

KIC 009821078

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})
009821078-01	OBS	7234.01	8.429459	132.277252	452500.6	5.000	15275.1	-1.0	0.68	4268	23.78	27.19
009821078-02	OBS	No	8.429436	136.511067	148375.0	3.760	8810.8	4654.5	0.68	4268	38.57	27.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009821078-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS
009821078-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD

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.

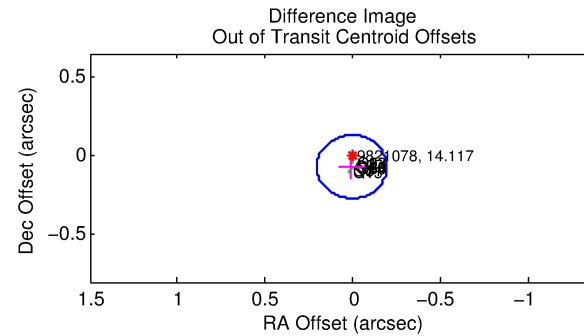
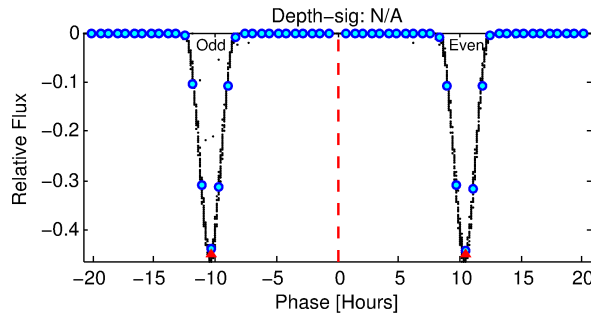
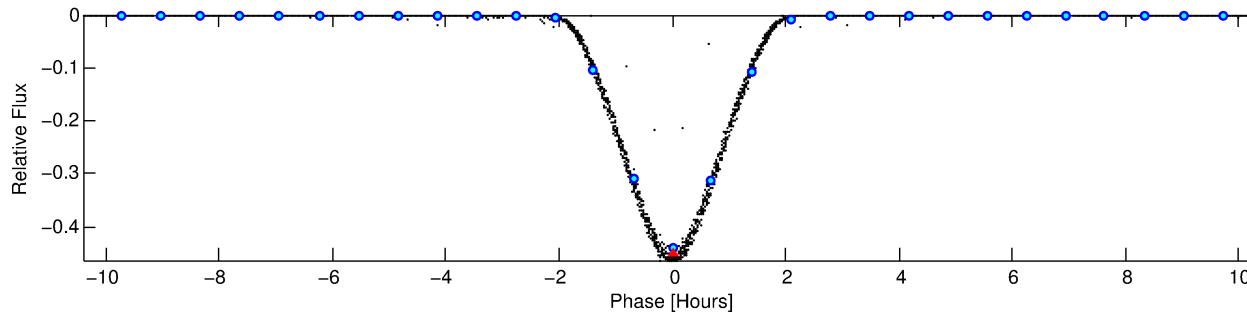
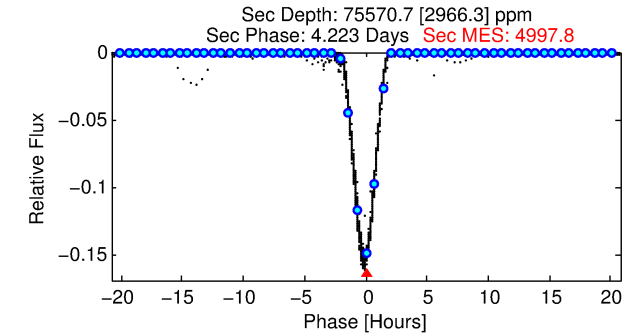
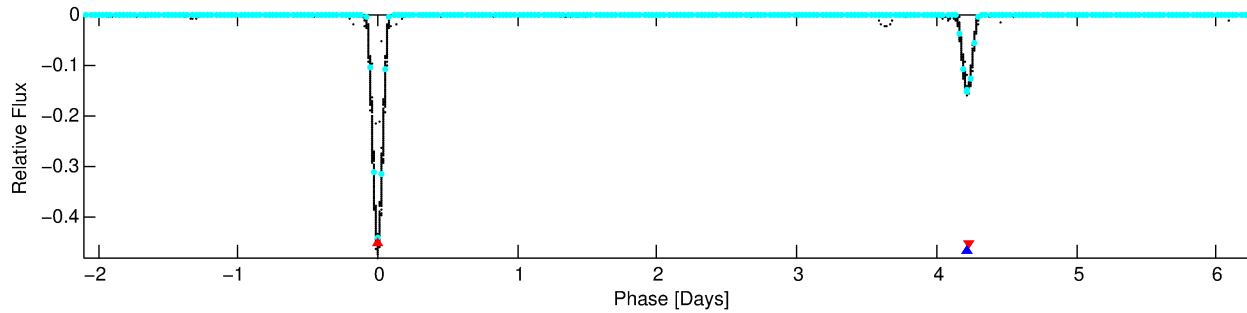
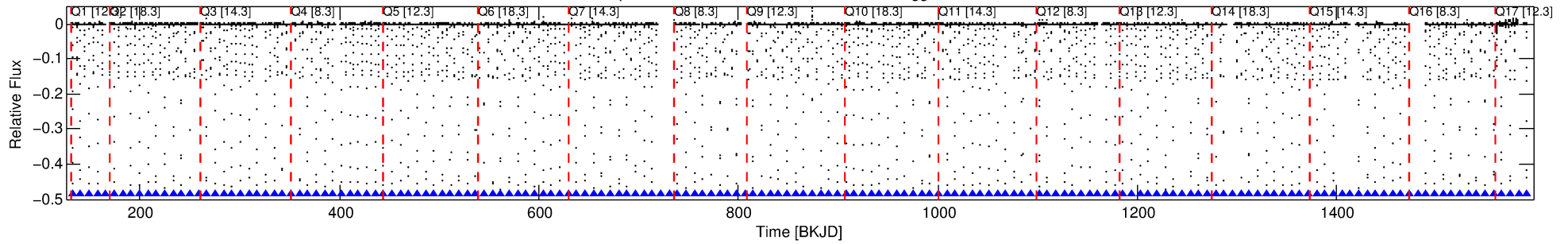
Ephemeris Match Information For 009821078-01

No Significant Match Found

DV One-Page Summary

KIC: 9821078 Candidate: 1 of 2 Period: 8.429 d
KOI: K07234.01 Corr: 0.888

Kp: 14.12 R*: 0.68 Rs Teff: 4268.0 K Logg: 4.60 Fe/H: 0.200



TPS TCE Results:

Period = 8.42946 d
Epoch = 132.2773 BKJD

DV fit results are unavailable

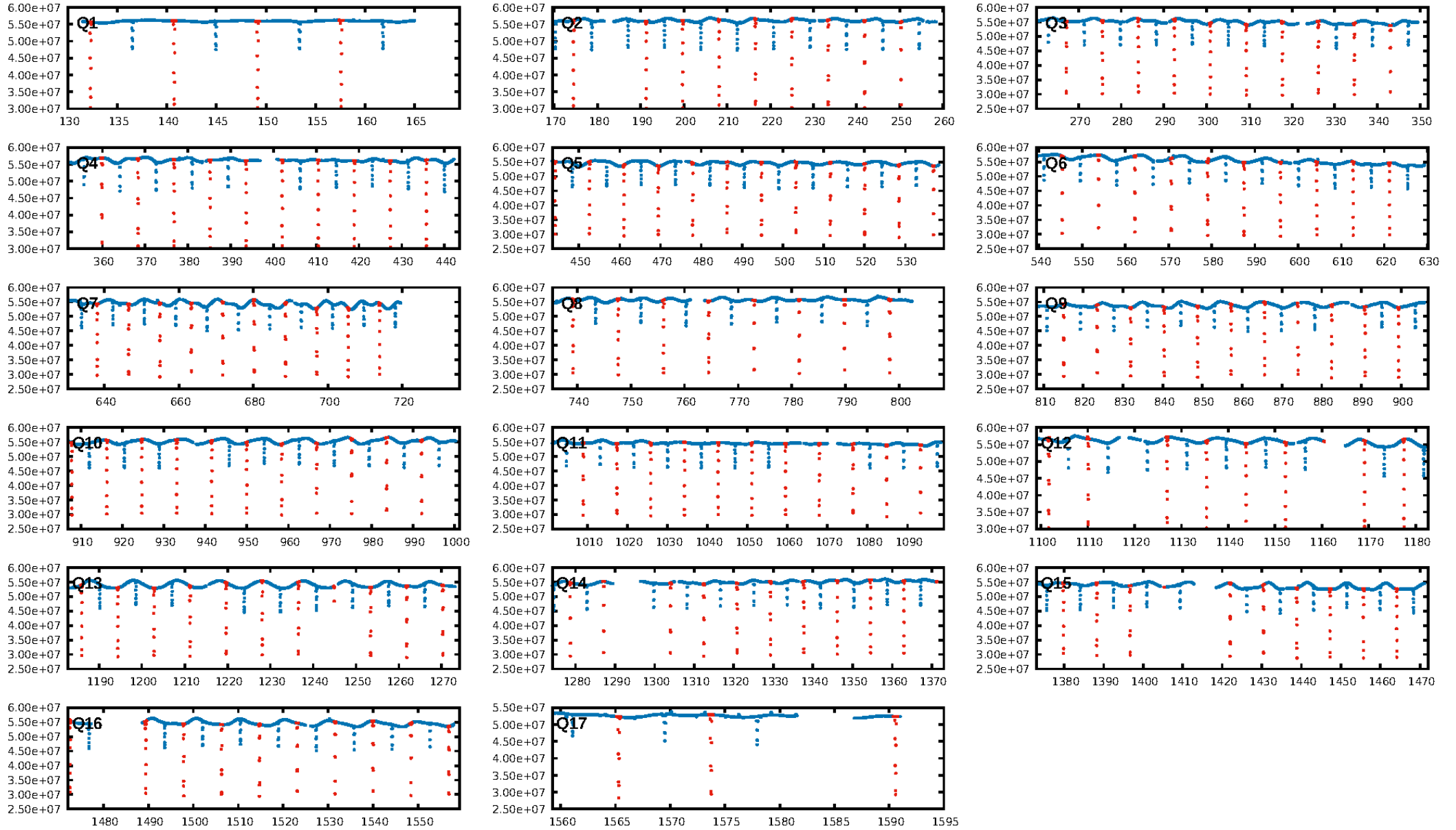
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [149/149]
GhostDiagnostic-chr: 1.122
Centroid-sig: N/A
Centroid-so: 0.361 arcsec [996.40 σ]
OotOffset-rm: 0.069 arcsec [1.03 σ]
KicOffset-rm: 0.392 arcsec [5.68 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]

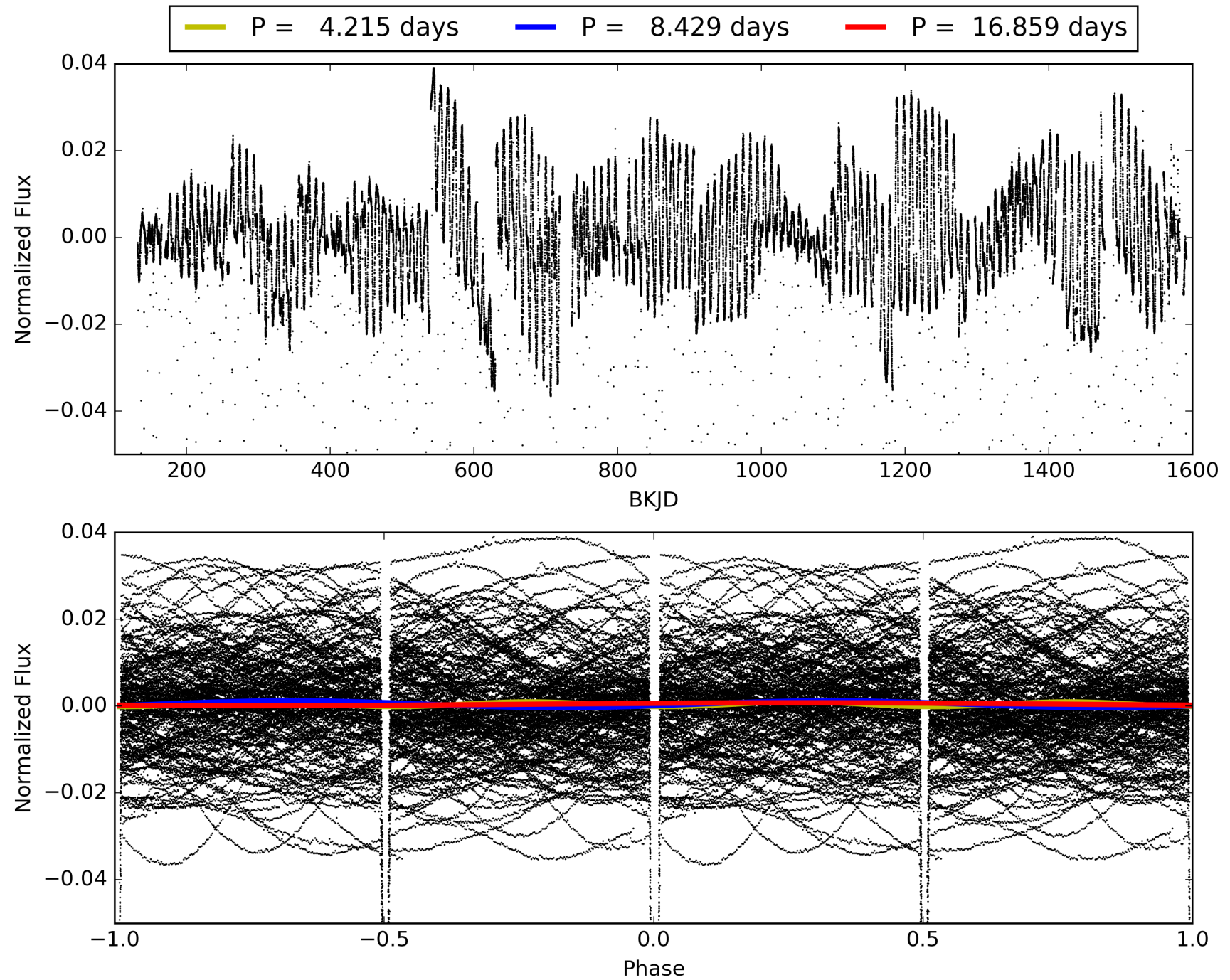
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:12:54 Z

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

TCE 009821078-01, PDC Light Curves

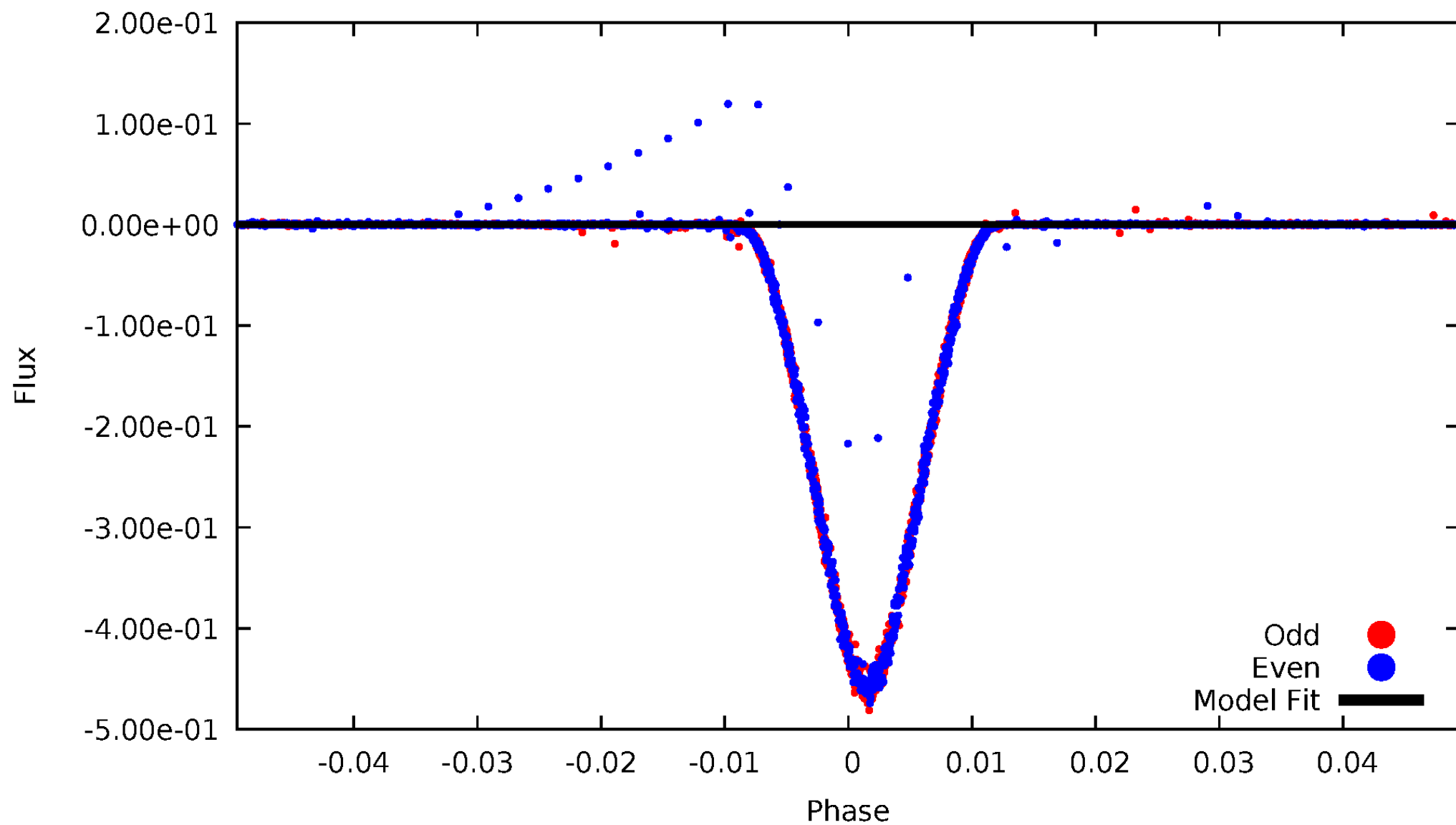


TCE 009821078-01



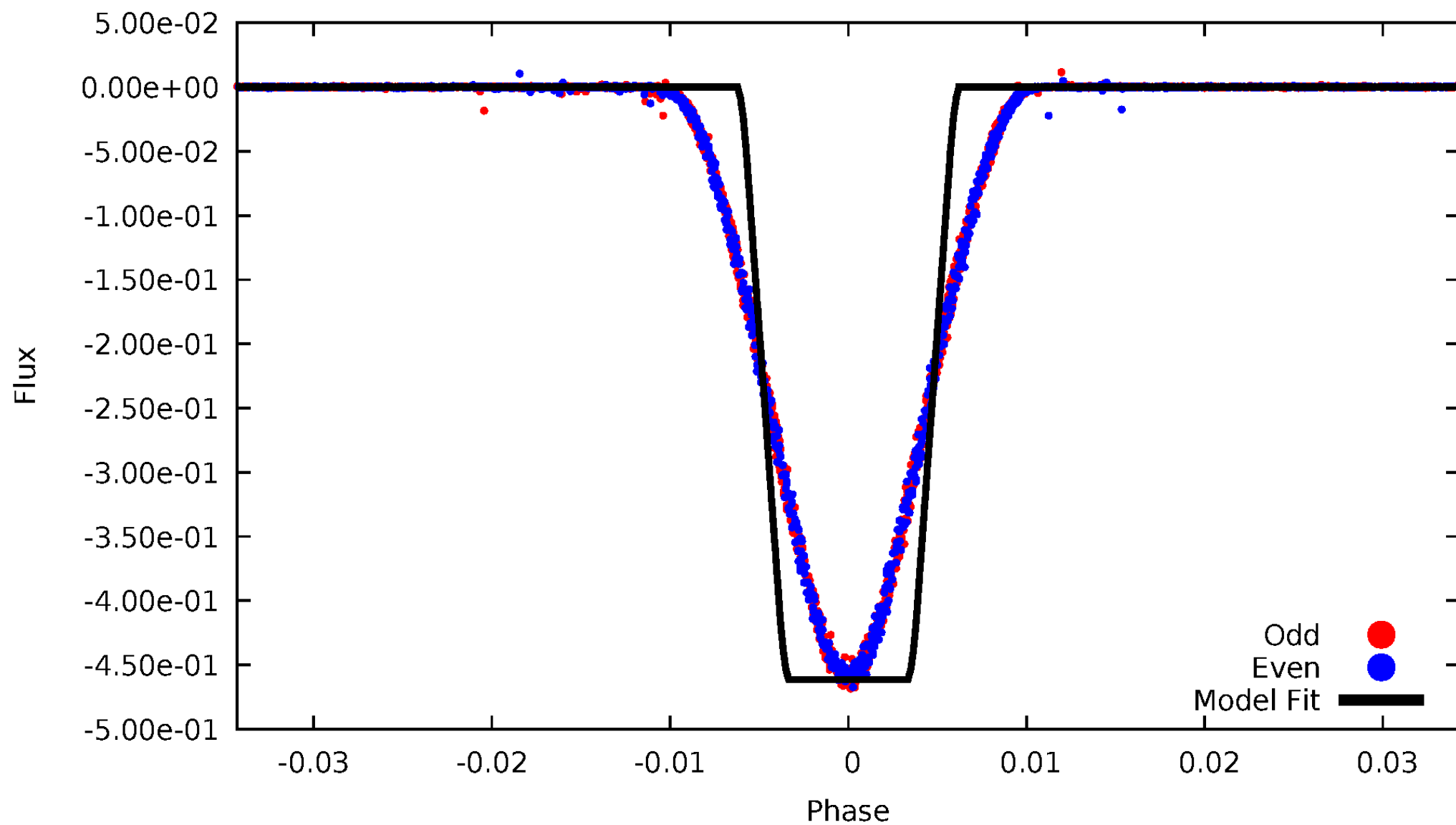
DV Odd/Even

TCE 009821078-01



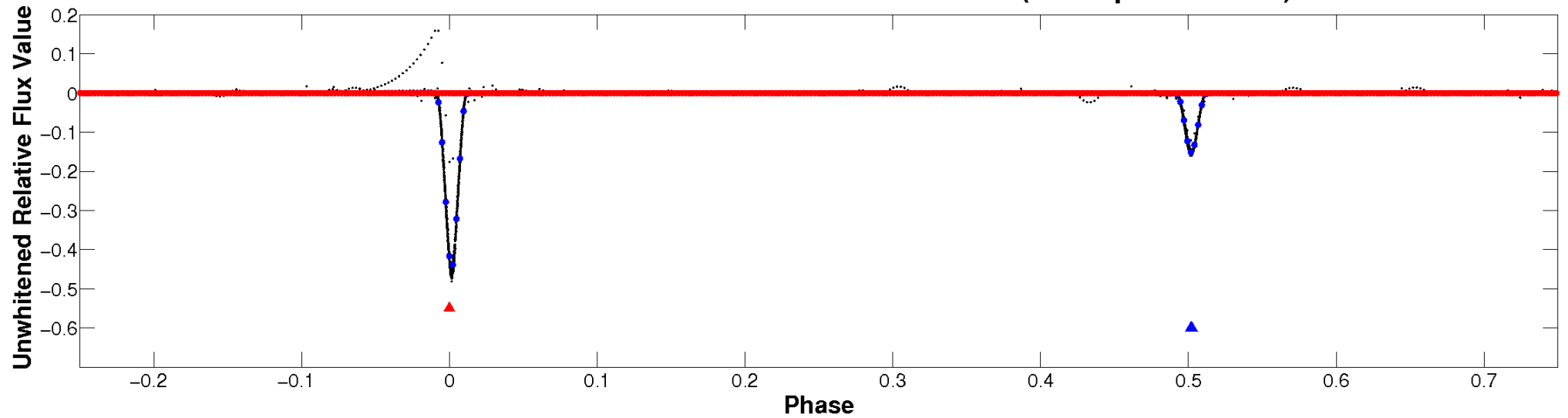
ALT Odd/Even

TCE 009821078-01



Non-Whitened Vs. Whitened Light Curve

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

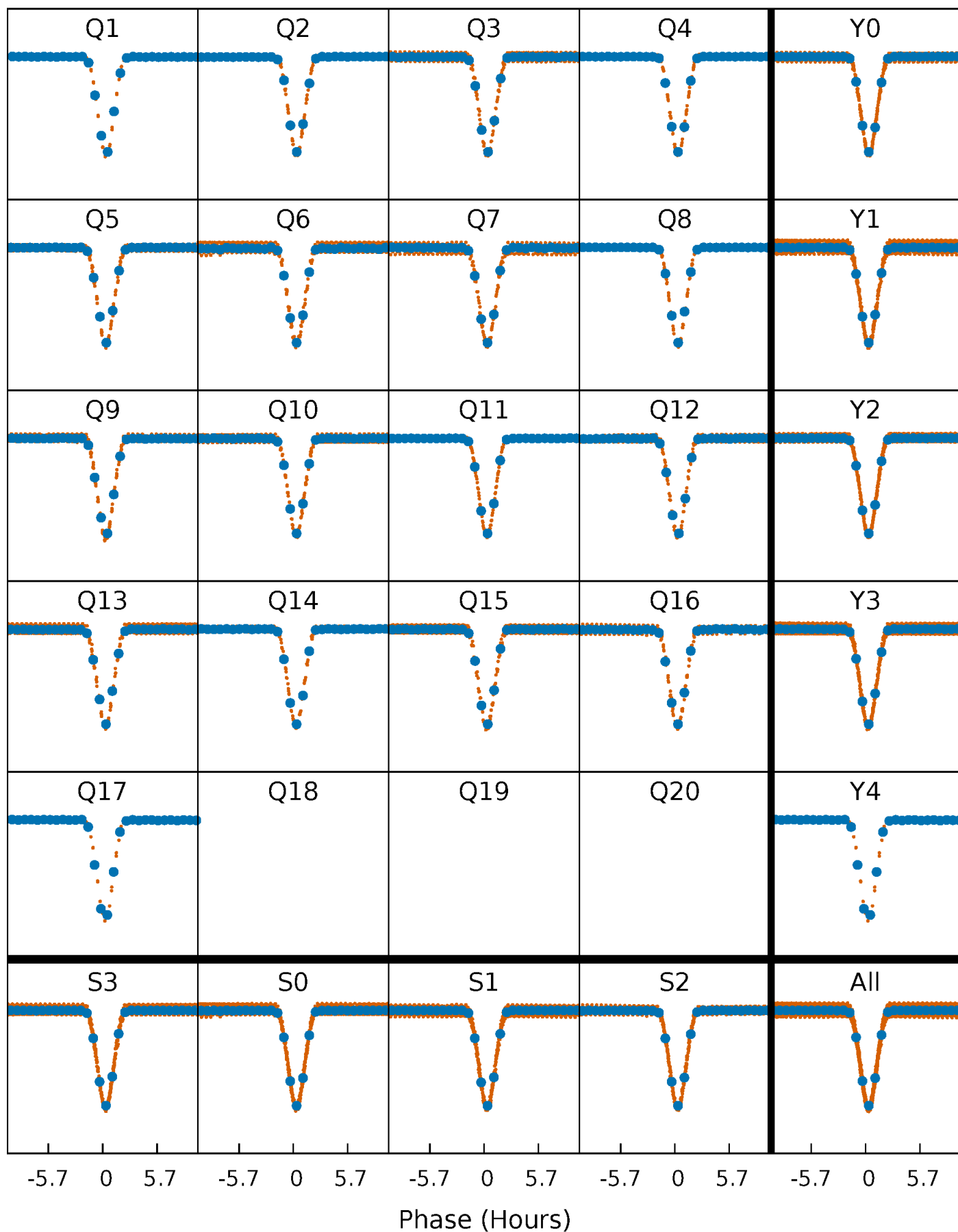


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



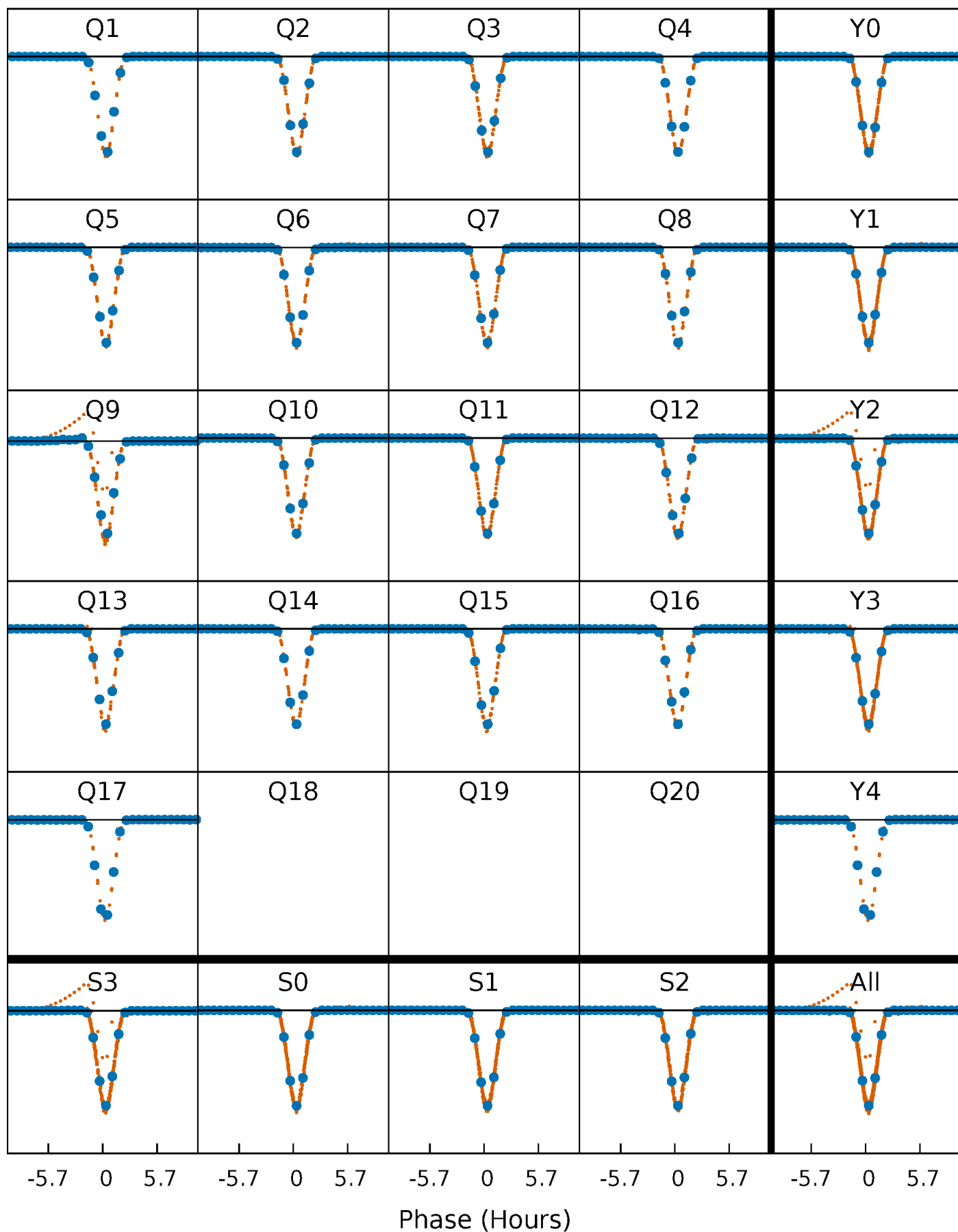
PDC Quarter-Phased Transit Curves

TCE 009821078-01 P= 8.429459 Days $T_0=132.277252$ (BKJD)



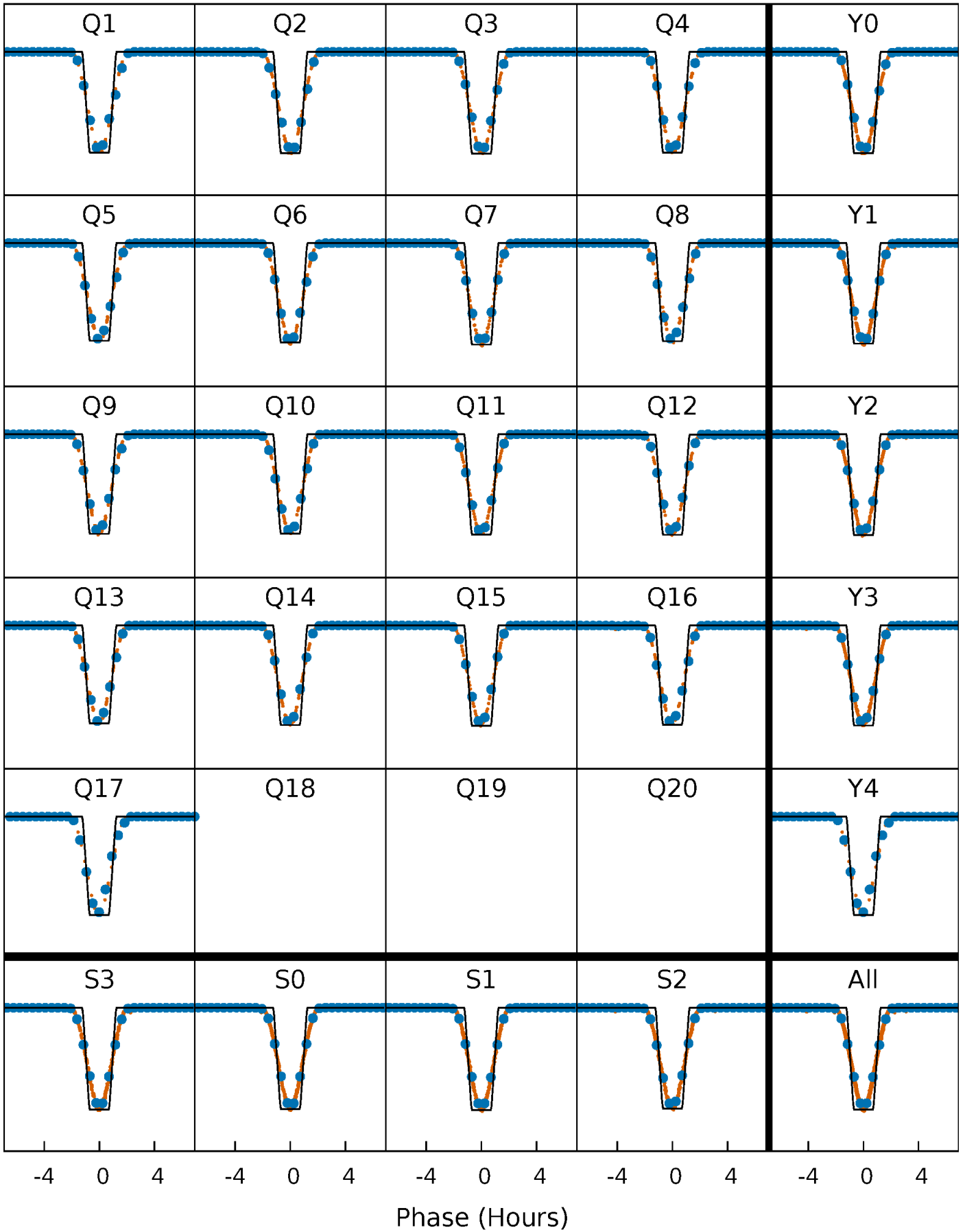
DV Quarter-Phased Transit Curves

TCE 009821078-01 P= 8.429459 Days $T_0=132.277252$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

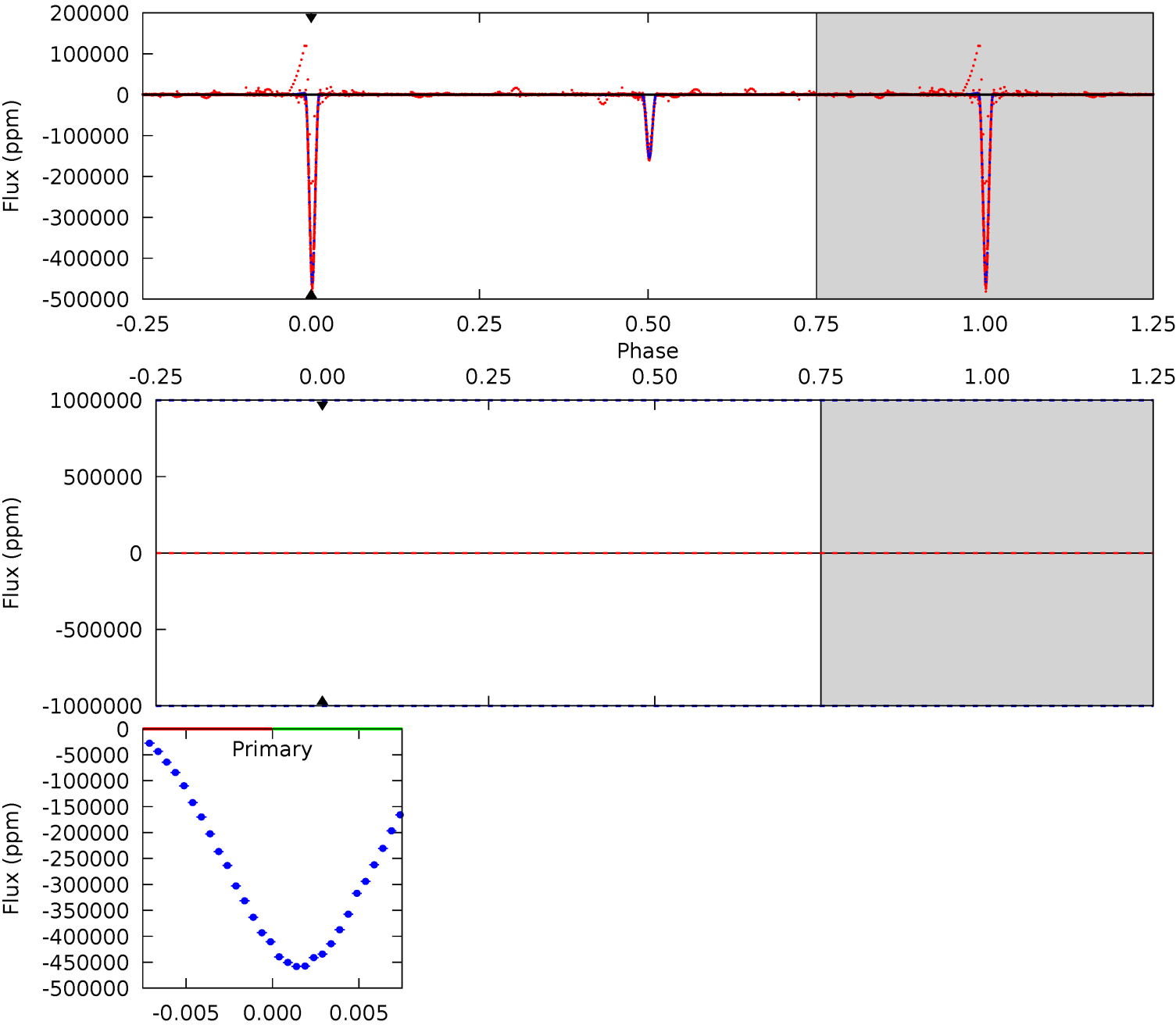
TCE 009821078-01 P= 8.429459 Days $T_0=132.290392$ (BKJD)



DV Model-Shift Uniqueness Test

009821078-01, P = 8.429459 Days, E = 123.847793 Days

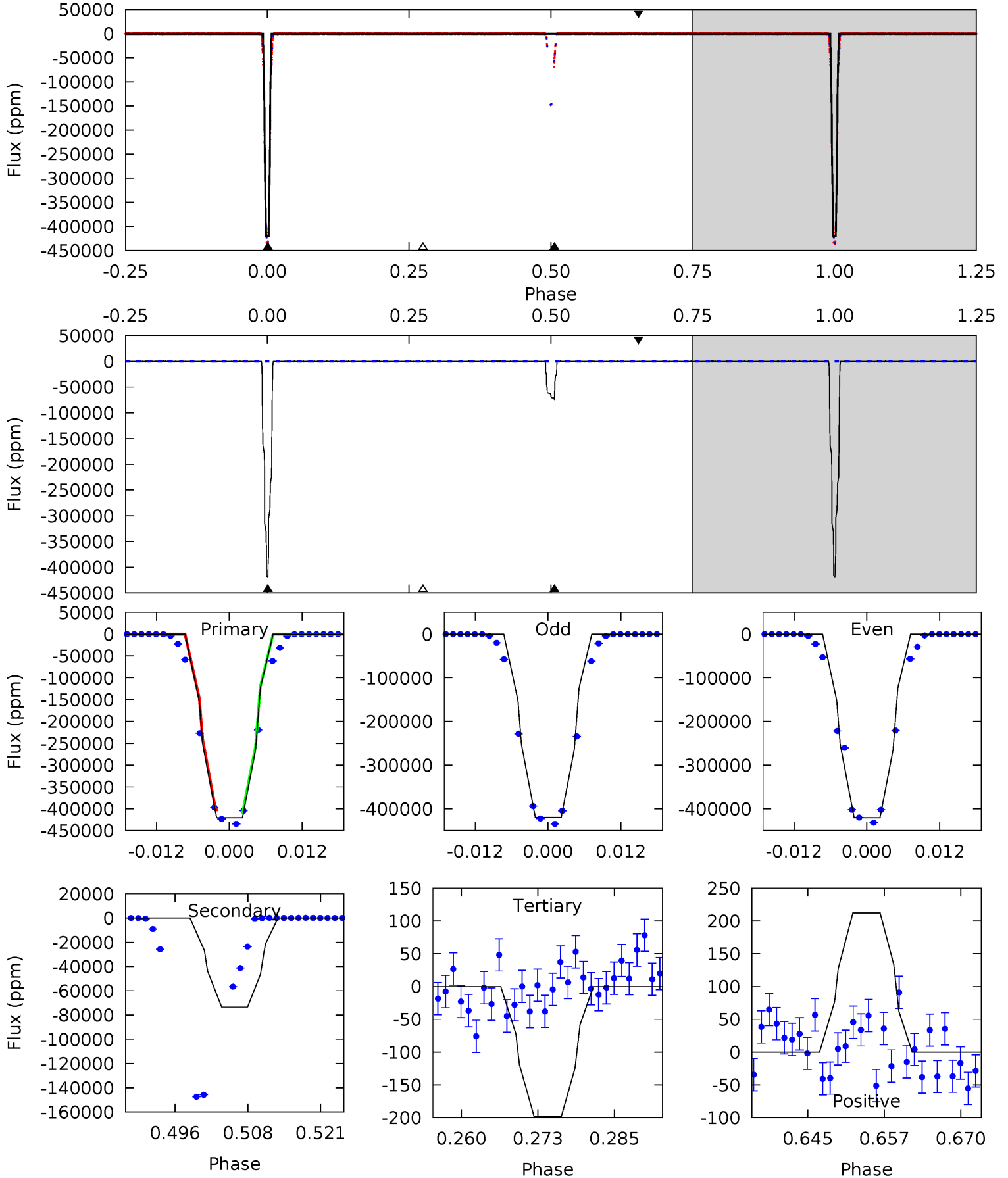
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009821078-01, P = 8.429459 Days, E = 123.860933 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6454	1129	3.05	3.26	4.98	2.50	10.3	6451	6451	1126	1125	5.21	1.00	0.00	0



Stellar Parameters For KIC 009821078

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4268^{+129}_{-142}	$4.602^{+0.052}_{-0.017}$	$0.200^{+0.200}_{-0.300}$	$0.680^{+0.028}_{-0.057}$	$0.675^{+0.047}_{-0.052}$	$3.021^{+0.696}_{-0.202}$
	+3%/-3%	+1%/-0%	+100%/-150%	+4%/-8%	+7%/-8%	+23%/-7%
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 009821078-01 / KOI 7234.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$23.00^{+7.61}_{-7.06}$	809^{+27}_{-30}	2635^{+1848}_{-6830}	21^{+635}_{-496}
Alt.	-73479 ± 65	$49.76^{+8.21}_{-7.96}$	808^{+28}_{-29}	3192^{+180}_{-151}	89^{+37}_{-22}

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

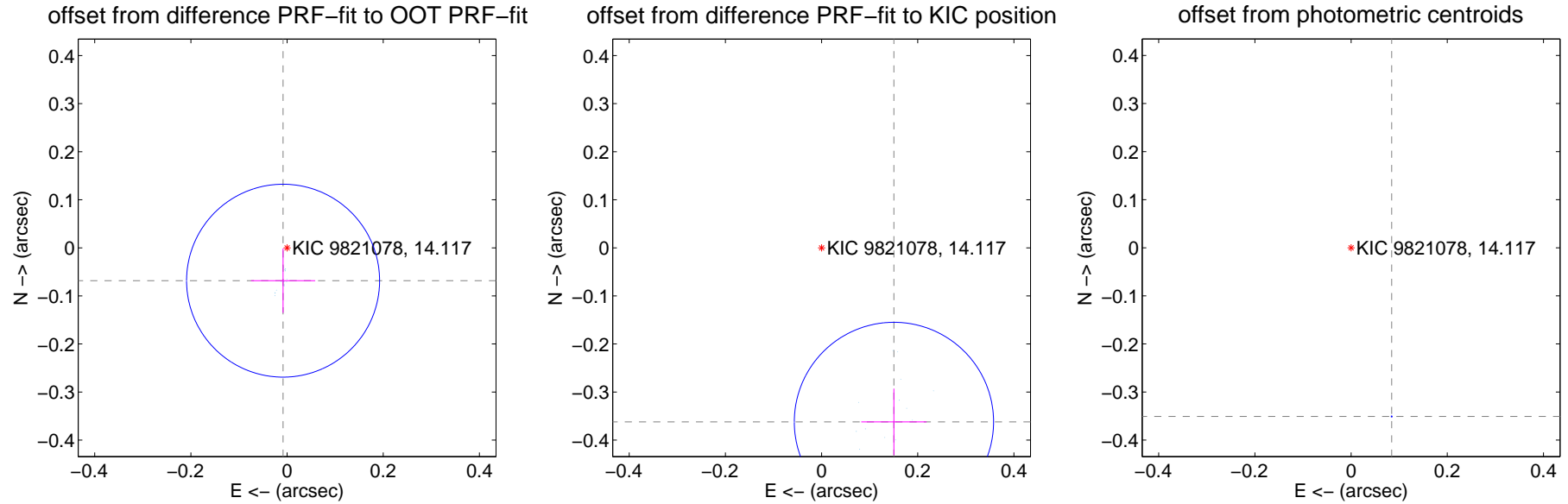
DV Centroid Data

Supplemental centroid analysis for 009821078-01. Kepler magnitude: 14.12. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

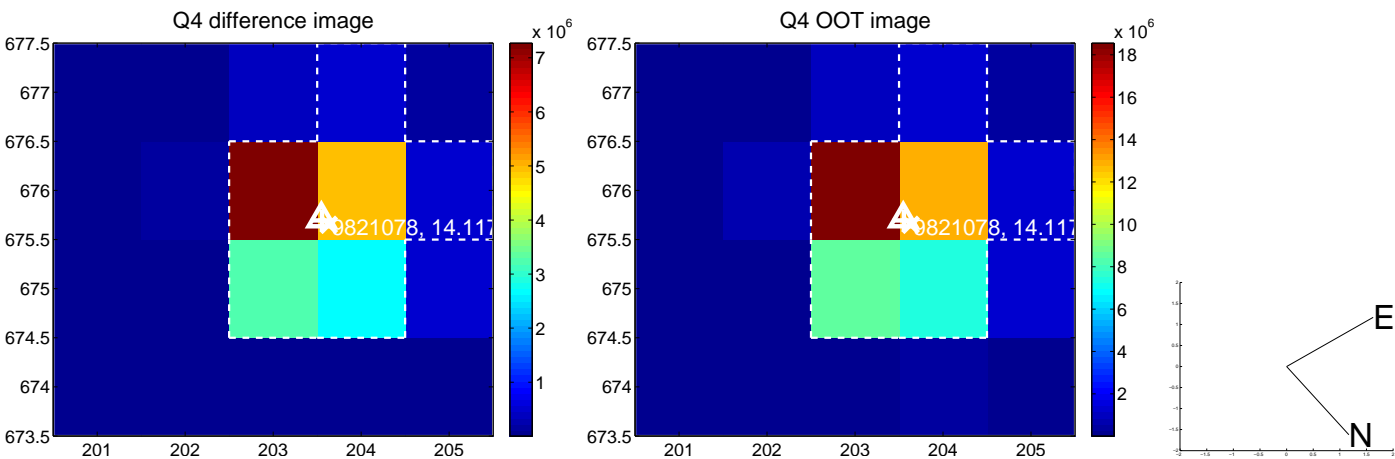
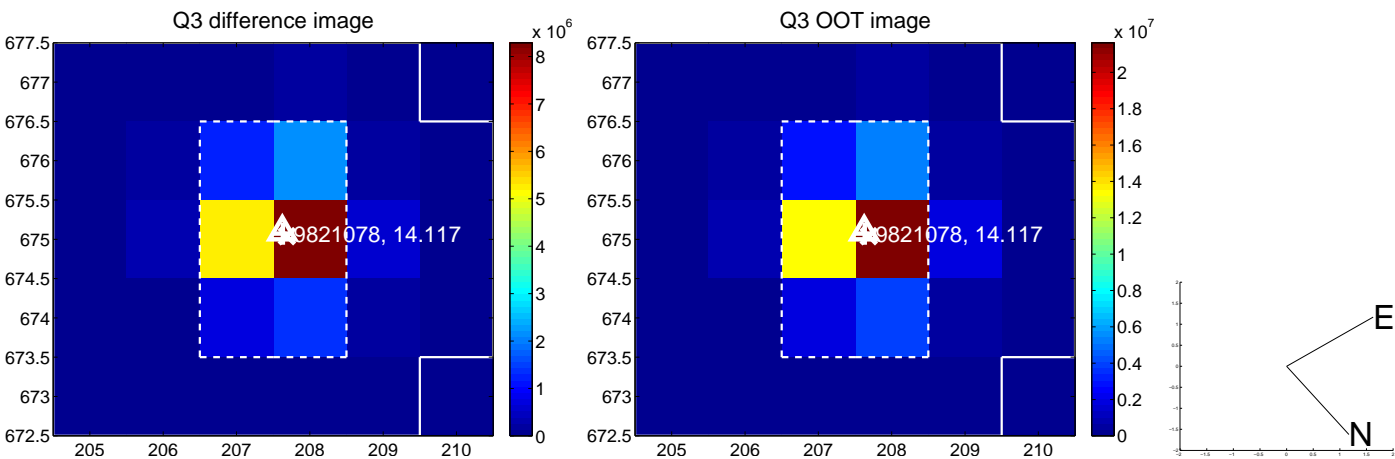
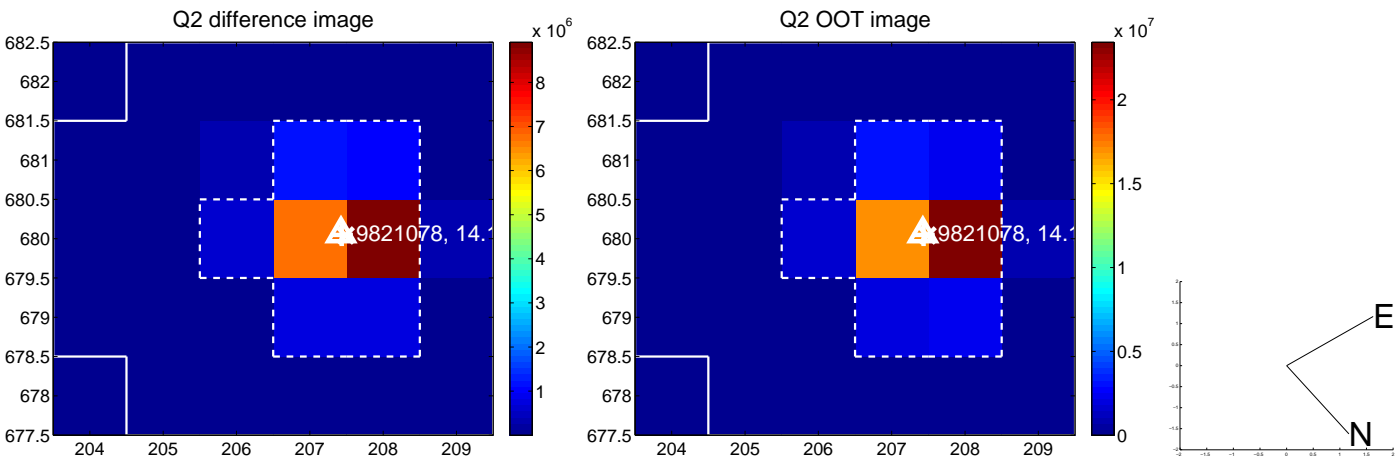
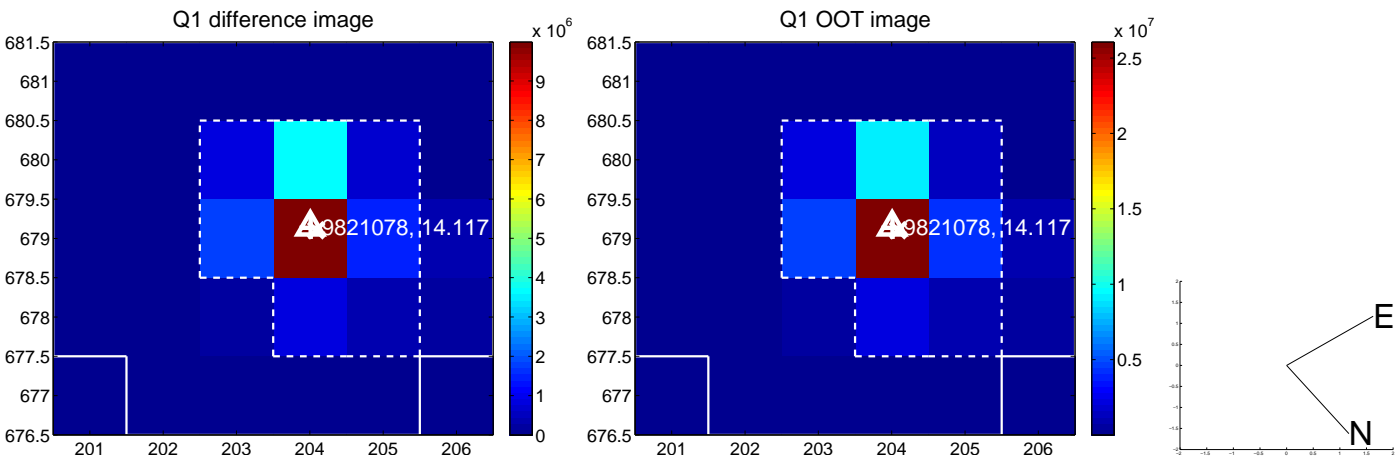
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.069 ± 0.067	1.03	0.008 ± 0.067	-0.068 ± 0.067
PRF-fit source offset from KIC position	0.392 ± 0.069	5.68	-0.150 ± 0.068	-0.362 ± 0.069
photometric centroid source offset	0.36 ± 0.00	996.40	-0.08 ± 0.00	-0.35 ± 0.00

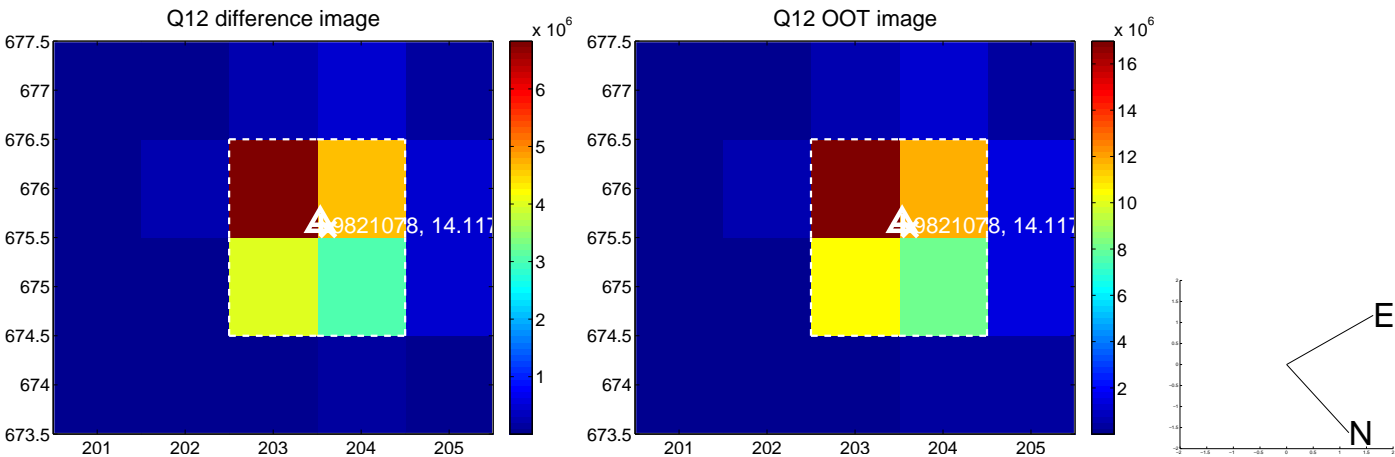
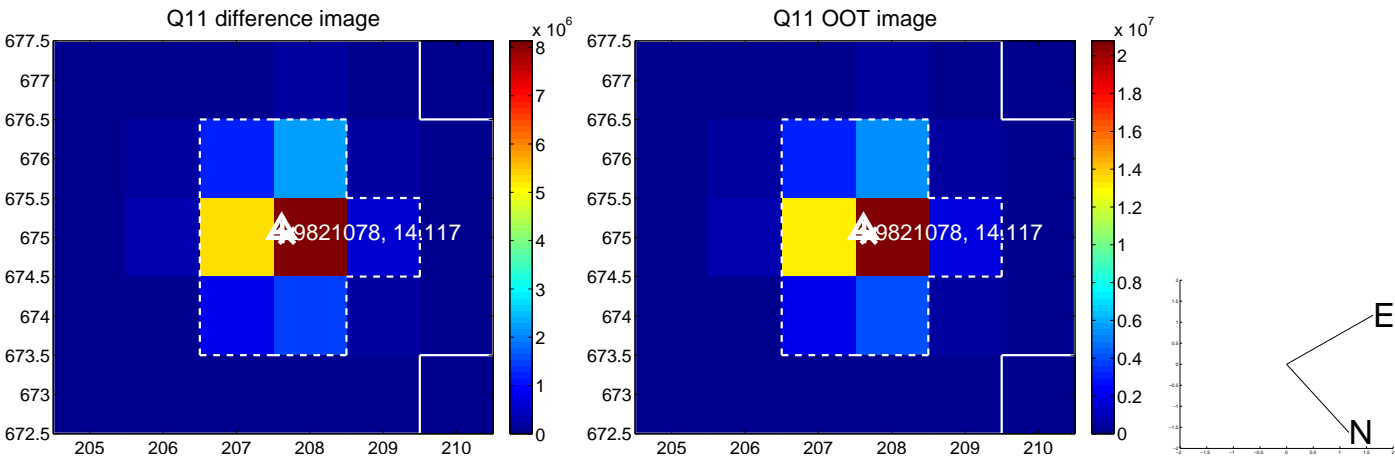
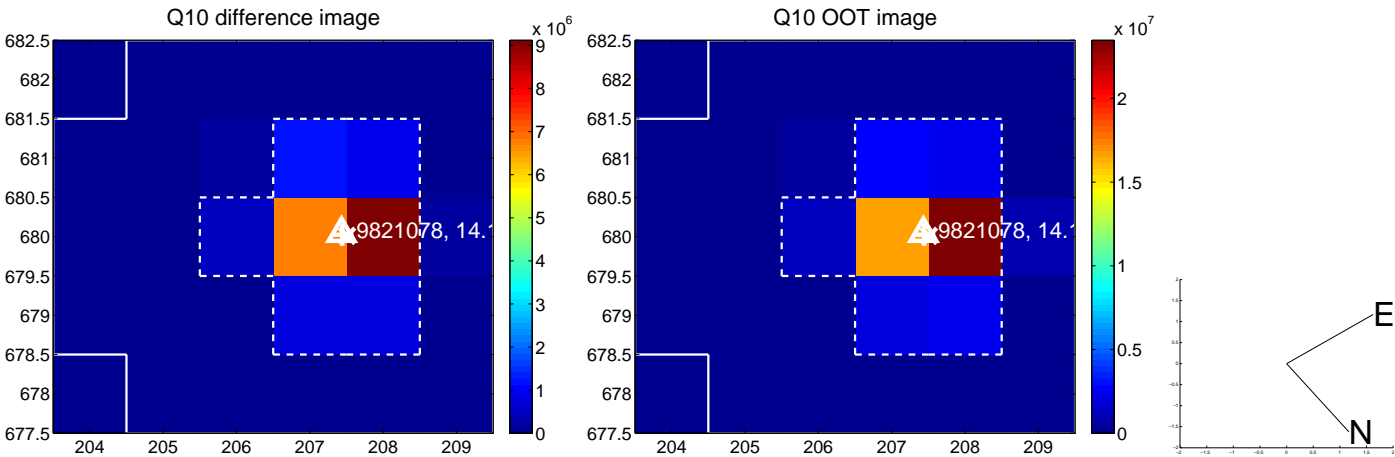
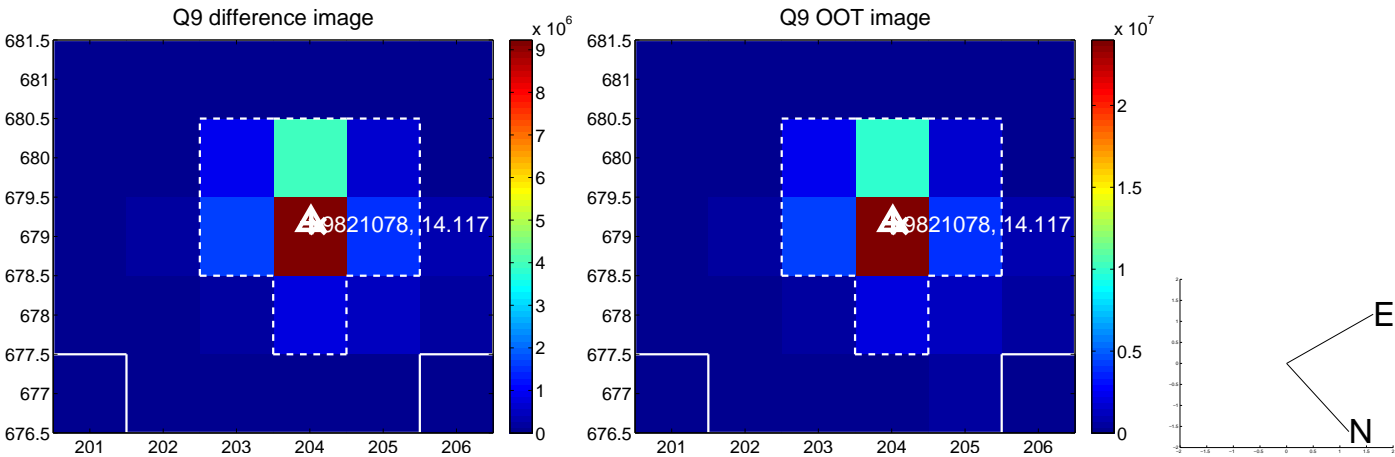


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

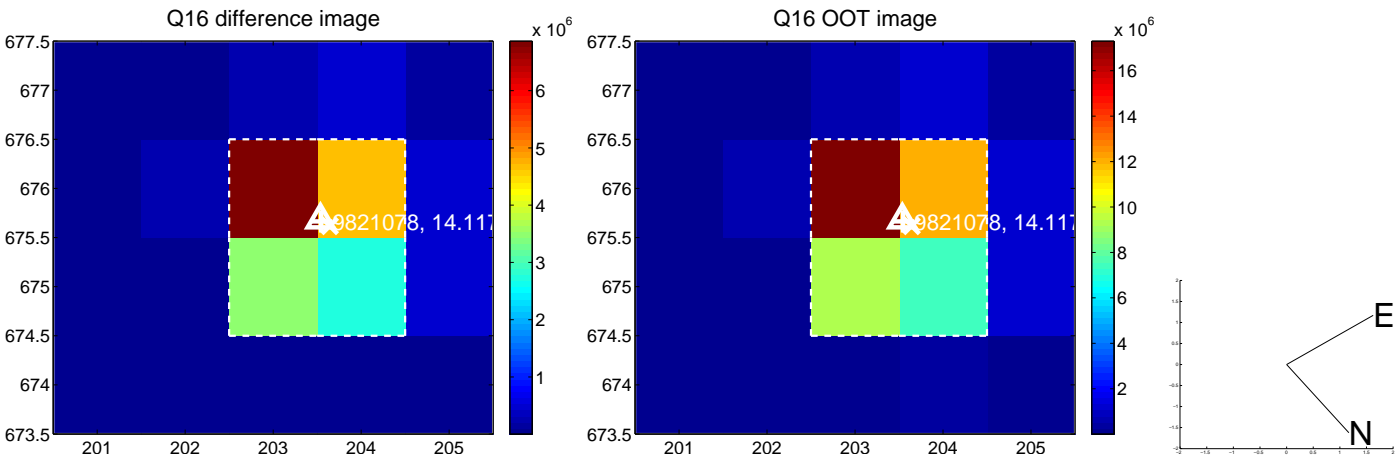
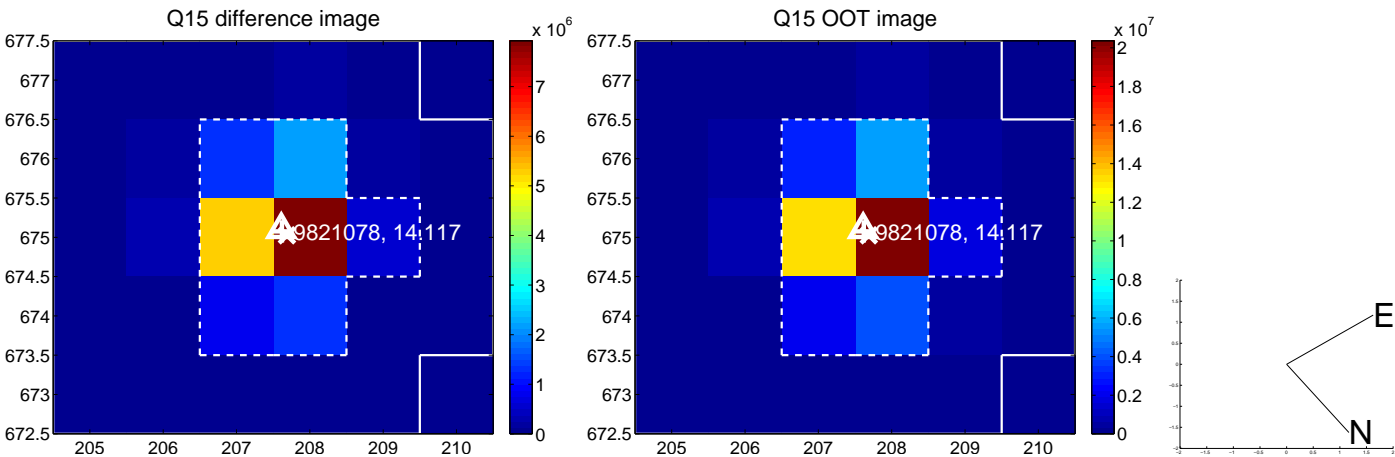
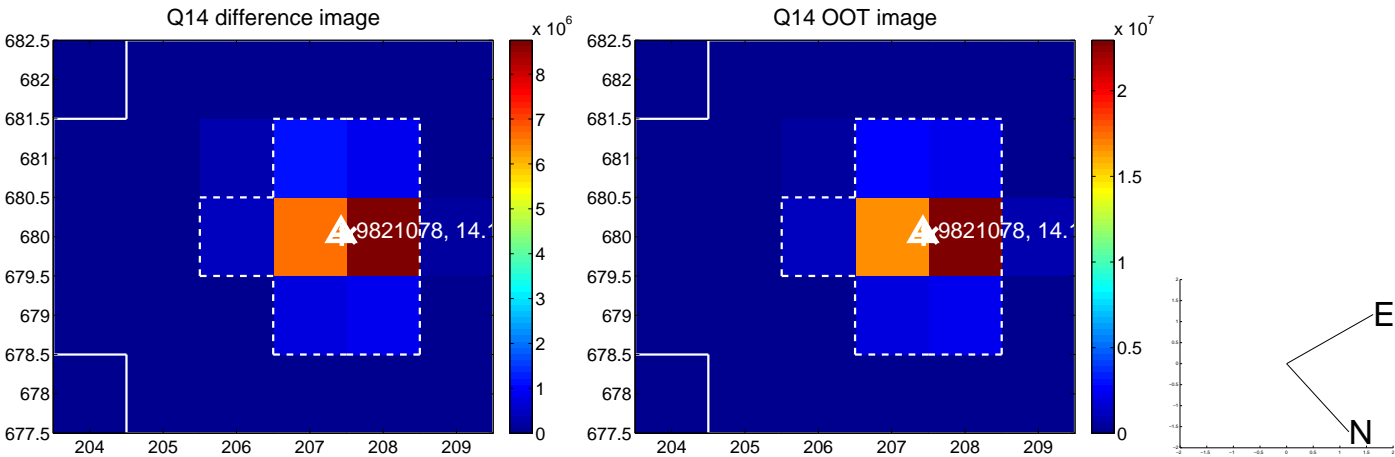
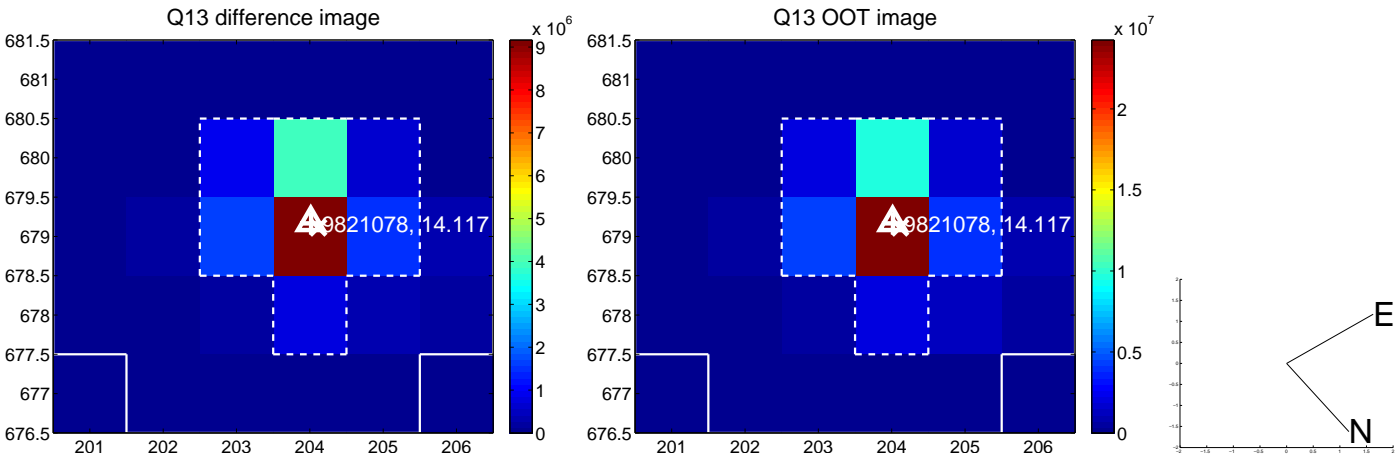
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



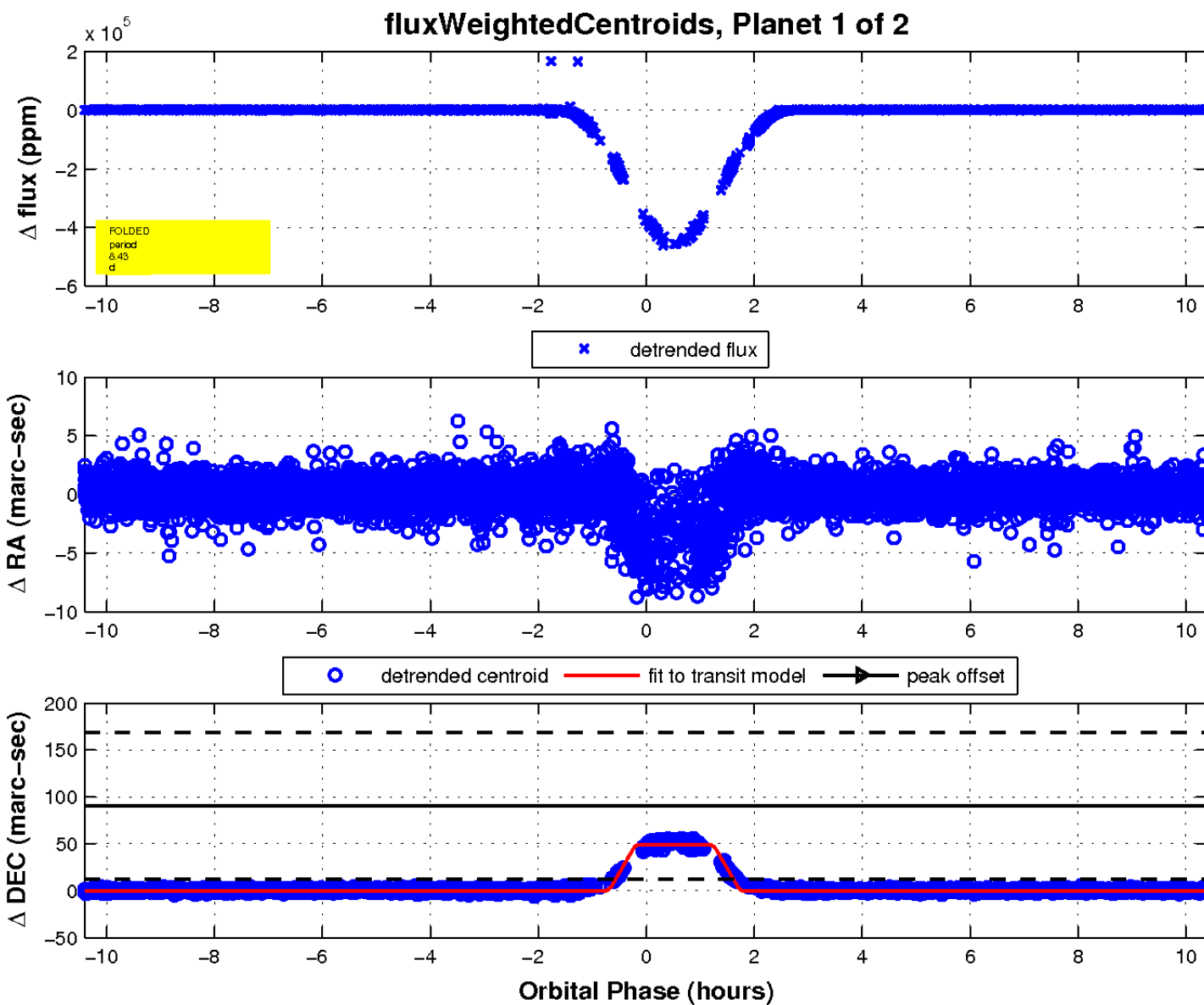
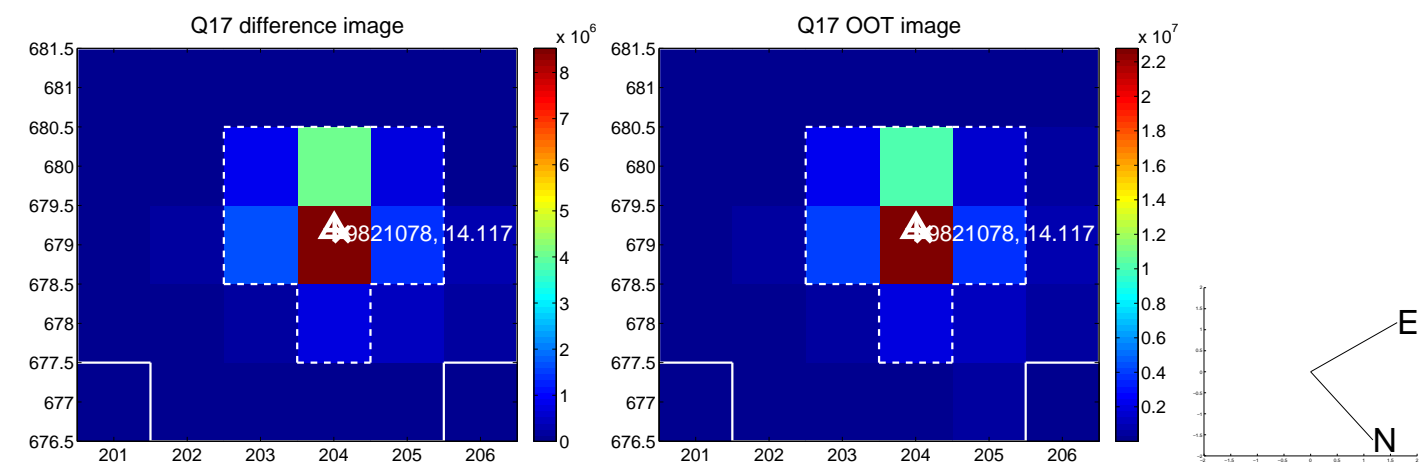
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

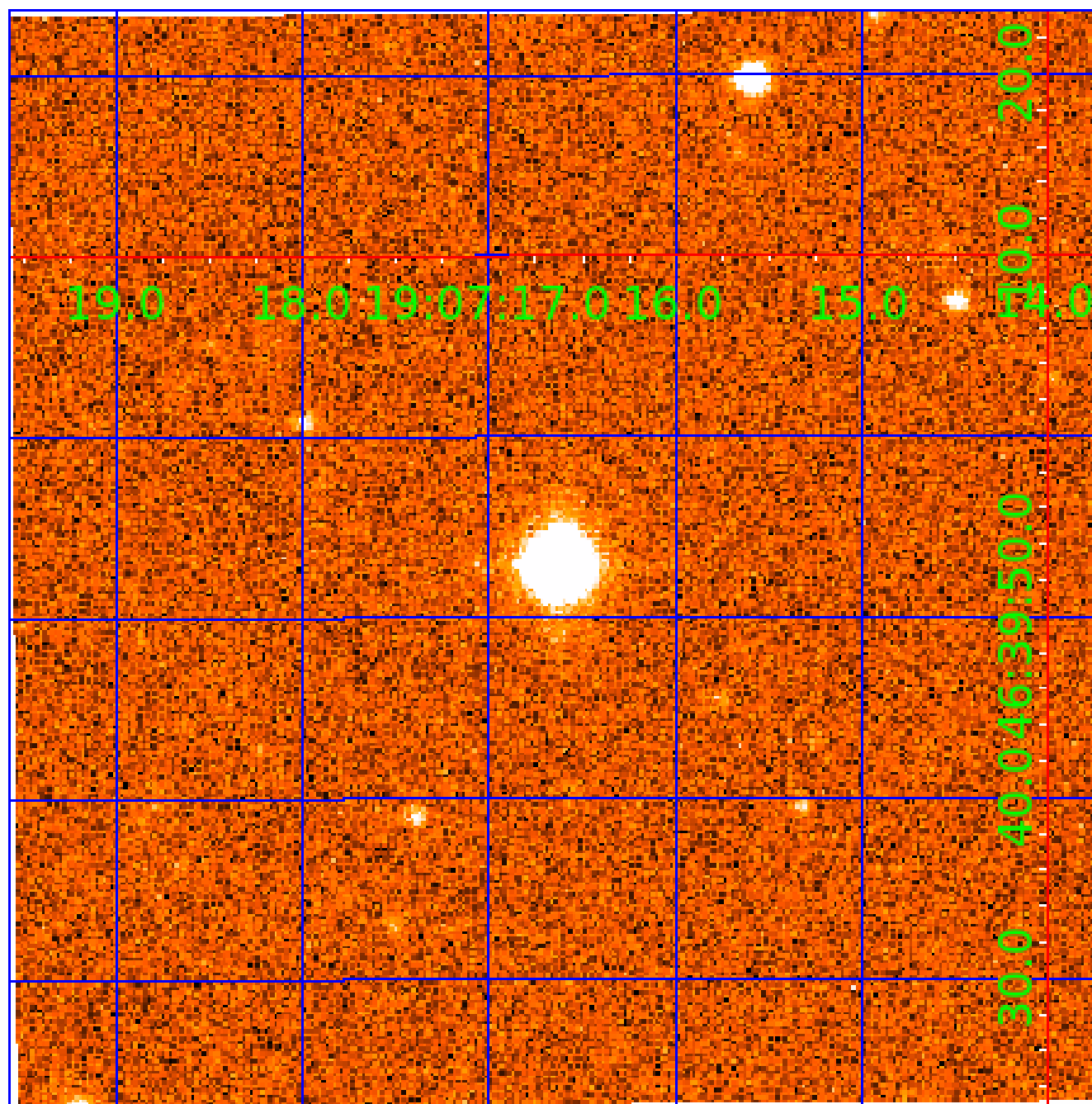


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009821078

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})
009821078-01	OBS	7234.01	8.429459	132.277252	452500.6	5.000	15275.1	-1.0	0.68	4268	23.78	27.19
009821078-02	OBS	No	8.429436	136.511067	148375.0	3.760	8810.8	4654.5	0.68	4268	38.57	27.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009821078-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS
009821078-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD

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.

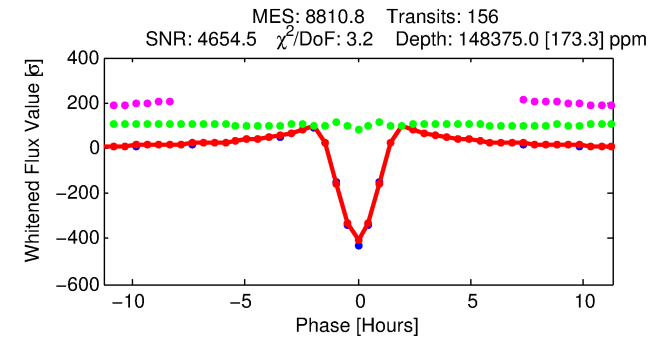
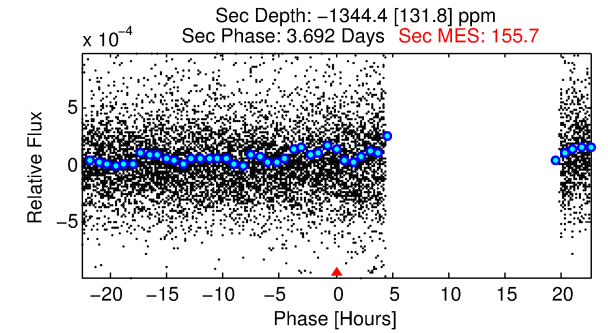
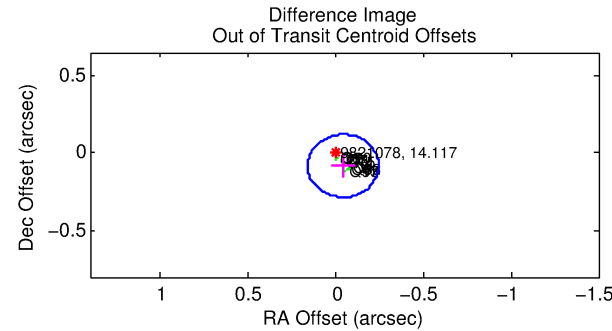
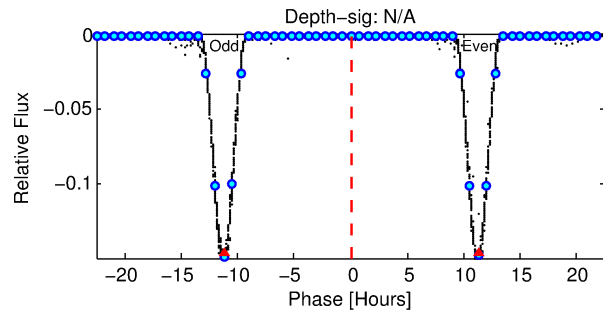
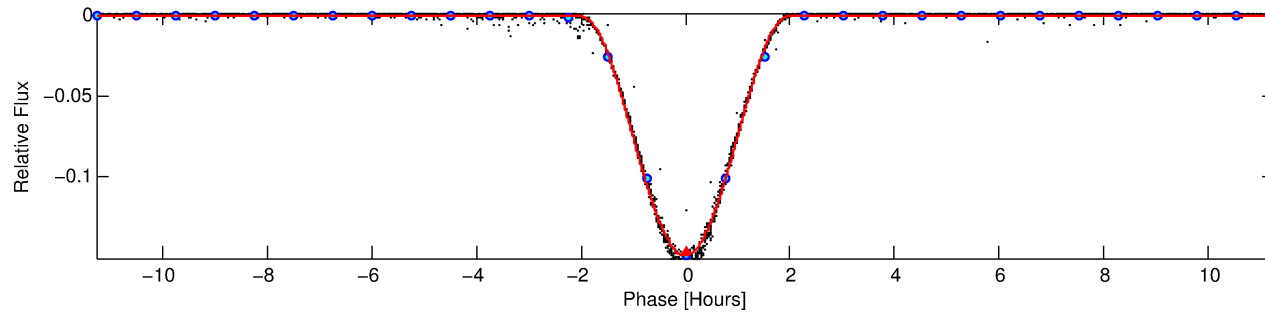
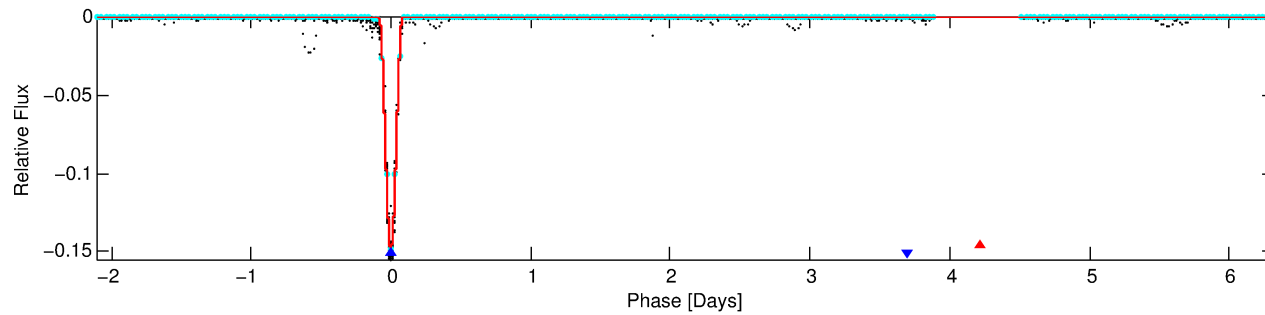
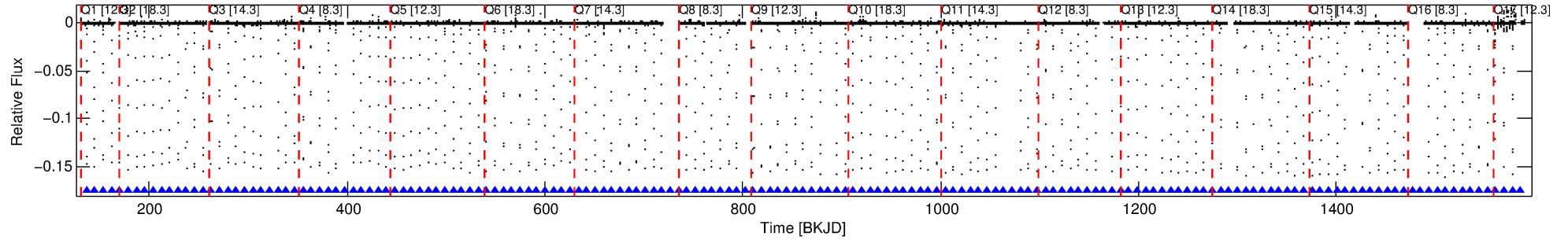
Ephemeris Match Information For 009821078-02

No Significant Match Found

DV One-Page Summary

KIC: 9821078 Candidate: 2 of 2 Period: 8.429 d
KOI: K07234 Corr: No Ephemeris Match

Kp: 14.12 R*: 0.68 Rs Teff: 4268.0 K Logg: 4.60 Fe/H: 0.200



DV Fit Results:

Period = 8.42944 [0.00000] d
Epoch = 136.5111 [0.0000] BKJD
Rp/R* = 0.5198 [0.0387]
a/R* = 21.23 [0.17]
b = 0.88 [0.05]
Seff = 27.19 [4.48]
Teff = 582 [24] K
Rp = 38.57 [4.33] Re
a = 0.0711 [0.0049] AU
Ag = N/A
Teffp = N/A

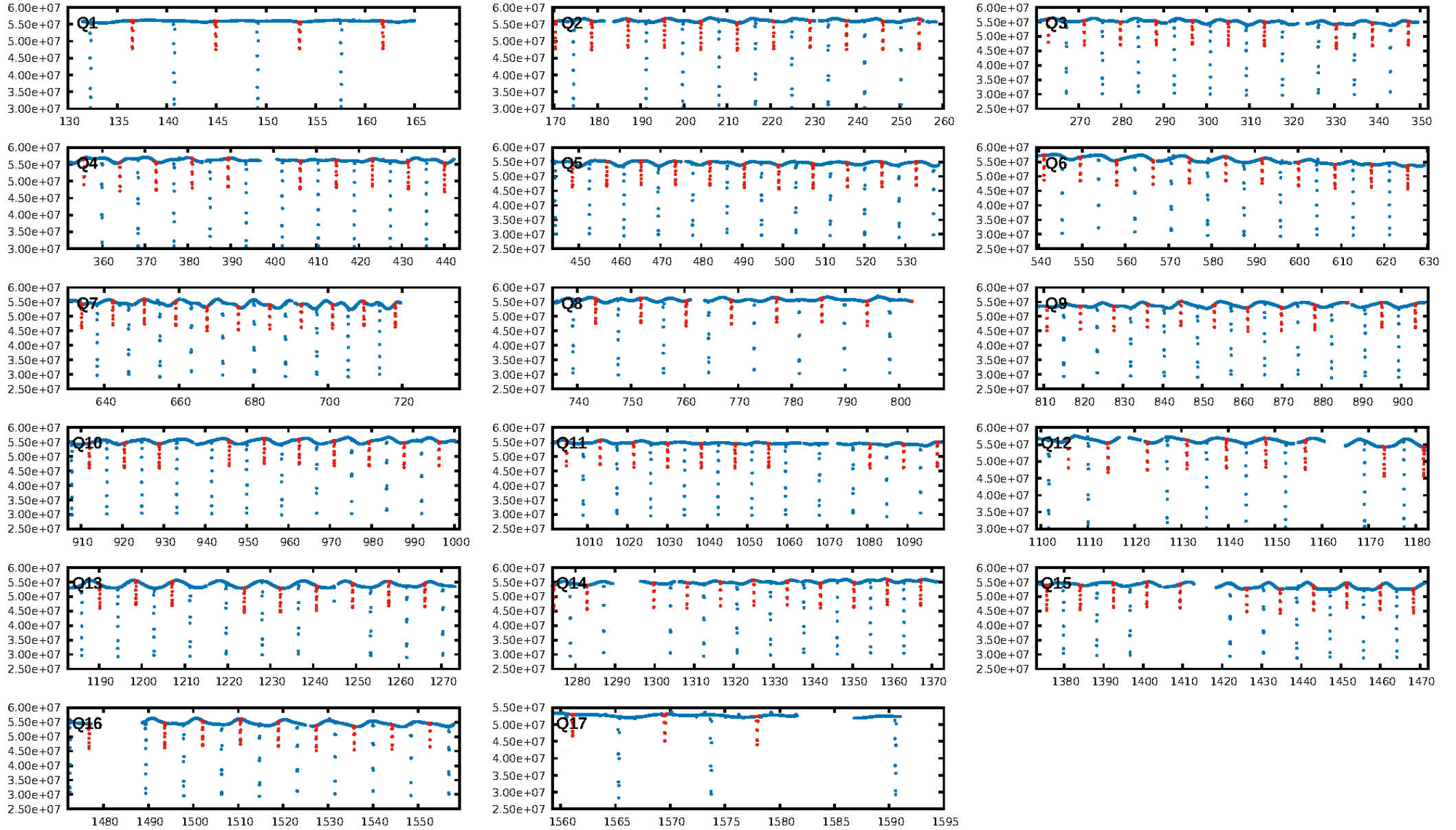
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [149/149]
GhostDiagnostic-chr: 1.987
Centroid-sig: N/A
Centroid-so: 0.352 arcsec [381.55σ]
OotOffset-rm: 0.093 arcsec [1.38σ]
KicOffset-rm: 0.422 arcsec [5.89σ]
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]

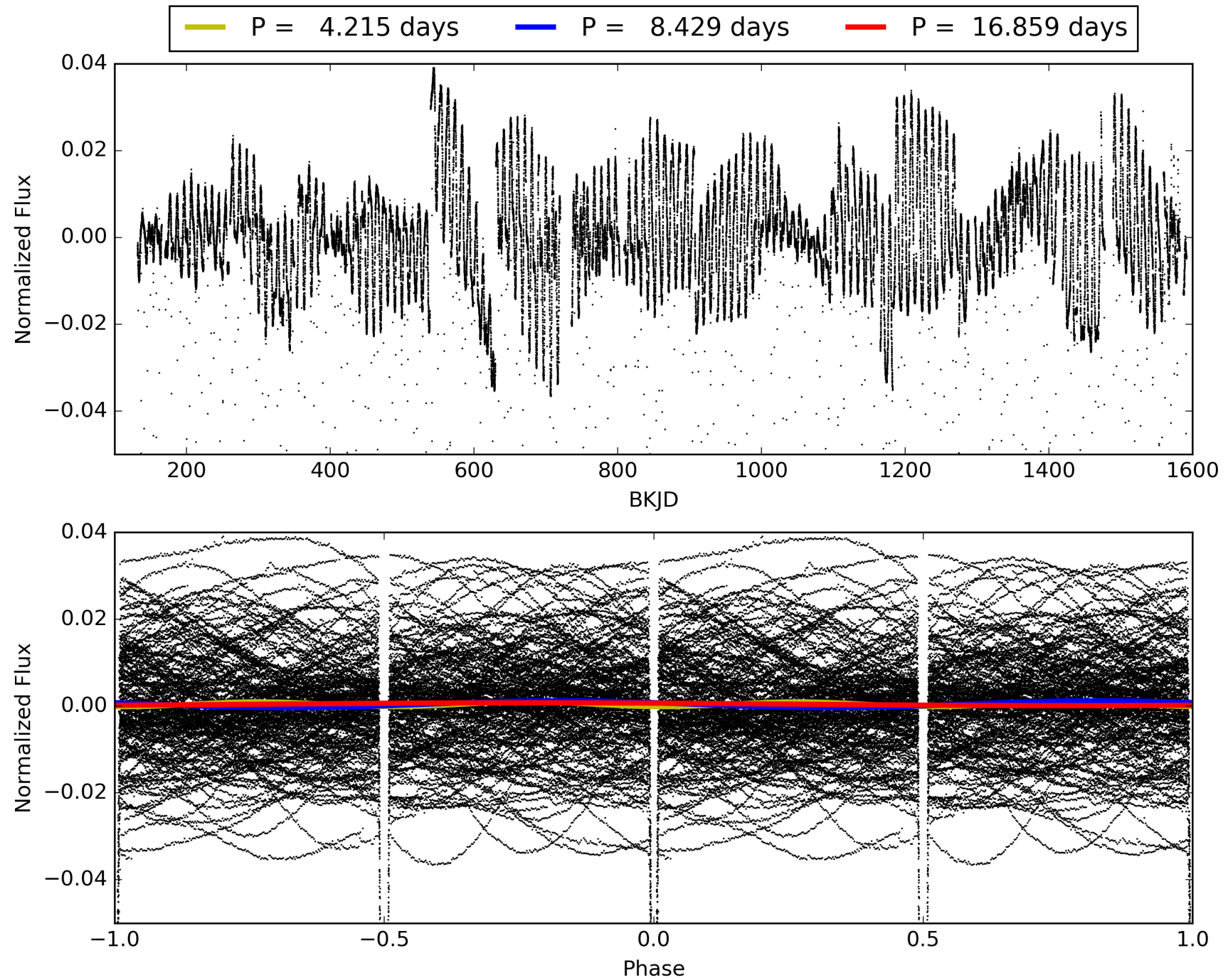
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:12:58 Z

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

TCE 009821078-02, PDC Light Curves

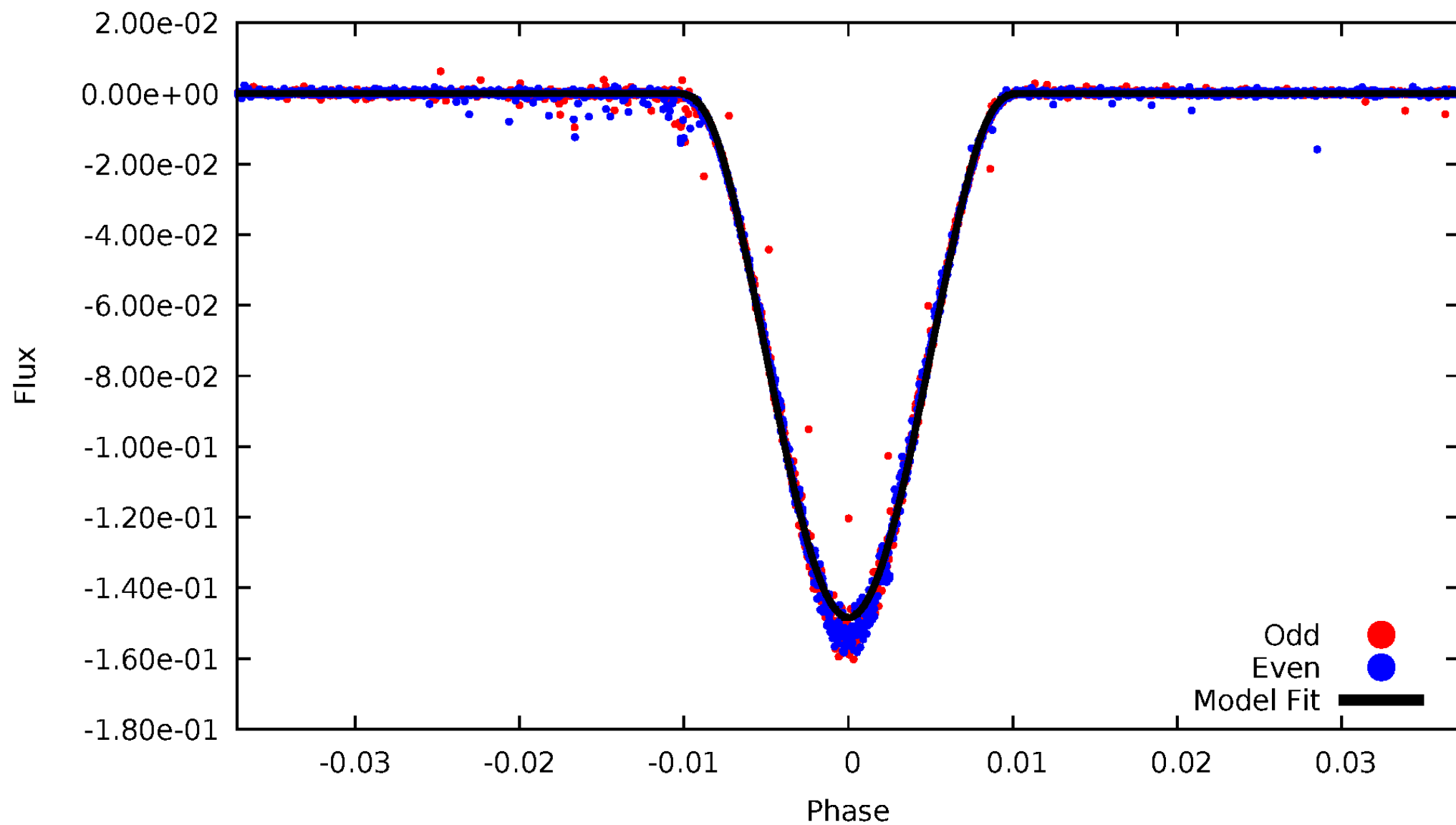


TCE 009821078-02



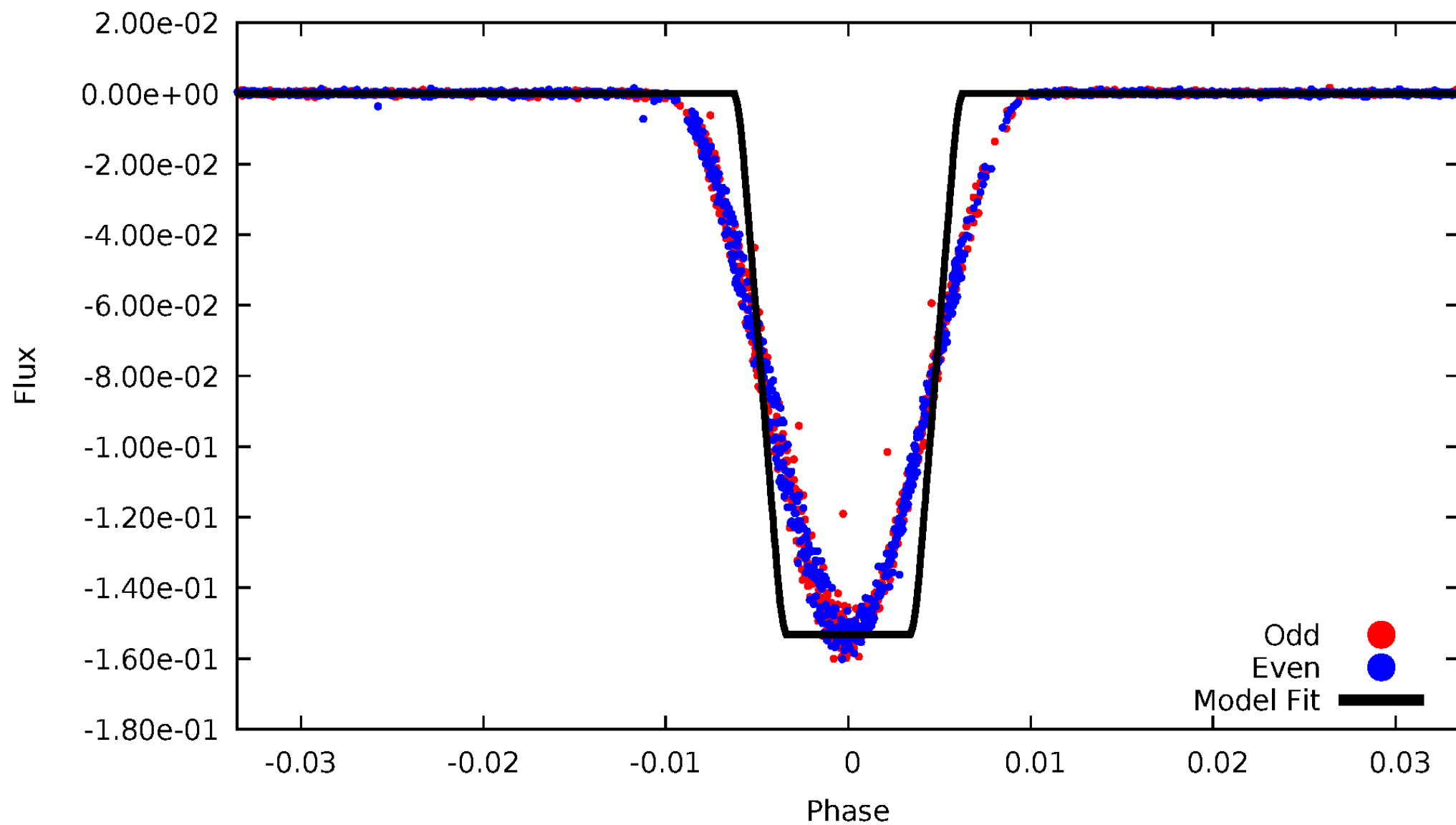
DV Odd/Even

TCE 009821078-02



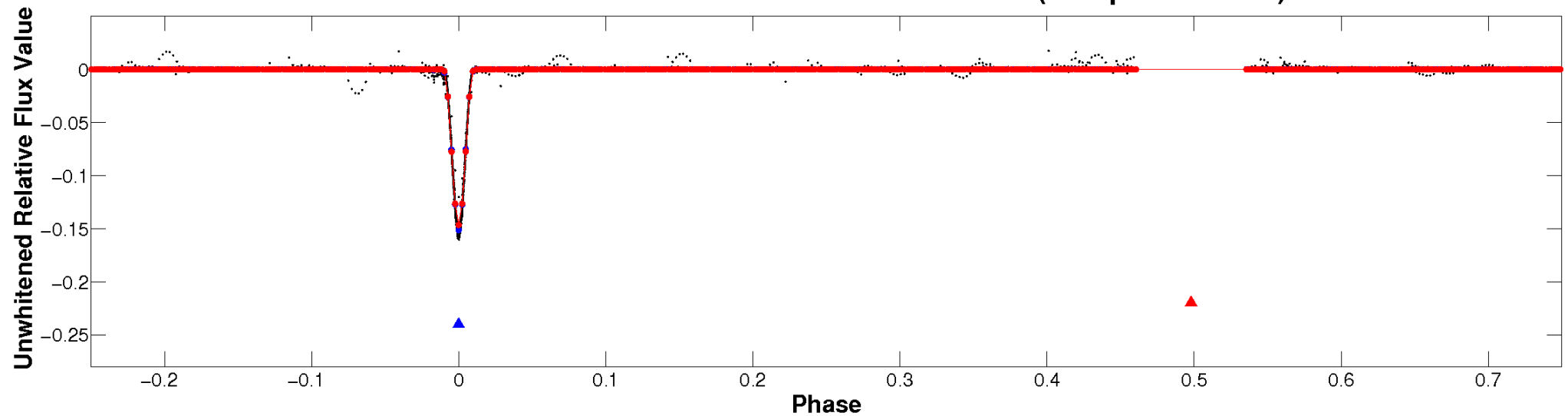
ALT Odd/Even

TCE 009821078-02

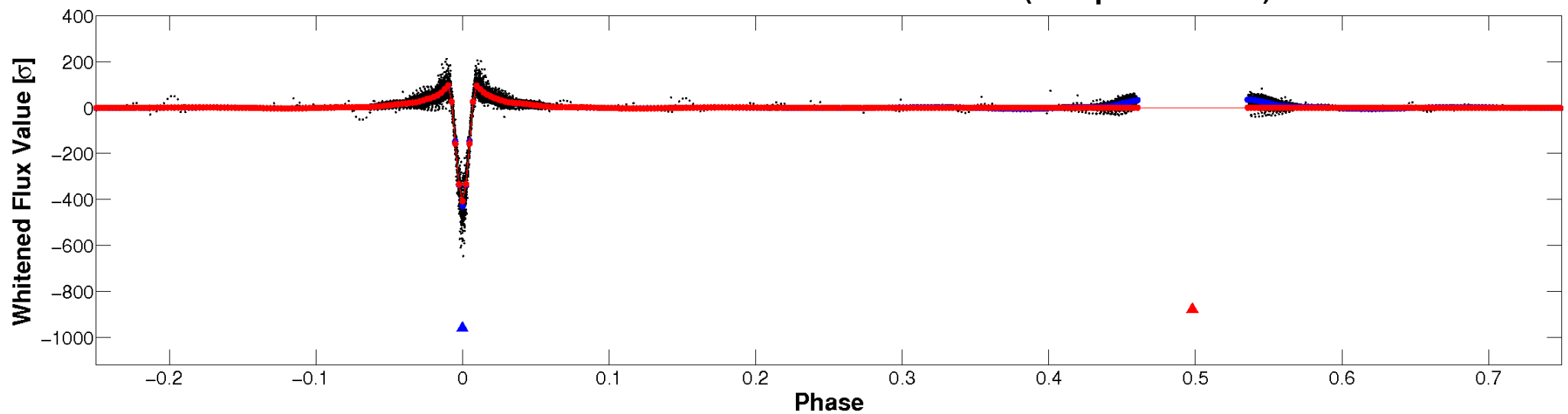


Non-Whitened Vs. Whitened Light Curve

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

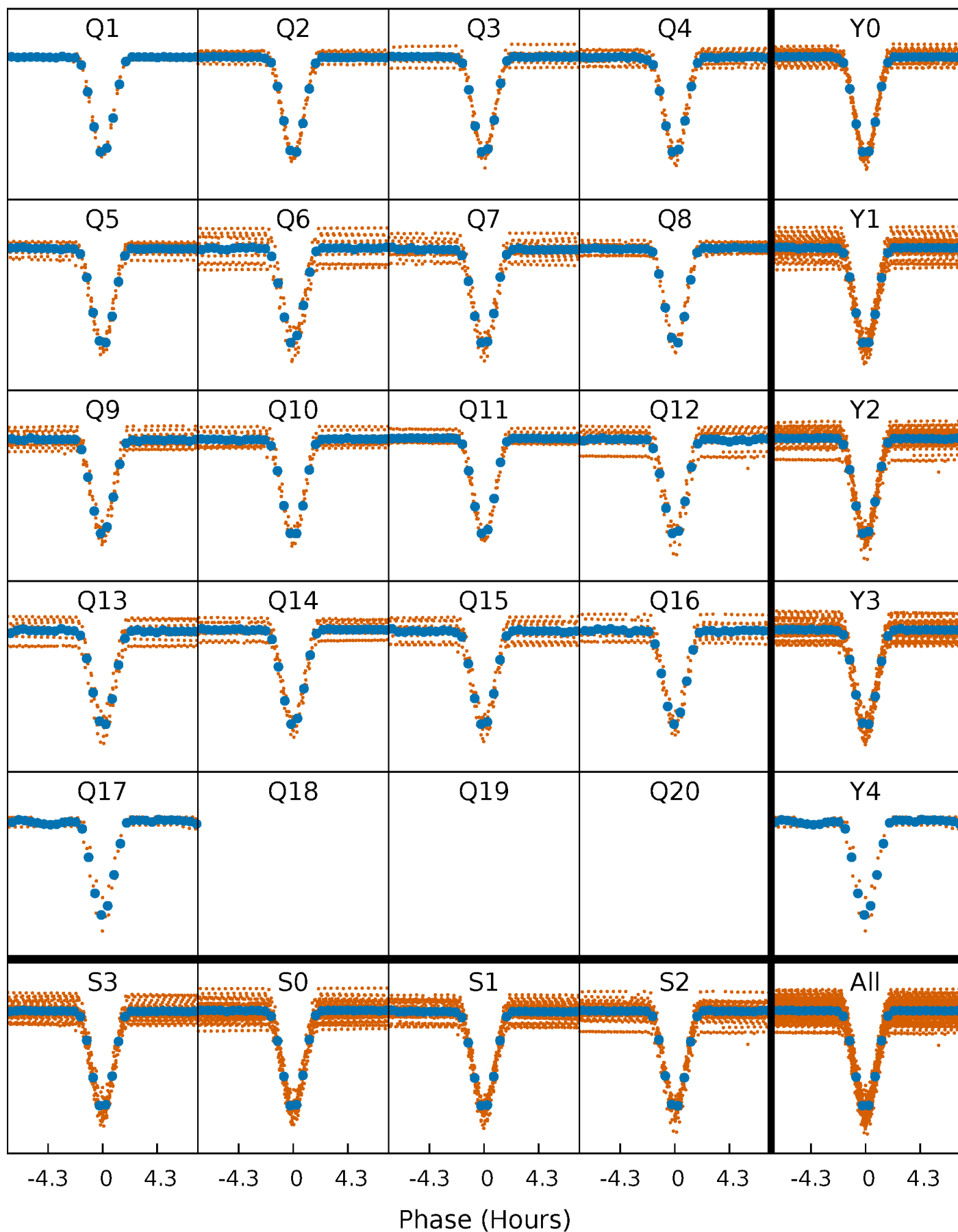


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



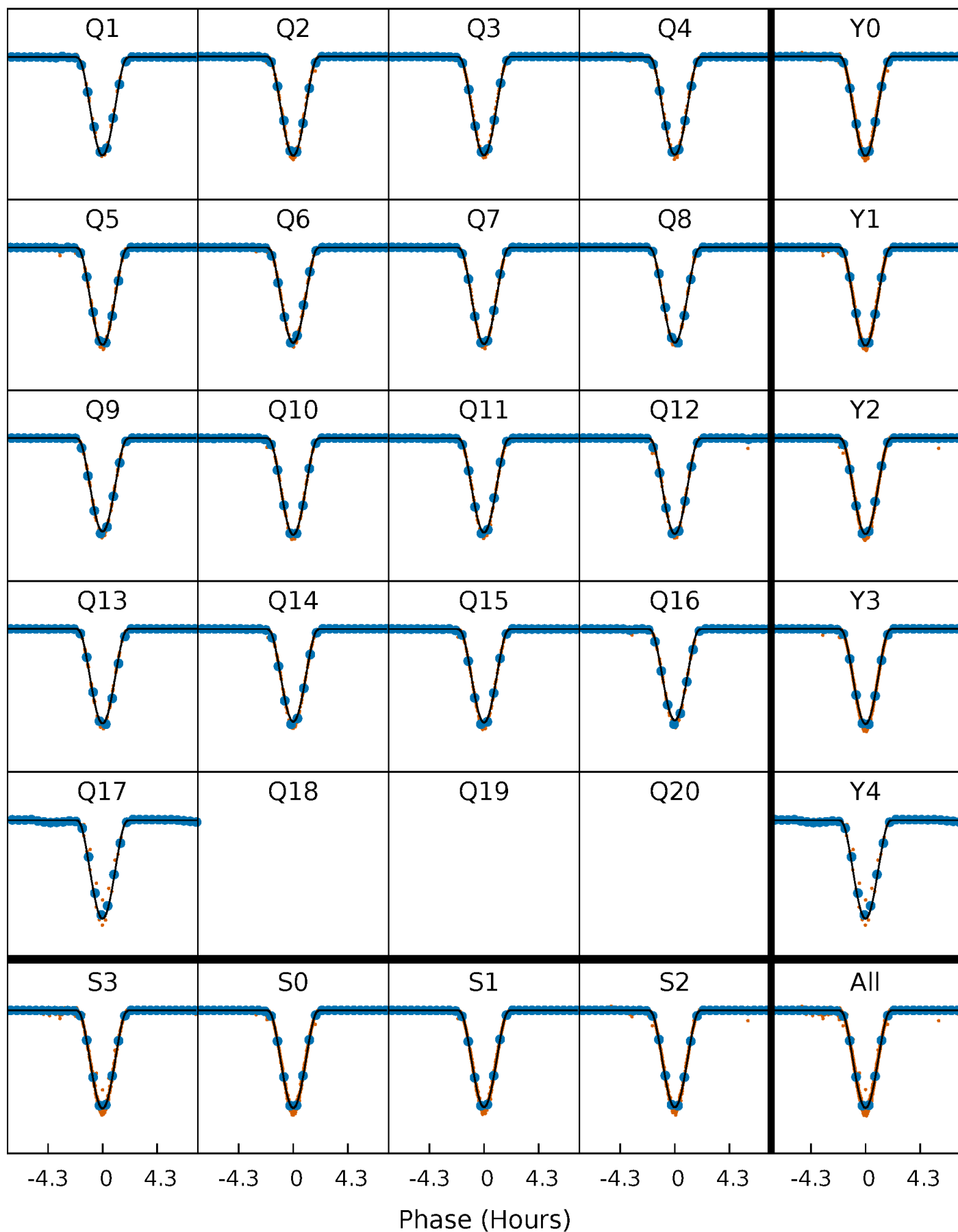
PDC Quarter-Phased Transit Curves

TCE 009821078-02 P= 8.429436 Days $T_0=136.511067$ (BKJD)



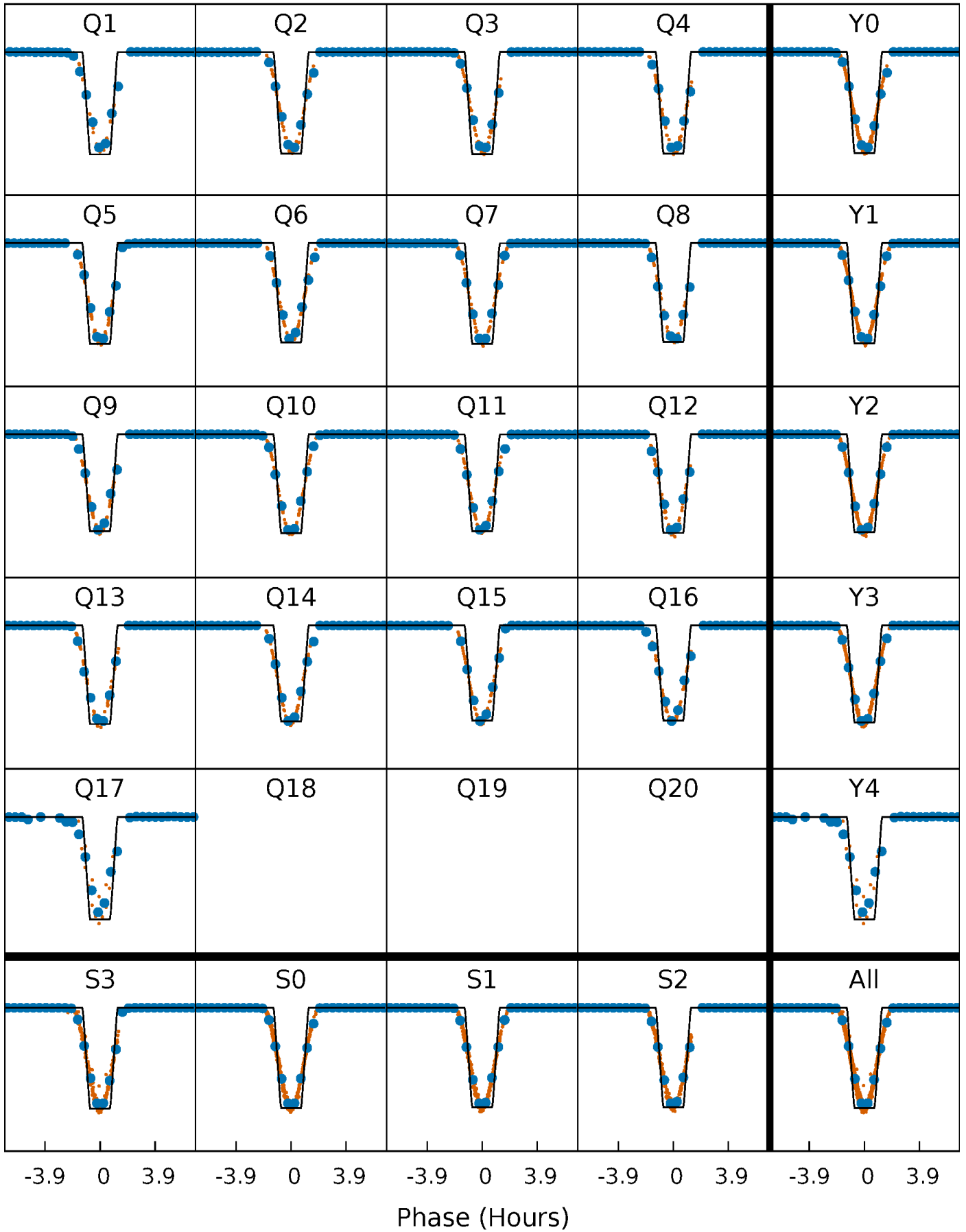
DV Quarter-Phased Transit Curves

TCE 009821078-02 P= 8.429436 Days $T_0=136.511067$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

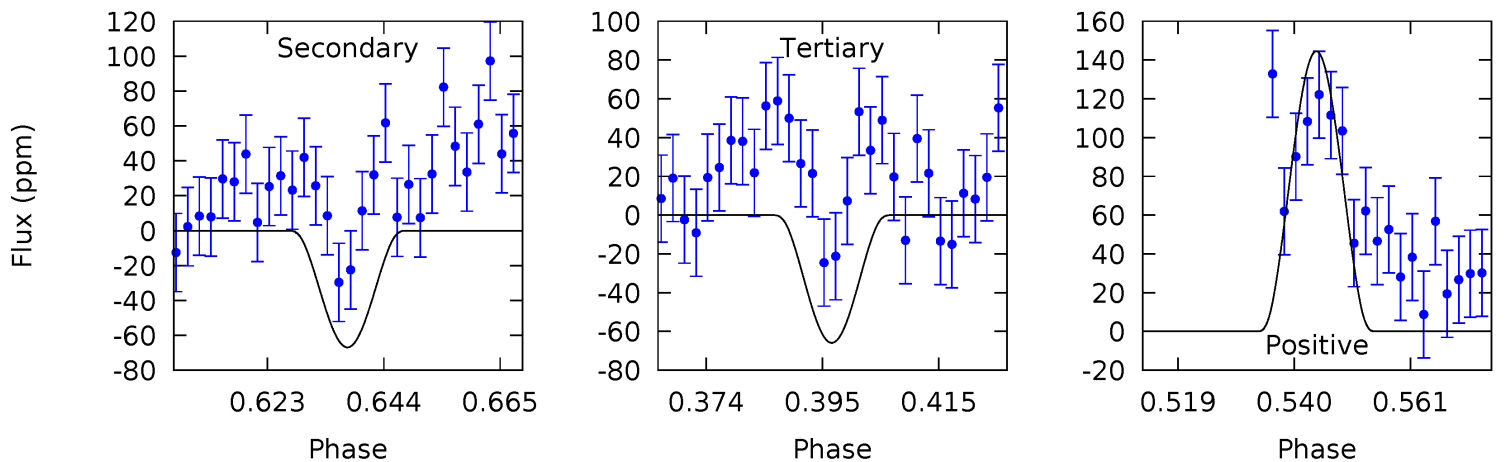
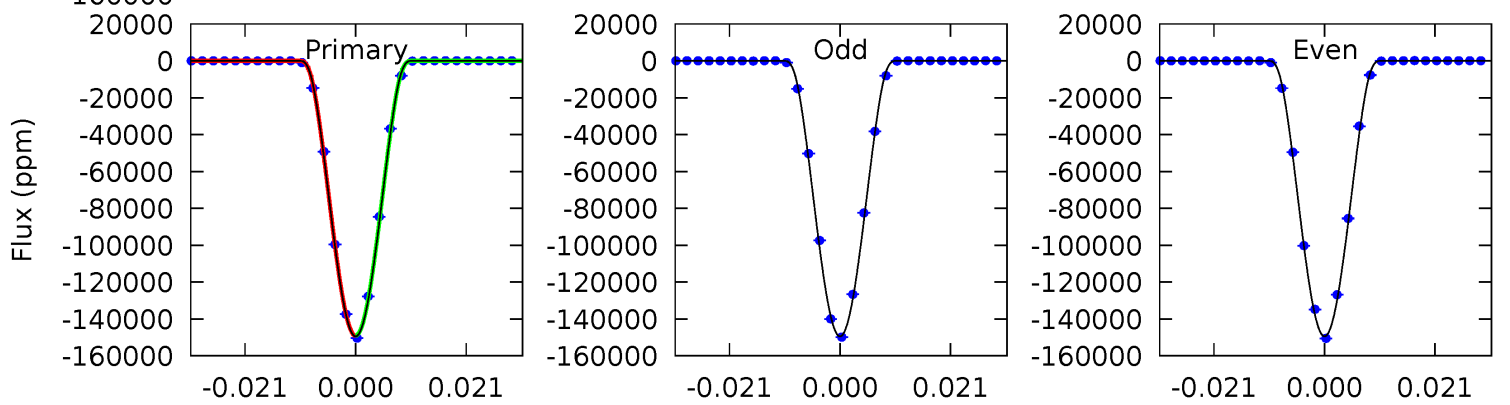
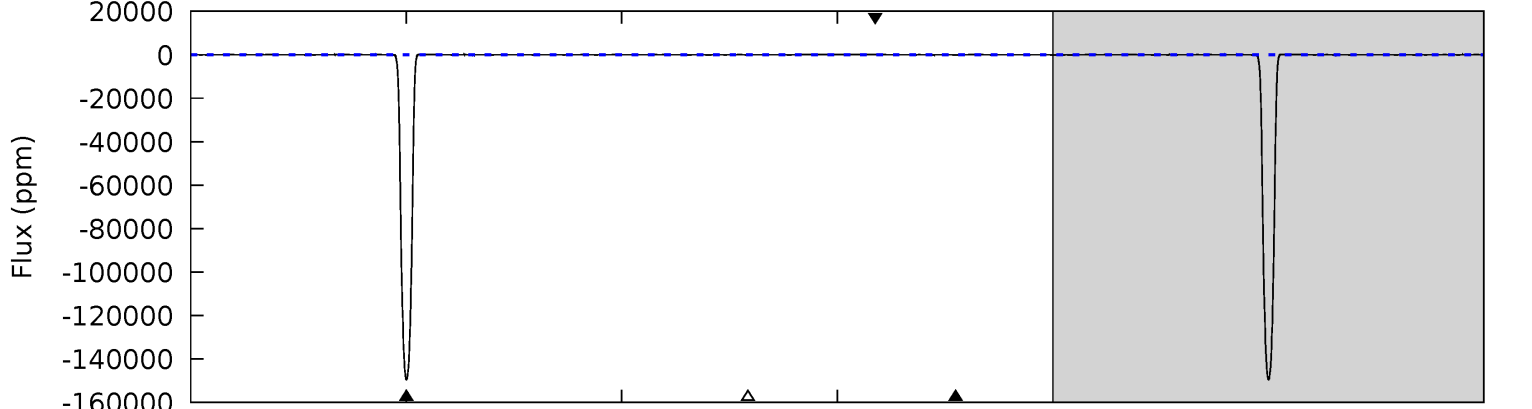
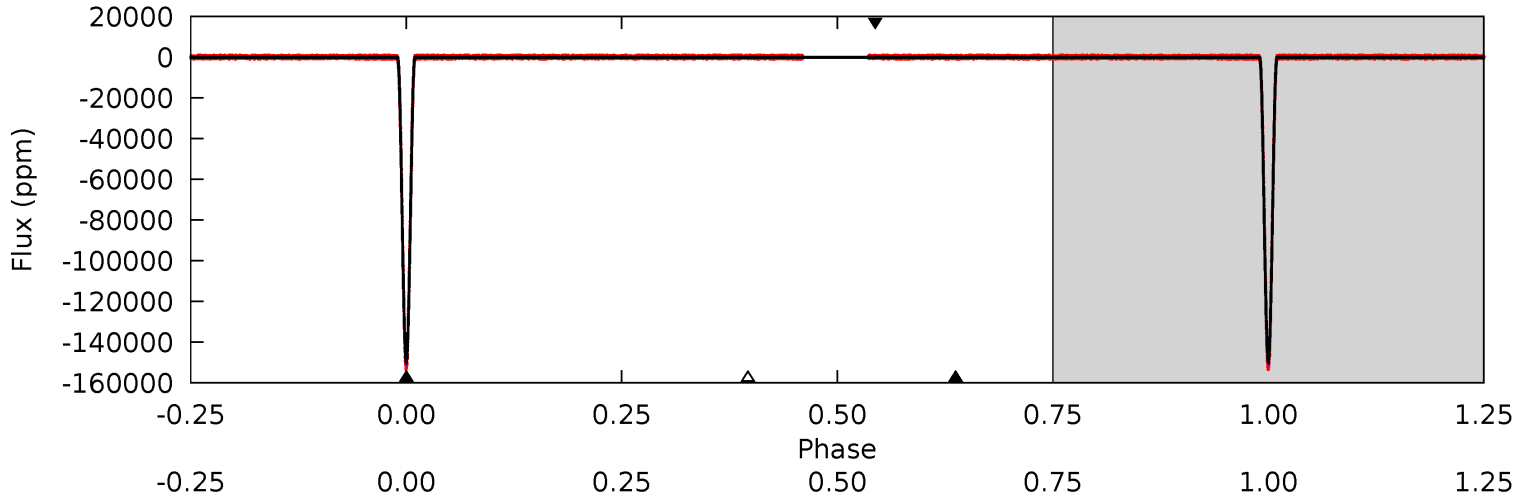
TCE 009821078-02 P= 8.429470 Days $T_0=136.507895$ (BKJD)



DV Model-Shift Uniqueness Test

009821078-02, P = 8.429436 Days, E = 128.081631 Days

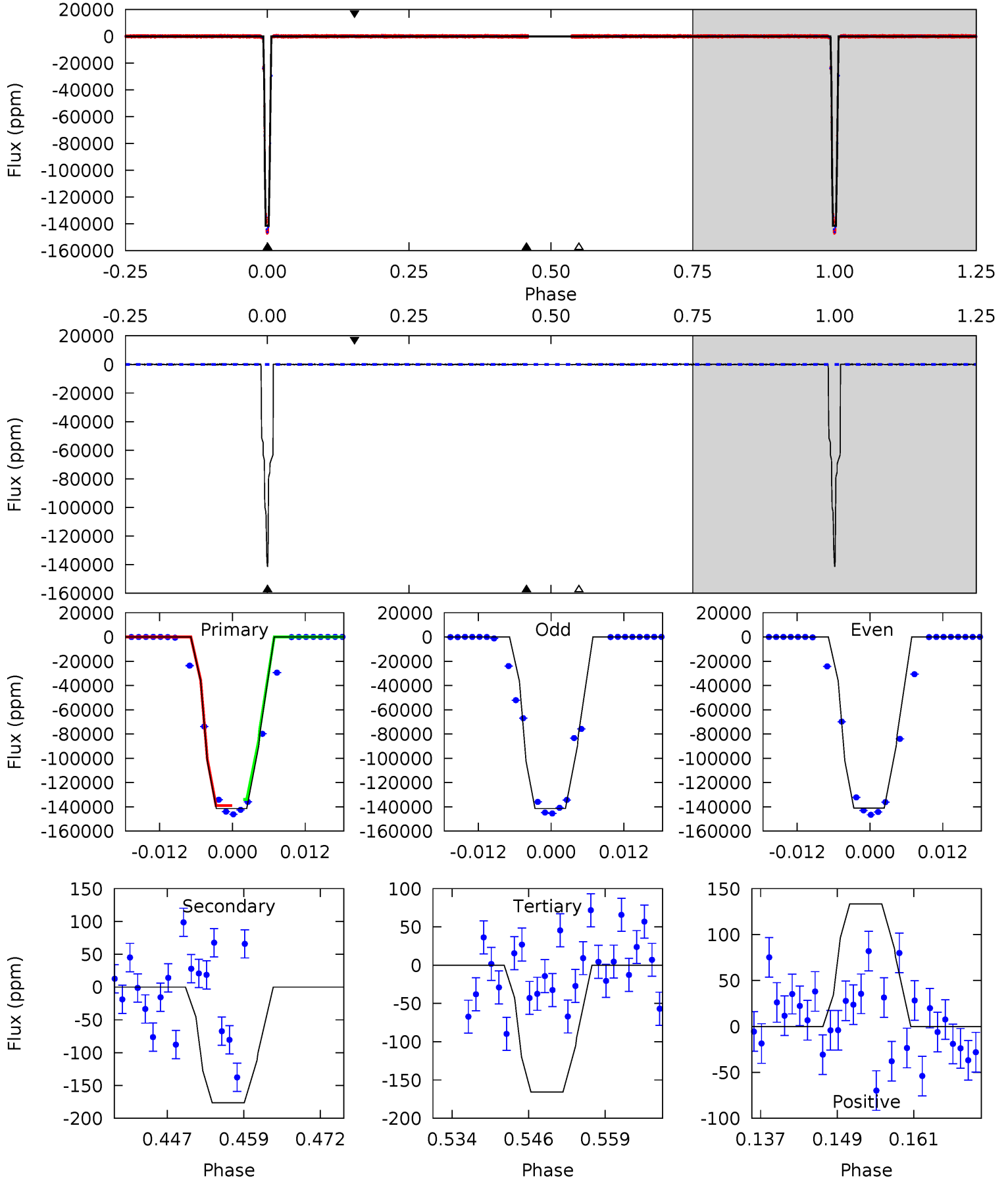
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14455	6.47	6.37	14.0	4.88	2.31	2.80	14448	14441	0.10	-7.51	2.34	1.00	0.00	5.28



Alt Model-Shift Uniqueness Test

009821078-02, P = 8.429470 Days, E = 128.078425 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4295	5.36	5.04	4.05	4.98	2.50	1.14	4290	4291	0.33	1.31	6.53	1.00	0.00	0



Stellar Parameters For KIC 009821078

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4268^{+129}_{-142}	$4.602^{+0.052}_{-0.017}$	$0.200^{+0.200}_{-0.300}$	$0.680^{+0.028}_{-0.057}$	$0.675^{+0.047}_{-0.052}$	$3.021^{+0.696}_{-0.202}$
	+3%/-3%	+1%/-0%	+100%/-150%	+4%/-8%	+7%/-8%	+23%/-7%
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 009821078-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-67 ± 10	$38.16^{+3.35}_{-3.00}$	807^{+28}_{-30}	-1594^{+39}_{-32}	$0.129^{+0.031}_{-0.028}$
Alt.	-176 ± 33	$28.62^{+3.10}_{-3.00}$	806^{+29}_{-29}	1671^{+80}_{-98}	$0.604^{+0.197}_{-0.156}$

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 $A_{obs} \gg 1.0$

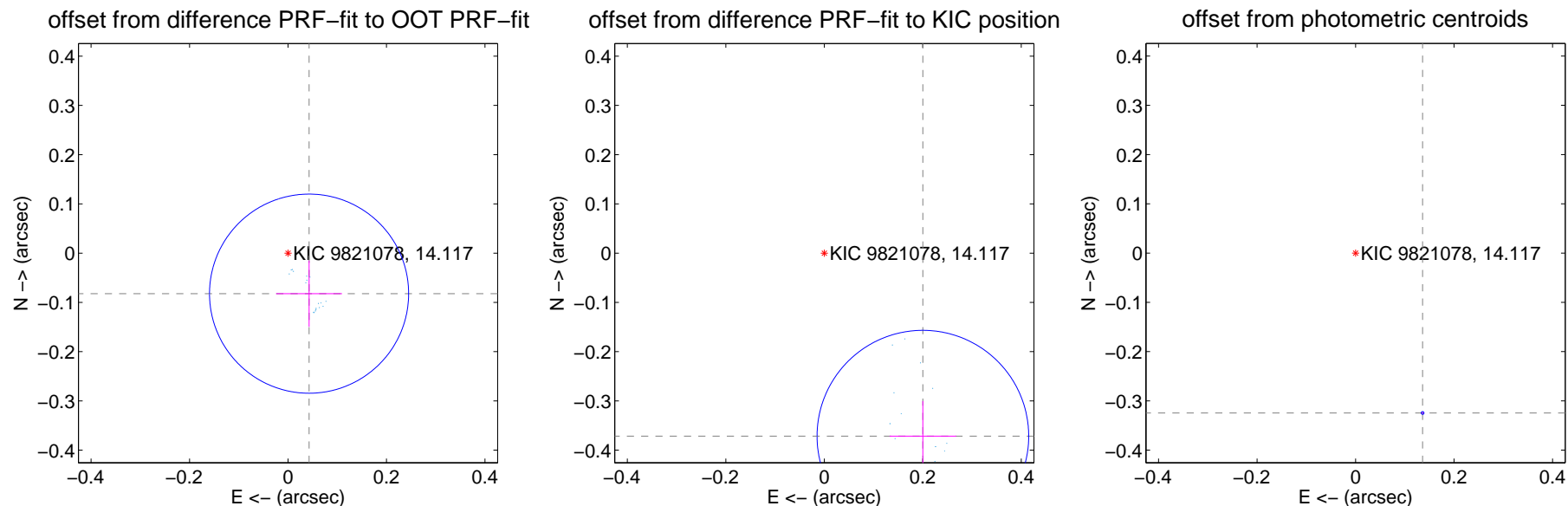
DV Centroid Data

Supplemental centroid analysis for 009821078-02. Kepler magnitude: 14.12. Transit SNR 4654.47

There are 17 quarters with good PRF difference image offsets

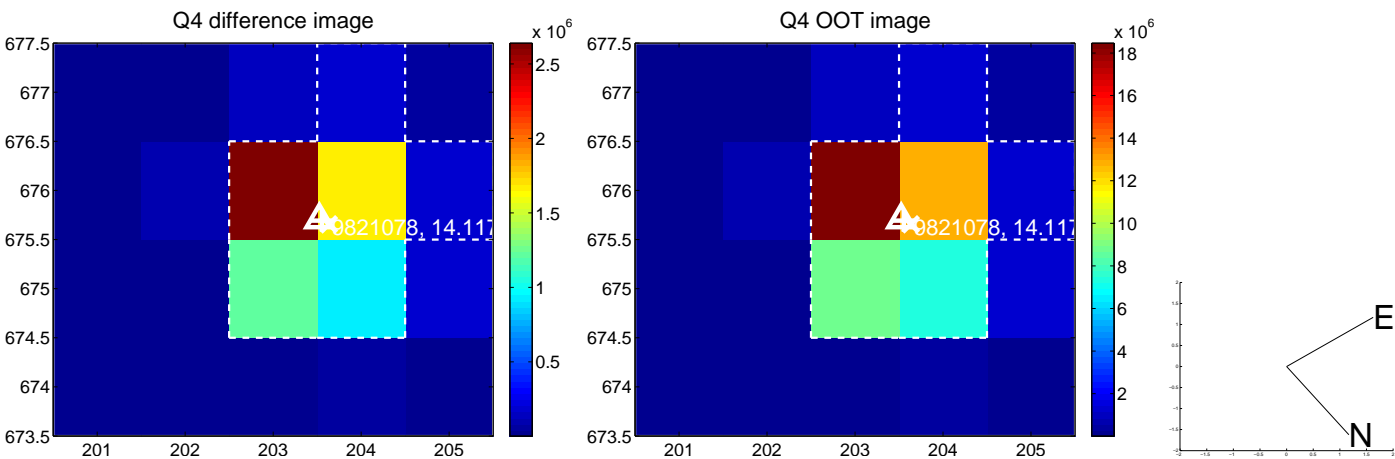
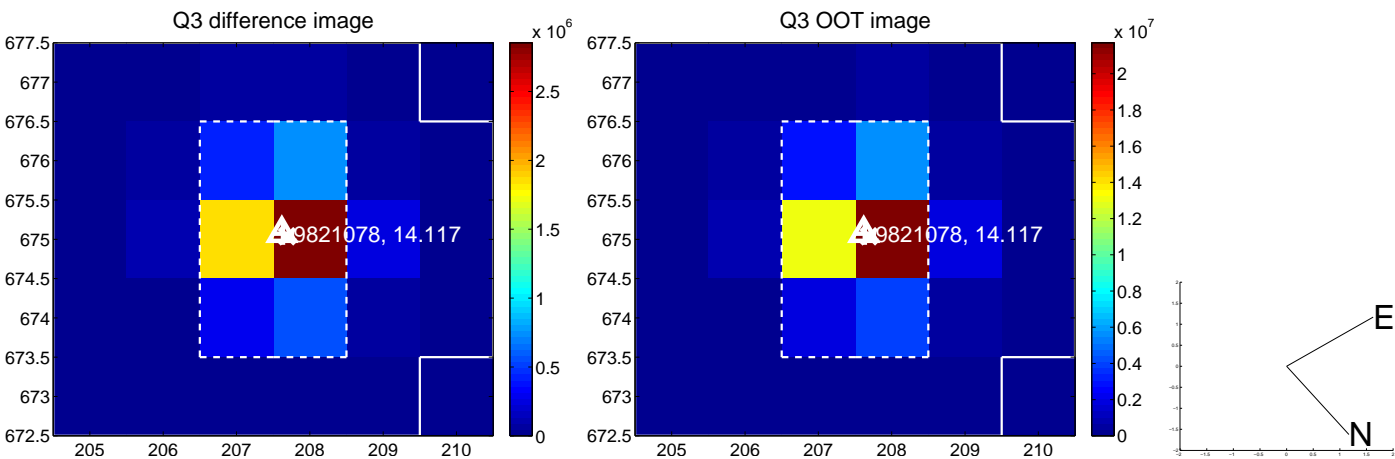
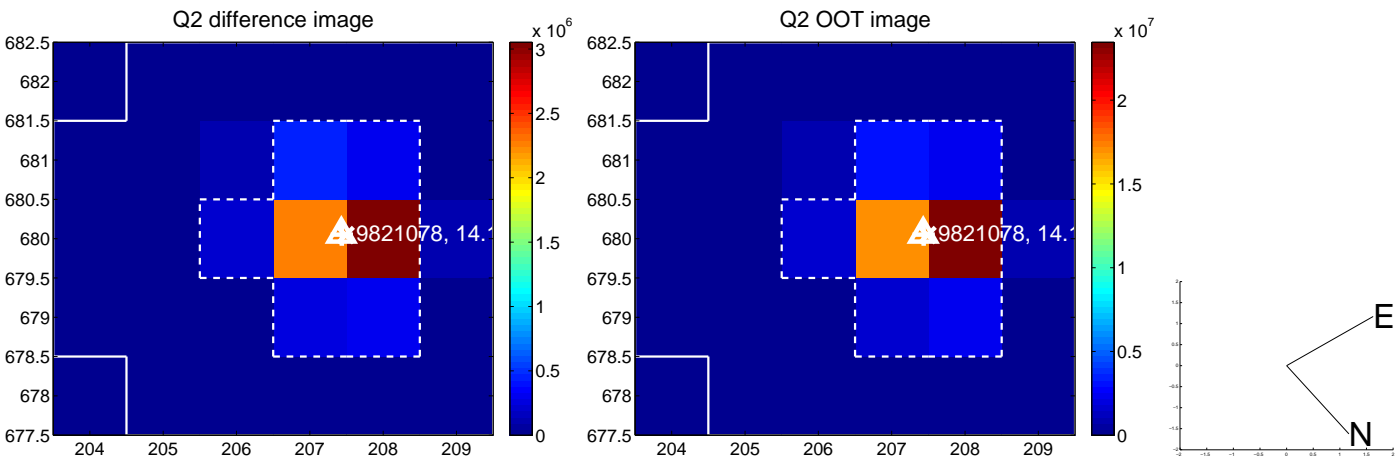
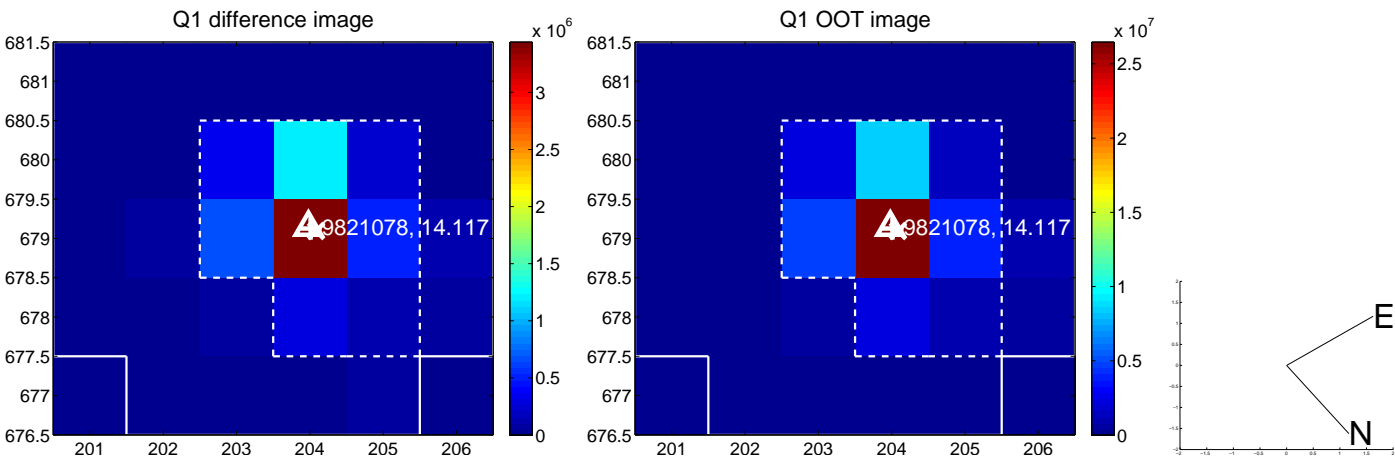
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.067	1.38	-0.043 ± 0.067	-0.082 ± 0.067
PRF-fit source offset from KIC position	0.422 ± 0.072	5.89	-0.200 ± 0.068	-0.372 ± 0.071
photometric centroid source offset	0.35 ± 0.00	381.55	-0.14 ± 0.00	-0.32 ± 0.00

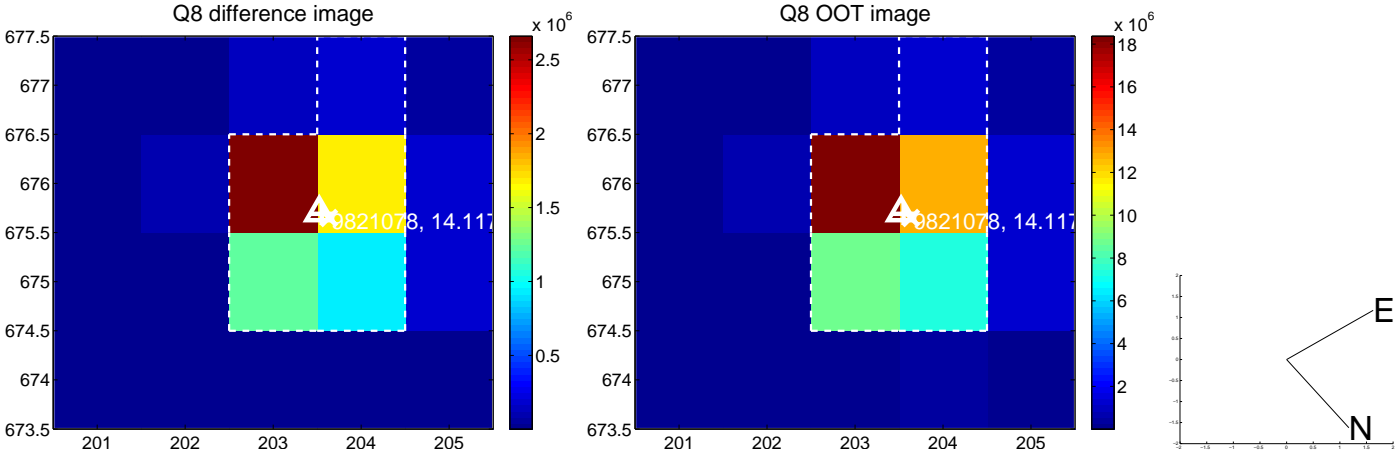
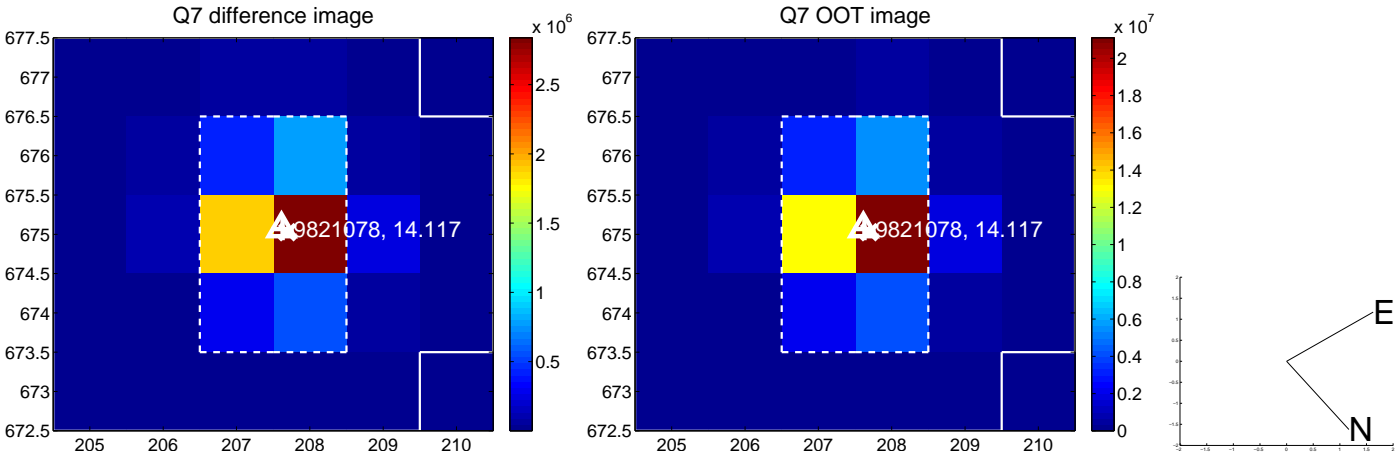
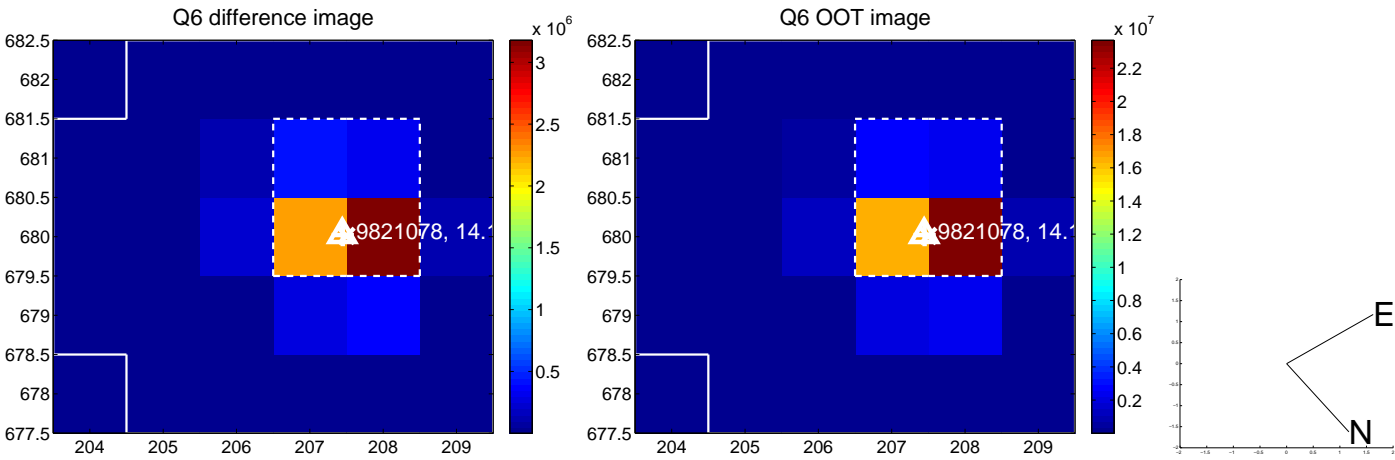
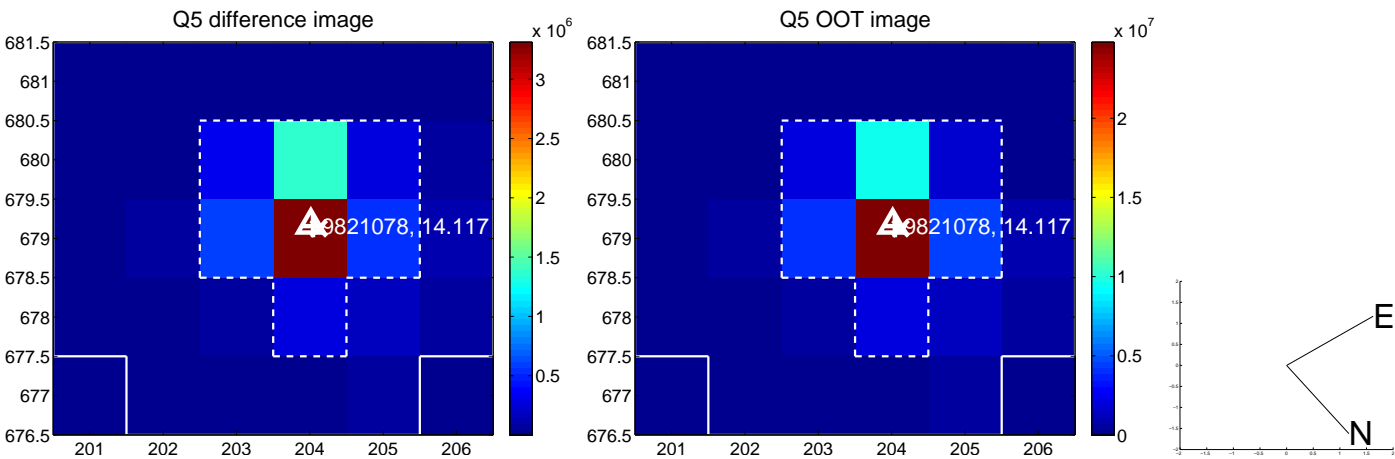


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

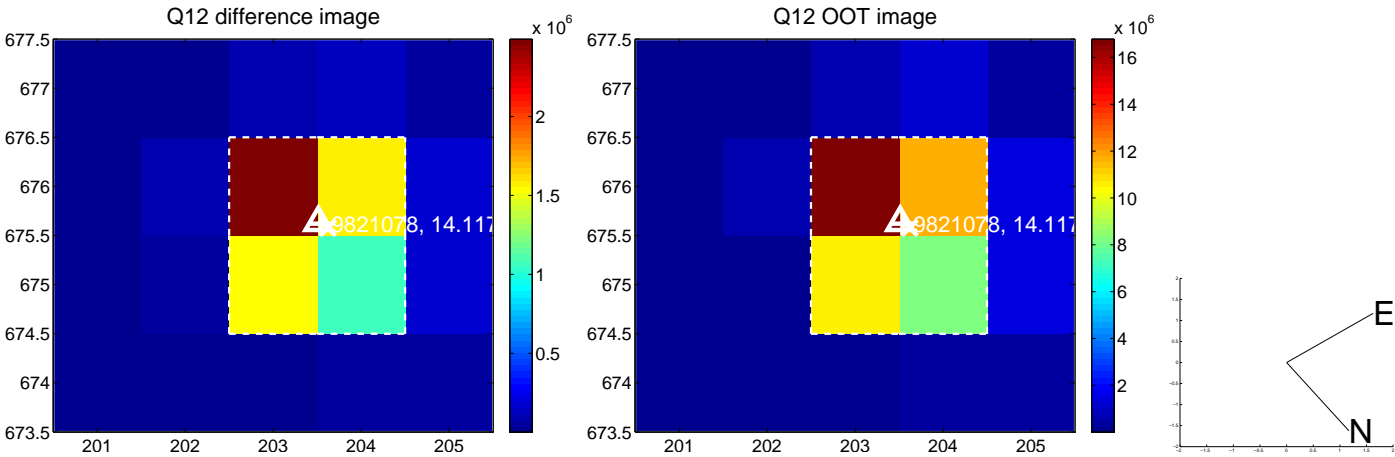
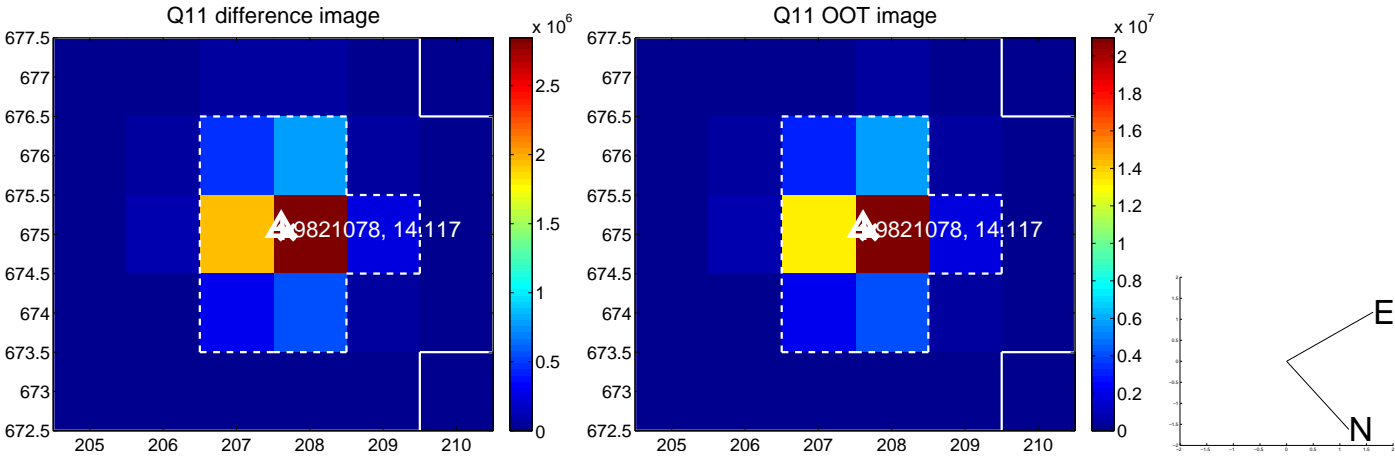
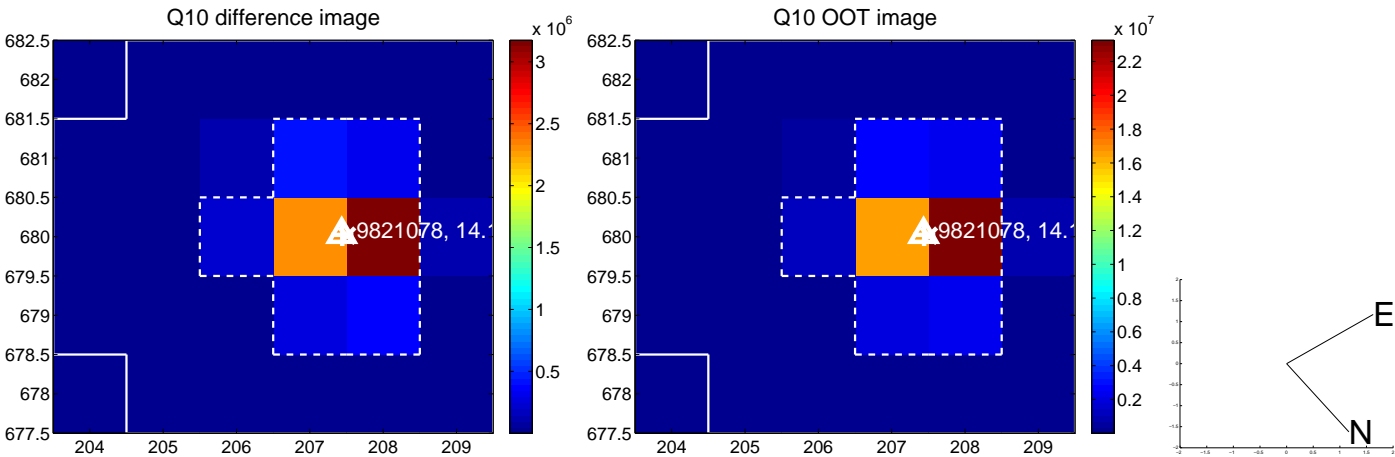
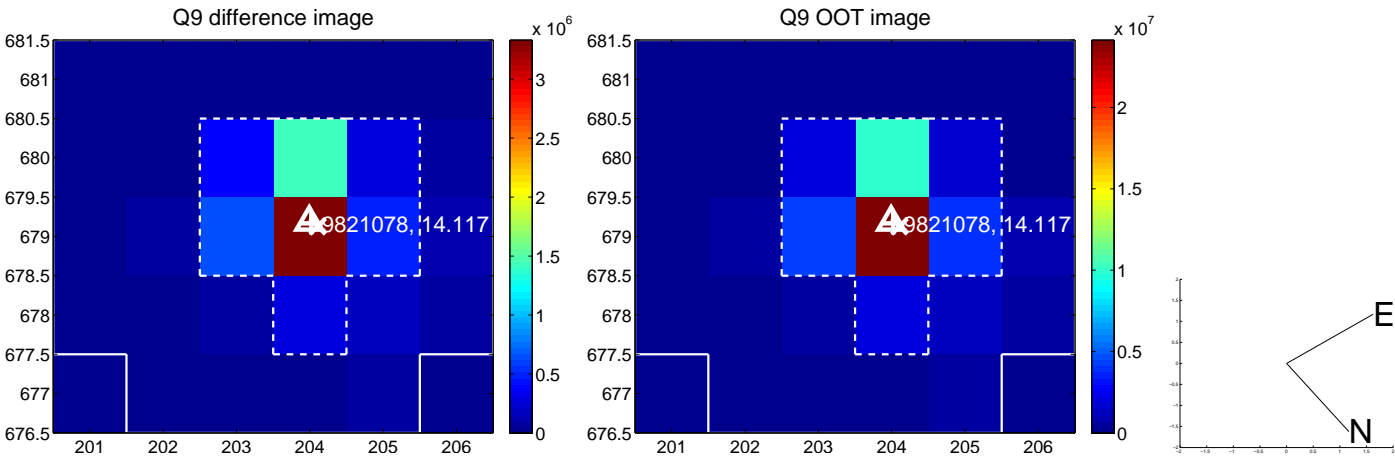
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



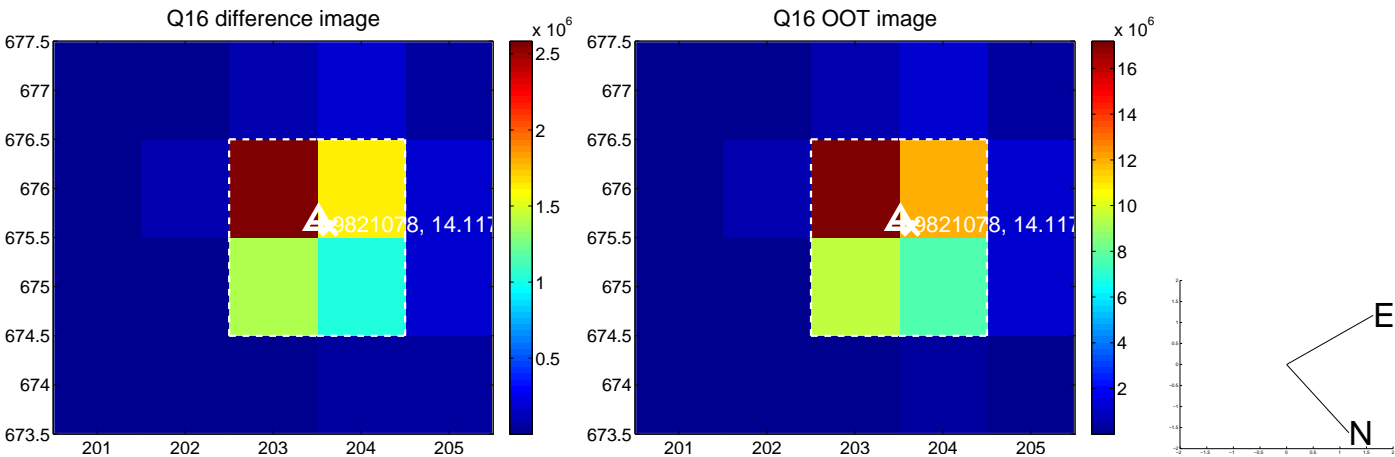
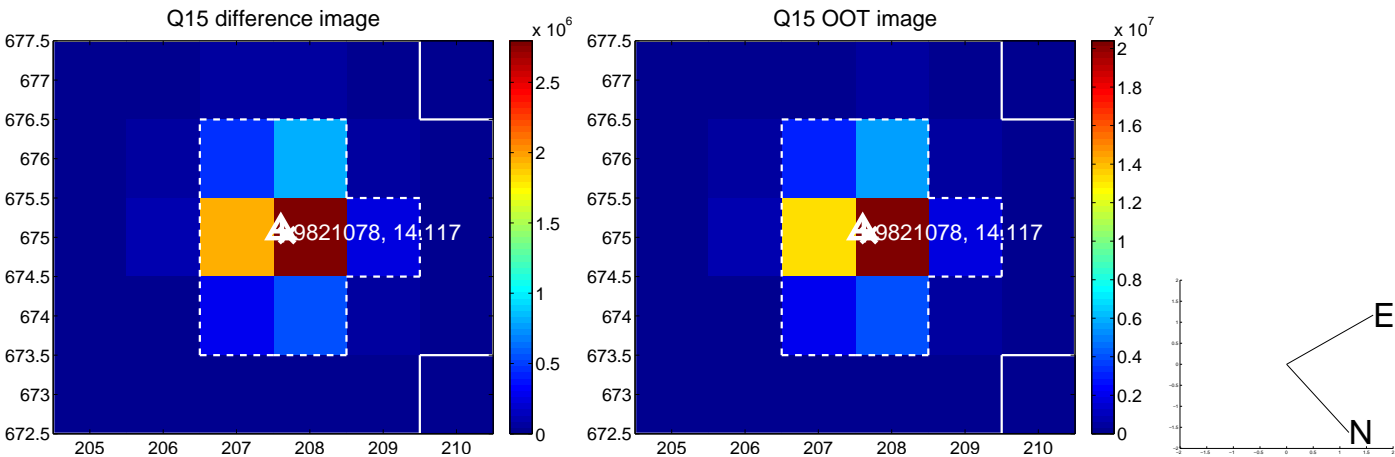
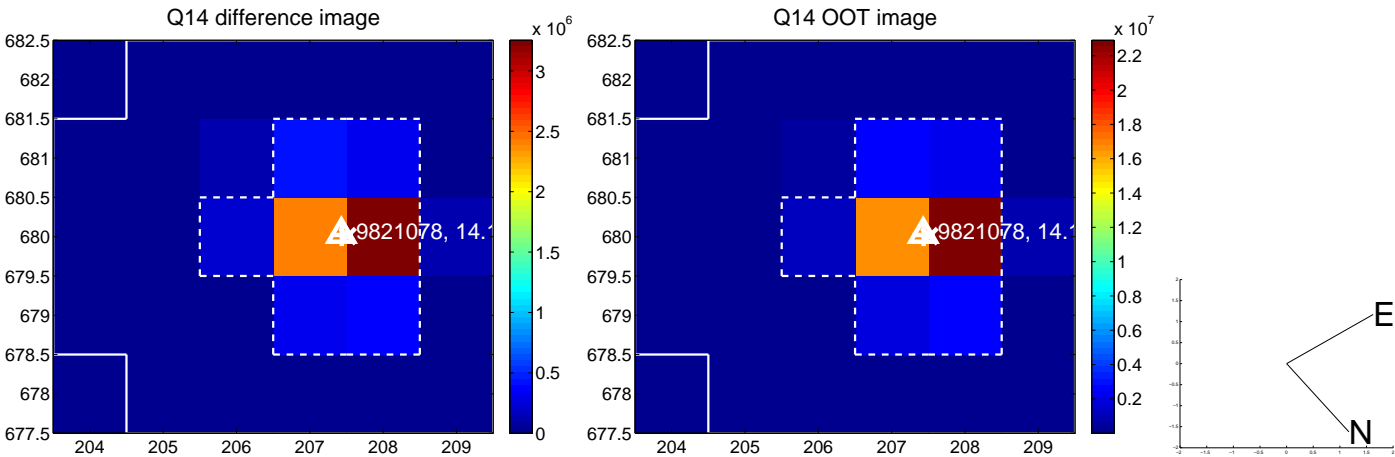
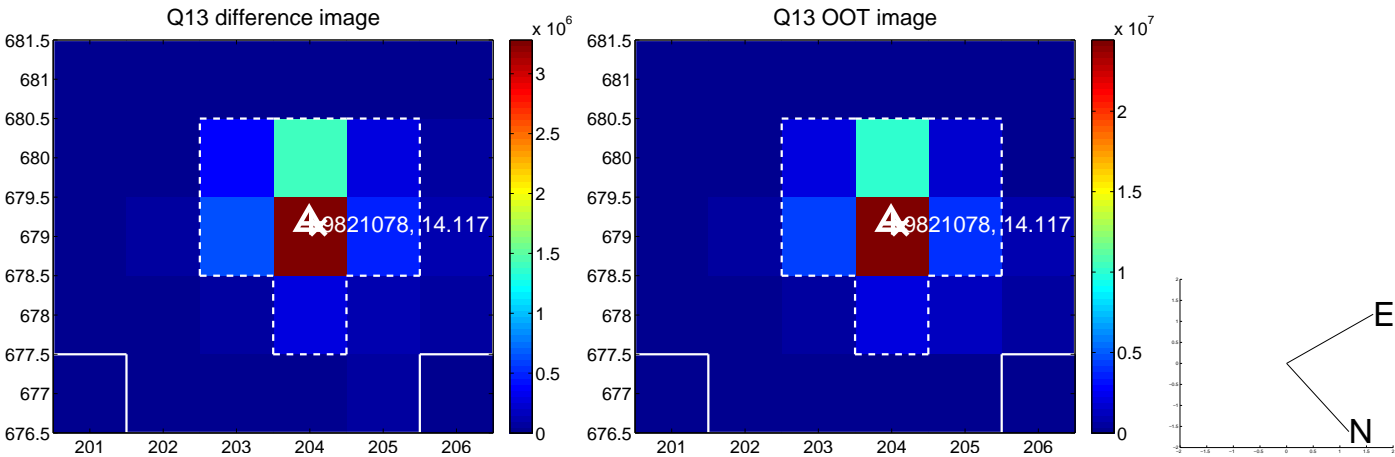
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



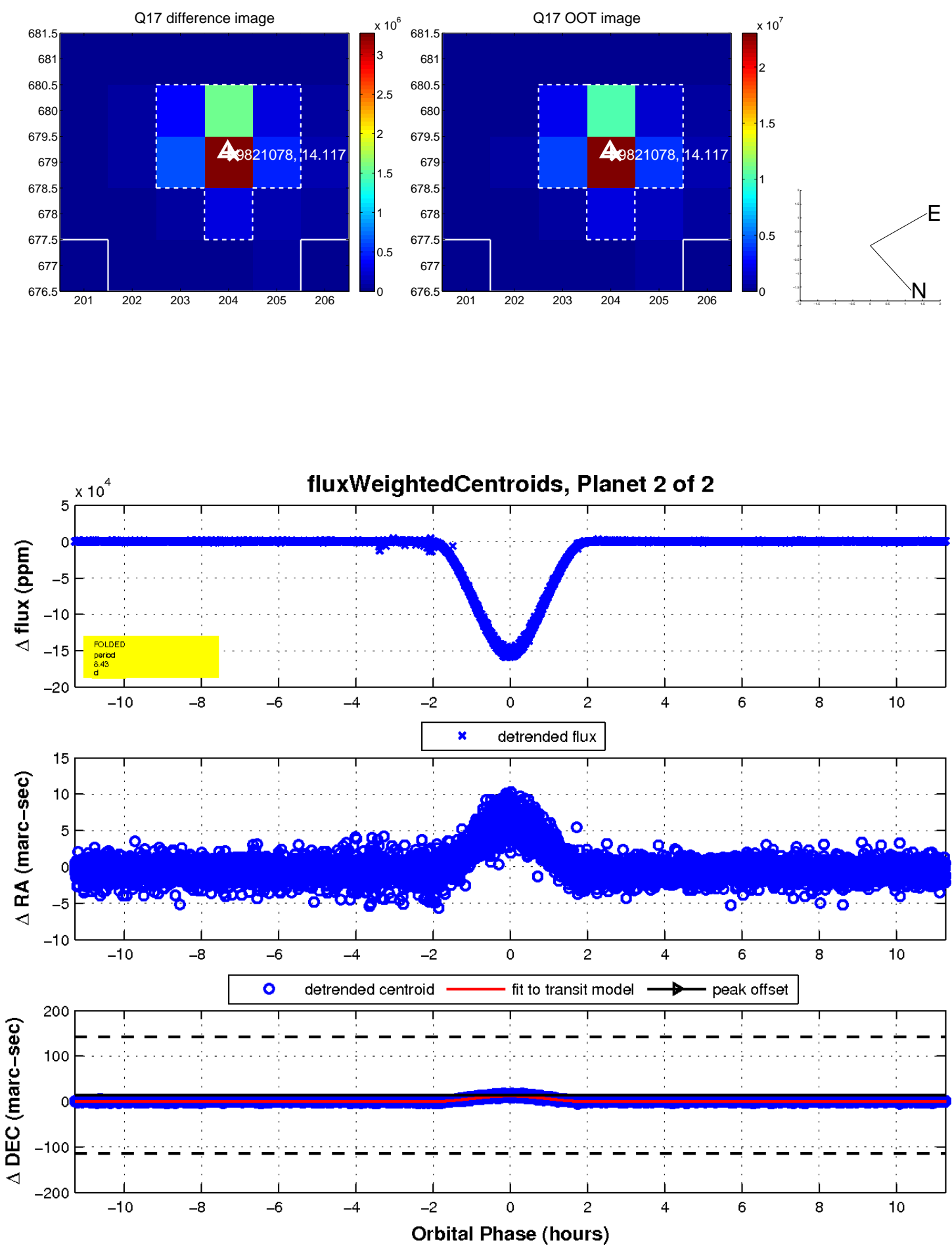
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

