

KIC 004736569

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})
004736569-01	OBS	1996.01	10.132028	132.908890	919.8	3.294	31.4	34.4	0.56	4777	1.89	25.70
004736569-02	OBS	1996.02	7.074032	136.632396	261.3	2.606	9.1	10.5	0.56	4777	1.09	41.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004736569-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004736569-02	OBS	PC	0.95	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 004736569-01

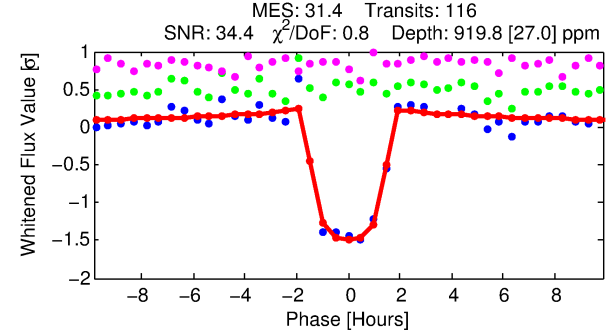
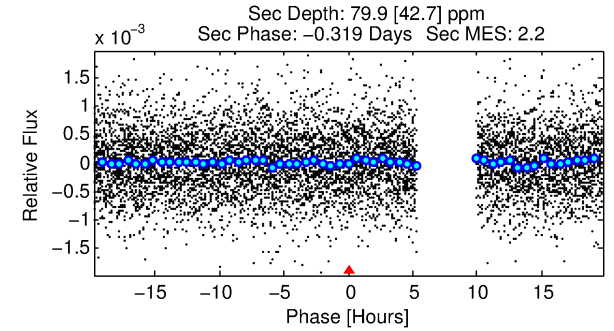
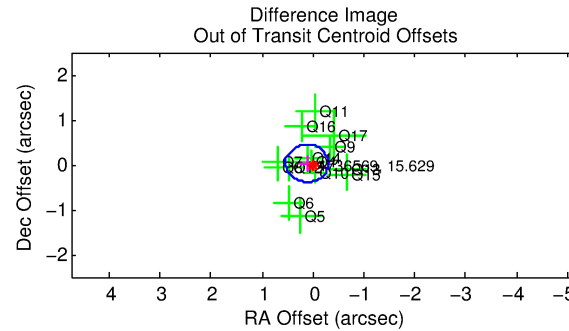
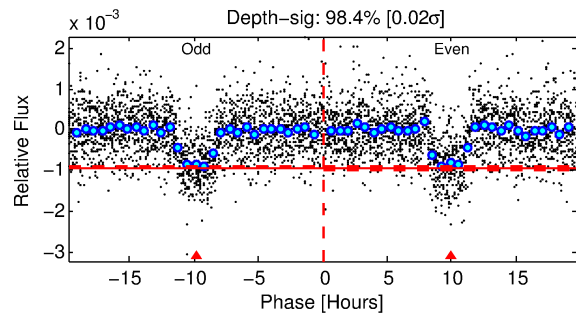
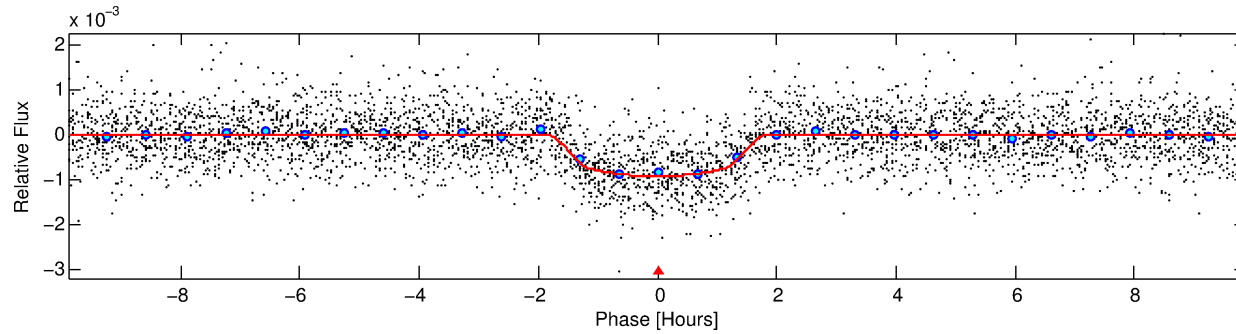
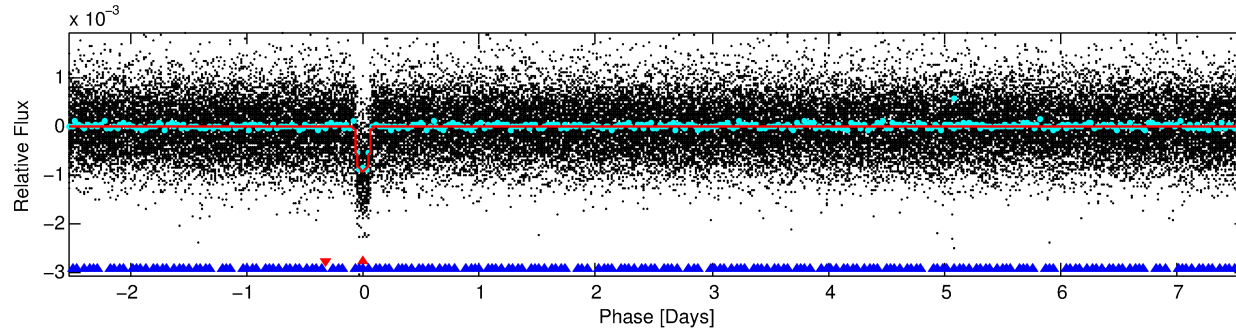
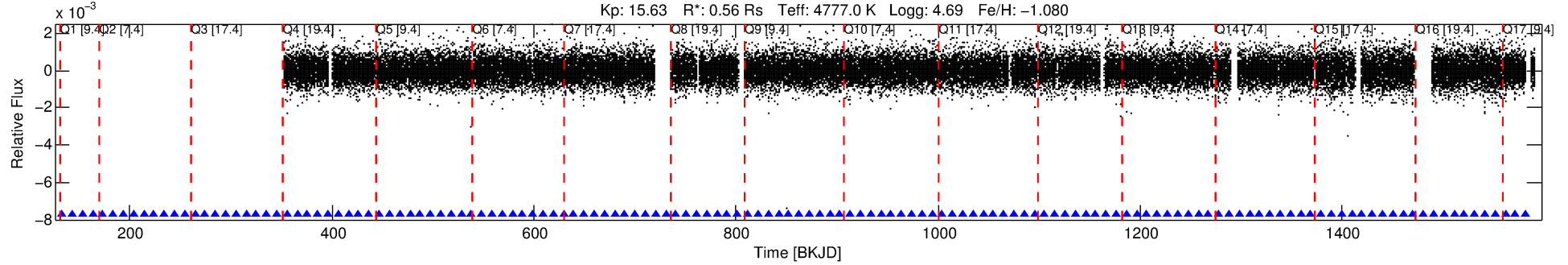
No Significant Match Found

DV One-Page Summary

KIC: 4736569 Candidate: 1 of 2 Period: 10.132 d

KOI: K01996.01 Corr: 0.976

Kp: 15.63 R*: 0.56 Rs Teff: 4777.0 K Logg: 4.69 Fe/H: -1.080



DV Fit Results:

Period = 10.13203 [0.00003] d
Epoch = 132.9089 [0.0023] BKJD
Rp/R* = 0.0308 [0.0068]
a/R* = 15.64 [13.04]
b = 0.79 [0.41]
Seff = 25.70 [4.22]
Teq = 574 [24] K
Rp = 1.89 [0.43] Re
a = 0.0756 [0.0044] AU
Ag = 70.65 [49.25] [1.41σ]
Teffp = 2573 [454] K [4.40σ]

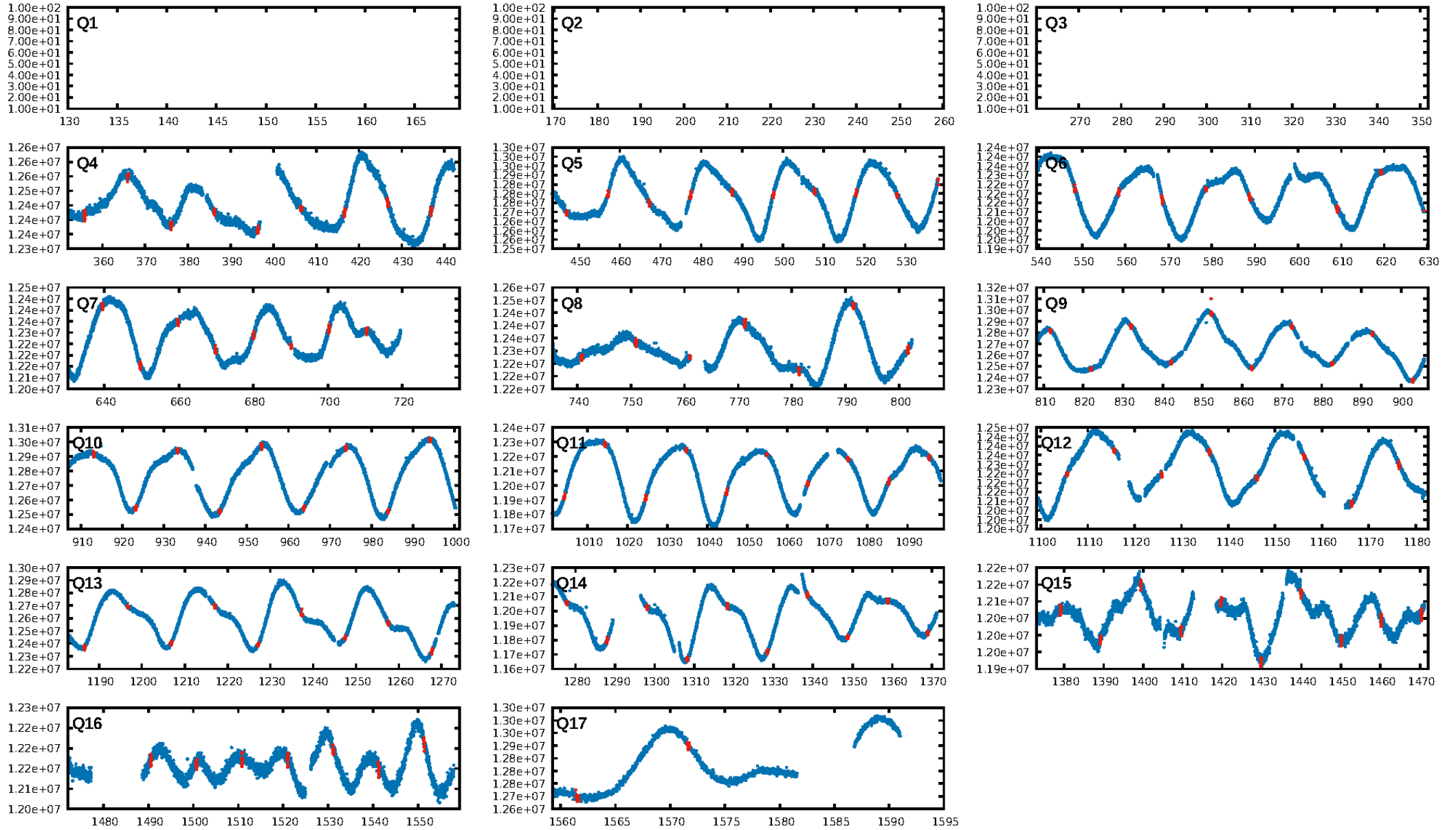
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.47σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.77e-198
RollingBand-fgt: 1.00 [114/114]
GhostDiagnostic-chr: 1.902
Centroid-sig: 0.0%
Centroid-so: 1.089 arcsec [3.20σ]
OotOffset-rm: 0.121 arcsec [0.87σ]
KicOffset-rm: 0.106 arcsec [0.78σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

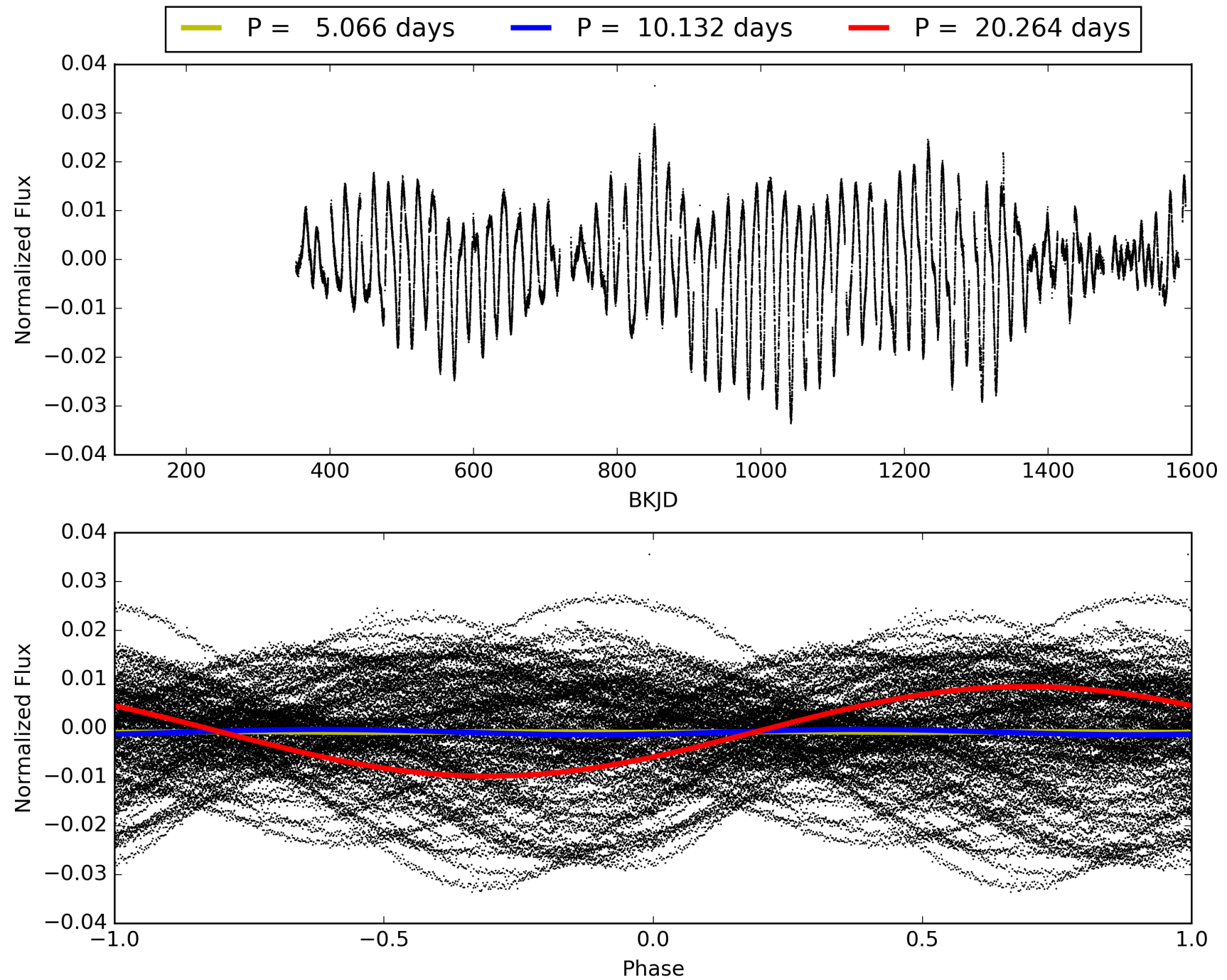
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:49:45 Z

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

TCE 004736569-01, PDC Light Curves

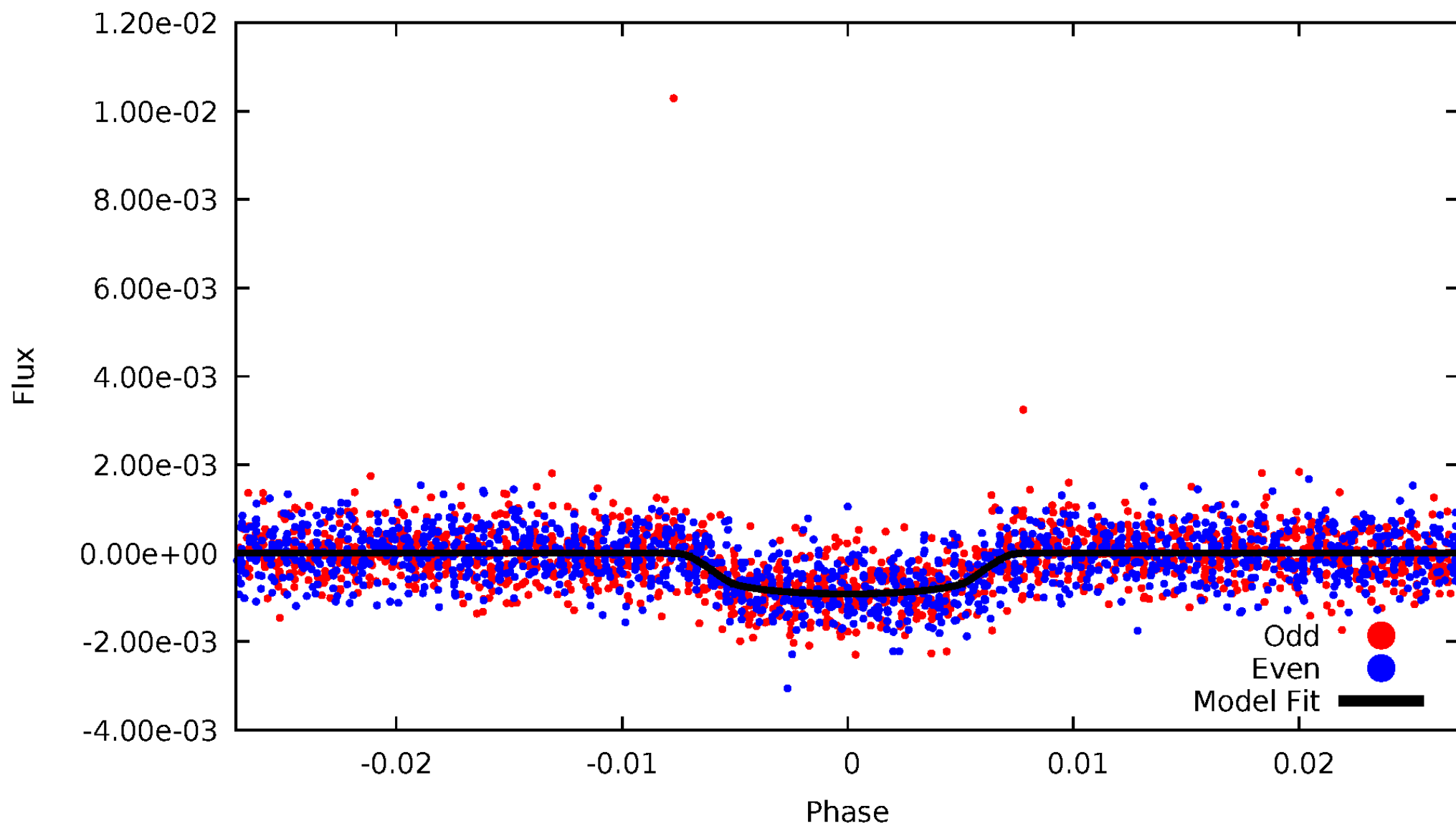


TCE 004736569-01



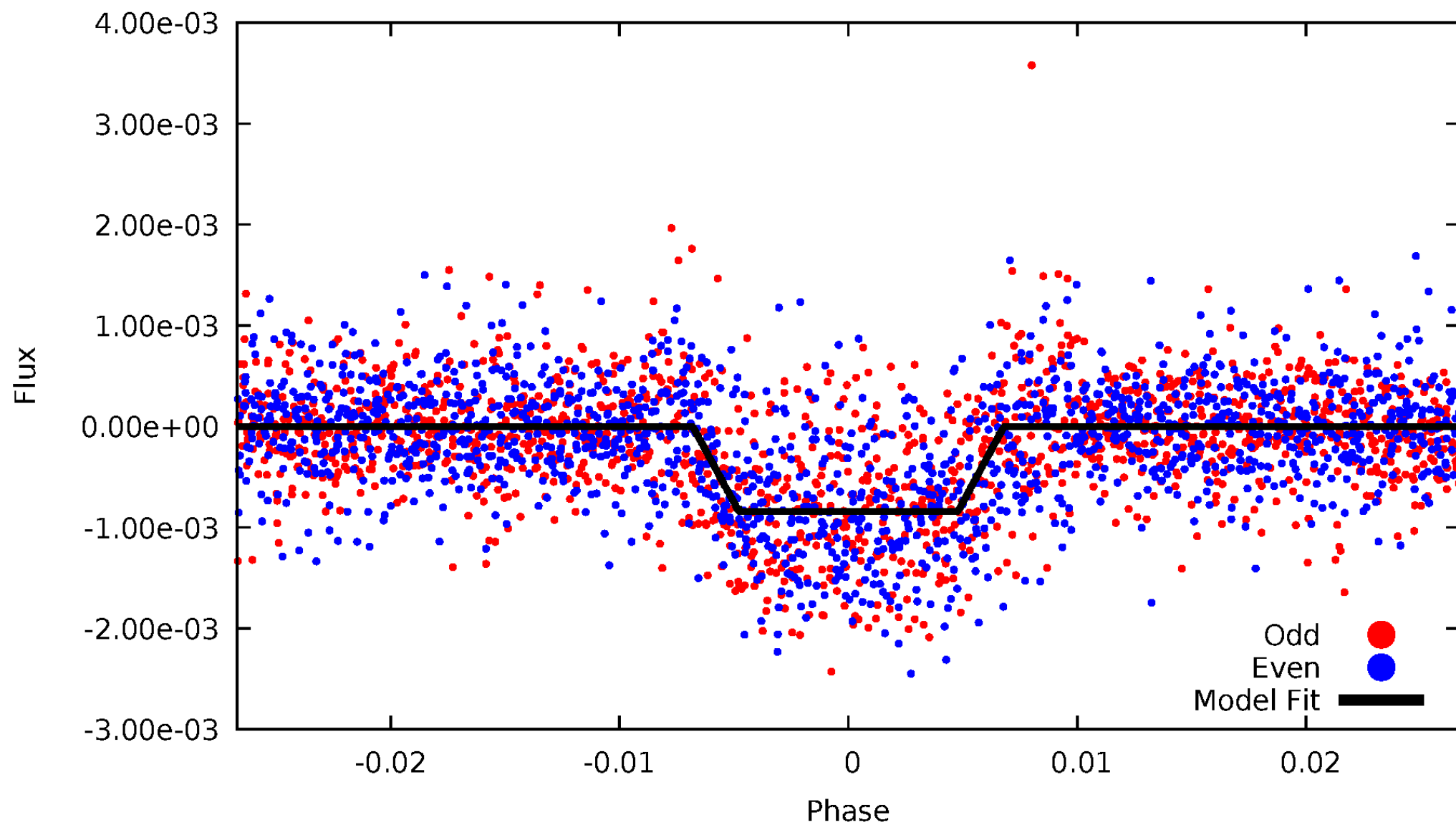
DV Odd/Even

TCE 004736569-01

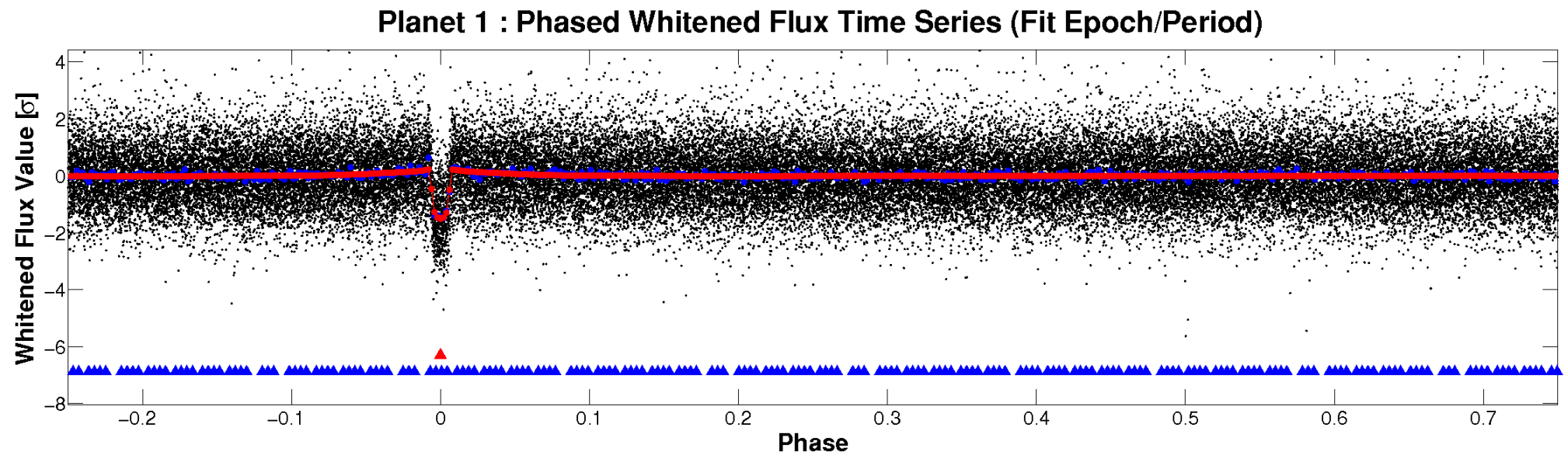
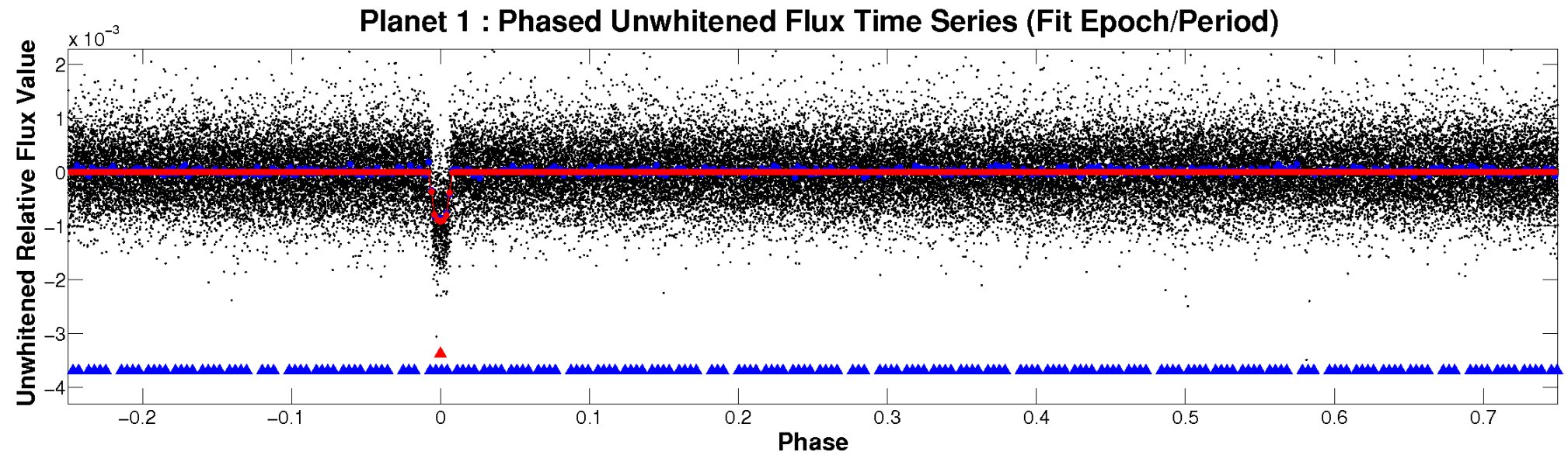


ALT Odd/Even

TCE 004736569-01

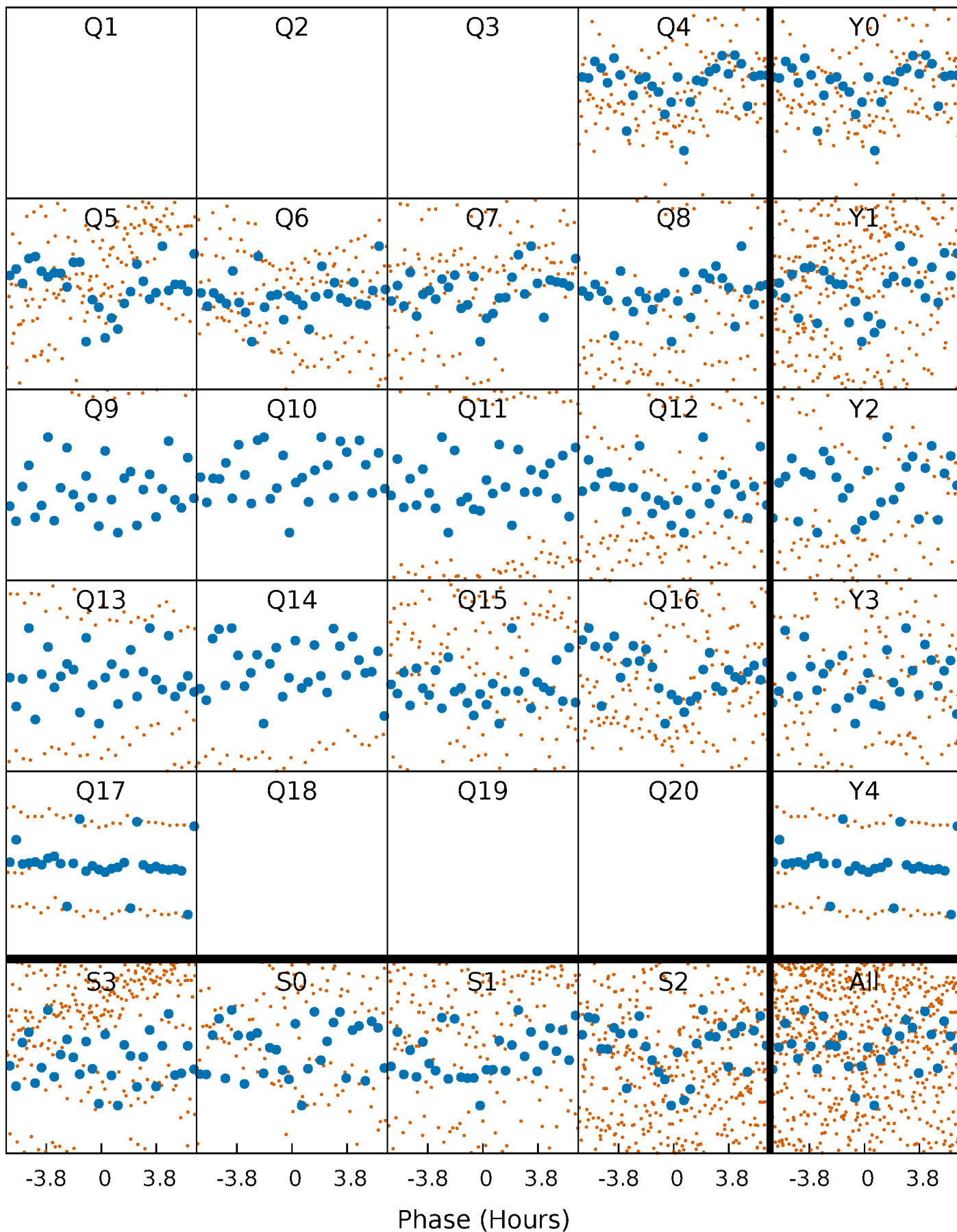


Non-Whitened Vs. Whitened Light Curve



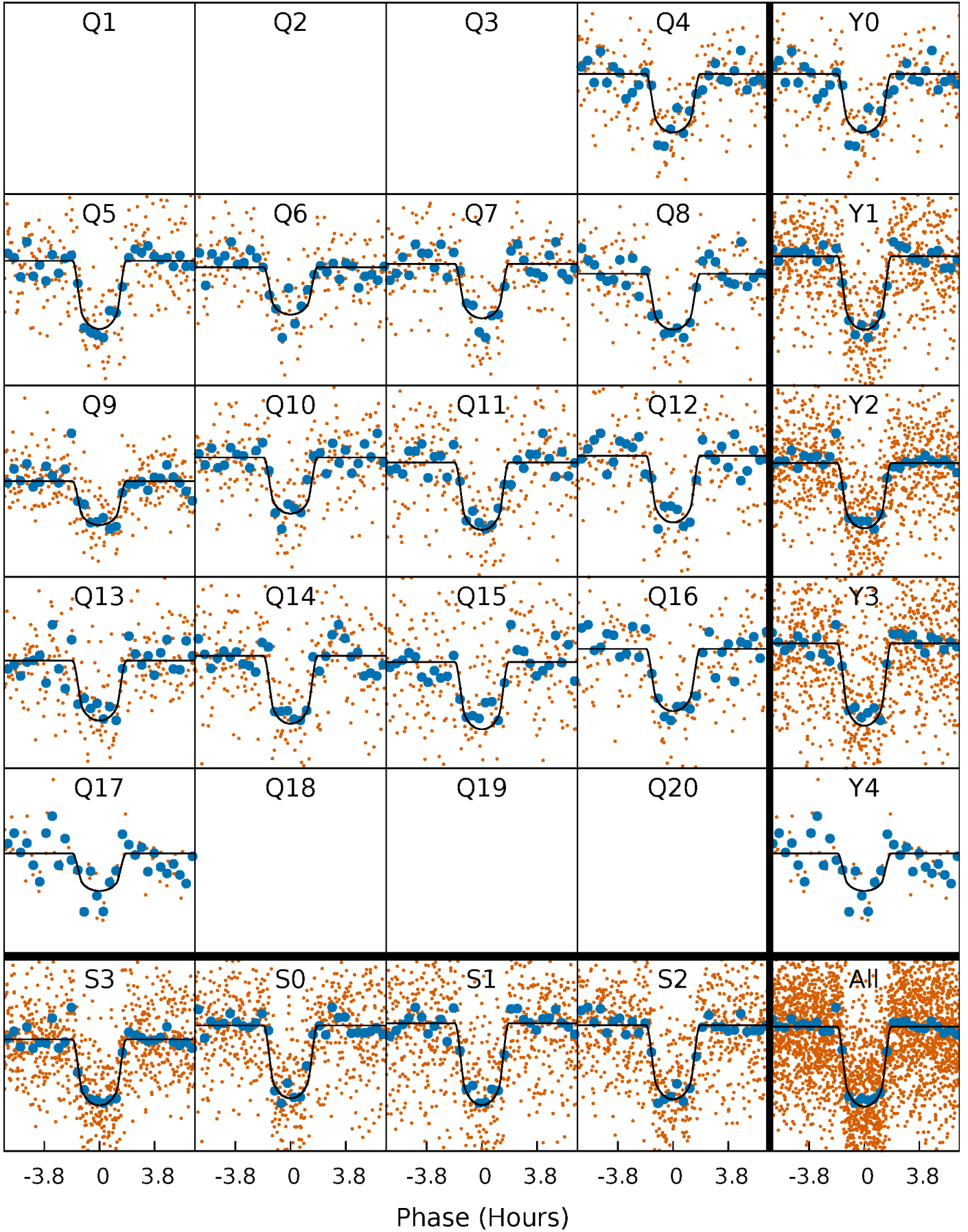
PDC Quarter-Phased Transit Curves

TCE 004736569-01 P= 10.132028 Days $T_0=132.908890$ (BKJD)



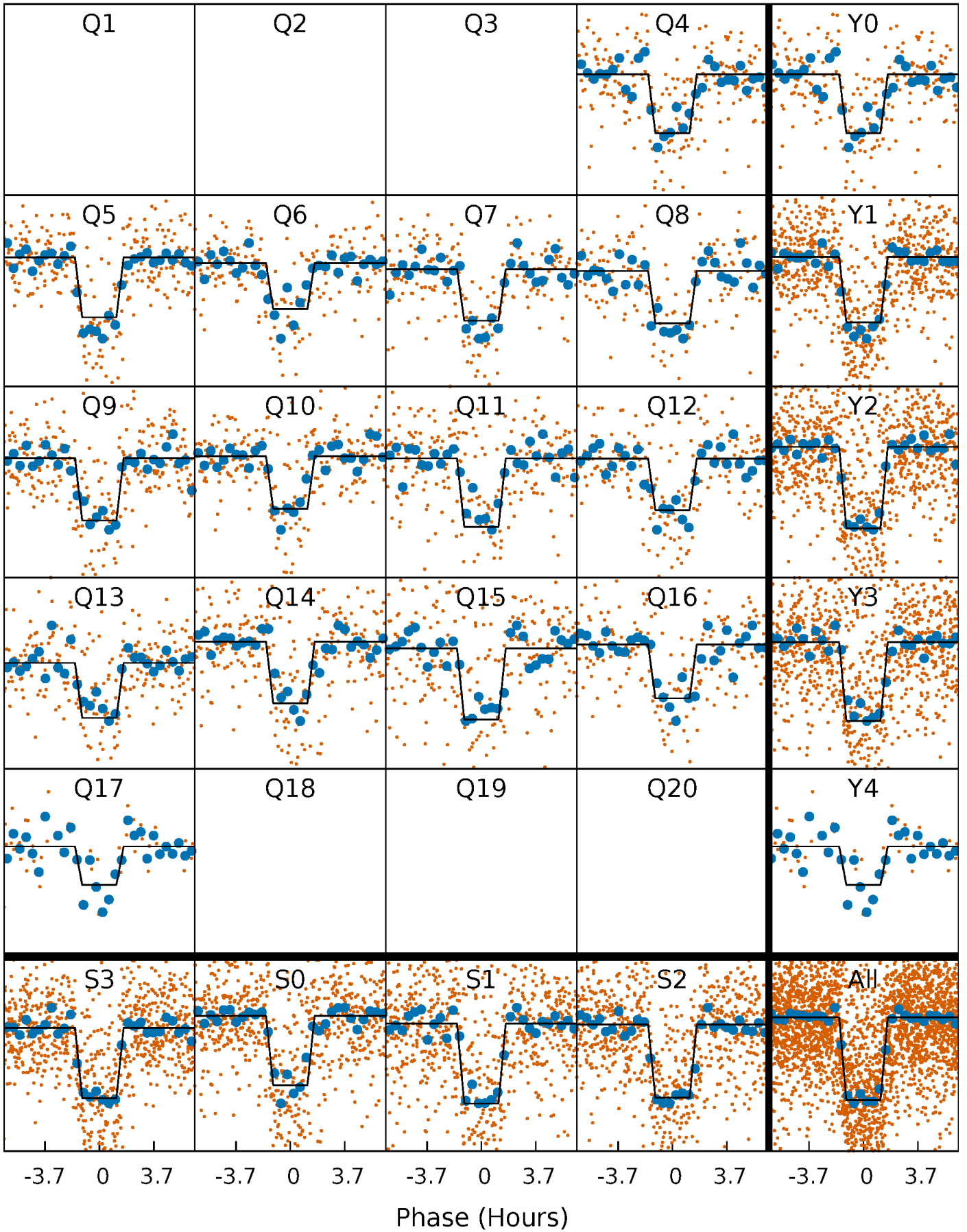
DV Quarter-Phased Transit Curves

TCE 004736569-01 P= 10.132028 Days $T_0=132.908890$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

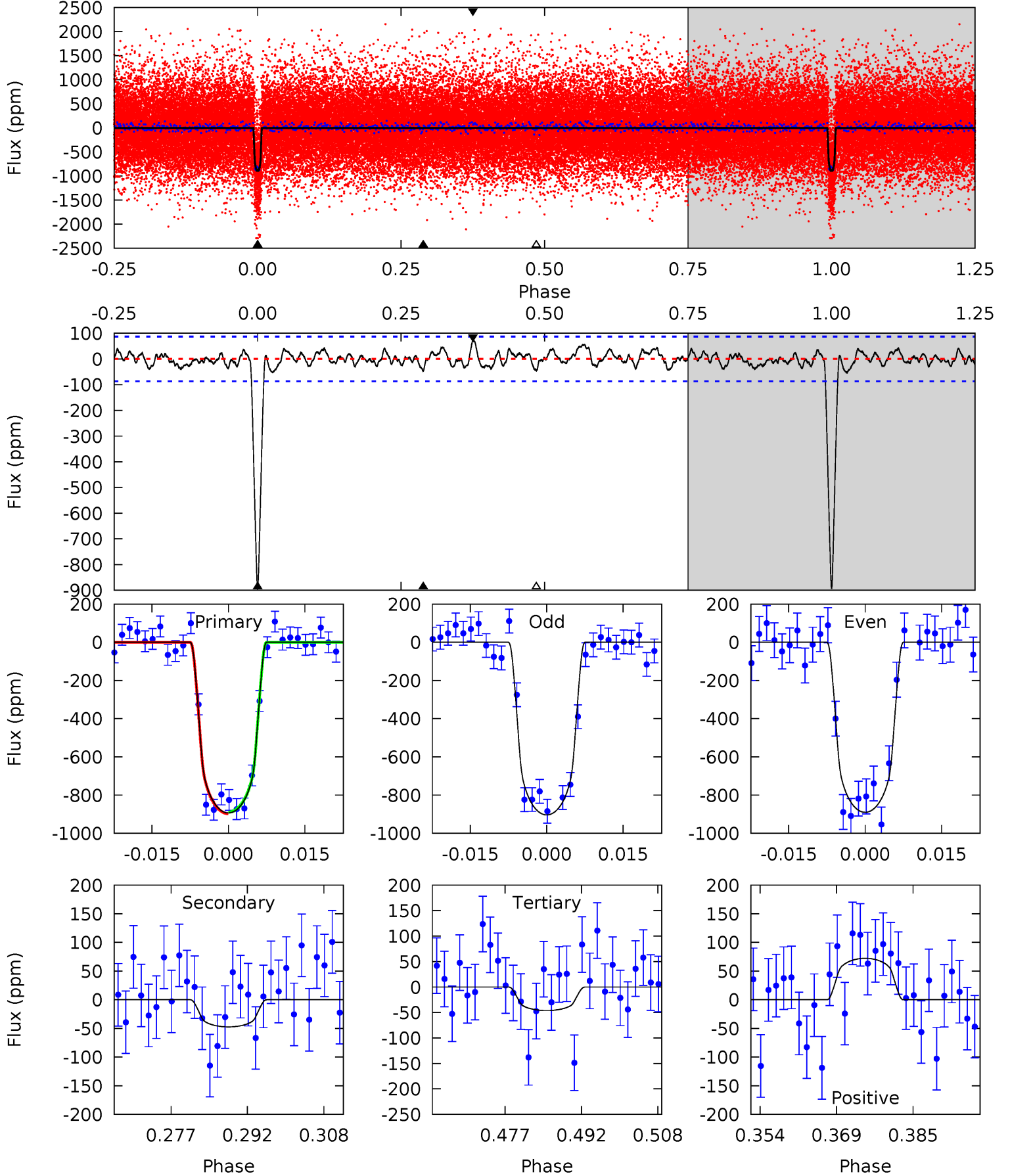
TCE 004736569-01 P= 10.131929 Days $T_0=132.917321$ (BKJD)



DV Model-Shift Uniqueness Test

004736569-01, $P = 10.132028$ Days, $E = 132.908890$ Days

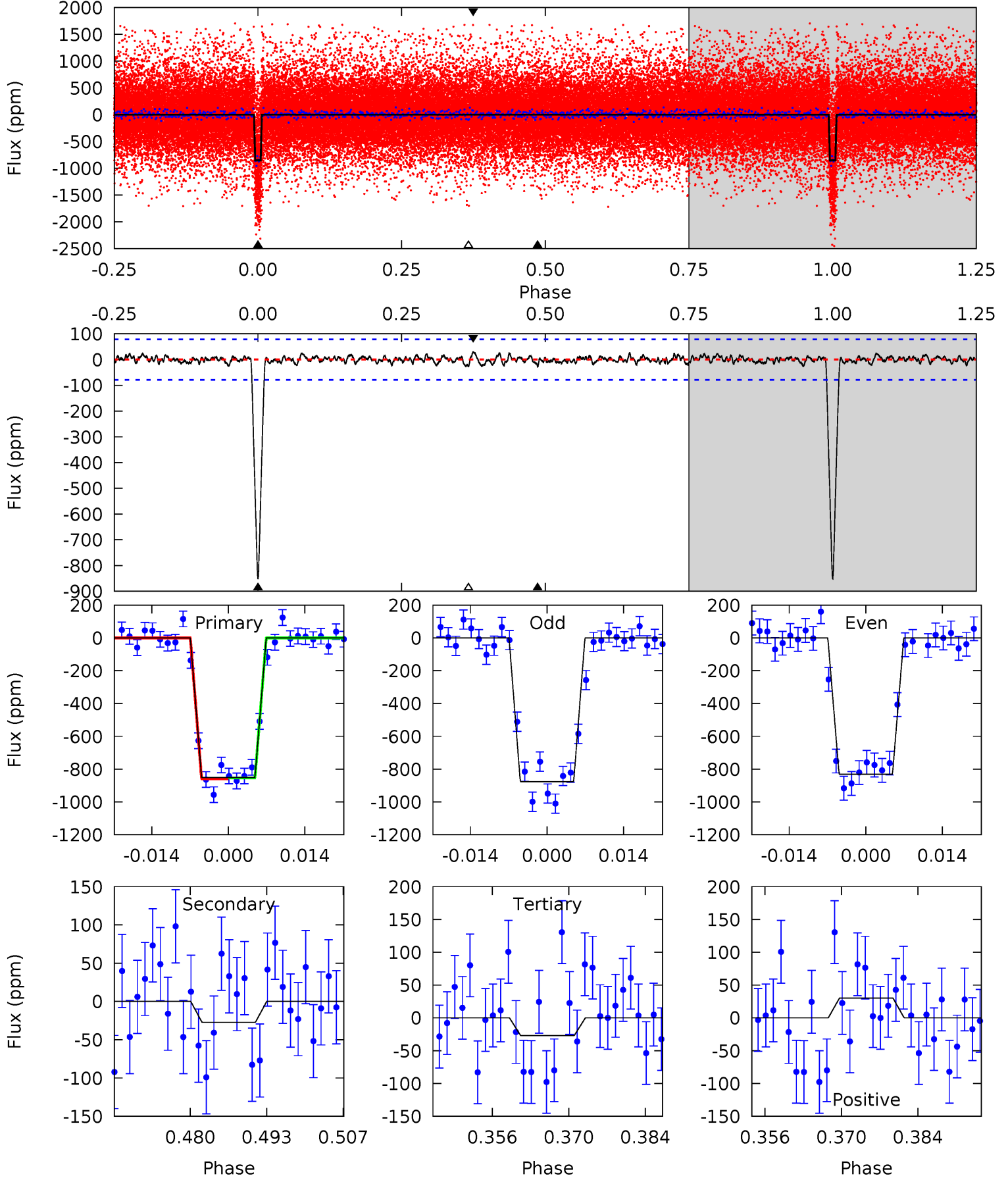
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.9	2.70	2.63	4.11	4.94	2.42	1.26	48.2	46.8	0.07	-1.42	0.40	1.02	0.07	0.23



Alt Model-Shift Uniqueness Test

004736569-01, P = 10.131929 Days, E = 132.917321 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.8	1.72	1.72	1.91	4.97	2.46	0.63	52.1	51.9	0.00	-0.19	1.43	0.95	0.03	0.19



Stellar Parameters For KIC 004736569

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4777^{+167}_{-167}	$4.689^{+0.048}_{-0.032}$	$-1.080^{+0.300}_{-0.300}$	$0.561^{+0.038}_{-0.038}$	$0.561^{+0.047}_{-0.024}$	$4.472^{+0.874}_{-0.609}$
	+3%/-3%	+1%/-1%	+28%/-28%	+7%/-7%	+8%/-4%	+20%/-14%
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 004736569-01 / KOI 1996.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 18	$1.91^{+0.41}_{-0.44}$	801^{+31}_{-31}	2878^{+274}_{-228}	40^{+35}_{-17}
Alt.	-27 ± 16	$1.78^{+0.40}_{-0.40}$	799^{+30}_{-33}	2713^{+292}_{-330}	26^{+27}_{-17}

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

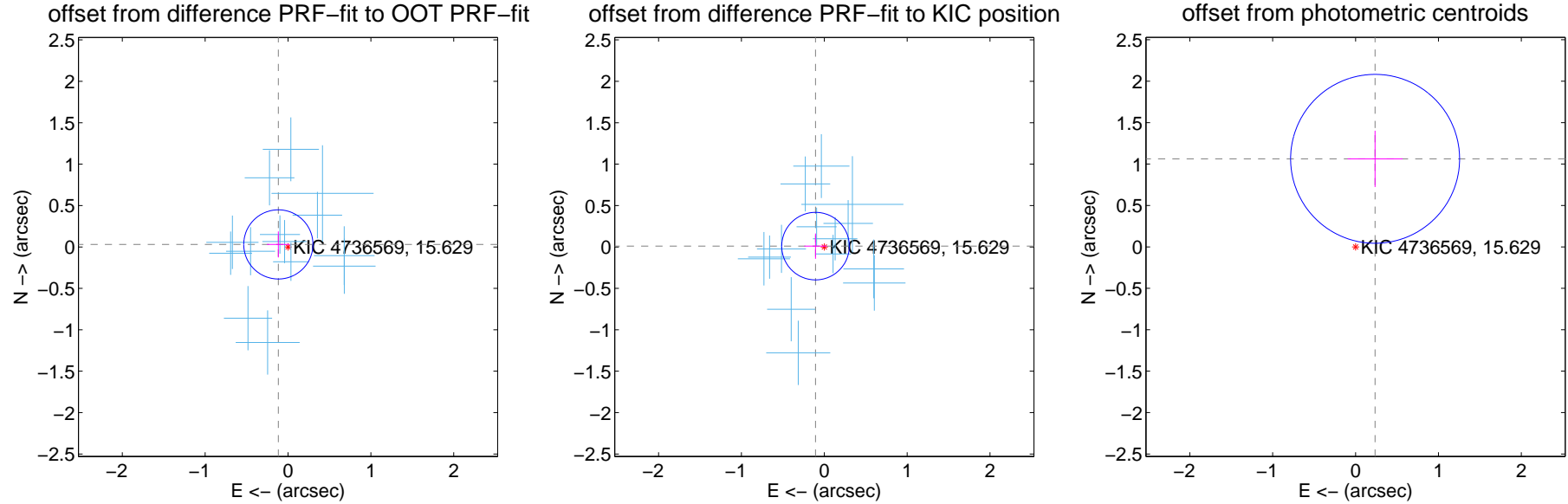
DV Centroid Data

Supplemental centroid analysis for 004736569-01. Kepler magnitude: 15.63. Transit SNR 34.40

There are 14 quarters with good PRF difference image offsets

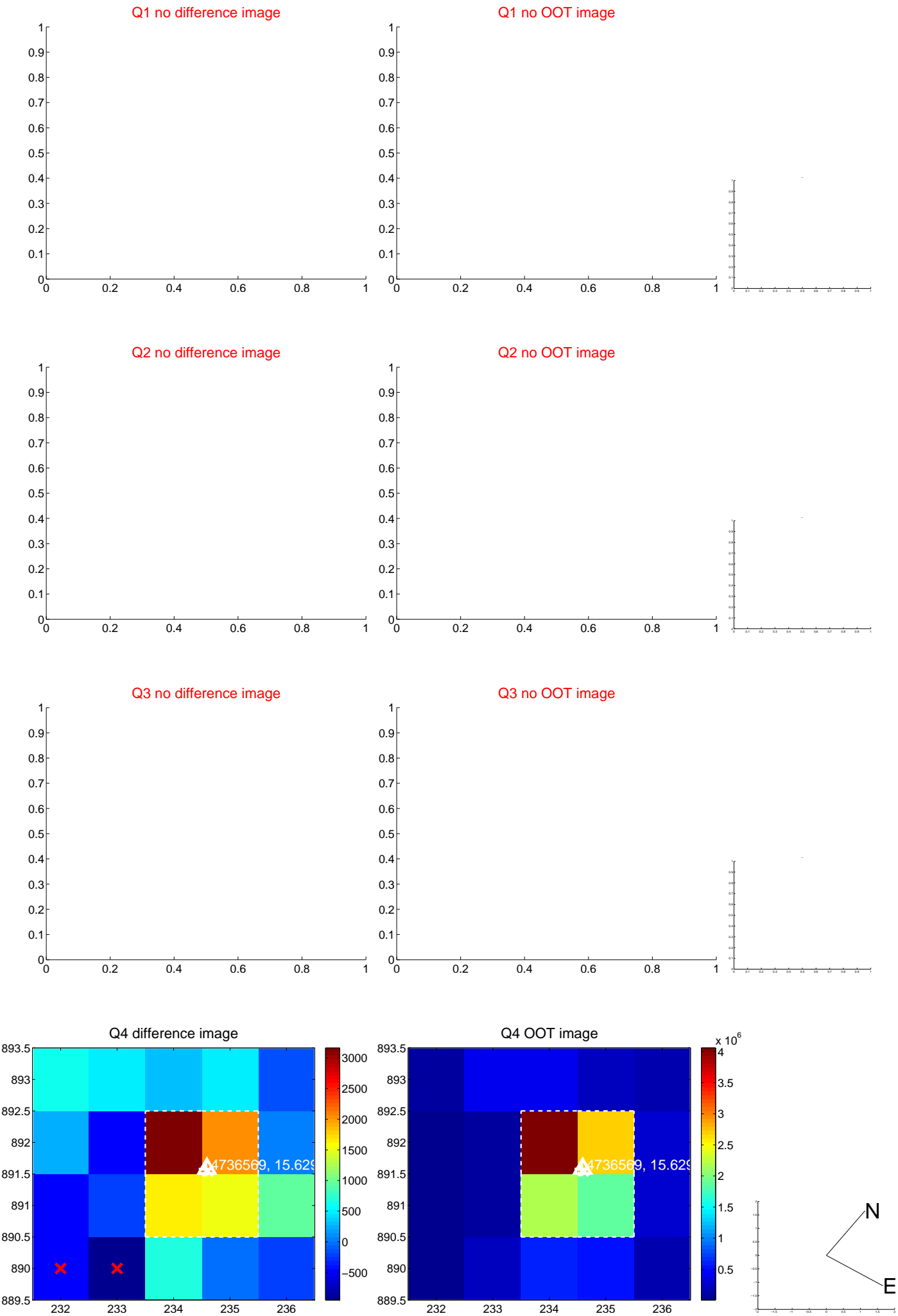
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.139	0.87	0.117 ± 0.138	0.031 ± 0.157
PRF-fit source offset from KIC position	0.106 ± 0.136	0.78	0.106 ± 0.136	0.010 ± 0.153
photometric centroid source offset	1.09 ± 0.34	3.20	-0.24 ± 0.33	1.06 ± 0.34

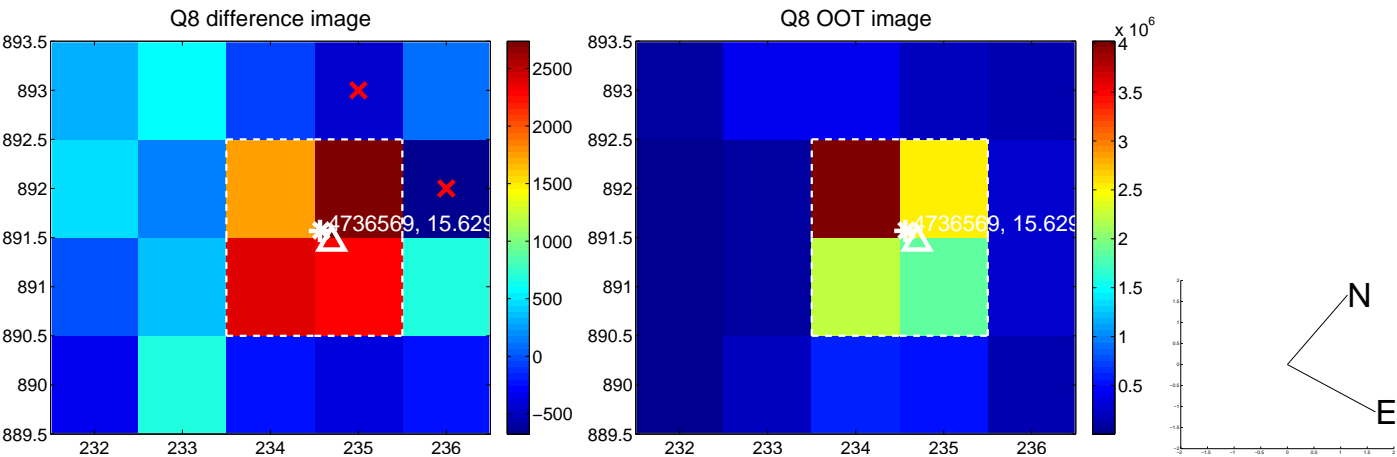
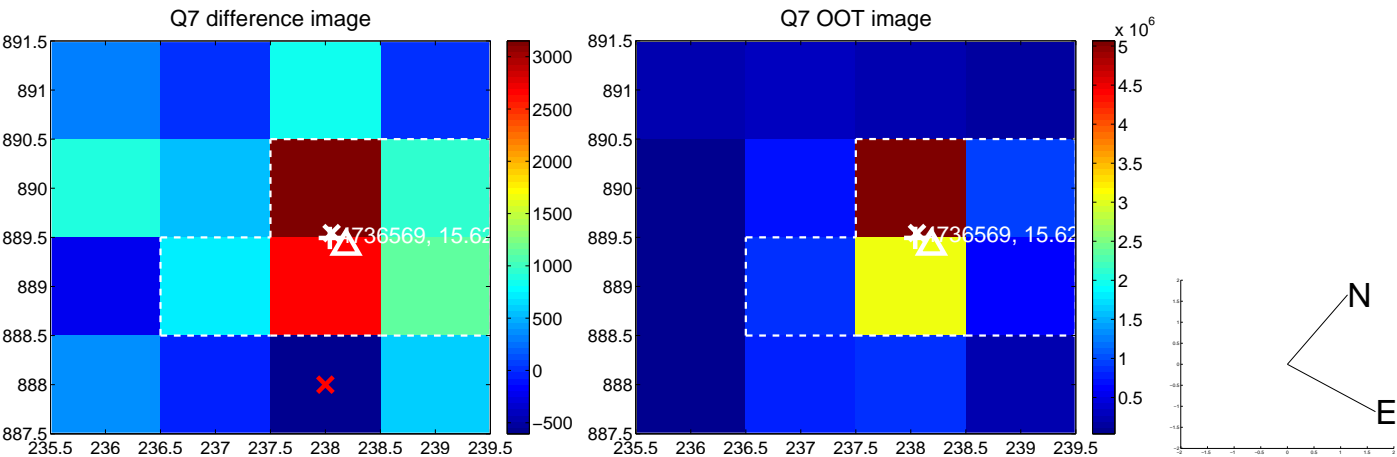
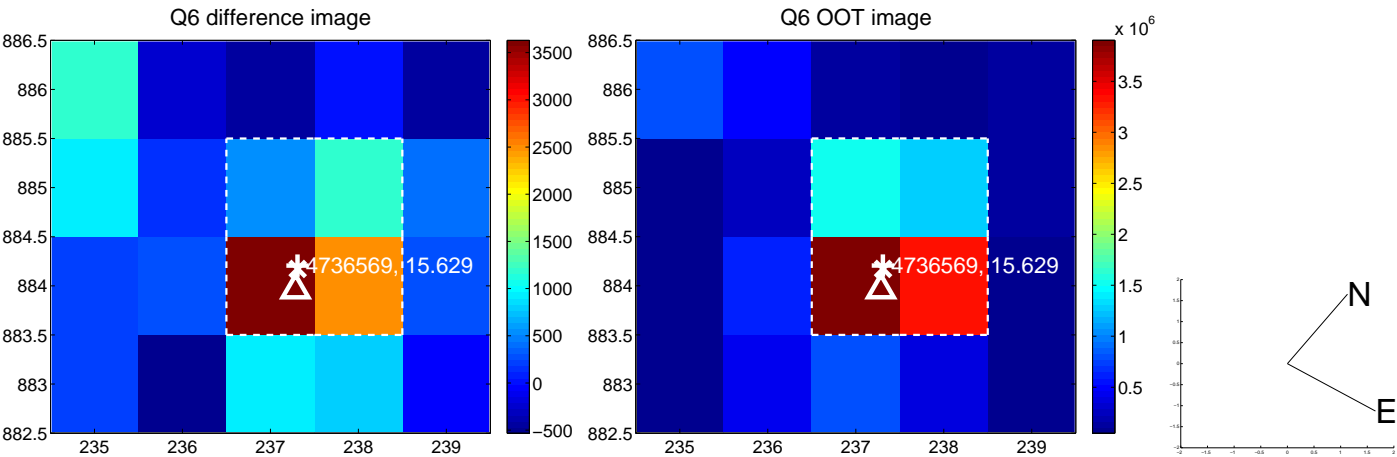
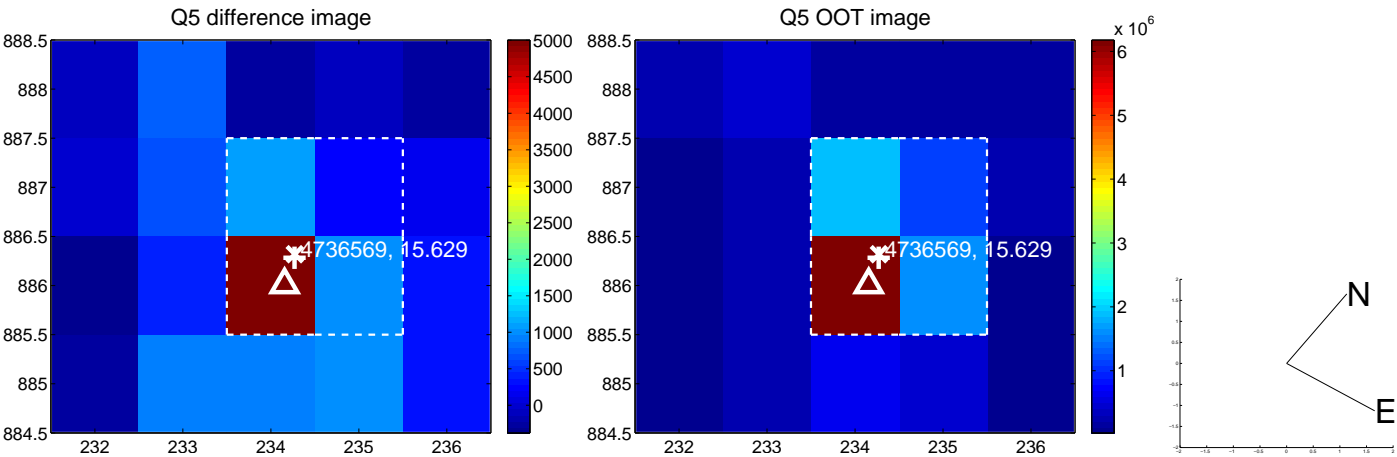


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

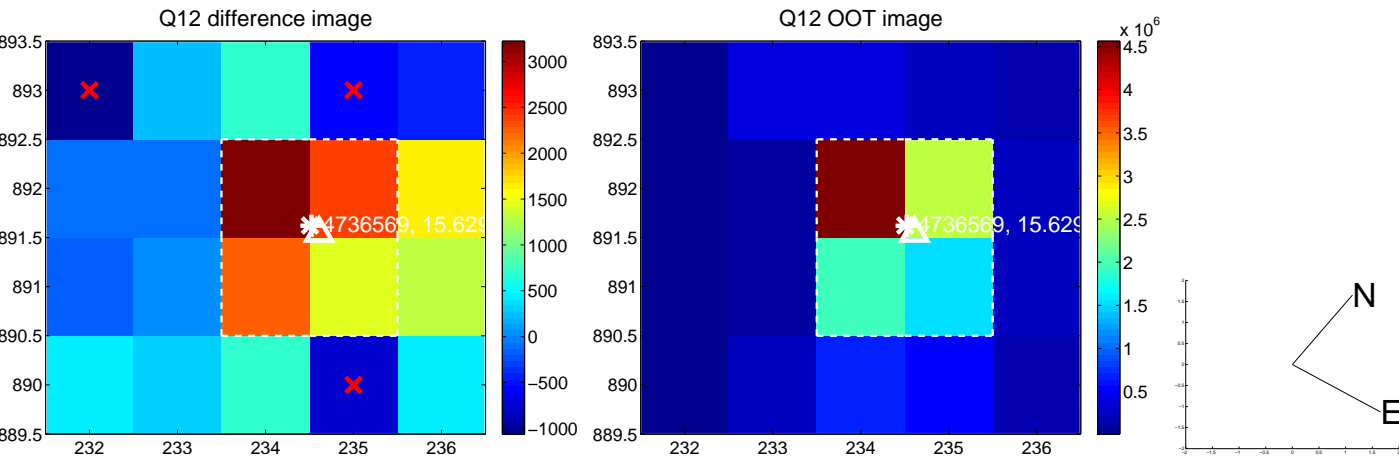
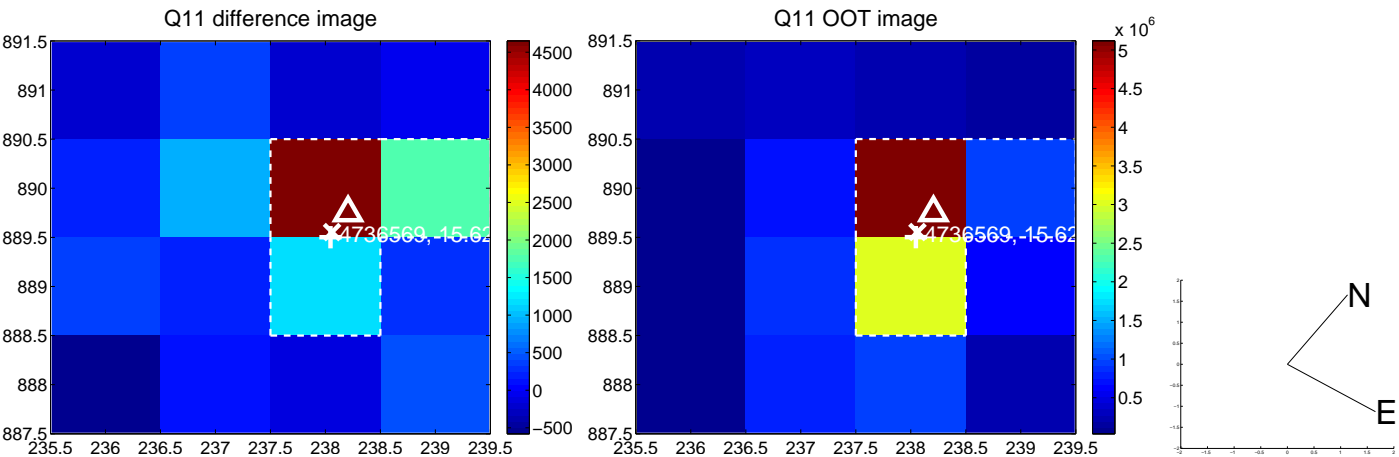
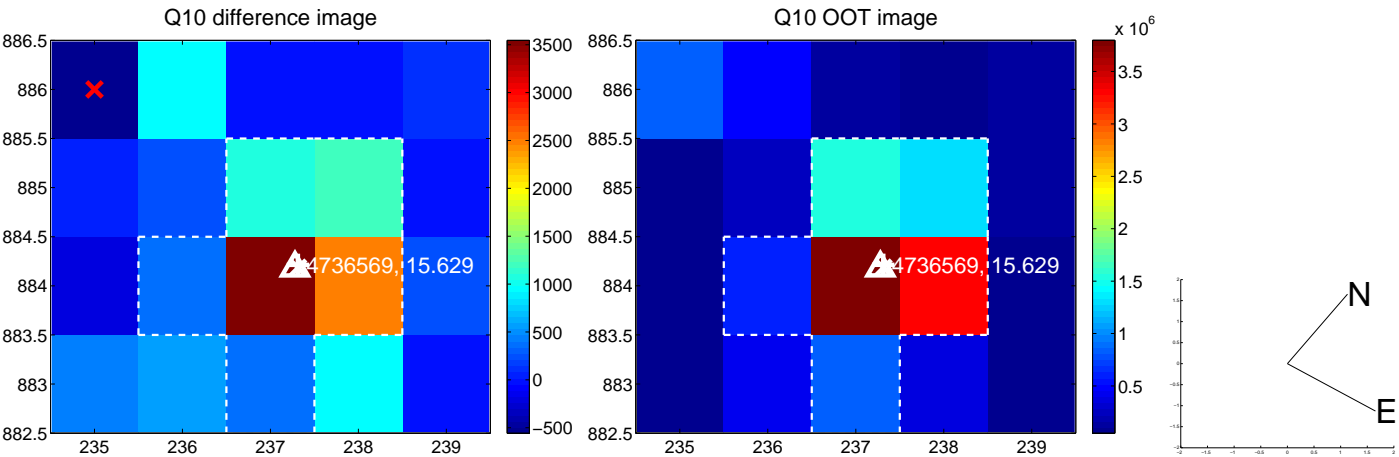
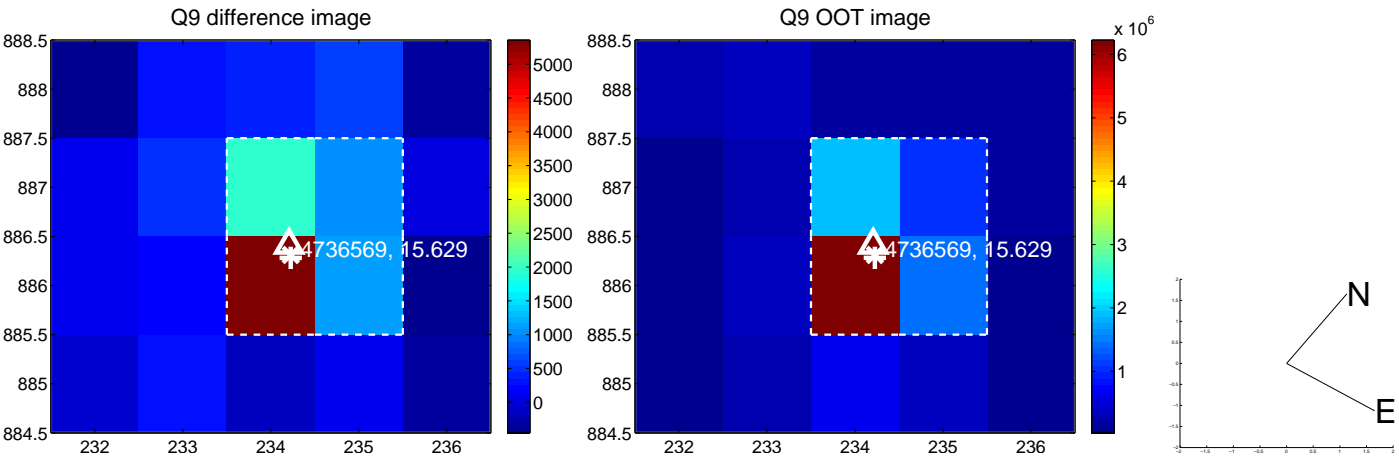
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



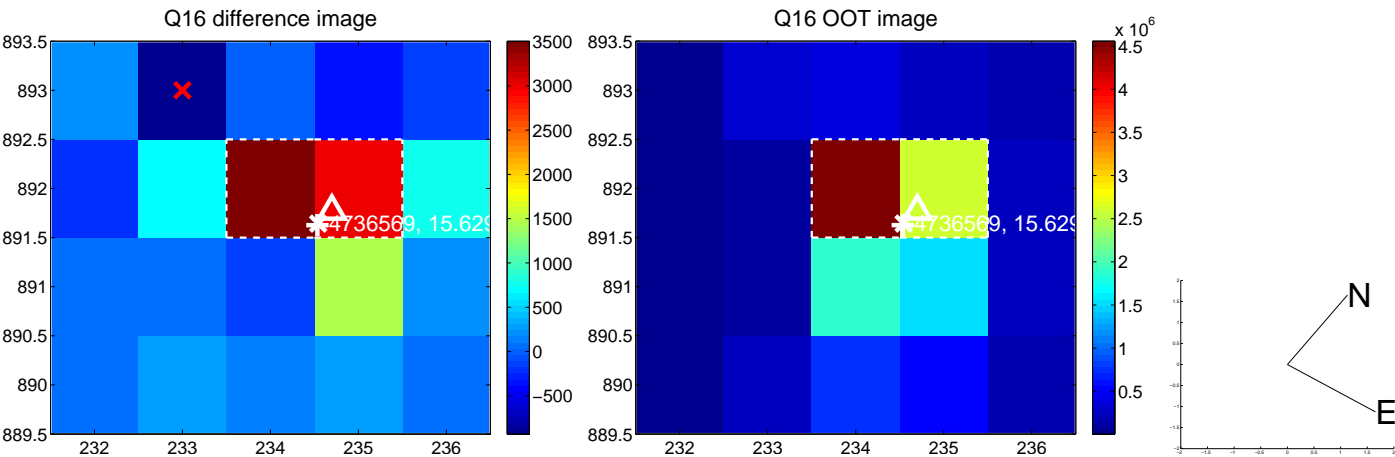
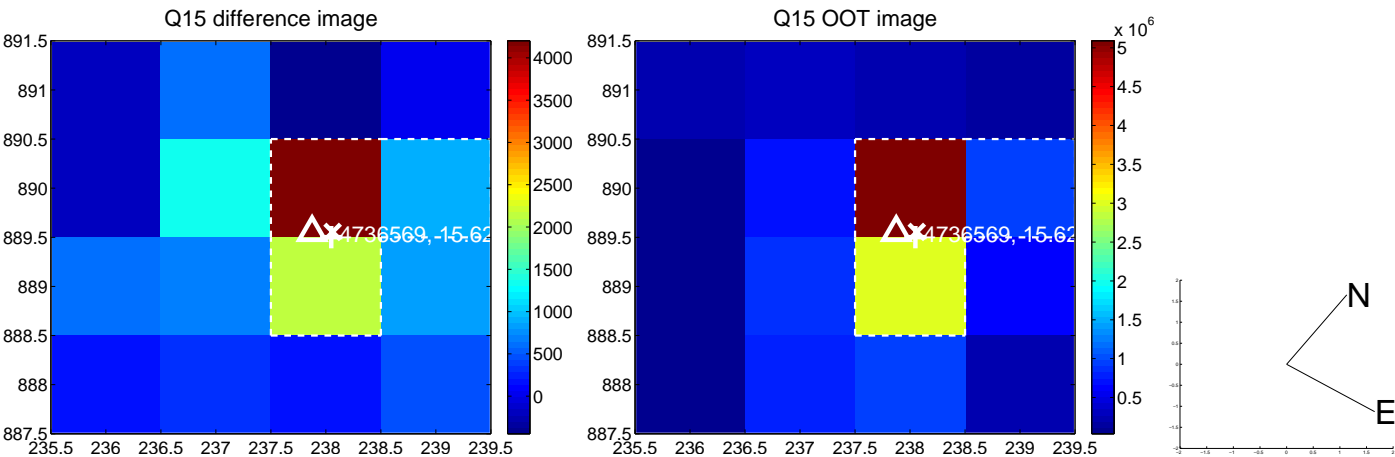
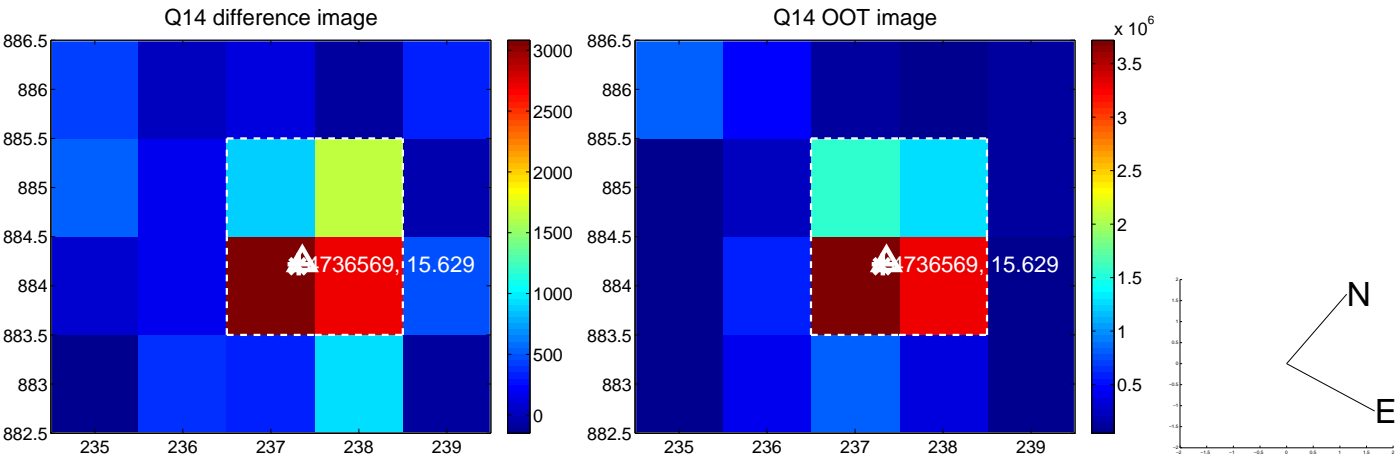
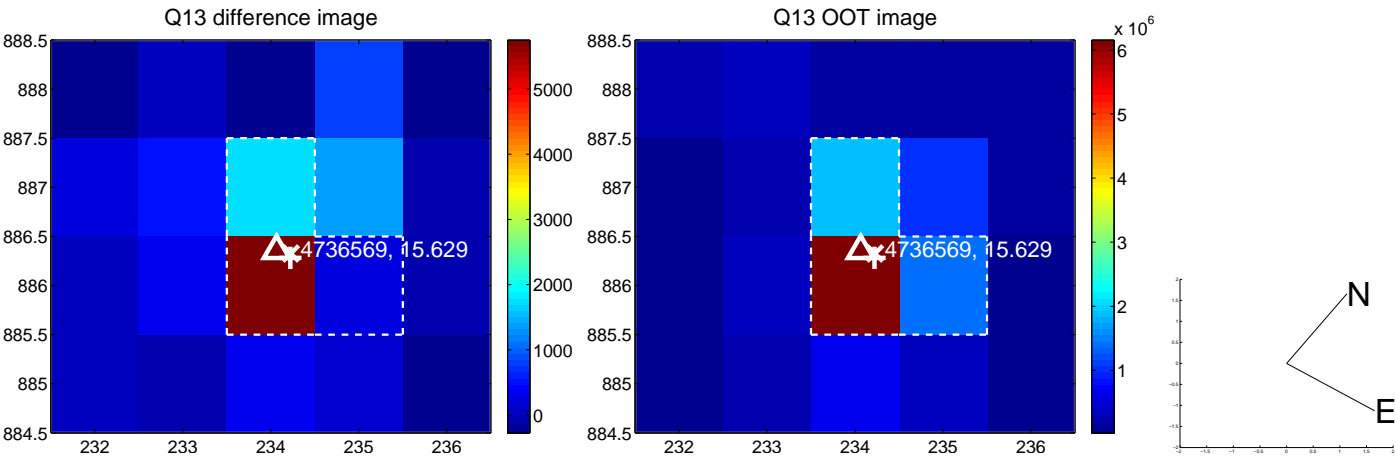
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



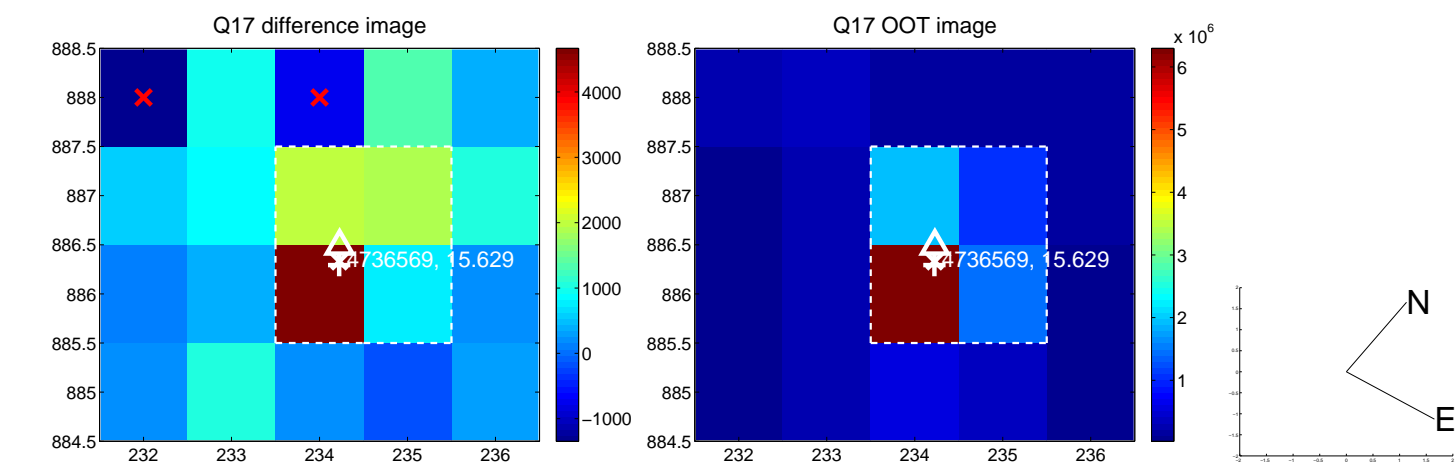
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



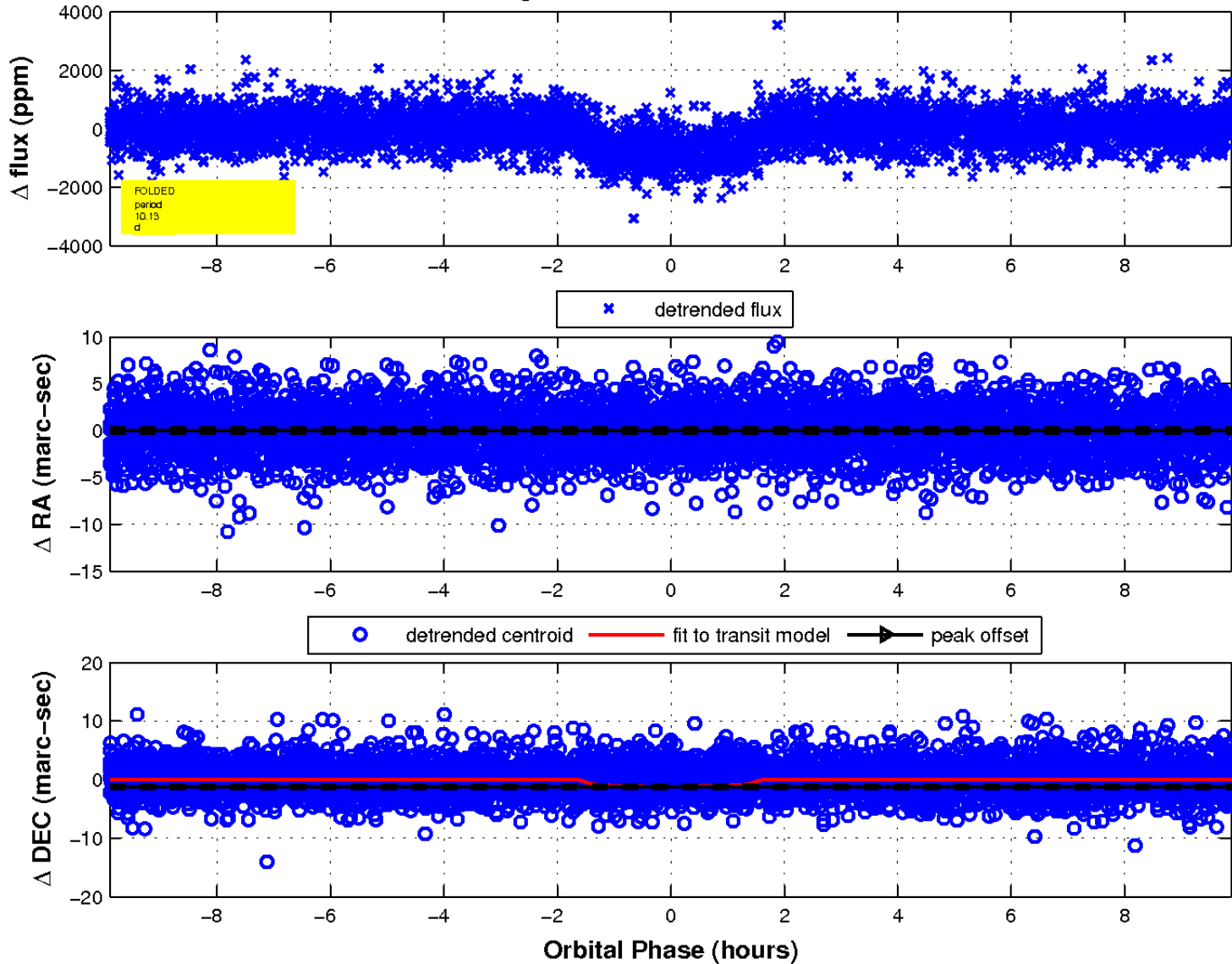
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

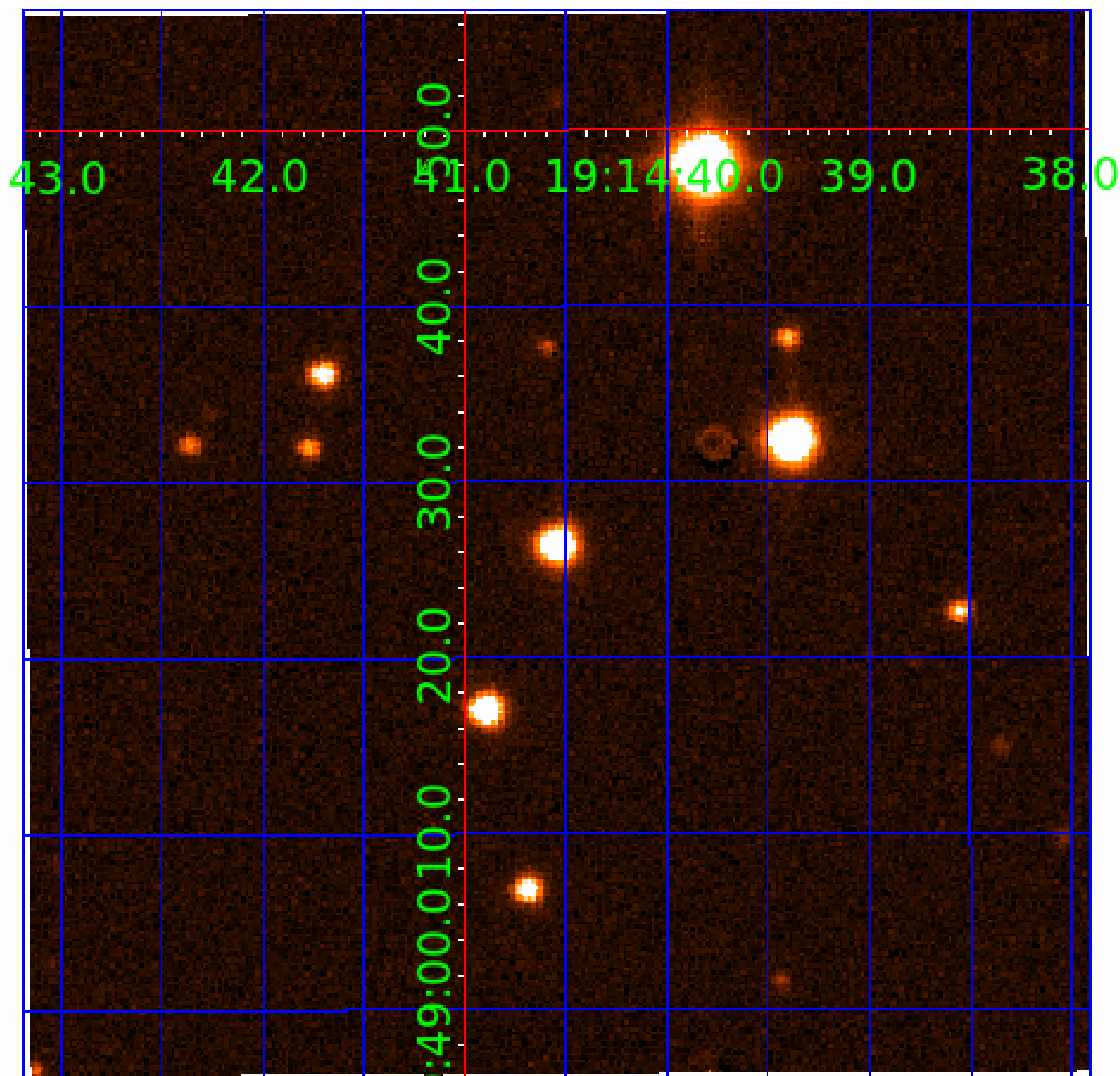


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004736569

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})
004736569-01	OBS	1996.01	10.132028	132.908890	919.8	3.294	31.4	34.4	0.56	4777	1.89	25.70
004736569-02	OBS	1996.02	7.074032	136.632396	261.3	2.606	9.1	10.5	0.56	4777	1.09	41.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004736569-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004736569-02	OBS	PC	0.95	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.

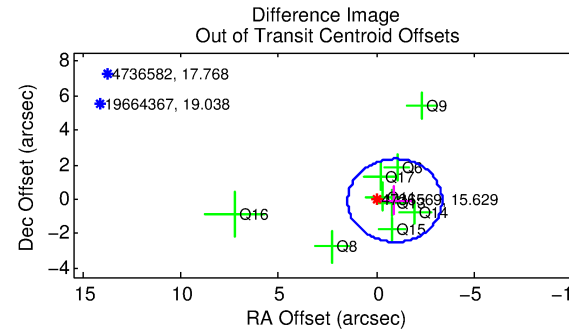
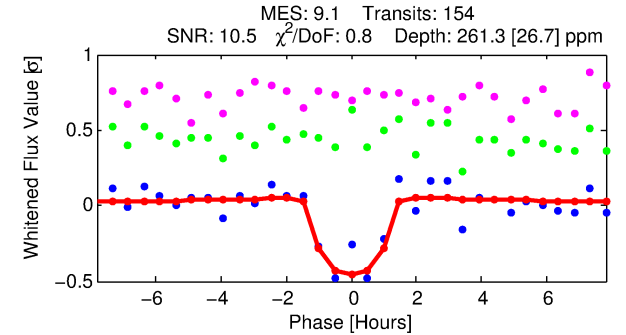
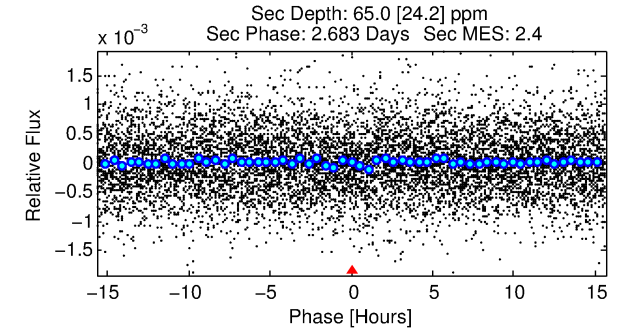
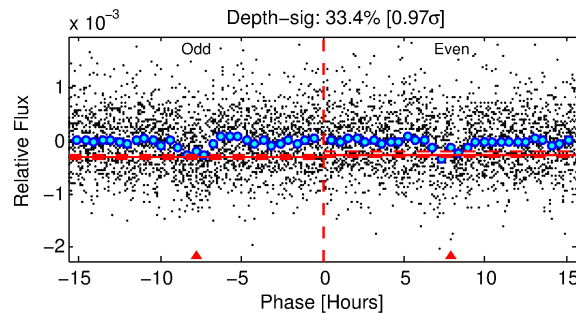
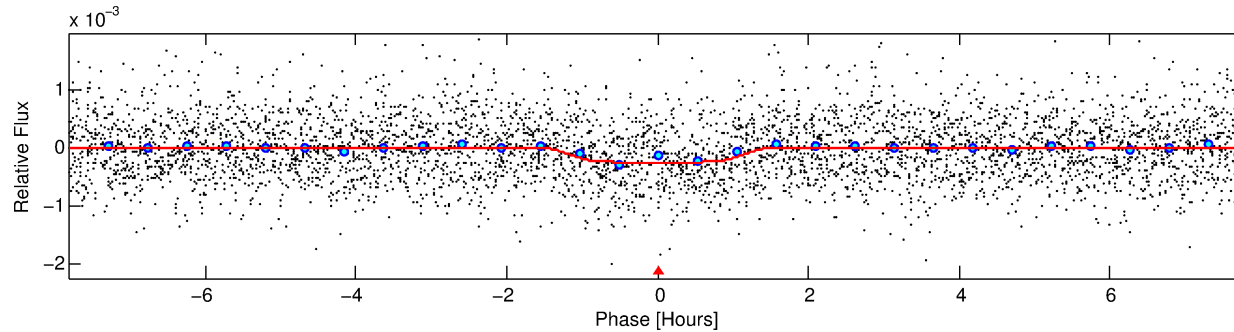
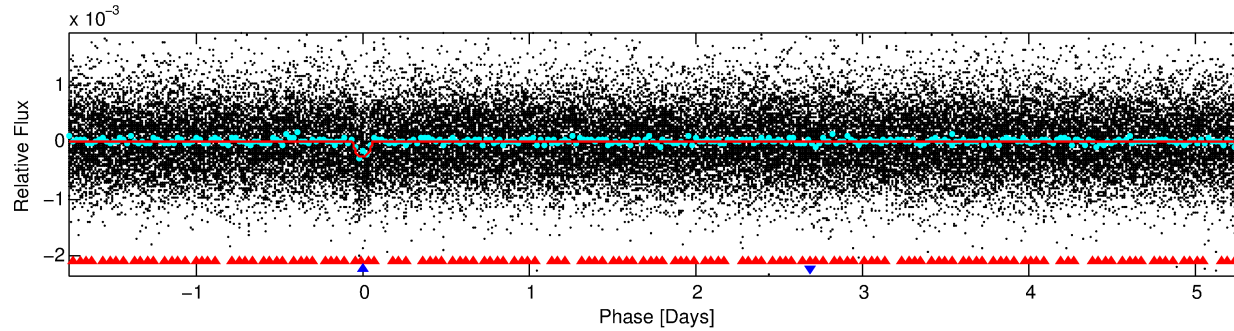
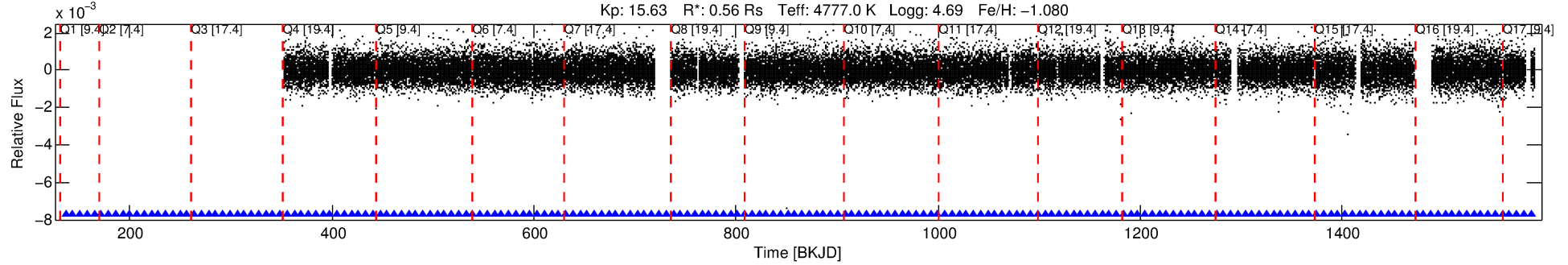
Ephemeris Match Information For 004736569-02

No Significant Match Found

DV One-Page Summary

KIC: 4736569 Candidate: 2 of 2 Period: 7.074 d
KOI: K01996.02 Corr: 0.963

Kp: 15.63 R*: 0.56 Rs Teff: 4777.0 K Logg: 4.69 Fe/H: -1.080



DV Fit Results:

Period = 7.07403 [0.00005] d
Epoch = 136.6324 [0.0055] BKJD
Rp/R* = 0.0178 [0.0117]
a/R* = 10.09 [26.95]
b = 0.90 [0.61]
Seff = 41.49 [6.82]
Teq = 647 [27] K
Rp = 1.09 [0.72] Re
a = 0.0595 [0.0035] AU
Ag = 106.76 [146.34] [0.72σ]
Teffp = 3216 [1106] K [2.32σ]

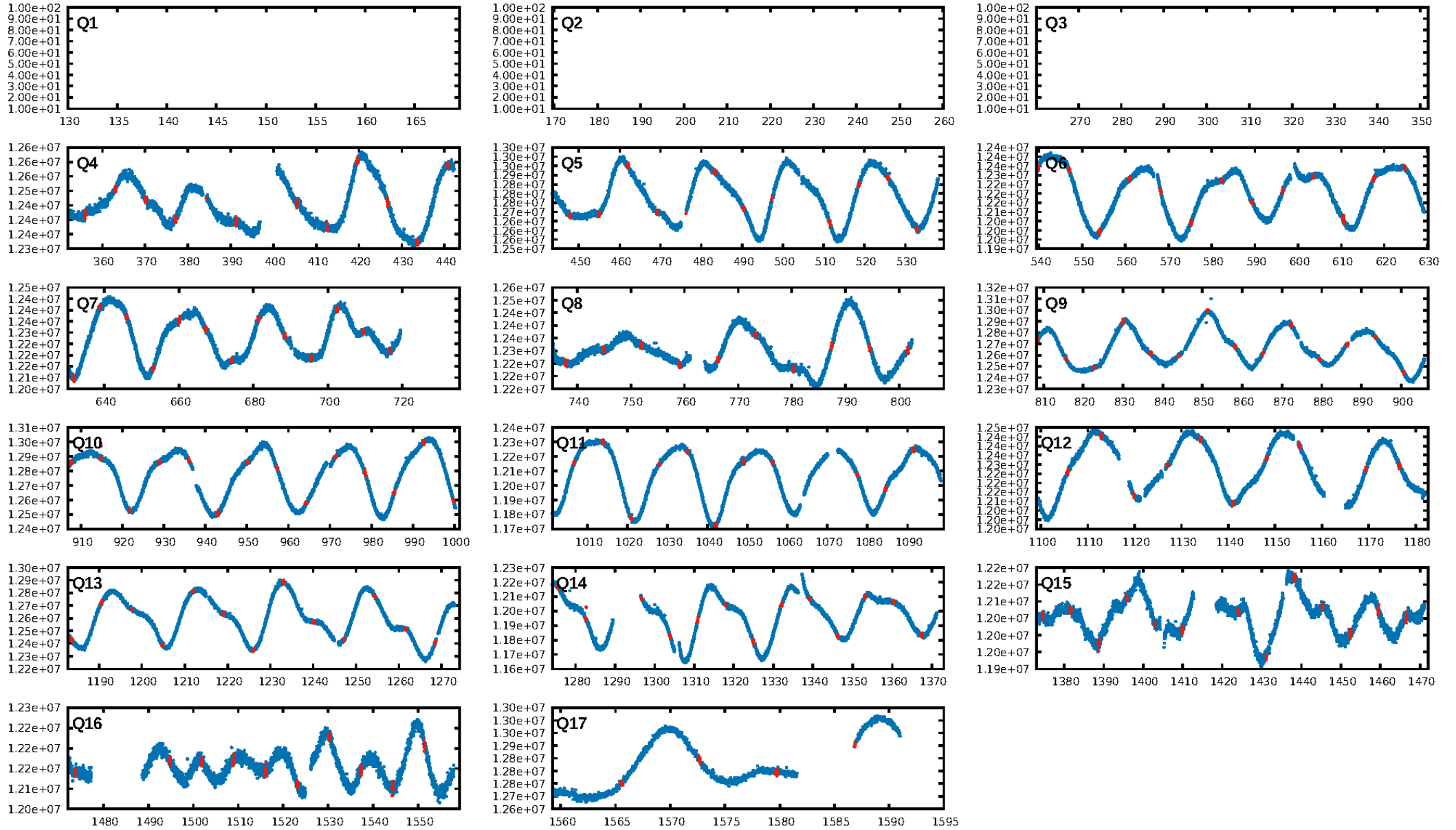
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [17.47σ]
ModelChiSquare2-sig: 99.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.41e-19
RollingBand-fgt: 1.00 [150/150]
GhostDiagnostic-chr: 3.784
Centroid-sig: 48.6%
Centroid-so: 1.094 arcsec [0.99σ]
OotOffset-rm: 0.942 arcsec [1.17σ]
KicOffset-rm: 0.898 arcsec [1.21σ]
OotOffset-st: 2/2/2/3 [9]
KicOffset-st: 2/2/2/3 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 1.00 [14/14]

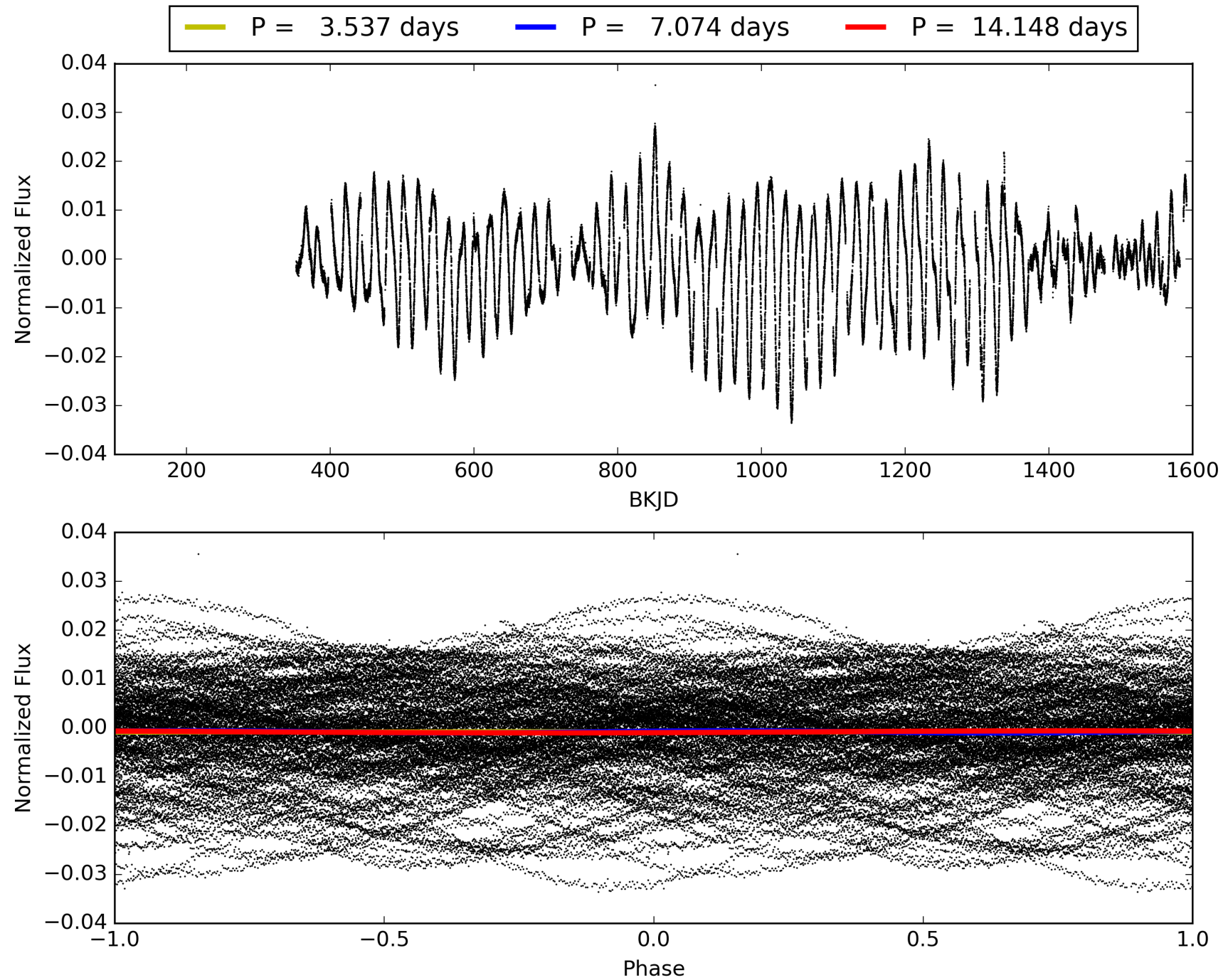
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:49:51 Z

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

TCE 004736569-02, PDC Light Curves

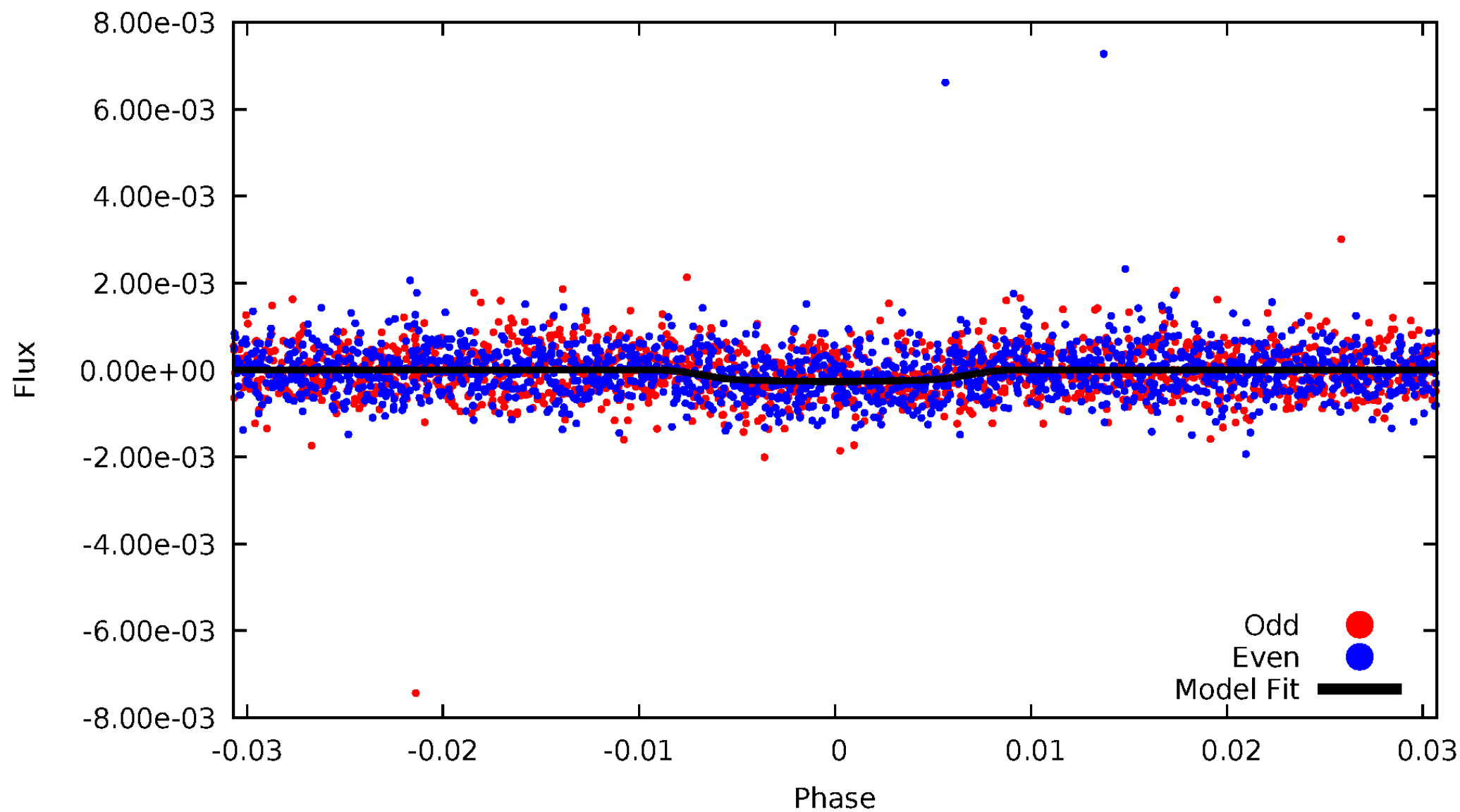


TCE 004736569-02



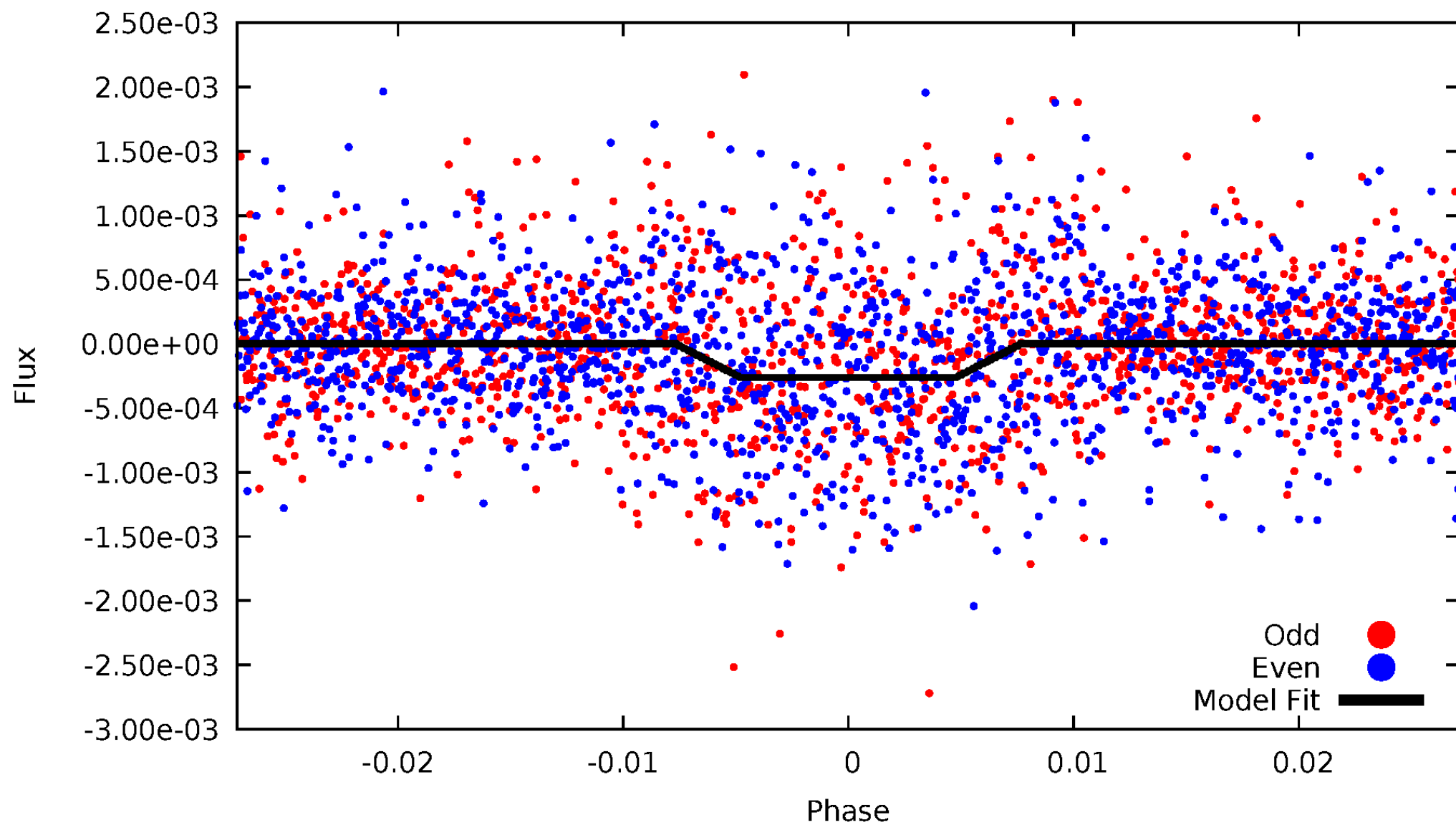
DV Odd/Even

TCE 004736569-02



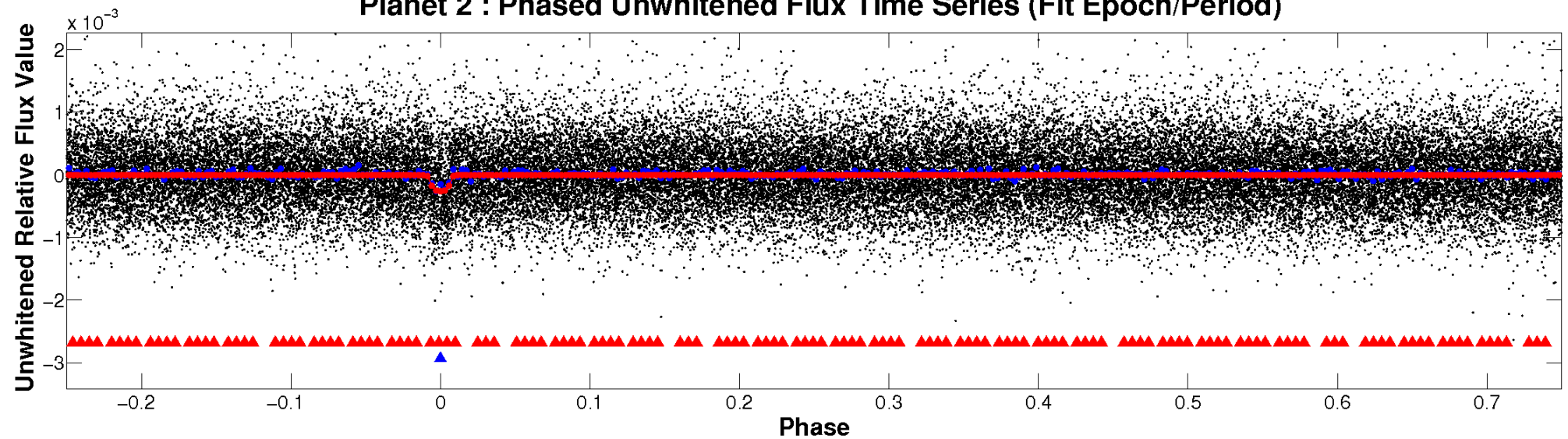
ALT Odd/Even

TCE 004736569-02

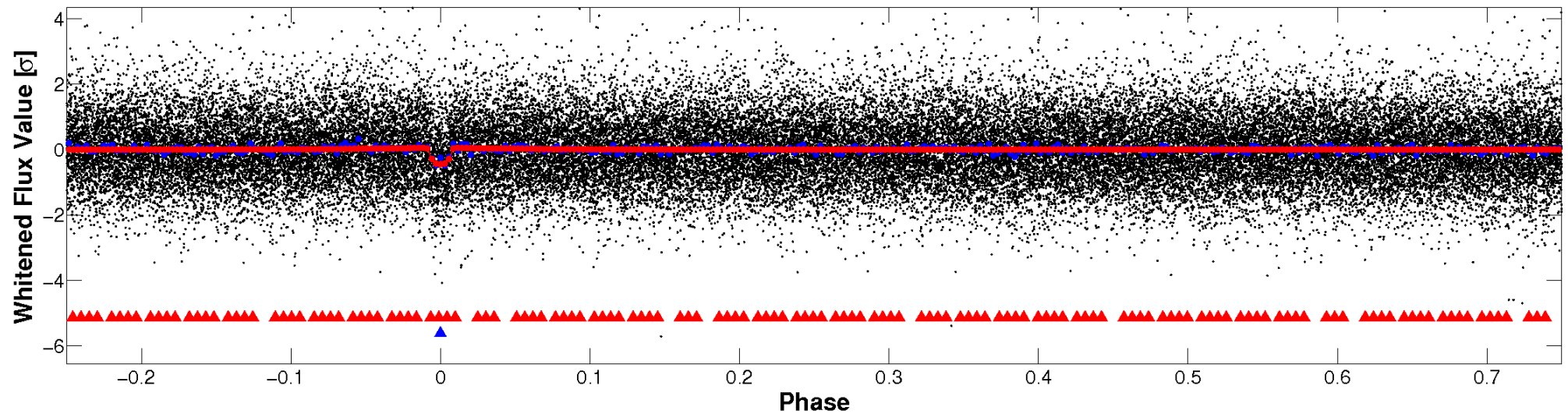


Non-Whitened Vs. Whitened Light Curve

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

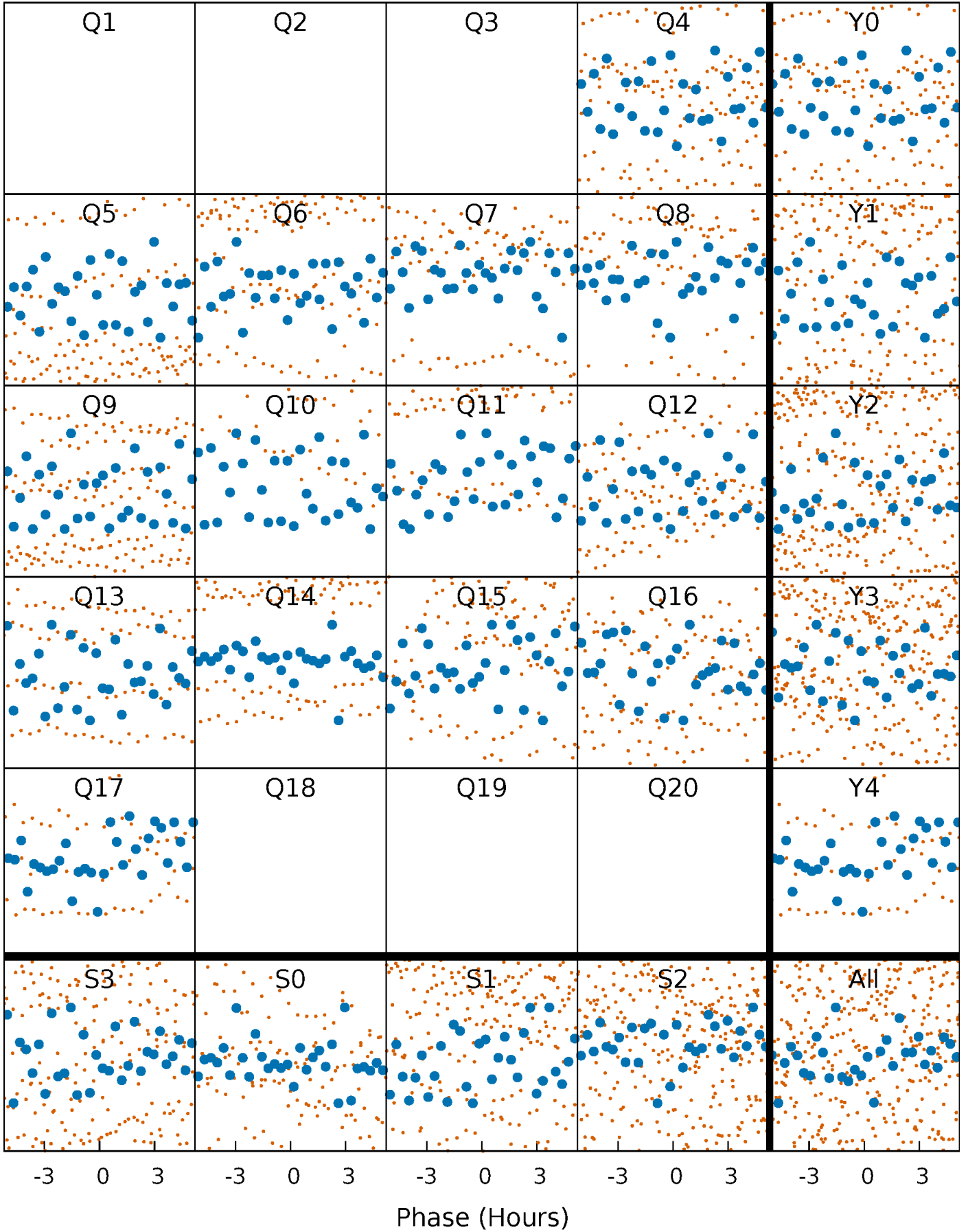


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



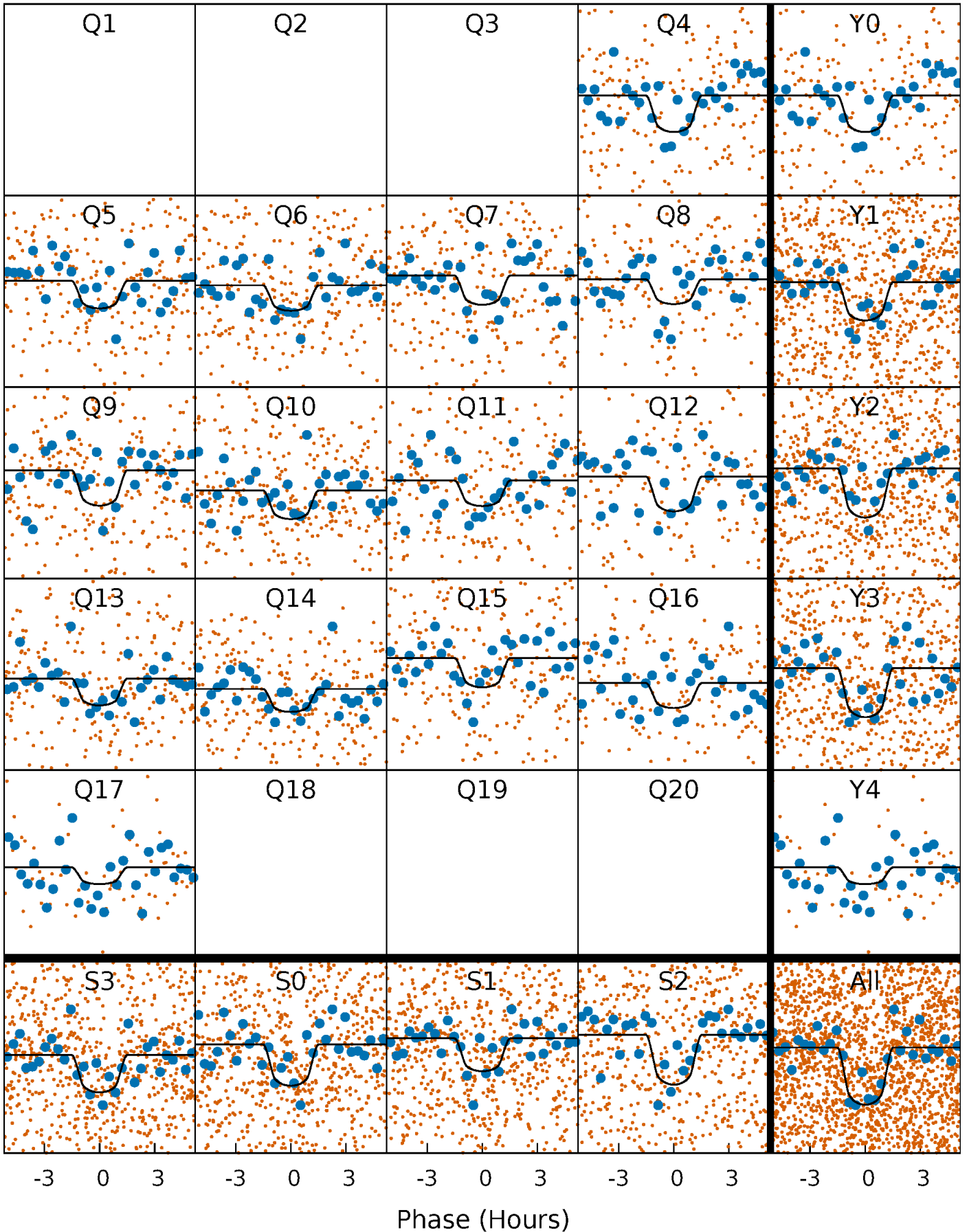
PDC Quarter-Phased Transit Curves

TCE 004736569-02 P= 7.074032 Days $T_0=136.632396$ (BKJD)



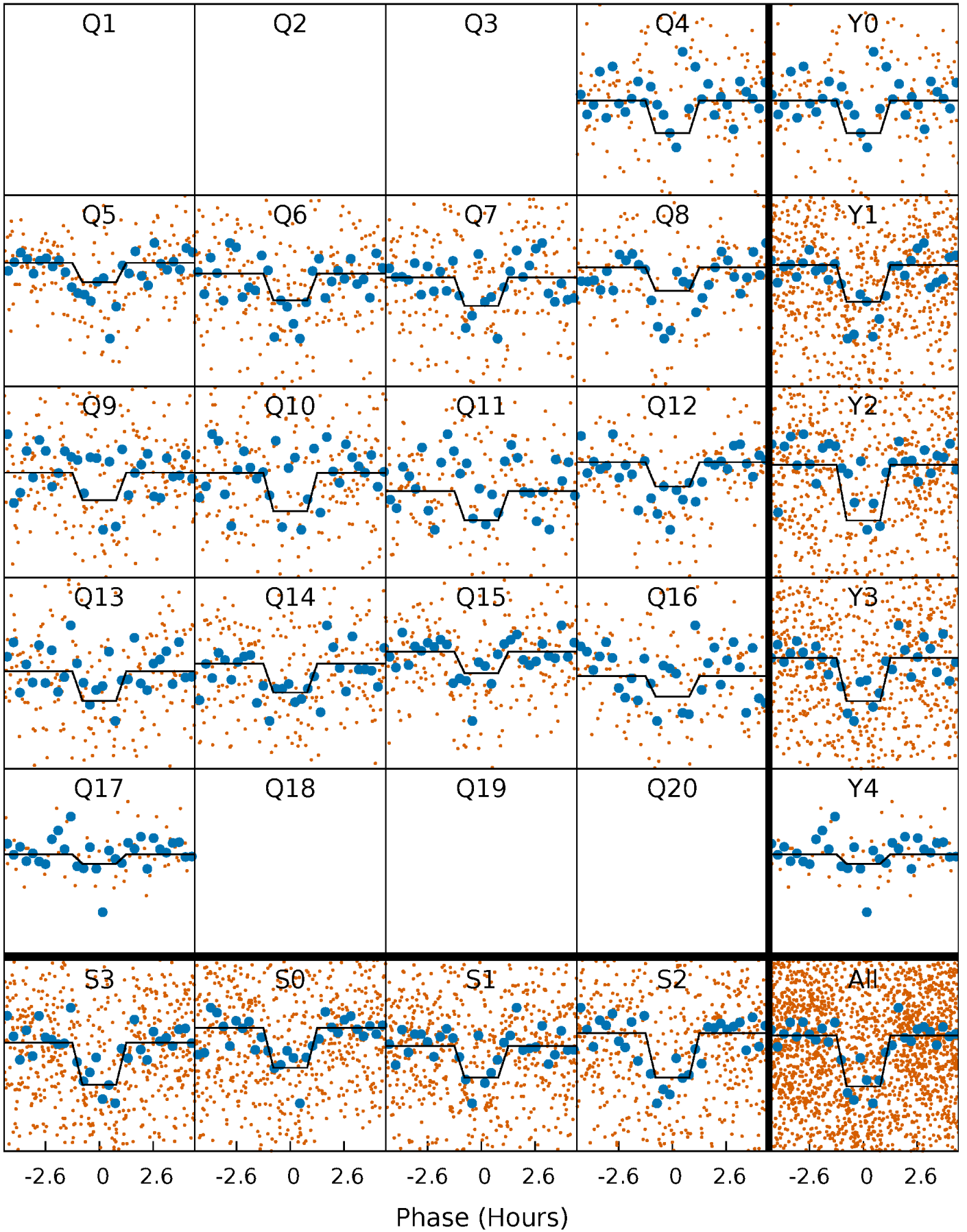
DV Quarter-Phased Transit Curves

TCE 004736569-02 P= 7.074032 Days $T_0=136.632396$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

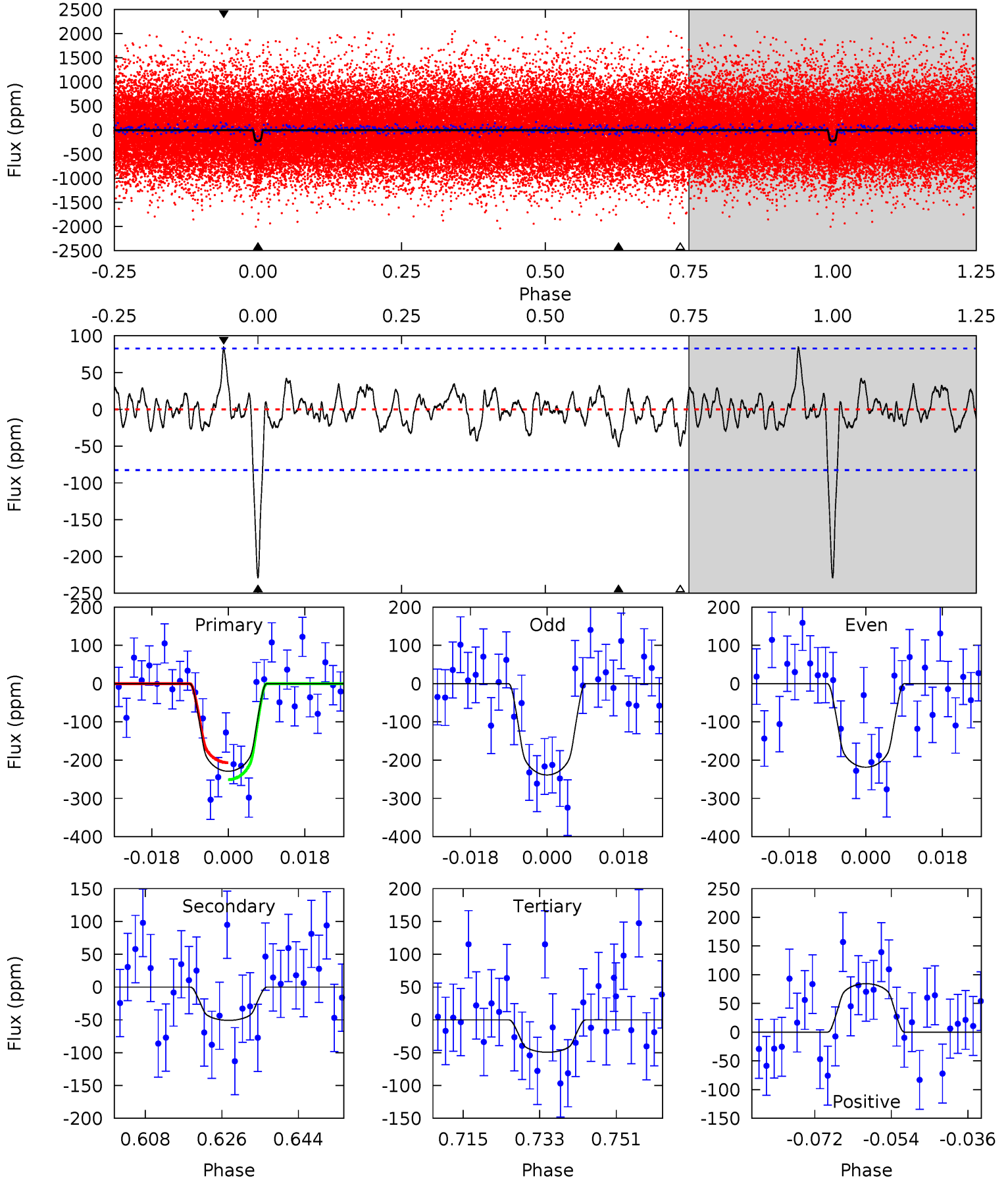
TCE 004736569-02 P= 7.073970 Days $T_0=136.639501$ (BKJD)



DV Model-Shift Uniqueness Test

004736569-02, P = 7.074032 Days, E = 136.632396 Days

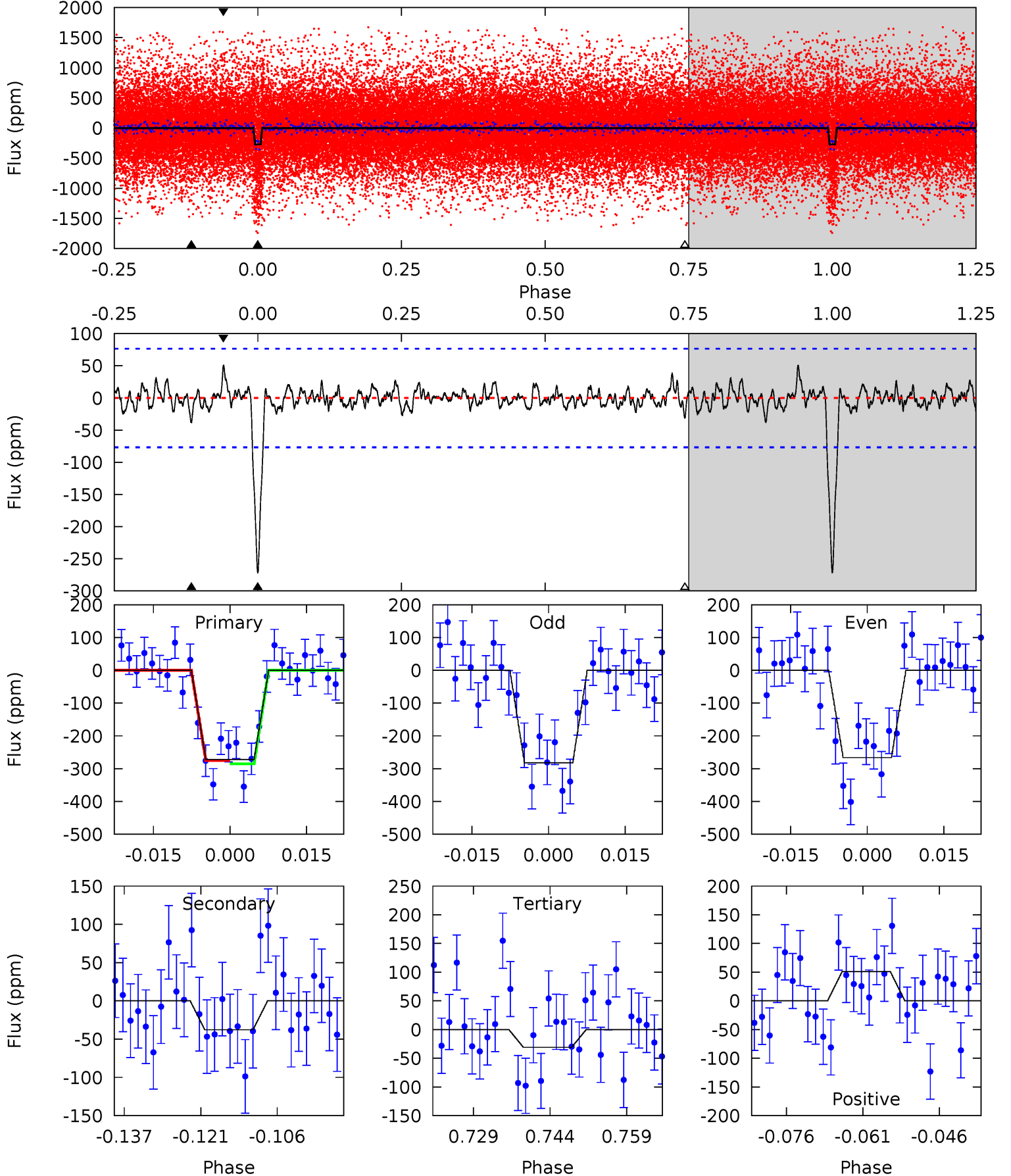
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	3.02	2.93	5.02	4.91	2.37	1.09	10.7	8.59	0.08	-2.00	0.61	1.03	0.27	1.32



Alt Model-Shift Uniqueness Test

004736569-02, P = 7.073970 Days, E = 136.639501 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	2.44	2.00	3.29	4.95	2.43	0.75	15.6	14.3	0.44	-0.85	0.52	0.92	0.16	0.32



Stellar Parameters For KIC 004736569

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4777^{+167}_{-167}	$4.689^{+0.048}_{-0.032}$	$-1.080^{+0.300}_{-0.300}$	$0.561^{+0.038}_{-0.038}$	$0.561^{+0.047}_{-0.024}$	$4.472^{+0.874}_{-0.609}$
	+3%/-3%	+1%/-1%	+28%/-28%	+7%/-7%	+8%/-4%	+20%/-14%
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 004736569-02 / KOI 1996.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-51 ± 17	$1.18^{+0.70}_{-0.65}$	901^{+35}_{-37}	3343^{+1083}_{-448}	70^{+281}_{-43}
Alt.	-38 ± 15	$1.03^{+0.68}_{-0.63}$	905^{+33}_{-36}	3314^{+1259}_{-501}	65^{+352}_{-43}

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

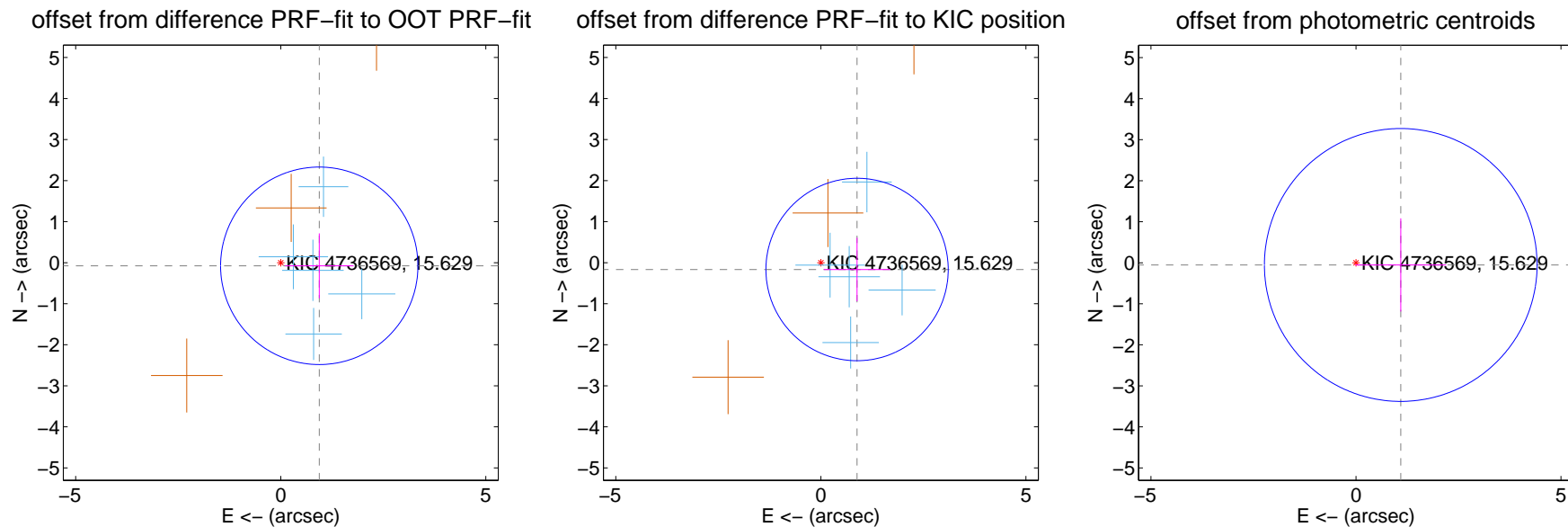
DV Centroid Data

Supplemental centroid analysis for 004736569-02. Kepler magnitude: 15.63. Transit SNR 10.49

There are 5 quarters with good PRF difference image offsets

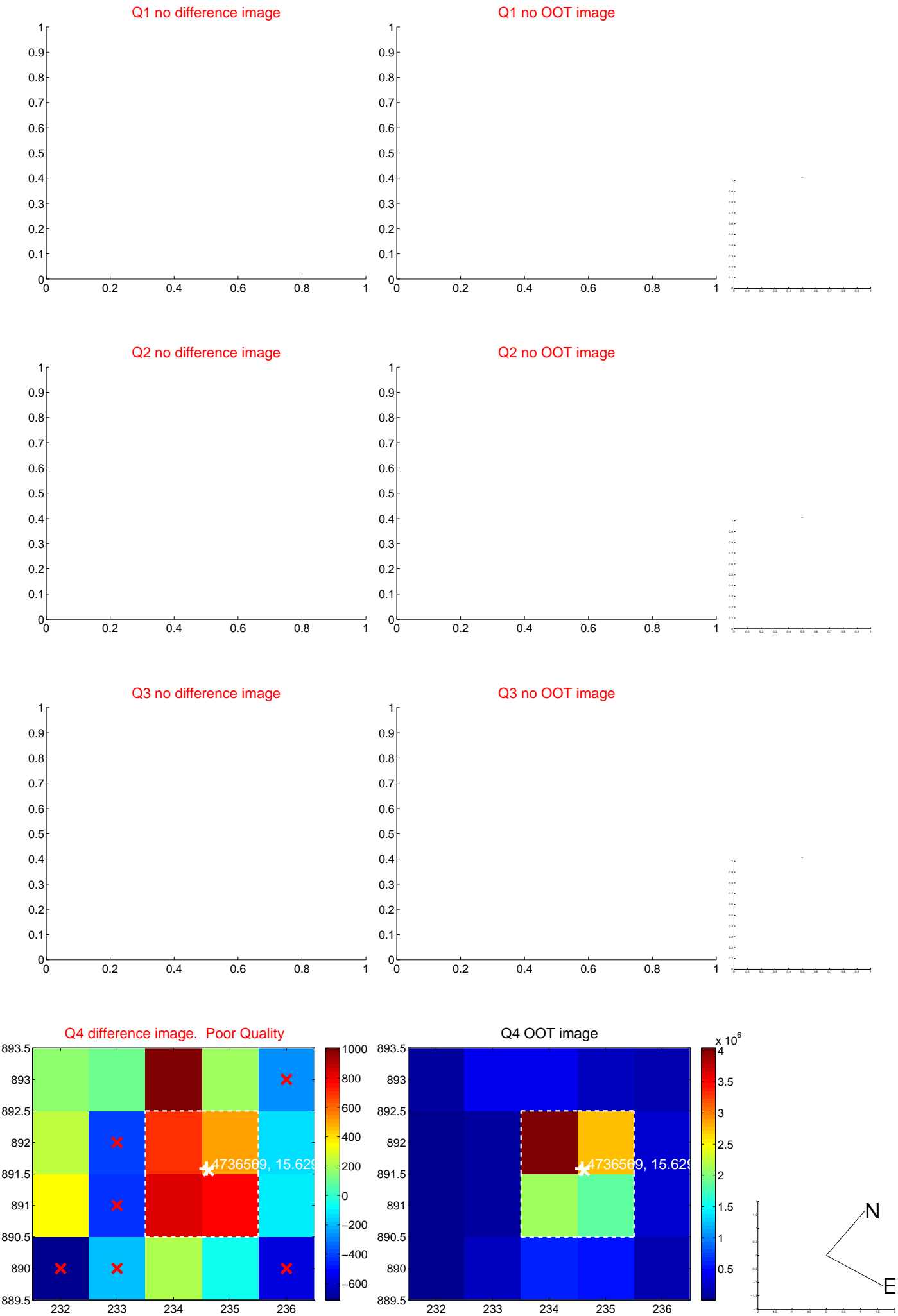
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.942 ± 0.802	1.17	-0.939 ± 0.837	-0.076 ± 0.791
PRF-fit source offset from KIC position	0.898 ± 0.741	1.21	-0.883 ± 0.810	-0.166 ± 0.773
photometric centroid source offset	1.09 ± 1.11	0.99	-1.09 ± 1.11	-0.05 ± 1.14

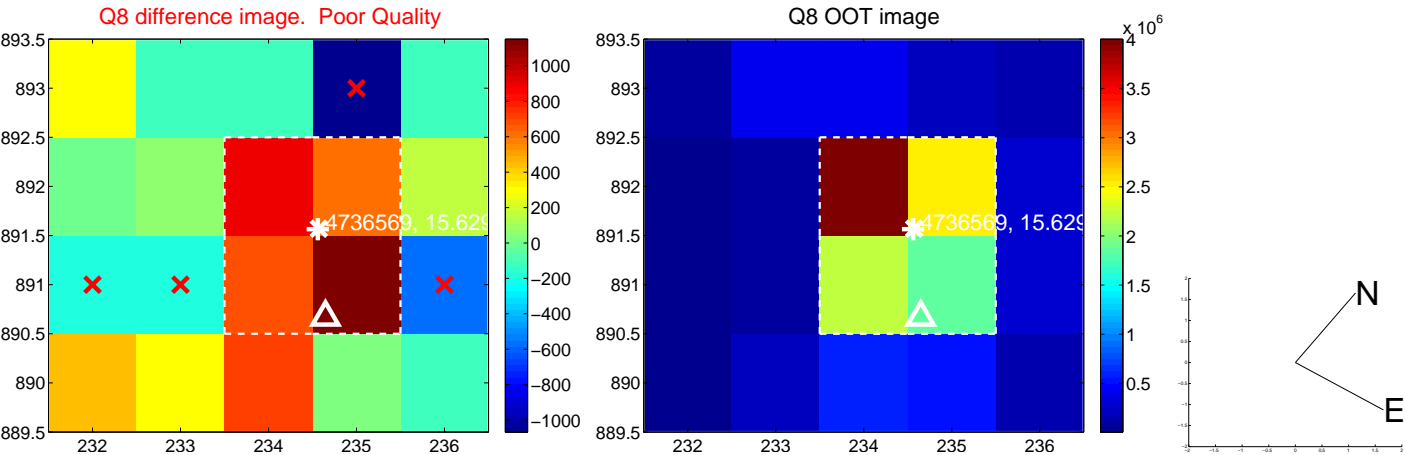
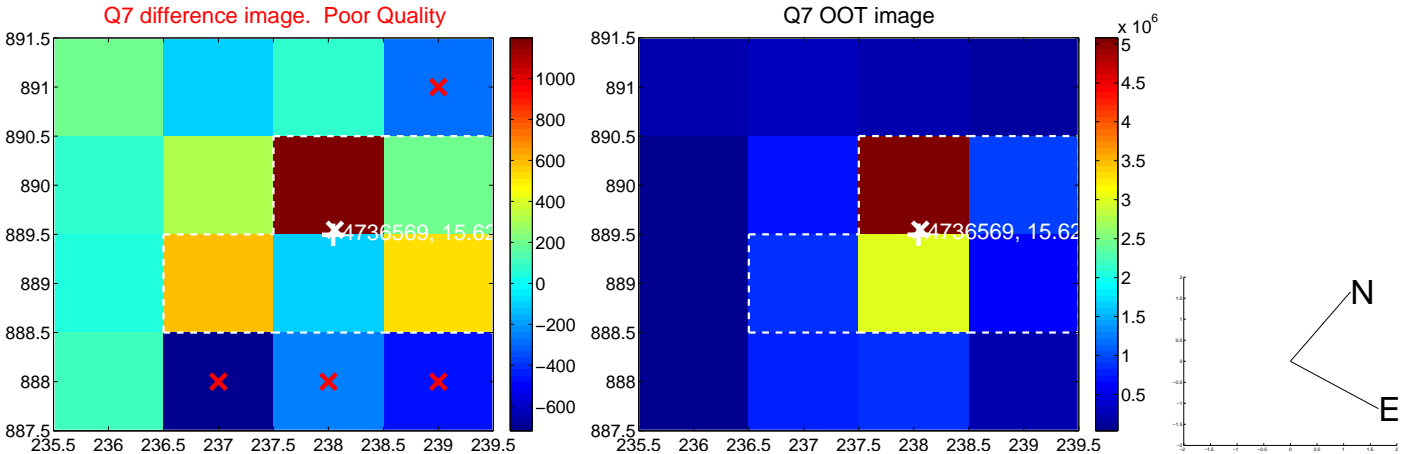
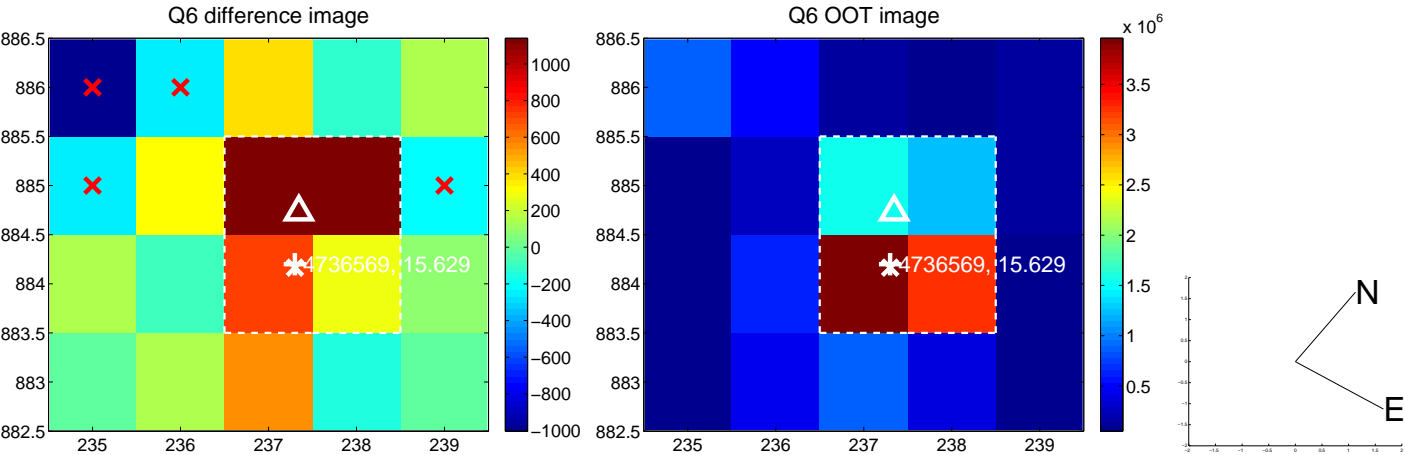
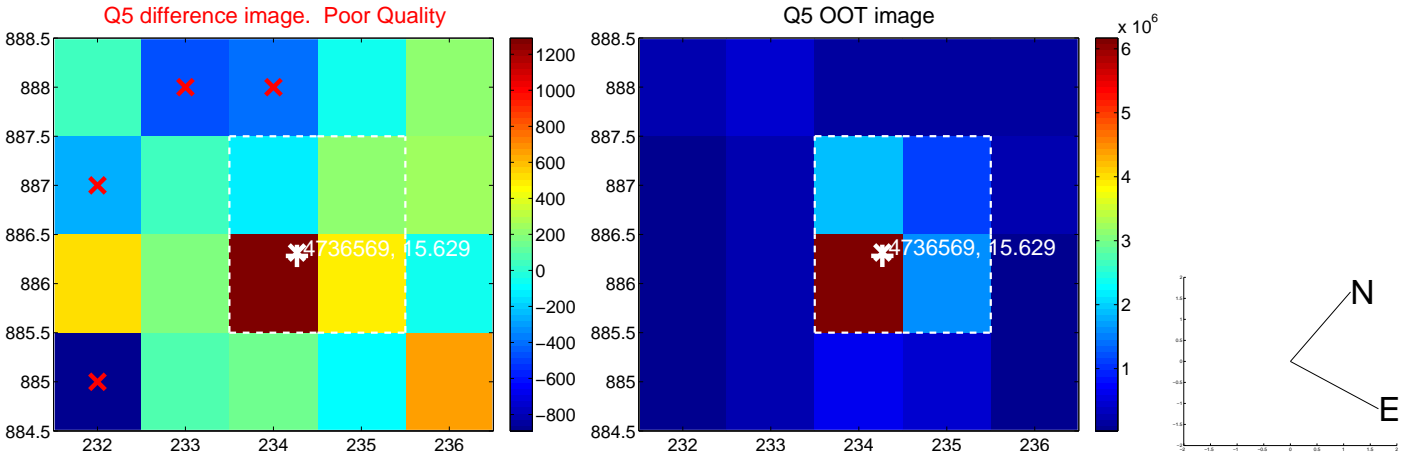


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

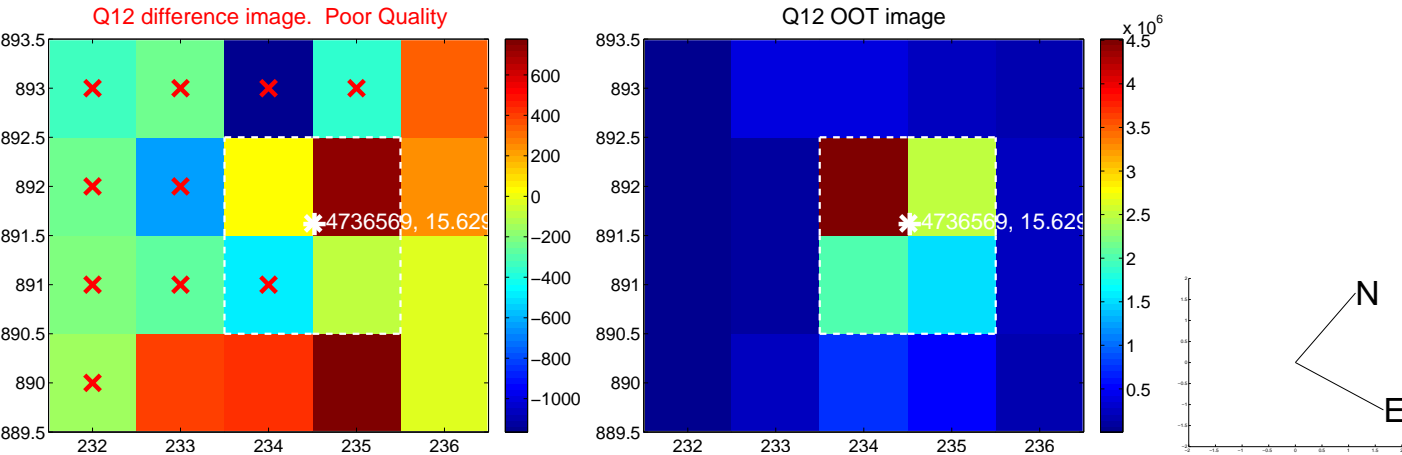
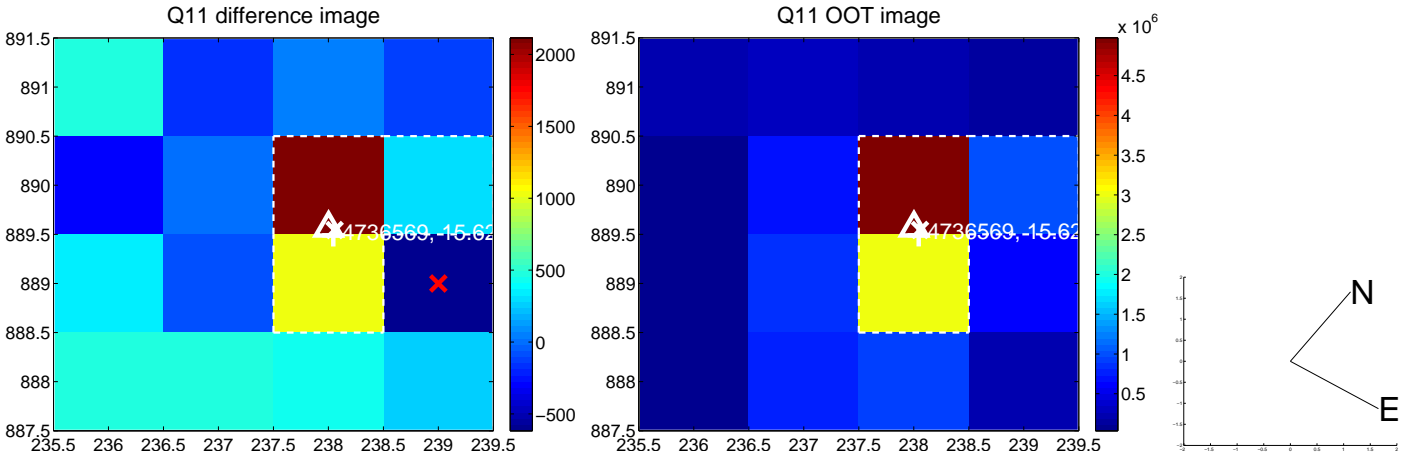
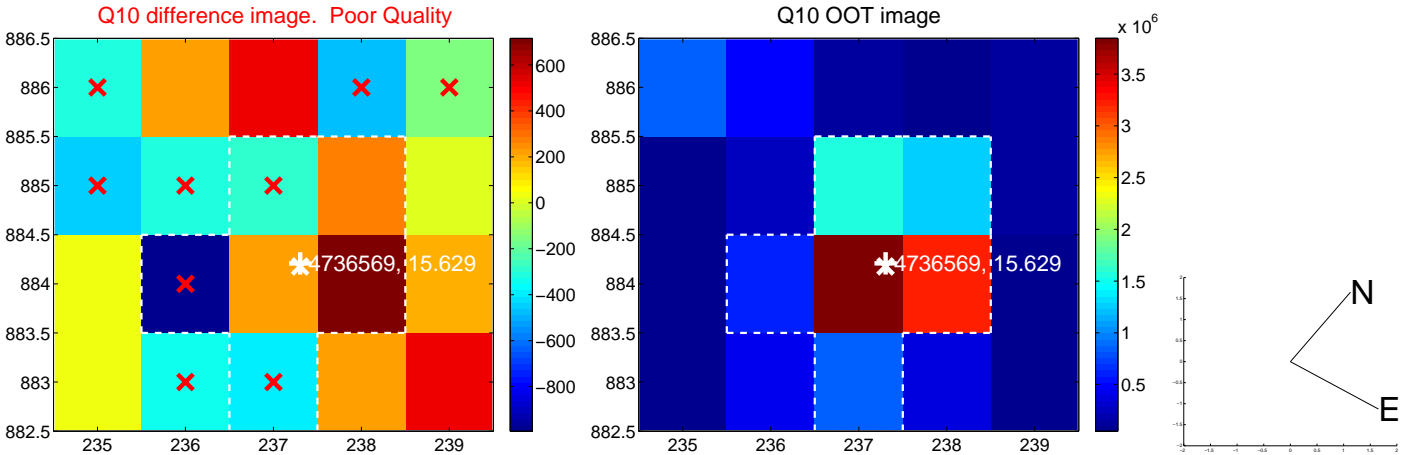
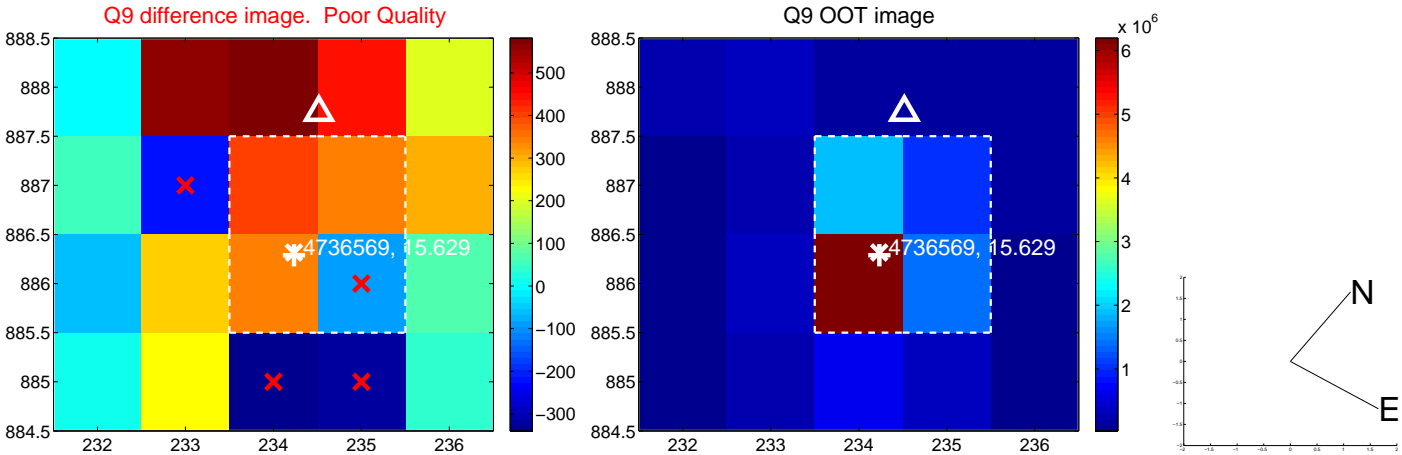
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



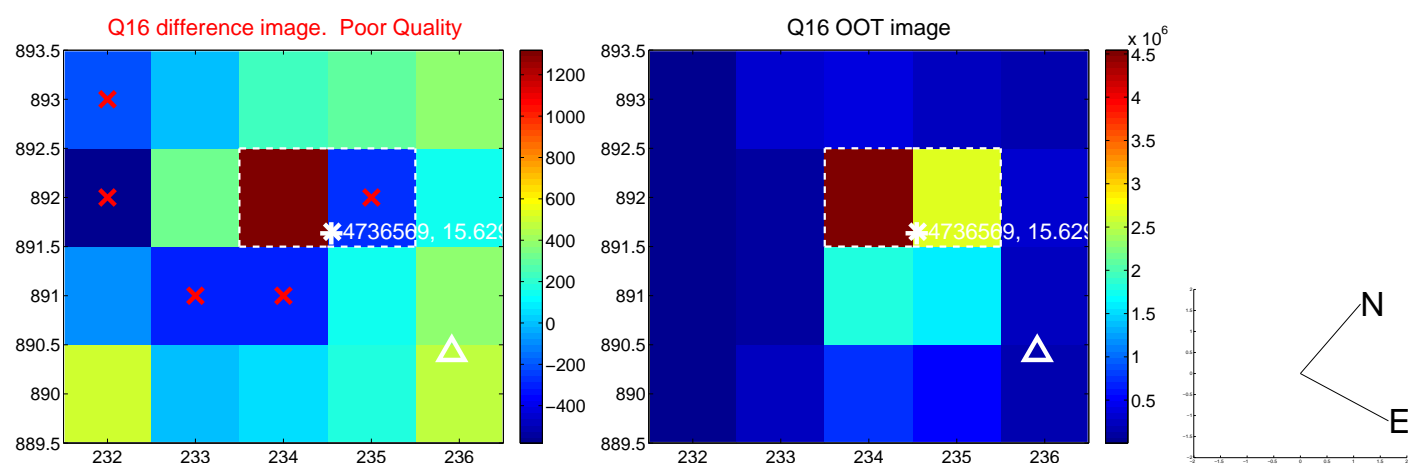
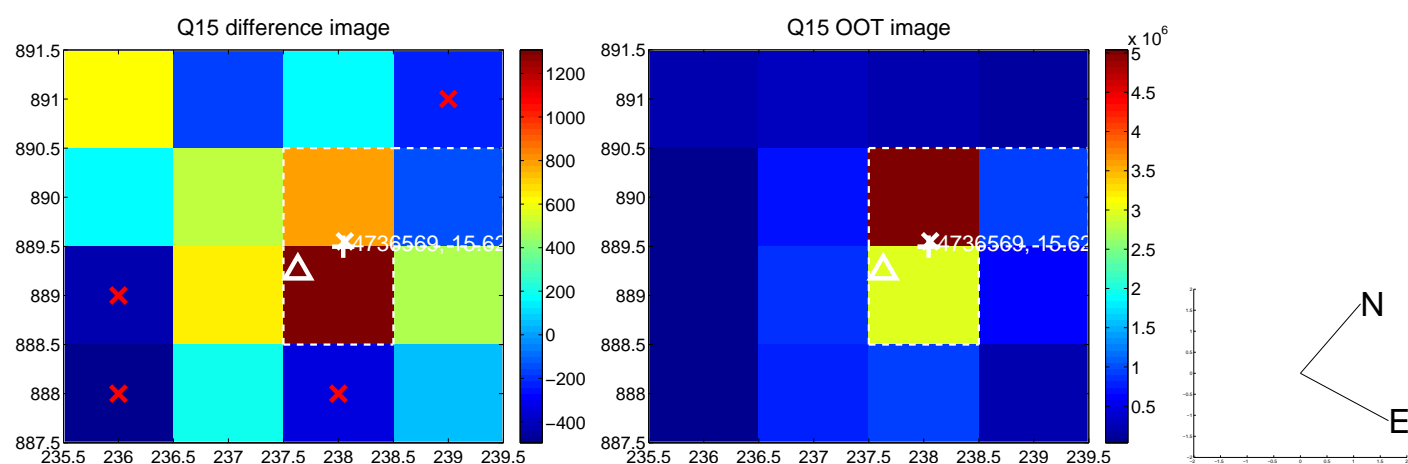
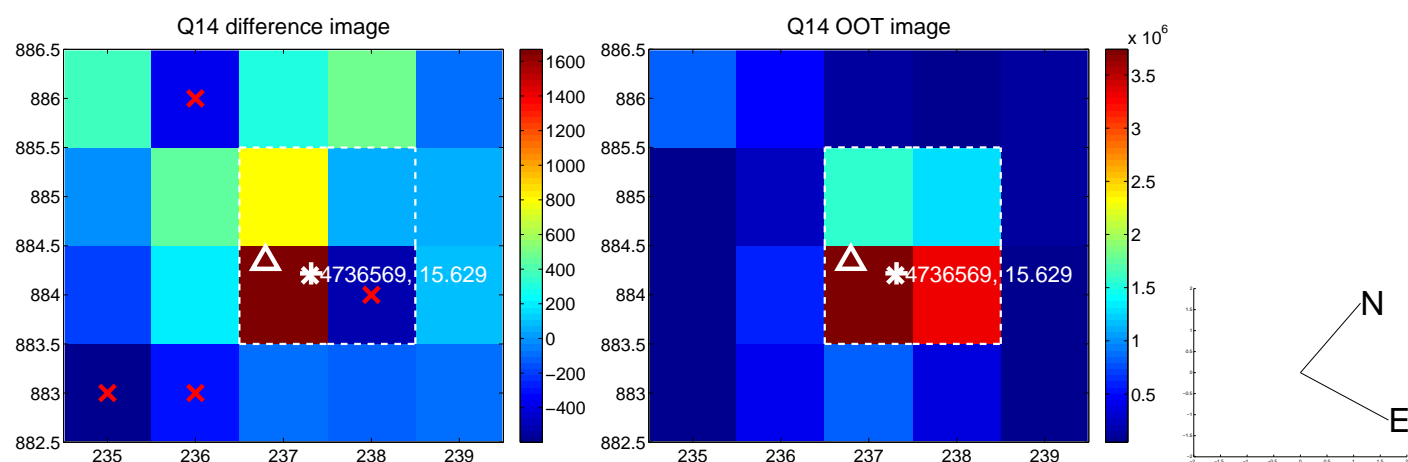
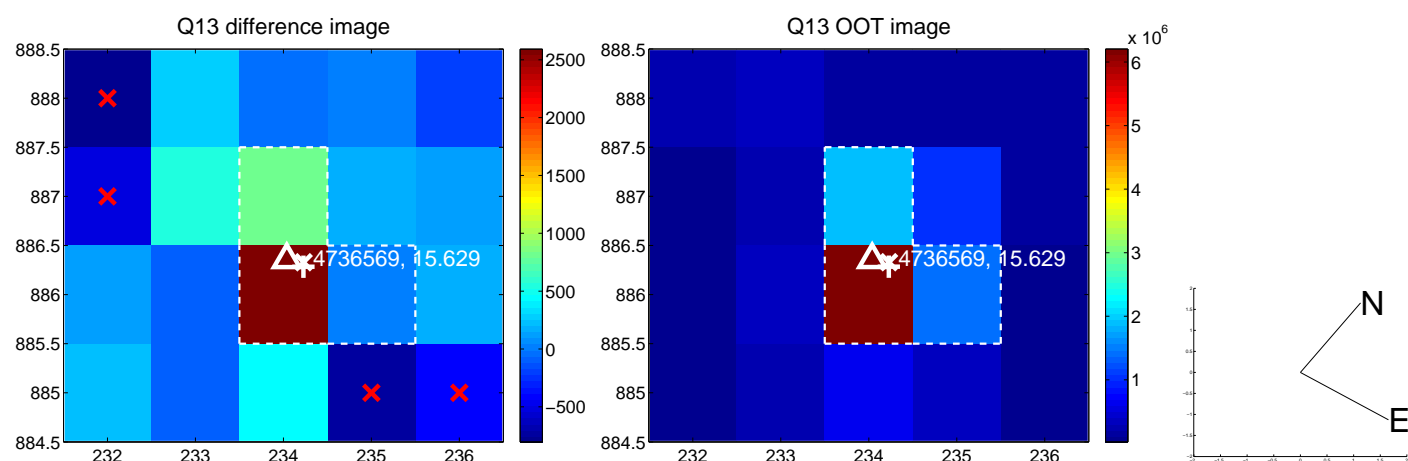
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



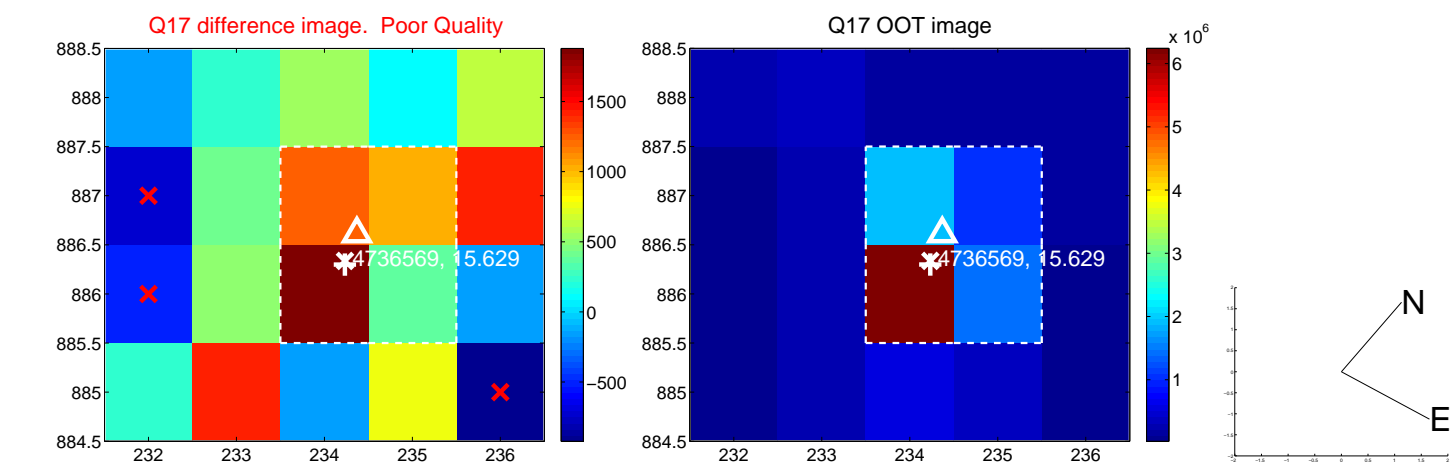
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



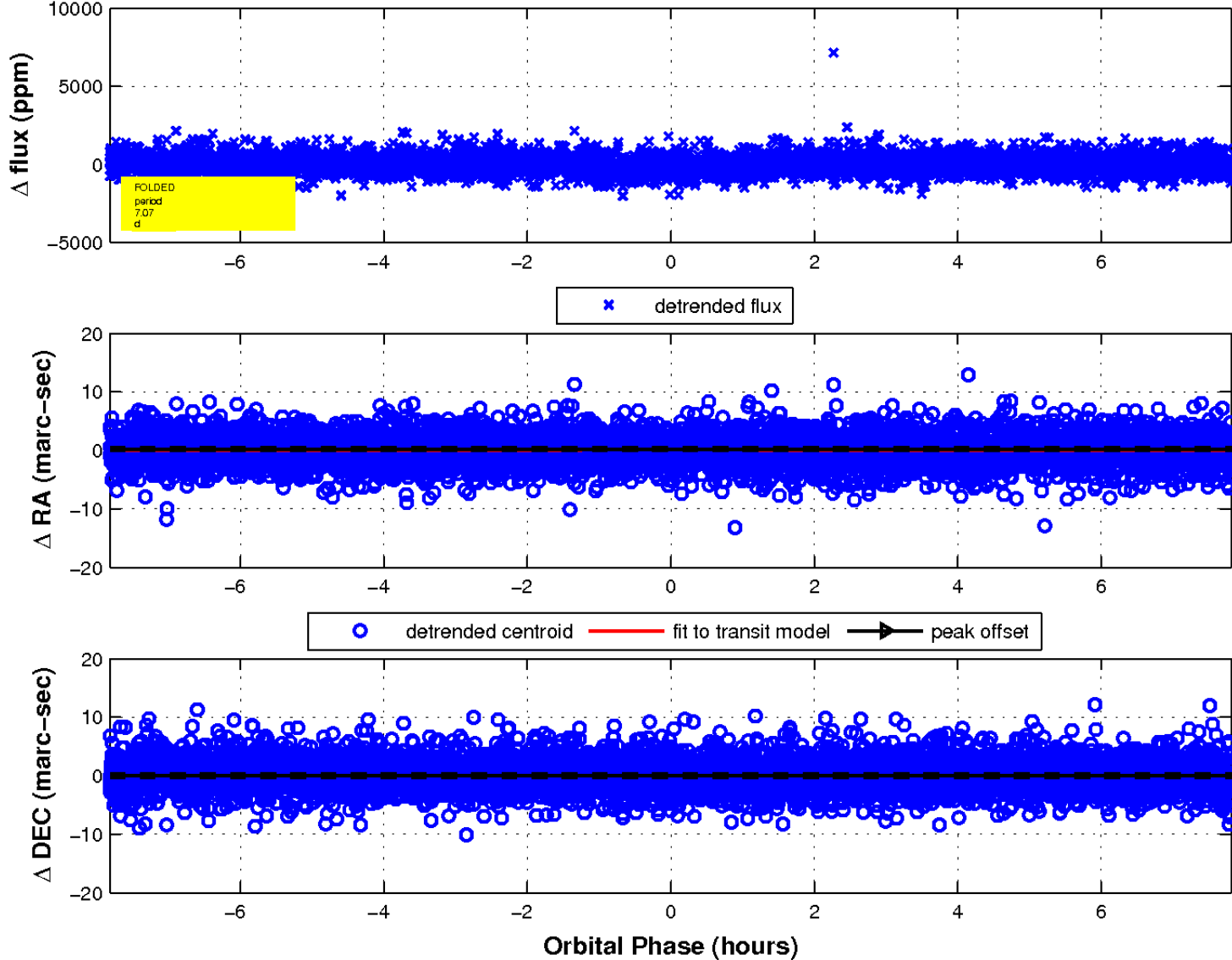
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

