

KIC 009606106

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})
009606106-01	OBS	No	362.966464	196.023551	915.0	3.589	17.7	4.1	0.77	5308	2.45	0.50
009606106-02	OBS	No	298.822750	356.935287	892.5	2.537	12.8	5.1	0.77	5308	2.28	0.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009606106-01	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—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009606106-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

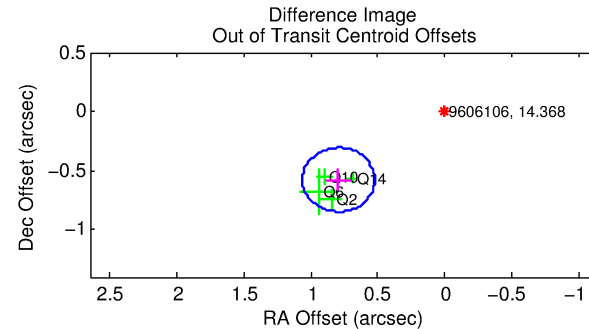
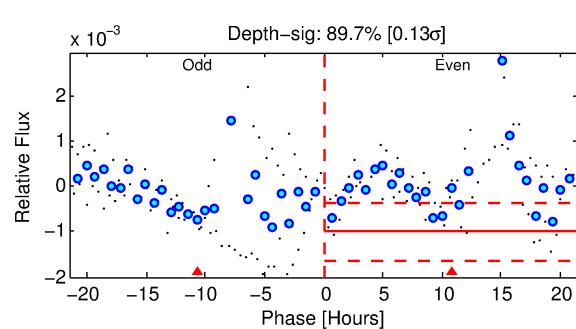
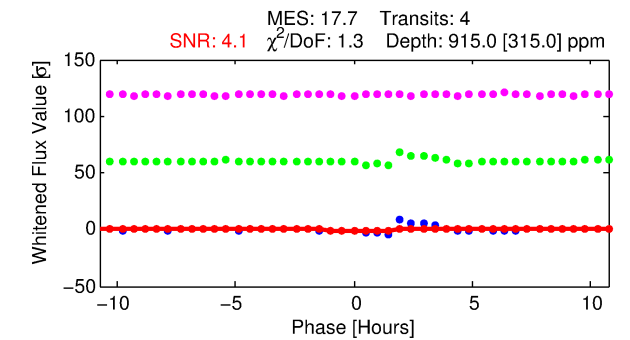
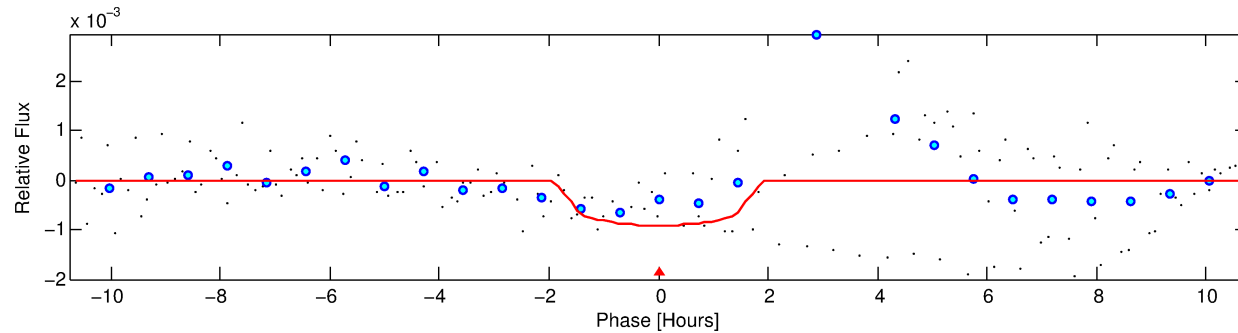
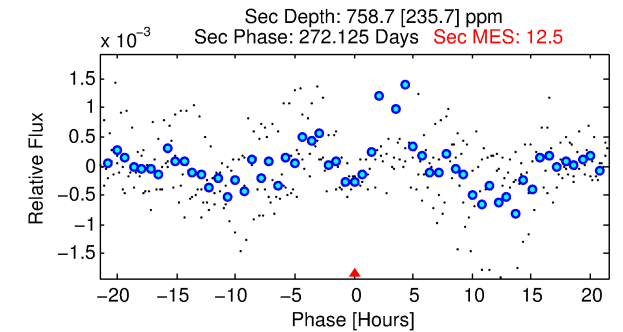
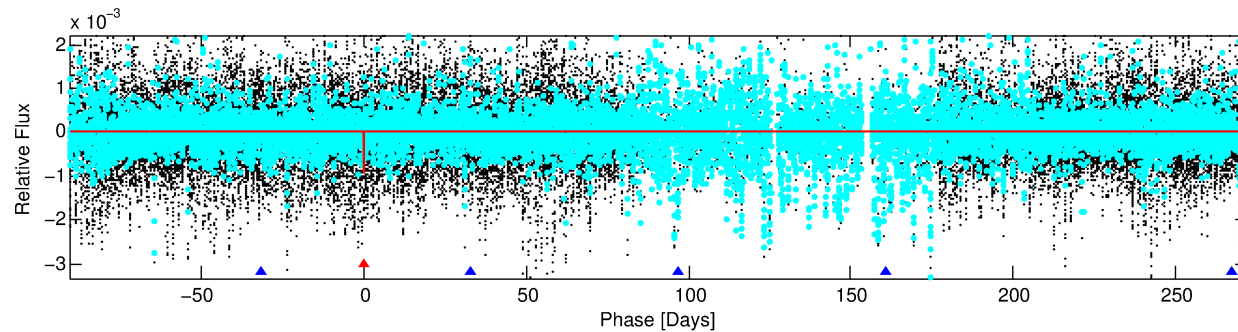
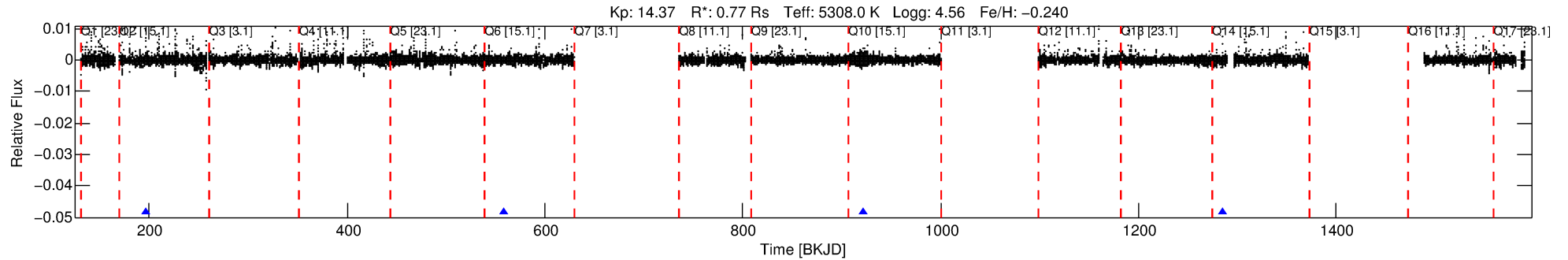
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009606106-01

No Significant Match Found

DV One-Page Summary

KIC: 9606106 Candidate: 1 of 2 Period: 362.966 d



DV Fit Results:

Period = 362.96646 [0.00618] d
Epoch = 196.0236 [0.0125] BKJD
Rp/R* = 0.0291 [0.0592]
a/R* = 619.60 [4921.77]
b = 0.64 [7.30]
Seff = 0.50 [0.12]
Teq = 214 [13] K
Rp = 2.45 [5.00] Re
a = 0.9211 [0.1189] AU
Ag = 59159.29 [241805.53] [0.24σ]
Teffp = 5166 [5278] K [0.94σ]

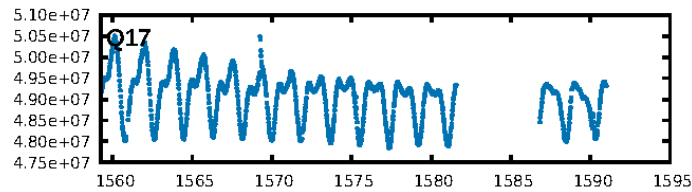
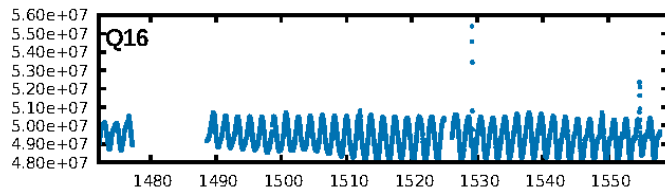
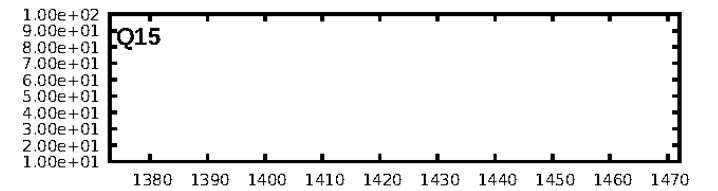
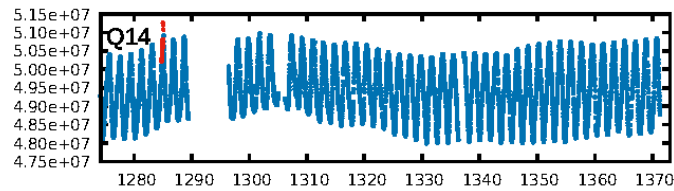
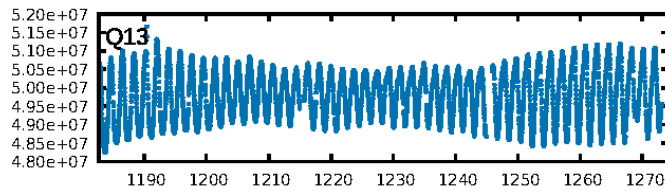
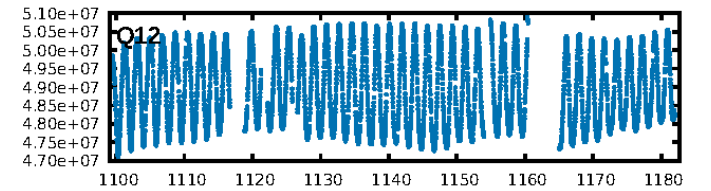
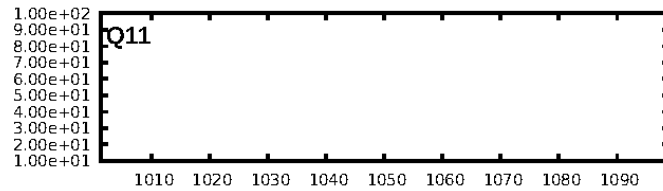
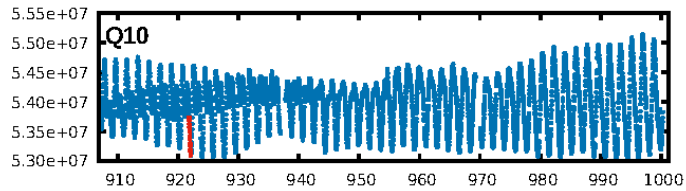
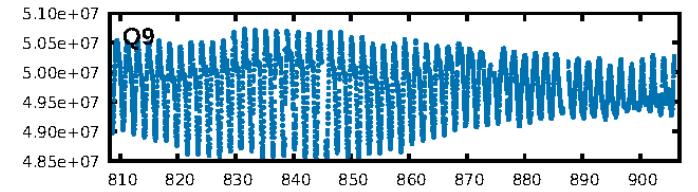
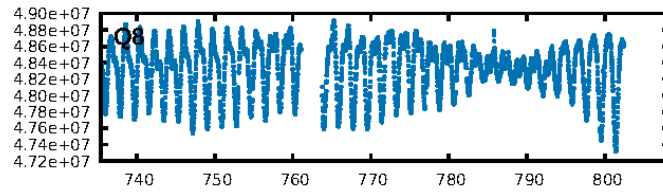
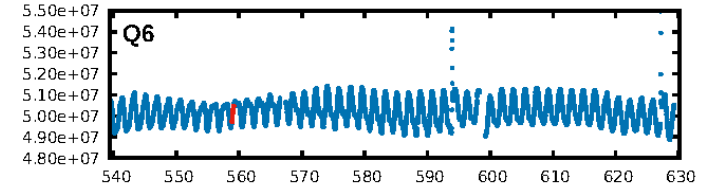
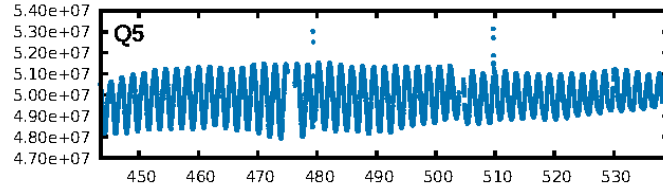
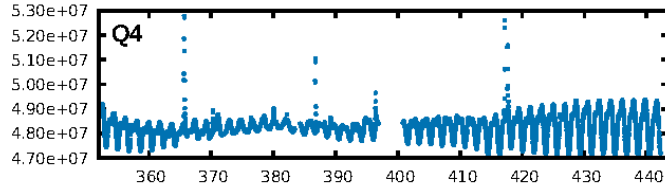
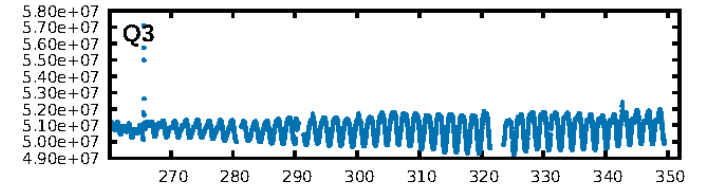
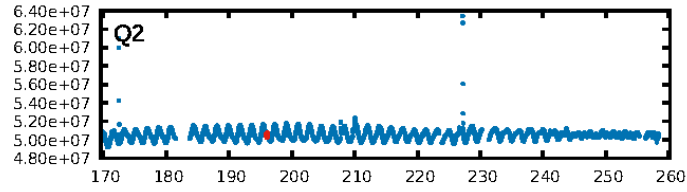
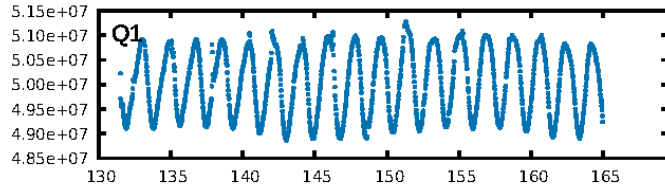
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [350.29σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.8%
ModelChiSquareGoF-sig: 91.2%
Bootstrap-pfa: 6.12e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 22.65
Centroid-sig: N/A
Centroid-so: 0.142 arcsec [0.18σ]
OotOffset-rm: 0.982 arcsec [10.87σ]
KicOffset-rm: 0.207 arcsec [2.38σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

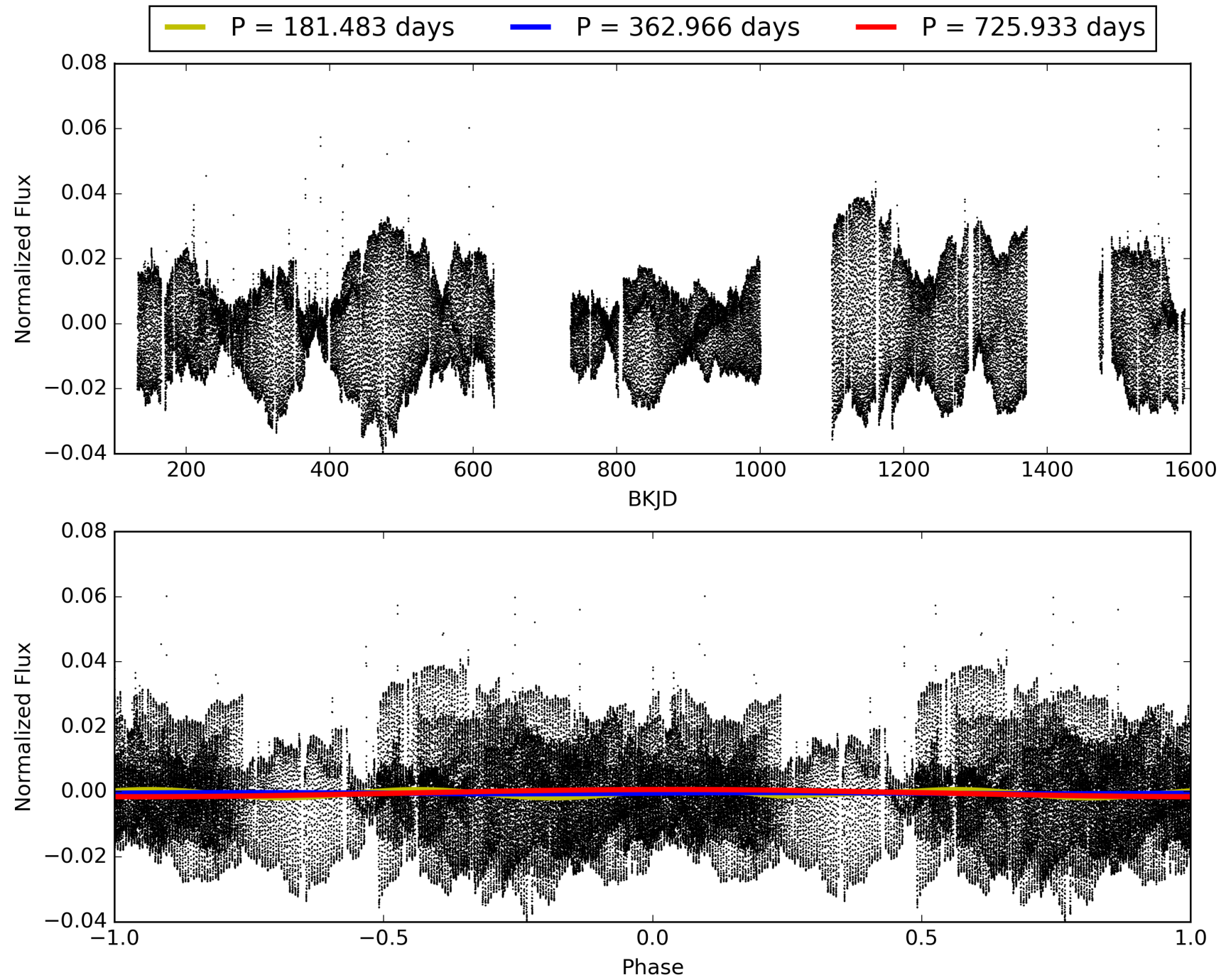
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:22:10 Z

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

TCE 009606106-01, PDC Light Curves

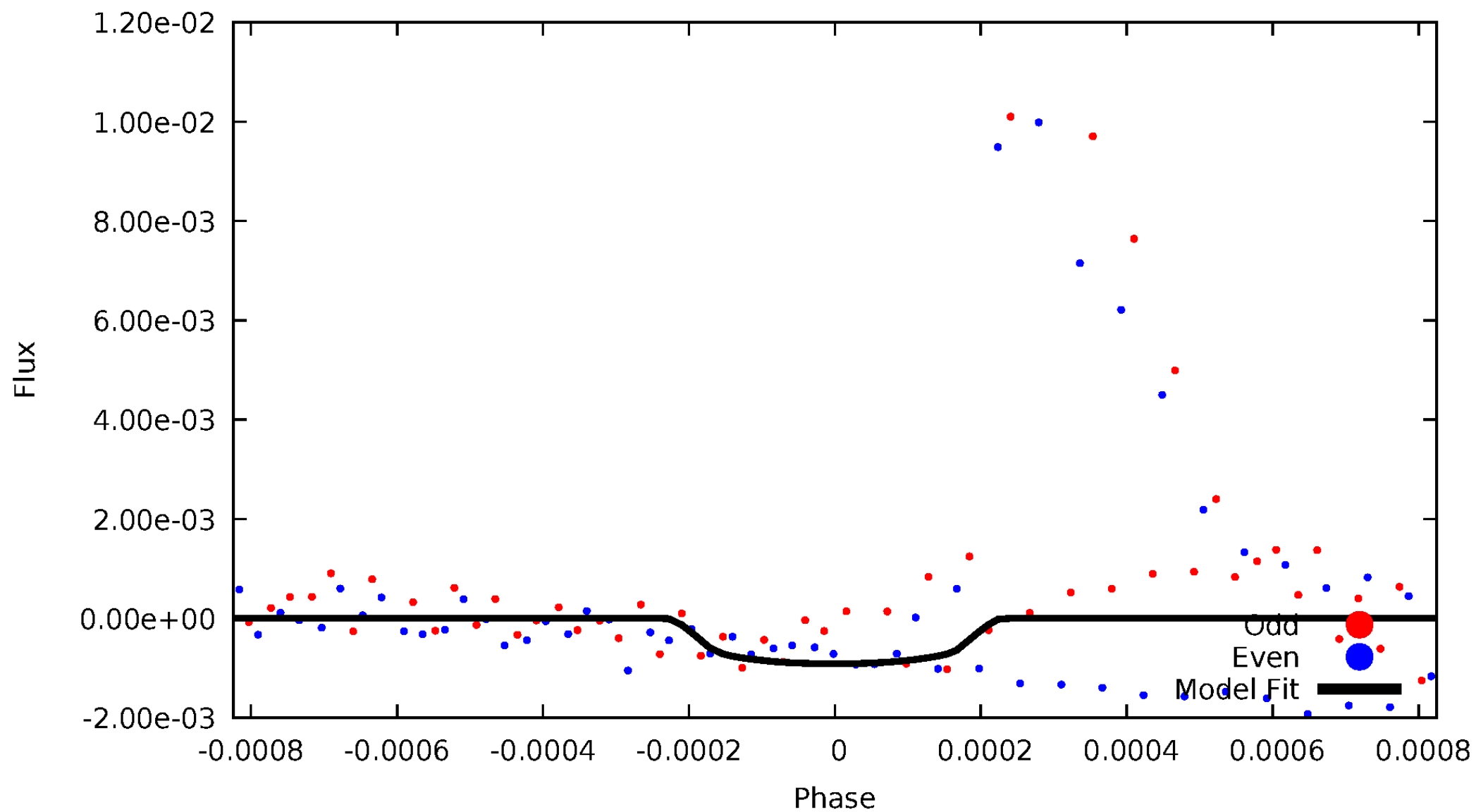


TCE 009606106-01



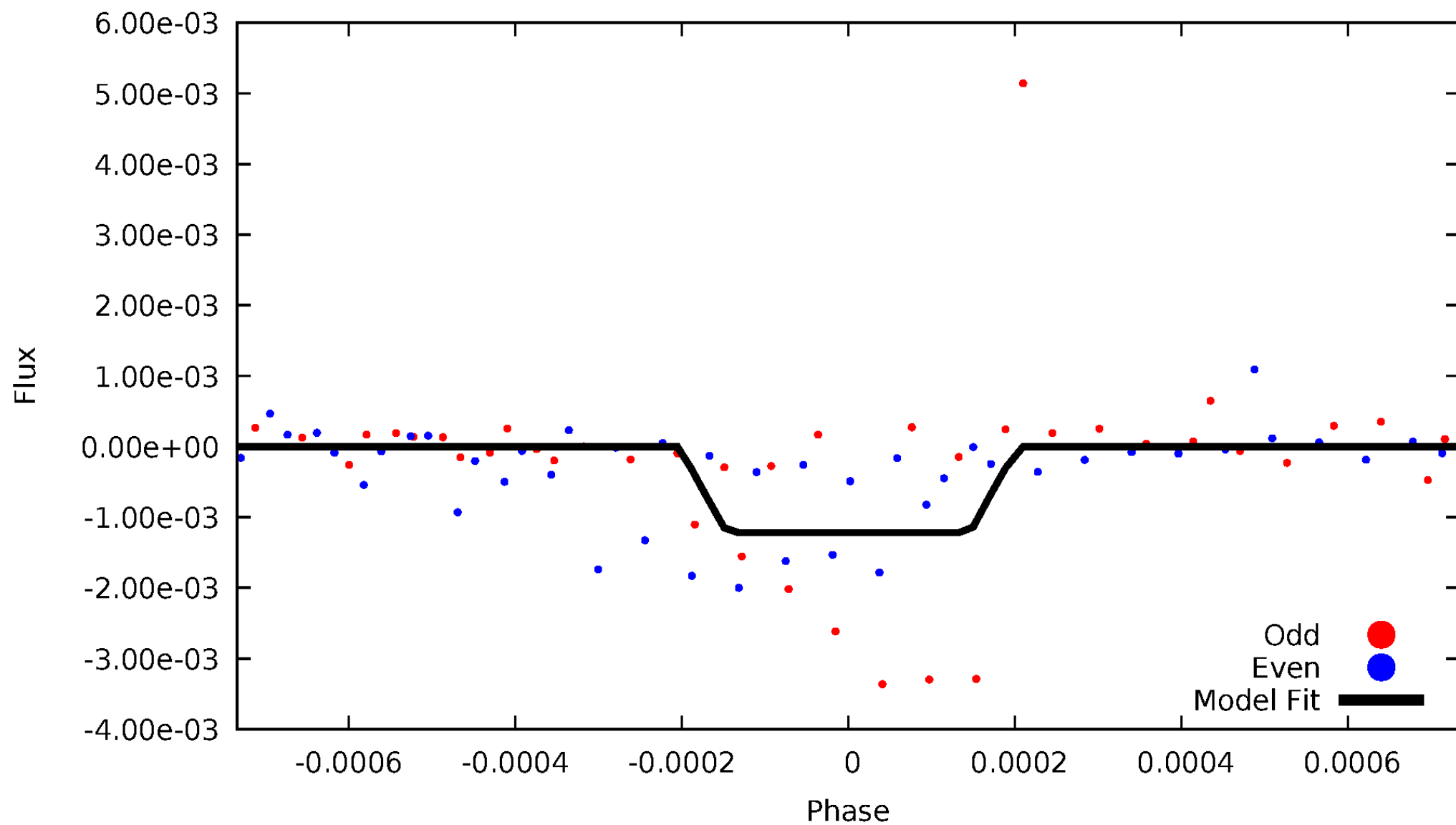
DV Odd/Even

TCE 009606106-01



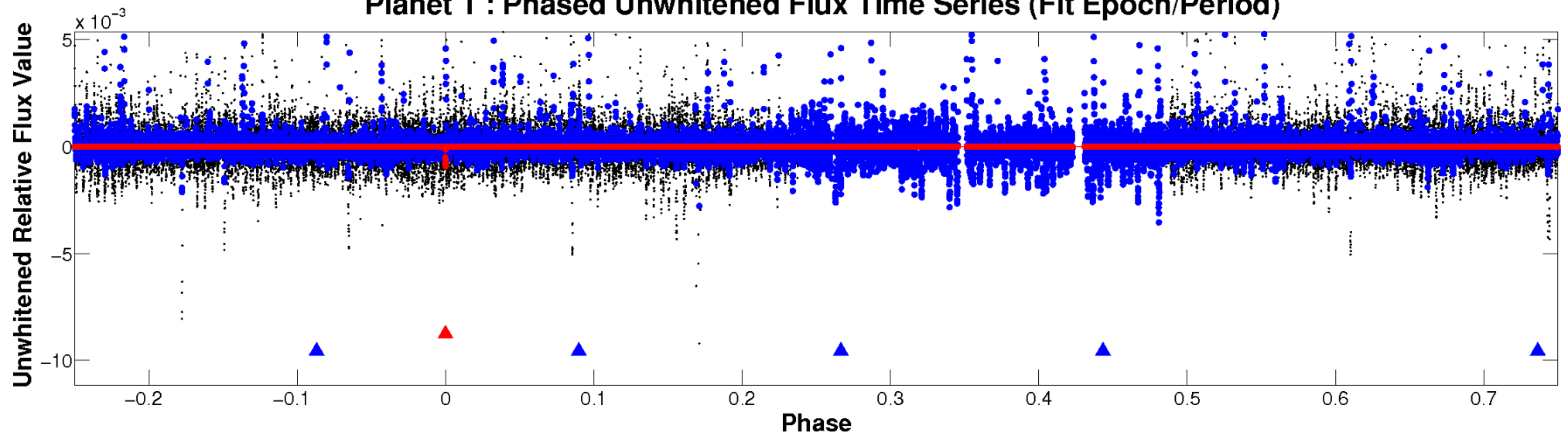
ALT Odd/Even

TCE 009606106-01

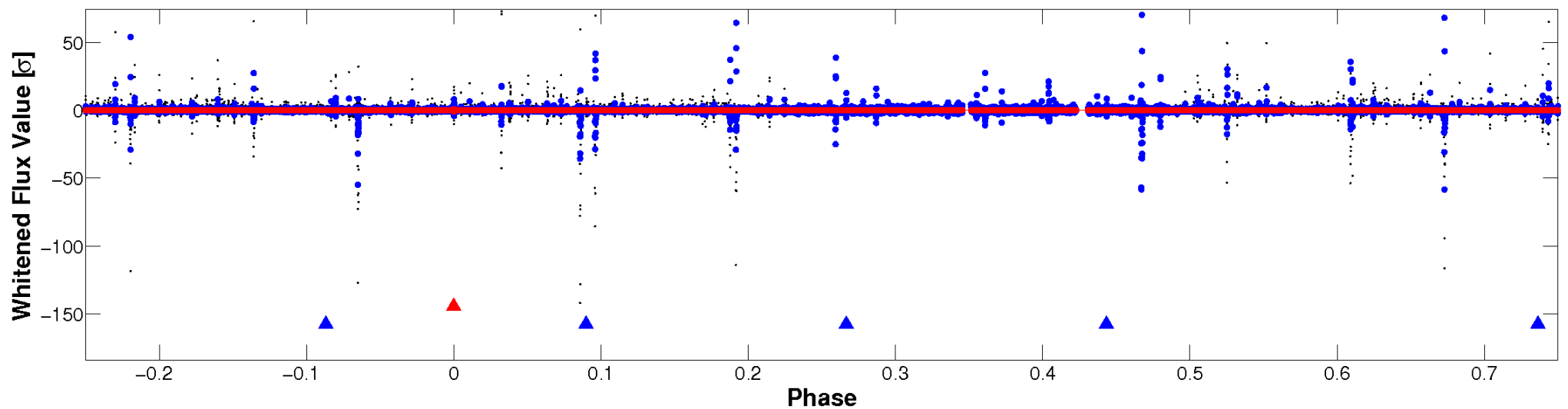


Non-Whitened Vs. Whitened Light Curve

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

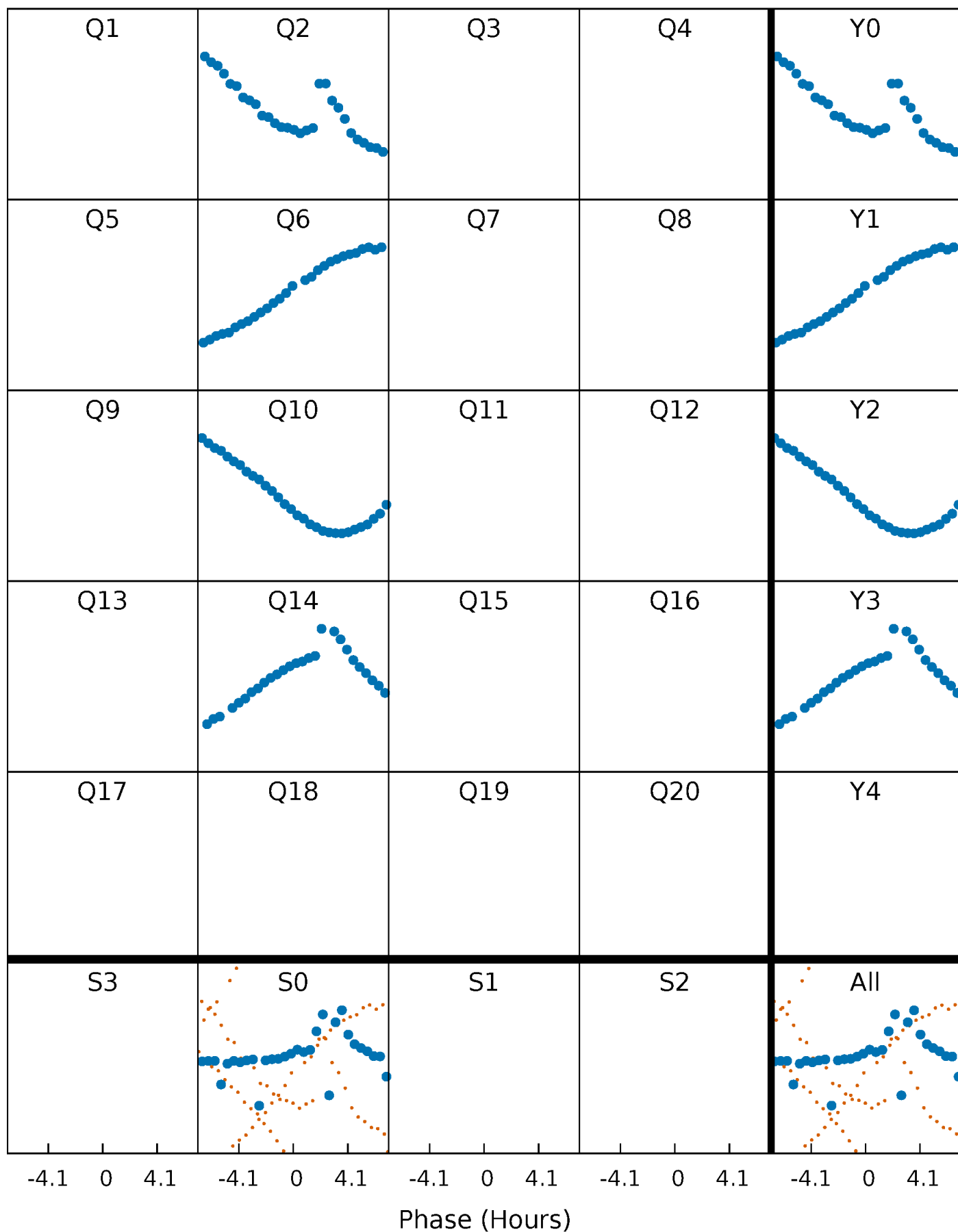


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



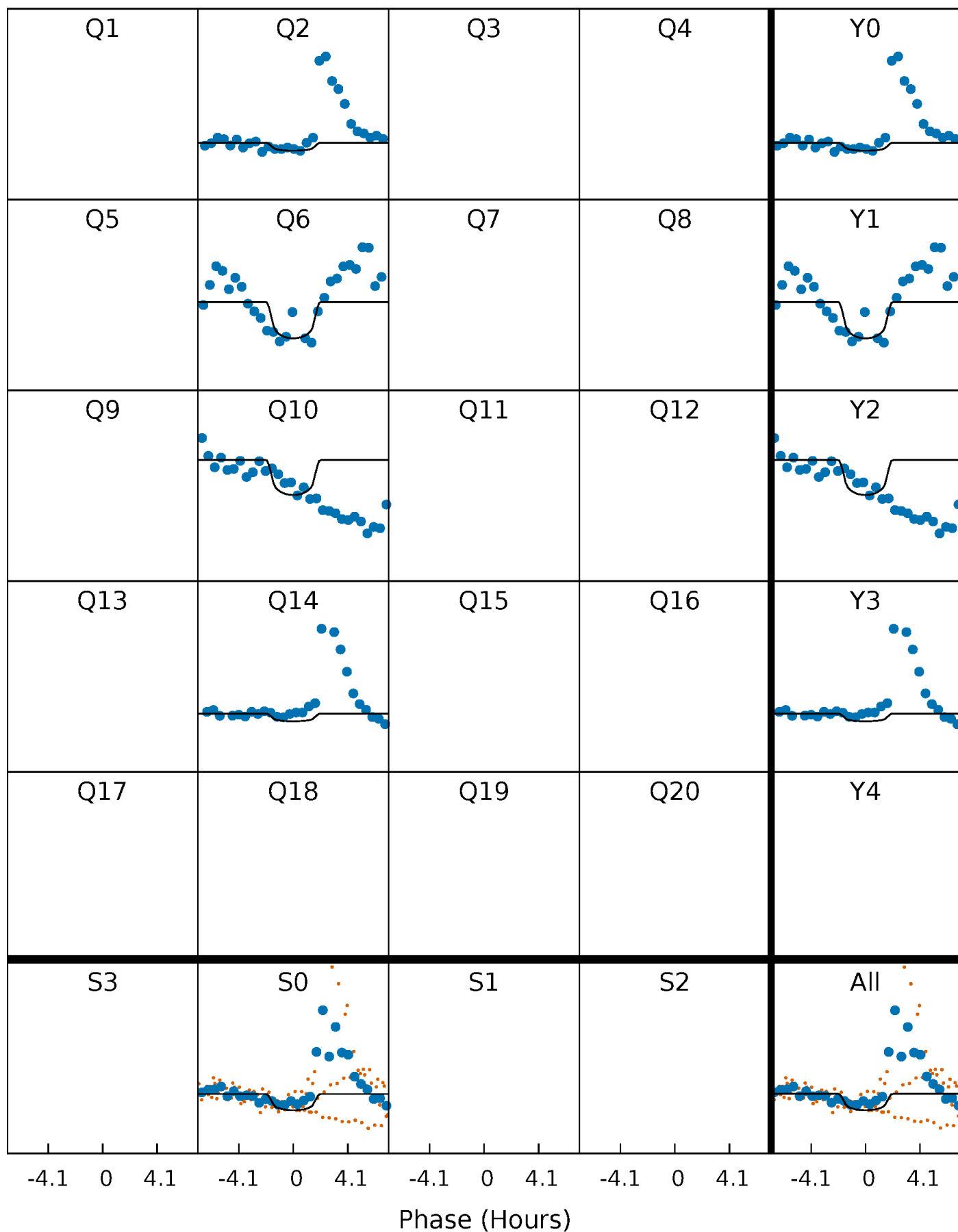
PDC Quarter-Phased Transit Curves

TCE 009606106-01 P=362.966464 Days $T_0=196.023551$ (BKJD)



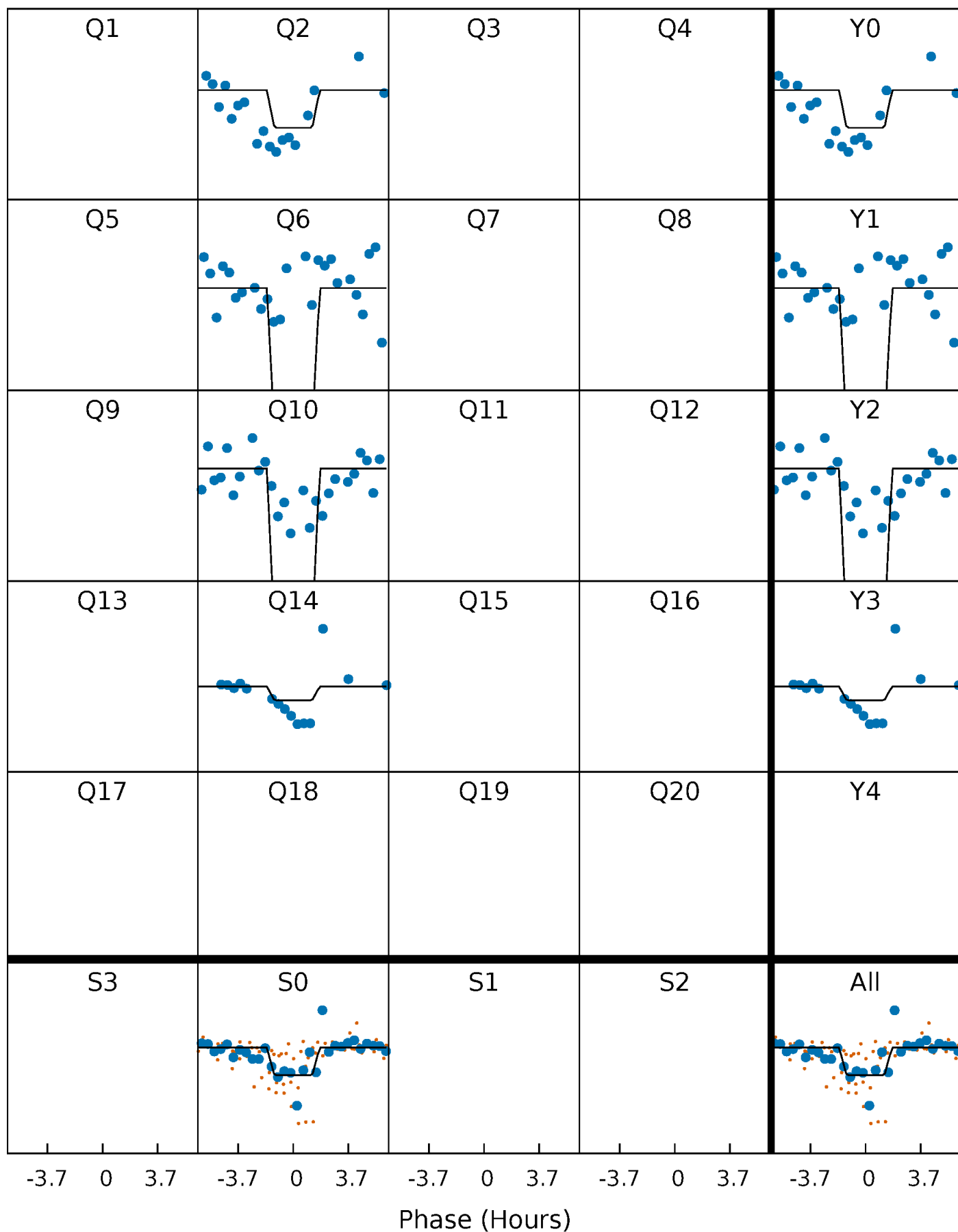
DV Quarter-Phased Transit Curves

TCE 009606106-01 P=362.966464 Days $T_0=196.023551$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

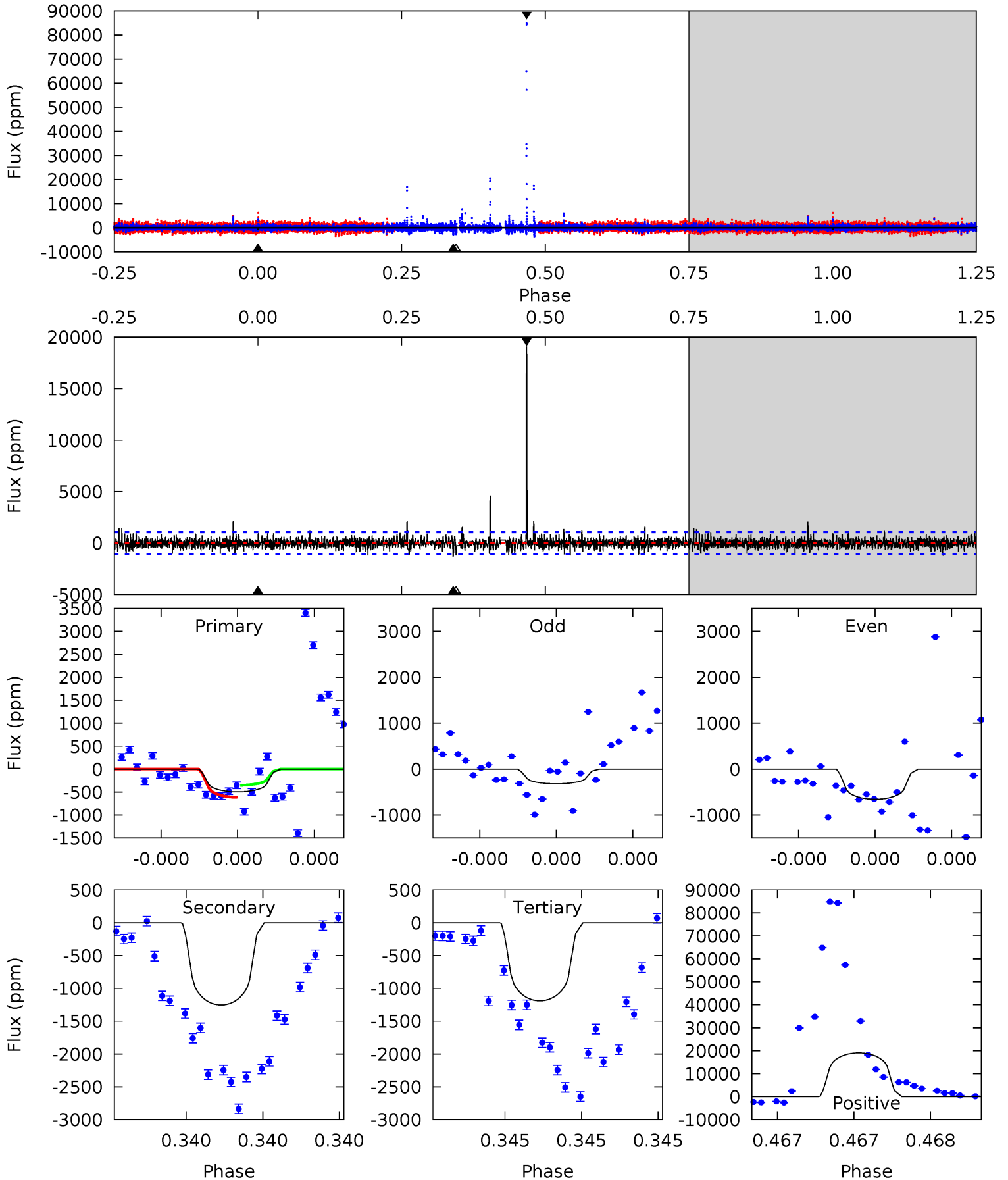
TCE 009606106-01 P=362.968186 Days $T_0=196.029637$ (BKJD)



DV Model-Shift Uniqueness Test

009606106-01, P = 362.966464 Days, E = 196.023551 Days

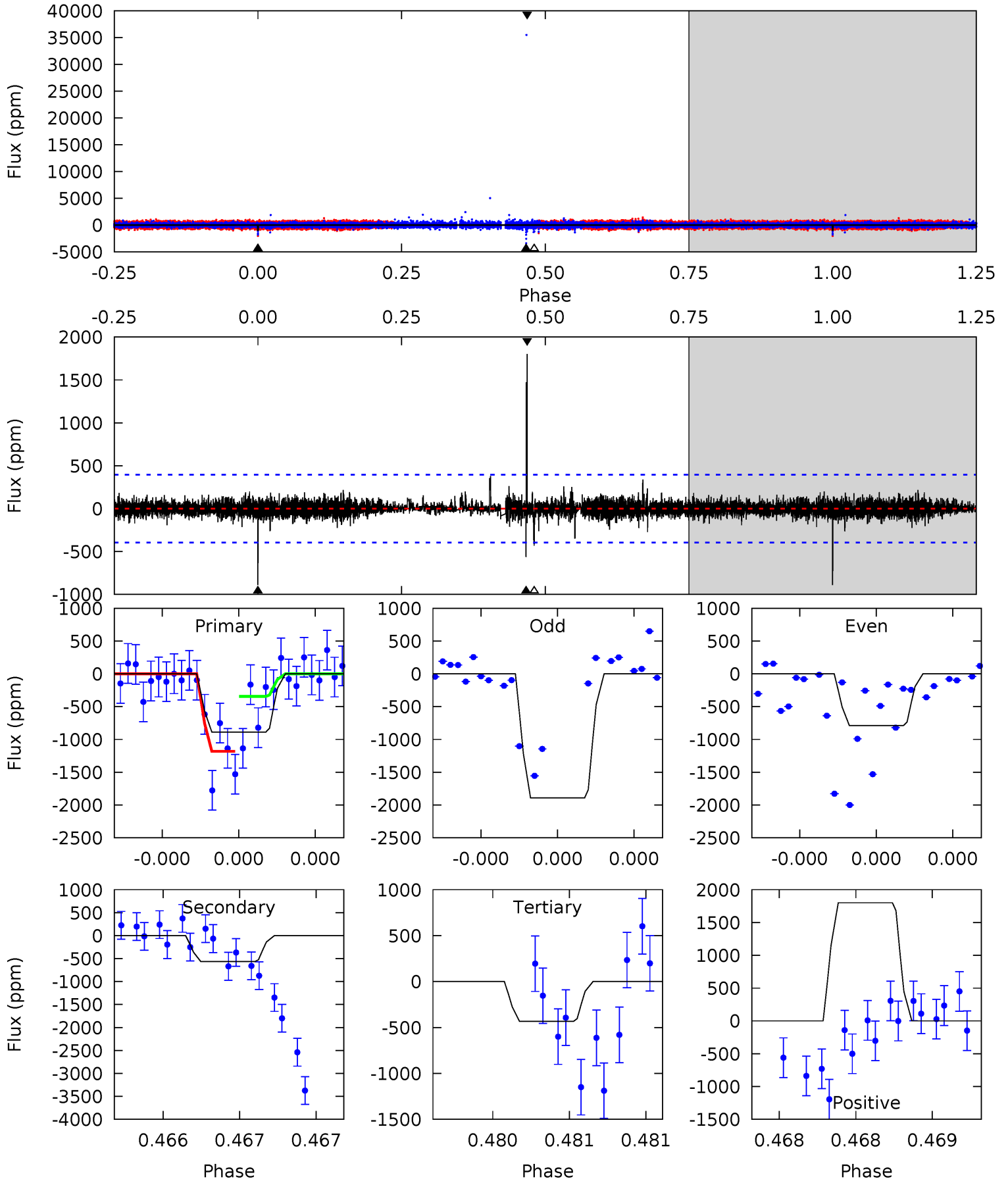
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.60	6.56	6.22	99.6	5.59	3.51	2.58	-3.63	-97.0	0.33	-93.1	0.72	0.79	0.94	0.63



Alt Model-Shift Uniqueness Test

009606106-01, P = 362.968186 Days, E = 196.029637 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	8.00	6.13	25.5	5.62	3.56	0.82	6.47	-12.9	1.87	-17.5	8.34	1.30	0.67	0



Stellar Parameters For KIC 009606106

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5308^{+212}_{-212}	$4.562^{+0.052}_{-0.097}$	$-0.240^{+0.300}_{-0.300}$	$0.771^{+0.122}_{-0.082}$	$0.790^{+0.096}_{-0.078}$	$2.431^{+0.651}_{-0.726}$
	+4%/-4%	+1%/-2%	+125%/-125%	+16%/-11%	+12%/-10%	+27%/-30%
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 009606106-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1254 ± 191	$4.43^{+3.90}_{-3.10}$	303^{+14}_{-14}	4600^{+3634}_{-1019}	$31202^{+290092}_{-23091}$
Alt.	-564 ± 70	$4.87^{+4.06}_{-3.28}$	301^{+15}_{-14}	3809^{+2148}_{-702}	11235^{+89507}_{-8046}

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

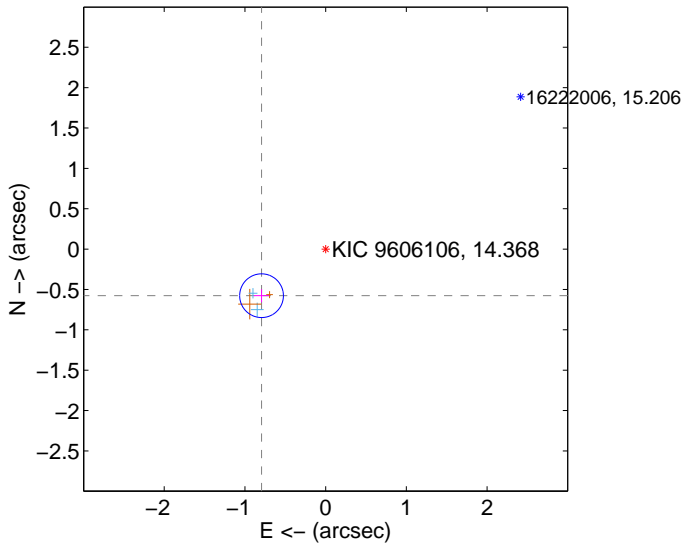
Supplemental centroid analysis for 009606106-01. Kepler magnitude: 14.37. Transit SNR 4.07

There are 2 quarters with good PRF difference image offsets

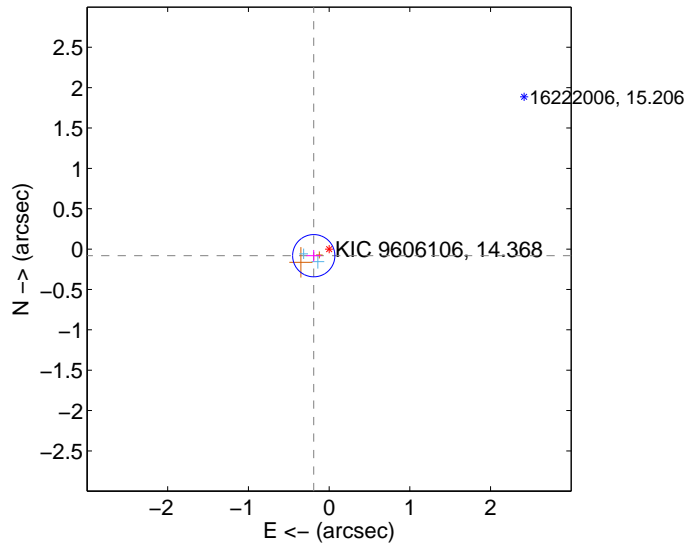
The direct PRF centroid is offset from the target star catalog position by about 0.76 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.982 ± 0.090	10.87	0.794 ± 0.094	-0.577 ± 0.082
PRF-fit source offset from KIC position	0.207 ± 0.087	2.38	0.190 ± 0.090	-0.082 ± 0.071
photometric centroid source offset	0.14 ± 0.79	0.18	-0.01 ± 0.82	0.14 ± 0.78

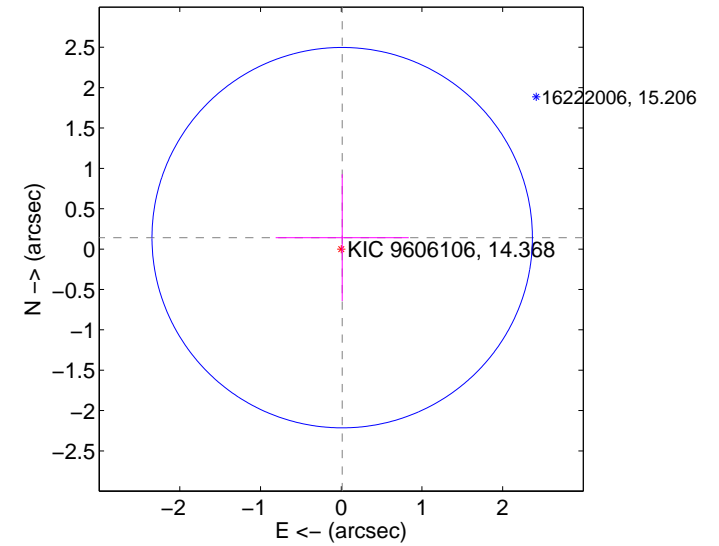
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



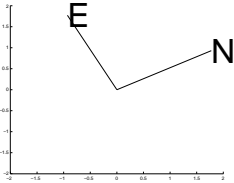
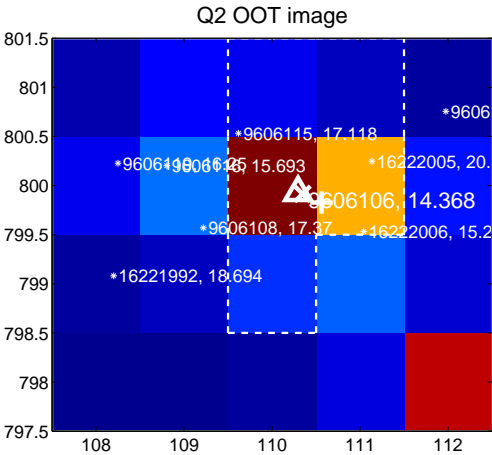
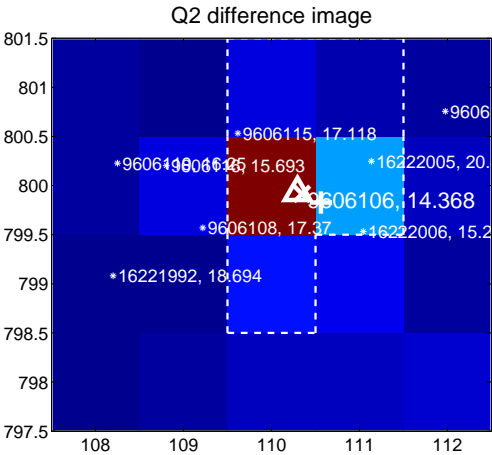
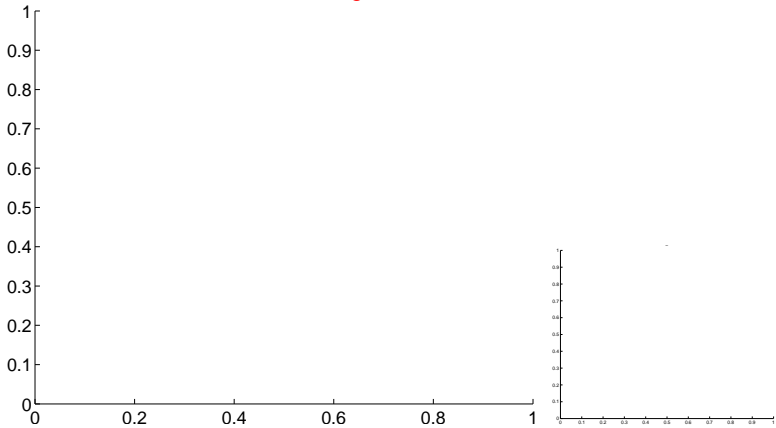
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

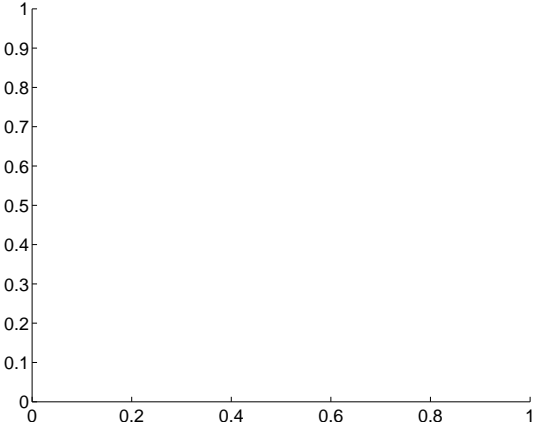
Q1 no difference image



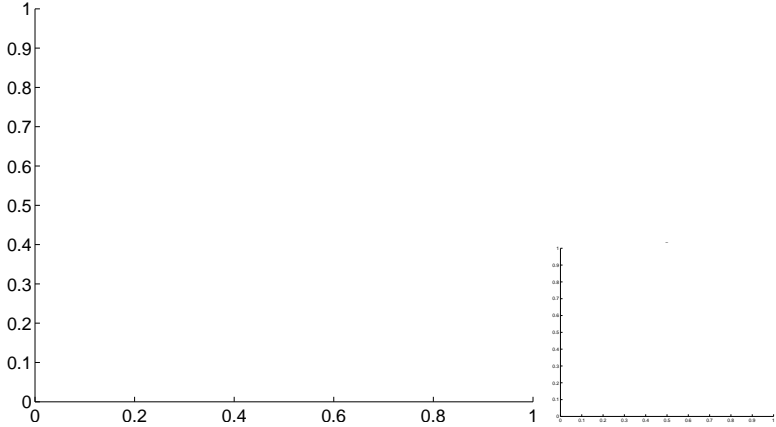
Q1 no OOT image



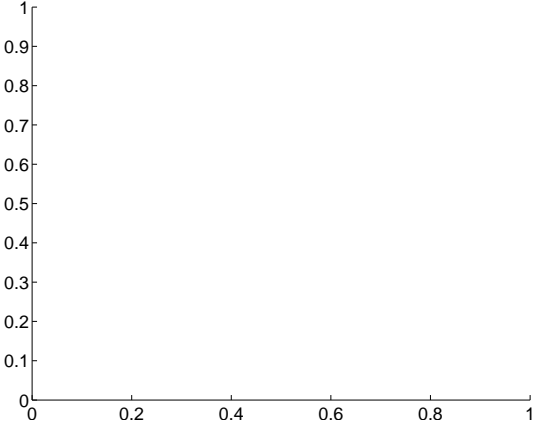
Q3 no difference image



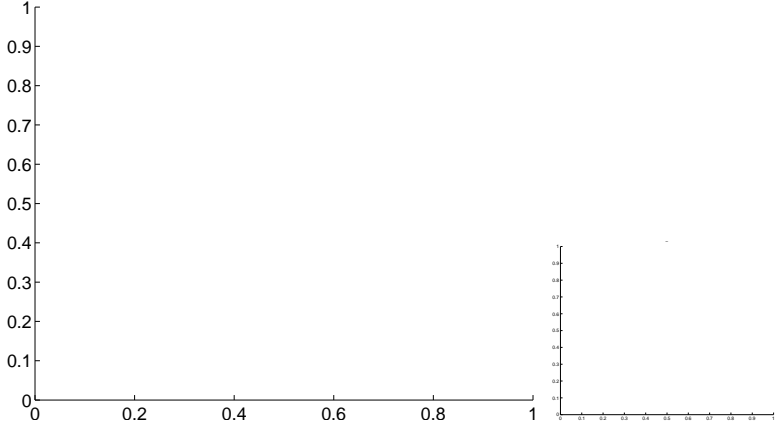
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

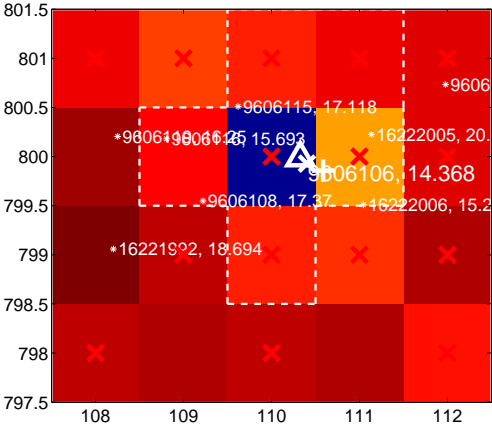
Q5 no difference image



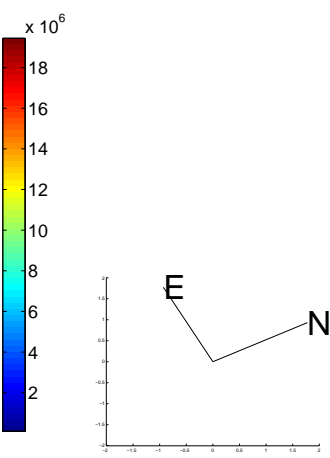
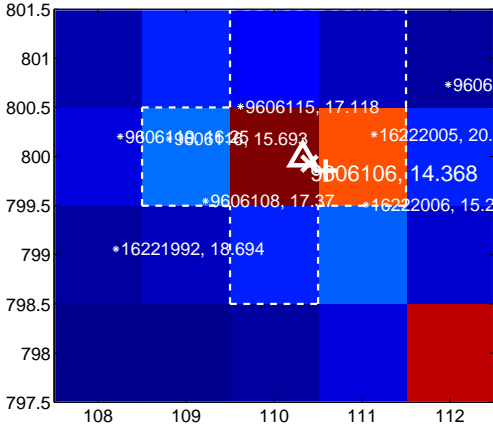
Q5 no OOT image



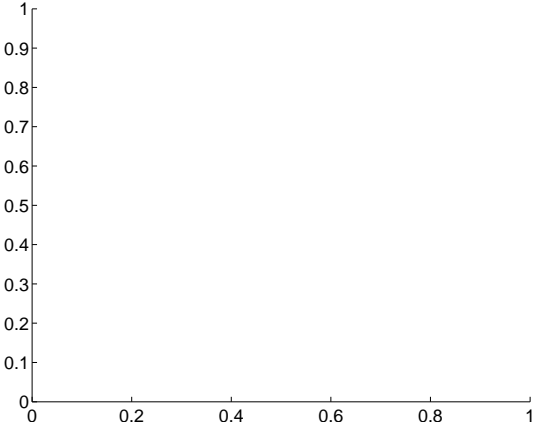
Q6 difference image. Poor Quality



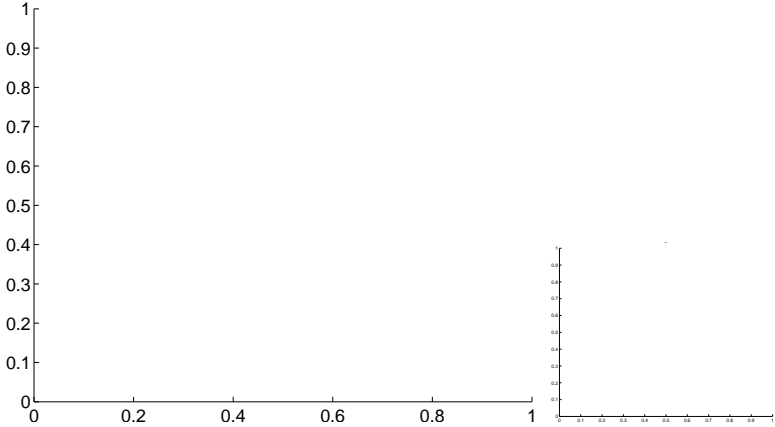
Q6 OOT image



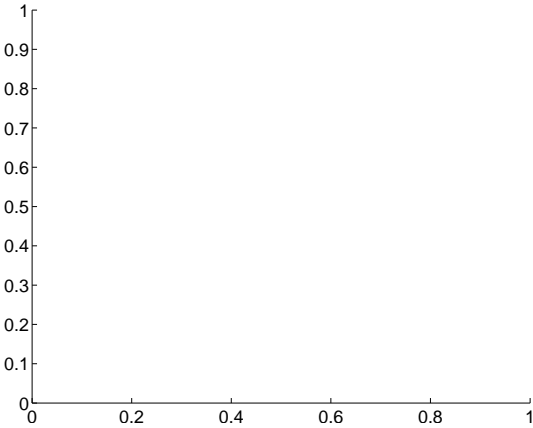
Q7 no difference image



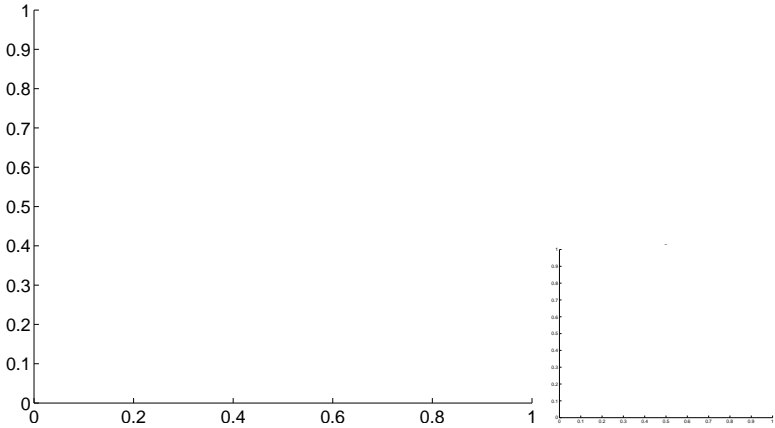
Q7 no OOT image



Q8 no difference image



Q8 no OOT image

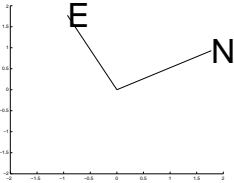
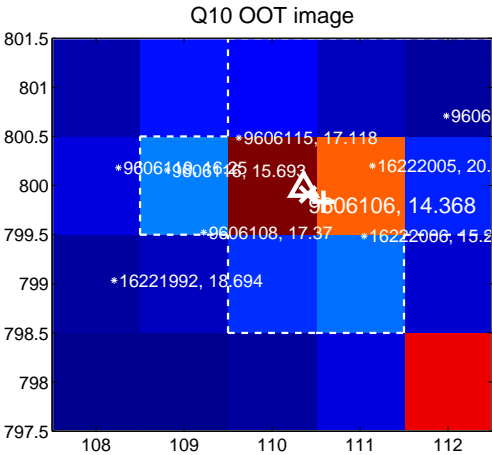
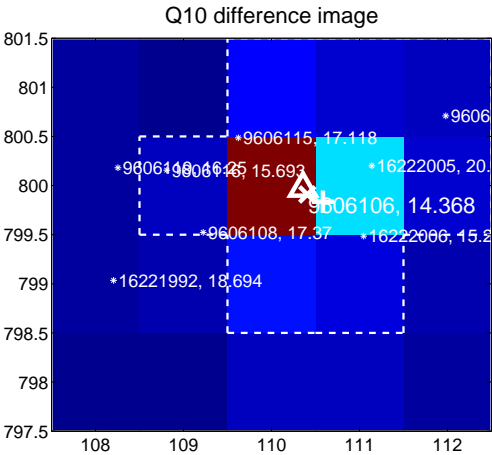
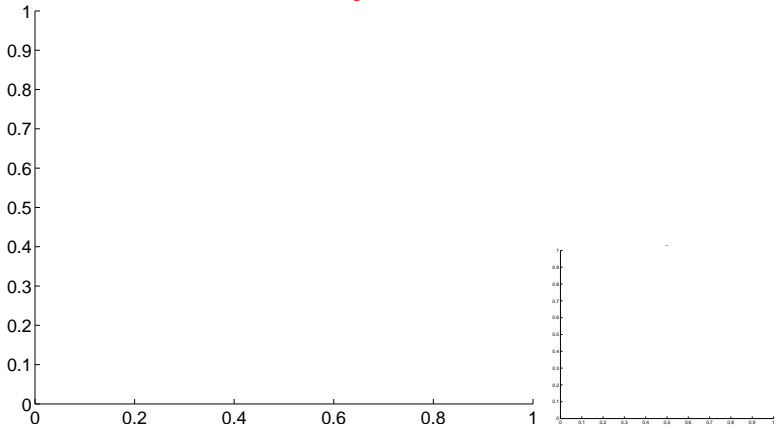


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

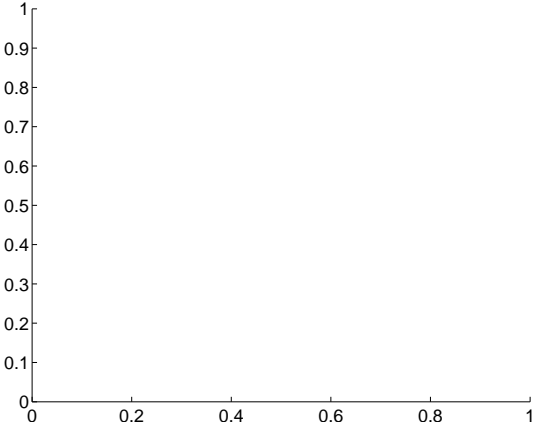
Q9 no difference image



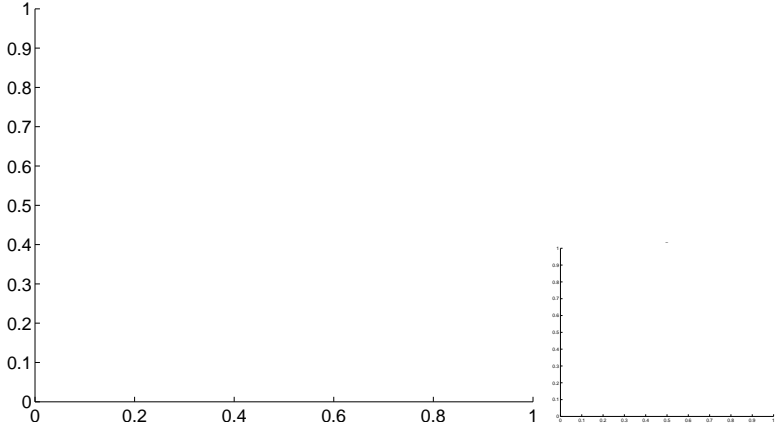
Q9 no OOT image



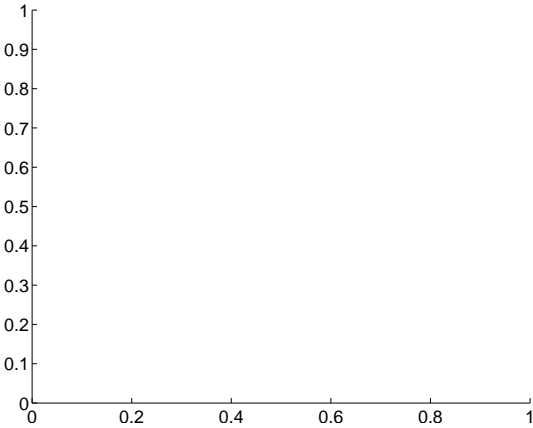
Q11 no difference image



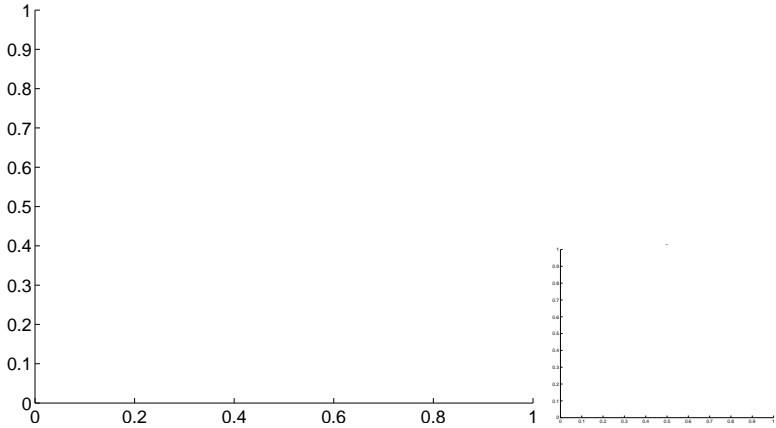
Q11 no OOT image



Q12 no difference image

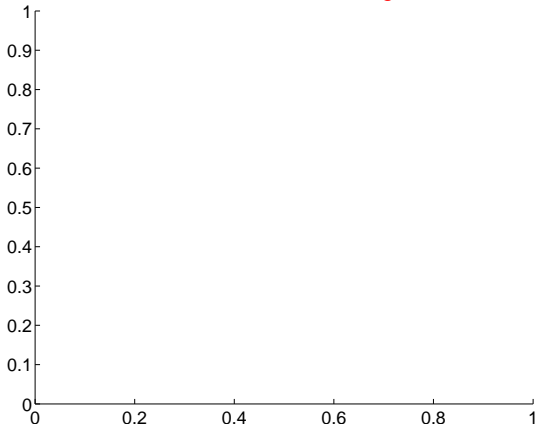


Q12 no OOT image

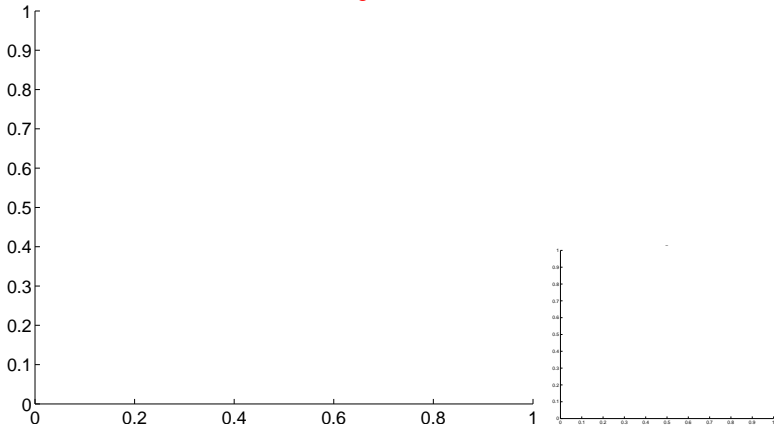


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

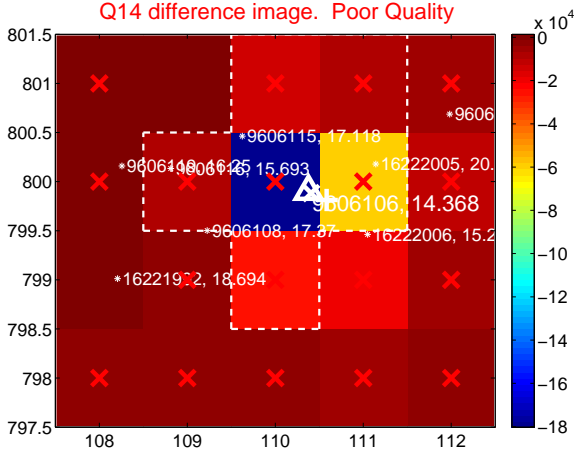
Q13 no difference image



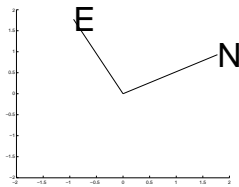
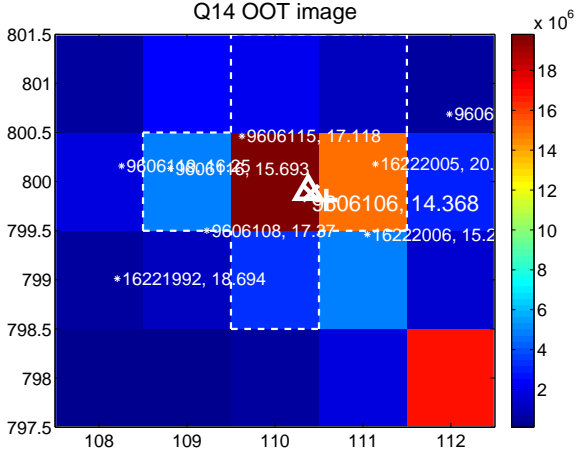
Q13 no OOT image



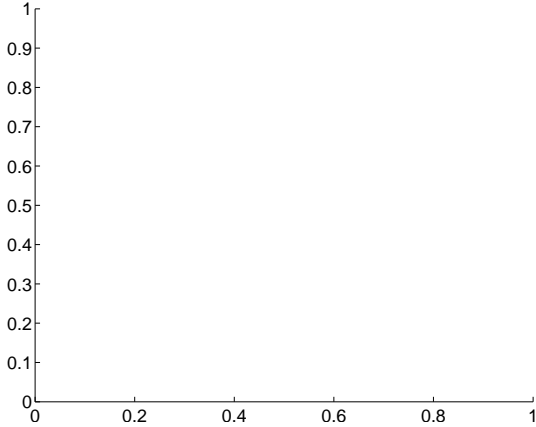
Q14 difference image. Poor Quality



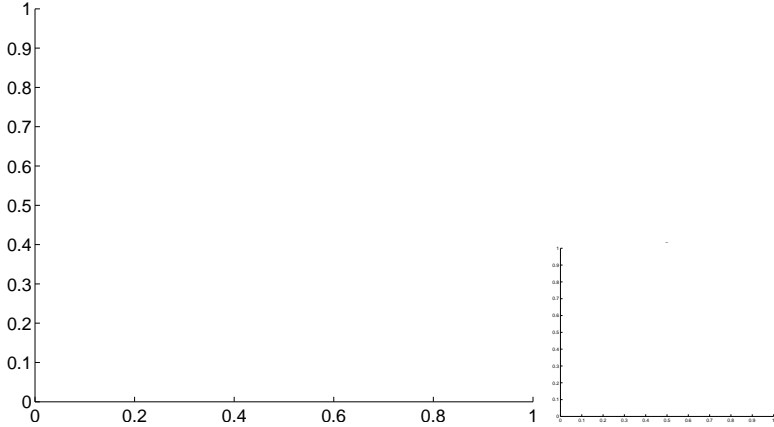
Q14 OOT image



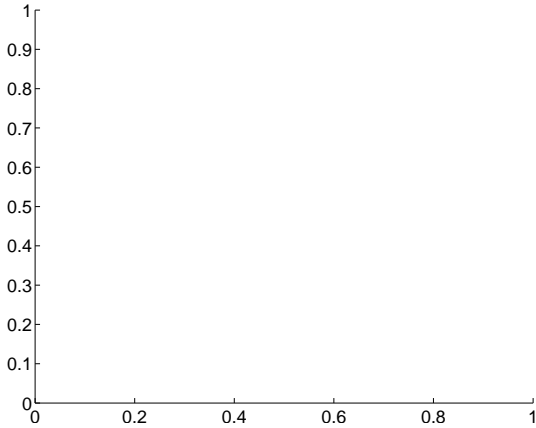
Q15 no difference image



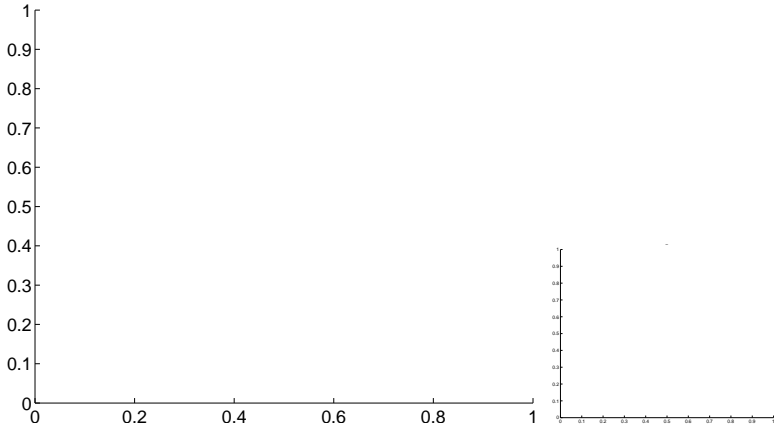
Q15 no OOT image



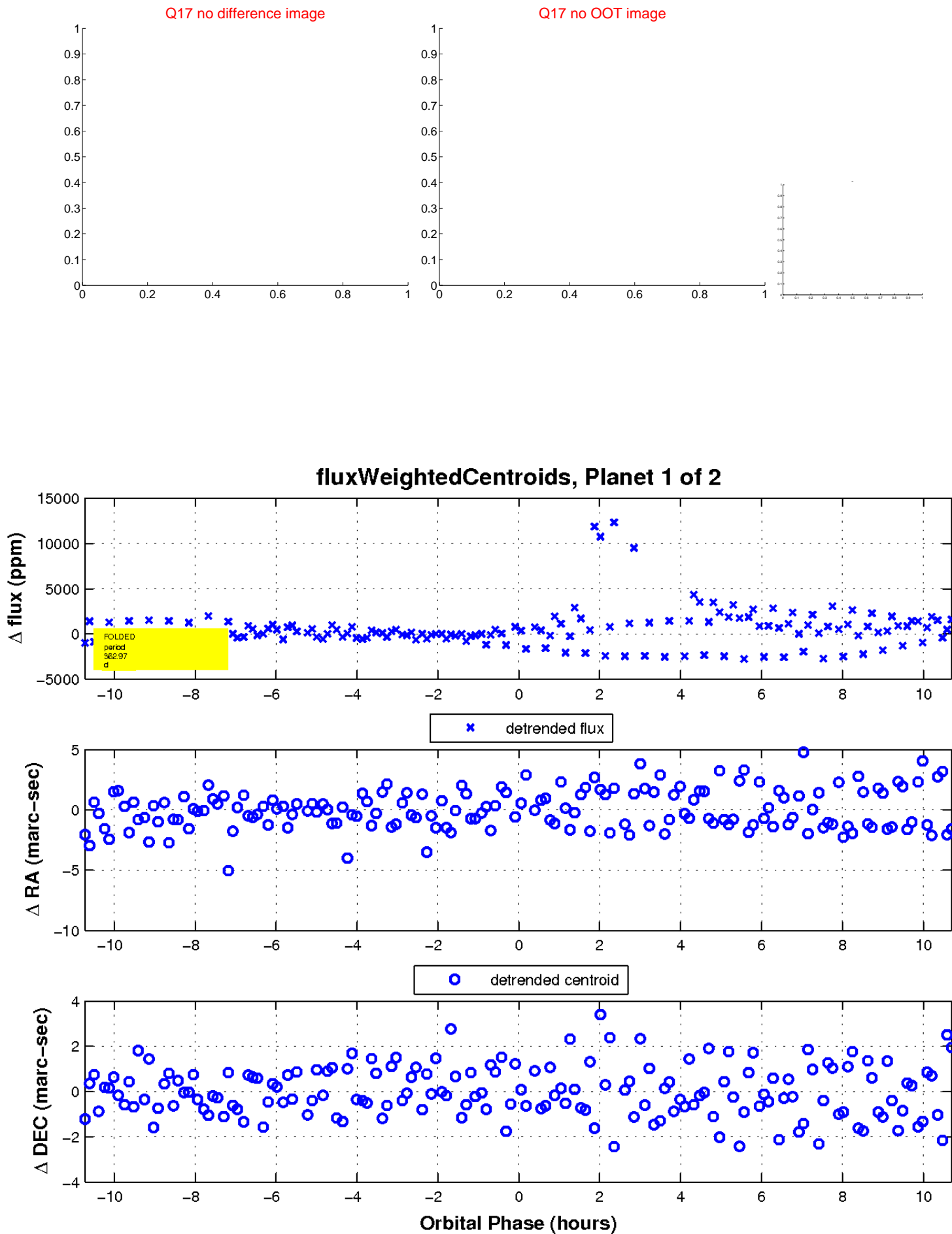
Q16 no difference image



Q16 no OOT image

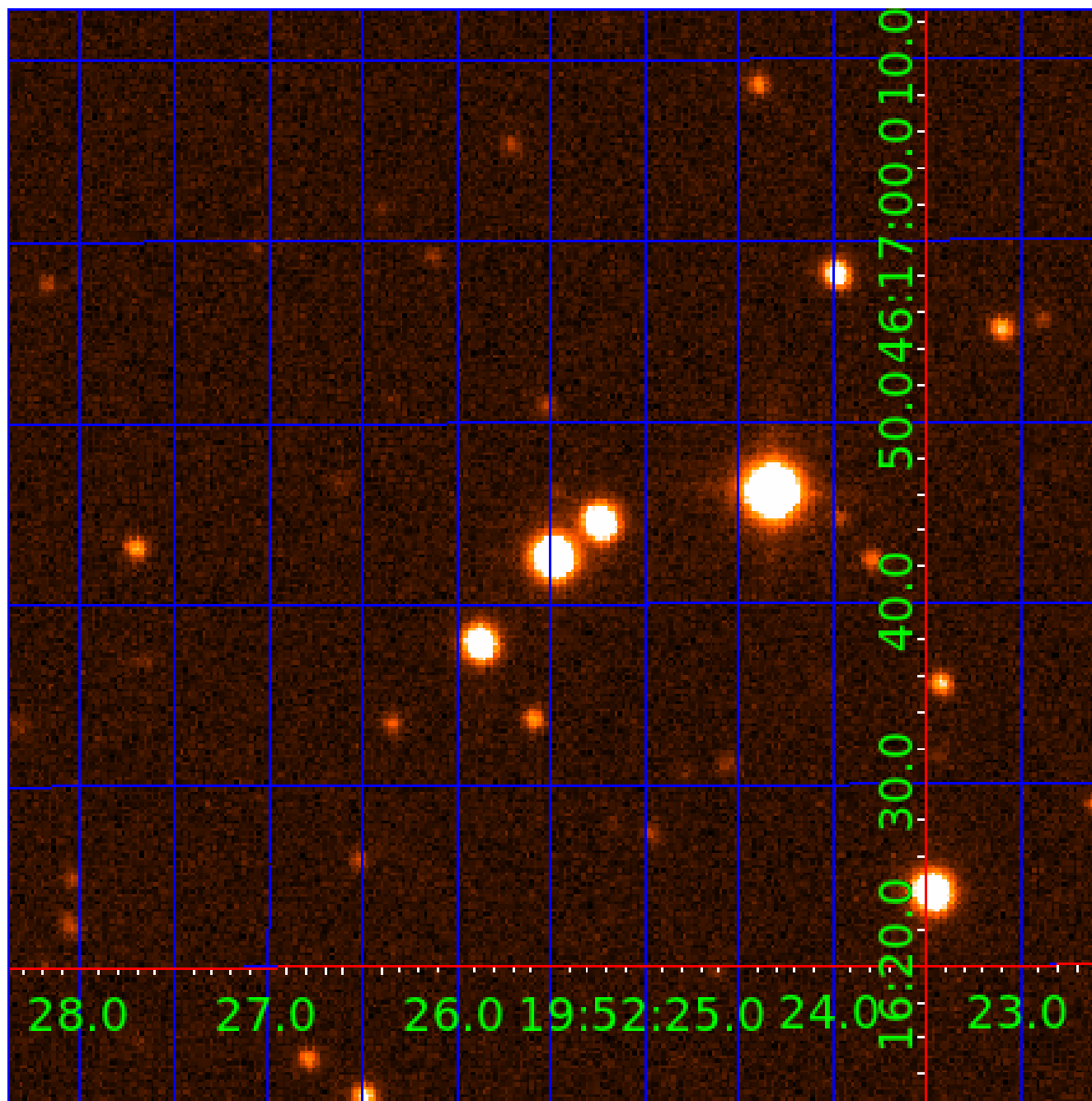


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009606106

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})
009606106-01	OBS	No	362.966464	196.023551	915.0	3.589	17.7	4.1	0.77	5308	2.45	0.50
009606106-02	OBS	No	298.822750	356.935287	892.5	2.537	12.8	5.1	0.77	5308	2.28	0.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009606106-01	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—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009606106-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

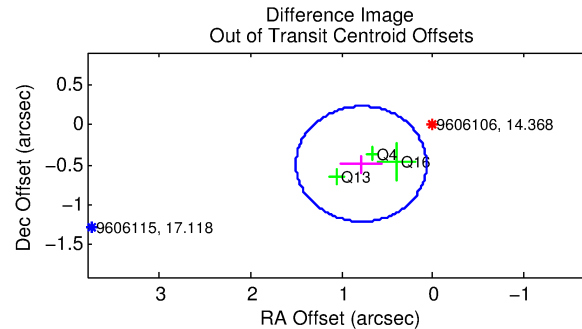
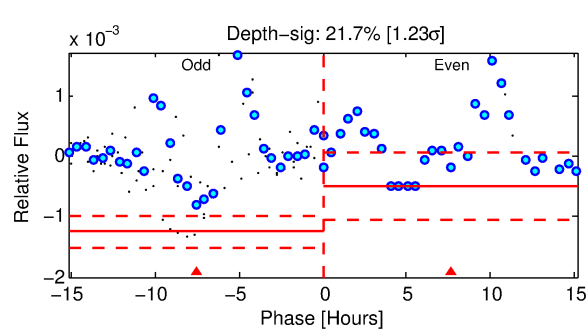
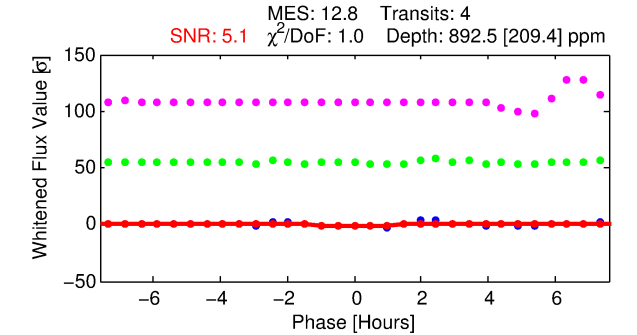
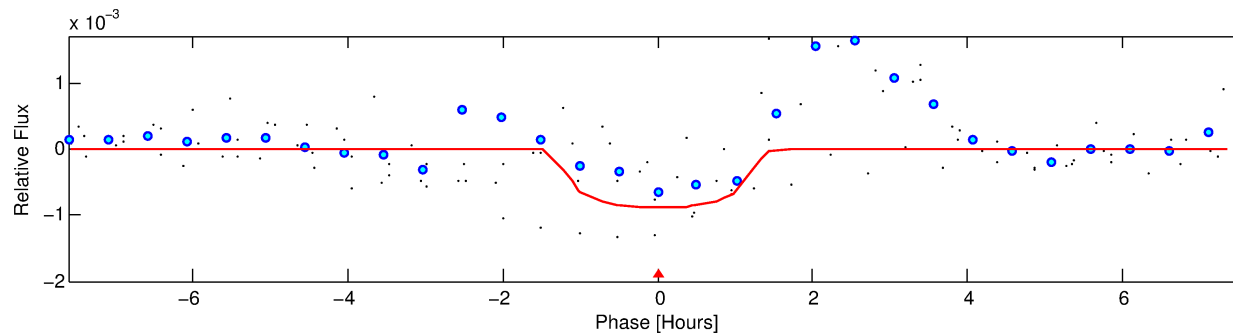
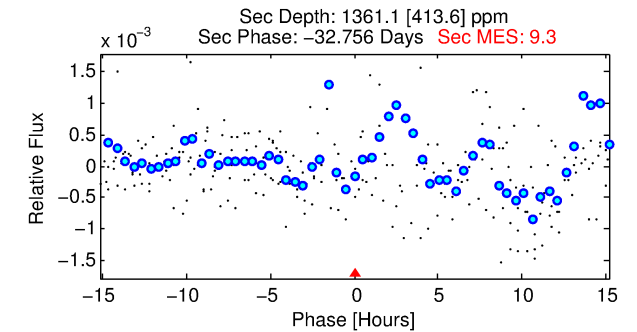
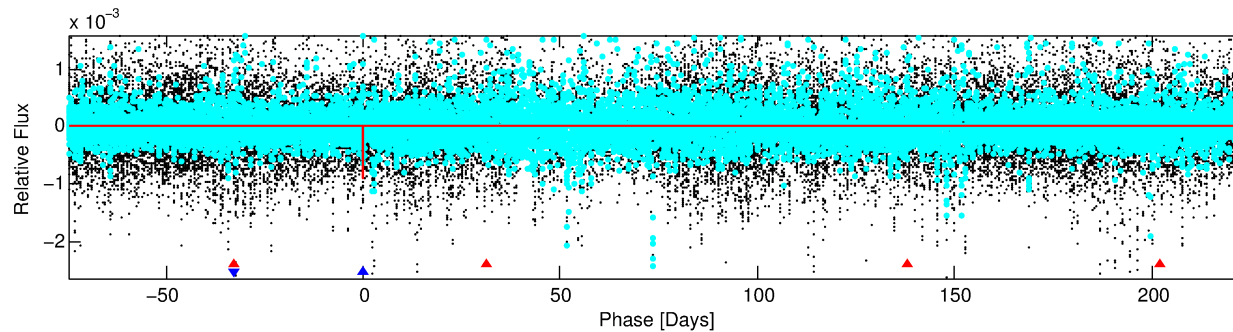
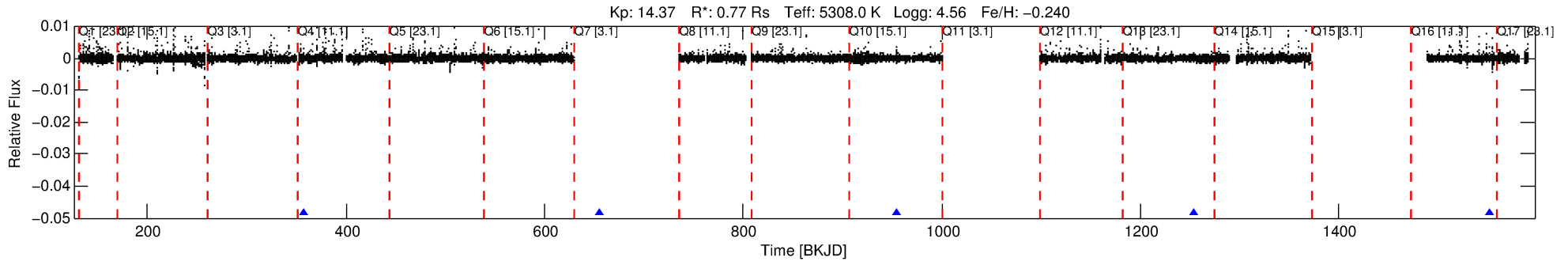
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009606106-02

No Significant Match Found

DV One-Page Summary

KIC: 9606106 Candidate: 2 of 2 Period: 298.823 d



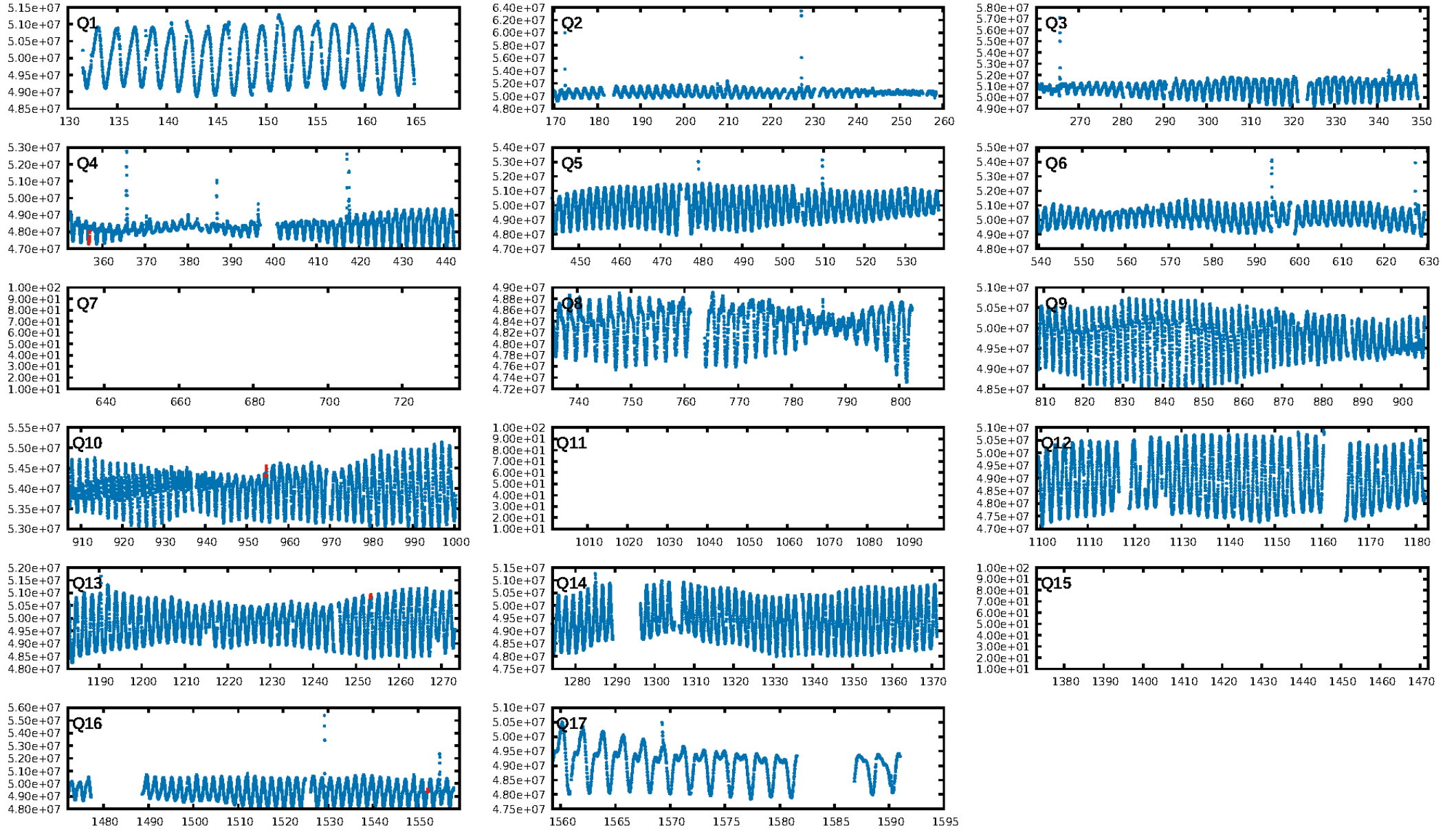
DV Fit Results:

Period = 298.82275 [0.00282] d
Epoch = 356.9353 [0.0079] BKJD
Rp/R* = 0.0271 [0.1502]
a/R* = 890.76 [19234.09]
b = 0.27 [73.64]
Seff = 0.65 [0.16]
Teq = 229 [14] K
Rp = 2.28 [12.65] Re
a = 0.8091 [0.1045] AU
Ag = 94225.96 [1044890.22] [0.09σ]
Teffp = 6192 [17166] K [0.35σ]

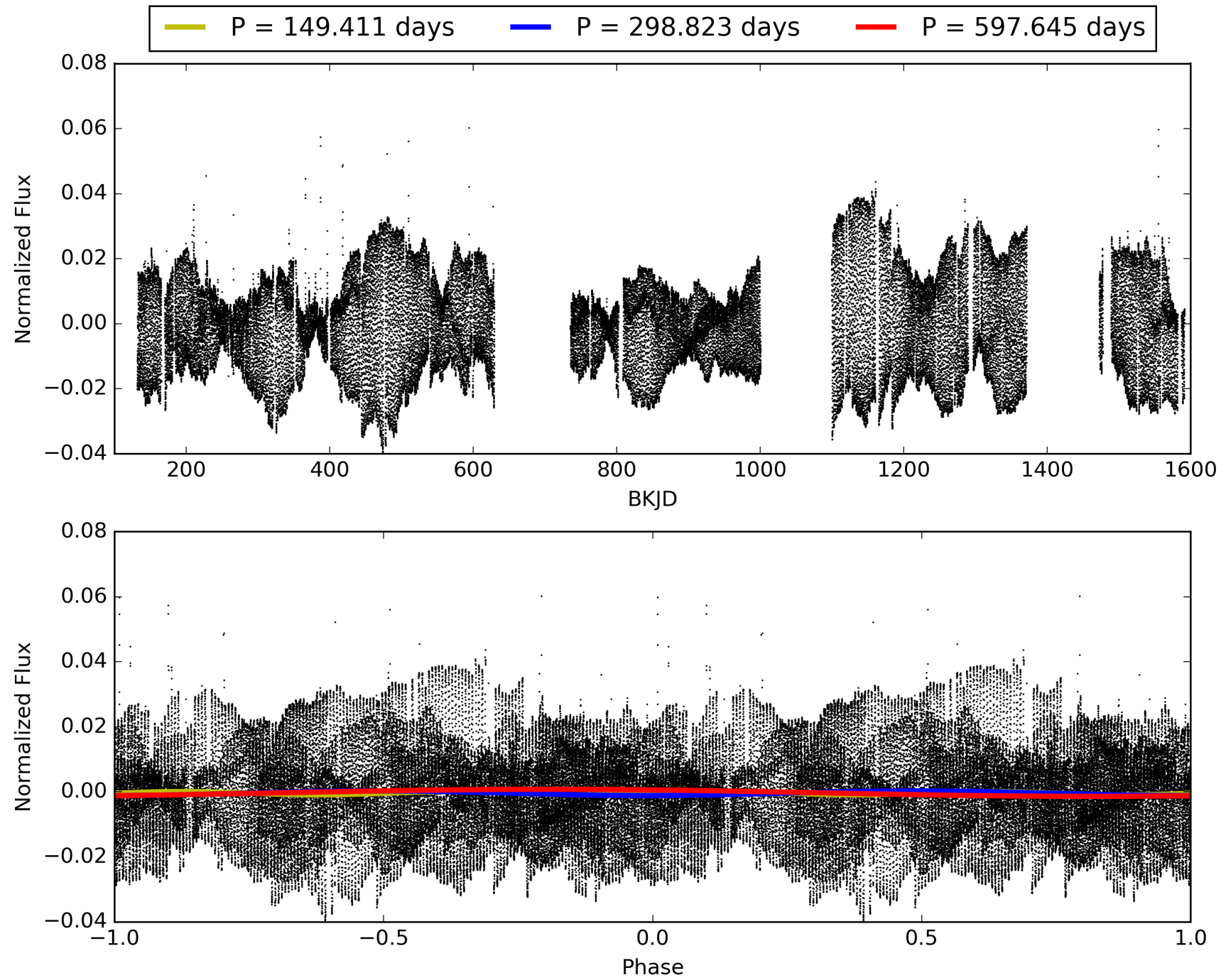
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [350.29σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 76.4%
Bootstrap-pfa: 2.15e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.9497
Centroid-sig: N/A
Centroid-so: 0.827 arcsec [0.67σ]
OotOffset-rm: 0.924 arcsec [3.86σ]
KicOffset-rm: 0.228 arcsec [2.23σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 009606106-02, PDC Light Curves

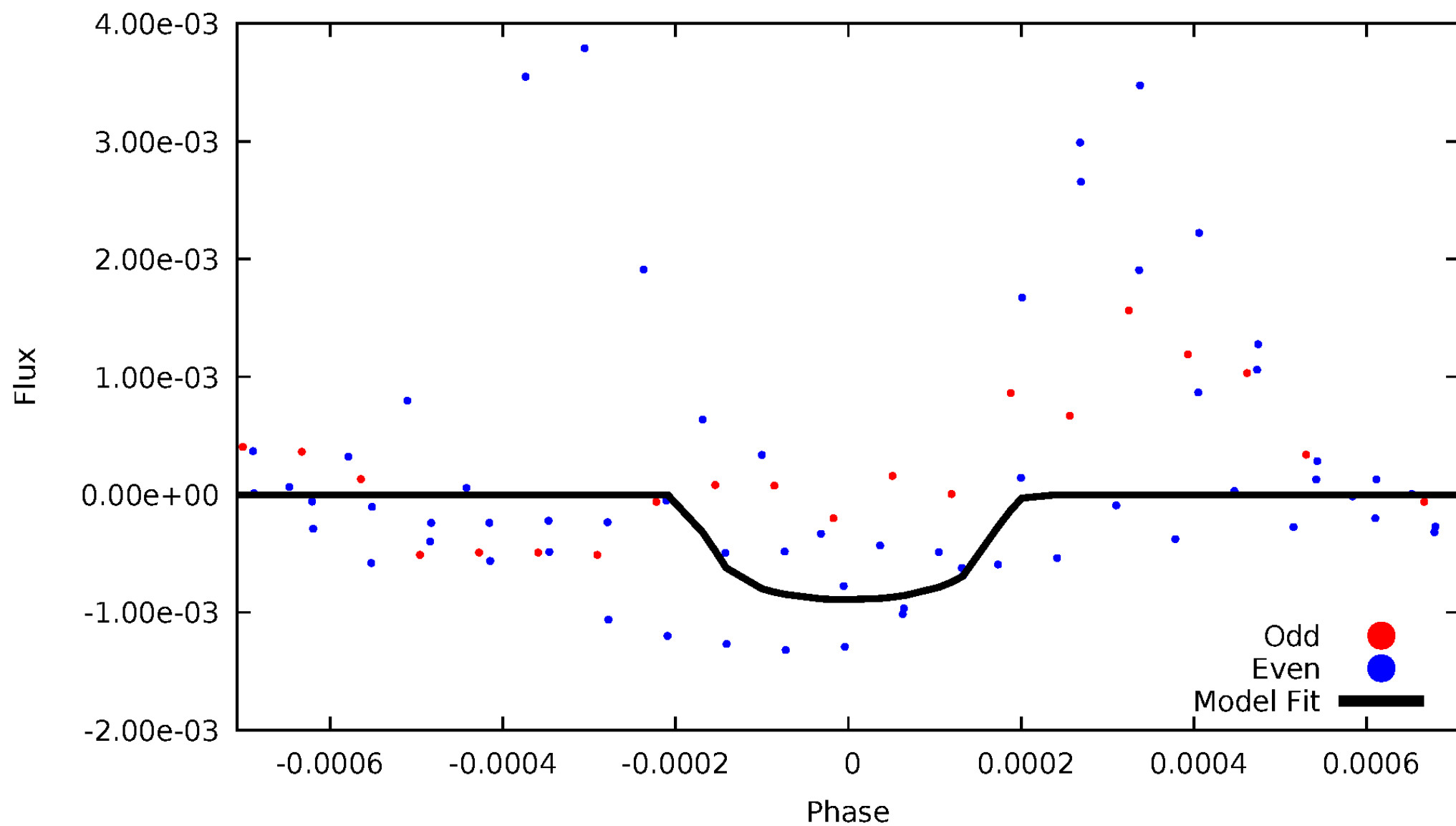


TCE 009606106-02



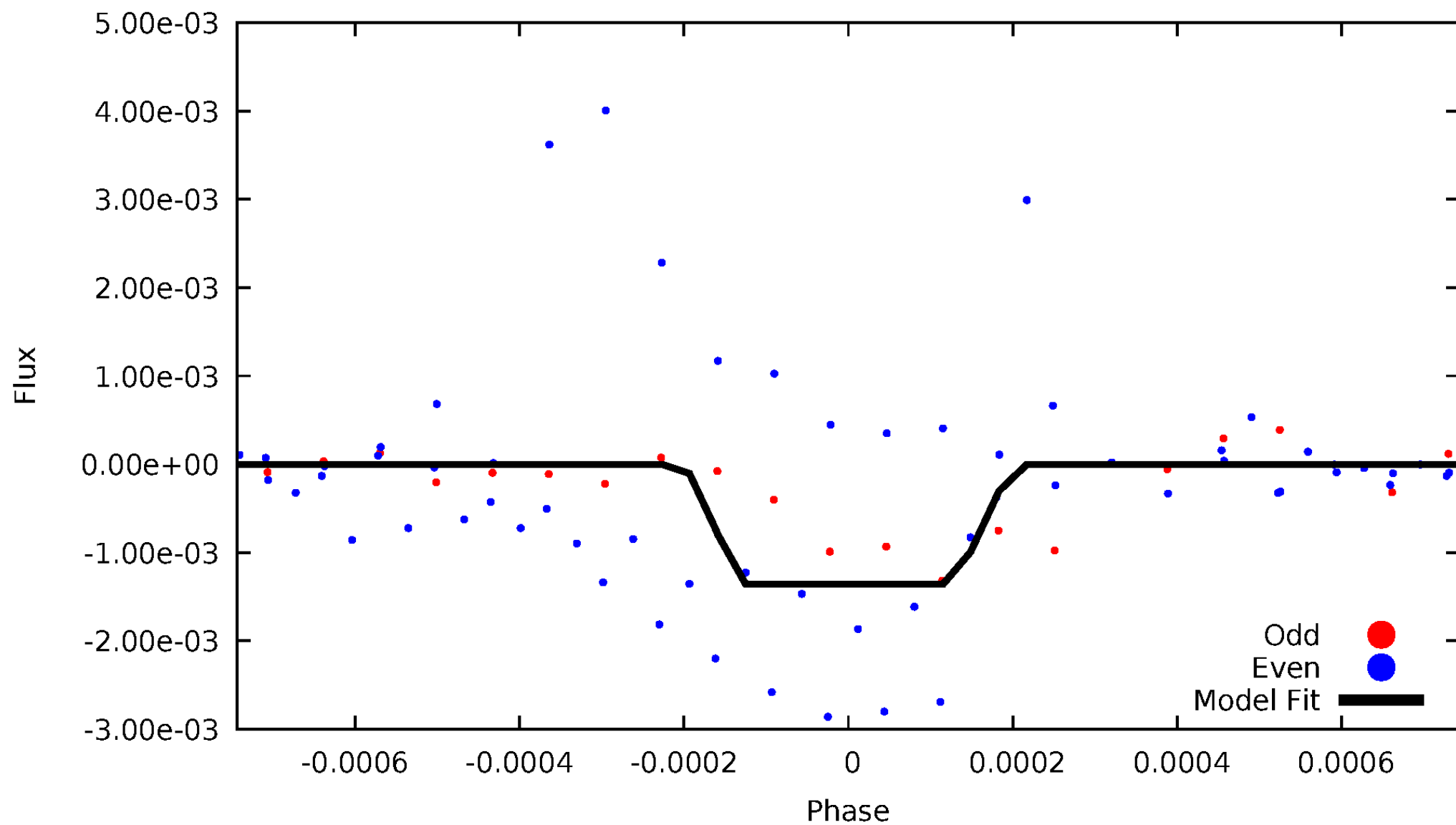
DV Odd/Even

TCE 009606106-02



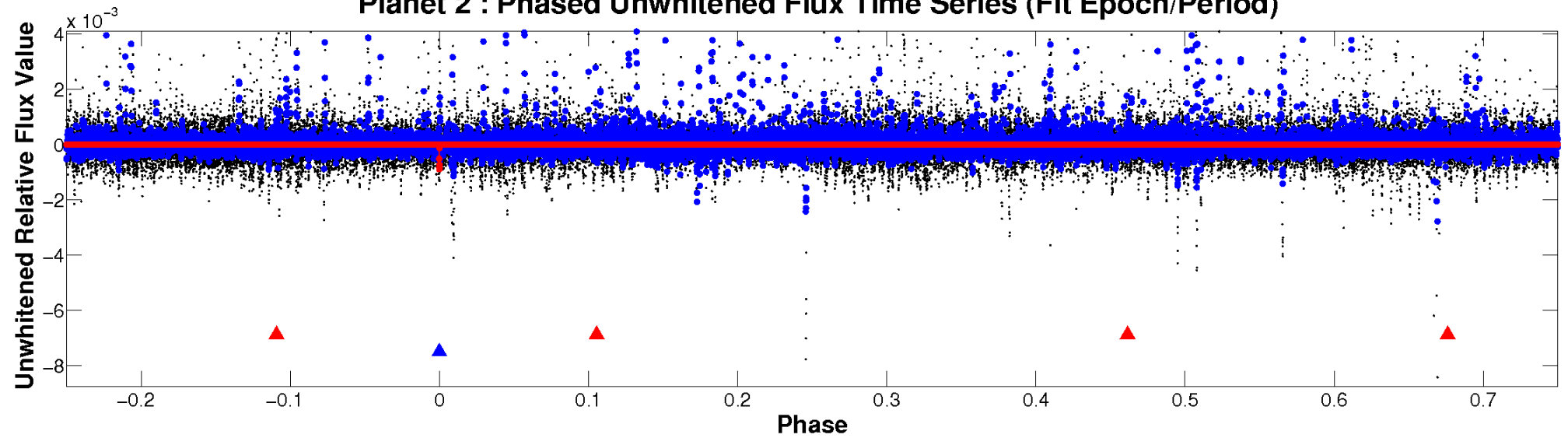
ALT Odd/Even

TCE 009606106-02

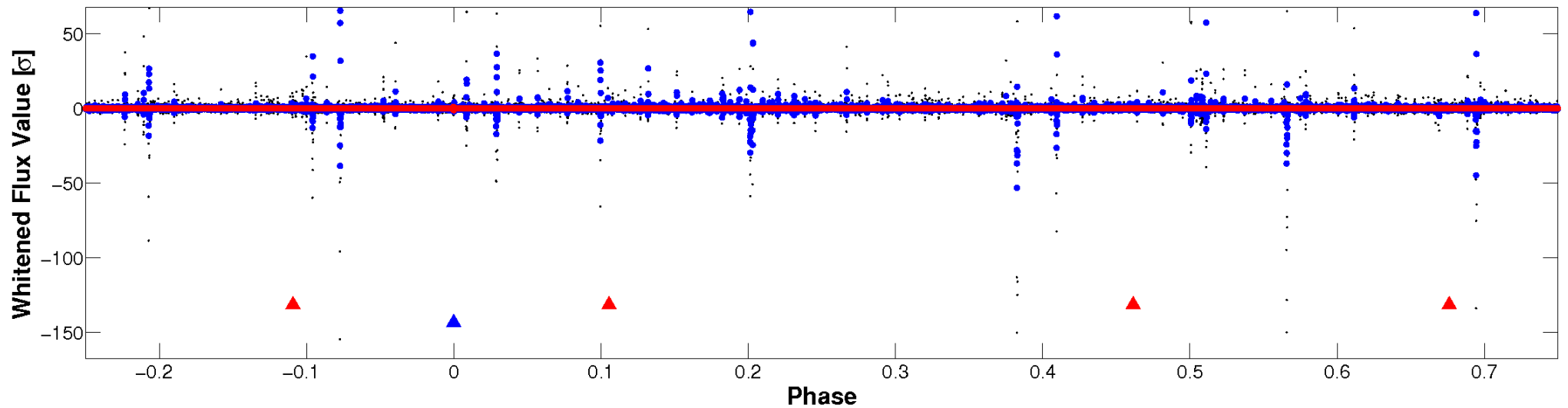


Non-Whitened Vs. Whitened Light Curve

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

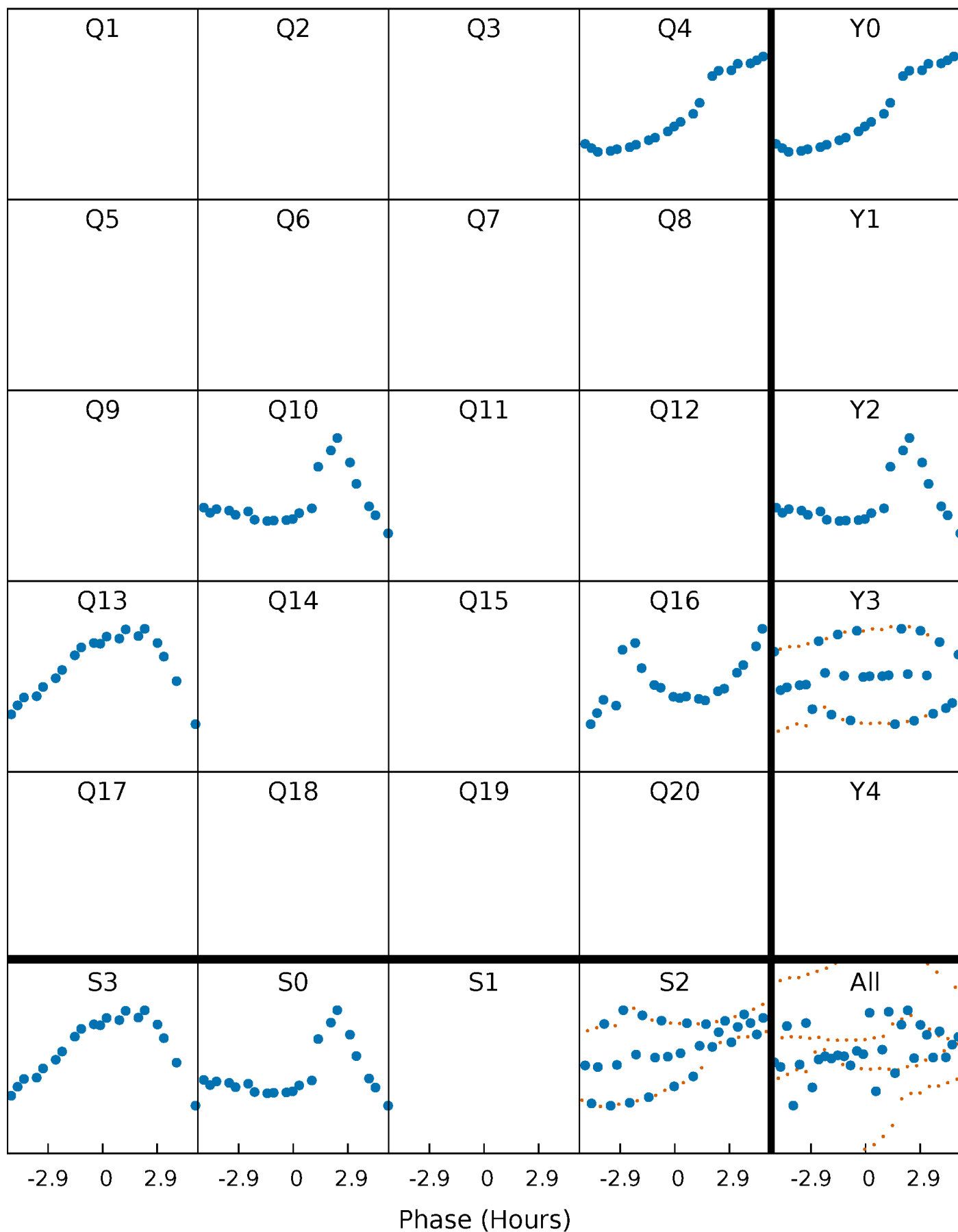


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



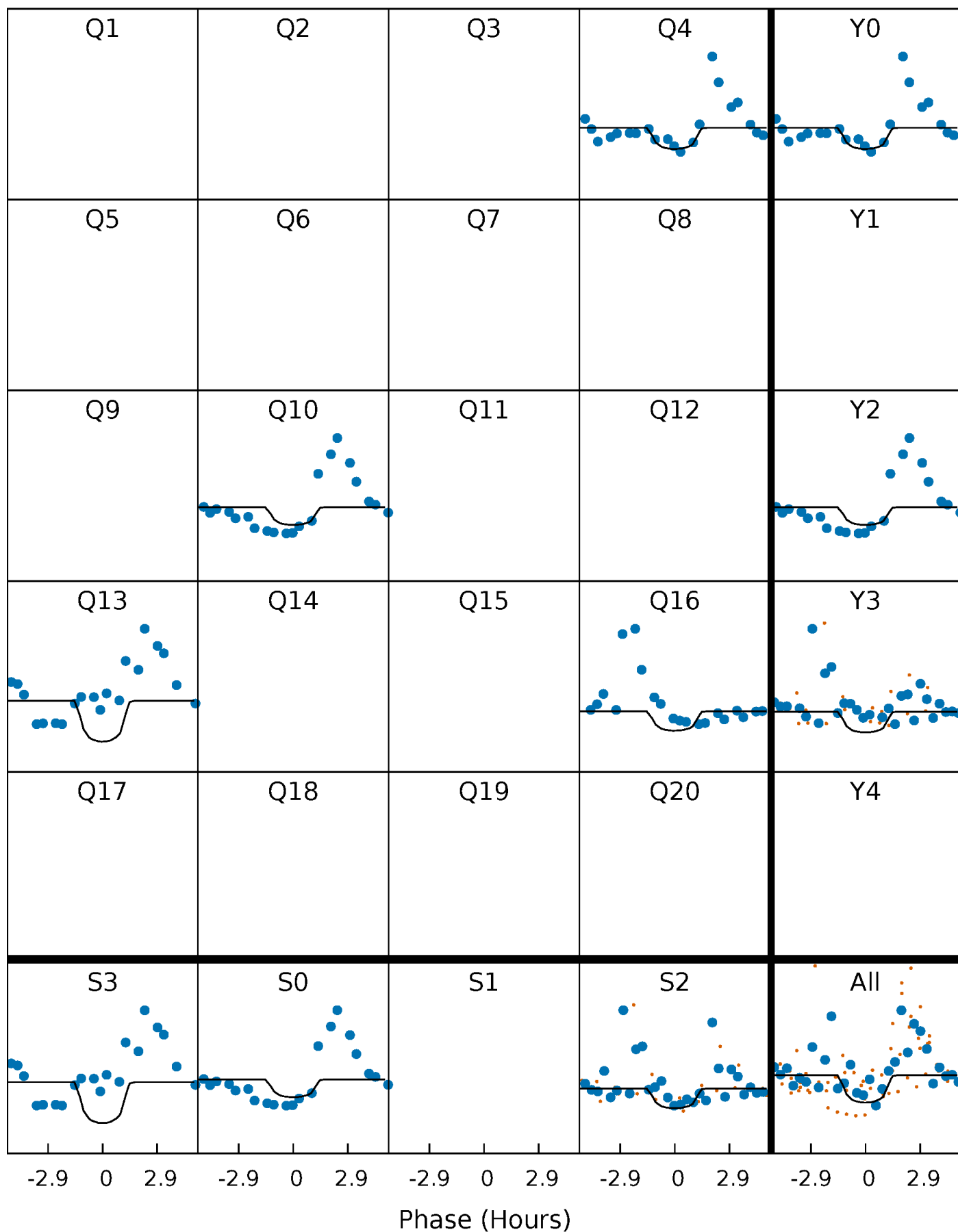
PDC Quarter-Phased Transit Curves

TCE 009606106-02 $P=298.822750$ Days $T_0=356.935287$ (BKJD)



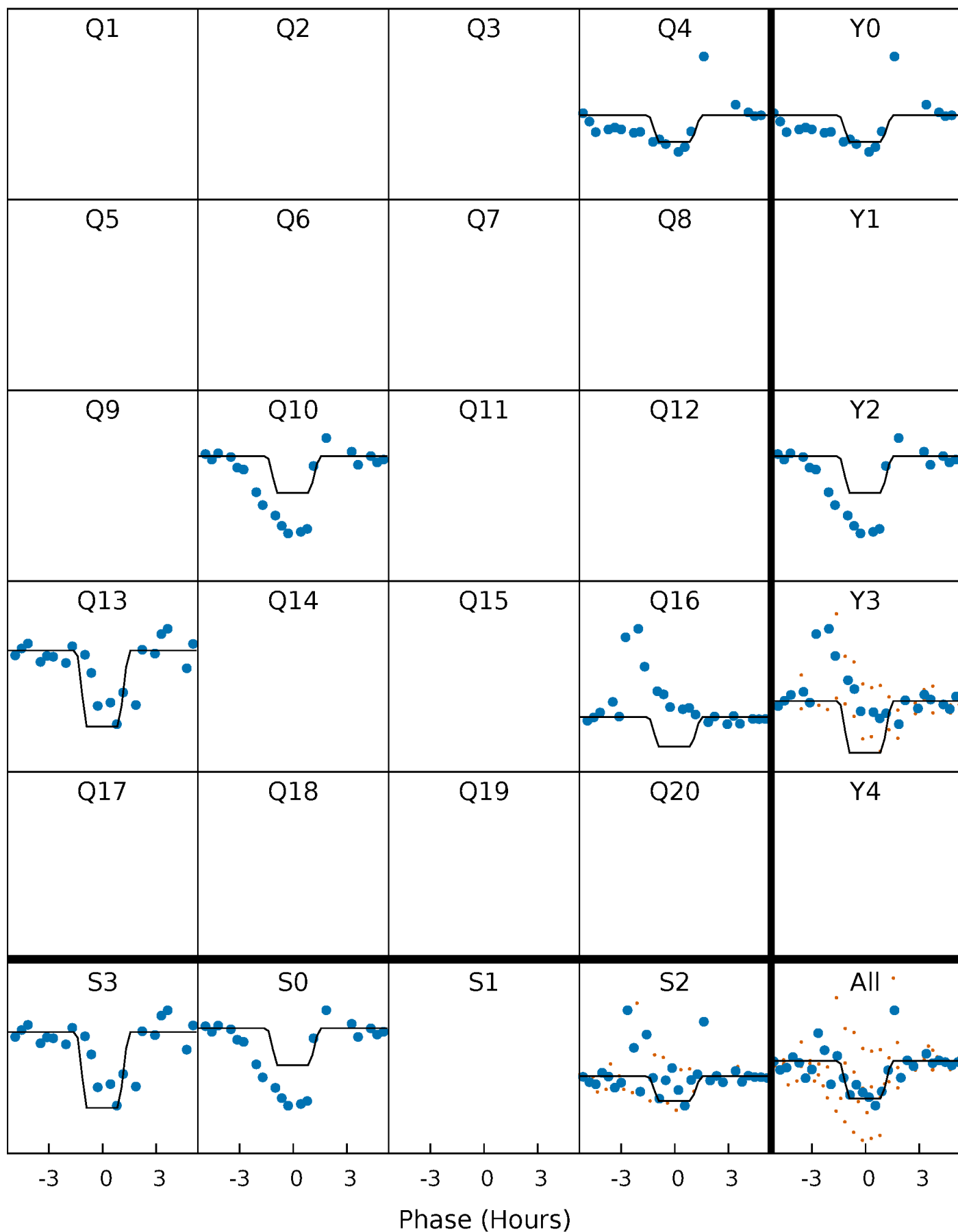
DV Quarter-Phased Transit Curves

TCE 009606106-02 $P=298.822750$ Days $T_0=356.935287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

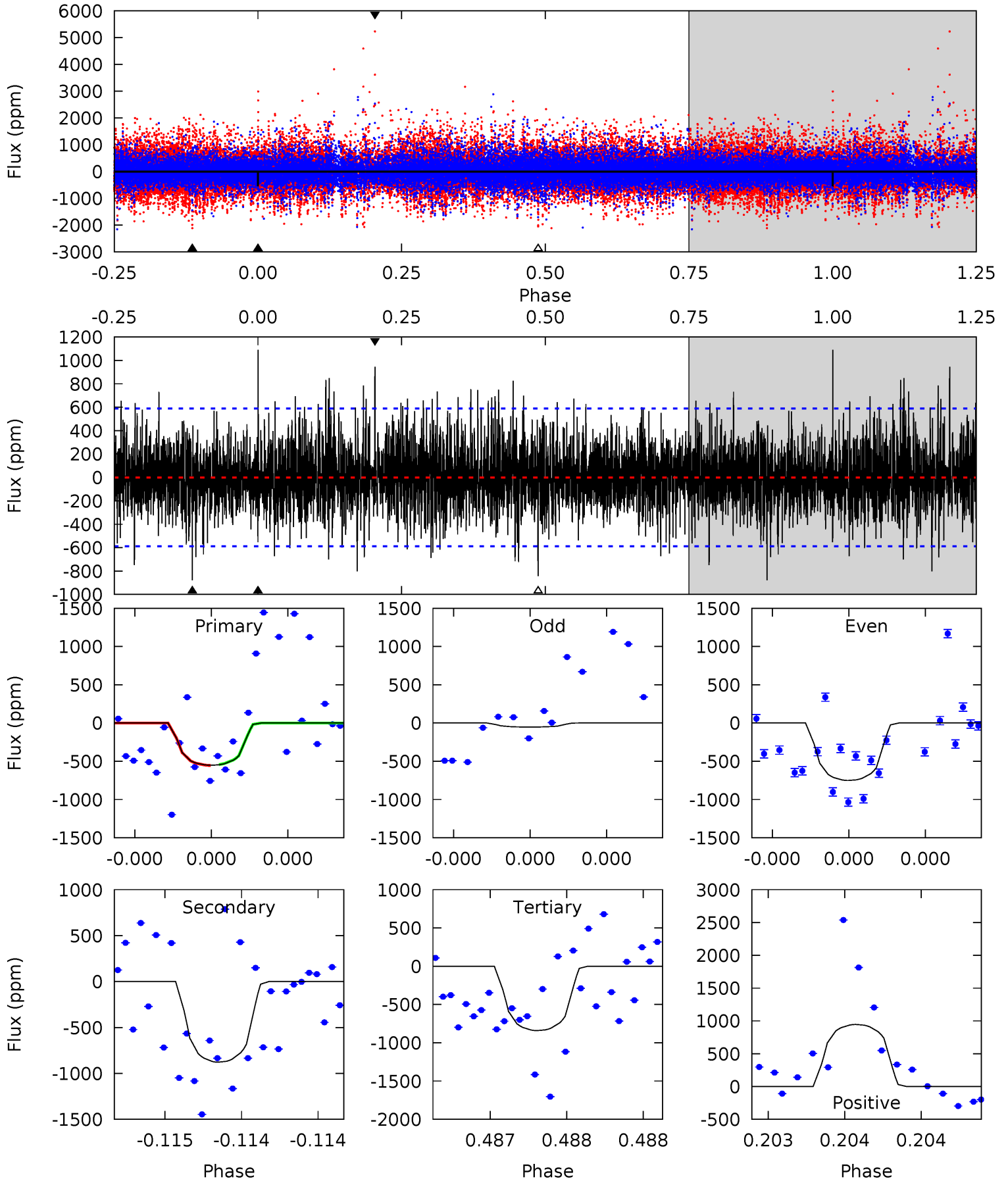
TCE 009606106-02 $P=298.818171$ Days $T_0=356.950590$ (BKJD)



DV Model-Shift Uniqueness Test

009606106-02, P = 298.822750 Days, E = 58.112537 Days

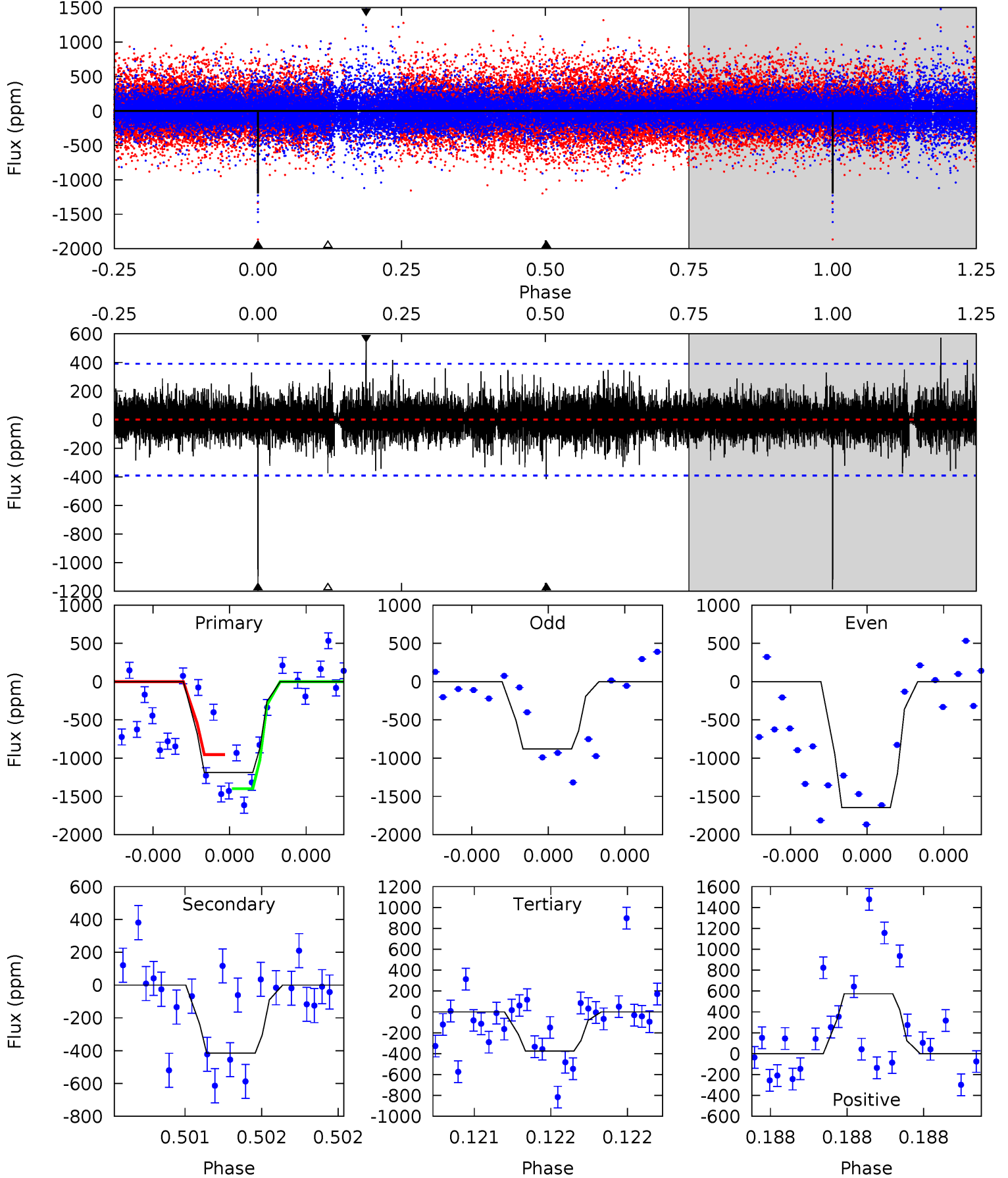
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.28	8.40	8.04	9.05	5.63	3.56	2.04	-2.76	-3.77	0.35	-0.65	2.02	1.09	0.55	0.06



Alt Model-Shift Uniqueness Test

009606106-02, P = 298.818171 Days, E = 58.132419 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	5.96	5.39	8.25	5.62	3.56	1.15	11.7	8.80	0.58	-2.29	5.11	0.94	0.33	0



Stellar Parameters For KIC 009606106

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5308^{+212}_{-212}	$4.562^{+0.052}_{-0.097}$	$-0.240^{+0.300}_{-0.300}$	$0.771^{+0.122}_{-0.082}$	$0.790^{+0.096}_{-0.078}$	$2.431^{+0.651}_{-0.726}$
	+4%/-4%	+1%/-2%	+125%/-125%	+16%/-11%	+12%/-10%	+27%/-30%
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 009606106-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-878 ± 105	$9.56^{+9.36}_{-6.86}$	323^{+16}_{-16}	3291^{+1892}_{-590}	3460^{+38030}_{-2613}
Alt.	-414 ± 69	$10.34^{+10.07}_{-7.67}$	322^{+18}_{-15}	2888^{+1600}_{-488}	1432^{+20424}_{-1083}

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

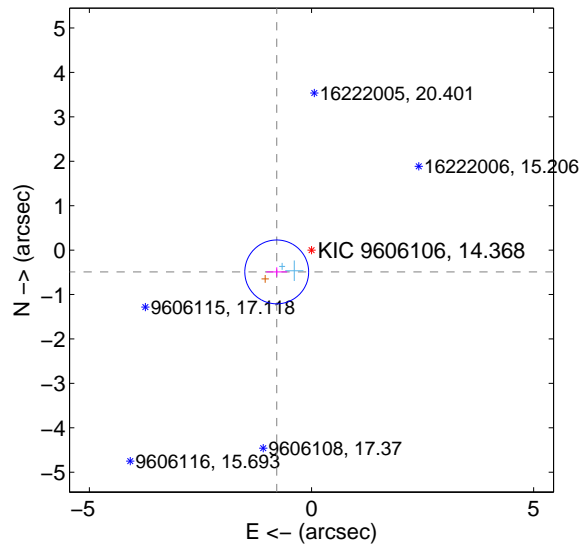
Supplemental centroid analysis for 009606106-02. Kepler magnitude: 14.37. Transit SNR 5.13

There are 2 quarters with good PRF difference image offsets

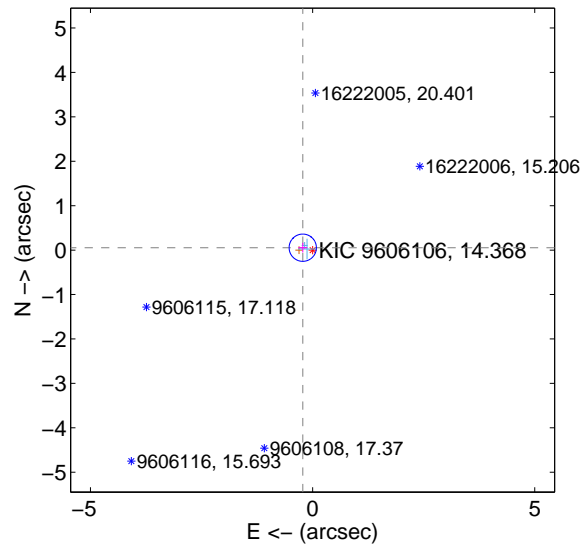
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.924 ± 0.240	3.86	0.783 ± 0.236	-0.491 ± 0.103
PRF-fit source offset from KIC position	0.228 ± 0.102	2.23	0.222 ± 0.102	0.054 ± 0.109
photometric centroid source offset	0.83 ± 1.24	0.67	0.56 ± 1.59	0.61 ± 0.81

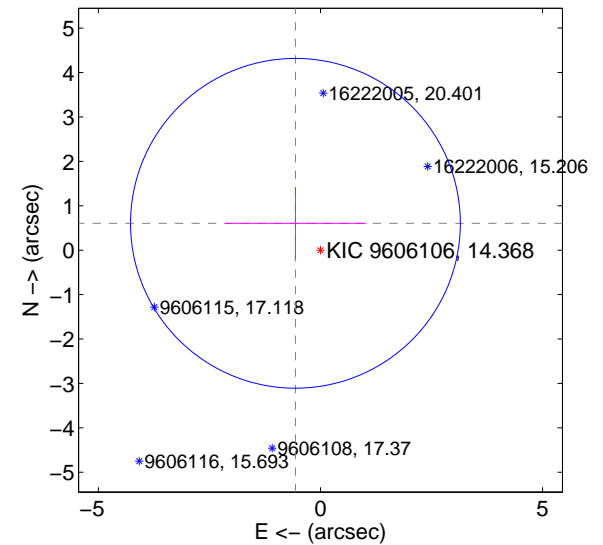
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

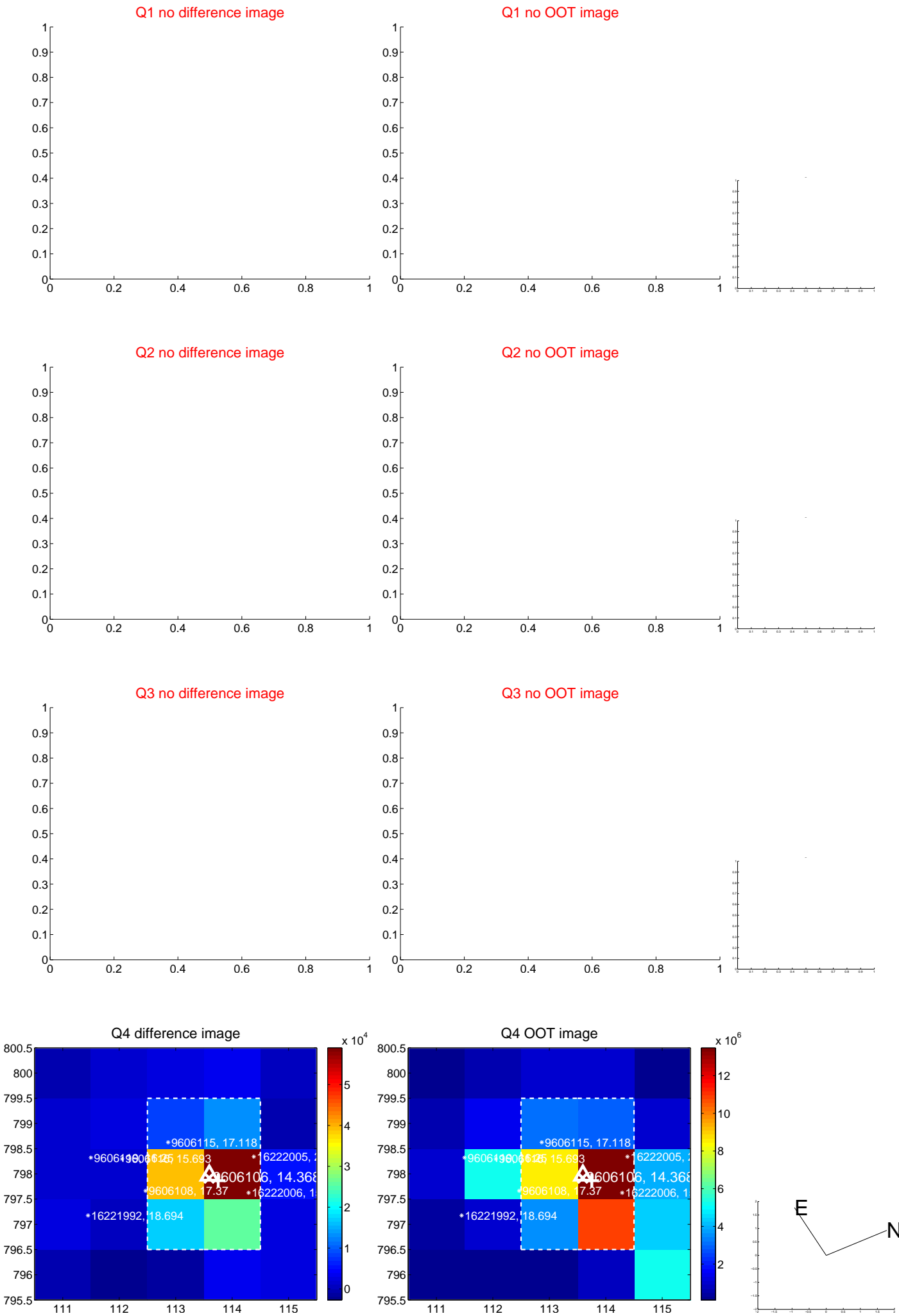


offset from photometric centroids



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

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



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



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

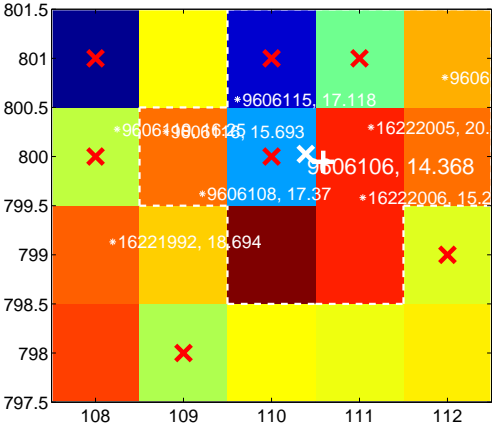
Q9 no difference image



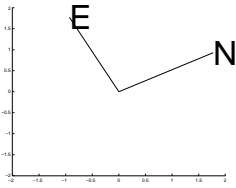
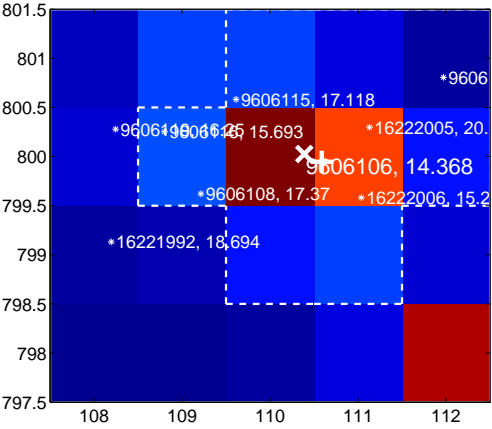
Q9 no OOT image



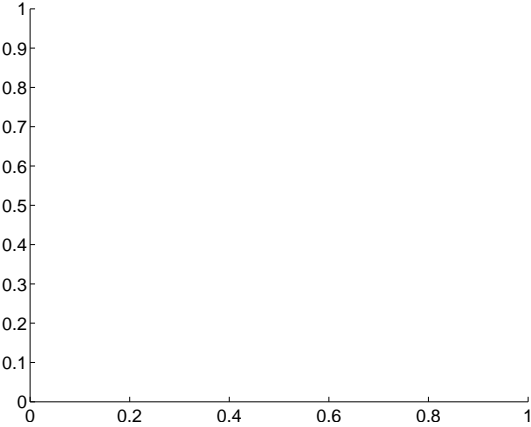
Q10 difference image. Poor Quality



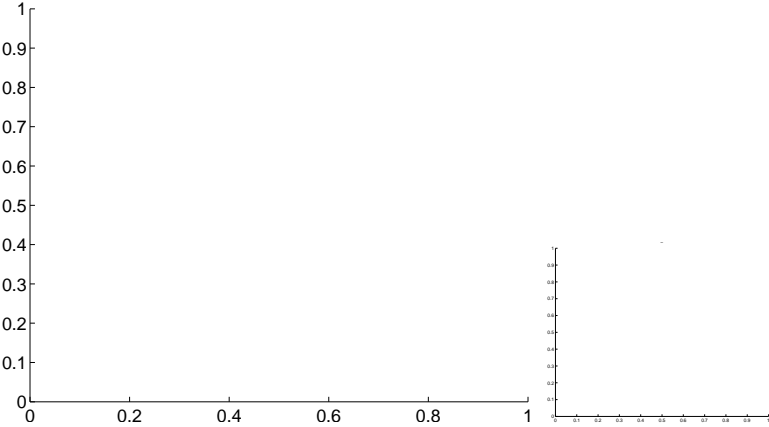
Q10 OOT image



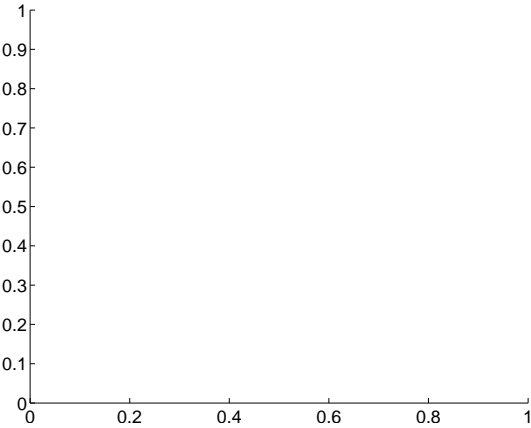
Q11 no difference image



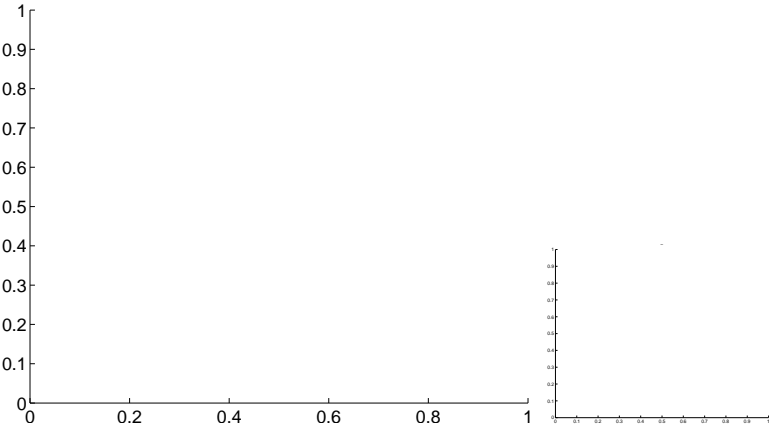
Q11 no OOT image



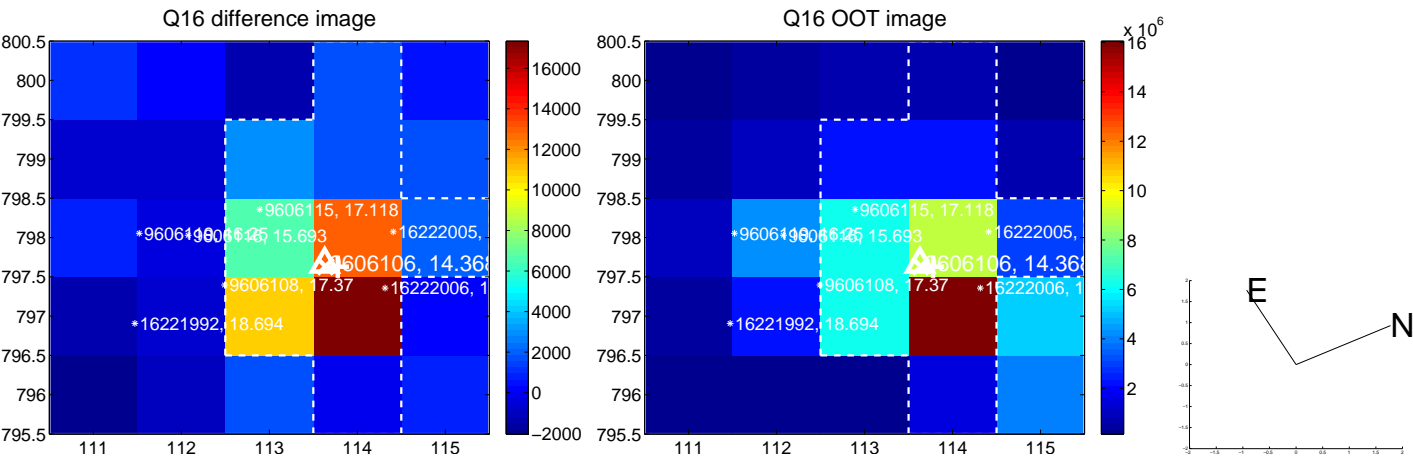
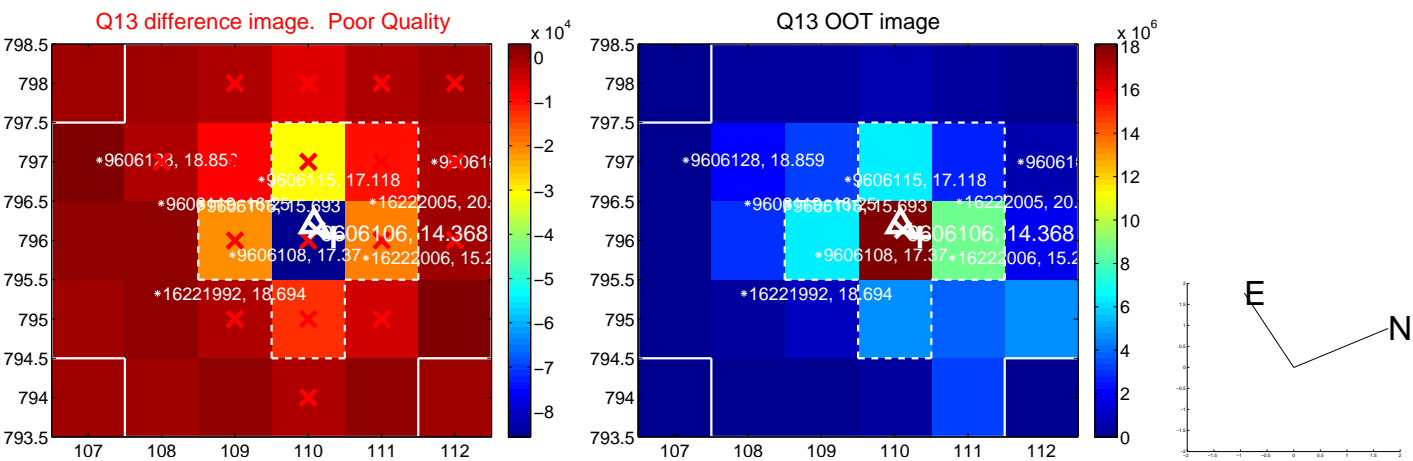
Q12 no difference image



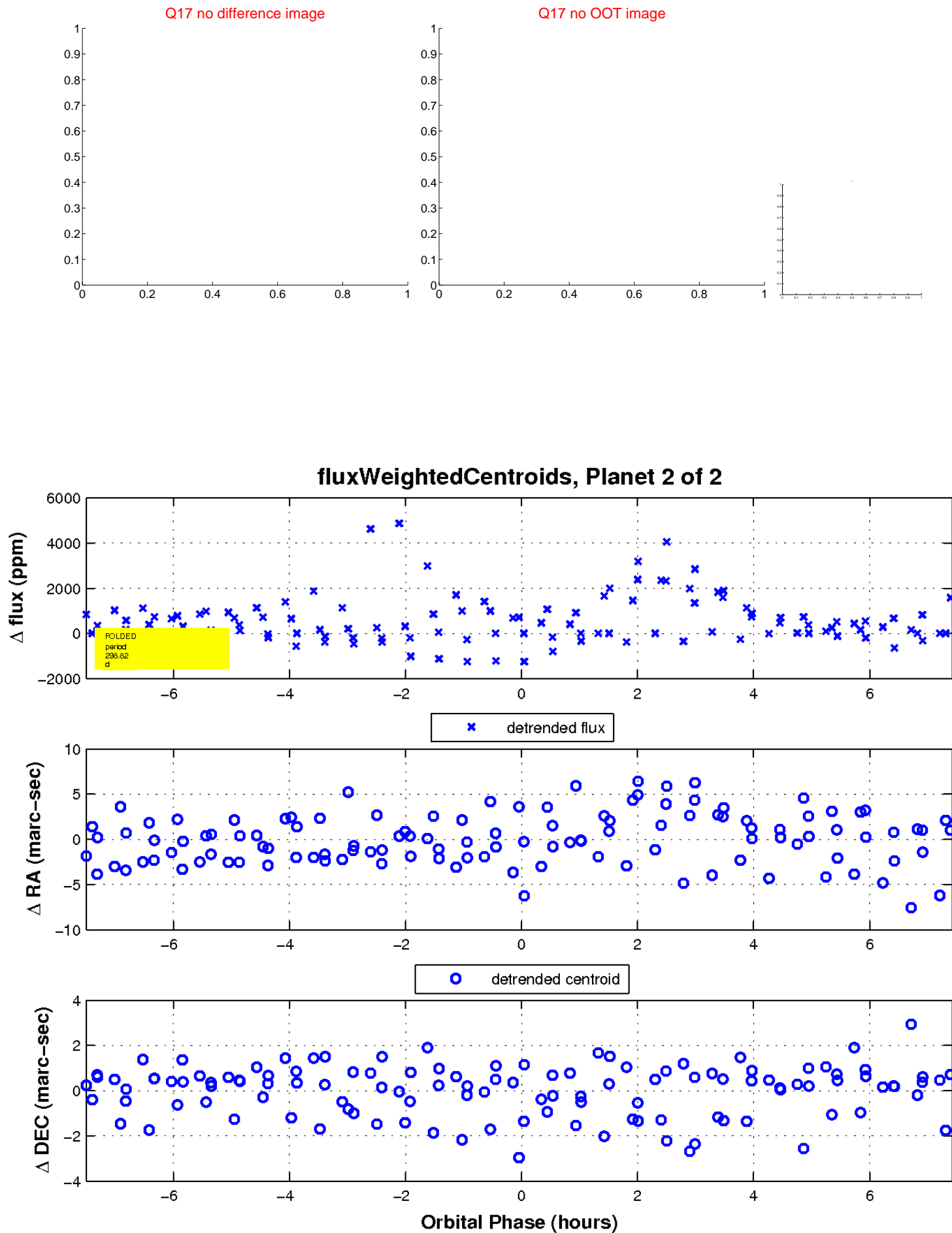
Q12 no OOT image



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

Declination

