

KIC 010482387

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})
010482387-01	OBS	No	353.437589	224.936290	579.0	5.425	12.8	3.8	0.75	5551	1.82	0.62
010482387-02	OBS	No	284.141971	271.635717	866.2	3.406	10.9	7.5	0.75	5551	2.33	0.84
010482387-03	OBS	No	331.091784	280.280933	491.7	10.500	15.5	-1.0	0.75	5551	1.65	0.68
010482387-04	OBS	No	240.733837	317.344722	503.2	3.358	14.6	4.2	0.75	5551	1.78	1.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010482387-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010482387-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010482387-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
010482387-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

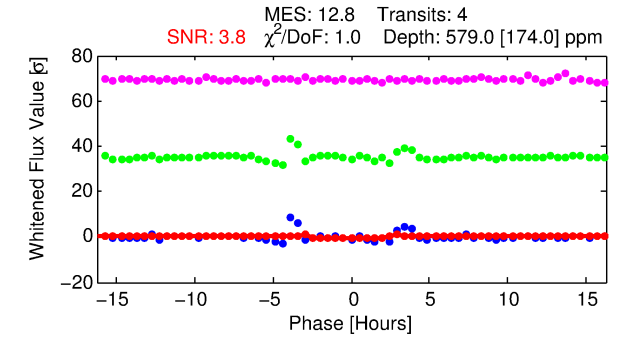
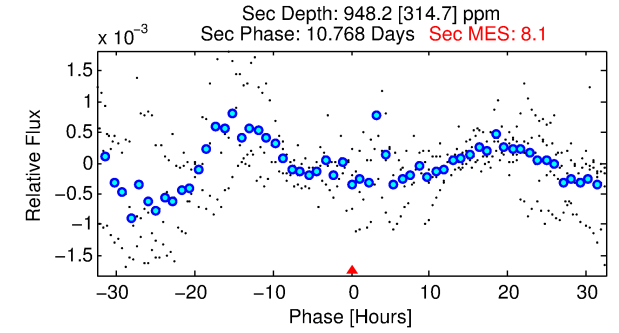
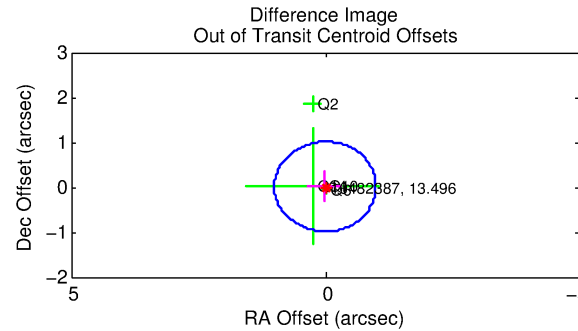
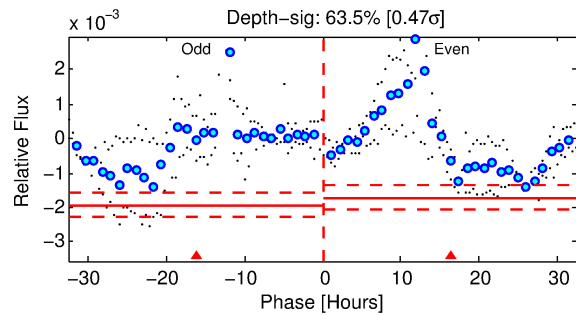
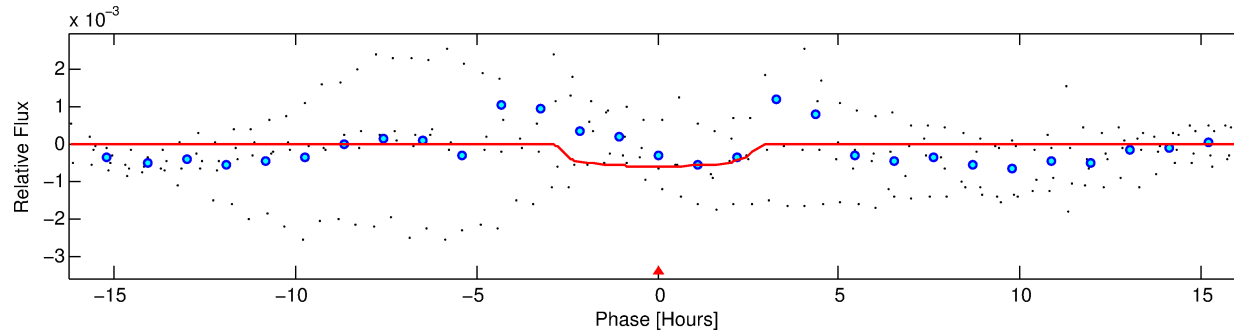
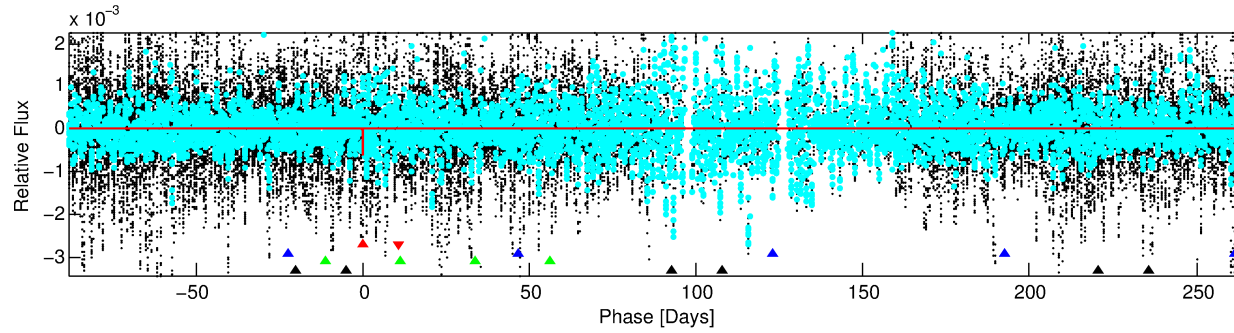
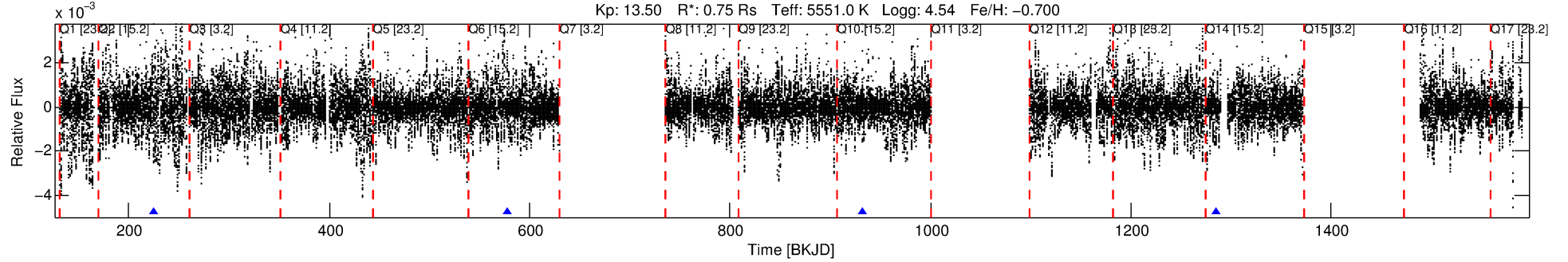
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010482387-01

No Significant Match Found

DV One-Page Summary

KIC: 10482387 Candidate: 1 of 4 Period: 353.438 d



DV Fit Results:

Period = 353.43759 [0.00505] d
Epoch = 224.9363 [0.0102] BKJD
Rp/R* = 0.0222 [0.0476]
a/R* = 477.12 [4653.25]
b = 0.36 [24.19]
Seff = 0.62 [0.13]
Teq = 227 [12] K
Rp = 1.82 [3.90] Re
a = 0.8741 [0.1022] AU
Ag = 120816.23 [519541.60] [0.23 σ]
Teffp = 6534 [7022] K [0.90 σ]

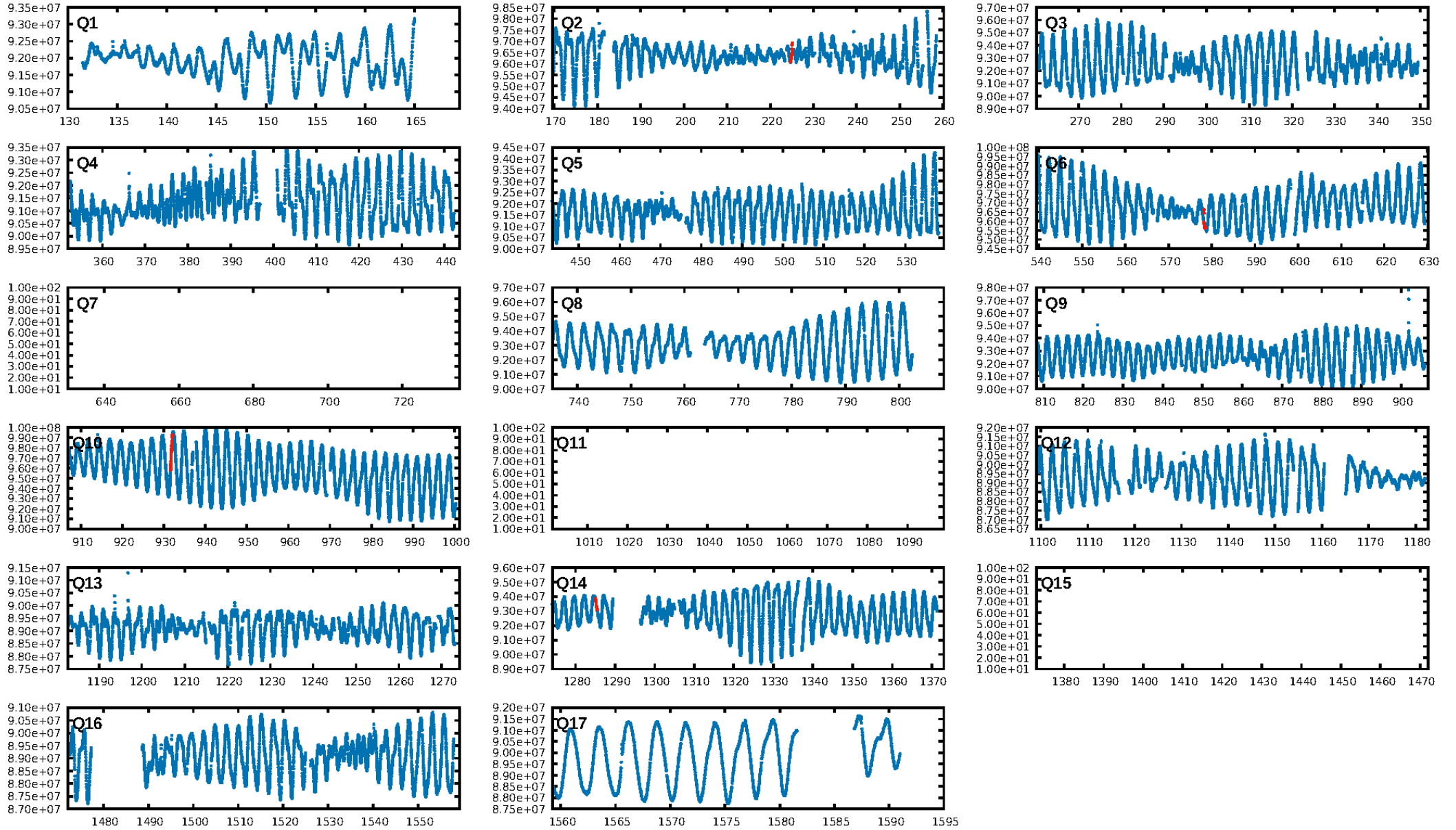
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.38 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 46.5%
ModelChiSquareGof-sig: 95.5%
Bootstrap-pfa: 1.82e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.368
Centroid-sig: 4.7%
Centroid-so: 1.028 arcsec [1.53 σ]
OotOffset-rm: 0.015 arcsec [0.05 σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-rm: 0.170 arcsec [0.46 σ]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 1.00 [4/4]

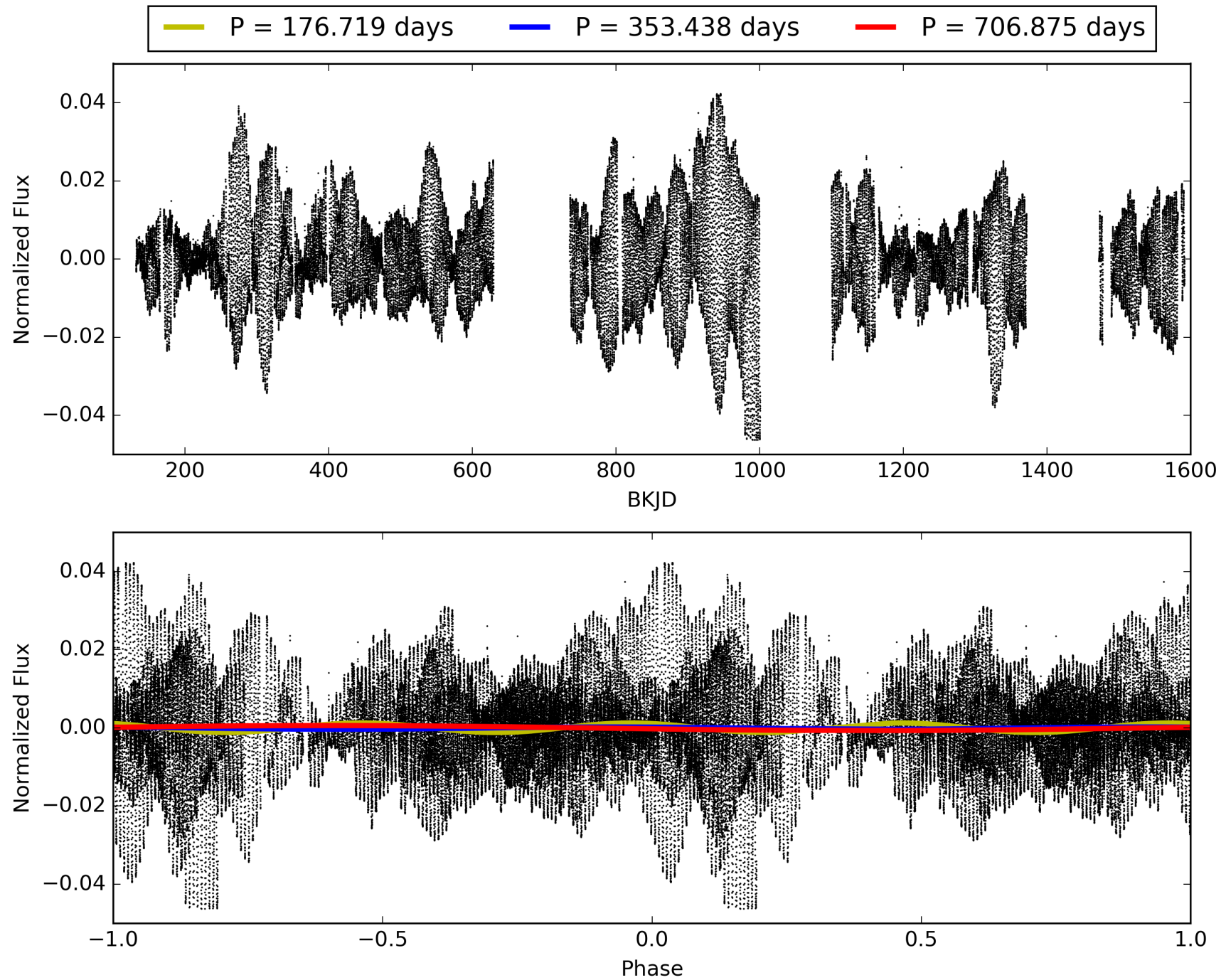
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:59:10 Z

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

TCE 010482387-01, PDC Light Curves

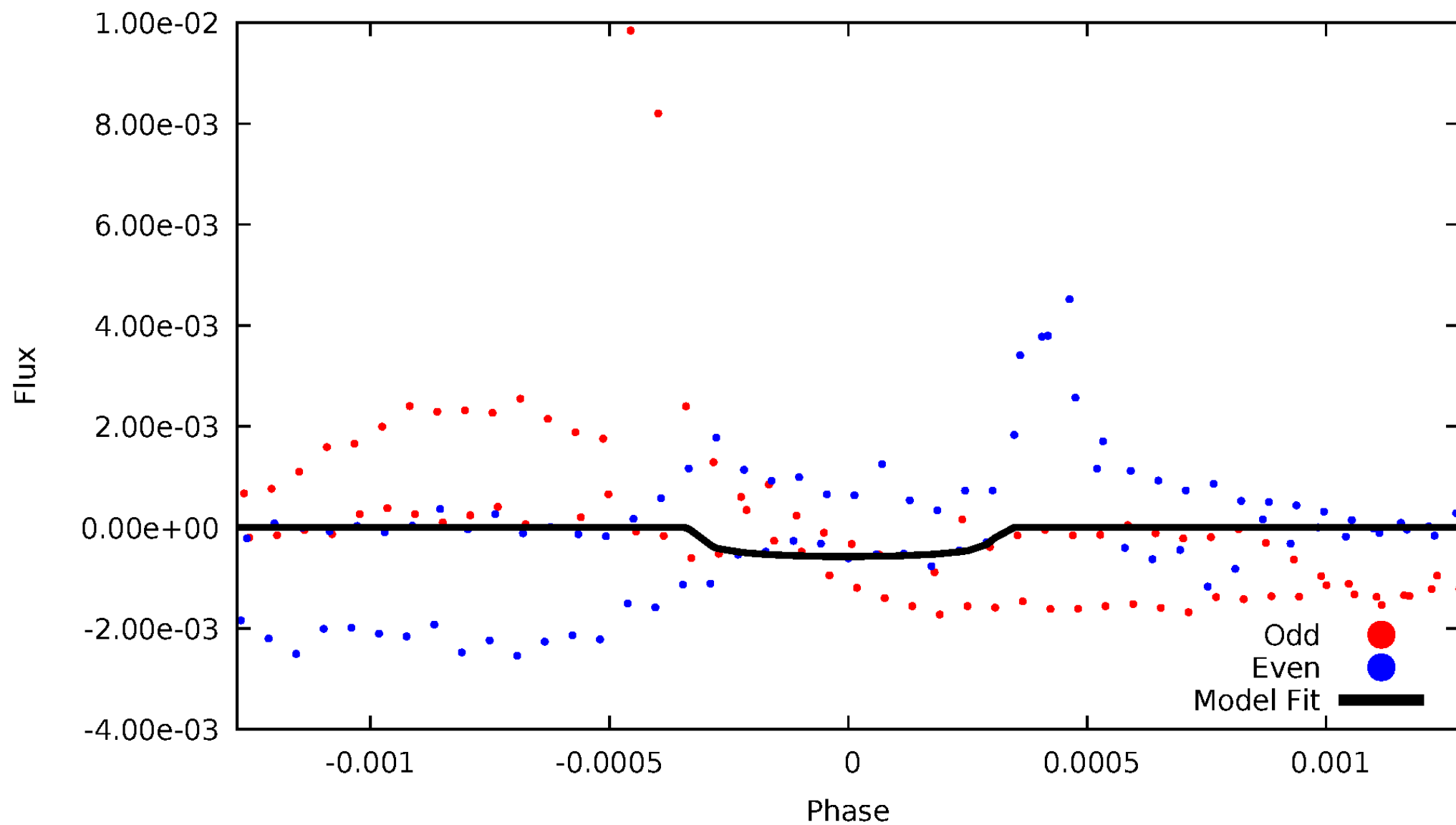


TCE 010482387-01



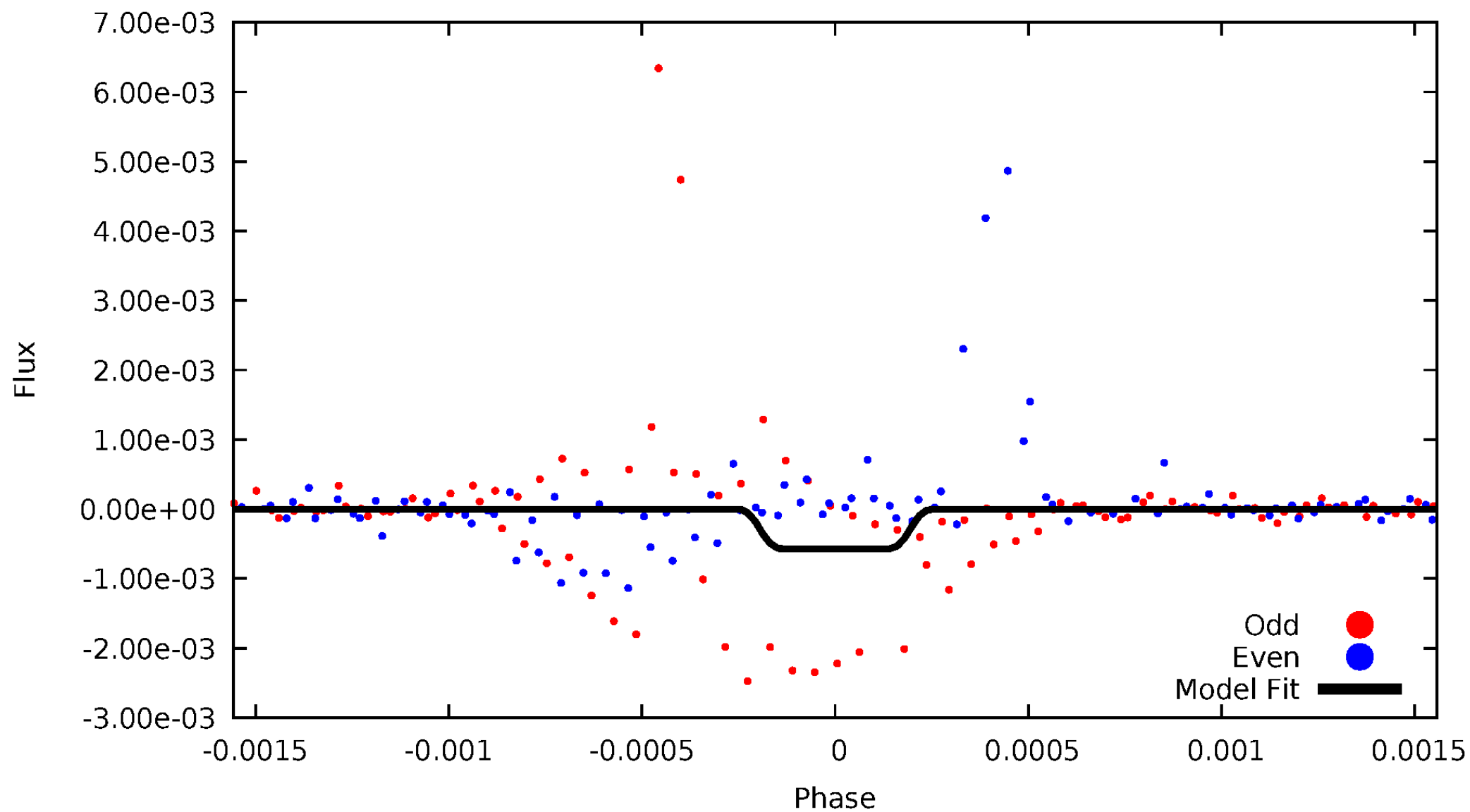
DV Odd/Even

TCE 010482387-01



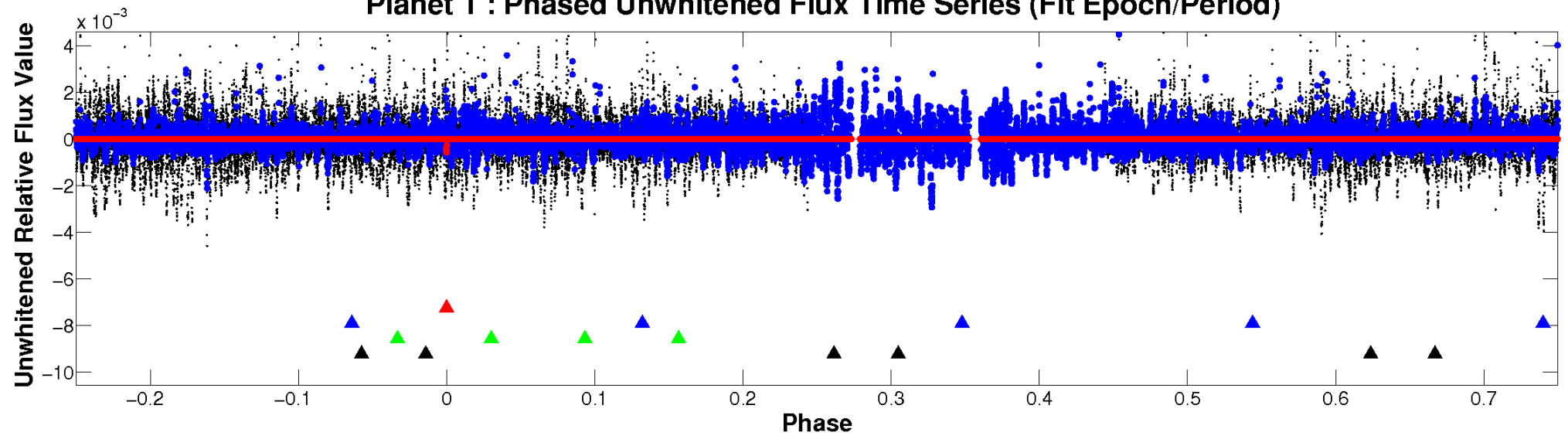
ALT Odd/Even

TCE 010482387-01

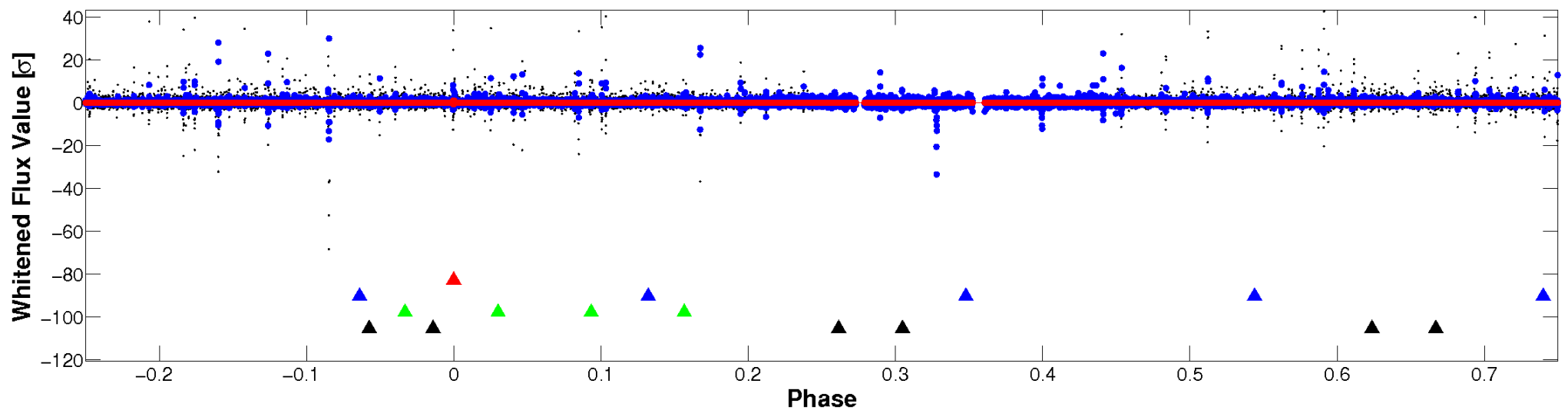


Non-Whitened Vs. Whitened Light Curve

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

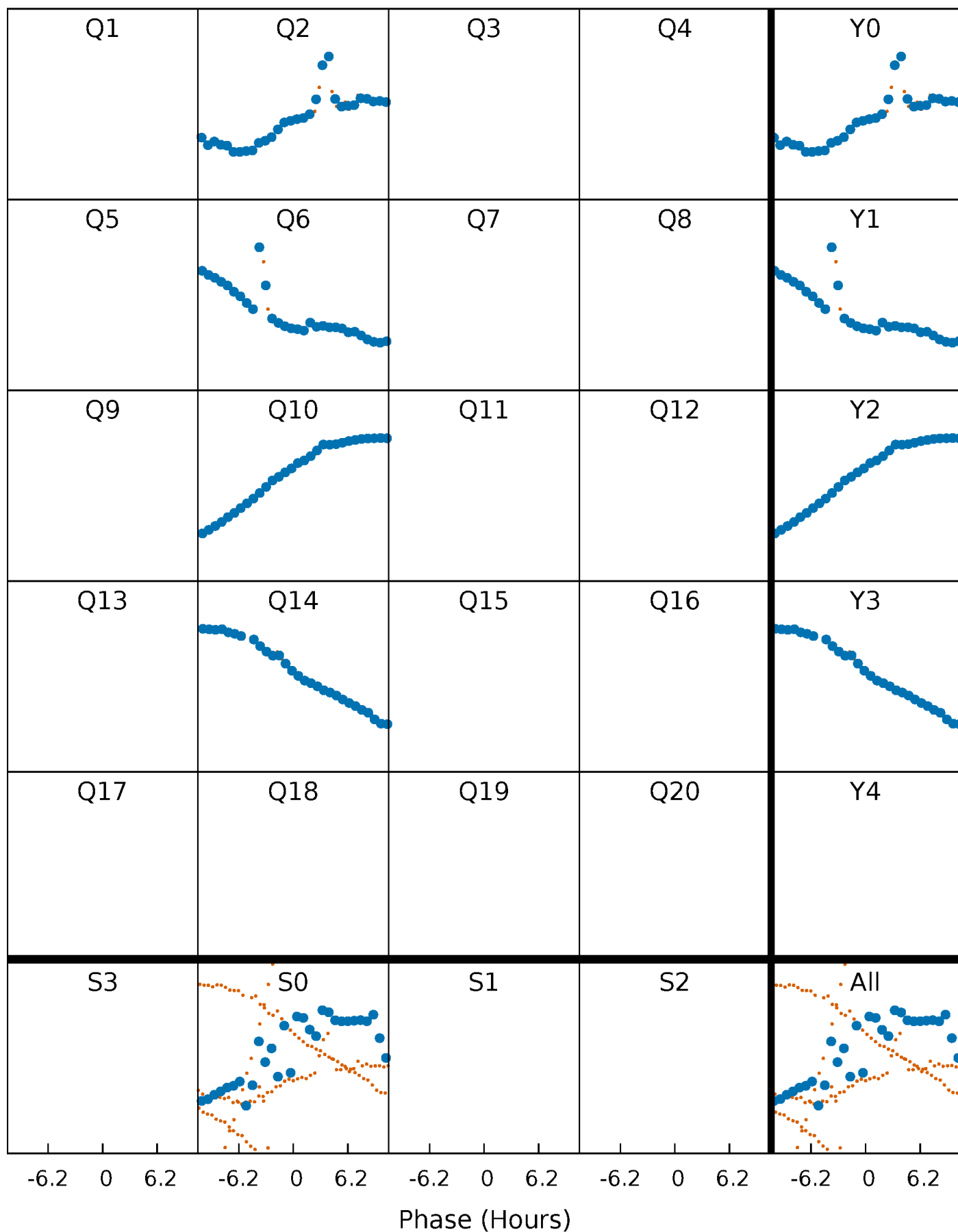


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



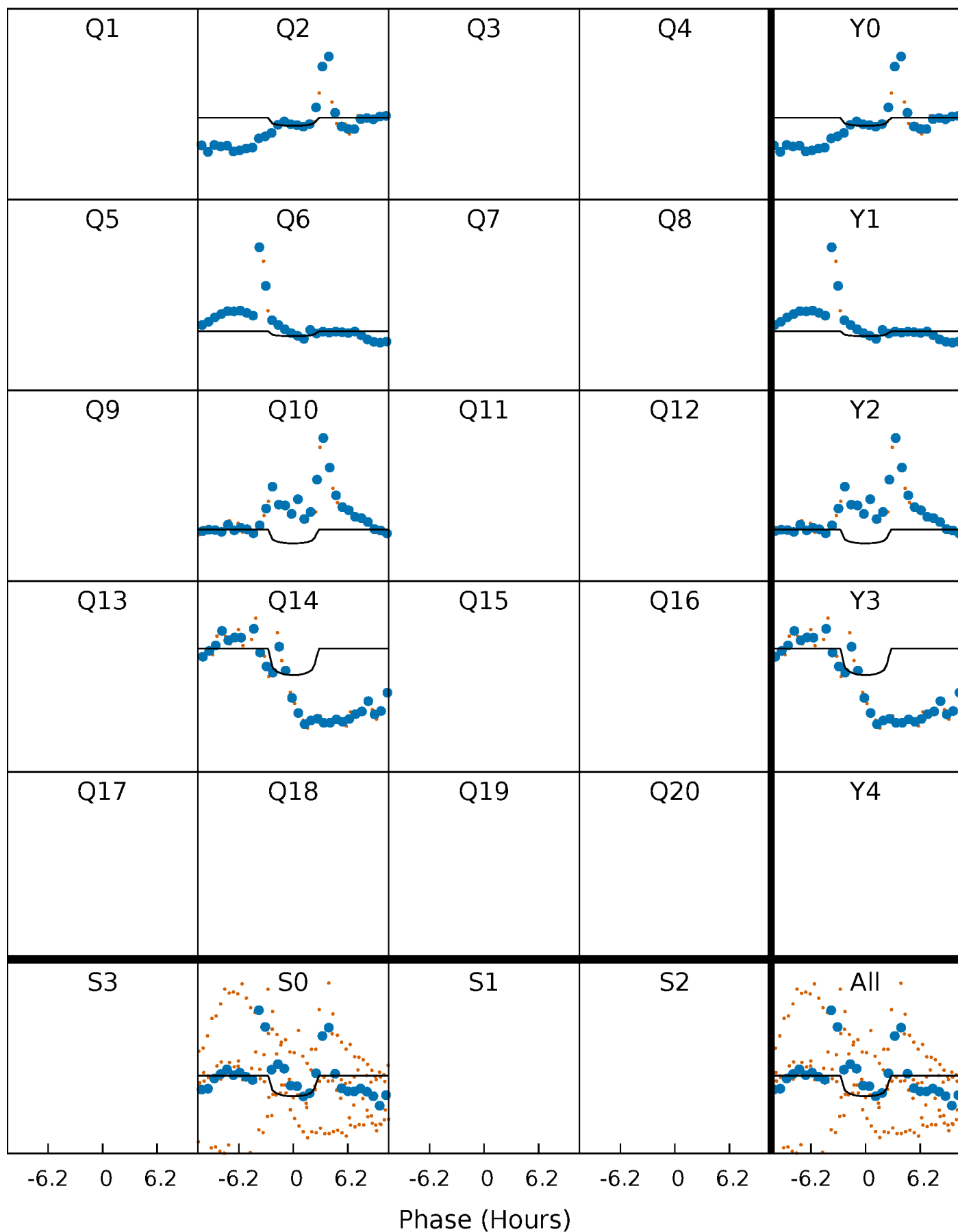
PDC Quarter-Phased Transit Curves

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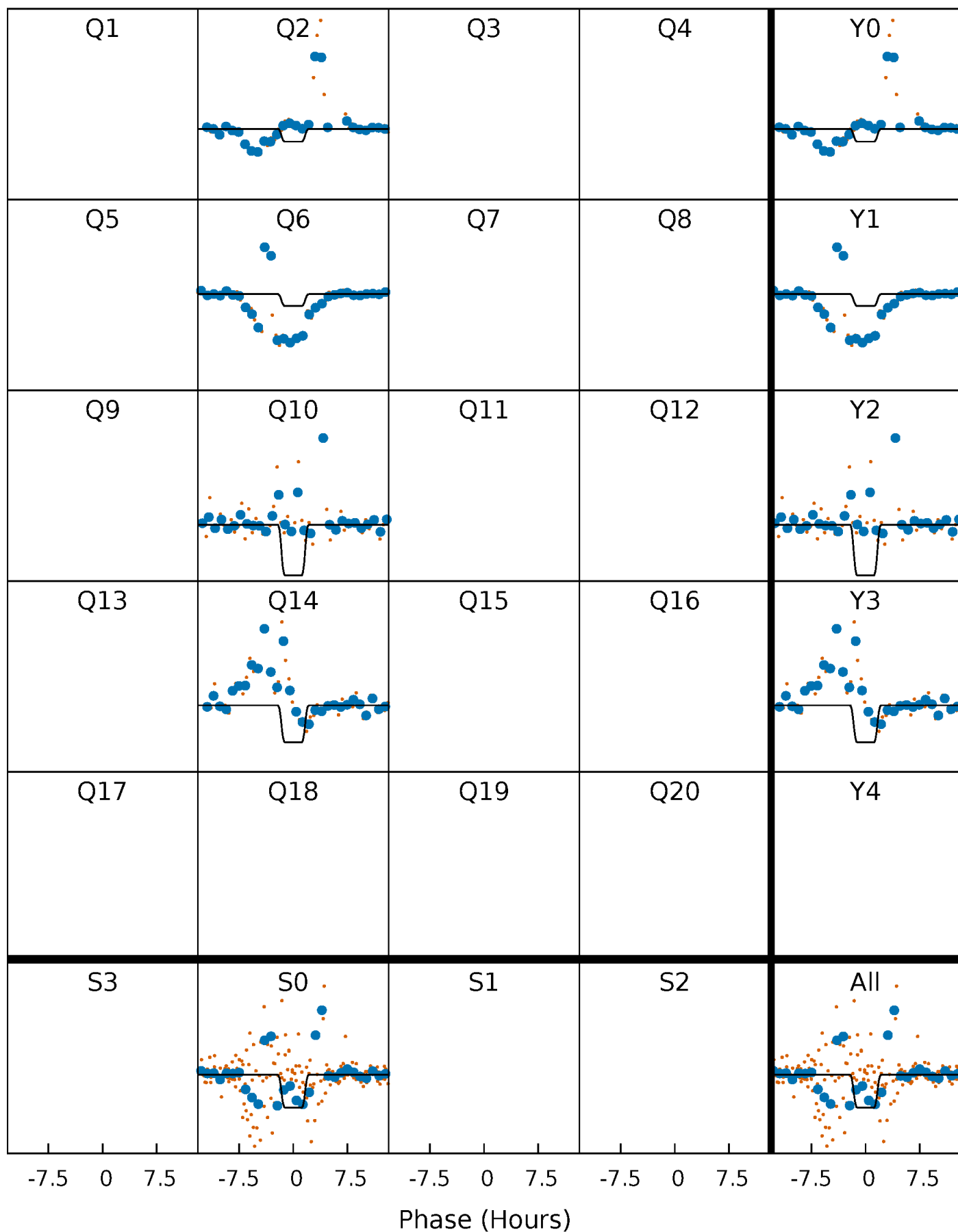
DV Quarter-Phased Transit Curves

TCE 010482387-01 $P=353.437589$ Days $T_0=224.936290$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

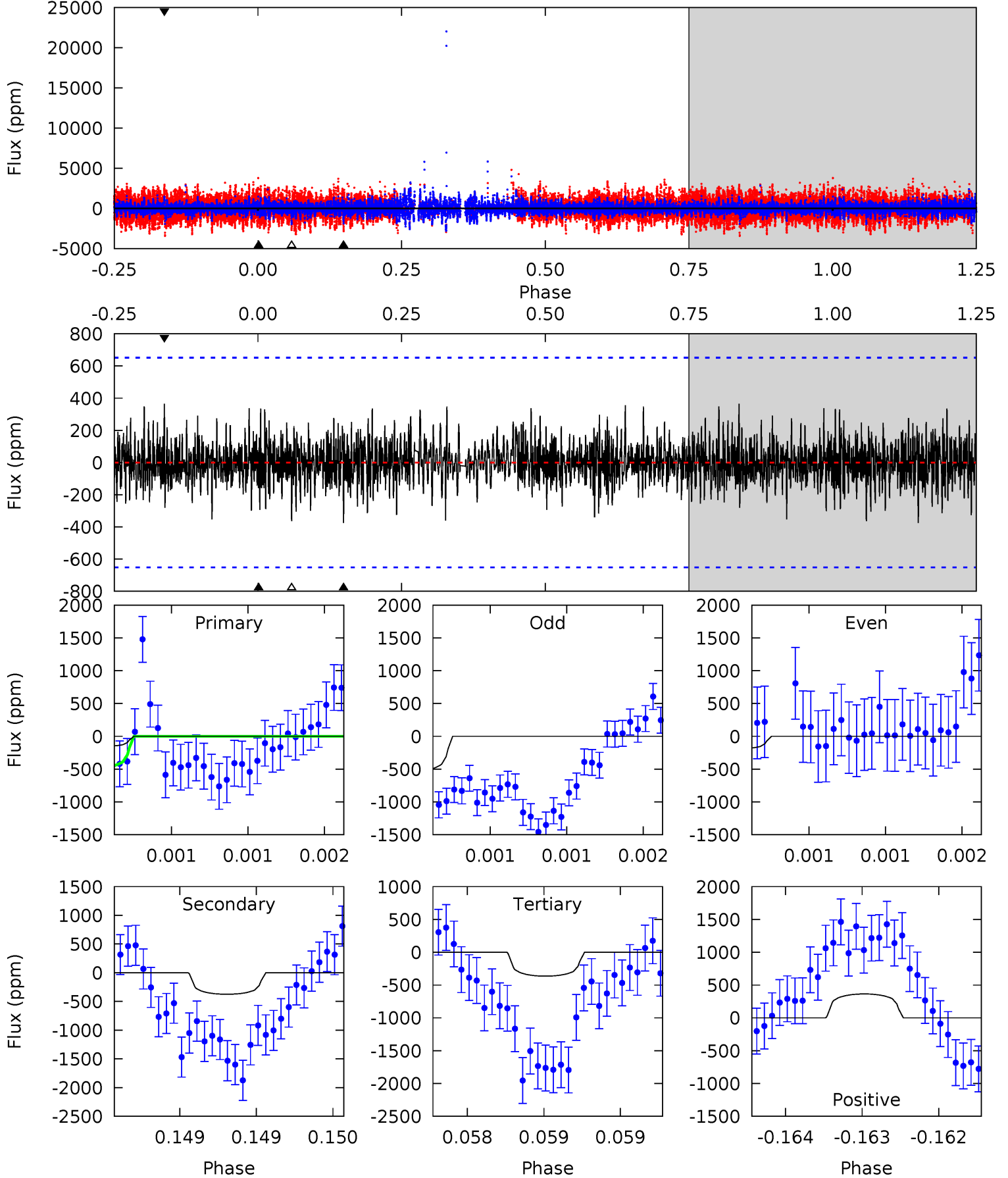
TCE 010482387-01 P=353.432476 Days $T_0=224.941976$ (BKJD)



DV Model-Shift Uniqueness Test

010482387-01, P = 353.437589 Days, E = 224.936290 Days

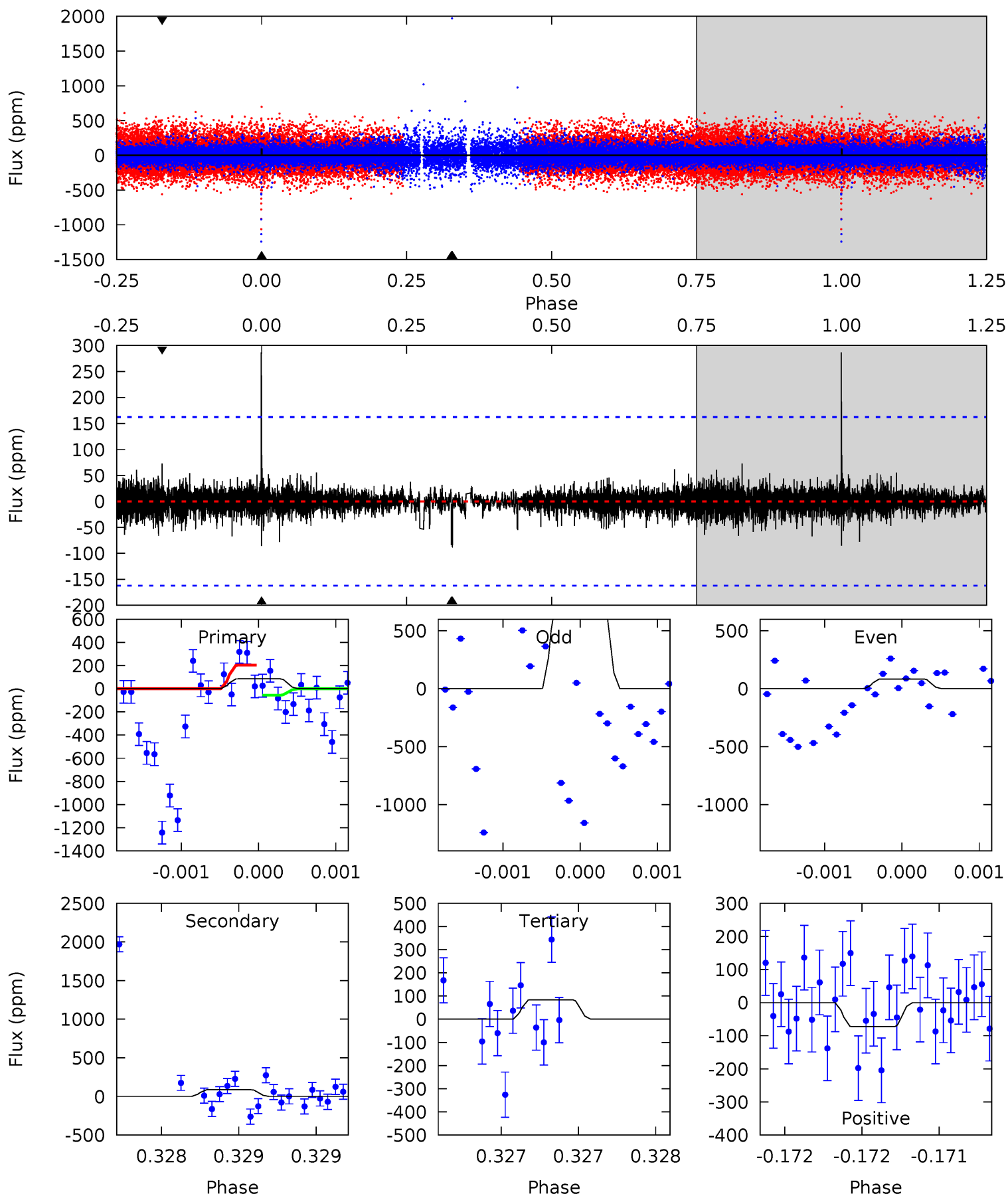
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.35	3.17	3.09	3.09	5.52	3.40	0.89	-1.74	-1.74	0.09	0.09	1.38	0.60	0.49	1.22



Alt Model-Shift Uniqueness Test

010482387-01, P = 353.432476 Days, E = 224.941976 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.92	2.99	2.88	2.49	5.57	3.48	0.49	0.04	0.43	0.11	0.49	14.4	-3.45	0.77	2.58



Stellar Parameters For KIC 010482387

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5551^{+165}_{-148}	$4.542^{+0.090}_{-0.090}$	$-0.700^{+0.300}_{-0.300}$	$0.749^{+0.106}_{-0.087}$	$0.712^{+0.085}_{-0.039}$	$2.386^{+0.843}_{-0.683}$
	+3%/-3%	+2%/-2%	+43%/-43%	+14%/-12%	+12%/-5%	+35%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010482387-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-375 ± 118	$3.37^{+3.25}_{-2.26}$	317^{+14}_{-13}	4077^{+2518}_{-841}	$13438^{+106337}_{-10149}$
Alt.	-87 ± 29	$3.52^{+3.40}_{-2.40}$	317^{+14}_{-13}	3145^{+1573}_{-510}	2817^{+26585}_{-2044}

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 $A_{obs} \gg 1.0$

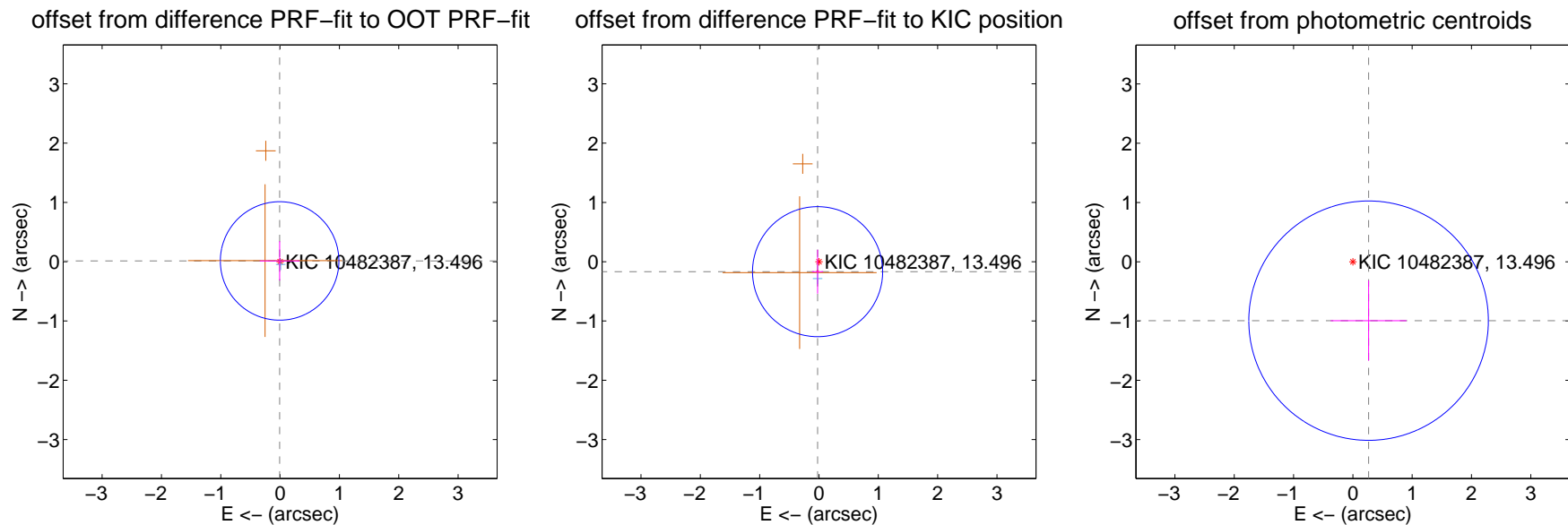
DV Centroid Data

Supplemental centroid analysis for 010482387-01. Kepler magnitude: 13.50. Transit SNR 3.76

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.015 ± 0.333	0.05	0.008 ± 0.334	0.013 ± 0.332
PRF-fit source offset from KIC position	0.170 ± 0.365	0.46	0.024 ± 0.094	-0.168 ± 0.370
photometric centroid source offset	1.03 ± 0.67	1.53	-0.26 ± 0.64	-0.99 ± 0.68



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

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

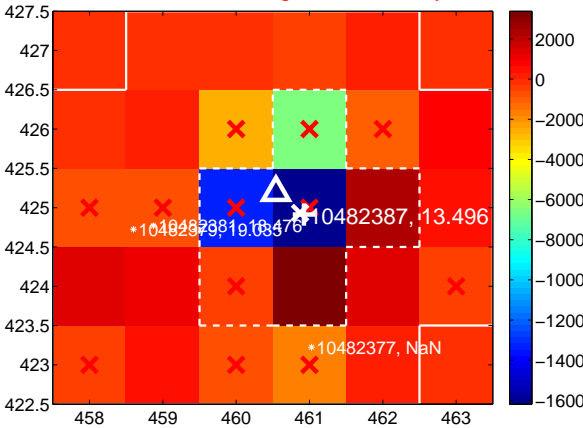
Q1 no difference image



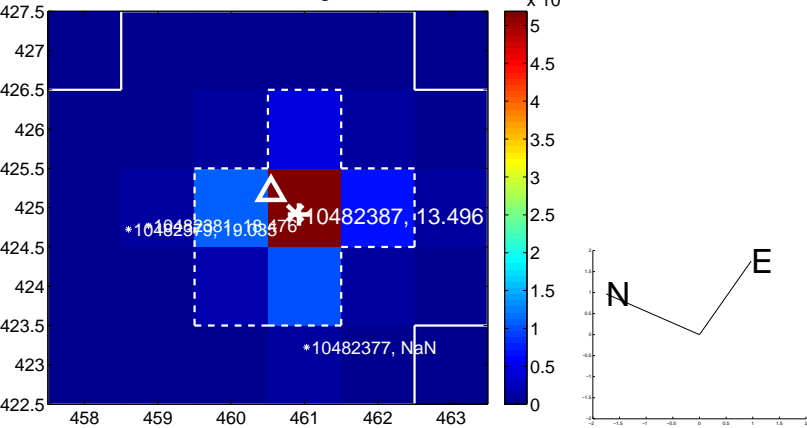
Q1 no OOT image



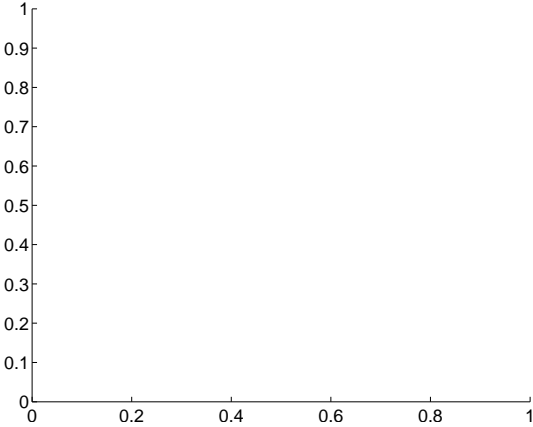
Q2 difference image. Poor Quality



Q2 OOT image



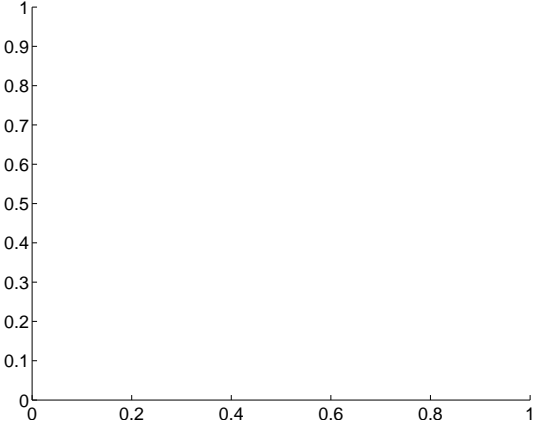
Q3 no difference image



Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

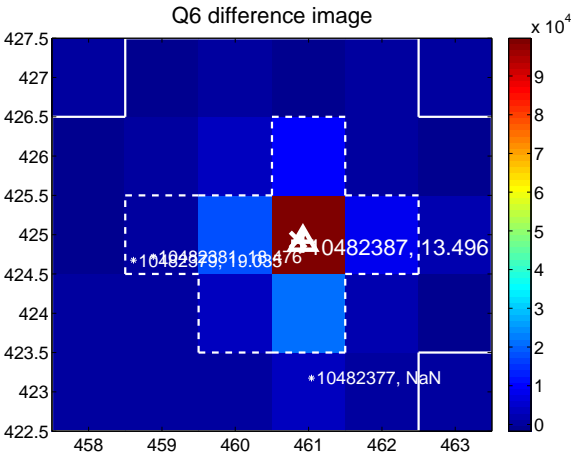
Q5 no difference image



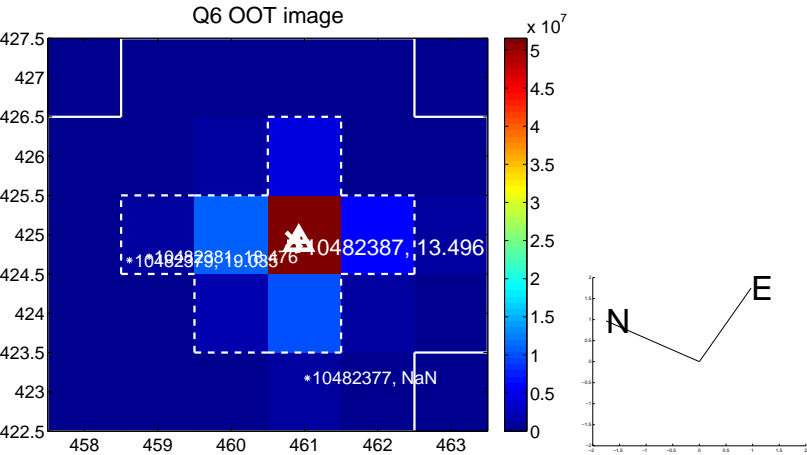
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



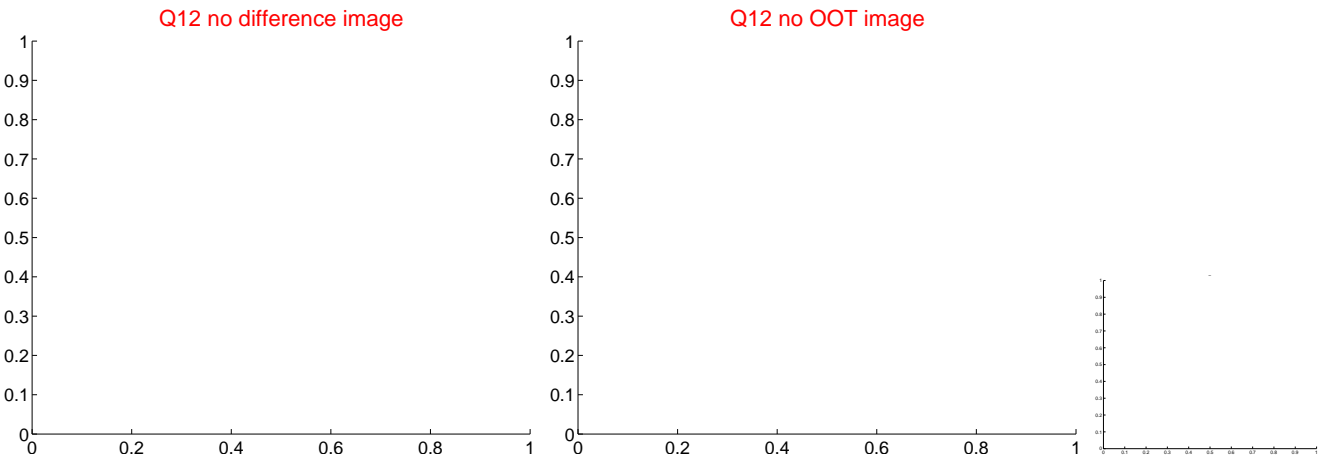
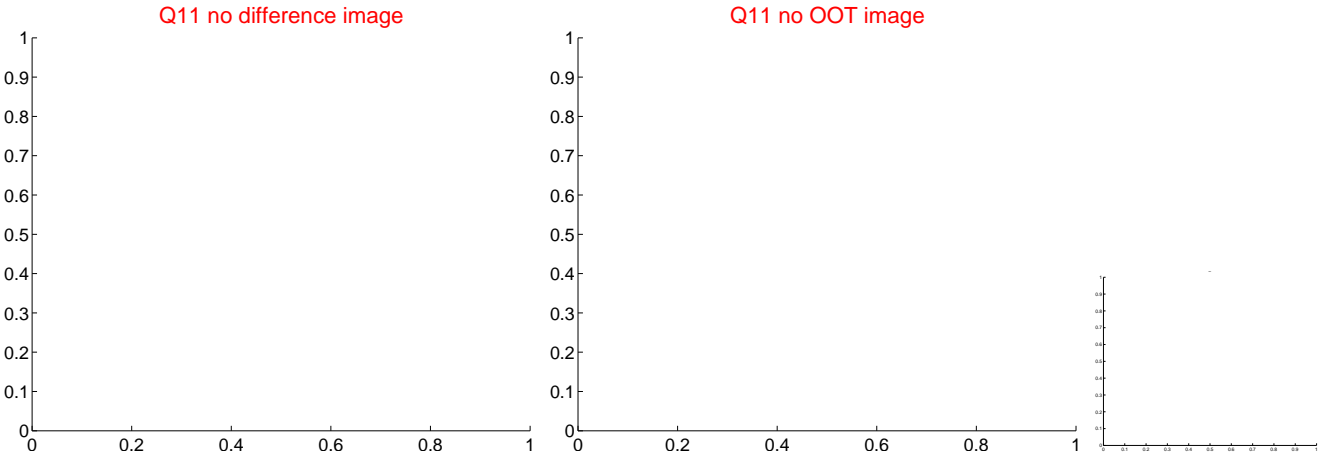
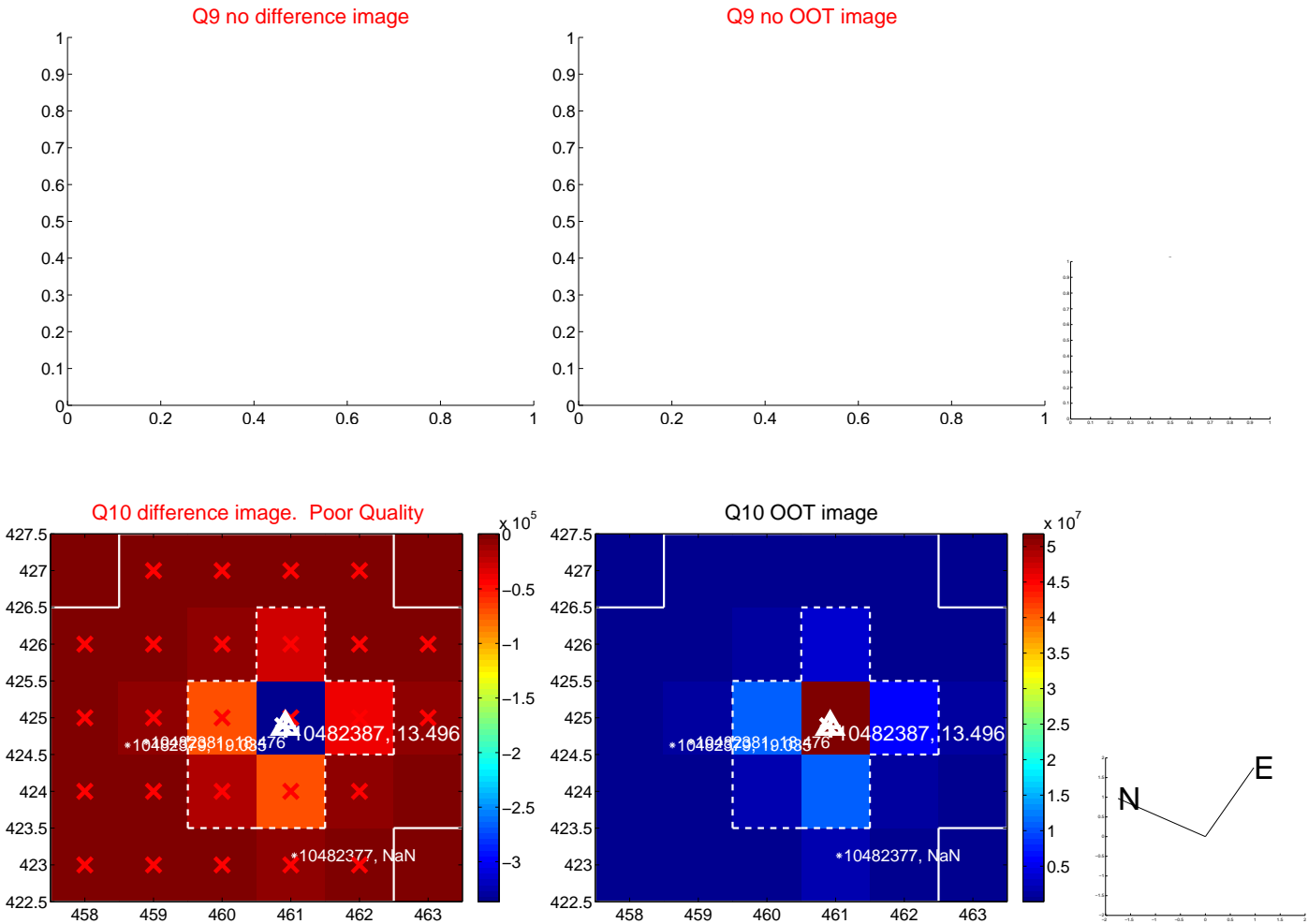
Q8 no difference image



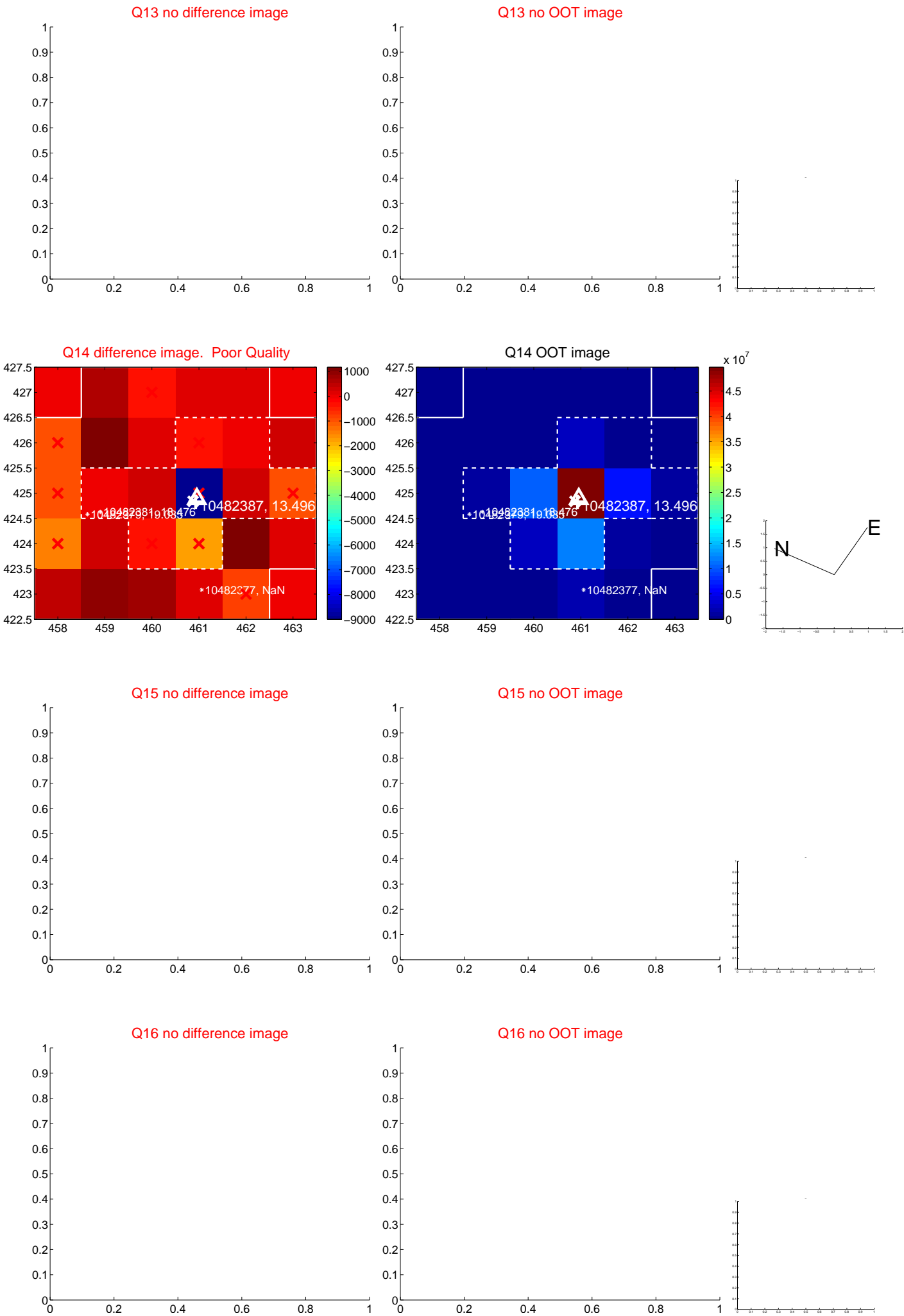
Q8 no OOT image



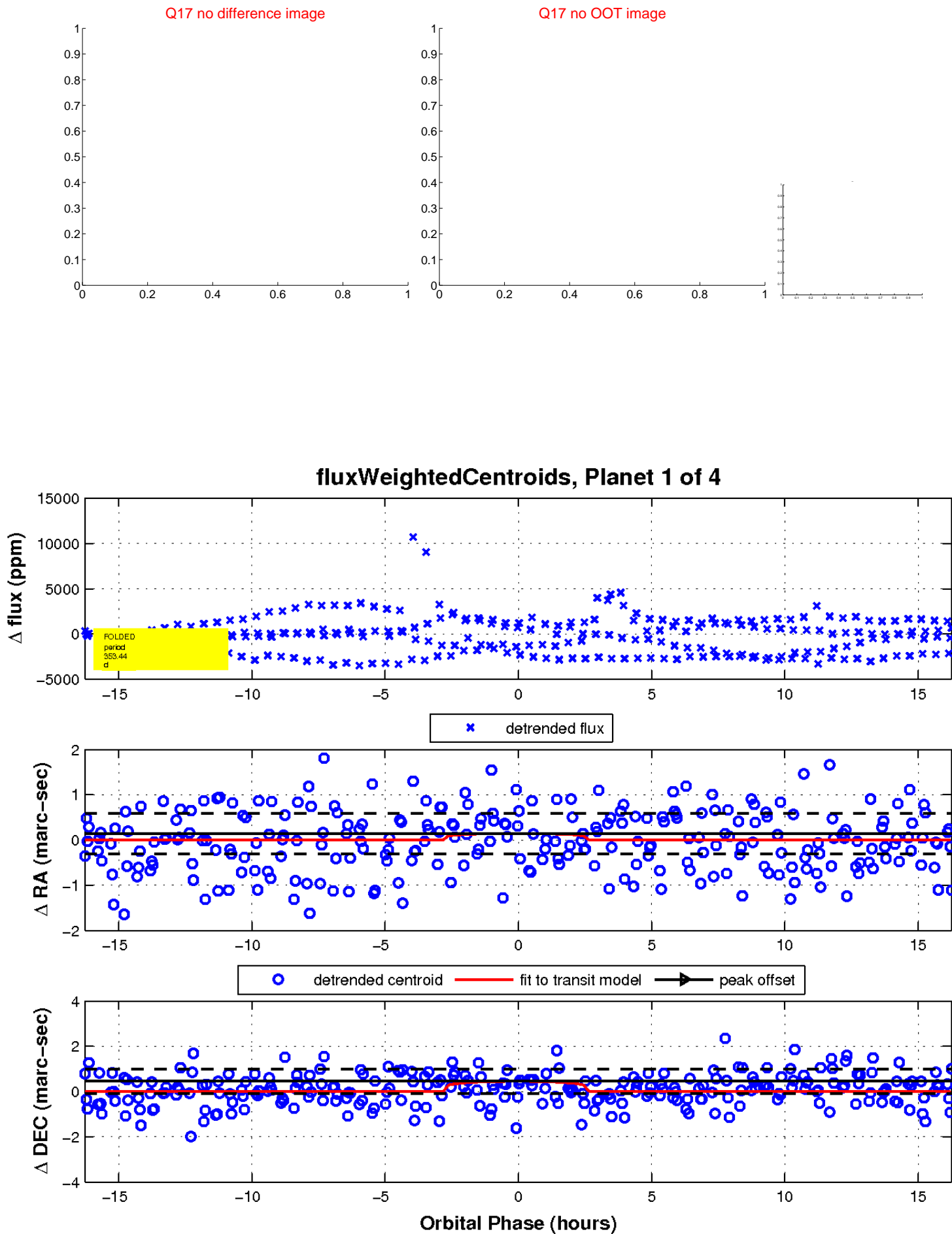
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

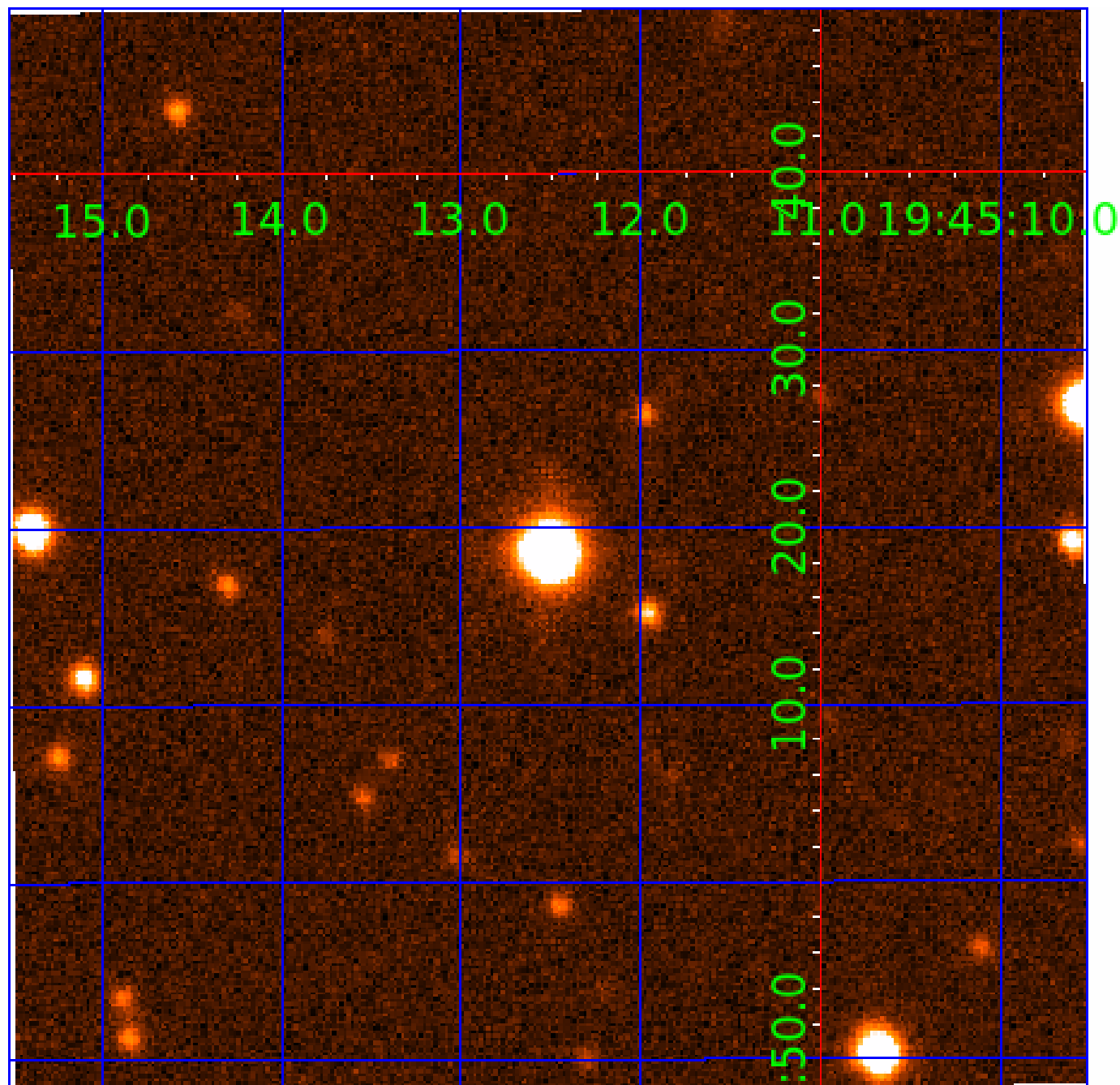


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010482387

Q1-17 DR25 TCE Parameters

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Robovetter Results

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010482387-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010482387-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
010482387-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

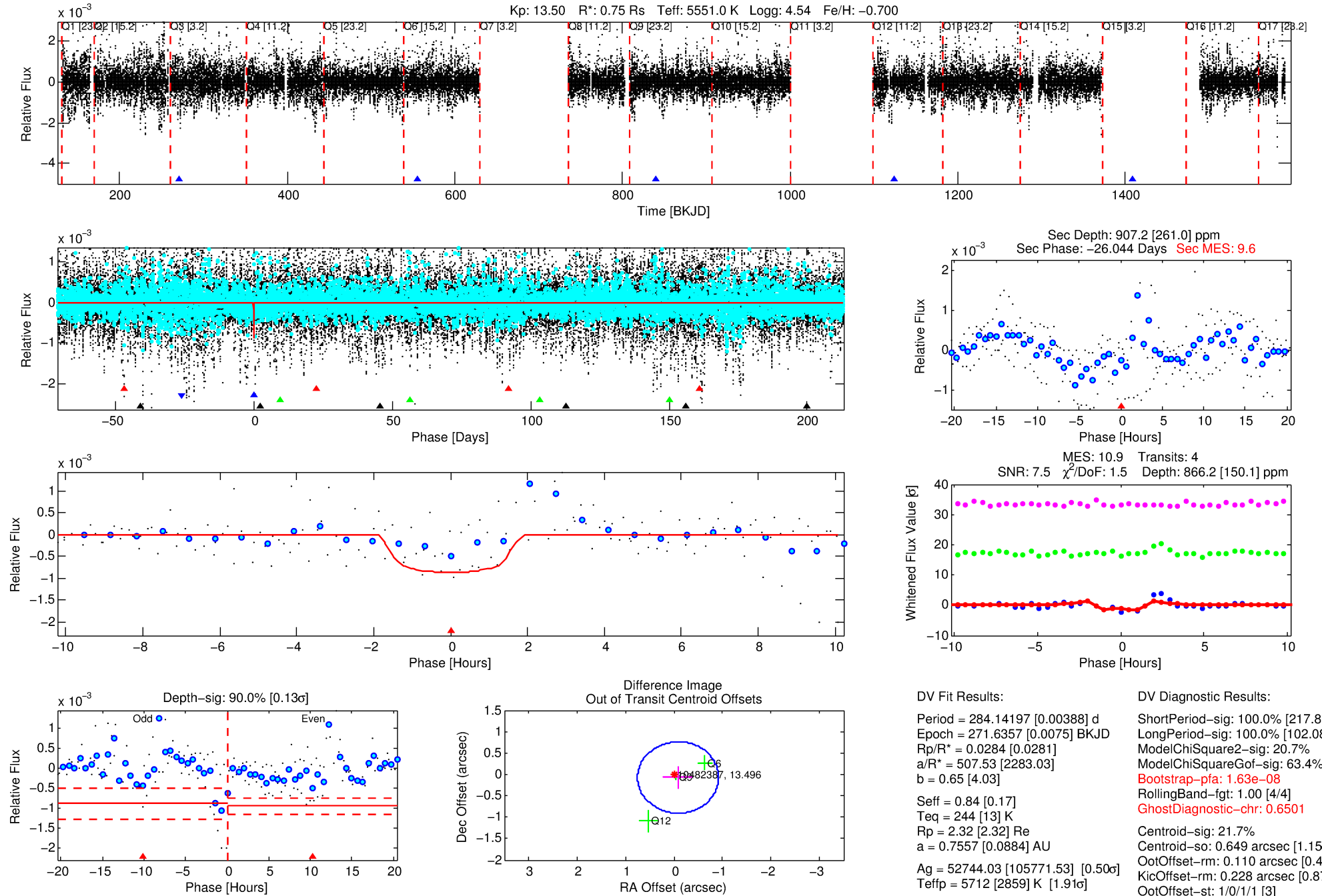
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010482387-02

No Significant Match Found

DV One-Page Summary

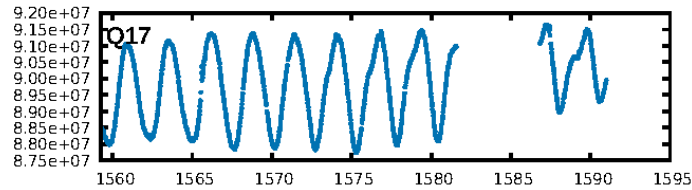
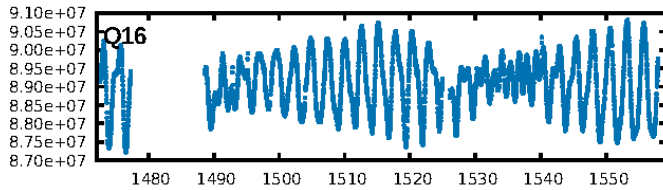
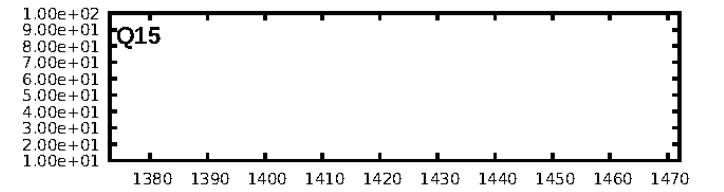
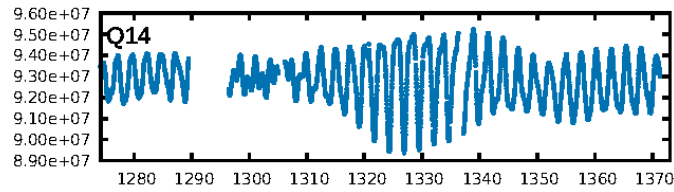
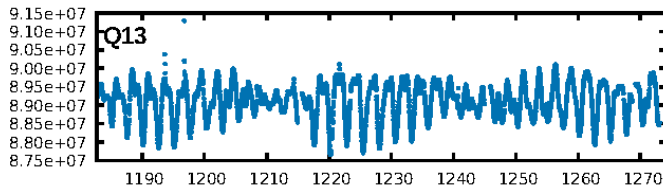
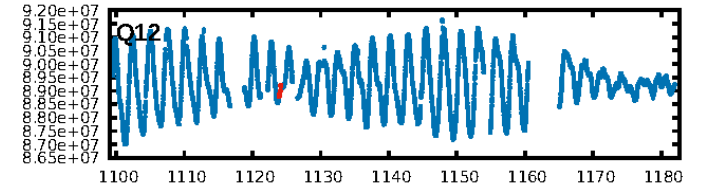
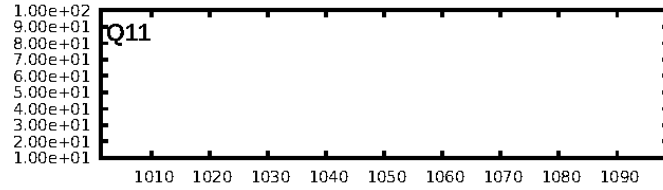
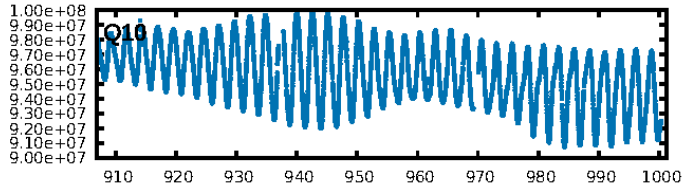
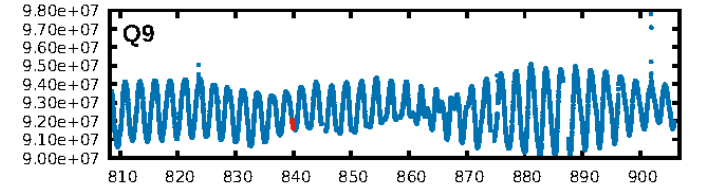
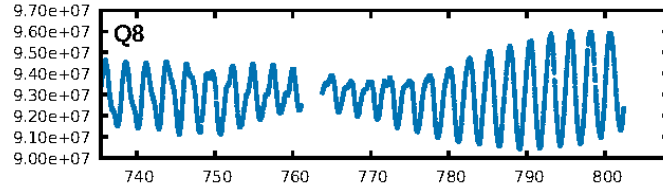
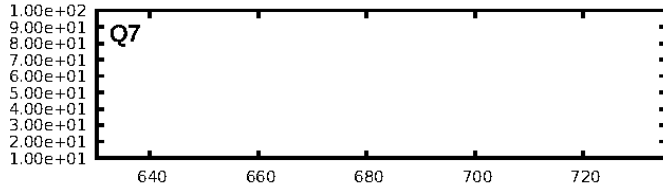
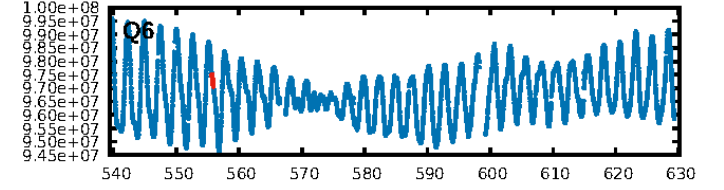
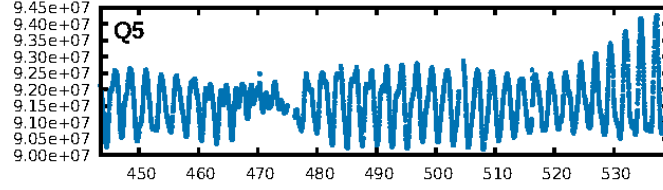
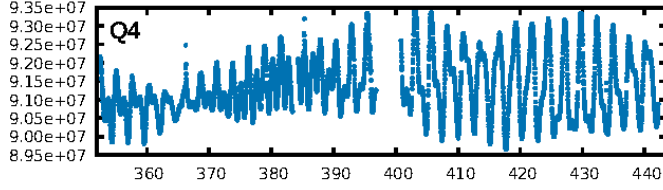
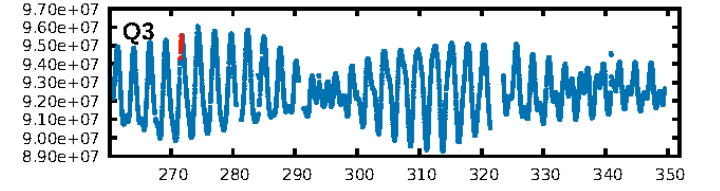
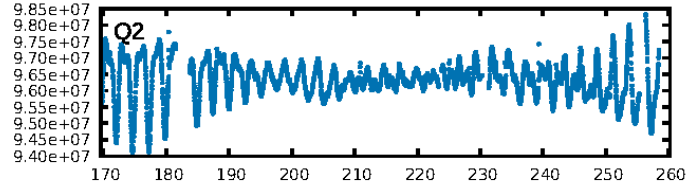
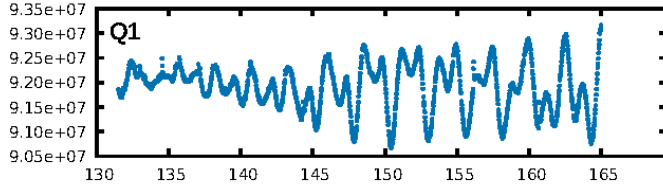
KIC: 10482387 Candidate: 2 of 4 Period: 284.142 d



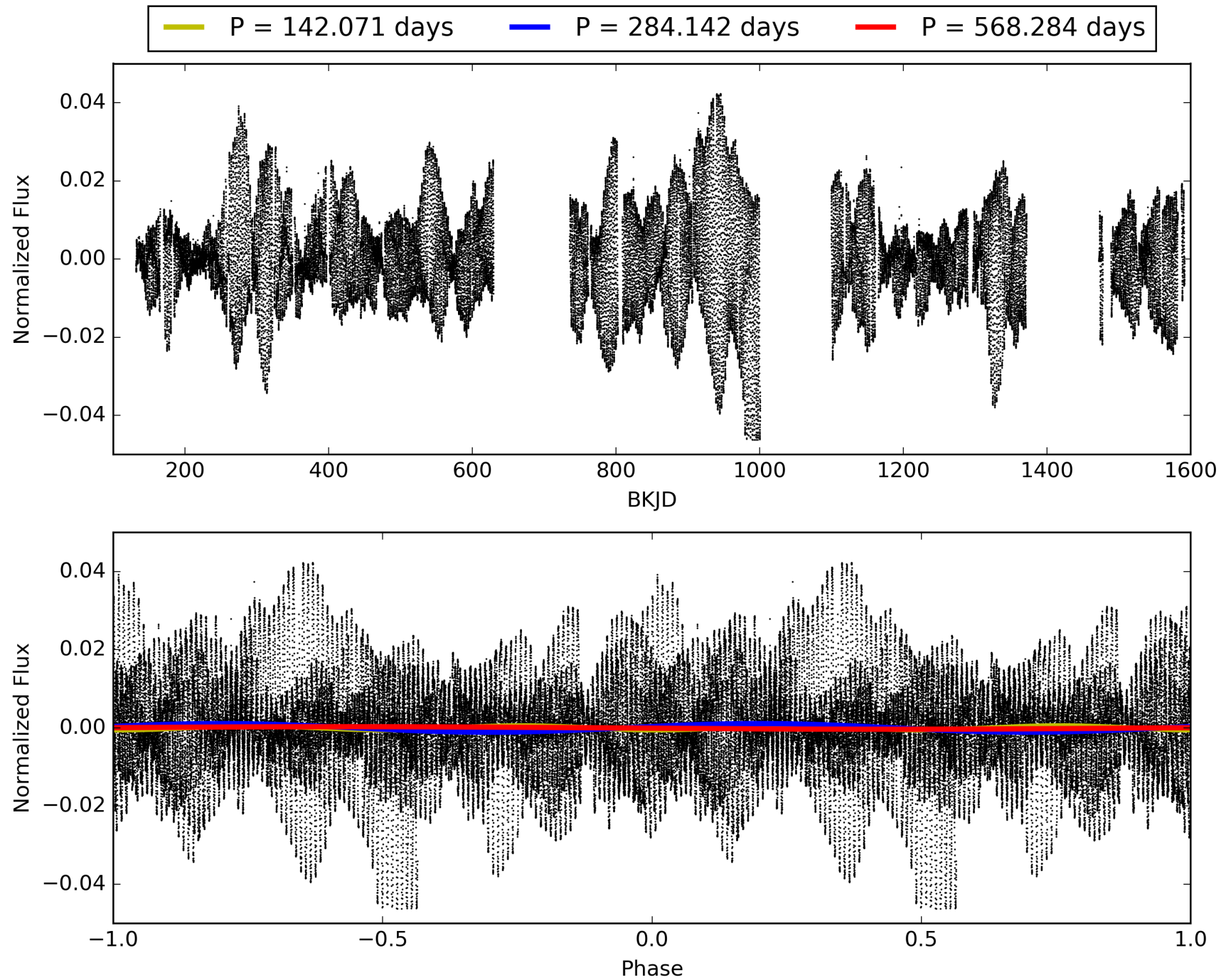
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:59:22 Z

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

TCE 010482387-02, PDC Light Curves

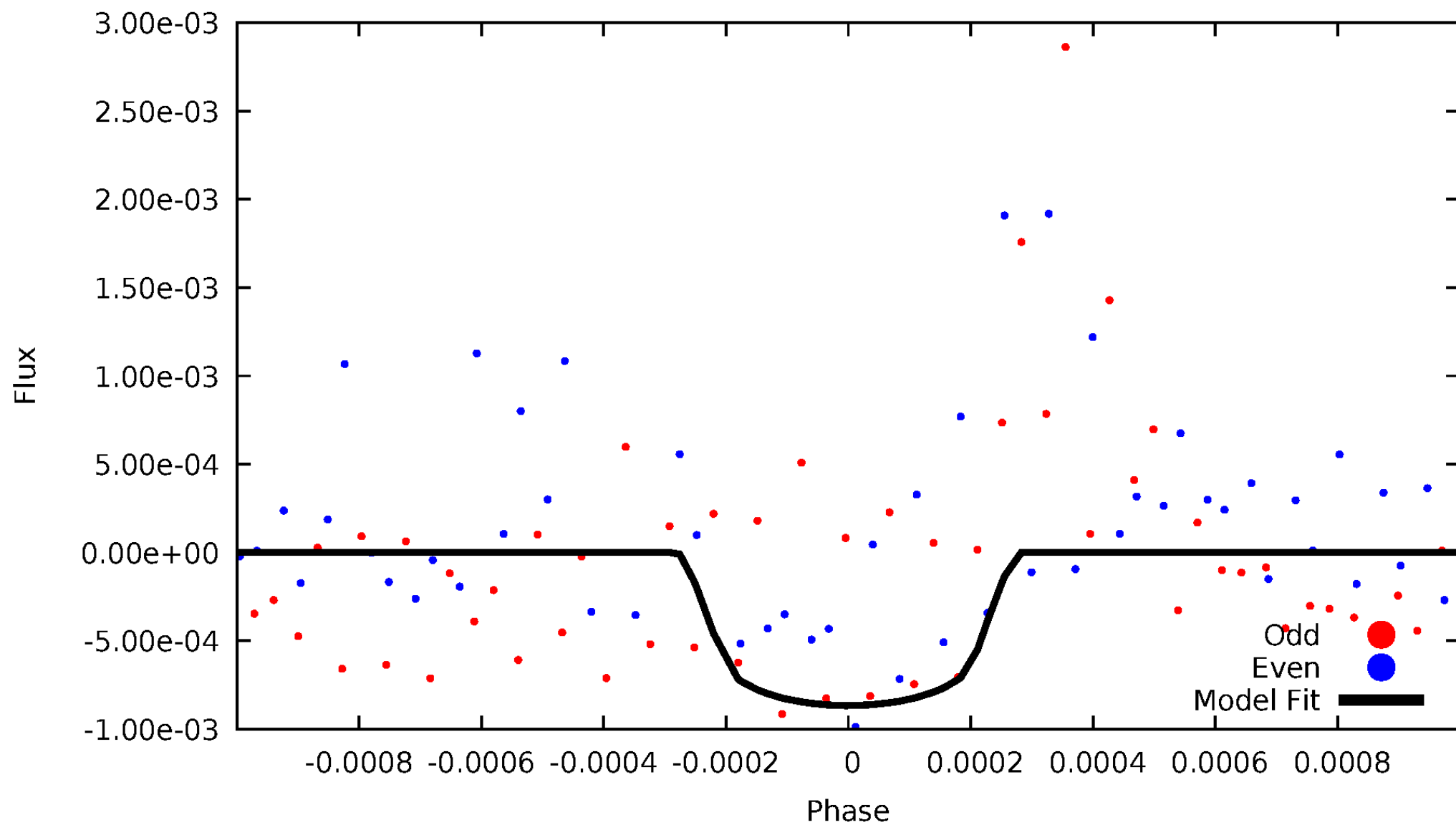


TCE 010482387-02



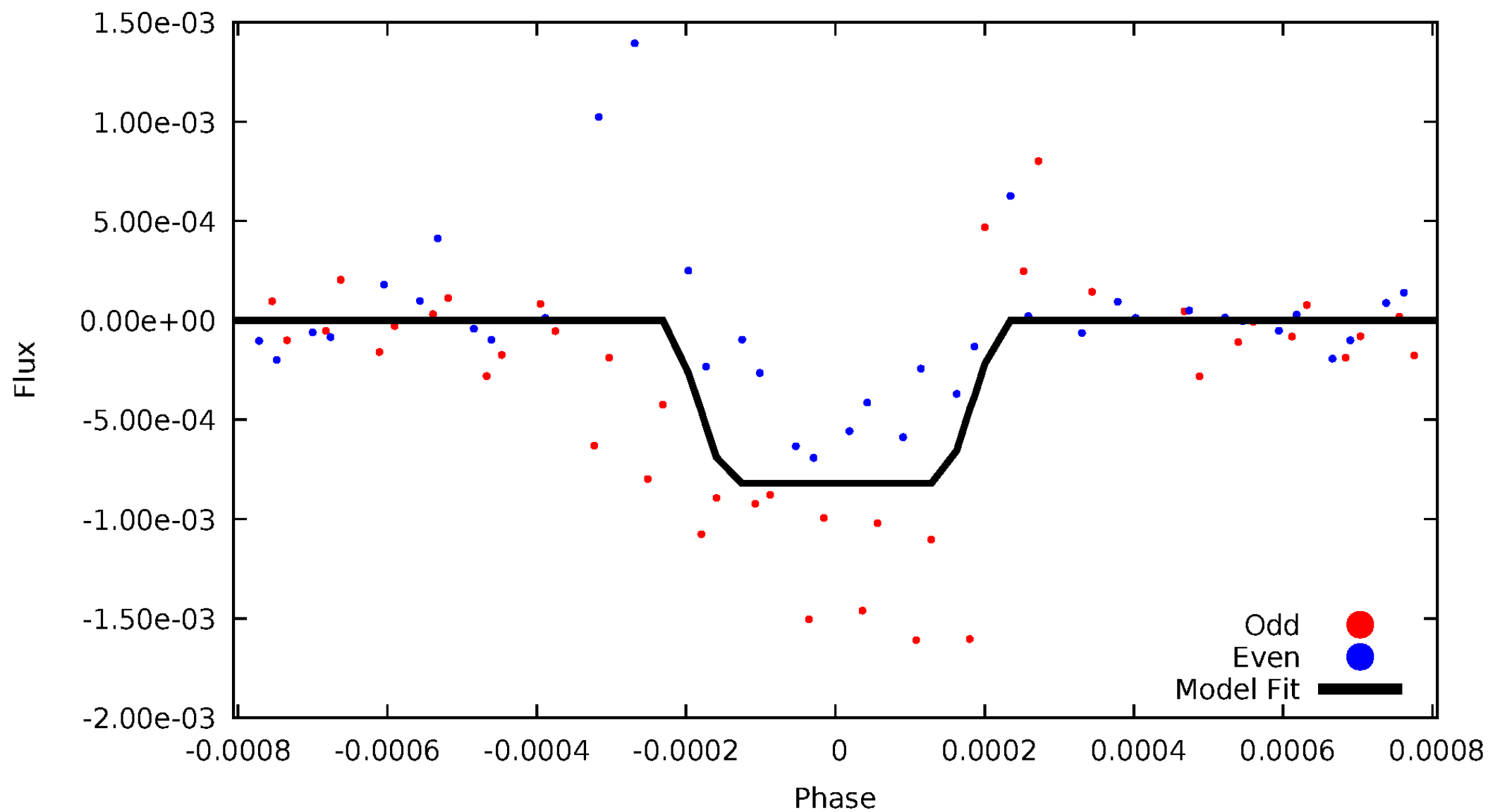
DV Odd/Even

TCE 010482387-02



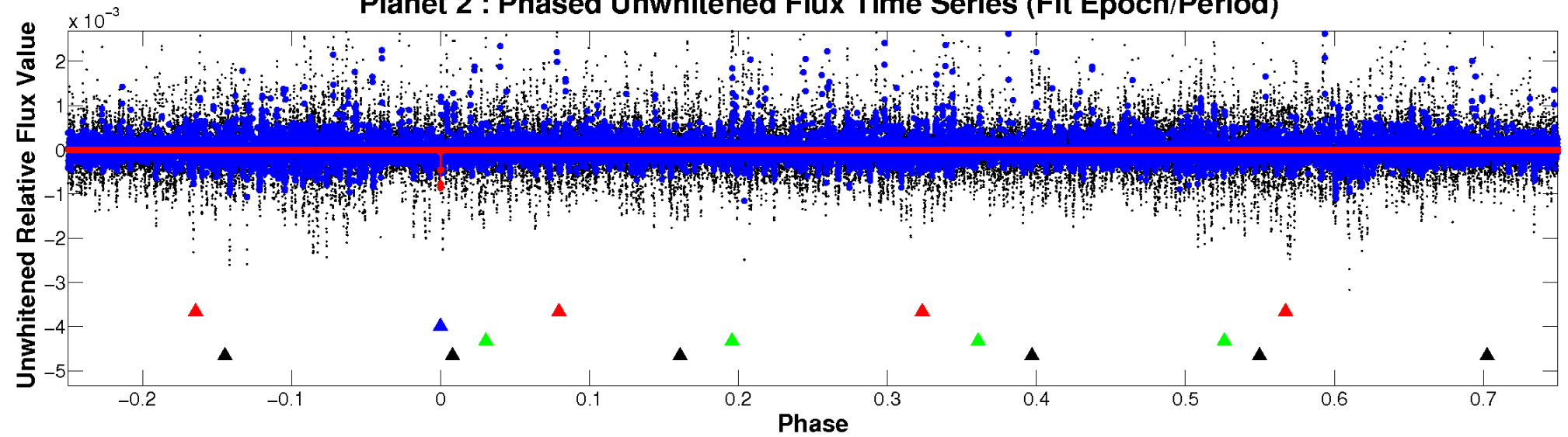
ALT Odd/Even

TCE 010482387-02

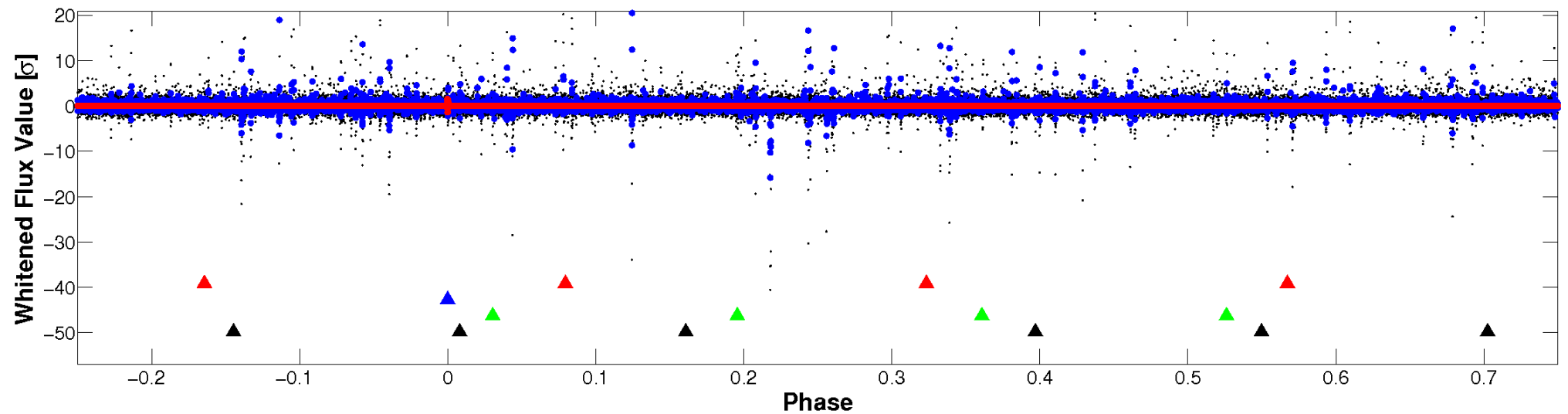


Non-Whitened Vs. Whitened Light Curve

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

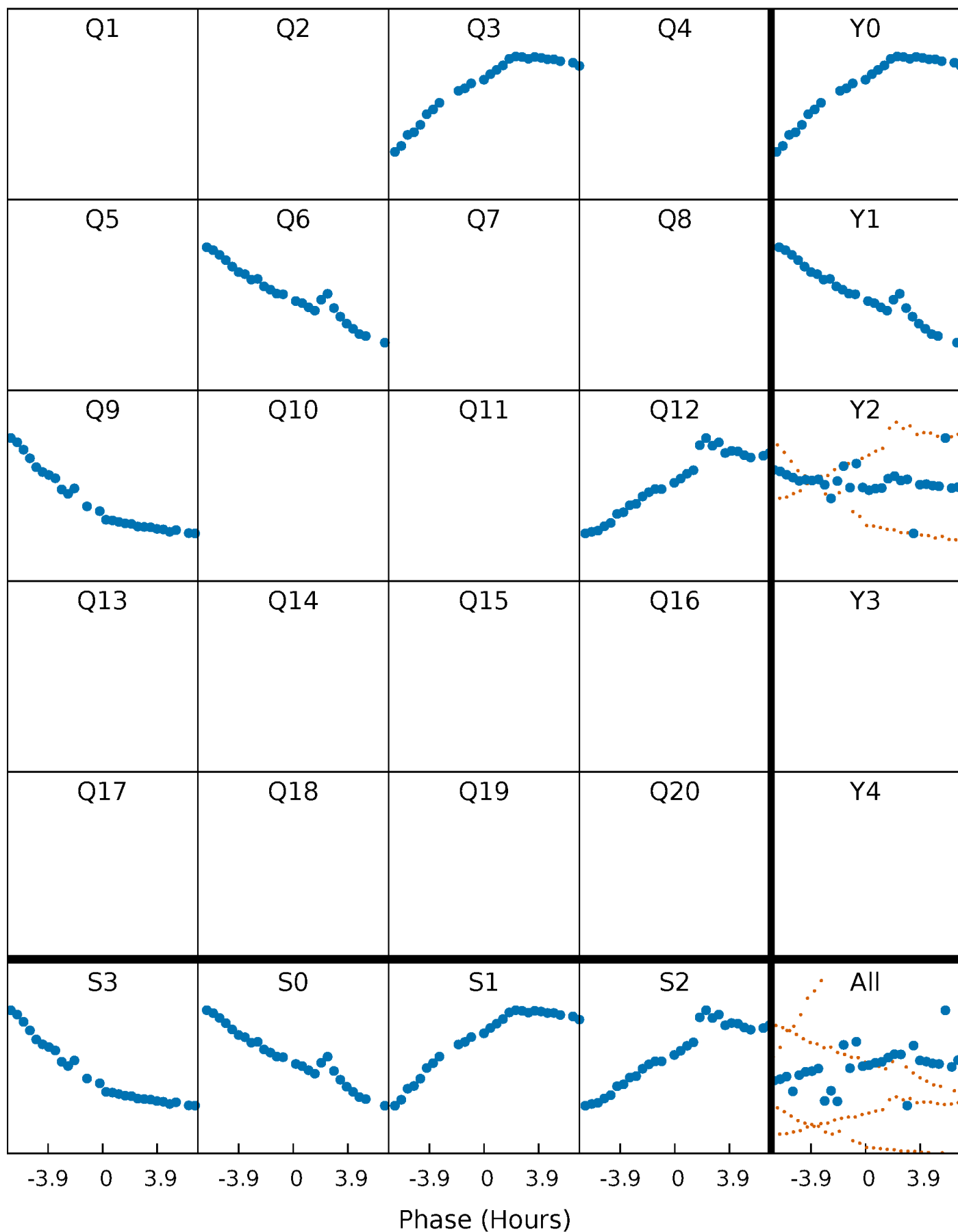


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



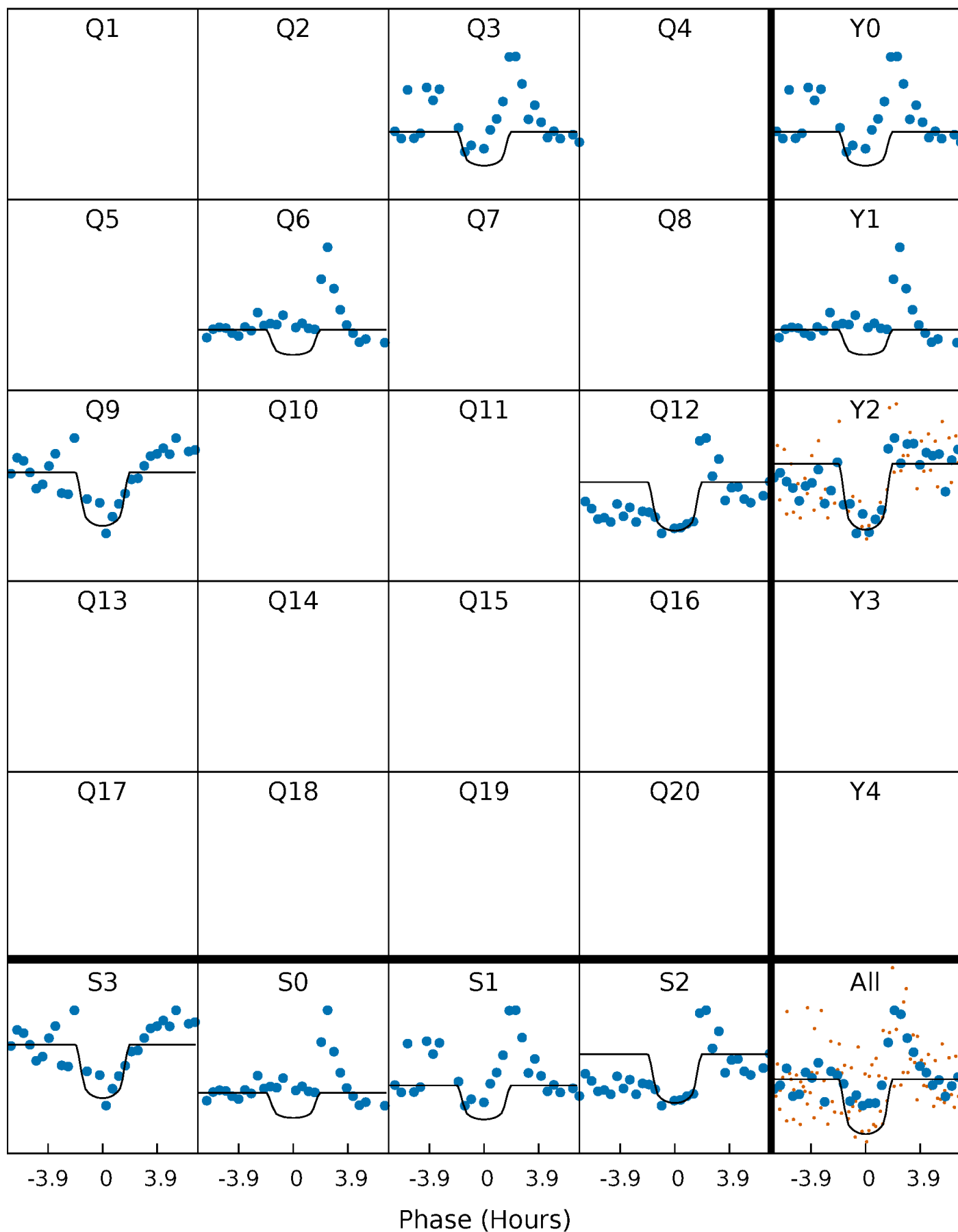
PDC Quarter-Phased Transit Curves

TCE 010482387-02 P=284.141971 Days $T_0=271.635717$ (BKJD)



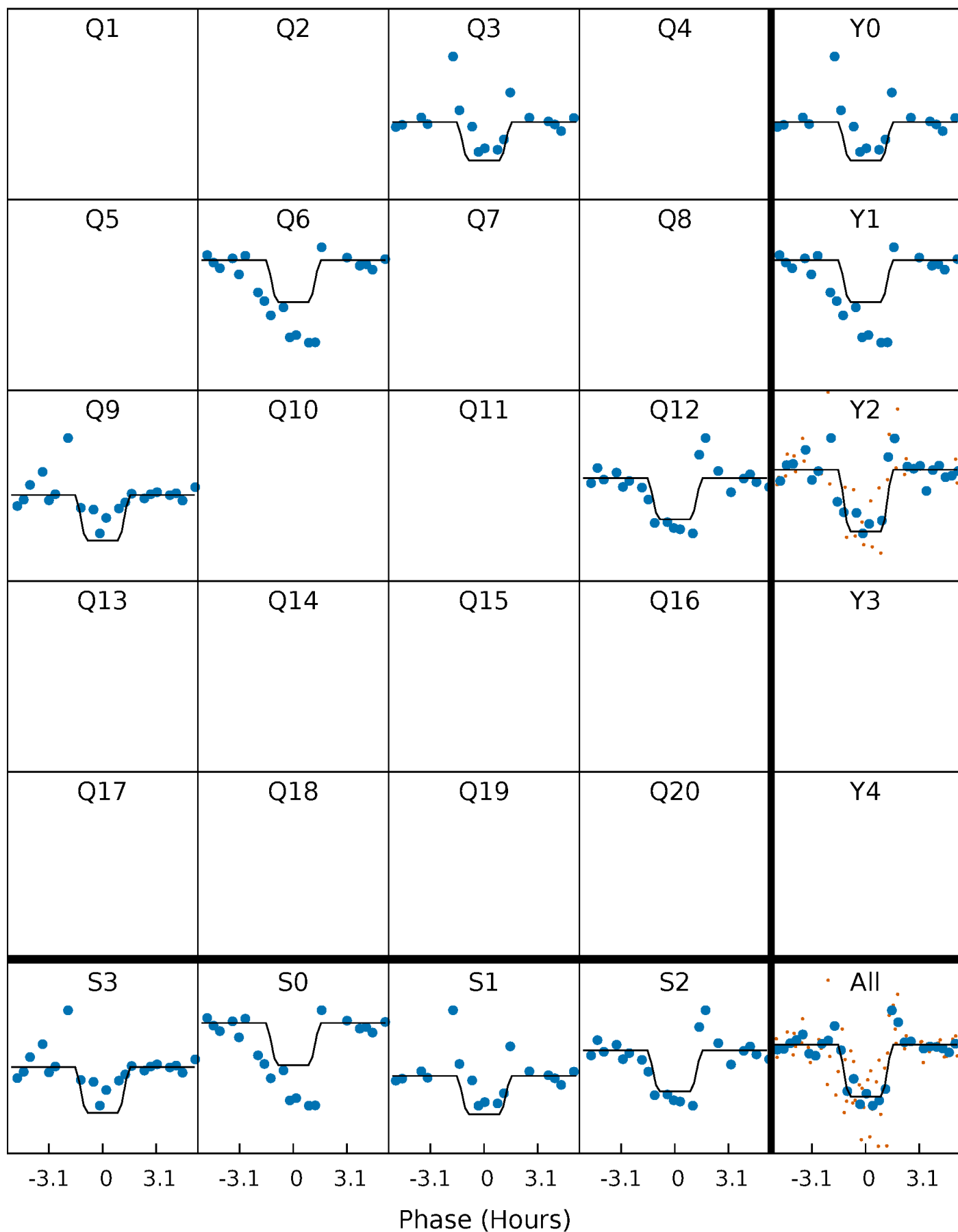
DV Quarter-Phased Transit Curves

TCE 010482387-02 $P=284.141971$ Days $T_0=271.635717$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

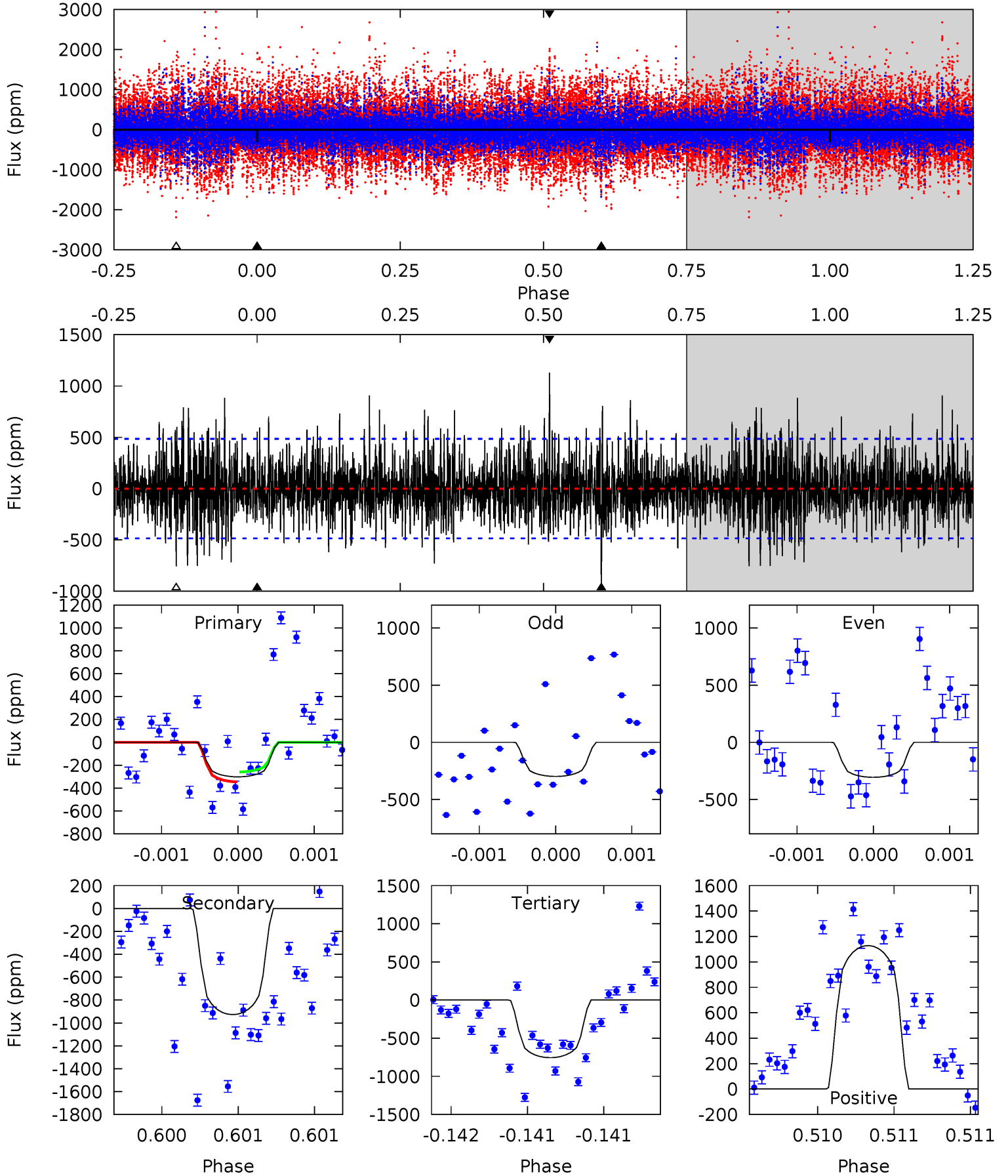
TCE 010482387-02 $P=284.144834$ Days $T_0=271.641660$ (BKJD)



DV Model-Shift Uniqueness Test

010482387-02, P = 284.141971 Days, E = 271.635717 Days

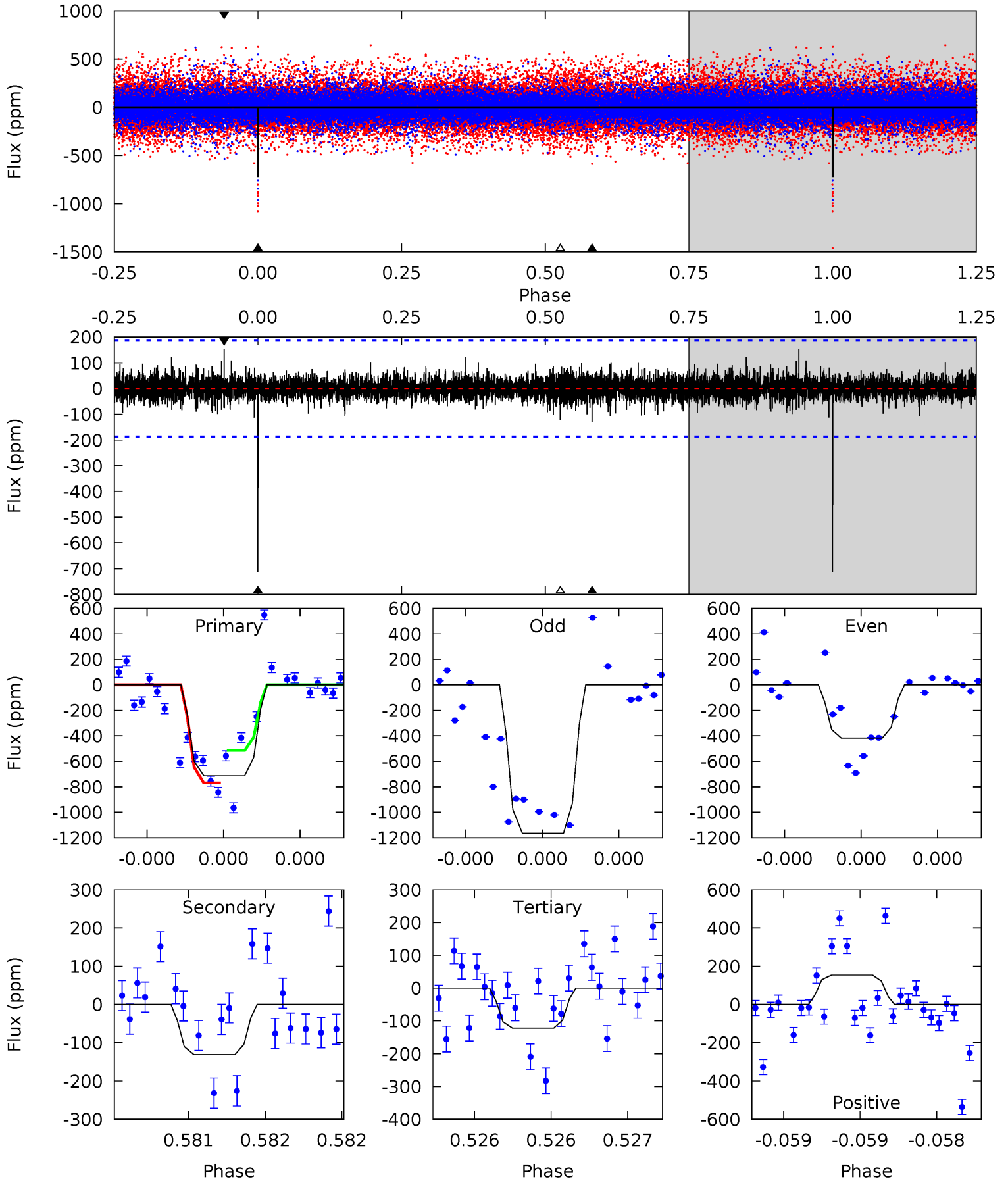
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.46	10.6	8.67	12.9	5.56	3.46	2.51	-5.20	-9.48	1.97	-2.31	0.04	0.96	0.55	0.50



Alt Model-Shift Uniqueness Test

010482387-02, P = 284.144834 Days, E = 271.641660 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.5	3.95	3.69	4.64	5.61	3.53	0.78	17.8	16.9	0.26	-0.69	11.7	1.18	0.18	3.74



Stellar Parameters For KIC 010482387

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5551^{+165}_{-148}	$4.542^{+0.090}_{-0.090}$	$-0.700^{+0.300}_{-0.300}$	$0.749^{+0.106}_{-0.087}$	$0.712^{+0.085}_{-0.039}$	$2.386^{+0.843}_{-0.683}$
	+3%/-3%	+2%/-2%	+43%/-43%	+14%/-12%	+12%/-5%	+35%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010482387-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-927 ± 87	$2.87^{+2.18}_{-1.82}$	342^{+15}_{-14}	5201^{+3778}_{-1021}	$35851^{+228812}_{-24583}$
Alt.	-131 ± 33	$2.81^{+2.16}_{-1.74}$	341^{+16}_{-15}	3618^{+1618}_{-590}	5396^{+30062}_{-3780}

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

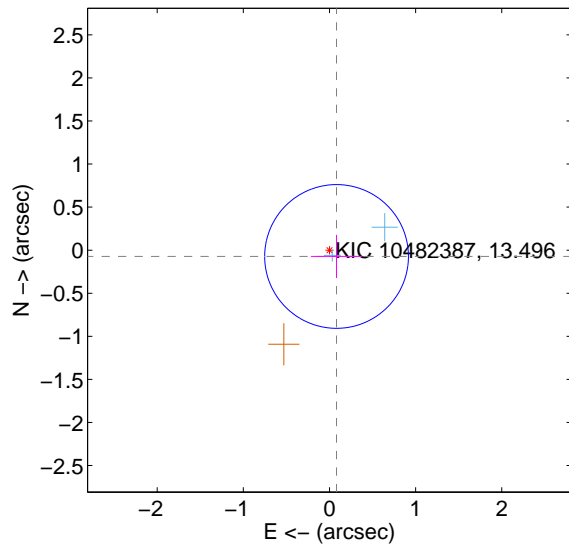
Supplemental centroid analysis for 010482387-02. Kepler magnitude: 13.50. Transit SNR 7.48

There are 2 quarters with good PRF difference image offsets

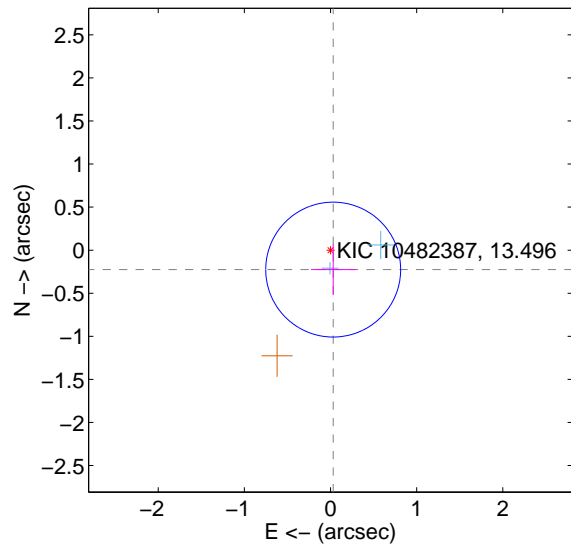
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.110 ± 0.278	0.40	-0.082 ± 0.298	-0.073 ± 0.251
PRF-fit source offset from KIC position	0.228 ± 0.261	0.87	-0.031 ± 0.257	-0.226 ± 0.296
photometric centroid source offset	0.65 ± 0.56	1.15	0.03 ± 0.50	-0.65 ± 0.56

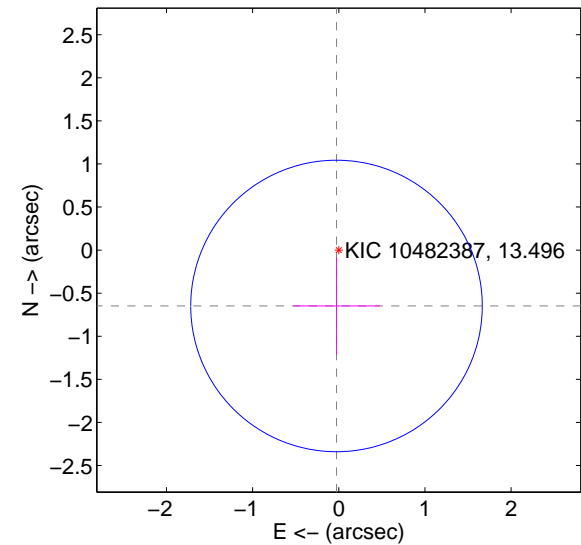
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

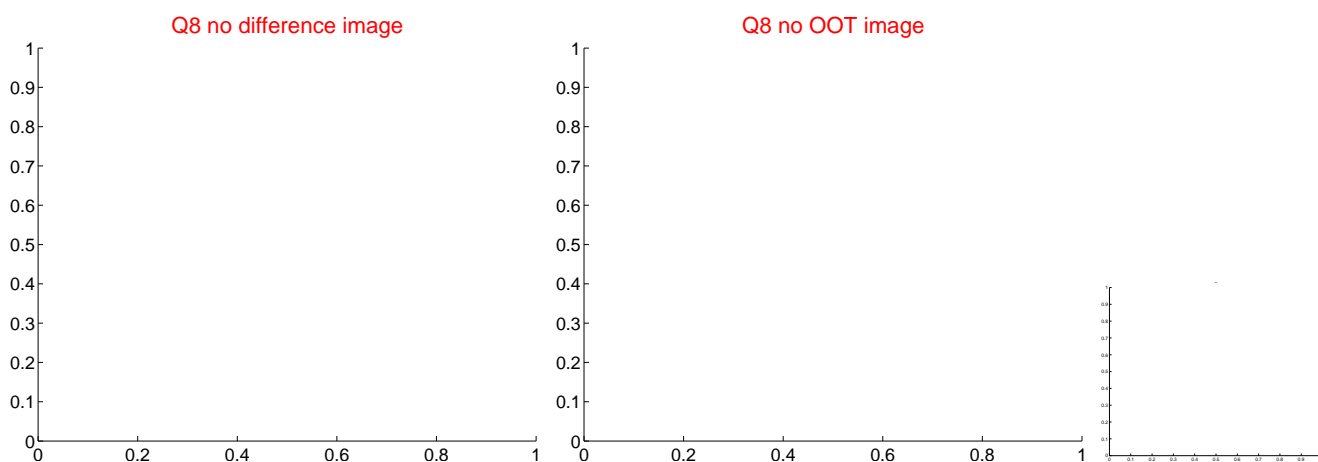
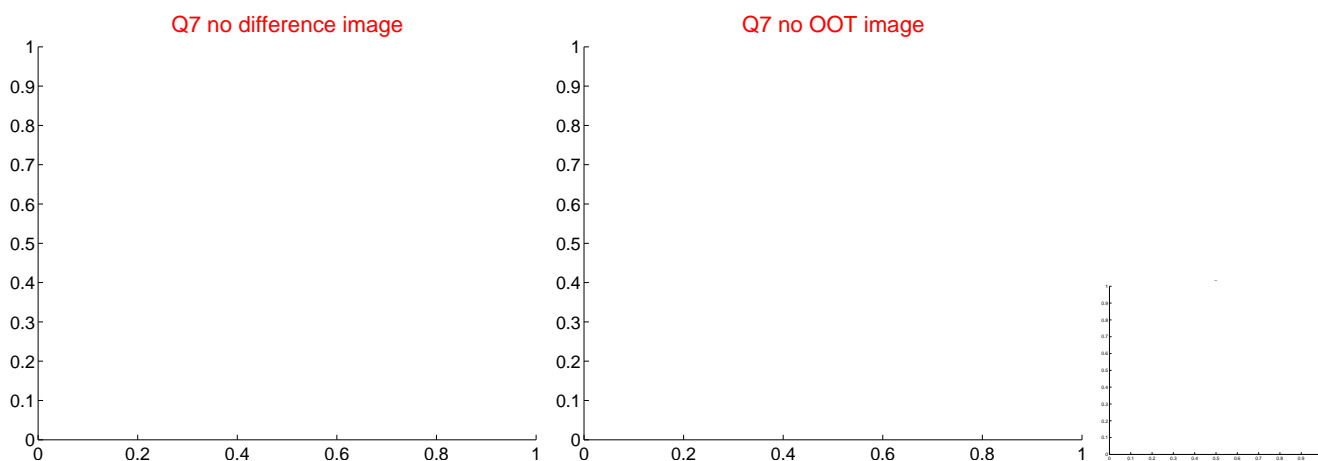
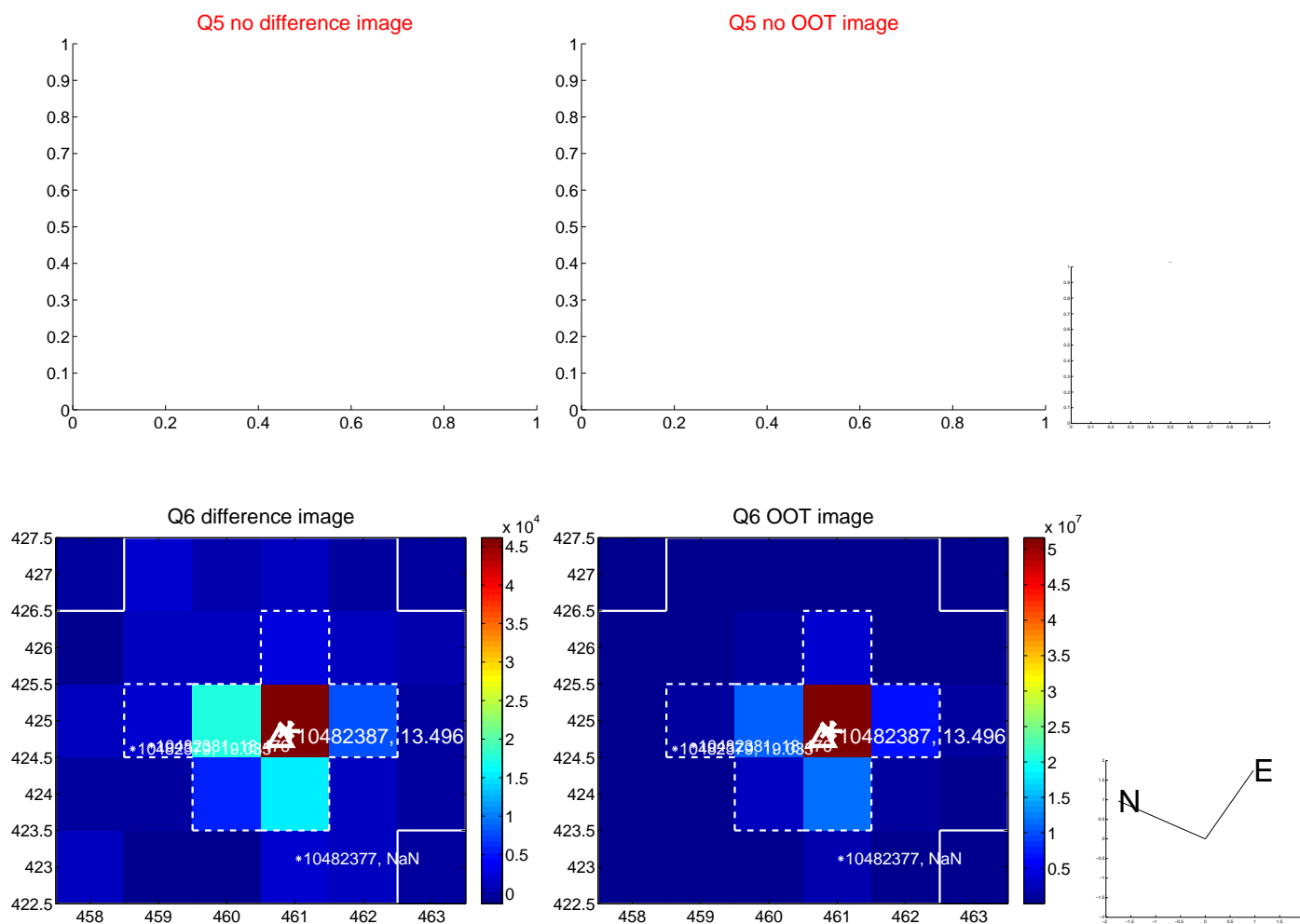


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

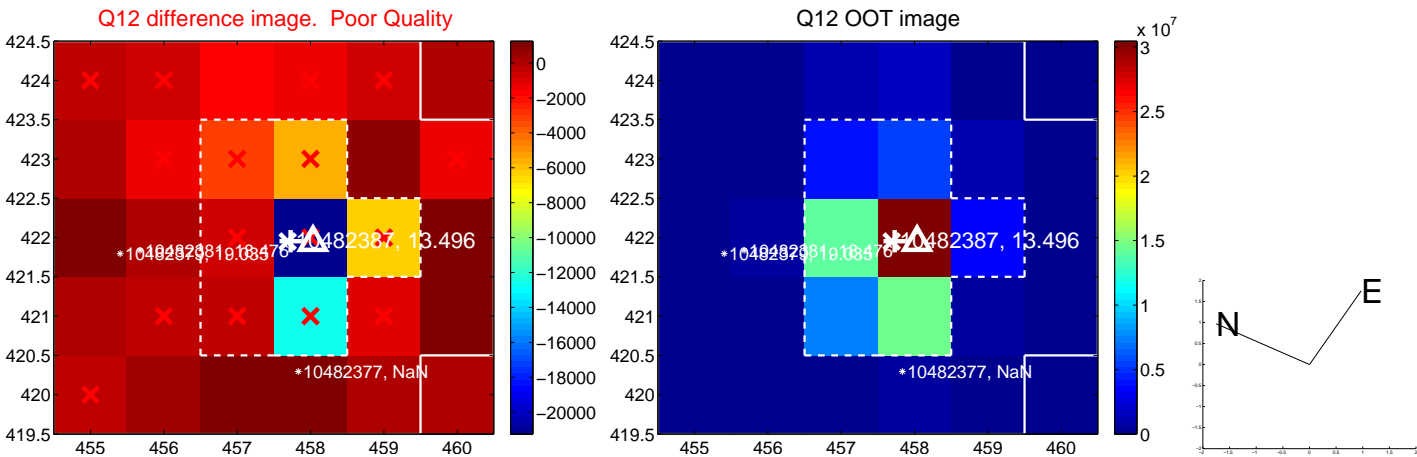
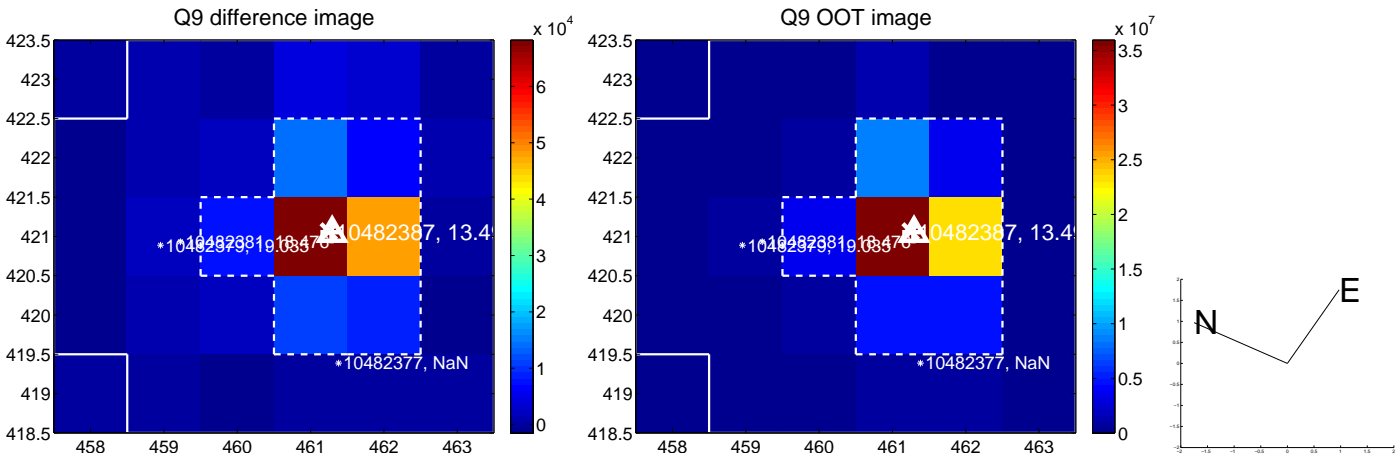
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



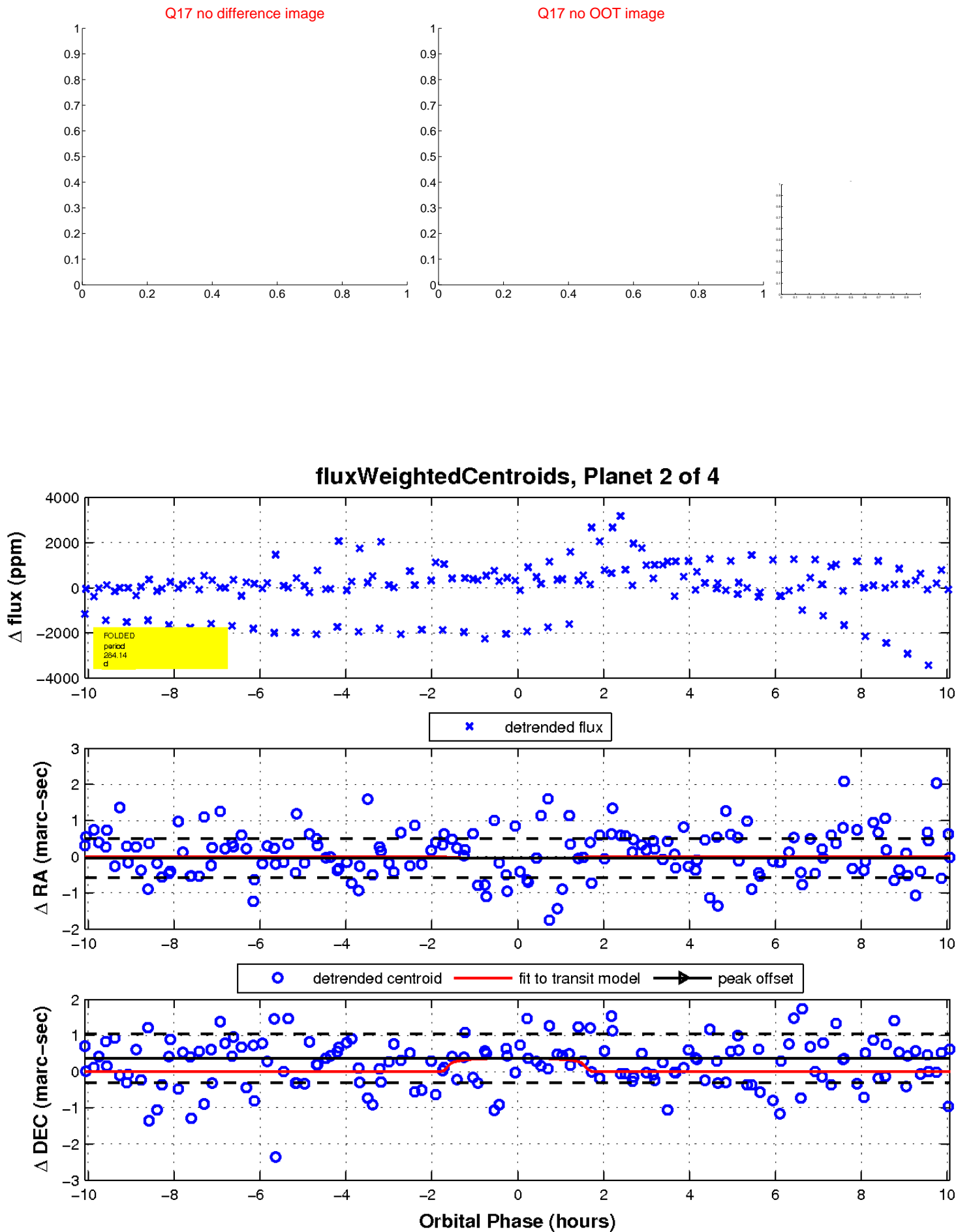
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

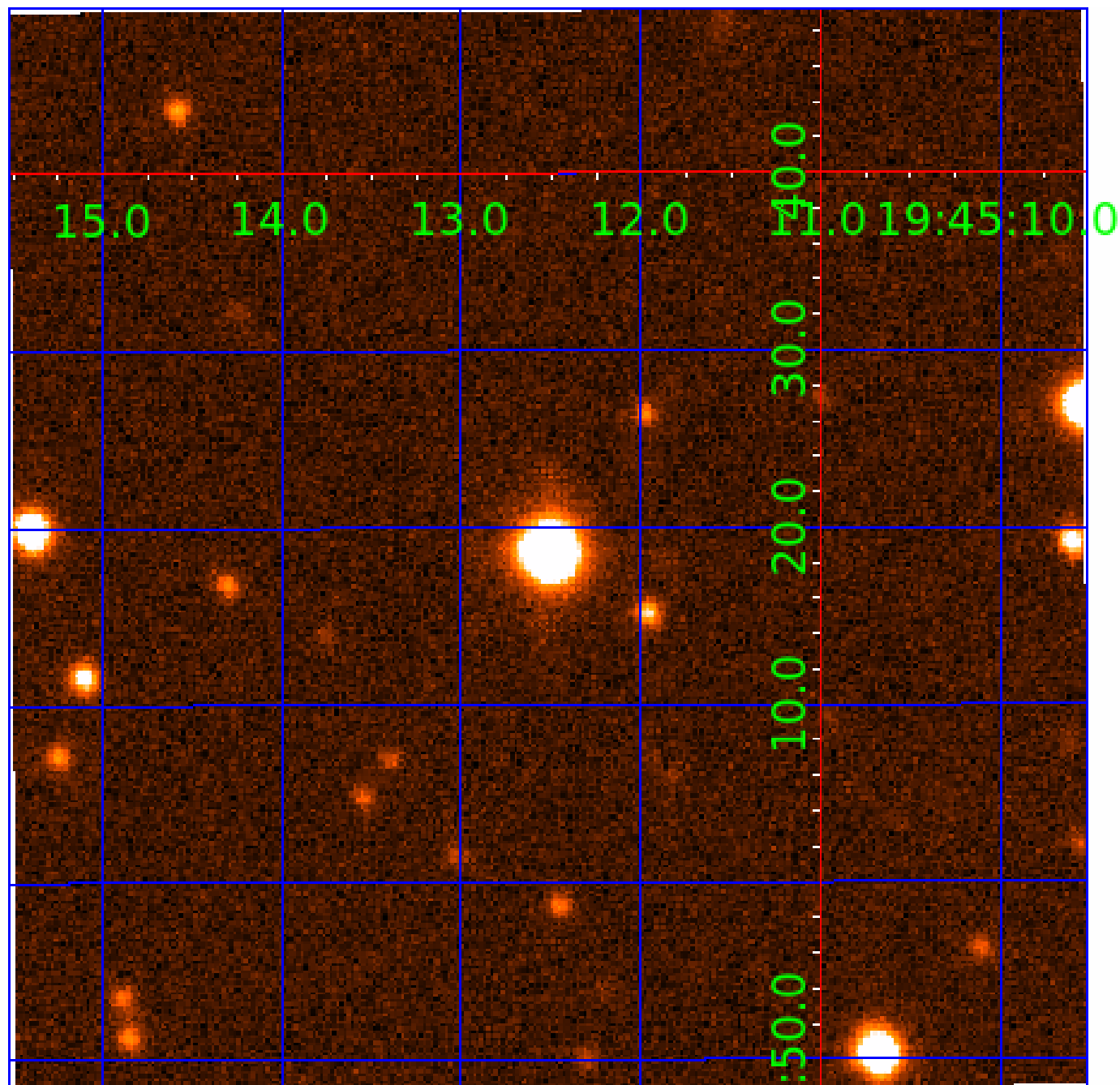


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010482387

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})
010482387-01	OBS	No	353.437589	224.936290	579.0	5.425	12.8	3.8	0.75	5551	1.82	0.62
010482387-02	OBS	No	284.141971	271.635717	866.2	3.406	10.9	7.5	0.75	5551	2.33	0.84
010482387-03	OBS	No	331.091784	280.280933	491.7	10.500	15.5	-1.0	0.75	5551	1.65	0.68
010482387-04	OBS	No	240.733837	317.344722	503.2	3.358	14.6	4.2	0.75	5551	1.78	1.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010482387-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010482387-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010482387-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
010482387-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

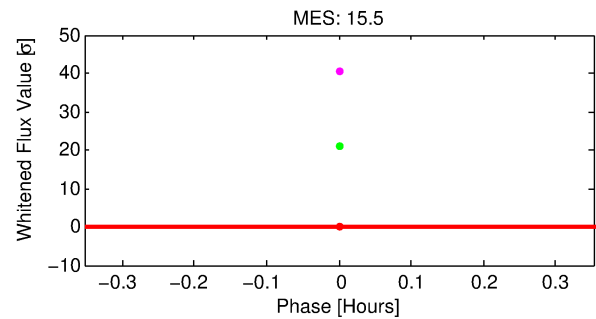
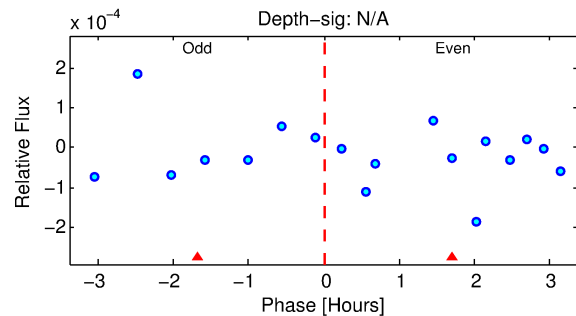
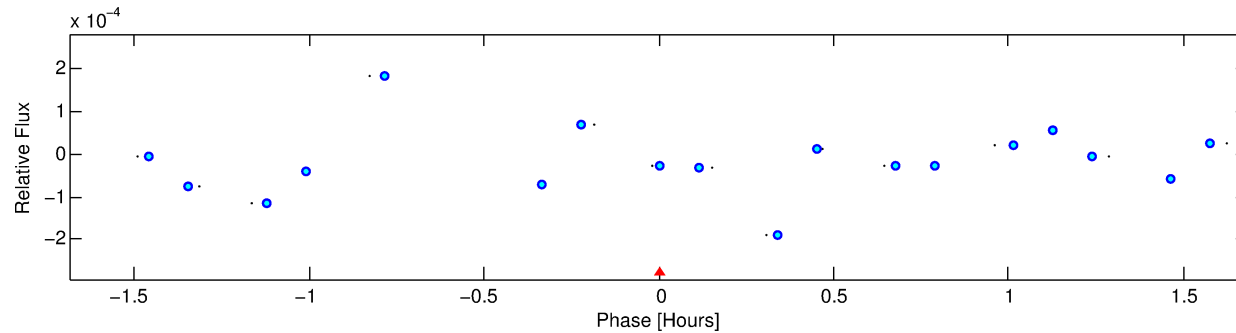
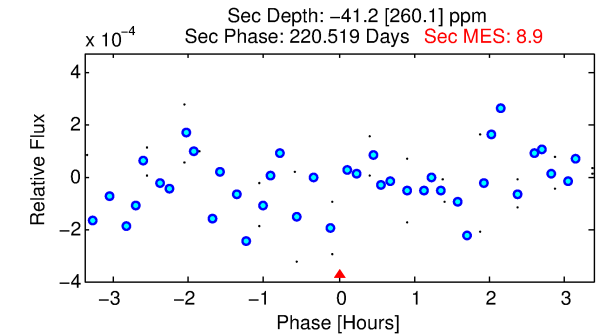
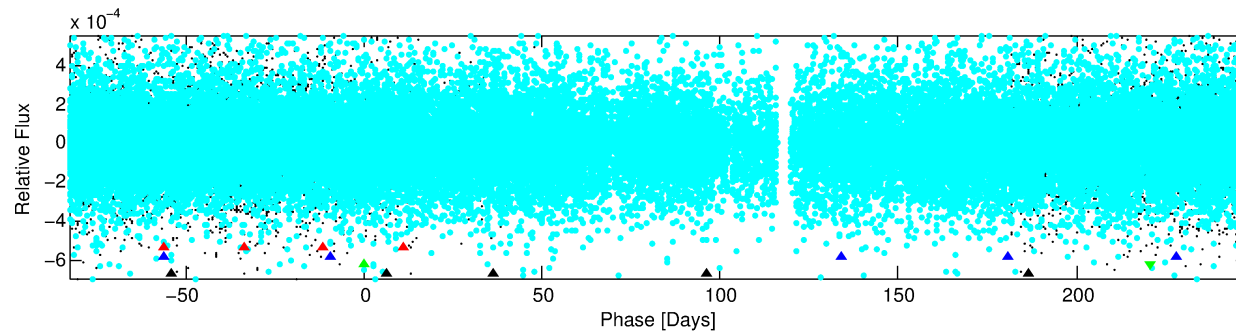
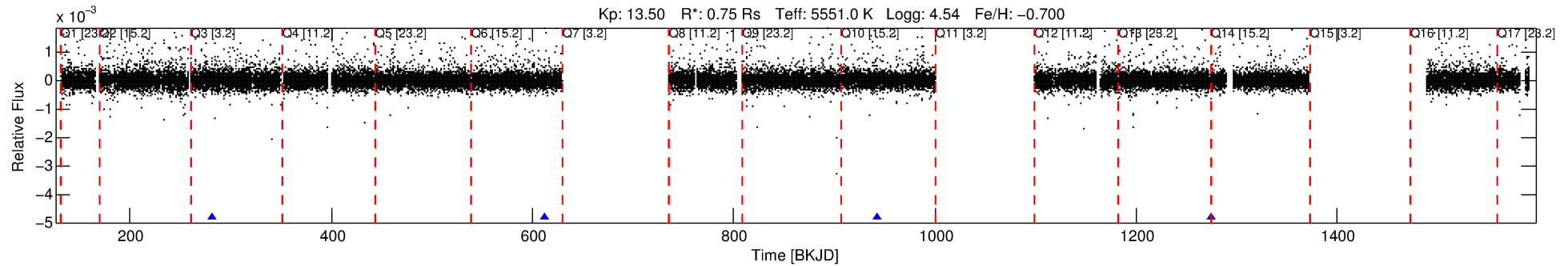
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010482387-03

No Significant Match Found

DV One-Page Summary

KIC: 10482387 Candidate: 3 of 4 Period: 331.092 d



TPS TCE Results:

Period = 331.09178 d
Epoch = 280.2809 BKJD

DV fit results are unavailable

DV Diagnostic Results:

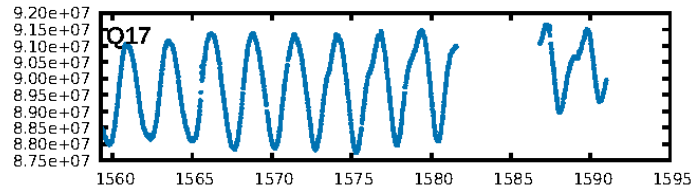
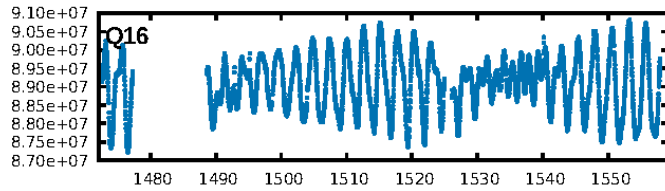
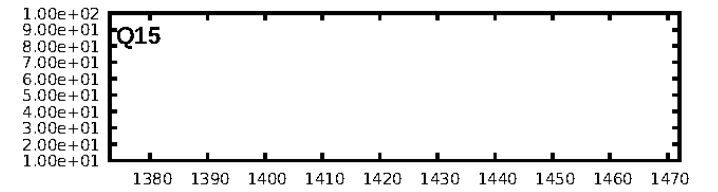
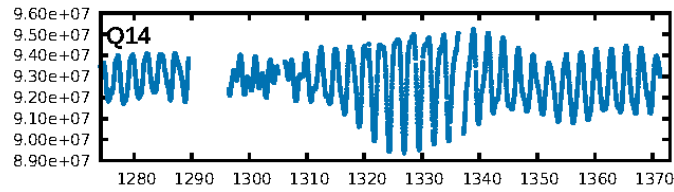
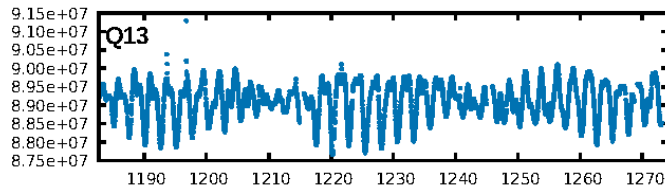
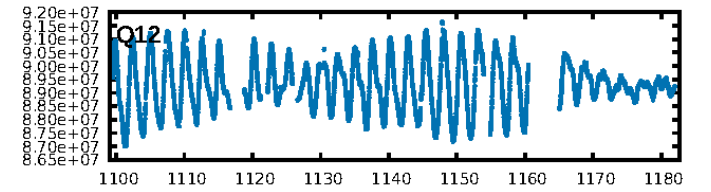
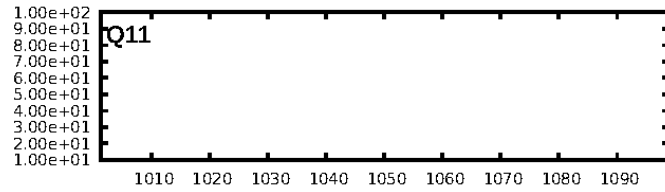
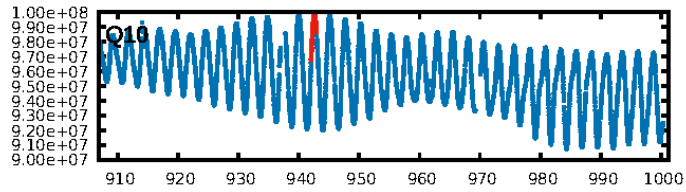
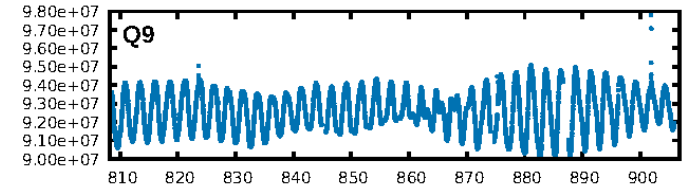
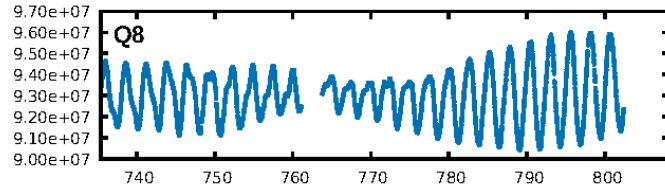
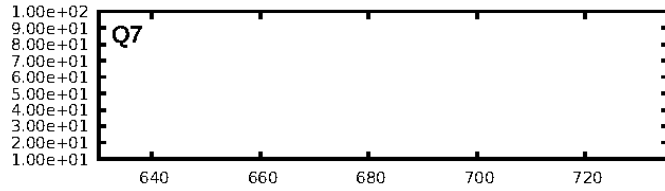
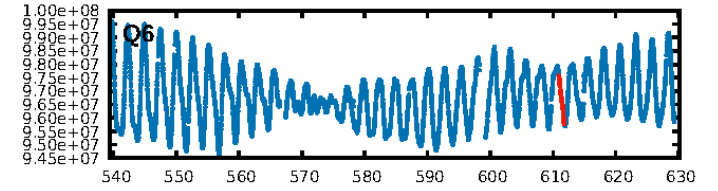
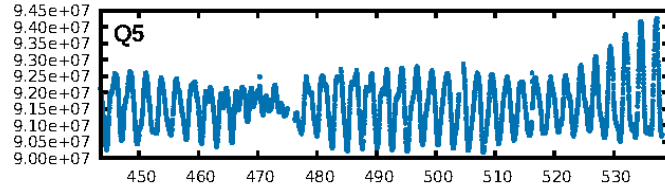
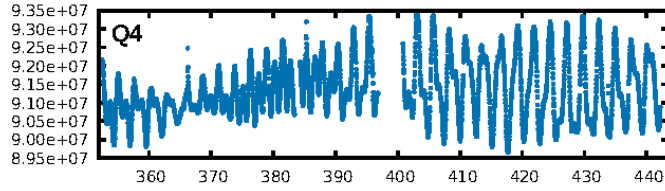
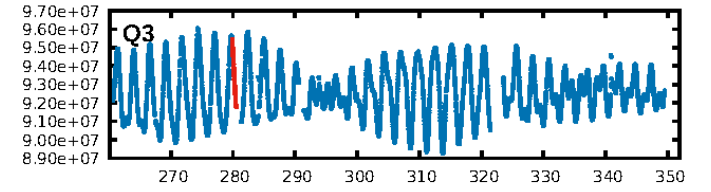
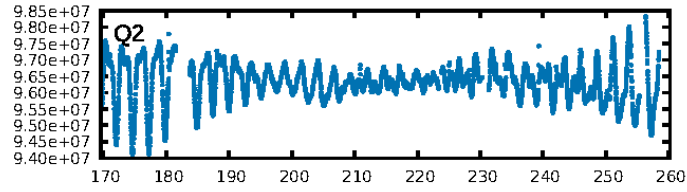
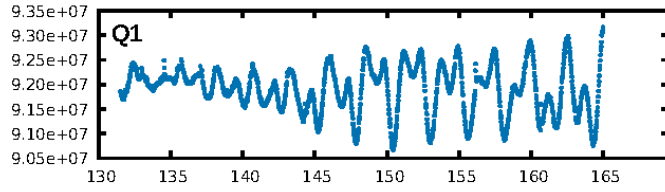
ShortPeriod-sig: 100.0% [102.08σ]
LongPeriod-sig: 100.0% [45.38σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.15e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.17

Centroid-sig: 96.6%
Centroid-so: 13.347 arcsec [0.10σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: N/A

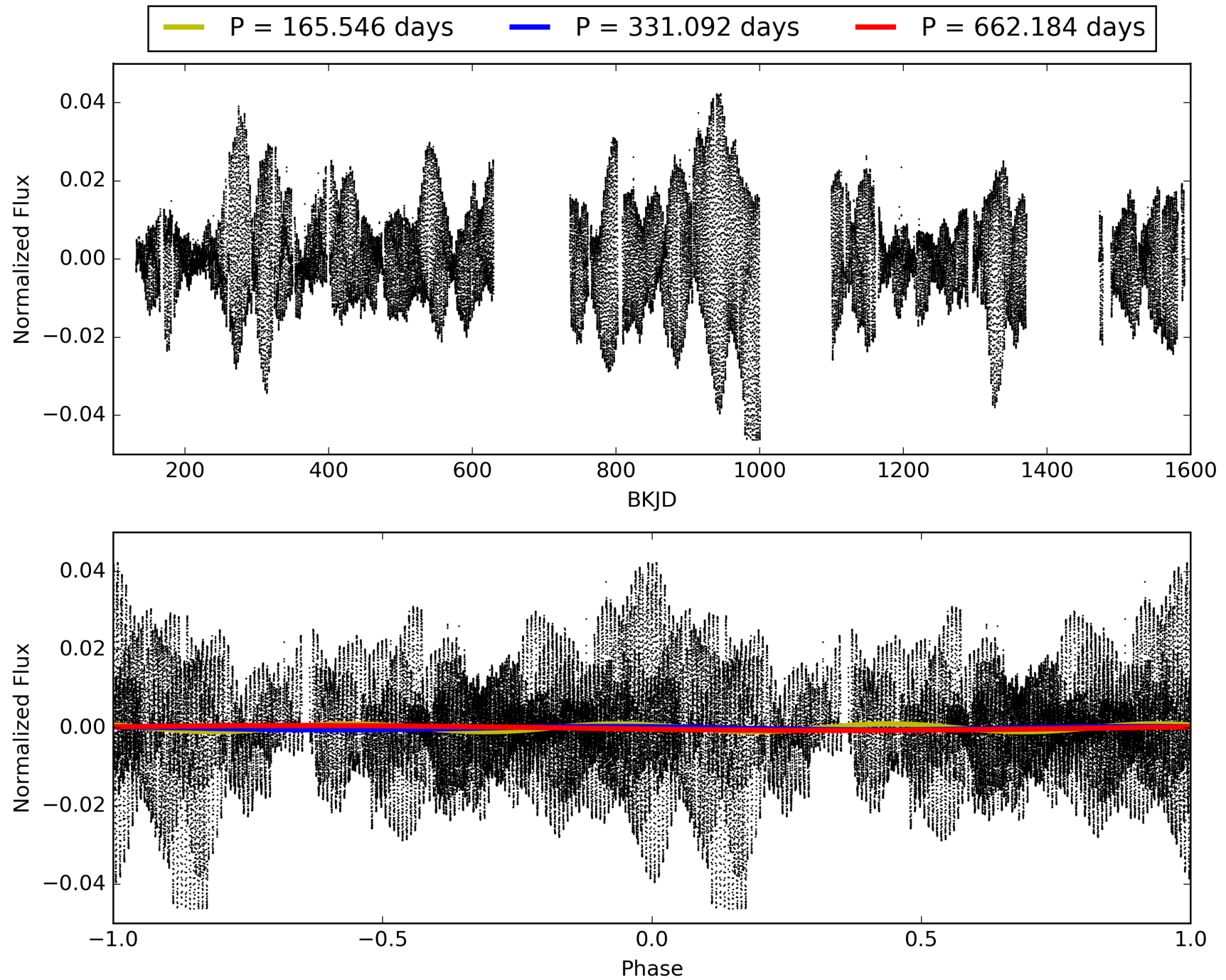
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:00:15 Z

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

TCE 010482387-03, PDC Light Curves

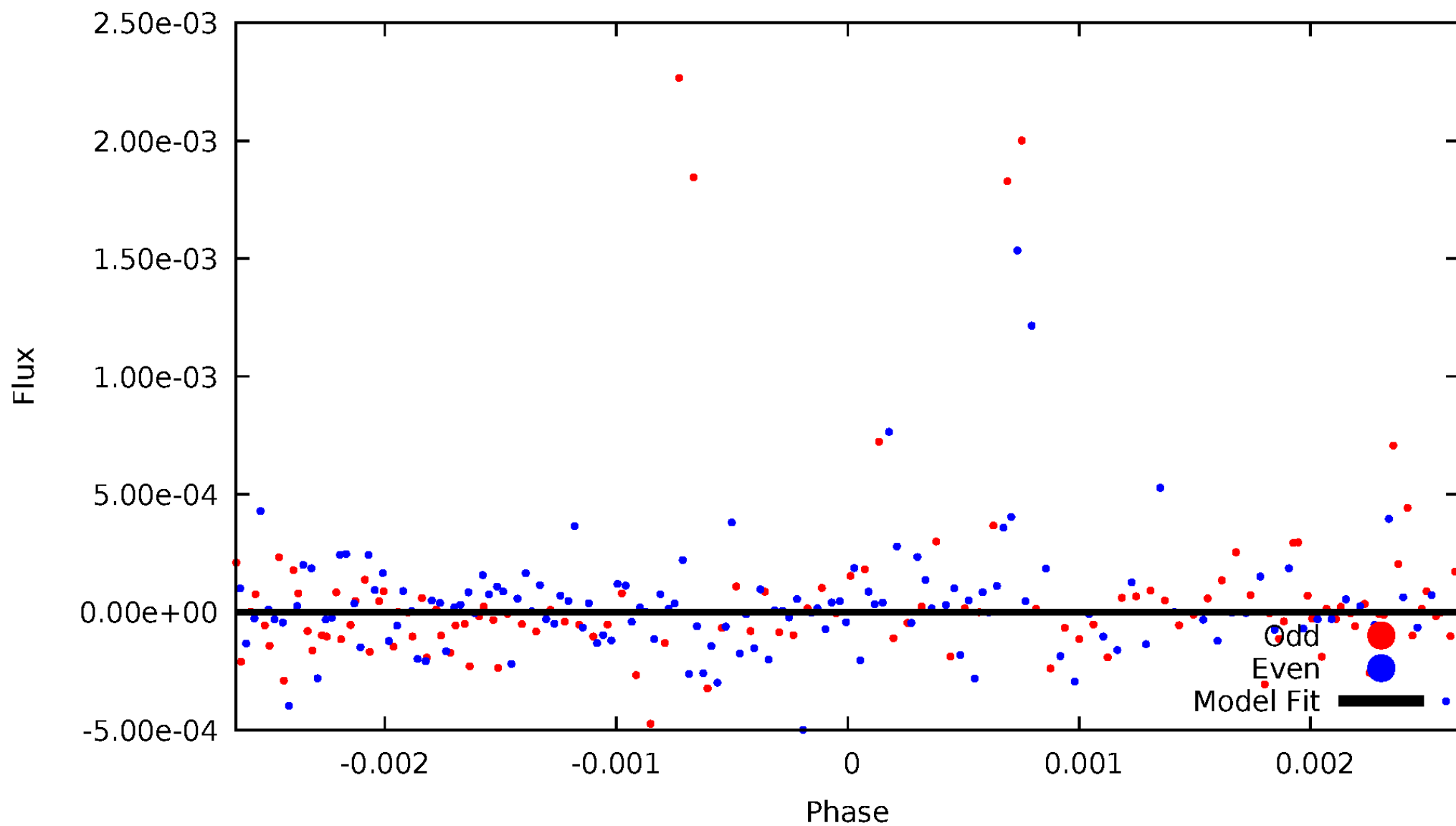


TCE 010482387-03



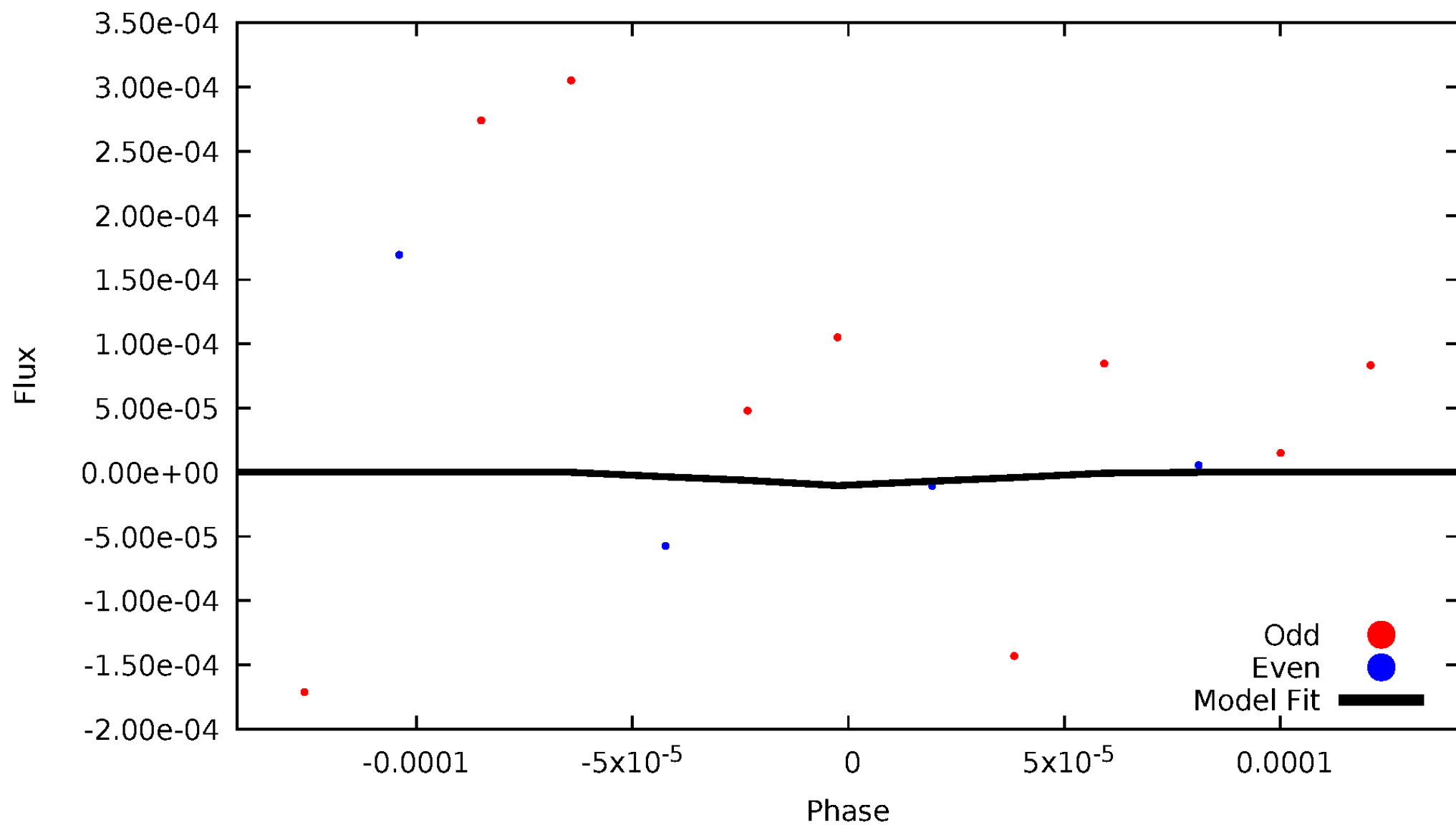
DV Odd/Even

TCE 010482387-03

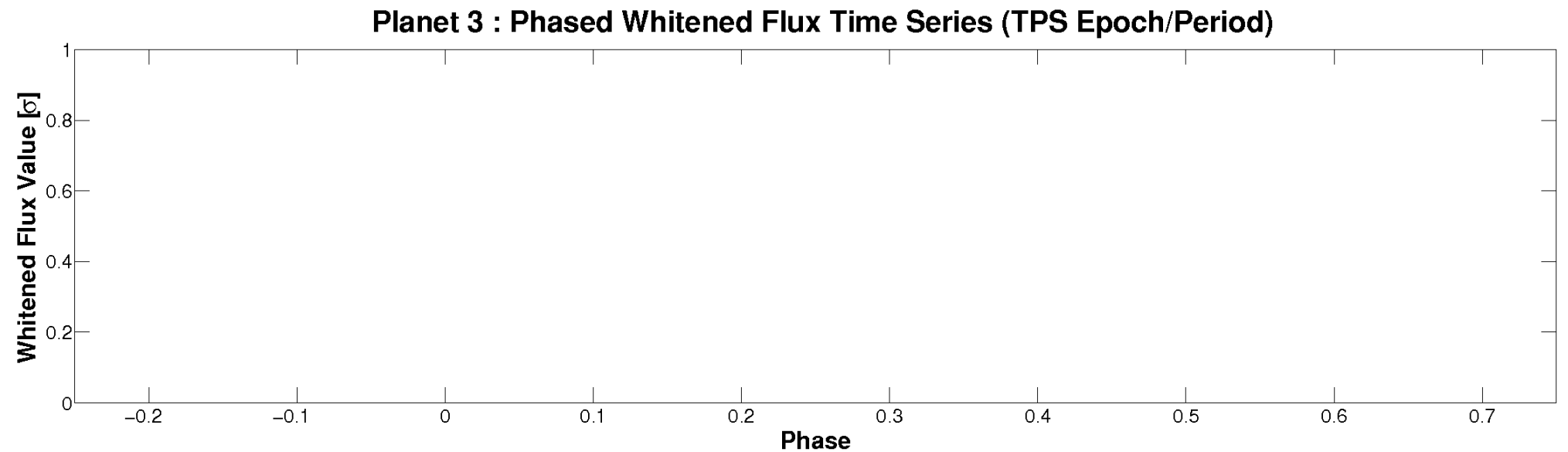
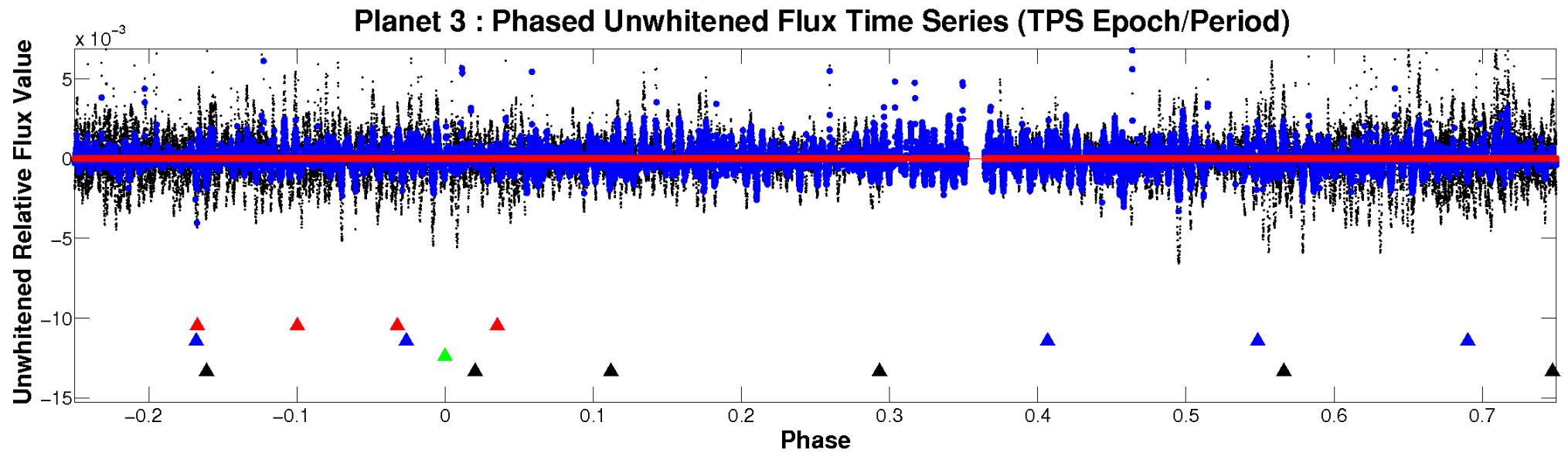


ALT Odd/Even

TCE 010482387-03

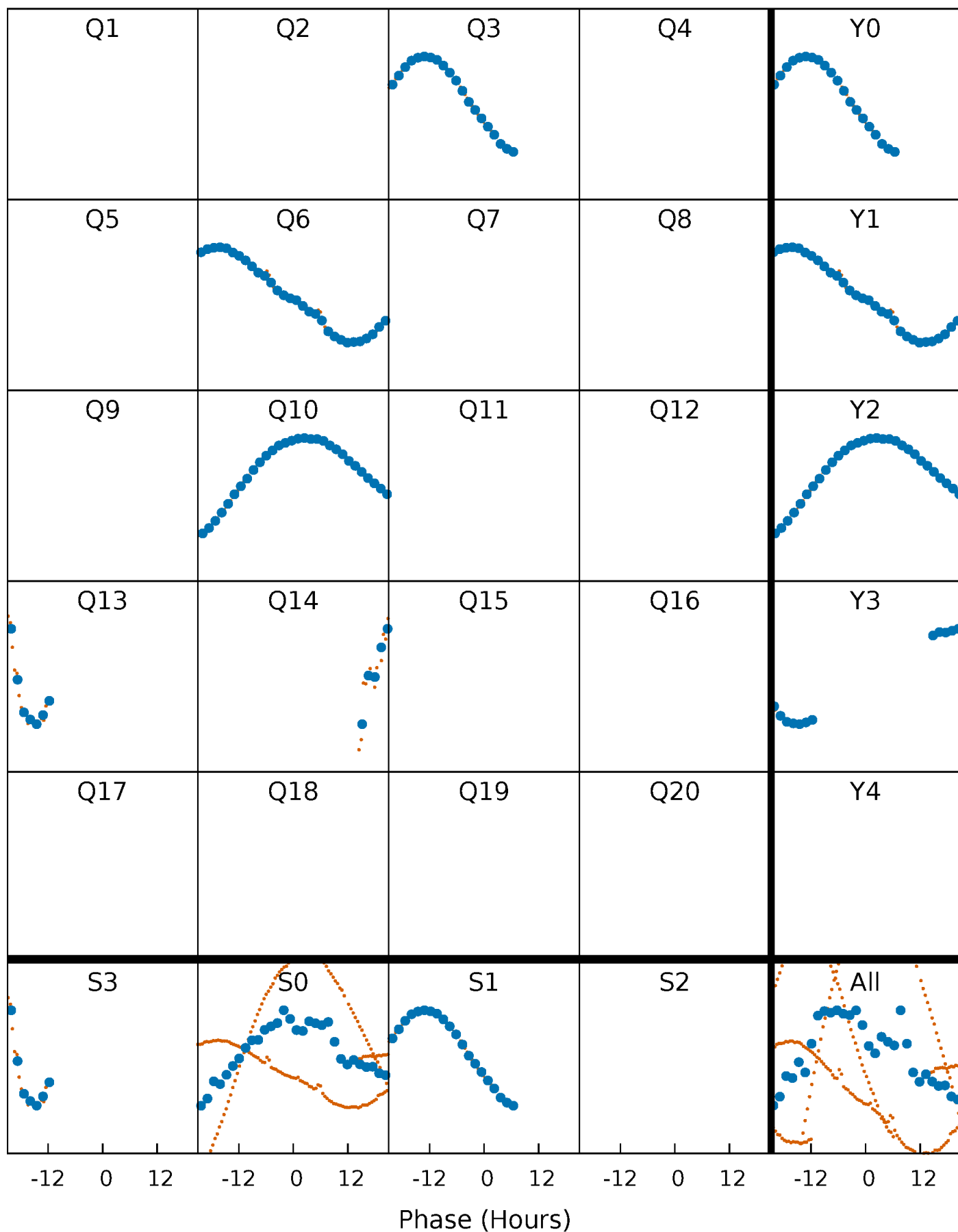


Non-Whitened Vs. Whitened Light Curve



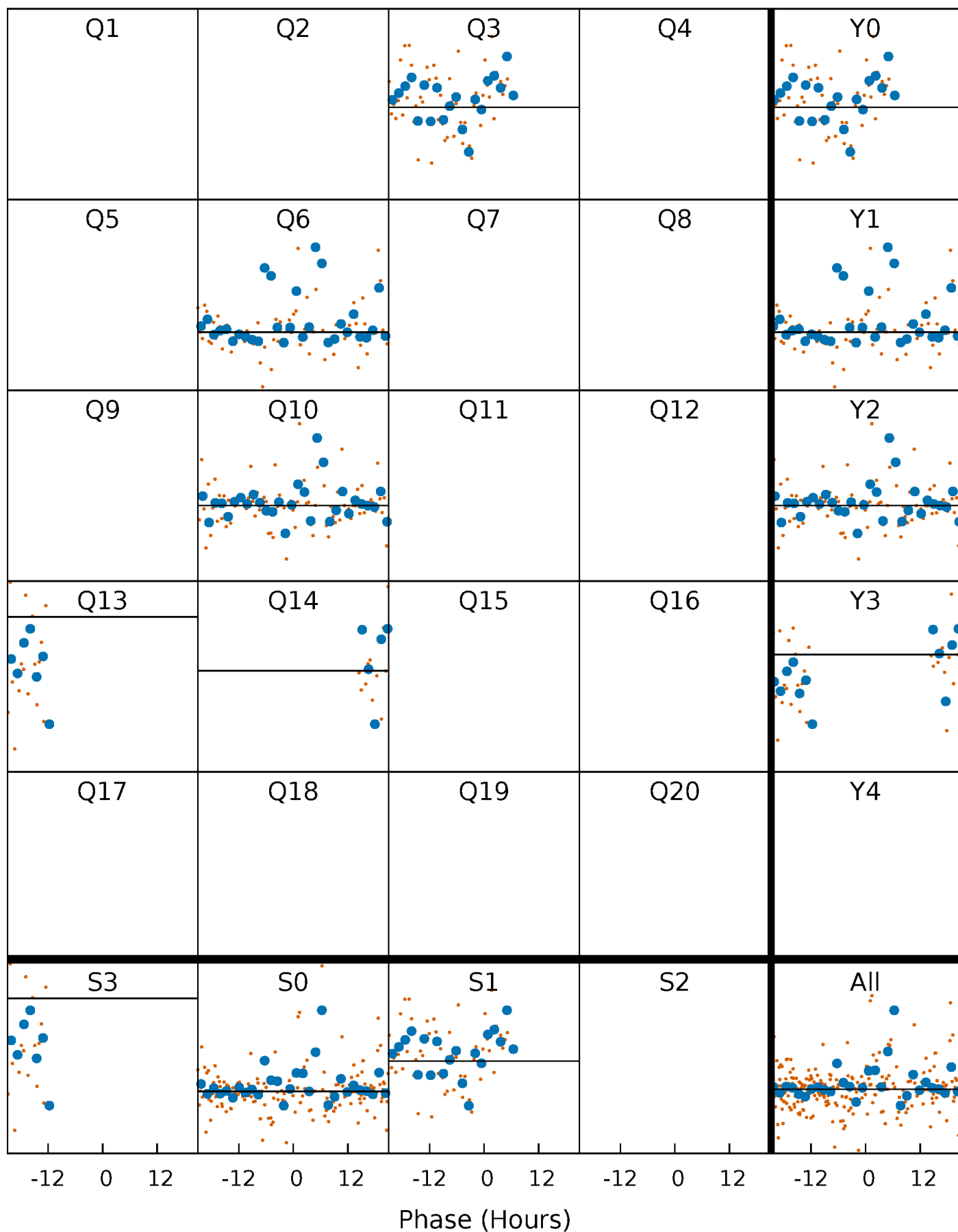
PDC Quarter-Phased Transit Curves

TCE 010482387-03 $P=331.091784$ Days $T_0=280.280933$ (BKJD)



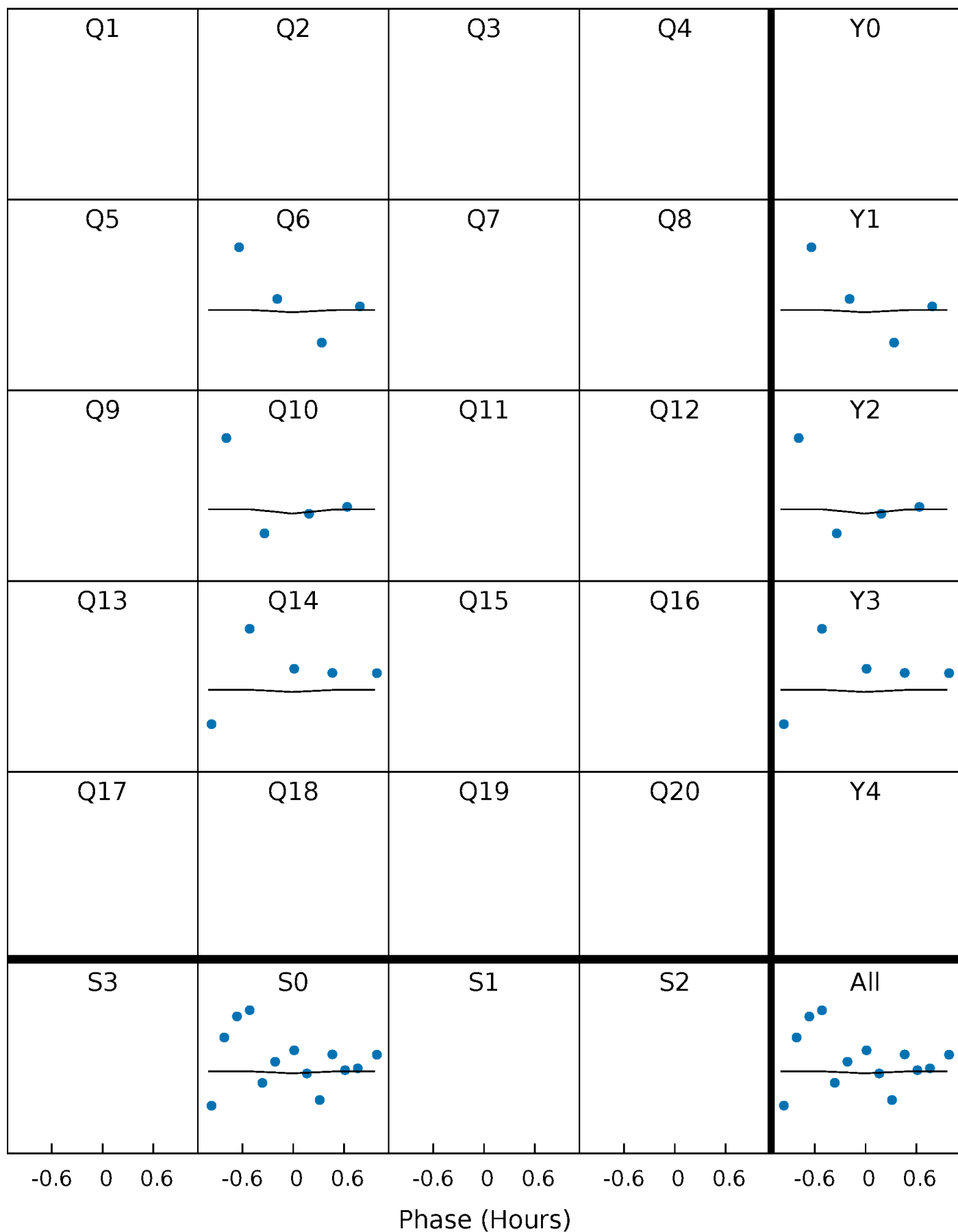
DV Quarter-Phased Transit Curves

TCE 010482387-03 $P=331.091784$ Days $T_0=280.280933$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

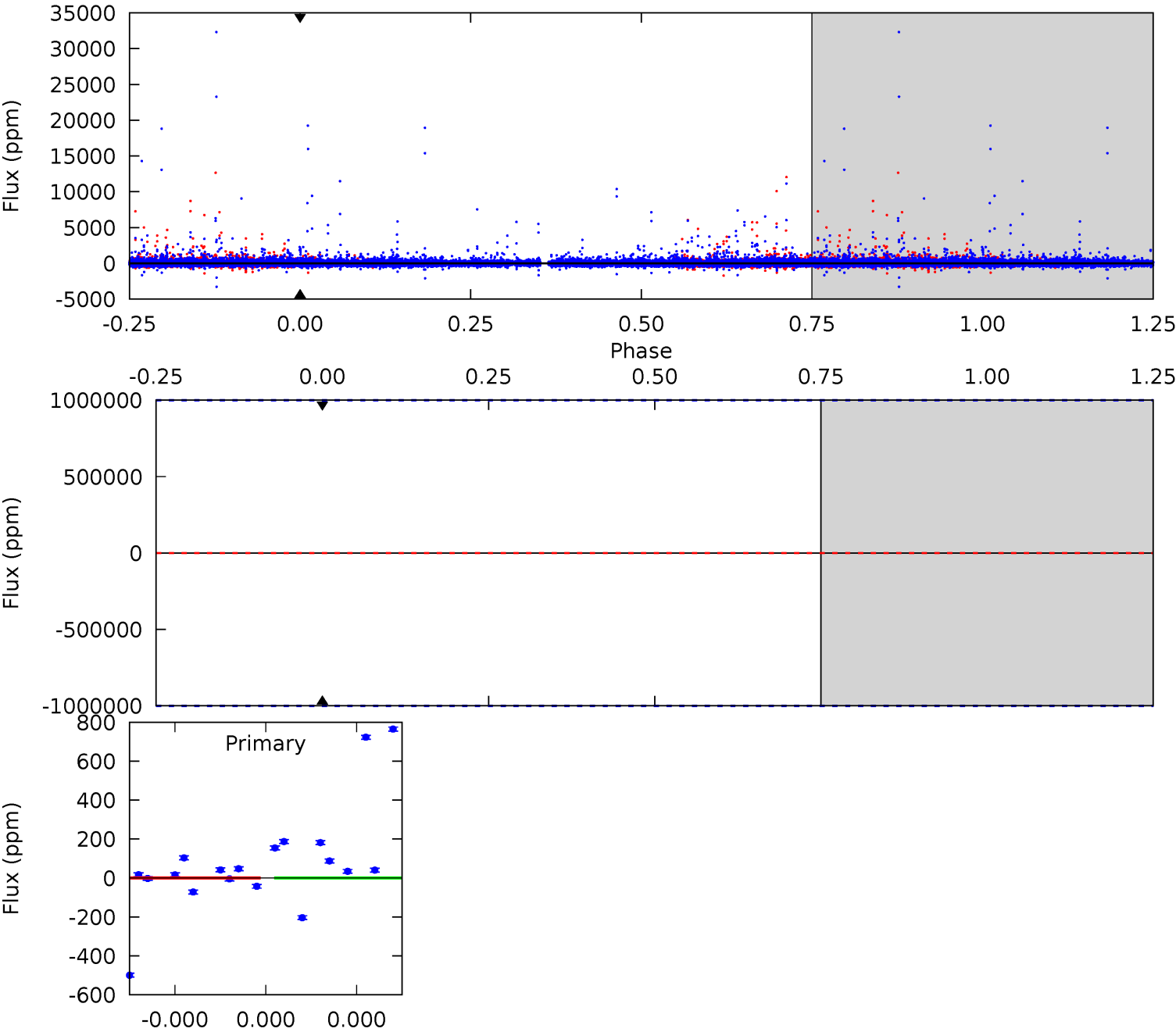
TCE 010482387-03 P=331.091784 Days $T_0=280.946428$ (BKJD)



DV Model-Shift Uniqueness Test

010482387-03, P = 331.091784 Days, E = 280.280933 Days

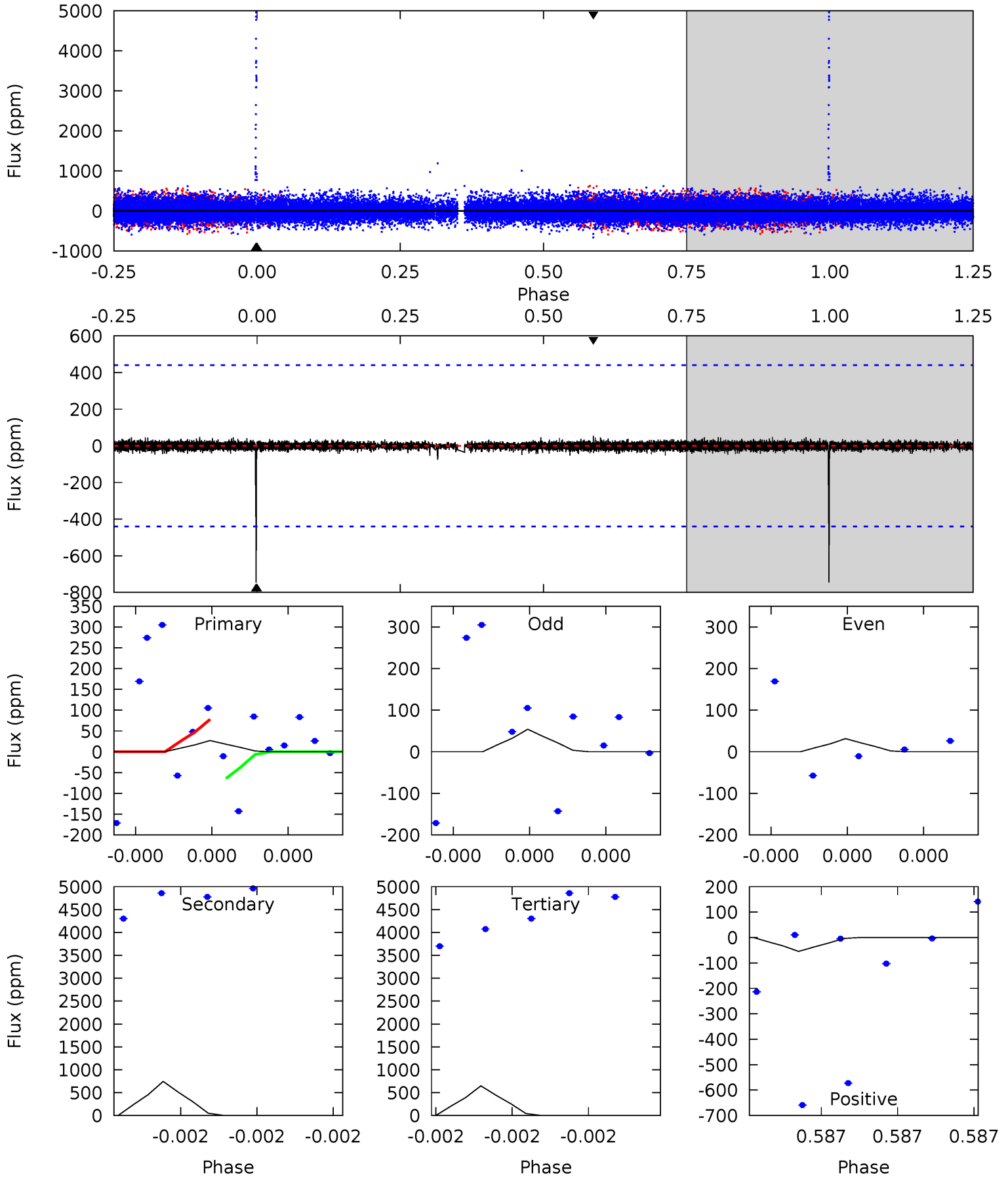
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010482387-03, P = 331.091784 Days, E = 280.946428 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.36	9.90	8.60	0.73	5.84	3.88	0.19	-8.24	-0.37	1.30	9.17	0.09	-0.07	0.07	0.08



Stellar Parameters For KIC 010482387

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5551^{+165}_{-148}	$4.542^{+0.090}_{-0.090}$	$-0.700^{+0.300}_{-0.300}$	$0.749^{+0.106}_{-0.087}$	$0.712^{+0.085}_{-0.039}$	$2.386^{+0.843}_{-0.683}$
	+3%/-3%	+2%/-2%	+43%/-43%	+14%/-12%	+12%/-5%	+35%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010482387-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$5.98^{+6.02}_{-3.97}$	325^{+15}_{-14}	3021^{+15744}_{-21982}	$1541^{+1826898}_{-1795589}$
Alt.	-745 ± 75	$5.69^{+6.49}_{-4.00}$	325^{+14}_{-15}	3827^{+2516}_{-794}	8971^{+95329}_{-7047}

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 $A_{obs} \gg 1.0$

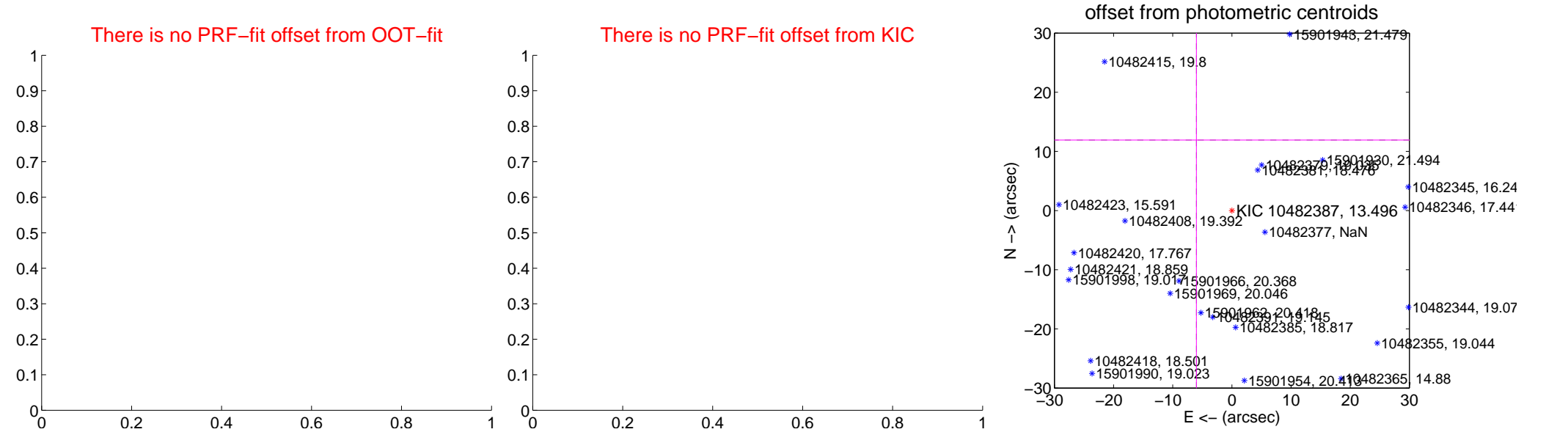
DV Centroid Data

Supplemental centroid analysis for 010482387-03. Kepler magnitude: 13.50. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	13.35 ± 136.91	0.10	6.01 ± 116.96	11.92 ± 141.52



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.



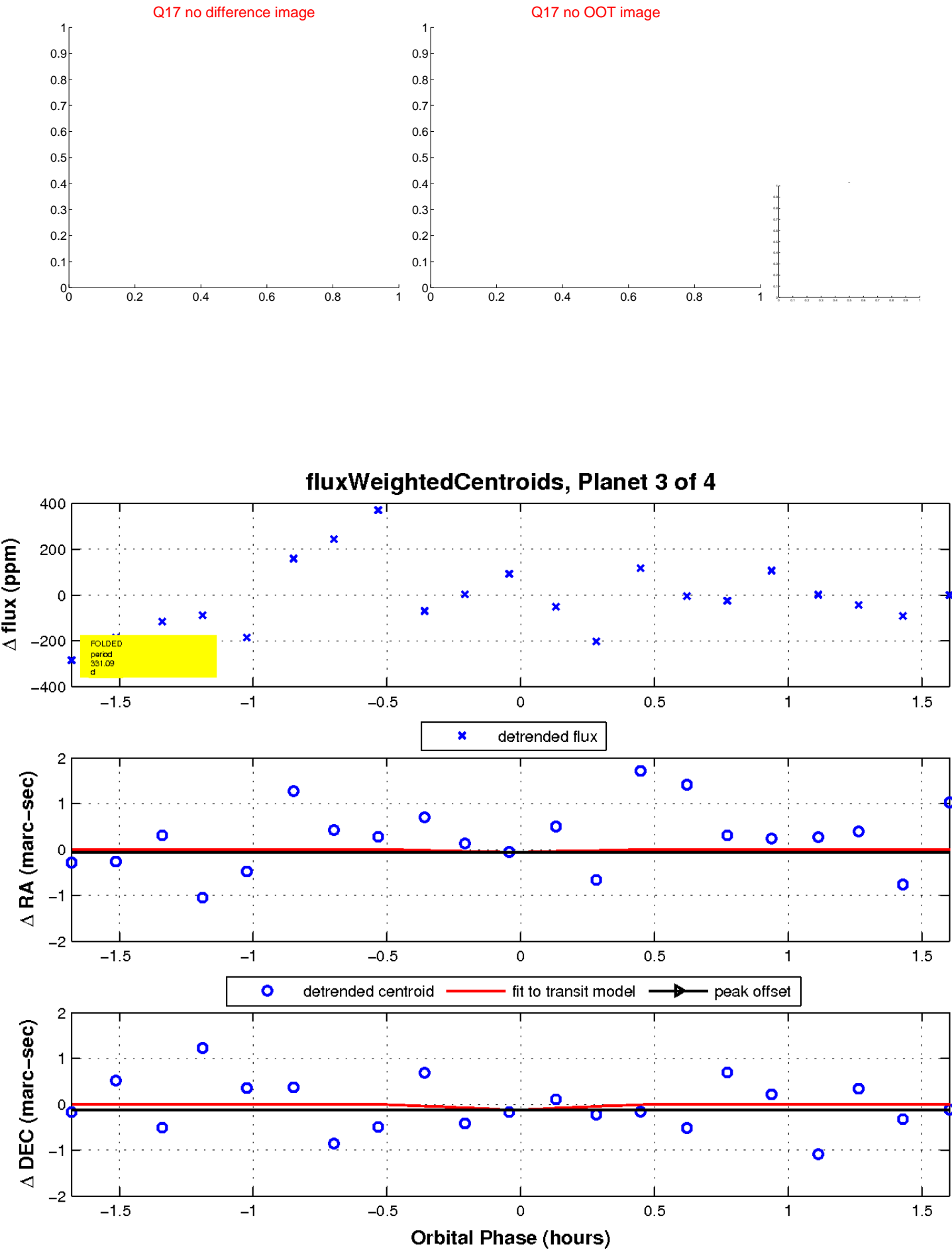
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

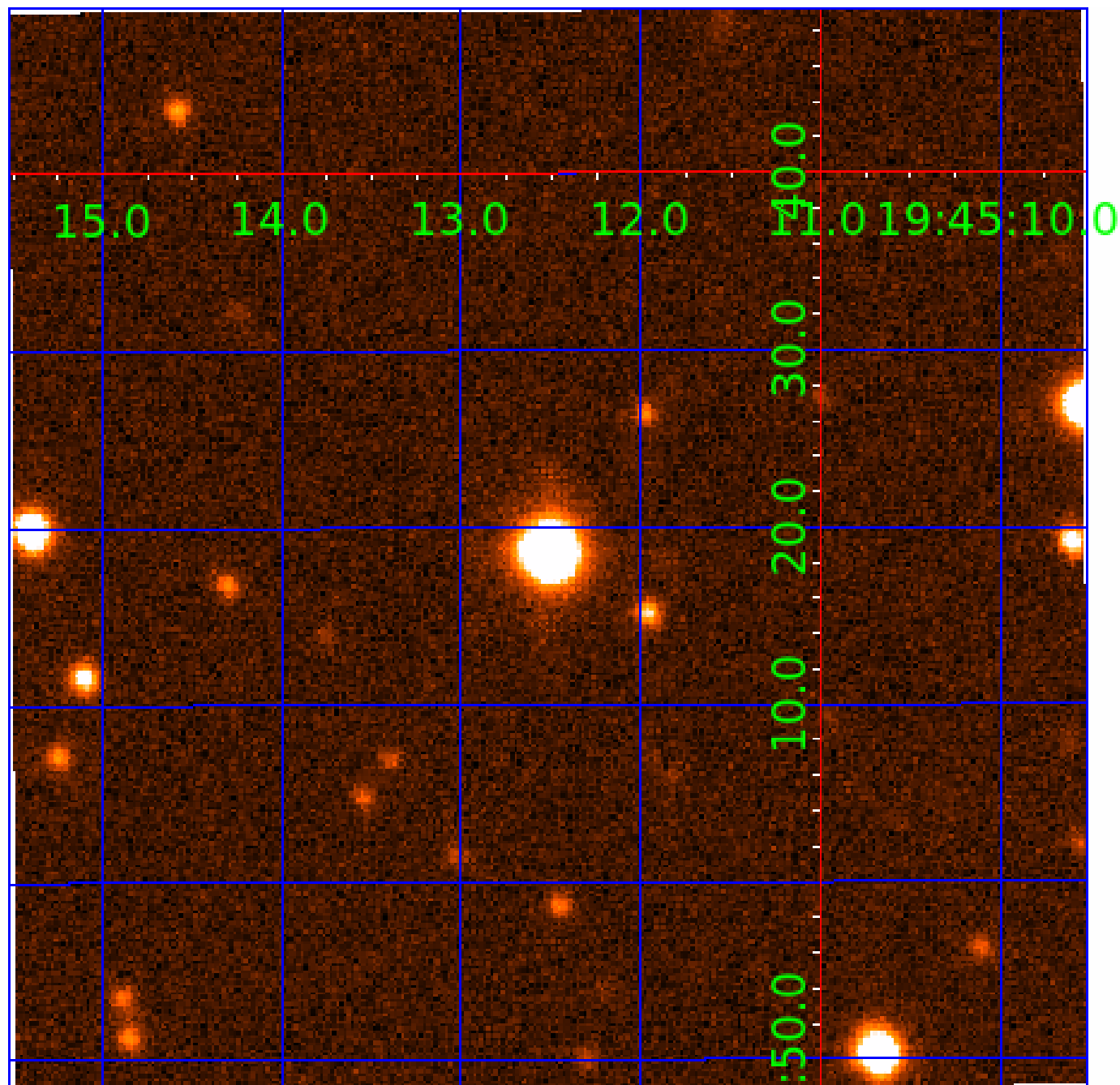


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010482387

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})
010482387-01	OBS	No	353.437589	224.936290	579.0	5.425	12.8	3.8	0.75	5551	1.82	0.62
010482387-02	OBS	No	284.141971	271.635717	866.2	3.406	10.9	7.5	0.75	5551	2.33	0.84
010482387-03	OBS	No	331.091784	280.280933	491.7	10.500	15.5	-1.0	0.75	5551	1.65	0.68
010482387-04	OBS	No	240.733837	317.344722	503.2	3.358	14.6	4.2	0.75	5551	1.78	1.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010482387-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010482387-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010482387-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
010482387-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

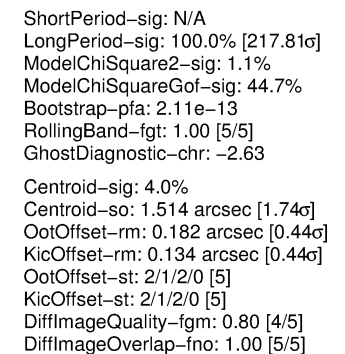
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

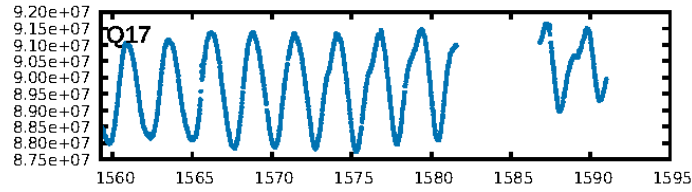
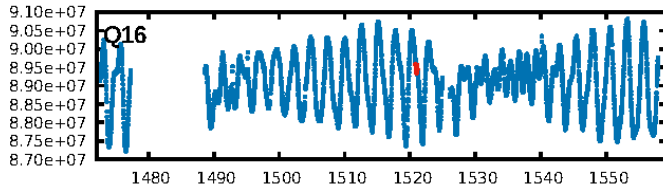
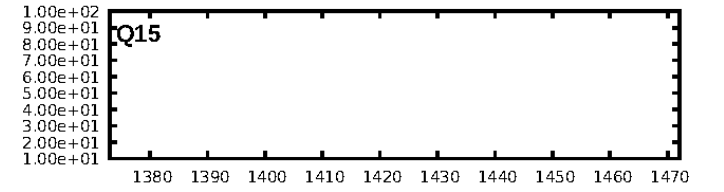
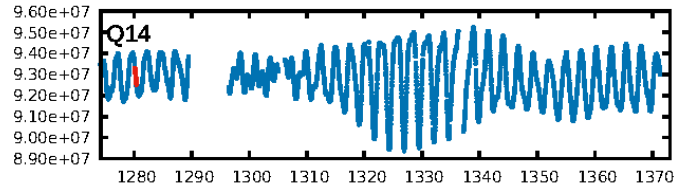
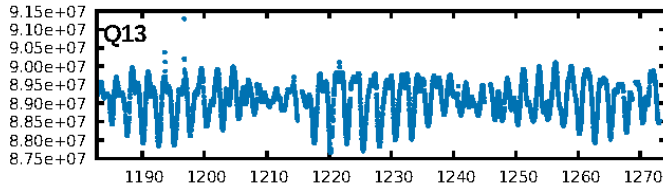
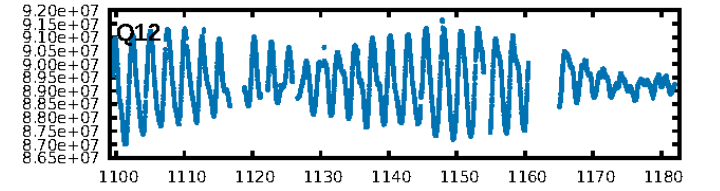
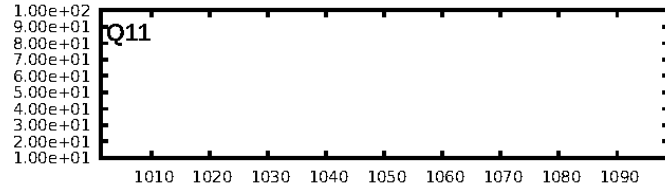
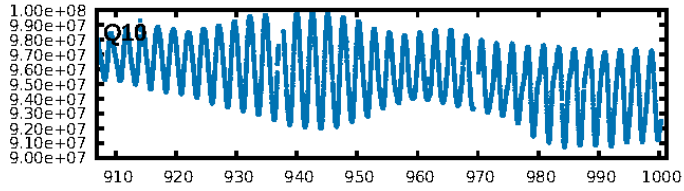
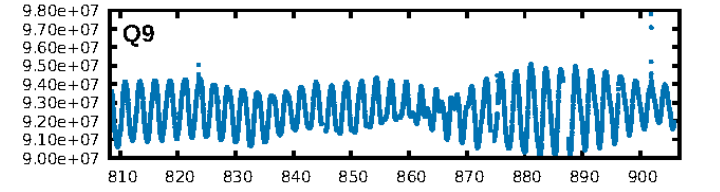
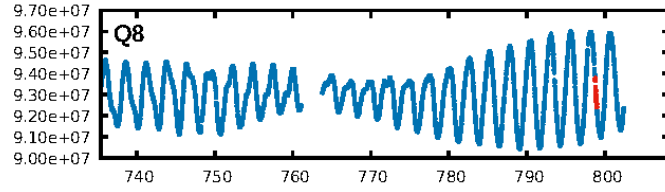
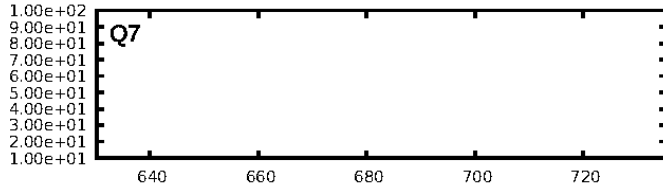
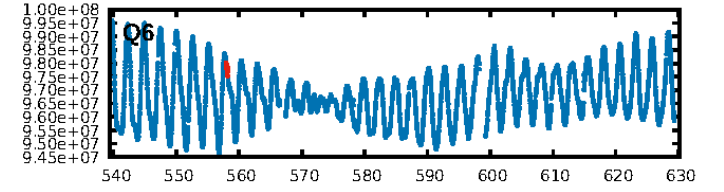
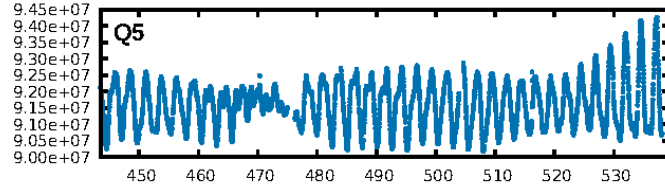
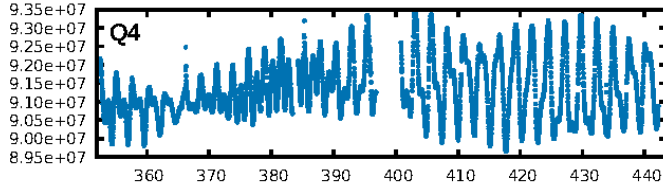
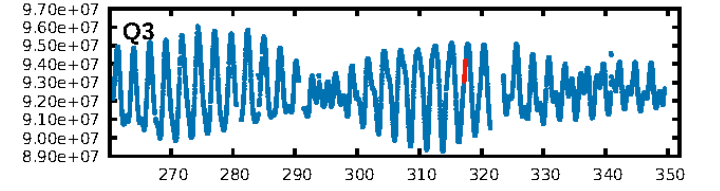
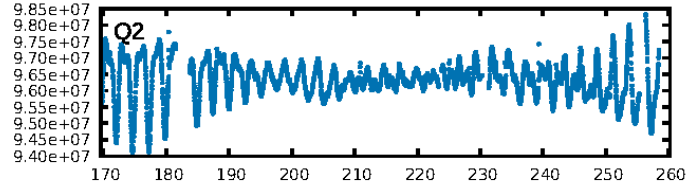
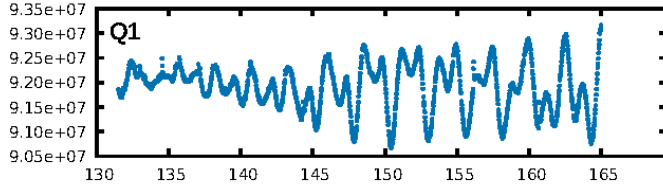
Ephemeris Match Information For 010482387-04

No Significant Match Found

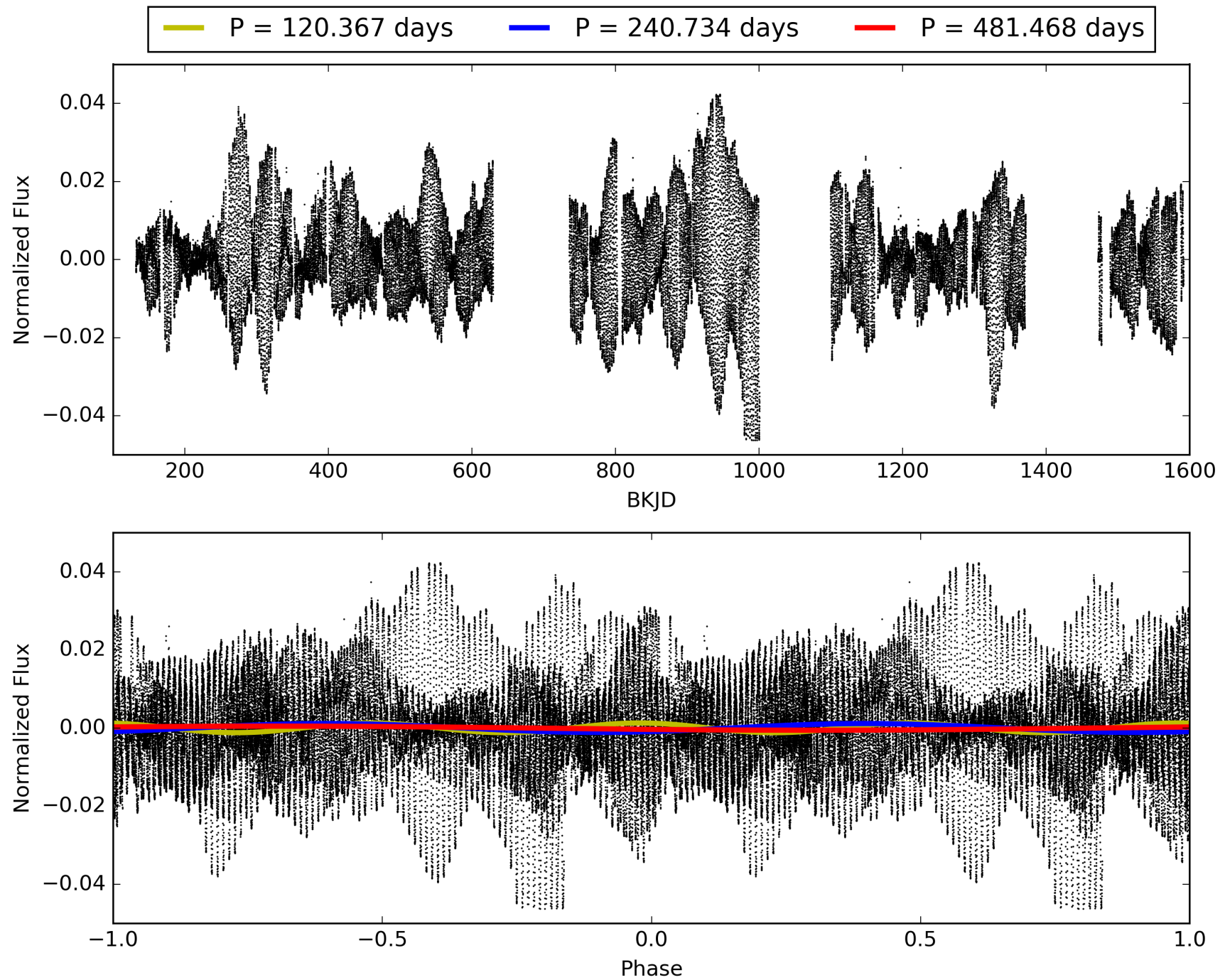
KIC: 10482387 Candidate: 4 of 4 Period: 240.734 d



TCE 010482387-04, PDC Light Curves

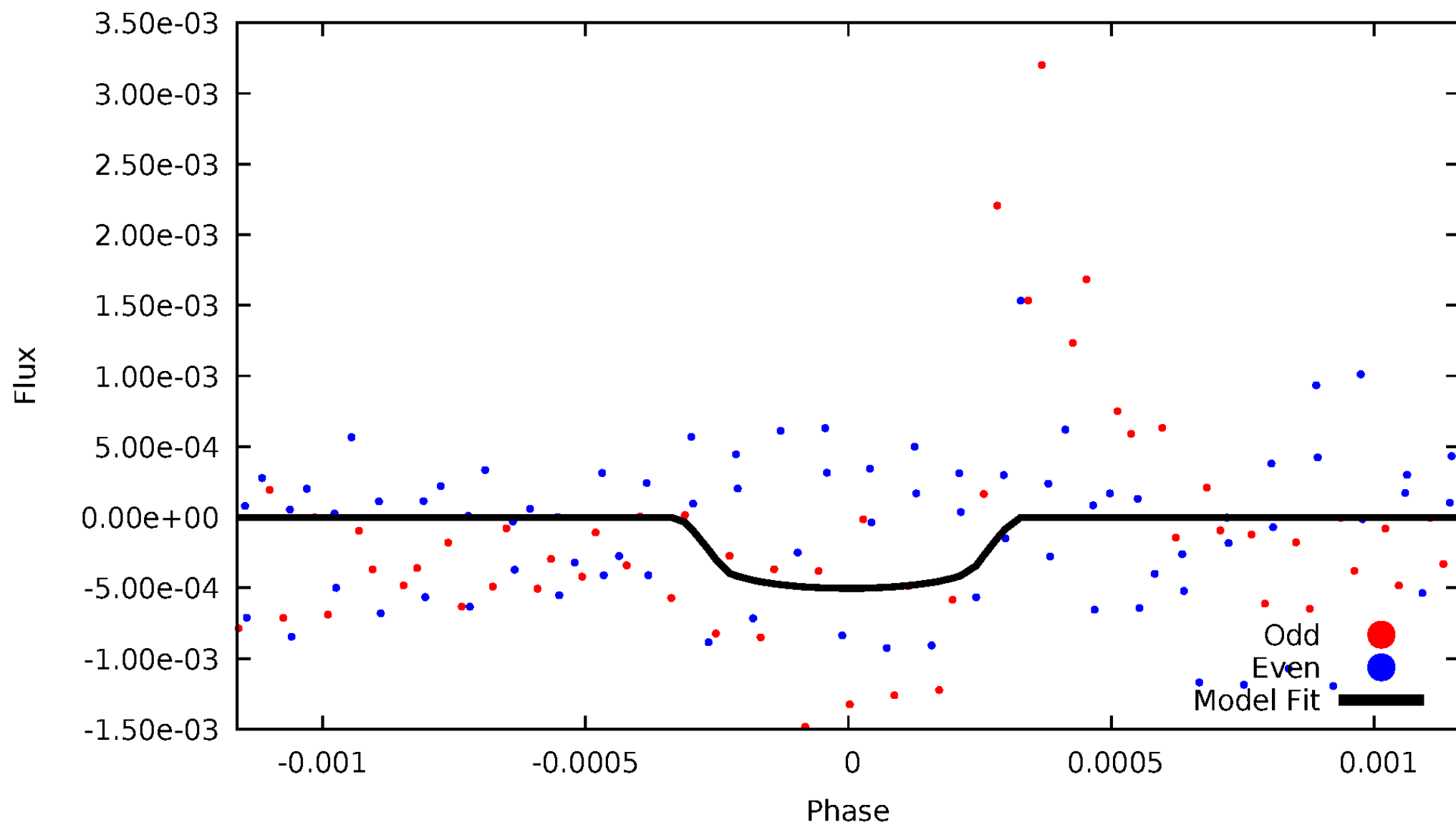


TCE 010482387-04



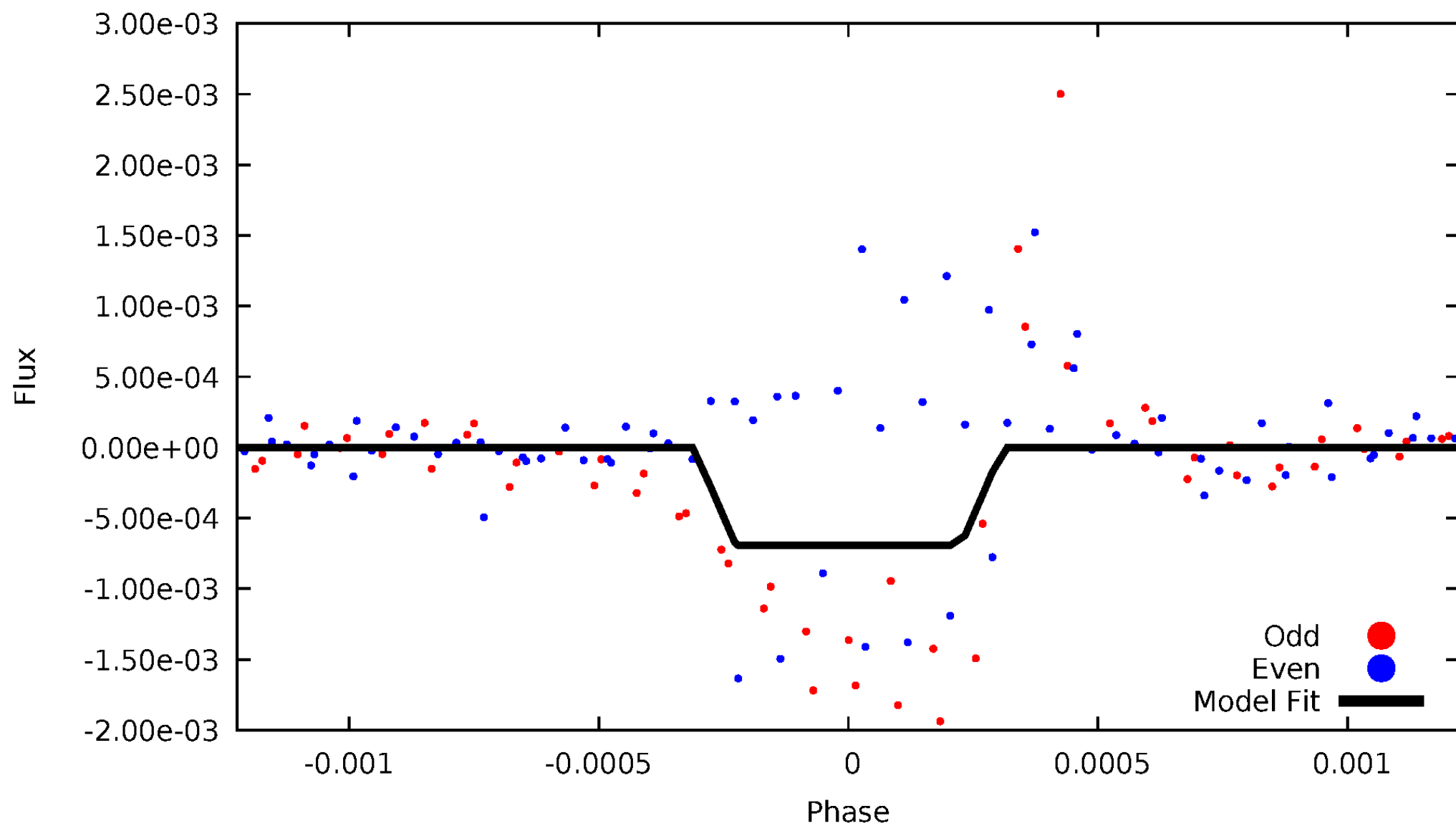
DV Odd/Even

TCE 010482387-04



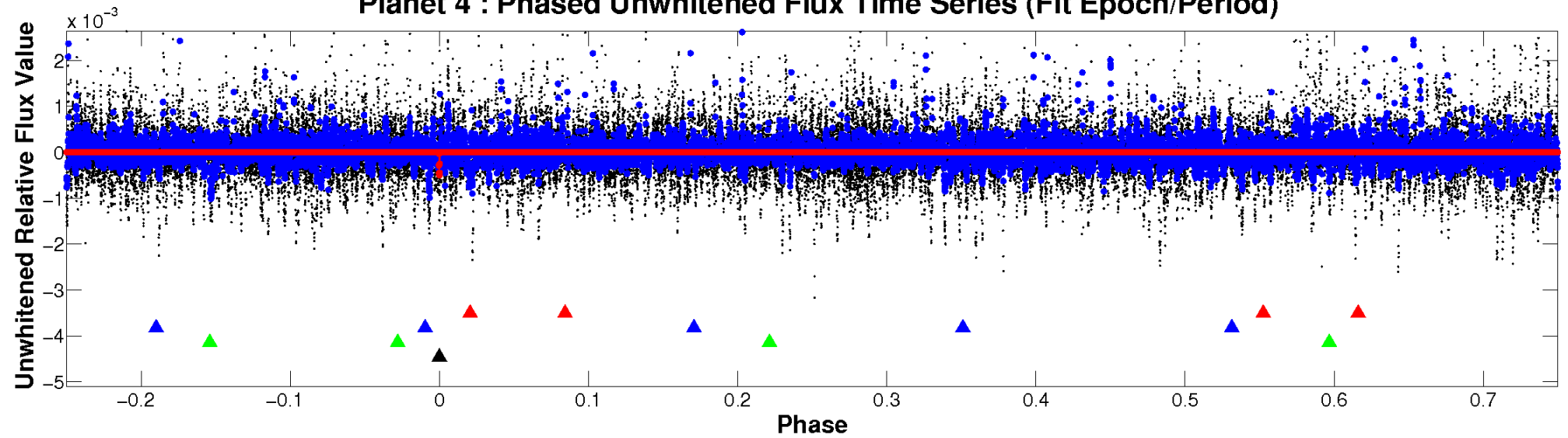
ALT Odd/Even

TCE 010482387-04

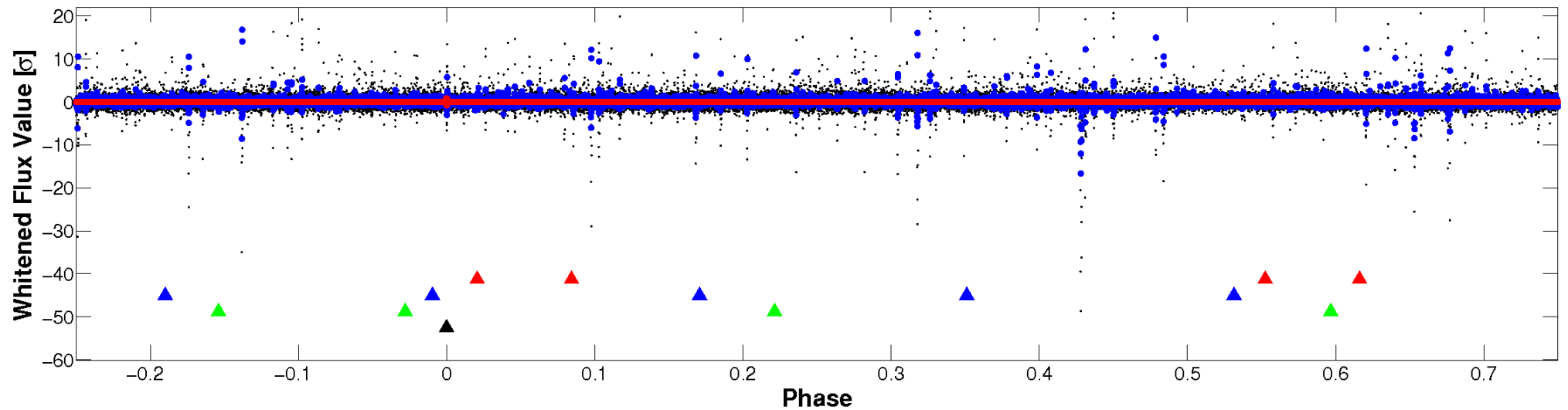


Non-Whitened Vs. Whitened Light Curve

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

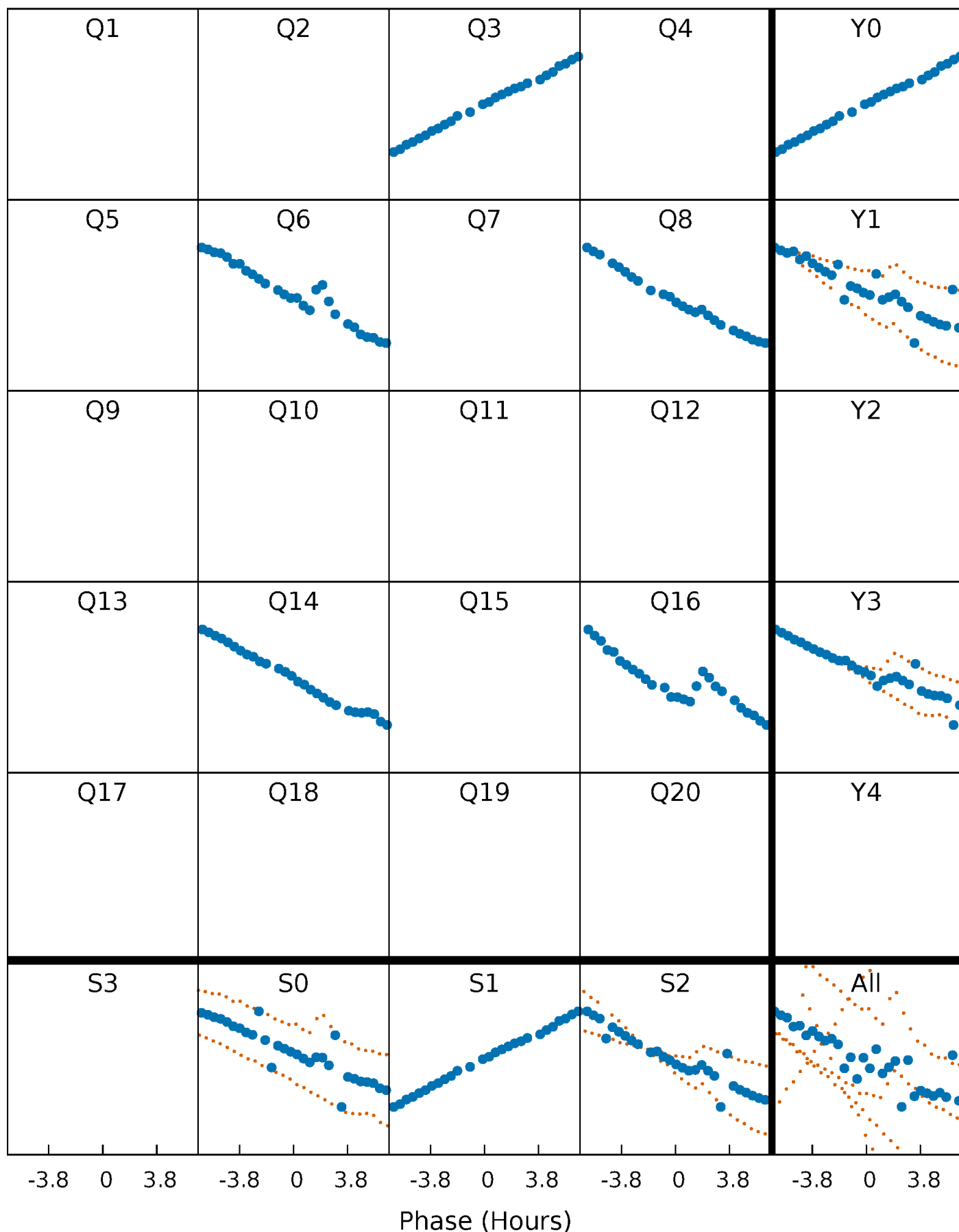


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



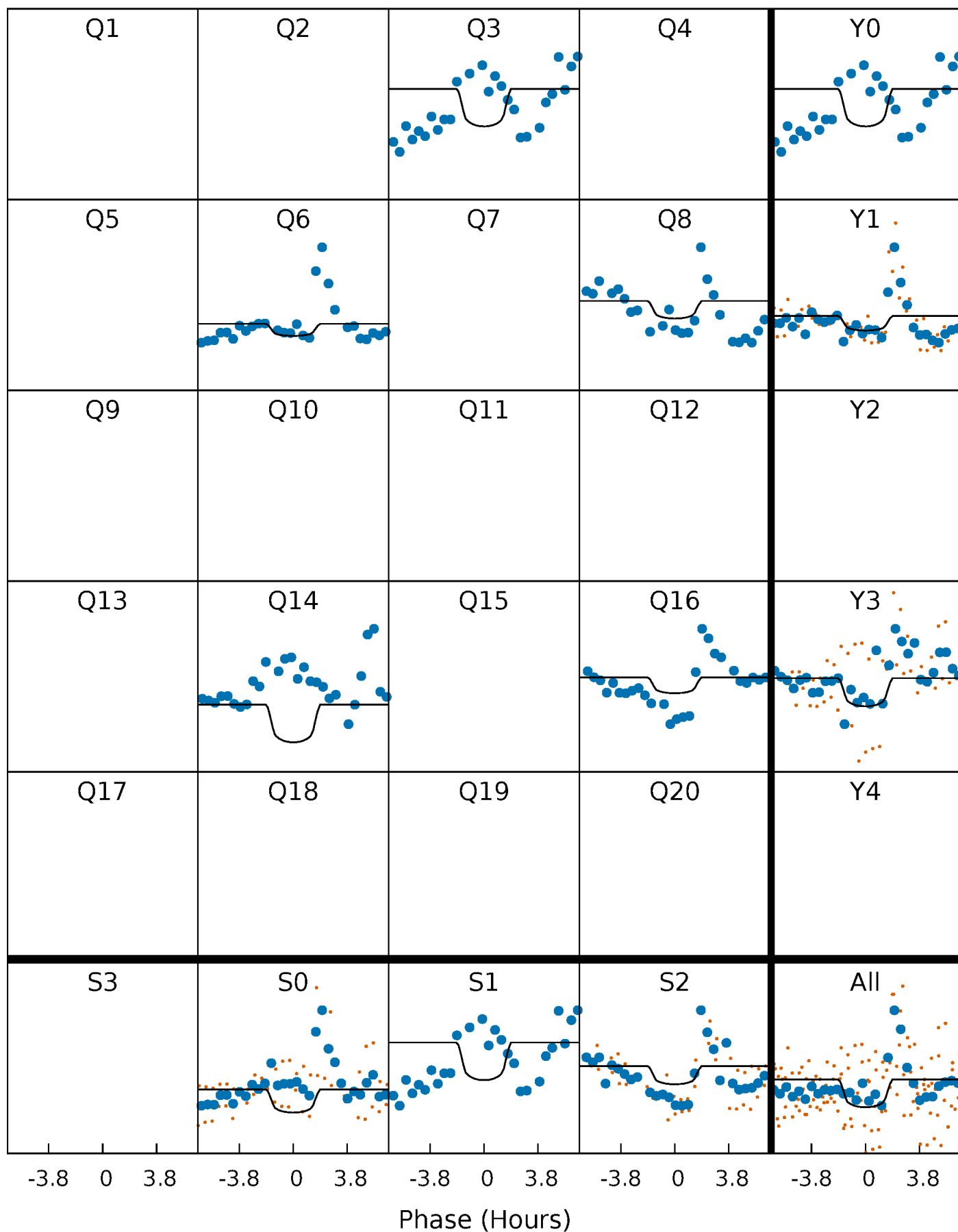
PDC Quarter-Phased Transit Curves

TCE 010482387-04 $P=240.733837$ Days $T_0=317.344722$ (BKJD)



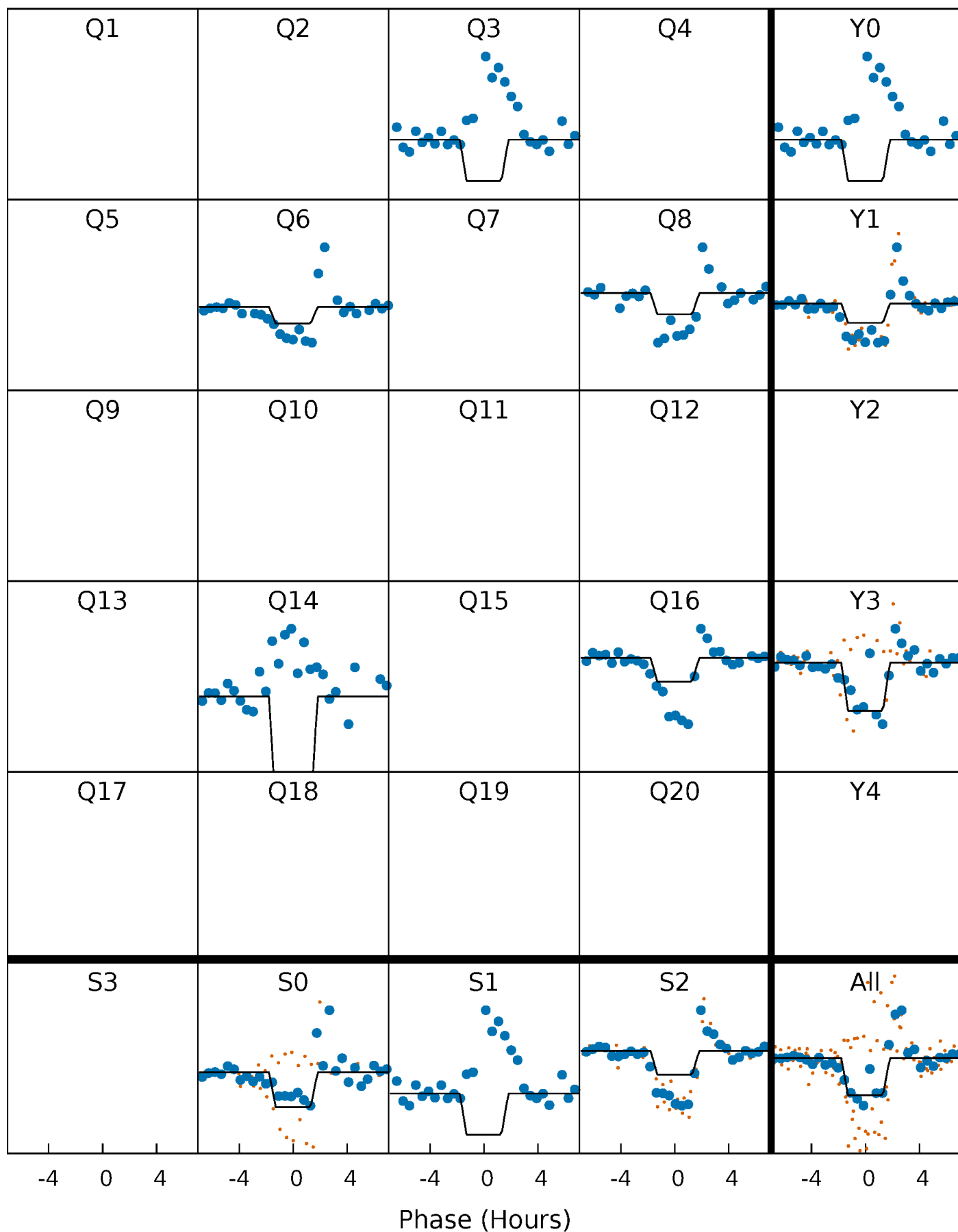
DV Quarter-Phased Transit Curves

TCE 010482387-04 $P=240.733837$ Days $T_0=317.344722$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

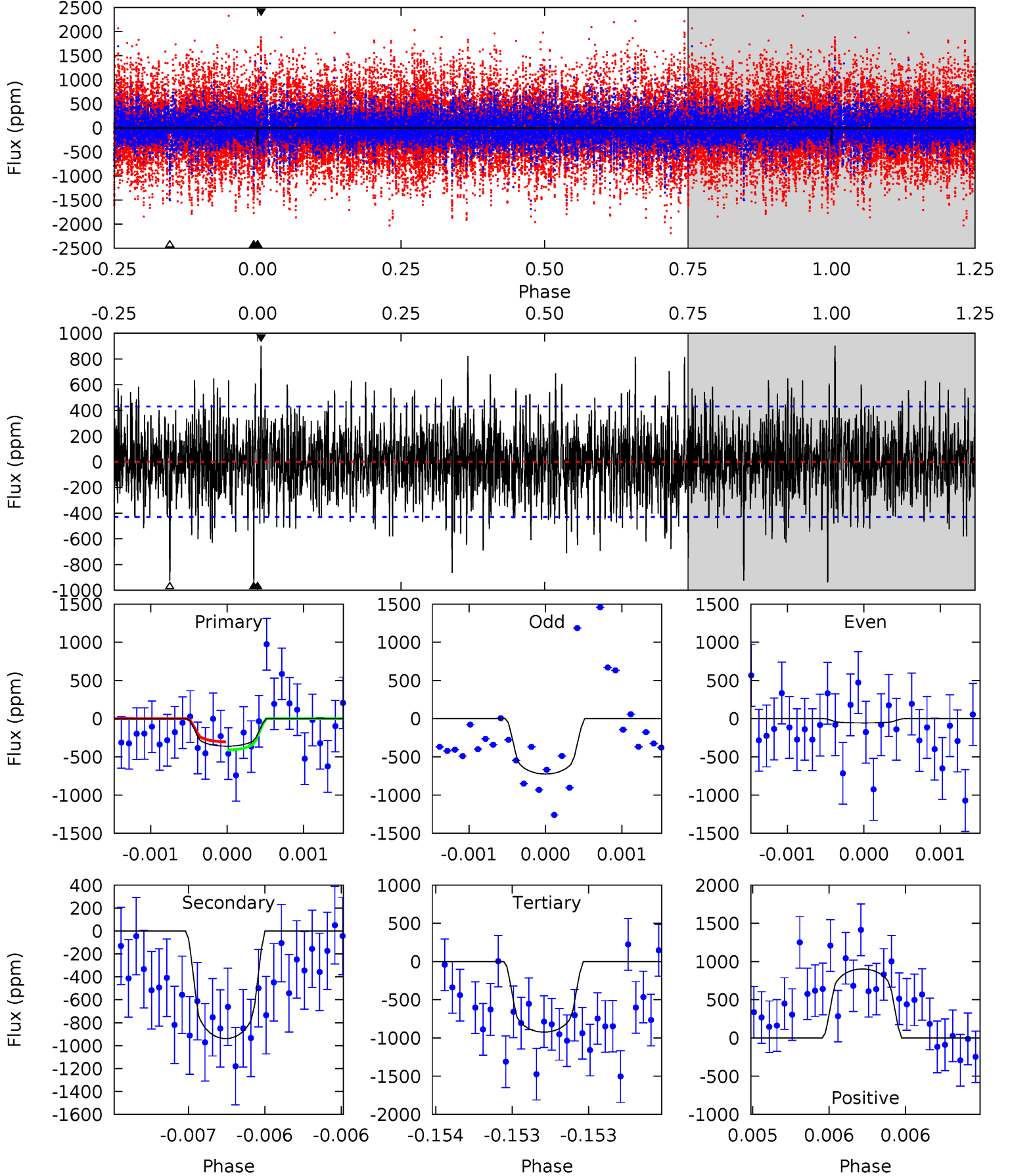
TCE 010482387-04 $P=240.736550$ Days $T_0=317.328354$ (BKJD)



DV Model-Shift Uniqueness Test

010482387-04, P = 240.733837 Days, E = 76.610885 Days

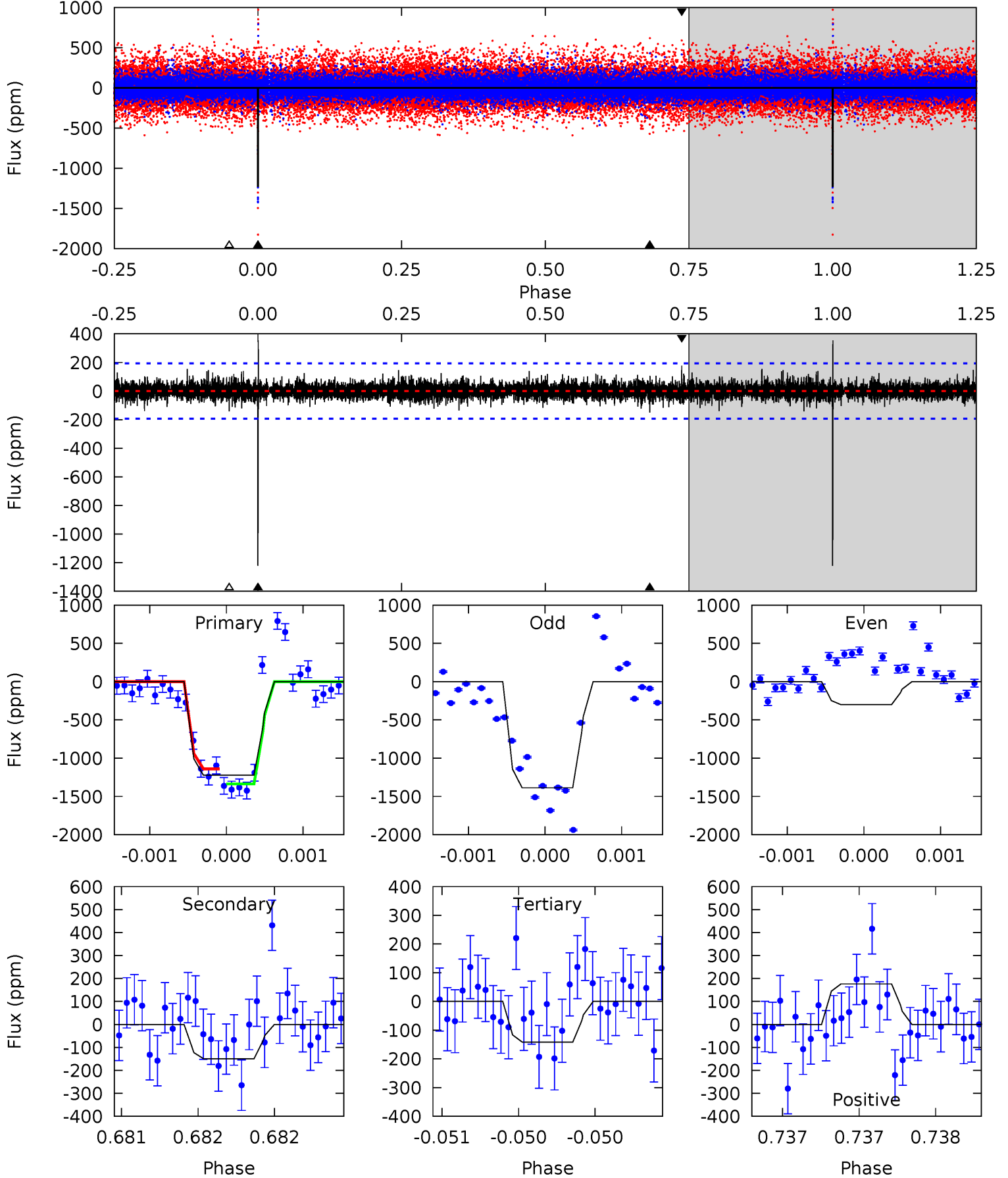
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.63	12.1	11.9	11.6	5.53	3.41	2.79	-7.26	-6.99	0.20	0.46	4.07	1.31	0.49	0.70



Alt Model-Shift Uniqueness Test

010482387-04, P = 240.736550 Days, E = 76.591804 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.1	4.28	4.06	5.05	5.55	3.45	0.95	31.0	30.0	0.22	-0.77	17.2	0.46	0.22	0



Stellar Parameters For KIC 010482387

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5551^{+165}_{-148}	$4.542^{+0.090}_{-0.090}$	$-0.700^{+0.300}_{-0.300}$	$0.749^{+0.106}_{-0.087}$	$0.712^{+0.085}_{-0.039}$	$2.386^{+0.843}_{-0.683}$
	+3%/-3%	+2%/-2%	+43%/-43%	+14%/-12%	+12%/-5%	+35%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010482387-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-939 ± 78	$2.71^{+2.72}_{-1.79}$	361^{+16}_{-16}	5368^{+4367}_{-1280}	$33504^{+240062}_{-25250}$
Alt.	-149 ± 35	$2.84^{+2.61}_{-1.84}$	361^{+17}_{-15}	3667^{+1865}_{-663}	4403^{+32599}_{-3177}

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 $A_{obs} \gg 1.0$

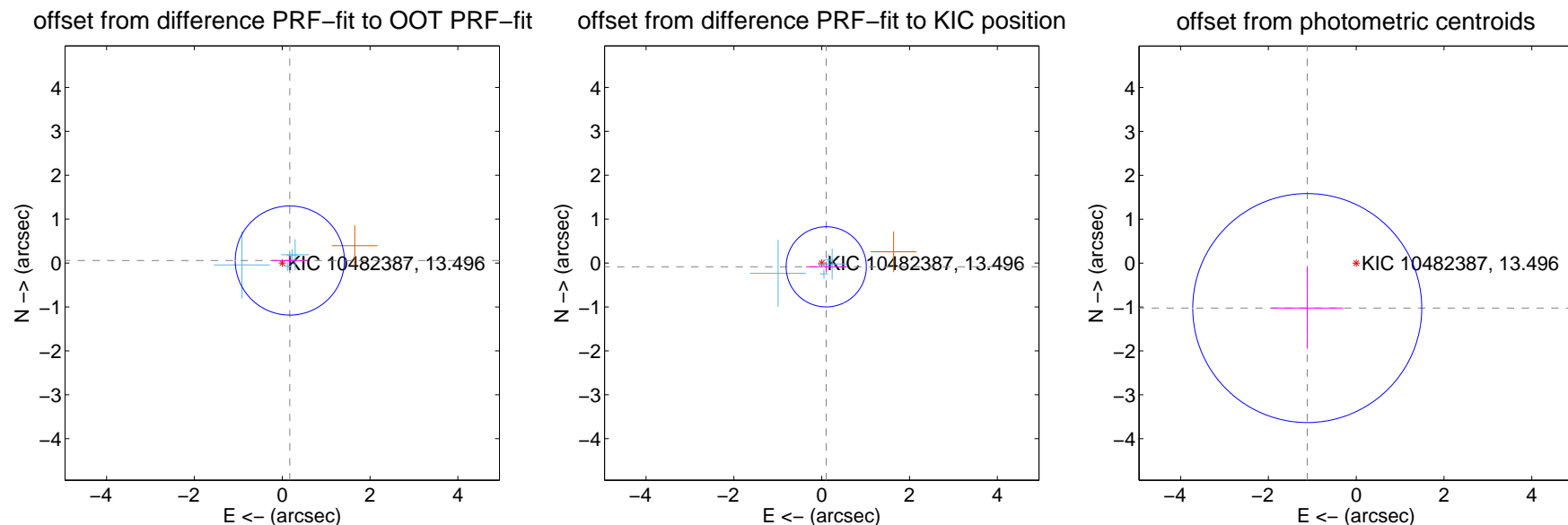
DV Centroid Data

Supplemental centroid analysis for 010482387-04. Kepler magnitude: 13.50. Transit SNR 4.17

There are 4 quarters with good PRF difference image offsets

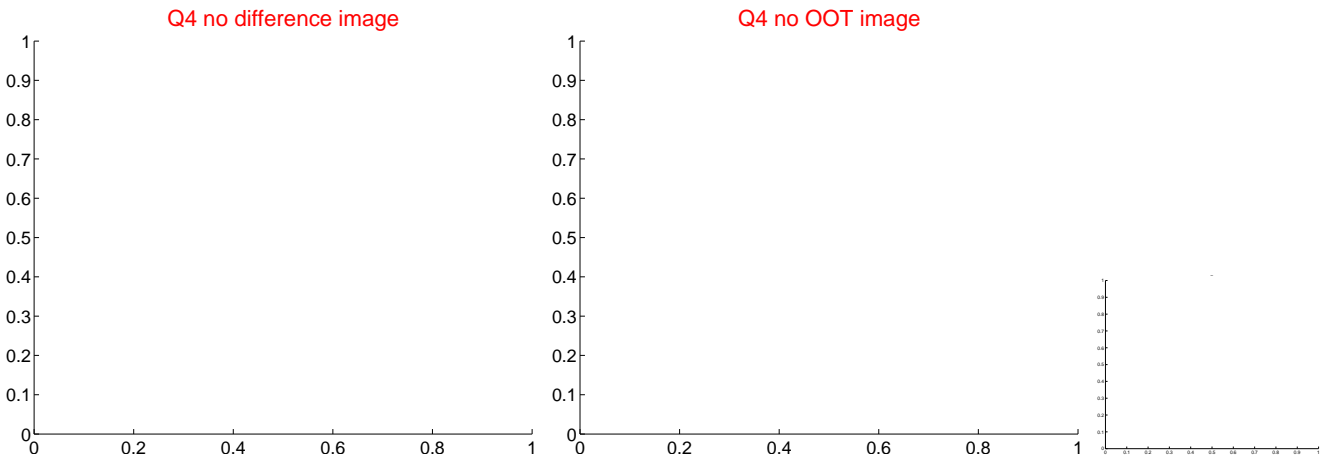
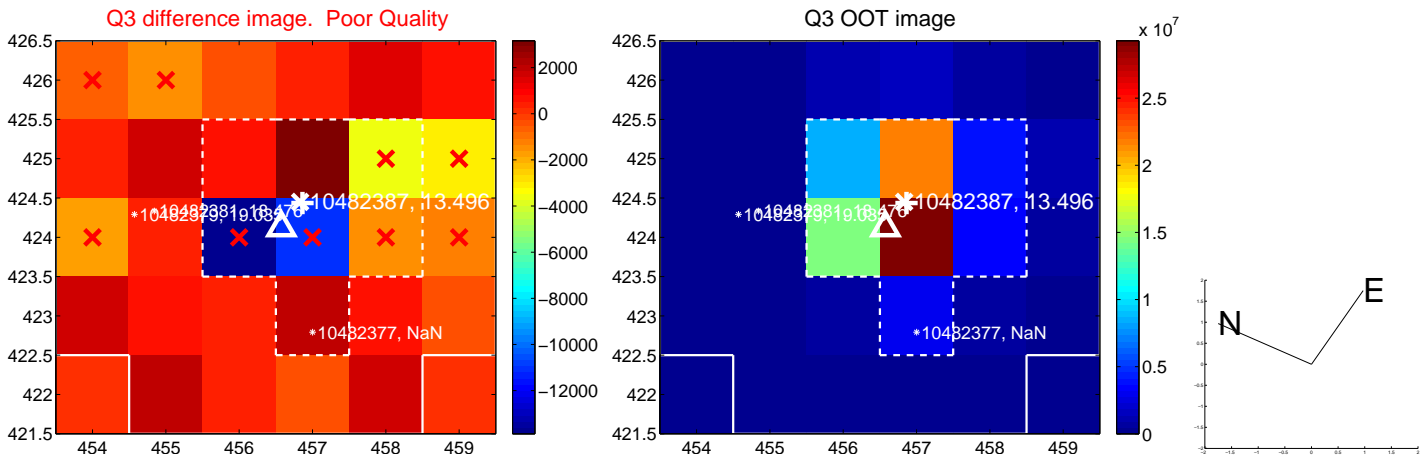
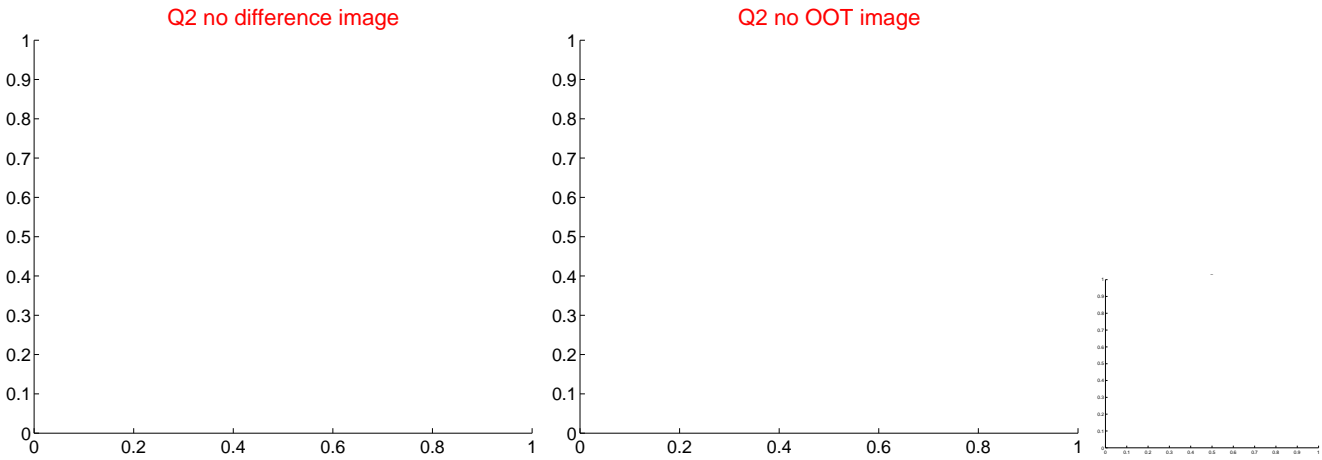
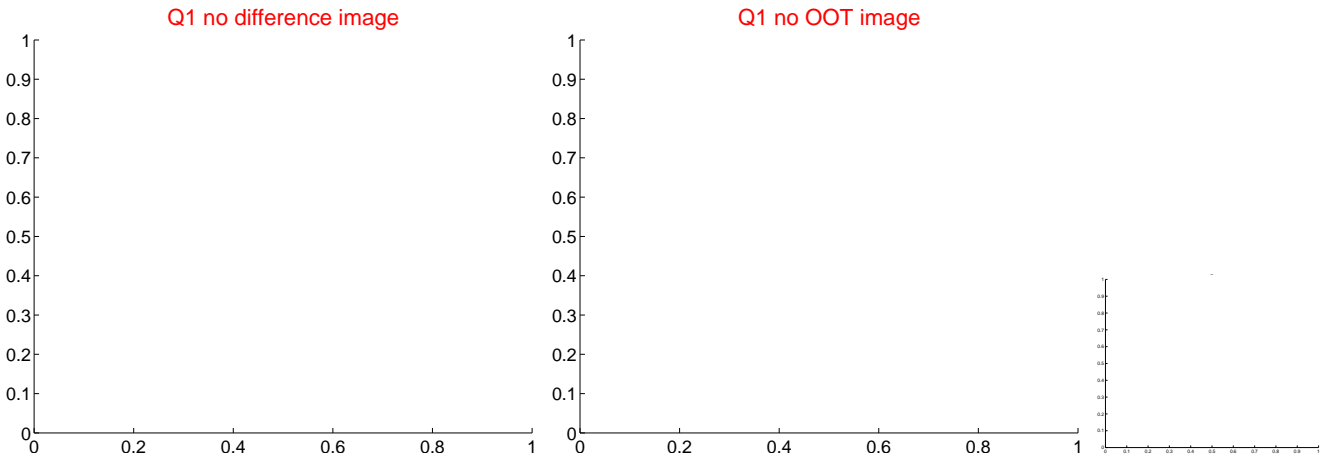
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.182 ± 0.414	0.44	-0.173 ± 0.413	0.058 ± 0.103
PRF-fit source offset from KIC position	0.134 ± 0.304	0.44	-0.103 ± 0.463	-0.087 ± 0.114
photometric centroid source offset	1.51 ± 0.87	1.74	1.11 ± 0.82	-1.02 ± 0.93

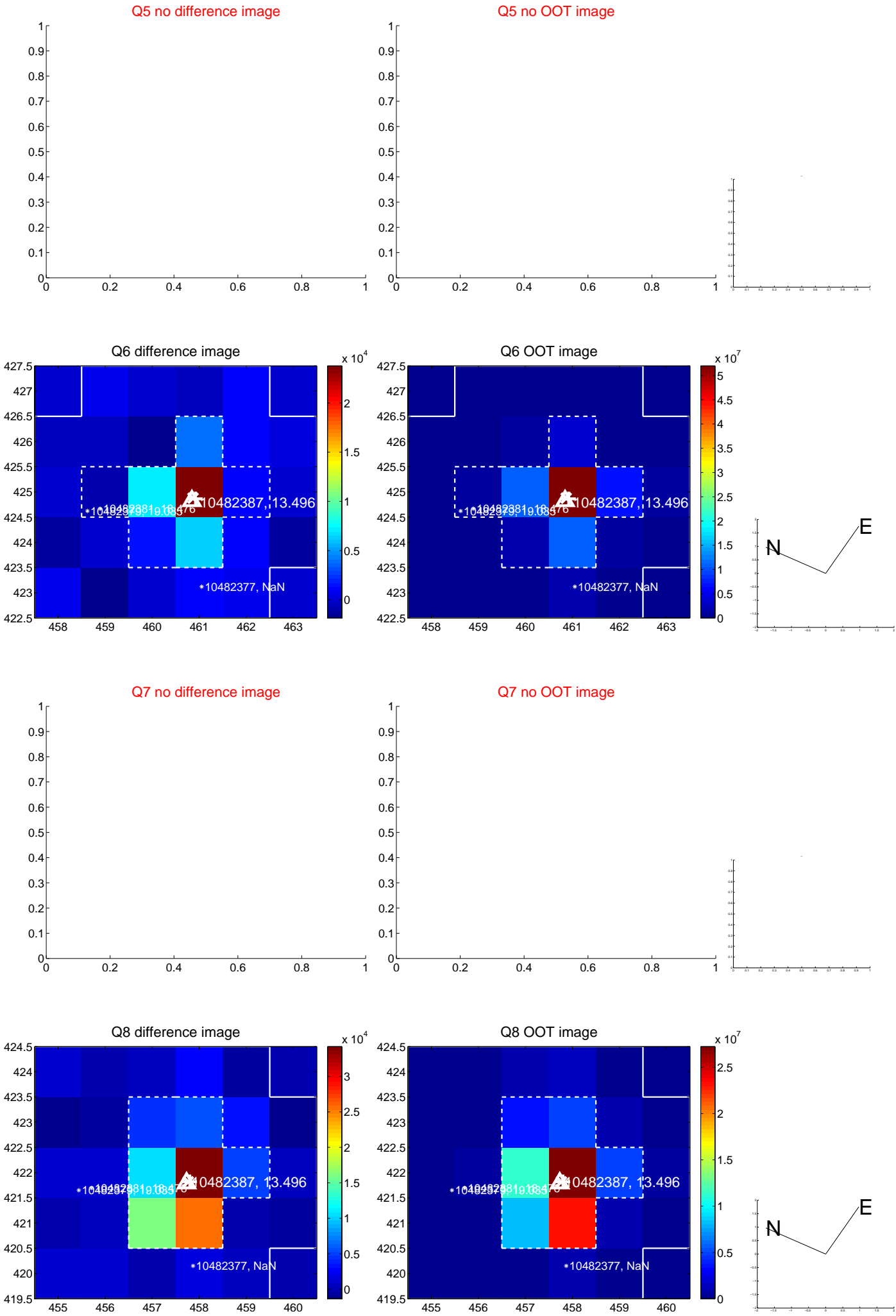


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



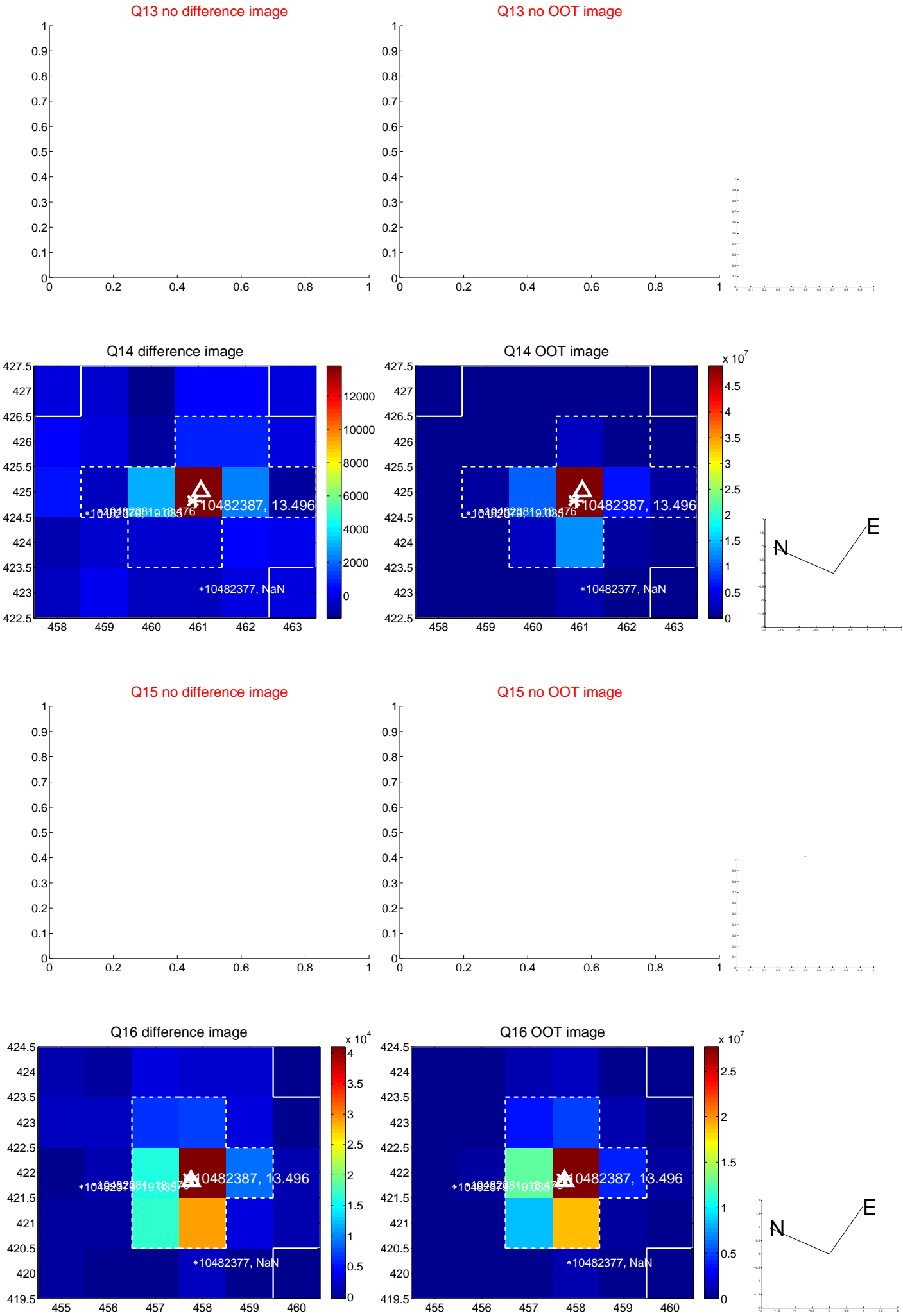
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



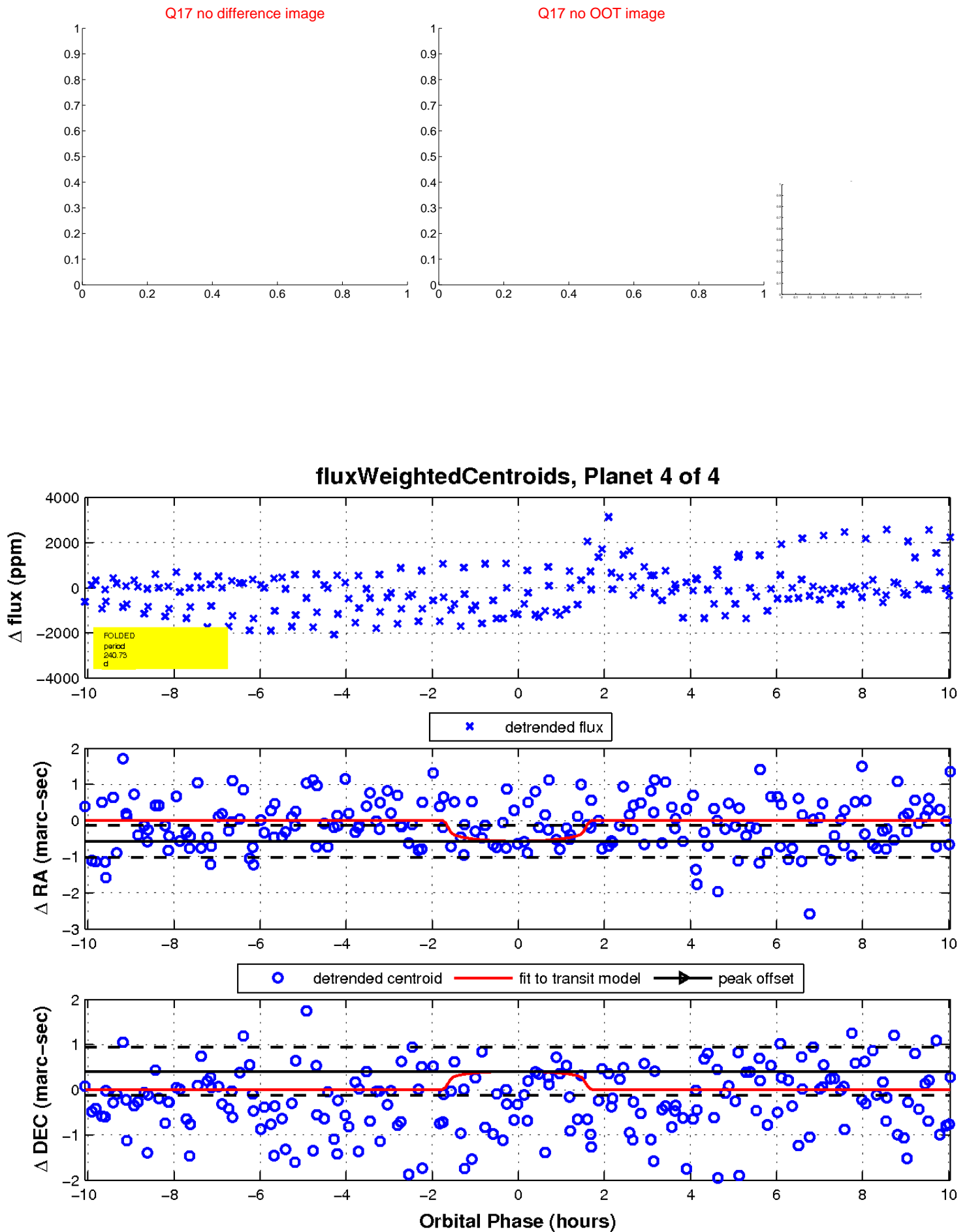
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

