

KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
010877367-02	OBS	No	287.526754	394.324622	942.8	16.762	14.1	8.5	1.77	6585	10.22	6.48
010877367-03	OBS	No	289.662726	416.362864	232.2	3.404	10.1	3.3	1.77	6585	3.04	6.42
010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

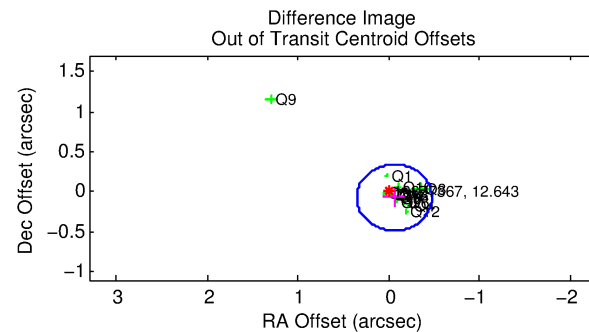
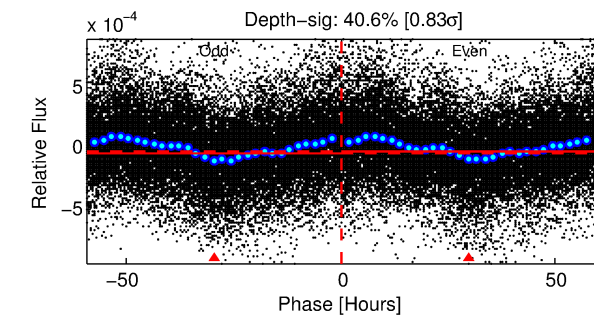
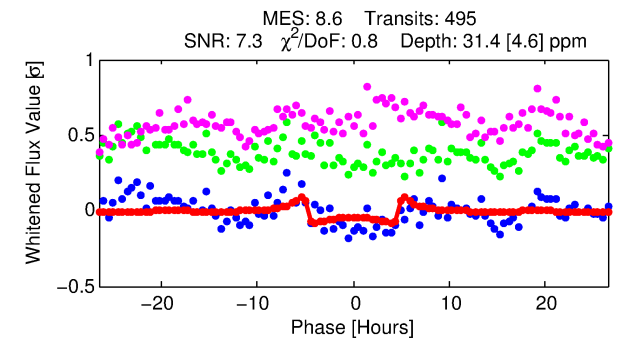
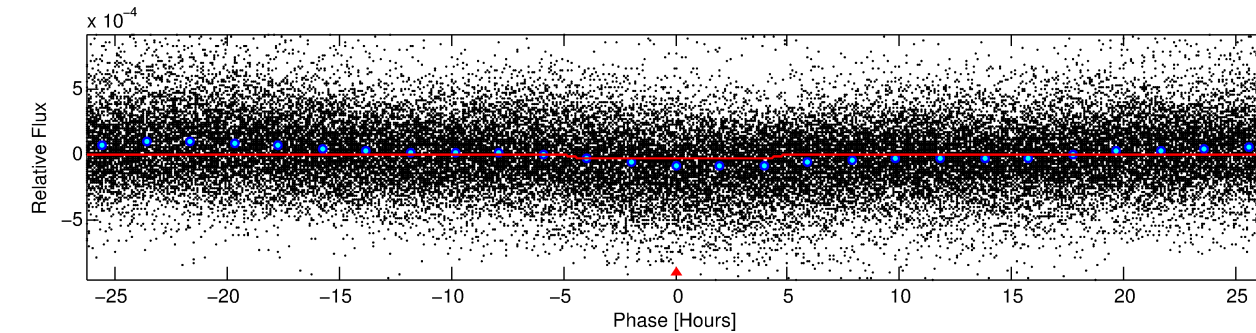
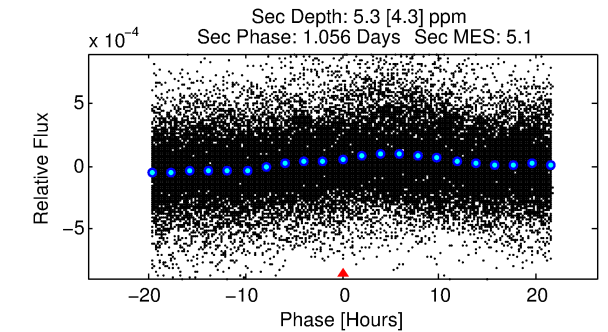
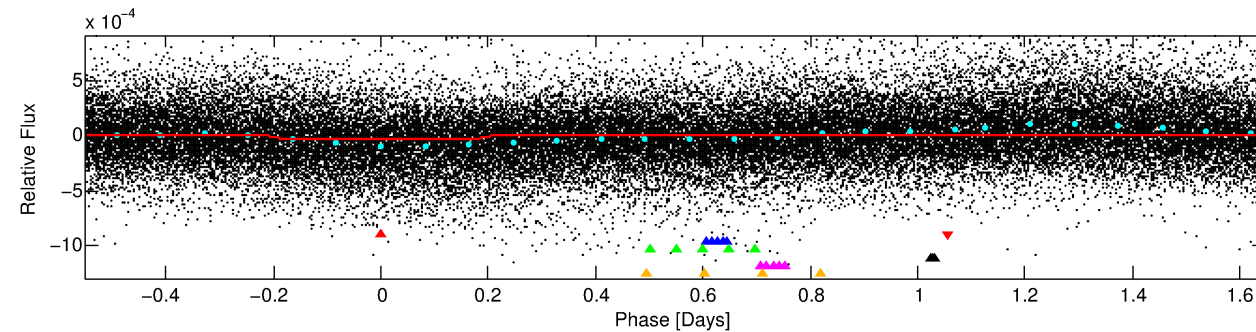
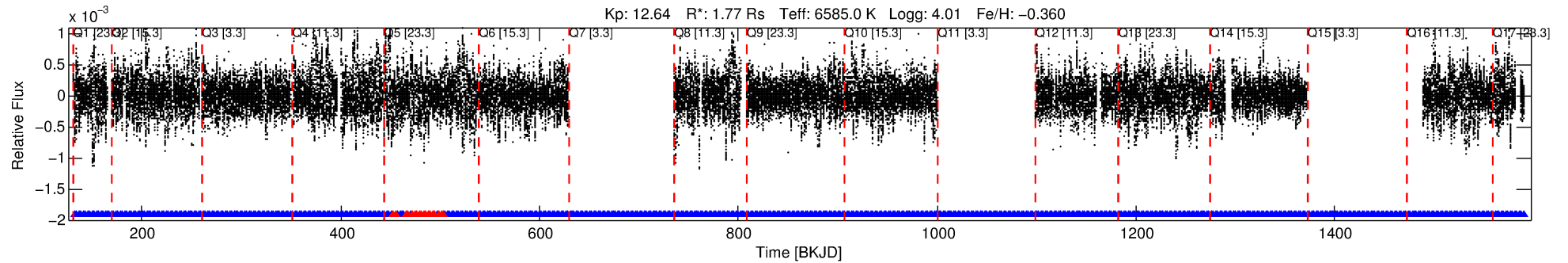
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-01

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 1 of 6 Period: 2.195 d



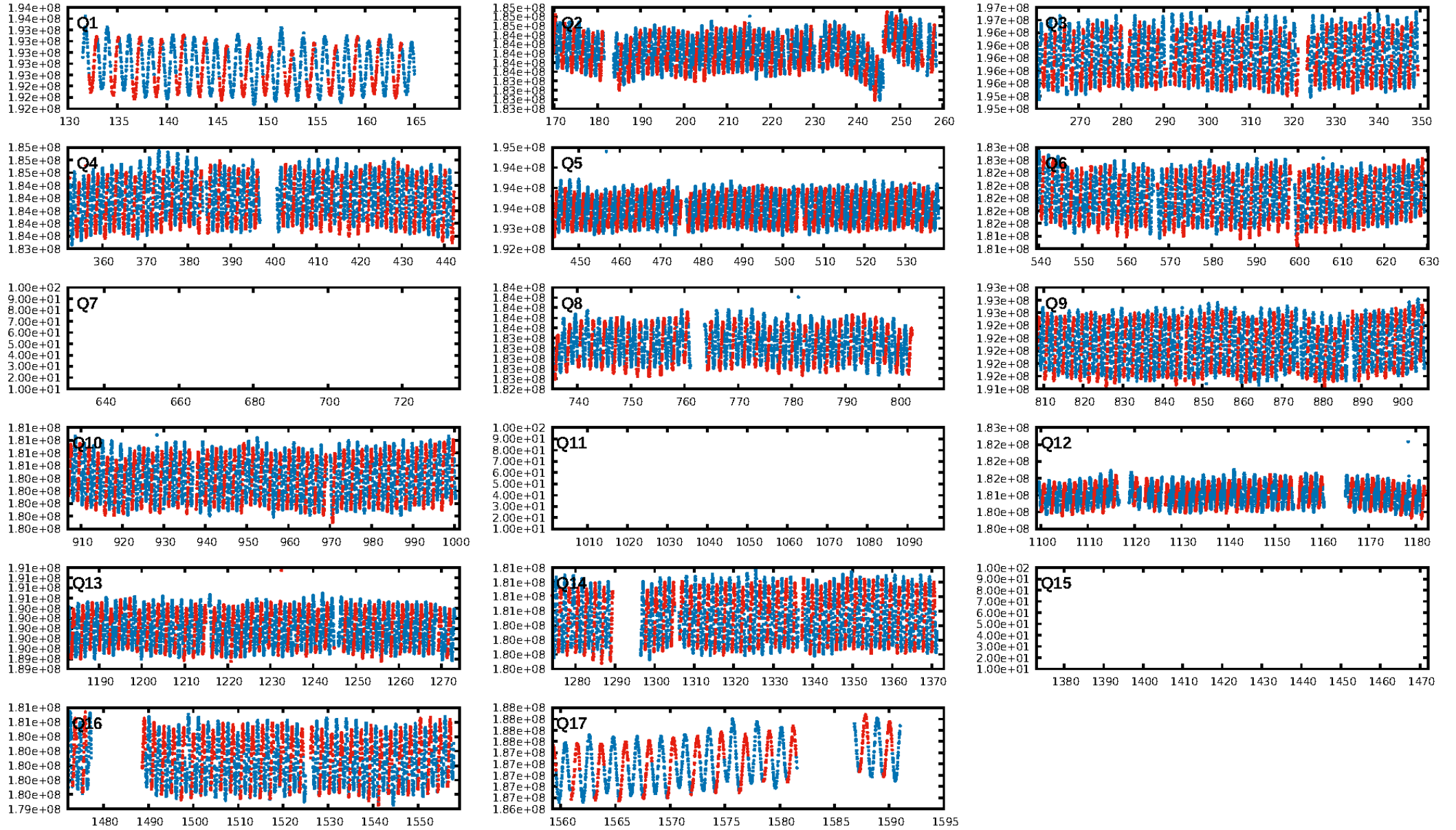
DV Fit Results:

Period = 2.19479 [0.00002] d
Epoch = 132.5388 [0.0043] BKJD
Rp/R* = 0.0060 [0.0009]
a/R* = 1.21 [0.29]
b = 0.90 [0.16]
Seff = 4314.36 [1951.42]
Teff = 2067 [234] K
Rp = 1.15 [0.37] Re
a = 0.0349 [0.0095] AU
Ag = 2.67 [2.58] [0.65σ]
Teffp = 4084 [887] K [2.20σ]

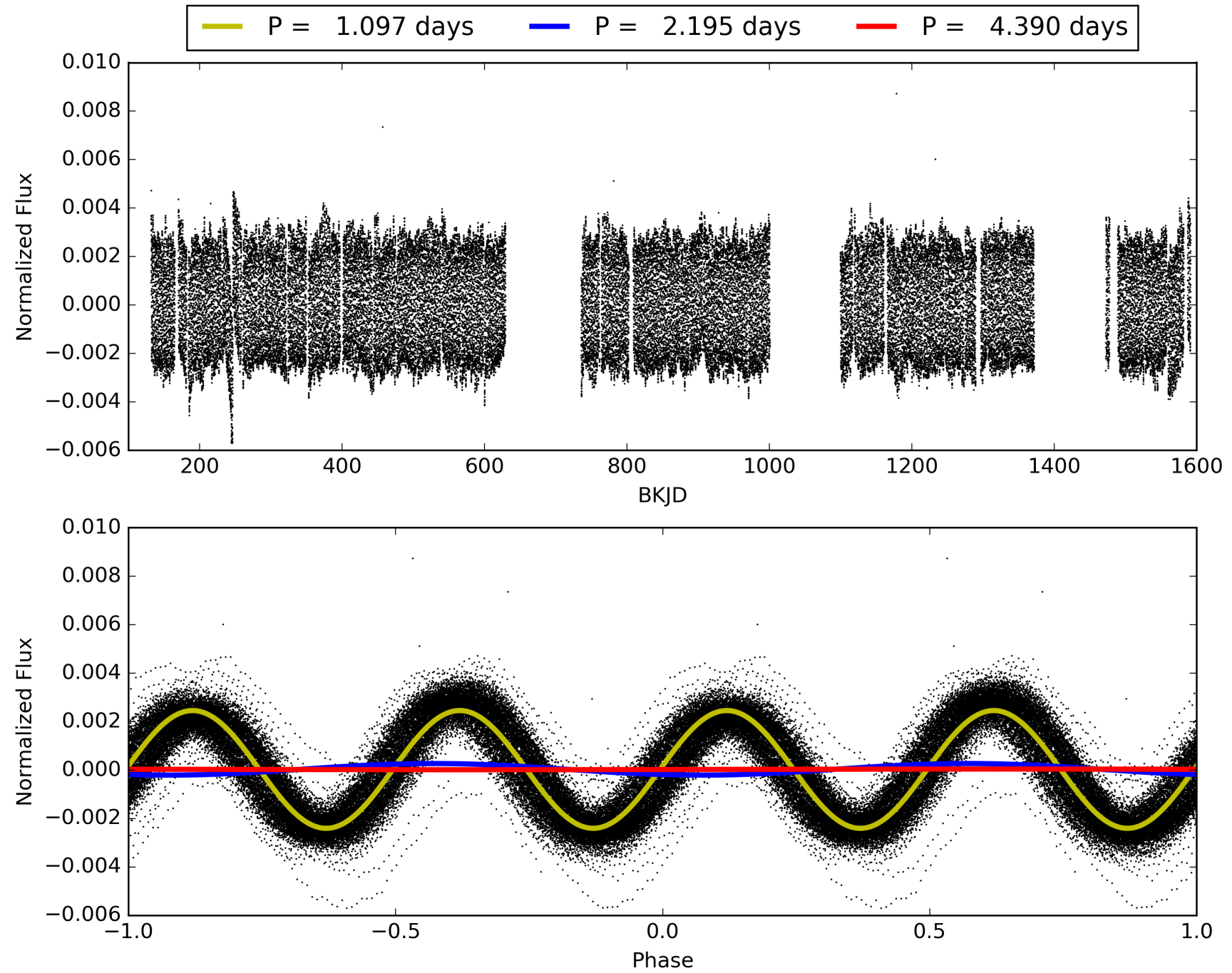
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [352.16σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.30e-12
RollingBand-fgt: 0.96 [449/467]
GhostDiagnostic-chr: 1.632
Centroid-sig: 0.0%
Centroid-so: 3.682 arcsec [3.36σ]
OotOffset-rm: 0.093 arcsec [0.67σ]
KicOffset-rm: 0.045 arcsec [0.45σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010877367-01, PDC Light Curves

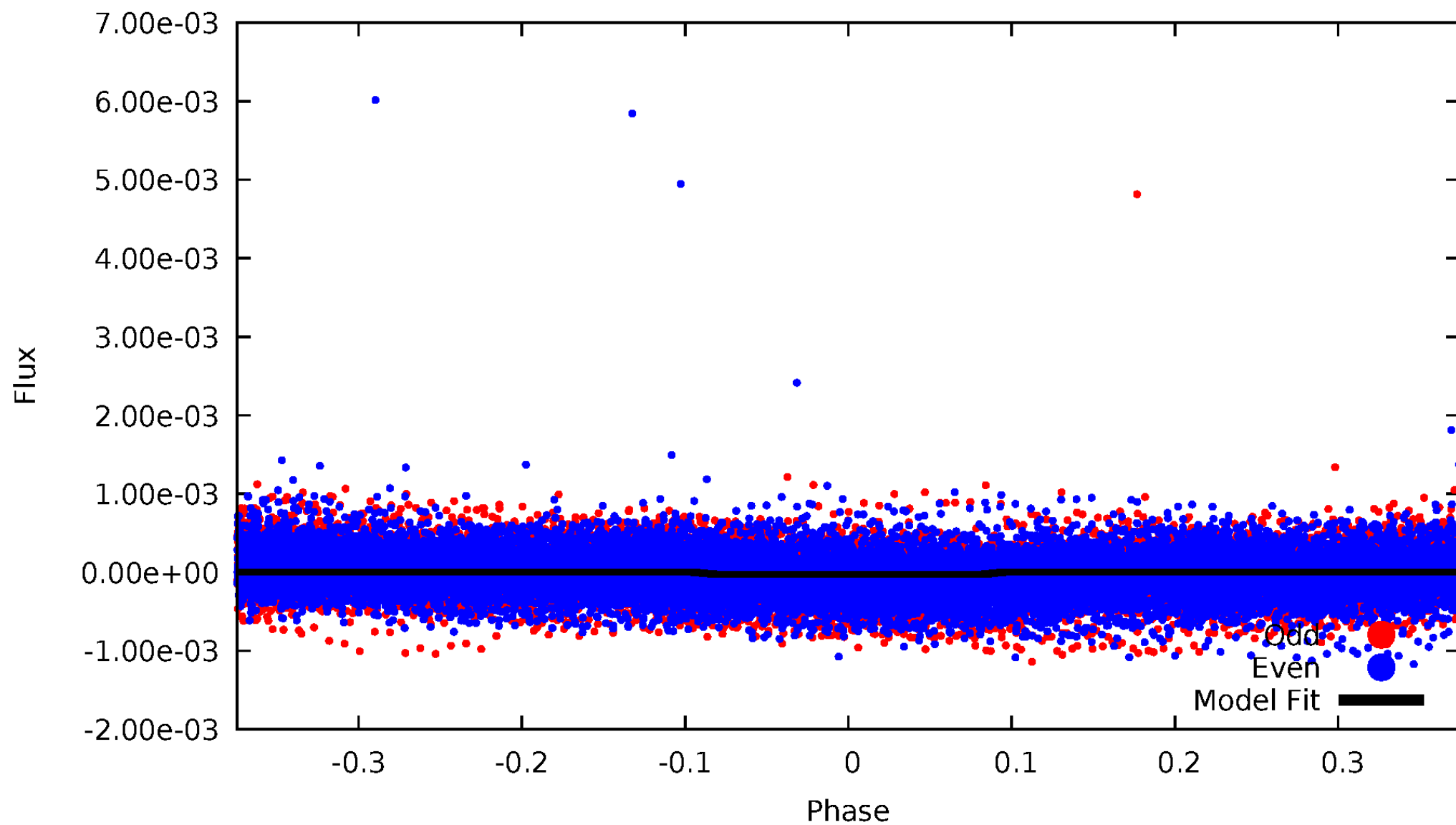


TCE 010877367-01



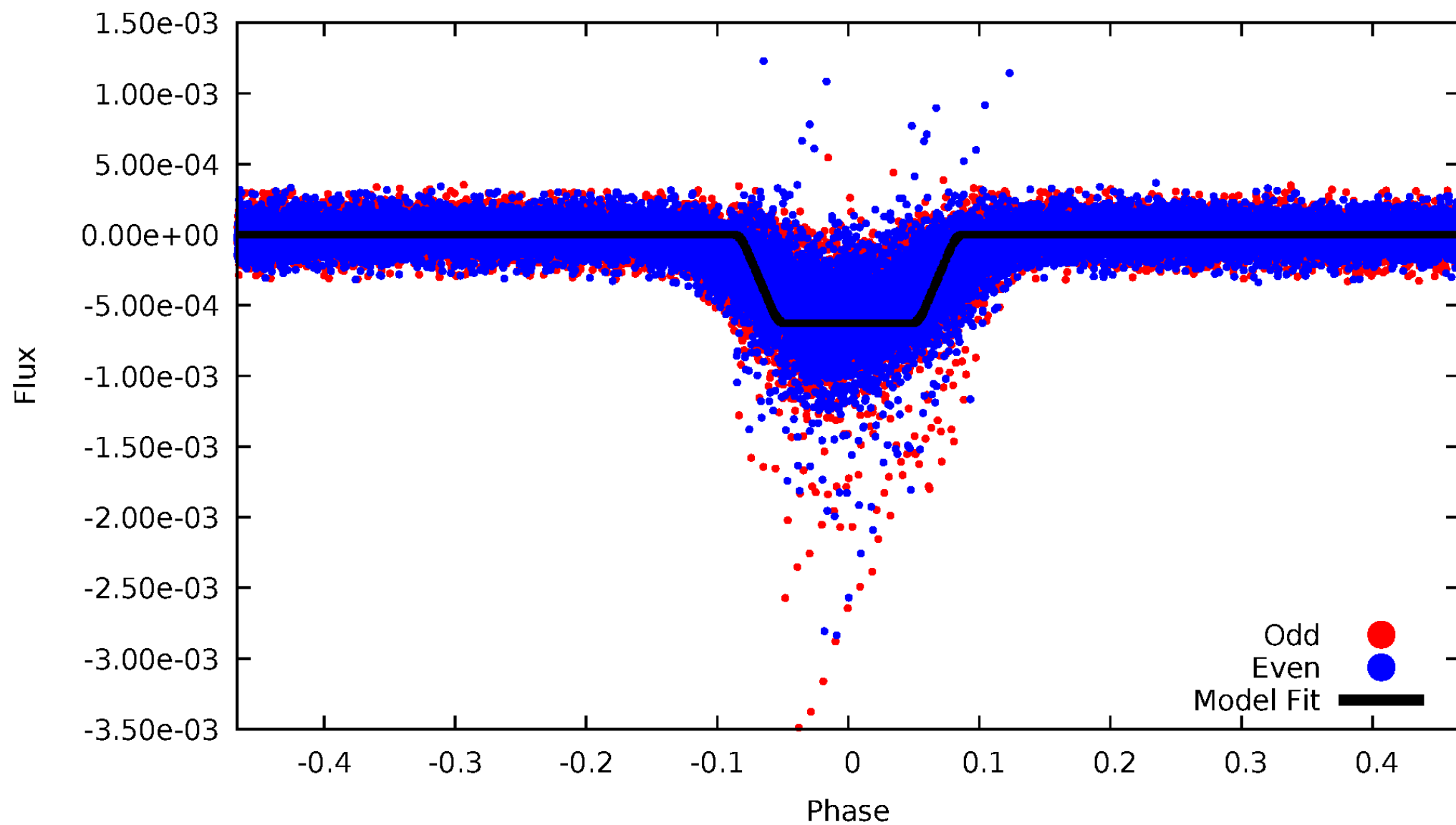
DV Odd/Even

TCE 010877367-01

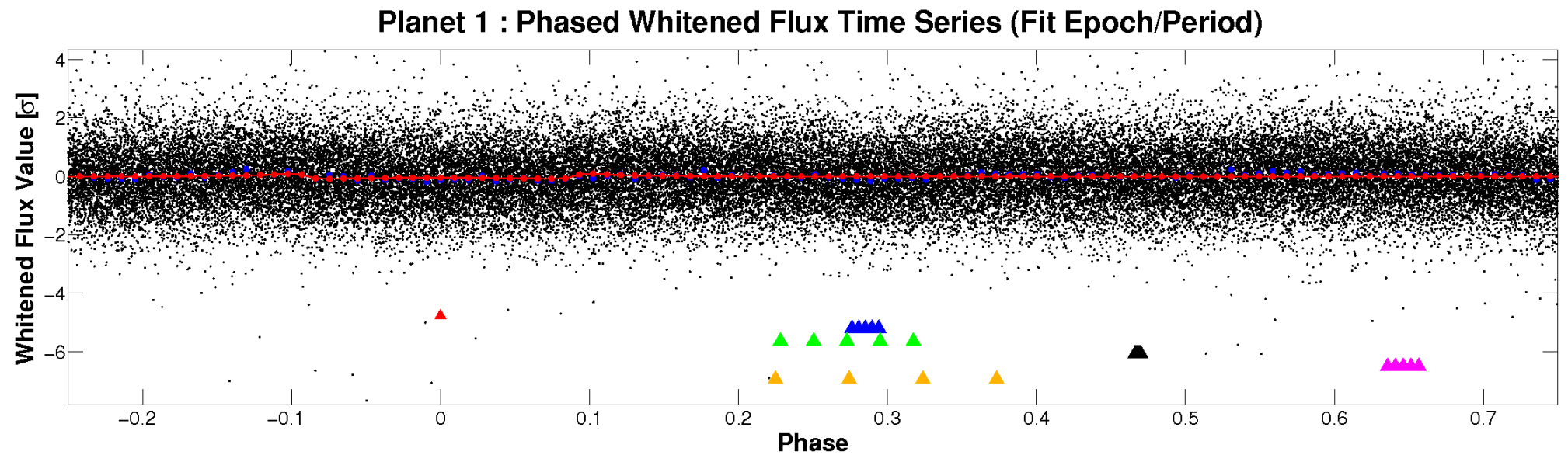
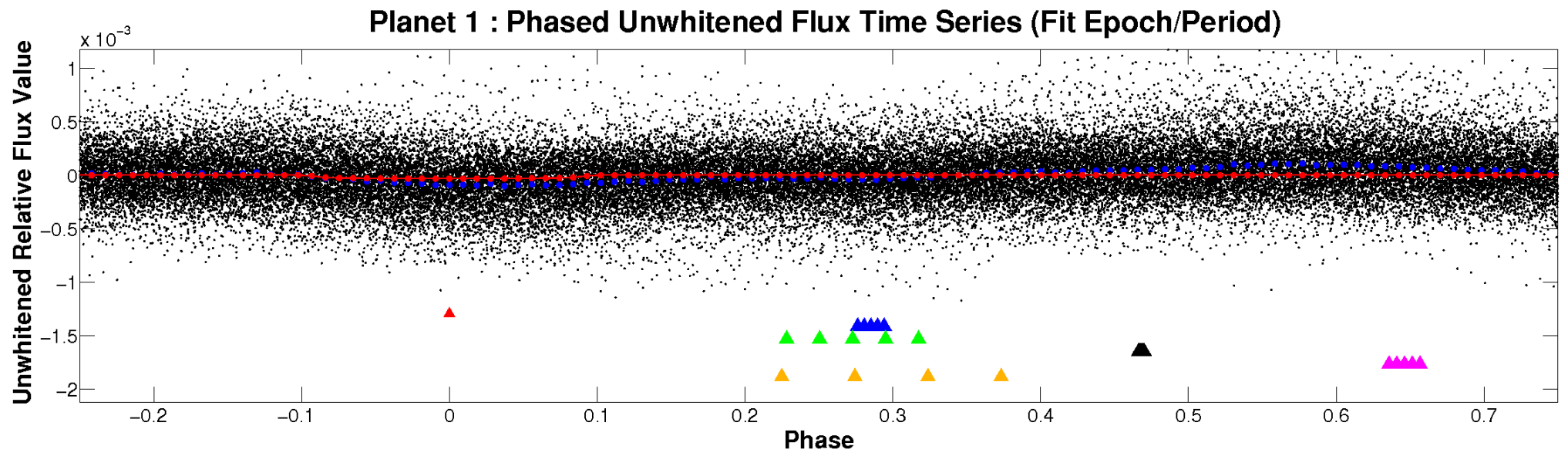


ALT Odd/Even

TCE 010877367-01

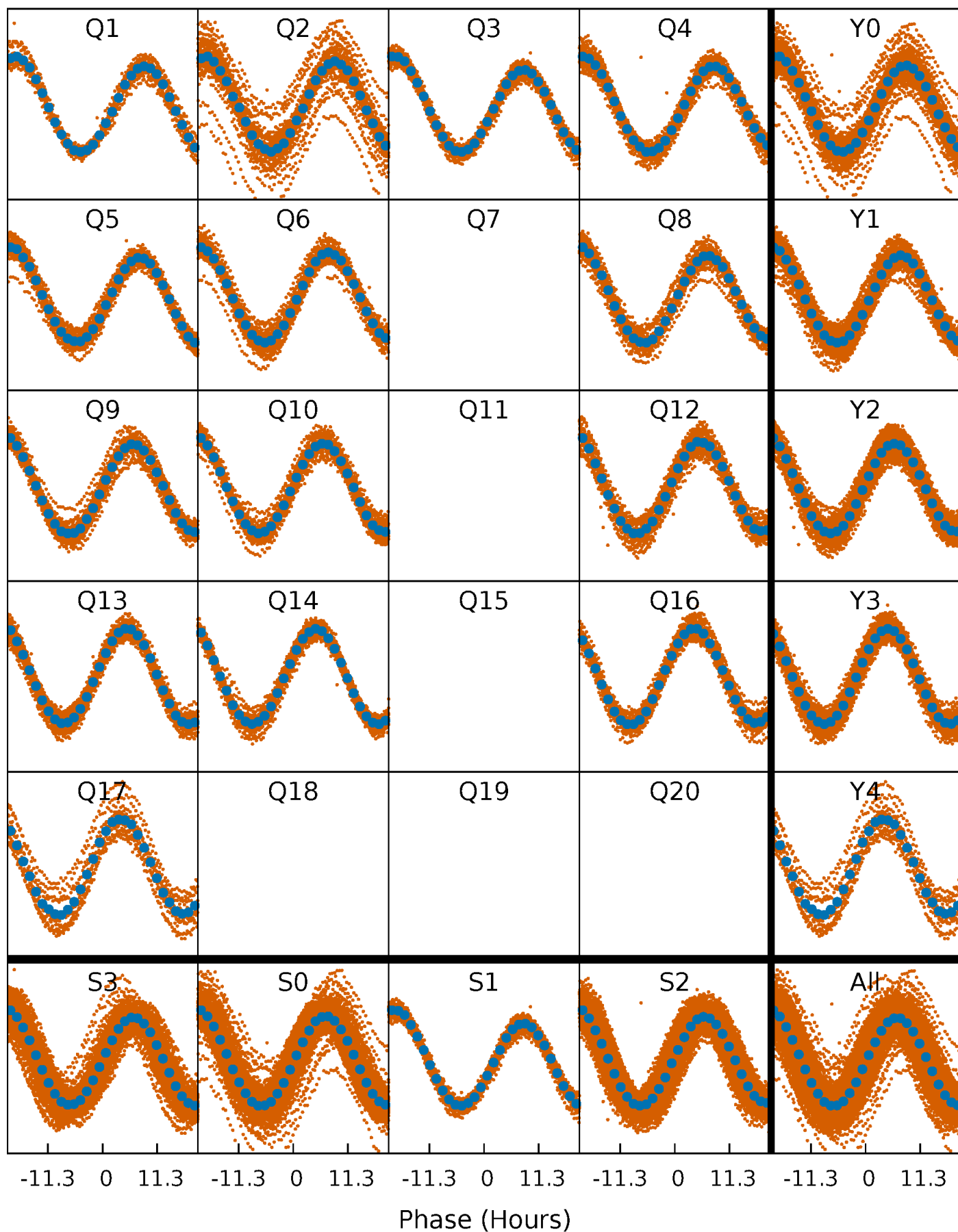


Non-Whitened Vs. Whitened Light Curve



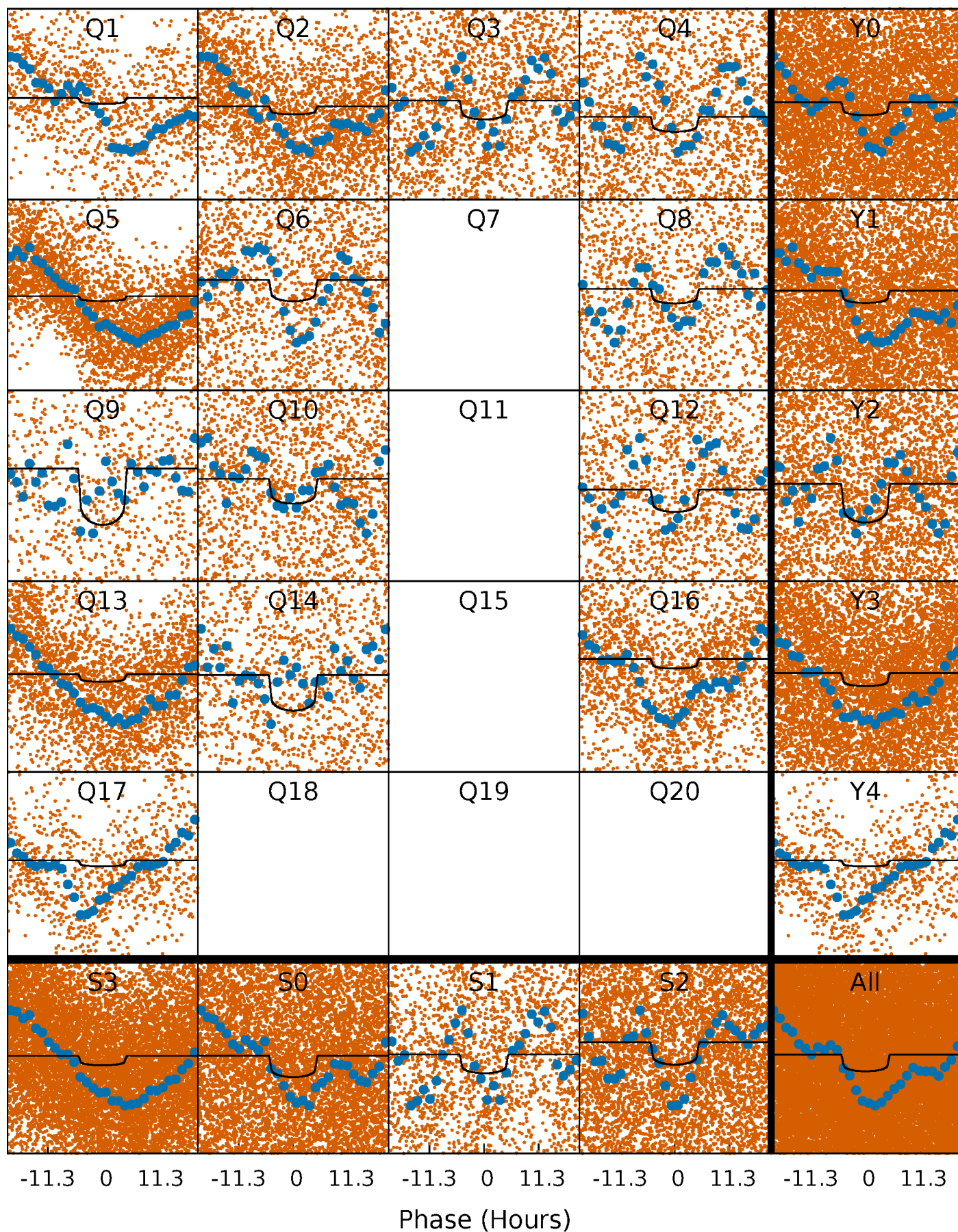
PDC Quarter-Phased Transit Curves

TCE 010877367-01 P= 2.194786 Days $T_0=132.538779$ (BKJD)



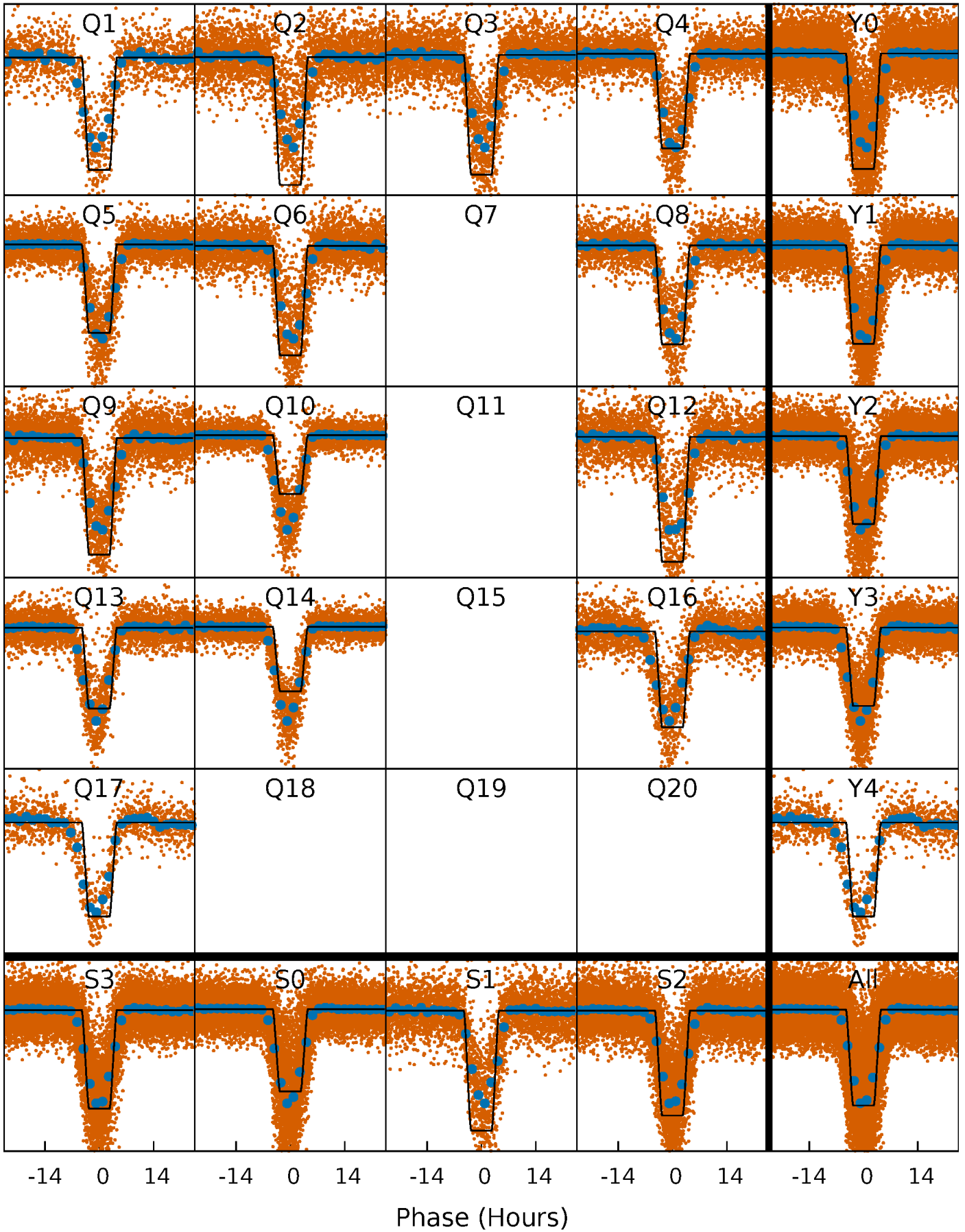
DV Quarter-Phased Transit Curves

TCE 010877367-01 P= 2.194786 Days $T_0=132.538779$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

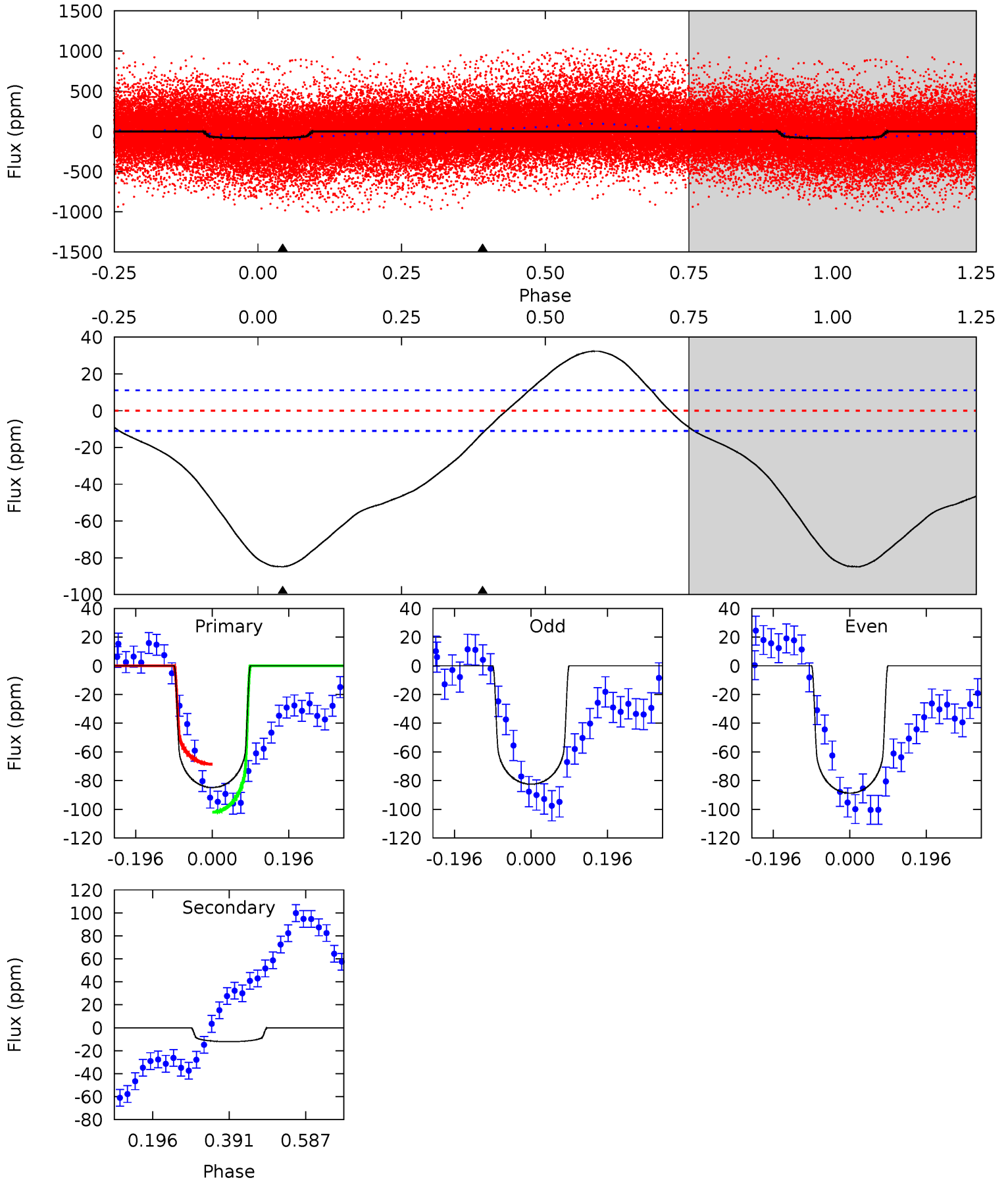
TCE 010877367-01 P= 2.194494 Days $T_0=132.527254$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-01, P = 2.194786 Days, E = 130.343993 Days

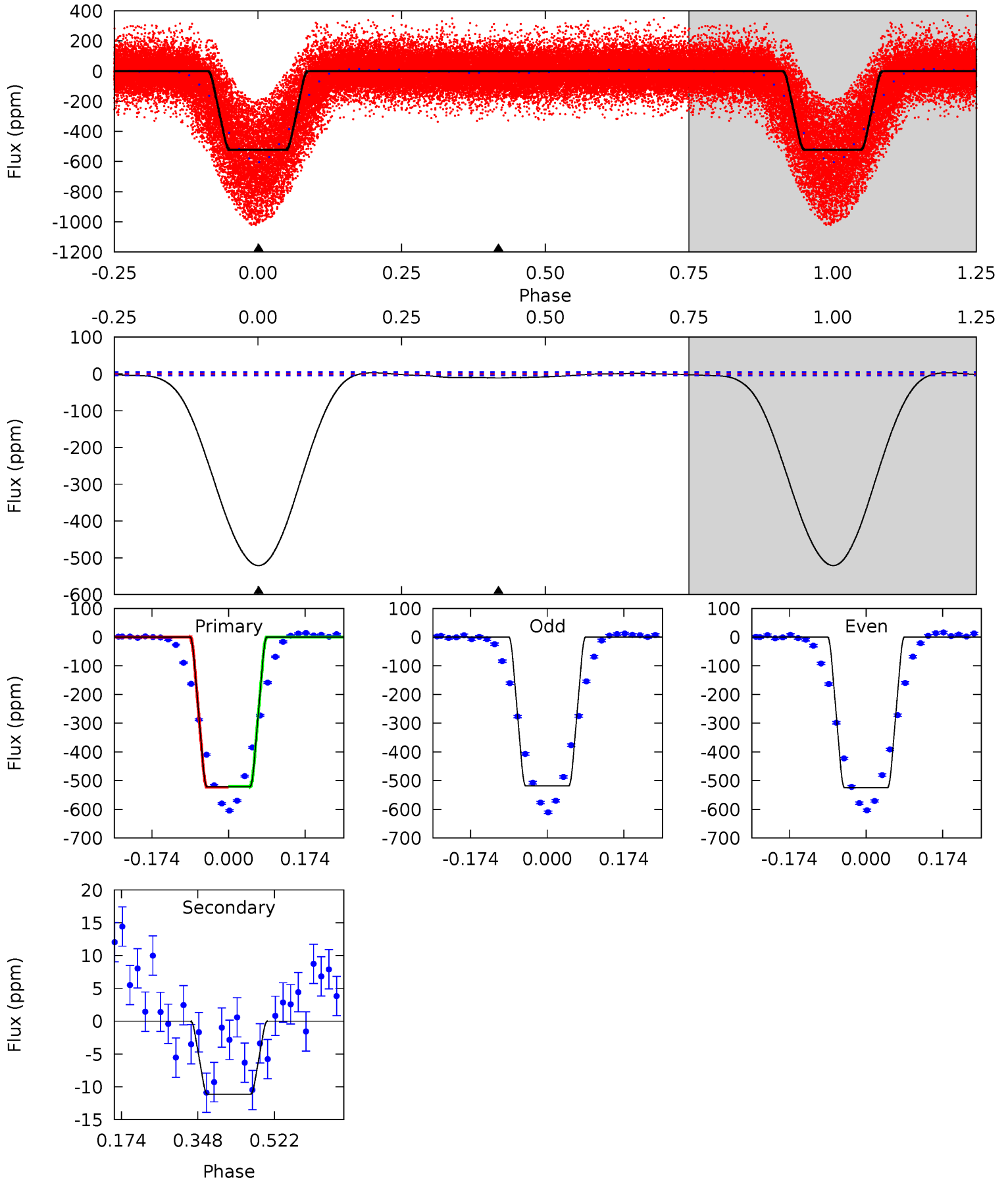
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.0	4.86	0	0	4.42	1.29	7.63	34.0	34.0	4.86	4.86	1.26	1.22	0.28	7.04



Alt Model-Shift Uniqueness Test

010877367-01, P = 2.194494 Days, E = 130.332760 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
537.0	11.5	0	0	4.45	1.36	3.02	537.0	537.0	11.5	11.5	3.10	1.07	0.01	1.78



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-12 ± 2	$1.10^{+0.25}_{-0.22}$	2845^{+181}_{-216}	5037^{+492}_{-398}	$6.711^{+4.117}_{-2.433}$
Alt.	-11 ± 1	$4.74^{+0.71}_{-0.70}$	2857^{+182}_{-211}	2310^{+355}_{-4713}	$0.339^{+0.118}_{-0.083}$

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

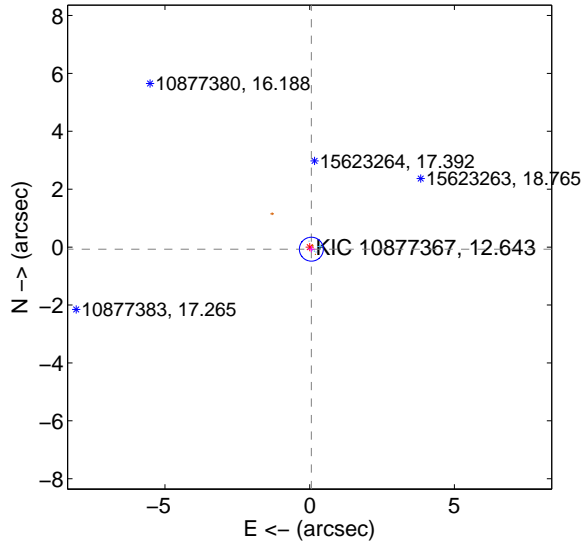
Supplemental centroid analysis for 010877367-01. Kepler magnitude: 12.64. Transit SNR 7.35

There are 7 quarters with good PRF difference image offsets

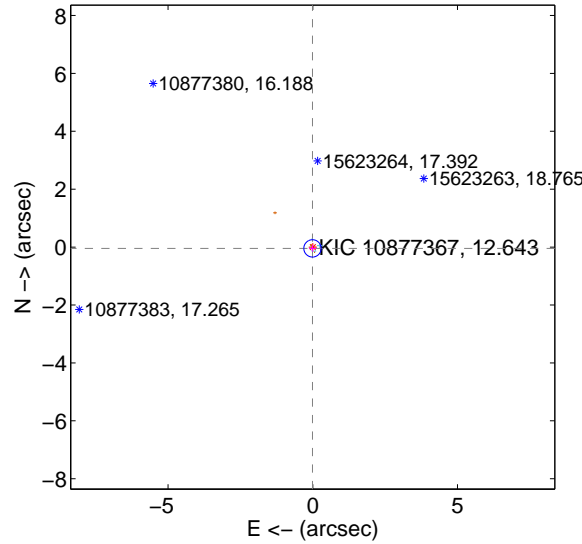
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.138	0.67	-0.058 ± 0.114	-0.072 ± 0.106
PRF-fit source offset from KIC position	0.045 ± 0.100	0.45	0.010 ± 0.121	-0.044 ± 0.117
photometric centroid source offset	3.68 ± 1.09	3.36	-2.27 ± 1.06	-2.90 ± 1.11

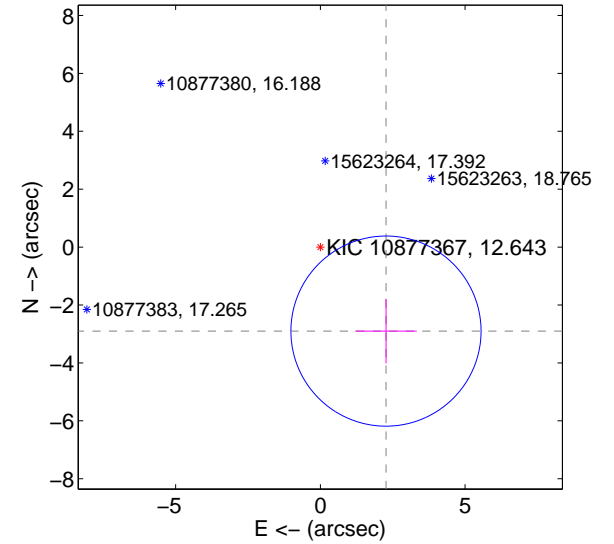
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

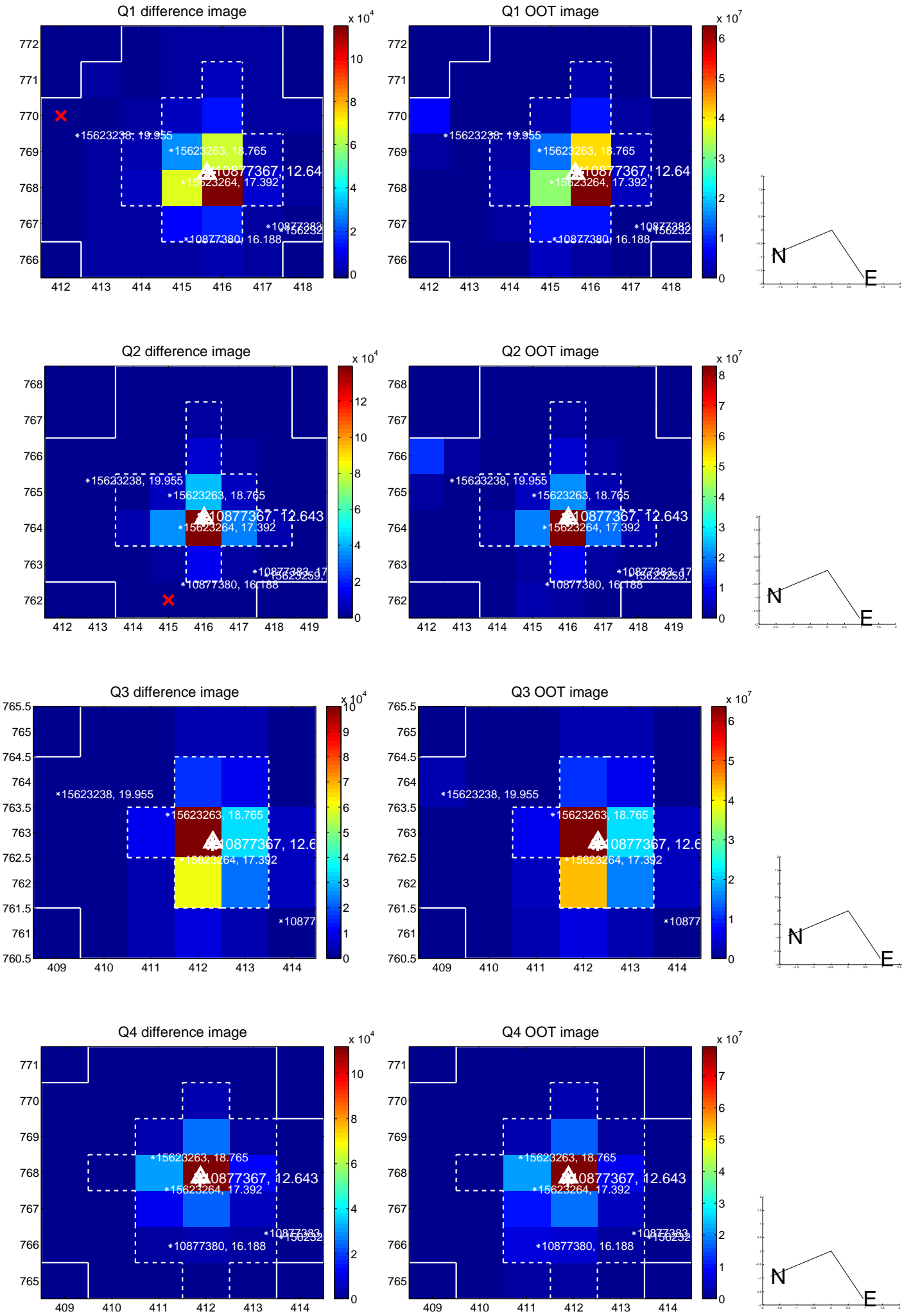


offset from photometric centroids

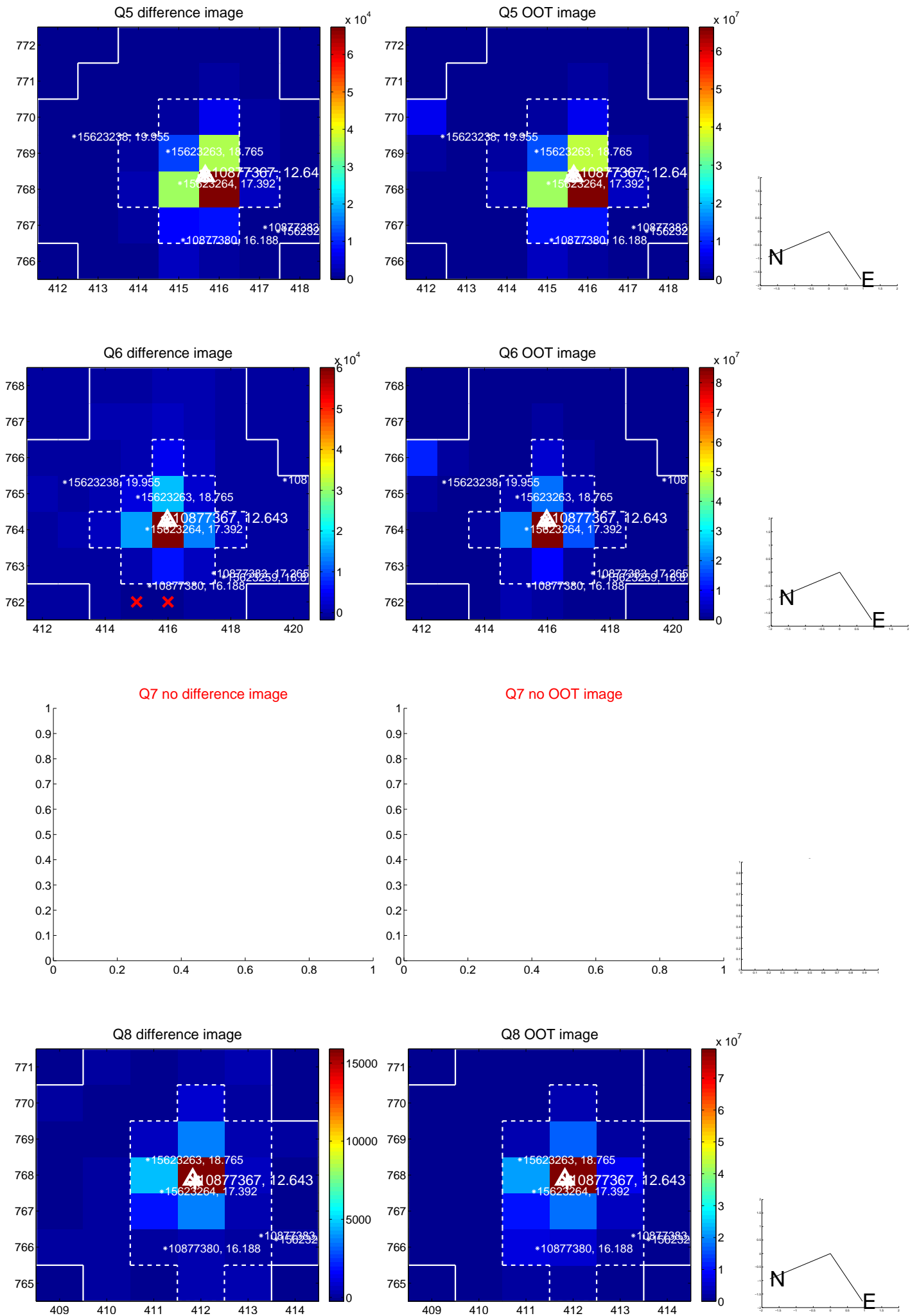


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

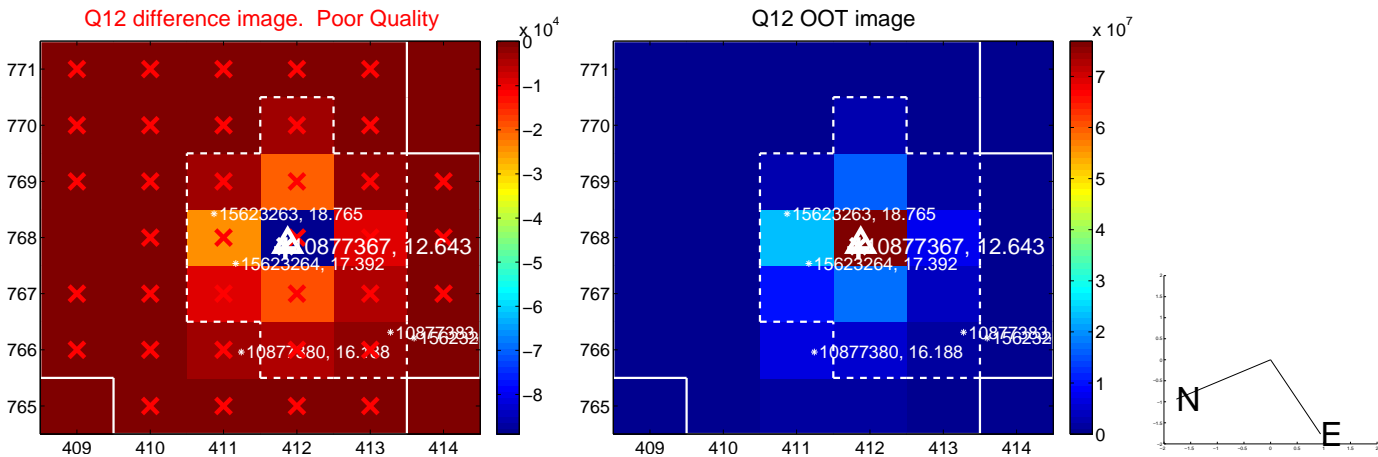
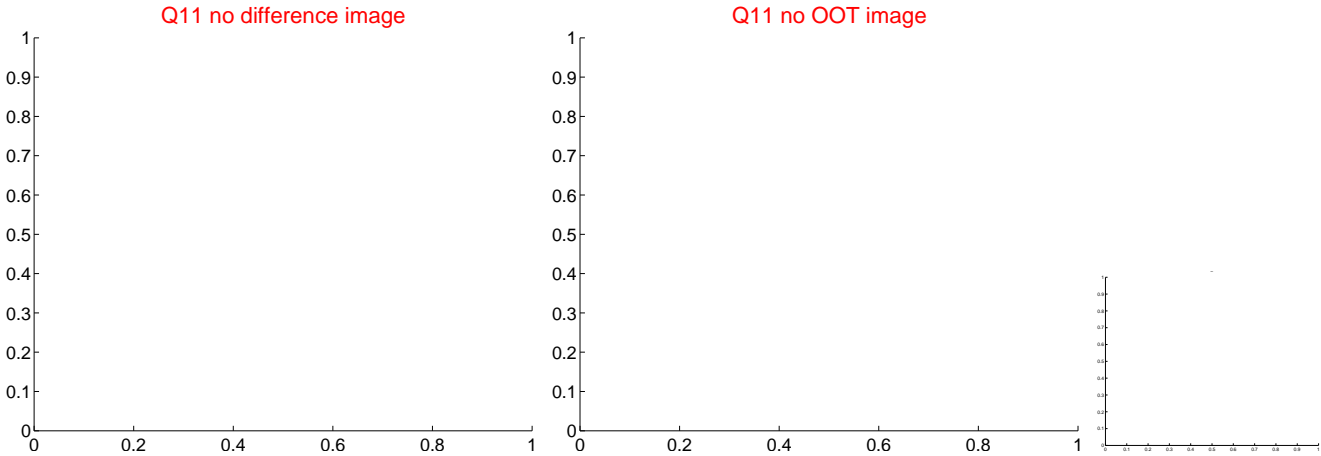
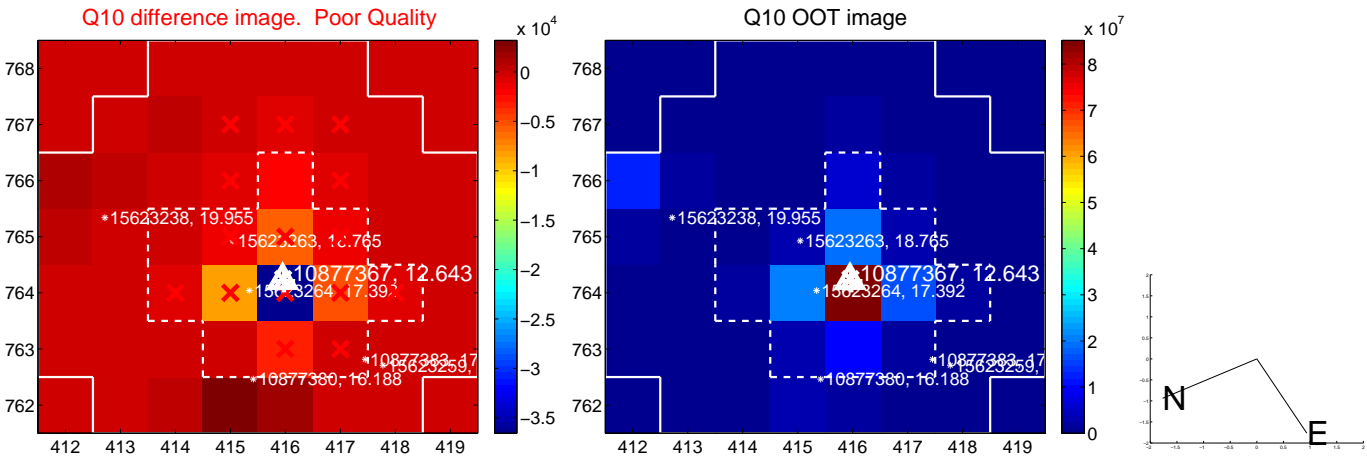
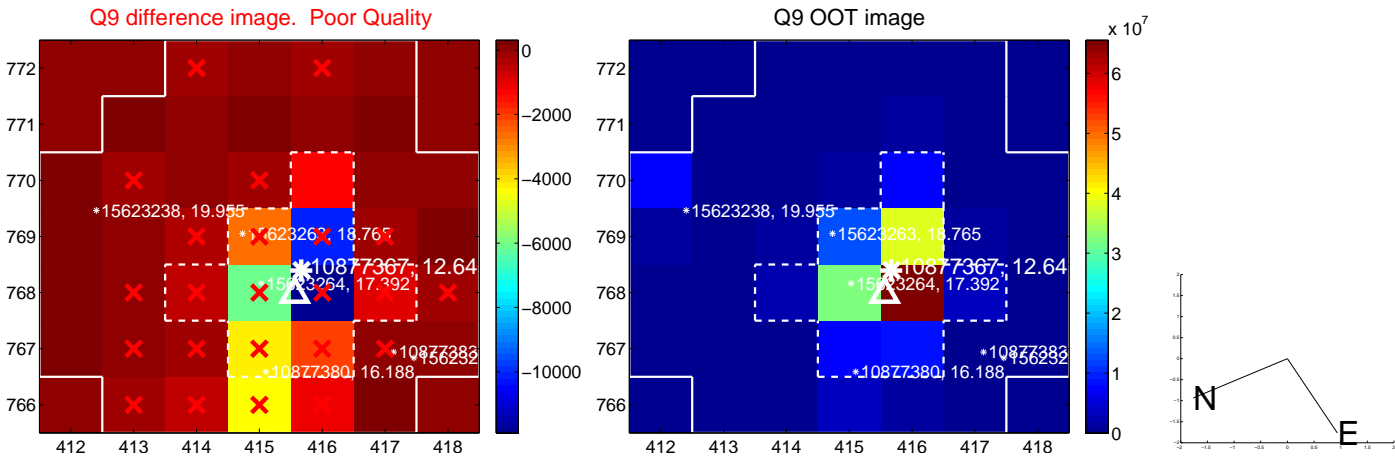
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



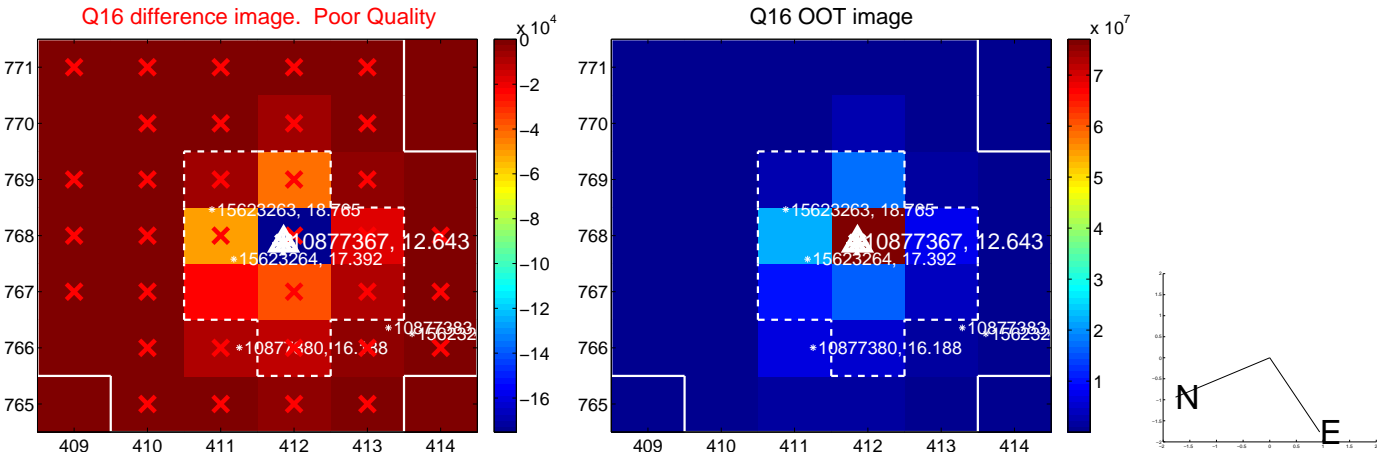
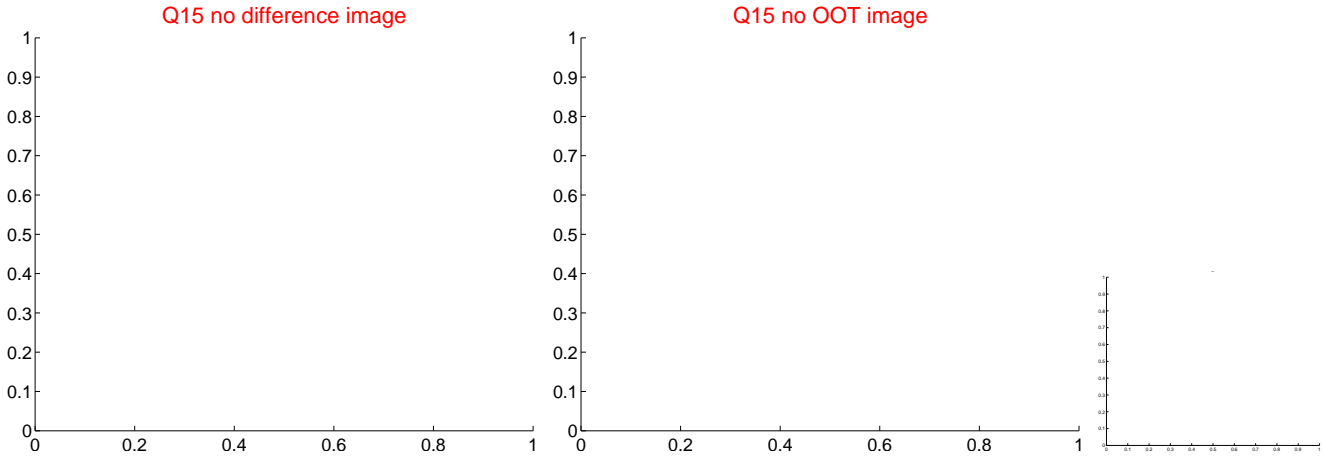
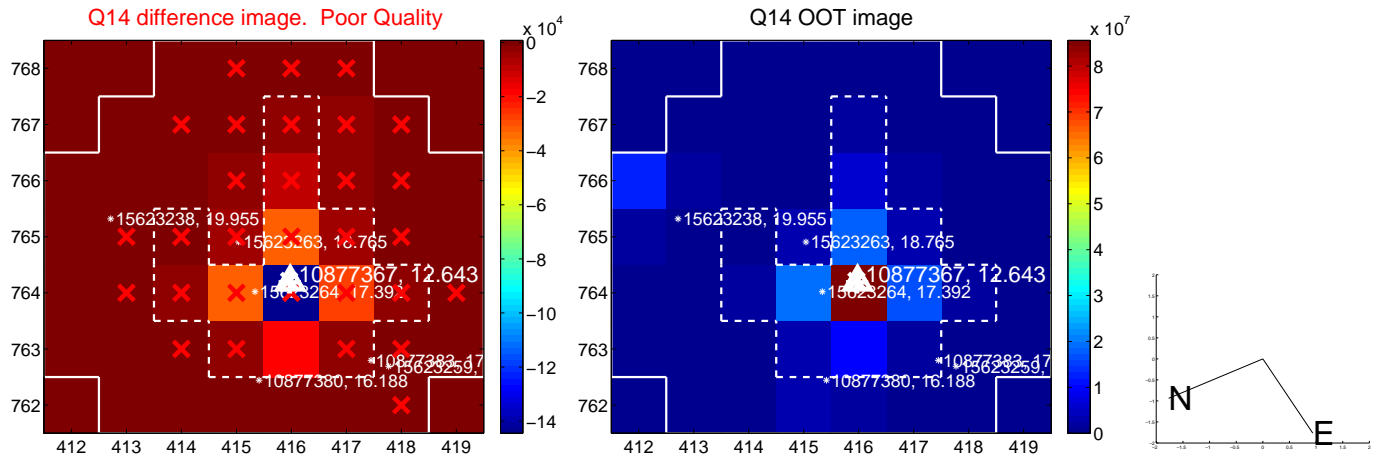
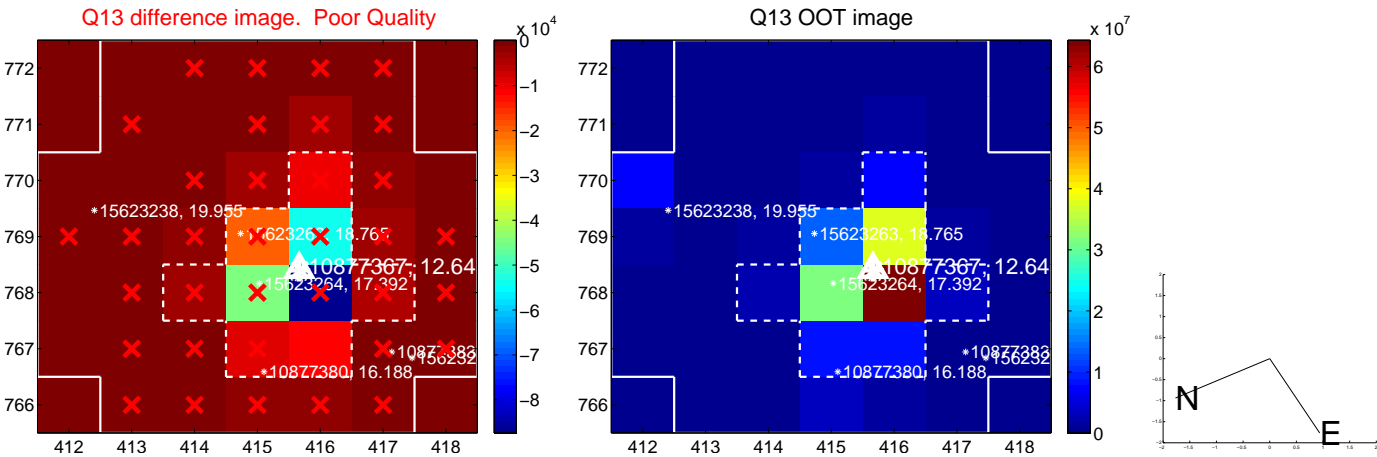
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



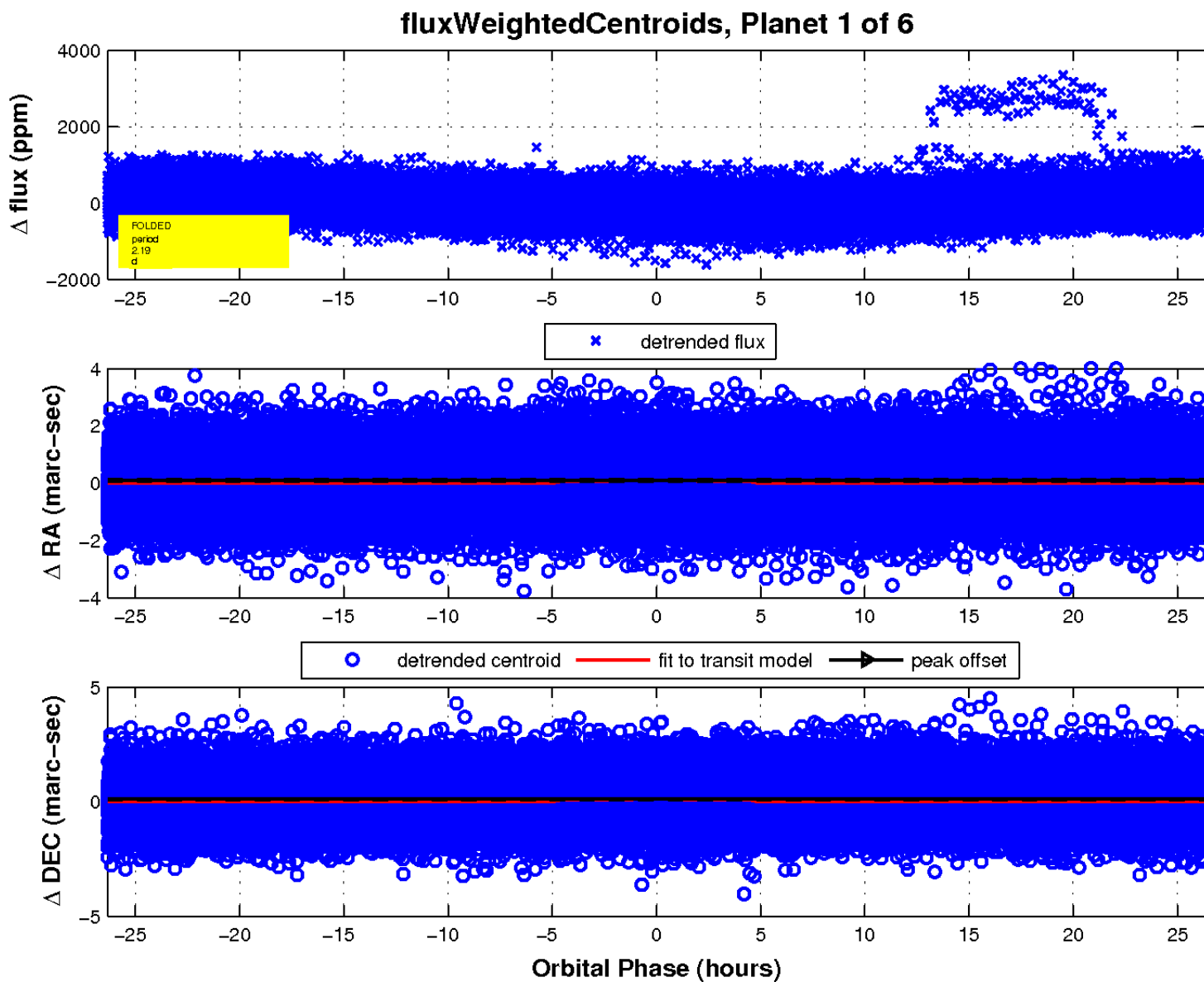
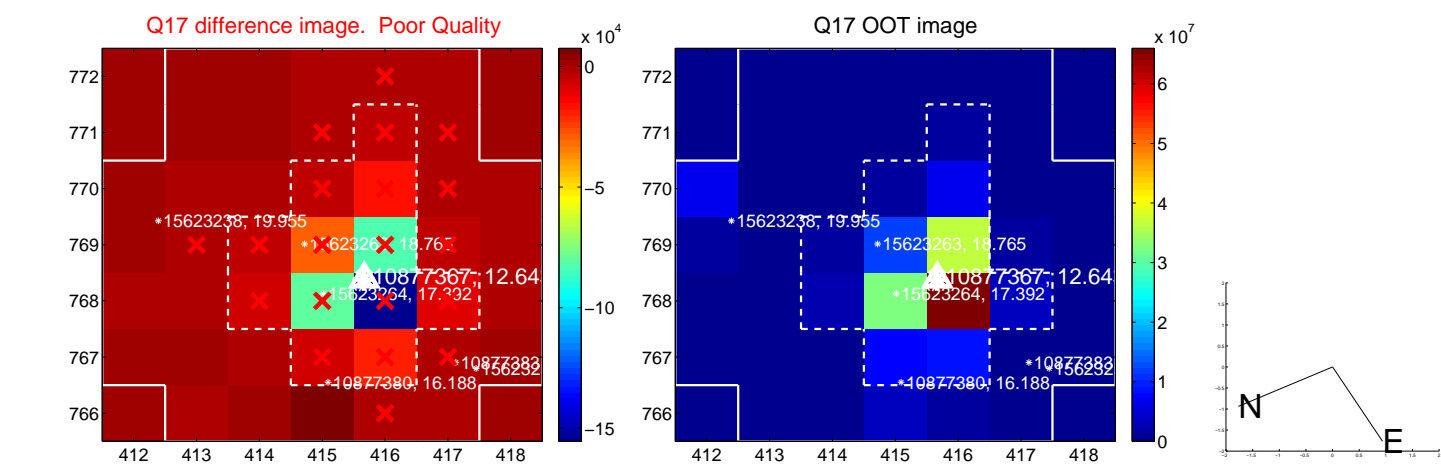
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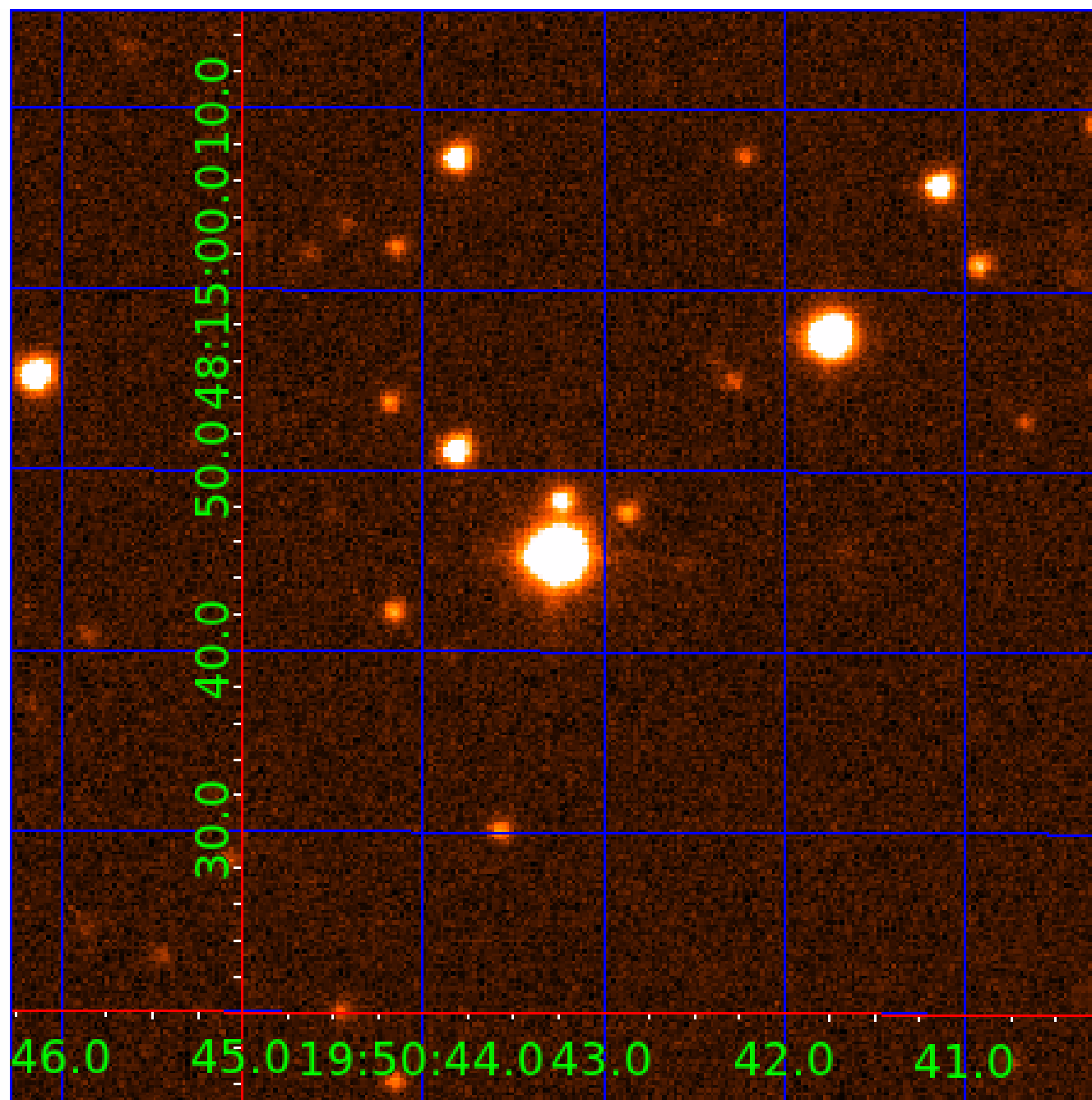


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
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010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

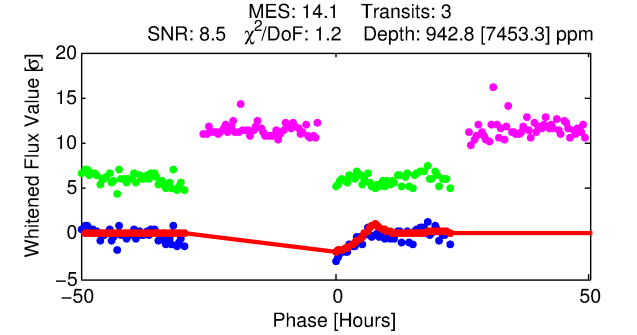
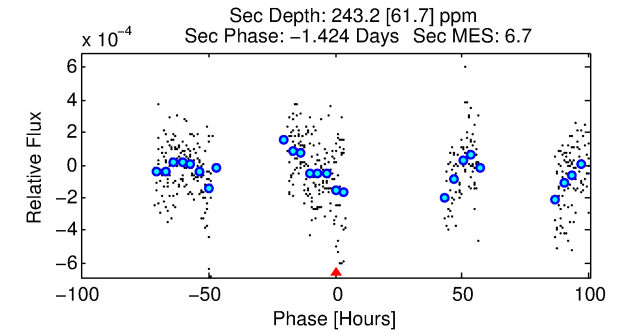
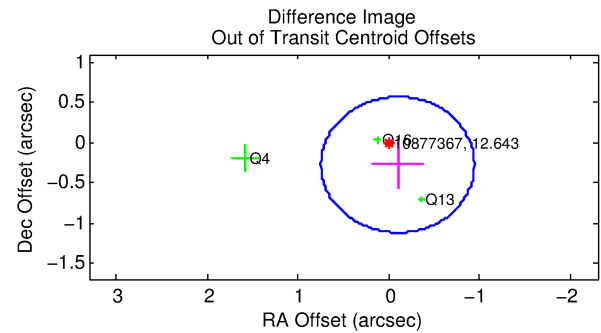
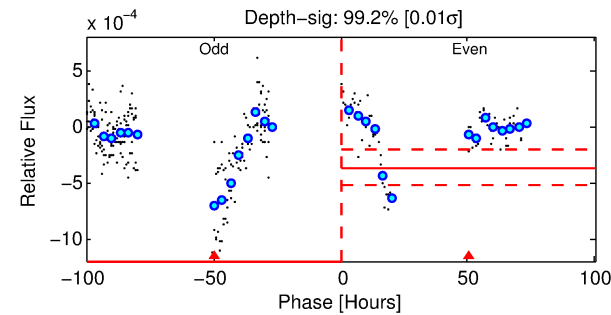
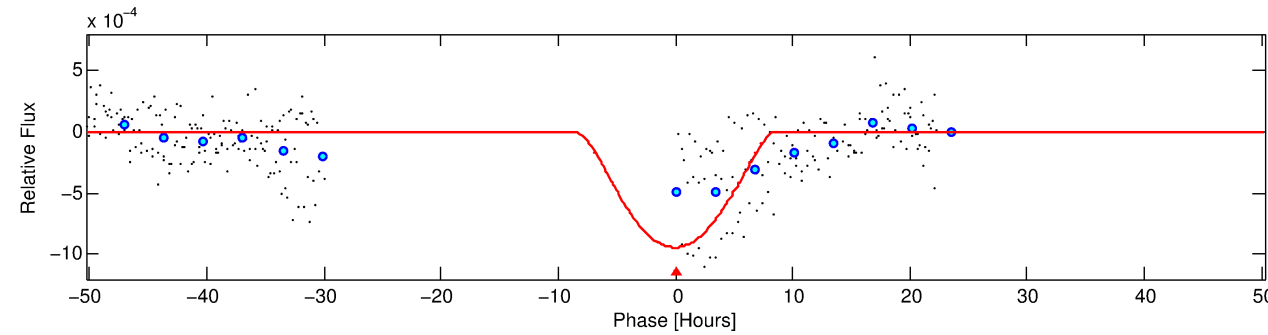
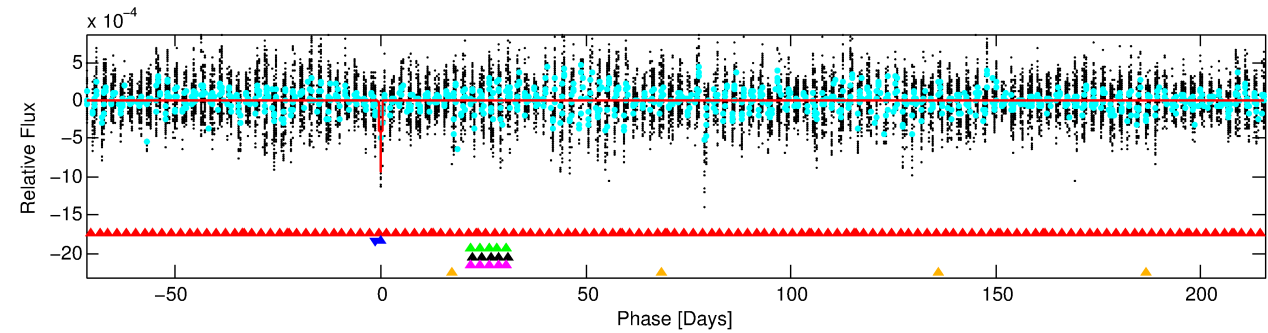
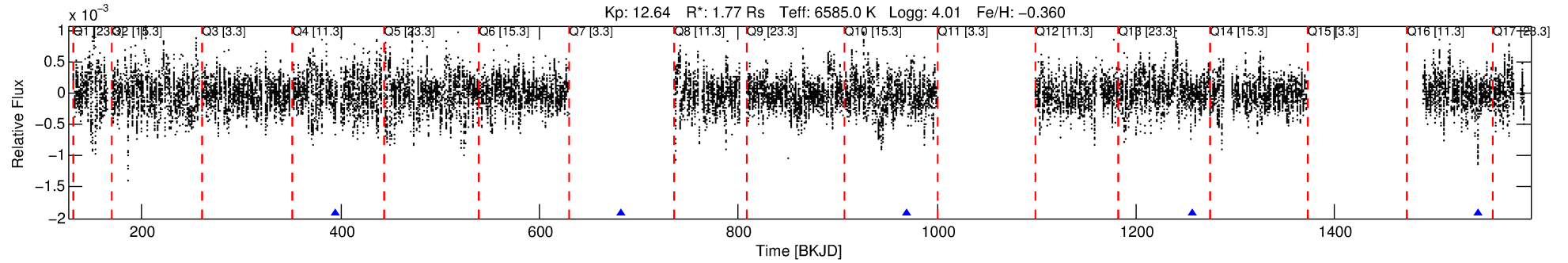
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-02

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 2 of 6 Period: 287.527 d



DV Fit Results:

Period = 287.52675 [0.00989] d
Epoch = 394.3246 [0.0807] BKJD
Rp/R* = 0.0530 [0.0842]
a/R* = 43.22 [16.35]
b = 1.00 [0.41]
Seff = 6.48 [2.93]
Teq = 407 [46] K
Rp = 10.22 [16.50] Re
a = 0.9012 [0.2453] AU
Ag = 1040.56 [3352.02] [0.31 σ]
Teff = 3573 [2852] K [1.11 σ]

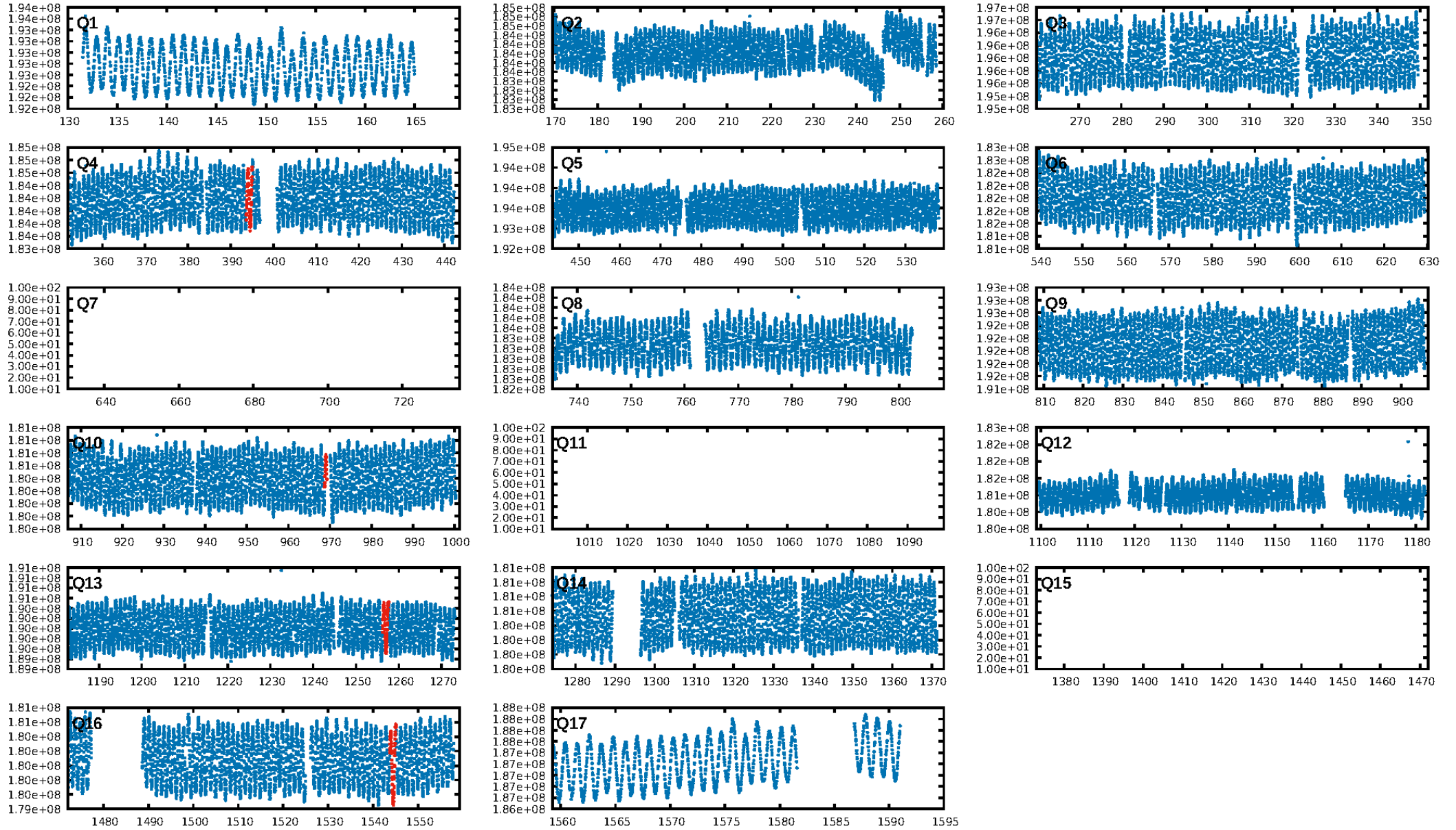
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [352.16 σ]
LongPeriod-sig: 99.7% [3.00 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.13e-19
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.8189
Centroid-sig: 4.8%
Centroid-so: 1.580 arcsec [2.42 σ]
OotOffset-rm: 0.293 arcsec [1.04 σ]
KicOffset-rm: 0.223 arcsec [0.79 σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

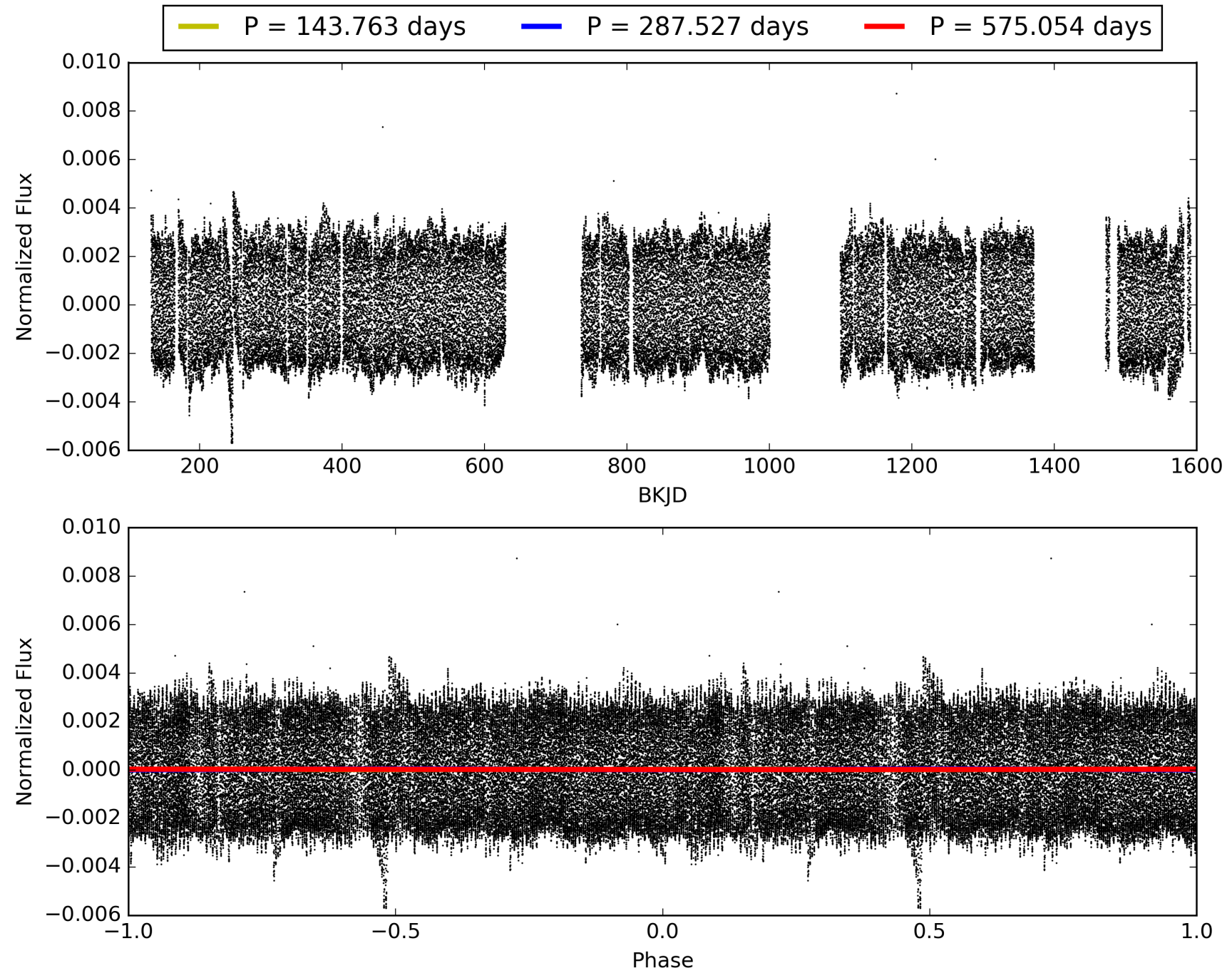
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:34:41 Z

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

TCE 010877367-02, PDC Light Curves

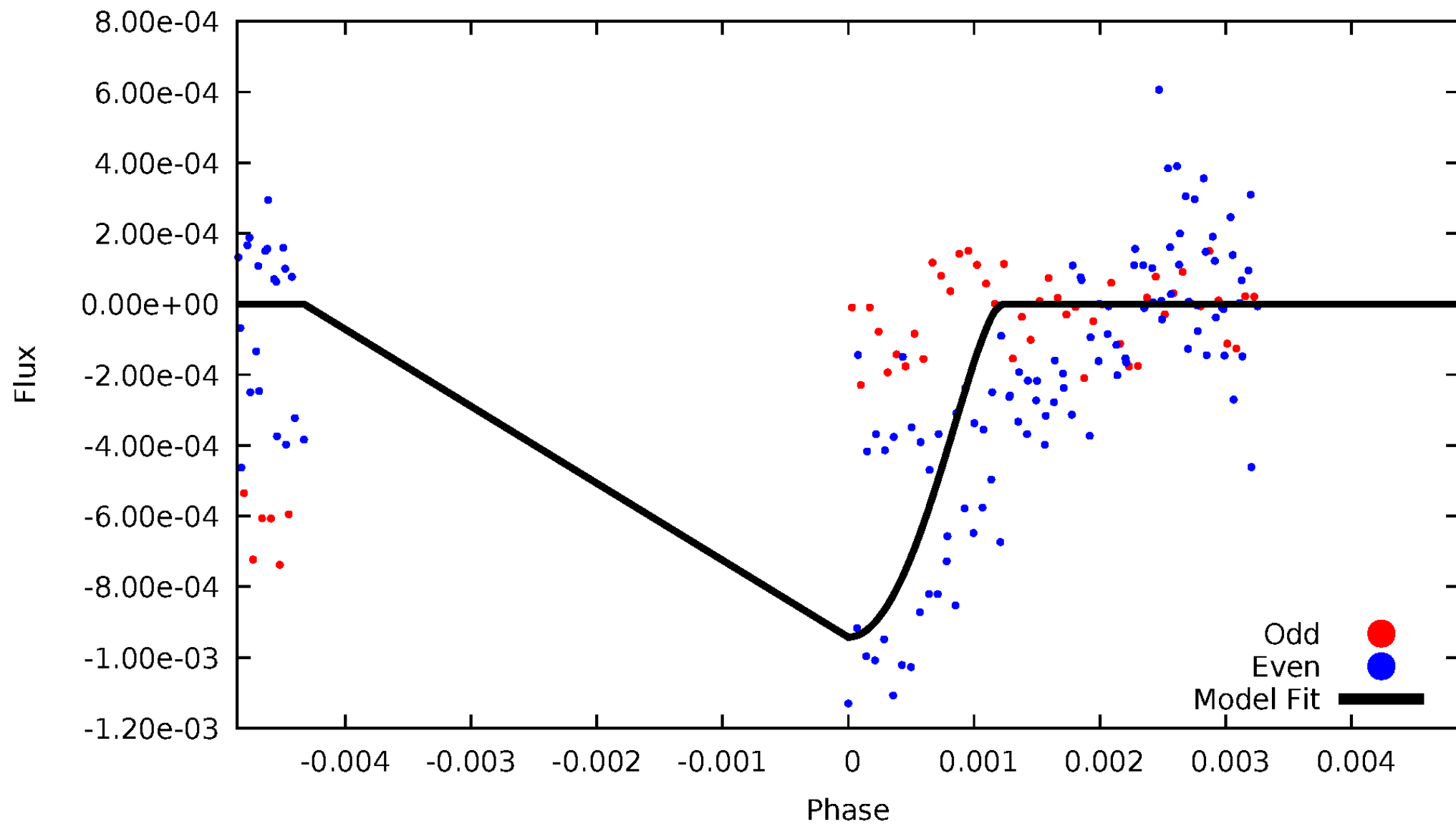


TCE 010877367-02



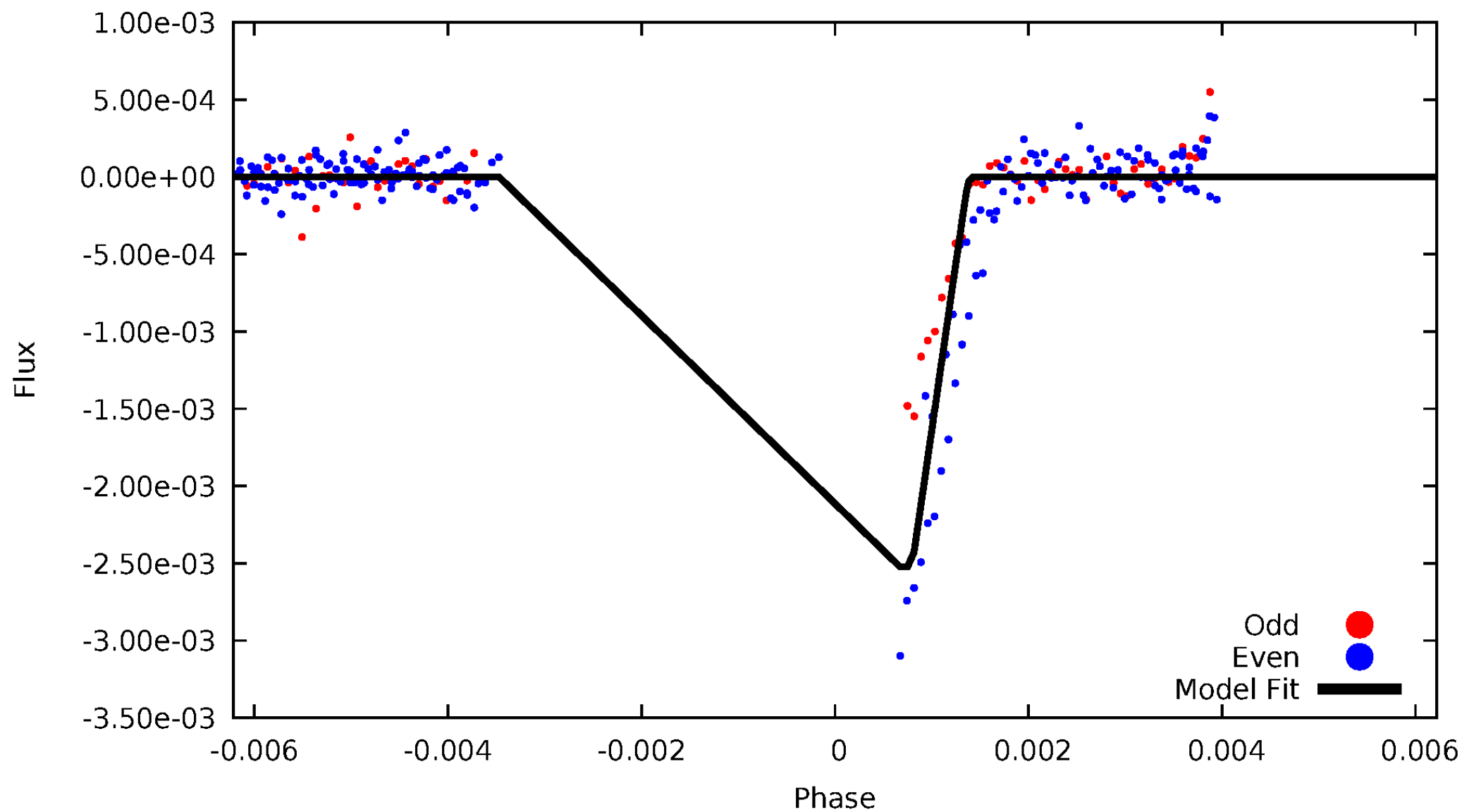
DV Odd/Even

TCE 010877367-02



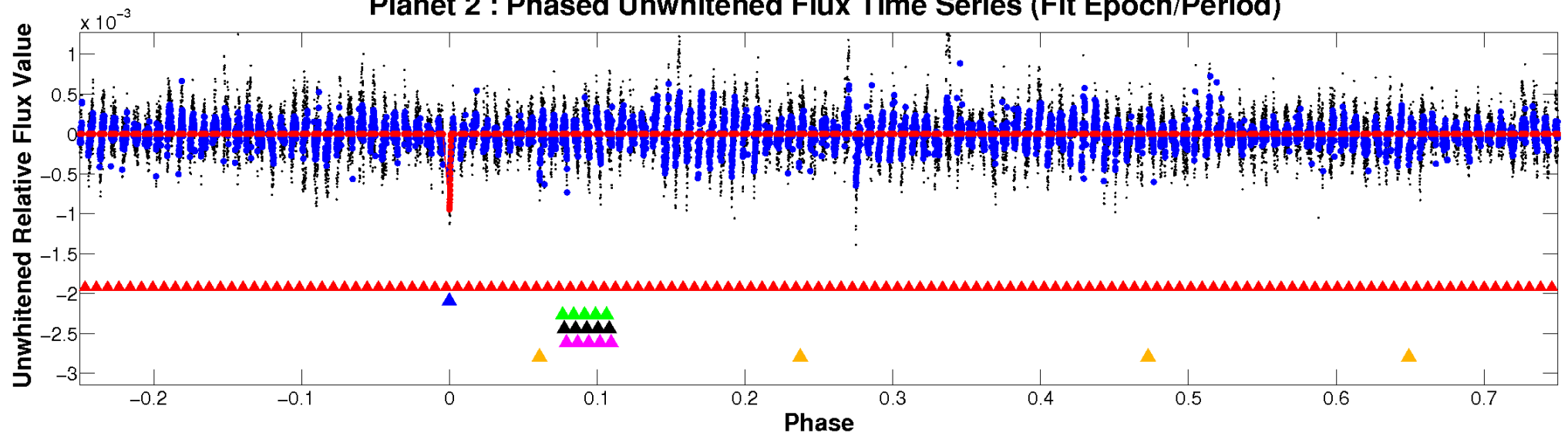
ALT Odd/Even

TCE 010877367-02

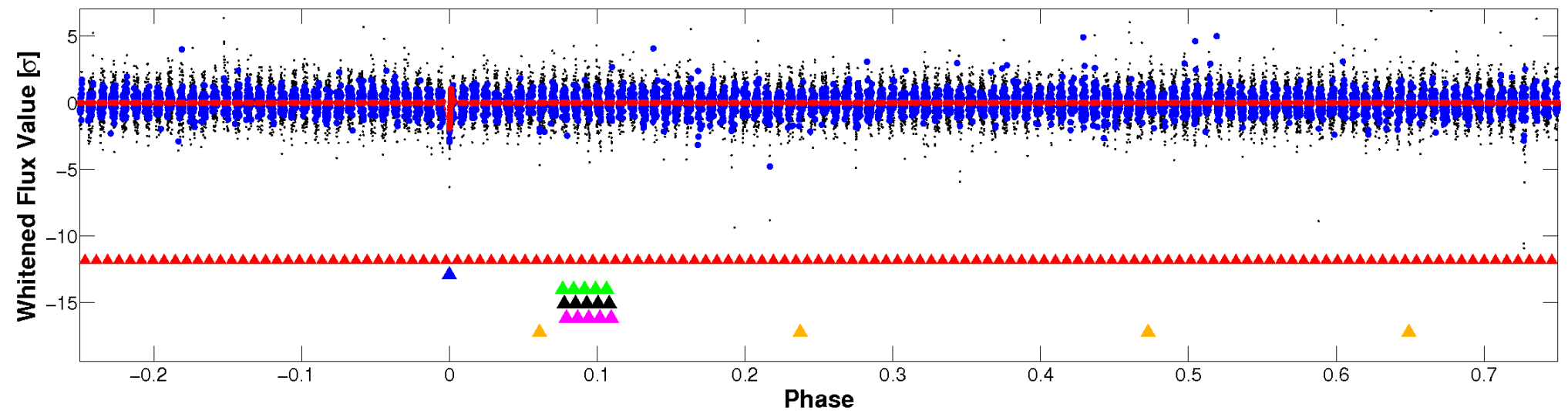


Non-Whitened Vs. Whitened Light Curve

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

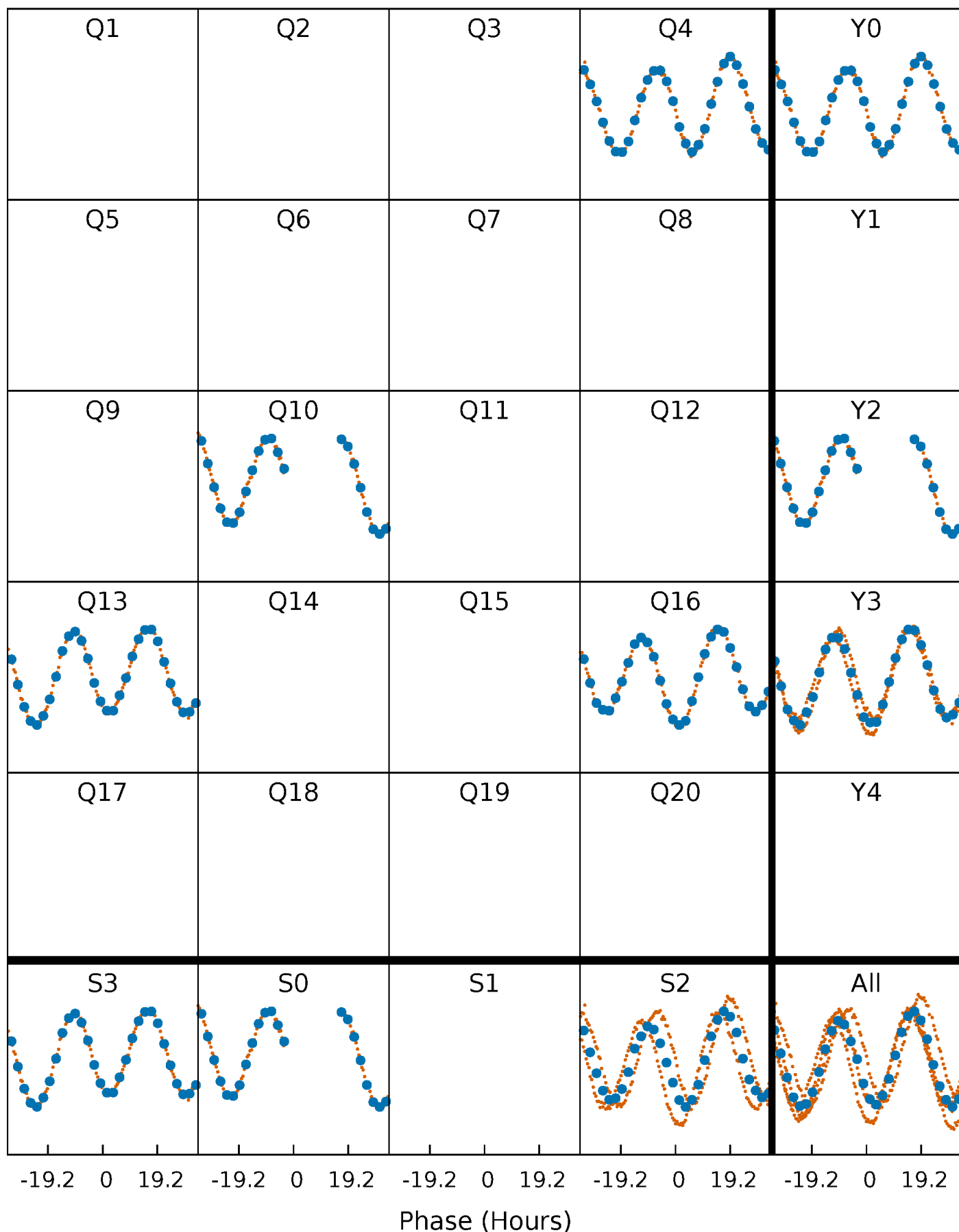


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



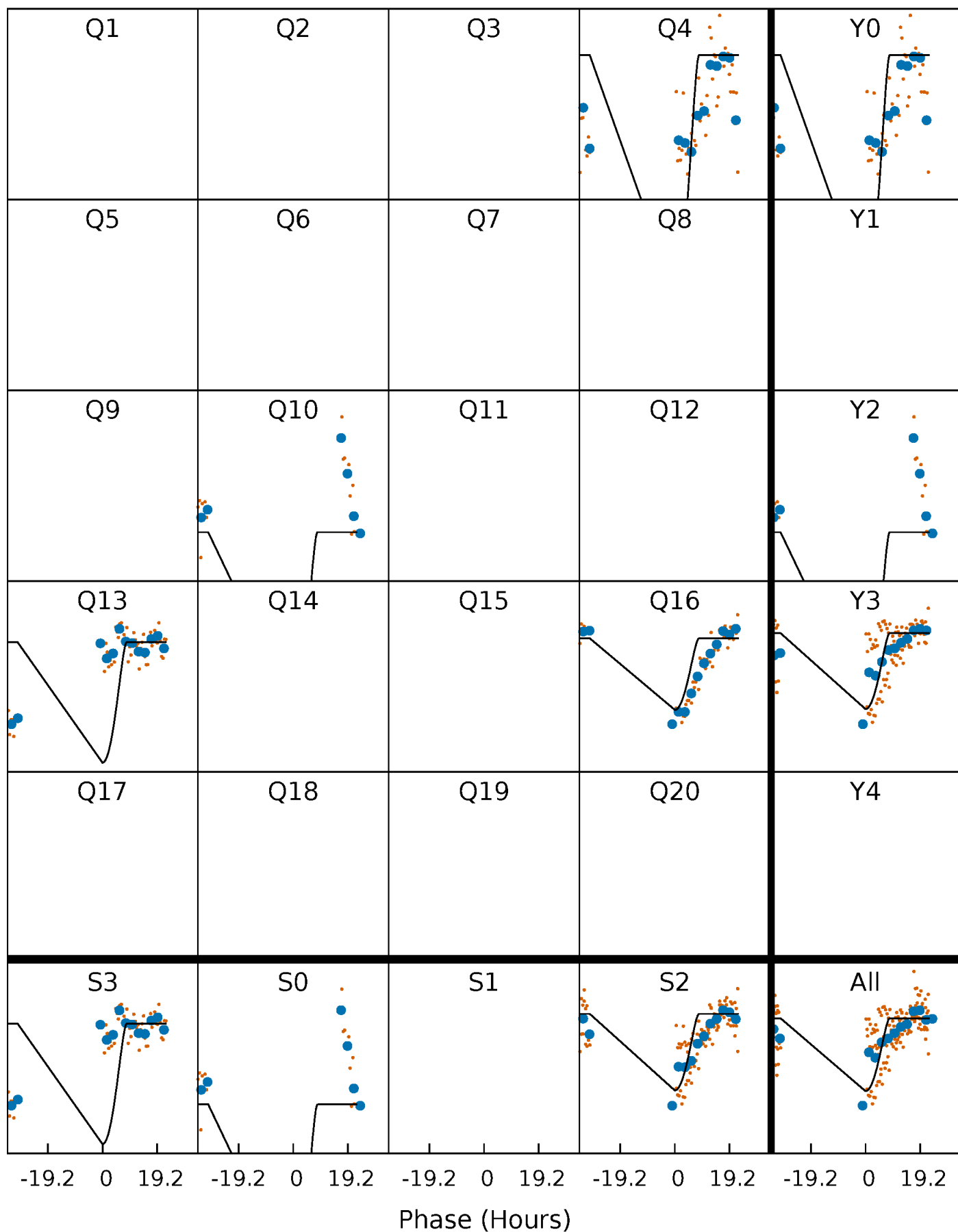
PDC Quarter-Phased Transit Curves

TCE 010877367-02 $P=287.526754$ Days $T_0=394.324622$ (BKJD)



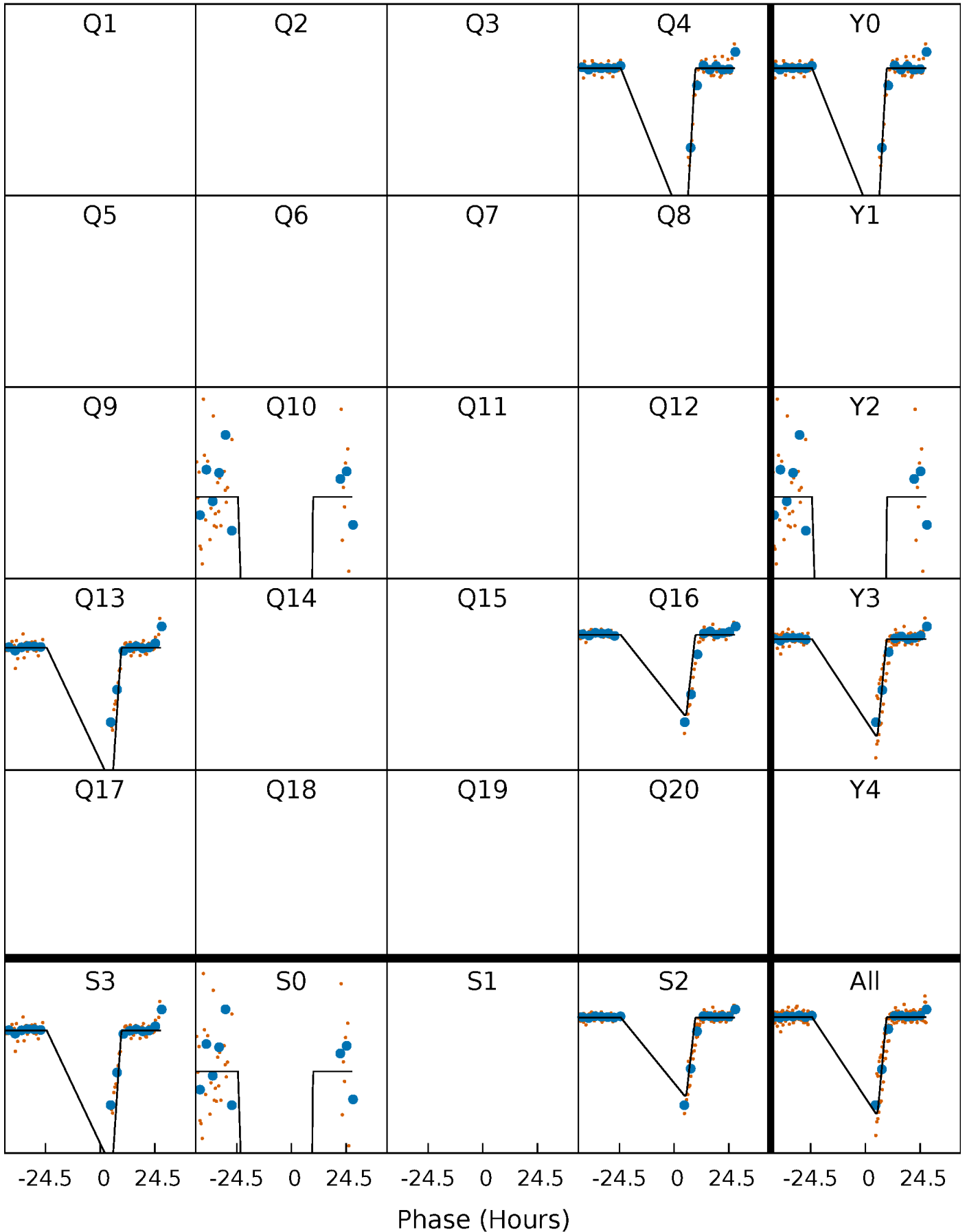
DV Quarter-Phased Transit Curves

TCE 010877367-02 $P=287.526754$ Days $T_0=394.324622$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

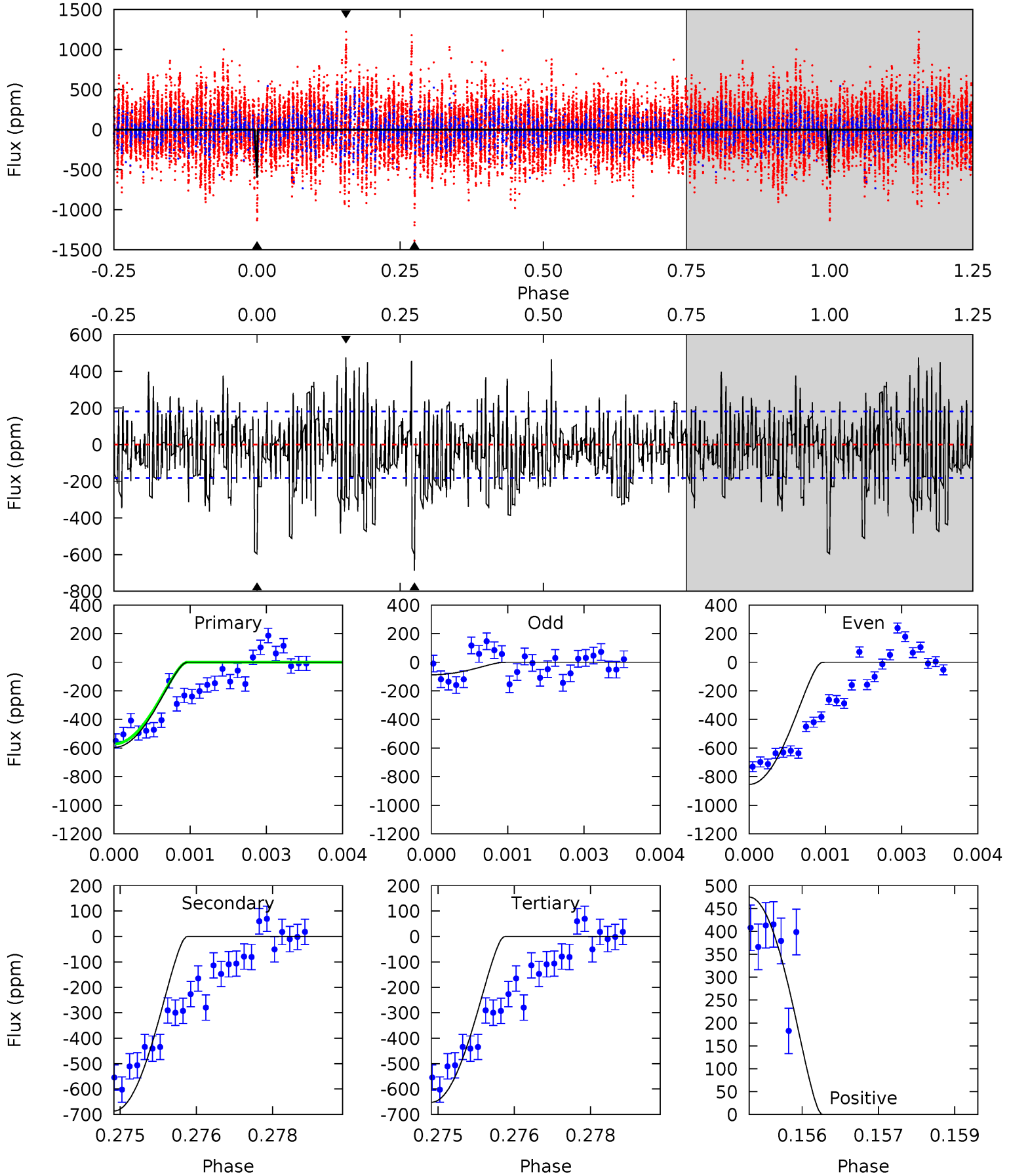
TCE 010877367-02 $P=287.539846$ Days $T_0=394.078478$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-02, P = 287.526754 Days, E = 106.797868 Days

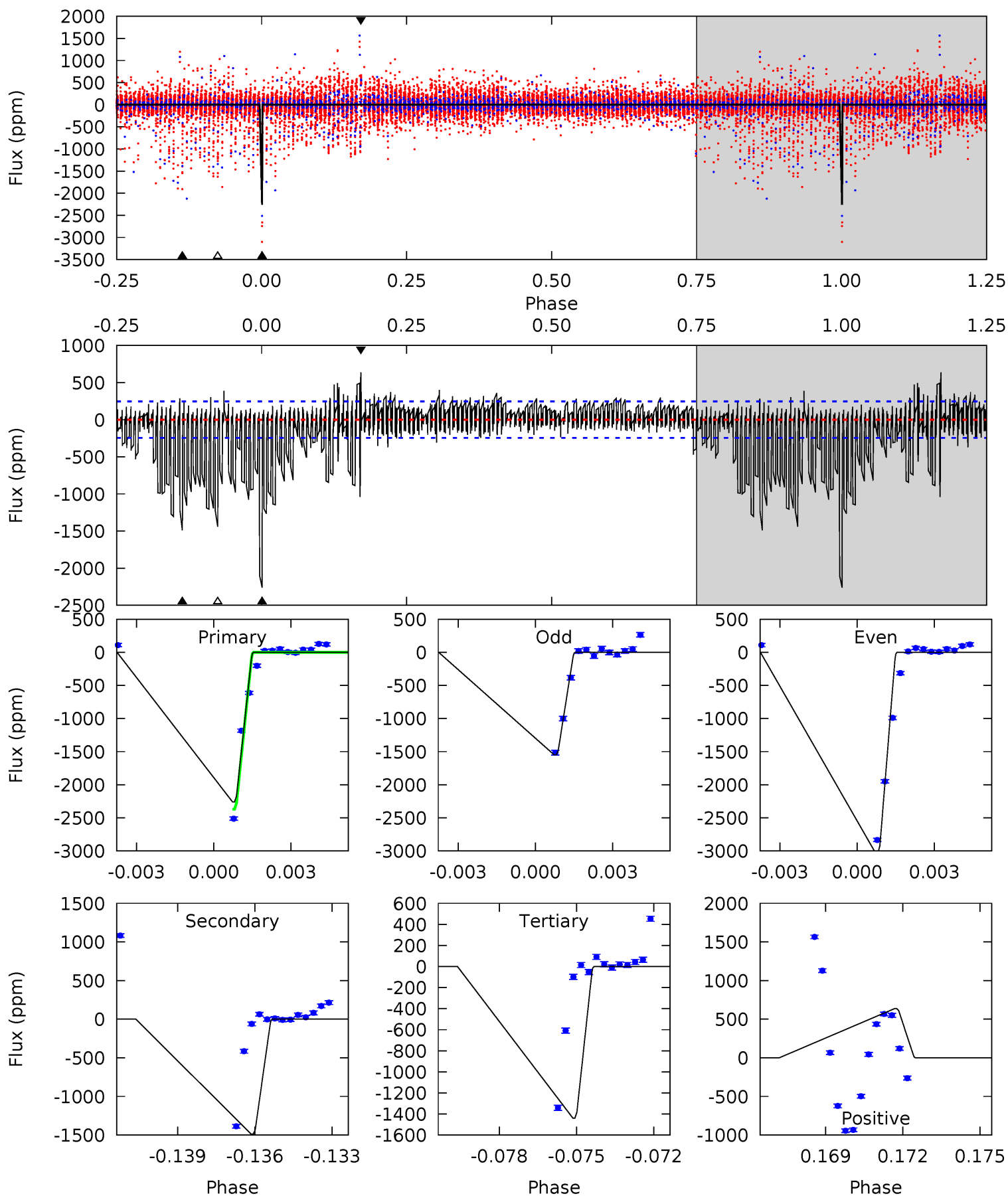
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	20.5	19.5	14.2	5.41	3.22	4.21	-1.68	3.60	1.03	6.31	10.9	1.27	0.41	0.00



Alt Model-Shift Uniqueness Test

010877367-02, P = 287.539846 Days, E = 106.538632 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.4	31.9	30.8	13.6	5.27	2.99	3.07	17.6	34.8	1.04	18.2	14.6	1.00	0.22	0



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-686 ± 34	$16.07^{+13.58}_{-10.78}$	561^{+38}_{-44}	3954^{+2227}_{-680}	1264^{+9839}_{-910}
Alt.	-1488 ± 47	$14.27^{+14.01}_{-9.50}$	561^{+36}_{-45}	4800^{+3563}_{-1035}	3303^{+27747}_{-2447}

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 $A_{obs} \gg 1.0$

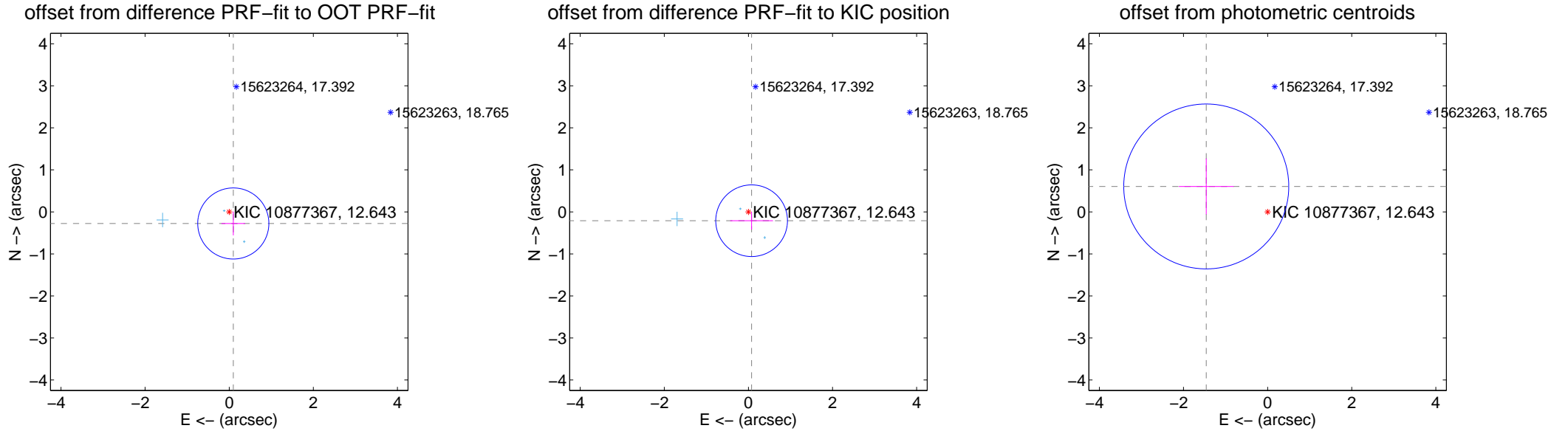
DV Centroid Data

Supplemental centroid analysis for 010877367-02. Kepler magnitude: 12.64. Transit SNR 8.52

There are 3 quarters with good PRF difference image offsets

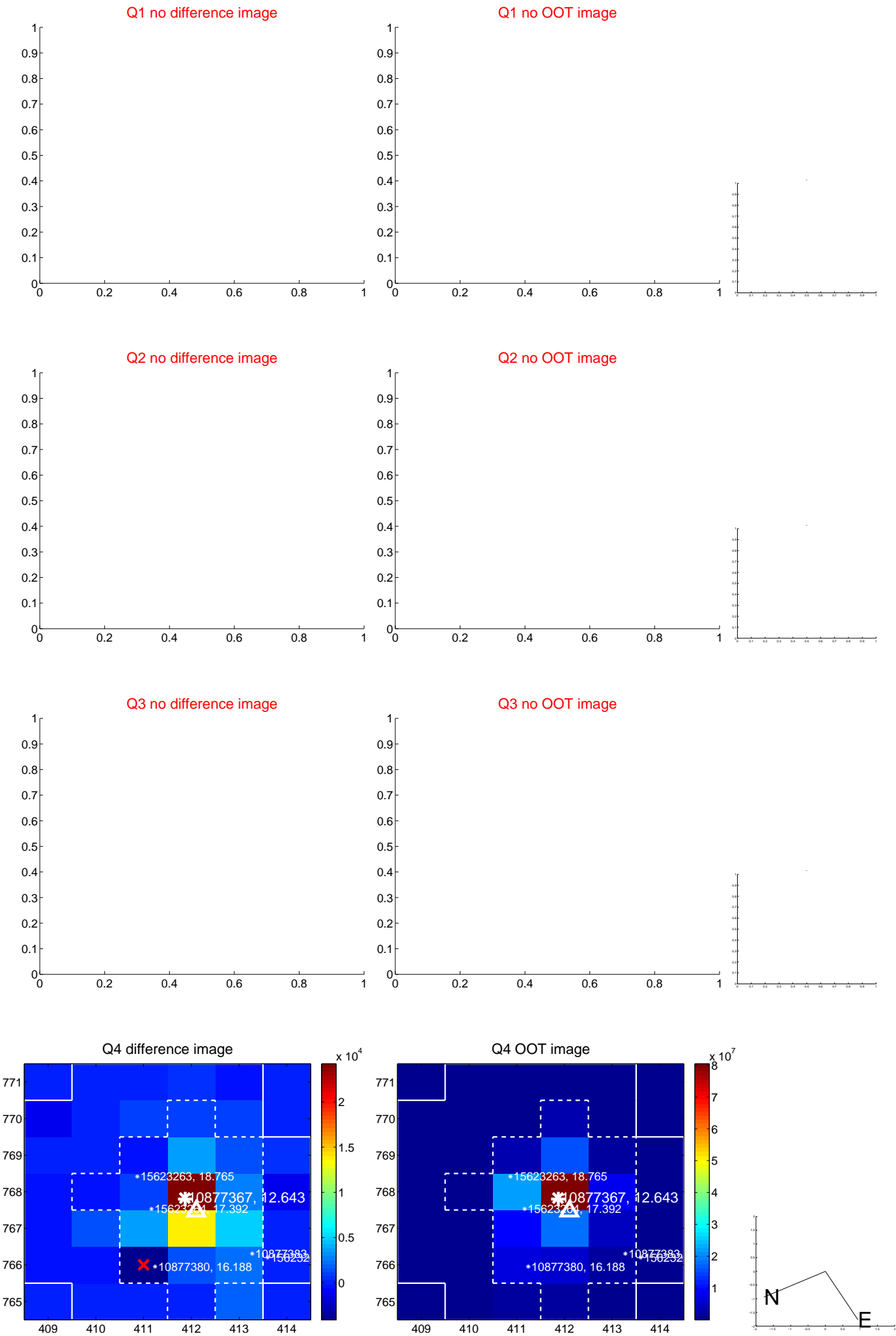
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.293 ± 0.282	1.04	-0.097 ± 0.281	-0.276 ± 0.282
PRF-fit source offset from KIC position	0.223 ± 0.284	0.79	-0.076 ± 0.508	-0.210 ± 0.211
photometric centroid source offset	1.58 ± 0.65	2.42	1.46 ± 0.65	0.61 ± 0.67

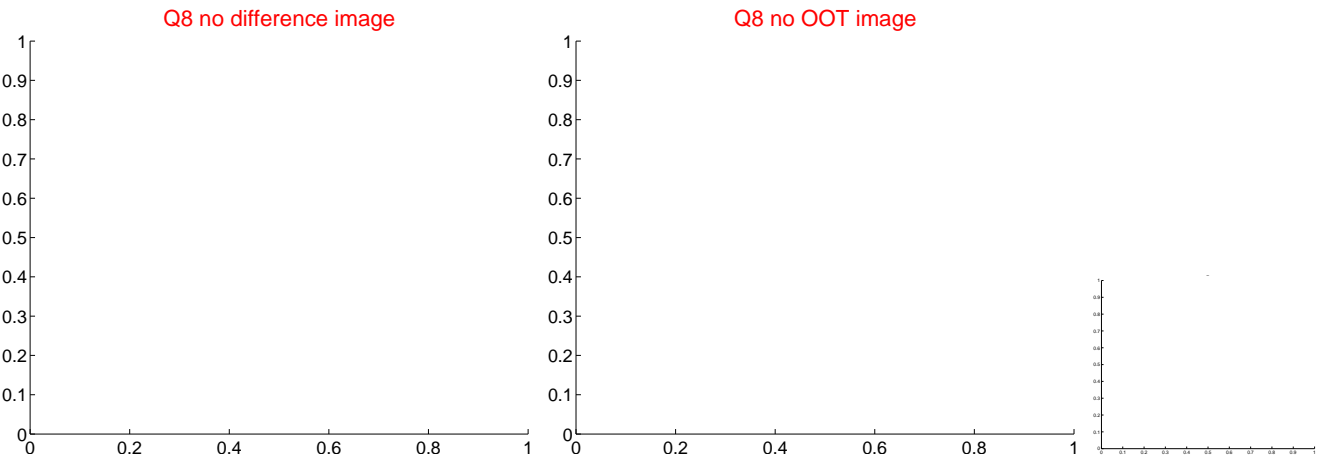
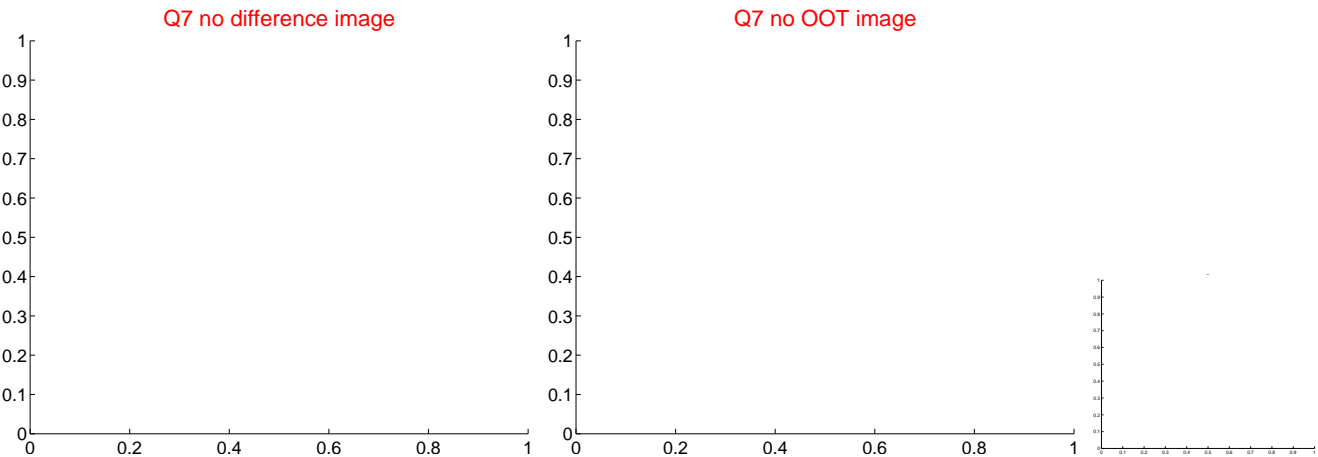
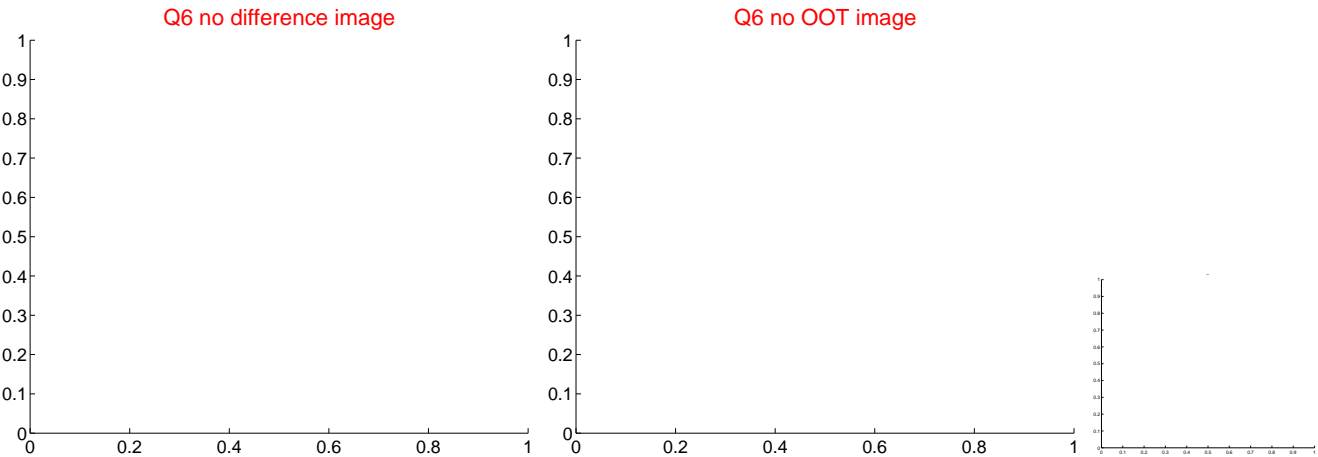
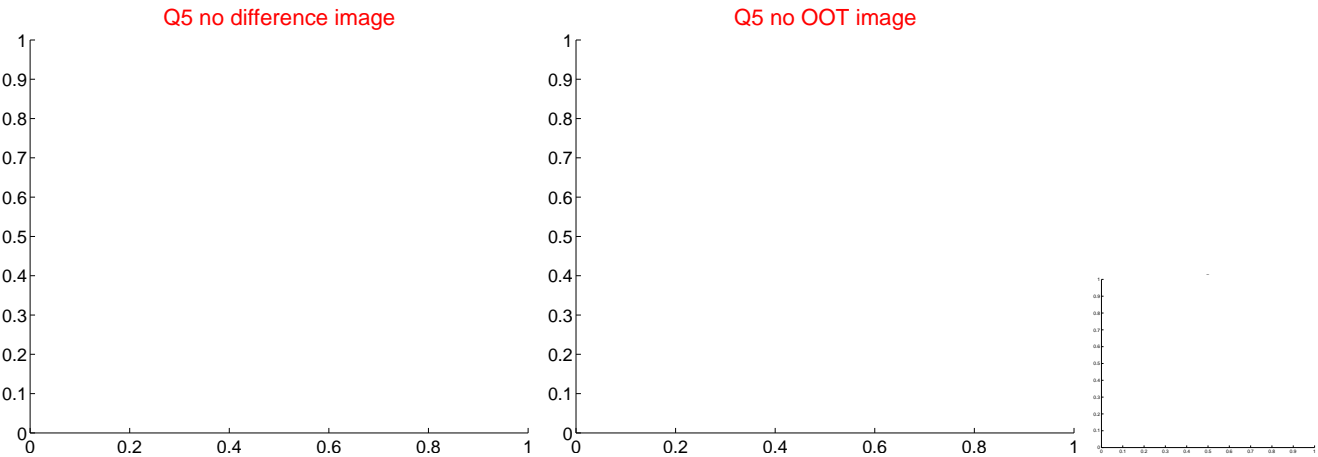


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

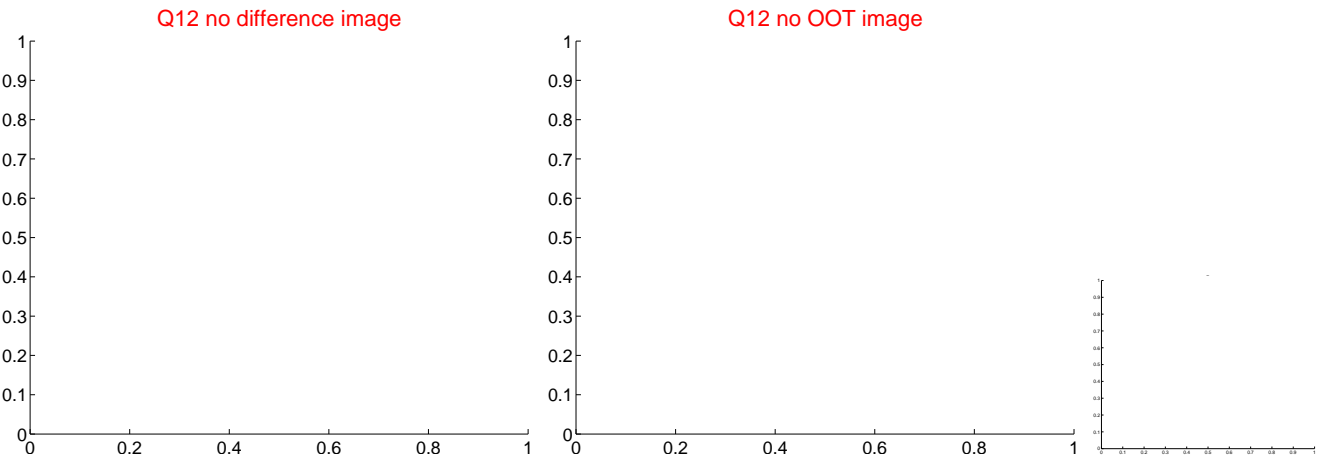
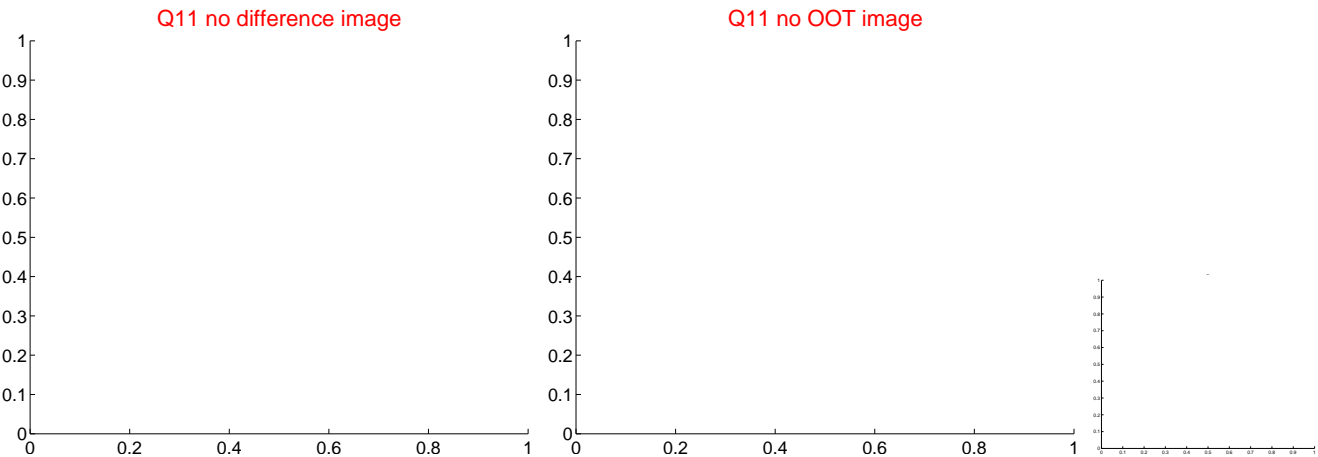
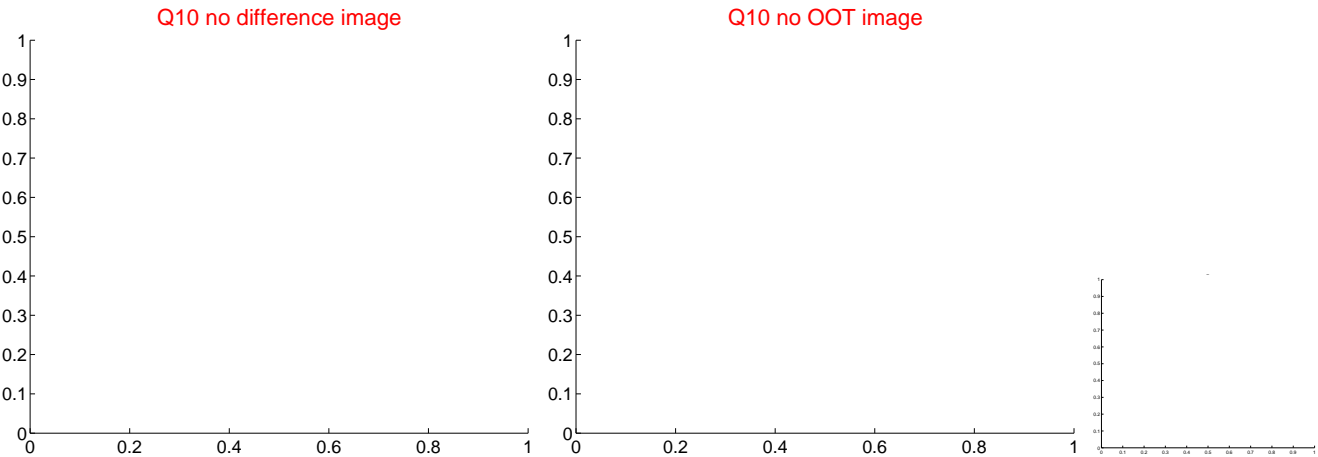
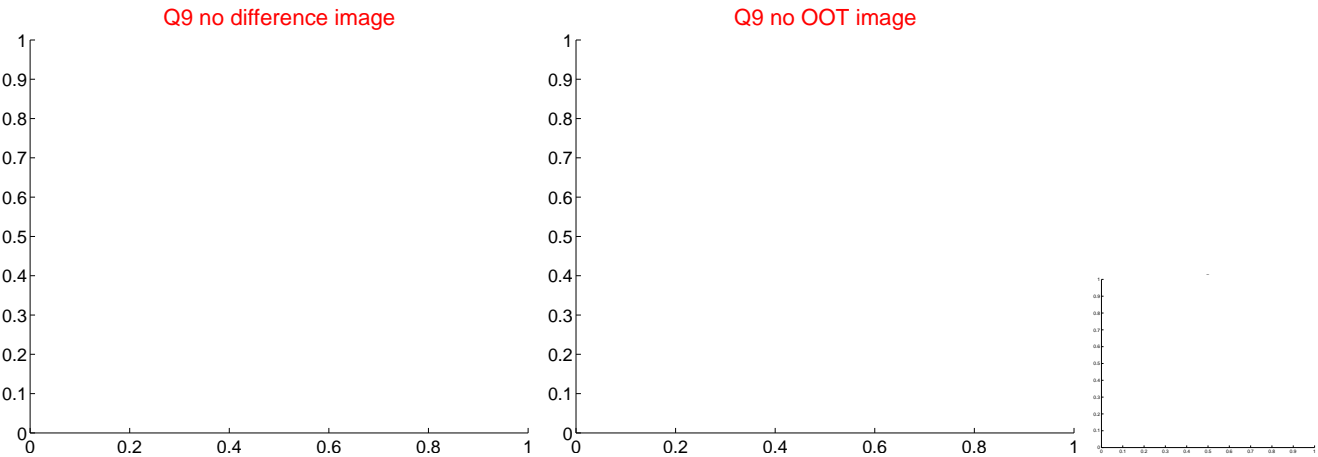
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



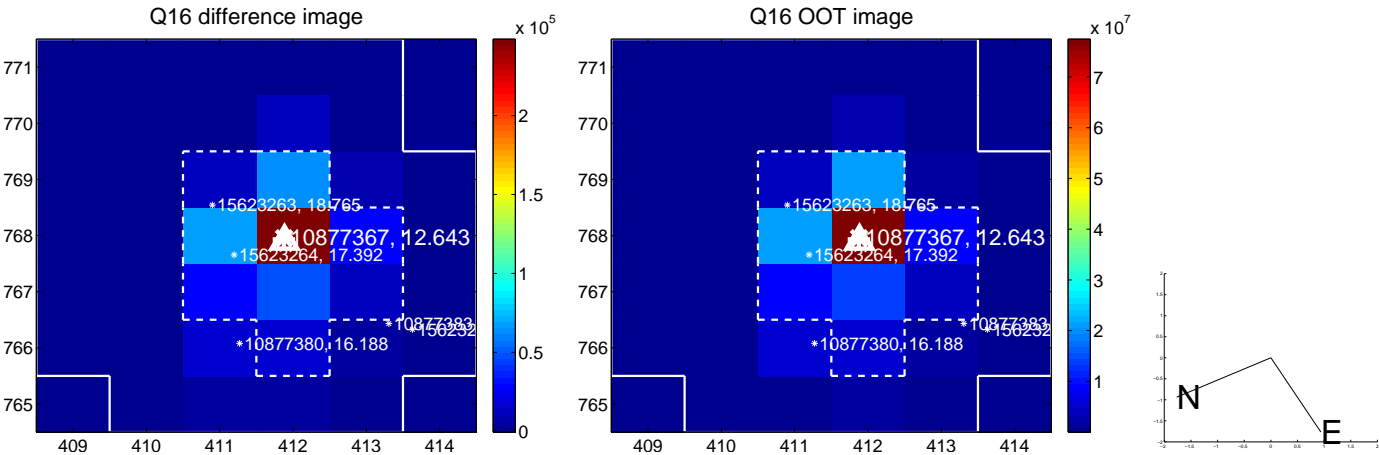
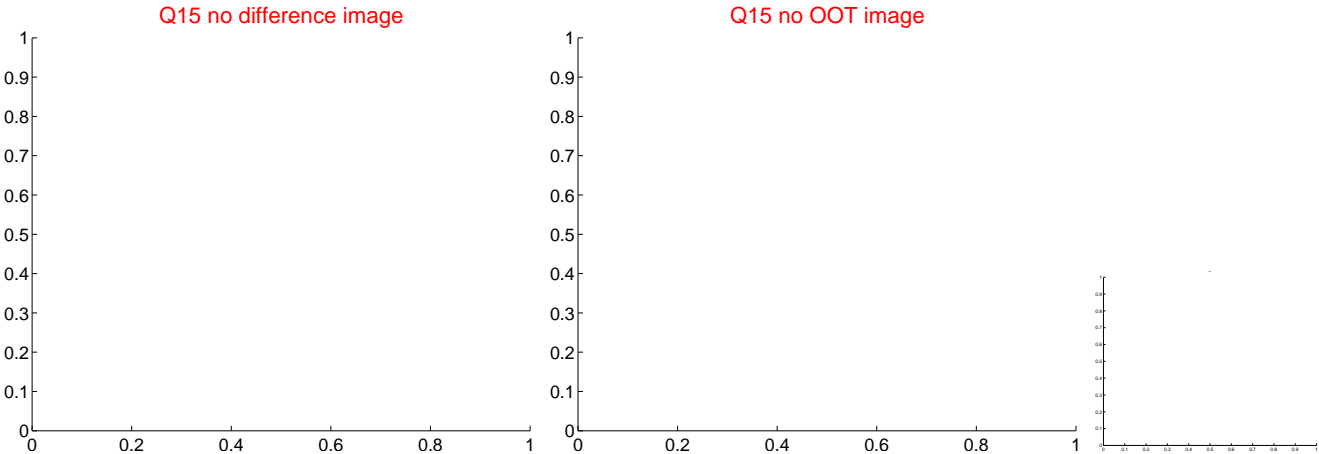
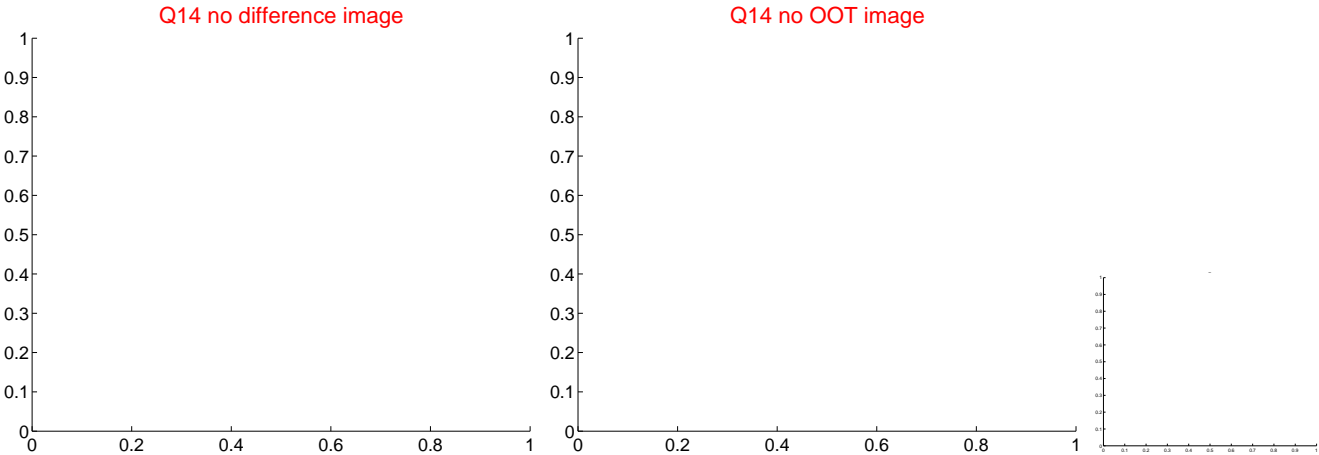
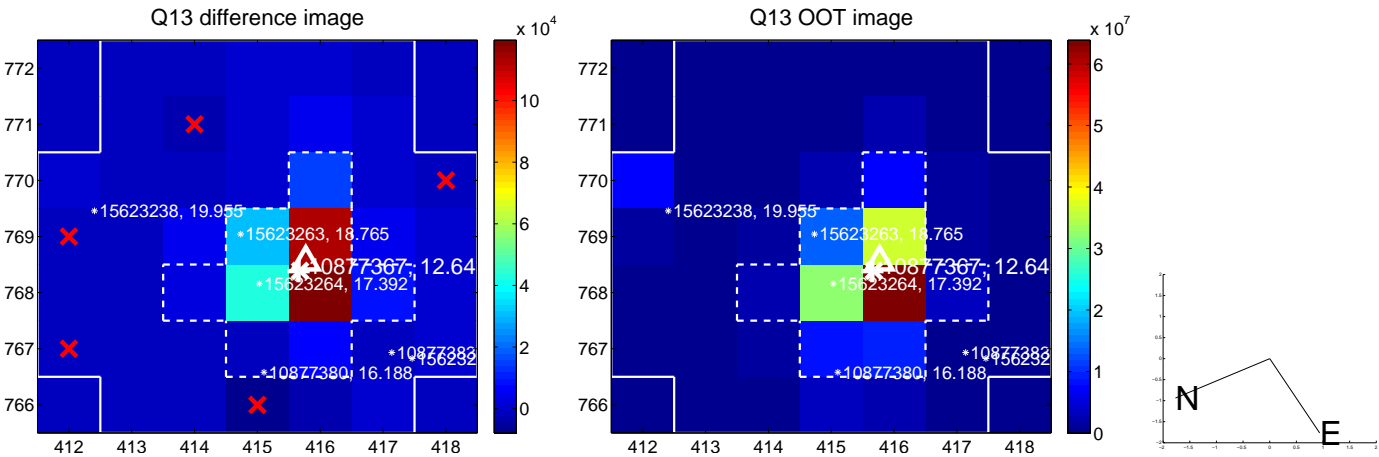
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



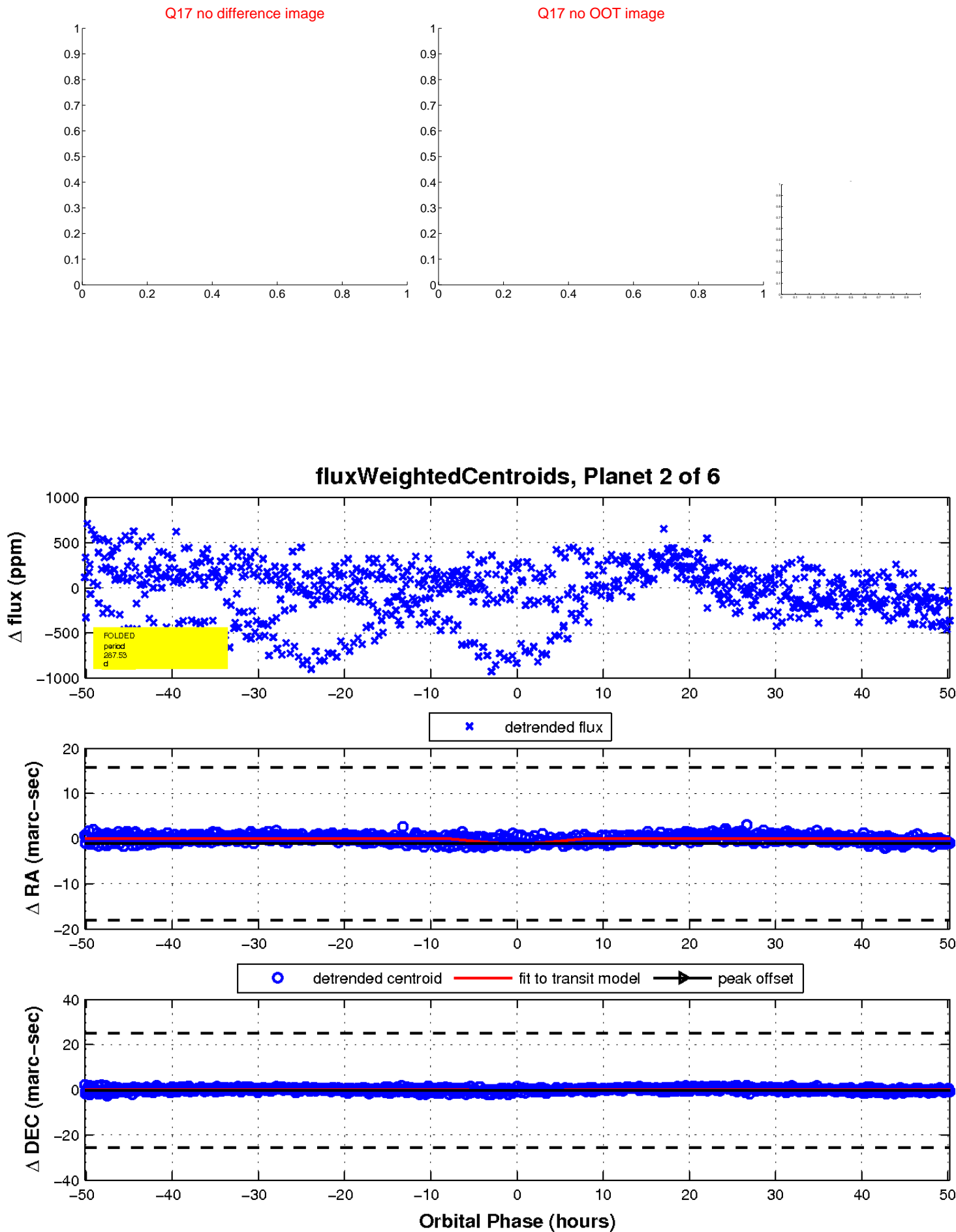
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

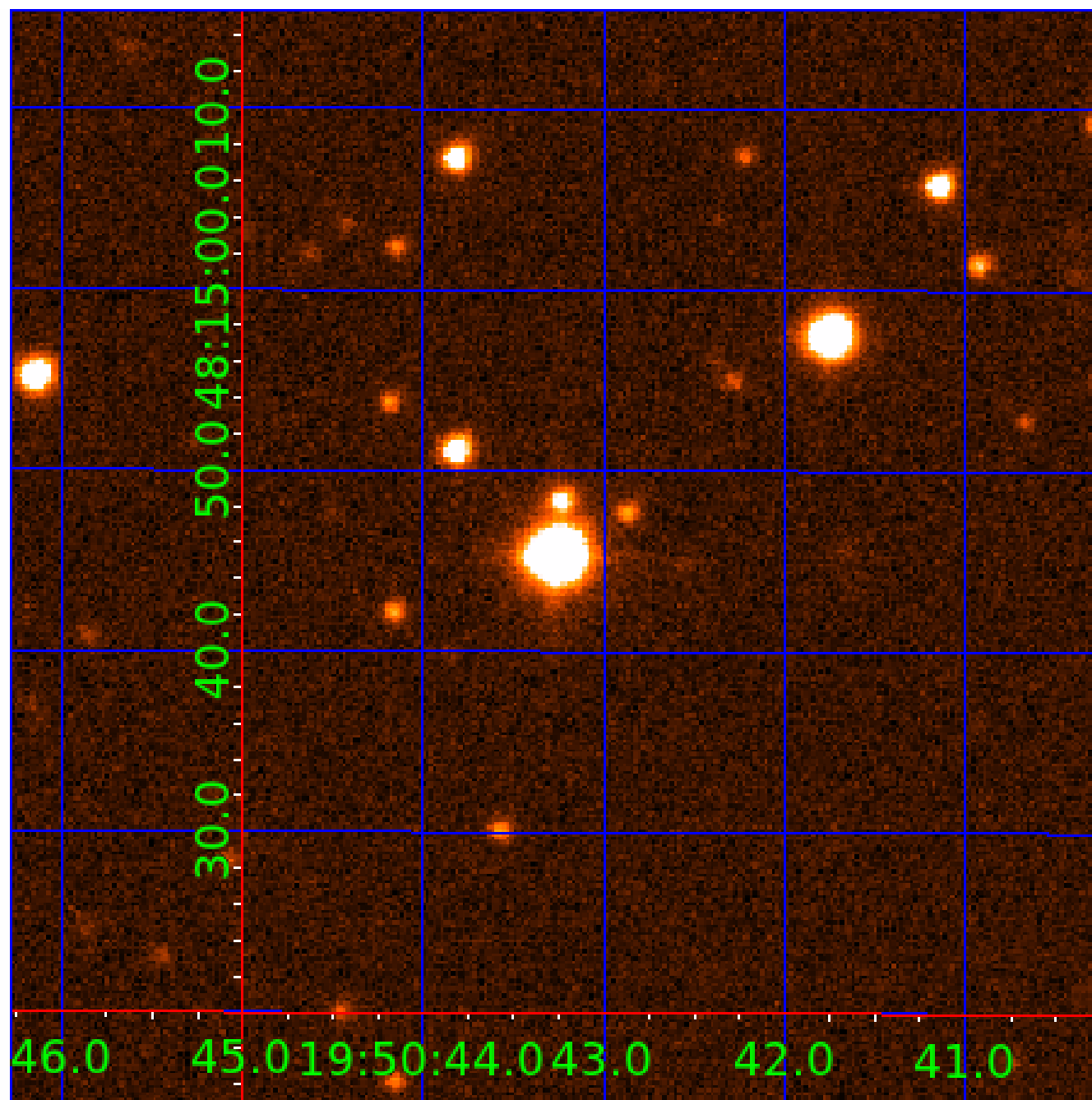


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
010877367-02	OBS	No	287.526754	394.324622	942.8	16.762	14.1	8.5	1.77	6585	10.22	6.48
010877367-03	OBS	No	289.662726	416.362864	232.2	3.404	10.1	3.3	1.77	6585	3.04	6.42
010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

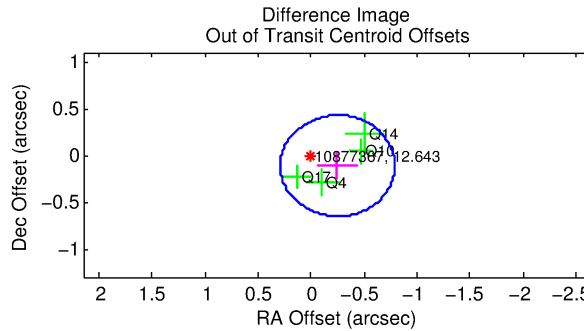
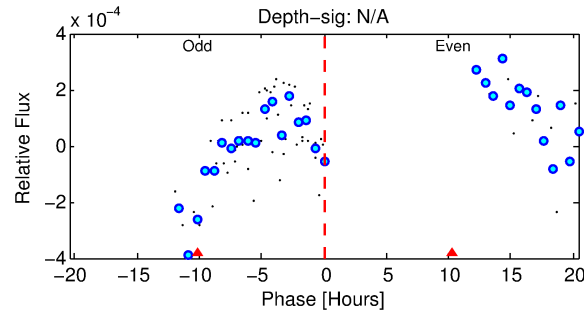
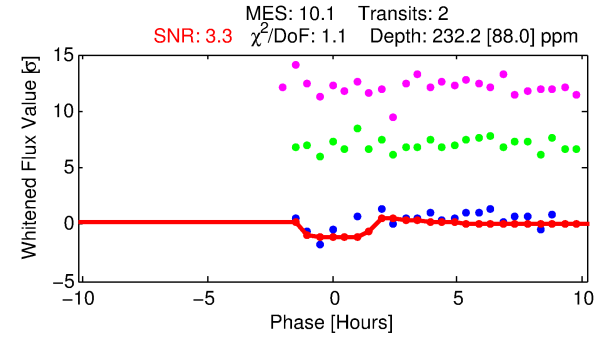
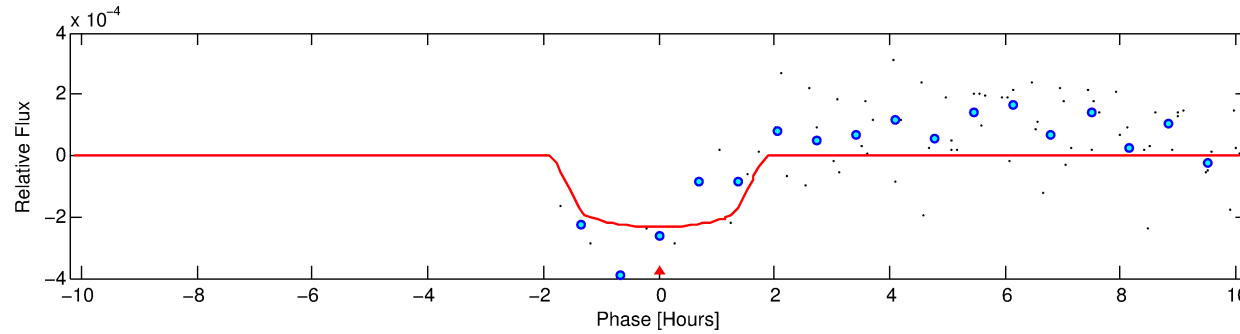
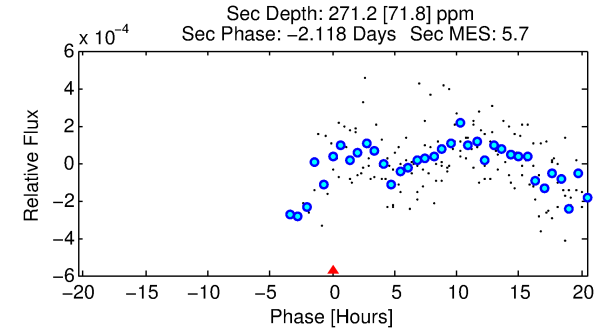
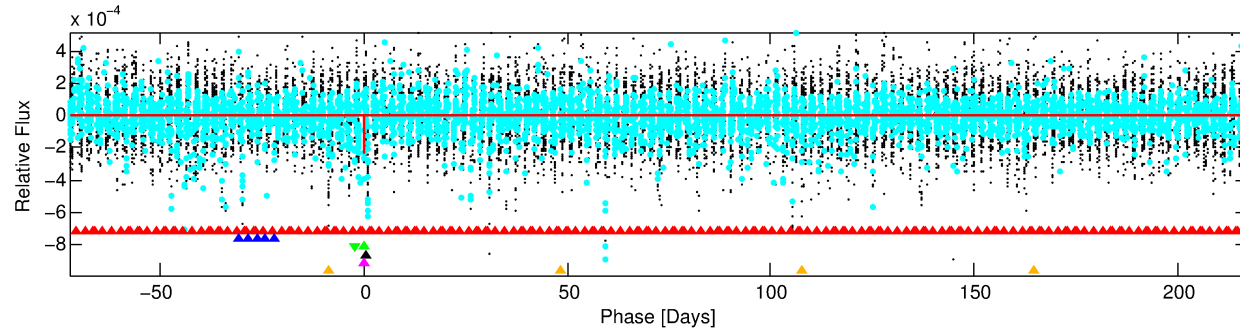
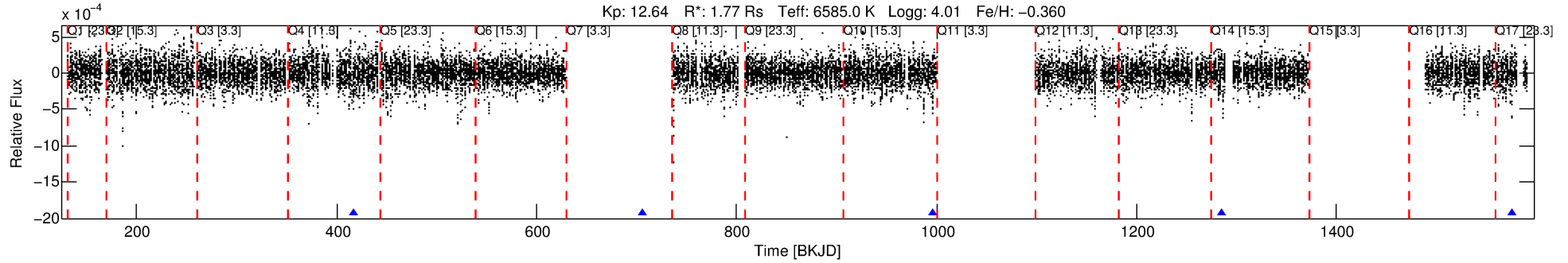
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-03

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 3 of 6 Period: 289.663 d



DV Fit Results:

Period = 289.66273 [0.01727] d
Epoch = 416.3629 [0.0167] BKJD
Rp/R* = 0.0157 [0.1164]
a/R* = 365.95 [15576.71]
b = 0.85 [14.67]
Seff = 6.42 [2.90]
Teq = 406 [46] K
Rp = 3.04 [22.47] Re
a = 0.9056 [0.2465] AU
Ag = 13271.75 [196379.21] [0.07] σ
Teffp = 6736 [24907] K [0.25] σ

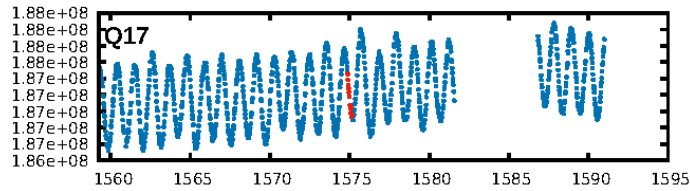
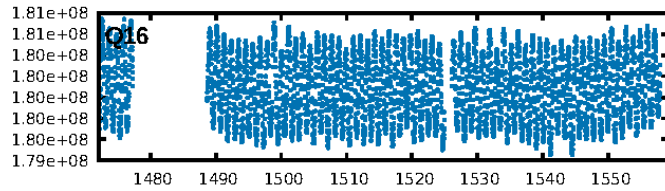
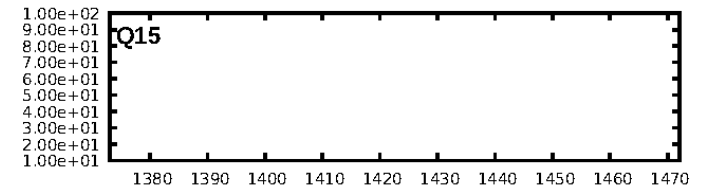
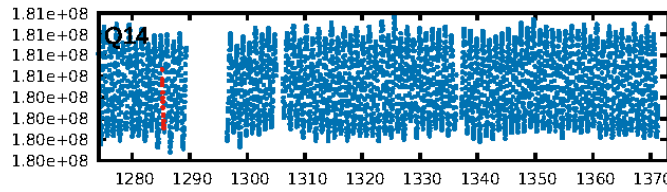
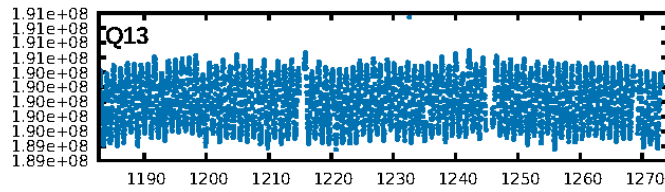
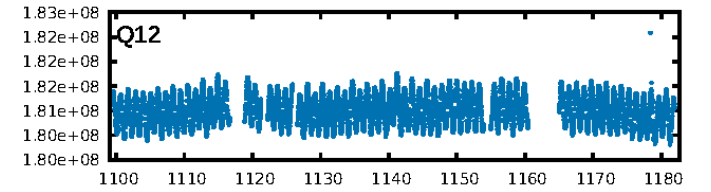
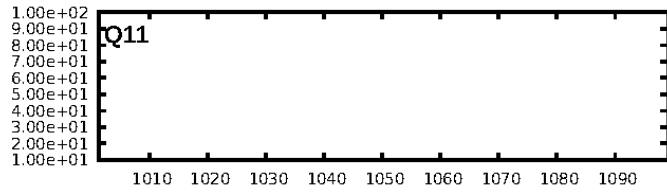
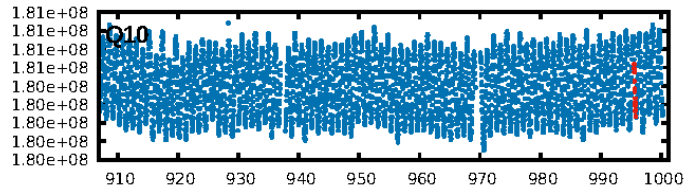
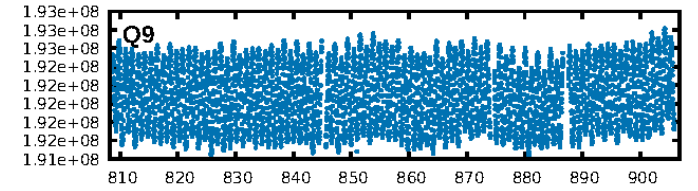
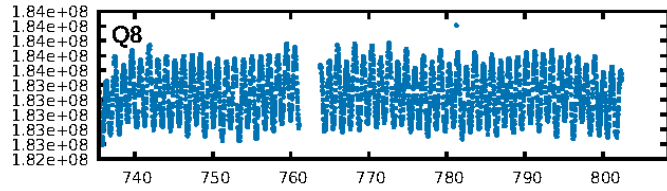
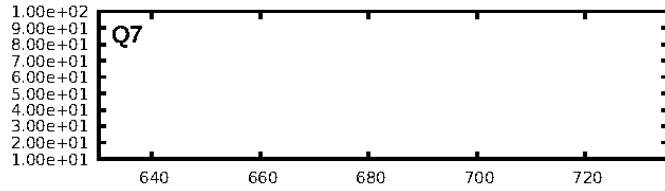
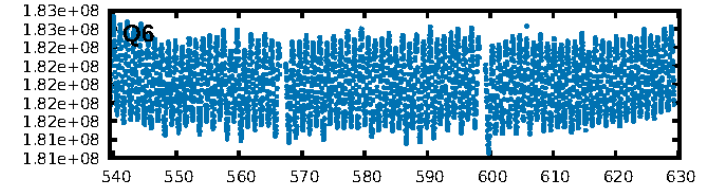
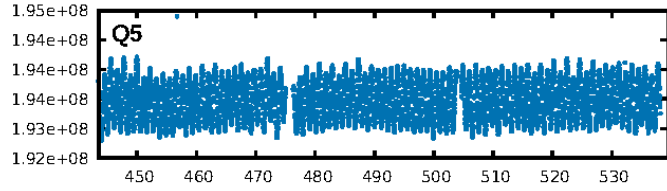
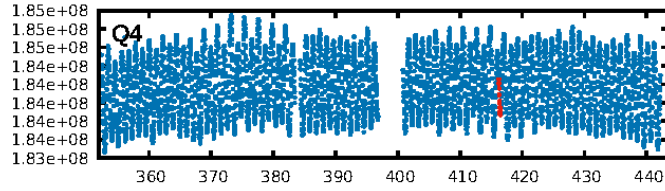
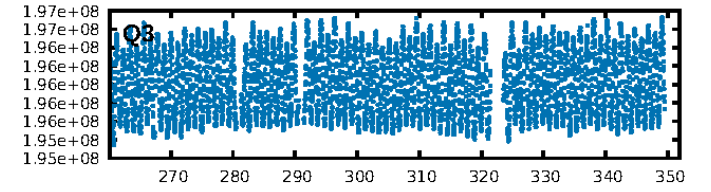
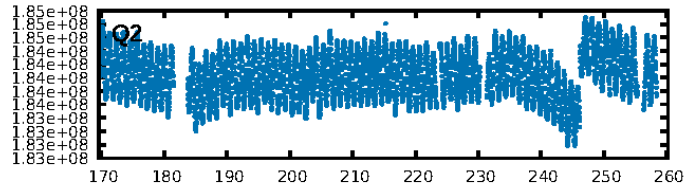
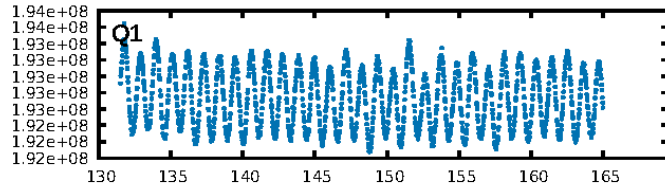
DV Diagnostic Results:

ShortPeriod-sig: 99.7% [3.00 σ]
LongPeriod-sig: 7.4% [0.09 σ]
ModelChiSquare2-sig: 13.2%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: 2.22e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.4334
Centroid-sig: 67.6%
Centroid-so: 1.203 arcsec [0.58 σ]
OotOffset-rm: 0.273 arcsec [1.51 σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-rm: 0.192 arcsec [1.11 σ]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.00 [0/4]

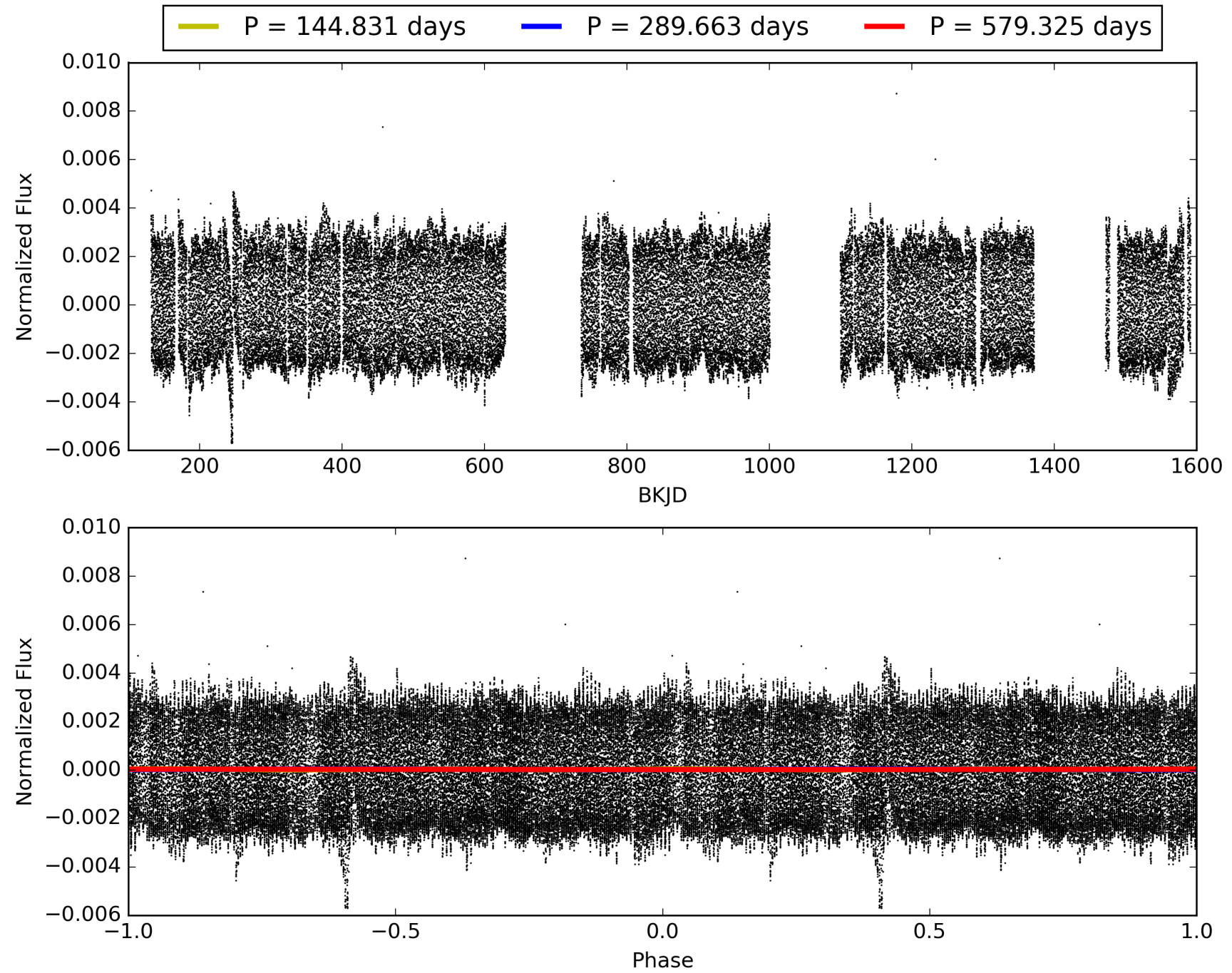
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:34:48 Z

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

TCE 010877367-03, PDC Light Curves

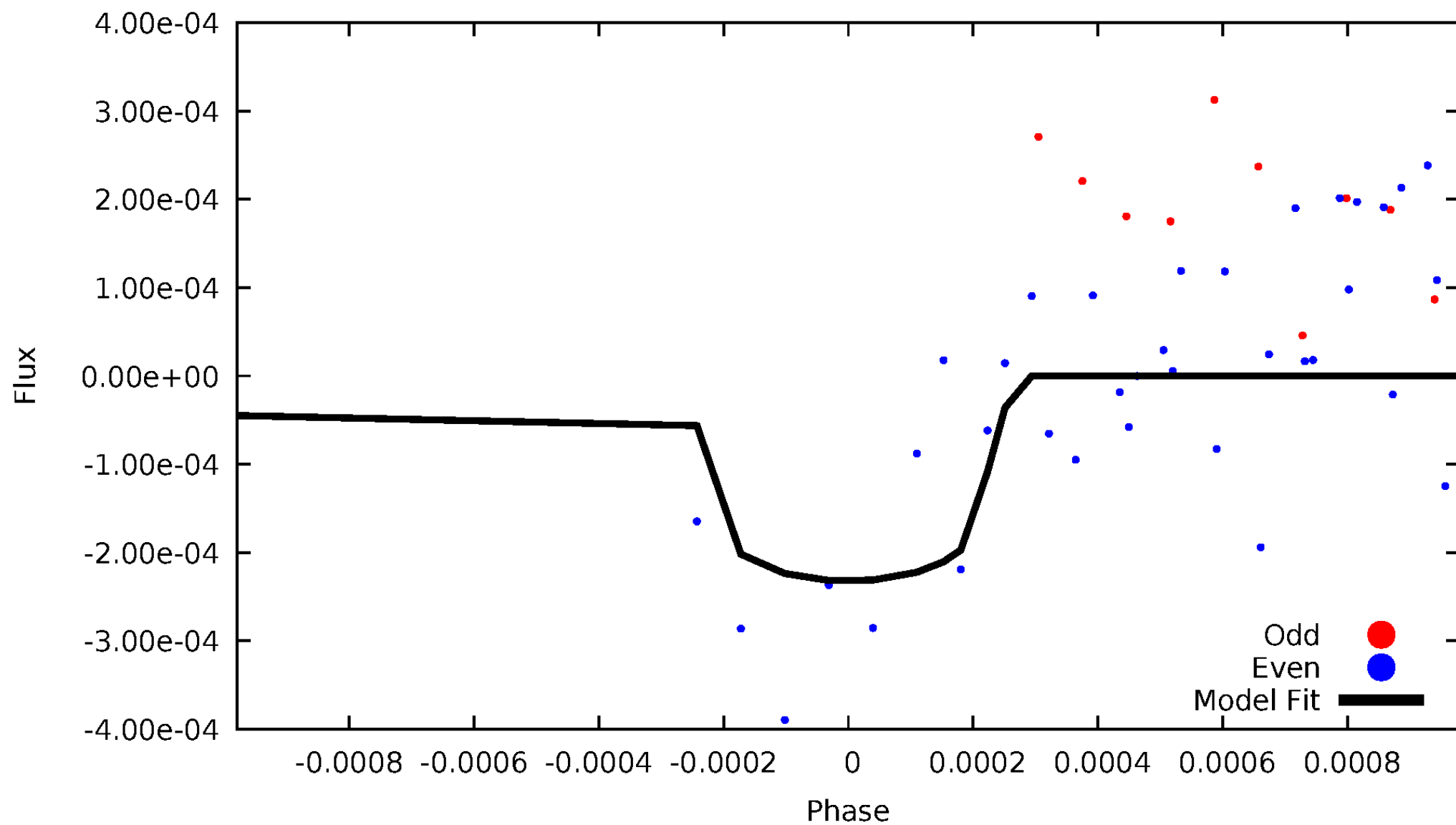


TCE 010877367-03



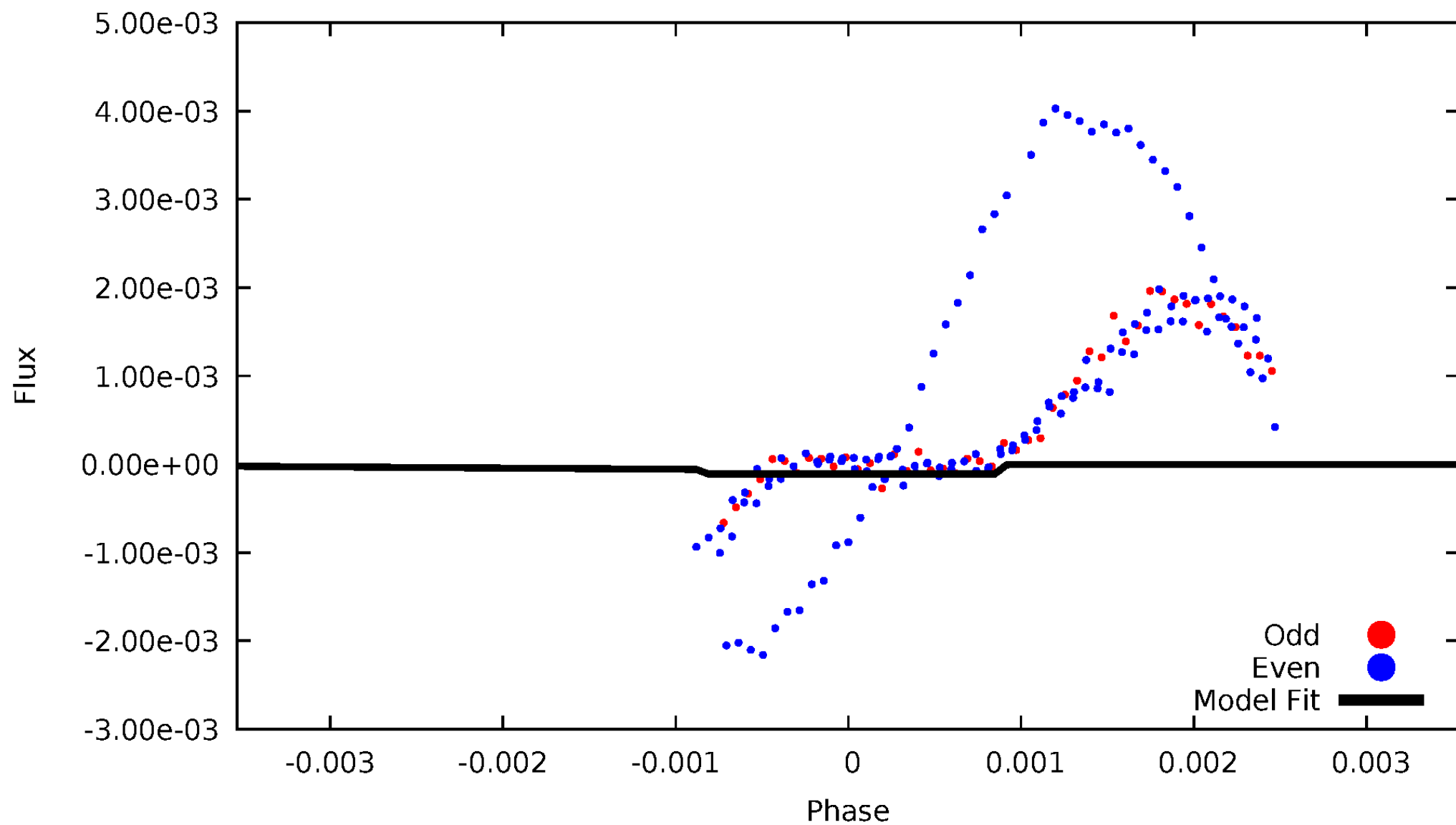
DV Odd/Even

TCE 010877367-03



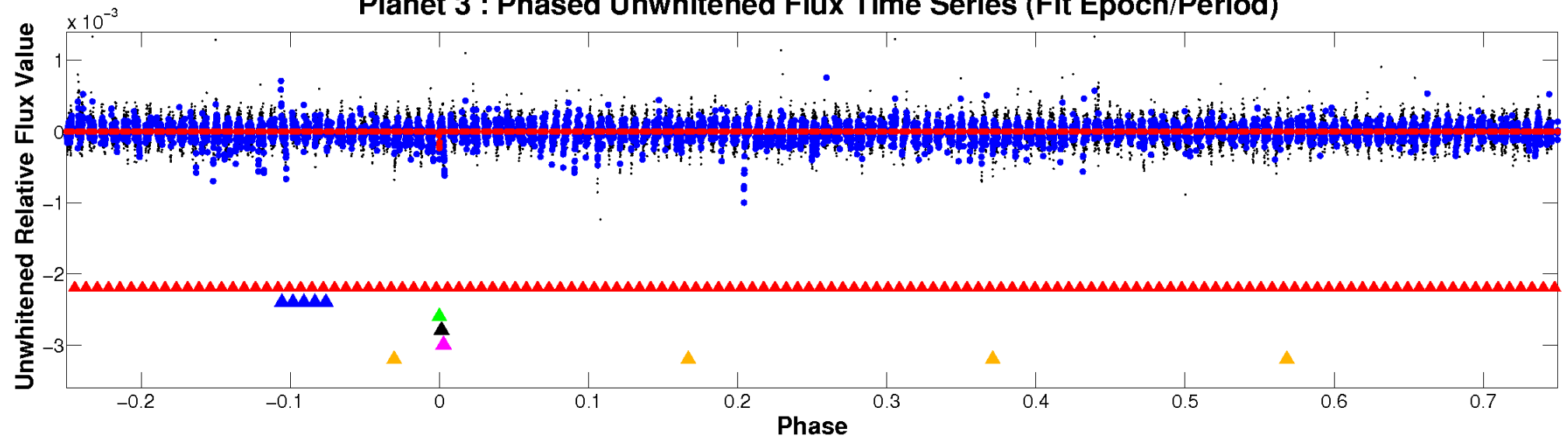
ALT Odd/Even

TCE 010877367-03

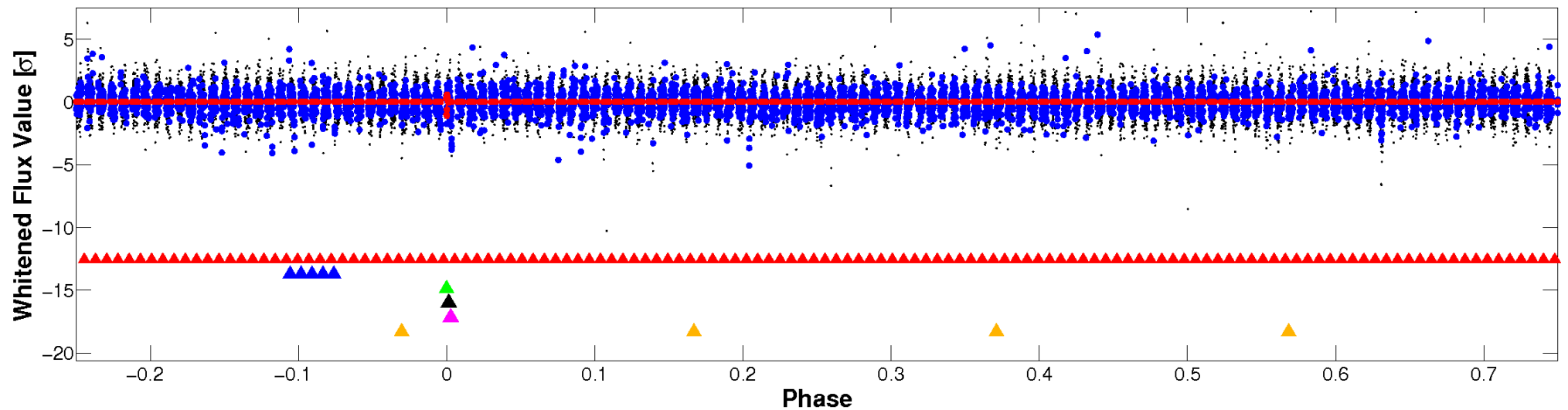


Non-Whitened Vs. Whitened Light Curve

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

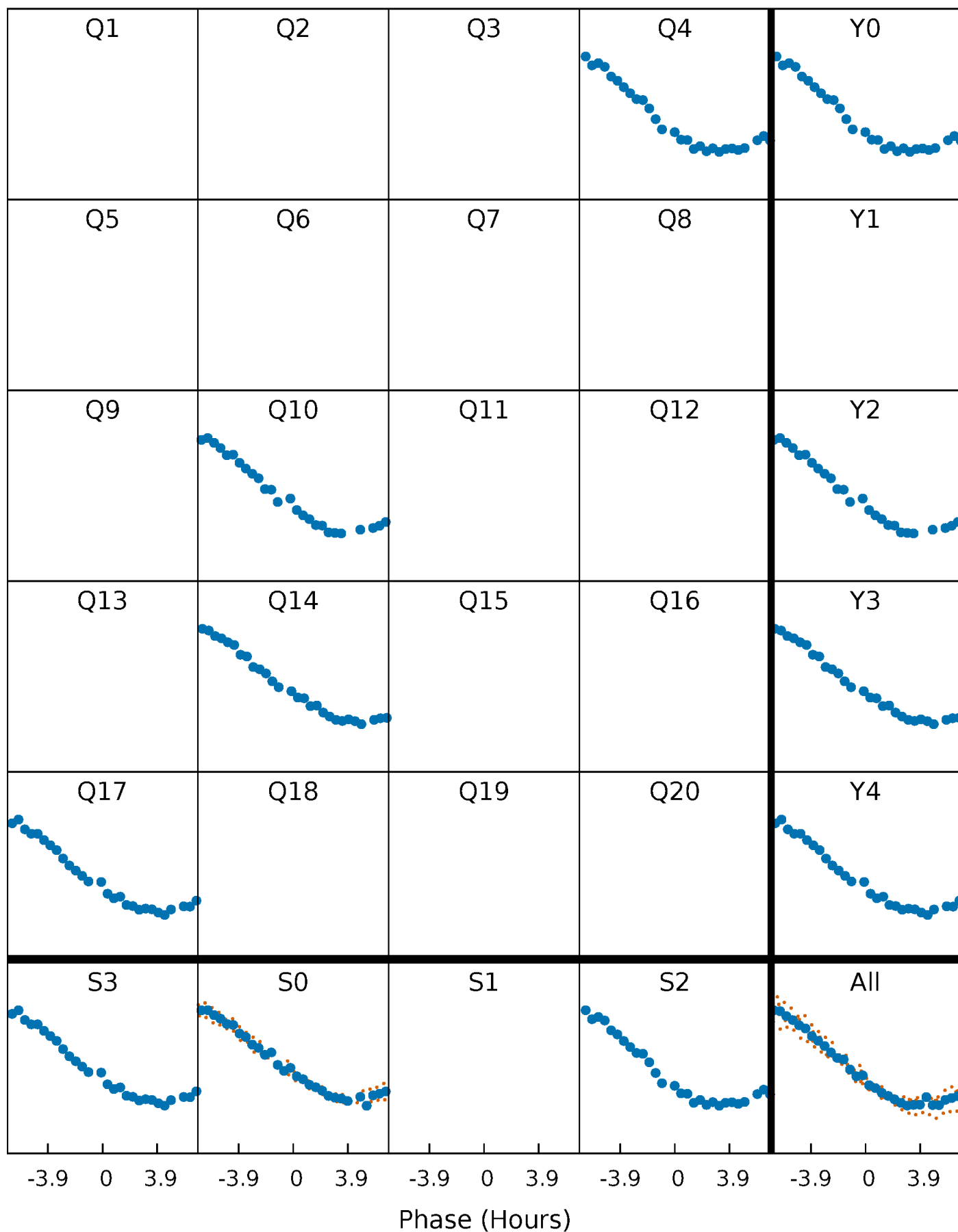


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



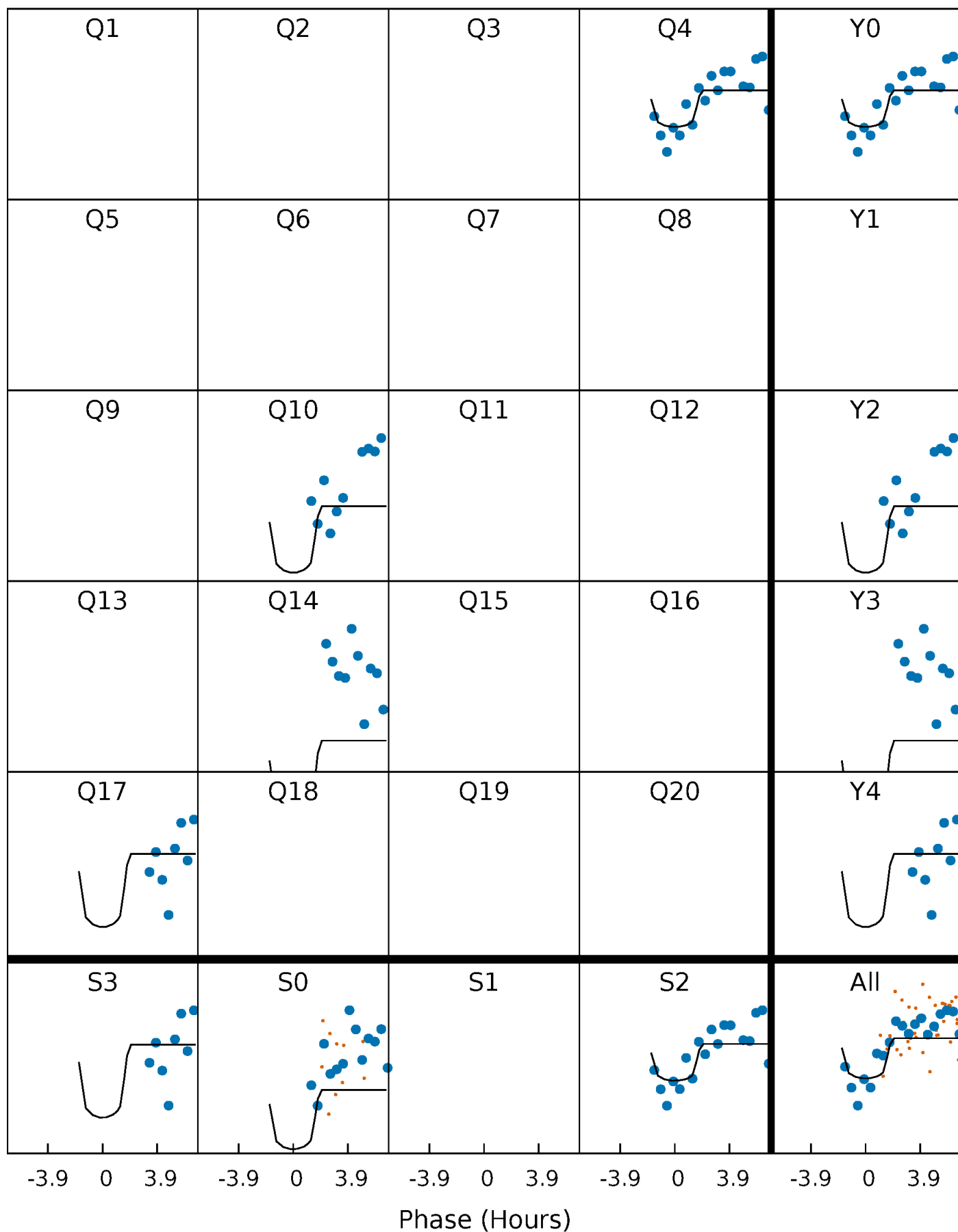
PDC Quarter-Phased Transit Curves

TCE 010877367-03 P=289.662726 Days $T_0=416.362865$ (BKJD)



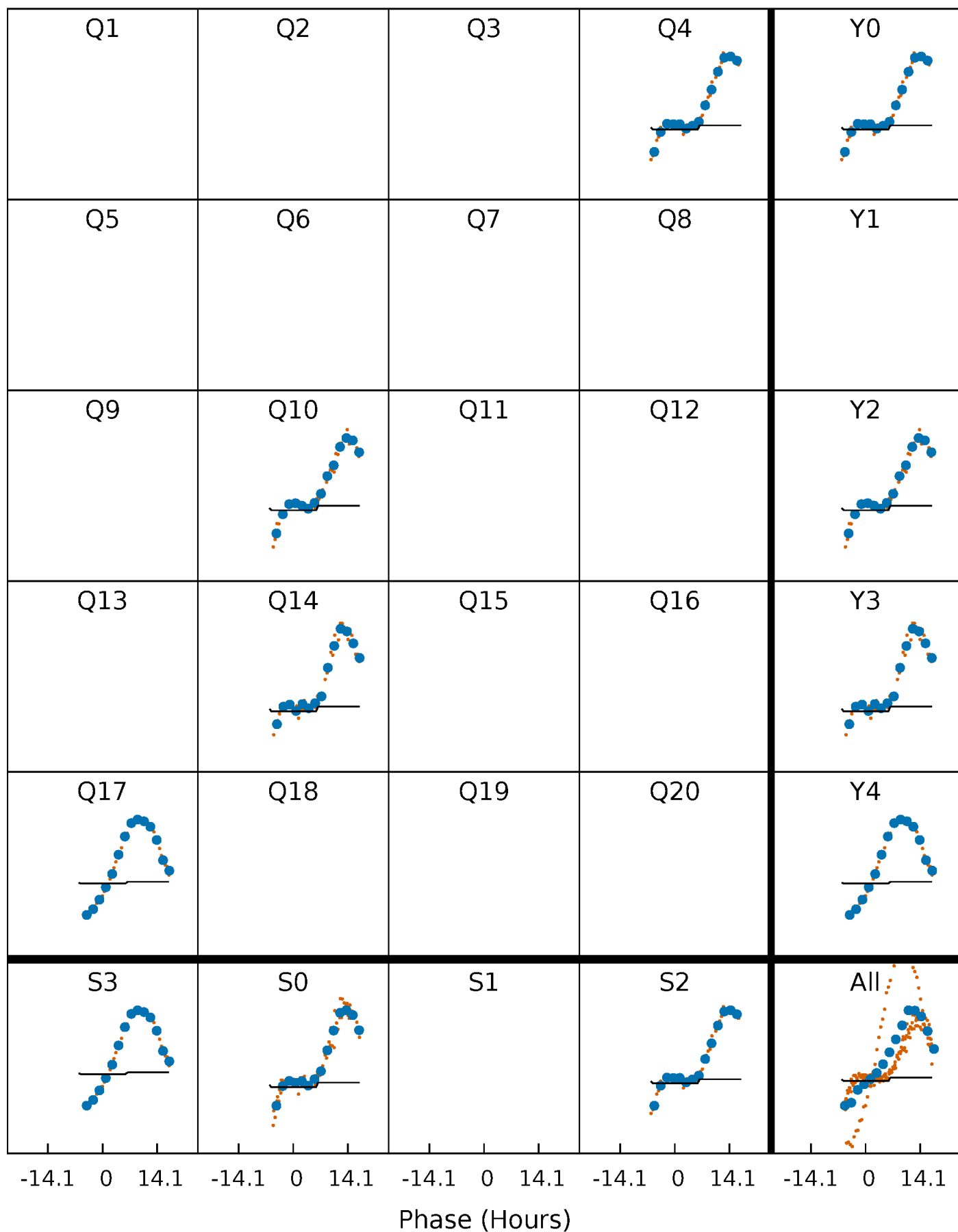
DV Quarter-Phased Transit Curves

TCE 010877367-03 P=289.662726 Days $T_0=416.362865$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

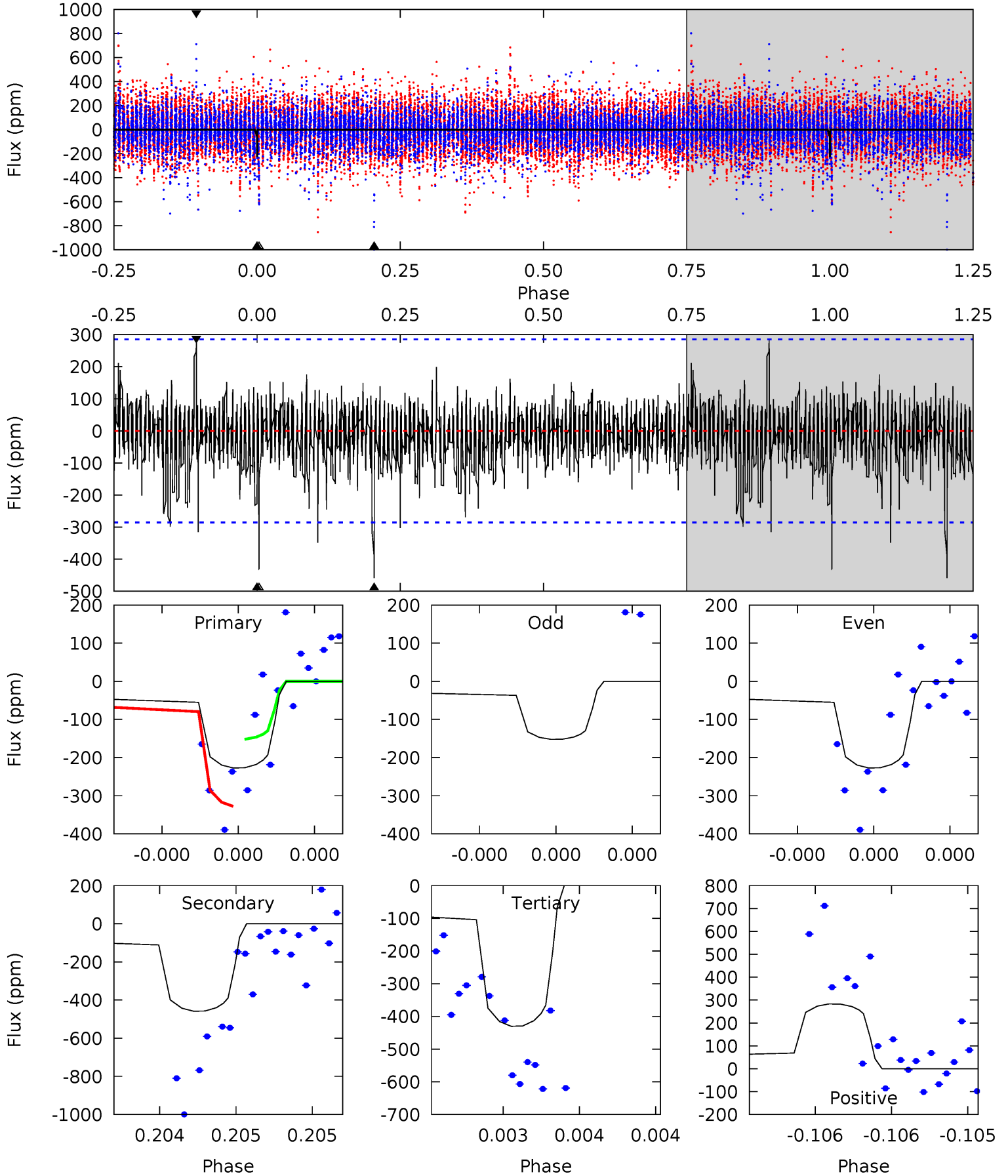
TCE 010877367-03 P=289.700202 Days $T_0=416.547646$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-03, P = 289.662726 Days, E = 126.700139 Days

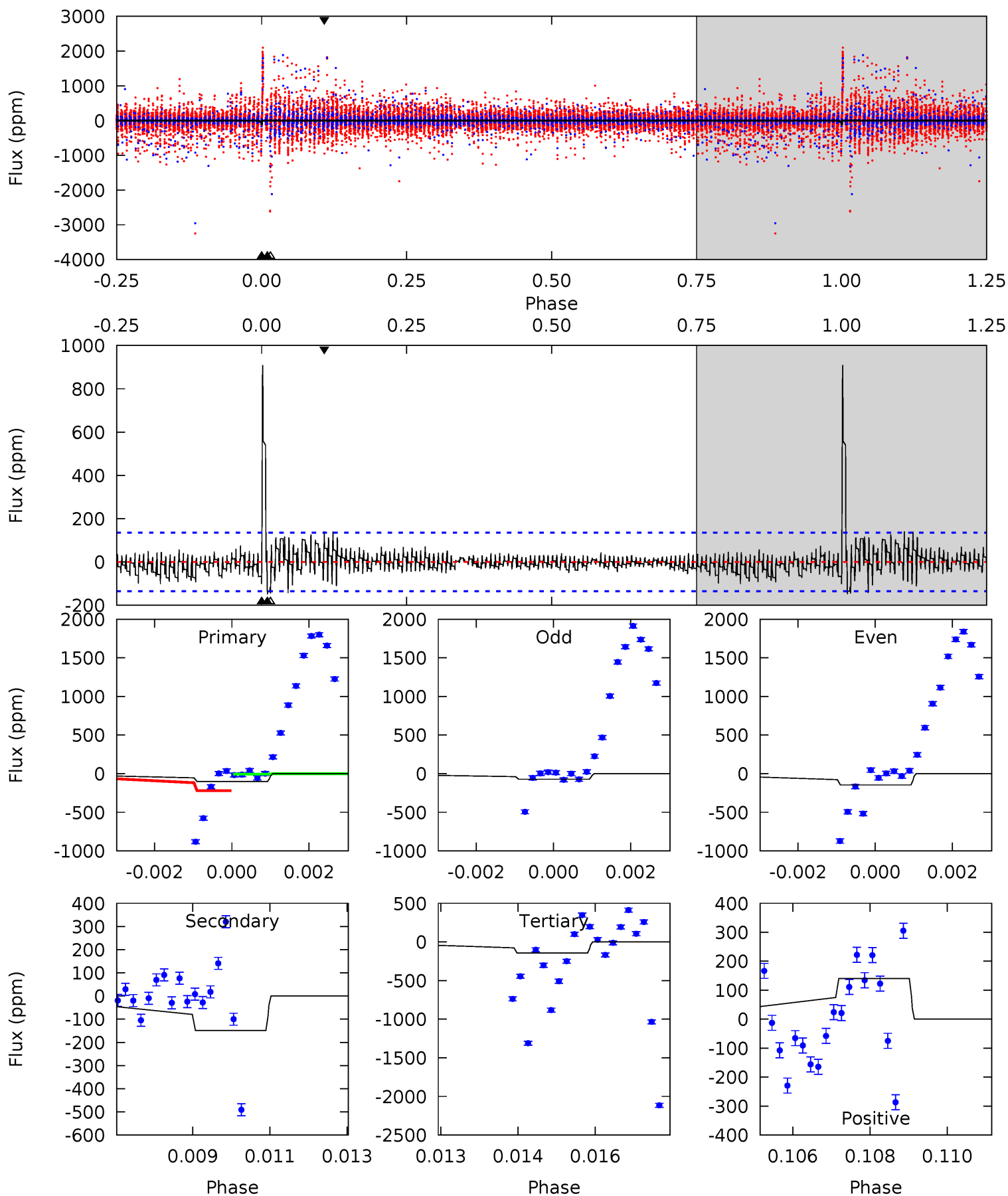
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.44	8.96	8.41	5.53	5.59	3.50	1.10	-3.97	-1.09	0.55	3.43	0.95	1.00	0.38	1.51



Alt Model-Shift Uniqueness Test

010877367-03, P = 289.700202 Days, E = 126.847444 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.01	5.88	5.70	5.56	5.35	3.12	1.81	-1.68	-1.55	0.19	0.32	1.20	1.06	0.86	0



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-458 ± 51	$16.39^{+17.46}_{-11.31}$	559^{+36}_{-45}	3658^{+2075}_{-716}	798^{+7230}_{-623}
Alt.	-149 ± 25	$14.70^{+17.99}_{-10.36}$	558^{+38}_{-44}	3176^{+1641}_{-613}	319^{+3228}_{-258}

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

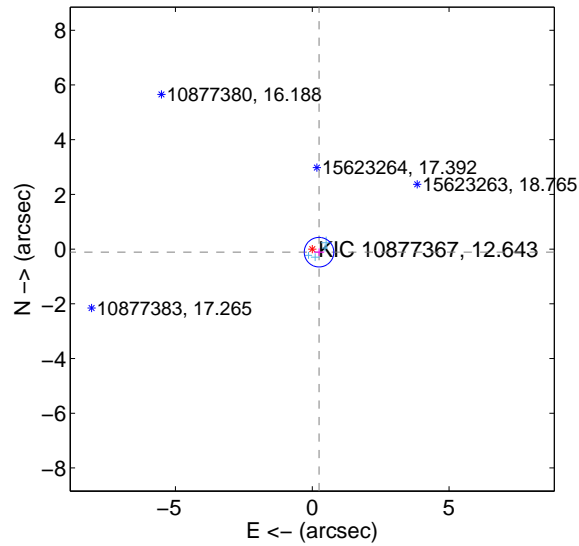
Supplemental centroid analysis for 010877367-03. Kepler magnitude: 12.64. Transit SNR 3.27

There are 4 quarters with good PRF difference image offsets

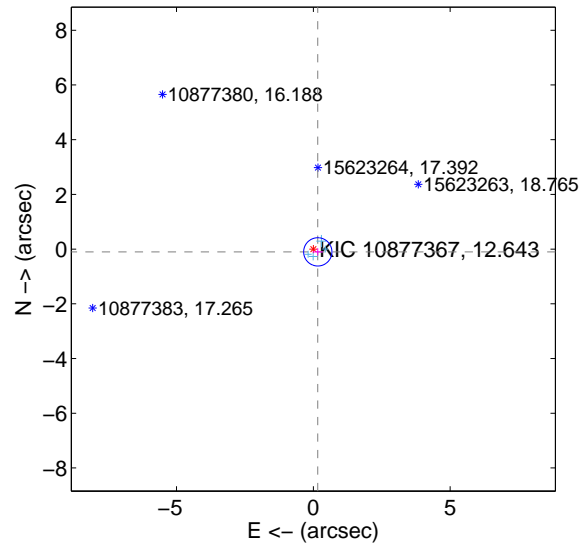
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.273 ± 0.180	1.51	-0.248 ± 0.188	-0.112 ± 0.135
PRF-fit source offset from KIC position	0.192 ± 0.172	1.11	-0.163 ± 0.186	-0.101 ± 0.131
photometric centroid source offset	1.20 ± 2.06	0.58	-0.73 ± 2.06	0.96 ± 2.06

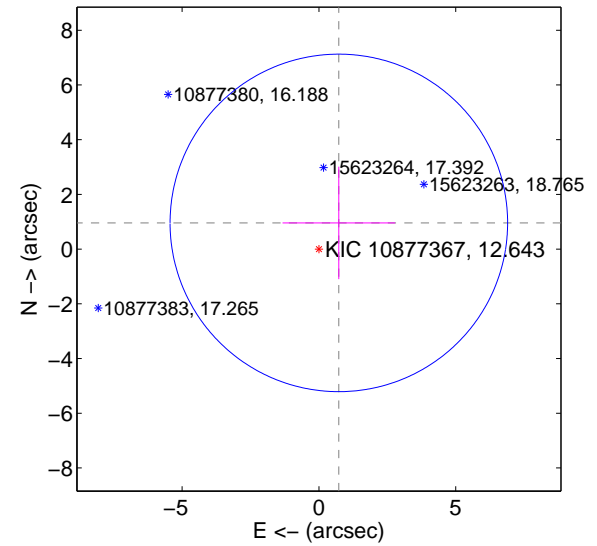
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

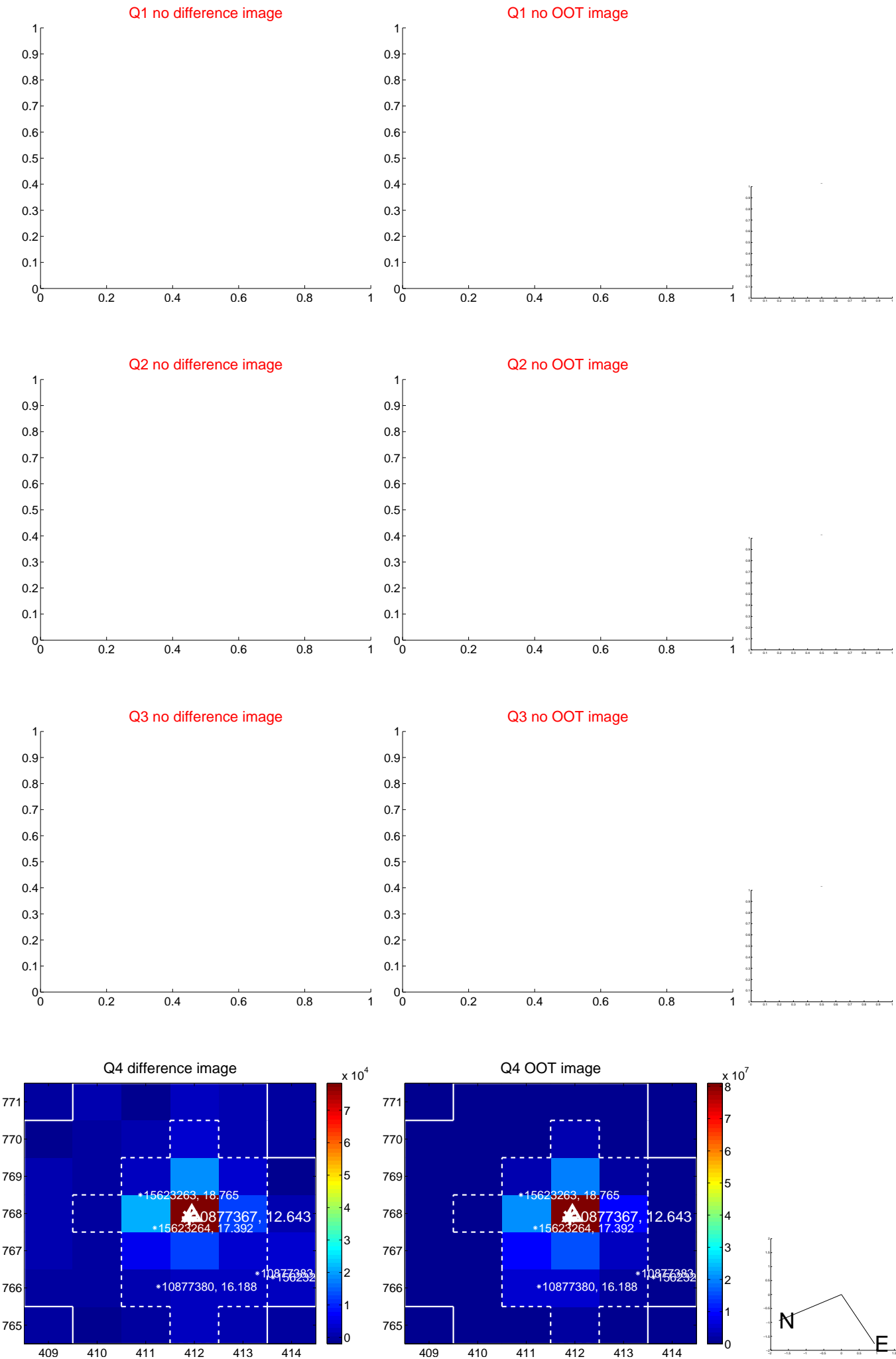


offset from photometric centroids

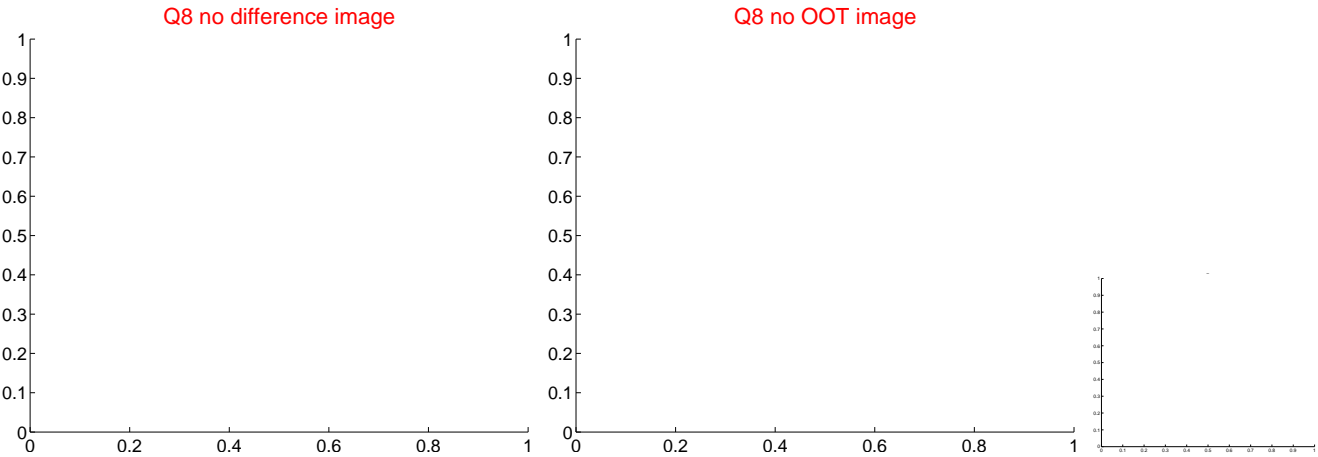
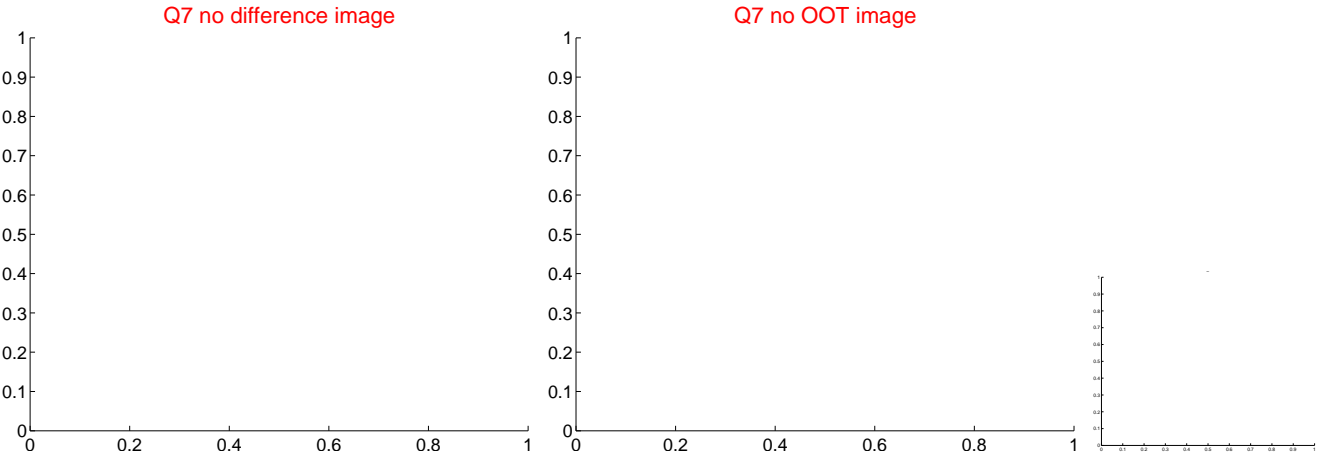
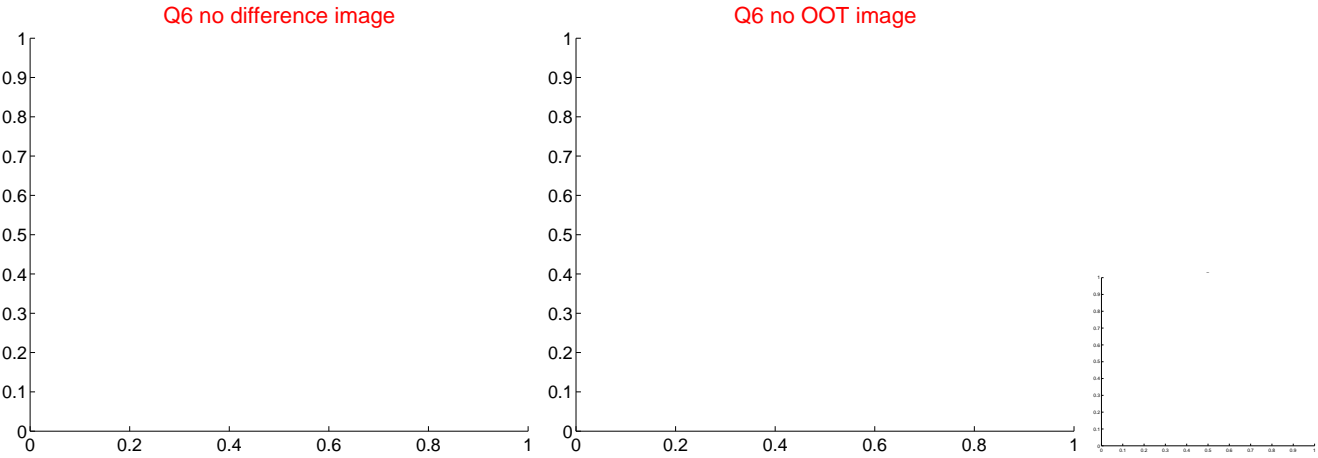
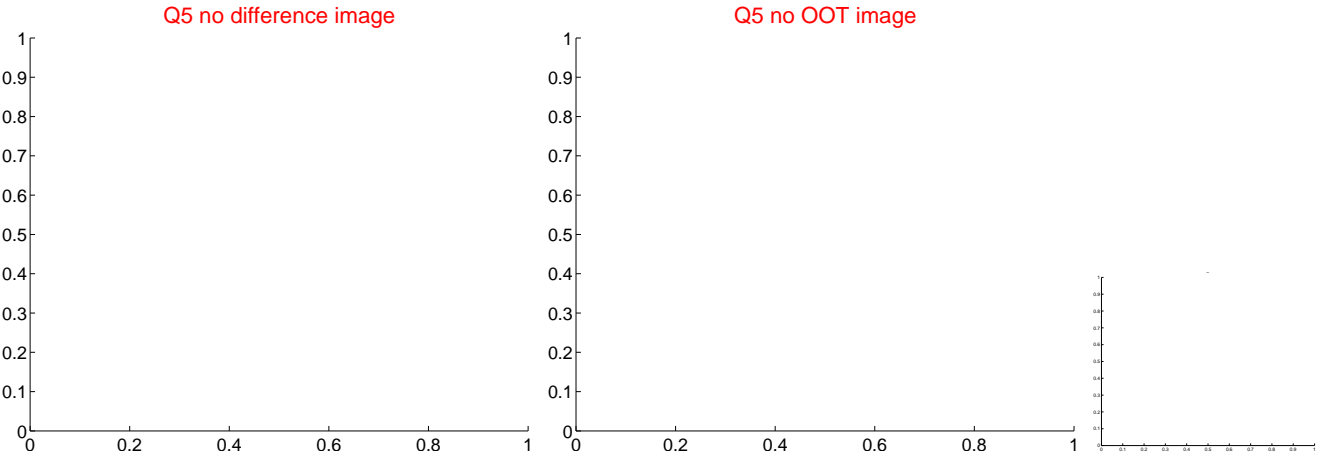


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

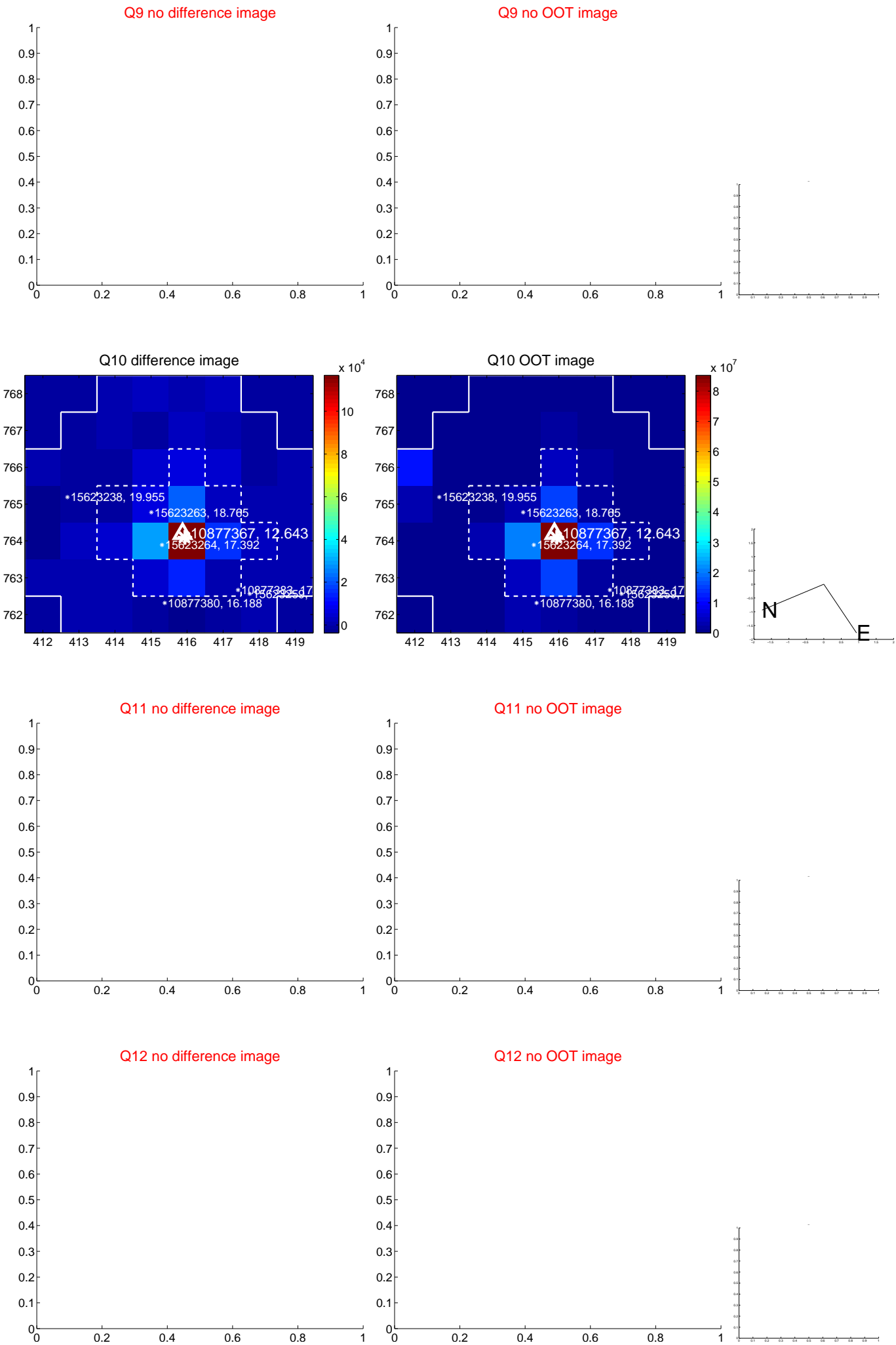
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



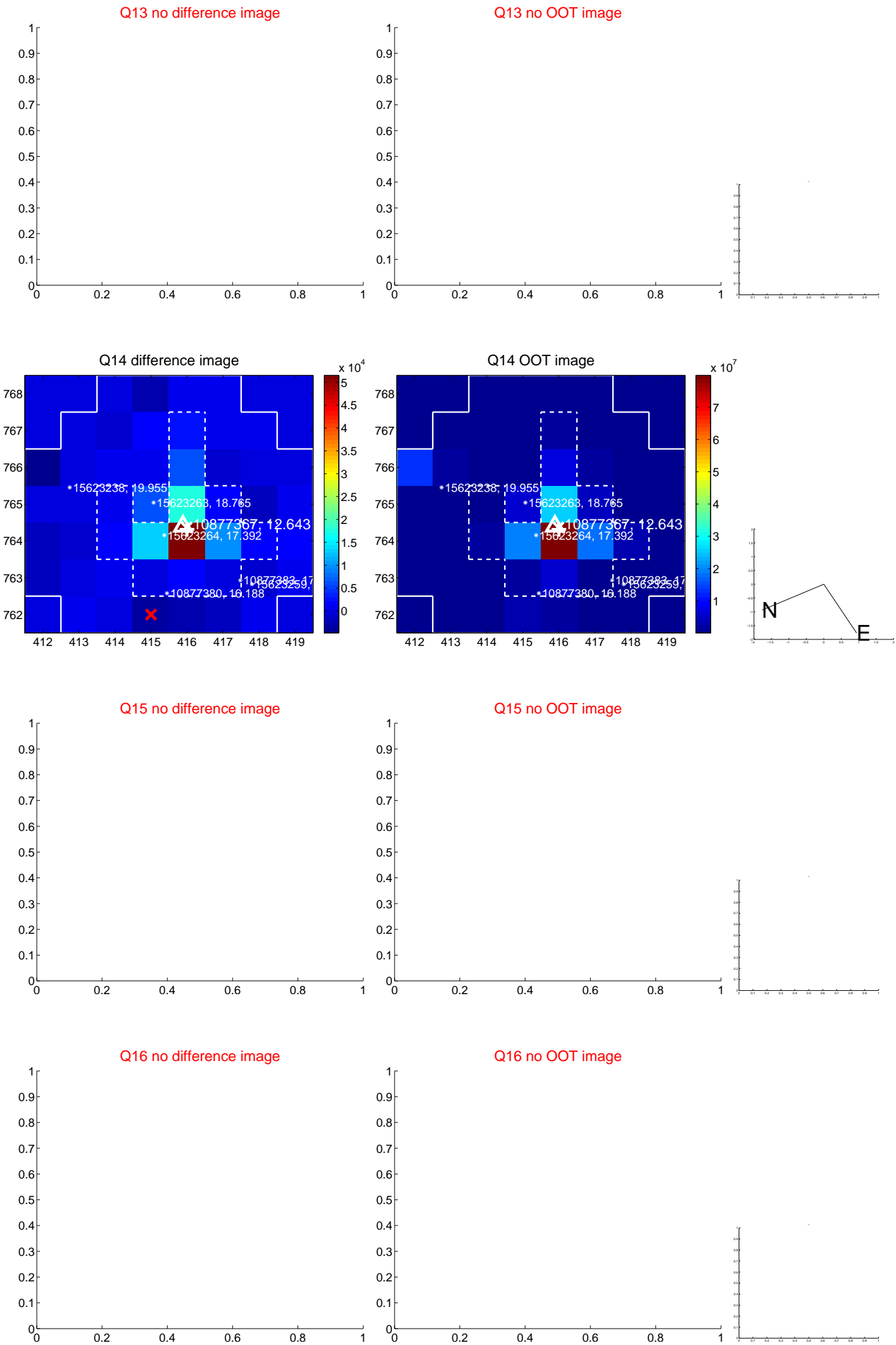
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



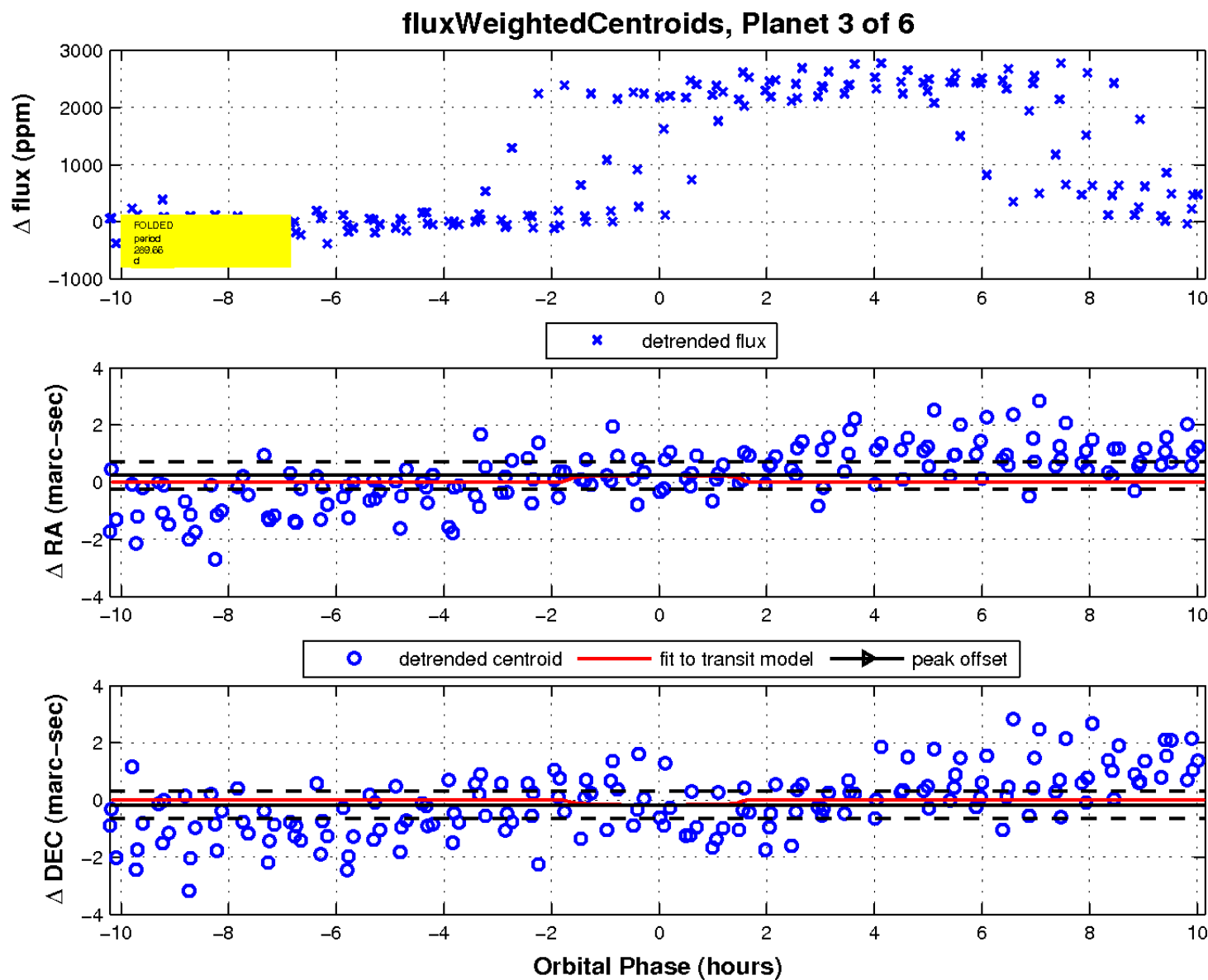
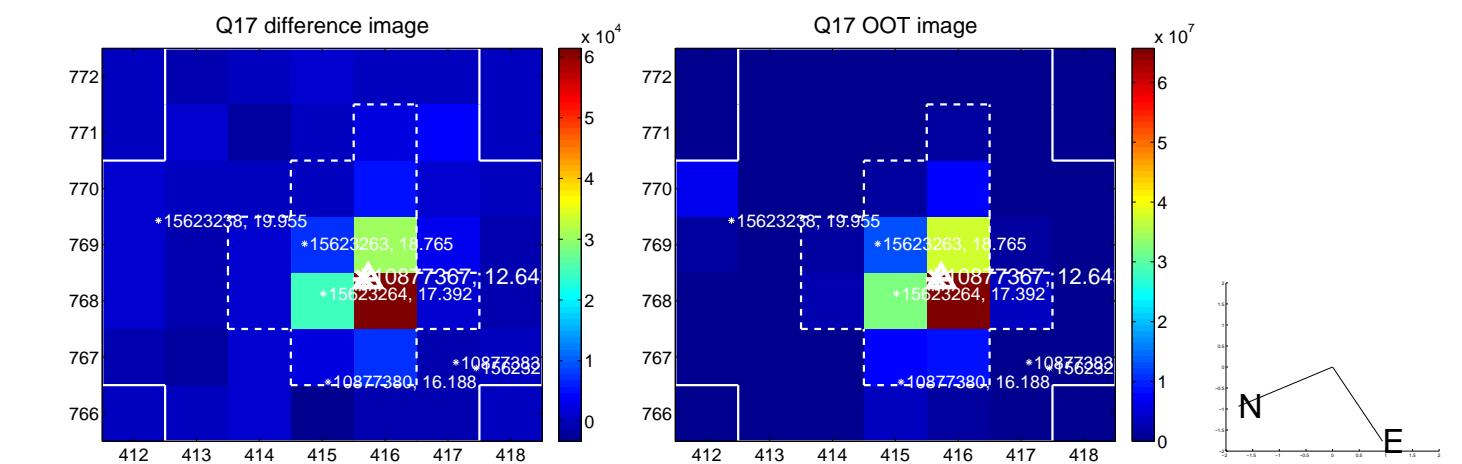
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

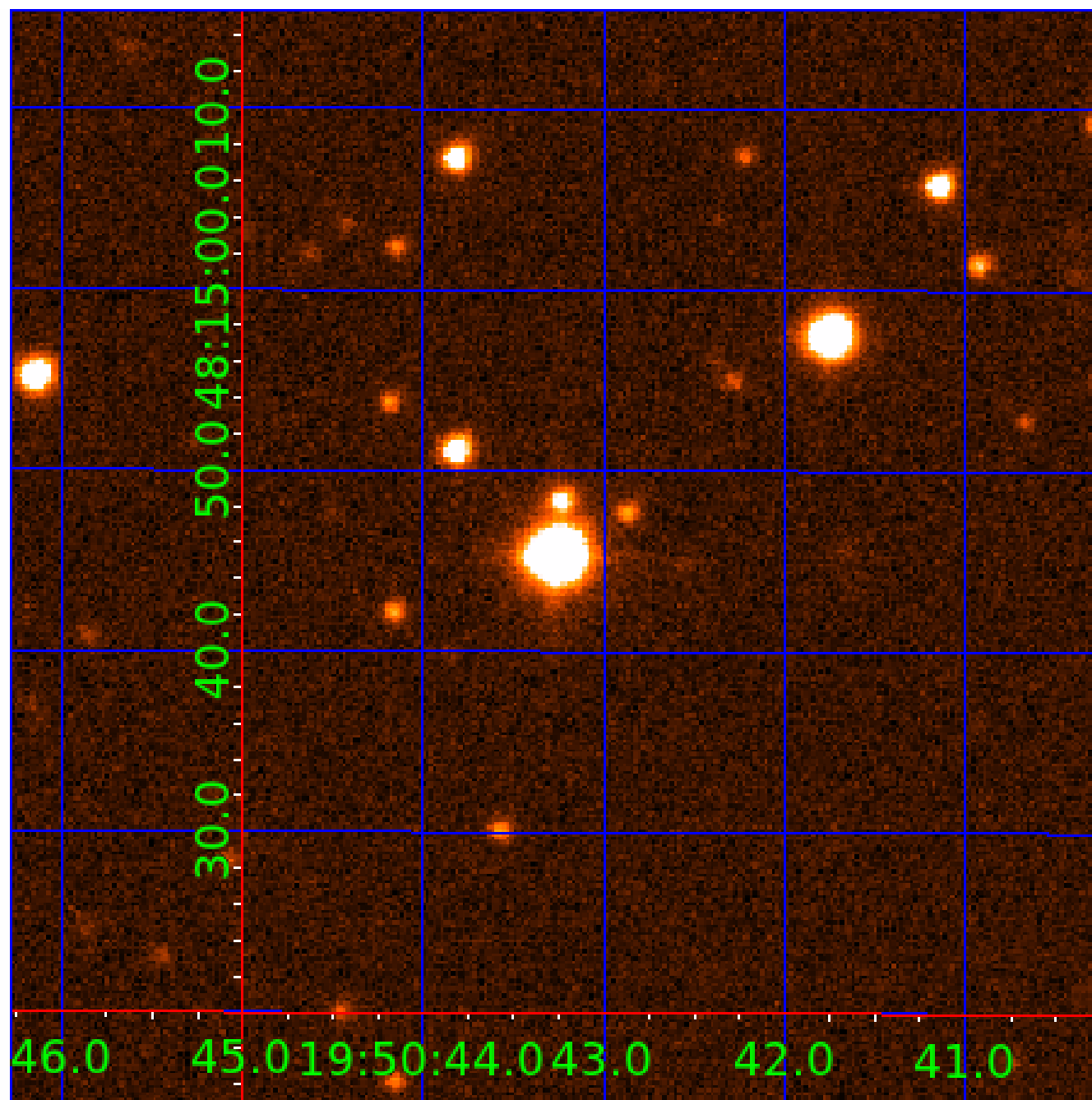


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
010877367-02	OBS	No	287.526754	394.324622	942.8	16.762	14.1	8.5	1.77	6585	10.22	6.48
010877367-03	OBS	No	289.662726	416.362864	232.2	3.404	10.1	3.3	1.77	6585	3.04	6.42
010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

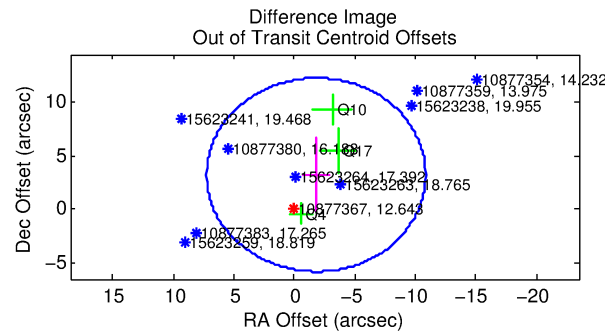
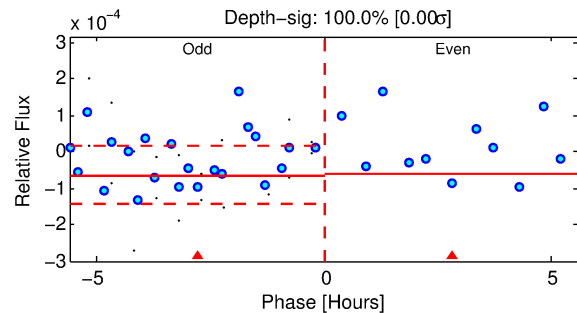
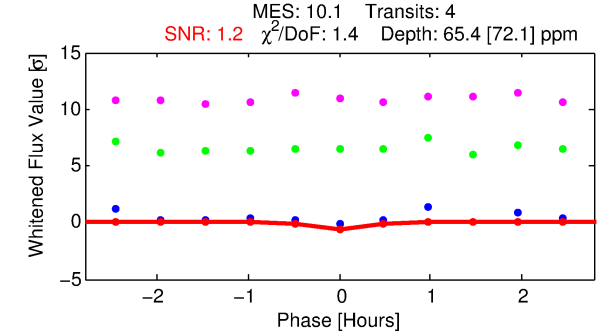
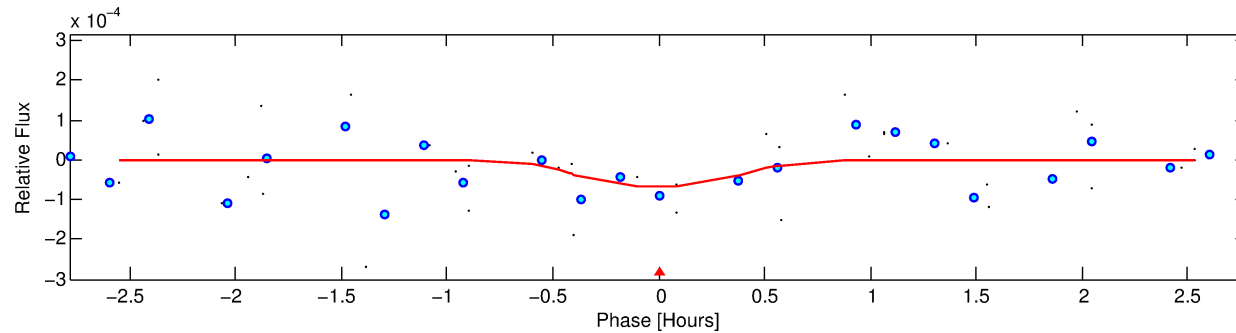
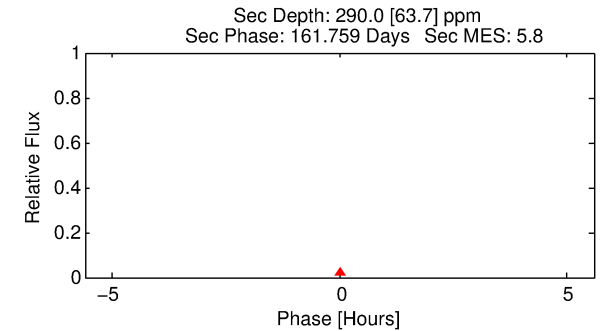
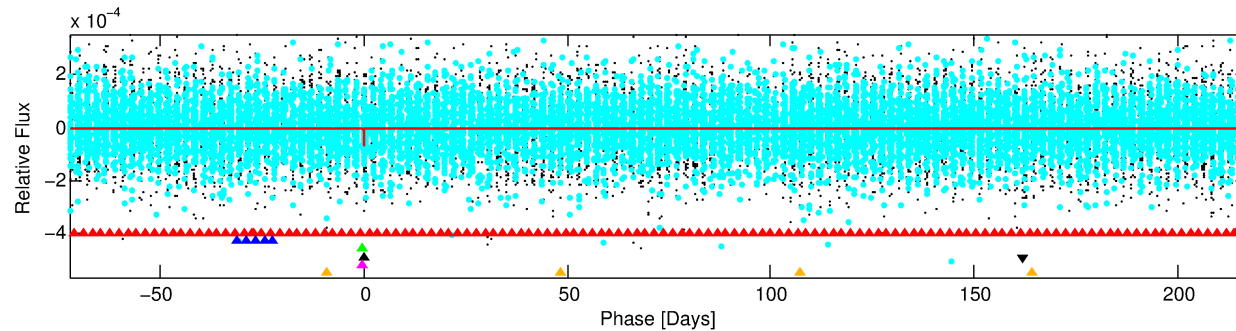
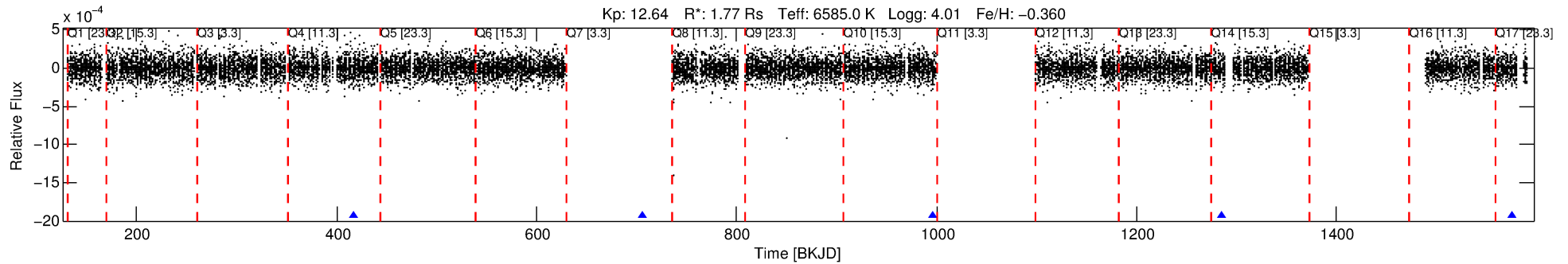
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-04

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 4 of 6 Period: 289.710 d



DV Fit Results:

Period = 289.70969 [0.01014] d
Epoch = 416.6978 [0.0268] BKJD
Rp/R* = 0.0082 [0.0271]
a/R* = 1556.47 [27831.41]
b = 0.77 [9.75]
Seff = 6.42 [2.90]
Teq = 406 [46] K
Rp = 1.57 [5.24] Re
a = 0.9057 [0.2465] AU
Ag = 52818.70 [351285.01] [0.15σ]
Teffp = 9513 [15785] K [0.58σ]

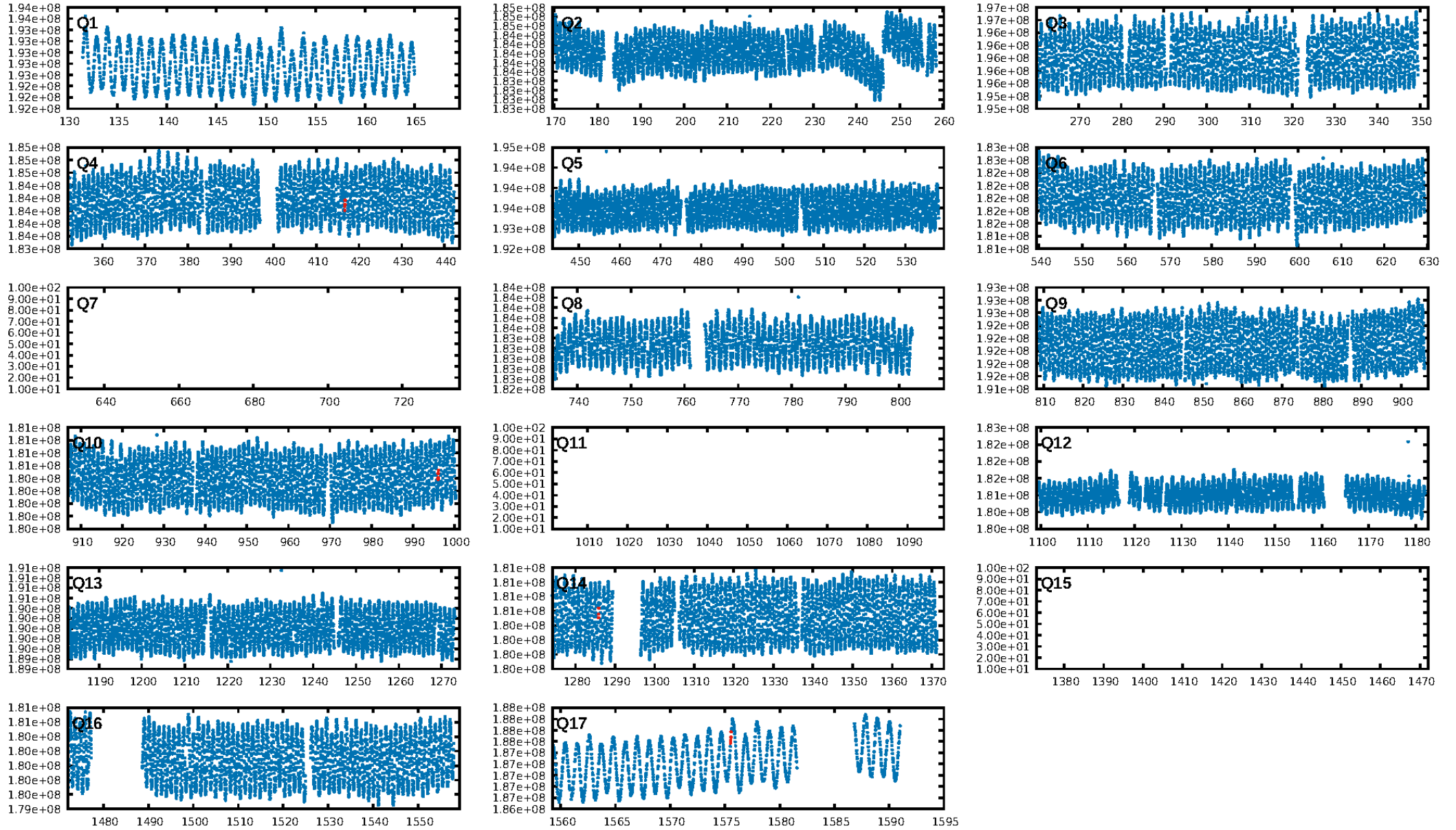
DV Diagnostic Results:

ShortPeriod-sig: 2.0% [0.03σ]
LongPeriod-sig: 100.0% [153.20σ]
ModelChiSquare2-sig: 59.3%
ModelChiSquareGof-sig: 86.7%
Bootstrap-pfa: 2.36e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.365
Centroid-sig: 95.9%
Centroid-so: 1.320 arcsec [0.12σ]
OotOffset-rm: 3.703 arcsec [1.23σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 3.670 arcsec [1.21σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/4]

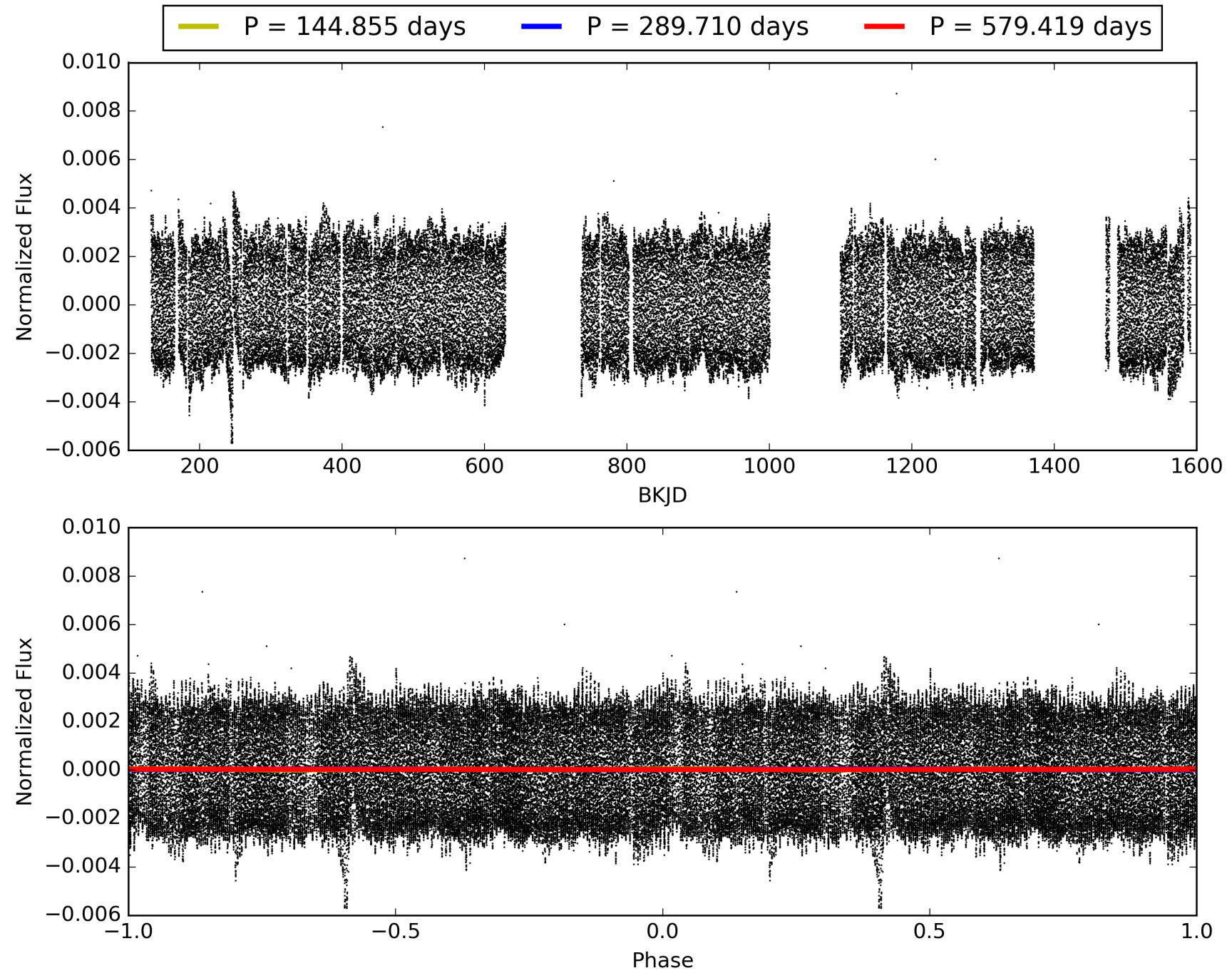
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:35:02 Z

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

TCE 010877367-04, PDC Light Curves

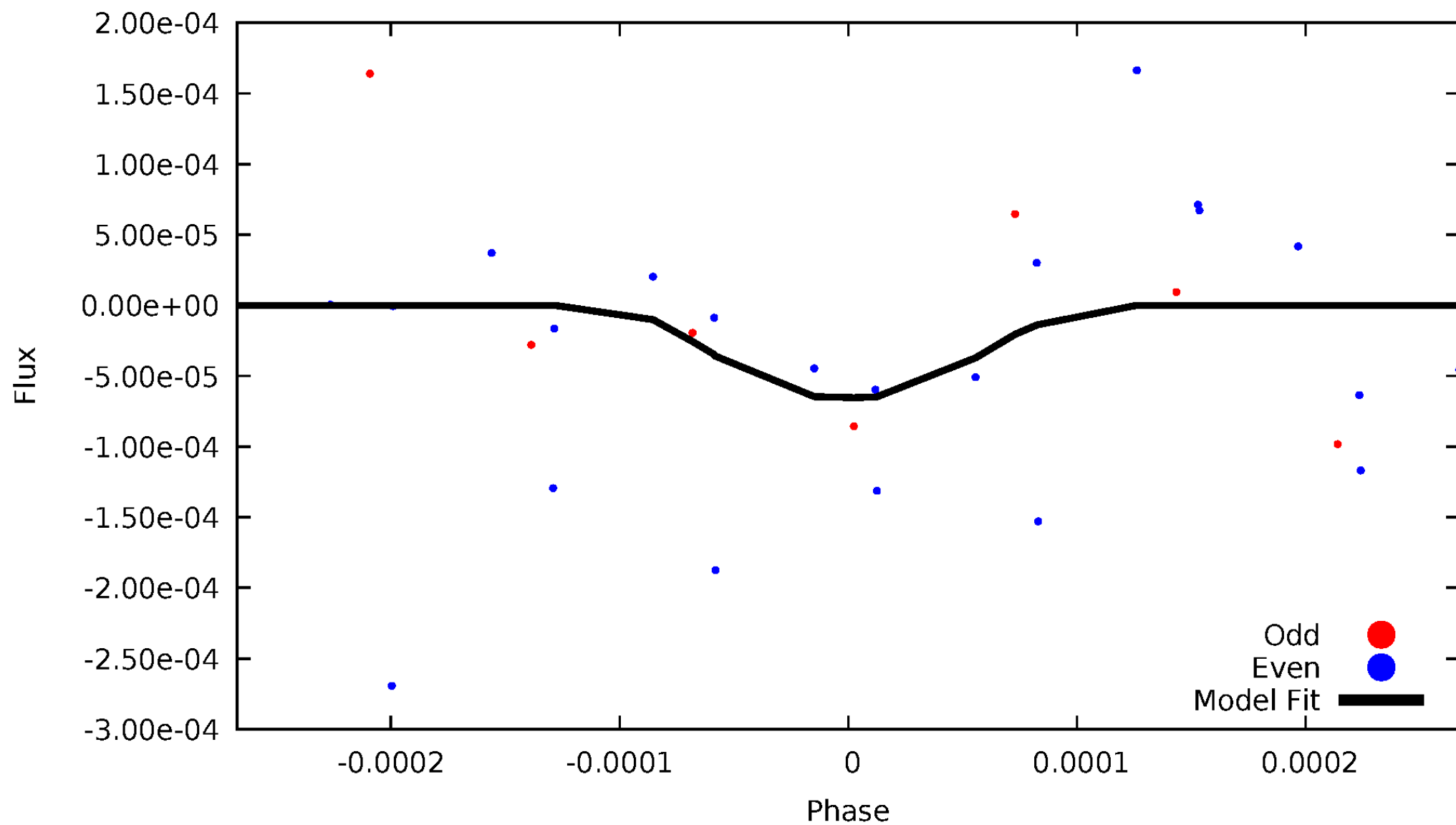


TCE 010877367-04



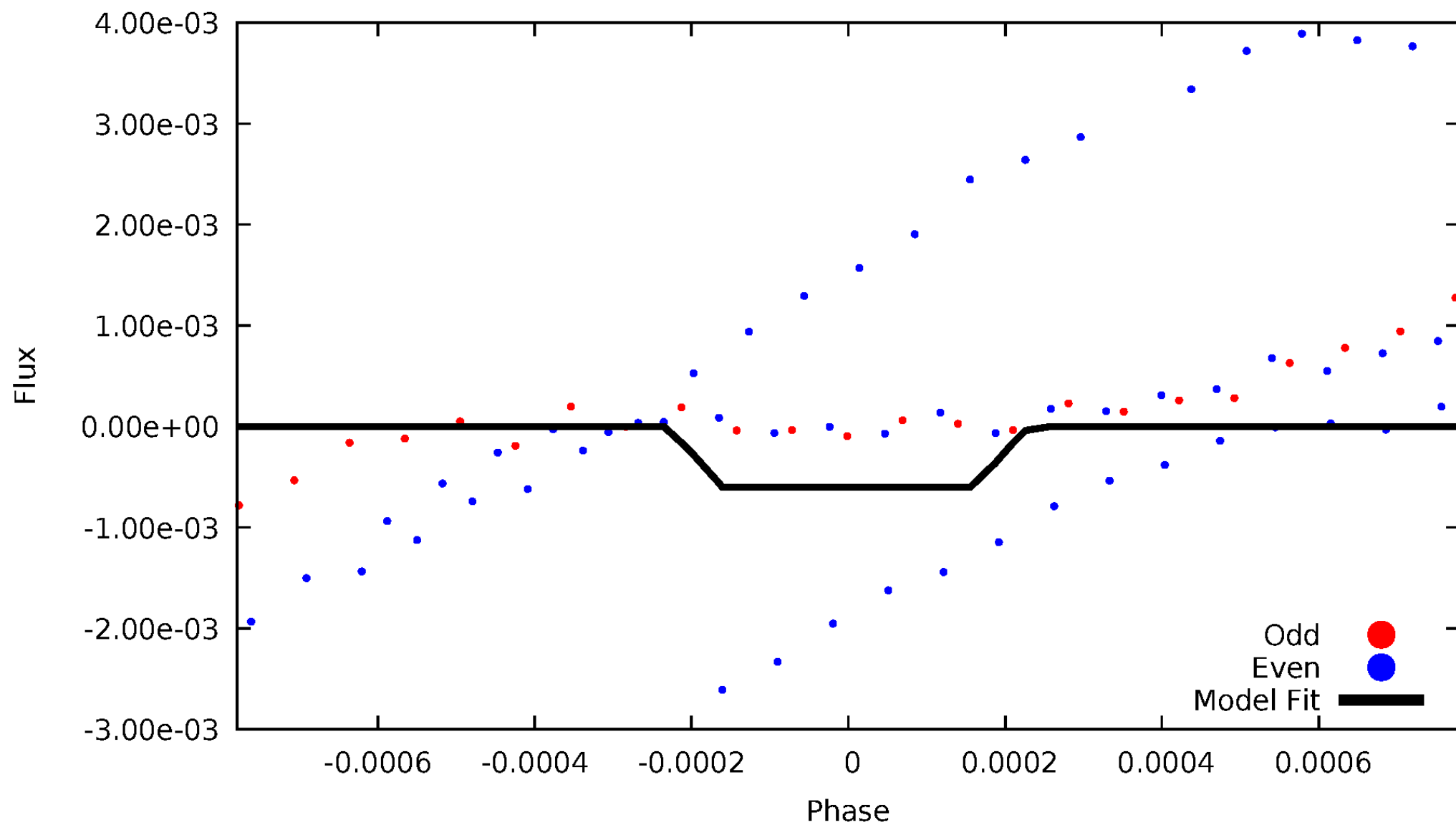
DV Odd/Even

TCE 010877367-04



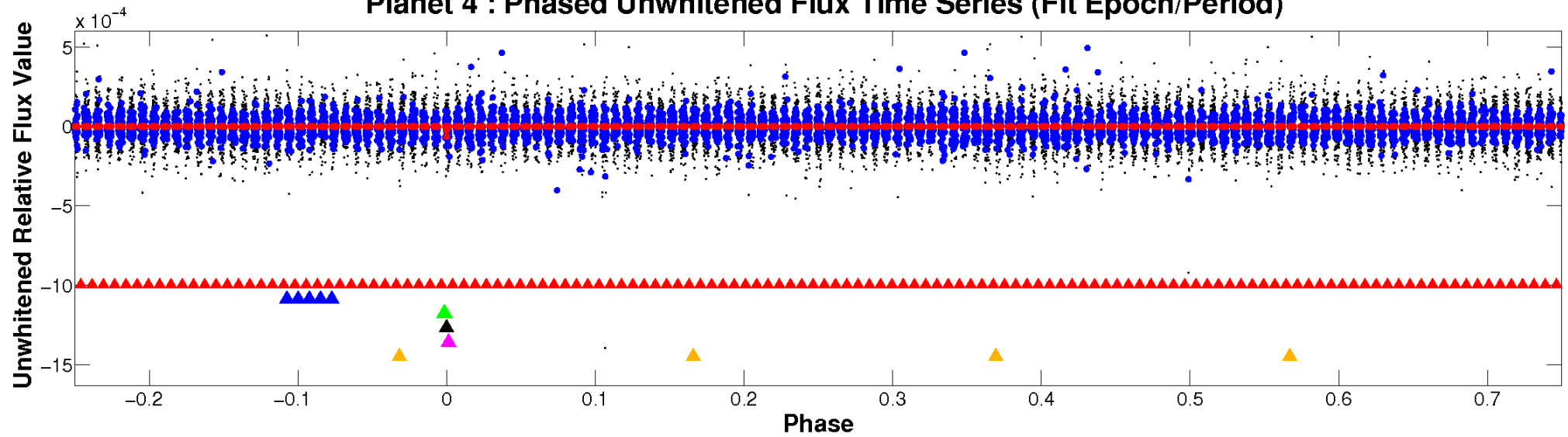
ALT Odd/Even

TCE 010877367-04

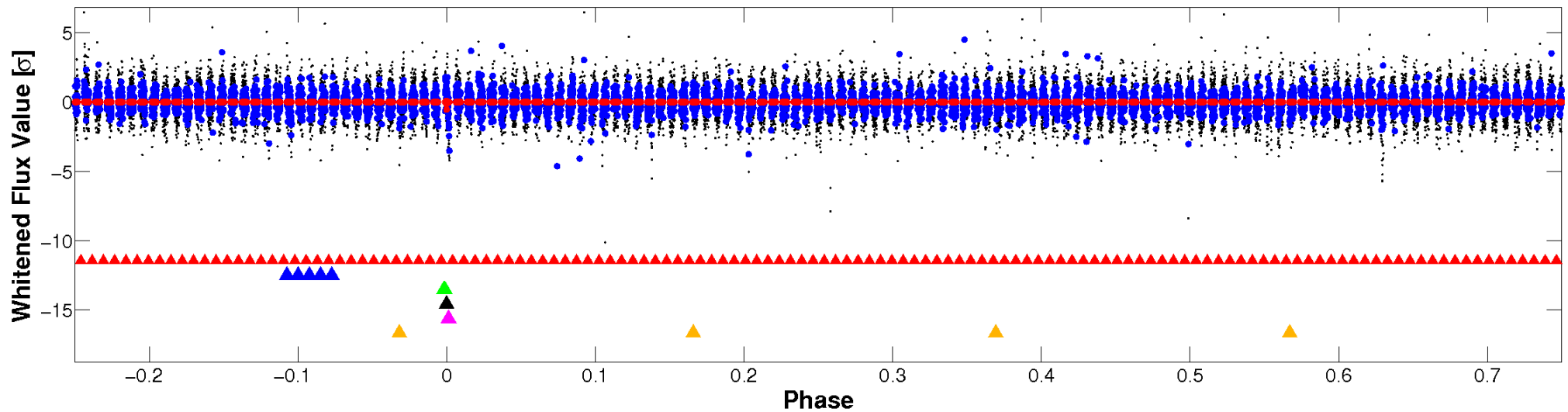


Non-Whitened Vs. Whitened Light Curve

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

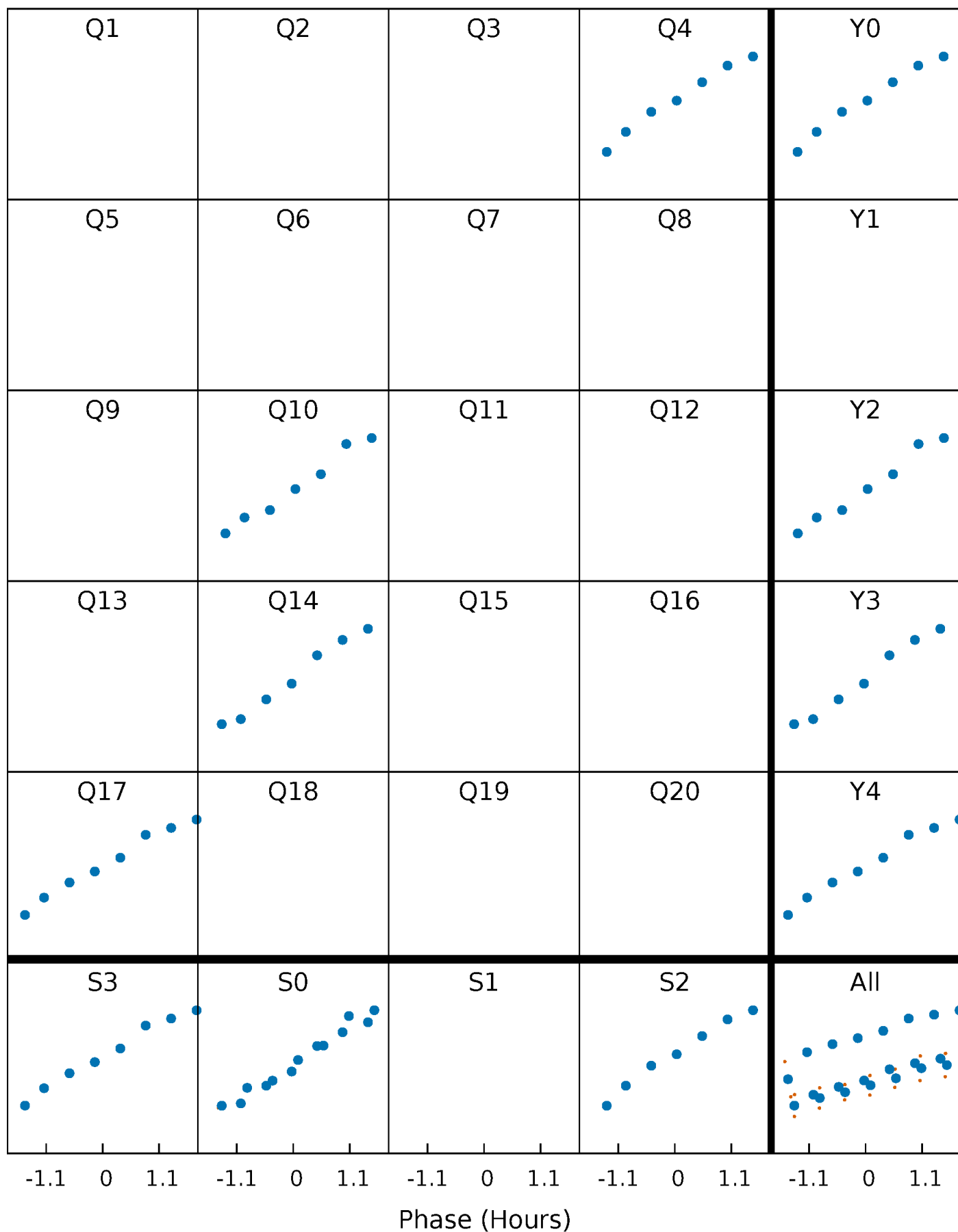


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



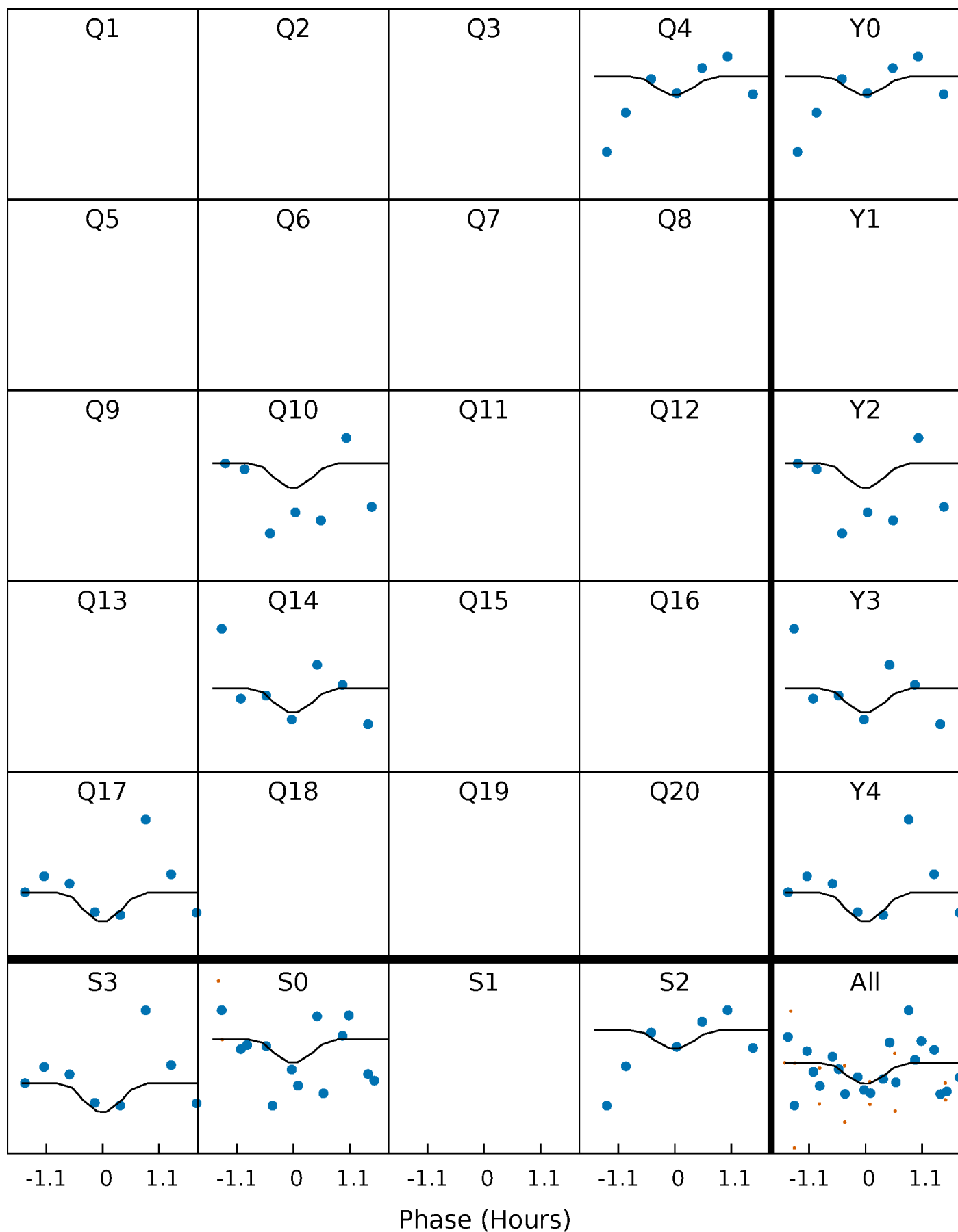
PDC Quarter-Phased Transit Curves

TCE 010877367-04 P=289.709686 Days $T_0=416.697759$ (BKJD)



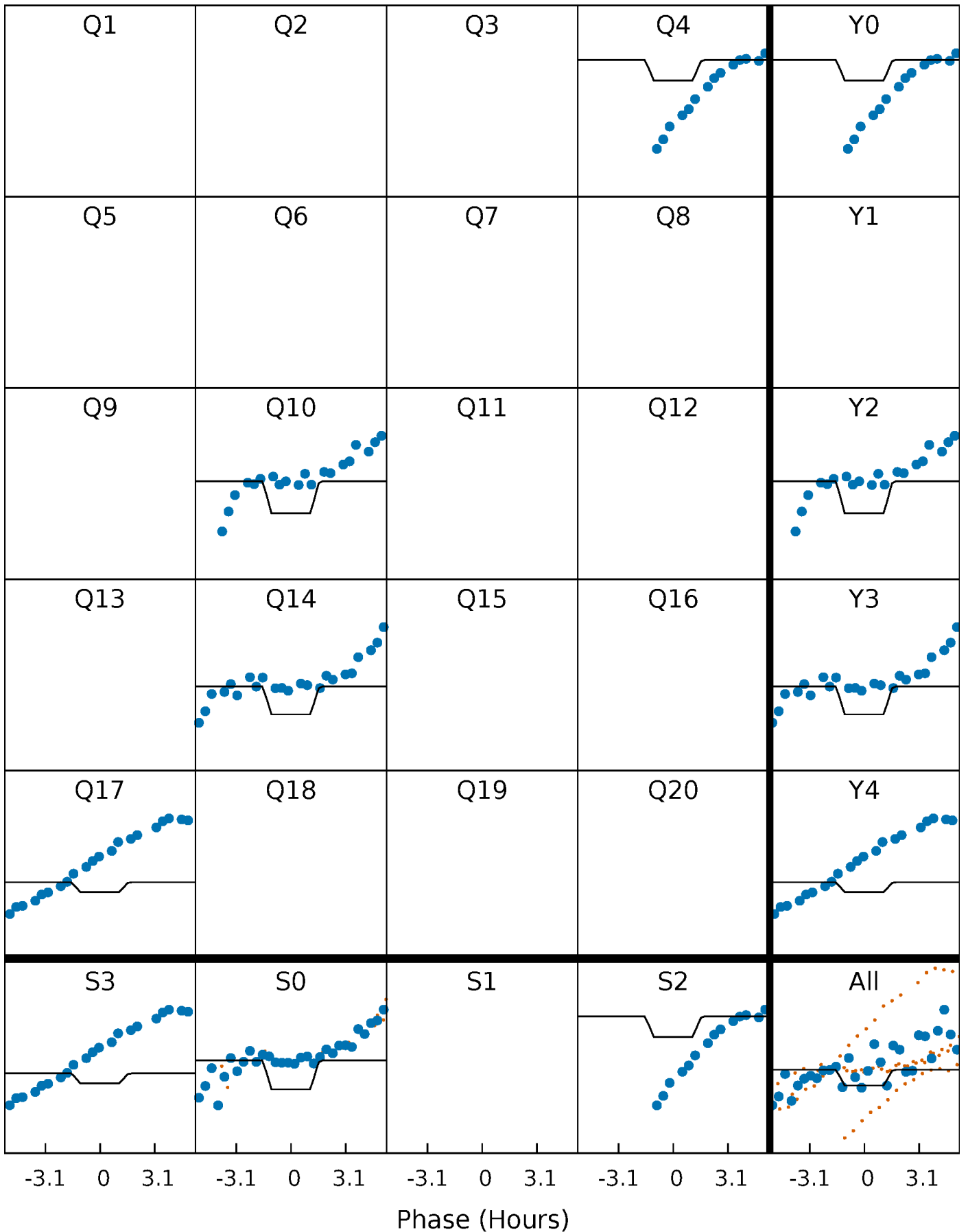
DV Quarter-Phased Transit Curves

TCE 010877367-04 P=289.709686 Days $T_0=416.697759$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

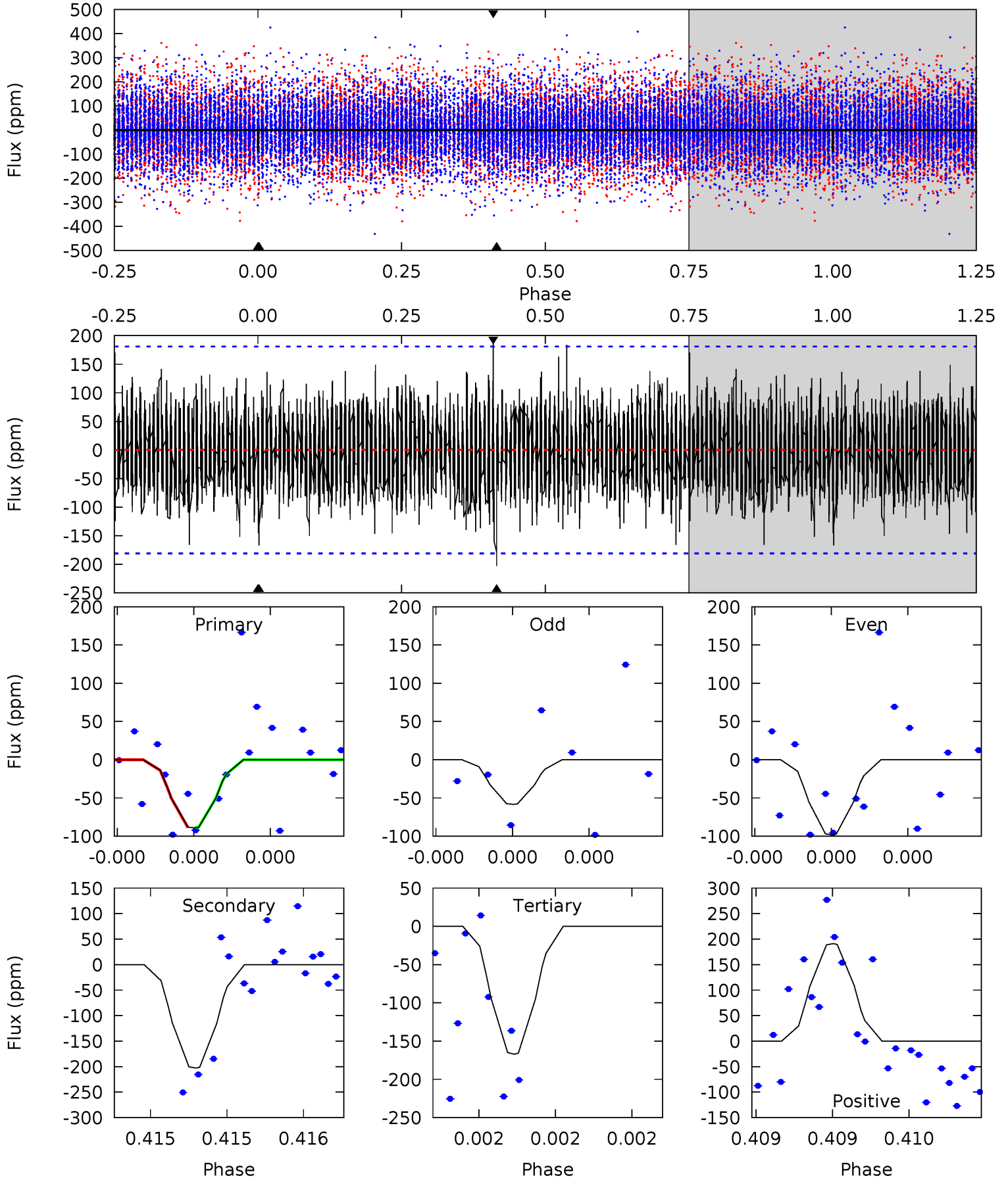
TCE 010877367-04 P=289.700202 Days $T_0=416.727279$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-04, P = 289.709686 Days, E = 126.988073 Days

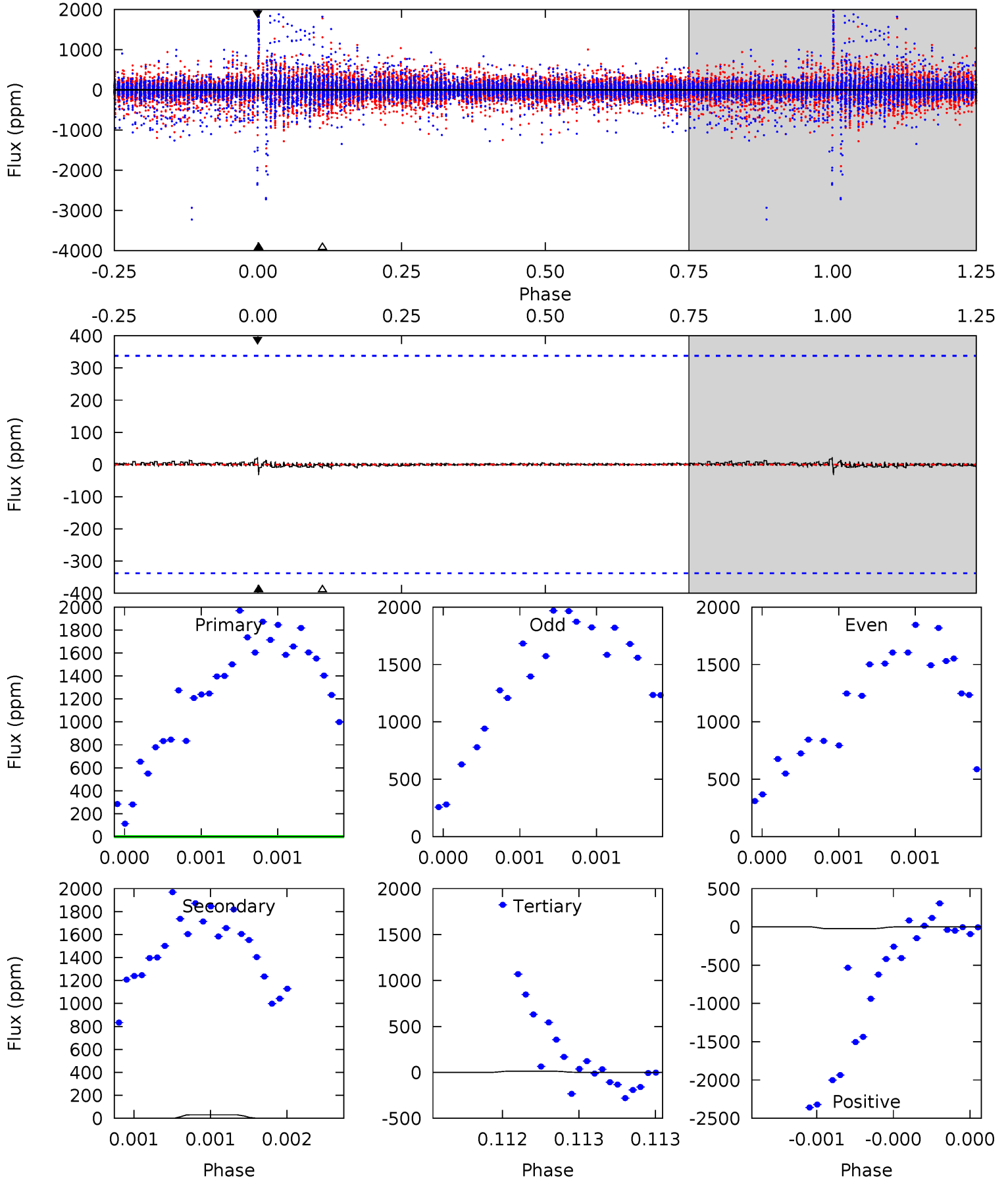
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.83	6.43	5.30	6.06	5.74	3.73	1.39	-2.47	-3.23	1.13	0.37	0.51	1.59	0.49	0.00



Alt Model-Shift Uniqueness Test

010877367-04, P = 289.700202 Days, E = 127.027077 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.38	0.49	0.20	0.38	5.59	3.51	0.03	0.18	0.01	0.29	0.12	0.00	717.8	0.43	0.01



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-203 ± 32	$3.95^{+4.12}_{-2.85}$	557^{+40}_{-40}	5304^{+6275}_{-1233}	5666^{+68790}_{-4276}
Alt.	-30 ± 60	$5.85^{+4.49}_{-3.65}$	560^{+39}_{-44}	3163^{+1650}_{-6456}	282^{+2854}_{-678}

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 $A_{obs} \gg 1.0$

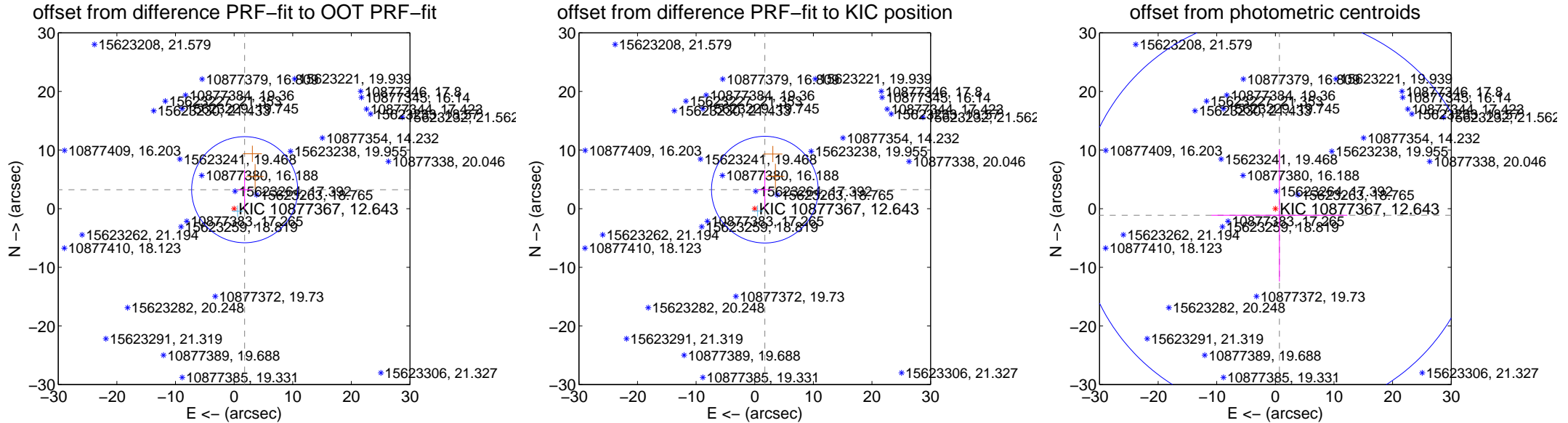
DV Centroid Data

Supplemental centroid analysis for 010877367-04. Kepler magnitude: 12.64. Transit SNR 1.22

There are 1 quarters with good PRF difference image offsets

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

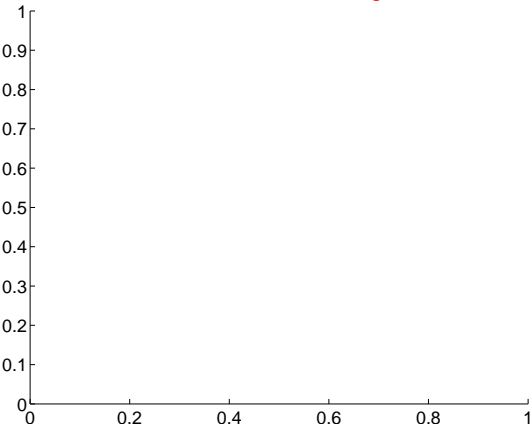
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.703 ± 3.016	1.23	-1.802 ± 1.137	3.235 ± 3.393
PRF-fit source offset from KIC position	3.670 ± 3.033	1.21	-1.719 ± 1.170	3.243 ± 3.376
photometric centroid source offset	1.32 ± 11.38	0.12	-0.69 ± 11.59	-1.13 ± 11.31



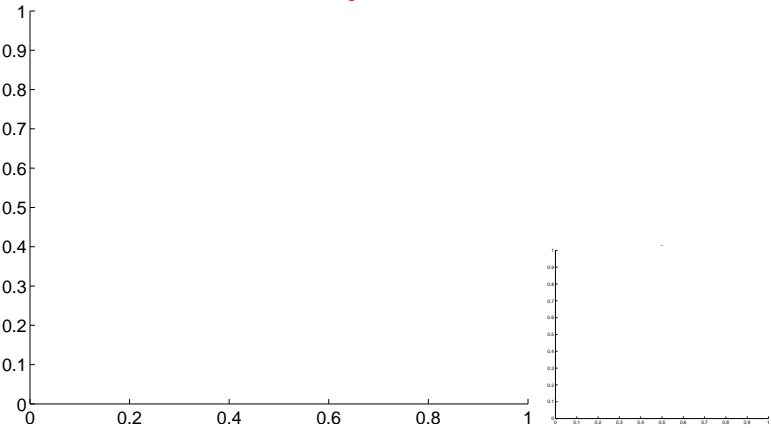
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

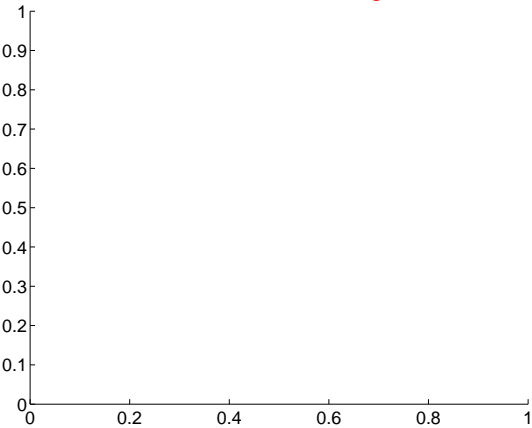
Q1 no difference image



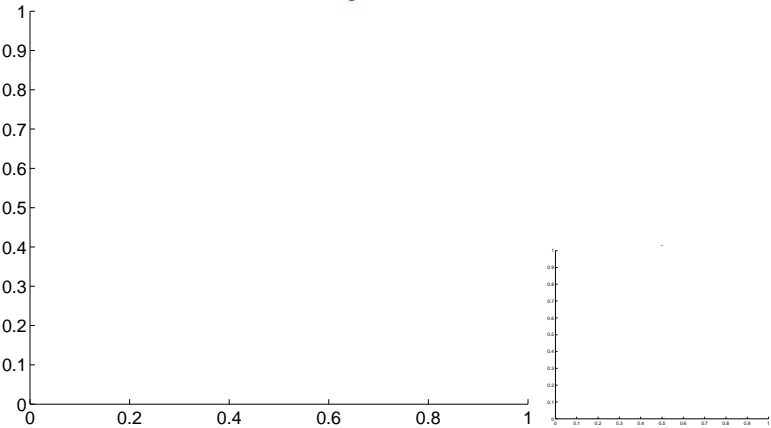
Q1 no OOT image



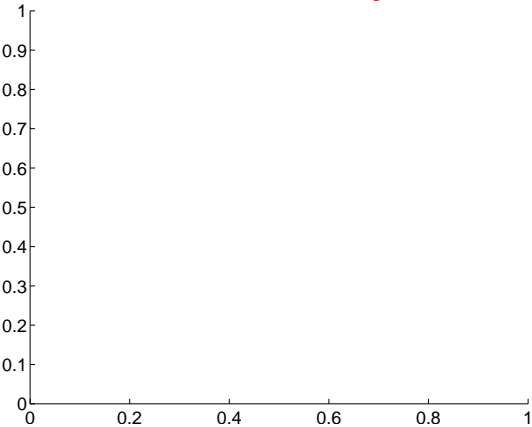
Q2 no difference image



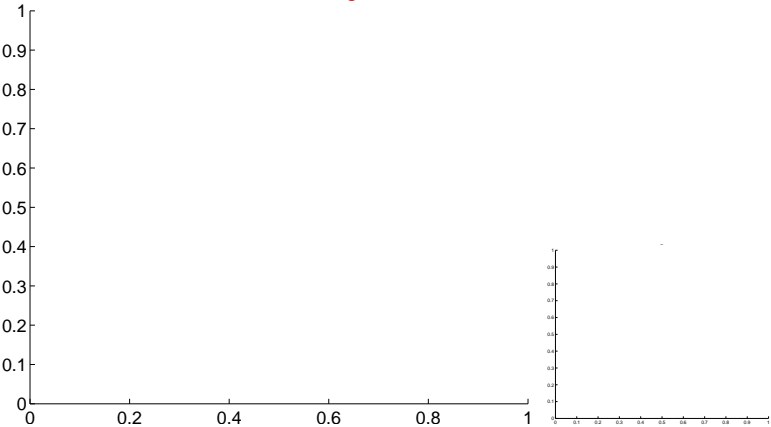
Q2 no OOT image



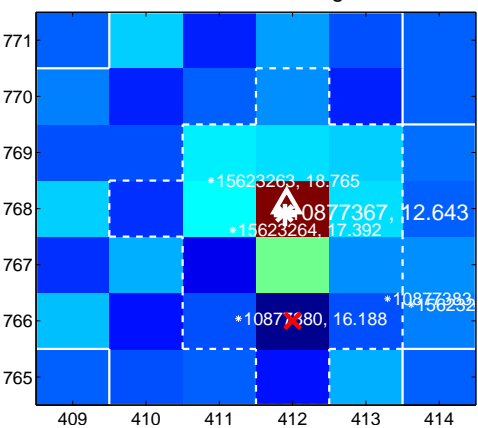
Q3 no difference image



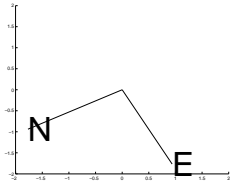
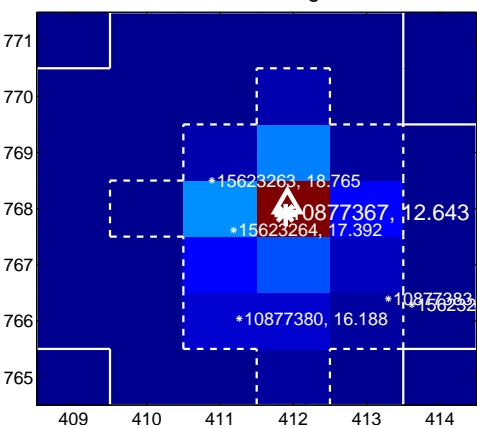
Q3 no OOT image



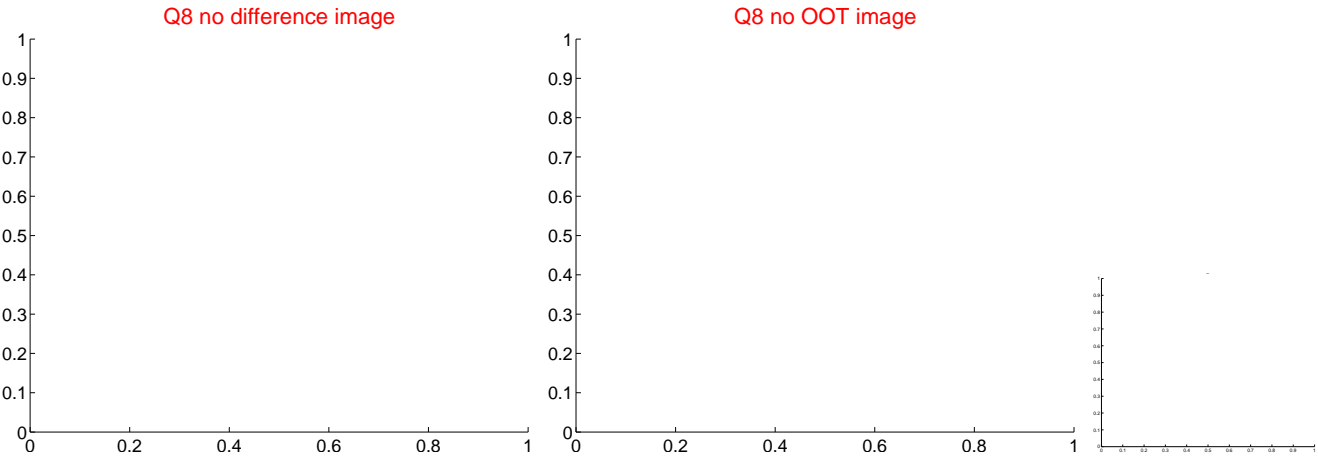
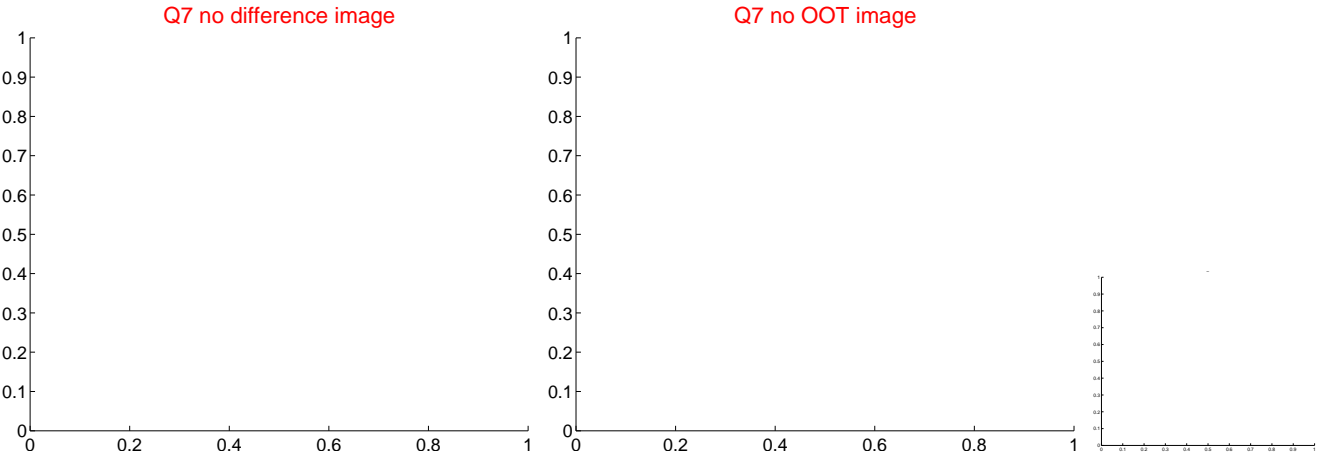
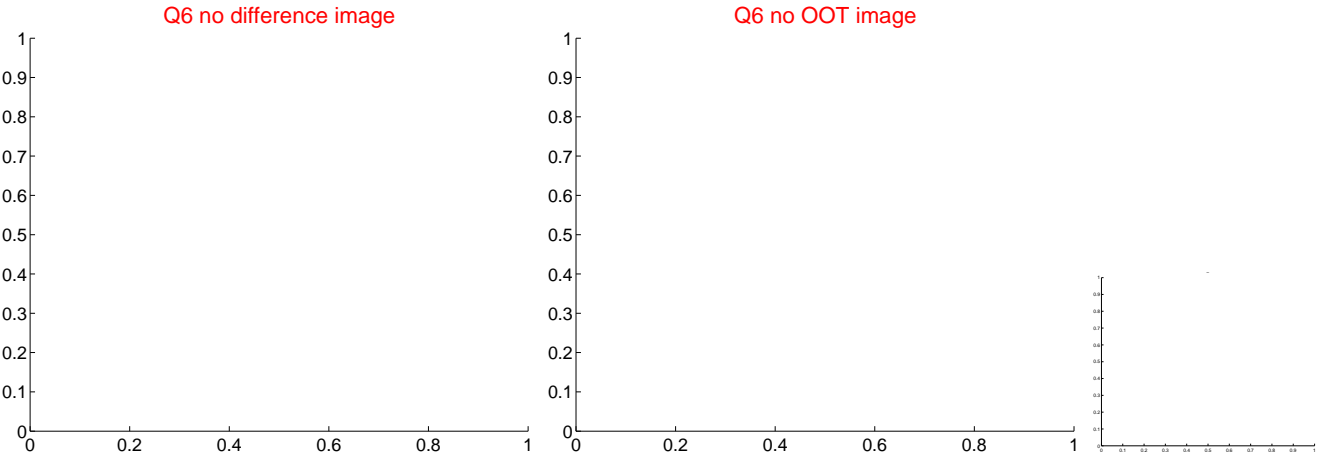
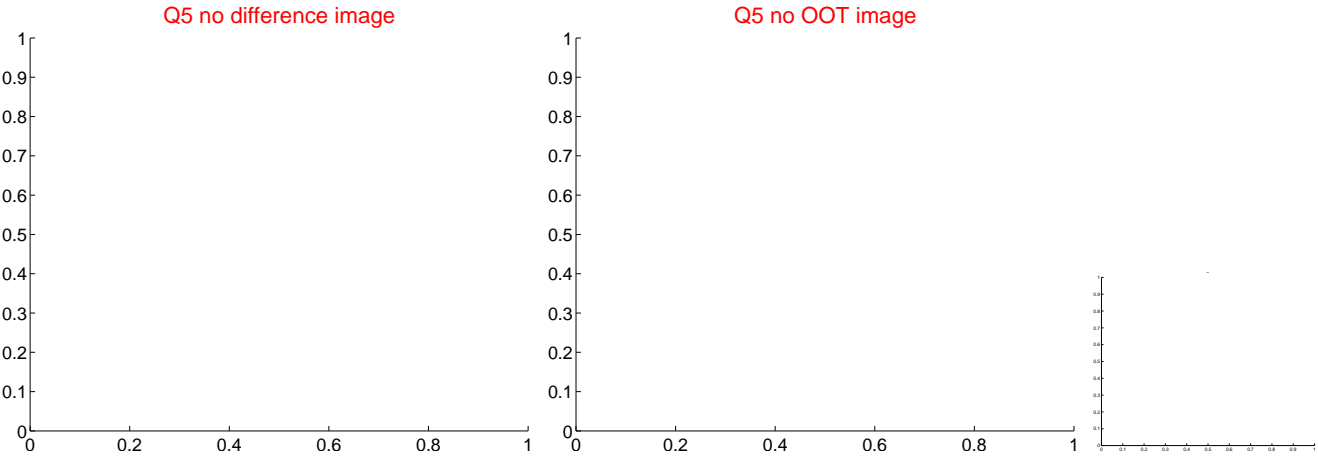
Q4 difference image



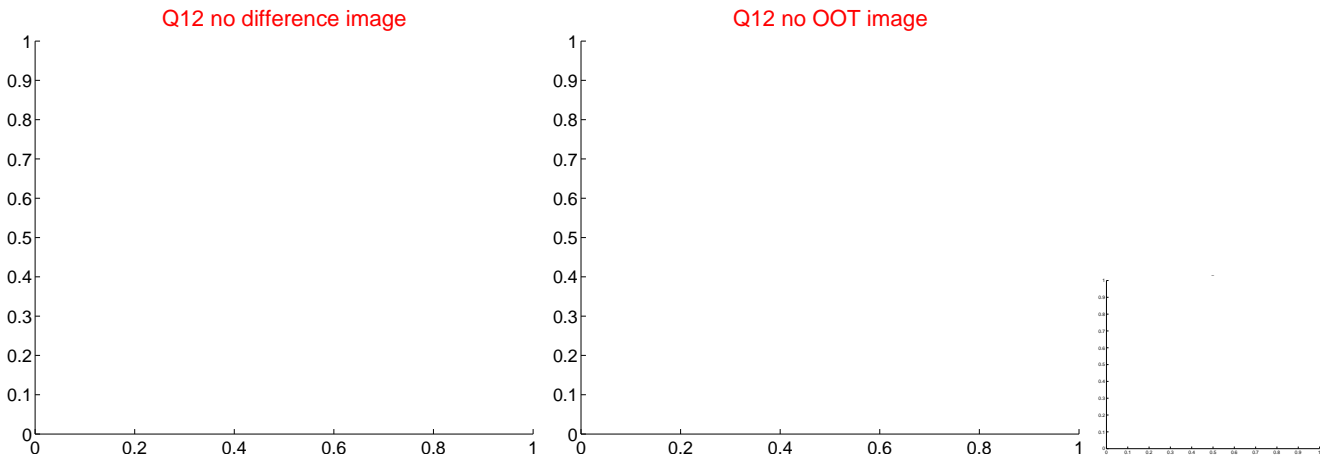
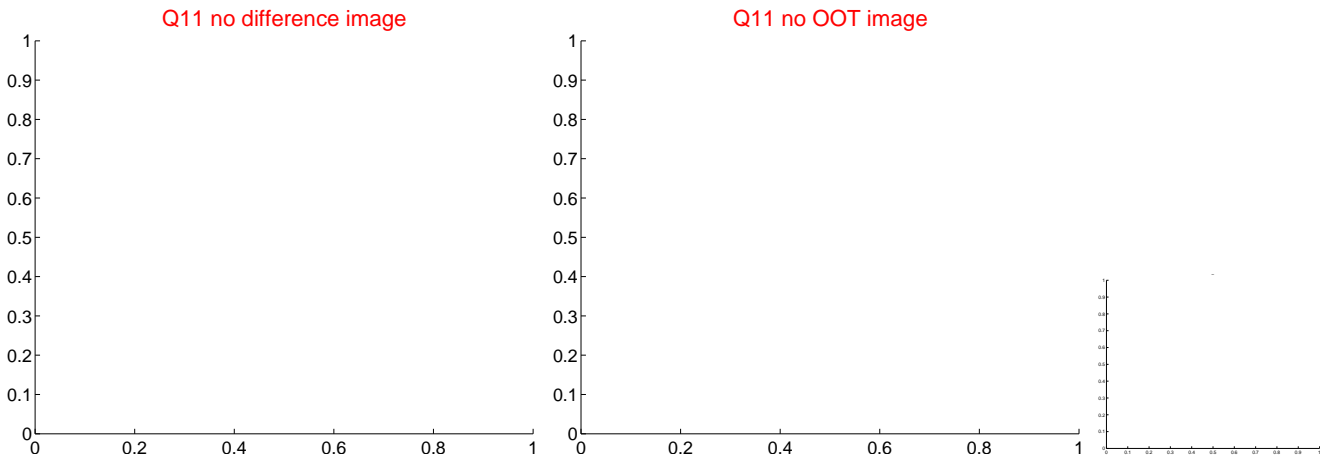
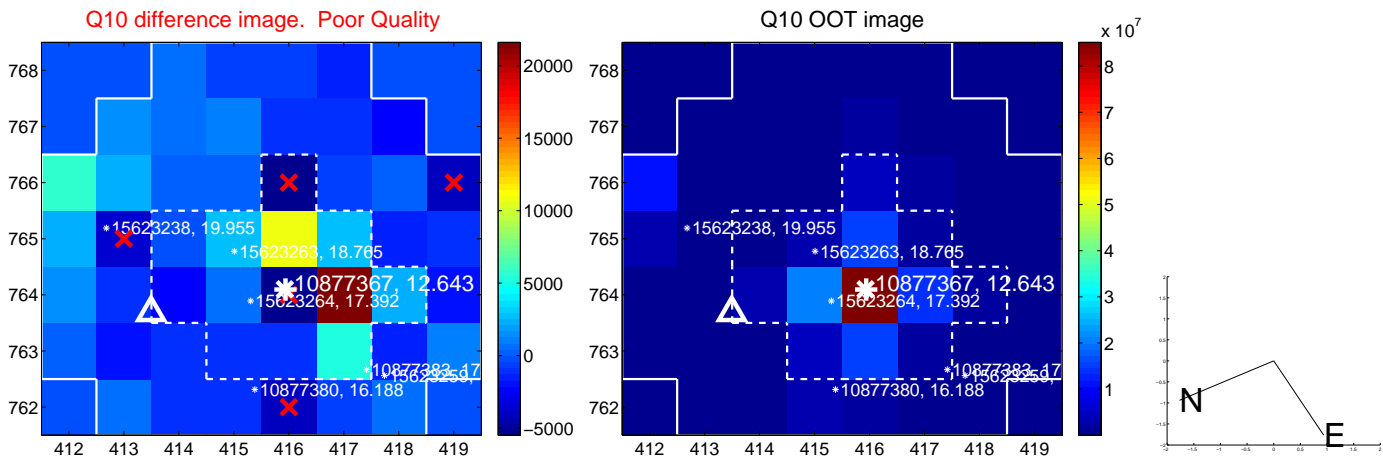
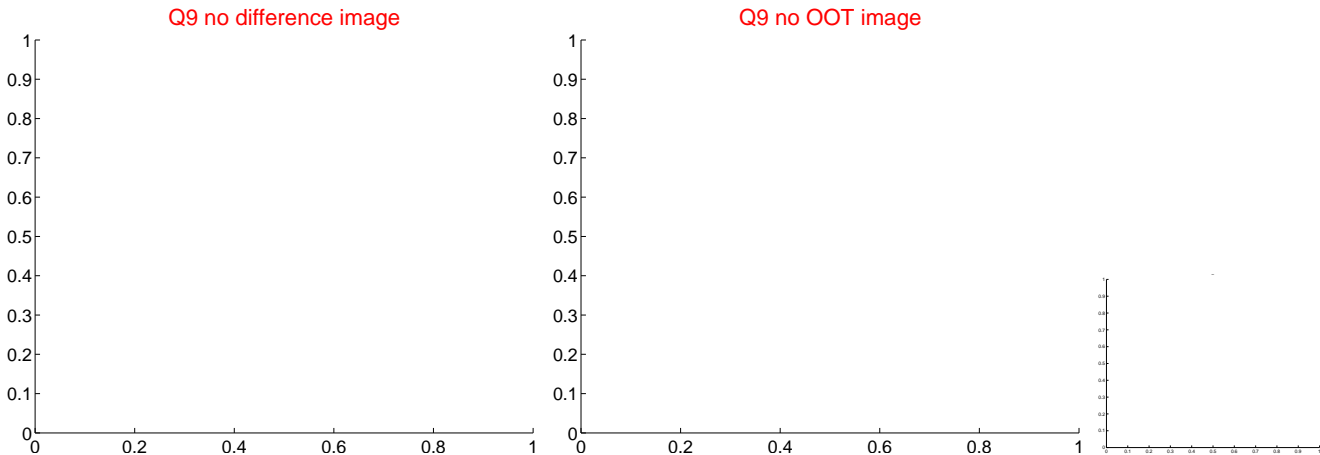
Q4 OOT image



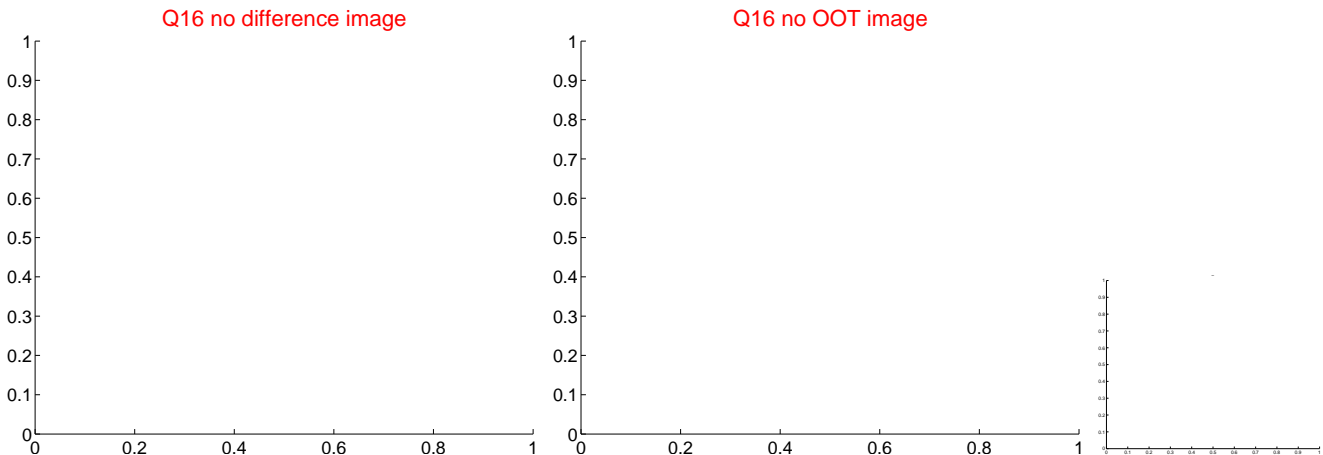
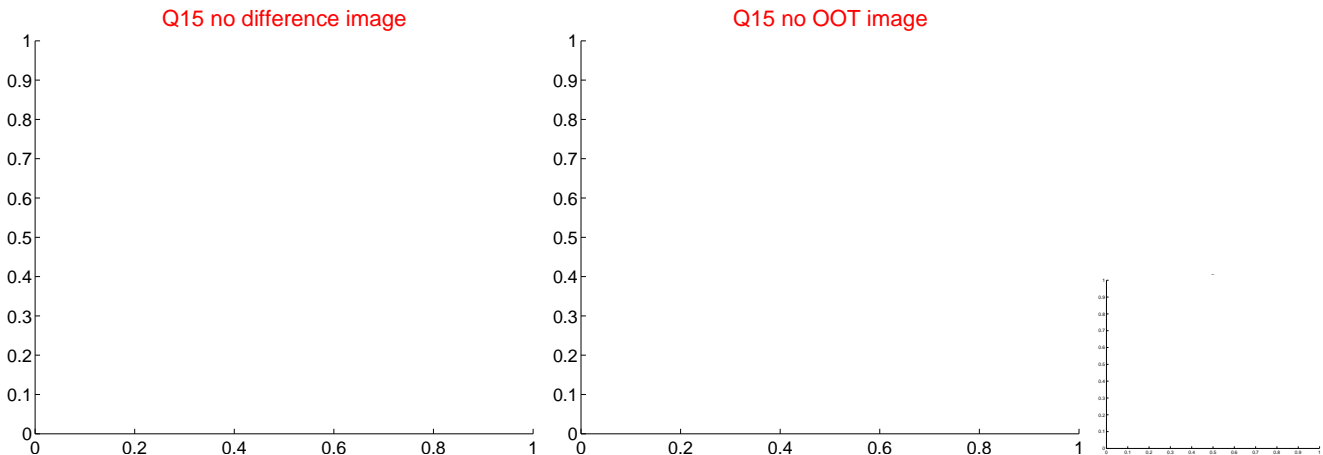
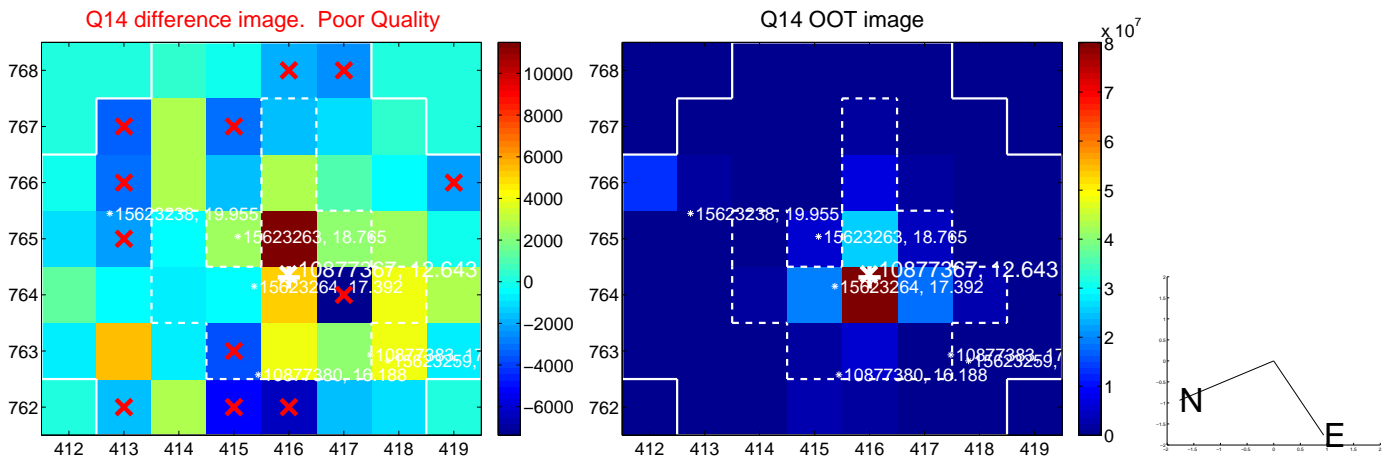
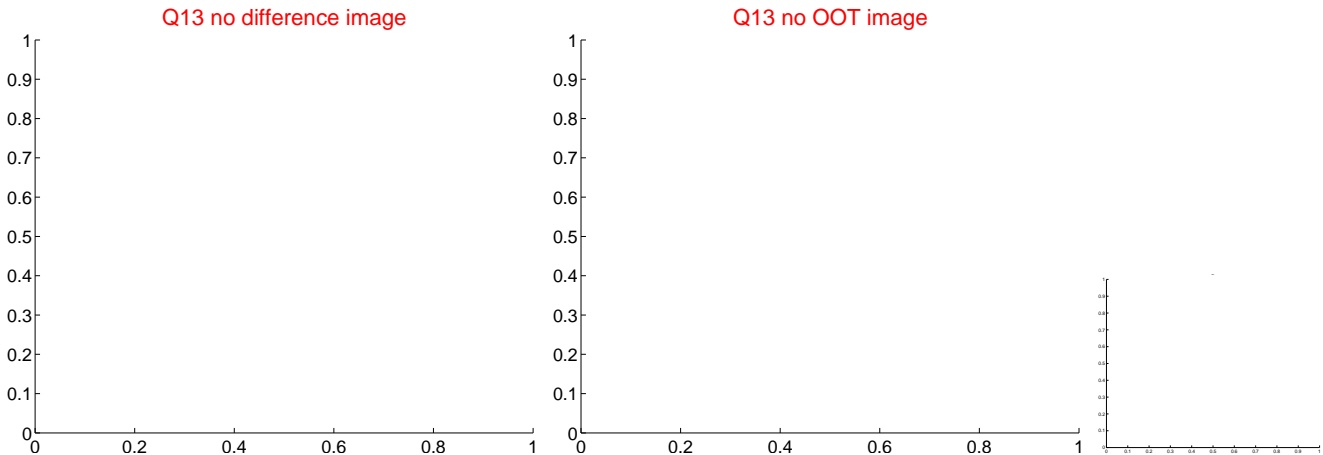
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



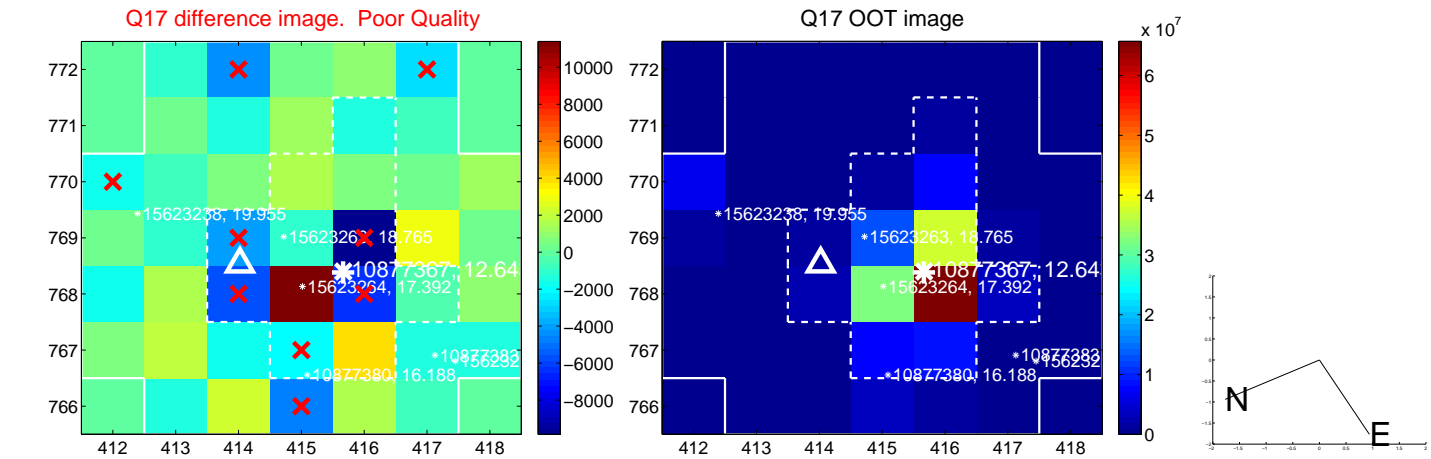
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



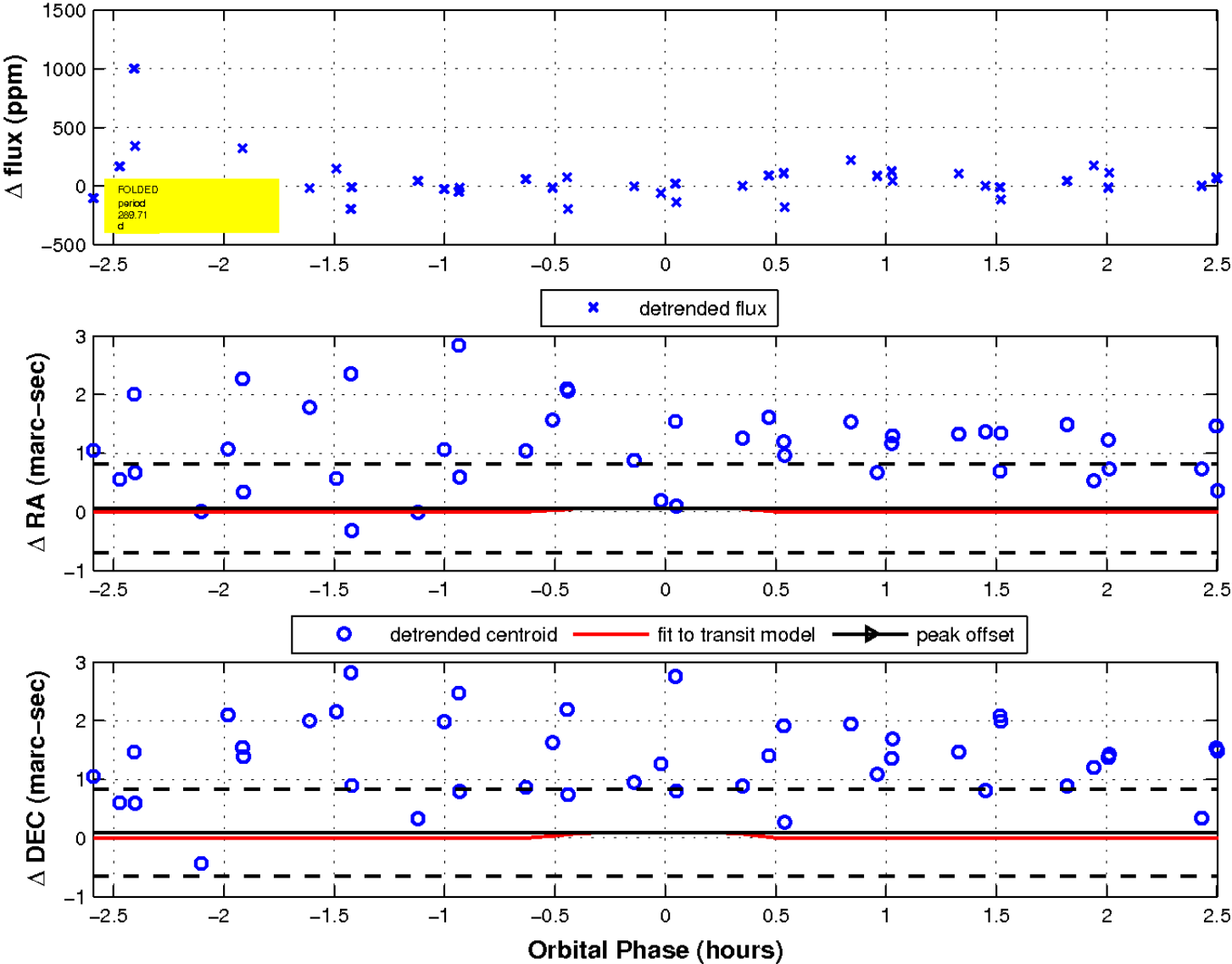
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

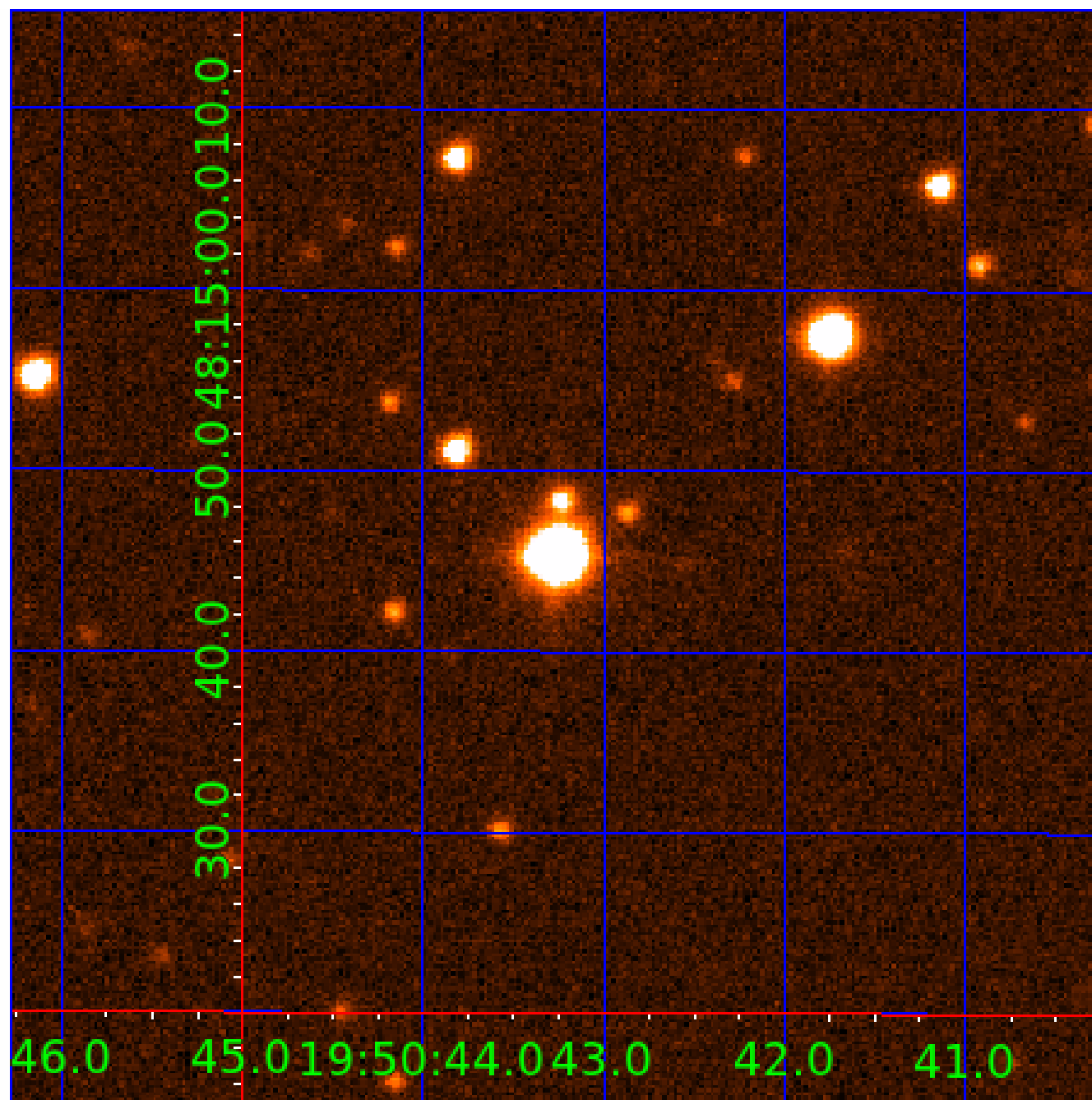


fluxWeightedCentroids, Planet 4 of 6



UKIRT Image

Declination



KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
010877367-02	OBS	No	287.526754	394.324622	942.8	16.762	14.1	8.5	1.77	6585	10.22	6.48
010877367-03	OBS	No	289.662726	416.362864	232.2	3.404	10.1	3.3	1.77	6585	3.04	6.42
010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

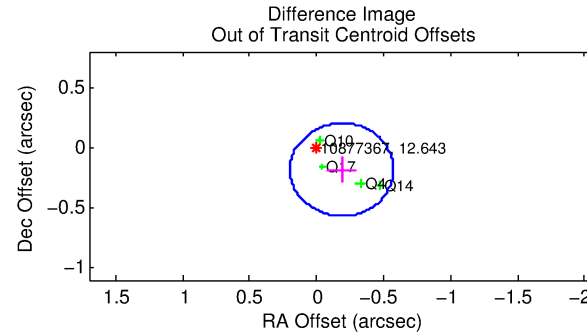
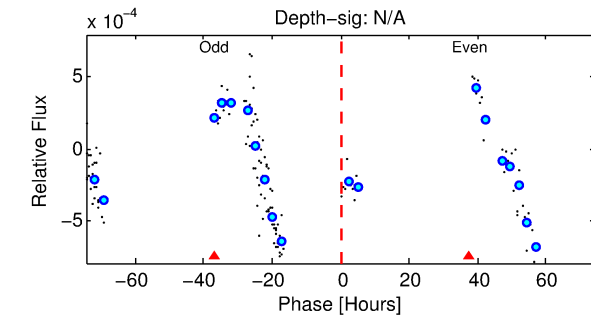
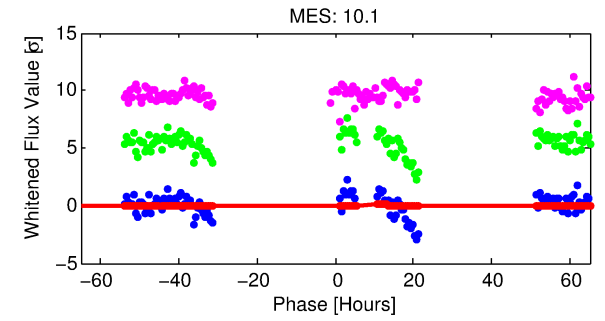
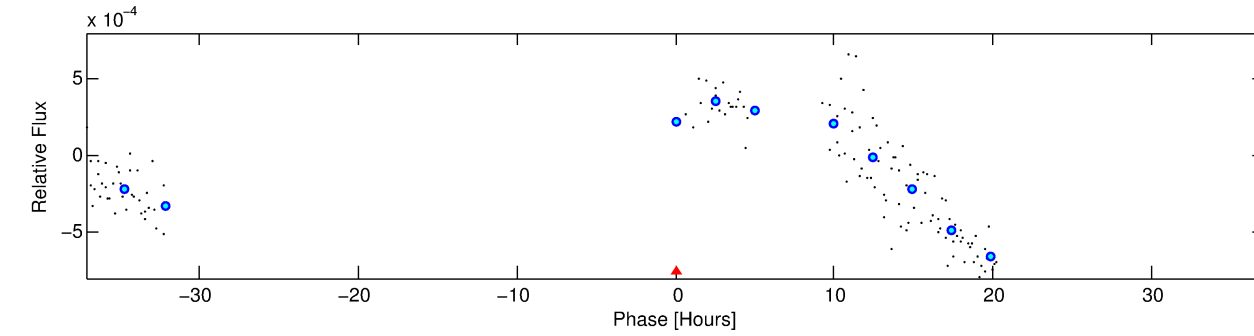
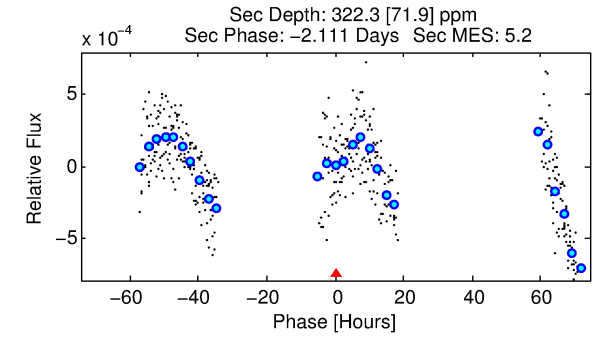
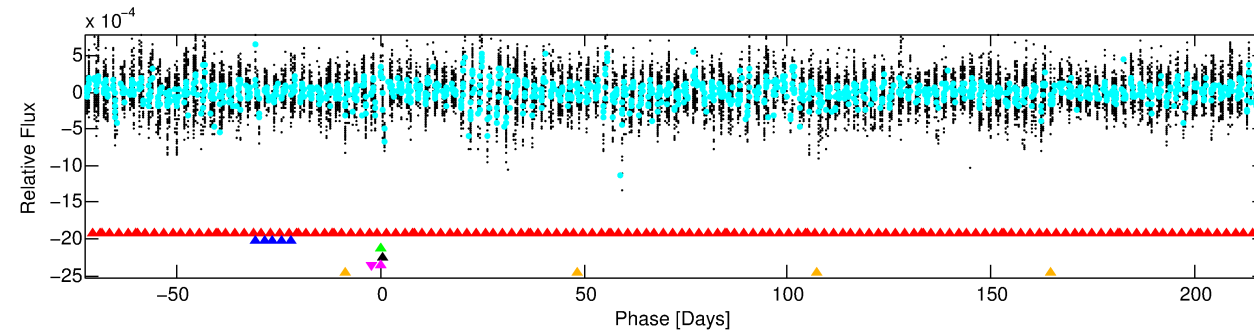
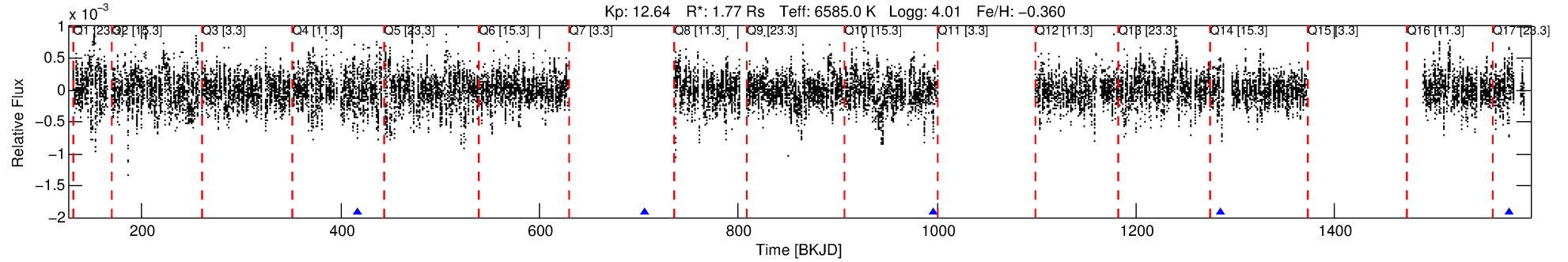
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-05

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 5 of 6 Period: 289.700 d



TPS TCE Results:

Period = 289.70020 d
Epoch = 417.1075 BKJD

DV fit results are unavailable

DV Diagnostic Results:

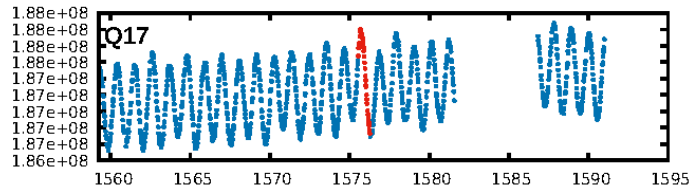
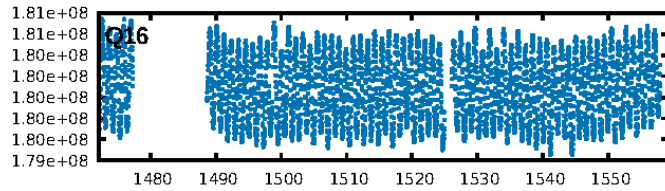
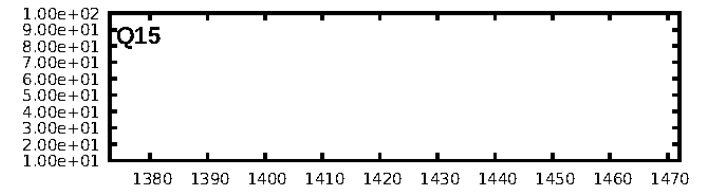
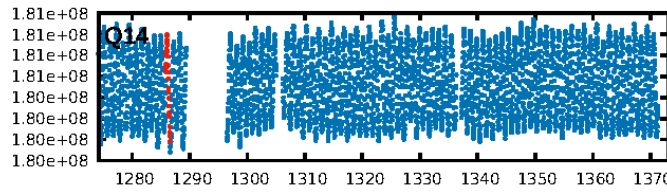
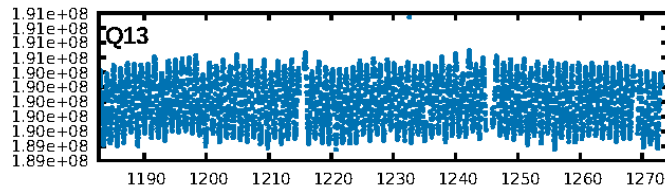
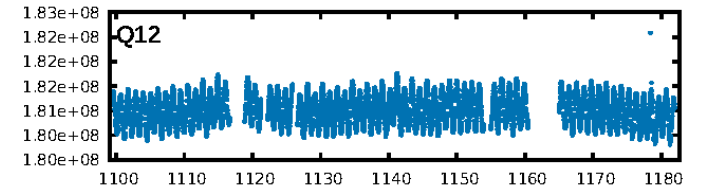
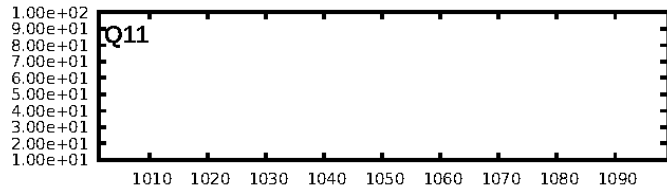
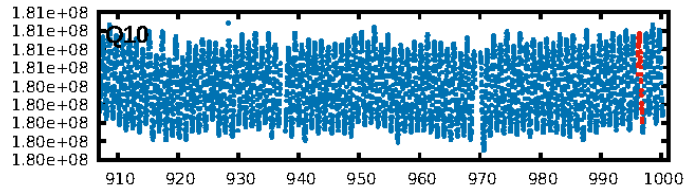
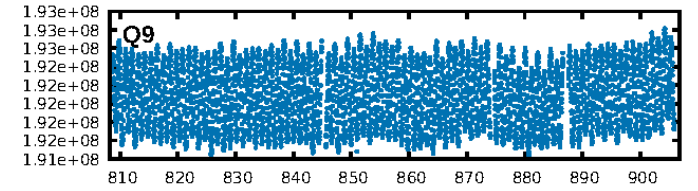
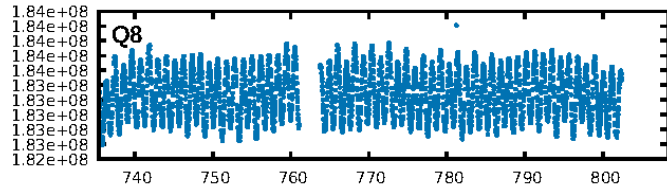
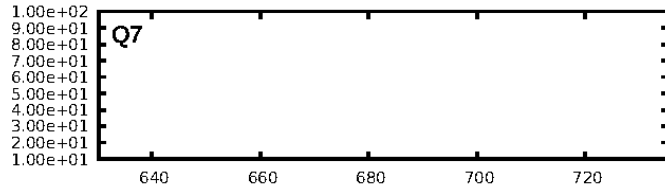
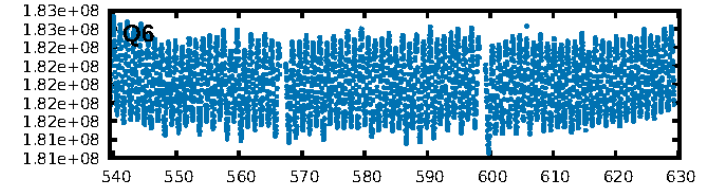
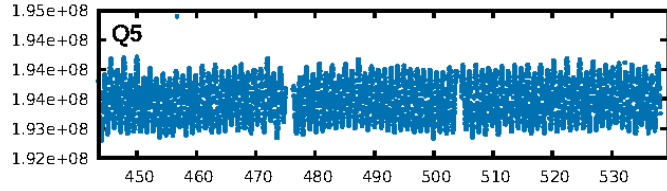
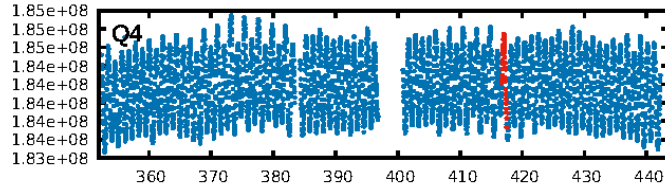
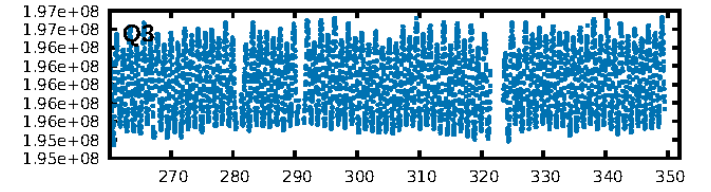
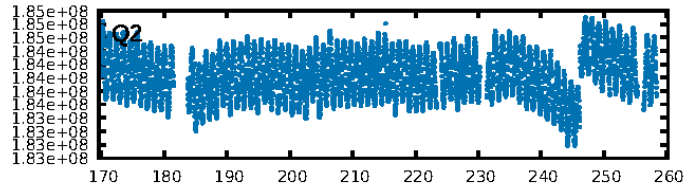
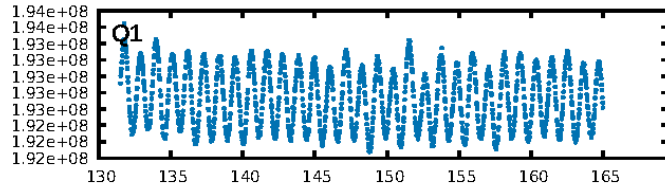
ShortPeriod-sig: 7.4% [0.09σ]
LongPeriod-sig: 2.0% [0.03σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.98e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.6127

Centroid-sig: 0.0%
Centroid-so: 0.417 arcsec [1.96σ]
OotOffset-rm: 0.261 arcsec [2.03σ]
KicOffset-rm: 0.176 arcsec [1.58σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.00 [0/4]

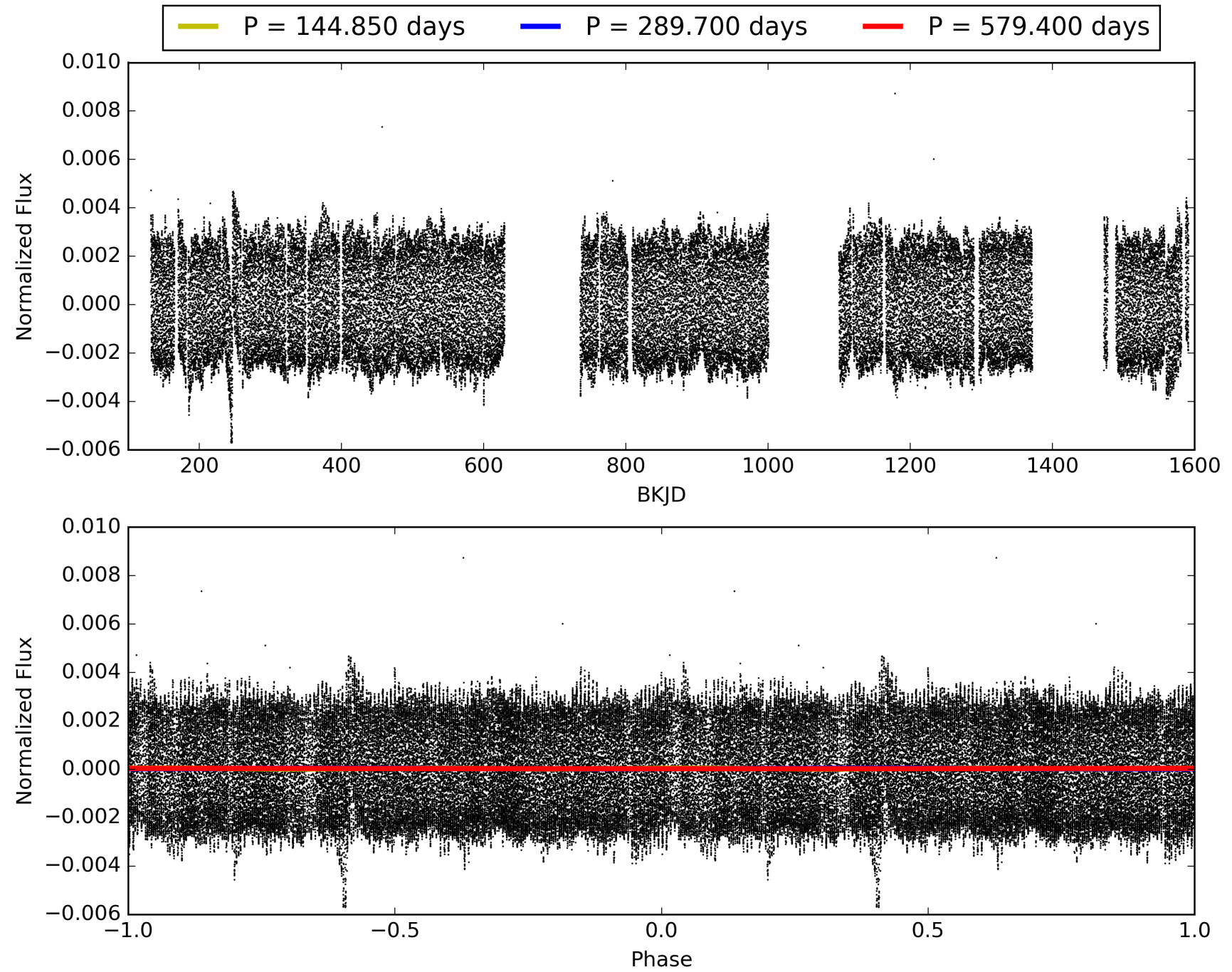
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:35:07 Z

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

TCE 010877367-05, PDC Light Curves

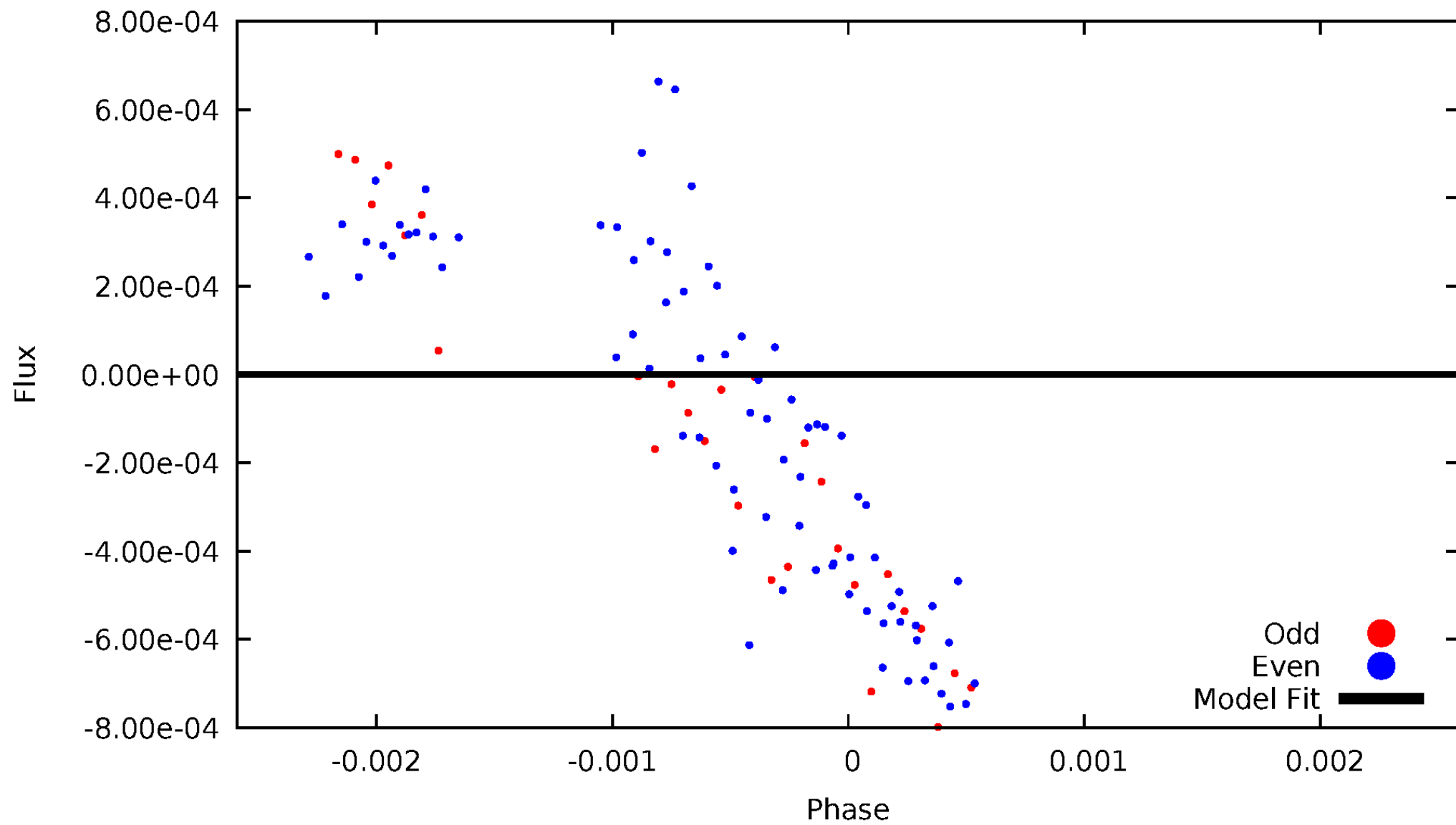


TCE 010877367-05



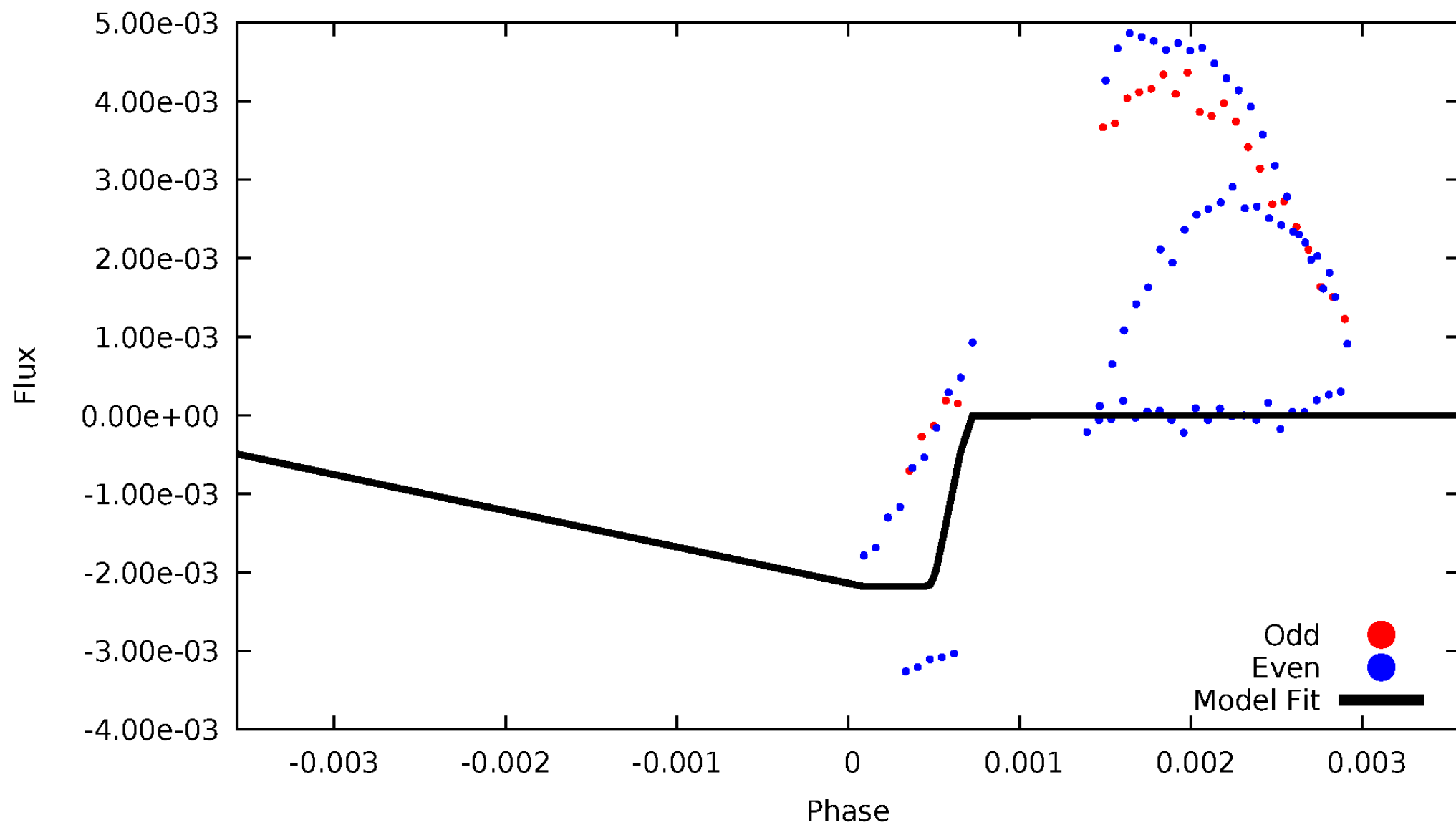
DV Odd/Even

TCE 010877367-05



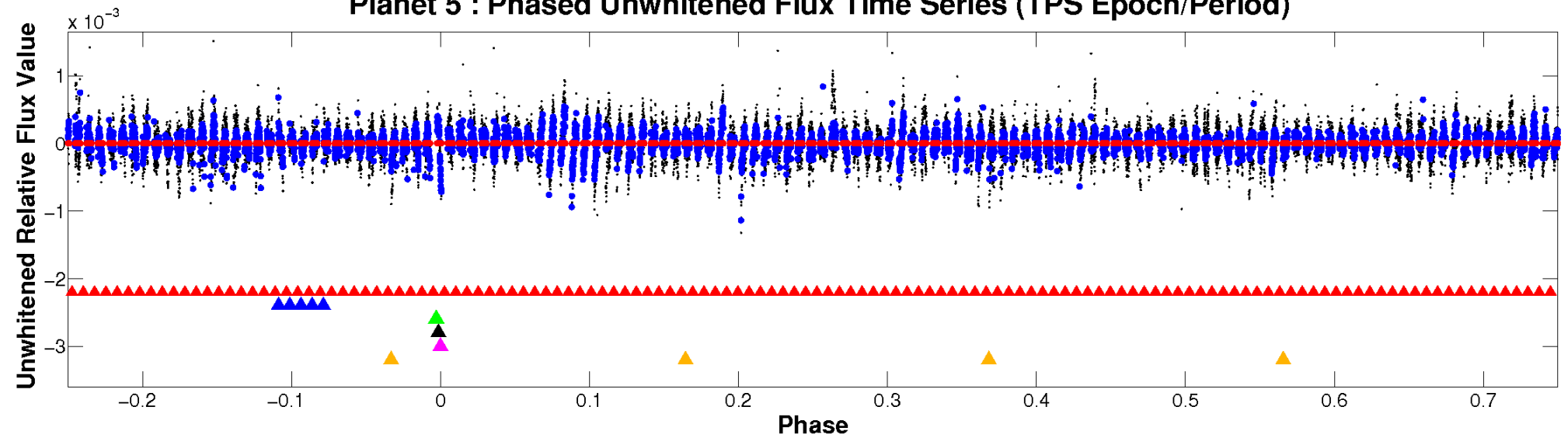
ALT Odd/Even

TCE 010877367-05

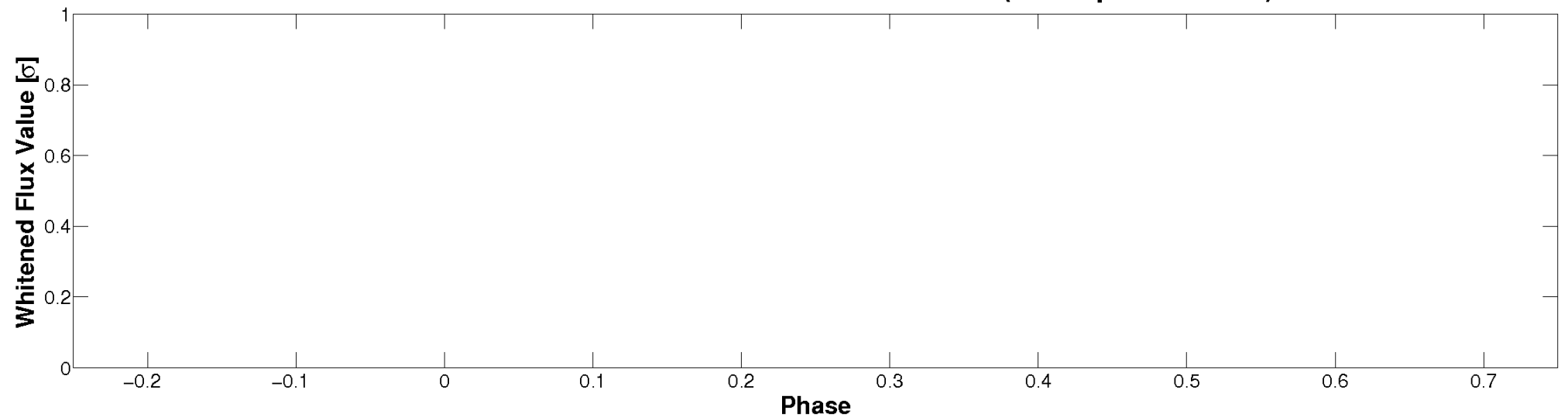


Non-Whitened Vs. Whitened Light Curve

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

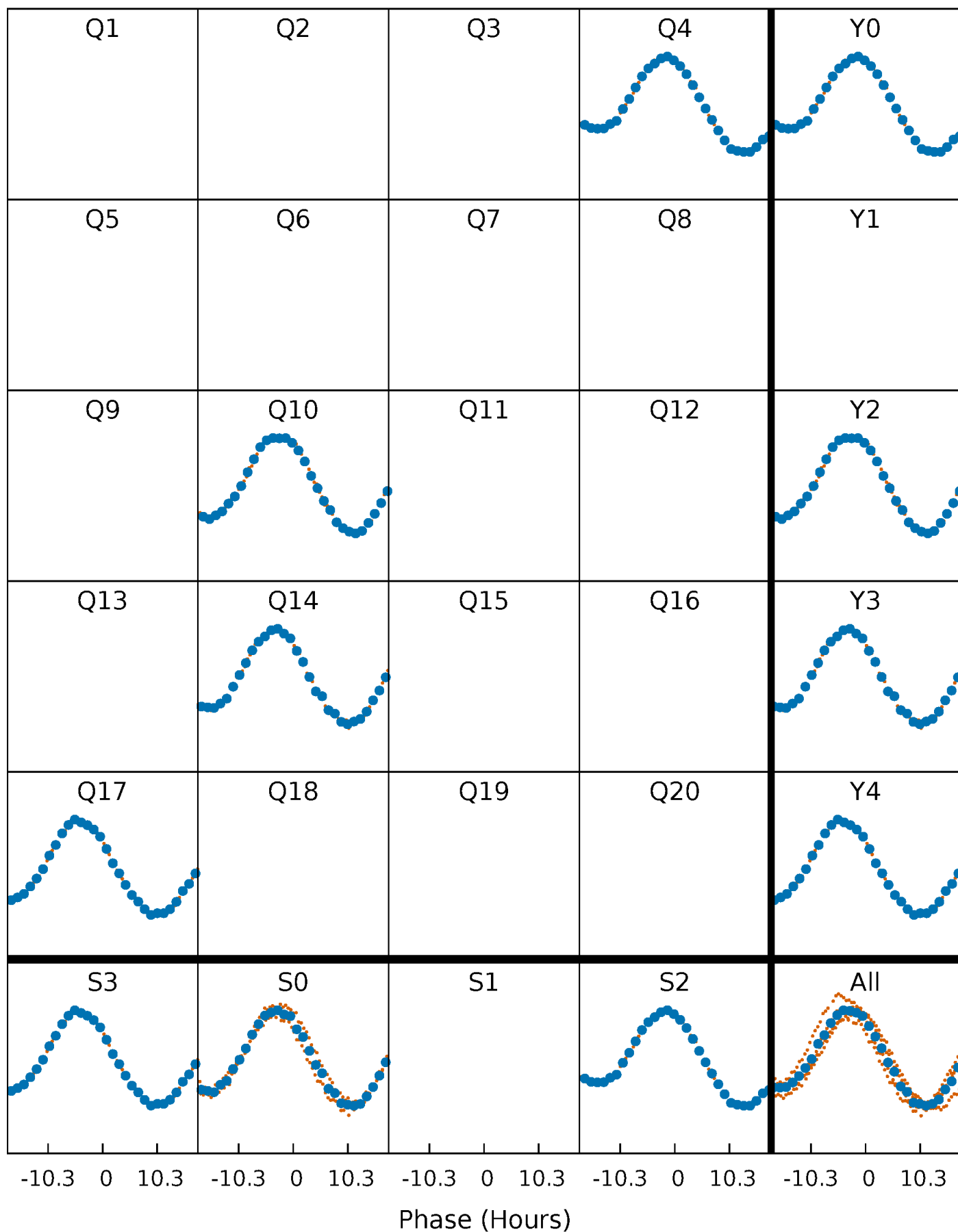


Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)



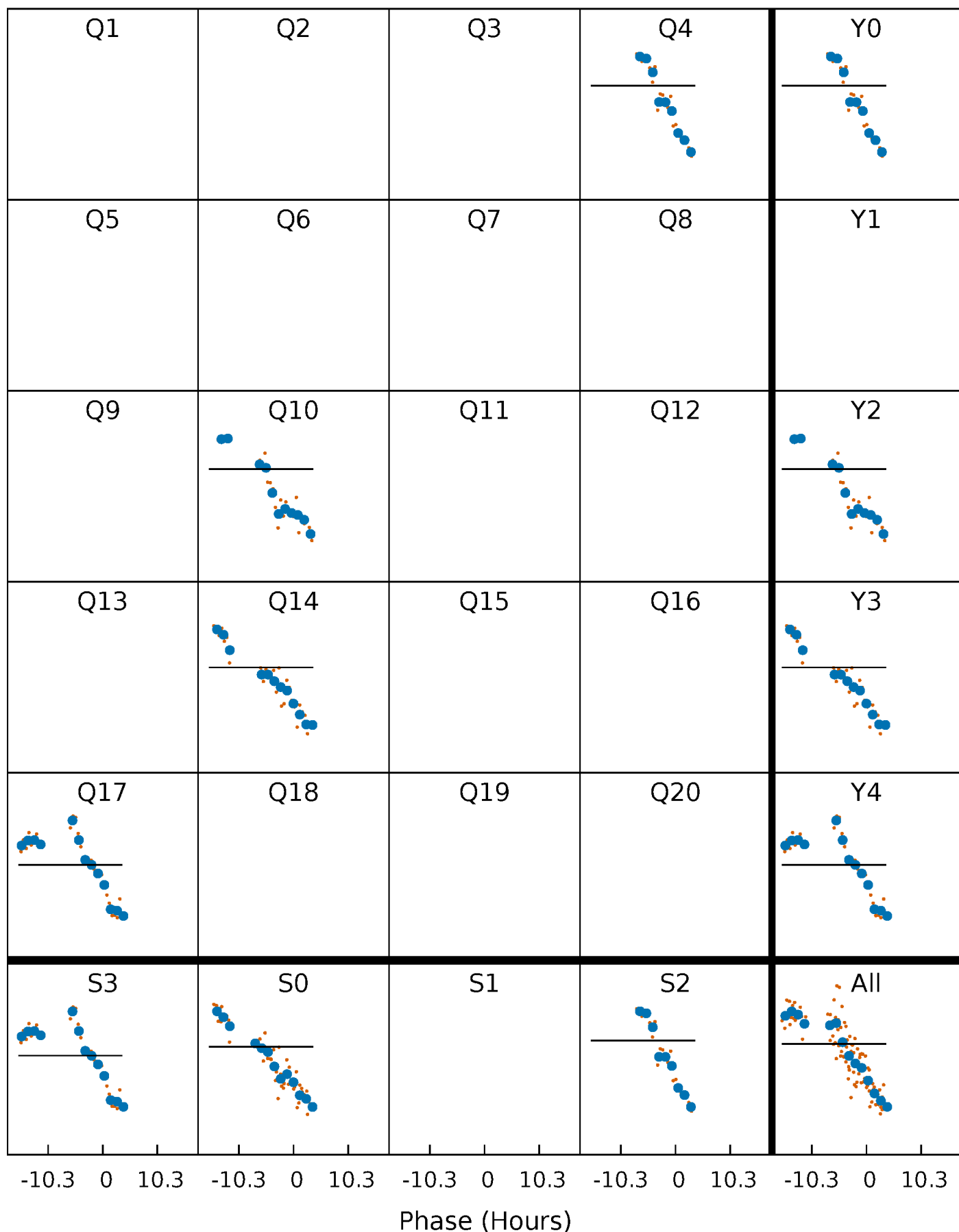
PDC Quarter-Phased Transit Curves

TCE 010877367-05 $P=289.700202$ Days $T_0=417.107456$ (BKJD)



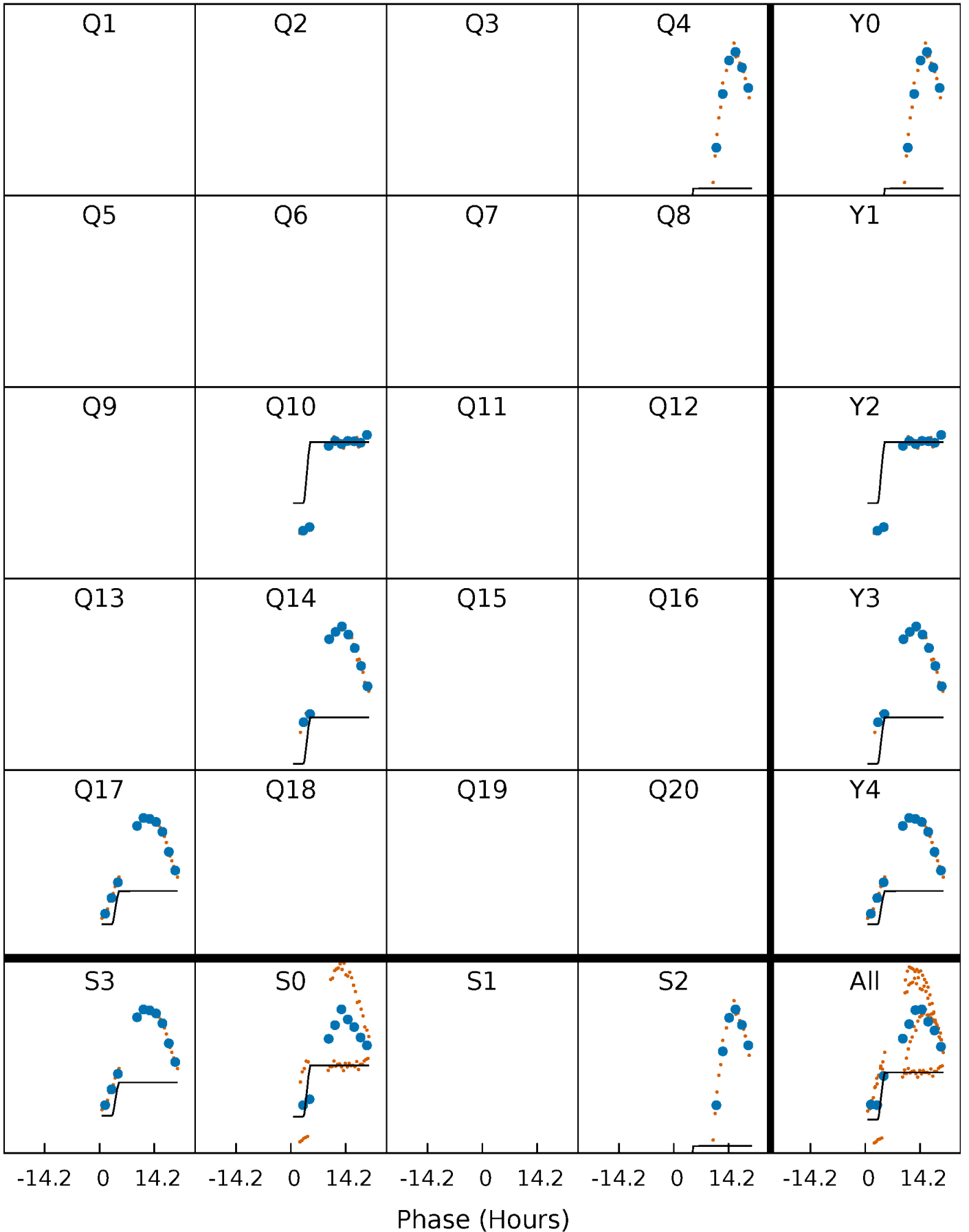
DV Quarter-Phased Transit Curves

TCE 010877367-05 $P=289.700202$ Days $T_0=417.107456$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

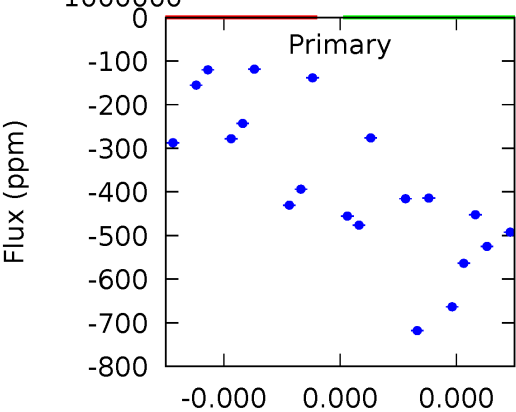
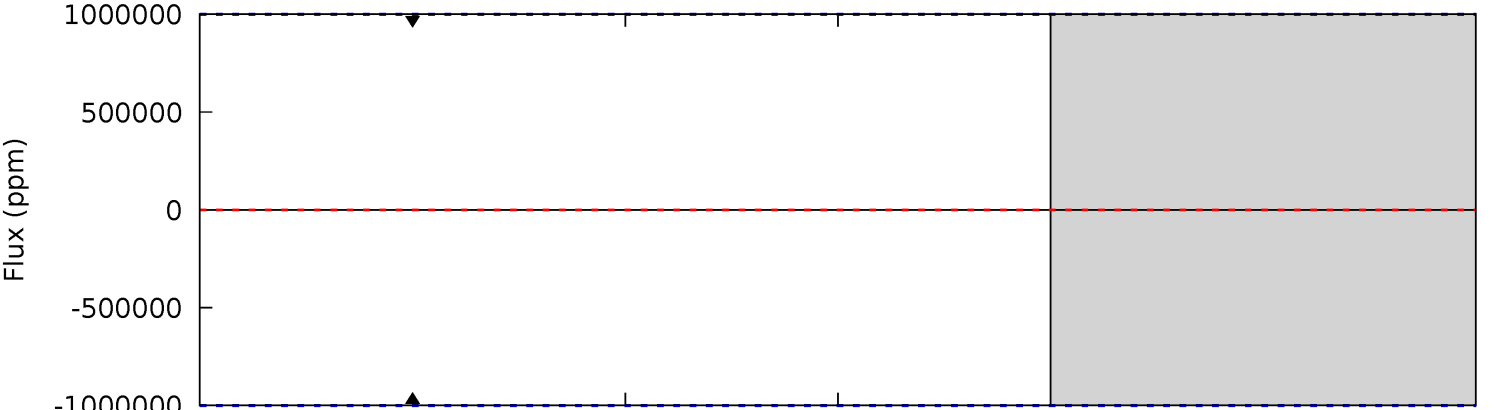
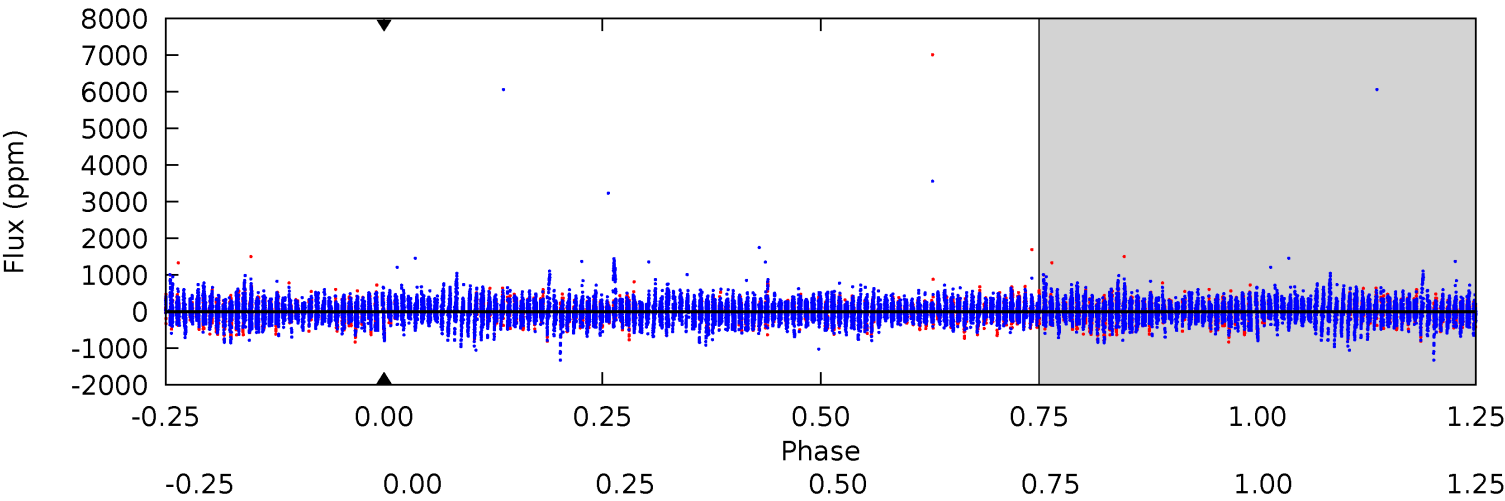
TCE 010877367-05 P=289.700202 Days $T_0=416.419114$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-05, P = 289.700202 Days, E = 127.407254 Days

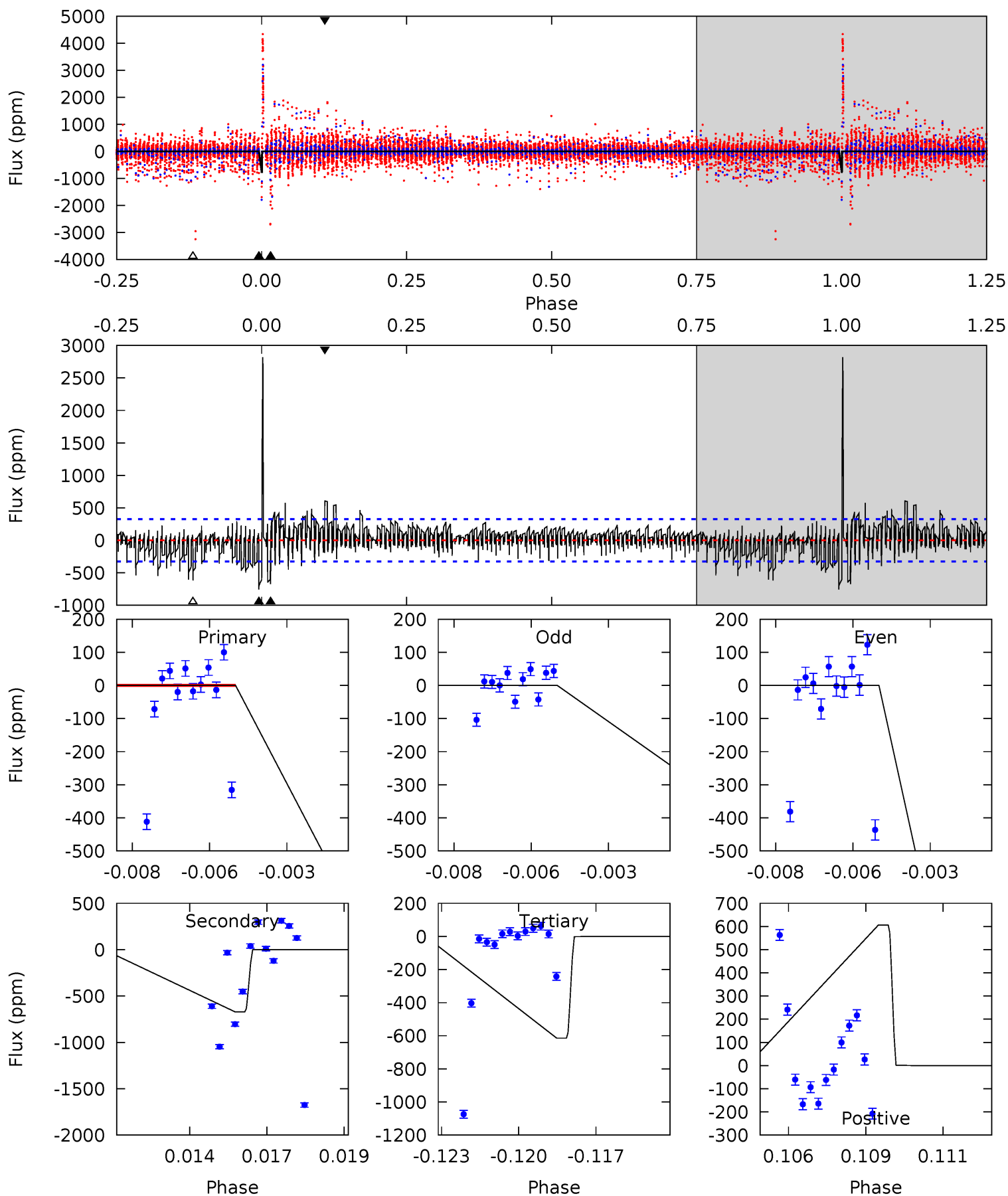
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010877367-05, P = 289.700202 Days, E = 126.718912 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	10.8	9.91	9.77	5.27	2.99	2.19	2.28	2.41	0.90	1.04	11.6	1.63	0.79	0



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$13.02^{+15.19}_{-9.25}$	561^{+36}_{-45}	-4670^{+36811}_{-28463}	$-2792.462^{+573964.793}_{-486277.840}$
Alt.	-671 ± 62	$15.99^{+15.08}_{-11.07}$	560^{+39}_{-45}	3914^{+2581}_{-720}	1210^{+10973}_{-893}

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 $A_{obs} \gg 1.0$

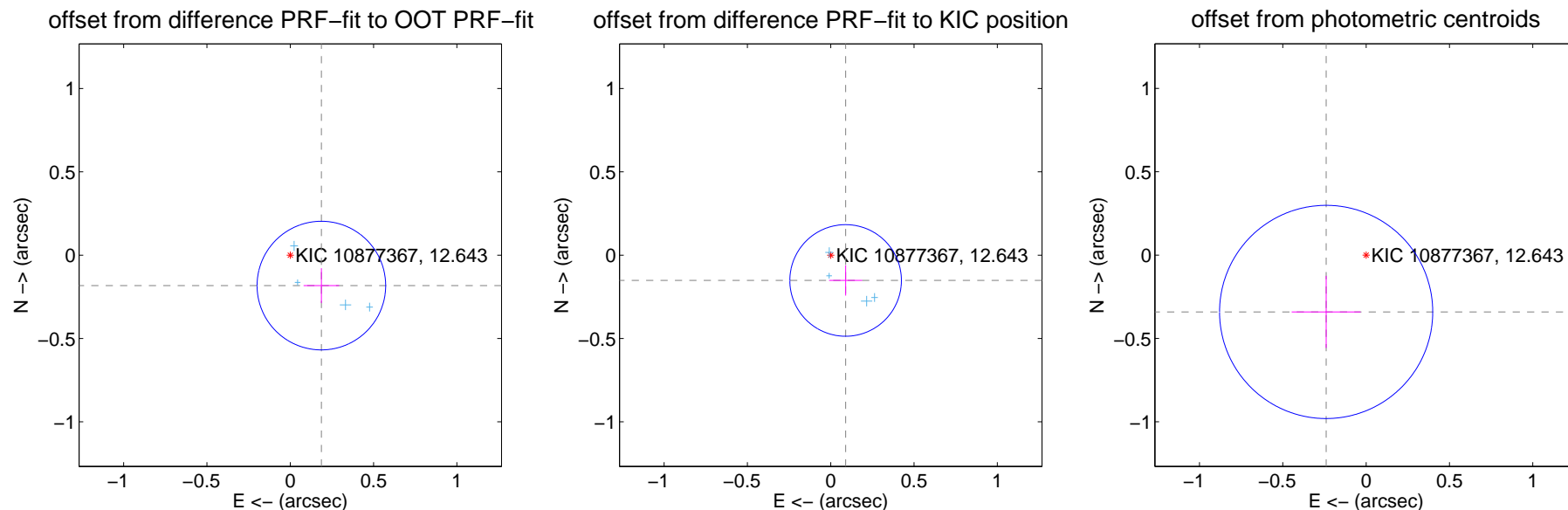
DV Centroid Data

Supplemental centroid analysis for 010877367-05. Kepler magnitude: 12.64. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

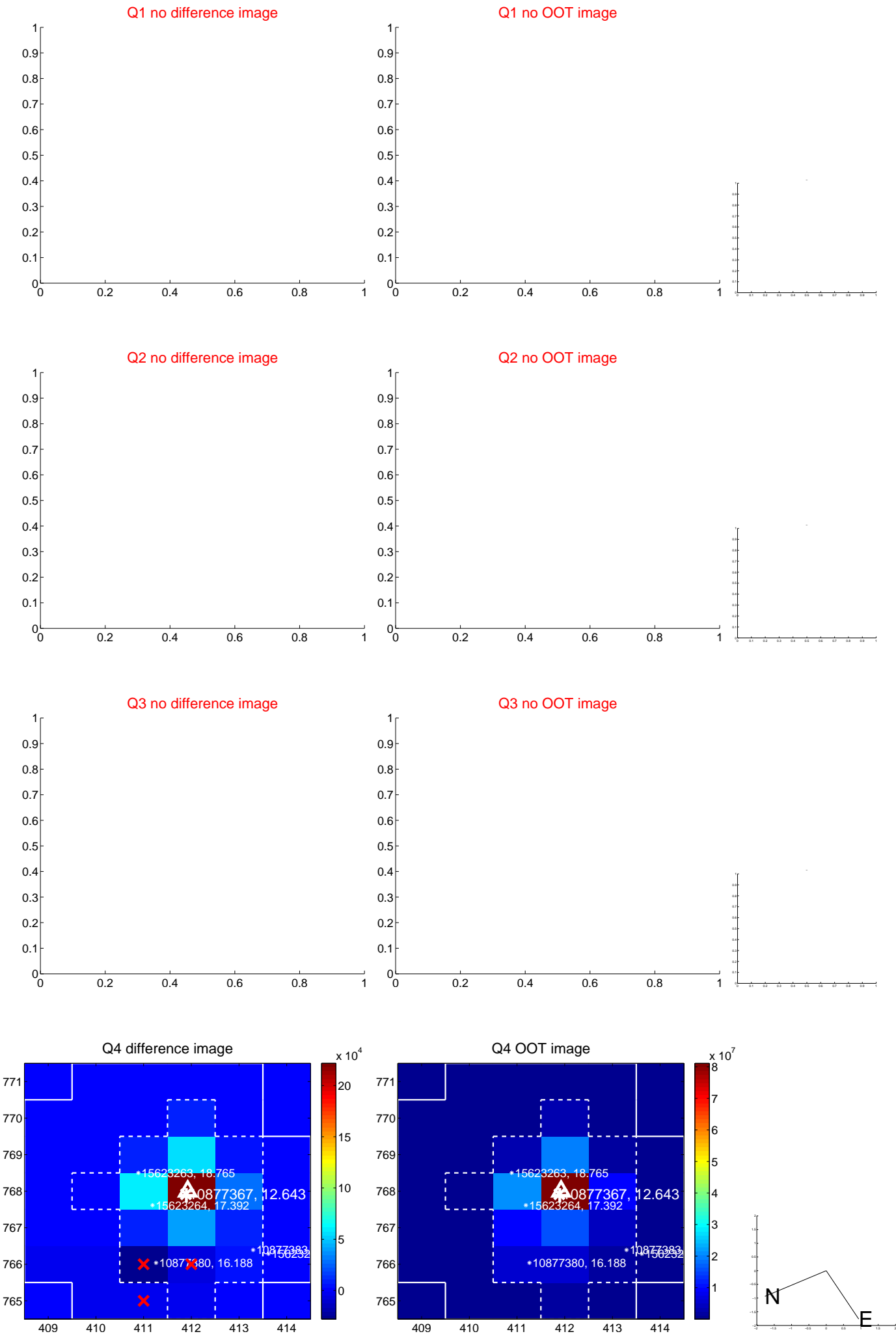
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.261 ± 0.129	2.03	-0.187 ± 0.107	-0.183 ± 0.104
PRF-fit source offset from KIC position	0.176 ± 0.112	1.58	-0.089 ± 0.099	-0.152 ± 0.091
photometric centroid source offset	0.42 ± 0.21	1.96	0.24 ± 0.21	-0.34 ± 0.22

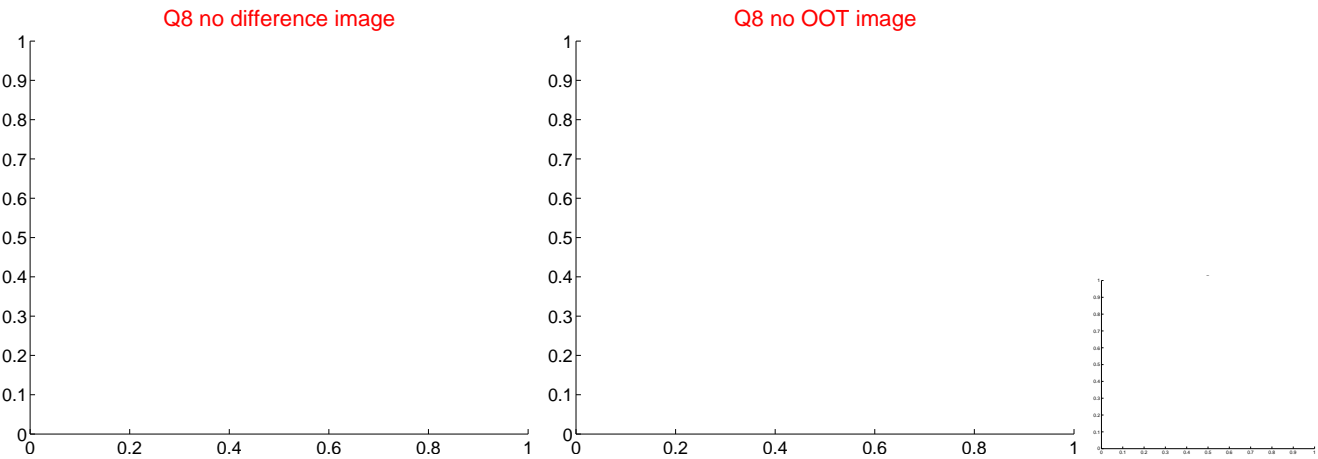
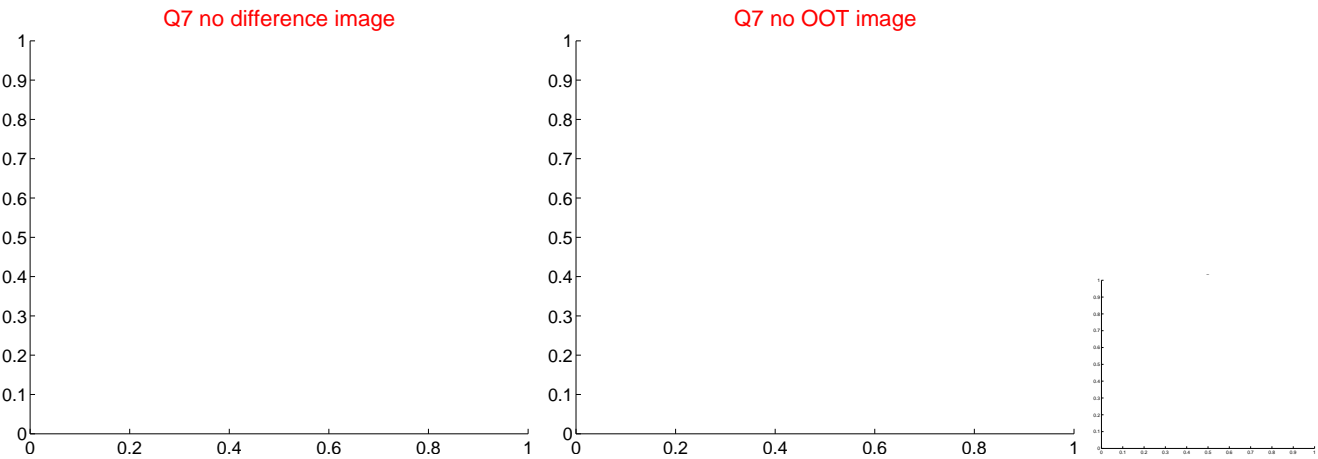
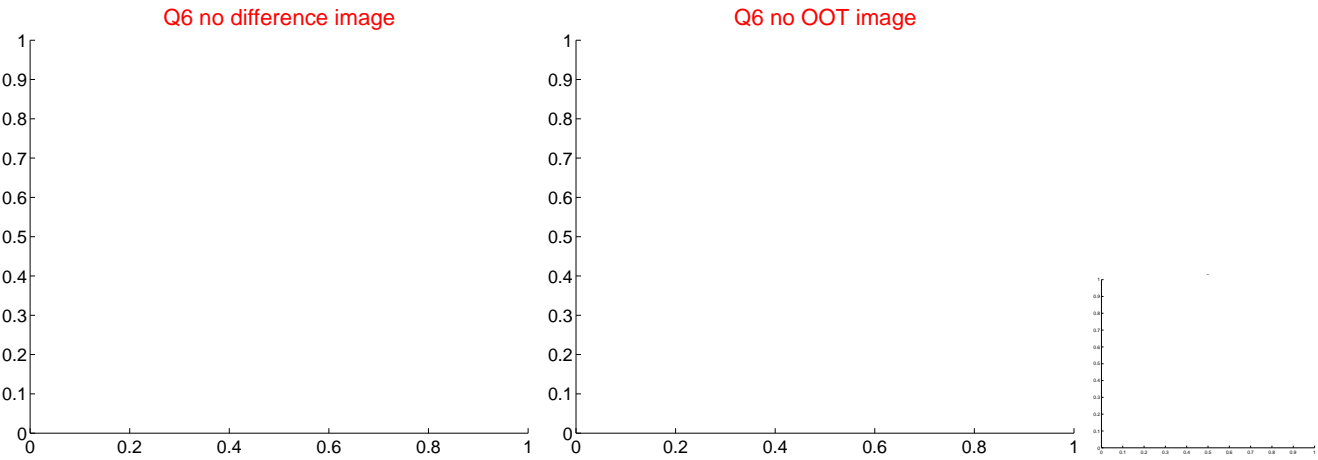
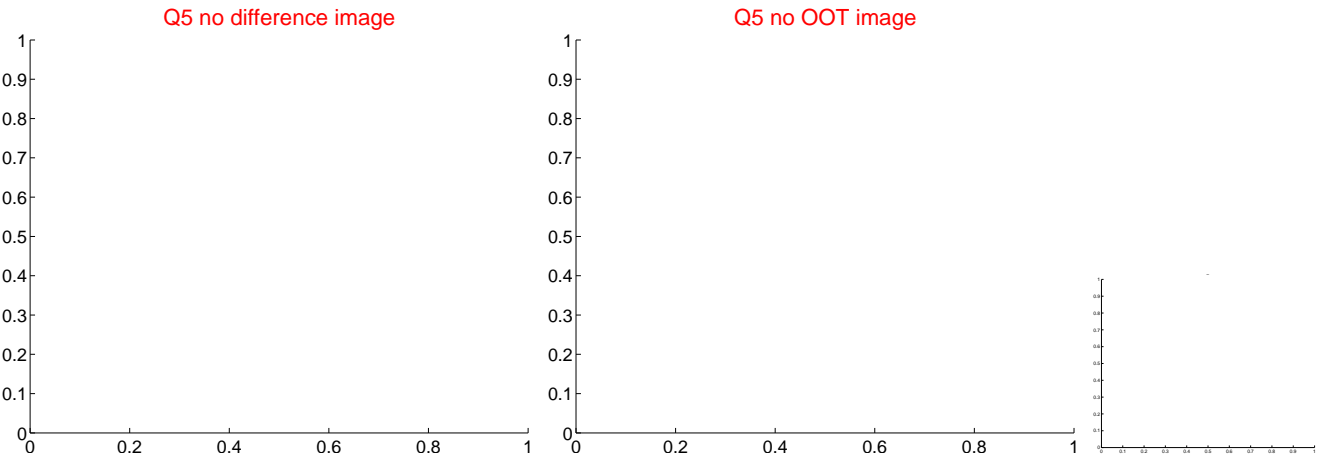


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

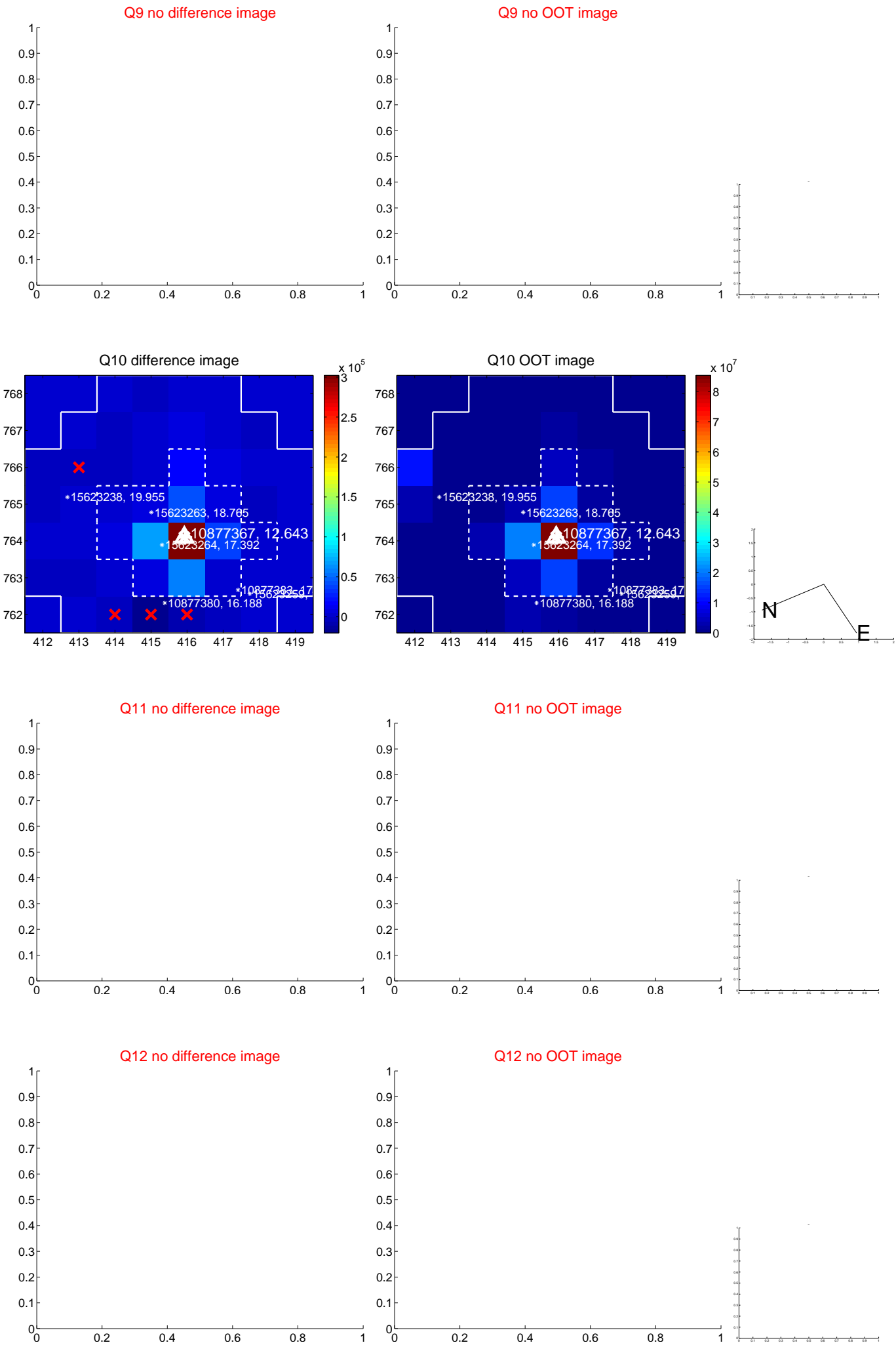
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



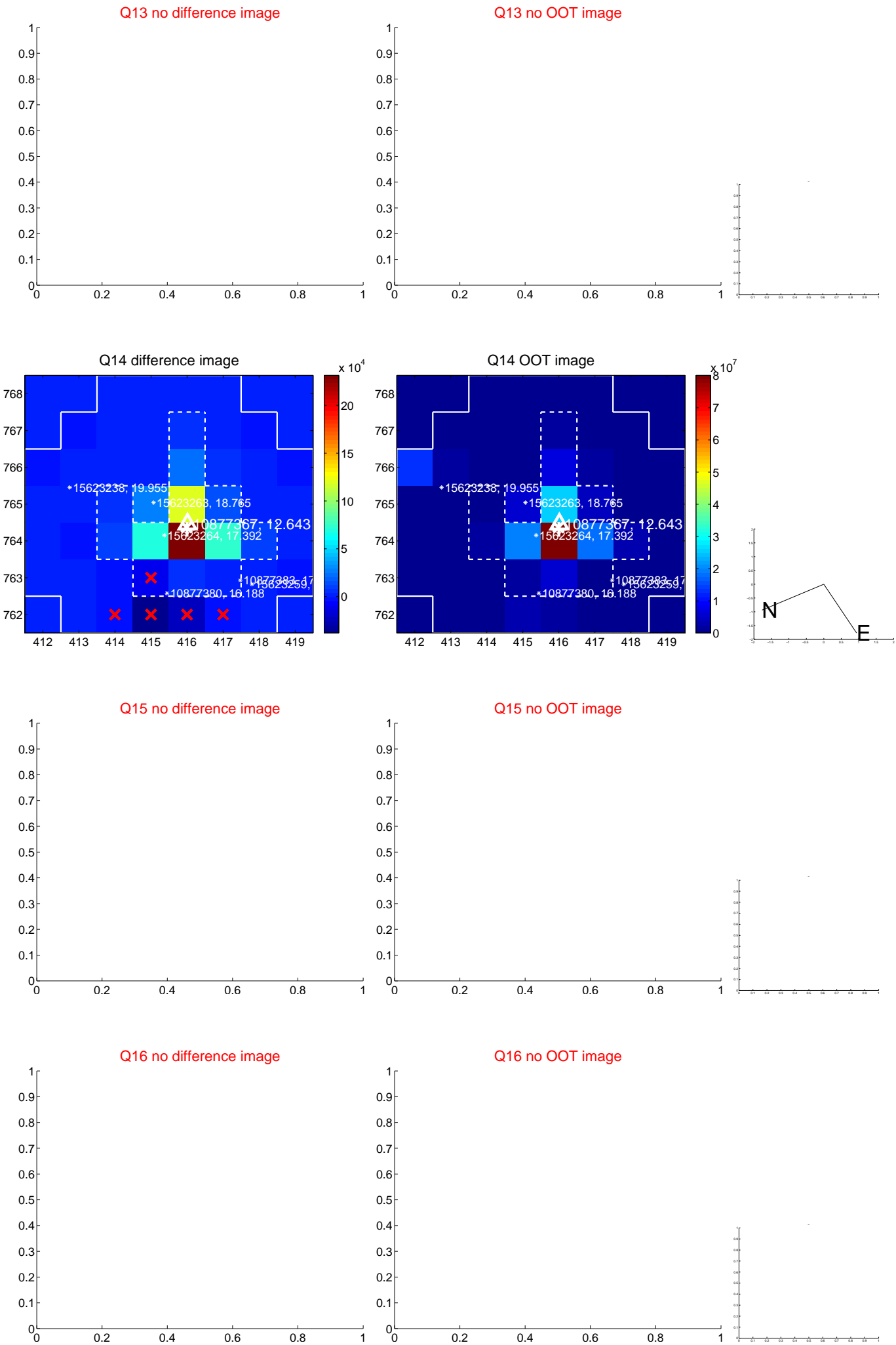
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



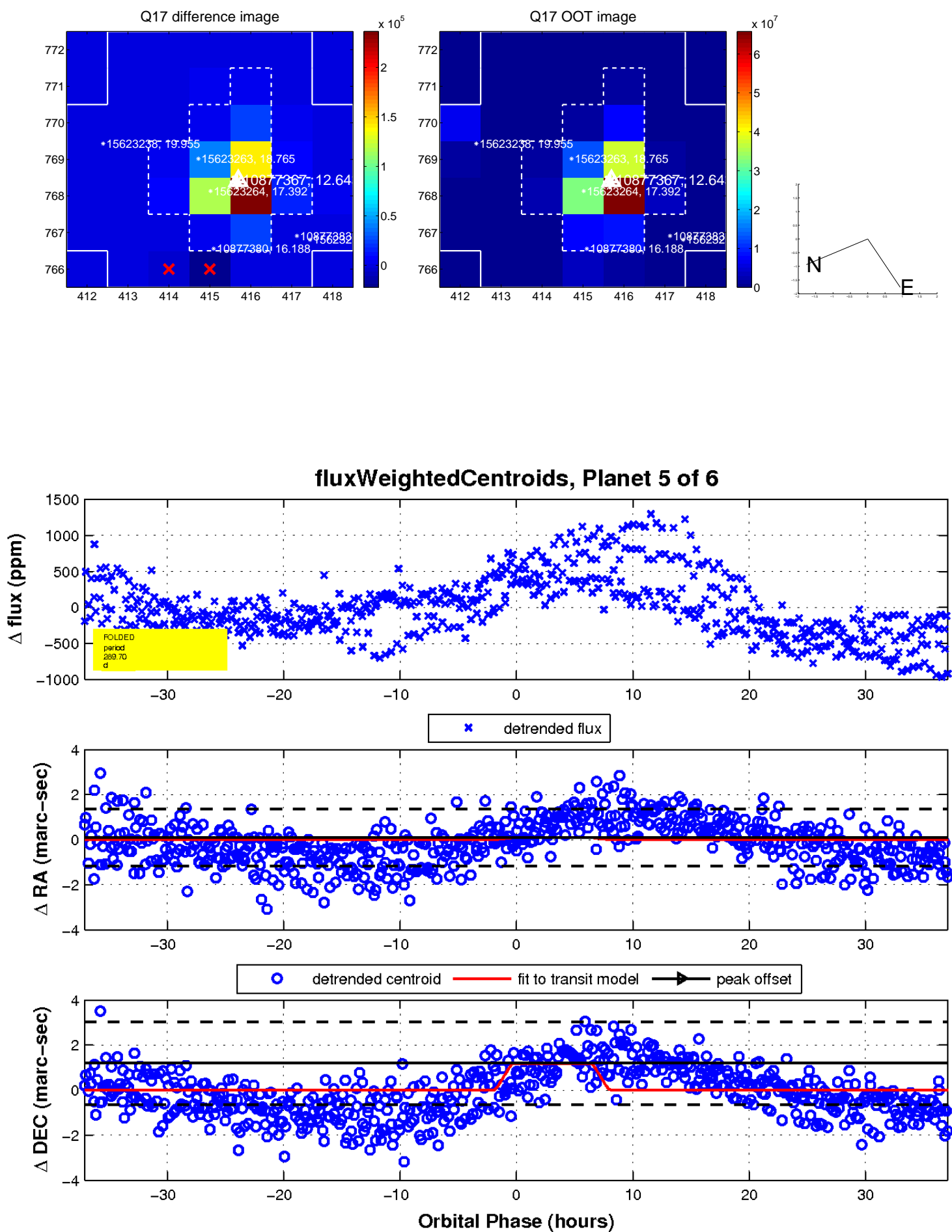
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

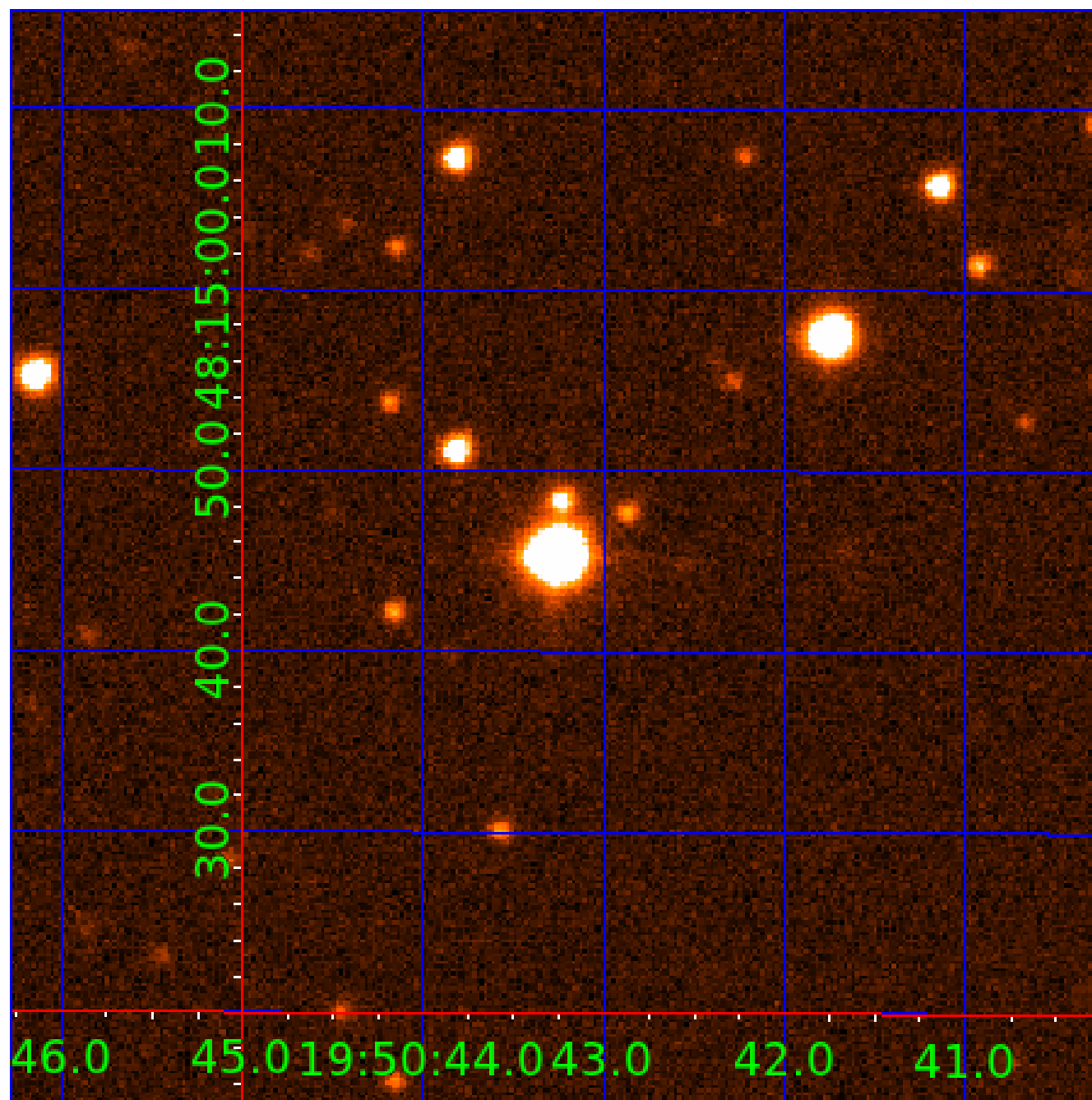


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010877367

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})
010877367-01	OBS	No	2.194786	132.538779	31.4	9.857	8.6	7.3	1.77	6585	1.15	4314.36
010877367-02	OBS	No	287.526754	394.324622	942.8	16.762	14.1	8.5	1.77	6585	10.22	6.48
010877367-03	OBS	No	289.662726	416.362864	232.2	3.404	10.1	3.3	1.77	6585	3.04	6.42
010877367-04	OBS	No	289.709686	416.697759	65.4	0.929	10.1	1.2	1.77	6585	1.57	6.42
010877367-05	OBS	No	289.700202	417.107456	159.6	9.000	10.1	-1.0	1.77	6585	2.25	6.42
010877367-06	OBS	No	405.926752	175.059032	637.8	18.183	8.9	8.3	1.77	6585	5.21	4.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010877367-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
010877367-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS
010877367-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010877367-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010877367-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS
010877367-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—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.

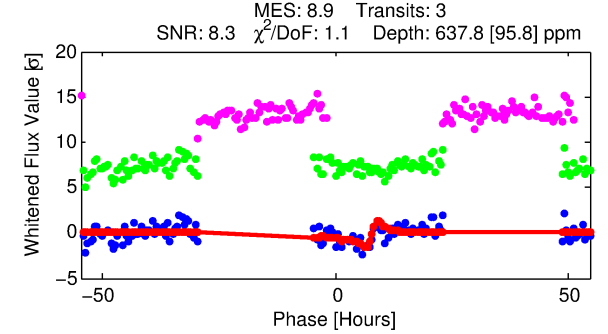
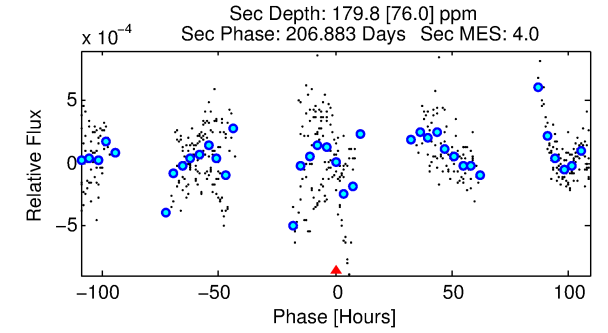
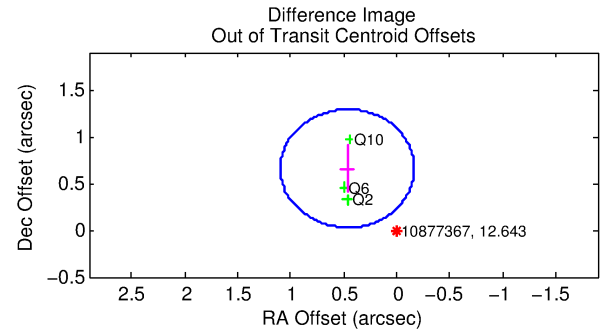
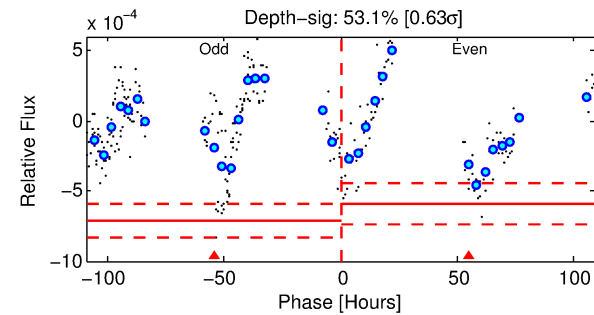
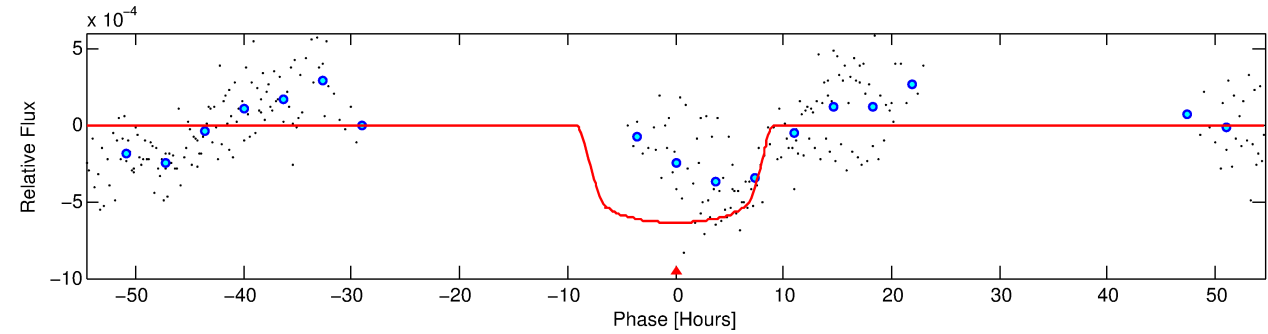
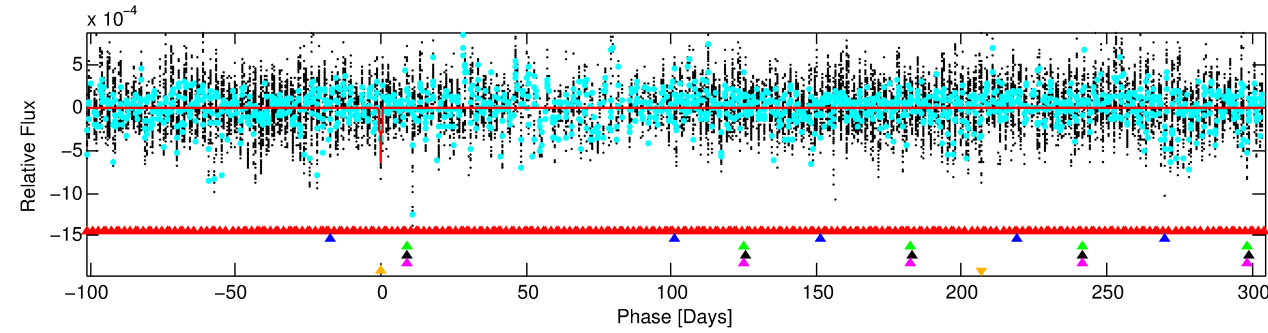
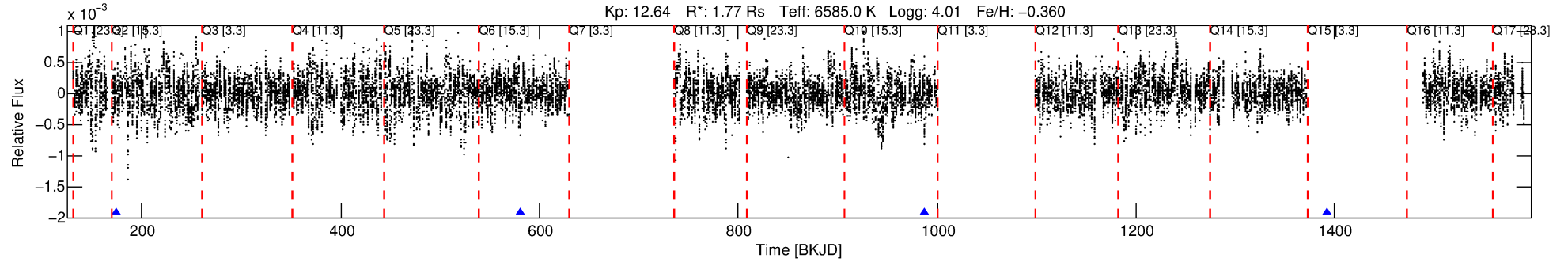
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010877367-06

No Significant Match Found

DV One-Page Summary

KIC: 10877367 Candidate: 6 of 6 Period: 405.927 d



DV Fit Results:

Period = 405.92675 [0.01106] d
Epoch = 175.0590 [0.0670] BKJD
Rp/R* = 0.0270 [0.0023]
a/R* = 83.99 [20.36]
b = 0.90 [0.03]
Seff = 4.09 [1.85]
Teq = 363 [41] K
Rp = 5.21 [1.52] Re
a = 1.1341 [0.3087] AU
Ag = 4682.98 [2962.46] [1.58σ]
Teffp = 4639 [543] K [7.85σ]

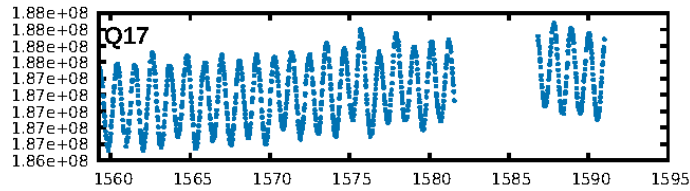
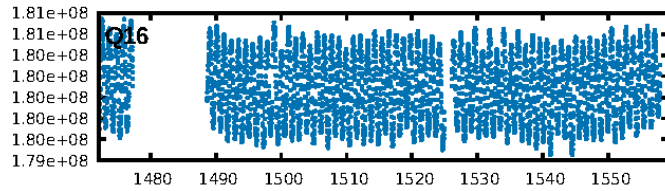
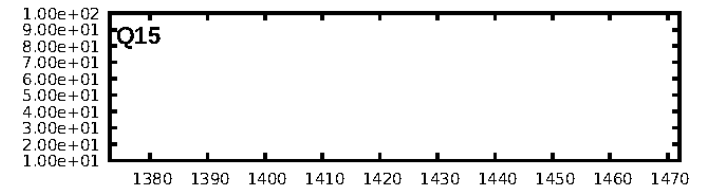
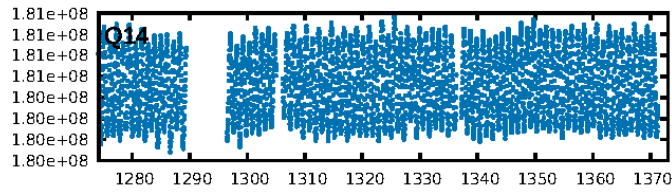
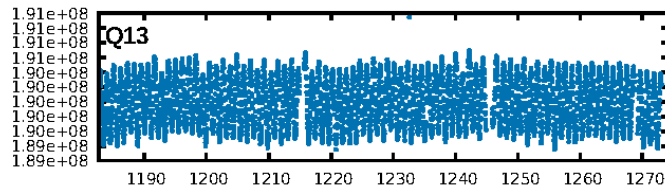
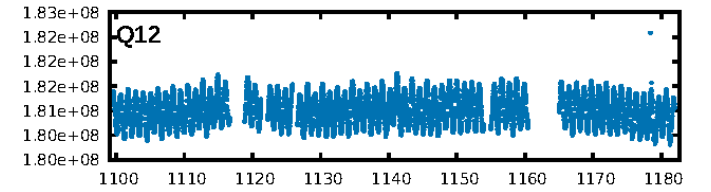
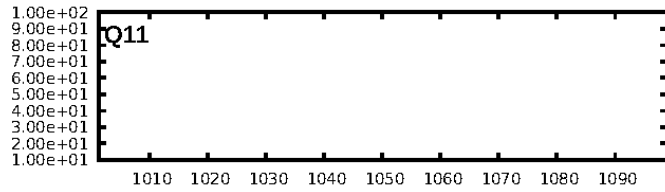
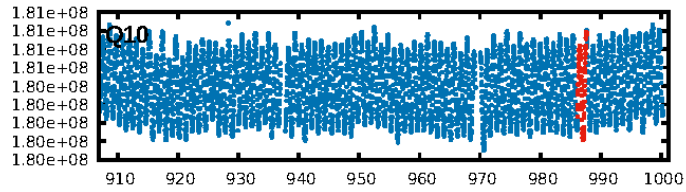
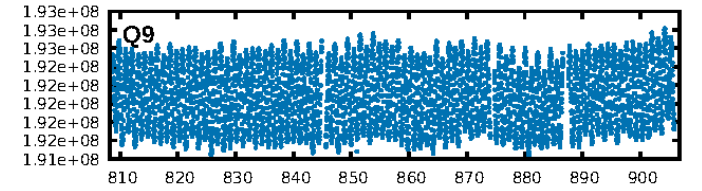
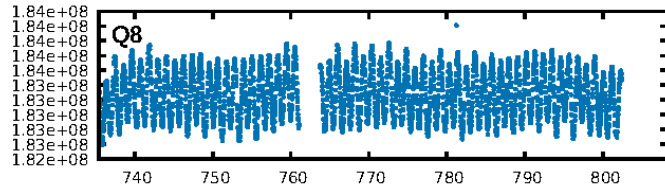
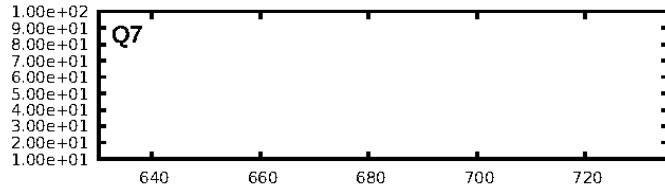
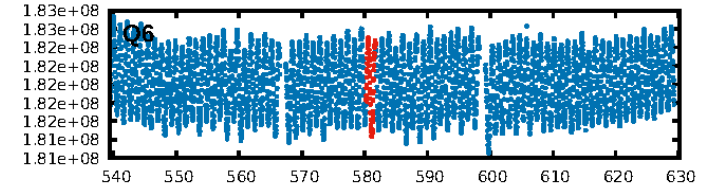
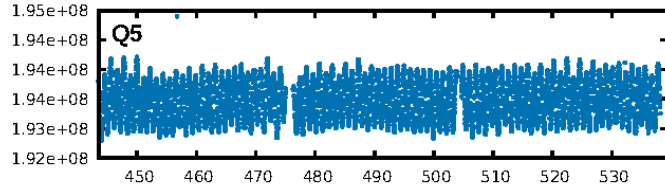
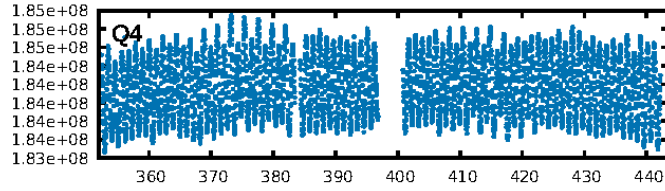
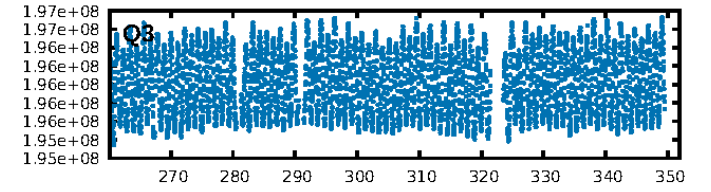
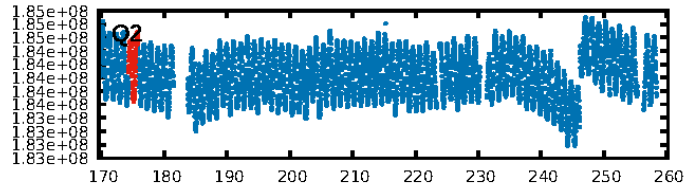
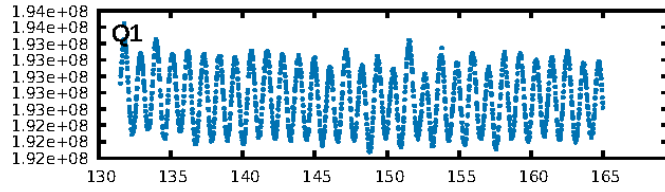
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [153.20σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 9.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.29e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.4943
Centroid-sig: 47.1%
Centroid-so: 0.402 arcsec [0.45σ]
OotOffset-rm: 0.806 arcsec [3.83σ]
KicOffset-rm: 0.859 arcsec [4.56σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

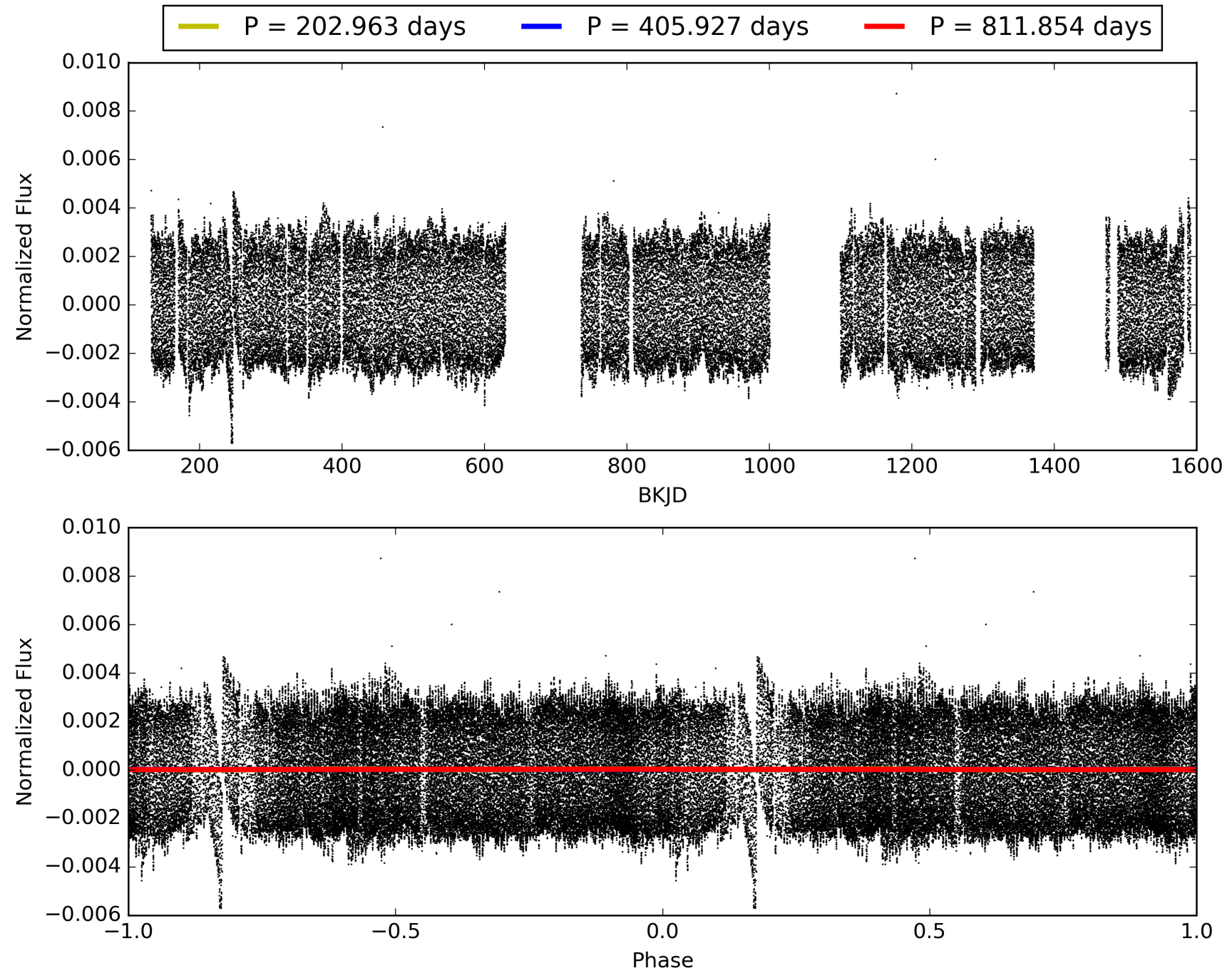
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:35:13 Z

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

TCE 010877367-06, PDC Light Curves

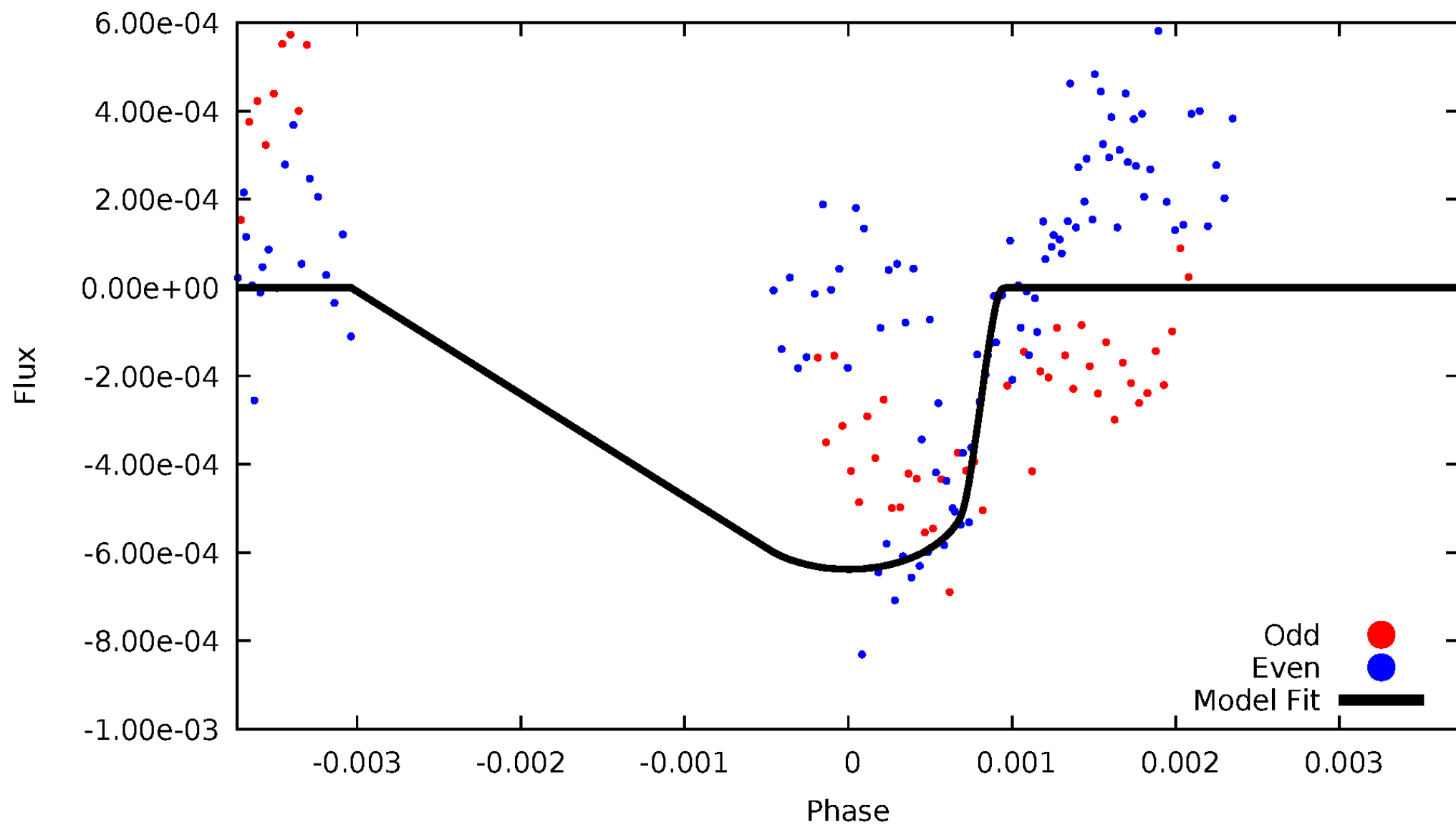


TCE 010877367-06



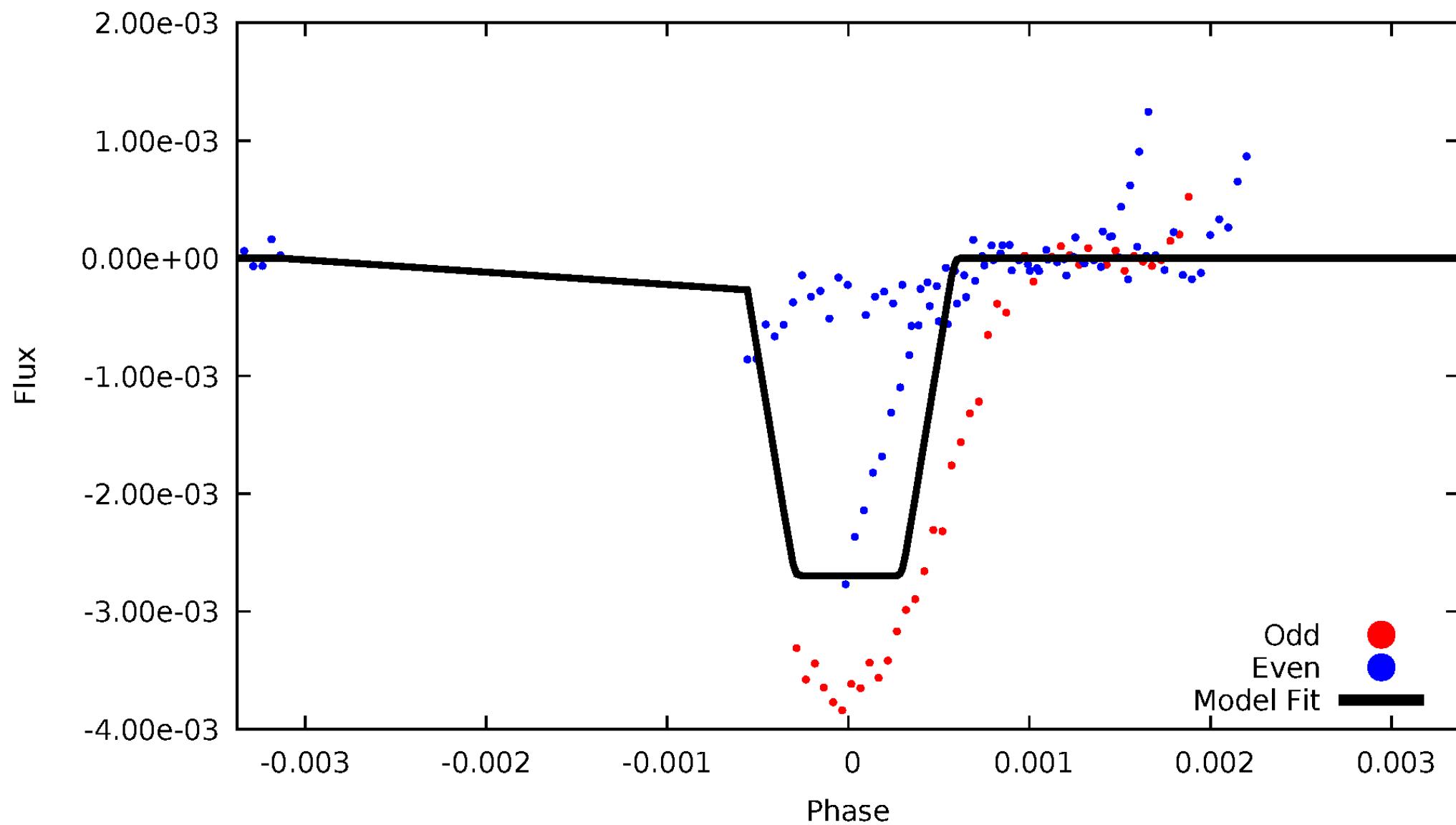
DV Odd/Even

TCE 010877367-06



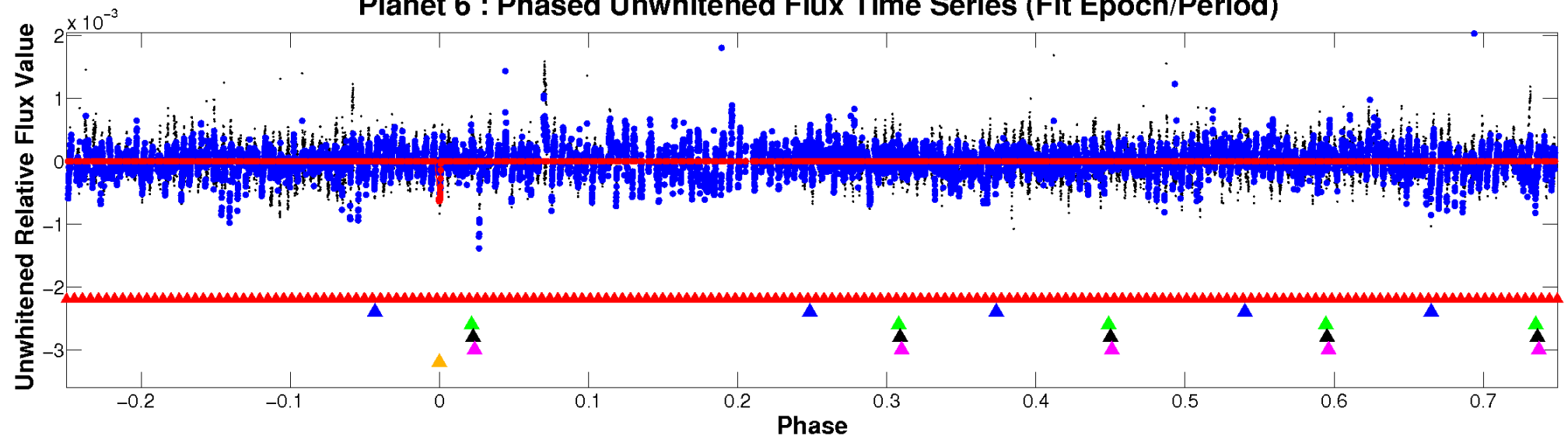
ALT Odd/Even

TCE 010877367-06

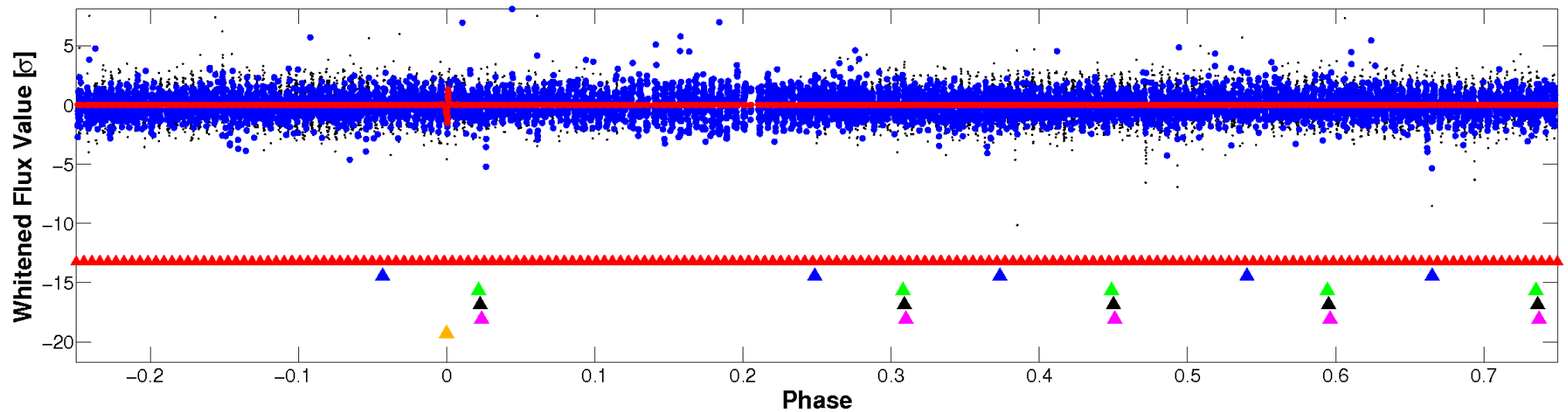


Non-Whitened Vs. Whitened Light Curve

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

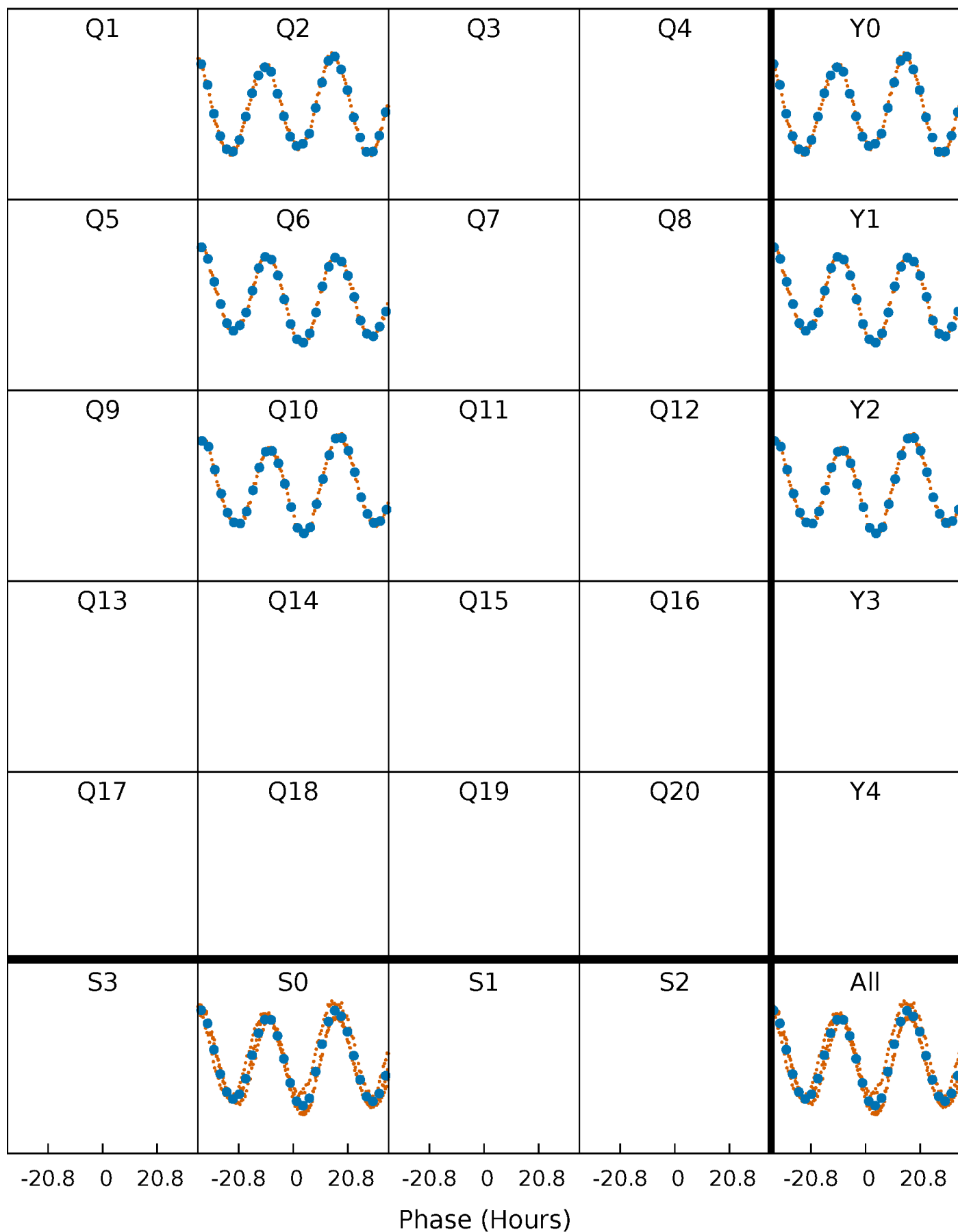


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



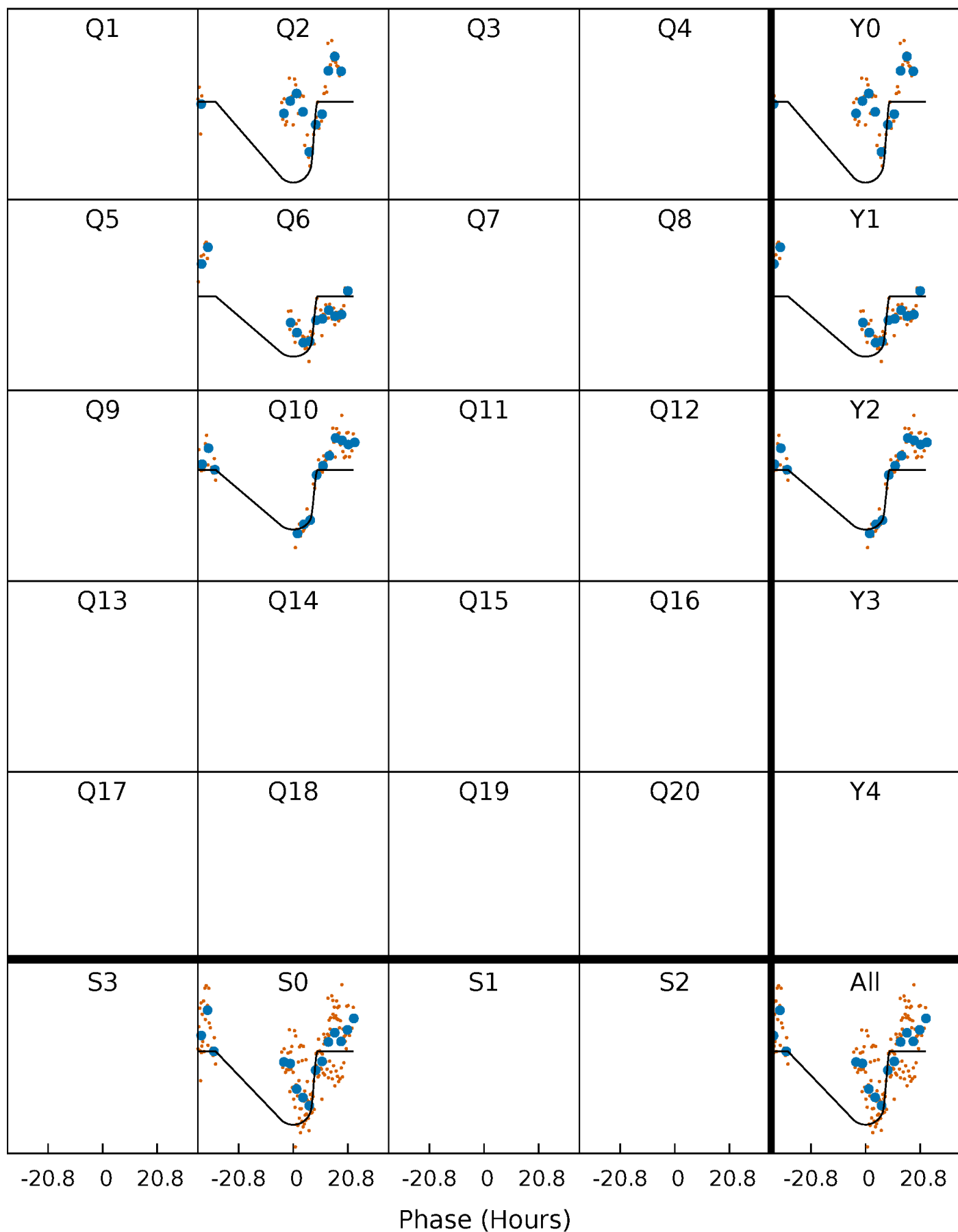
PDC Quarter-Phased Transit Curves

TCE 010877367-06 $P=405.926752$ Days $T_0=175.059032$ (BKJD)



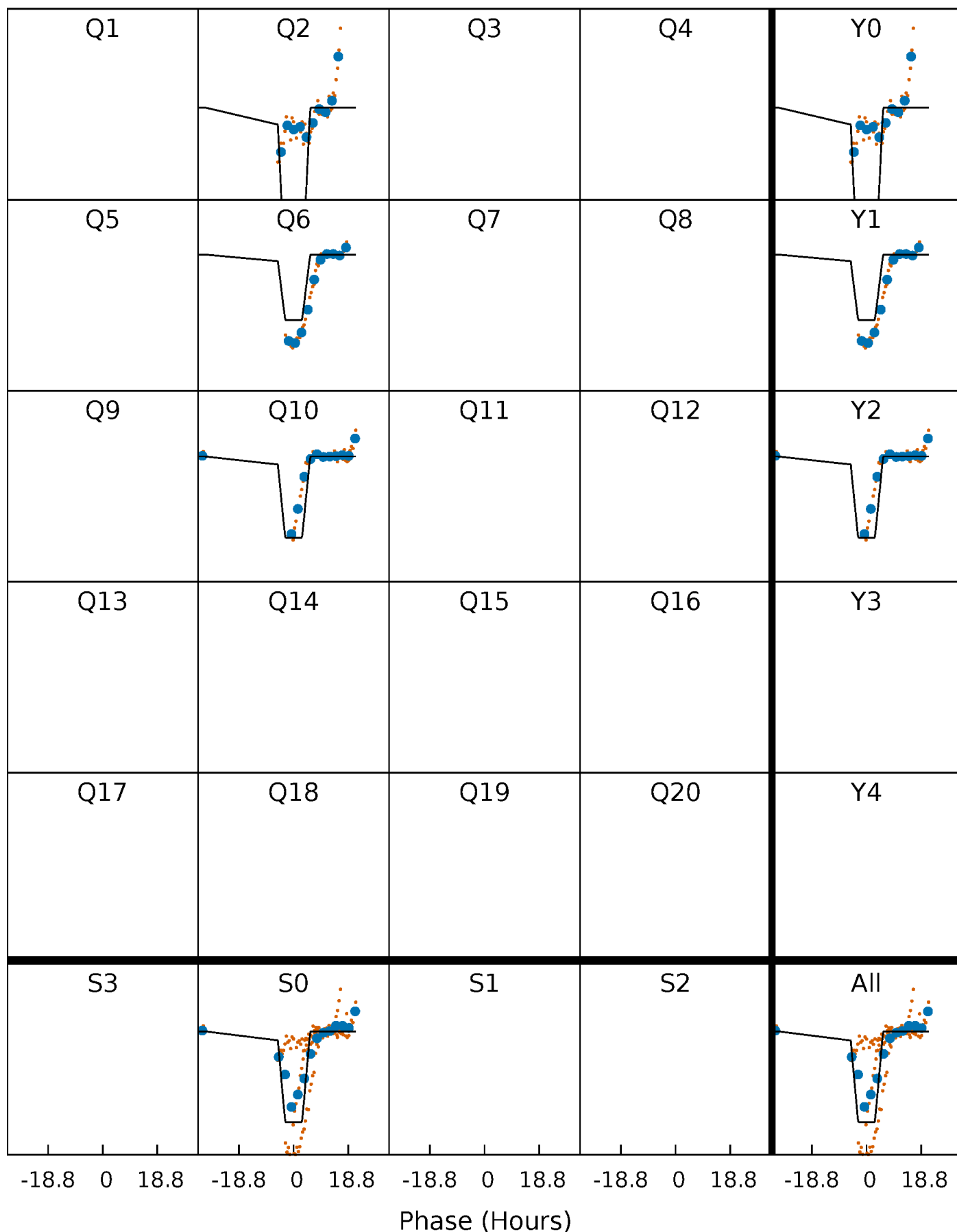
DV Quarter-Phased Transit Curves

TCE 010877367-06 $P=405.926752$ Days $T_0=175.059032$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

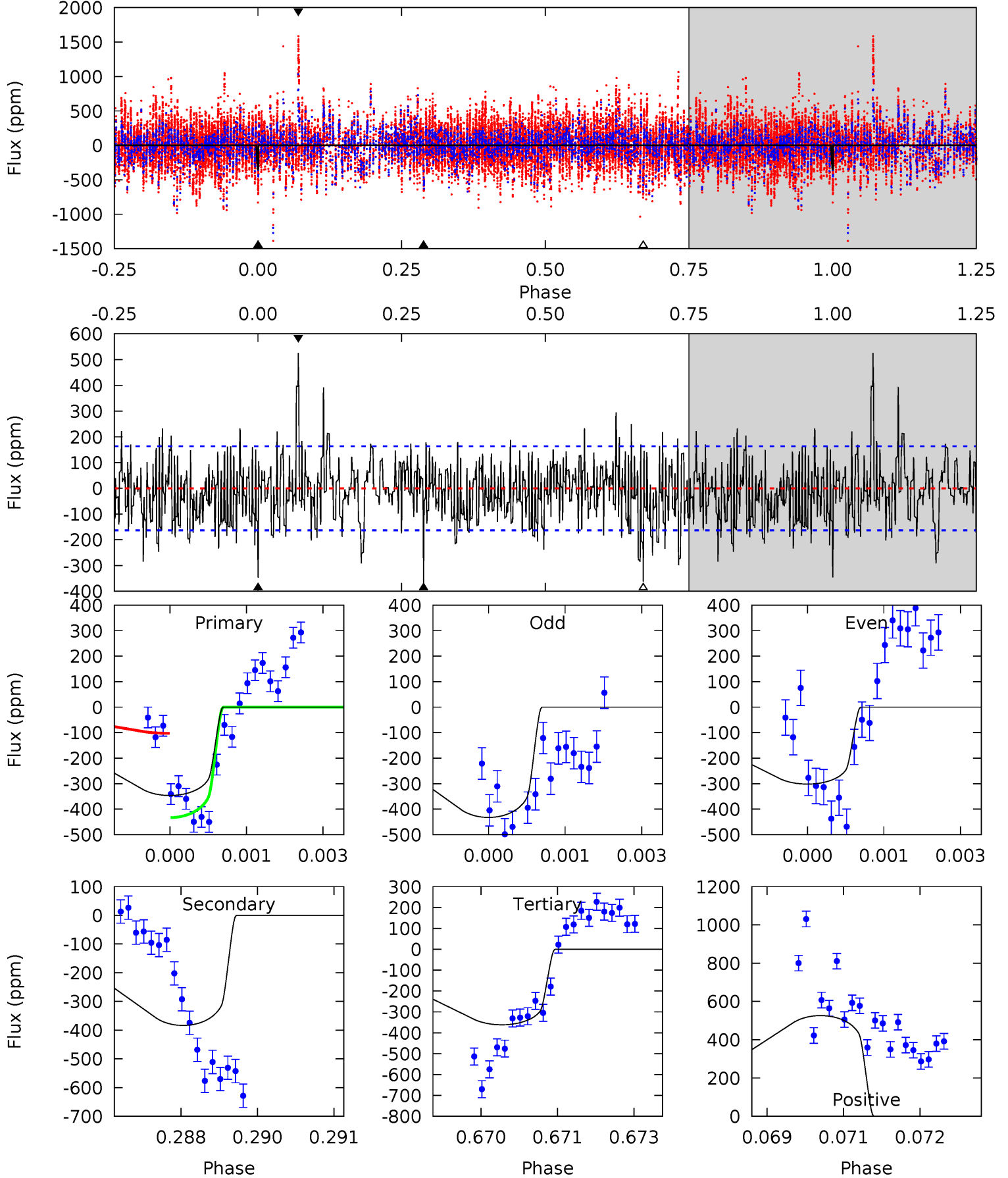
TCE 010877367-06 P=405.926292 Days $T_0=175.099662$ (BKJD)



DV Model-Shift Uniqueness Test

010877367-06, P = 405.926752 Days, E = 175.059032 Days

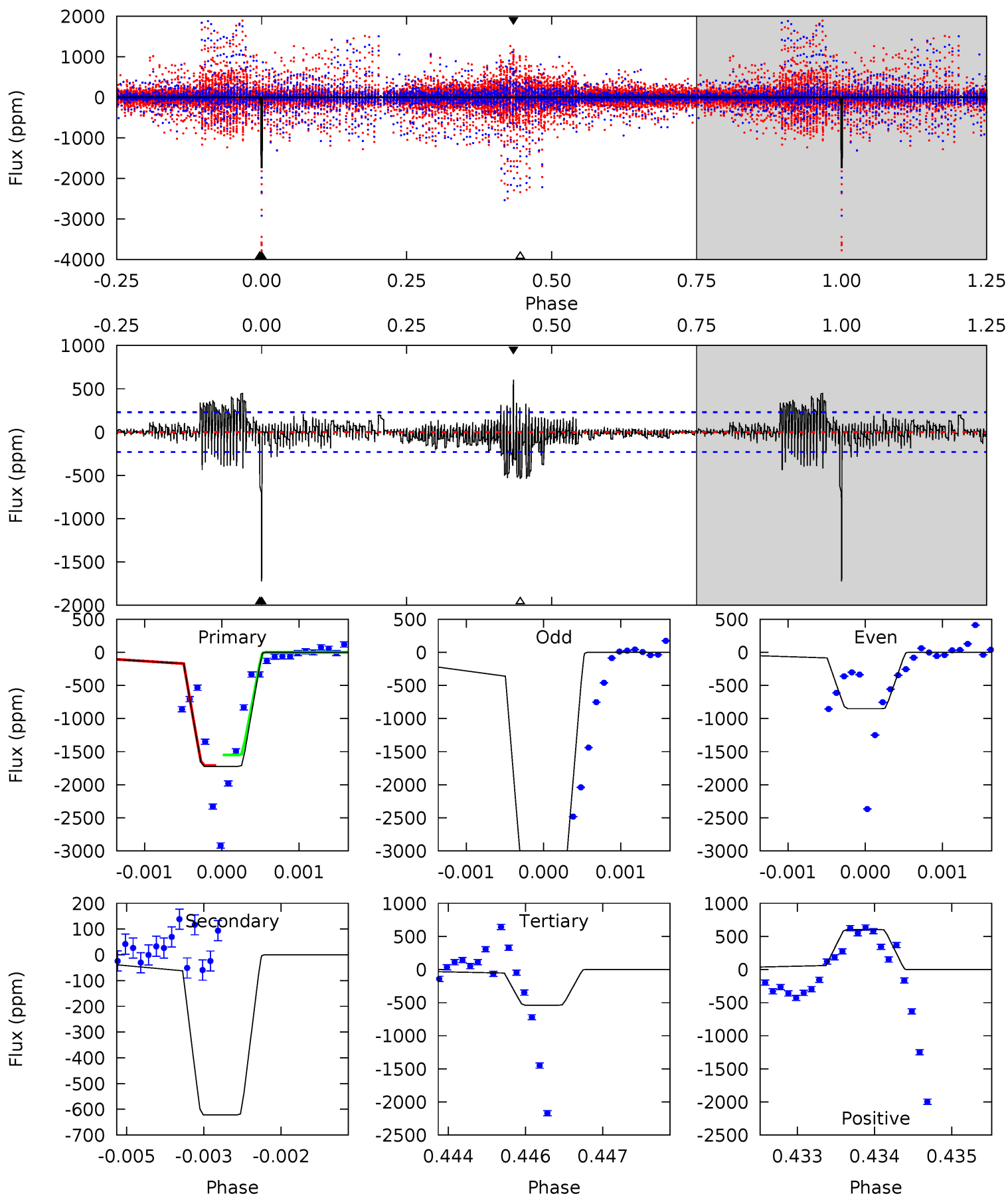
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	12.7	12.0	17.4	5.40	3.20	3.15	-0.51	-5.94	0.72	-4.71	2.07	0.91	0.58	4.24



Alt Model-Shift Uniqueness Test

010877367-06, P = 405.926292 Days, E = 175.099662 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.7	14.7	12.7	14.3	5.43	3.26	2.25	28.0	26.4	1.98	0.44	35.6	1.13	0.26	0



Stellar Parameters For KIC 010877367

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+160}_{-180}	$4.015^{+0.259}_{-0.130}$	$-0.360^{+0.300}_{-0.250}$	$1.768^{+0.404}_{-0.493}$	$1.180^{+0.197}_{-0.161}$	$0.301^{+0.444}_{-0.117}$
	+2%/-3%	+6%/-3%	+83%/-69%	+23%/-28%	+17%/-14%	+148%/-39%
Source	PHO1	FLK73	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 010877367-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-384 ± 30	$5.09^{+0.82}_{-0.85}$	500^{+33}_{-37}	5618^{+282}_{-271}	10584^{+4314}_{-2799}
Alt.	-622 ± 42	$9.86^{+1.52}_{-1.57}$	501^{+32}_{-40}	4692^{+152}_{-134}	4618^{+1645}_{-1100}

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

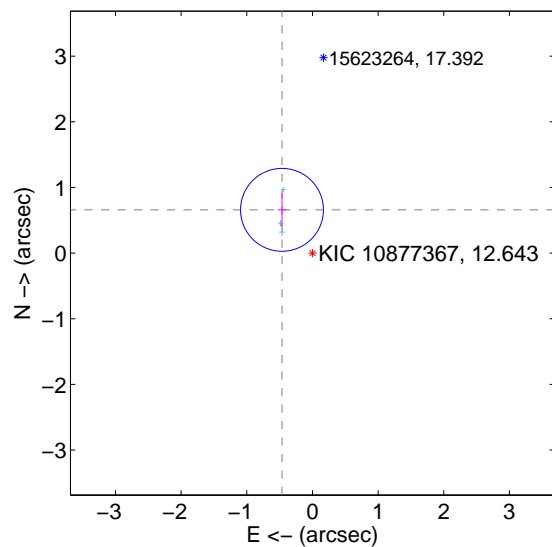
Supplemental centroid analysis for 010877367-06. Kepler magnitude: 12.64. Transit SNR 8.31

There are 3 quarters with good PRF difference image offsets

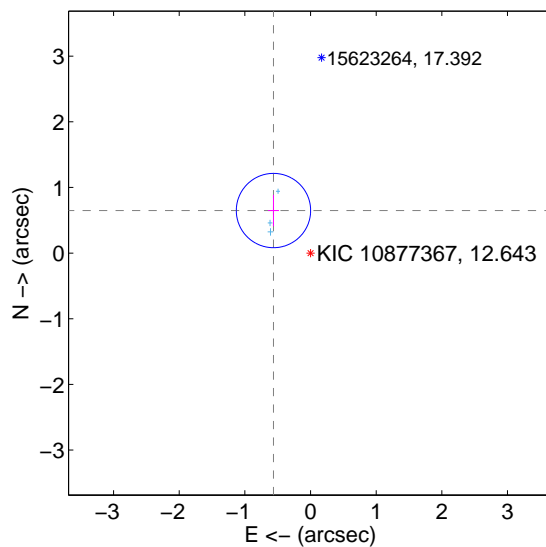
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.806 ± 0.210	3.83	0.464 ± 0.068	0.659 ± 0.253
PRF-fit source offset from KIC position	0.859 ± 0.189	4.56	0.564 ± 0.083	0.648 ± 0.239
photometric centroid source offset	0.40 ± 0.89	0.45	0.18 ± 0.84	-0.36 ± 0.90

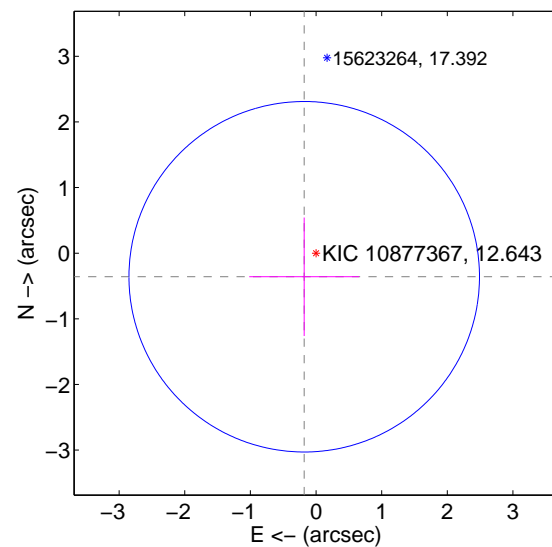
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

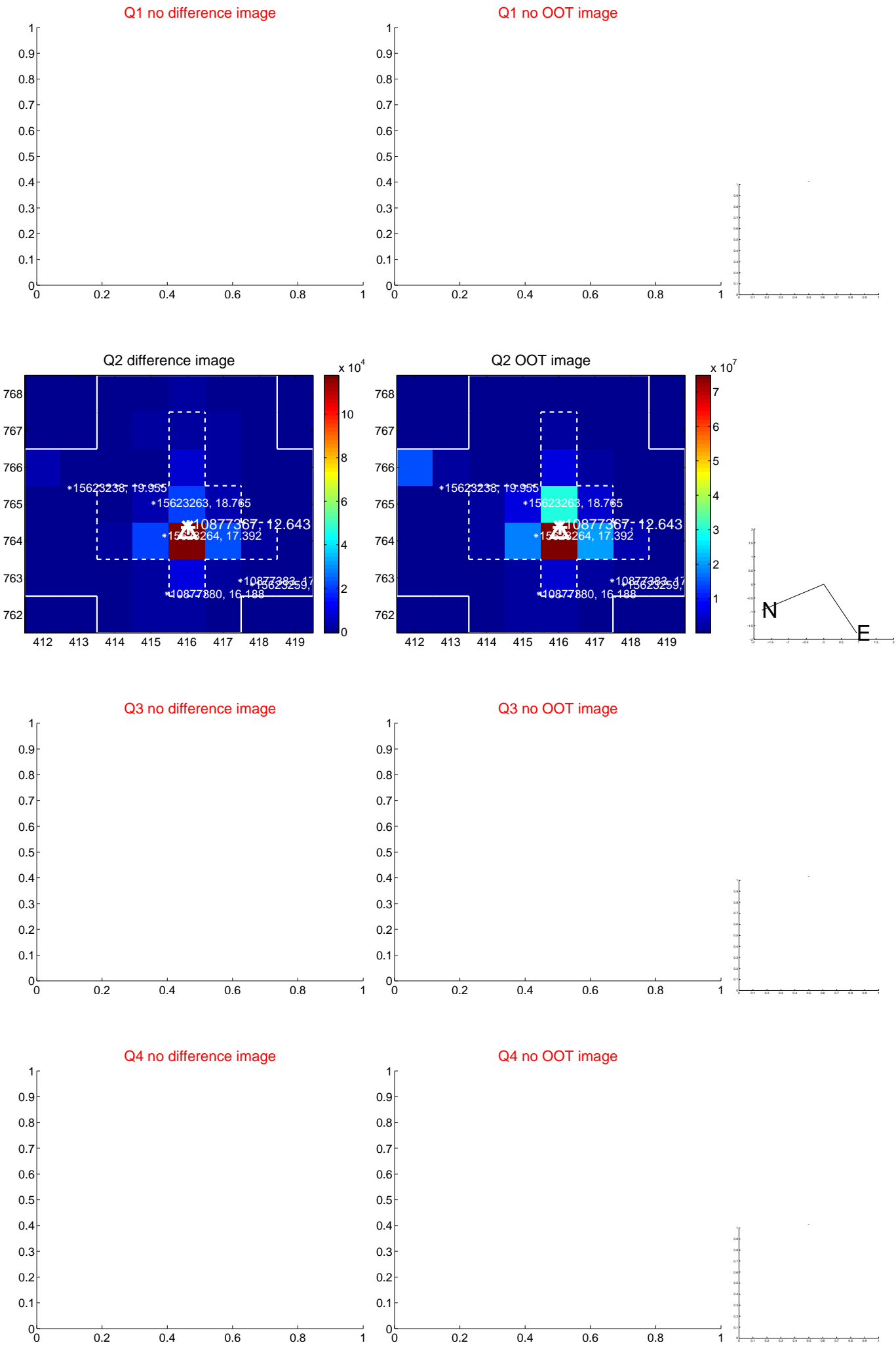


offset from photometric centroids

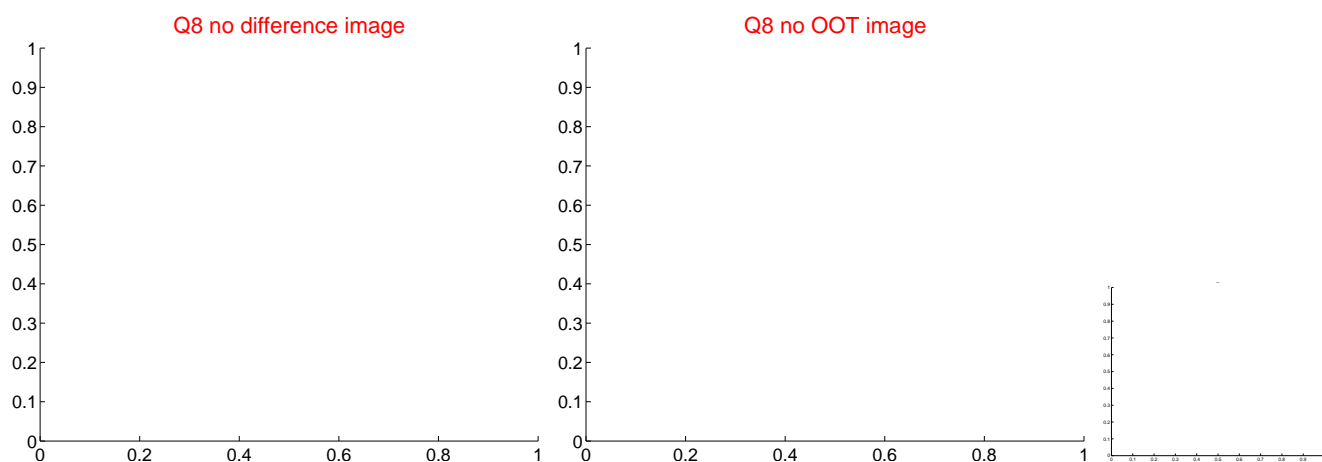
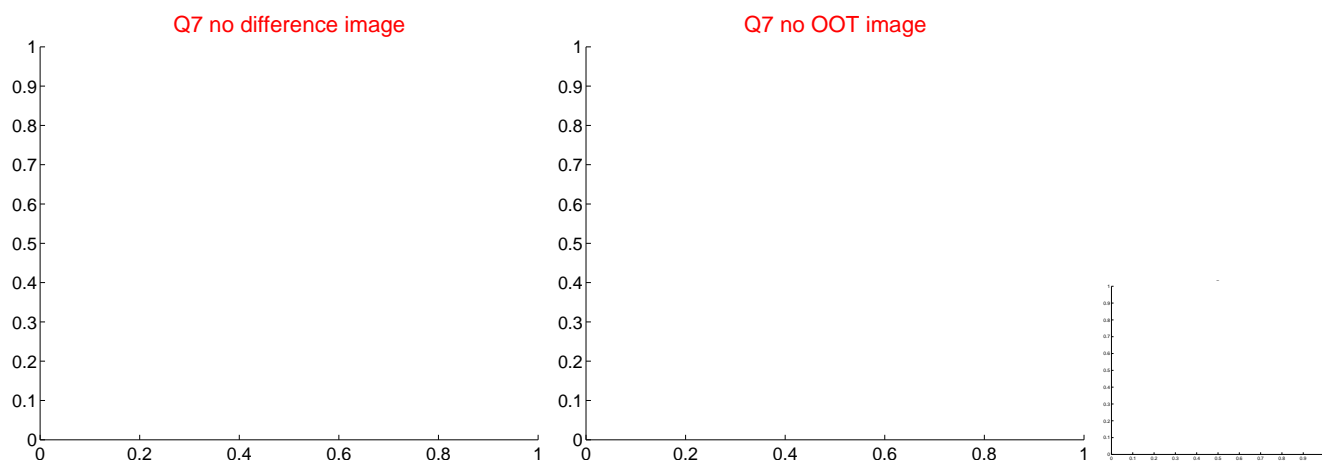
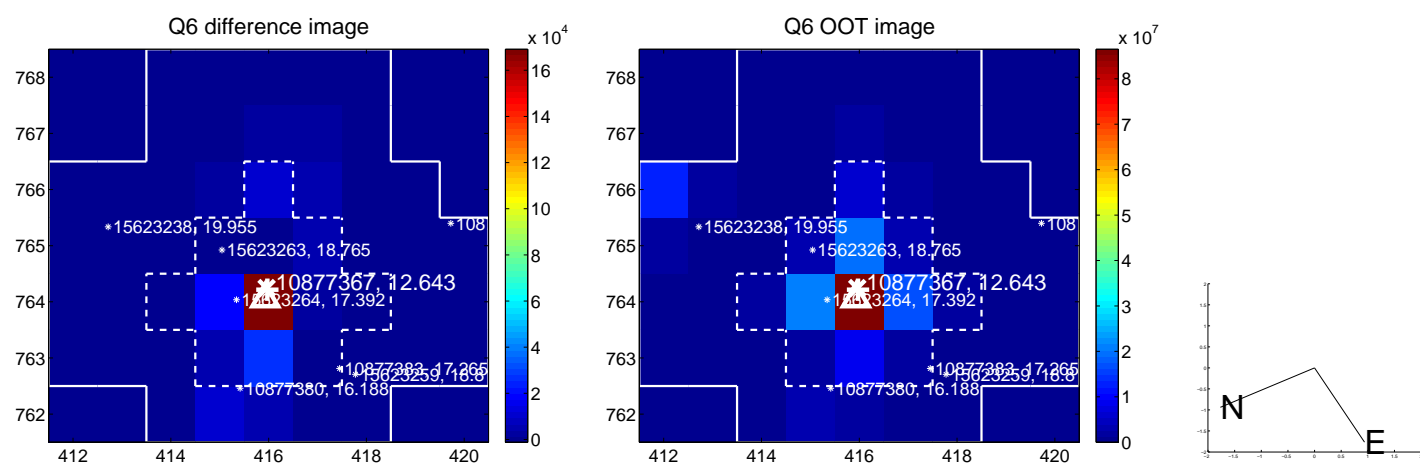
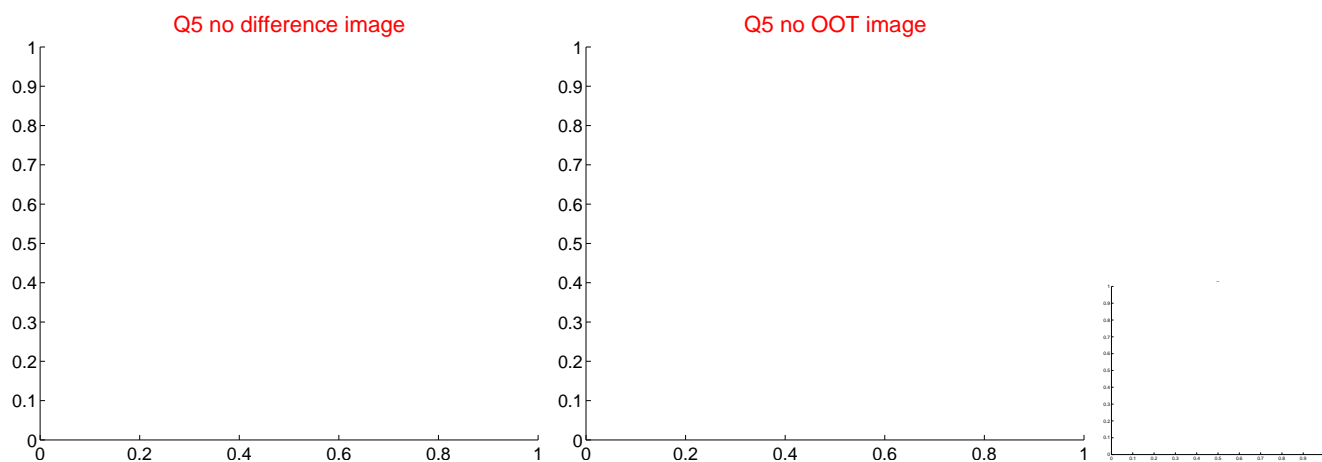


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

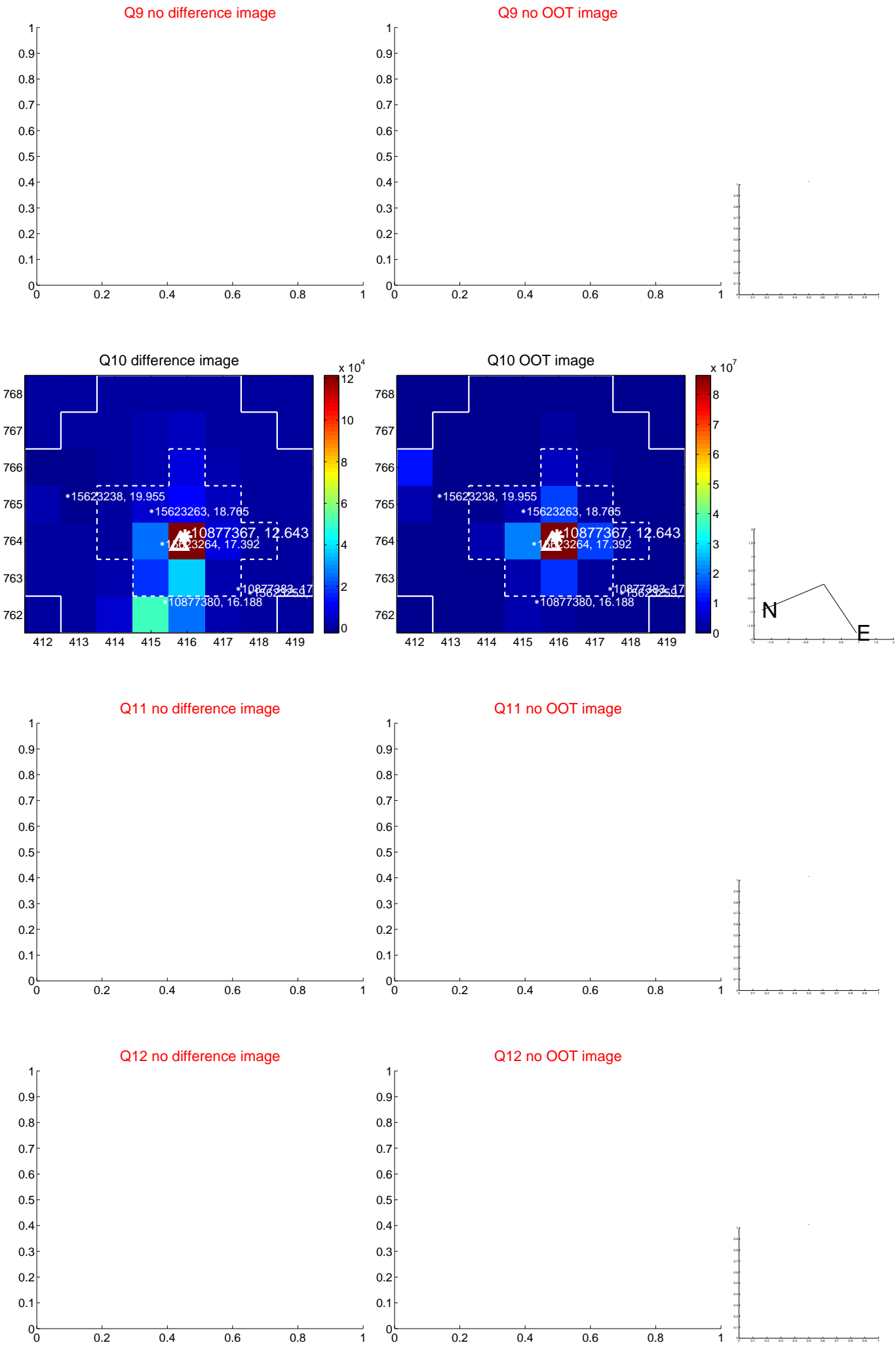
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



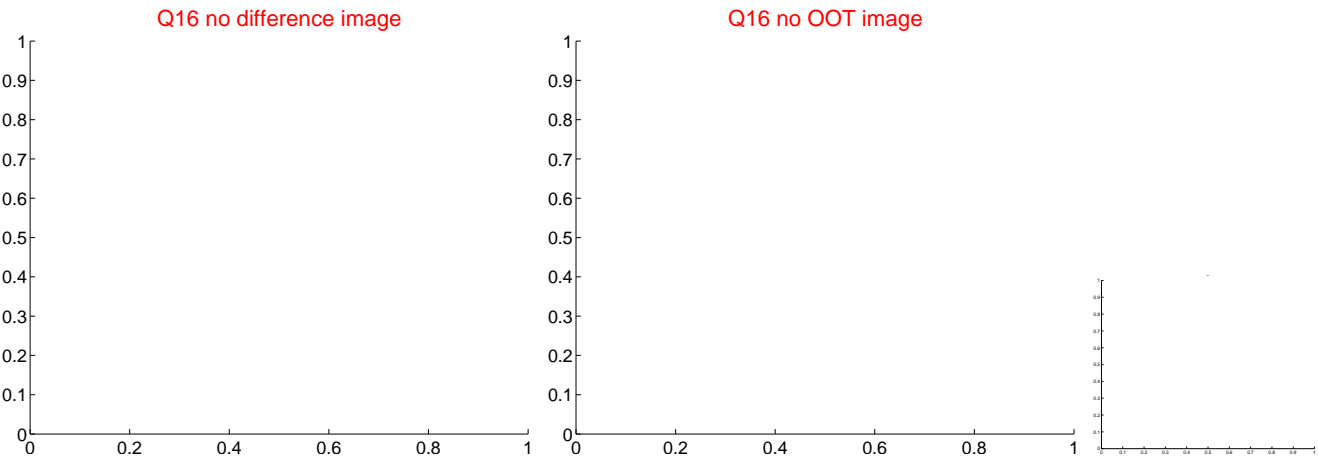
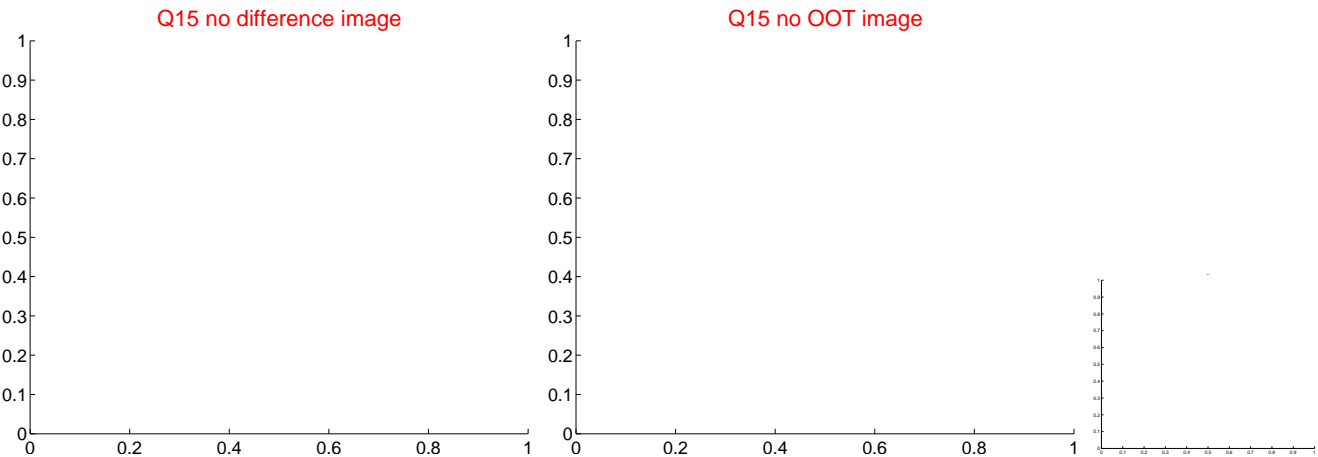
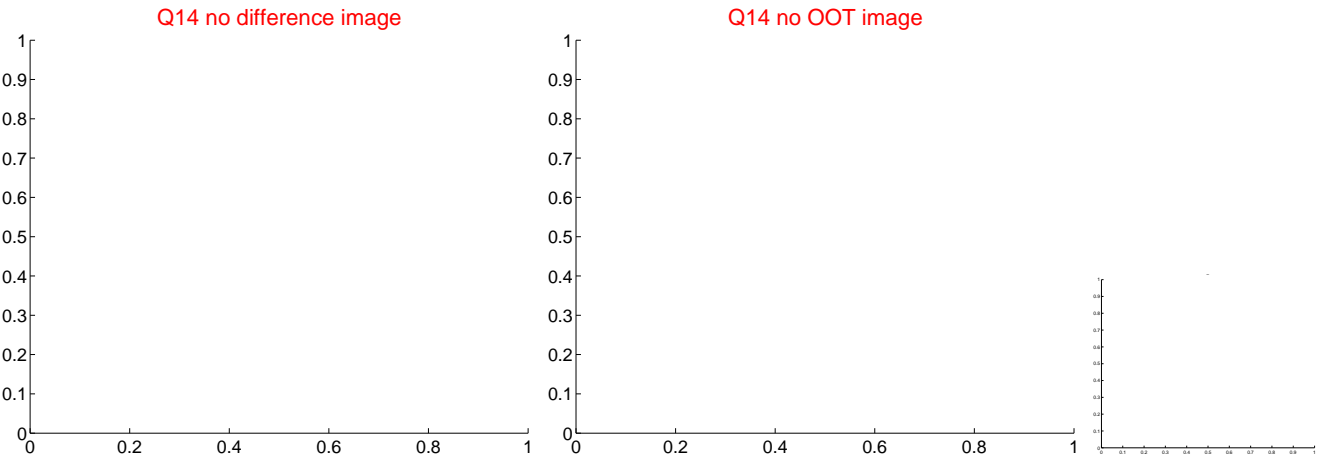
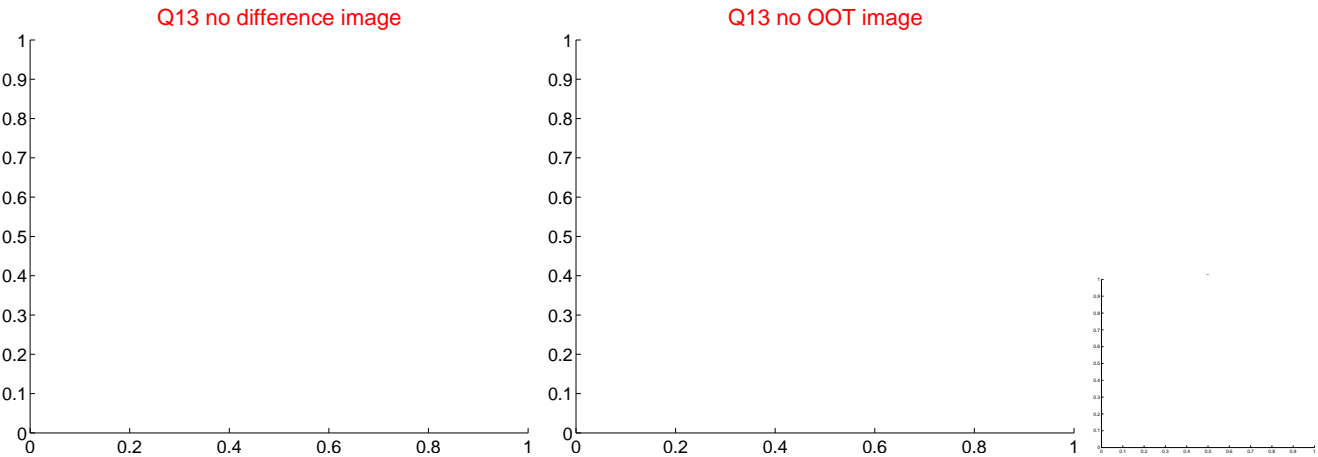
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



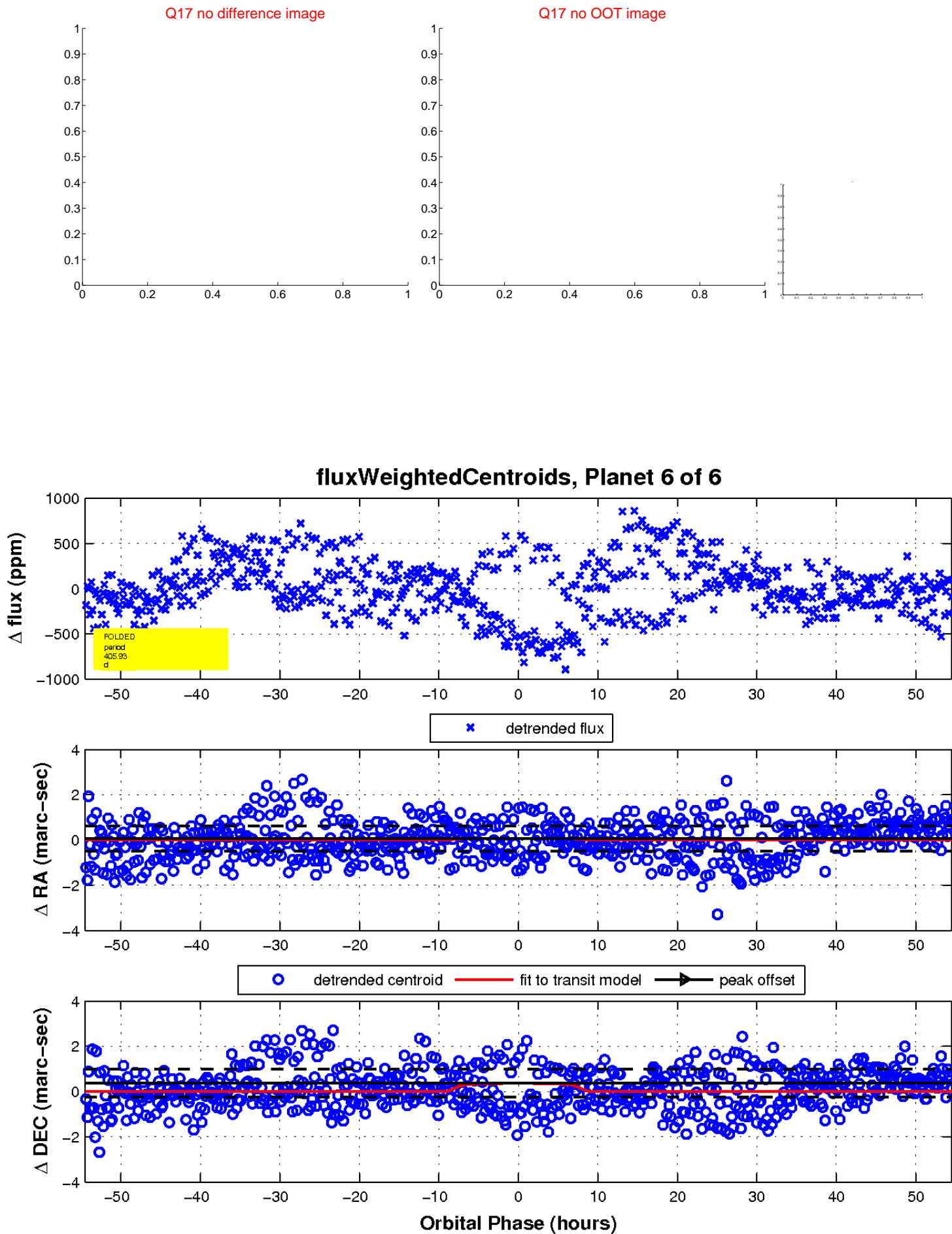
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

