

KIC 009603367

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})
009603367-01	OBS	No	578.713572	336.392462	1324.4	11.538	16.0	10.0	0.67	5446	2.62	0.26
009603367-02	OBS	No	305.909165	223.522093	815.5	10.278	11.1	7.5	0.67	5446	2.34	0.60
009603367-03	OBS	No	237.975640	236.652446	797.2	69.960	12.6	5.1	0.67	5446	1.88	0.83
009603367-04	OBS	No	396.605031	311.777681	711.0	8.509	10.2	6.0	0.67	5446	1.89	0.42
009603367-05	OBS	No	587.312281	155.402136	679.4	12.024	13.1	6.0	0.67	5446	1.78	0.25
009603367-06	OBS	No	519.411119	220.885602	854.7	3.729	11.5	6.8	0.67	5446	2.42	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009603367-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS—HALO_GHOST
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009603367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

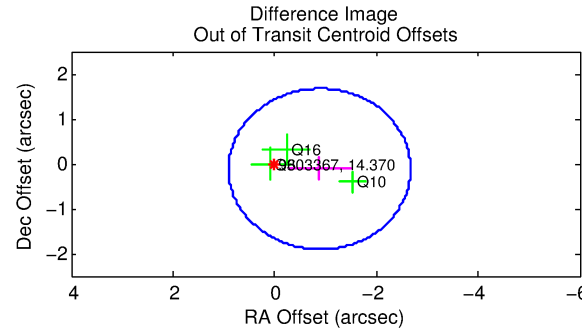
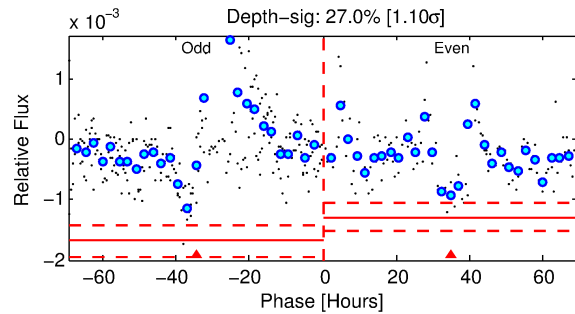
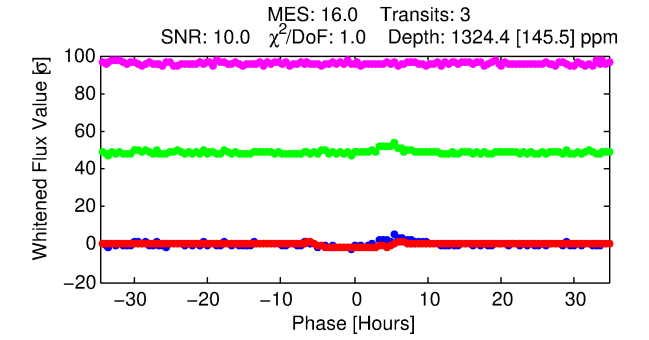
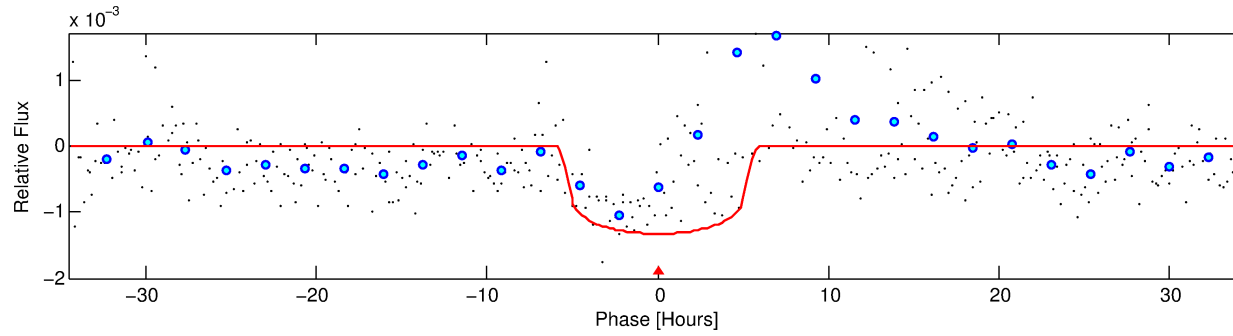
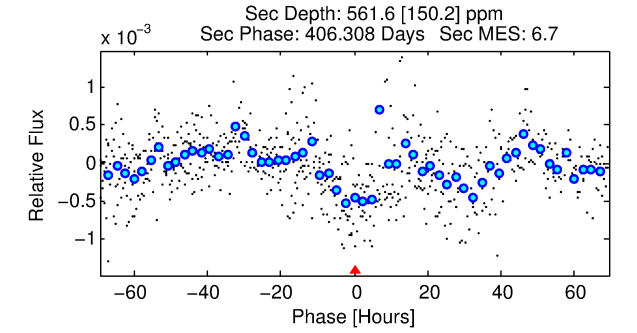
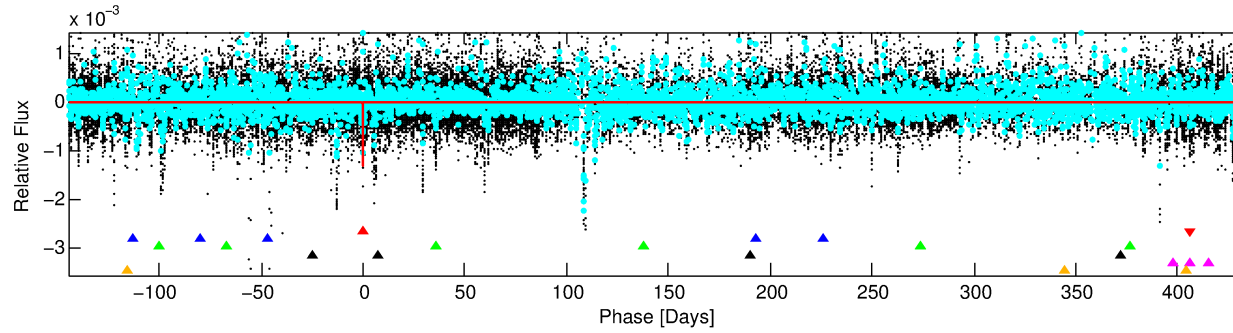
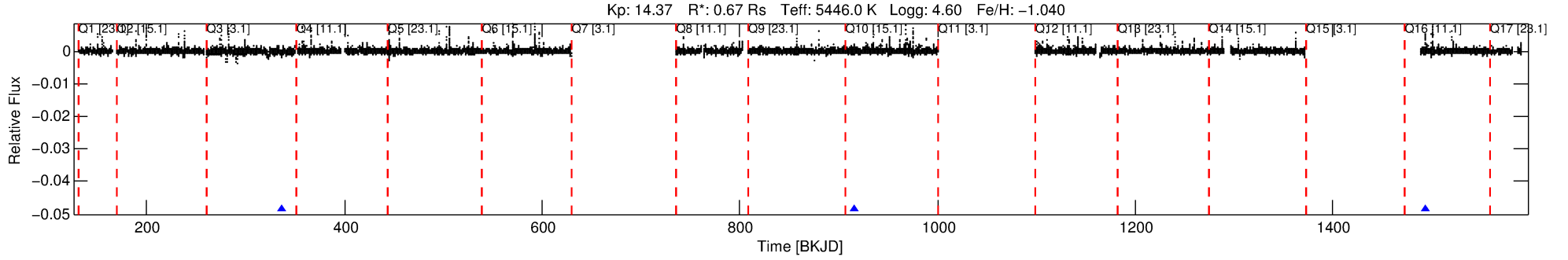
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-01

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 1 of 6 Period: 578.714 d



DV Fit Results:

Period = 578.71357 [0.00652] d
Epoch = 336.3925 [0.0086] BKJD
Rp/R* = 0.0359 [0.0036]
a/R* = 282.73 [101.96]
b = 0.73 [0.24]
Seff = 0.25 [0.05]
Teq = 181 [9] K
Rp = 2.62 [0.38] Re
a = 1.1754 [0.1067] AU
Ag = 62307.60 [22486.58] [2.77σ]
Teffp = 4424 [397] K [10.69σ]

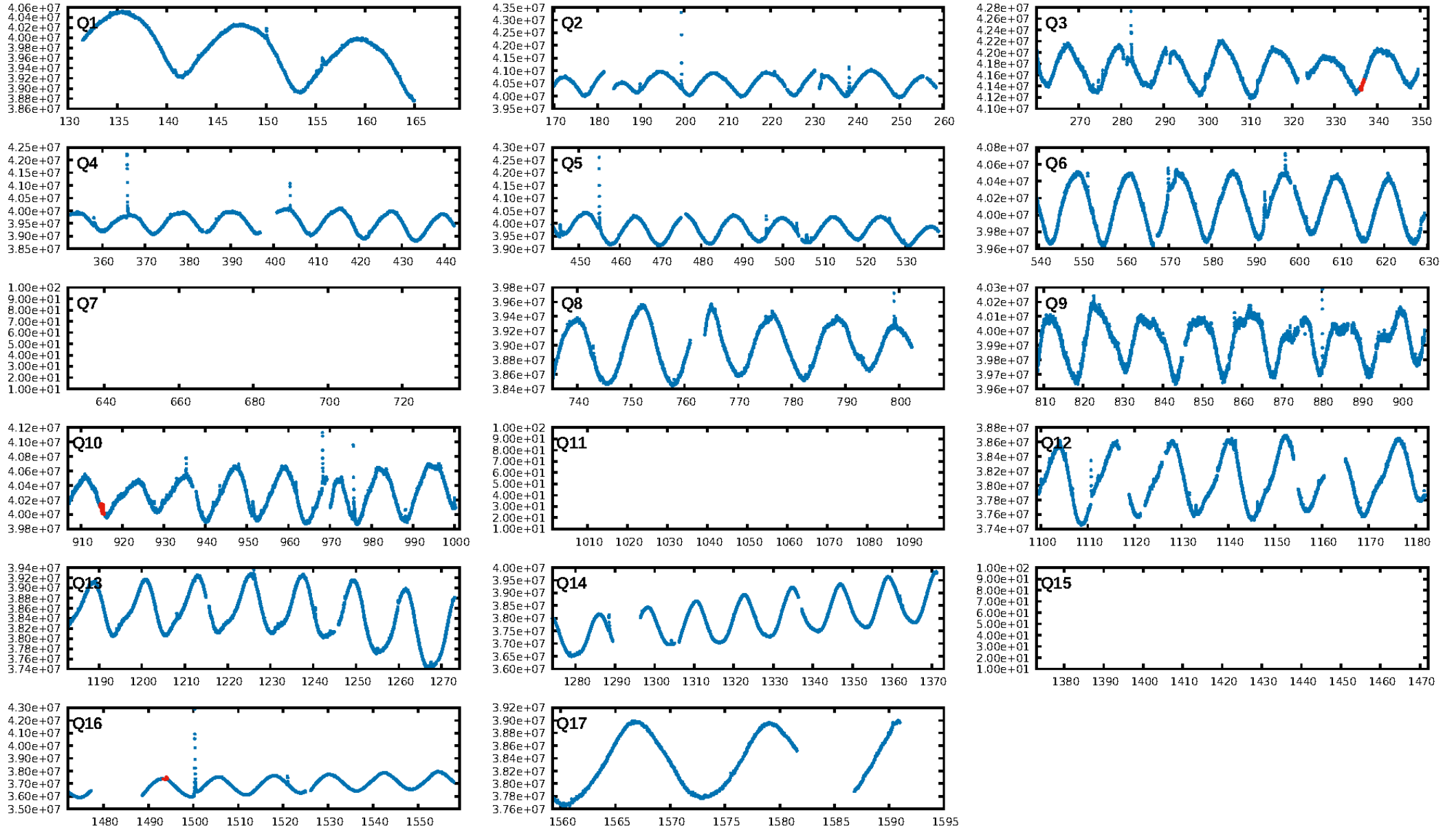
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [117.37σ]
LongPeriod-sig: 100.0% [12.38σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 97.1%
Bootstrap-pfa: 5.29e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6148
Centroid-sig: 3.5%
Centroid-so: 0.651 arcsec [1.30σ]
OotOffset-rm: 0.892 arcsec [1.49σ]
KicOffset-rm: 0.813 arcsec [1.40σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

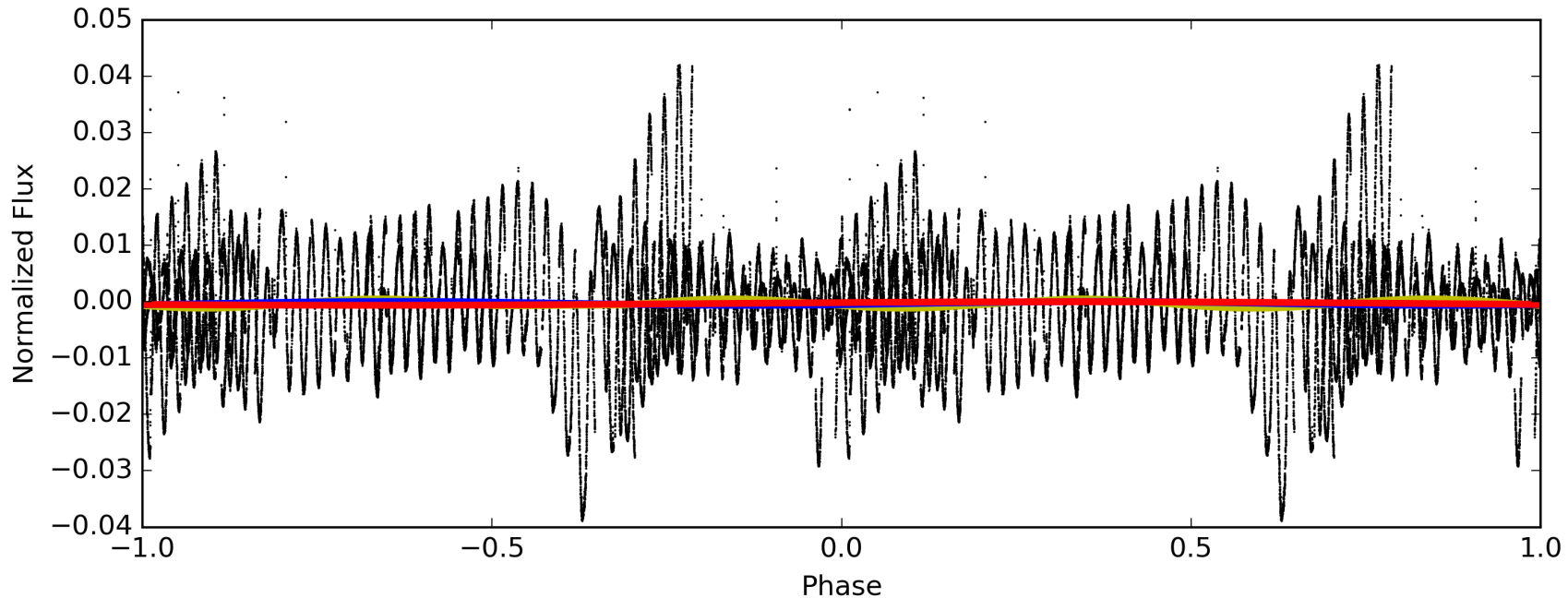
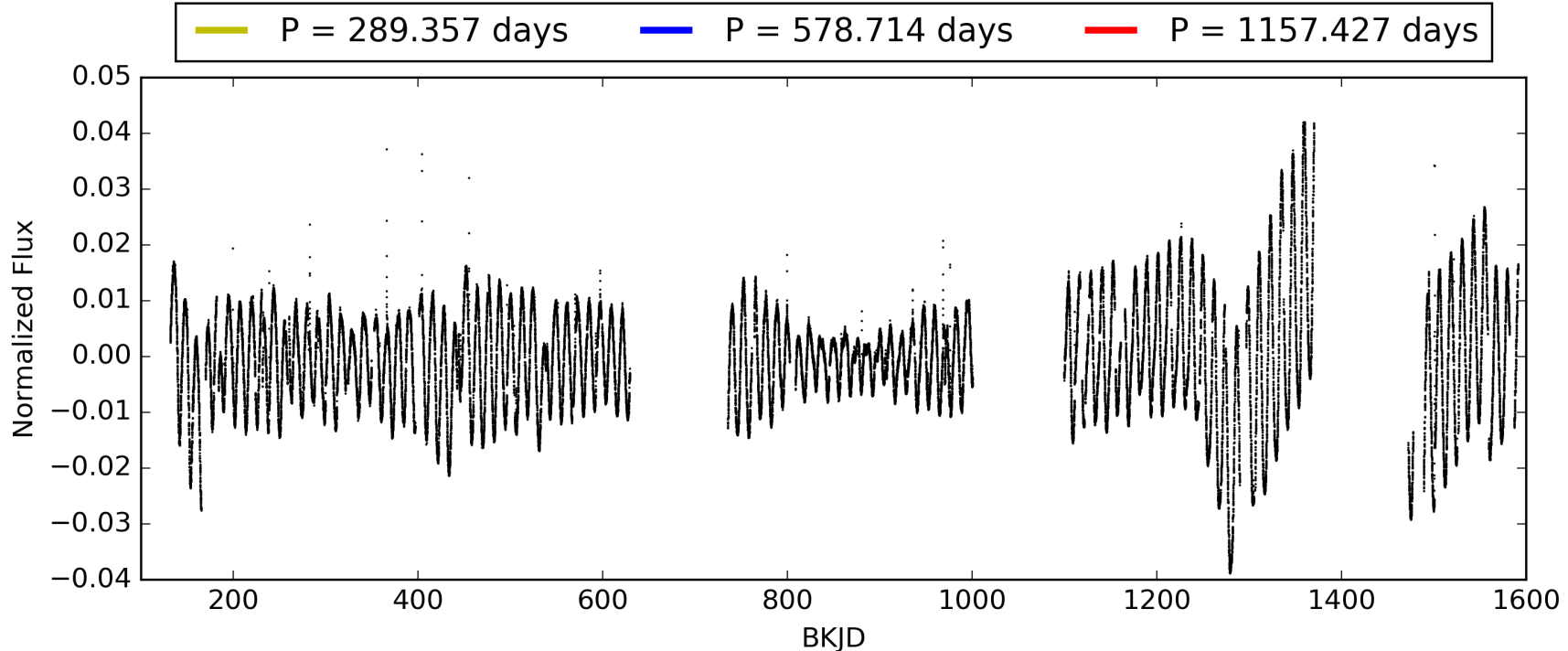
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:44:52 Z

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

TCE 009603367-01, PDC Light Curves

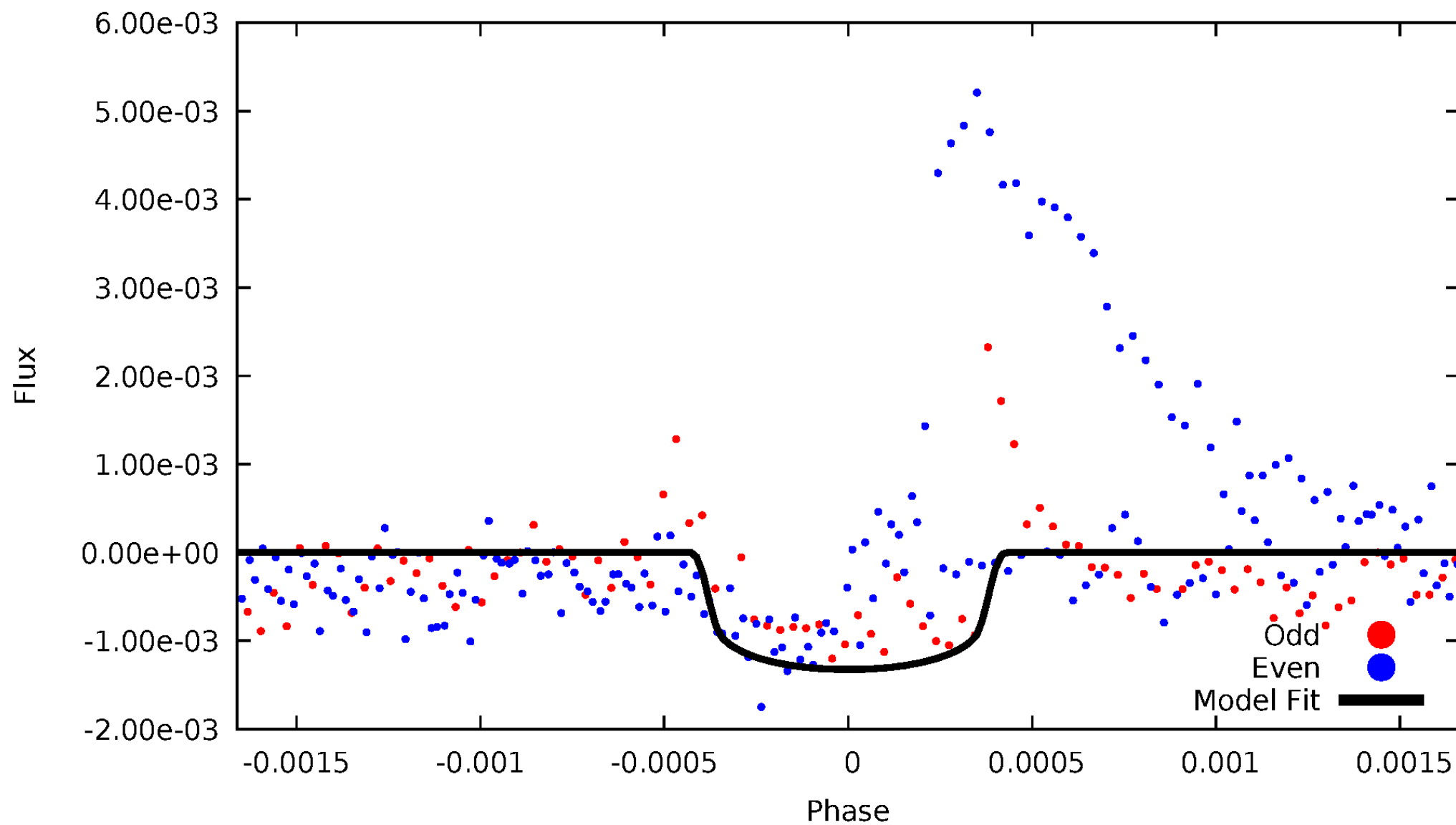


TCE 009603367-01



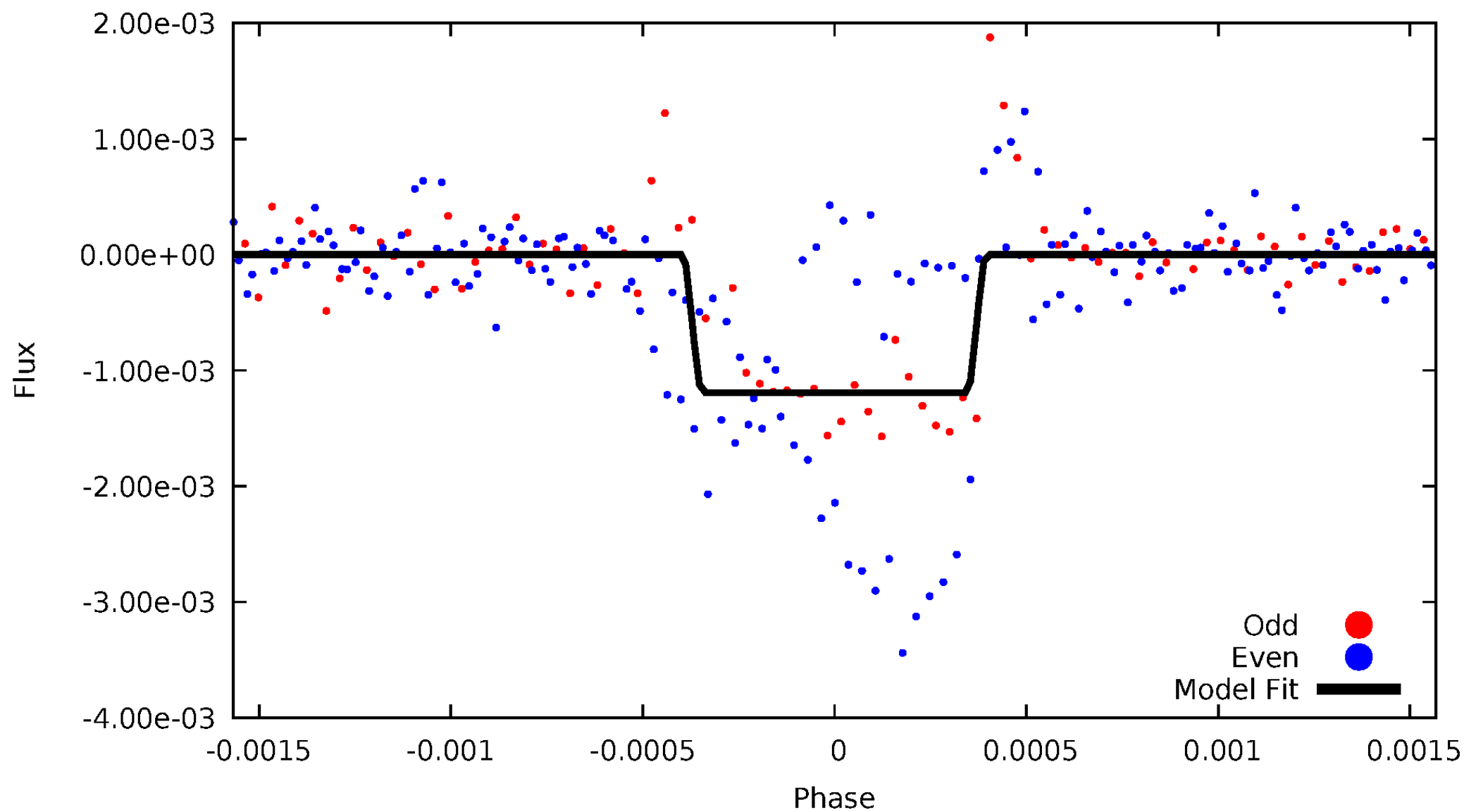
DV Odd/Even

TCE 009603367-01



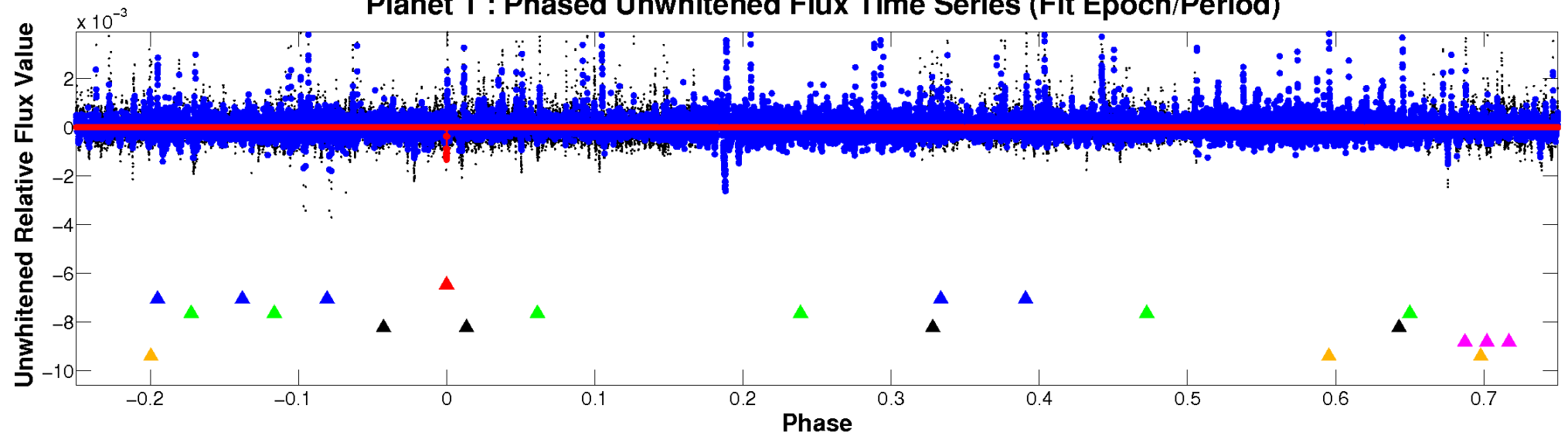
ALT Odd/Even

TCE 009603367-01

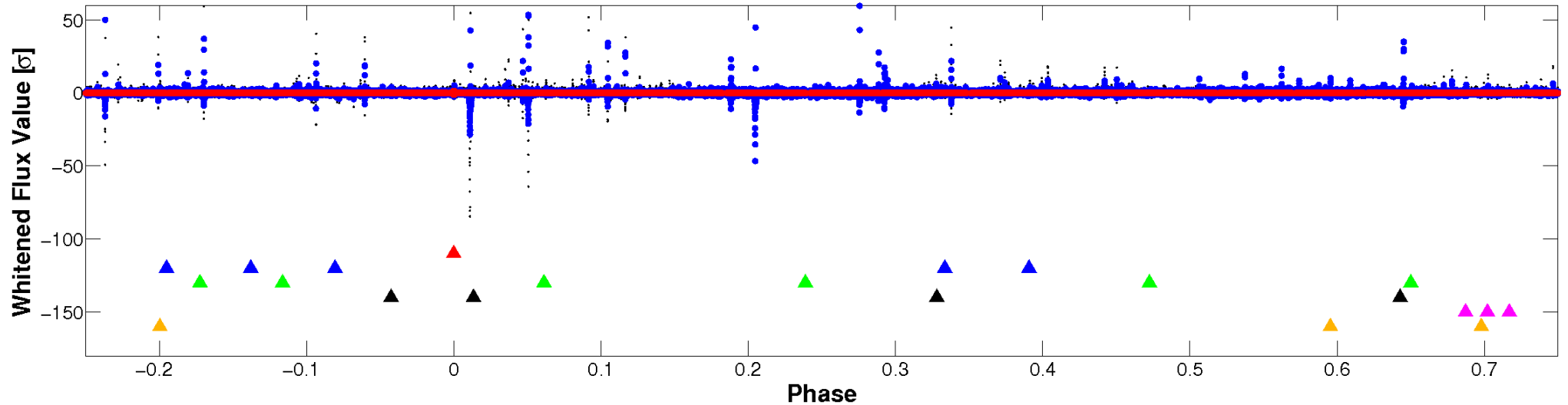


Non-Whitened Vs. Whitened Light Curve

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

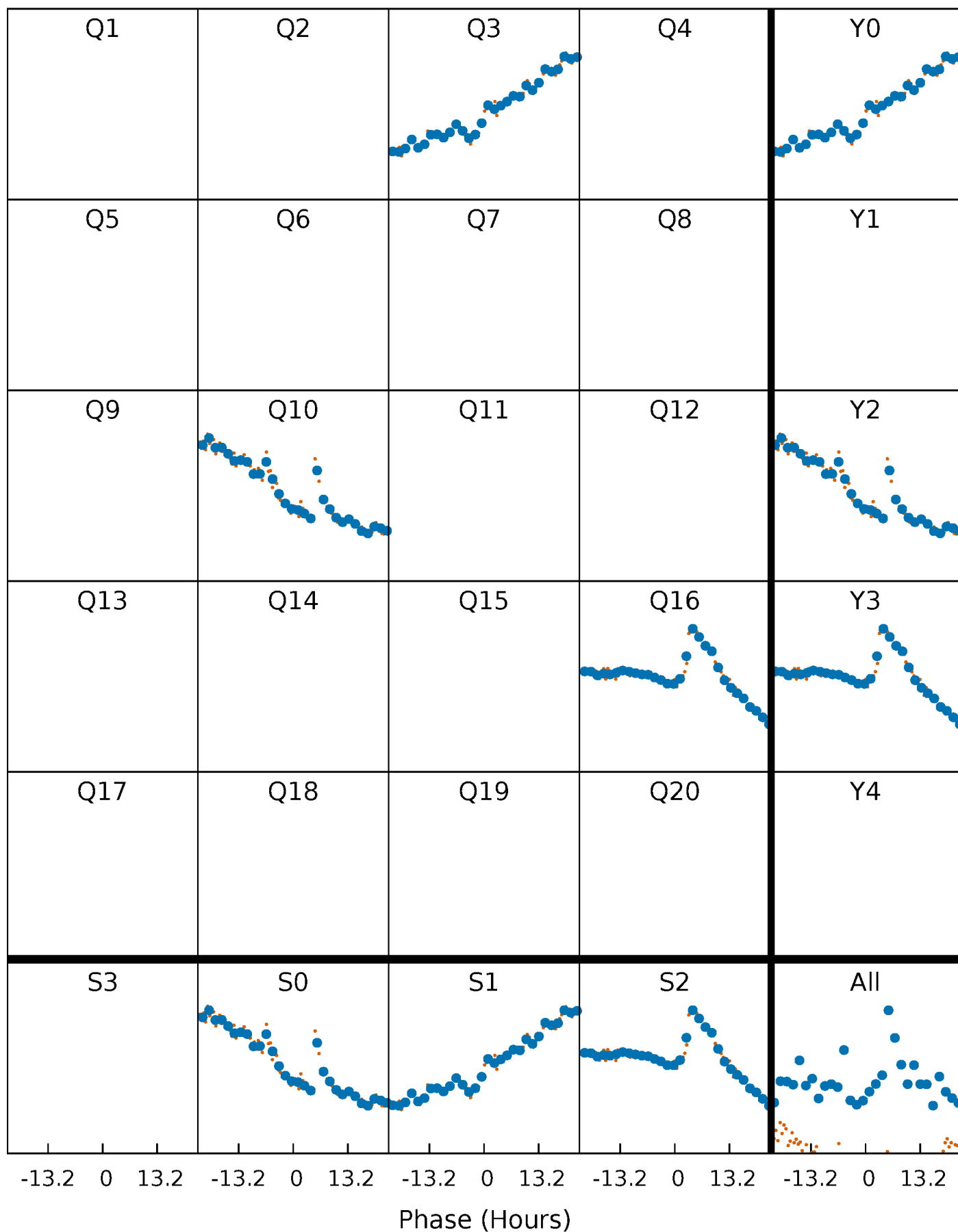


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



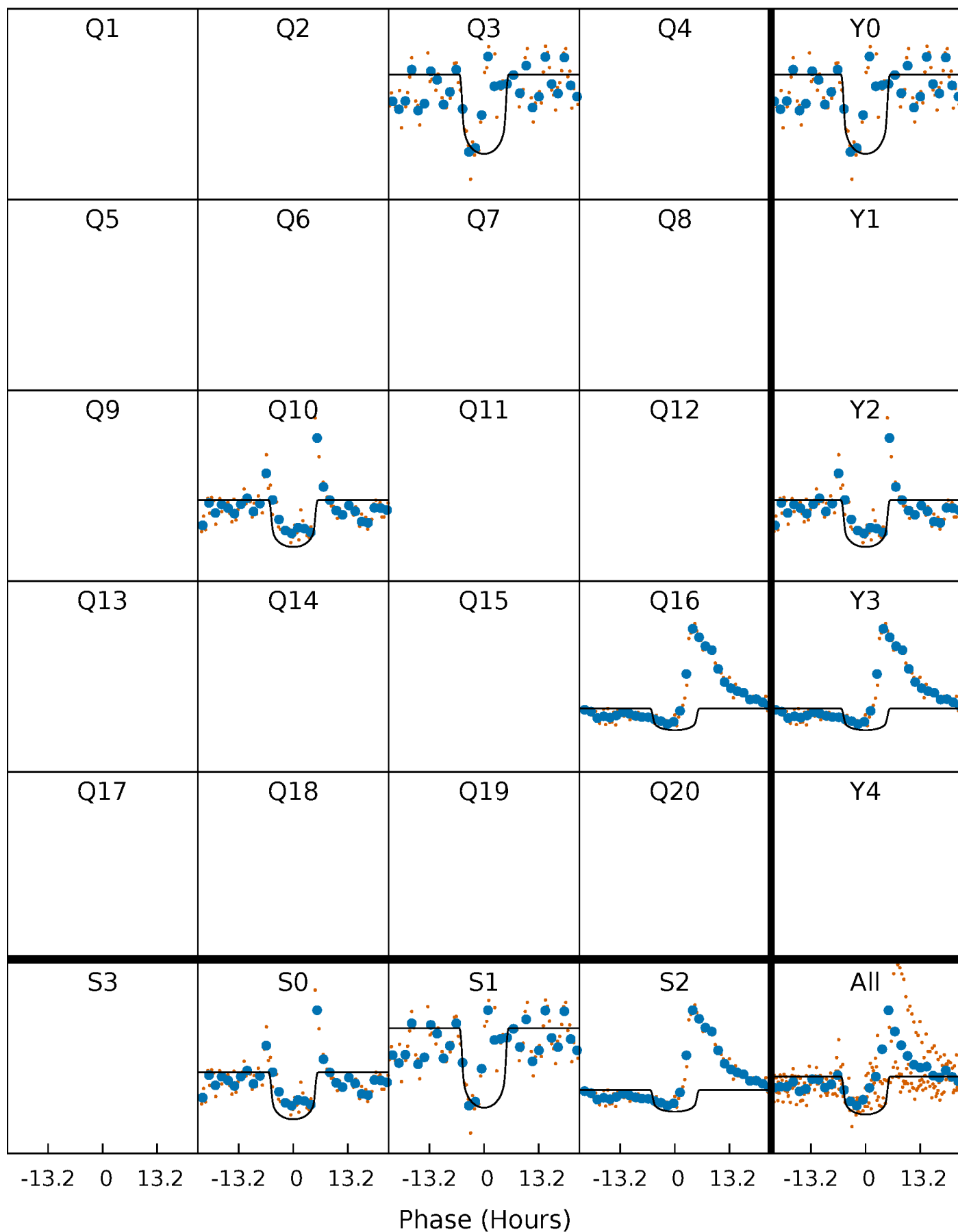
PDC Quarter-Phased Transit Curves

TCE 009603367-01 P=578.713573 Days $T_0=336.392462$ (BKJD)



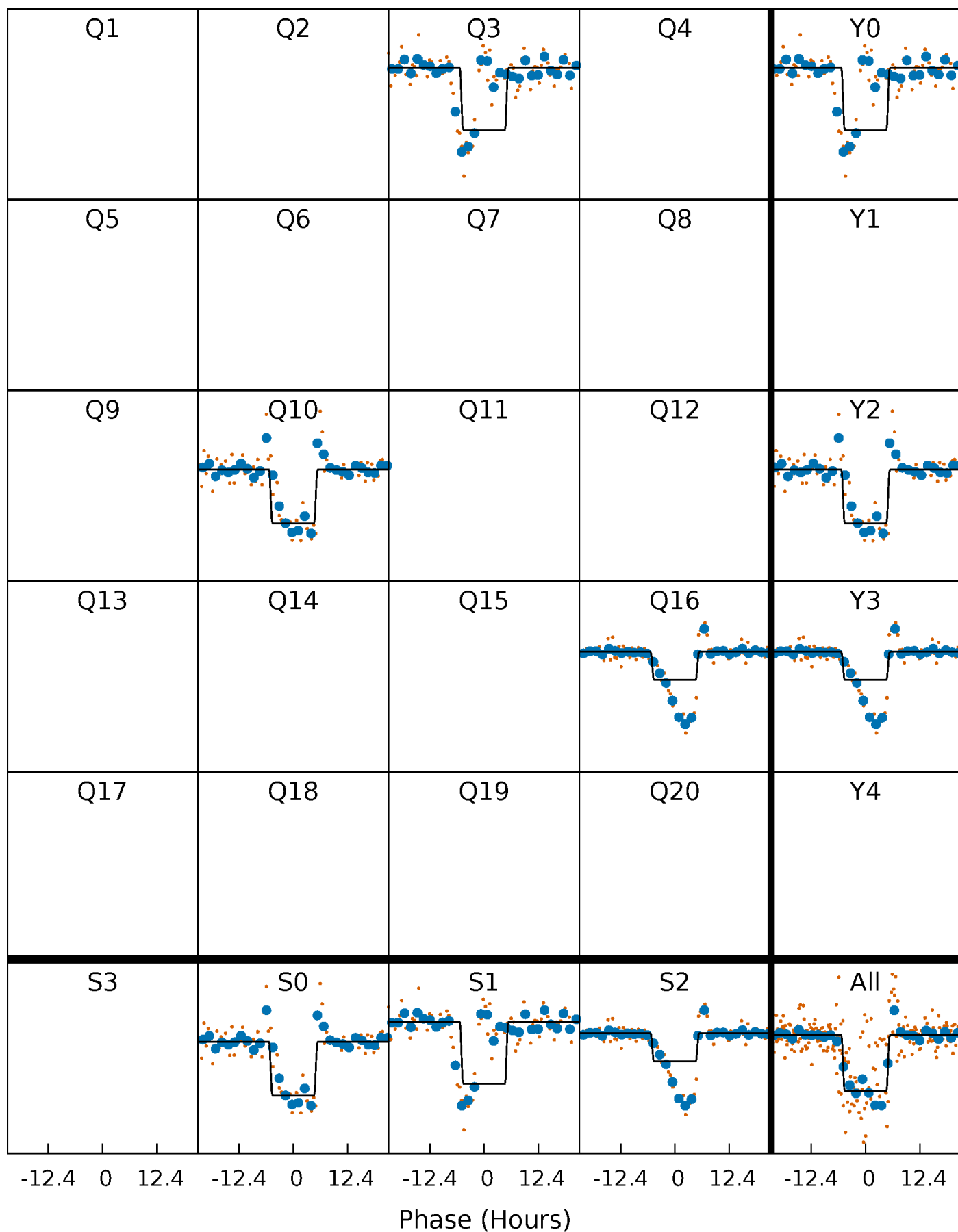
DV Quarter-Phased Transit Curves

TCE 009603367-01 P=578.713573 Days $T_0=336.392462$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

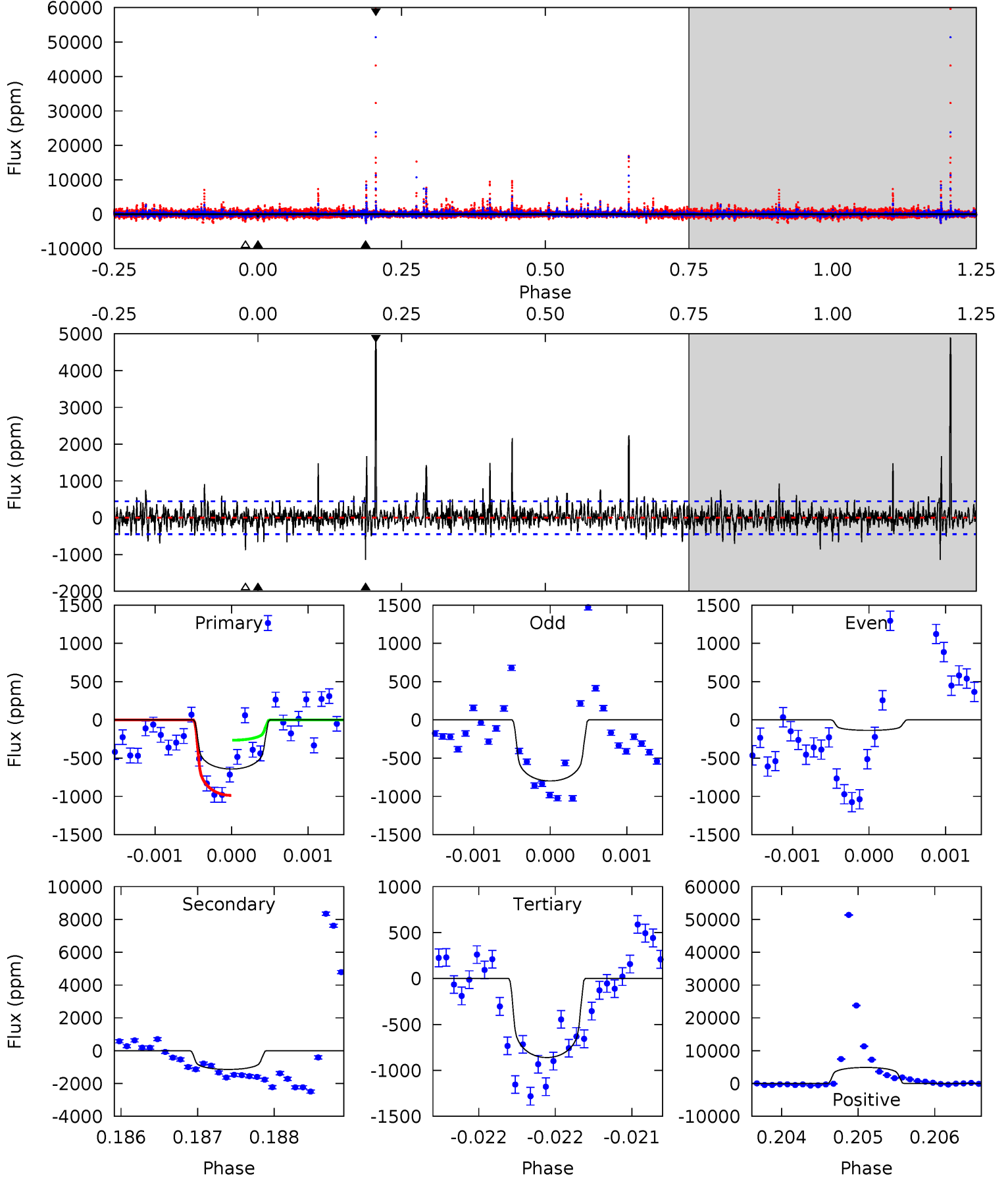
TCE 009603367-01 P=578.644363 Days $T_0=336.446665$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-01, P = 578.713573 Days, E = 336.392462 Days

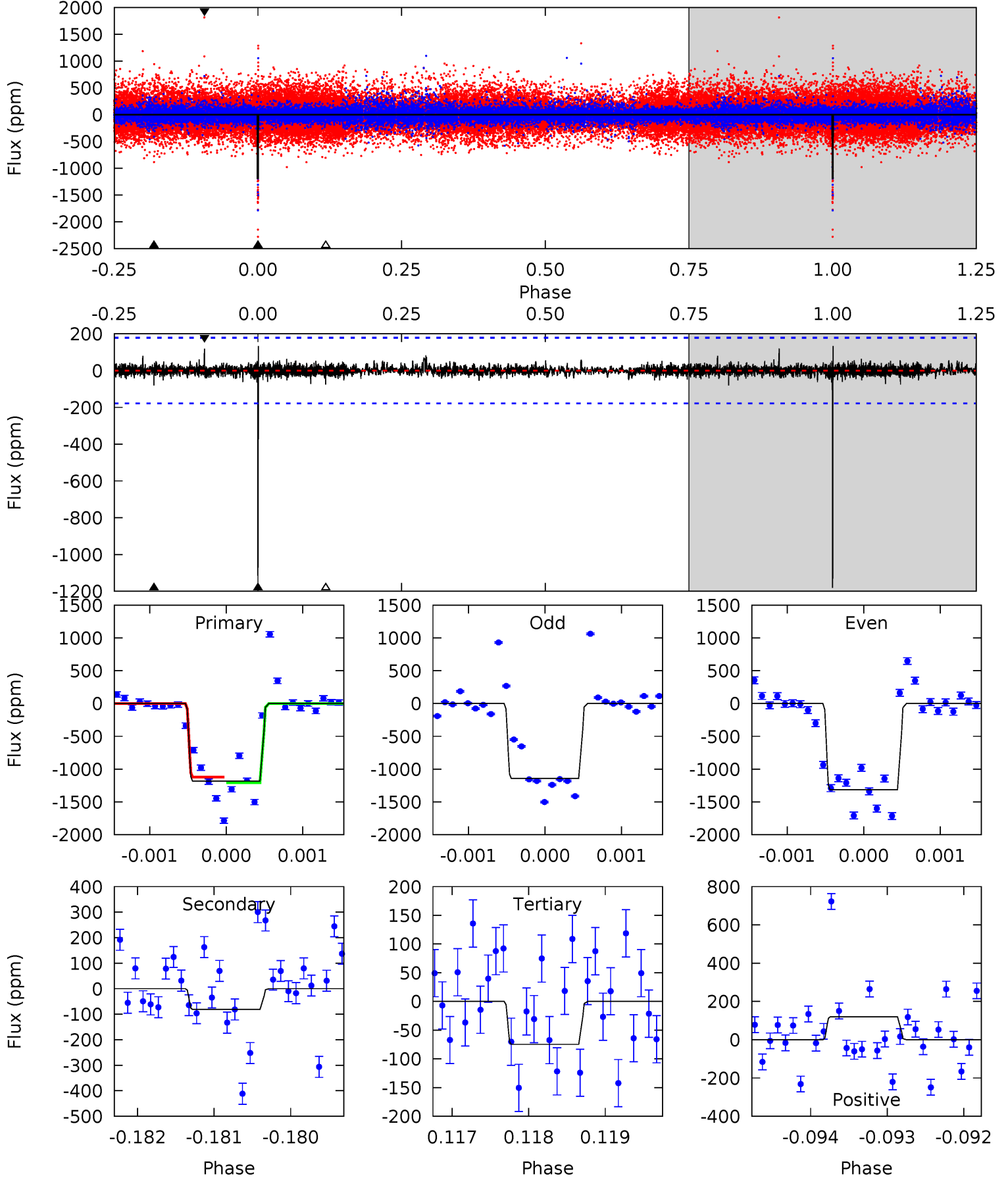
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.85	14.0	10.5	59.8	5.48	3.33	3.26	-2.67	-52.0	3.46	-45.8	3.67	0.49	0.81	4.36



Alt Model-Shift Uniqueness Test

009603367-01, P = 578.644363 Days, E = 336.446665 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.4	2.50	2.31	3.67	5.50	3.37	0.46	34.1	32.8	0.19	-1.17	2.97	1.06	0.10	0



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1144 ± 82	$2.64^{+0.29}_{-0.29}$	253^{+11}_{-9}	5308^{+325}_{-281}	127442^{+32191}_{-25176}
Alt.	-81 ± 32	$2.50^{+0.31}_{-0.30}$	252^{+10}_{-10}	3322^{+242}_{-254}	9767^{+5641}_{-4062}

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 $A_{obs} \gg 1.0$

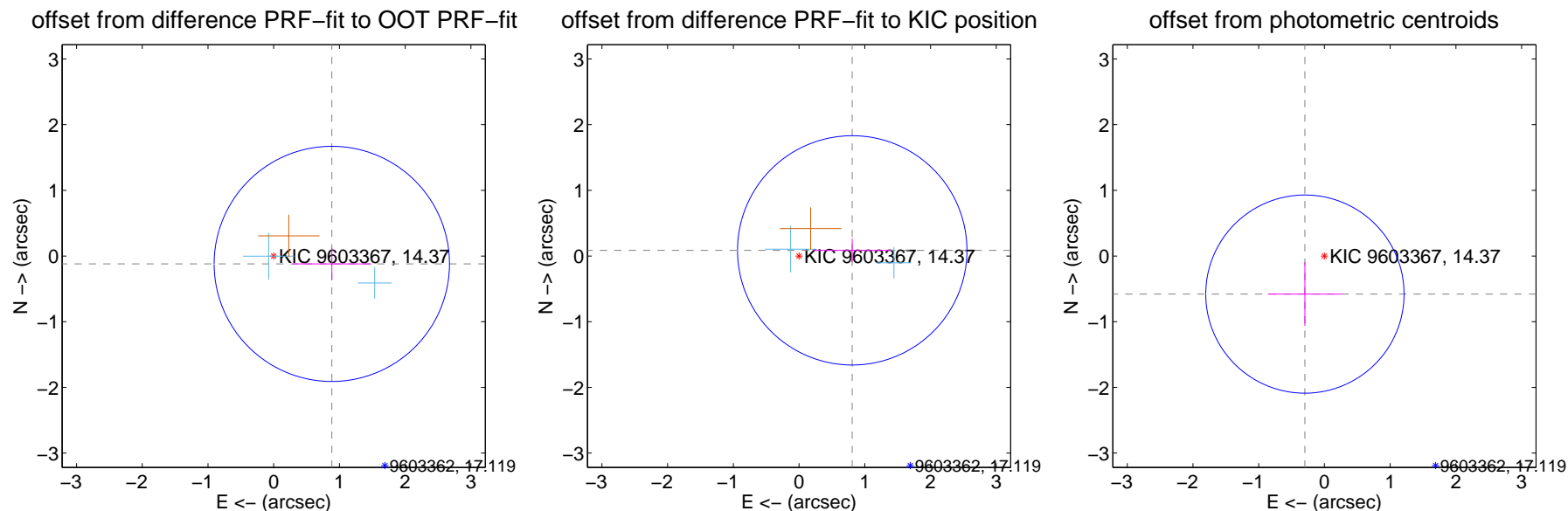
DV Centroid Data

Supplemental centroid analysis for 009603367-01. Kepler magnitude: 14.37. Transit SNR 10.04

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.892 ± 0.597	1.49	-0.884 ± 0.601	-0.120 ± 0.247
PRF-fit source offset from KIC position	0.813 ± 0.582	1.40	-0.809 ± 0.585	0.086 ± 0.180
photometric centroid source offset	0.65 ± 0.50	1.30	0.30 ± 0.57	-0.58 ± 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.

Q1 no difference image



Q1 no OOT image



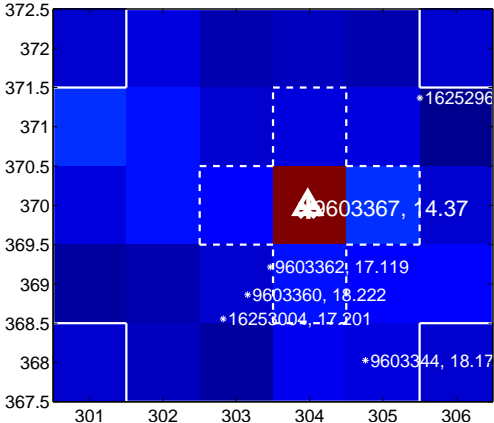
Q2 no difference image



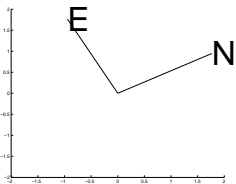
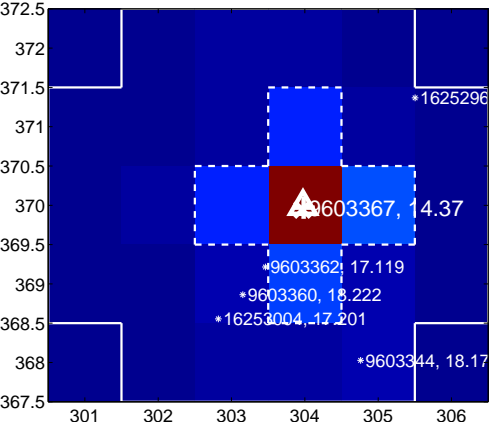
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



Q4 no OOT image

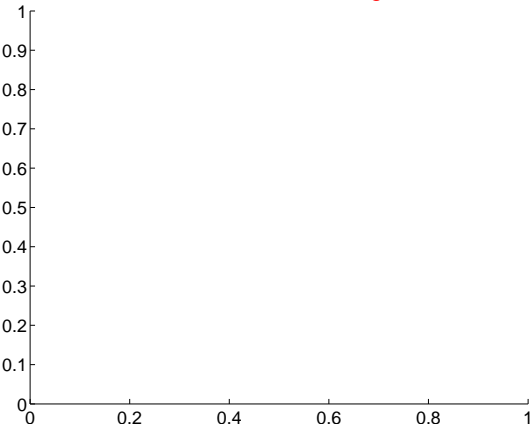


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

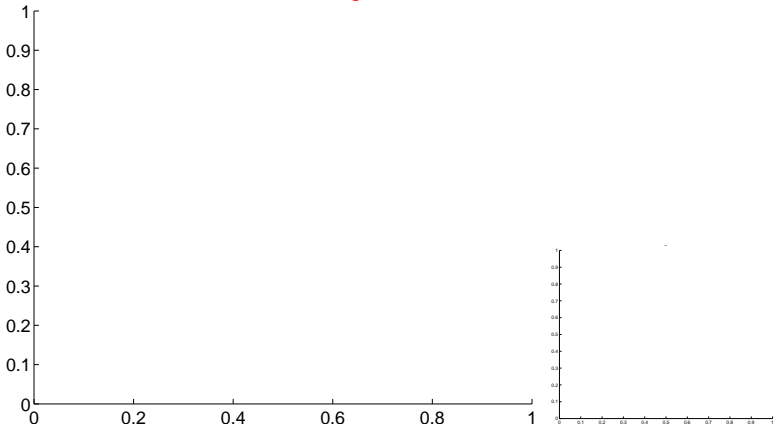


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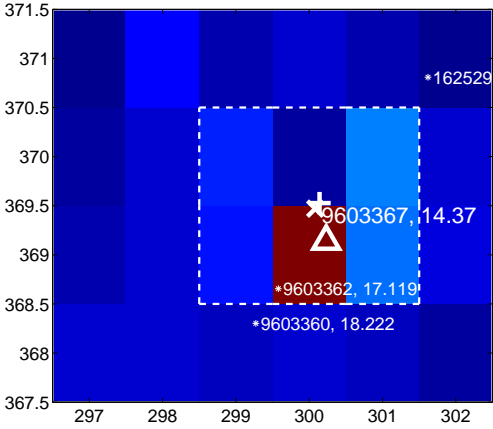
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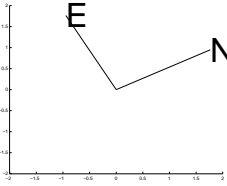
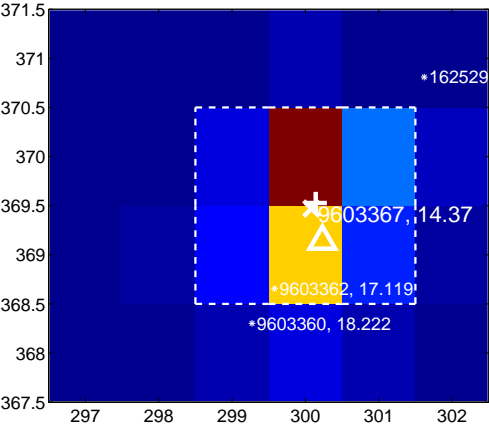
Q9 no OOT image



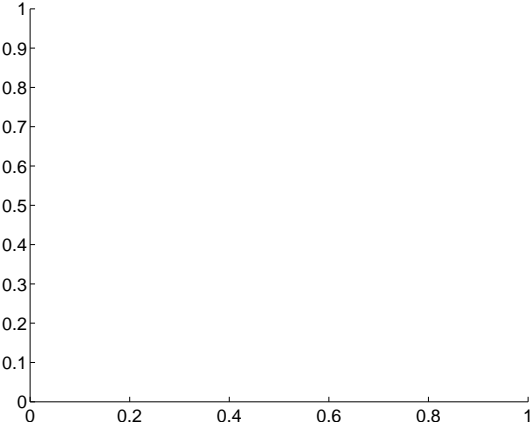
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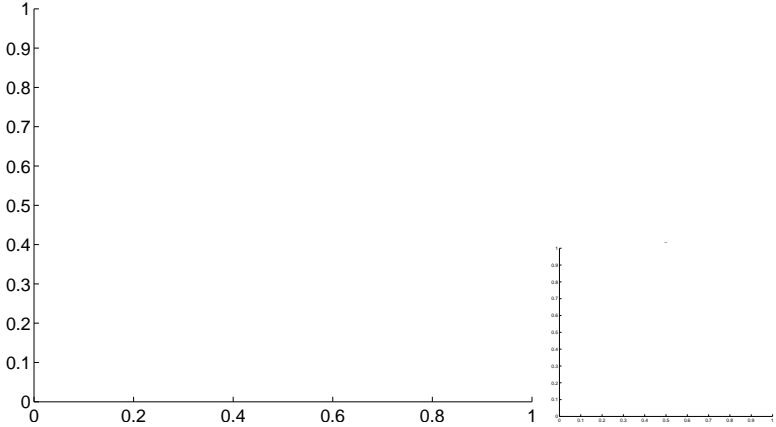
Q10 OOT image



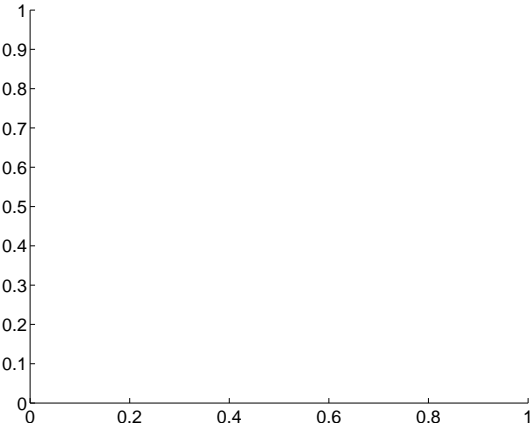
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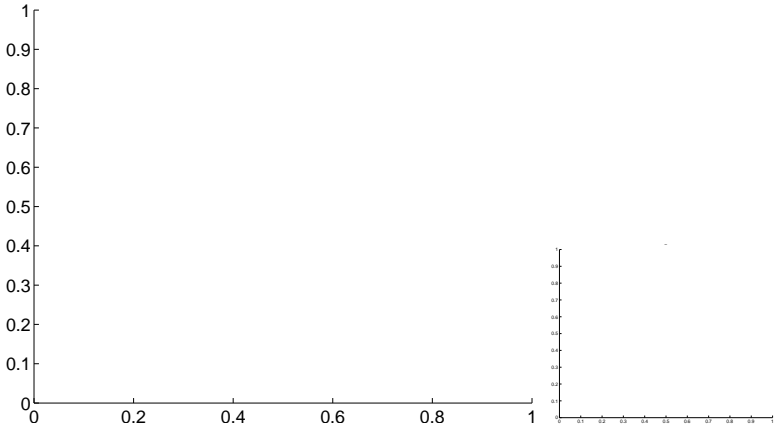
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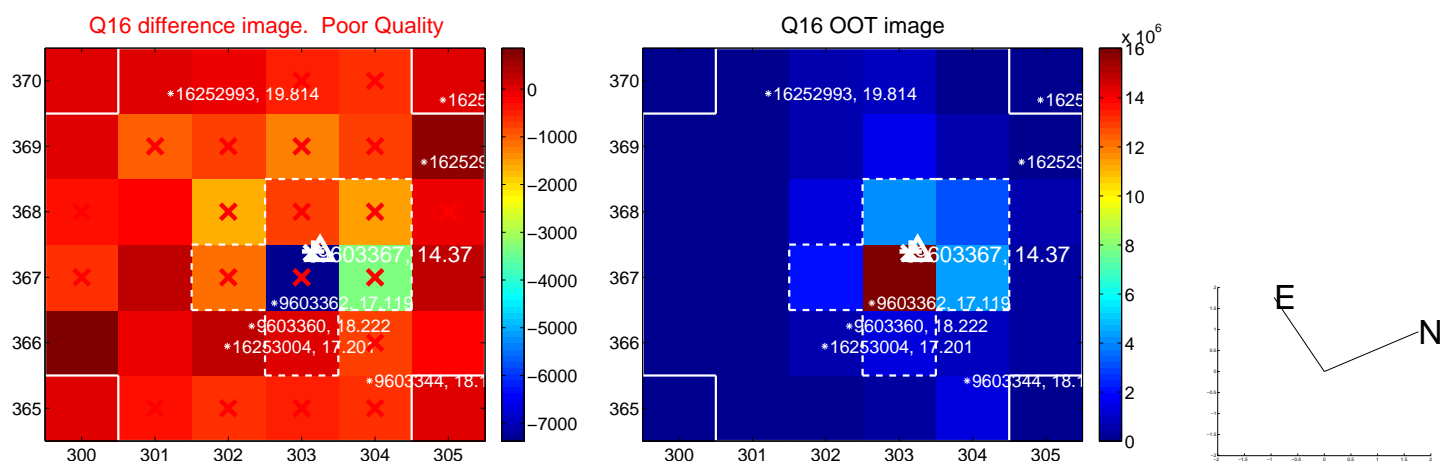
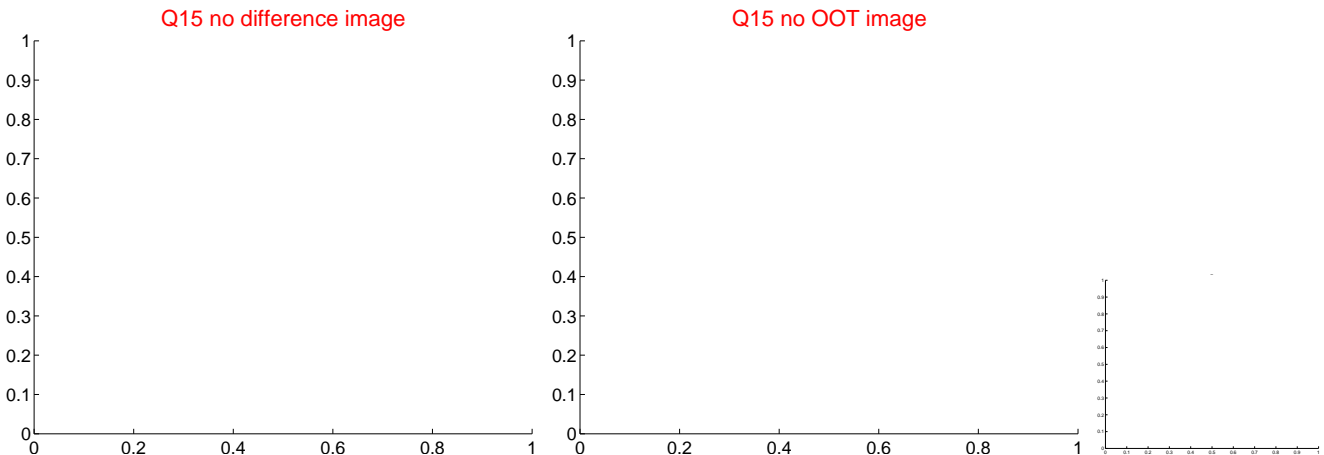
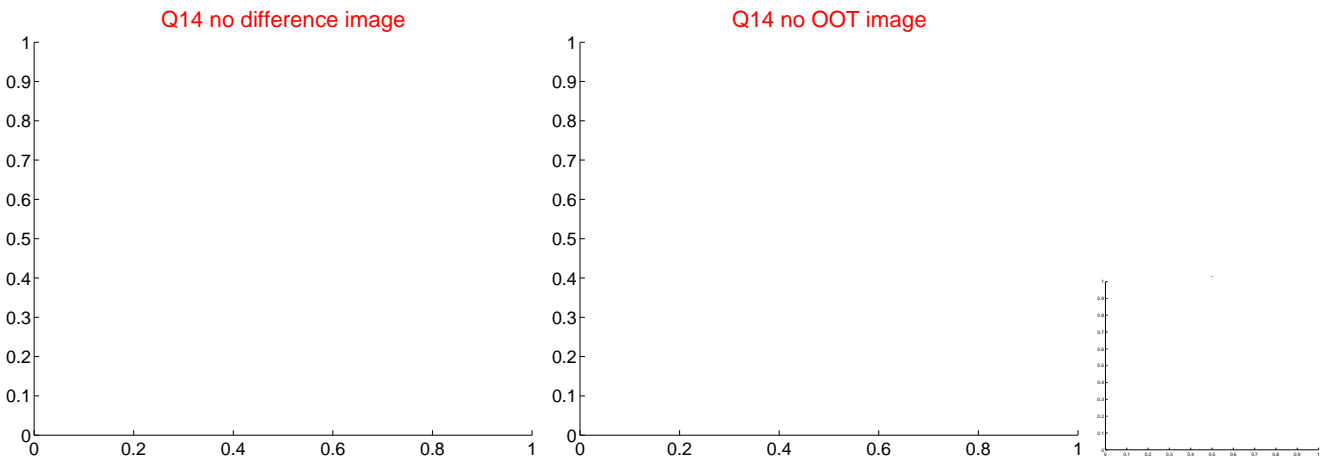
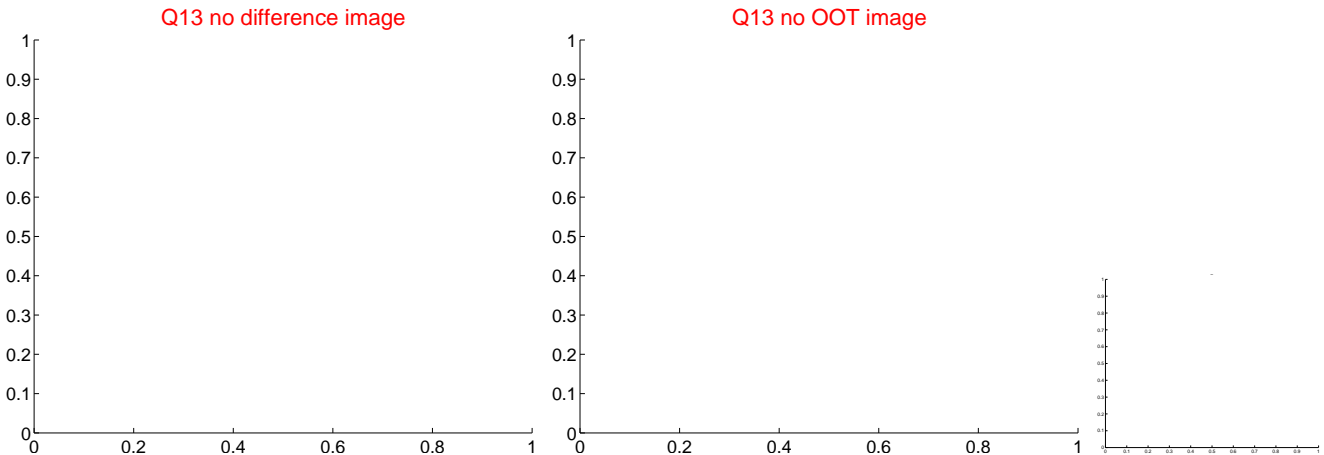
Q12 no difference image



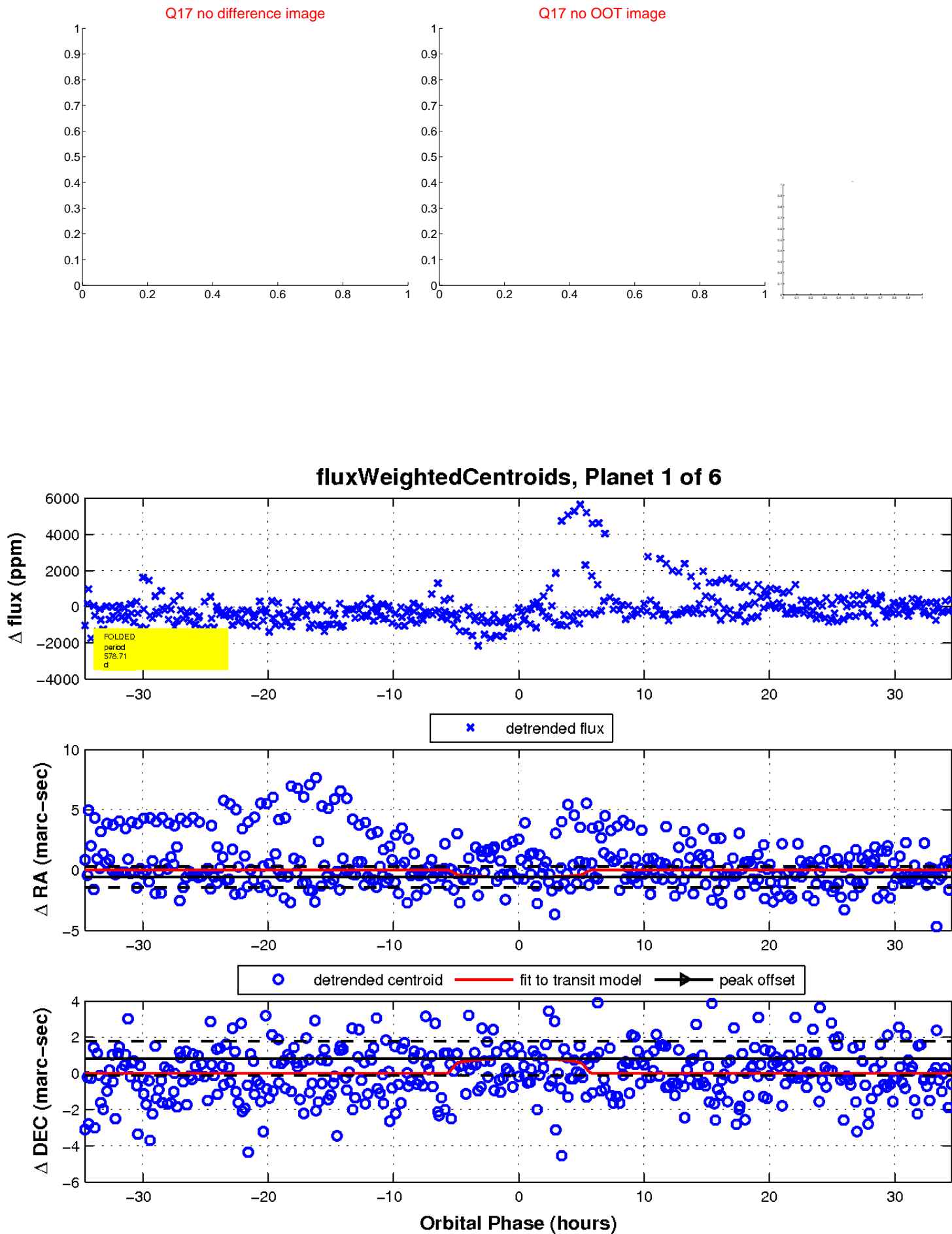
Q12 no OOT image



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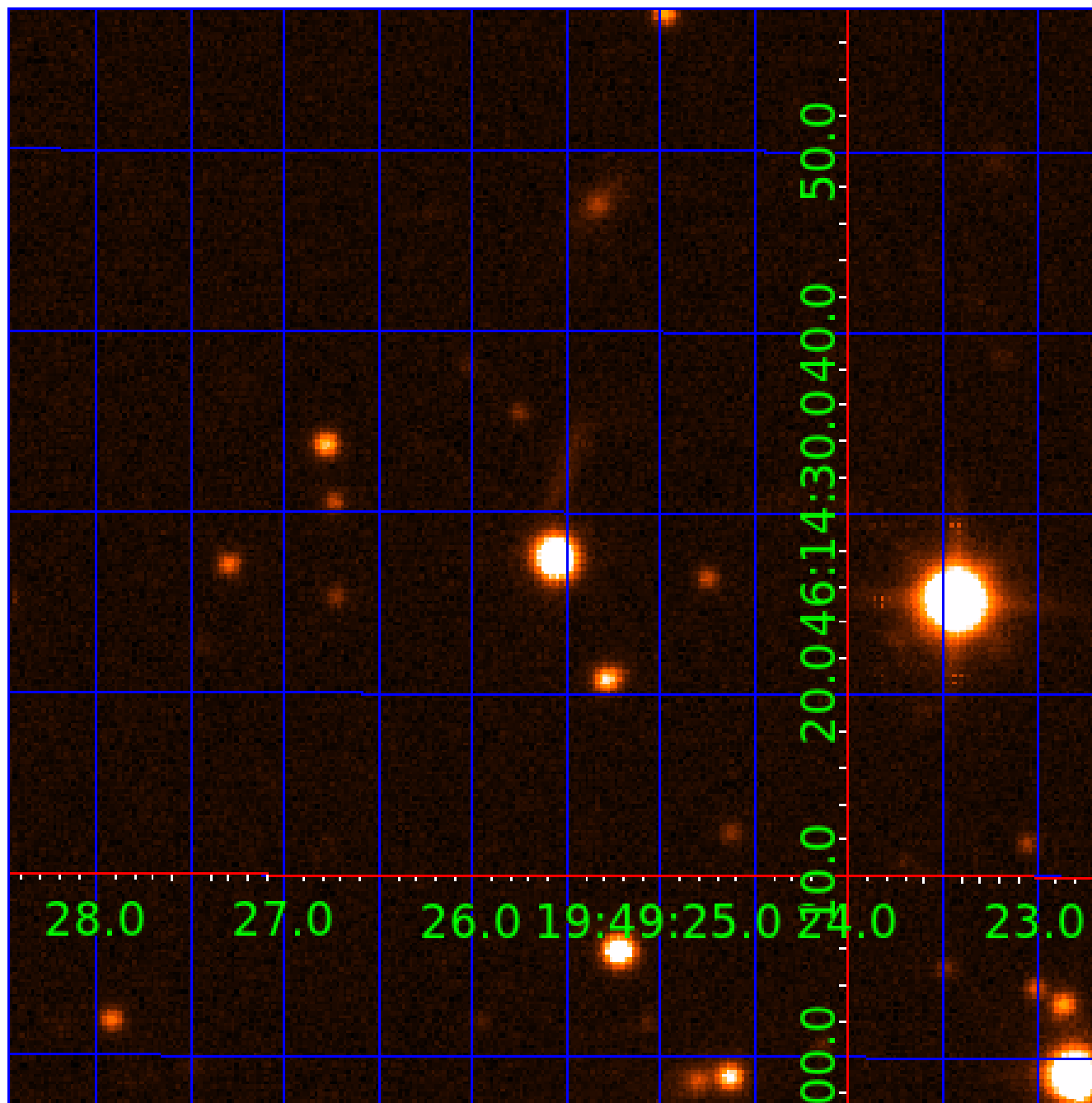


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009603367

Q1-17 DR25 TCE Parameters

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009603367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
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009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

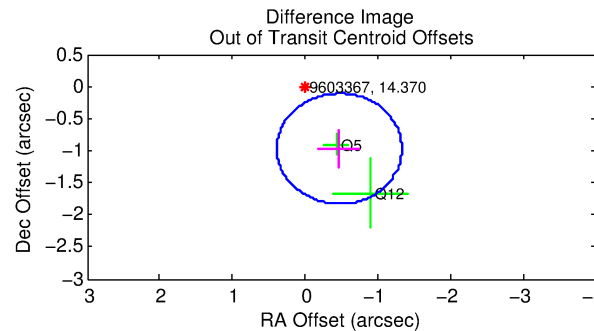
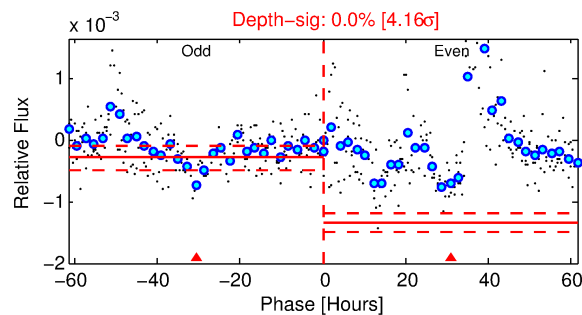
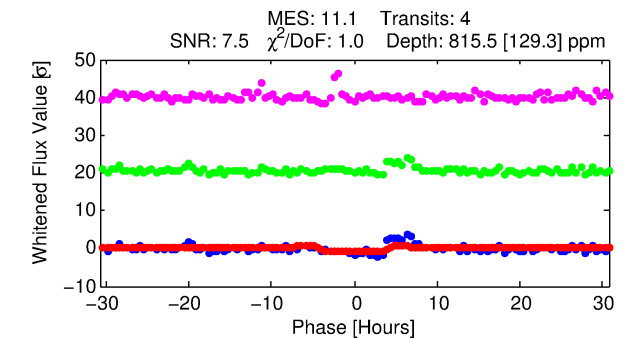
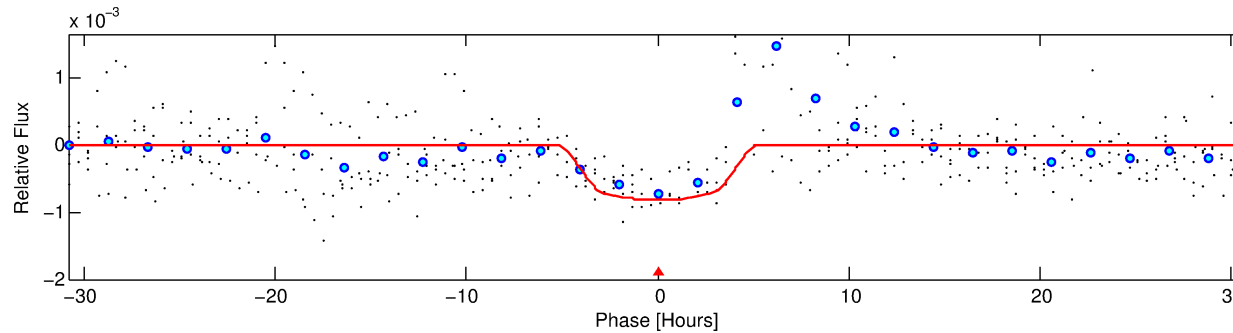
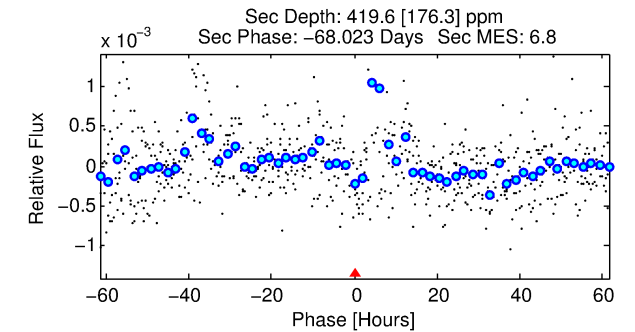
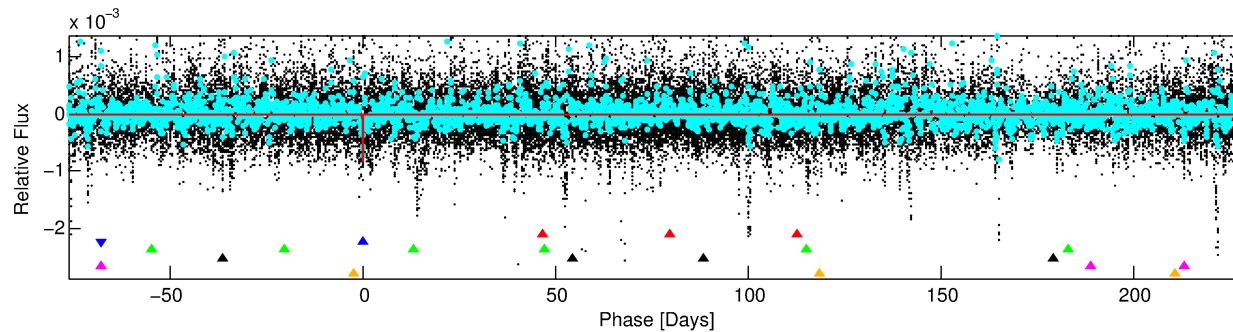
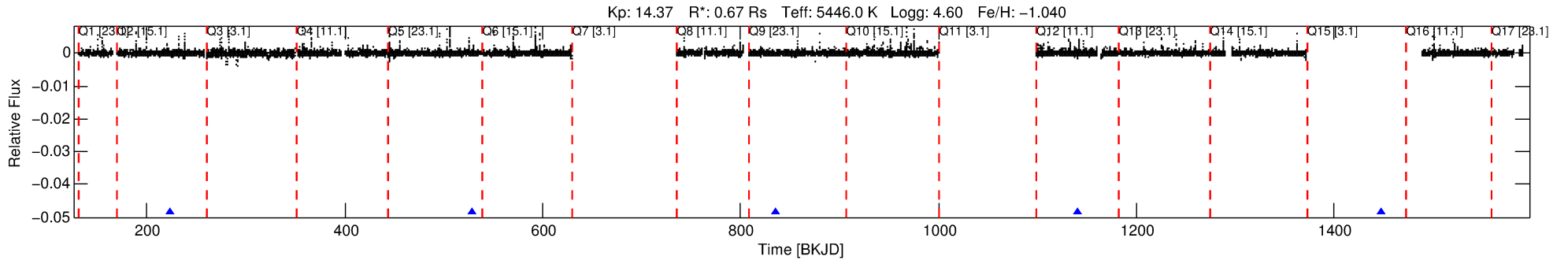
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-02

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 2 of 6 Period: 305.909 d



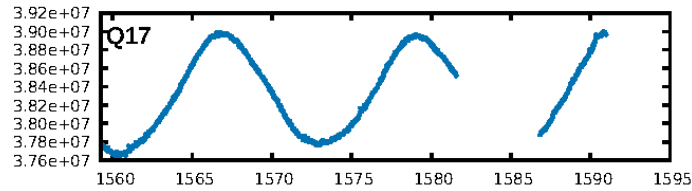
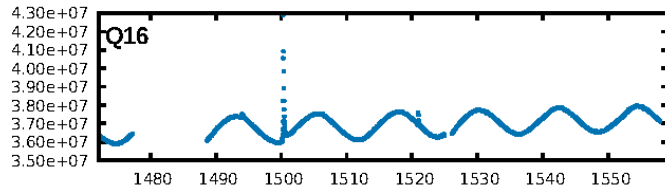
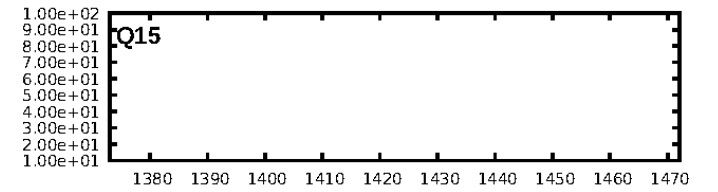
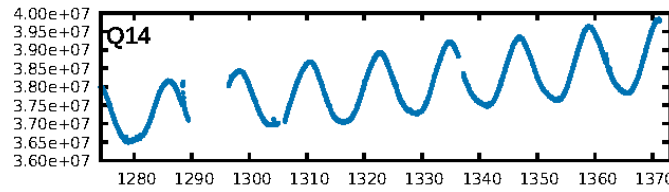
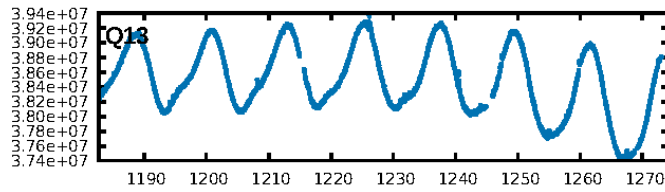
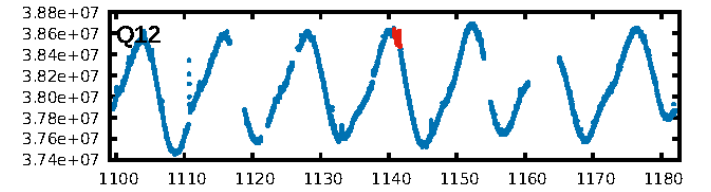
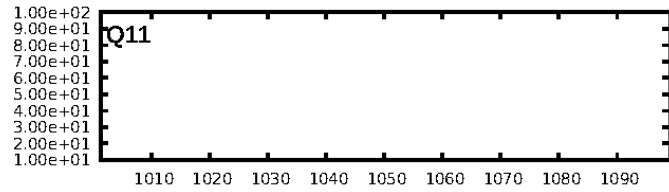
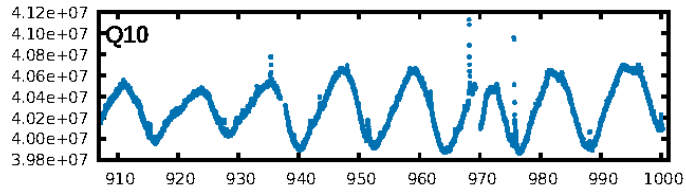
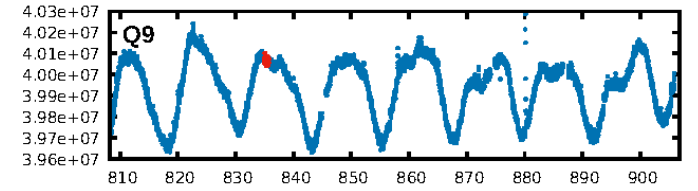
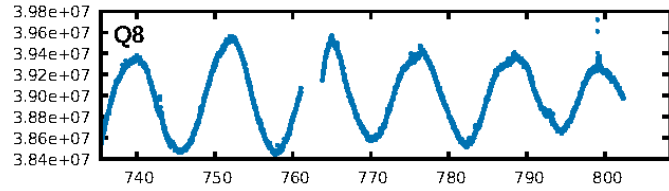
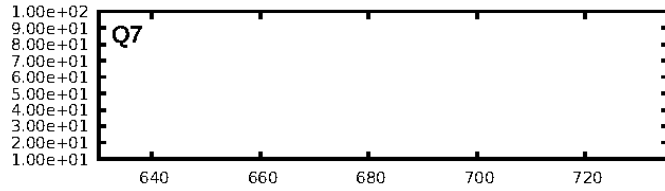
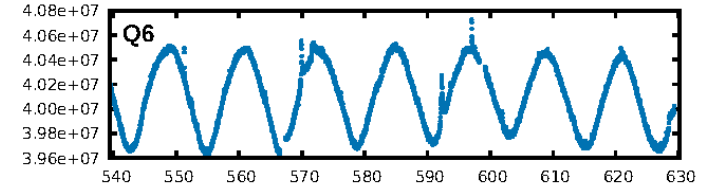
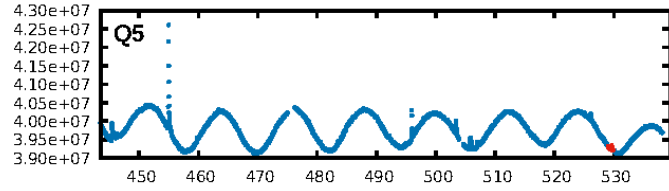
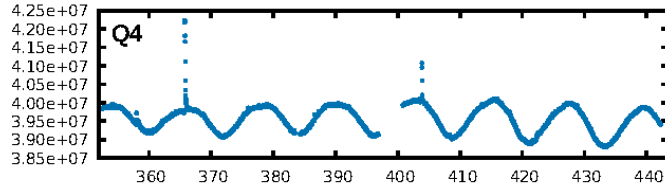
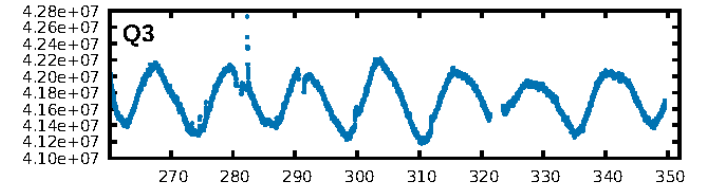
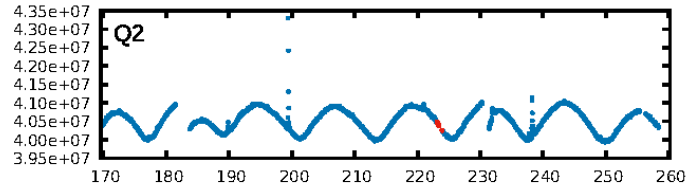
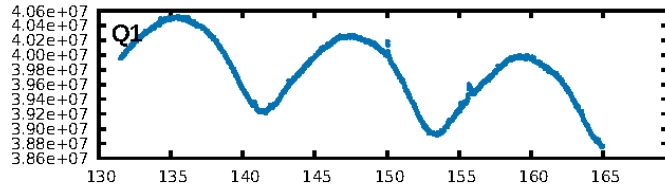
DV Fit Results:

Period = 305.90916 [0.00988] d
Epoch = 223.5221 [0.0197] BKJD
Rp/R* = 0.0321 [0.0032]
a/R* = 100.38 [22.10]
b = 0.93 [0.03]
Seff = 0.60 [0.11]
Teq = 224 [11] K
Rp = 2.34 [0.33] Re
a = 0.7684 [0.0697] AU
Ag = 24955.72 [12080.47] [2.07σ]
Teffp = 4353 [525] K [7.86σ]

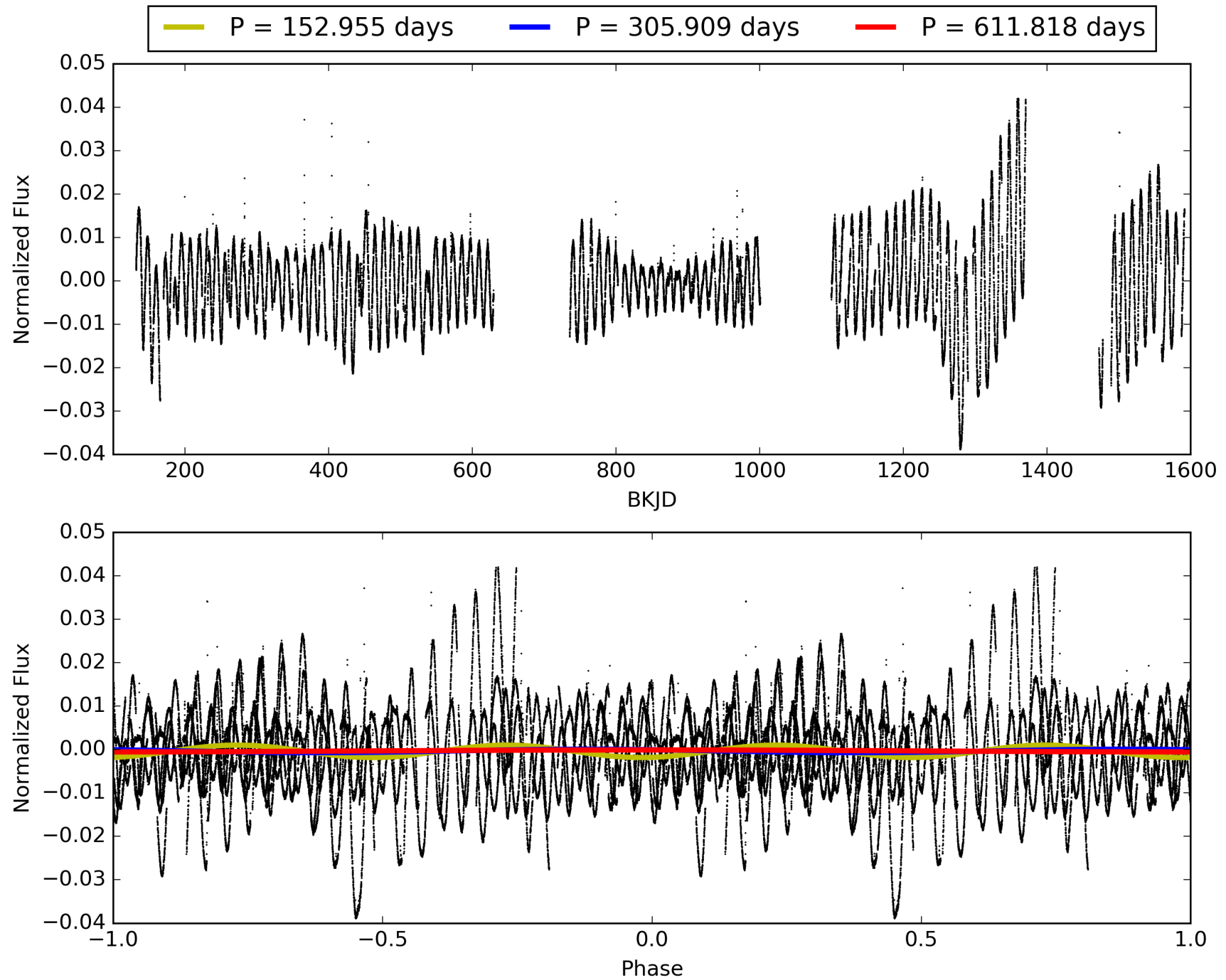
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.06σ]
LongPeriod-sig: 100.0% [163.13σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.24e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2259
Centroid-sig: 28.0%
Centroid-so: 1.257 arcsec [1.48σ]
OotOffset-rm: 1.078 arcsec [3.76σ]
KicOffset-rm: 1.030 arcsec [3.12σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009603367-02, PDC Light Curves

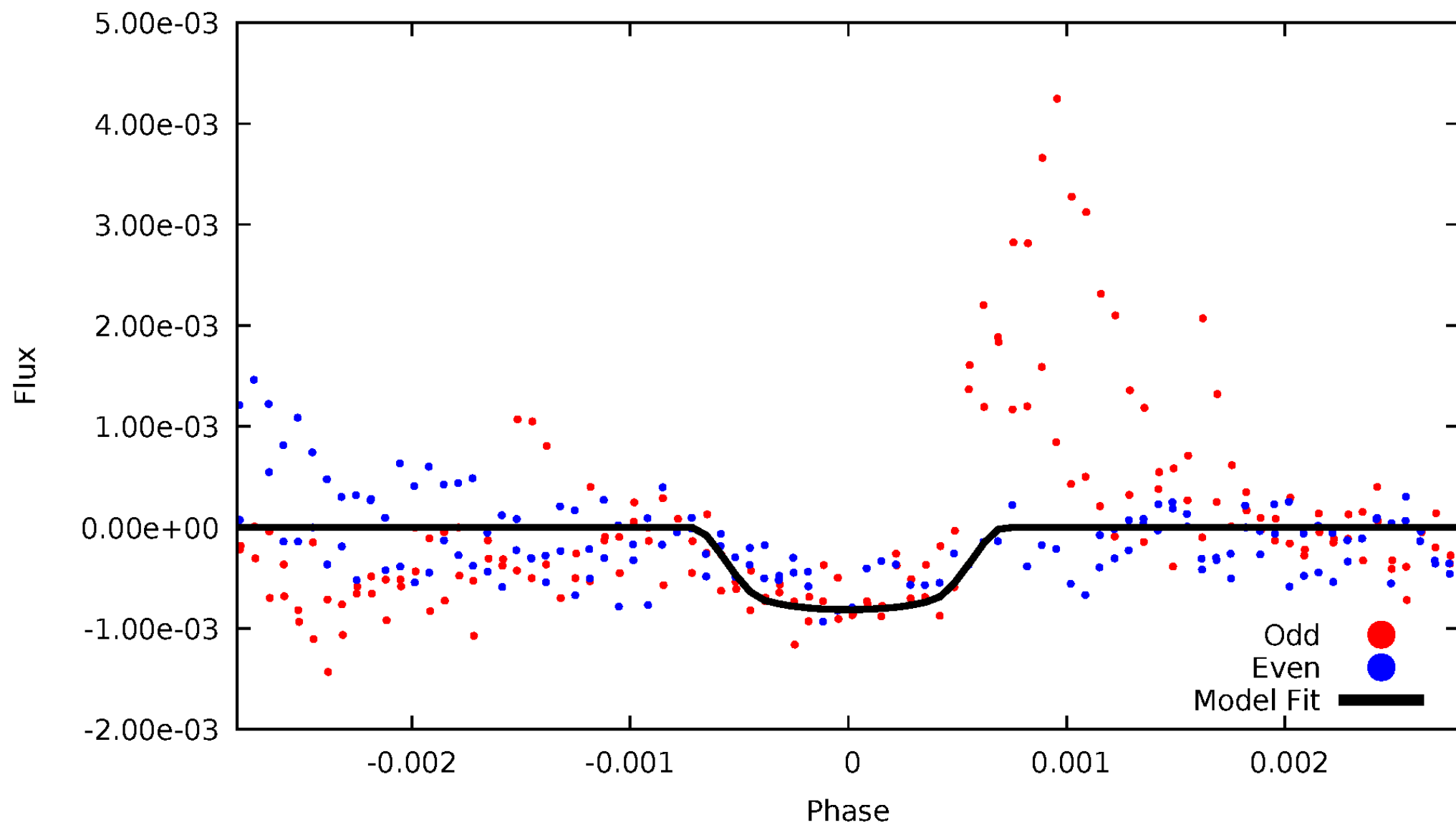


TCE 009603367-02



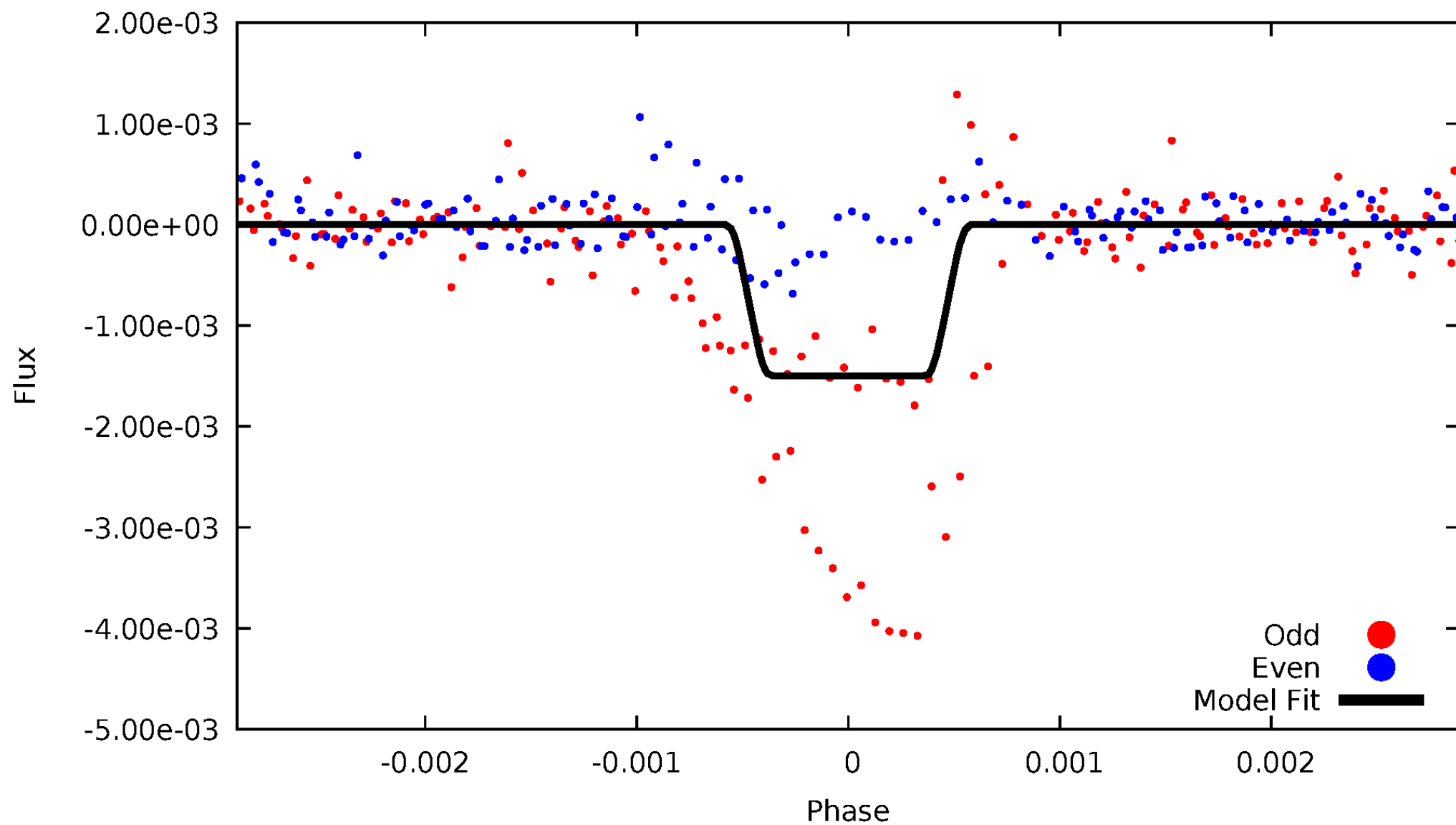
DV Odd/Even

TCE 009603367-02



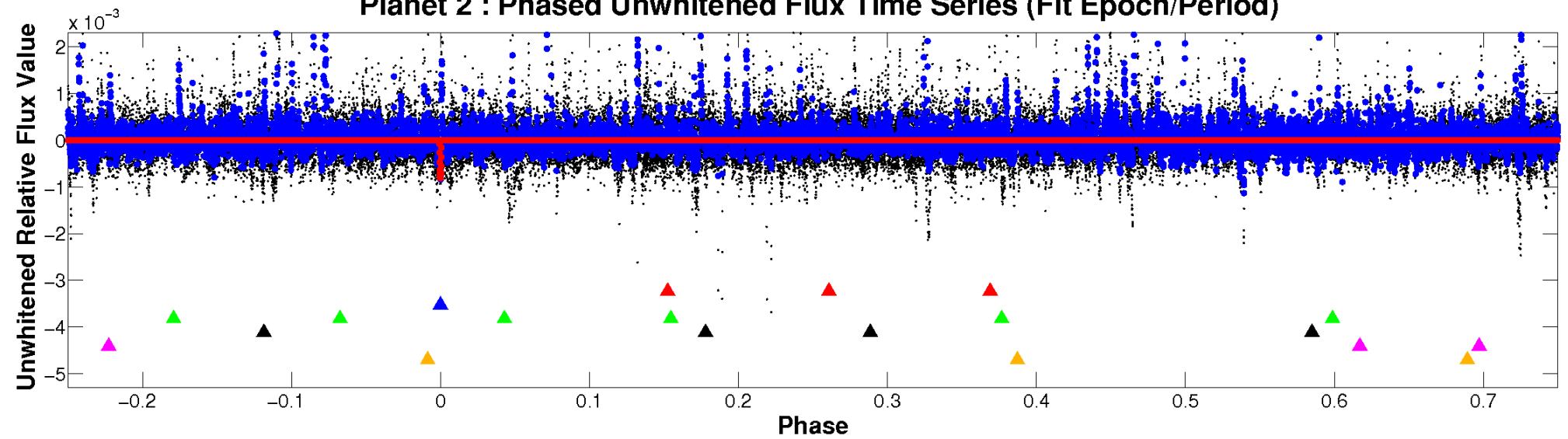
ALT Odd/Even

TCE 009603367-02

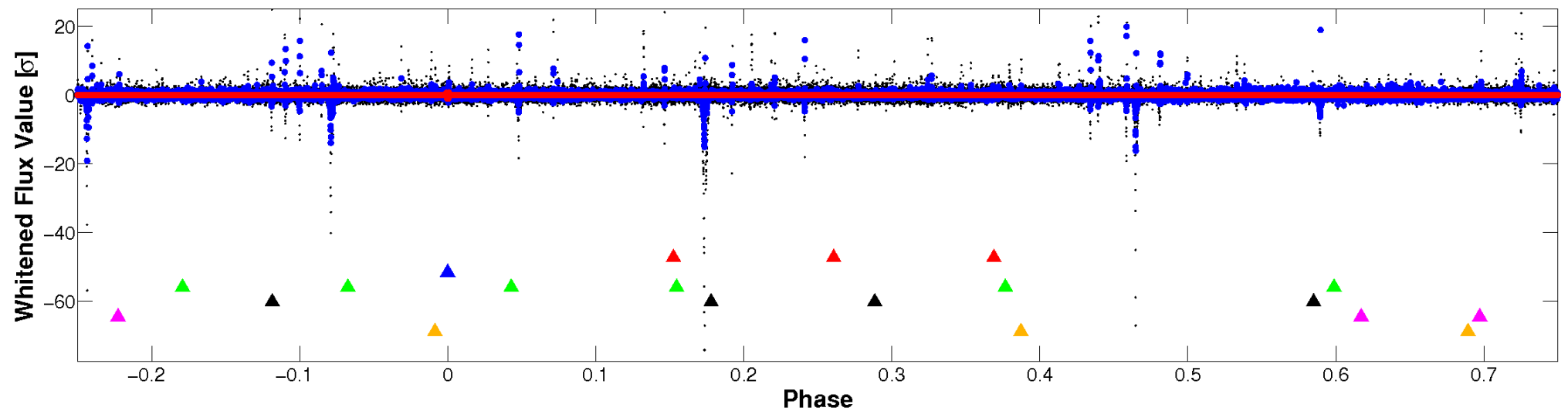


Non-Whitened Vs. Whitened Light Curve

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

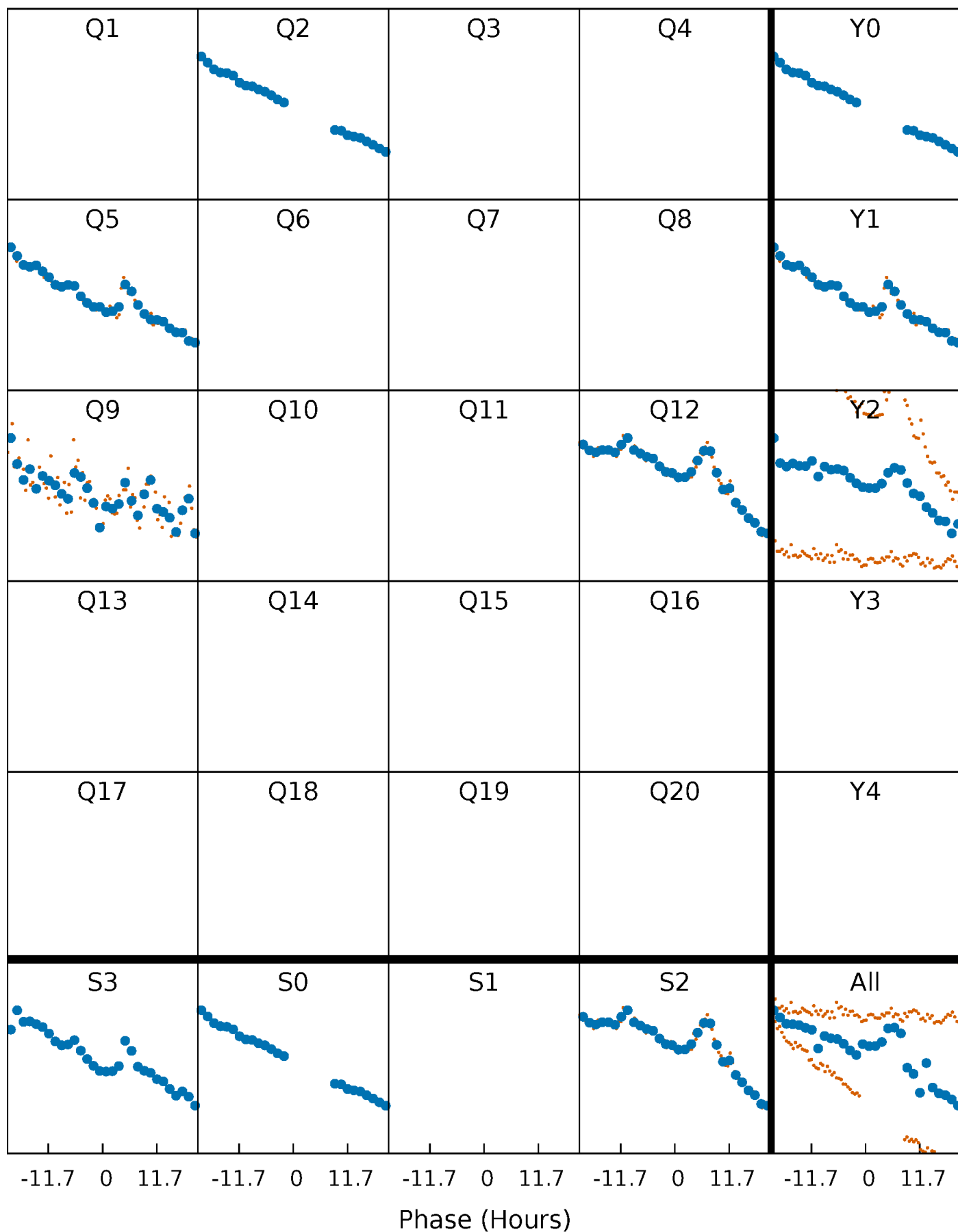


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



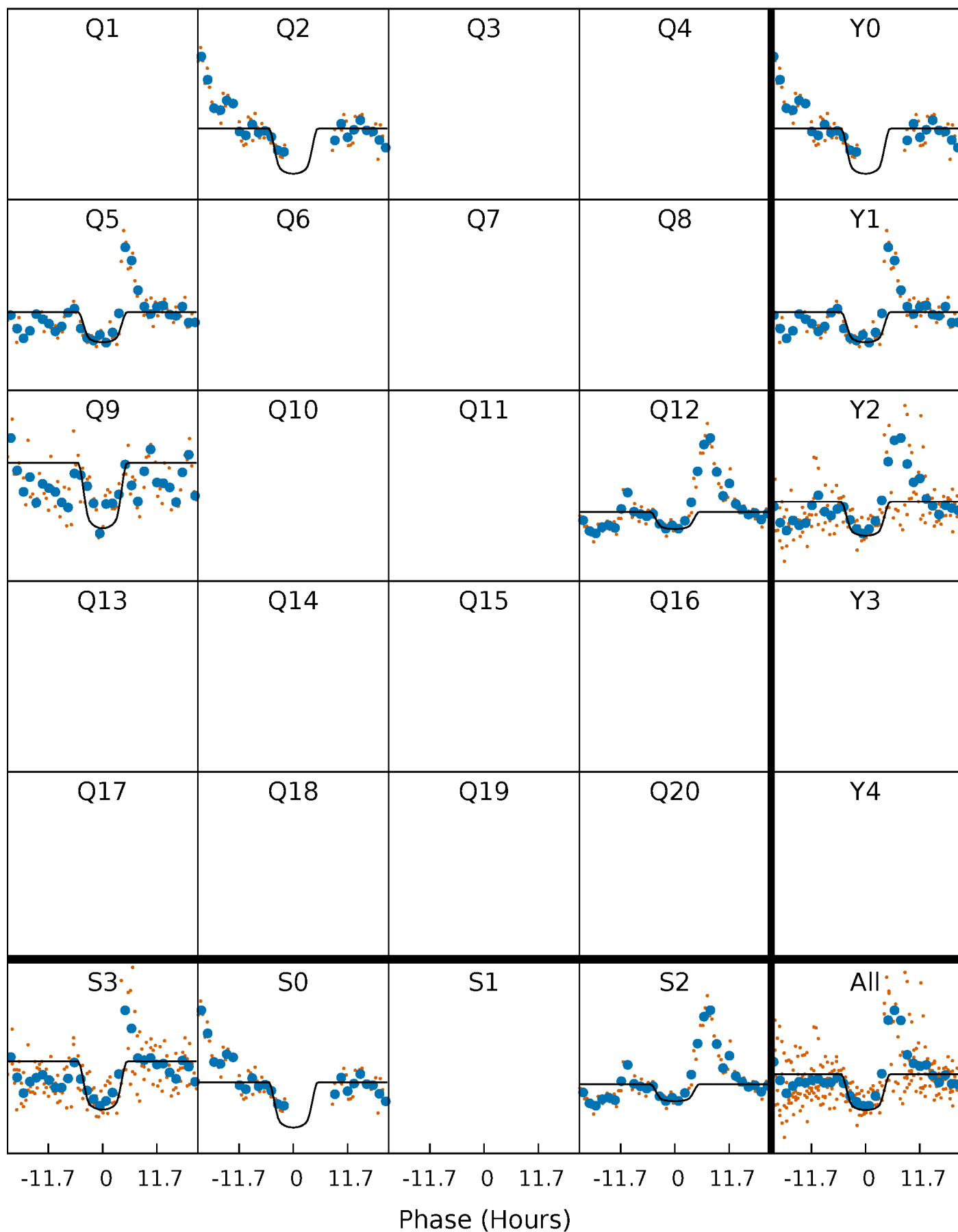
PDC Quarter-Phased Transit Curves

TCE 009603367-02 $P=305.909165$ Days $T_0=223.522093$ (BKJD)



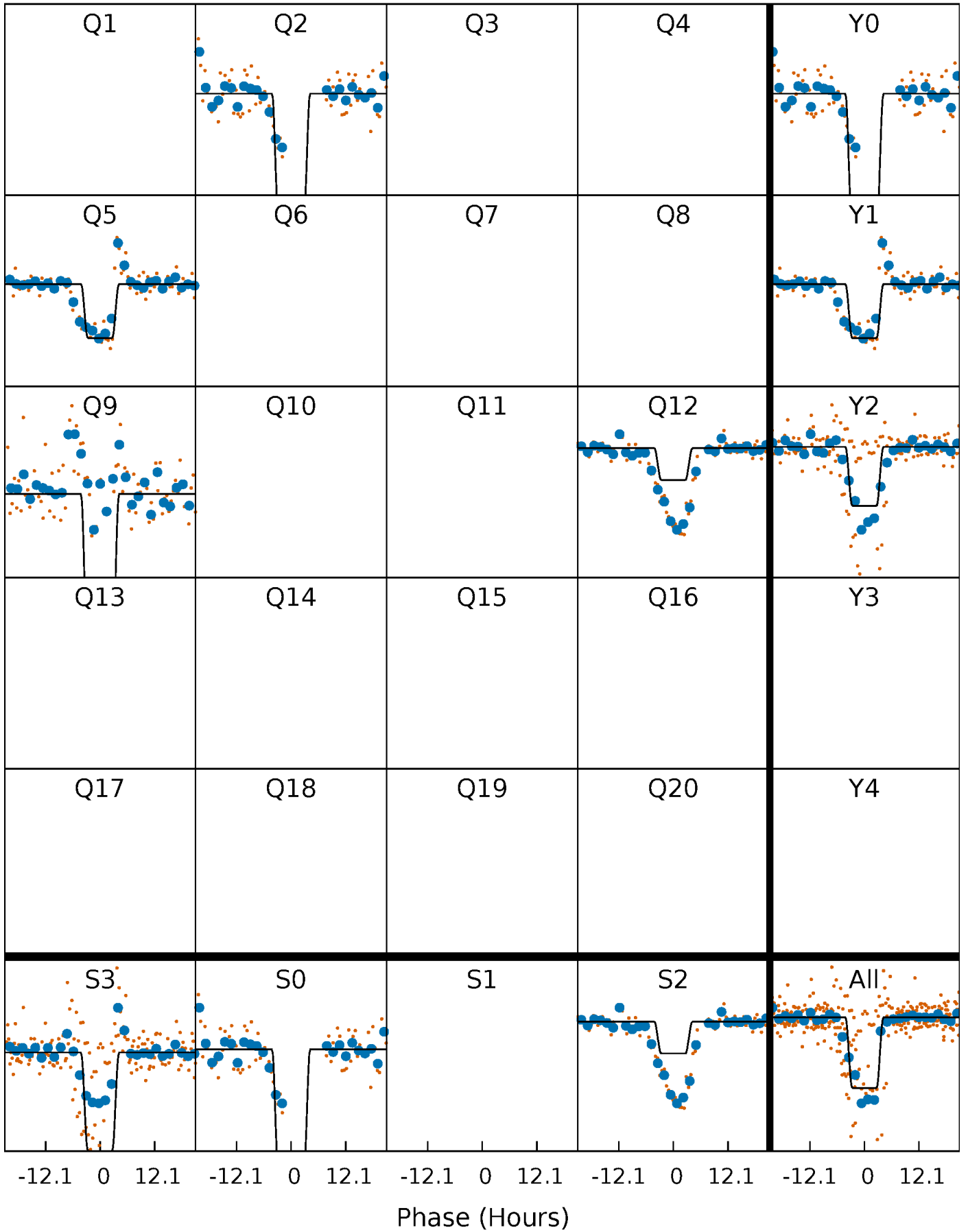
DV Quarter-Phased Transit Curves

TCE 009603367-02 P=305.909165 Days $T_0=223.522093$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

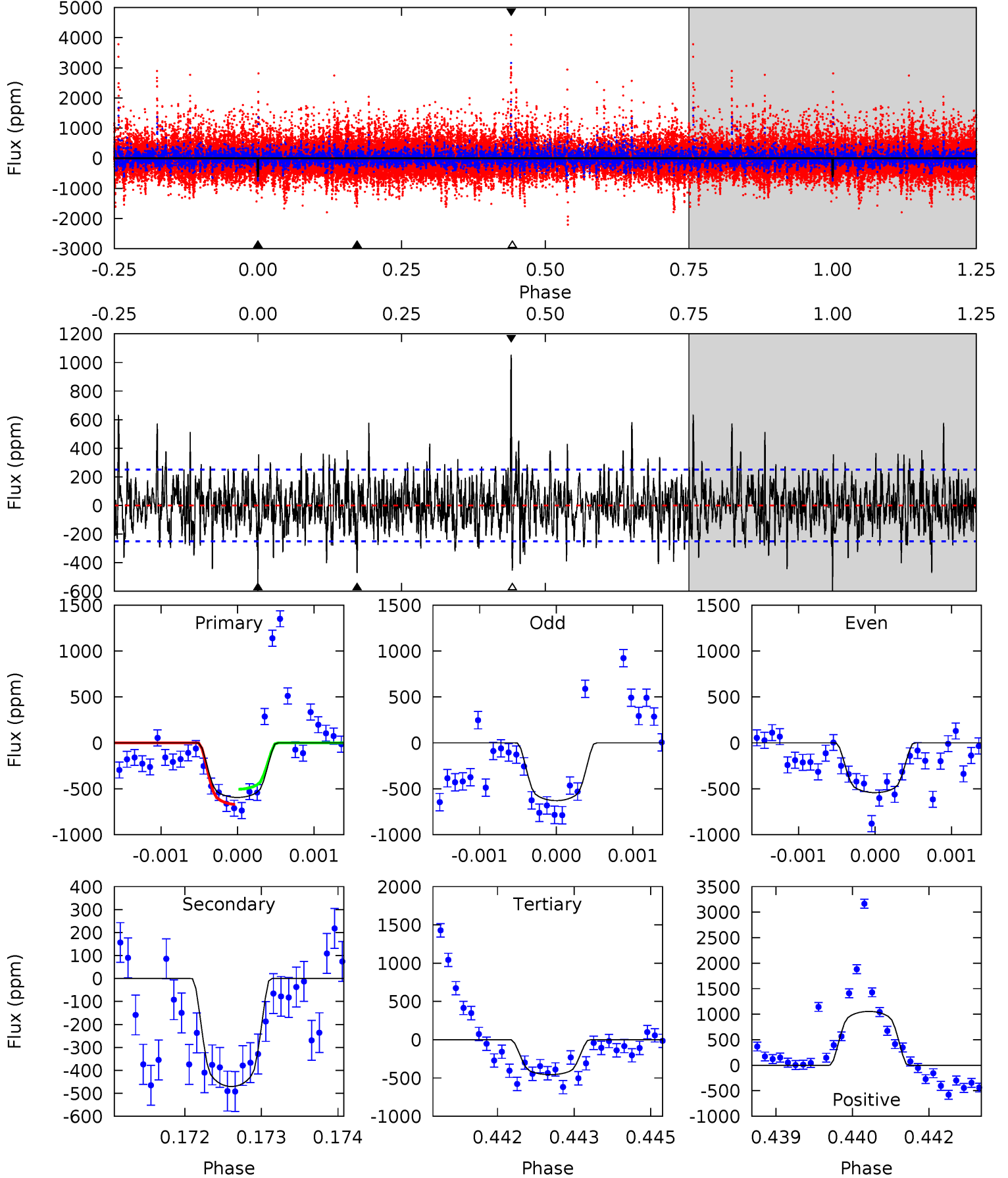
TCE 009603367-02 P=305.917638 Days $T_0=223.546037$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-02, P = 305.909165 Days, E = 223.522093 Days

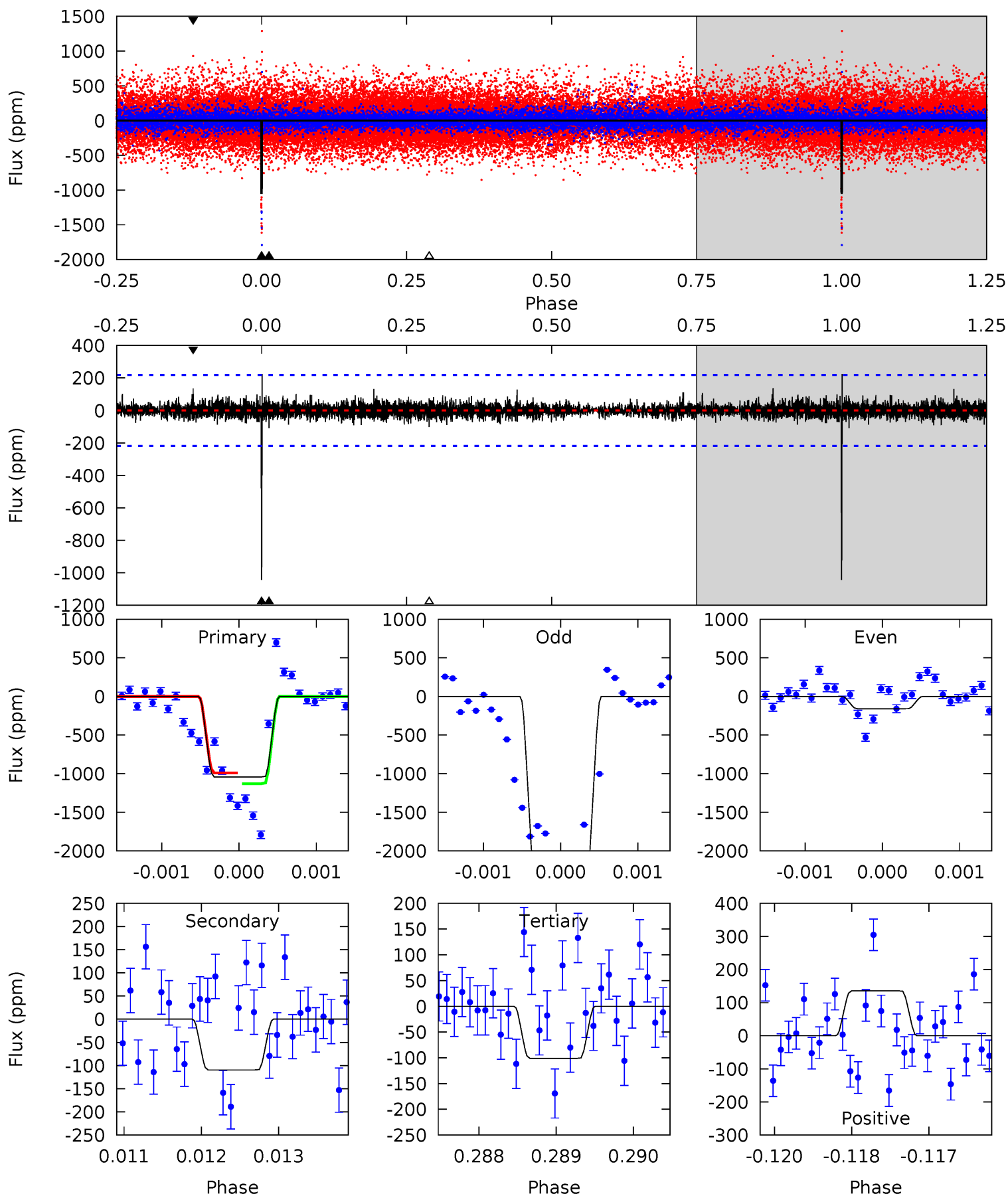
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	10.1	9.80	22.7	5.39	3.19	2.98	2.99	-9.92	0.32	-12.6	0.57	1.01	0.64	1.78



Alt Model-Shift Uniqueness Test

009603367-02, P = 305.917638 Days, E = 223.546037 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.0	2.73	2.52	3.38	5.43	3.26	0.62	23.5	22.6	0.21	-0.65	37.9	1.37	0.18	0



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-470 ± 46	$2.33^{+0.27}_{-0.25}$	313^{+13}_{-13}	4627^{+251}_{-240}	28363^{+7931}_{-6061}
Alt.	-110 ± 40	$2.82^{+0.30}_{-0.27}$	313^{+12}_{-13}	3360^{+214}_{-251}	4535^{+2102}_{-1858}

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

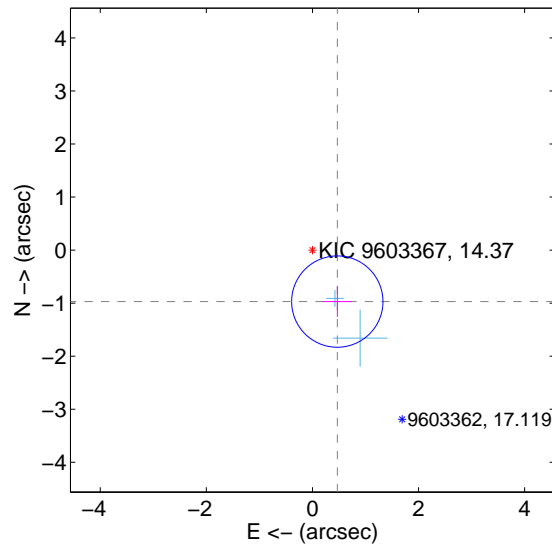
Supplemental centroid analysis for 009603367-02. Kepler magnitude: 14.37. Transit SNR 7.48

There are 2 quarters with good PRF difference image offsets

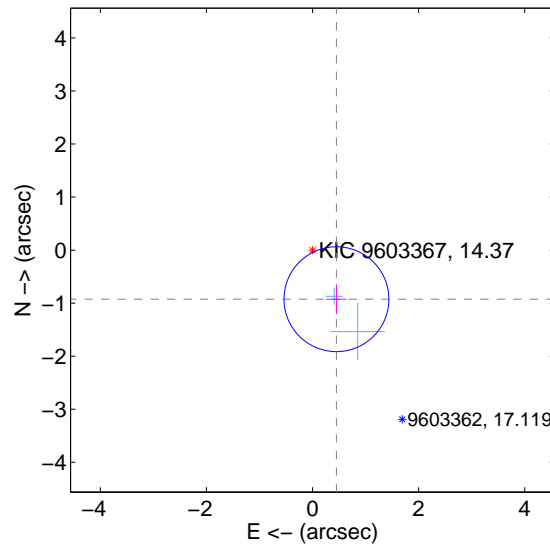
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.078 ± 0.287	3.76	-0.469 ± 0.278	-0.971 ± 0.289
PRF-fit source offset from KIC position	1.030 ± 0.330	3.12	-0.451 ± 0.193	-0.926 ± 0.279
photometric centroid source offset	1.26 ± 0.85	1.48	-1.23 ± 0.85	0.27 ± 0.88

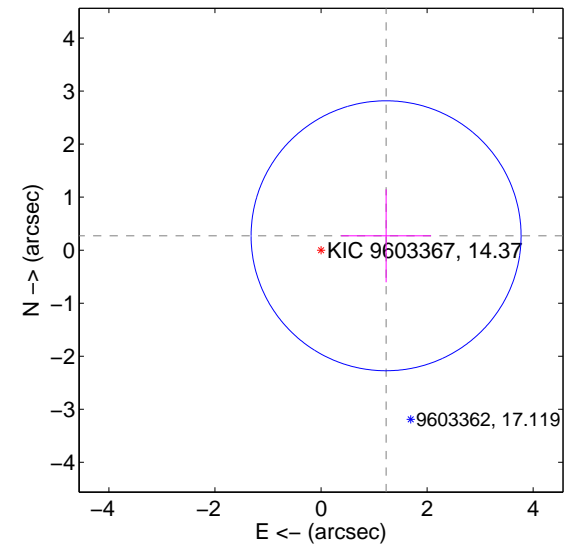
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

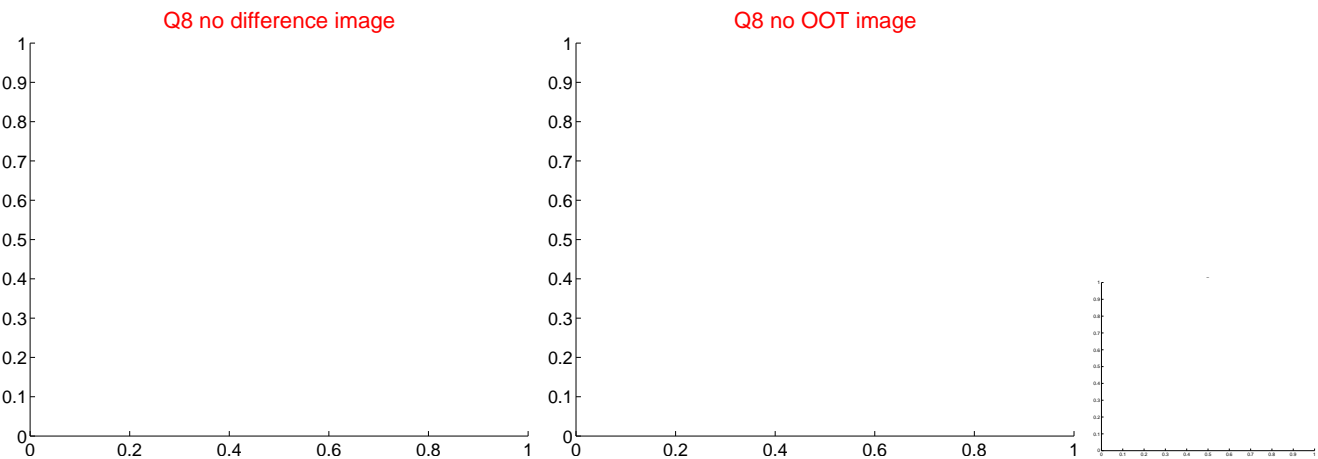
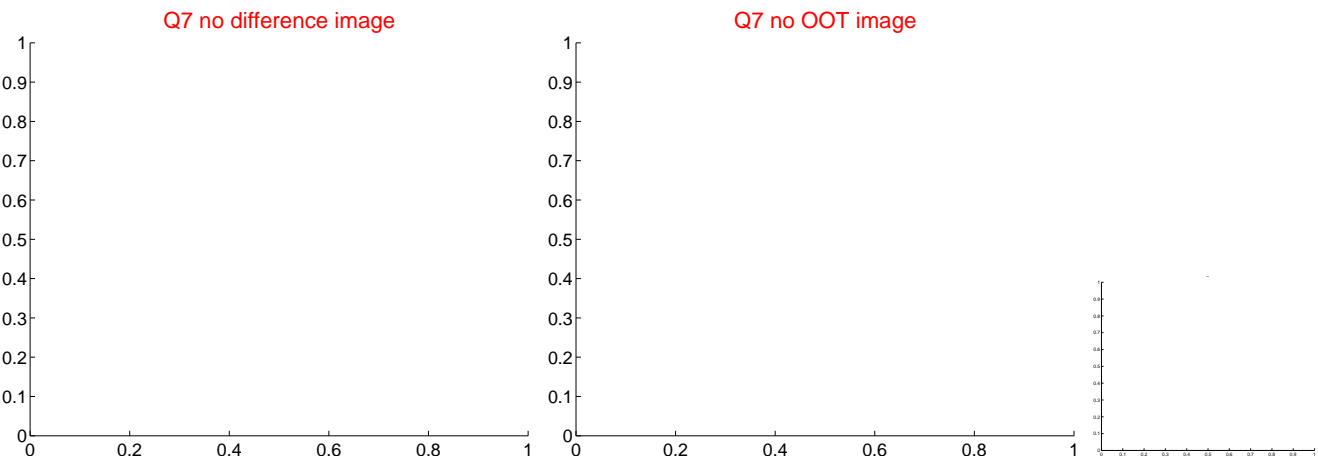
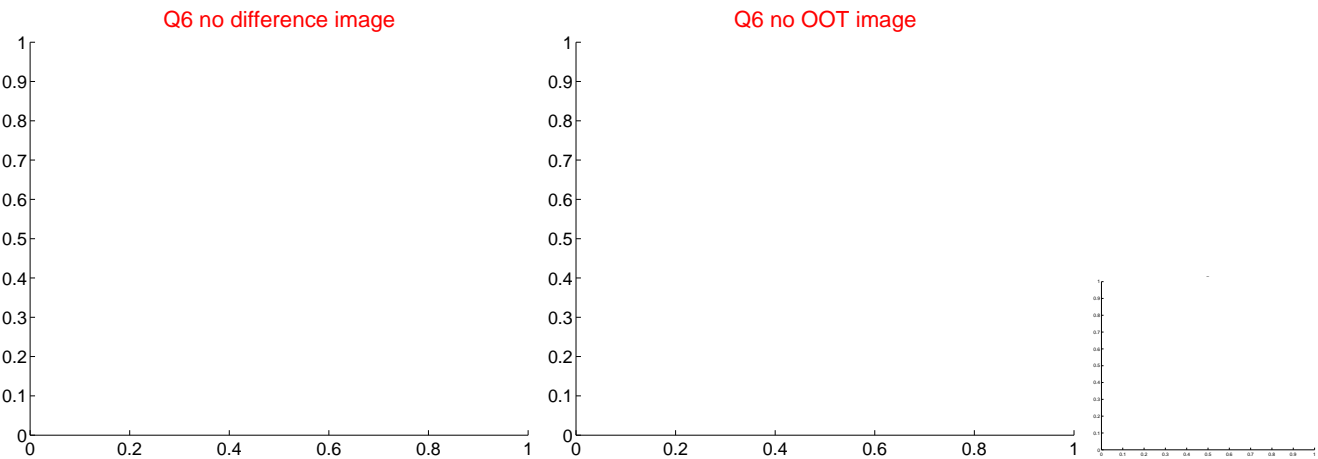
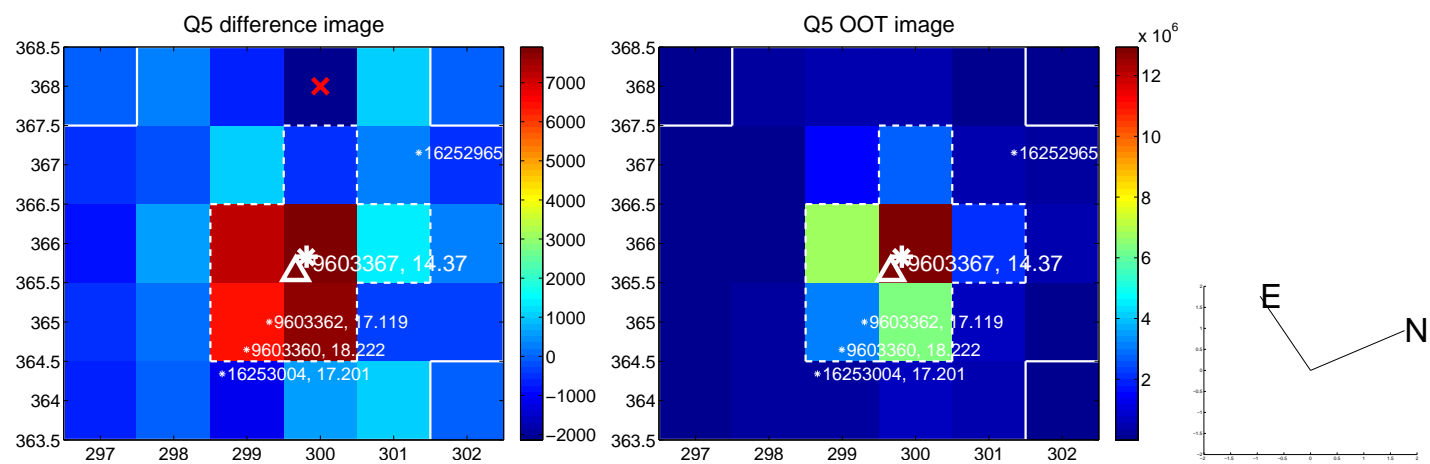


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

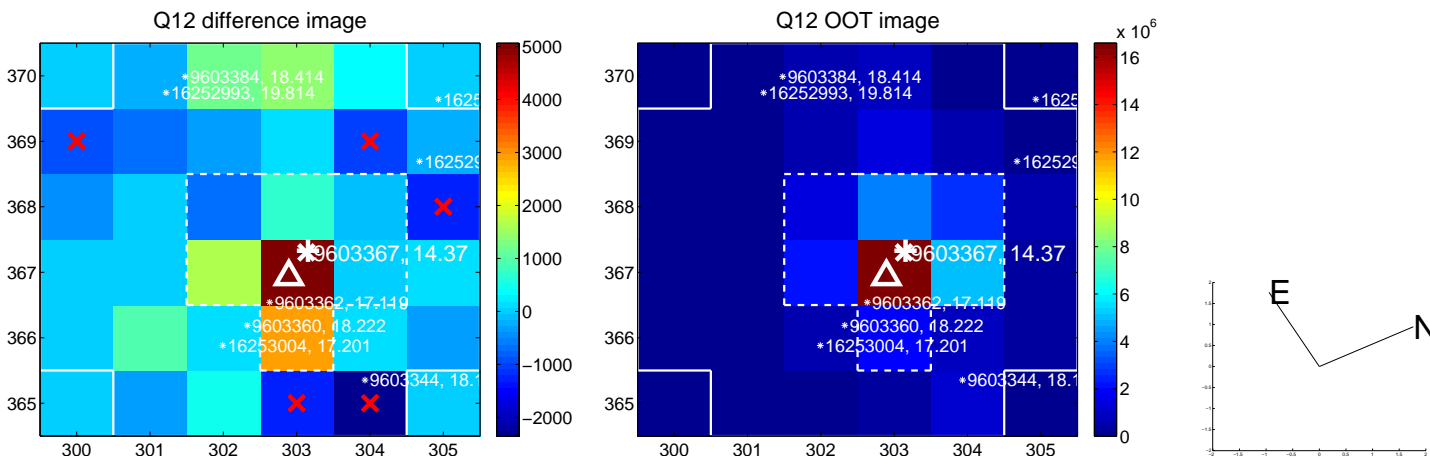
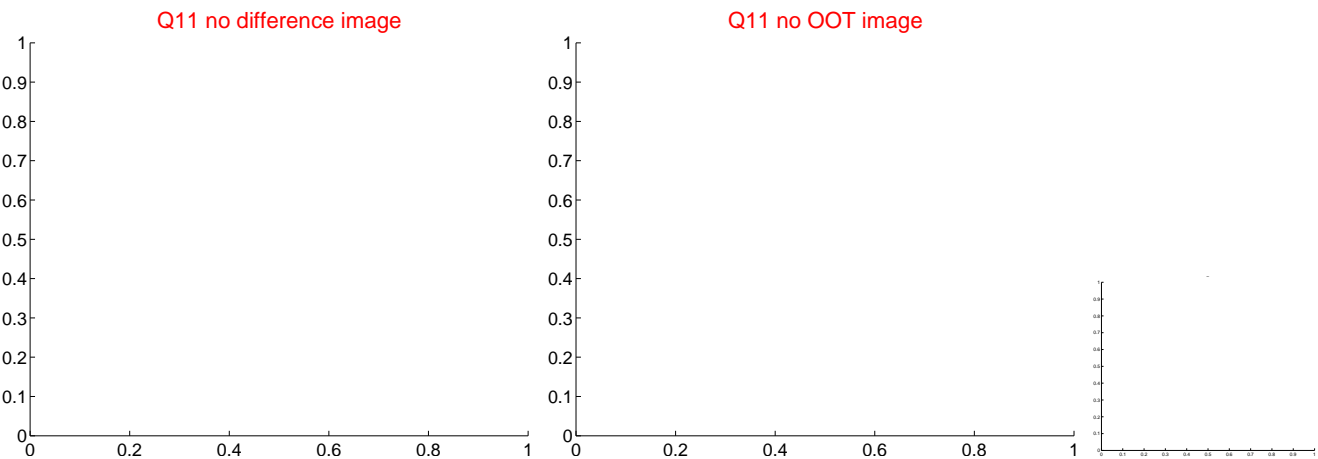
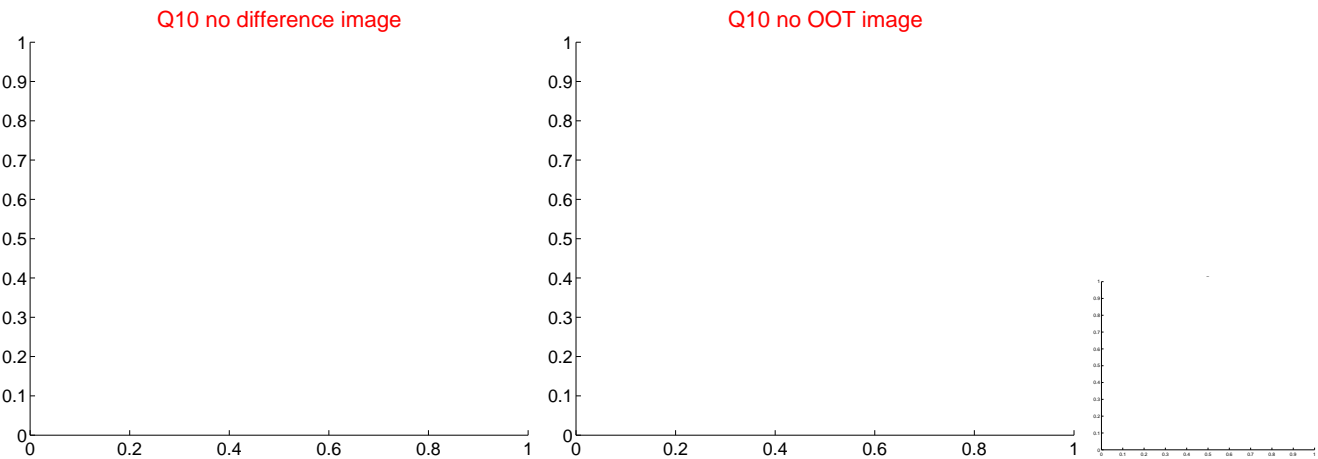
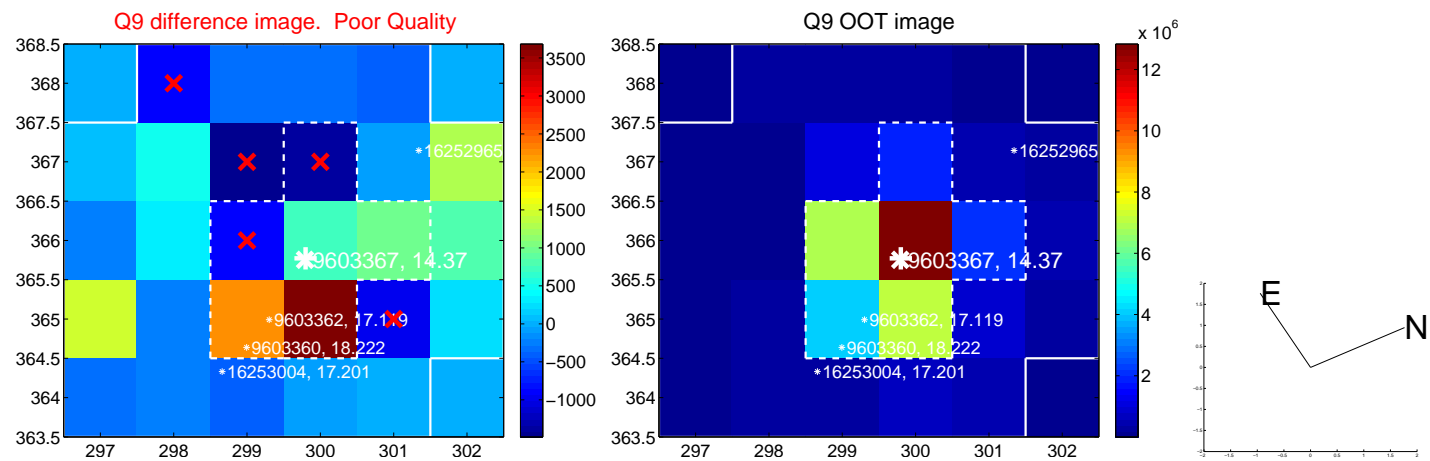
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



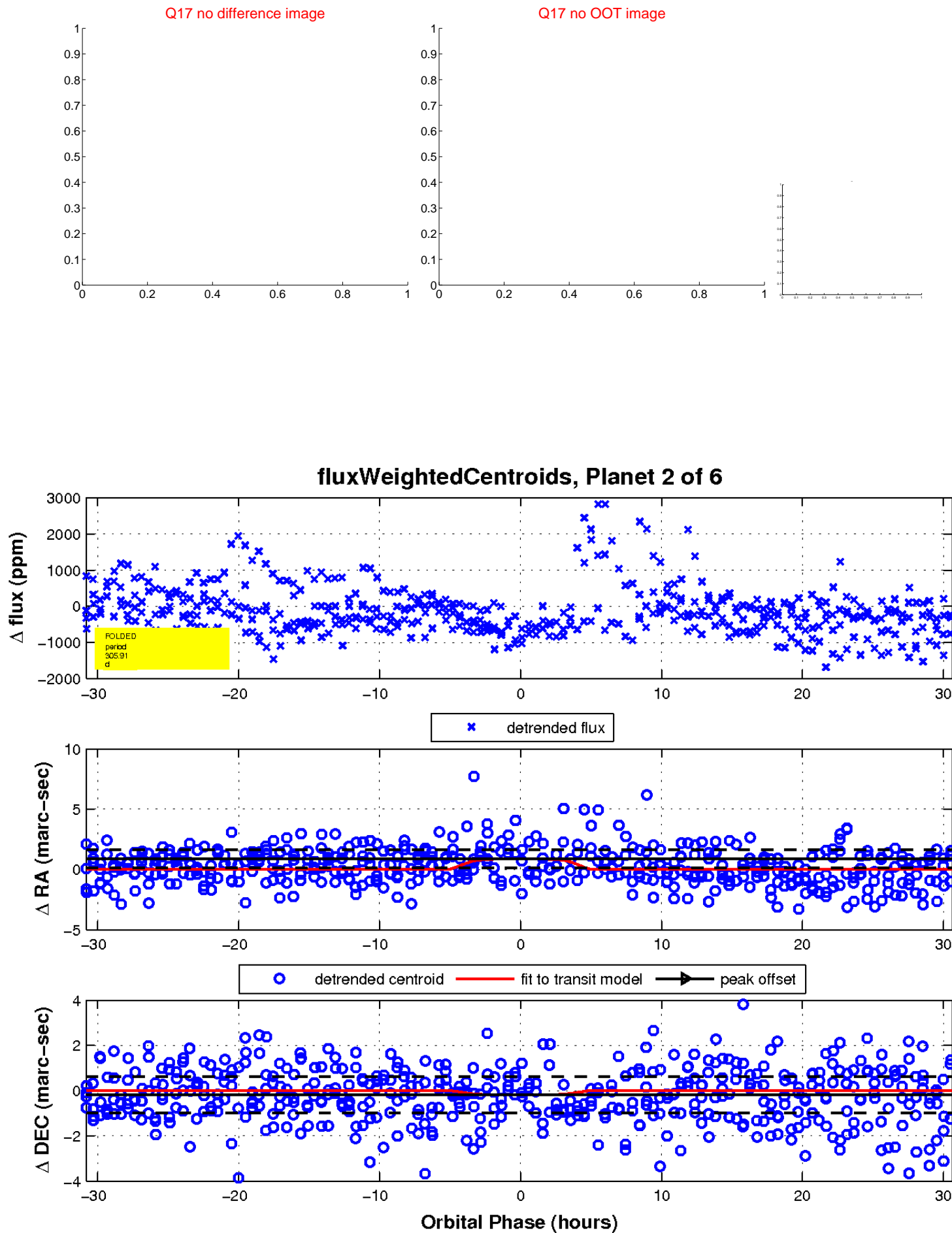
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

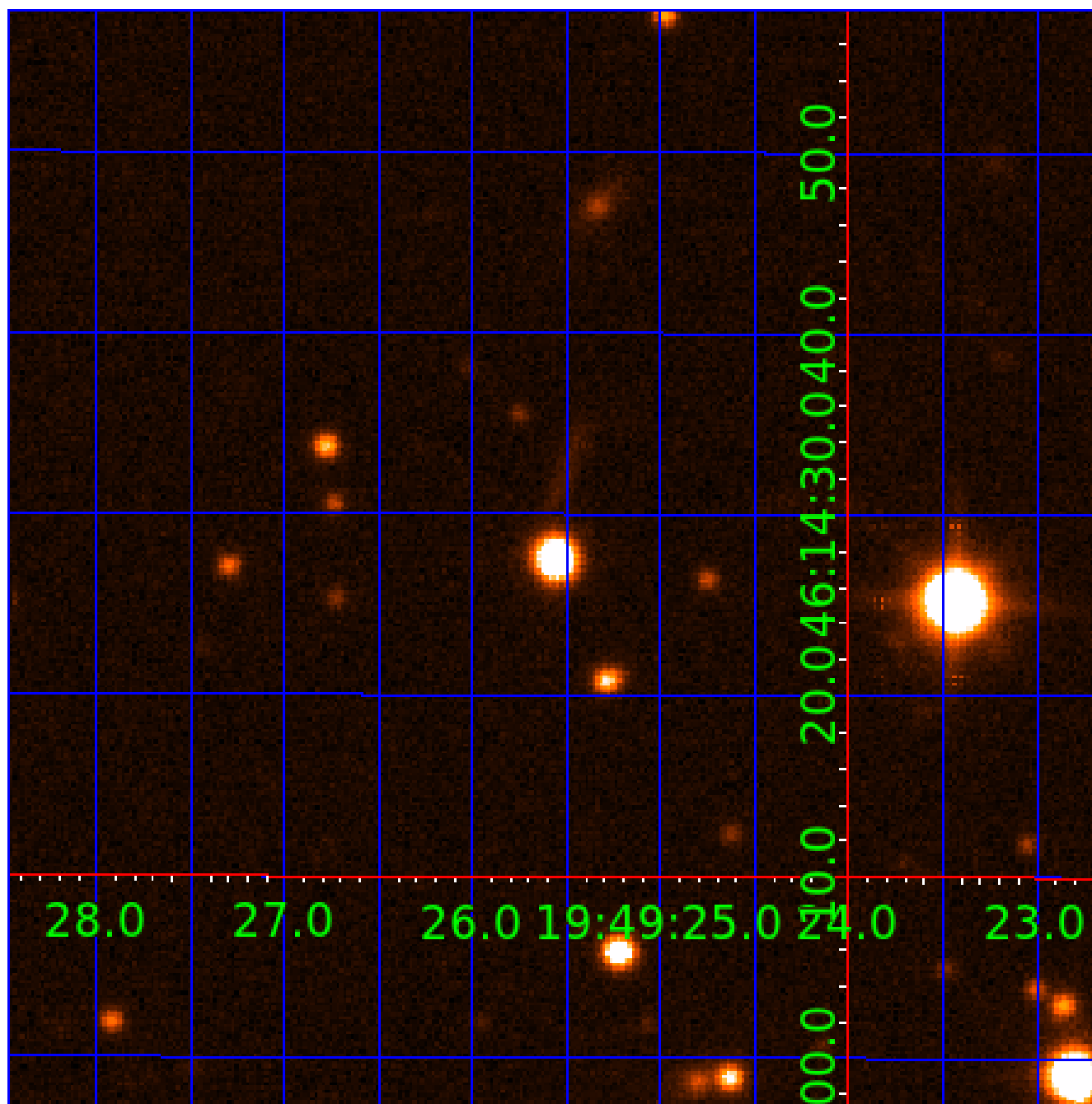


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009603367

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})
009603367-01	OBS	No	578.713572	336.392462	1324.4	11.538	16.0	10.0	0.67	5446	2.62	0.26
009603367-02	OBS	No	305.909165	223.522093	815.5	10.278	11.1	7.5	0.67	5446	2.34	0.60
009603367-03	OBS	No	237.975640	236.652446	797.2	69.960	12.6	5.1	0.67	5446	1.88	0.83
009603367-04	OBS	No	396.605031	311.777681	711.0	8.509	10.2	6.0	0.67	5446	1.89	0.42
009603367-05	OBS	No	587.312281	155.402136	679.4	12.024	13.1	6.0	0.67	5446	1.78	0.25
009603367-06	OBS	No	519.411119	220.885602	854.7	3.729	11.5	6.8	0.67	5446	2.42	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009603367-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS—HALO_GHOST
009603367-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009603367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

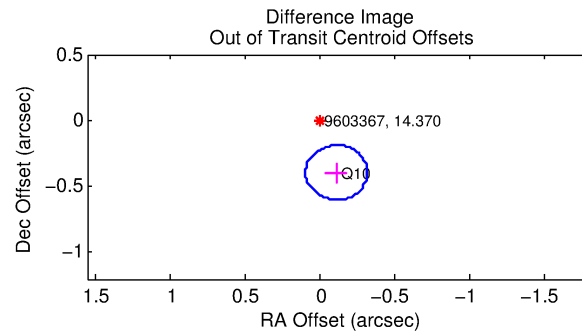
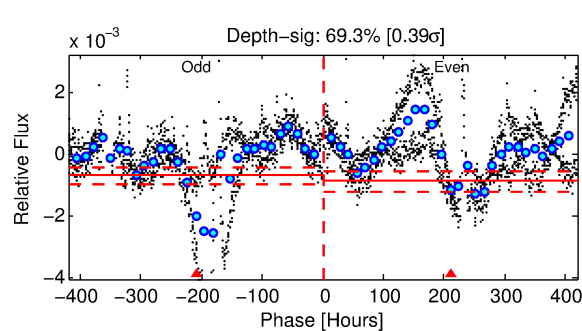
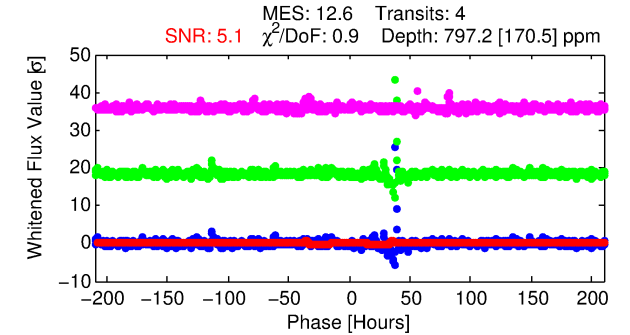
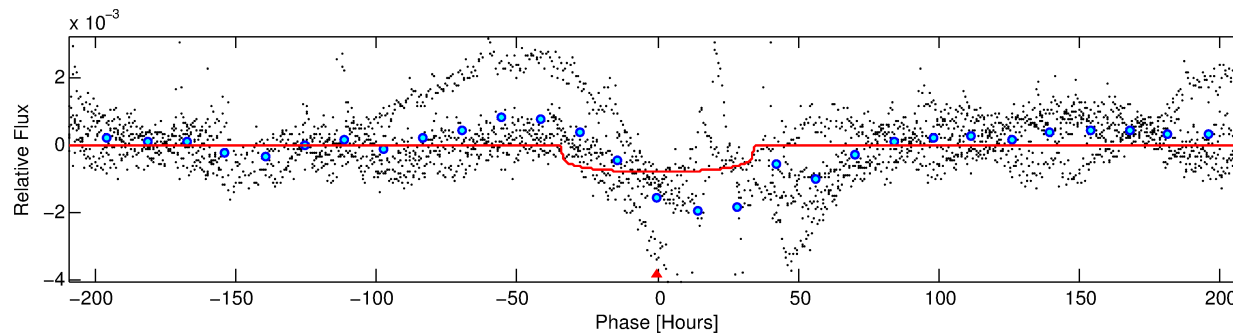
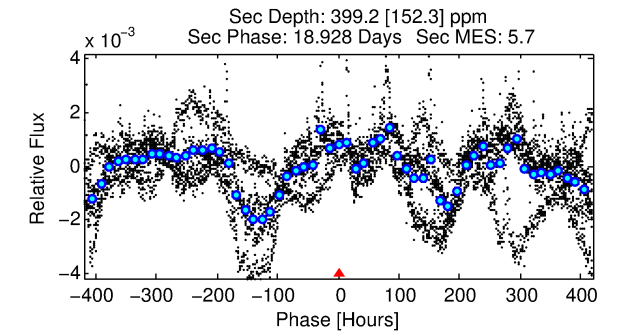
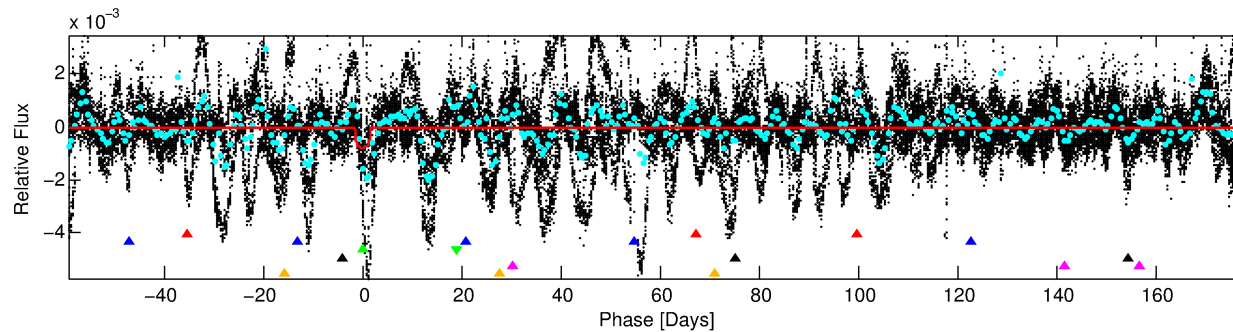
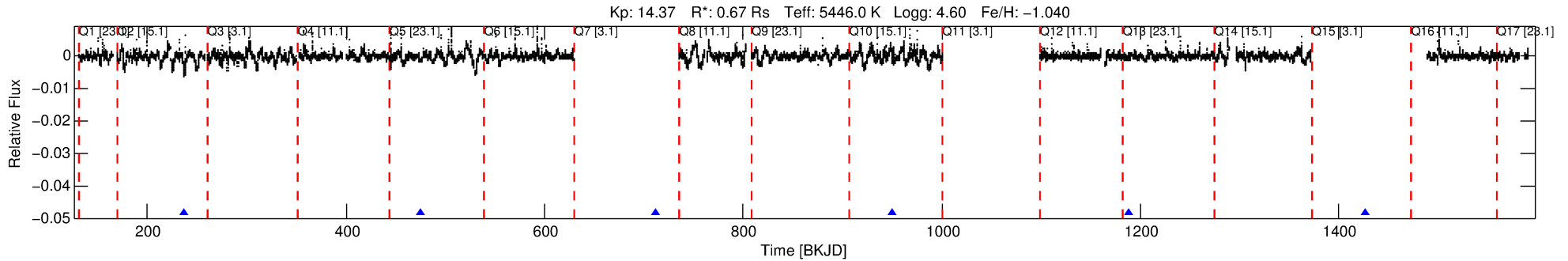
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-03

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 3 of 6 Period: 237.976 d



DV Fit Results:

Period = 237.97564 [0.00835] d
Epoch = 236.6524 [0.0241] BKJD
Rp/R* = 0.0258 [0.0036]
a/R* = 26.40 [9.46]
b = 0.14 [2.45]
Seff = 0.83 [0.16]
Teq = 244 [12] K
Rp = 1.88 [0.33] Re
a = 0.6500 [0.0590] AU
Ag = 26194.80 [12894.59] [2.03σ]
Teffp = 4791 [588] K [7.73σ]

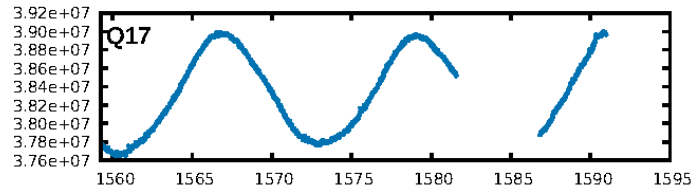
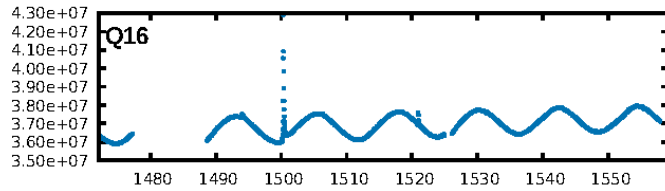
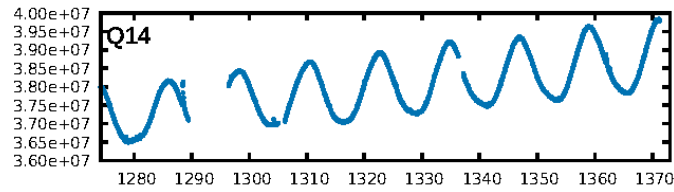
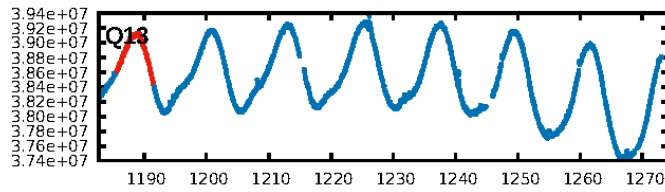
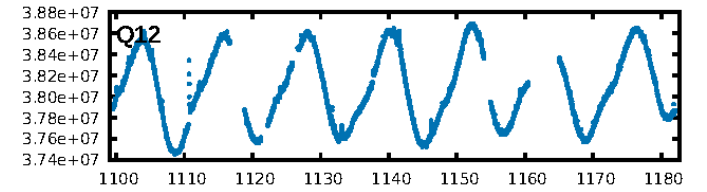
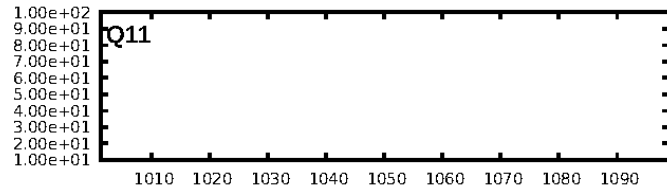
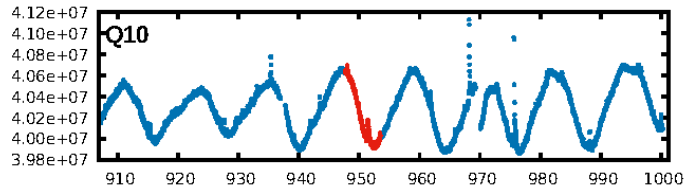
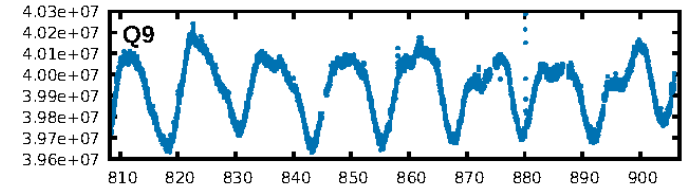
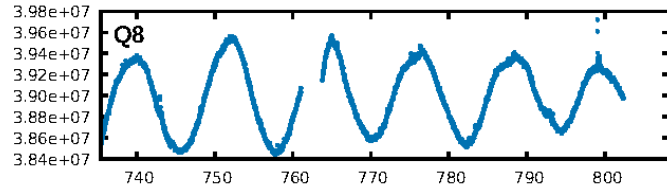
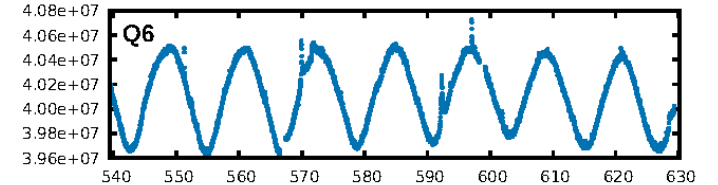
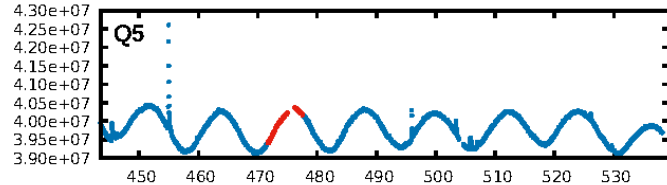
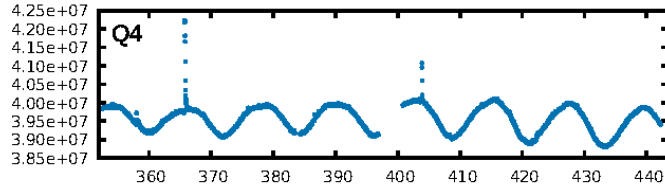
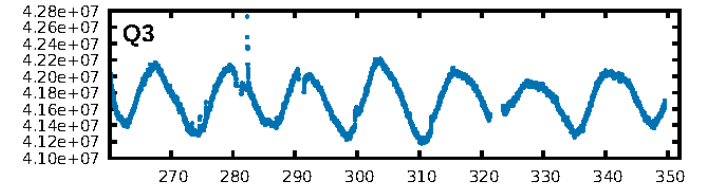
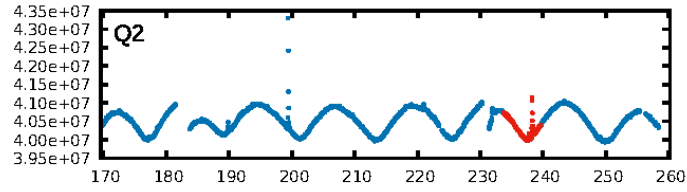
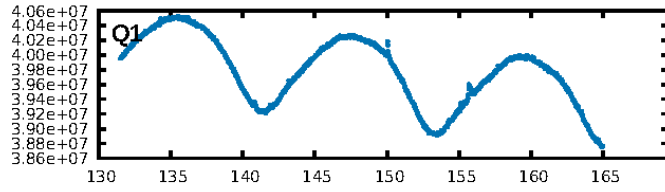
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [23.06σ]
ModelChiSquare2-sig: 15.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.75e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.528
Centroid-sig: 0.0%
Centroid-so: 1.521 arcsec [2.66σ]
OotOffset-rm: 0.411 arcsec [5.97σ]
KicOffset-rm: 0.079 arcsec [1.15σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [1/1]

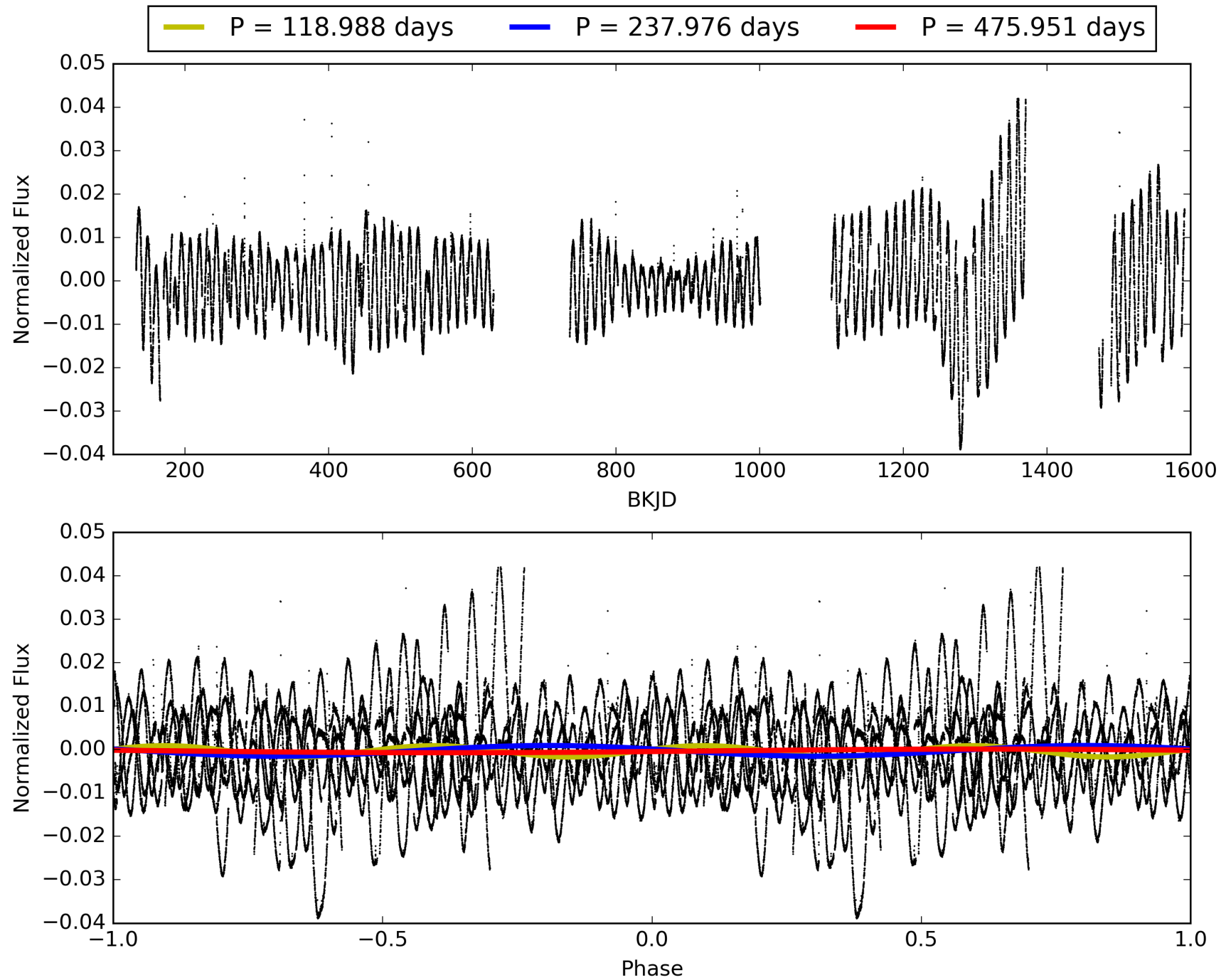
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:45:07 Z

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

TCE 009603367-03, PDC Light Curves

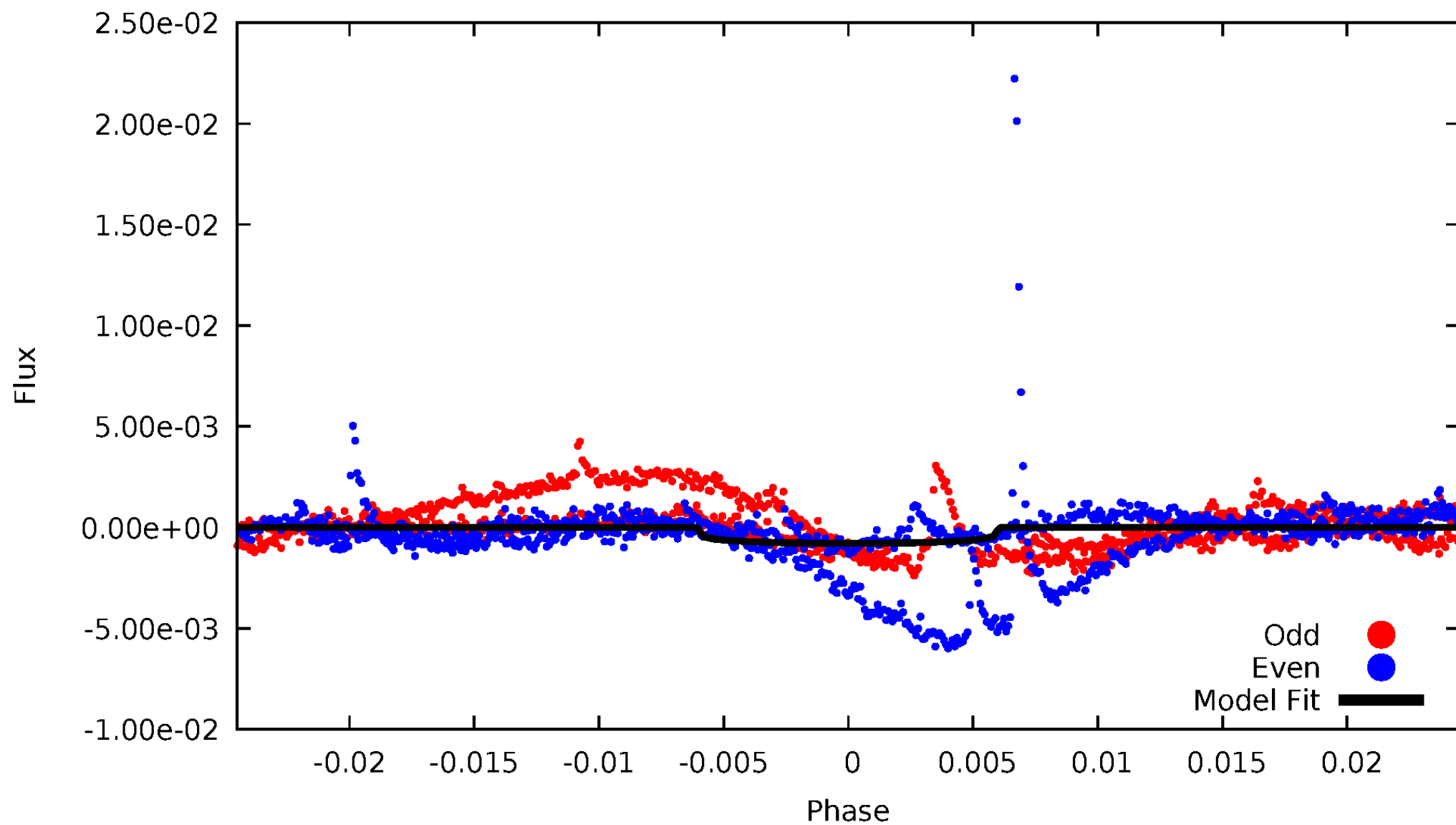


TCE 009603367-03



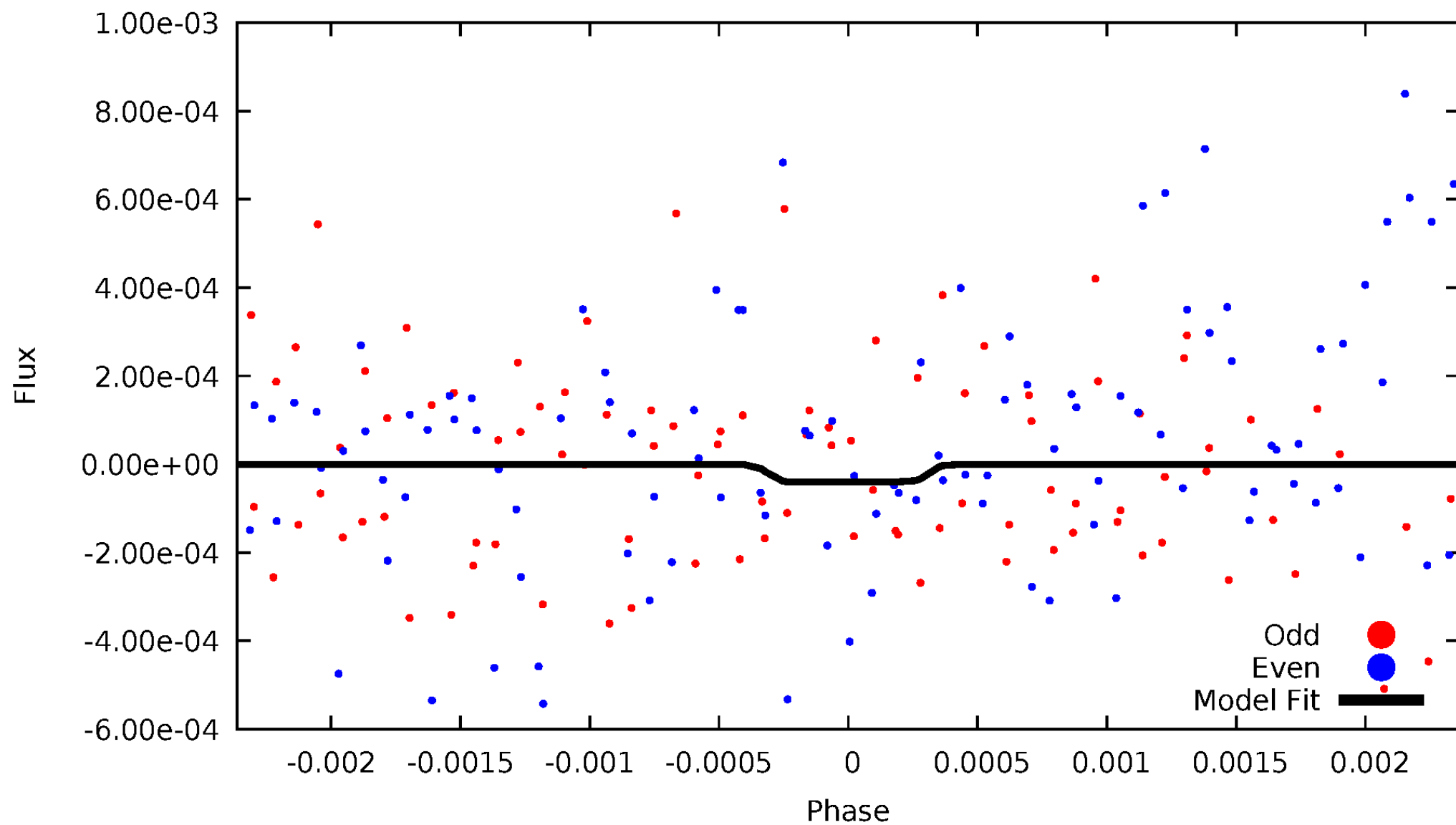
DV Odd/Even

TCE 009603367-03



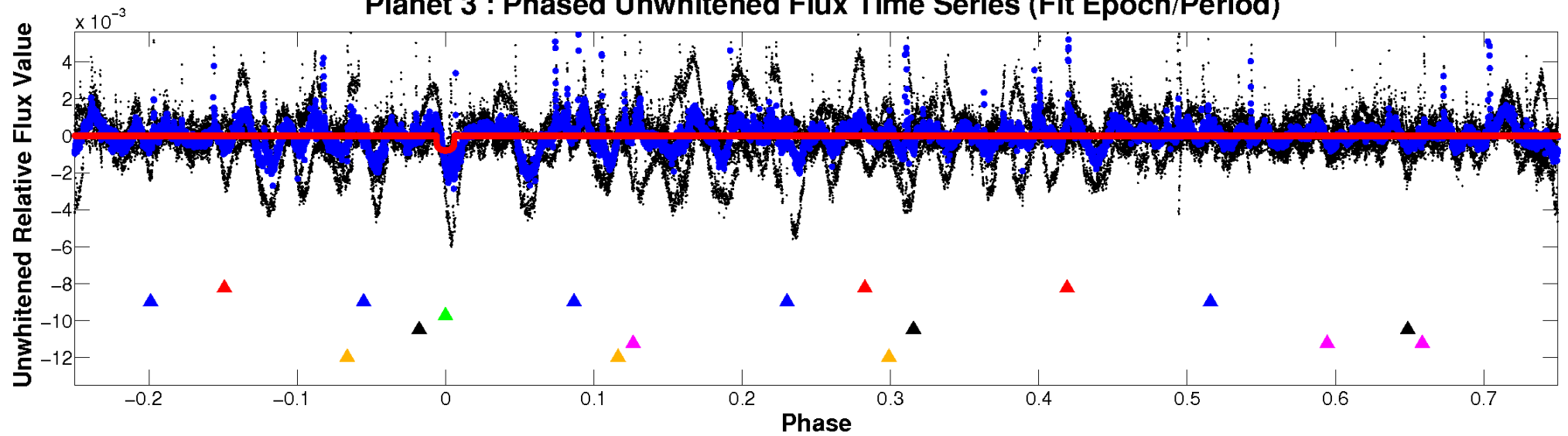
ALT Odd/Even

TCE 009603367-03

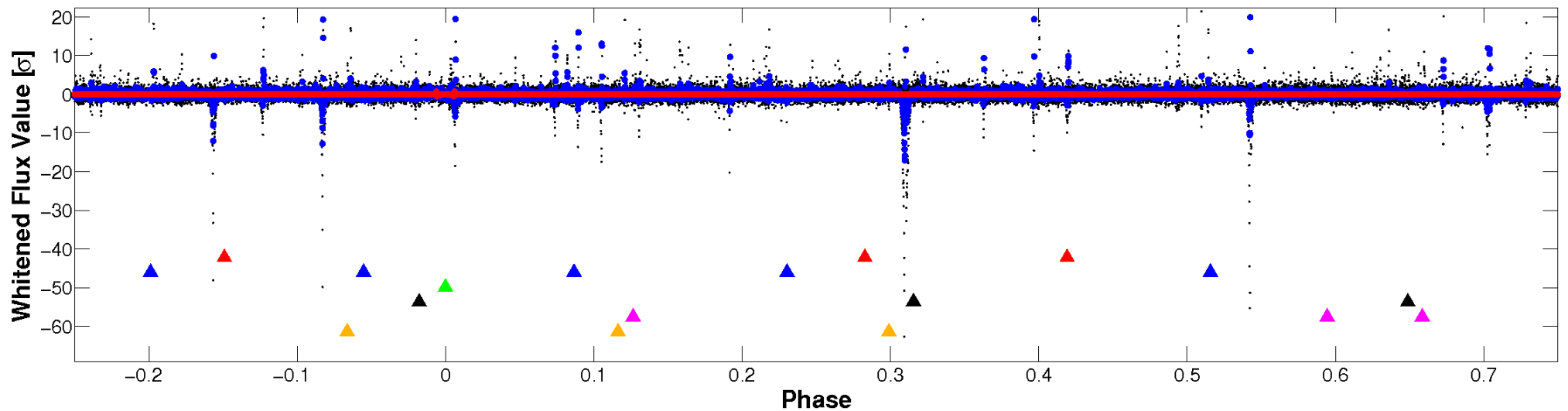


Non-Whitened Vs. Whitened Light Curve

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

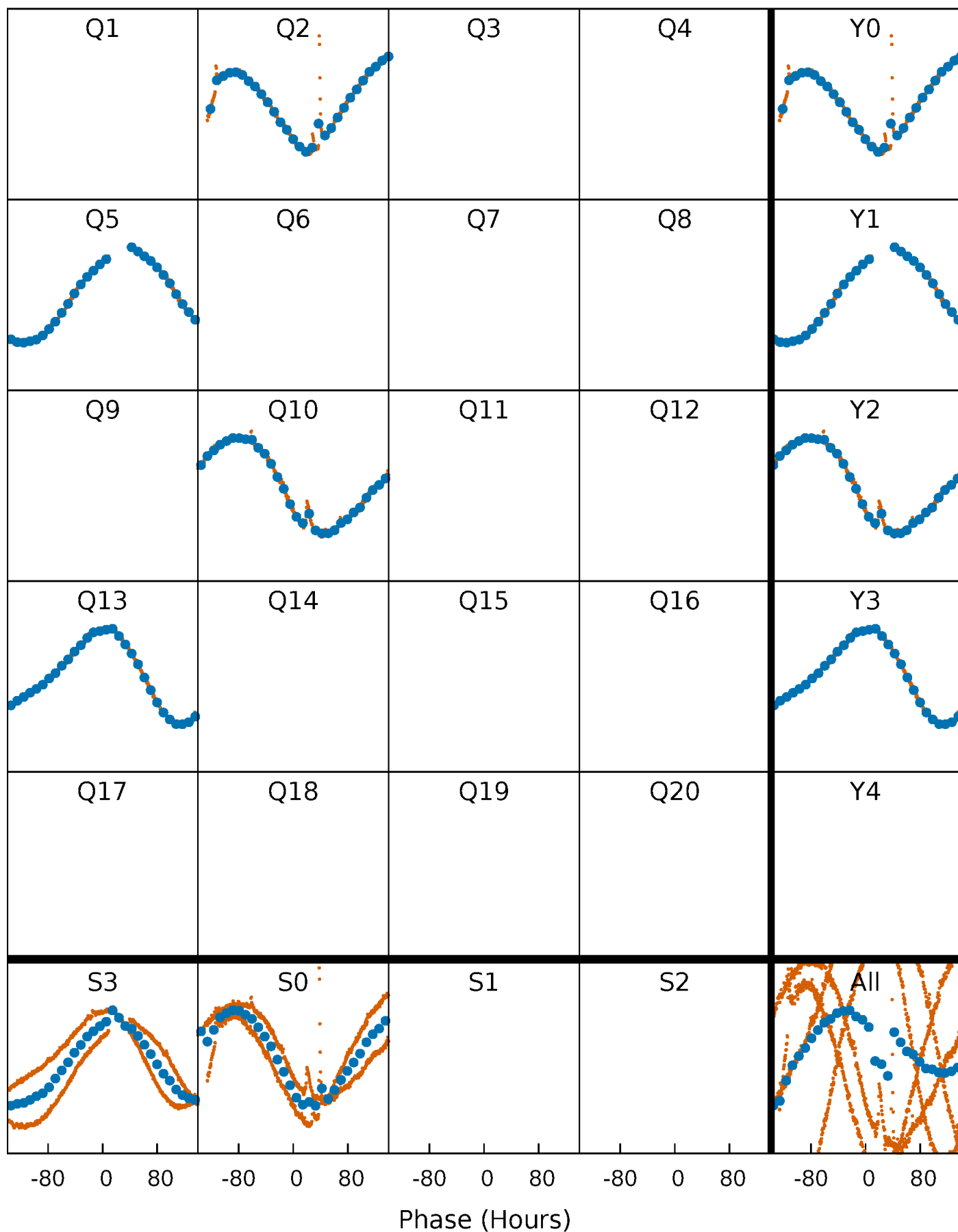


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 009603367-03 $P=237.975640$ Days $T_0=236.652446$ (BKJD)



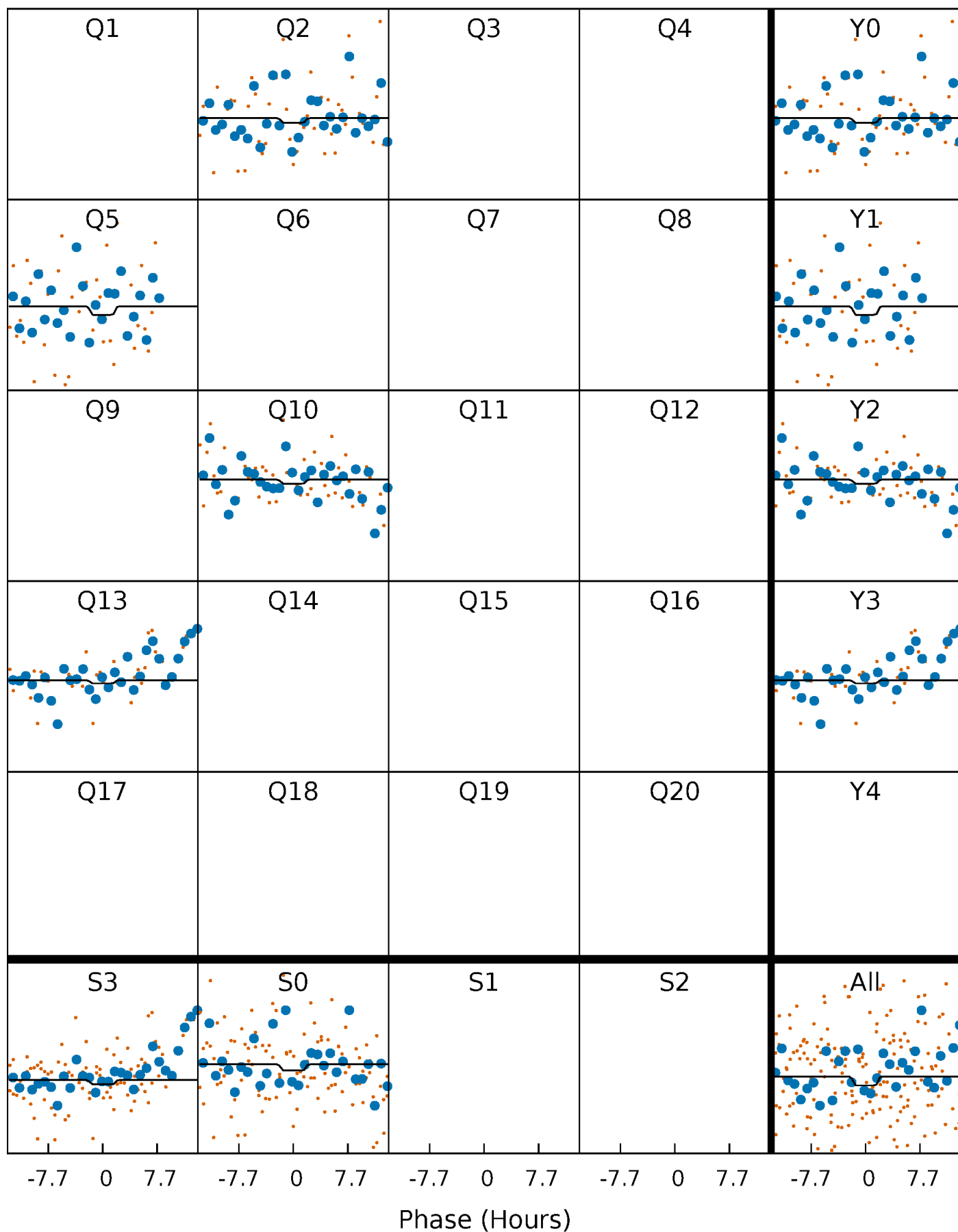
DV Quarter-Phased Transit Curves

TCE 009603367-03 $P=237.975640$ Days $T_0=236.652446$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

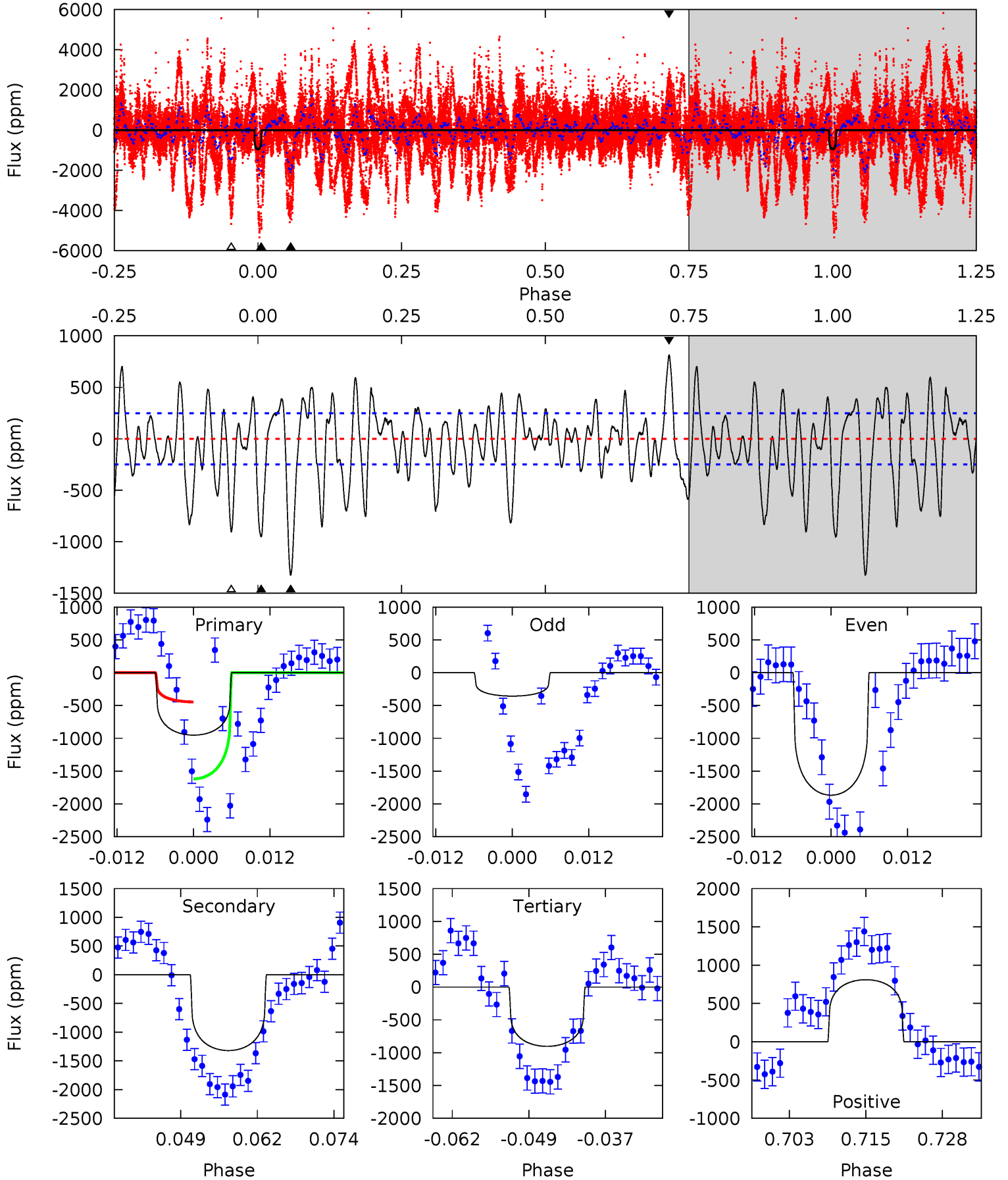
TCE 009603367-03 $P=237.839827$ Days $T_0=236.827791$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-03, P = 237.975640 Days, E = 236.652446 Days

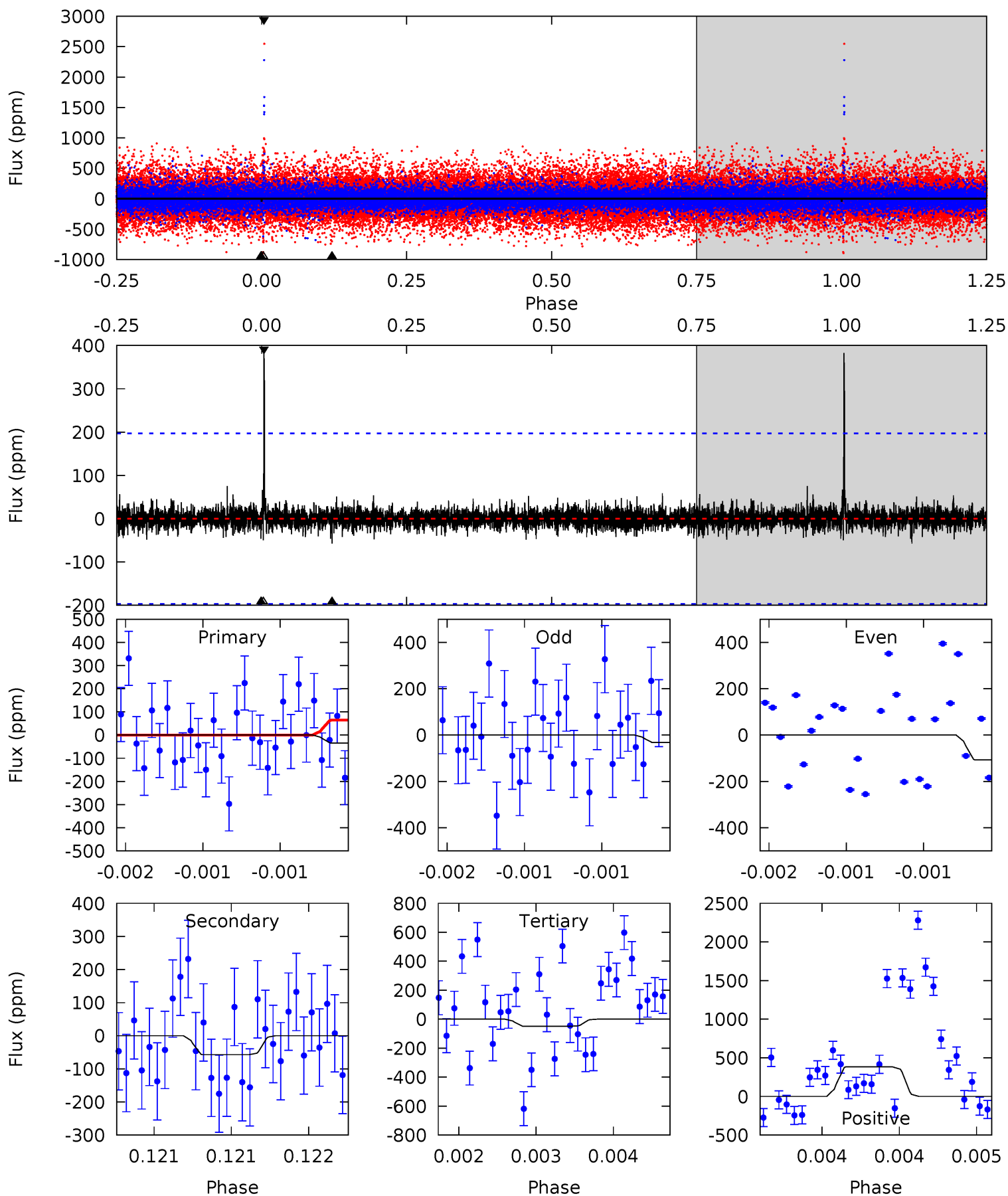
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	26.5	18.1	16.2	4.99	2.50	6.03	0.97	2.84	8.36	10.2	14.4	1.86	0.38	11.6



Alt Model-Shift Uniqueness Test

009603367-03, P = 237.839827 Days, E = 236.827791 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.98	1.60	1.38	10.7	5.51	3.39	0.43	-0.40	-9.74	0.22	-9.12	1.04	0.26	0.87	0.09



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1320 ± 50	$1.87^{+0.27}_{-0.28}$	340^{+13}_{-13}	6467^{+634}_{-452}	88346^{+33448}_{-20727}
Alt.	-57 ± 36	$0.48^{+0.25}_{-0.25}$	340^{+14}_{-14}	5696^{+2877}_{-1425}	$54391^{+180924}_{-41612}$

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 $A_{obs} \gg 1.0$

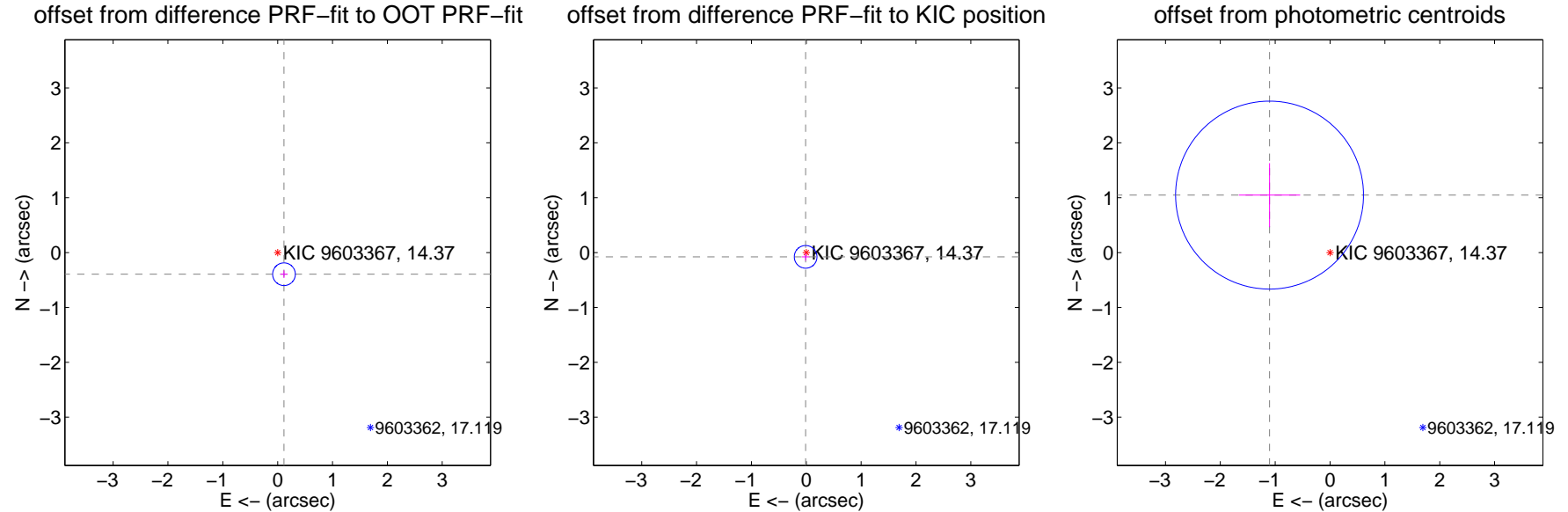
DV Centroid Data

Supplemental centroid analysis for 009603367-03. Kepler magnitude: 14.37. Transit SNR 5.07

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.411 ± 0.069	5.97	-0.115 ± 0.068	-0.395 ± 0.069
PRF-fit source offset from KIC position	0.079 ± 0.069	1.15	0.012 ± 0.068	-0.078 ± 0.069
photometric centroid source offset	1.52 ± 0.57	2.66	1.10 ± 0.56	1.05 ± 0.58



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

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



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



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

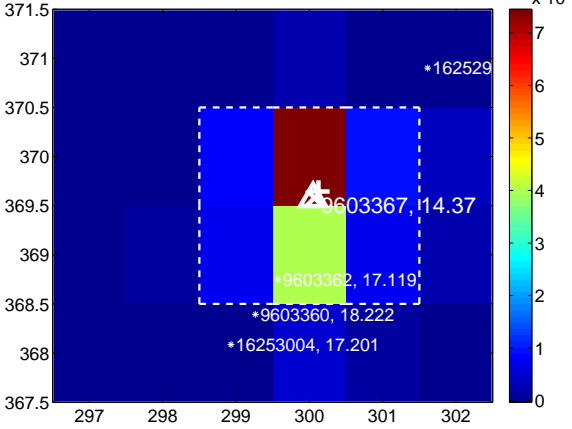
Q9 no difference image



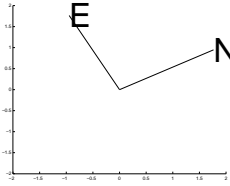
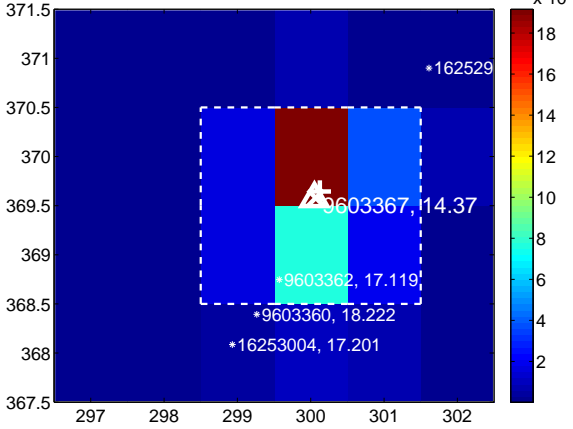
Q9 no OOT image



Q10 difference image



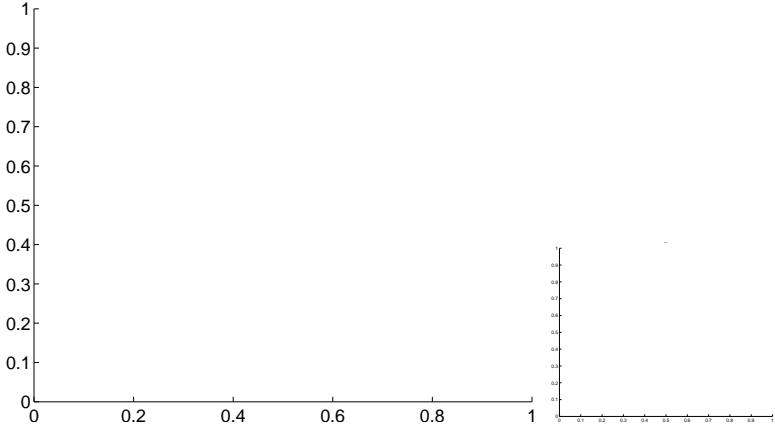
Q10 OOT image



Q11 no difference image



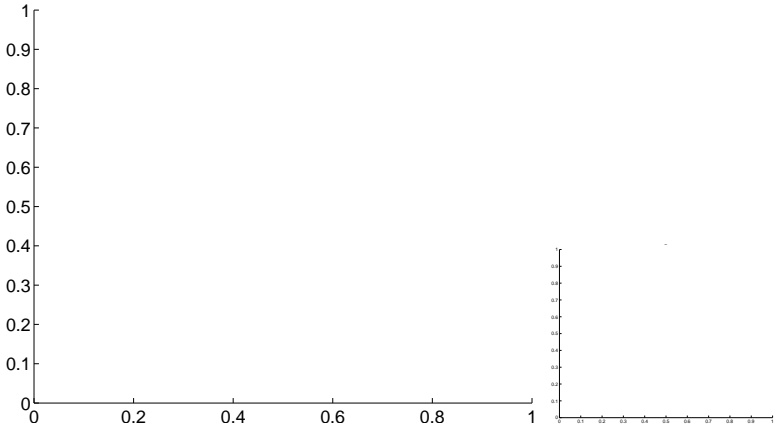
Q11 no OOT image



Q12 no difference image



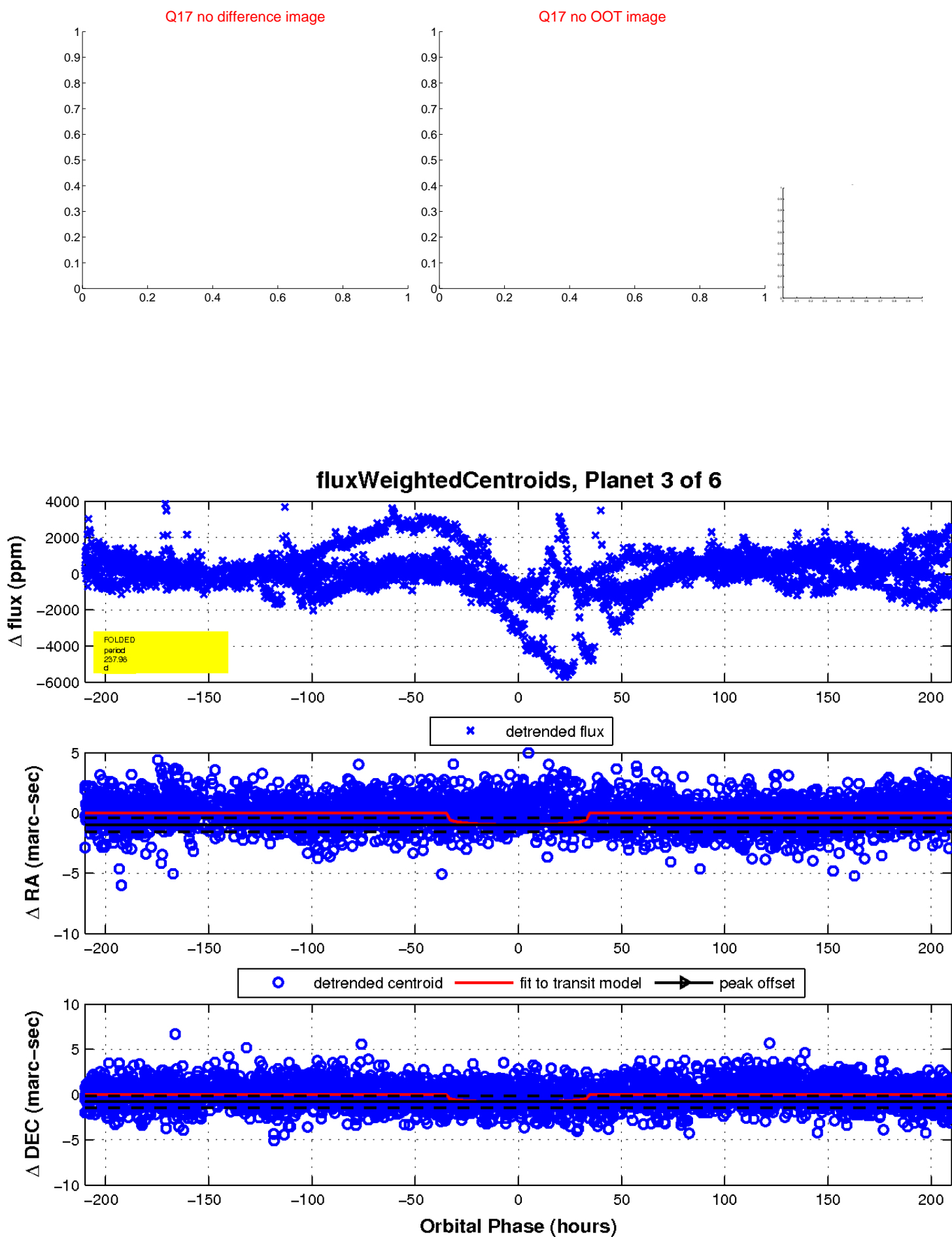
Q12 no OOT image



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

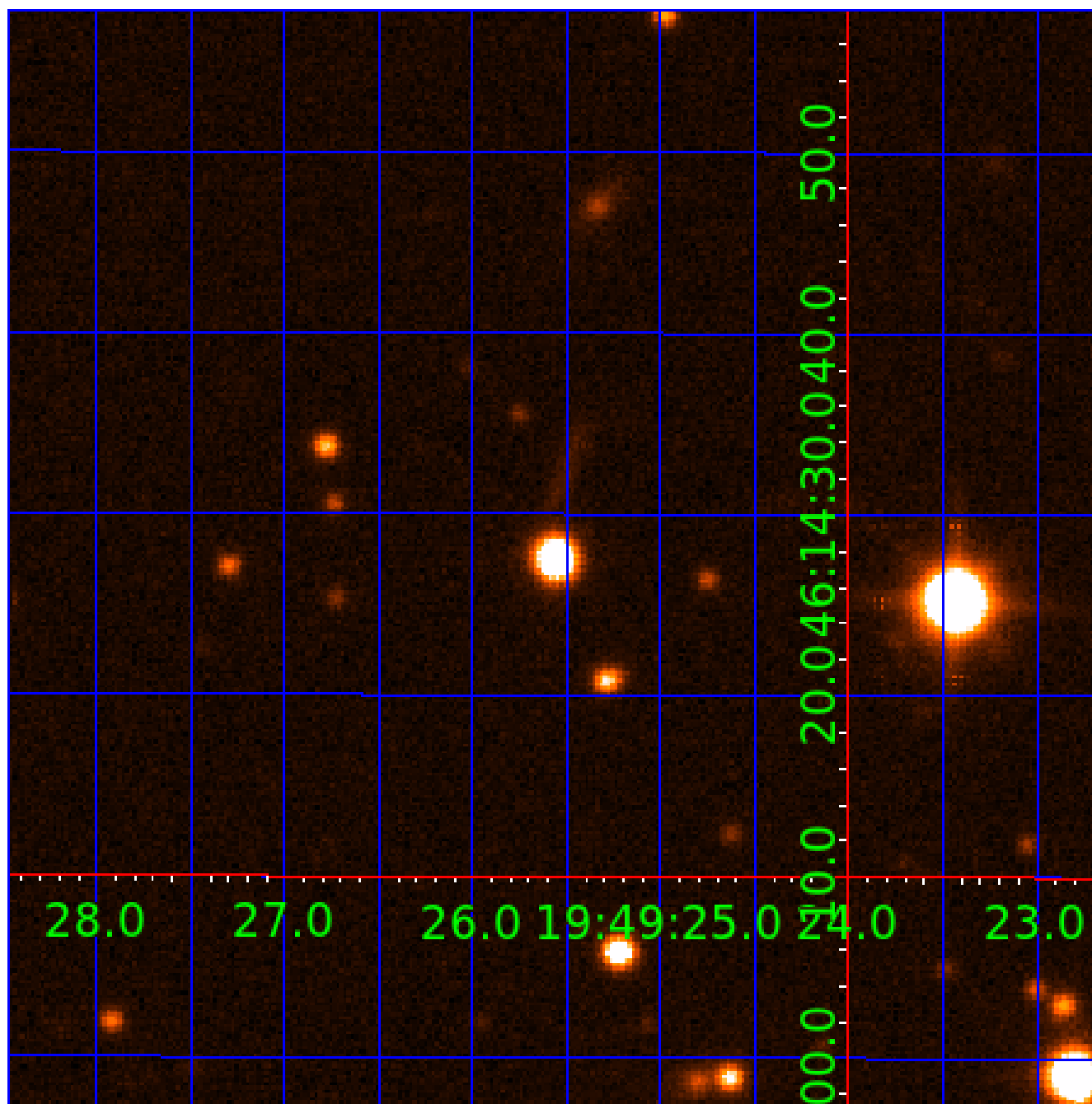


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009603367

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})
009603367-01	OBS	No	578.713572	336.392462	1324.4	11.538	16.0	10.0	0.67	5446	2.62	0.26
009603367-02	OBS	No	305.909165	223.522093	815.5	10.278	11.1	7.5	0.67	5446	2.34	0.60
009603367-03	OBS	No	237.975640	236.652446	797.2	69.960	12.6	5.1	0.67	5446	1.88	0.83
009603367-04	OBS	No	396.605031	311.777681	711.0	8.509	10.2	6.0	0.67	5446	1.89	0.42
009603367-05	OBS	No	587.312281	155.402136	679.4	12.024	13.1	6.0	0.67	5446	1.78	0.25
009603367-06	OBS	No	519.411119	220.885602	854.7	3.729	11.5	6.8	0.67	5446	2.42	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009603367-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS—HALO_GHOST
009603367-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009603367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

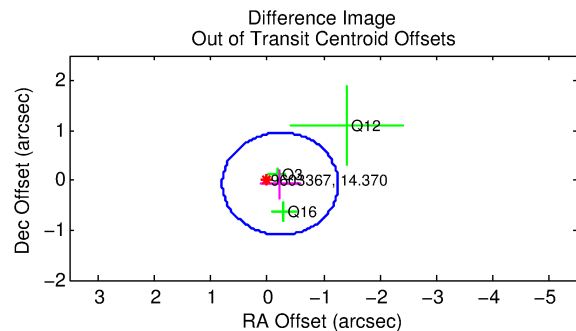
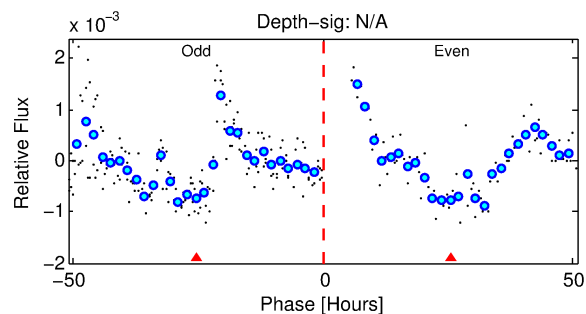
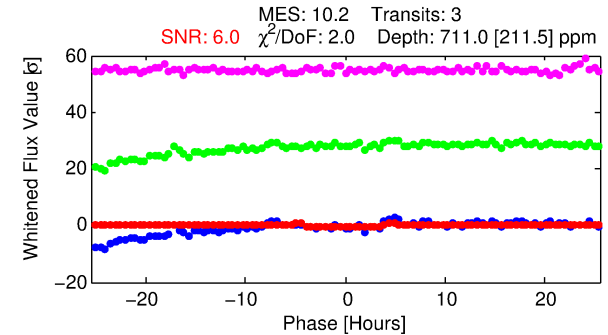
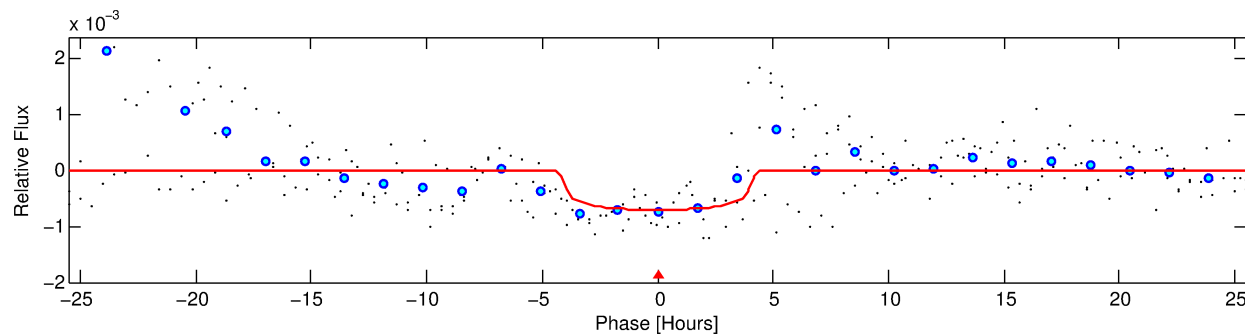
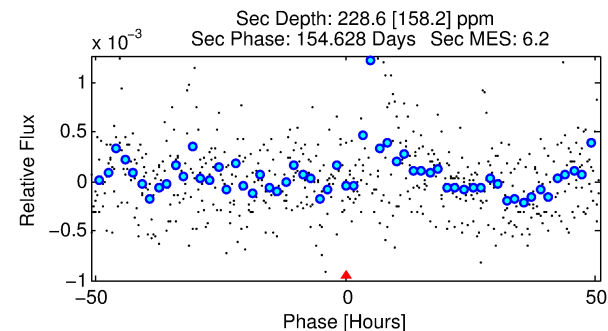
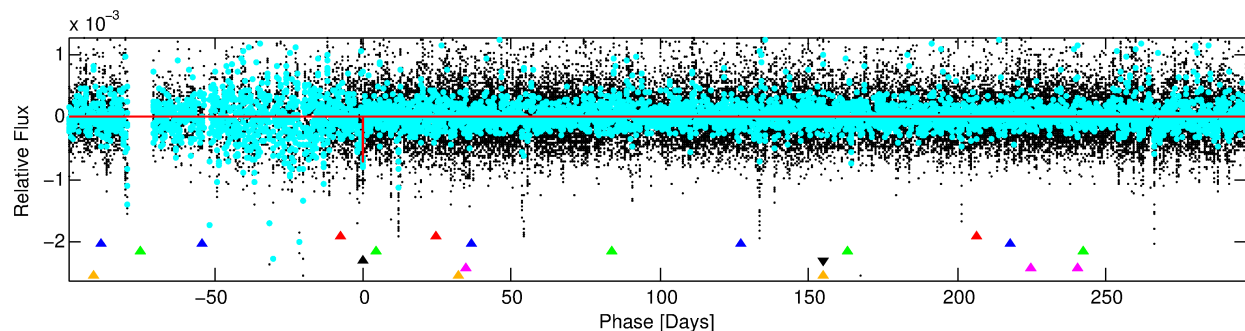
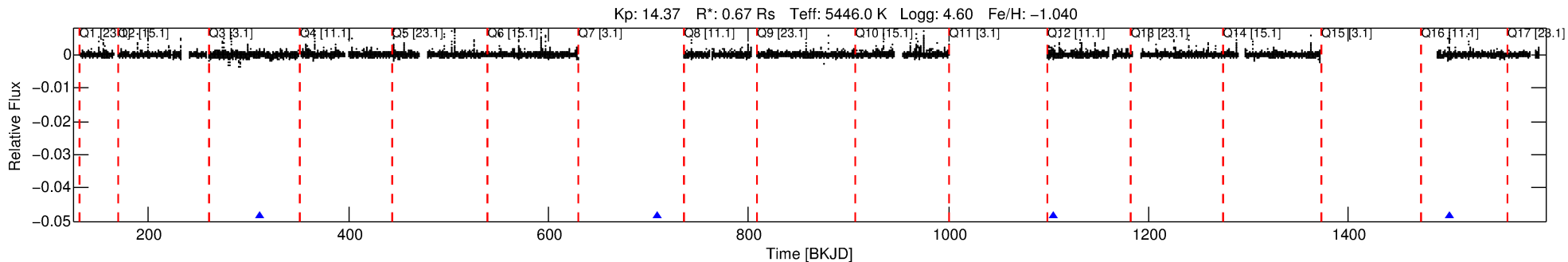
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-04

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 4 of 6 Period: 396.605 d



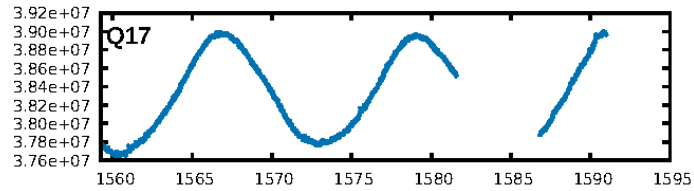
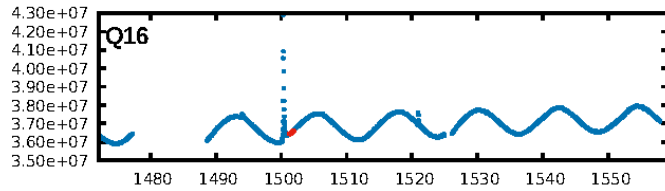
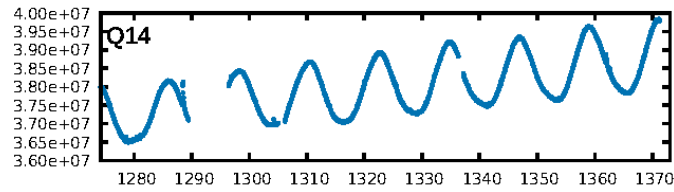
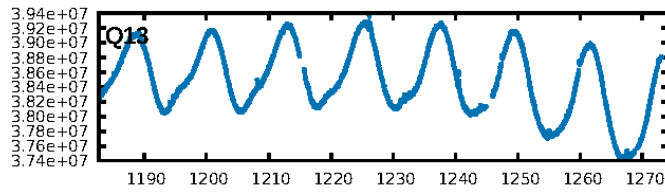
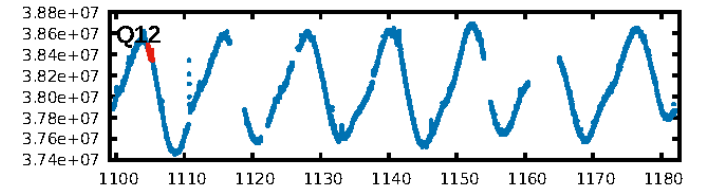
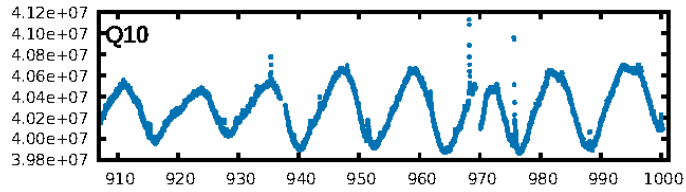
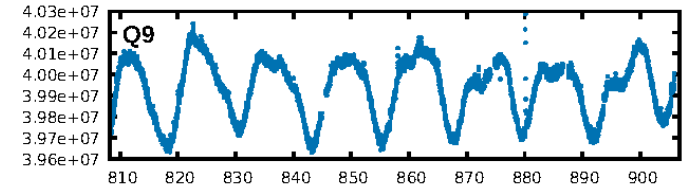
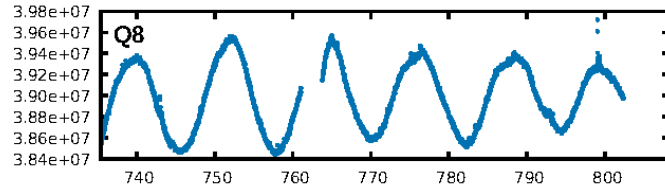
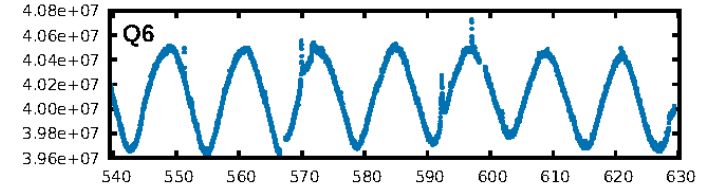
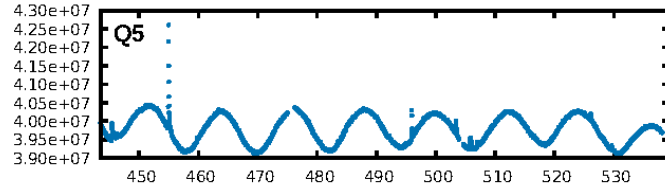
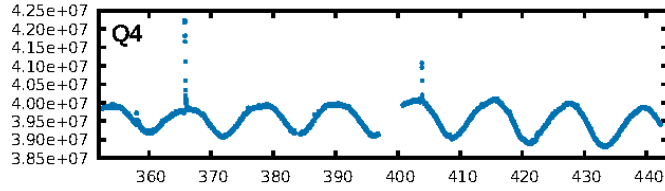
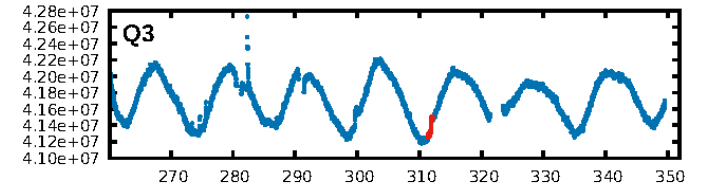
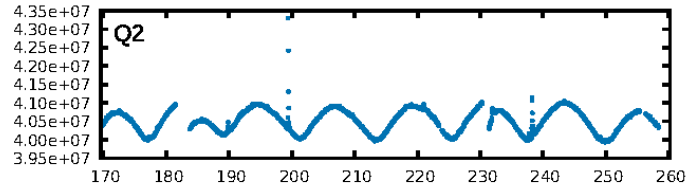
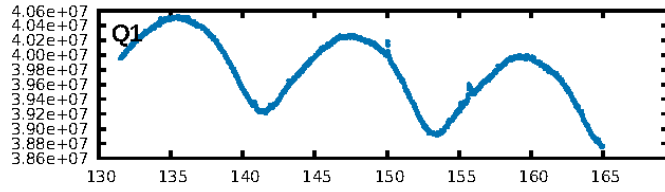
DV Fit Results:

Period = 396.60503 [0.00835] d
Epoch = 311.7777 [0.0172] BKJD
Rp/R* = 0.0259 [0.0215]
a/R* = 276.24 [1052.89]
b = 0.67 [3.13]
Seff = 0.42 [0.08]
Teq = 205 [10] K
Rp = 1.89 [1.58] Re
a = 0.9137 [0.0829] AU
Ag = 29452.93 [53163.72] [0.55σ]
Teffp = 4161 [1877] K [2.1σ]

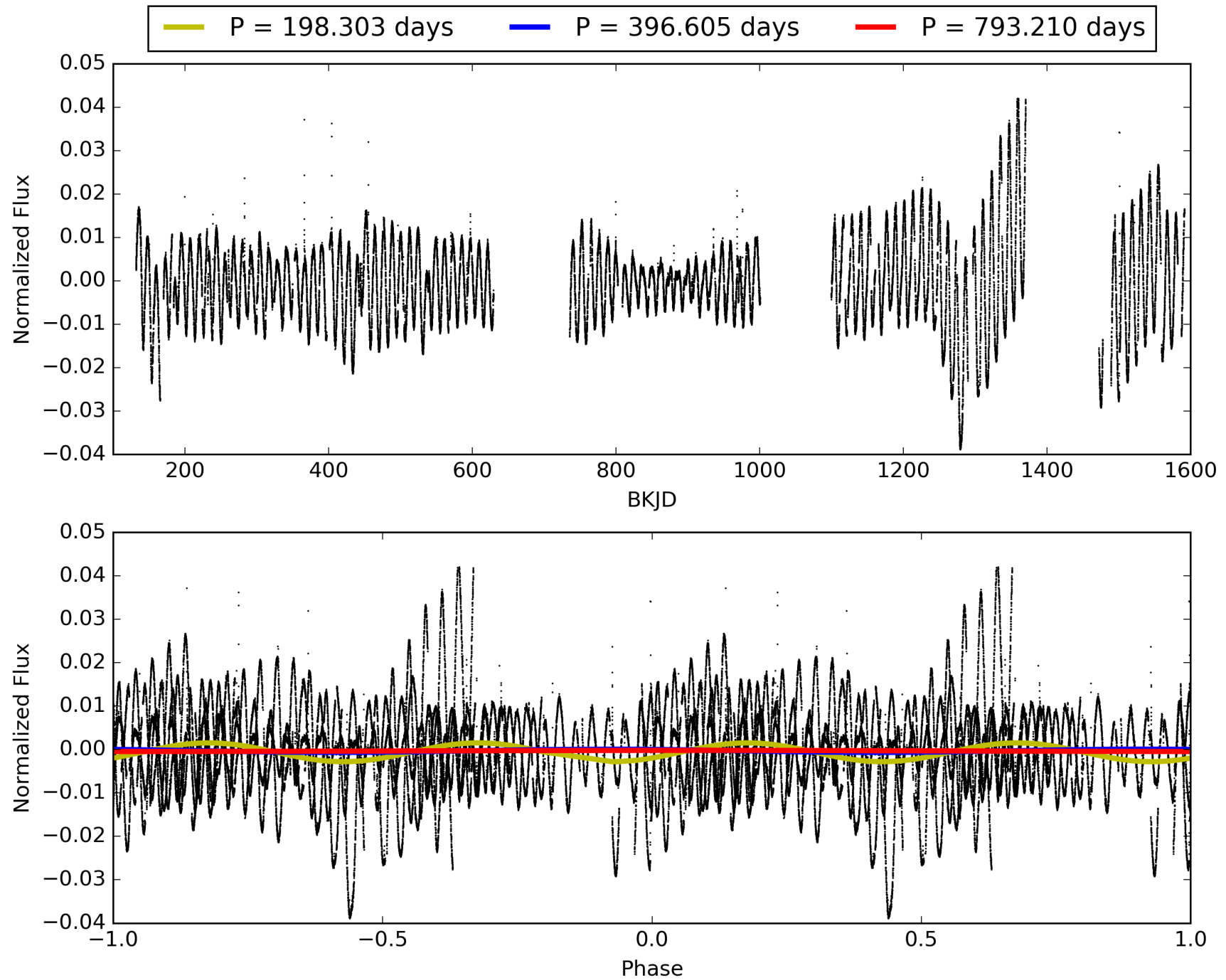
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [163.13σ]
LongPeriod-sig: 100.0% [317.25σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 16.9%
Bootstrap-pfa: 1.59e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3283
Centroid-sig: 10.8%
Centroid-so: 1.623 arcsec [1.23σ]
OotOffset-rm: 0.246 arcsec [0.72σ]
OotOffset-st: 0/1/2/0 [3]
KicOffset-rm: 0.197 arcsec [0.57σ]
KicOffset-st: 0/1/2/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009603367-04, PDC Light Curves

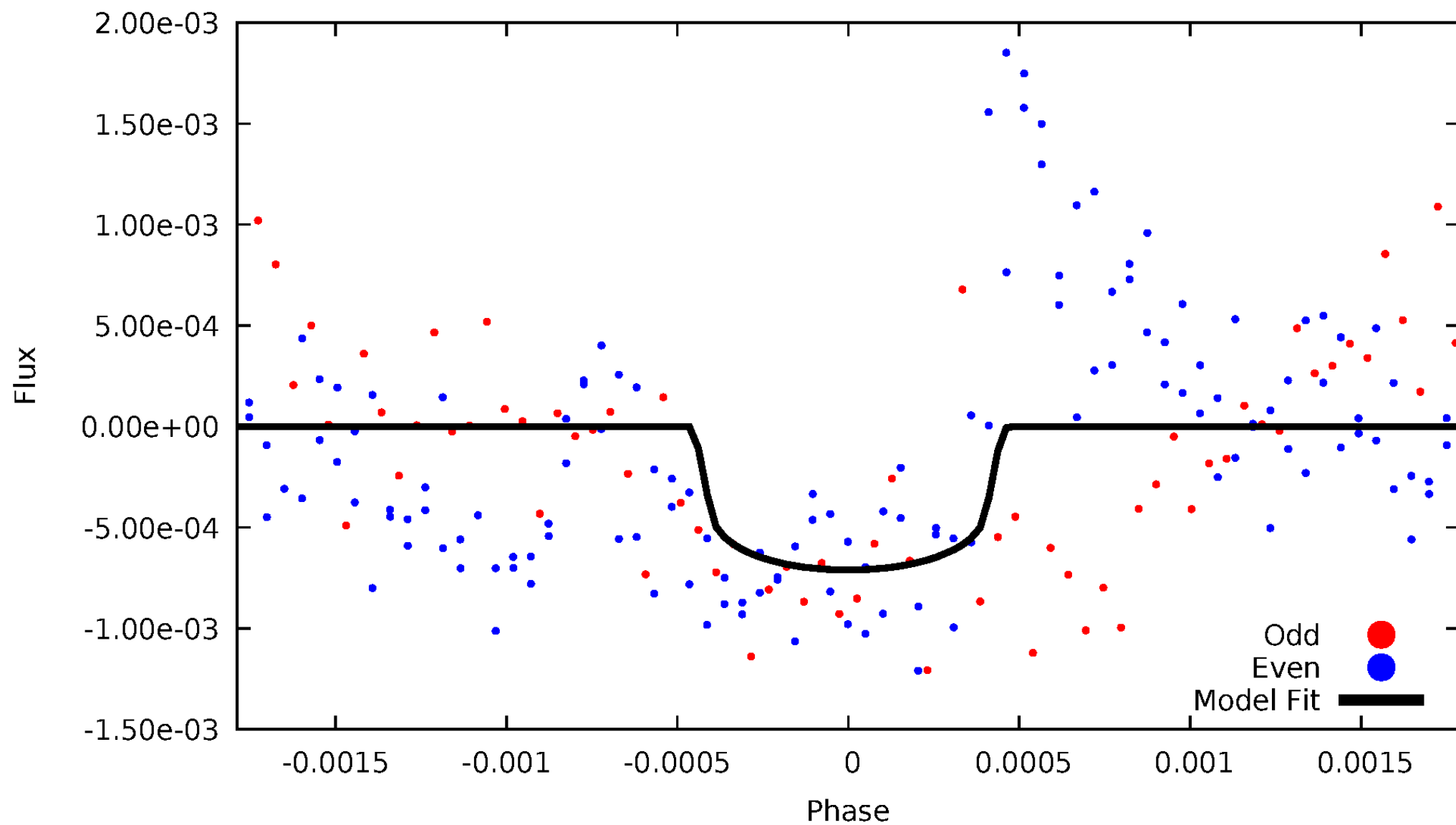


TCE 009603367-04



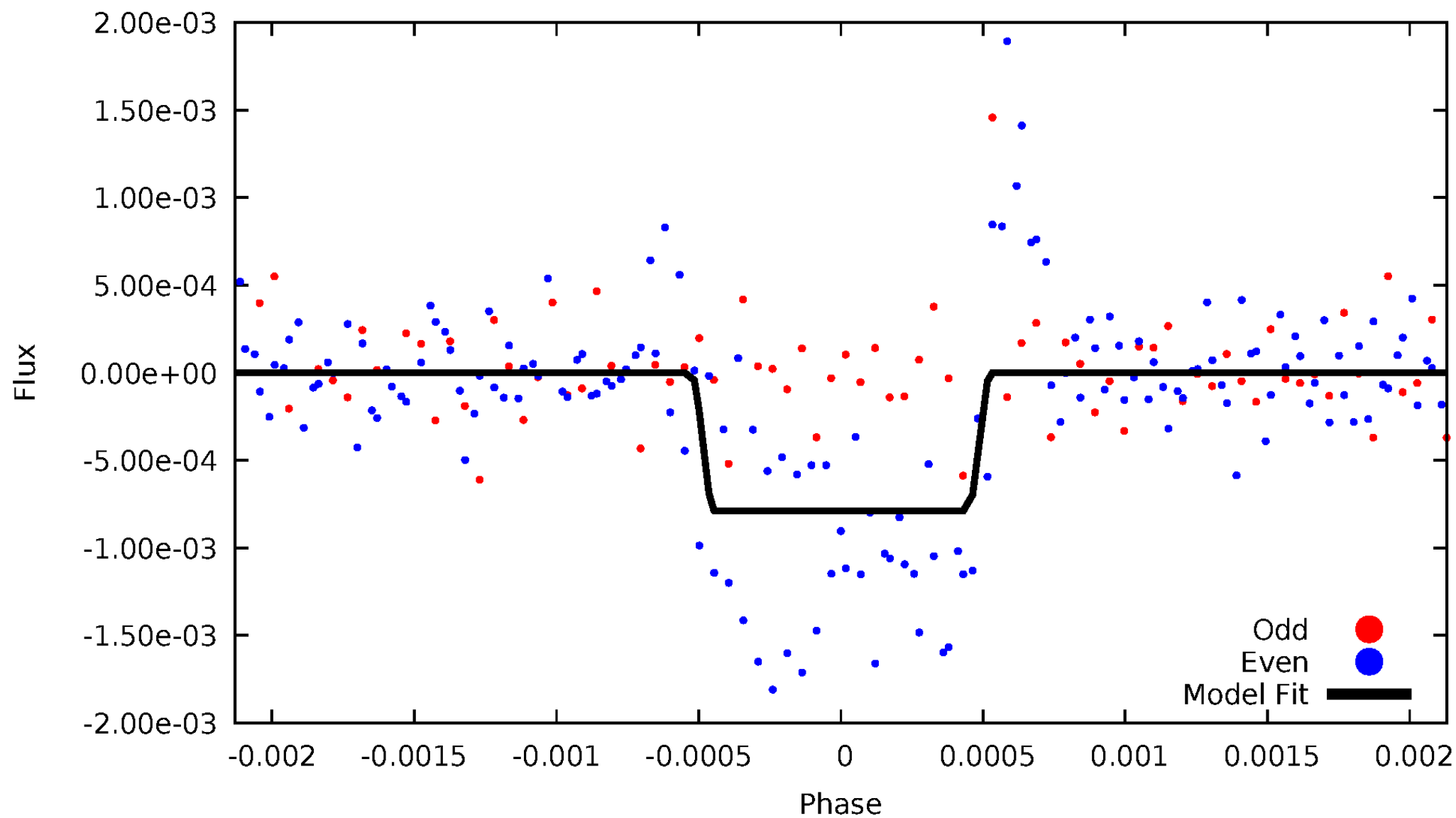
DV Odd/Even

TCE 009603367-04



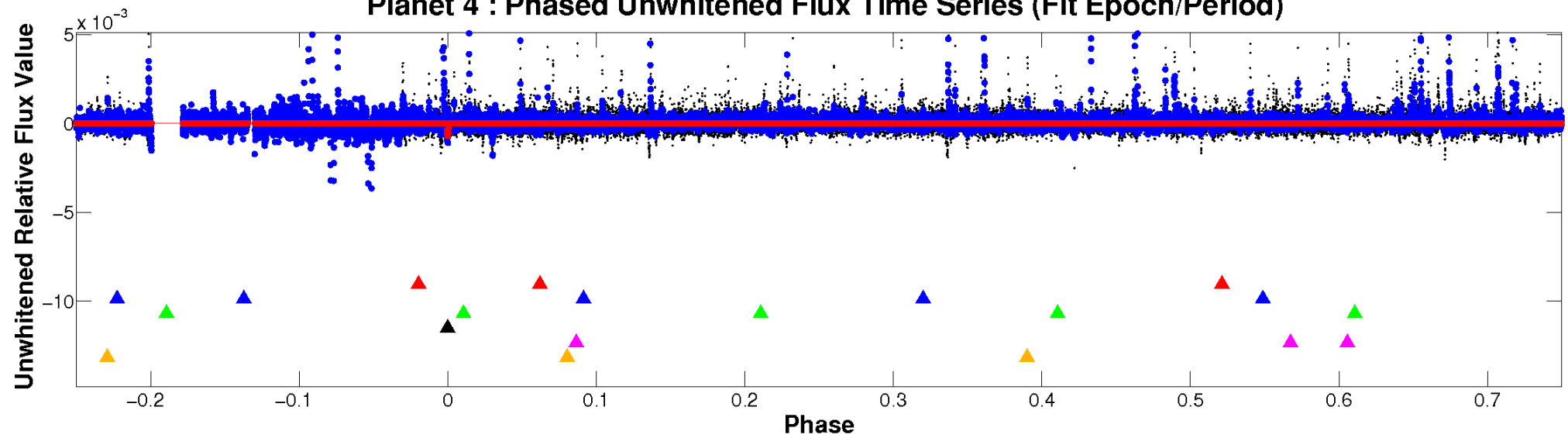
ALT Odd/Even

TCE 009603367-04

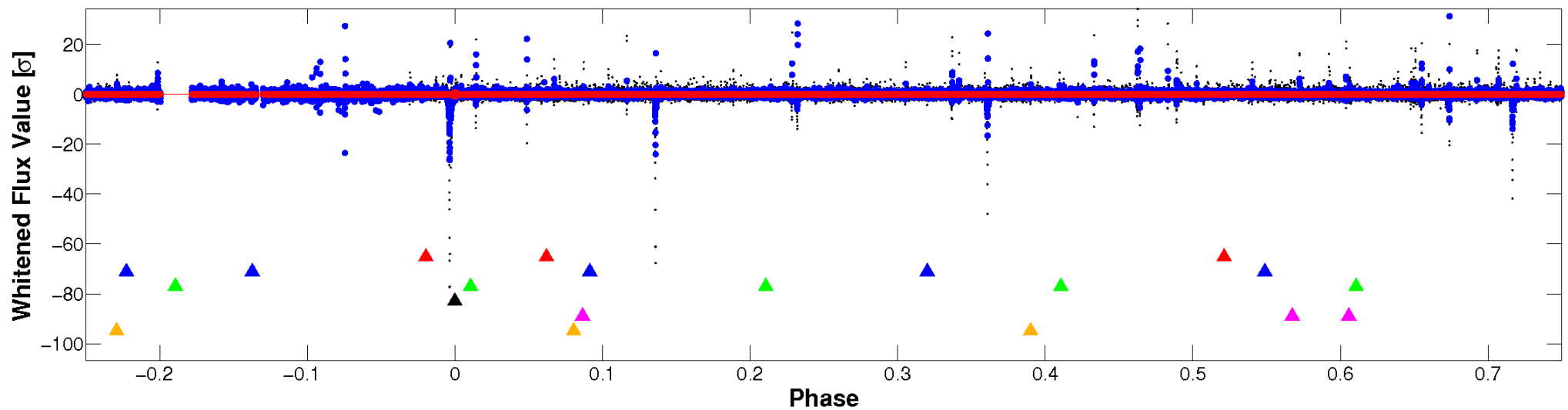


Non-Whitened Vs. Whitened Light Curve

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

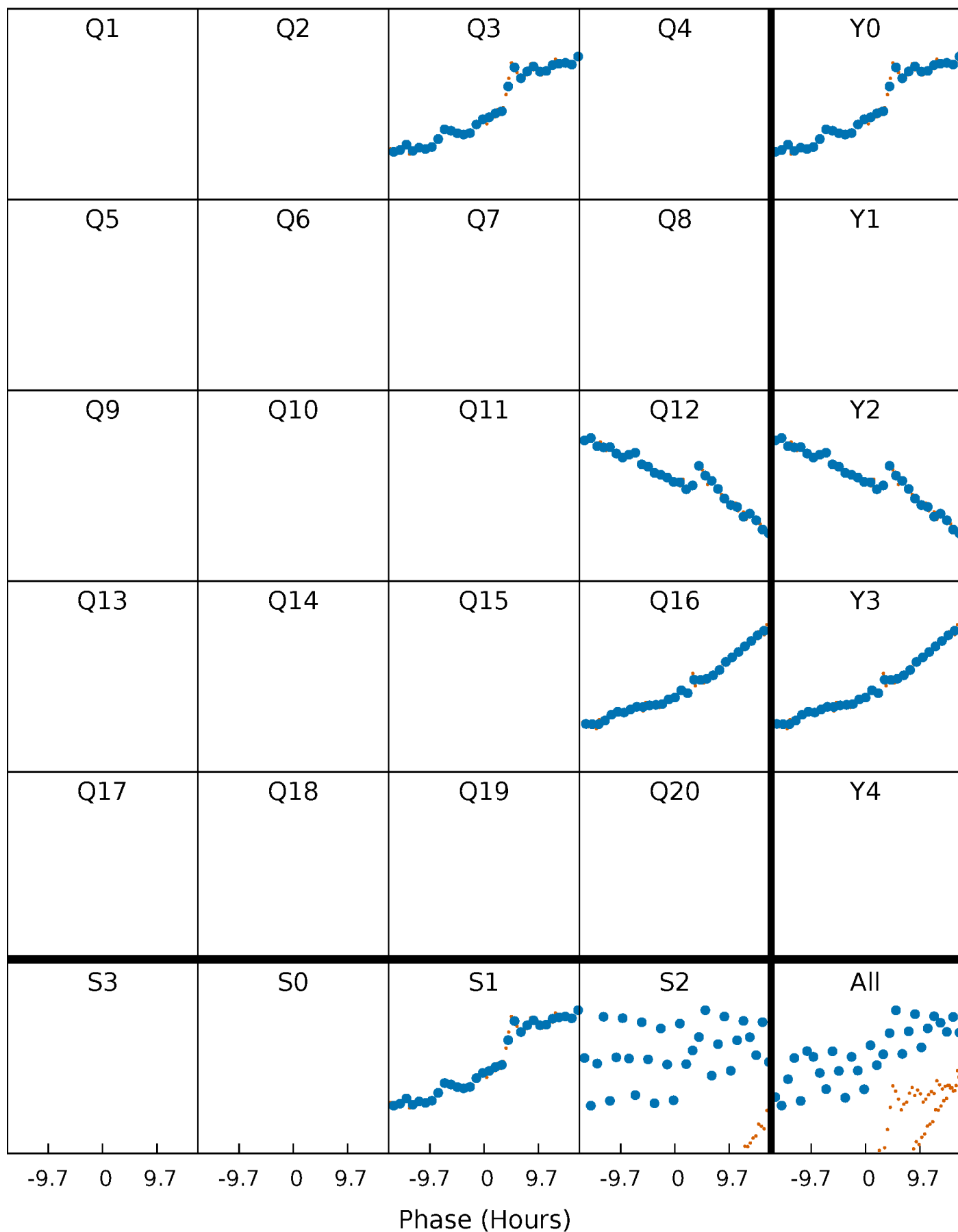


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



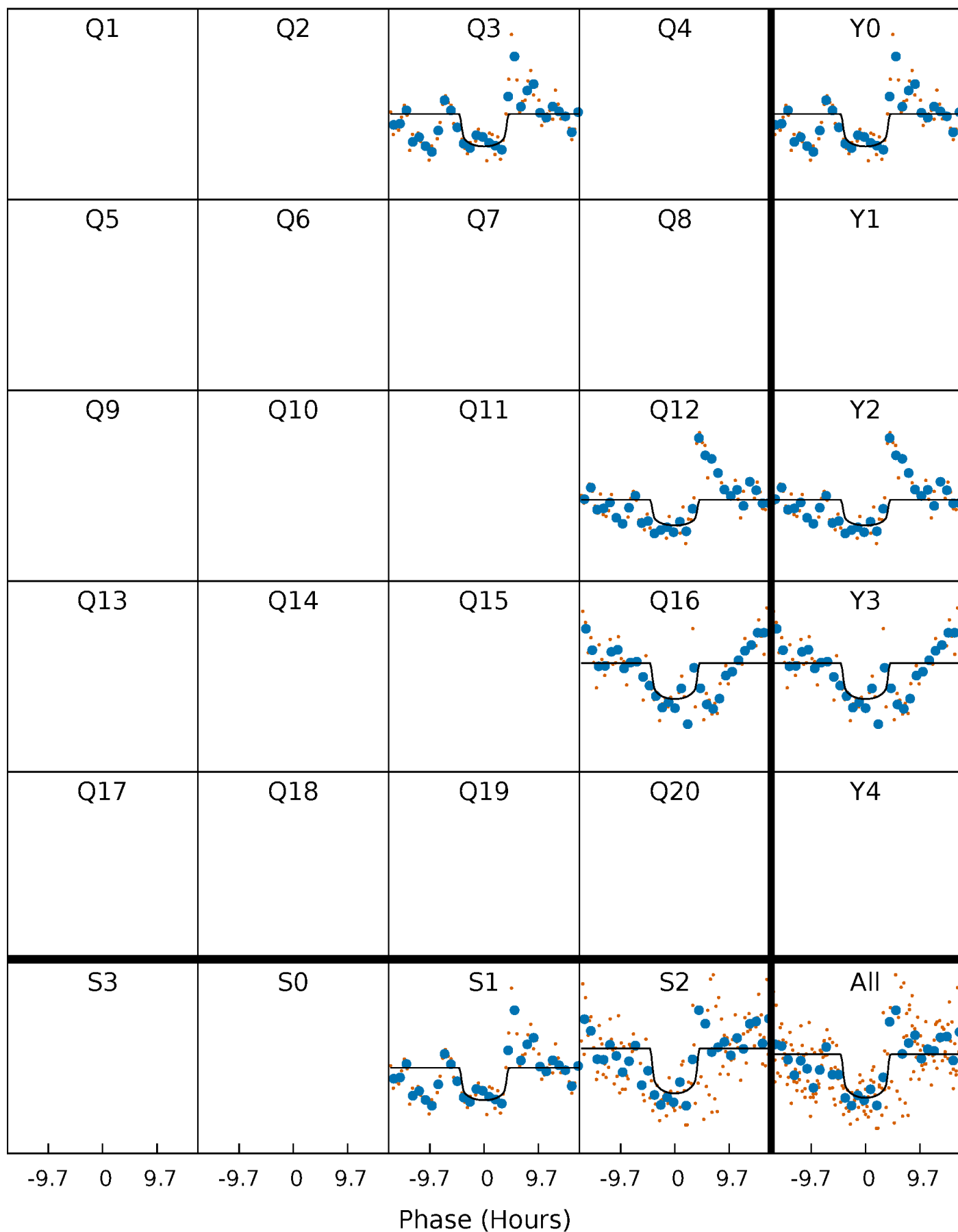
PDC Quarter-Phased Transit Curves

TCE 009603367-04 P=396.605031 Days $T_0=311.777681$ (BKJD)



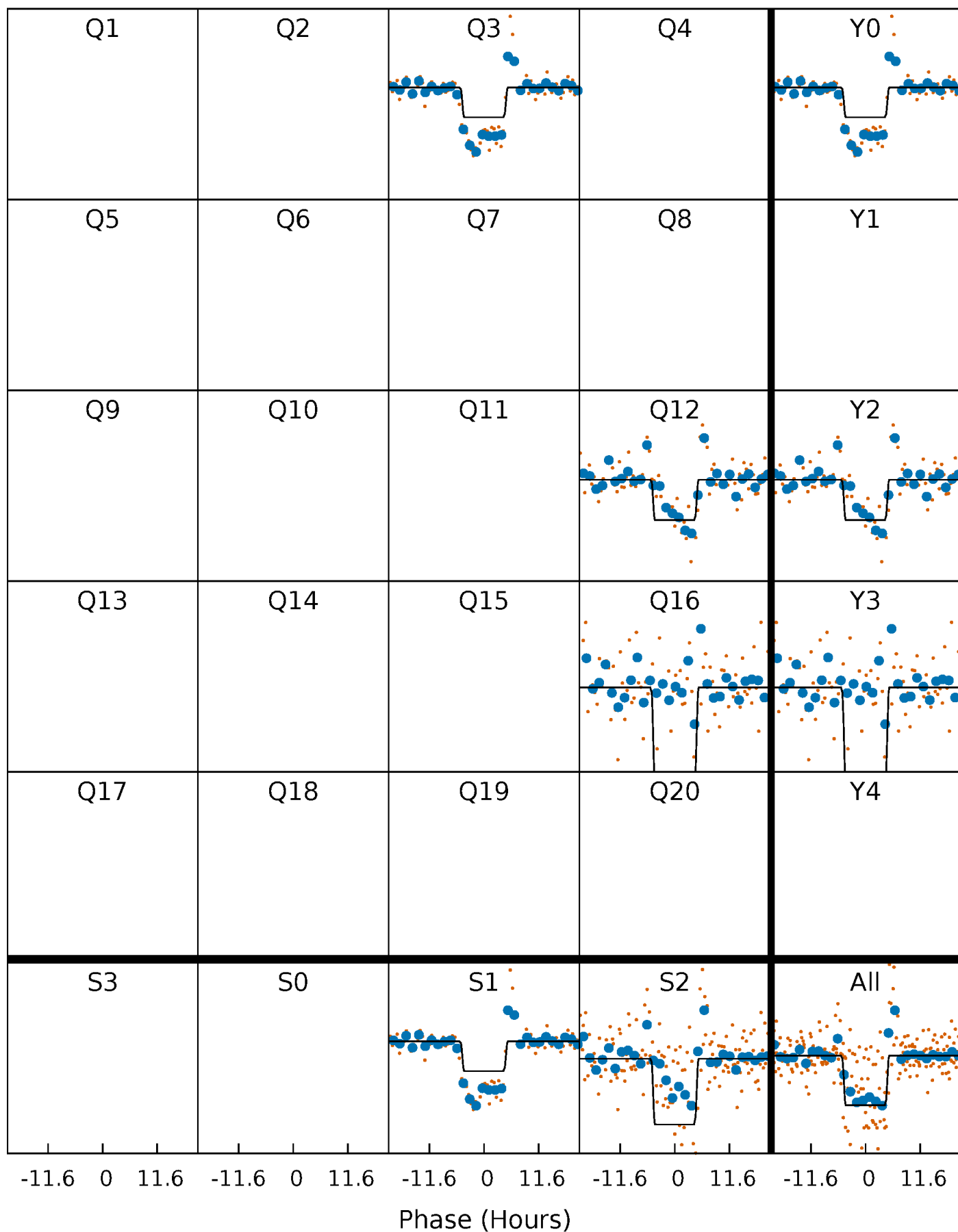
DV Quarter-Phased Transit Curves

TCE 009603367-04 P=396.605031 Days $T_0=311.777681$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

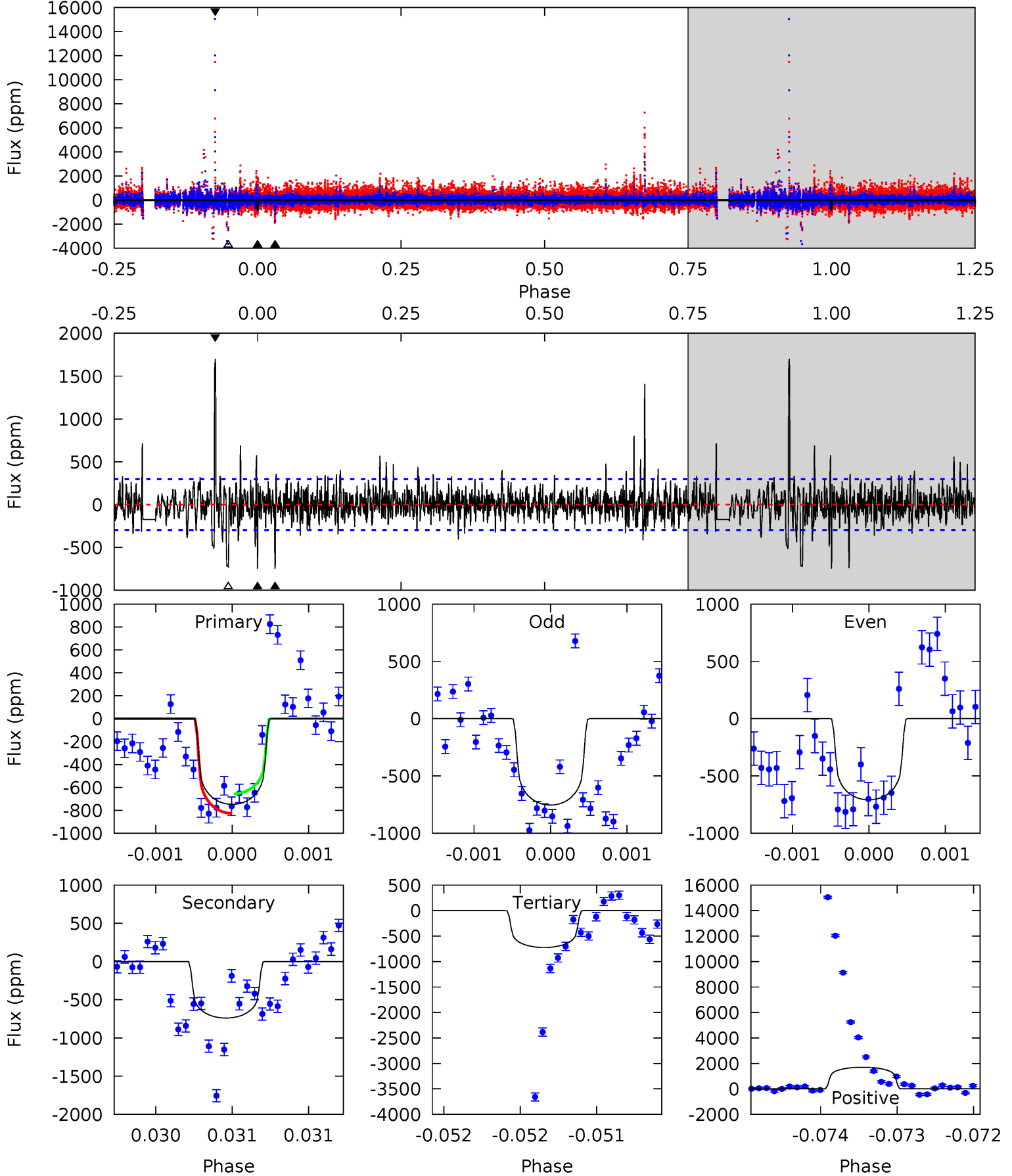
TCE 009603367-04 $P=396.588155$ Days $T_0=311.749673$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-04, P = 396.605031 Days, E = 311.777681 Days

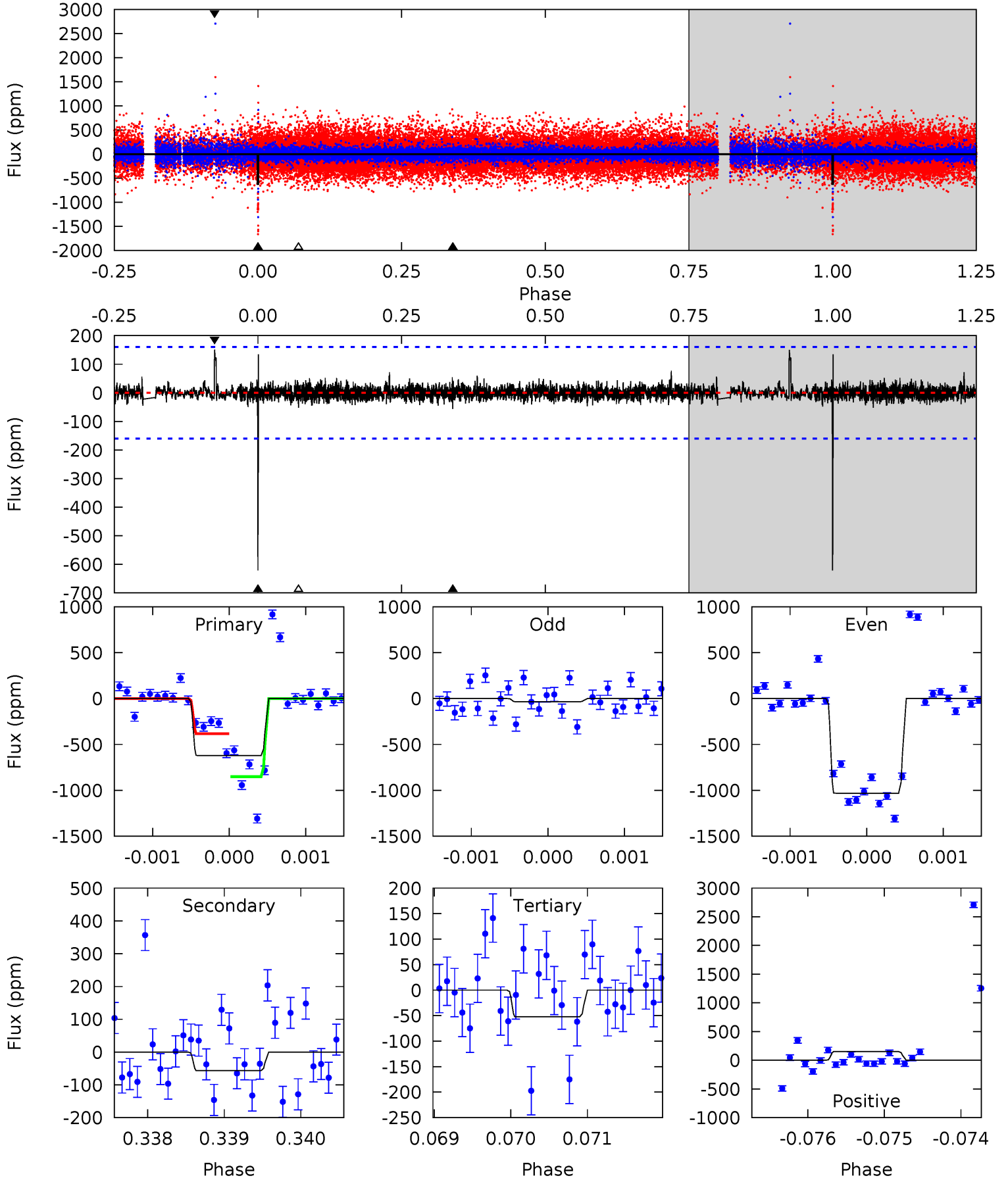
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	13.6	13.4	31.3	5.46	3.30	2.59	0.43	-17.6	0.27	-17.7	0.07	0.99	0.69	1.56



Alt Model-Shift Uniqueness Test

009603367-04, P = 396.588155 Days, E = 311.749673 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	1.92	1.78	5.11	5.45	3.28	0.48	19.4	16.0	0.14	-3.20	17.7	1.02	0.19	7.76



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-739 ± 54	$2.10^{+1.34}_{-1.31}$	286^{+11}_{-11}	5331^{+3603}_{-1033}	$77192^{+487505}_{-49303}$
Alt.	-56 ± 29	$2.35^{+1.44}_{-1.41}$	287^{+11}_{-12}	3178^{+1027}_{-526}	4318^{+19344}_{-3104}

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 $A_{obs} \gg 1.0$

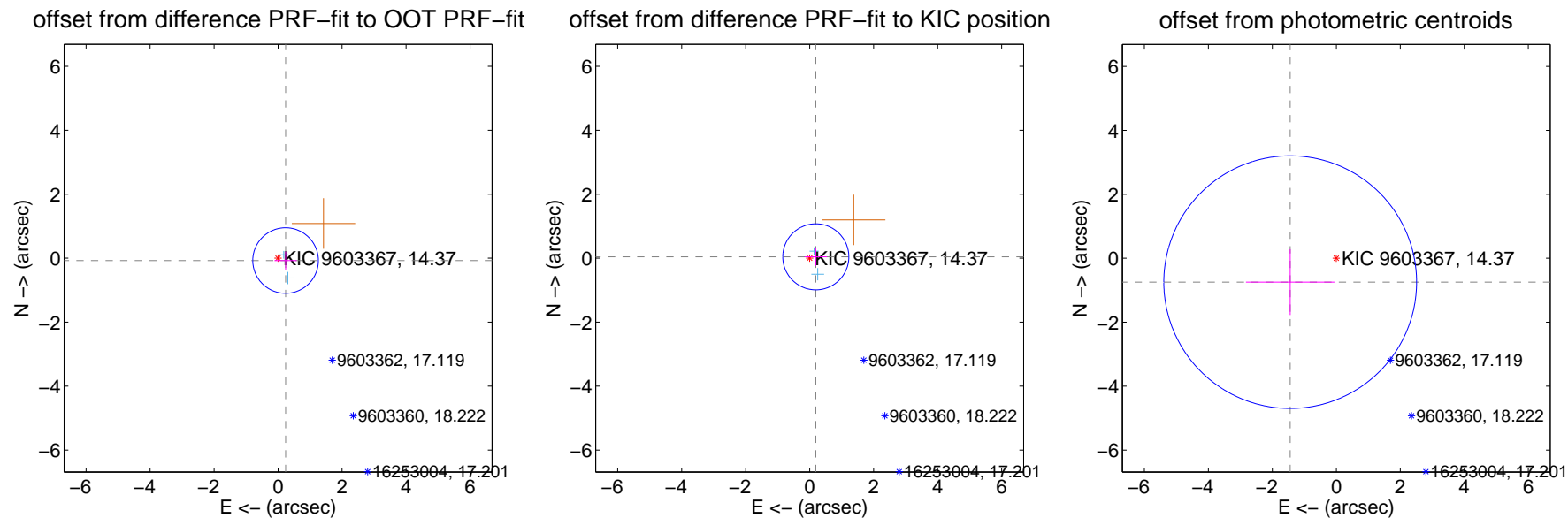
DV Centroid Data

Supplemental centroid analysis for 009603367-04. Kepler magnitude: 14.37. Transit SNR 6.04

There are 2 quarters with good PRF difference image offsets

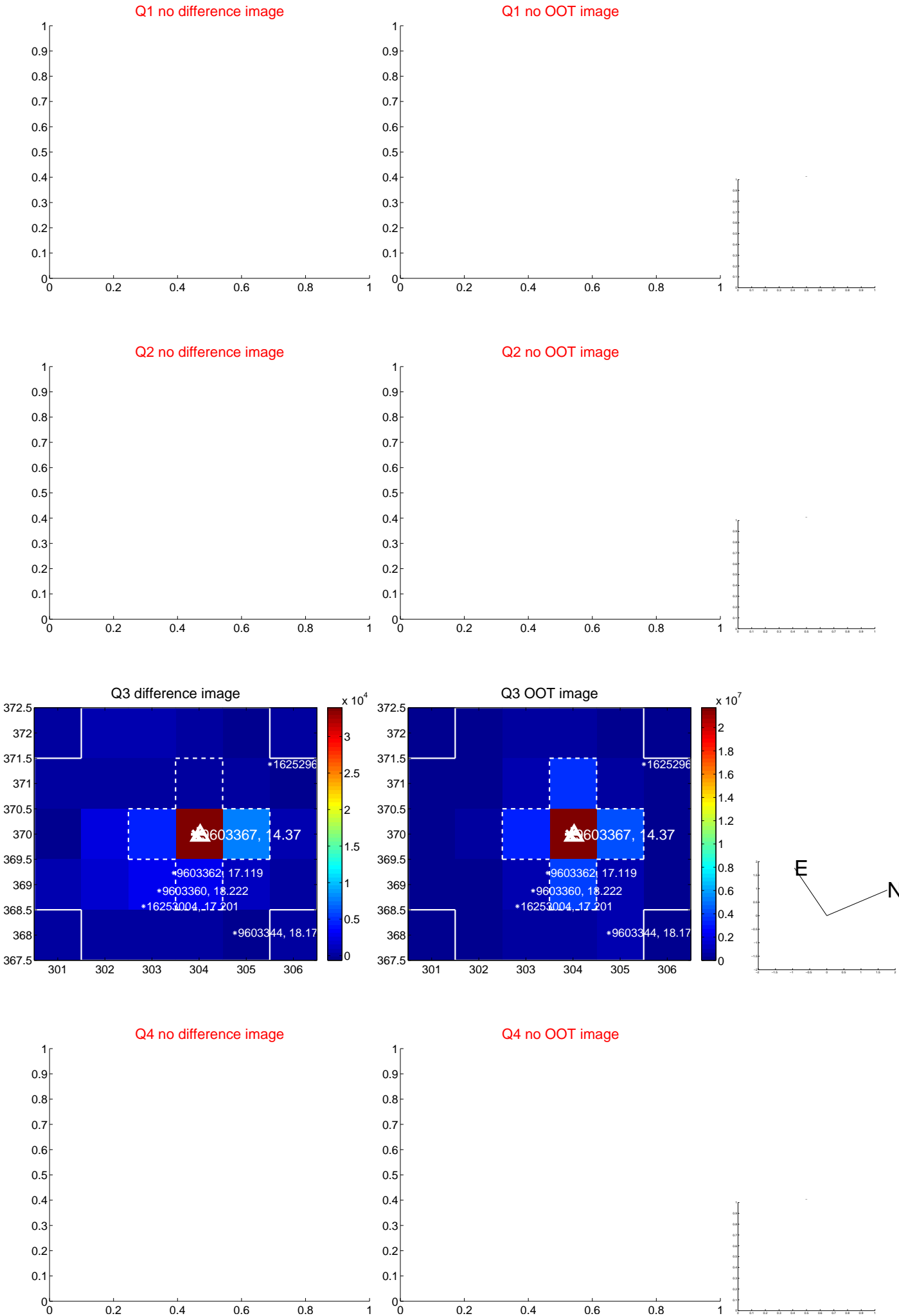
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.246 ± 0.342	0.72	-0.234 ± 0.347	-0.073 ± 0.282
PRF-fit source offset from KIC position	0.197 ± 0.344	0.57	-0.192 ± 0.347	0.043 ± 0.282
photometric centroid source offset	1.62 ± 1.32	1.23	1.44 ± 1.38	-0.75 ± 1.03



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.

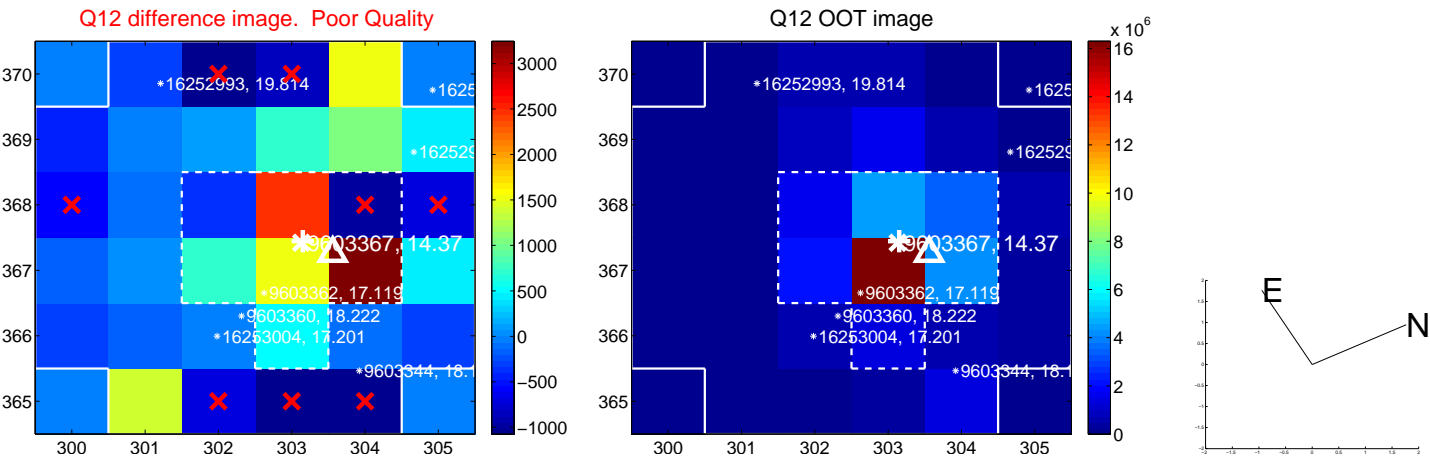
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

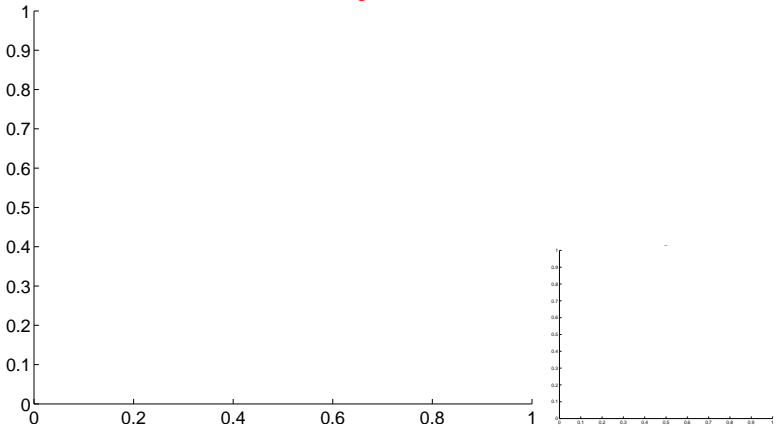


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

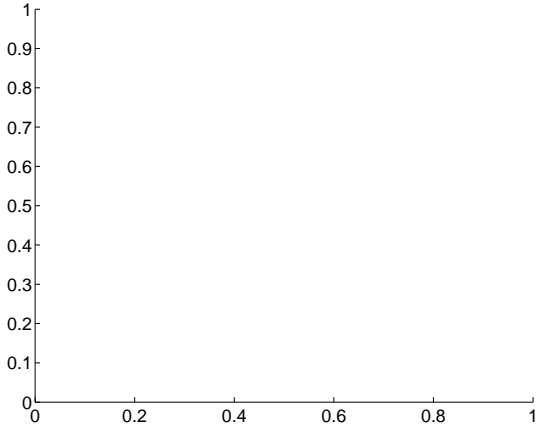
Q13 no difference image



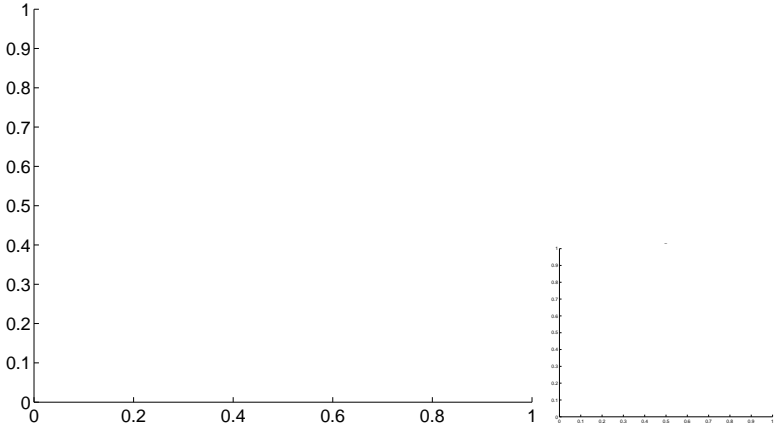
Q13 no OOT image



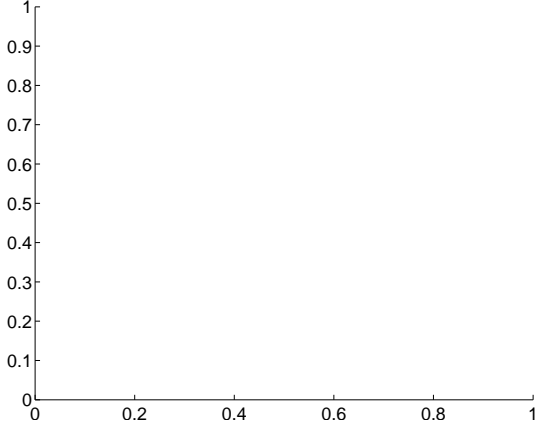
Q14 no difference image



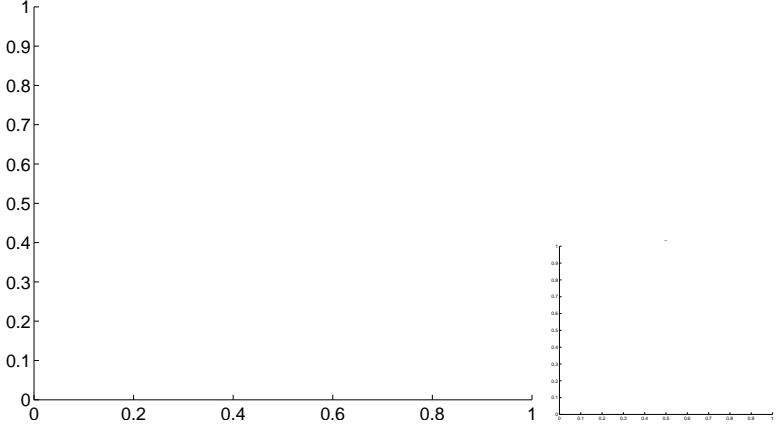
Q14 no OOT image



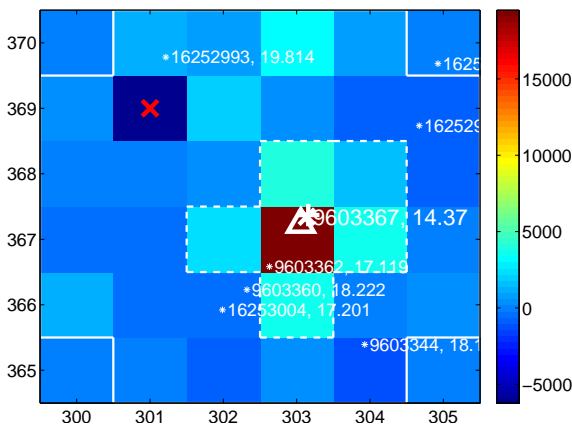
Q15 no difference image



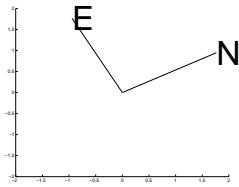
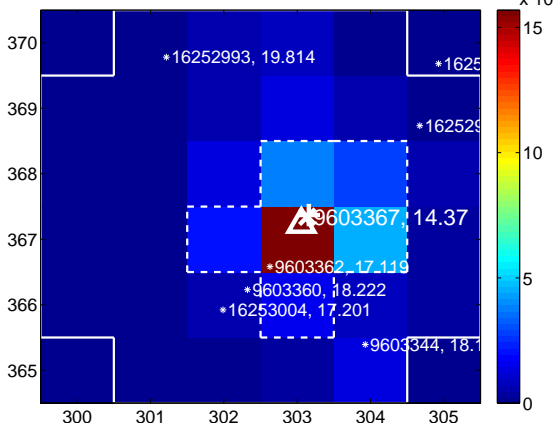
Q15 no OOT image



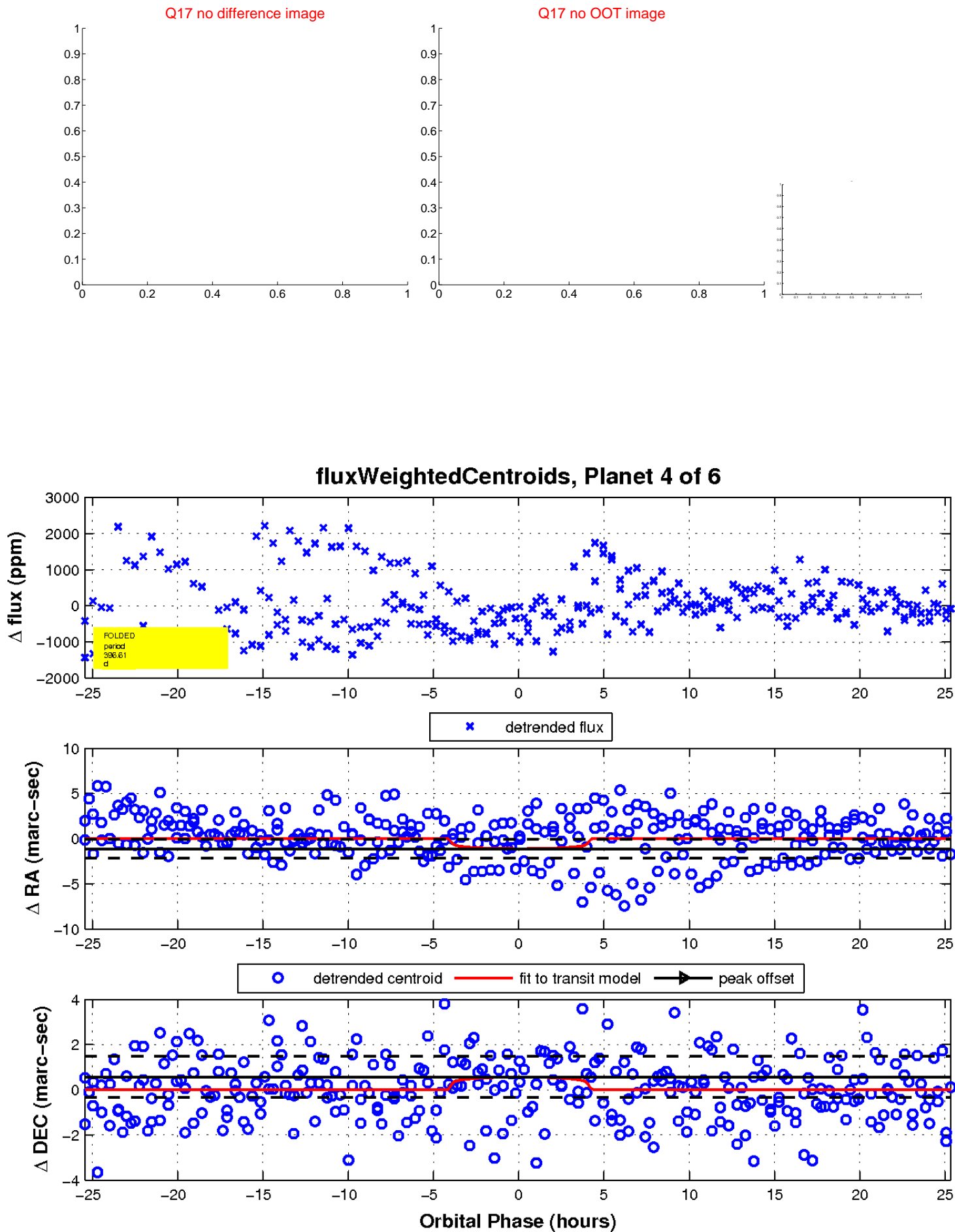
Q16 difference image



Q16 OOT image

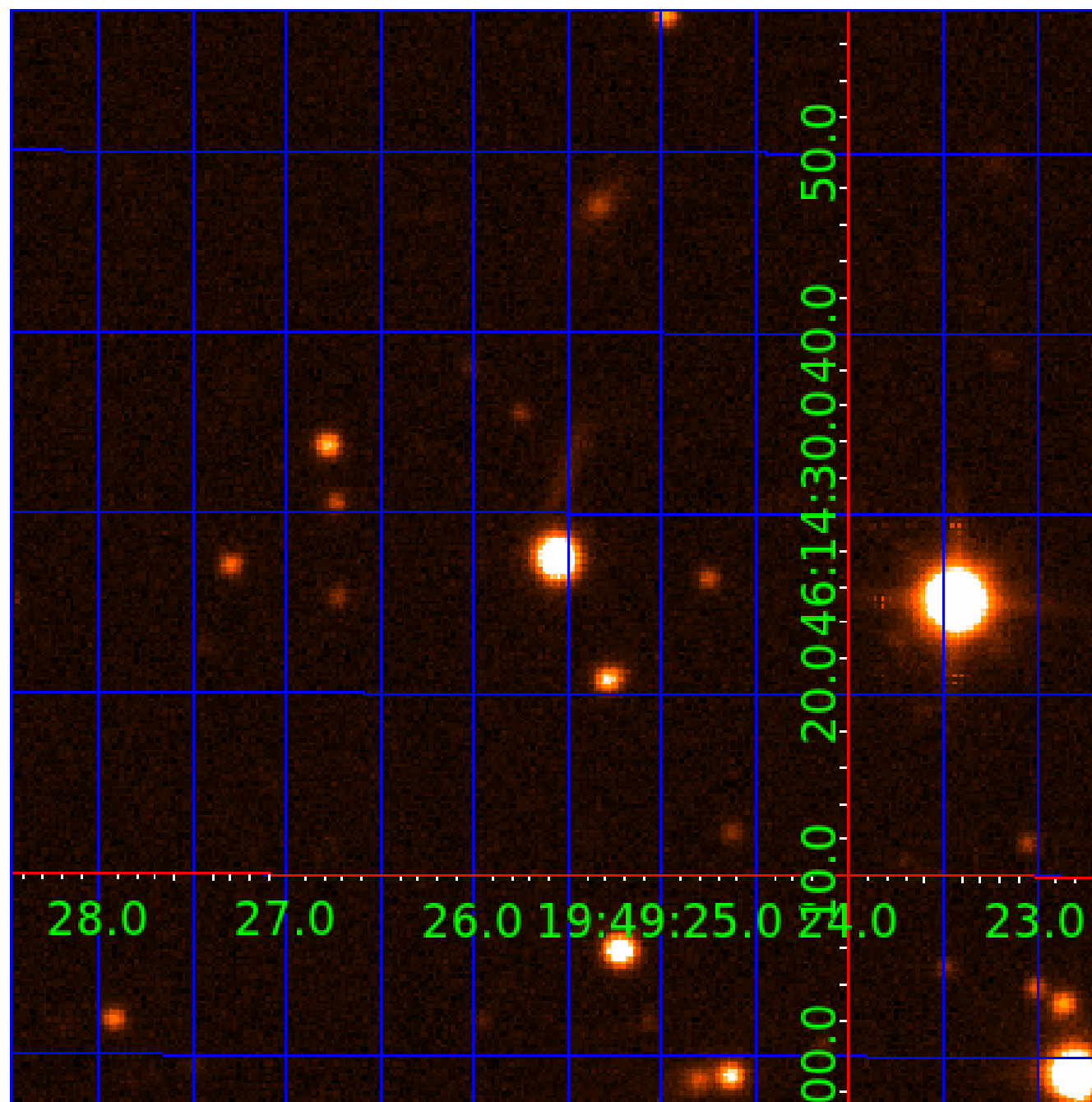


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009603367

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})
009603367-01	OBS	No	578.713572	336.392462	1324.4	11.538	16.0	10.0	0.67	5446	2.62	0.26
009603367-02	OBS	No	305.909165	223.522093	815.5	10.278	11.1	7.5	0.67	5446	2.34	0.60
009603367-03	OBS	No	237.975640	236.652446	797.2	69.960	12.6	5.1	0.67	5446	1.88	0.83
009603367-04	OBS	No	396.605031	311.777681	711.0	8.509	10.2	6.0	0.67	5446	1.89	0.42
009603367-05	OBS	No	587.312281	155.402136	679.4	12.024	13.1	6.0	0.67	5446	1.78	0.25
009603367-06	OBS	No	519.411119	220.885602	854.7	3.729	11.5	6.8	0.67	5446	2.42	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009603367-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS—HALO_GHOST
009603367-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009603367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

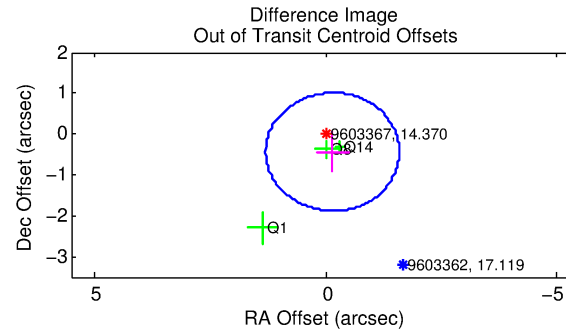
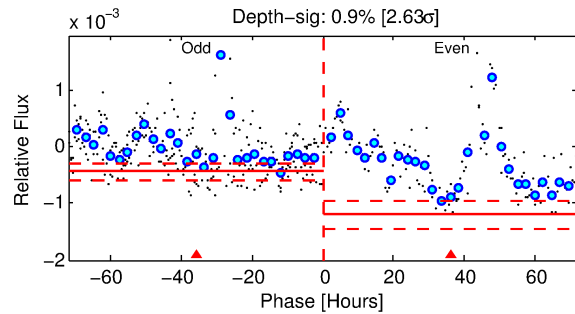
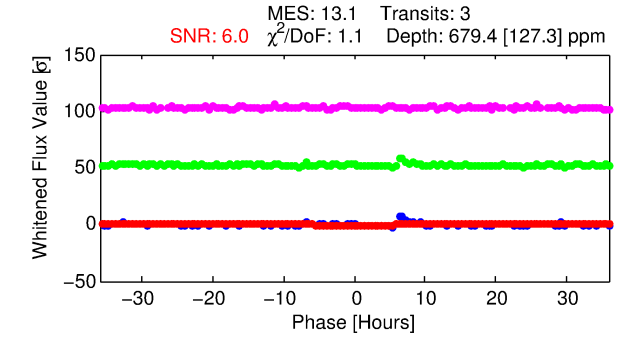
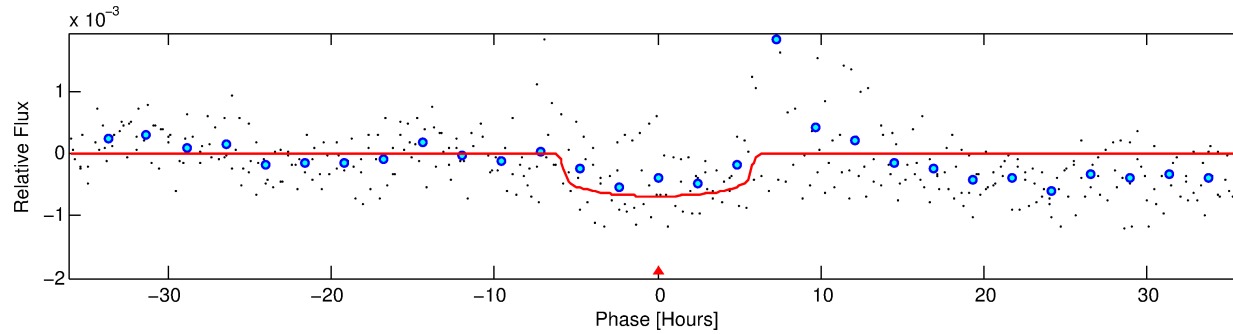
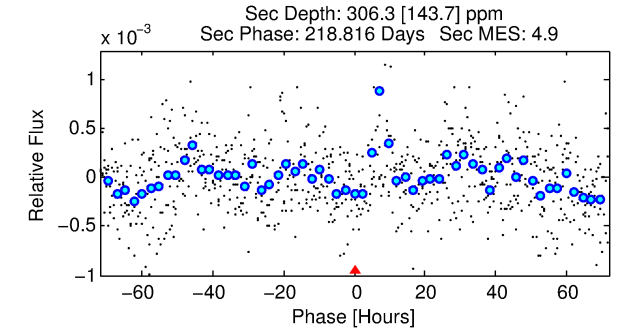
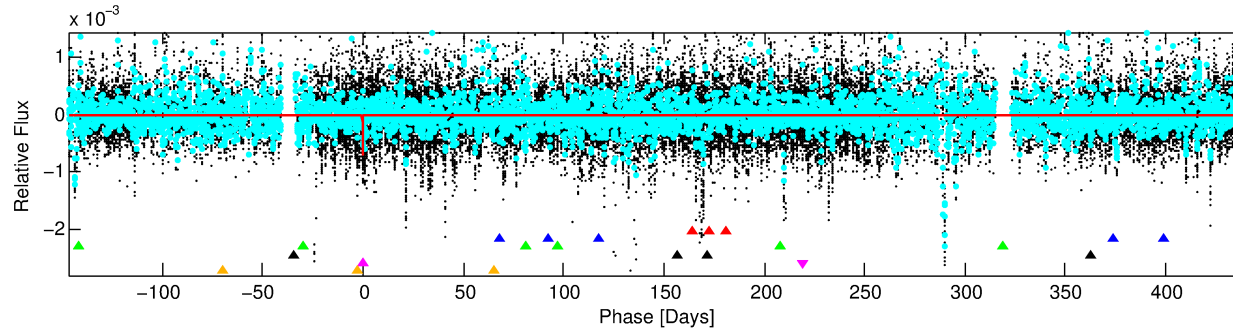
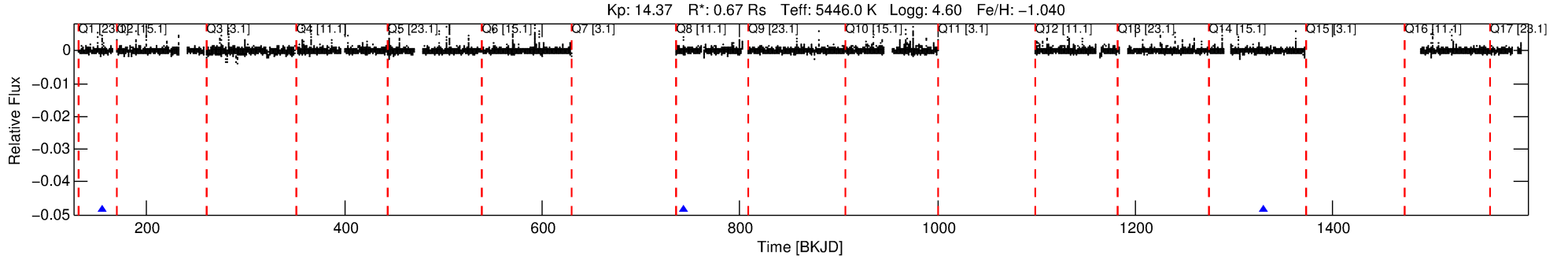
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-05

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 5 of 6 Period: 587.312 d



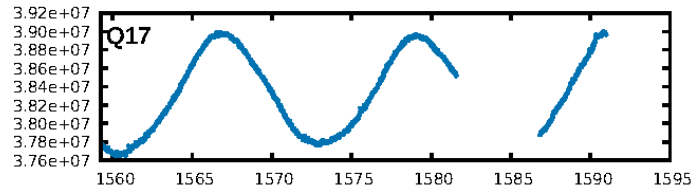
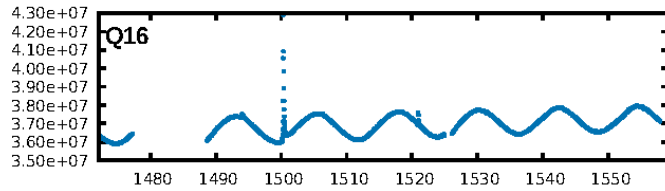
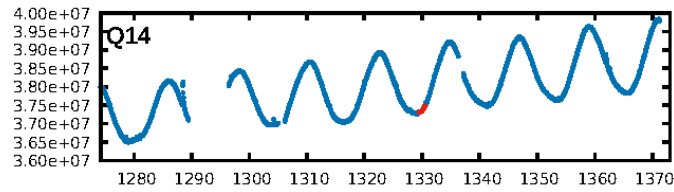
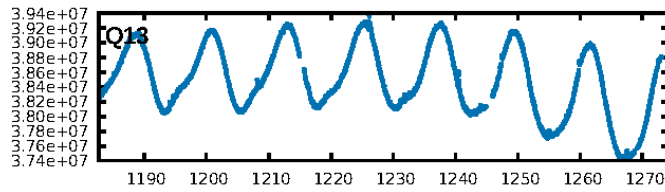
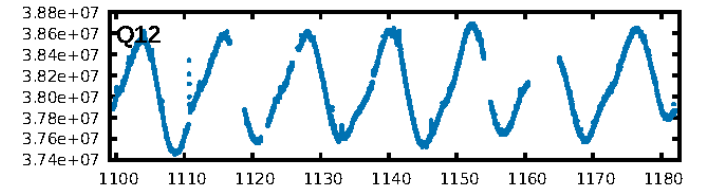
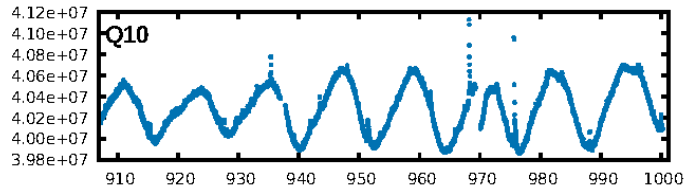
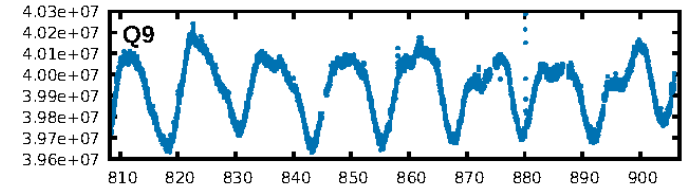
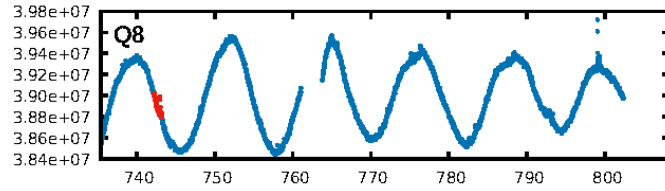
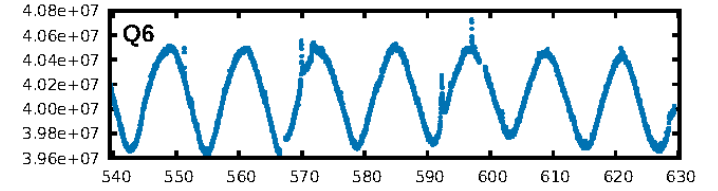
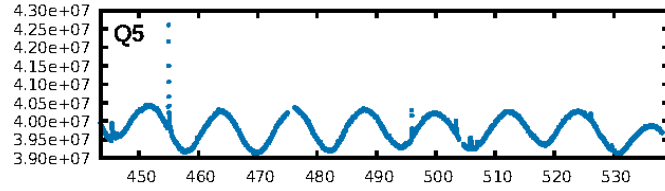
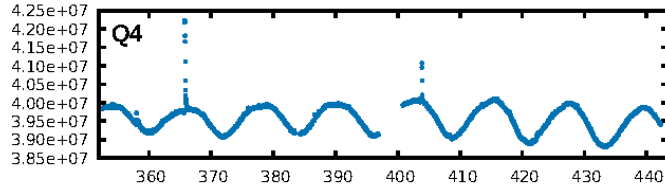
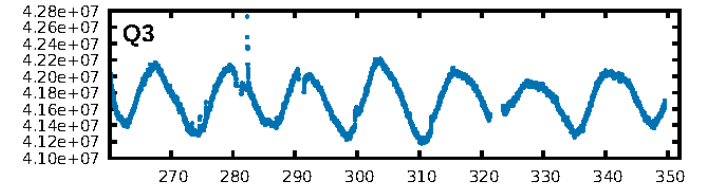
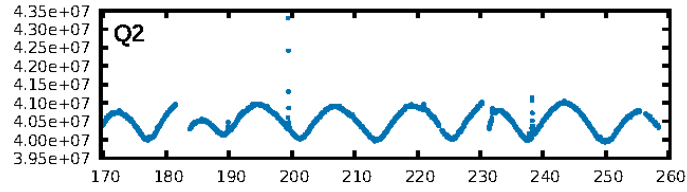
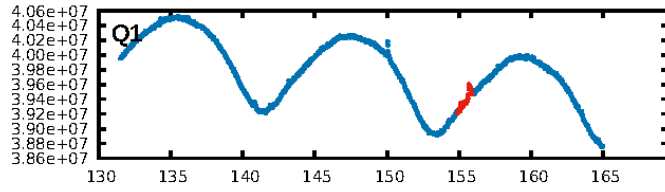
DV Fit Results:

Period = 587.31228 [0.00862] d
Epoch = 155.4021 [0.0120] BKJD
Rp/R* = 0.0244 [0.0170]
a/R* = 337.48 [1101.10]
b = 0.48 [5.25]
Seff = 0.25 [0.05]
Teq = 180 [9] K
Rp = 1.78 [1.25] Re
a = 1.1870 [0.1077] AU
Ag = 74757.68 [110206.86] [0.68σ]
Teffp = 4608 [1698] K [2.61σ]

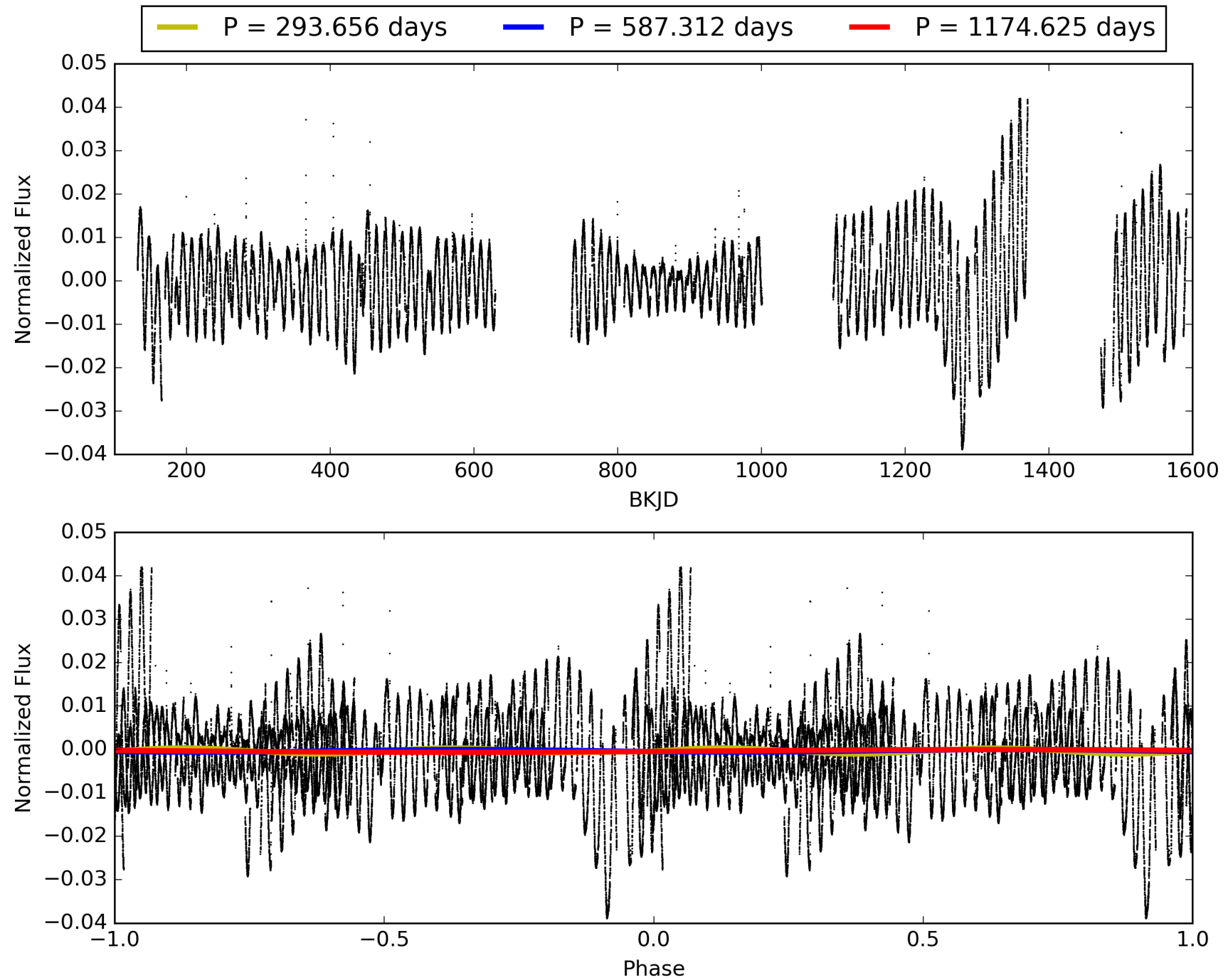
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.38σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 97.9%
Bootstrap-pfa: 2.94e-11
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 10.59
Centroid-sig: 36.8%
Centroid-so: 0.766 arcsec [0.84σ]
OotOffset-rm: 0.460 arcsec [0.96σ]
KicOffset-rm: 0.255 arcsec [0.52σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009603367-05, PDC Light Curves

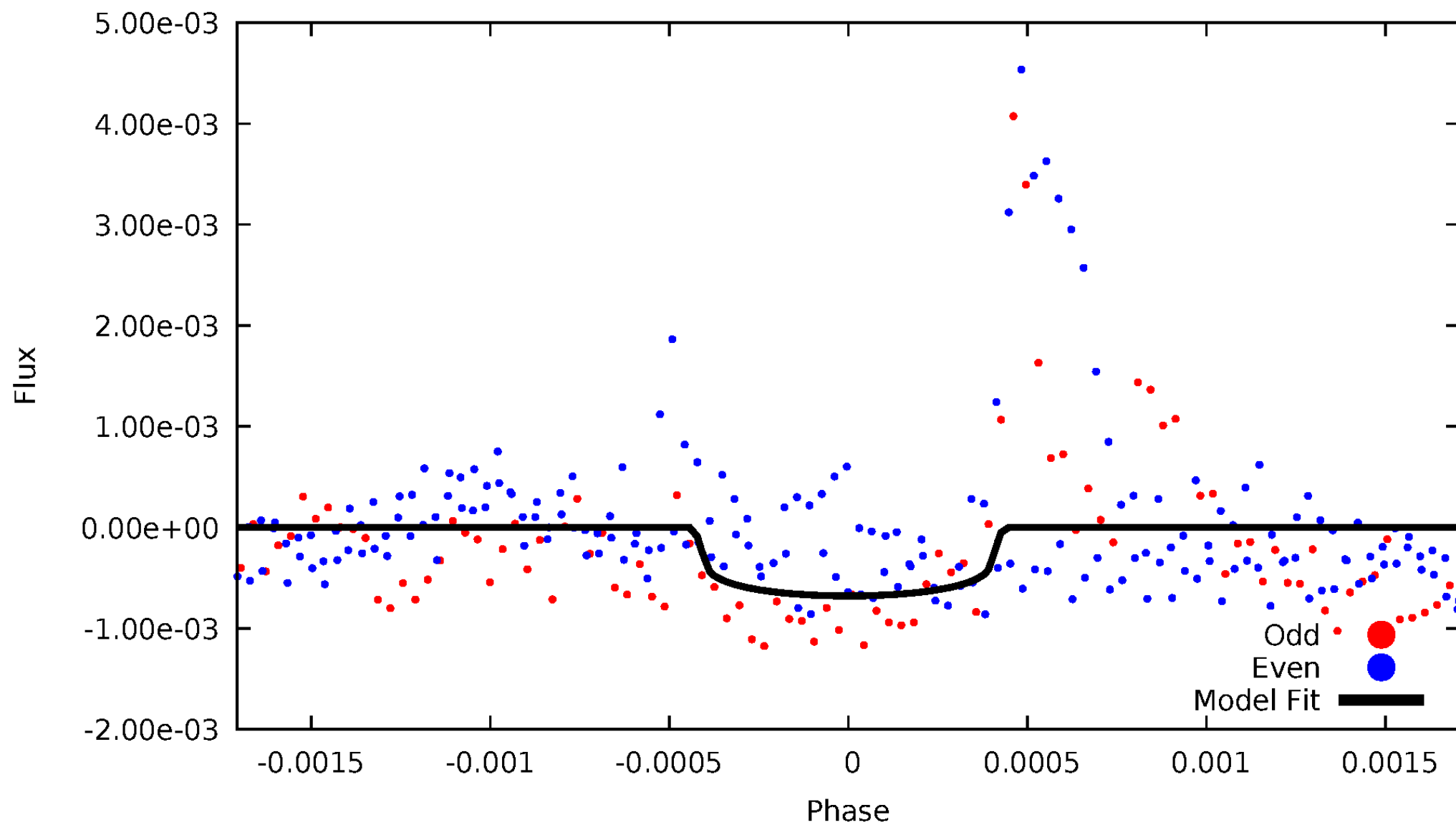


TCE 009603367-05



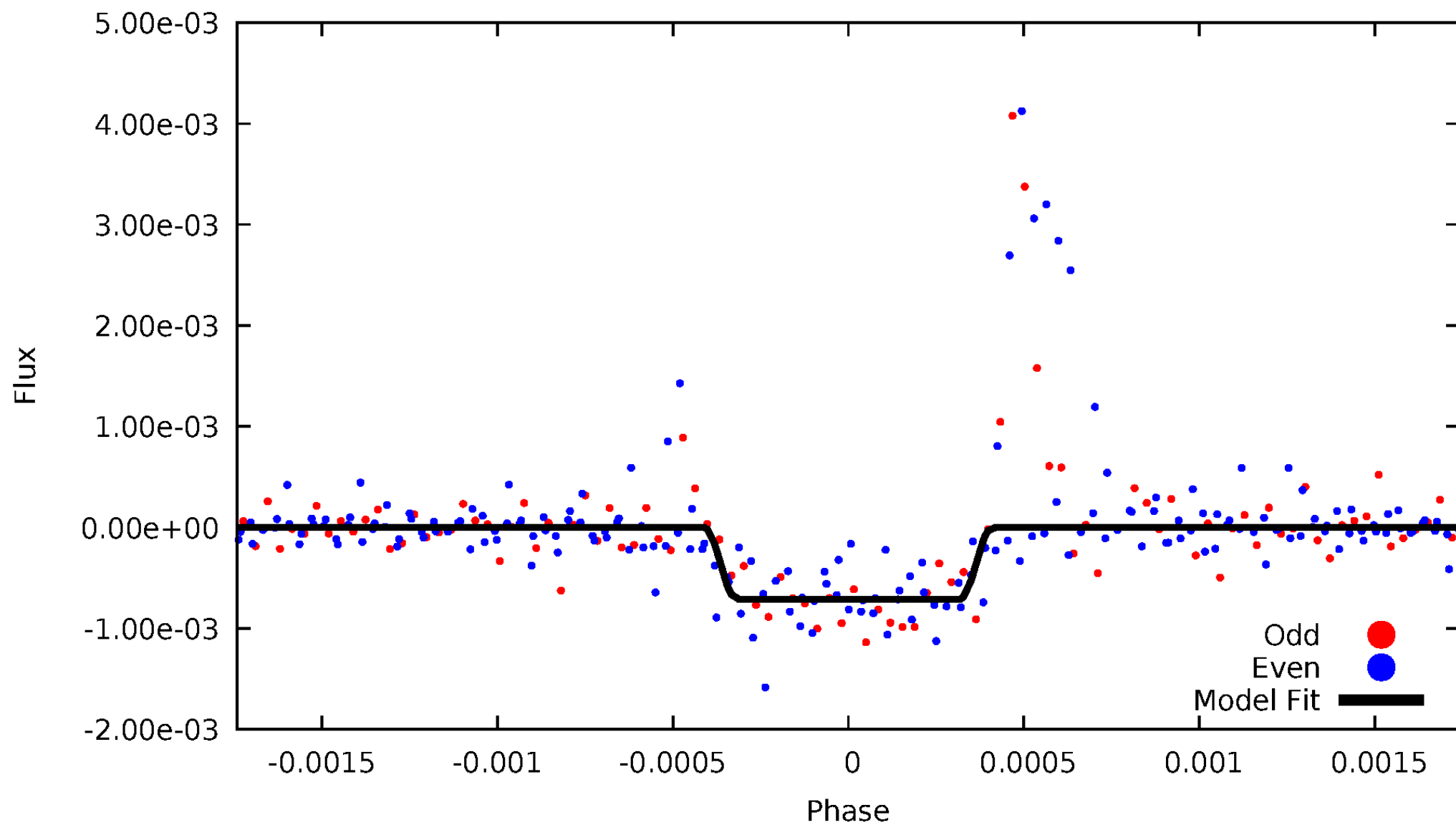
DV Odd/Even

TCE 009603367-05



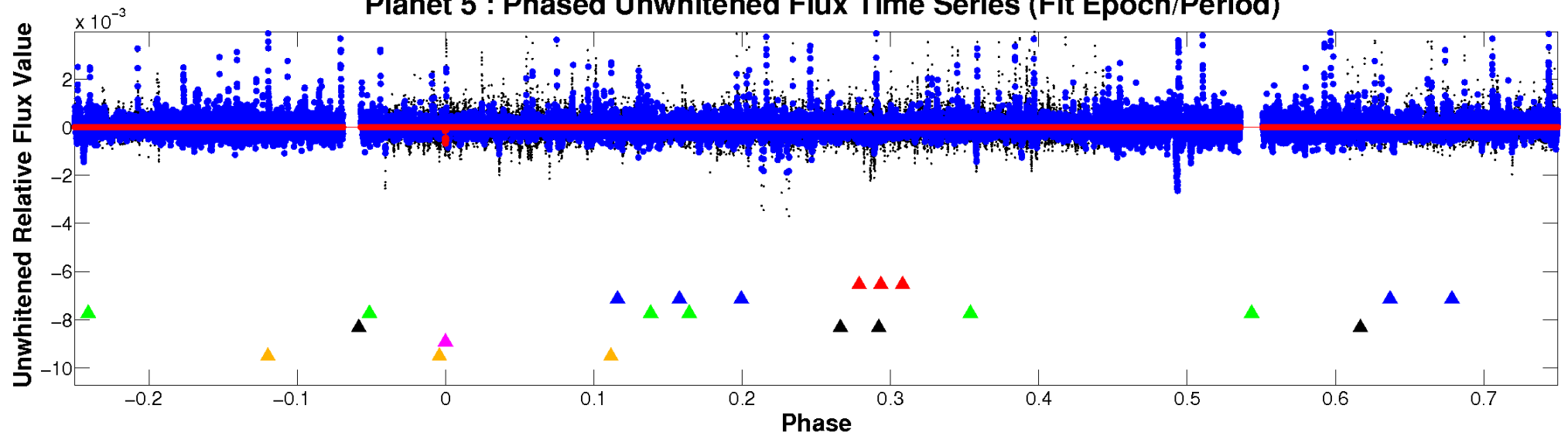
ALT Odd/Even

TCE 009603367-05

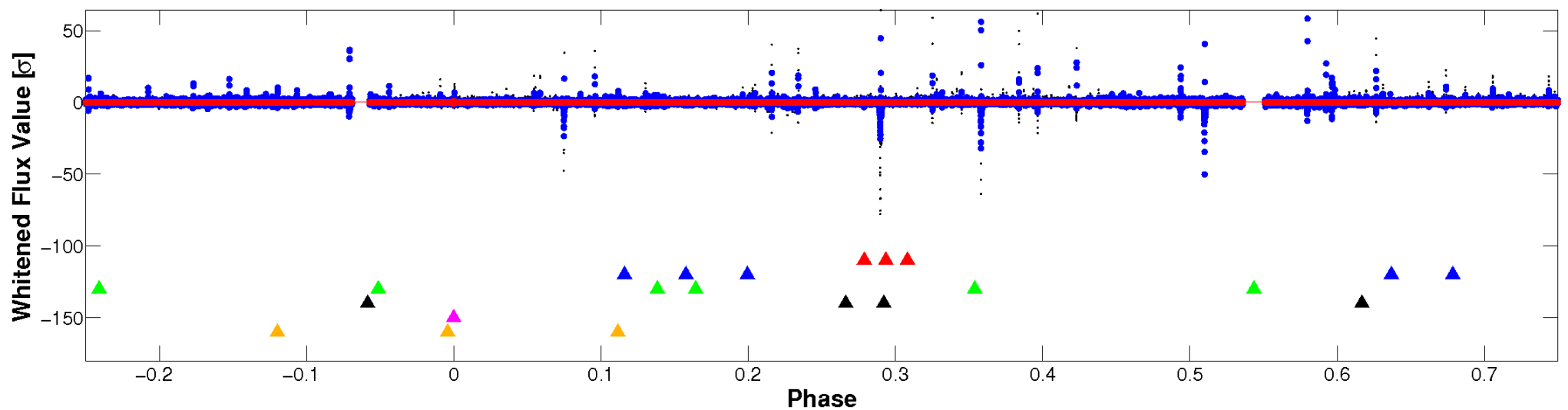


Non-Whitened Vs. Whitened Light Curve

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

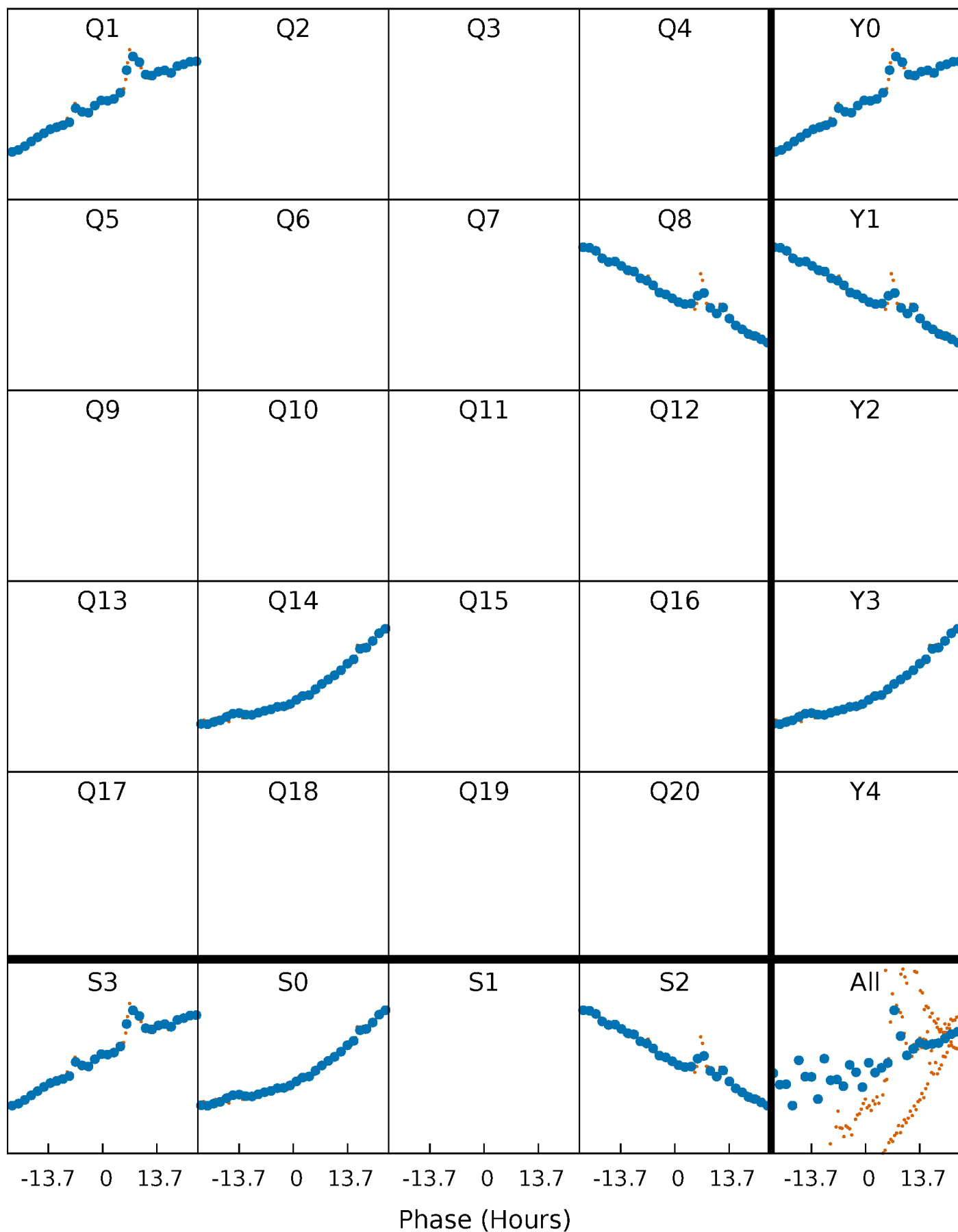


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



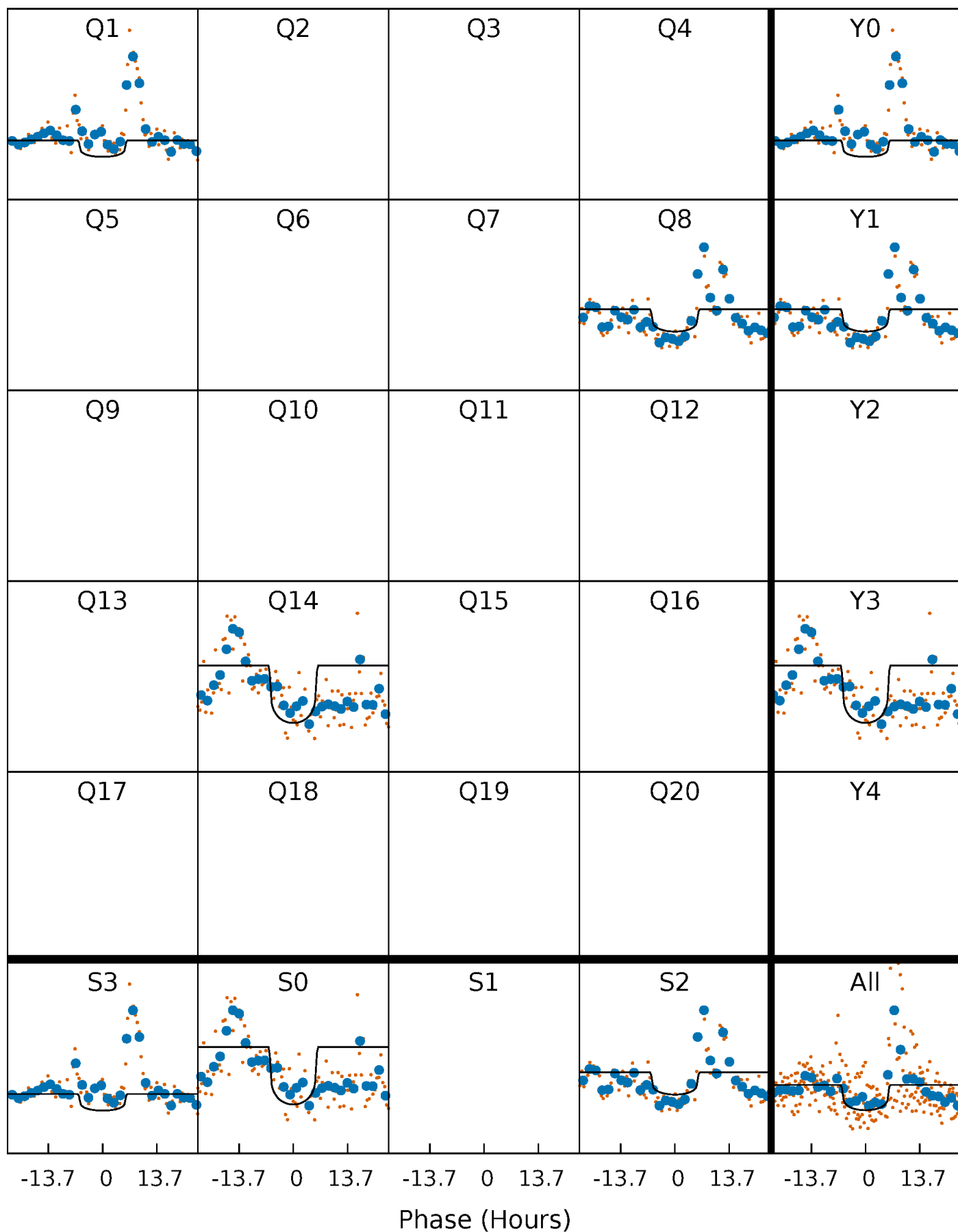
PDC Quarter-Phased Transit Curves

TCE 009603367-05 $P=587.312281$ Days $T_0=155.402136$ (BKJD)



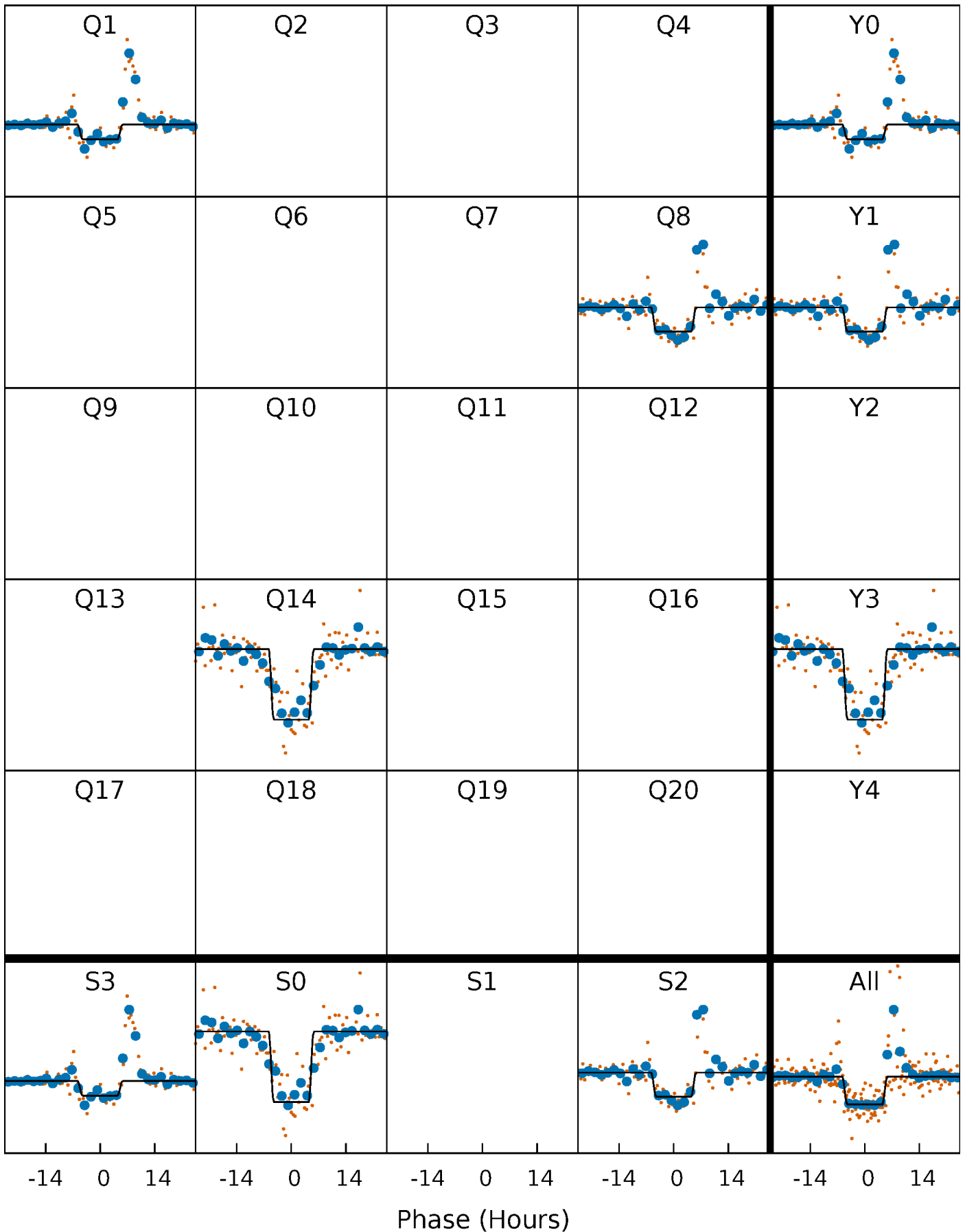
DV Quarter-Phased Transit Curves

TCE 009603367-05 $P=587.312281$ Days $T_0=155.402136$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

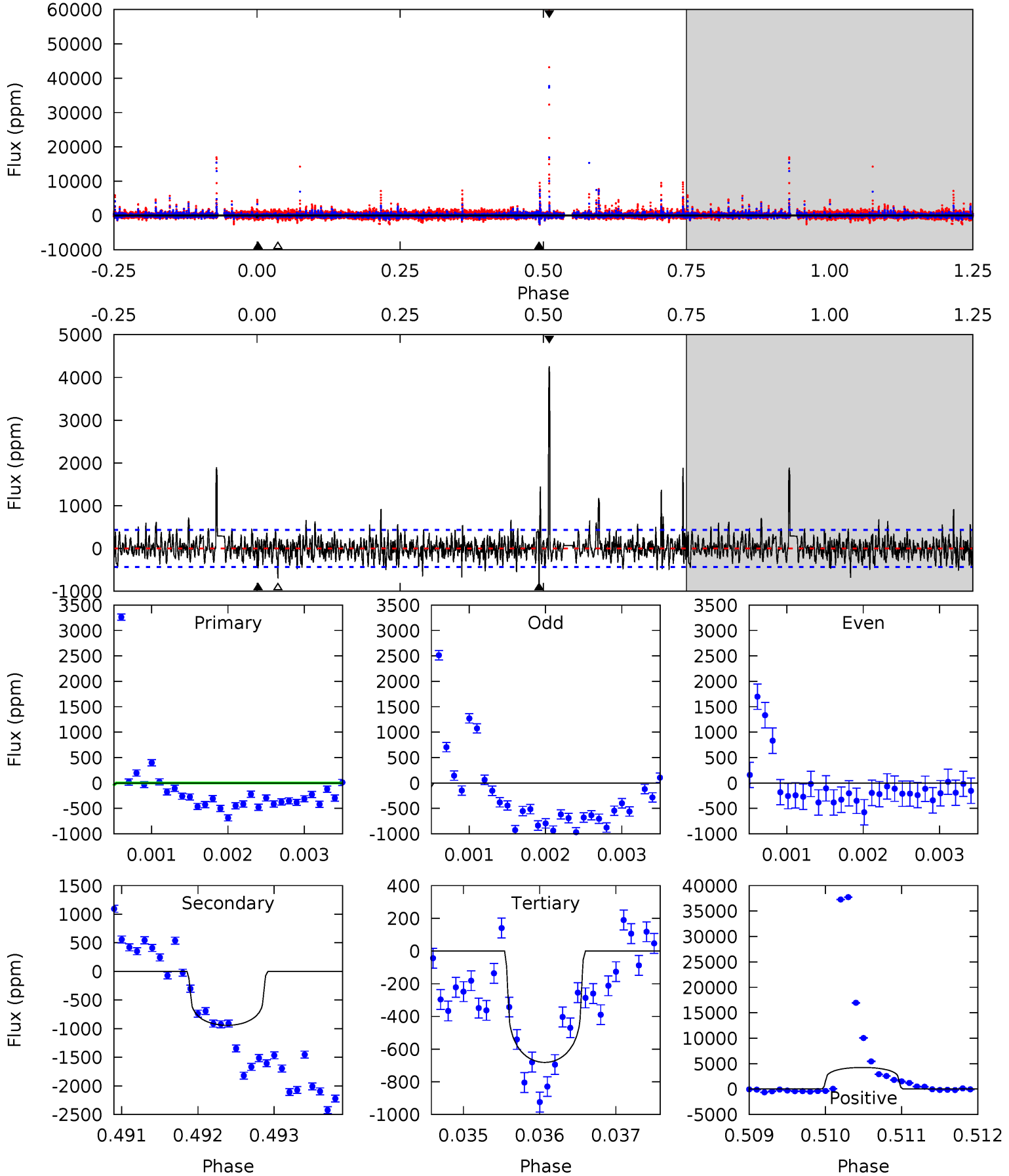
TCE 009603367-05 $P=587.315004$ Days $T_0=155.395469$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-05, P = 587.312281 Days, E = 155.402136 Days

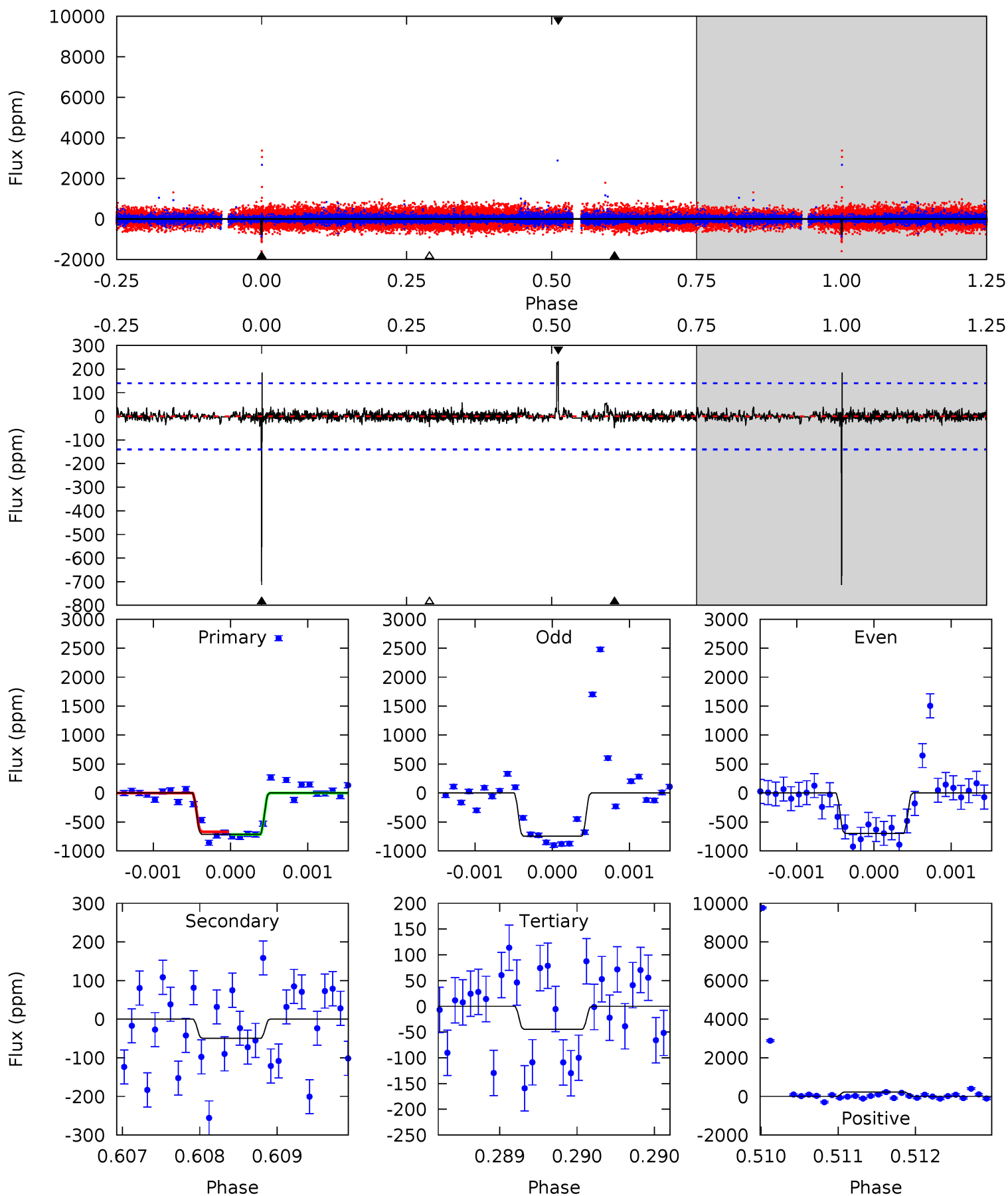
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.80	11.9	8.62	53.8	5.48	3.34	3.22	-2.82	-48.0	3.29	-41.9	2.93	0.82	0.82	0.64



Alt Model-Shift Uniqueness Test

009603367-05, P = 587.315004 Days, E = 155.395469 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.0	1.93	1.74	9.15	5.48	3.34	0.54	26.2	18.8	0.20	-7.22	0.82	0.96	0.25	0.88



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-941 ± 79	$1.92^{+1.18}_{-1.11}$	251^{+10}_{-9}	5879^{+3896}_{-1175}	$203400^{+895994}_{-126583}$
Alt.	-49 ± 26	$2.01^{+1.26}_{-1.10}$	251^{+11}_{-9}	3242^{+999}_{-487}	8741^{+33348}_{-6081}

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

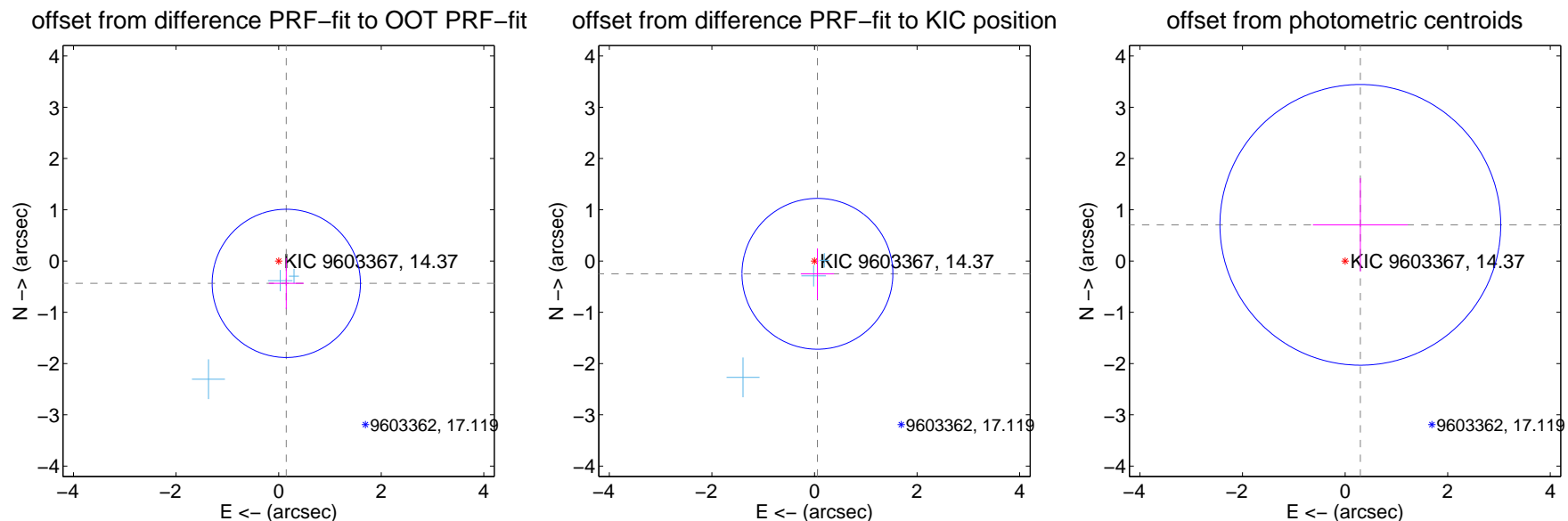
DV Centroid Data

Supplemental centroid analysis for 009603367-05. Kepler magnitude: 14.37. Transit SNR 6.00

There are 3 quarters with good PRF difference image offsets

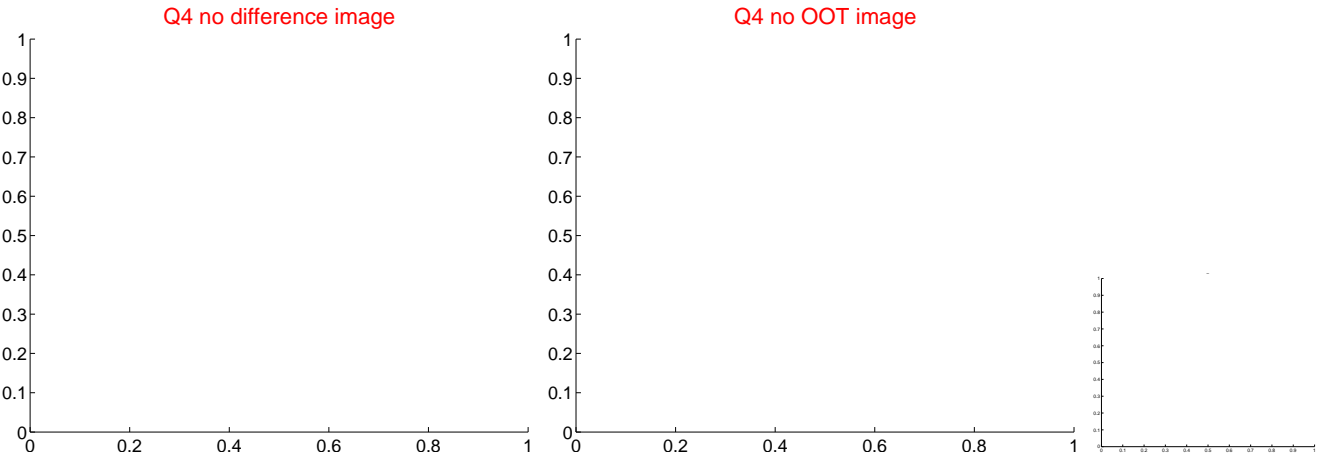
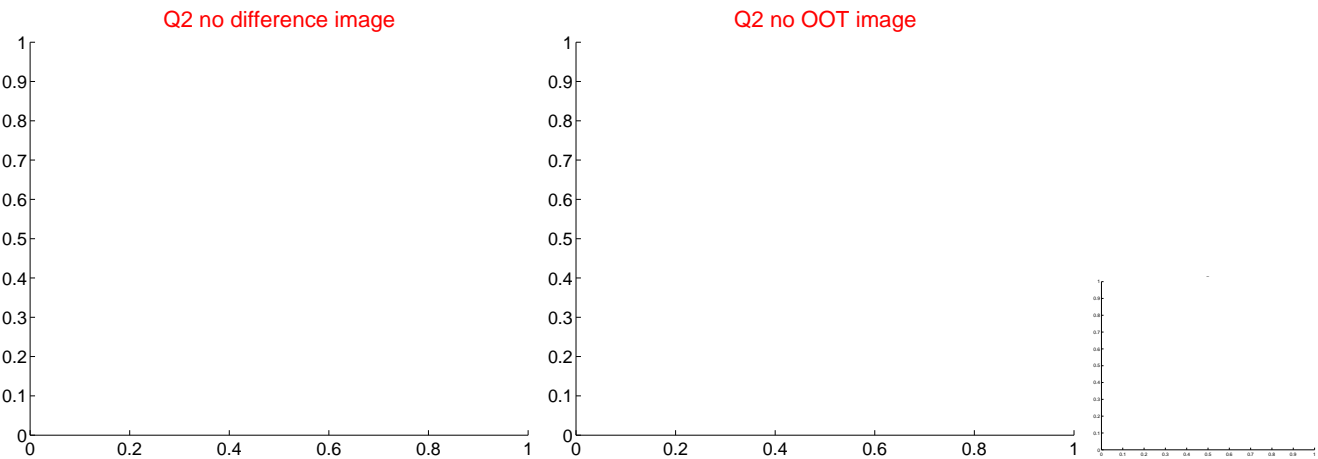
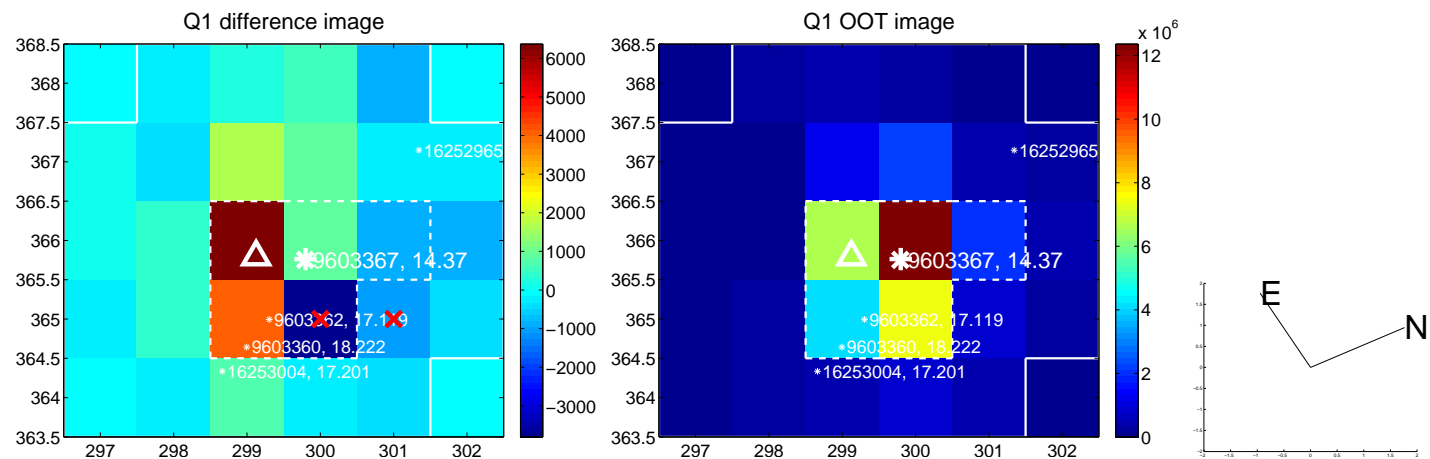
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.460 ± 0.482	0.96	-0.149 ± 0.341	-0.436 ± 0.496
PRF-fit source offset from KIC position	0.255 ± 0.490	0.52	-0.057 ± 0.325	-0.249 ± 0.497
photometric centroid source offset	0.77 ± 0.91	0.84	-0.30 ± 0.93	0.71 ± 0.91

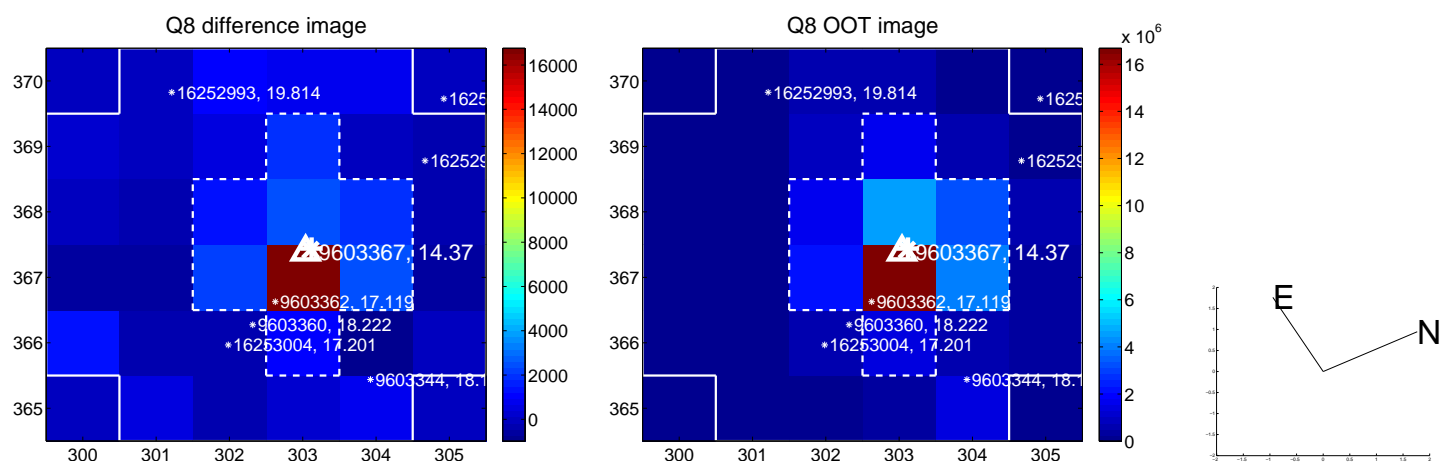
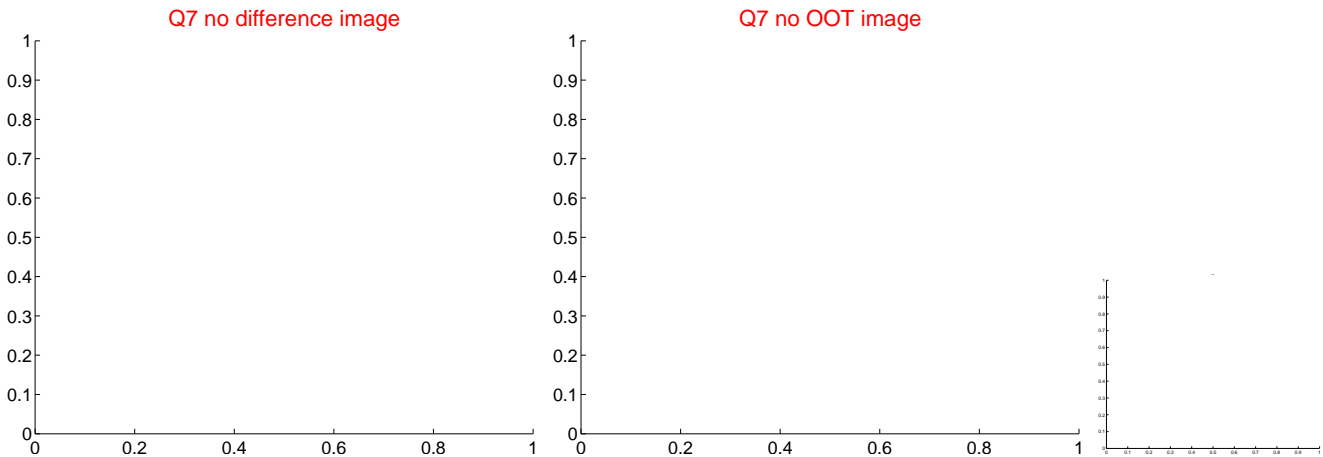
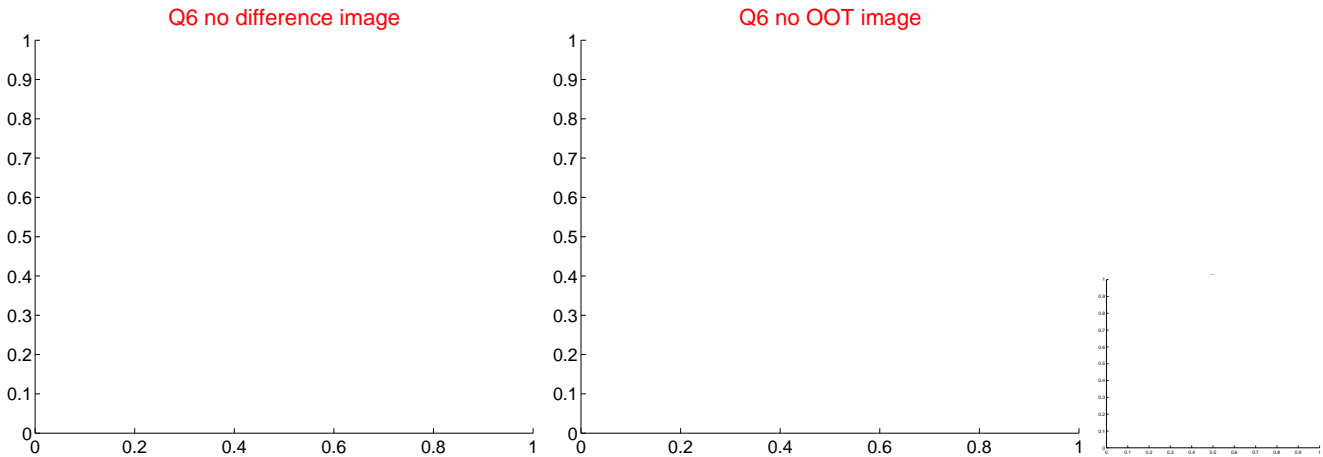
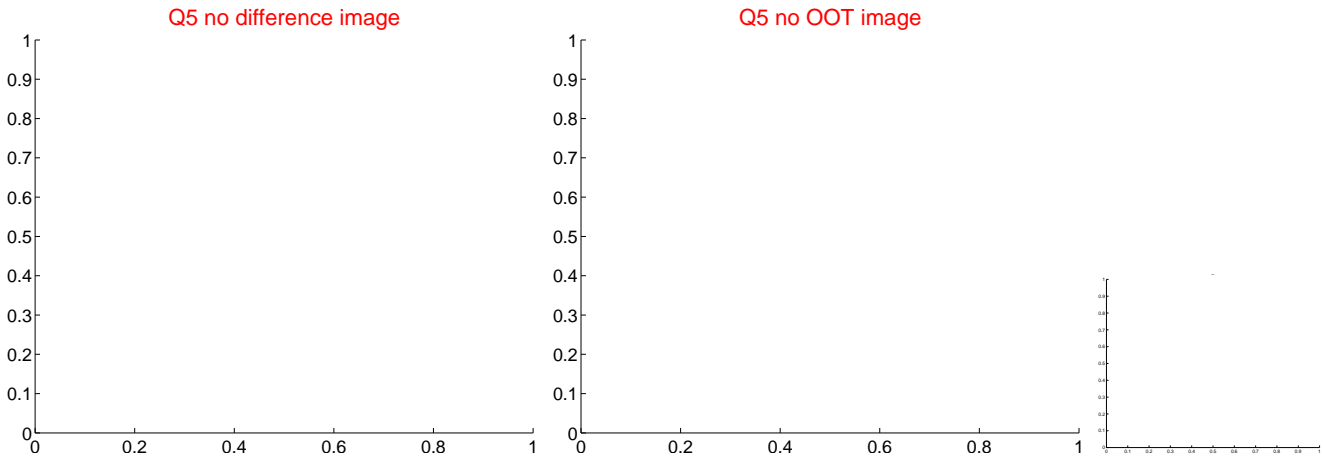


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

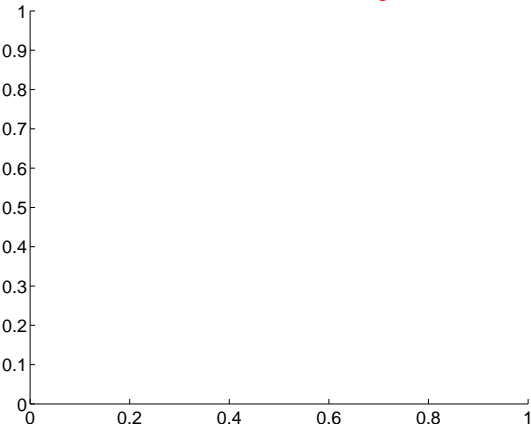


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

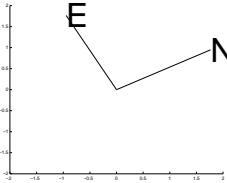
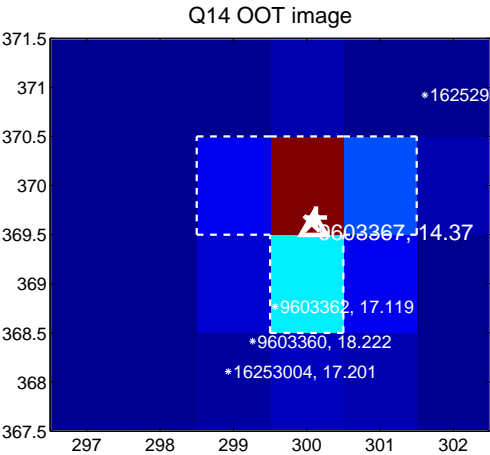
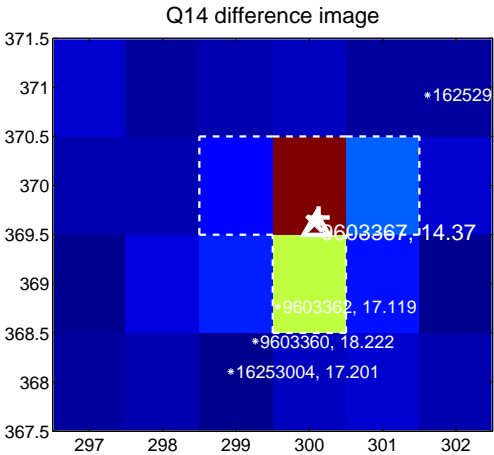
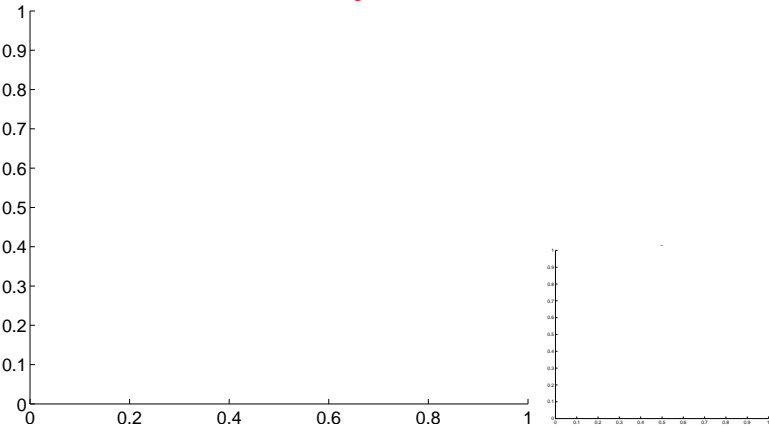


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

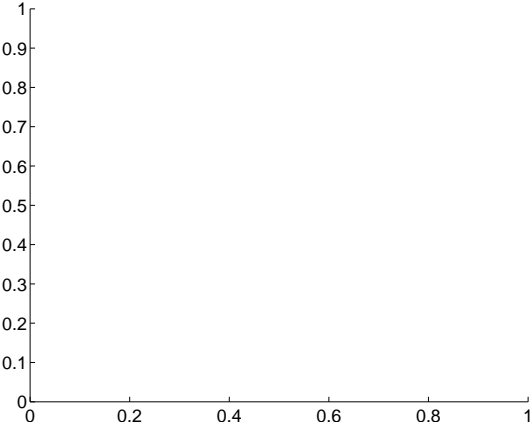
Q13 no difference image



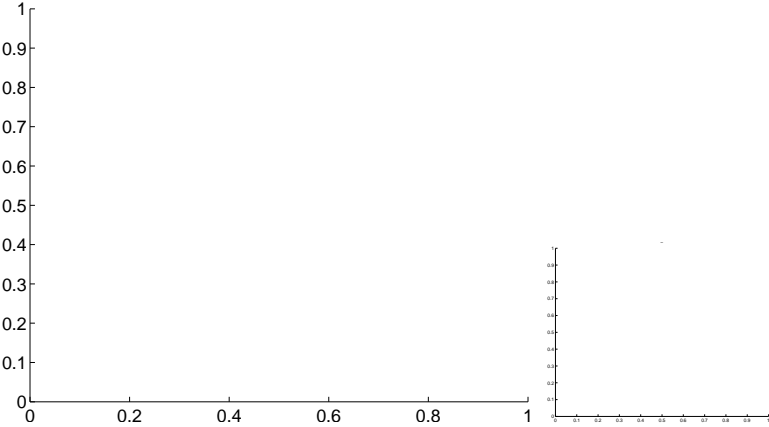
Q13 no OOT image



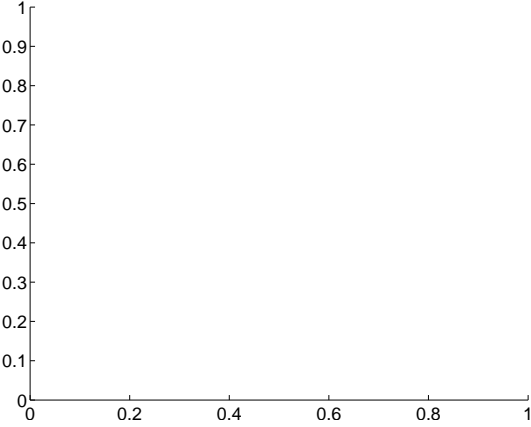
Q15 no difference image



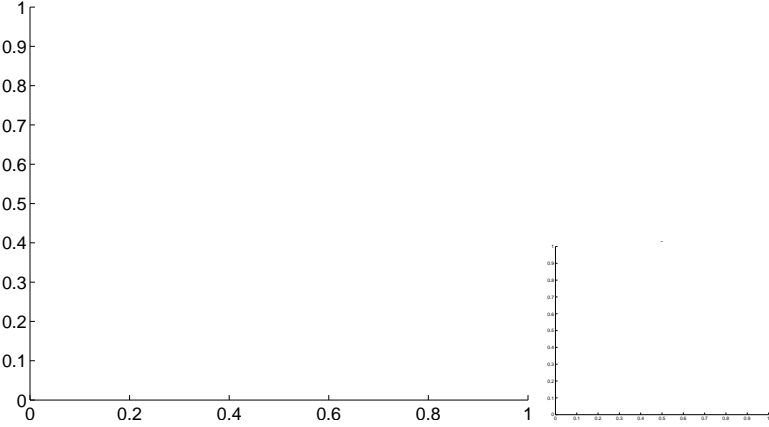
Q15 no OOT image



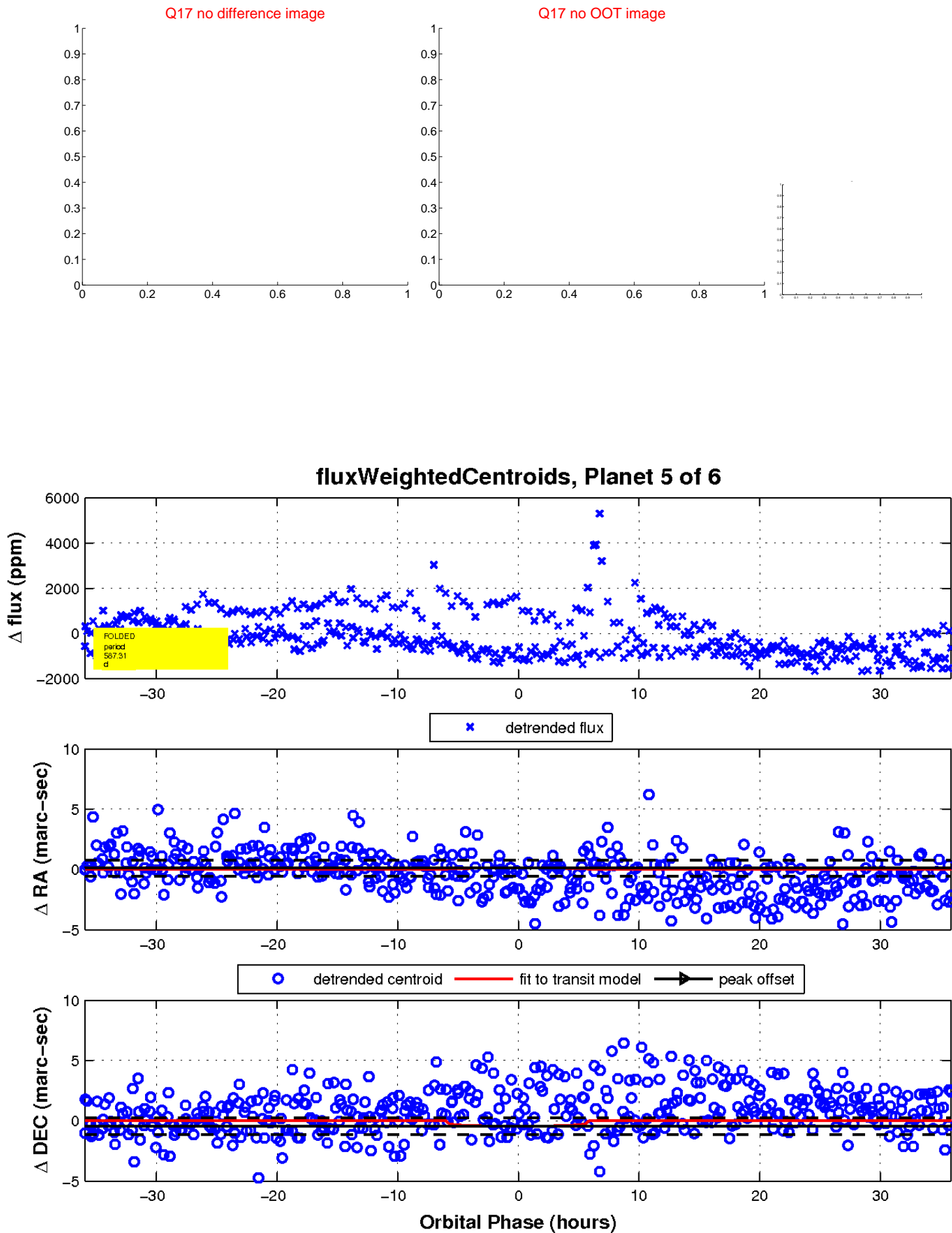
Q16 no difference image



Q16 no OOT image

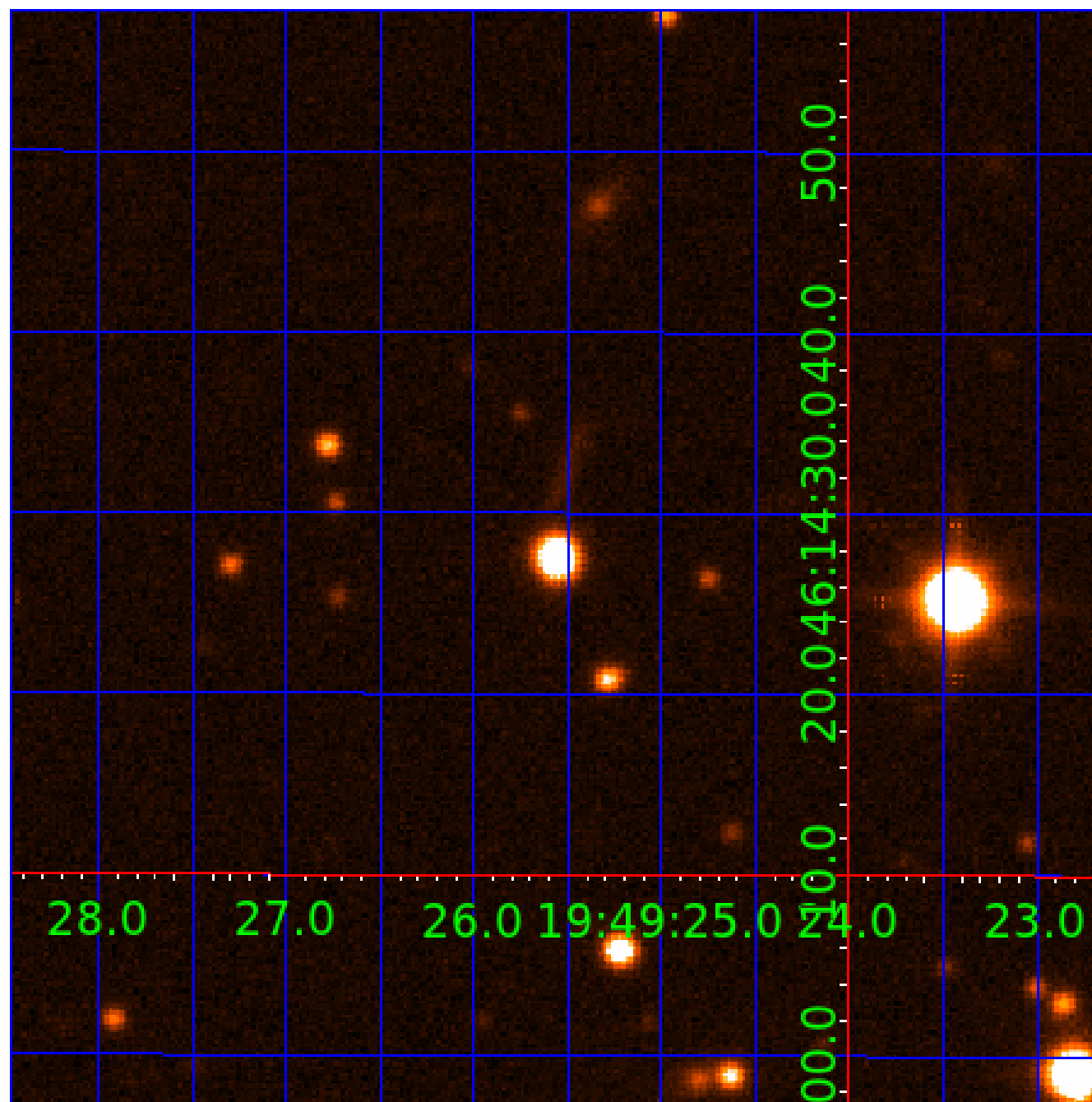


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009603367

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})
009603367-01	OBS	No	578.713572	336.392462	1324.4	11.538	16.0	10.0	0.67	5446	2.62	0.26
009603367-02	OBS	No	305.909165	223.522093	815.5	10.278	11.1	7.5	0.67	5446	2.34	0.60
009603367-03	OBS	No	237.975640	236.652446	797.2	69.960	12.6	5.1	0.67	5446	1.88	0.83
009603367-04	OBS	No	396.605031	311.777681	711.0	8.509	10.2	6.0	0.67	5446	1.89	0.42
009603367-05	OBS	No	587.312281	155.402136	679.4	12.024	13.1	6.0	0.67	5446	1.78	0.25
009603367-06	OBS	No	519.411119	220.885602	854.7	3.729	11.5	6.8	0.67	5446	2.42	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009603367-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS—HALO_GHOST
009603367-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009603367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009603367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

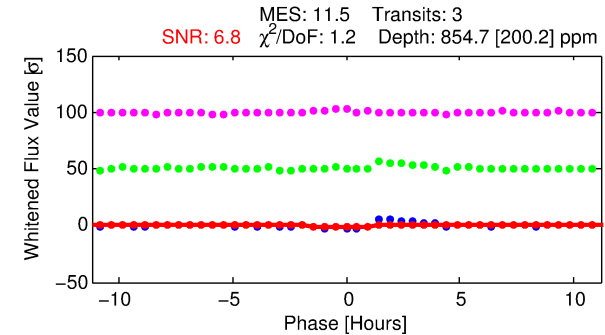
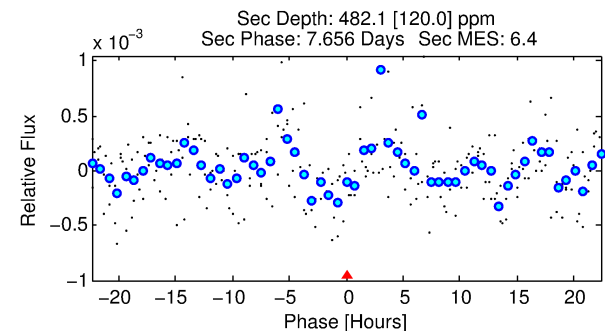
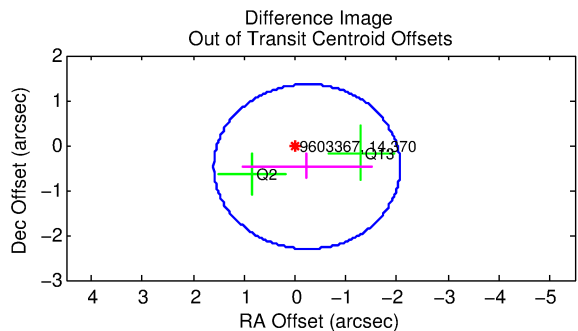
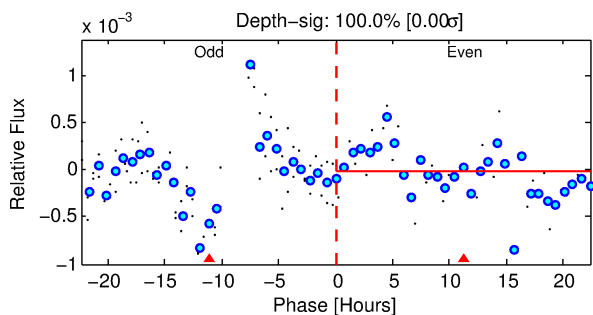
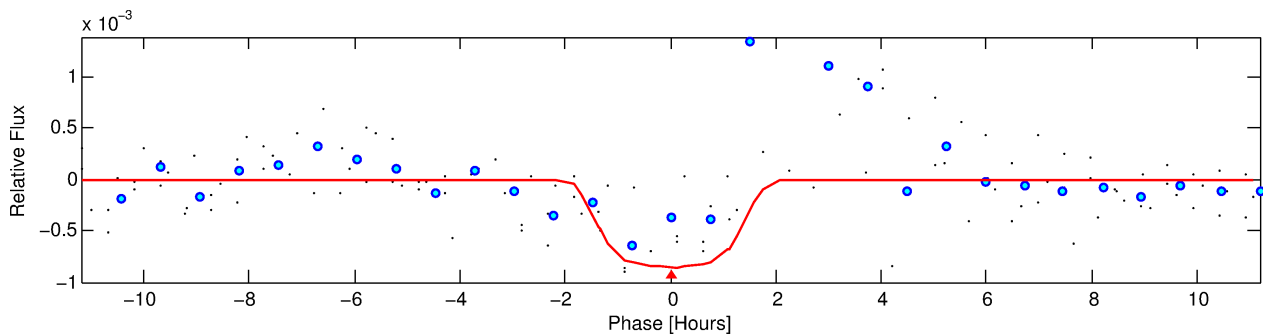
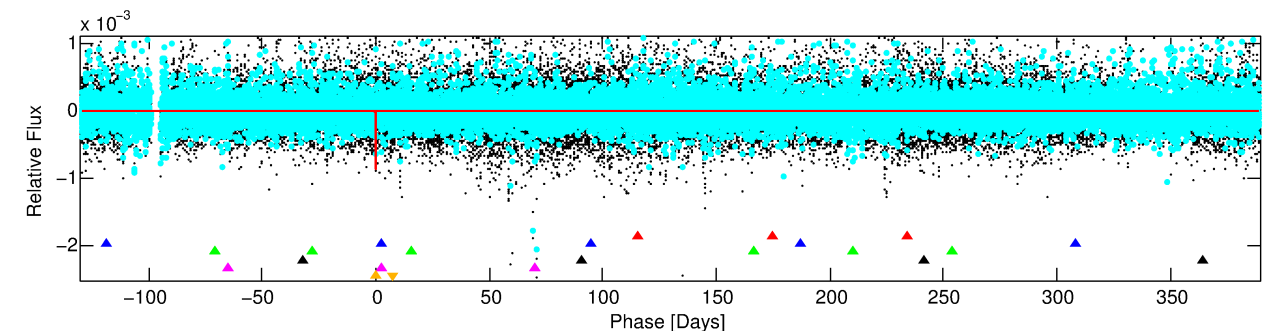
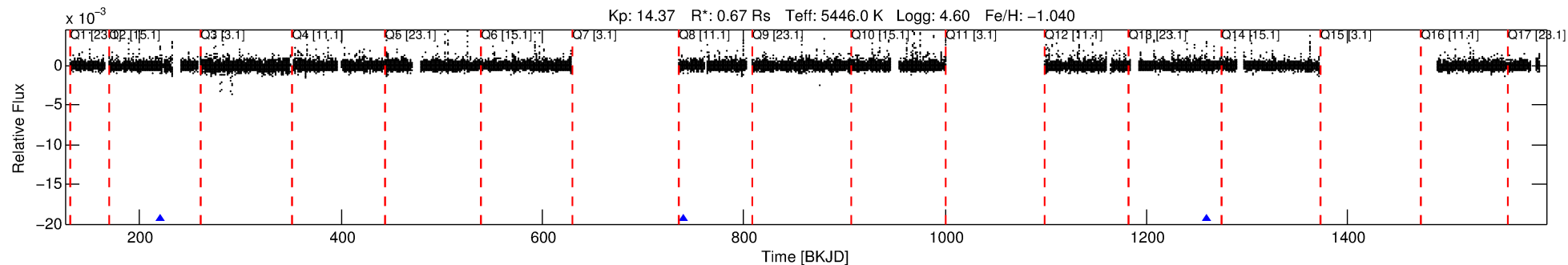
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009603367-06

No Significant Match Found

DV One-Page Summary

KIC: 9603367 Candidate: 6 of 6 Period: 519.411 d



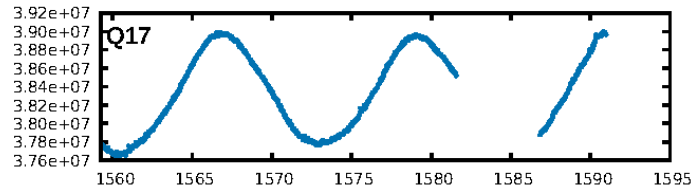
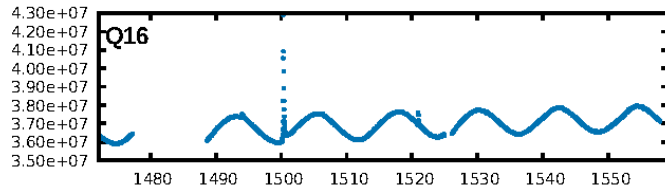
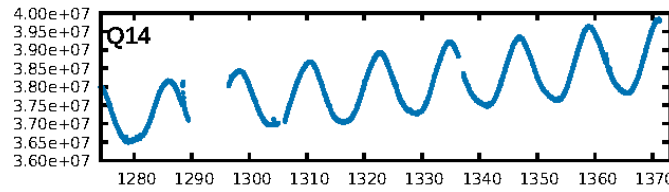
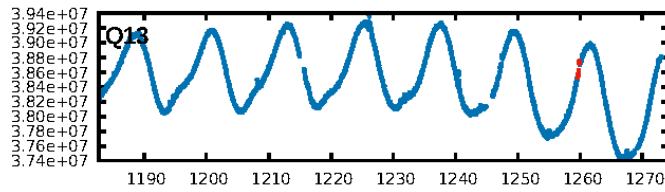
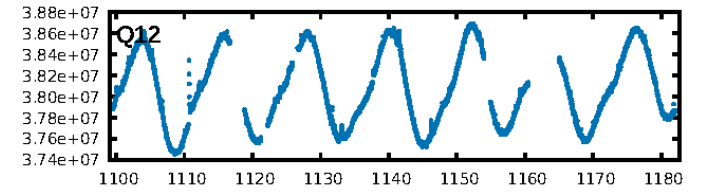
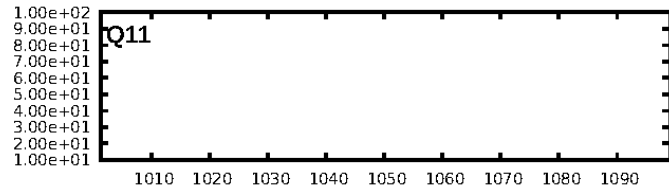
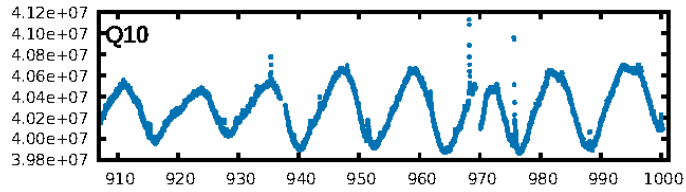
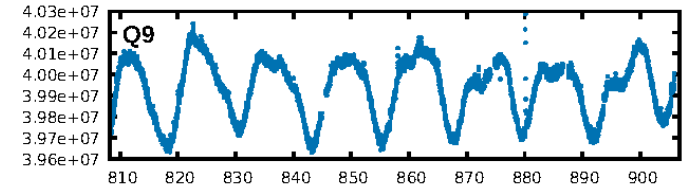
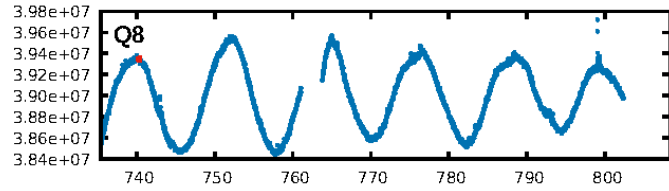
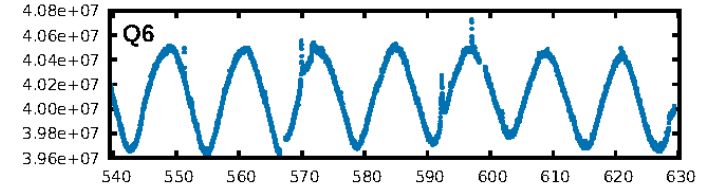
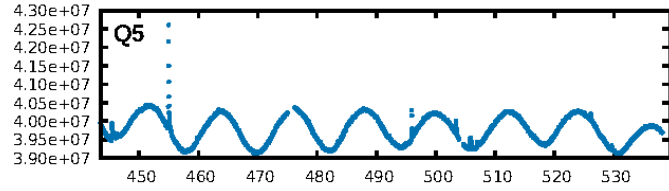
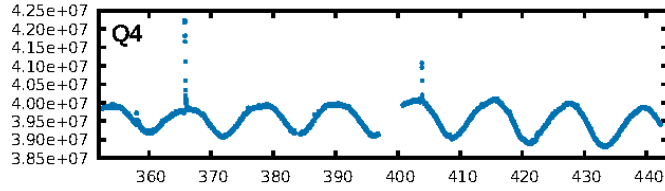
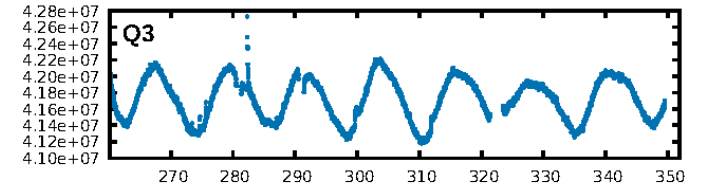
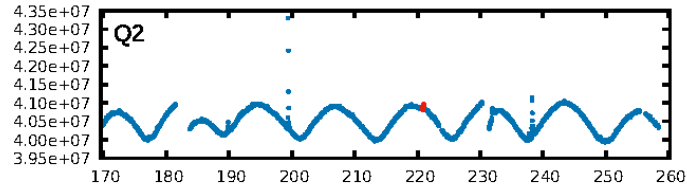
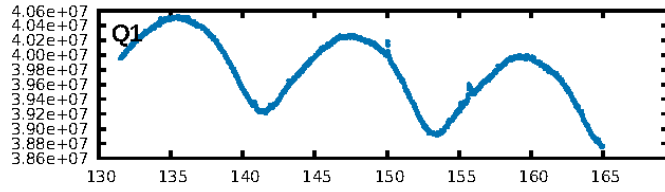
DV Fit Results:

Period = 519.41112 [0.00776] d
Epoch = 220.8856 [0.0107] BKJD
Rp/R* = 0.0331 [0.0062]
a/R* = 459.48 [252.46]
b = 0.94 [0.07]
Seff = 0.29 [0.06]
Teq = 188 [9] K
Rp = 2.42 [0.52] Re
a = 1.0937 [0.0992] AU
Ag = 54339.02 [25476.62] [2.13 σ]
Teffp = 4432 [518] K [8.20 σ]

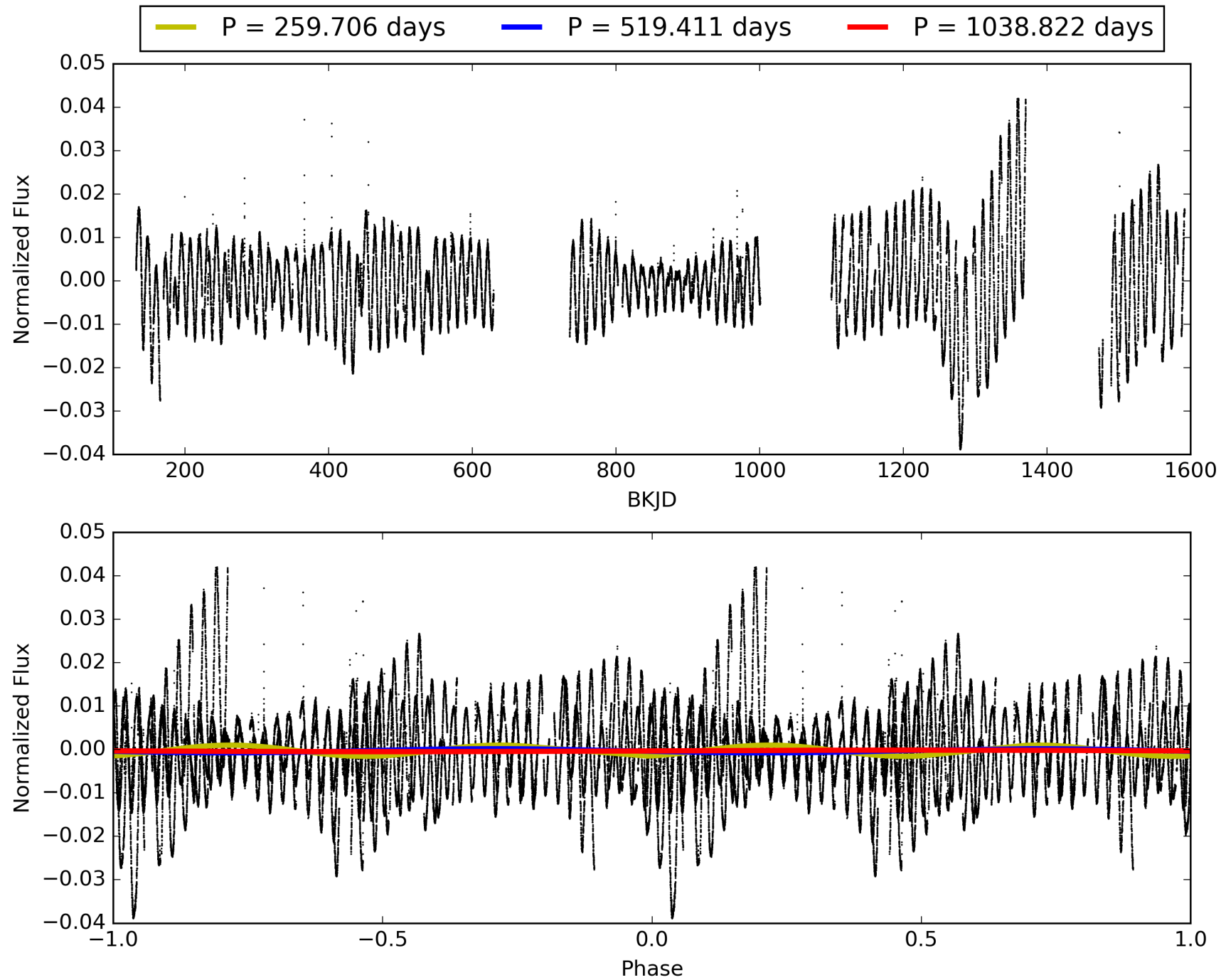
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [317.25 σ]
LongPeriod-sig: 100.0% [117.37 σ]
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 93.2%
Bootstrap-pfa: 5.75e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 19.71
Centroid-sig: 41.2%
Centroid-so: 1.206 arcsec [0.93 σ]
OotOffset-rm: 0.533 arcsec [0.87 σ]
KicOffset-rm: 0.343 arcsec [0.47 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009603367-06, PDC Light Curves

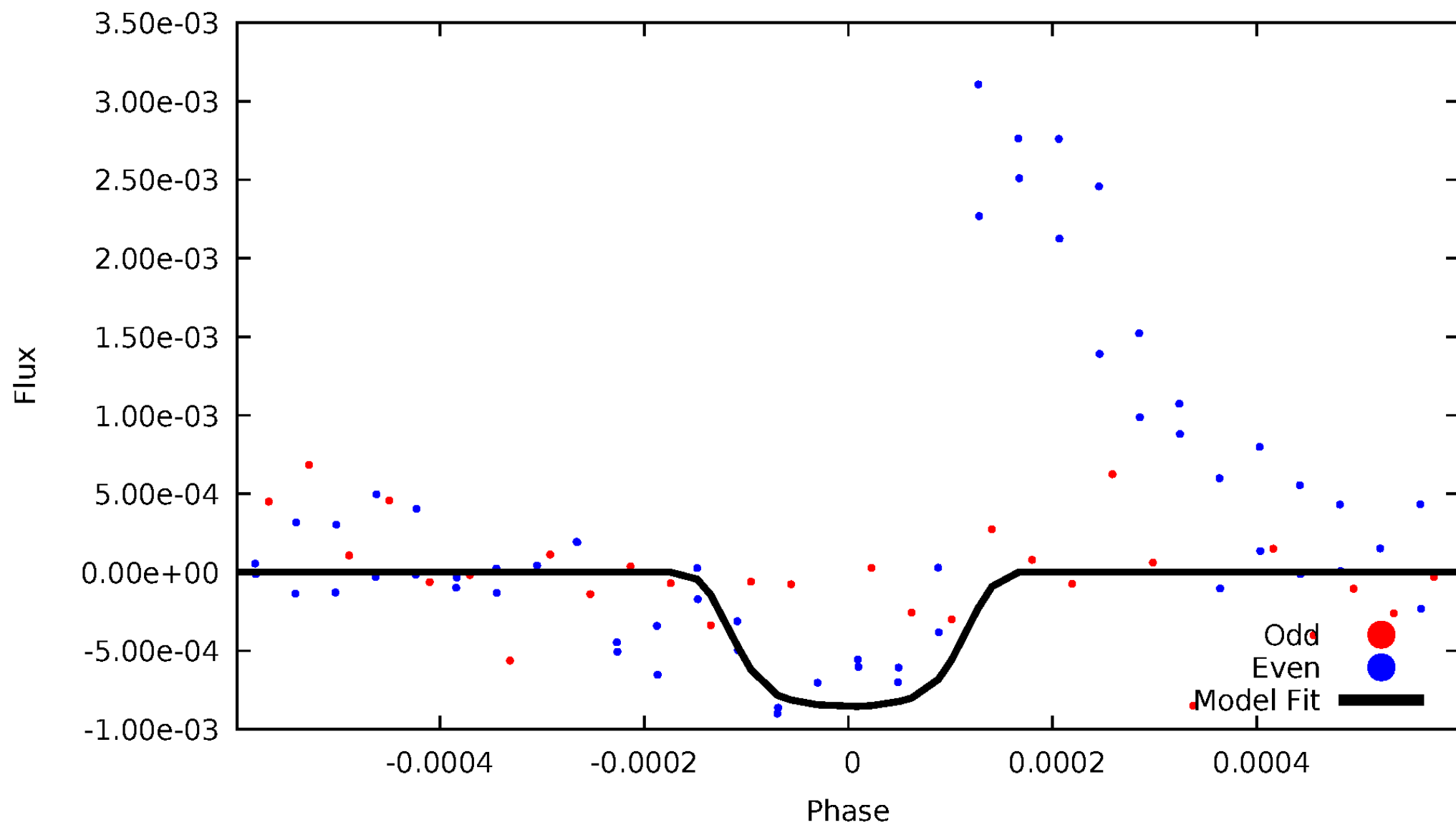


TCE 009603367-06



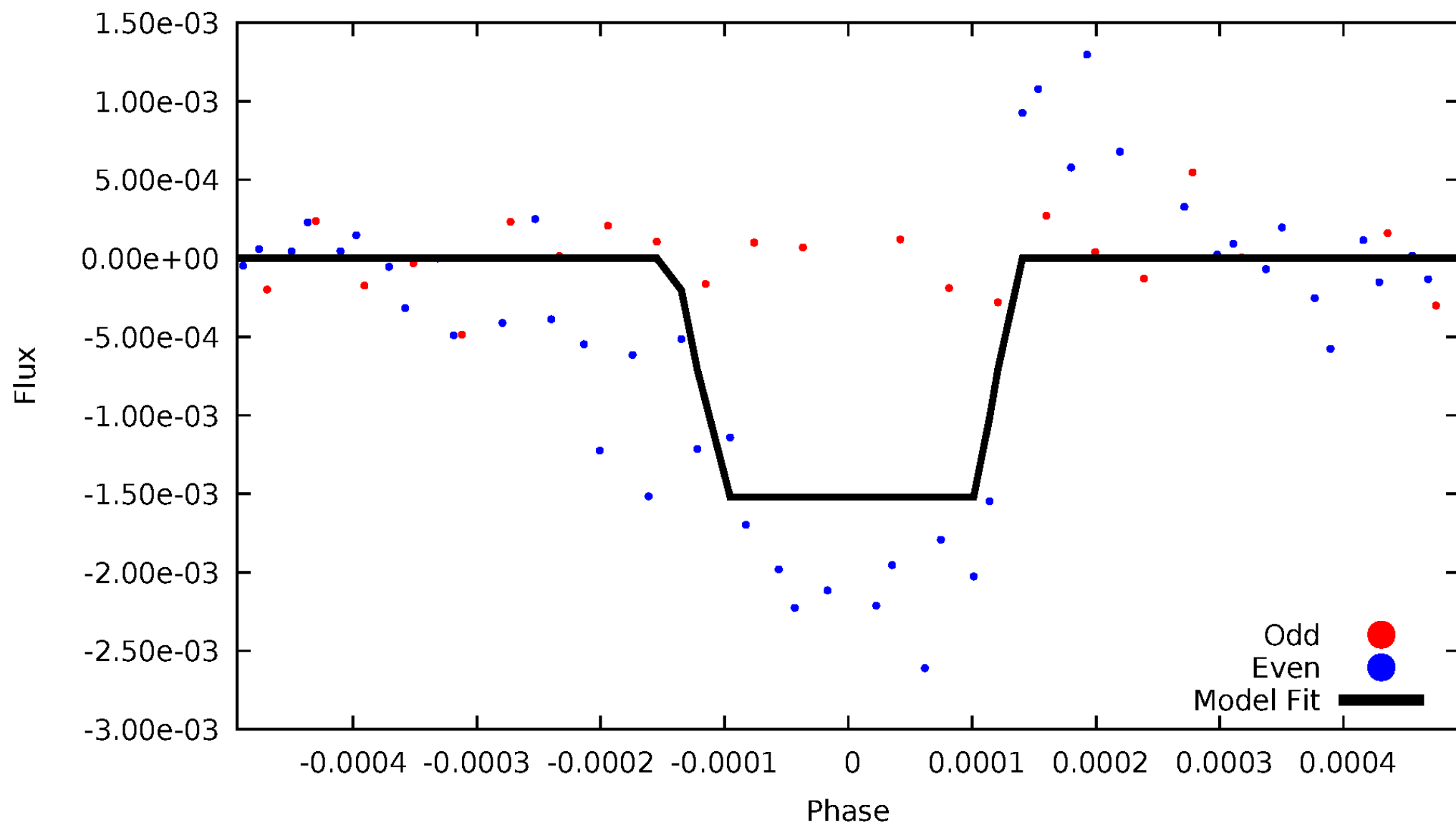
DV Odd/Even

TCE 009603367-06



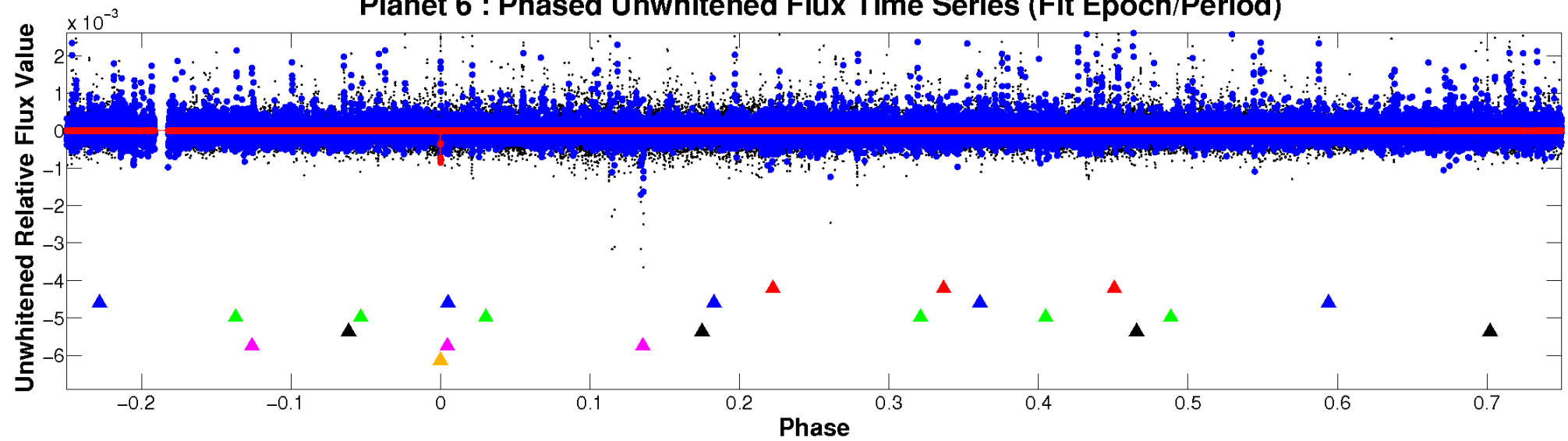
ALT Odd/Even

TCE 009603367-06

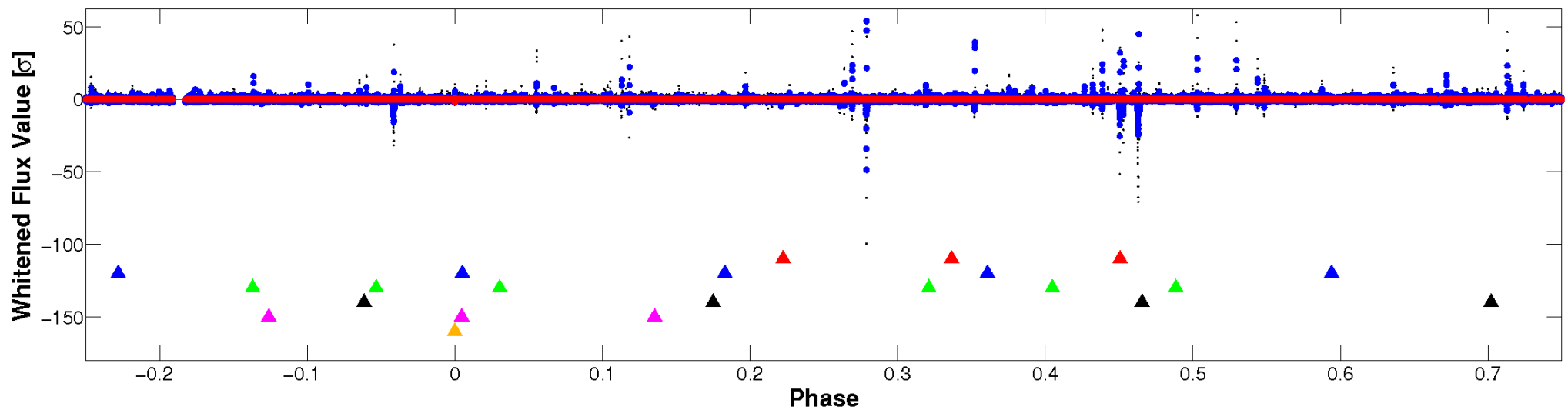


Non-Whitened Vs. Whitened Light Curve

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

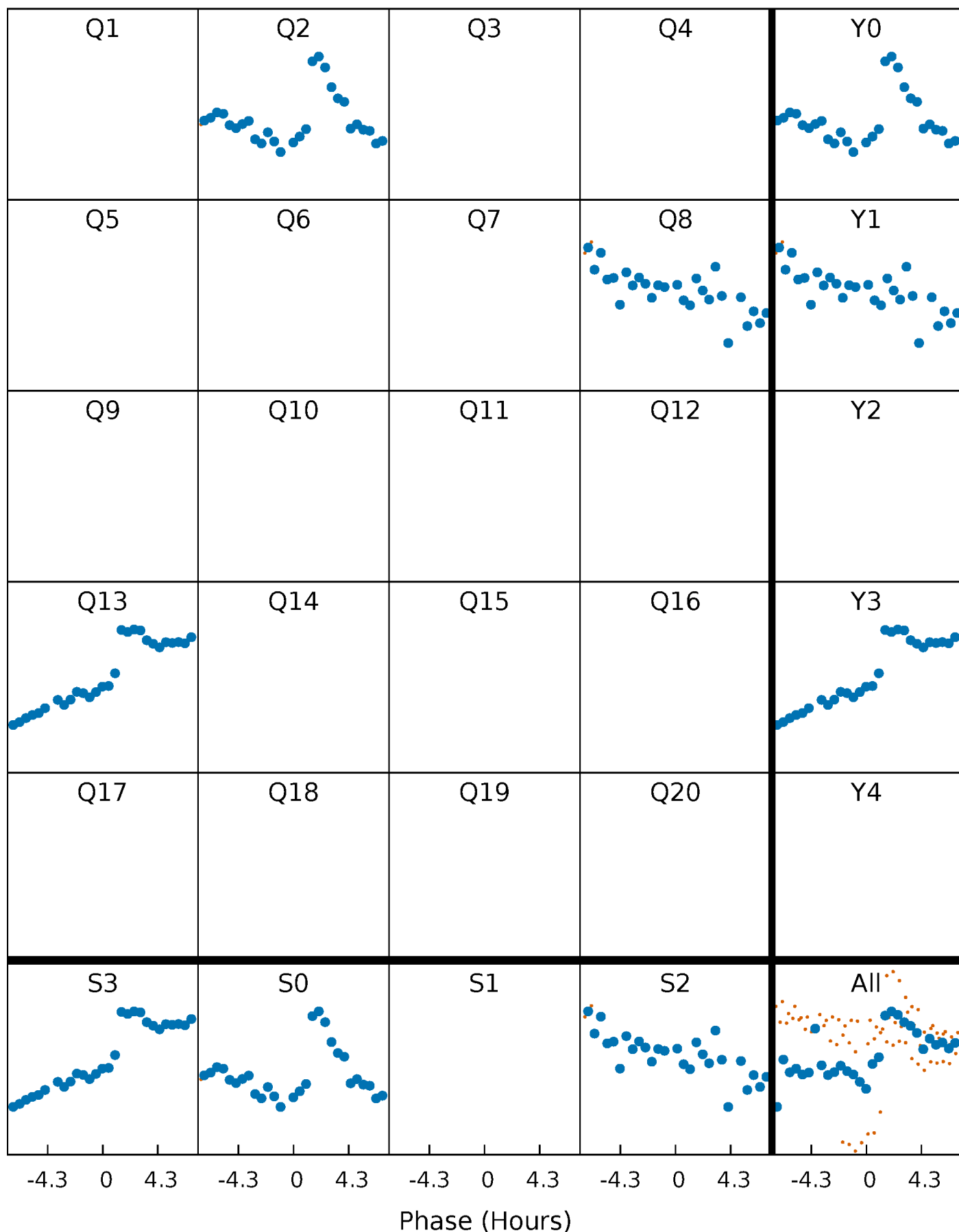


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



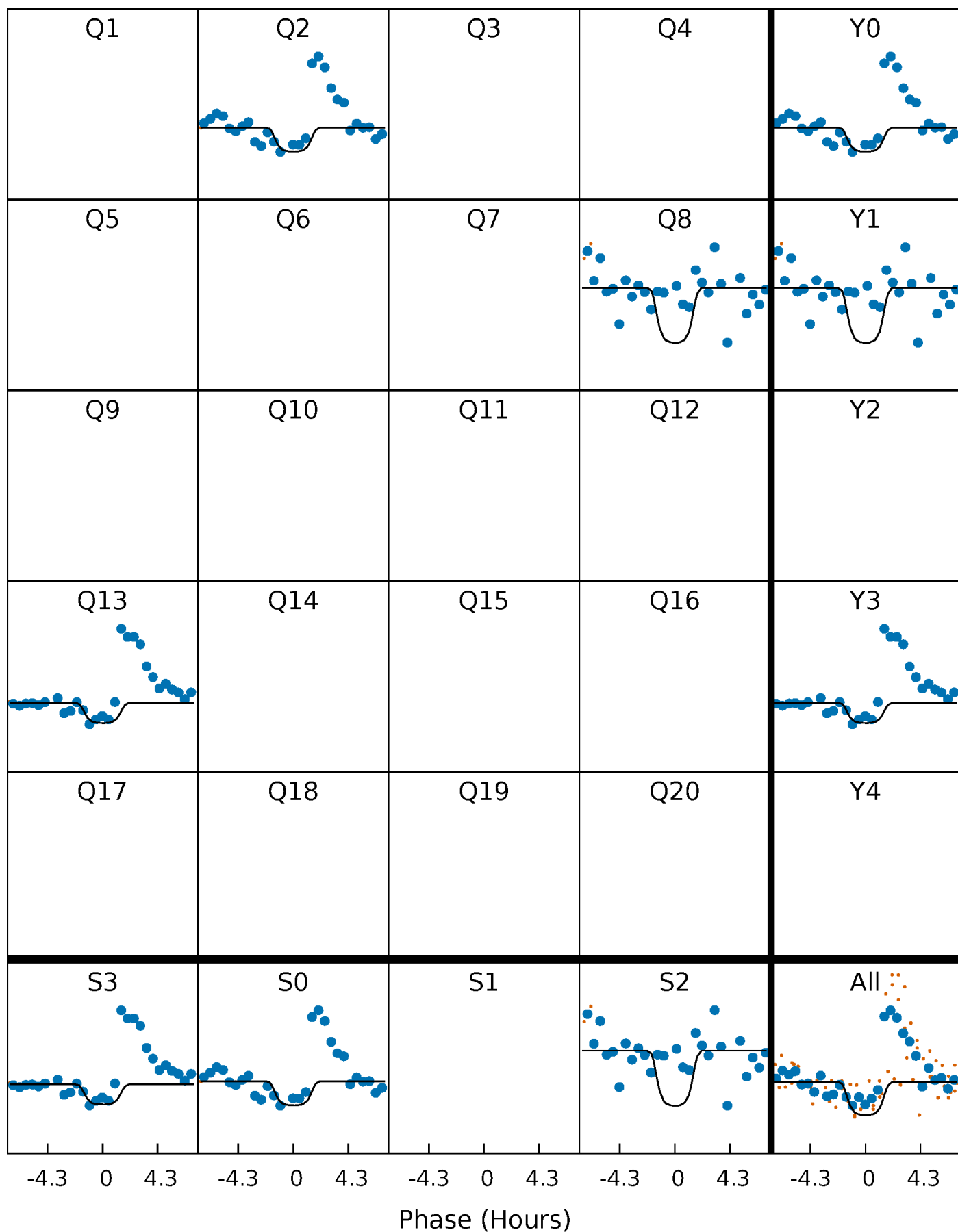
PDC Quarter-Phased Transit Curves

TCE 009603367-06 P=519.411119 Days $T_0=220.885602$ (BKJD)



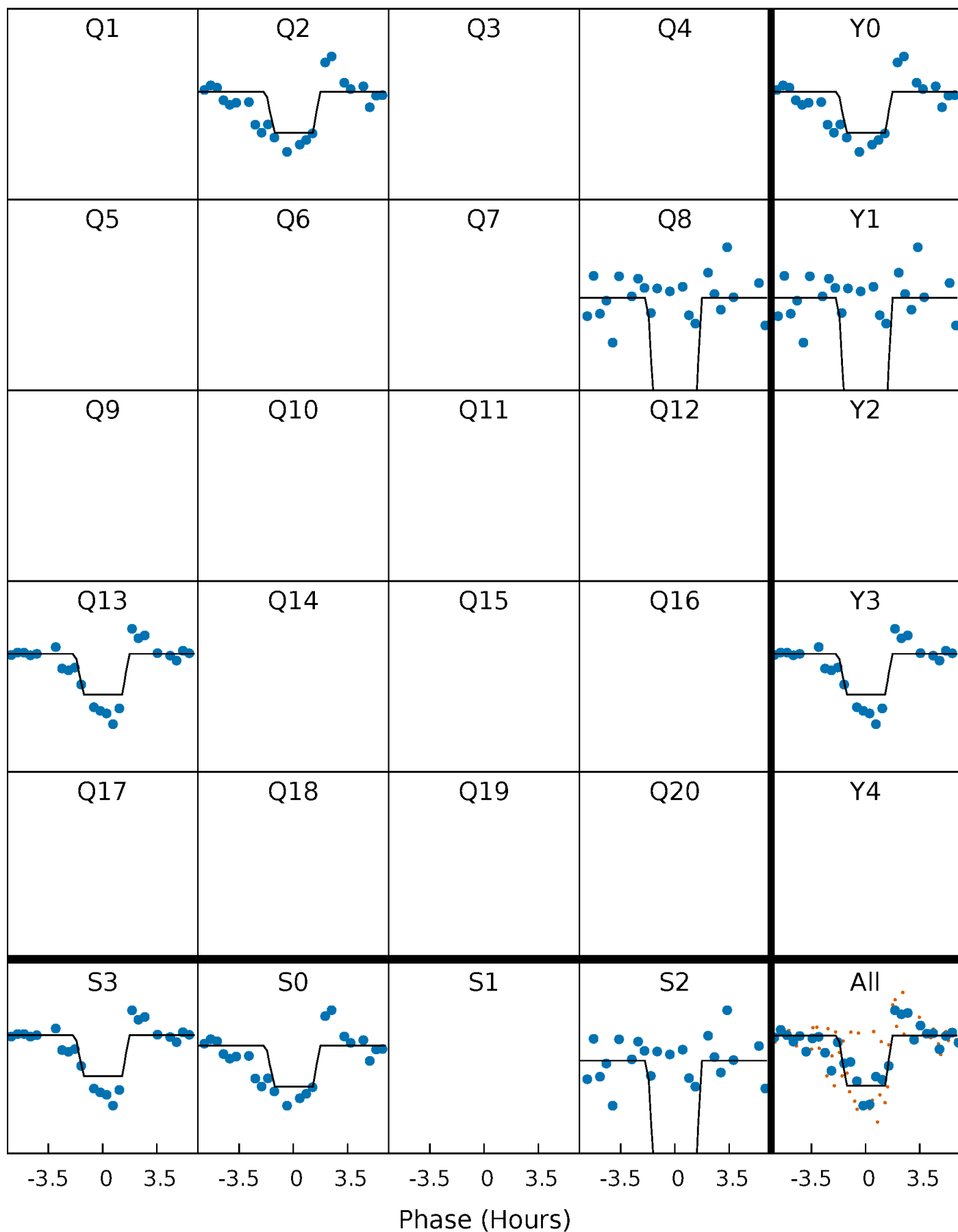
DV Quarter-Phased Transit Curves

TCE 009603367-06 P=519.411119 Days $T_0=220.885602$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

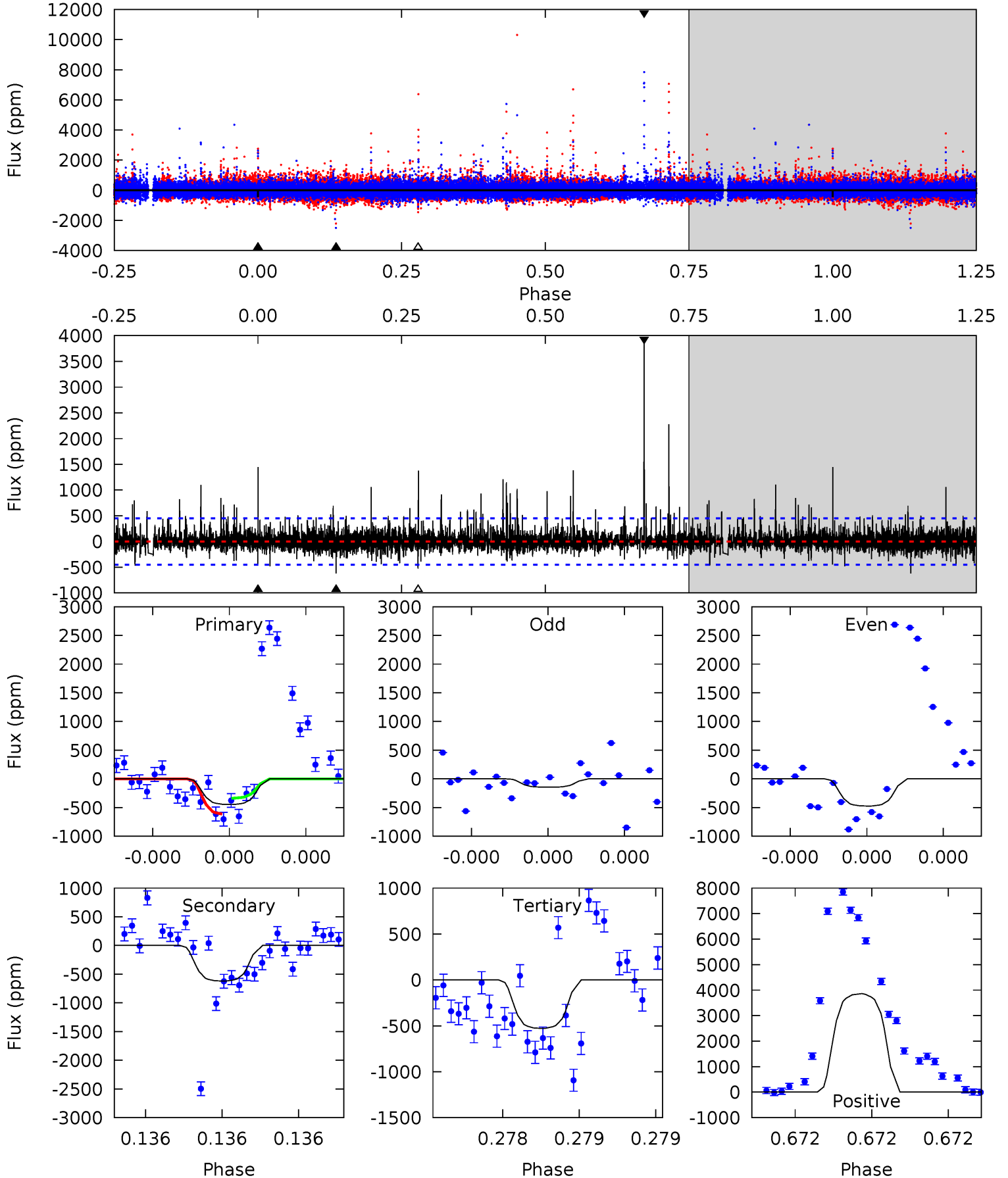
TCE 009603367-06 $P=519.414284$ Days $T_0=220.872398$ (BKJD)



DV Model-Shift Uniqueness Test

009603367-06, P = 519.411119 Days, E = 220.885602 Days

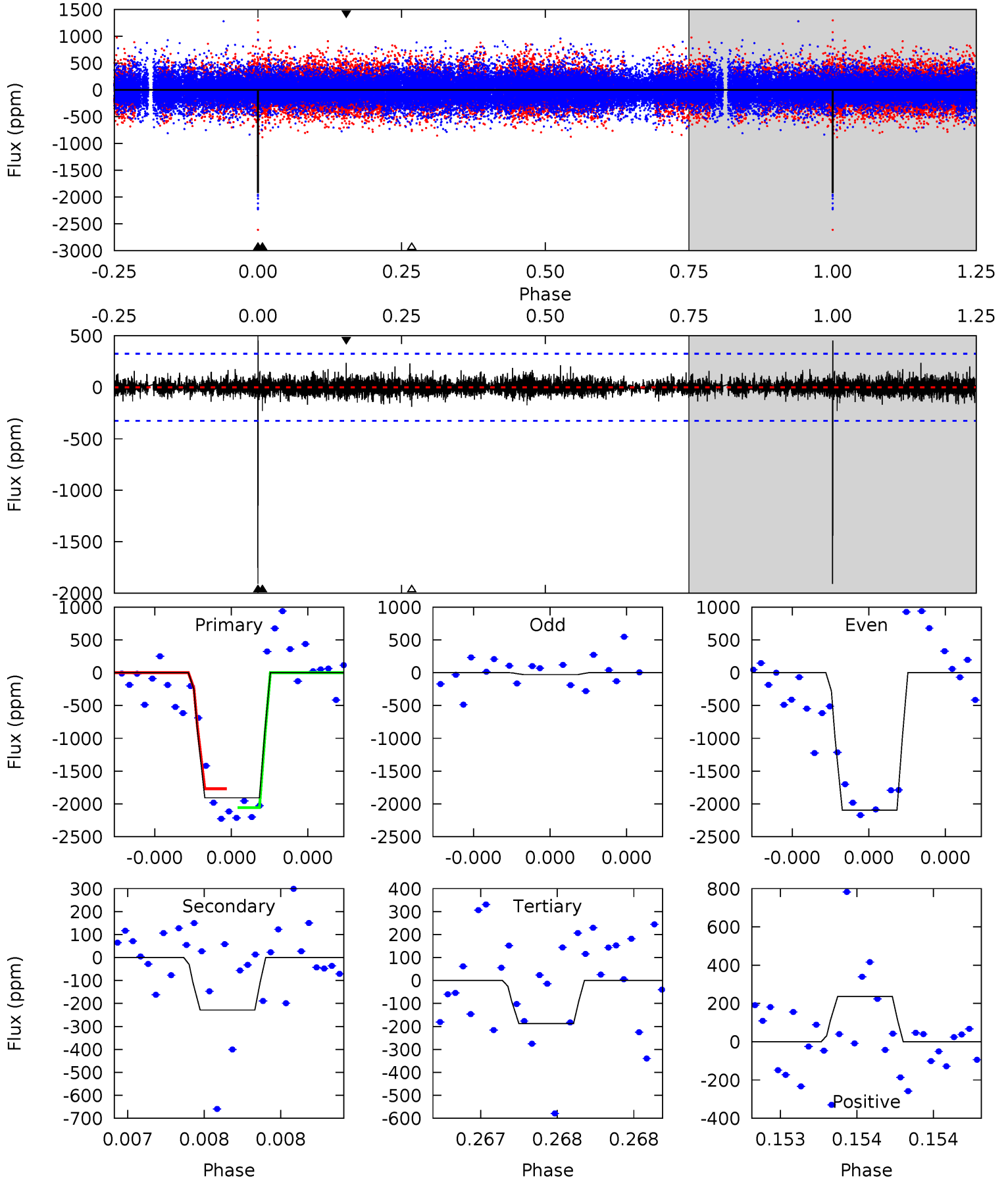
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.62	7.79	6.64	48.5	5.65	3.60	1.98	-1.02	-42.9	1.15	-40.7	1.11	0.85	0.86	1.73



Alt Model-Shift Uniqueness Test

009603367-06, P = 519.414284 Days, E = 220.872398 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	3.98	3.27	4.12	5.68	3.64	0.69	29.9	29.1	0.71	-0.13	19.3	0.68	0.19	2.51



Stellar Parameters For KIC 009603367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5446^{+179}_{-163}	$4.599^{+0.077}_{-0.063}$	$-1.040^{+0.300}_{-0.300}$	$0.668^{+0.069}_{-0.057}$	$0.646^{+0.066}_{-0.024}$	$3.058^{+0.892}_{-0.631}$
	+3%/-3%	+2%/-1%	+29%/-29%	+10%/-9%	+10%/-4%	+29%/-21%
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 009603367-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-621 ± 80	$2.41^{+0.51}_{-0.43}$	262^{+10}_{-10}	4805^{+496}_{-359}	70396^{+38663}_{-23142}
Alt.	-229 ± 57	$2.88^{+0.47}_{-0.49}$	262^{+11}_{-10}	3754^{+290}_{-255}	18256^{+10036}_{-6052}

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 $A_{obs} \gg 1.0$

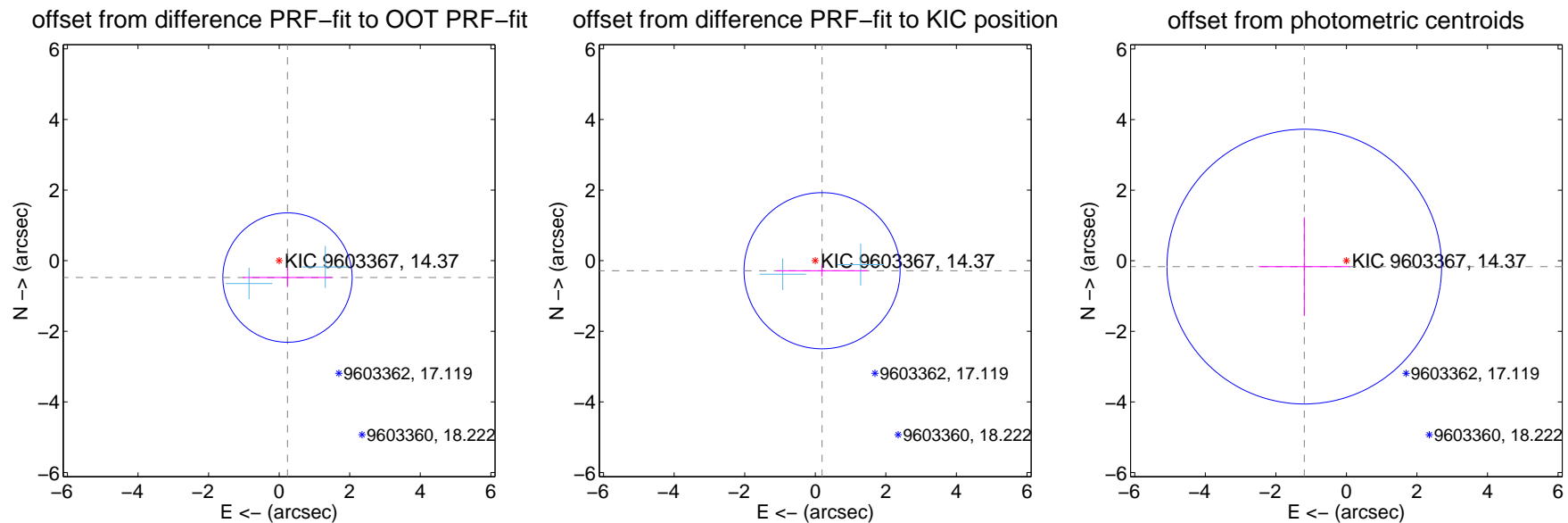
DV Centroid Data

Supplemental centroid analysis for 009603367-06. Kepler magnitude: 14.37. Transit SNR 6.77

There are 2 quarters with good PRF difference image offsets

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

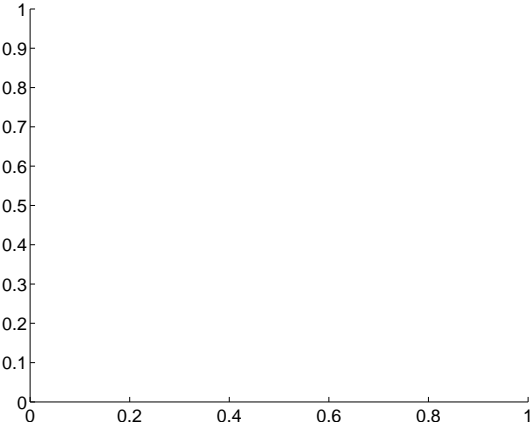
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.533 ± 0.611	0.87	-0.236 ± 1.264	-0.478 ± 0.272
PRF-fit source offset from KIC position	0.343 ± 0.737	0.47	-0.192 ± 1.292	-0.284 ± 0.166
photometric centroid source offset	1.21 ± 1.30	0.93	1.19 ± 1.30	-0.17 ± 1.40



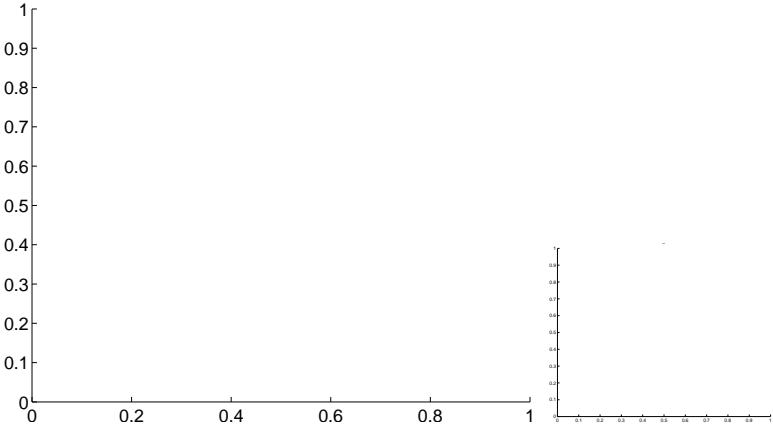
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

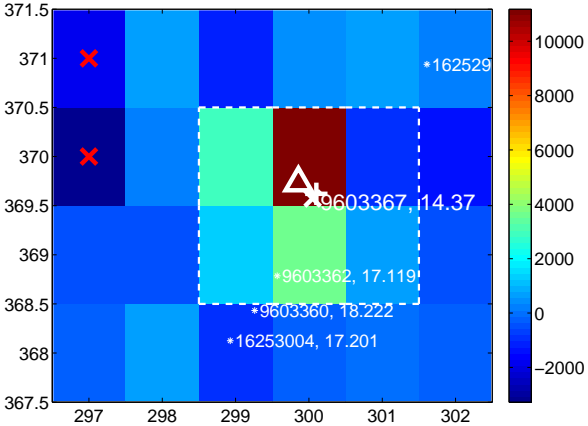
Q1 no difference image



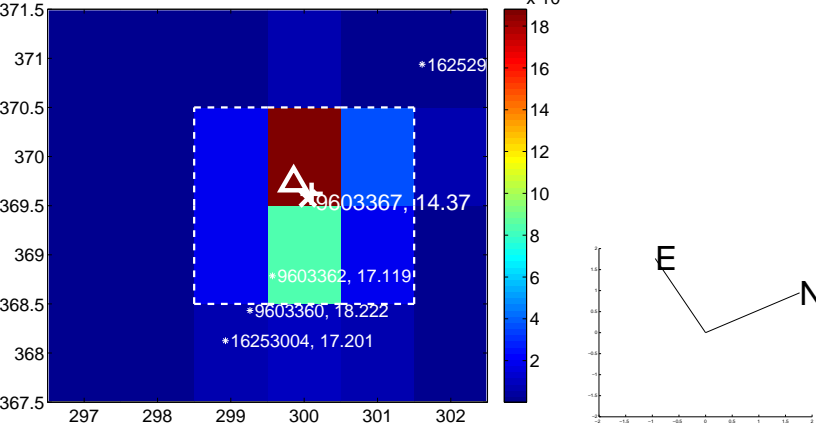
Q1 no OOT image



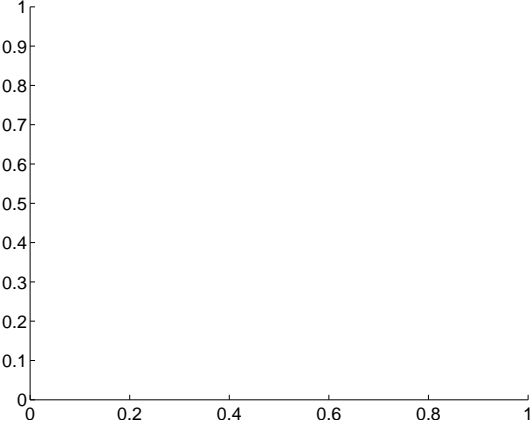
Q2 difference image



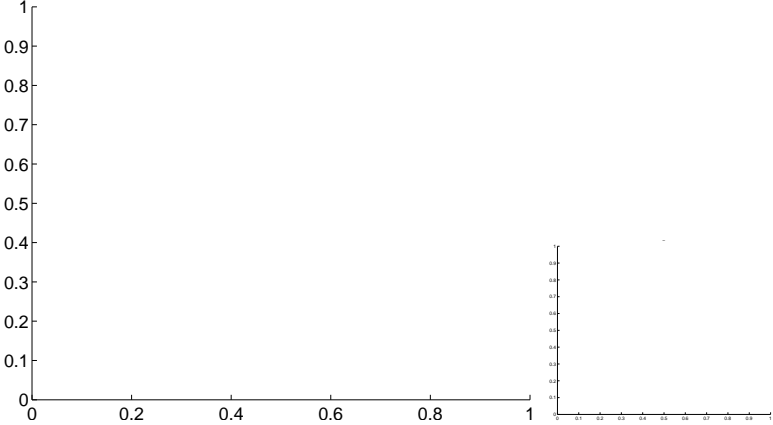
Q2 OOT image



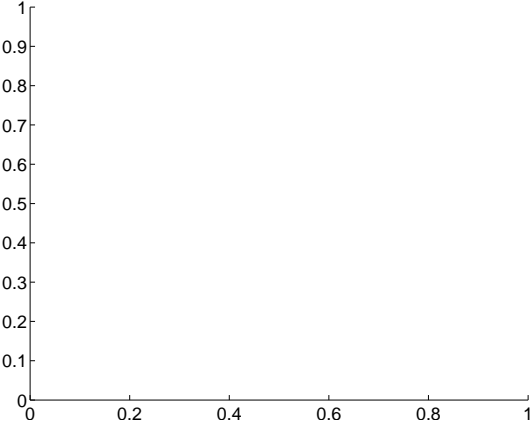
Q3 no difference image



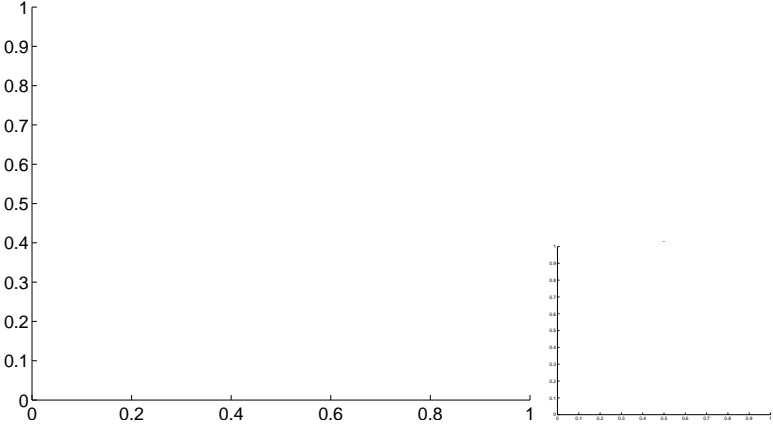
Q3 no OOT image



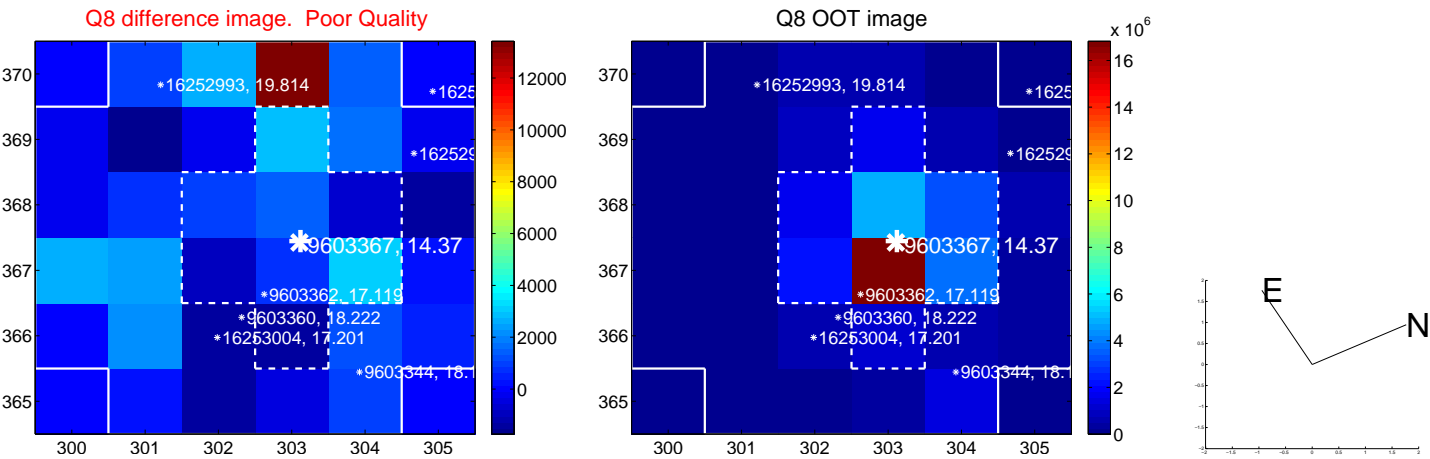
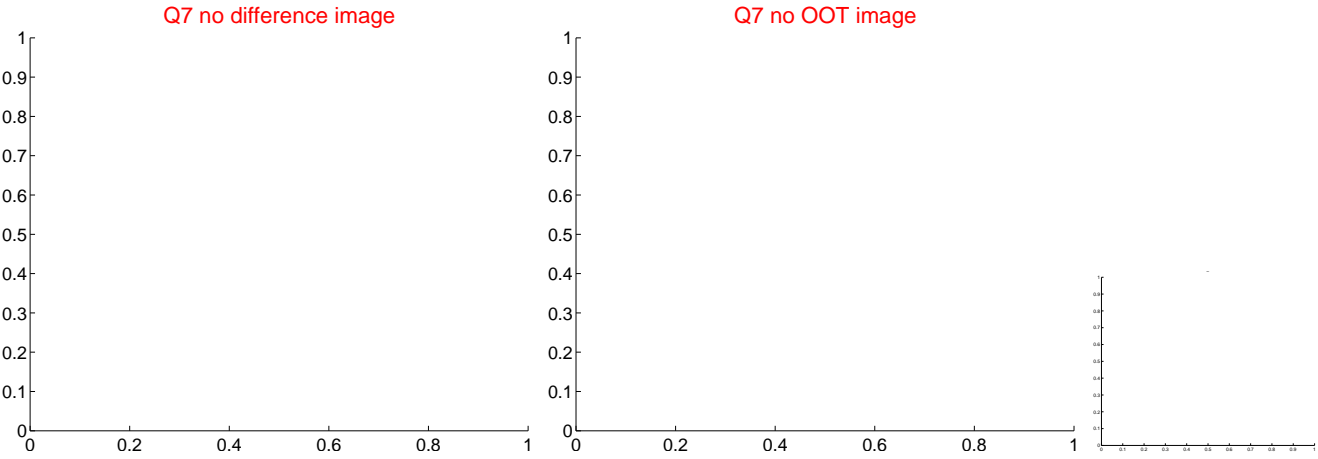
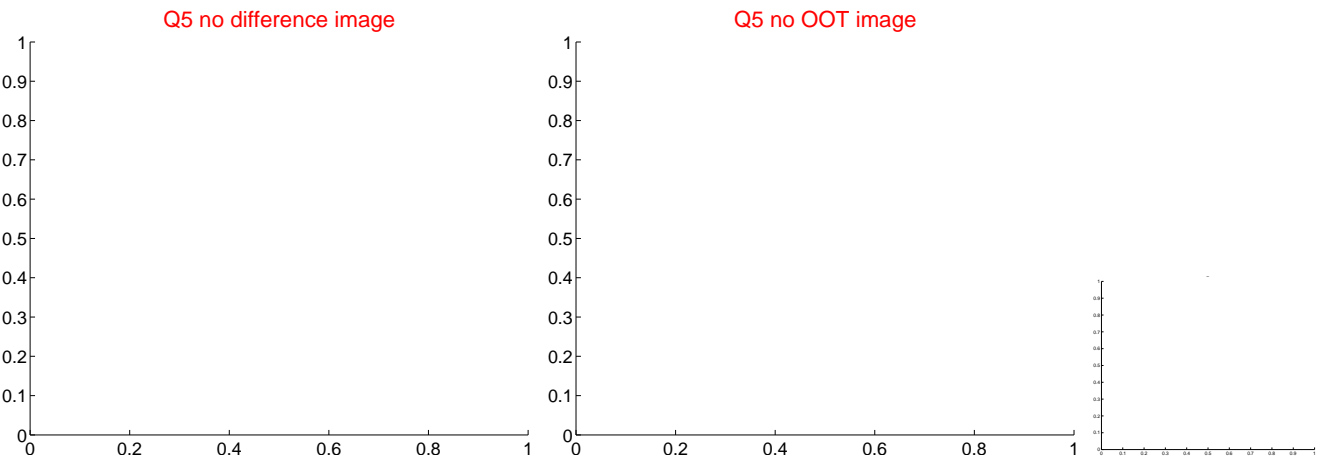
Q4 no difference image



Q4 no OOT image



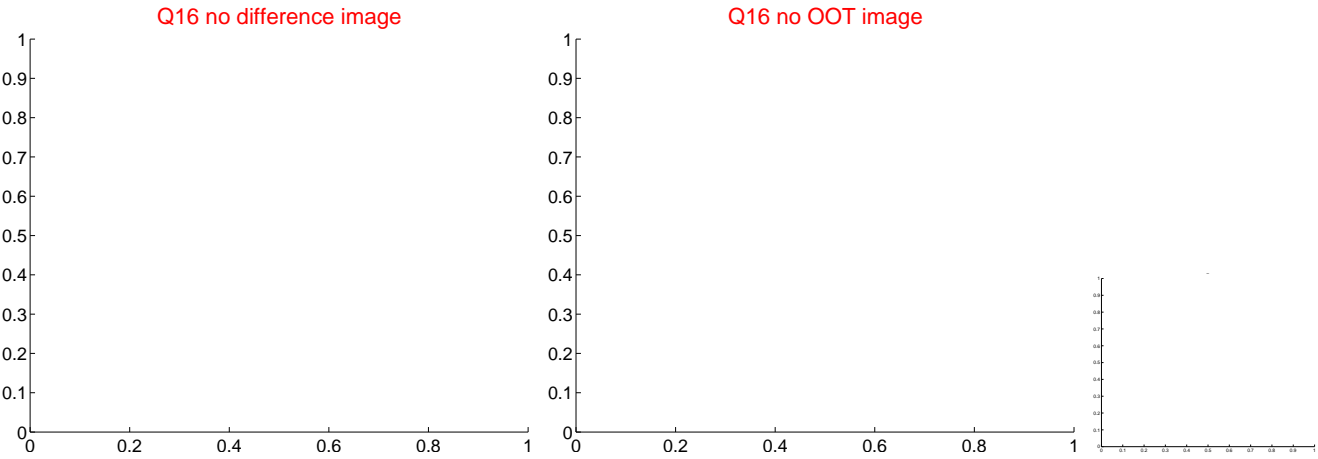
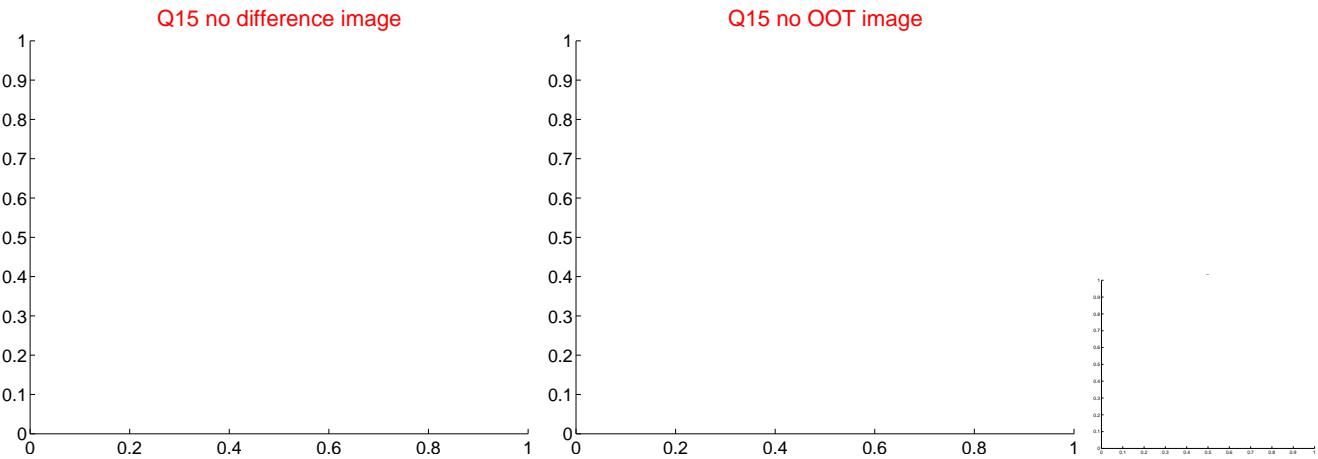
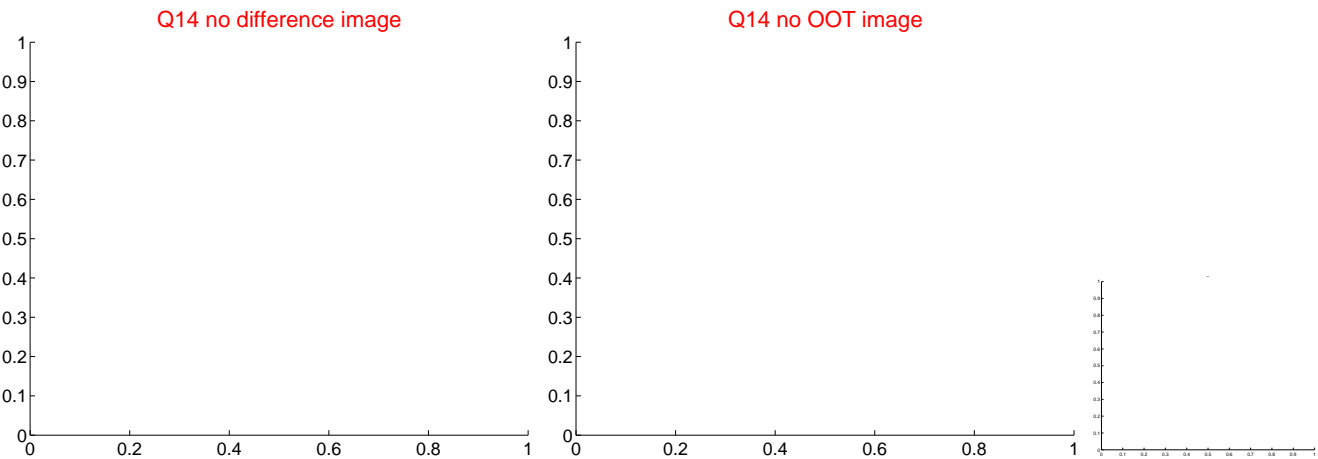
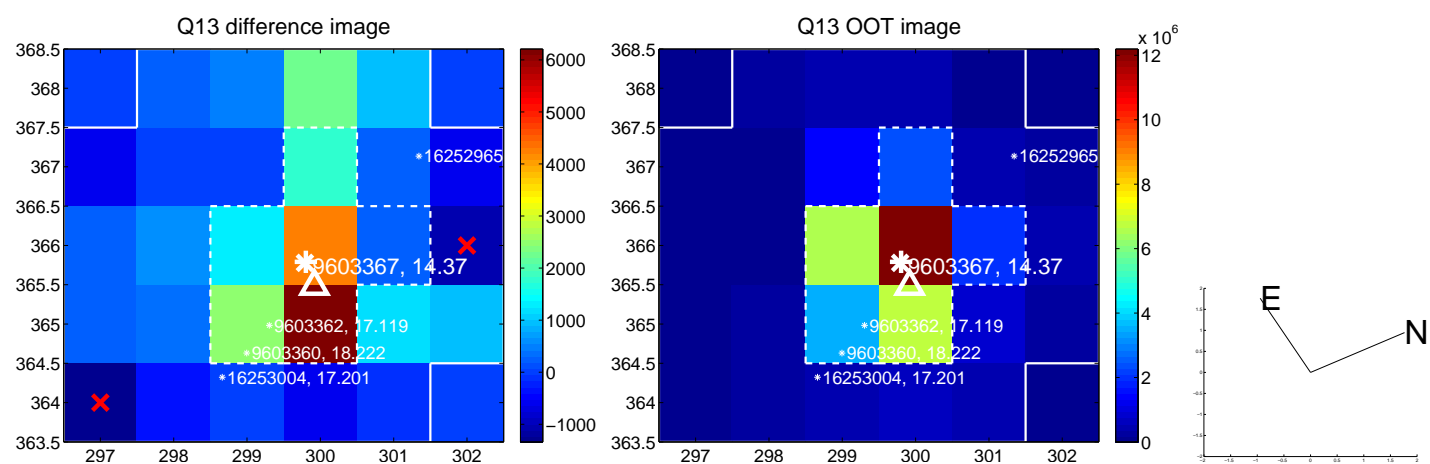
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



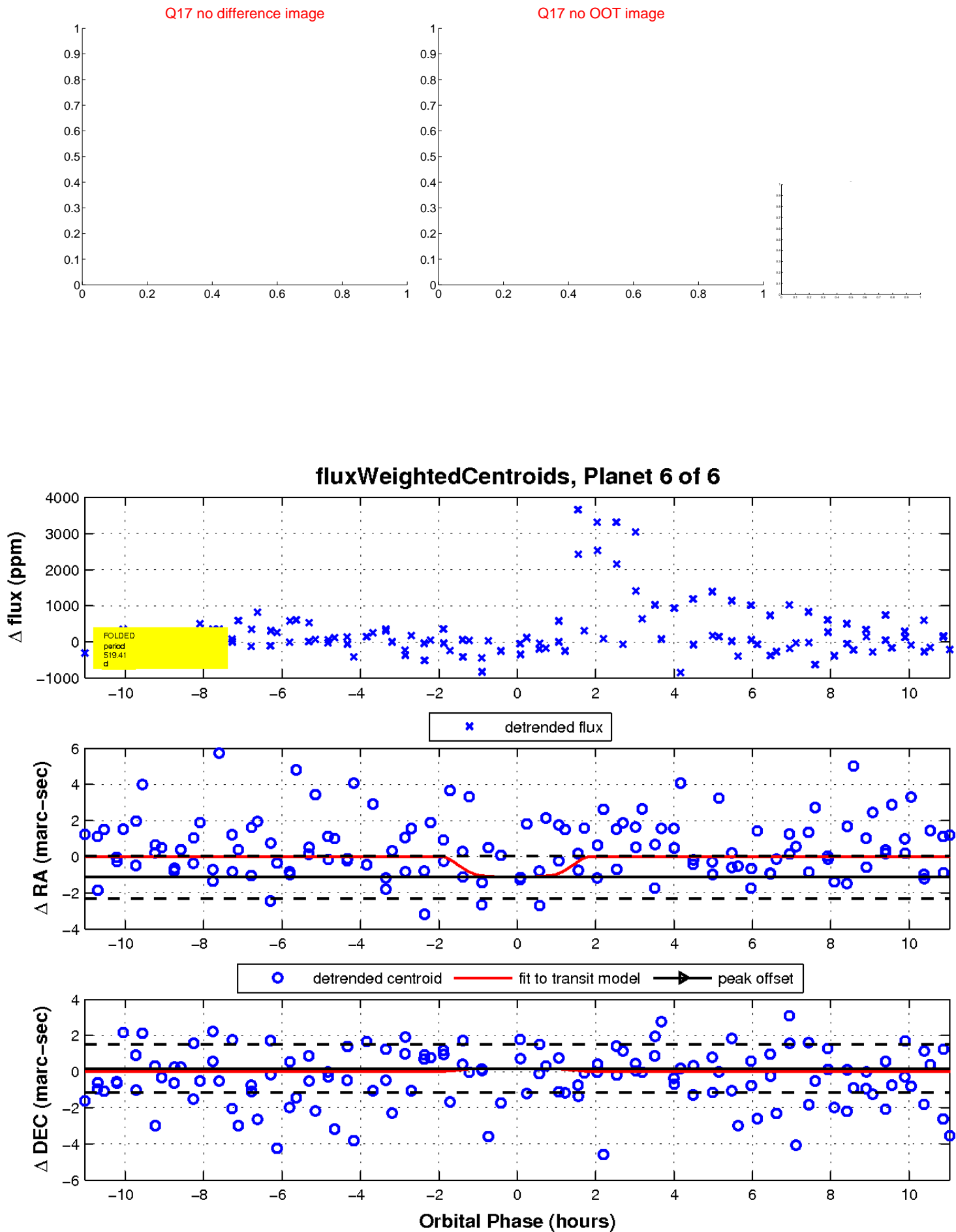
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

