

KIC 009966115

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})
009966115-01	OBS	6075.01	8.947426	132.045741	85981.2	4.906	11636.4	9648.1	1.51	6297	46.02	401.53
009966115-02	OBS	No	4.473711	132.046407	3593.0	4.735	508.1	496.4	1.51	6297	10.48	1011.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009966115-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
009966115-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

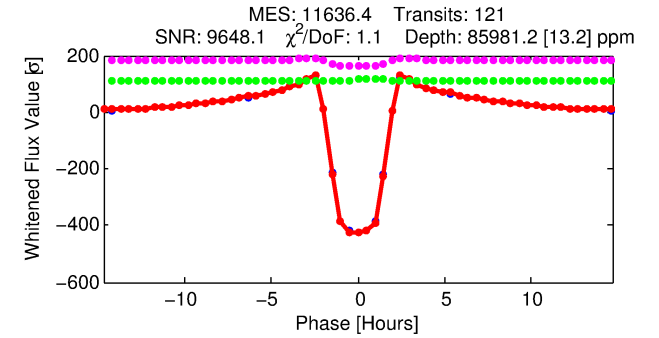
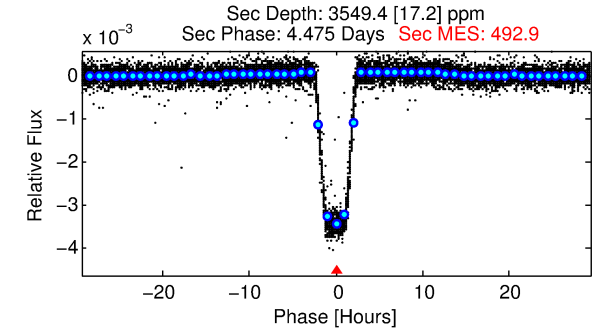
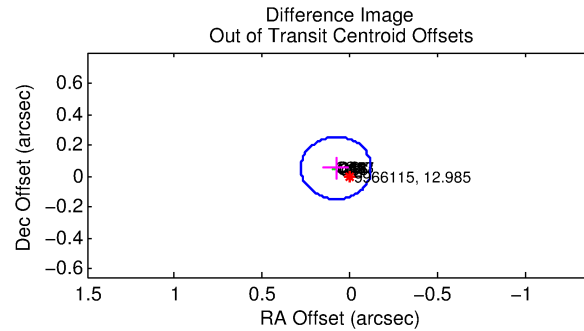
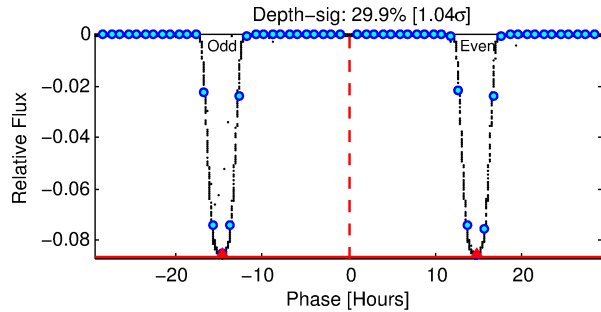
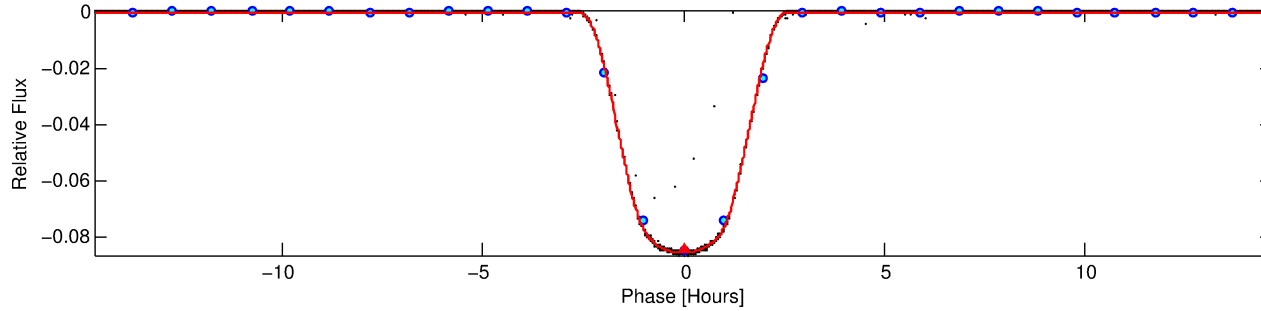
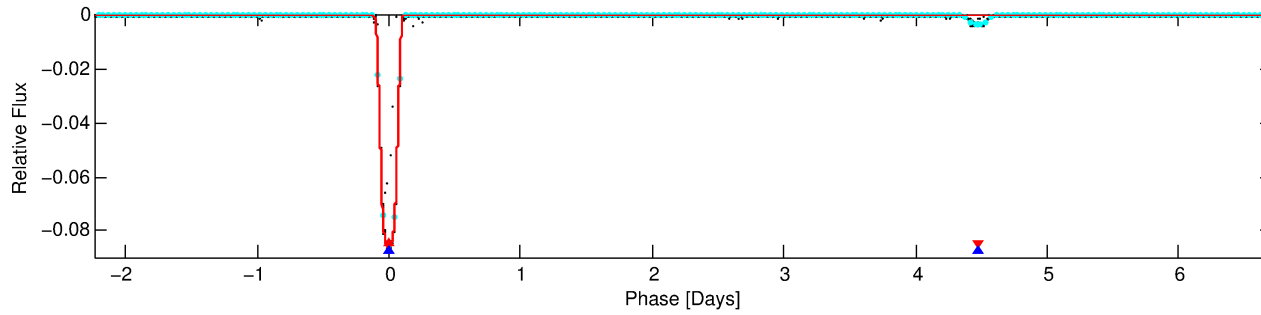
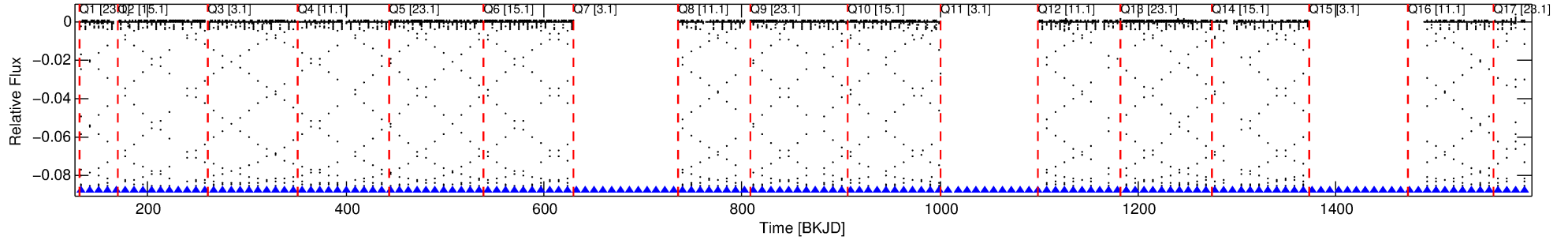
Ephemeris Match Information For 009966115-01

No Significant Match Found

DV One-Page Summary

KIC: 9966115 Candidate: 1 of 2 Period: 8.947 d
KOI: K06075.01 Corr: 0.999

Kp: 12.98 R*: 1.51 Rs Teff: 6297.0 K Logg: 4.16 Fe/H: -0.060



DV Fit Results:

Period = 8.94743 [0.00000] d
Epoch = 132.0457 [0.0000] BKJD
Rp/R* = 0.2800 [0.0000]
a/R* = 16.27 [0.00]
b = 0.53 [0.00]
Seff = 401.53 [150.05]
Teq = 1141 [107] K
Rp = 46.02 [11.46] Re
a = 0.0892 [0.0201] AU
Ag = 7.34 [2.54] [2.49σ]
Teffp = 2905 [102] K [11.95σ]

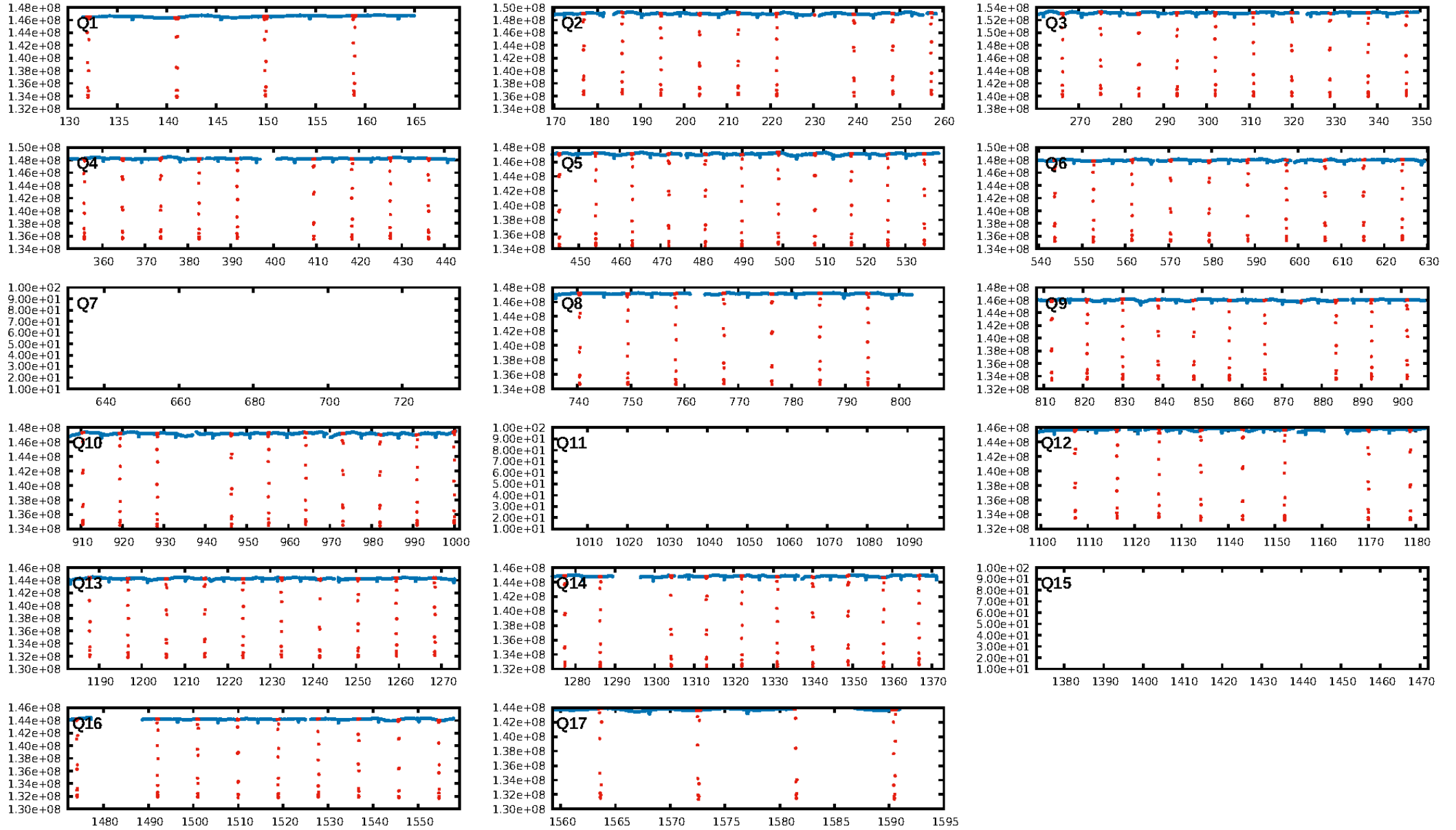
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.75σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [113/113]
GhostDiagnostic-chr: 5.047
Centroid-sig: 0.0%
Centroid-so: 0.268 arcsec [251.54σ]
OotOffset-rm: 0.096 arcsec [1.44σ]
KicOffset-rm: 0.232 arcsec [3.39σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

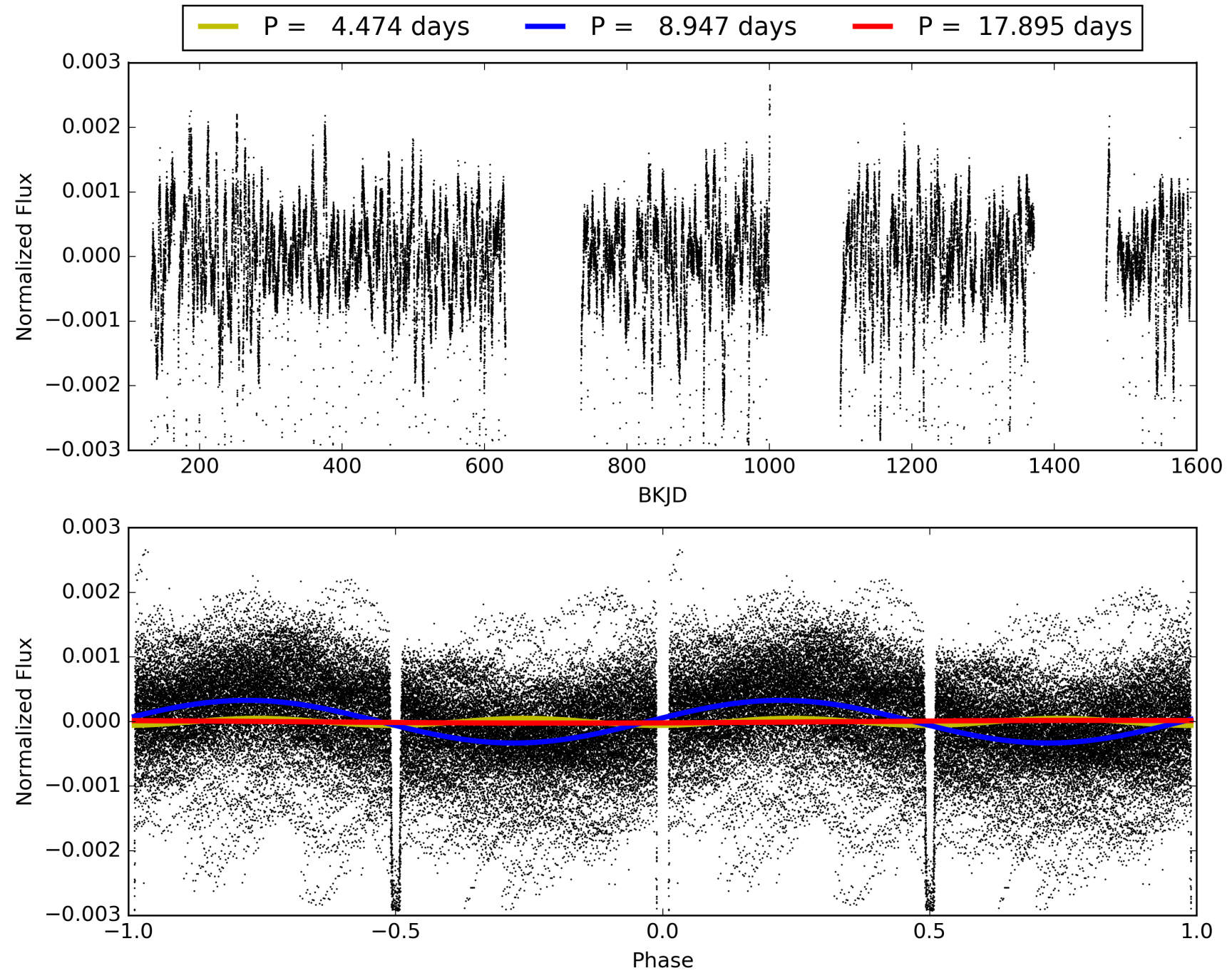
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:33:18 Z

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

TCE 009966115-01, PDC Light Curves

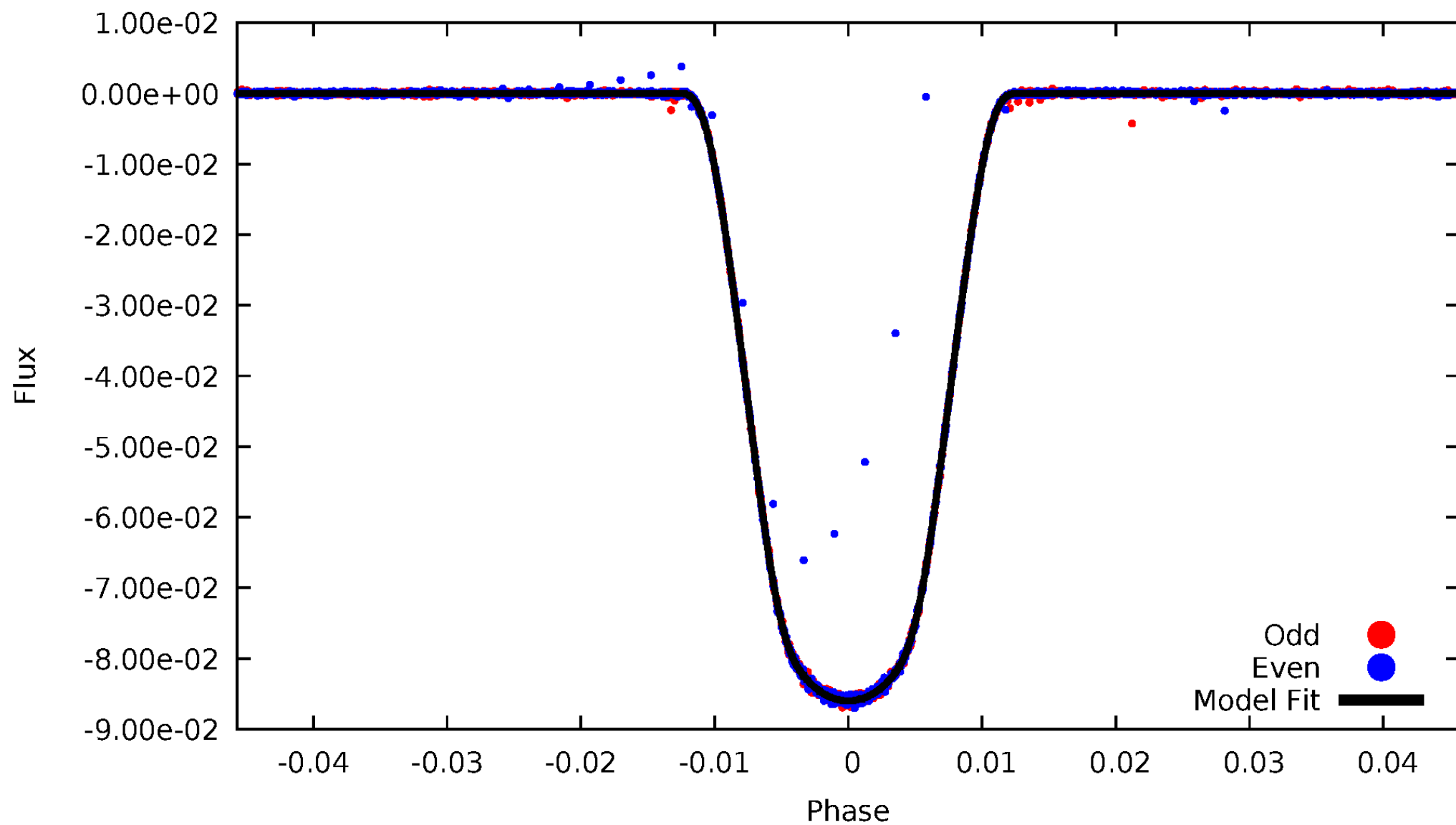


TCE 009966115-01



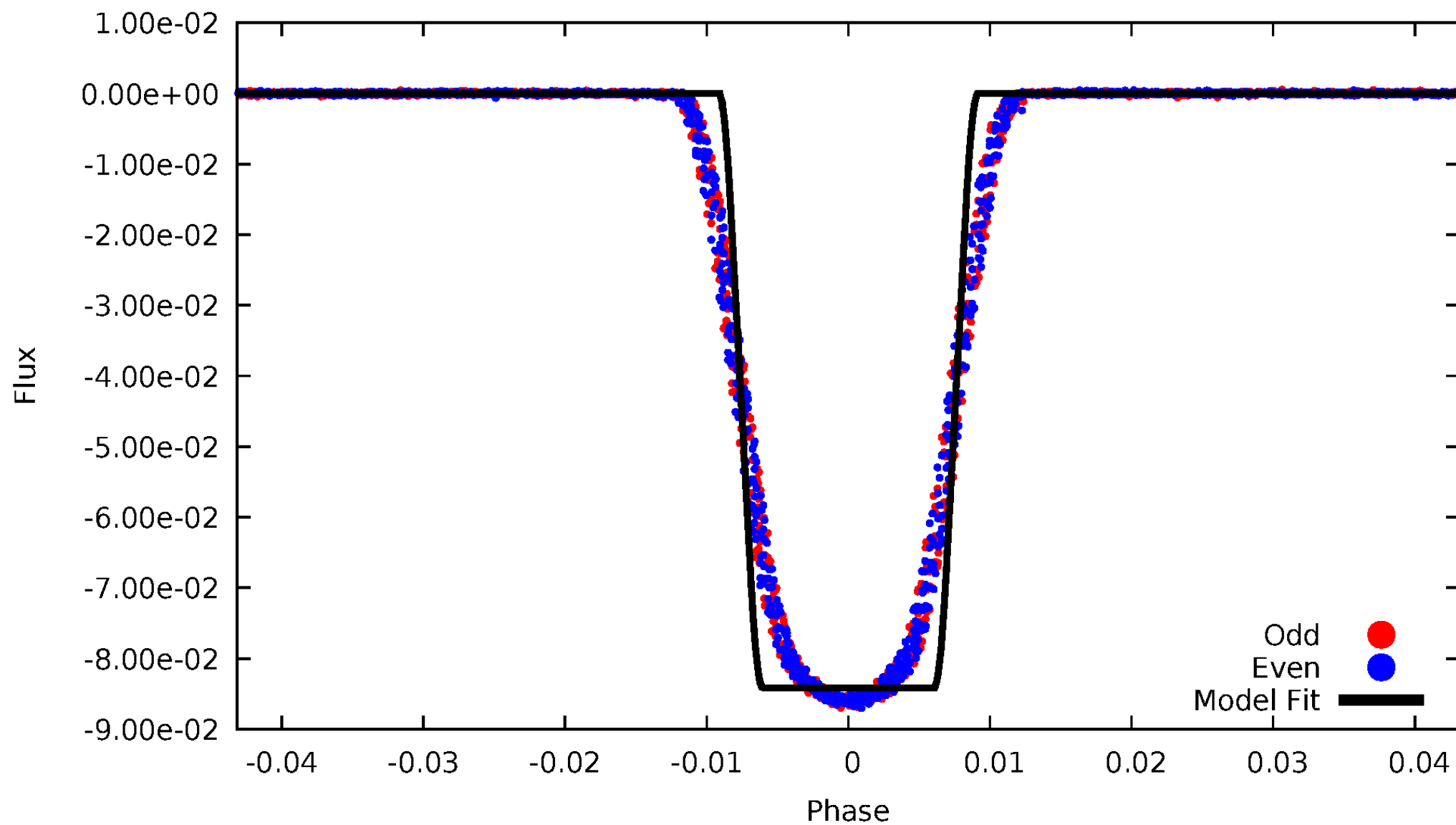
DV Odd/Even

TCE 009966115-01



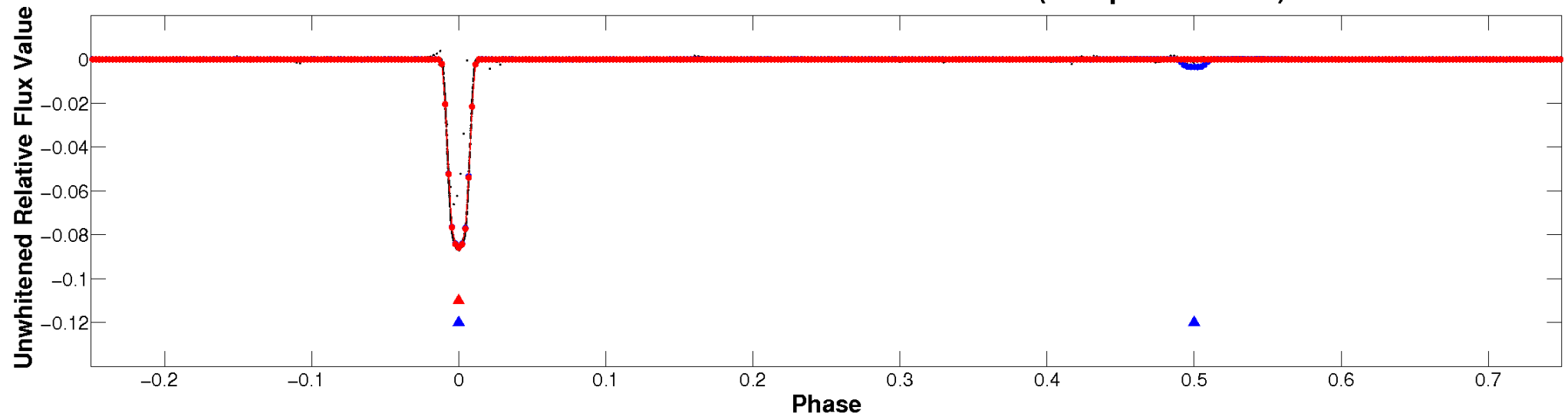
ALT Odd/Even

TCE 009966115-01

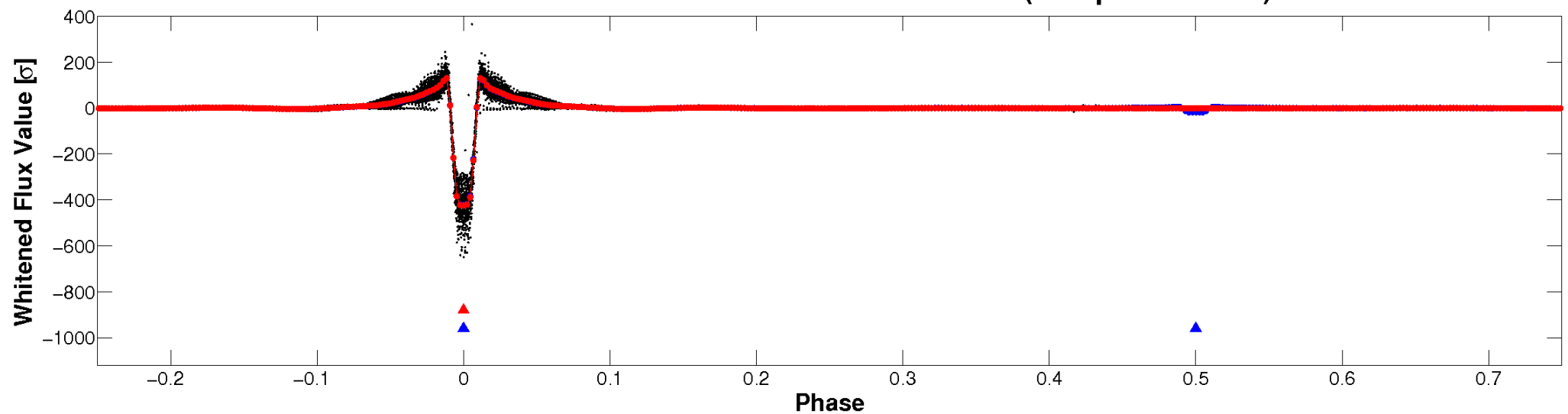


Non-Whitened Vs. Whitened Light Curve

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

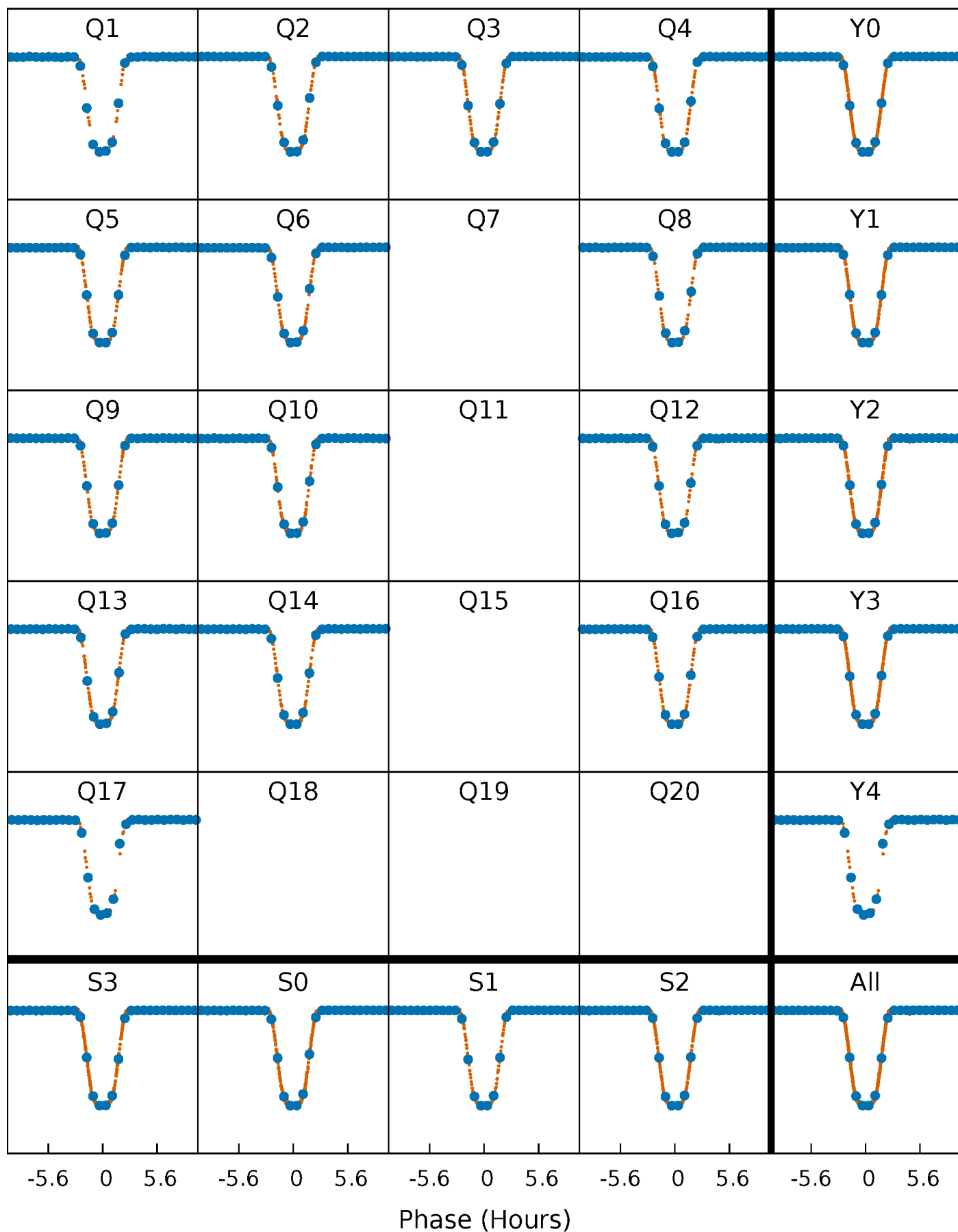


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



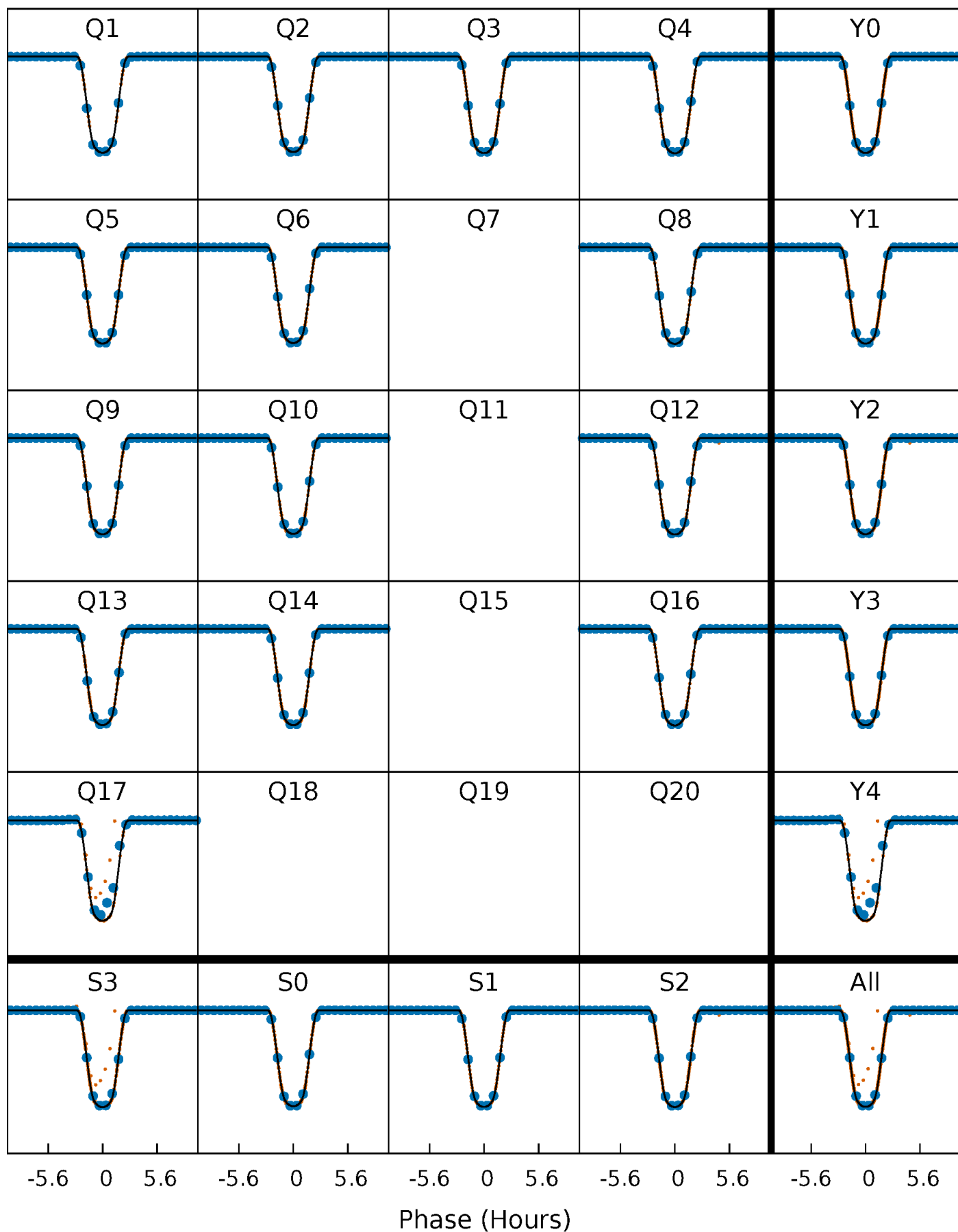
PDC Quarter-Phased Transit Curves

TCE 009966115-01 P= 8.947426 Days $T_0=132.045741$ (BKJD)



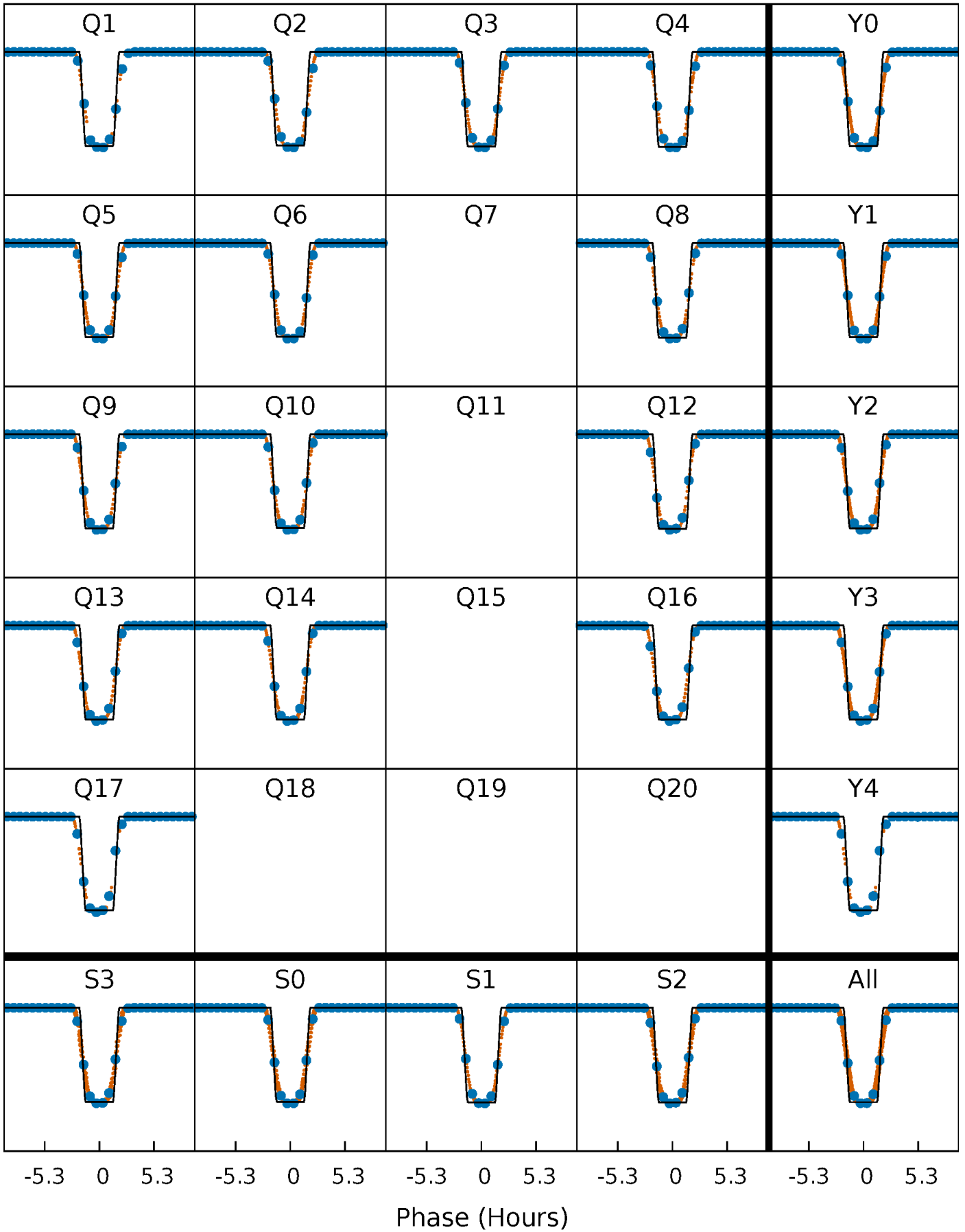
DV Quarter-Phased Transit Curves

TCE 009966115-01 P= 8.947426 Days $T_0=132.045741$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

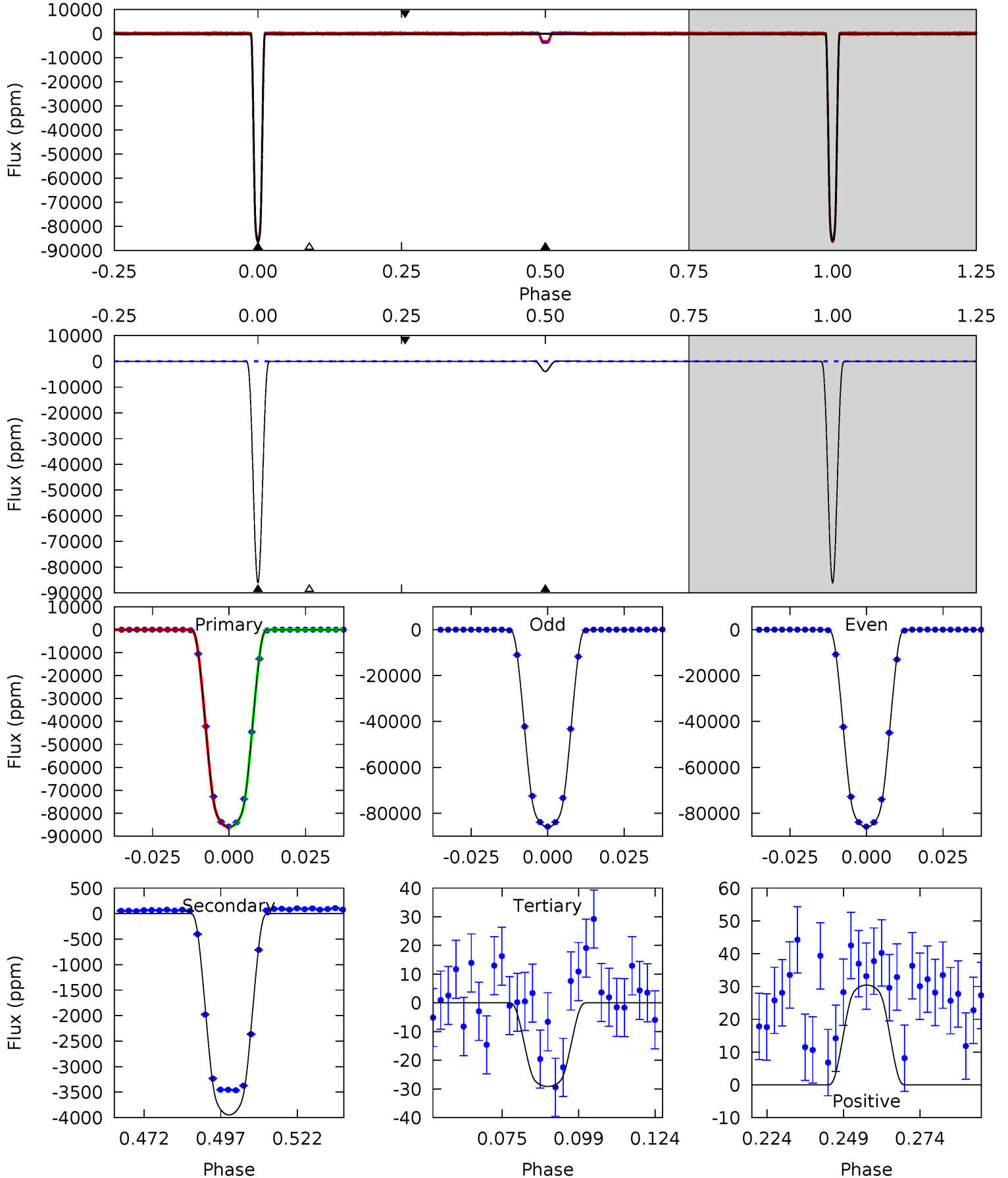
TCE 009966115-01 P= 8.947489 Days $T_0=132.041015$ (BKJD)



DV Model-Shift Uniqueness Test

009966115-01, P = 8.947426 Days, E = 123.098315 Days

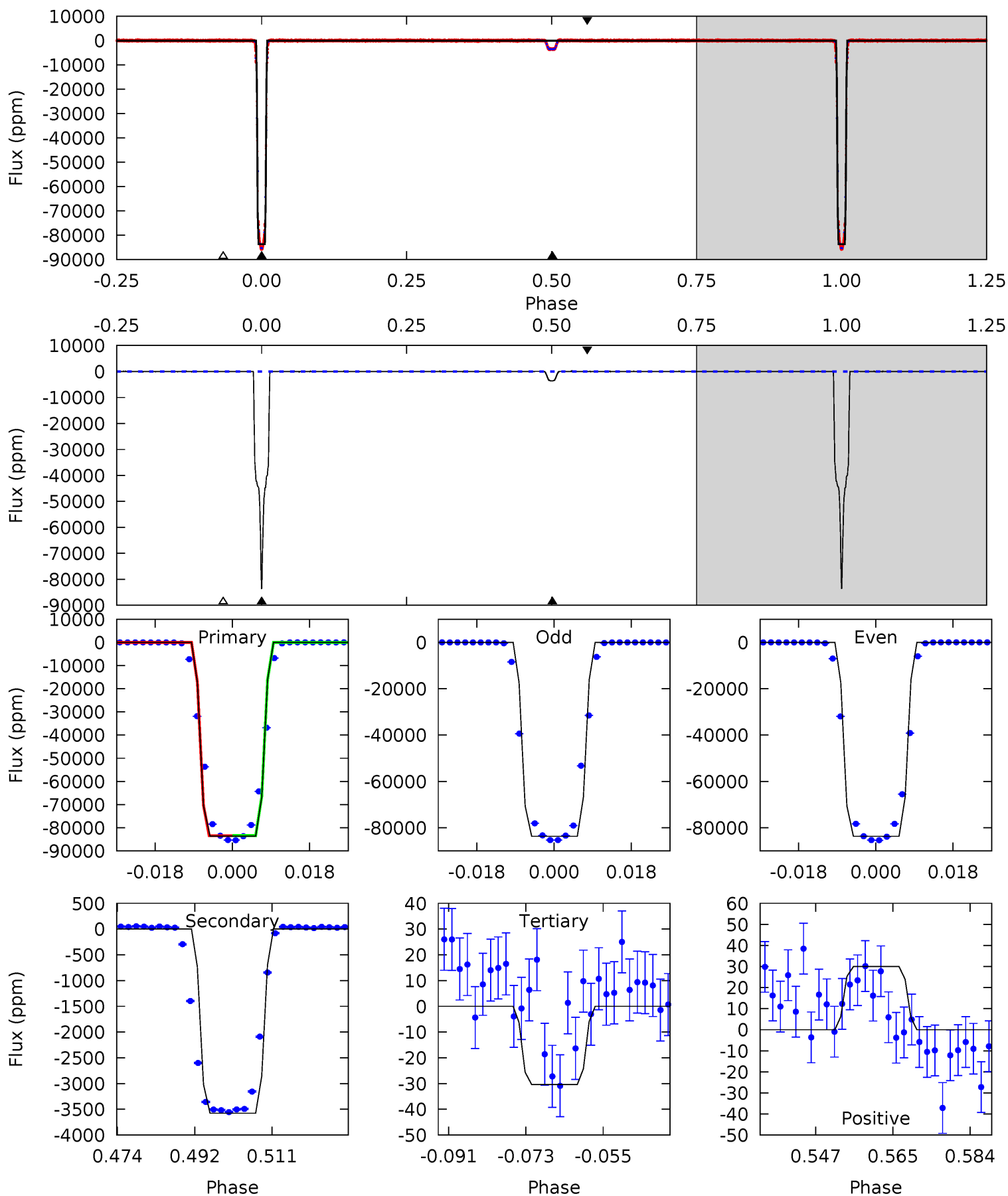
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21512	987.5	7.29	7.62	4.85	2.24	5.50	21505	21504	980.2	979.9	1.18	1.00	0.00	0.74



Alt Model-Shift Uniqueness Test

009966115-01, P = 8.947489 Days, E = 123.093526 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10739	459.0	3.90	3.84	4.91	2.36	1.54	10735	10735	455.1	455.2	0.55	1.00	0.00	3.57



Stellar Parameters For KIC 009966115

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6297^{+177}_{-221}	$4.155^{+0.198}_{-0.132}$	$-0.060^{+0.250}_{-0.300}$	$1.506^{+0.341}_{-0.375}$	$1.180^{+0.164}_{-0.164}$	$0.487^{+0.467}_{-0.208}$
	+3%/-4%	+5%/-3%	+417%/-500%	+23%/-25%	+14%/-14%	+96%/-43%
Source	PHO1	FLK73	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 009966115-01 / KOI 6075.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3947 ± 4	$45.66^{+5.50}_{-6.31}$	1582^{+102}_{-116}	3461^{+60}_{-78}	$8.359^{+2.491}_{-1.598}$
Alt.	-3576 ± 8	$47.62^{+5.66}_{-6.40}$	1585^{+109}_{-112}	3366^{+60}_{-70}	$7.038^{+2.002}_{-1.418}$

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 $A_{obs} \gg 1.0$

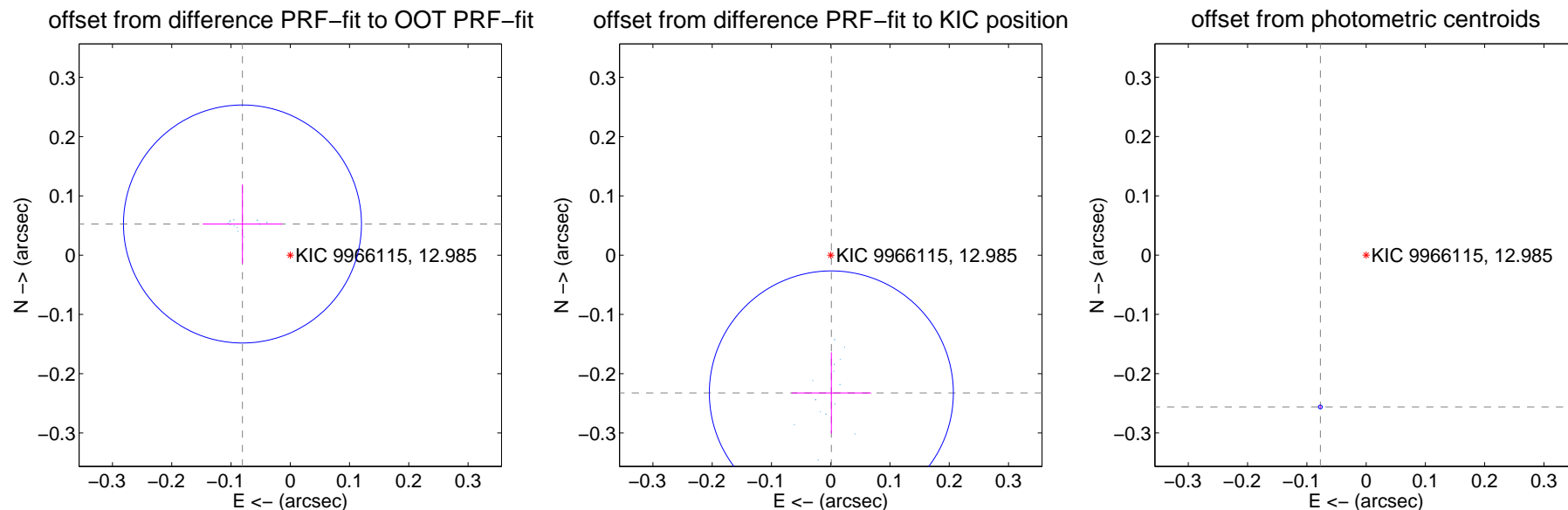
DV Centroid Data

Supplemental centroid analysis for 009966115-01. Kepler magnitude: 12.98. Transit SNR 9648.09

There are 14 quarters with good PRF difference image offsets

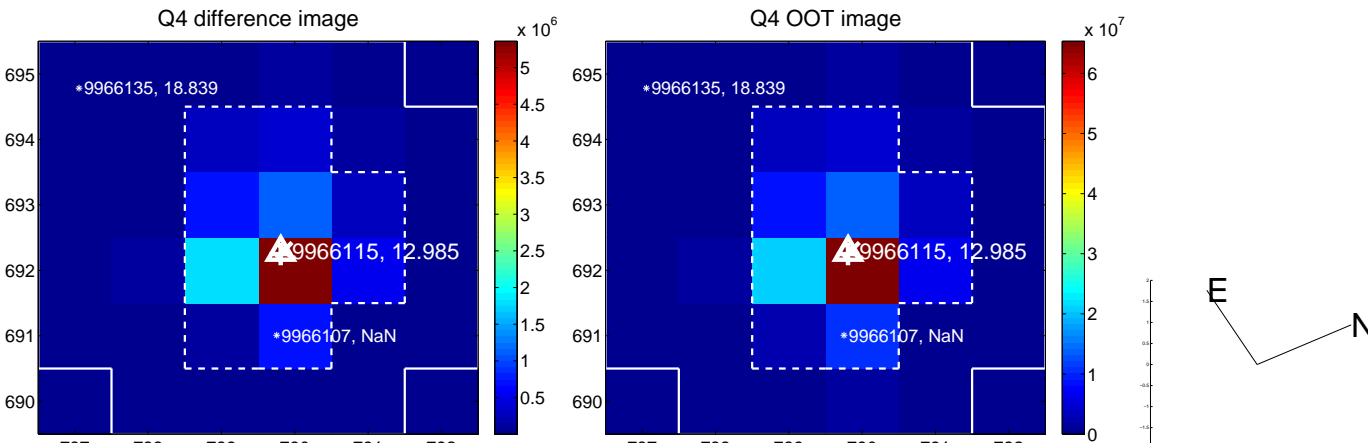
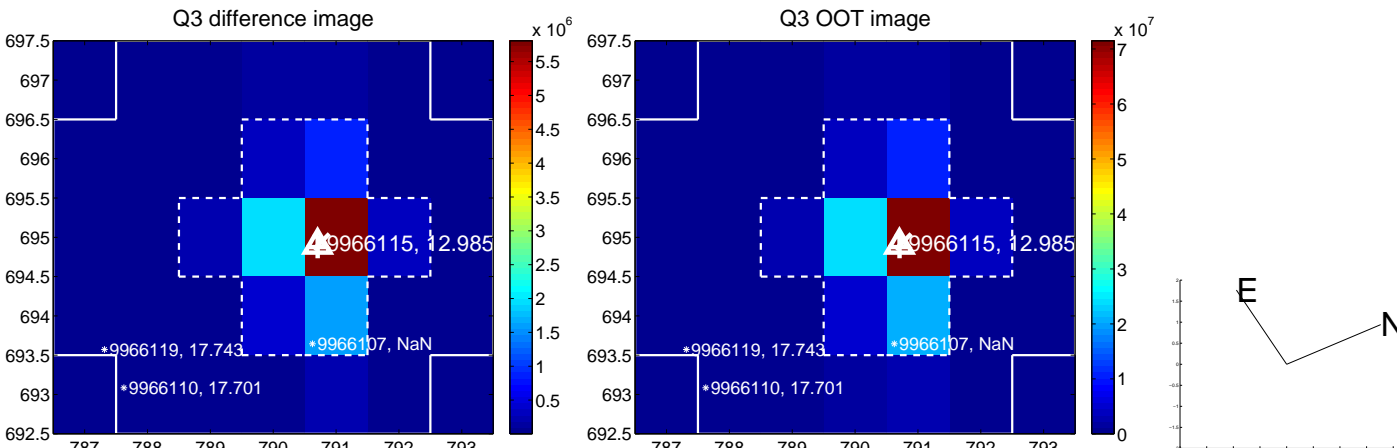
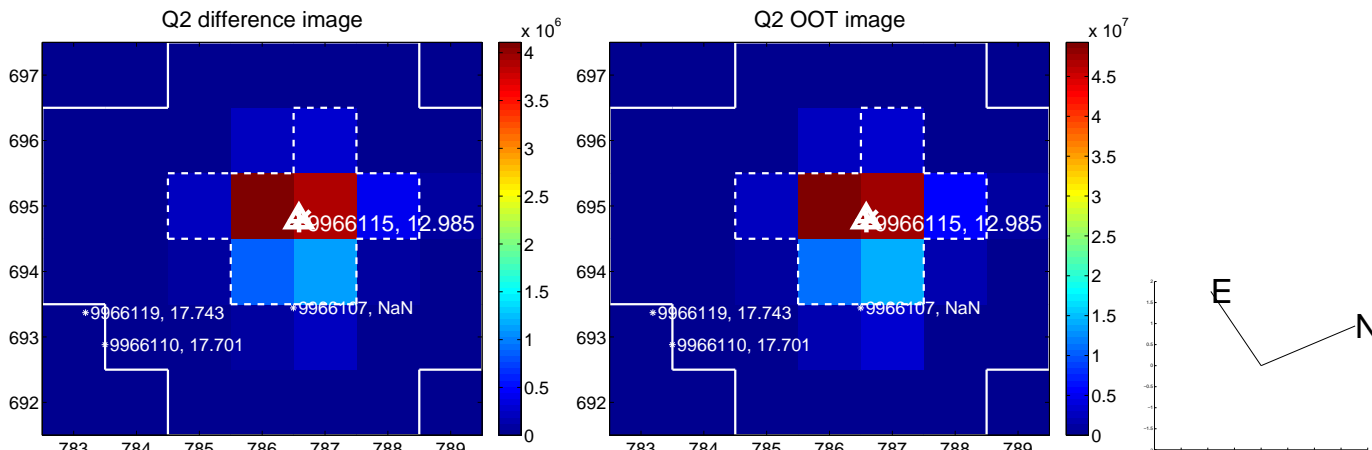
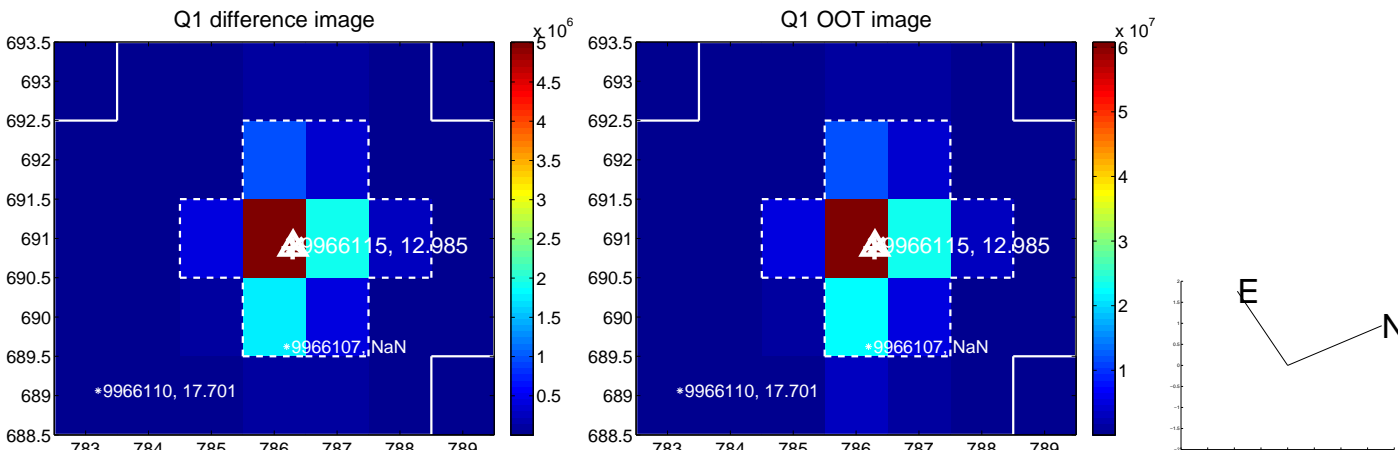
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.096 ± 0.067	1.44	0.081 ± 0.067	0.053 ± 0.067
PRF-fit source offset from KIC position	0.232 ± 0.069	3.39	-0.001 ± 0.067	-0.232 ± 0.069
photometric centroid source offset	0.27 ± 0.00	251.54	0.08 ± 0.00	-0.26 ± 0.00

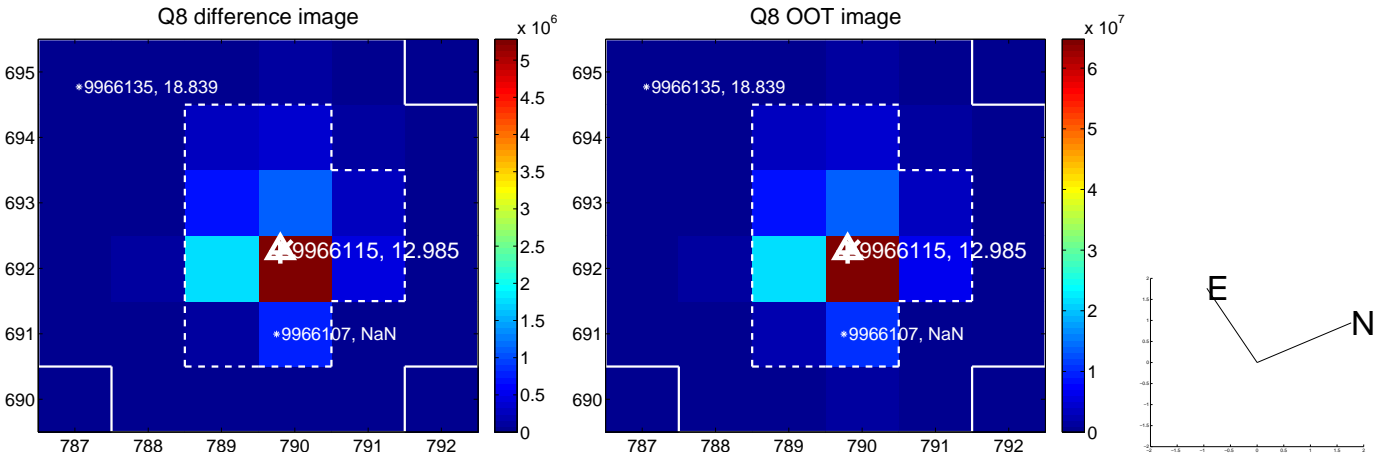
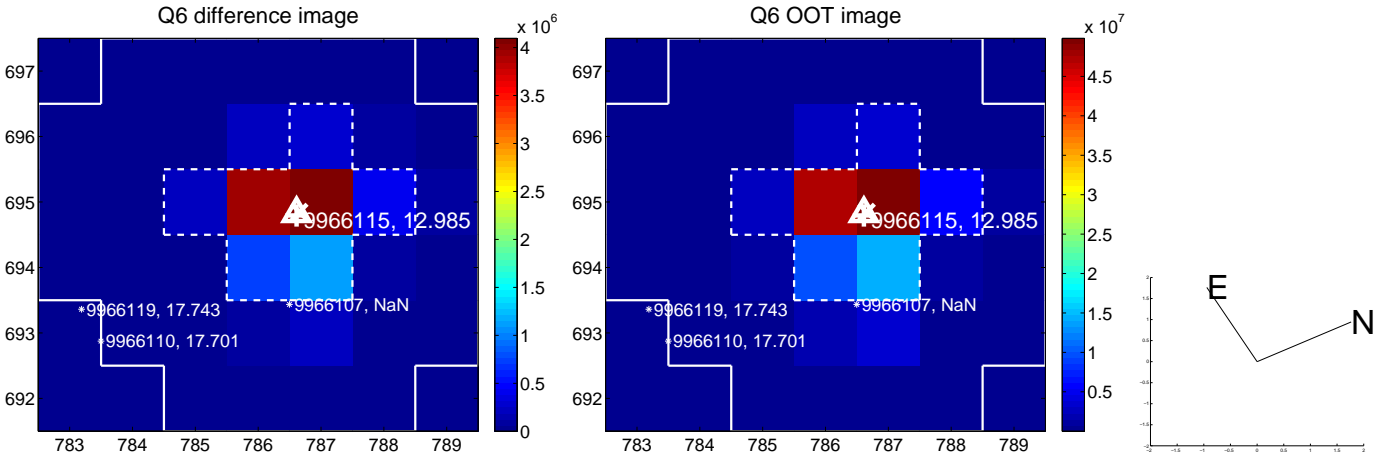
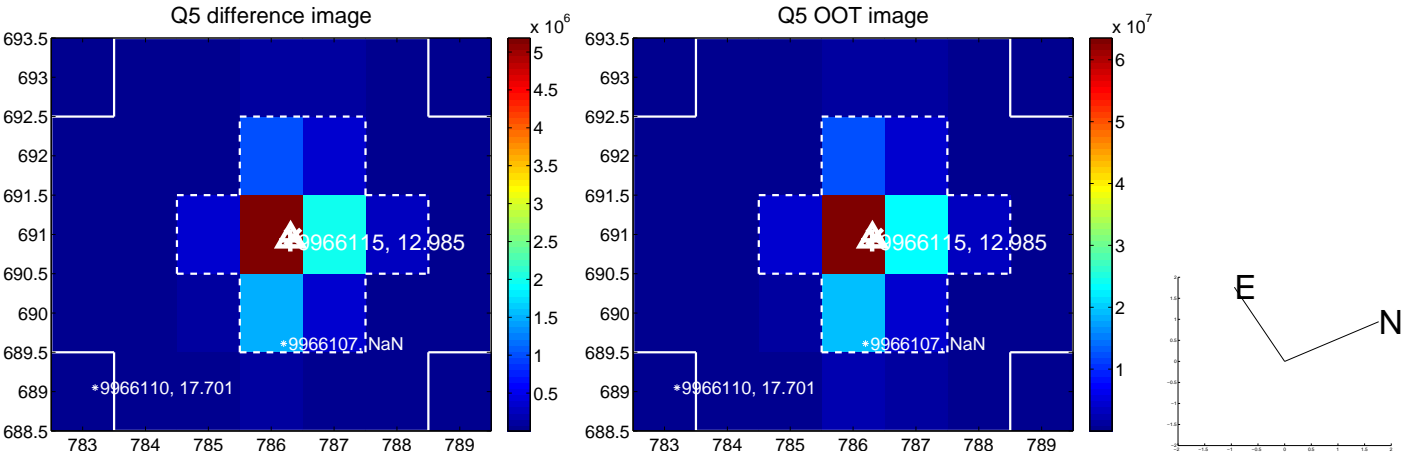


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

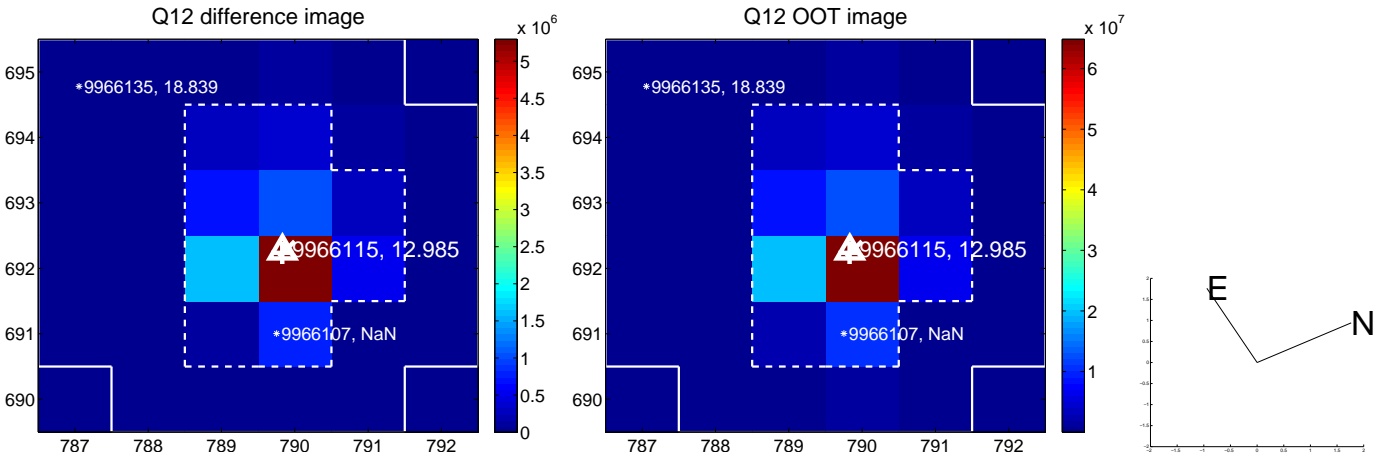
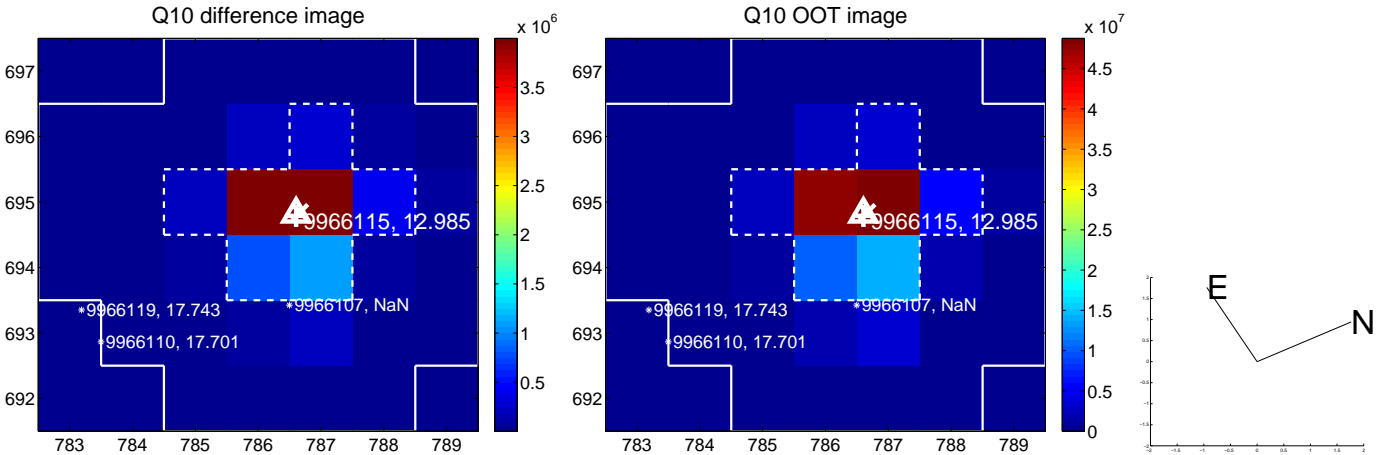
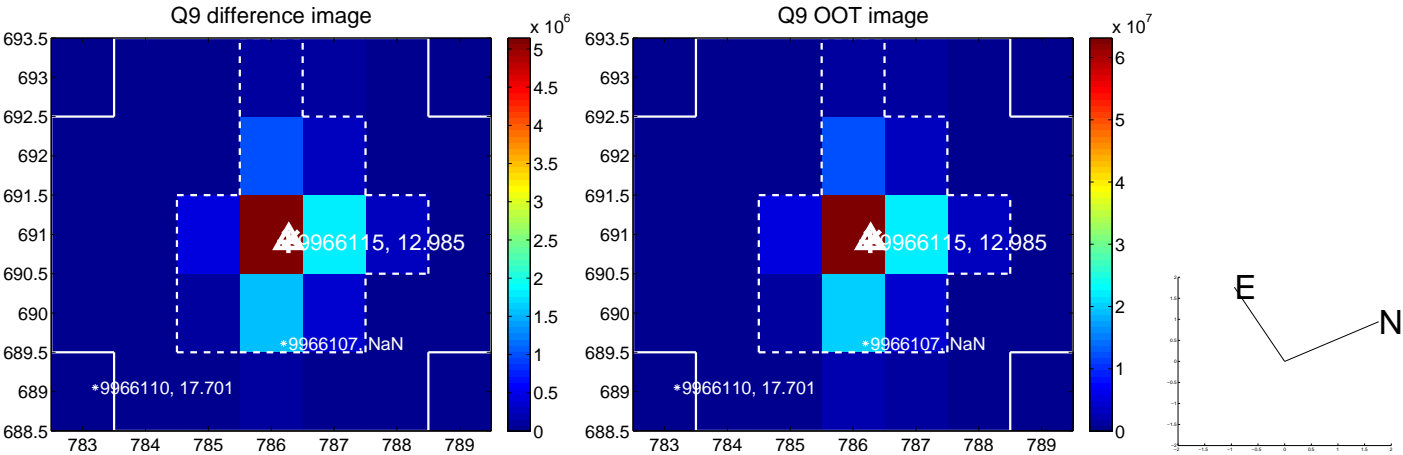
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



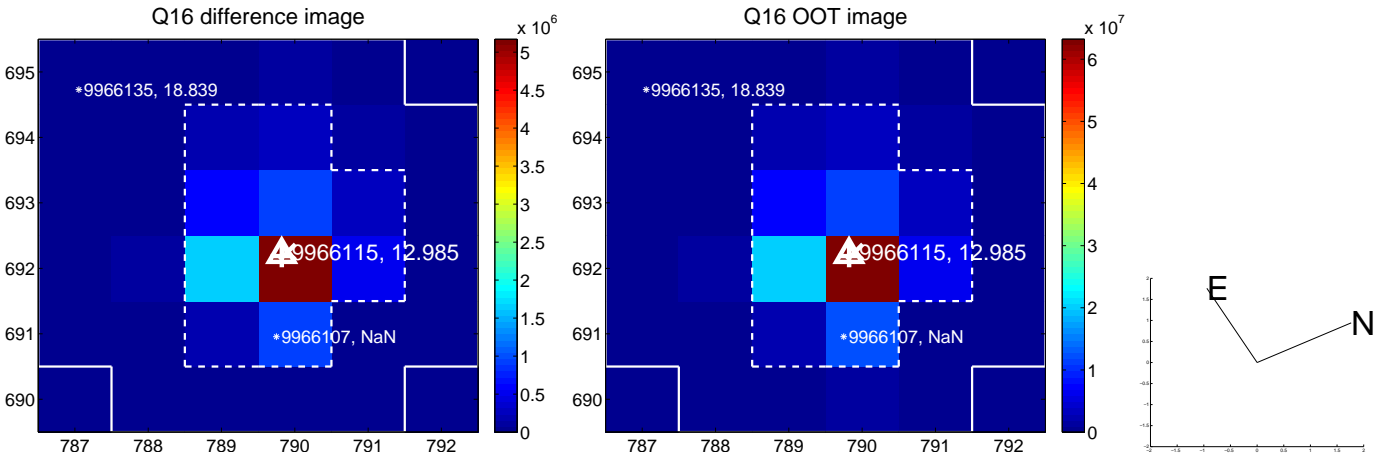
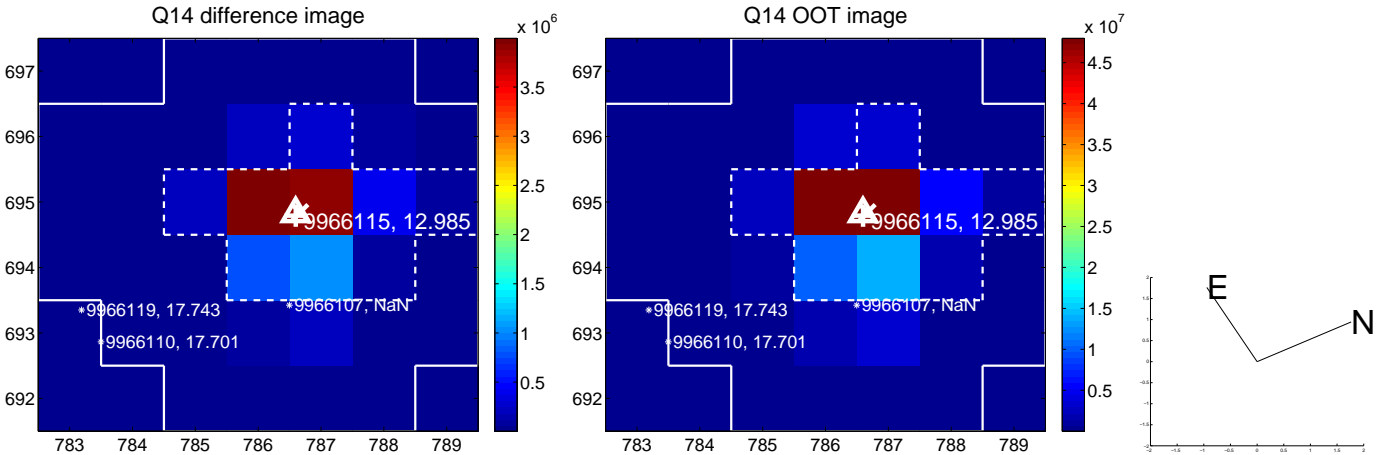
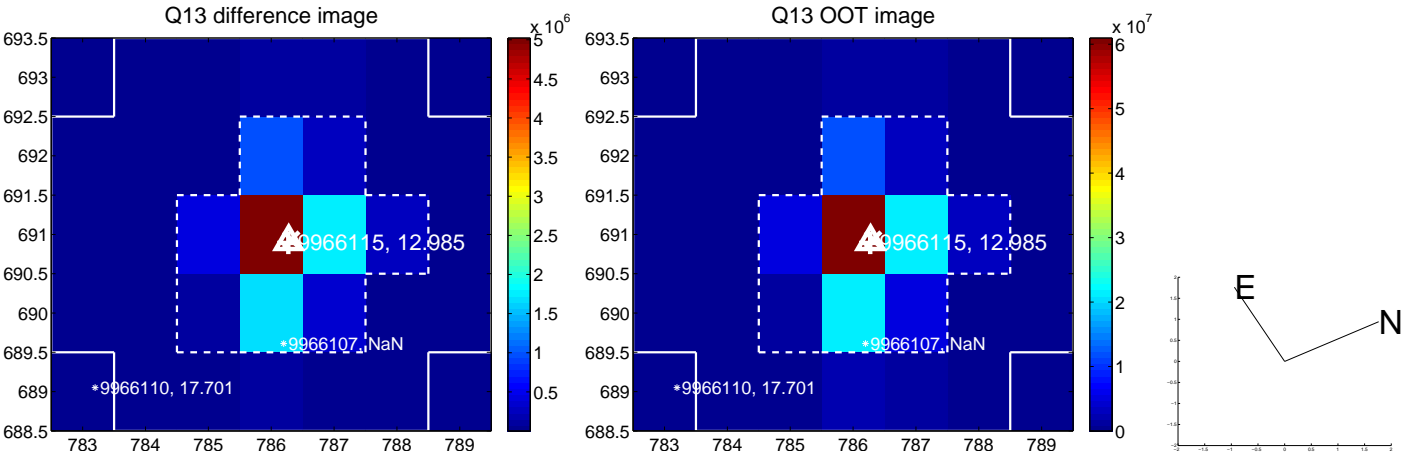
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



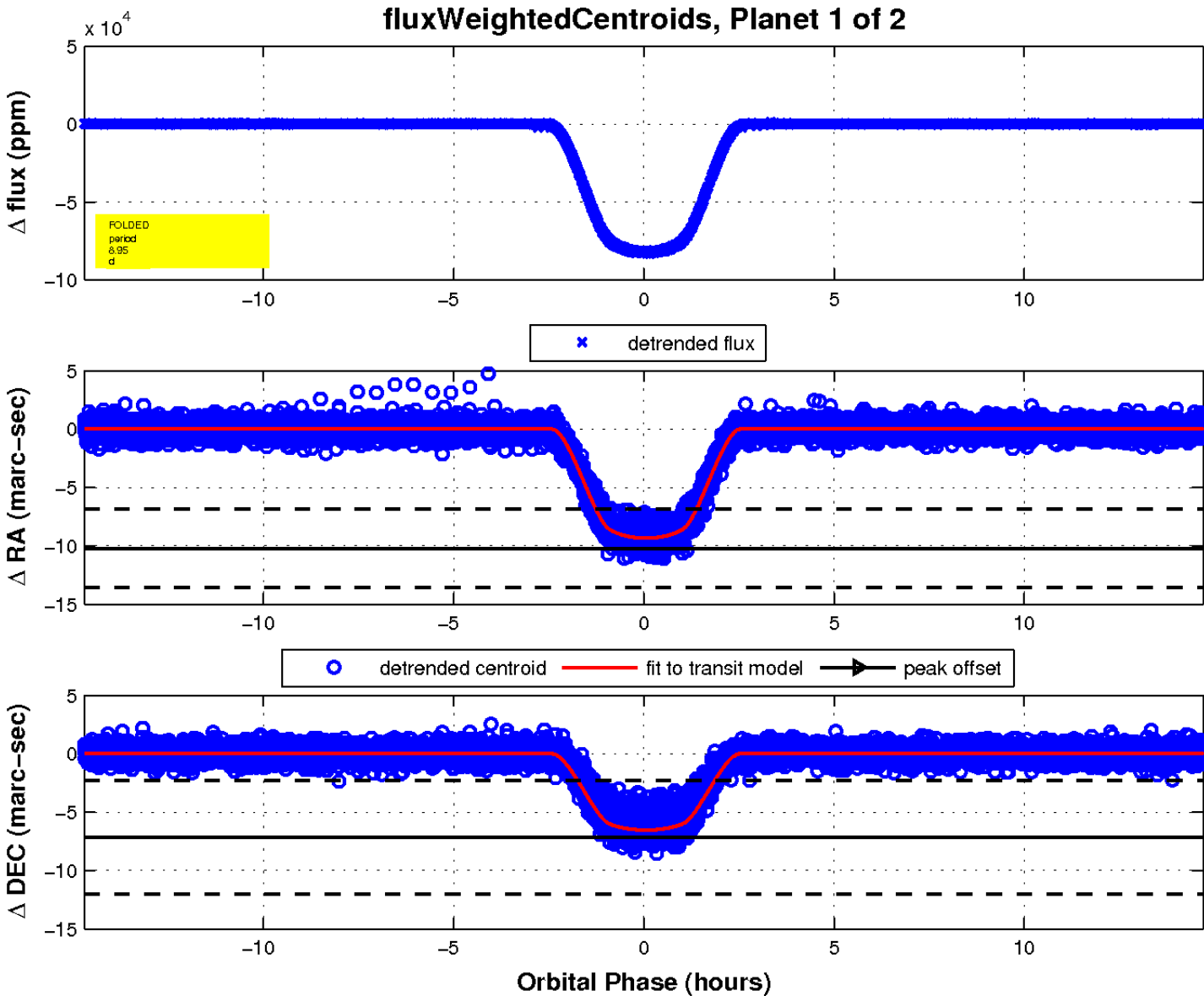
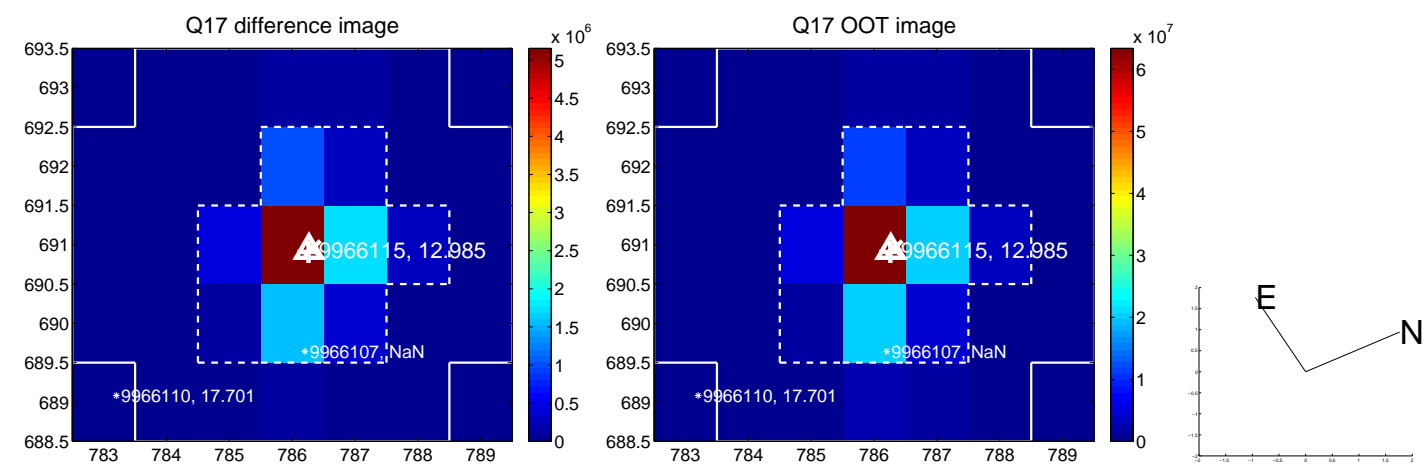
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



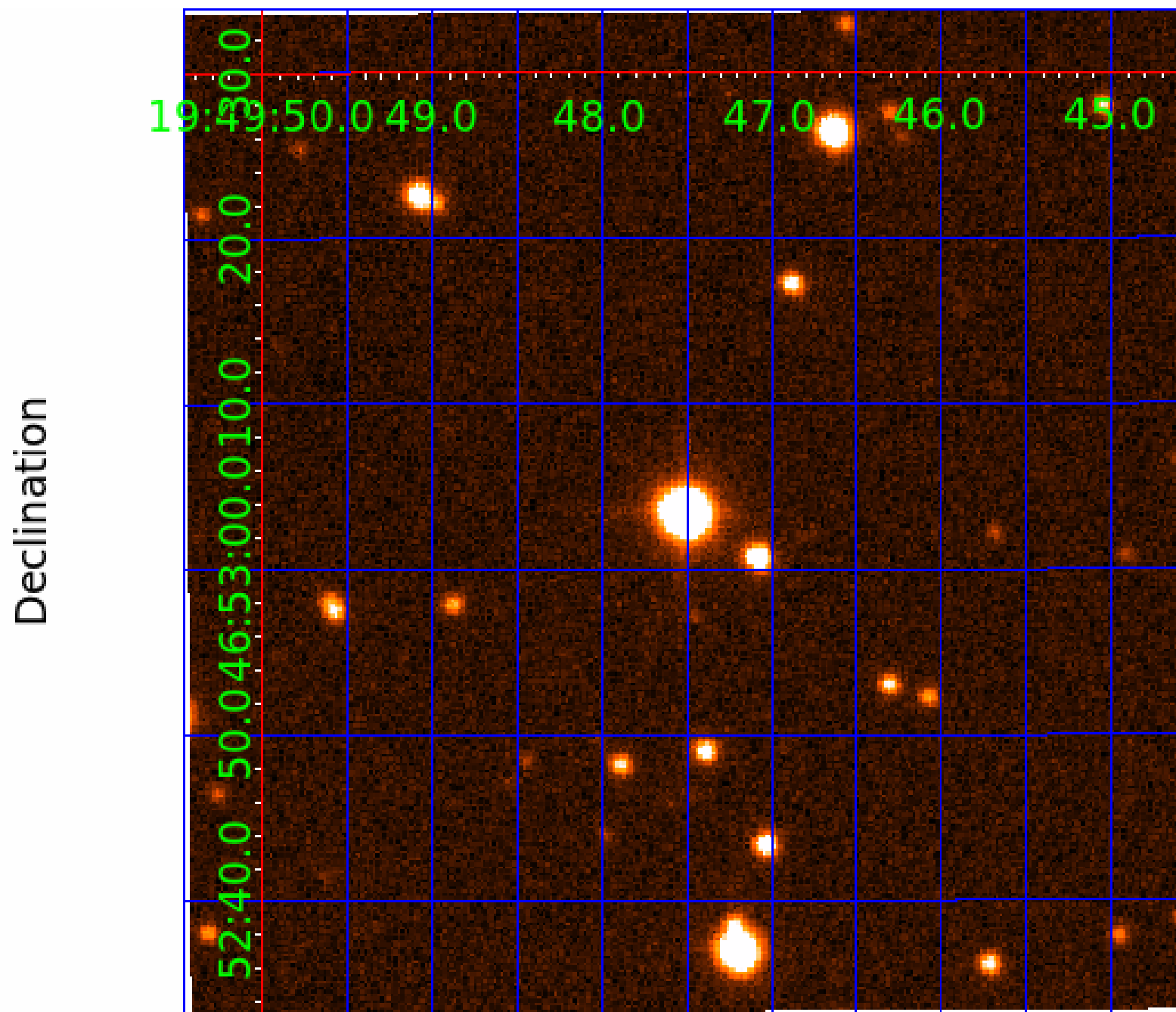
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009966115

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})
009966115-01	OBS	6075.01	8.947426	132.045741	85981.2	4.906	11636.4	9648.1	1.51	6297	46.02	401.53
009966115-02	OBS	No	4.473711	132.046407	3593.0	4.735	508.1	496.4	1.51	6297	10.48	1011.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009966115-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
009966115-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

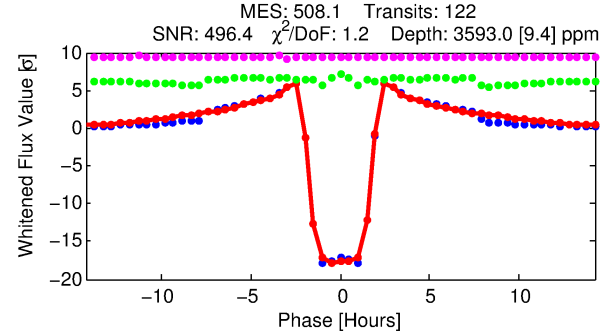
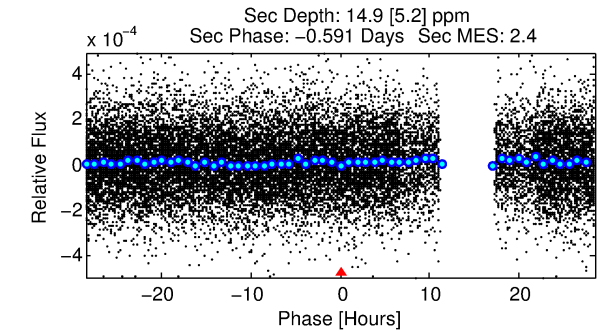
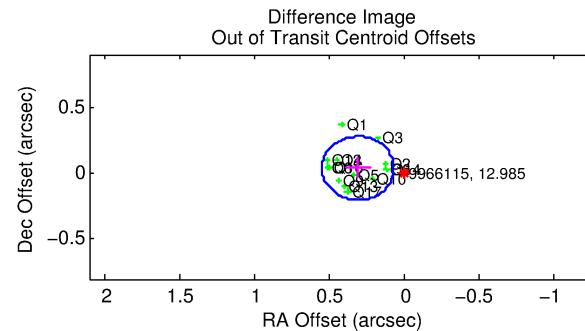
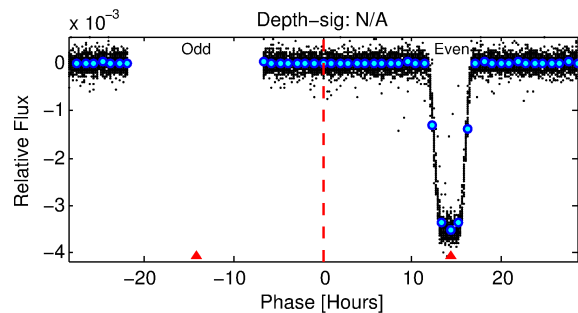
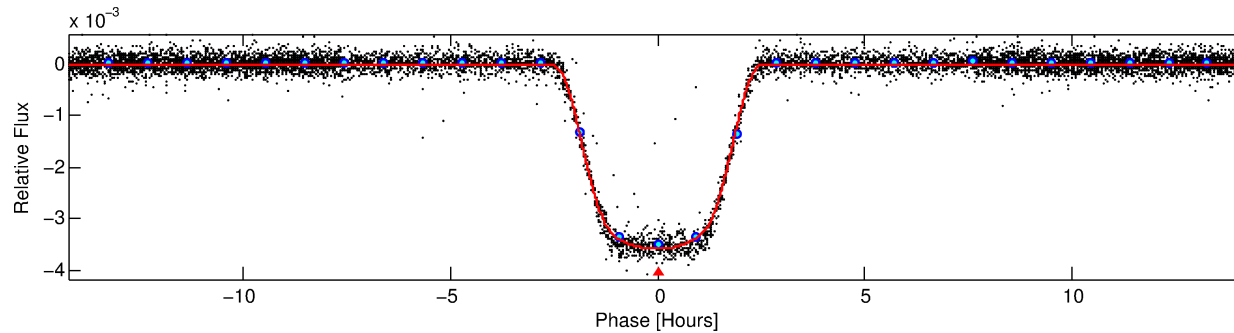
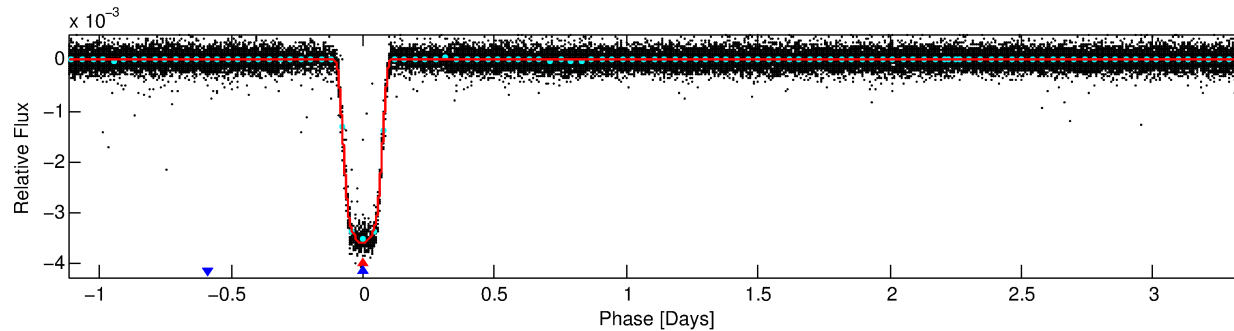
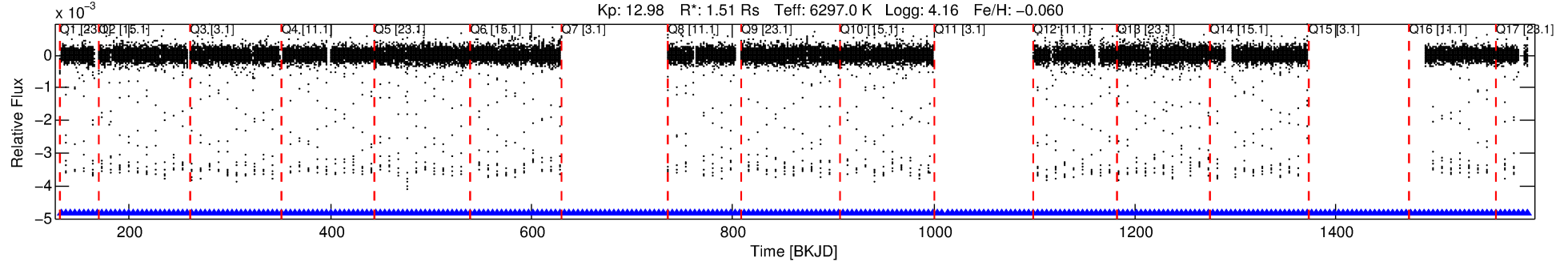
Ephemeris Match Information For 009966115-02

No Significant Match Found

DV One-Page Summary

KIC: 9966115 Candidate: 2 of 2 Period: 4.474 d
KOI: K06075 Corr: No Ephemeris Match

Kp: 12.98 R*: 1.51 Rs Teff: 6297.0 K Logg: 4.16 Fe/H: -0.060



DV Fit Results:

Period = 4.47371 [0.00000] d
Epoch = 132.0464 [0.0002] BKJD
Rp/R* = 0.0638 [0.0001]
a/R* = 4.38 [0.03]
b = 0.88 [0.00]
Seff = 1011.79 [378.10]
Teq = 1438 [134] K
Rp = 10.48 [2.61] Re
a = 0.0562 [0.0126] AU
Ag = 0.24 [0.12] [-6.62σ]
Teffp = 1549 [145] K [0.56σ]

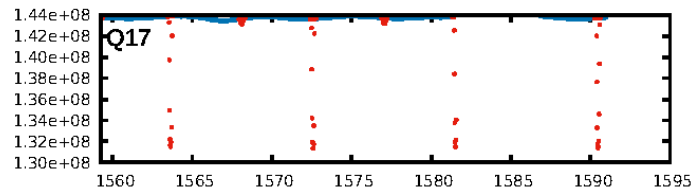
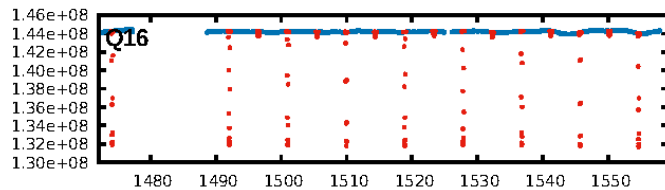
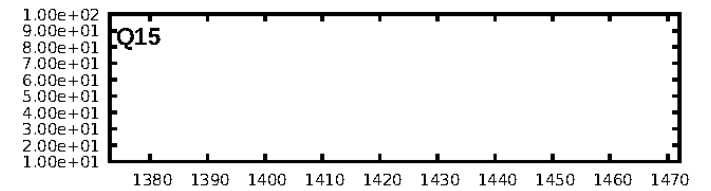
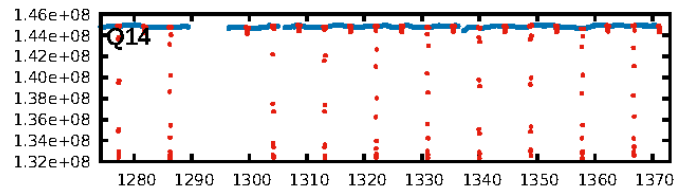
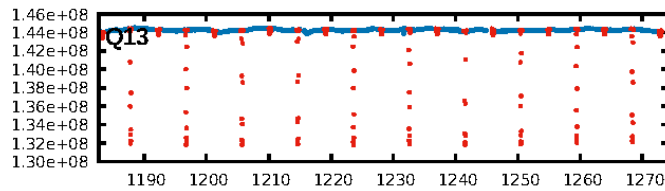
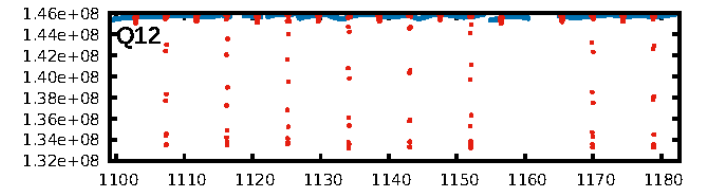
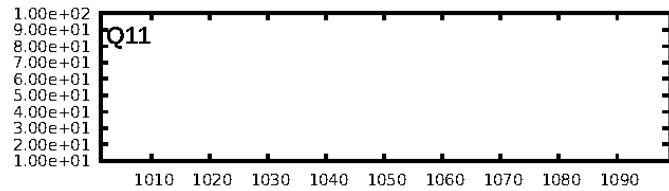
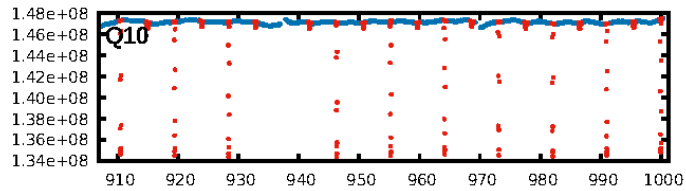
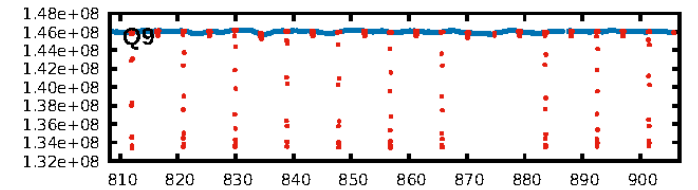
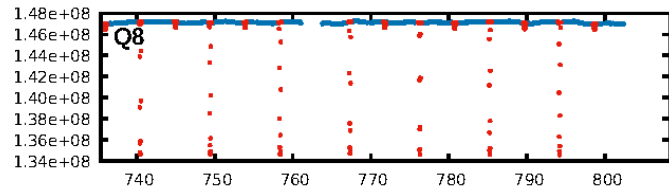
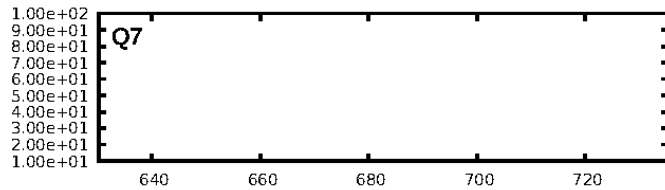
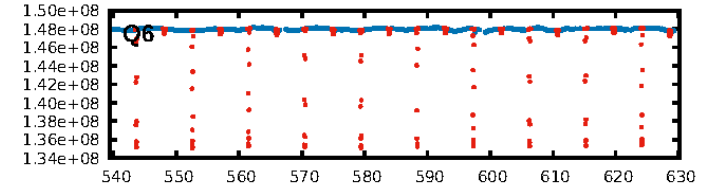
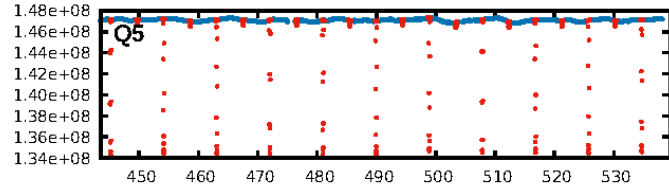
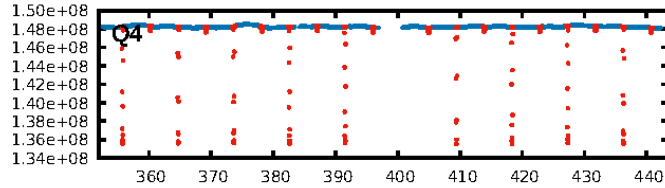
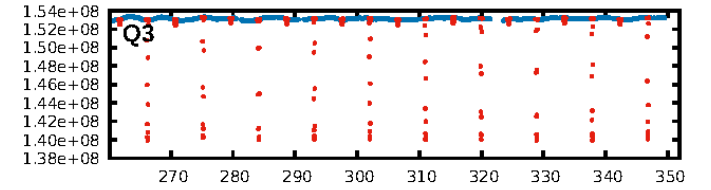
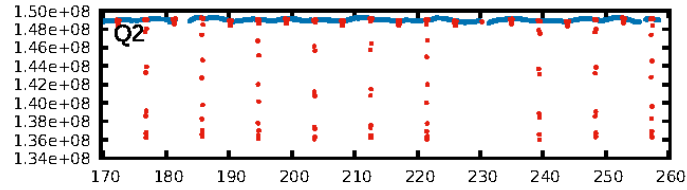
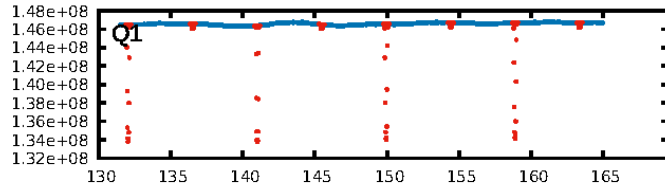
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [15.75σ]
ModelChiSquare2-sig: 3.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [115/115]
GhostDiagnostic-chr: 6.427
Centroid-sig: 0.0%
Centroid-so: 0.340 arcsec [20.66σ]
OotOffset-rm: 0.307 arcsec [3.82σ]
KicOffset-rm: 0.329 arcsec [4.21σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

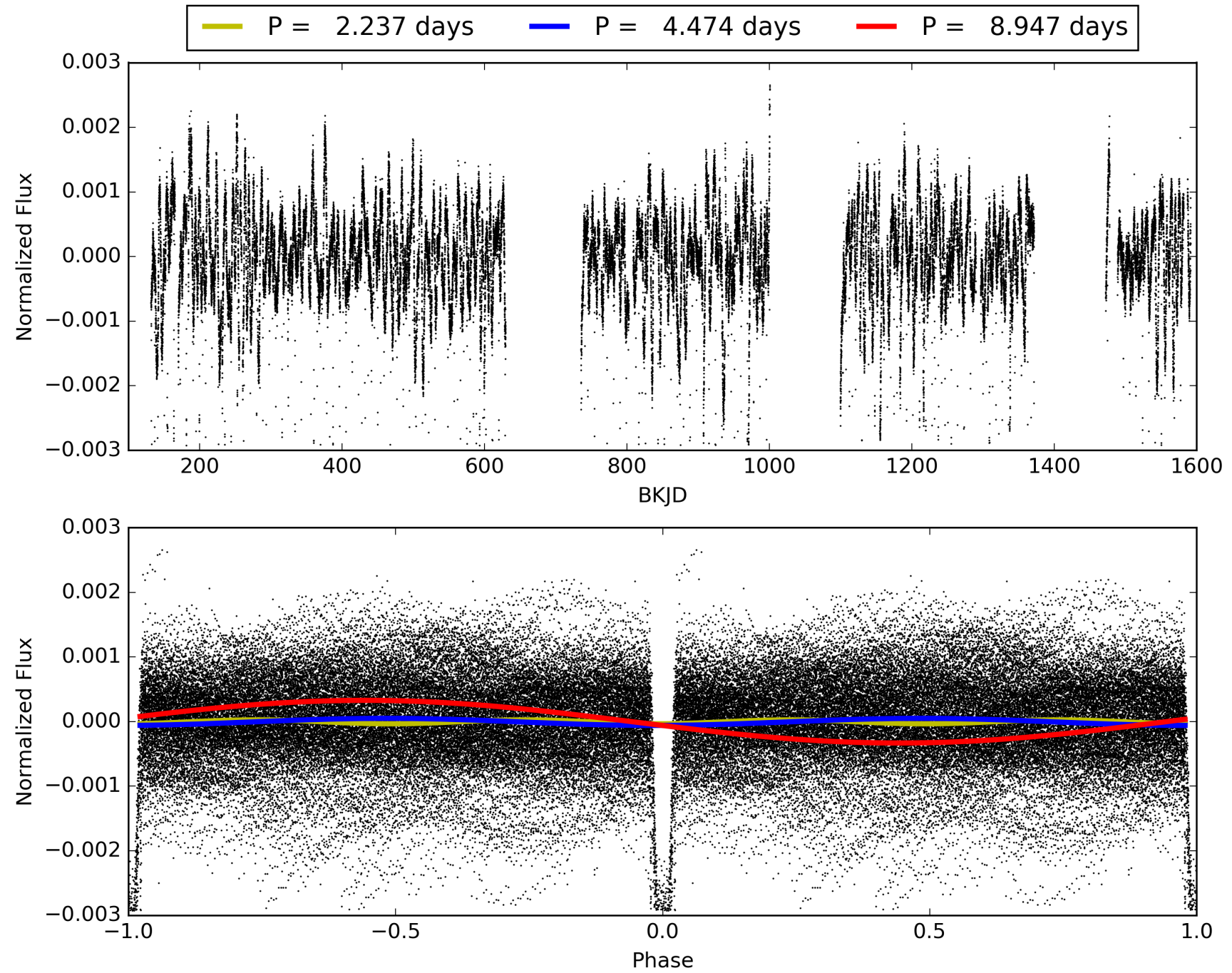
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:33:23 Z

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

TCE 009966115-02, PDC Light Curves

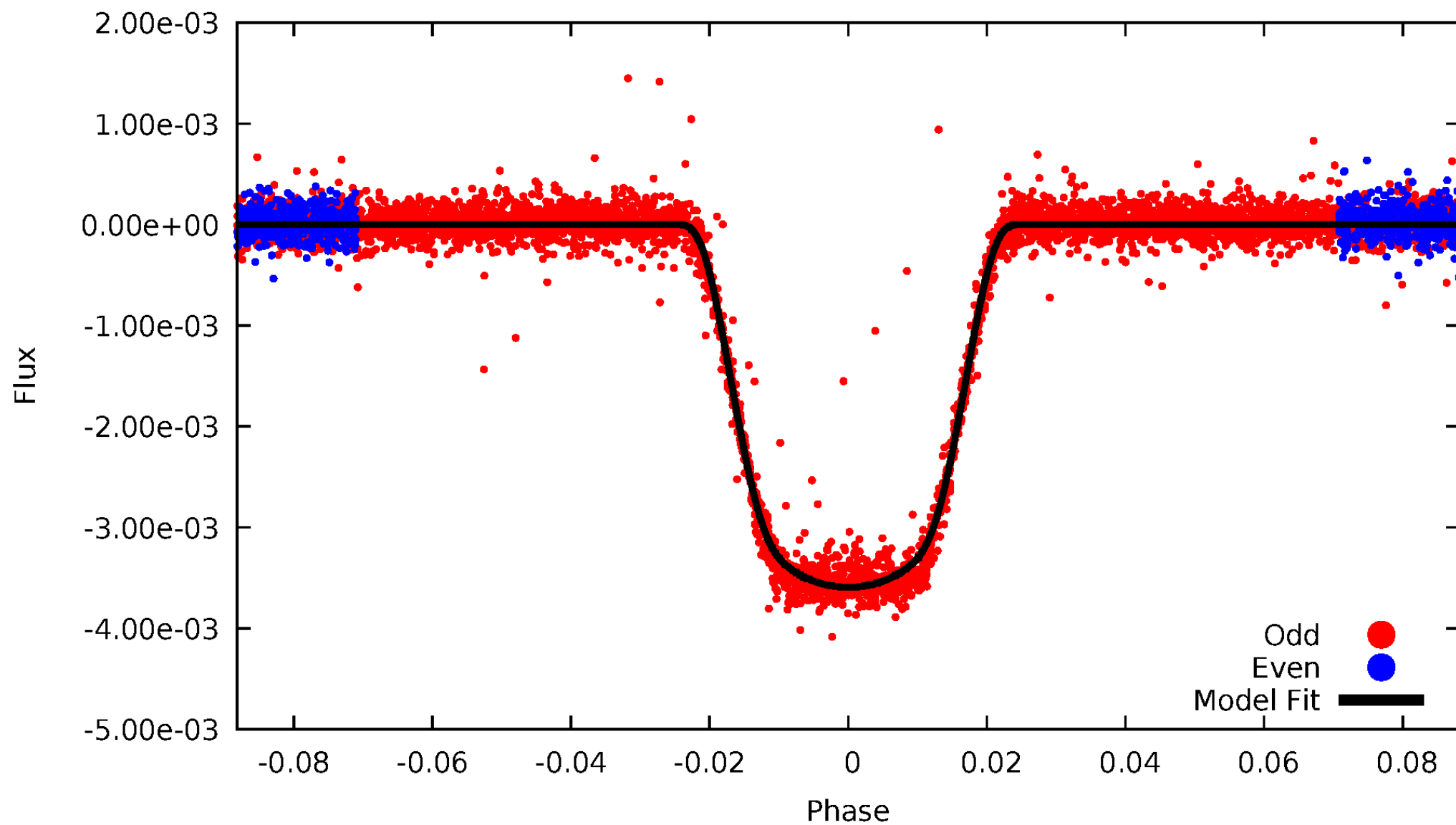


TCE 009966115-02



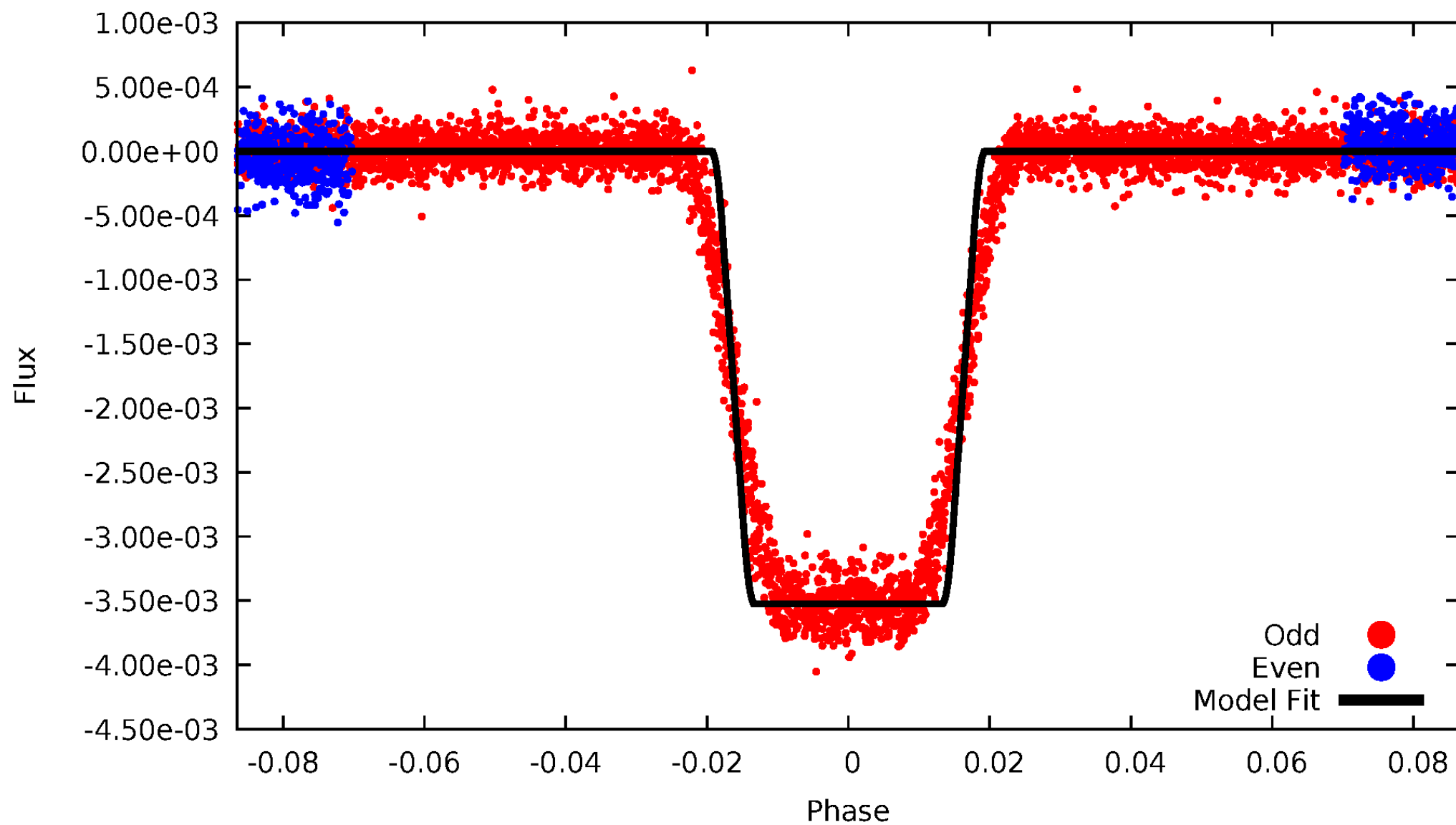
DV Odd/Even

TCE 009966115-02



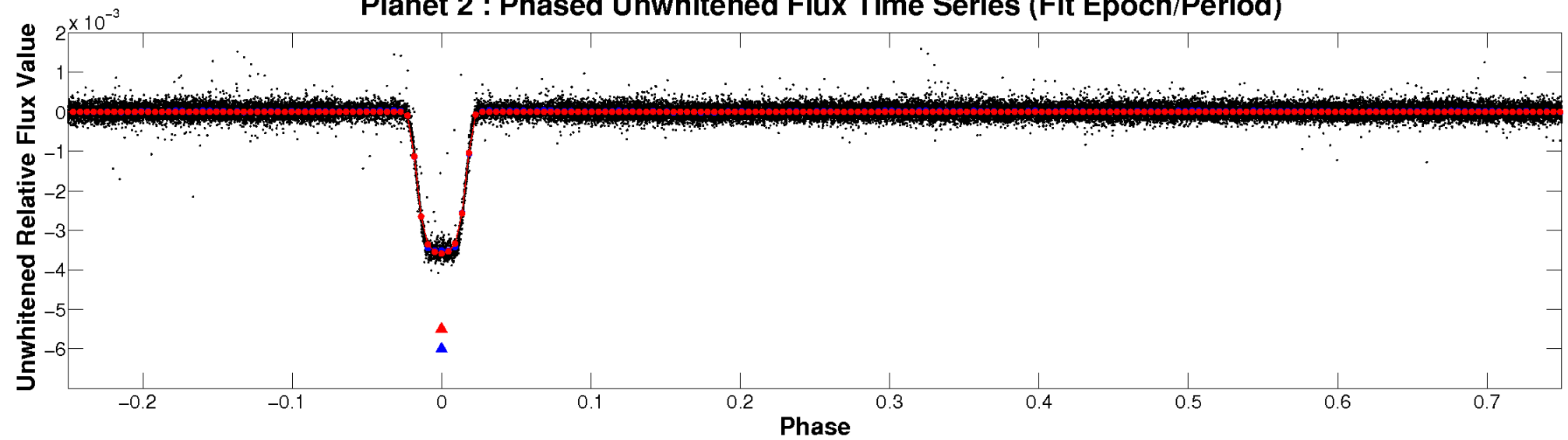
ALT Odd/Even

TCE 009966115-02

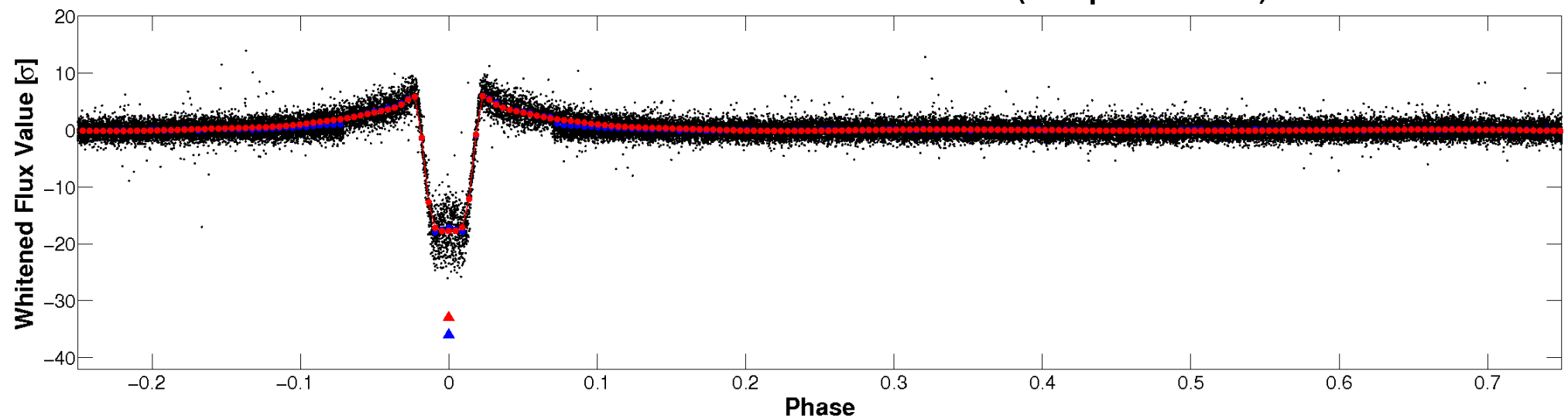


Non-Whitened Vs. Whitened Light Curve

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

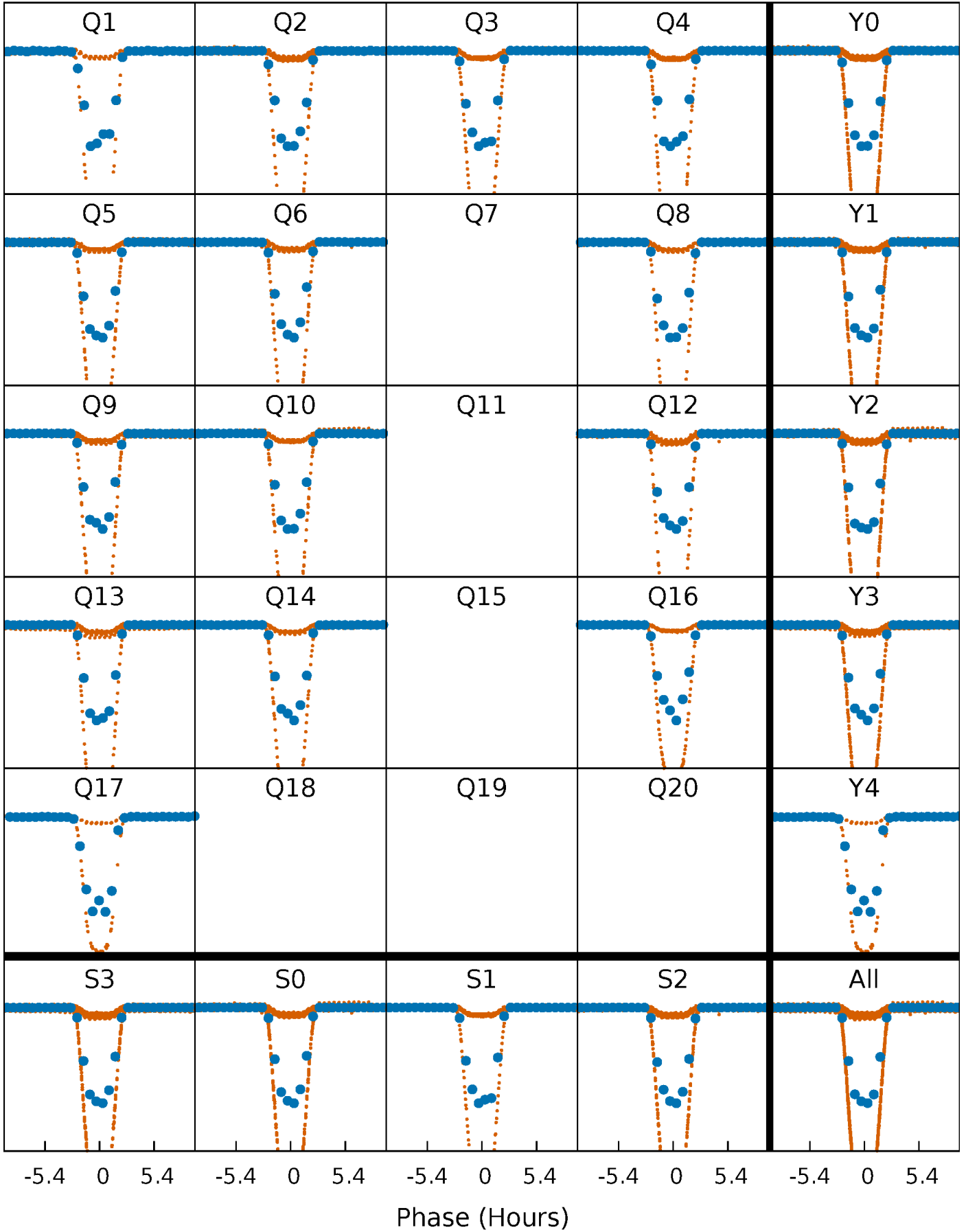


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



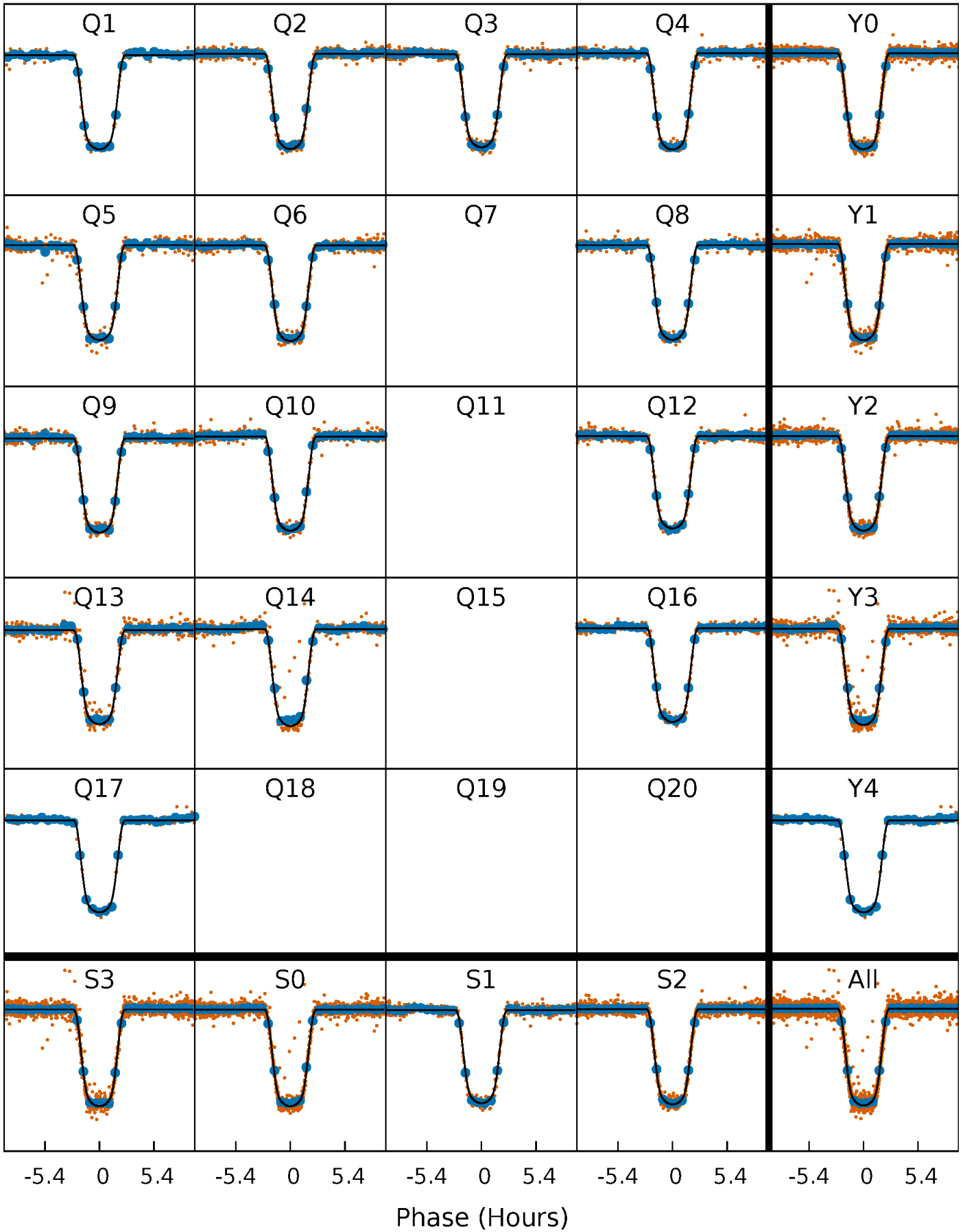
PDC Quarter-Phased Transit Curves

TCE 009966115-02 P= 4.473711 Days $T_0=132.046407$ (BKJD)



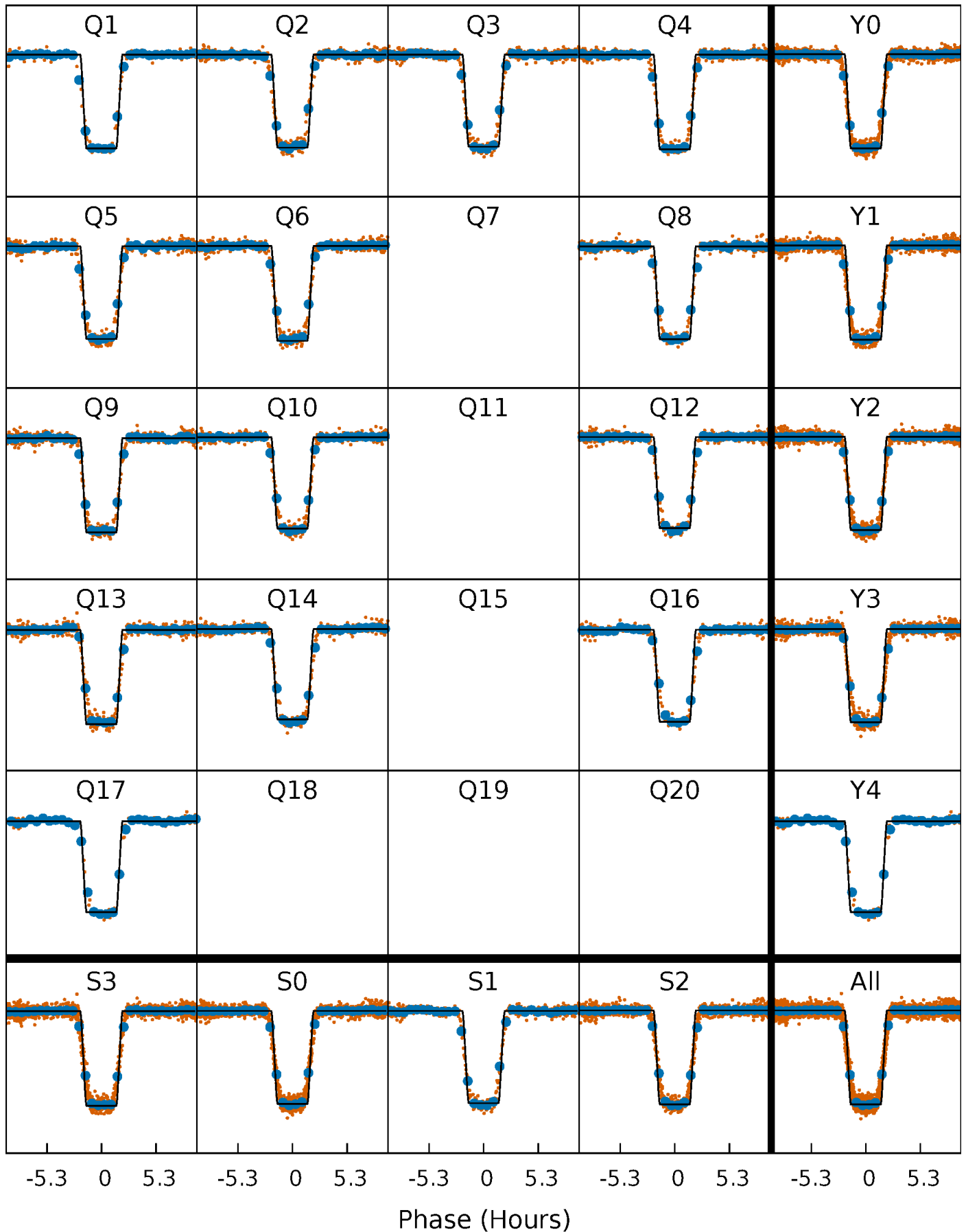
DV Quarter-Phased Transit Curves

TCE 009966115-02 P= 4.473711 Days $T_0=132.046407$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

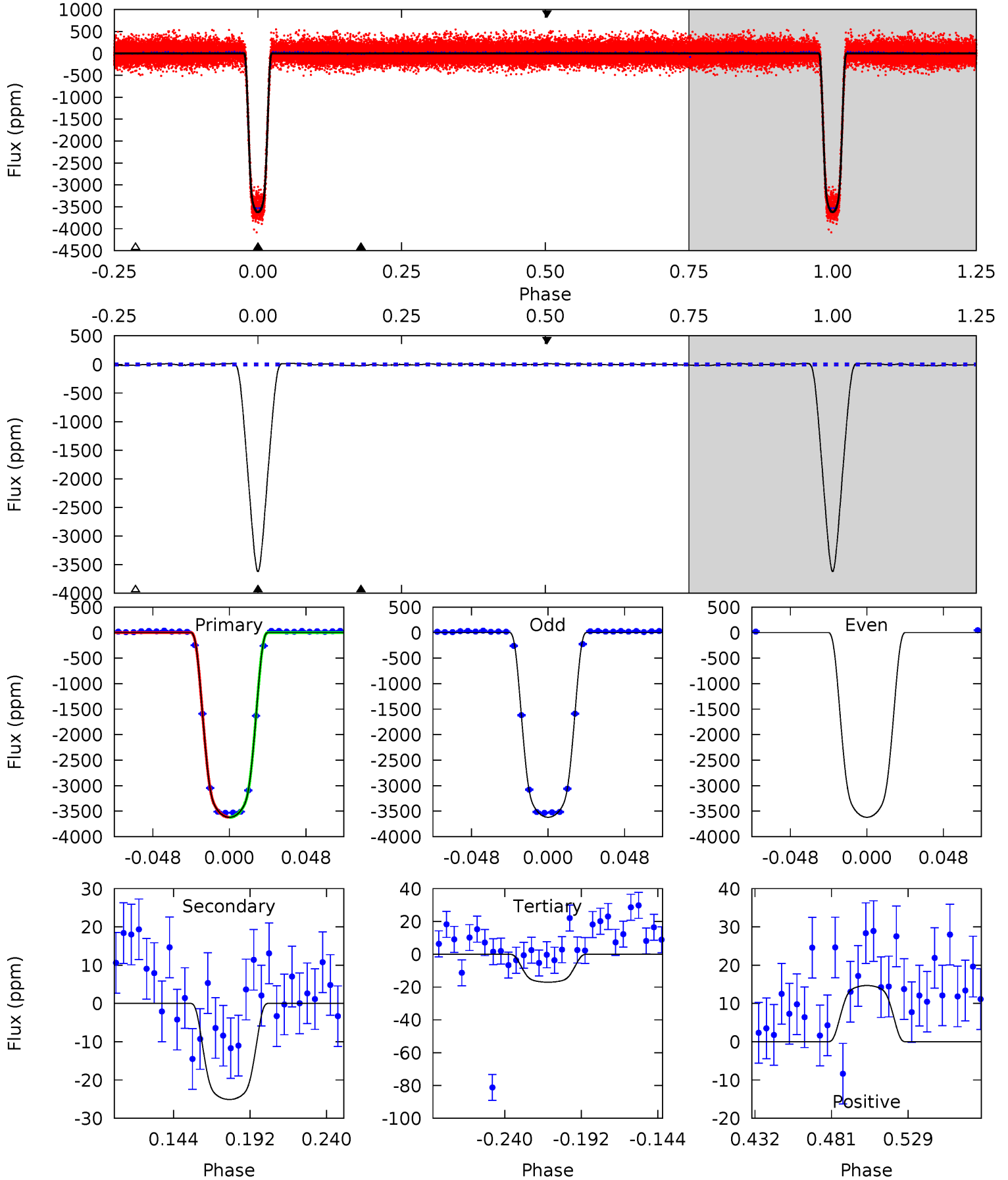
TCE 009966115-02 P= 4.473686 Days $T_0=132.050218$ (BKJD)



DV Model-Shift Uniqueness Test

009966115-02, P = 4.473711 Days, E = 127.572696 Days

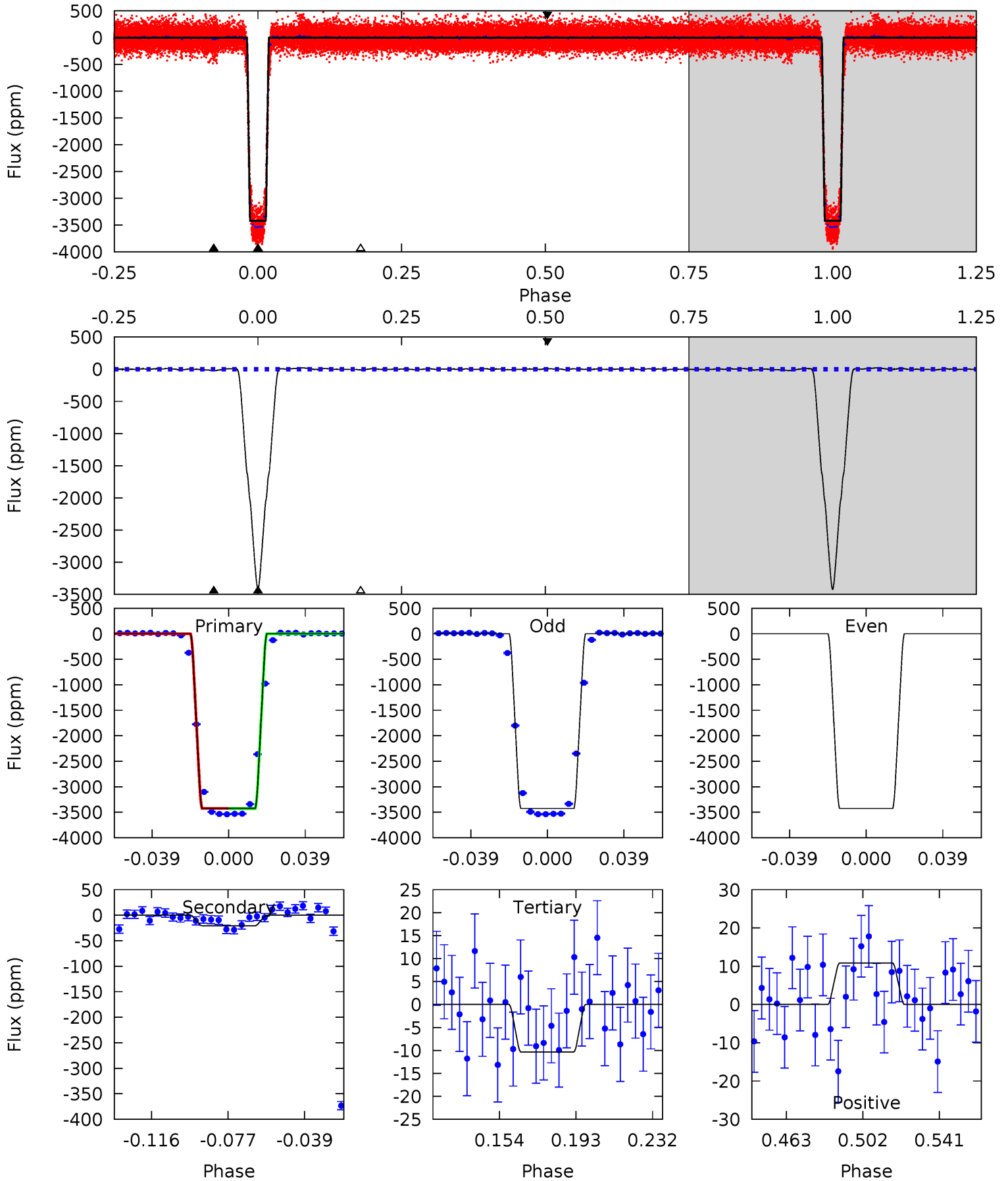
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
962.7	6.67	4.53	3.91	4.72	1.98	1.83	958.2	958.8	2.14	2.77	0	0.99	0.00	0.42



Alt Model-Shift Uniqueness Test

009966115-02, P = 4.473686 Days, E = 127.576532 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
878.4	5.31	2.65	2.79	4.76	2.07	1.26	875.7	875.6	2.65	2.52	0	1.00	0.01	0.54



Stellar Parameters For KIC 009966115

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6297^{+177}_{-221}	$4.155^{+0.198}_{-0.132}$	$-0.060^{+0.250}_{-0.300}$	$1.506^{+0.341}_{-0.375}$	$1.180^{+0.164}_{-0.164}$	$0.487^{+0.467}_{-0.208}$
	+3%/-4%	+5%/-3%	+417%/-500%	+23%/-25%	+14%/-14%	+96%/-43%
Source	PHO1	FLK73	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 009966115-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 4	$10.42^{+1.29}_{-1.35}$	1988^{+124}_{-135}	2197^{+171}_{-385}	$0.404^{+0.135}_{-0.091}$
Alt.	-21 ± 4	$9.68^{+1.22}_{-1.28}$	1992^{+140}_{-142}	2149^{+207}_{-4039}	$0.384^{+0.148}_{-0.105}$

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

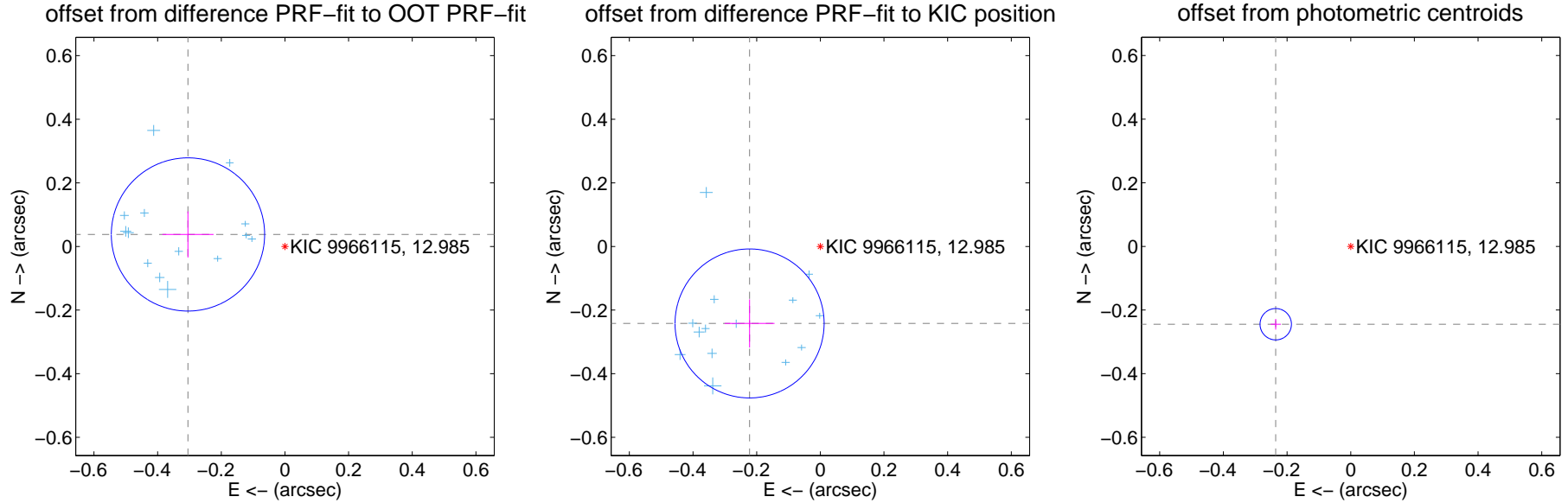
DV Centroid Data

Supplemental centroid analysis for 009966115-02. Kepler magnitude: 12.98. Transit SNR 496.43

There are 14 quarters with good PRF difference image offsets

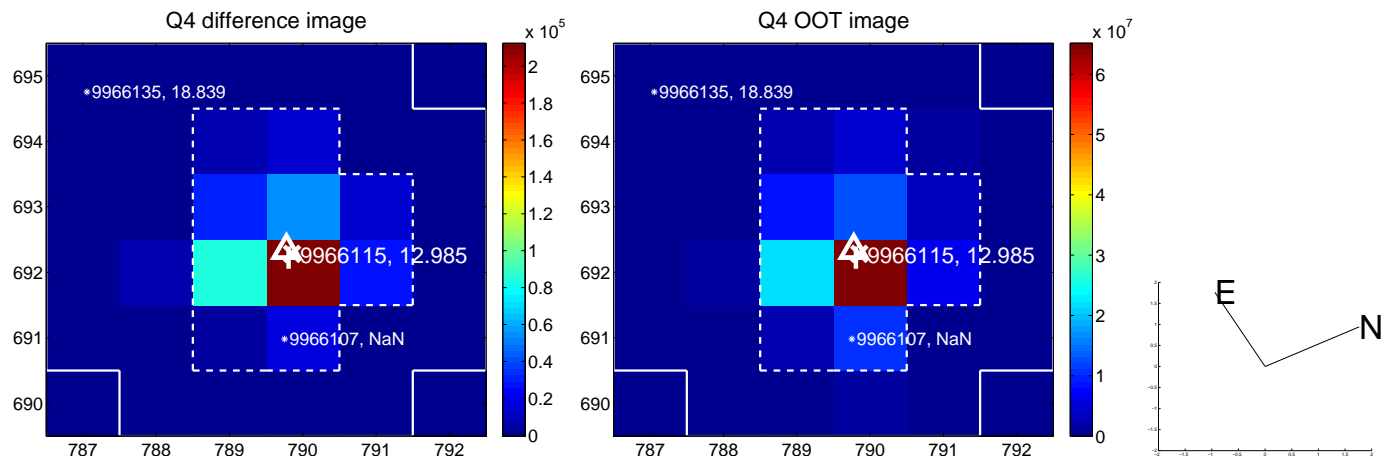
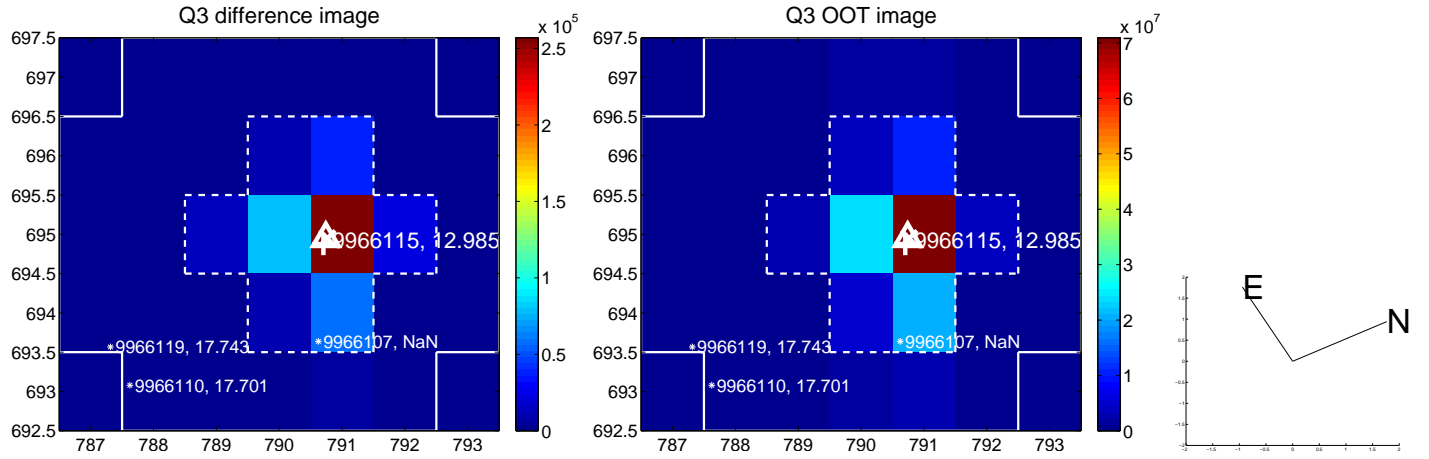
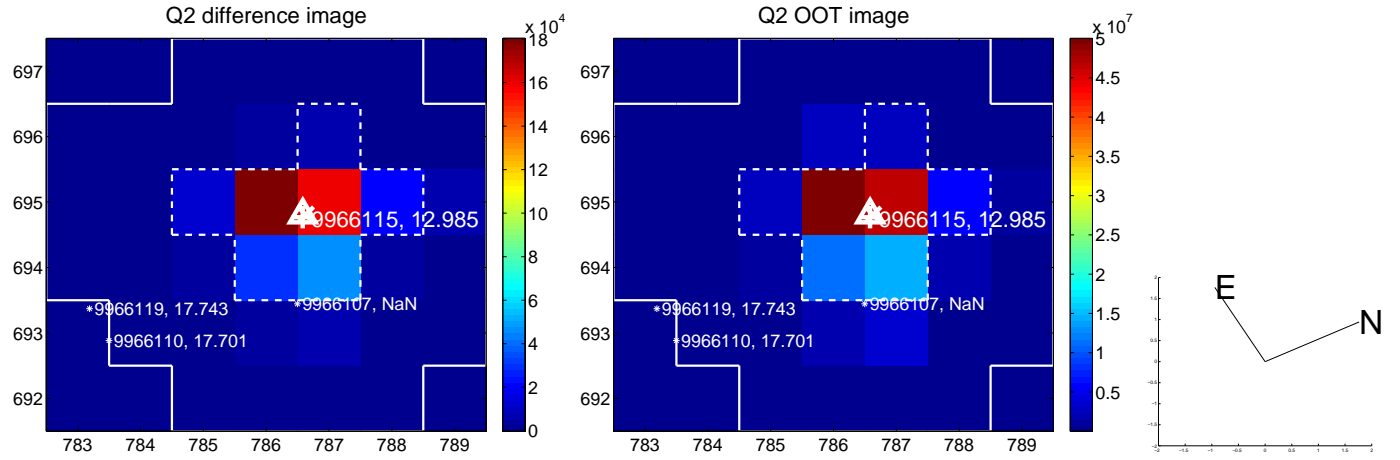
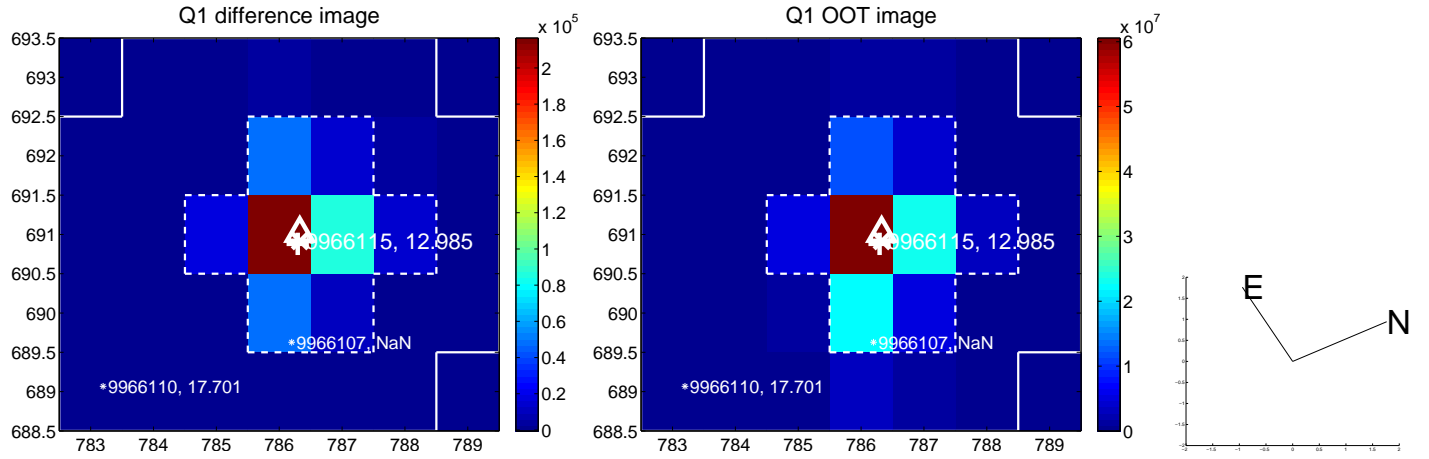
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.307 ± 0.080	3.82	0.305 ± 0.080	0.038 ± 0.072
PRF-fit source offset from KIC position	0.329 ± 0.078	4.21	0.222 ± 0.078	-0.242 ± 0.076
photometric centroid source offset	0.34 ± 0.02	20.66	0.24 ± 0.02	-0.24 ± 0.02

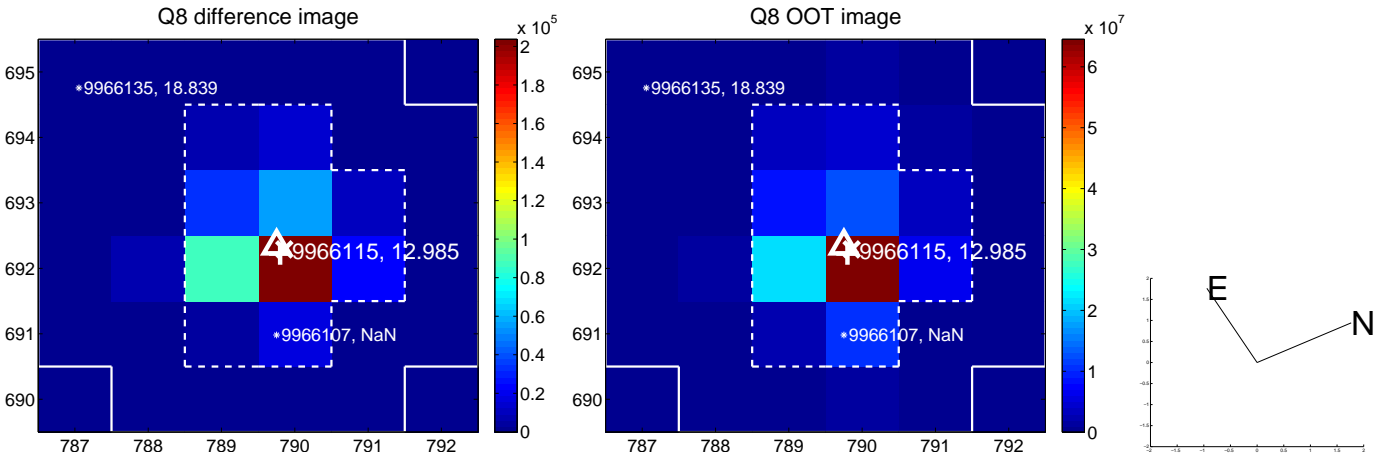
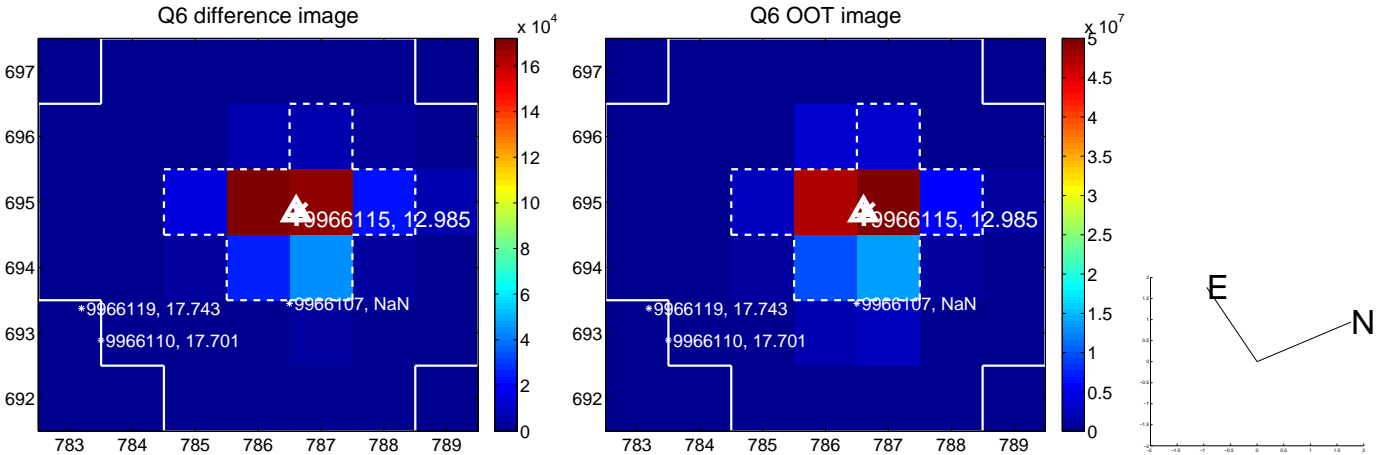
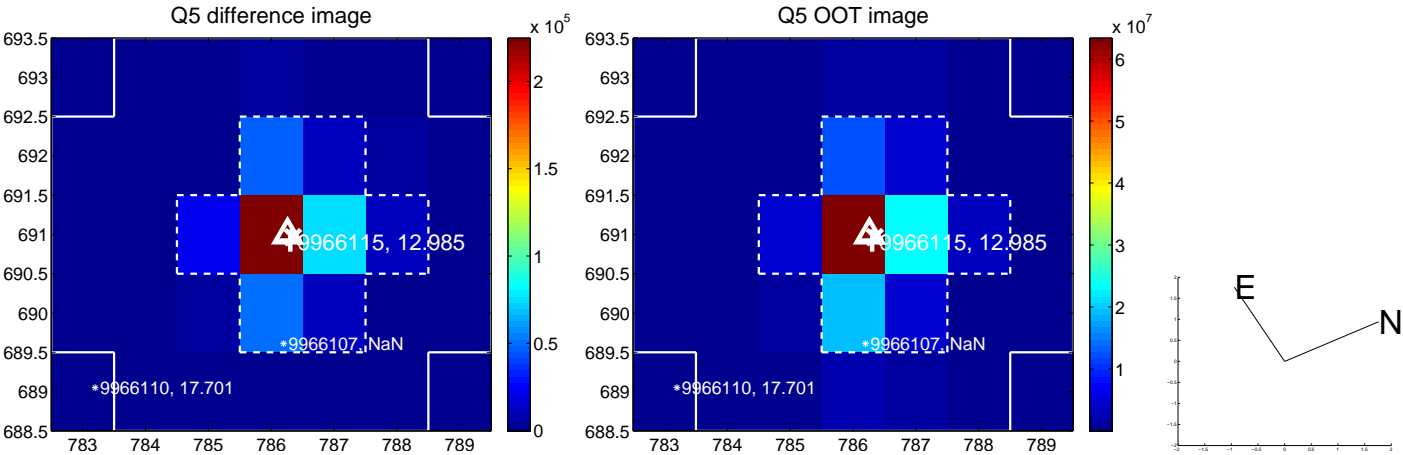


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

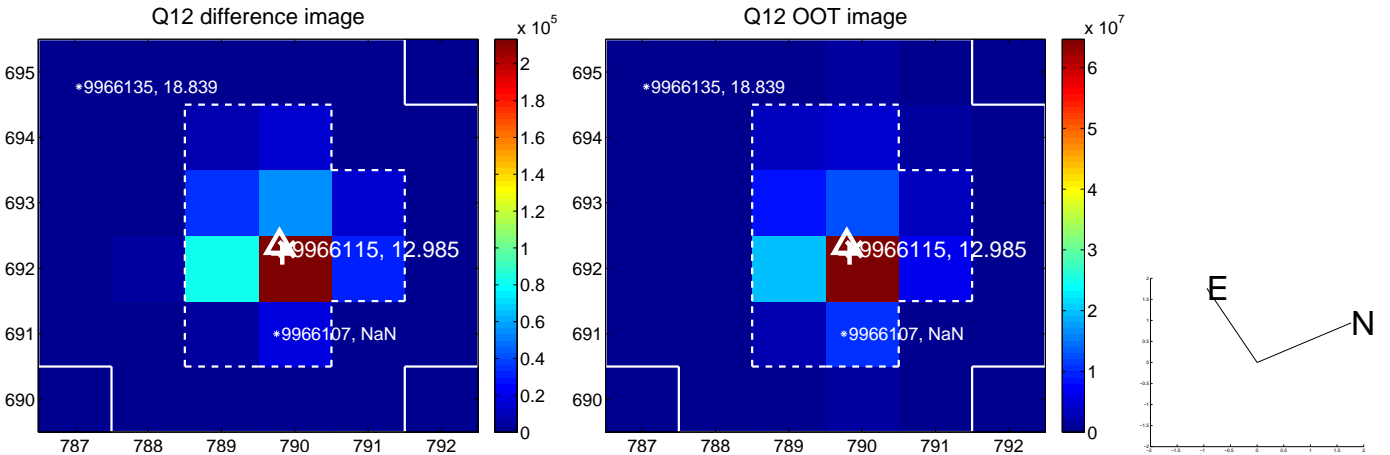
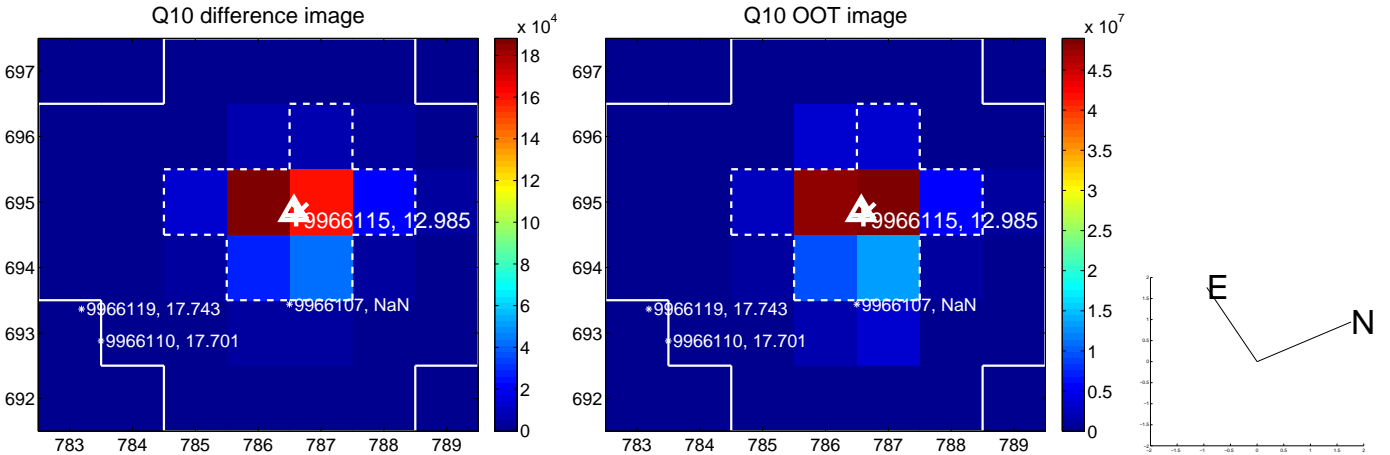
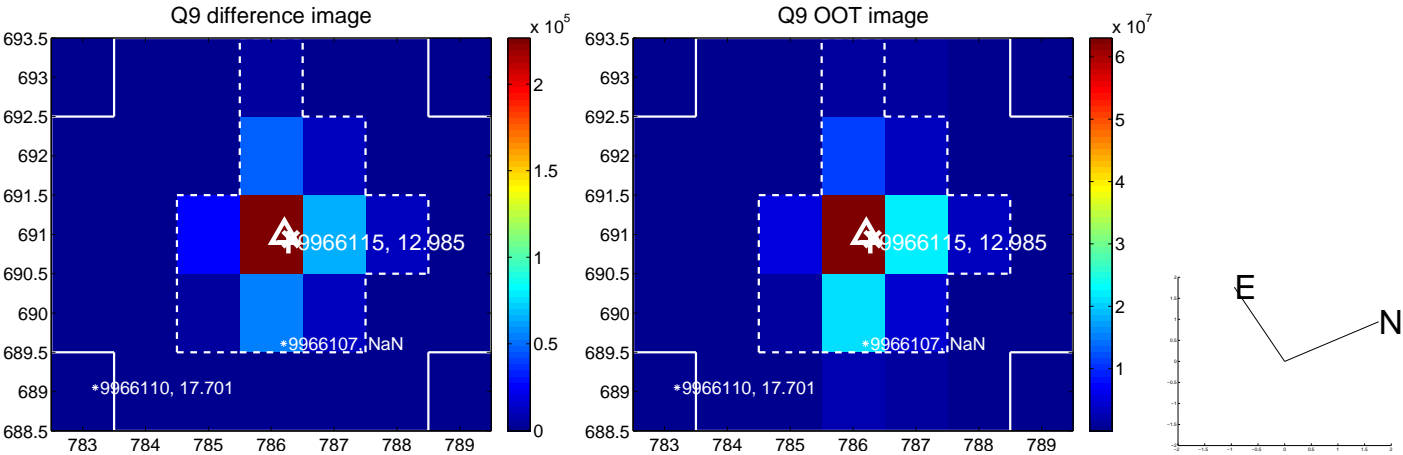
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



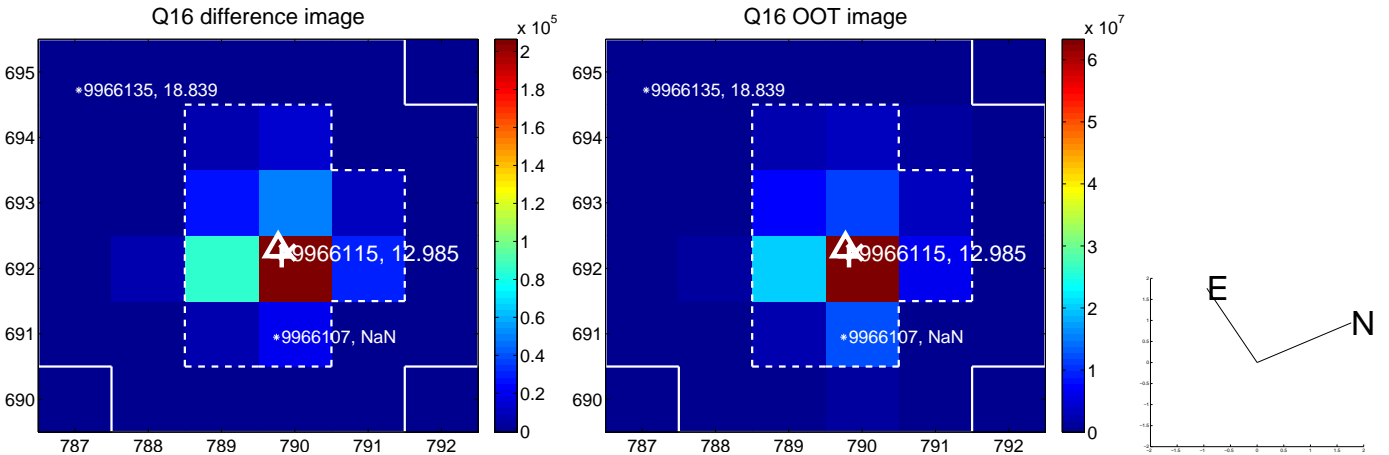
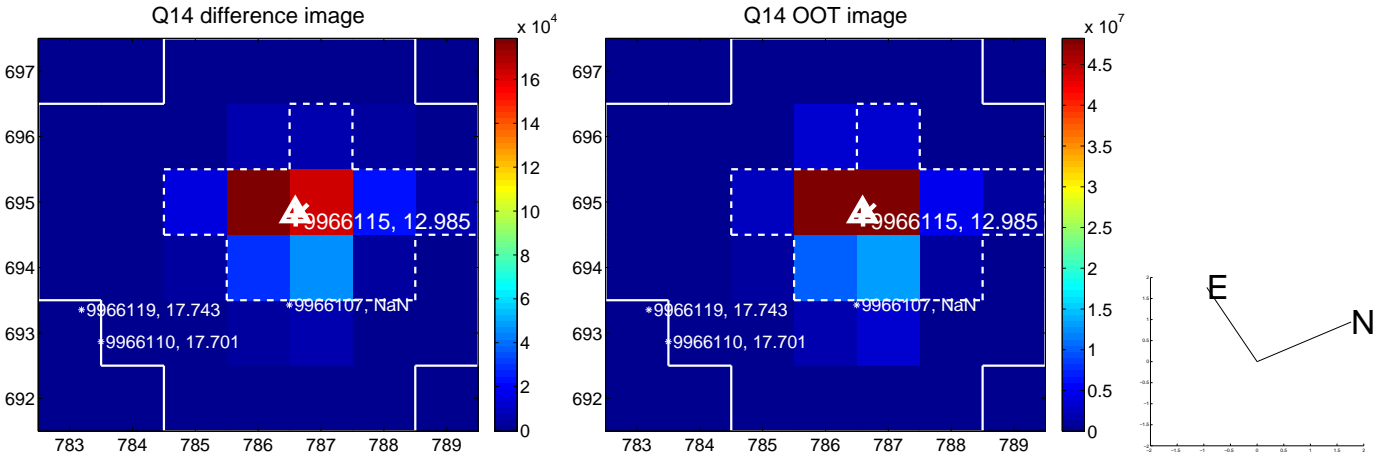
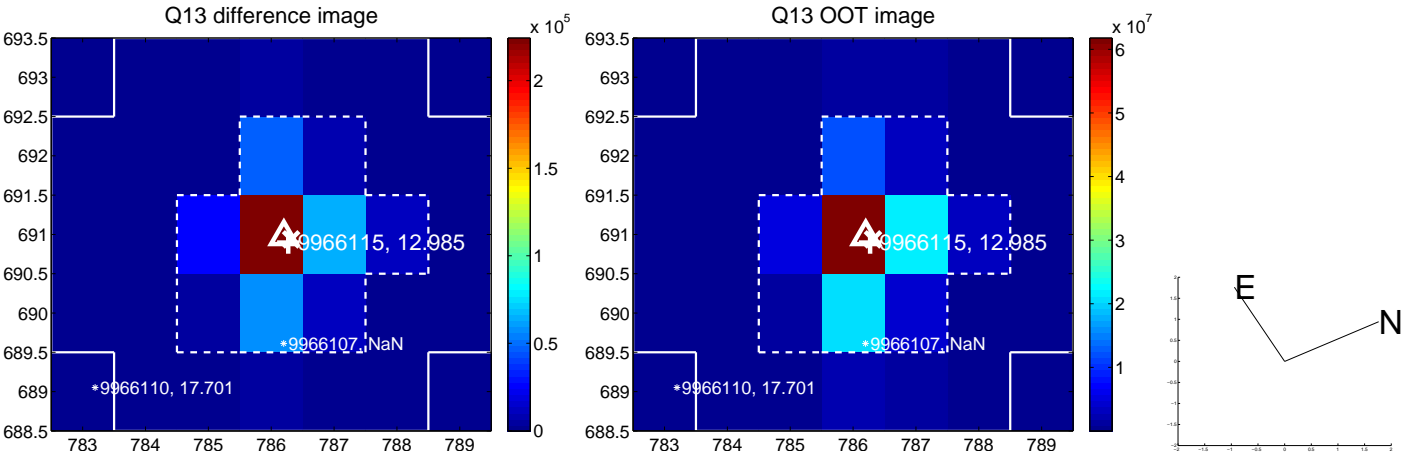
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



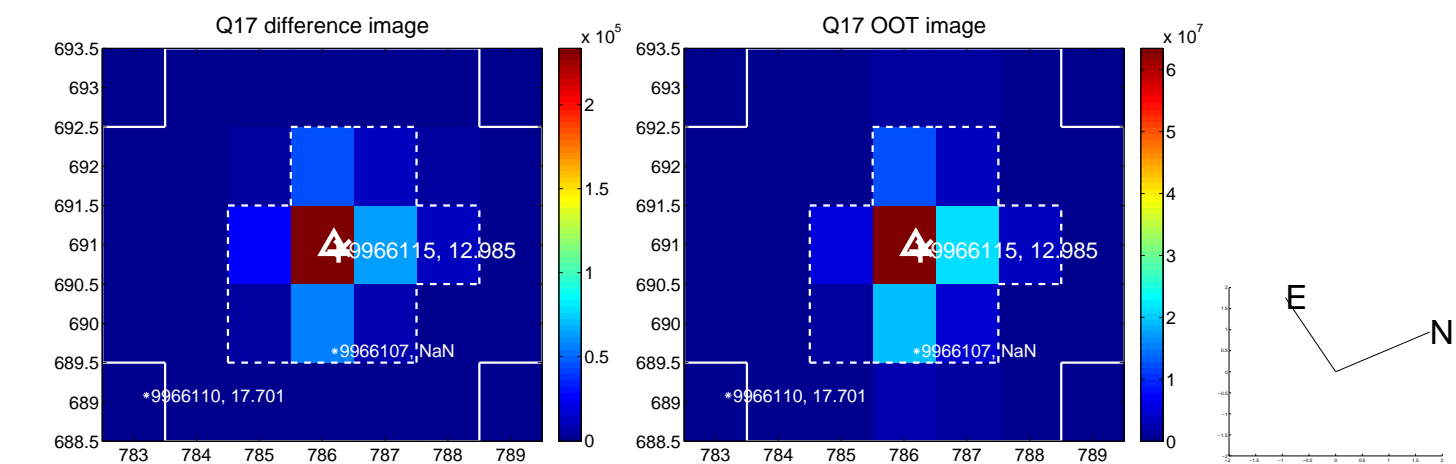
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



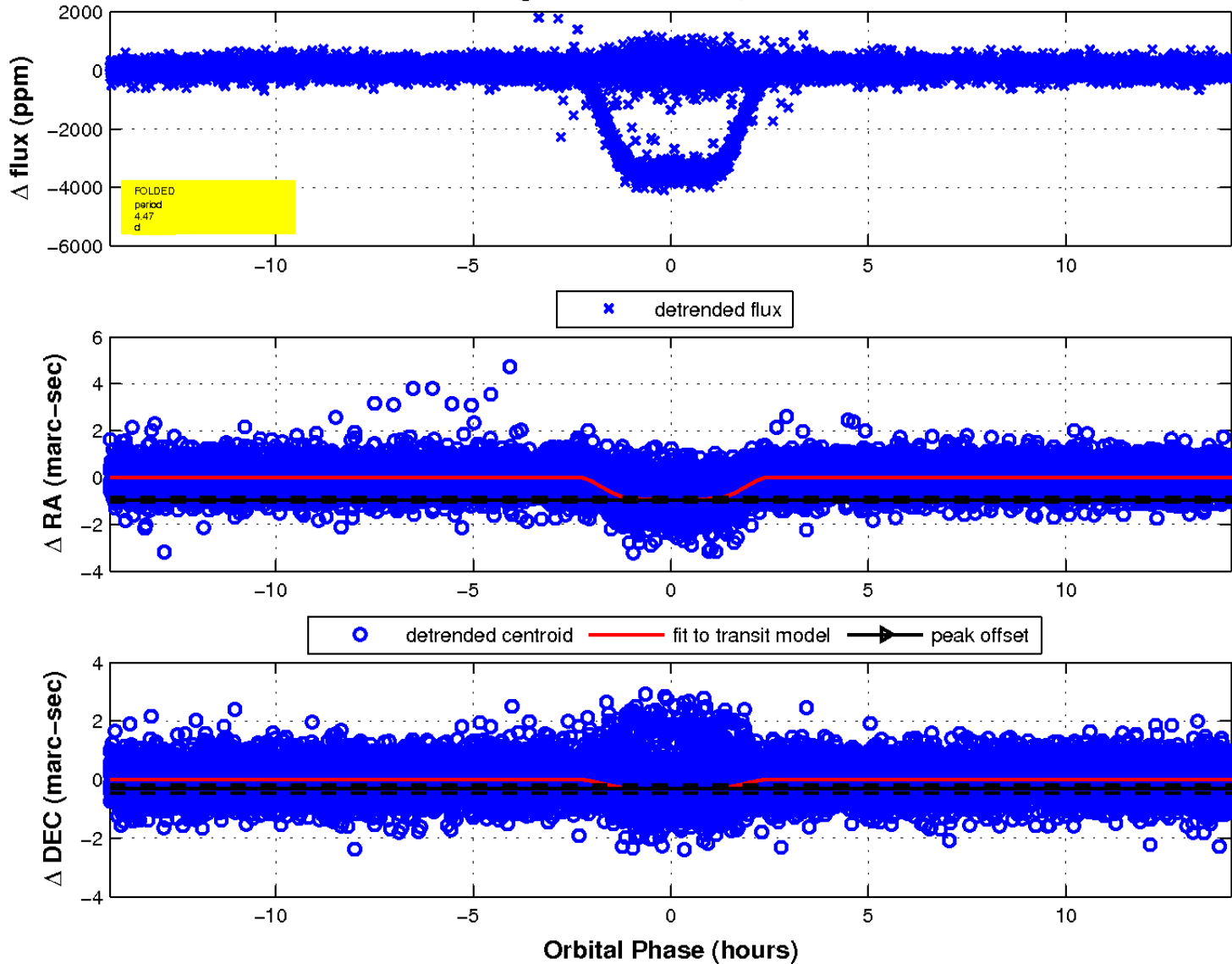
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

