

KIC 005782376

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})
005782376-01	OBS	No	343.032173	398.253036	1270.0	3.396	15.9	8.2	102.87	3628	385.18	1278.36
005782376-02	OBS	No	587.659759	336.105345	1833.1	12.995	16.9	8.7	102.87	3628	490.91	623.64
005782376-03	OBS	No	489.164807	588.251366	2881.6	23.344	11.3	10.8	102.87	3628	726.21	796.45
005782376-04	OBS	No	465.483824	423.229027	1120.9	4.691	9.7	7.1	102.87	3628	392.49	850.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005782376-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

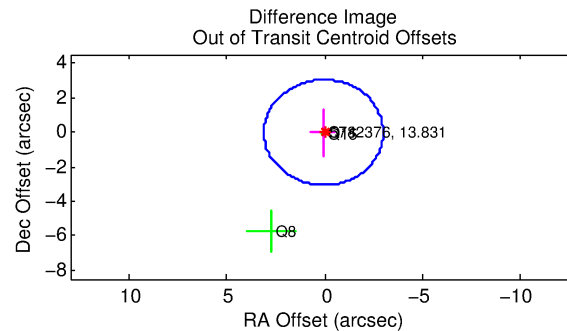
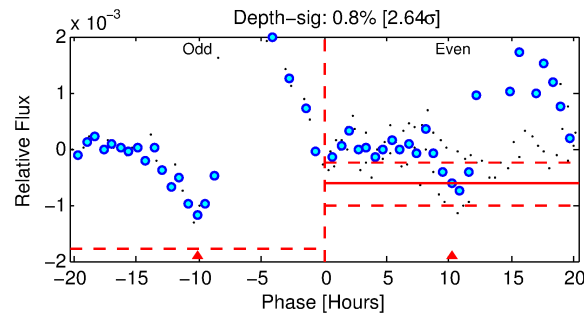
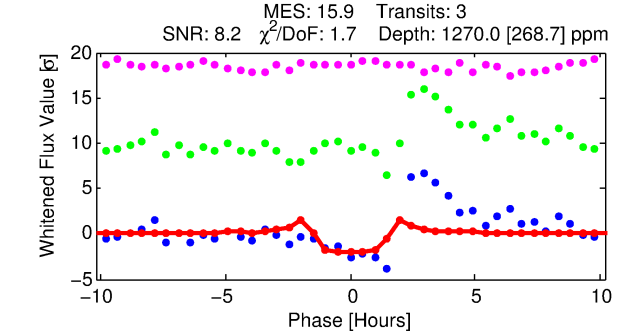
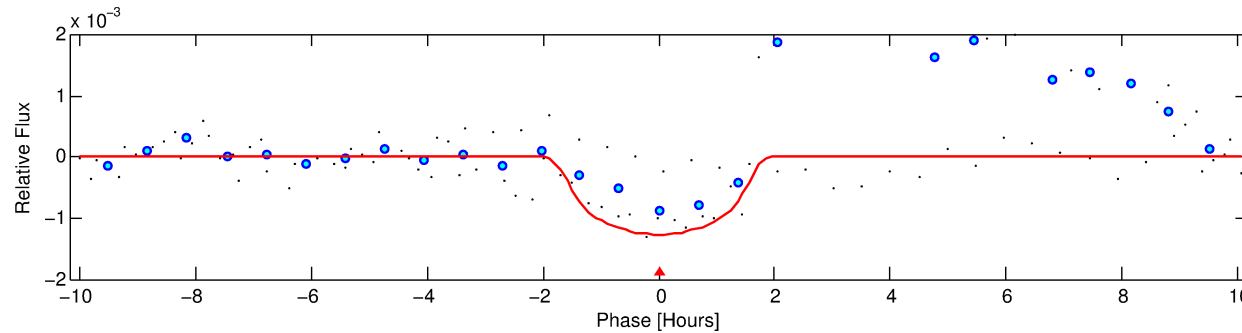
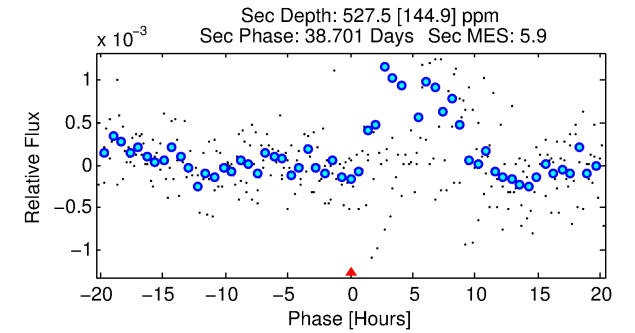
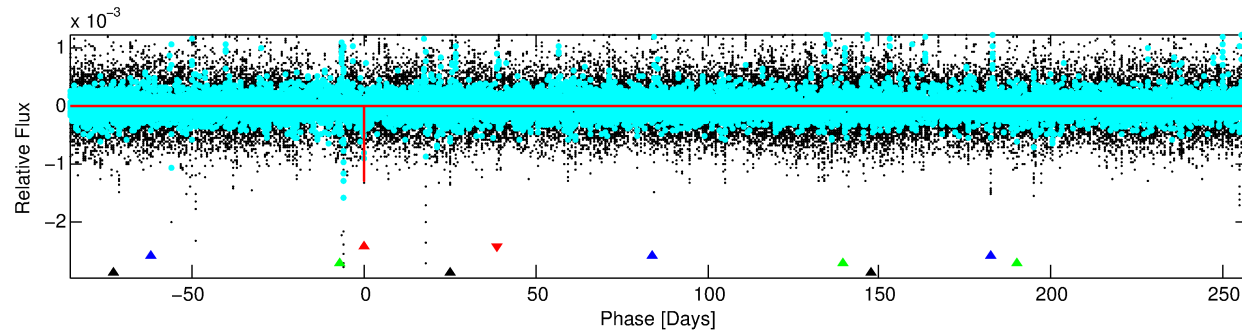
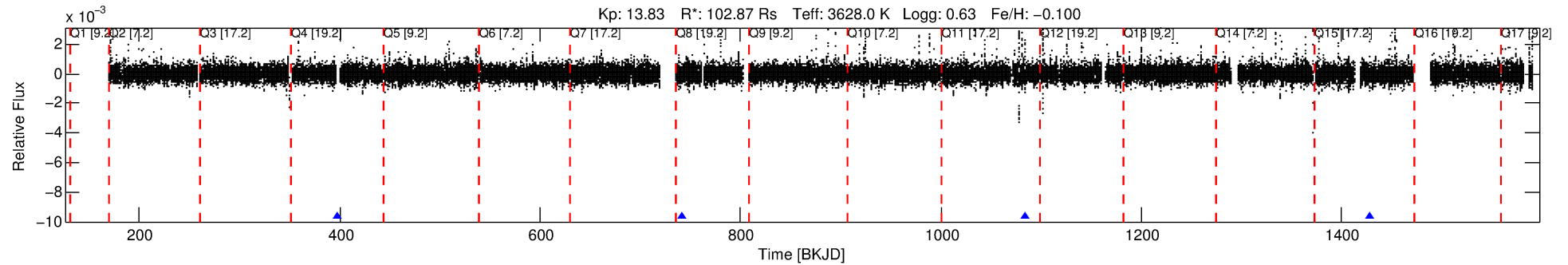
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005782376-01

No Significant Match Found

DV One-Page Summary

KIC: 5782376 Candidate: 1 of 4 Period: 343.032 d



DV Fit Results:

Period = 343.03217 [0.00433] d
Epoch = 398.2530 [0.0087] BKJD
Rp/R* = 0.0343 [0.0269]
a/R* = 611.67 [1151.36]
b = 0.66 [1.66]
Seff = 1278.36 [219.85]
Teq = 1525 [66] K
Rp = 385.18 [310.08] Re
a = 1.1336 [0.1437] AU
Ag = 2.51 [4.01] [0.38σ]
Teffp = 2968 [1183] K [1.22σ]

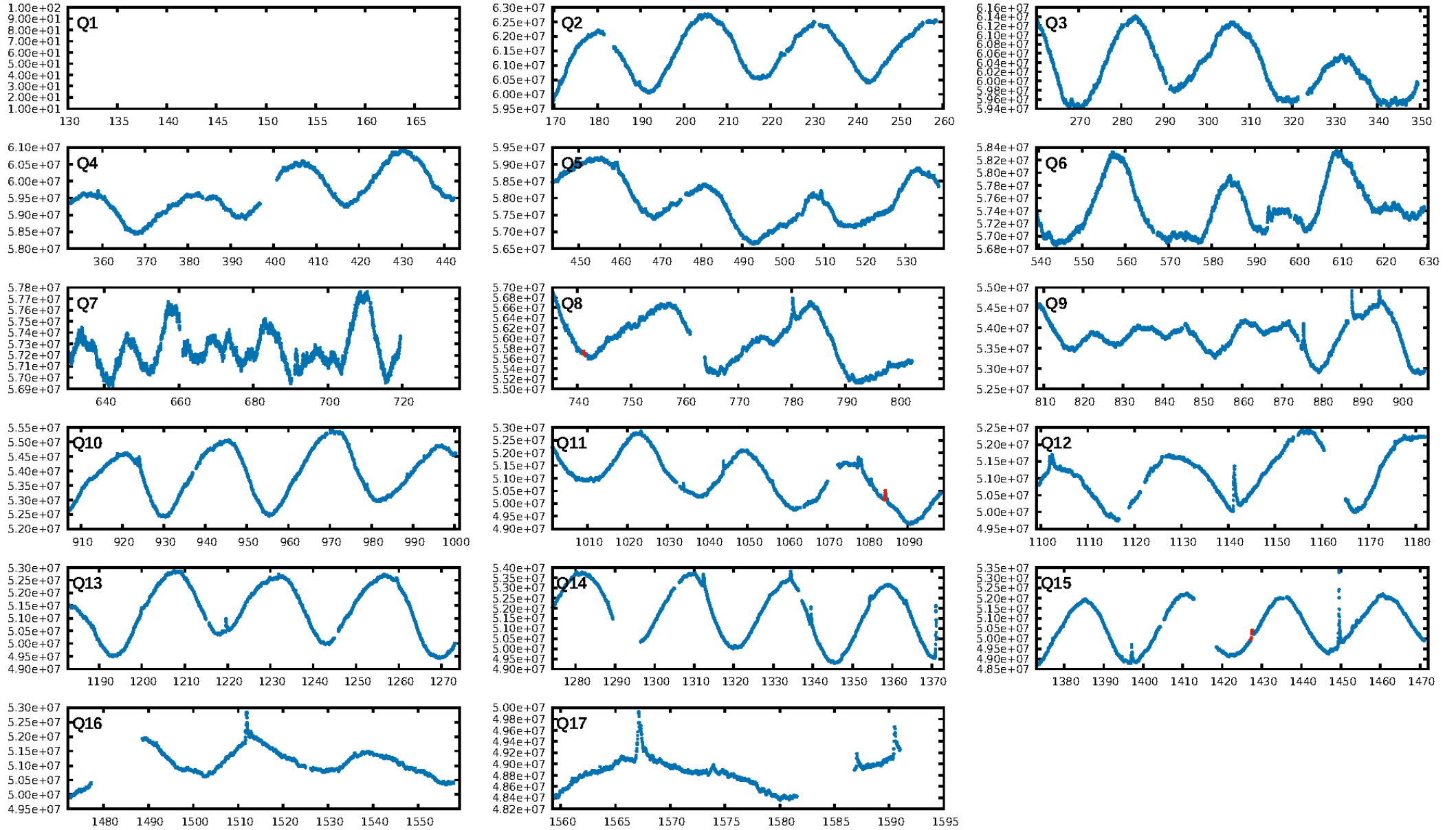
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [507.43σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 8.6%
Bootstrap-pfa: 2.56e-20
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.034
Centroid-sig: 82.2%
Centroid-so: 0.150 arcsec [0.20σ]
OotOffset-rm: 0.059 arcsec [0.06σ]
OotOffset-st: 0.2/1/0 [3]
KicOffset-rm: 0.108 arcsec [0.26σ]
KicOffset-st: 0.2/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

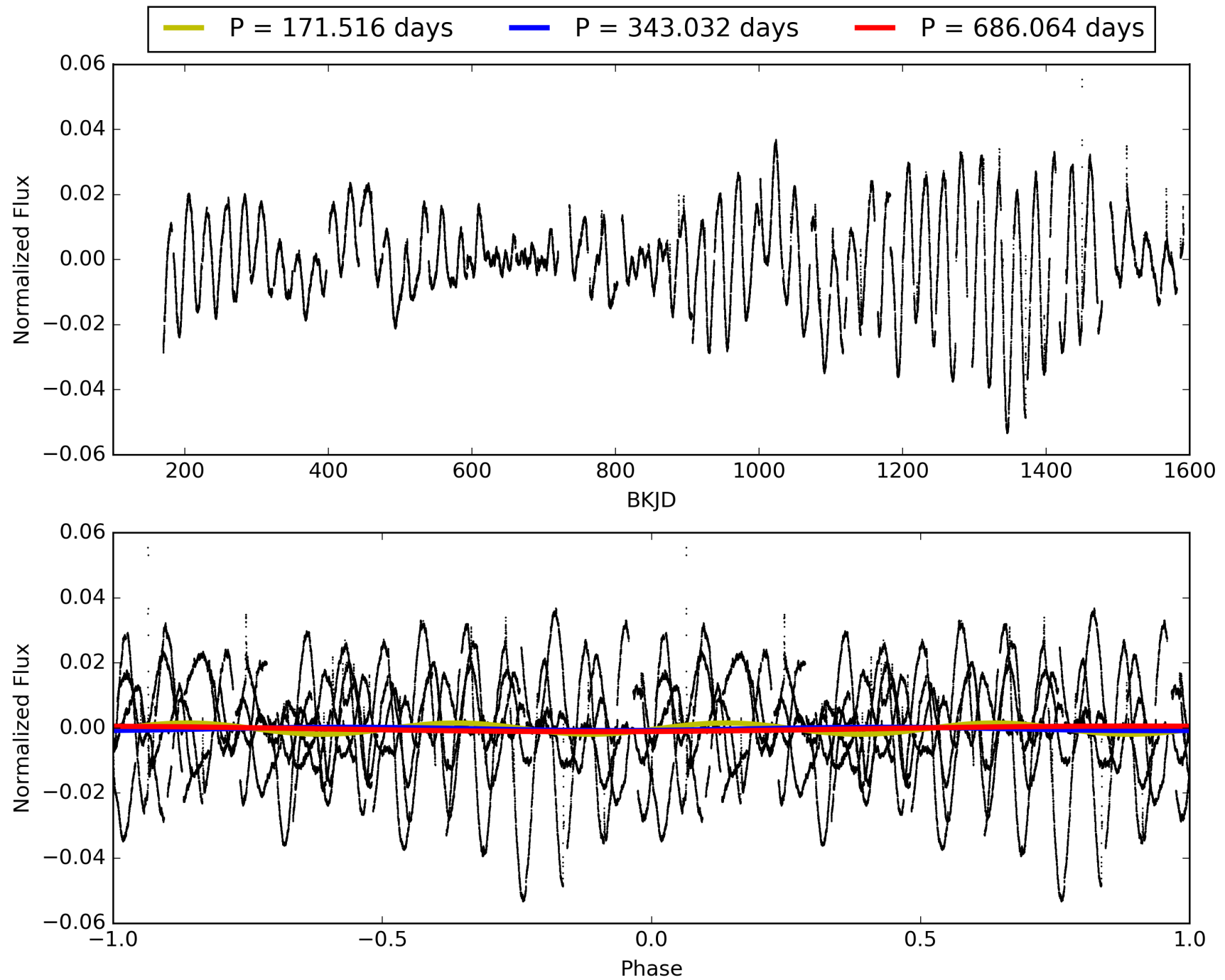
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:19:00 Z

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

TCE 005782376-01, PDC Light Curves

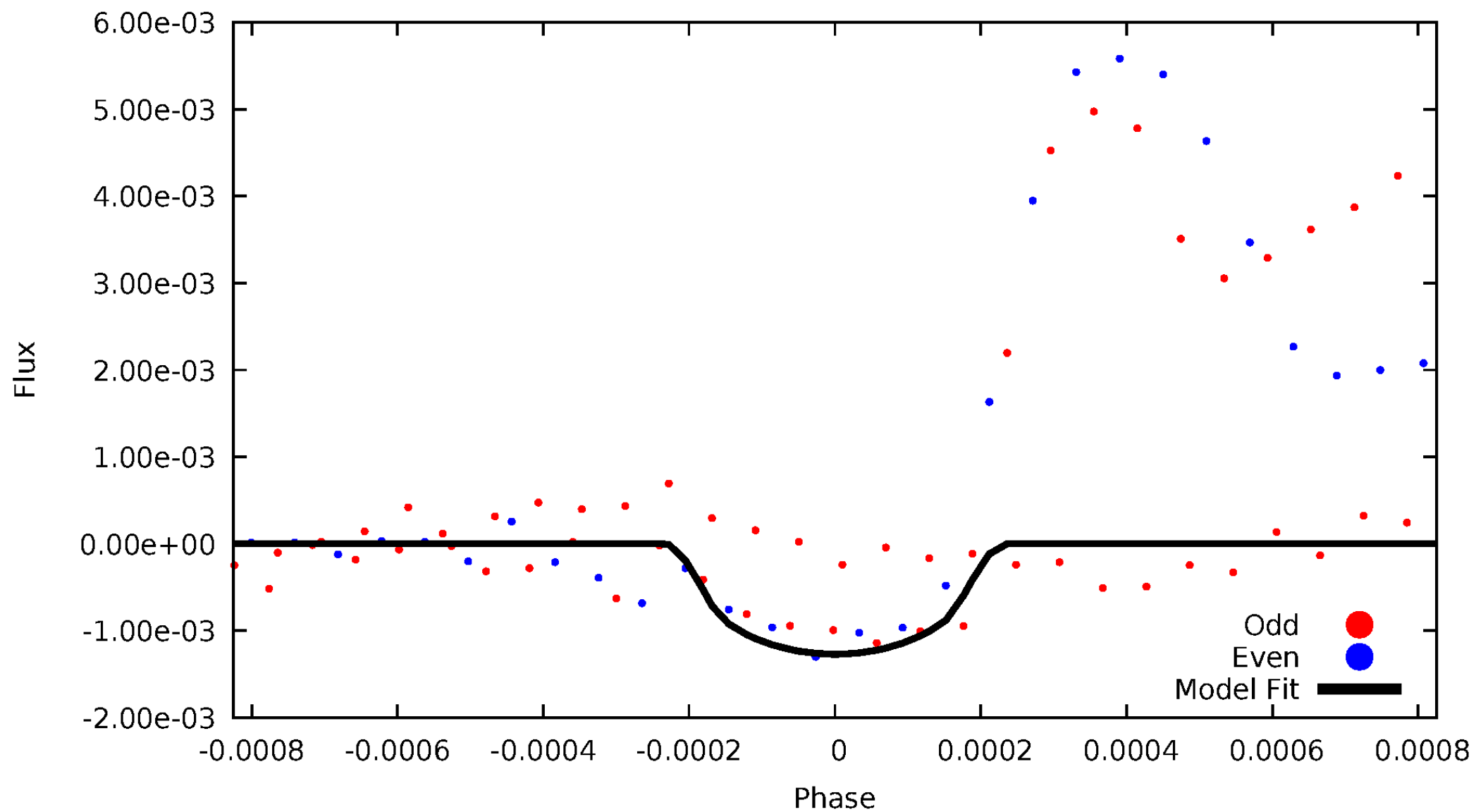


TCE 005782376-01



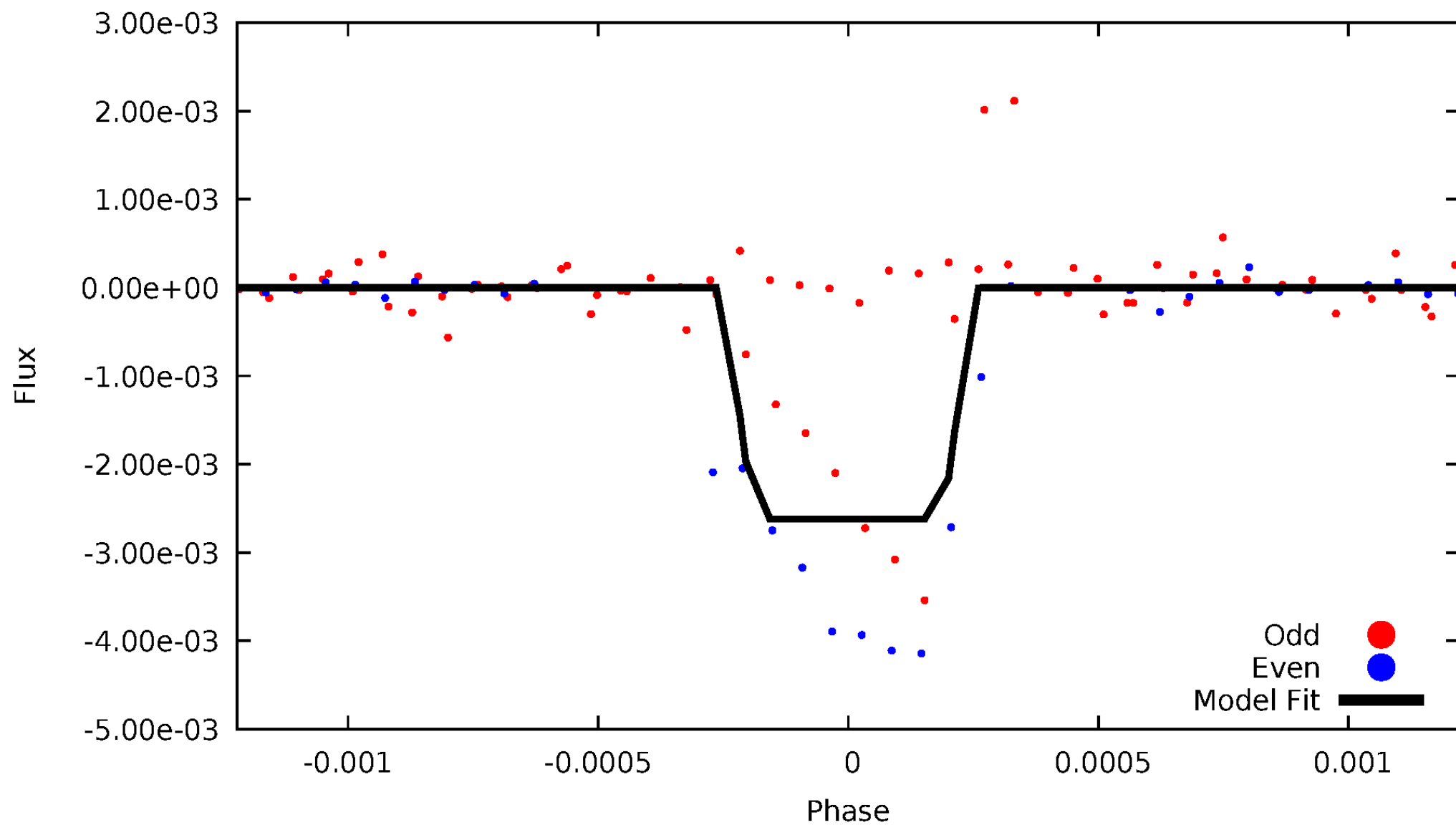
DV Odd/Even

TCE 005782376-01



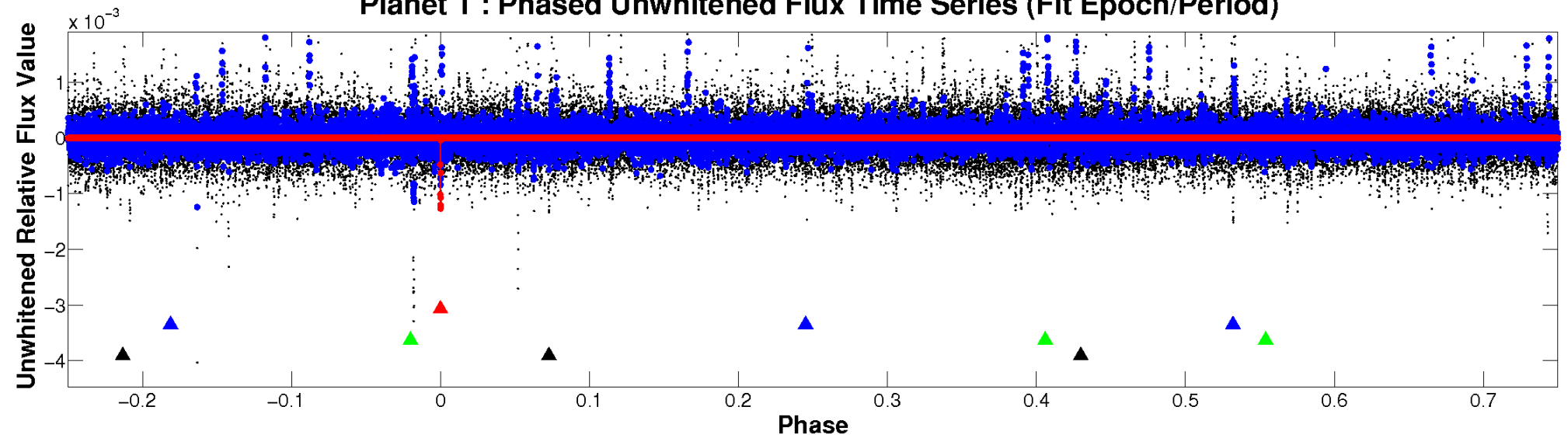
ALT Odd/Even

TCE 005782376-01

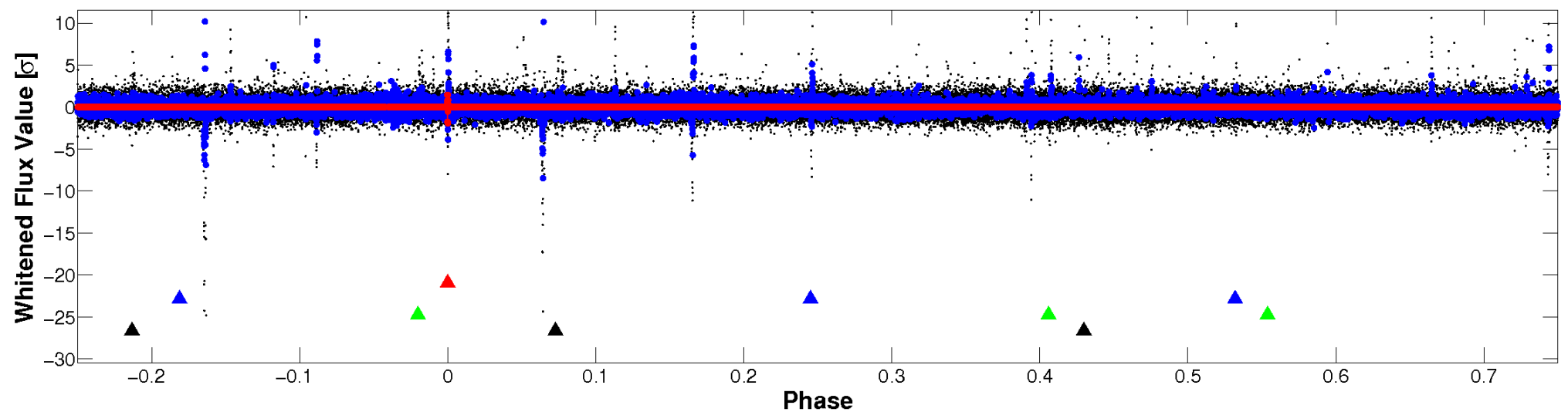


Non-Whitened Vs. Whitened Light Curve

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

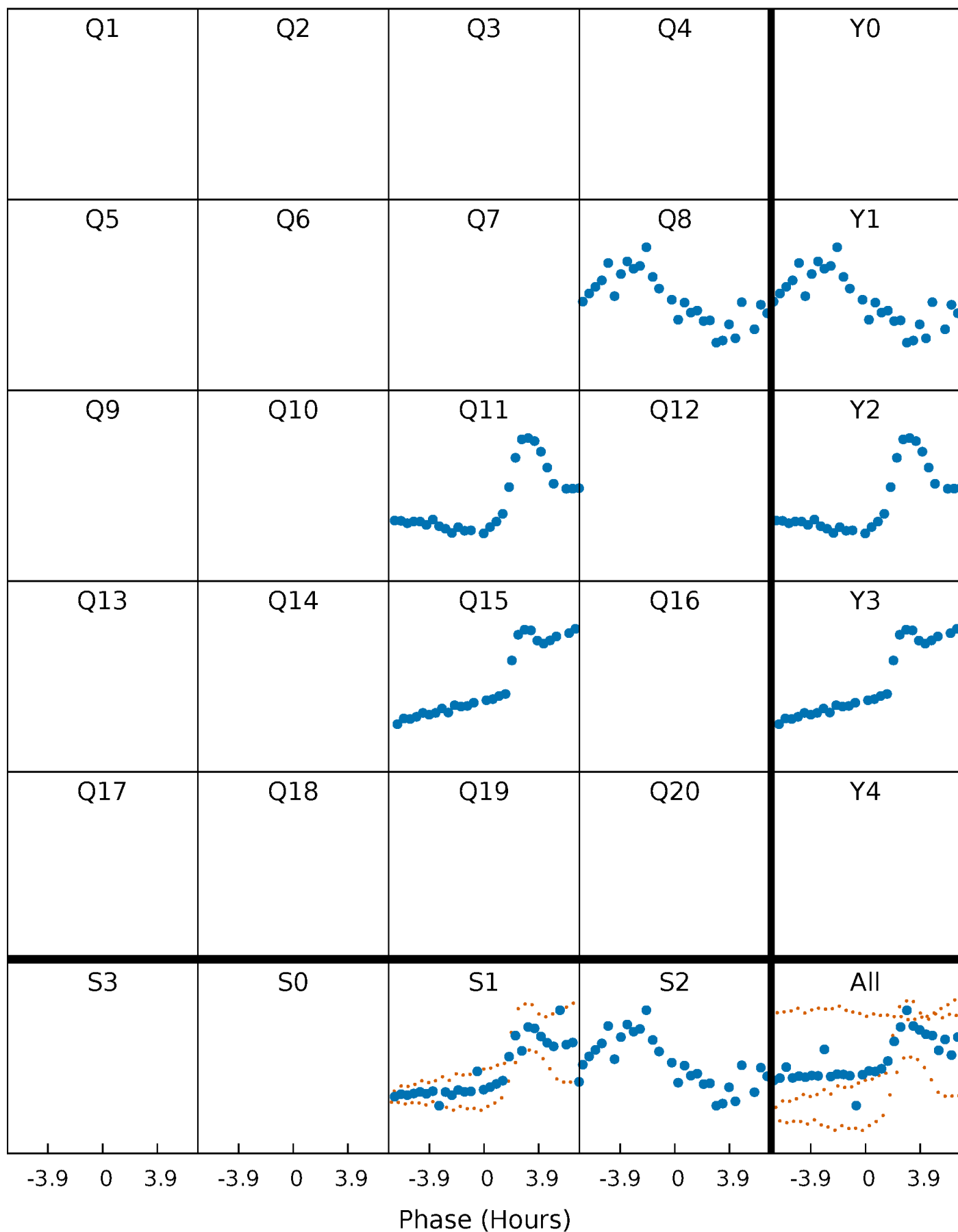


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



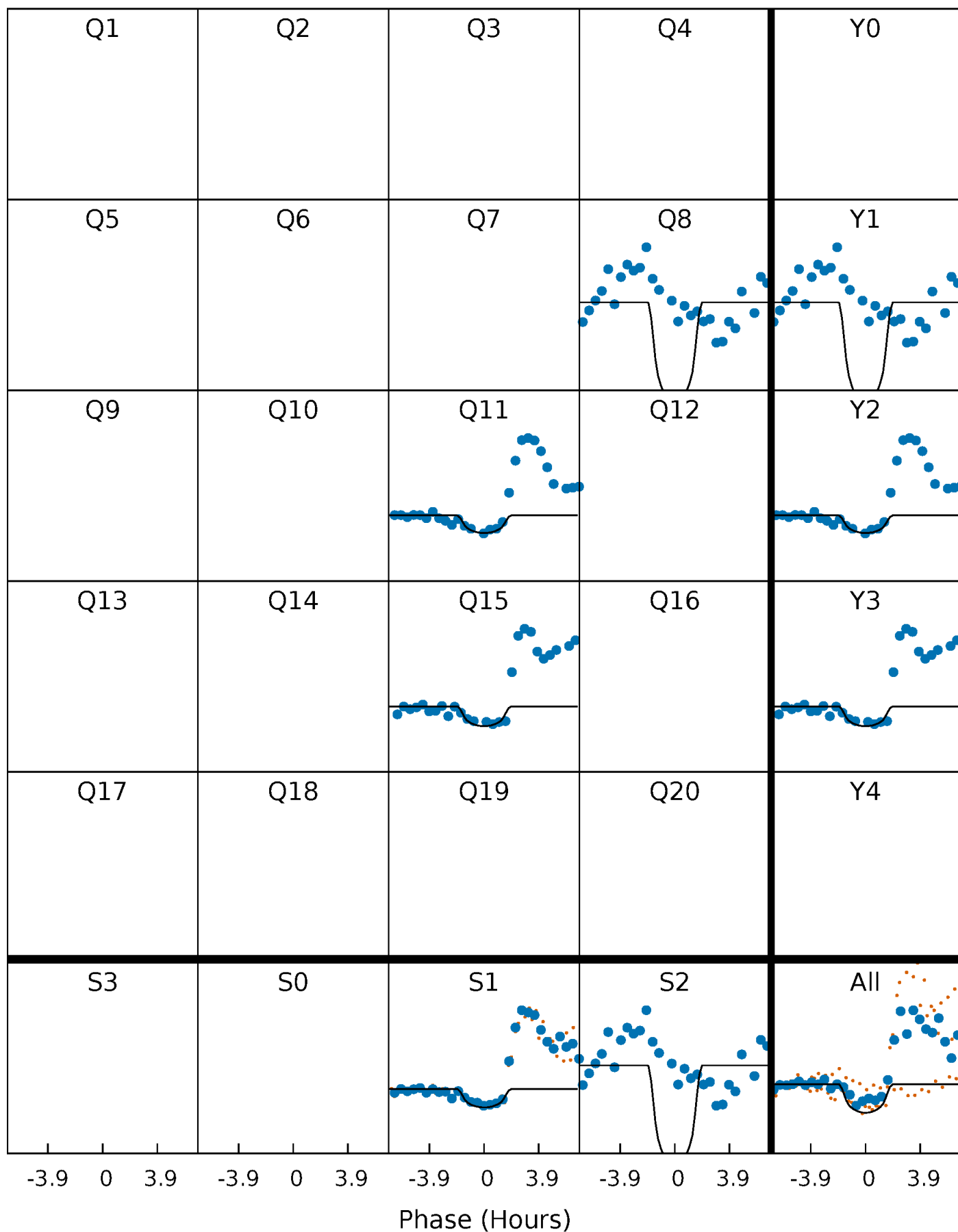
PDC Quarter-Phased Transit Curves

TCE 005782376-01 P=343.032173 Days $T_0=398.253036$ (BKJD)



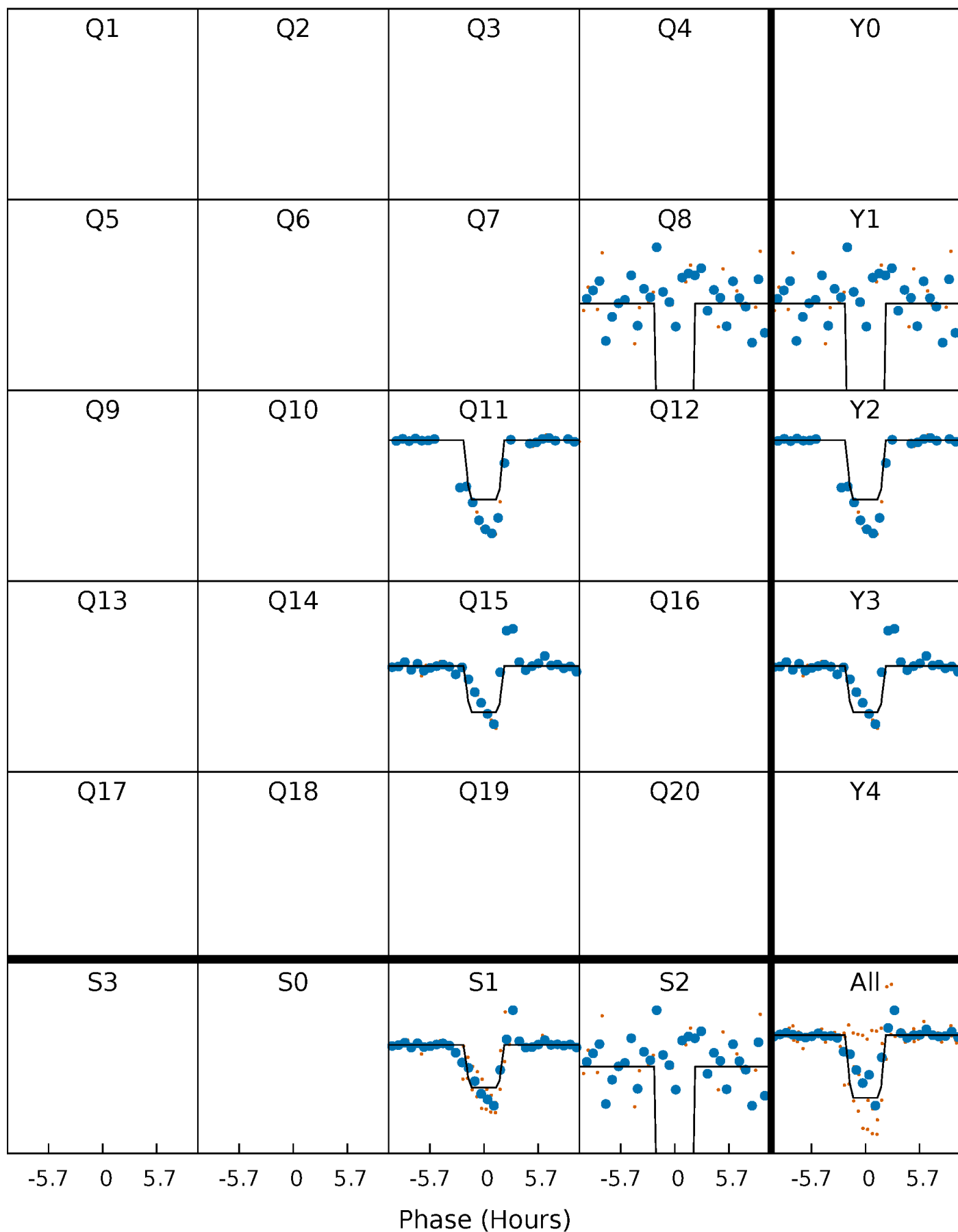
DV Quarter-Phased Transit Curves

TCE 005782376-01 P=343.032173 Days $T_0=398.253036$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

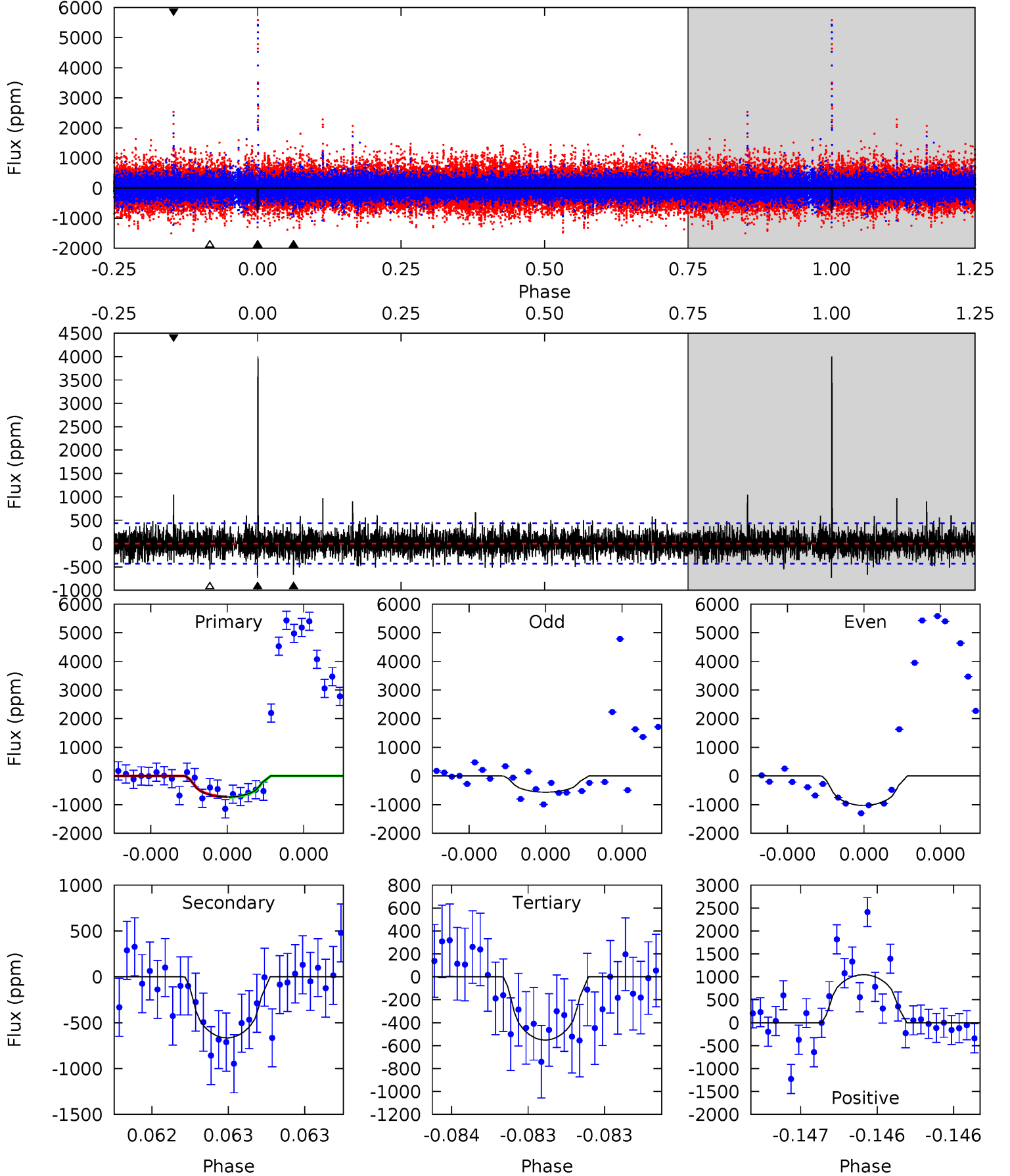
TCE 005782376-01 P=343.038242 Days $T_0=398.242995$ (BKJD)



DV Model-Shift Uniqueness Test

005782376-01, P = 343.032173 Days, E = 55.220863 Days

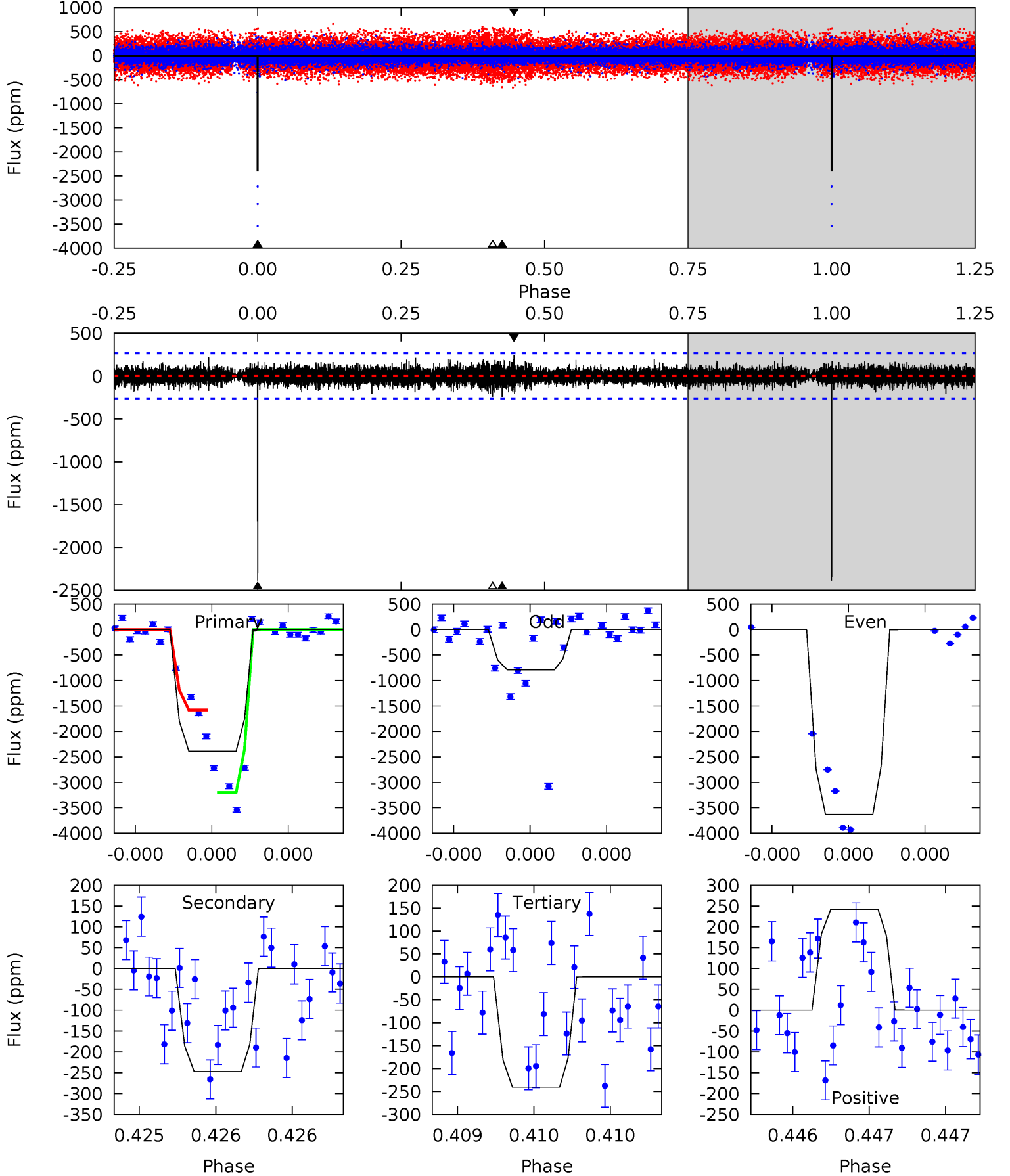
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.54	8.63	7.15	13.6	5.60	3.53	2.21	2.38	-4.04	1.48	-4.94	1.84	0.70	0.84	0.15



Alt Model-Shift Uniqueness Test

005782376-01, P = 343.038242 Days, E = 55.204753 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.9	5.16	5.03	5.06	5.58	3.49	0.97	44.8	44.8	0.13	0.10	41.0	0.87	0.09	17.1



Stellar Parameters For KIC 005782376

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3628^{+81}_{-1}	$0.631^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$102.874^{+3.395}_{-19.237}$	$1.651^{+0.059}_{-0.535}$	$0.000^{+0.000}_{-0.000}$
	+2%/-0%	+5%/-5%	+200%/-250%	+3%/-19%	+4%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 005782376-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-666 ± 77	$433.17^{+284.63}_{-235.73}$	2120^{+67}_{-114}	3100^{+971}_{-495}	$2.510^{+9.199}_{-1.596}$
Alt.	-247 ± 48	$584.56^{+298.36}_{-291.57}$	2123^{+62}_{-109}	2270^{+721}_{-4364}	$0.497^{+1.549}_{-0.292}$

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 $A_{obs} \gg 1.0$

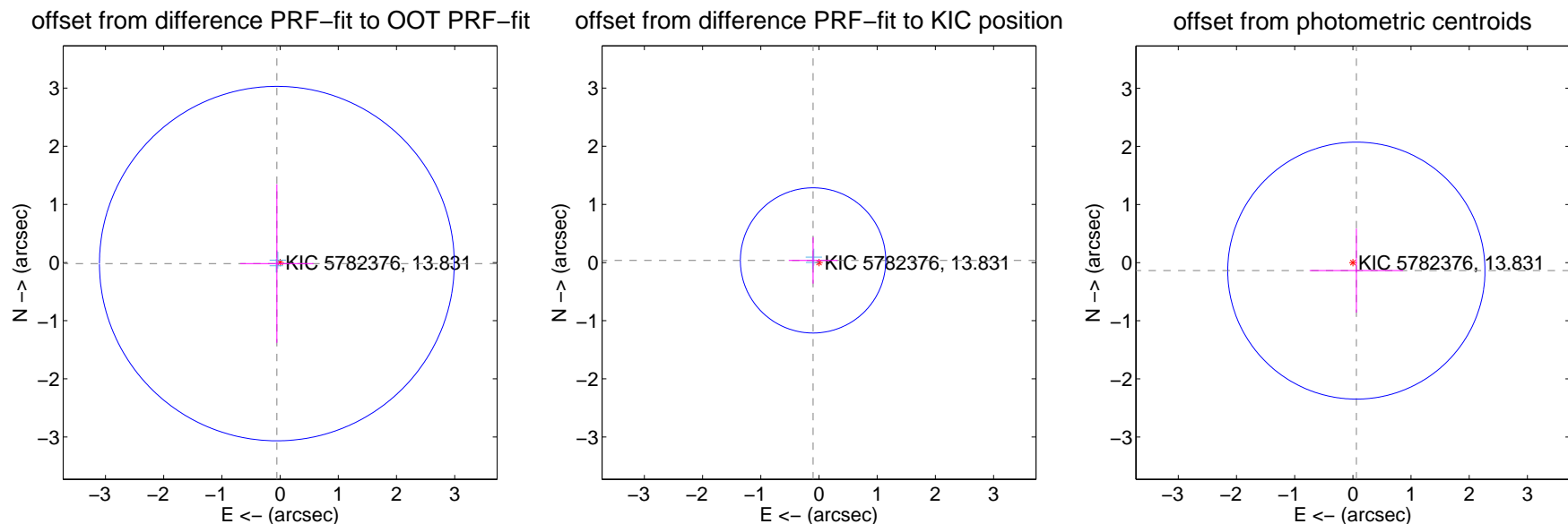
DV Centroid Data

Supplemental centroid analysis for 005782376-01. Kepler magnitude: 13.83. Transit SNR 8.17

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	0.059 ± 1.016	0.06	0.056 ± 0.628	-0.018 ± 1.363
PRF-fit source offset from KIC position	0.108 ± 0.416	0.26	0.102 ± 0.418	0.037 ± 0.399
photometric centroid source offset	0.15 ± 0.74	0.20	-0.06 ± 0.80	-0.14 ± 0.72

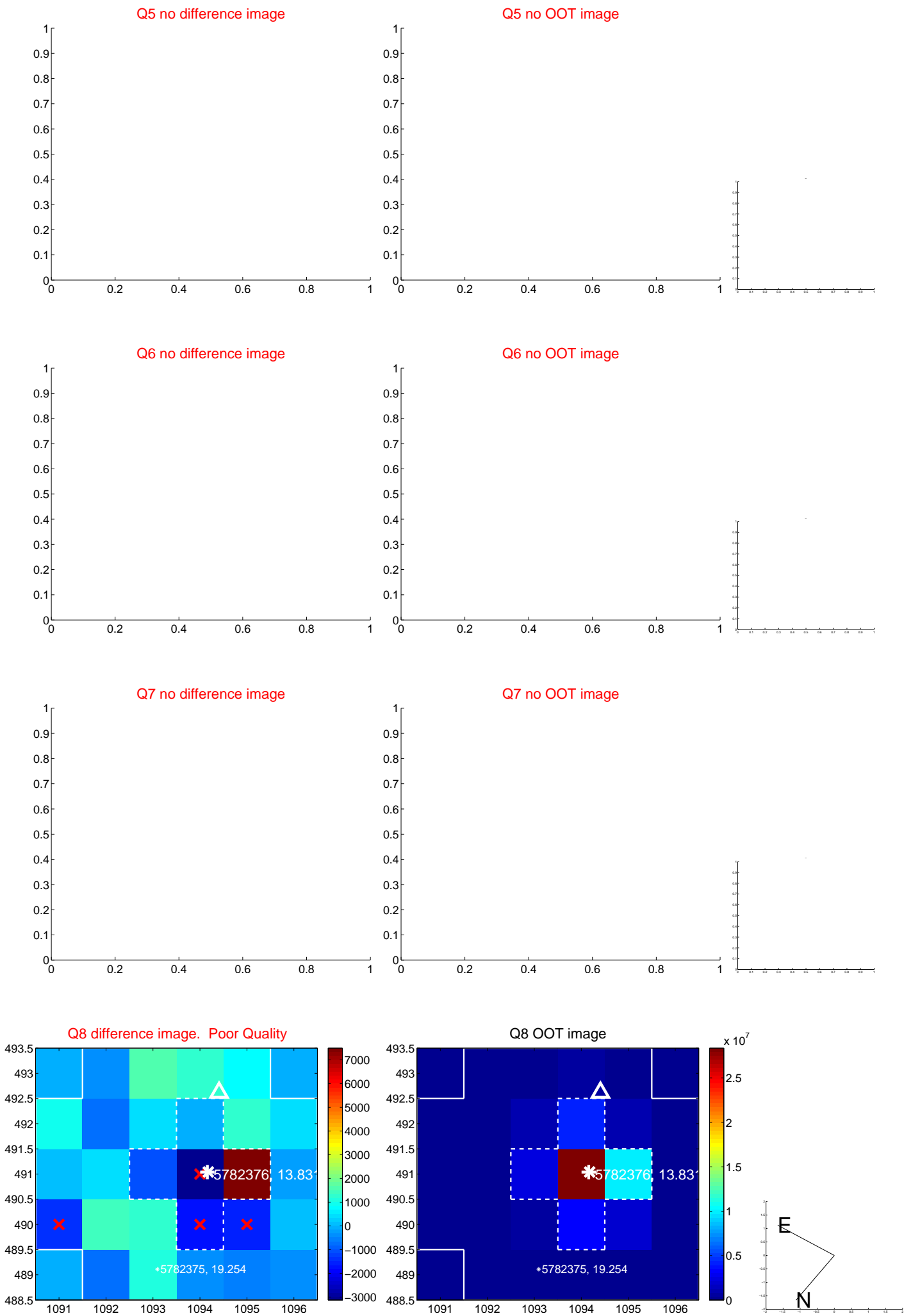


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

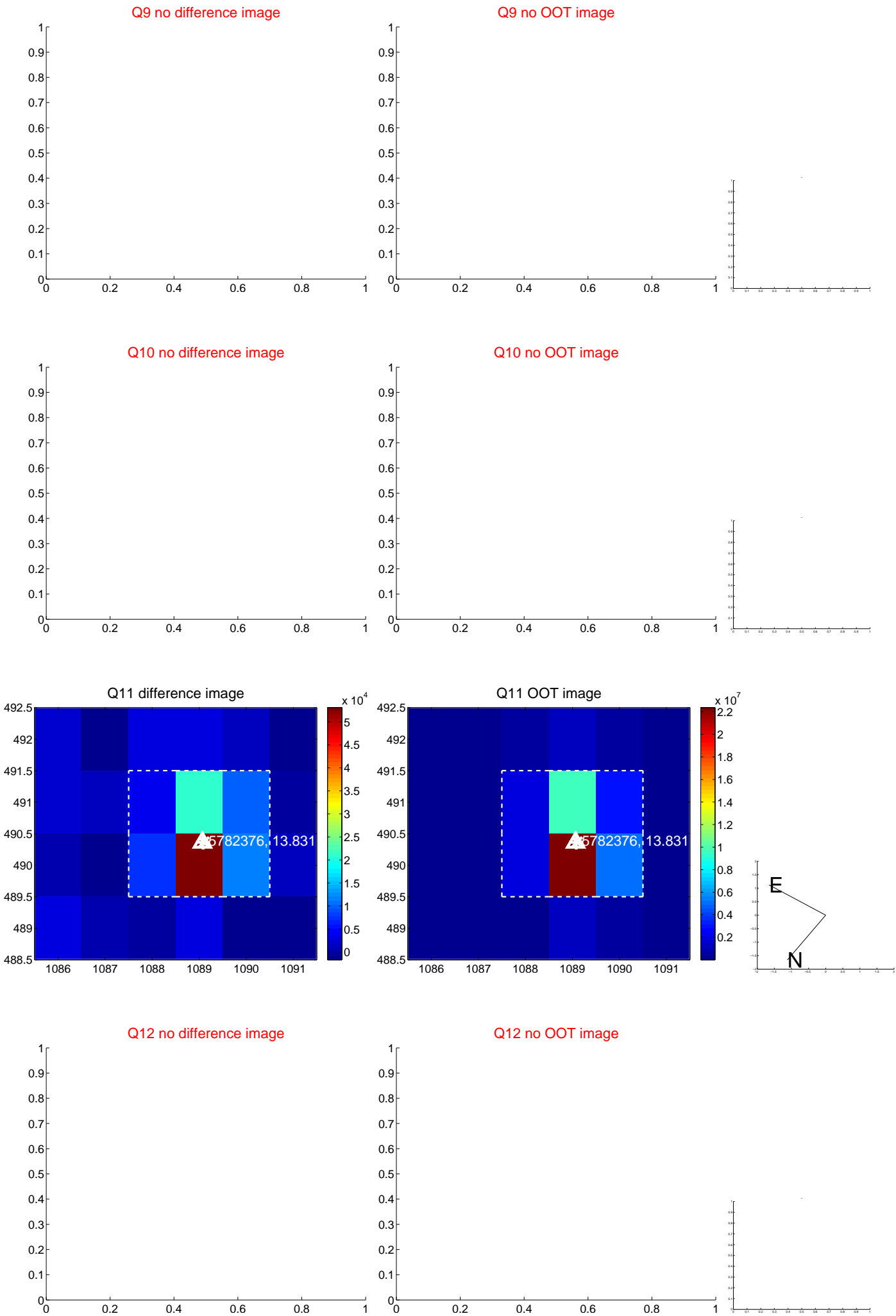
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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Q13 no difference image



Q13 no OOT image



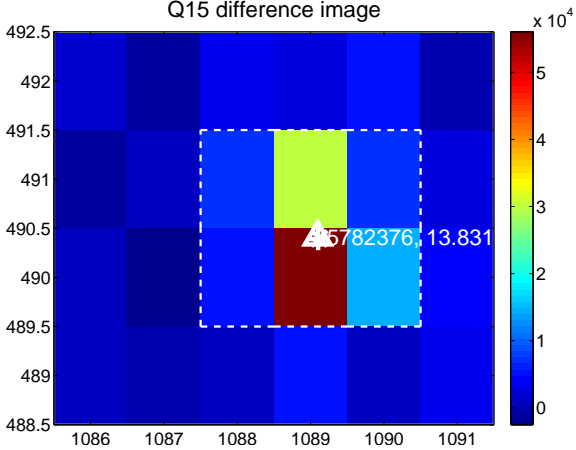
Q14 no difference image



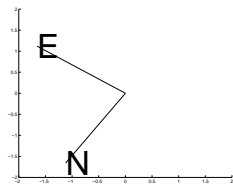
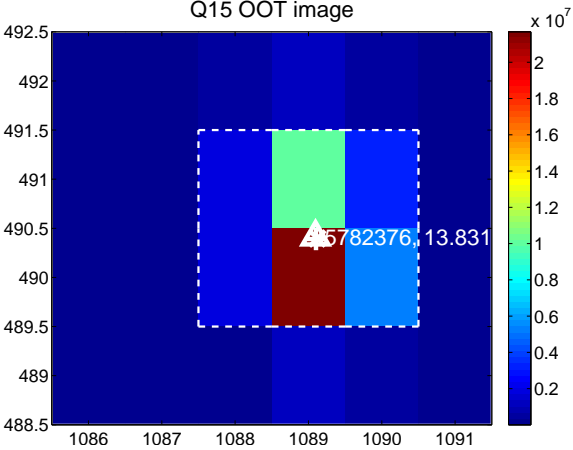
Q14 no OOT image



Q15 difference image



Q15 OOT image



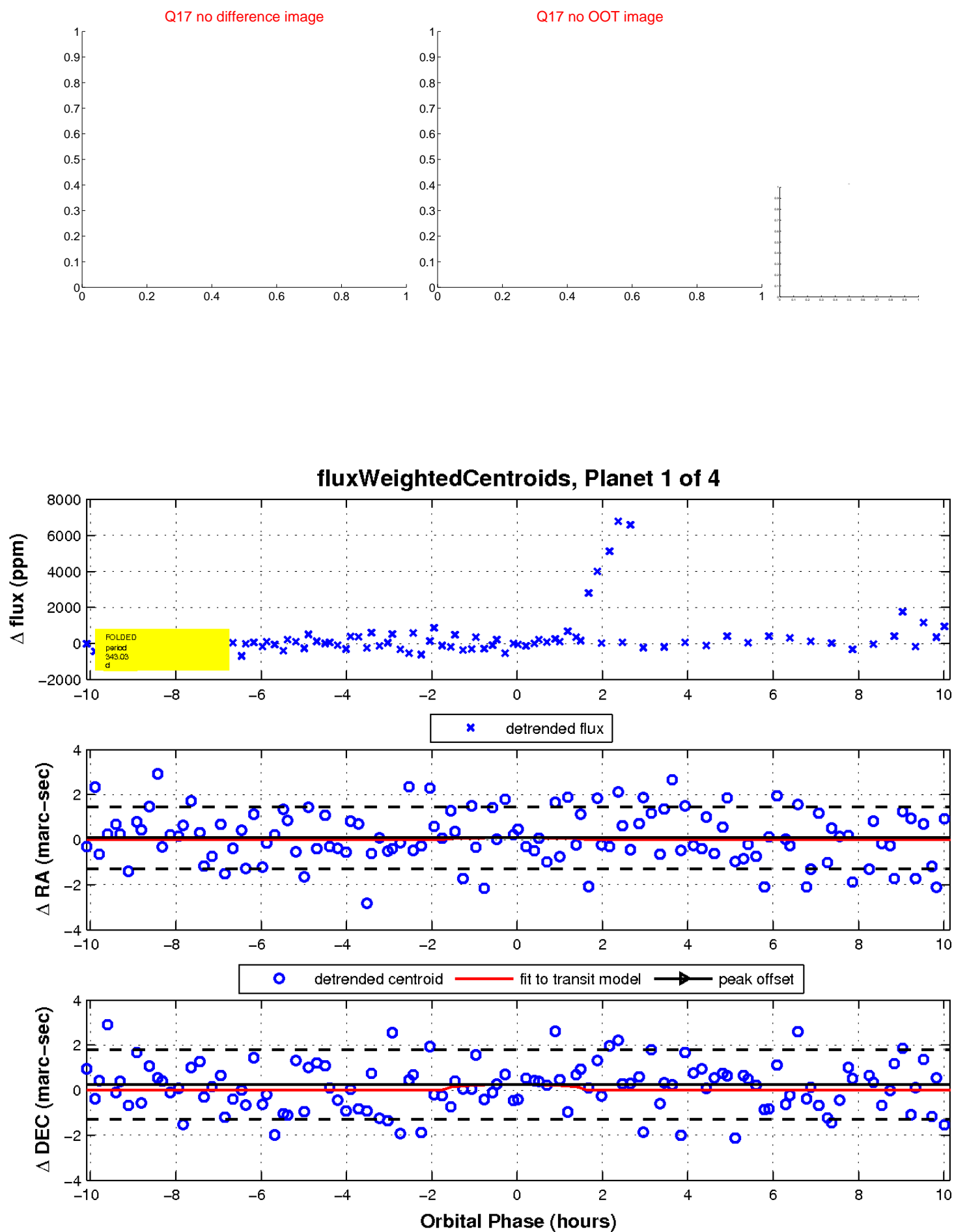
Q16 no difference image



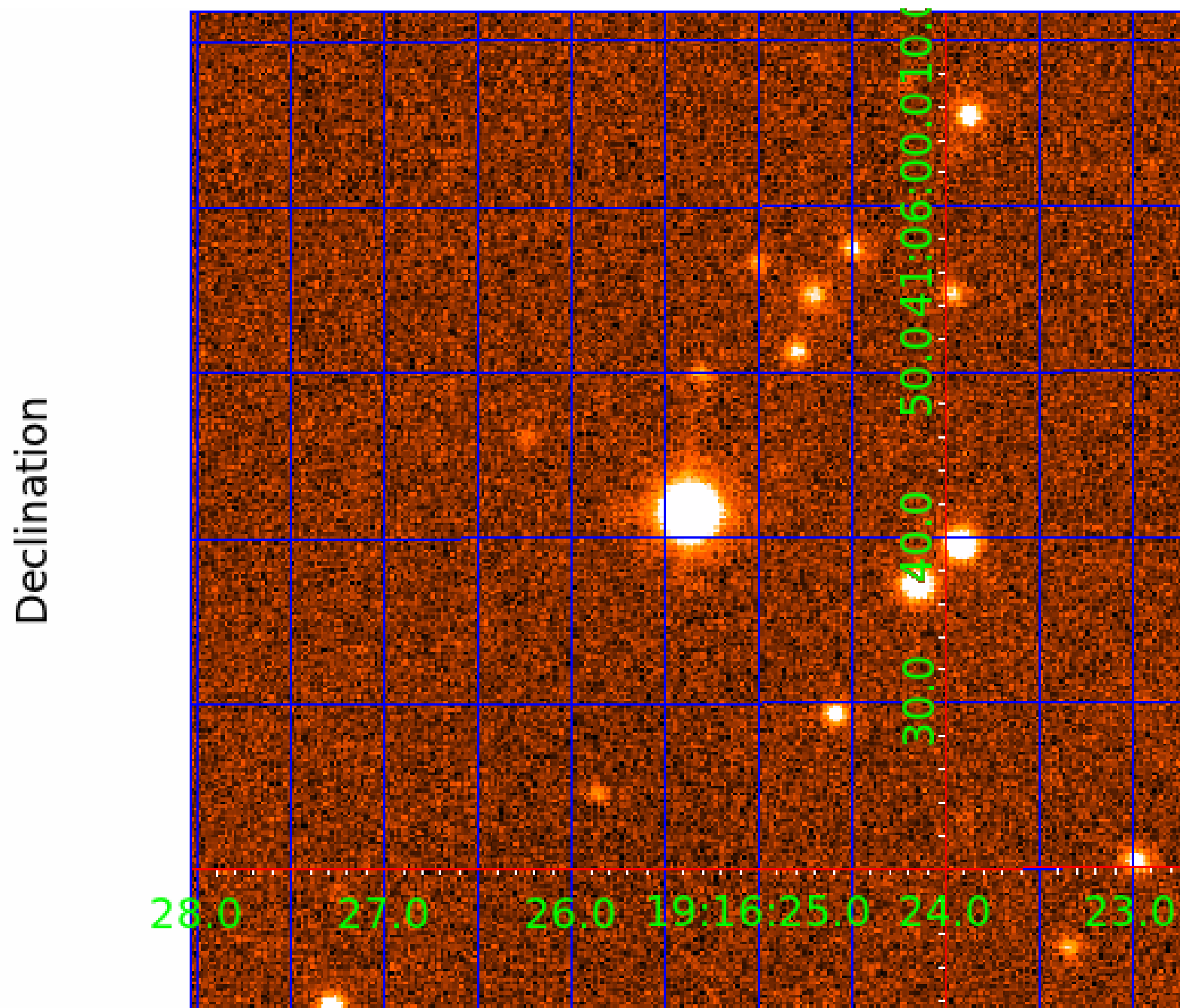
Q16 no OOT image



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



UKIRT Image



KIC 005782376

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})
005782376-01	OBS	No	343.032173	398.253036	1270.0	3.396	15.9	8.2	102.87	3628	385.18	1278.36
005782376-02	OBS	No	587.659759	336.105345	1833.1	12.995	16.9	8.7	102.87	3628	490.91	623.64
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005782376-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

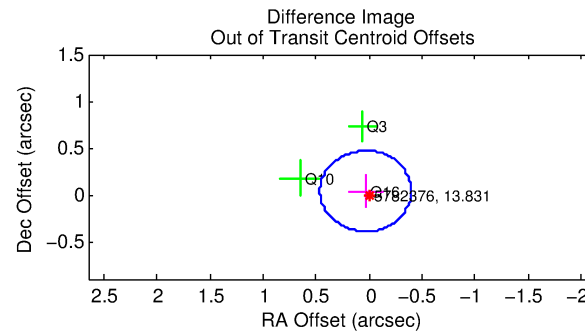
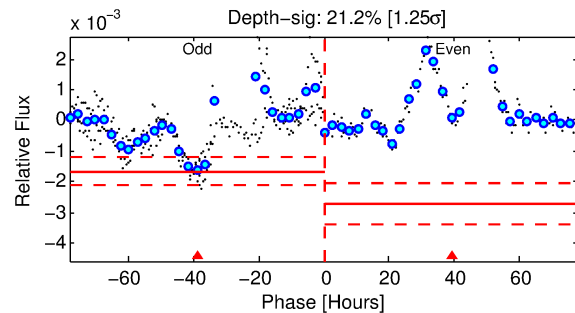
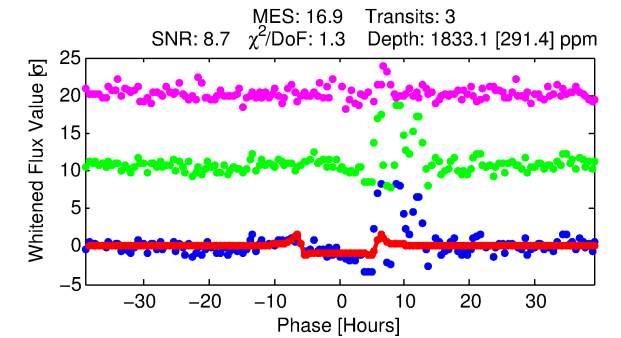
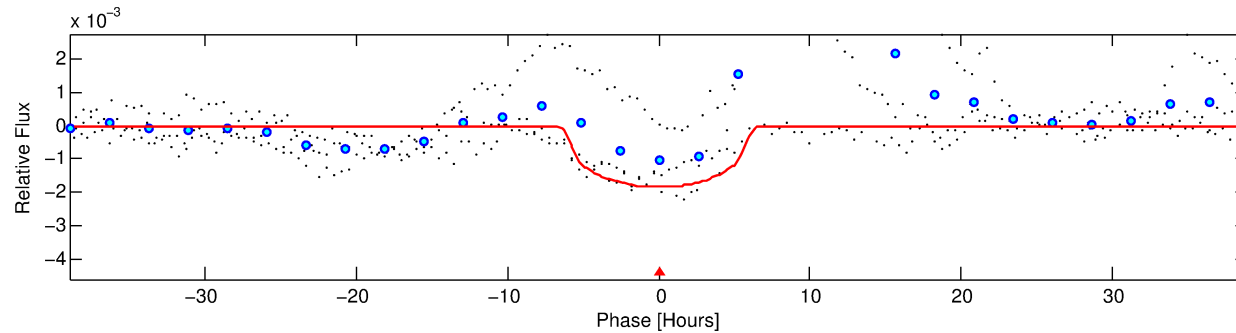
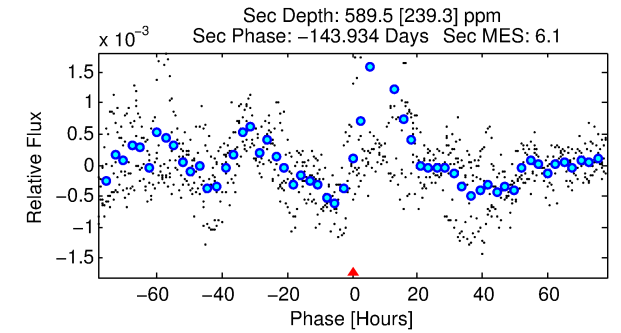
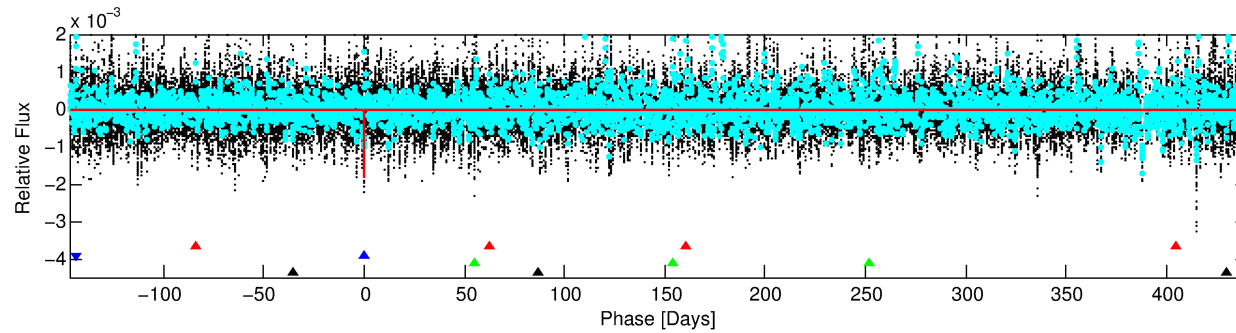
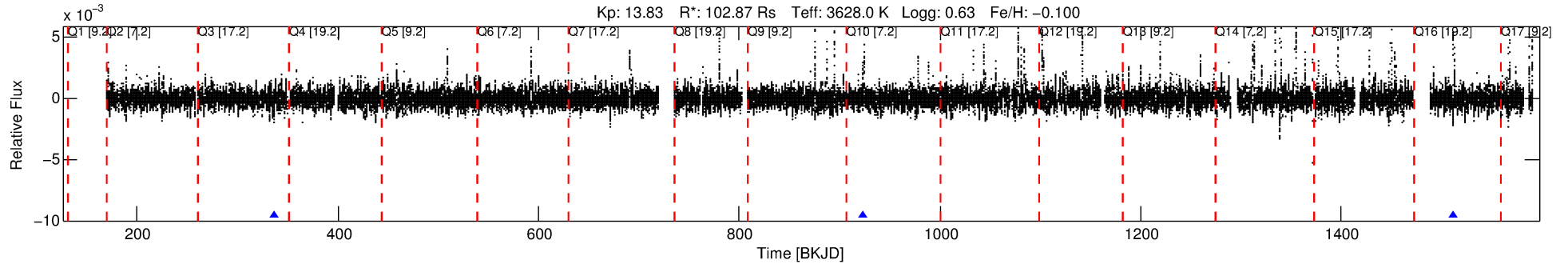
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005782376-02

No Significant Match Found

DV One-Page Summary

KIC: 5782376 Candidate: 2 of 4 Period: 587.660 d



DV Fit Results:

Period = 587.65976 [0.00748] d
Epoch = 336.1053 [0.0093] BKJD
Rp/R* = 0.0437 [0.0054]
a/R* = 245.12 [54.49]
b = 0.77 [0.12]
Seff = 623.64 [107.25]
Teq = 1274 [55] K
Rp = 490.91 [110.00] Re
a = 1.6230 [0.2058] AU
Ag = 3.54 [1.75] [1.45 σ]
Teffp = 2703 [330] K [4.28 σ]

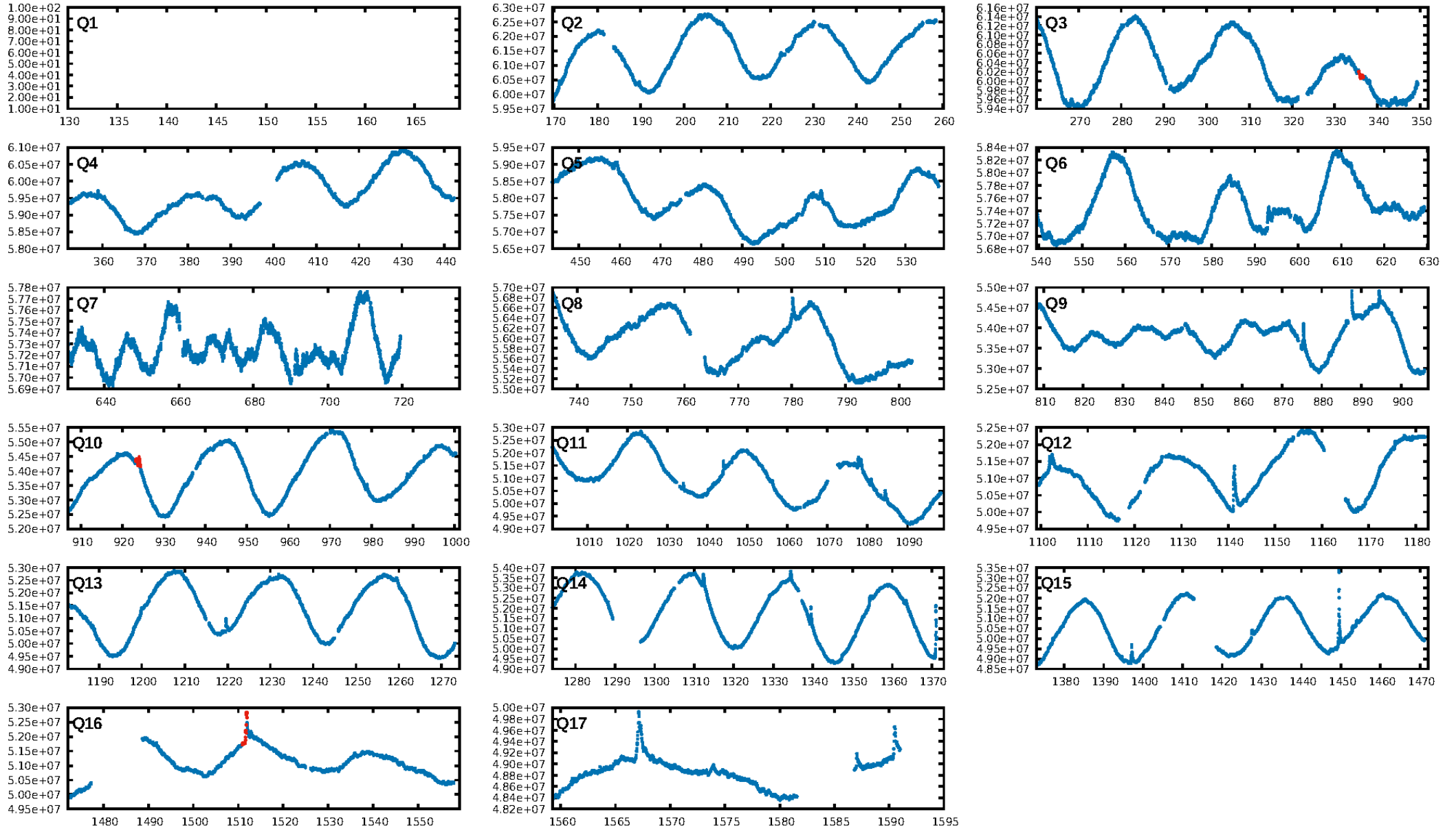
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [88.48 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 45.5%
Bootstrap-pfa: 6.30e-18
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -6.213
Centroid-sig: 6.2%
Centroid-so: 0.290 arcsec [1.06 σ]
OotOffset-rm: 0.051 arcsec [0.36 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.121 arcsec [0.84 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

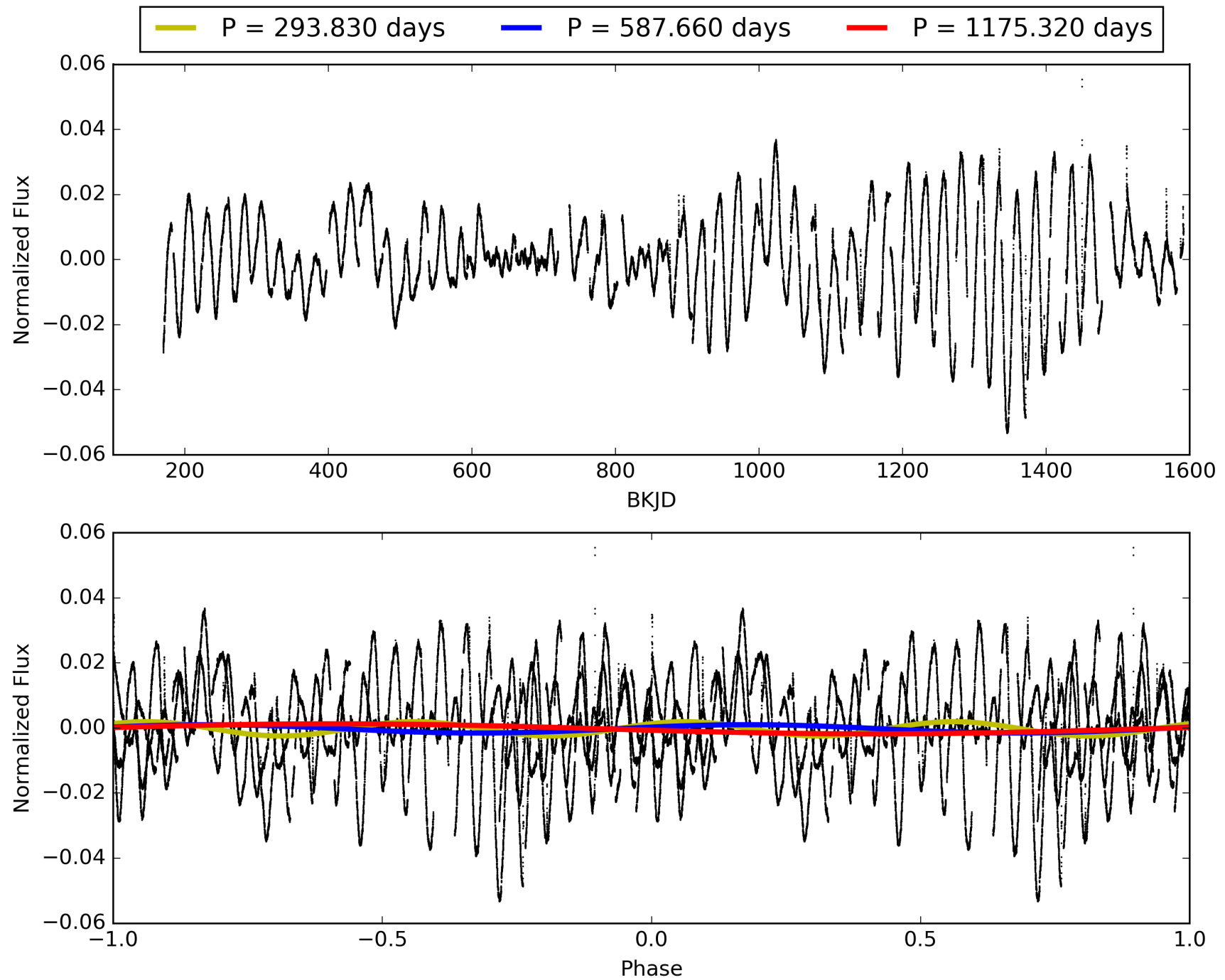
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:19:11 Z

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

TCE 005782376-02, PDC Light Curves

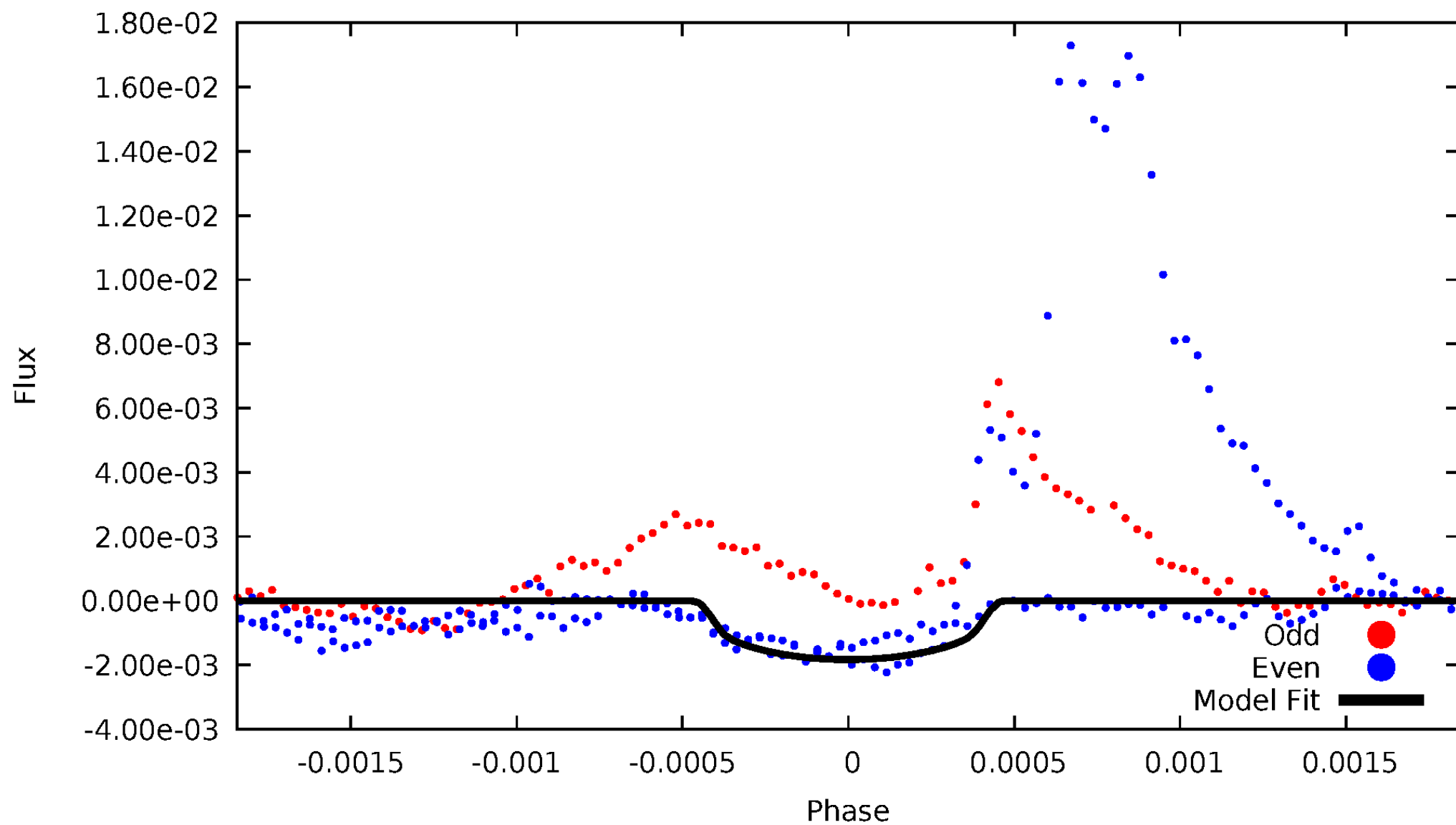


TCE 005782376-02



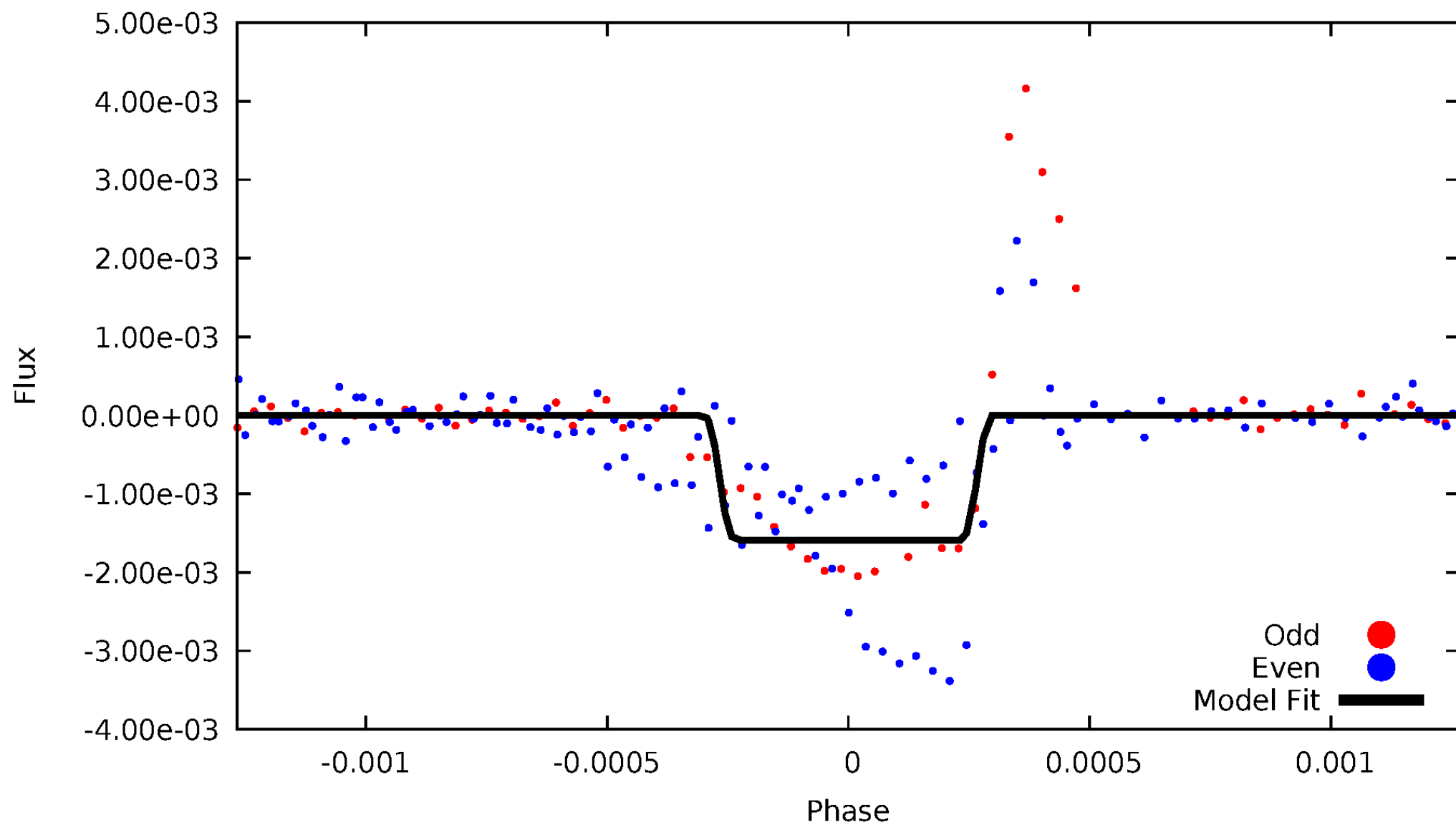
DV Odd/Even

TCE 005782376-02



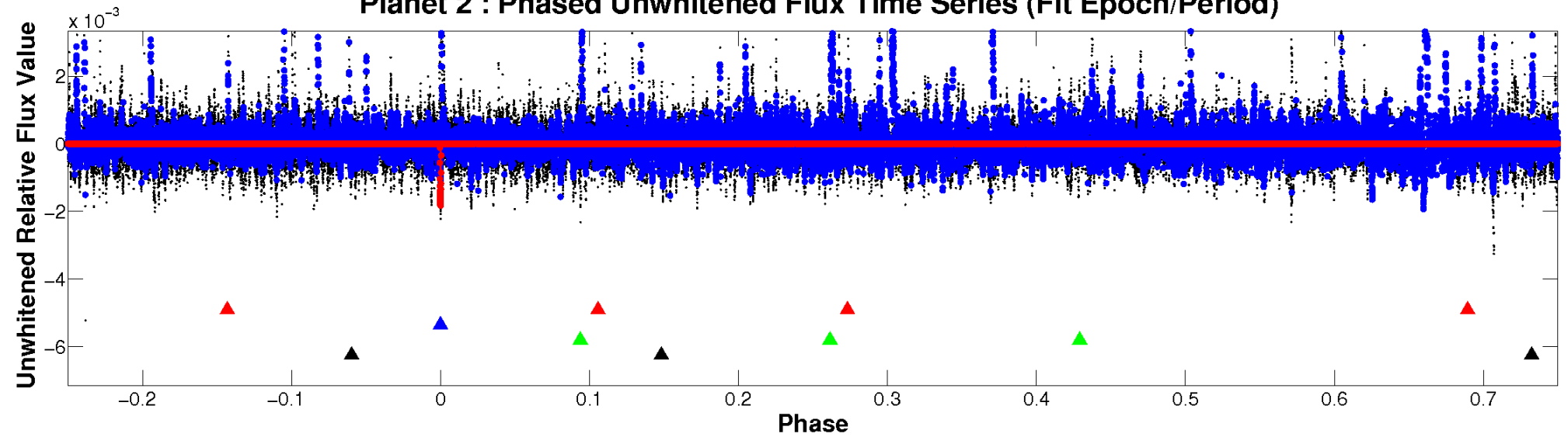
ALT Odd/Even

TCE 005782376-02

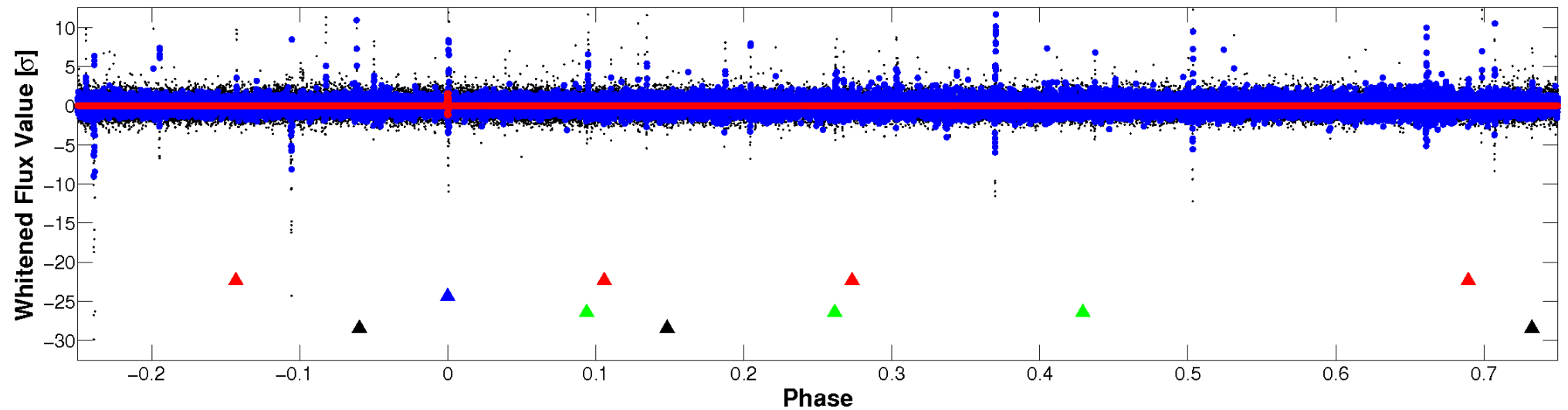


Non-Whitened Vs. Whitened Light Curve

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

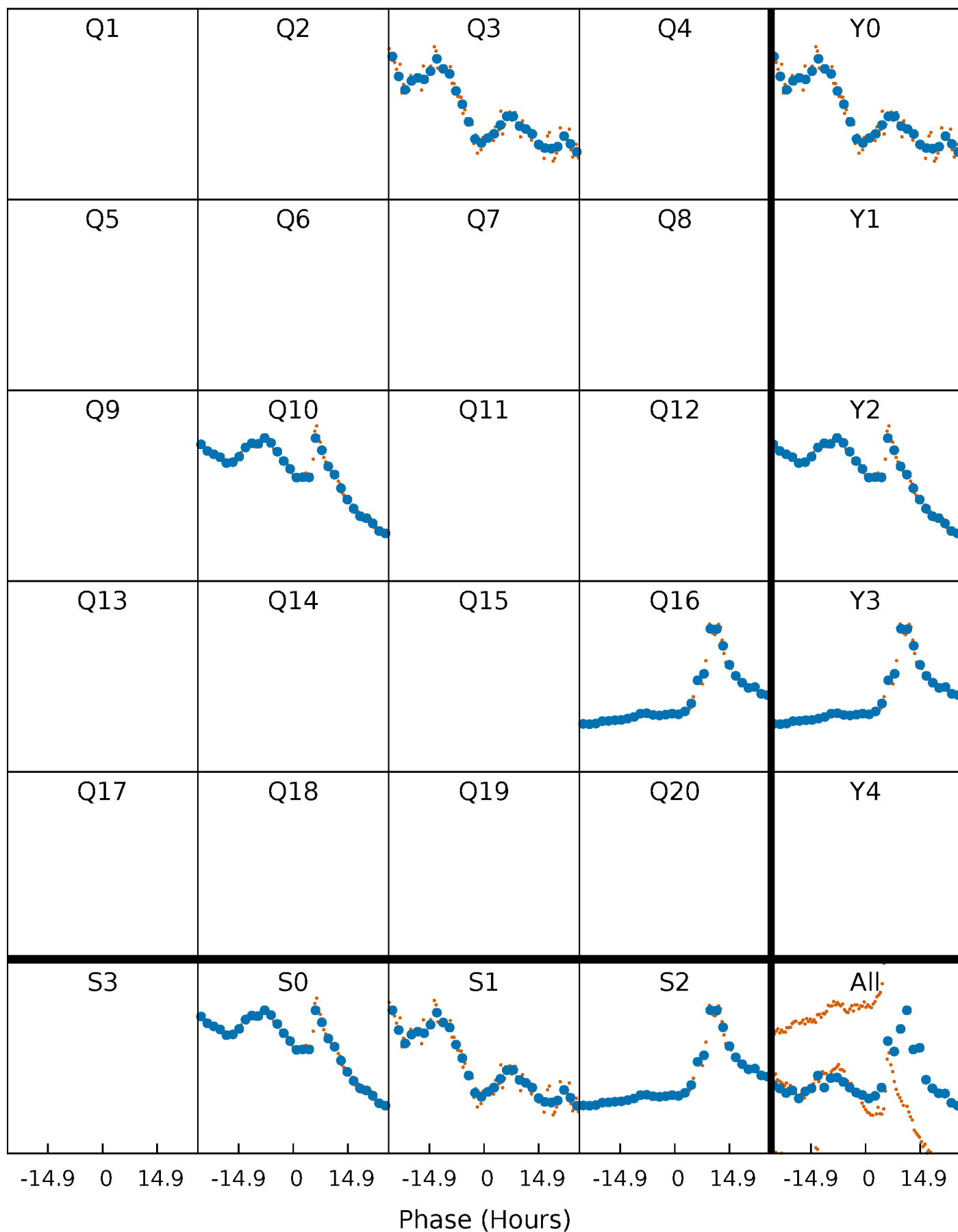


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



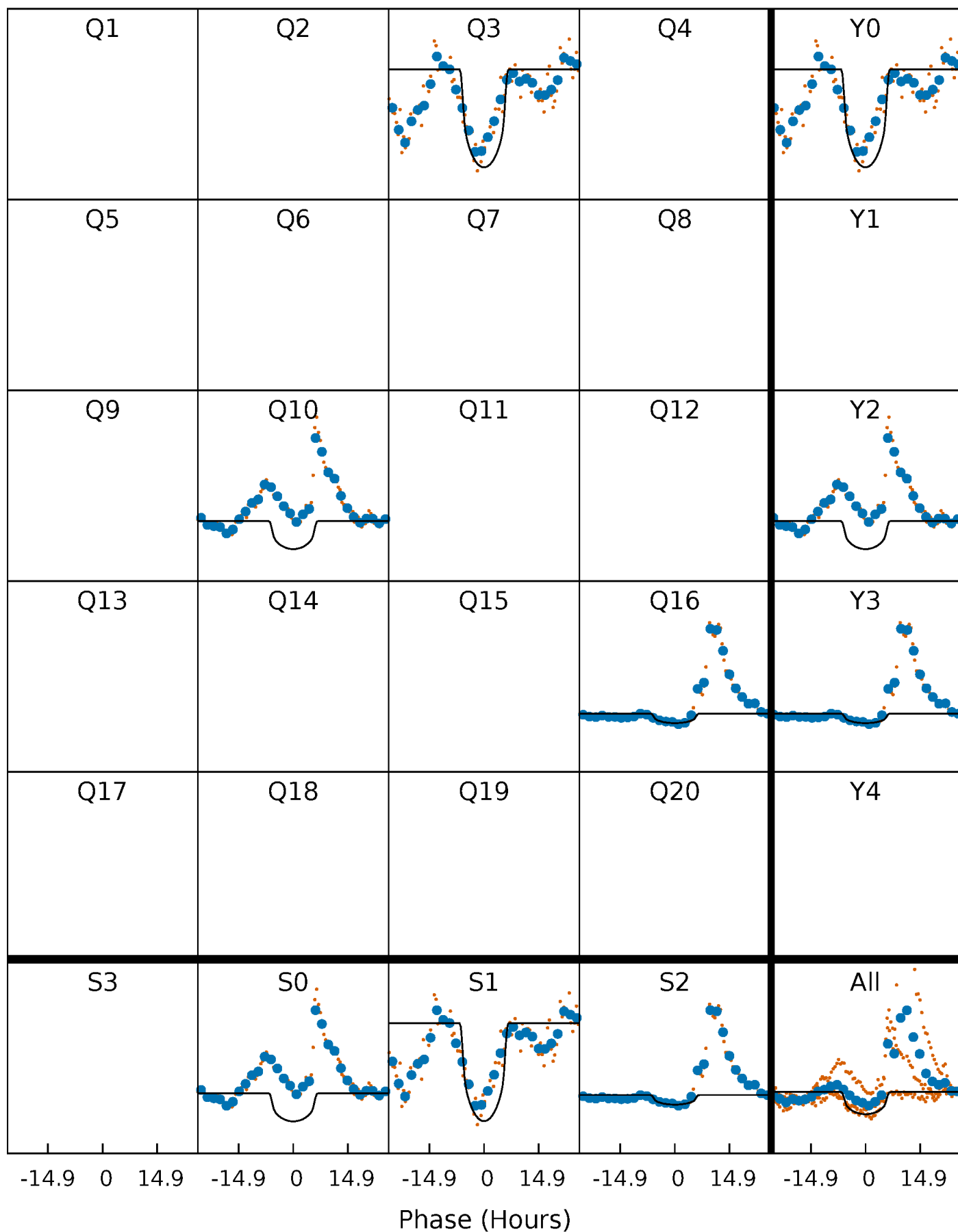
PDC Quarter-Phased Transit Curves

TCE 005782376-02 $P=587.659759$ Days $T_0=336.105345$ (BKJD)



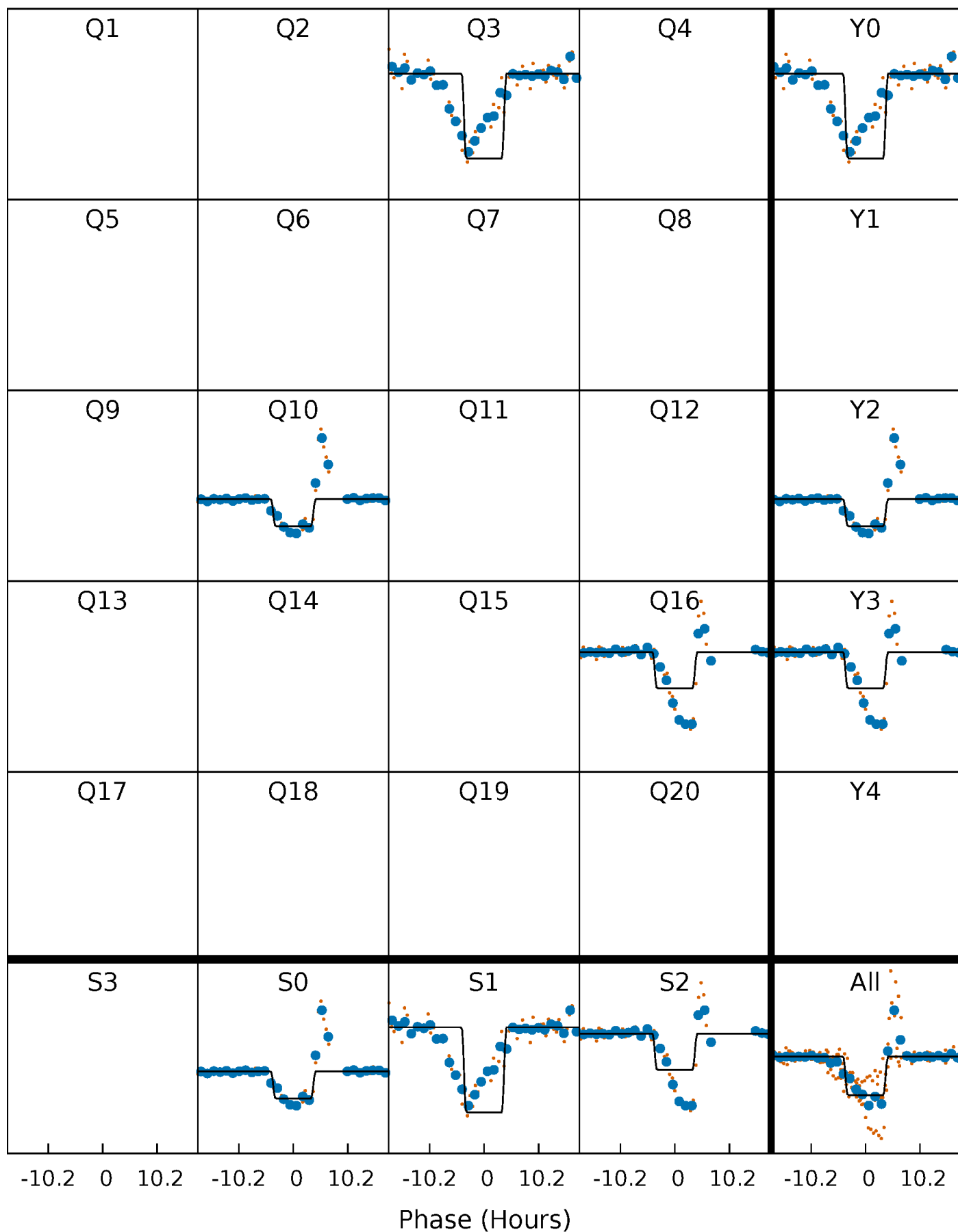
DV Quarter-Phased Transit Curves

TCE 005782376-02 $P=587.659759$ Days $T_0=336.105345$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

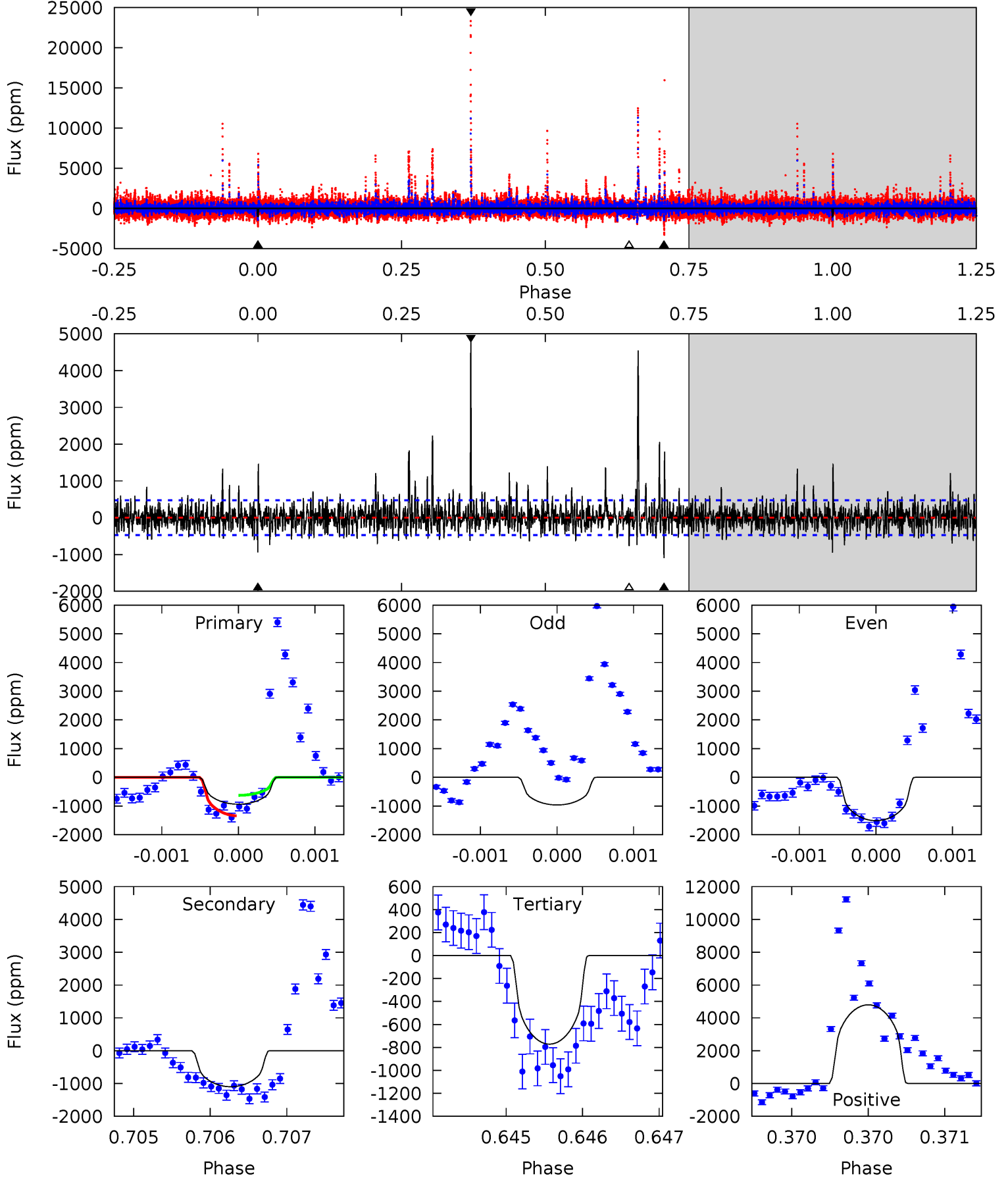
TCE 005782376-02 $P=587.655563$ Days $T_0=336.159743$ (BKJD)



DV Model-Shift Uniqueness Test

005782376-02, P = 587.659759 Days, E = 336.105345 Days

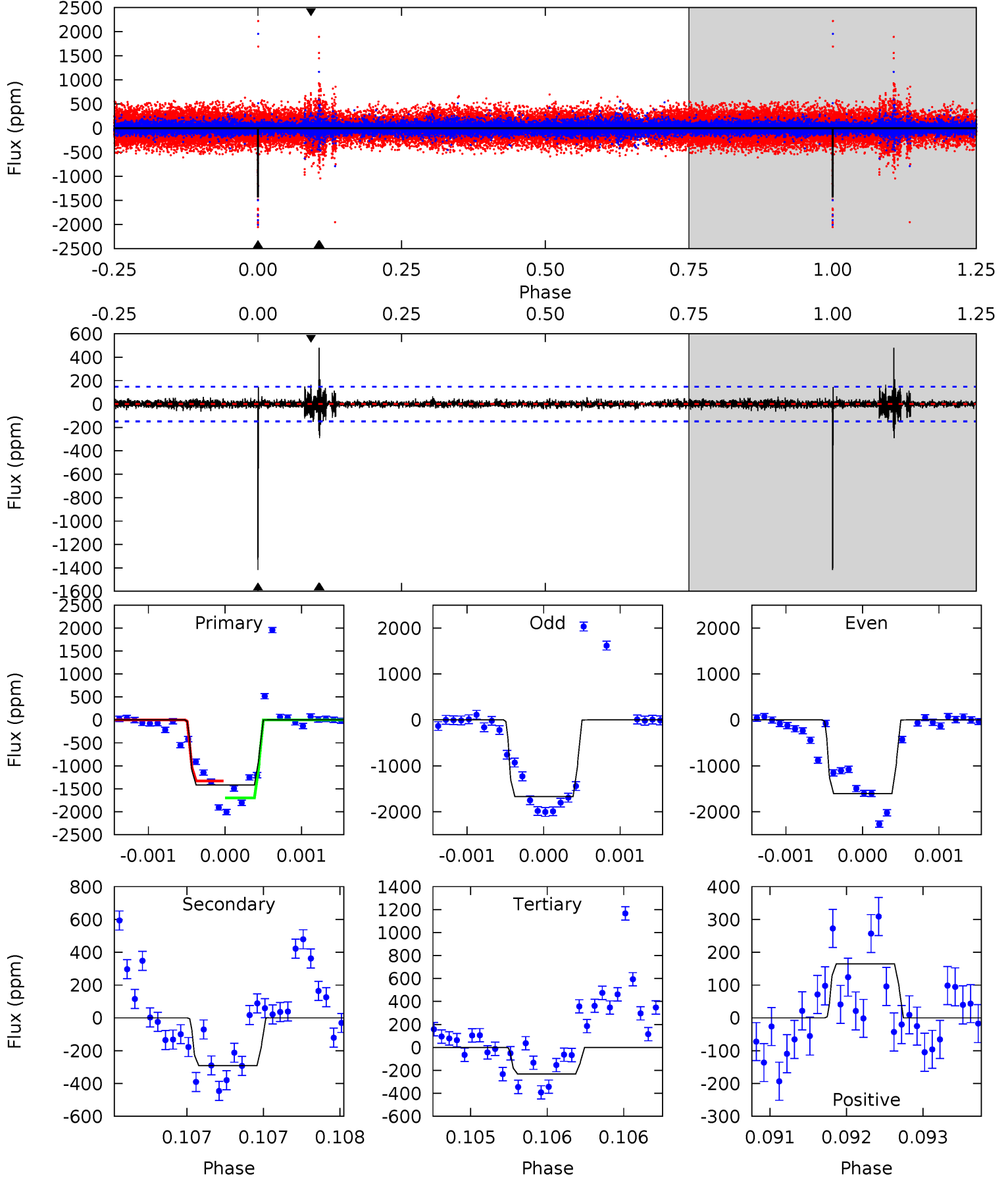
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	12.7	8.89	55.2	5.46	3.31	3.78	1.93	-44.4	3.76	-42.6	3.08	0.47	0.81	4.16



Alt Model-Shift Uniqueness Test

005782376-02, P = 587.655563 Days, E = 336.159743 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.1	10.9	8.63	6.16	5.54	3.43	0.78	44.4	46.9	2.28	4.75	1.22	0.97	0.25	6.80



Stellar Parameters For KIC 005782376

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3628^{+81}_{-1}	$0.631^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$102.874^{+3.395}_{-19.237}$	$1.651^{+0.059}_{-0.535}$	$0.000^{+0.000}_{-0.000}$
	+2%/-0%	+5%/-5%	+200%/-250%	+3%/-19%	+4%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 005782376-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1098 ± 87	$488.40^{+70.67}_{-61.09}$	1775^{+54}_{-92}	3261^{+198}_{-159}	$6.649^{+1.972}_{-1.582}$
Alt.	-291 ± 27	$446.48^{+67.70}_{-65.30}$	1783^{+50}_{-95}	2756^{+149}_{-152}	$2.108^{+0.790}_{-0.514}$

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

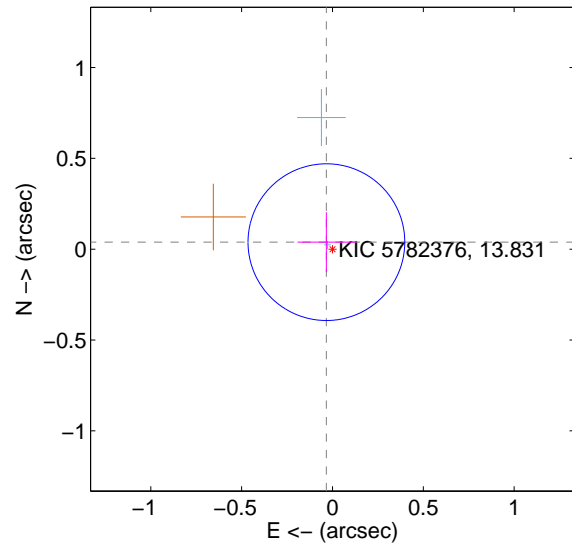
Supplemental centroid analysis for 005782376-02. Kepler magnitude: 13.83. Transit SNR 8.72

There are 2 quarters with good PRF difference image offsets

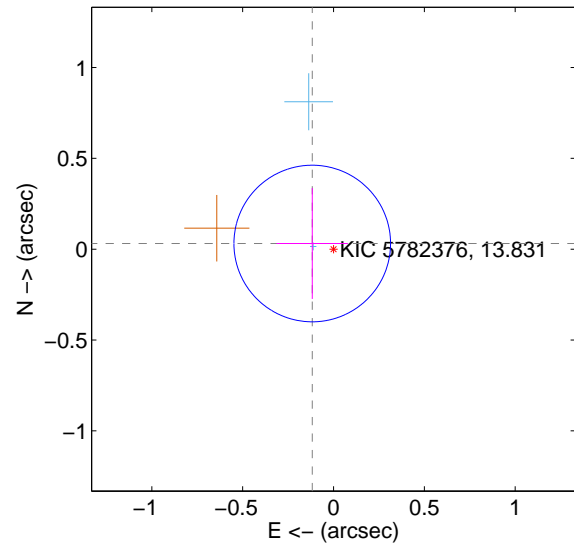
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.051 ± 0.144	0.36	0.033 ± 0.159	0.039 ± 0.165
PRF-fit source offset from KIC position	0.121 ± 0.144	0.84	0.117 ± 0.196	0.031 ± 0.305
photometric centroid source offset	0.29 ± 0.27	1.06	-0.01 ± 0.28	-0.29 ± 0.27

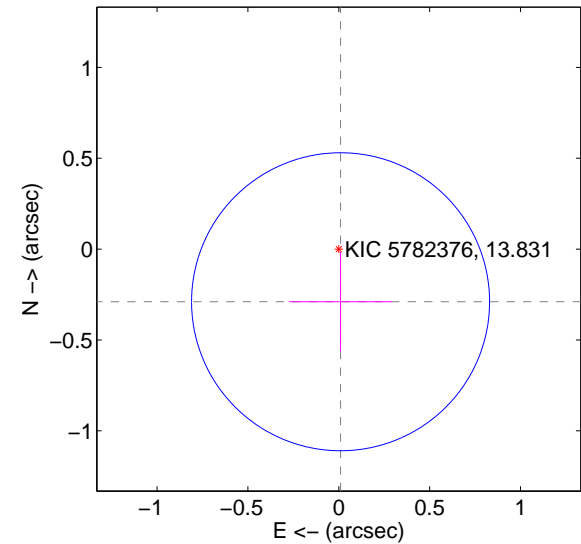
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

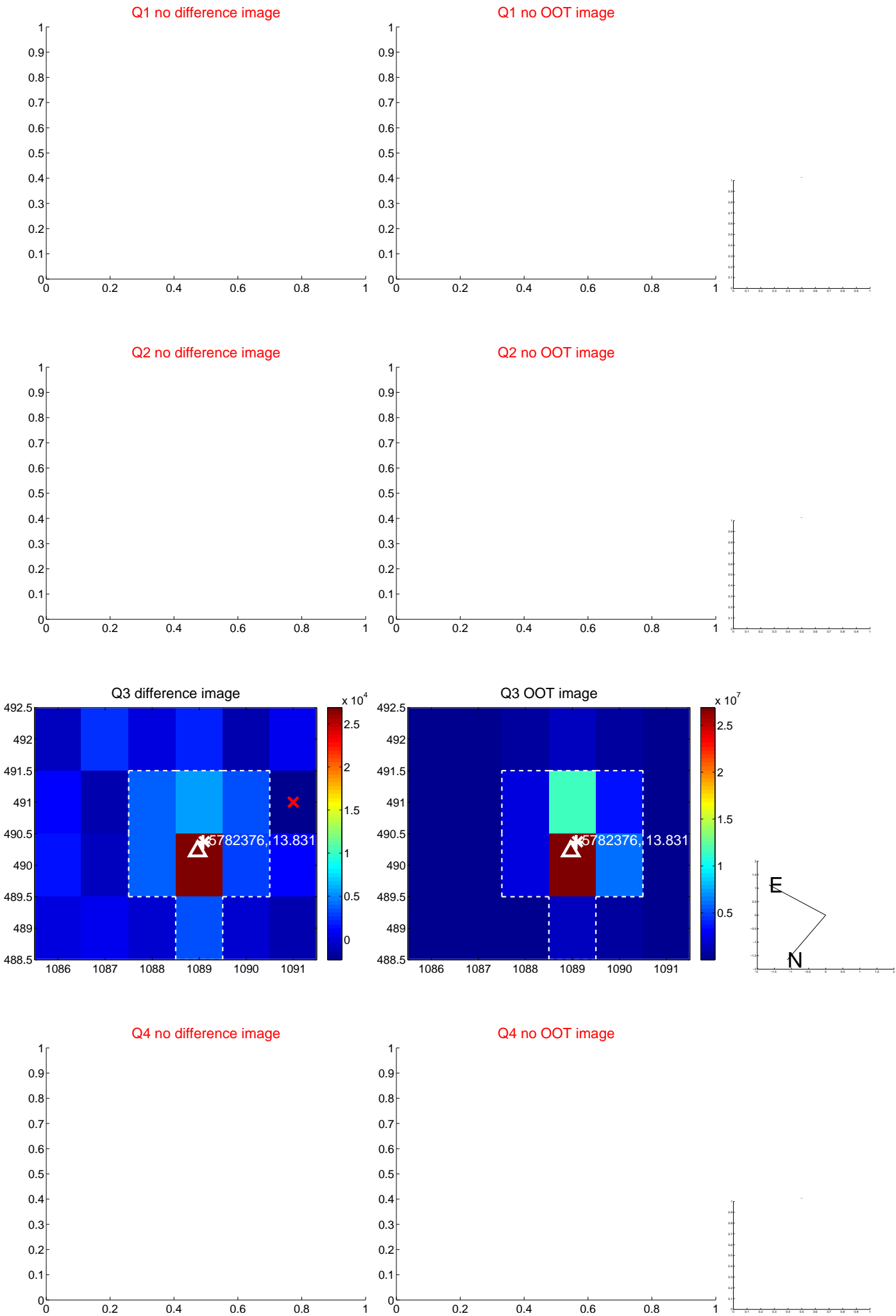


offset from photometric centroids



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.

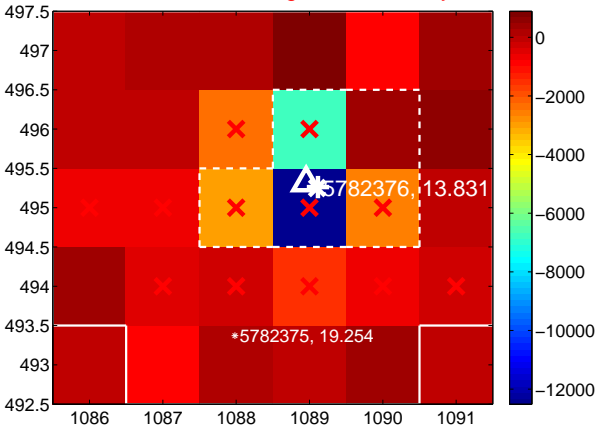
Q9 no difference image



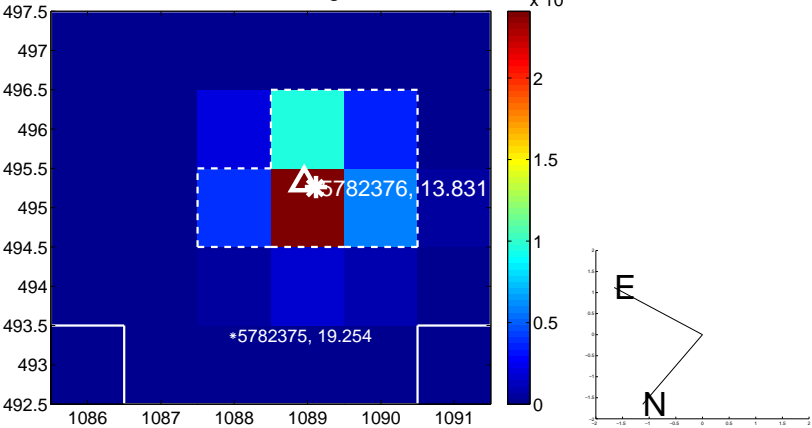
Q9 no OOT image



Q10 difference image. Poor Quality



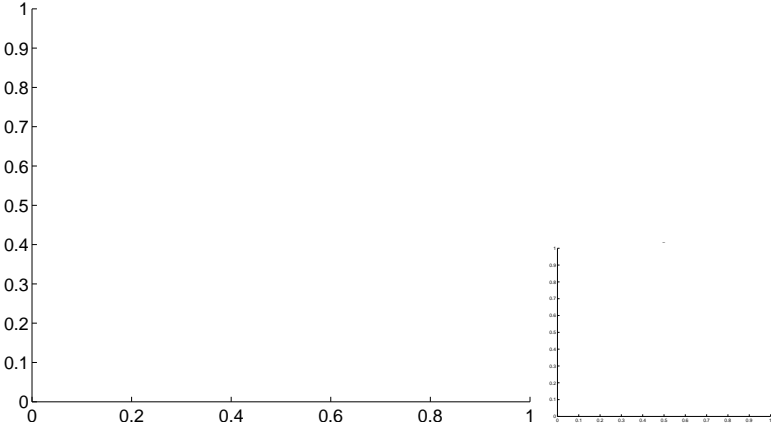
Q10 OOT image



Q11 no difference image



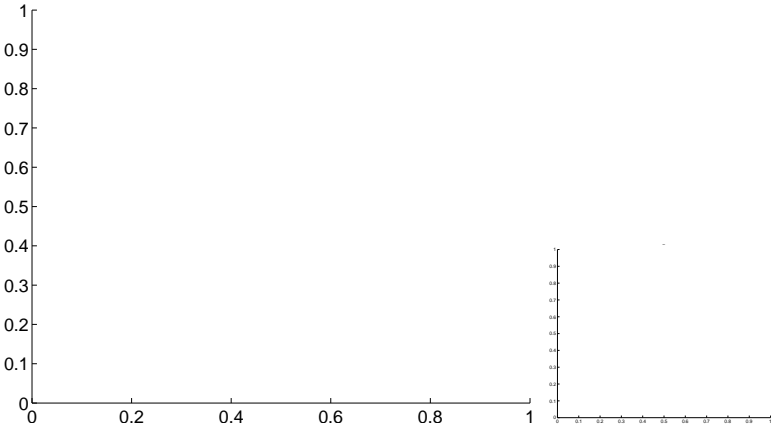
Q11 no OOT image



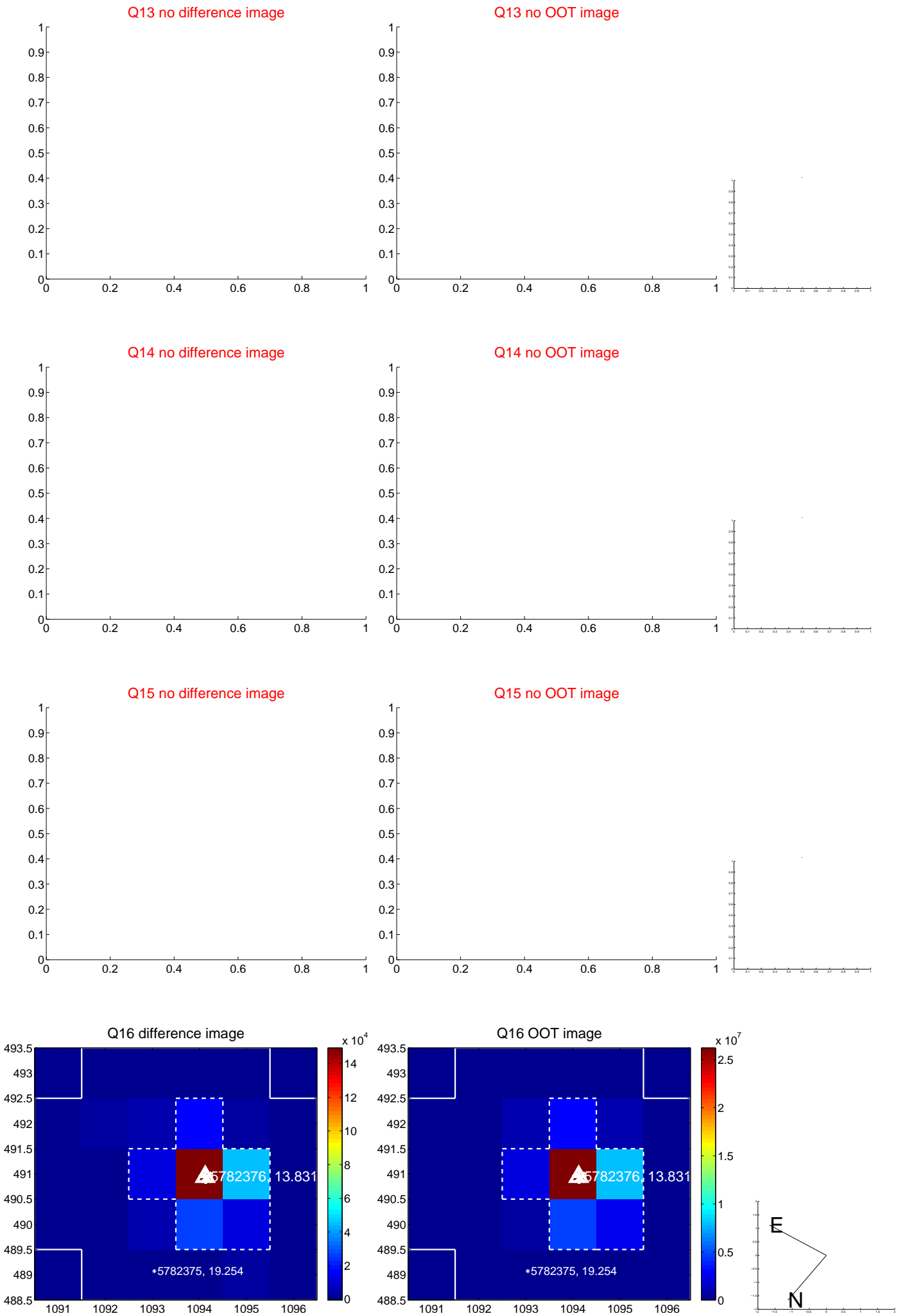
Q12 no difference image



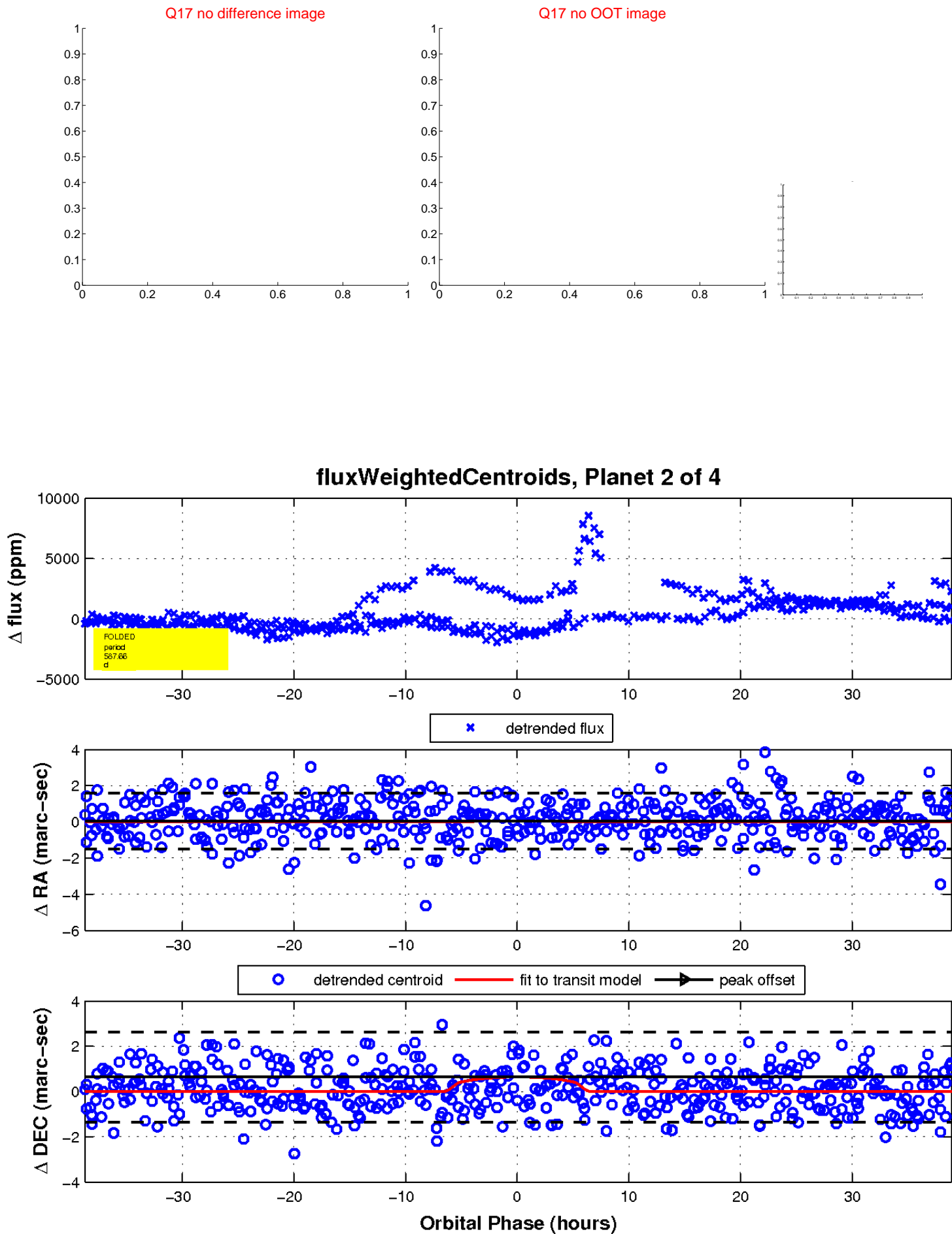
Q12 no OOT image



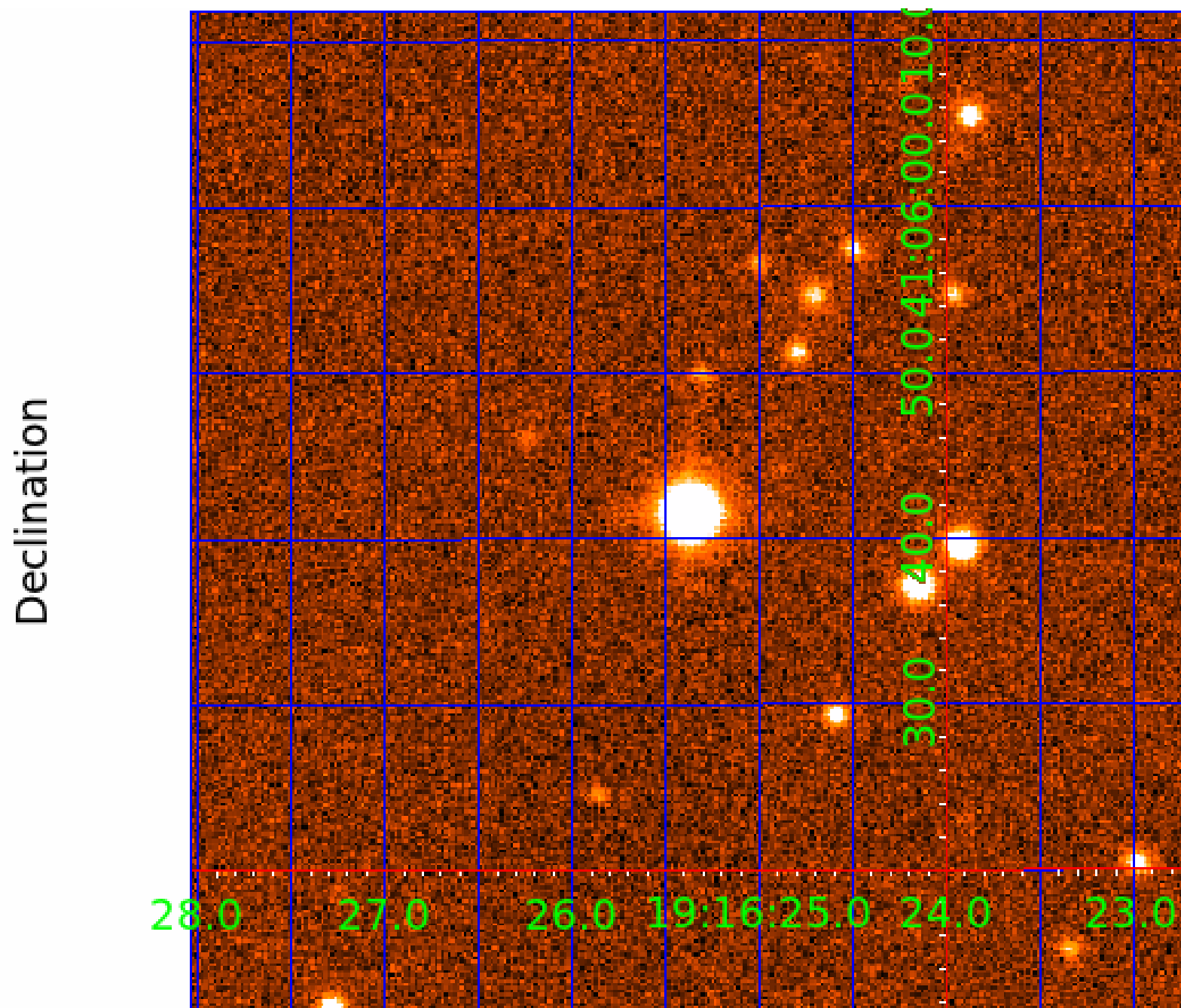
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005782376

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})
005782376-01	OBS	No	343.032173	398.253036	1270.0	3.396	15.9	8.2	102.87	3628	385.18	1278.36
005782376-02	OBS	No	587.659759	336.105345	1833.1	12.995	16.9	8.7	102.87	3628	490.91	623.64
005782376-03	OBS	No	489.164807	588.251366	2881.6	23.344	11.3	10.8	102.87	3628	726.21	796.45
005782376-04	OBS	No	465.483824	423.229027	1120.9	4.691	9.7	7.1	102.87	3628	392.49	850.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005782376-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

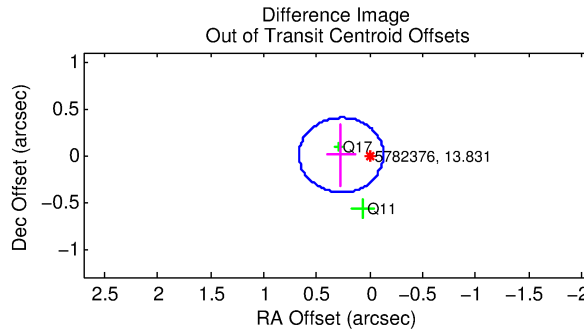
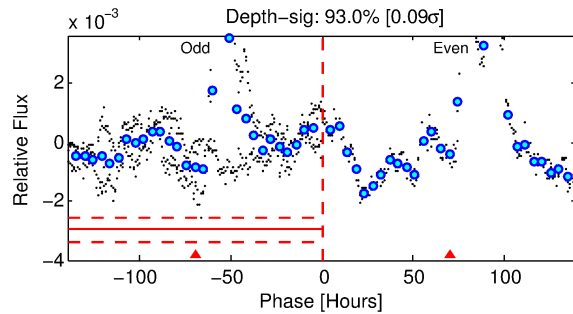
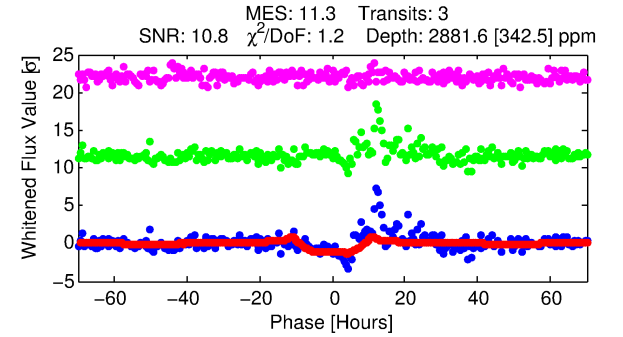
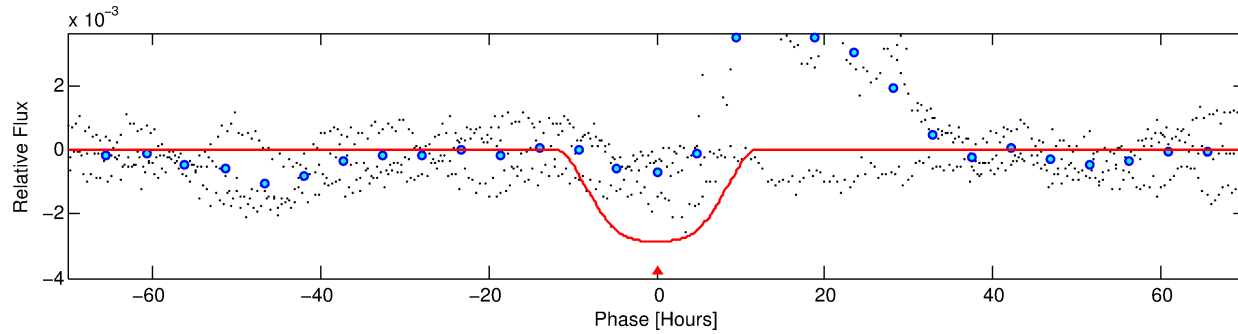
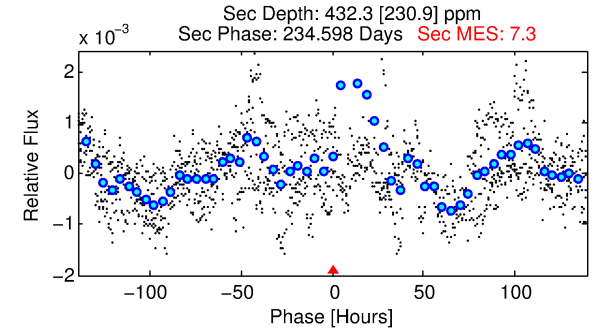
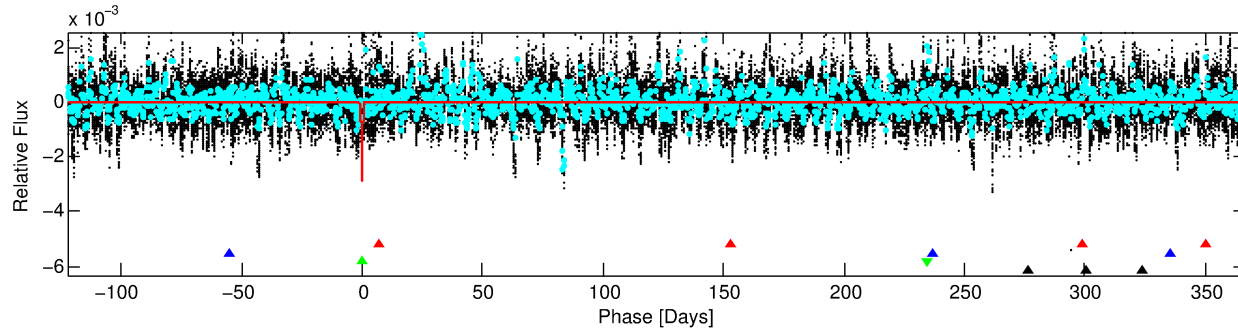
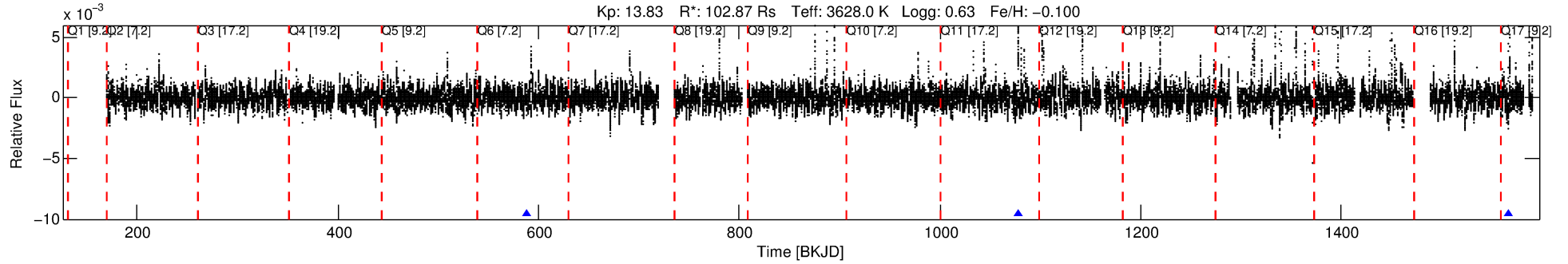
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005782376-03

No Significant Match Found

DV One-Page Summary

KIC: 5782376 Candidate: 3 of 4 Period: 489.165 d



DV Fit Results:

Period = 489.16481 [0.01946] d
Epoch = 588.2514 [0.0249] BKJD
Rp/R* = 0.0647 [0.0046]
a/R* = 87.24 [6.38]
b = 0.91 [0.02]
Seff = 796.45 [136.97]
Teq = 1355 [58] K
Rp = 726.21 [145.23] Re
a = 1.4362 [0.1821] AU
Ag = 0.93 [0.53] [-0.13 σ]
Teffp = 2057 [290] K [2.38 σ]

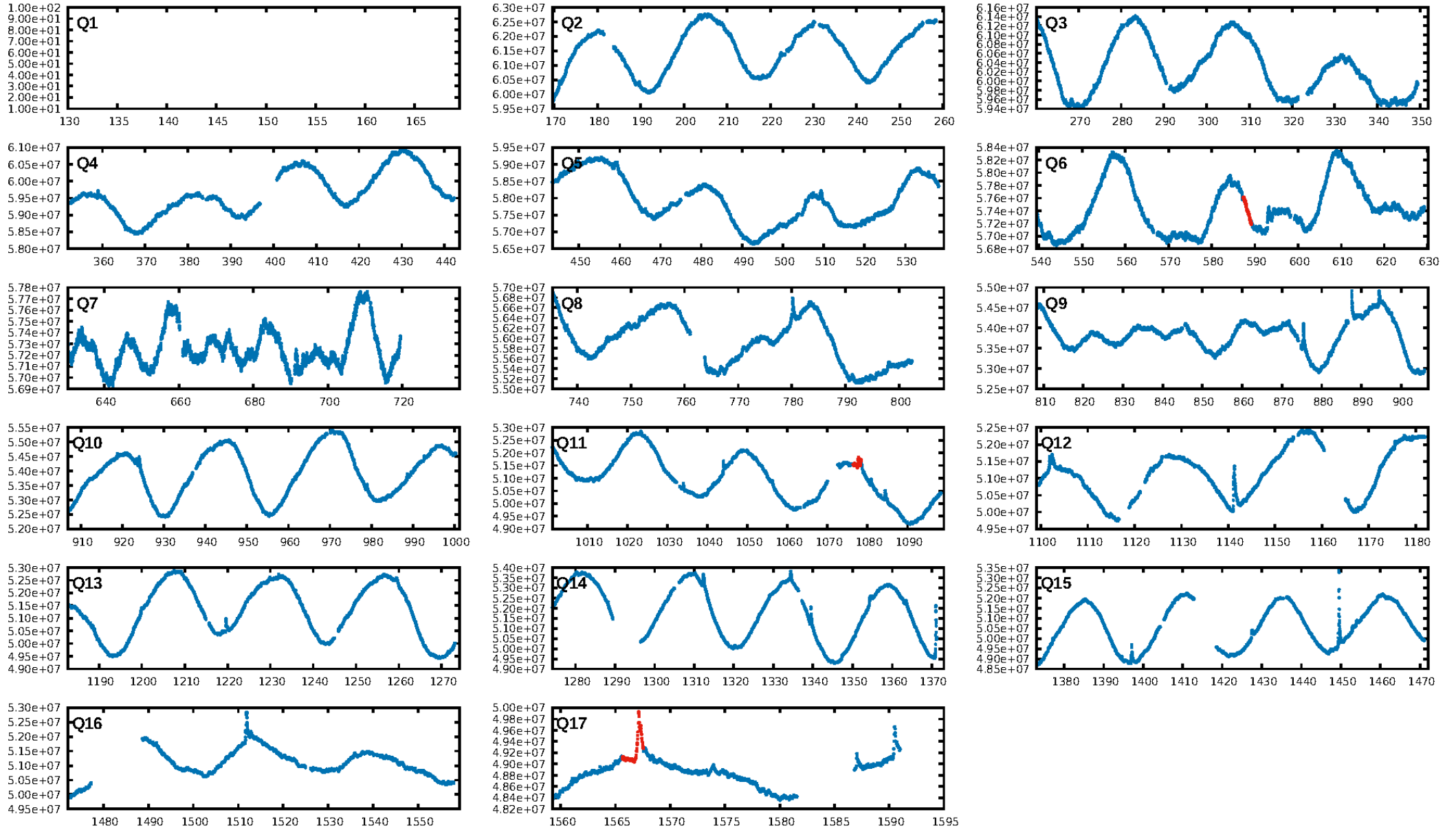
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.87 σ]
LongPeriod-sig: 100.0% [88.48 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 73.7%
Bootstrap-pfa: 1.72e-10
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -1.444
Centroid-sig: 80.1%
Centroid-so: 0.012 arcsec [0.09 σ]
OotOffset-rm: 0.266 arcsec [2.01 σ]
OotOffset-st: 0.1/0/1 [2]
KicOffset-rm: 0.336 arcsec [2.53 σ]
KicOffset-st: 0.1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

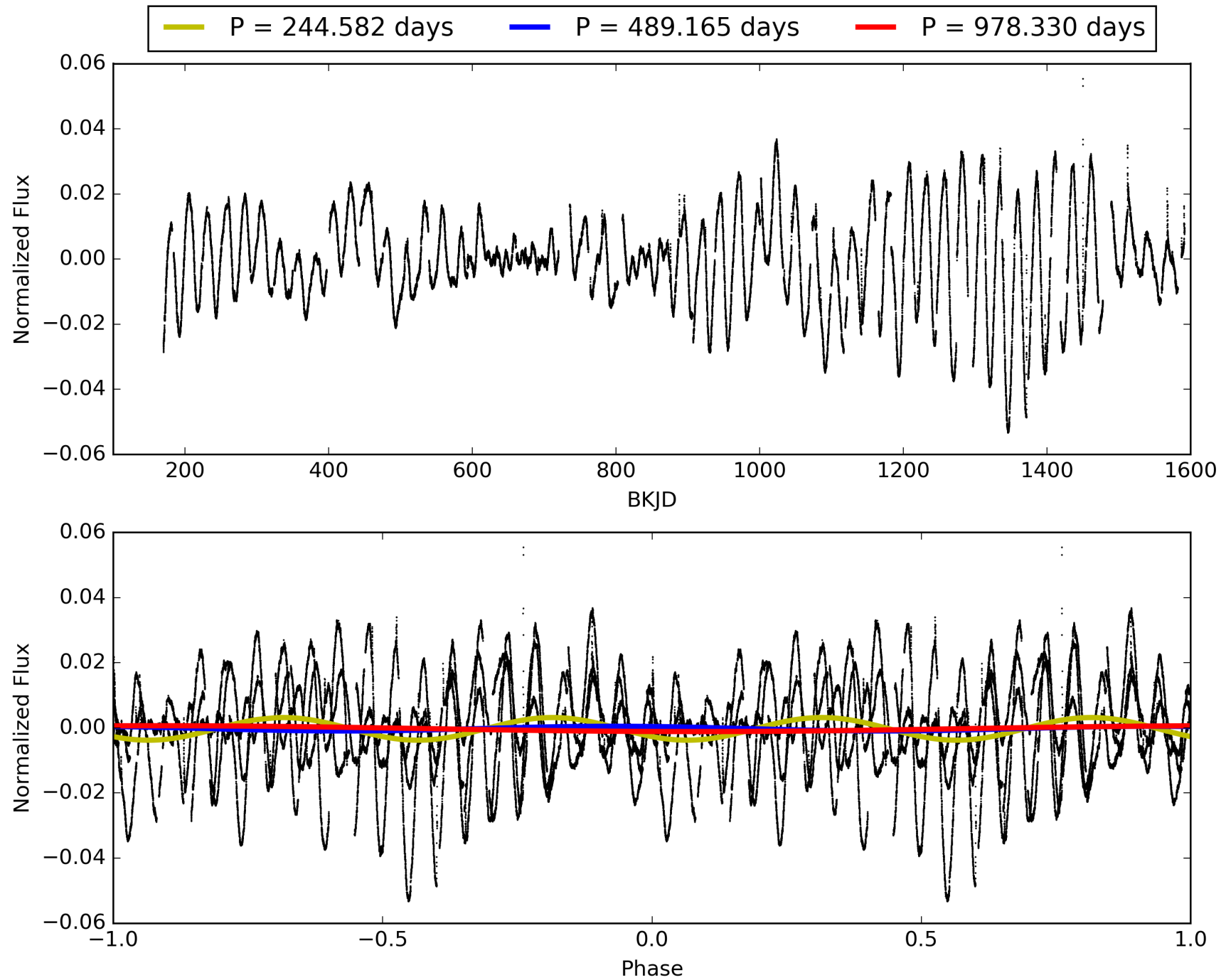
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:19:19 Z

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

TCE 005782376-03, PDC Light Curves

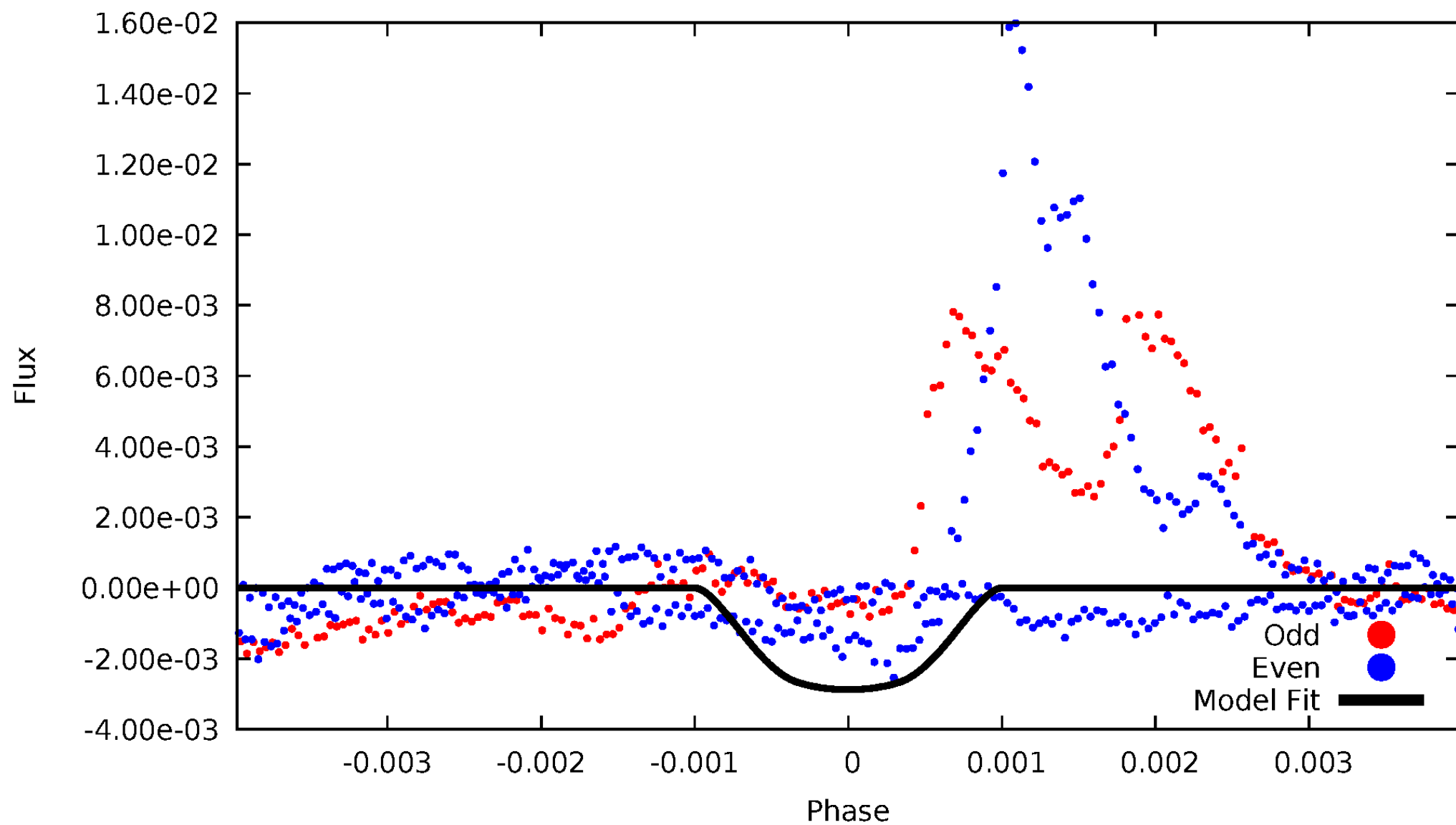


TCE 005782376-03



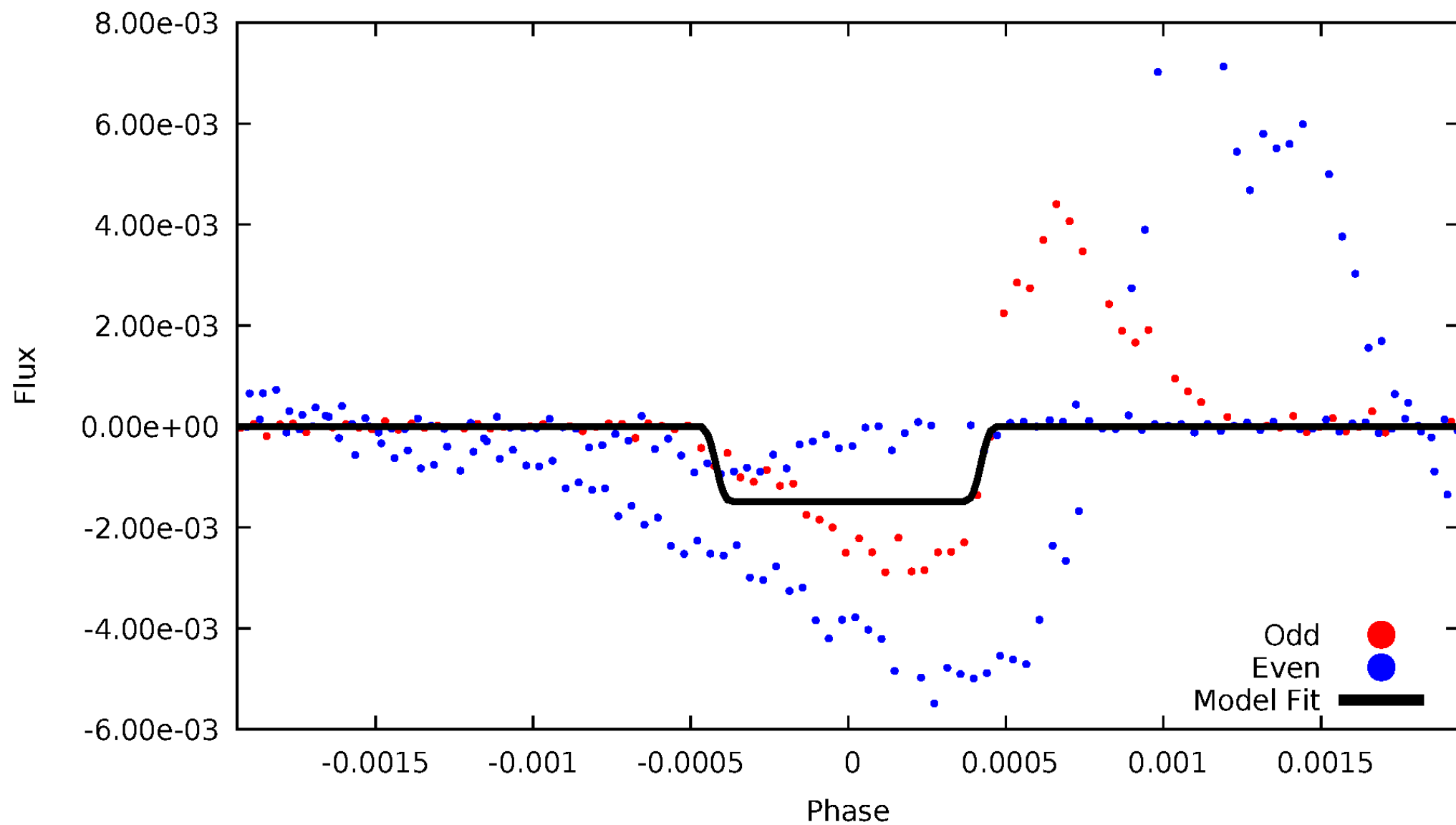
DV Odd/Even

TCE 005782376-03



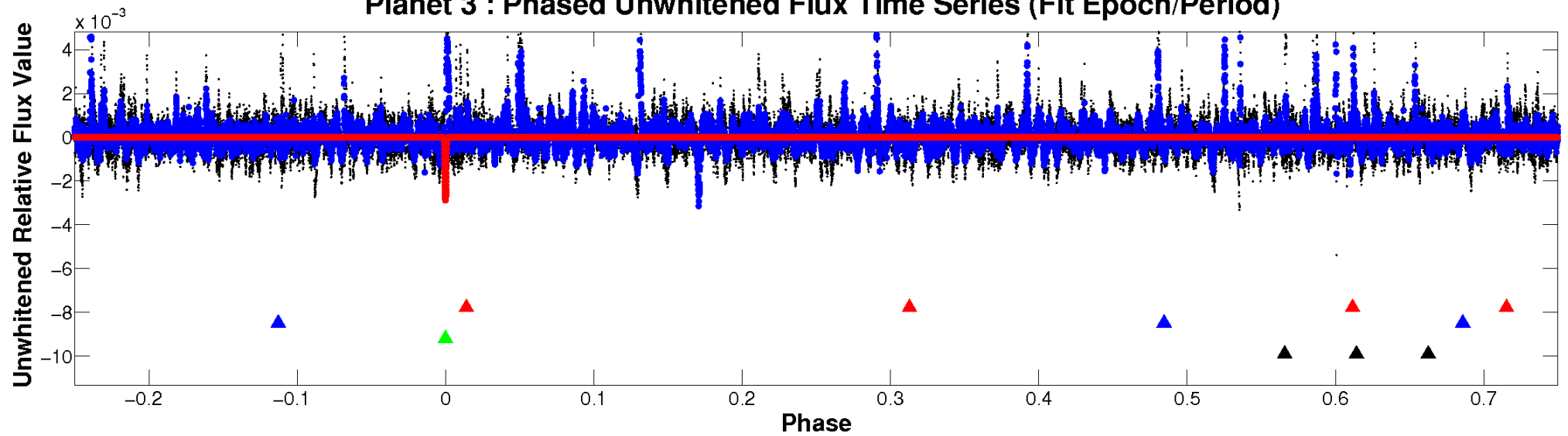
ALT Odd/Even

TCE 005782376-03

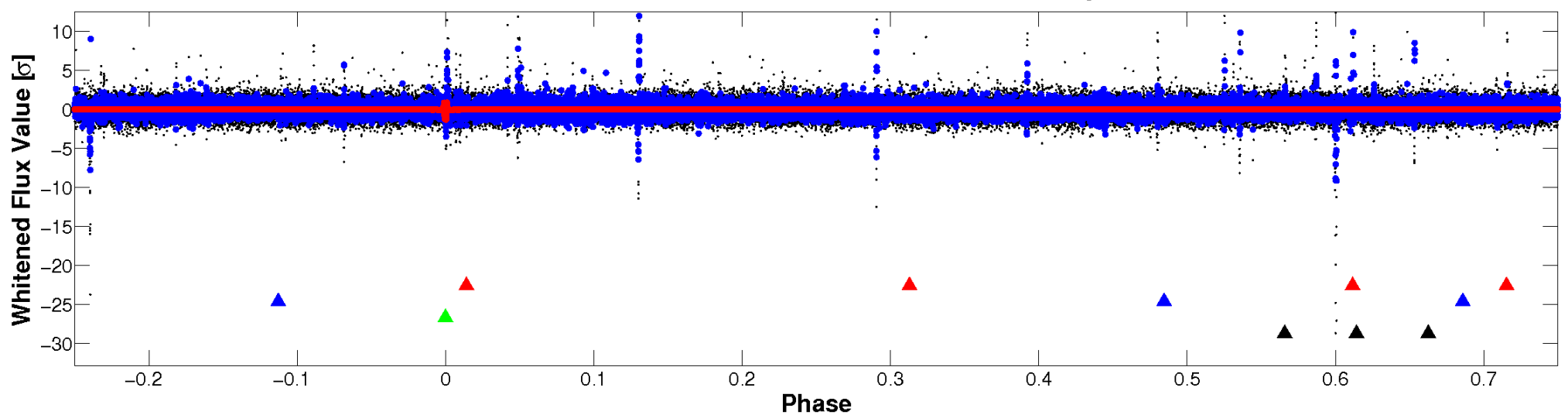


Non-Whitened Vs. Whitened Light Curve

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

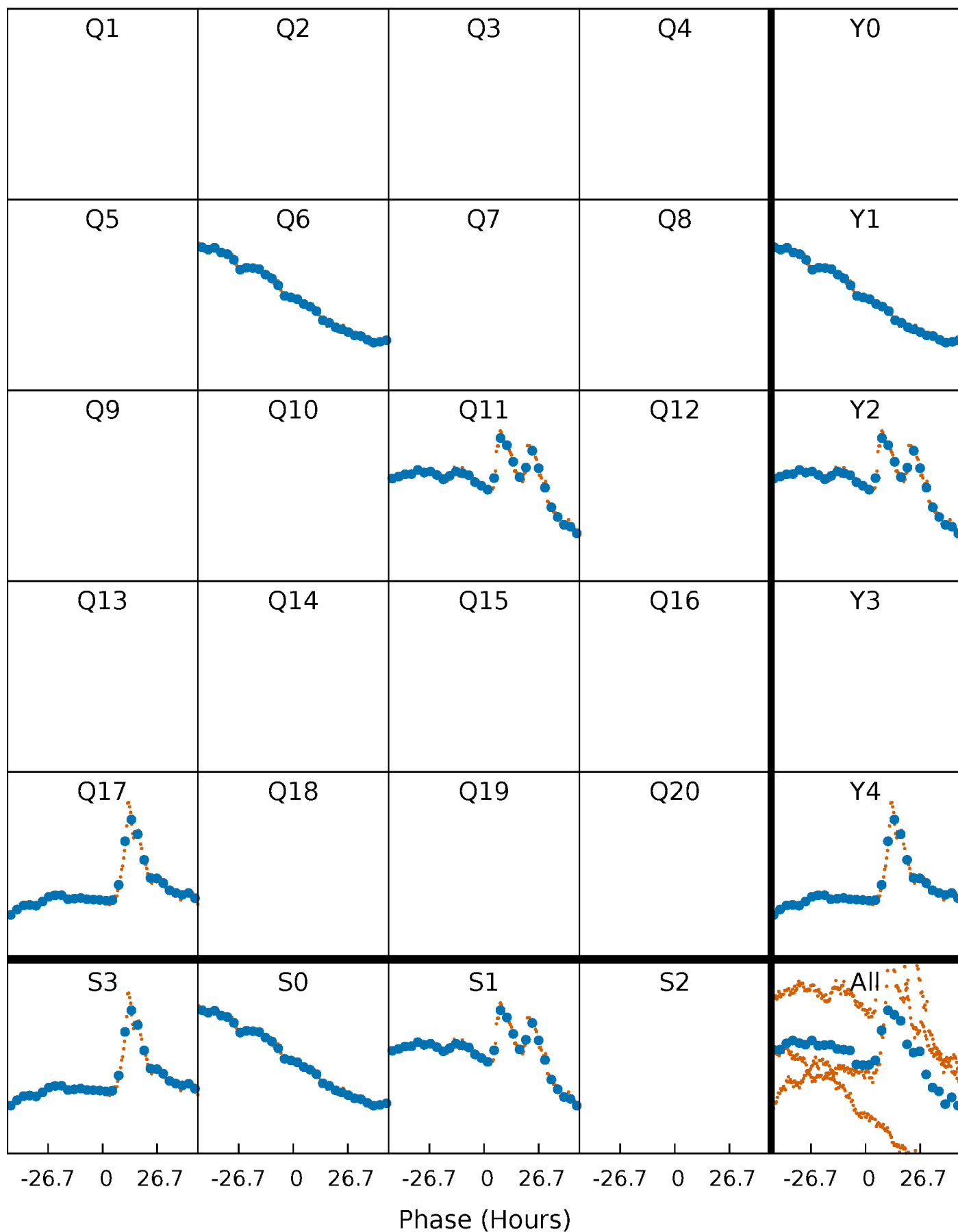


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



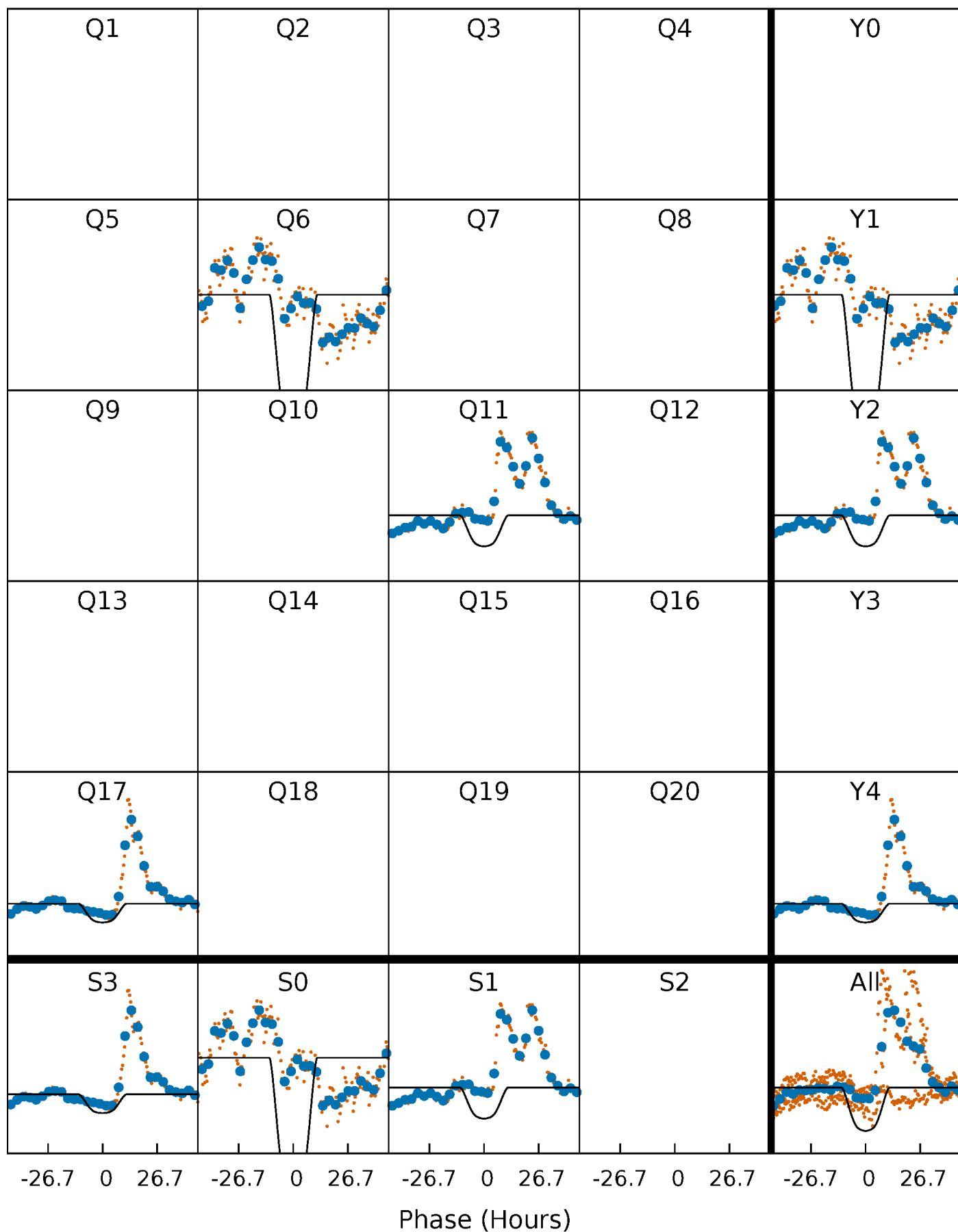
PDC Quarter-Phased Transit Curves

TCE 005782376-03 P=489.164807 Days $T_0=588.251366$ (BKJD)



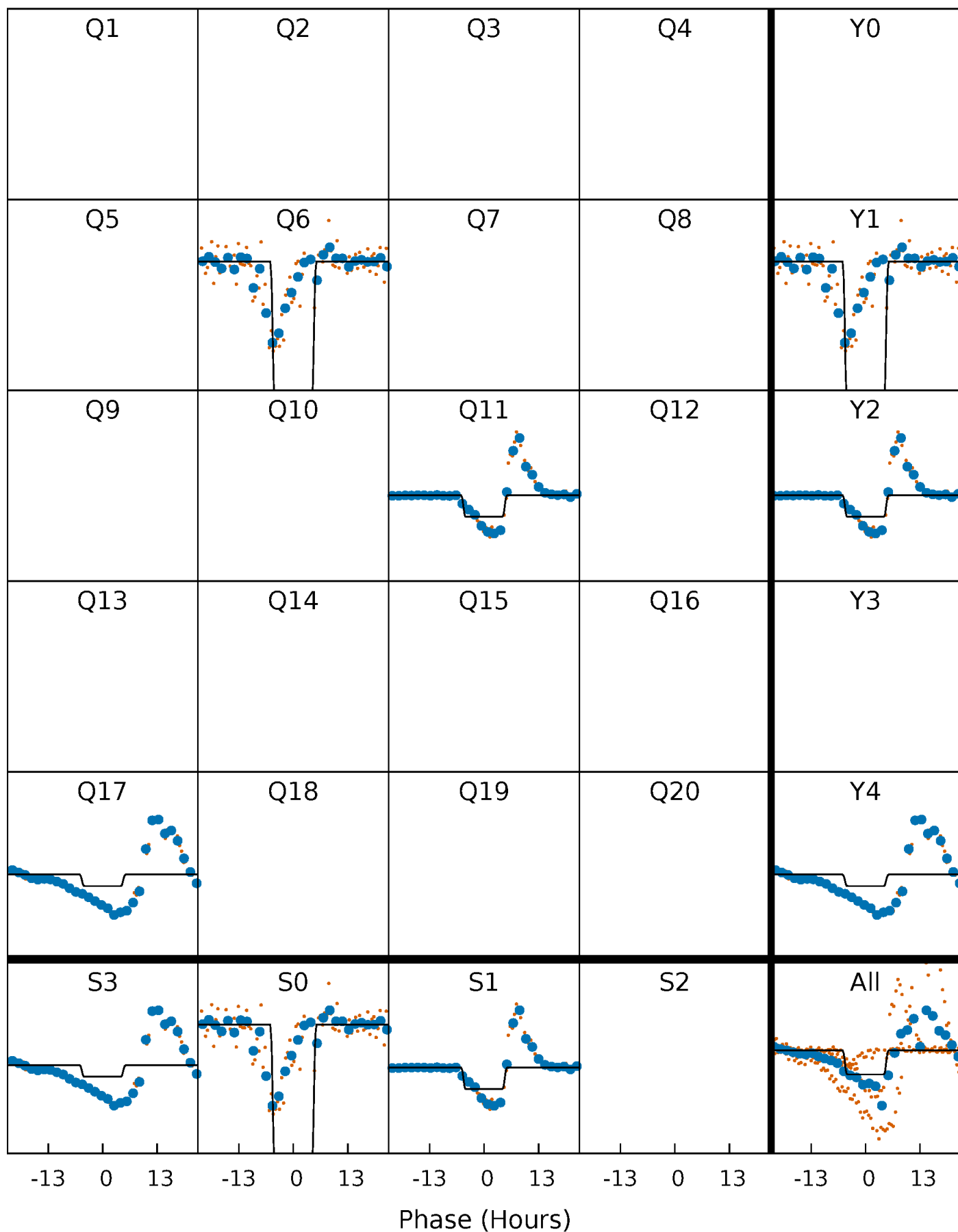
DV Quarter-Phased Transit Curves

TCE 005782376-03 $P=489.164807$ Days $T_0=588.251366$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

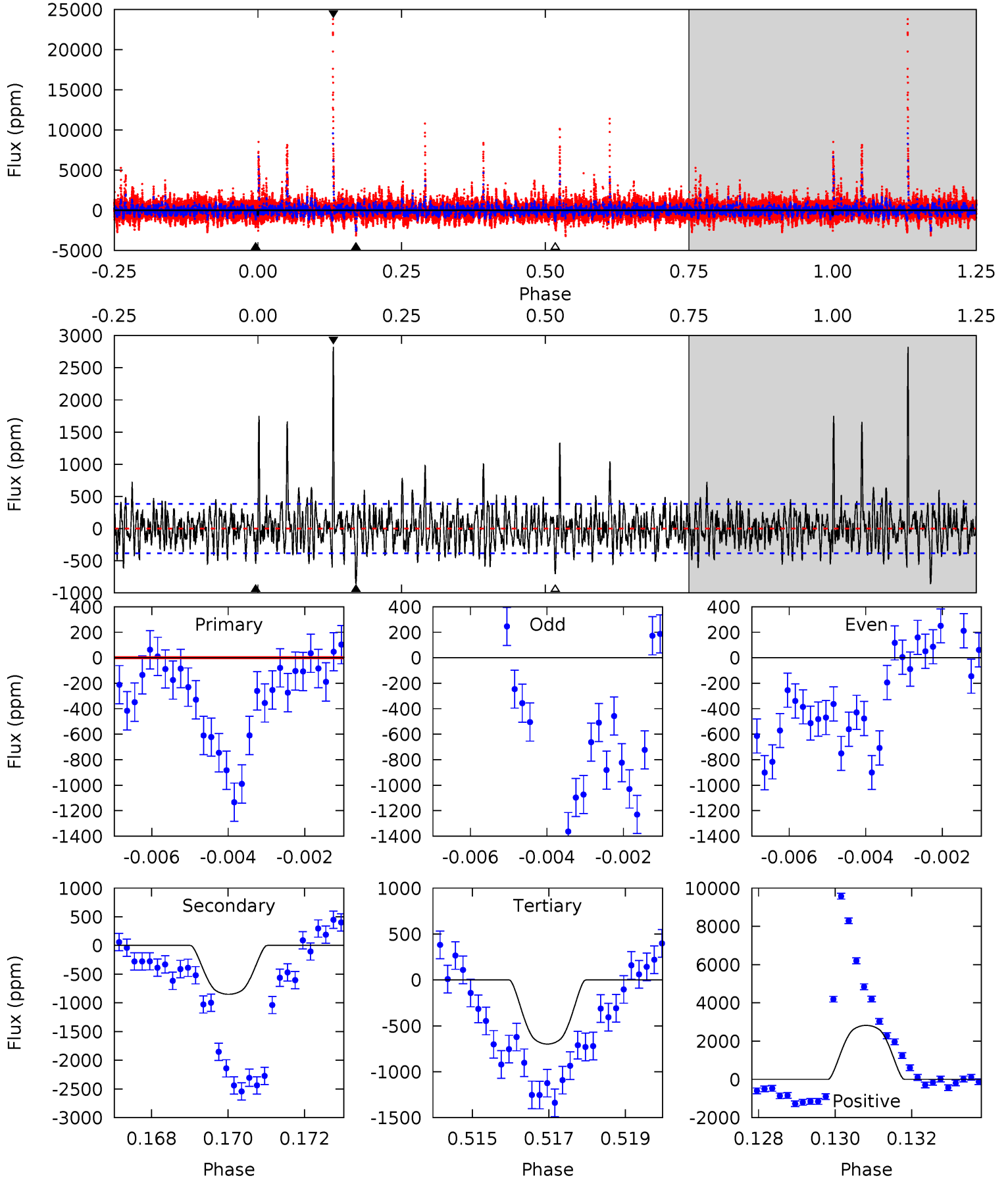
TCE 005782376-03 $P=489.165804$ Days $T_0=588.260585$ (BKJD)



DV Model-Shift Uniqueness Test

005782376-03, P = 489.164807 Days, E = 99.086559 Days

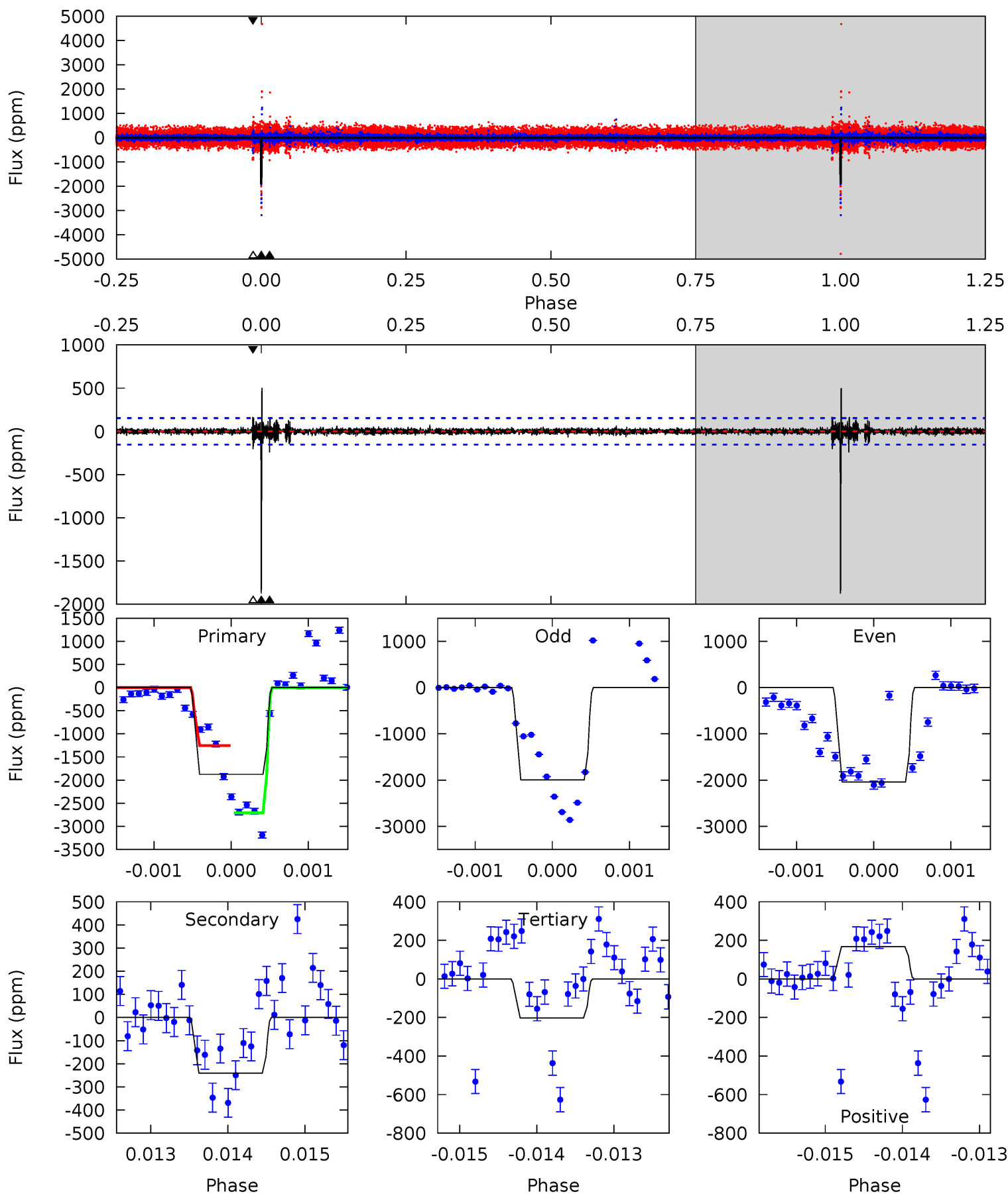
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.57	11.8	9.70	39.2	5.33	3.09	3.62	-2.13	-31.6	2.11	-27.4	0.79	1.18	0.77	1.22



Alt Model-Shift Uniqueness Test

005782376-03, P = 489.165804 Days, E = 99.094781 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
66.6	8.54	7.19	5.95	5.47	3.32	0.73	59.4	60.7	1.36	2.59	1.06	1.09	0.21	25.9



Stellar Parameters For KIC 005782376

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3628^{+81}_{-1}	$0.631^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$102.874^{+3.395}_{-19.237}$	$1.651^{+0.059}_{-0.535}$	$0.000^{+0.000}_{-0.000}$
	+2%/-0%	+5%/-5%	+200%/-250%	+3%/-19%	+4%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 005782376-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-851 ± 72	$728.39^{+58.58}_{-61.90}$	1888^{+53}_{-101}	2778^{+107}_{-135}	$1.815^{+0.363}_{-0.265}$
Alt.	-241 ± 28	$431.82^{+55.56}_{-57.42}$	1889^{+49}_{-100}	2673^{+140}_{-140}	$1.460^{+0.478}_{-0.344}$

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 $A_{obs} \gg 1.0$

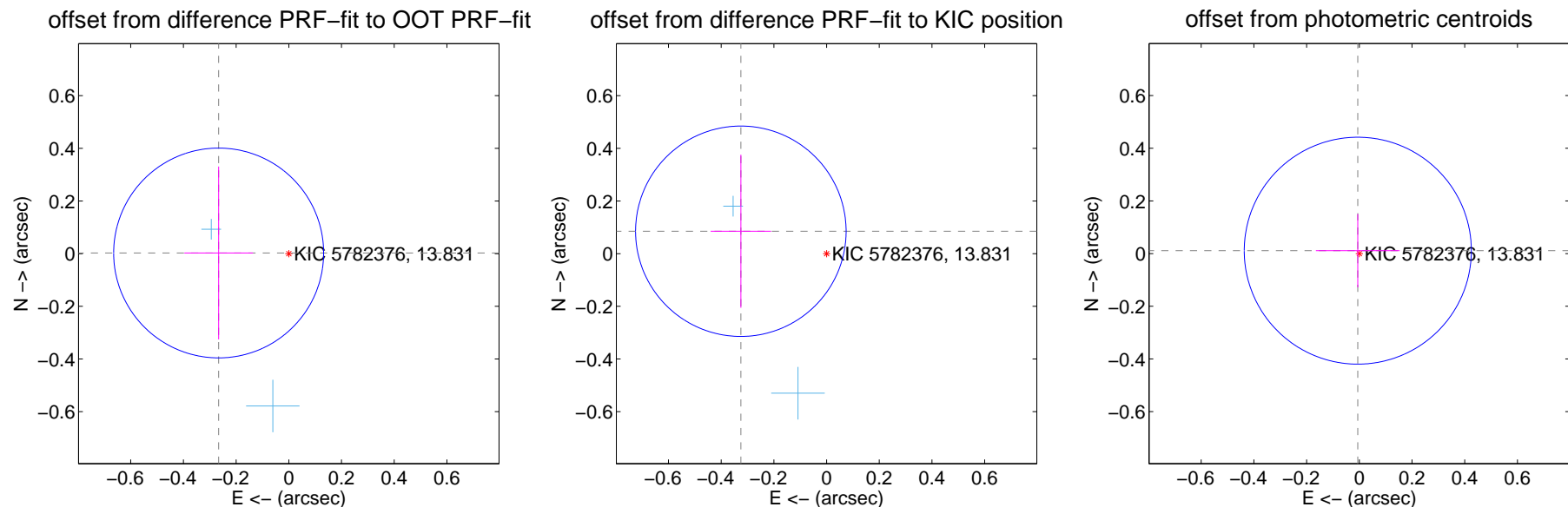
DV Centroid Data

Supplemental centroid analysis for 005782376-03. Kepler magnitude: 13.83. Transit SNR 10.81

There are 2 quarters with good PRF difference image offsets

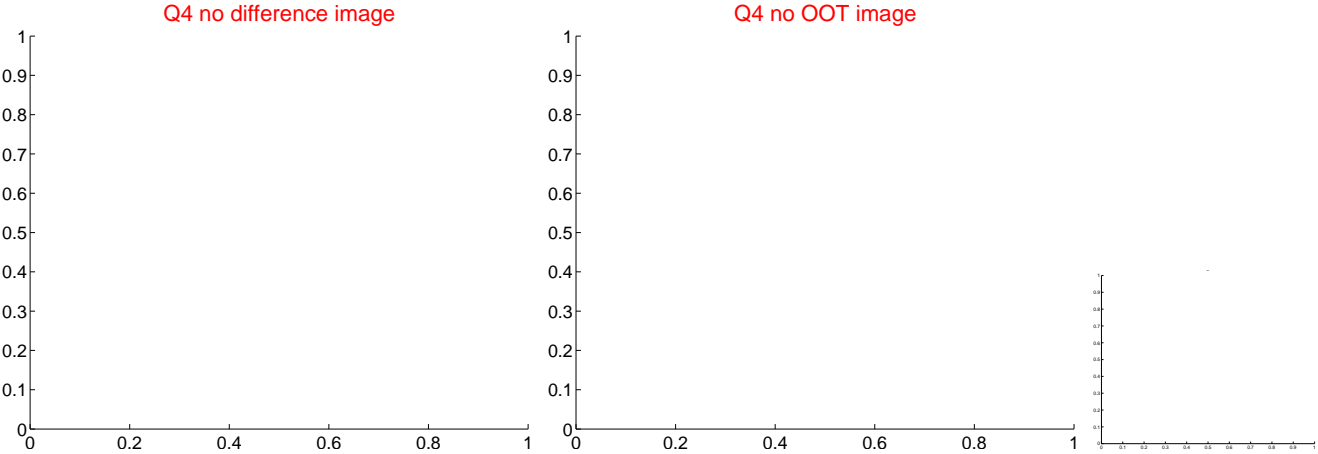
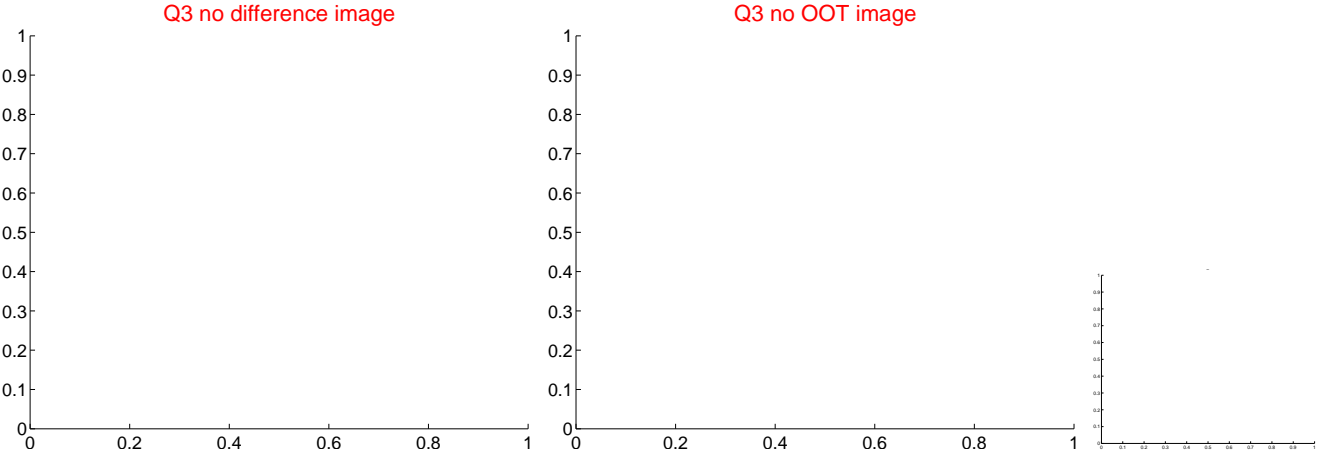
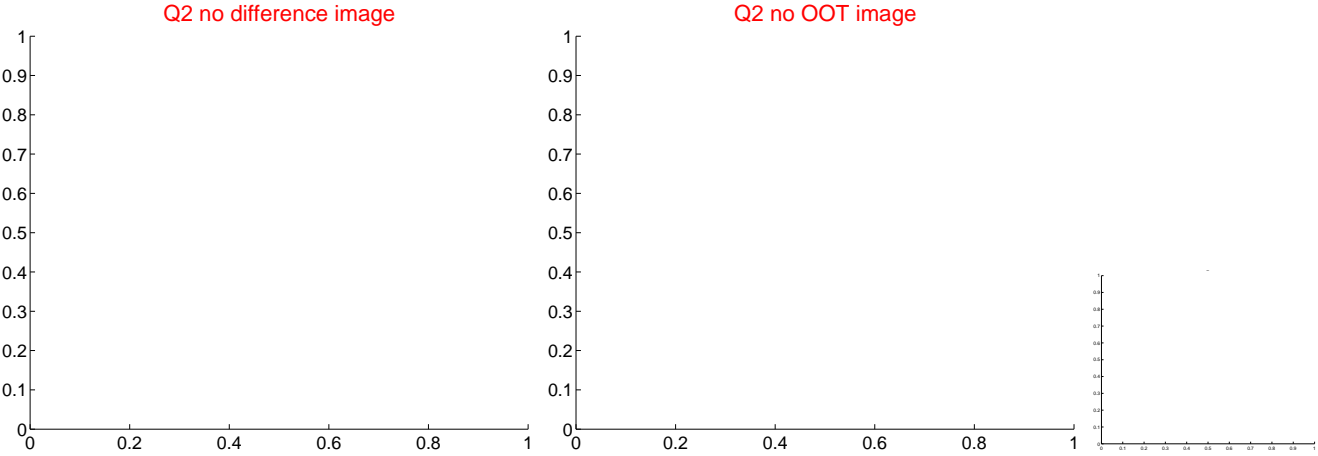
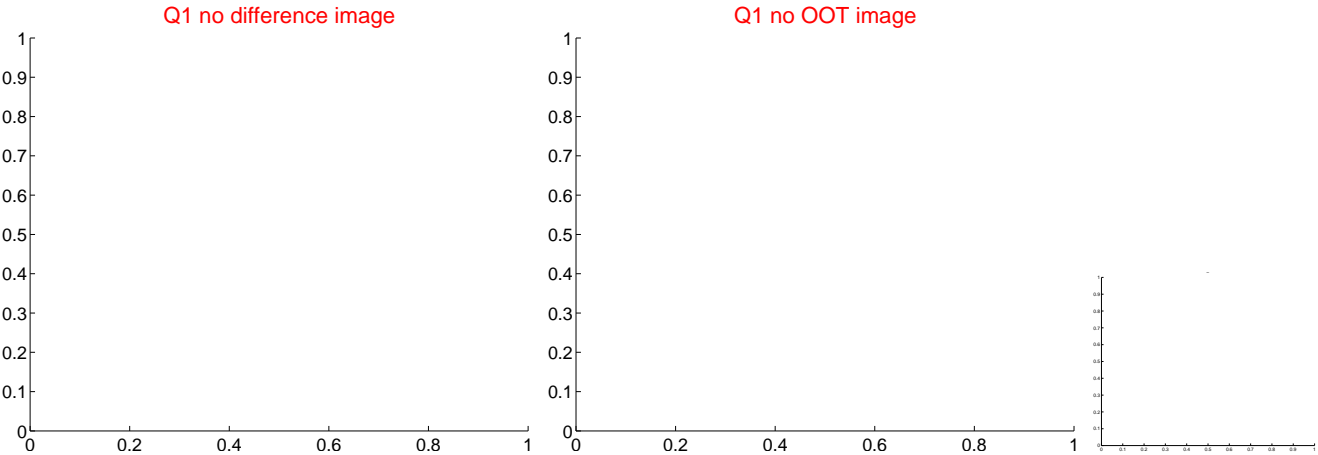
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.266 ± 0.133	2.01	0.266 ± 0.130	0.003 ± 0.328
PRF-fit source offset from KIC position	0.336 ± 0.133	2.53	0.325 ± 0.115	0.085 ± 0.291
photometric centroid source offset	0.01 ± 0.14	0.09	0.01 ± 0.16	0.01 ± 0.14

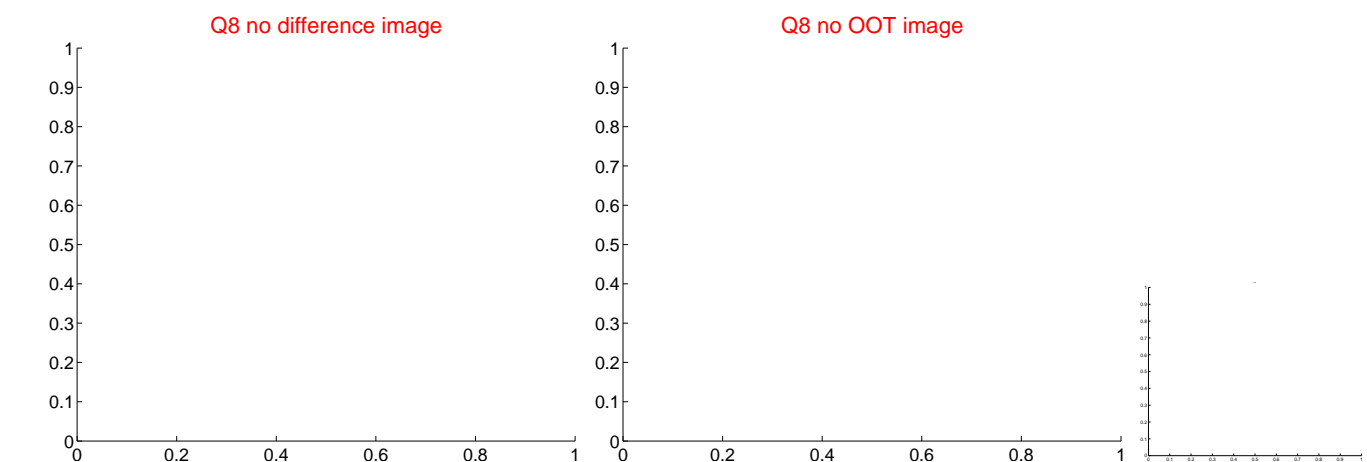
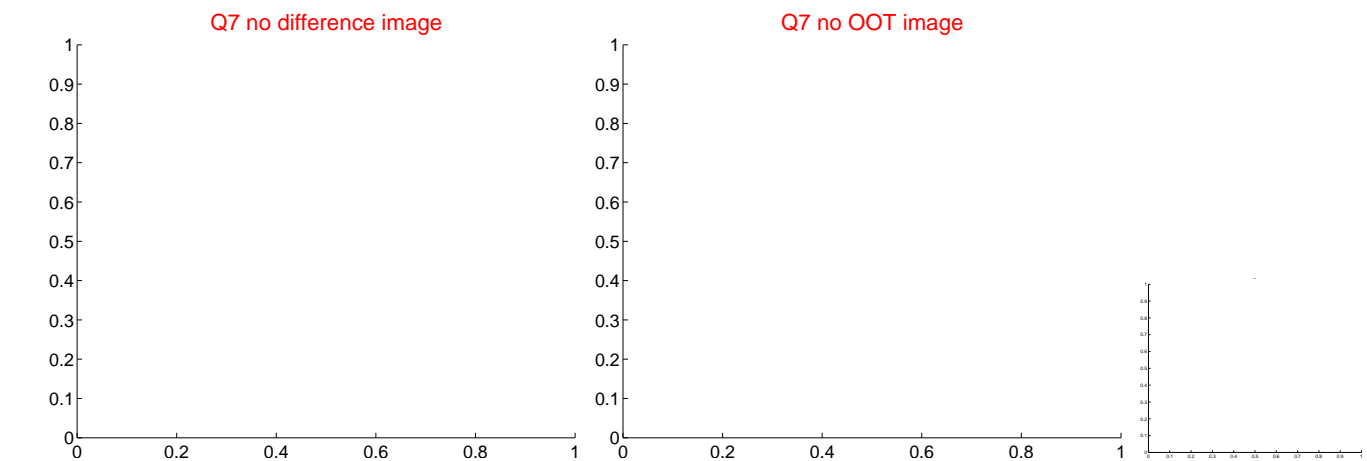
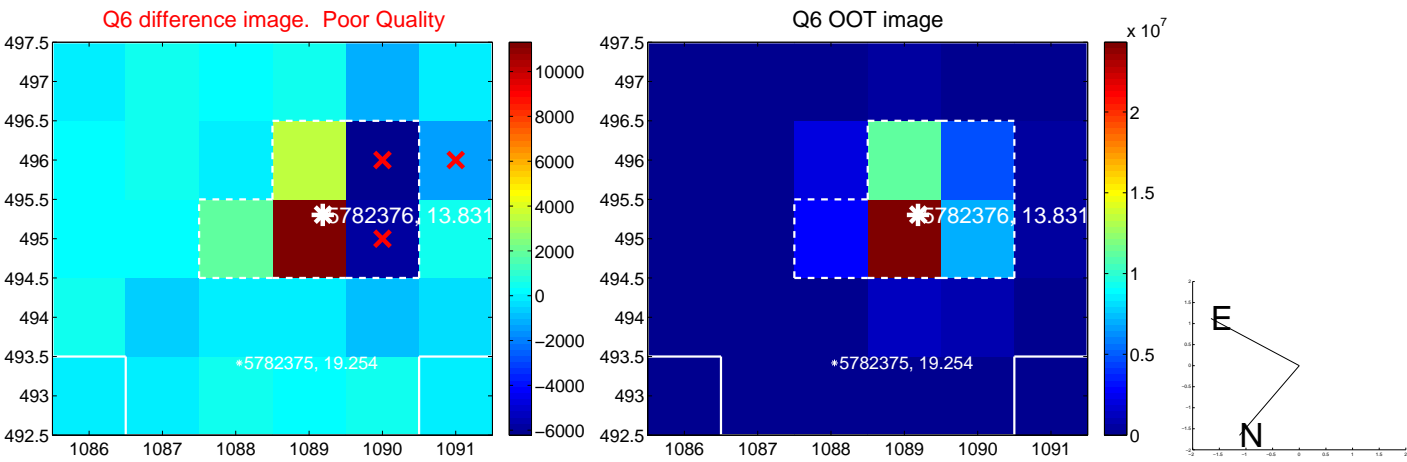
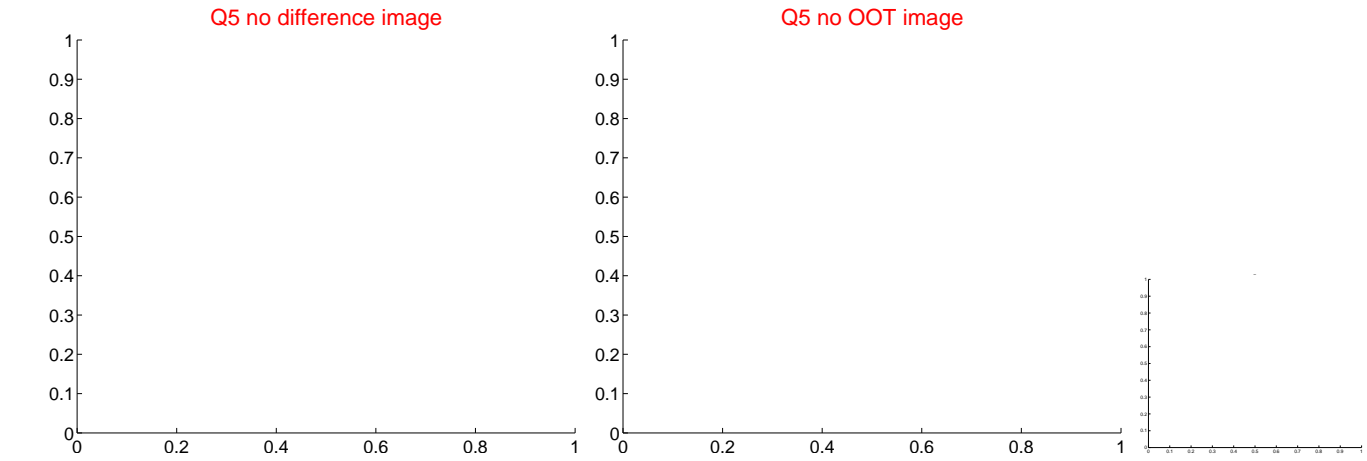


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

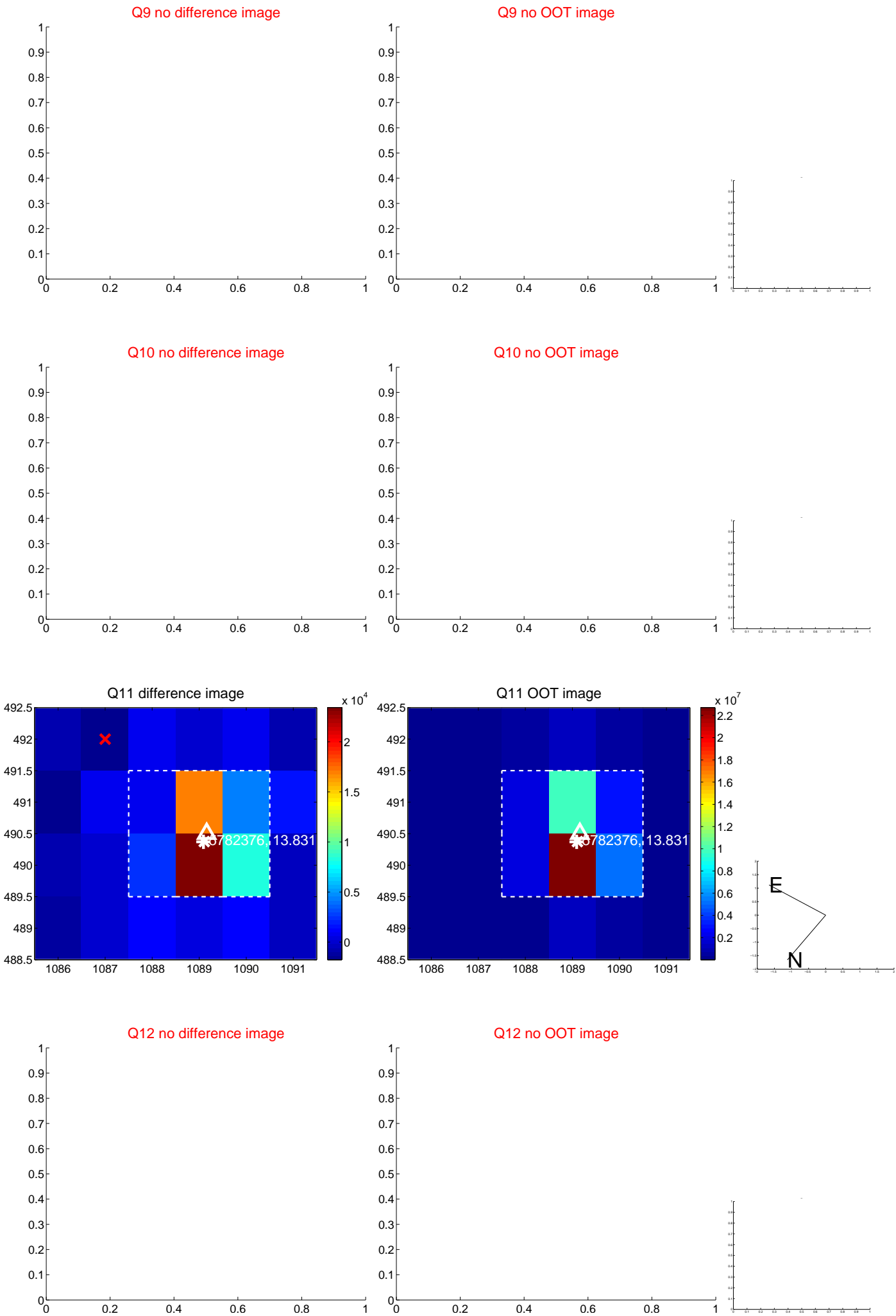
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



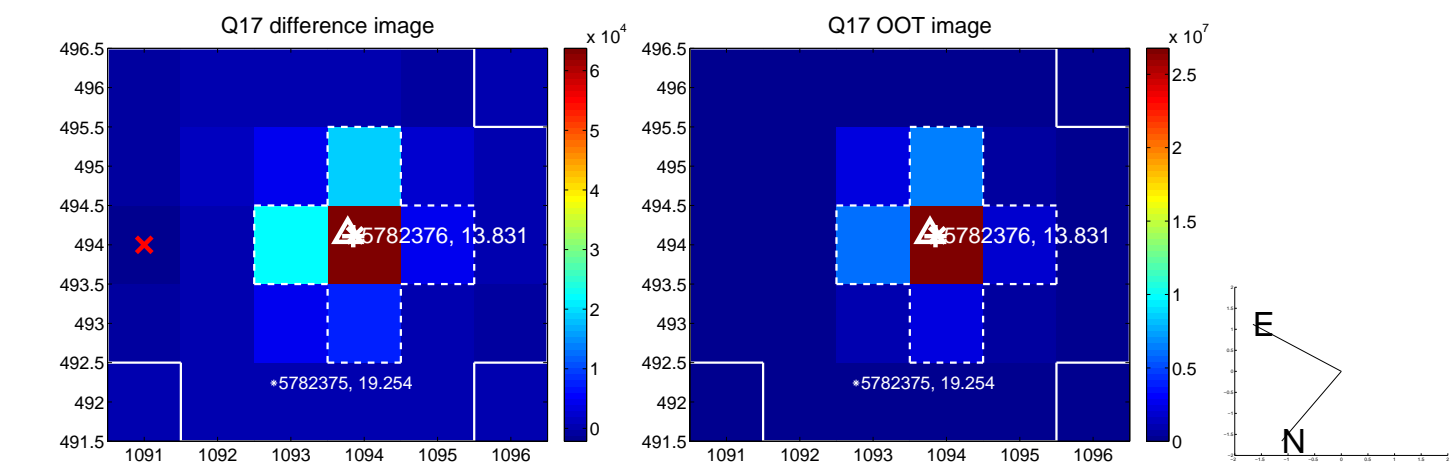
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



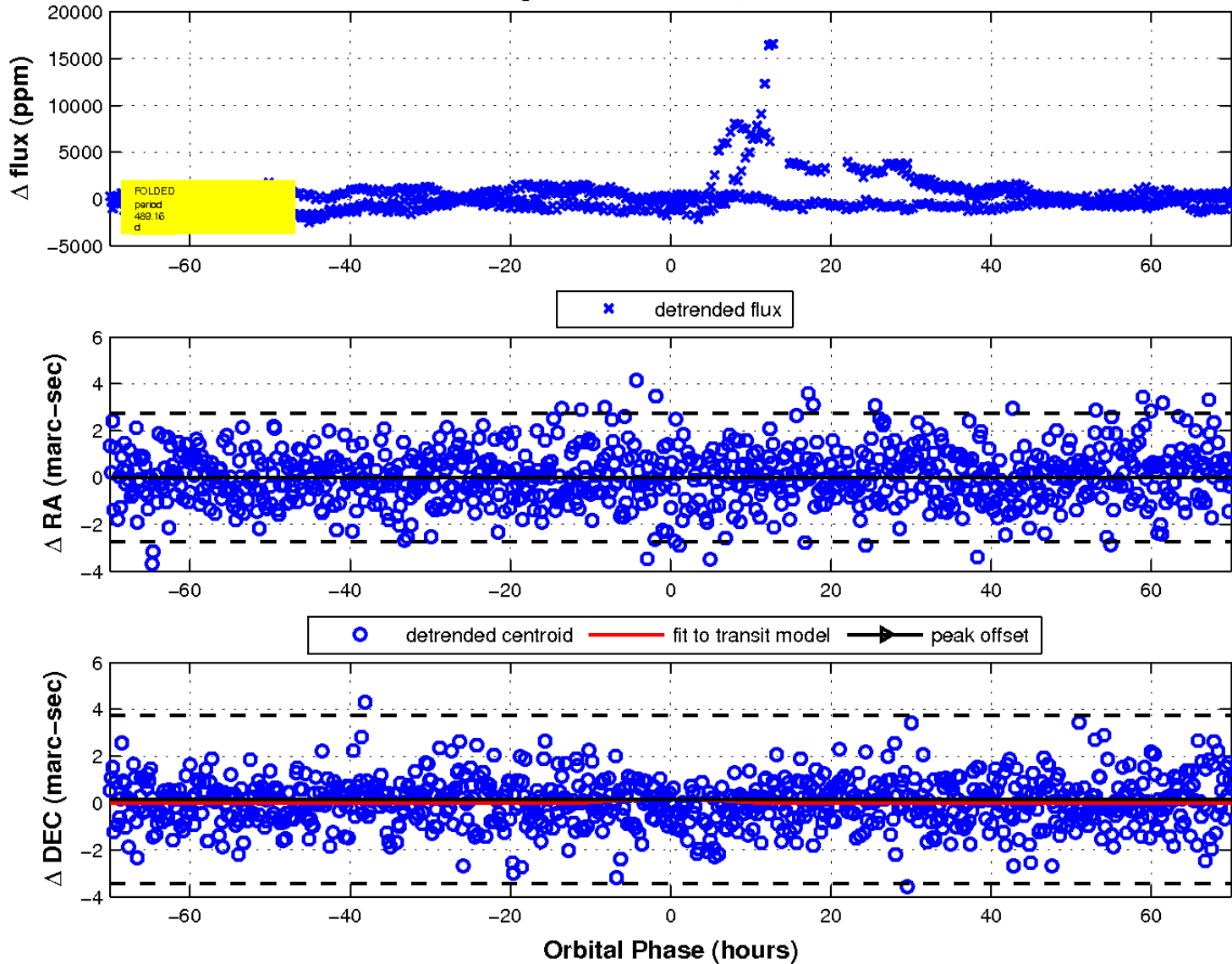
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



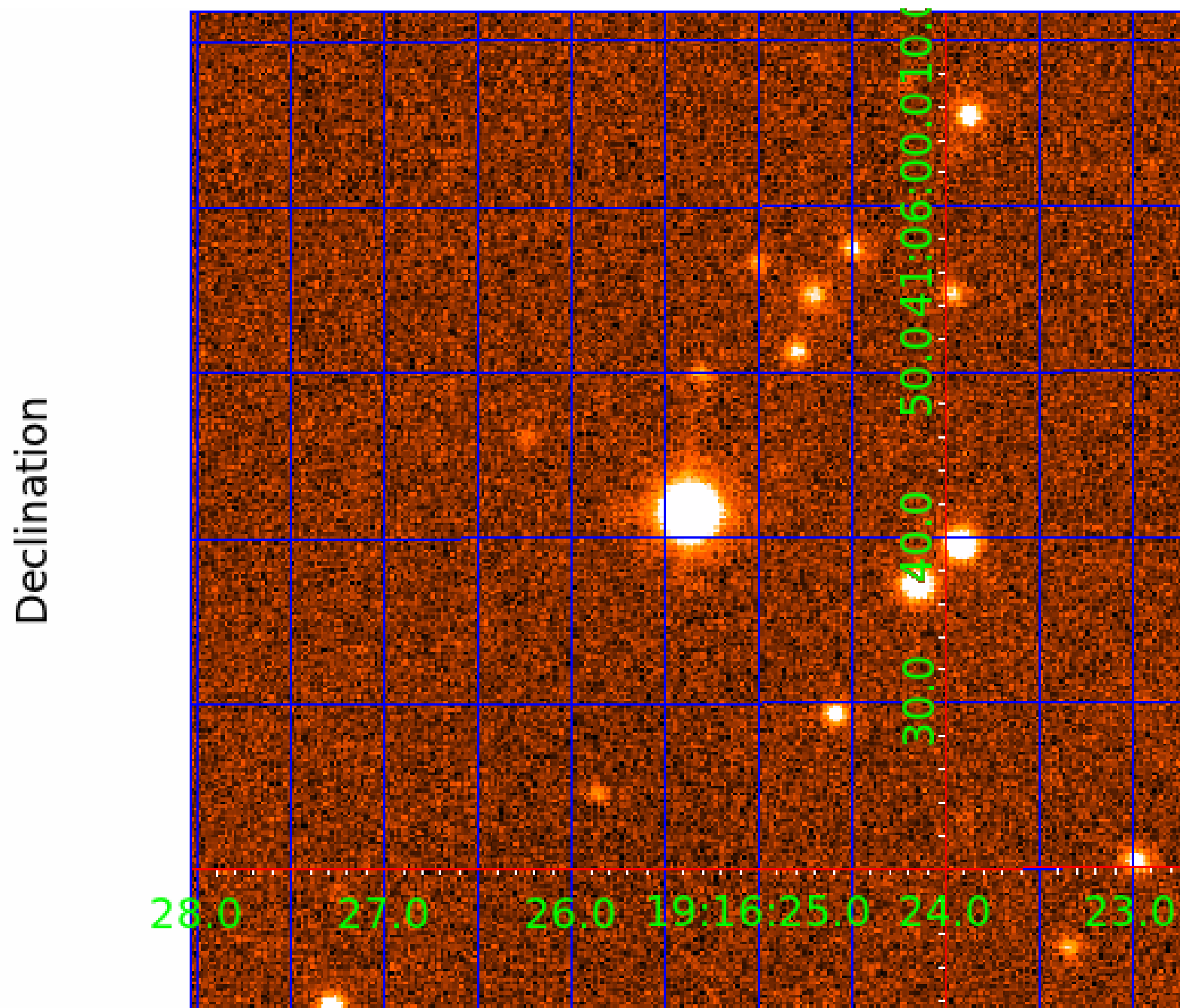
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 4



UKIRT Image



KIC 005782376

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})
005782376-01	OBS	No	343.032173	398.253036	1270.0	3.396	15.9	8.2	102.87	3628	385.18	1278.36
005782376-02	OBS	No	587.659759	336.105345	1833.1	12.995	16.9	8.7	102.87	3628	490.91	623.64
005782376-03	OBS	No	489.164807	588.251366	2881.6	23.344	11.3	10.8	102.87	3628	726.21	796.45
005782376-04	OBS	No	465.483824	423.229027	1120.9	4.691	9.7	7.1	102.87	3628	392.49	850.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005782376-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005782376-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

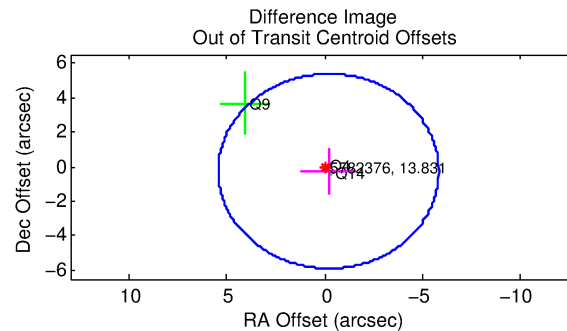
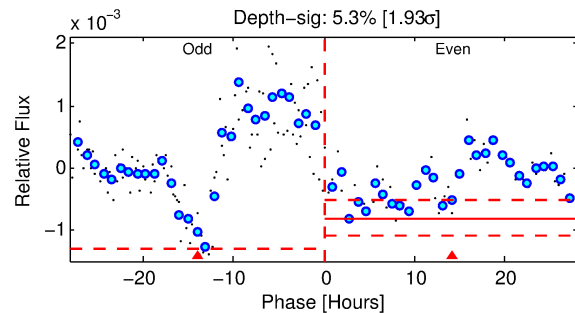
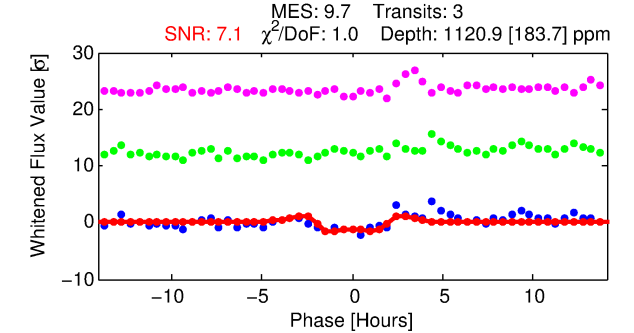
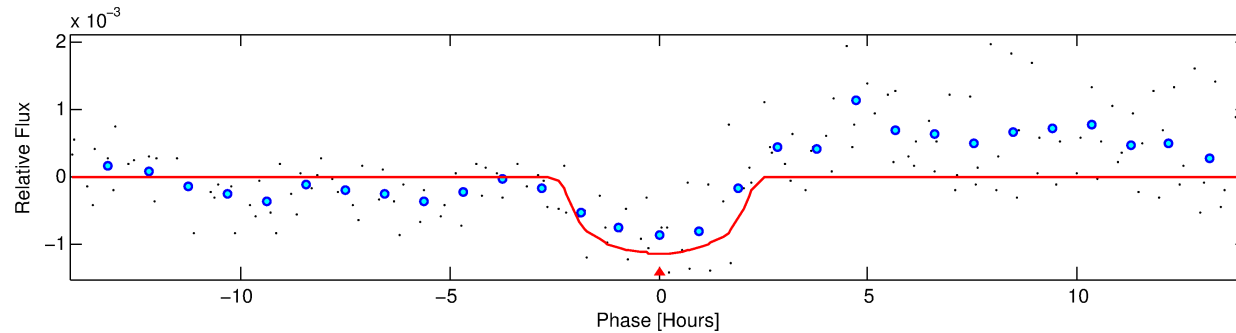
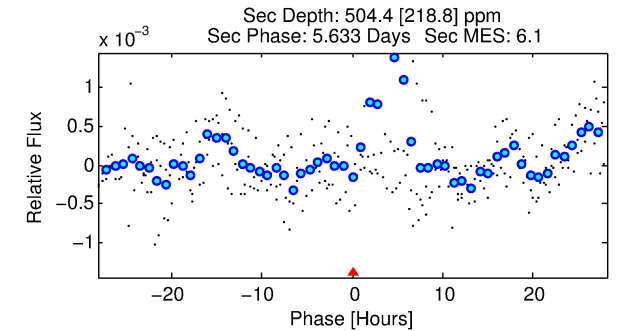
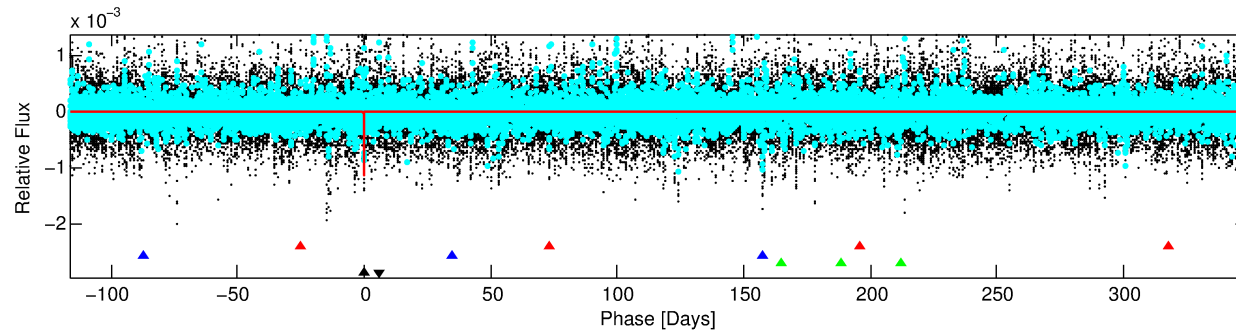
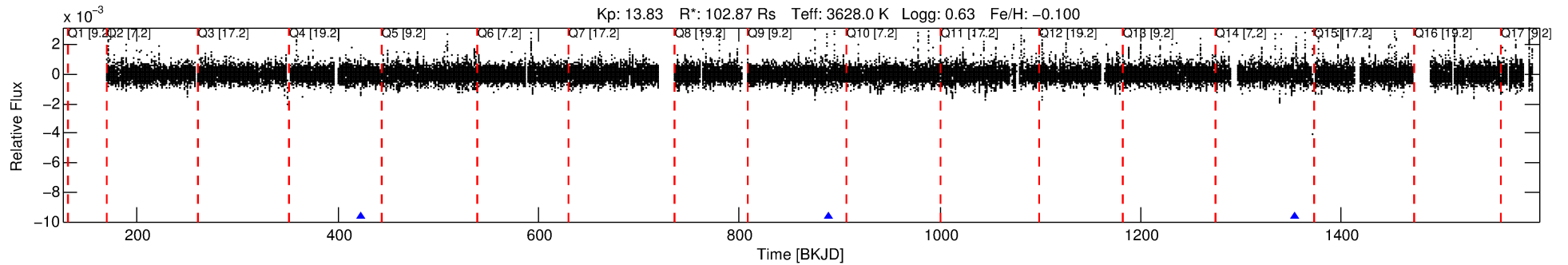
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005782376-04

No Significant Match Found

DV One-Page Summary

KIC: 5782376 Candidate: 4 of 4 Period: 465.484 d



DV Fit Results:

Period = 465.48382 [0.00504] d
Epoch = 423.2290 [0.0062] BKJD
Rp/R* = 0.0350 [0.0183]
a/R* = 503.42 [687.21]
b = 0.79 [0.66]
Seff = 850.93 [146.34]
Teq = 1377 [59] K
Rp = 392.49 [218.50] Re
a = 1.3894 [0.1761] AU
Ag = 3.48 [3.97] [0.62 σ]
Teffp = 2908 [829] K [1.84 σ]

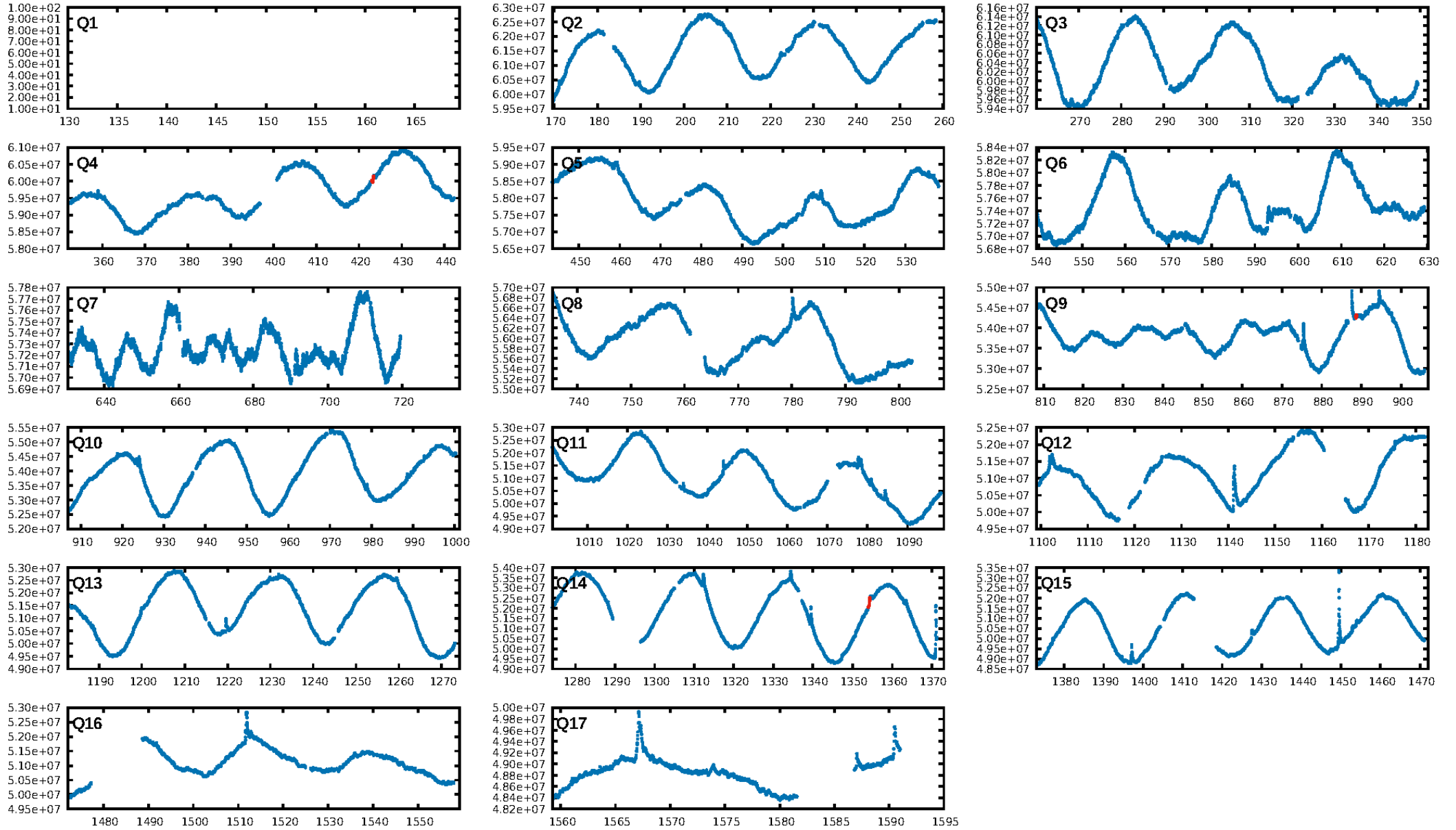
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [507.43 σ]
LongPeriod-sig: 100.0% [23.87 σ]
ModelChiSquare2-sig: 21.1%
ModelChiSquareGof-sig: 97.9%
Bootstrap-pfa: 2.70e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 12.81
Centroid-sig: 82.0%
Centroid-so: 0.170 arcsec [0.25 σ]
OotOffset-rm: 0.329 arcsec [0.18 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.302 arcsec [0.16 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

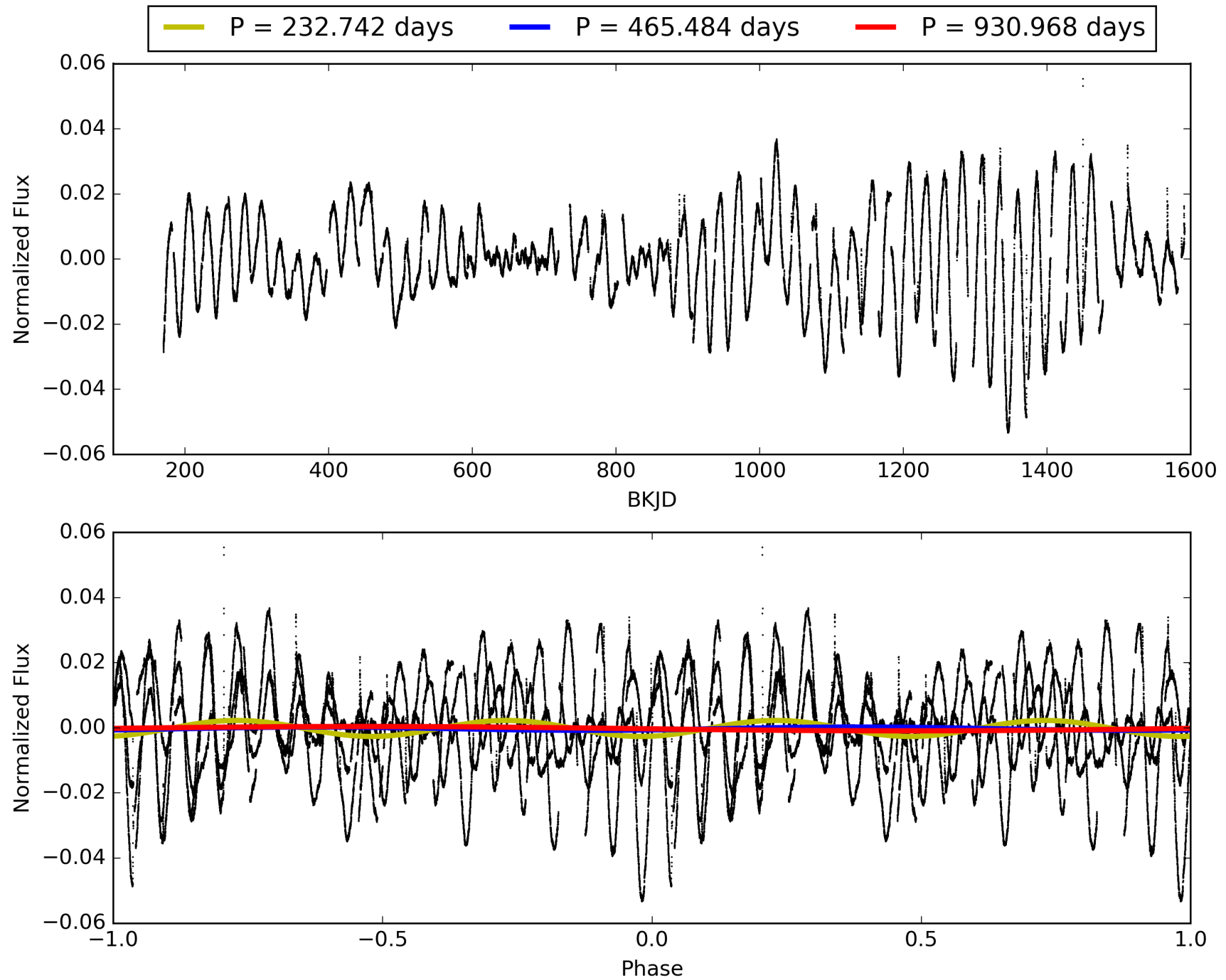
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:19:33 Z

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

TCE 005782376-04, PDC Light Curves

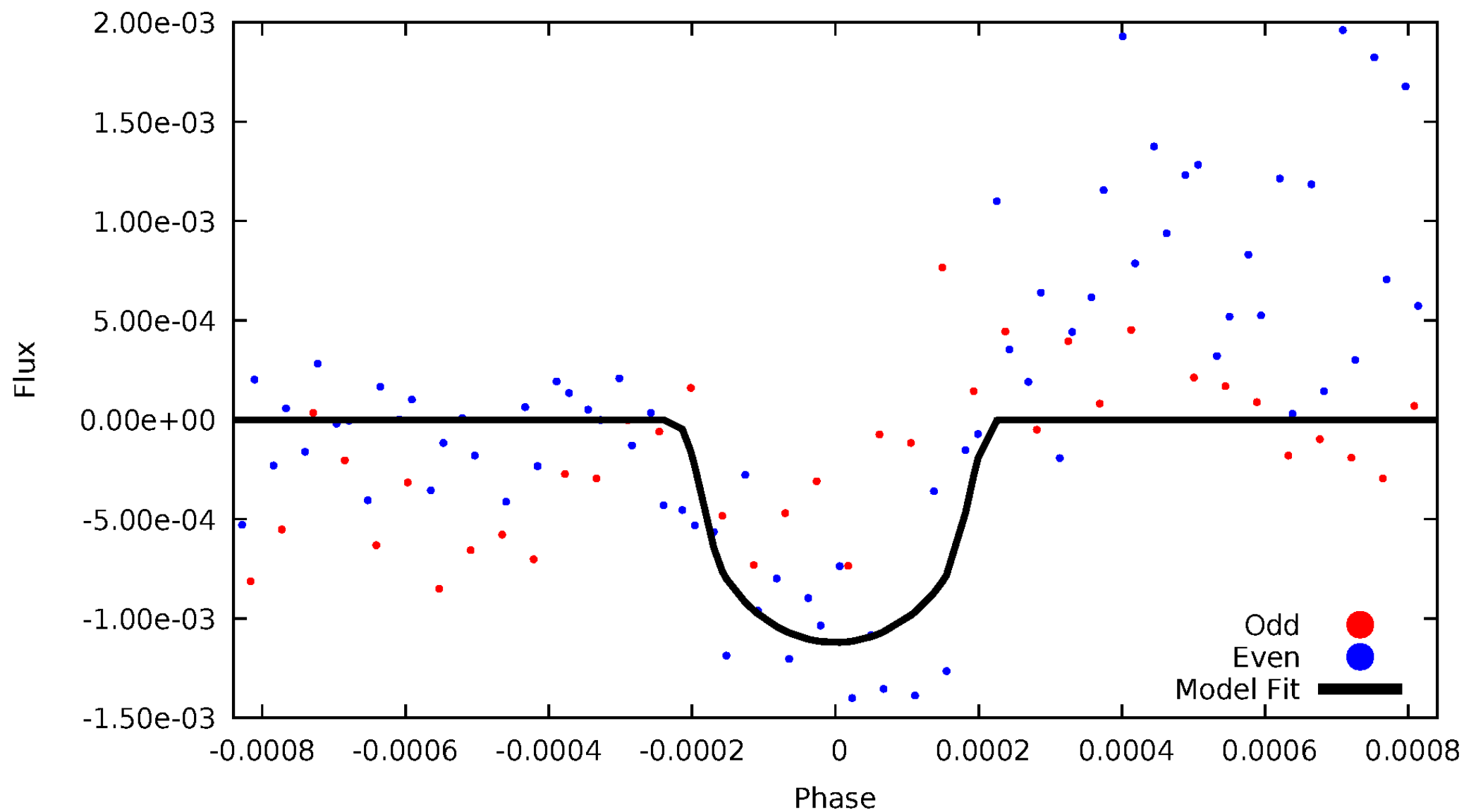


TCE 005782376-04



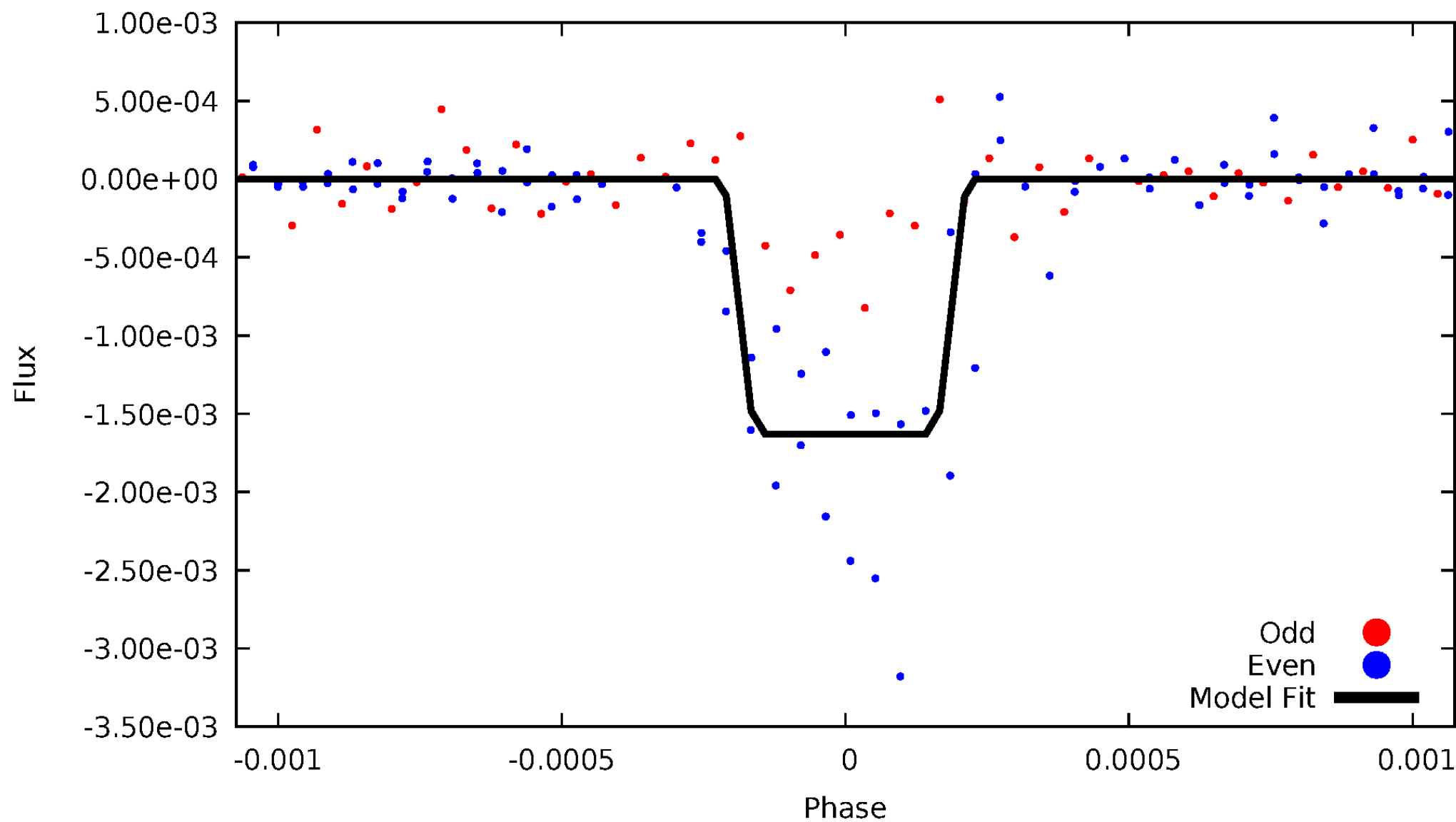
DV Odd/Even

TCE 005782376-04



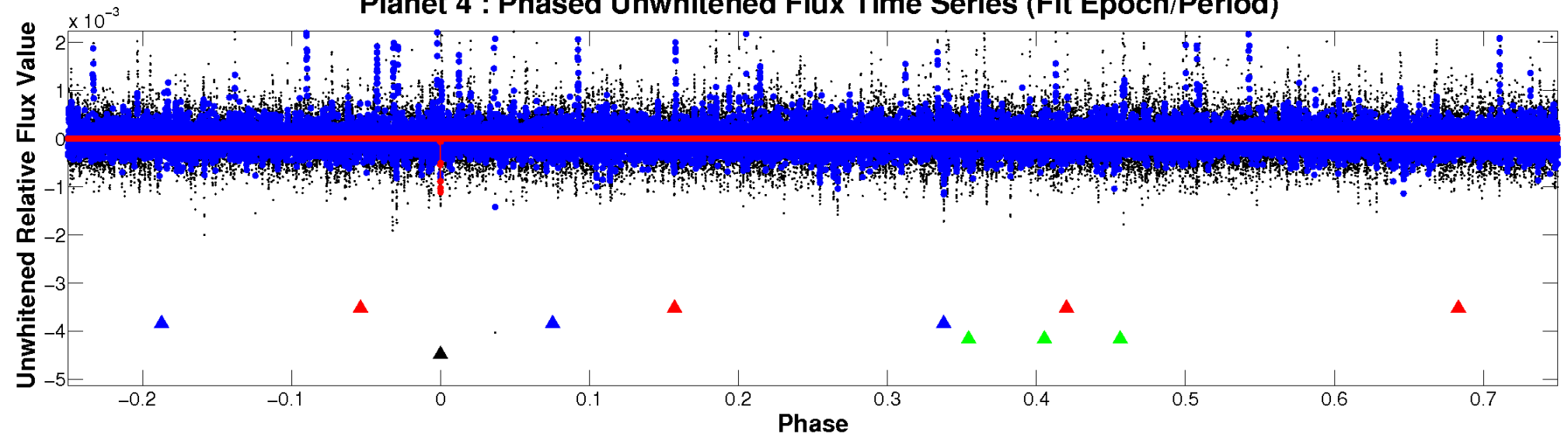
ALT Odd/Even

TCE 005782376-04

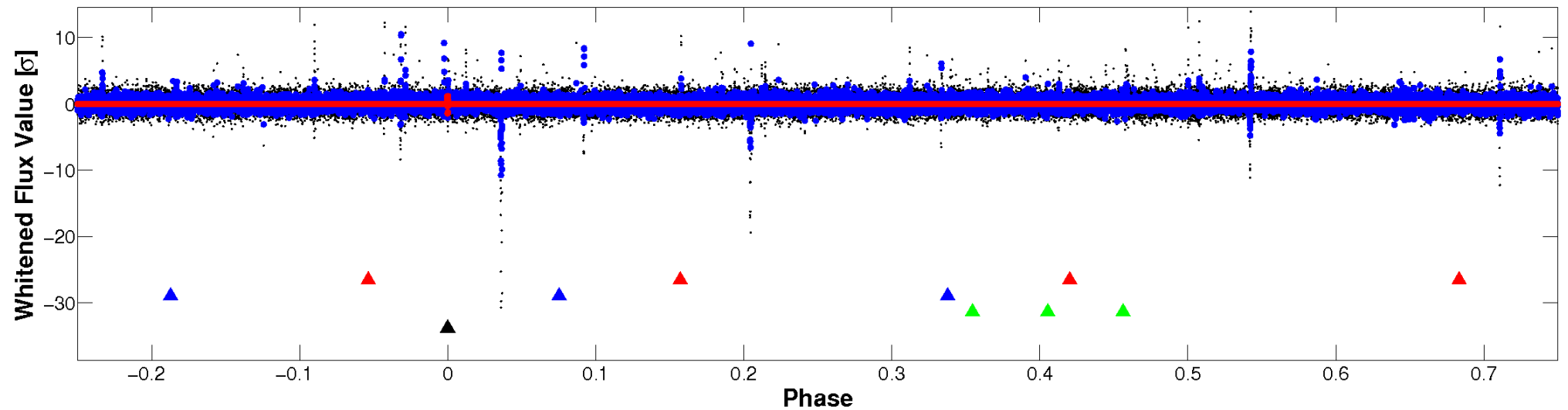


Non-Whitened Vs. Whitened Light Curve

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

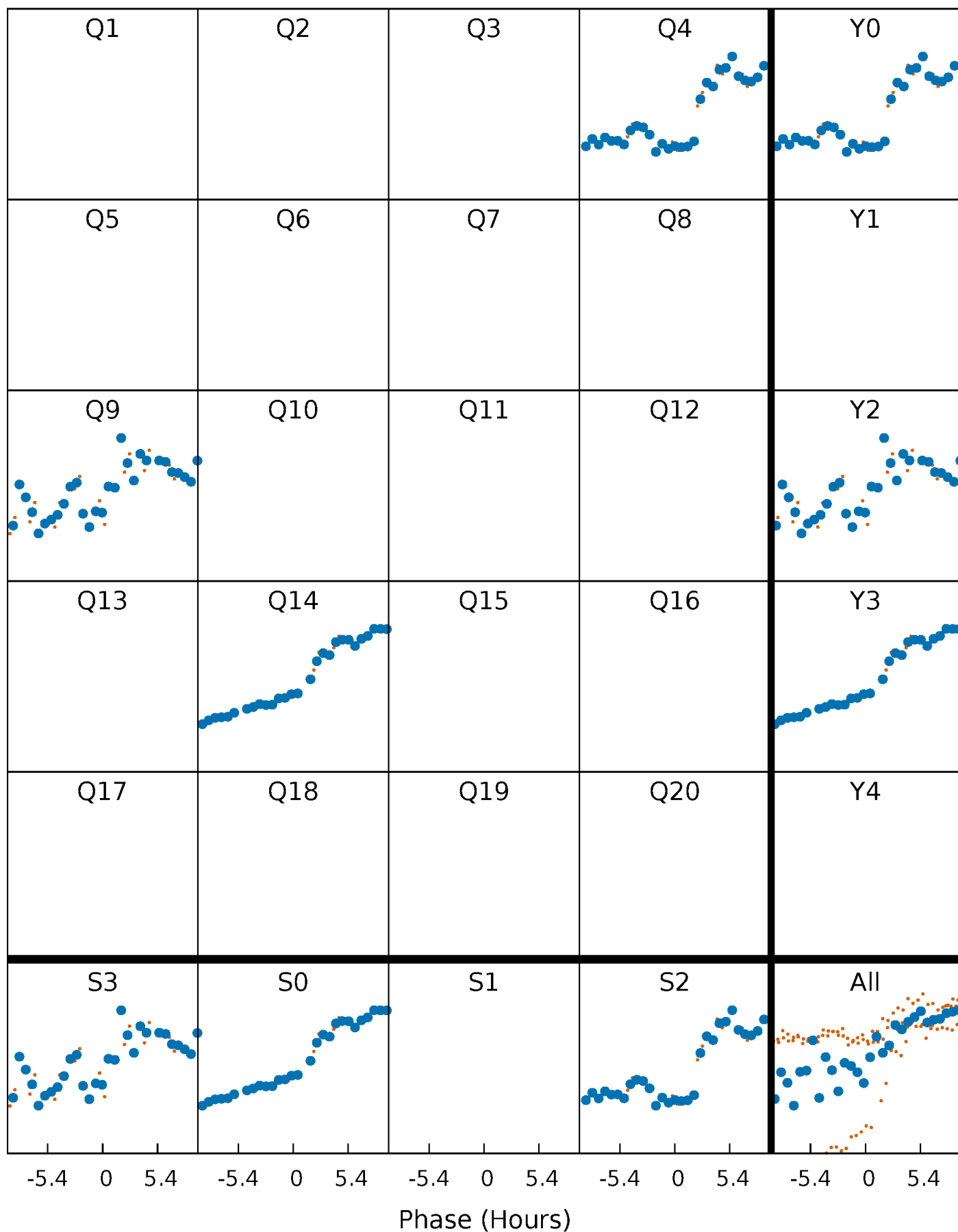


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



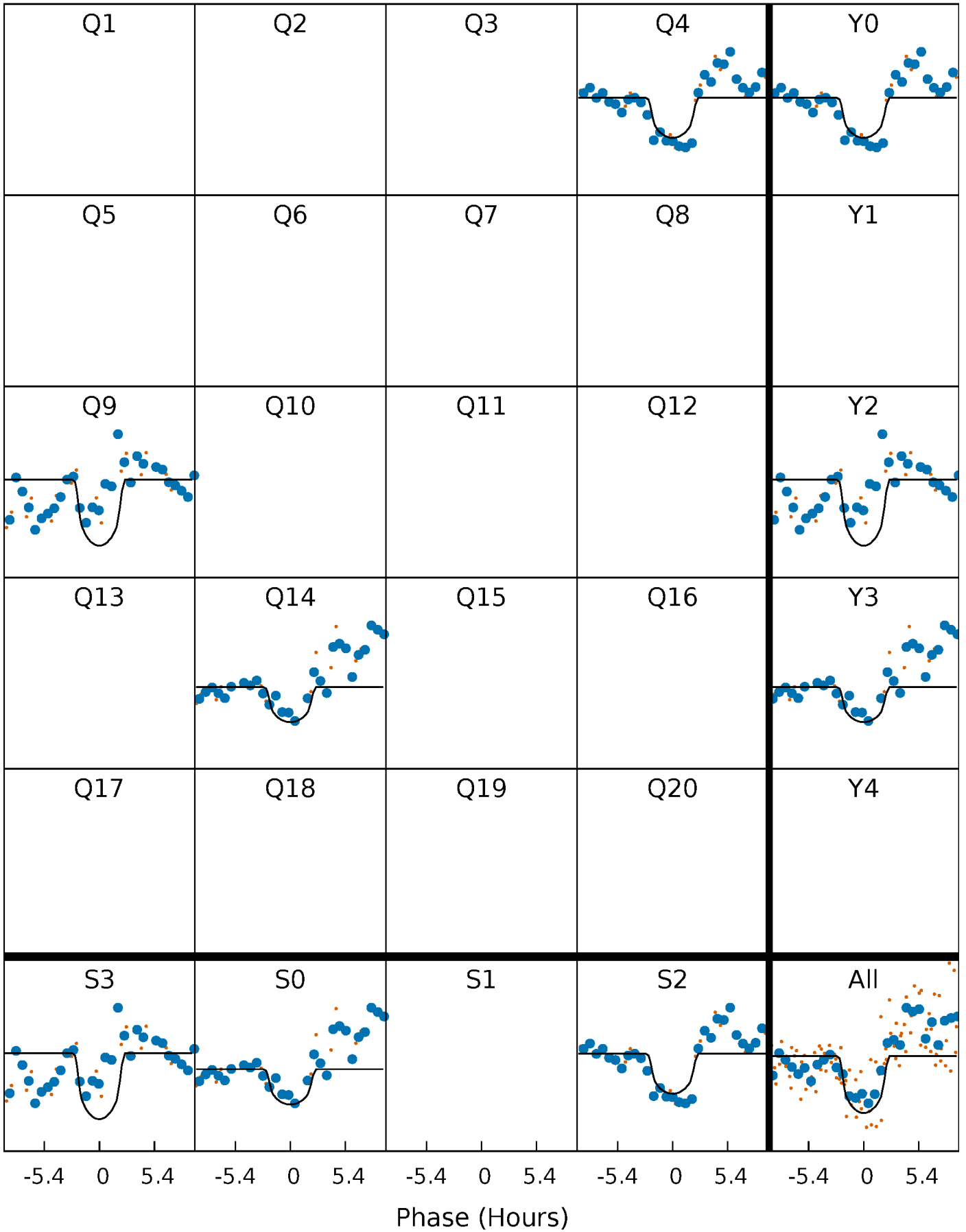
PDC Quarter-Phased Transit Curves

TCE 005782376-04 $P=465.483824$ Days $T_0=423.229027$ (BKJD)



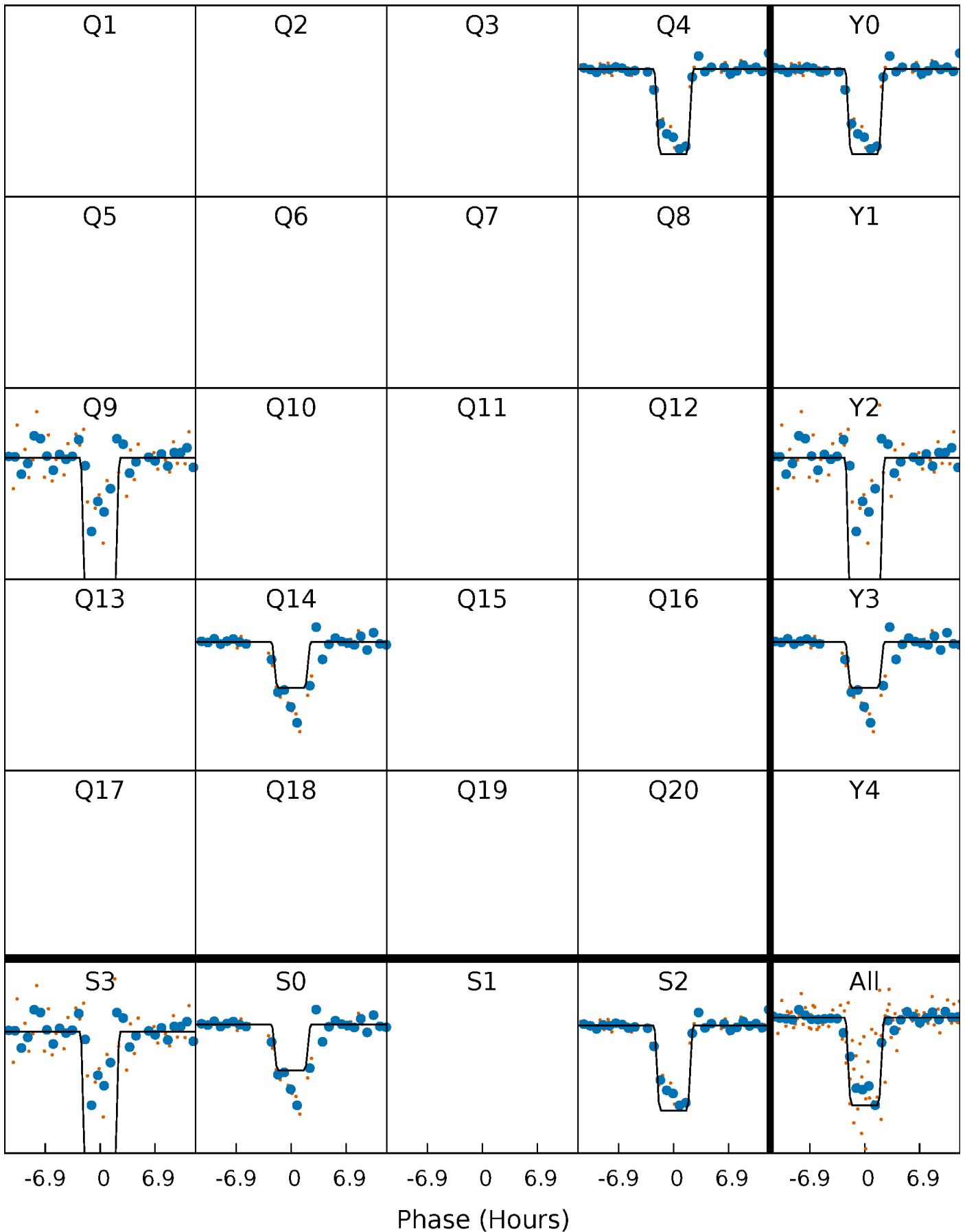
DV Quarter-Phased Transit Curves

TCE 005782376-04 $P=465.483824$ Days $T_0=423.229027$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

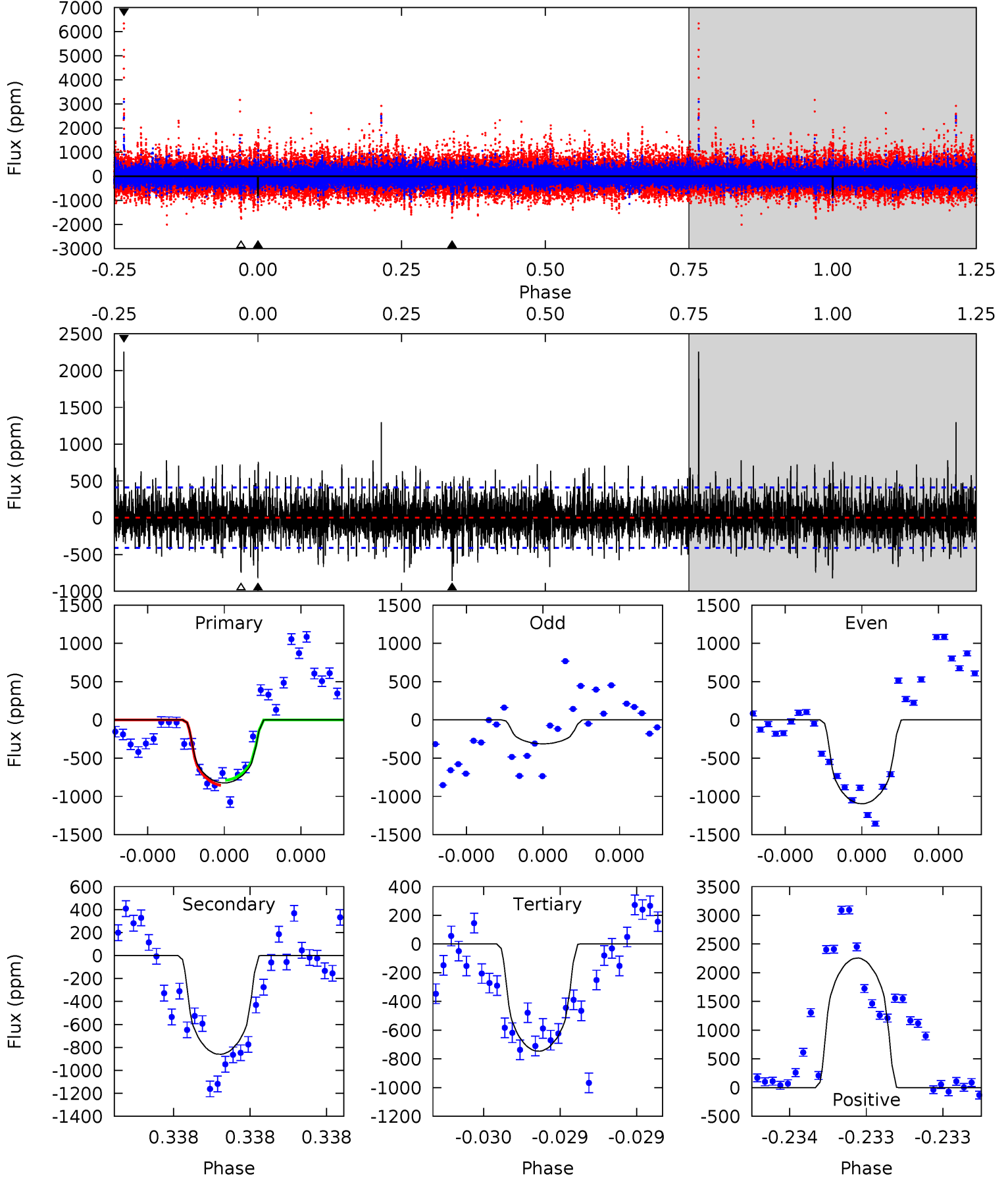
TCE 005782376-04 P=465.469686 Days $T_0=423.235436$ (BKJD)



DV Model-Shift Uniqueness Test

005782376-04, P = 465.483824 Days, E = 423.229027 Days

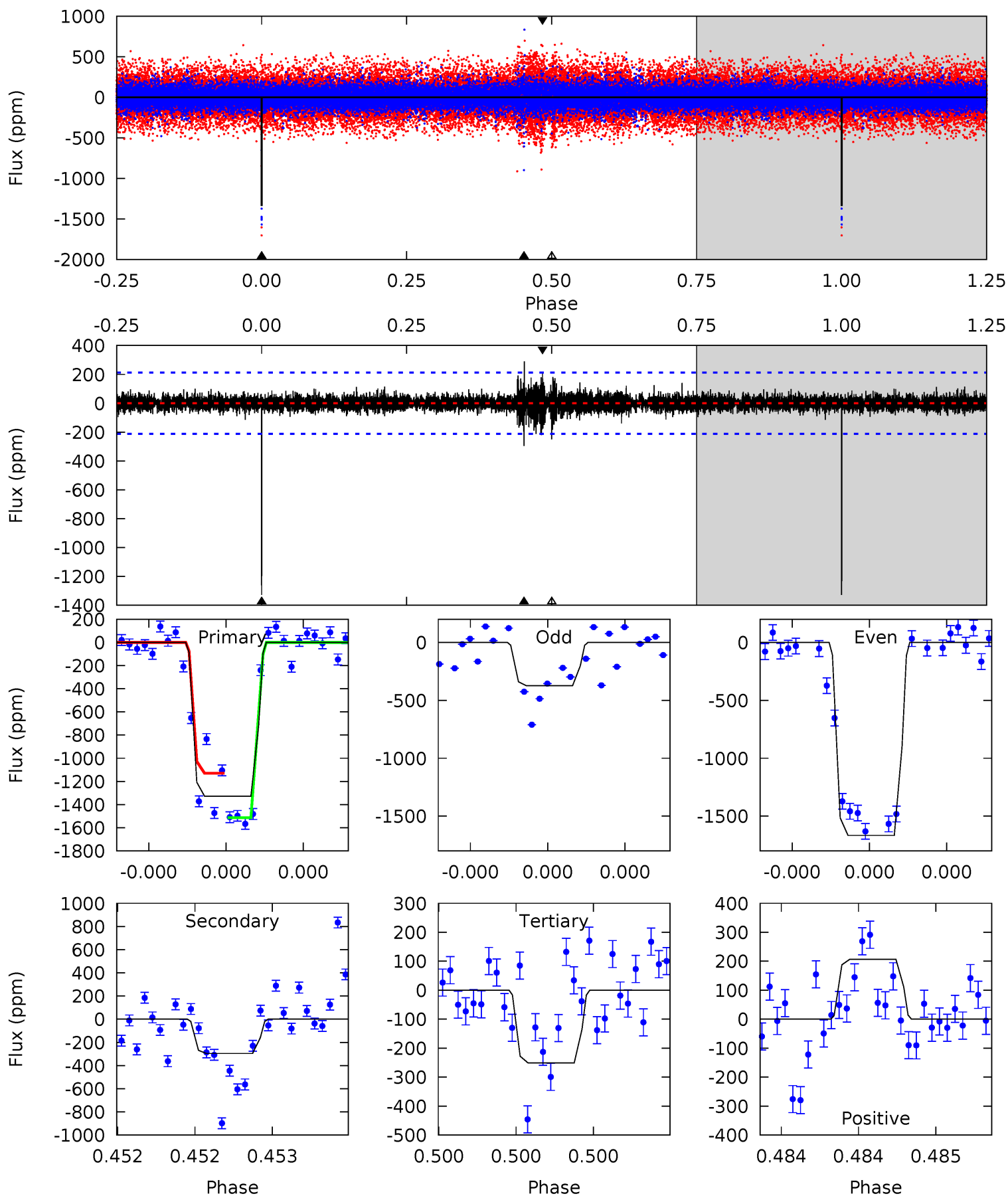
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	11.7	10.2	30.8	5.60	3.52	2.75	1.05	-19.5	1.55	-19.0	3.96	1.06	0.72	0.46



Alt Model-Shift Uniqueness Test

005782376-04, P = 465.469686 Days, E = 423.235436 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.1	7.80	6.61	5.45	5.60	3.52	0.81	28.4	29.6	1.19	2.35	20.5	1.01	0.18	4.93



Stellar Parameters For KIC 005782376

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3628^{+81}_{-1}	$0.631^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$102.874^{+3.395}_{-19.237}$	$1.651^{+0.059}_{-0.535}$	$0.000^{+0.000}_{-0.000}$
	+2%/-0%	+5%/-5%	+200%/-250%	+3%/-19%	+4%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 005782376-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-860 ± 73	$403.19^{+196.30}_{-211.22}$	1918^{+59}_{-106}	3366^{+880}_{-451}	$5.635^{+18.153}_{-3.145}$
Alt.	-296 ± 38	$450.76^{+211.77}_{-198.64}$	1918^{+56}_{-103}	2716^{+562}_{-360}	$1.554^{+3.187}_{-0.842}$

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 $A_{obs} \gg 1.0$

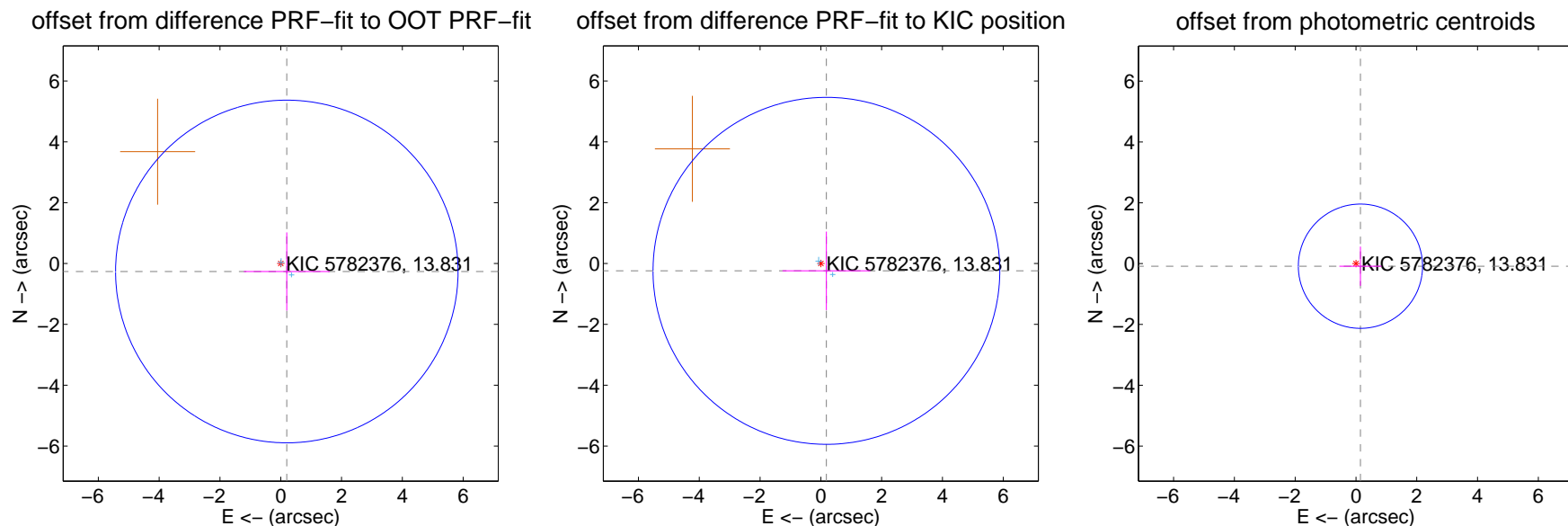
DV Centroid Data

Supplemental centroid analysis for 005782376-04. Kepler magnitude: 13.83. Transit SNR 7.08

There are 2 quarters with good PRF difference image offsets

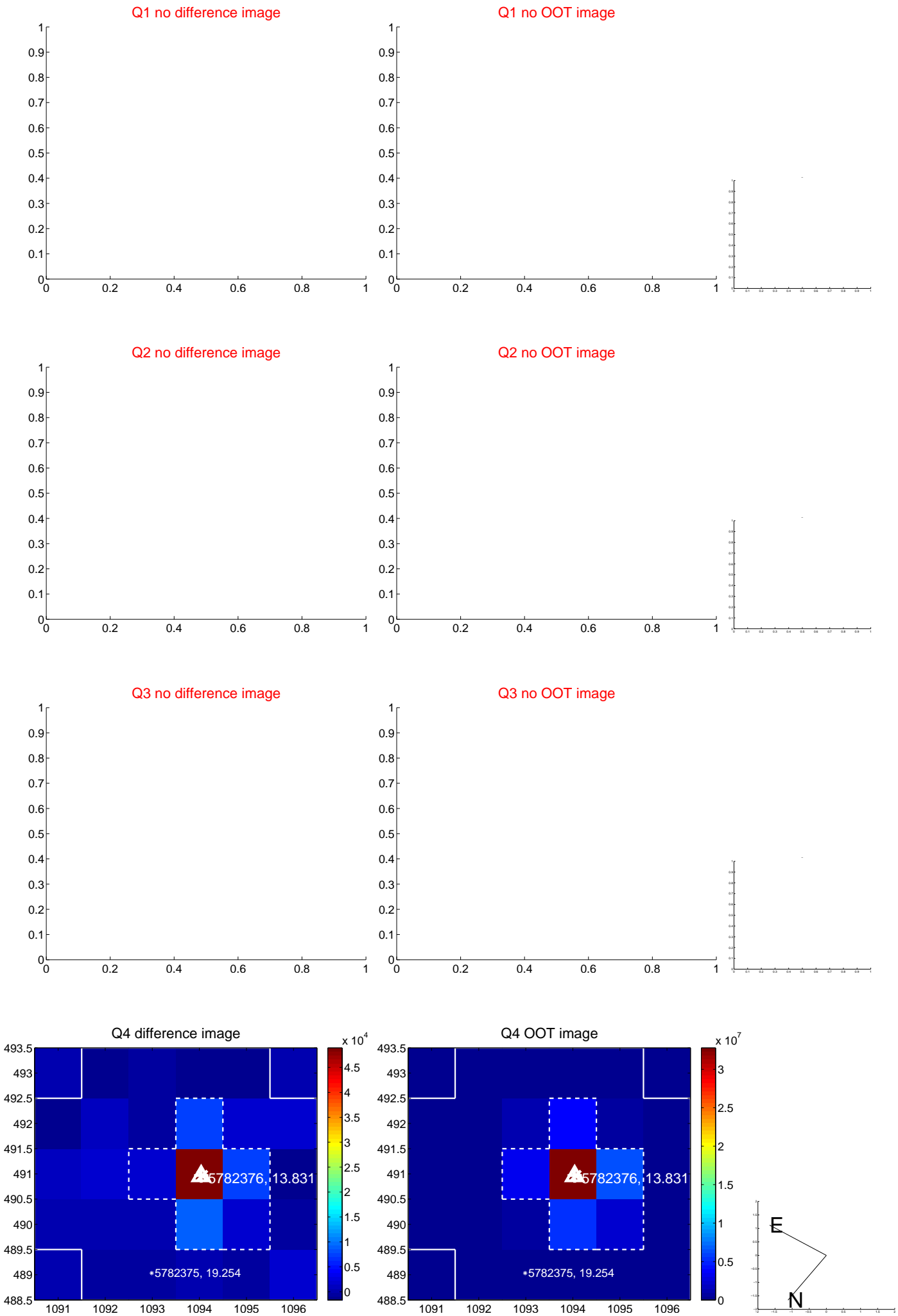
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.329 ± 1.877	0.18	-0.200 ± 1.413	-0.261 ± 1.284
PRF-fit source offset from KIC position	0.302 ± 1.901	0.16	-0.183 ± 1.443	-0.240 ± 1.293
photometric centroid source offset	0.17 ± 0.68	0.25	-0.15 ± 0.69	-0.09 ± 0.65



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.

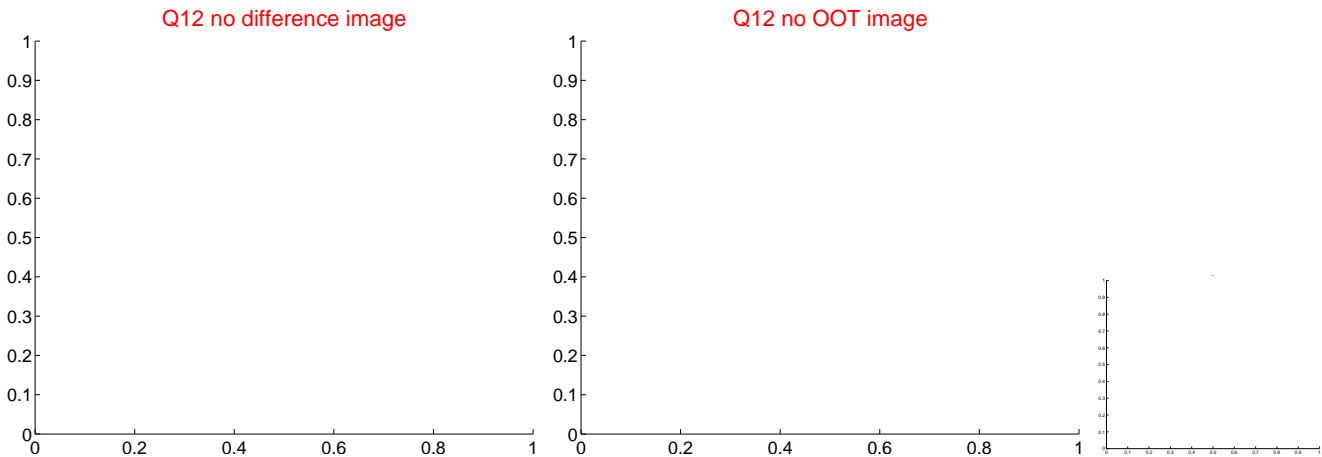
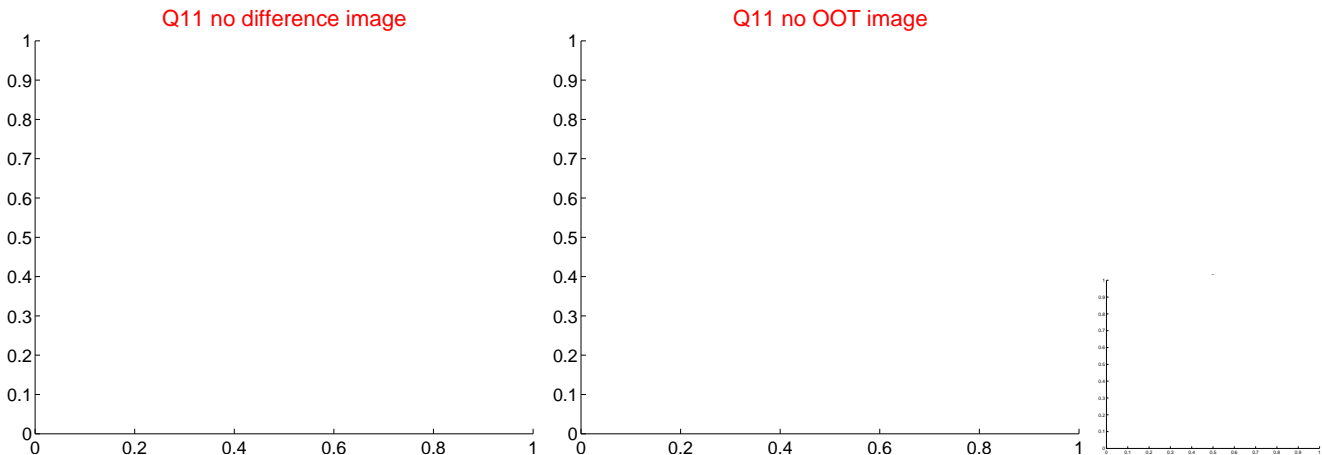
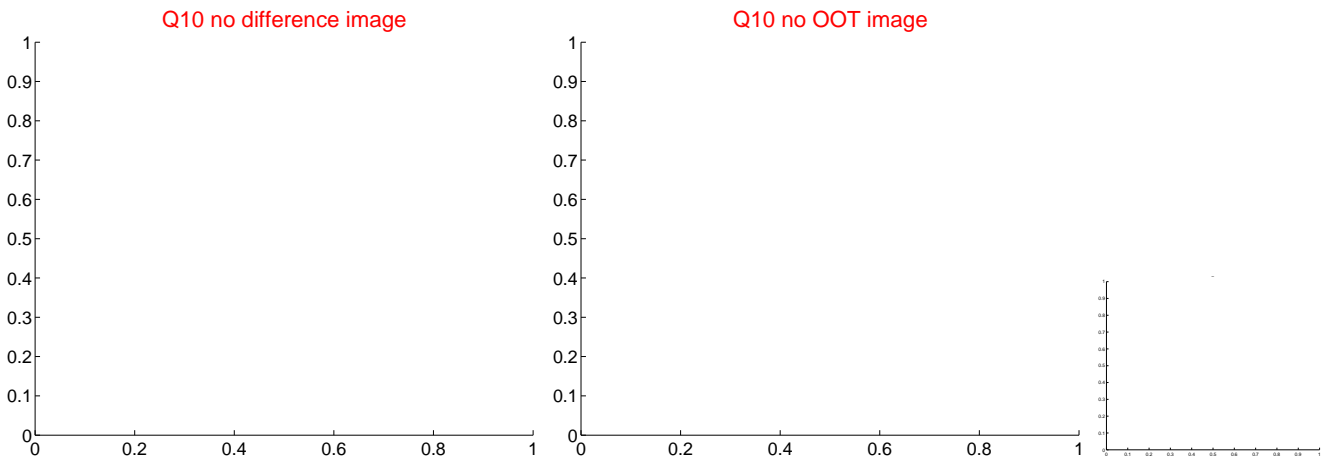
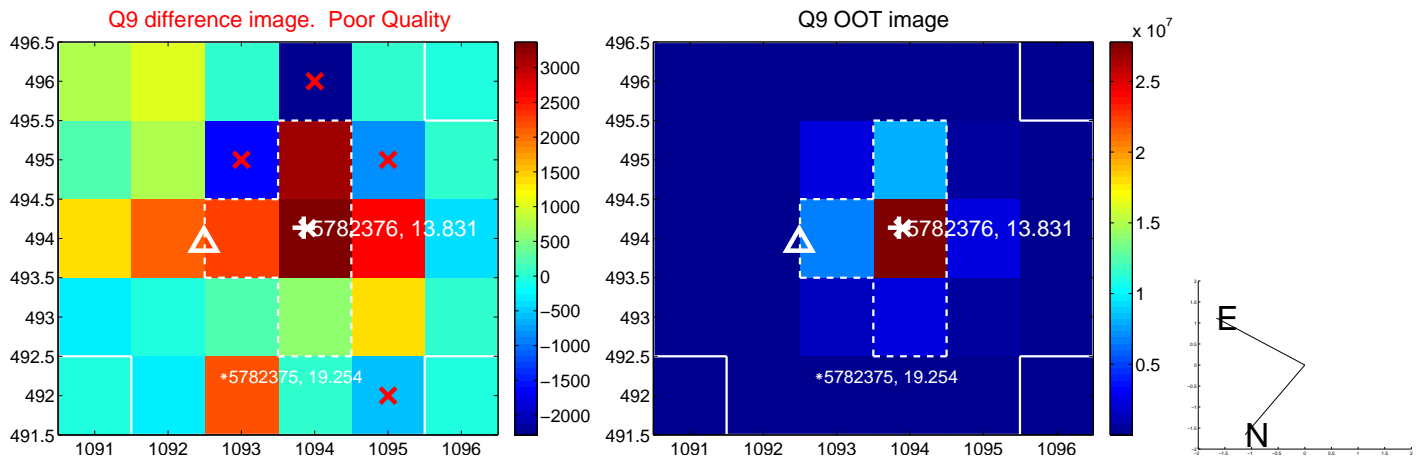
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

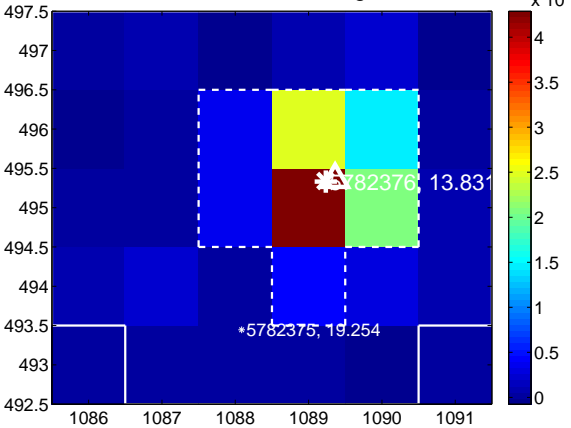
Q13 no difference image



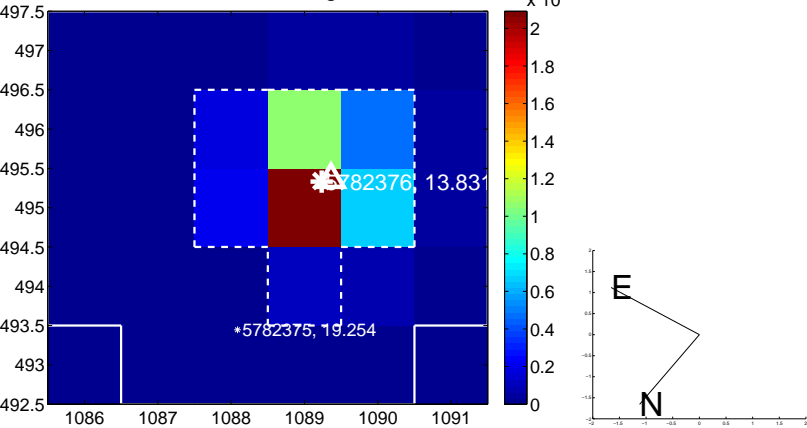
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



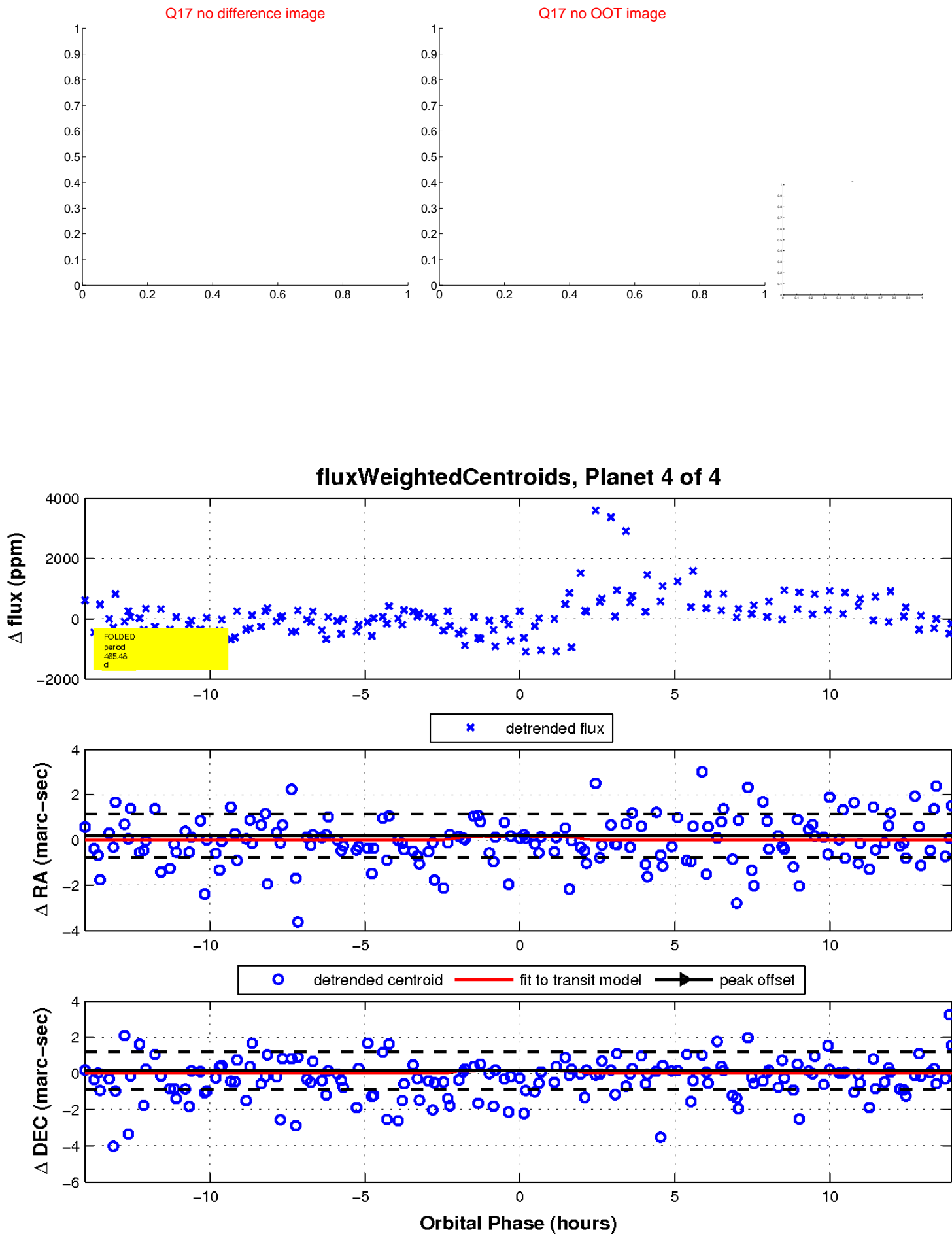
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

