

KIC 007102316

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})
007102316-01	OBS	2028.01	57.248863	184.685563	1415.9	6.152	27.8	28.5	0.85	5642	3.28	8.19
007102316-02	OBS	2028.02	37.055087	163.147138	1044.8	5.113	22.7	24.1	0.85	5642	3.12	14.62
007102316-03	OBS	2028.03	142.543641	202.885451	928.7	9.368	11.7	12.6	0.85	5642	2.93	2.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007102316-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-03	OBS	PC	0.98	0	0	0	0	CENT_FEW_MEAS

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.

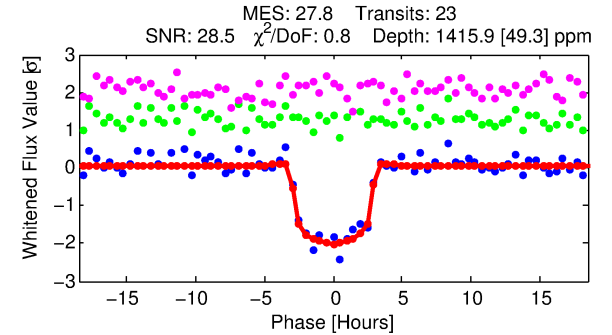
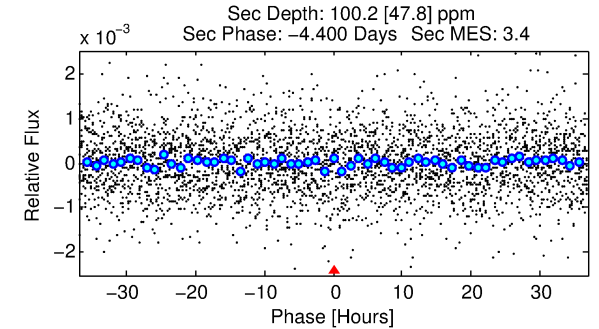
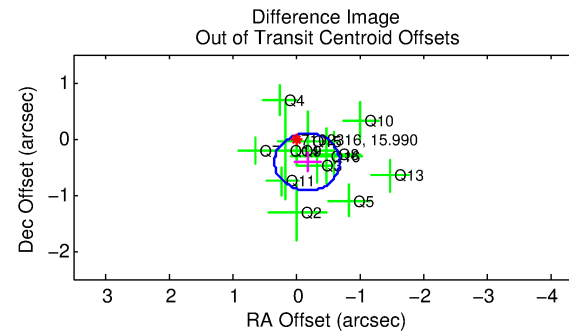
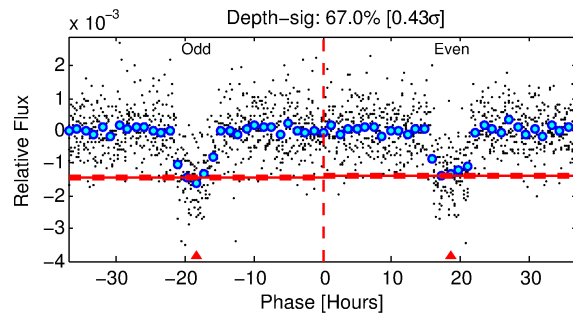
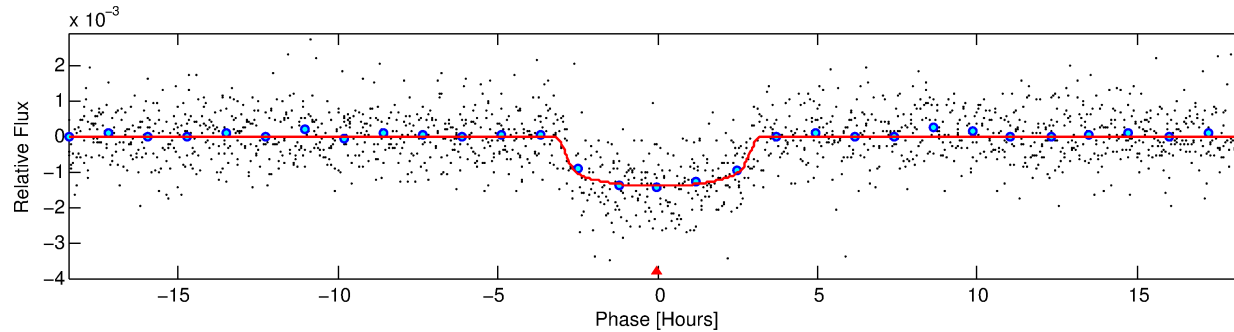
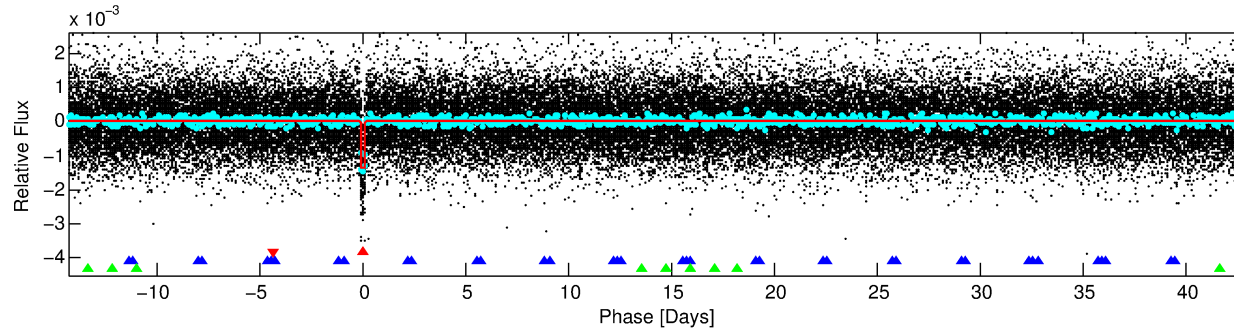
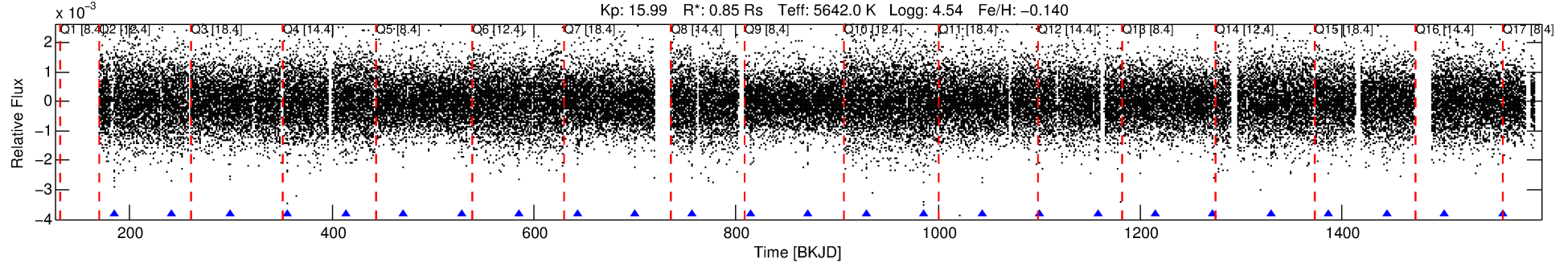
Ephemeris Match Information For 007102316-01

No Significant Match Found

DV One-Page Summary

KIC: 7102316 Candidate: 1 of 3 Period: 57.249 d
KOI: K02028.01 Name: Kepler-351c Corr: 0.994

Kp: 15.99 R*: 0.85 Rs Teff: 5642.0 K Logg: 4.54 Fe/H: -0.140



DV Fit Results:

Period = 57.24886 [0.00032] d
Epoch = 184.6856 [0.0043] BKJD
Rp/R* = 0.0355 [0.0111]
a/R* = 62.16 [81.96]
b = 0.55 [1.66]
Seff = 8.19 [2.85]
Teq = 431 [38] K
Rp = 3.28 [1.36] Re
a = 0.2817 [0.0642] AU
Ag = 406.67 [345.50] [1.17σ]
Teff = 2995 [594] K [4.31σ]

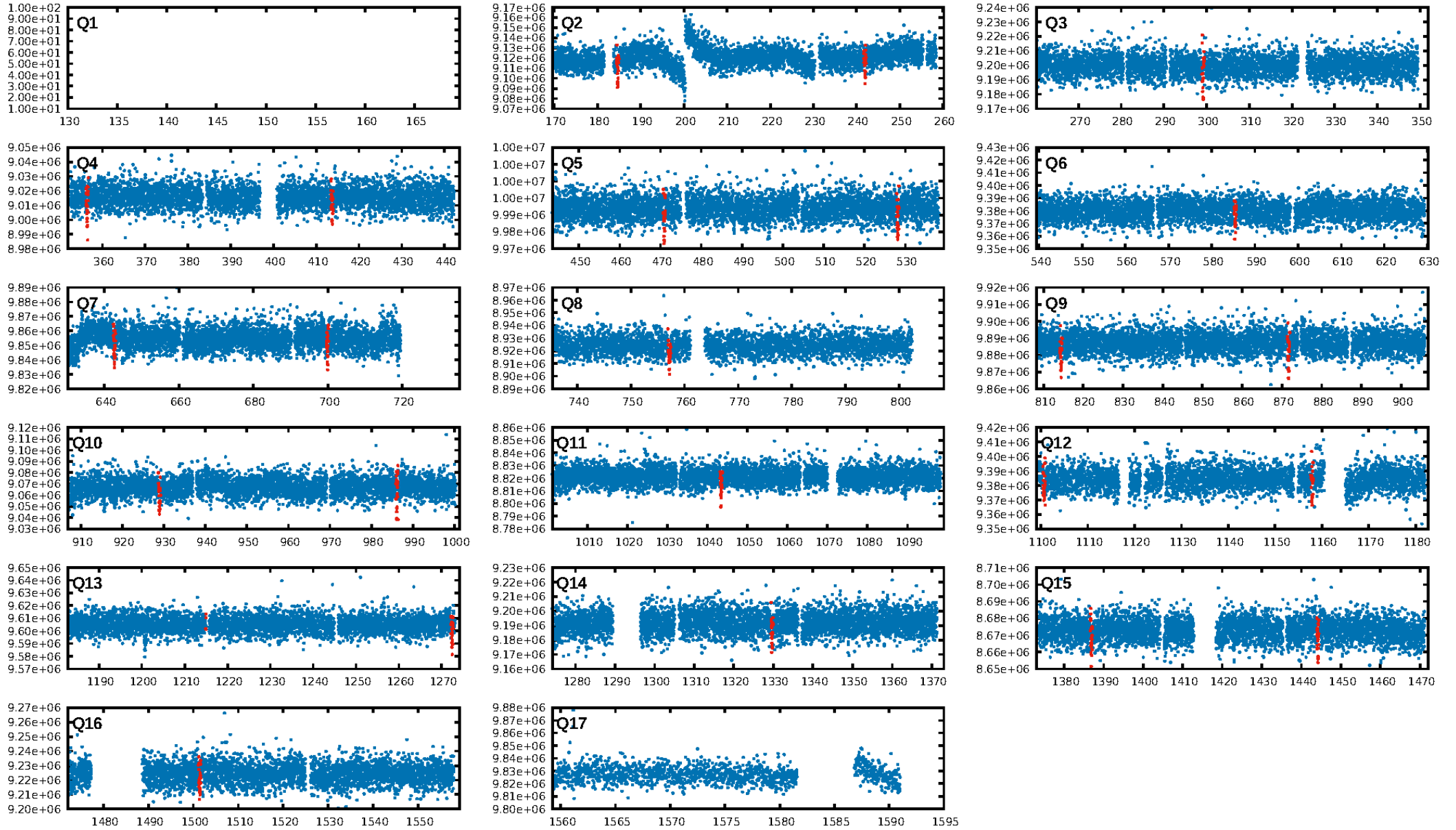
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.58σ]
LongPeriod-sig: 100.0% [182.66σ]
ModelChiSquare2-sig: 98.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.23e-173
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: 5.902
Centroid-sig: 0.8%
Centroid-so: 0.494 arcsec [1.16σ]
OotOffset-rm: 0.453 arcsec [2.67σ]
KicOffset-rm: 0.442 arcsec [2.66σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [15/15]

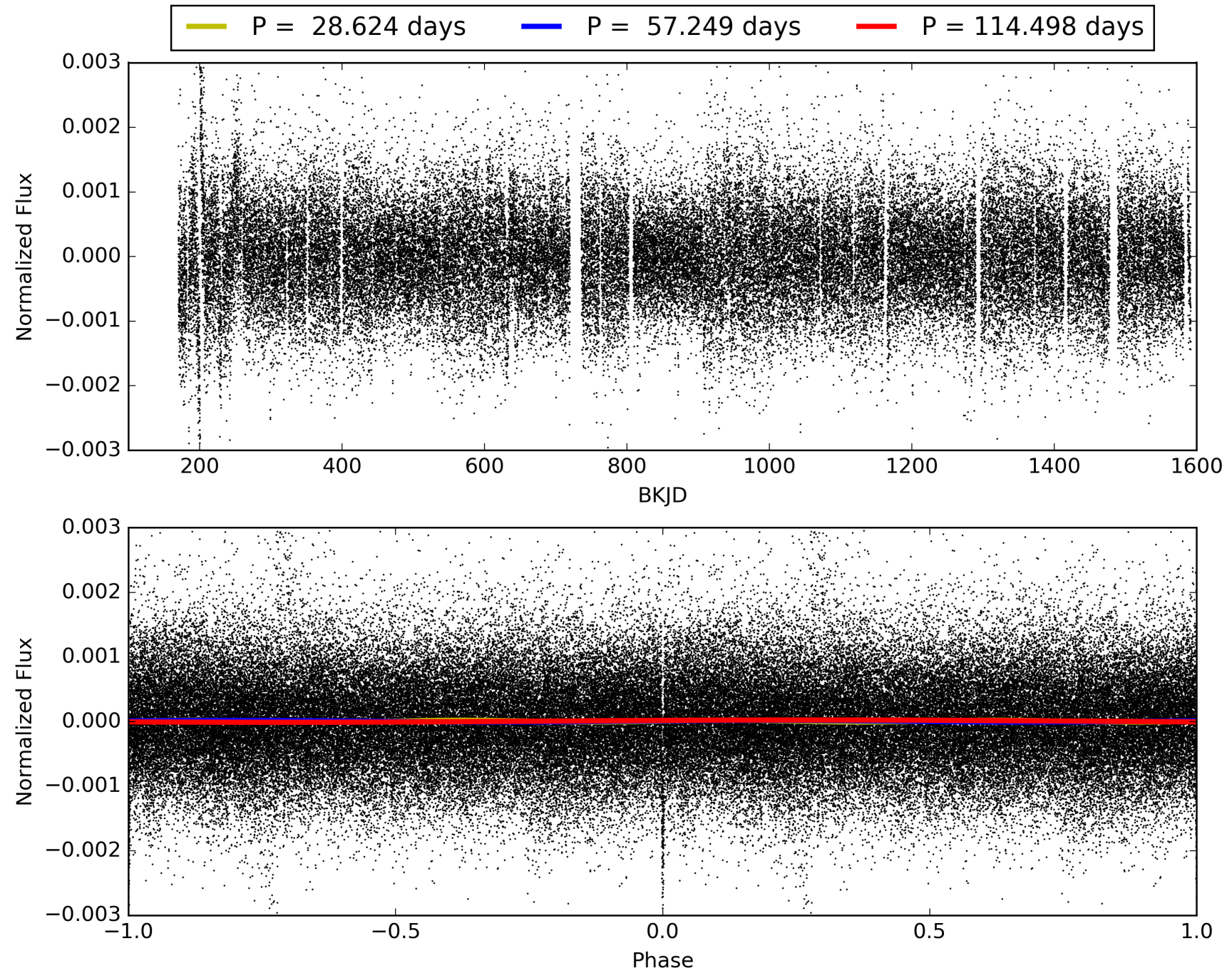
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:38:52 Z

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

TCE 007102316-01, PDC Light Curves

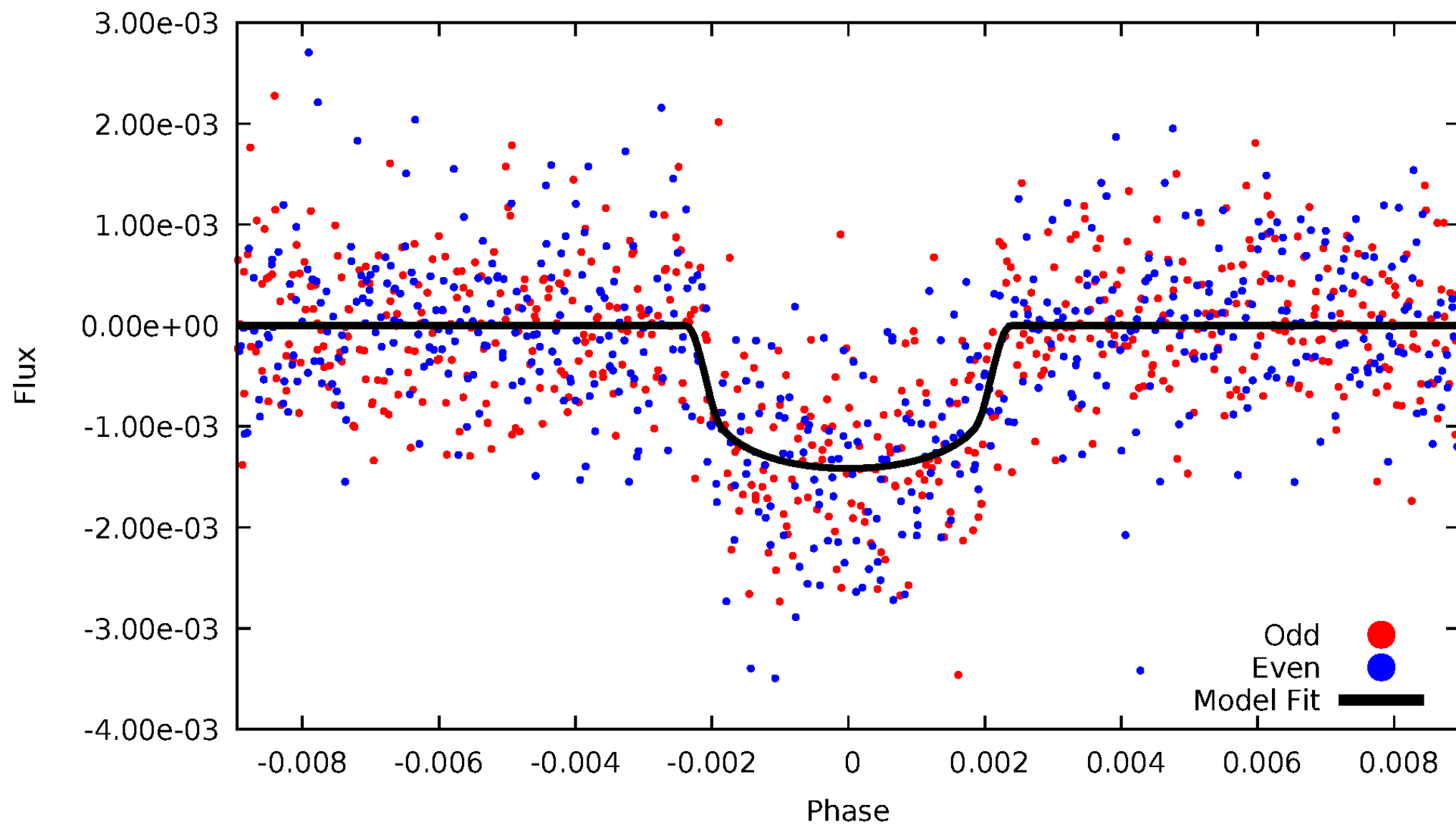


TCE 007102316-01



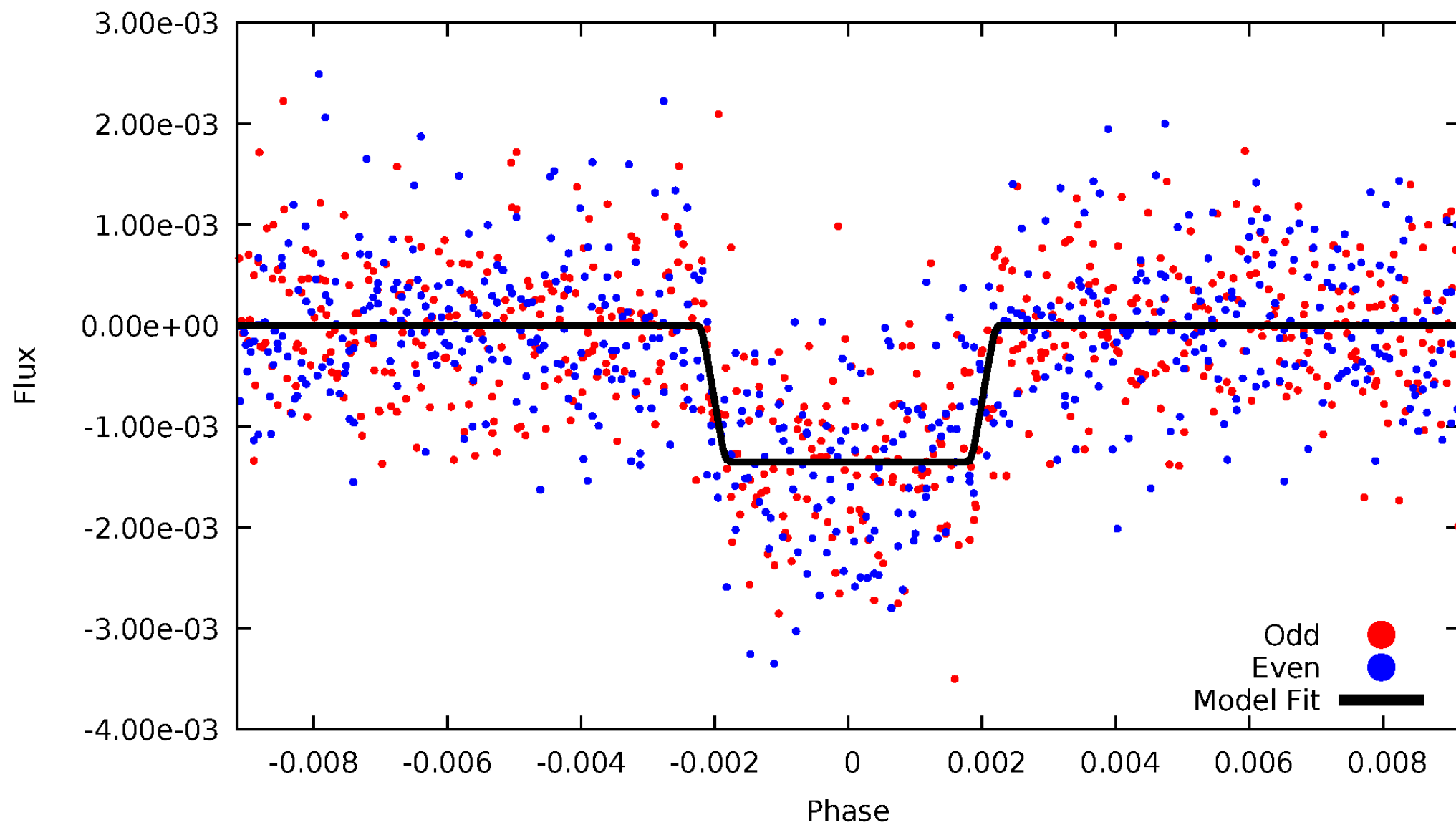
DV Odd/Even

TCE 007102316-01



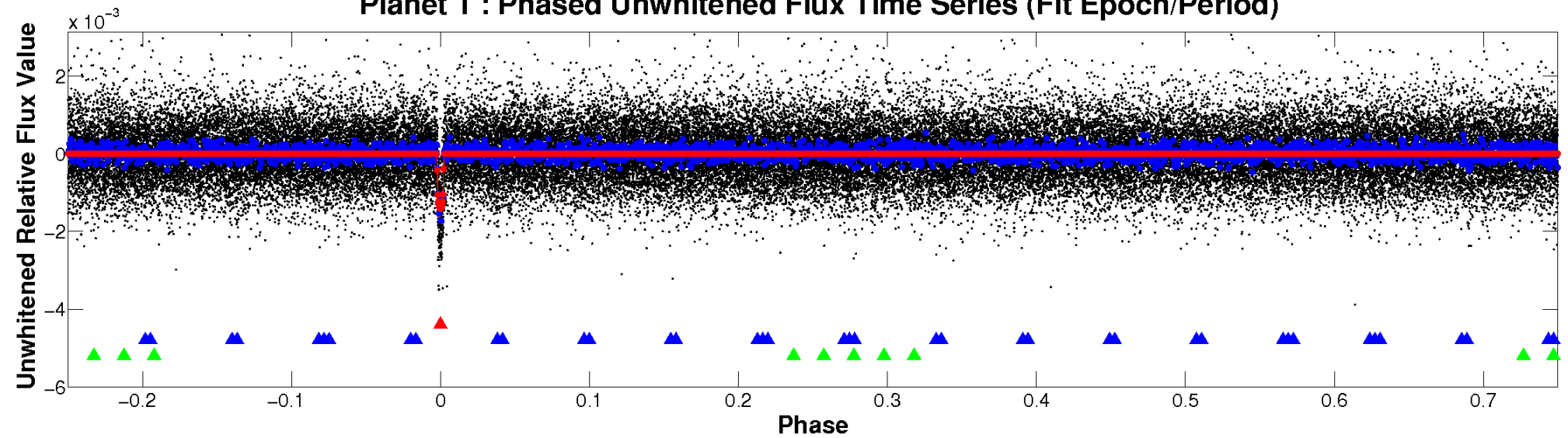
ALT Odd/Even

TCE 007102316-01

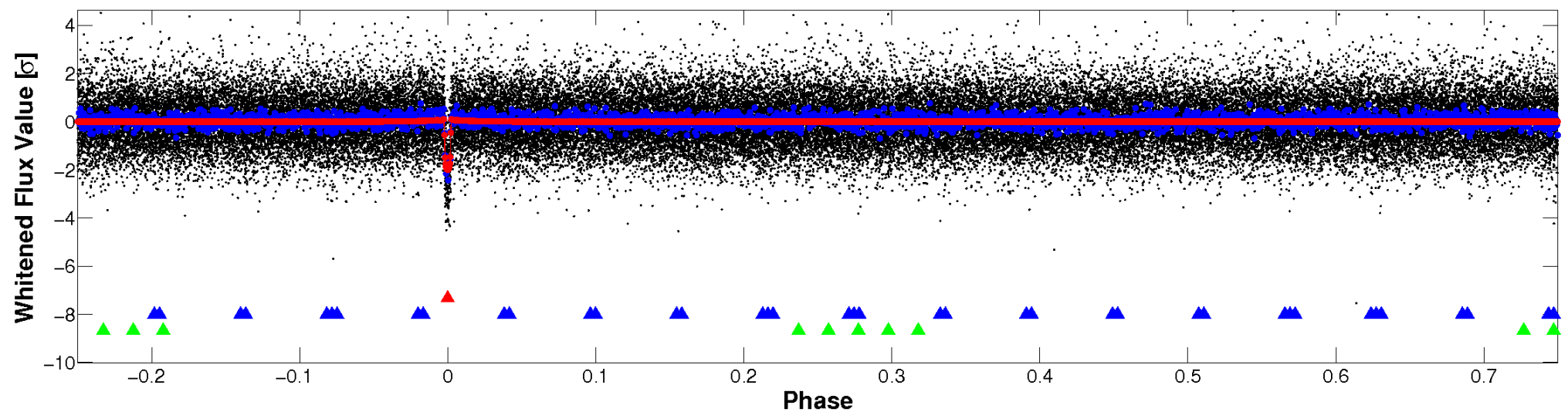


Non-Whitened Vs. Whitened Light Curve

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

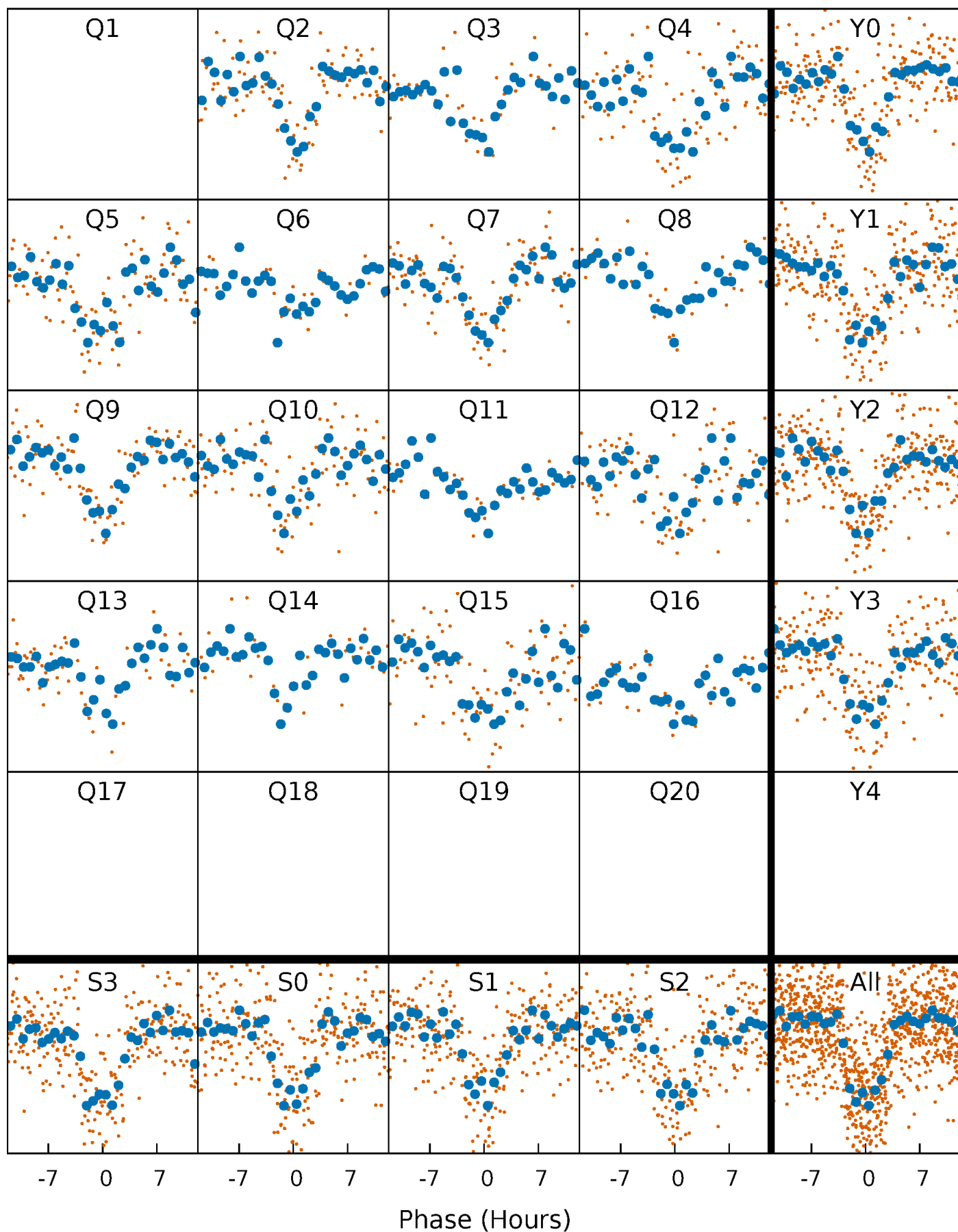


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



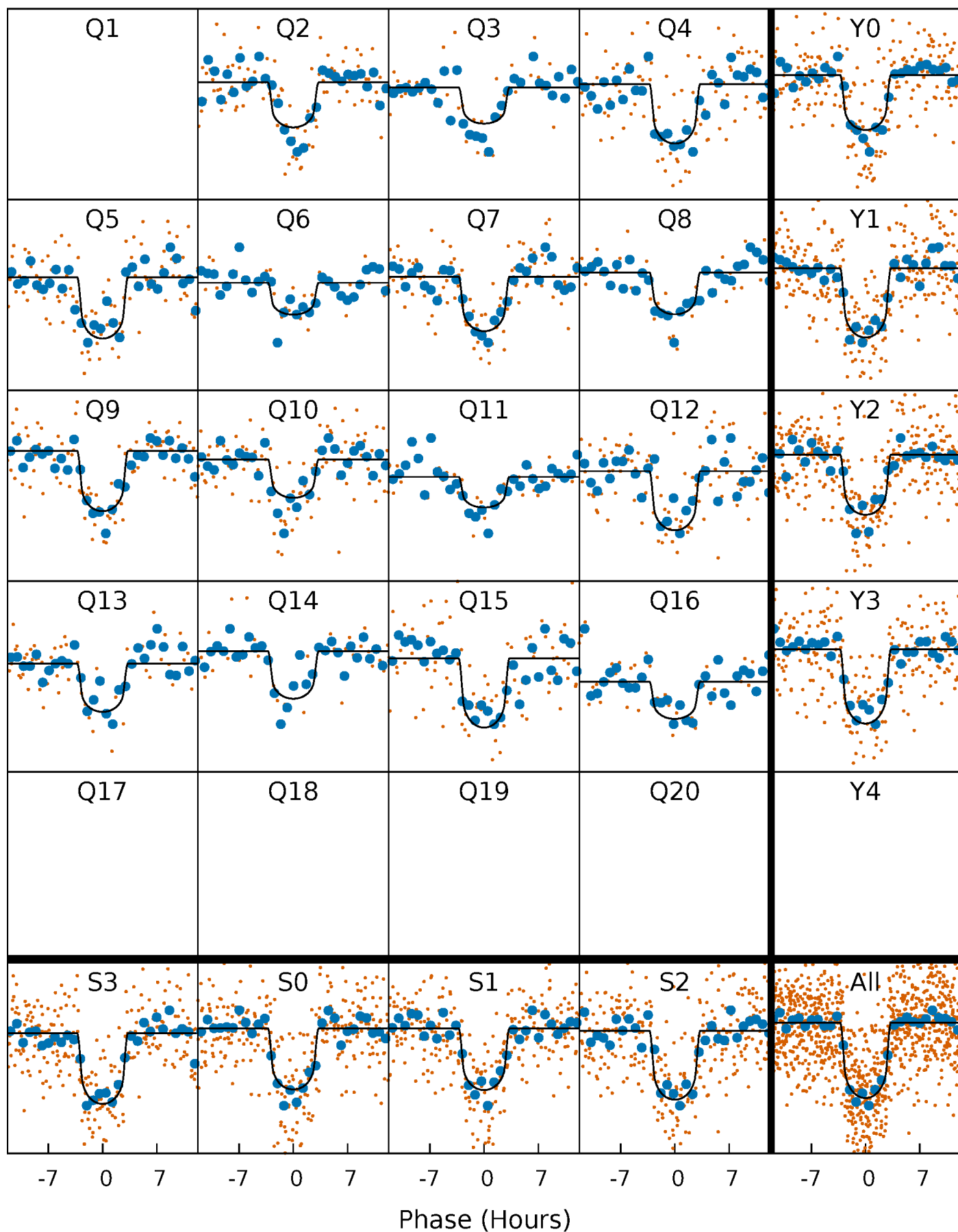
PDC Quarter-Phased Transit Curves

TCE 007102316-01 P= 57.248863 Days $T_0=184.685563$ (BKJD)



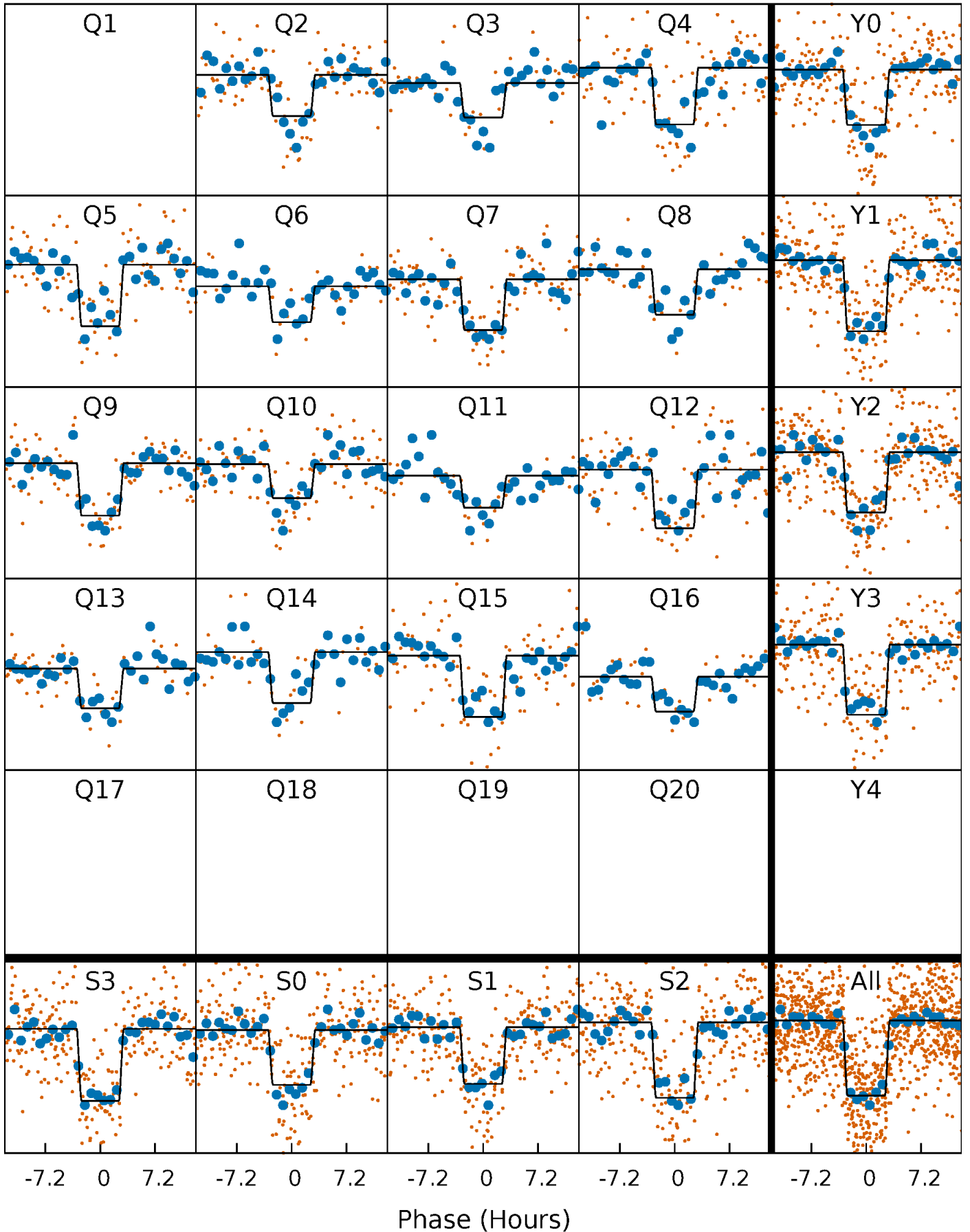
DV Quarter-Phased Transit Curves

TCE 007102316-01 P= 57.248863 Days $T_0=184.685563$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

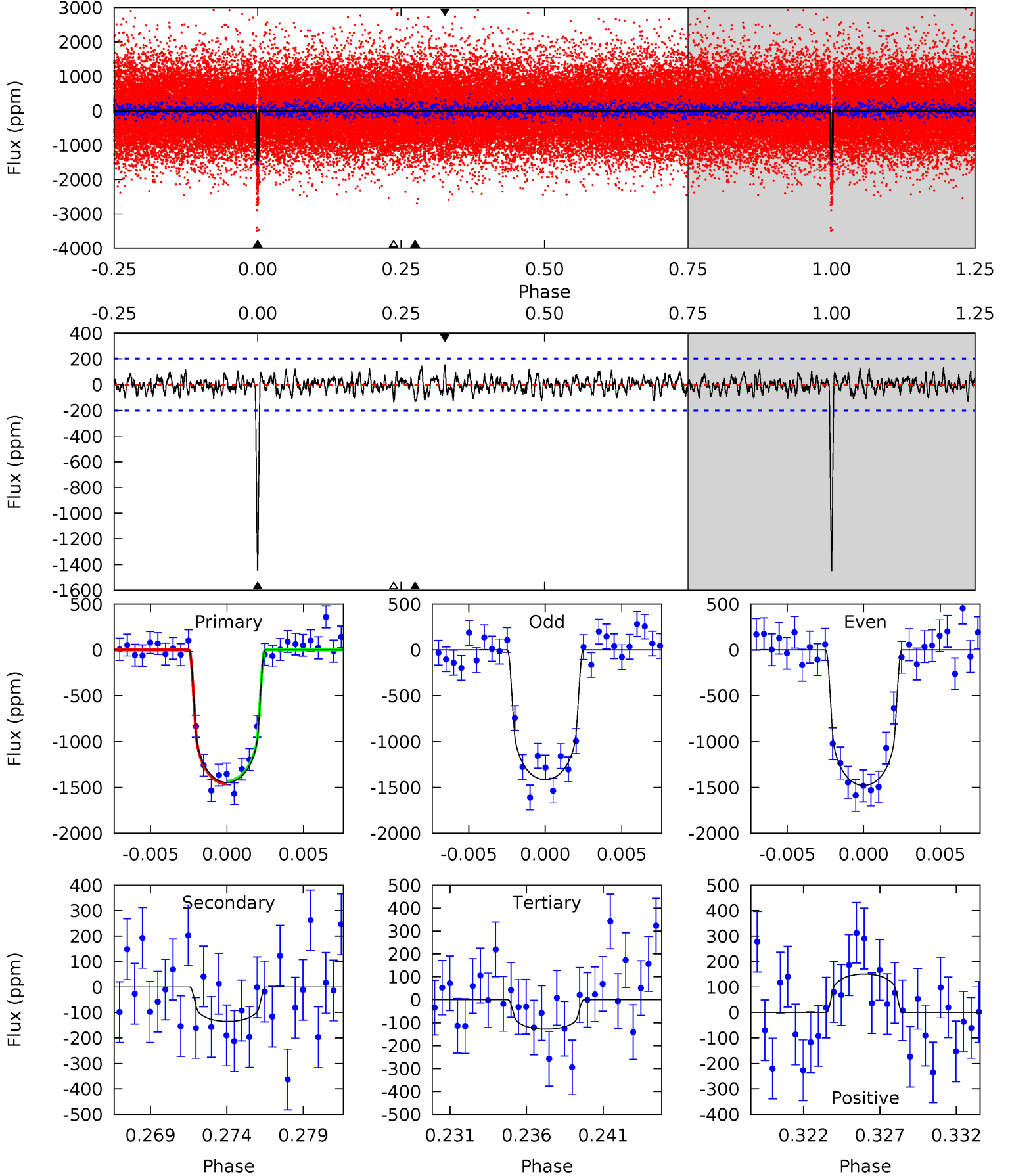
TCE 007102316-01 P= 57.248947 Days $T_0=184.686392$ (BKJD)



DV Model-Shift Uniqueness Test

007102316-01, P = 57.248863 Days, E = 127.436700 Days

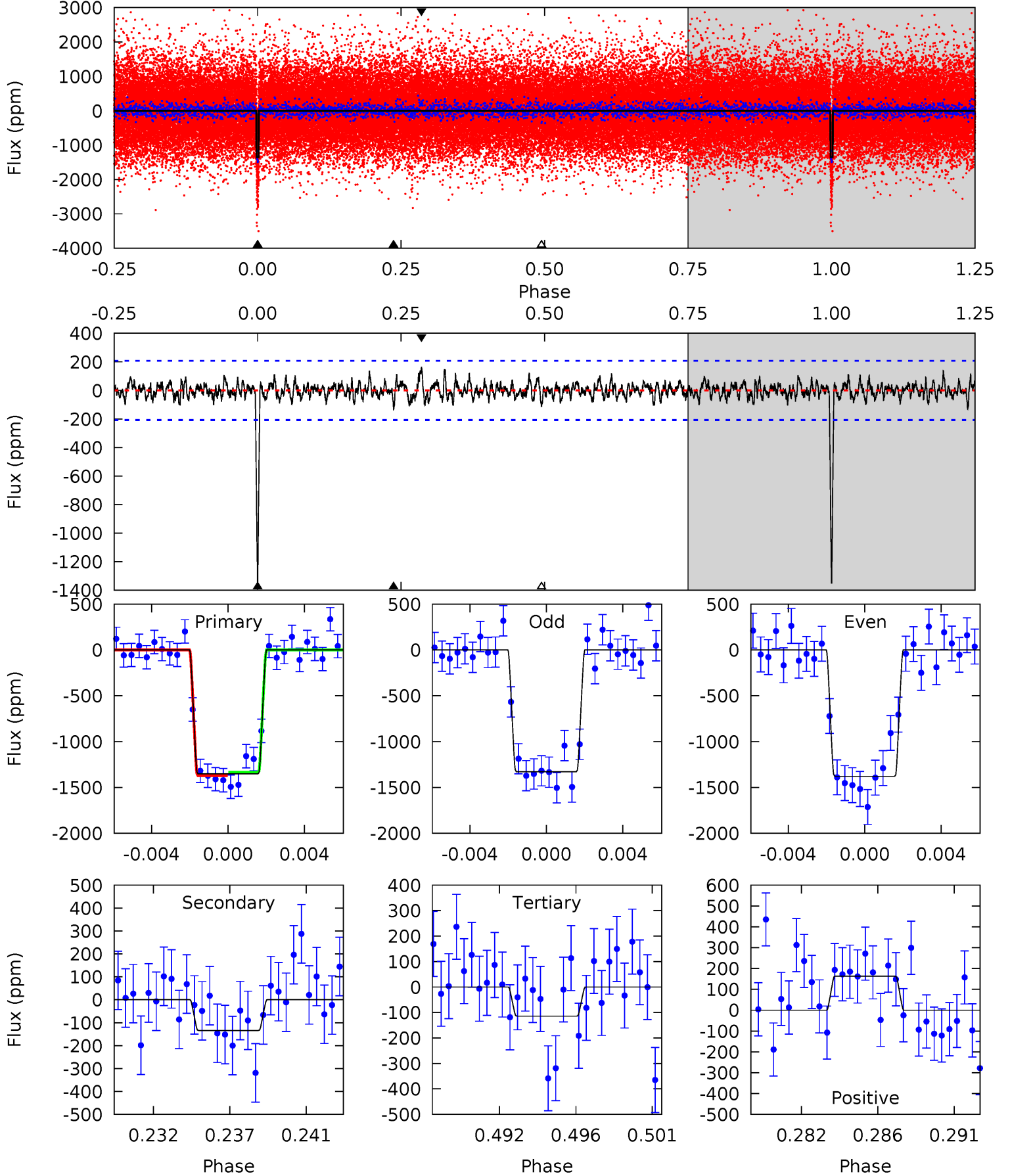
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.1	3.47	3.29	3.87	5.16	2.82	1.19	33.8	33.3	0.18	-0.41	0.81	1.06	0.09	0.42



Alt Model-Shift Uniqueness Test

007102316-01, $P = 57.248947$ Days, $E = 127.437445$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.7	3.34	2.85	4.07	5.18	2.84	1.05	30.9	29.7	0.49	-0.74	0.63	1.05	0.11	0.45



Stellar Parameters For KIC 007102316

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5642^{+169}_{-169}	$4.542^{+0.044}_{-0.176}$	$-0.140^{+0.300}_{-0.300}$	$0.846^{+0.233}_{-0.078}$	$0.910^{+0.104}_{-0.095}$	$2.119^{+0.505}_{-1.004}$
	+3%/-3%	+1%/-4%	+214%/-214%	+28%/-9%	+11%/-10%	+24%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007102316-01 / KOI 2028.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-135 ± 39	$3.37^{+1.12}_{-1.19}$	613^{+40}_{-28}	3664^{+619}_{-340}	517^{+791}_{-261}
Alt.	-134 ± 40	$3.56^{+1.24}_{-1.12}$	615^{+40}_{-28}	3599^{+503}_{-344}	457^{+523}_{-231}

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 $A_{obs} \gg 1.0$

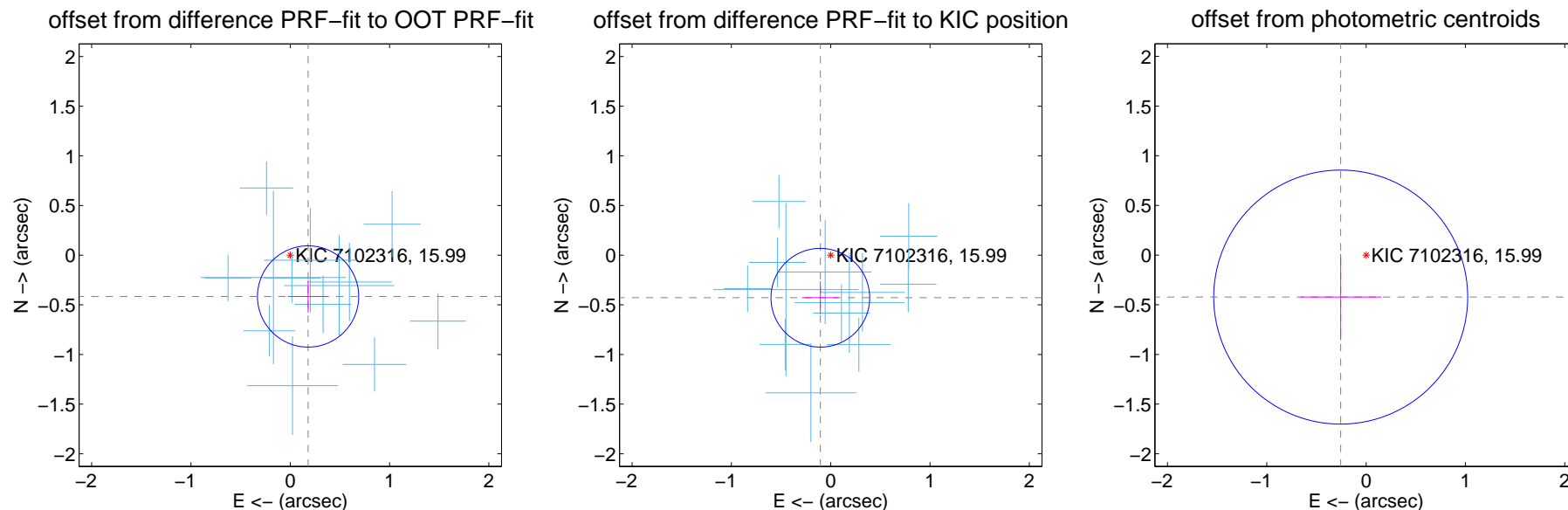
DV Centroid Data

Supplemental centroid analysis for 007102316-01. Kepler magnitude: 15.99. Transit SNR 28.50

There are 13 quarters with good PRF difference image offsets

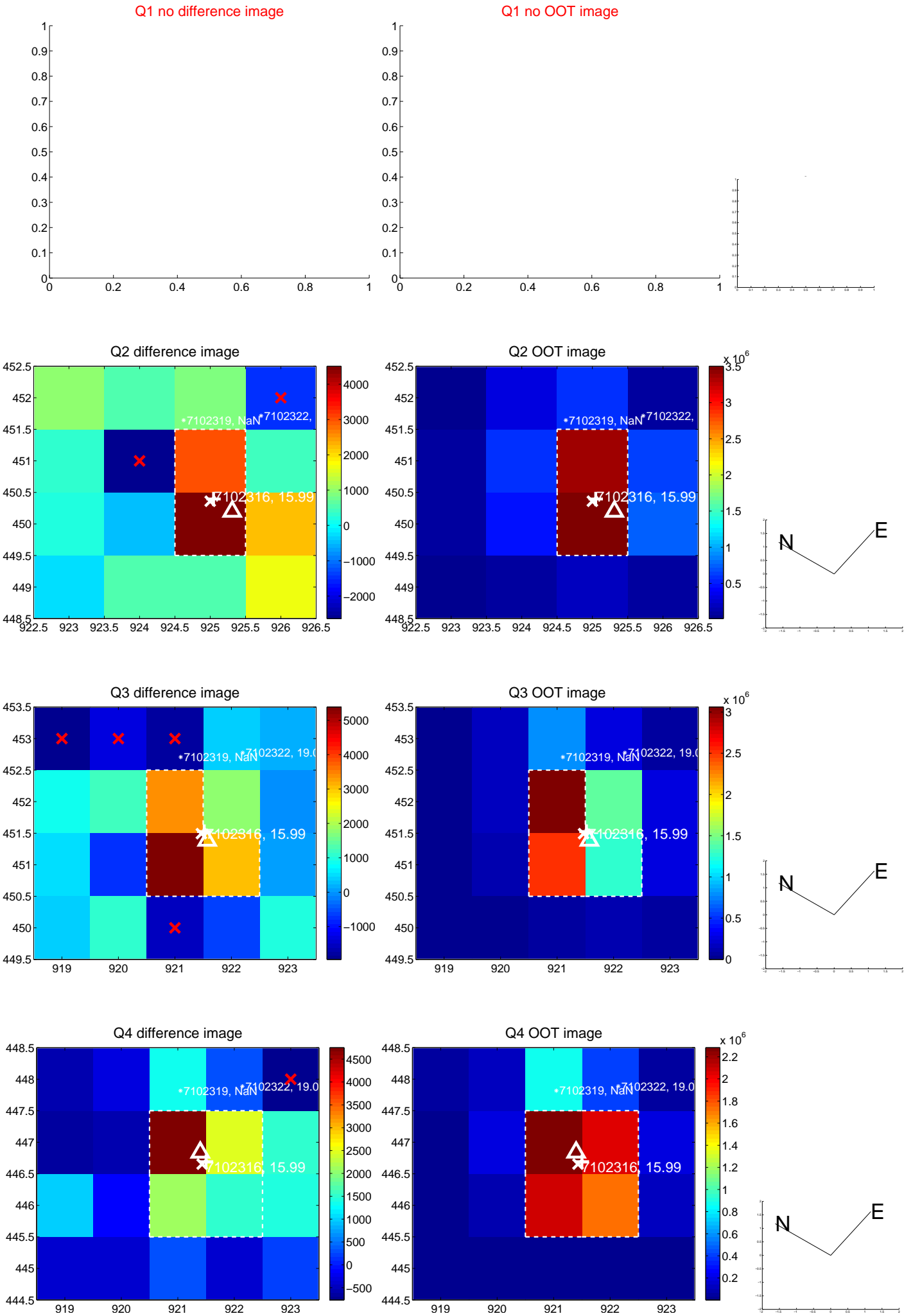
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.453 ± 0.170	2.67	-0.180 ± 0.204	-0.416 ± 0.163
PRF-fit source offset from KIC position	0.442 ± 0.166	2.66	0.105 ± 0.185	-0.429 ± 0.164
photometric centroid source offset	0.49 ± 0.43	1.16	0.26 ± 0.41	-0.42 ± 0.43

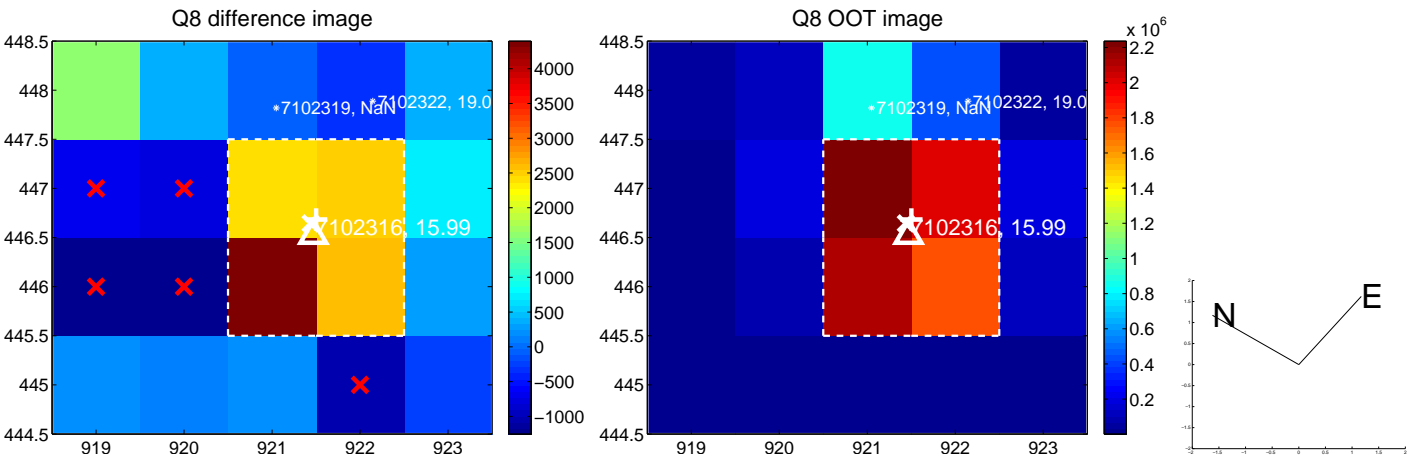
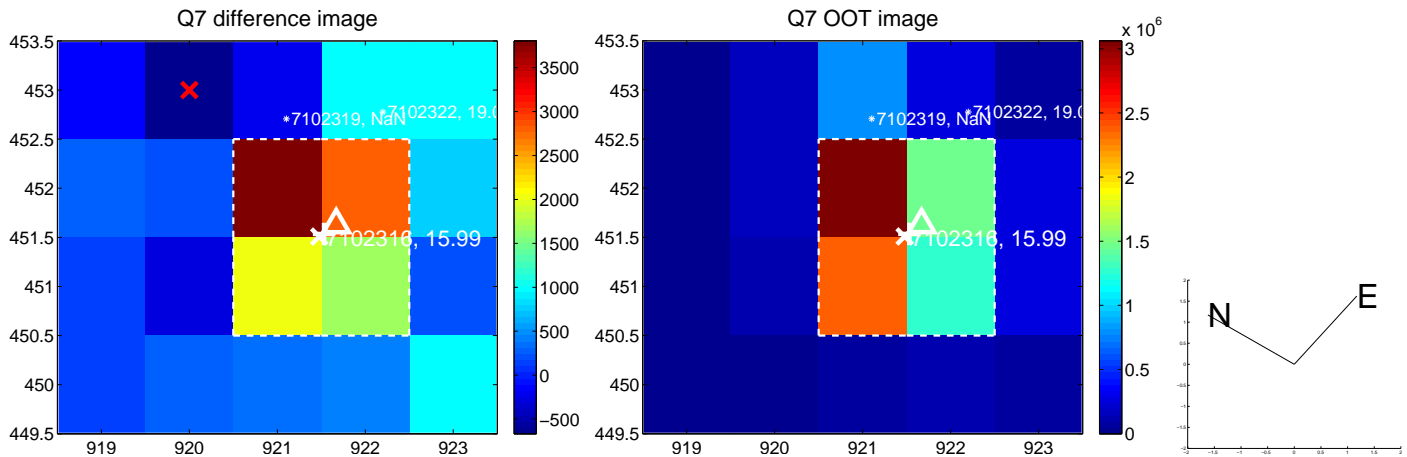
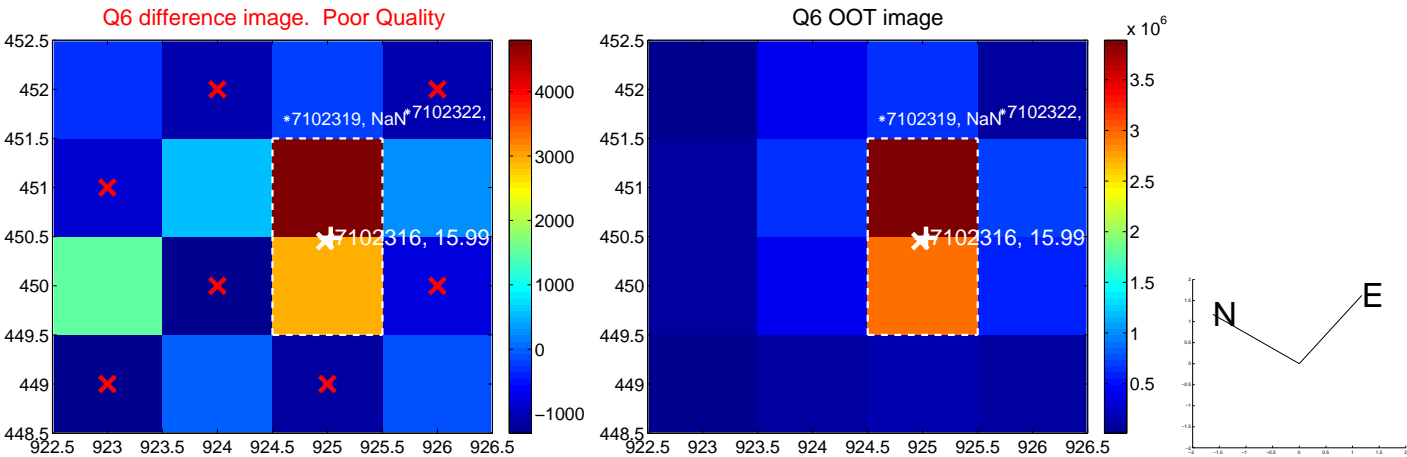
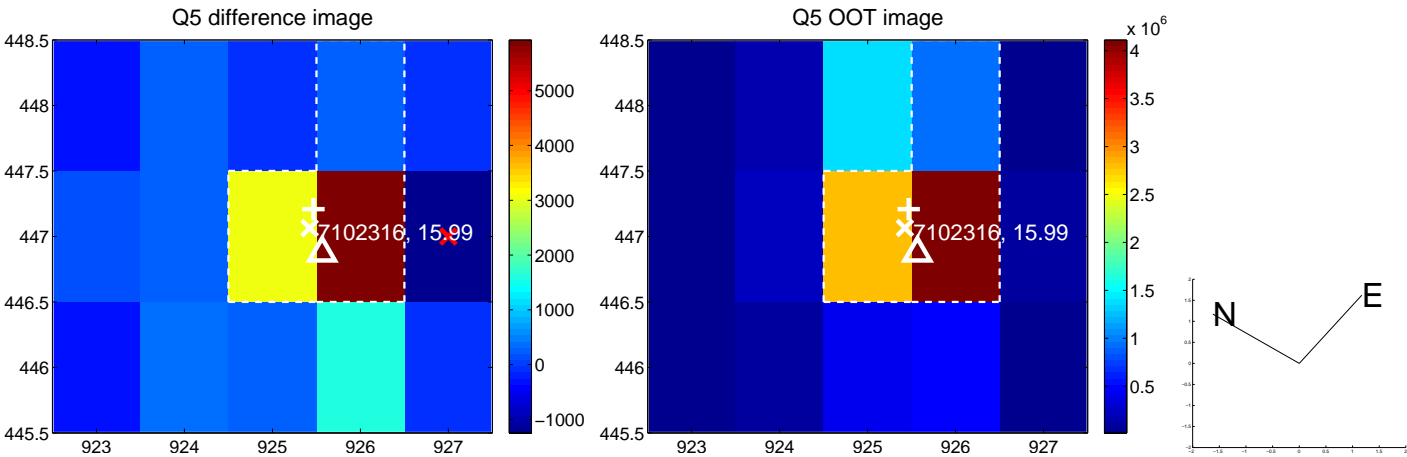


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

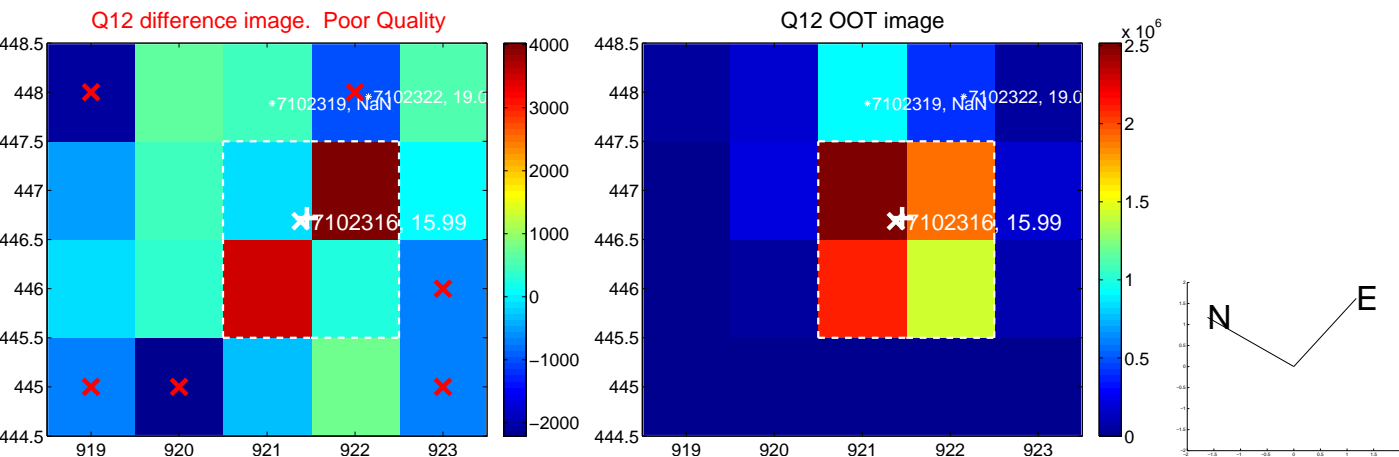
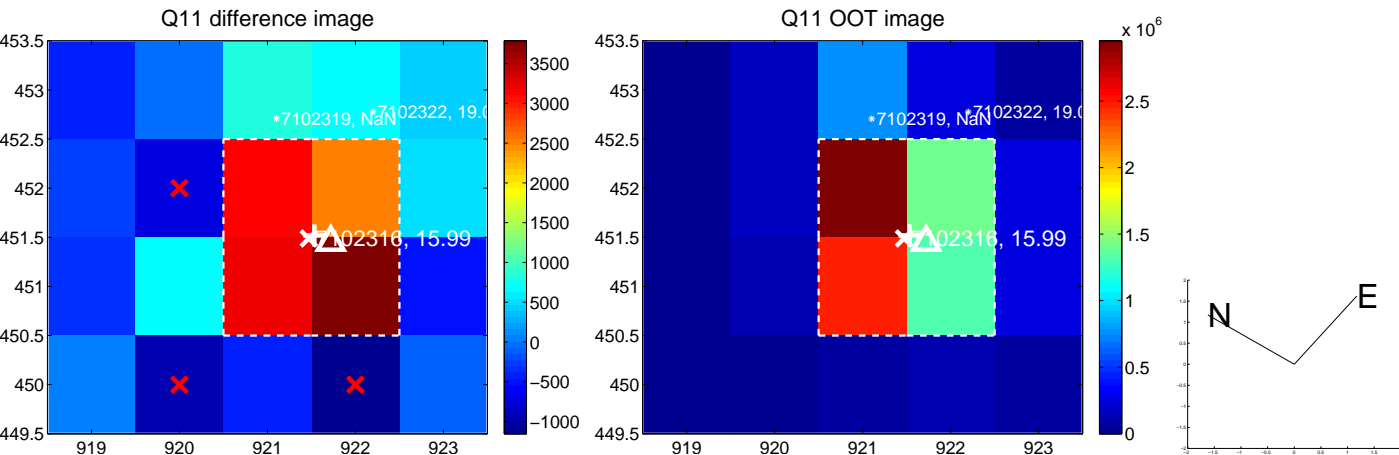
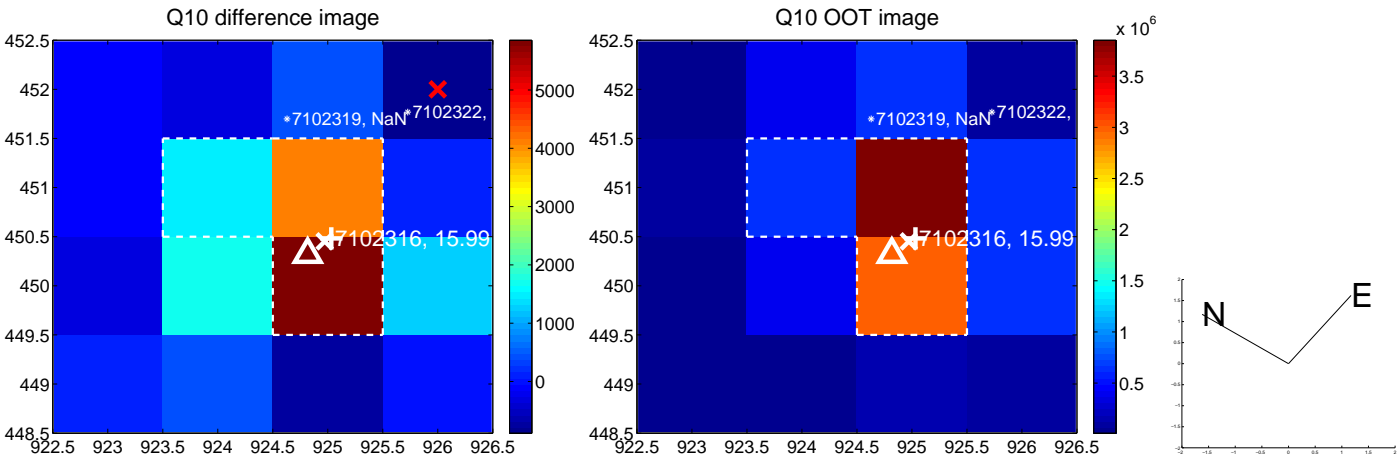
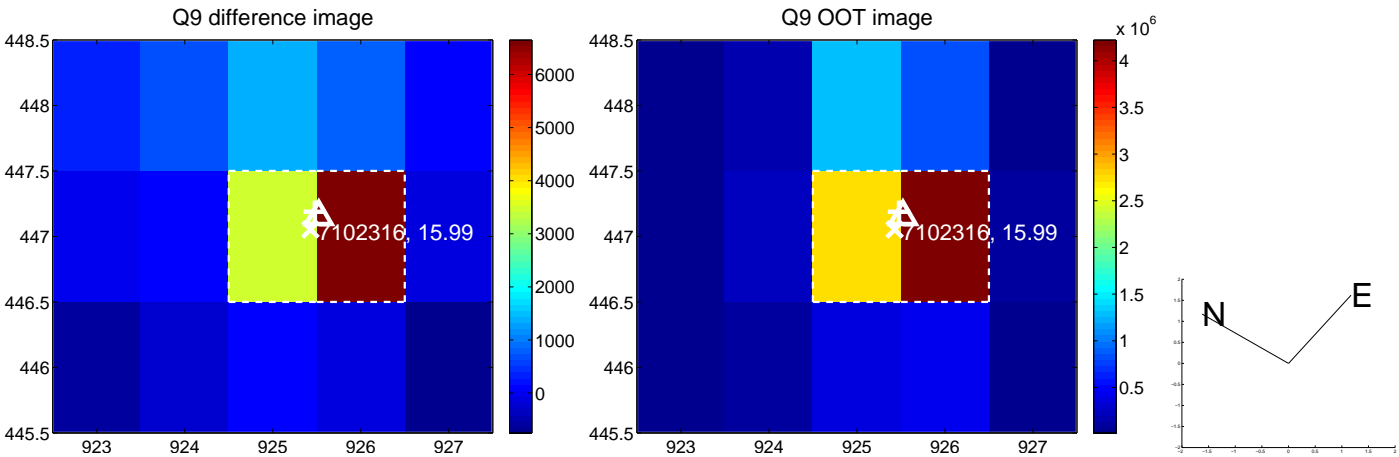
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



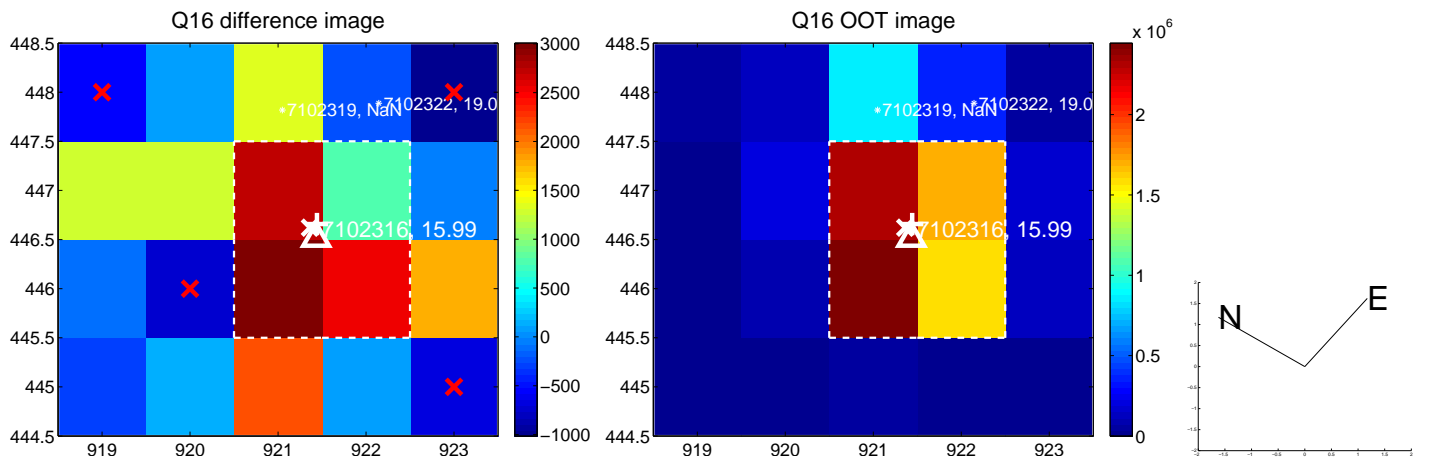
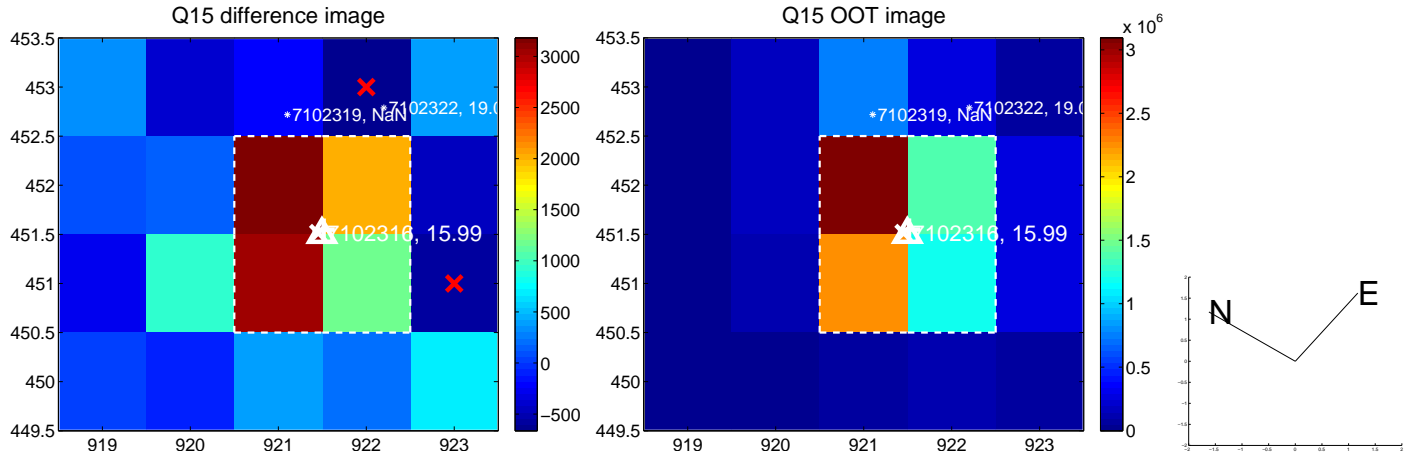
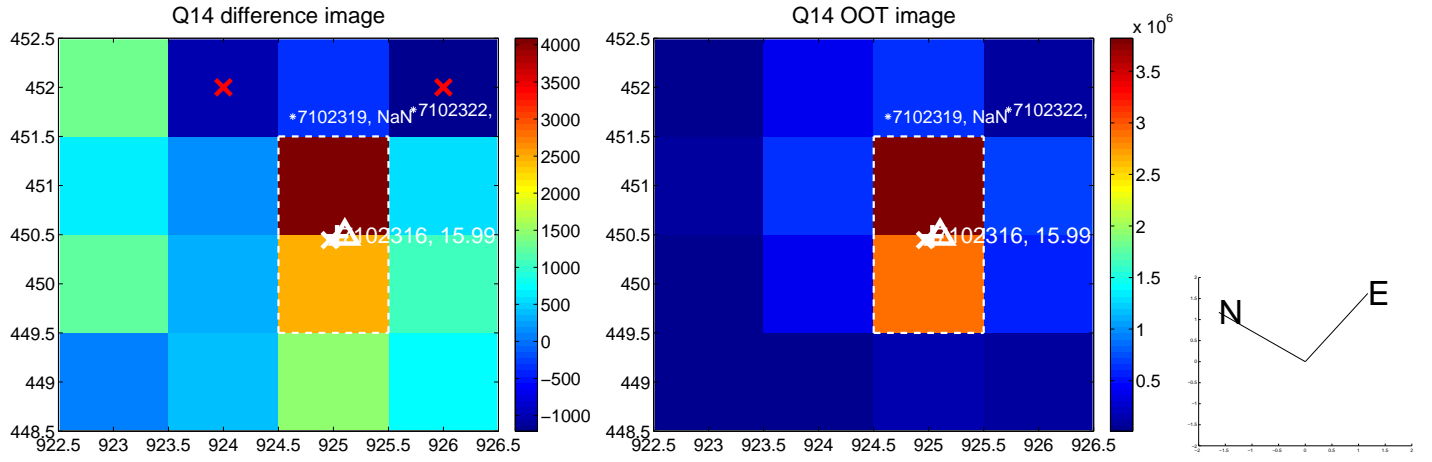
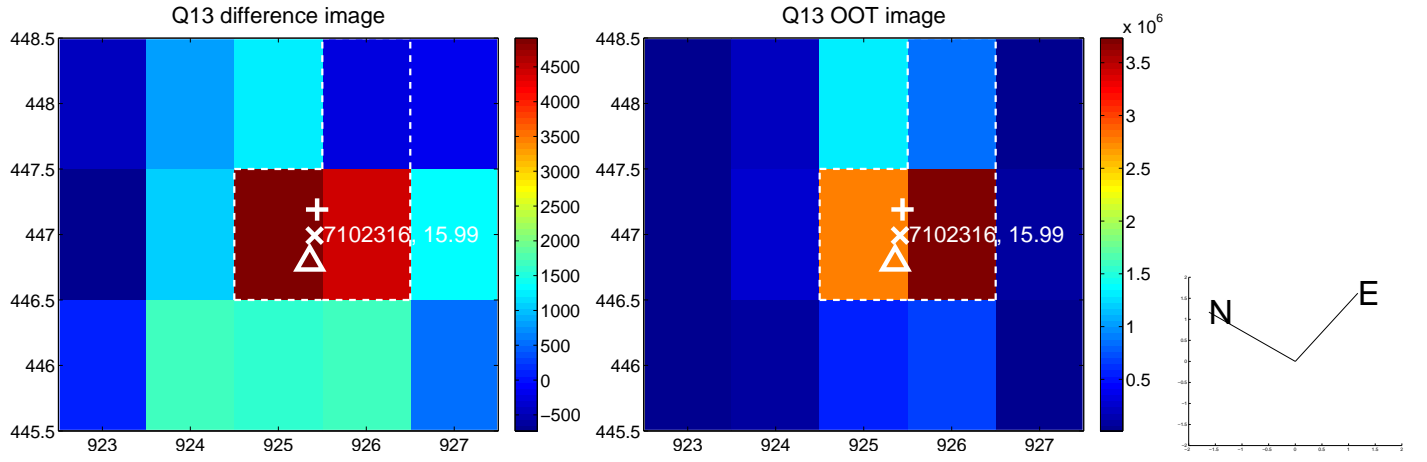
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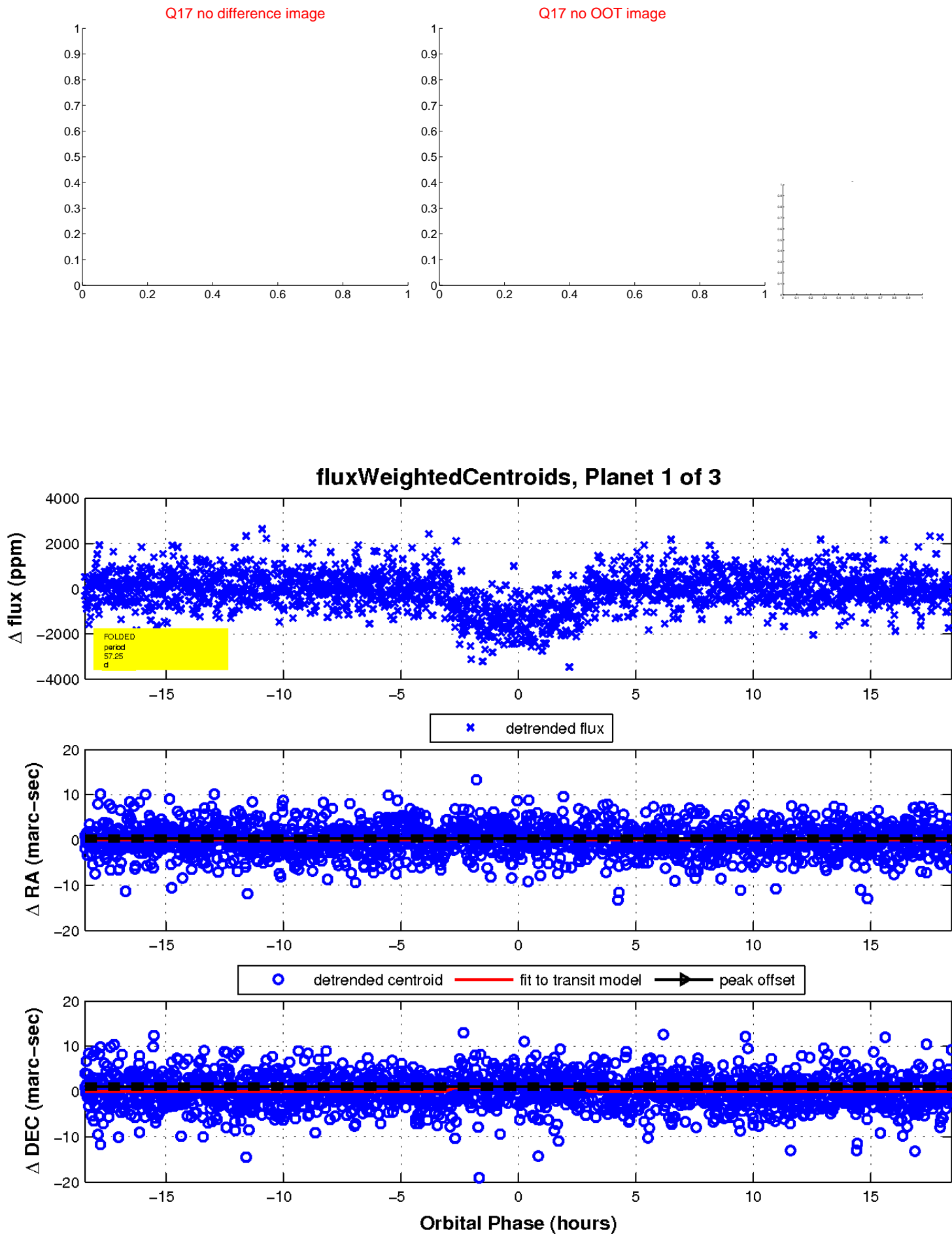
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

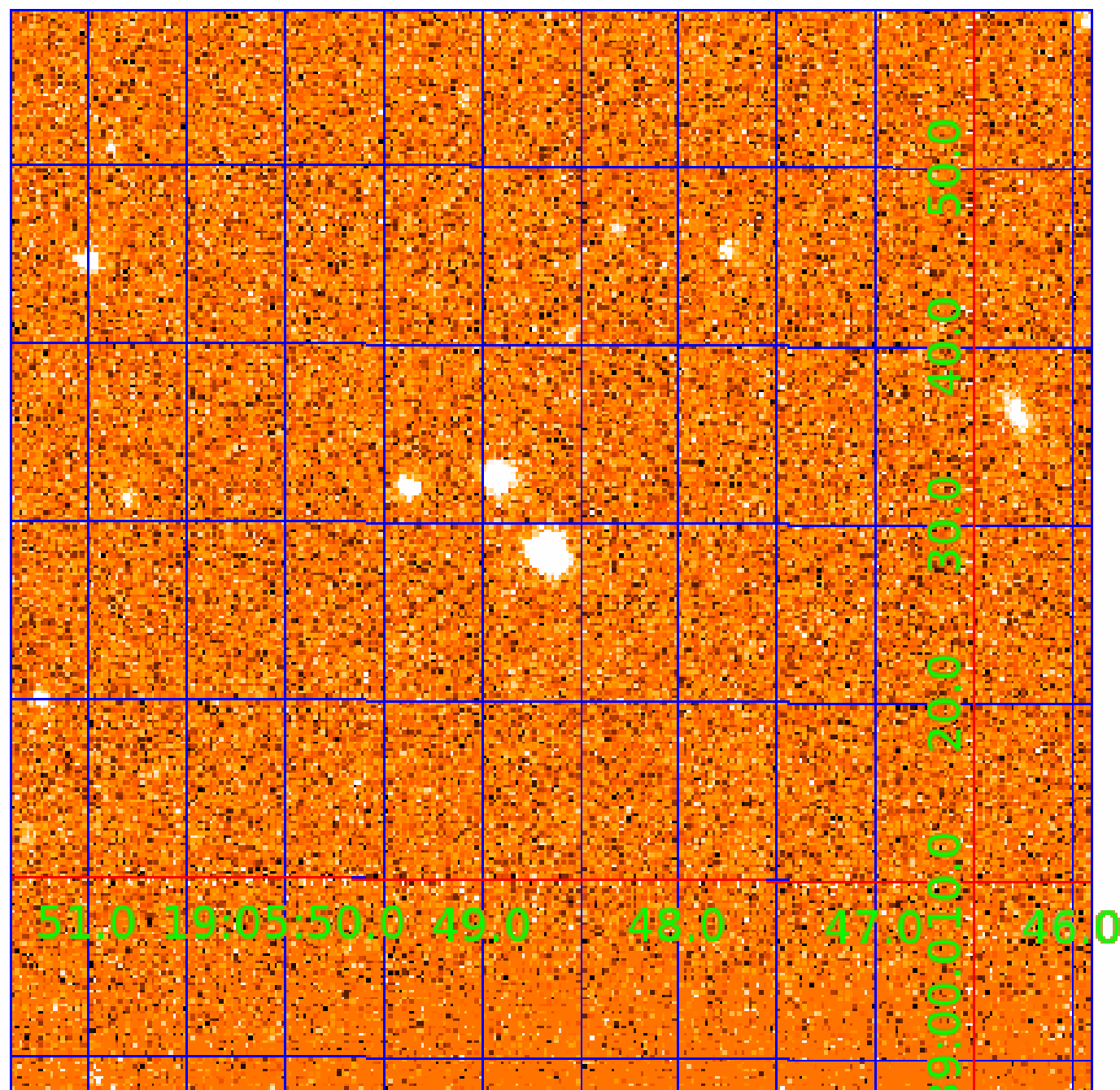


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007102316

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})
007102316-01	OBS	2028.01	57.248863	184.685563	1415.9	6.152	27.8	28.5	0.85	5642	3.28	8.19
007102316-02	OBS	2028.02	37.055087	163.147138	1044.8	5.113	22.7	24.1	0.85	5642	3.12	14.62
007102316-03	OBS	2028.03	142.543641	202.885451	928.7	9.368	11.7	12.6	0.85	5642	2.93	2.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007102316-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-03	OBS	PC	0.98	0	0	0	0	CENT_FEW_MEAS

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.

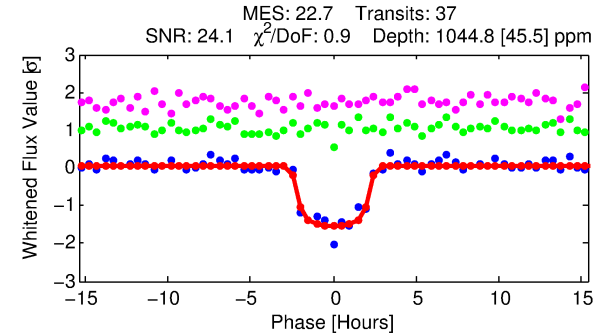
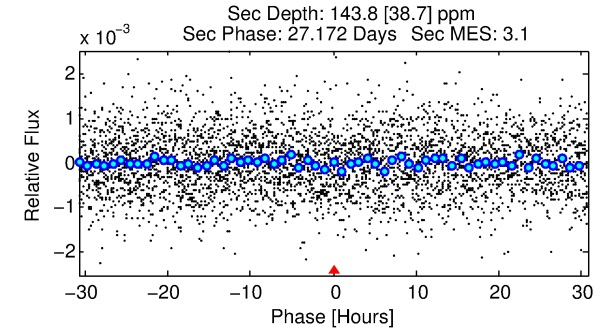
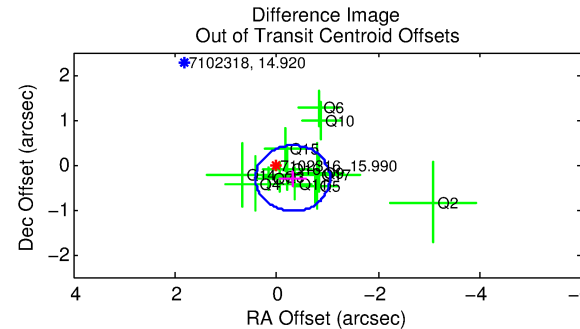
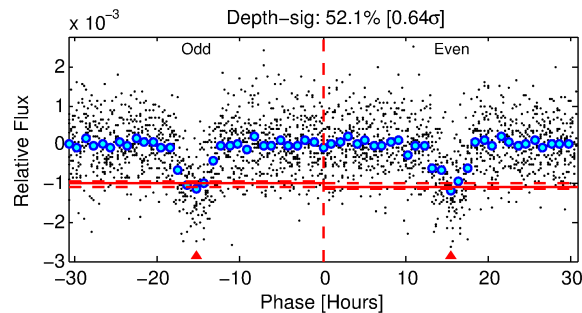
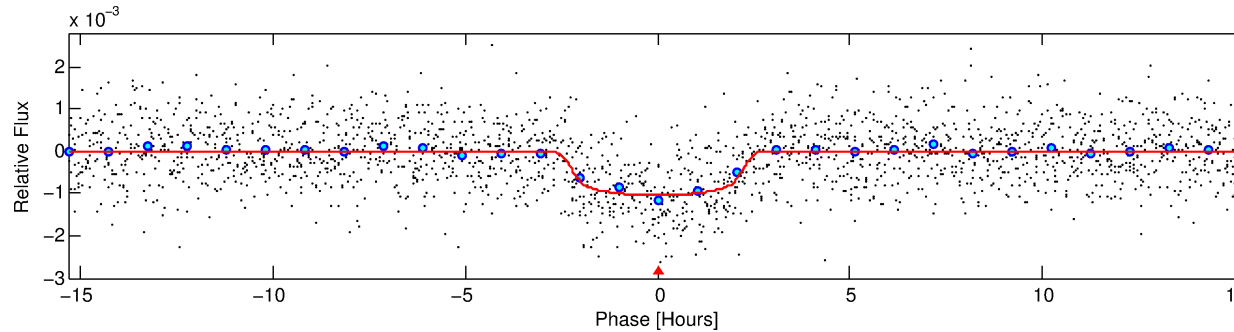
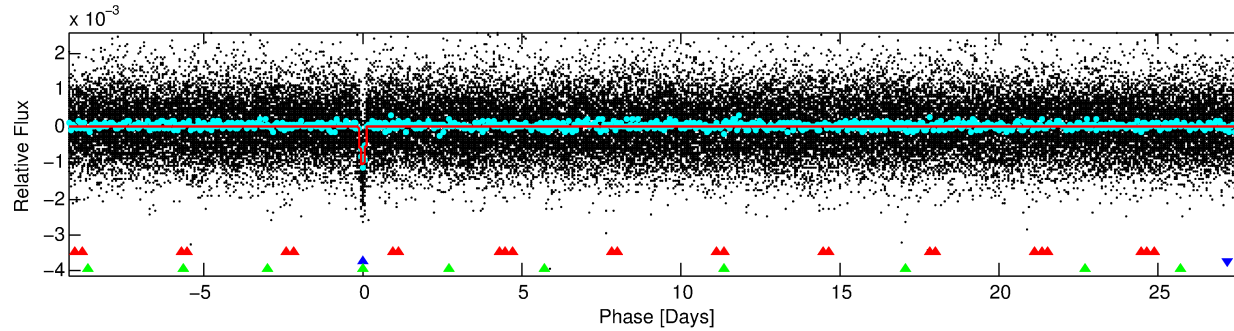
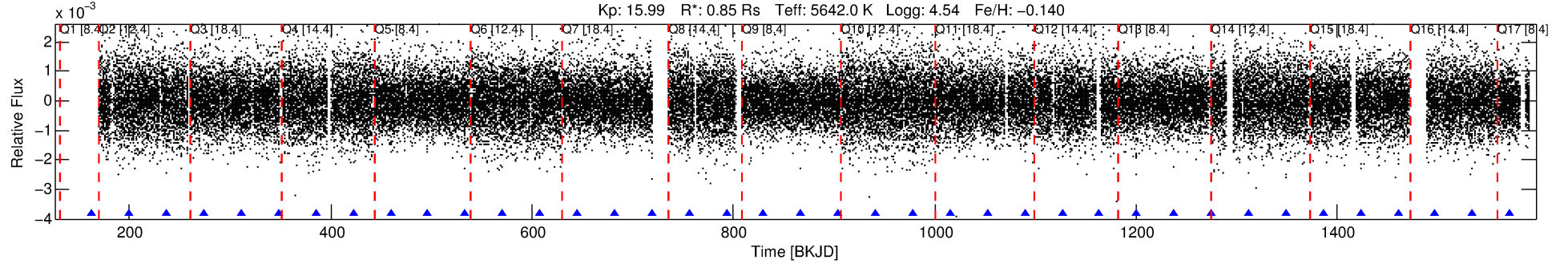
Ephemeris Match Information For 007102316-02

No Significant Match Found

DV One-Page Summary

KIC: 7102316 Candidate: 2 of 3 Period: 37.055 d
KOI: K02028.02 Name: Kepler-351b Corr: 0.973

Kp: 15.99 R*: 0.85 Rs Teff: 5642.0 K Logg: 4.54 Fe/H: -0.140



DV Fit Results:

Period = 37.05509 [0.00022] d
Epoch = 163.1471 [0.0048] BKJD
Rp/R* = 0.0338 [0.0035]
a/R* = 32.74 [14.39]
b = 0.85 [0.15]
Seff = 14.62 [5.09]
Teq = 499 [43] K
Rp = 3.12 [0.92] Re
a = 0.2108 [0.0480] AU
Ag = 359.95 [169.73] [2.11σ]
Teffp = 3358 [303] K [9.35σ]

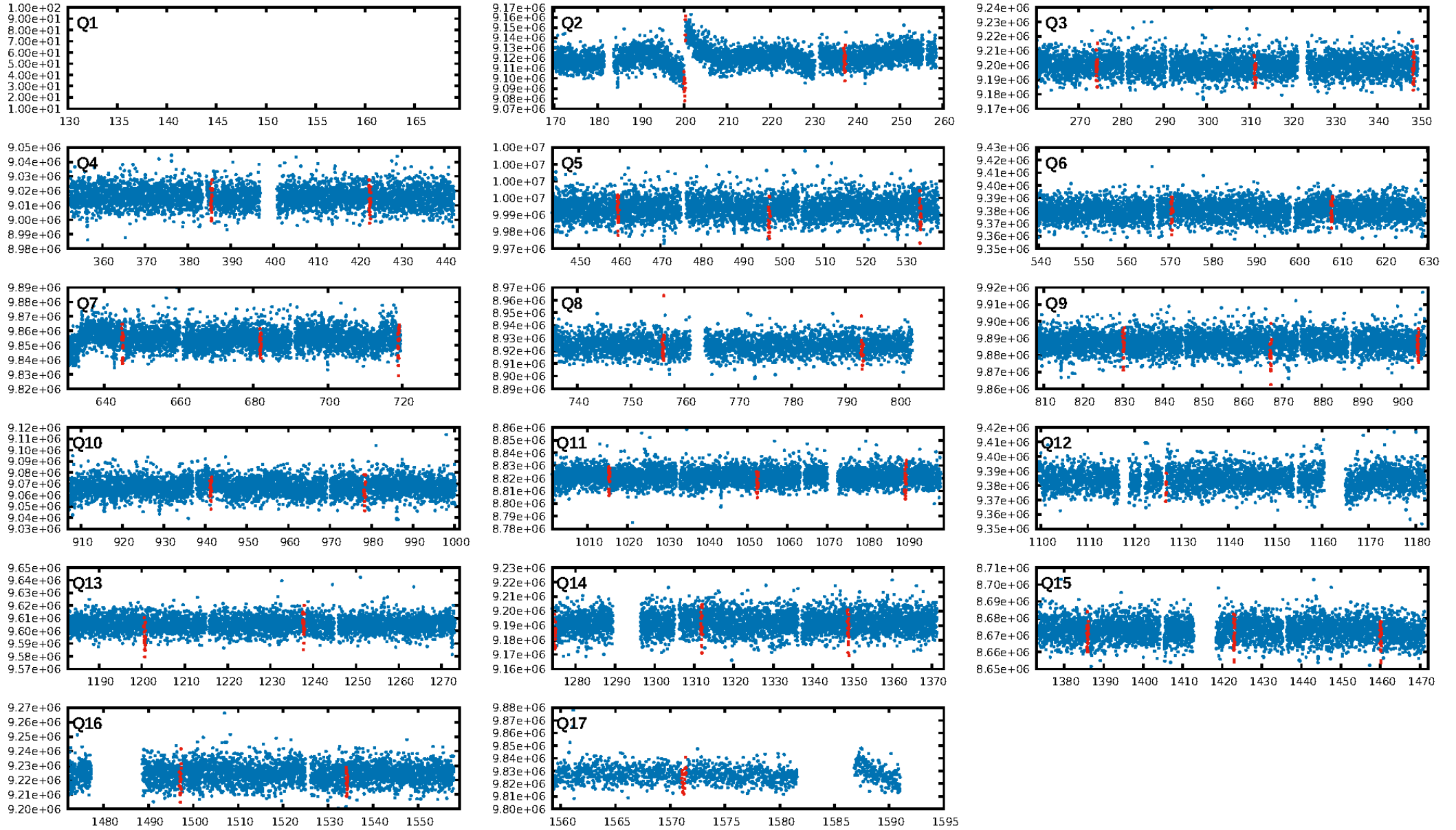
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [60.58σ]
ModelChiSquare2-sig: 49.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.44e-115
RollingBand-fgt: 1.00 [36/36]
GhostDiagnostic-chr: 8.697
Centroid-sig: 0.6%
Centroid-so: 0.503 arcsec [0.98σ]
OotOffset-rm: 0.436 arcsec [1.79σ]
KicOffset-rm: 0.257 arcsec [1.57σ]
OotOffset-st: 4/4/2/3 [13]
KicOffset-st: 4/4/2/3 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 1.00 [15/15]

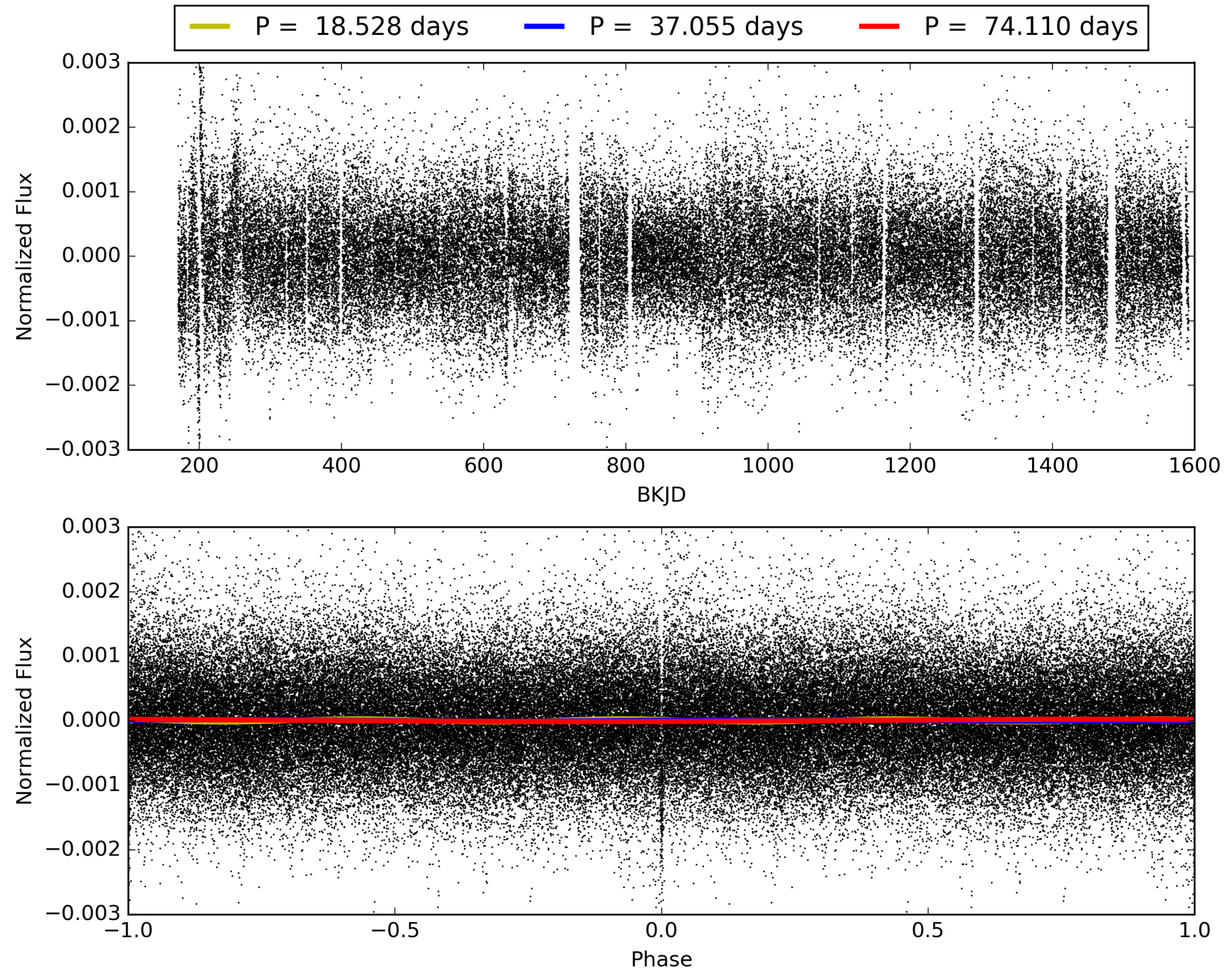
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:38:59 Z

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

TCE 007102316-02, PDC Light Curves

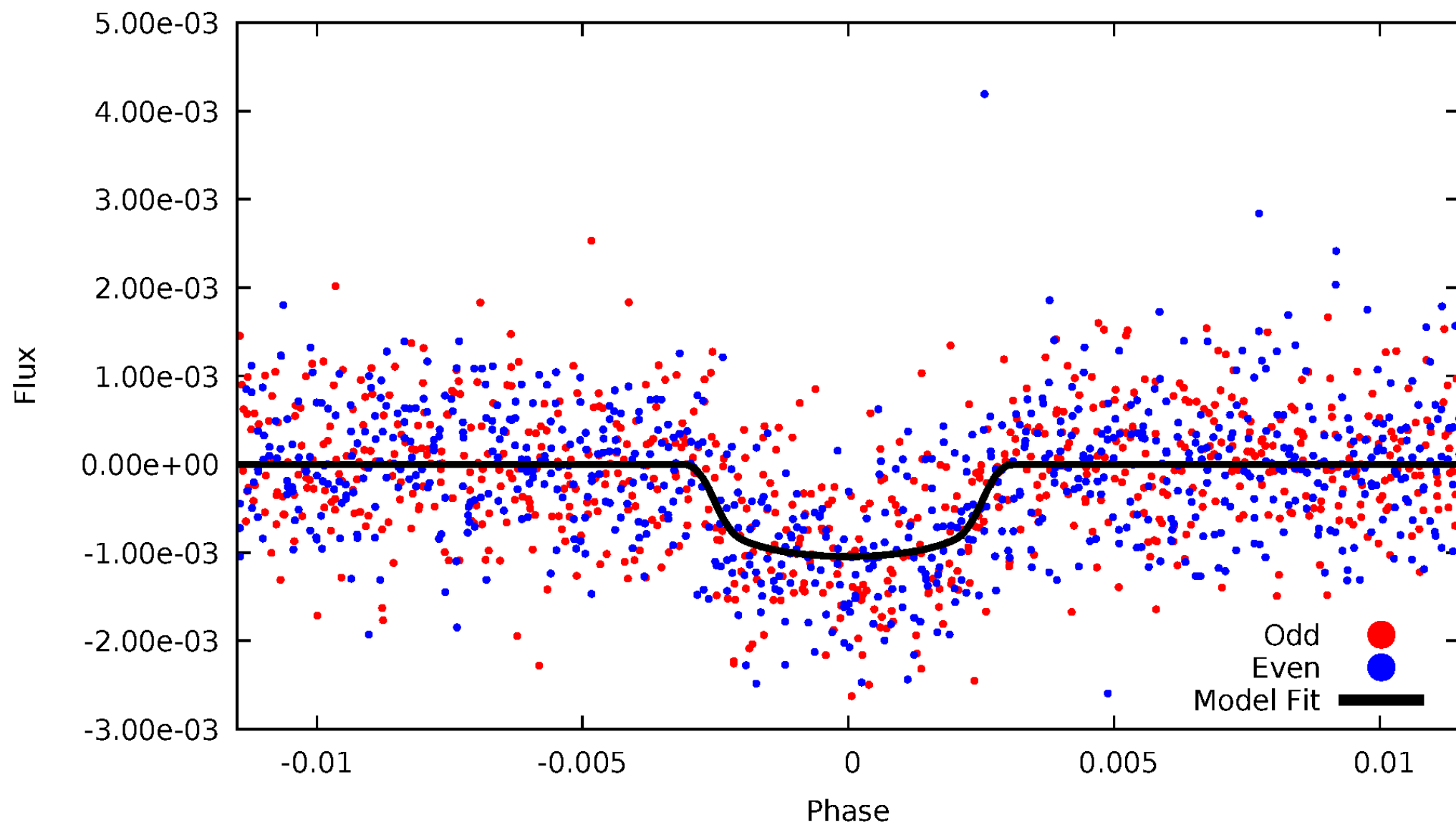


TCE 007102316-02



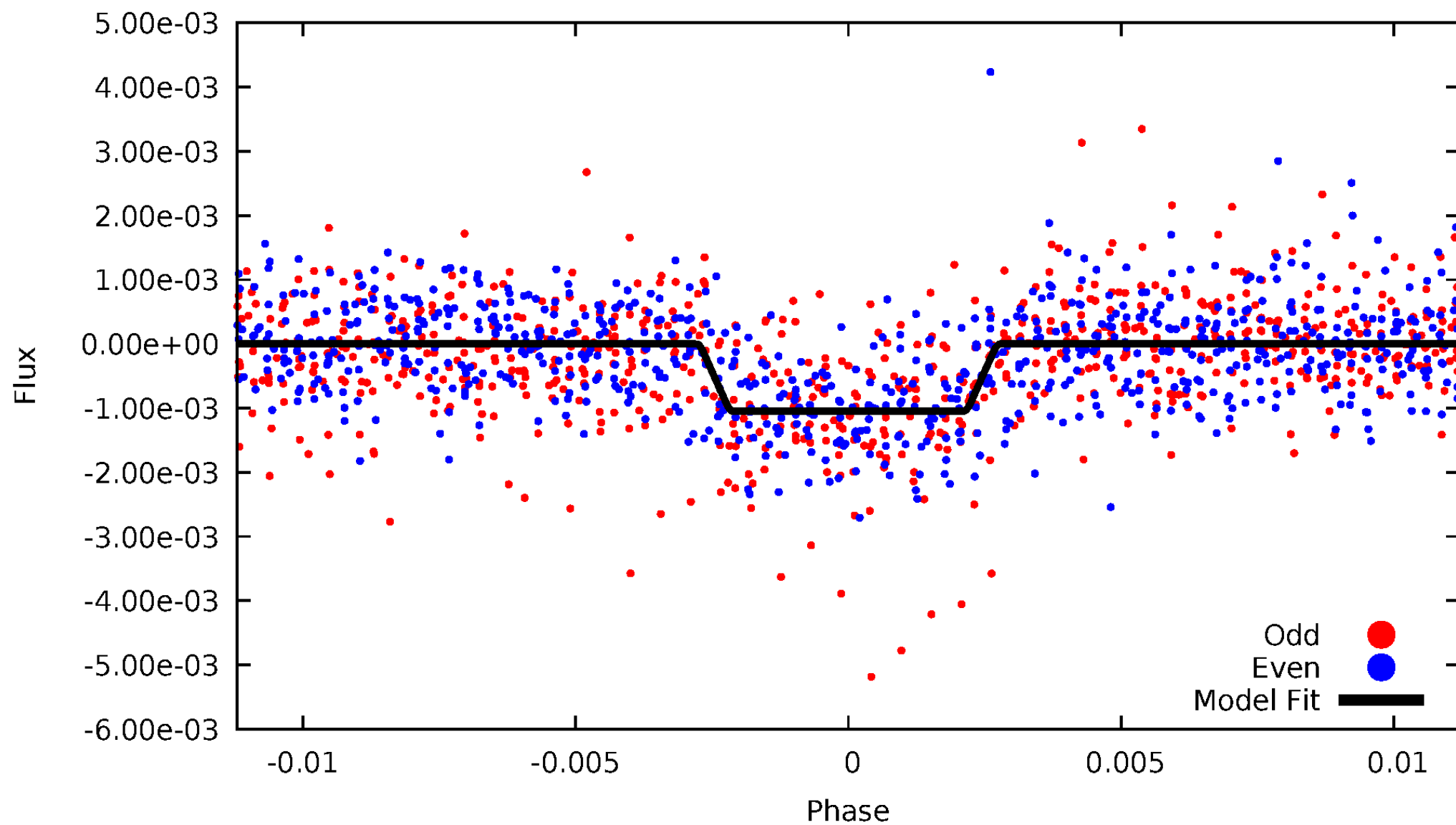
DV Odd/Even

TCE 007102316-02



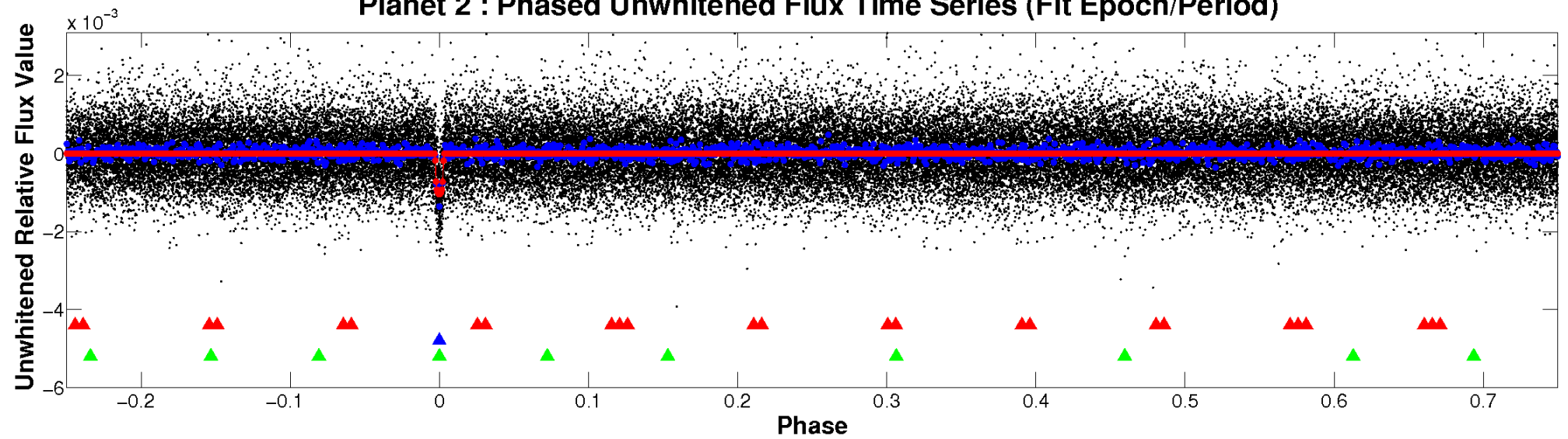
ALT Odd/Even

TCE 007102316-02

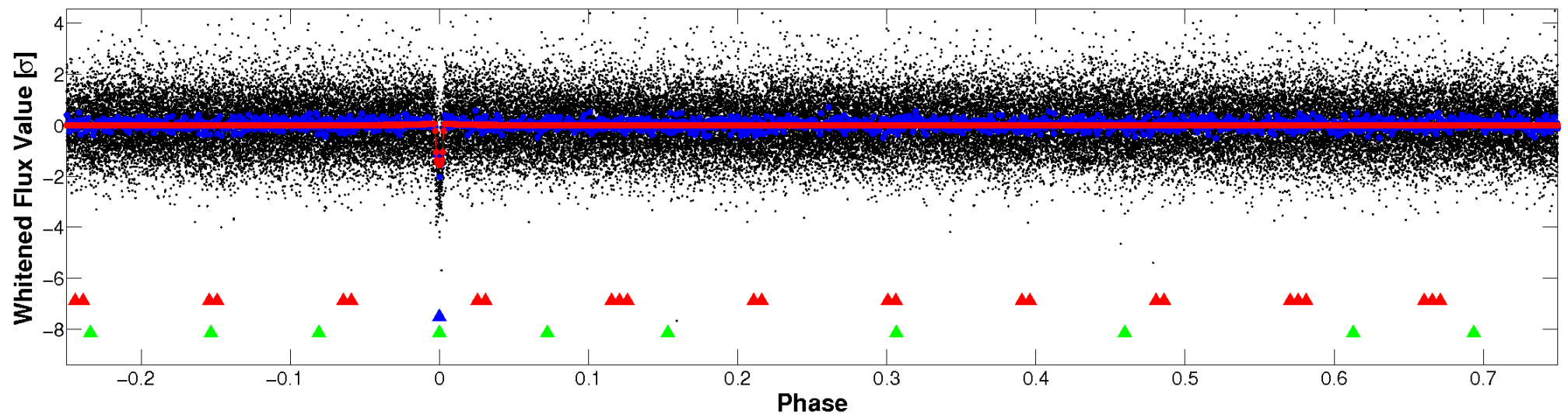


Non-Whitened Vs. Whitened Light Curve

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

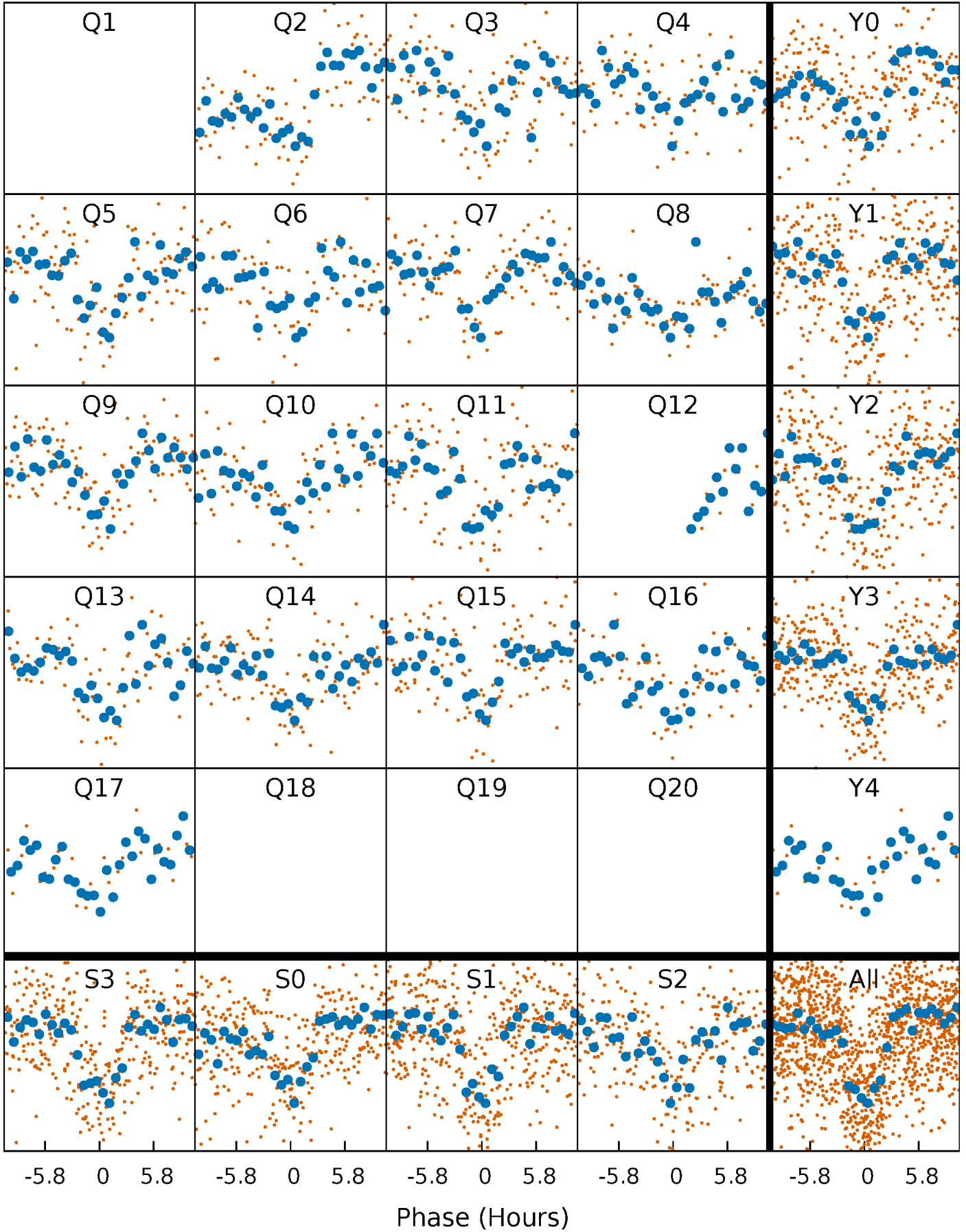


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



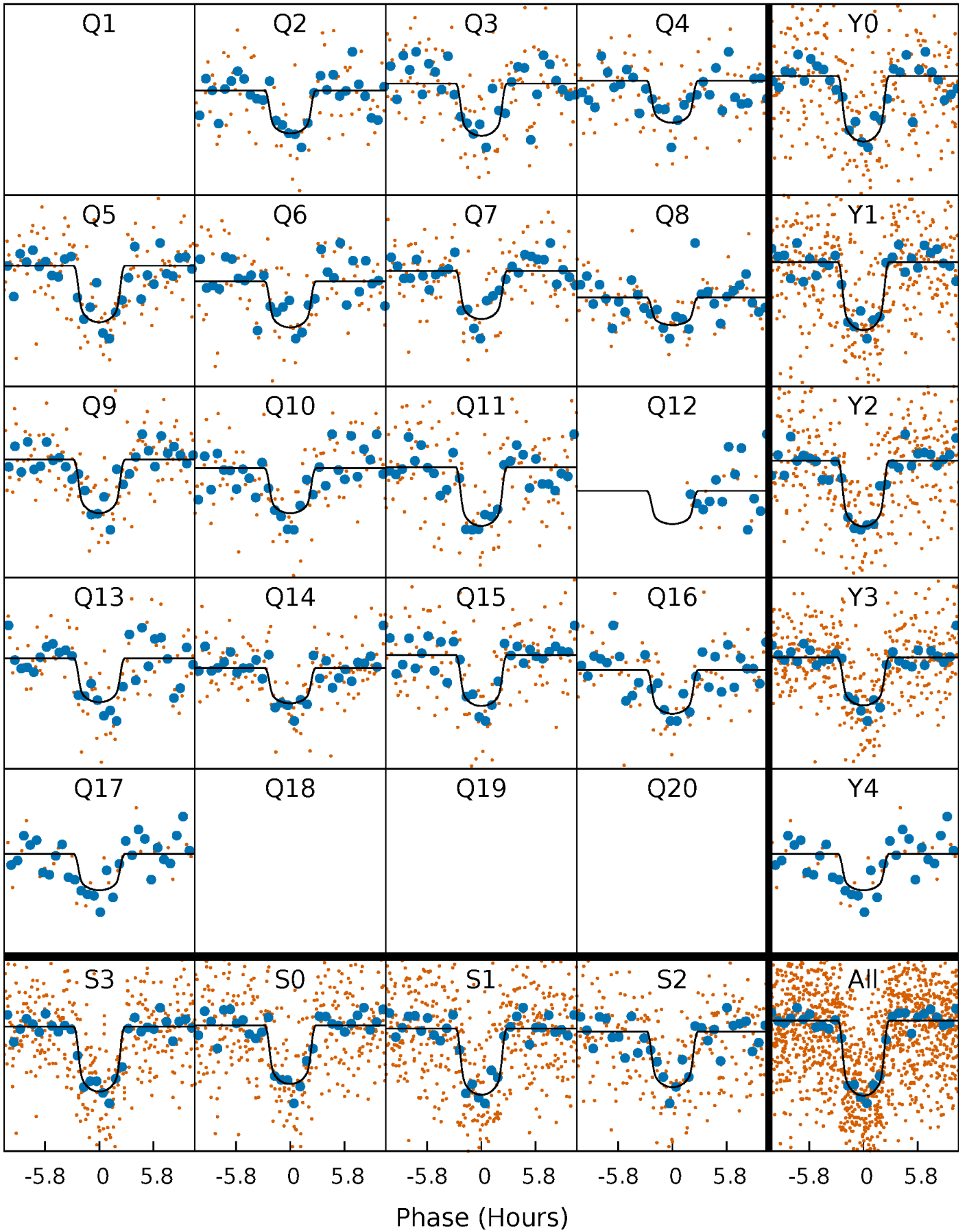
PDC Quarter-Phased Transit Curves

TCE 007102316-02 P= 37.055087 Days $T_0=163.147138$ (BKJD)



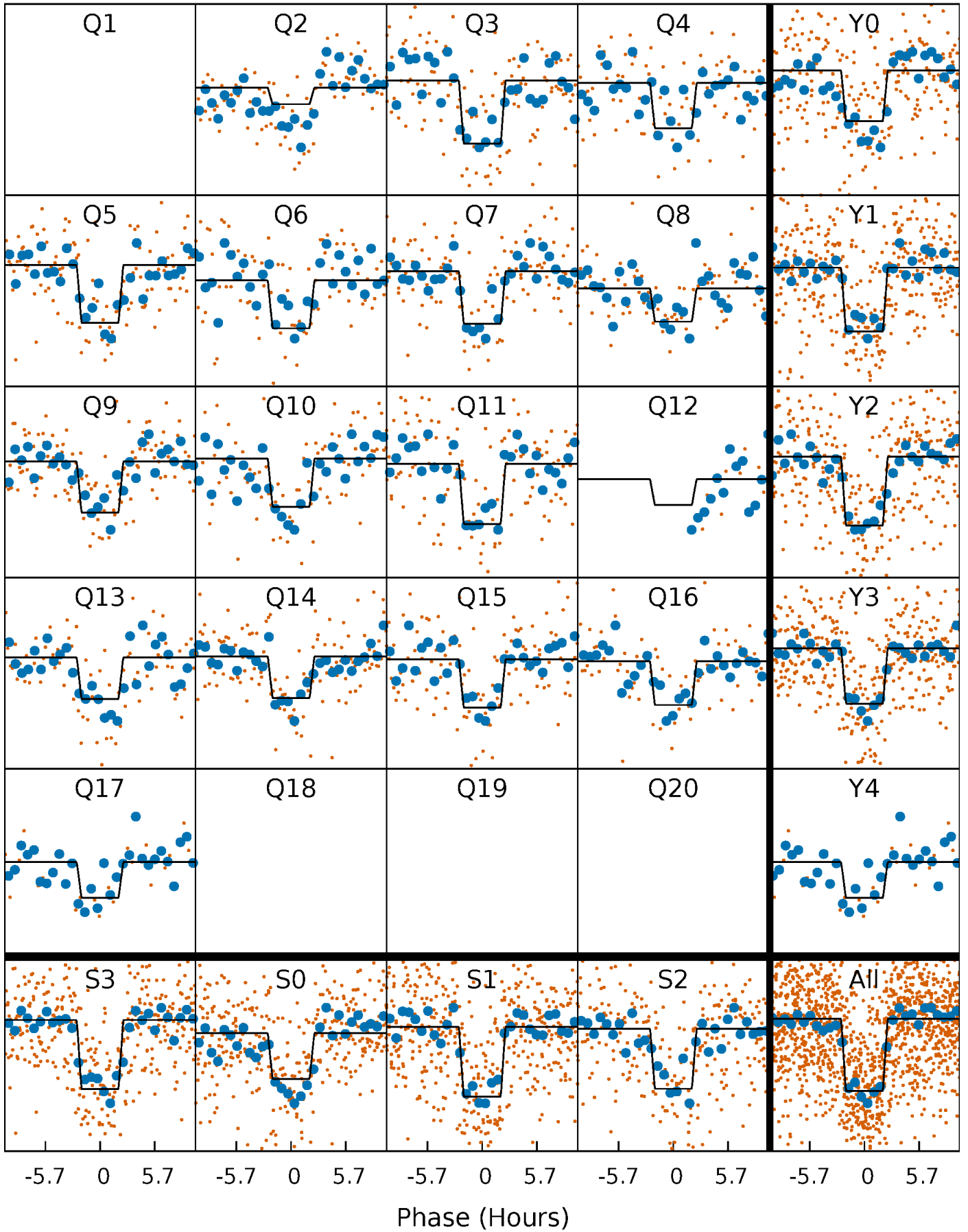
DV Quarter-Phased Transit Curves

TCE 007102316-02 P= 37.055087 Days $T_0=163.147138$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

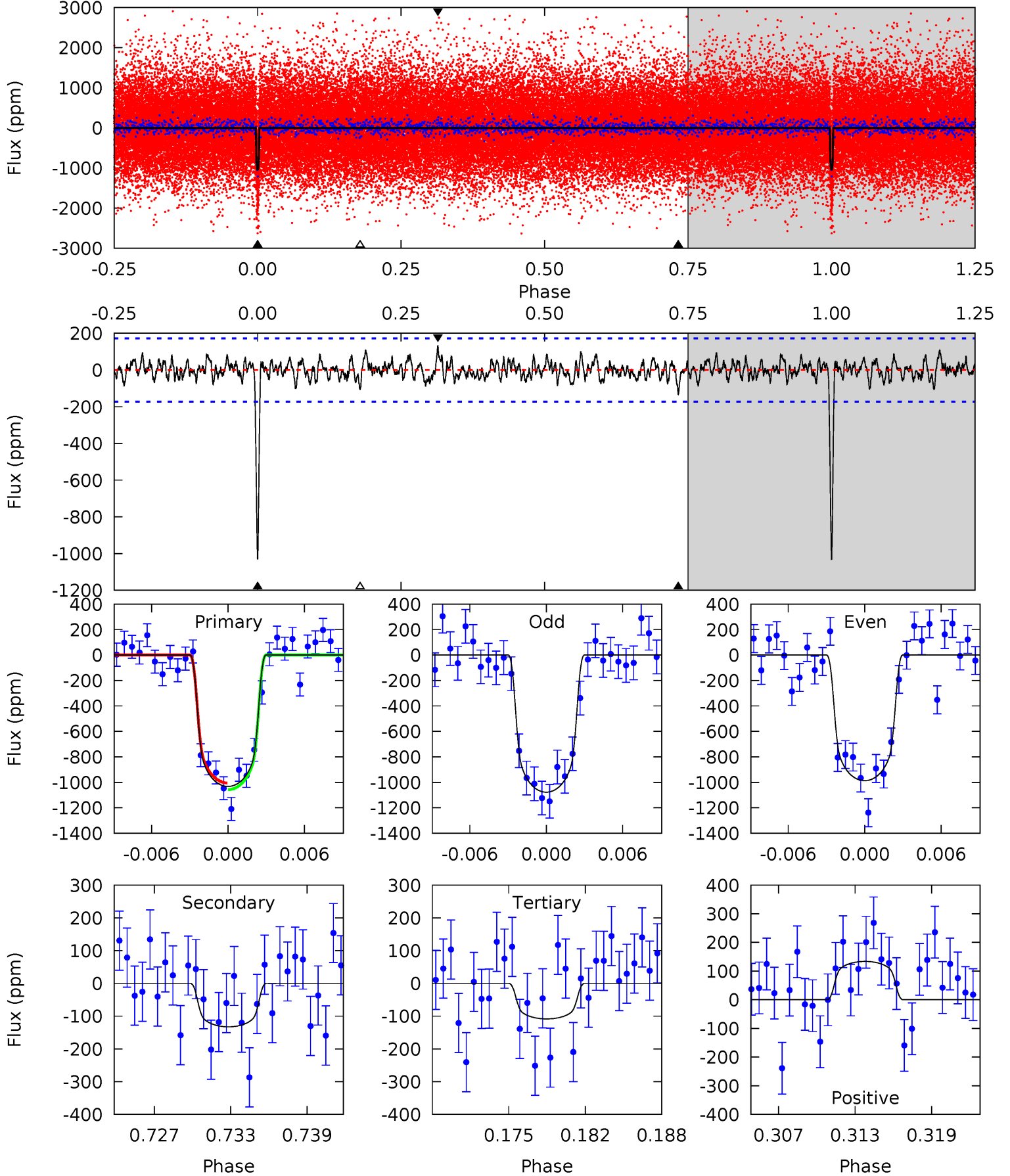
TCE 007102316-02 P= 37.055359 Days $T_0=163.141168$ (BKJD)



DV Model-Shift Uniqueness Test

007102316-02, $P = 37.055087$ Days, $E = 163.147138$ Days

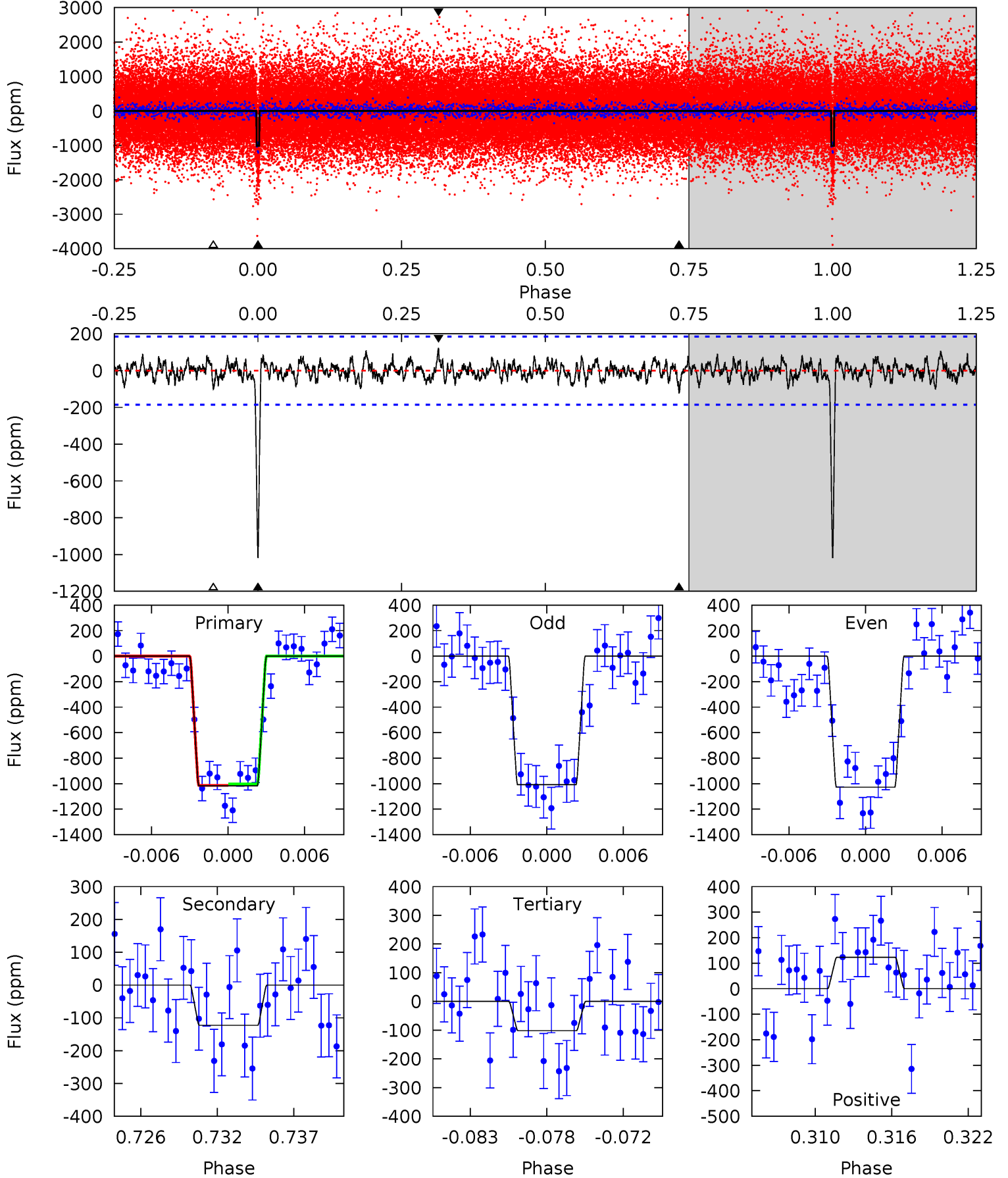
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.6	3.93	3.21	3.96	5.12	2.73	1.12	27.3	26.6	0.72	-0.03	1.34	1.01	0.11	0.77



Alt Model-Shift Uniqueness Test

007102316-02, $P = 37.055359$ Days, $E = 163.141168$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	3.40	2.82	3.41	5.14	2.77	0.99	25.4	24.8	0.58	-0.01	0.27	1.14	0.11	0.16



Stellar Parameters For KIC 007102316

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5642^{+169}_{-169}	$4.542^{+0.044}_{-0.176}$	$-0.140^{+0.300}_{-0.300}$	$0.846^{+0.233}_{-0.078}$	$0.910^{+0.104}_{-0.095}$	$2.119^{+0.505}_{-1.004}$
	+3%/-3%	+1%/-4%	+214%/-214%	+28%/-9%	+11%/-10%	+24%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007102316-02 / KOI 2028.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-133 ± 34	$3.24^{+0.52}_{-0.43}$	710^{+45}_{-31}	3693^{+210}_{-224}	302^{+122}_{-107}
Alt.	-123 ± 36	$3.12^{+0.49}_{-0.42}$	710^{+44}_{-33}	3688^{+235}_{-249}	299^{+140}_{-107}

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 $A_{obs} \gg 1.0$

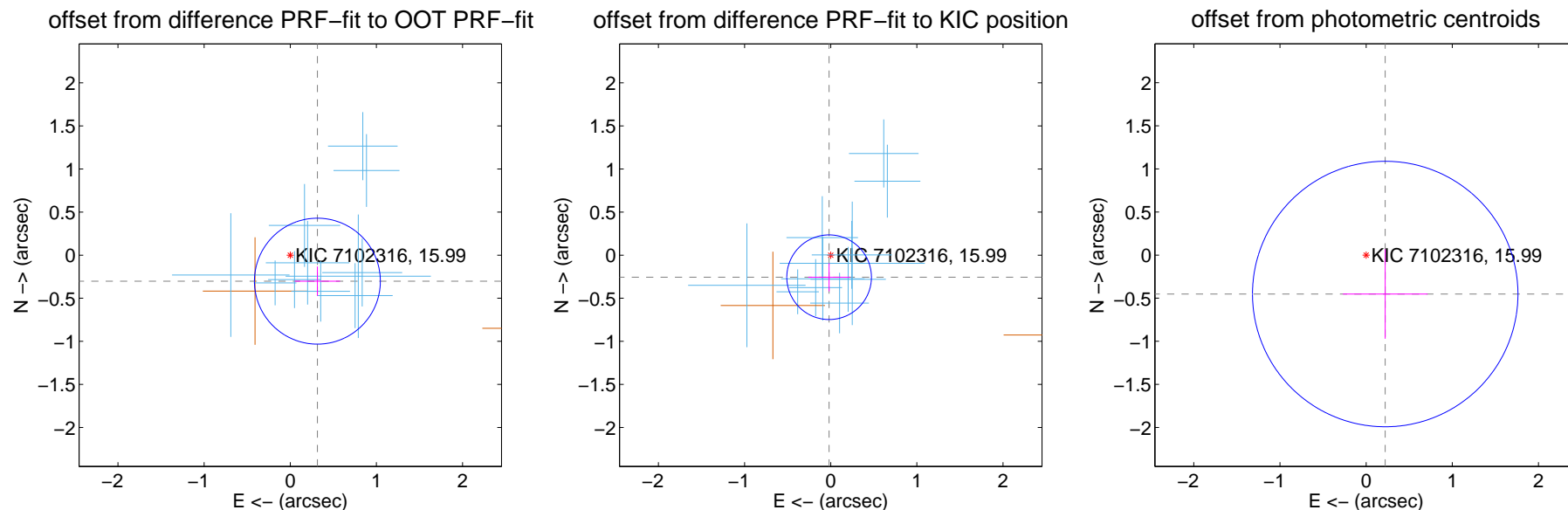
DV Centroid Data

Supplemental centroid analysis for 007102316-02. Kepler magnitude: 15.99. Transit SNR 24.15

There are 11 quarters with good PRF difference image offsets

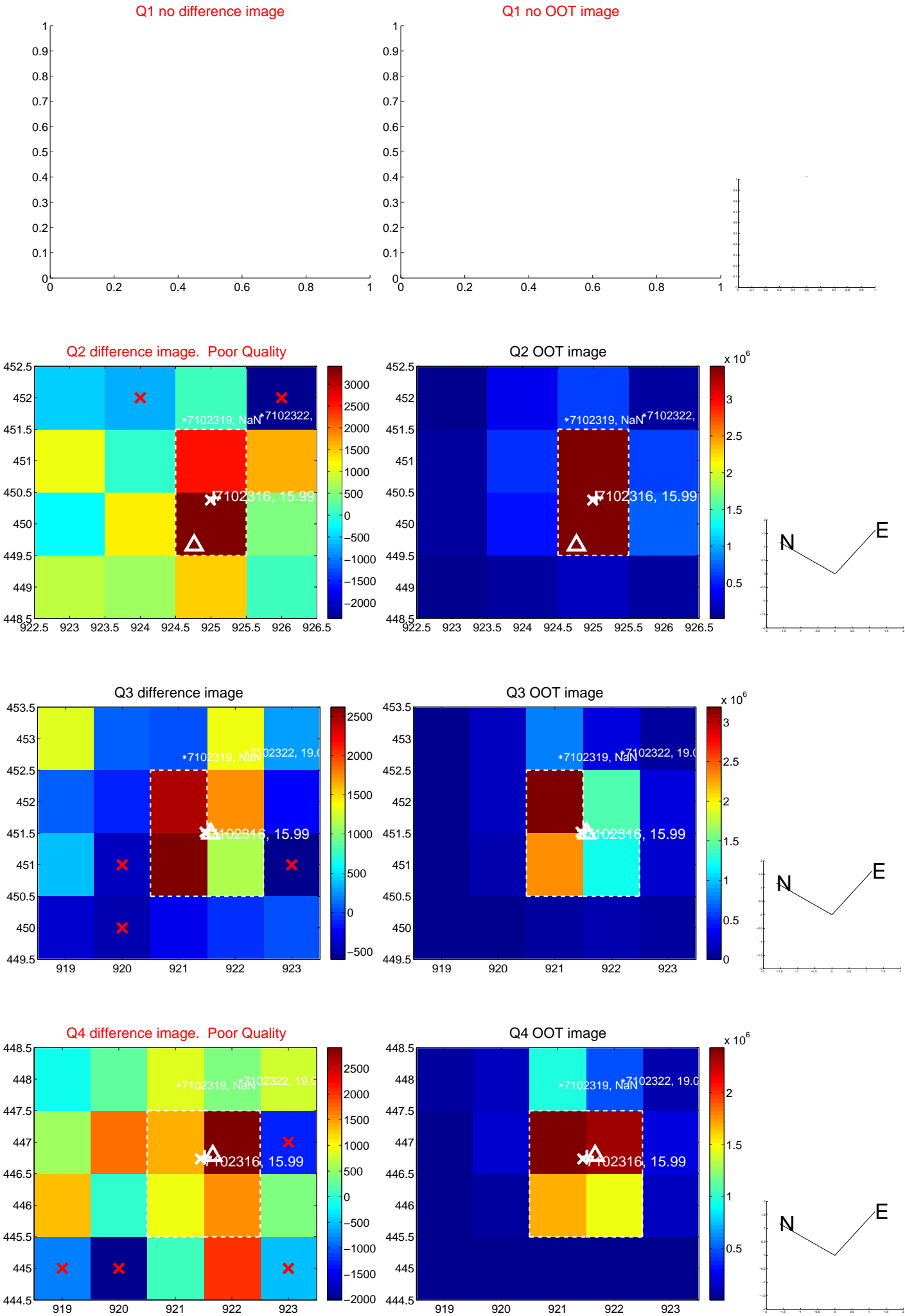
The direct PRF centroid is offset from the target star catalog position by about 0.56 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.436 ± 0.244	1.79	-0.315 ± 0.262	-0.302 ± 0.170
PRF-fit source offset from KIC position	0.257 ± 0.164	1.57	0.019 ± 0.242	-0.256 ± 0.163
photometric centroid source offset	0.50 ± 0.51	0.98	-0.22 ± 0.49	-0.45 ± 0.52

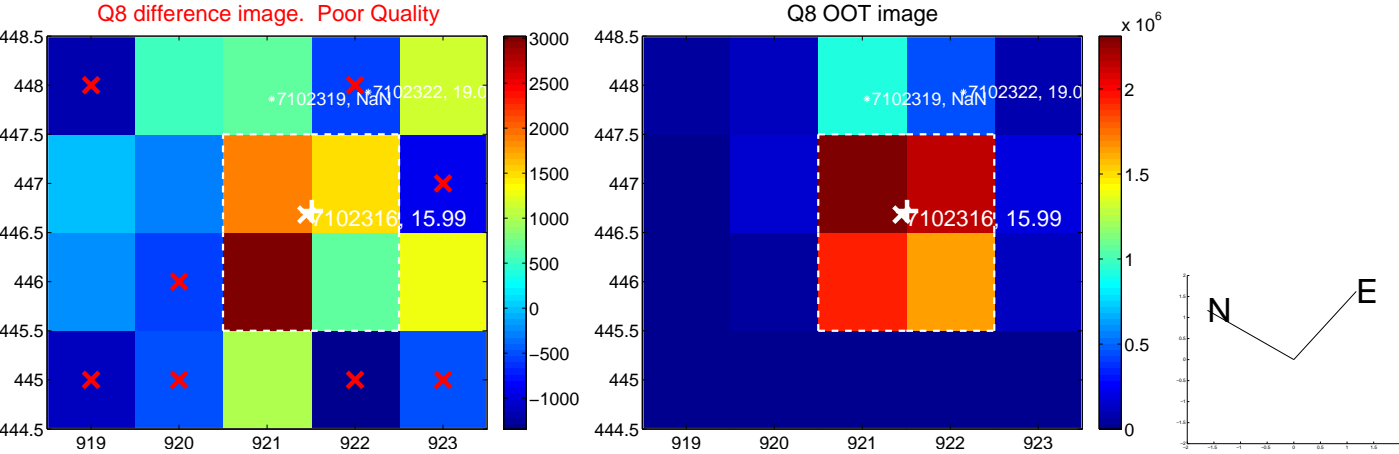
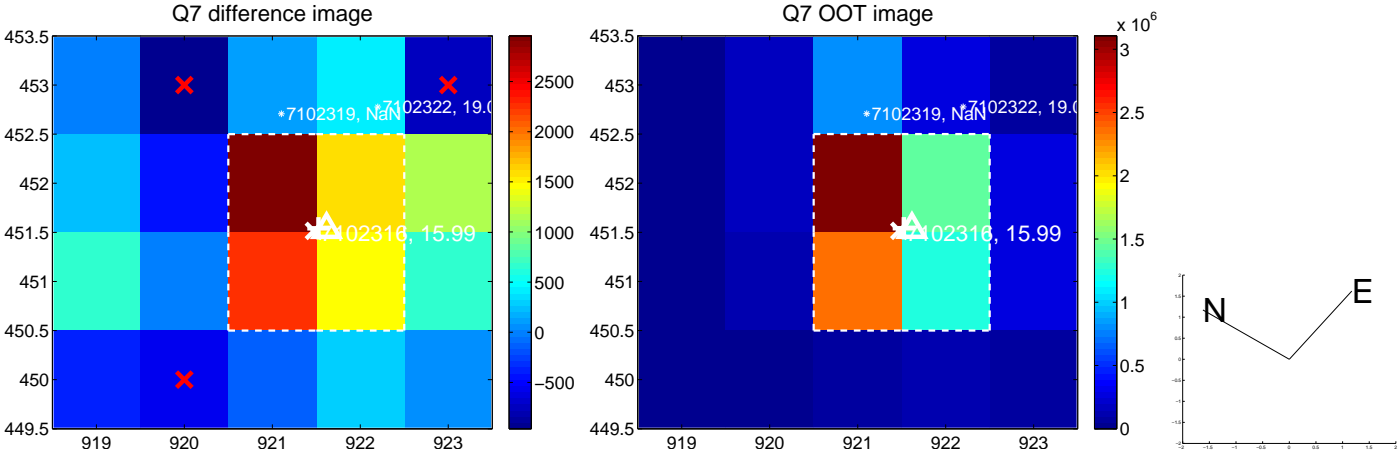
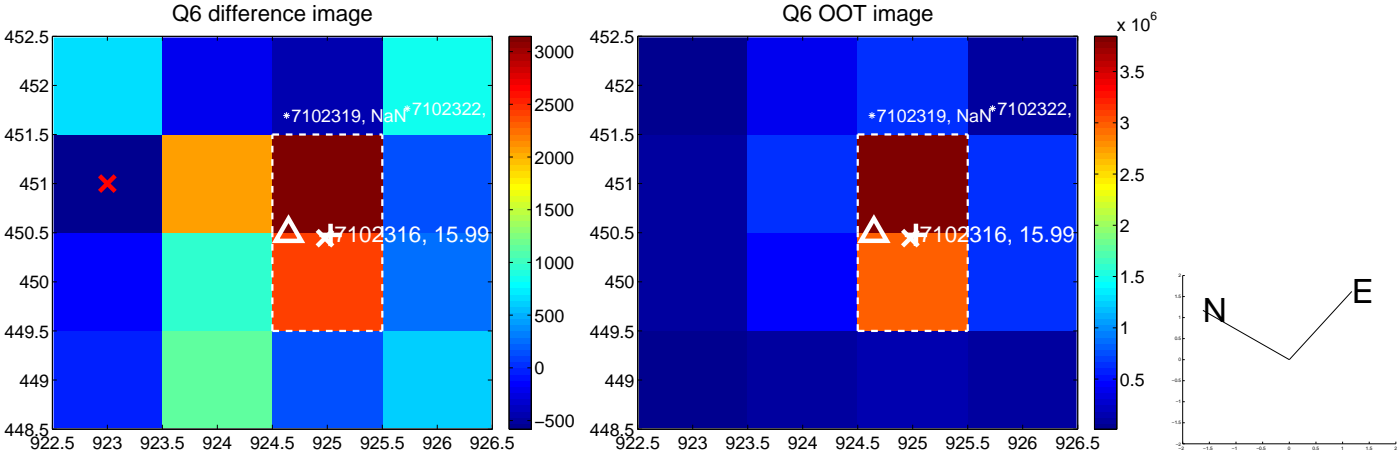
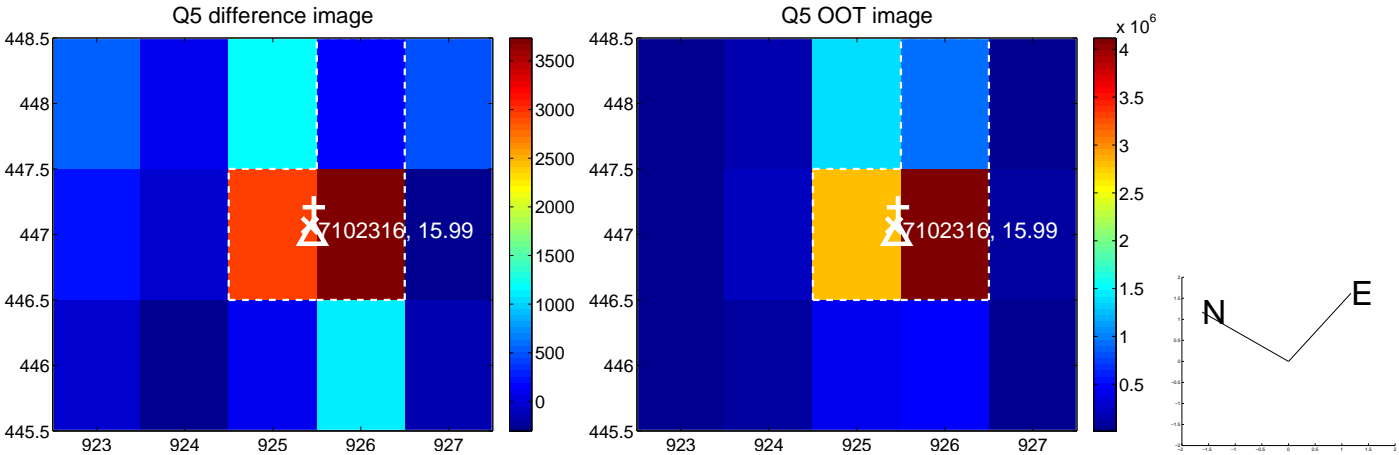


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

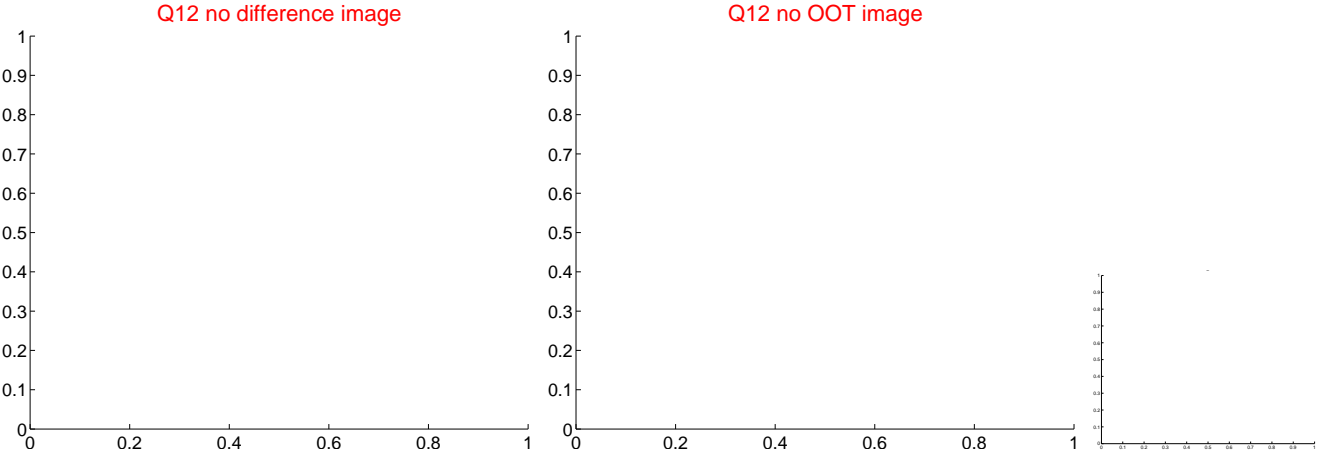
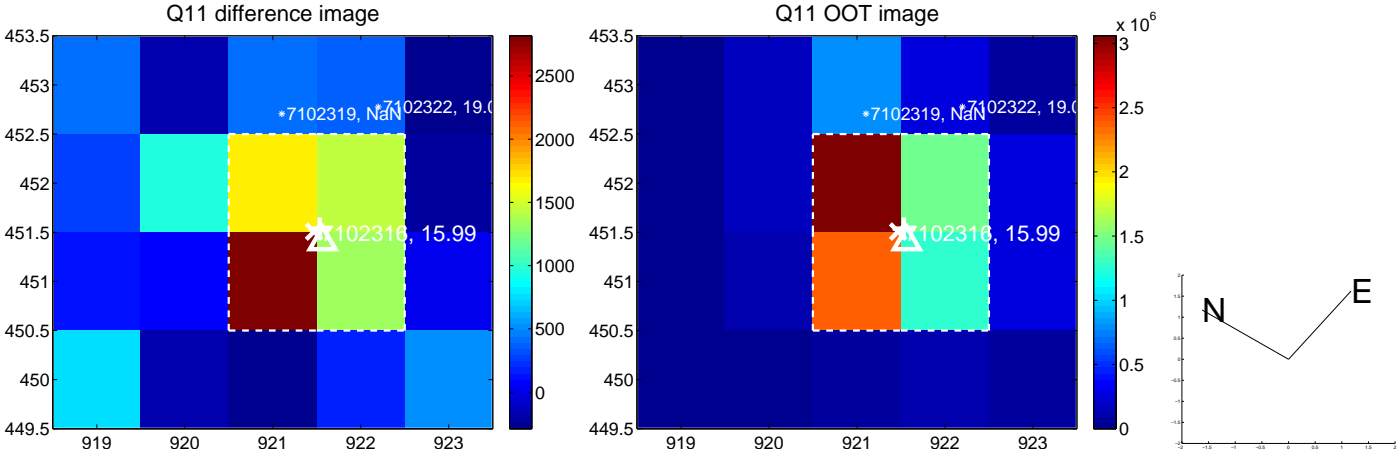
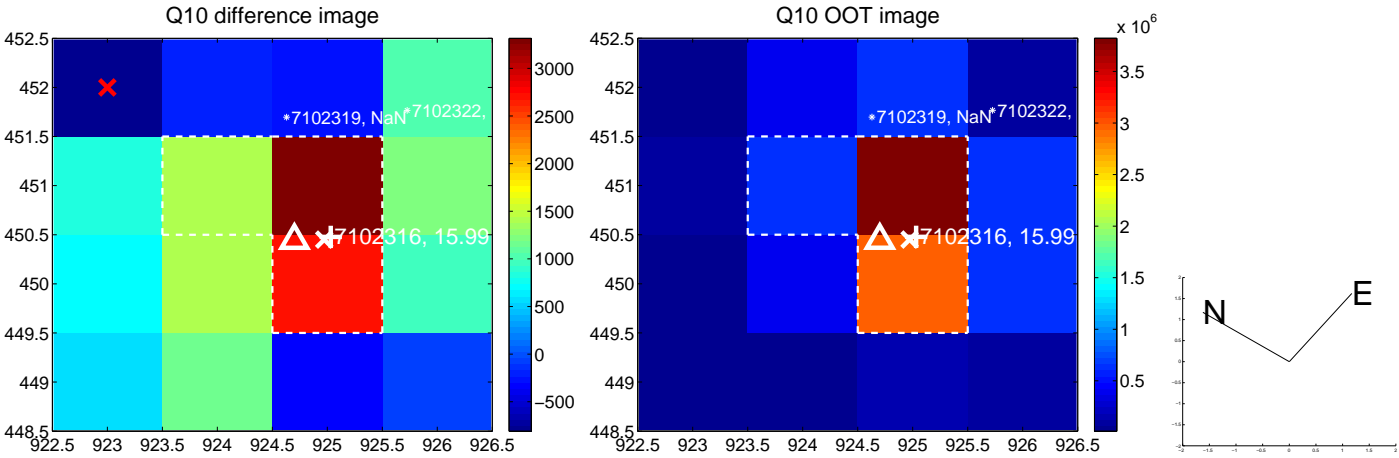
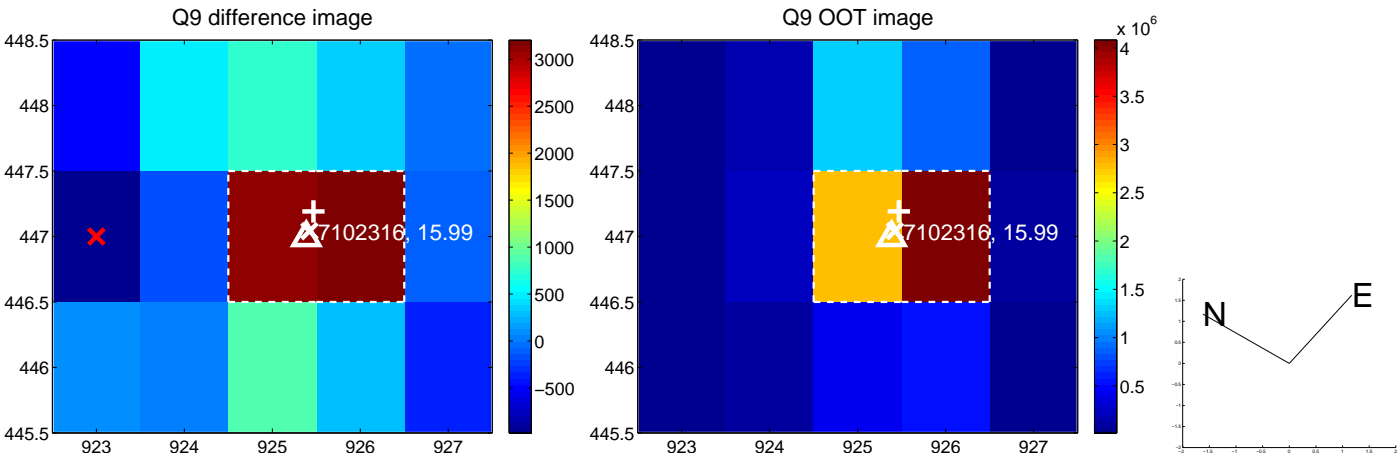
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



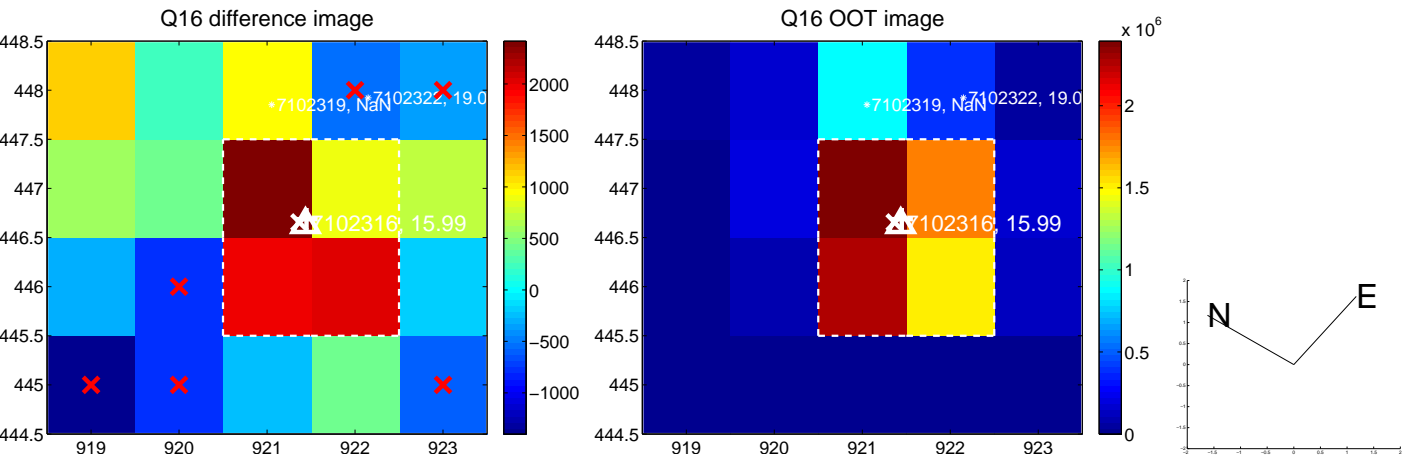
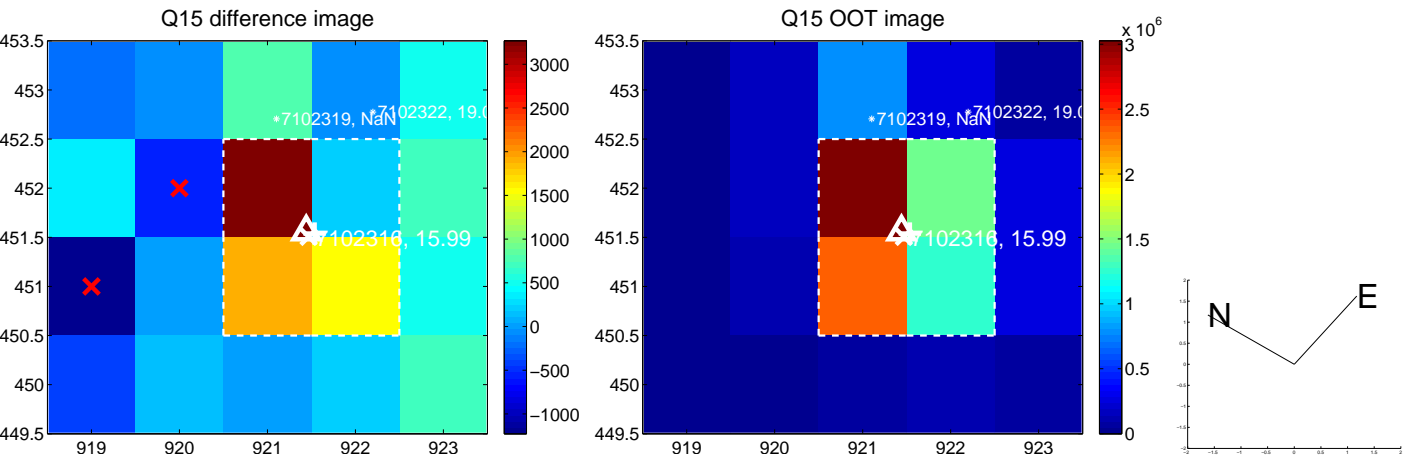
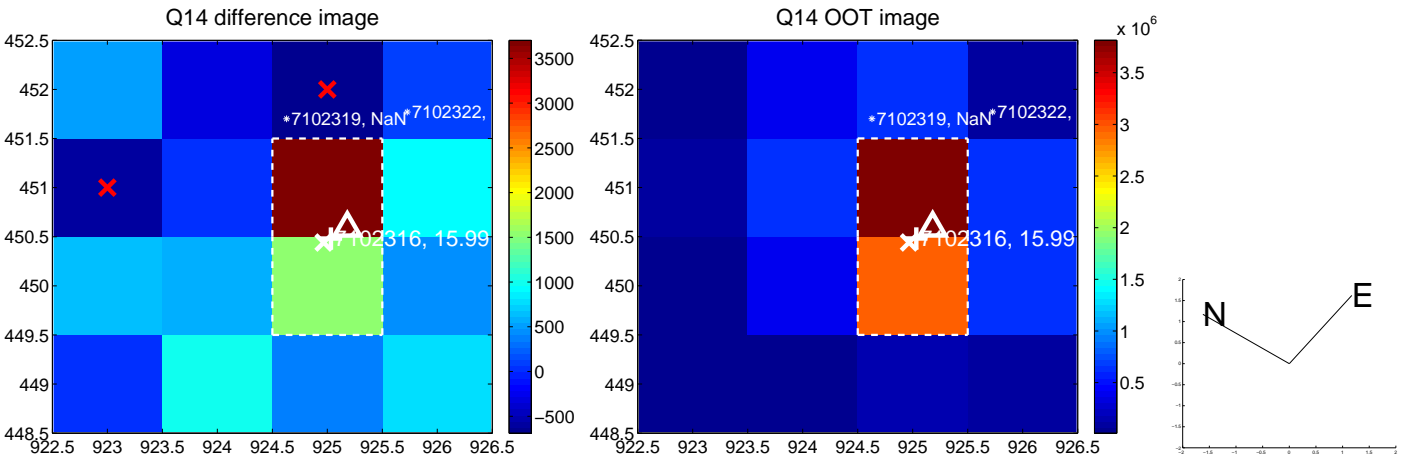
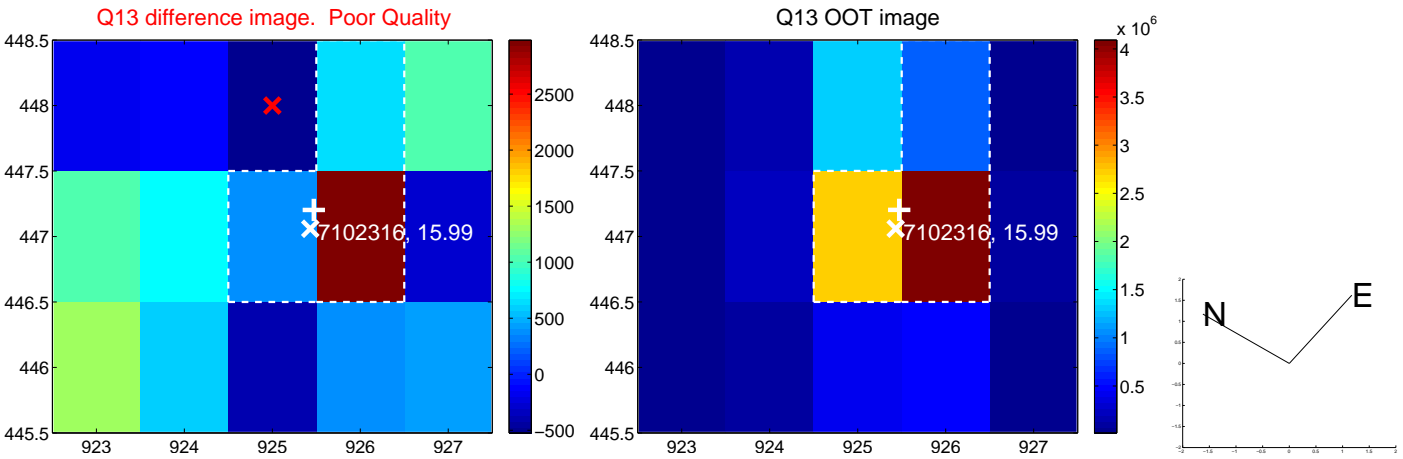
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



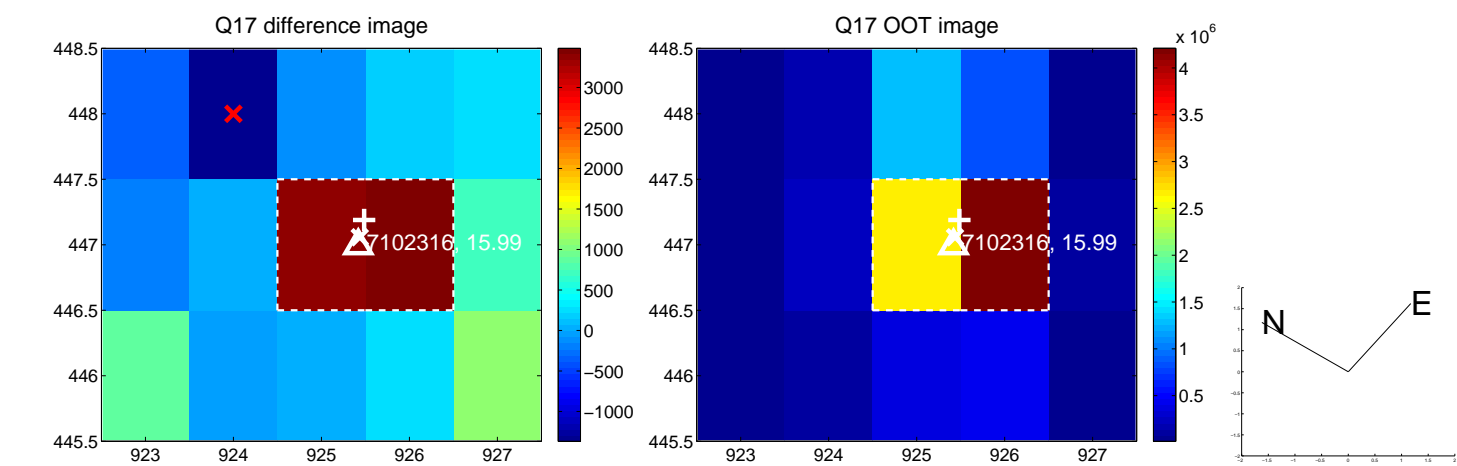
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



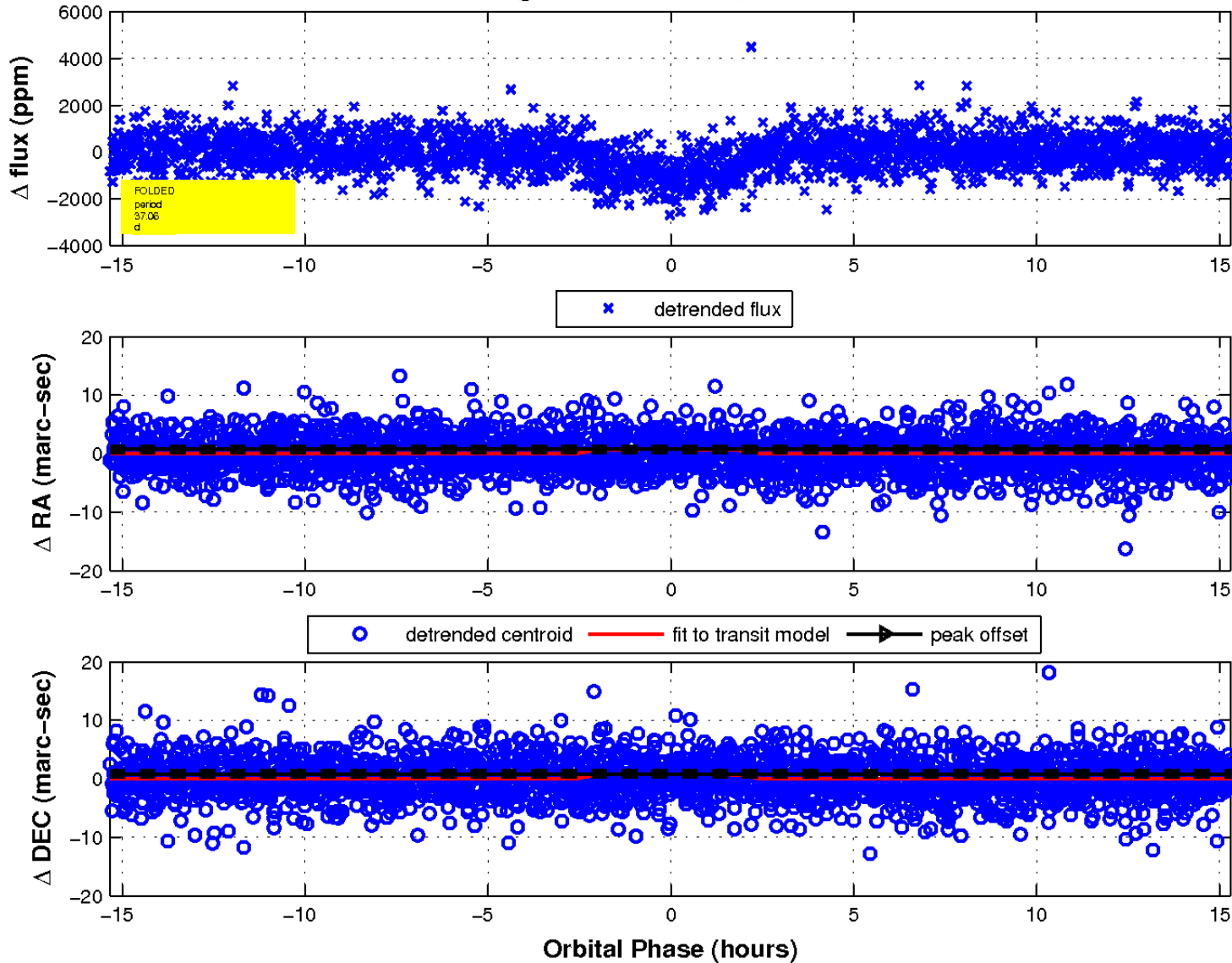
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

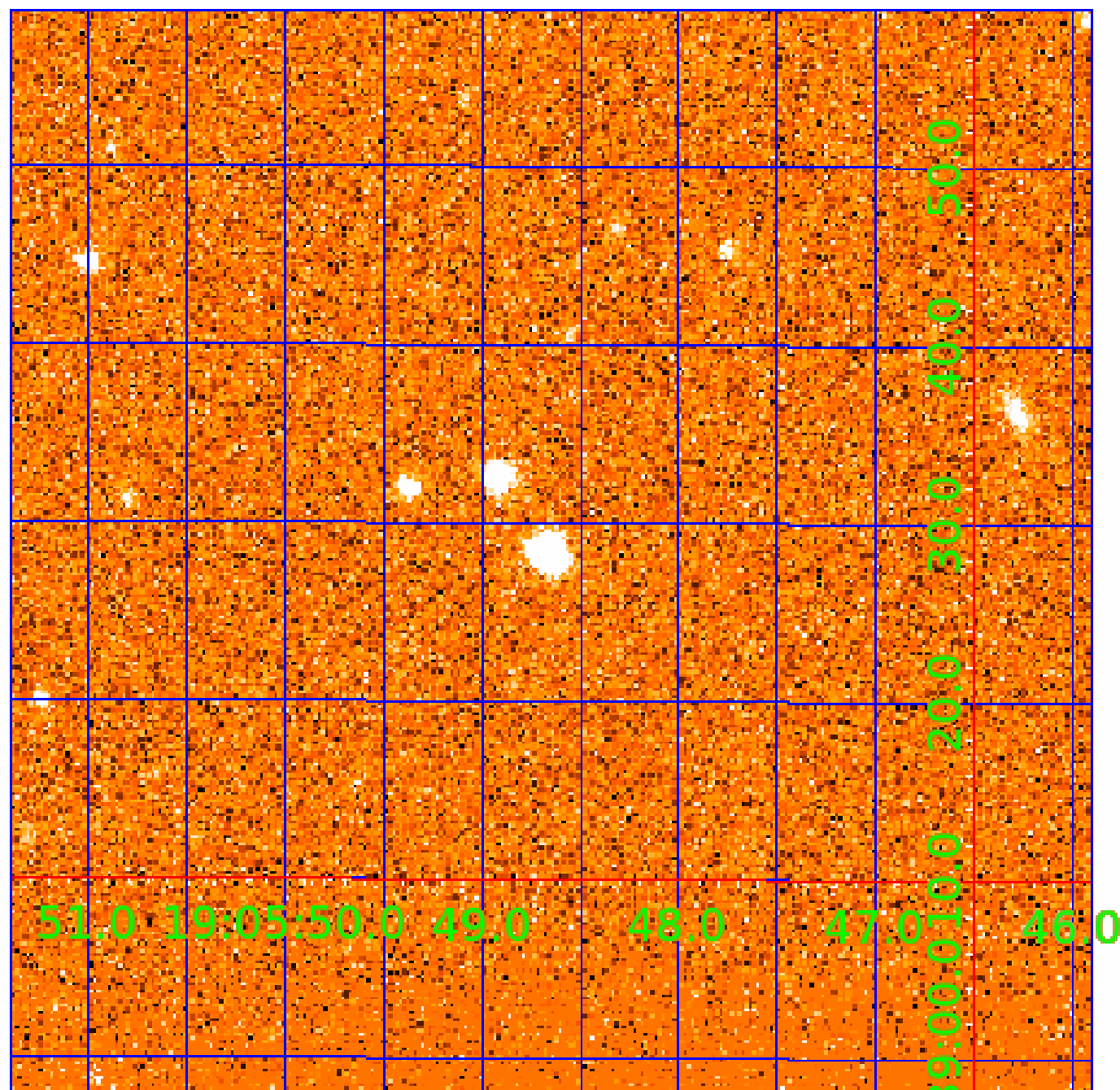


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 007102316

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})
007102316-01	OBS	2028.01	57.248863	184.685563	1415.9	6.152	27.8	28.5	0.85	5642	3.28	8.19
007102316-02	OBS	2028.02	37.055087	163.147138	1044.8	5.113	22.7	24.1	0.85	5642	3.12	14.62
007102316-03	OBS	2028.03	142.543641	202.885451	928.7	9.368	11.7	12.6	0.85	5642	2.93	2.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007102316-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007102316-03	OBS	PC	0.98	0	0	0	0	CENT_FEW_MEAS

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 007102316-03

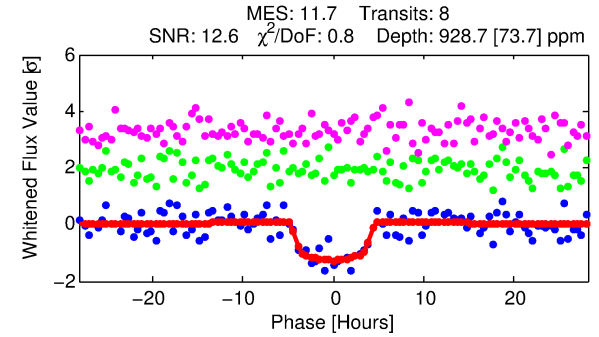
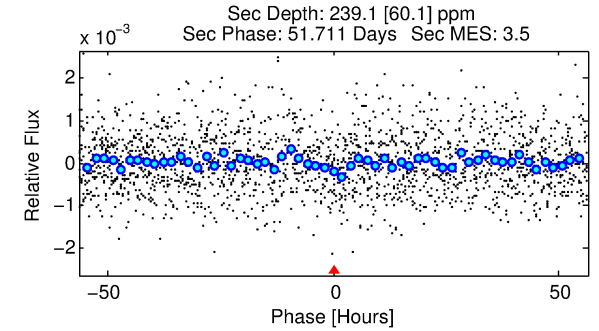
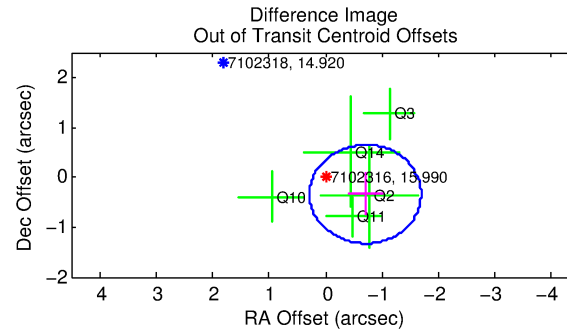
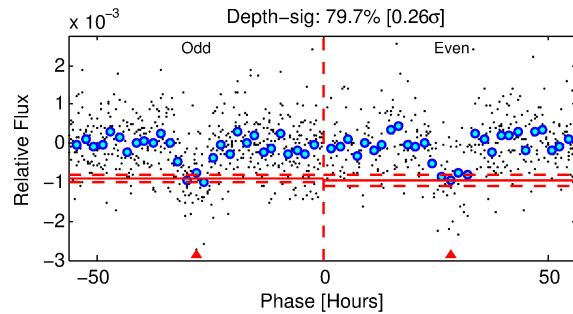
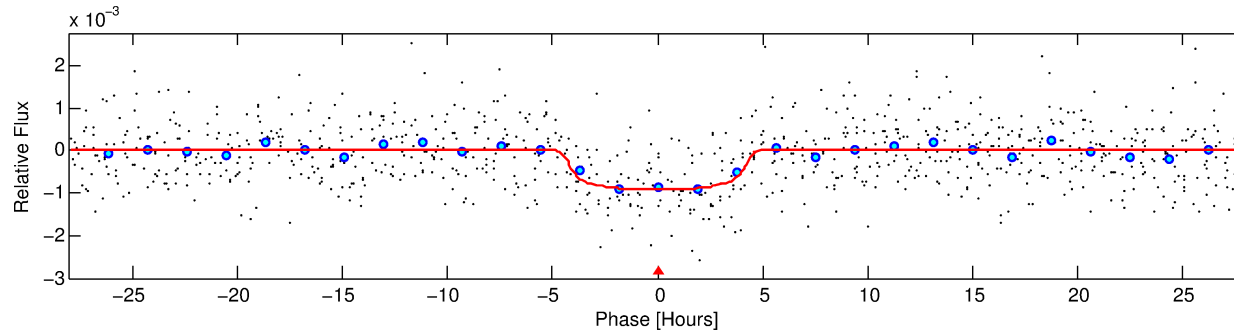
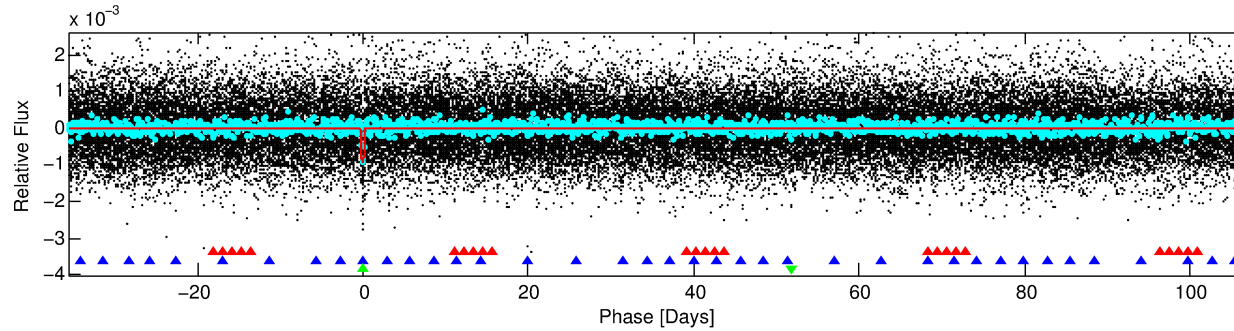
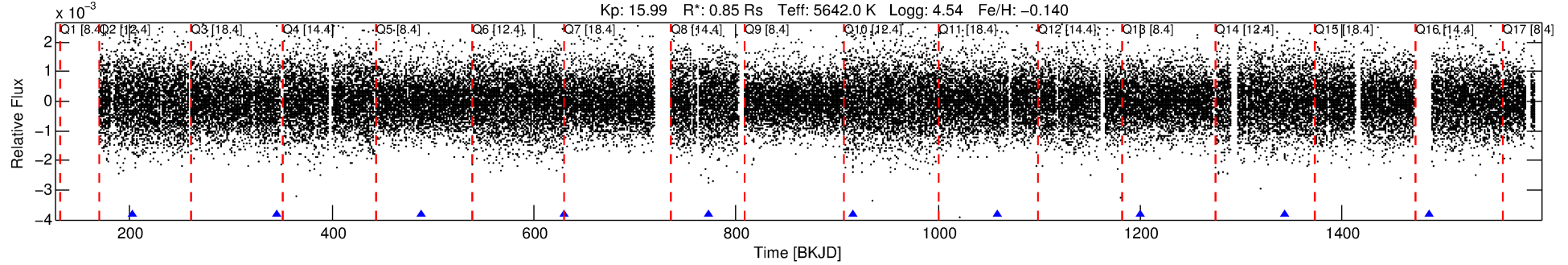
No Significant Match Found

DV One-Page Summary

KIC: 7102316 Candidate: 3 of 3 Period: 142.544 d

KOI: K02028.03 Corr: 0.979

Kp: 15.99 R*: 0.85 Rs Teff: 5642.0 K Logg: 4.54 Fe/H: -0.140



DV Fit Results:

Period = 142.54364 [0.00286] d
Epoch = 202.8855 [0.0124] BKJD
Rp/R* = 0.0317 [0.0043]
a/R* = 69.89 [38.96]
b = 0.84 [0.20]
Seff = 2.43 [0.84]
Teq = 318 [28] K
Rp = 2.93 [0.90] Re
a = 0.5175 [0.1180] AU
Ag = 4114.17 [2026.34] [2.03σ]
Teffp = 3941 [382] K [9.46σ]

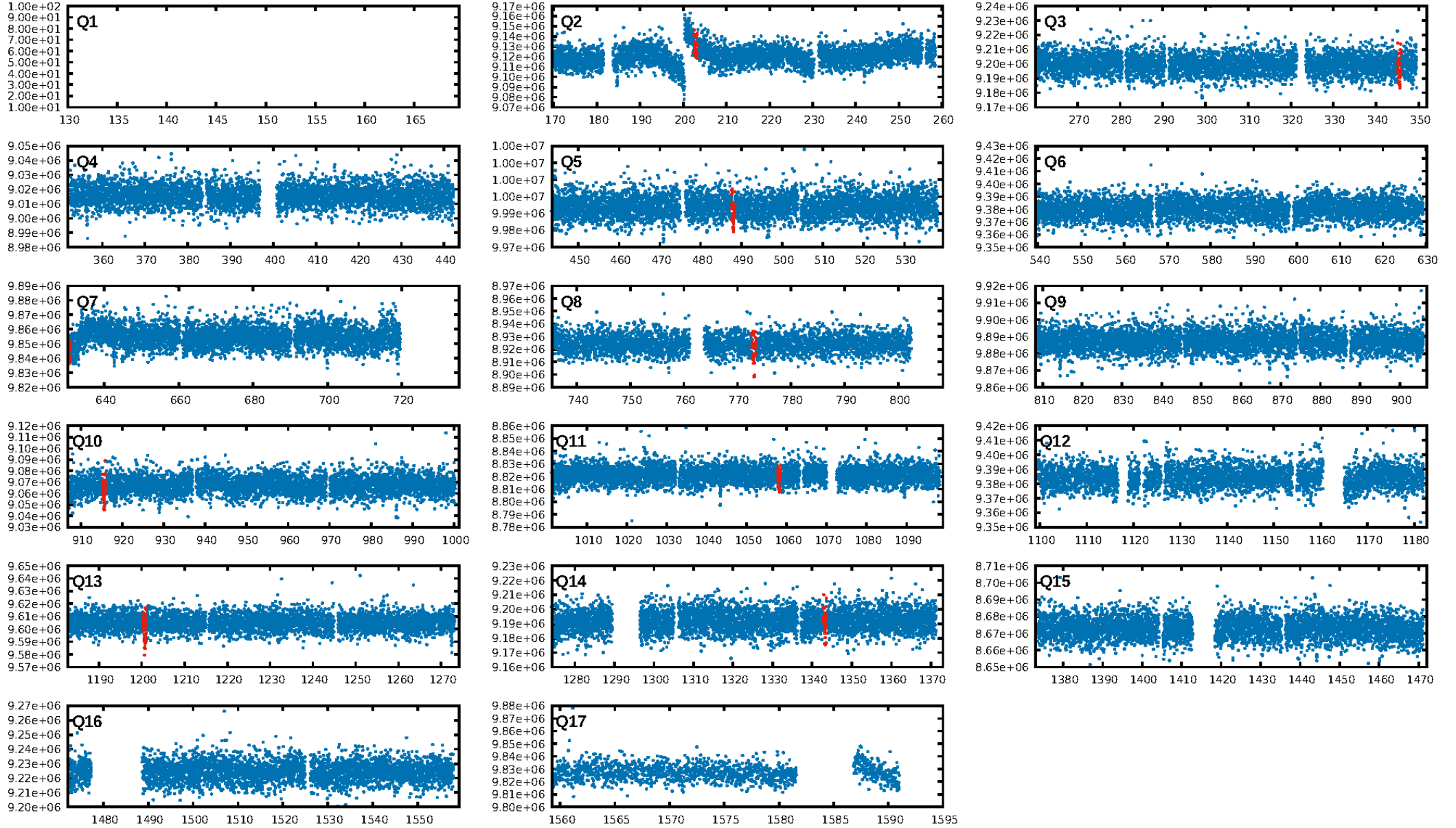
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [182.66σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 71.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.76e-31
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 6.97
Centroid-sig: 0.5%
Centroid-so: 1.219 arcsec [1.43σ]
OotOffset-rm: 0.782 arcsec [2.38σ]
KicOffset-rm: 0.669 arcsec [1.81σ]
OotOffset-st: 3/2/0/0 [5]
KicOffset-st: 3/2/0/0 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [7/7]

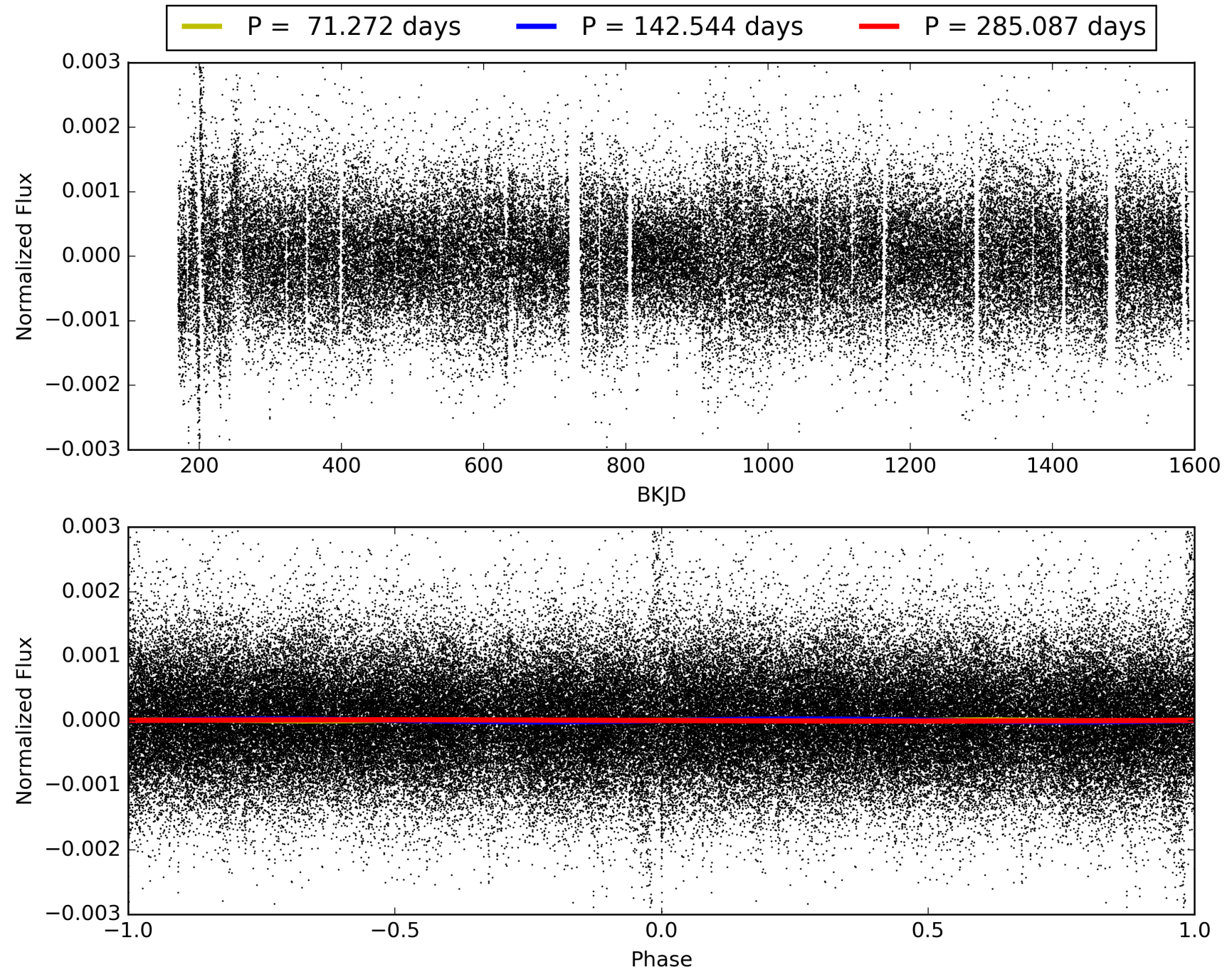
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:39:07 Z

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

TCE 007102316-03, PDC Light Curves

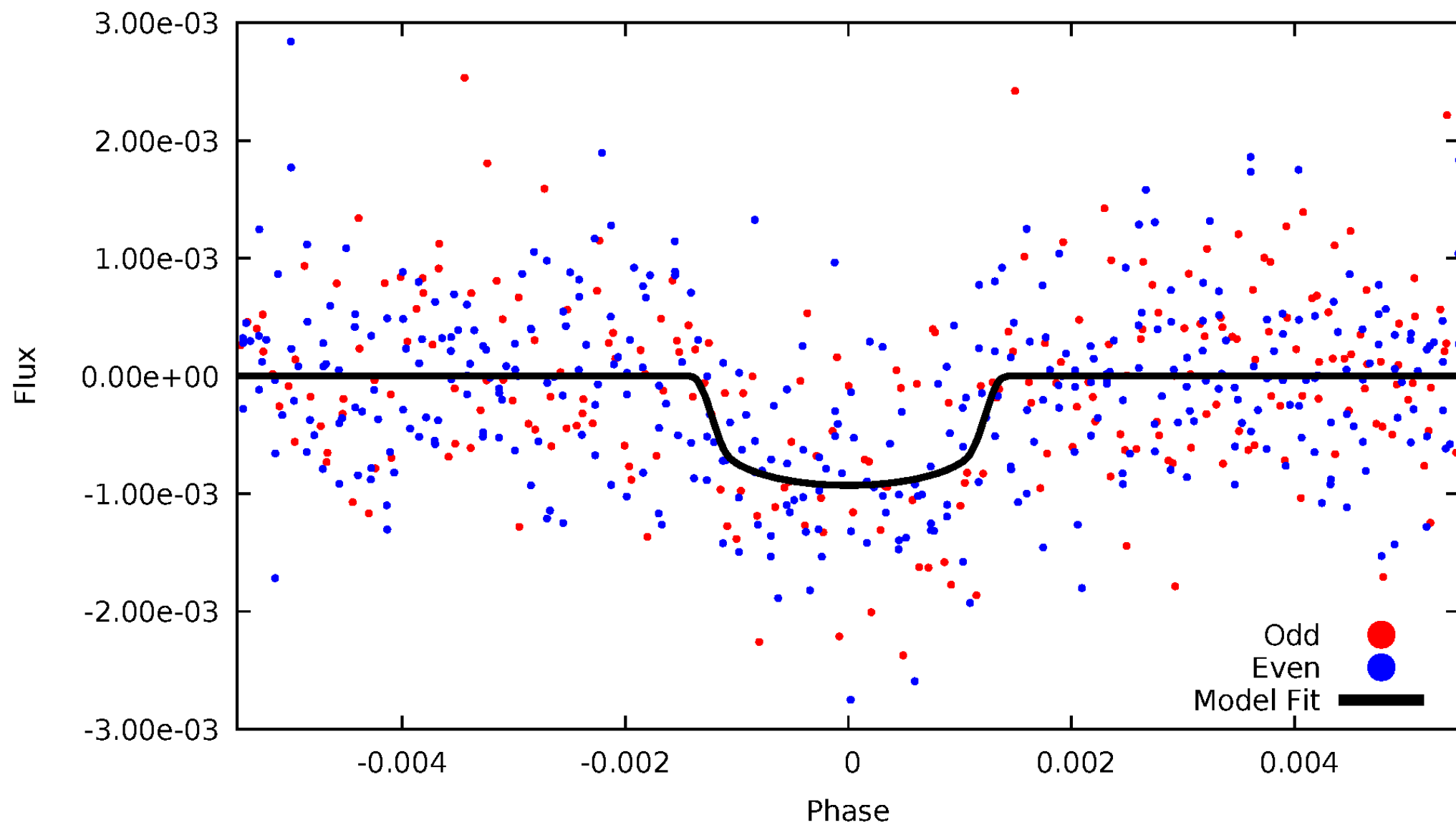


TCE 007102316-03



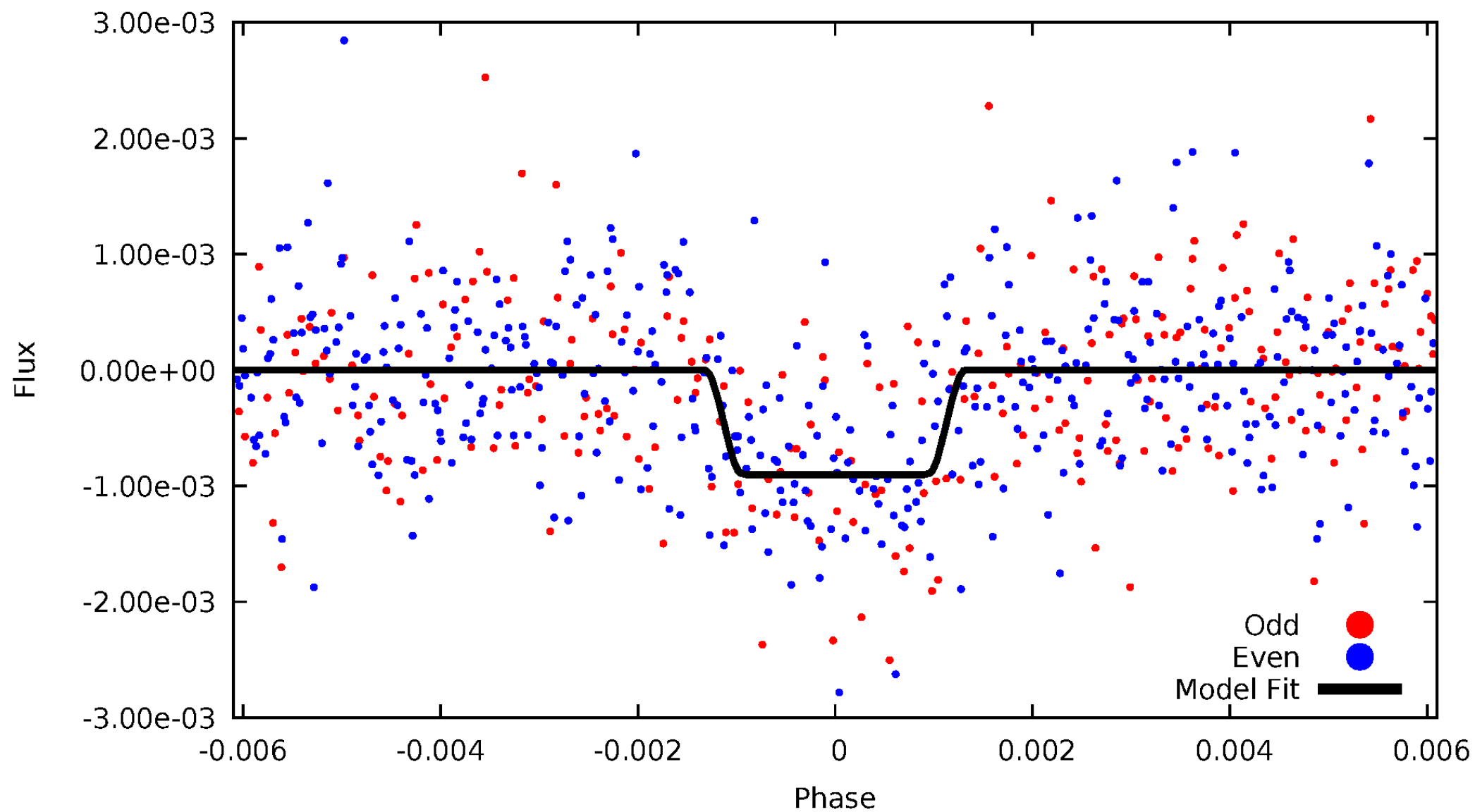
DV Odd/Even

TCE 007102316-03

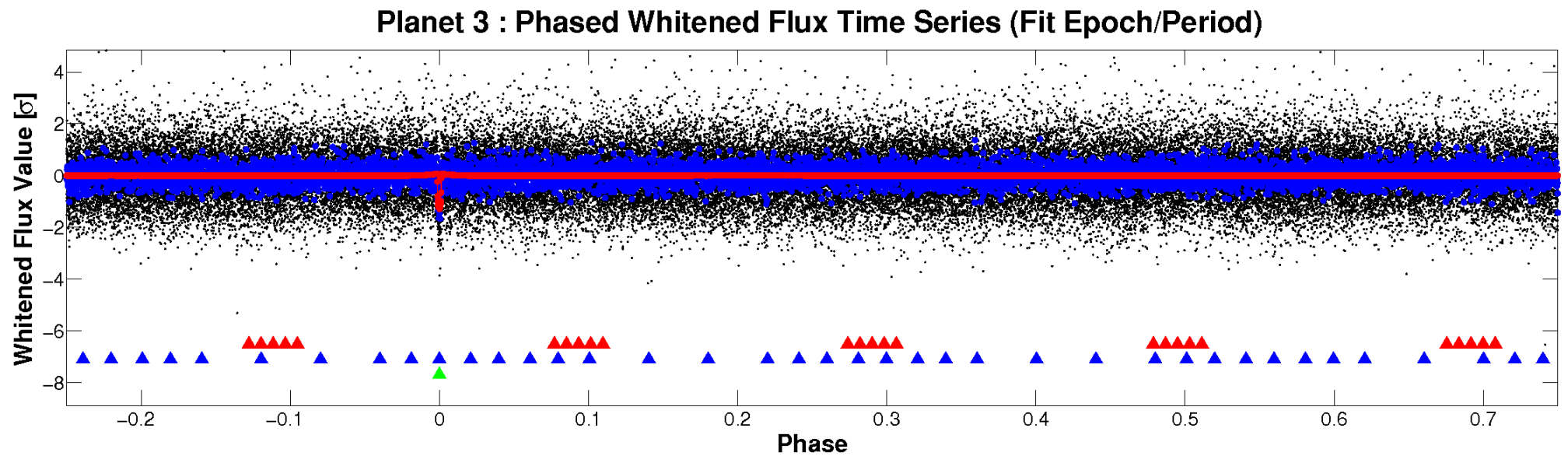
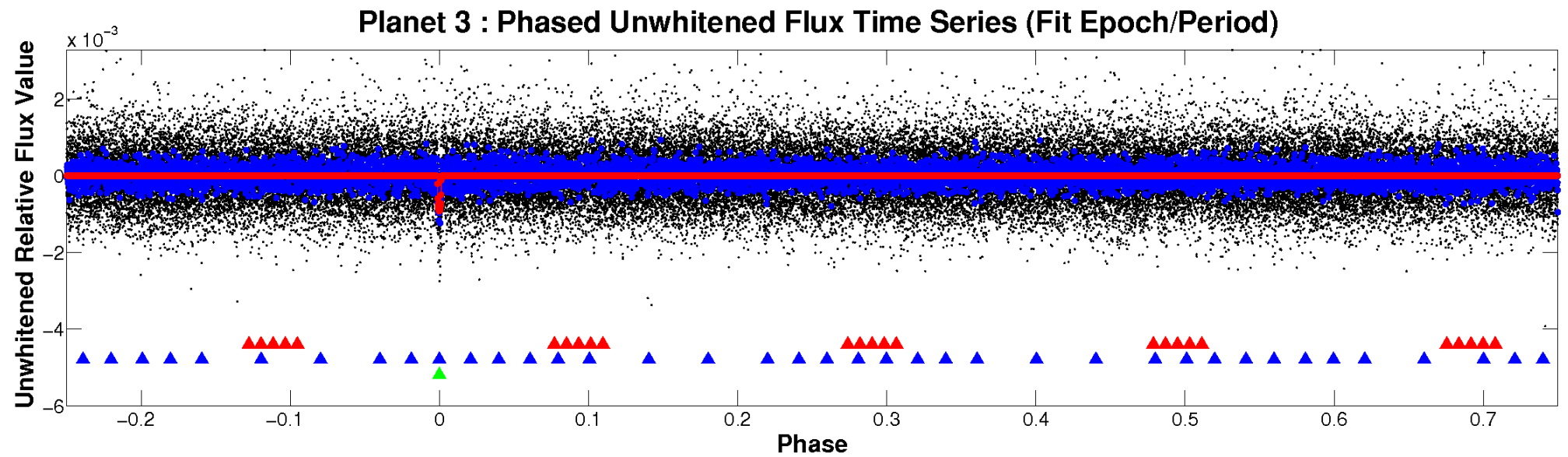


ALT Odd/Even

TCE 007102316-03

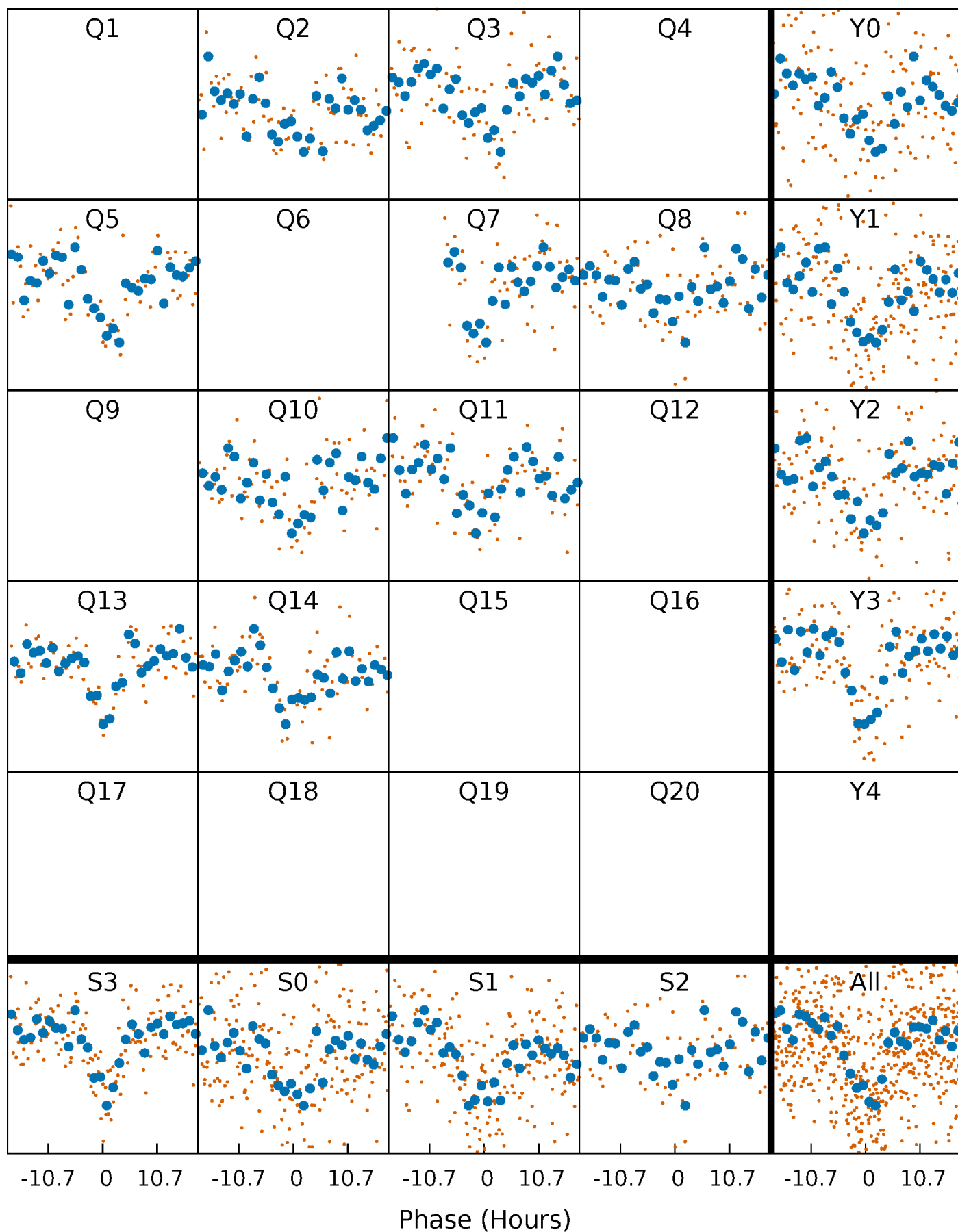


Non-Whitened Vs. Whitened Light Curve



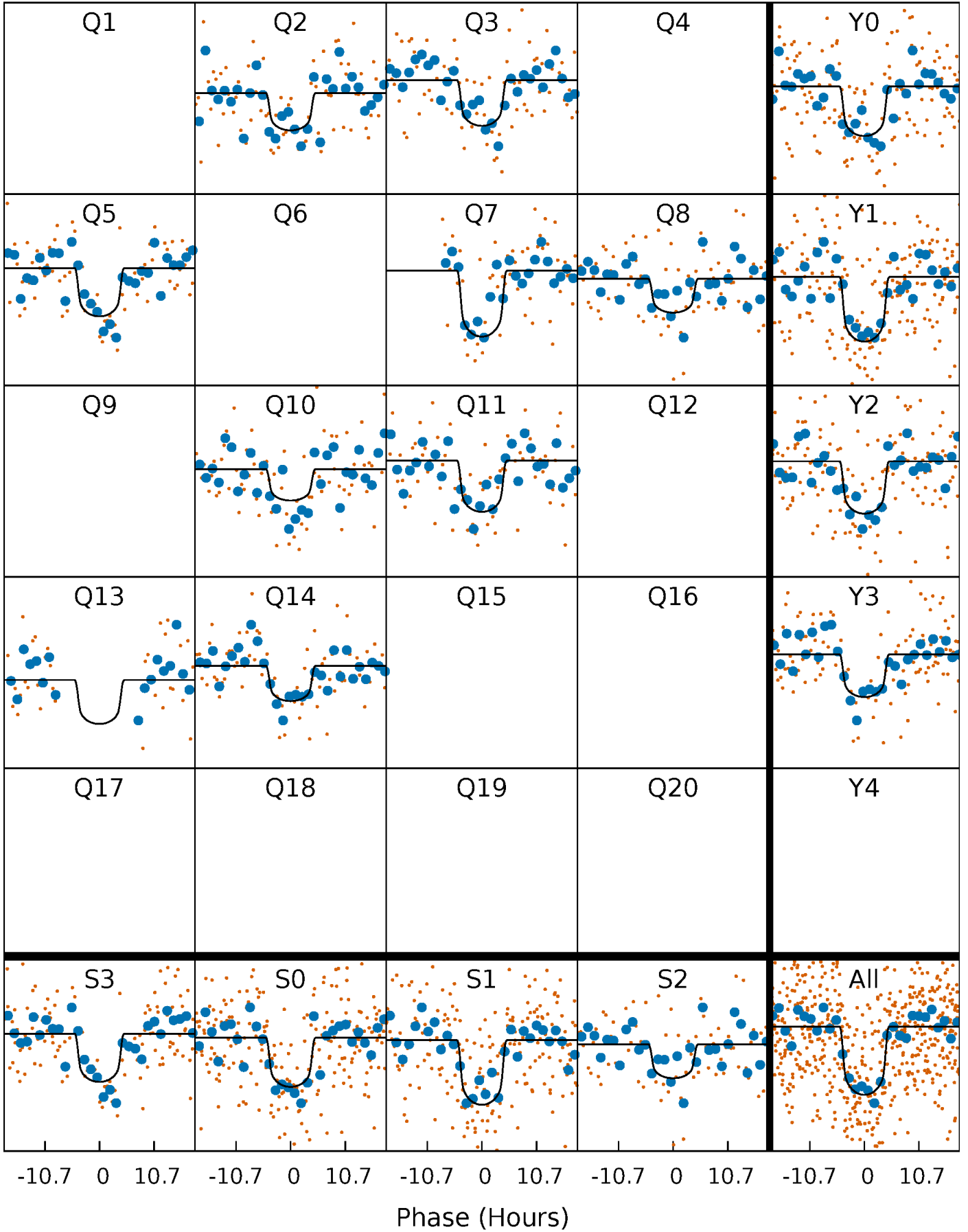
PDC Quarter-Phased Transit Curves

TCE 007102316-03 P=142.543641 Days $T_0=202.885451$ (BKJD)



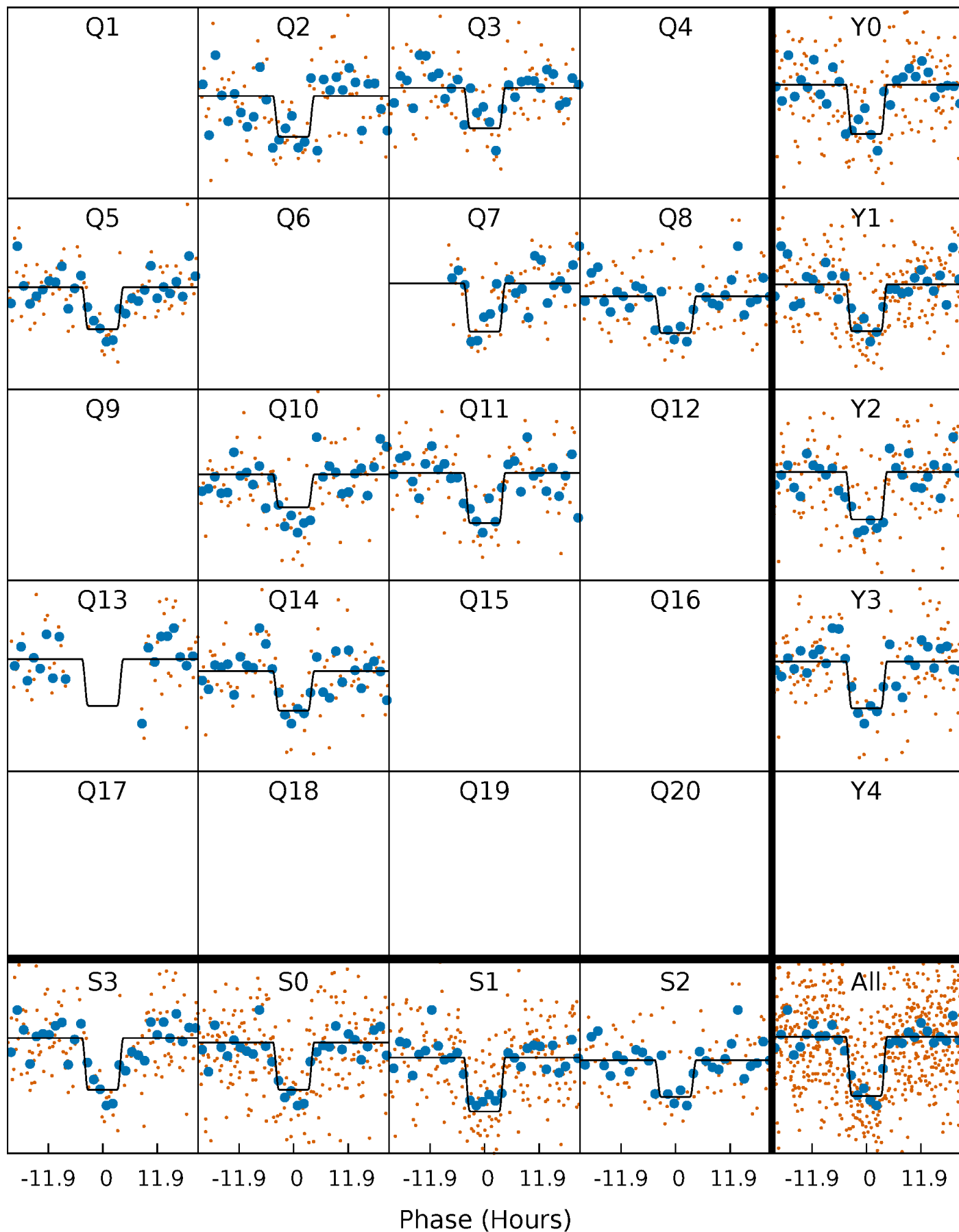
DV Quarter-Phased Transit Curves

TCE 007102316-03 P=142.543641 Days $T_0=202.885451$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

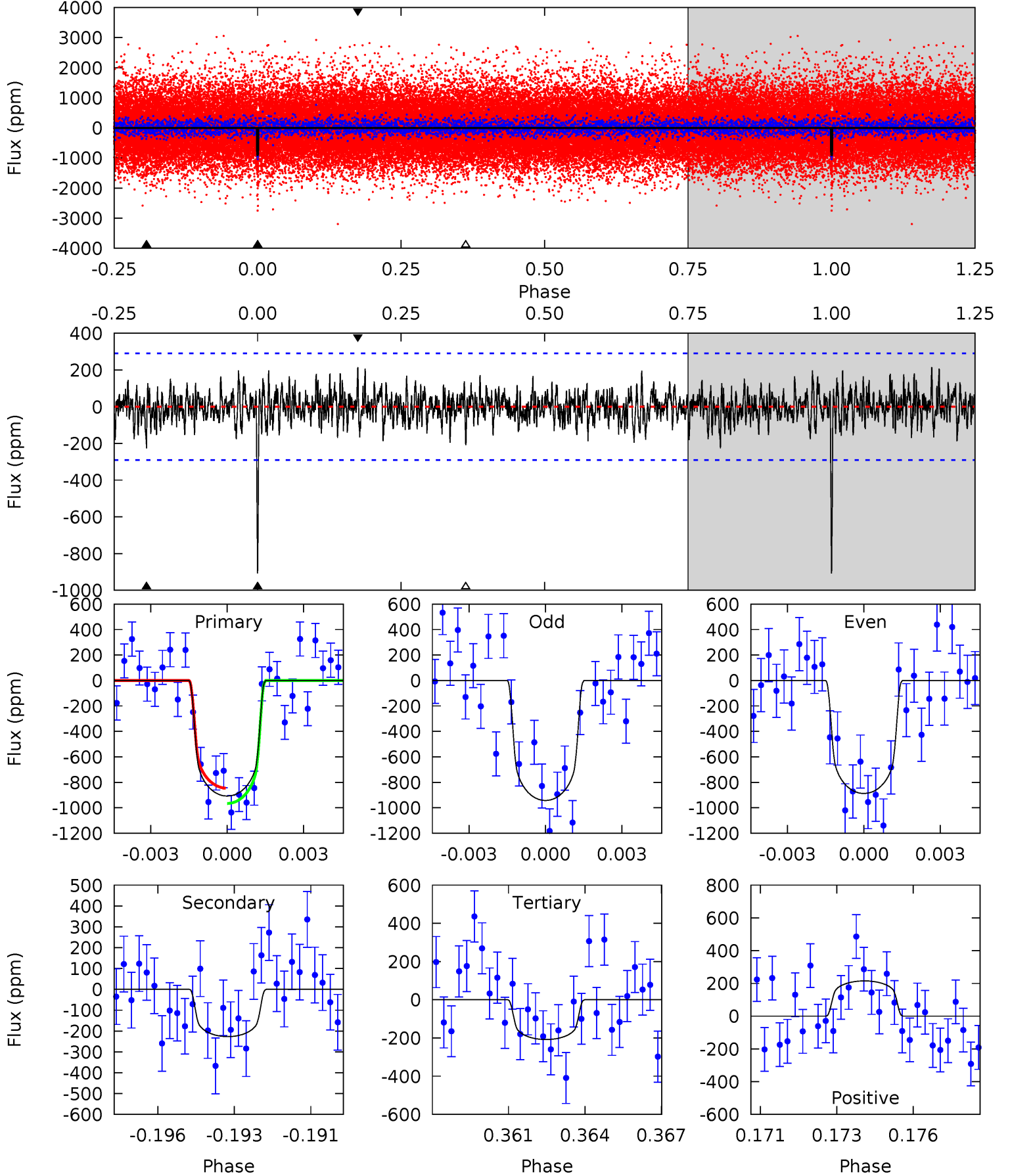
TCE 007102316-03 P=142.537703 Days $T_0=202.906518$ (BKJD)



DV Model-Shift Uniqueness Test

007102316-03, P = 142.543641 Days, E = 60.341810 Days

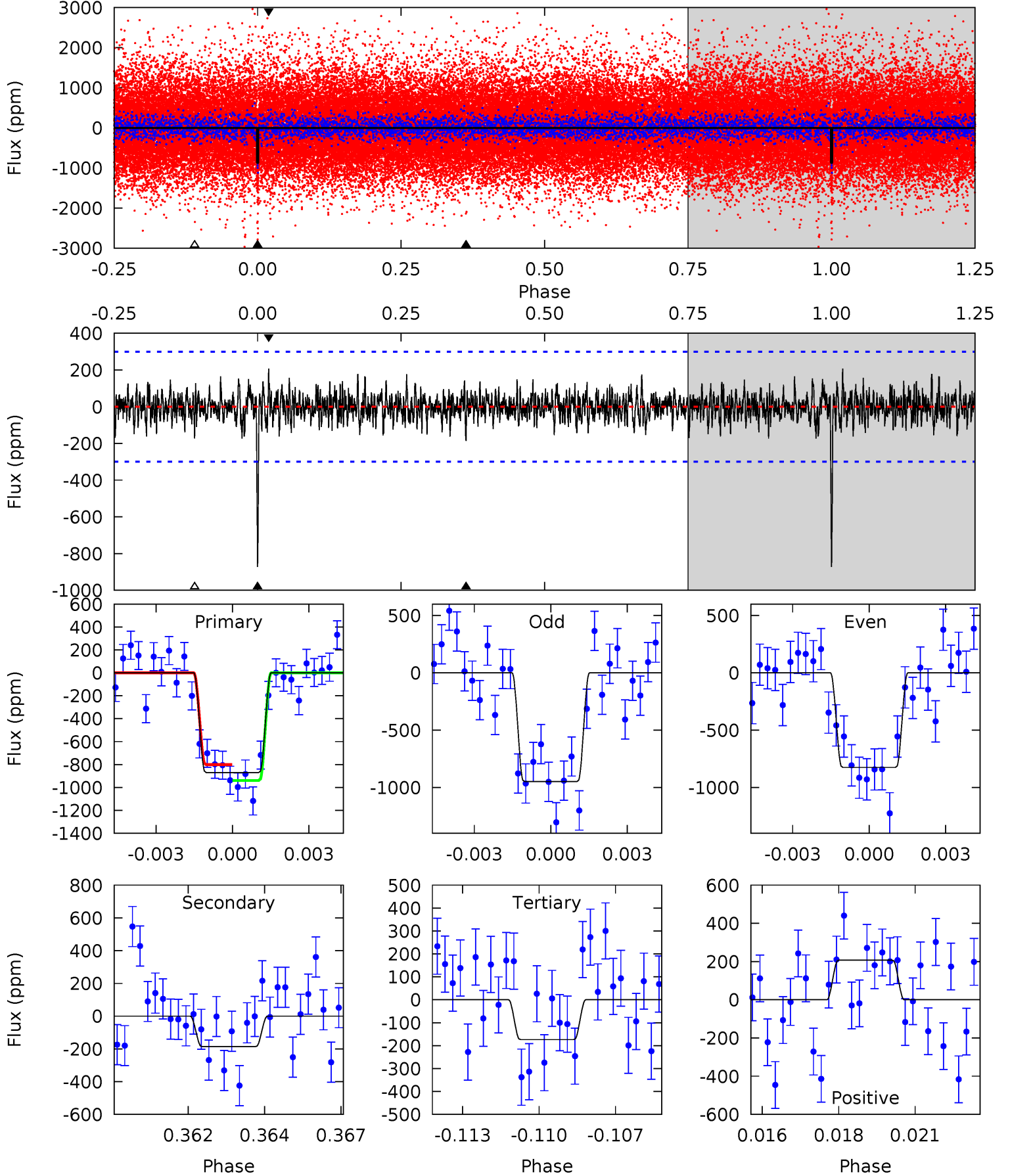
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	4.11	3.77	3.90	5.26	2.98	1.15	12.7	12.5	0.34	0.21	0.48	1.02	0.19	1.09



Alt Model-Shift Uniqueness Test

007102316-03, P = 142.537703 Days, E = 60.368815 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	3.28	3.06	3.66	5.28	3.01	0.97	12.3	11.7	0.22	-0.37	1.06	1.06	0.19	1.22



Stellar Parameters For KIC 007102316

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5642^{+169}_{-169}	$4.542^{+0.044}_{-0.176}$	$-0.140^{+0.300}_{-0.300}$	$0.846^{+0.233}_{-0.078}$	$0.910^{+0.104}_{-0.095}$	$2.119^{+0.505}_{-1.004}$
	+3%/-3%	+1%/-4%	+214%/-214%	+28%/-9%	+11%/-10%	+24%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007102316-03 / KOI 2028.03

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-227 ± 55	$3.07^{+0.57}_{-0.46}$	454^{+28}_{-20}	4126^{+325}_{-259}	3381^{+1674}_{-1131}
Alt.	-186 ± 57	$2.88^{+0.53}_{-0.46}$	453^{+28}_{-20}	4086^{+315}_{-313}	3183^{+1776}_{-1193}

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

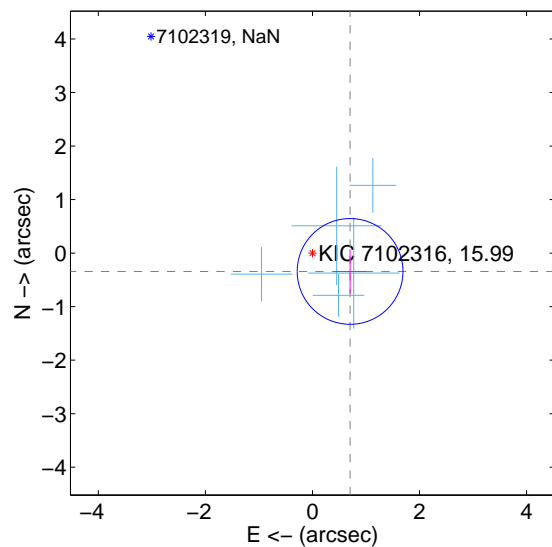
Supplemental centroid analysis for 007102316-03. Kepler magnitude: 15.99. Transit SNR 12.60

There are 5 quarters with good PRF difference image offsets

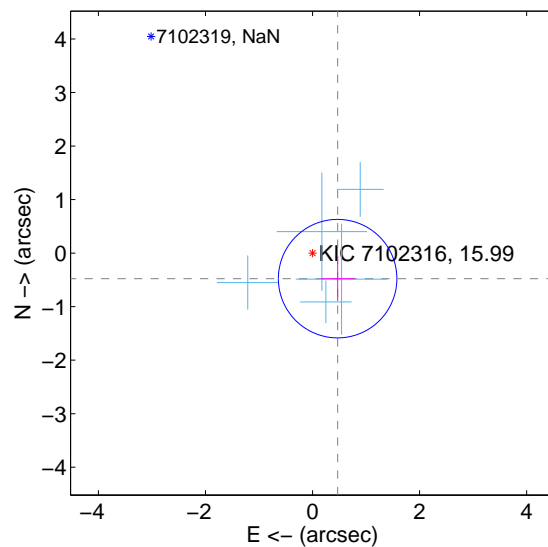
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.782 ± 0.329	2.38	-0.703 ± 0.305	-0.342 ± 0.415
PRF-fit source offset from KIC position	0.669 ± 0.369	1.81	-0.469 ± 0.313	-0.477 ± 0.416
photometric centroid source offset	1.22 ± 0.85	1.43	-0.90 ± 0.83	-0.82 ± 0.88

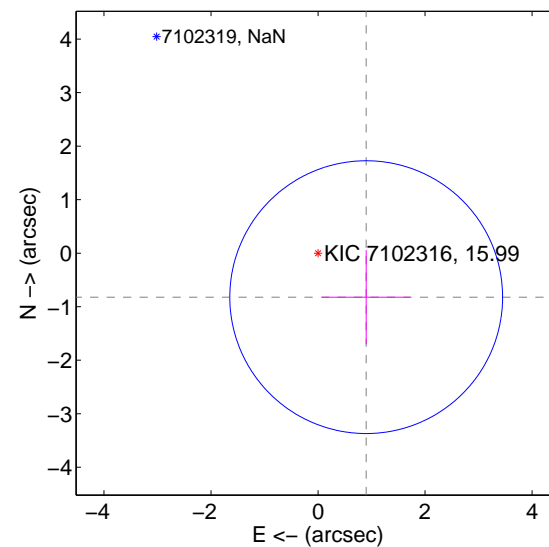
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

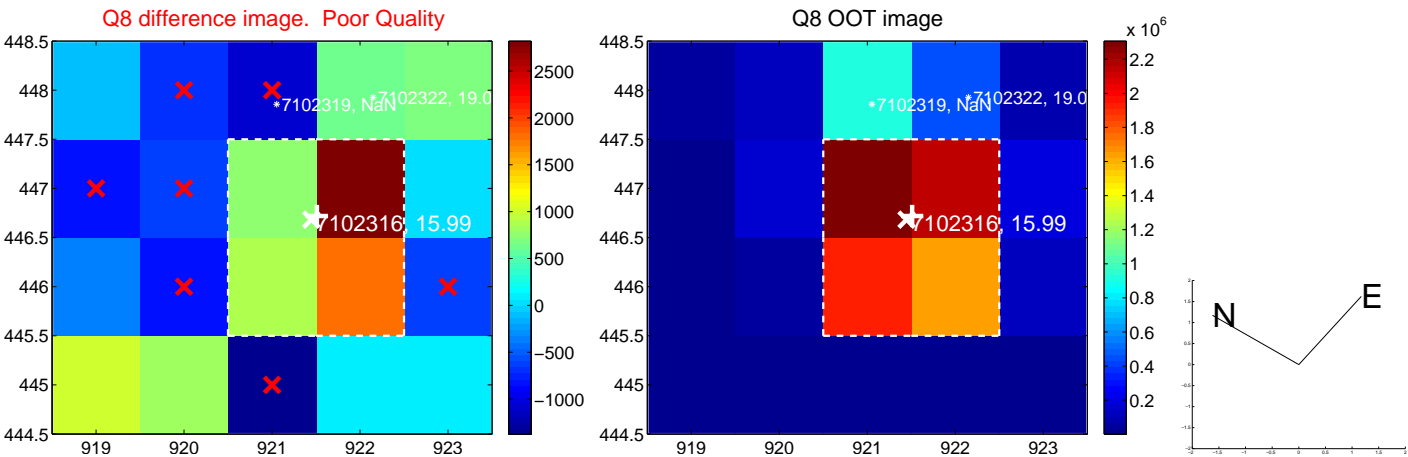
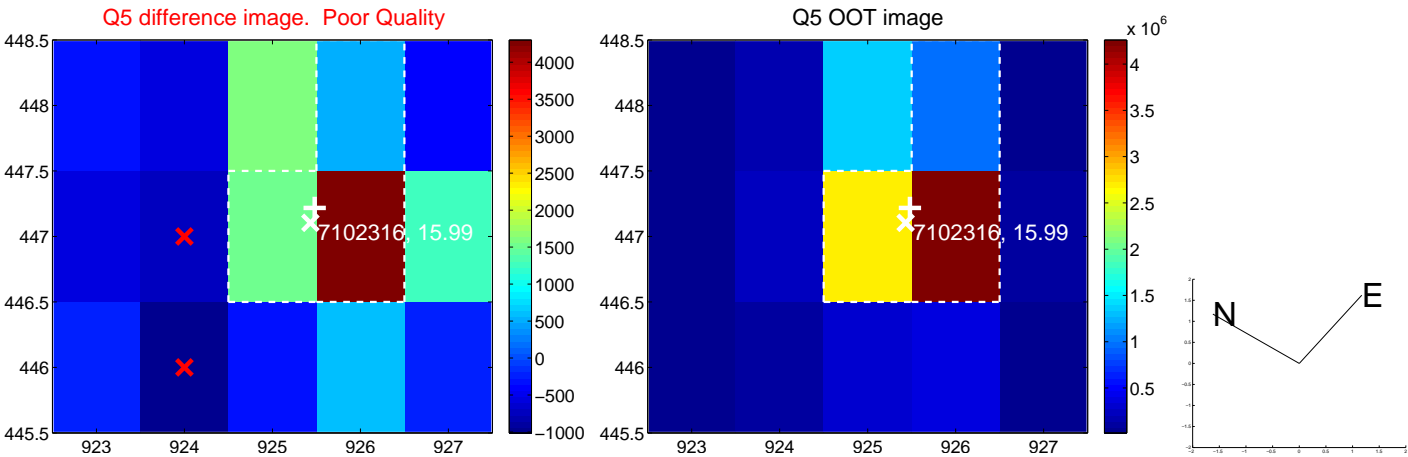


offset from photometric centroids



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

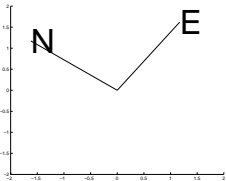
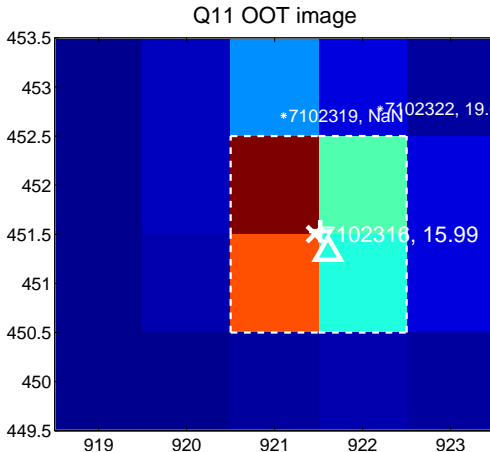
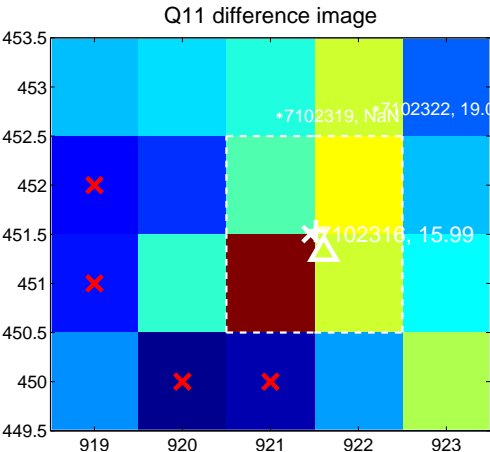
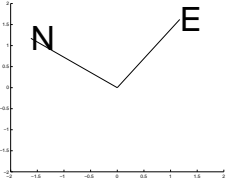
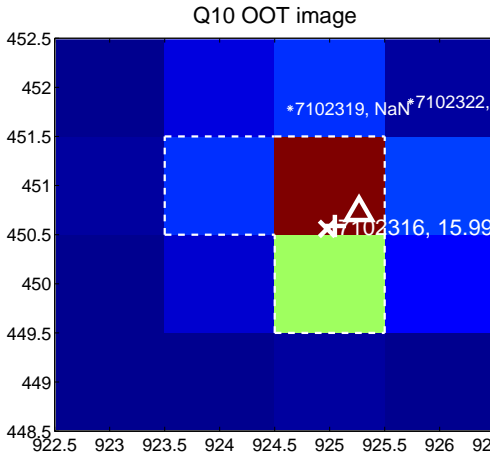
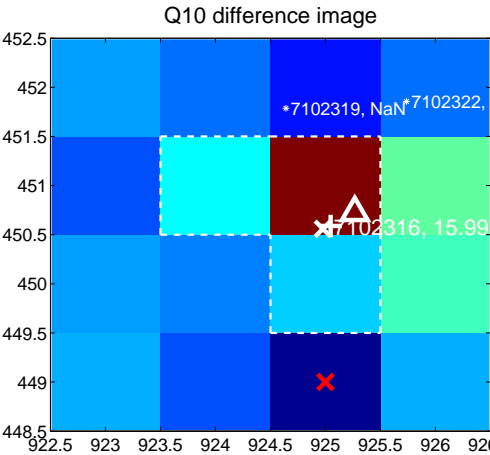


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

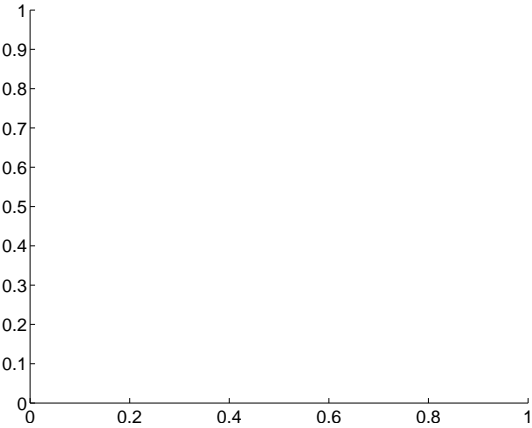
Q9 no difference image



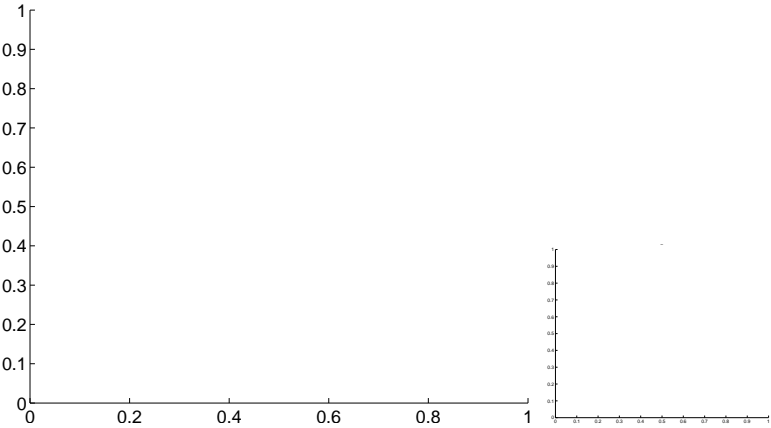
Q9 no OOT image



Q12 no difference image

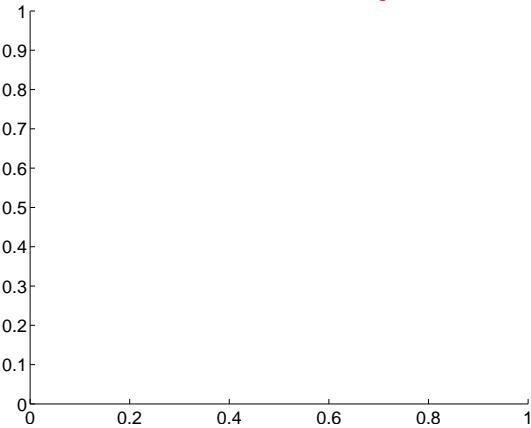


Q12 no OOT image

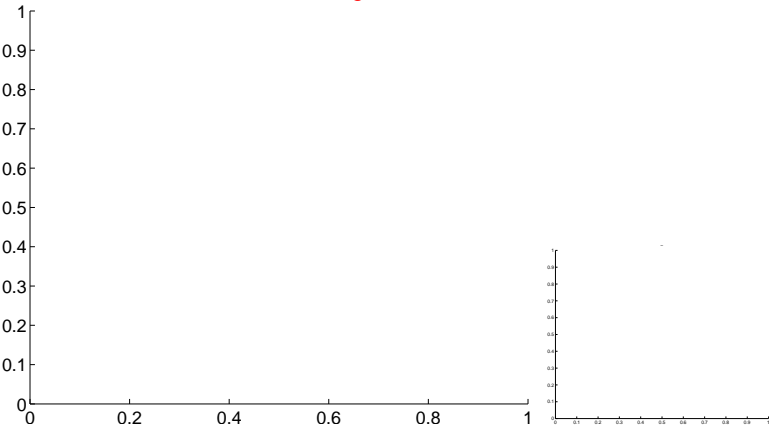


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

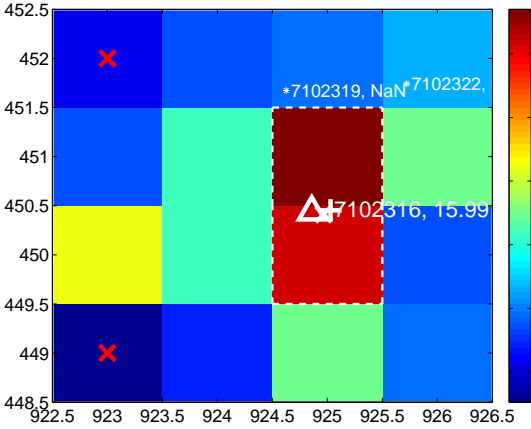
Q13 no difference image



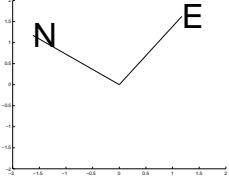
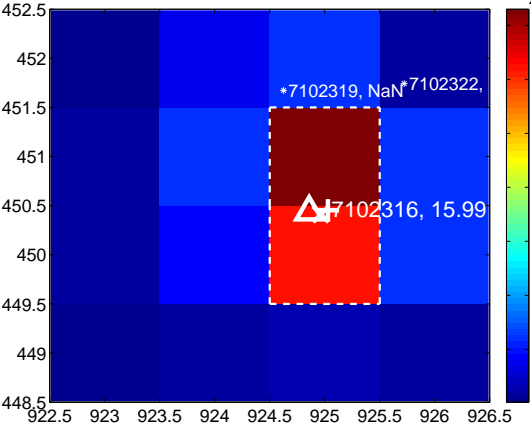
Q13 no OOT image



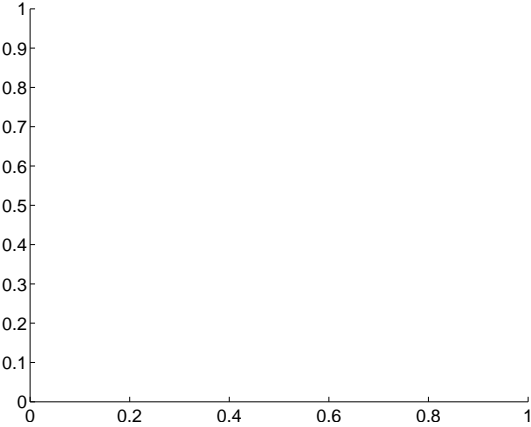
Q14 difference image



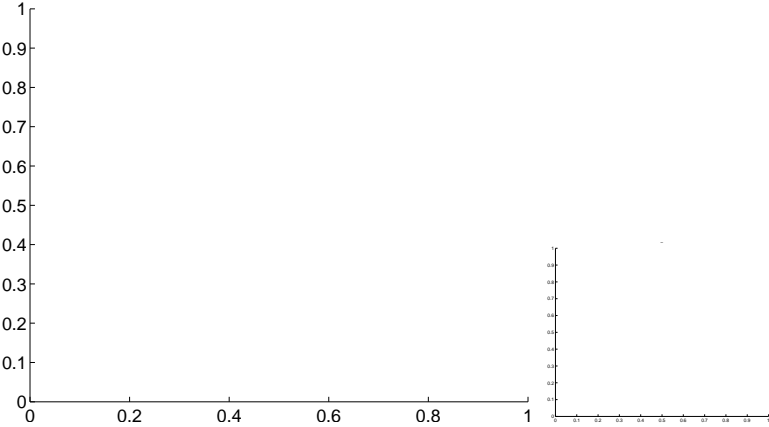
Q14 OOT image



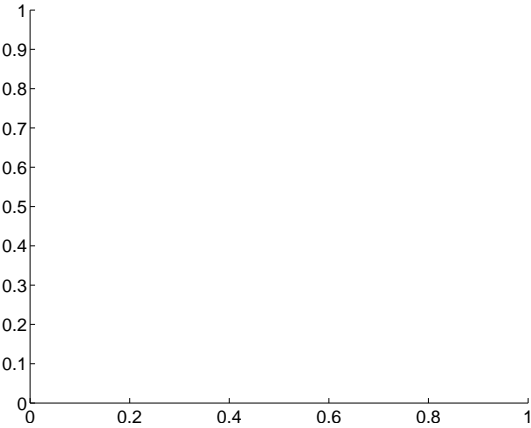
Q15 no difference image



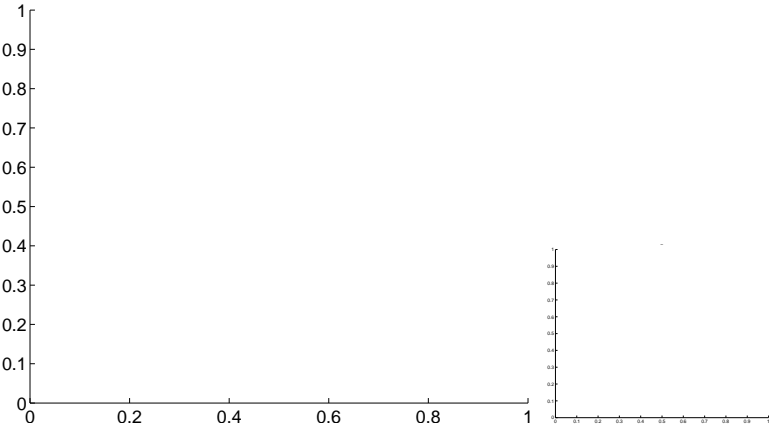
Q15 no OOT image



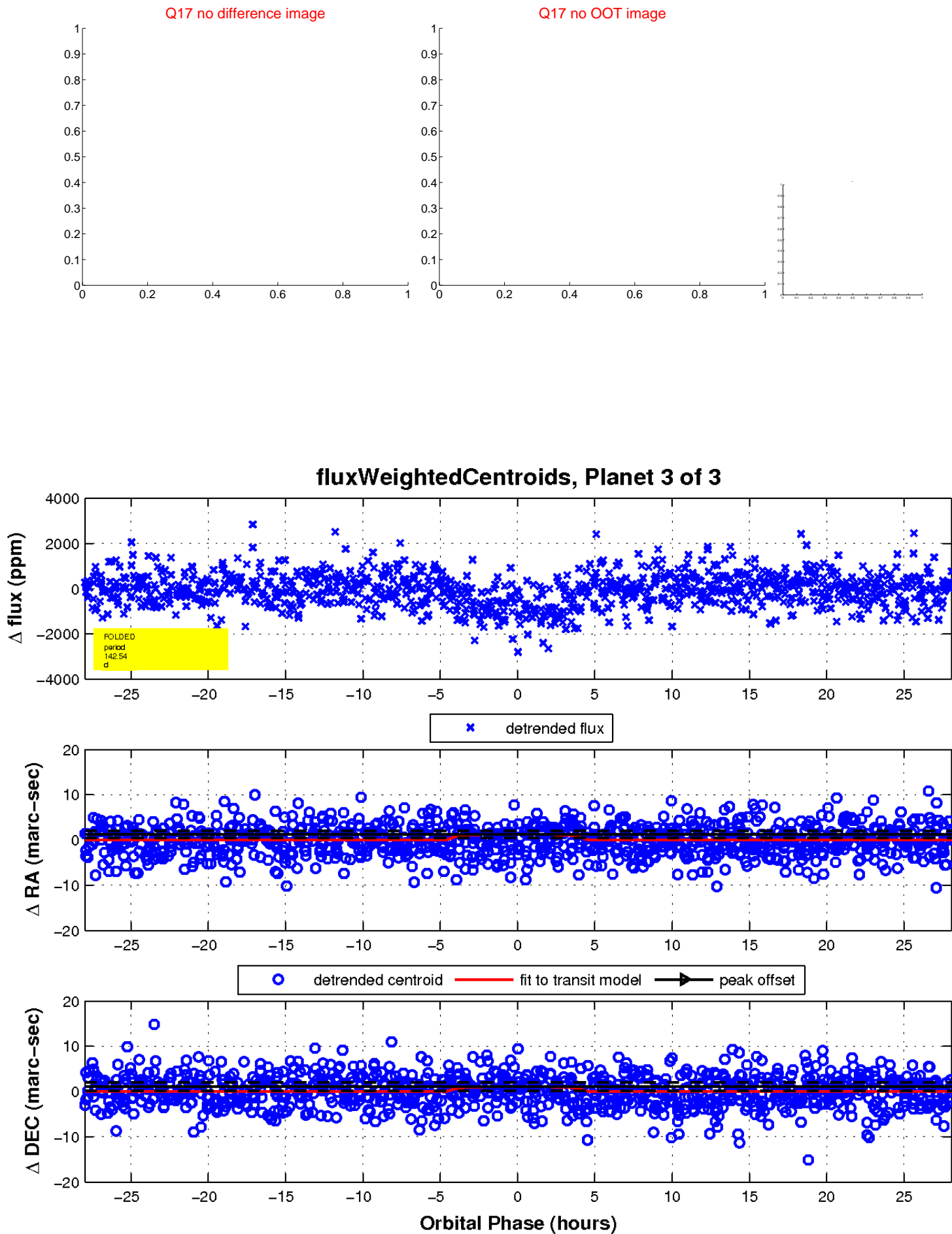
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

