

KIC 006436029

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})
006436029-01	OBS	2828.01	59.496655	146.955151	1258.3	5.883	18.7	20.5	0.83	4817	3.47	4.37
006436029-02	OBS	2828.02	505.465037	458.076373	1732.6	10.162	12.8	13.1	0.83	4817	3.60	0.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006436029-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006436029-02	OBS	PC	0.77	0	0	0	0	NO_COMMENT

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.

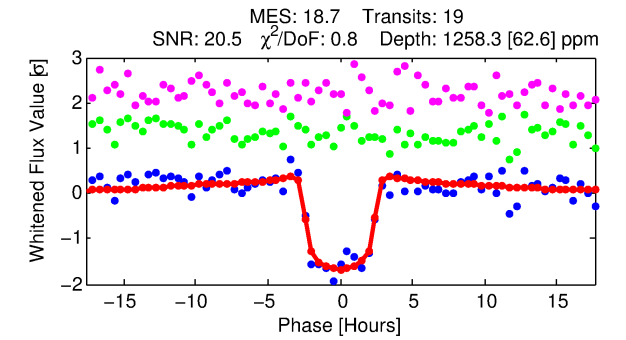
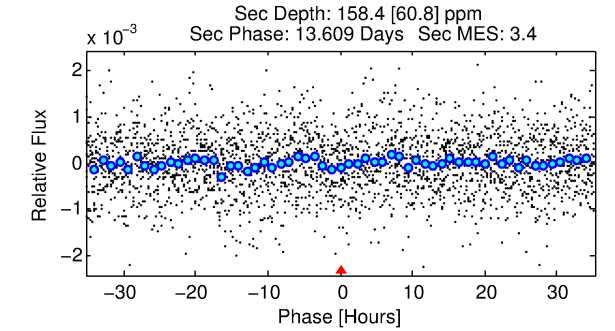
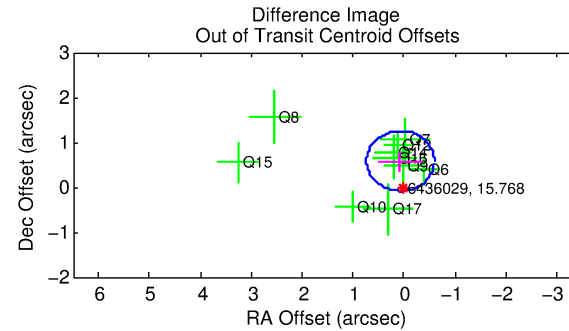
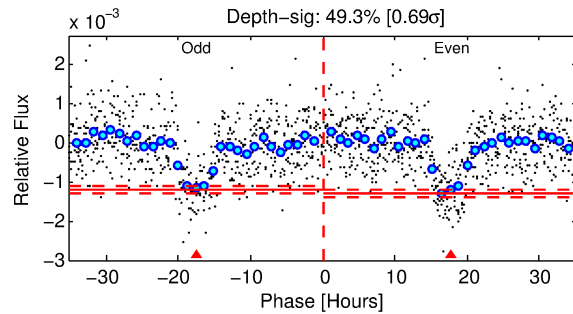
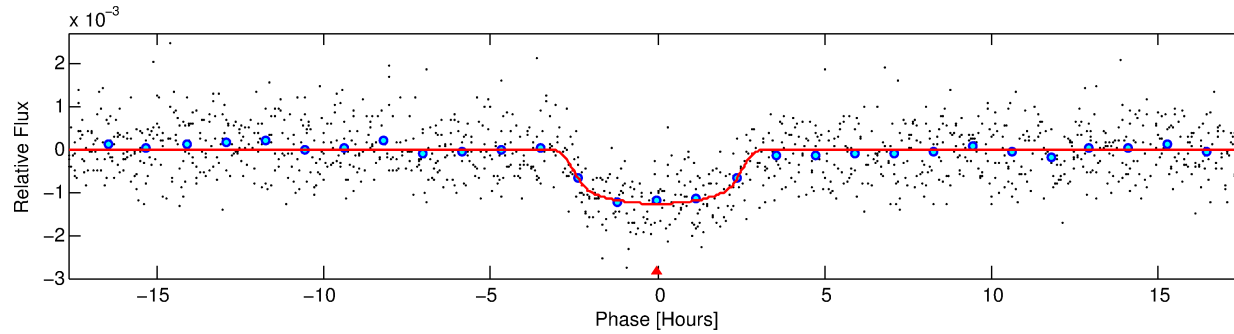
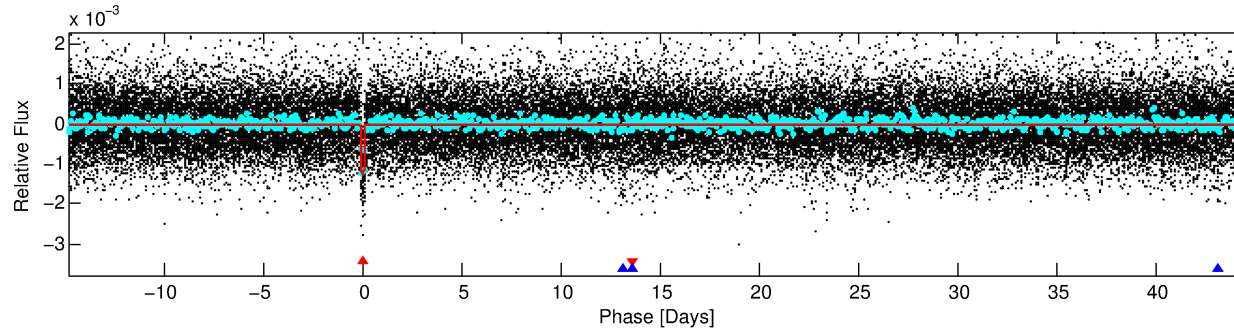
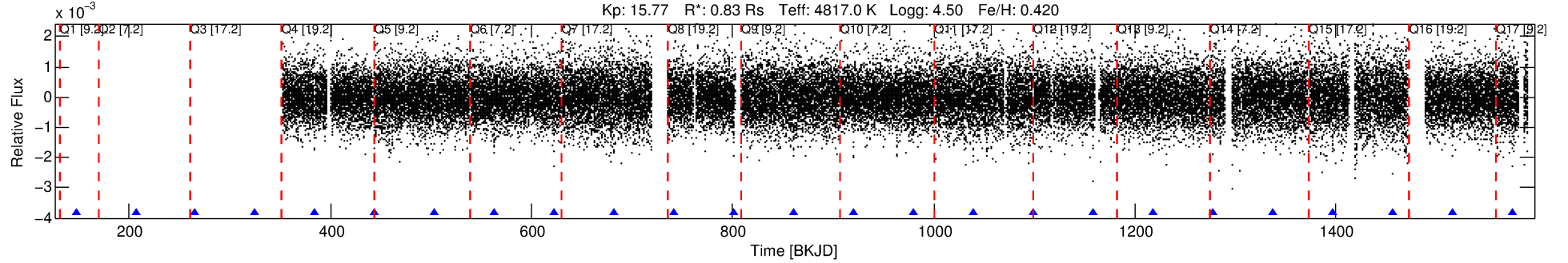
Ephemeris Match Information For 006436029-01

No Significant Match Found

DV One-Page Summary

KIC: 6436029 Candidate: 1 of 2 Period: 59.497 d
KOI: K02828.01 Corr: 0.976

Kp: 15.77 R*: 0.83 Rs Teff: 4817.0 K Logg: 4.50 Fe/H: 0.420



DV Fit Results:

Period = 59.49665 [0.00046] d
Epoch = 146.9552 [0.0066] BKJD
Rp/R* = 0.0381 [0.0039]
a/R* = 45.51 [15.23]
b = 0.85 [0.11]
Seff = 4.37 [1.06]
Teq = 369 [22] K
Rp = 3.47 [0.50] Re
a = 0.2768 [0.0305] AU
Ag = 555.02 [263.35] [2.10σ]
Teffp = 2767 [319] K [7.49σ]

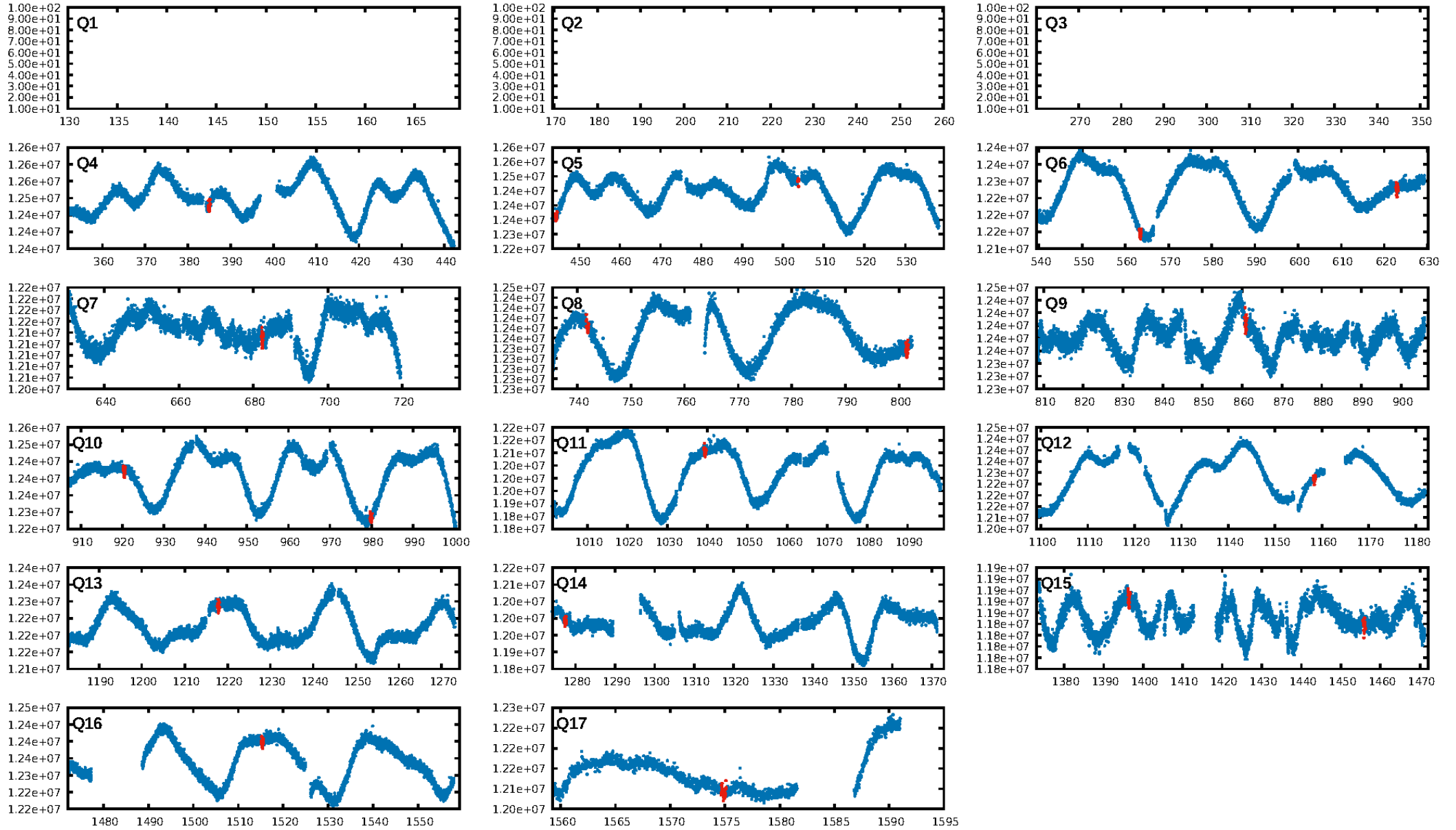
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [911.51σ]
ModelChiSquare2-sig: 92.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.76e-48
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 2.924
Centroid-sig: 18.3%
Centroid-so: 0.912 arcsec [1.37σ]
OotOffset-rm: 0.585 arcsec [2.63σ]
KicOffset-rm: 0.650 arcsec [2.59σ]
OotOffset-st: 3/2/3/2 [10]
KicOffset-st: 3/2/3/2 [10]
DiffImageQuality-fgm: 0.90 [9/10]
DiffImageOverlap-fno: 1.00 [11/11]

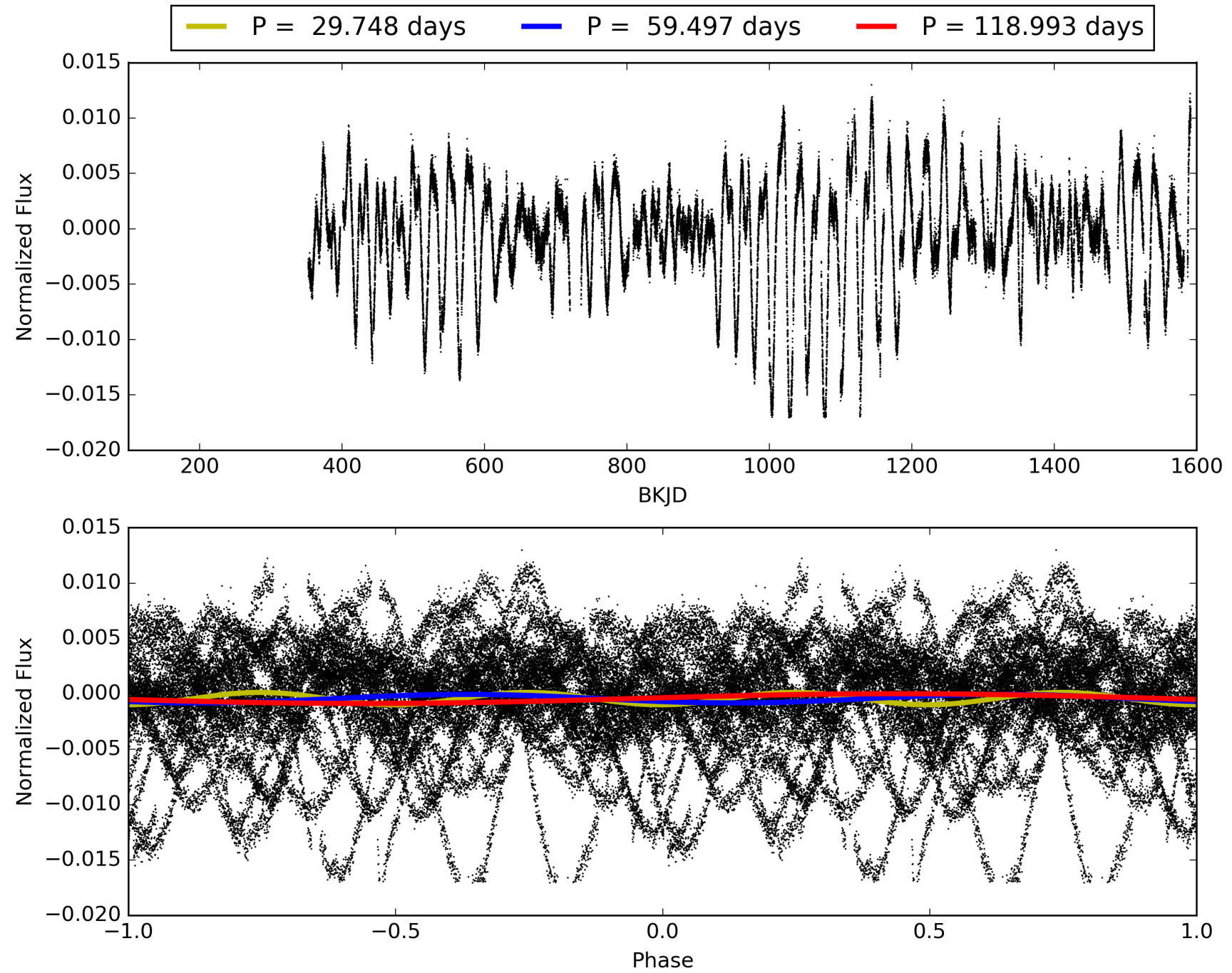
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:58:14 Z

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

TCE 006436029-01, PDC Light Curves

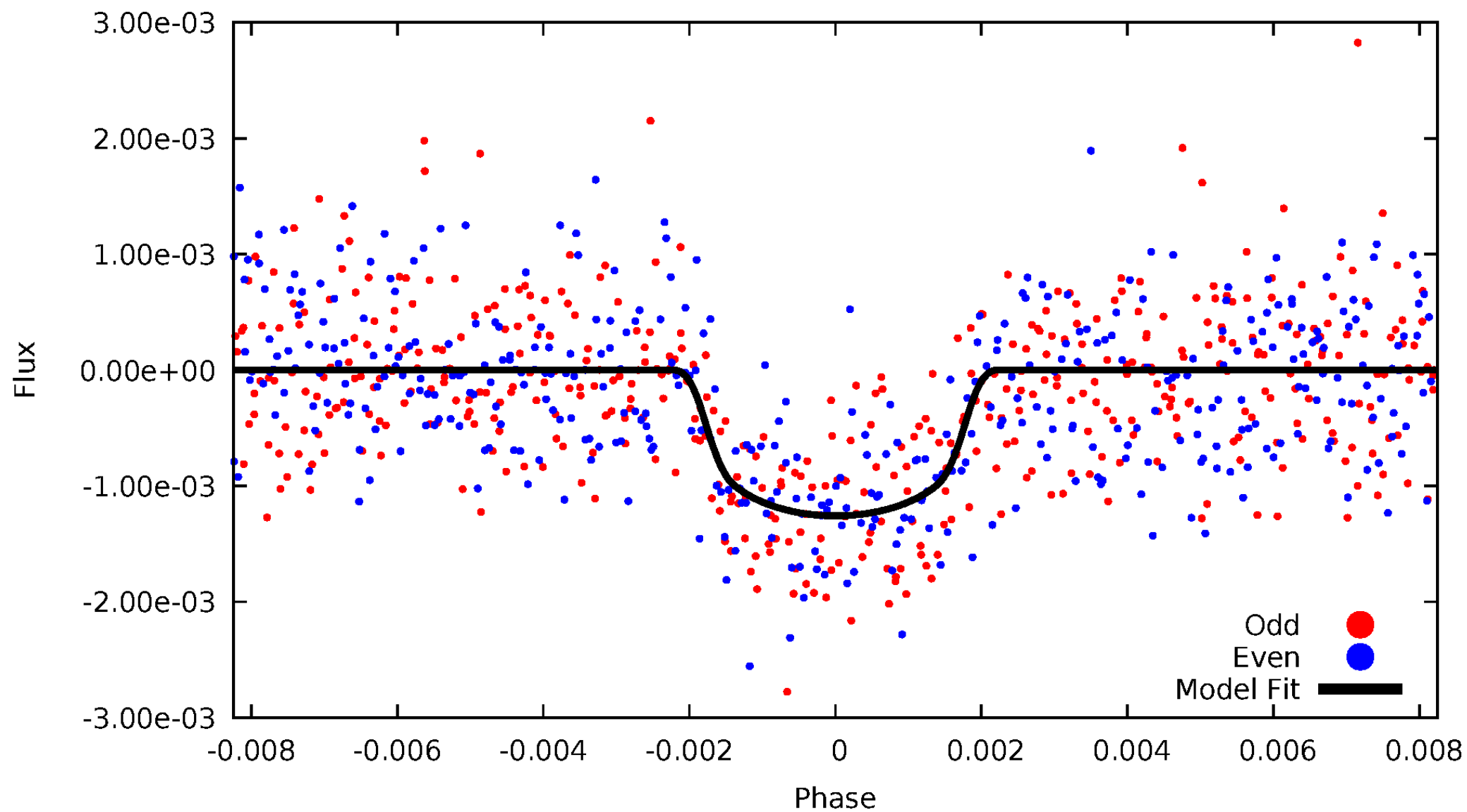


TCE 006436029-01



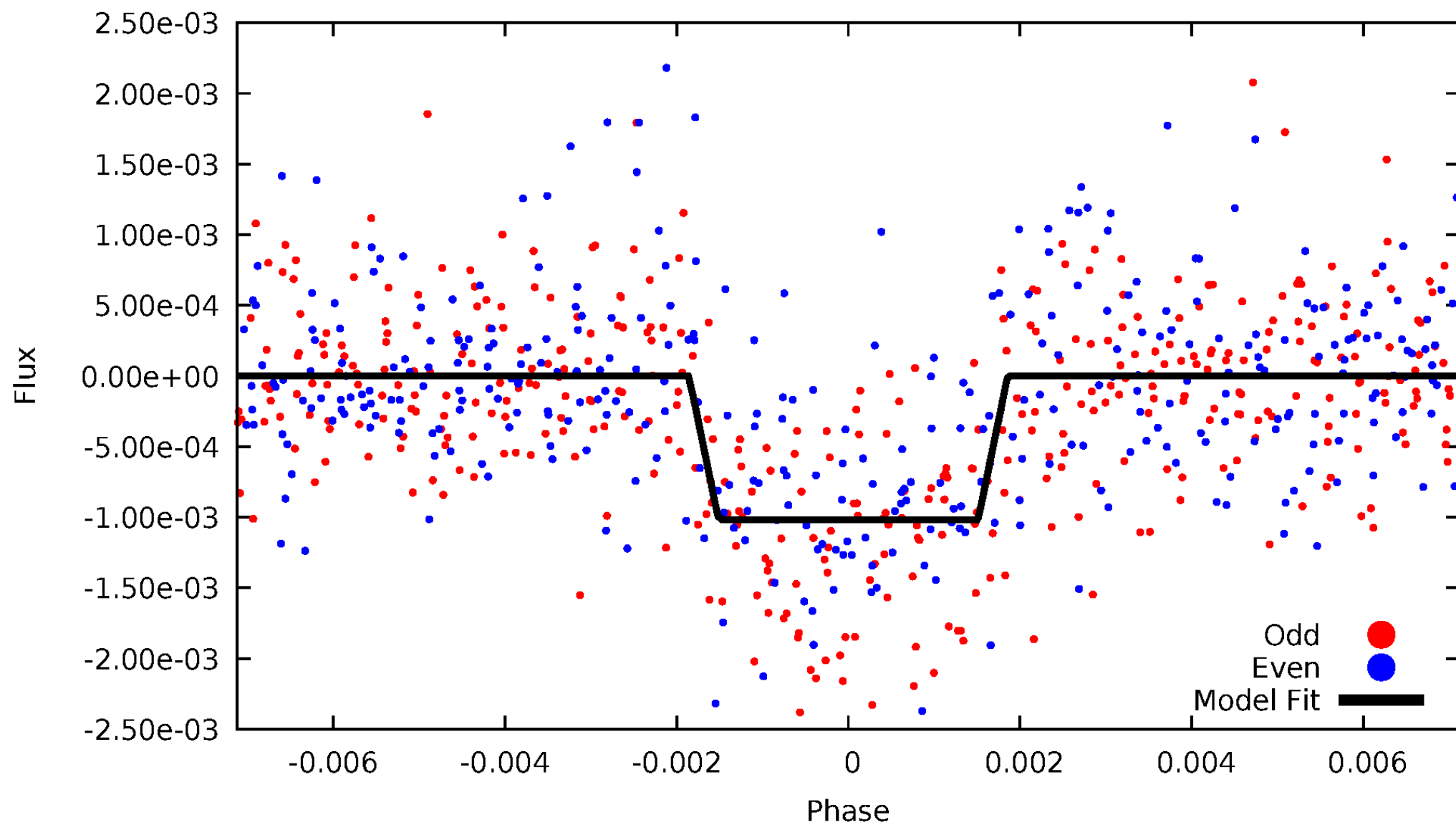
DV Odd/Even

TCE 006436029-01

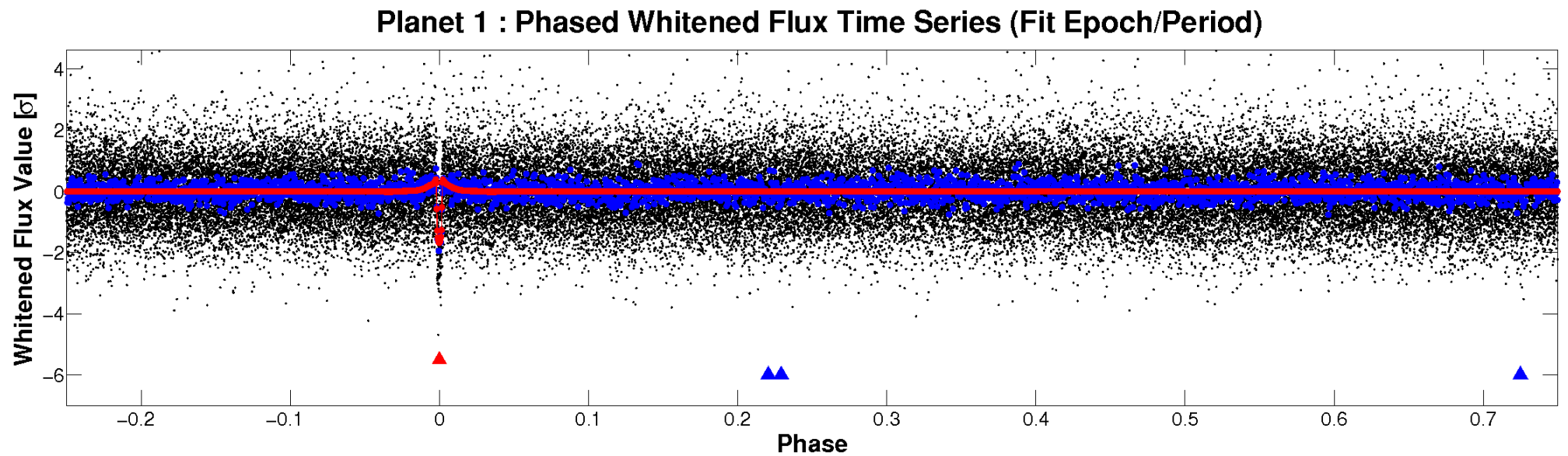
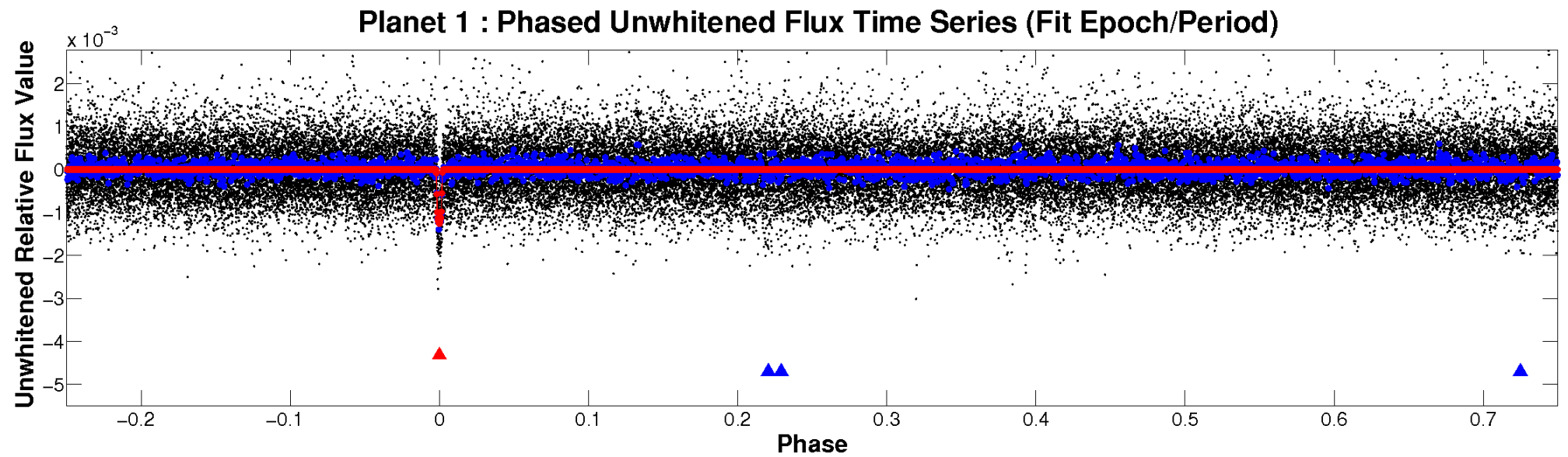


ALT Odd/Even

TCE 006436029-01

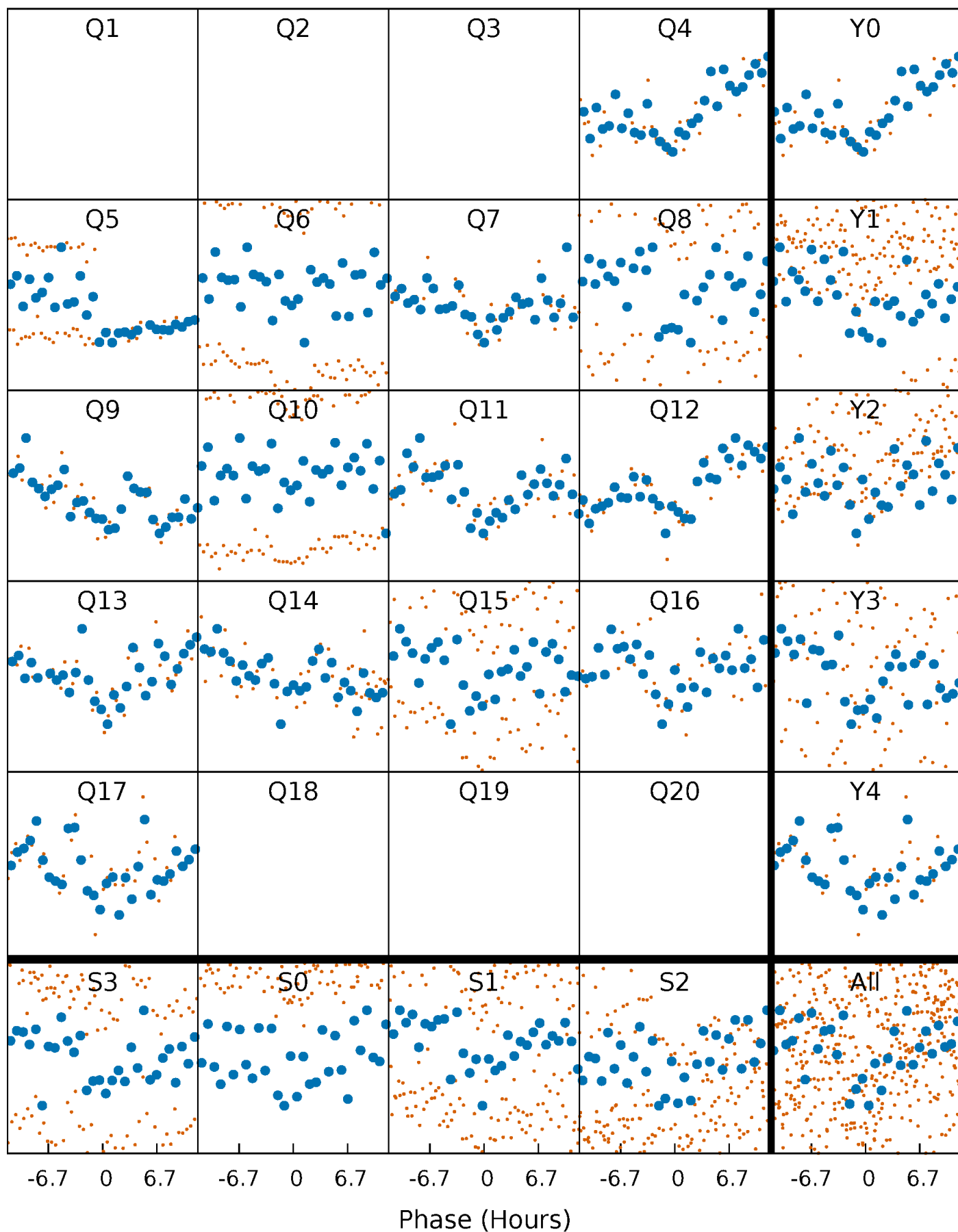


Non-Whitened Vs. Whitened Light Curve



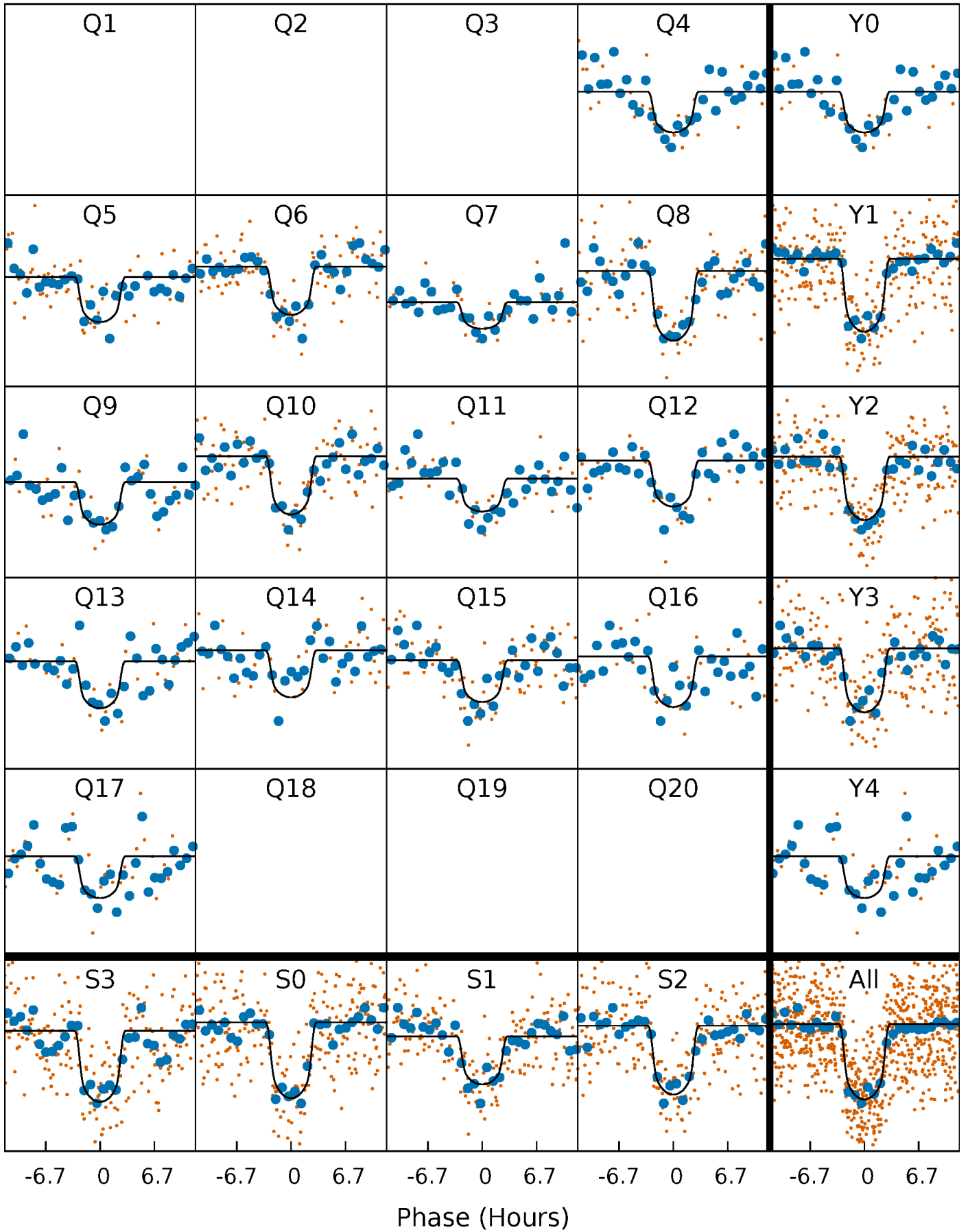
PDC Quarter-Phased Transit Curves

TCE 006436029-01 P= 59.496655 Days $T_0=146.955151$ (BKJD)



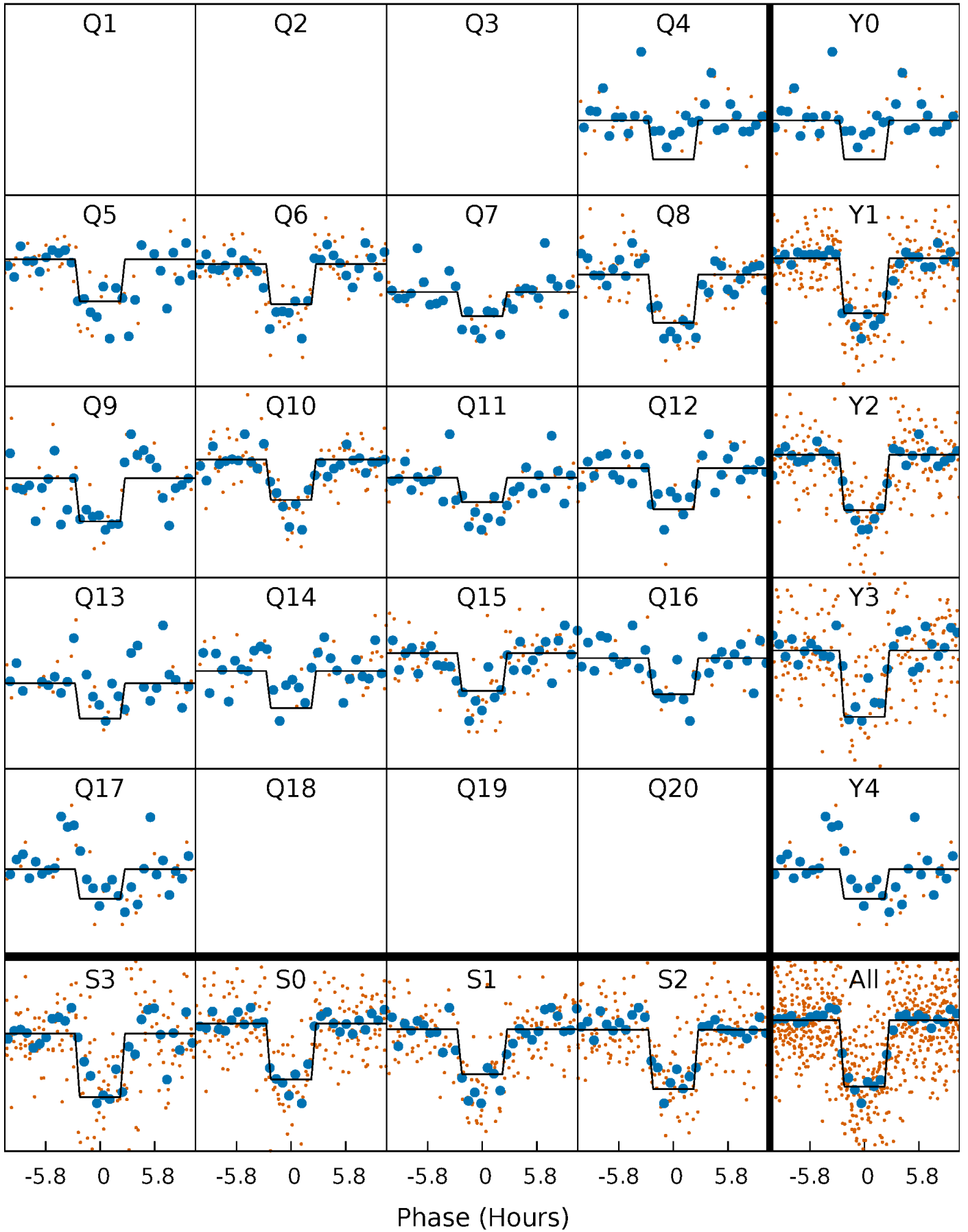
DV Quarter-Phased Transit Curves

TCE 006436029-01 P= 59.496655 Days $T_0=146.955151$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

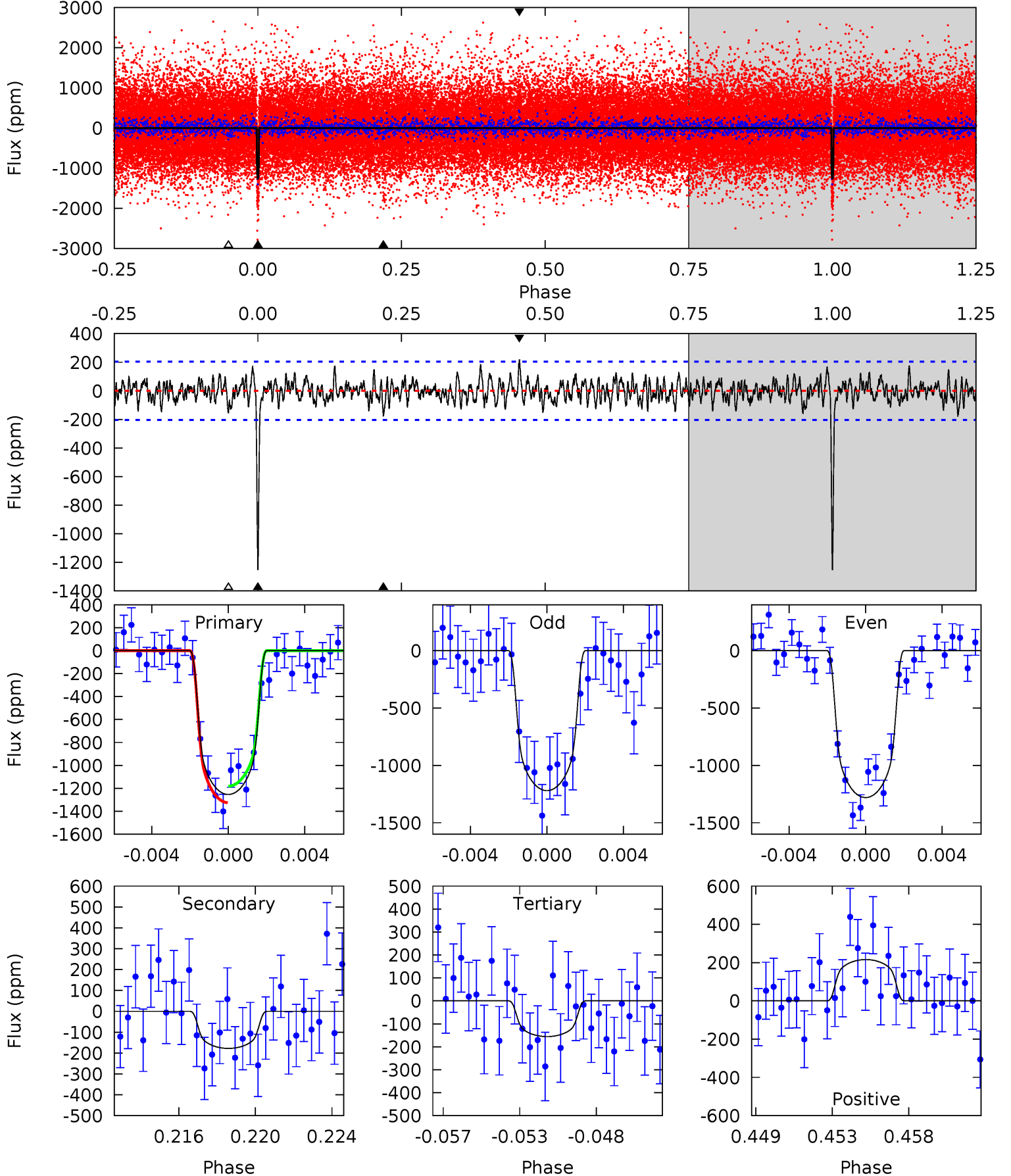
TCE 006436029-01 P= 59.495640 Days $T_0=146.966523$ (BKJD)



DV Model-Shift Uniqueness Test

006436029-01, $P = 59.496655$ Days, $E = 146.955151$ Days

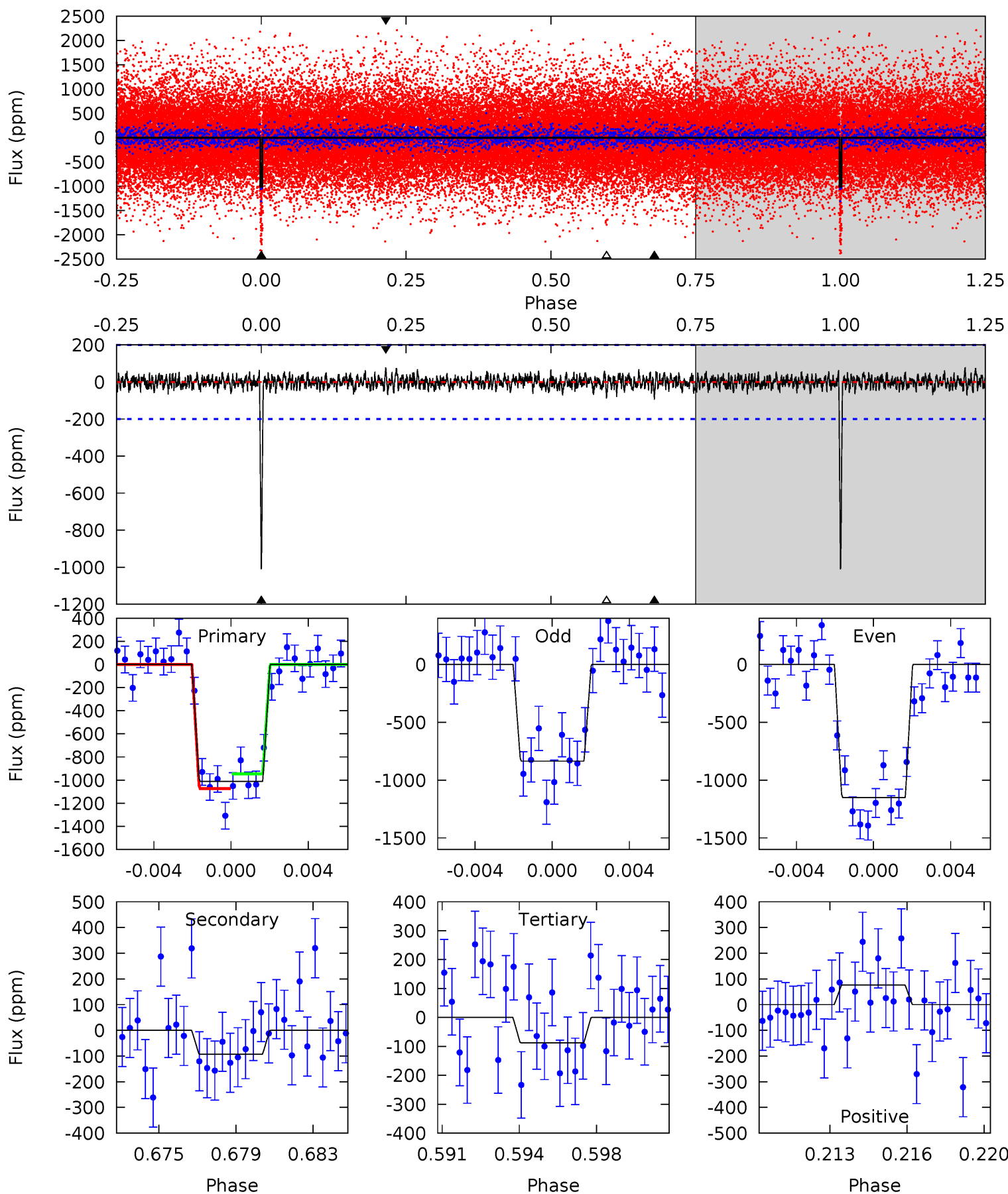
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.8	4.51	3.95	5.48	5.18	2.85	1.49	27.9	26.3	0.57	-0.97	0.77	0.97	0.15	1.83



Alt Model-Shift Uniqueness Test

006436029-01, $P = 59.495640$ Days, $E = 146.966523$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	2.43	2.30	2.00	5.22	2.91	0.61	24.1	24.4	0.13	0.43	4.10	1.00	0.07	1.66



Stellar Parameters For KIC 006436029

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4817^{+184}_{-167}	$4.499^{+0.095}_{-0.114}$	$0.420^{+0.050}_{-0.300}$	$0.833^{+0.068}_{-0.084}$	$0.800^{+0.056}_{-0.051}$	$1.946^{+0.715}_{-0.560}$
	+4%/-3%	+2%/-3%	+12%/-71%	+8%/-10%	+7%/-6%	+37%/-29%
Source	KIC0	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 006436029-01 / KOI 2828.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-178 ± 39	$3.50^{+0.41}_{-0.39}$	518^{+23}_{-24}	3321^{+194}_{-178}	621^{+225}_{-184}
Alt.	-93 ± 38	$2.92^{+0.40}_{-0.40}$	517^{+25}_{-22}	3177^{+228}_{-239}	448^{+271}_{-177}

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

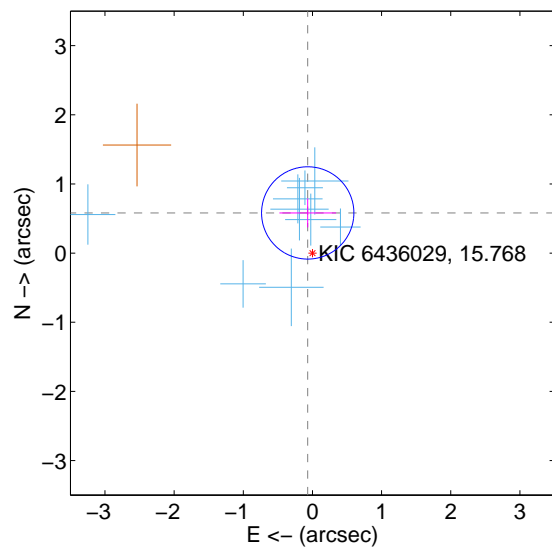
Supplemental centroid analysis for 006436029-01. Kepler magnitude: 15.77. Transit SNR 20.48

There are 9 quarters with good PRF difference image offsets

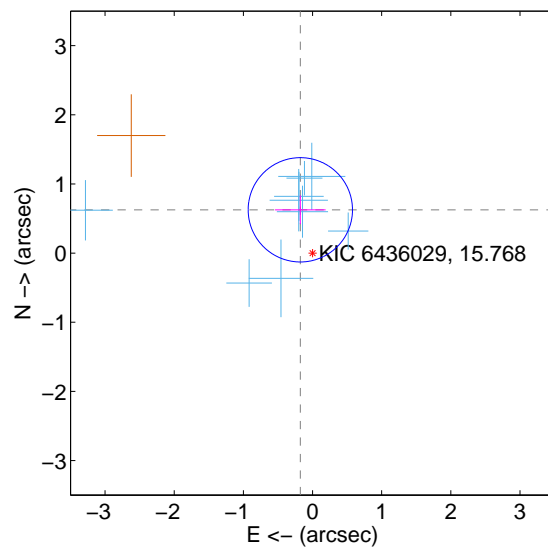
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.585 ± 0.222	2.63	0.068 ± 0.409	0.581 ± 0.210
PRF-fit source offset from KIC position	0.650 ± 0.251	2.59	0.176 ± 0.367	0.626 ± 0.208
photometric centroid source offset	0.91 ± 0.67	1.37	0.80 ± 0.69	-0.43 ± 0.58

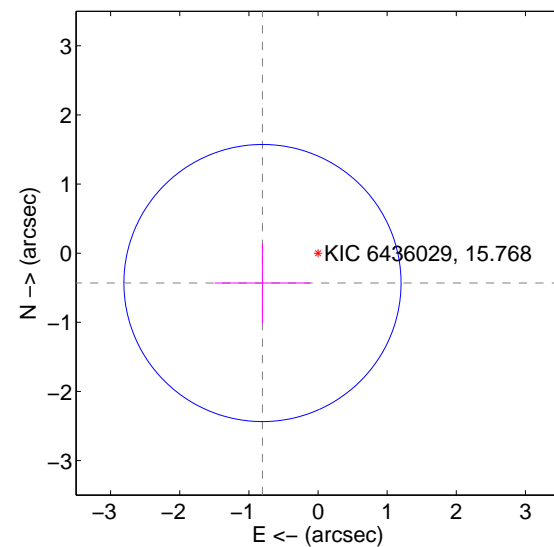
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

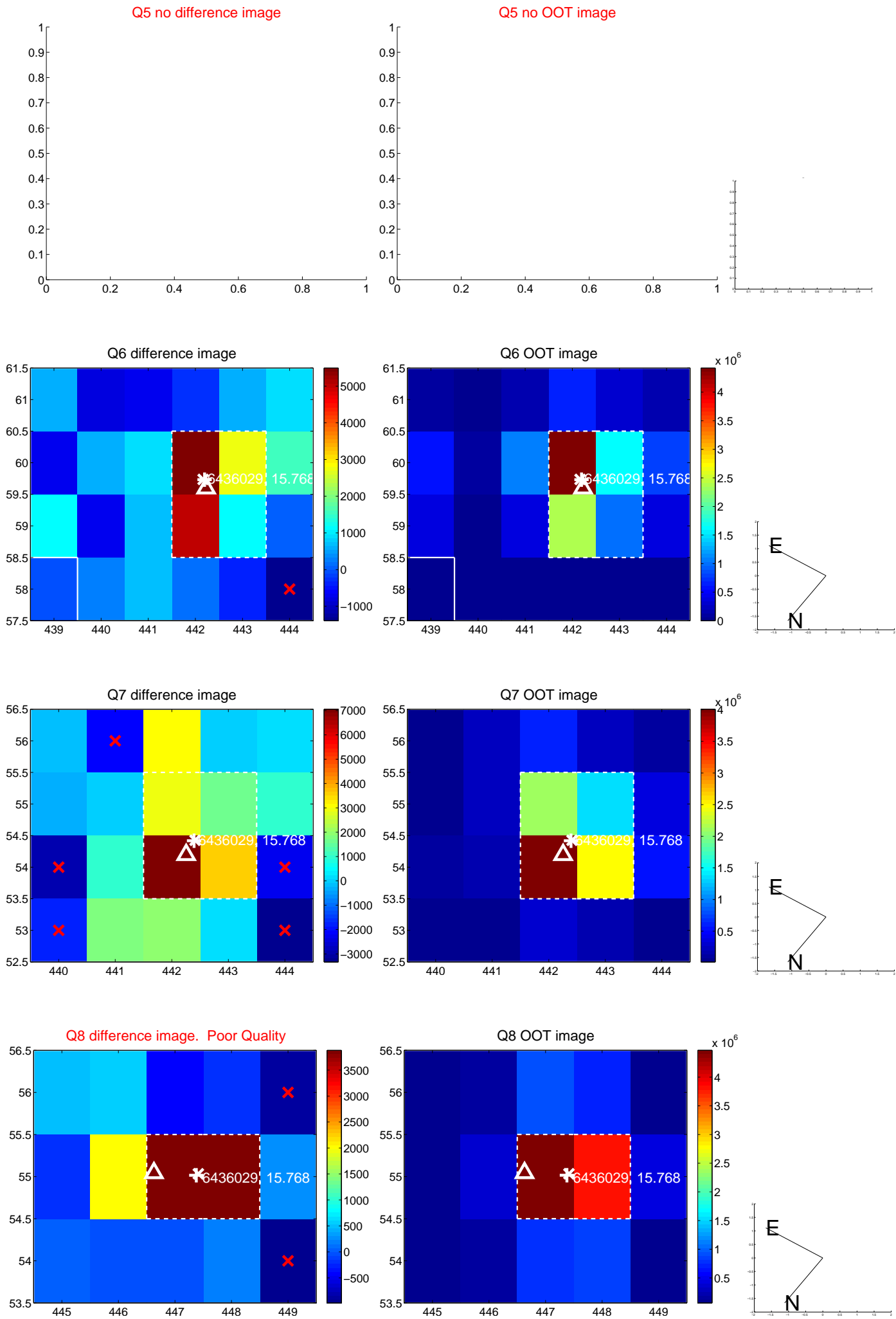


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

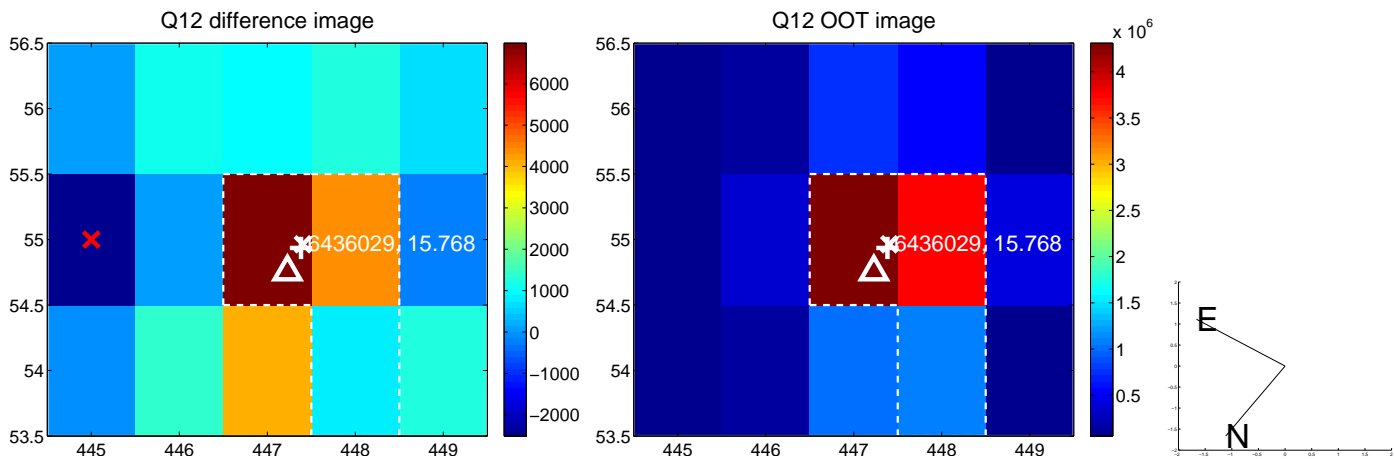
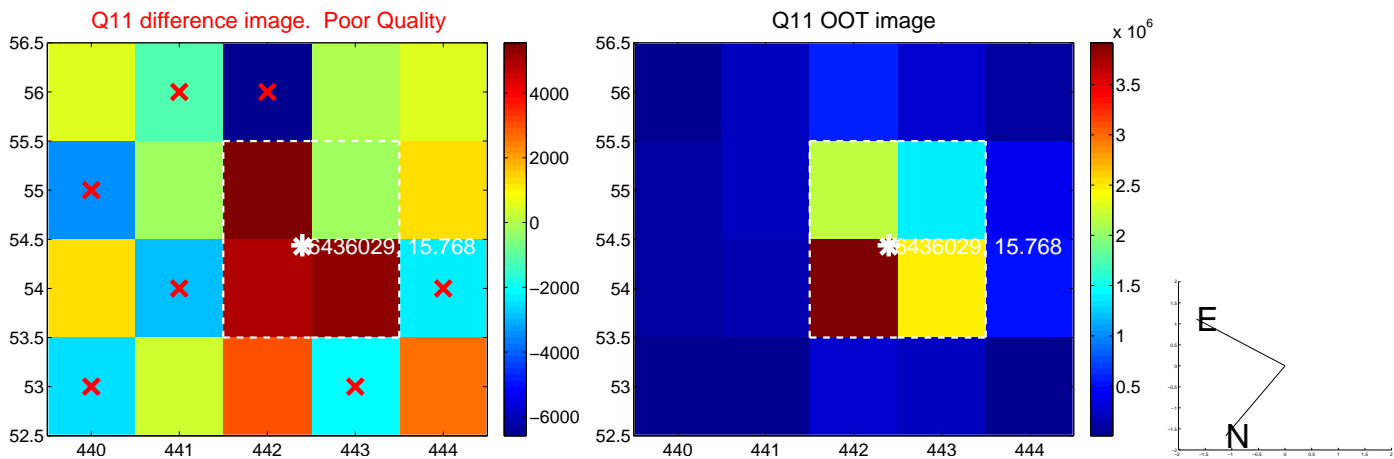
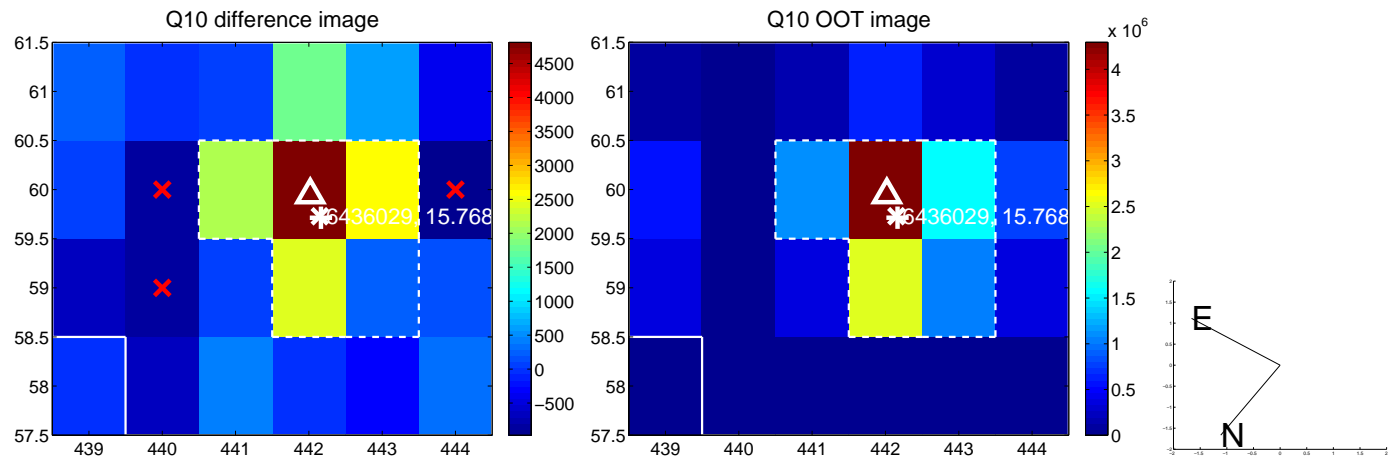
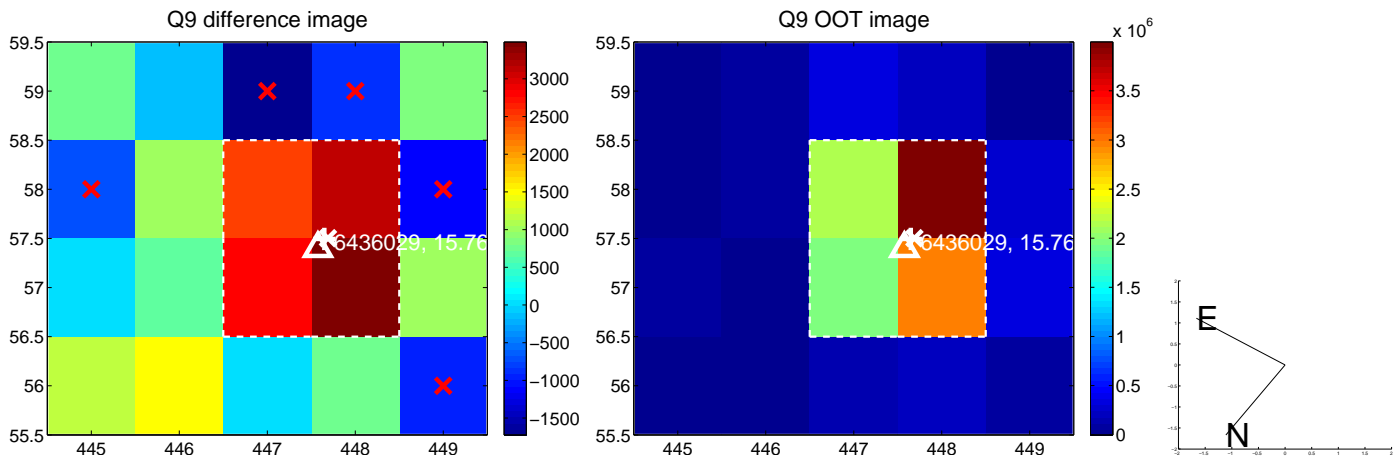
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



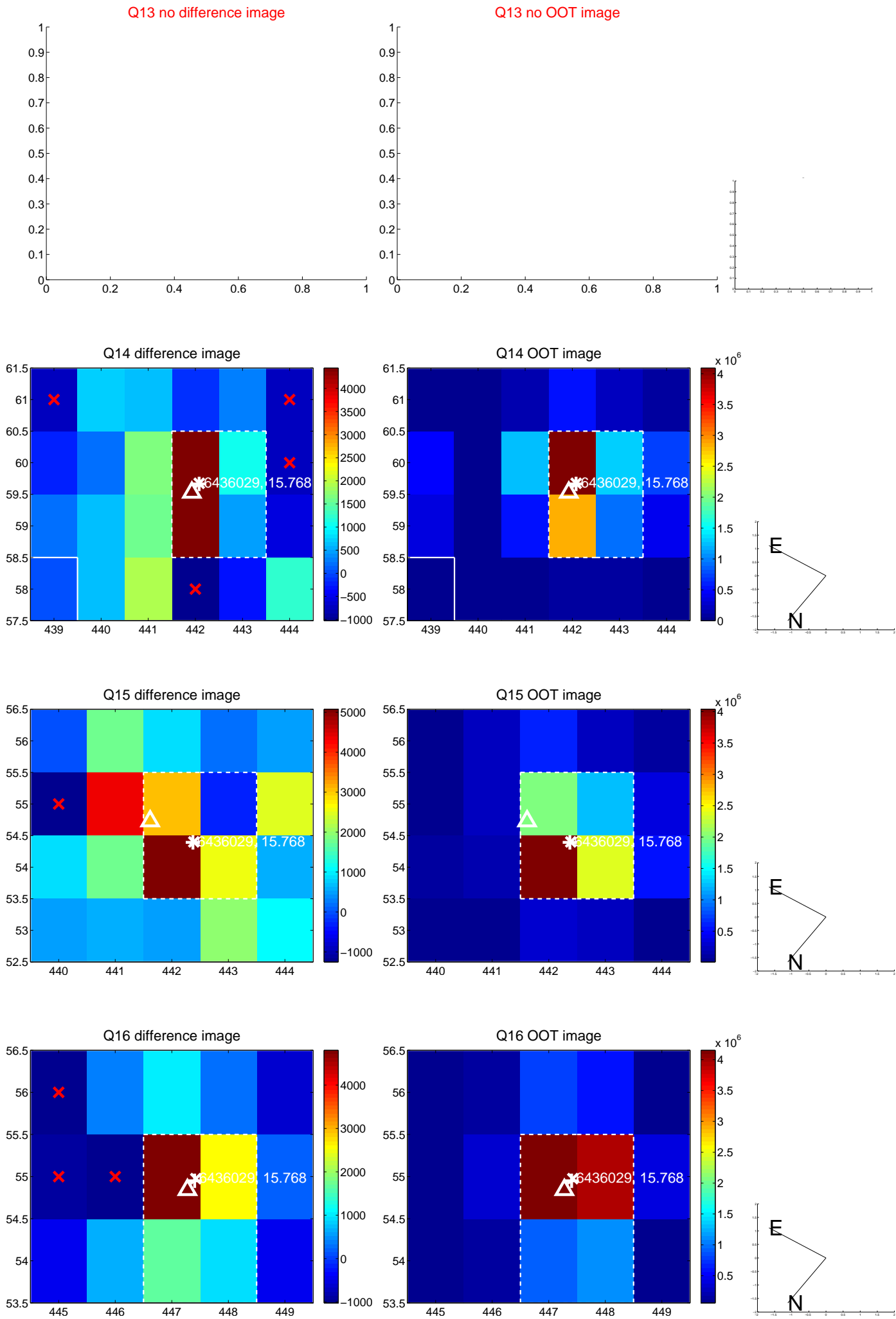
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



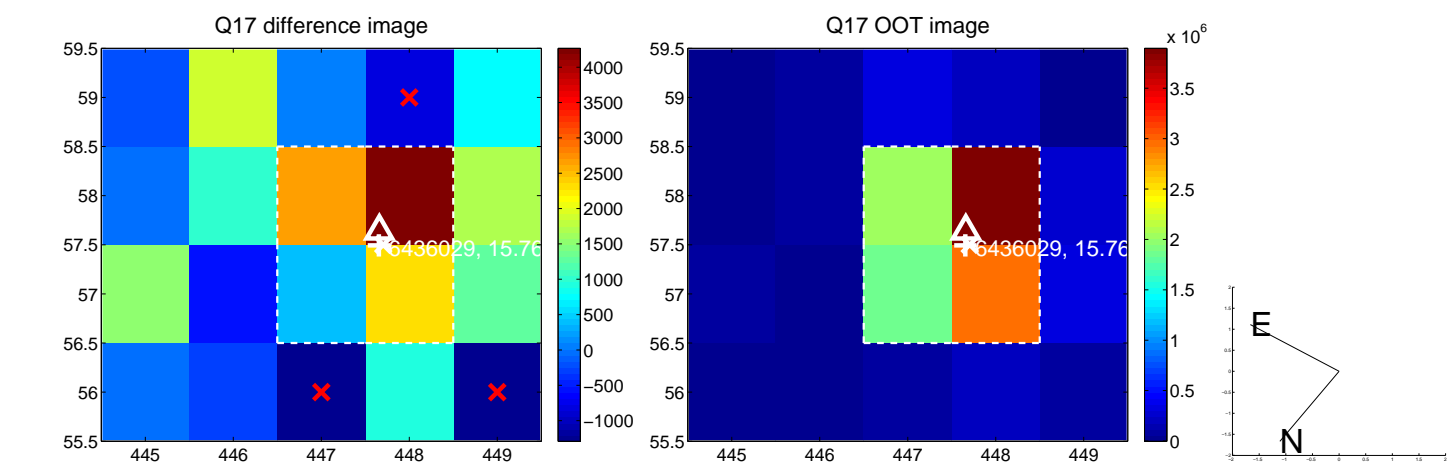
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



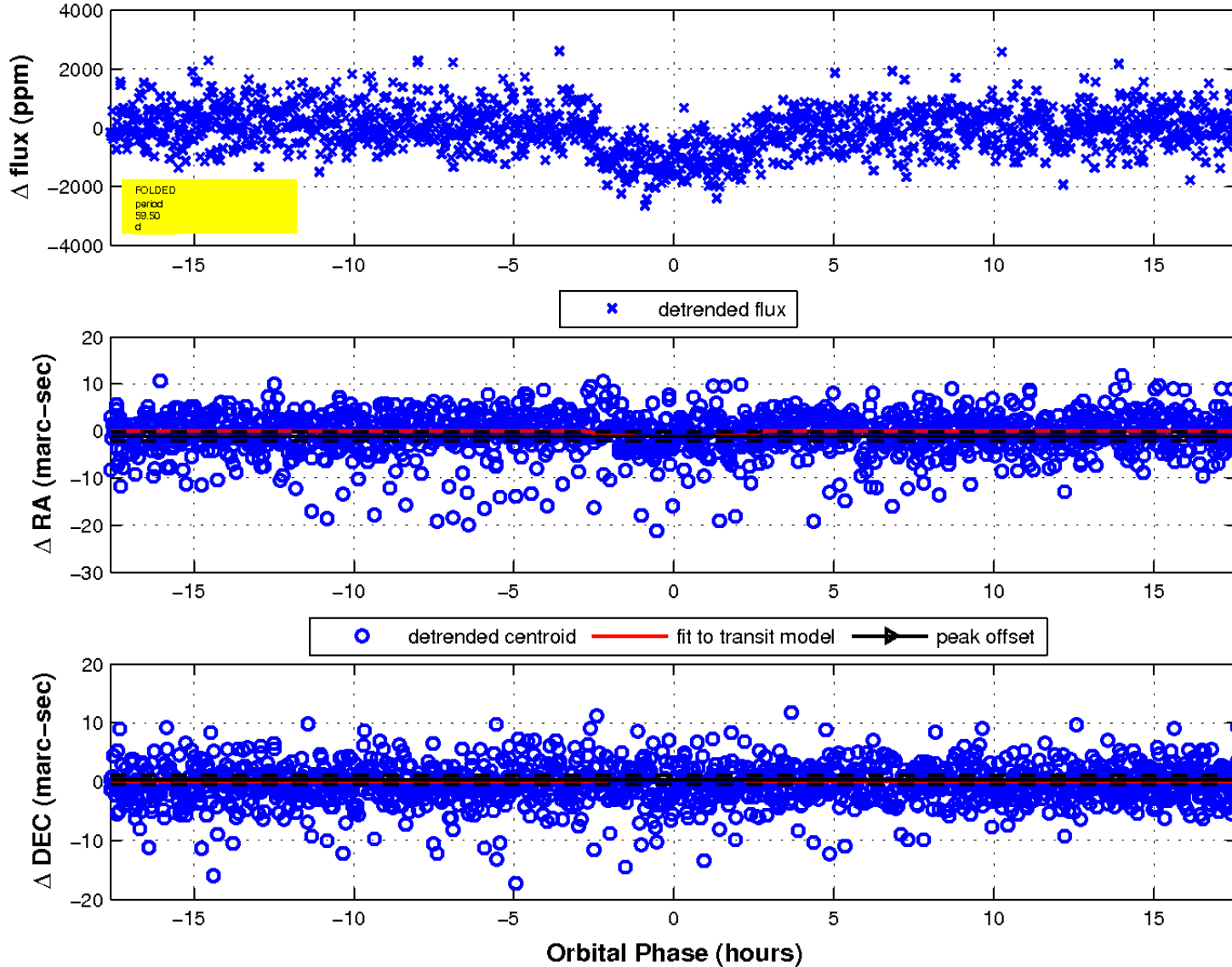
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



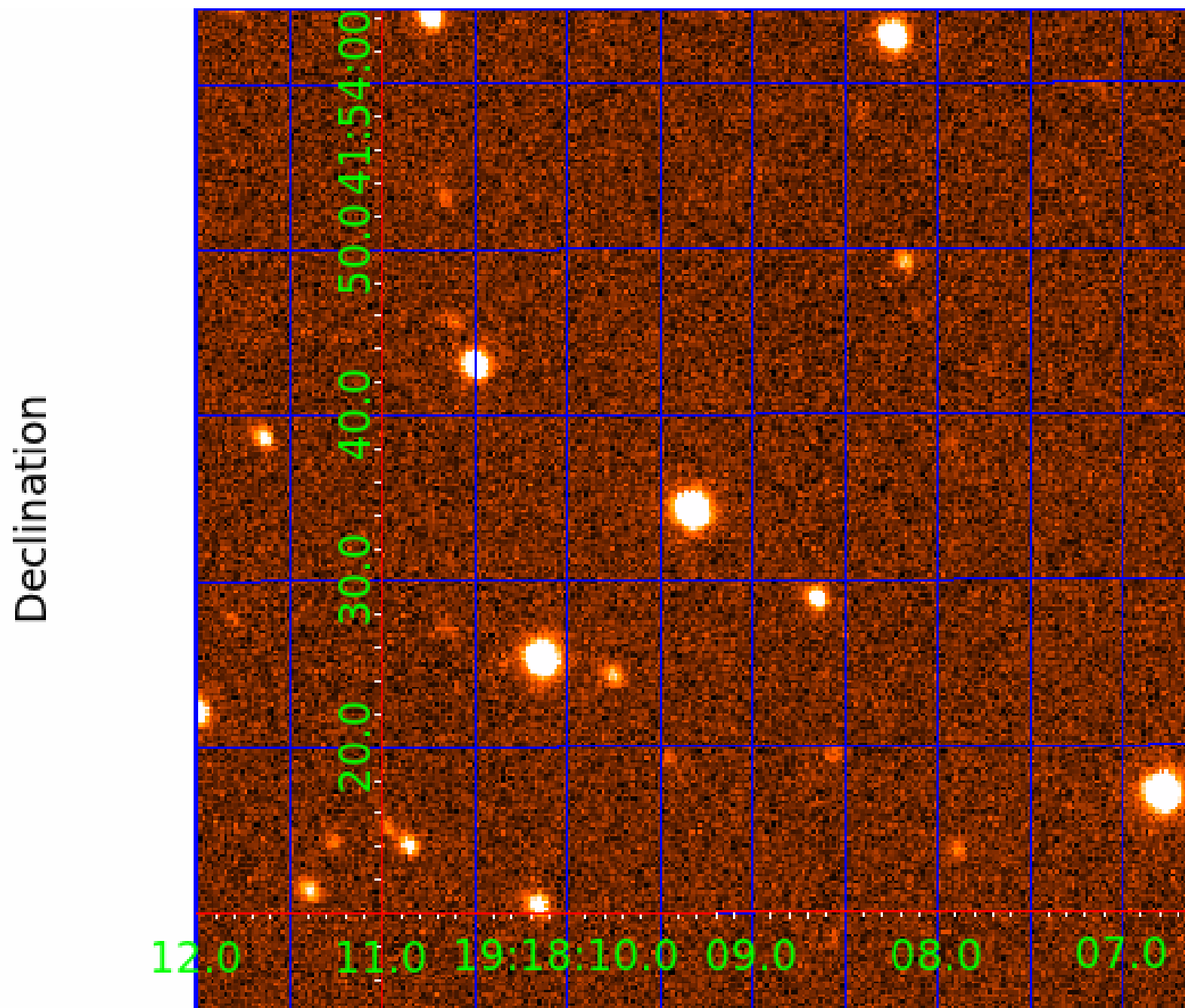
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 006436029

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})
006436029-01	OBS	2828.01	59.496655	146.955151	1258.3	5.883	18.7	20.5	0.83	4817	3.47	4.37
006436029-02	OBS	2828.02	505.465037	458.076373	1732.6	10.162	12.8	13.1	0.83	4817	3.60	0.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006436029-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006436029-02	OBS	PC	0.77	0	0	0	0	NO_COMMENT

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 006436029-02

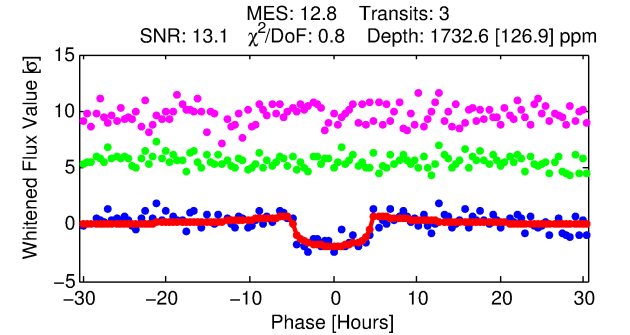
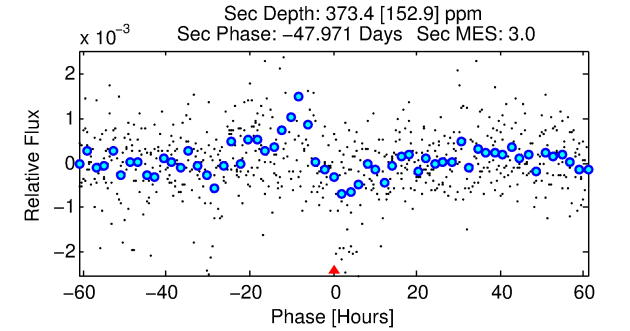
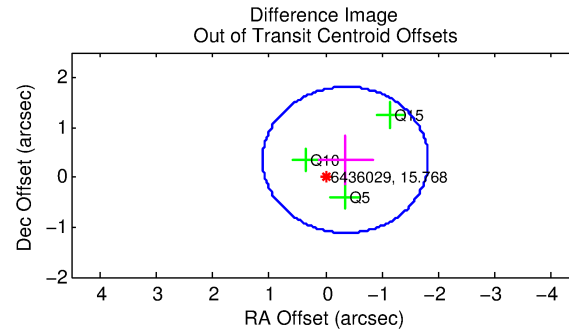
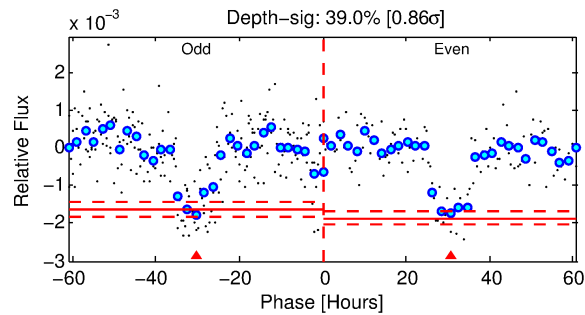
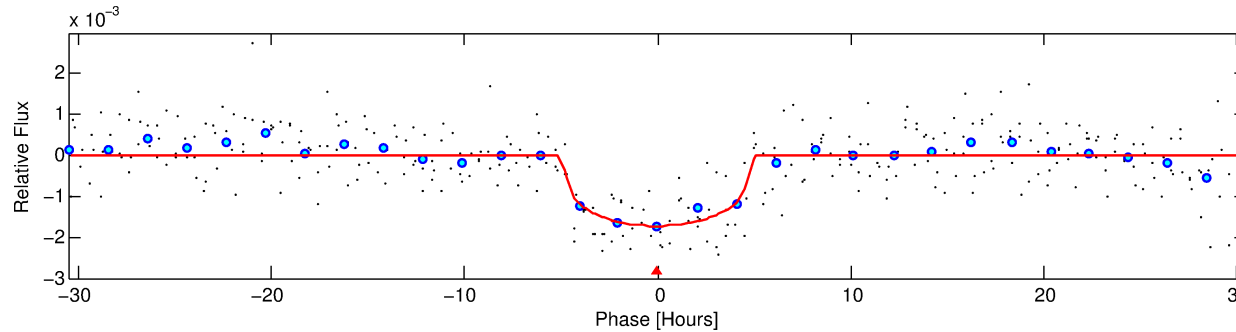
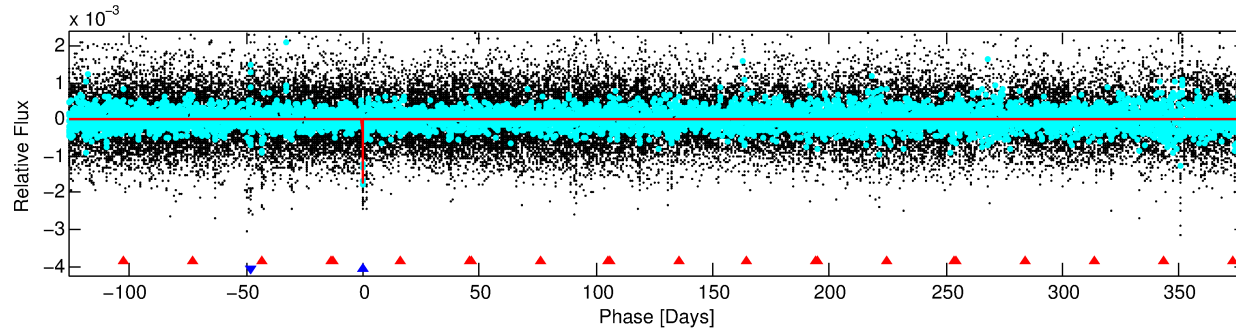
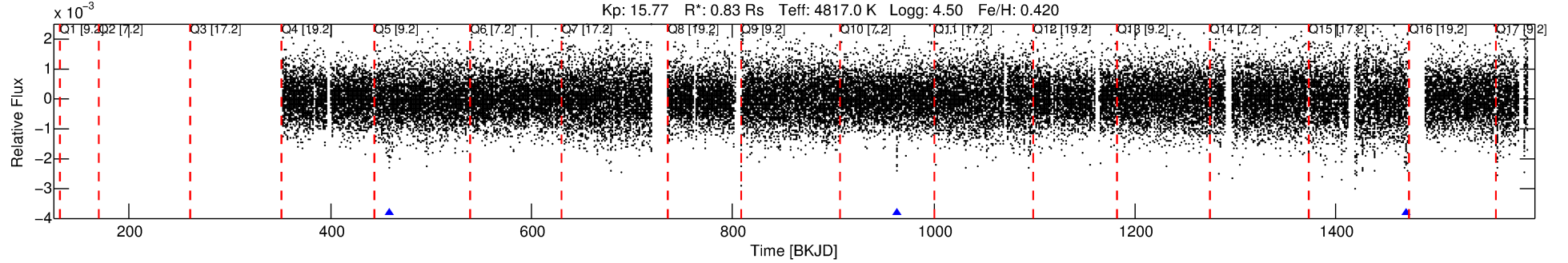
No Significant Match Found

DV One-Page Summary

KIC: 6436029 Candidate: 2 of 2 Period: 505.465 d

KOI: K02828.02 Corr: 0.991

Kp: 15.77 R*: 0.83 Rs Teff: 4817.0 K Logg: 4.50 Fe/H: 0.420



DV Fit Results:

Period = 505.46504 [0.00765] d
Epoch = 458.0764 [0.0093] BKJD
Rp/R* = 0.0396 [0.0123]
a/R* = 315.18 [303.86]
b = 0.63 [0.95]
Seff = 0.25 [0.06]
Teq = 181 [11] K
Rp = 3.60 [1.17] Re
a = 1.1524 [0.1272] AU
Ag = 21064.76 [16141.49] [1.30σ]
Teffp = 3365 [638] K [4.99σ]

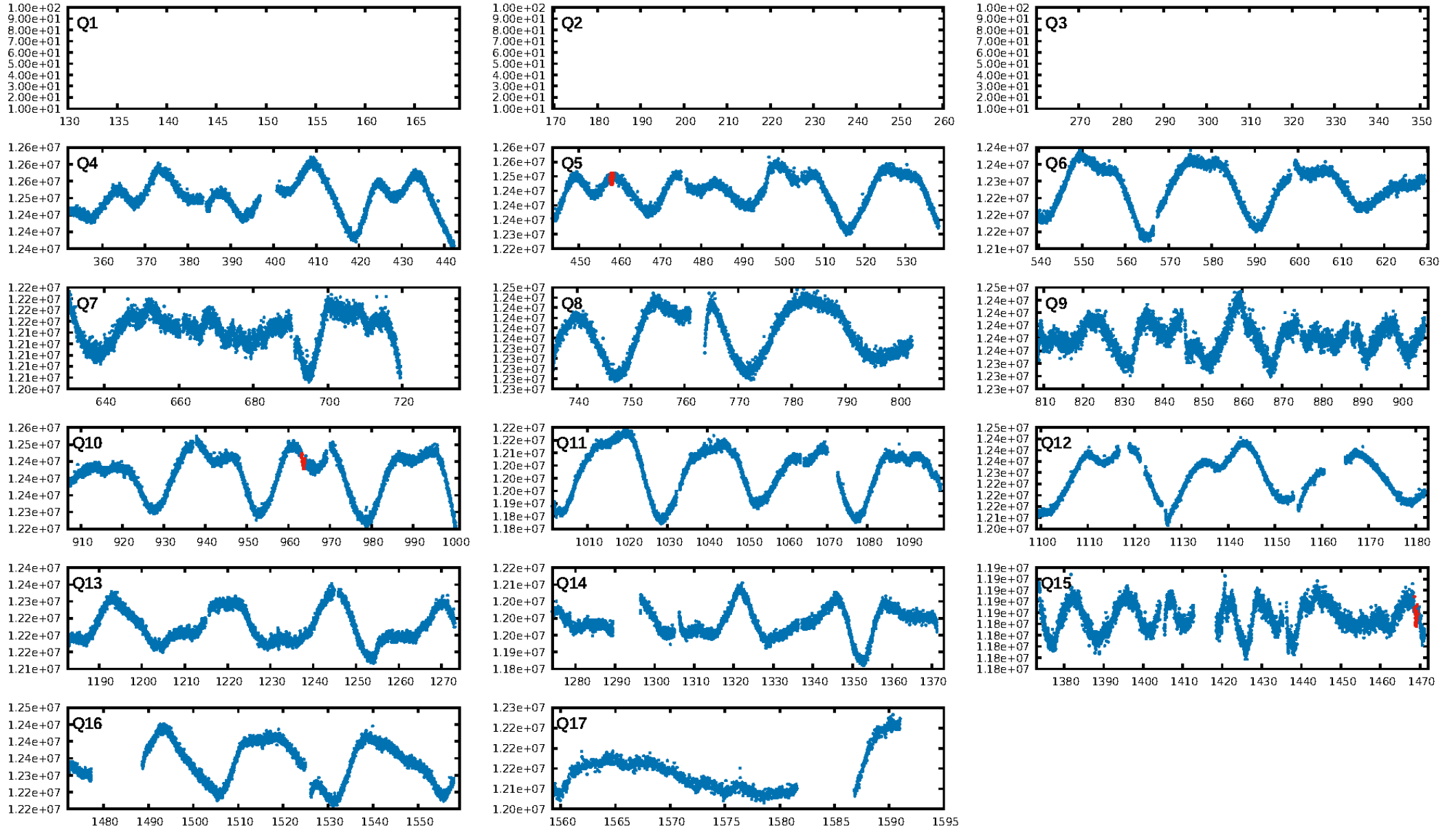
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [911.51σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 69.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 3.08e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.362
Centroid-sig: 35.7%
Centroid-so: 1.108 arcsec [0.92σ]
OotOffset-rm: 0.492 arcsec [1.01σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.517 arcsec [1.09σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

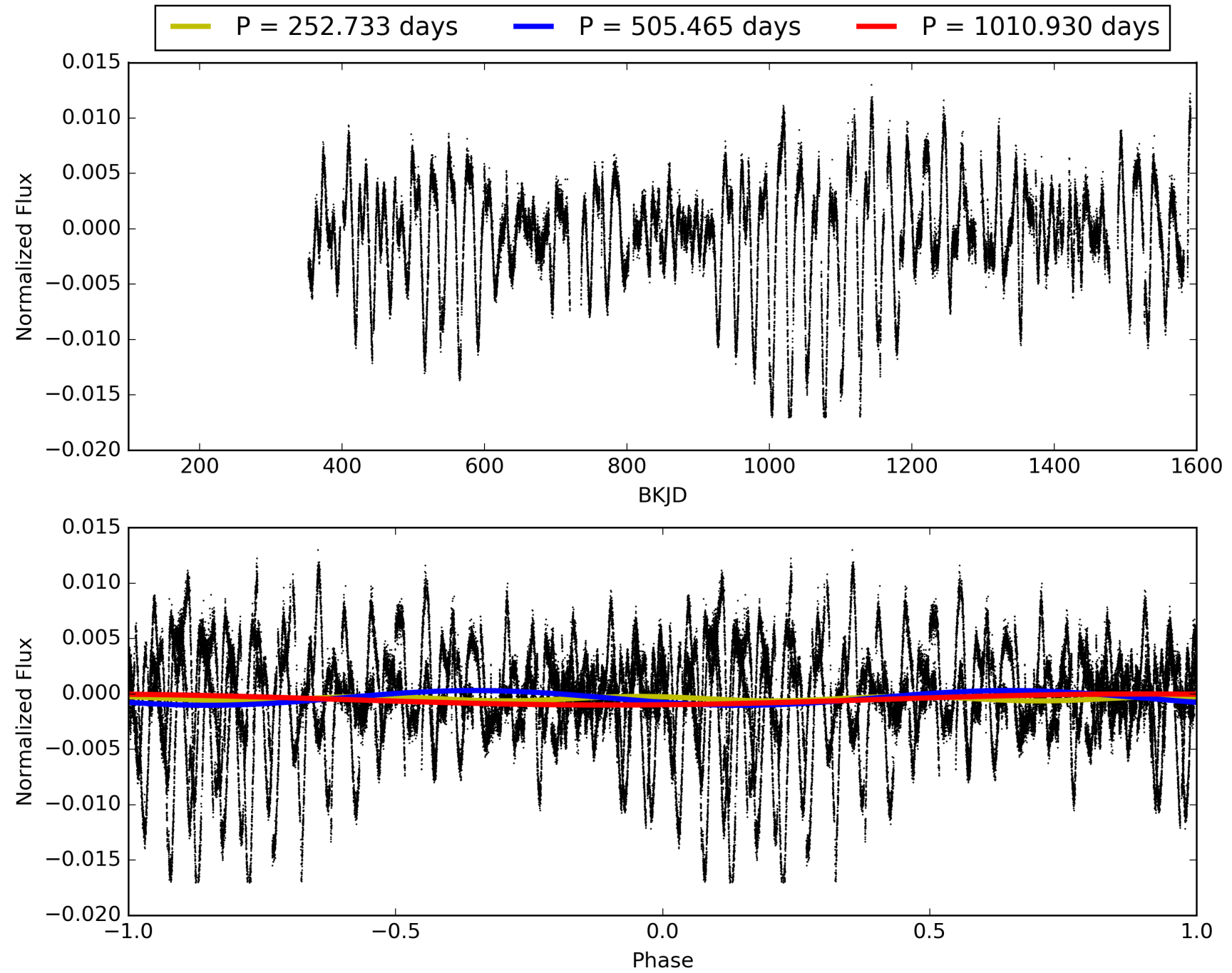
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:58:32 Z

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

TCE 006436029-02, PDC Light Curves

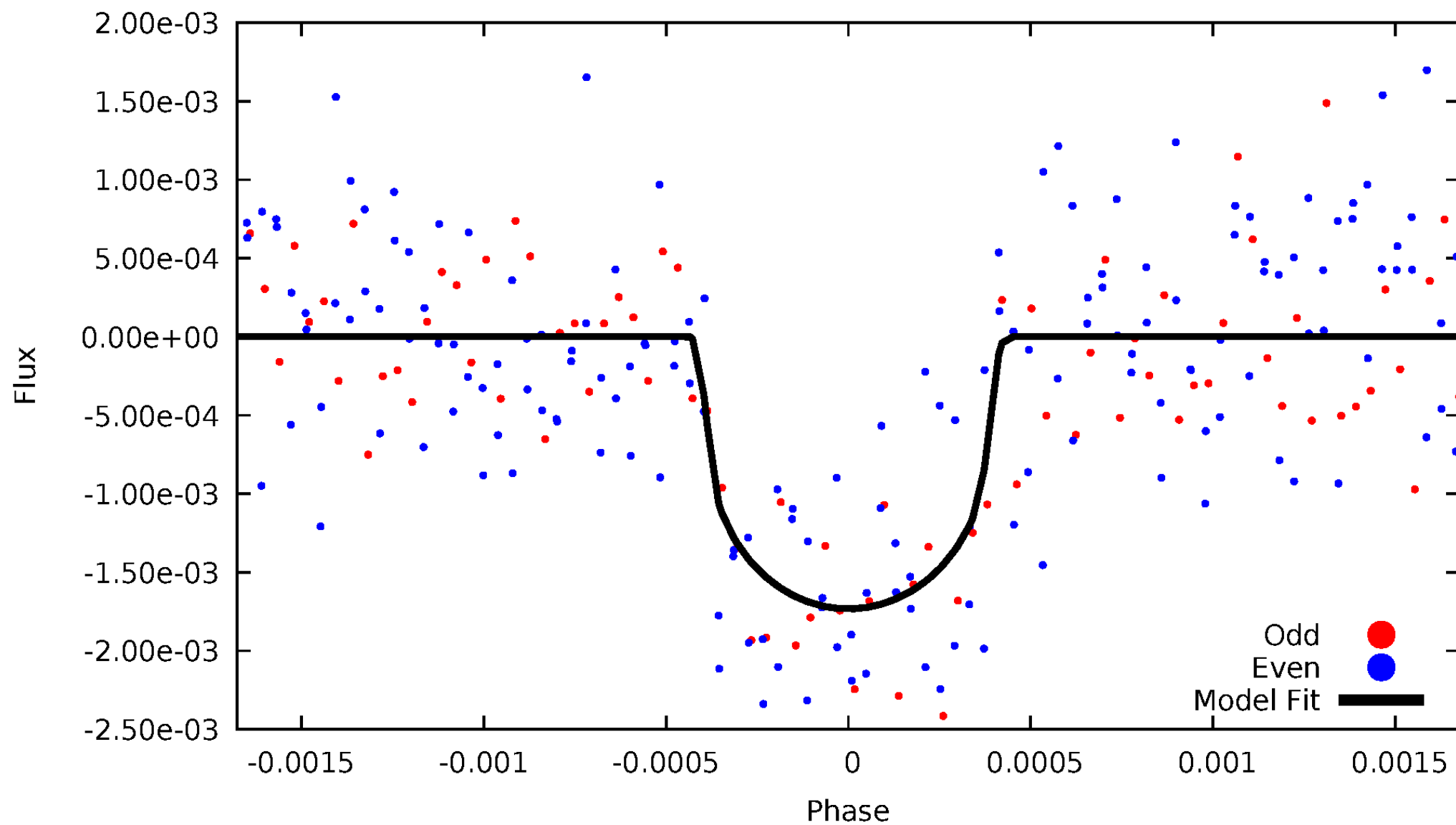


TCE 006436029-02



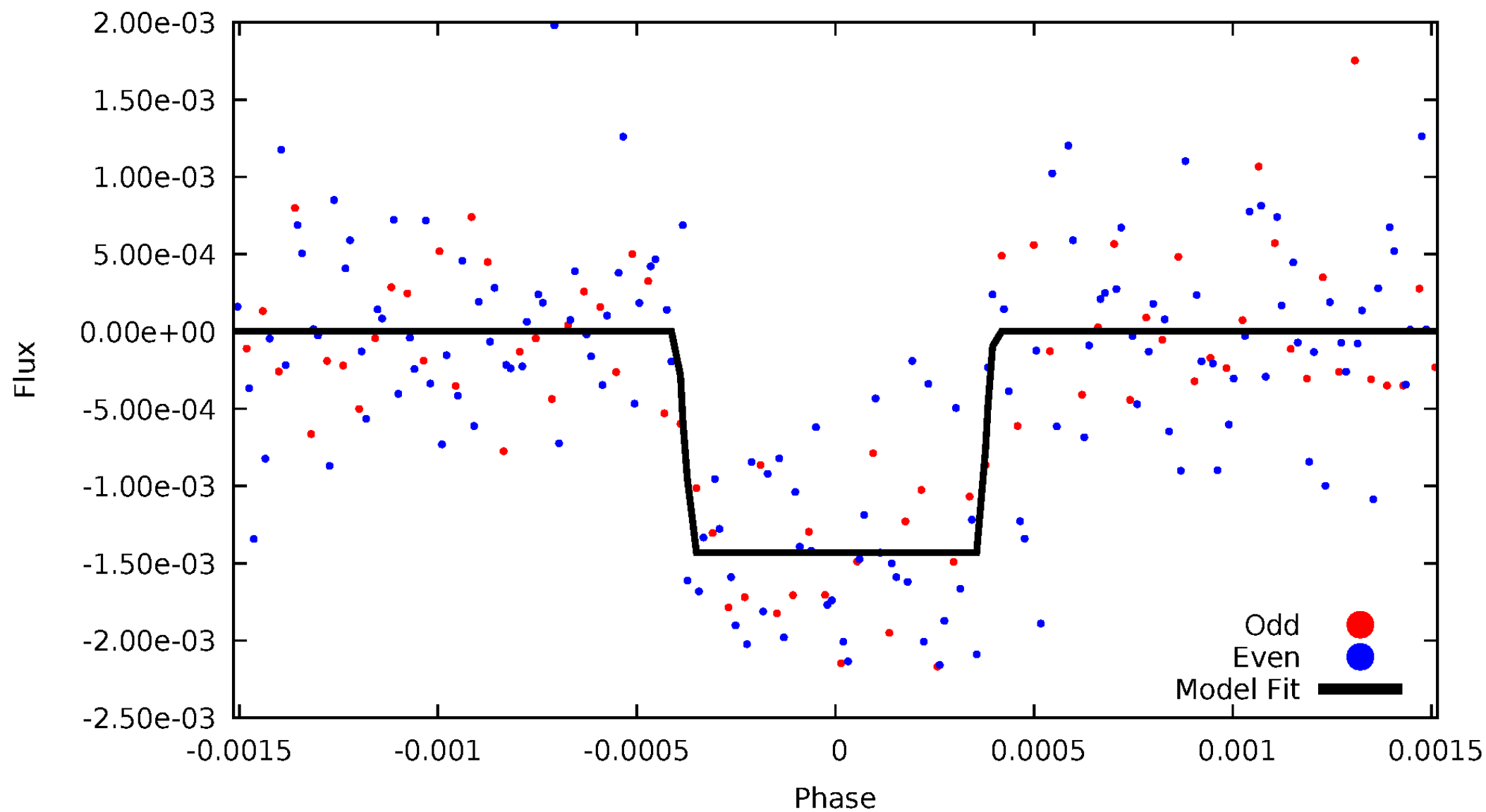
DV Odd/Even

TCE 006436029-02



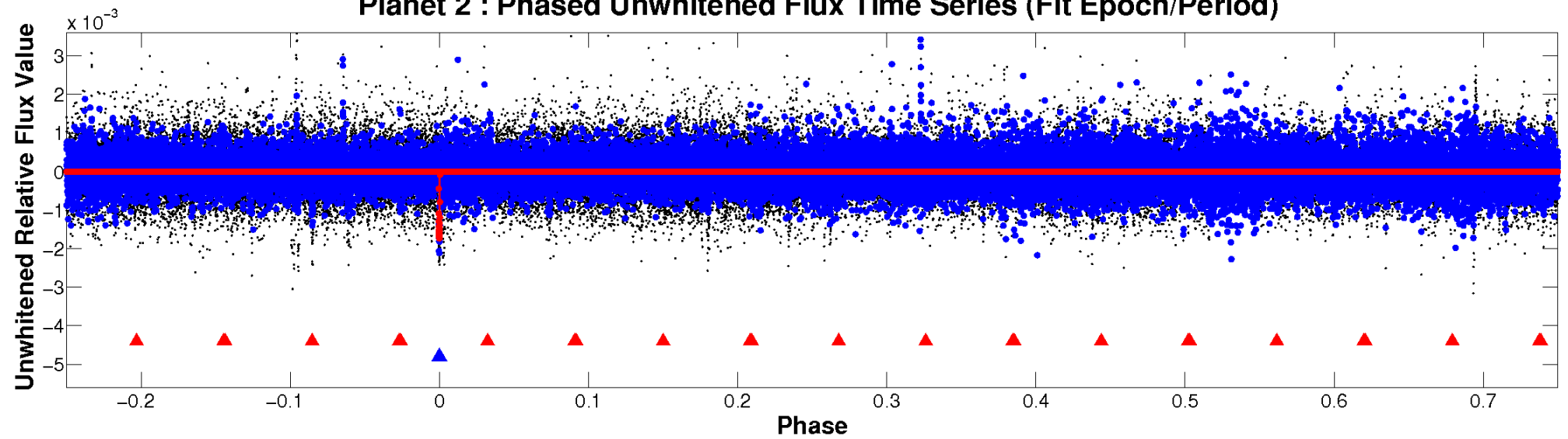
ALT Odd/Even

TCE 006436029-02

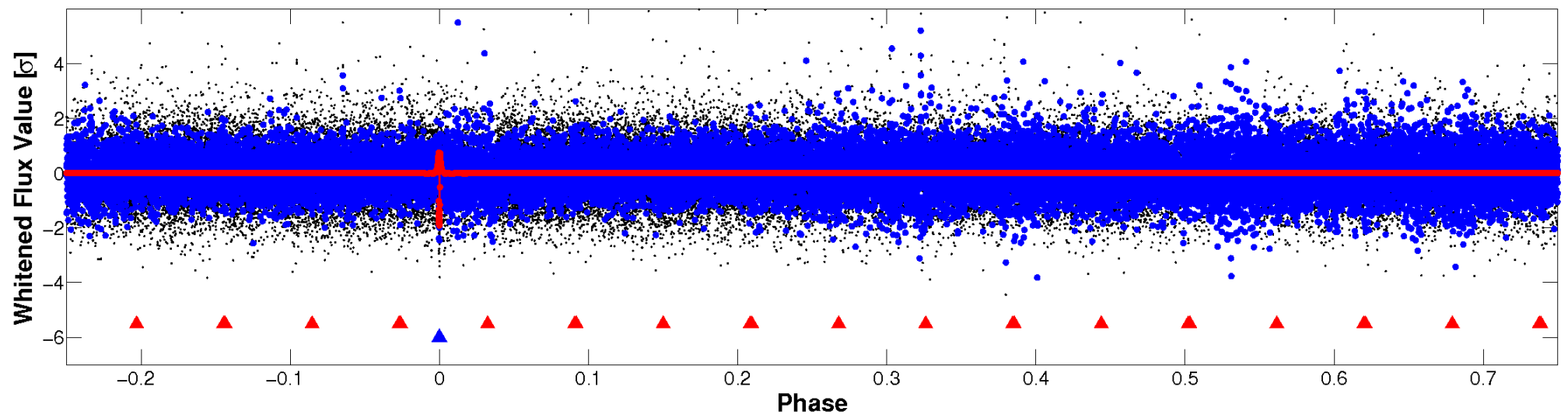


Non-Whitened Vs. Whitened Light Curve

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

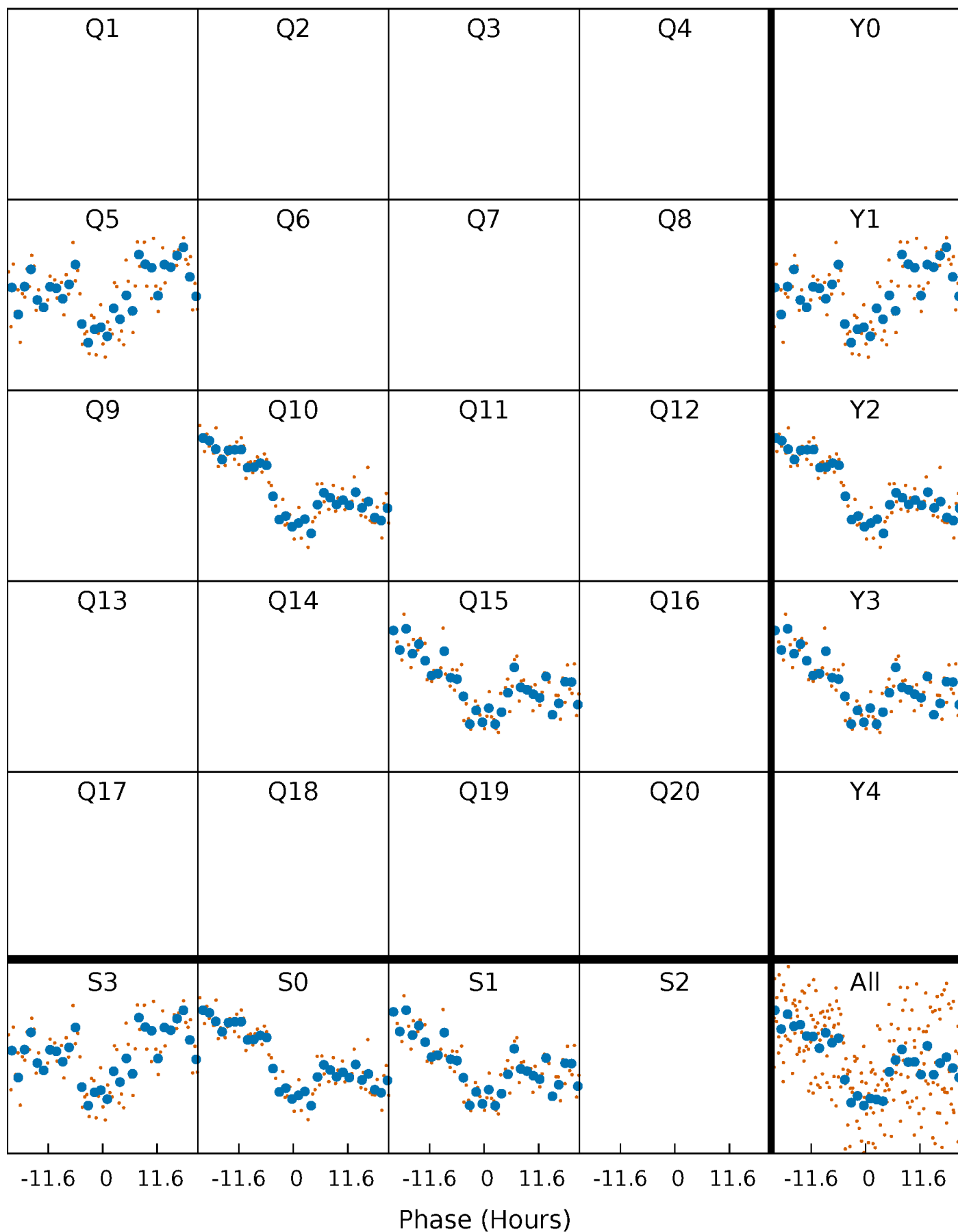


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



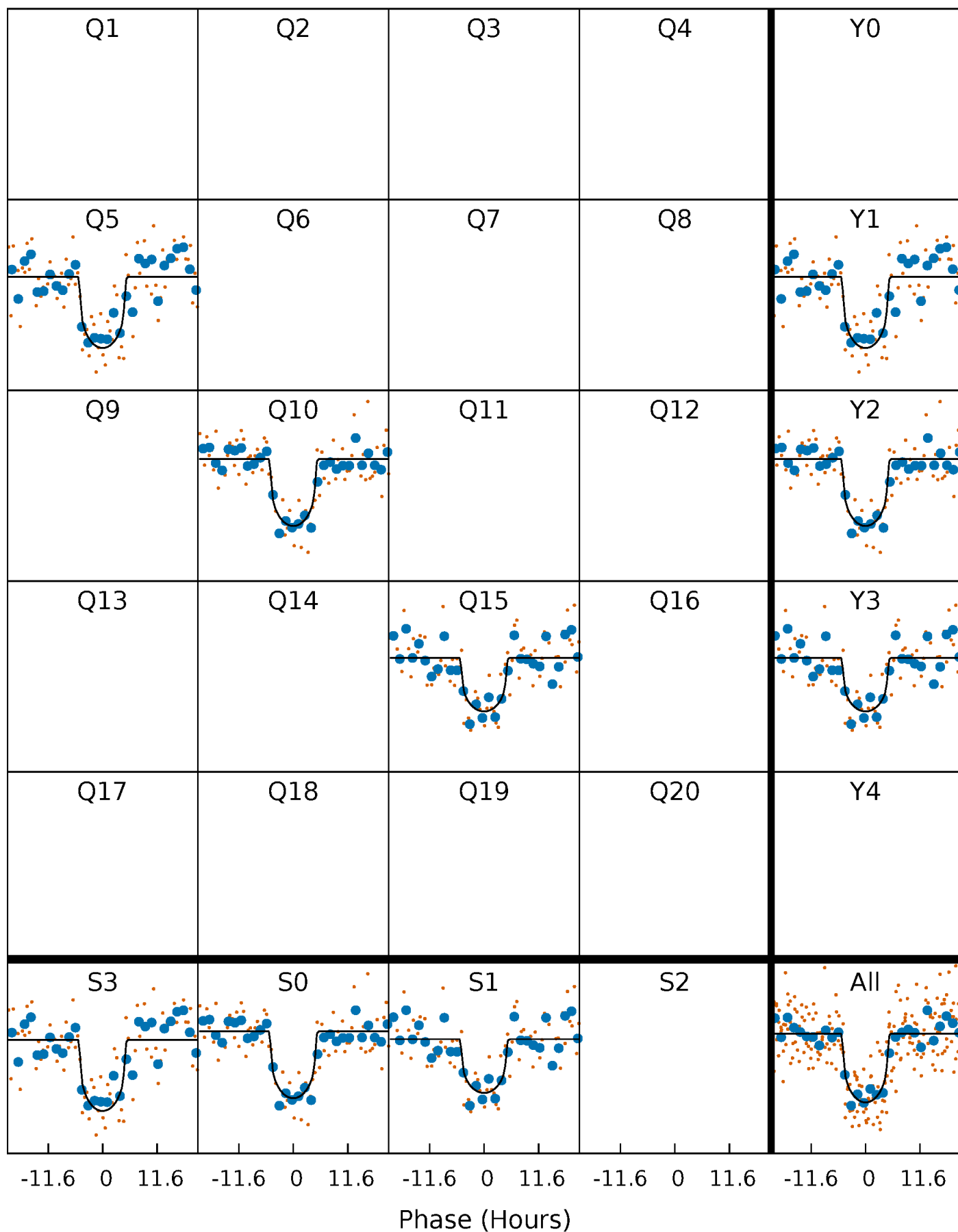
PDC Quarter-Phased Transit Curves

TCE 006436029-02 $P=505.465037$ Days $T_0=458.076373$ (BKJD)



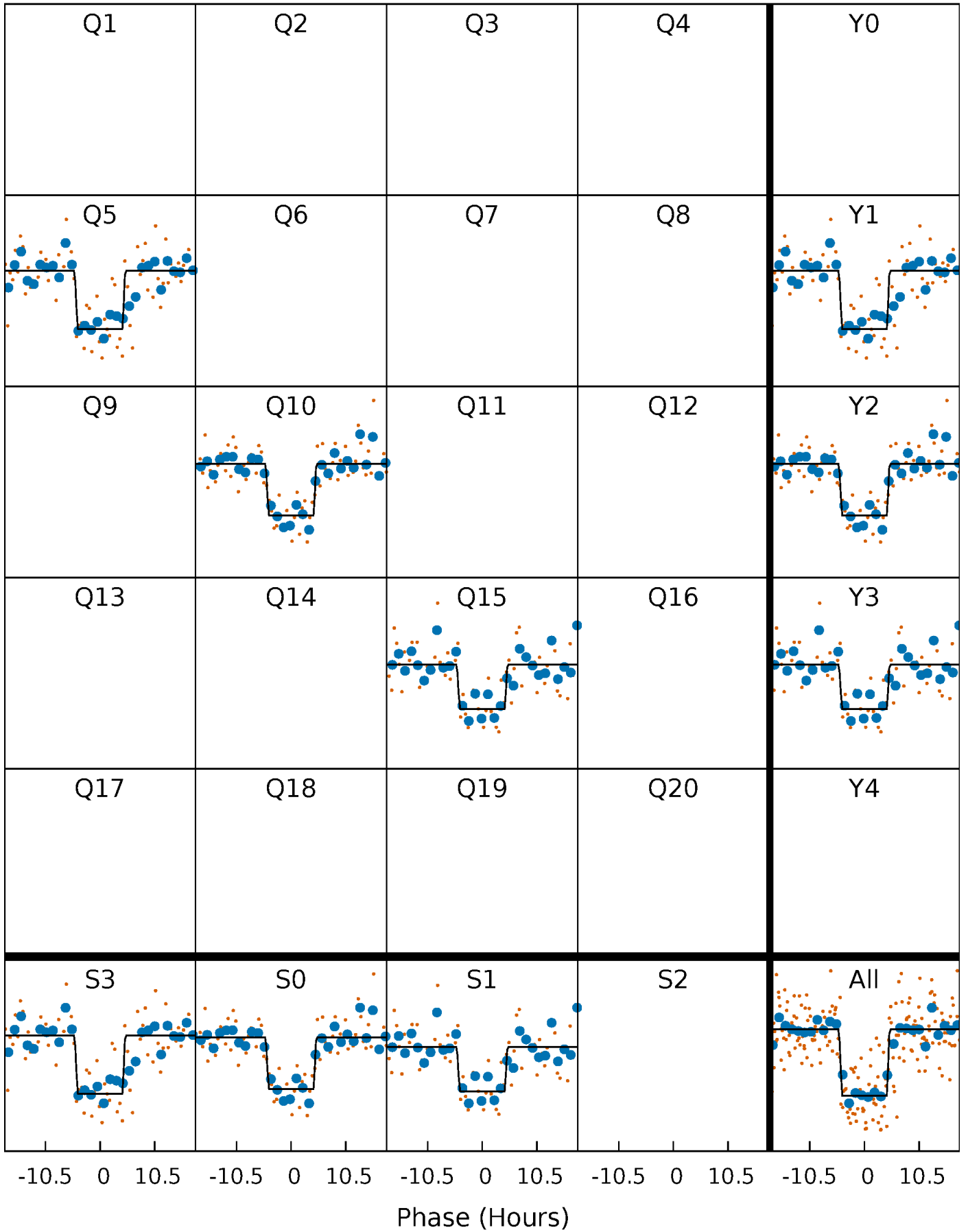
DV Quarter-Phased Transit Curves

TCE 006436029-02 $P=505.465037$ Days $T_0=458.076373$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

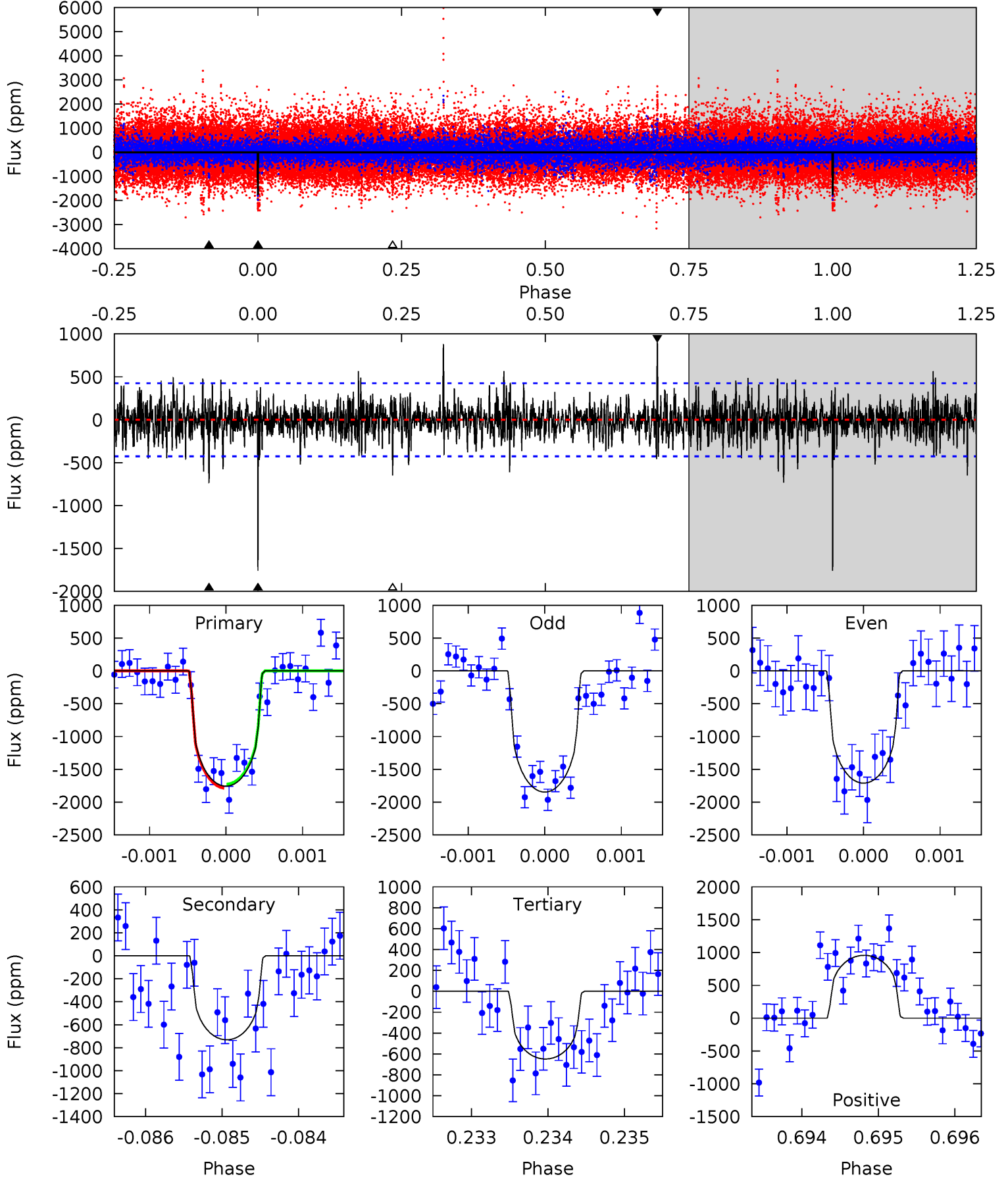
TCE 006436029-02 P=505.458163 Days $T_0=458.084805$ (BKJD)



DV Model-Shift Uniqueness Test

006436029-02, P = 505.465037 Days, E = 458.076373 Days

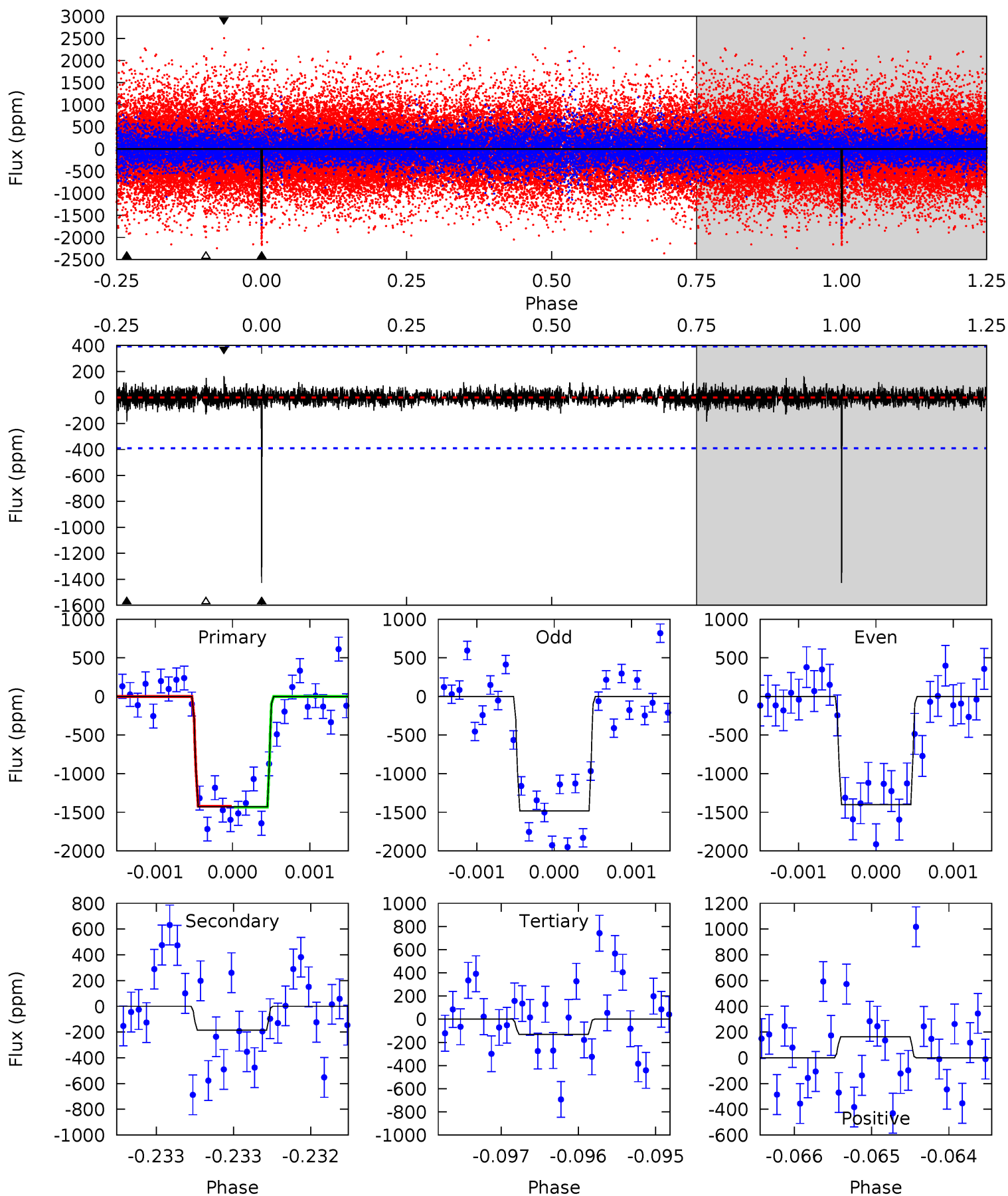
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	9.39	8.33	12.3	5.47	3.32	1.93	14.2	10.3	1.06	-2.90	0.83	0.98	0.35	0.40



Alt Model-Shift Uniqueness Test

006436029-02, P = 505.458163 Days, E = 458.084805 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	2.61	1.83	2.30	5.49	3.36	0.45	18.2	17.8	0.78	0.31	0.55	1.01	0.10	0.10



Stellar Parameters For KIC 006436029

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4817^{+184}_{-167}	$4.499^{+0.095}_{-0.114}$	$0.420^{+0.050}_{-0.300}$	$0.833^{+0.068}_{-0.084}$	$0.800^{+0.056}_{-0.051}$	$1.946^{+0.715}_{-0.560}$
	+4%/-3%	+2%/-3%	+12%/-71%	+8%/-10%	+7%/-6%	+37%/-29%
Source	KIC0	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 006436029-02 / KOI 2828.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-731 ± 78	$3.69^{+1.11}_{-1.10}$	254^{+12}_{-12}	4146^{+595}_{-394}	39469^{+43845}_{-16753}
Alt.	-186 ± 71	$3.50^{+1.16}_{-1.11}$	253^{+12}_{-11}	3338^{+485}_{-365}	10925^{+14152}_{-5914}

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

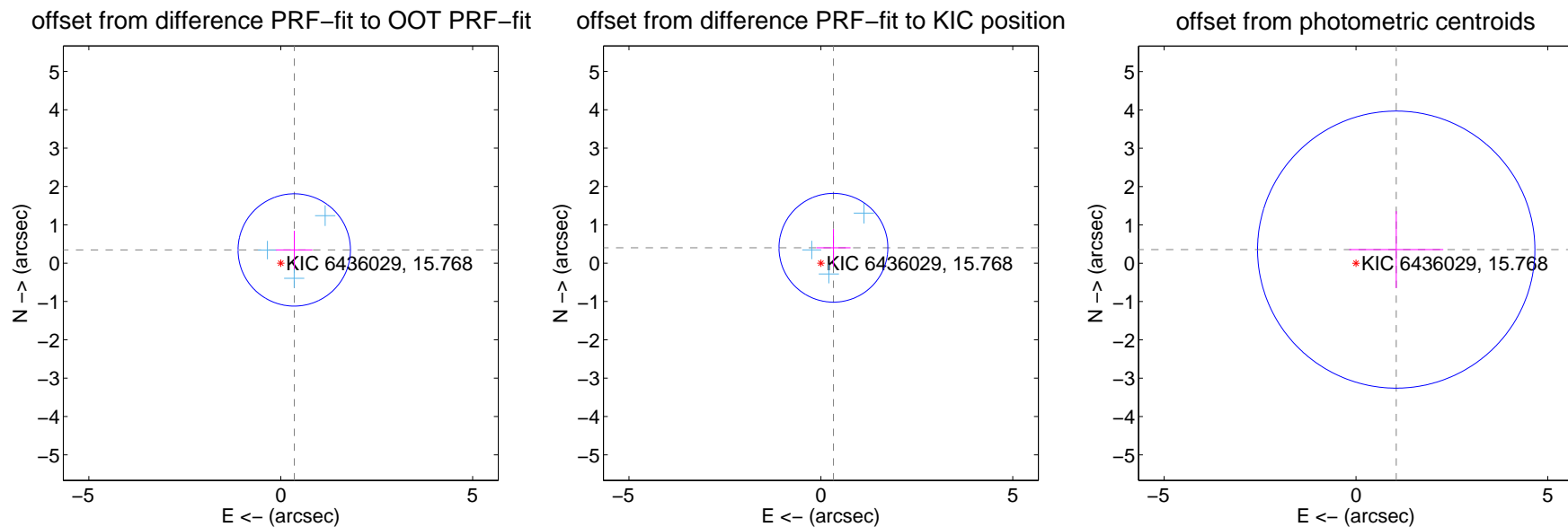
DV Centroid Data

Supplemental centroid analysis for 006436029-02. Kepler magnitude: 15.77. Transit SNR 13.12

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.492 ± 0.488	1.01	-0.352 ± 0.477	0.344 ± 0.500
PRF-fit source offset from KIC position	0.517 ± 0.473	1.09	-0.327 ± 0.445	0.401 ± 0.490
photometric centroid source offset	1.11 ± 1.20	0.92	-1.05 ± 1.23	0.36 ± 1.00

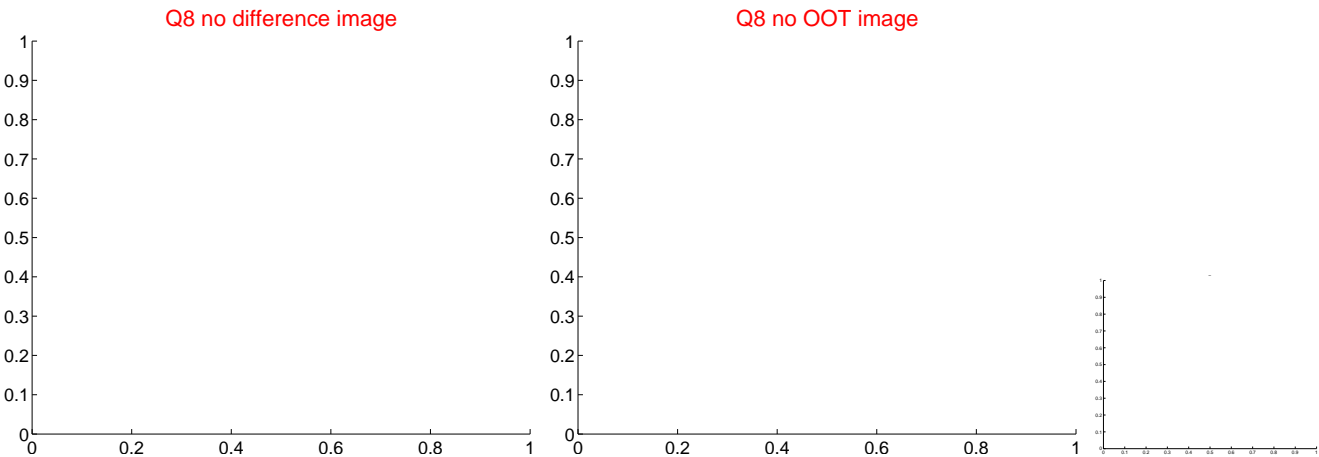
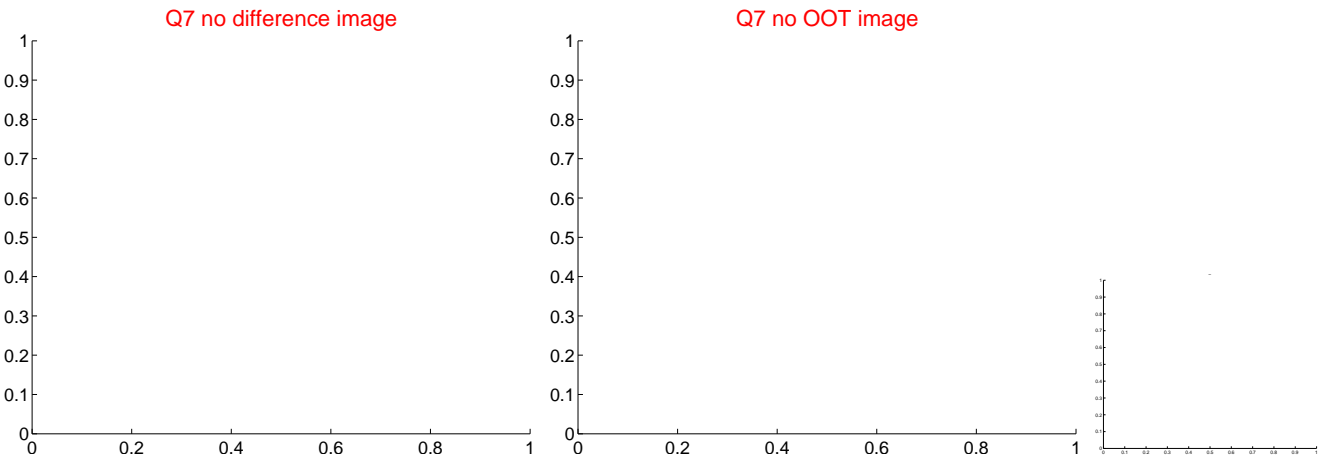
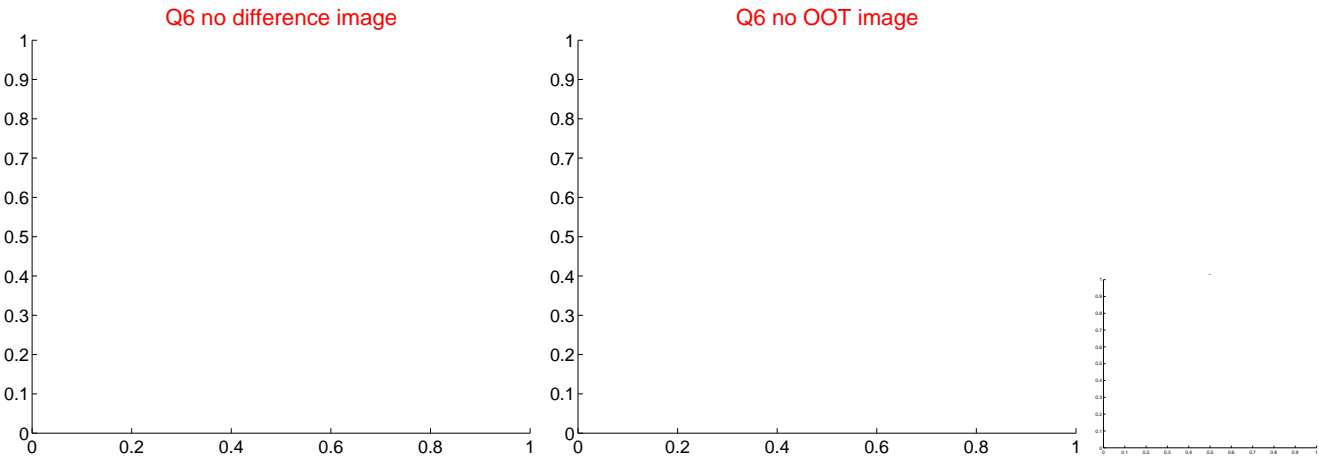
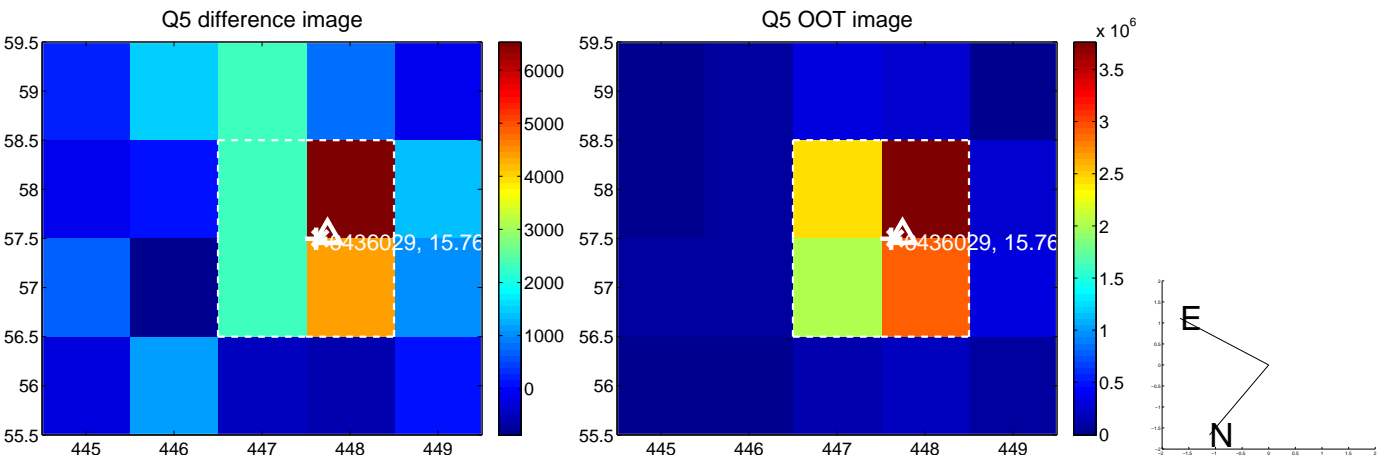


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

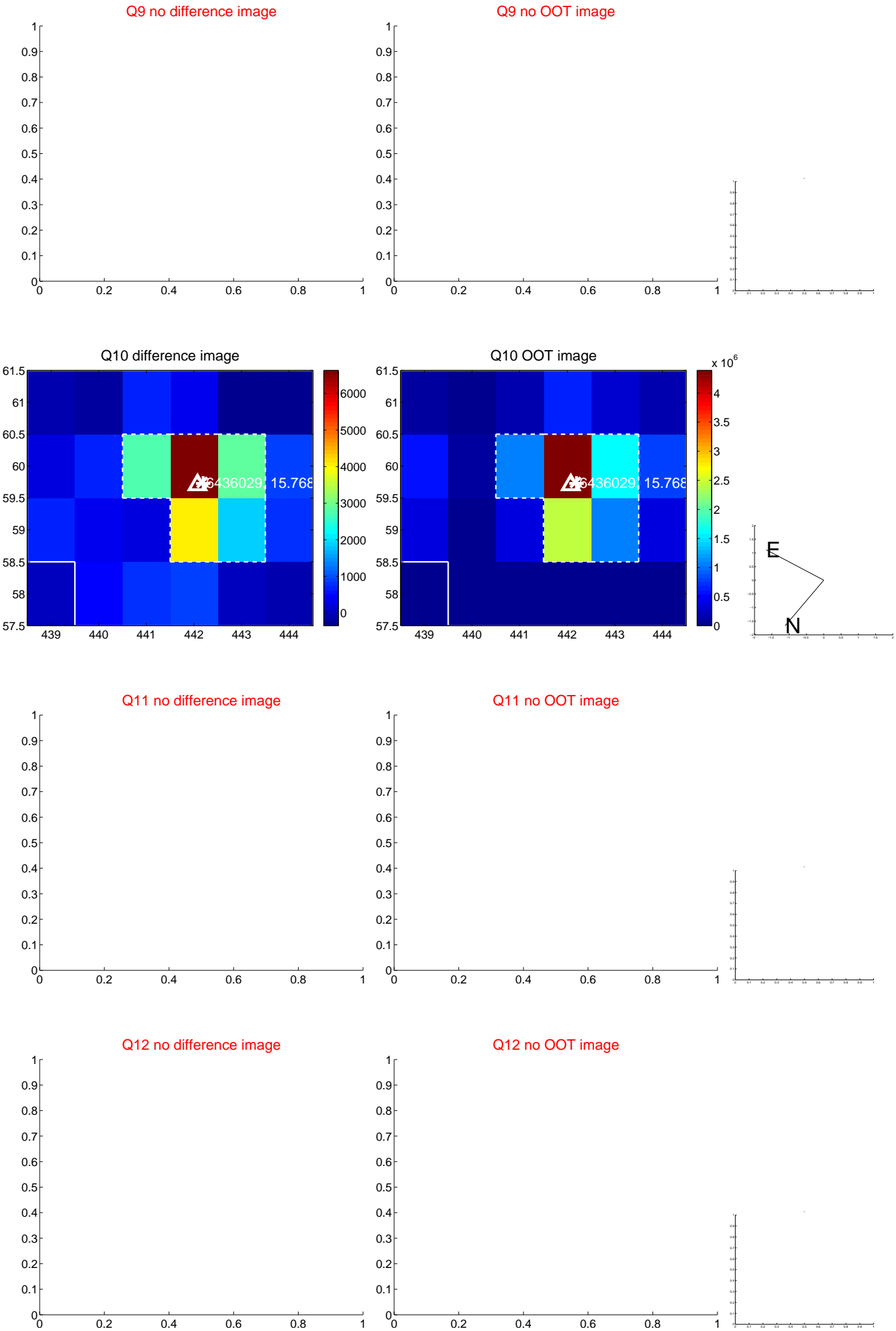
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q13 no difference image



Q13 no OOT image



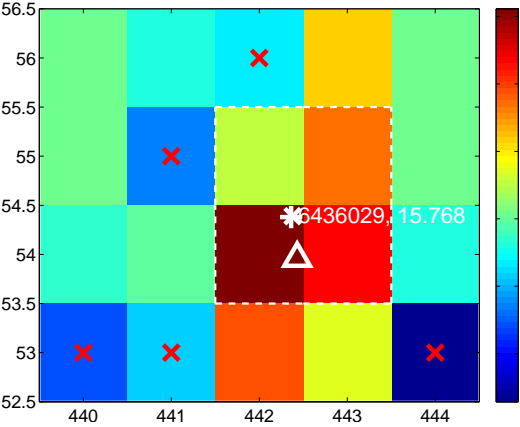
Q14 no difference image



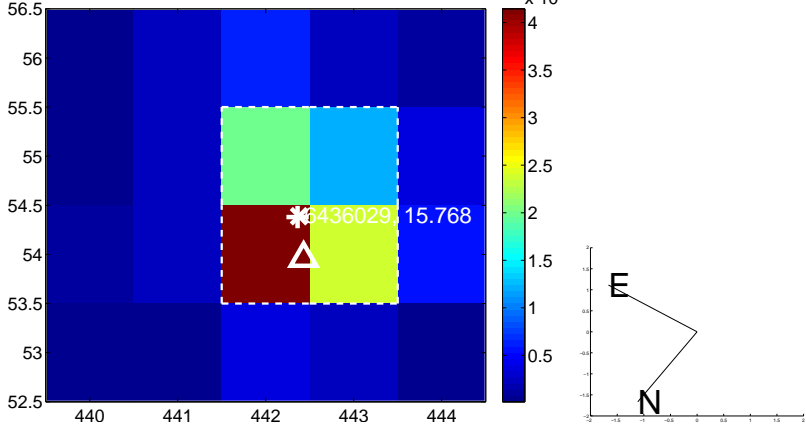
Q14 no OOT image



Q15 difference image



Q15 OOT image



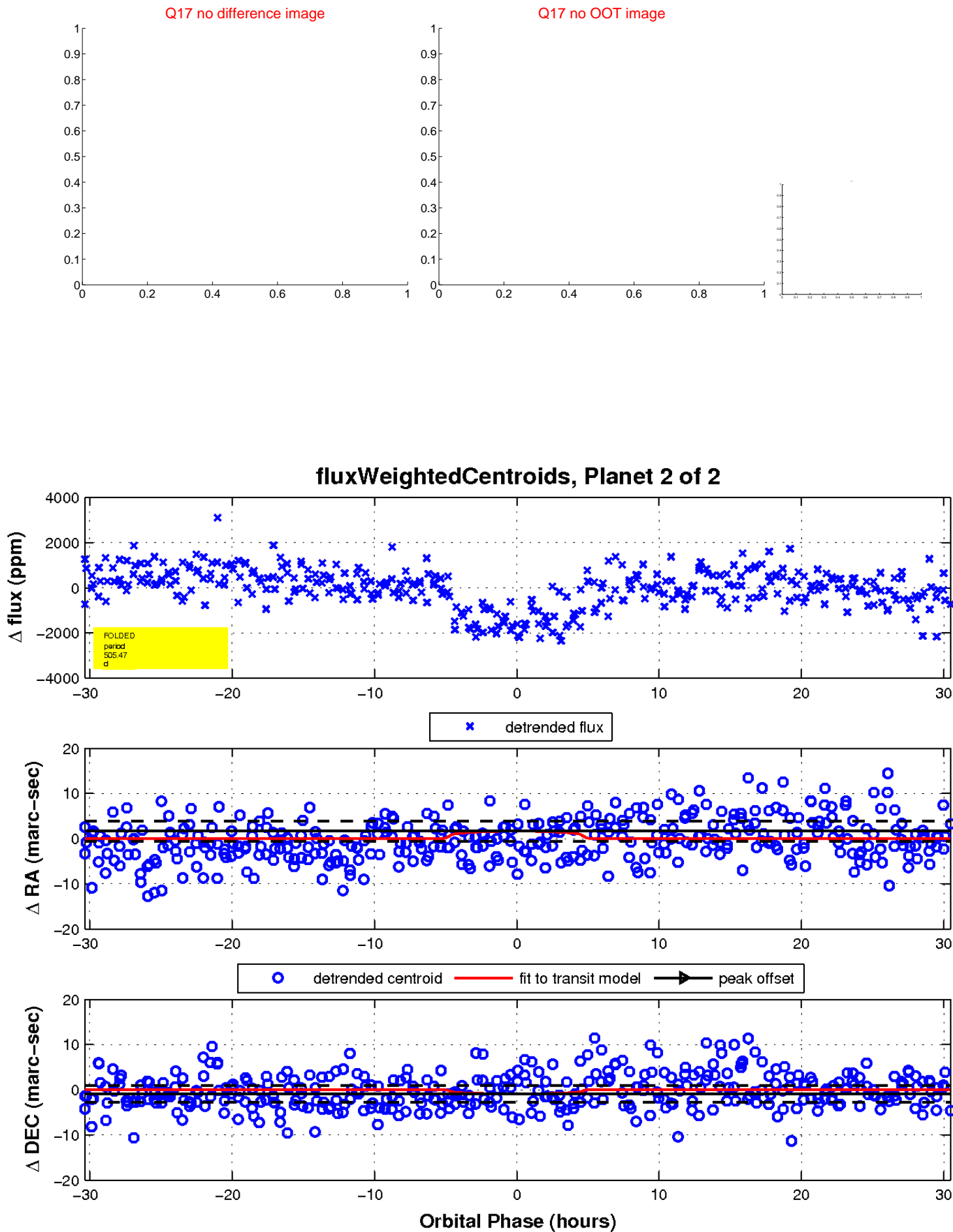
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

