

KIC 009527915

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})
009527915-01	OBS	0165.01	13.221748	139.570745	881.4	2.953	84.8	85.1	0.80	5211	2.77	39.62
009527915-02	OBS	No	363.954311	365.860216	366.0	6.967	8.1	8.0	0.80	5211	1.60	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009527915-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009527915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—MOD_NONUNIQ_ALT—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.

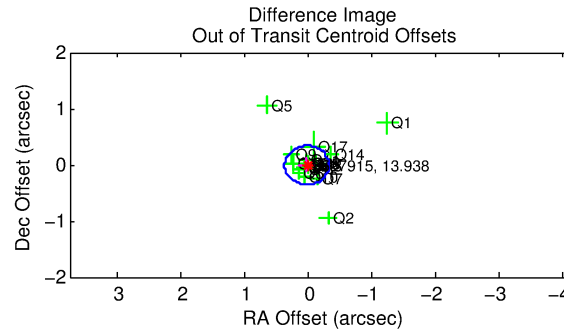
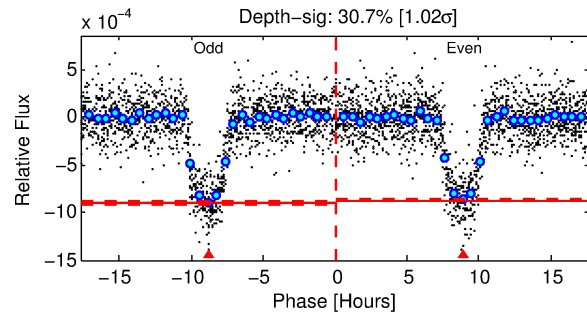
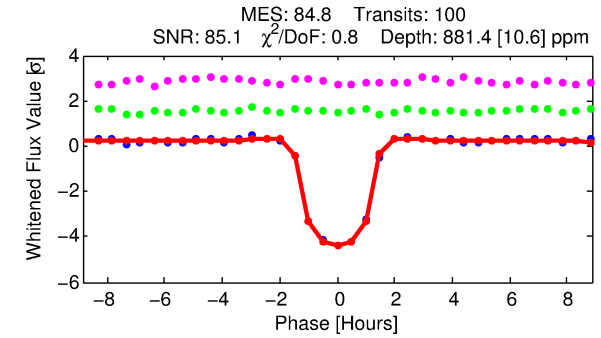
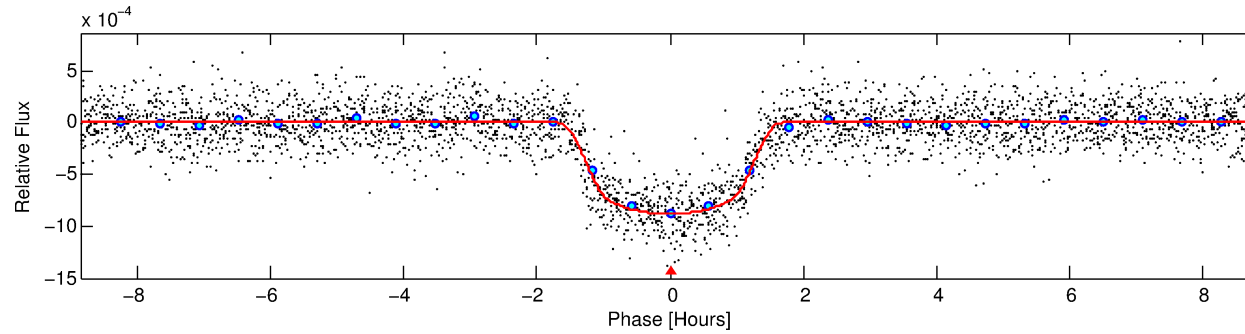
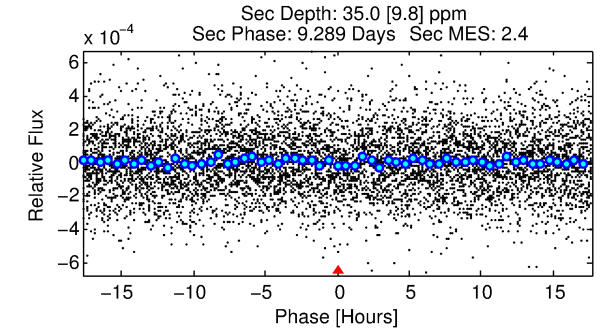
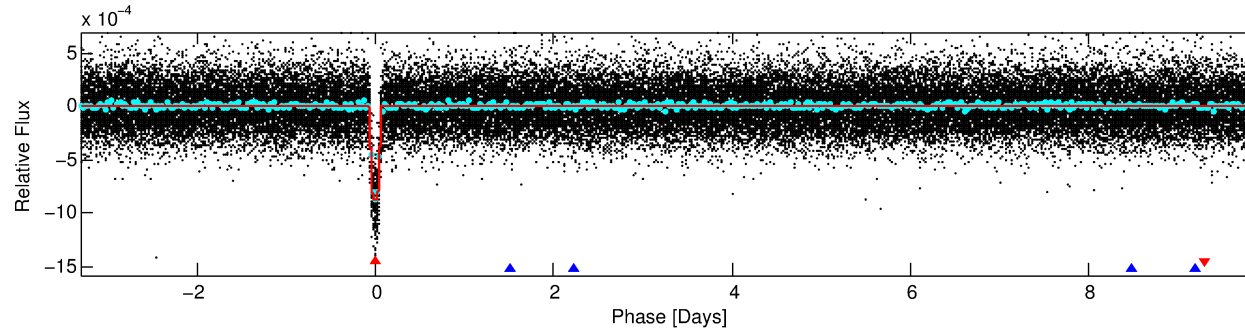
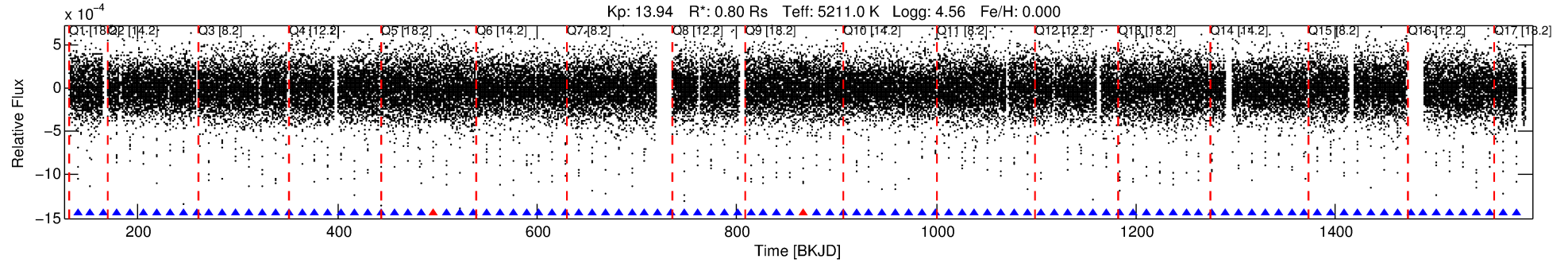
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009527915-01

No Significant Match Found

DV One-Page Summary

KIC: 9527915 Candidate: 1 of 2 Period: 13.222 d
KOI: K00165.01 Corr: 0.992



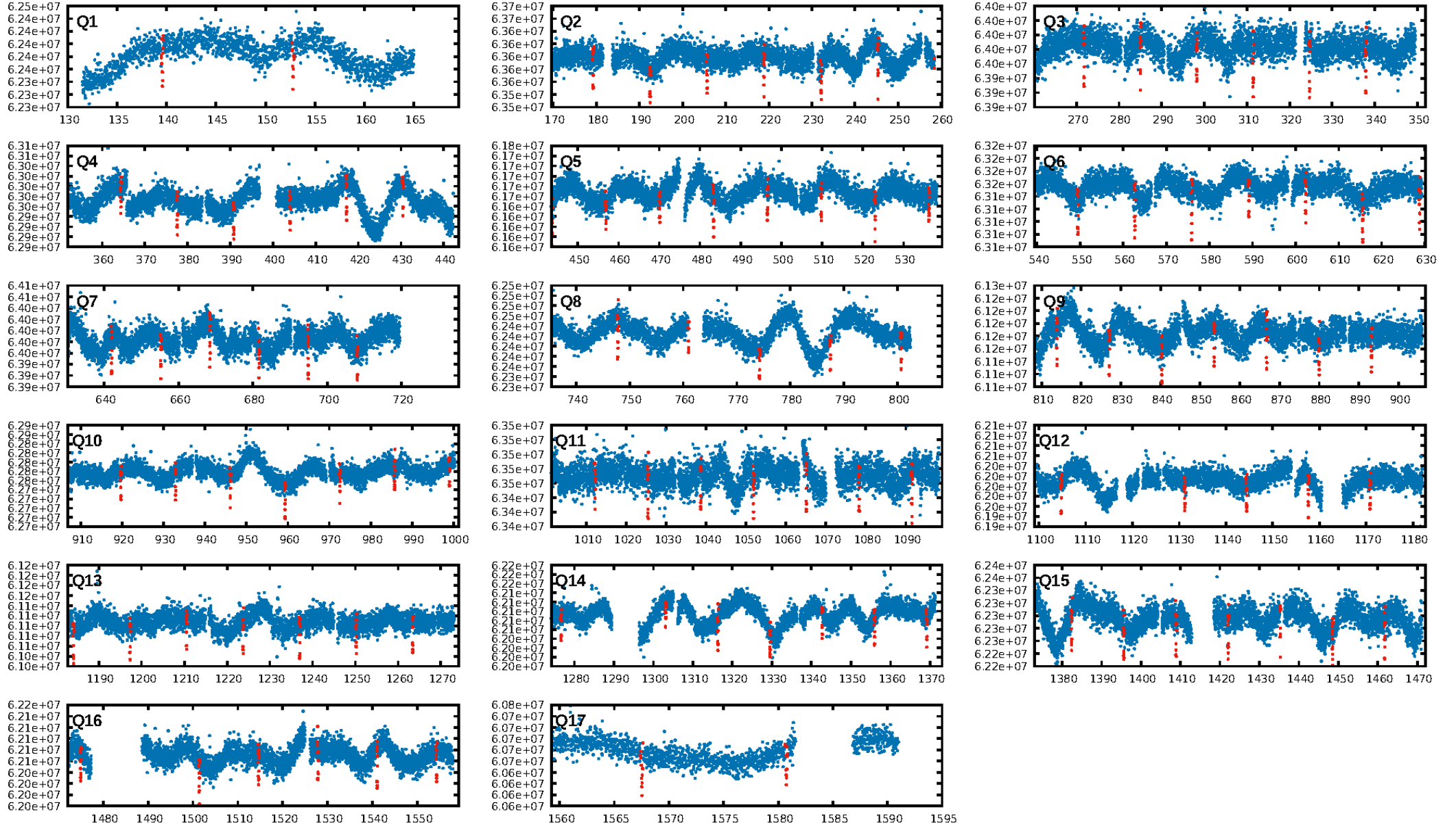
DV Fit Results:

Period = 13.22175 [0.00001] d
Epoch = 139.5707 [0.0008] BKJD
Rp/R* = 0.0318 [0.0016]
a/R* = 19.31 [3.71]
b = 0.86 [0.06]
Seff = 39.62 [5.16]
Teq = 640 [21] K
Rp = 2.78 [0.25] Re
a = 0.1032 [0.0070] AU
Ag = 26.58 [8.36] [3.06σ]
Teffp = 2246 [172] K [9.25σ]

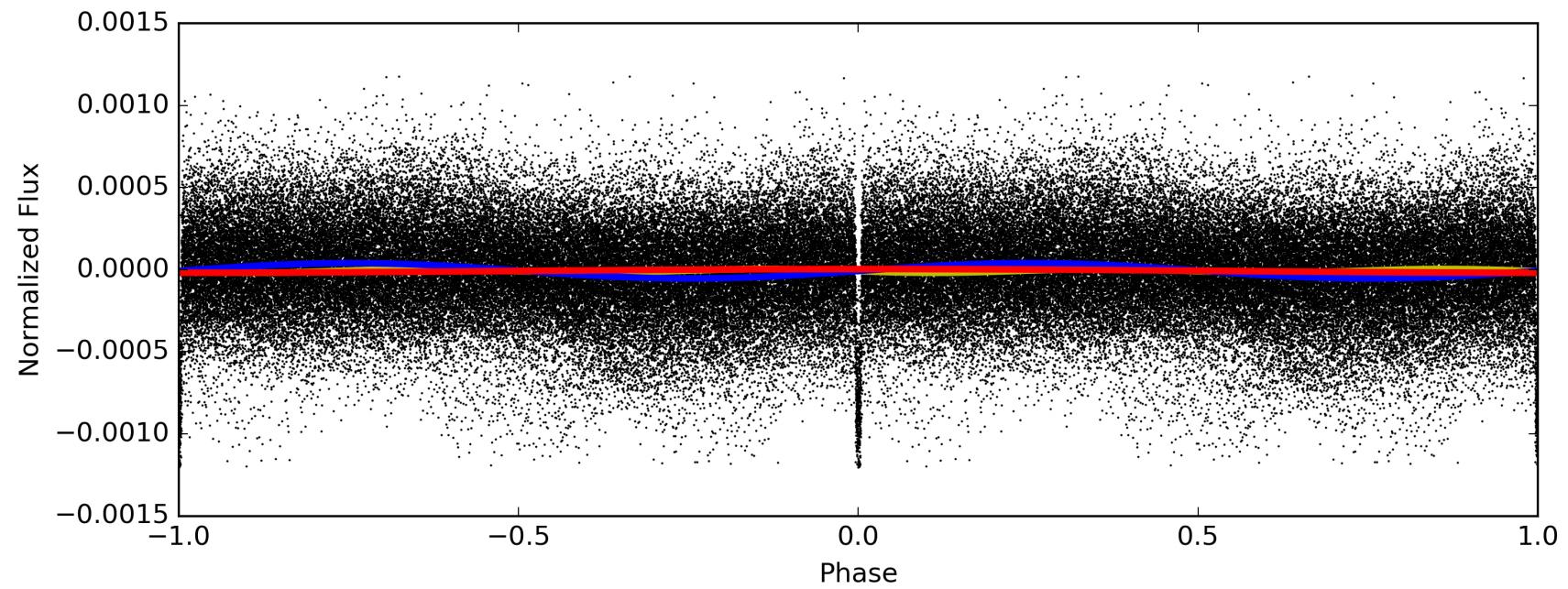
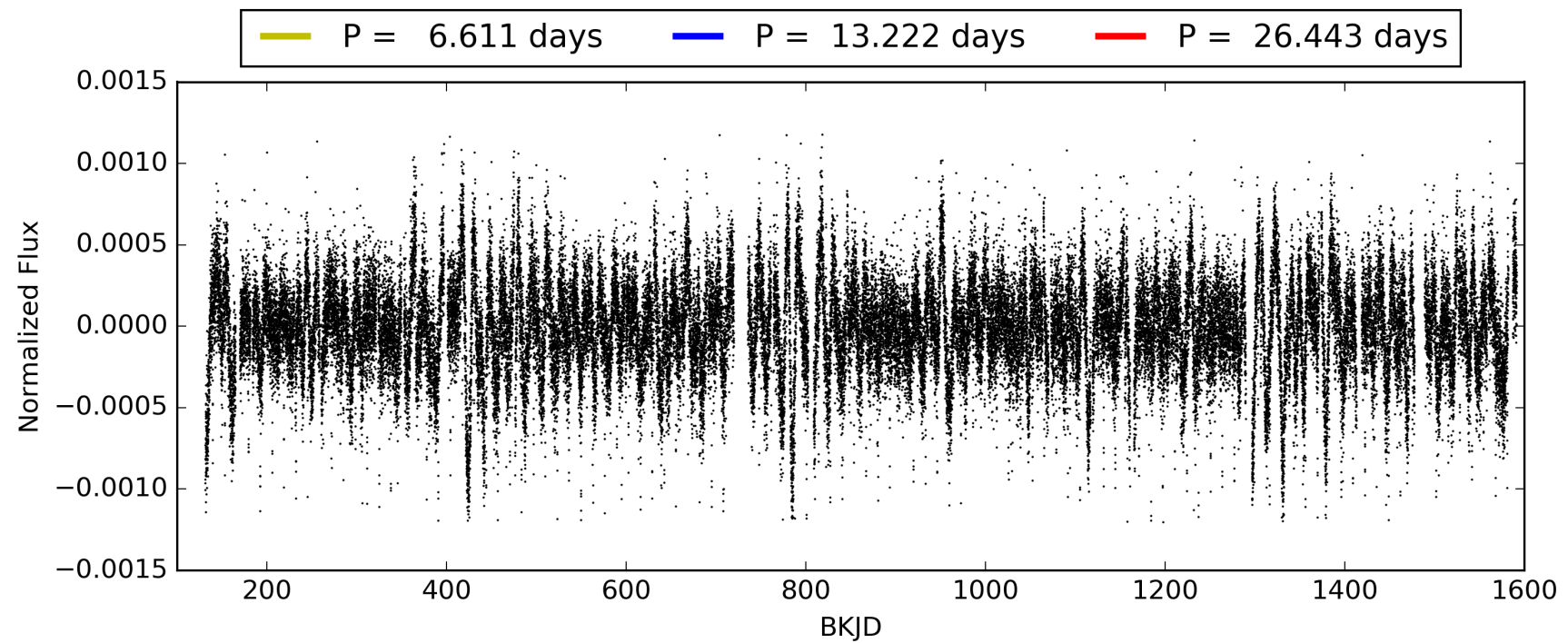
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1112.43σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fig: 0.98 [94/96]
GhostDiagnostic-chr: 6.733
Centroid-sig: 0.0%
Centroid-so: 0.191 arcsec [1.28σ]
OotOffset-rm: 0.028 arcsec [0.24σ]
KicOffset-rm: 0.215 arcsec [1.86σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009527915-01, PDC Light Curves

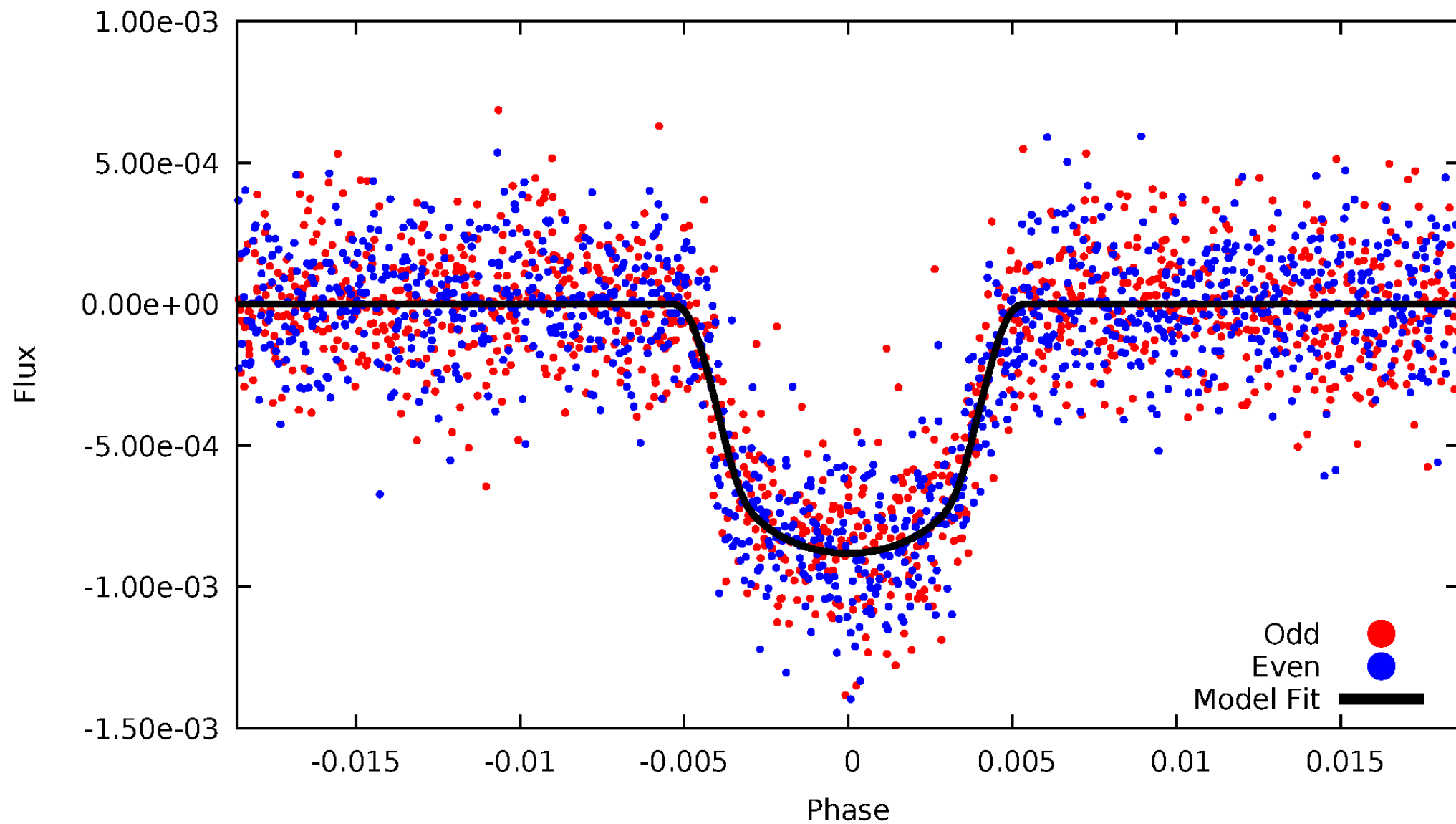


TCE 009527915-01



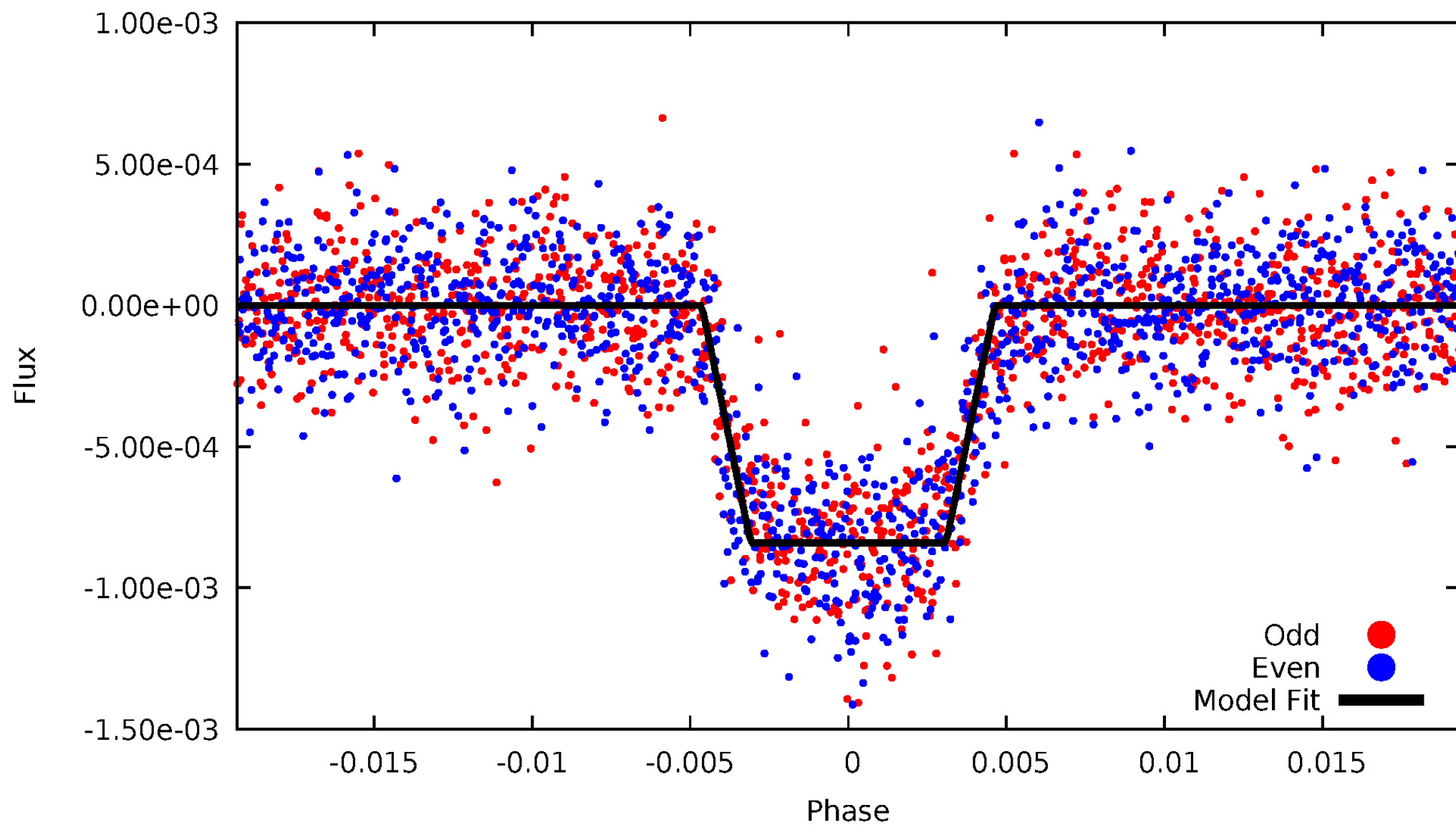
DV Odd/Even

TCE 009527915-01

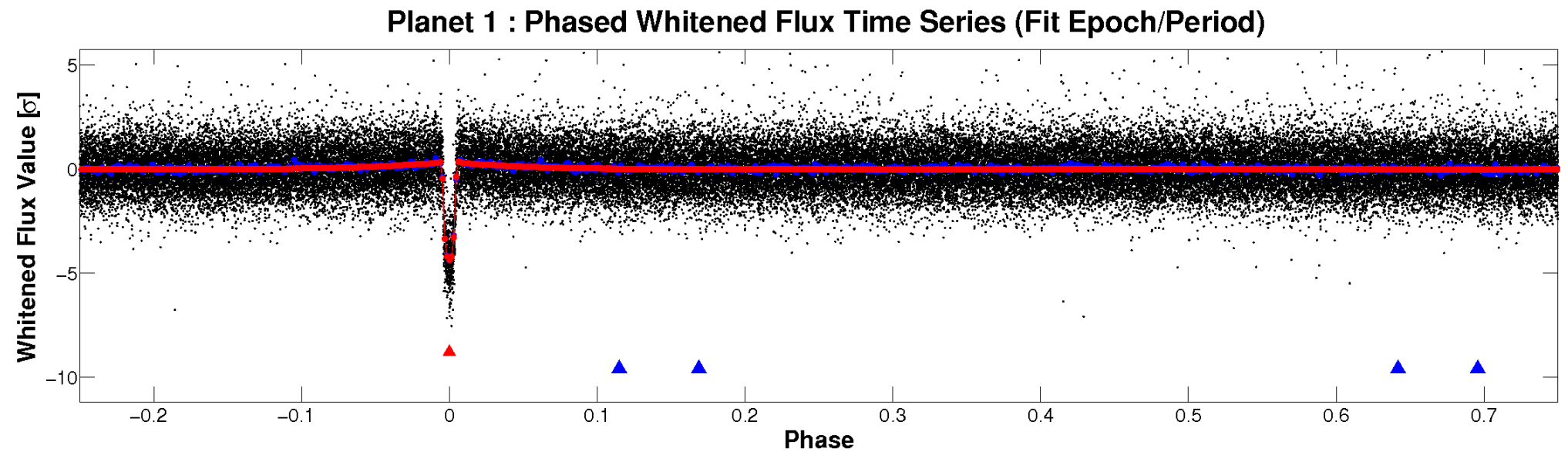
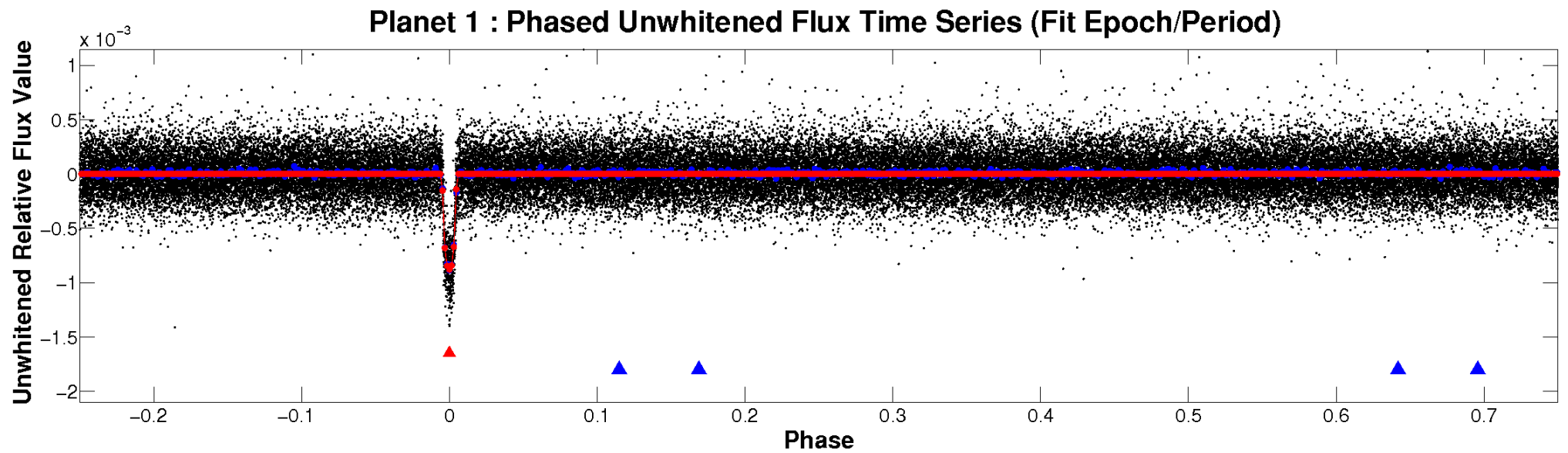


ALT Odd/Even

TCE 009527915-01

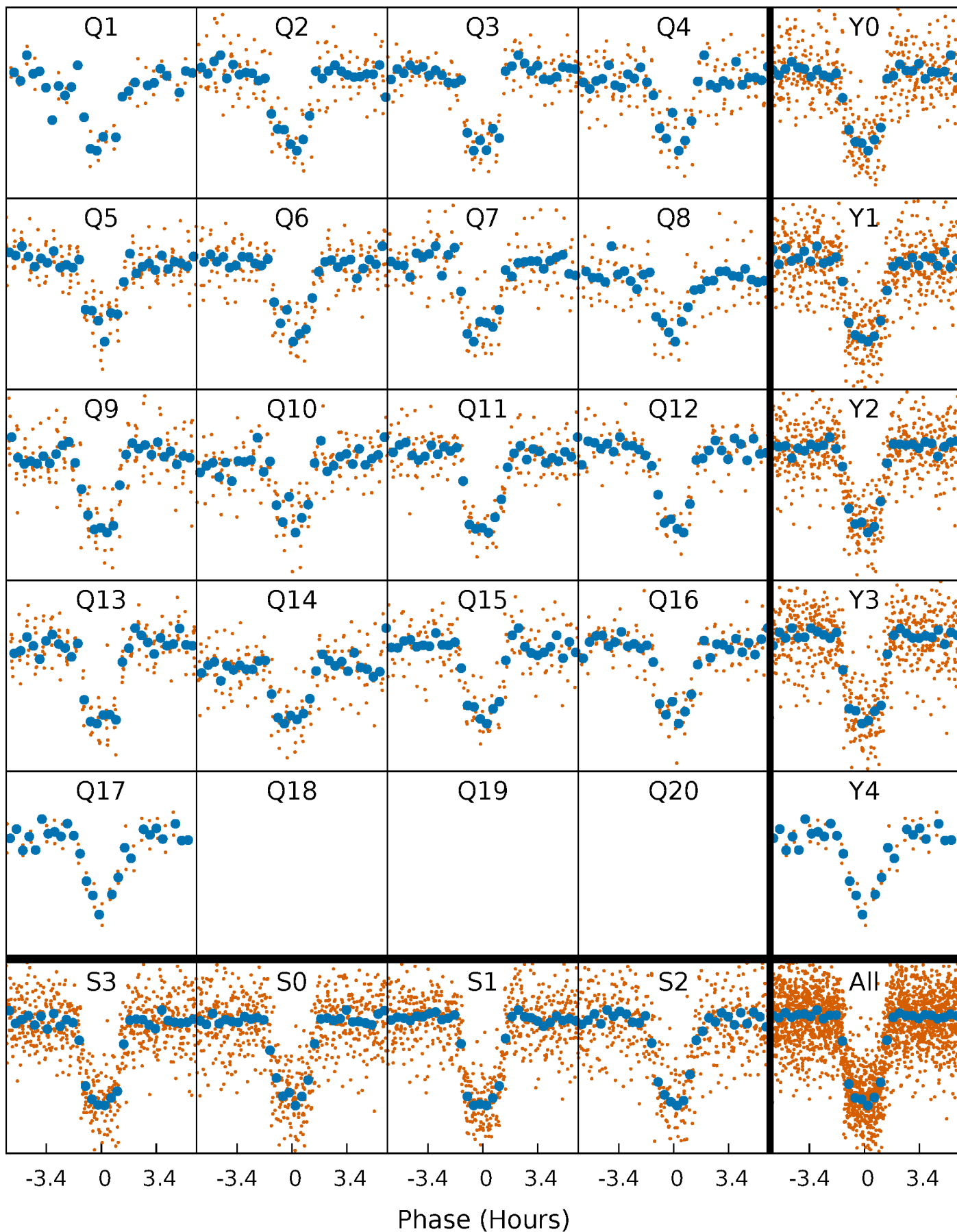


Non-Whitened Vs. Whitened Light Curve



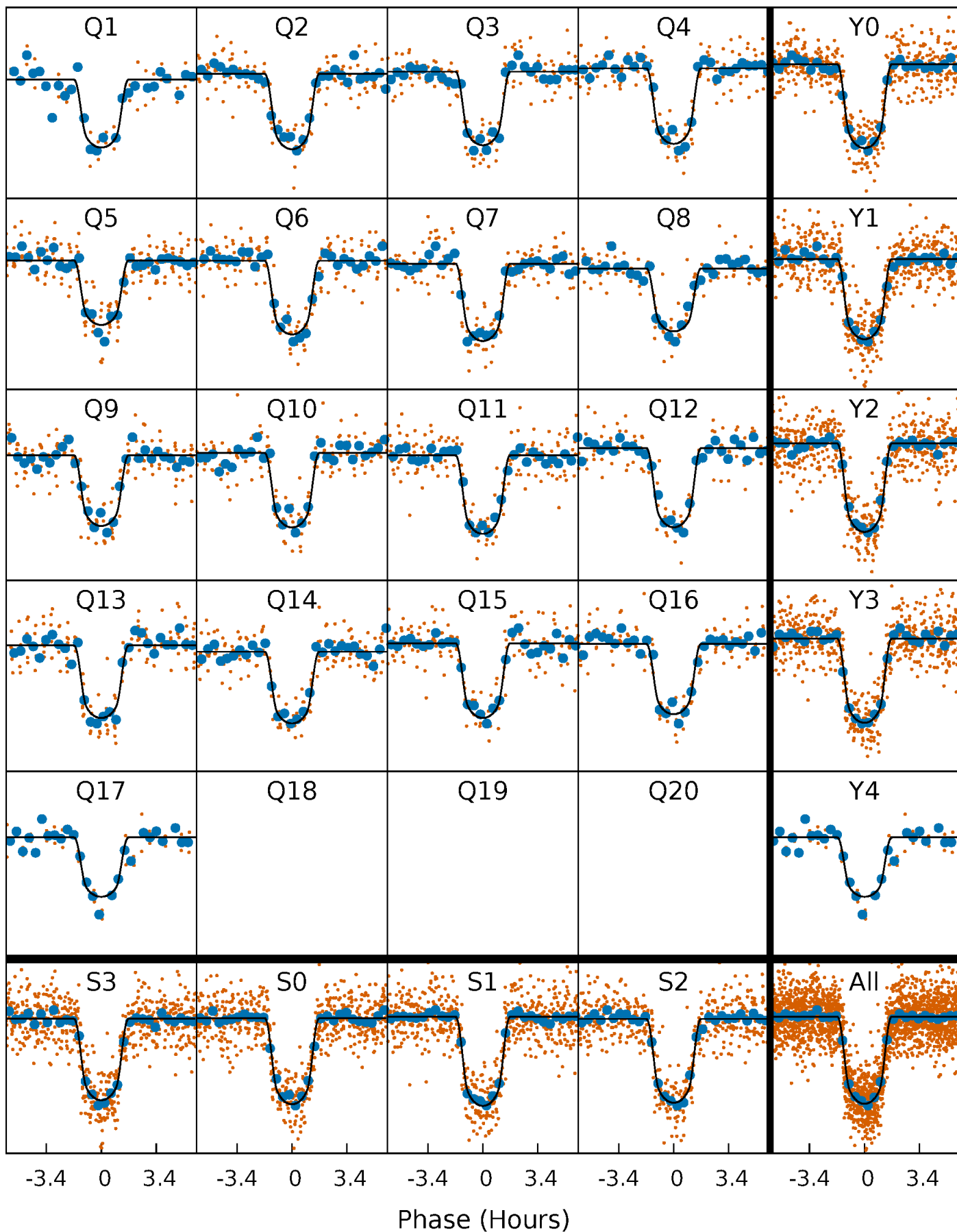
PDC Quarter-Phased Transit Curves

TCE 009527915-01 P= 13.221748 Days $T_0=139.570745$ (BKJD)



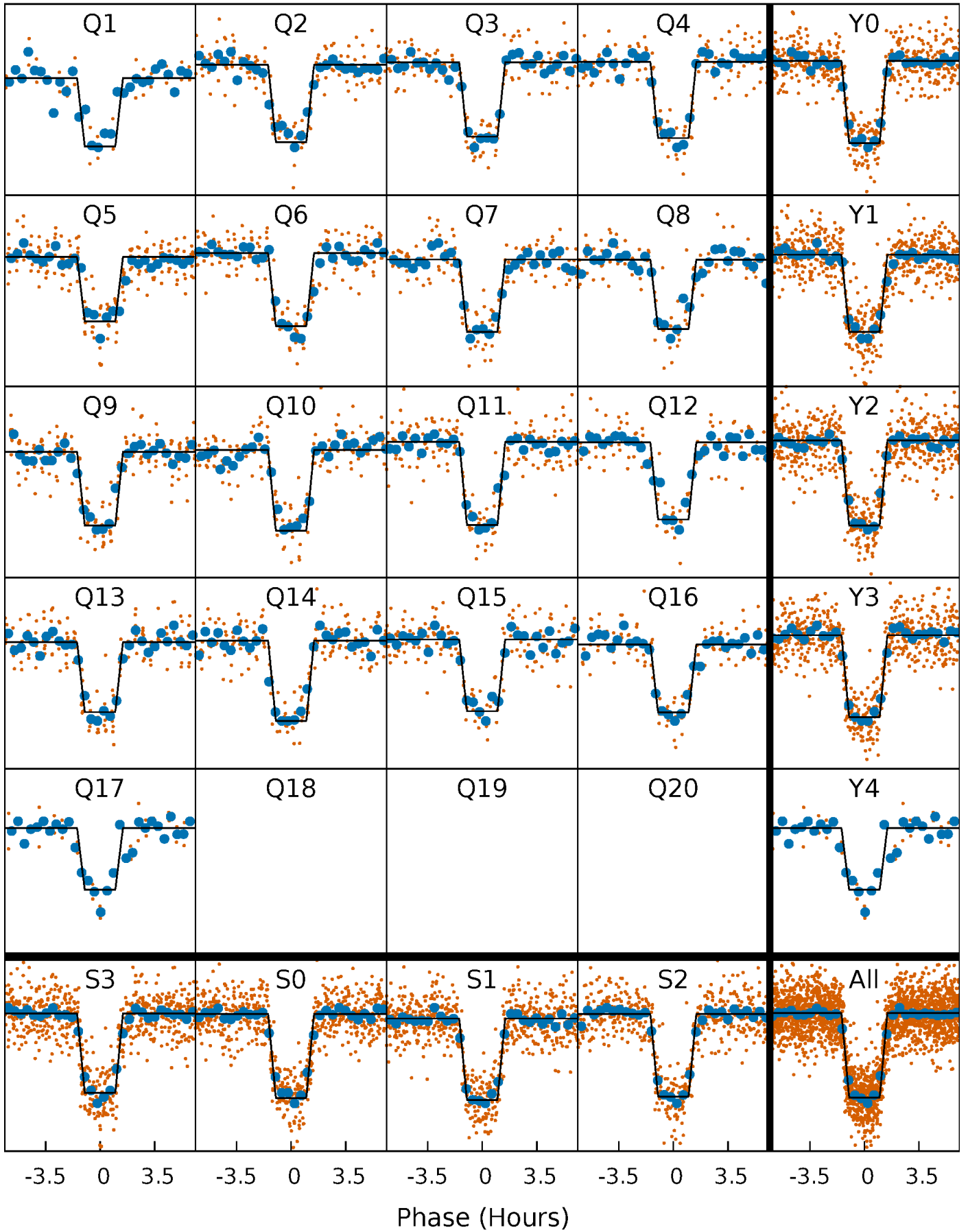
DV Quarter-Phased Transit Curves

TCE 009527915-01 P= 13.221748 Days $T_0=139.570745$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

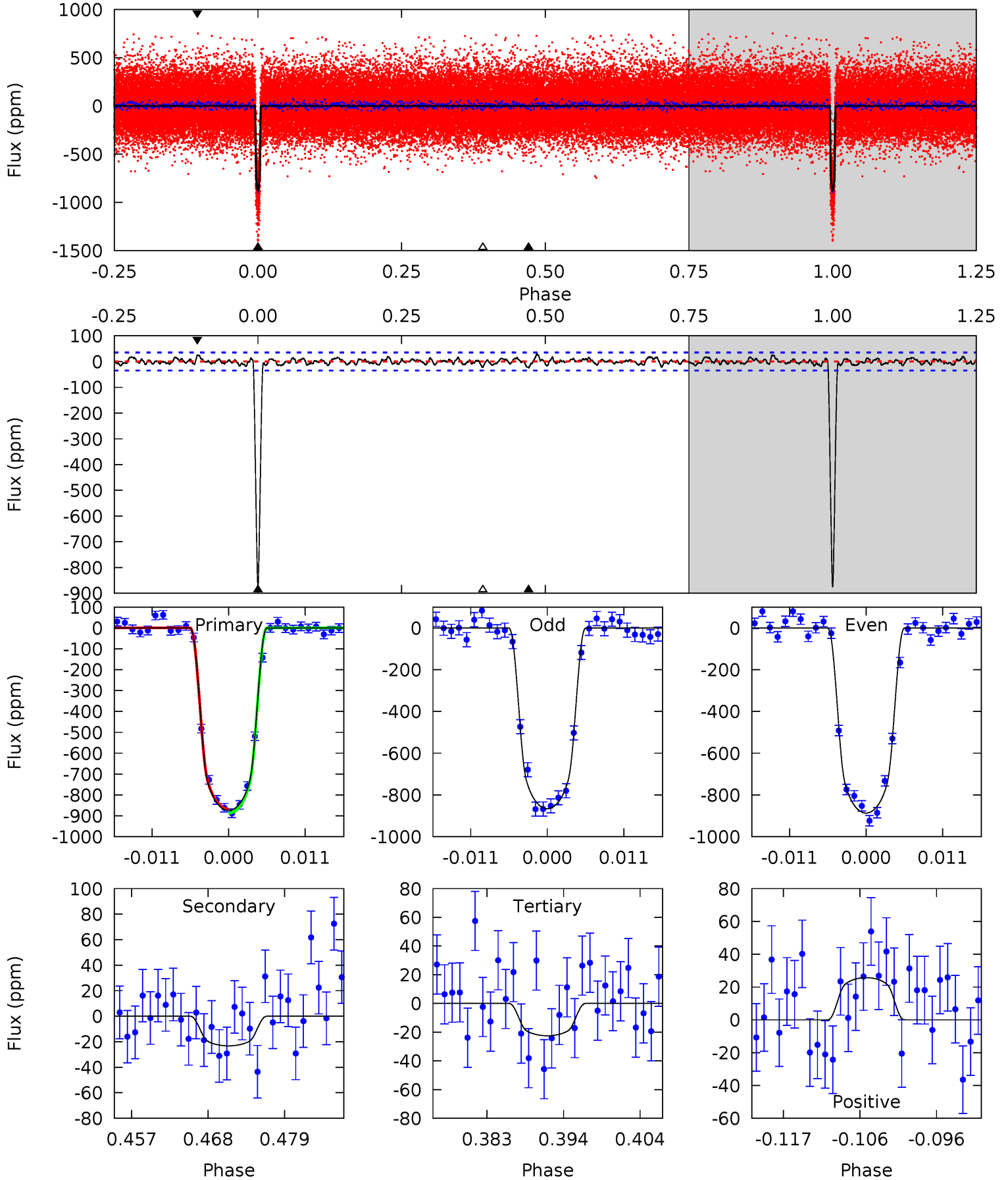
TCE 009527915-01 P= 13.221779 Days $T_0=139.569059$ (BKJD)



DV Model-Shift Uniqueness Test

009527915-01, P = 13.221748 Days, E = 126.348997 Days

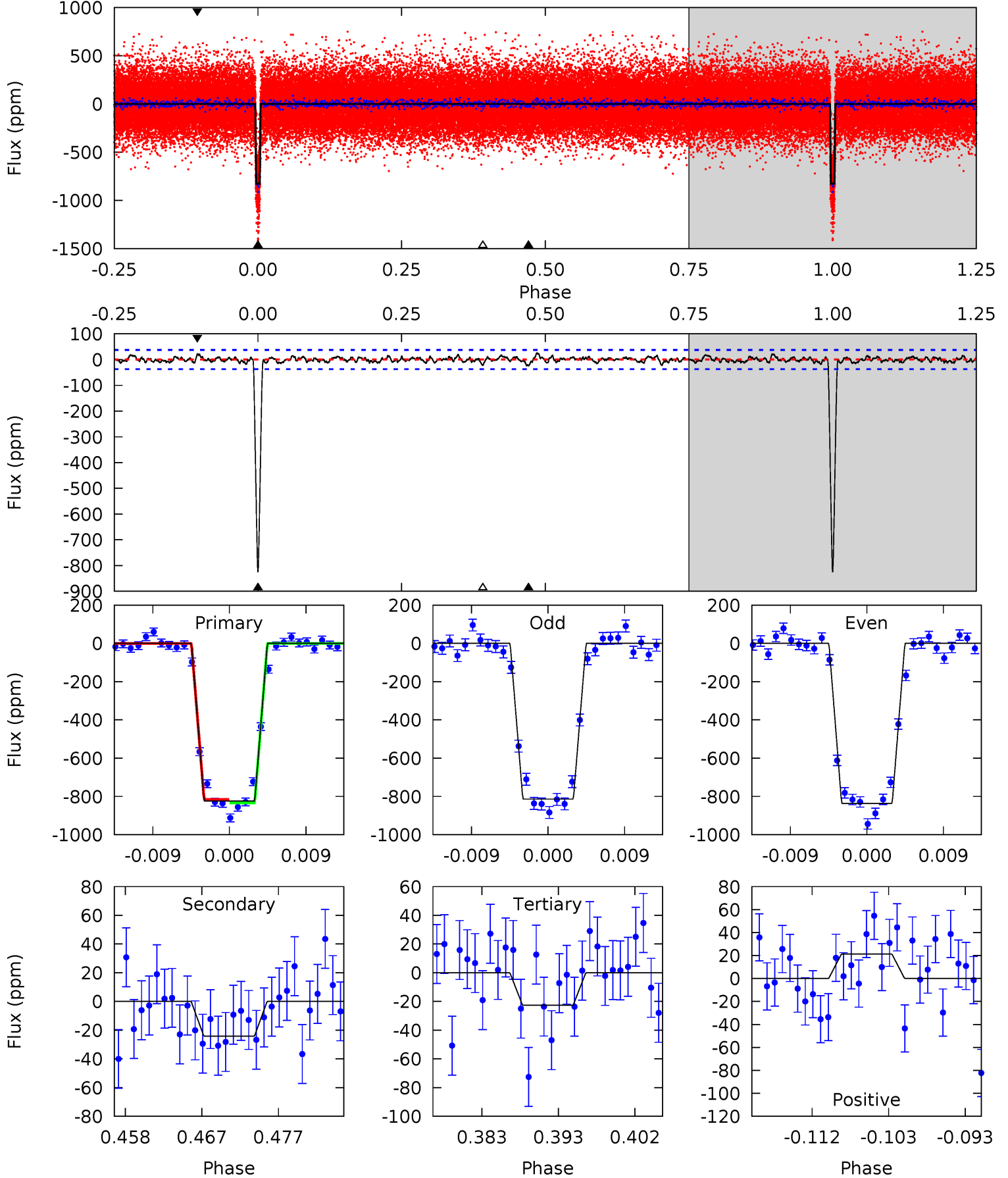
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
125.4	3.33	3.22	3.69	5.01	2.55	1.19	122.2	121.7	0.10	-0.36	1.53	0.99	0.03	1.39



Alt Model-Shift Uniqueness Test

009527915-01, P = 13.221779 Days, E = 126.347280 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
111.7	3.28	3.07	2.88	5.04	2.60	1.01	108.6	108.8	0.21	0.40	1.55	1.01	0.03	1.20



Stellar Parameters For KIC 009527915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5211^{+103}_{-103}	$4.556^{+0.032}_{-0.059}$	$0.000^{+0.150}_{-0.150}$	$0.799^{+0.060}_{-0.038}$	$0.838^{+0.046}_{-0.046}$	$2.312^{+0.316}_{-0.434}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+8%/-5%	+5%/-5%	+14%/-19%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 009527915-01 / KOI 0165.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-23 ± 7	$2.78^{+0.18}_{-0.16}$	896^{+23}_{-21}	2753^{+123}_{-132}	17^{+6}_{-5}
Alt.	-24 ± 7	$2.55^{+0.18}_{-0.17}$	898^{+23}_{-23}	2838^{+125}_{-136}	21^{+7}_{-7}

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

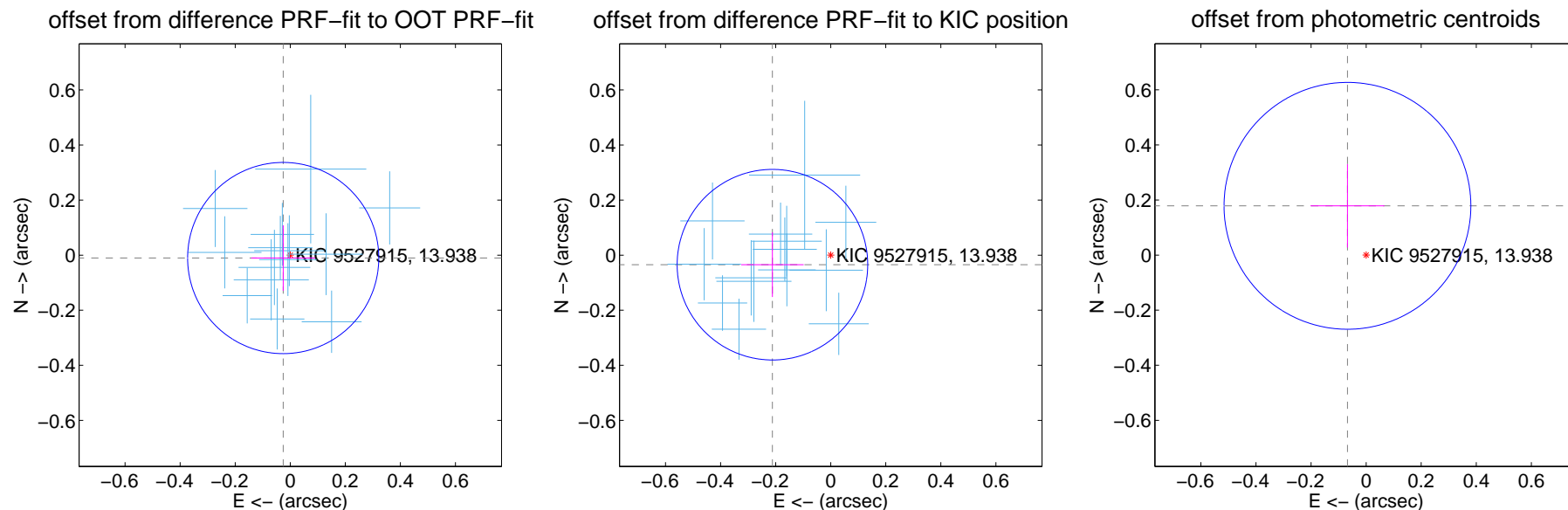
DV Centroid Data

Supplemental centroid analysis for 009527915-01. Kepler magnitude: 13.94. Transit SNR 85.12

There are 17 quarters with good PRF difference image offsets

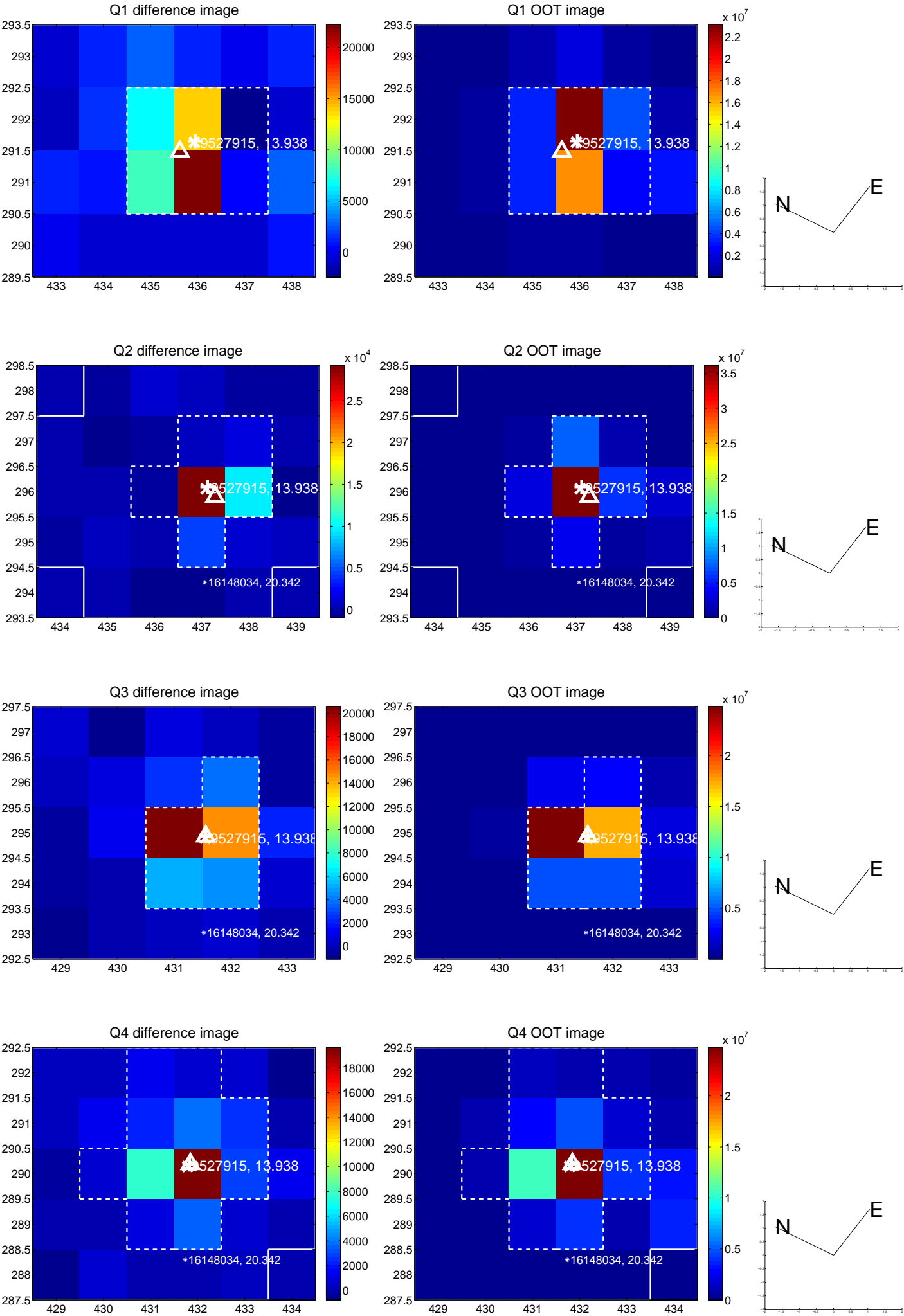
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.028 ± 0.116	0.24	0.026 ± 0.116	-0.010 ± 0.119
PRF-fit source offset from KIC position	0.215 ± 0.115	1.86	0.212 ± 0.114	-0.035 ± 0.117
photometric centroid source offset	0.19 ± 0.15	1.28	0.07 ± 0.13	0.18 ± 0.15

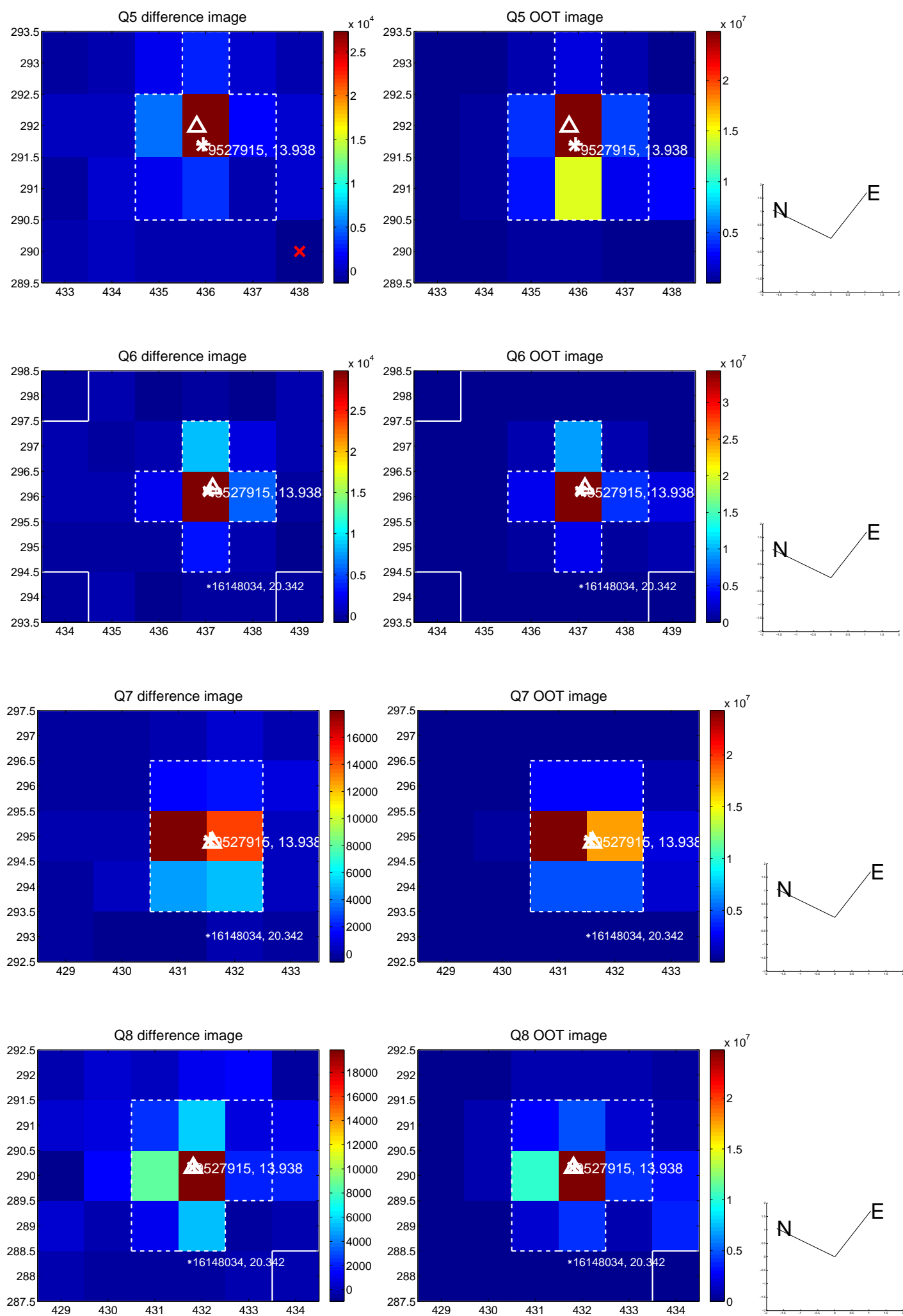


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

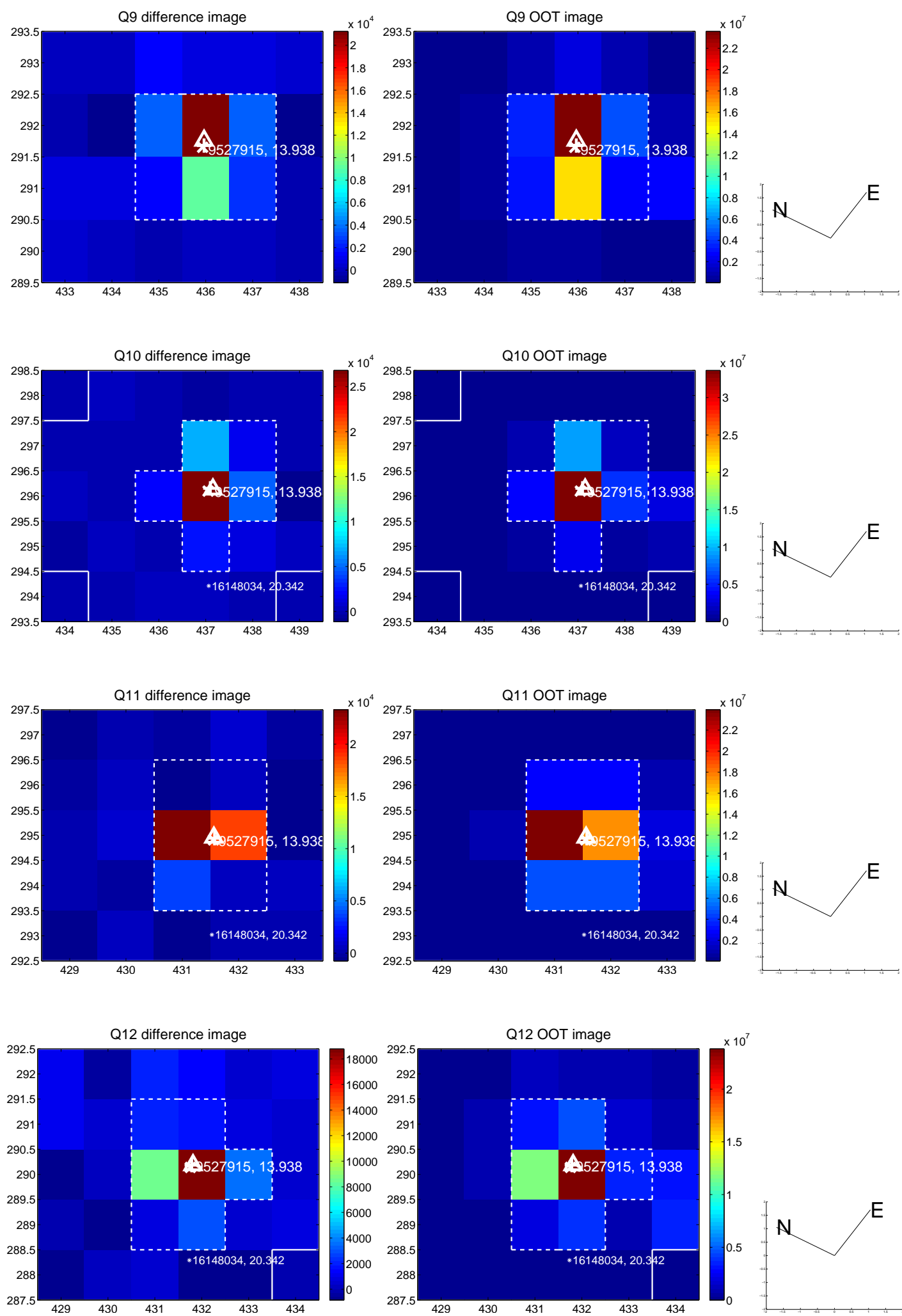
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



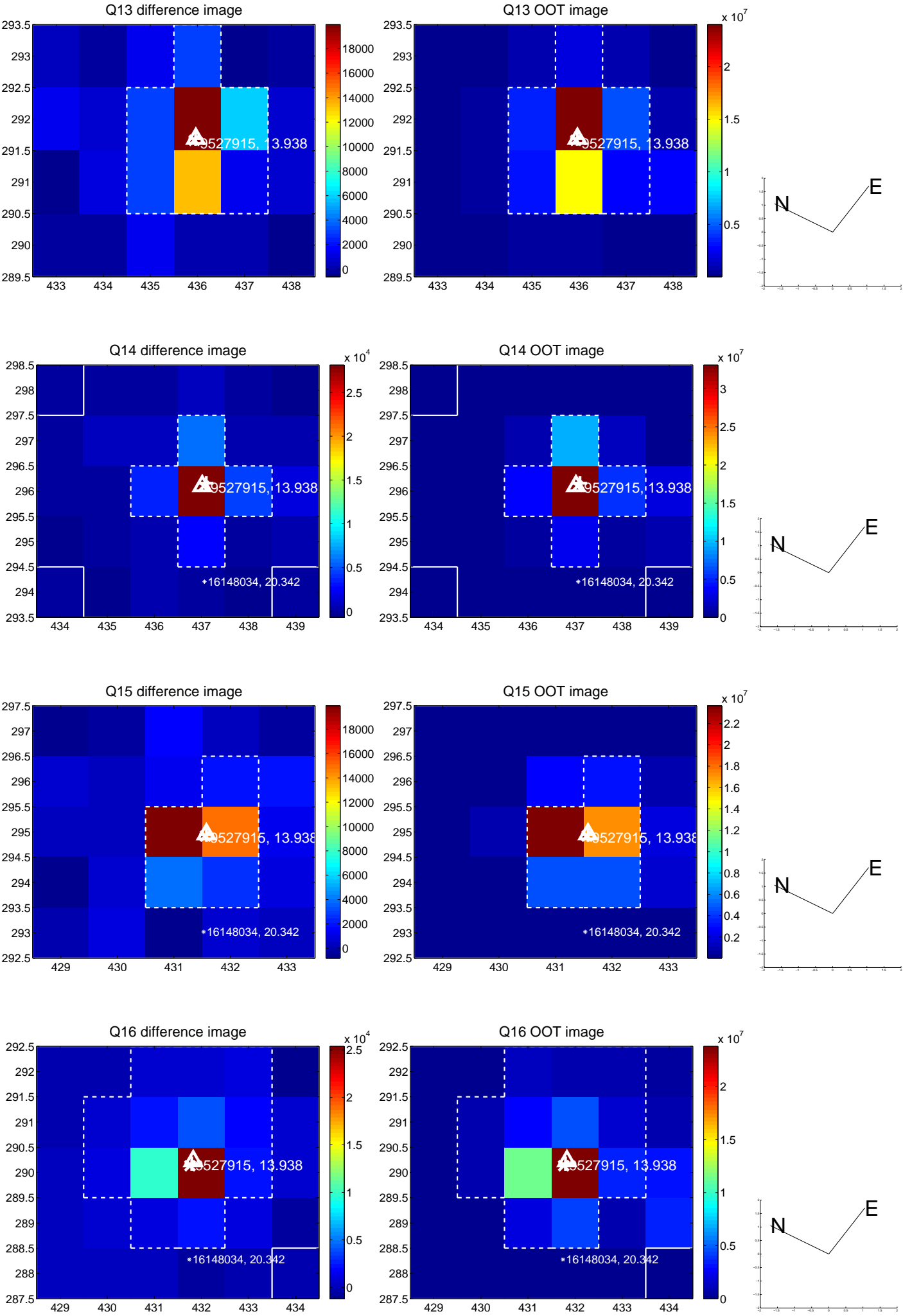
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



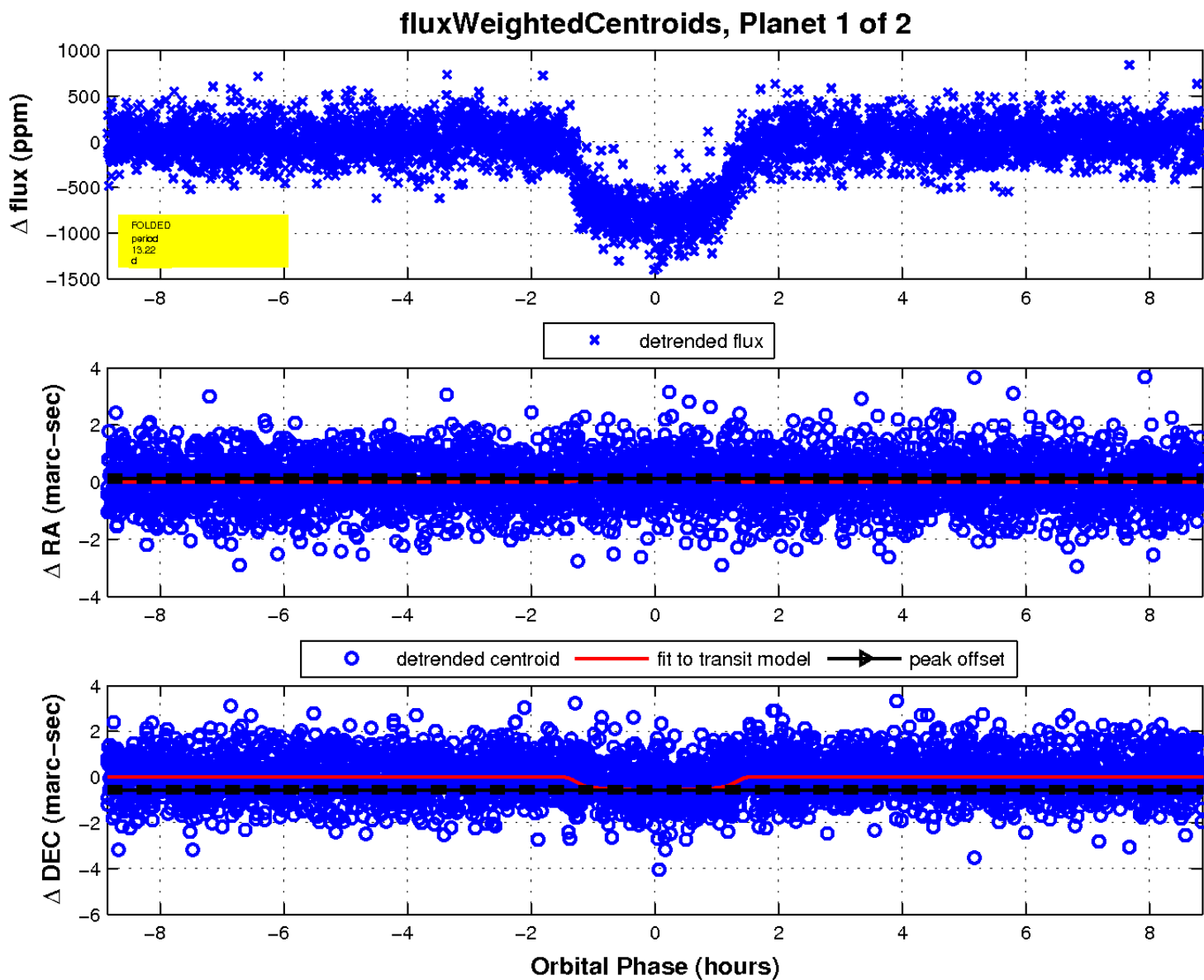
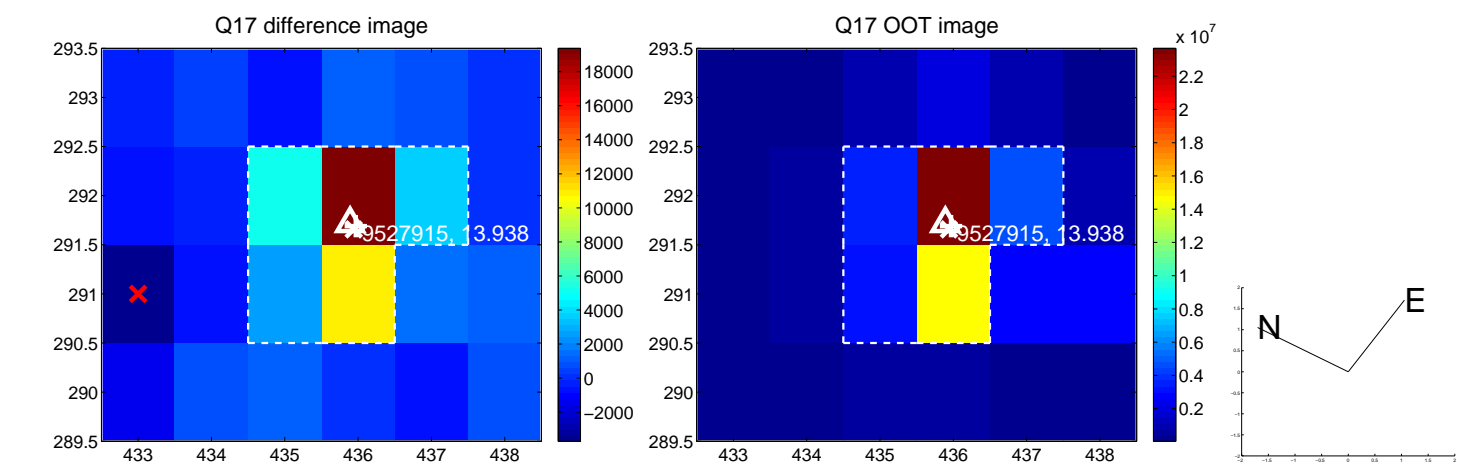
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

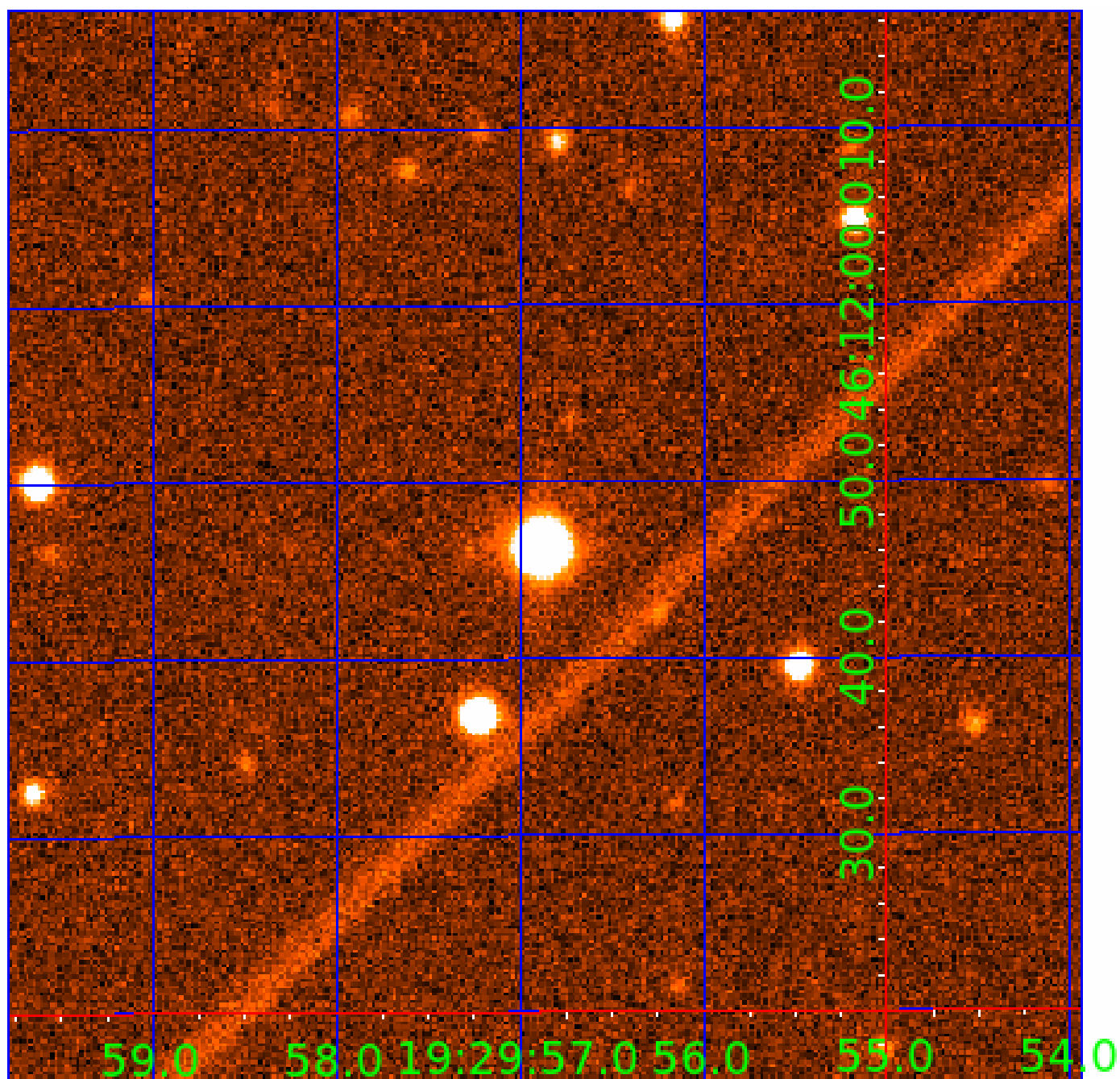


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009527915

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})
009527915-01	OBS	0165.01	13.221748	139.570745	881.4	2.953	84.8	85.1	0.80	5211	2.77	39.62
009527915-02	OBS	No	363.954311	365.860216	366.0	6.967	8.1	8.0	0.80	5211	1.60	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009527915-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009527915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—MOD_NONUNIQ_ALT—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.

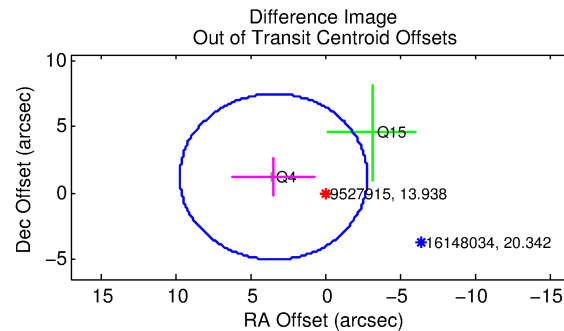
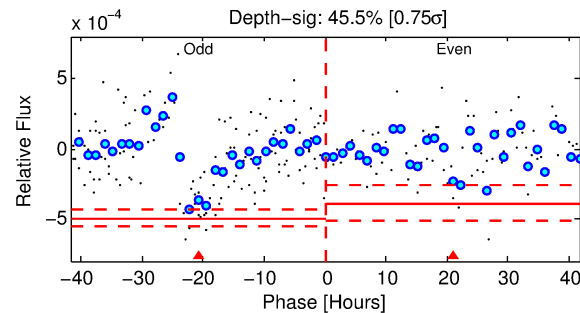
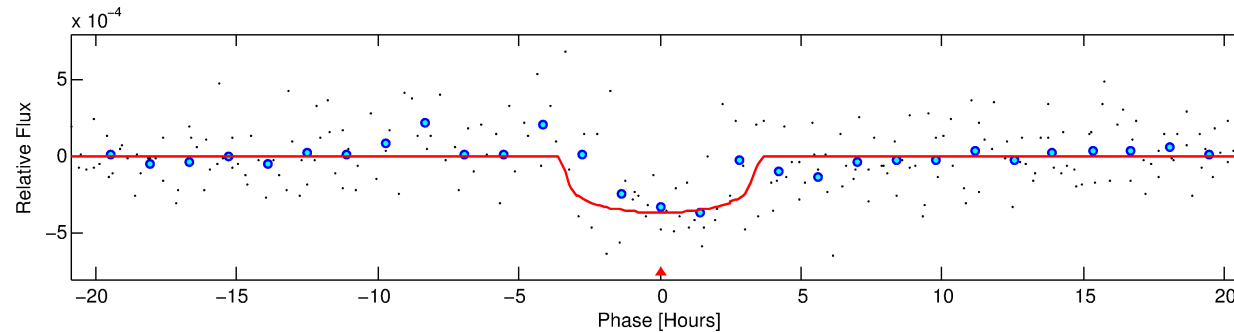
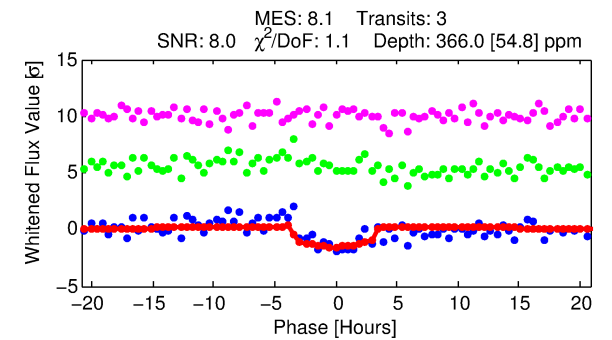
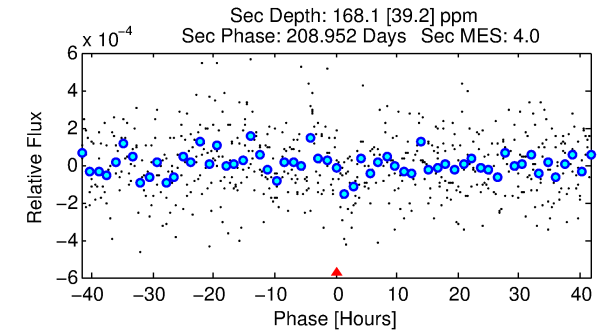
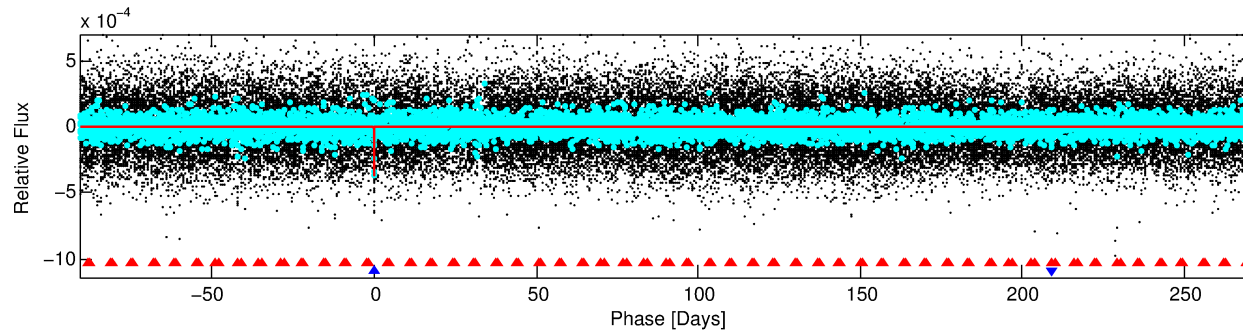
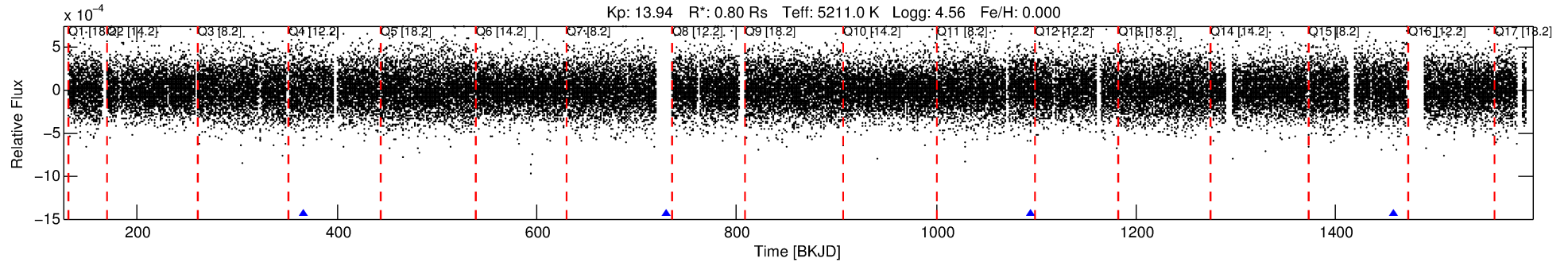
Ephemeris Match Information For 009527915-02

No Significant Match Found

DV One-Page Summary

KIC: 9527915 Candidate: 2 of 2 Period: 363.954 d

KOI: K00165 Corr: No Ephemeris Match



DV Fit Results:

Period = 363.95431 [0.00634] d
Epoch = 365.8602 [0.0128] BKJD
Rp/R* = 0.0183 [0.0295]
a/R* = 317.20 [1887.87]
b = 0.64 [5.63]
Seff = 0.48 [0.06]
Teq = 212 [7] K
Rp = 1.60 [2.58] Re
a = 0.9406 [0.0635] AU
Ag = 32114.11 [103834.34] [0.31σ]
Teffp = 4385 [3544] K [1.18σ]

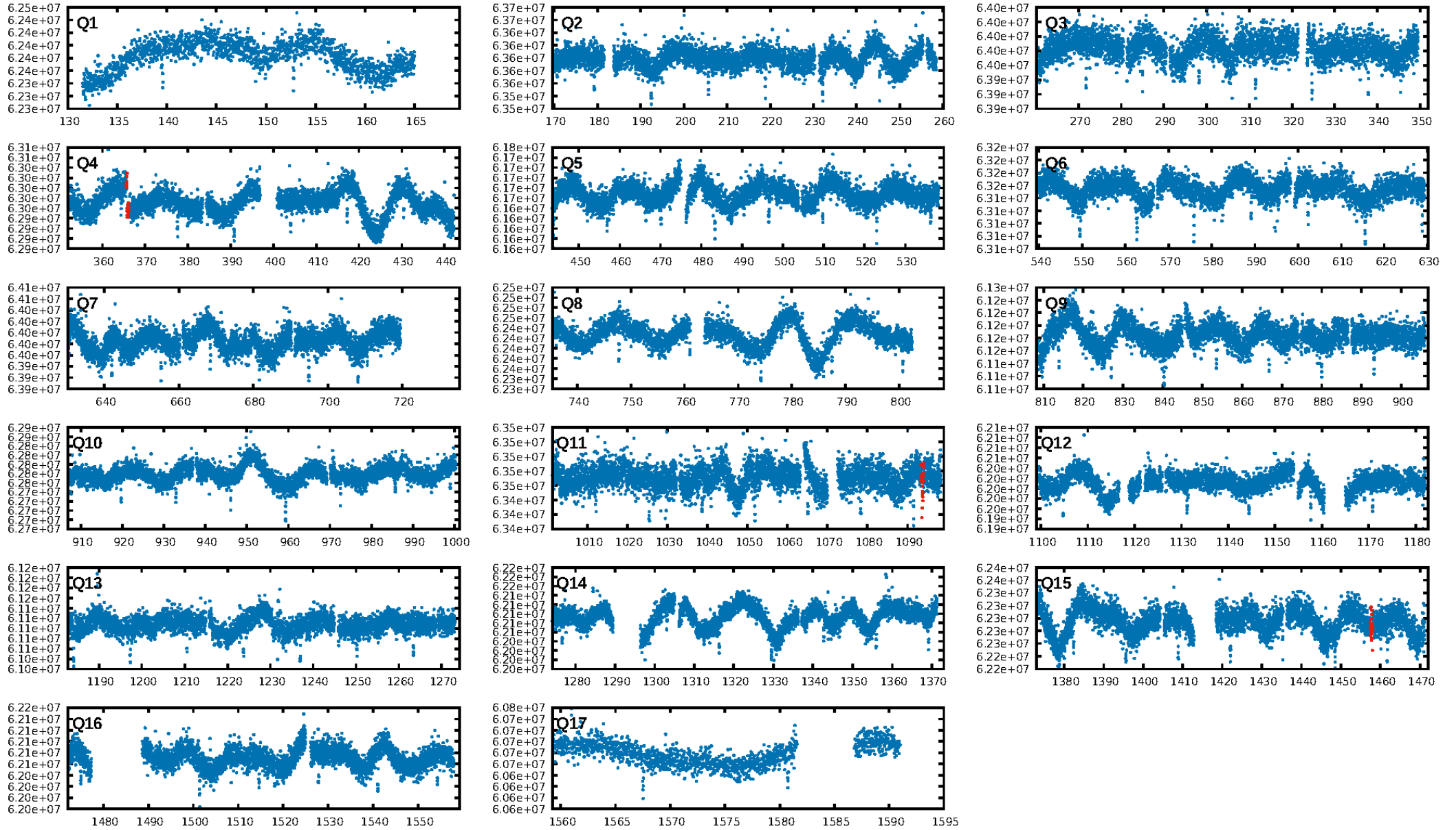
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1112.43σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.9%
ModelChiSquareGof-sig: 95.7%
Bootstrap-pfa: 1.48e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.822
Centroid-sig: 44.2%
Centroid-so: 1.358 arcsec [1.02σ]
OotOffset-rm: 3.644 arcsec [1.74σ]
KicOffset-rm: 3.823 arcsec [1.76σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

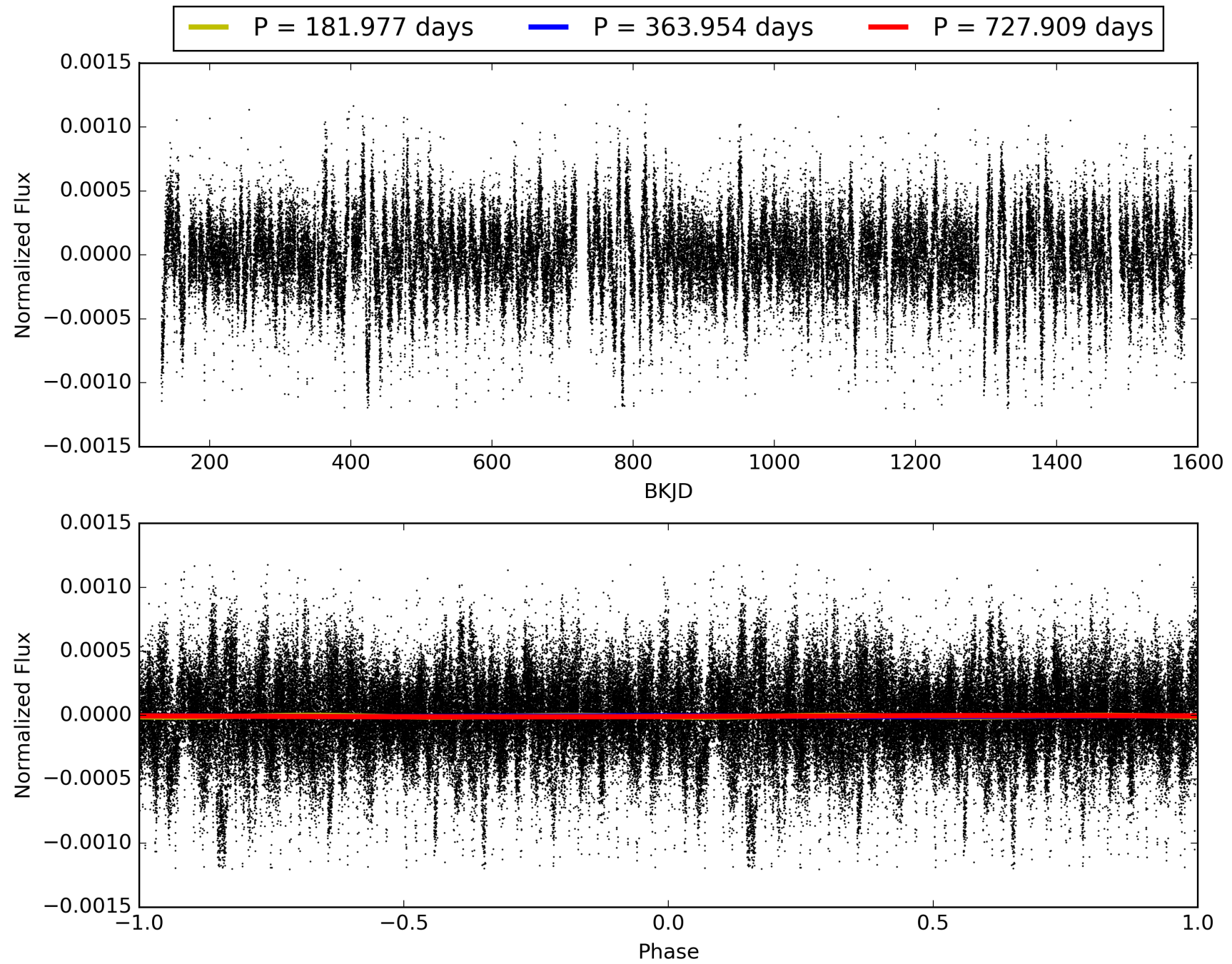
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:32:38 Z

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

TCE 009527915-02, PDC Light Curves

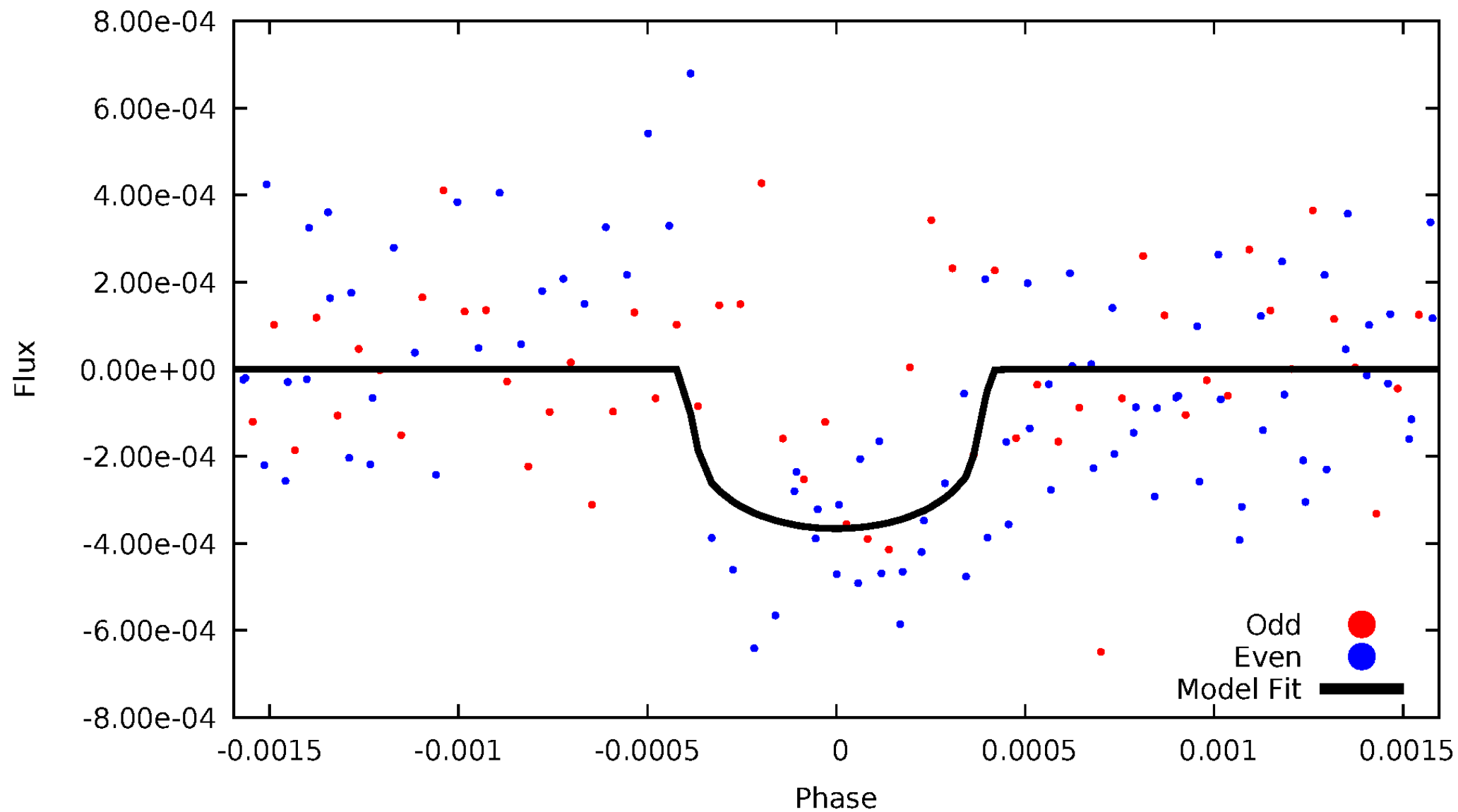


TCE 009527915-02



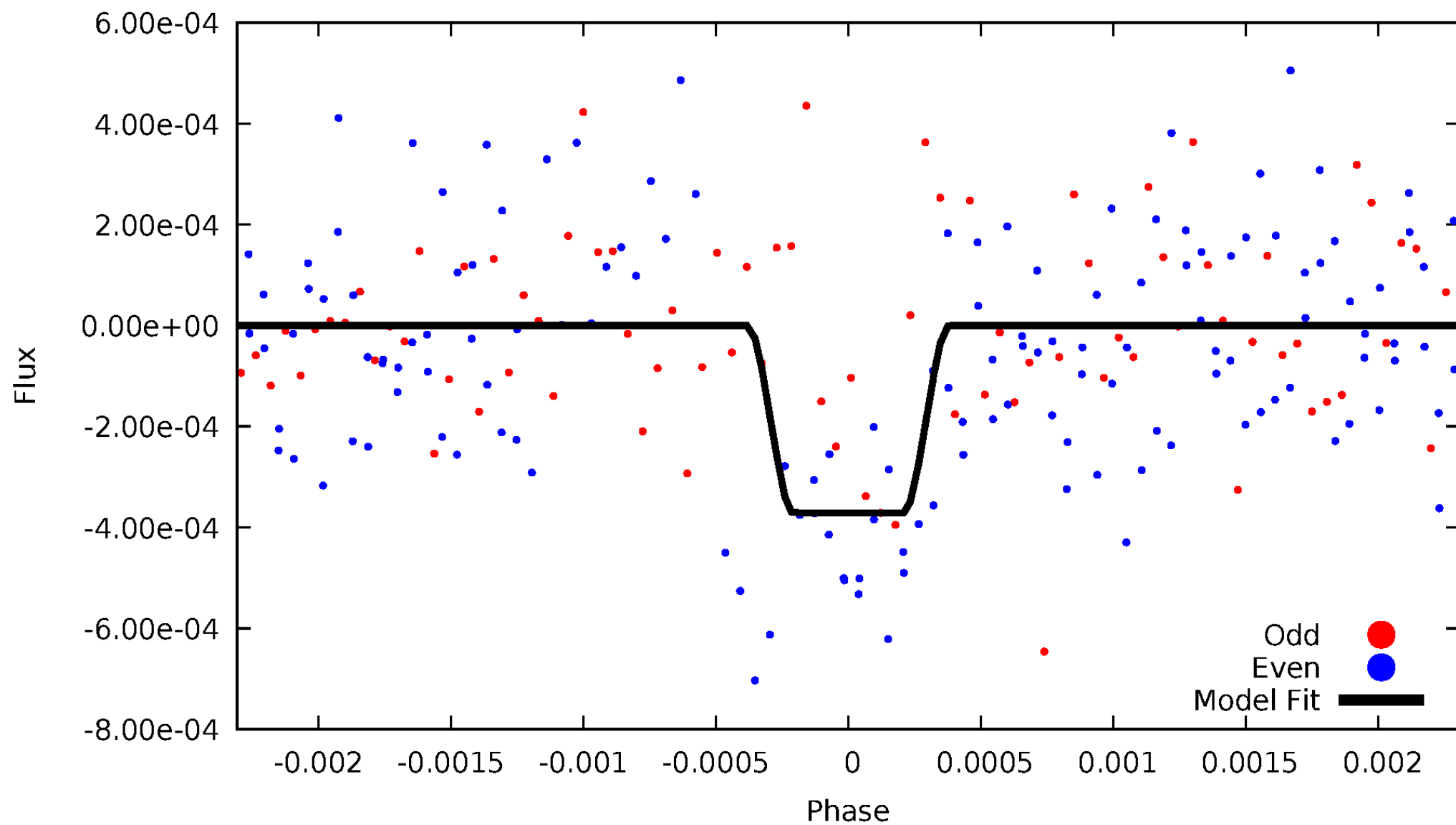
DV Odd/Even

TCE 009527915-02



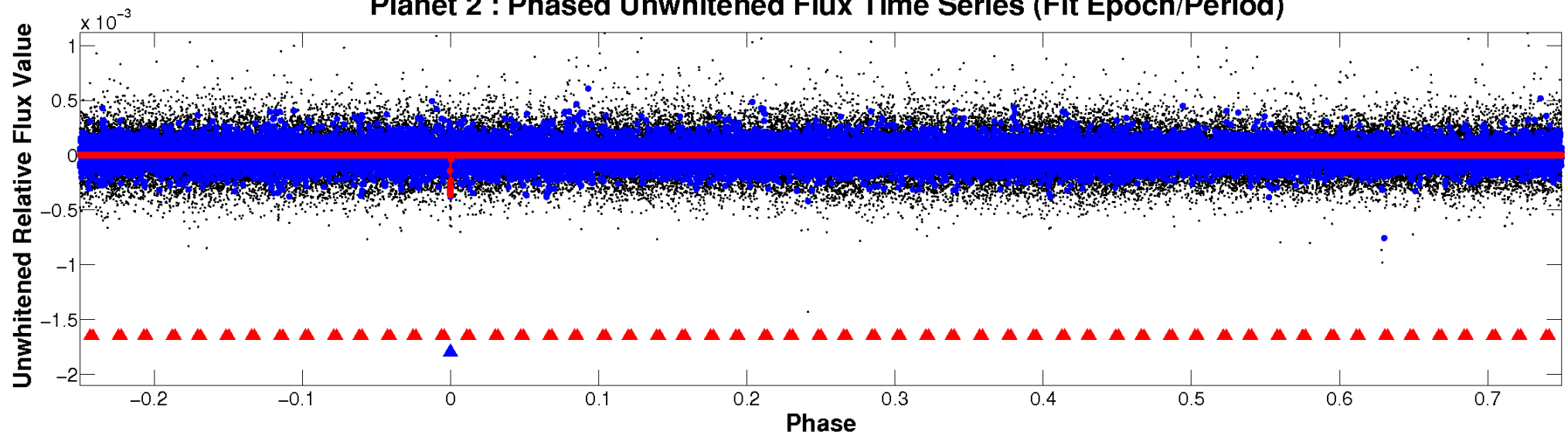
ALT Odd/Even

TCE 009527915-02

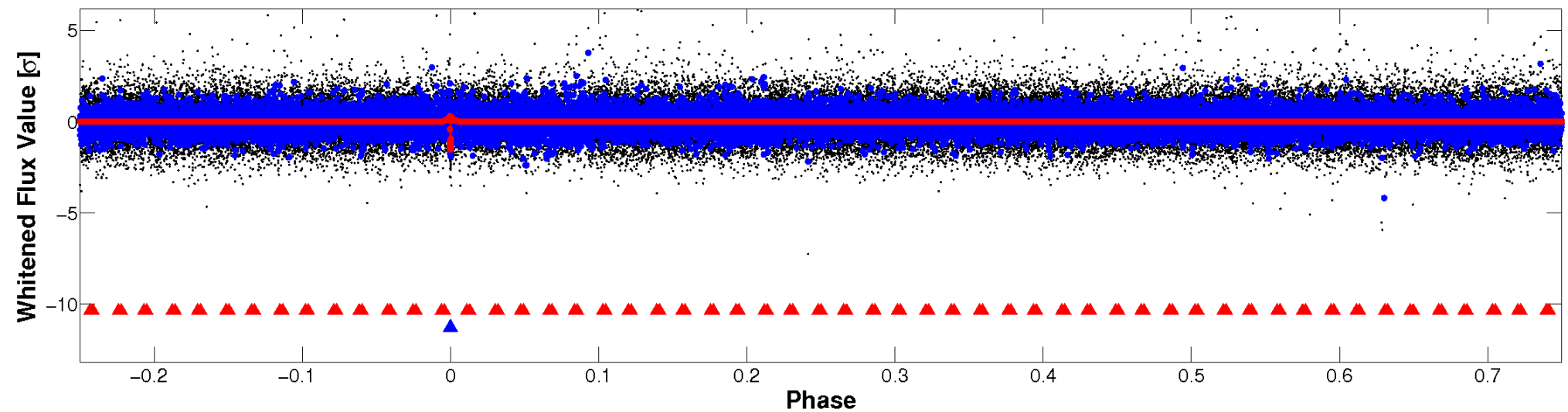


Non-Whitened Vs. Whitened Light Curve

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

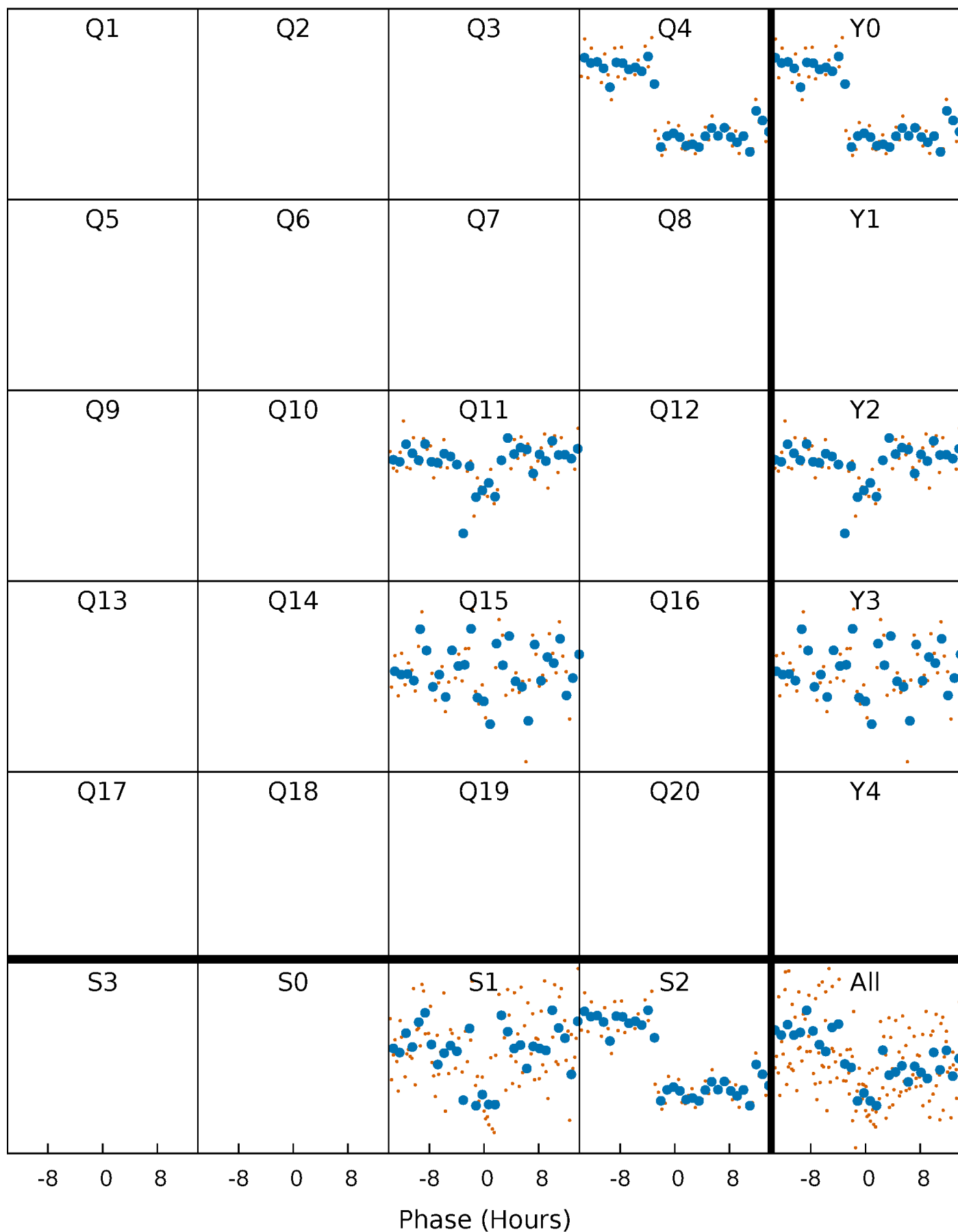


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



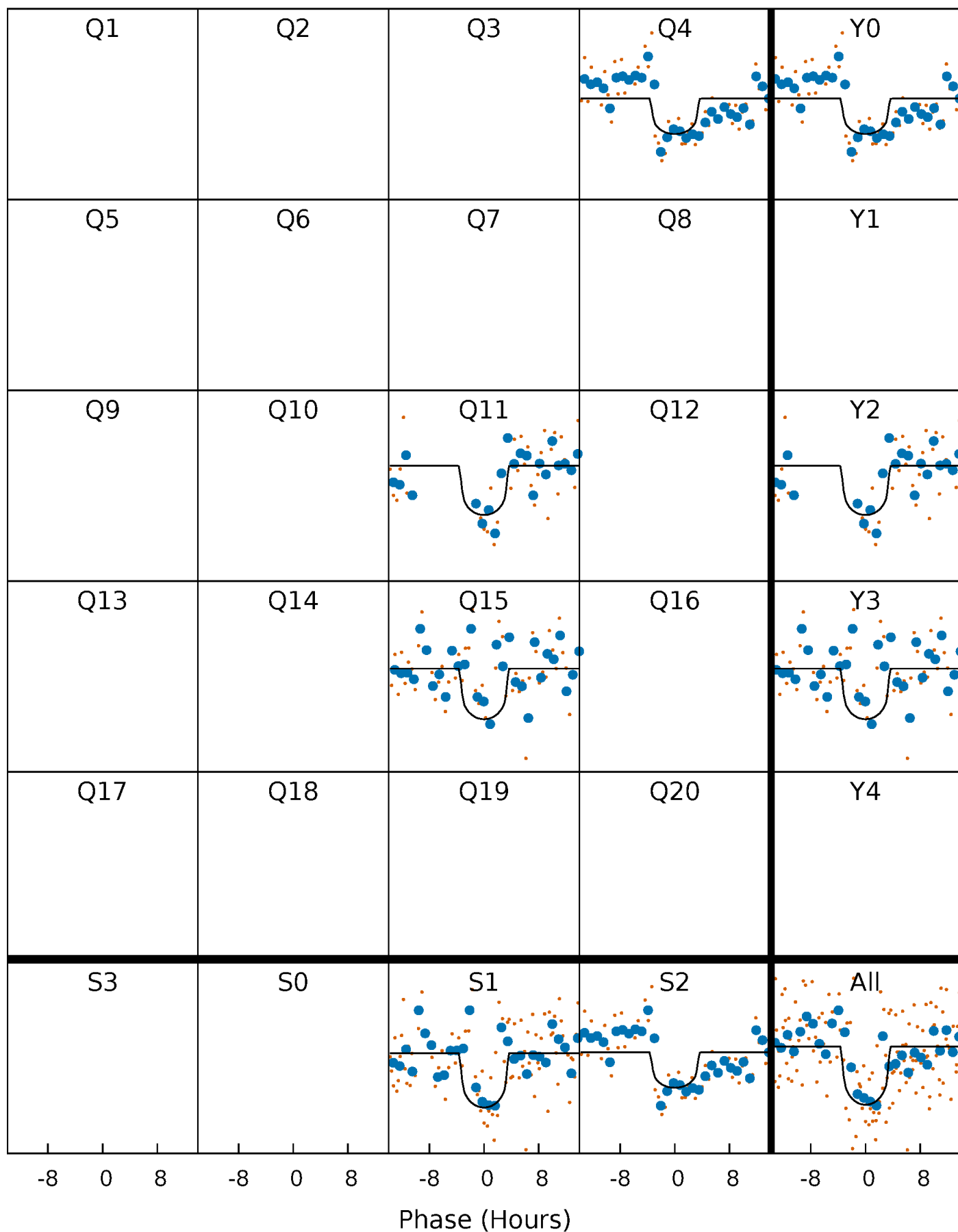
PDC Quarter-Phased Transit Curves

TCE 009527915-02 $P=363.954311$ Days $T_0=365.860216$ (BKJD)



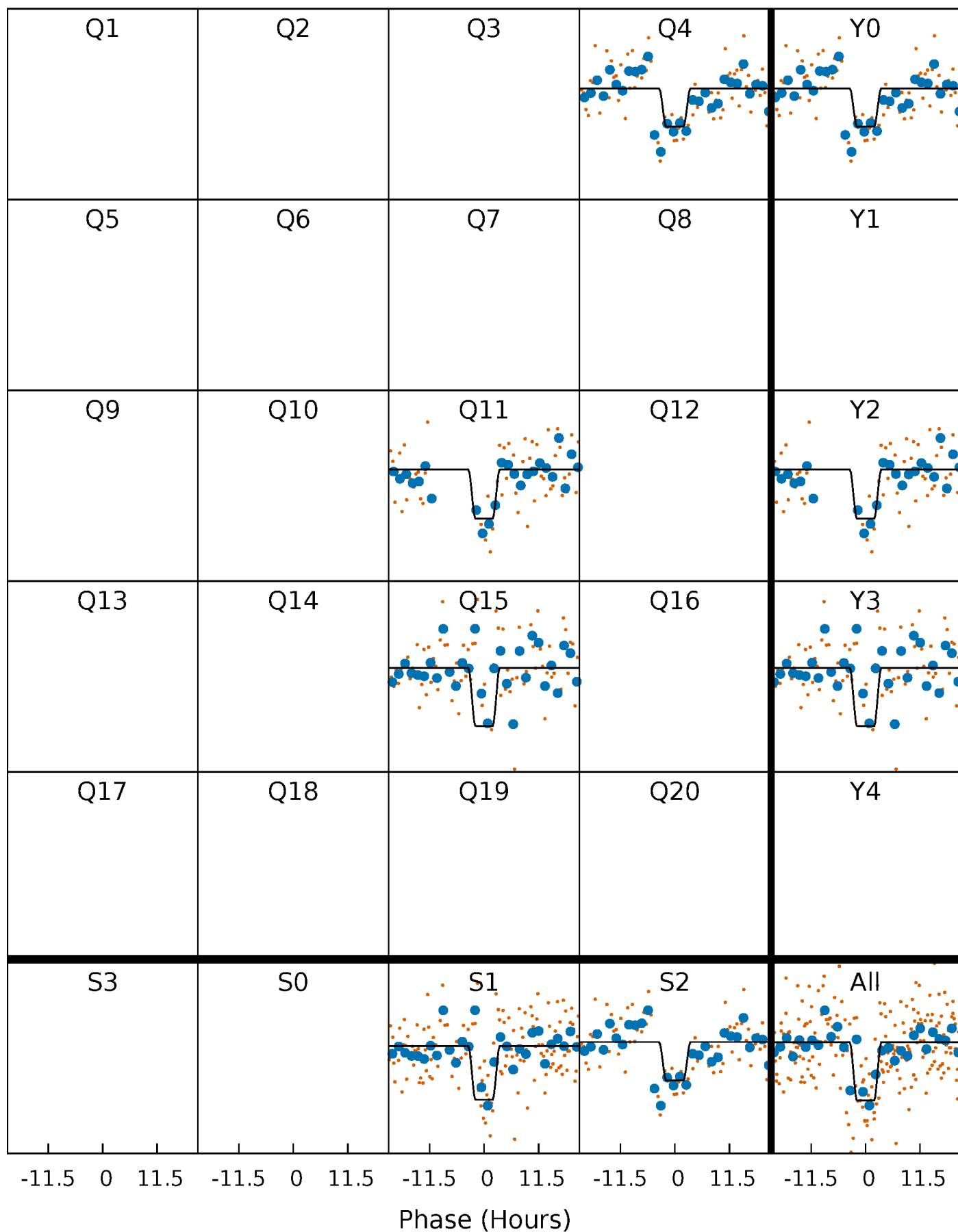
DV Quarter-Phased Transit Curves

TCE 009527915-02 $P=363.954311$ Days $T_0=365.860216$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

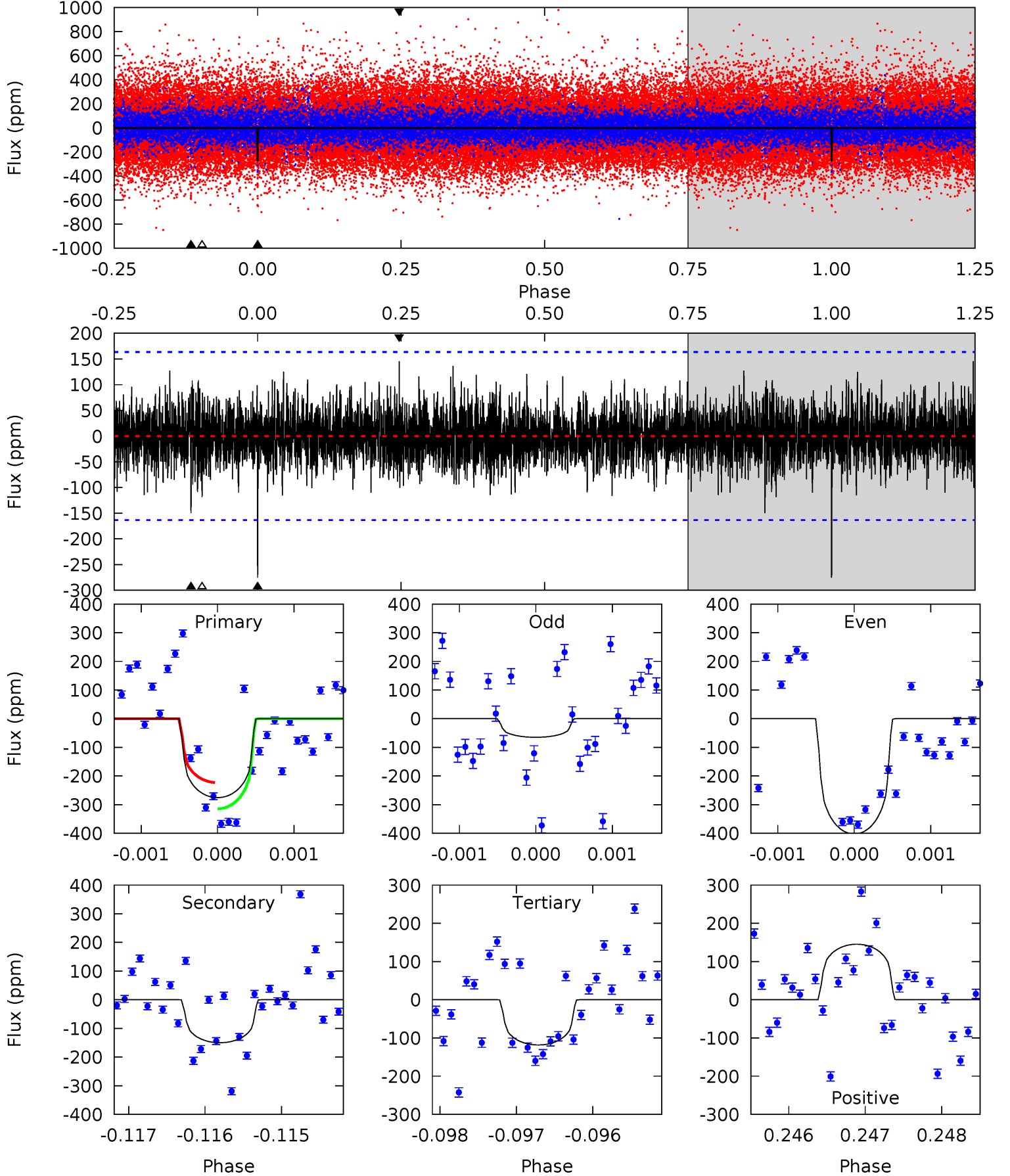
TCE 009527915-02 P=363.933247 Days $T_0=365.909119$ (BKJD)



DV Model-Shift Uniqueness Test

009527915-02, P = 363.954311 Days, E = 1.905905 Days

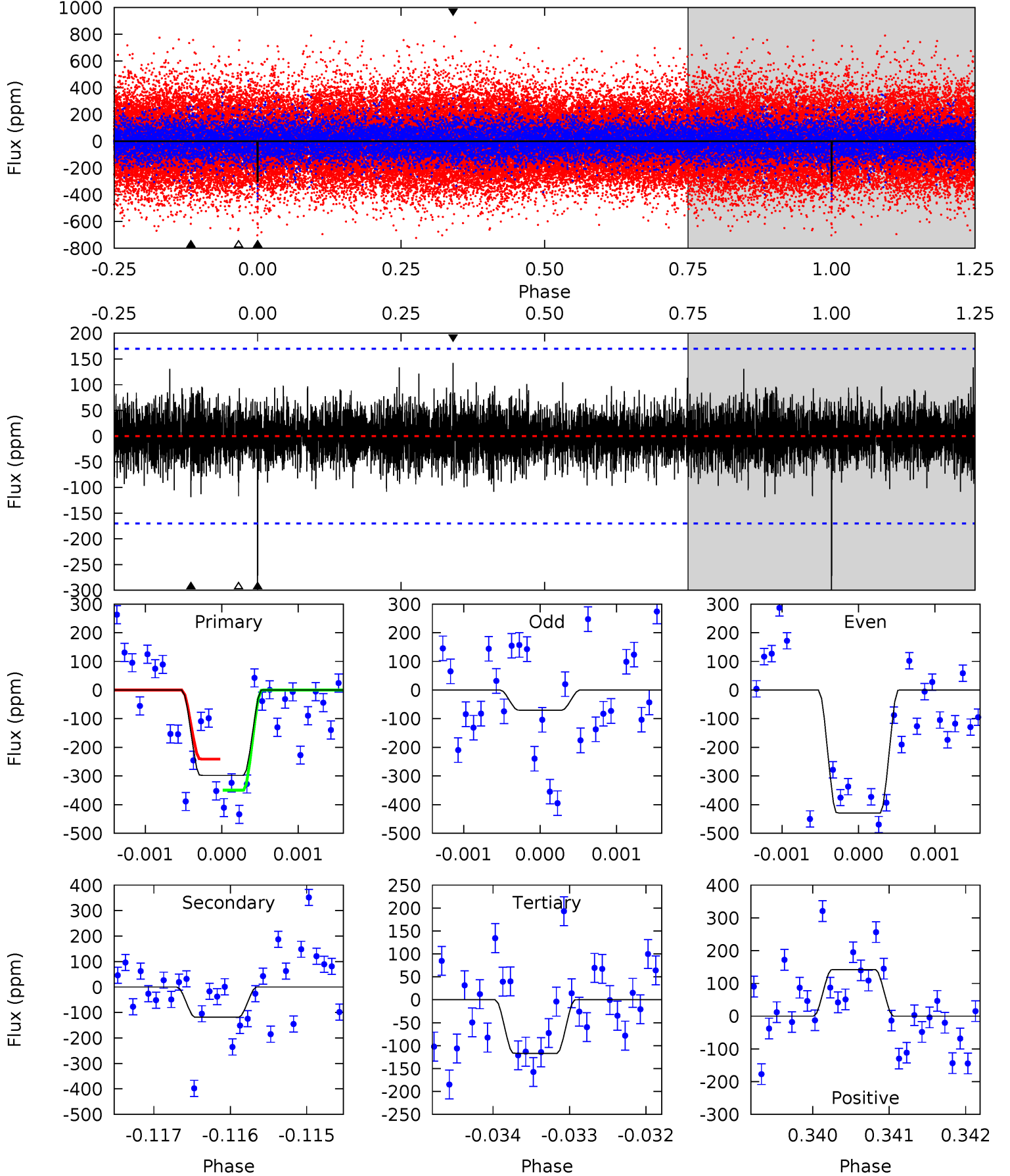
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.23	5.03	3.97	4.87	5.48	3.34	1.22	5.27	4.36	1.06	0.15	5.54	0.75	0.35	1.51



Alt Model-Shift Uniqueness Test

009527915-02, P = 363.933247 Days, E = 1.975872 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.66	3.85	3.79	4.61	5.51	3.38	1.03	5.87	5.05	0.06	-0.76	5.59	0.72	0.32	1.74



Stellar Parameters For KIC 009527915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5211^{+103}_{-103}	$4.556^{+0.032}_{-0.059}$	$0.000^{+0.150}_{-0.150}$	$0.799^{+0.060}_{-0.038}$	$0.838^{+0.046}_{-0.046}$	$2.312^{+0.316}_{-0.434}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+8%/-5%	+5%/-5%	+14%/-19%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 009527915-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-150 ± 30	$2.46^{+2.19}_{-1.69}$	297^{+9}_{-7}	3794^{+2294}_{-701}	$12293^{+105082}_{-8973}$
Alt.	-119 ± 31	$2.63^{+2.20}_{-1.64}$	297^{+8}_{-7}	3539^{+1557}_{-583}	7865^{+46997}_{-5482}

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 $A_{obs} \gg 1.0$

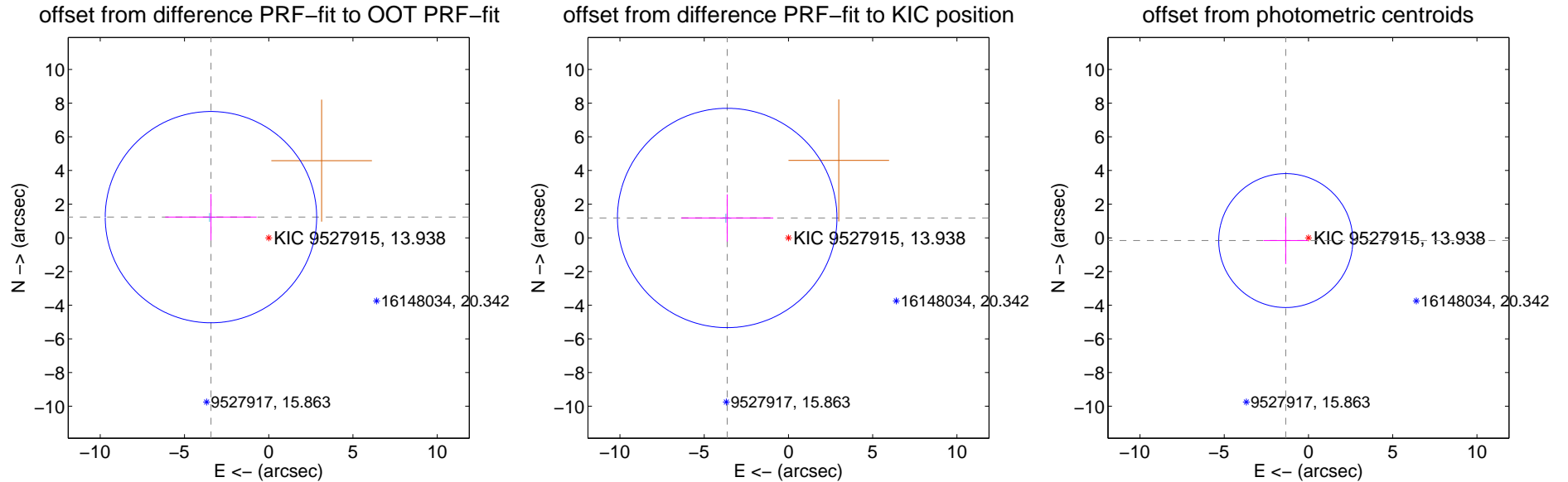
DV Centroid Data

Supplemental centroid analysis for 009527915-02. Kepler magnitude: 13.94. Transit SNR 7.97

There are 1 quarters with good PRF difference image offsets

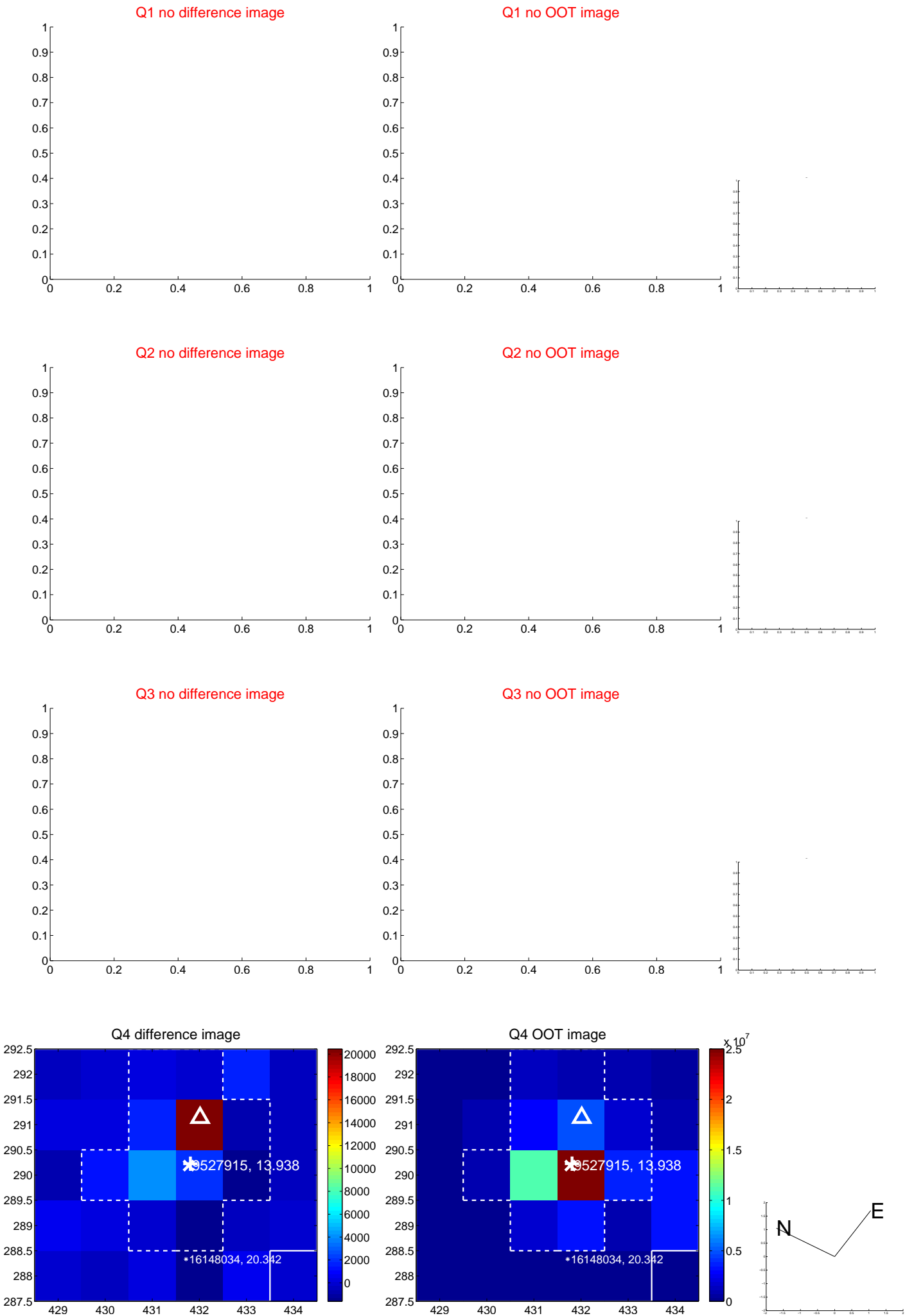
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.644 ± 2.092	1.74	3.430 ± 2.716	1.229 ± 1.379
PRF-fit source offset from KIC position	3.823 ± 2.172	1.76	3.636 ± 2.738	1.180 ± 1.404
photometric centroid source offset	1.36 ± 1.33	1.02	1.35 ± 1.33	-0.16 ± 1.39



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.



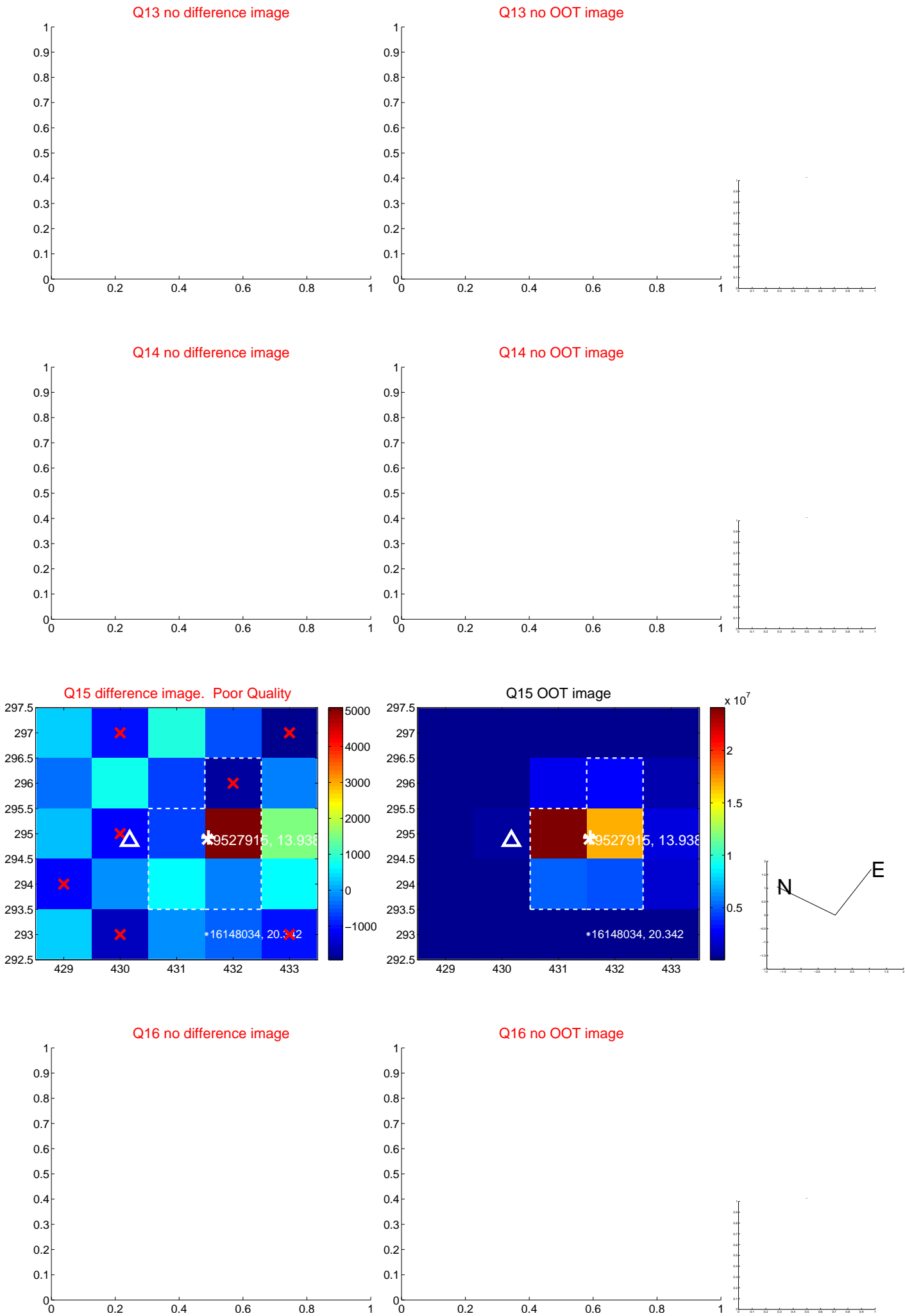
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



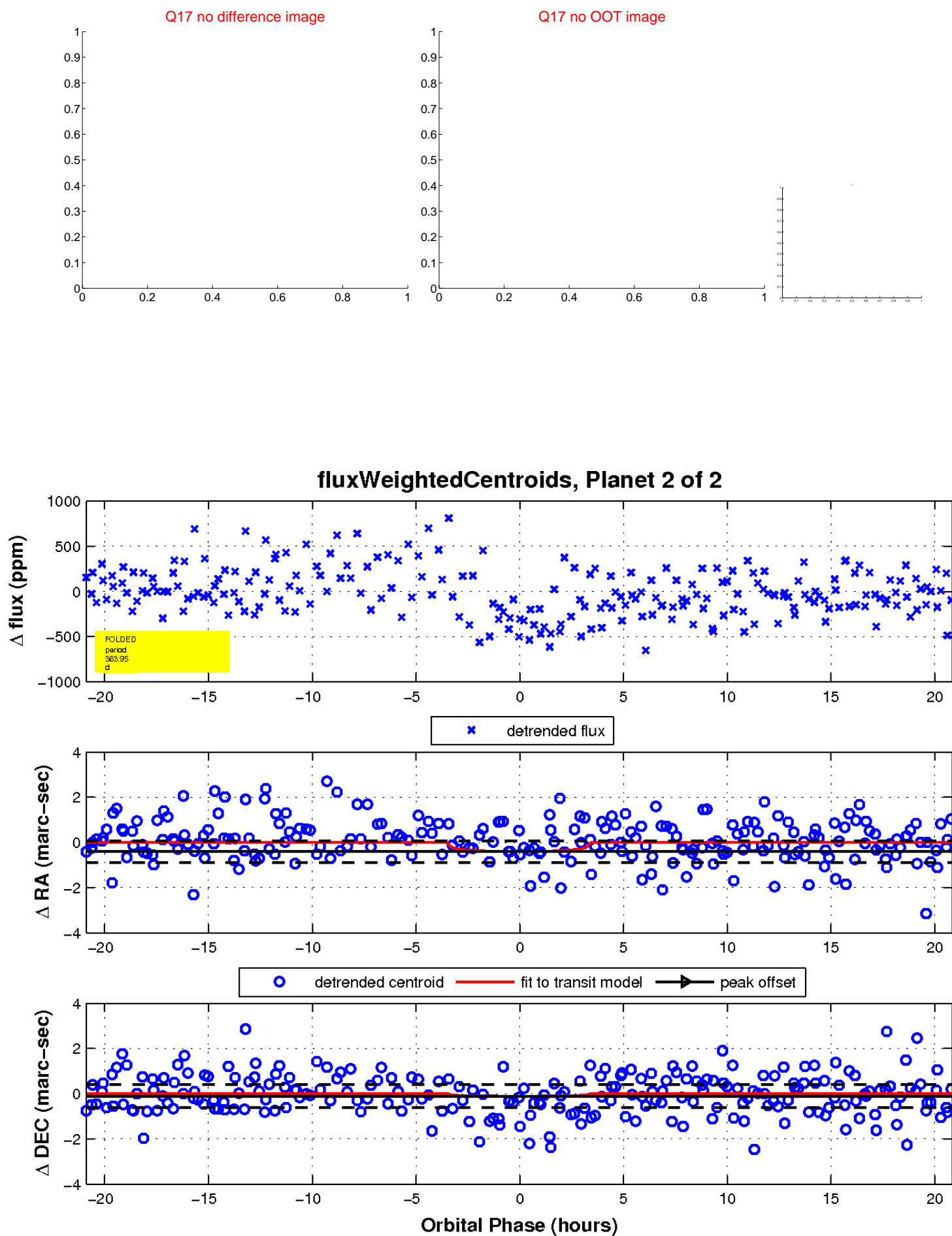
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

