

KIC 006438216

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})
006438216-01	OBS	No	275.818636	400.304526	1534.8	7.423	13.5	7.4	0.55	4650	2.57	0.28
006438216-02	OBS	No	610.468282	343.057573	1504.5	3.999	15.6	6.3	0.55	4650	2.29	0.10
006438216-03	OBS	No	262.441675	347.551214	964.6	5.472	12.1	5.1	0.55	4650	1.73	0.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006438216-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006438216-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006438216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

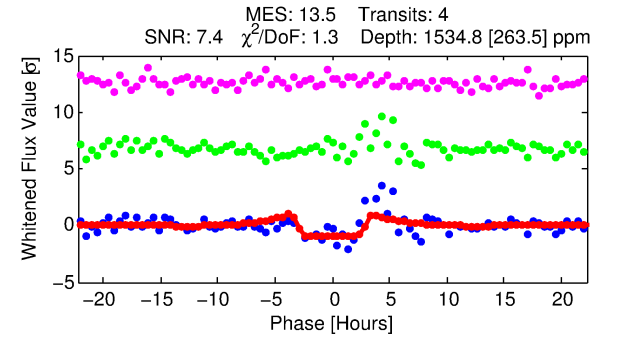
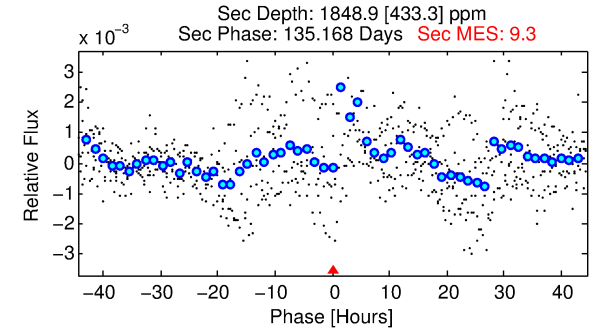
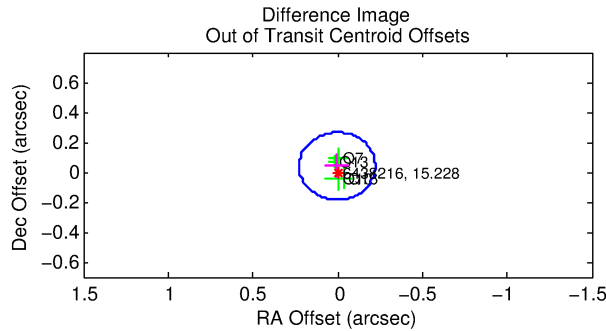
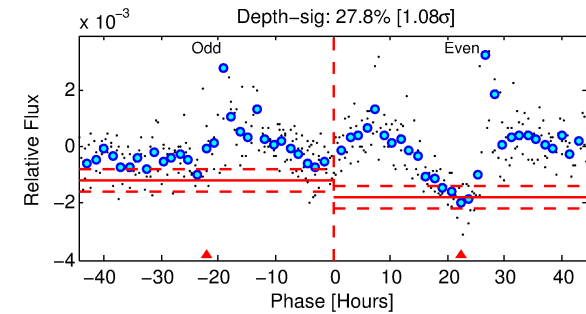
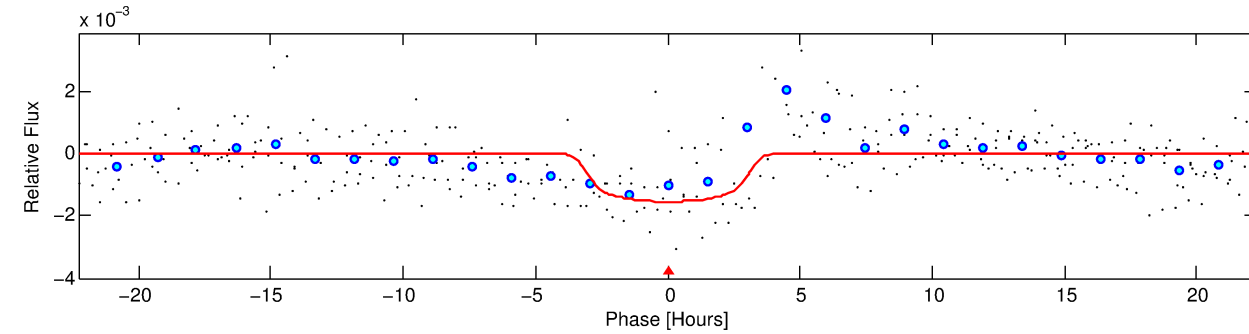
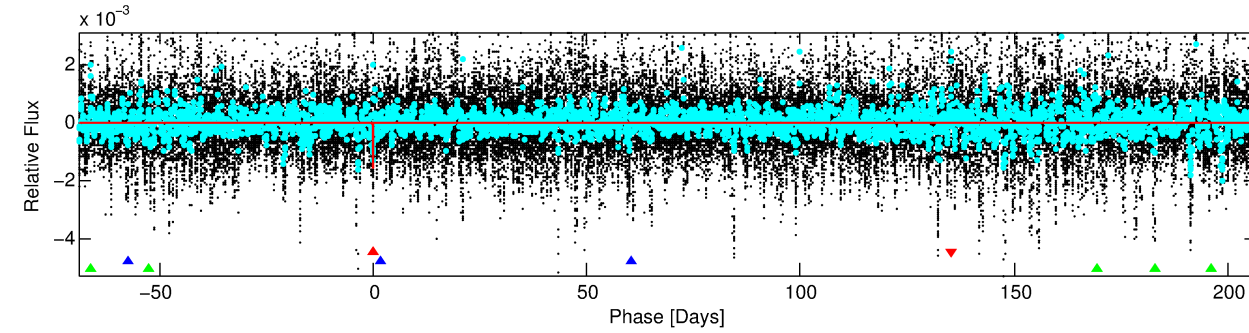
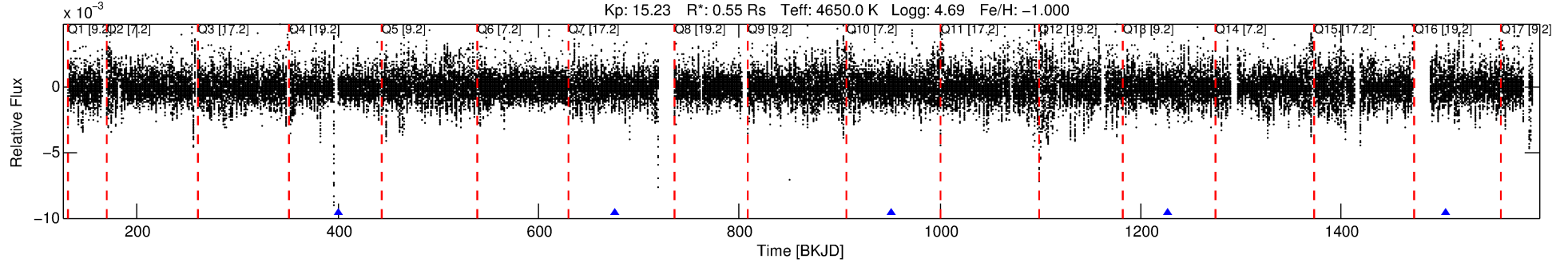
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006438216-01

No Significant Match Found

DV One-Page Summary

KIC: 6438216 Candidate: 1 of 3 Period: 275.819 d



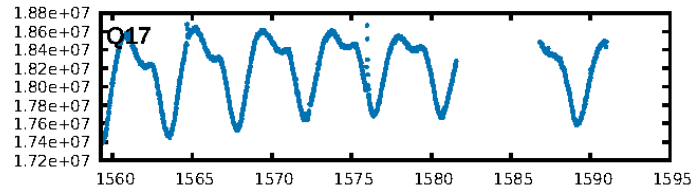
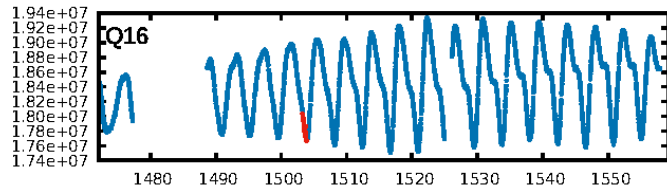
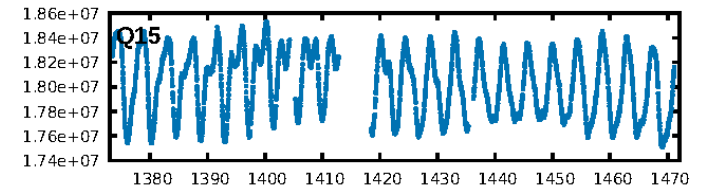
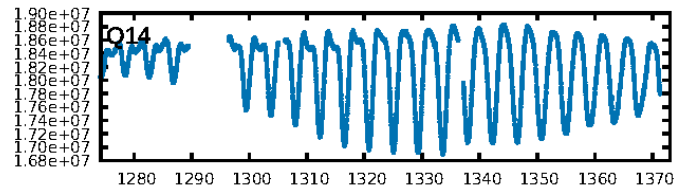
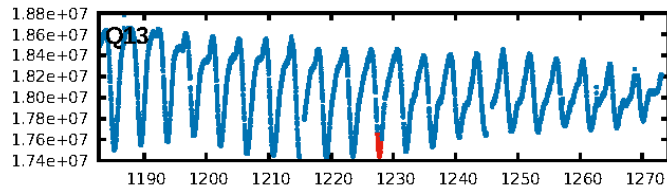
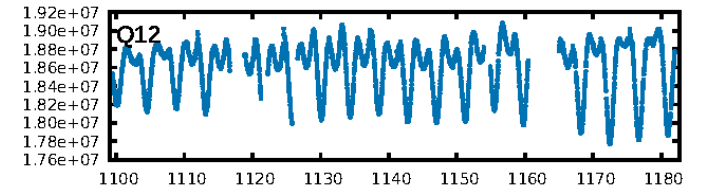
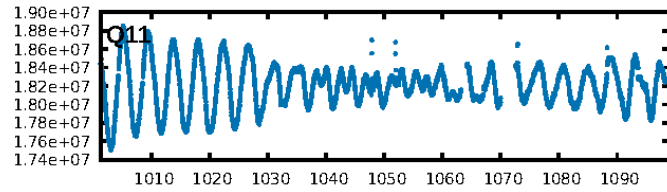
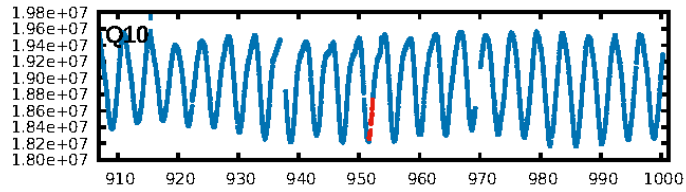
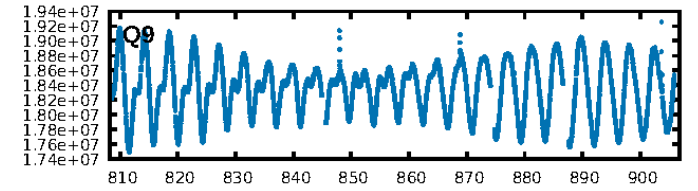
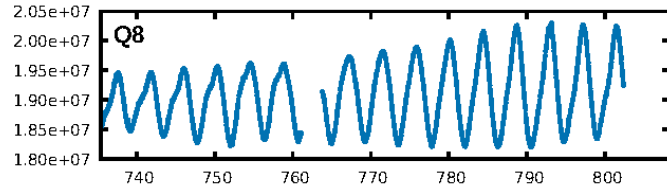
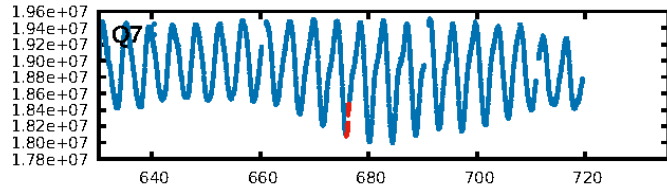
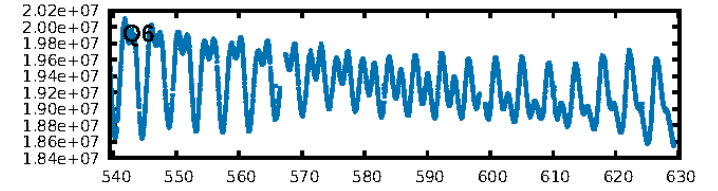
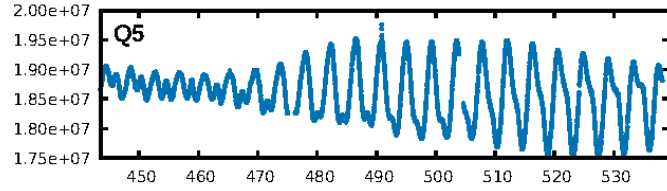
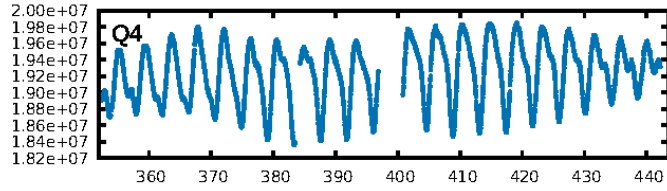
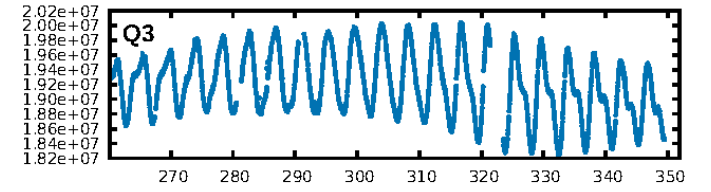
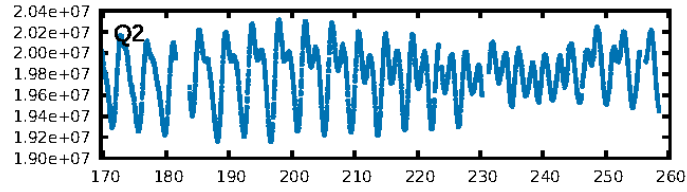
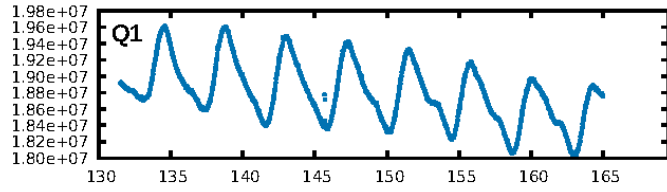
DV Fit Results:

Period = 275.81864 [0.00621] d
Epoch = 400.3045 [0.0170] BKJD
Rp/R* = 0.0426 [0.0058]
a/R* = 159.99 [54.46]
b = 0.88 [0.09]
Seff = 0.28 [0.04]
Teq = 185 [7] K
Rp = 2.57 [0.40] Re
a = 0.6804 [0.0419] AU
Ag = 71108.24 [26511.39] [2.68 σ]
Teffp = 4673 [444] K [10.10 σ]

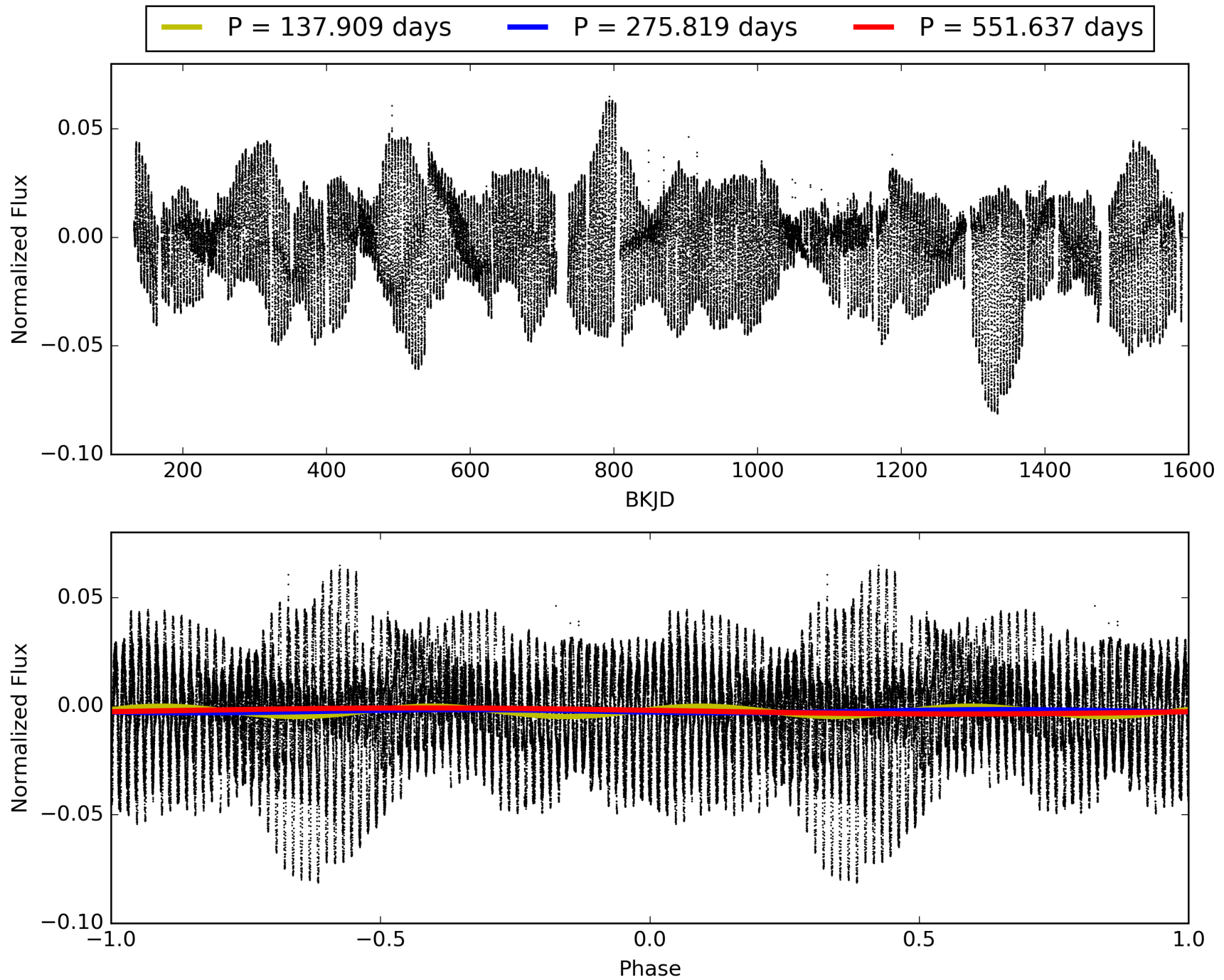
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.81 σ]
LongPeriod-sig: 100.0% [952.57 σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 30.6%
Bootstrap-pfa: 1.27e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.7002
Centroid-sig: 9.5%
Centroid-so: 0.951 arcsec [1.00 σ]
OotOffset-rm: 0.041 arcsec [0.54 σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 0.111 arcsec [1.47 σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 006438216-01, PDC Light Curves

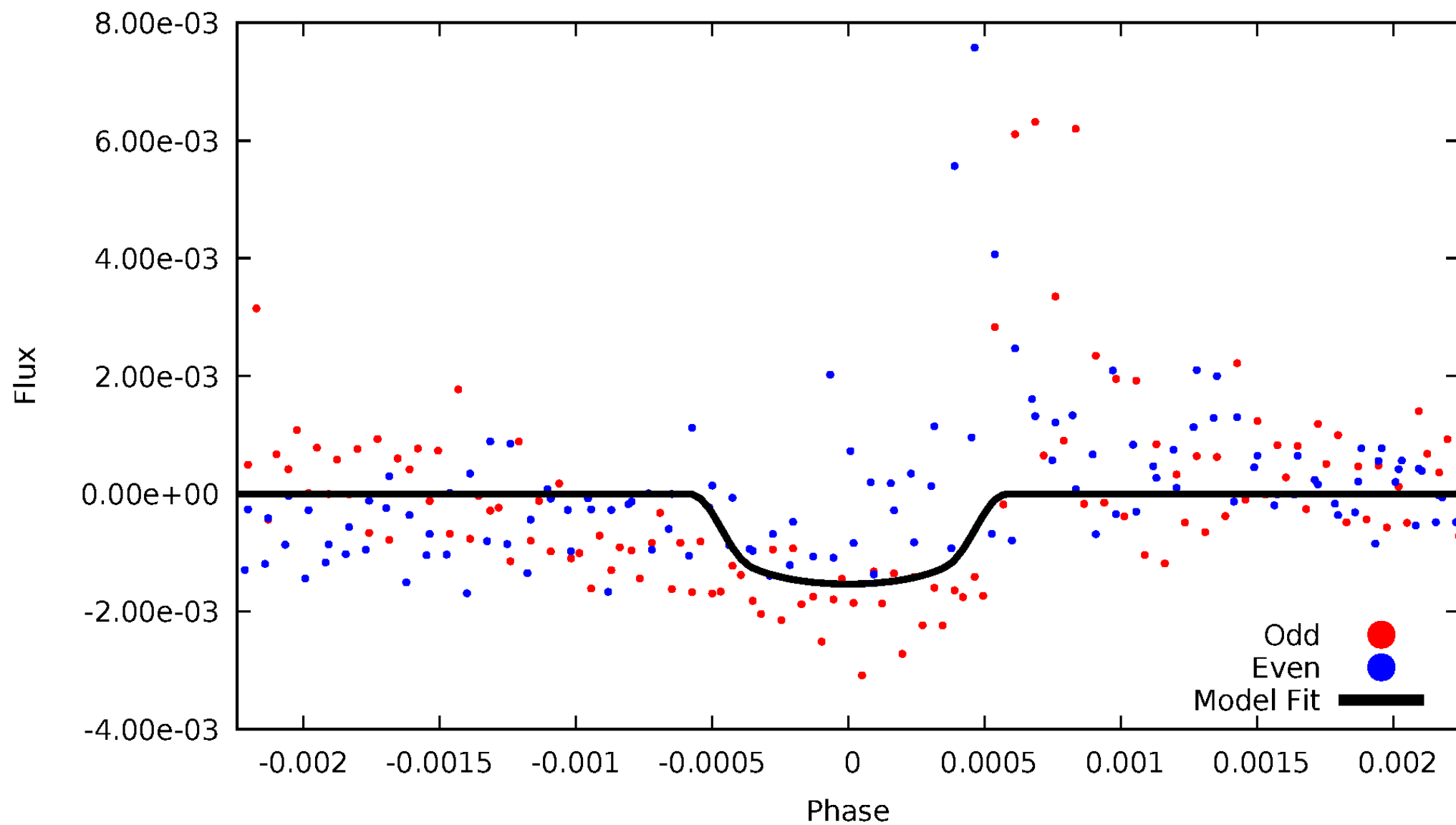


TCE 006438216-01



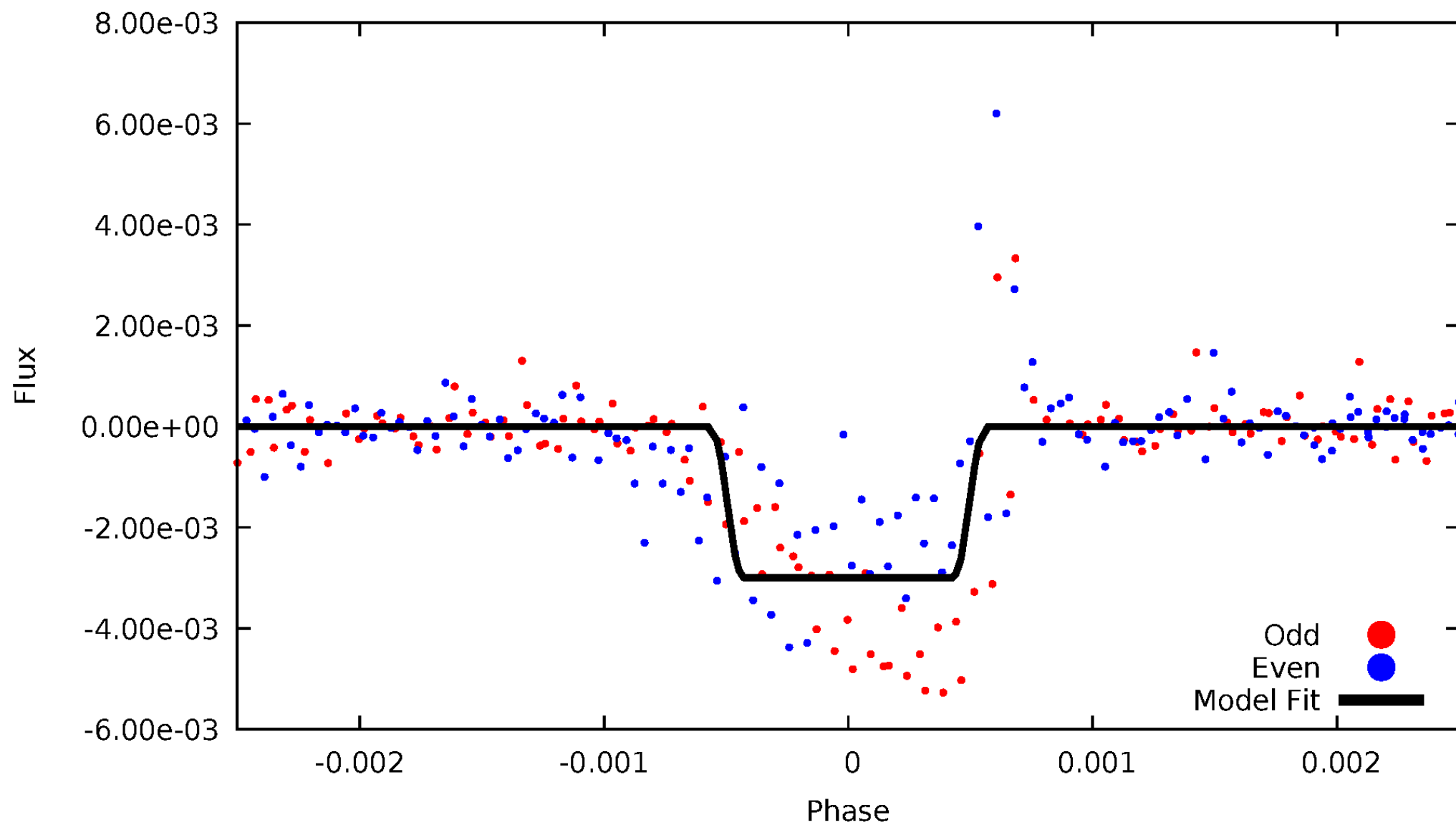
DV Odd/Even

TCE 006438216-01



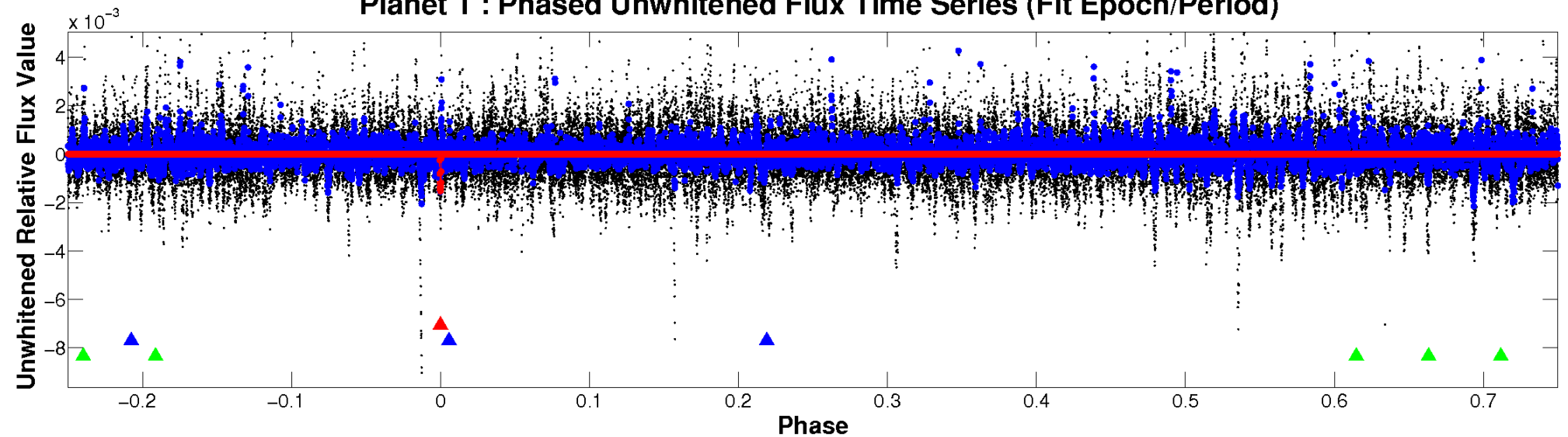
ALT Odd/Even

TCE 006438216-01

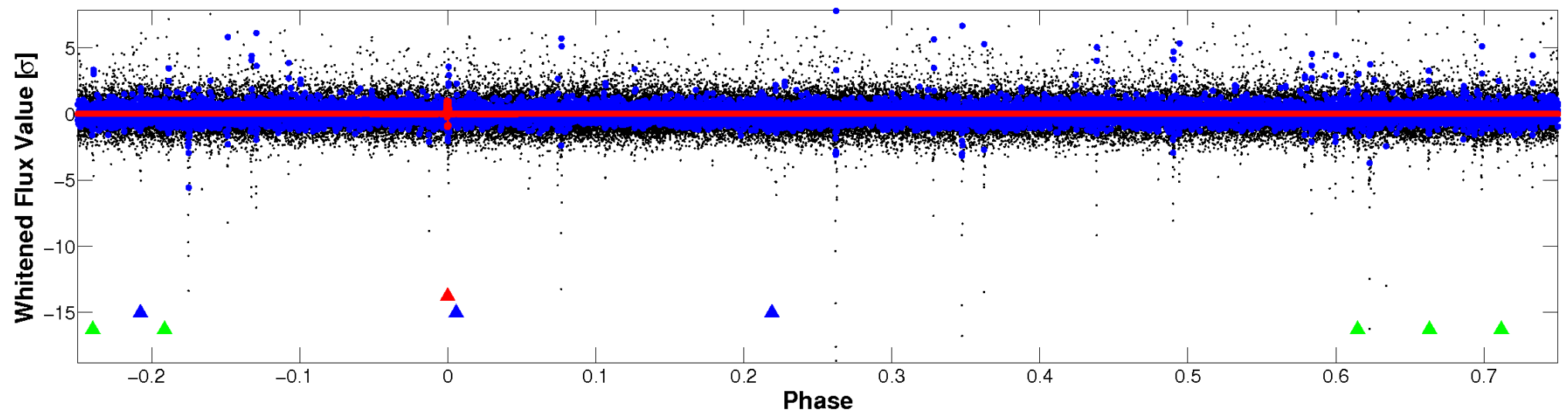


Non-Whitened Vs. Whitened Light Curve

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

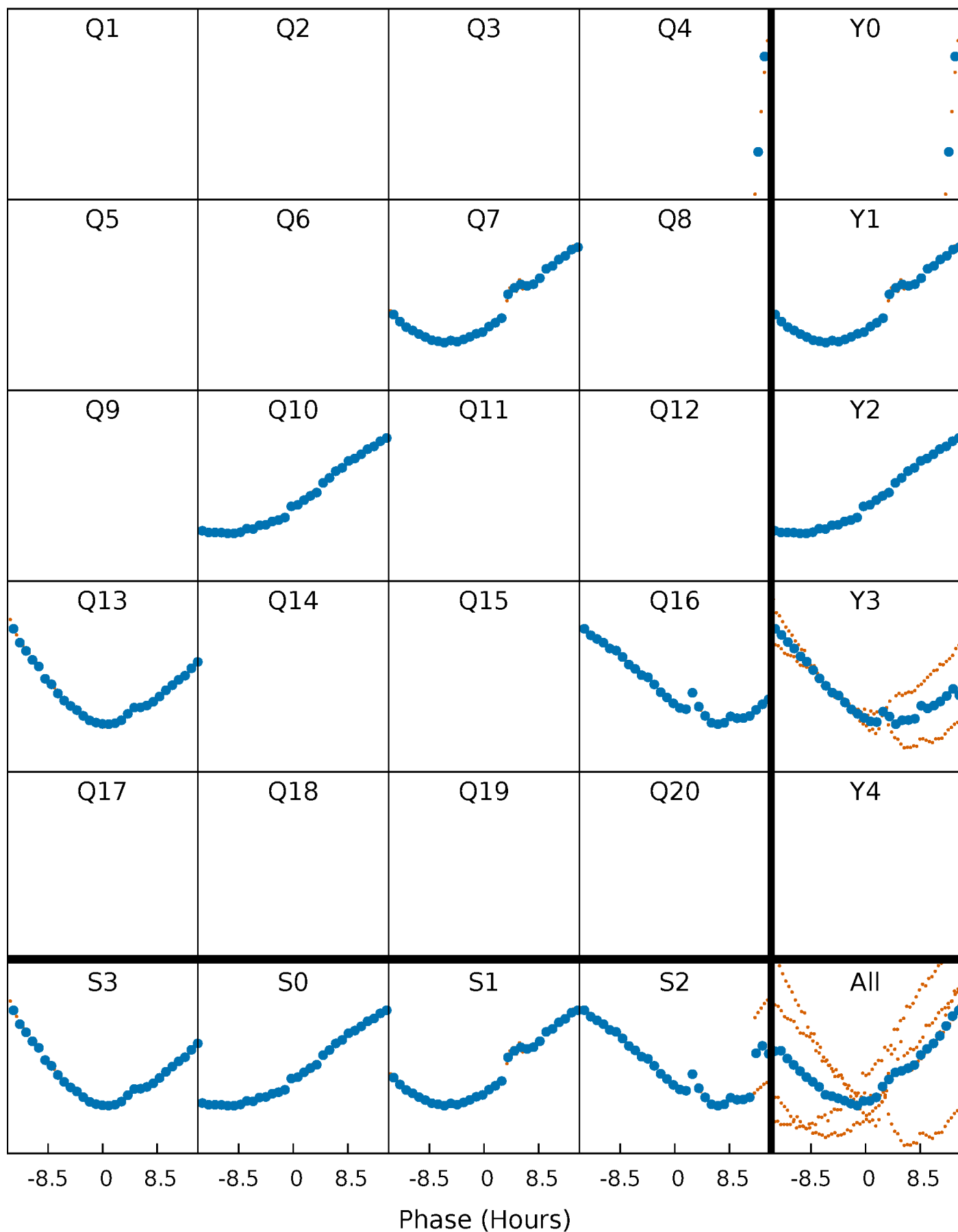


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



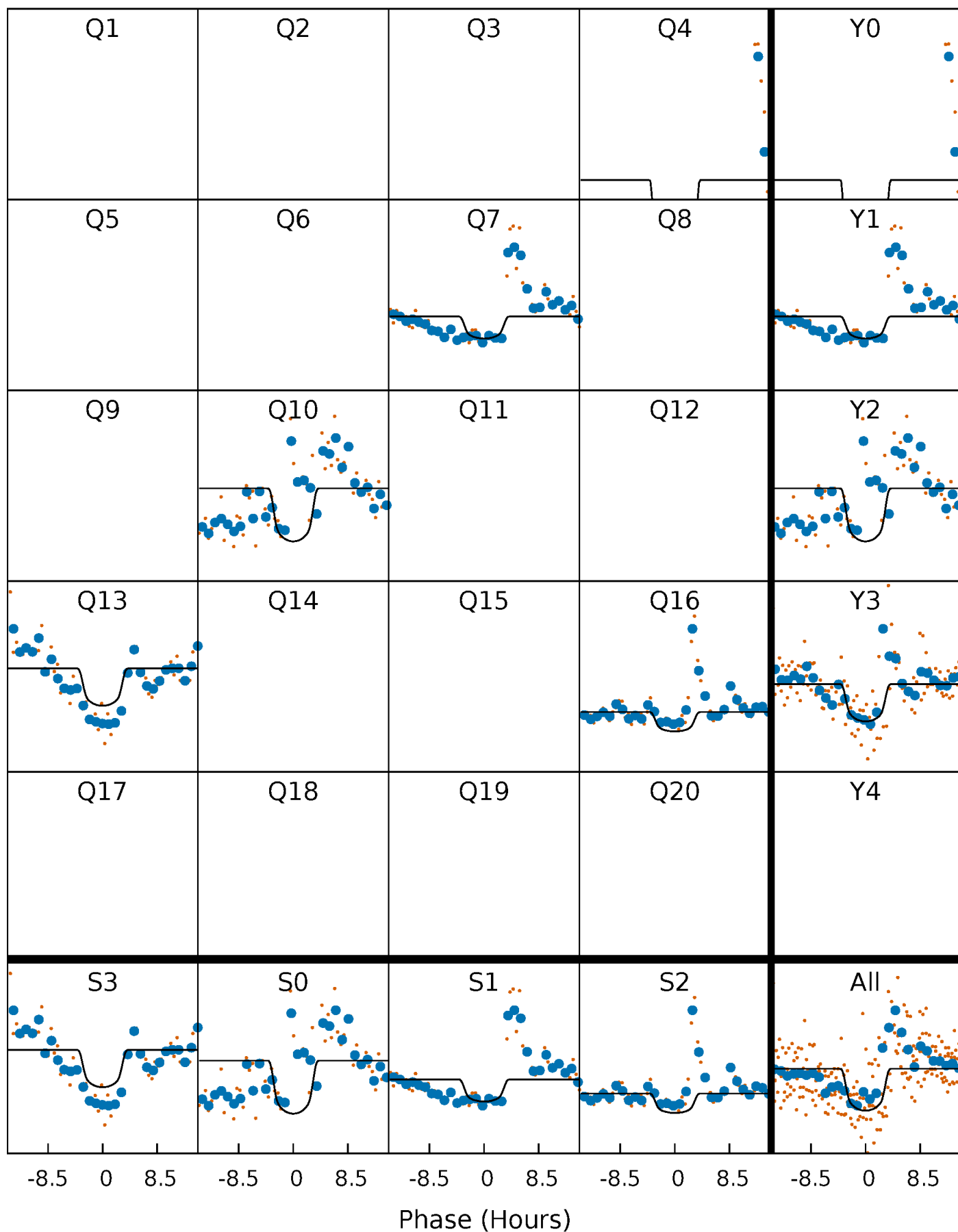
PDC Quarter-Phased Transit Curves

TCE 006438216-01 P=275.818636 Days $T_0=400.304526$ (BKJD)



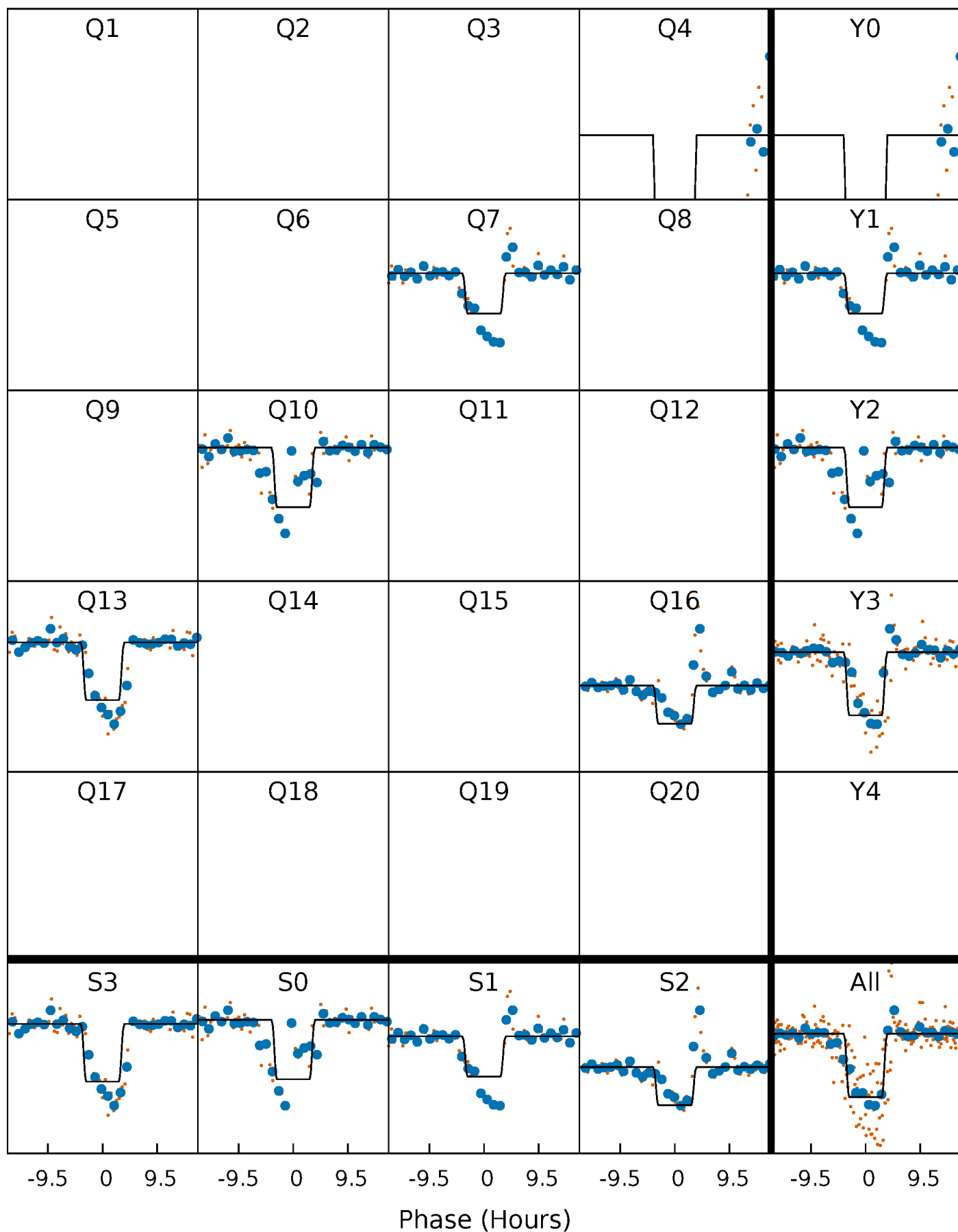
DV Quarter-Phased Transit Curves

TCE 006438216-01 P=275.818636 Days $T_0=400.304526$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

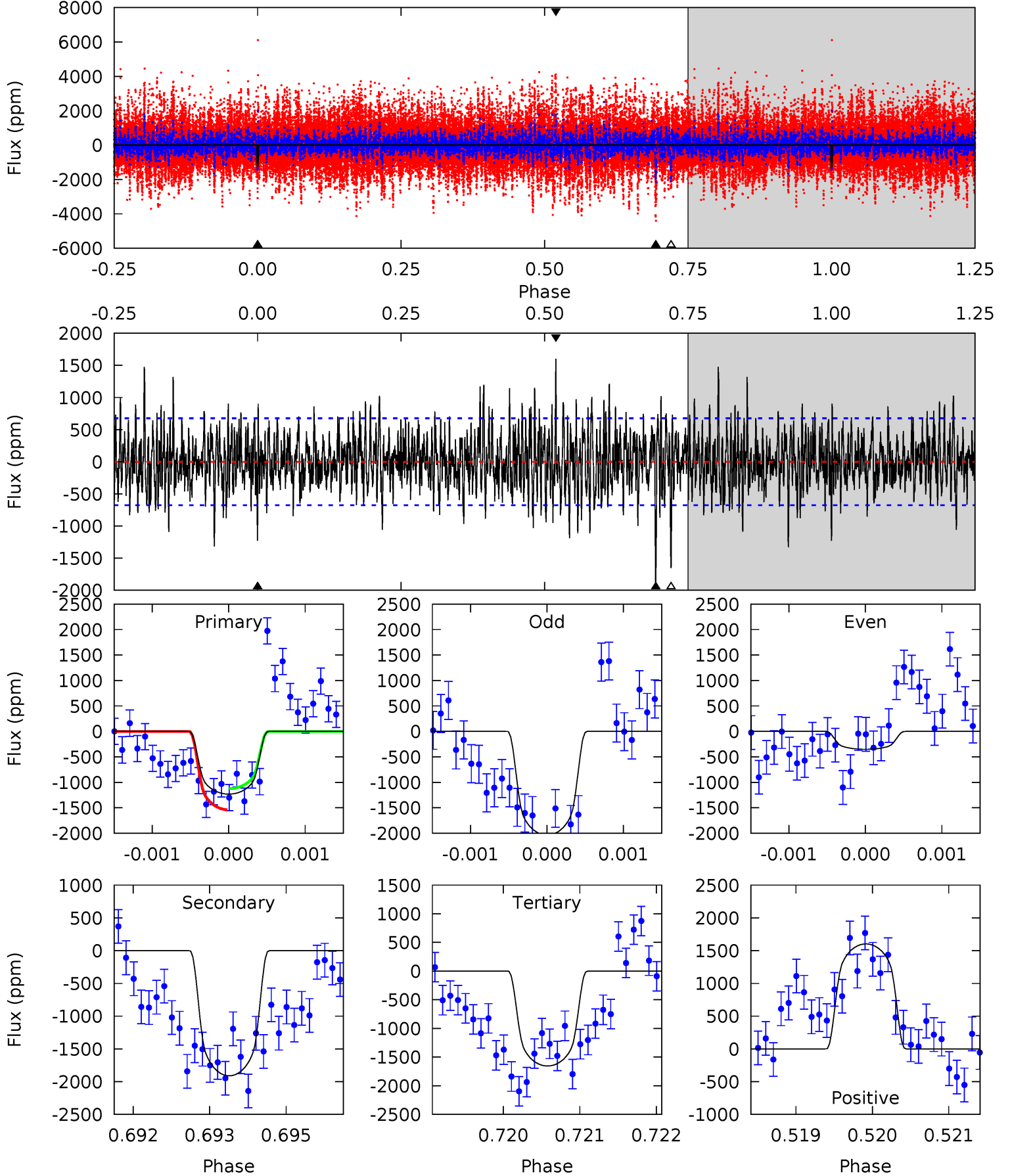
TCE 006438216-01 P=275.805382 Days $T_0=400.318164$ (BKJD)



DV Model-Shift Uniqueness Test

006438216-01, $P = 275.818636$ Days, $E = 124.485890$ Days

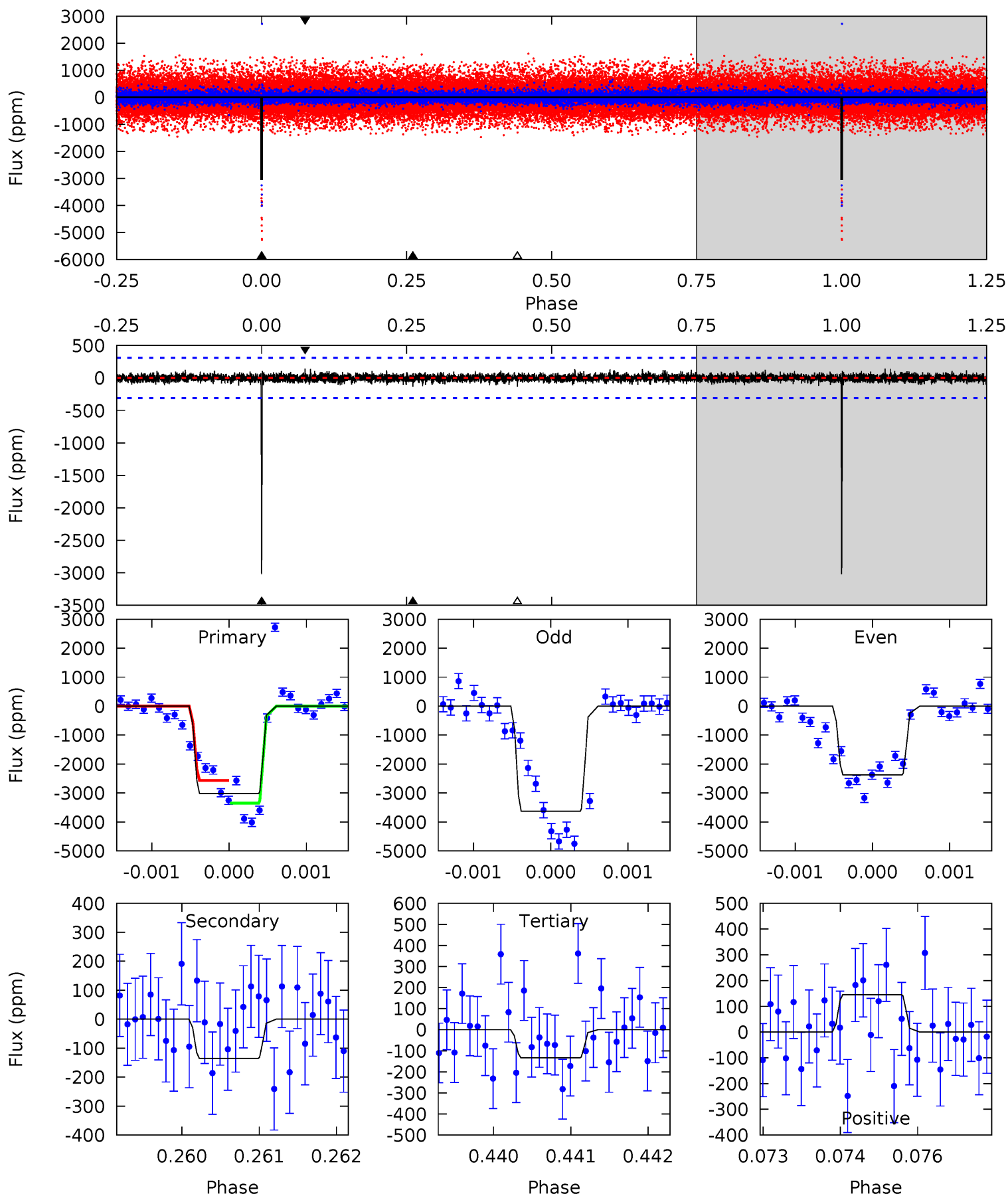
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.89	15.4	13.3	12.9	5.43	3.25	3.01	-3.41	-2.99	2.05	2.48	6.55	1.17	0.46	1.66



Alt Model-Shift Uniqueness Test

006438216-01, P = 275.805382 Days, E = 124.512782 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.9	2.37	2.34	2.53	5.43	3.26	0.55	50.6	50.4	0.03	-0.16	12.4	1.05	0.05	6.56



Stellar Parameters For KIC 006438216

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4650^{+139}_{-139}	$4.693^{+0.052}_{-0.028}$	$-1.000^{+0.300}_{-0.300}$	$0.554^{+0.039}_{-0.039}$	$0.552^{+0.044}_{-0.024}$	$4.571^{+0.968}_{-0.549}$
	+3%/-3%	+1%/-1%	+30%/-30%	+7%/-7%	+8%/-4%	+21%/-12%
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 006438216-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1911 ± 124	$2.55^{+0.35}_{-0.32}$	257^{+9}_{-9}	4702^{+334}_{-268}	75489^{+24271}_{-16797}
Alt.	-135 ± 57	$3.28^{+0.39}_{-0.36}$	257^{+10}_{-9}	2798^{+178}_{-213}	3038^{+1680}_{-1300}

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

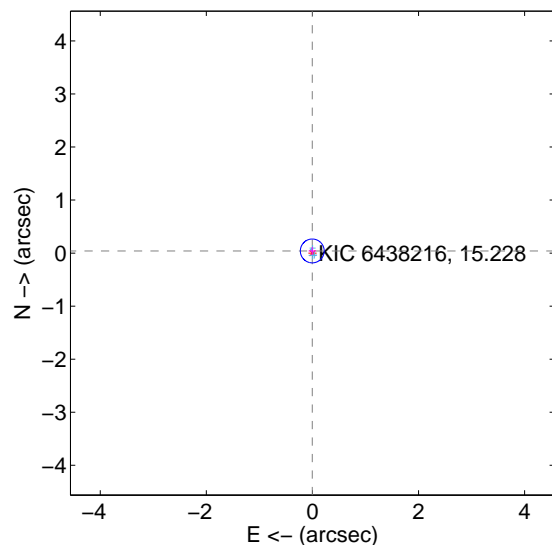
Supplemental centroid analysis for 006438216-01. Kepler magnitude: 15.23. Transit SNR 7.37

There are 4 quarters with good PRF difference image offsets

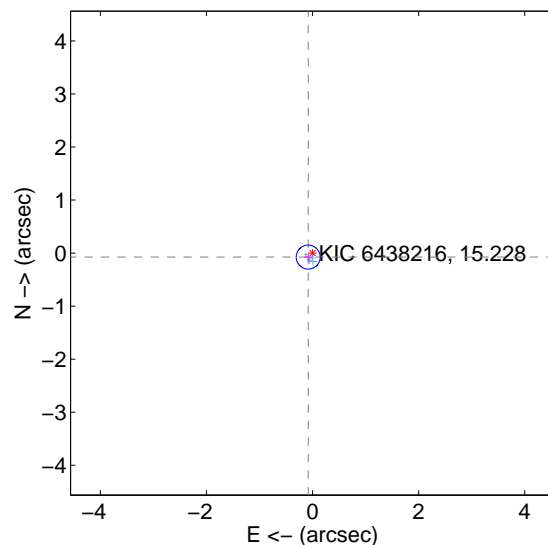
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.041 ± 0.075	0.54	0.003 ± 0.068	0.041 ± 0.075
PRF-fit source offset from KIC position	0.111 ± 0.075	1.47	0.081 ± 0.076	-0.076 ± 0.075
photometric centroid source offset	0.95 ± 0.95	1.00	-0.16 ± 1.07	0.94 ± 0.95

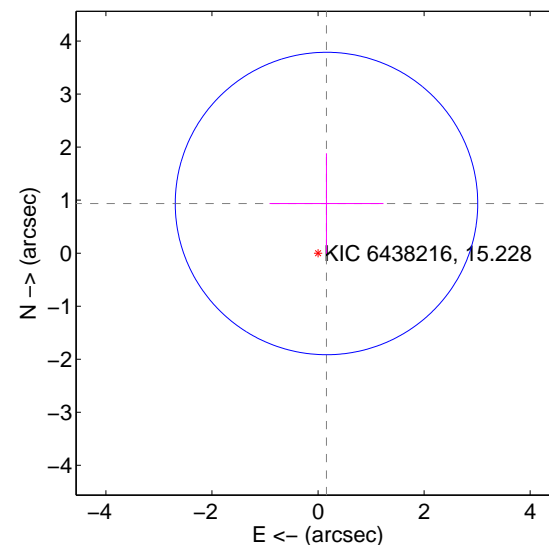
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

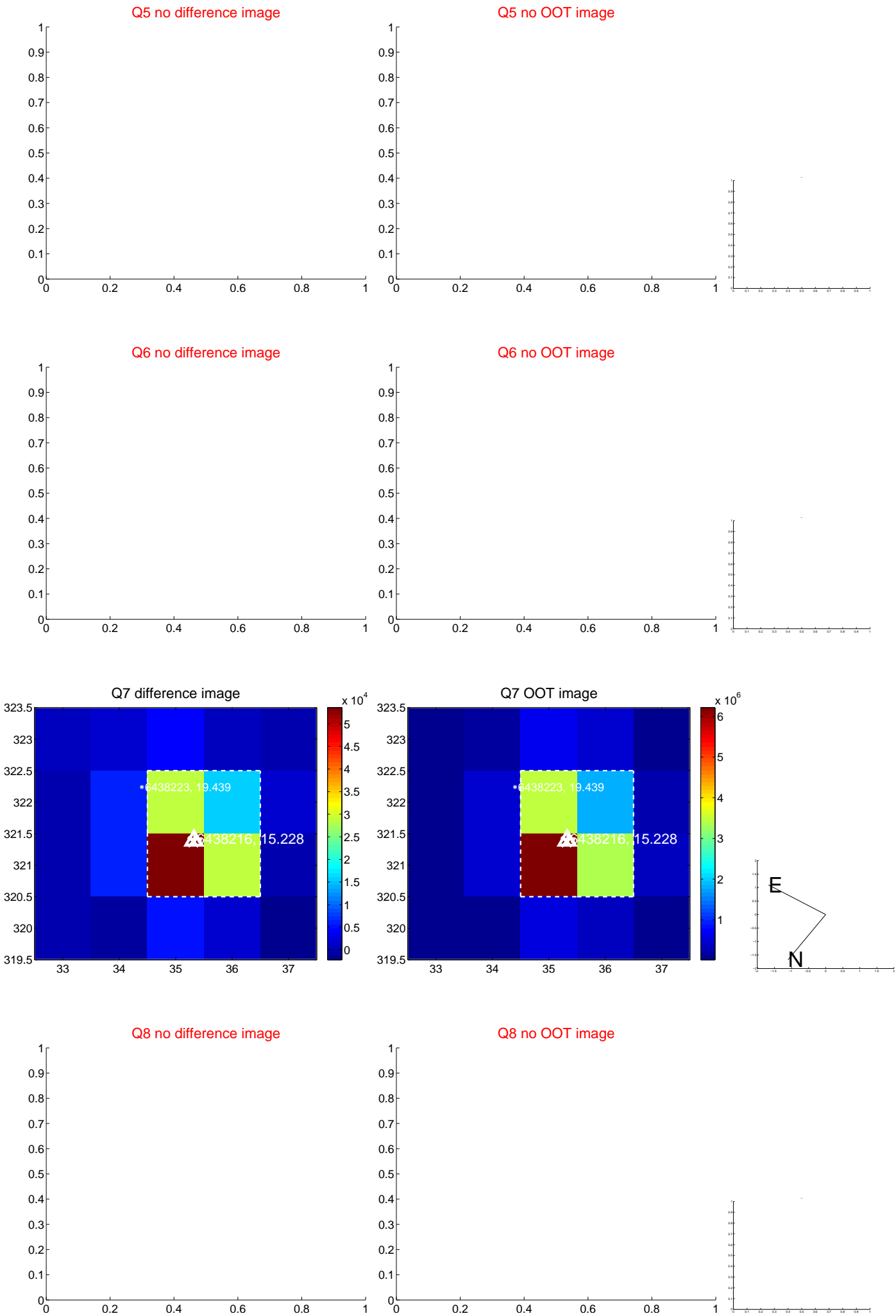


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

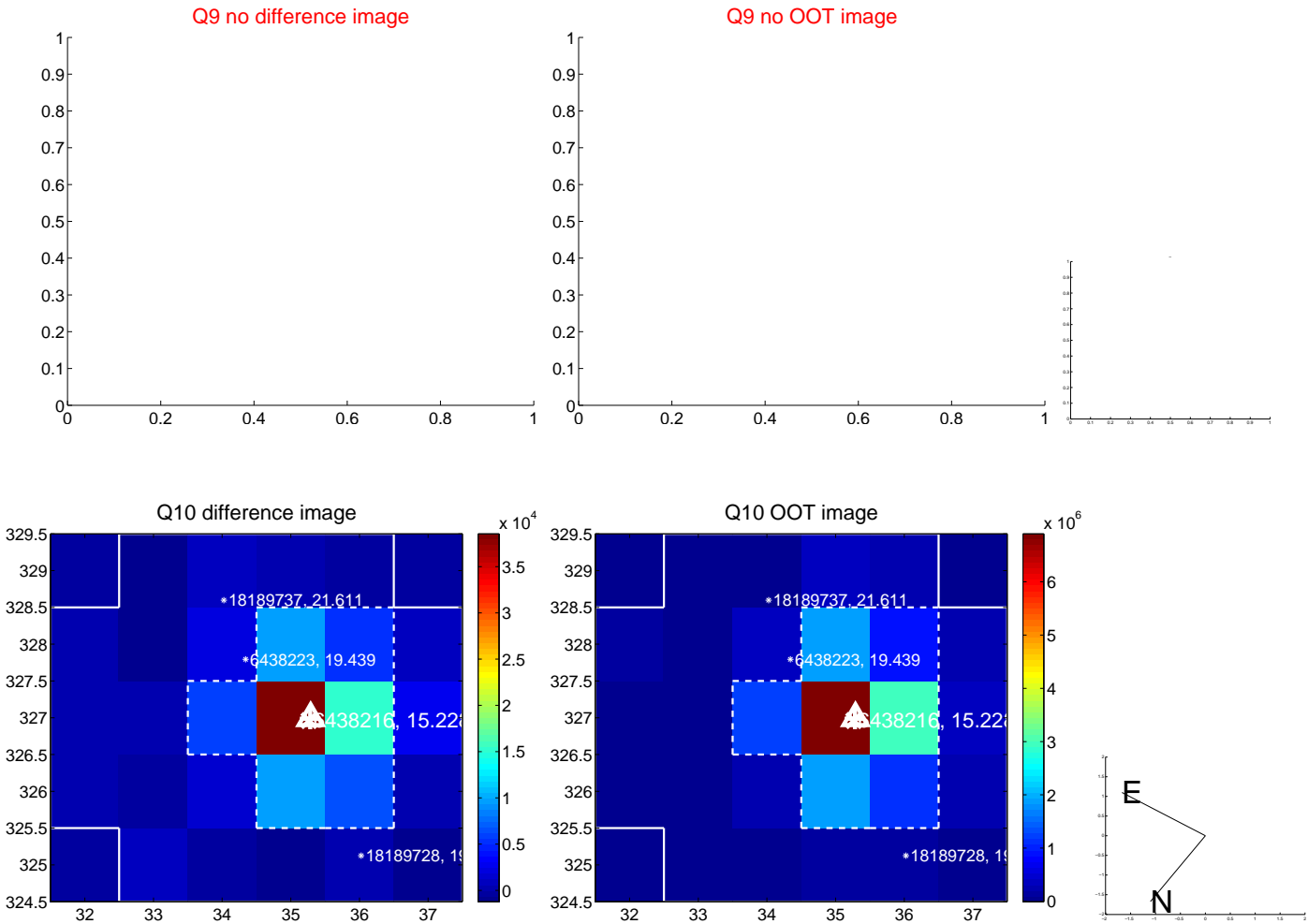
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



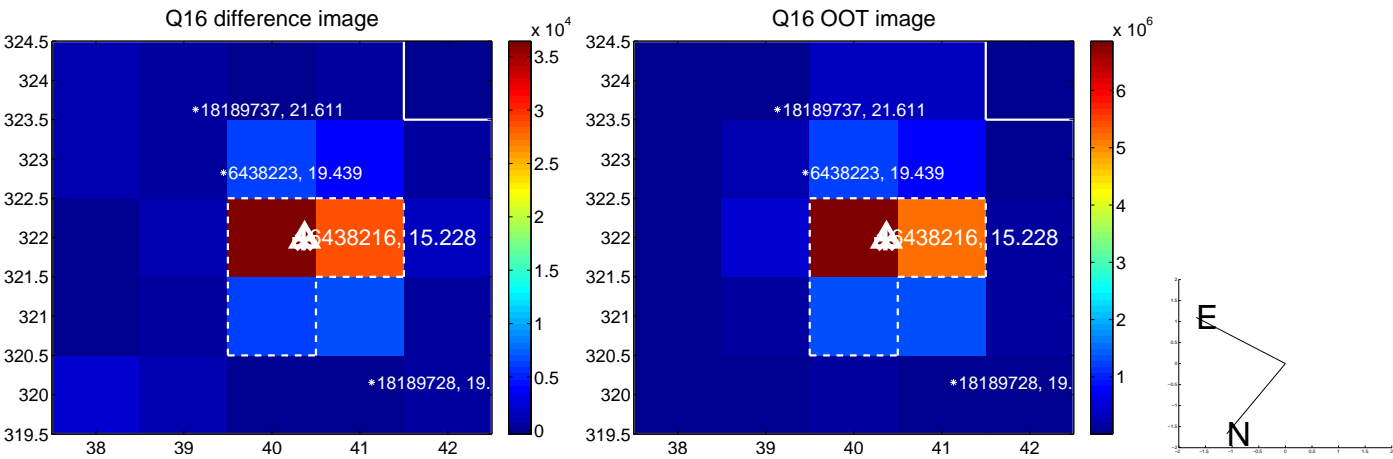
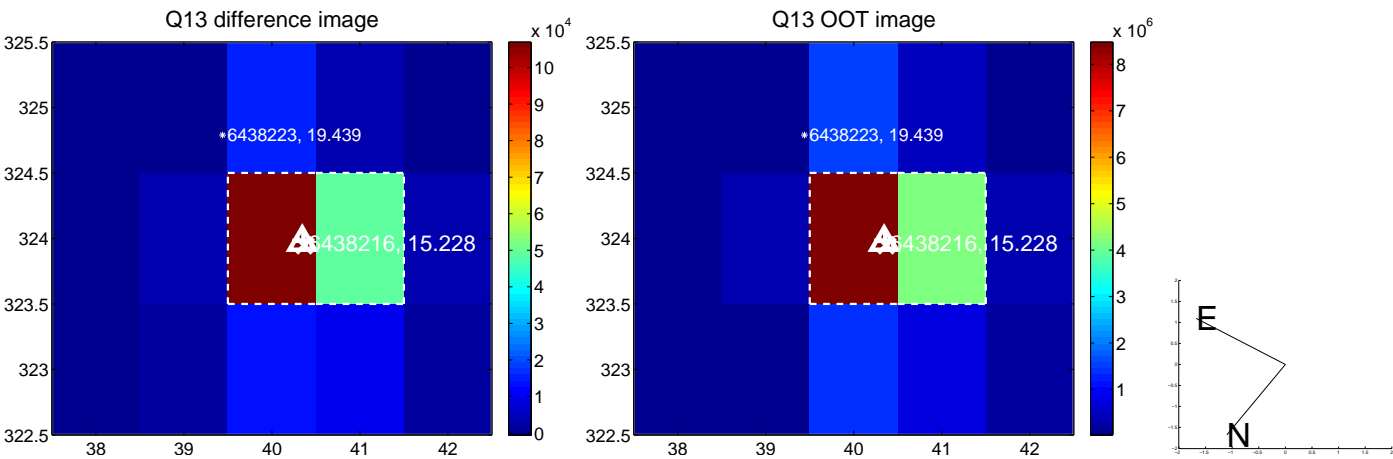
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



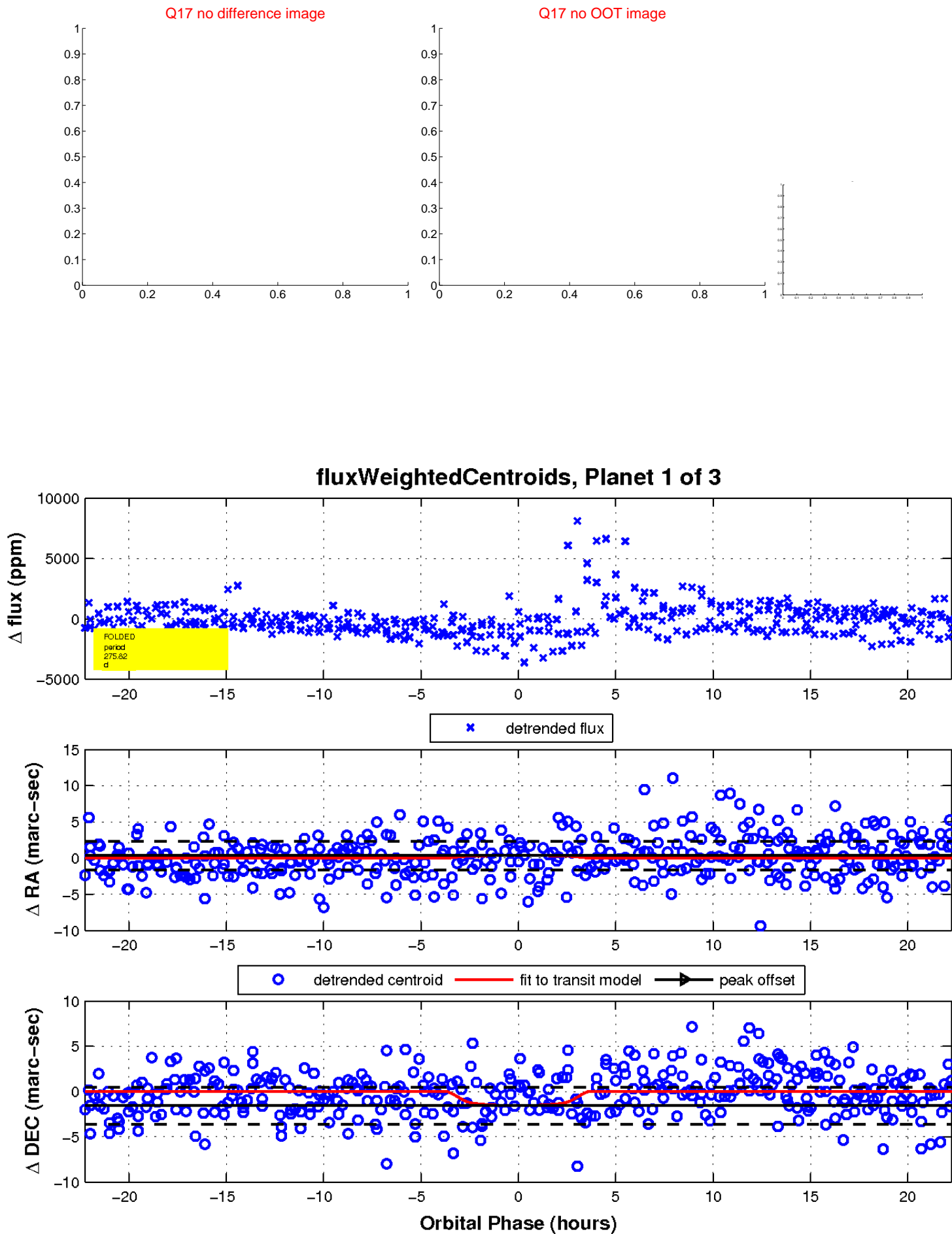
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

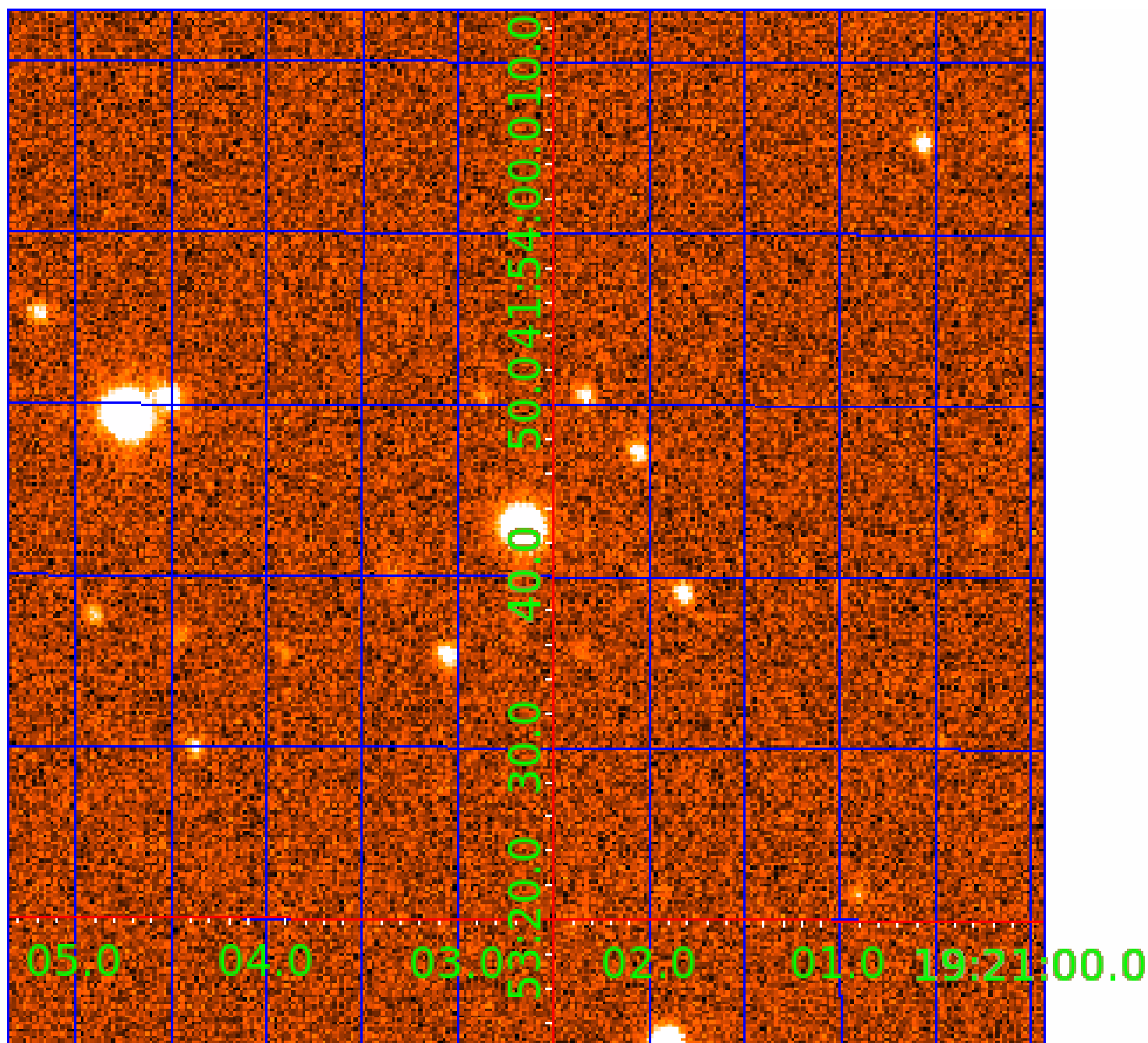


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006438216

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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006438216-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006438216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

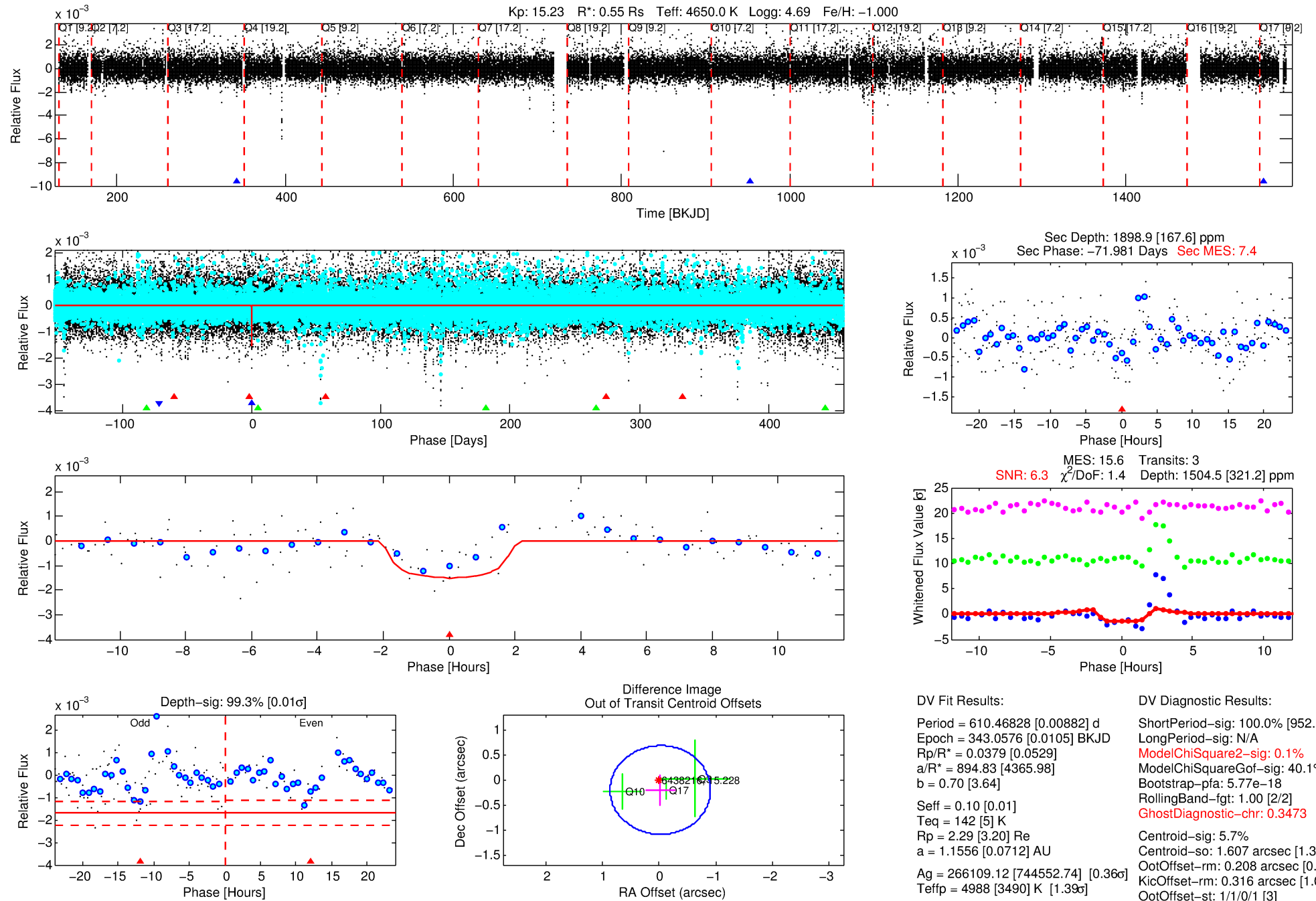
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006438216-02

No Significant Match Found

DV One-Page Summary

KIC: 6438216 Candidate: 2 of 3 Period: 610.468 d



DV Fit Results:

Period = 610.46828 [0.00882] d
Epoch = 343.0576 [0.0105] BKJD
Rp/R* = 0.0379 [0.0529]
a/R* = 894.83 [4365.98]
b = 0.70 [3.64]
Seff = 0.10 [0.01]
Teq = 142 [5] K
Rp = 2.29 [3.20] Re
a = 1.1556 [0.0712] AU
Ag = 266109.12 [744552.74] [0.36 σ]
Teffp = 4988 [3490] K [1.39 σ]

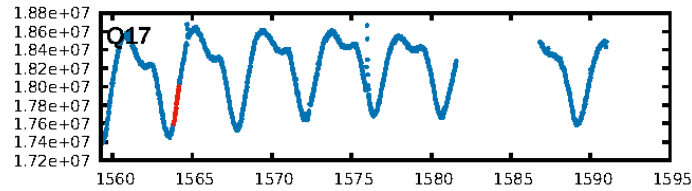
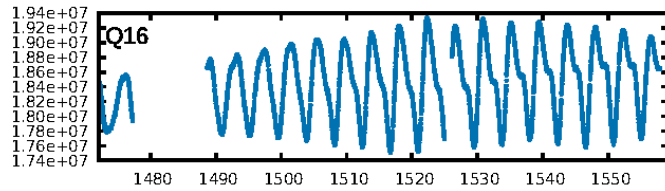
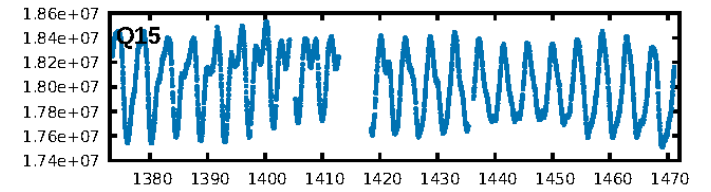
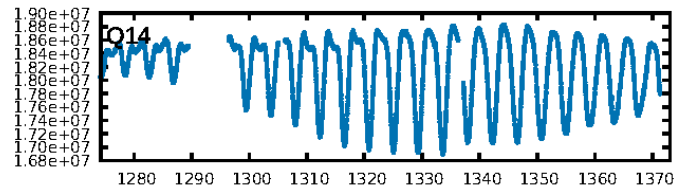
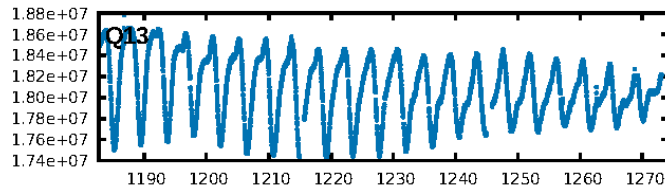
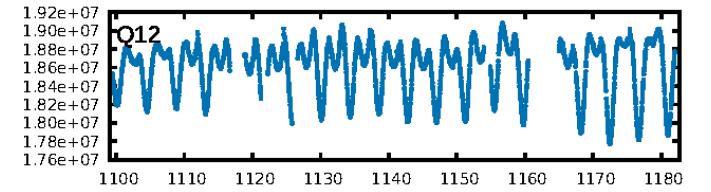
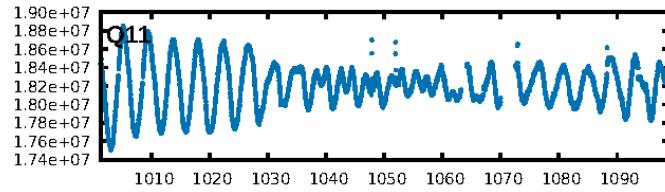
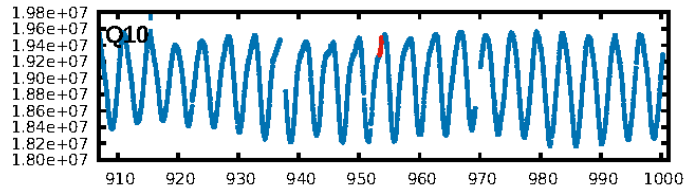
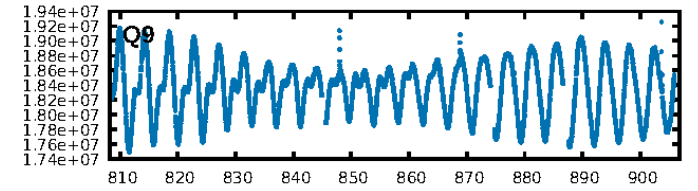
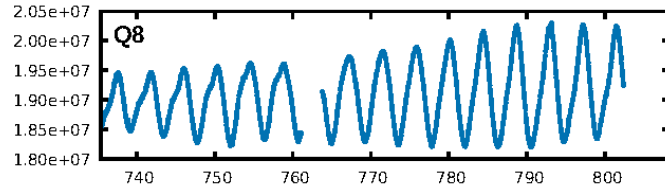
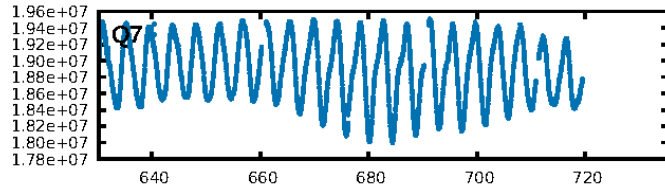
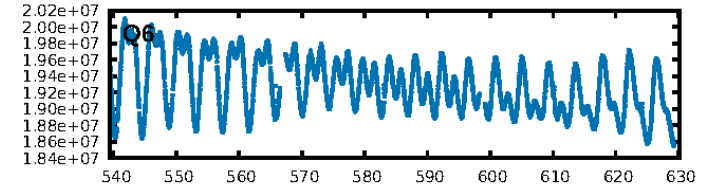
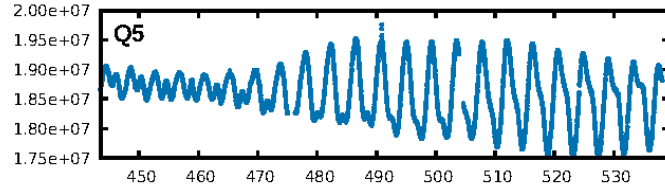
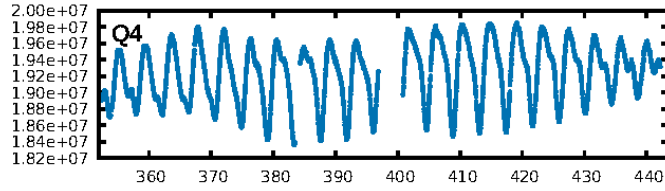
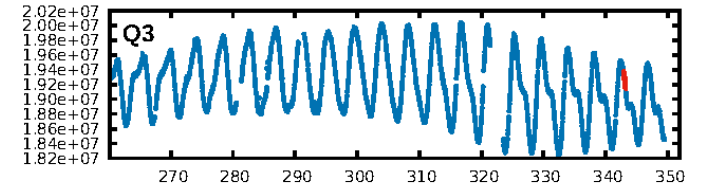
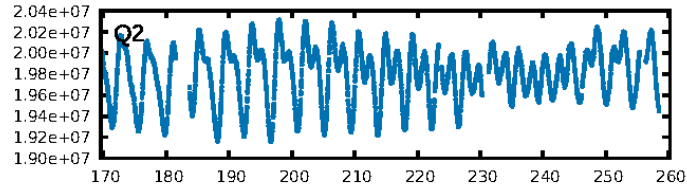
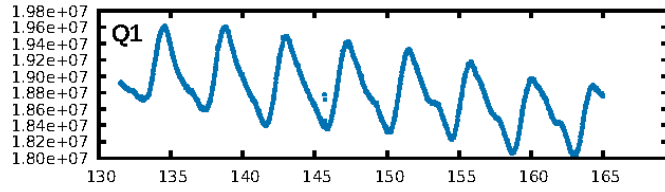
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [952.57 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 40.1%
Bootstrap-pfa: 5.77e-18
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.3473
Centroid-sig: 5.7%
Centroid-so: 1.607 arcsec [1.33 σ]
OotOffset-rm: 0.208 arcsec [0.71 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.316 arcsec [1.08 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

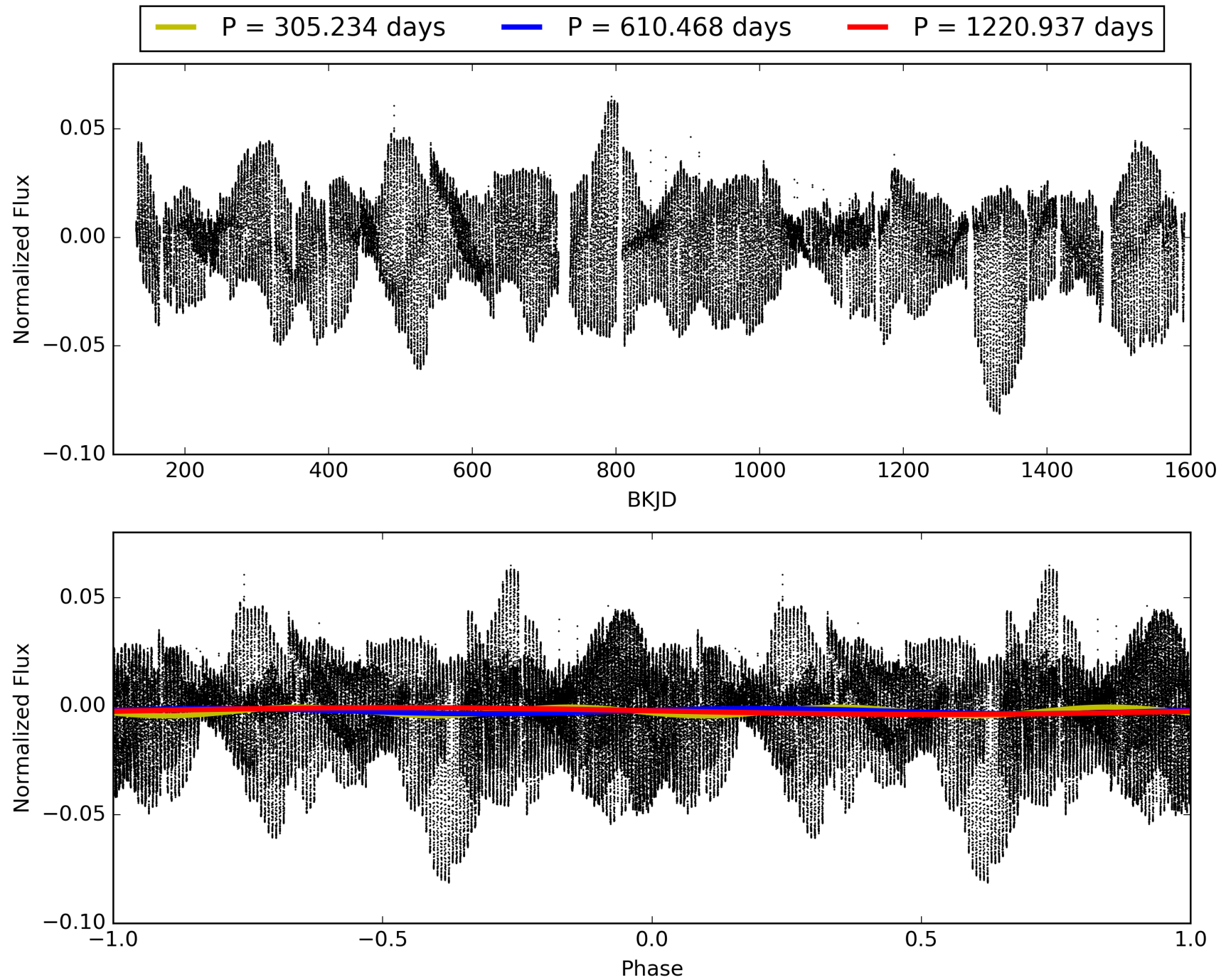
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:01:52 Z

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

TCE 006438216-02, PDC Light Curves

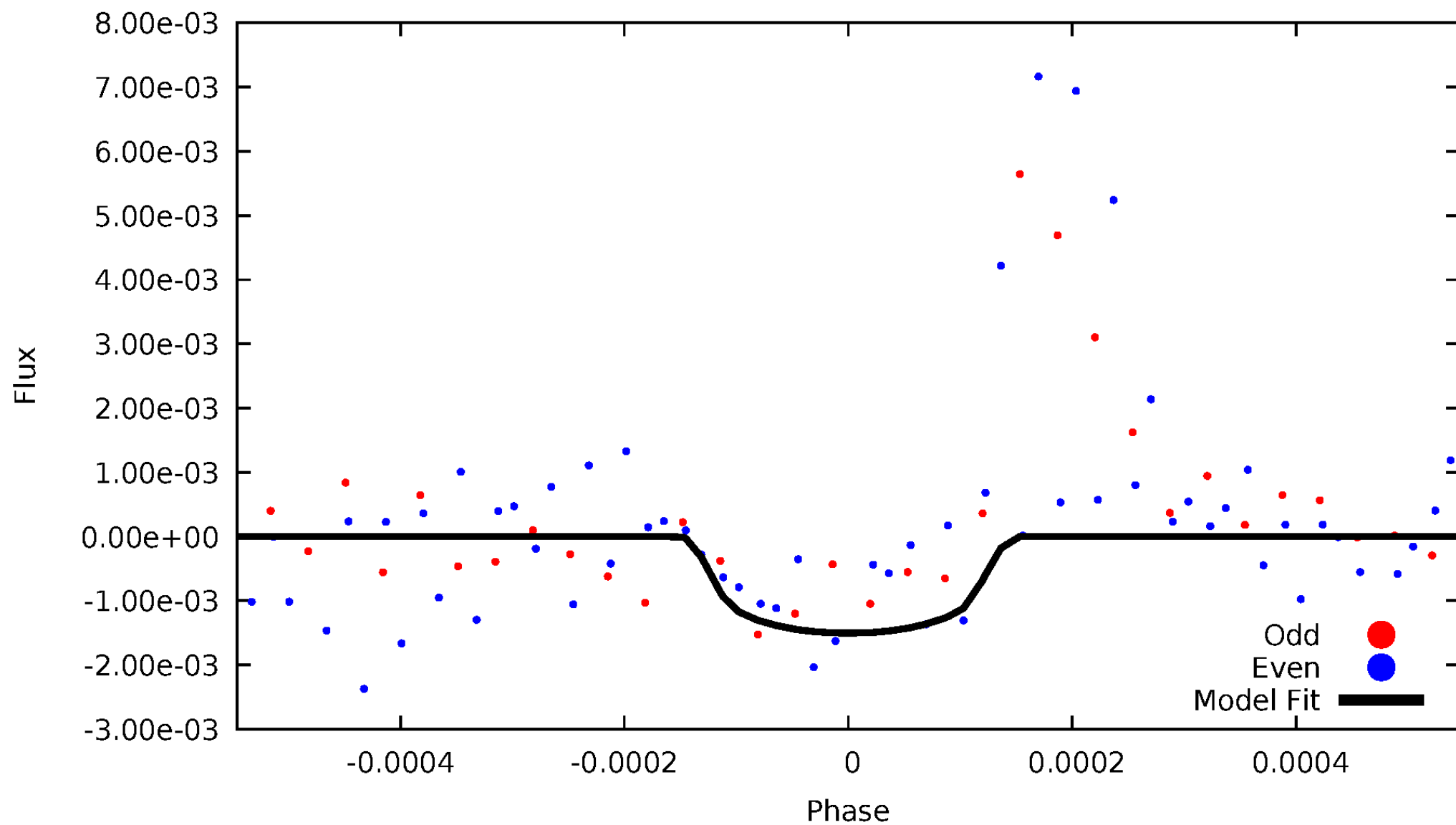


TCE 006438216-02



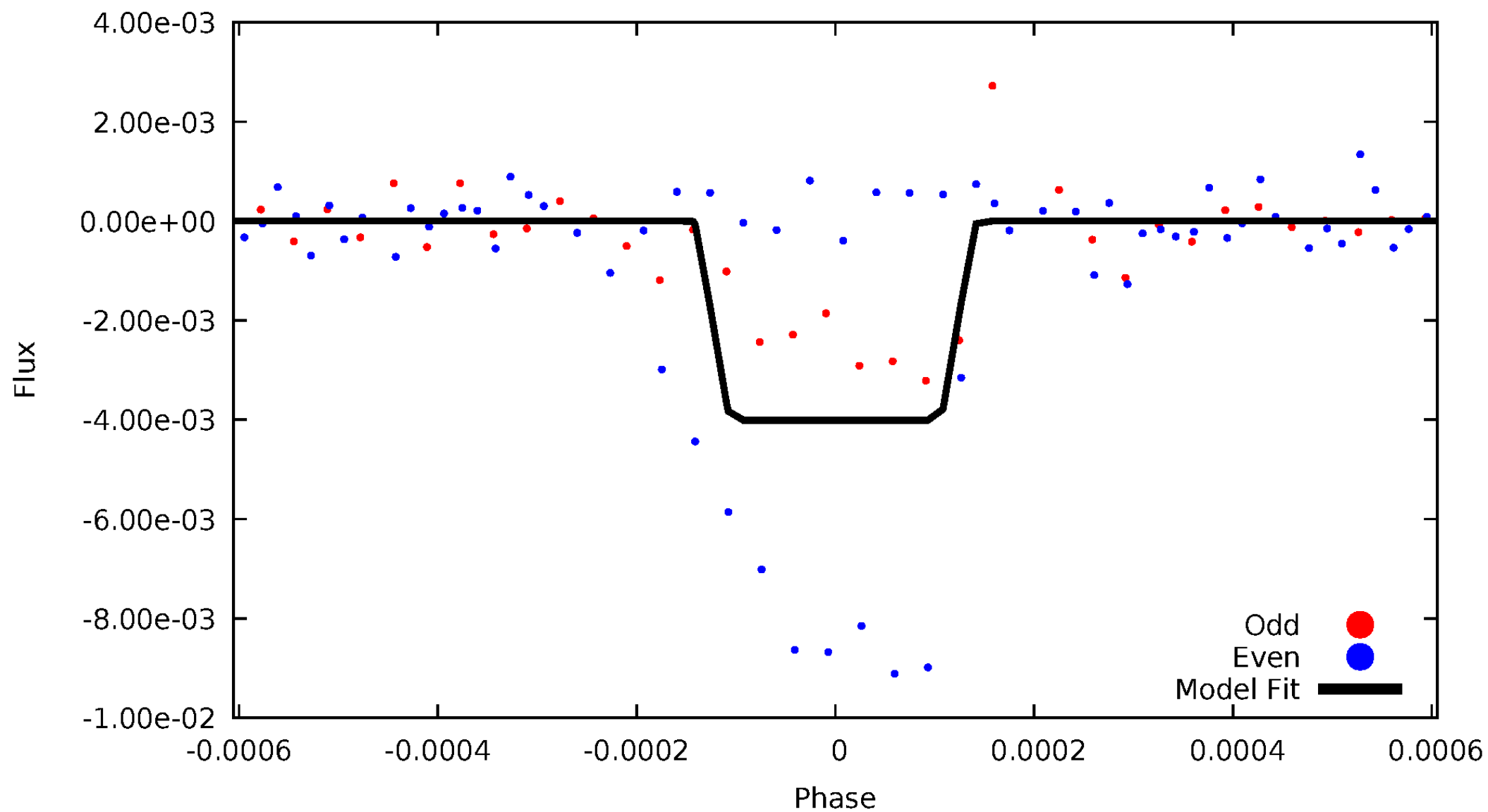
DV Odd/Even

TCE 006438216-02



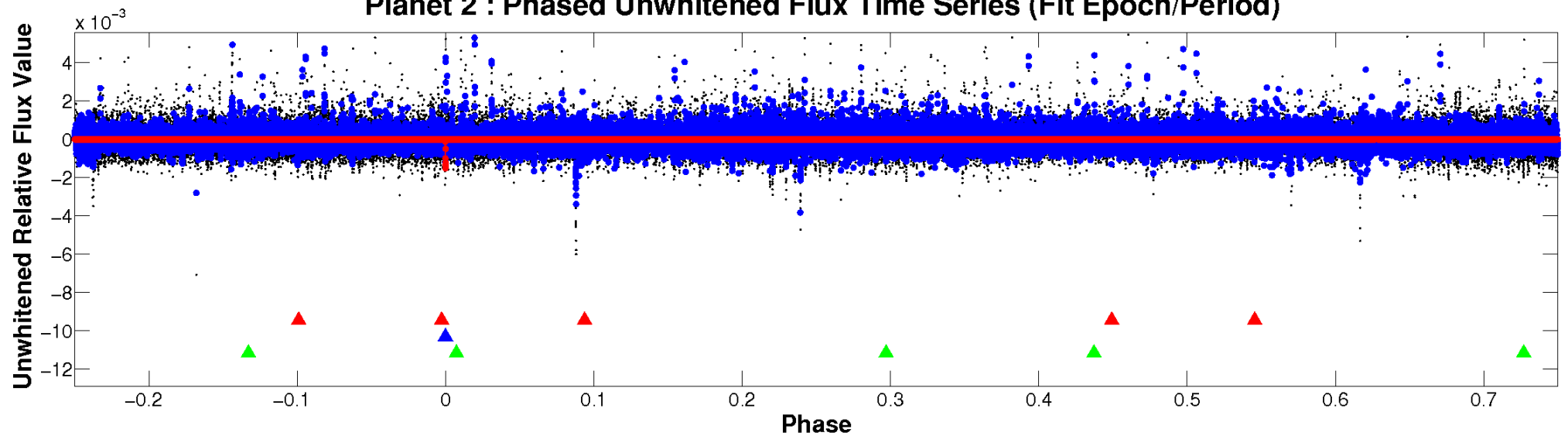
ALT Odd/Even

TCE 006438216-02

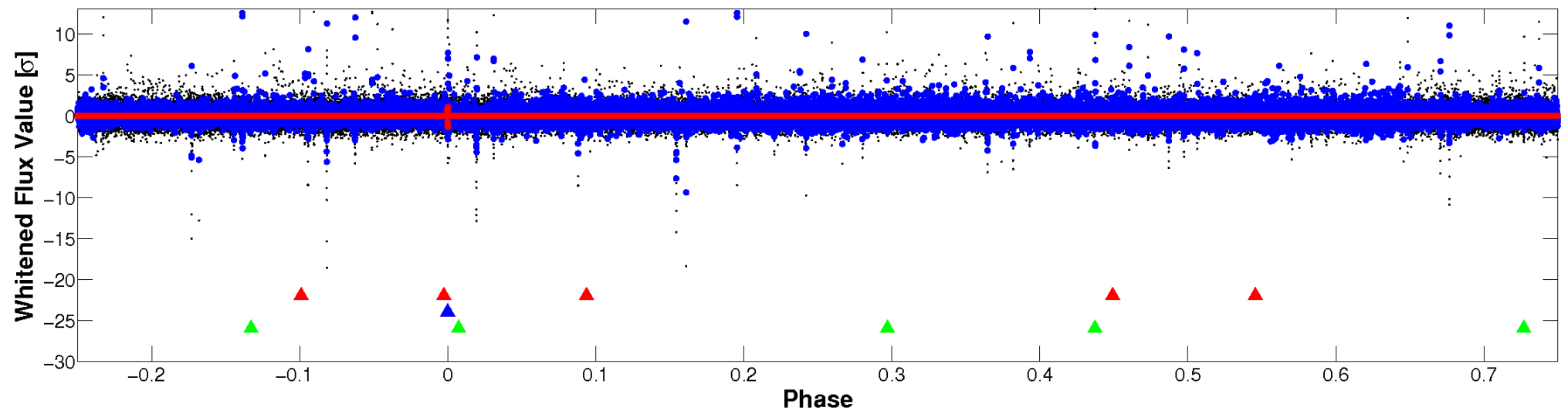


Non-Whitened Vs. Whitened Light Curve

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

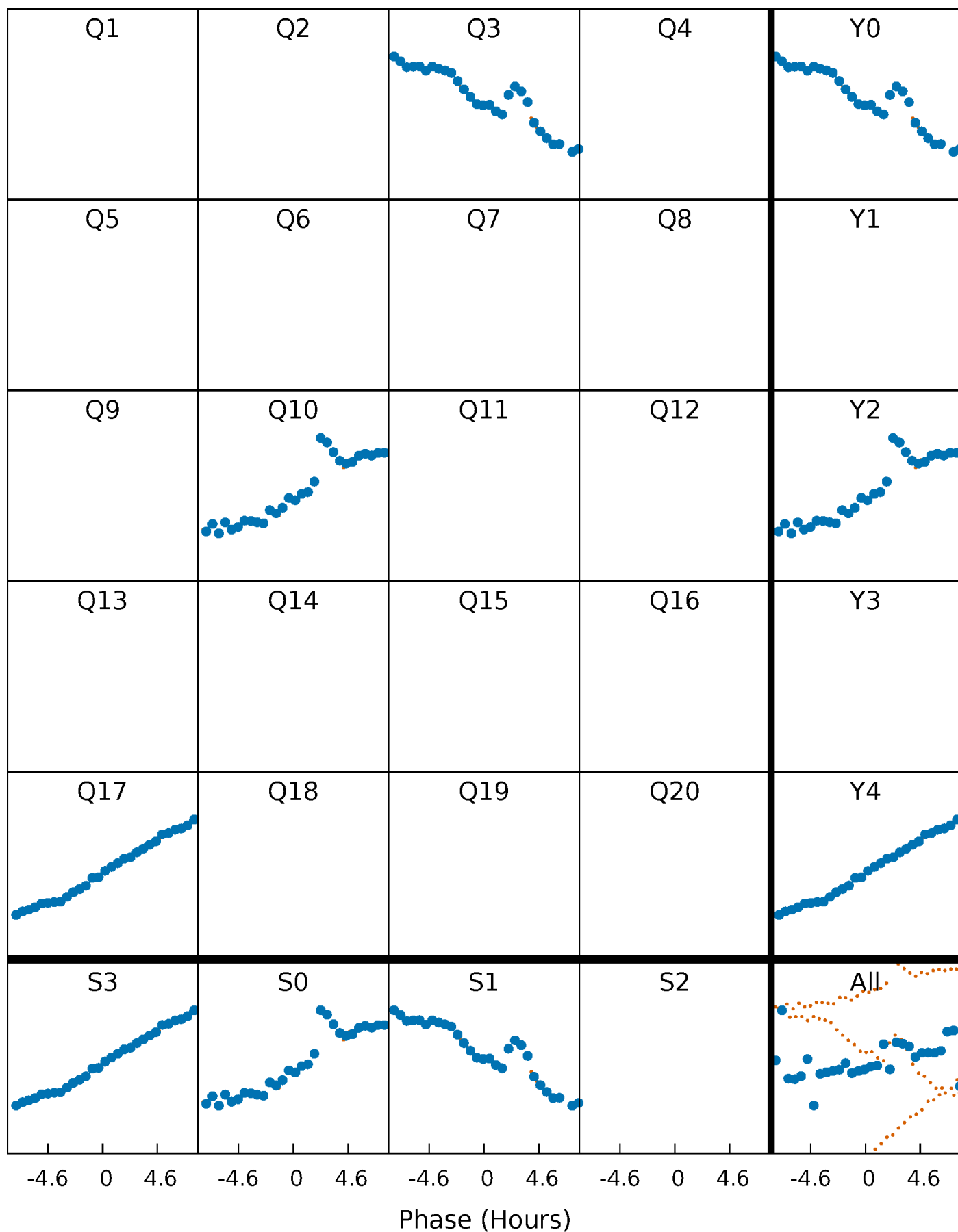


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



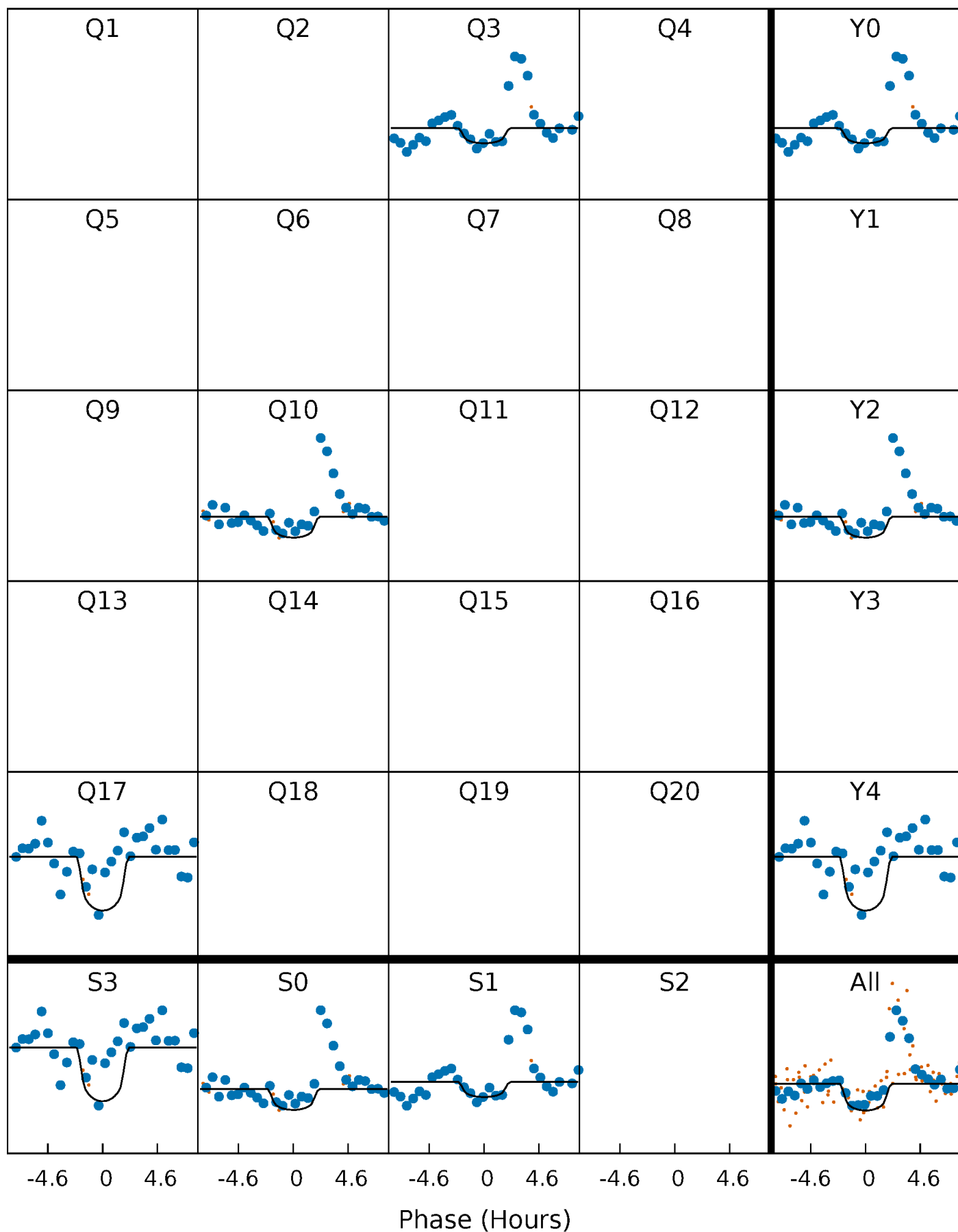
PDC Quarter-Phased Transit Curves

TCE 006438216-02 P=610.468282 Days $T_0=343.057573$ (BKJD)



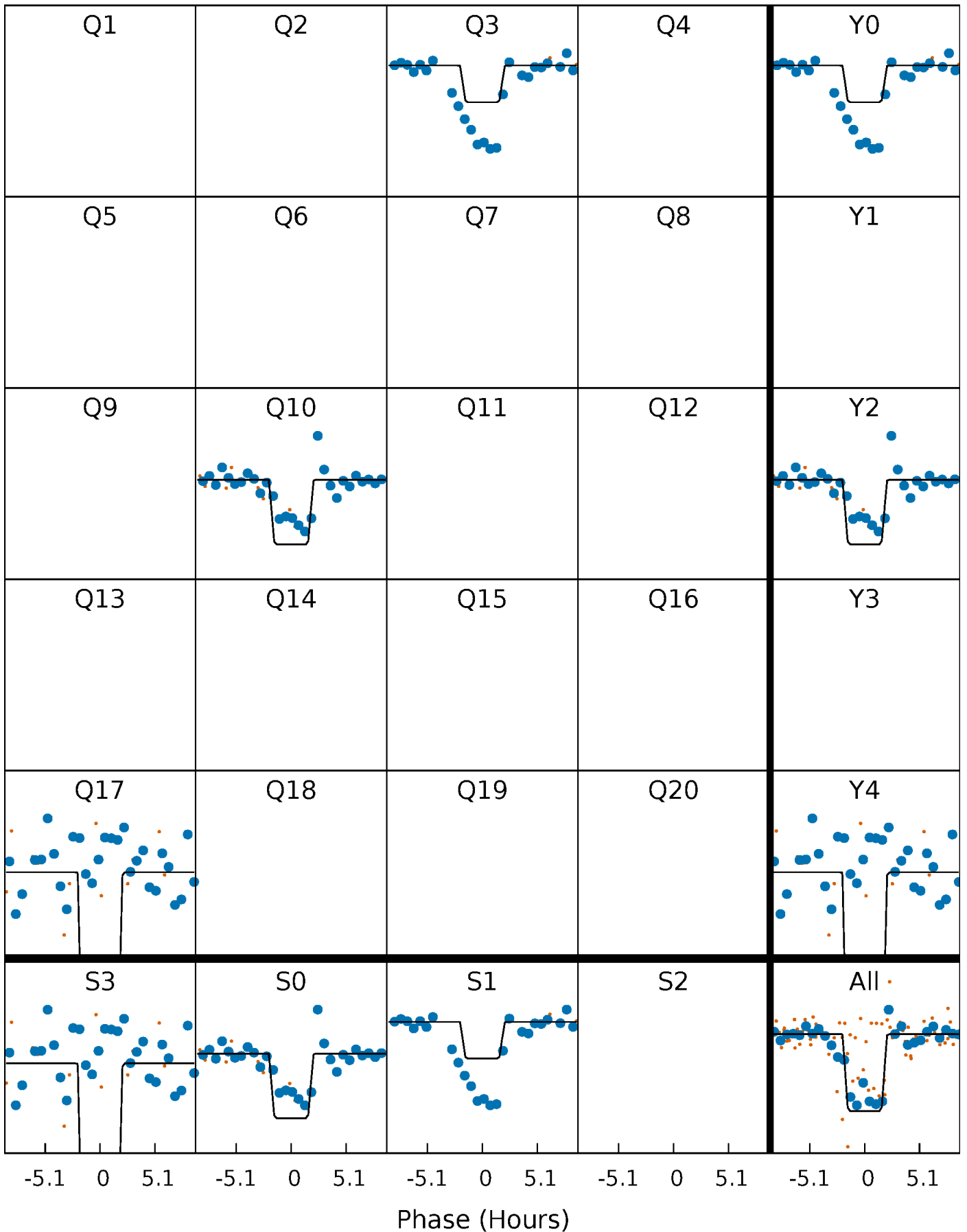
DV Quarter-Phased Transit Curves

TCE 006438216-02 P=610.468282 Days $T_0=343.057573$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

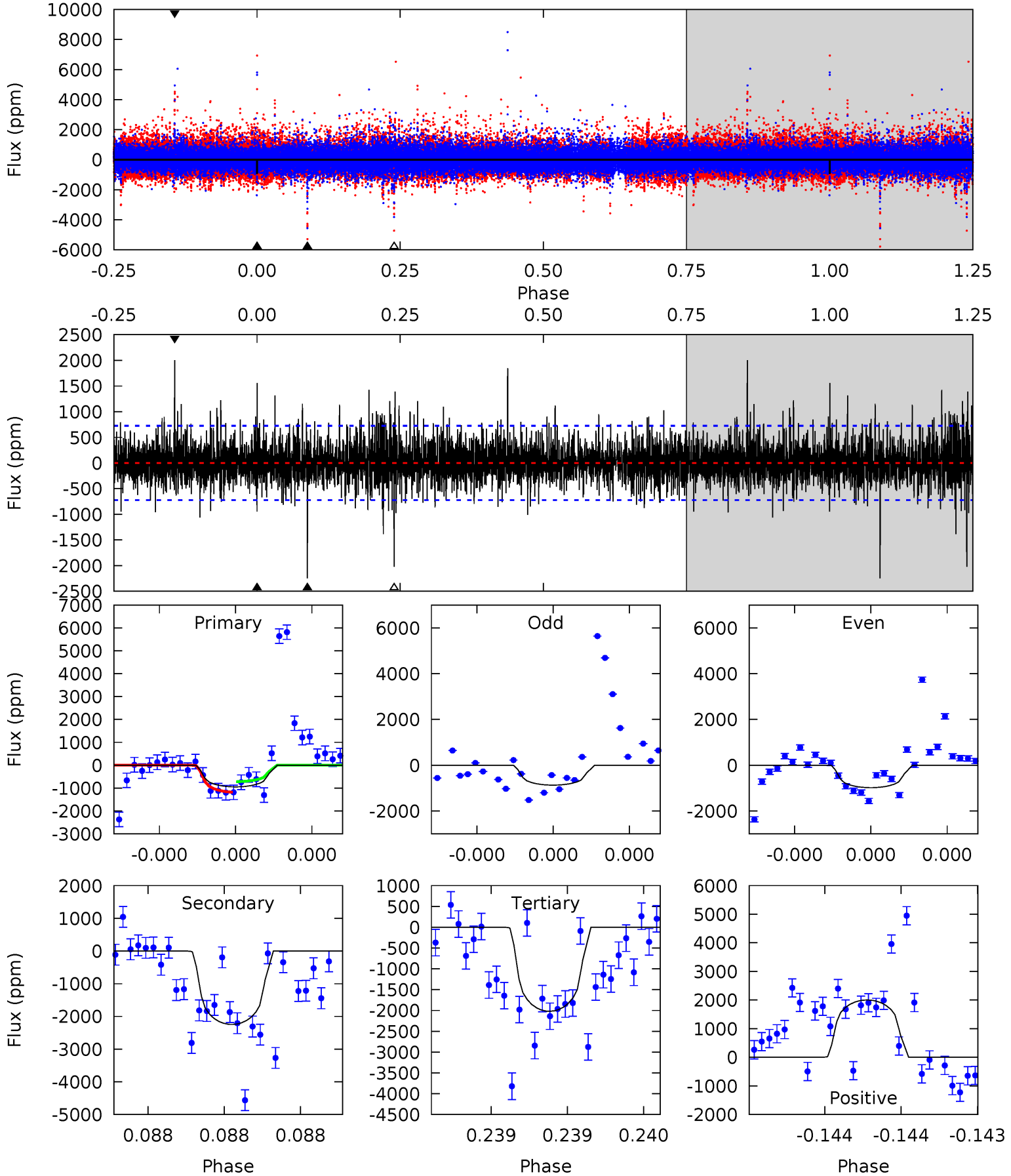
TCE 006438216-02 P=610.459416 Days $T_0=343.063557$ (BKJD)



DV Model-Shift Uniqueness Test

006438216-02, P = 610.468282 Days, E = 343.057573 Days

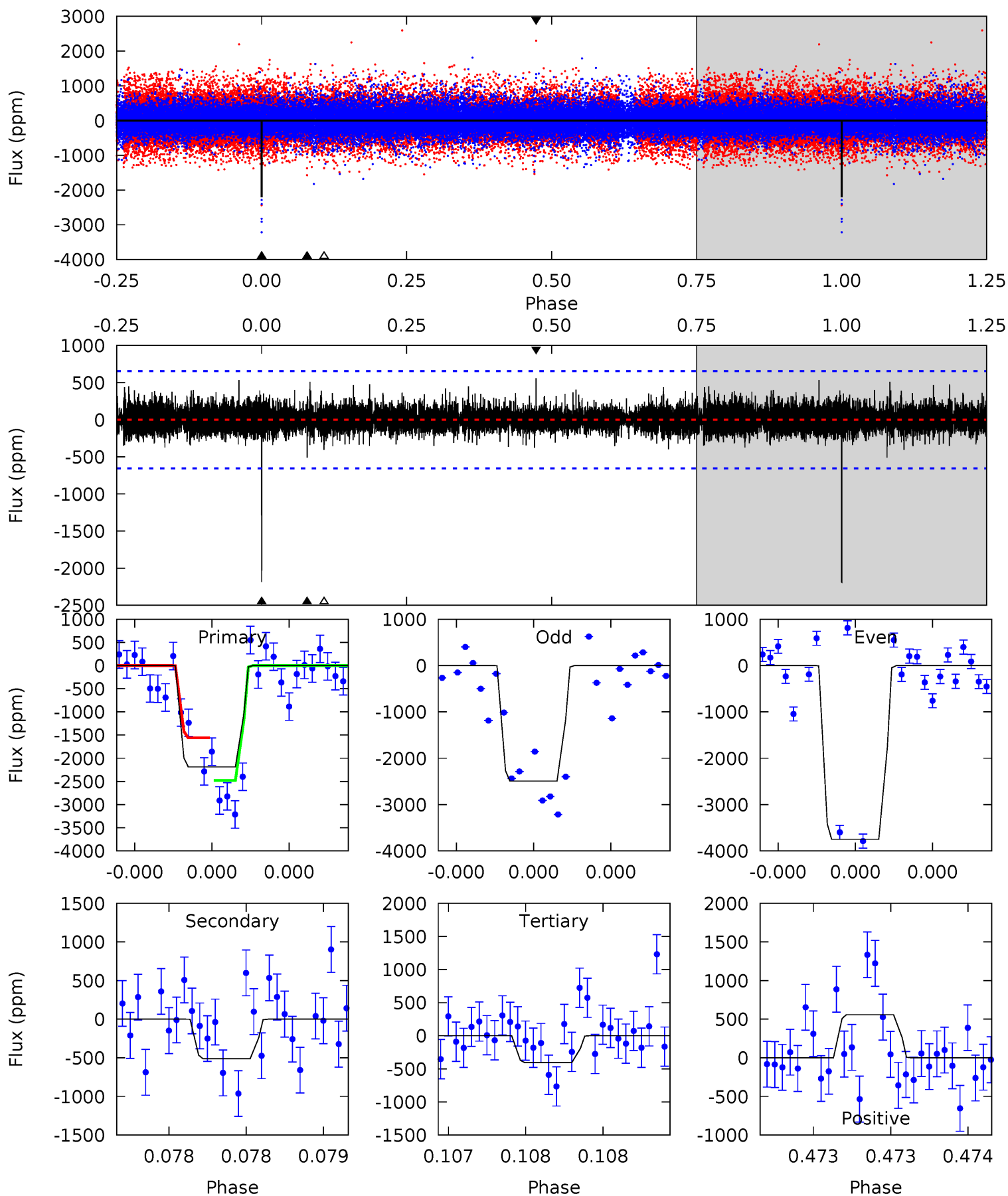
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.41	17.6	15.8	15.7	5.67	3.63	2.27	-8.40	-8.27	1.78	1.91	0.35	1.05	0.47	1.80



Alt Model-Shift Uniqueness Test

006438216-02, P = 610.459416 Days, E = 343.063557 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	4.42	3.51	4.83	5.66	3.61	0.79	15.4	14.1	0.91	-0.41	7.15	1.38	0.20	0



Stellar Parameters For KIC 006438216

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4650^{+139}_{-139}	$4.693^{+0.052}_{-0.028}$	$-1.000^{+0.300}_{-0.300}$	$0.554^{+0.039}_{-0.039}$	$0.552^{+0.044}_{-0.024}$	$4.571^{+0.968}_{-0.549}$
	+3%/-3%	+1%/-1%	+30%/-30%	+7%/-7%	+8%/-4%	+21%/-12%
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 006438216-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2247 ± 128	$3.13^{+2.75}_{-2.00}$	197^{+7}_{-7}	4510^{+2771}_{-925}	$170745^{+1179461}_{-122215}$
Alt.	-511 ± 116	$4.32^{+2.77}_{-2.59}$	197^{+8}_{-6}	3144^{+1112}_{-419}	$20134^{+103678}_{-12814}$

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

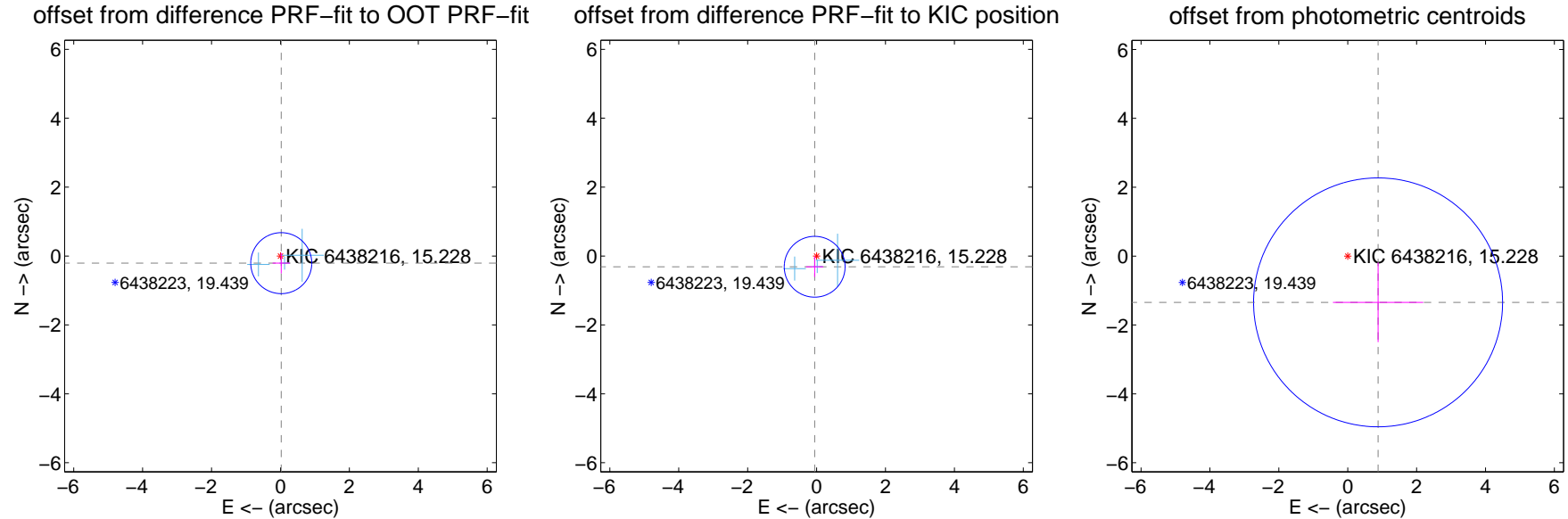
DV Centroid Data

Supplemental centroid analysis for 006438216-02. Kepler magnitude: 15.23. Transit SNR 6.26

There are 3 quarters with good PRF difference image offsets

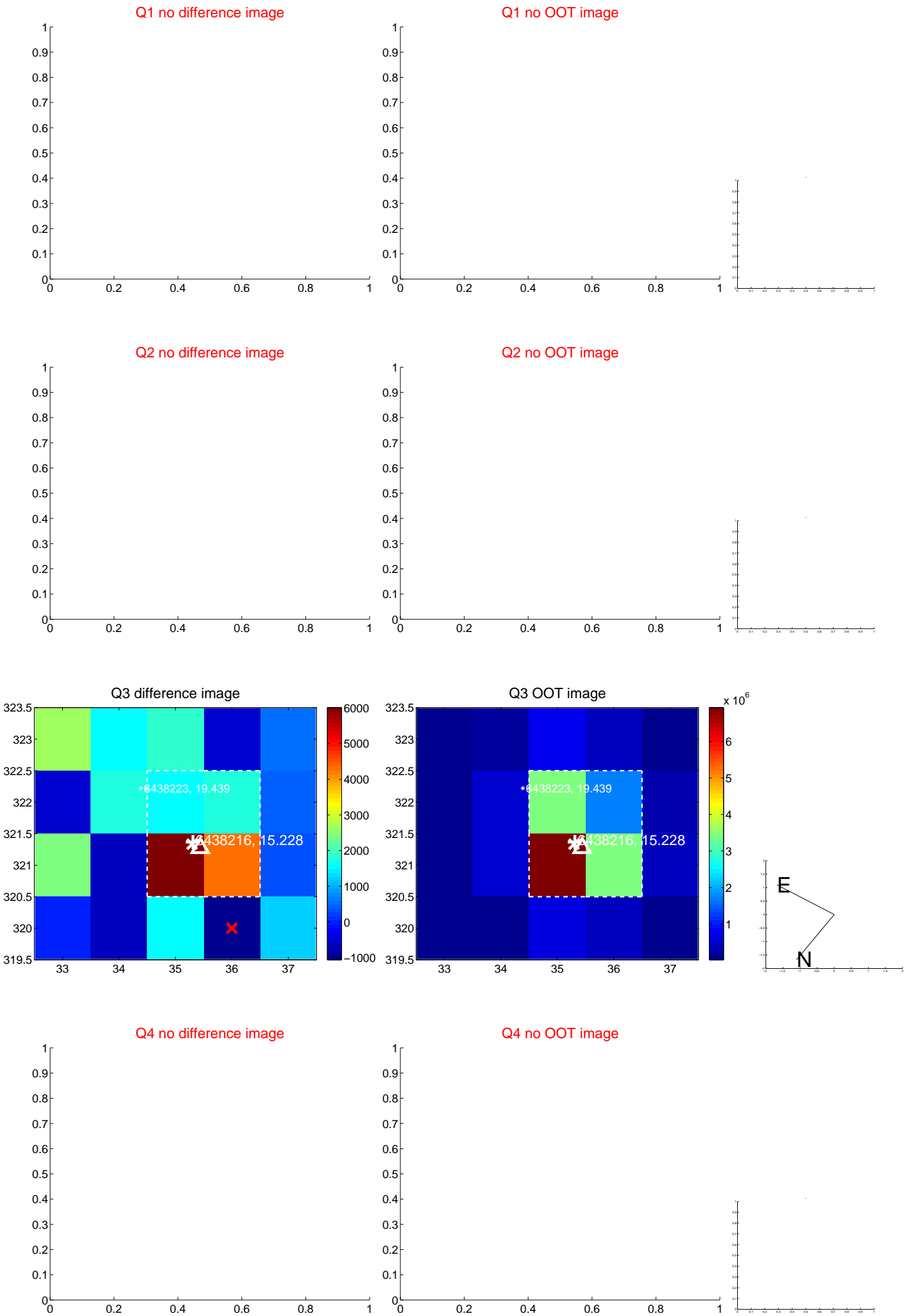
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.208 ± 0.295	0.71	-0.023 ± 0.250	-0.207 ± 0.296
PRF-fit source offset from KIC position	0.316 ± 0.294	1.08	0.055 ± 0.250	-0.312 ± 0.296
photometric centroid source offset	1.61 ± 1.20	1.33	-0.88 ± 1.31	-1.34 ± 1.16

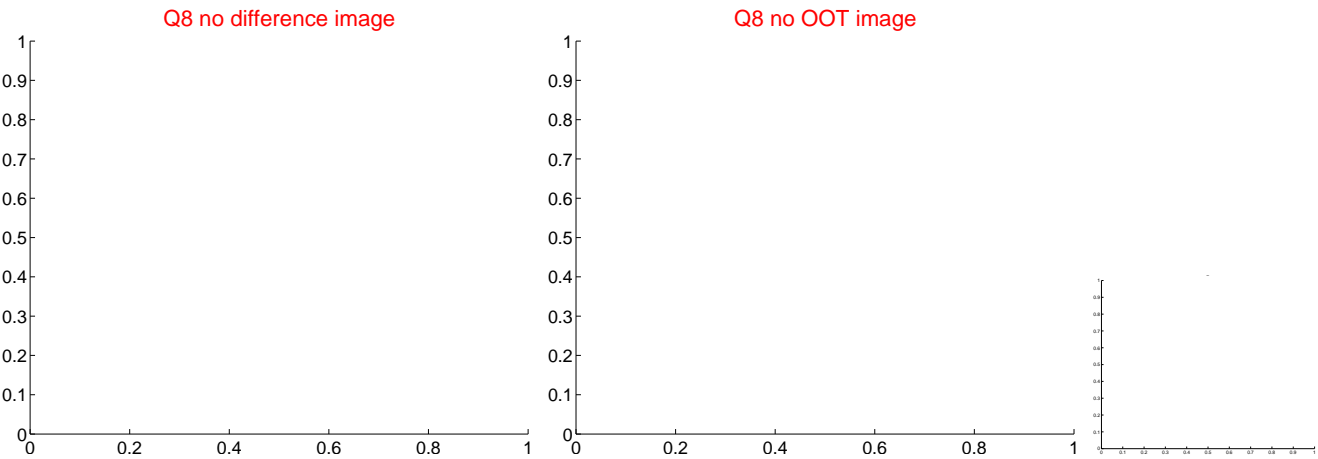
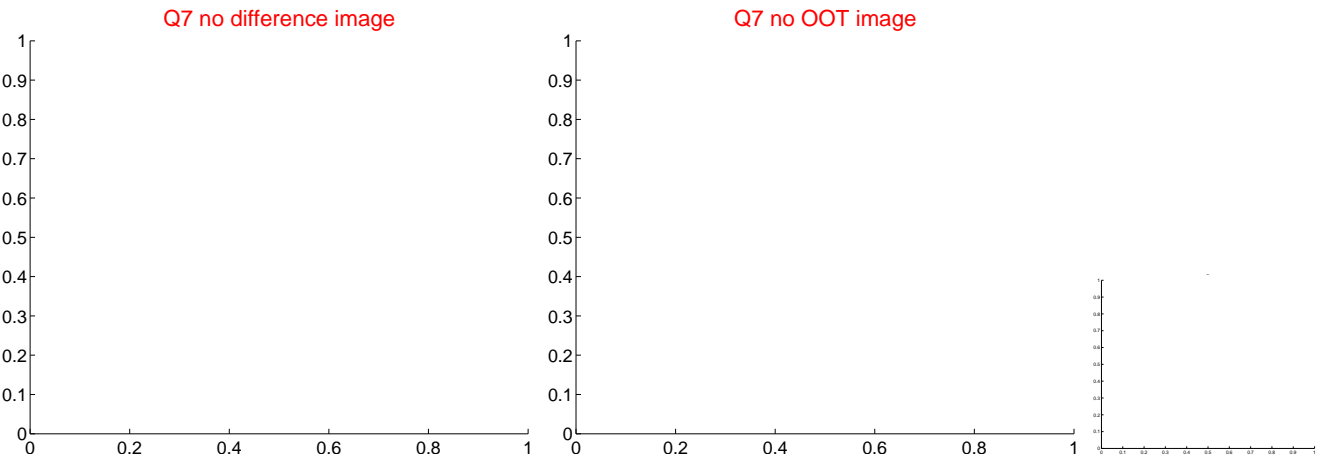
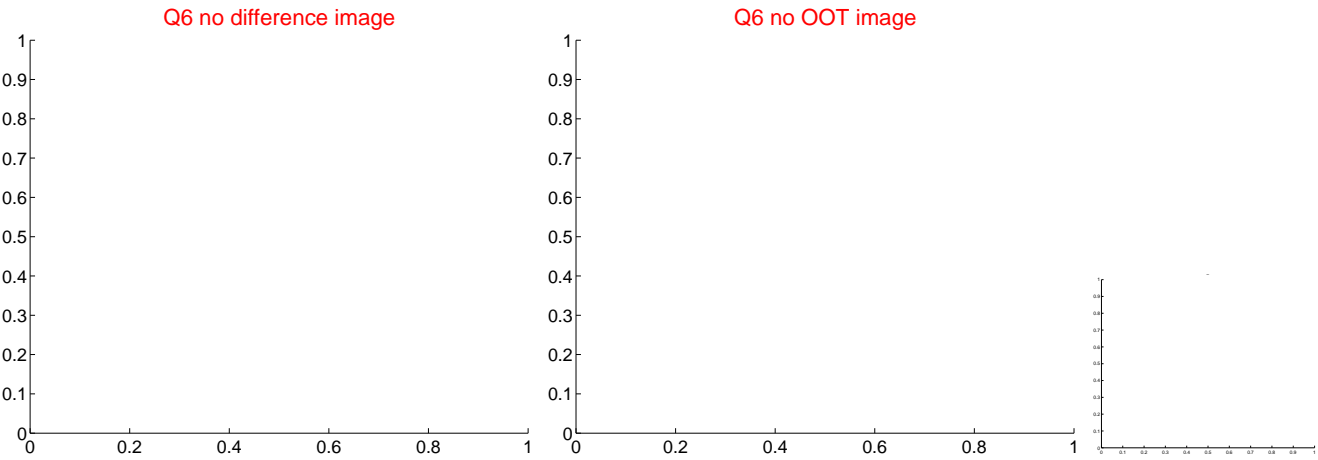
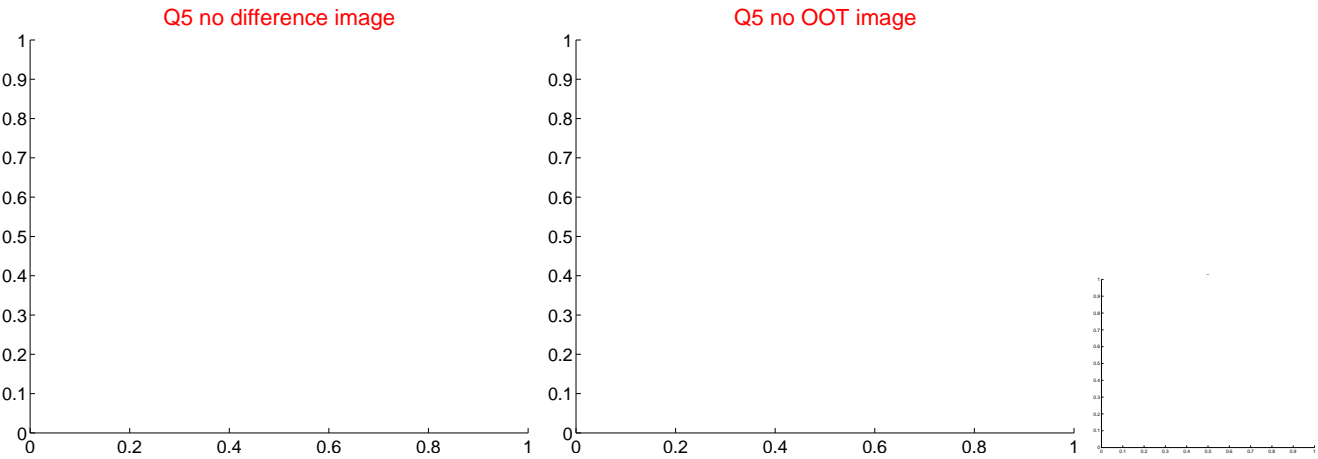


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

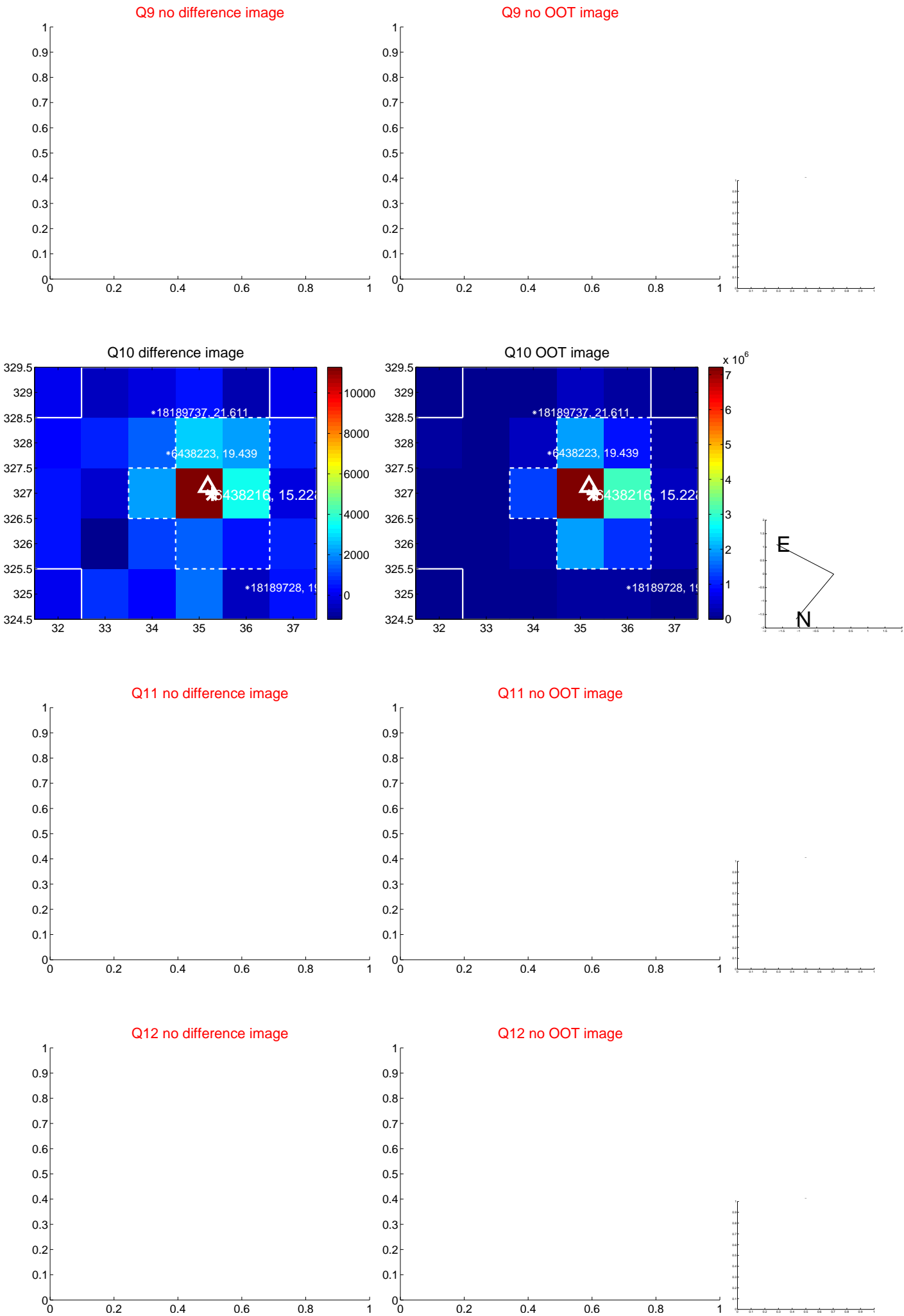
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



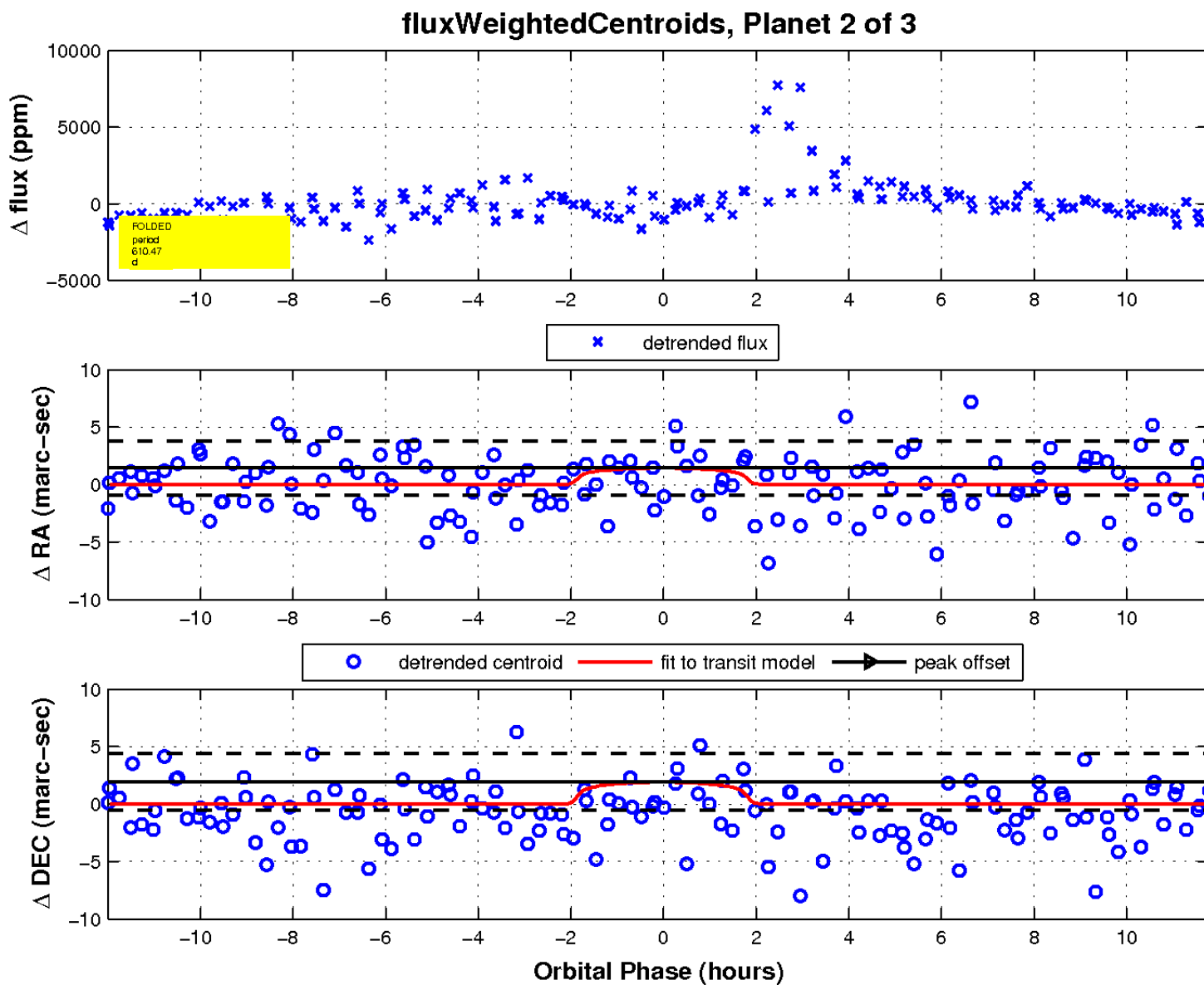
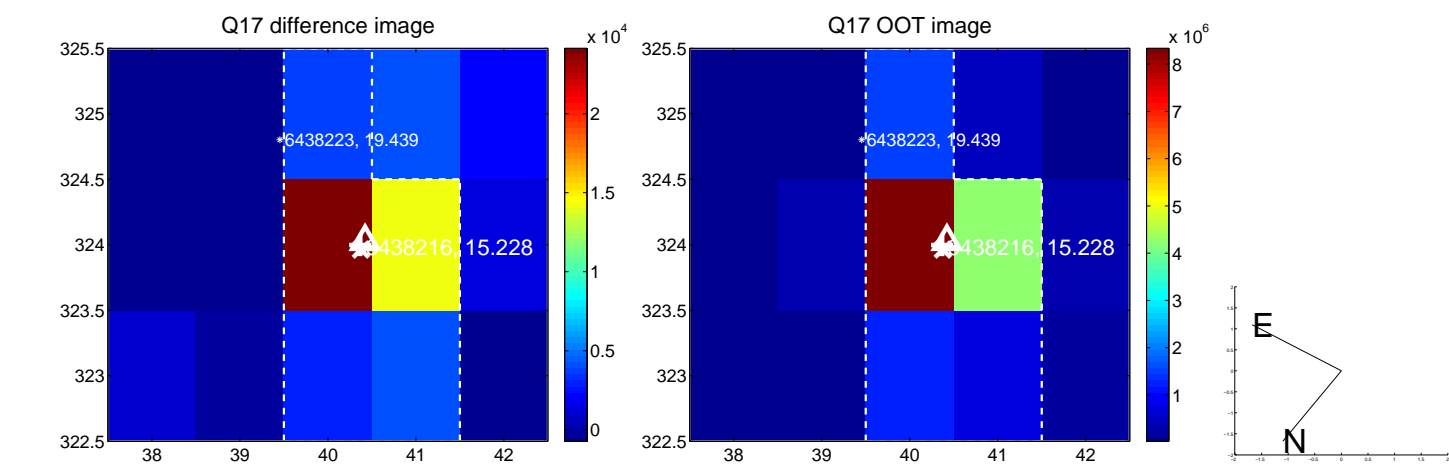
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

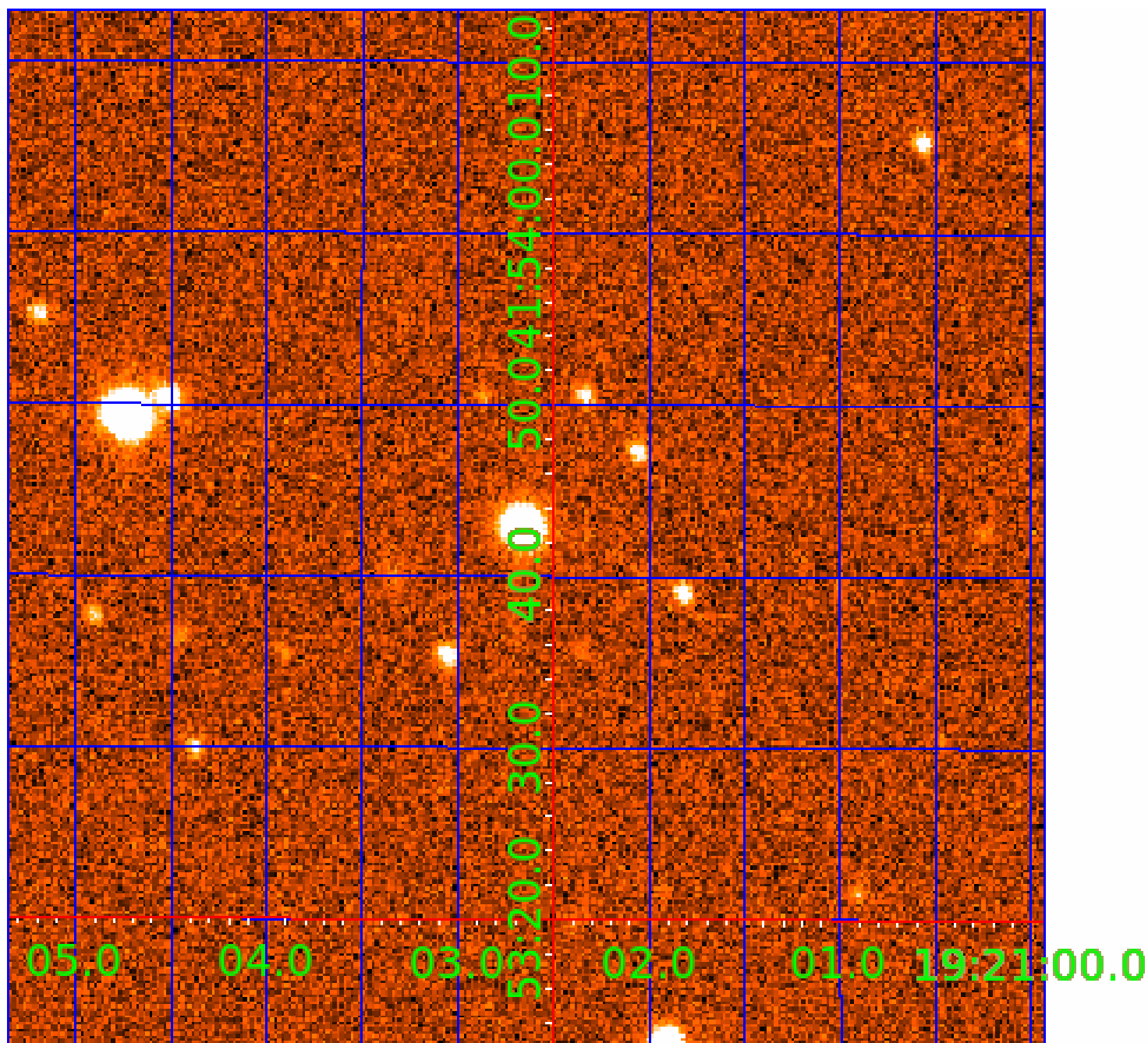


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006438216

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})
006438216-01	OBS	No	275.818636	400.304526	1534.8	7.423	13.5	7.4	0.55	4650	2.57	0.28
006438216-02	OBS	No	610.468282	343.057573	1504.5	3.999	15.6	6.3	0.55	4650	2.29	0.10
006438216-03	OBS	No	262.441675	347.551214	964.6	5.472	12.1	5.1	0.55	4650	1.73	0.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006438216-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
006438216-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006438216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

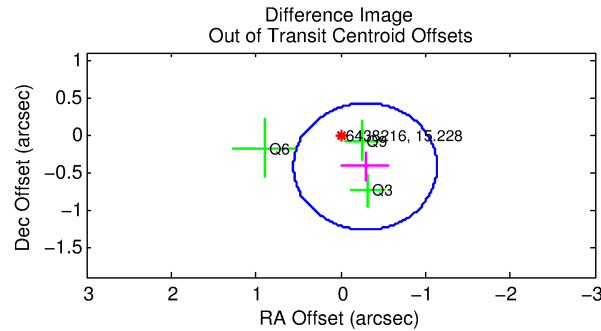
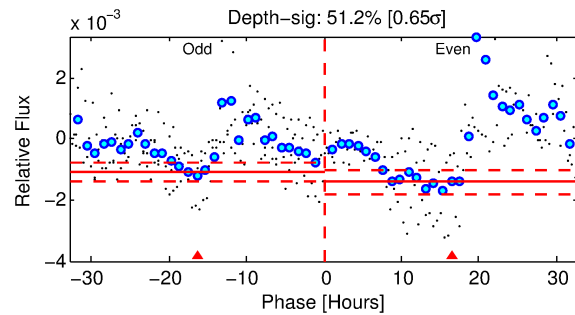
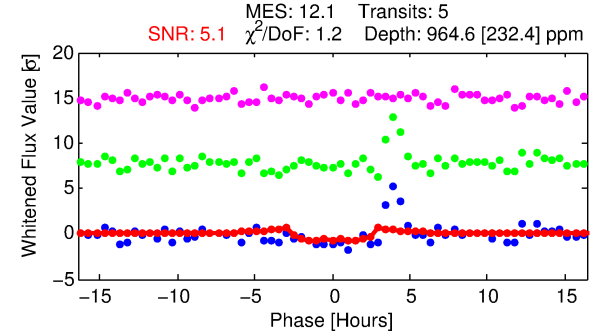
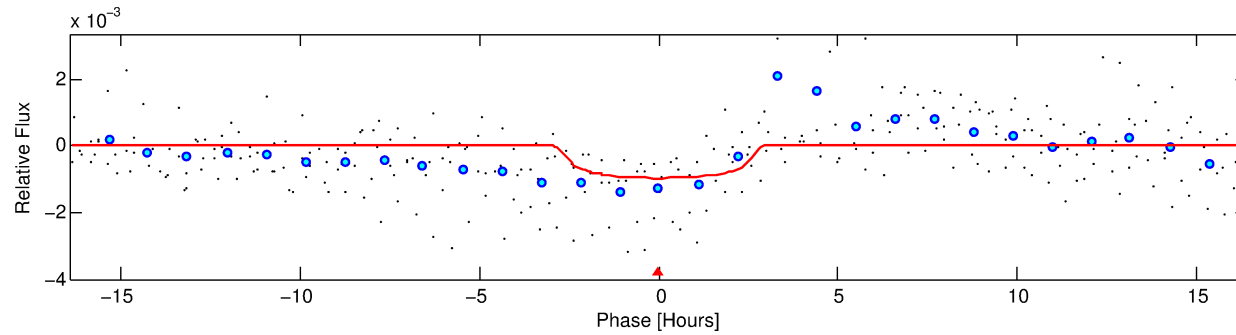
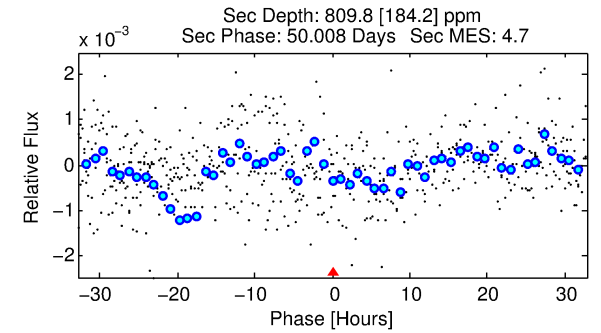
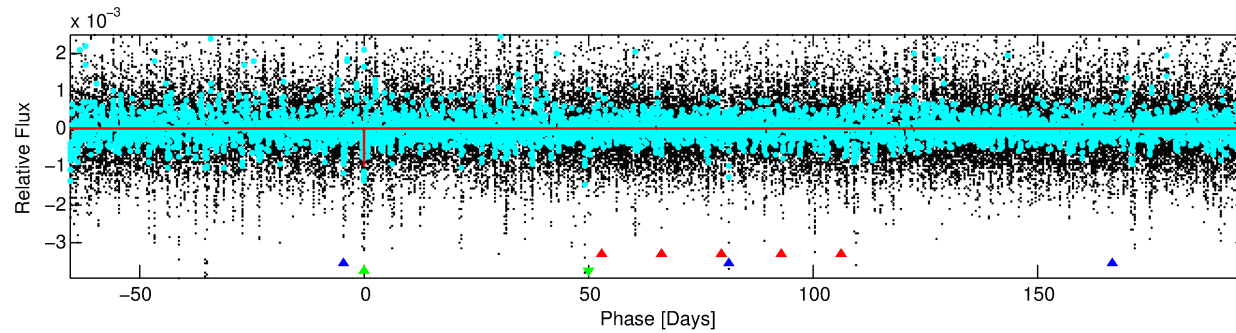
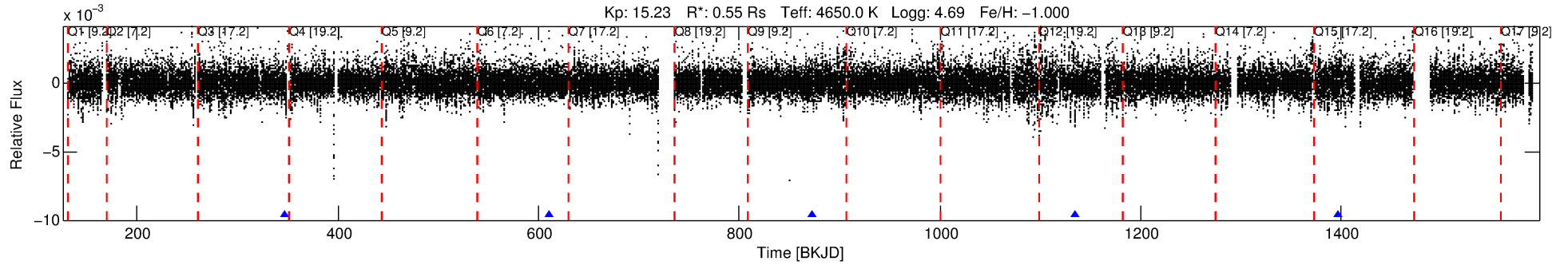
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006438216-03

No Significant Match Found

DV One-Page Summary

KIC: 6438216 Candidate: 3 of 3 Period: 262.442 d



DV Fit Results:

Period = 262.44168 [0.00493] d
Epoch = 347.5512 [0.0119] BKJD
Rp/R* = 0.0287 [0.0614]
a/R* = 332.50 [2499.33]
b = 0.48 [12.05]
Seff = 0.30 [0.04]
Teq = 188 [7] K
Rp = 1.73 [3.71] Re
a = 0.6583 [0.0406] AU
Ag = 64279.52 [275636.52] [0.23σ]
Teffp = 4633 [4968] K [0.89σ]

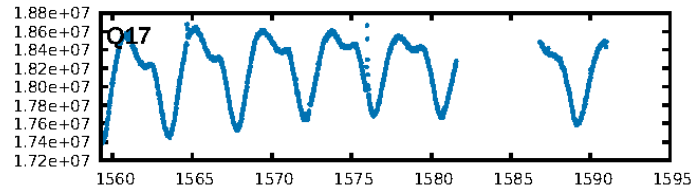
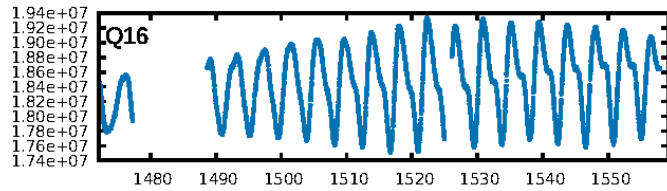
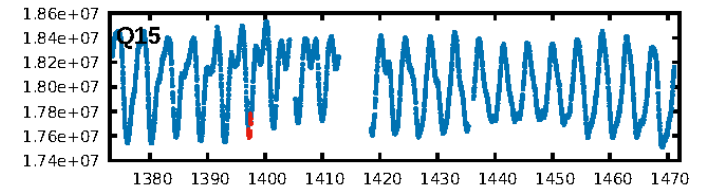
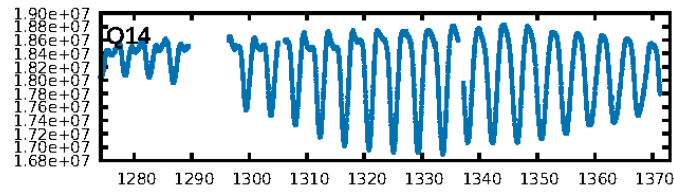
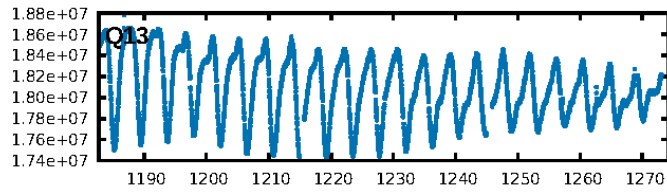
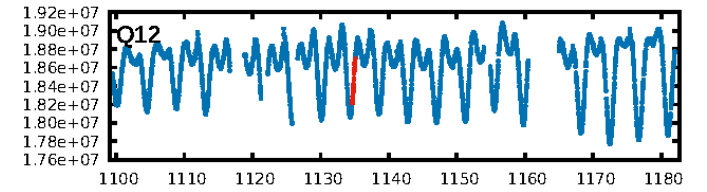
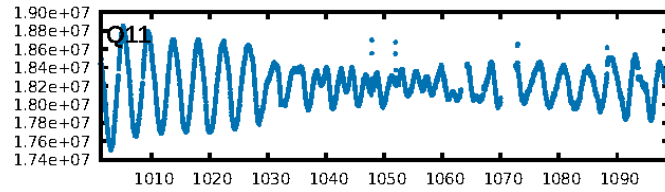
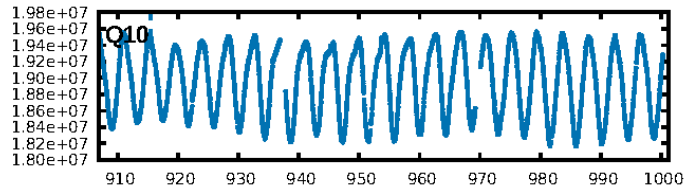
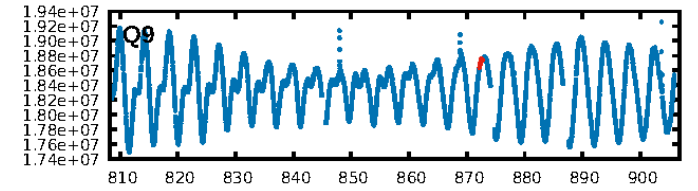
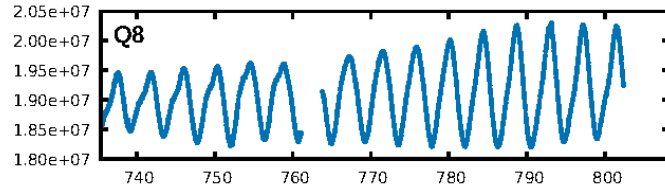
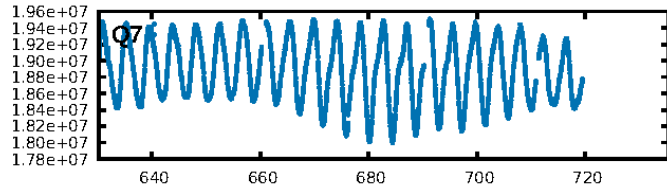
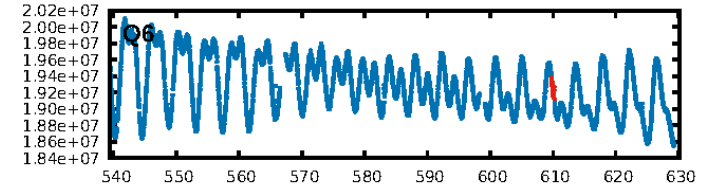
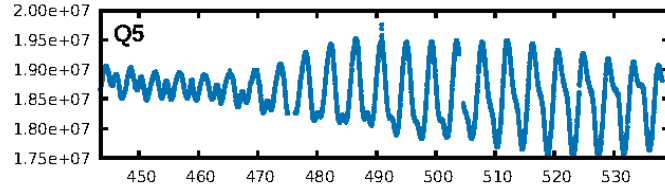
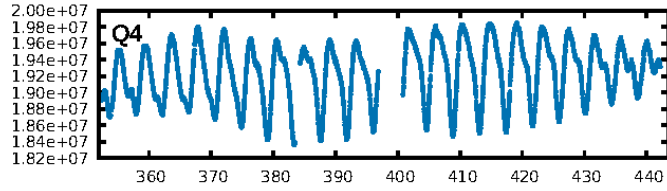
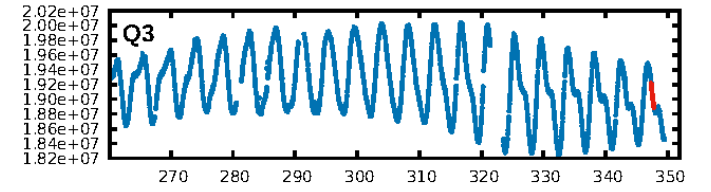
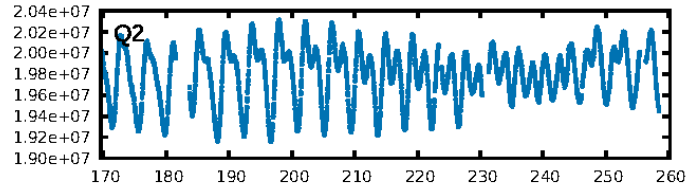
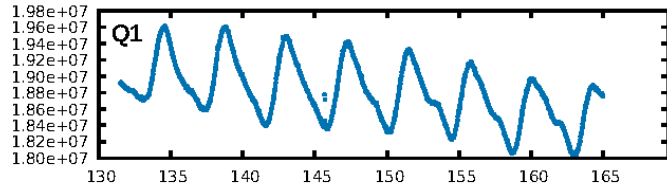
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [34.81σ]
ModelChiSquare2-sig: 3.8%
ModelChiSquareGof-sig: 94.7%
Bootstrap-pfa: 3.75e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -2.8
Centroid-sig: 78.4%
Centroid-so: 0.394 arcsec [0.26σ]
OotOffset-rm: 0.515 arcsec [1.83σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.548 arcsec [1.88σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [4/4]

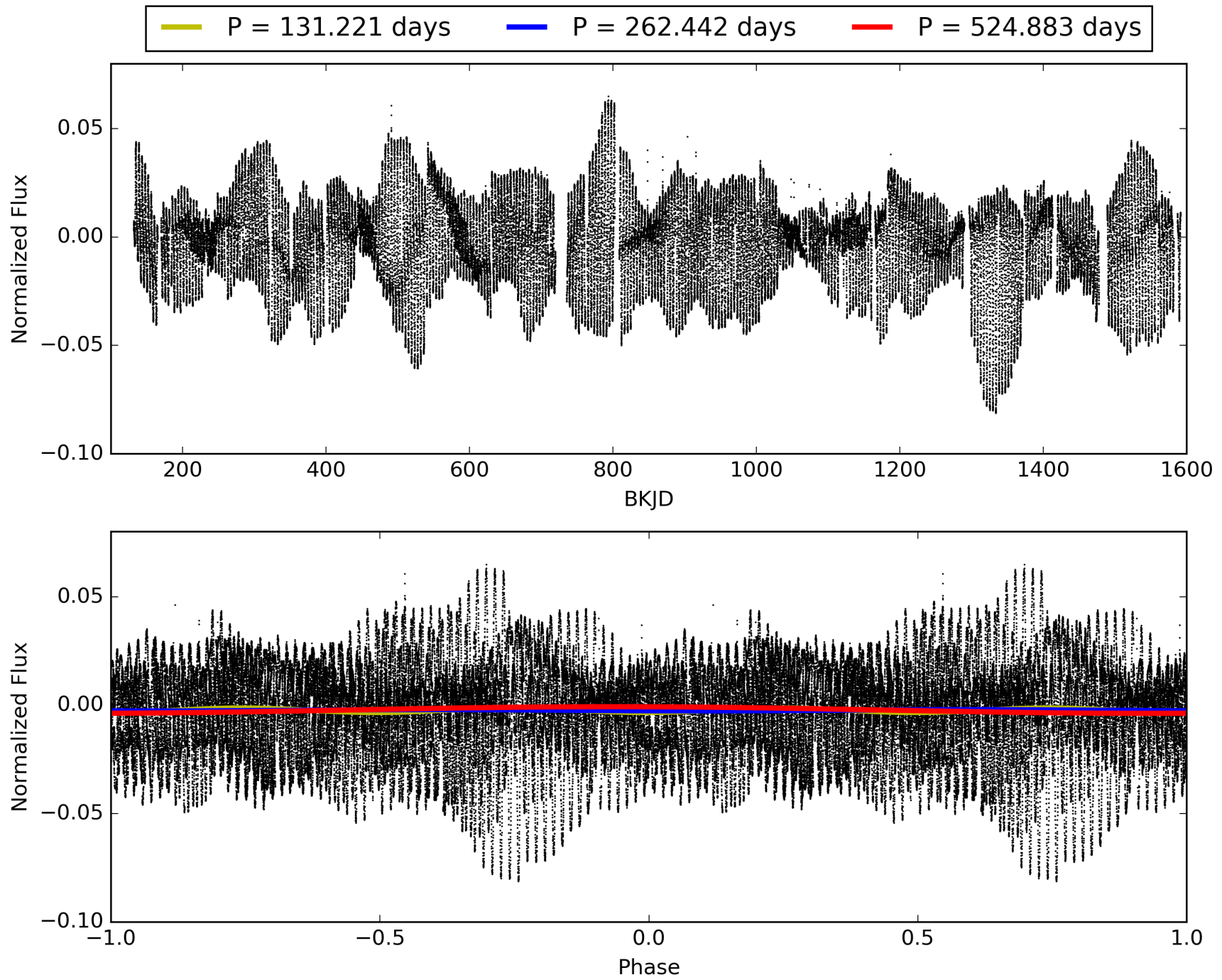
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:02:03 Z

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

TCE 006438216-03, PDC Light Curves

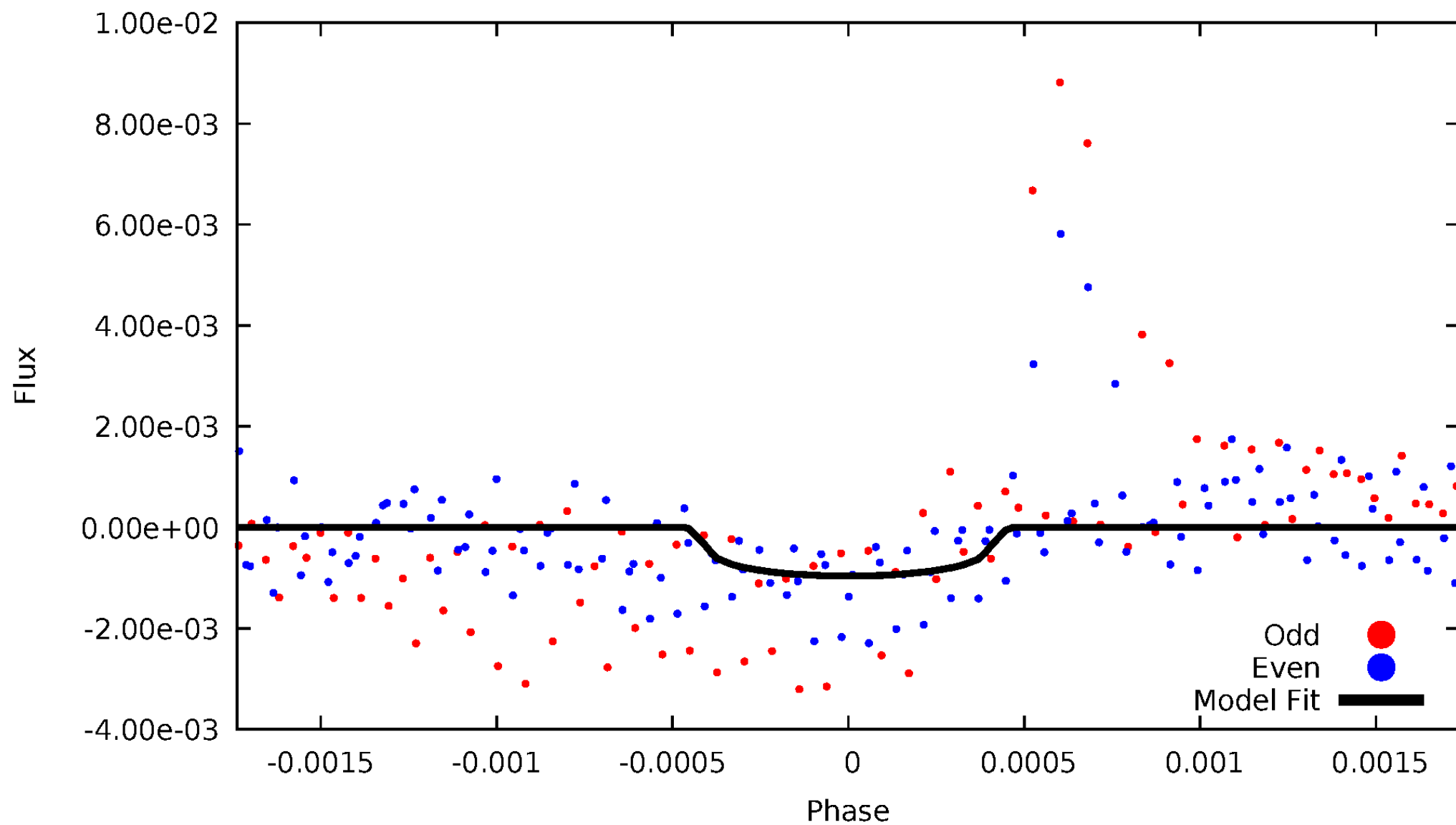


TCE 006438216-03



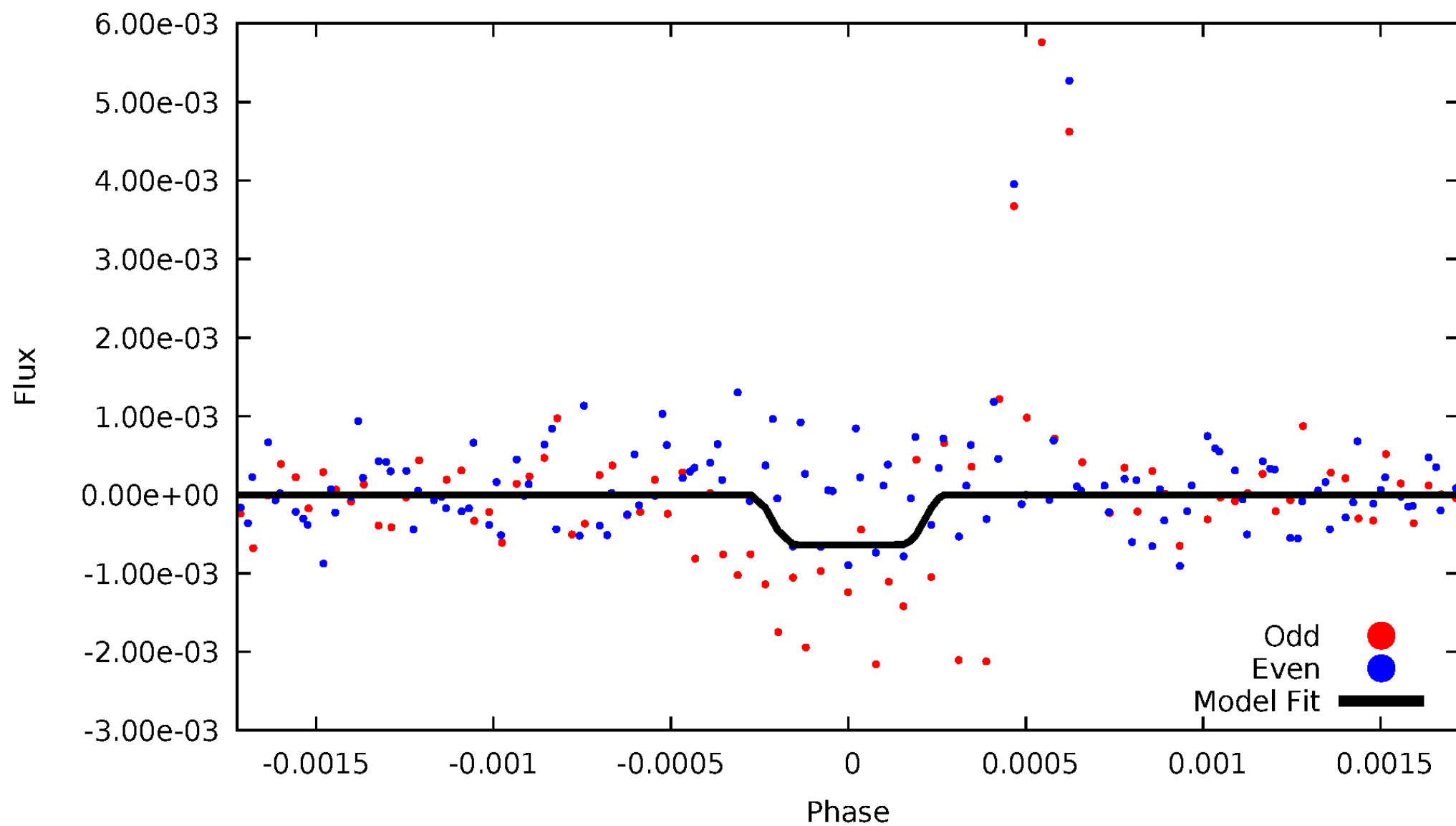
DV Odd/Even

TCE 006438216-03



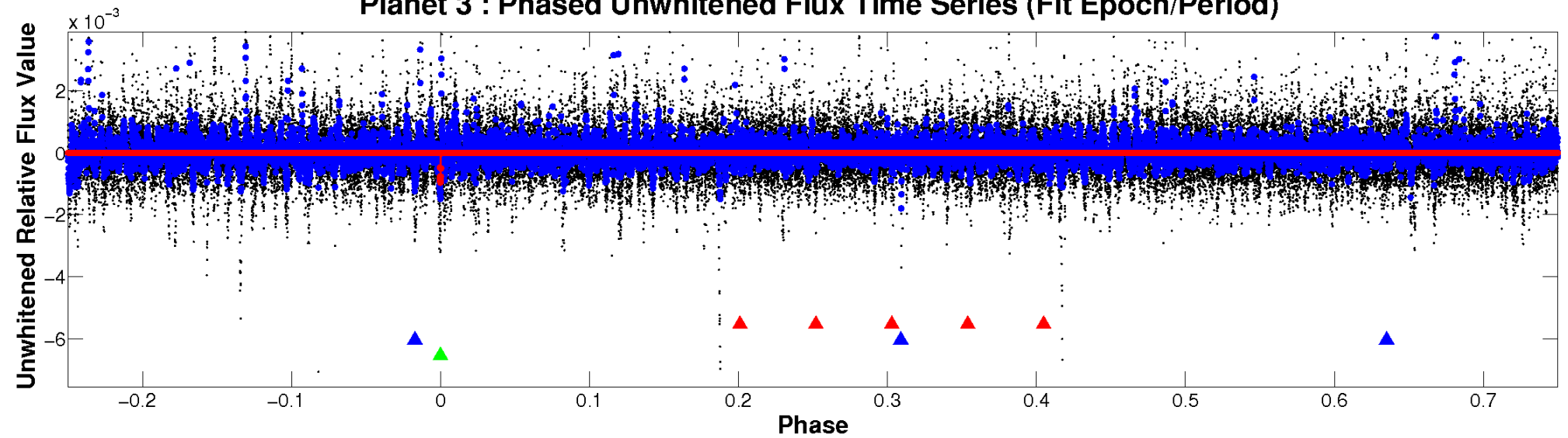
ALT Odd/Even

TCE 006438216-03

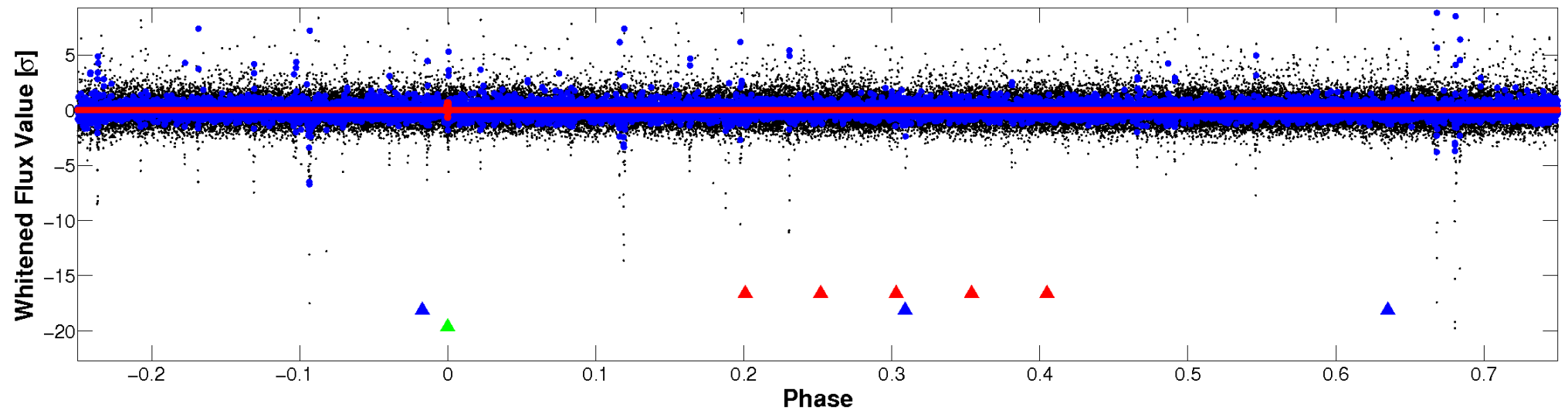


Non-Whitened Vs. Whitened Light Curve

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

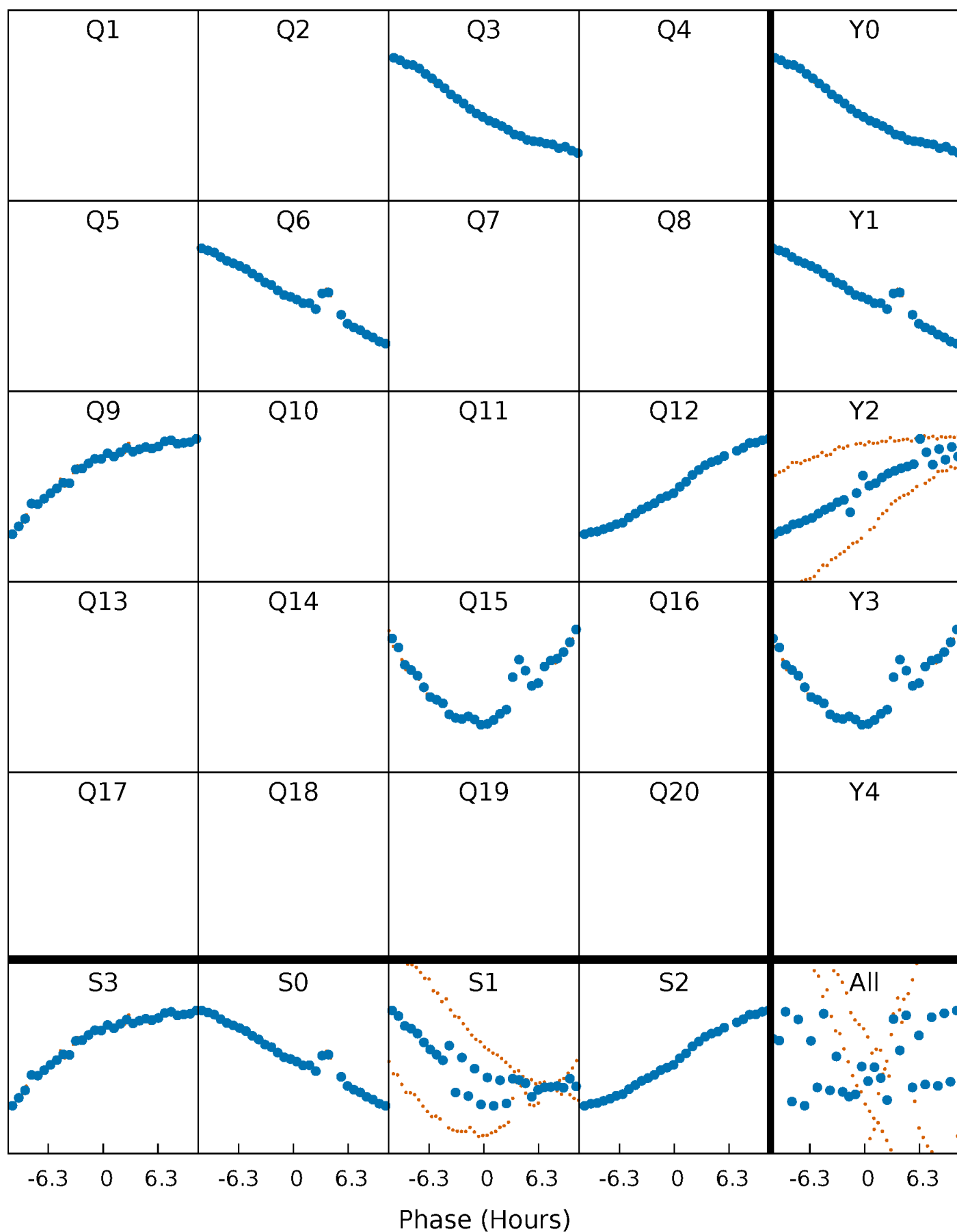


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



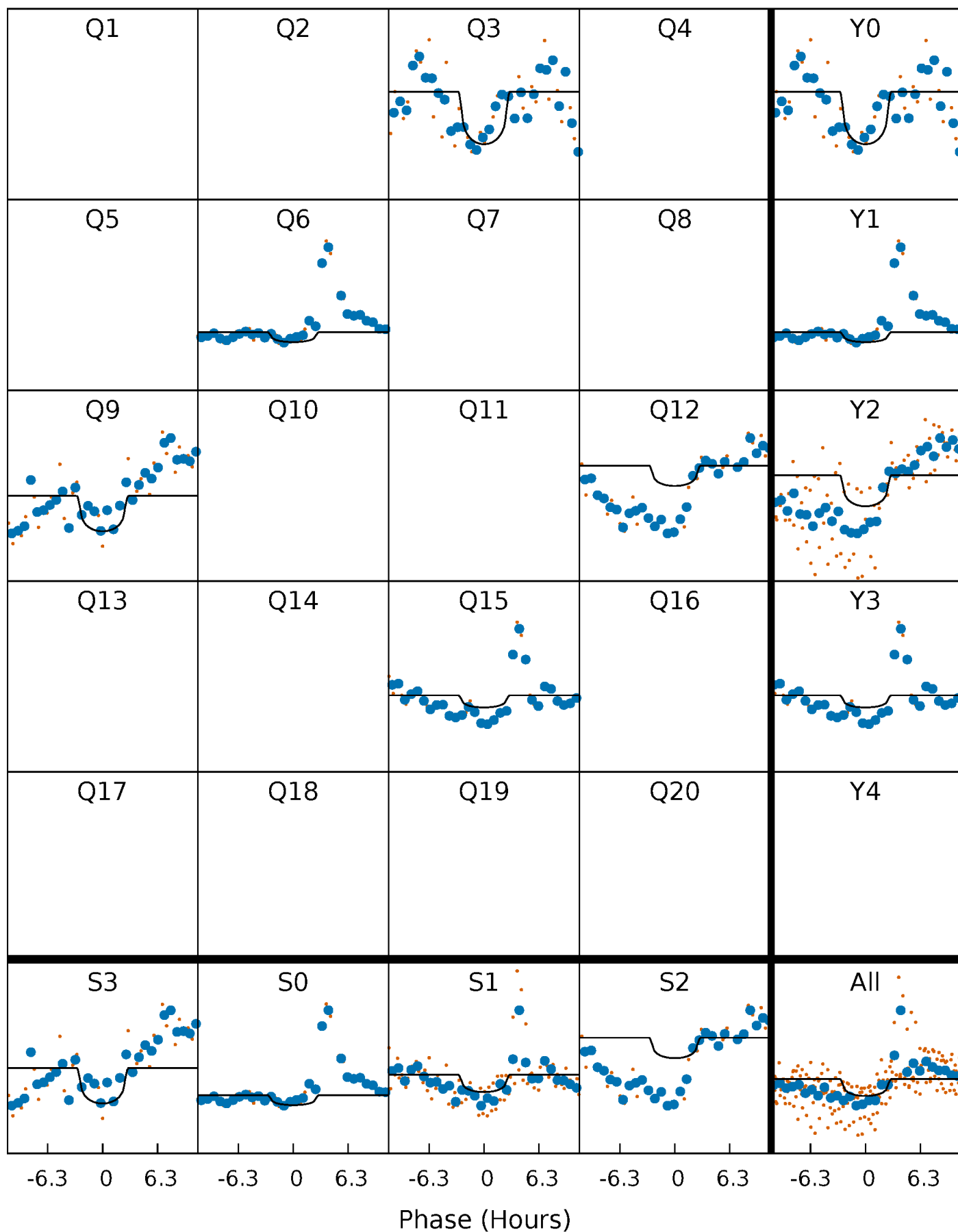
PDC Quarter-Phased Transit Curves

TCE 006438216-03 P=262.441675 Days $T_0=347.551214$ (BKJD)



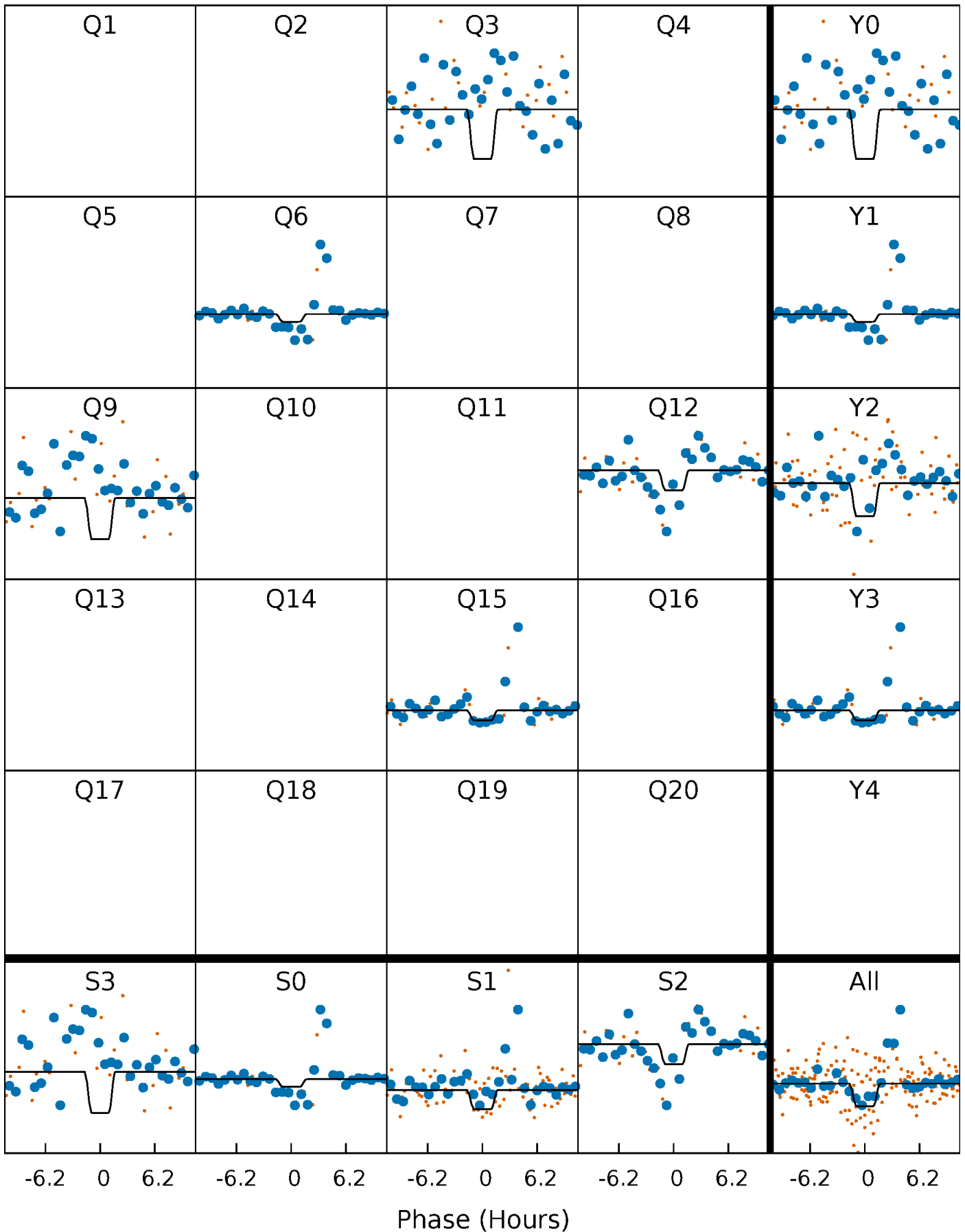
DV Quarter-Phased Transit Curves

TCE 006438216-03 P=262.441675 Days $T_0=347.551214$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

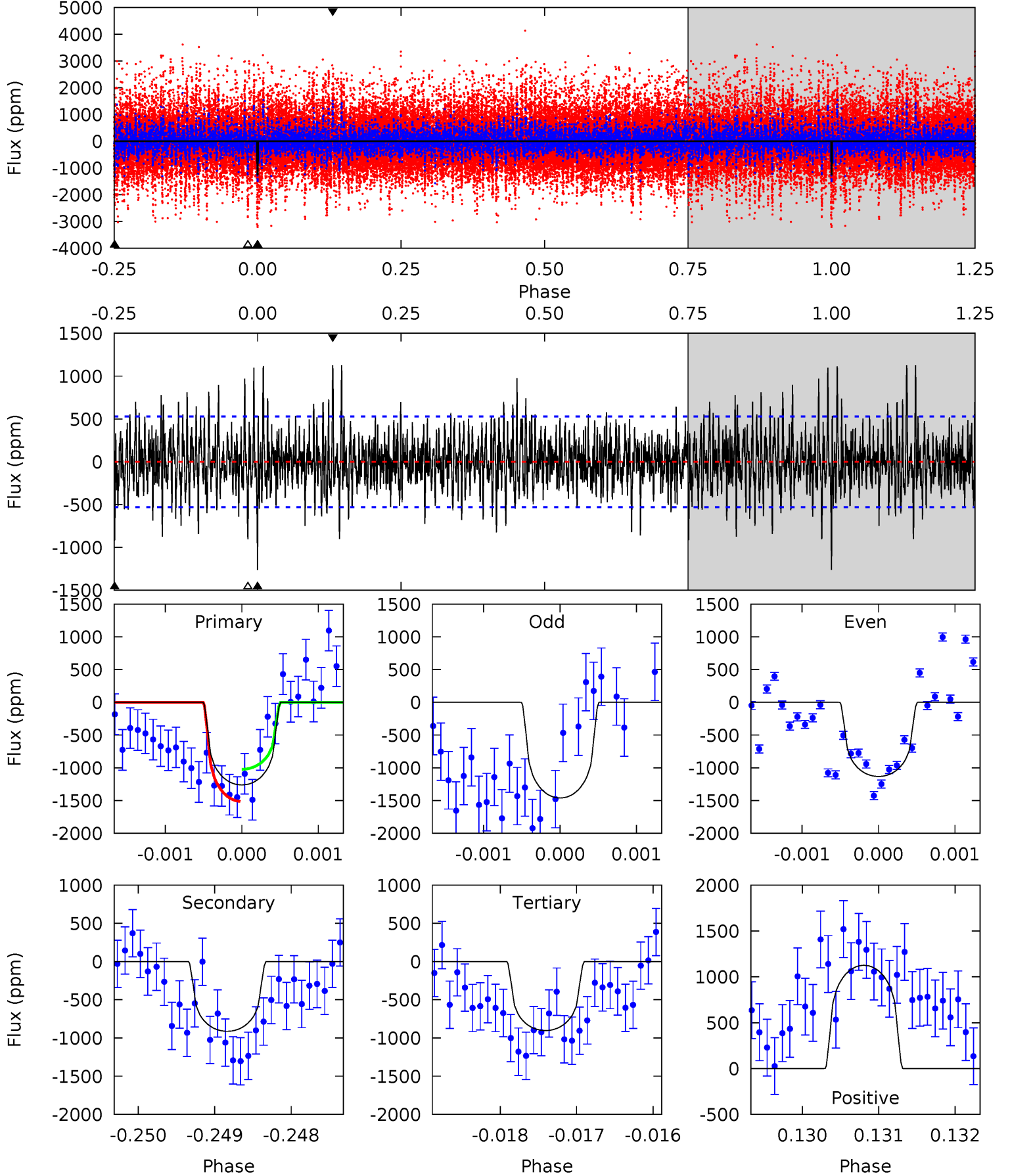
TCE 006438216-03 P=262.441833 Days $T_0=347.566004$ (BKJD)



DV Model-Shift Uniqueness Test

006438216-03, P = 262.441675 Days, E = 85.109539 Days

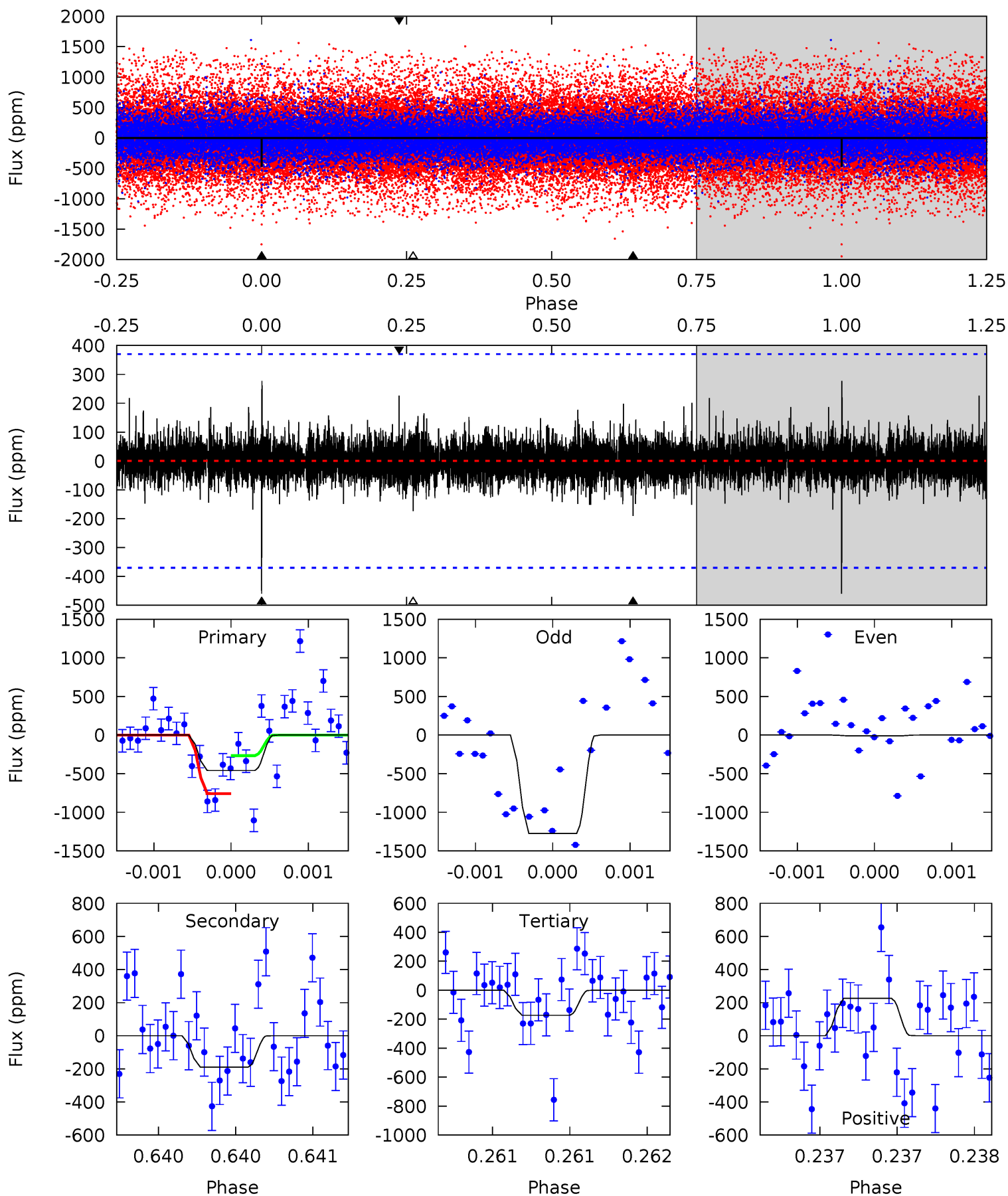
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	9.44	9.34	11.6	5.47	3.31	2.70	3.71	1.41	0.10	-2.20	1.62	1.75	0.47	2.55



Alt Model-Shift Uniqueness Test

006438216-03, P = 262.441833 Days, E = 85.124171 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.92	2.86	2.61	3.40	5.57	3.48	0.64	4.31	3.52	0.25	-0.54	9.27	0.68	0.38	3.60



Stellar Parameters For KIC 006438216

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	4650^{+139}_{-139}	$4.693^{+0.052}_{-0.028}$	$-1.000^{+0.300}_{-0.300}$	$0.554^{+0.039}_{-0.039}$	$0.552^{+0.044}_{-0.024}$	$4.571^{+0.968}_{-0.549}$
	+3%/-3%	+1%/-1%	+30%/-30%	+7%/-7%	+8%/-4%	+21%/-12%
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 006438216-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-913 ± 97	$3.26^{+2.80}_{-2.18}$	262^{+9}_{-9}	3782^{+2079}_{-696}	$20715^{+161640}_{-14709}$
Alt.	-190 ± 66	$3.29^{+3.03}_{-2.30}$	262^{+8}_{-10}	2928^{+1339}_{-457}	3979^{+38903}_{-2918}

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 $A_{obs} \gg 1.0$

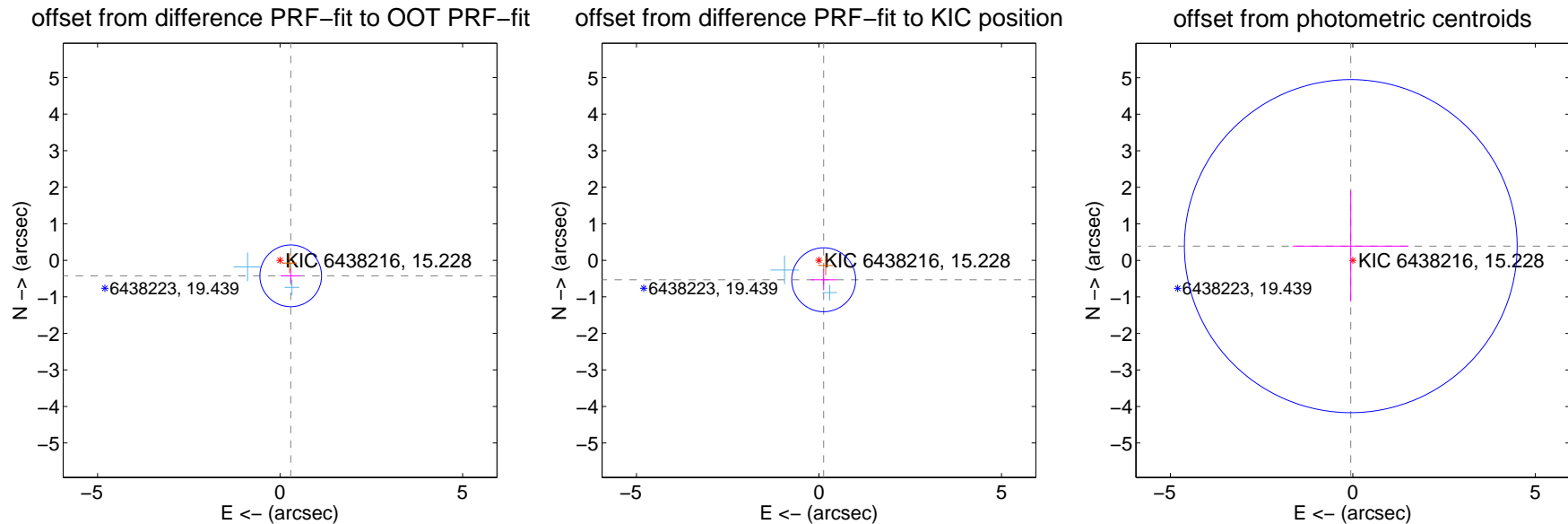
DV Centroid Data

Supplemental centroid analysis for 006438216-03. Kepler magnitude: 15.23. Transit SNR 5.13

There are 2 quarters with good PRF difference image offsets

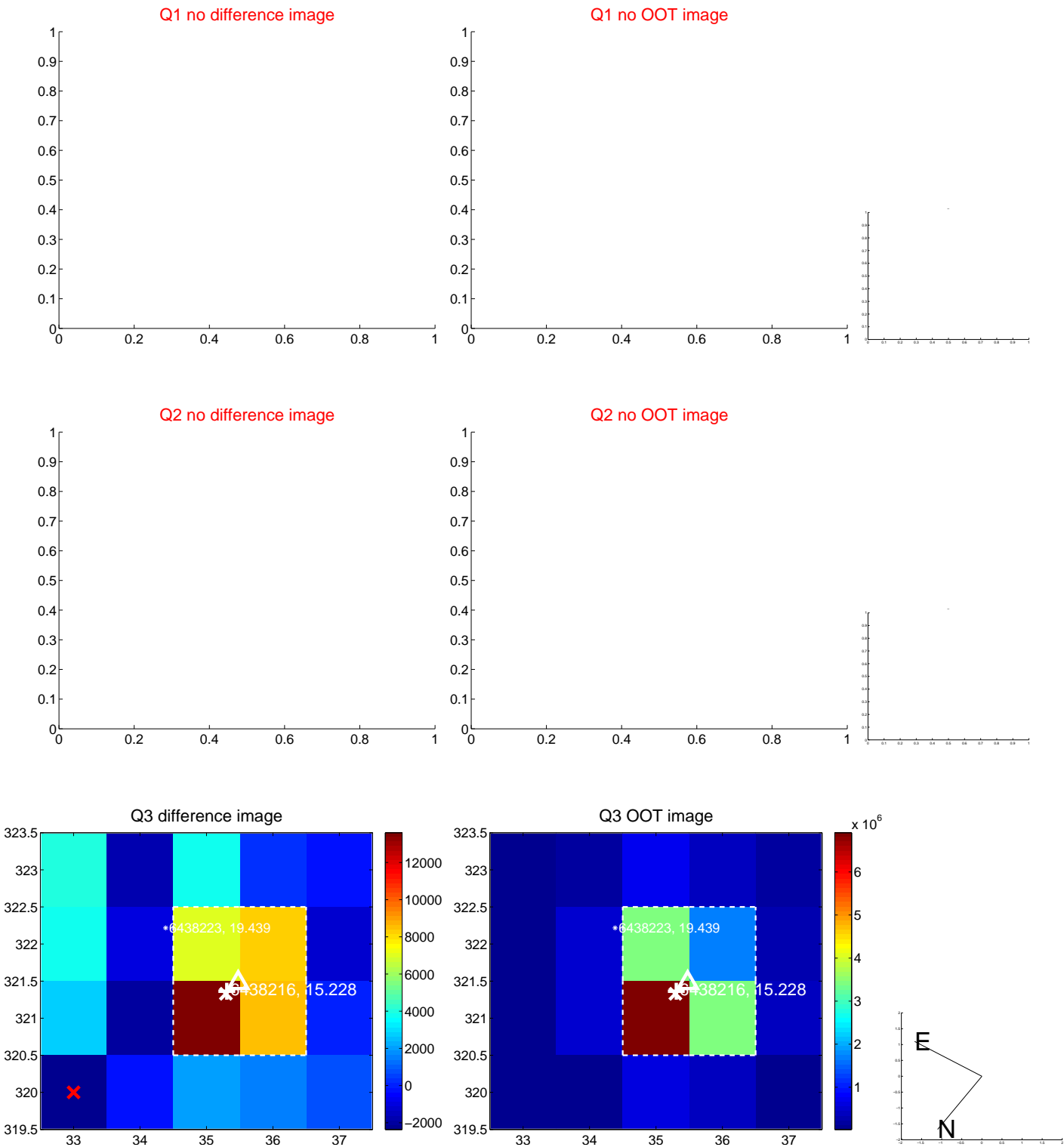
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.515 ± 0.282	1.83	-0.291 ± 0.278	-0.425 ± 0.188
PRF-fit source offset from KIC position	0.548 ± 0.292	1.88	-0.129 ± 0.348	-0.533 ± 0.288
photometric centroid source offset	0.39 ± 1.52	0.26	0.06 ± 1.58	0.39 ± 1.52



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

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



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

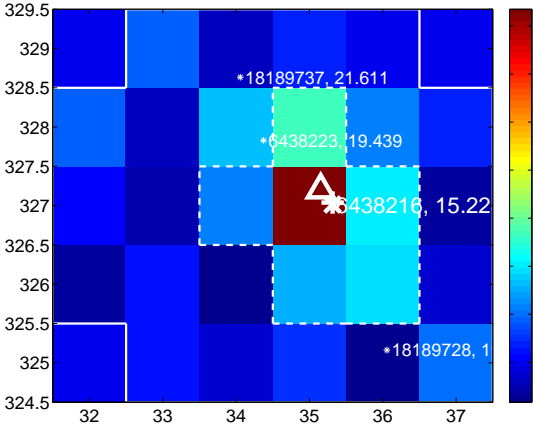
Q5 no difference image



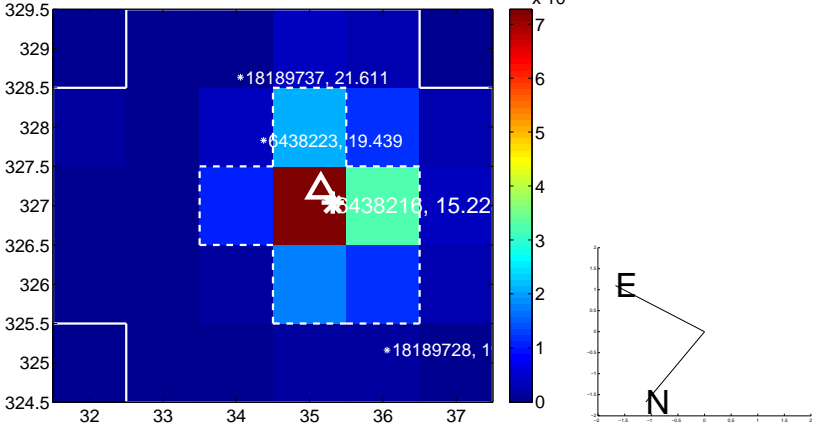
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



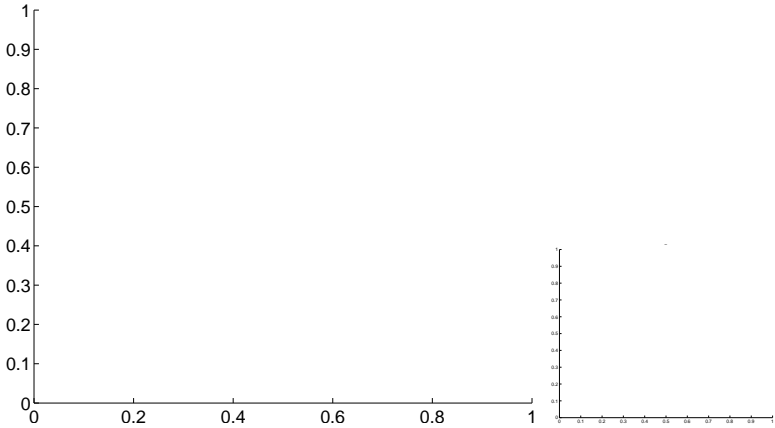
Q7 no OOT image



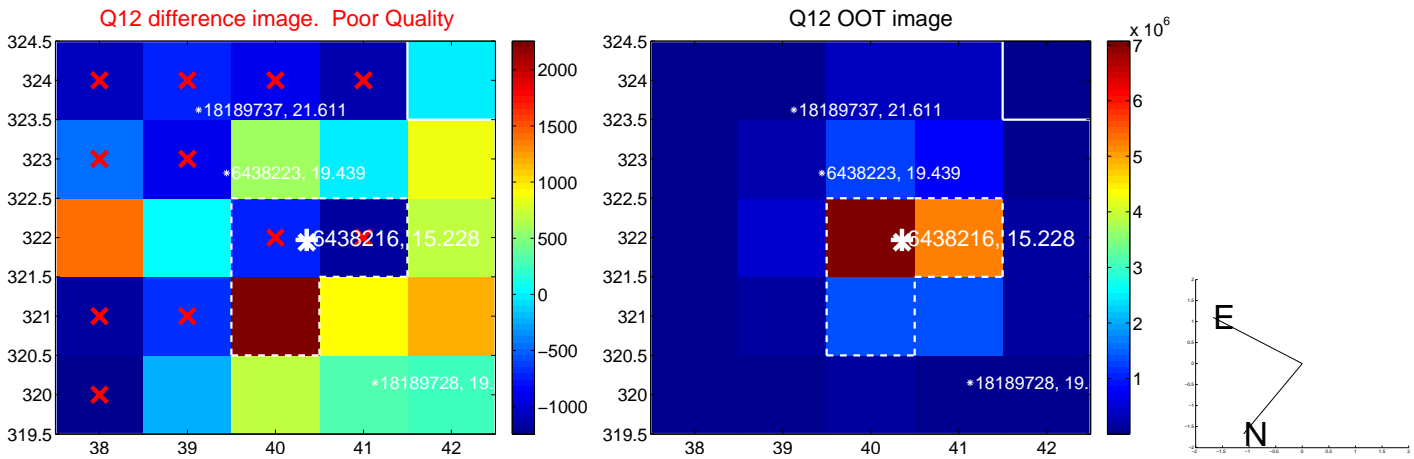
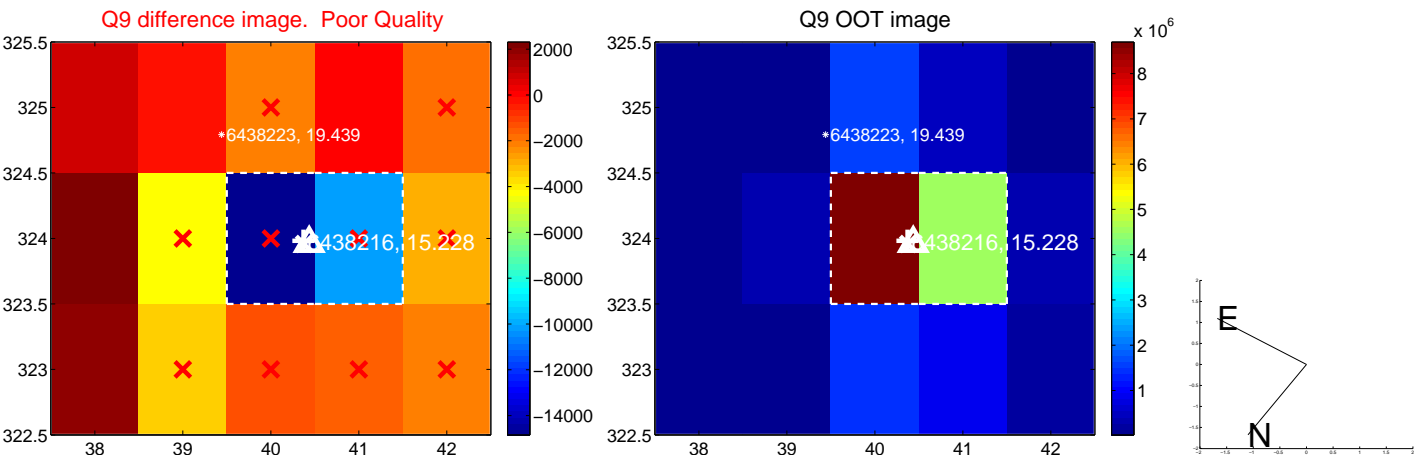
Q8 no difference image



Q8 no OOT image



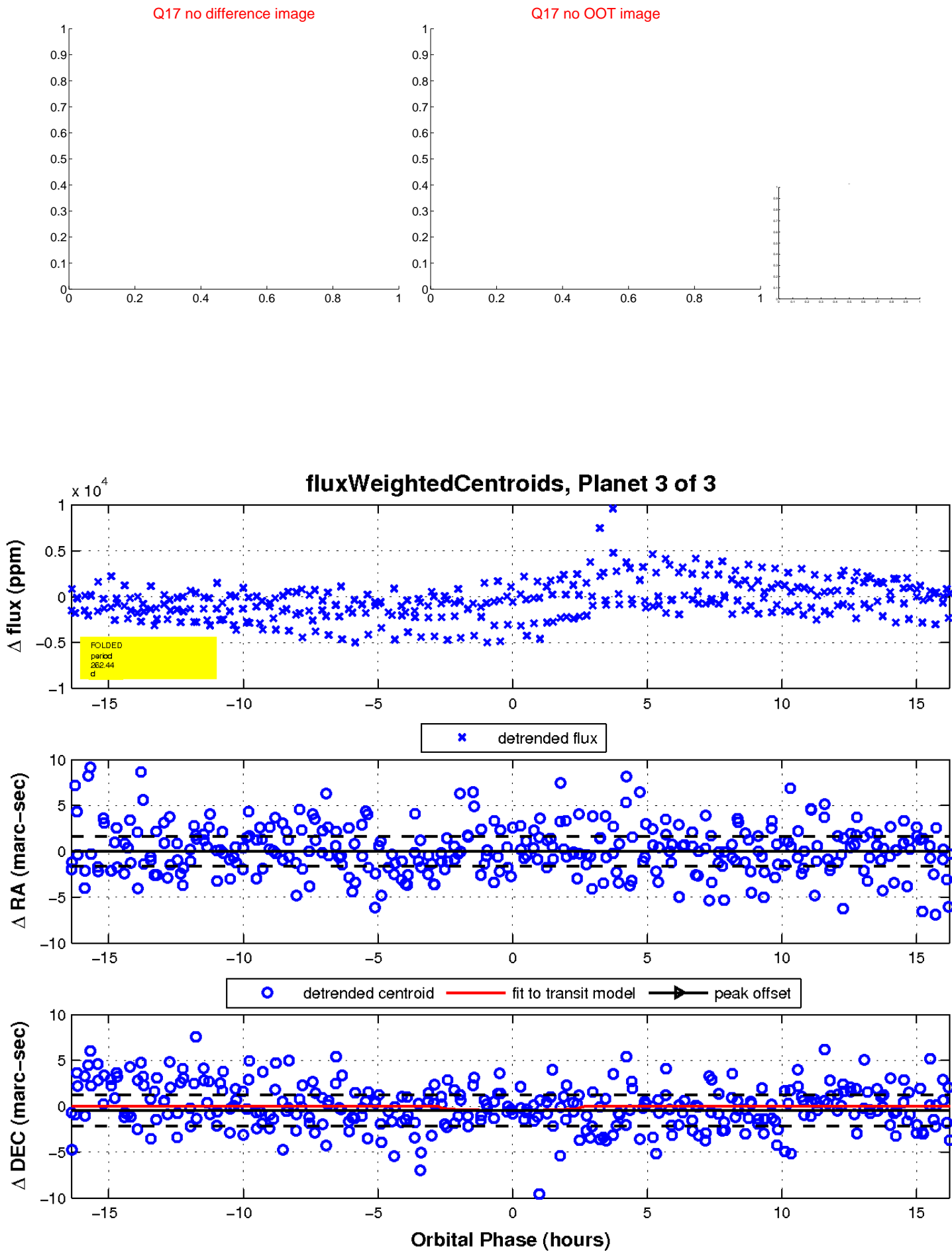
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

