

KIC 009411166

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})
009411166-01	OBS	1922.01	1.954506	132.302812	364.6	2.169	35.5	39.5	1.14	5741	2.59	1333.67
009411166-02	OBS	1922.03	105.654586	230.104555	1349.3	9.304	31.7	35.9	1.14	5741	4.25	6.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009411166-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009411166-02	OBS	PC	1.00	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.

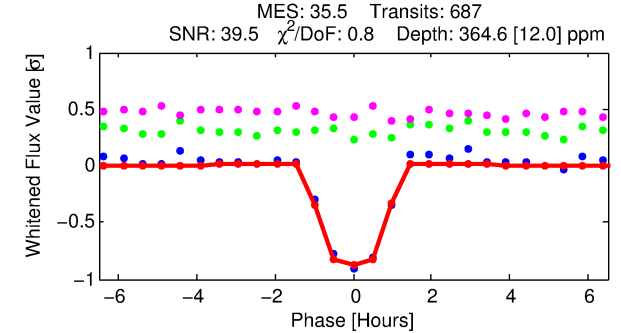
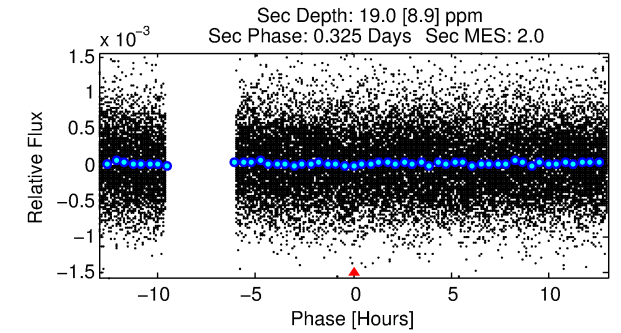
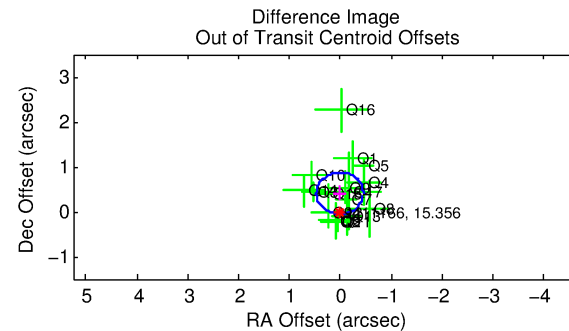
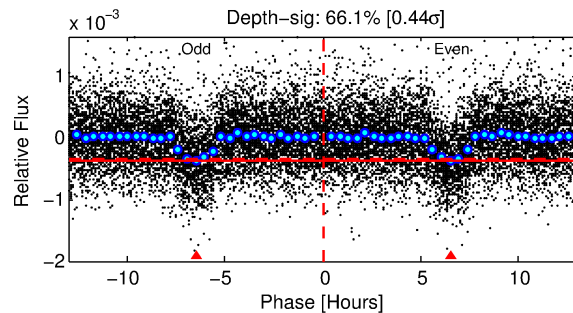
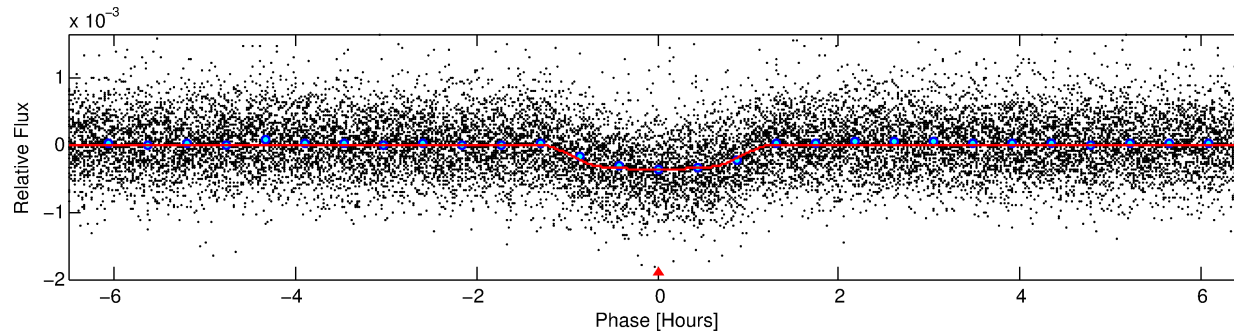
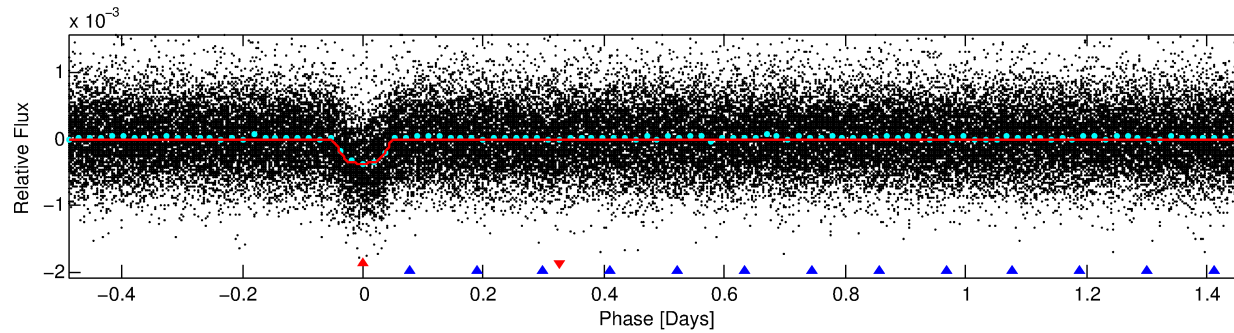
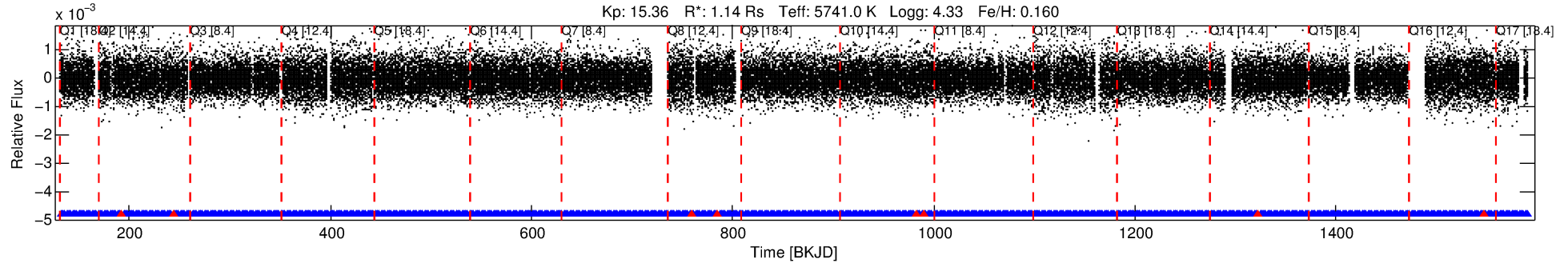
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009411166-01

No Significant Match Found

DV One-Page Summary

KIC: 9411166 Candidate: 1 of 2 Period: 1.955 d
KOI: K01922.01 Corr: 0.958



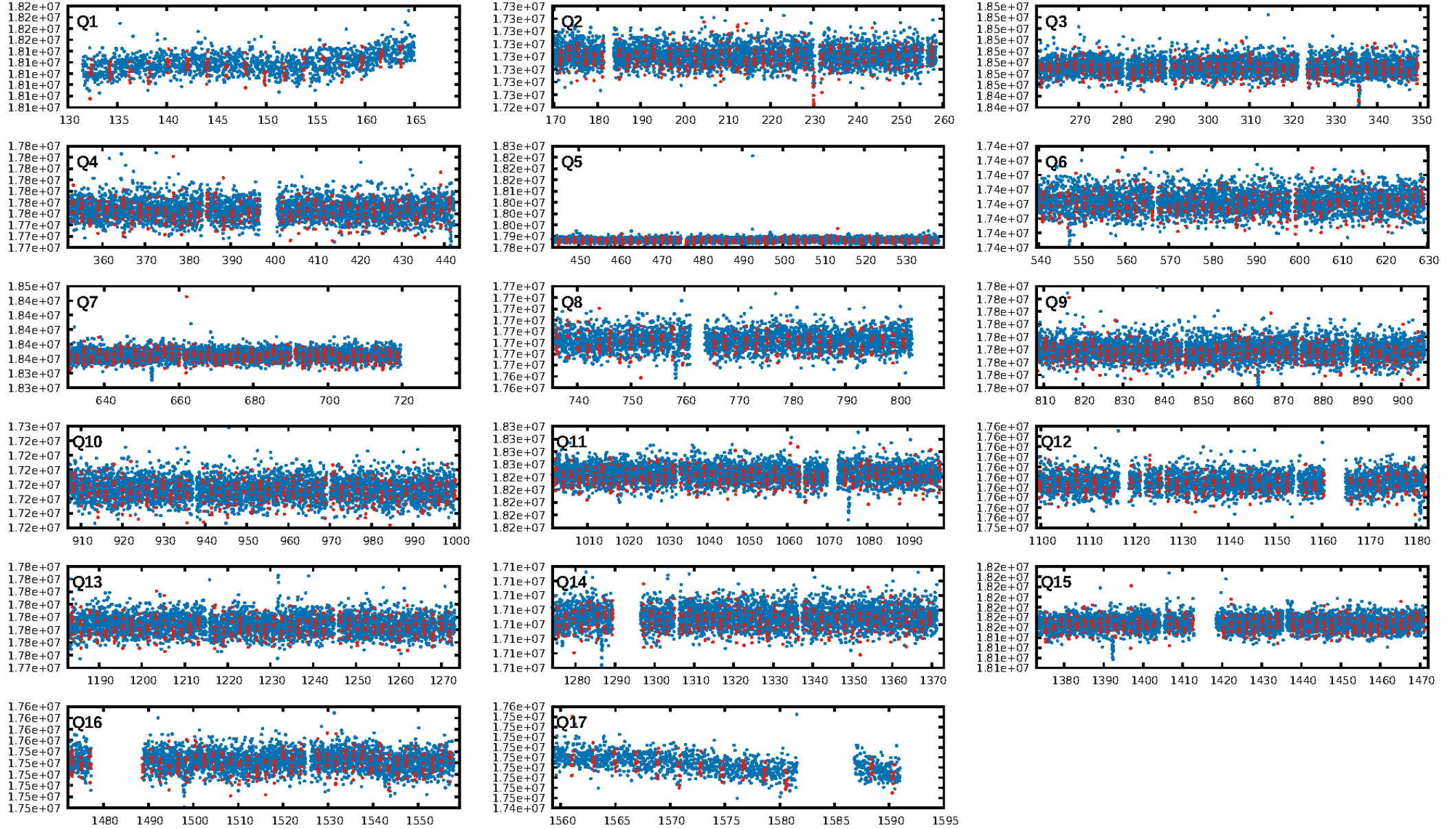
DV Fit Results:

Period = 1.95451 [0.00000] d
Epoch = 132.3028 [0.0009] BKJD
Rp/R* = 0.0209 [0.0030]
a/R* = 3.44 [2.04]
b = 0.90 [0.14]
Seff = 1333.67 [283.54]
Teff = 1541 [82] K
Rp = 2.59 [0.55] Re
a = 0.0307 [0.0042] AU
Ag = 1.46 [0.86] [0.54 σ]
Teffp = 2620 [361] K [2.91 σ]

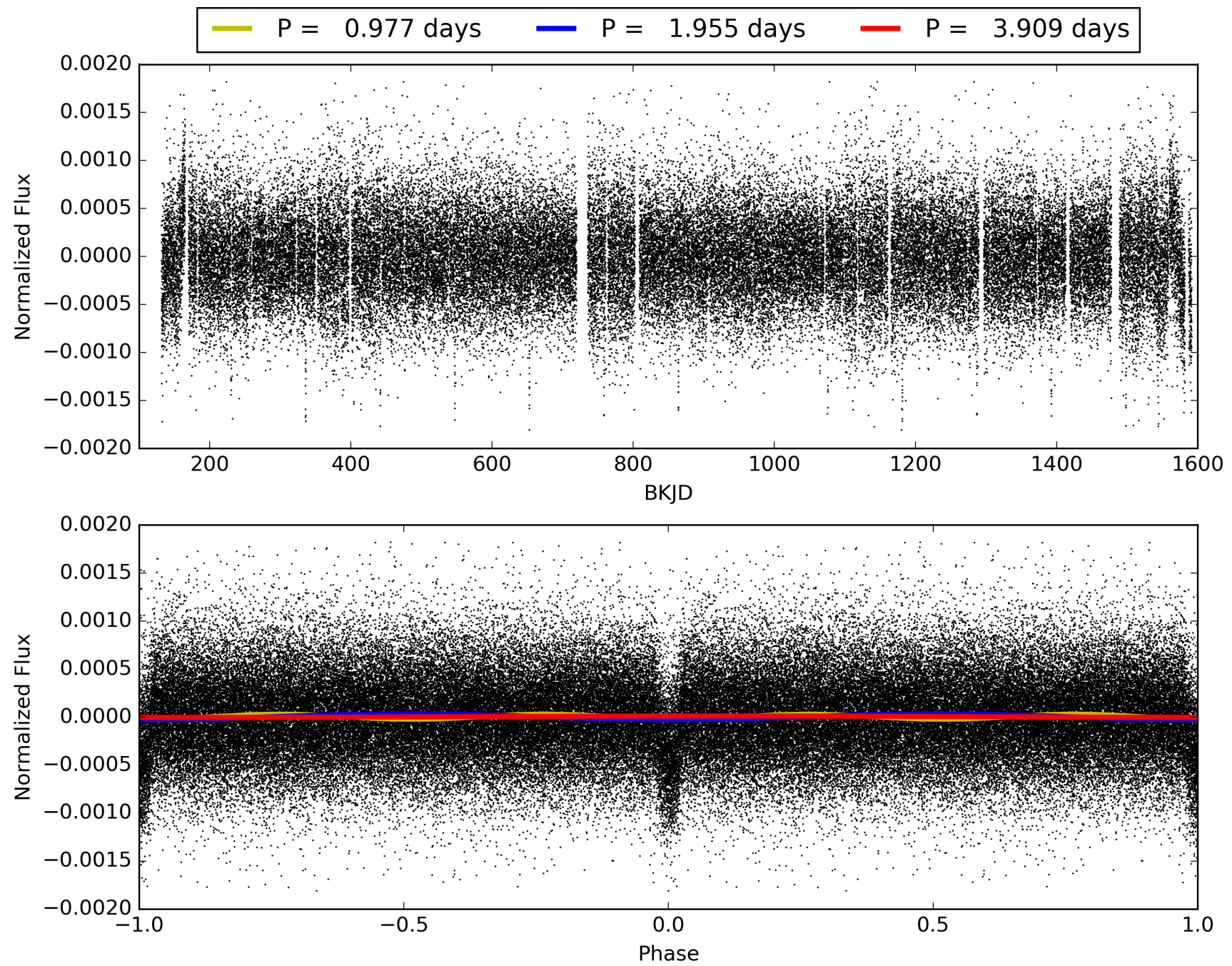
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [260.51 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.92e-274
RollingBand-fgt: 0.99 [649/657]
GhostDiagnostic-chr: 4.74
Centroid-sig: 62.5%
Centroid-so: 0.432 arcsec [1.10 σ]
OotOffset-rm: 0.407 arcsec [2.64 σ]
KicOffset-rm: 0.357 arcsec [2.34 σ]
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 009411166-01, PDC Light Curves

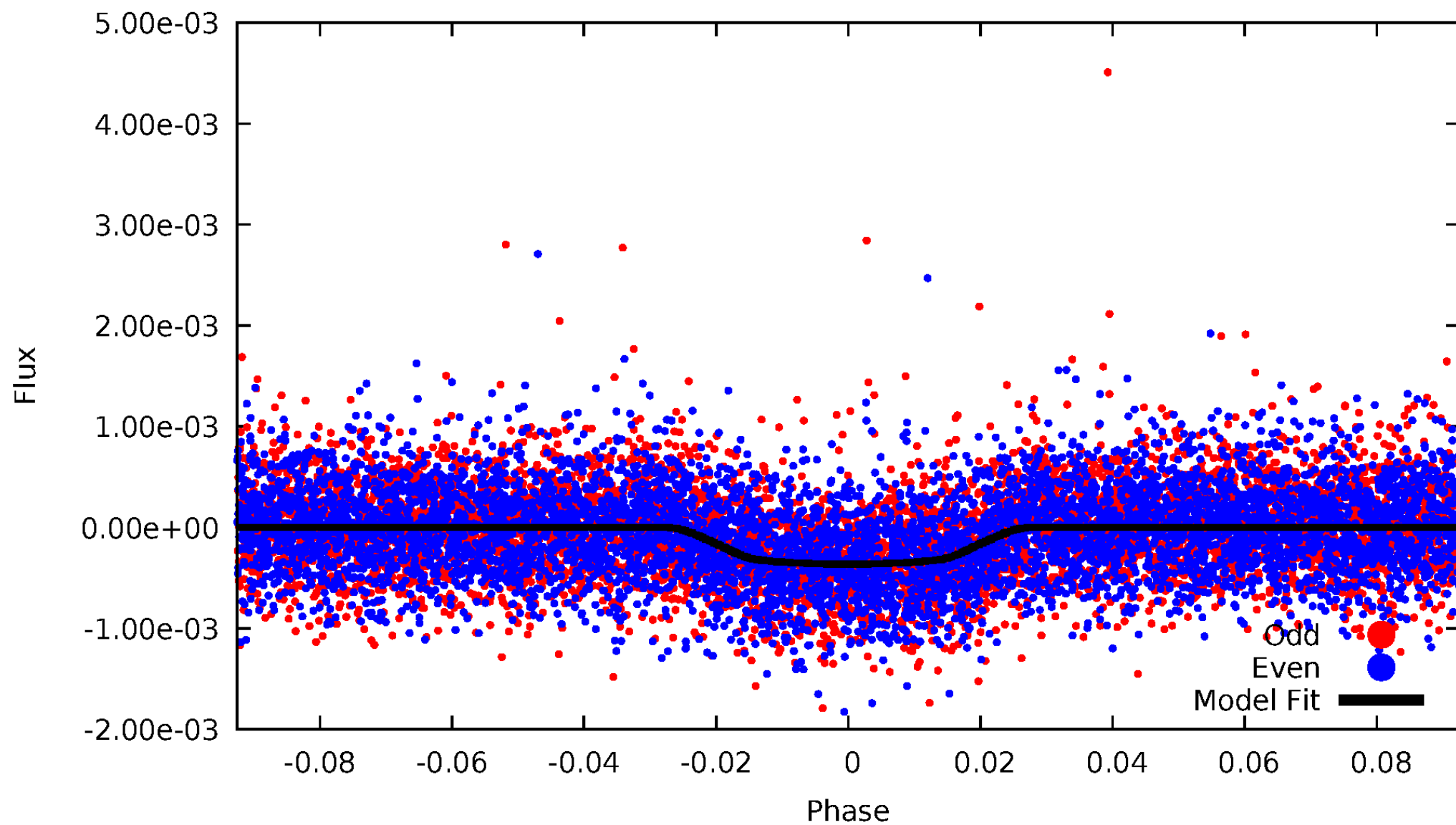


TCE 009411166-01



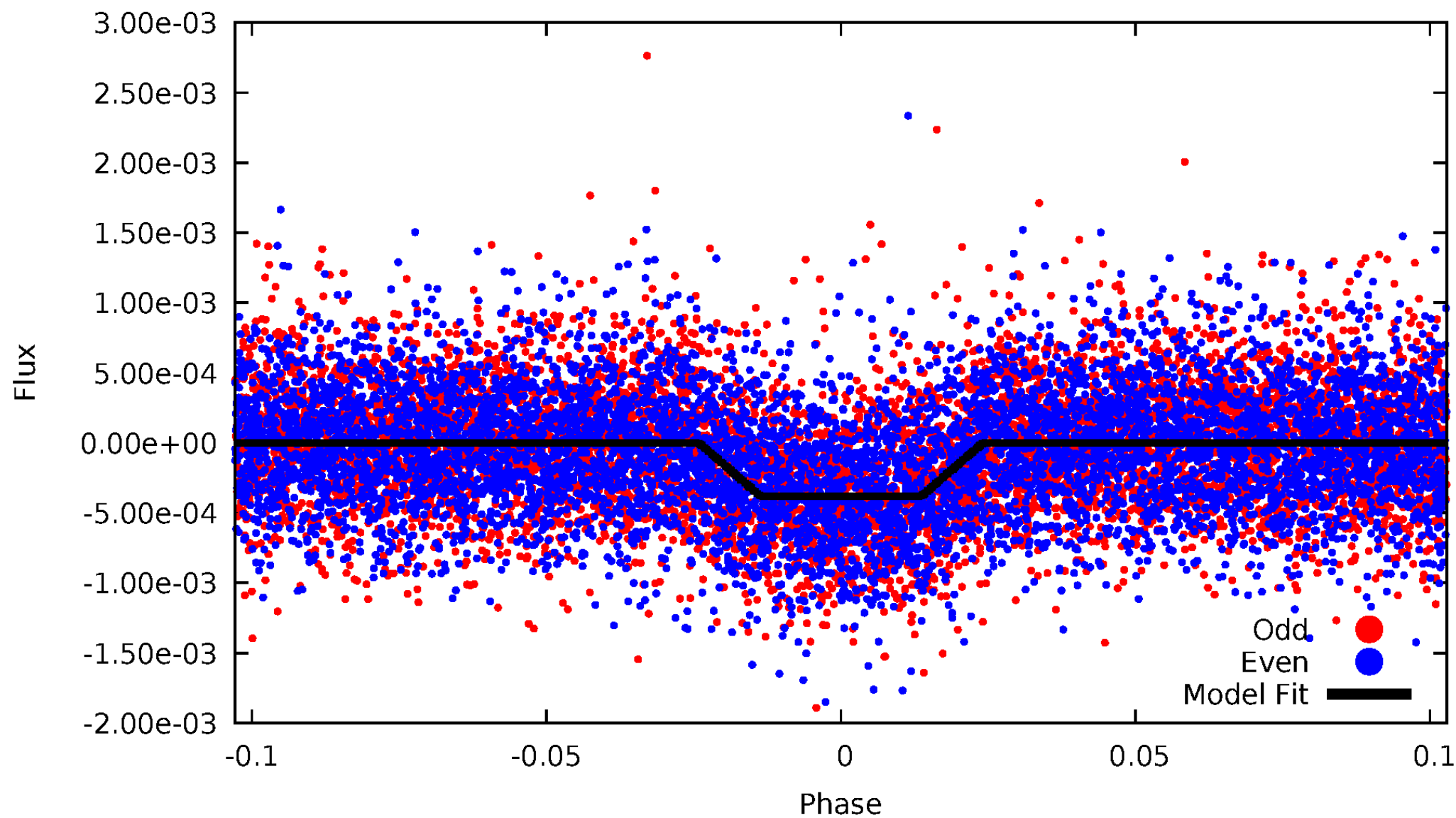
DV Odd/Even

TCE 009411166-01



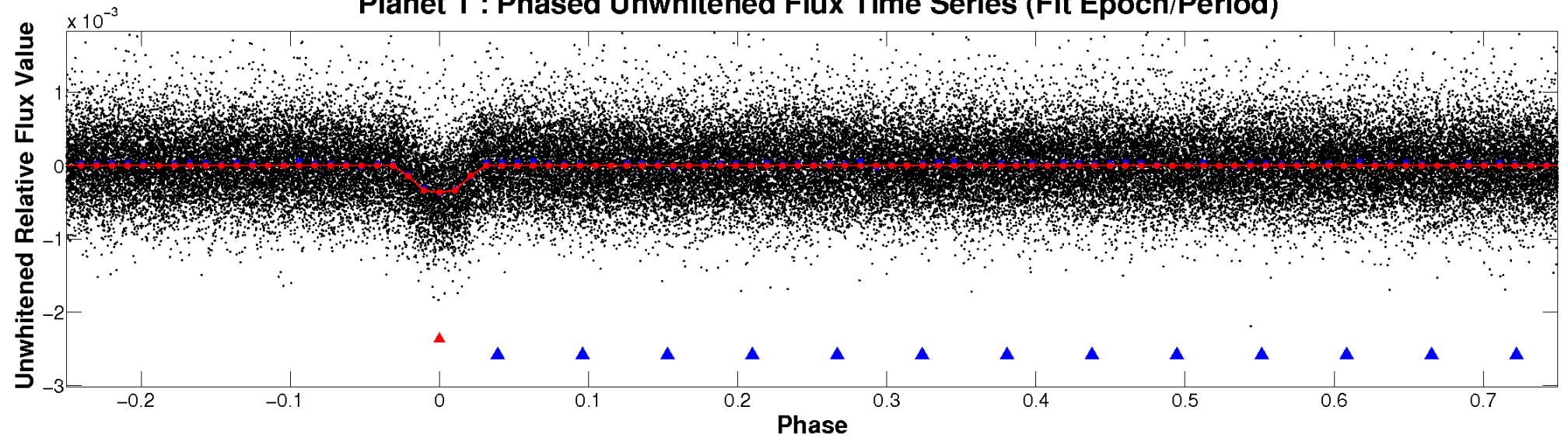
ALT Odd/Even

TCE 009411166-01

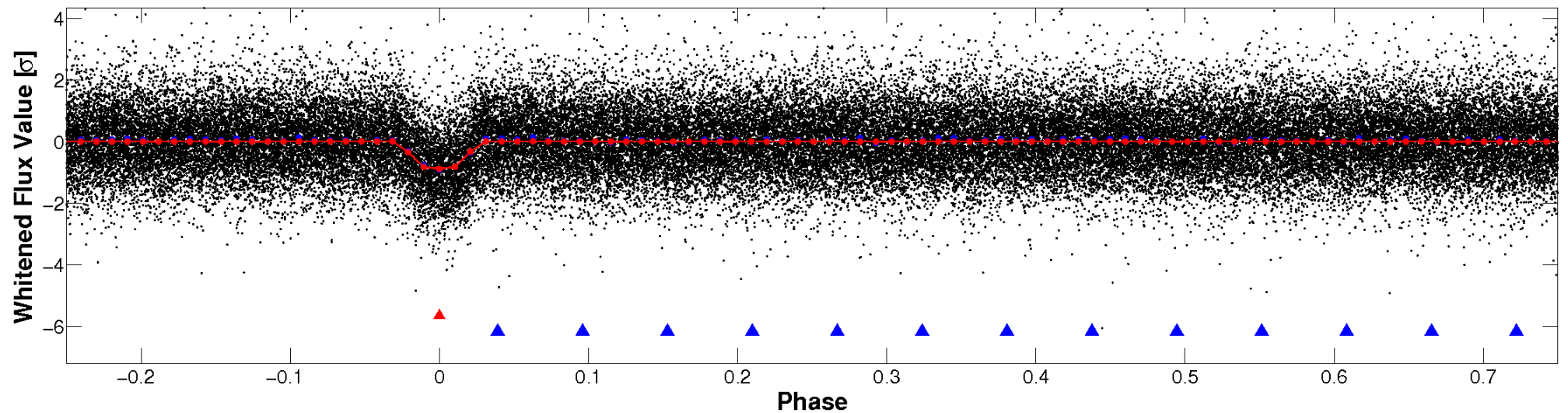


Non-Whitened Vs. Whitened Light Curve

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

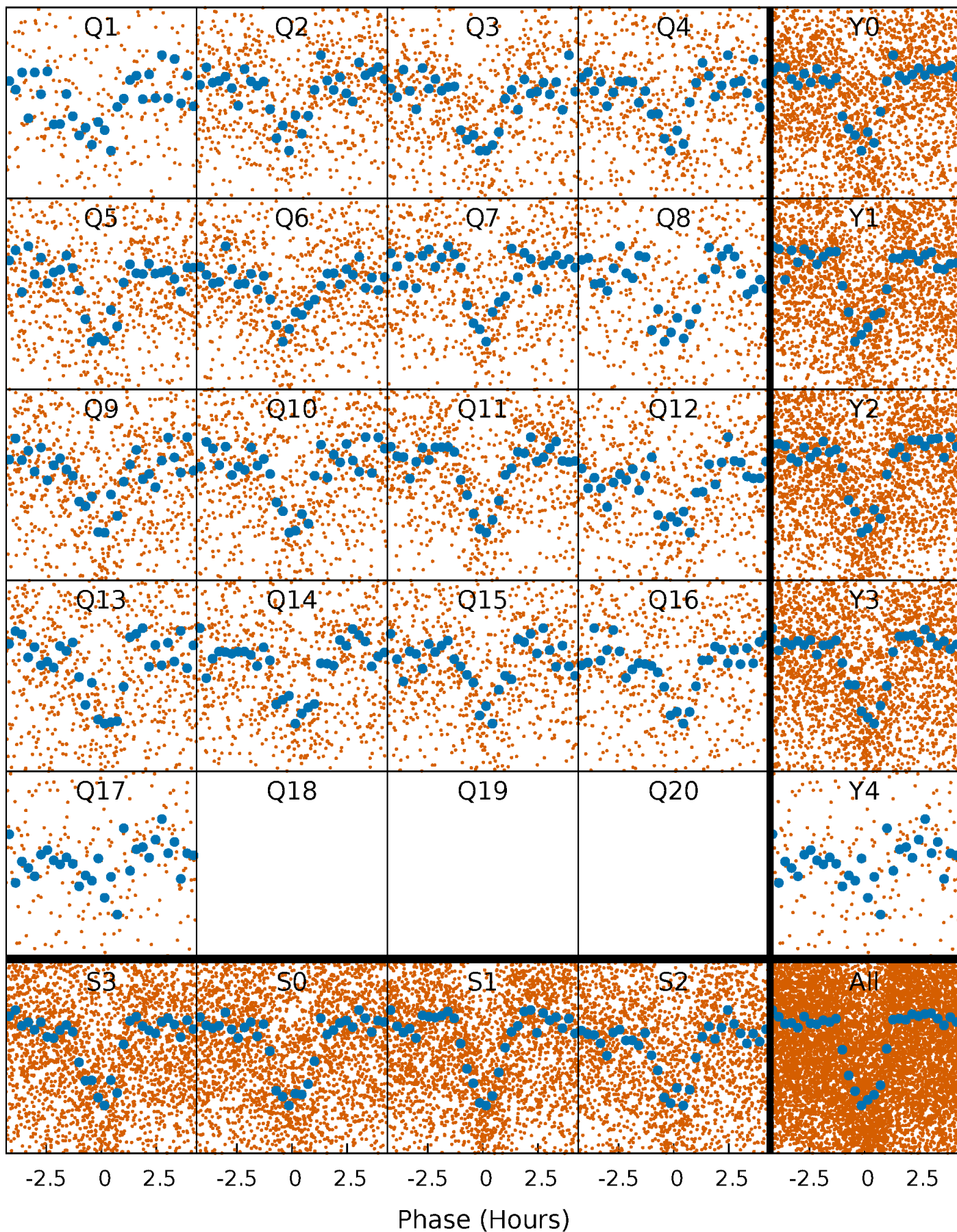


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



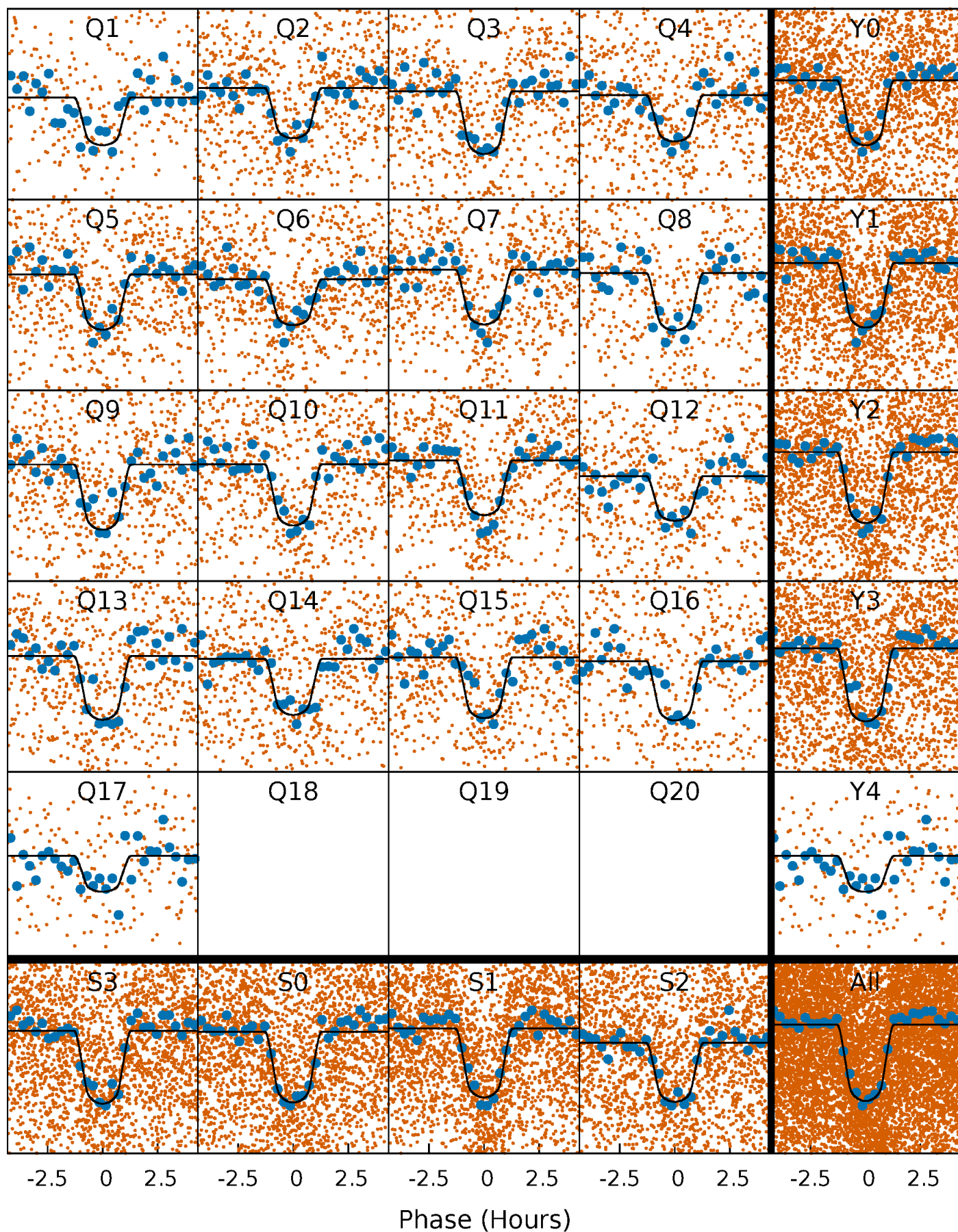
PDC Quarter-Phased Transit Curves

TCE 009411166-01 P= 1.954506 Days $T_0=132.302812$ (BKJD)



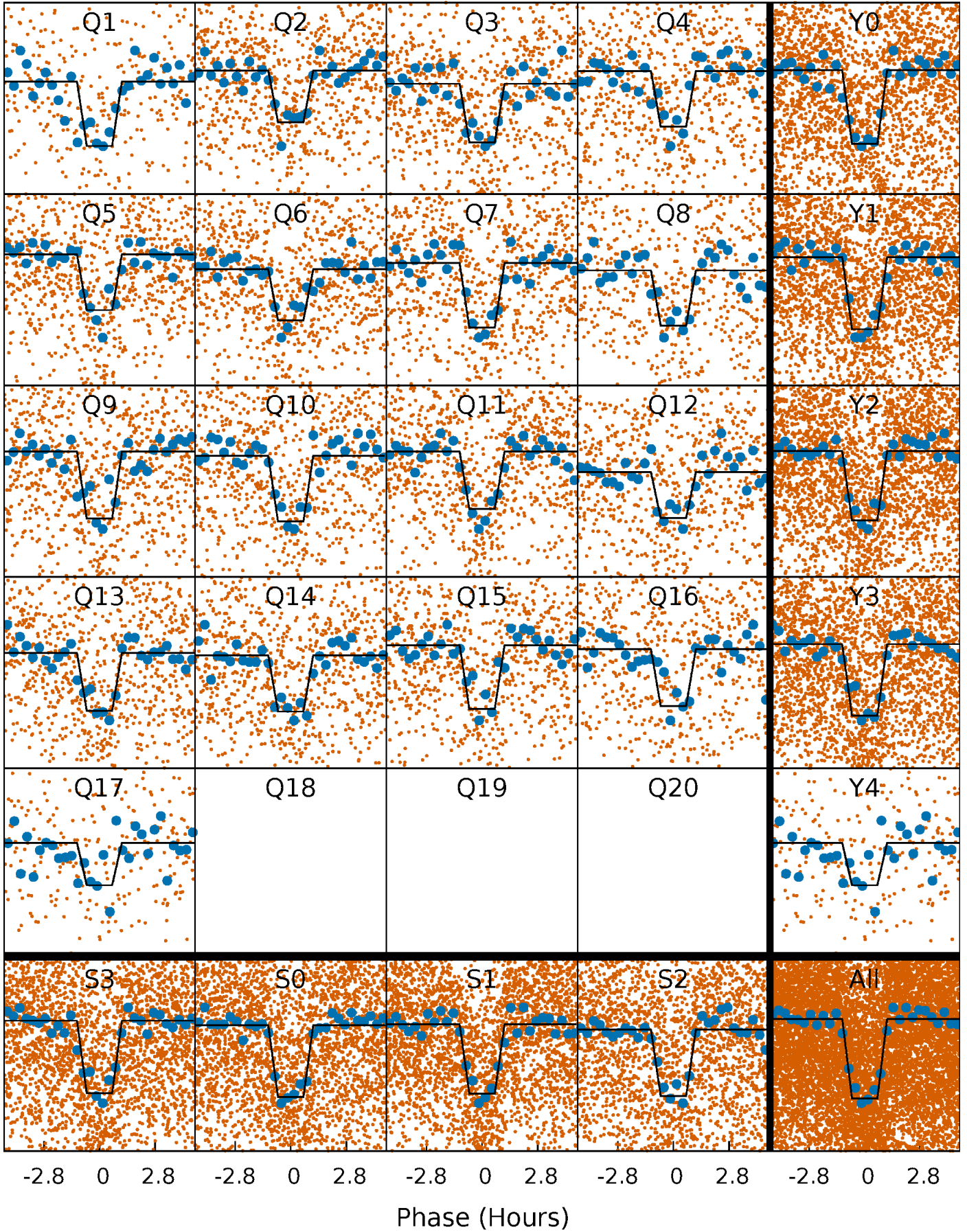
DV Quarter-Phased Transit Curves

TCE 009411166-01 P= 1.954506 Days $T_0=132.302812$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

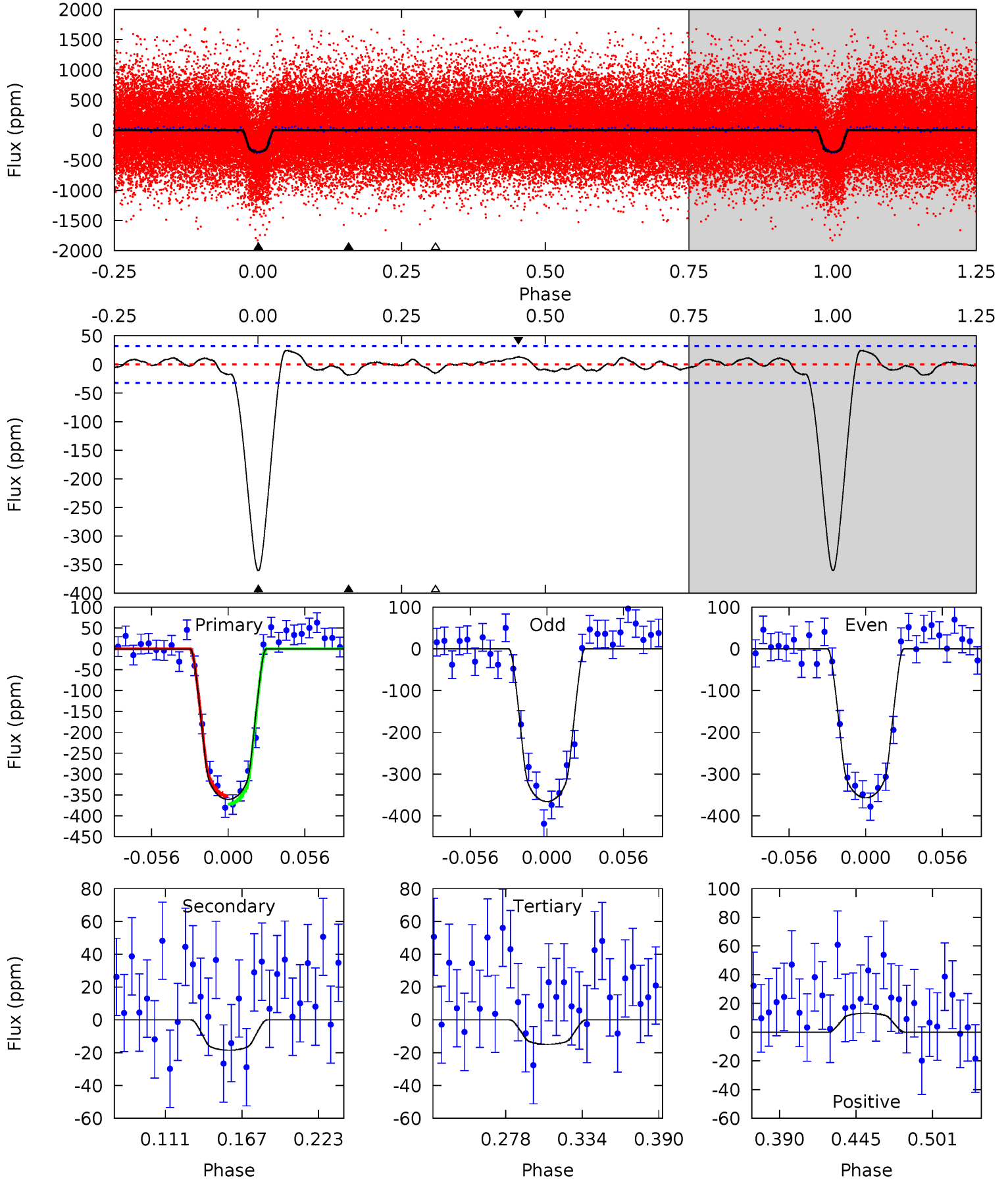
TCE 009411166-01 P= 1.954521 Days $T_0=132.298482$ (BKJD)



DV Model-Shift Uniqueness Test

009411166-01, P = 1.954506 Days, E = 130.348306 Days

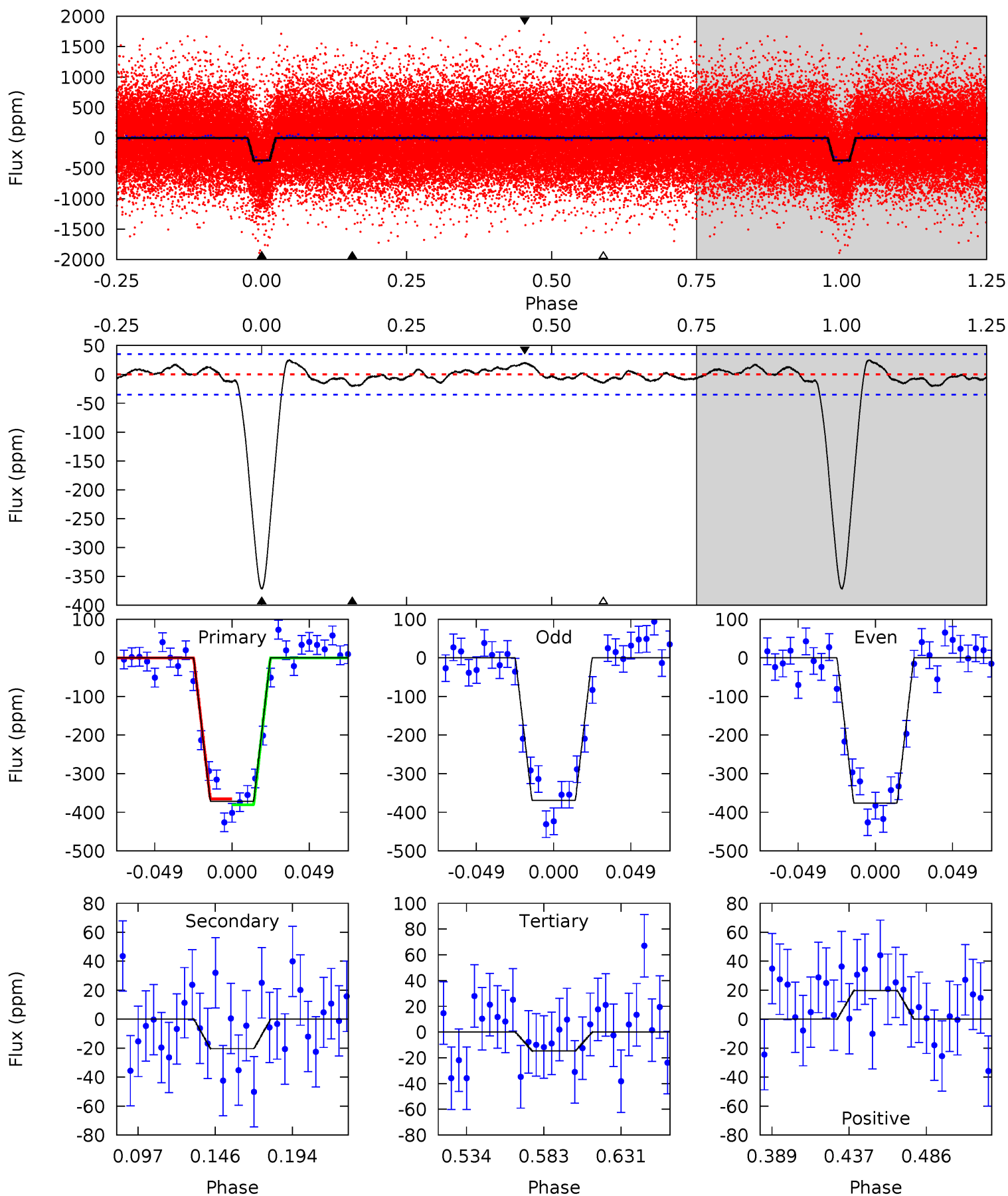
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.2	2.68	2.16	1.91	4.69	1.91	1.08	50.1	50.3	0.52	0.77	0.64	0.96	0.06	1.46



Alt Model-Shift Uniqueness Test

009411166-01, P = 1.954521 Days, E = 130.343961 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.9	2.73	1.96	2.66	4.71	1.97	1.16	47.9	47.2	0.77	0.07	0.48	0.96	0.06	1.00



Stellar Parameters For KIC 009411166

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5741^{+77}_{-77}	$4.331^{+0.115}_{-0.115}$	$0.160^{+0.150}_{-0.150}$	$1.136^{+0.180}_{-0.147}$	$1.010^{+0.073}_{-0.061}$	$0.969^{+0.481}_{-0.322}$
	+1%/-1%	+3%/-3%	+94%/-94%	+16%/-13%	+7%/-6%	+50%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009411166-01 / KOI 1922.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-19 ± 7	$2.61^{+0.46}_{-0.41}$	2152^{+89}_{-82}	3091^{+233}_{-328}	$1.398^{+0.754}_{-0.605}$
Alt.	-20 ± 7	$2.41^{+0.50}_{-0.42}$	2154^{+104}_{-84}	3206^{+296}_{-295}	$1.739^{+1.166}_{-0.758}$

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

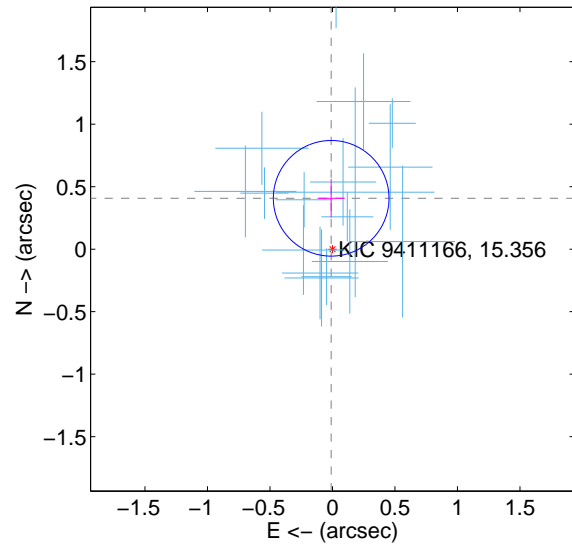
Supplemental centroid analysis for 009411166-01. Kepler magnitude: 15.36. Transit SNR 39.48

There are 17 quarters with good PRF difference image offsets

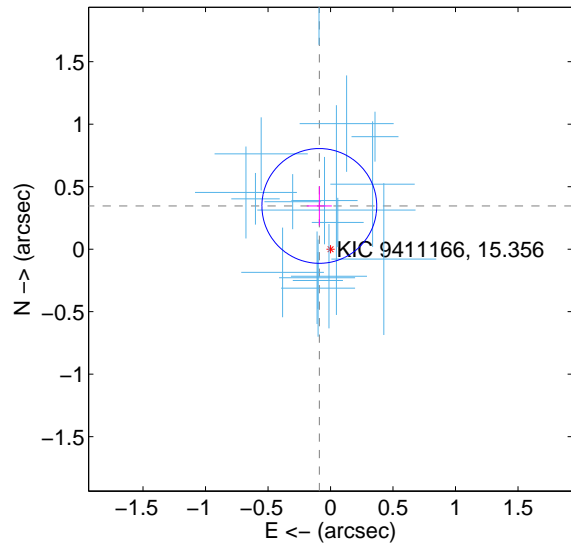
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.407 ± 0.154	2.64	0.010 ± 0.109	0.407 ± 0.154
PRF-fit source offset from KIC position	0.357 ± 0.153	2.34	0.090 ± 0.100	0.346 ± 0.157
photometric centroid source offset	0.43 ± 0.39	1.10	0.29 ± 0.38	-0.32 ± 0.40

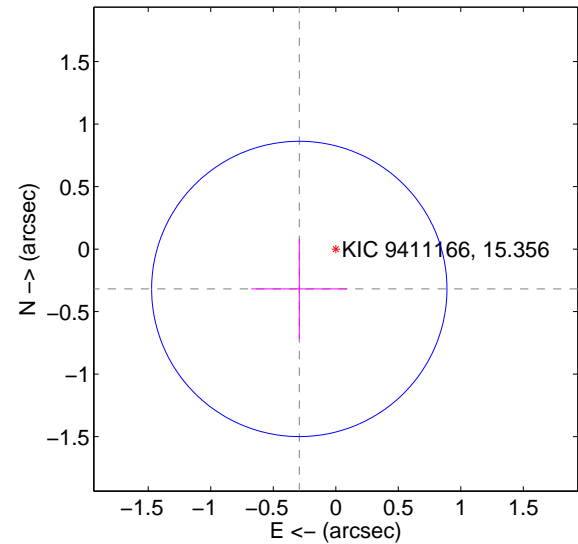
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

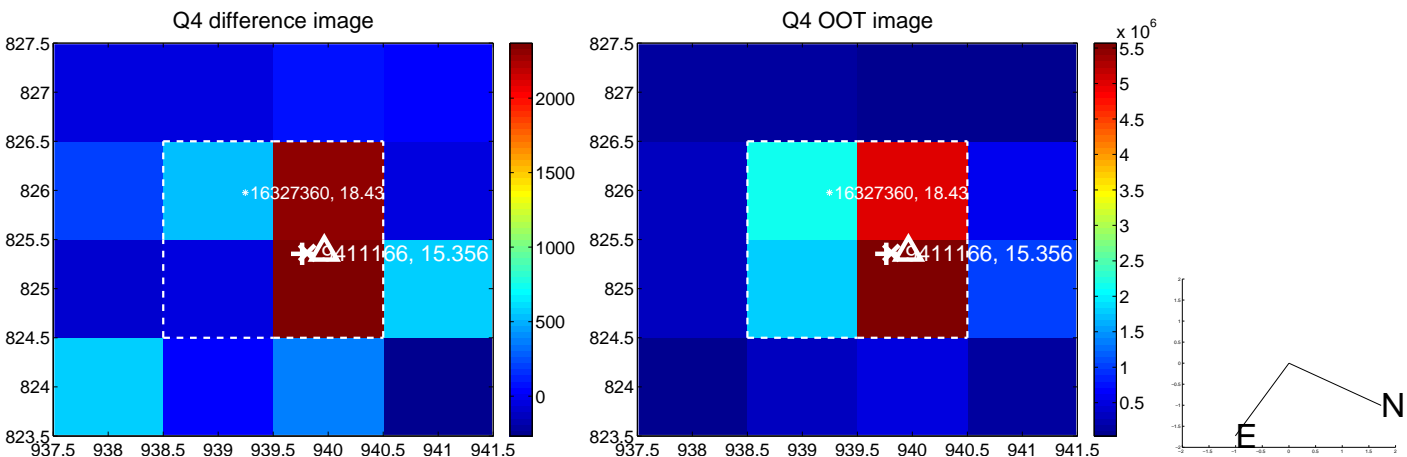
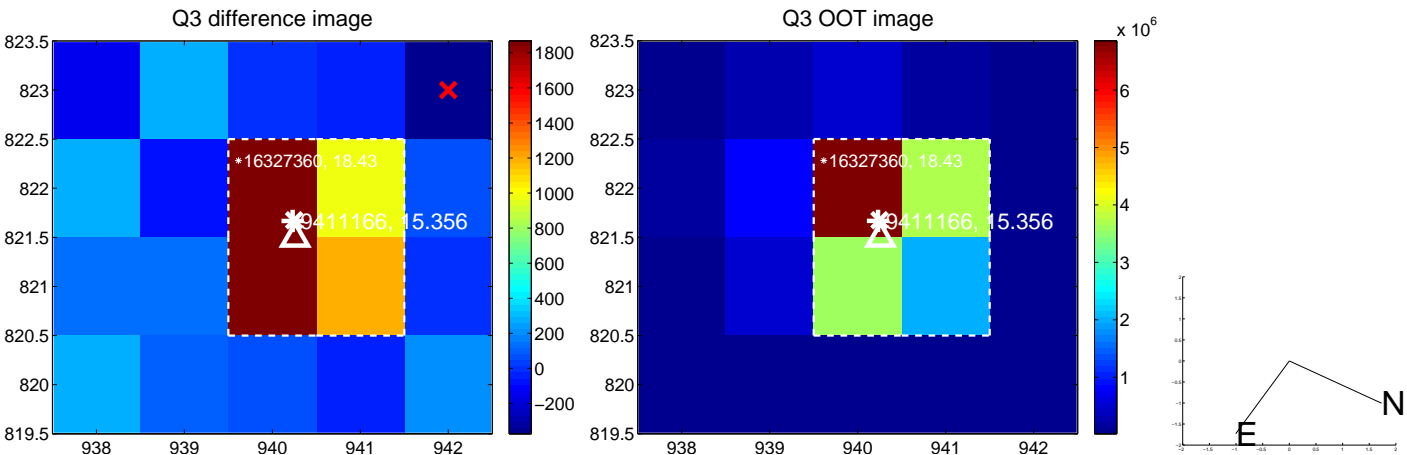
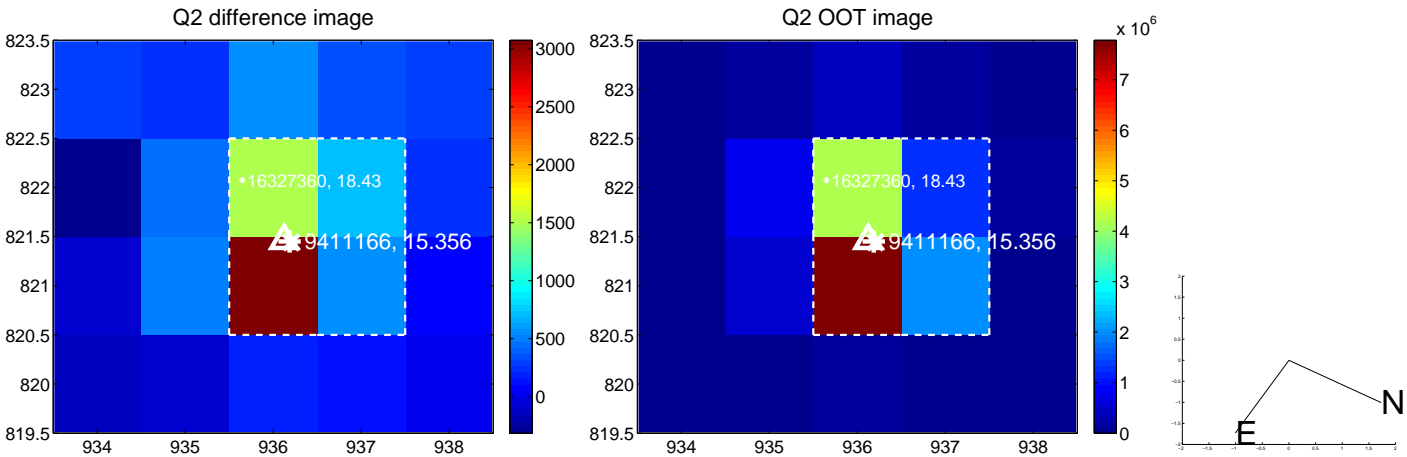
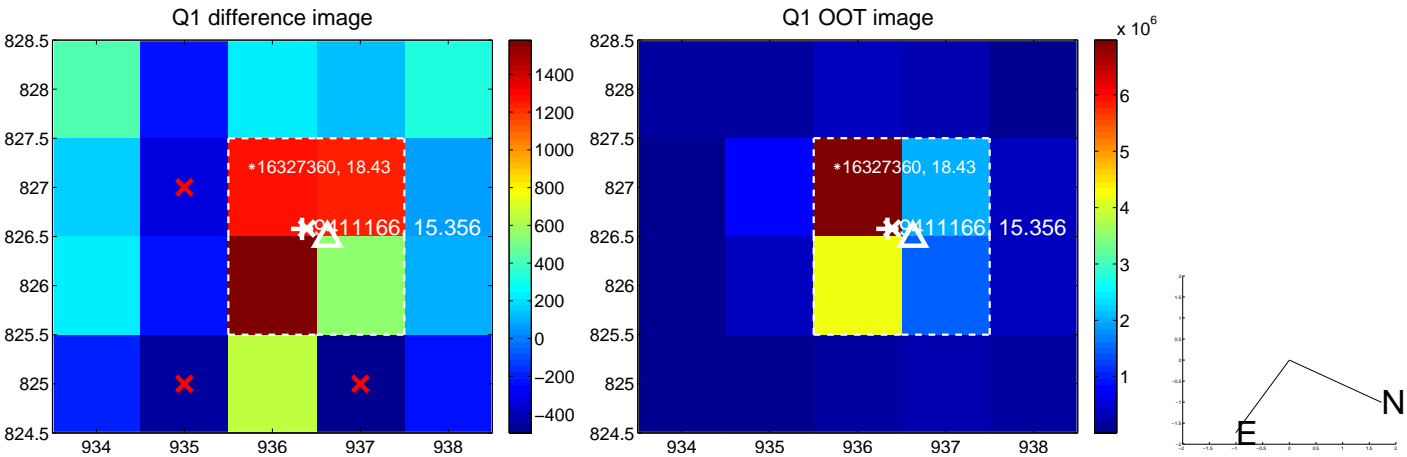


offset from photometric centroids

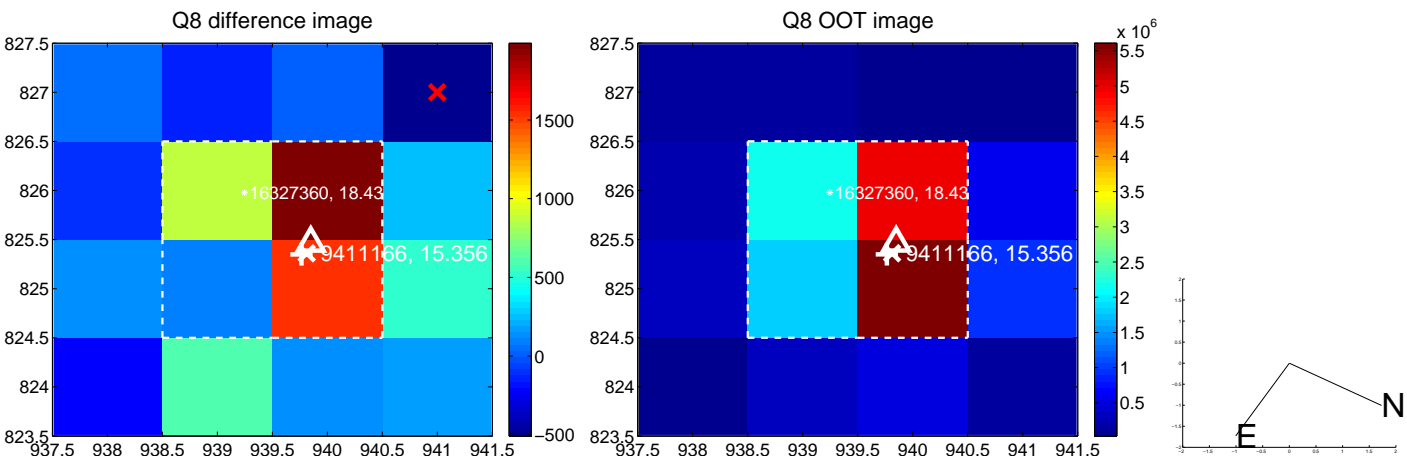
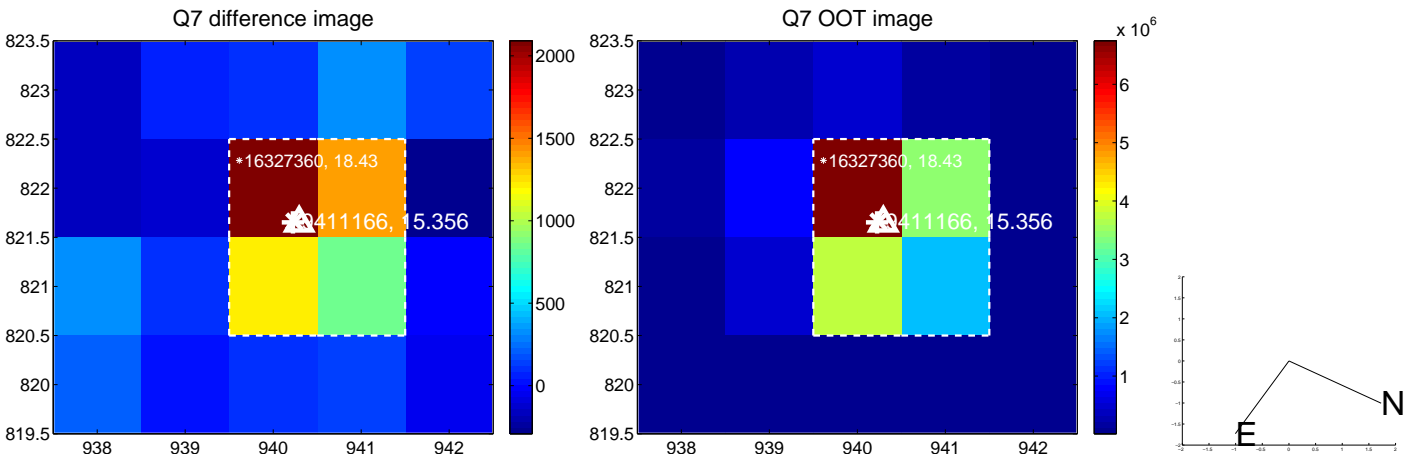
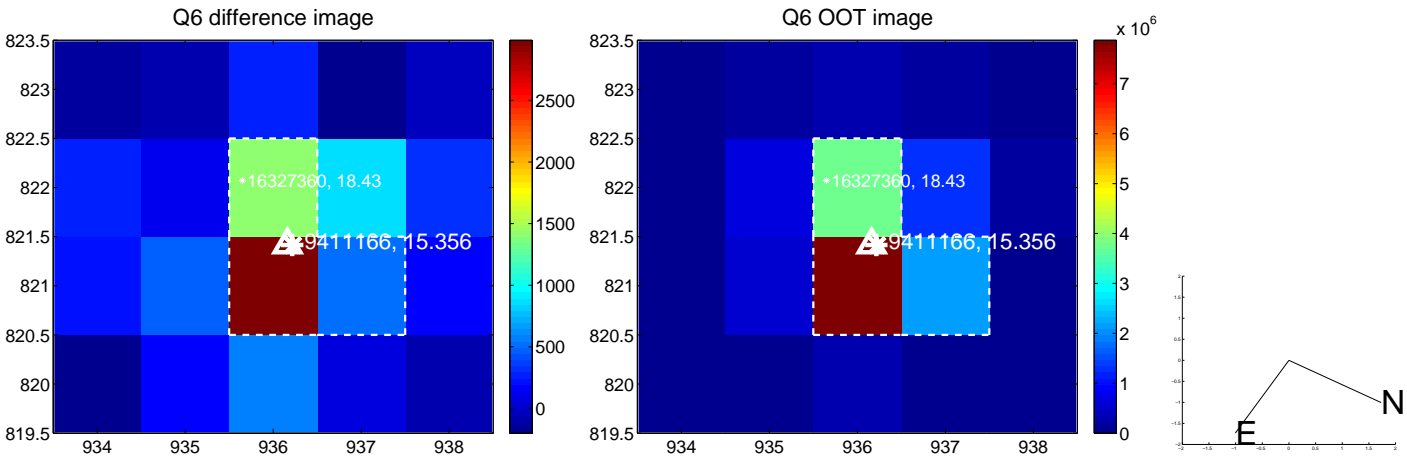
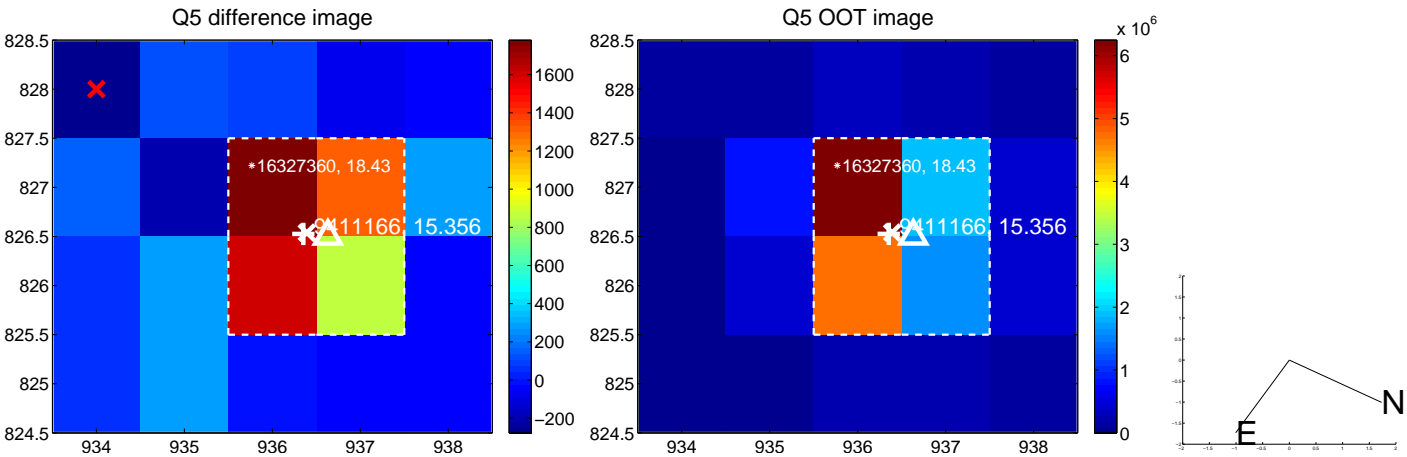


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

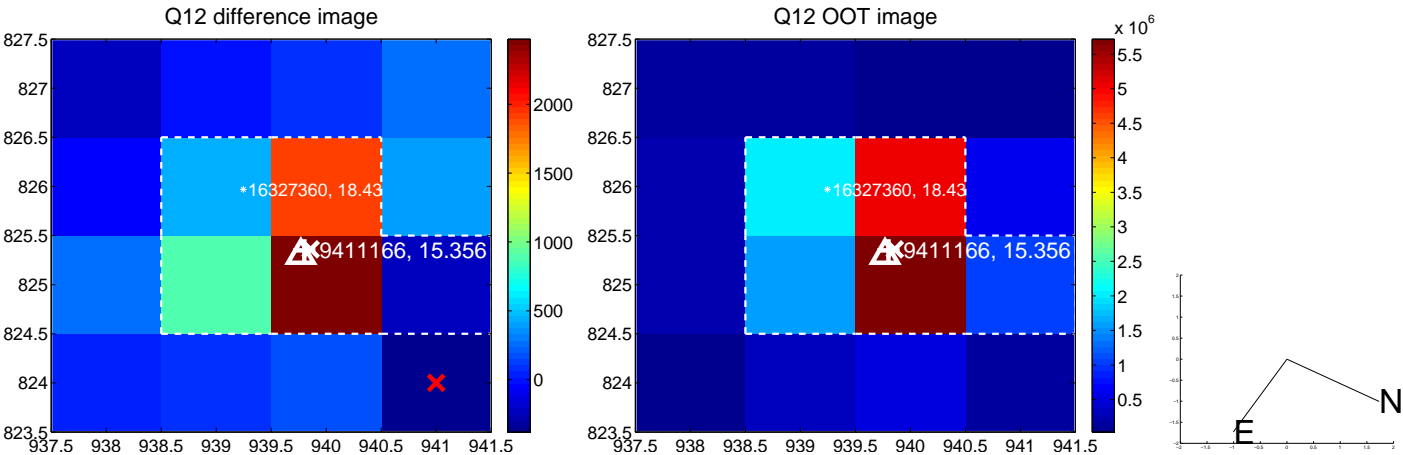
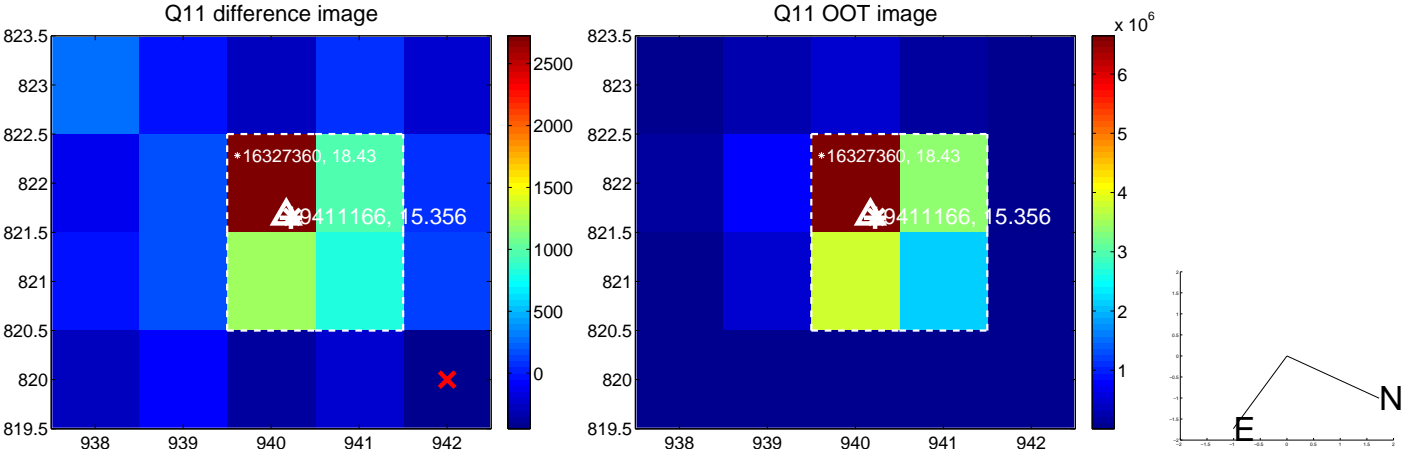
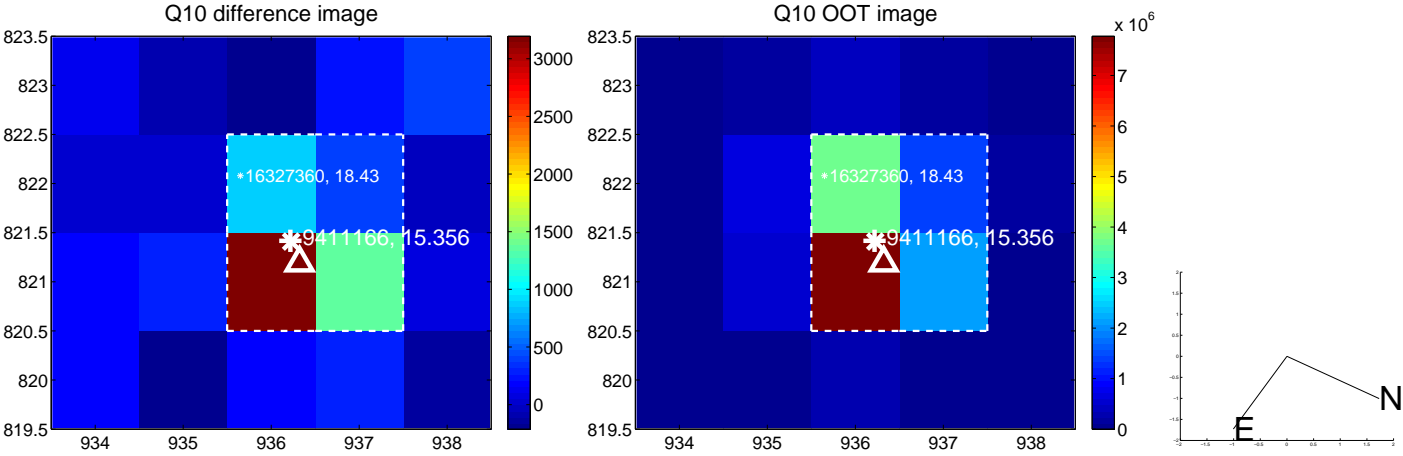
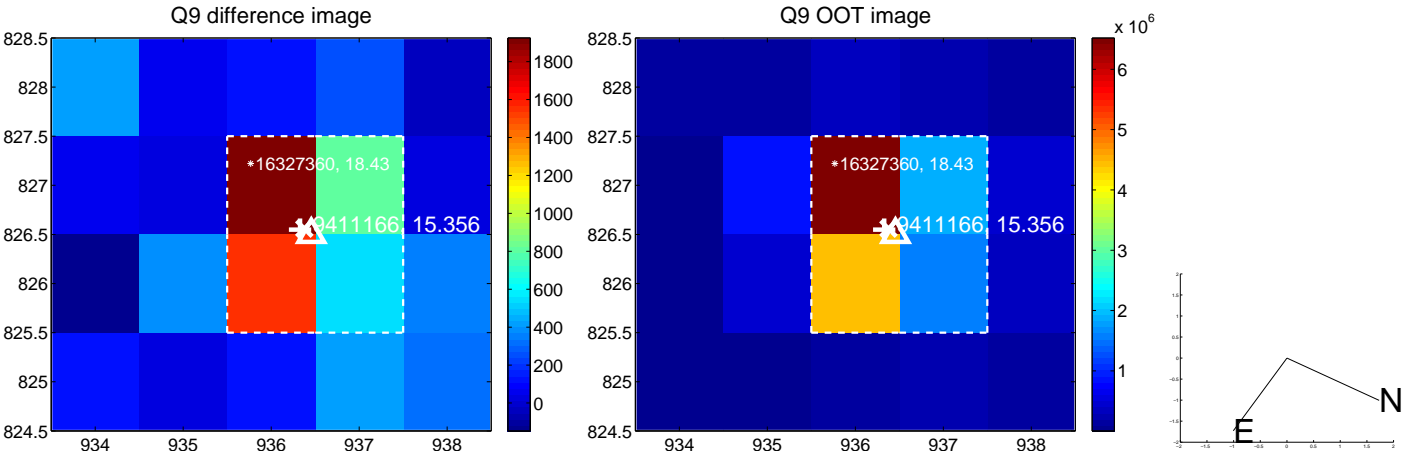
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



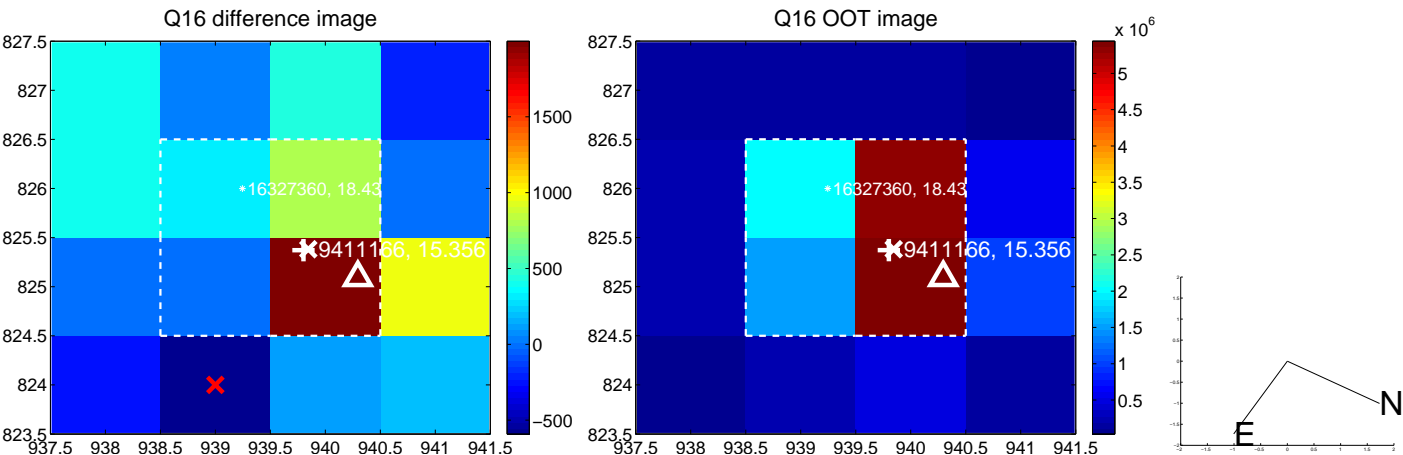
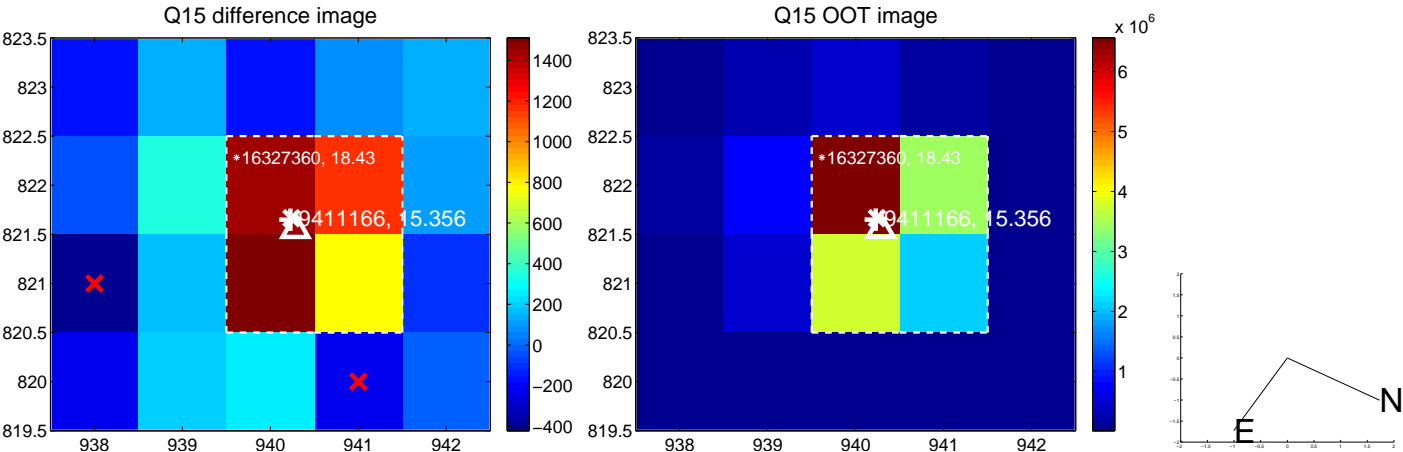
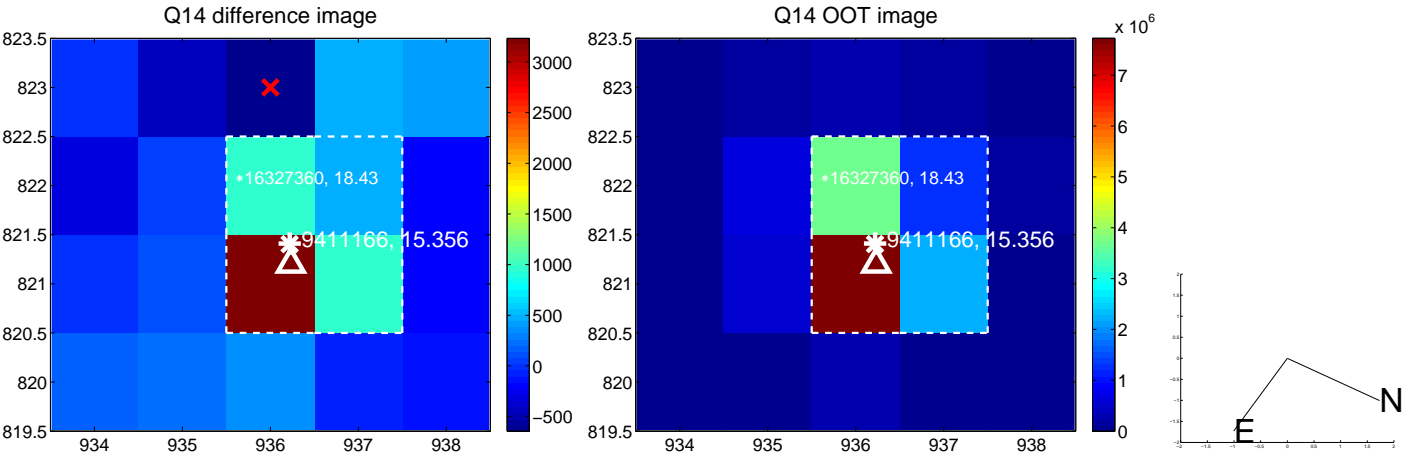
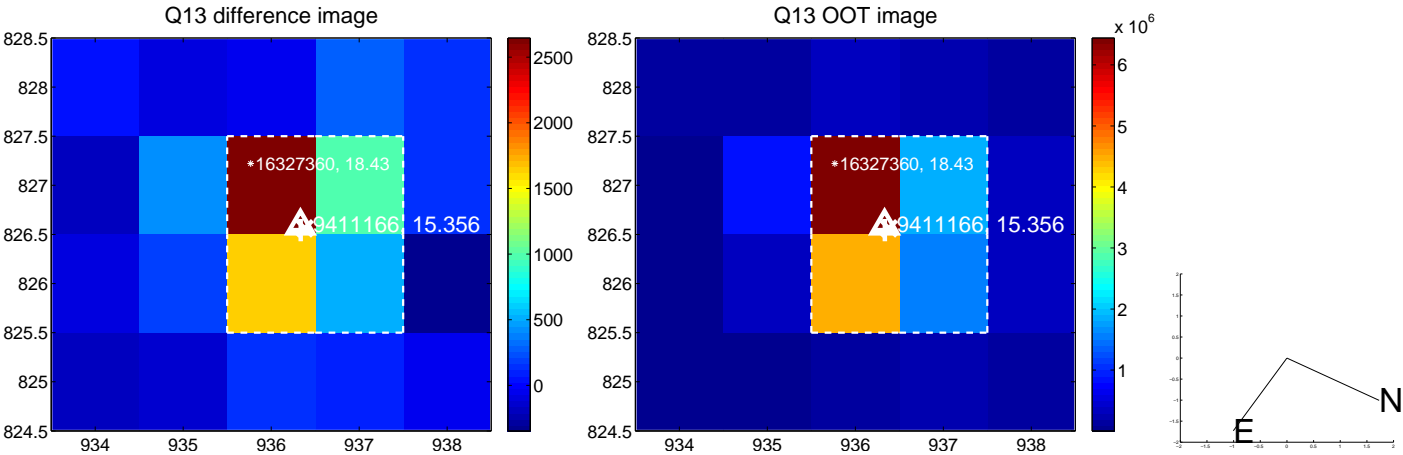
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



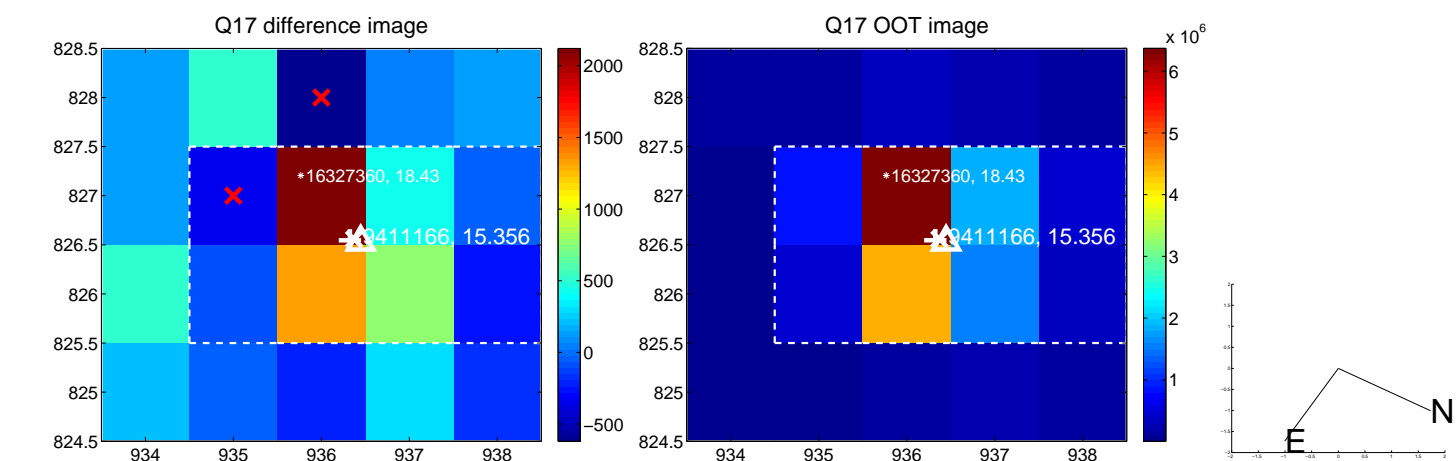
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



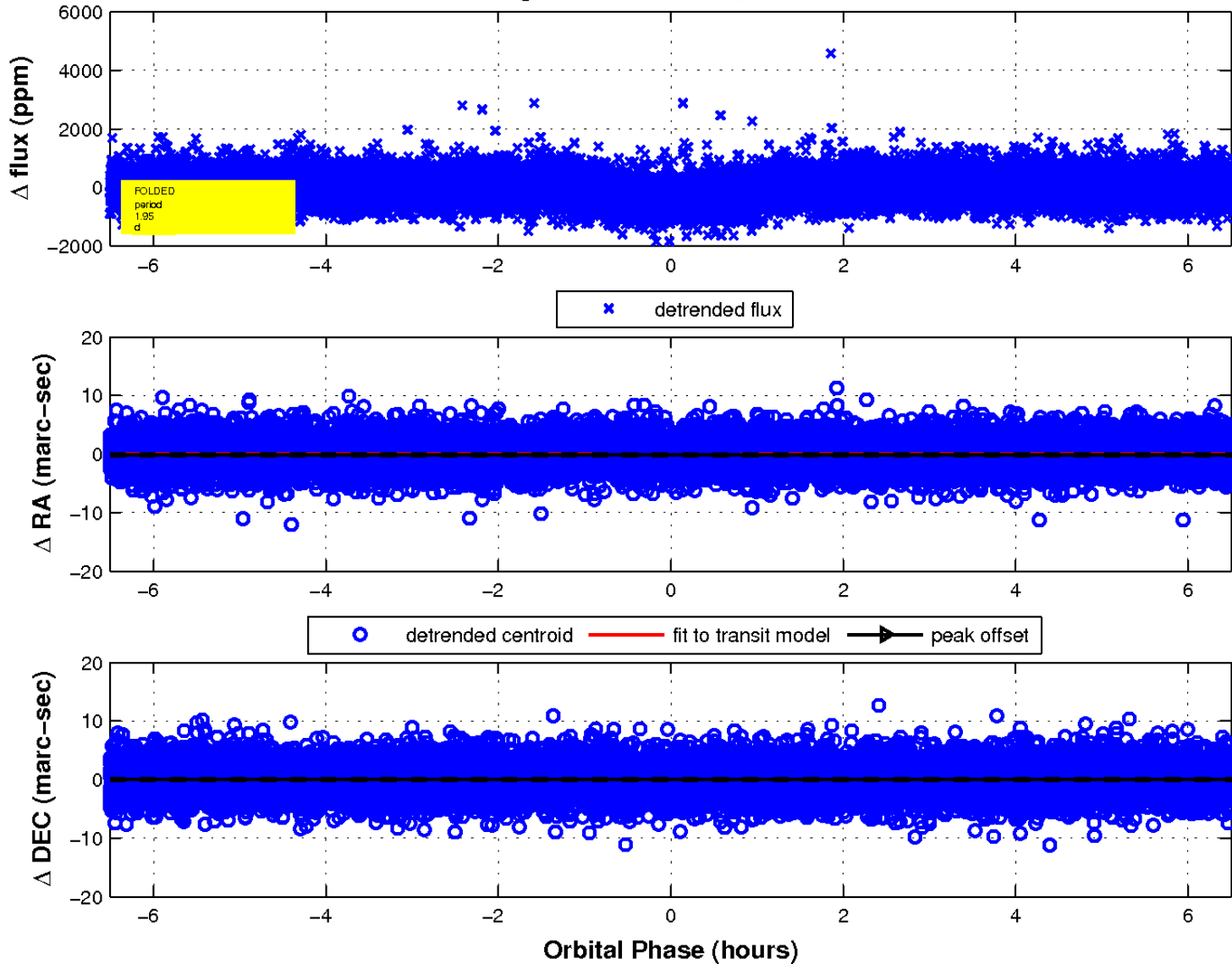
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

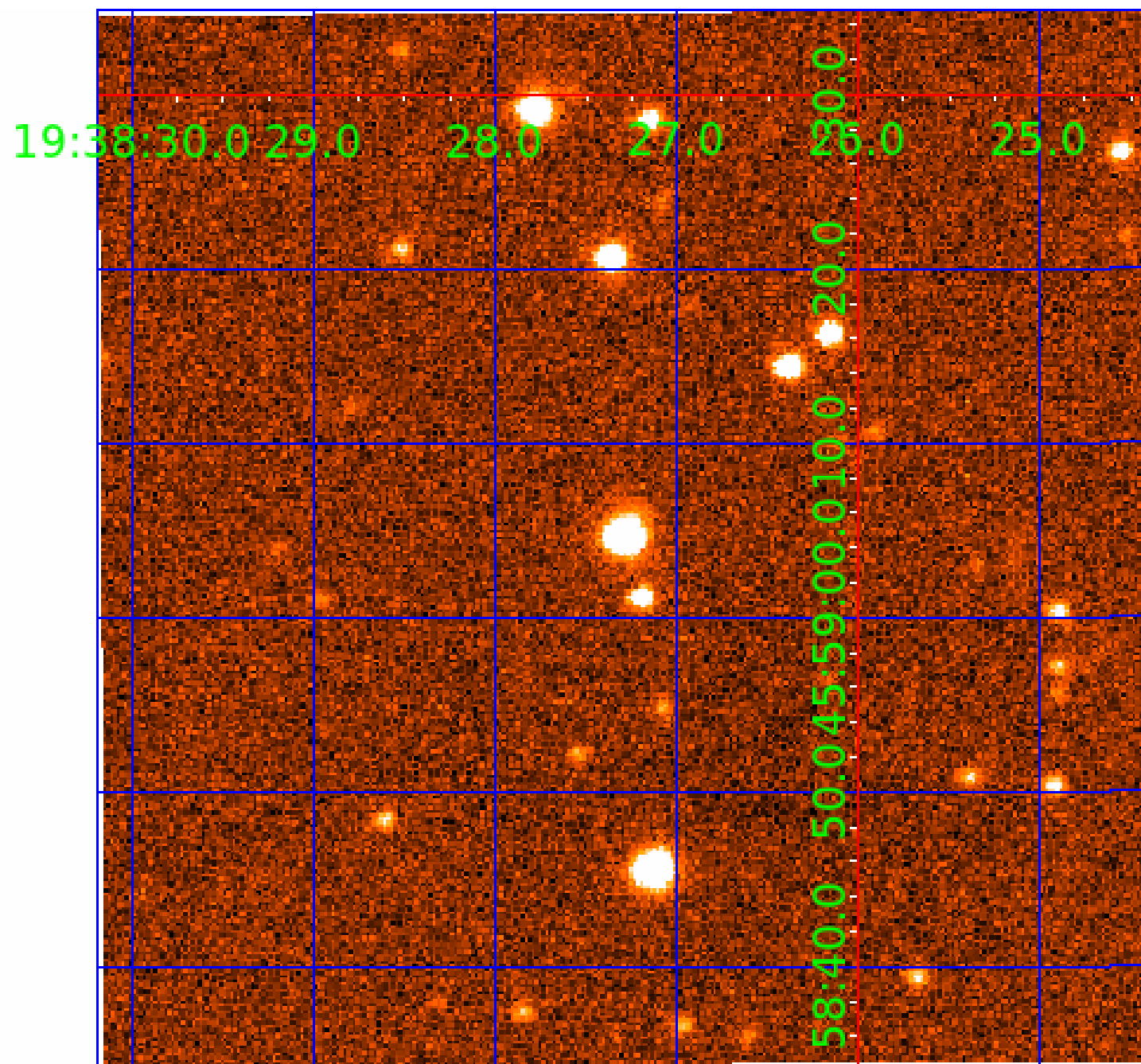


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009411166

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})
009411166-01	OBS	1922.01	1.954506	132.302812	364.6	2.169	35.5	39.5	1.14	5741	2.59	1333.67
009411166-02	OBS	1922.03	105.654586	230.104555	1349.3	9.304	31.7	35.9	1.14	5741	4.25	6.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009411166-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009411166-02	OBS	PC	1.00	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.

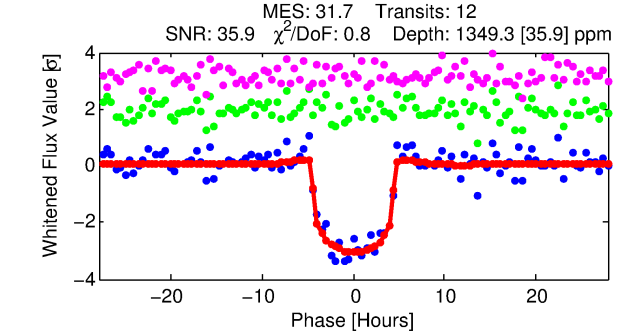
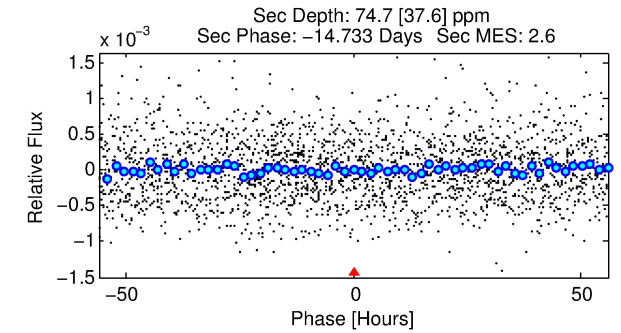
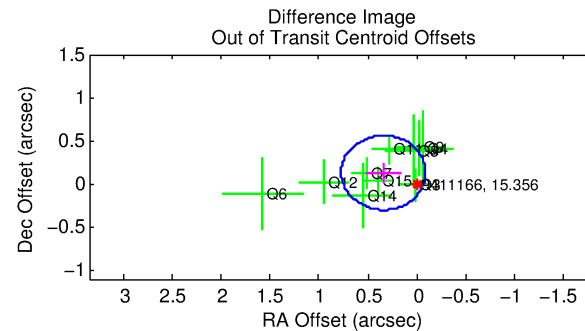
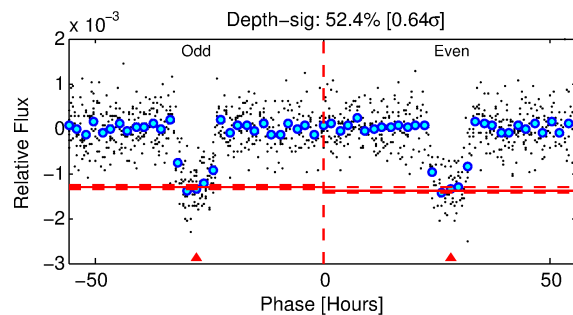
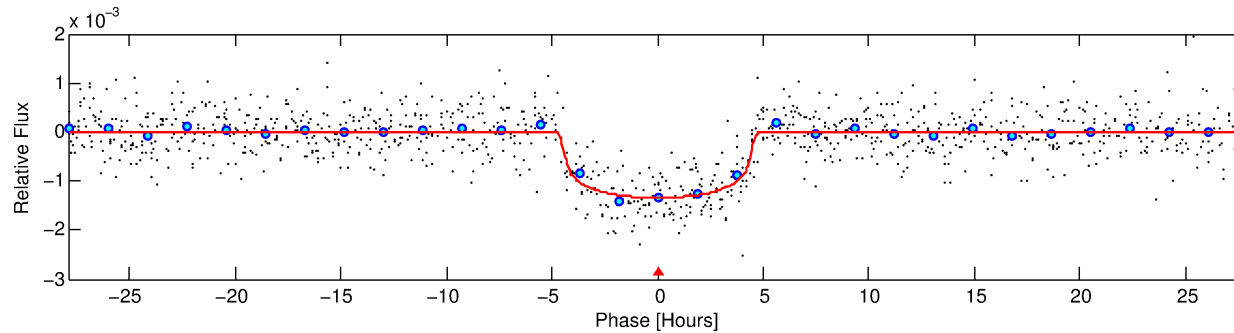
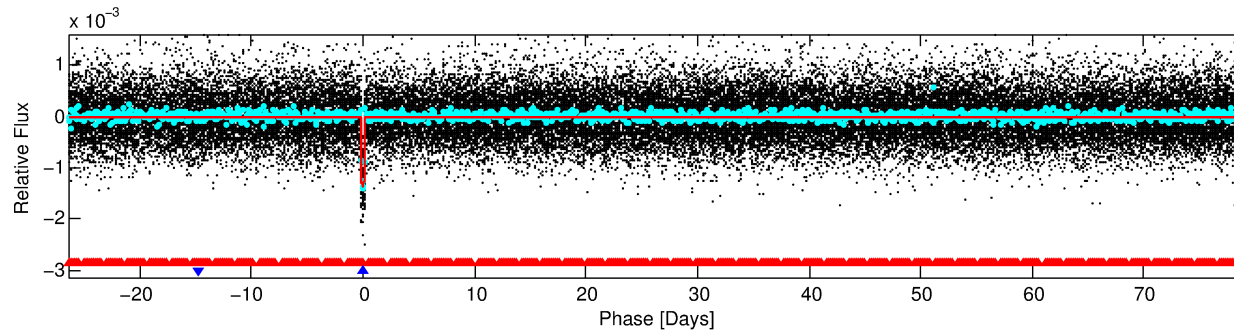
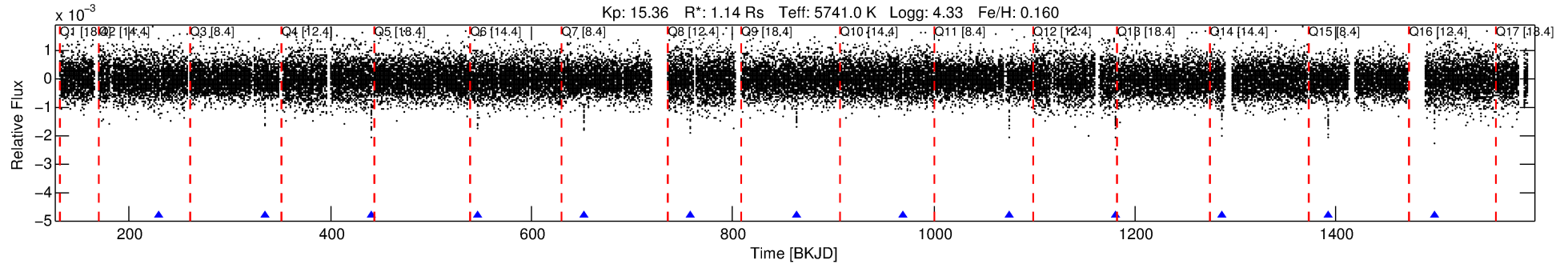
Ephemeris Match Information For 009411166-02

No Significant Match Found

DV One-Page Summary

KIC: 9411166 Candidate: 2 of 2 Period: 105.655 d

KOI: K01922.03 Corr: 0.994



DV Fit Results:

Period = 105.65459 [0.00063] d
Epoch = 230.1046 [0.0048] BKJD
Rp/R* = 0.0343 [0.0080]
a/R* = 78.90 [77.30]
b = 0.49 [1.52]
Seff = 6.52 [1.39]
Teq = 408 [22] K
Rp = 4.25 [1.20] Re
a = 0.4387 [0.0604] AU
Ag = 437.52 [313.64] [1.39 σ]
Teff = 2882 [496] K [4.98 σ]

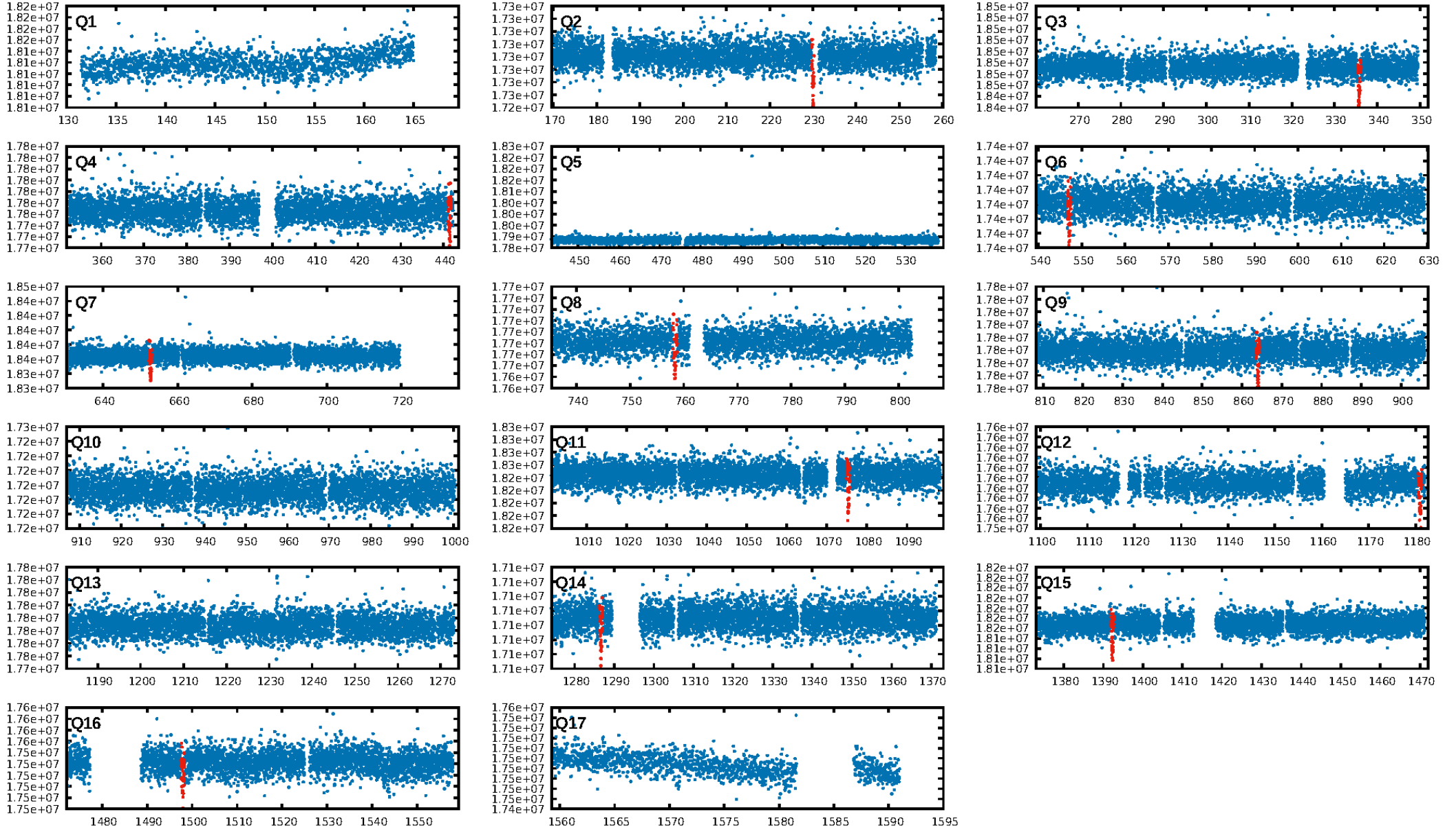
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [260.51 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 93.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.48e-223
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 16.02
Centroid-sig: 0.7%
Centroid-so: 0.581 arcsec [1.54 σ]
OotOffset-rm: 0.368 arcsec [2.57 σ]
KicOffset-rm: 0.424 arcsec [2.74 σ]
OotOffset-st: 2/4/3/1 [10]
KicOffset-st: 2/4/3/1 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 0.20 [2/10]

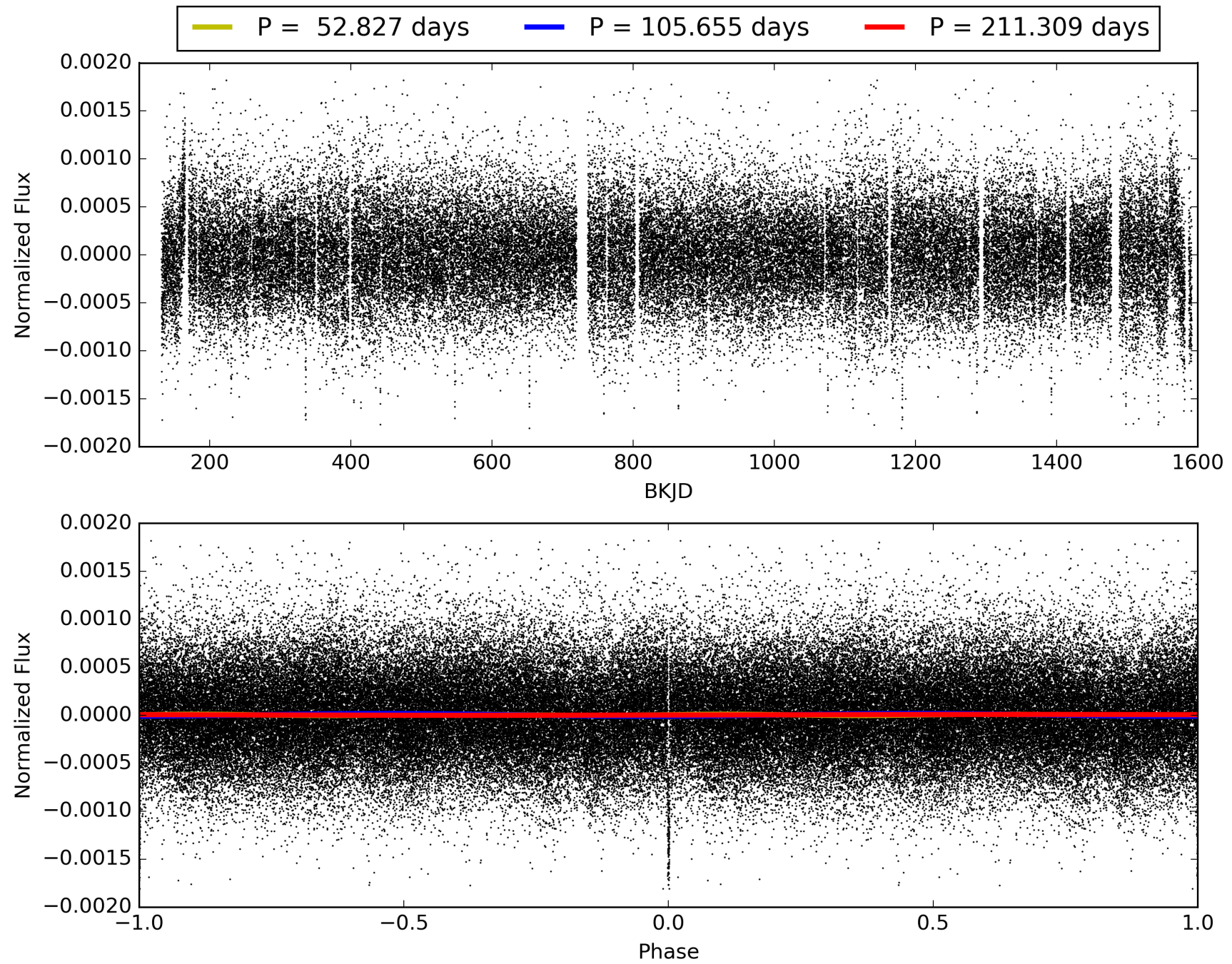
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:44:55 Z

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

TCE 009411166-02, PDC Light Curves

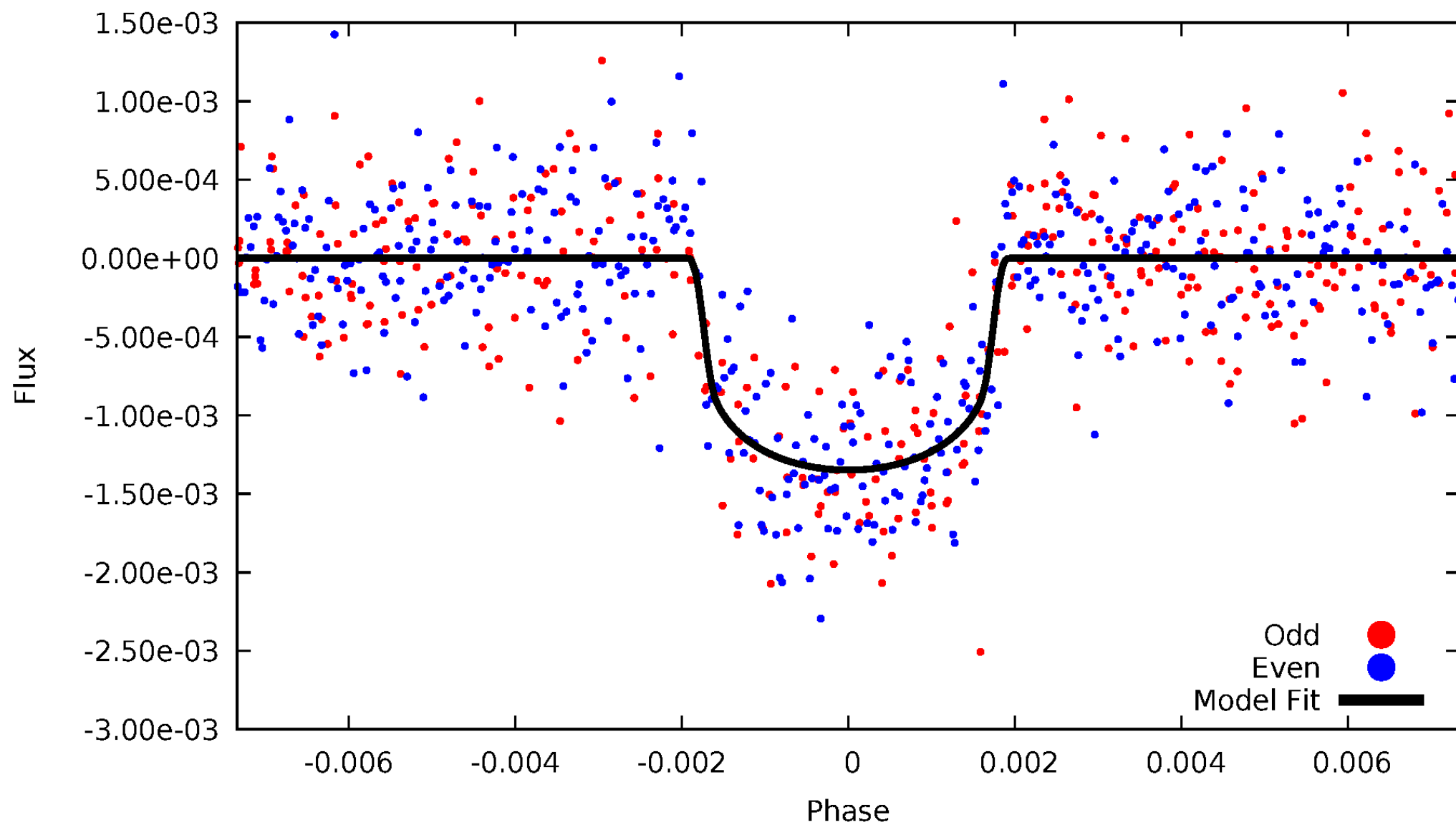


TCE 009411166-02



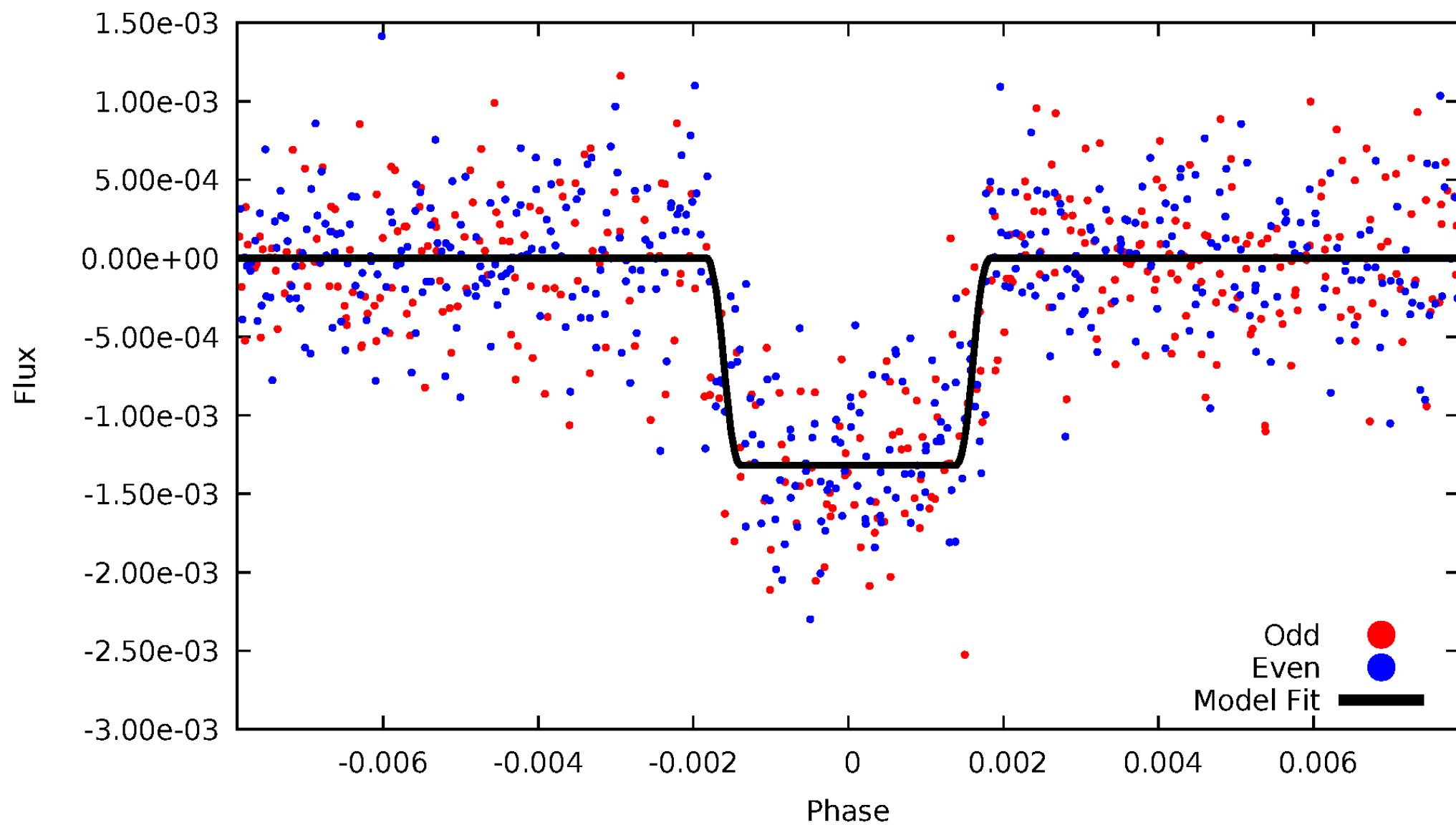
DV Odd/Even

TCE 009411166-02



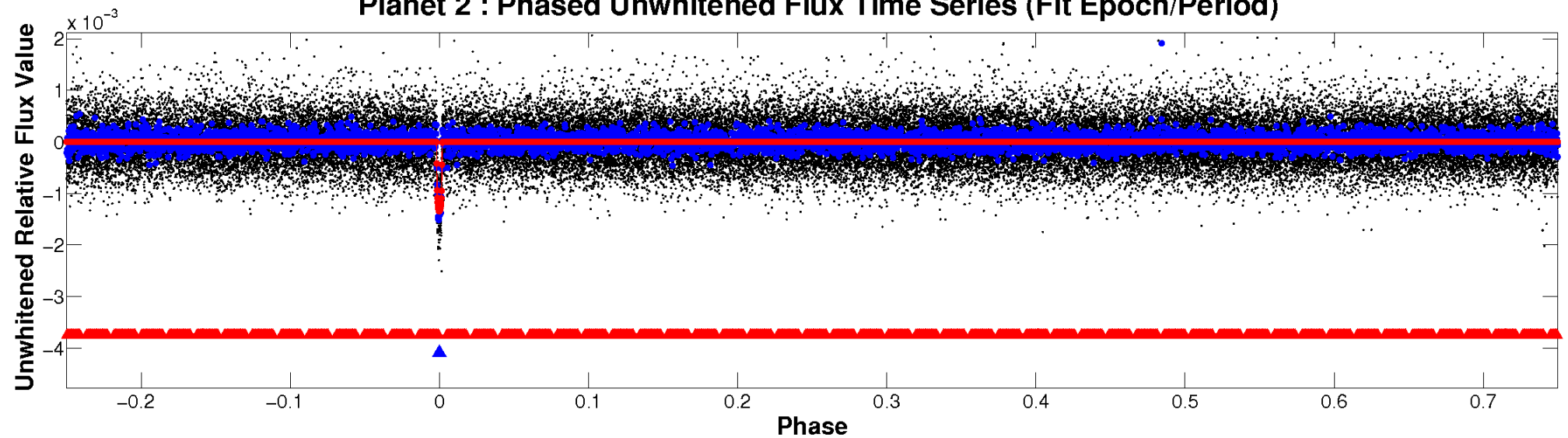
ALT Odd/Even

TCE 009411166-02

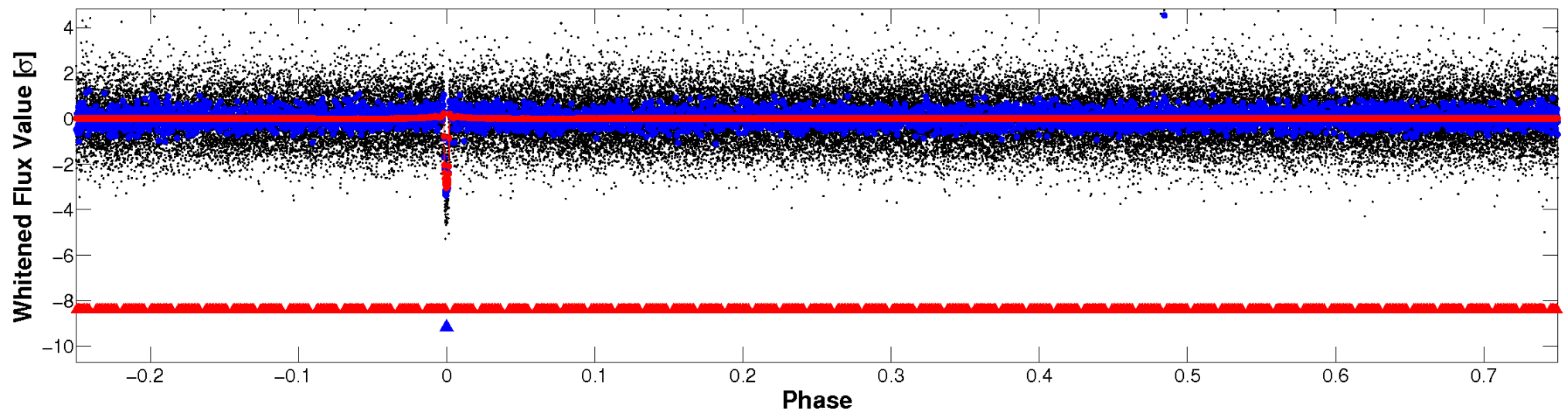


Non-Whitened Vs. Whitened Light Curve

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

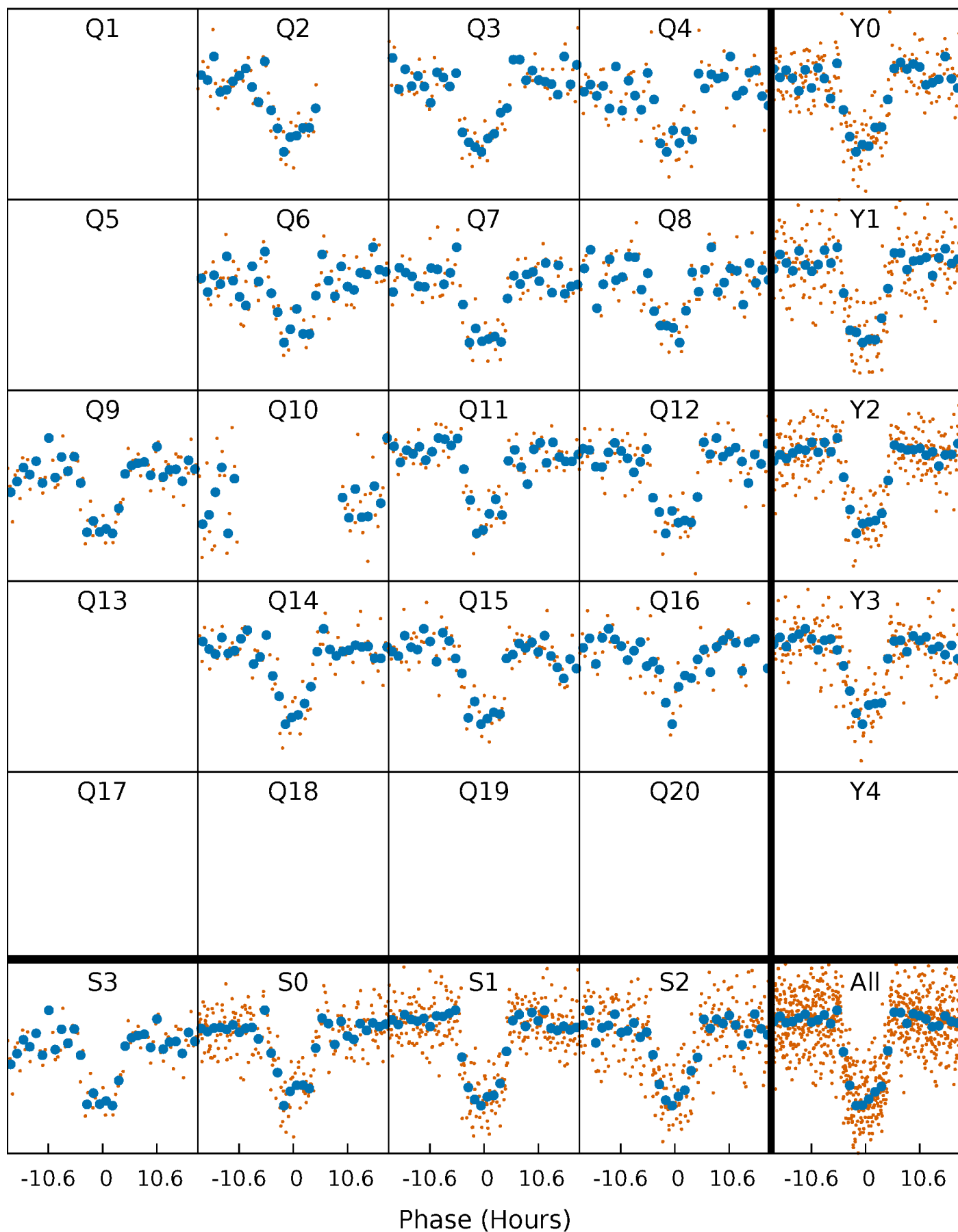


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



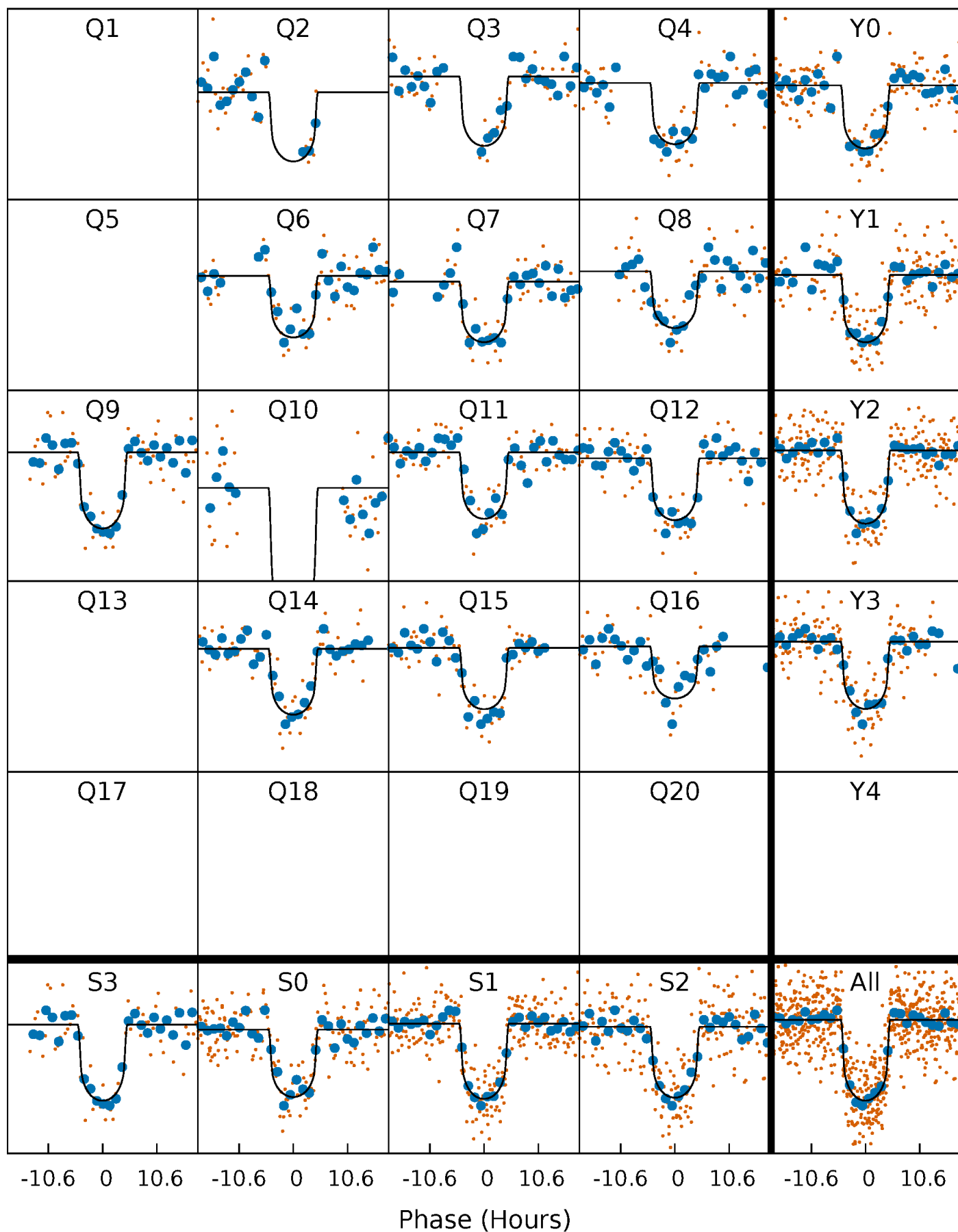
PDC Quarter-Phased Transit Curves

TCE 009411166-02 P=105.654586 Days $T_0=230.104555$ (BKJD)



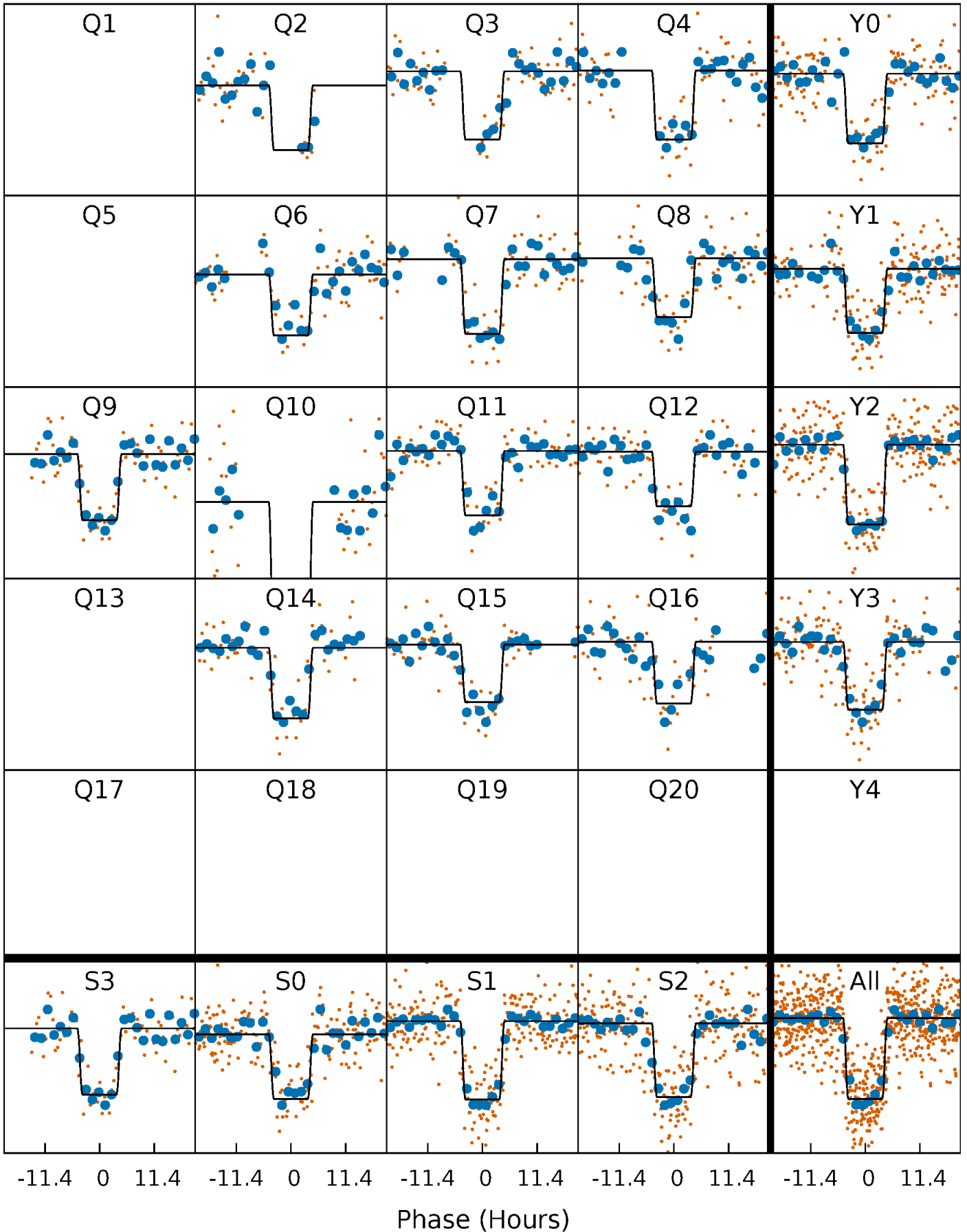
DV Quarter-Phased Transit Curves

TCE 009411166-02 P=105.654586 Days $T_0=230.104555$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

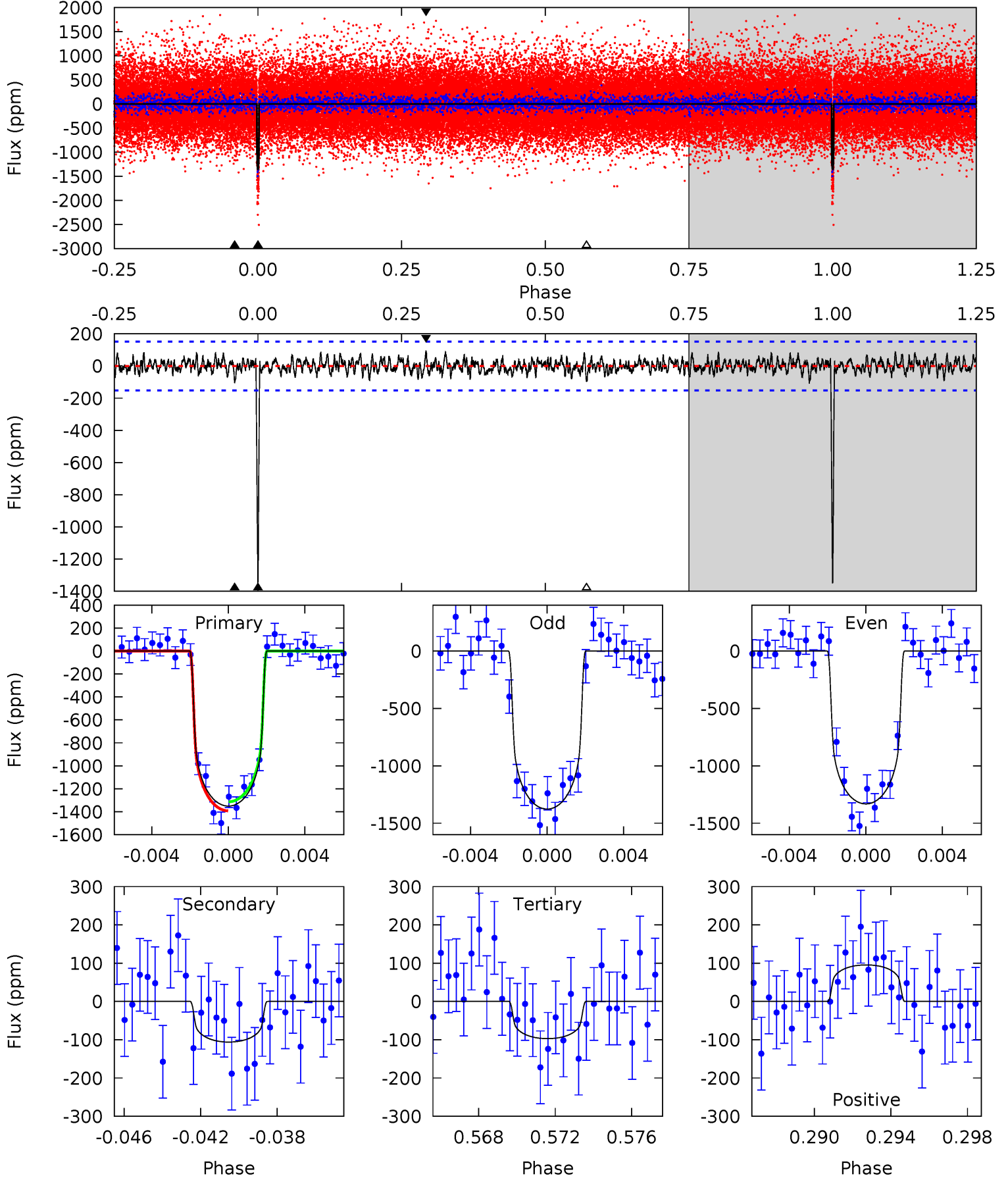
TCE 009411166-02 P=105.657349 Days $T_0=230.088301$ (BKJD)



DV Model-Shift Uniqueness Test

009411166-02, P = 105.654586 Days, E = 124.449969 Days

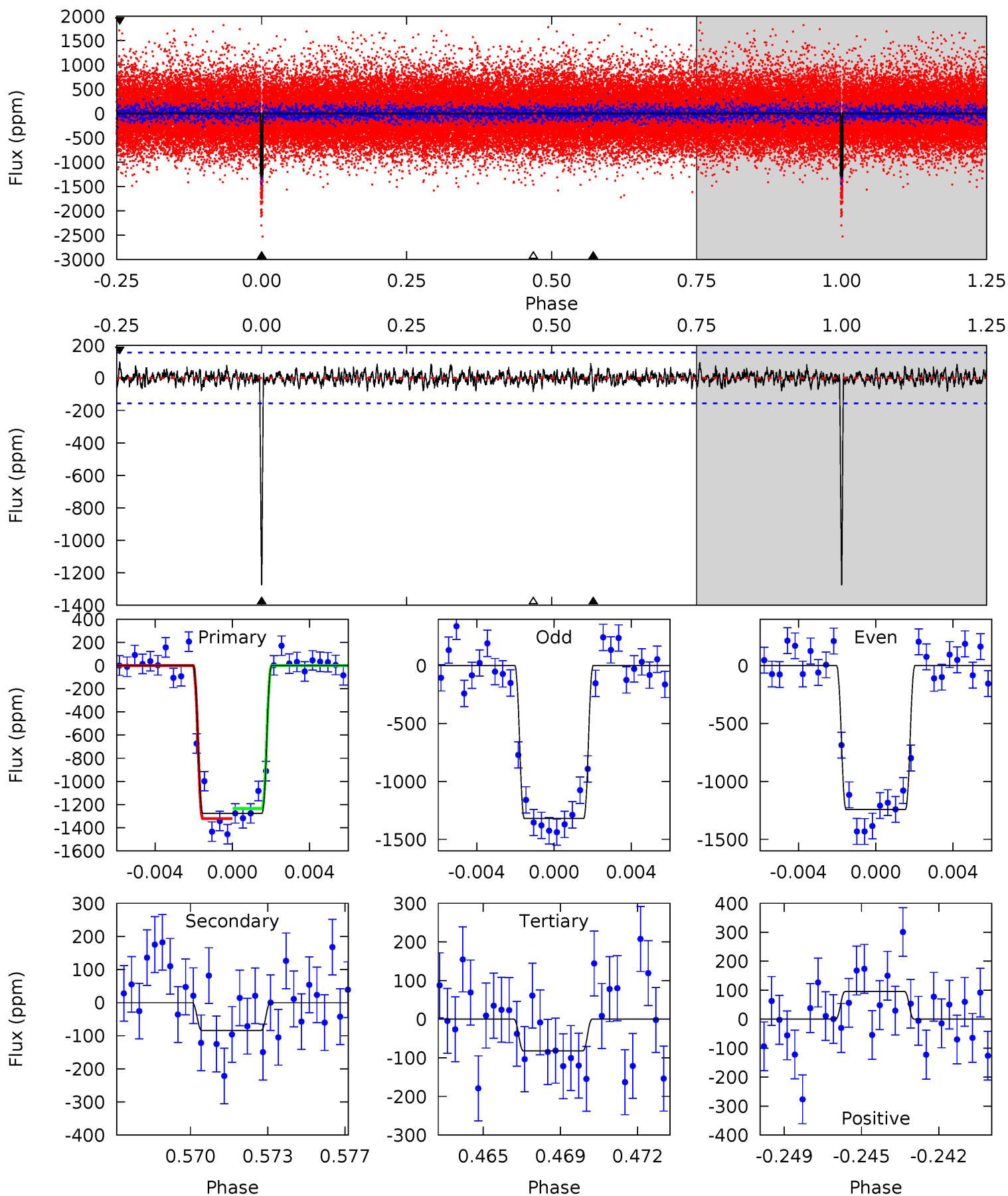
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.4	3.65	3.34	3.28	5.21	2.89	1.07	43.1	43.1	0.31	0.37	0.76	1.01	0.07	1.36



Alt Model-Shift Uniqueness Test

009411166-02, $P = 105.657349$ Days, $E = 124.430952$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.7	2.81	2.75	3.20	5.22	2.91	0.90	40.0	39.5	0.06	-0.39	1.29	1.01	0.07	1.45



Stellar Parameters For KIC 009411166

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5741^{+77}_{-77}	$4.331^{+0.115}_{-0.115}$	$0.160^{+0.150}_{-0.150}$	$1.136^{+0.180}_{-0.147}$	$1.010^{+0.073}_{-0.061}$	$0.969^{+0.481}_{-0.322}$
	+1%/-1%	+3%/-3%	+94%/-94%	+16%/-13%	+7%/-6%	+50%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009411166-02 / KOI 1922.03

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-106 ± 29	$4.24^{+1.06}_{-1.05}$	569^{+26}_{-23}	3596^{+341}_{-298}	611^{+487}_{-268}
Alt.	-84 ± 30	$4.53^{+1.06}_{-1.07}$	571^{+27}_{-23}	3382^{+346}_{-294}	429^{+344}_{-200}

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 $A_{obs} \gg 1.0$

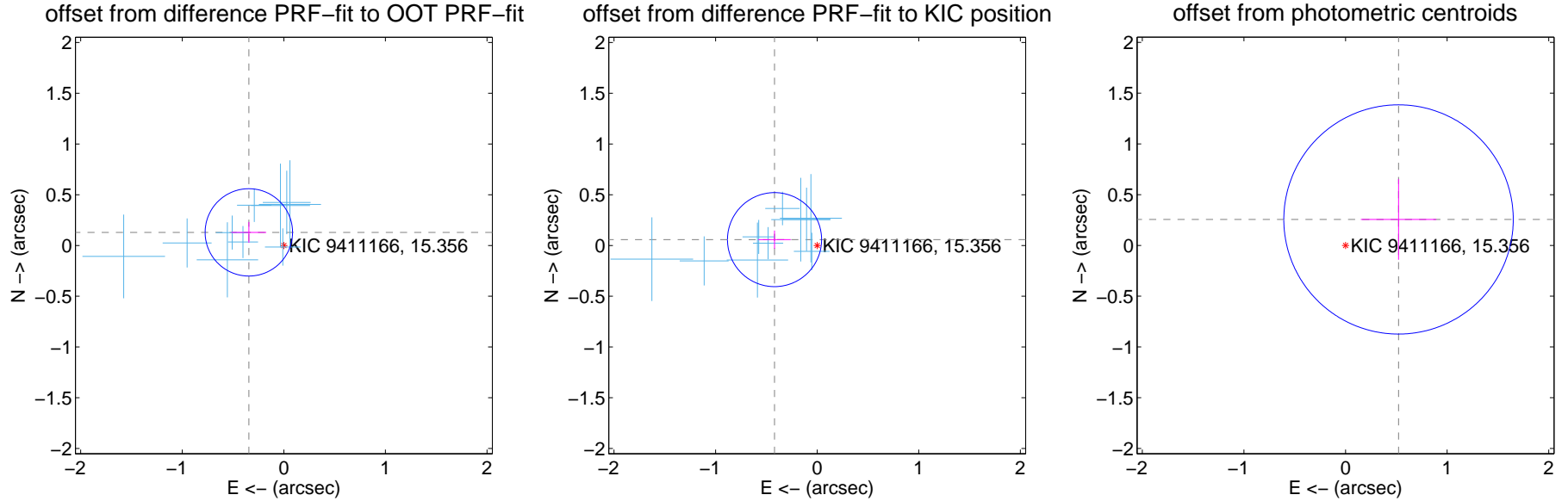
DV Centroid Data

Supplemental centroid analysis for 009411166-02. Kepler magnitude: 15.36. Transit SNR 35.93

There are 10 quarters with good PRF difference image offsets

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

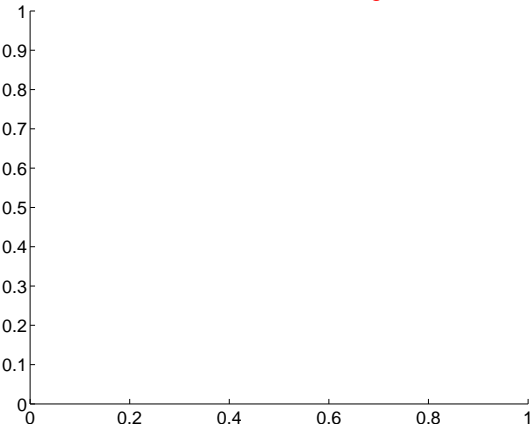
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.368 ± 0.143	2.57	0.345 ± 0.172	0.129 ± 0.103
PRF-fit source offset from KIC position	0.424 ± 0.154	2.74	0.420 ± 0.160	0.058 ± 0.089
photometric centroid source offset	0.58 ± 0.38	1.54	-0.52 ± 0.37	0.26 ± 0.40



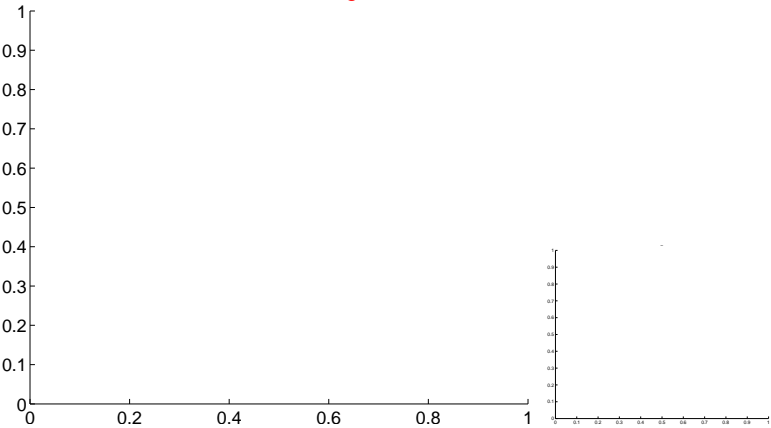
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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

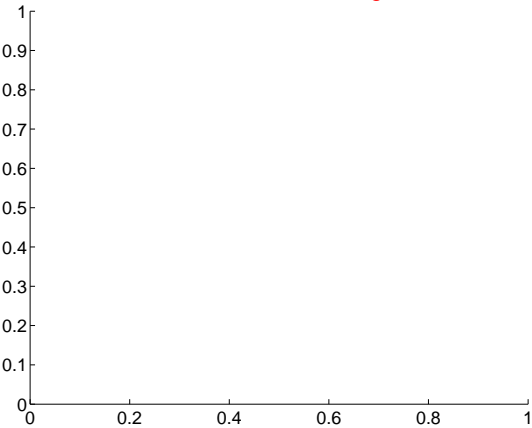
Q1 no difference image



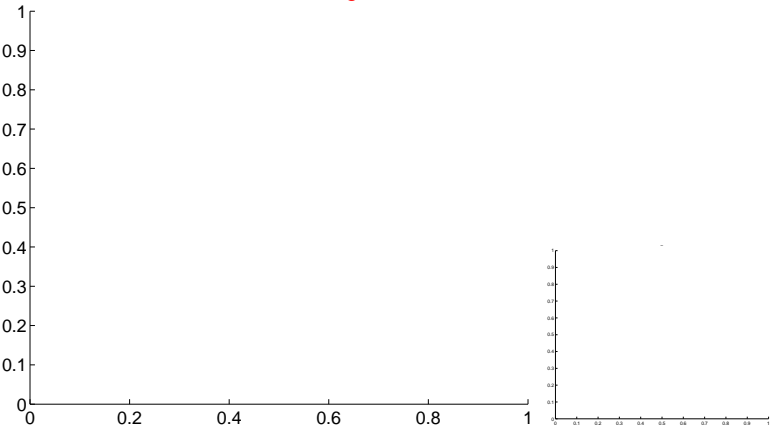
Q1 no OOT image



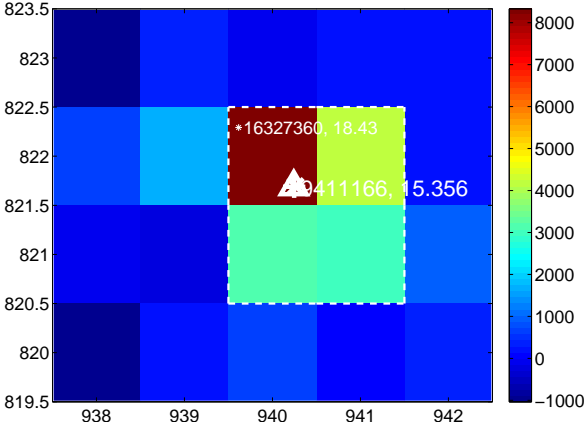
Q2 no difference image



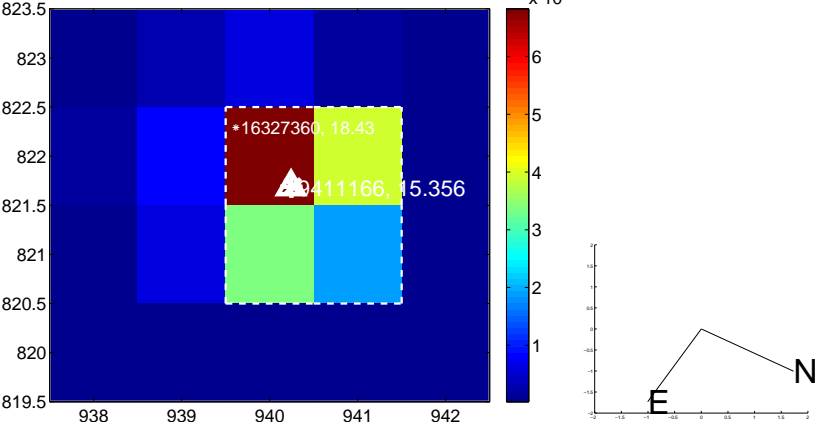
Q2 no OOT image



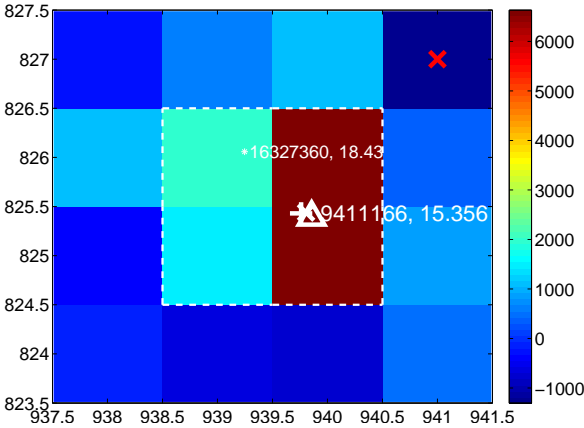
Q3 difference image



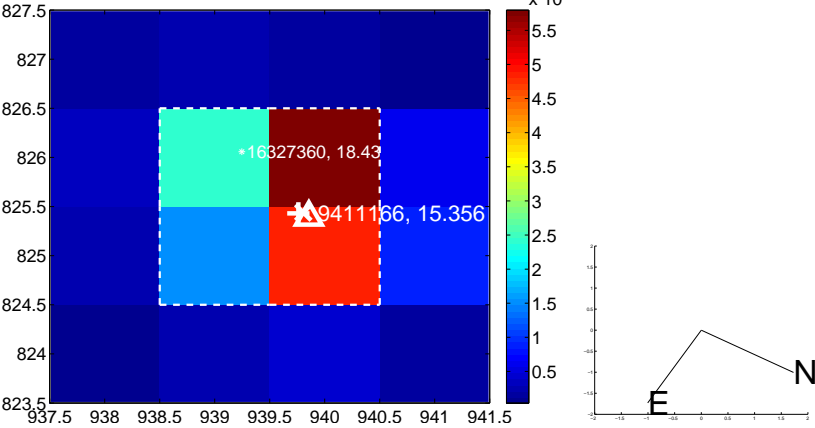
Q3 OOT image



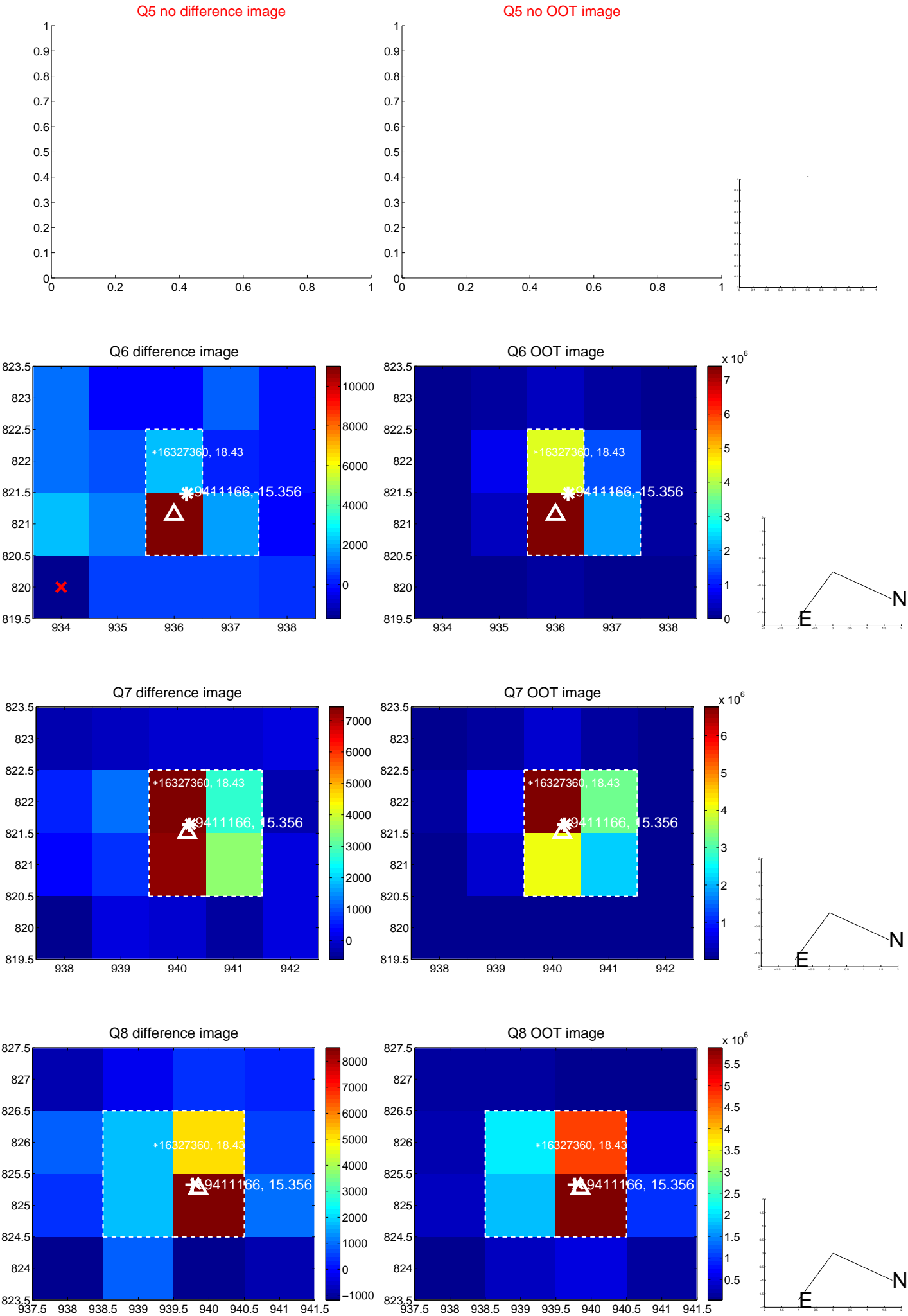
Q4 difference image



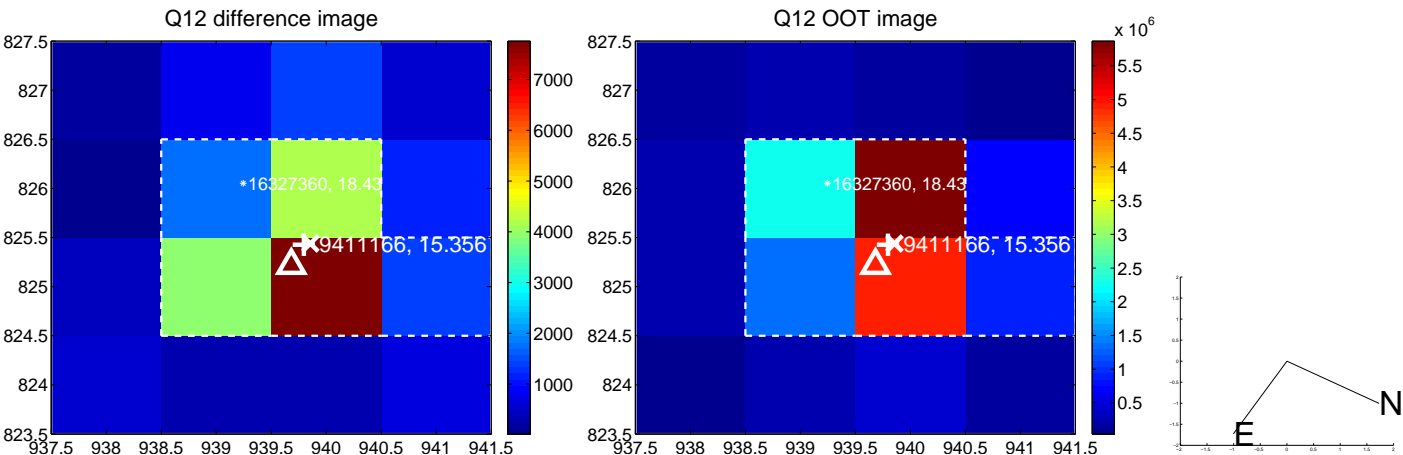
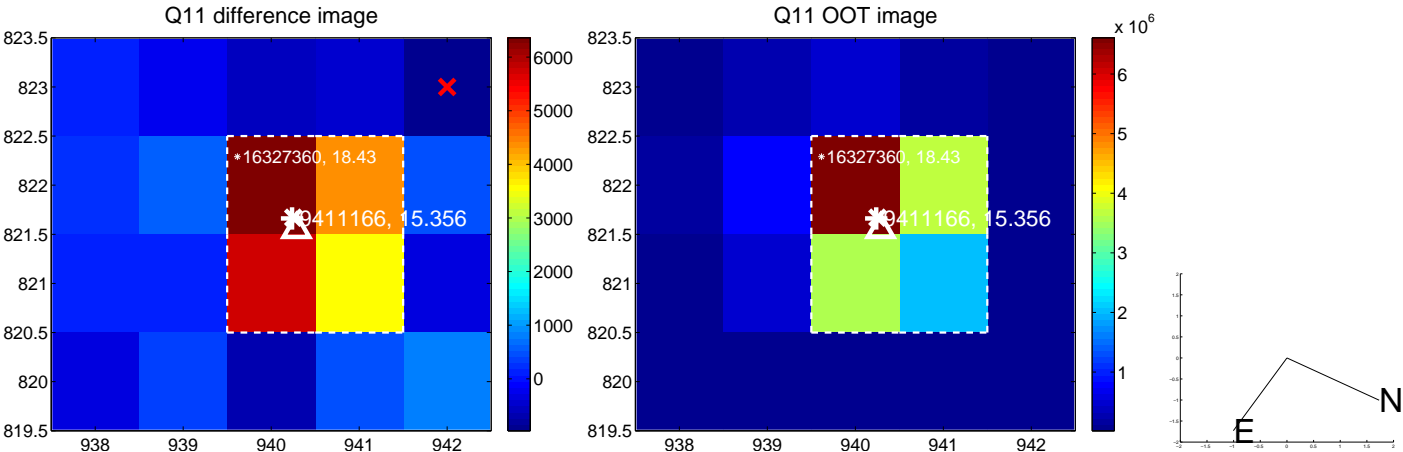
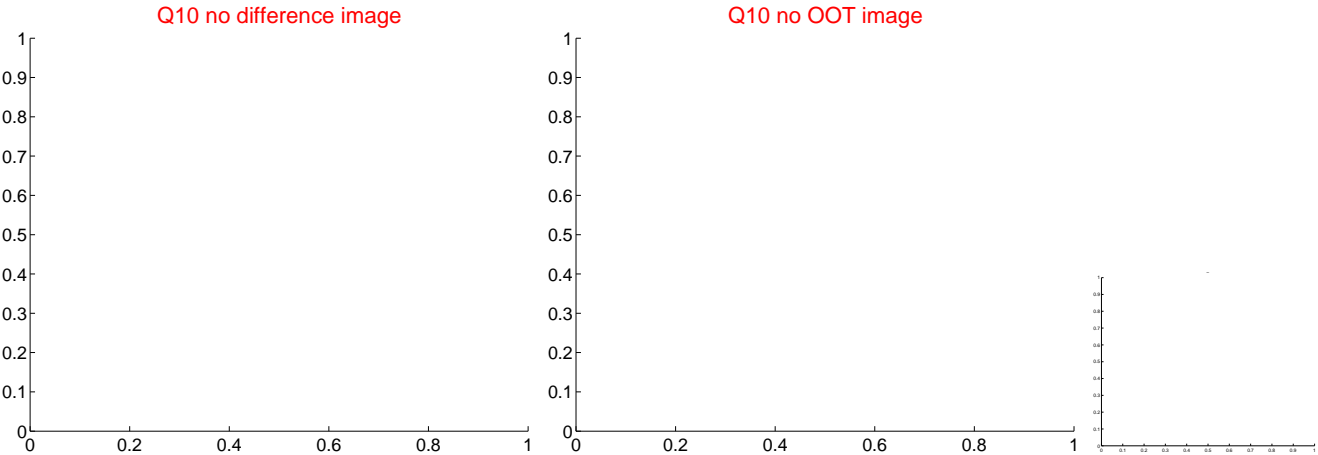
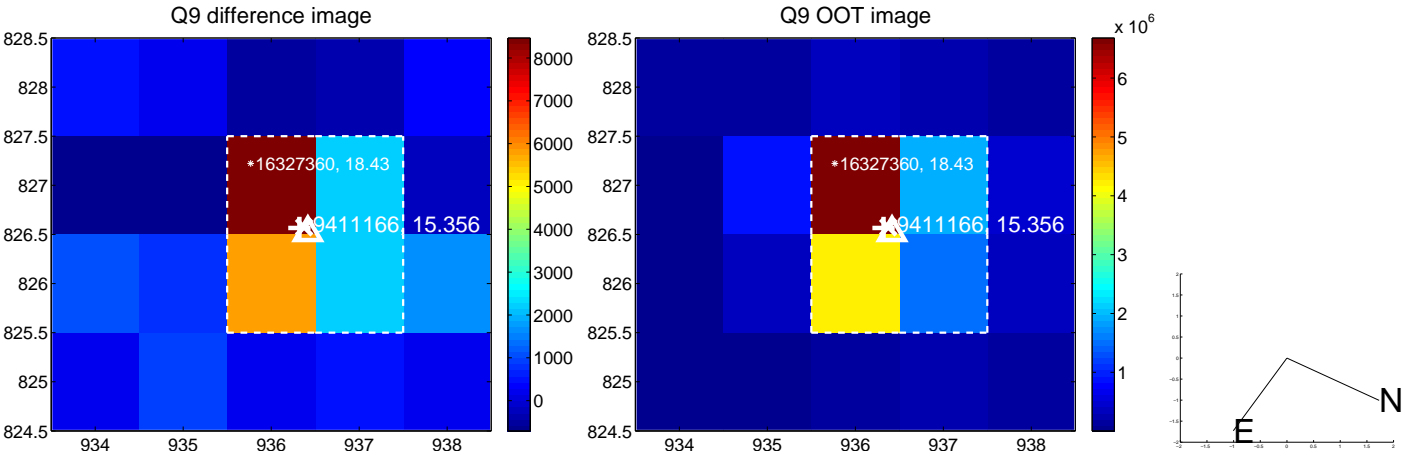
Q4 OOT image



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

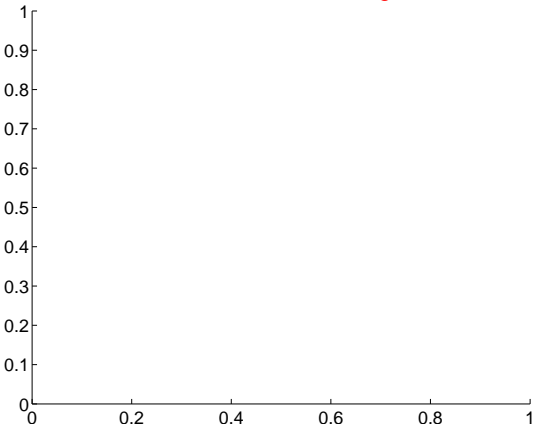


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

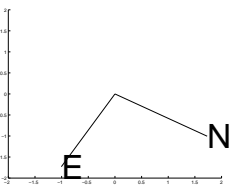
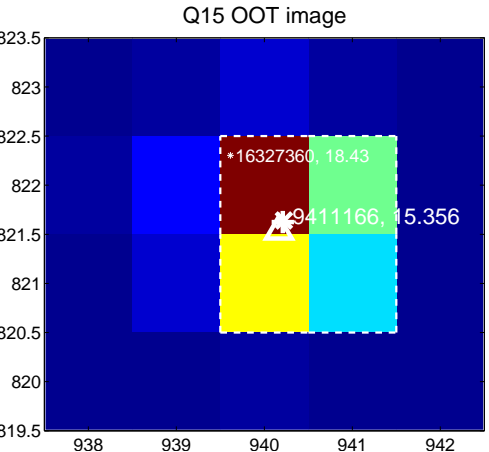
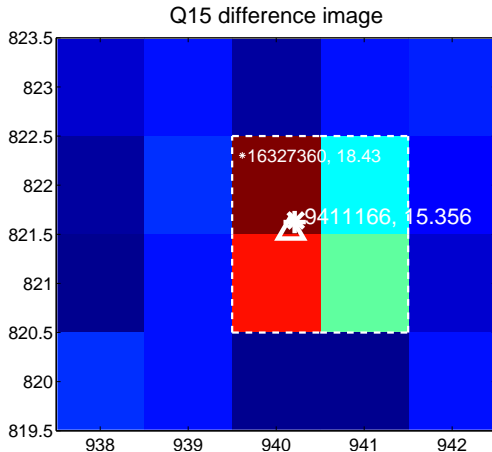
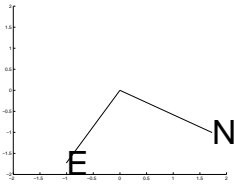
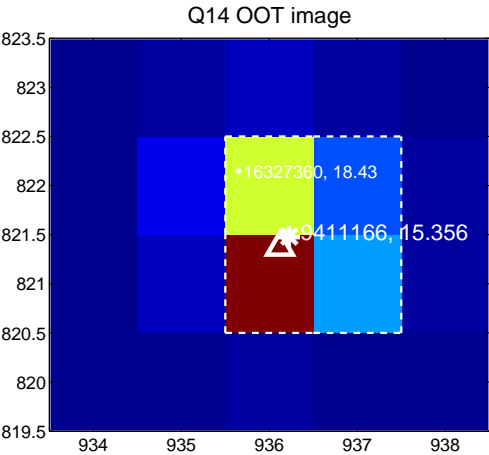
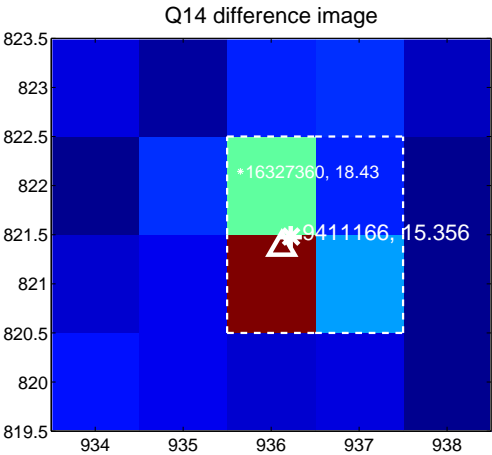
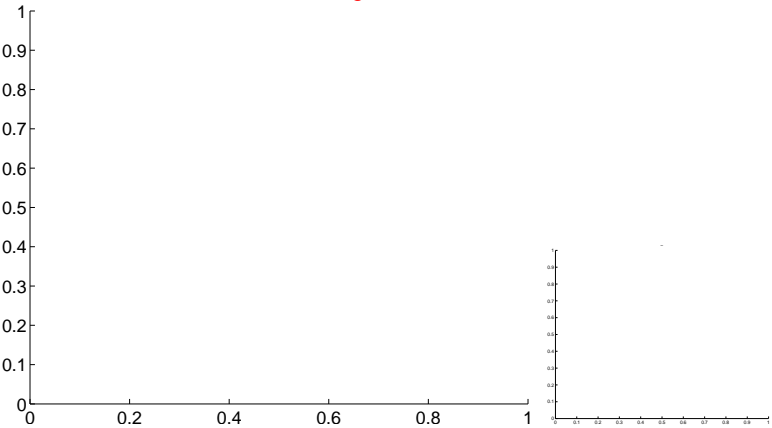


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

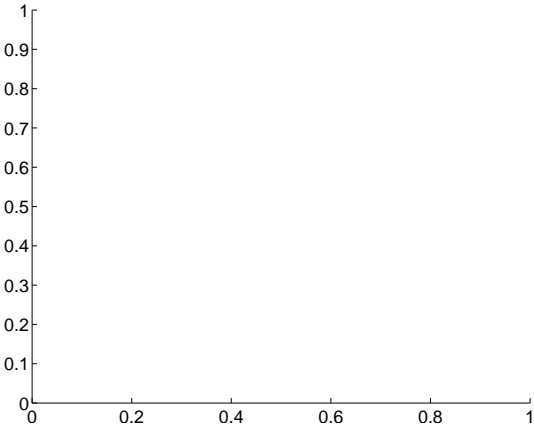
Q13 no difference image



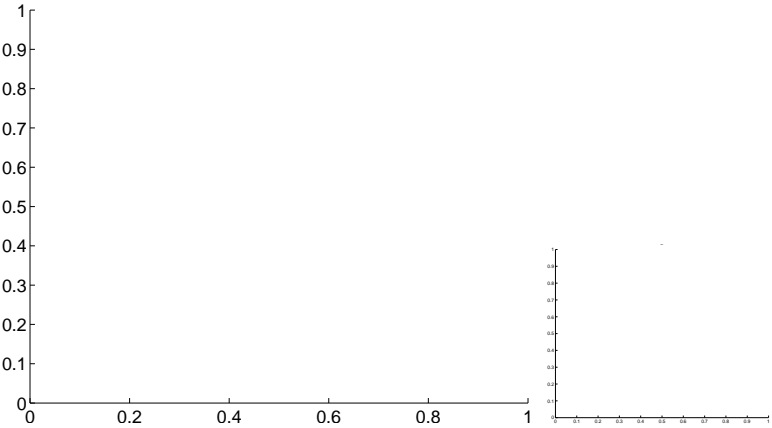
Q13 no OOT image



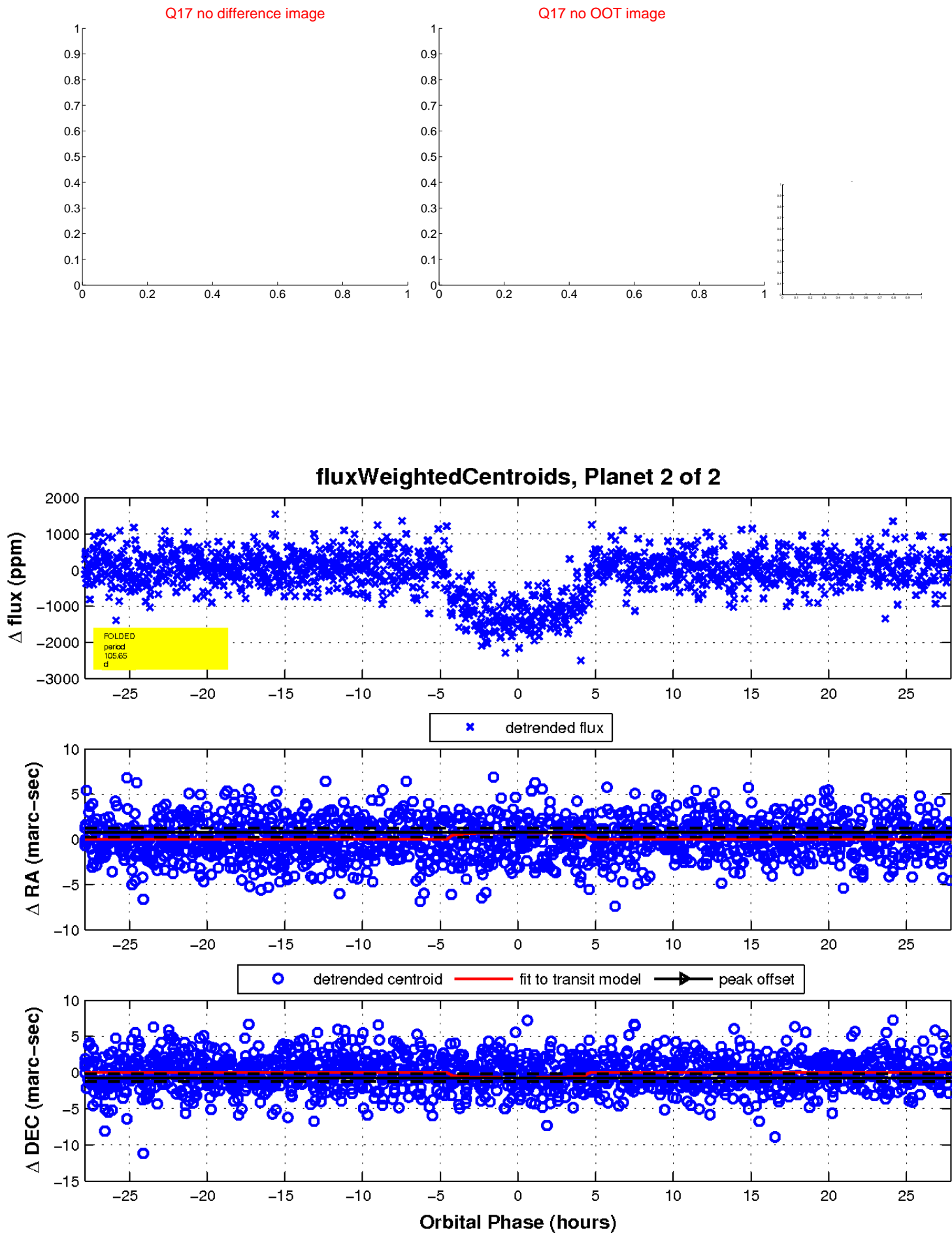
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

