

KIC 006437385

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})
006437385-01	OBS	No	422.247083	360.420787	347.3	7.884	54.7	5.2	2.06	5727	4.04	3.95
006437385-02	OBS	No	515.792211	250.228539	355.9	7.634	40.5	5.3	2.06	5727	4.18	3.02
006437385-03	OBS	No	551.976769	411.403643	749.7	3.520	20.4	13.7	2.06	5727	5.99	2.76
006437385-04	OBS	No	525.623730	300.786444	525.4	5.921	16.6	8.5	2.06	5727	4.75	2.95
006437385-05	OBS	No	469.404592	483.092458	417.9	11.679	22.0	5.6	2.06	5727	4.88	3.43
006437385-06	OBS	No	483.492086	465.051399	163.2	9.000	17.9	-1.0	2.06	5727	2.64	3.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006437385-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

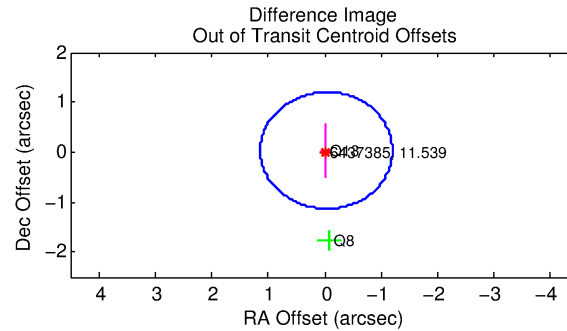
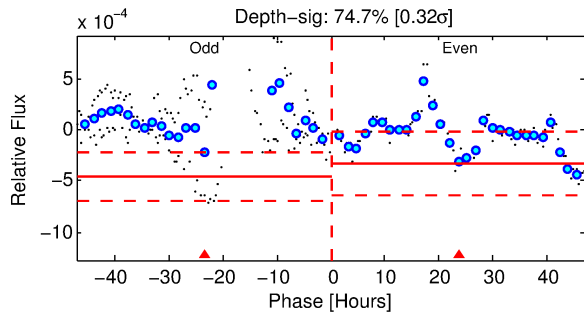
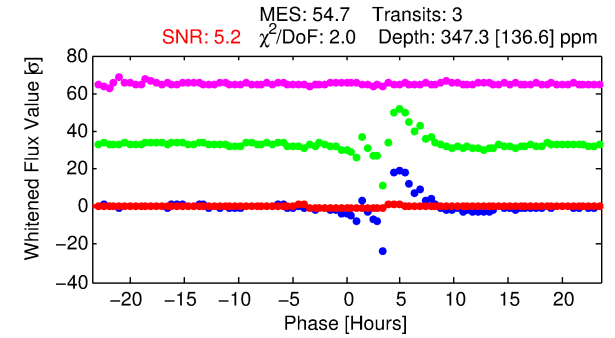
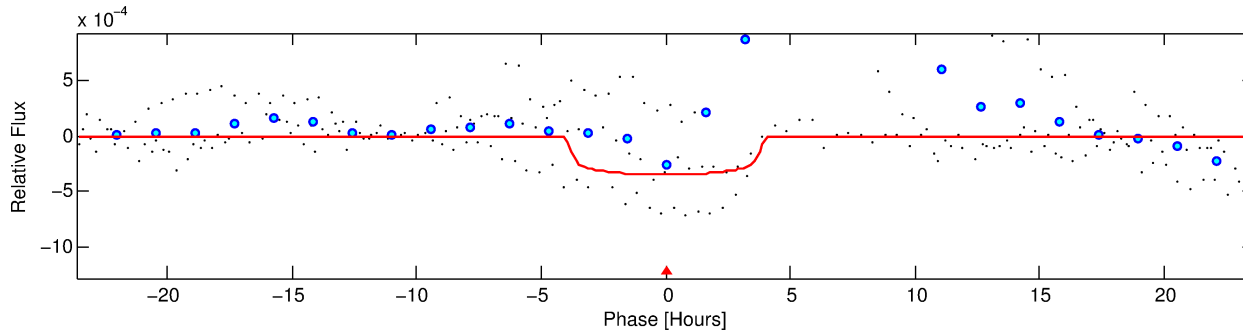
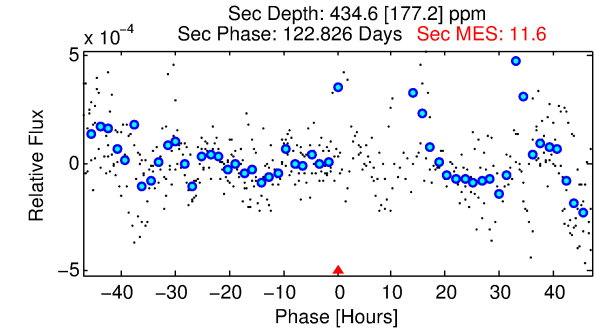
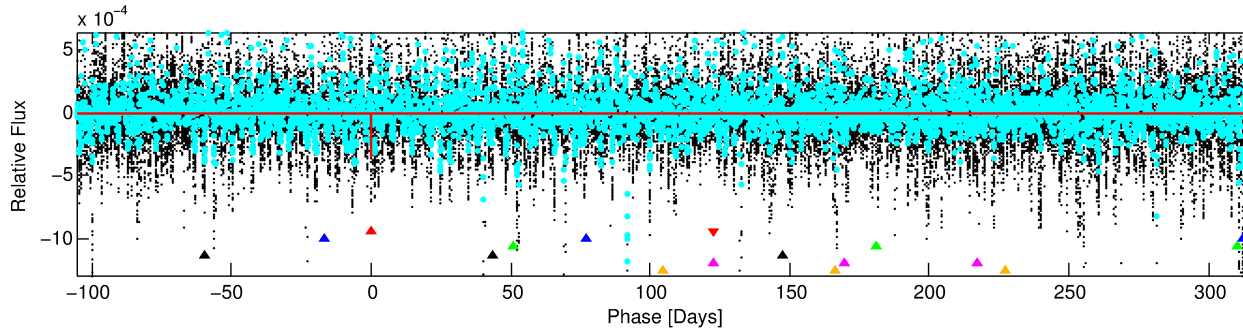
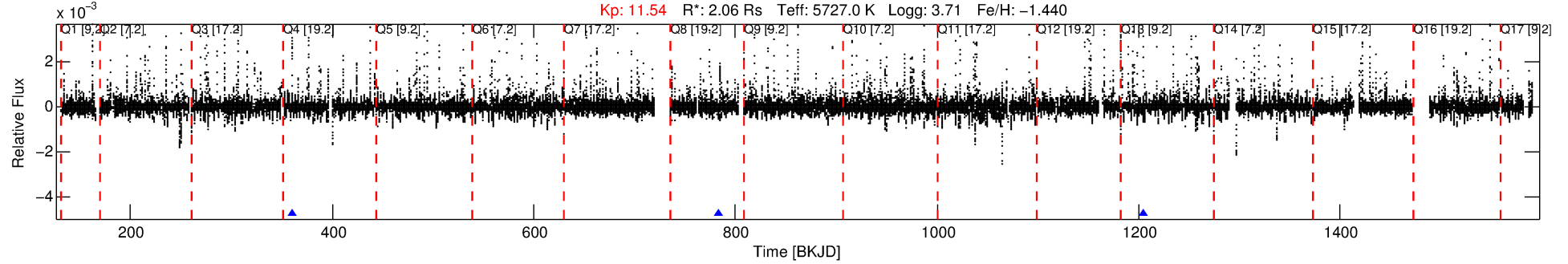
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006437385-01

No Significant Match Found

DV One-Page Summary

KIC: 6437385 Candidate: 1 of 6 Period: 422.247 d



DV Fit Results:

Period = 422.24708 [0.01287] d
Epoch = 360.4208 [0.0192] BKJD
Rp/R* = 0.0180 [0.0144]
a/R* = 327.80 [1308.45]
b = 0.63 [3.86]
Seff = 3.95 [5.66]
Teq = 359 [129] K
Rp = 4.04 [4.35] Re
a = 1.0181 [0.8387] AU
Ag = 15163.47 [33139.30] [0.46 σ]
Teffp = 6167 [2564] K [2.26 σ]

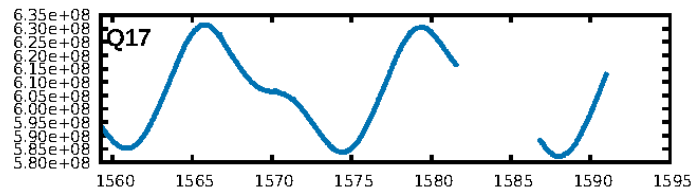
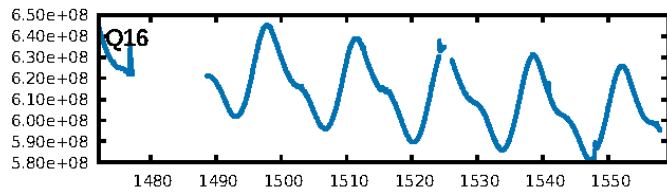
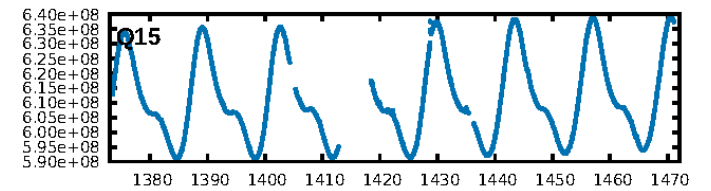
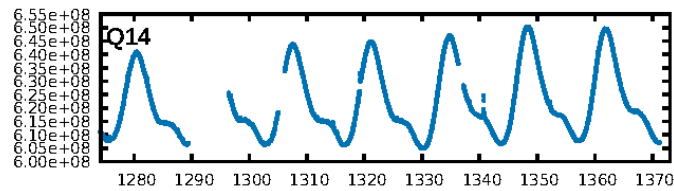
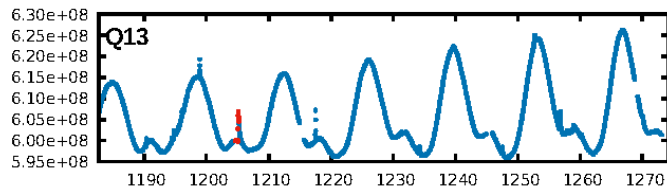
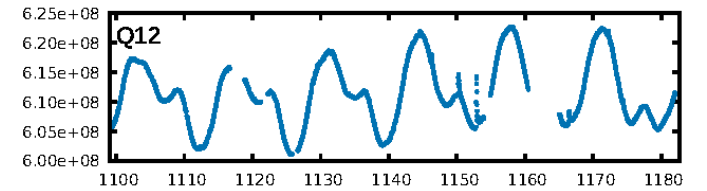
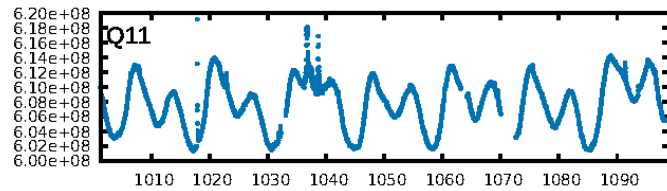
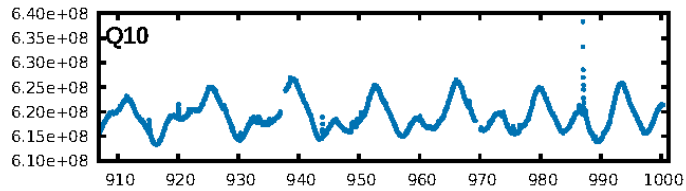
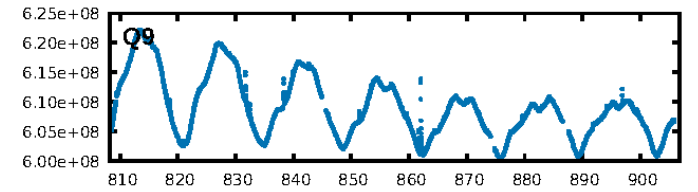
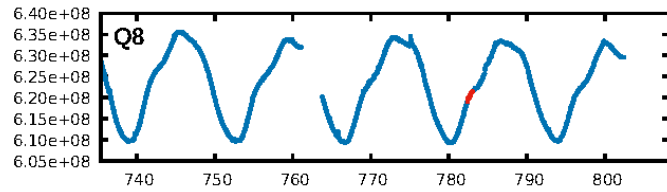
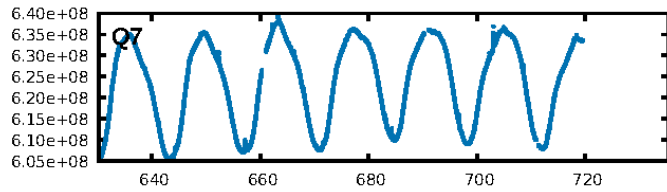
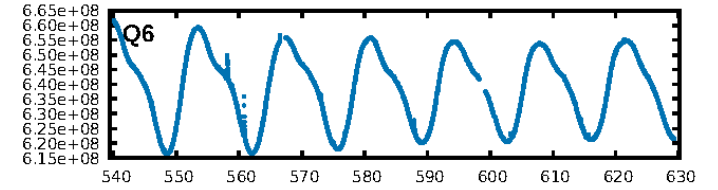
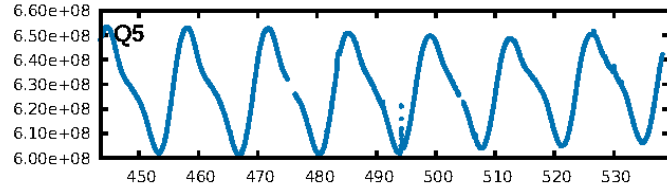
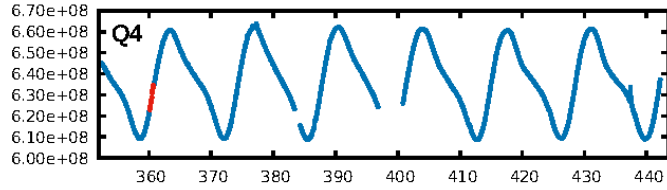
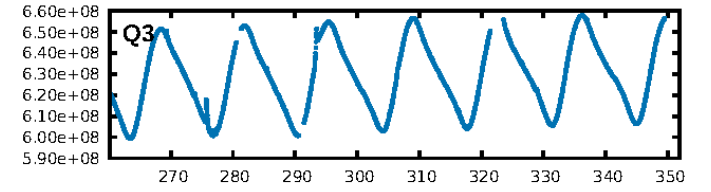
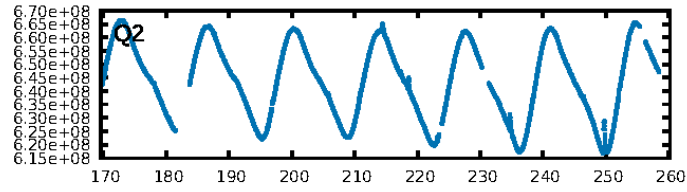
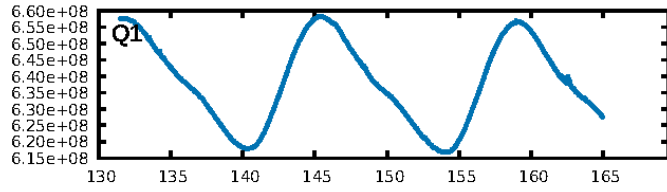
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [80.32 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 45.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2628
Centroid-sig: 62.8%
Centroid-so: 0.156 arcsec [0.33 σ]
OotOffset-rm: 0.047 arcsec [0.12 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.116 arcsec [1.01 σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

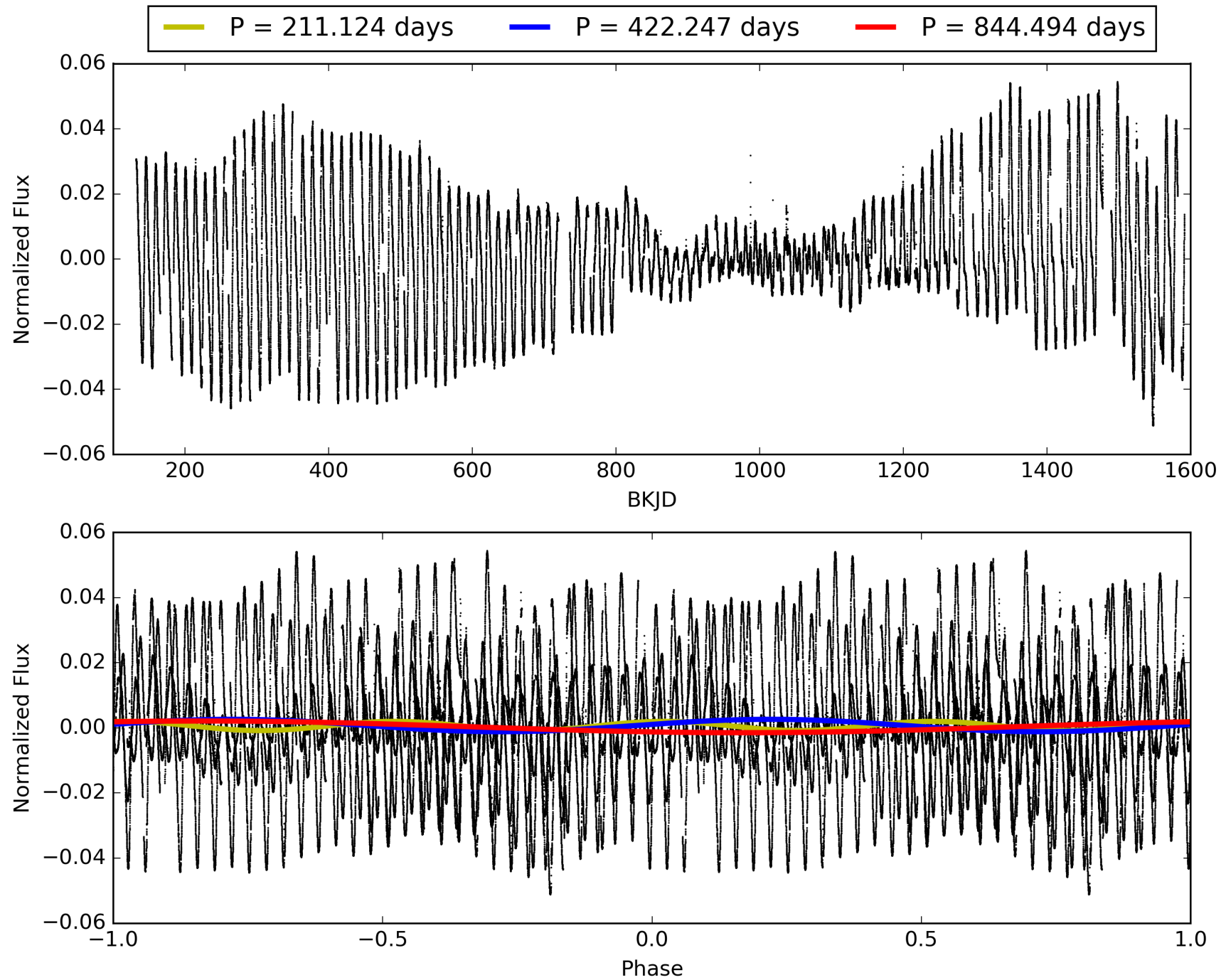
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:32:16 Z

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

TCE 006437385-01, PDC Light Curves

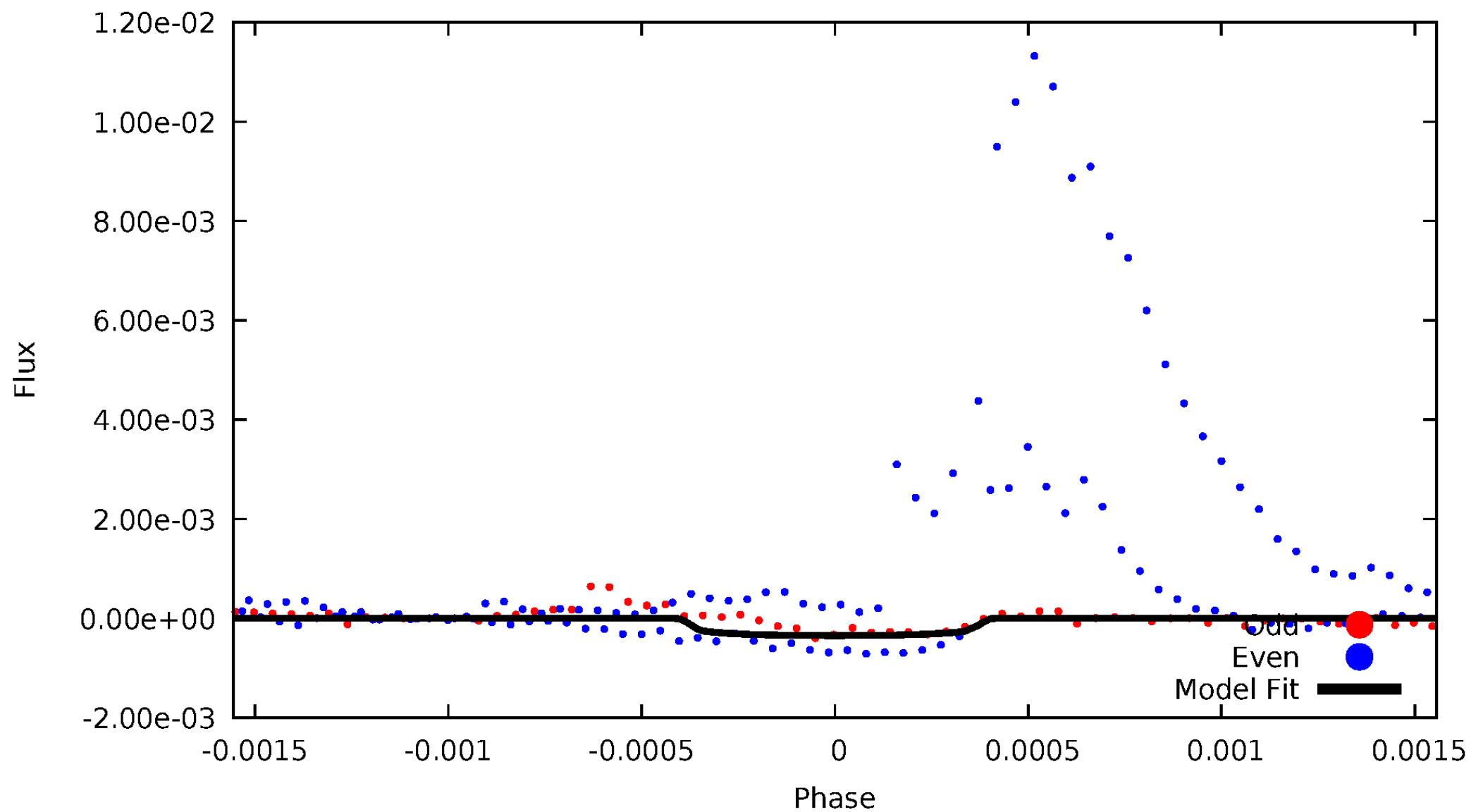


TCE 006437385-01



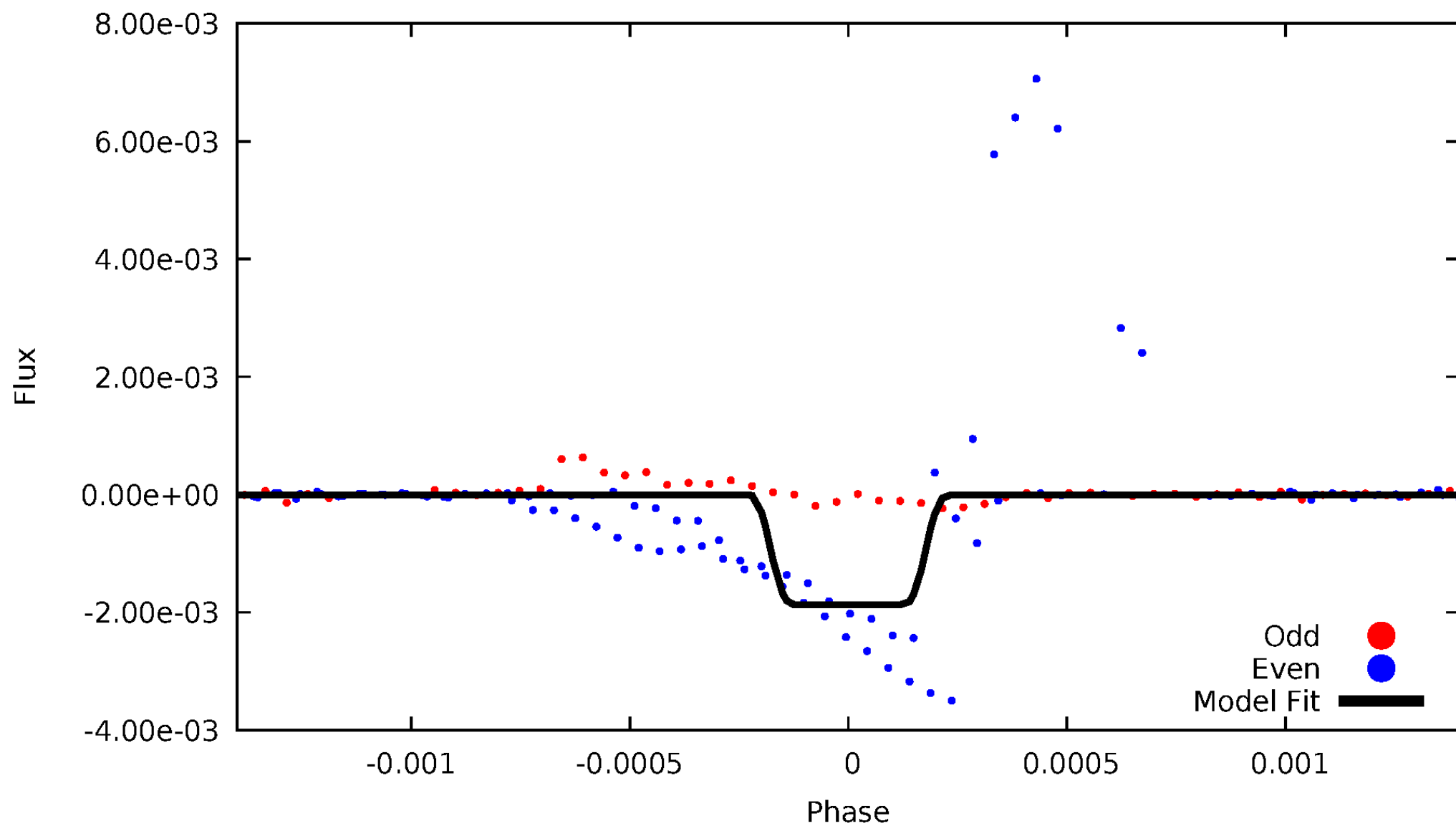
DV Odd/Even

TCE 006437385-01



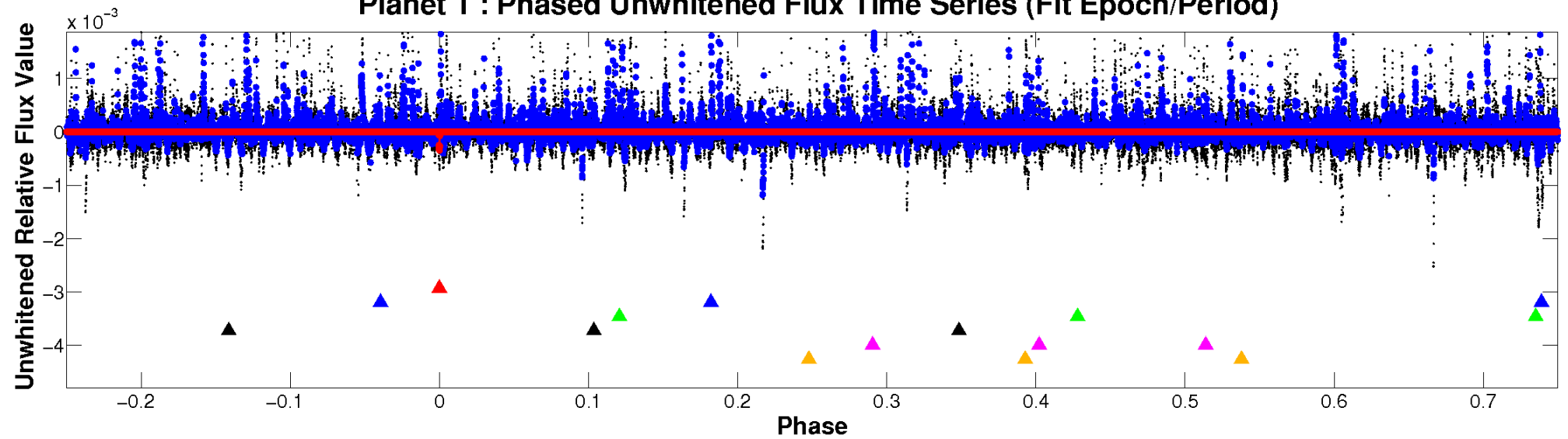
ALT Odd/Even

TCE 006437385-01

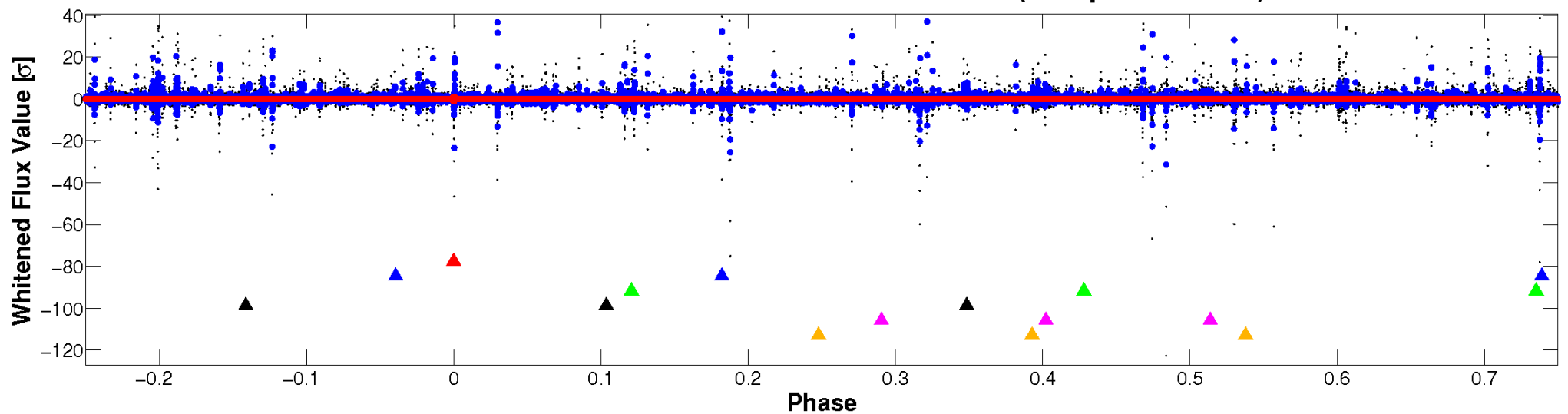


Non-Whitened Vs. Whitened Light Curve

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

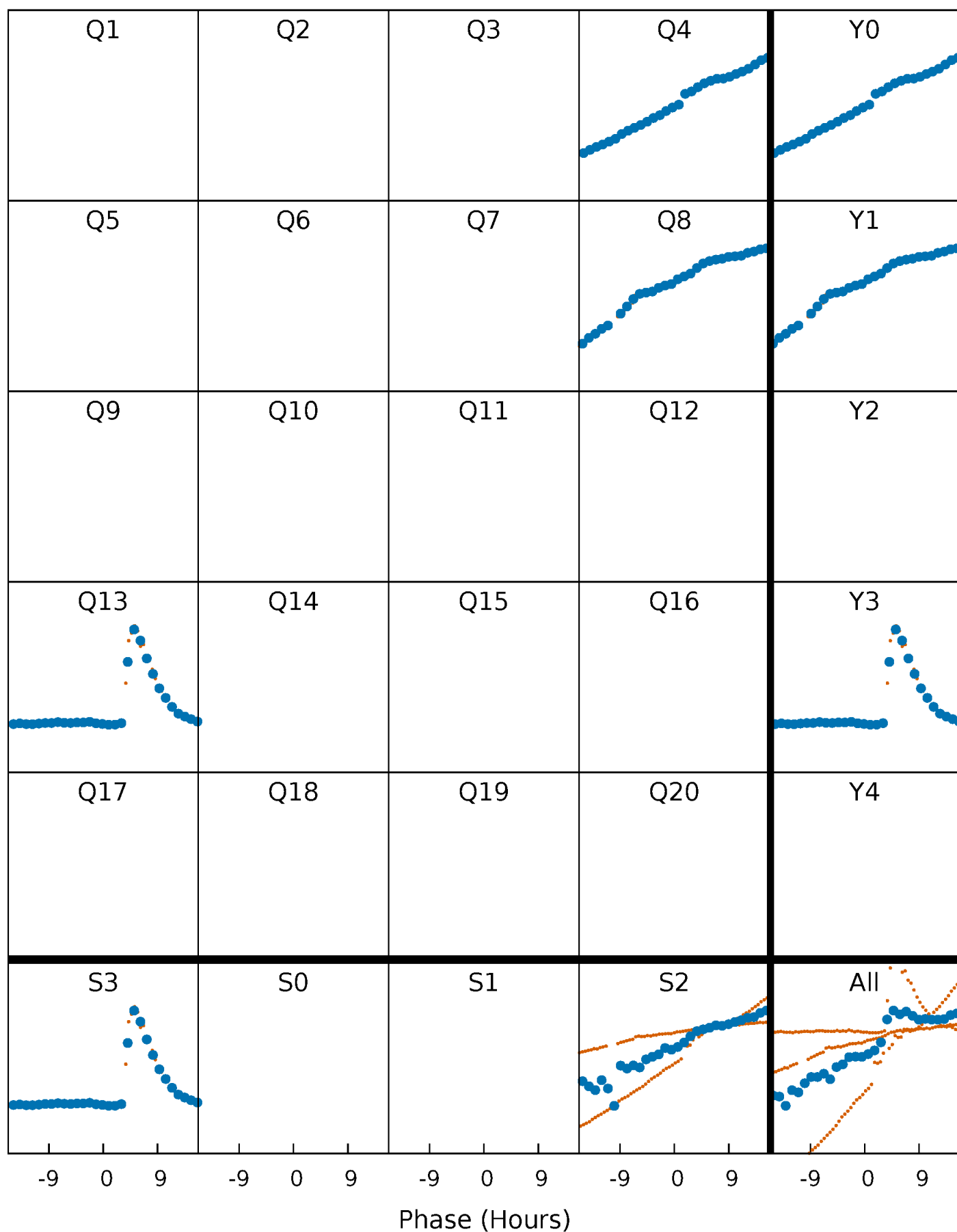


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



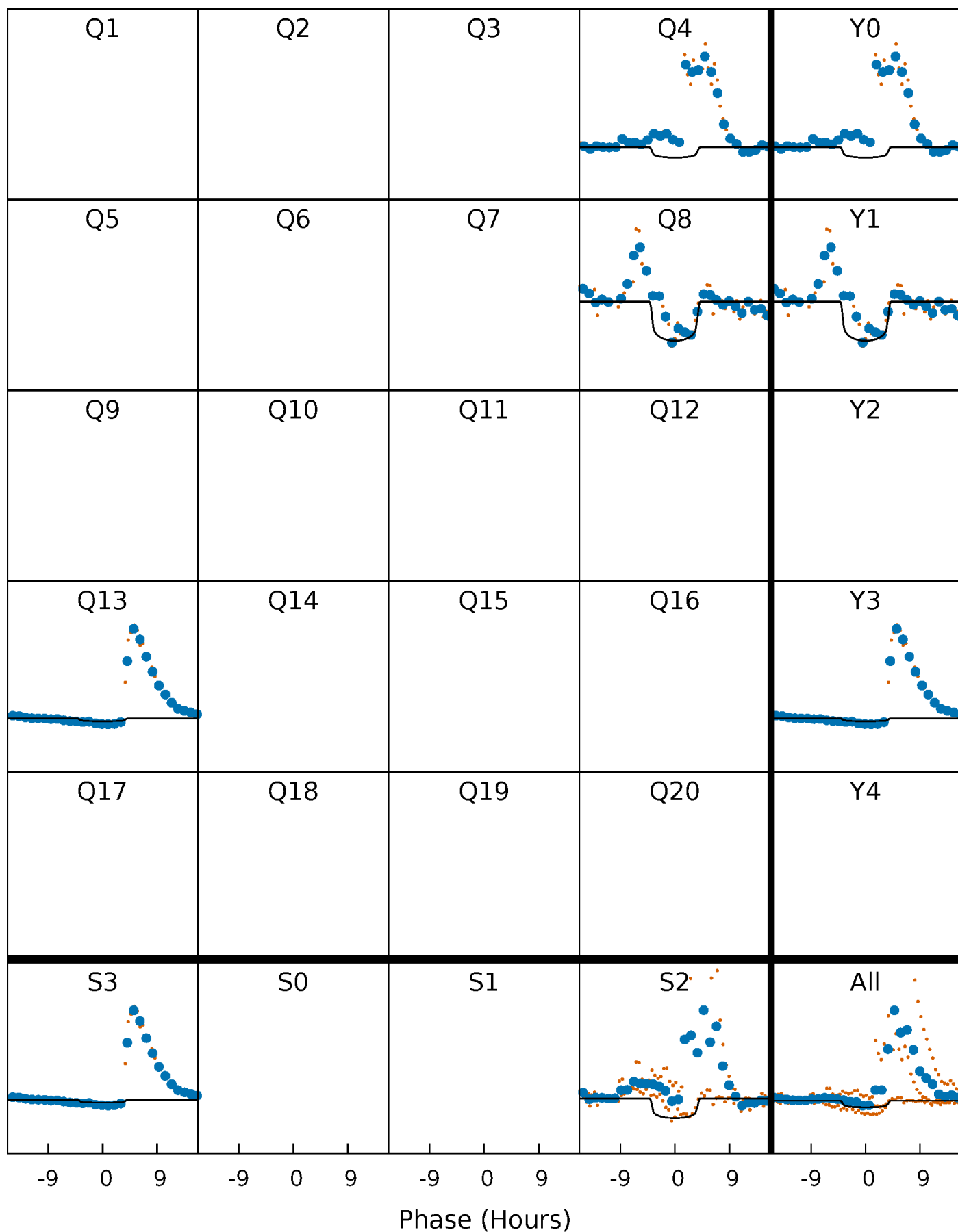
PDC Quarter-Phased Transit Curves

TCE 006437385-01 P=422.247083 Days $T_0=360.420787$ (BKJD)



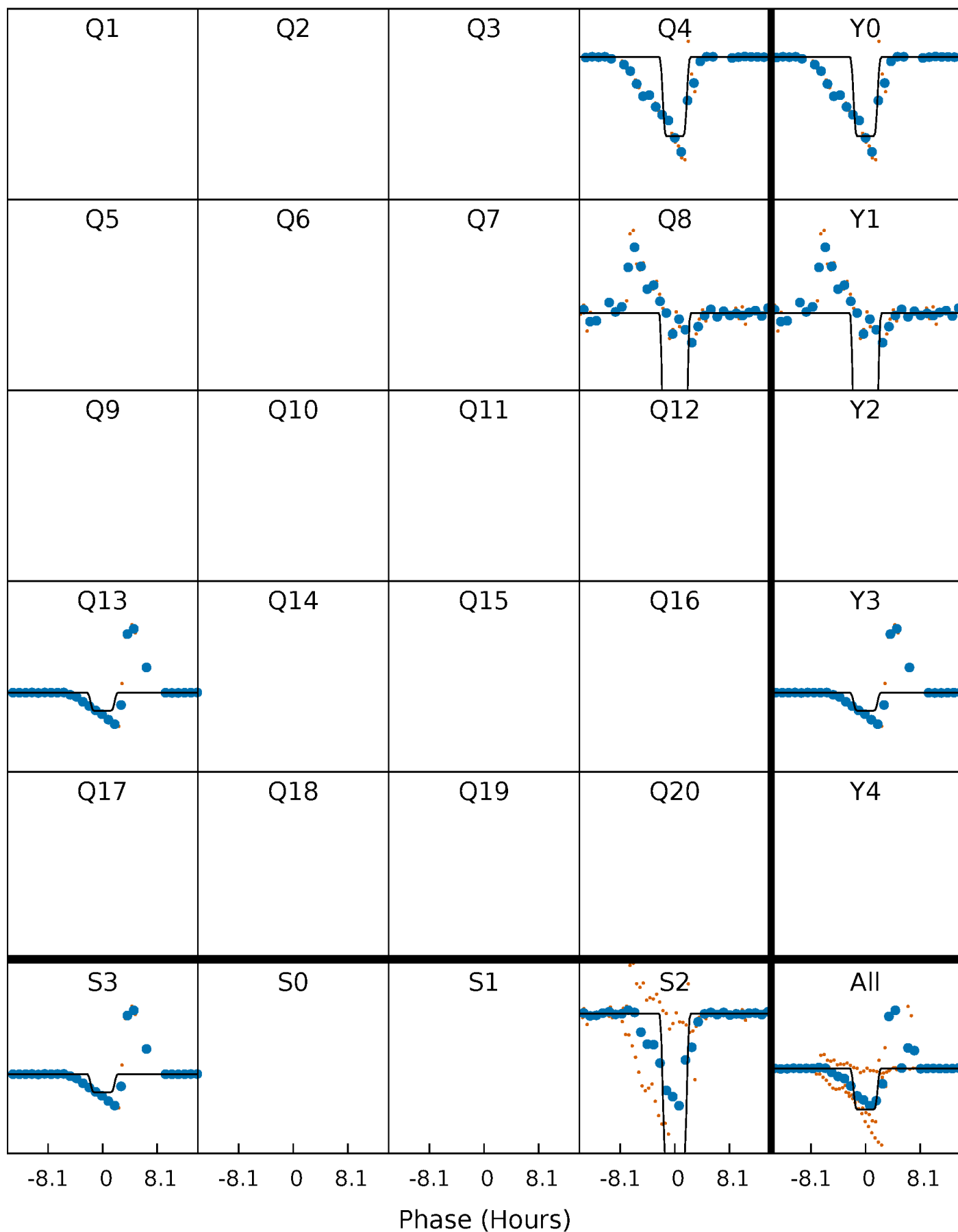
DV Quarter-Phased Transit Curves

TCE 006437385-01 P=422.247083 Days $T_0=360.420787$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

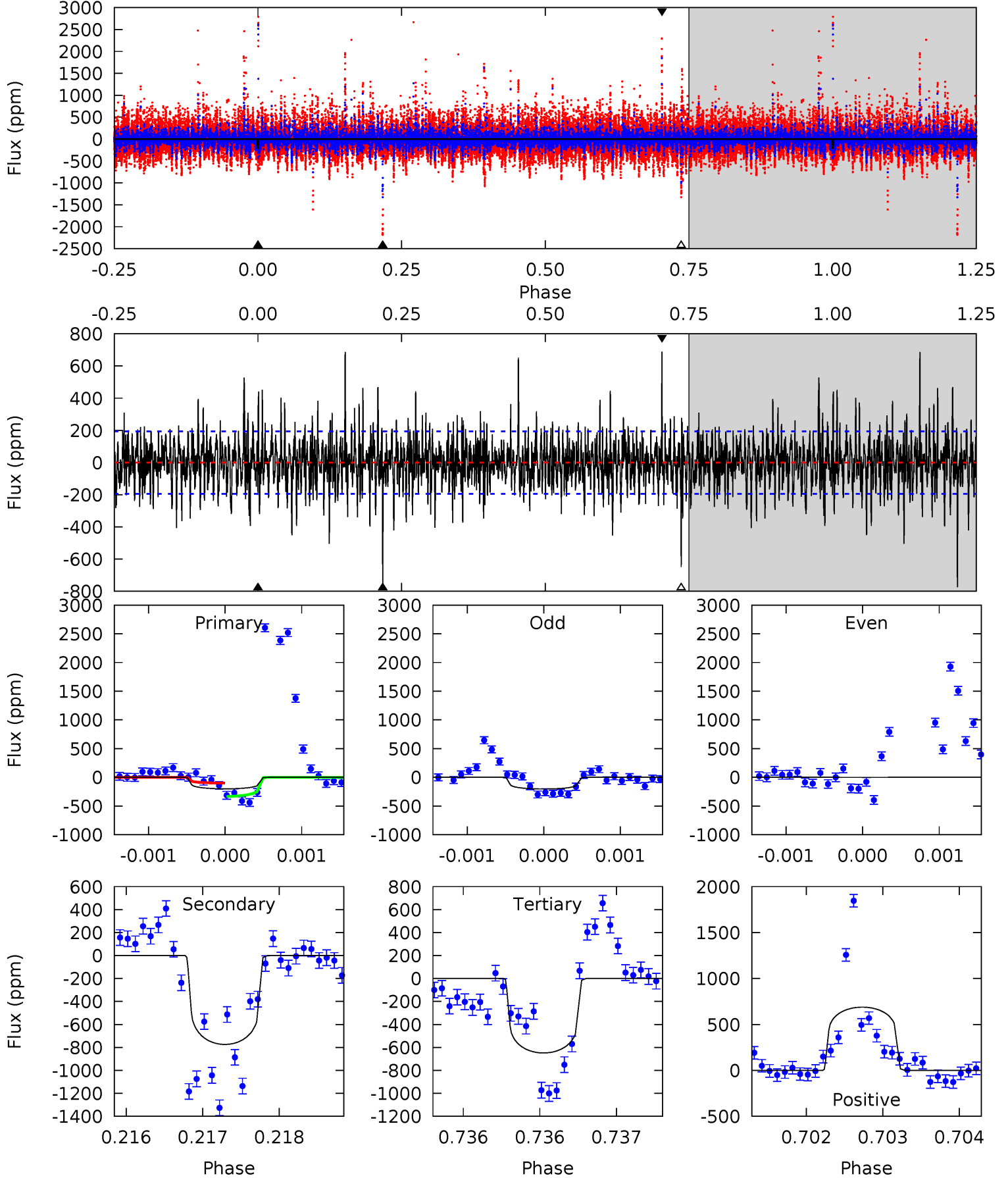
TCE 006437385-01 P=422.273140 Days $T_0=360.404961$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-01, P = 422.247083 Days, E = 360.420787 Days

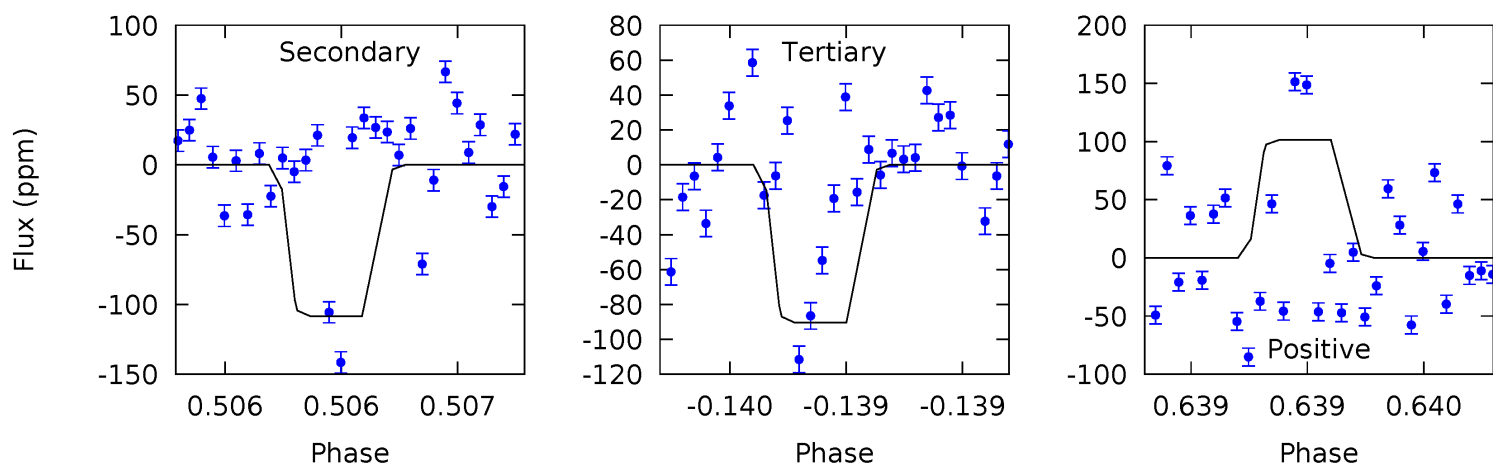
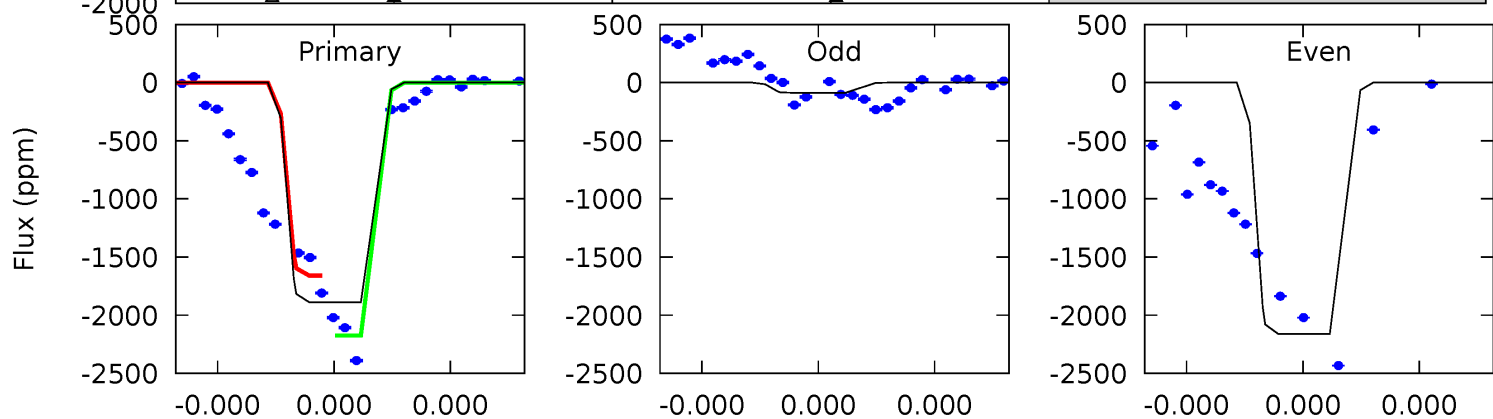
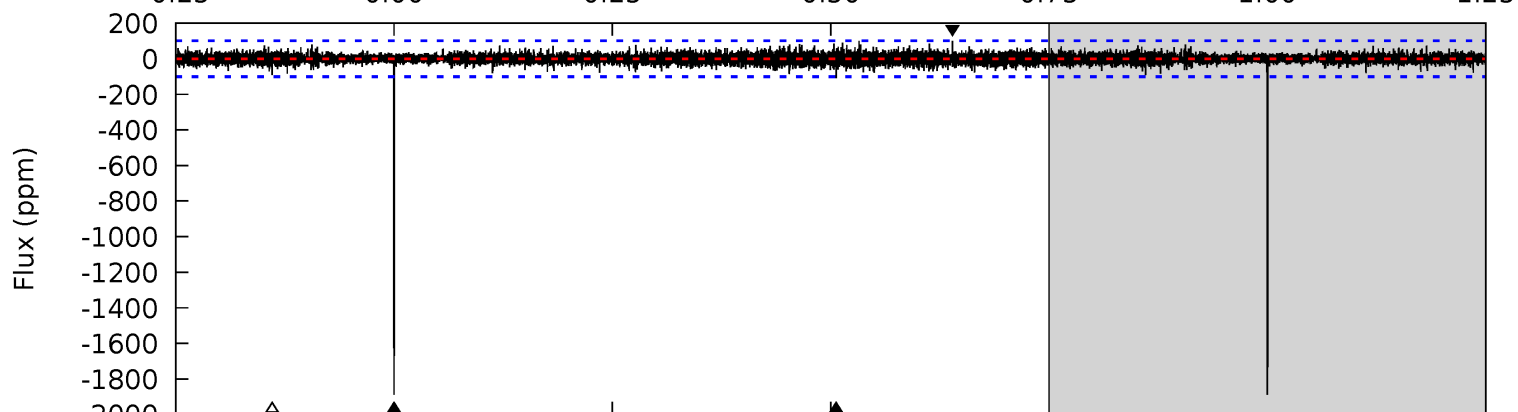
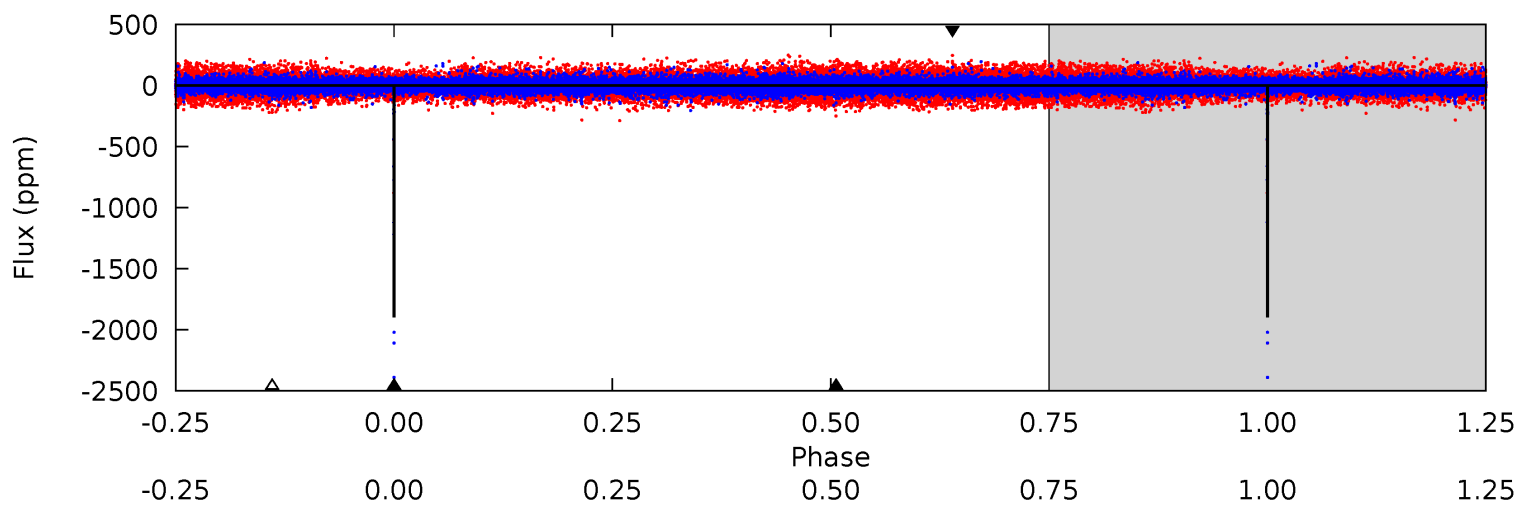
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.68	21.9	18.3	19.4	5.49	3.35	3.49	-12.6	-13.8	3.56	2.43	1.74	-0.61	0.47	3.28



Alt Model-Shift Uniqueness Test

006437385-01, P = 422.273140 Days, E = 360.404961 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
104.7	6.01	5.01	5.62	5.60	3.52	0.98	99.7	99.1	1.00	0.39	69.4	0.78	0.05	0



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-774 ± 35	$3.92^{+3.57}_{-2.50}$	490^{+79}_{-103}	6891^{+5543}_{-1573}	$29438^{+201355}_{-21484}$
Alt.	-108 ± 18	$9.12^{+5.24}_{-4.11}$	496^{+73}_{-99}	3325^{+505}_{-284}	759^{+1821}_{-447}

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

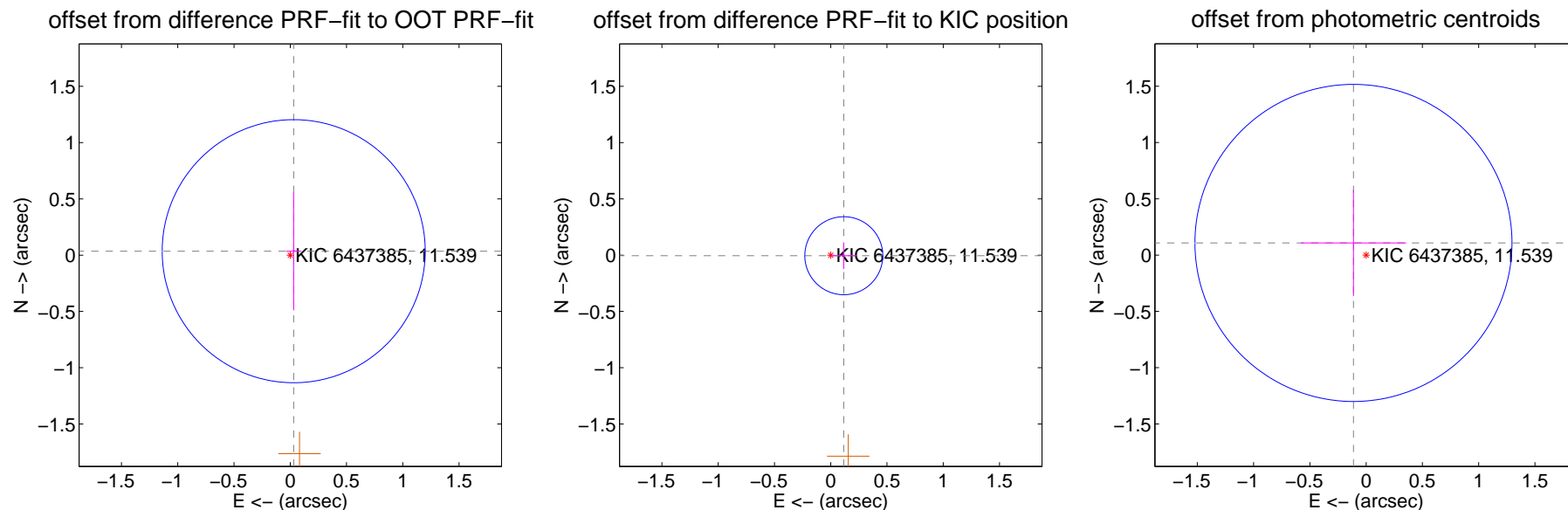
DV Centroid Data

Supplemental centroid analysis for 006437385-01. **Kepler magnitude: 11.54.** Transit SNR 5.19

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.390	0.12	-0.031 ± 0.068	0.035 ± 0.526
PRF-fit source offset from KIC position	0.116 ± 0.116	1.01	-0.116 ± 0.115	-0.005 ± 0.118
photometric centroid source offset	0.16 ± 0.47	0.33	0.11 ± 0.47	0.11 ± 0.47



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



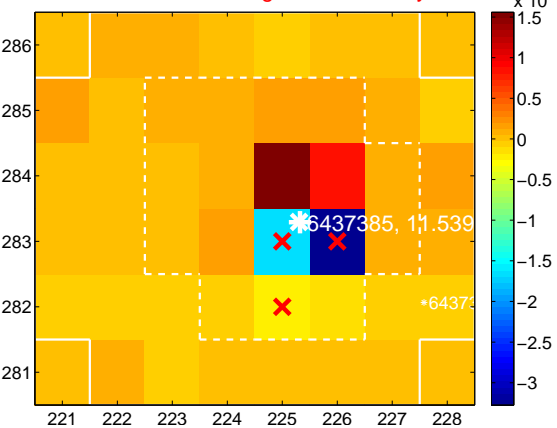
Q3 no difference image



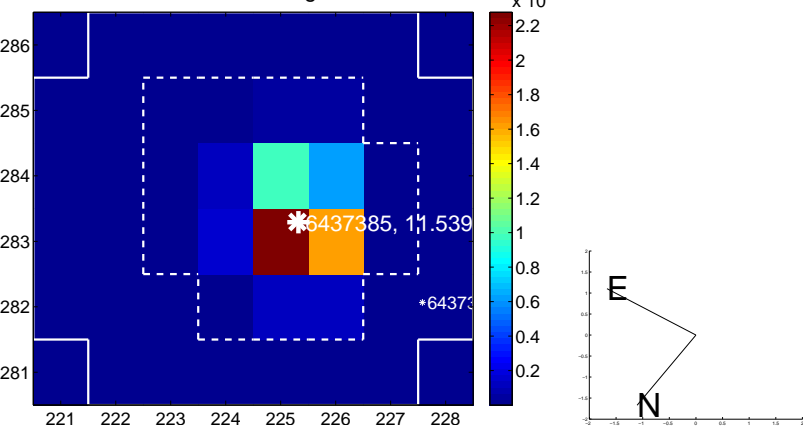
Q3 no OOT image



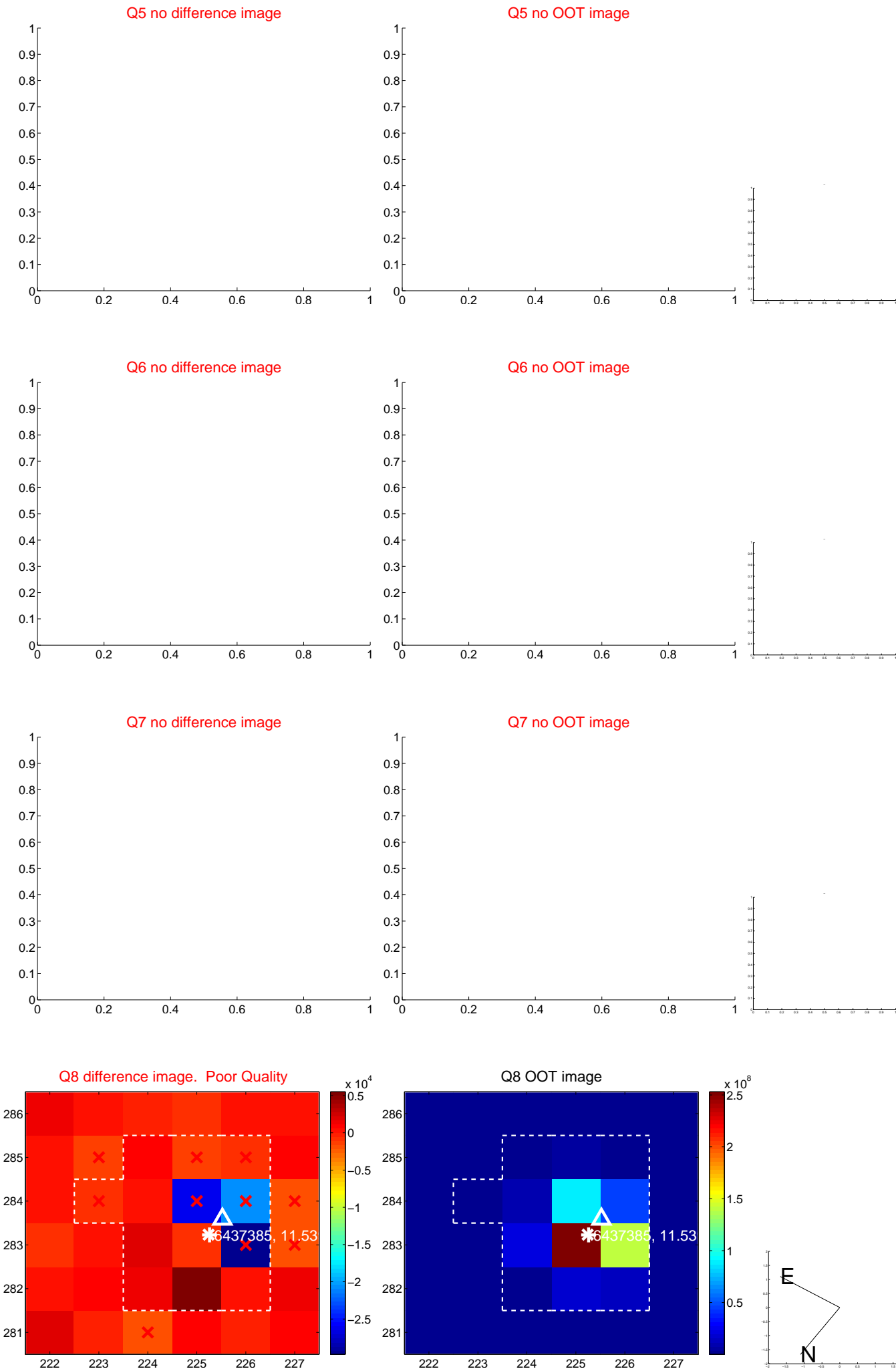
Q4 difference image. Poor Quality



Q4 OOT image



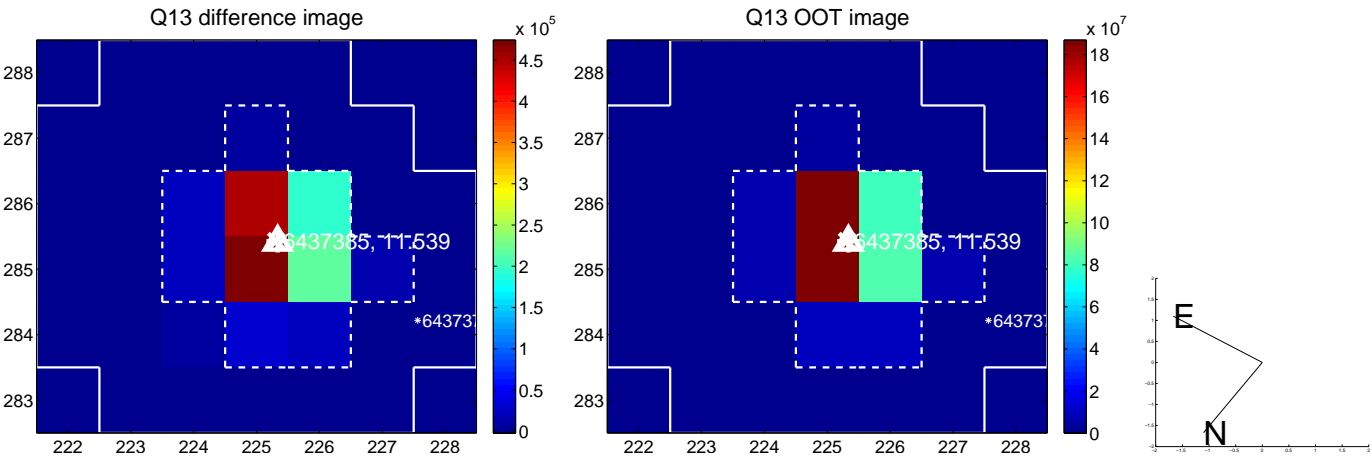
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



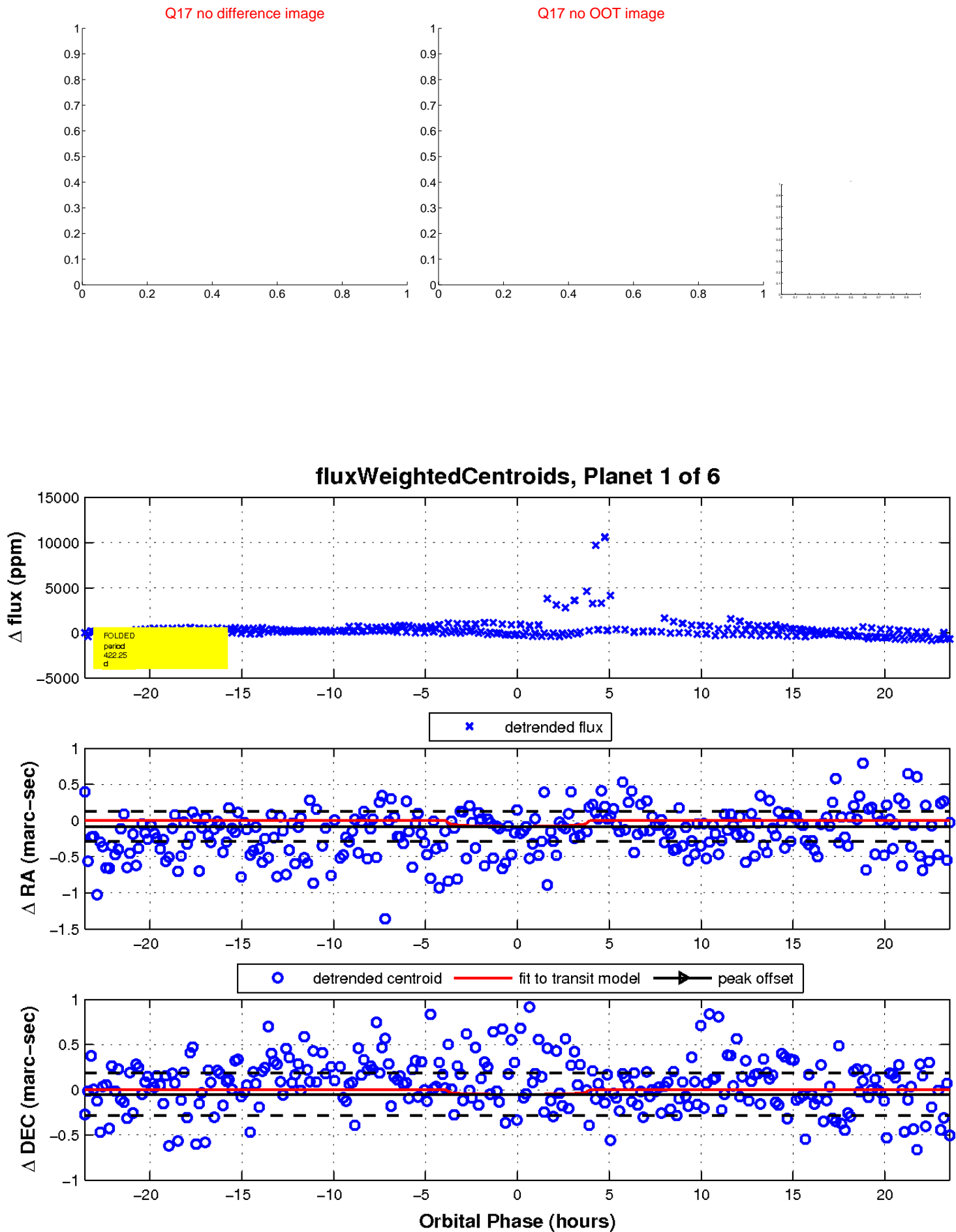
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

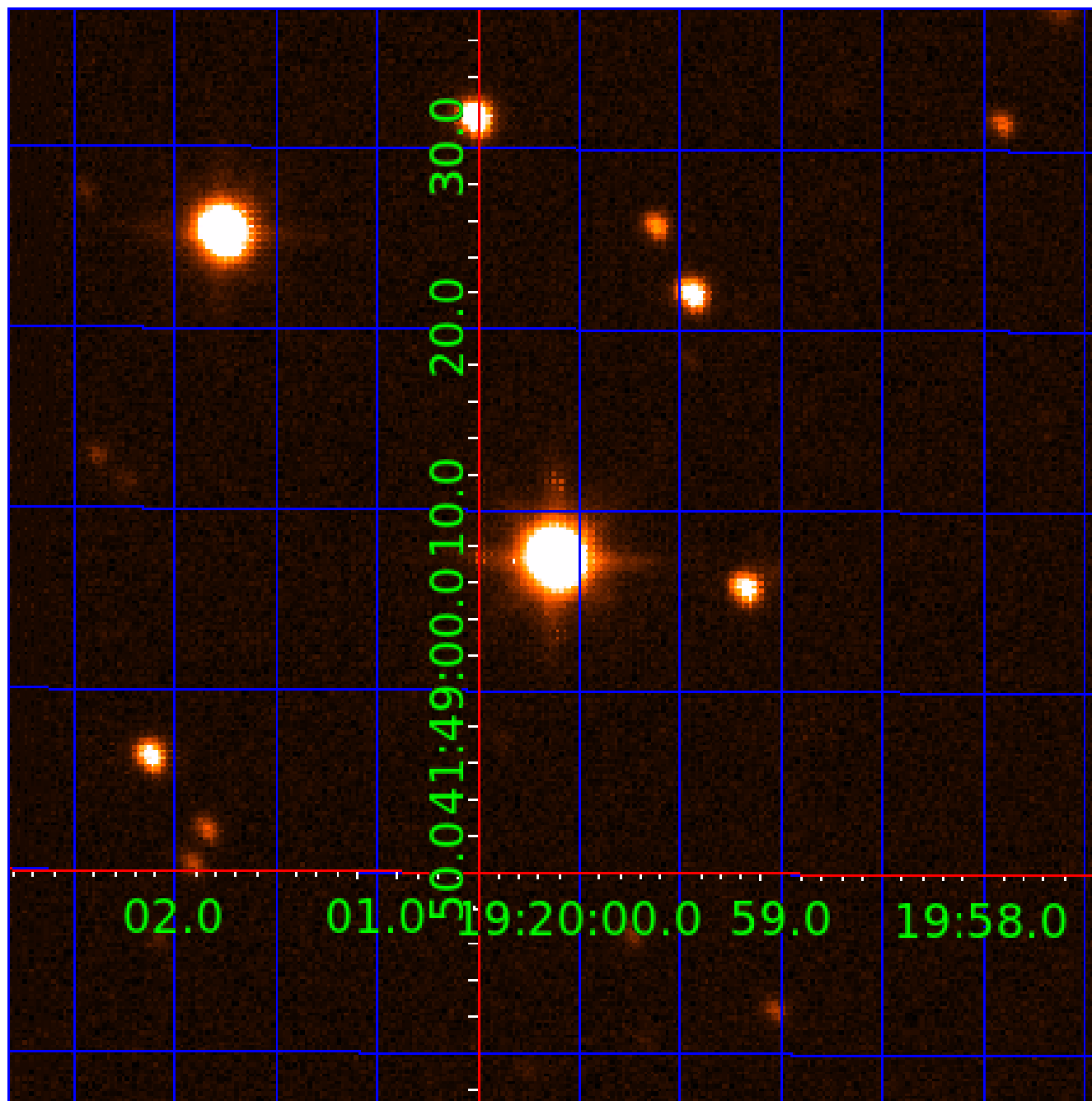


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006437385

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

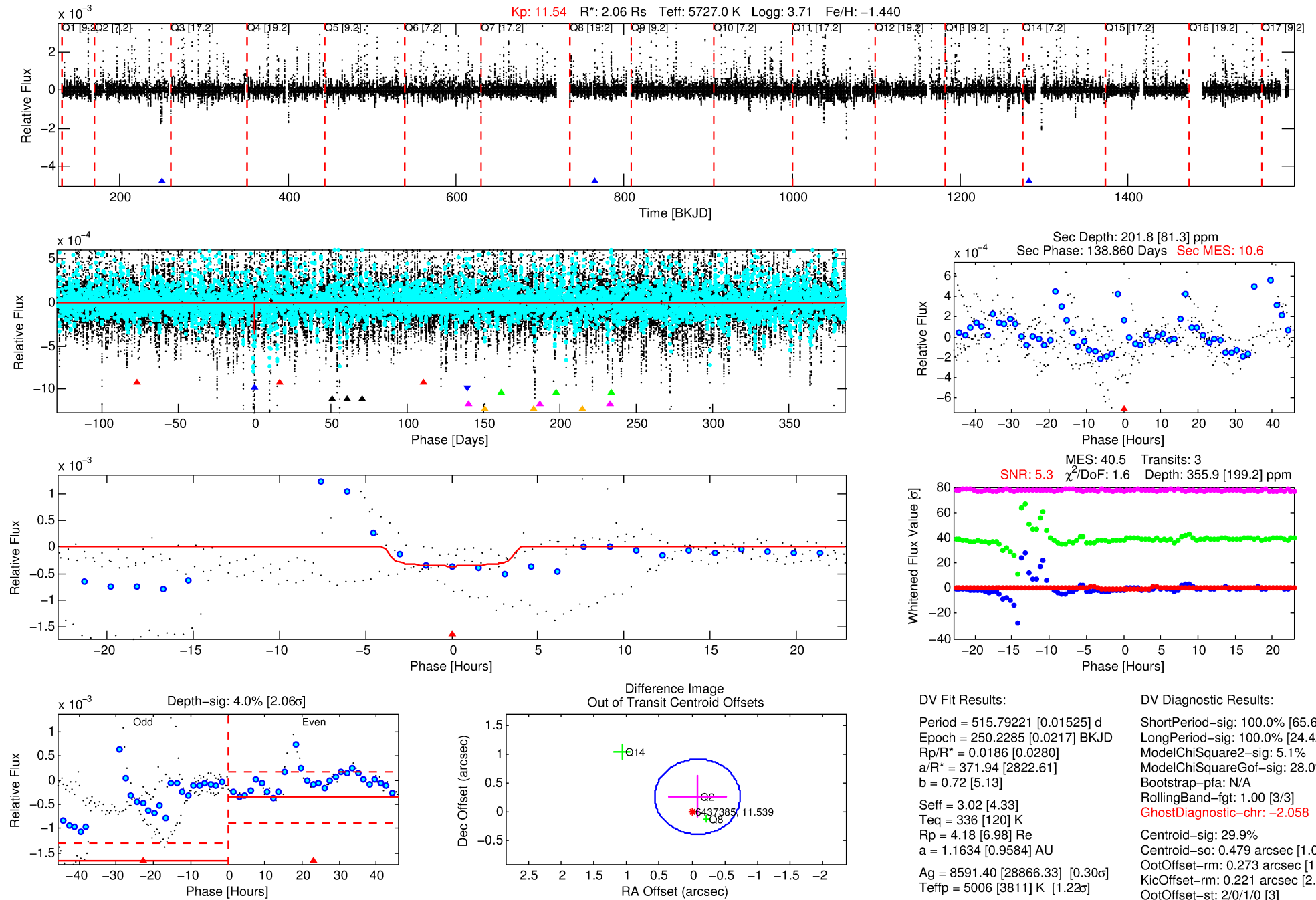
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006437385-02

No Significant Match Found

DV One-Page Summary

KIC: 6437385 Candidate: 2 of 6 Period: 515.792 d



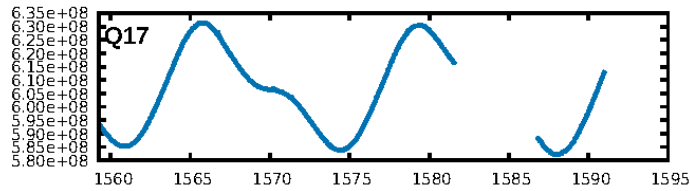
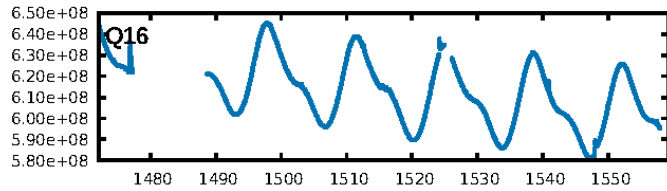
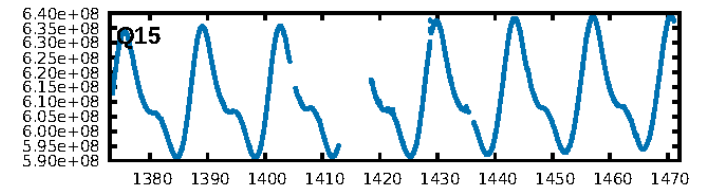
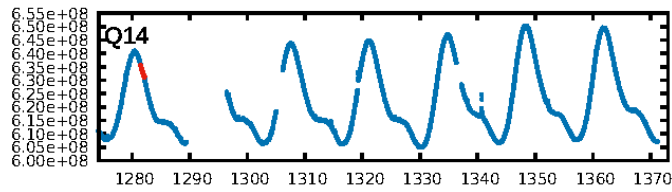
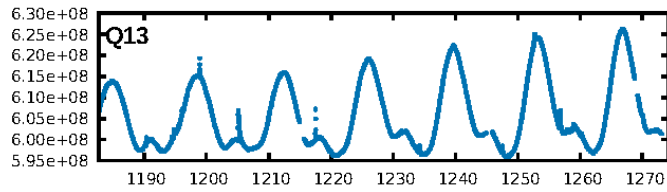
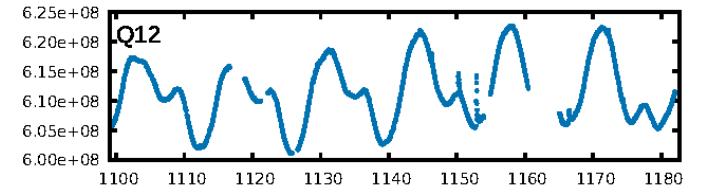
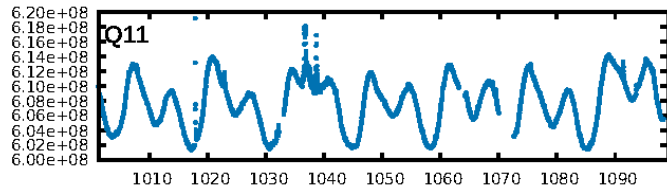
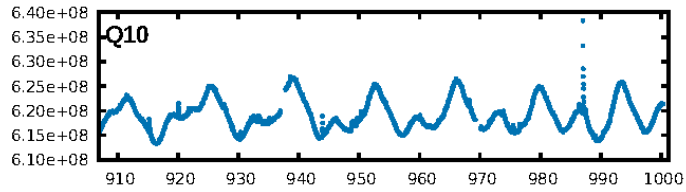
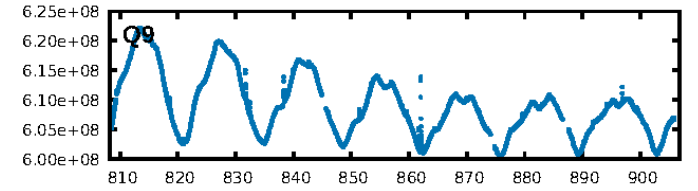
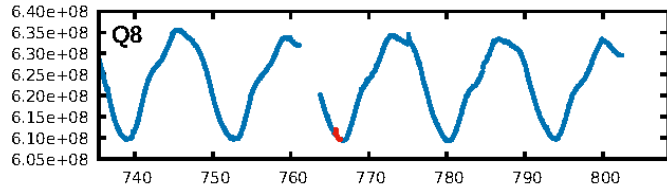
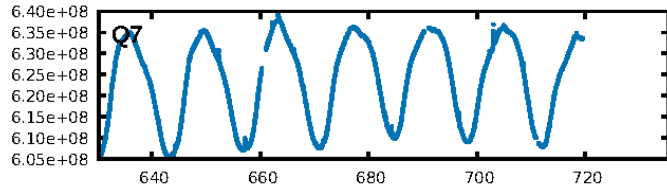
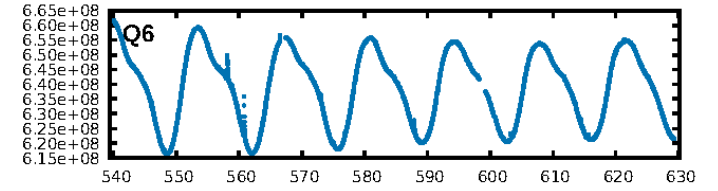
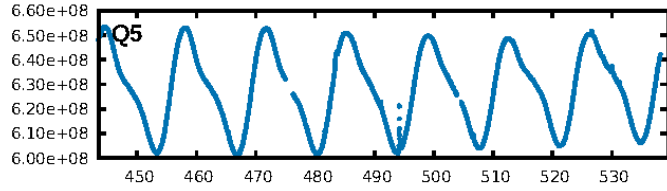
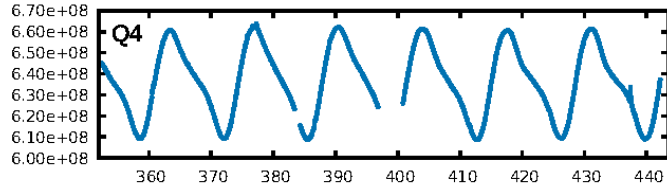
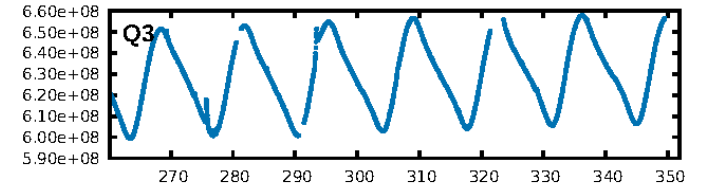
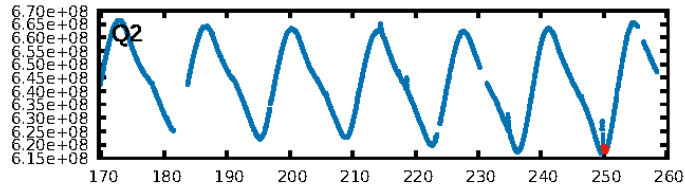
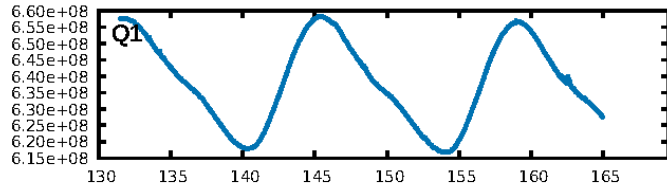
DV Fit Results:

Period = 515.79221 [0.01525] d
Epoch = 250.2285 [0.0217] BKJD
Rp/R* = 0.0186 [0.0280]
a/R* = 371.94 [2822.61]
b = 0.72 [5.13]
Seff = 3.02 [4.33]
T_{eq} = 336 [120] K
Rp = 4.18 [6.98] Re
a = 1.1634 [0.9584] AU
Ag = 8591.40 [28866.33] [0.30σ]
T_{eff} = 5006 [3811] K [1.22σ]

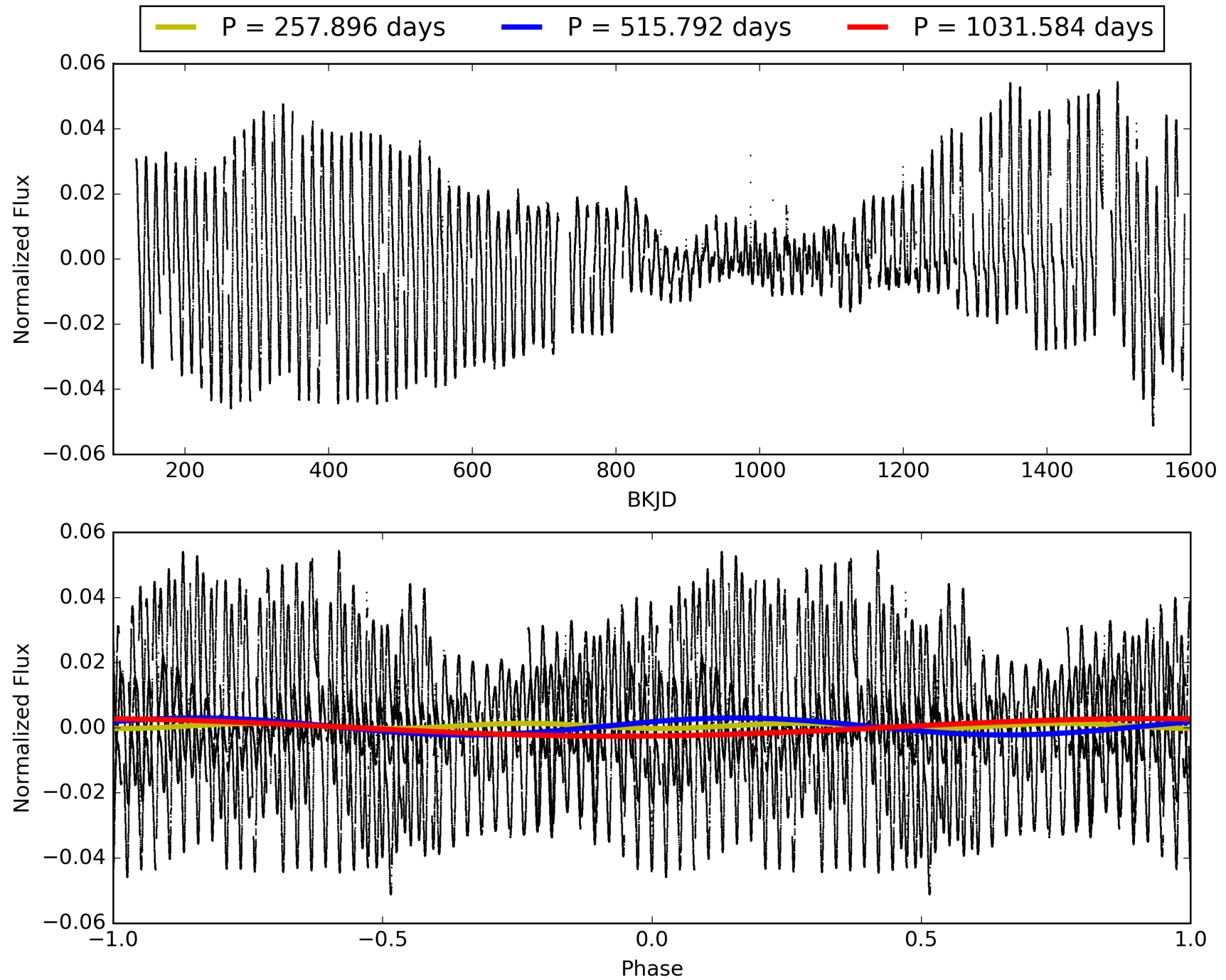
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.68σ]
LongPeriod-sig: 100.0% [24.42σ]
ModelChiSquare2-sig: 5.1%
ModelChiSquareGof-sig: 28.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.058
Centroid-sig: 29.9%
Centroid-so: 0.479 arcsec [1.01σ]
OotOffset-rm: 0.273 arcsec [1.26σ]
KicOffset-rm: 0.221 arcsec [2.73σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 006437385-02, PDC Light Curves

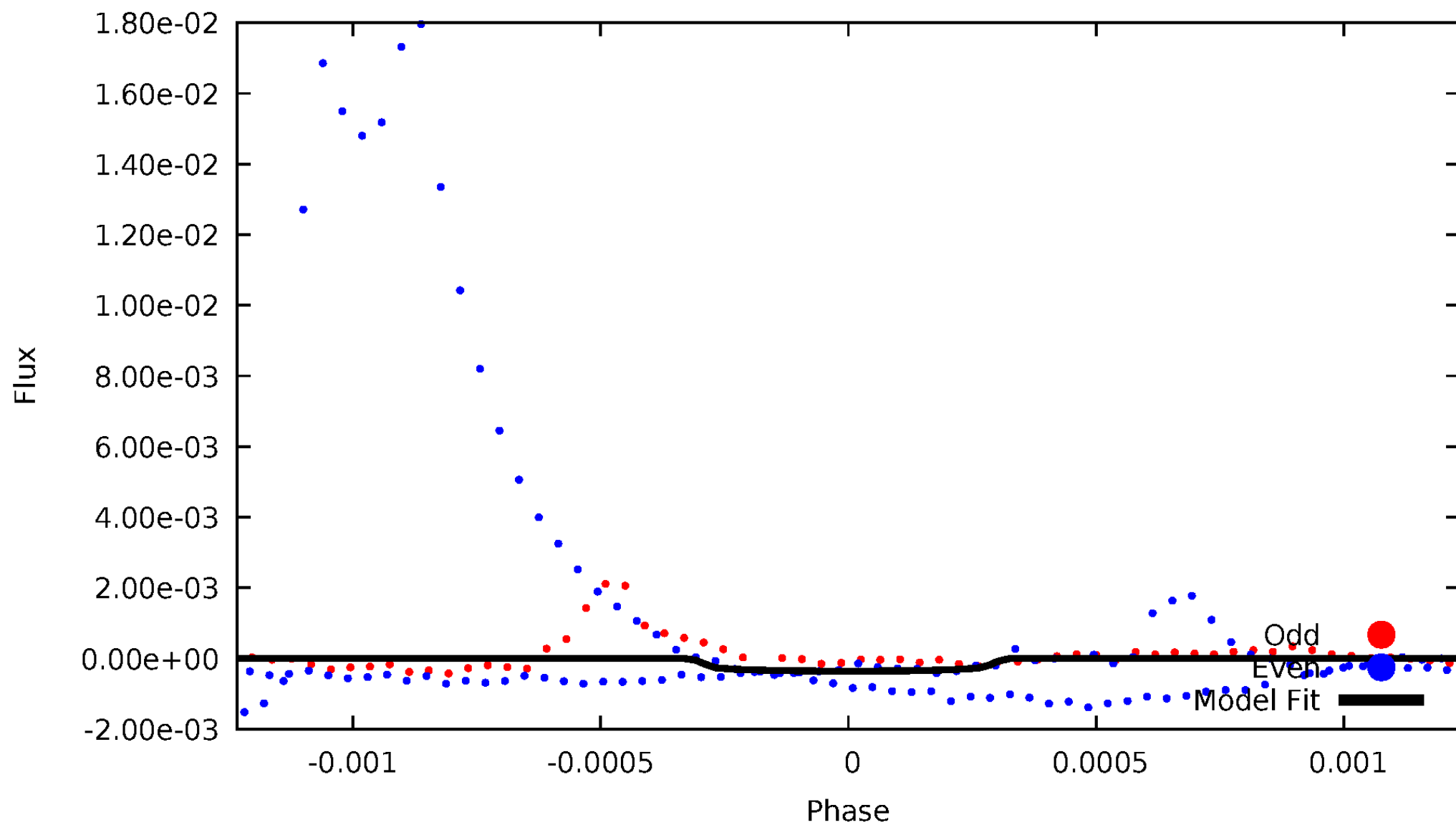


TCE 006437385-02



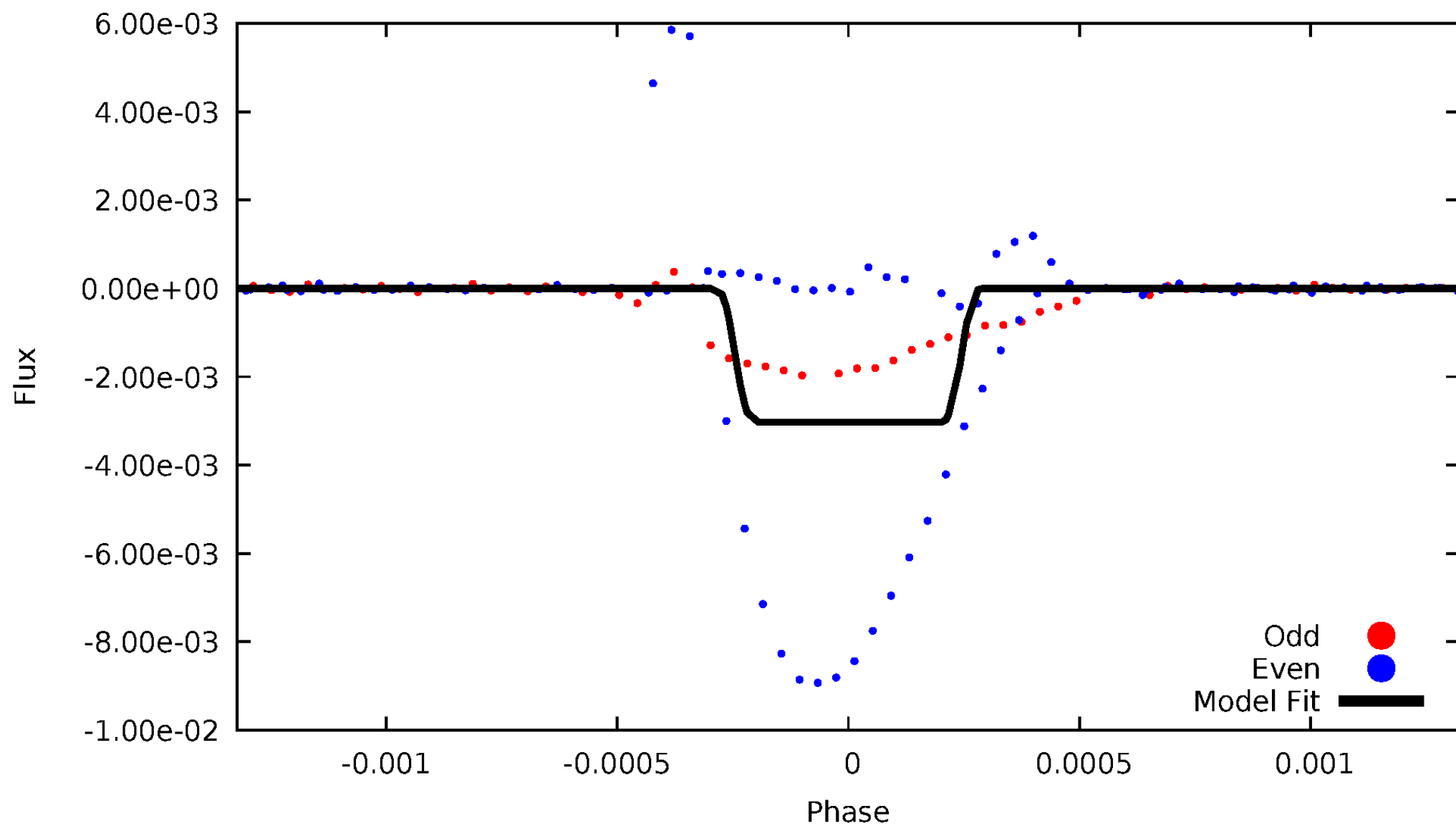
DV Odd/Even

TCE 006437385-02



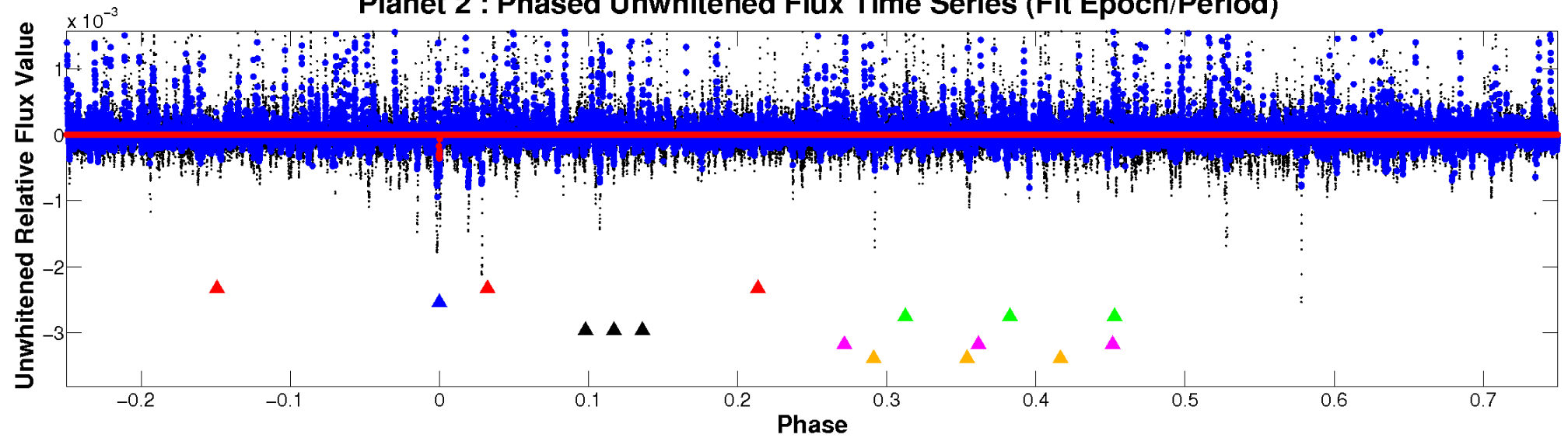
ALT Odd/Even

TCE 006437385-02

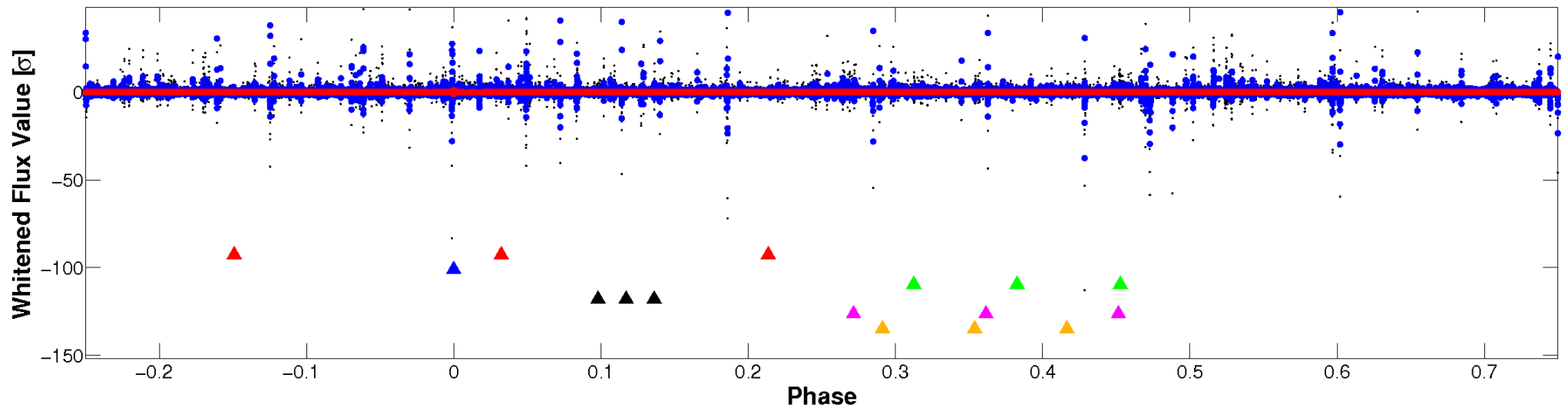


Non-Whitened Vs. Whitened Light Curve

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

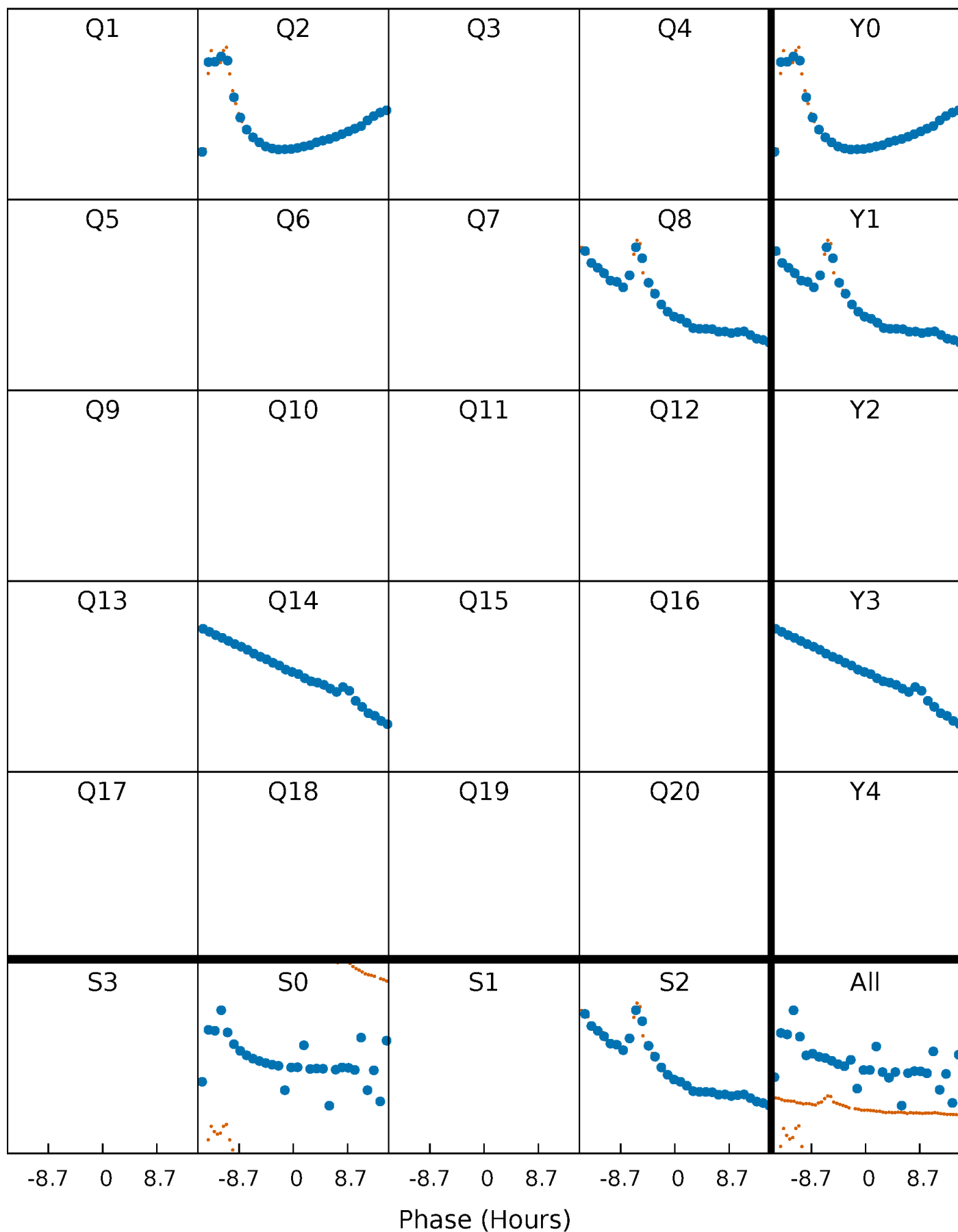


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



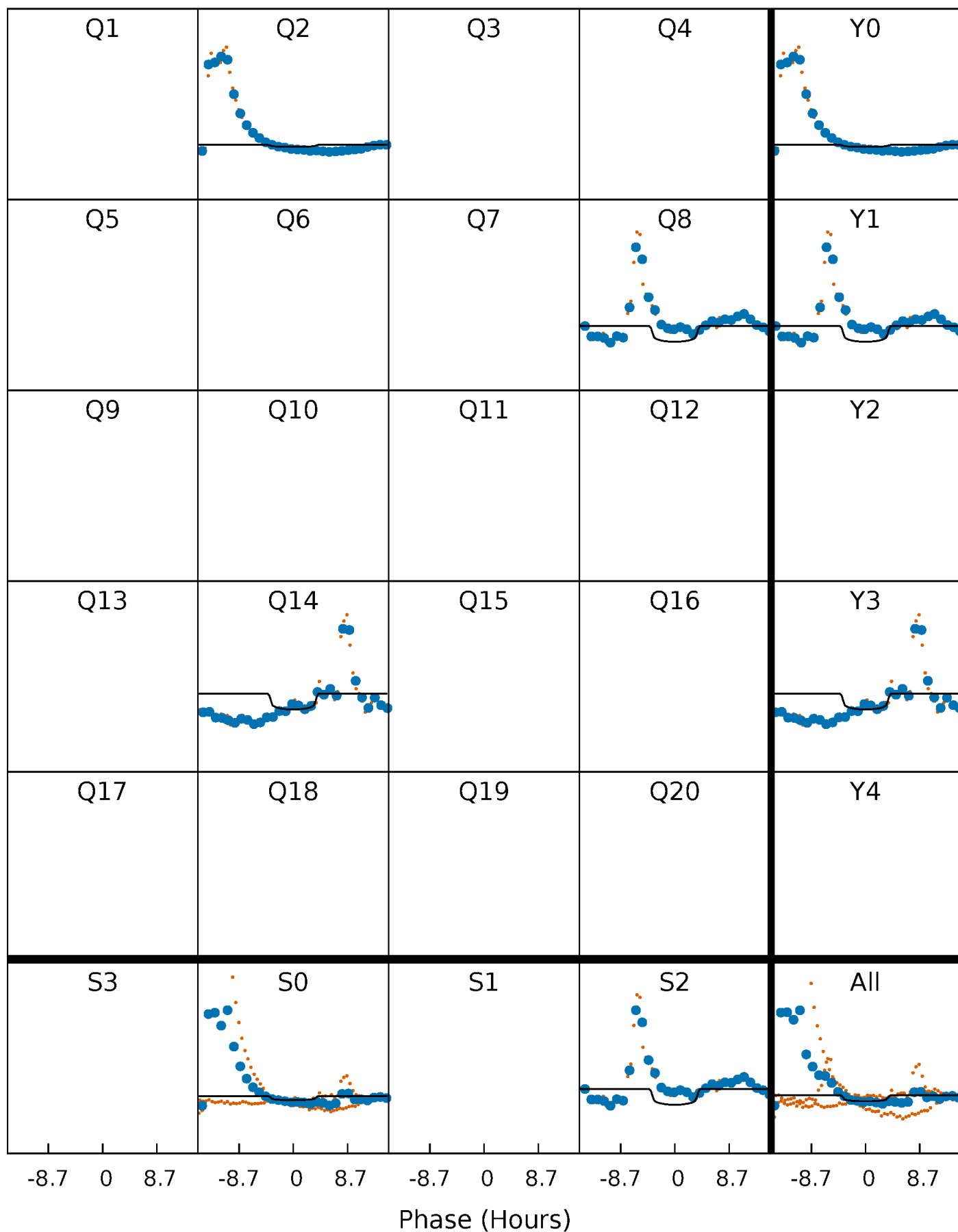
PDC Quarter-Phased Transit Curves

TCE 006437385-02 P=515.792211 Days $T_0=250.228539$ (BKJD)



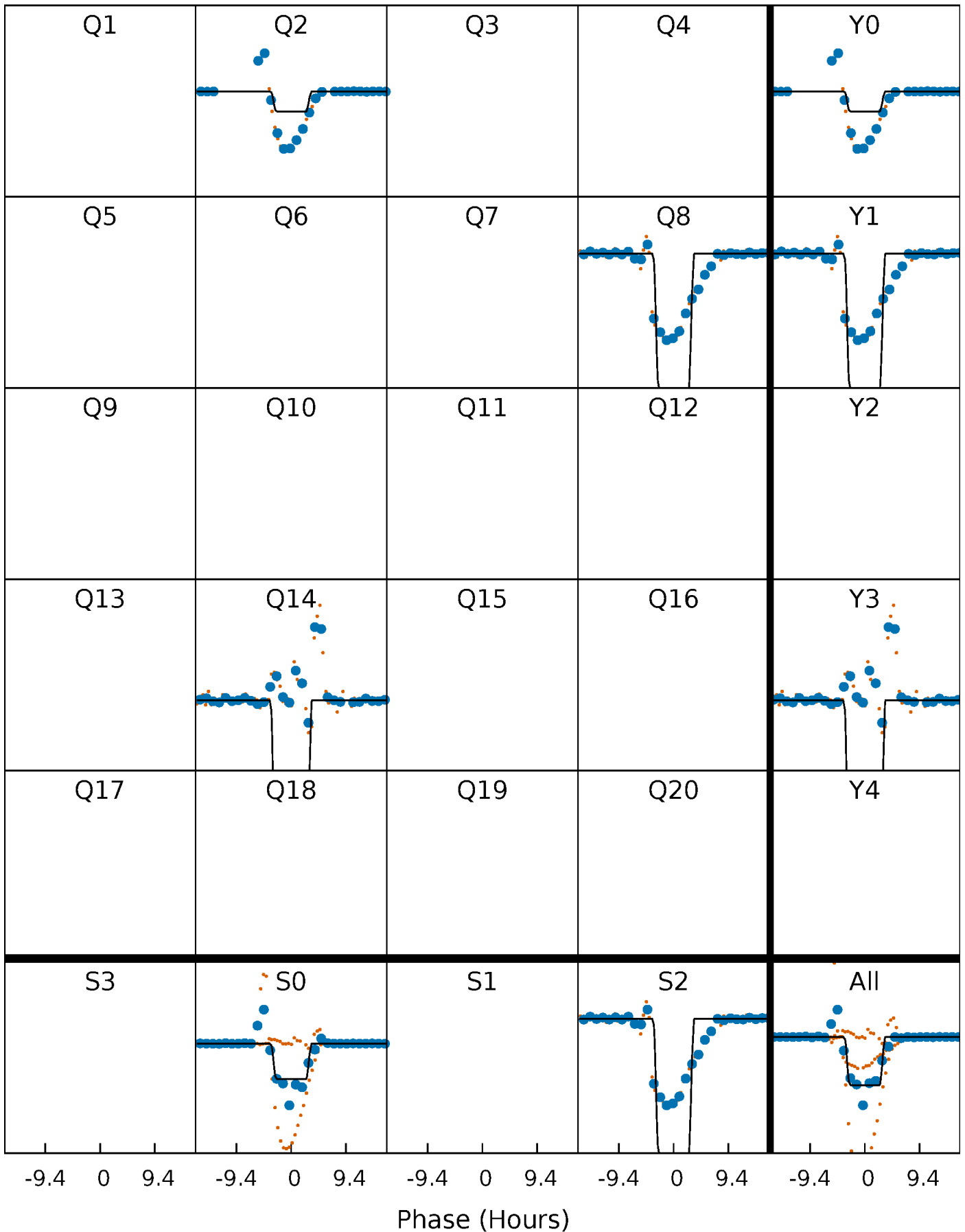
DV Quarter-Phased Transit Curves

TCE 006437385-02 P=515.792211 Days $T_0=250.228539$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

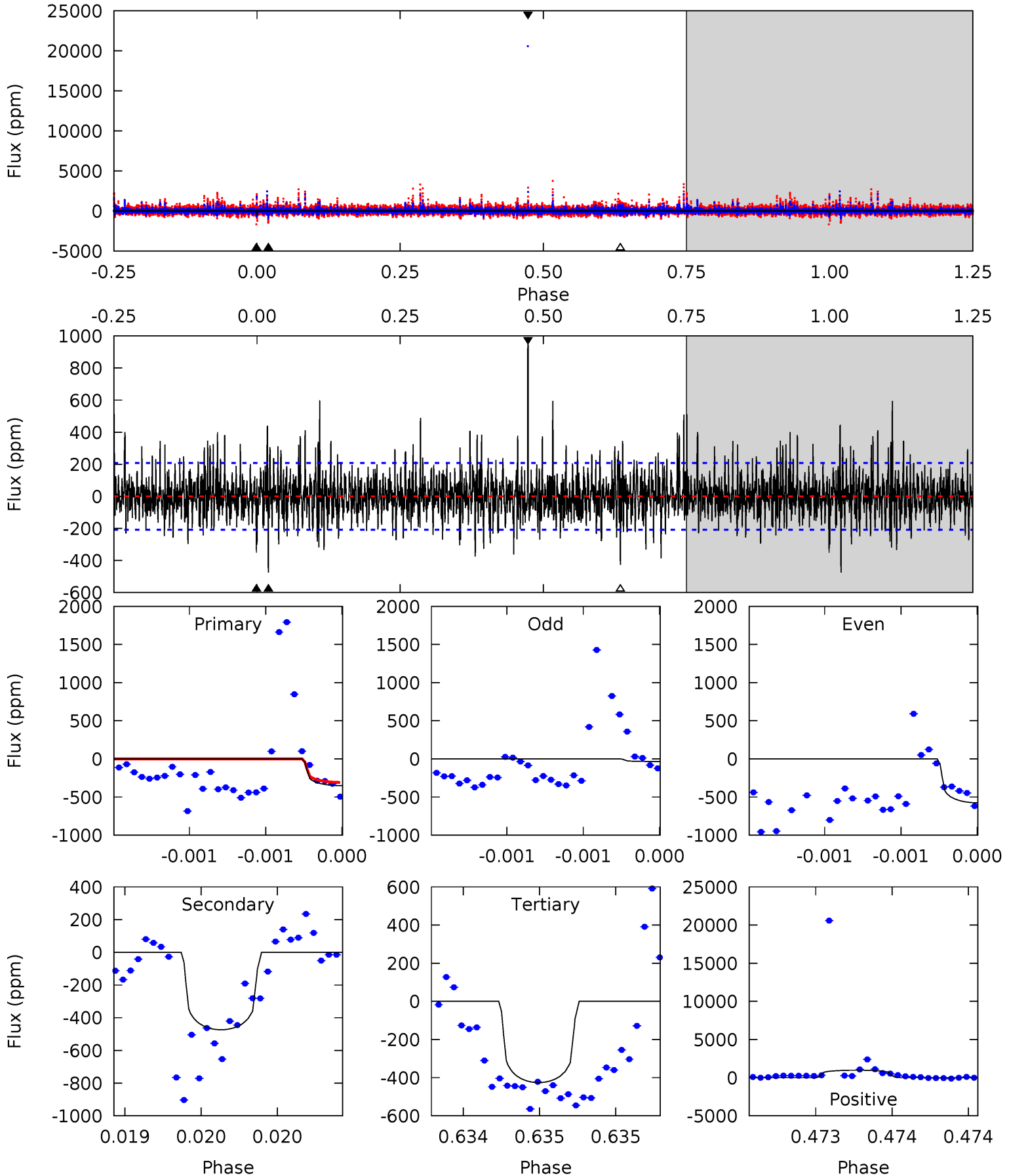
TCE 006437385-02 P=516.001879 Days $T_0=249.960777$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-02, P = 515.792211 Days, E = 250.228539 Days

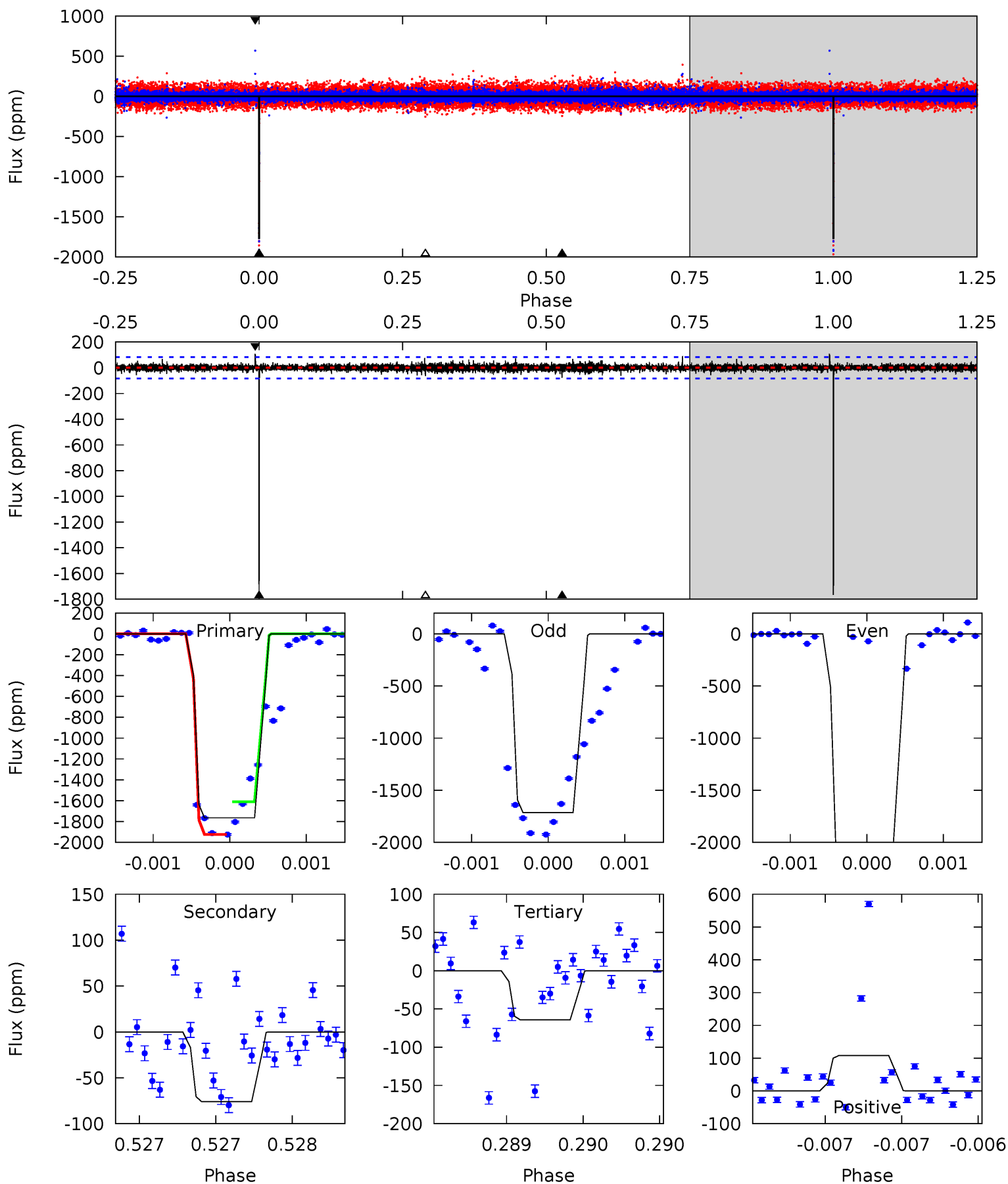
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.32	12.6	11.3	25.9	5.53	3.42	2.90	-1.98	-16.6	1.27	-13.3	3.59	1.06	0.67	0.21



Alt Model-Shift Uniqueness Test

006437385-02, P = 516.001879 Days, E = 249.960777 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
117.9	5.08	4.28	7.19	5.56	3.46	0.82	113.6	110.7	0.79	-2.11	19.9	1.74	0.06	10.5



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-474 ± 38	$5.43^{+6.29}_{-3.69}$	465^{+70}_{-90}	5175^{+4104}_{-1158}	$12112^{+108861}_{-9394}$
Alt.	-76 ± 15	$11.19^{+9.36}_{-5.80}$	464^{+76}_{-93}	2946^{+580}_{-323}	452^{+1496}_{-319}

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

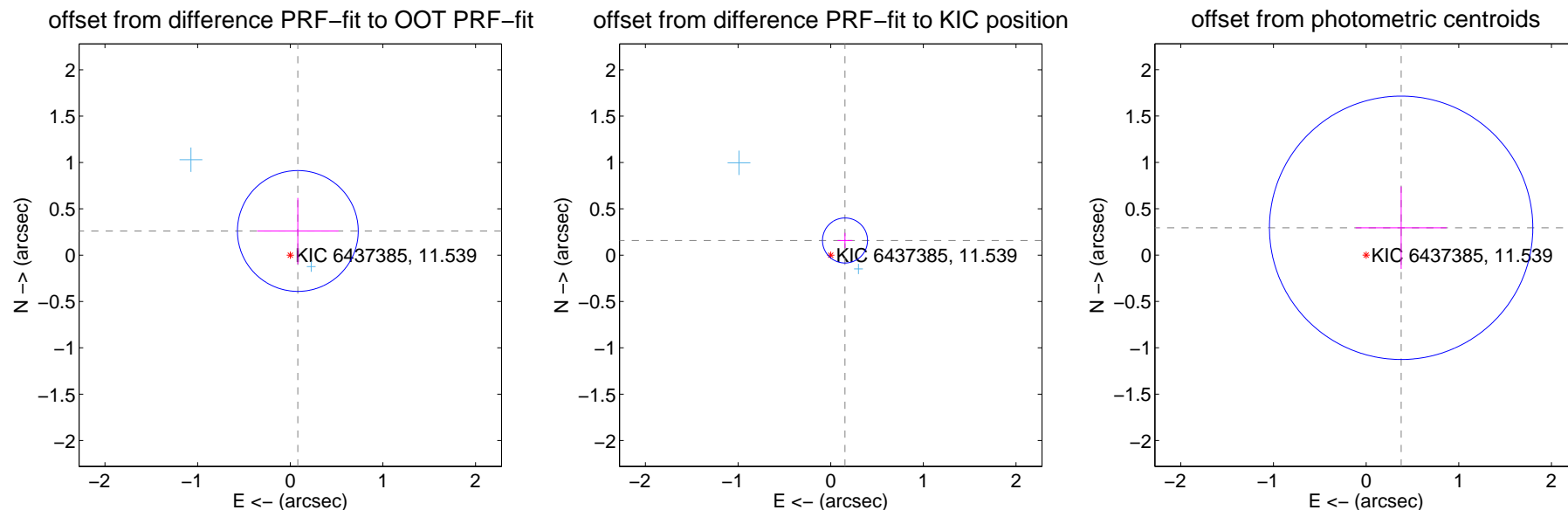
DV Centroid Data

Supplemental centroid analysis for 006437385-02. **Kepler magnitude: 11.54.** Transit SNR 5.32

There are 3 quarters with good PRF difference image offsets

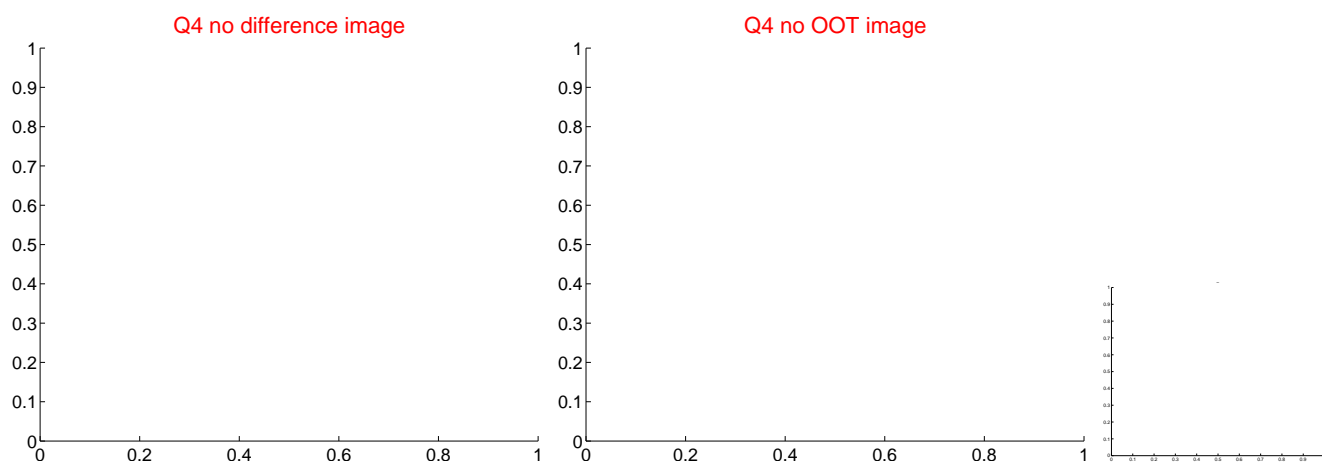
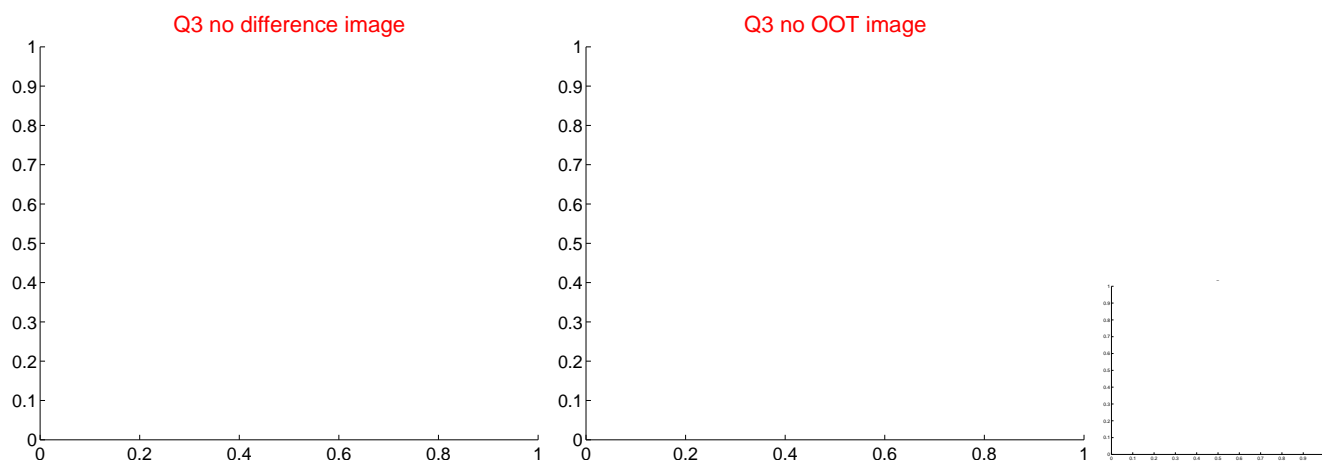
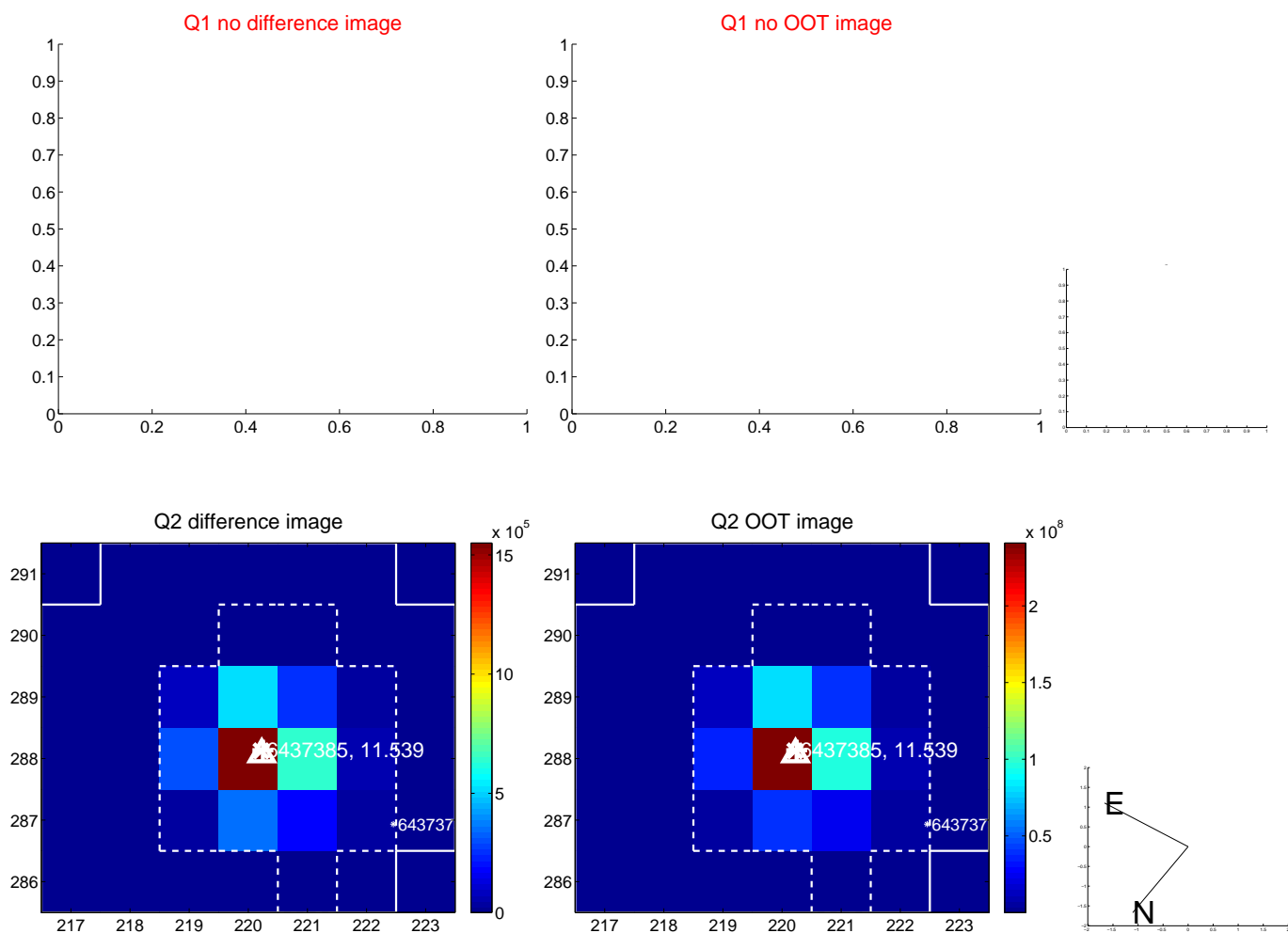
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.273 ± 0.217	1.26	-0.082 ± 0.439	0.261 ± 0.357
PRF-fit source offset from KIC position	0.221 ± 0.081	2.73	-0.154 ± 0.080	0.158 ± 0.082
photometric centroid source offset	0.48 ± 0.47	1.01	-0.38 ± 0.49	0.29 ± 0.44

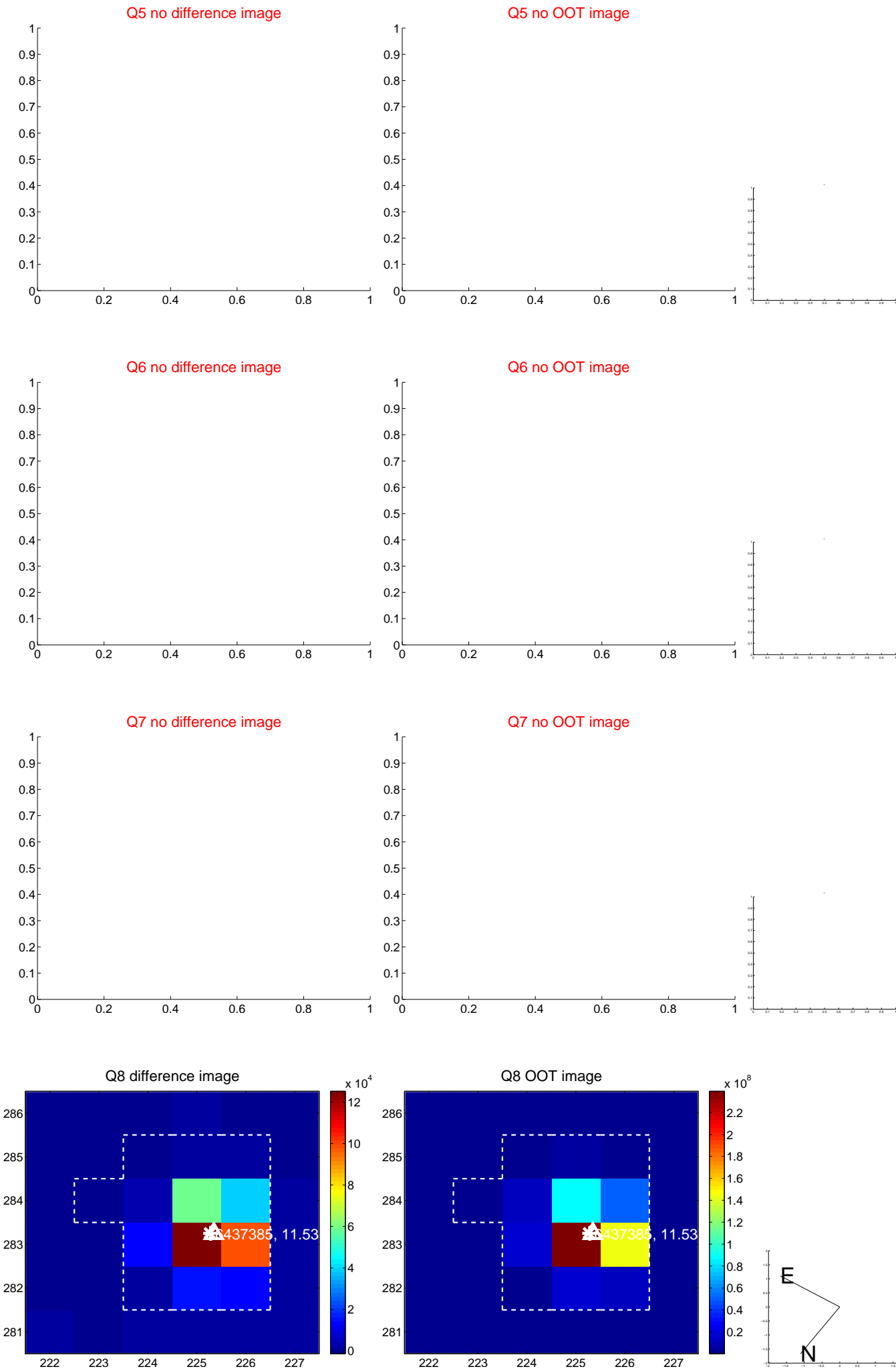


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



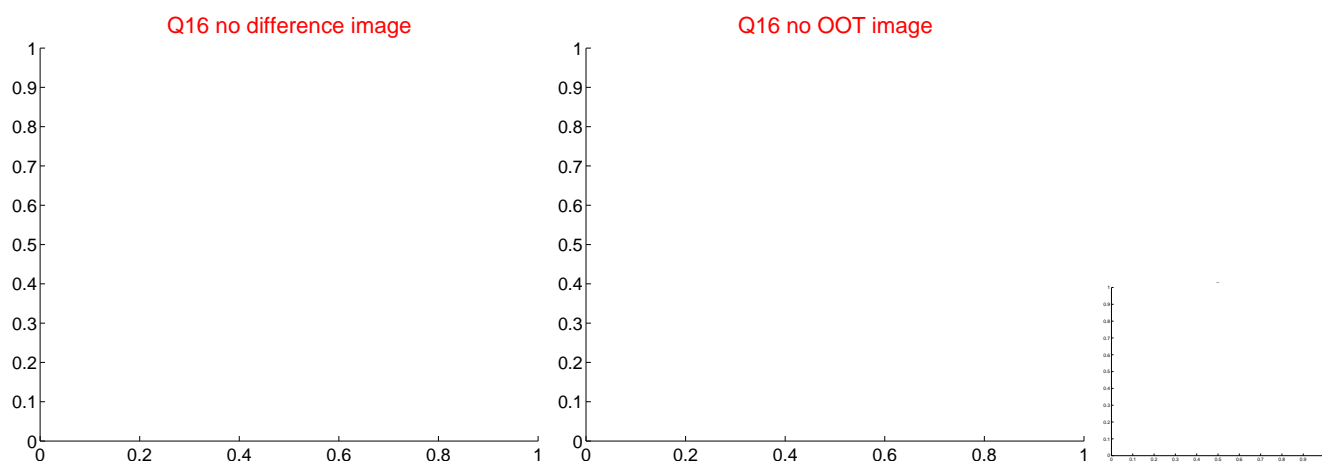
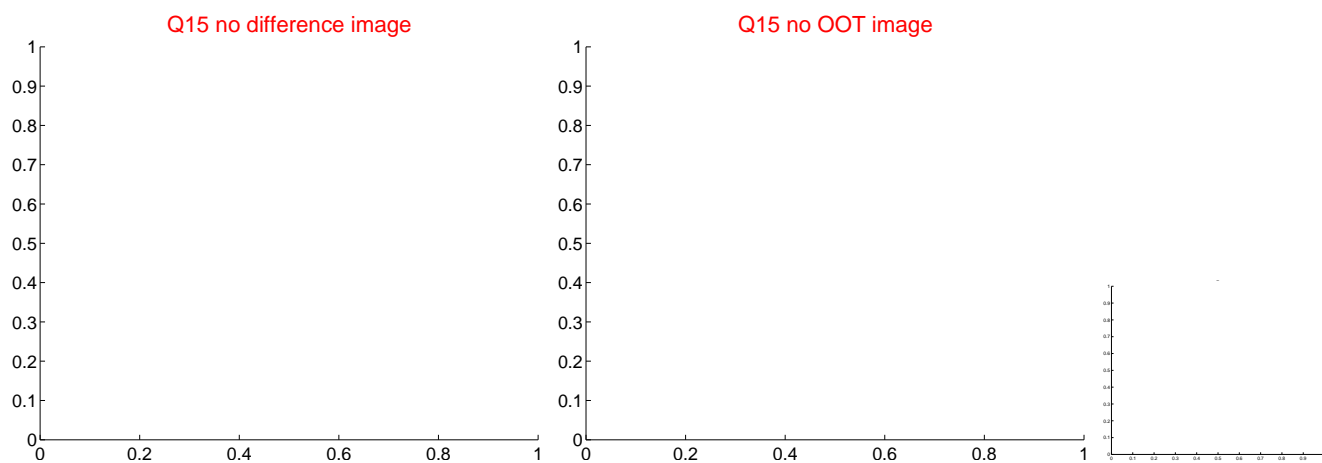
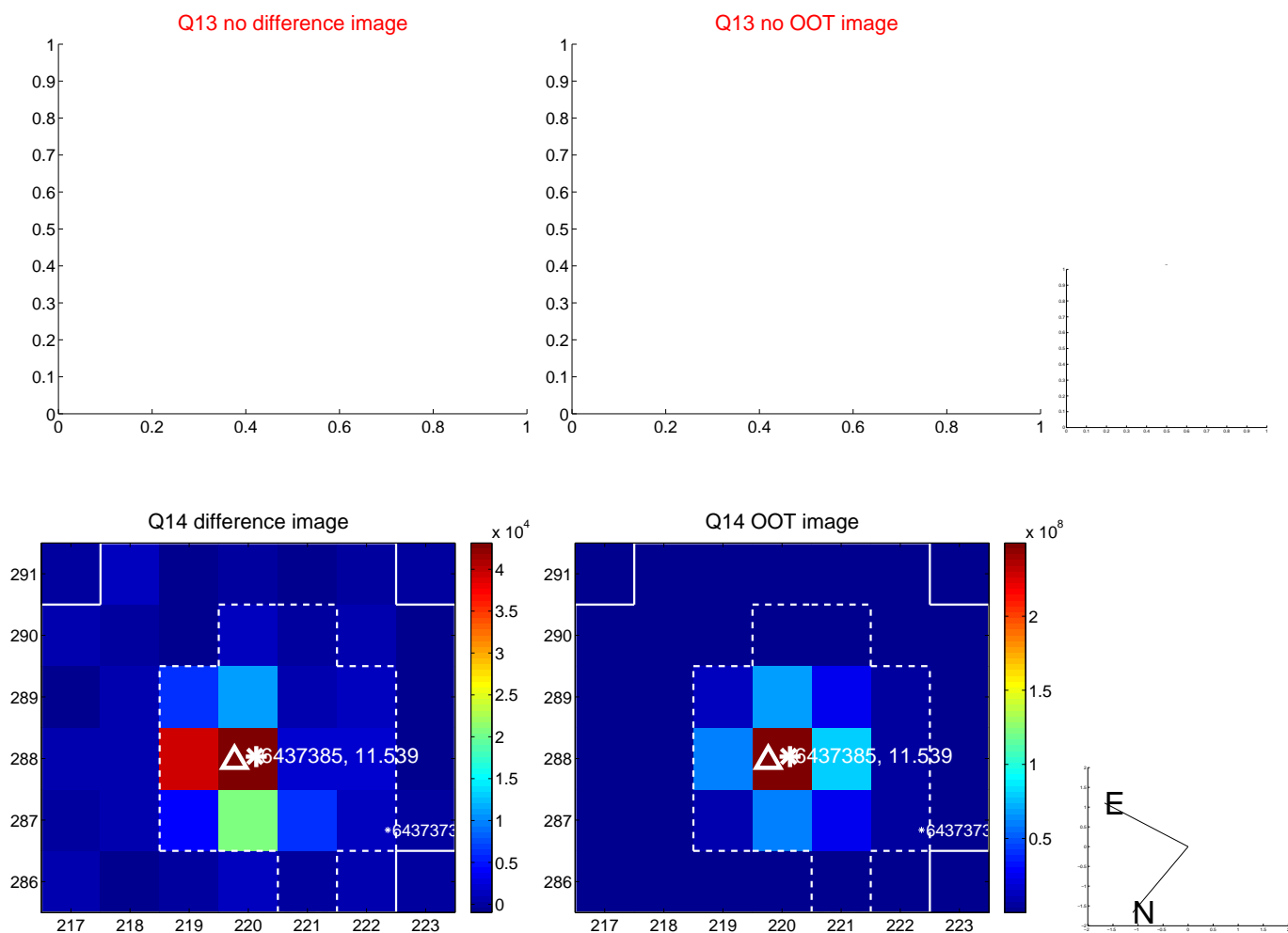
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



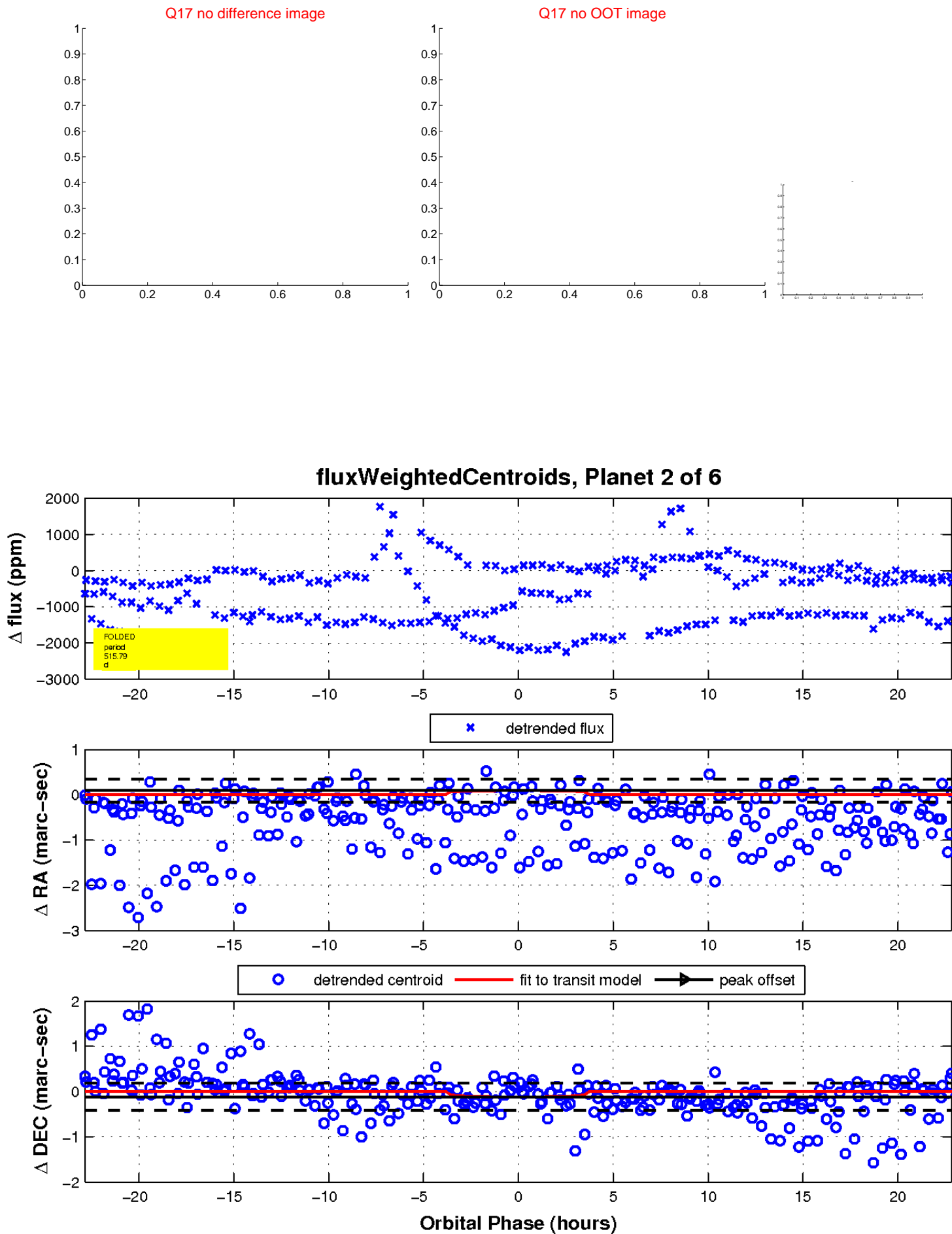
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



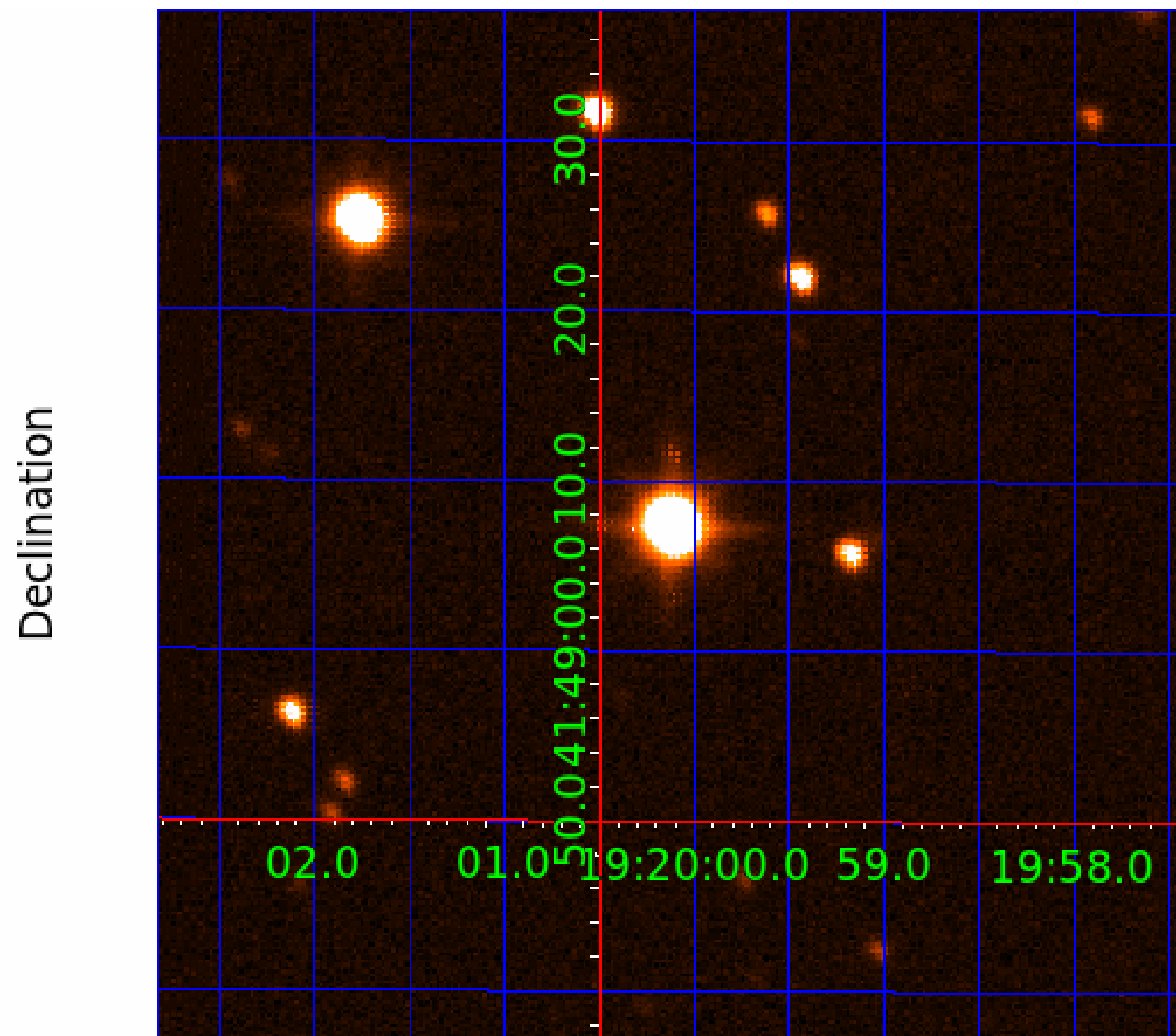
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006437385

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})
006437385-01	OBS	No	422.247083	360.420787	347.3	7.884	54.7	5.2	2.06	5727	4.04	3.95
006437385-02	OBS	No	515.792211	250.228539	355.9	7.634	40.5	5.3	2.06	5727	4.18	3.02
006437385-03	OBS	No	551.976769	411.403643	749.7	3.520	20.4	13.7	2.06	5727	5.99	2.76
006437385-04	OBS	No	525.623730	300.786444	525.4	5.921	16.6	8.5	2.06	5727	4.75	2.95
006437385-05	OBS	No	469.404592	483.092458	417.9	11.679	22.0	5.6	2.06	5727	4.88	3.43
006437385-06	OBS	No	483.492086	465.051399	163.2	9.000	17.9	-1.0	2.06	5727	2.64	3.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006437385-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

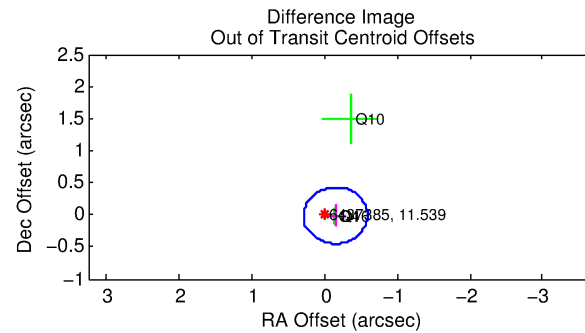
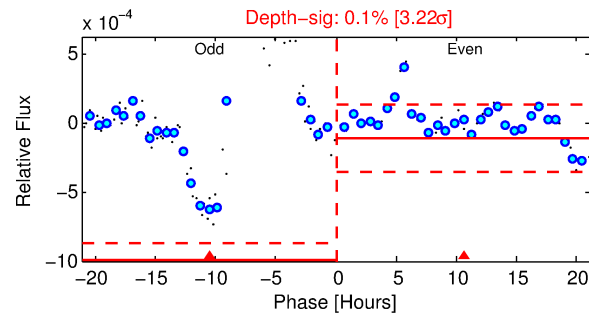
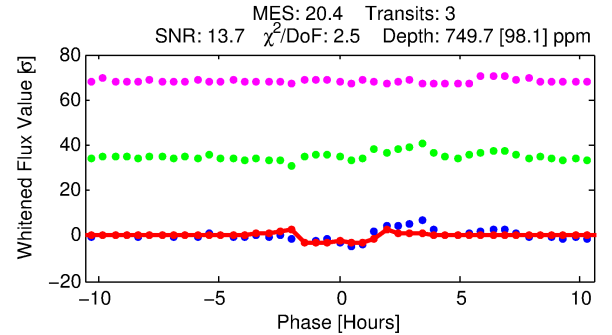
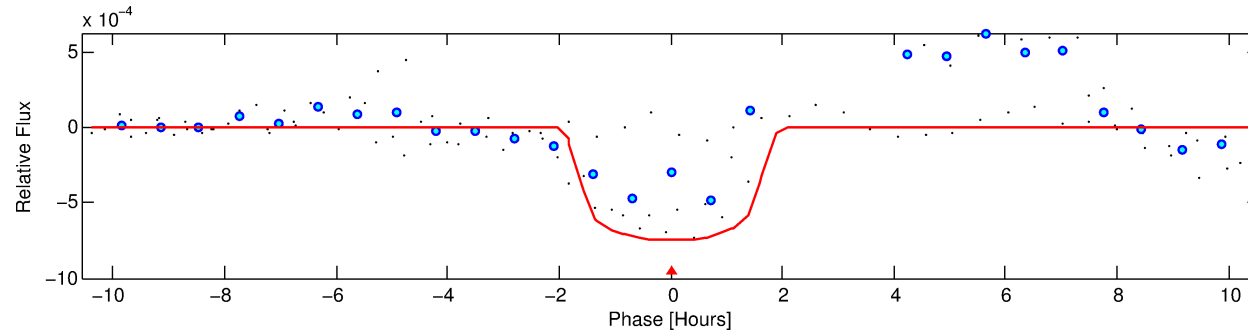
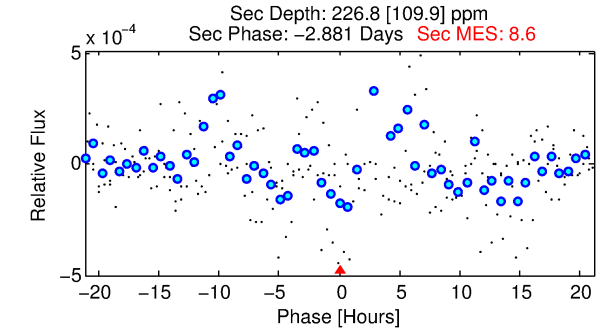
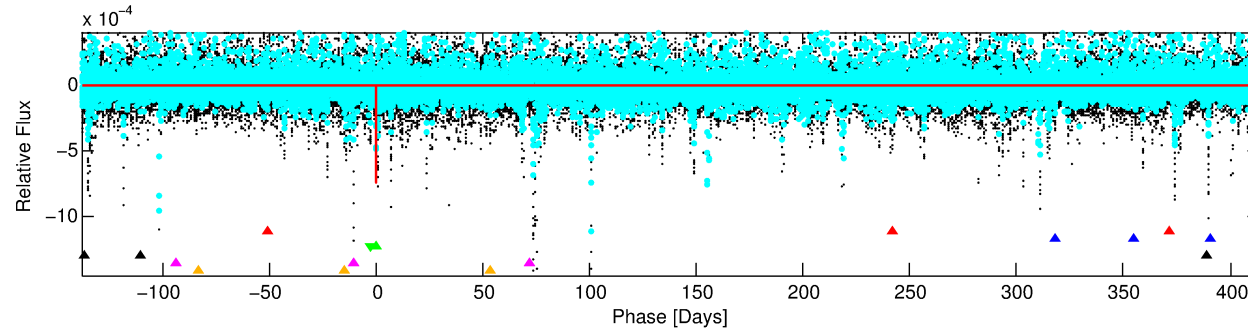
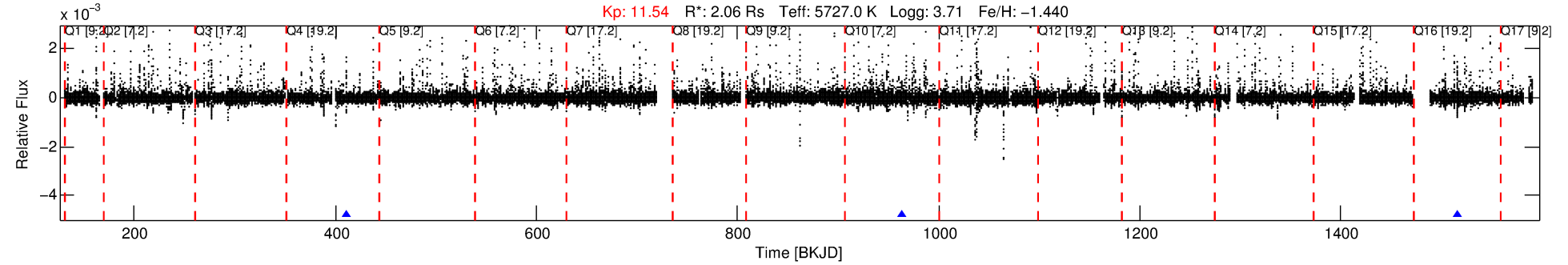
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006437385-03

No Significant Match Found

DV One-Page Summary

KIC: 6437385 Candidate: 3 of 6 Period: 551.977 d



DV Fit Results:

Period = 551.97677 [0.00354] d
Epoch = 411.4036 [0.0040] BKJD
Rp/R* = 0.0266 [0.0191]
a/R* = 936.62 [3487.85]
b = 0.67 [3.15]
Seff = 2.76 [3.96]
Teq = 329 [118] K
Rp = 5.99 [6.06] Re
a = 1.2172 [1.0027] AU
Ag = 5149.45 [10697.10] [0.48 σ]
Teffp = 4306 [1634] K [2.43 σ]

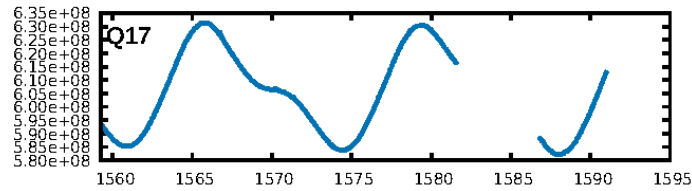
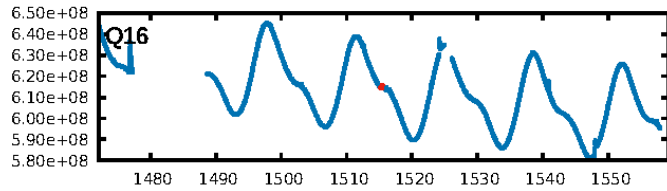
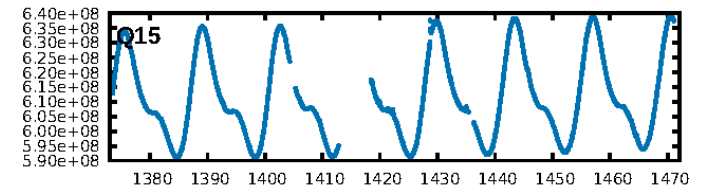
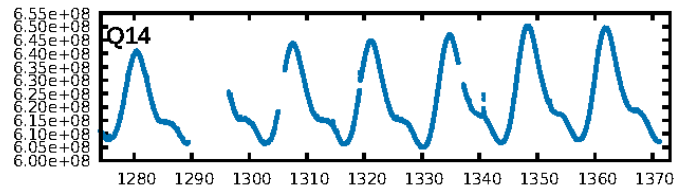
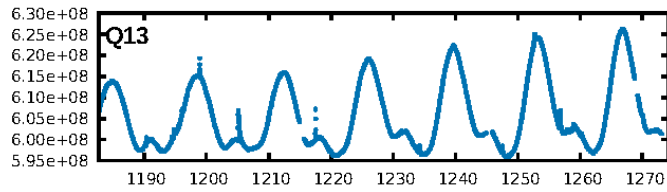
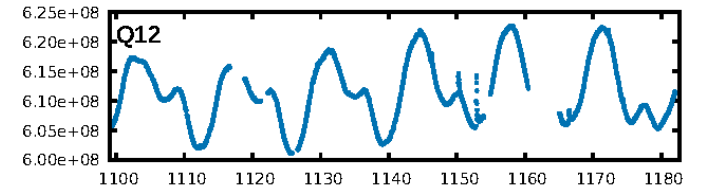
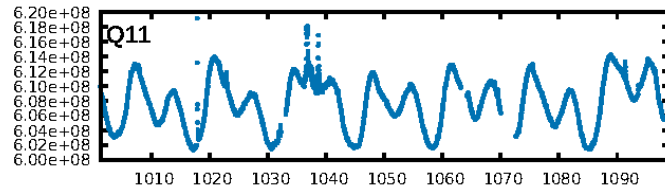
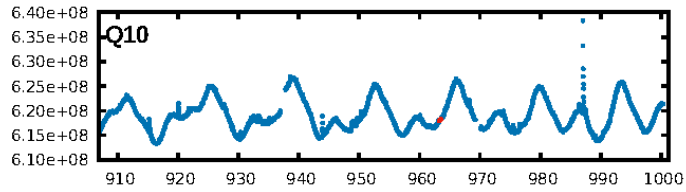
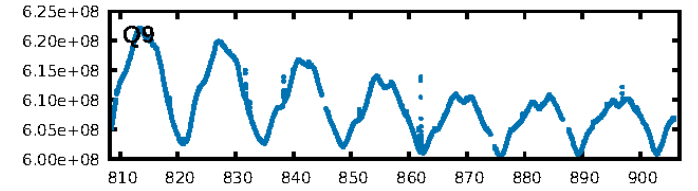
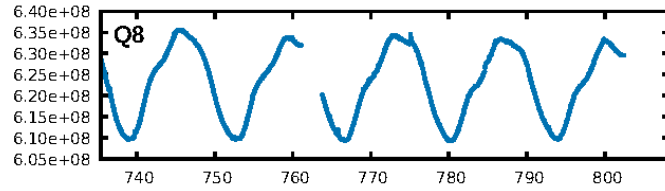
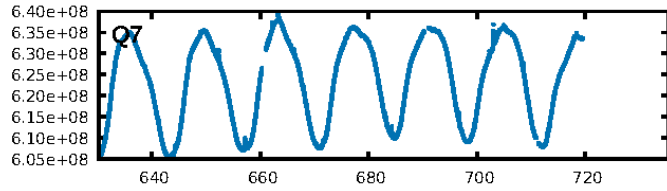
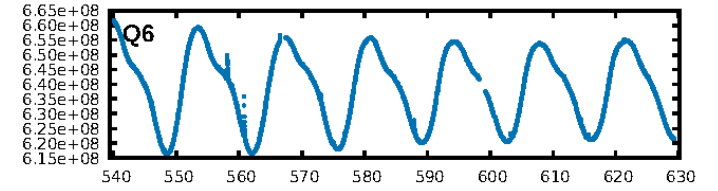
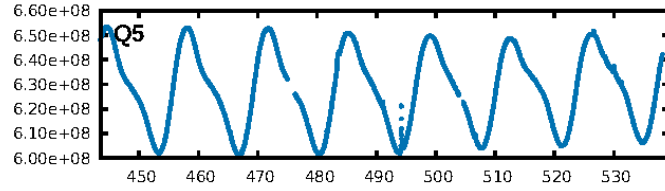
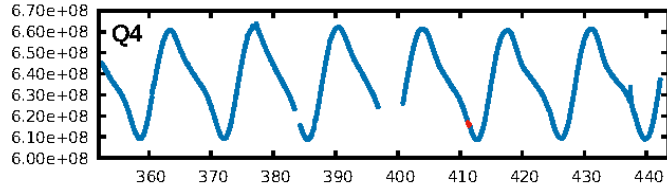
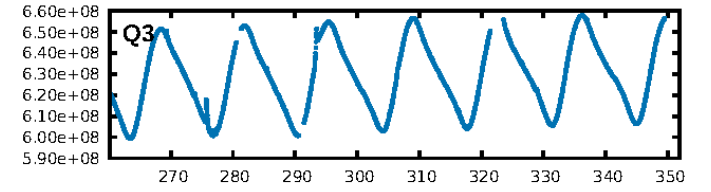
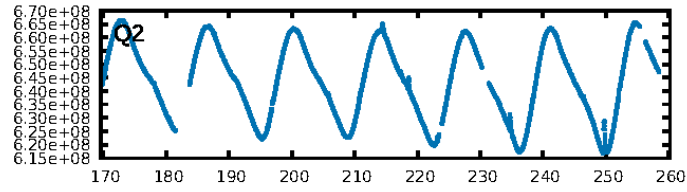
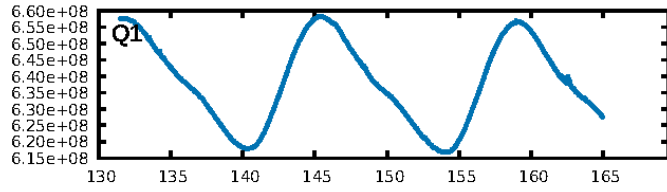
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [91.82 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.291
Centroid-sig: 2.3%
Centroid-so: 0.490 arcsec [2.26 σ]
OotOffset-rm: 0.151 arcsec [1.03 σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-rm: 0.247 arcsec [1.69 σ]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

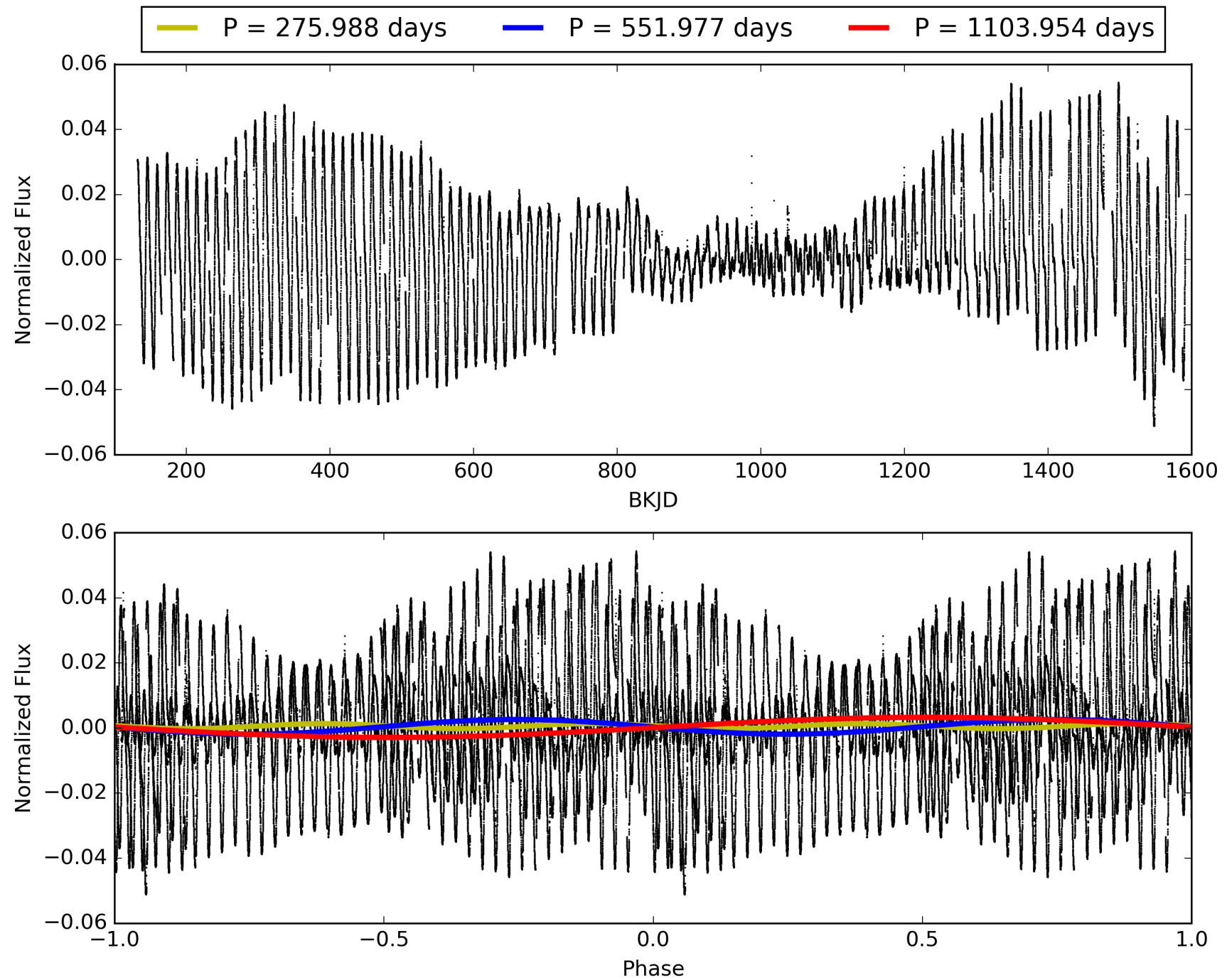
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:32:49 Z

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

TCE 006437385-03, PDC Light Curves

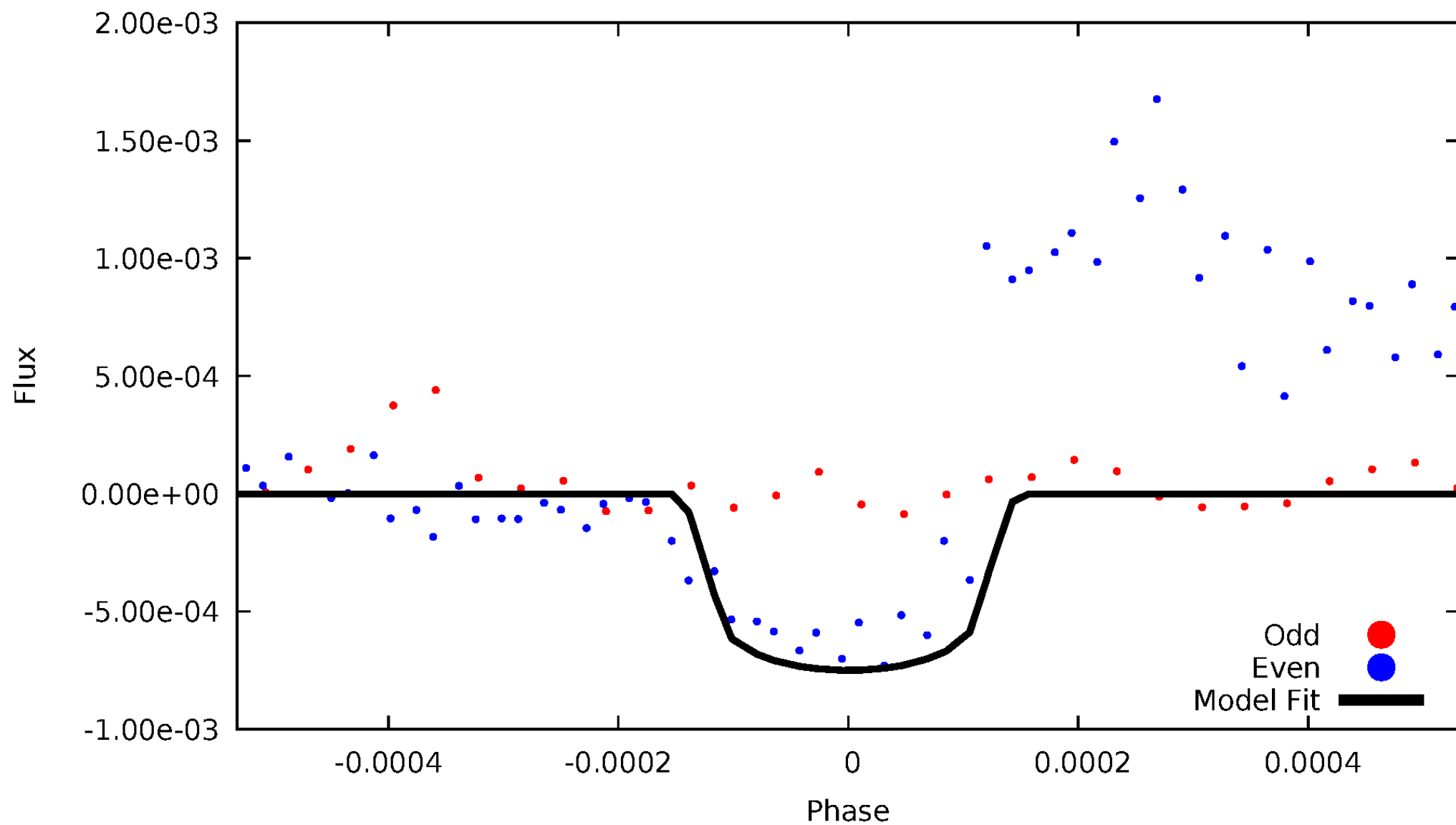


TCE 006437385-03



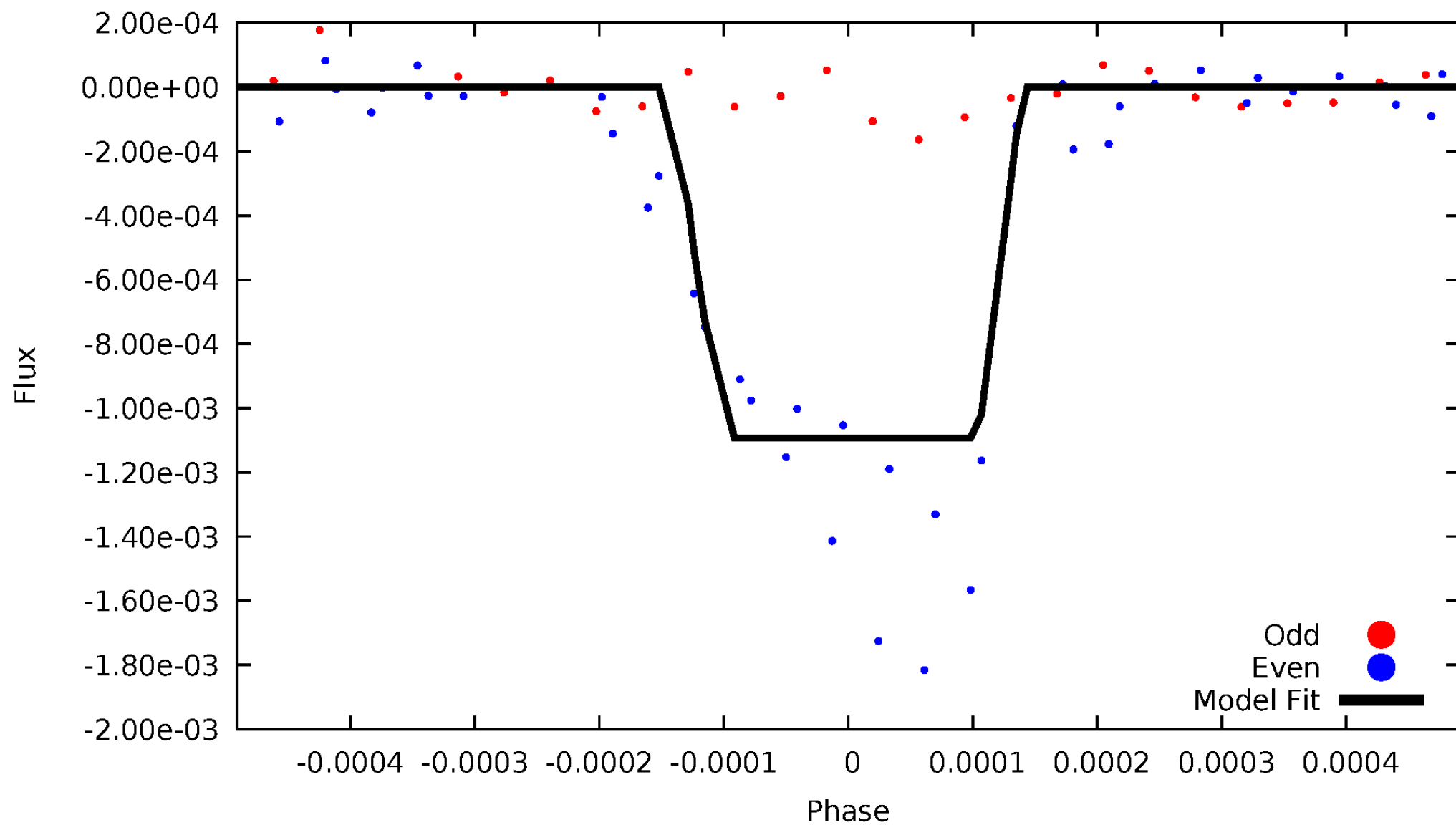
DV Odd/Even

TCE 006437385-03



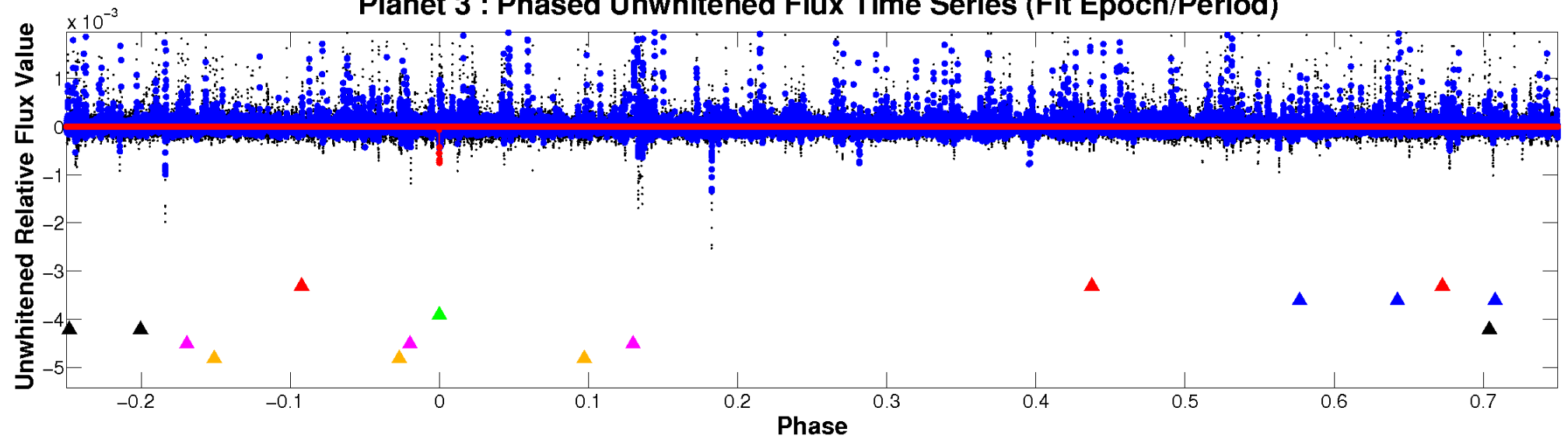
ALT Odd/Even

TCE 006437385-03

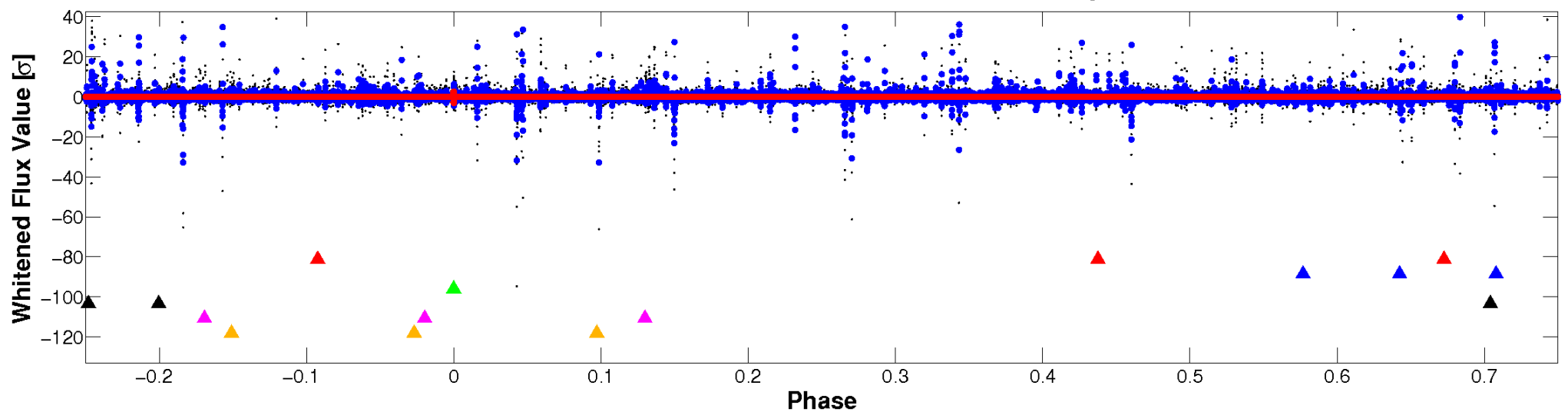


Non-Whitened Vs. Whitened Light Curve

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

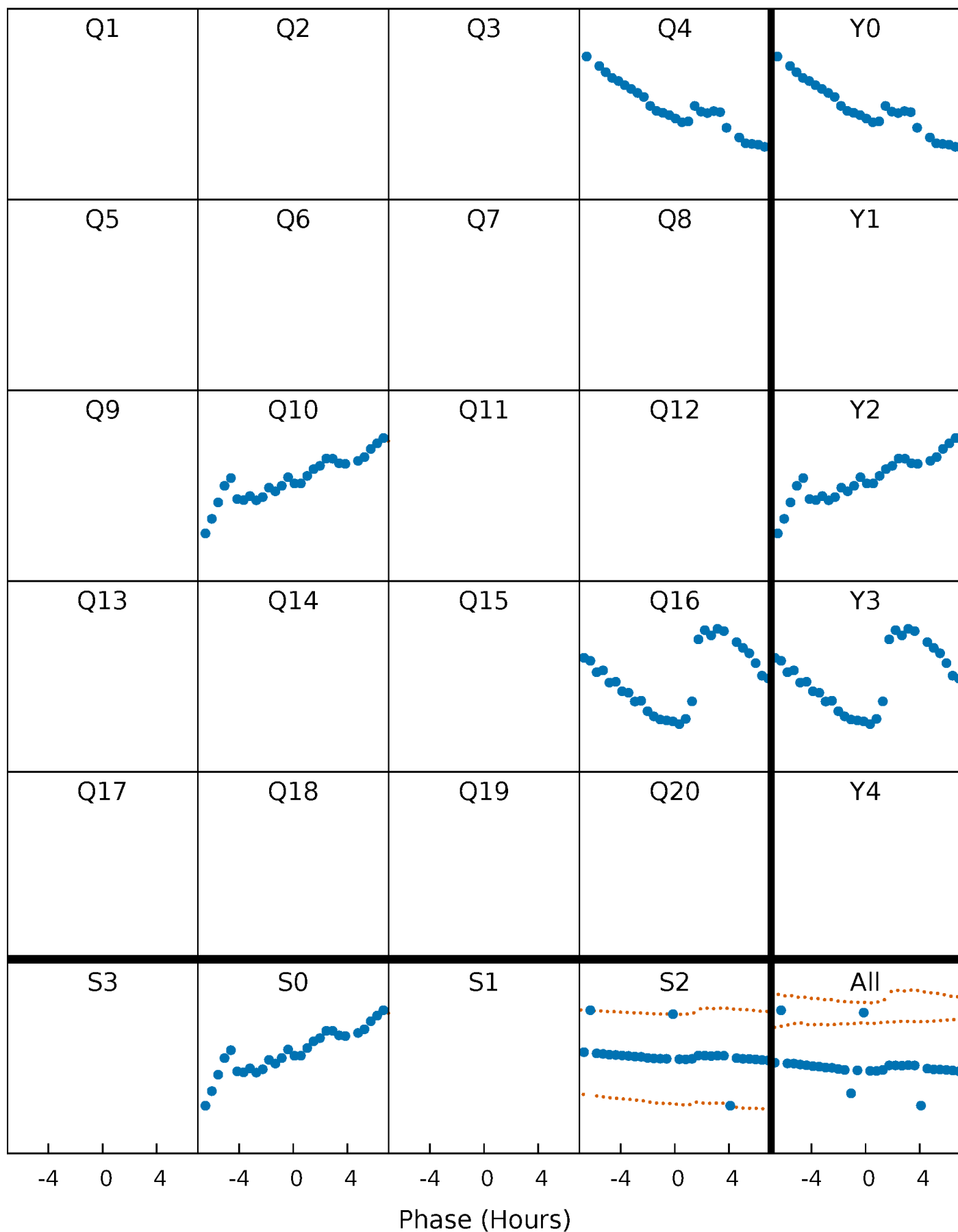


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



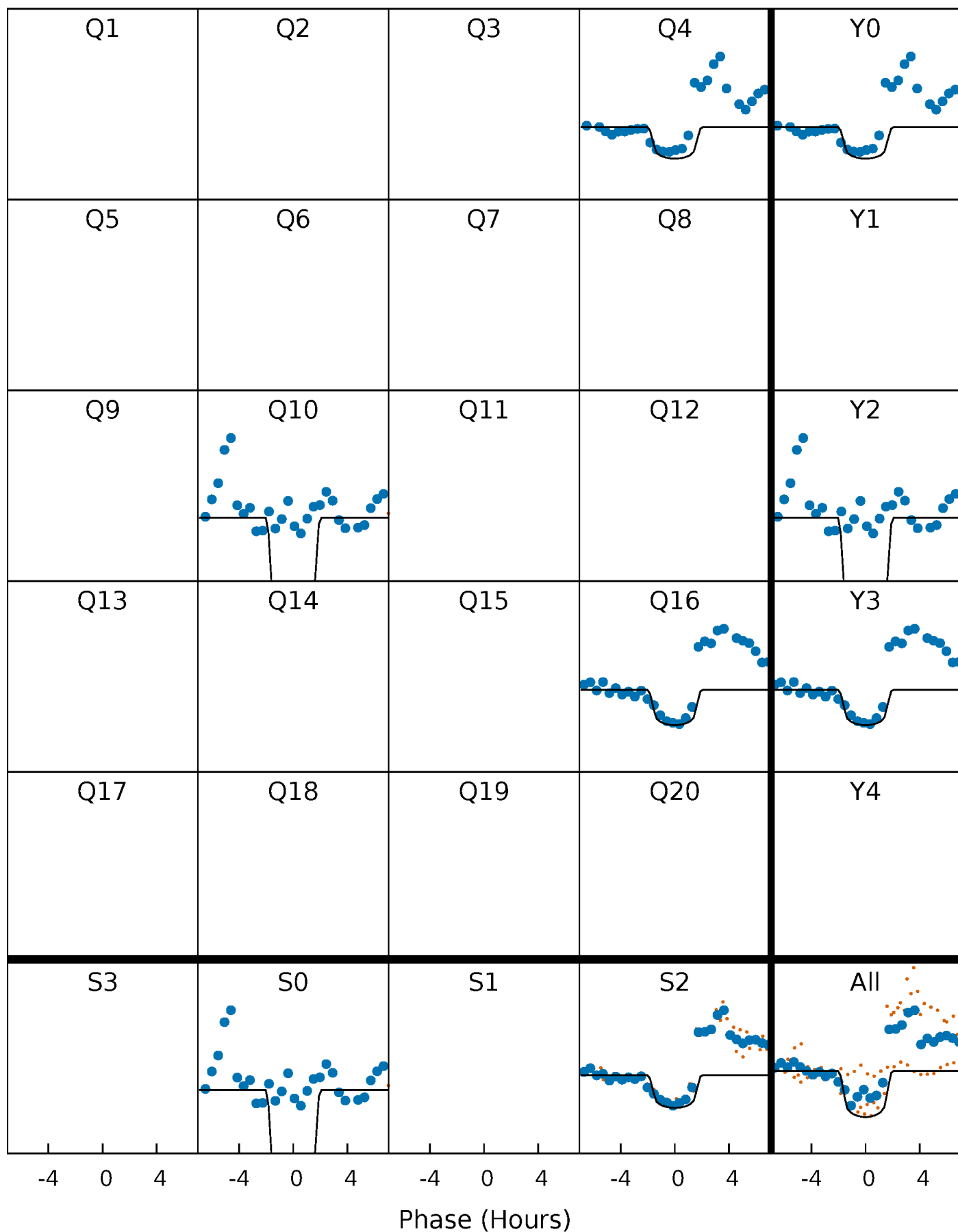
PDC Quarter-Phased Transit Curves

TCE 006437385-03 P=551.976769 Days $T_0=411.403643$ (BKJD)



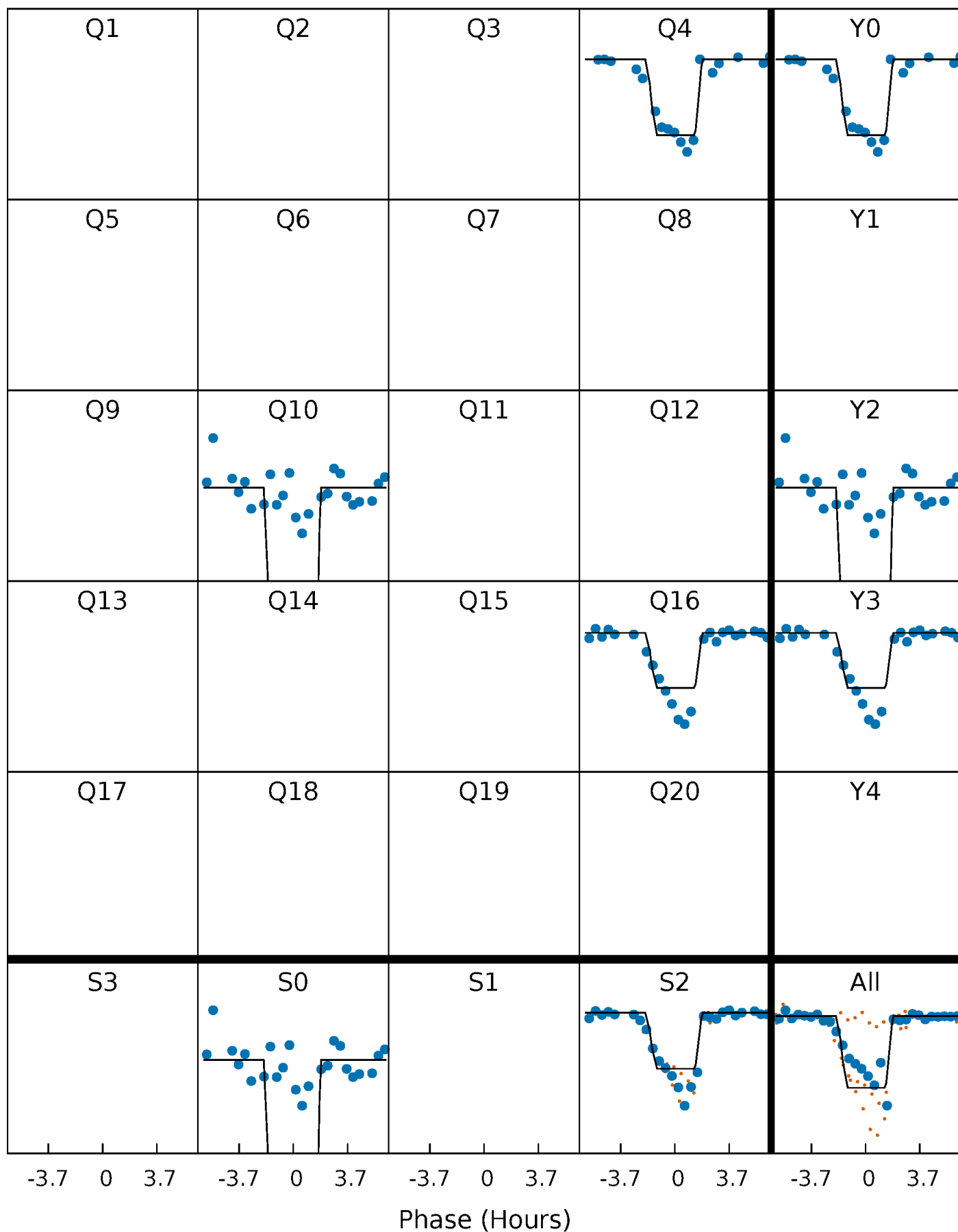
DV Quarter-Phased Transit Curves

TCE 006437385-03 P=551.976769 Days $T_0=411.403643$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

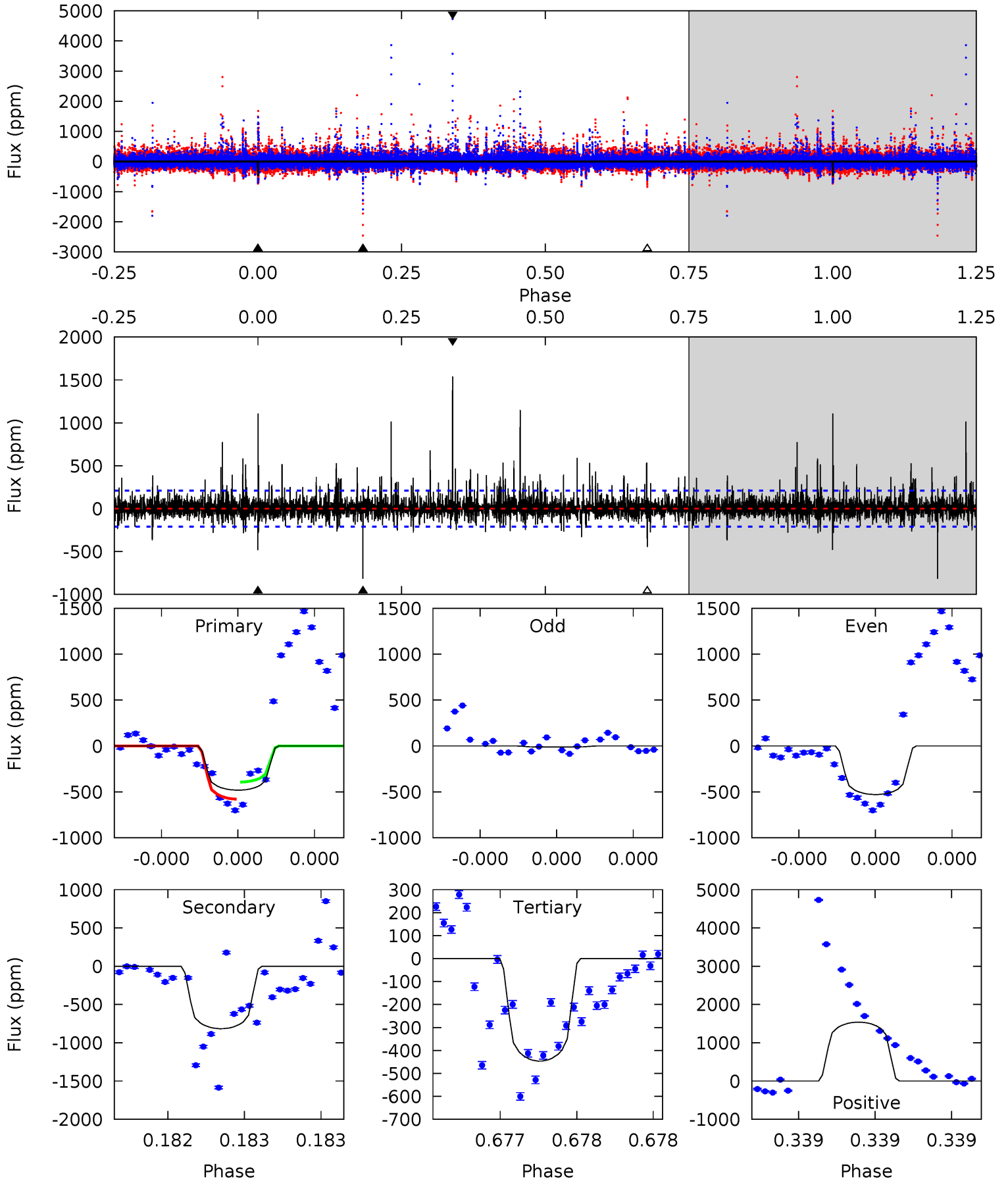
TCE 006437385-03 P=551.985379 Days $T_0=411.390524$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-03, P = 551.976769 Days, E = 411.403643 Days

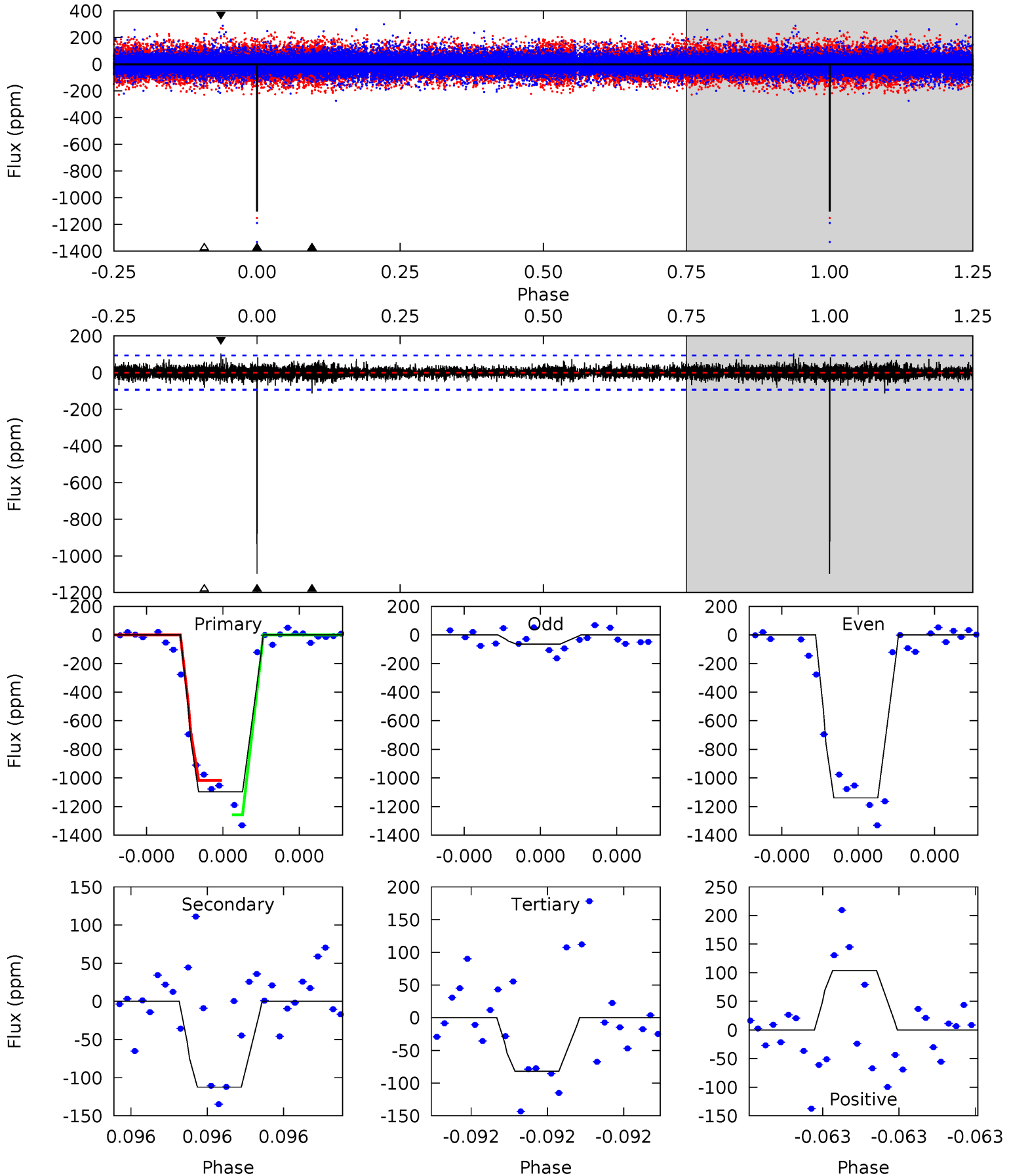
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	22.1	12.1	41.8	5.67	3.62	2.34	0.94	-28.7	10.0	-19.6	2.66	0.85	0.65	2.53



Alt Model-Shift Uniqueness Test

006437385-03, P = 551.985379 Days, E = 411.390524 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
66.8	6.85	4.98	6.33	5.68	3.64	0.90	61.9	60.5	1.87	0.52	36.1	0.77	0.09	6.52



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-816 ± 37	$5.60^{+5.33}_{-3.55}$	449^{+72}_{-88}	5819^{+3965}_{-1209}	$21913^{+146620}_{-16052}$
Alt.	-112 ± 16	$6.81^{+5.57}_{-3.83}$	452^{+67}_{-84}	3643^{+1068}_{-488}	1967^{+8527}_{-1348}

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

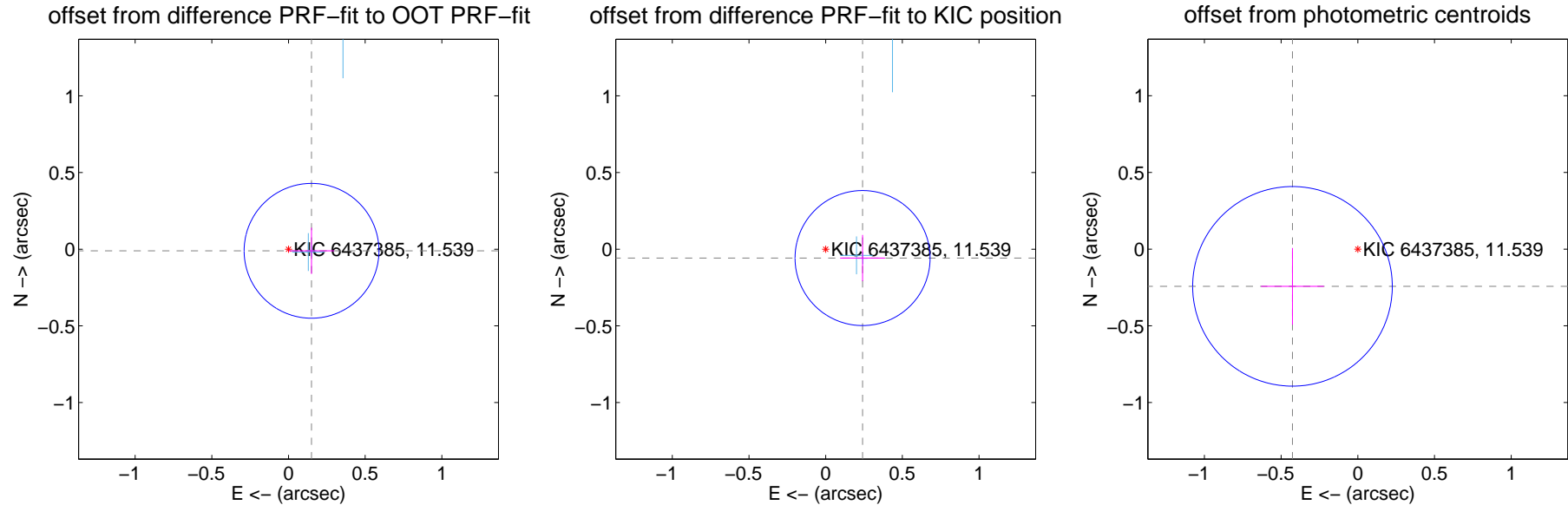
DV Centroid Data

Supplemental centroid analysis for 006437385-03. **Kepler magnitude: 11.54.** Transit SNR 13.71

There are 3 quarters with good PRF difference image offsets

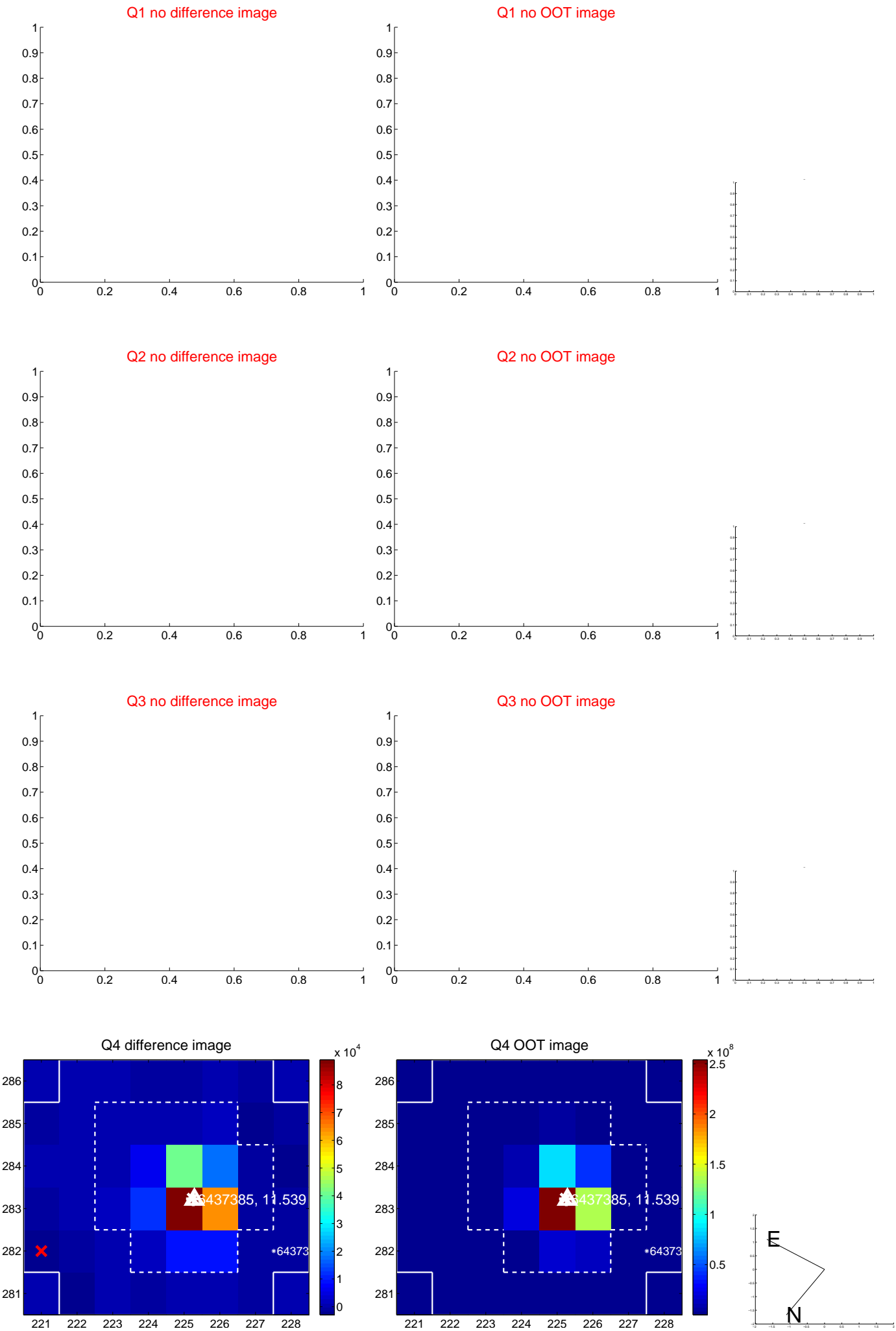
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.151 ± 0.146	1.03	-0.150 ± 0.146	-0.011 ± 0.151
PRF-fit source offset from KIC position	0.247 ± 0.147	1.69	-0.241 ± 0.146	-0.058 ± 0.151
photometric centroid source offset	0.49 ± 0.22	2.26	0.43 ± 0.20	-0.24 ± 0.25



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.

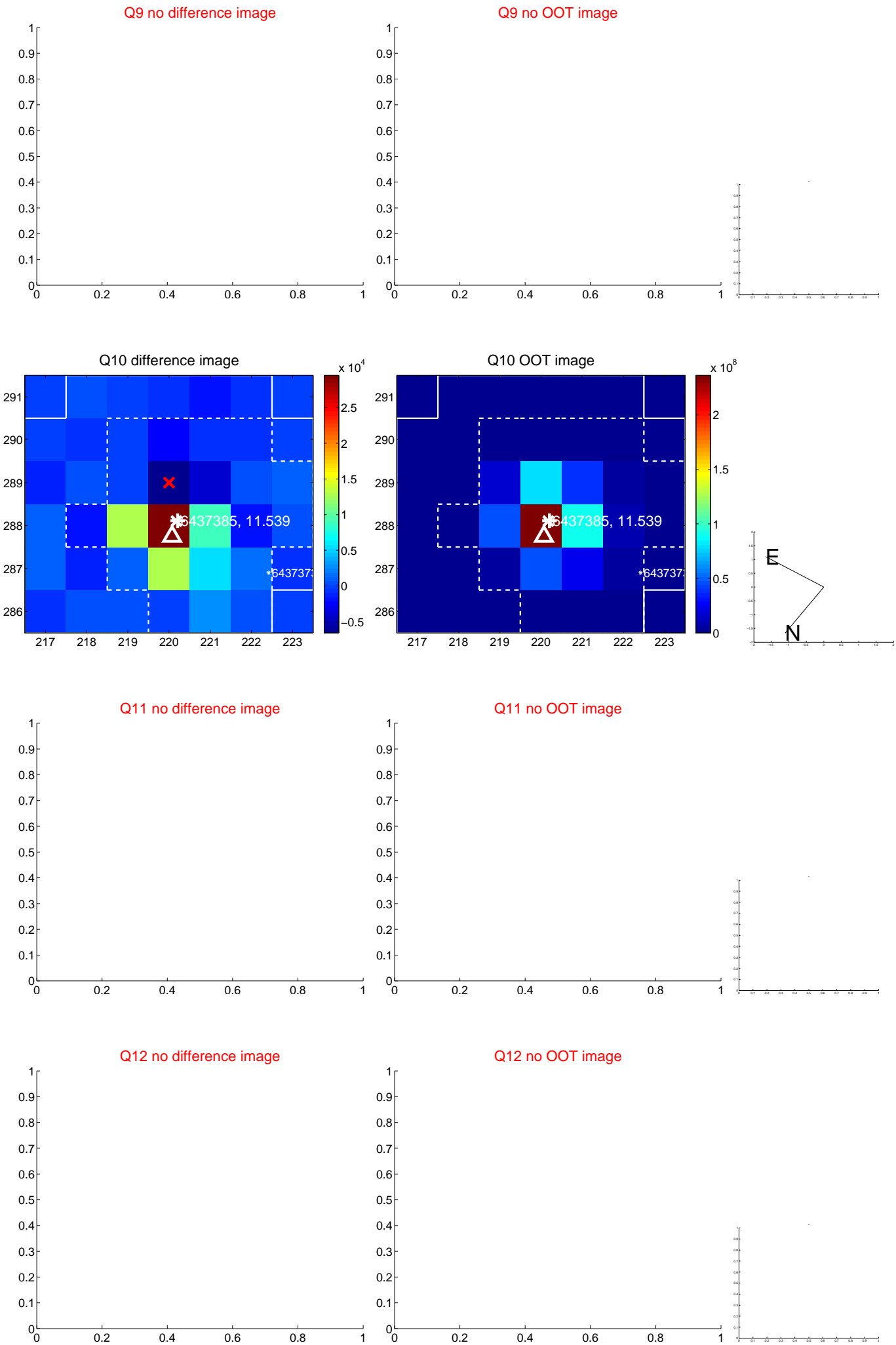
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



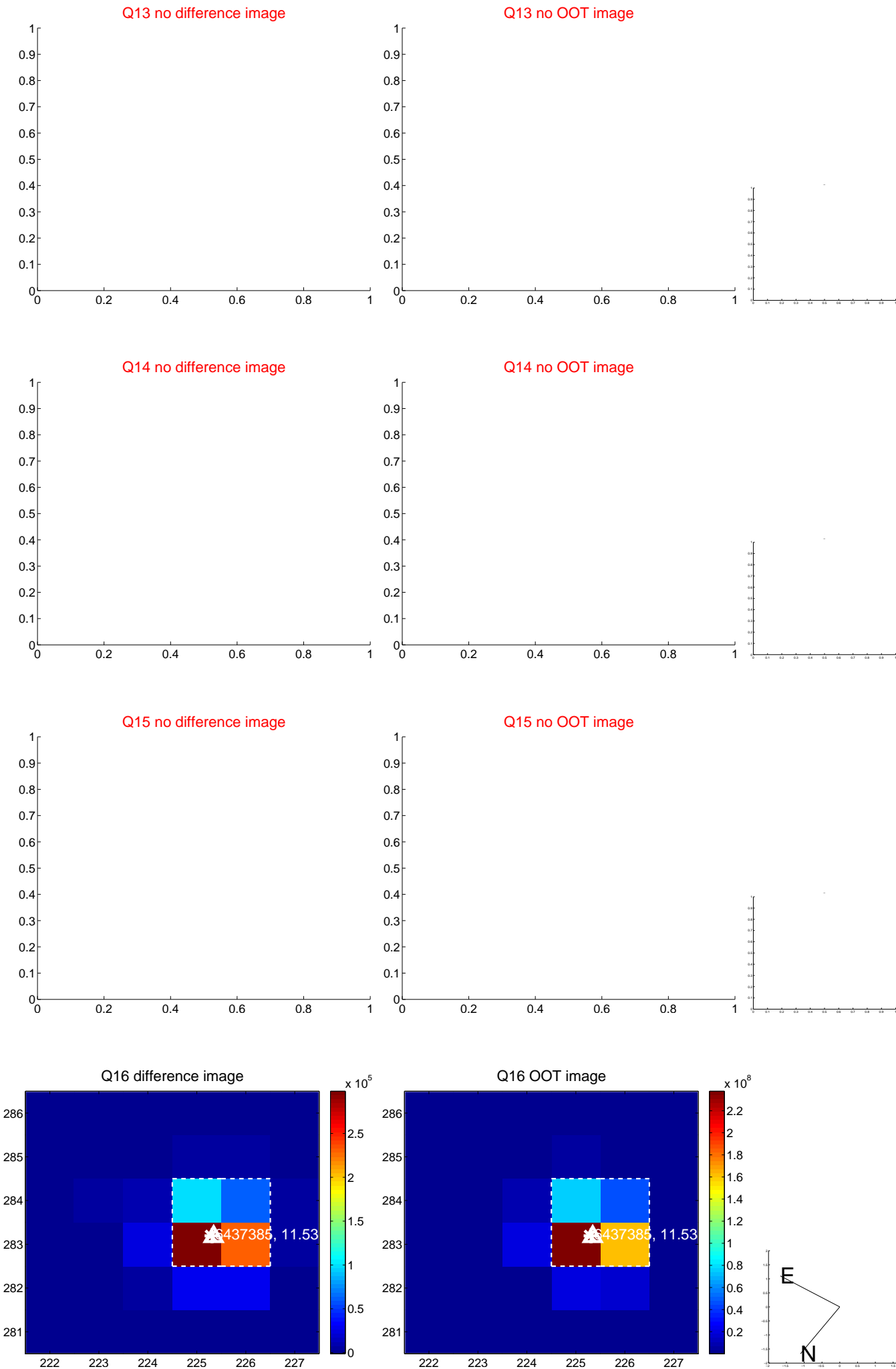
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



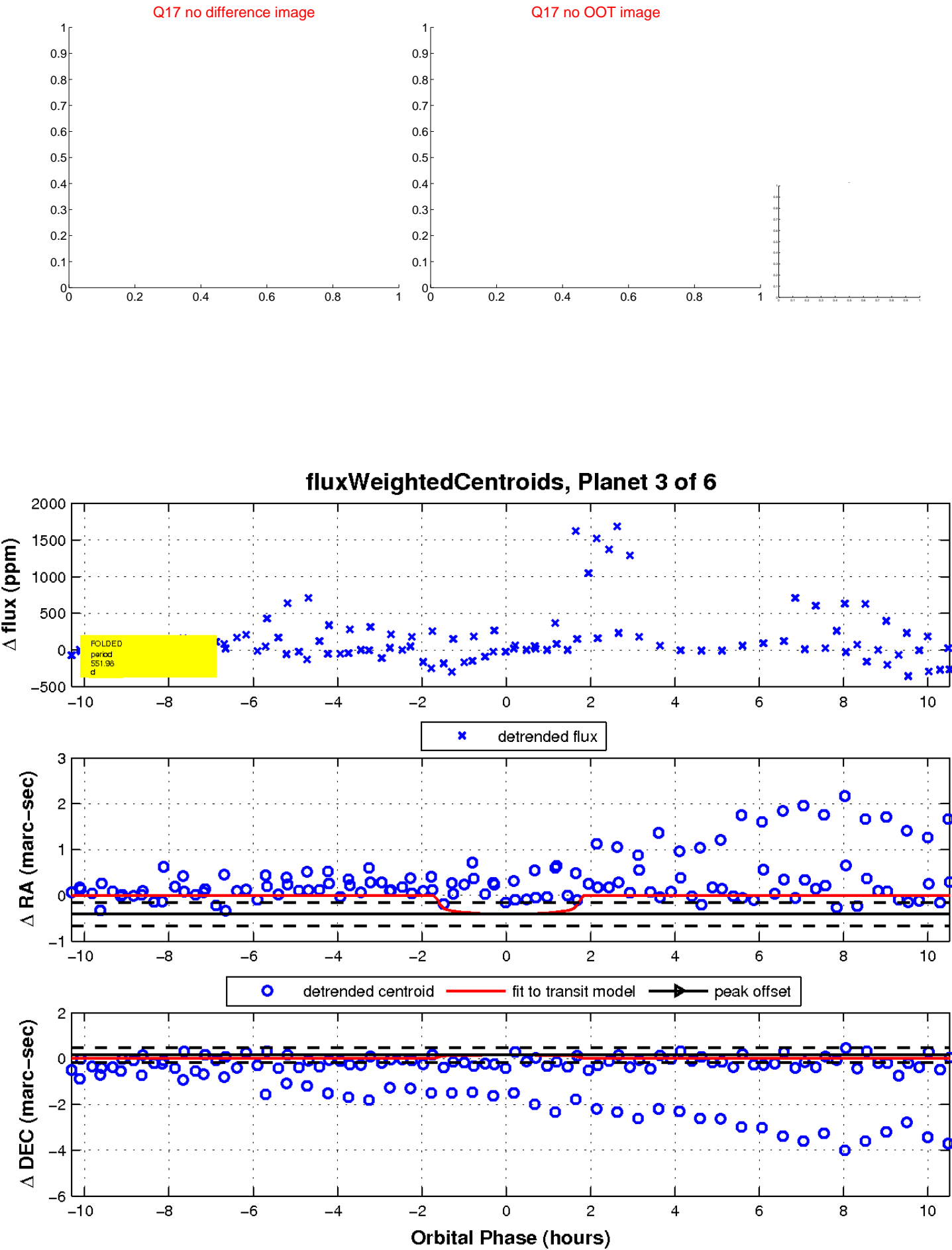
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



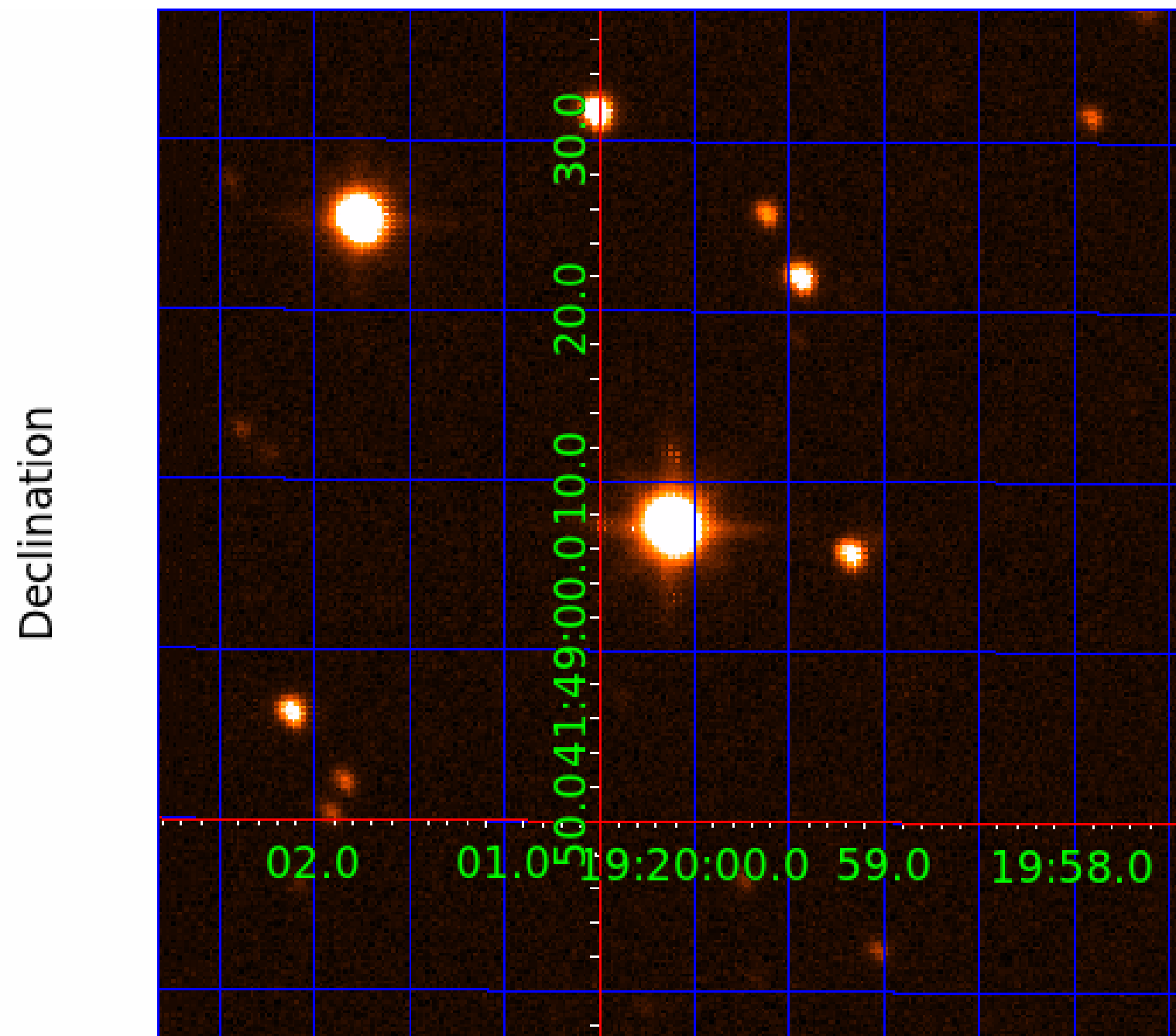
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006437385

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})
006437385-01	OBS	No	422.247083	360.420787	347.3	7.884	54.7	5.2	2.06	5727	4.04	3.95
006437385-02	OBS	No	515.792211	250.228539	355.9	7.634	40.5	5.3	2.06	5727	4.18	3.02
006437385-03	OBS	No	551.976769	411.403643	749.7	3.520	20.4	13.7	2.06	5727	5.99	2.76
006437385-04	OBS	No	525.623730	300.786444	525.4	5.921	16.6	8.5	2.06	5727	4.75	2.95
006437385-05	OBS	No	469.404592	483.092458	417.9	11.679	22.0	5.6	2.06	5727	4.88	3.43
006437385-06	OBS	No	483.492086	465.051399	163.2	9.000	17.9	-1.0	2.06	5727	2.64	3.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006437385-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

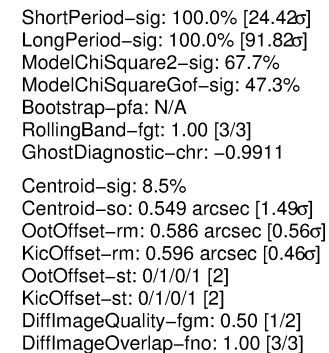
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 006437385-04

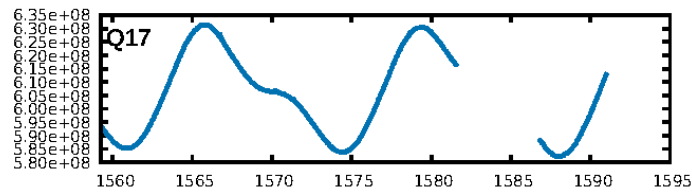
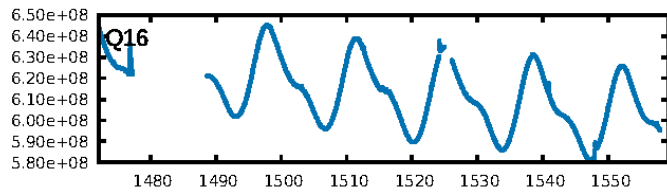
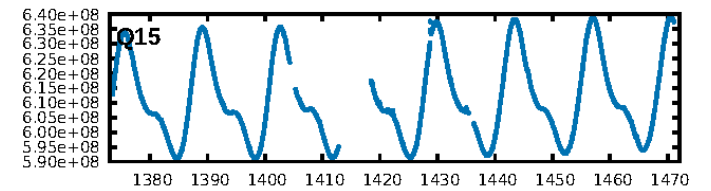
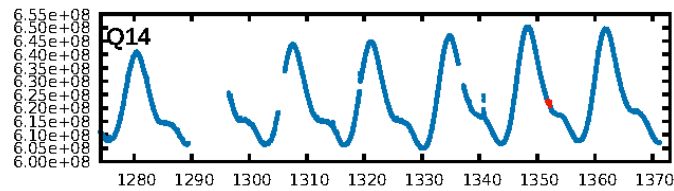
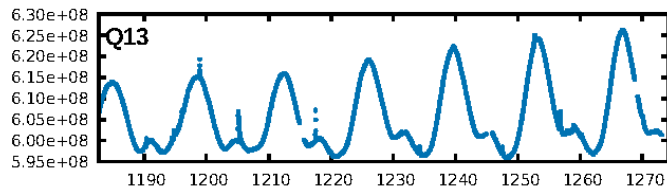
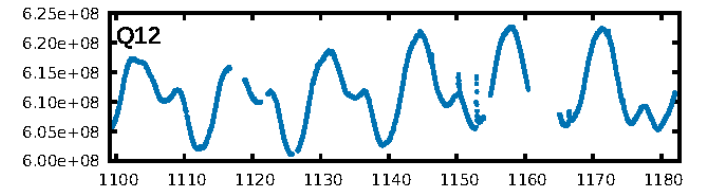
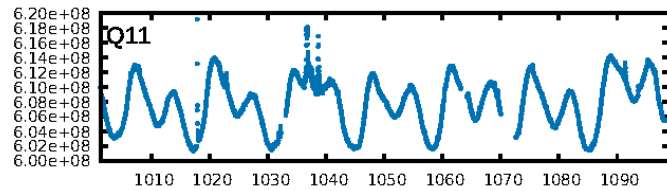
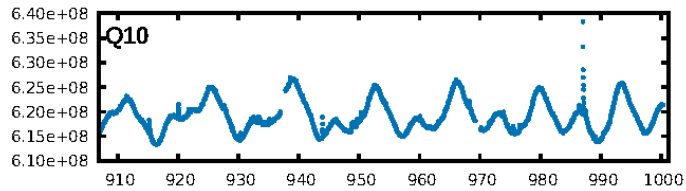
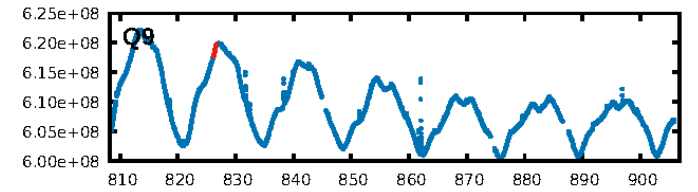
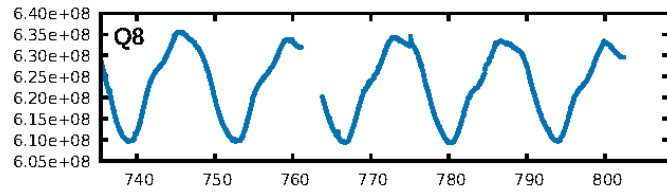
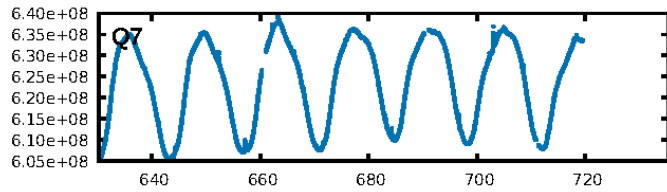
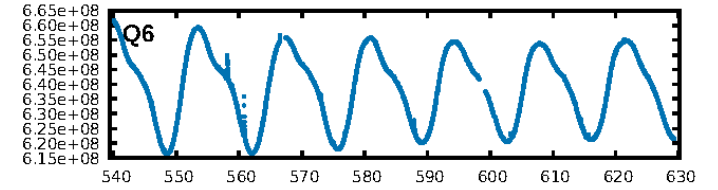
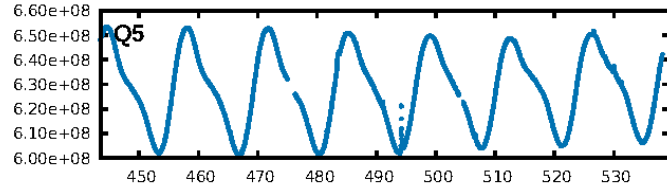
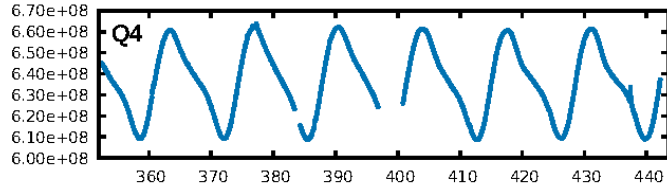
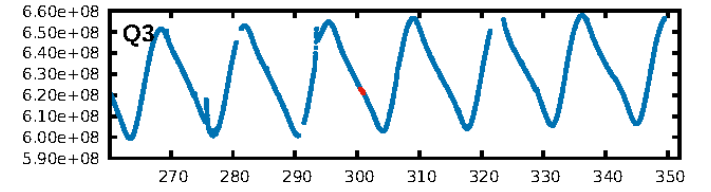
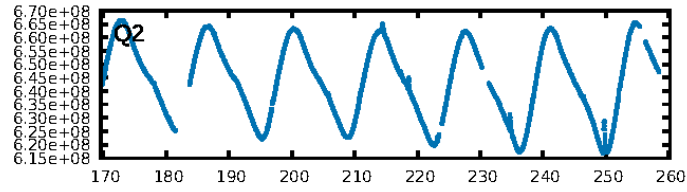
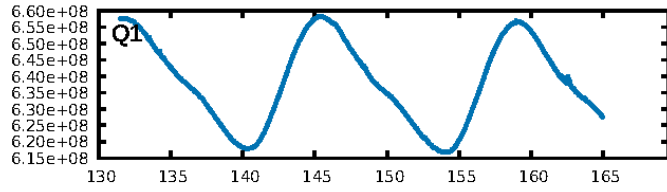
No Significant Match Found

KIC: 6437385 Candidate: 4 of 6 Period: 525.624 d

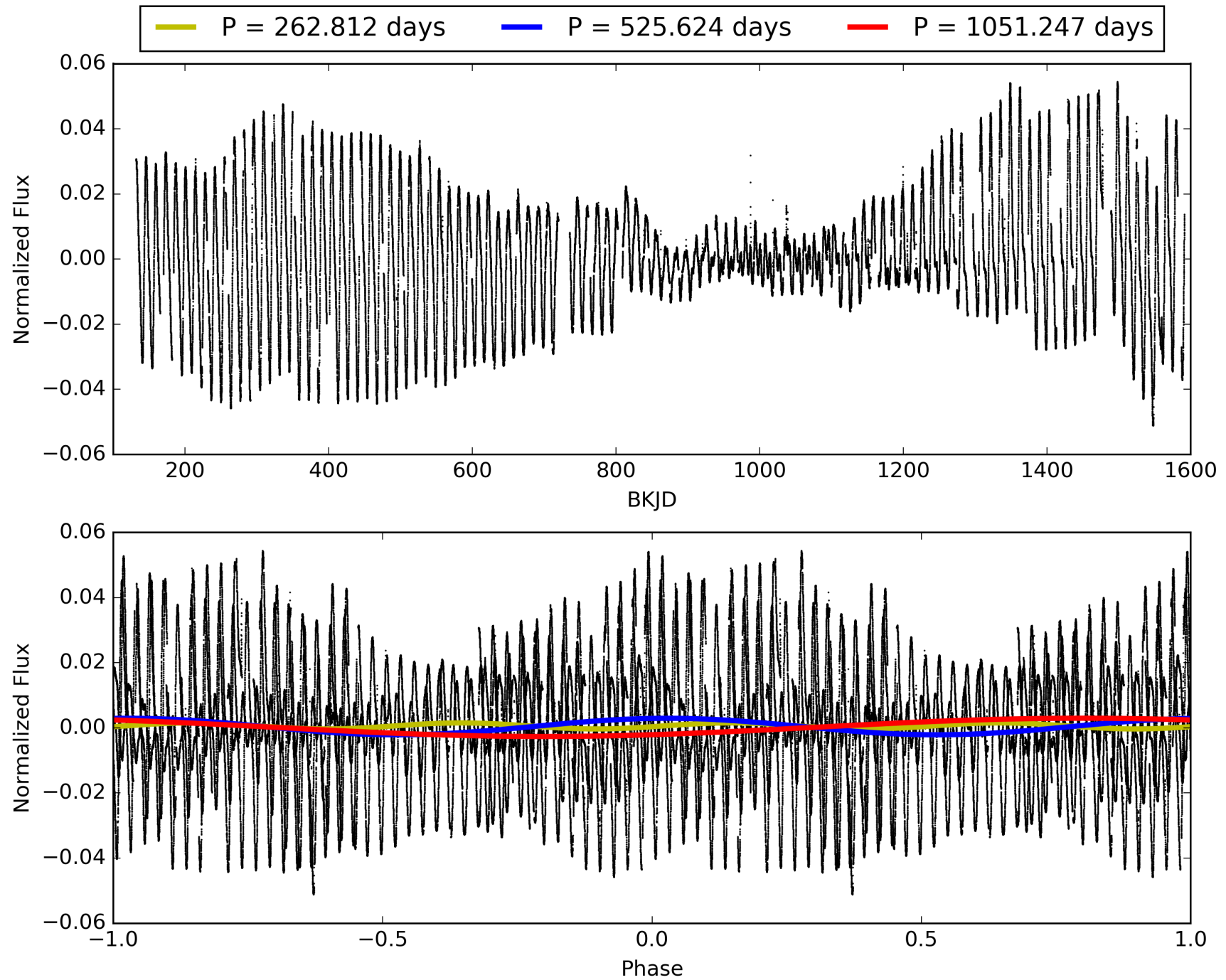


This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006437385-04, PDC Light Curves

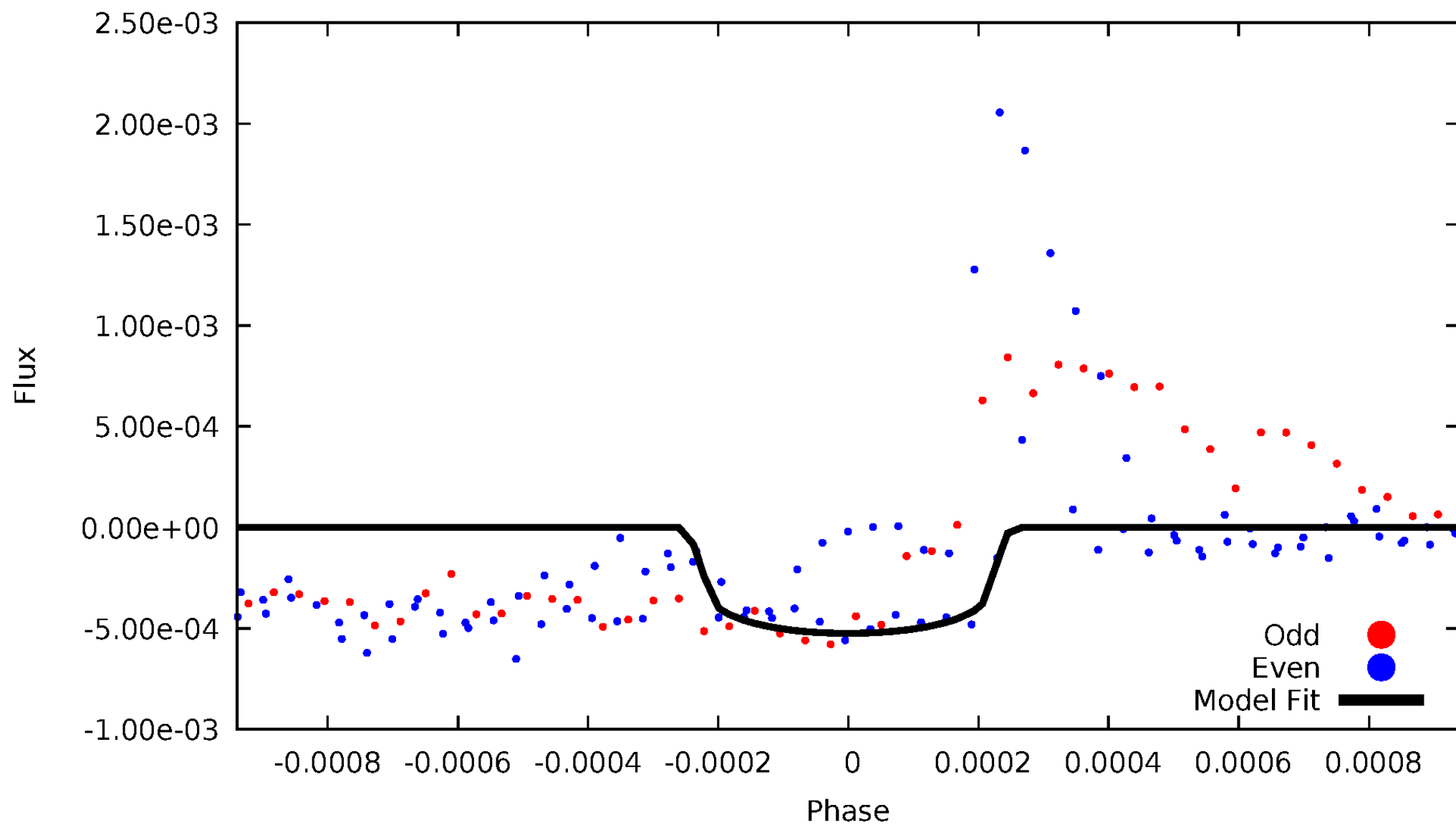


TCE 006437385-04



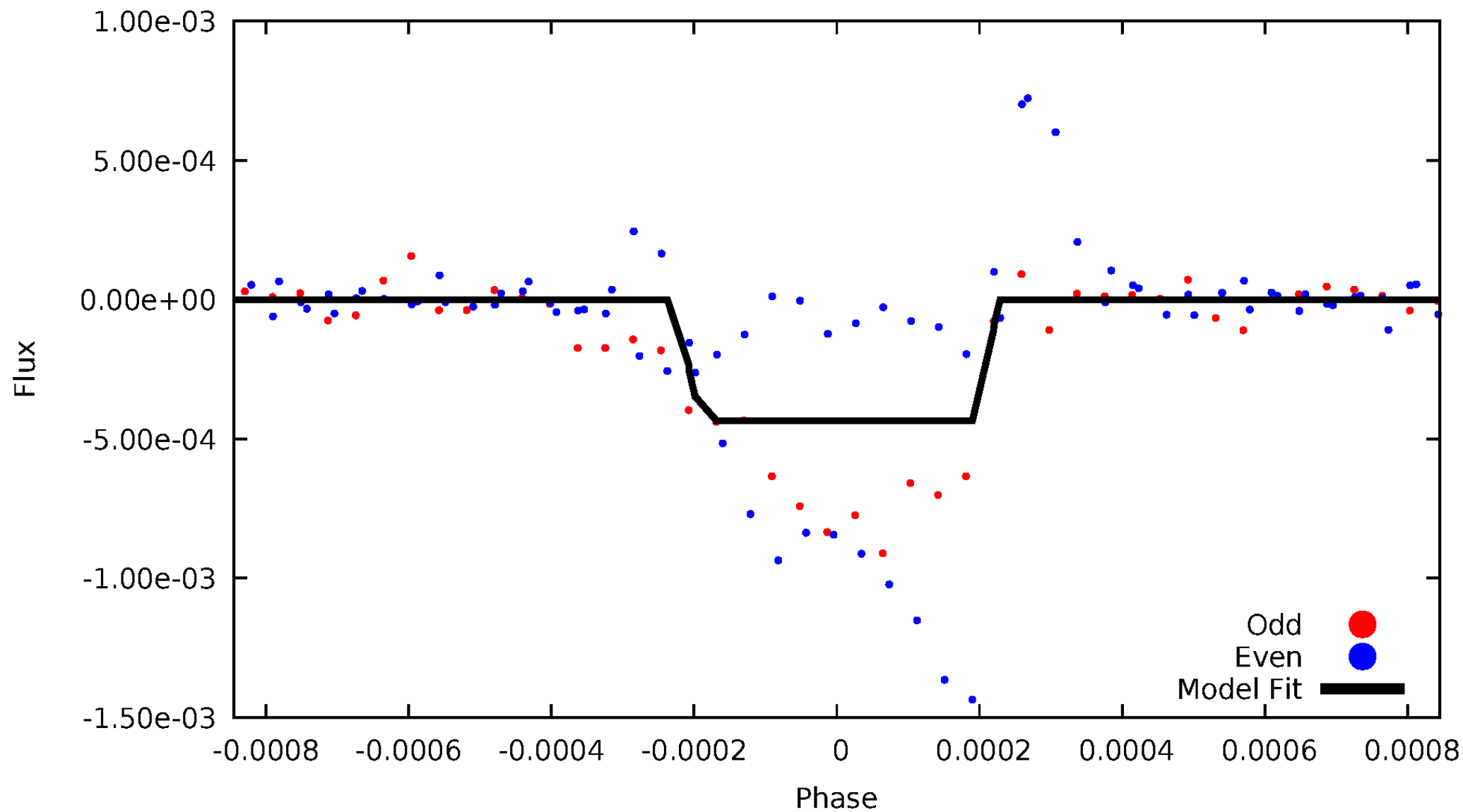
DV Odd/Even

TCE 006437385-04



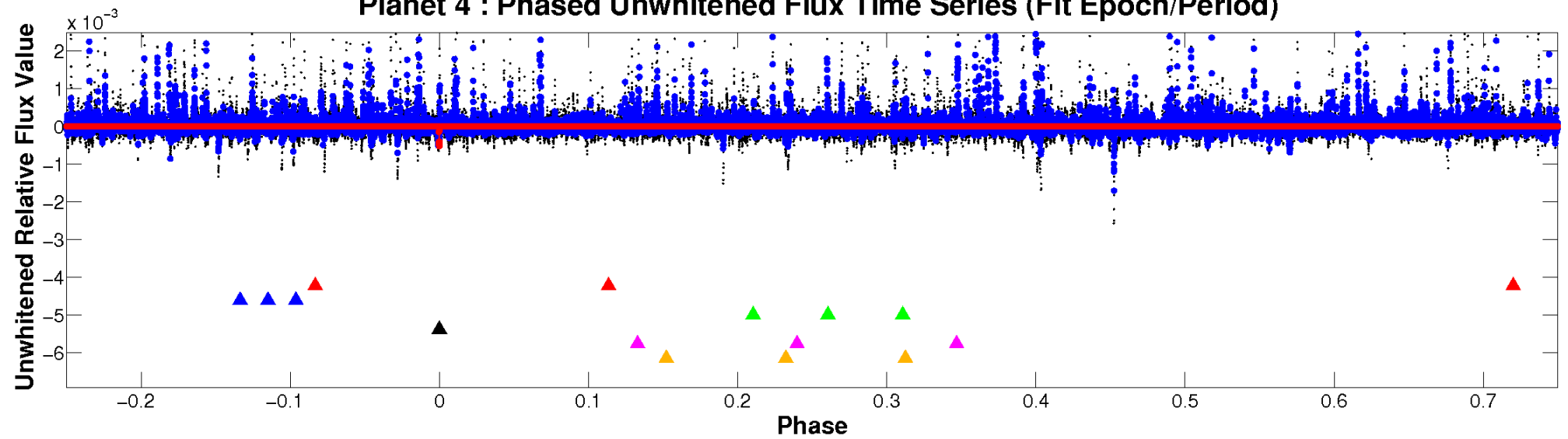
ALT Odd/Even

TCE 006437385-04

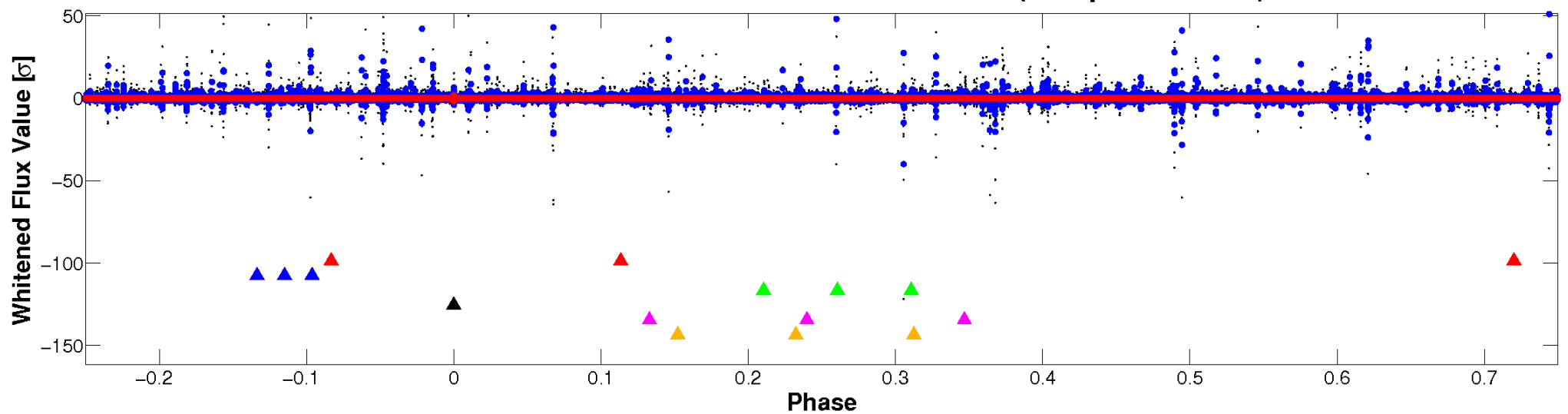


Non-Whitened Vs. Whitened Light Curve

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

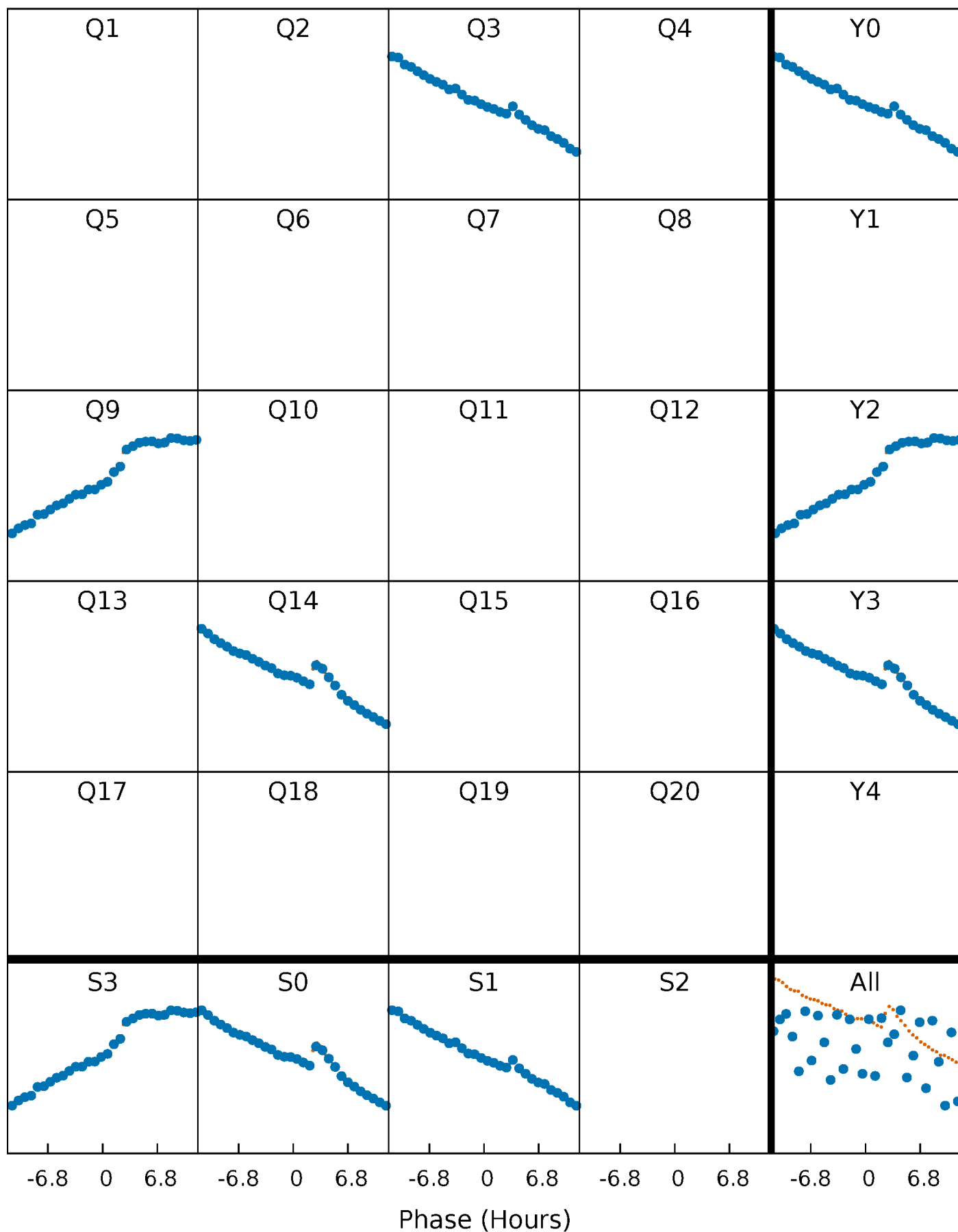


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



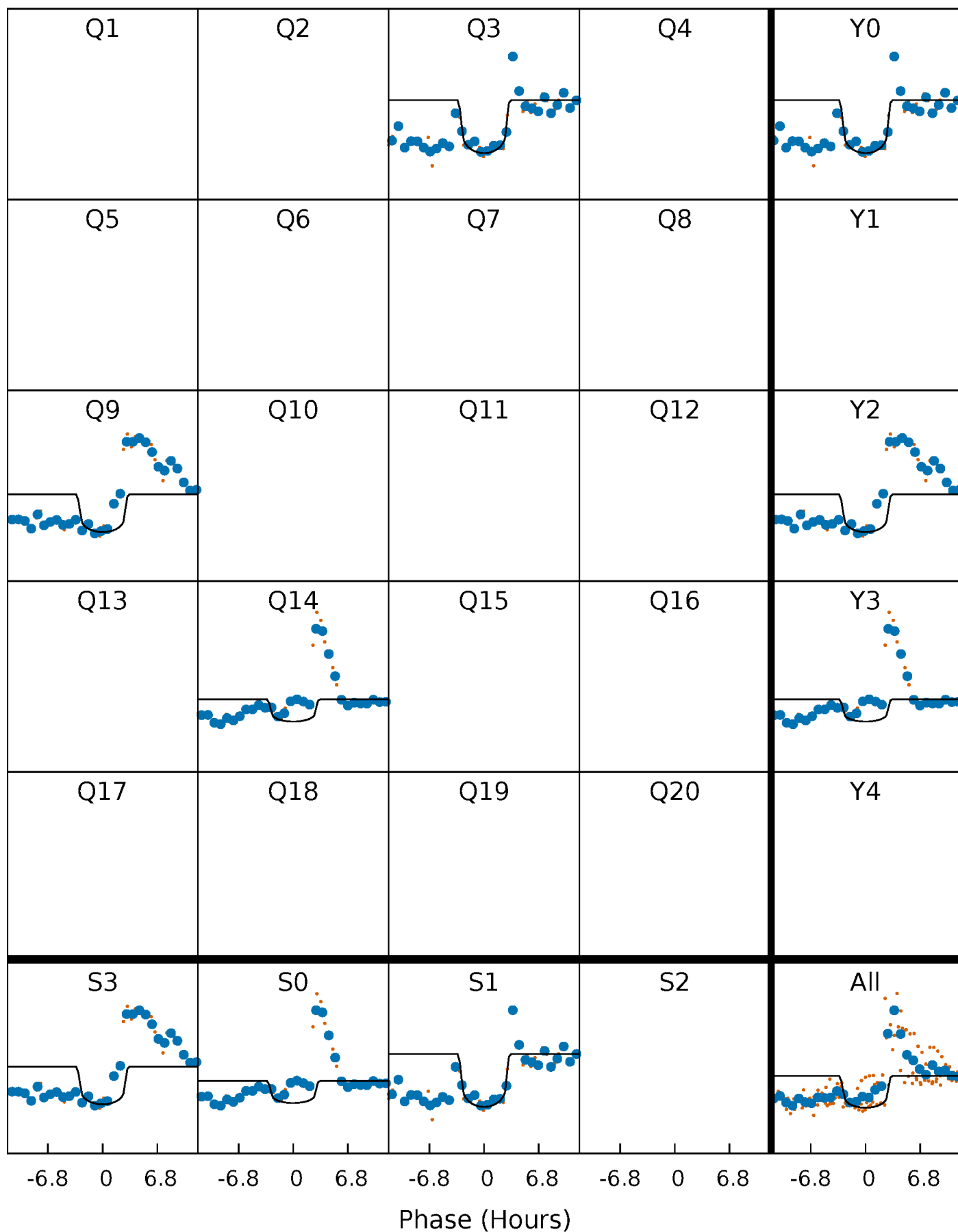
PDC Quarter-Phased Transit Curves

TCE 006437385-04 $P=525.623730$ Days $T_0=300.786445$ (BKJD)



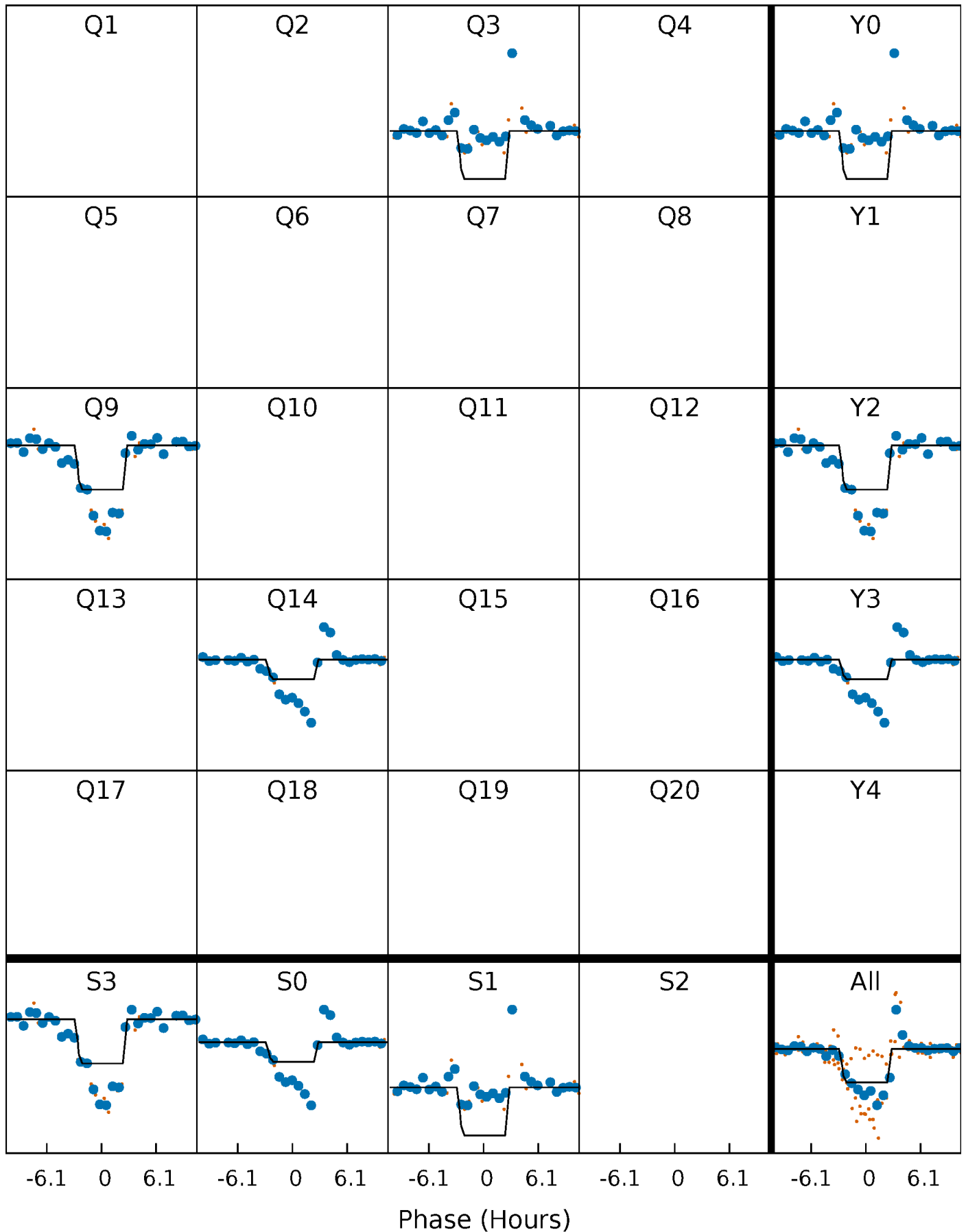
DV Quarter-Phased Transit Curves

TCE 006437385-04 $P=525.623730$ Days $T_0=300.786445$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

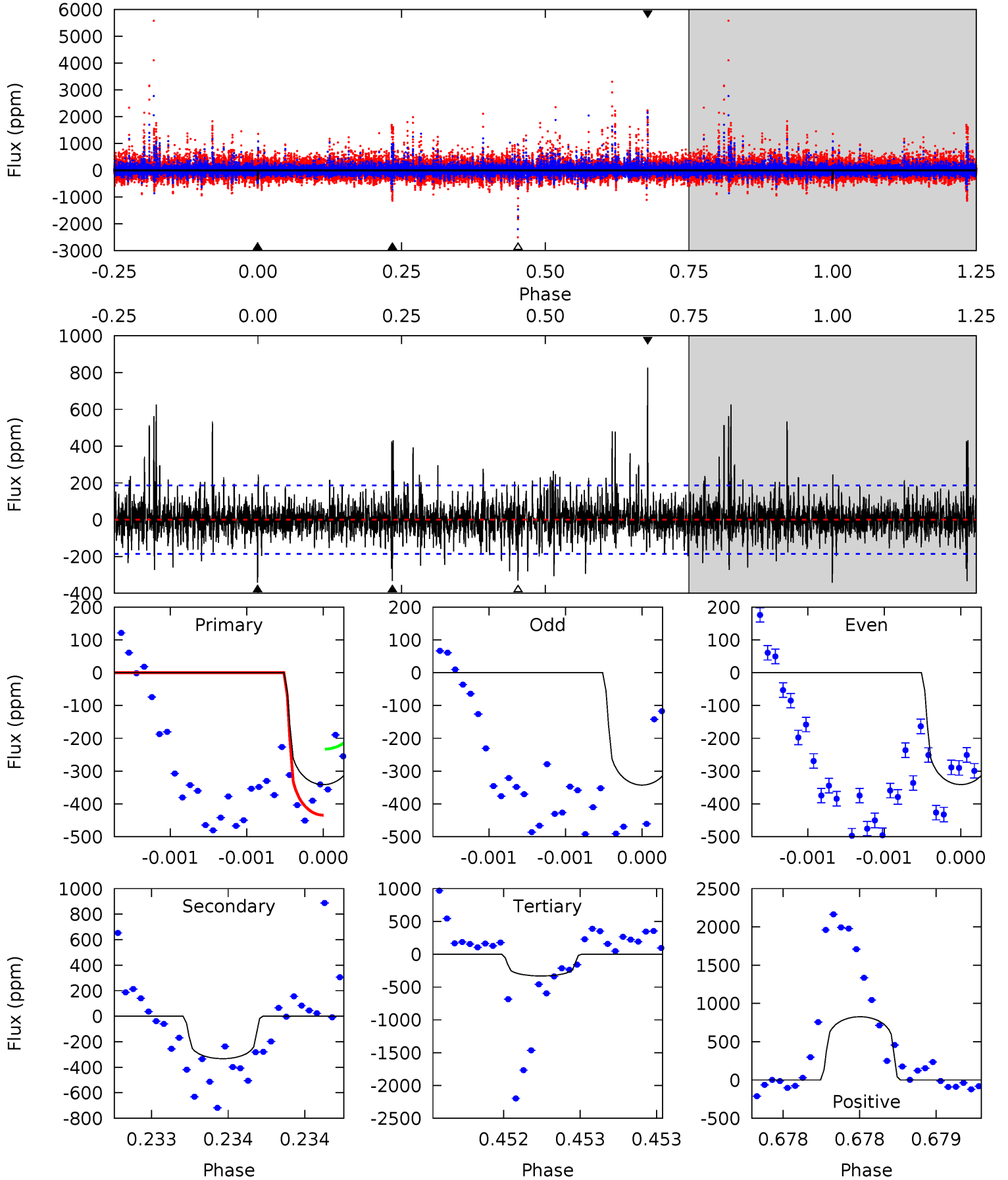
TCE 006437385-04 $P=525.612464$ Days $T_0=300.790406$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-04, P = 525.623730 Days, E = 300.786445 Days

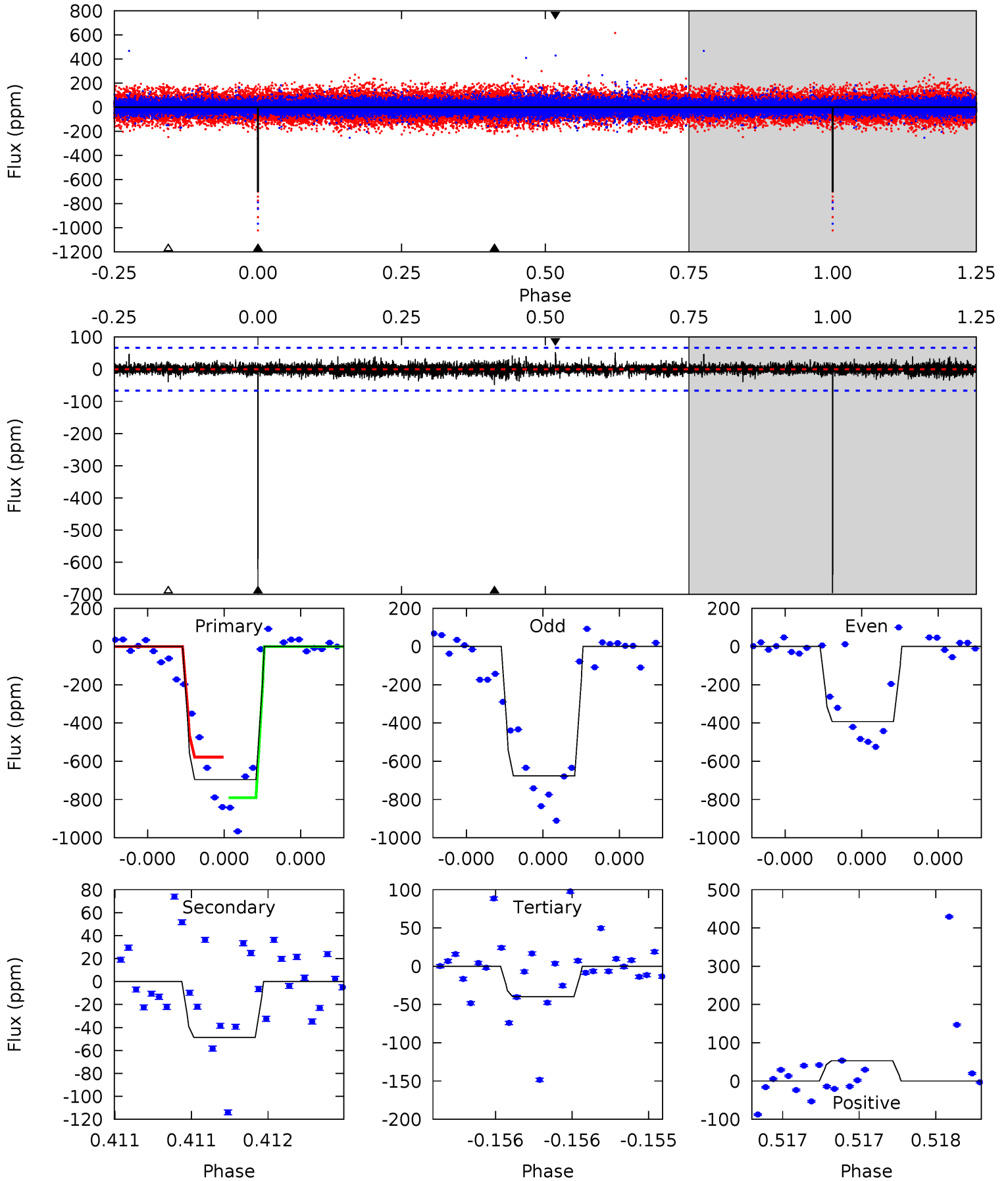
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	9.97	9.92	24.8	5.57	3.48	2.26	0.31	-14.5	0.05	-14.8	0.01	0.82	0.71	3.05



Alt Model-Shift Uniqueness Test

006437385-04, P = 525.612464 Days, E = 300.790406 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
58.4	4.09	3.34	4.45	5.60	3.52	0.68	55.0	53.9	0.75	-0.35	9.01	0.84	0.07	9.10



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-333 ± 33	$4.75^{+4.67}_{-2.88}$	458^{+72}_{-87}	5091^{+2641}_{-962}	11500^{+60871}_{-8428}
Alt.	-49 ± 12	$4.78^{+4.36}_{-3.21}$	459^{+67}_{-97}	3537^{+1484}_{-538}	1615^{+13238}_{-1203}

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 $A_{obs} \gg 1.0$

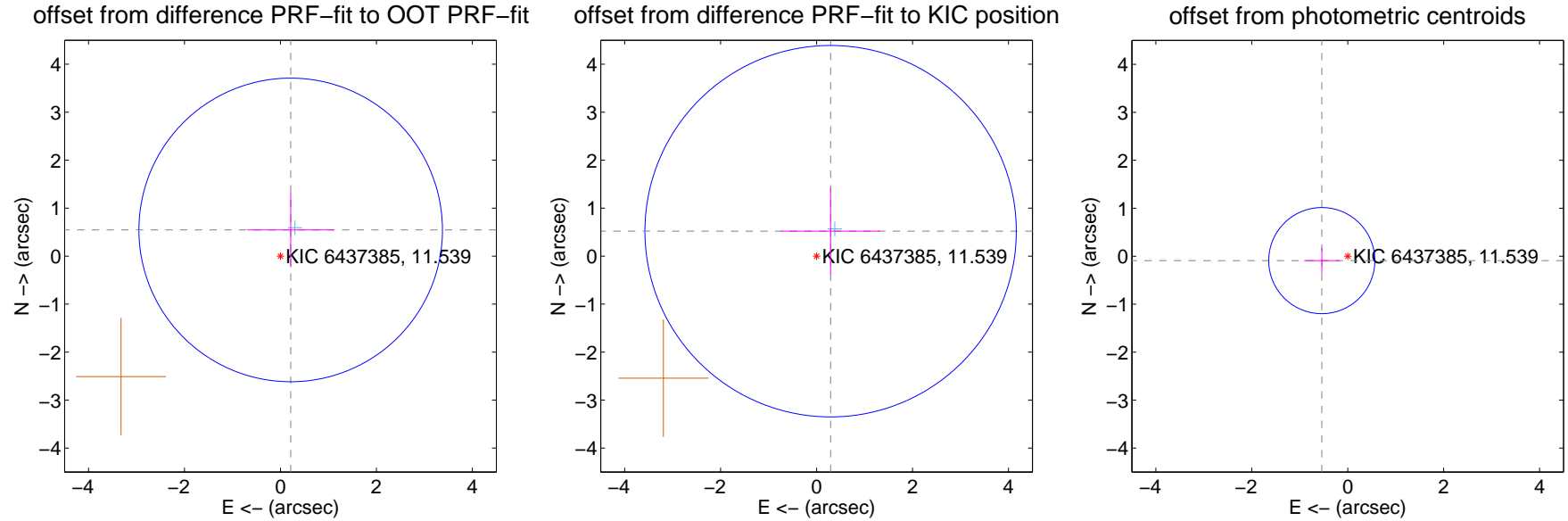
DV Centroid Data

Supplemental centroid analysis for 006437385-04. **Kepler magnitude: 11.54.** Transit SNR 8.48

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.586 ± 1.055	0.56	-0.213 ± 0.909	0.546 ± 0.779
PRF-fit source offset from KIC position	0.596 ± 1.290	0.46	-0.293 ± 1.034	0.520 ± 0.900
photometric centroid source offset	0.55 ± 0.37	1.49	0.54 ± 0.37	-0.09 ± 0.27



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

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

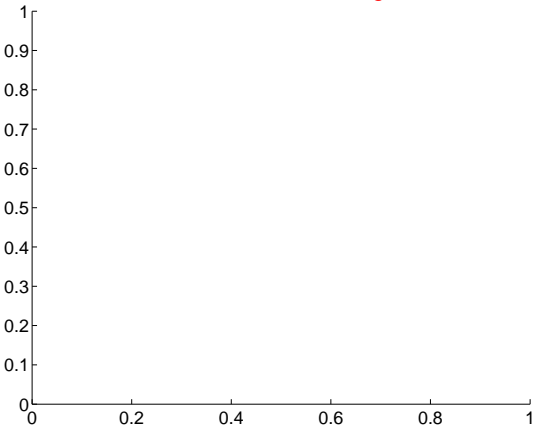
Q1 no difference image



Q1 no OOT image



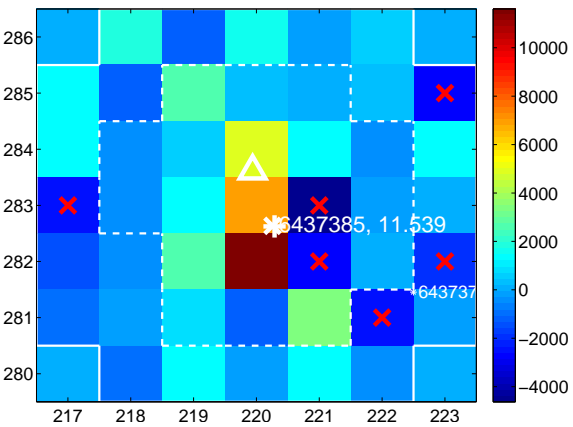
Q2 no difference image



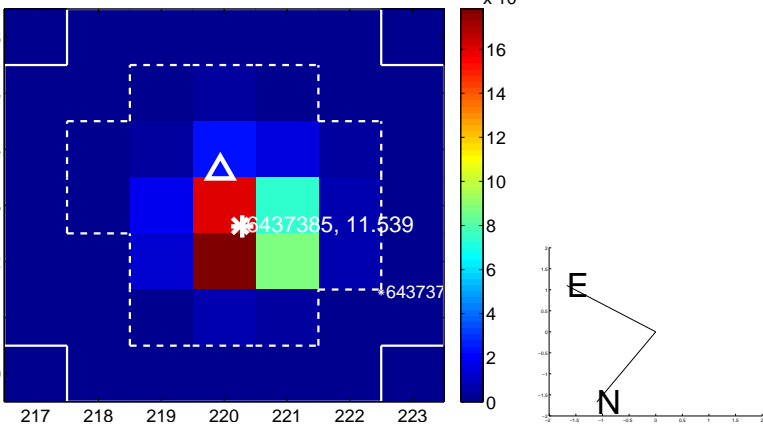
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



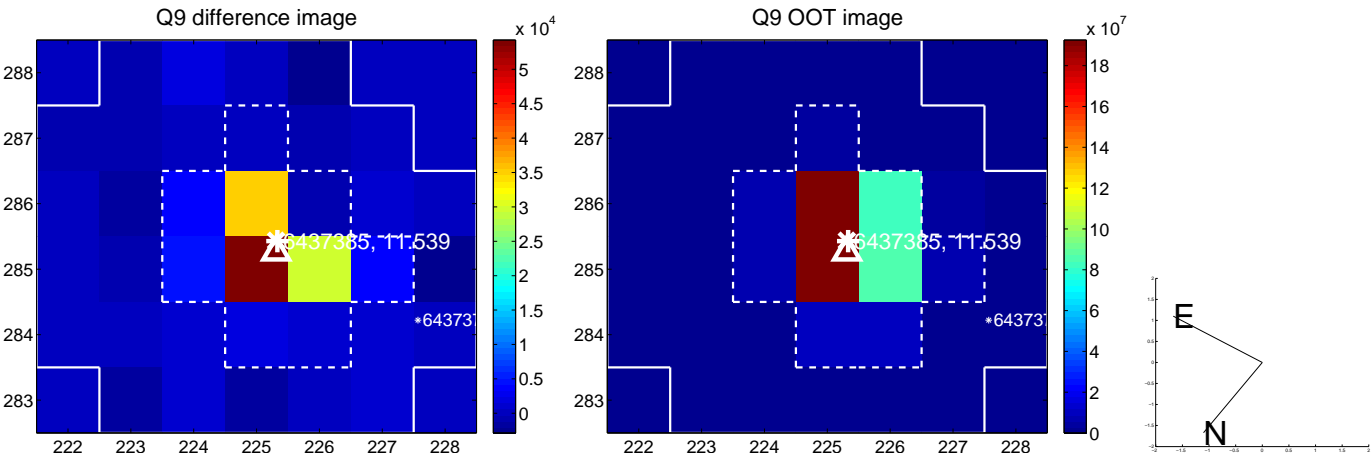
Q4 no OOT image



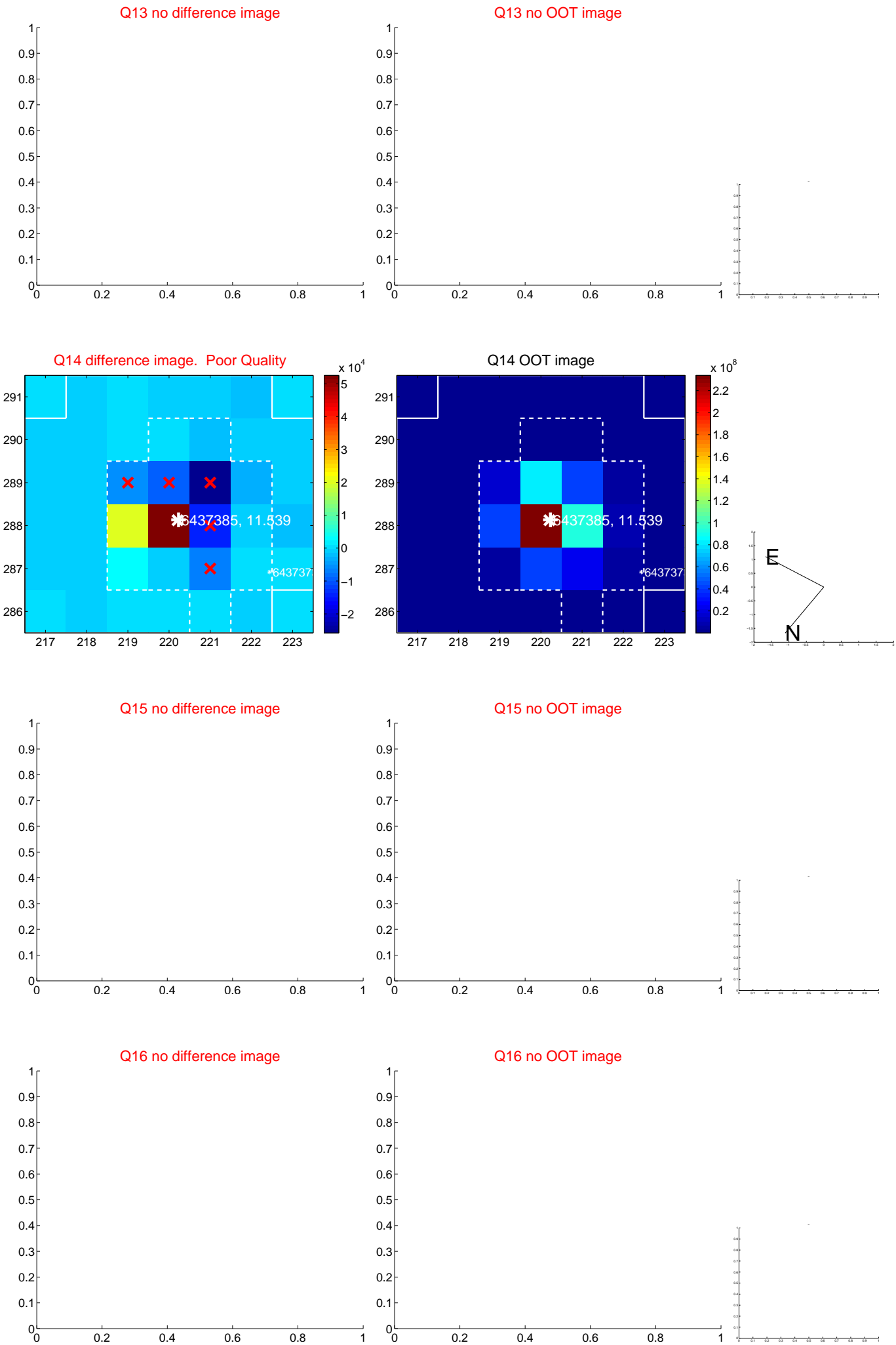
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



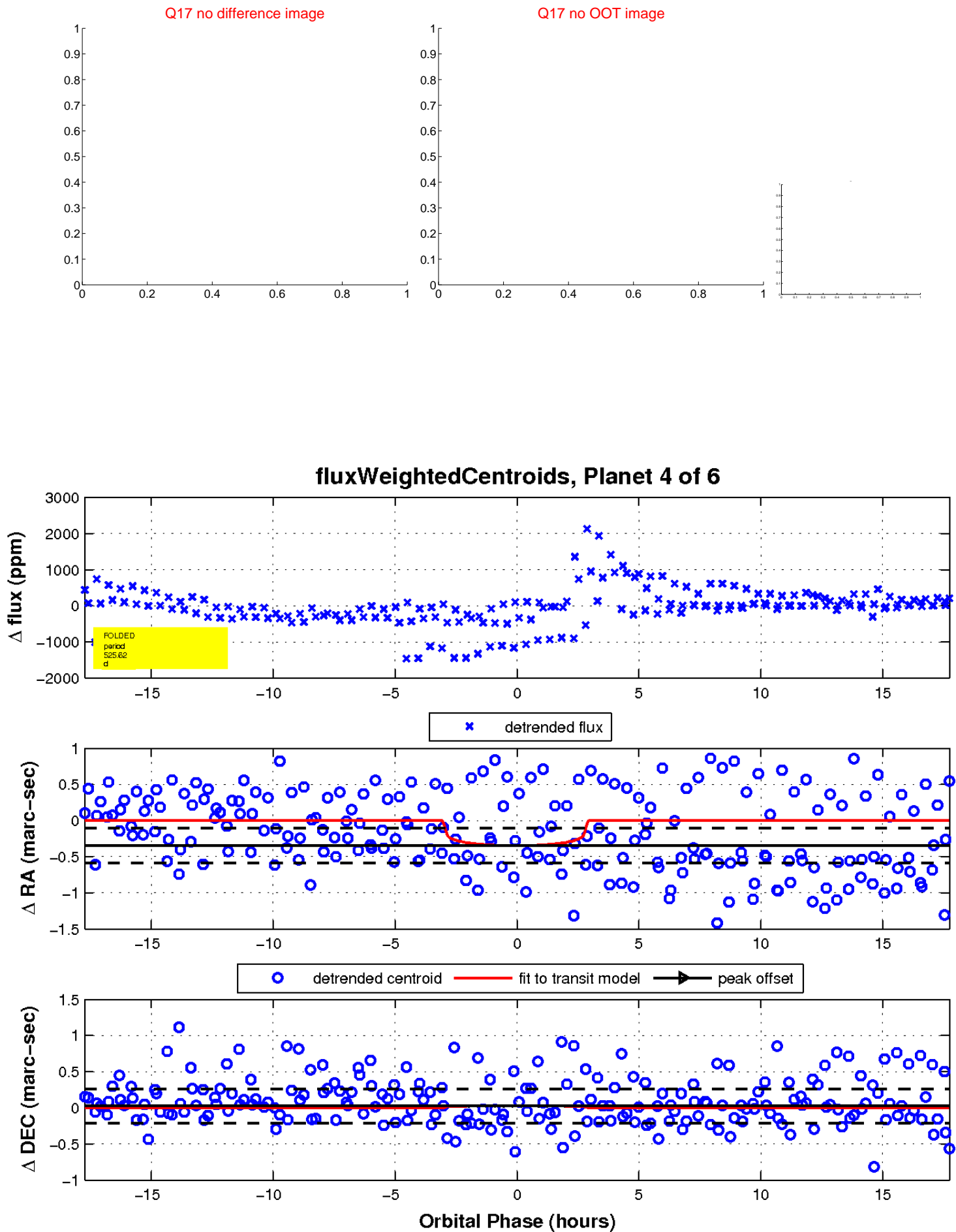
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



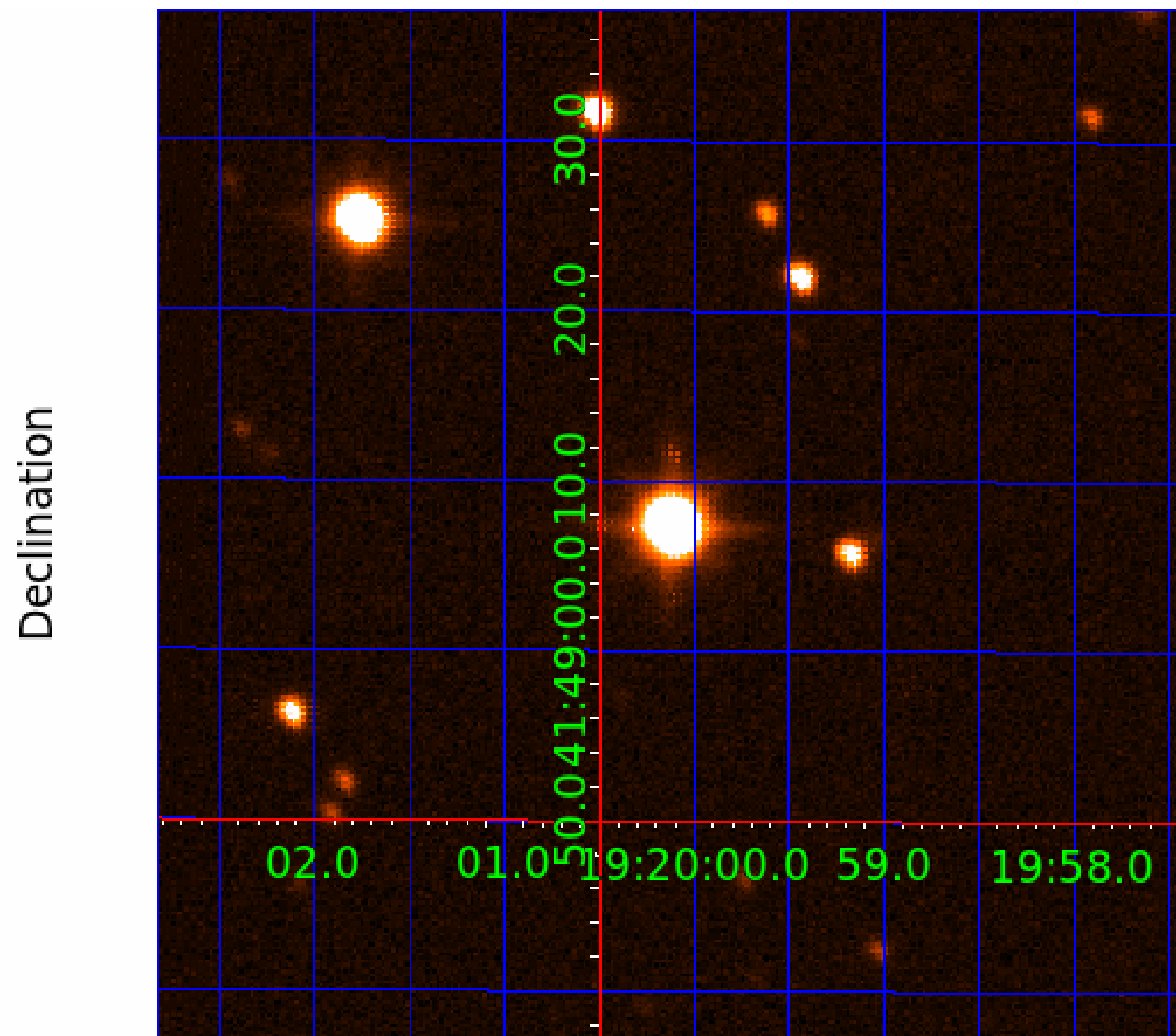
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006437385

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})
006437385-01	OBS	No	422.247083	360.420787	347.3	7.884	54.7	5.2	2.06	5727	4.04	3.95
006437385-02	OBS	No	515.792211	250.228539	355.9	7.634	40.5	5.3	2.06	5727	4.18	3.02
006437385-03	OBS	No	551.976769	411.403643	749.7	3.520	20.4	13.7	2.06	5727	5.99	2.76
006437385-04	OBS	No	525.623730	300.786444	525.4	5.921	16.6	8.5	2.06	5727	4.75	2.95
006437385-05	OBS	No	469.404592	483.092458	417.9	11.679	22.0	5.6	2.06	5727	4.88	3.43
006437385-06	OBS	No	483.492086	465.051399	163.2	9.000	17.9	-1.0	2.06	5727	2.64	3.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006437385-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

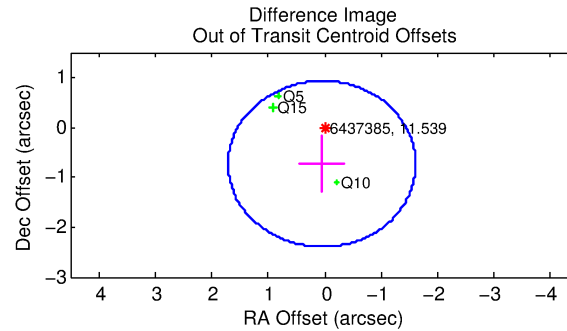
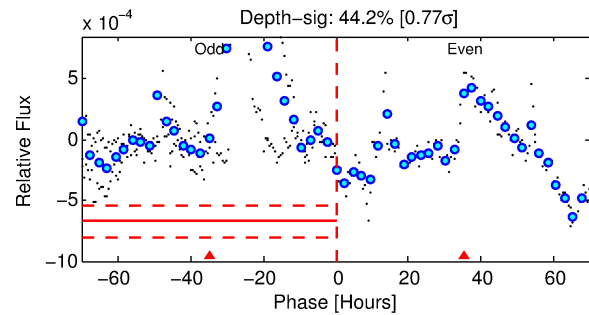
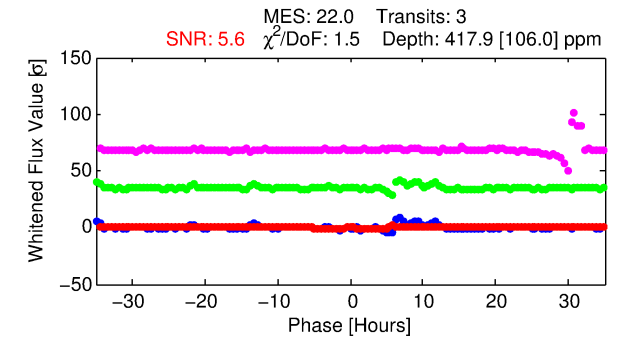
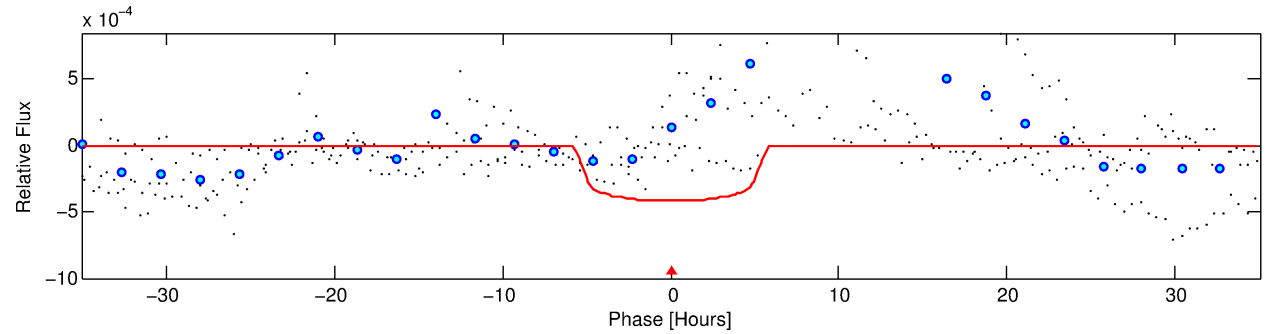
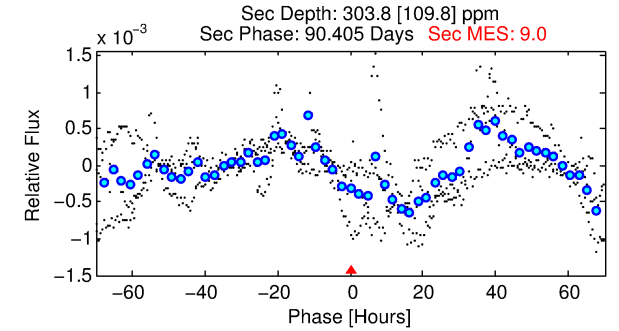
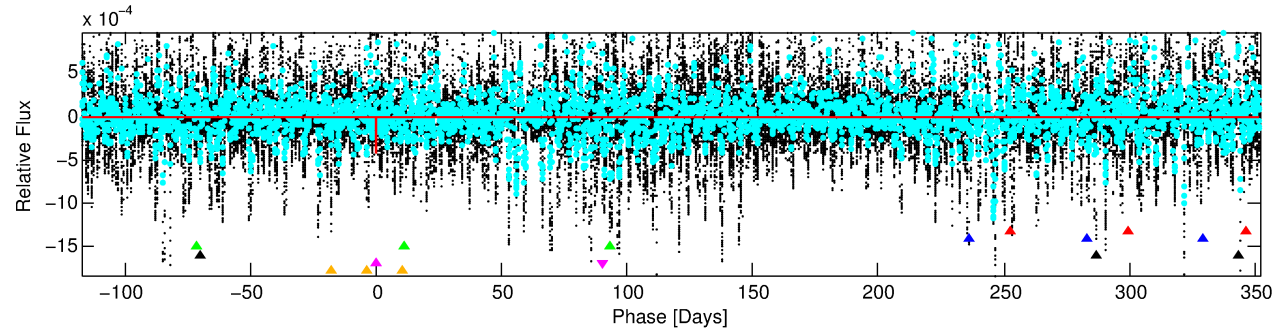
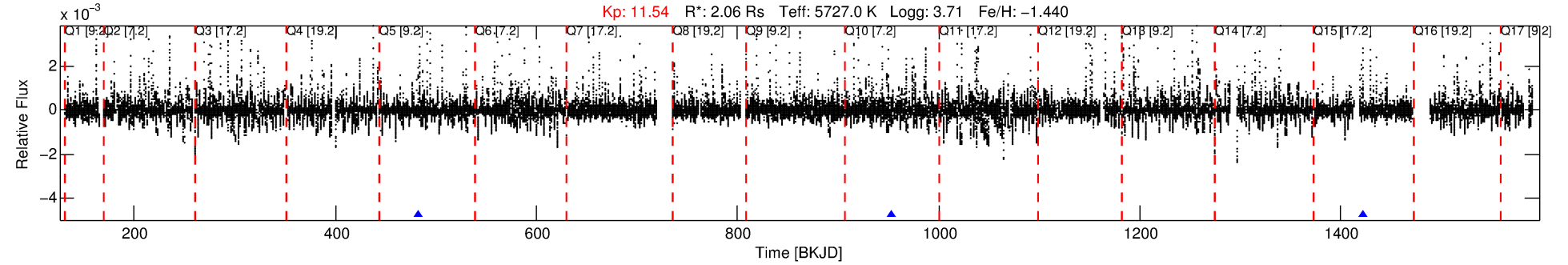
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006437385-05

No Significant Match Found

DV One-Page Summary

KIC: 6437385 Candidate: 5 of 6 Period: 469.405 d



DV Fit Results:

Period = 469.40459 [0.00845] d
Epoch = 483.0925 [0.0109] BKJD
Rp/R* = 0.0217 [0.0032]
a/R* = 155.33 [41.56]
b = 0.89 [0.06]
Seff = 3.43 [4.91]
Teq = 347 [124] K
Rp = 4.88 [3.57] Re
a = 1.0926 [0.9001] AU
Ag = 8365.43 [12541.36] [0.67 σ]
Teffp = 5131 [623] K [7.54 σ]

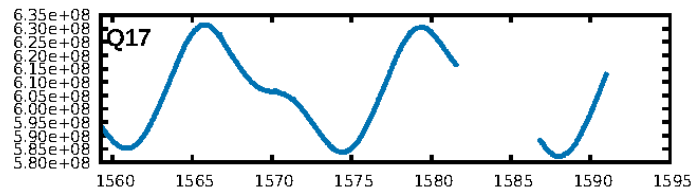
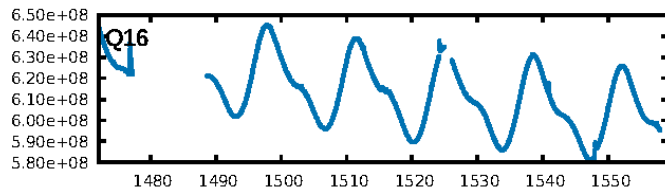
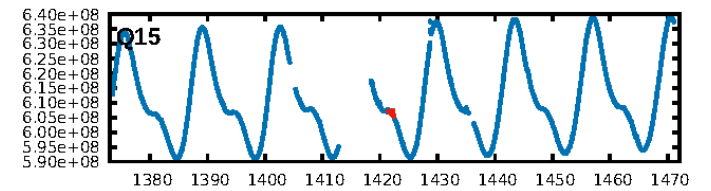
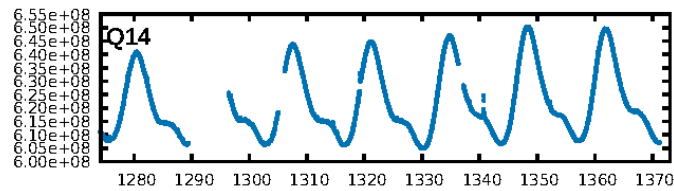
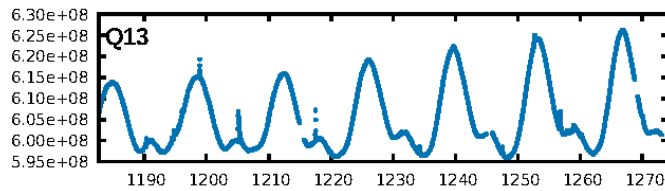
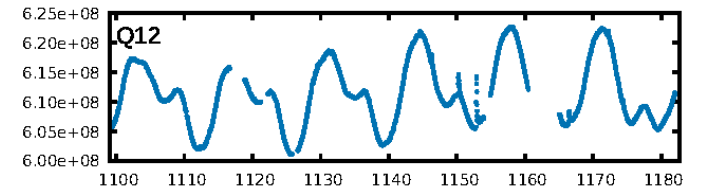
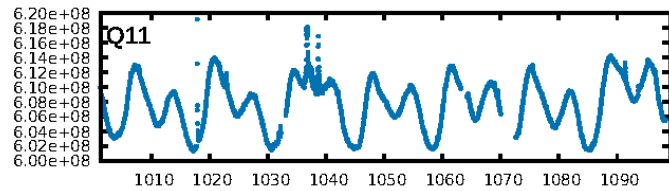
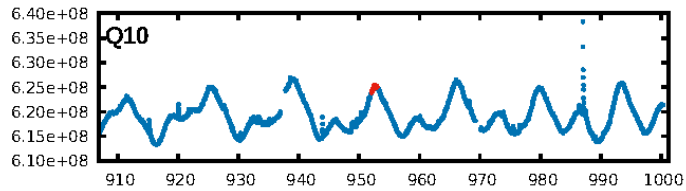
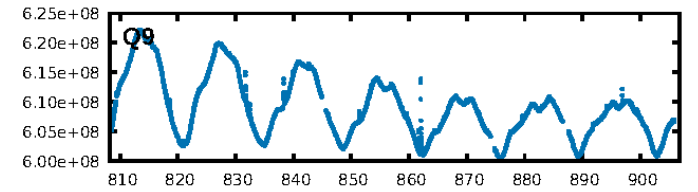
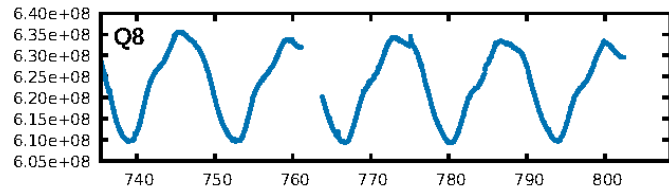
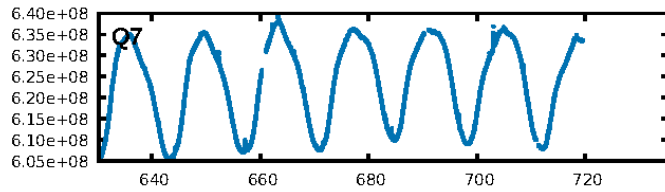
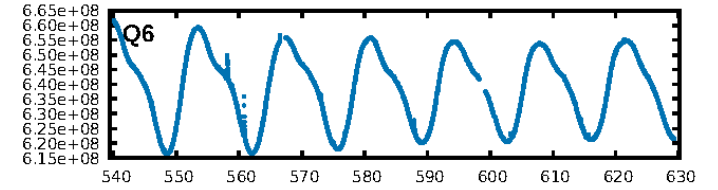
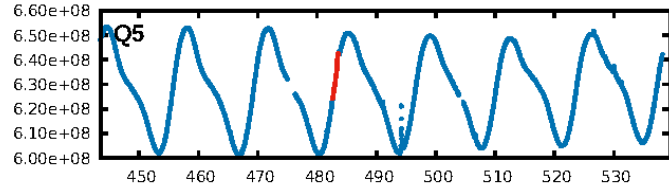
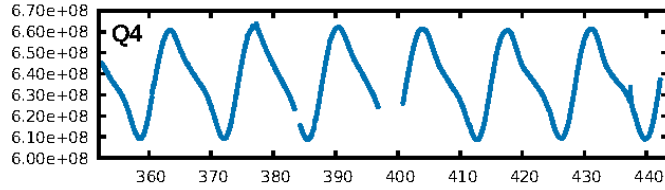
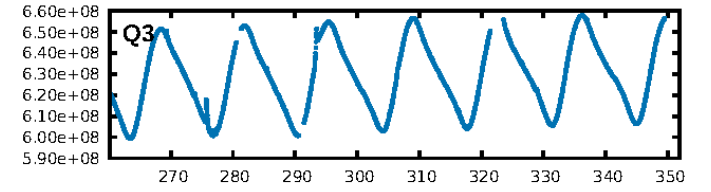
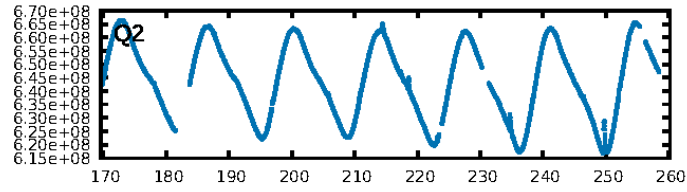
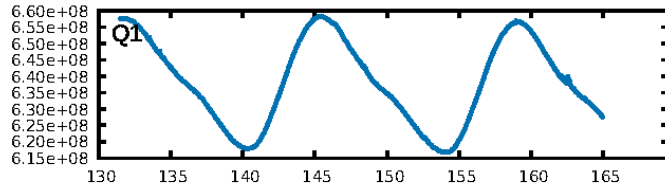
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [80.32 σ]
LongPeriod-sig: 100.0% [22.93 σ]
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 26.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.842
Centroid-sig: 25.5%
Centroid-so: 0.350 arcsec [0.90 σ]
OotOffset-rm: 0.738 arcsec [1.33 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.813 arcsec [1.42 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

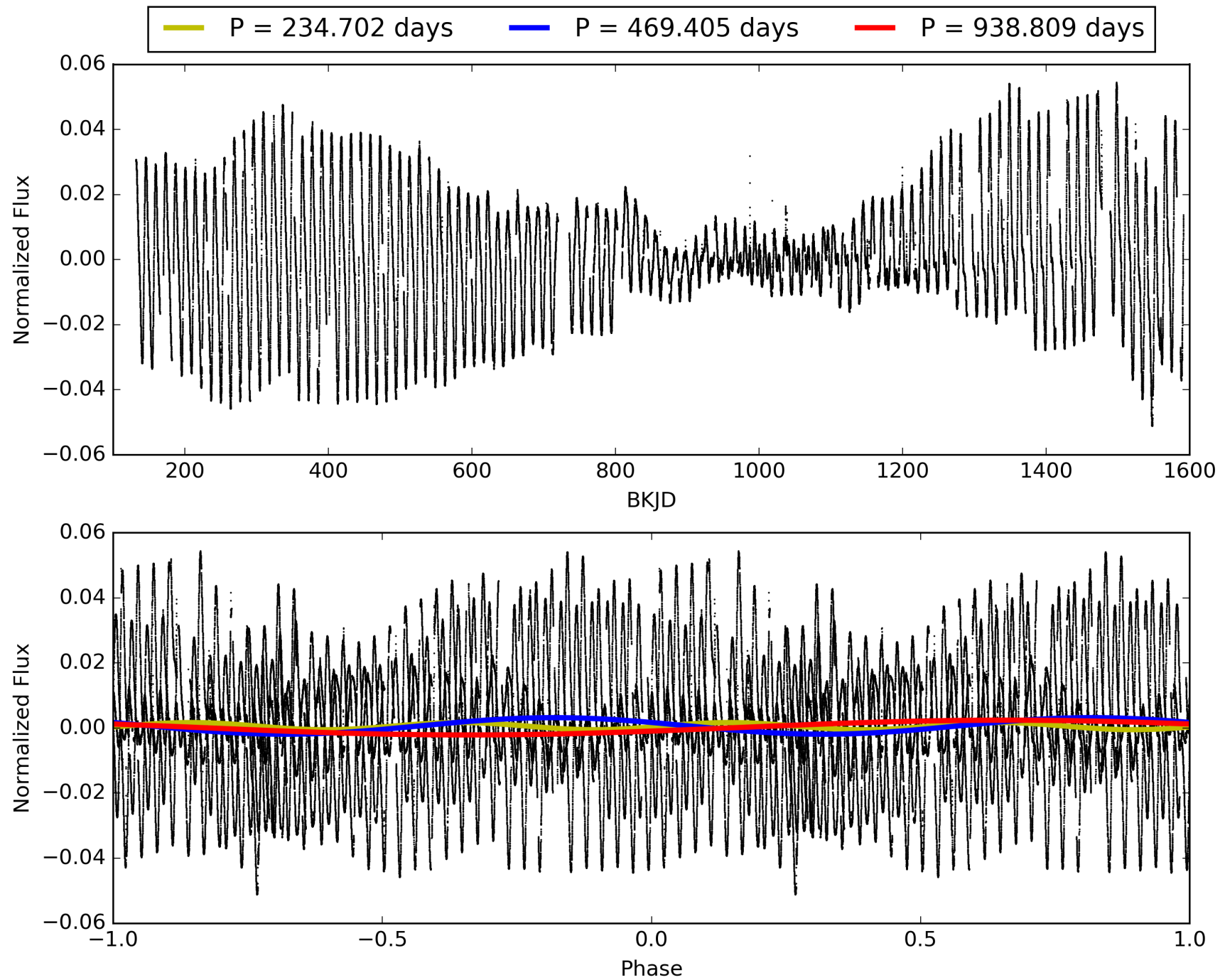
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:33:13 Z

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

TCE 006437385-05, PDC Light Curves

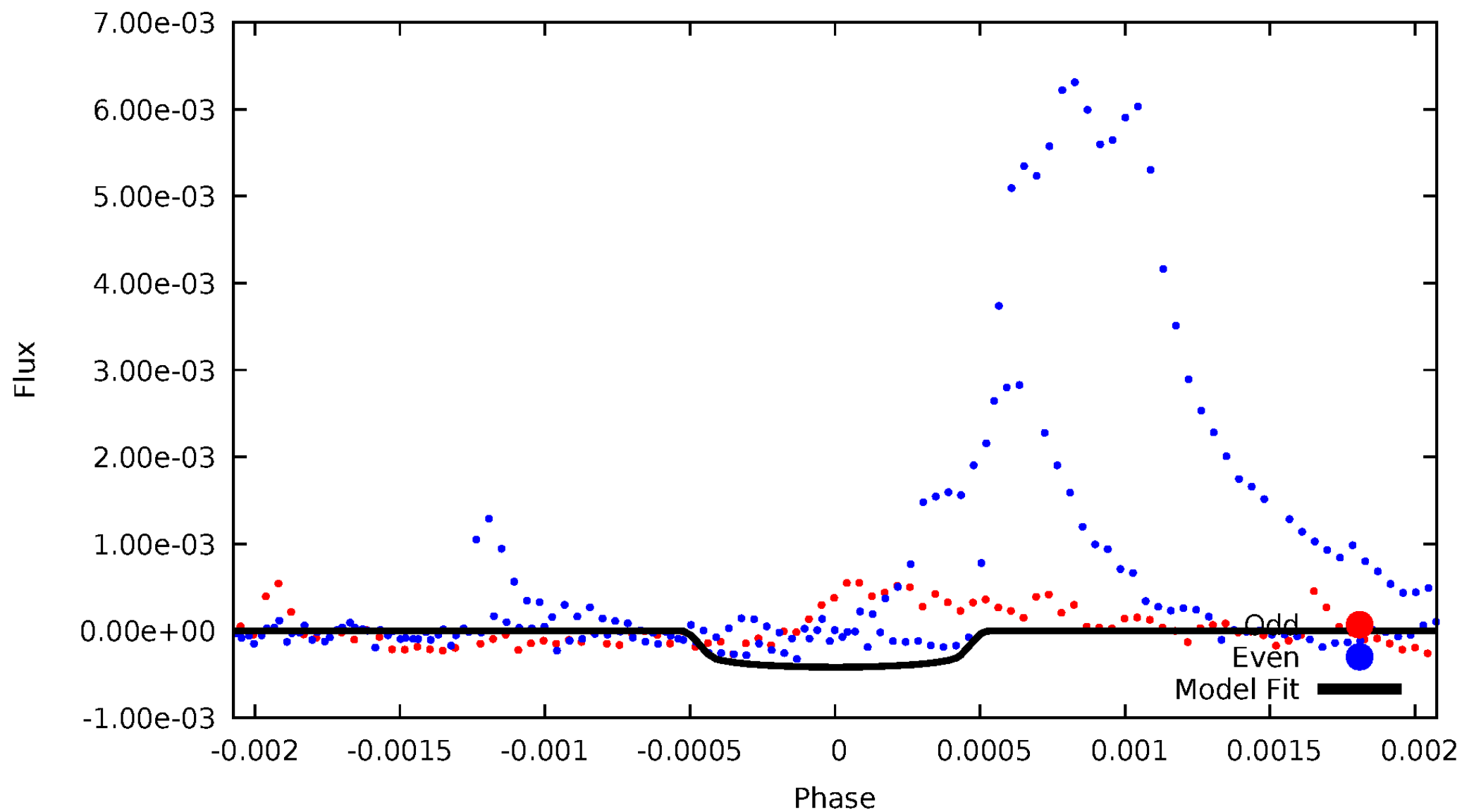


TCE 006437385-05



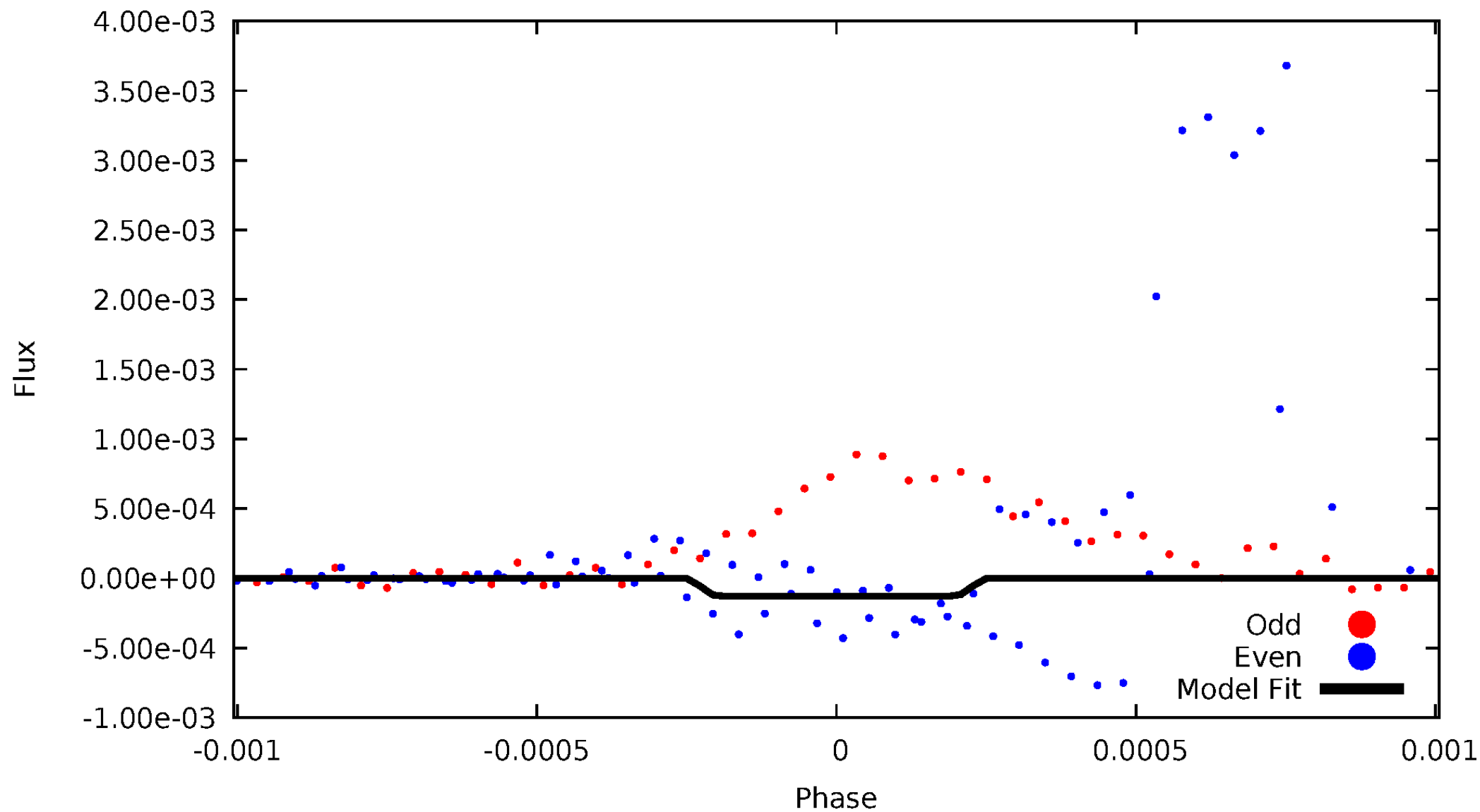
DV Odd/Even

TCE 006437385-05



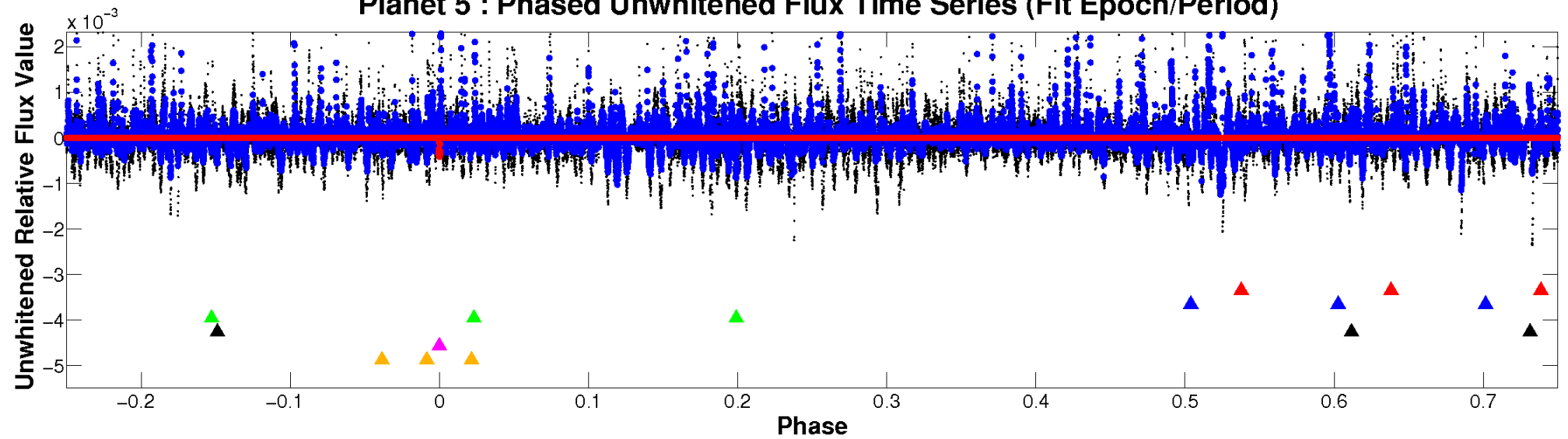
ALT Odd/Even

TCE 006437385-05

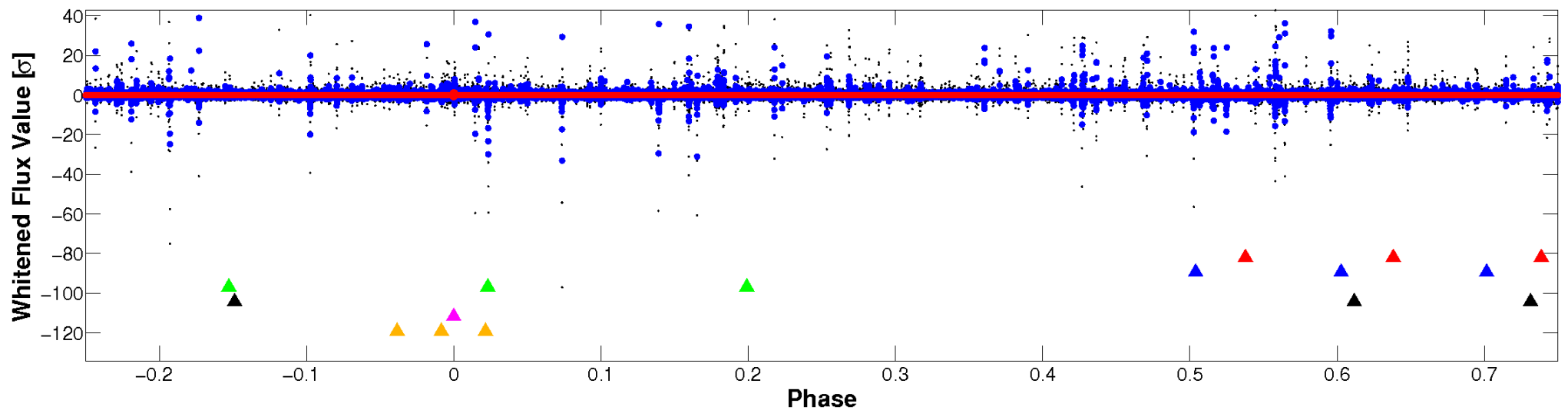


Non-Whitened Vs. Whitened Light Curve

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



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



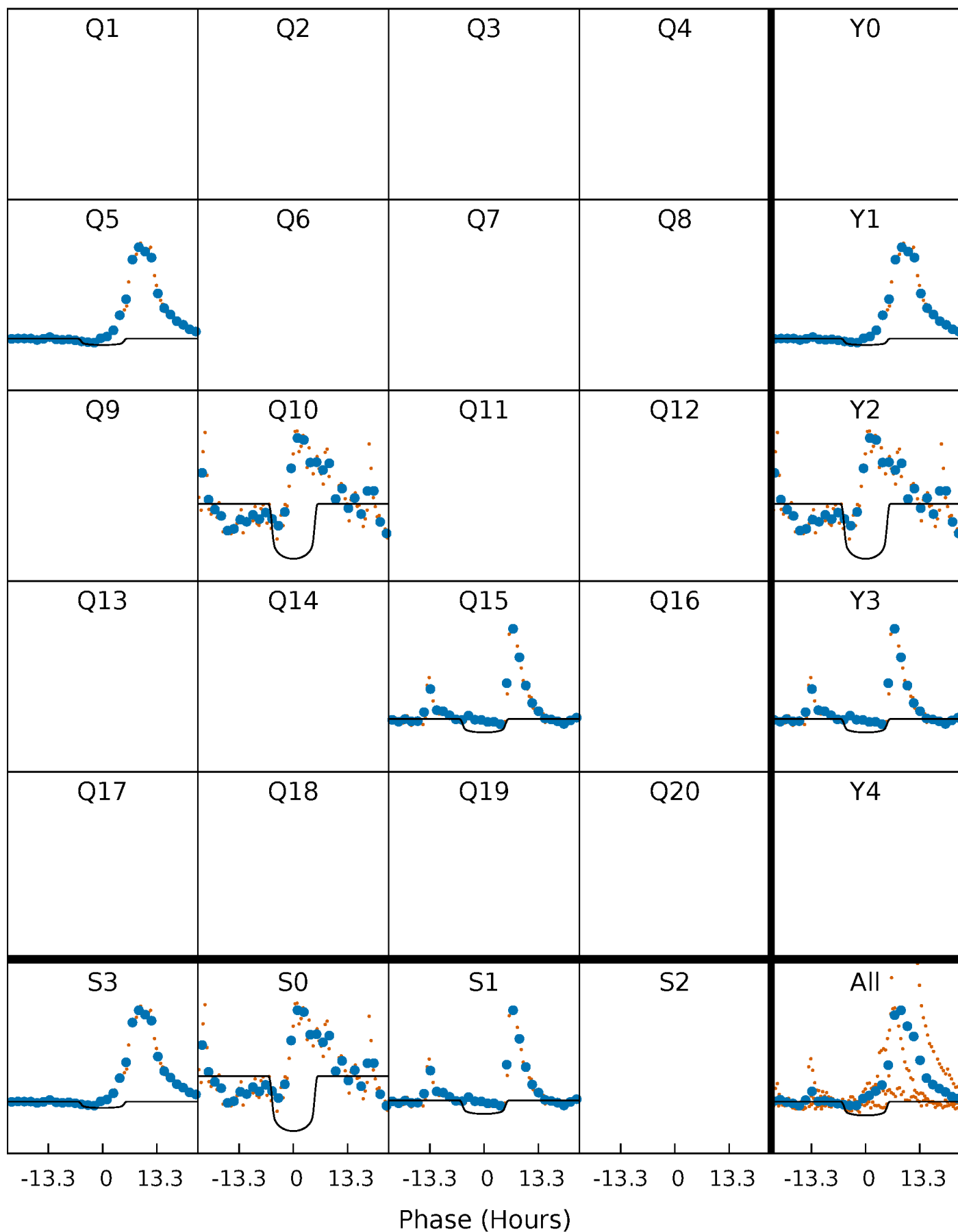
PDC Quarter-Phased Transit Curves

TCE 006437385-05 $P=469.404592$ Days $T_0=483.092458$ (BKJD)



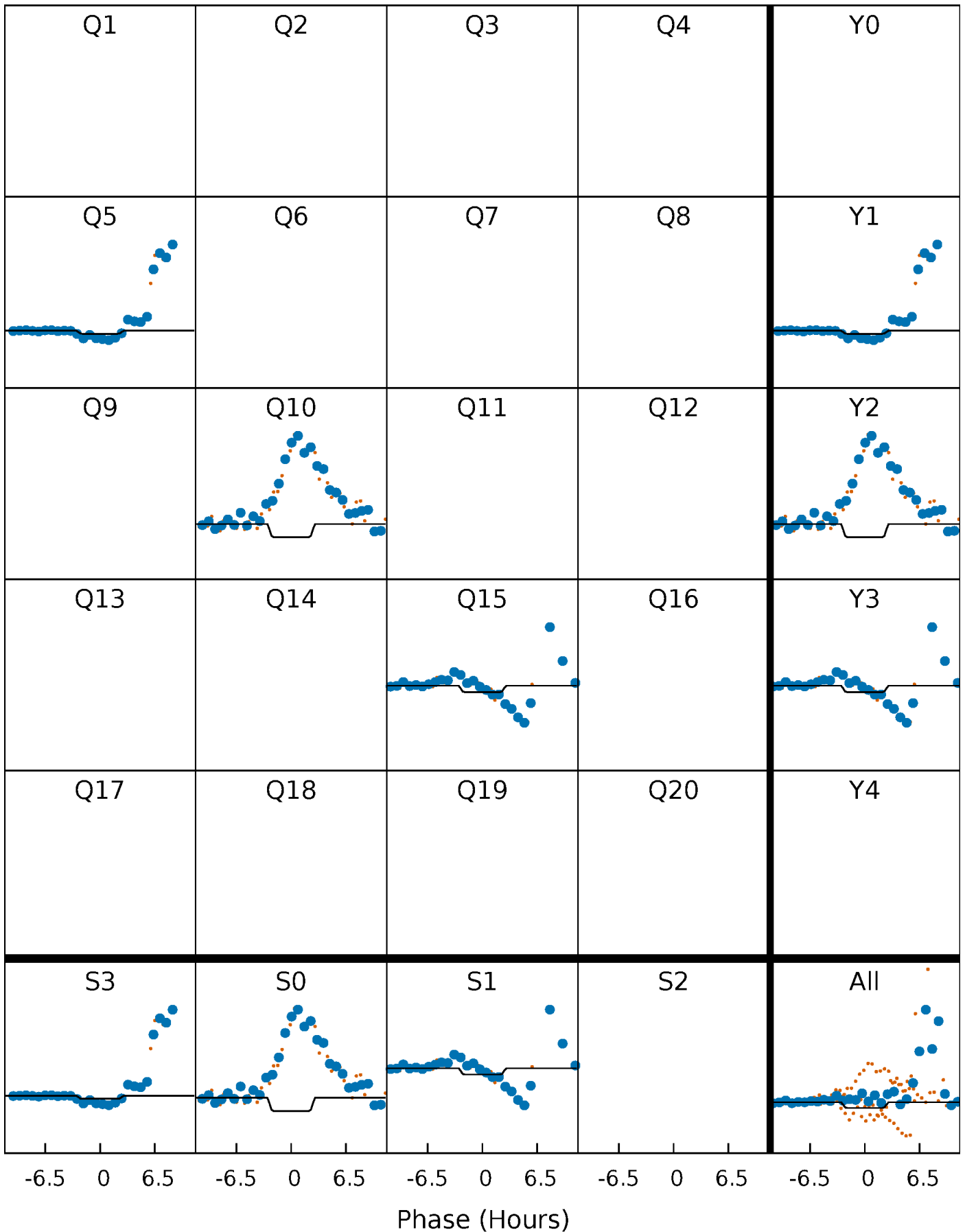
DV Quarter-Phased Transit Curves

TCE 006437385-05 $P=469.404592$ Days $T_0=483.092458$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

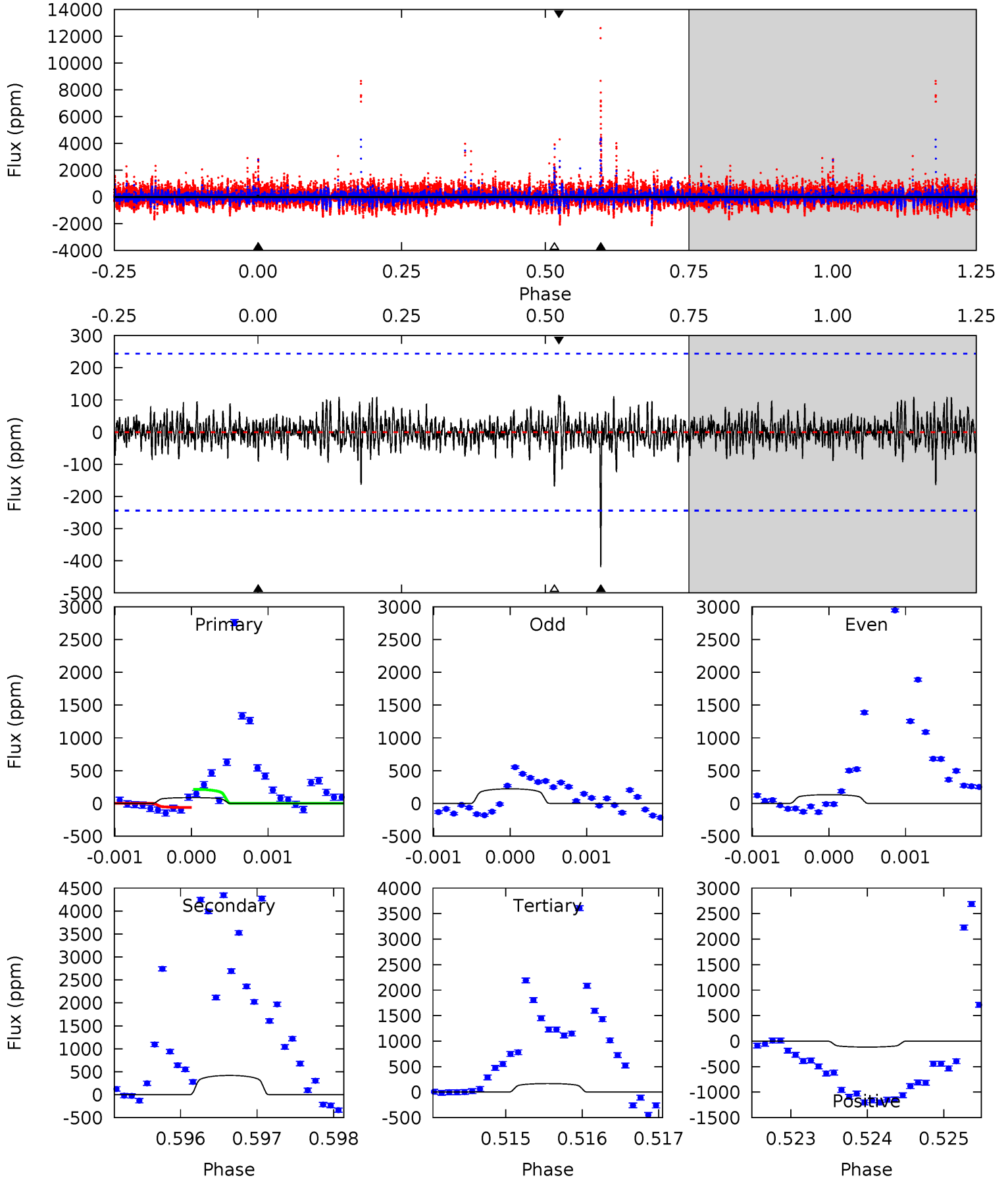
TCE 006437385-05 $P=469.392929$ Days $T_0=483.107363$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-05, P = 469.404592 Days, E = 13.687866 Days

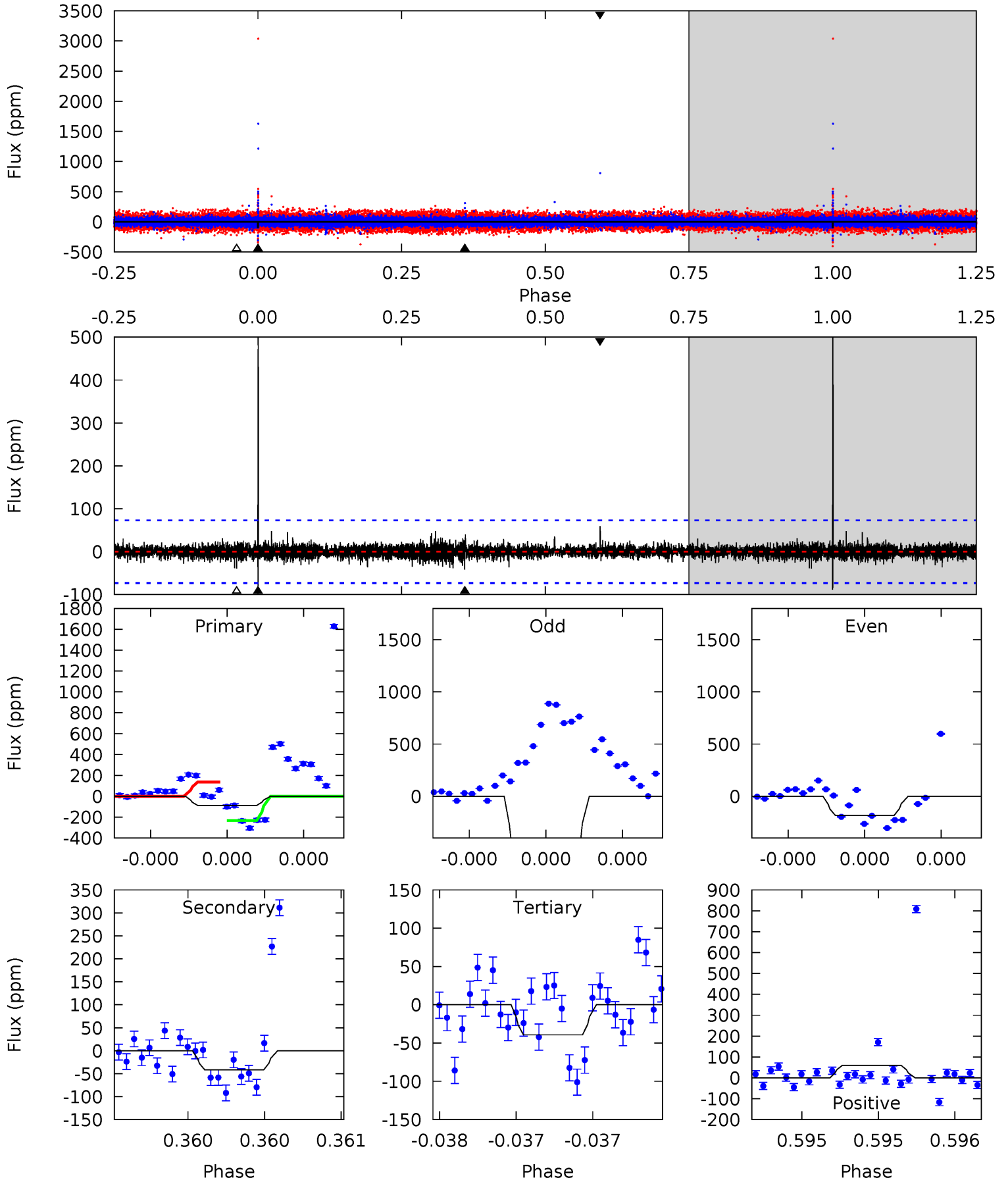
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.99	9.36	3.75	2.58	5.44	3.28	0.71	-1.77	-0.60	5.60	6.77	0.66	0.74	0.22	1.66



Alt Model-Shift Uniqueness Test

006437385-05, P = 469.392929 Days, E = 13.714434 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.73	3.19	3.00	4.55	5.58	3.49	0.70	3.73	2.18	0.18	-1.36	16.7	-1.60	0.85	0



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-420 ± 45	$4.63^{+1.76}_{-1.66}$	474^{+74}_{-92}	5592^{+522}_{-420}	13018^{+19317}_{-6071}
Alt.	-42 ± 13	$2.40^{+1.29}_{-1.00}$	480^{+73}_{-94}	4501^{+674}_{-549}	4704^{+9258}_{-2909}

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 $A_{obs} \gg 1.0$

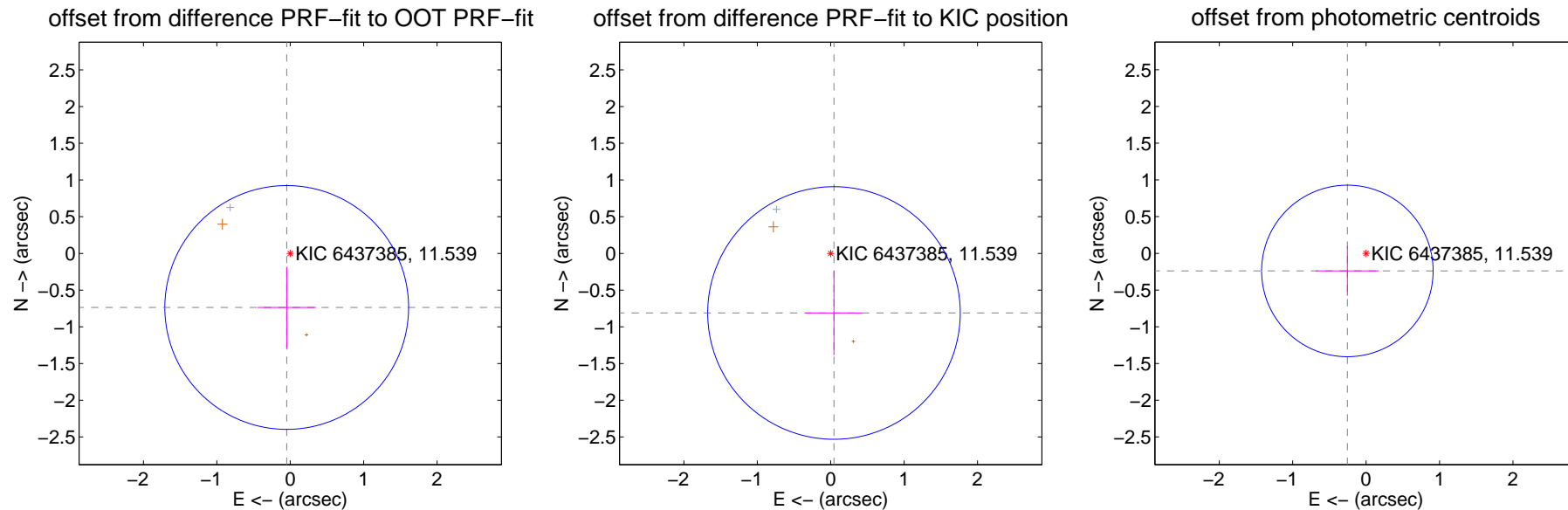
DV Centroid Data

Supplemental centroid analysis for 006437385-05. **Kepler magnitude: 11.54.** Transit SNR 5.64

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.738 ± 0.553	1.33	0.048 ± 0.399	-0.736 ± 0.554
PRF-fit source offset from KIC position	0.813 ± 0.573	1.42	-0.044 ± 0.388	-0.812 ± 0.574
photometric centroid source offset	0.35 ± 0.39	0.90	0.26 ± 0.43	-0.24 ± 0.34

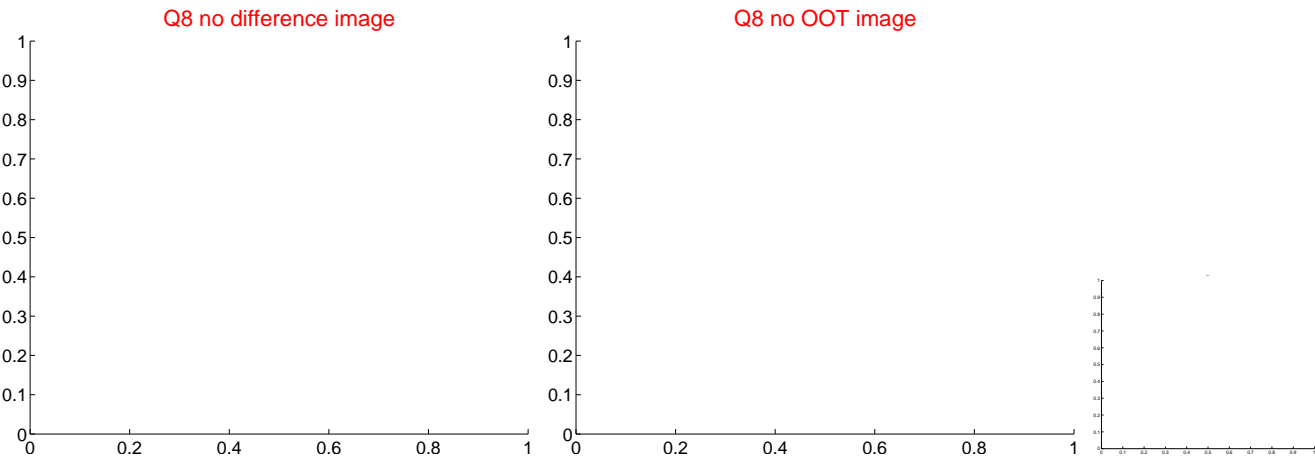
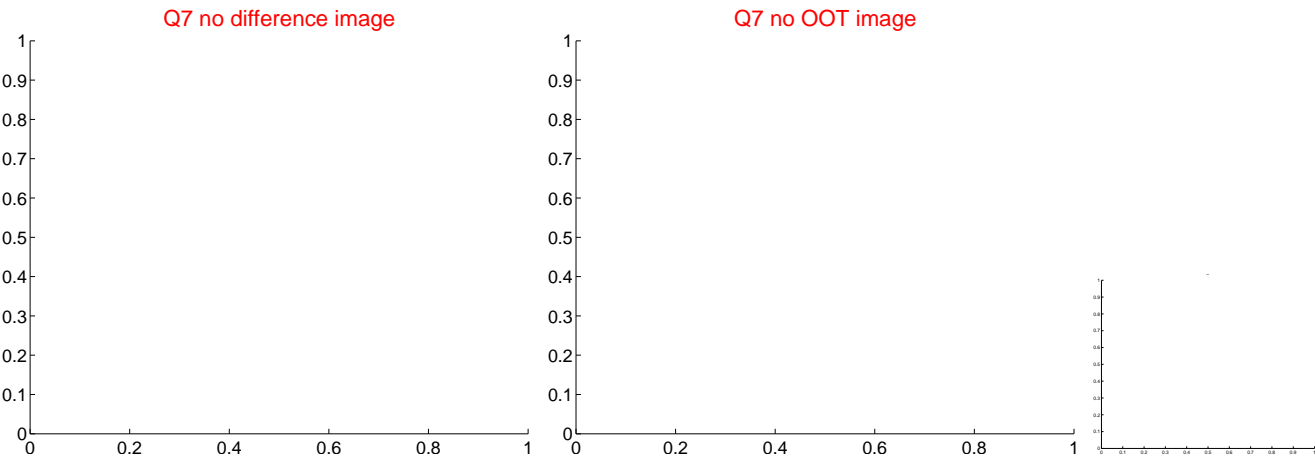
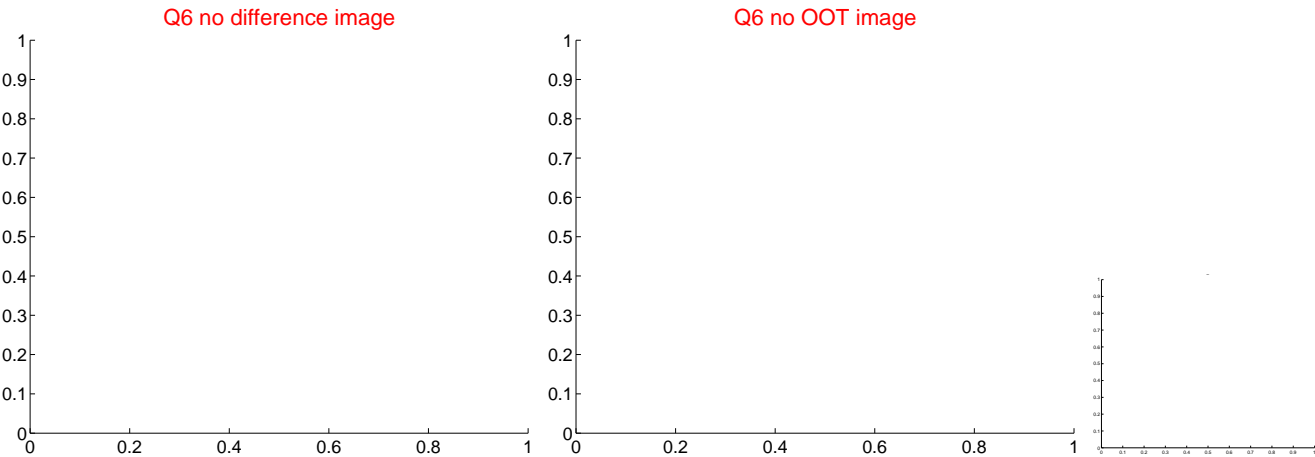
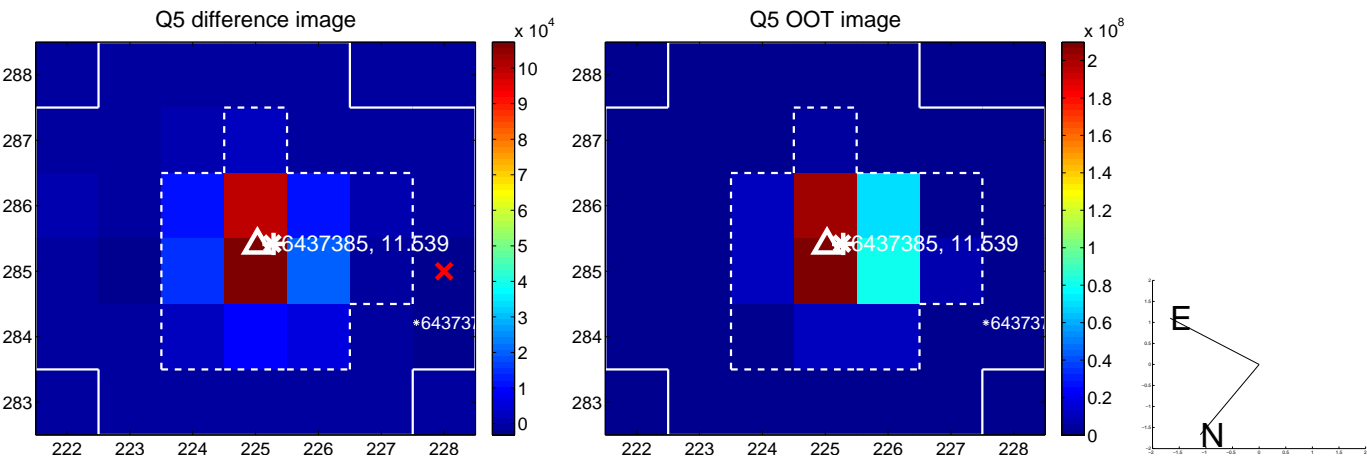


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

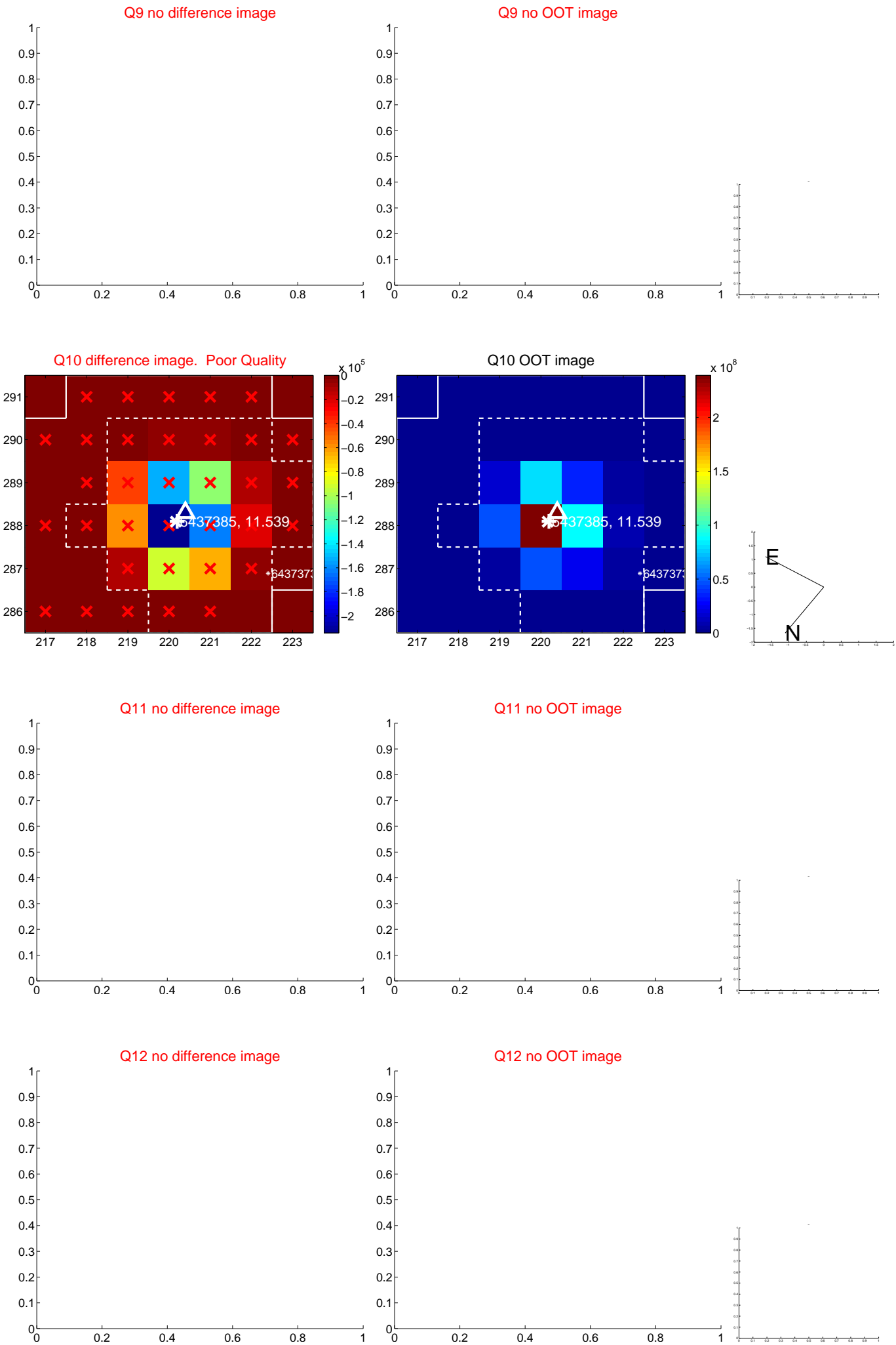
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



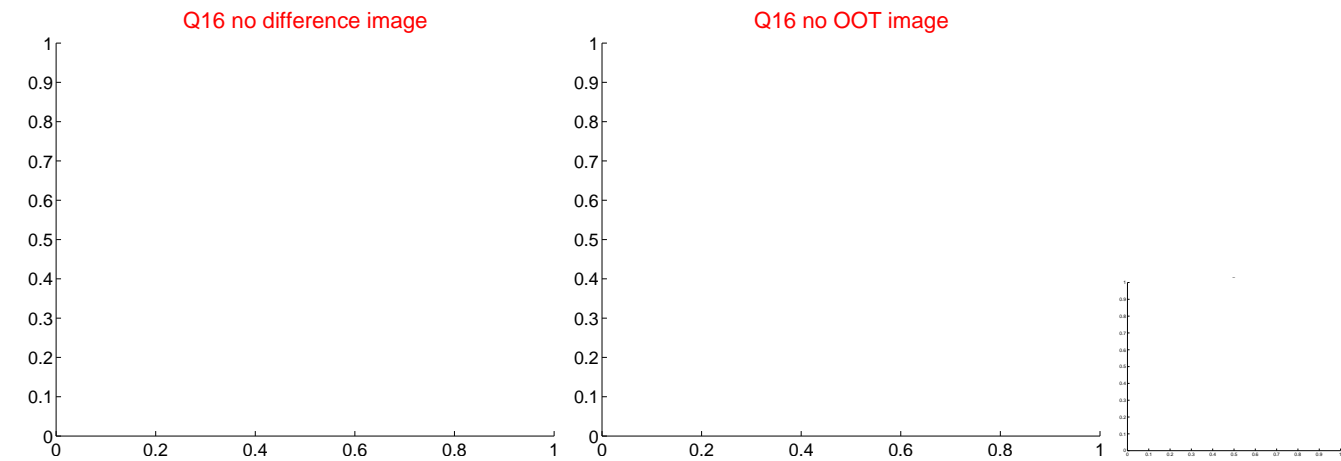
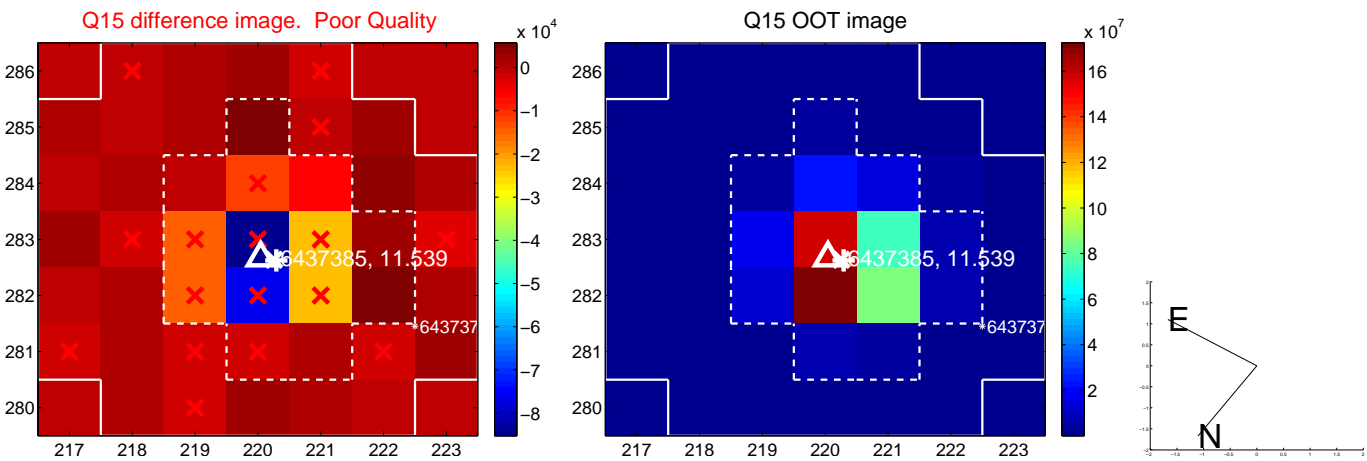
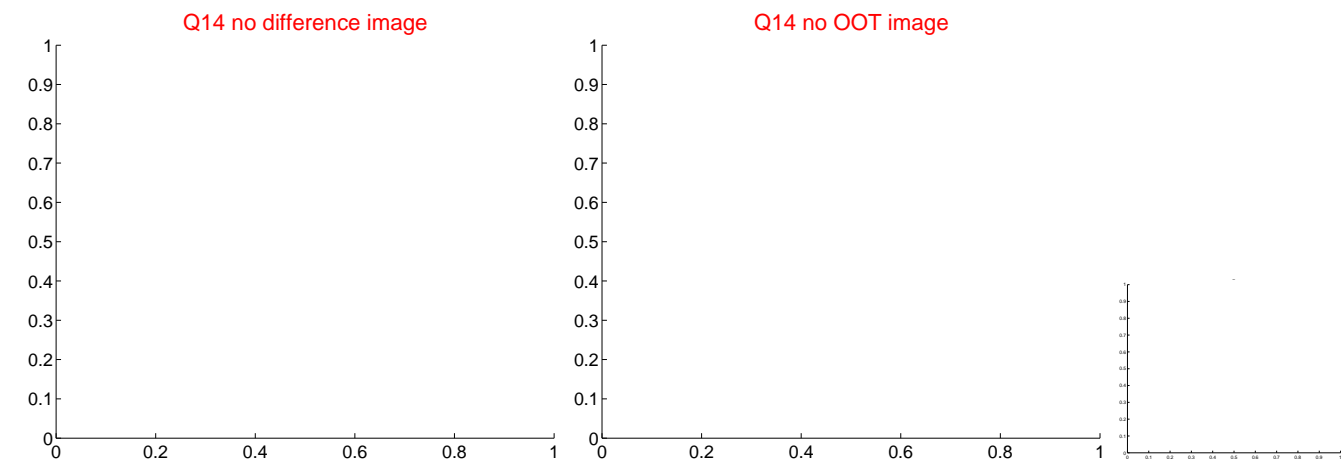
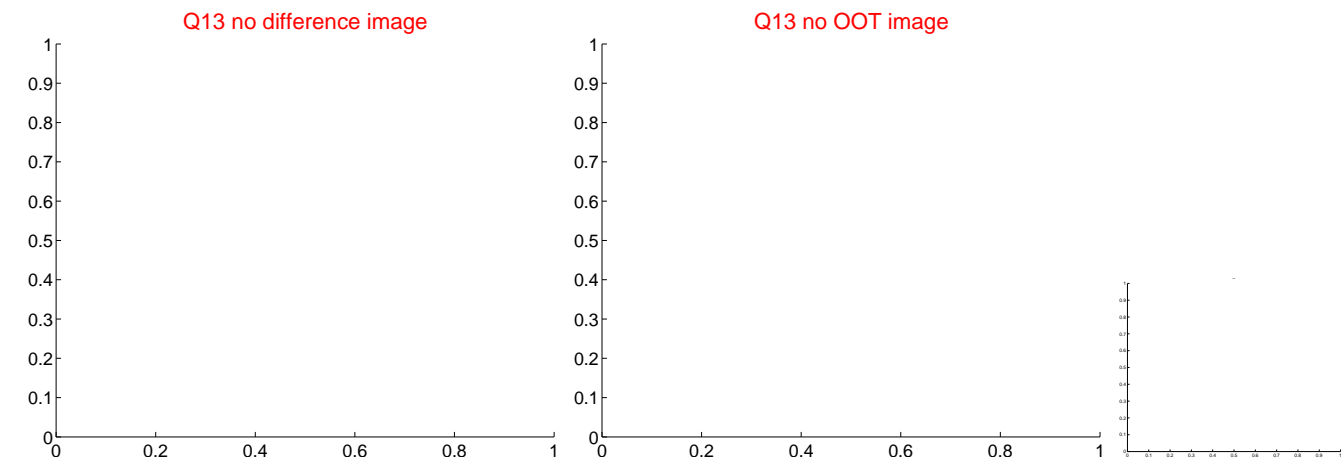
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



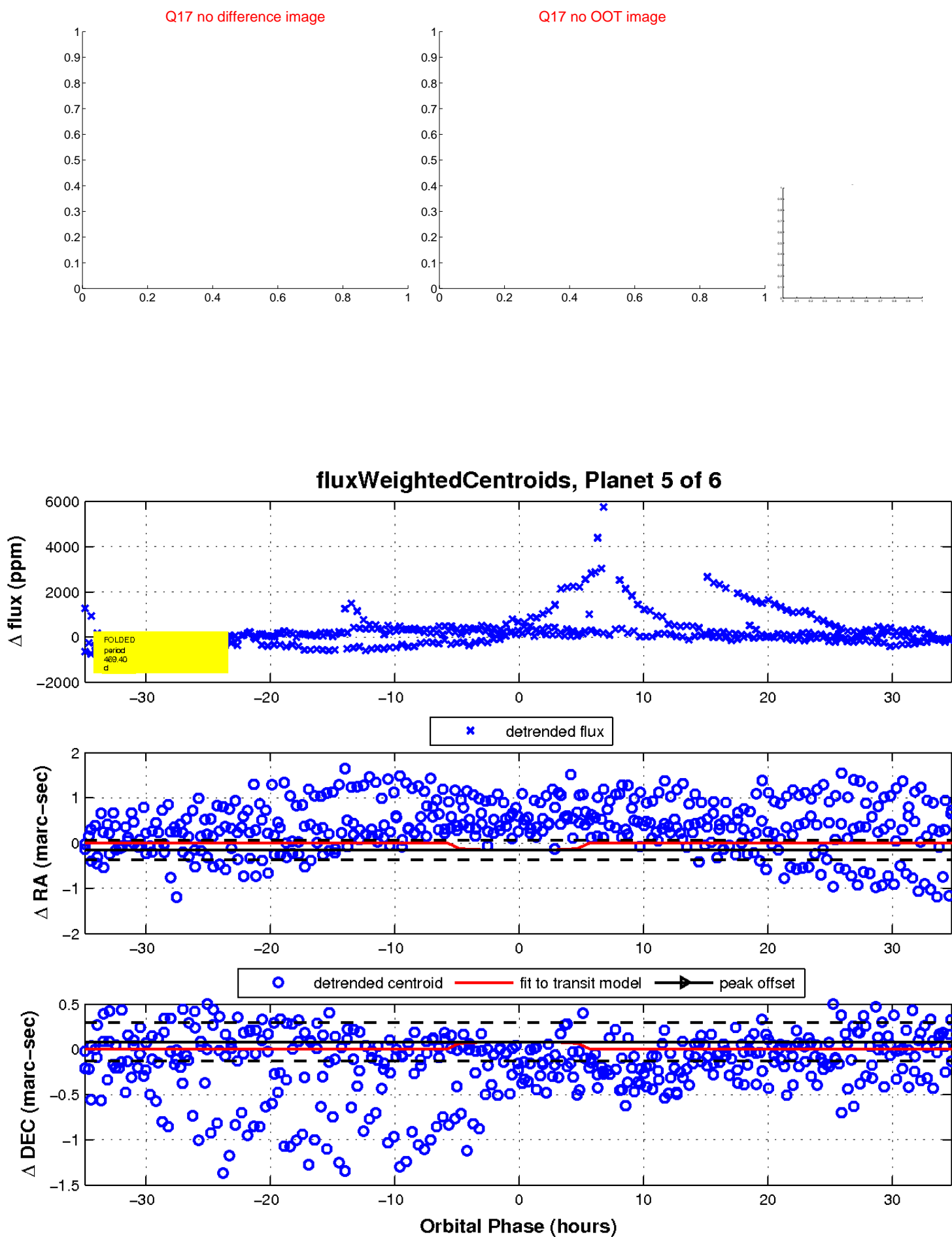
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



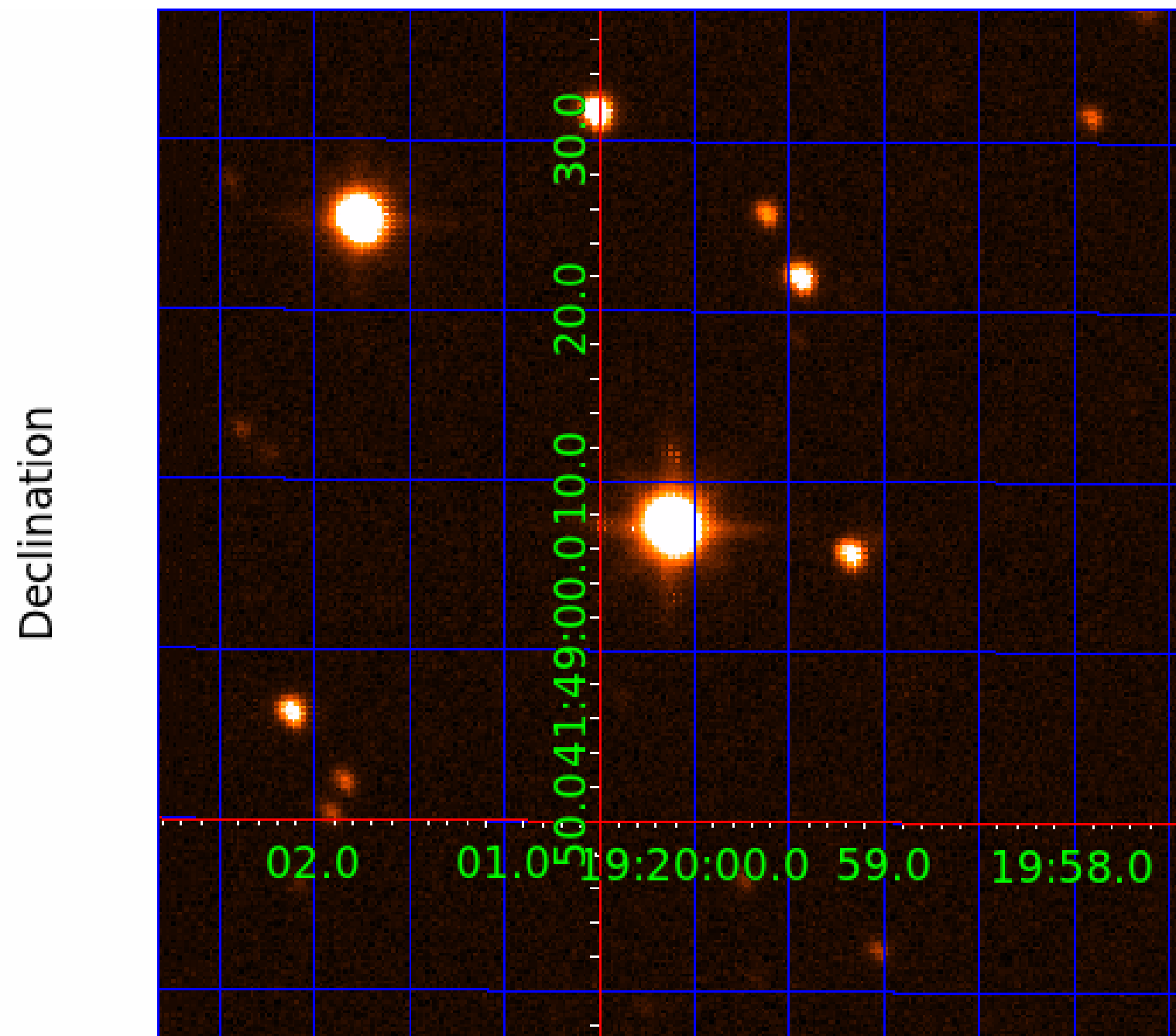
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006437385

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})
006437385-01	OBS	No	422.247083	360.420787	347.3	7.884	54.7	5.2	2.06	5727	4.04	3.95
006437385-02	OBS	No	515.792211	250.228539	355.9	7.634	40.5	5.3	2.06	5727	4.18	3.02
006437385-03	OBS	No	551.976769	411.403643	749.7	3.520	20.4	13.7	2.06	5727	5.99	2.76
006437385-04	OBS	No	525.623730	300.786444	525.4	5.921	16.6	8.5	2.06	5727	4.75	2.95
006437385-05	OBS	No	469.404592	483.092458	417.9	11.679	22.0	5.6	2.06	5727	4.88	3.43
006437385-06	OBS	No	483.492086	465.051399	163.2	9.000	17.9	-1.0	2.06	5727	2.64	3.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006437385-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006437385-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
006437385-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006437385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—CENT_NOFITS

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

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

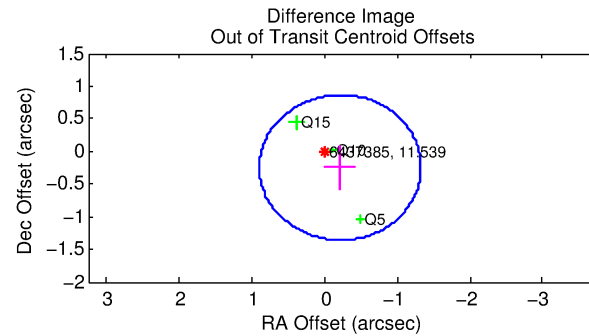
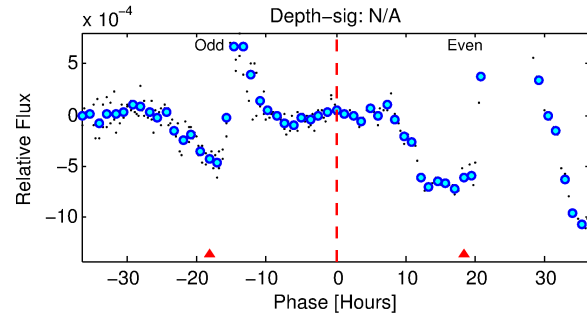
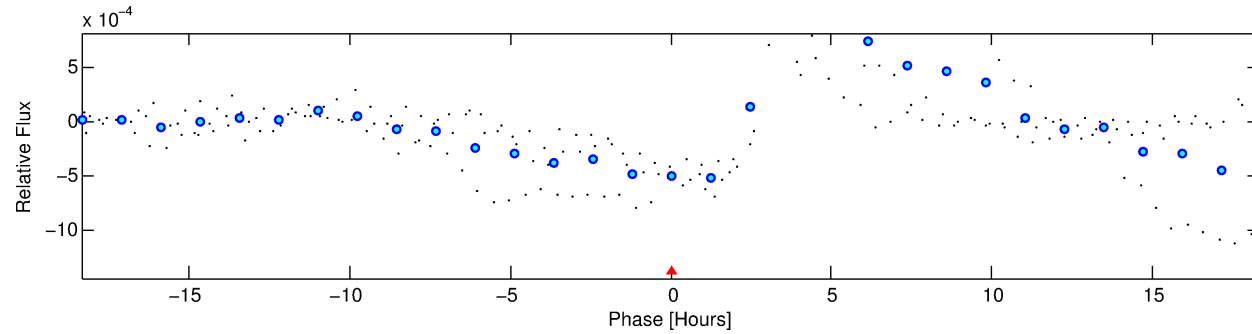
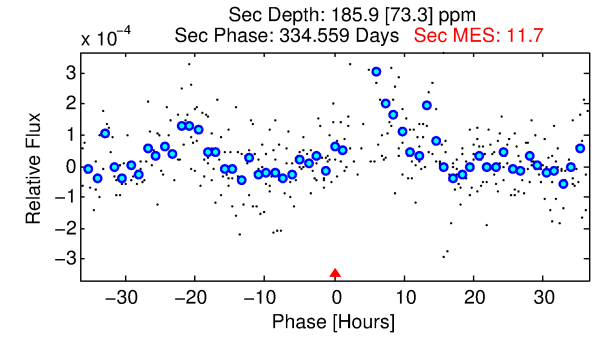
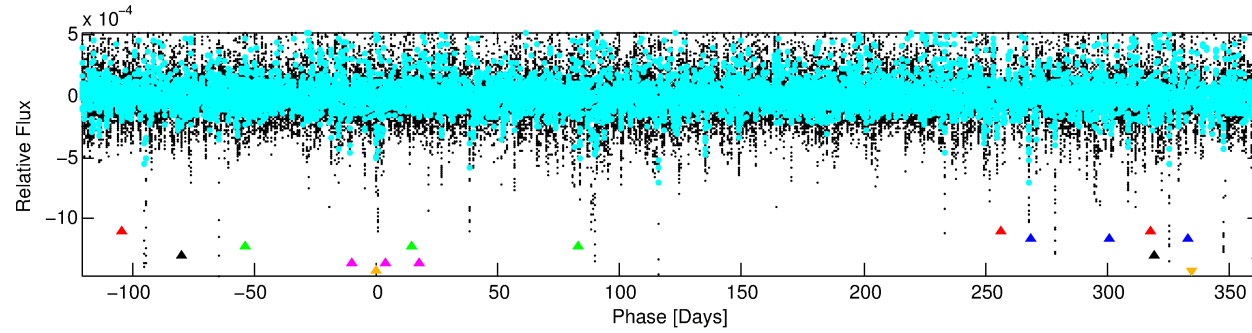
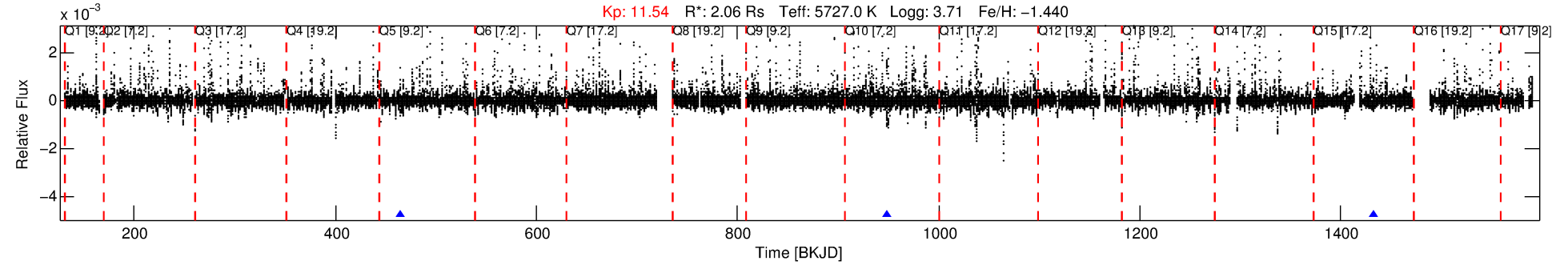
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006437385-06

No Significant Match Found

DV One-Page Summary

KIC: 6437385 Candidate: 6 of 6 Period: 483.492 d



TPS TCE Results:

Period = 483.49209 d
Epoch = 465.0514 BKJD

DV fit results are unavailable

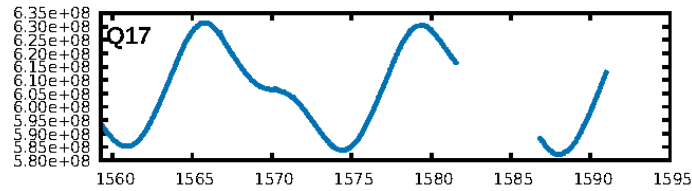
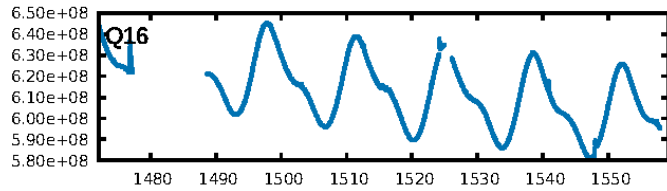
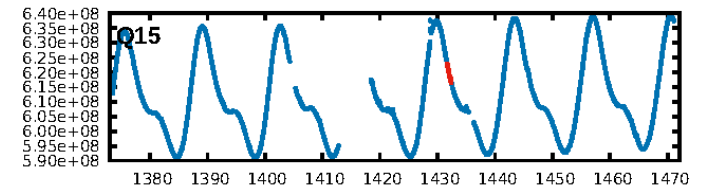
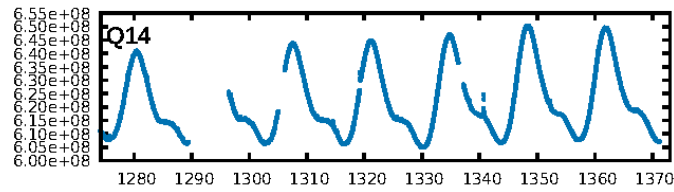
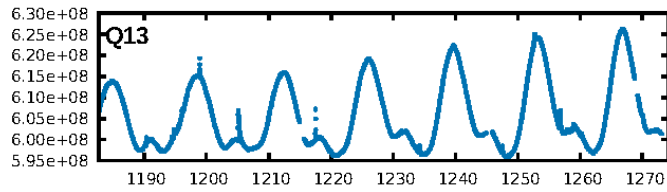
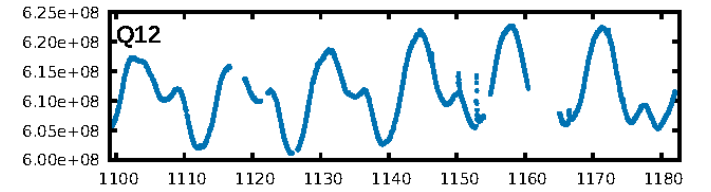
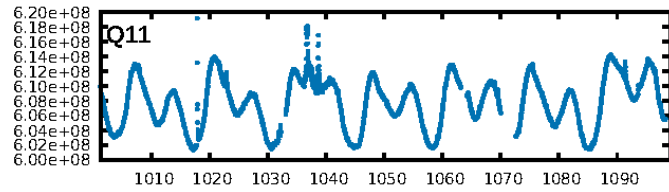
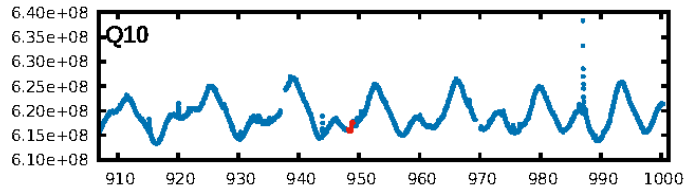
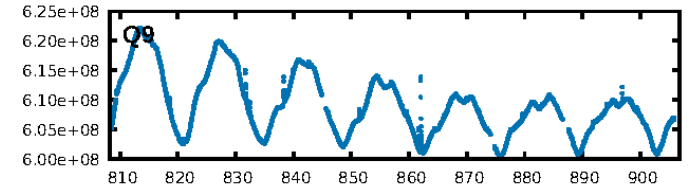
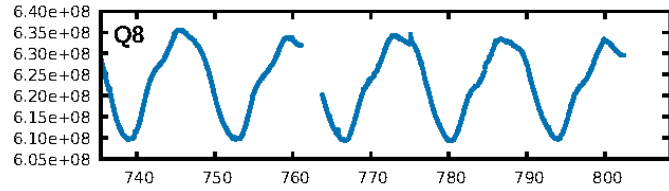
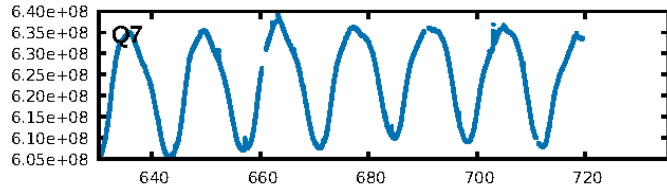
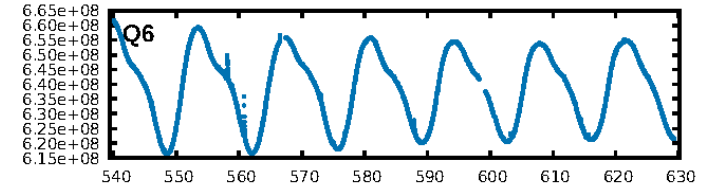
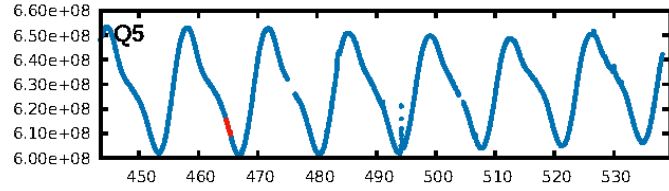
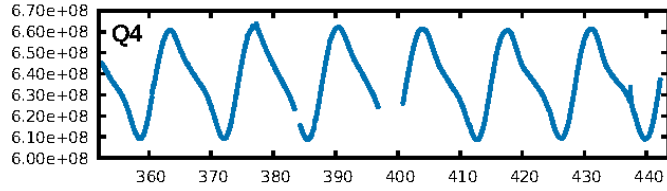
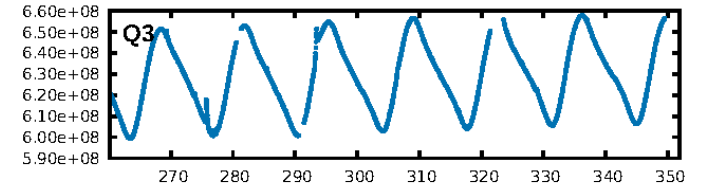
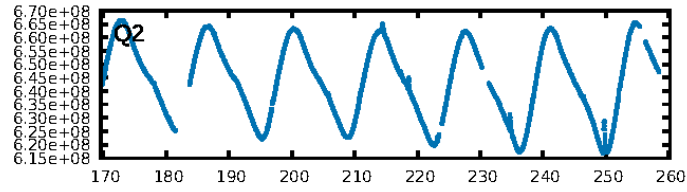
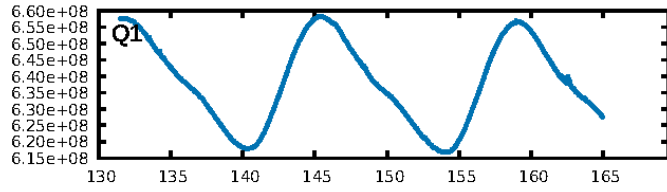
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.93 σ]
LongPeriod-sig: 100.0% [65.68 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.908
Centroid-sig: 36.2%
Centroid-so: 0.402 arcsec [1.31 σ]
OotOffset-rm: 0.329 arcsec [0.89 σ]
KicOffset-rm: 0.436 arcsec [1.09 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

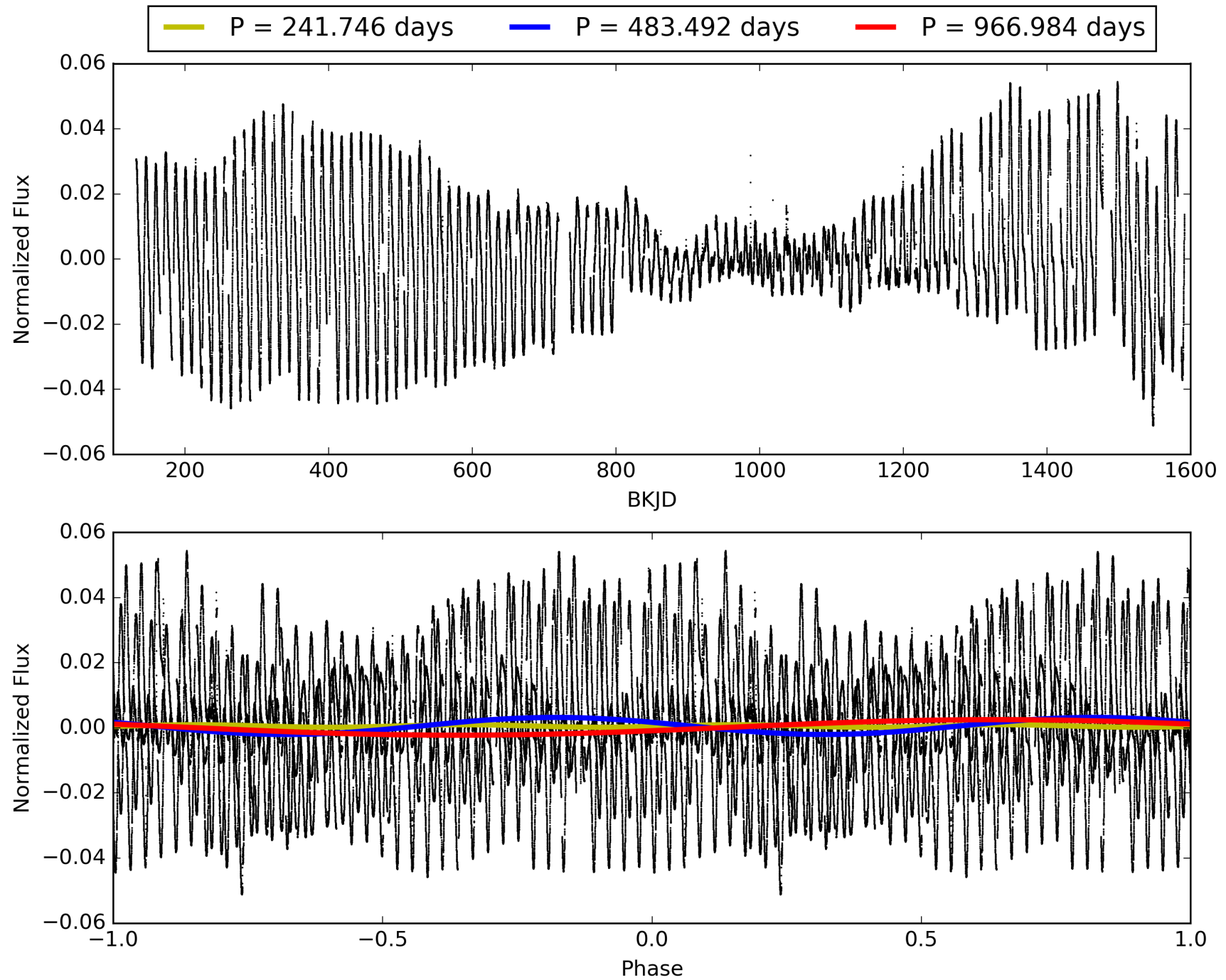
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:33:26 Z

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

TCE 006437385-06, PDC Light Curves

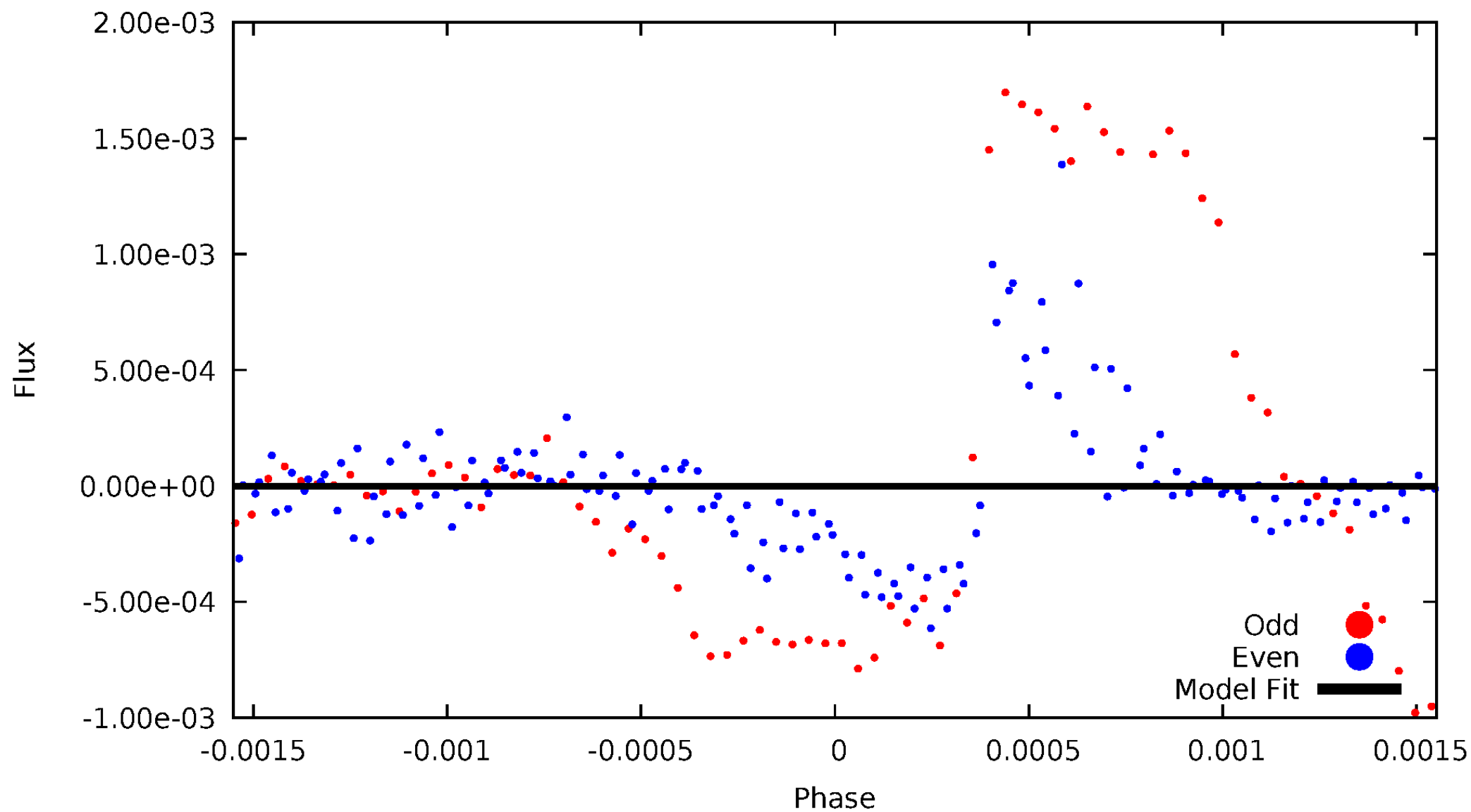


TCE 006437385-06



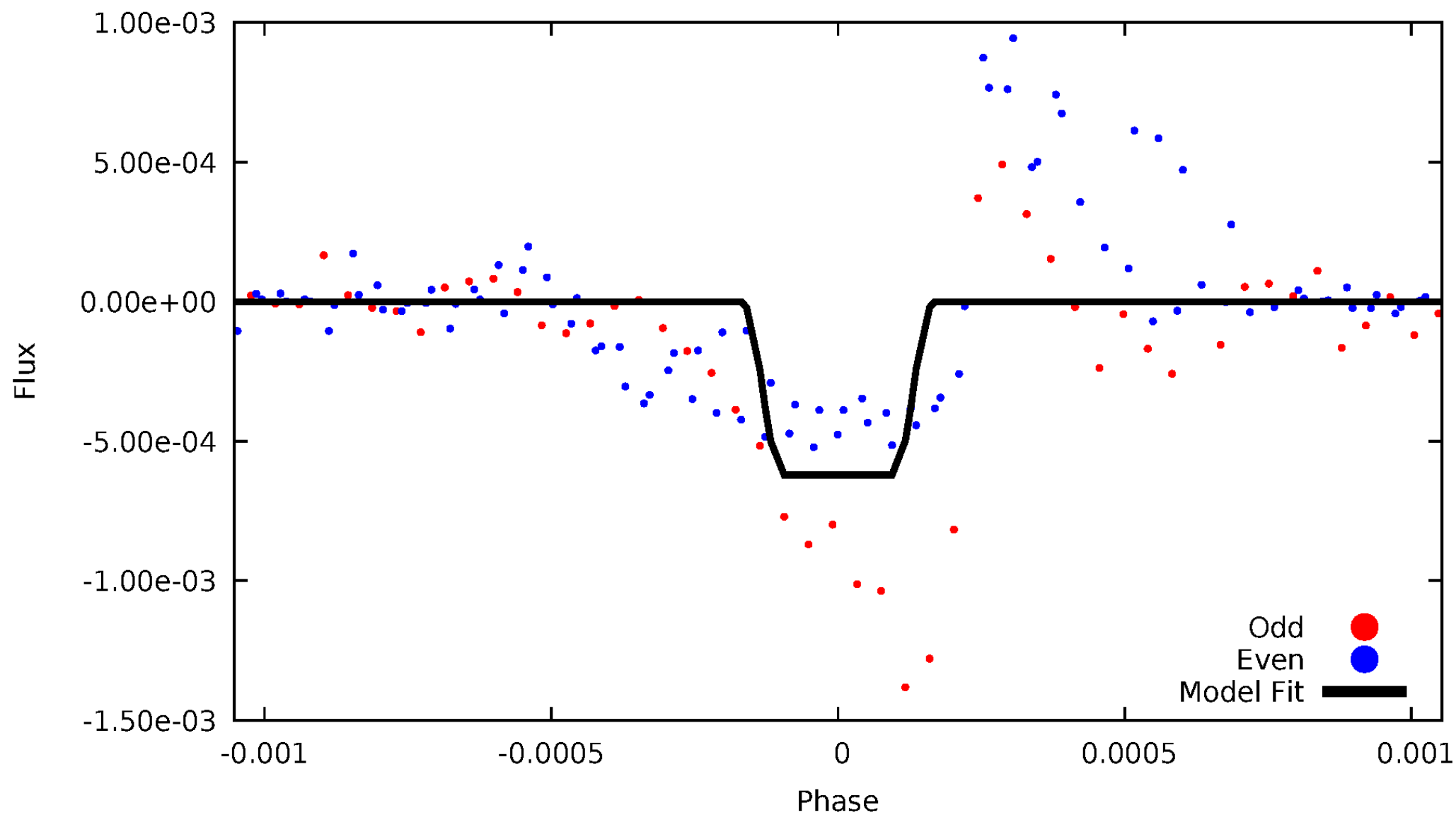
DV Odd/Even

TCE 006437385-06



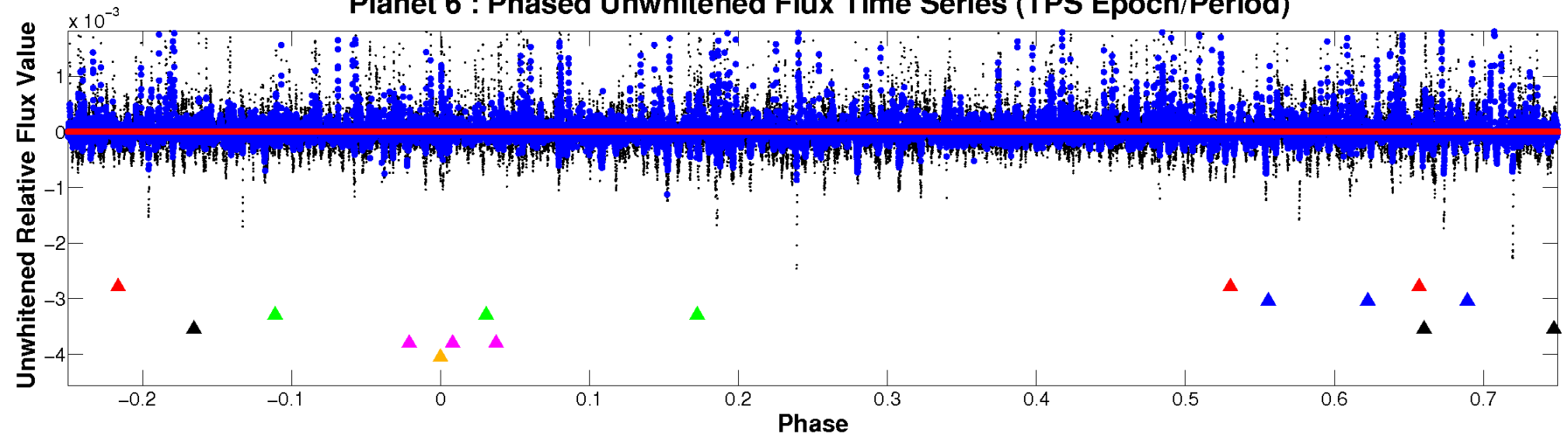
ALT Odd/Even

TCE 006437385-06



Non-Whitened Vs. Whitened Light Curve

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

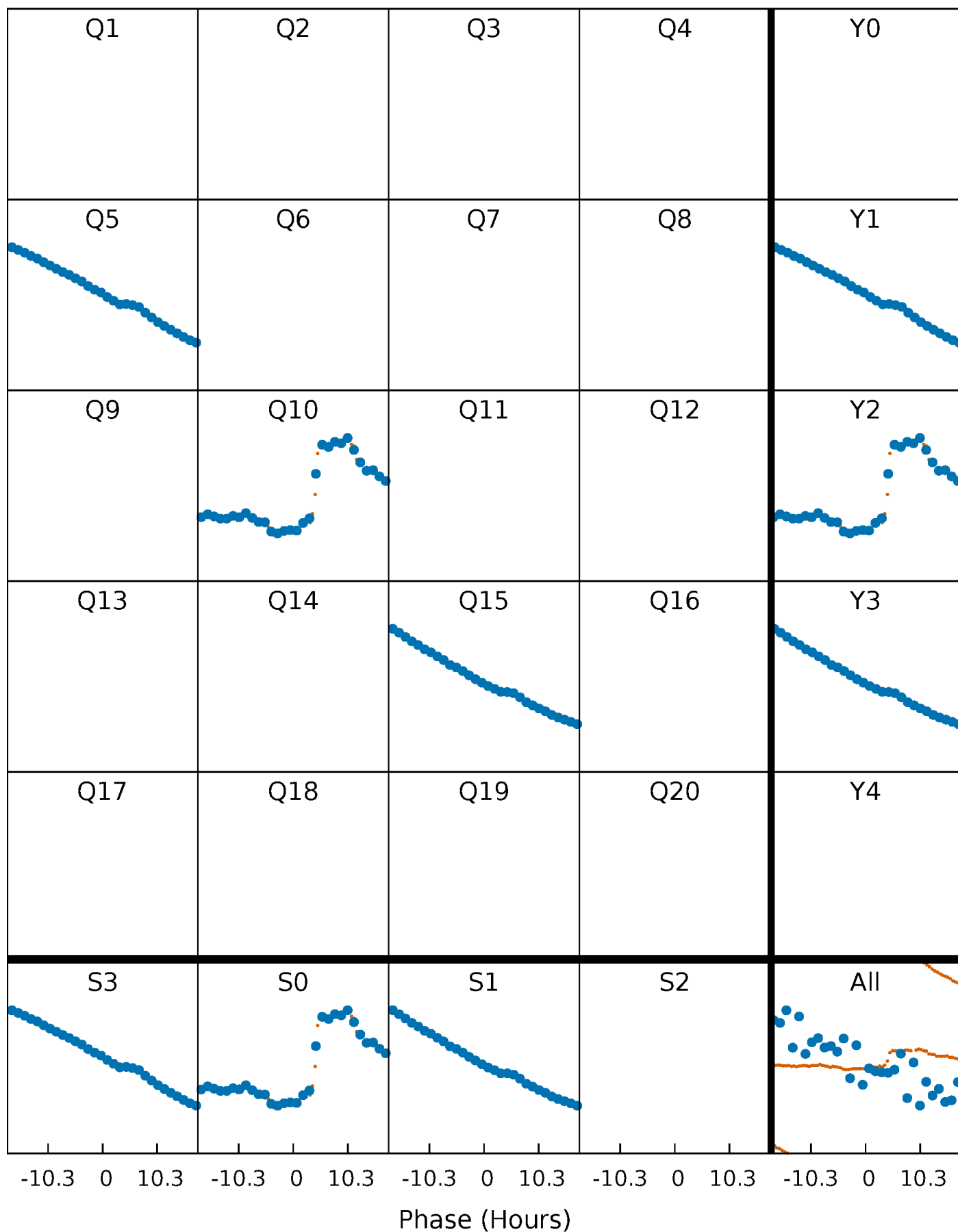


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



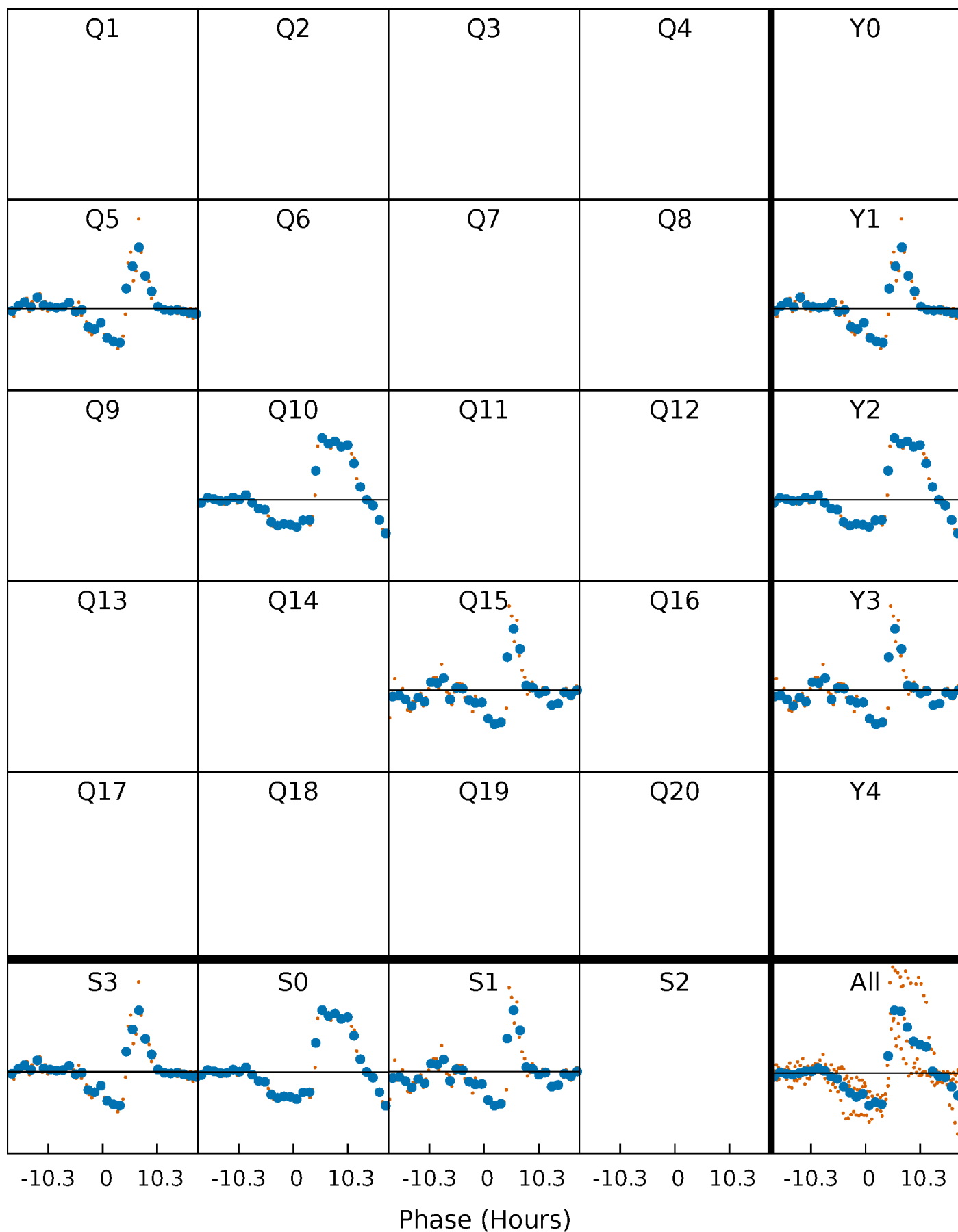
PDC Quarter-Phased Transit Curves

TCE 006437385-06 P=483.492085 Days $T_0=465.051399$ (BKJD)



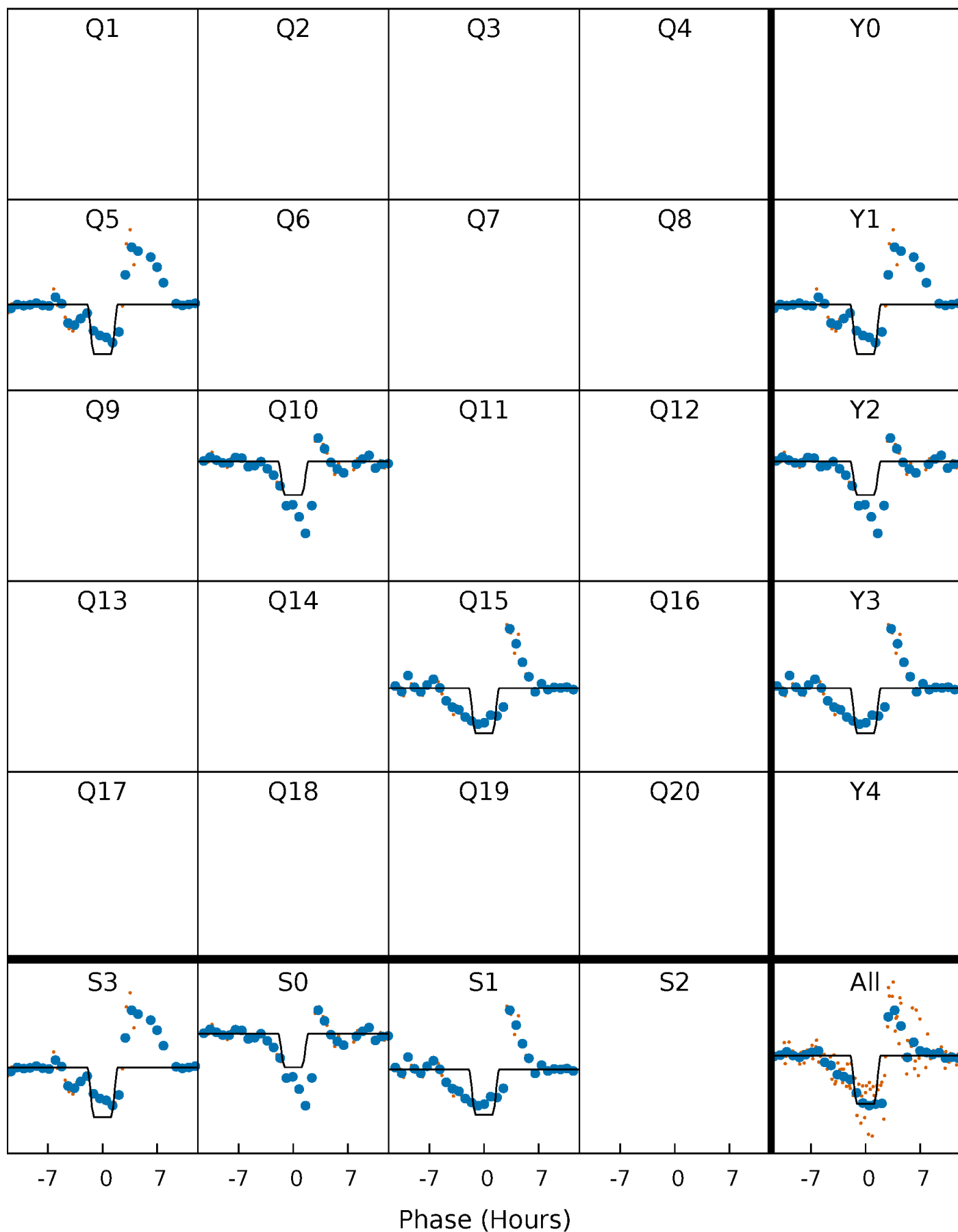
DV Quarter-Phased Transit Curves

TCE 006437385-06 $P=483.492085$ Days $T_0=465.051399$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

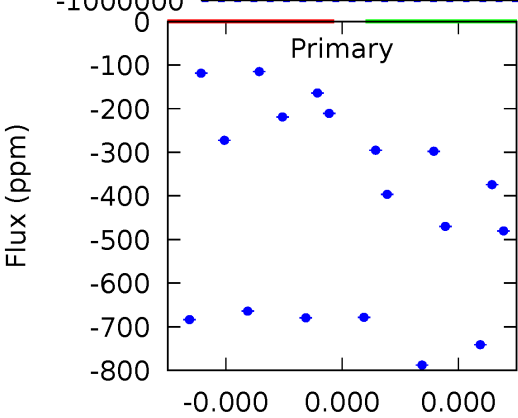
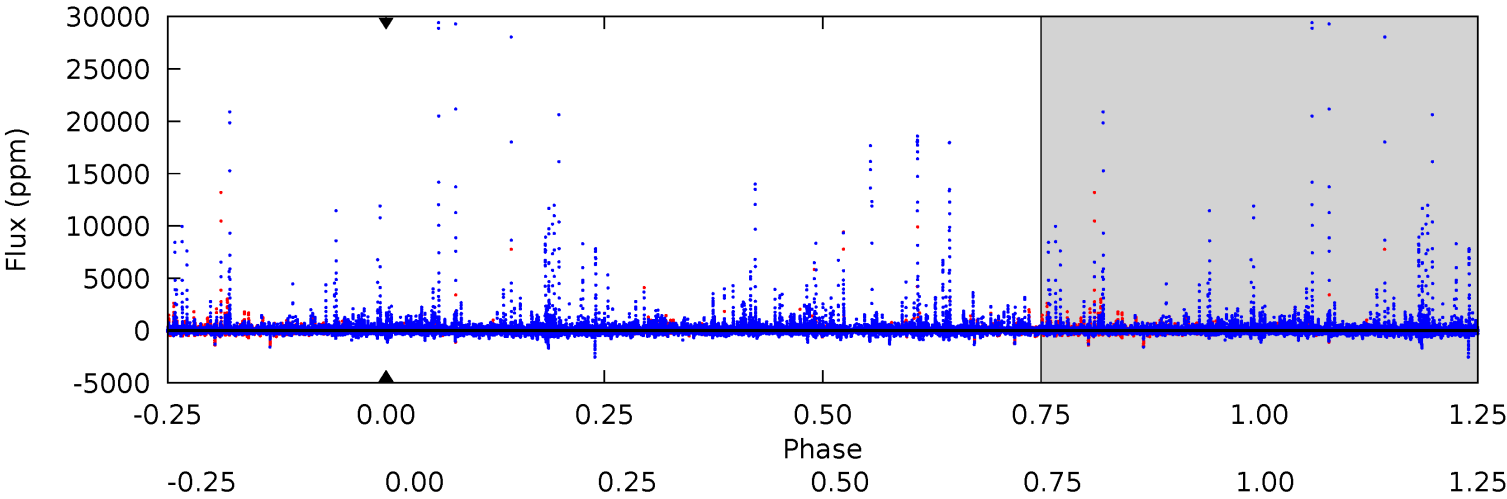
TCE 006437385-06 P=483.492085 Days $T_0=465.125663$ (BKJD)



DV Model-Shift Uniqueness Test

006437385-06, P = 483.492085 Days, E = 465.051399 Days

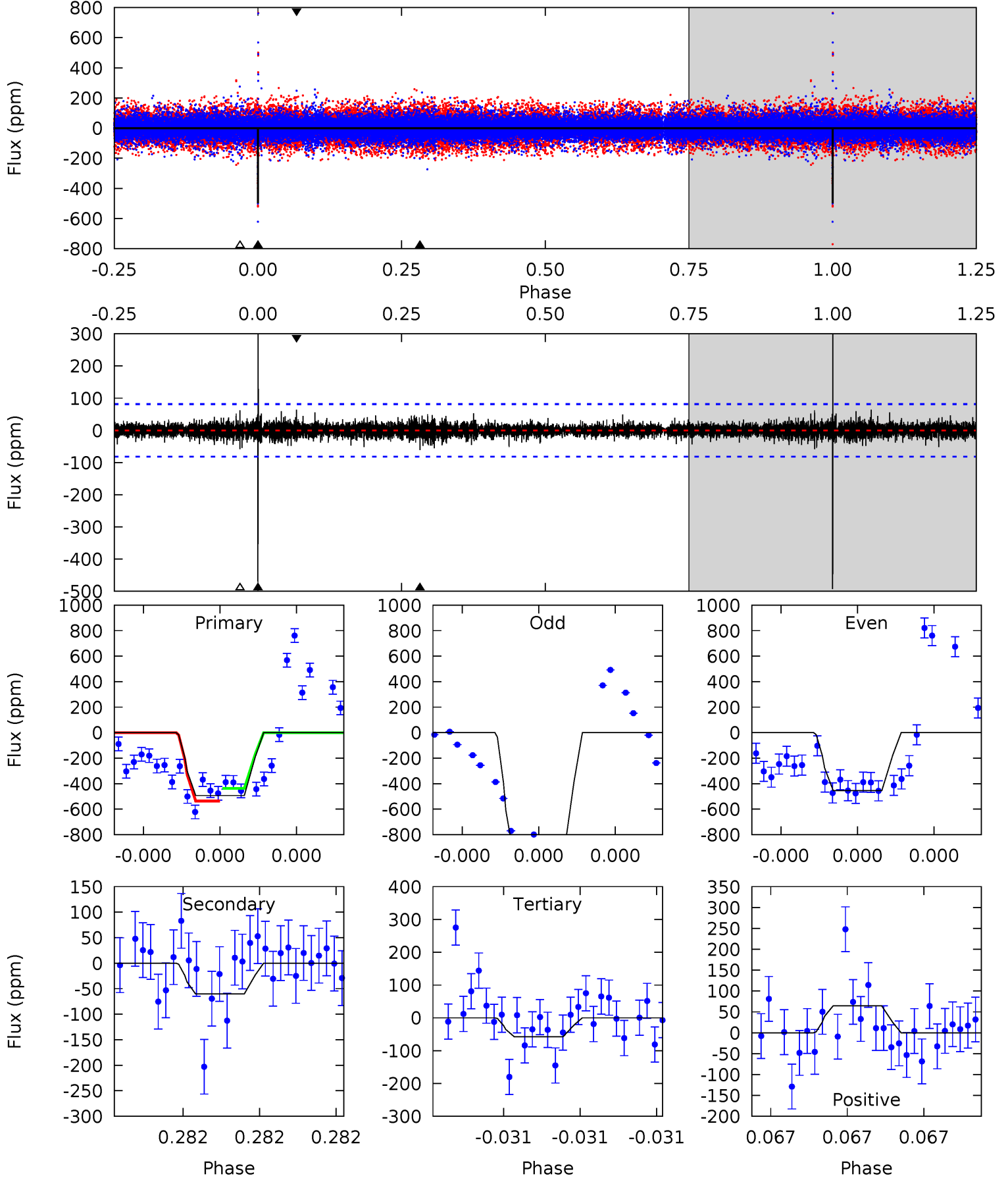
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

006437385-06, P = 483.492085 Days, E = 465.125663 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.3	4.20	4.02	4.49	5.66	3.62	0.79	30.3	29.8	0.19	-0.29	18.3	1.34	0.38	3.42



Stellar Parameters For KIC 006437385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5727^{+201}_{-181}	$3.707^{+0.875}_{-0.312}$	$-1.440^{+0.350}_{-0.250}$	$2.061^{+1.207}_{-1.475}$	$0.789^{+0.207}_{-0.112}$	$0.127^{+3.249}_{-0.077}$
	+4%/-3%	+24%/-8%	+24%/-17%	+59%/-72%	+26%/-14%	+2560%/-61%
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 006437385-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$14.59^{+19.08}_{-10.45}$	468^{+75}_{-97}	4580^{+16848}_{-24699}	$3290^{+656218}_{-642599}$
Alt.	-60 ± 14	$15.08^{+21.33}_{-10.88}$	473^{+76}_{-98}	2639^{+1170}_{-439}	171^{+2365}_{-139}

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 $A_{obs} \gg 1.0$

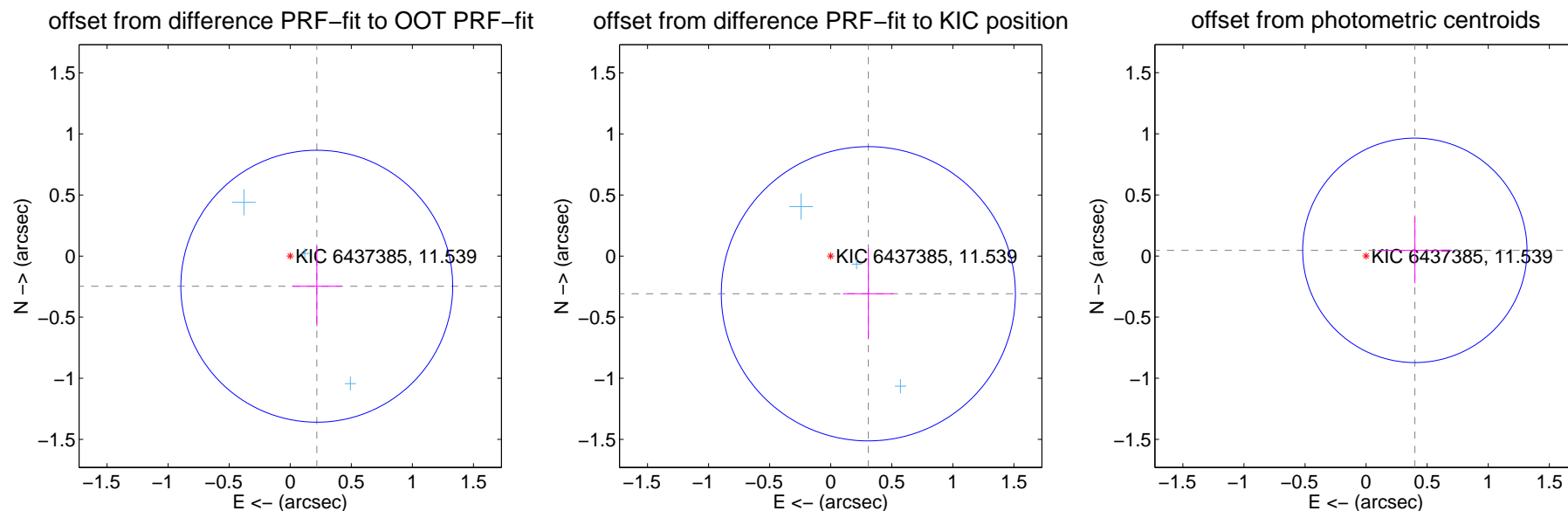
DV Centroid Data

Supplemental centroid analysis for 006437385-06. **Kepler magnitude: 11.54.** Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.329 ± 0.371	0.89	-0.217 ± 0.202	-0.247 ± 0.328
PRF-fit source offset from KIC position	0.436 ± 0.401	1.09	-0.308 ± 0.208	-0.308 ± 0.372
photometric centroid source offset	0.40 ± 0.31	1.31	-0.40 ± 0.31	0.05 ± 0.27

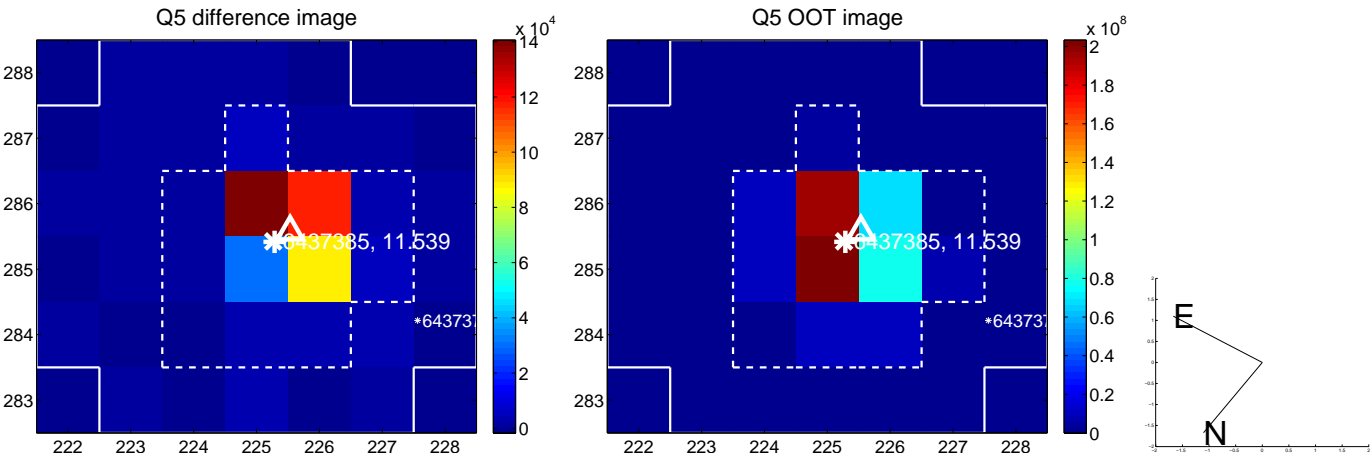


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

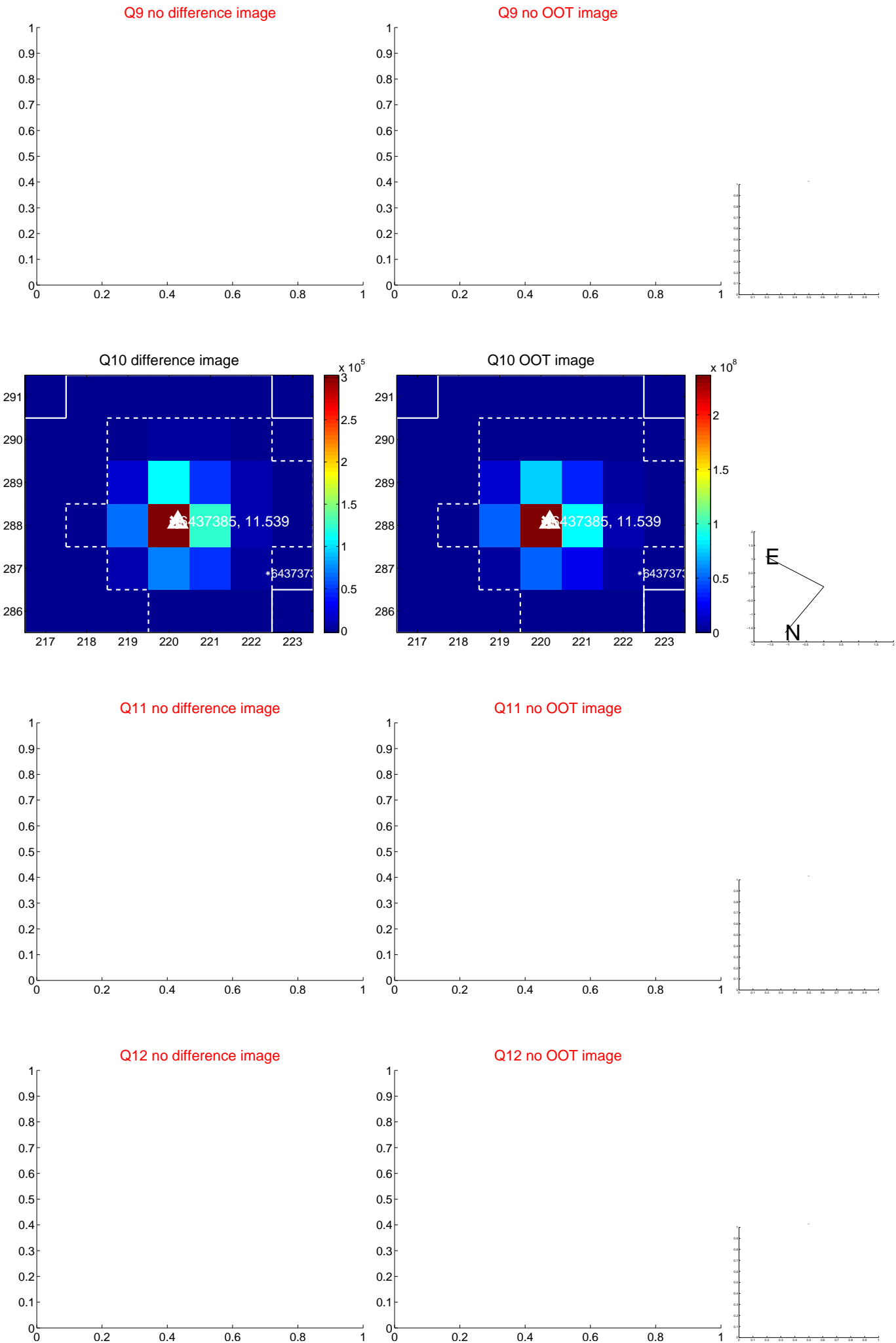
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



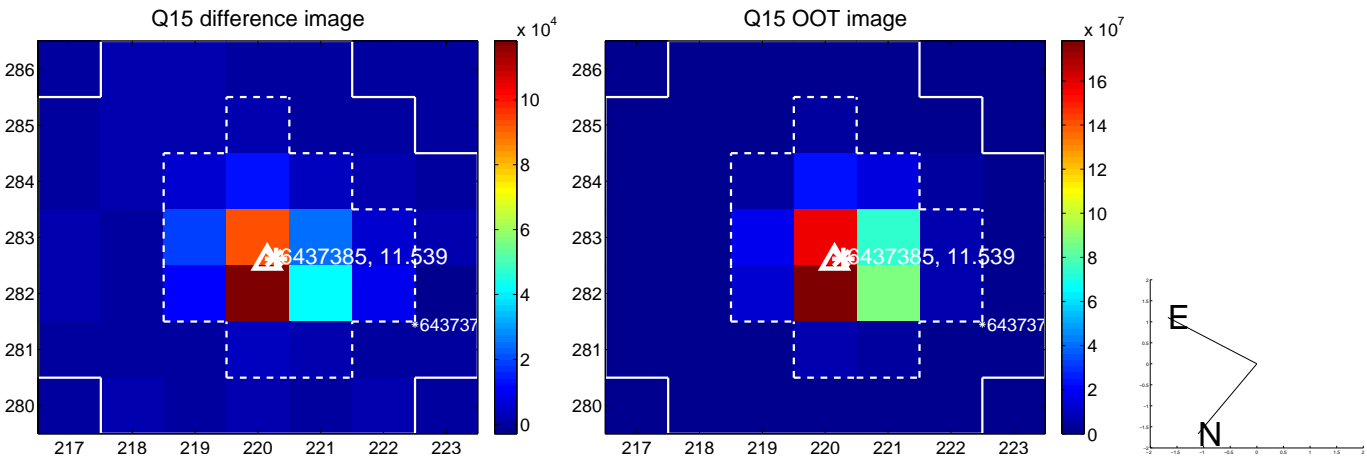
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



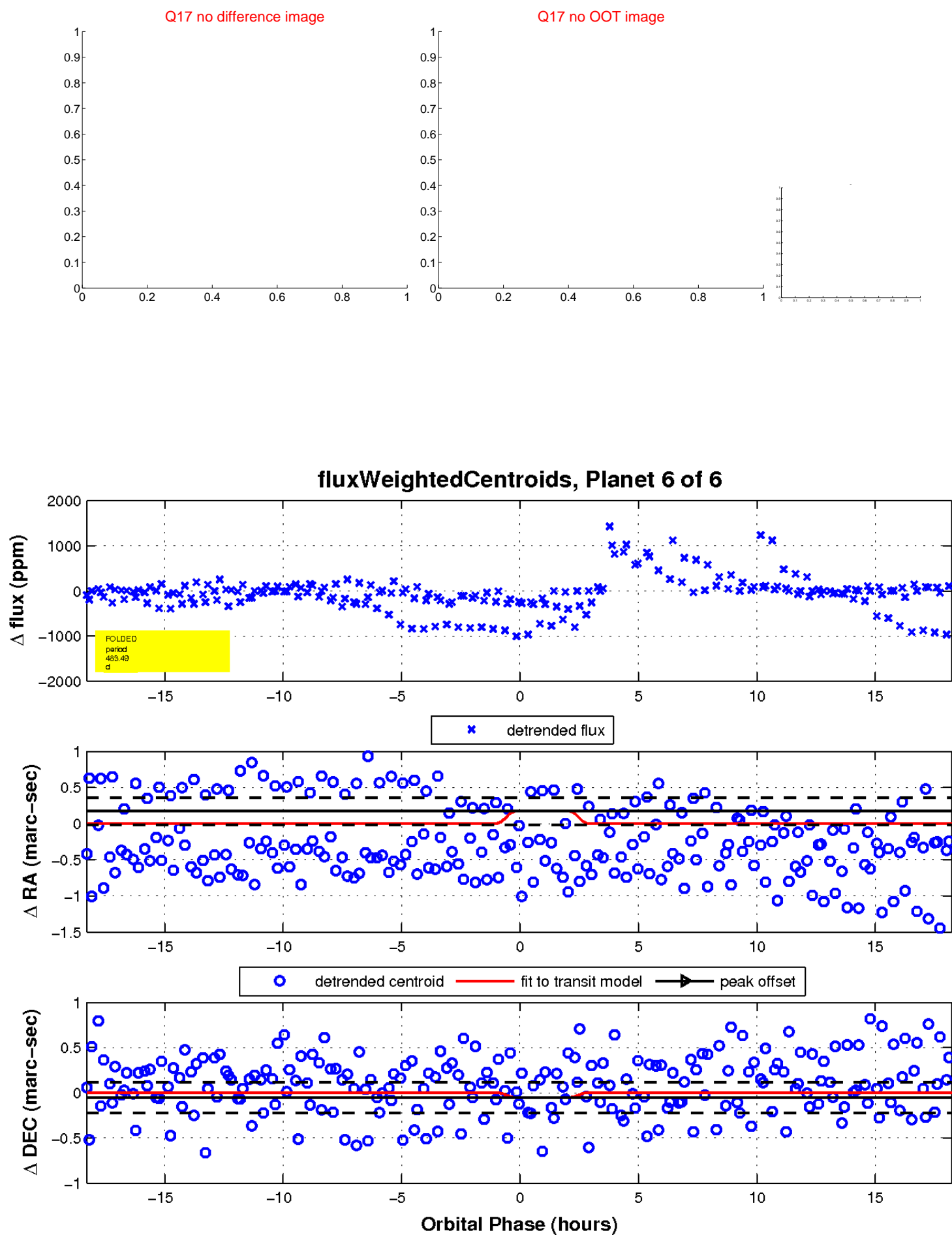
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

