

KIC 009002237

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})
009002237-01	OBS	1389.01	4.350088	134.800236	23367.9	2.631	1435.2	1369.9	0.95	6060	22.60	394.02
009002237-02	OBS	No	4.350085	132.625652	1189.8	2.599	65.3	74.8	0.95	6060	6.16	394.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009002237-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009002237-02	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.

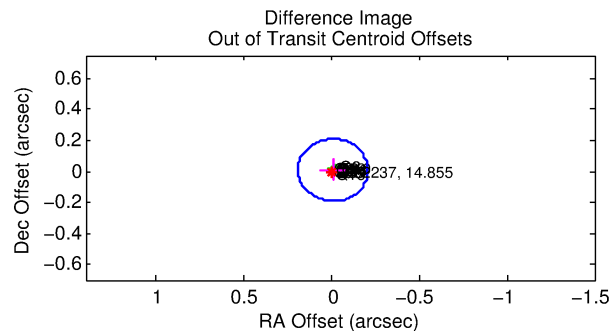
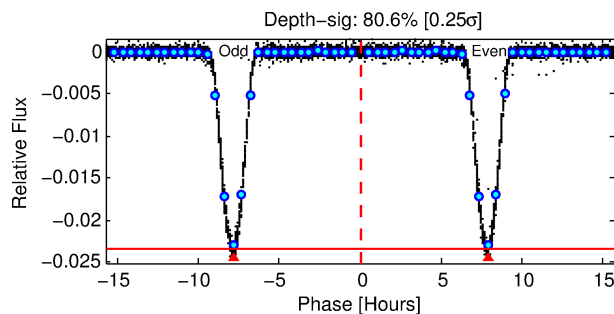
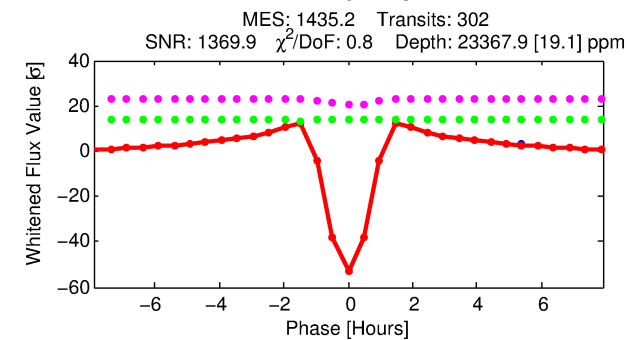
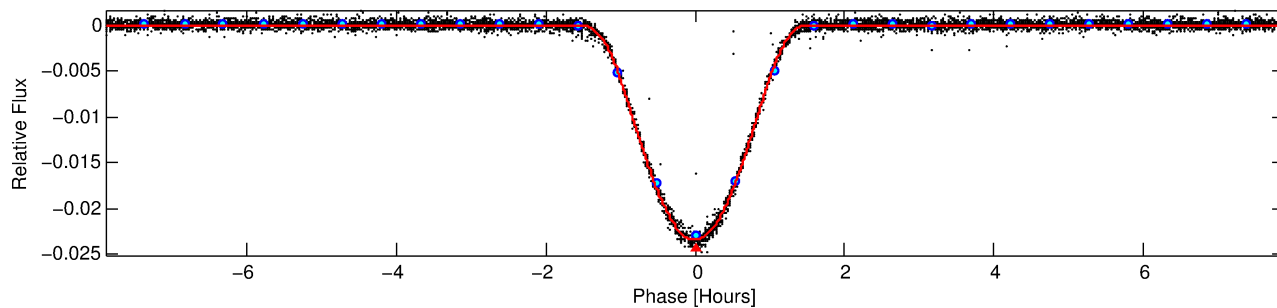
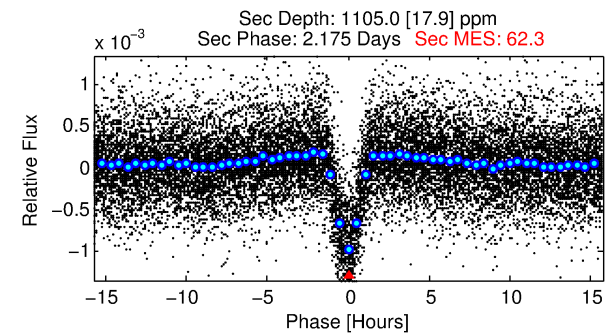
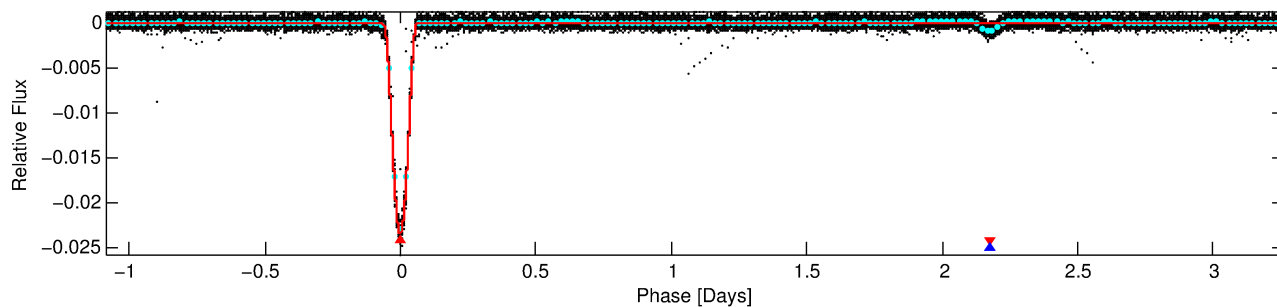
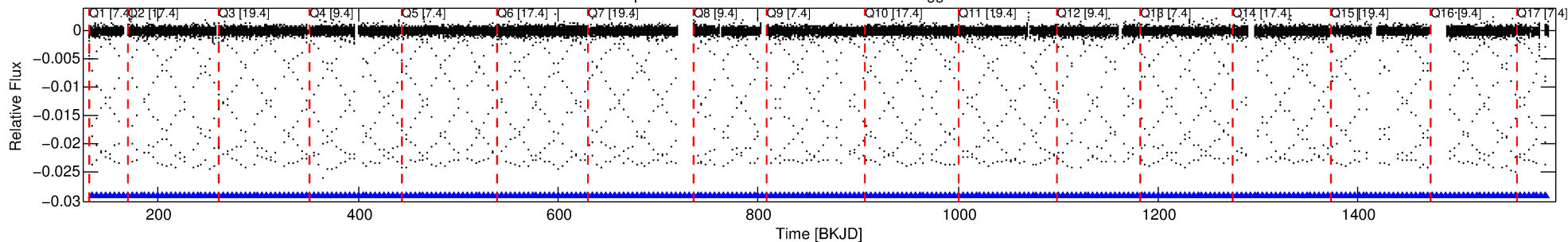
Ephemeris Match Information For 009002237-01

No Significant Match Found

DV One-Page Summary

KIC: 9002237 Candidate: 1 of 2 Period: 4.350 d
KOI: K01389.01 Corr: 0.999

Kp: 14.85 R*: 0.95 Rs Teff: 6060.0 K Logg: 4.50 Fe/H: -0.140



DV Fit Results:

Period = 4.35009 [0.00000] d
Epoch = 134.8002 [0.0000] BKJD
Rp/R* = 0.2173 [0.0060]
a/R* = 9.55 [0.04]
b = 0.96 [0.01]
Seff = 394.02 [159.11]
Teq = 1136 [115] K
Rp = 22.60 [7.14] Re
a = 0.0528 [0.0139] AU
Ag = 3.32 [1.28] [1.81σ]
Teffp = 2370 [85] K [8.6σ]

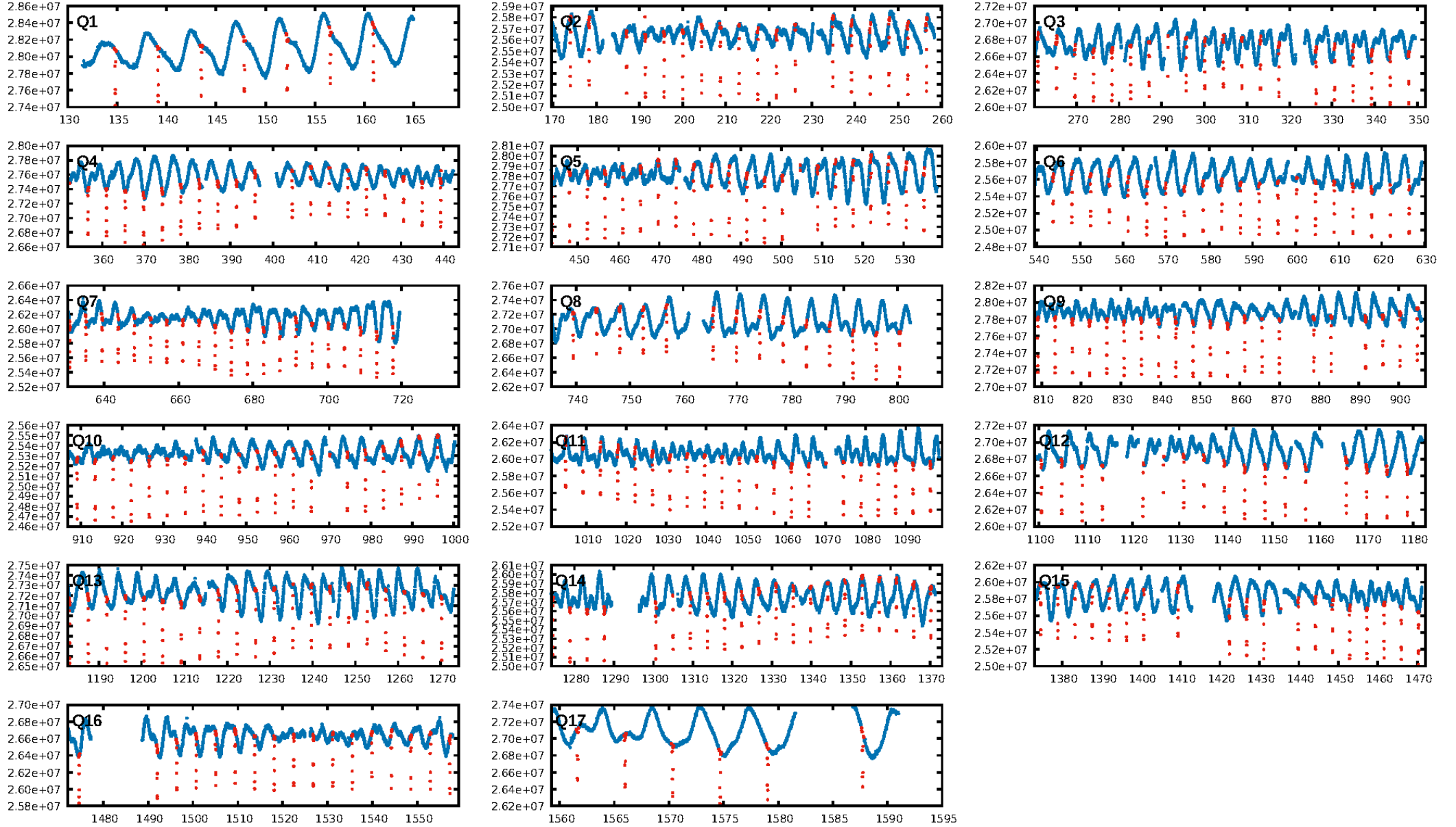
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [289/289]
GhostDiagnostic-chr: 2.977
Centroid-sig: 1.9%
Centroid-so: 0.100 arcsec [14.56σ]
OotOffset-rm: 0.013 arcsec [0.19σ]
KicOffset-rm: 0.019 arcsec [0.27σ]
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]

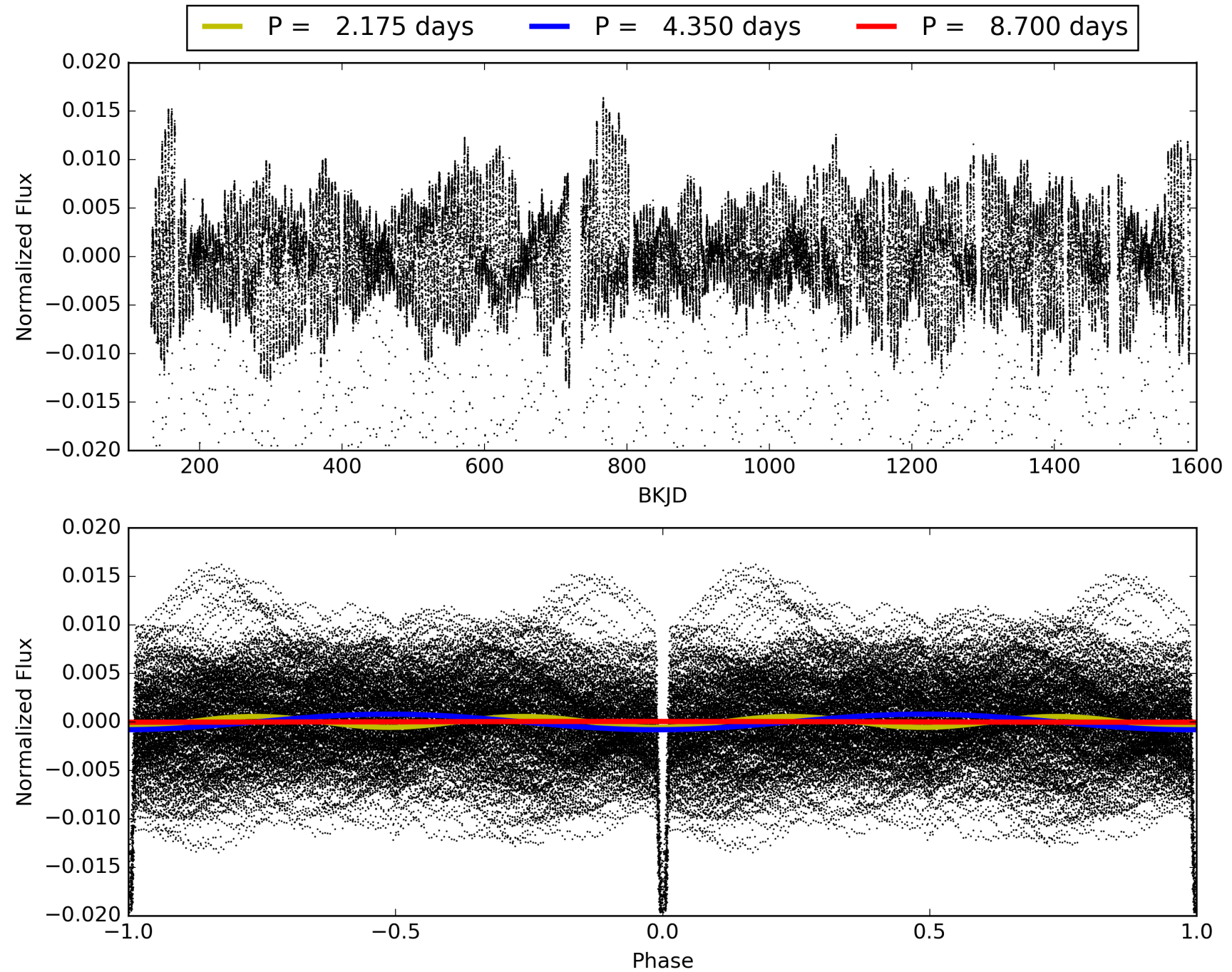
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:10:23 Z

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

TCE 009002237-01, PDC Light Curves

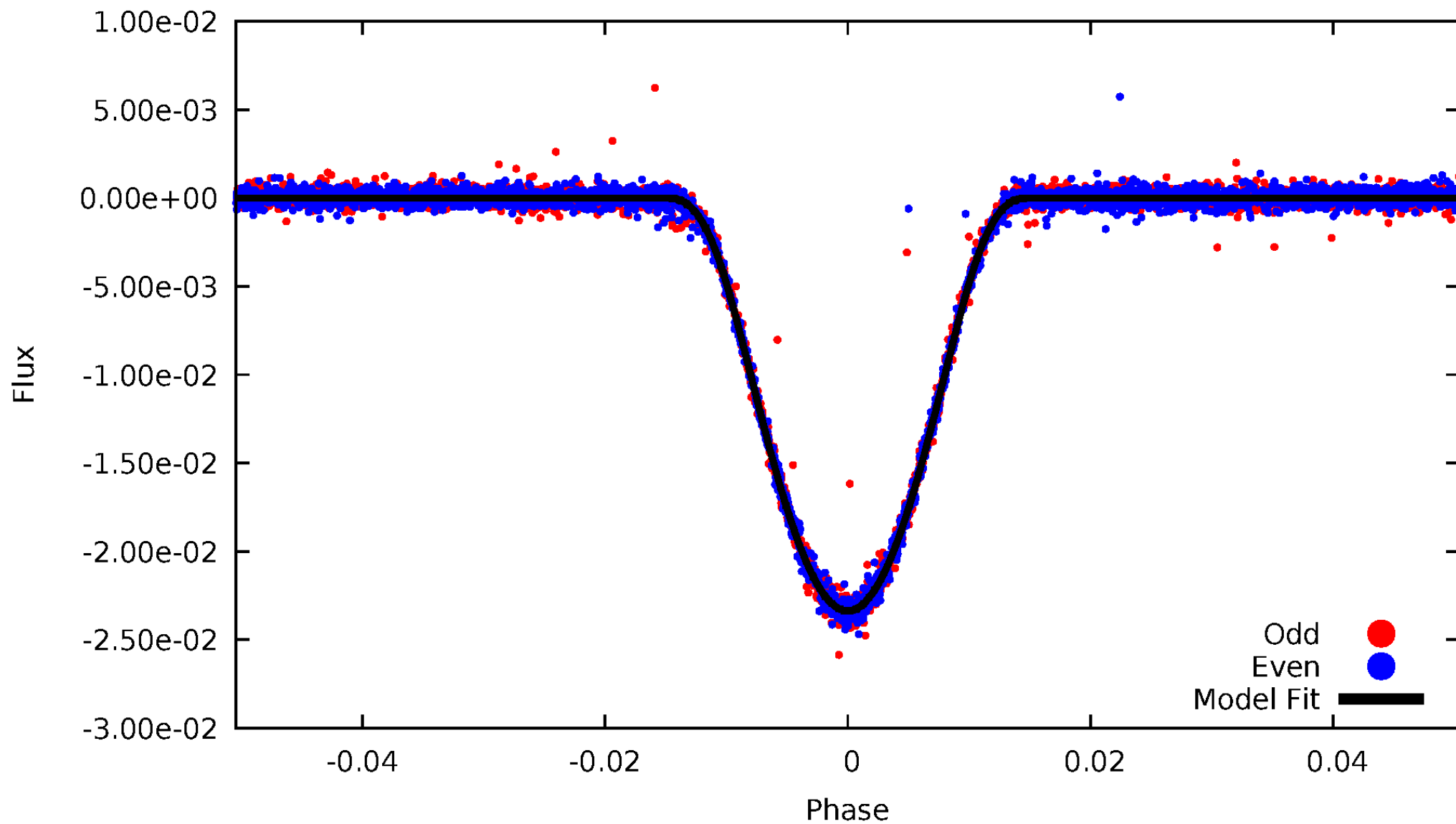


TCE 009002237-01



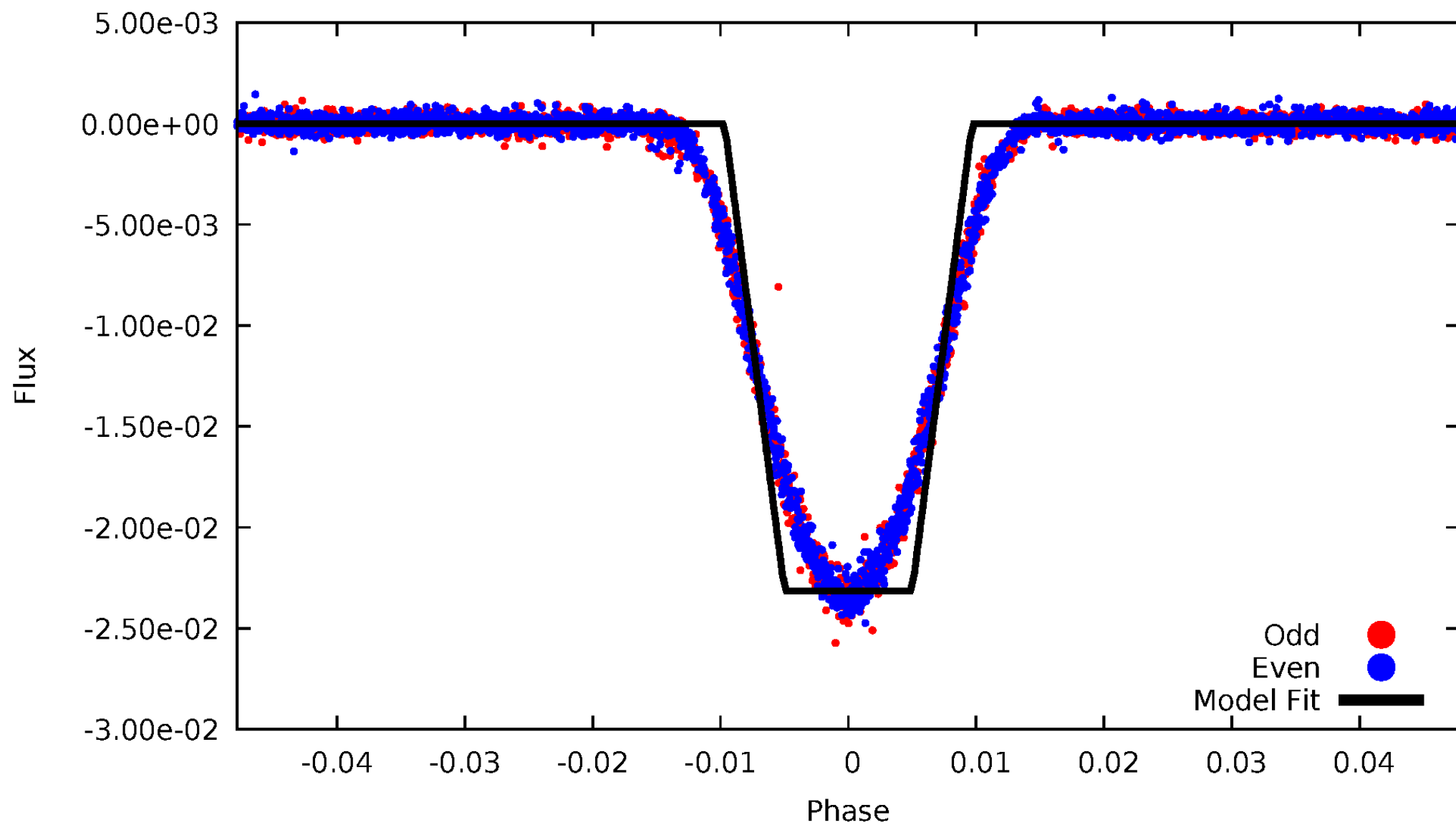
DV Odd/Even

TCE 009002237-01



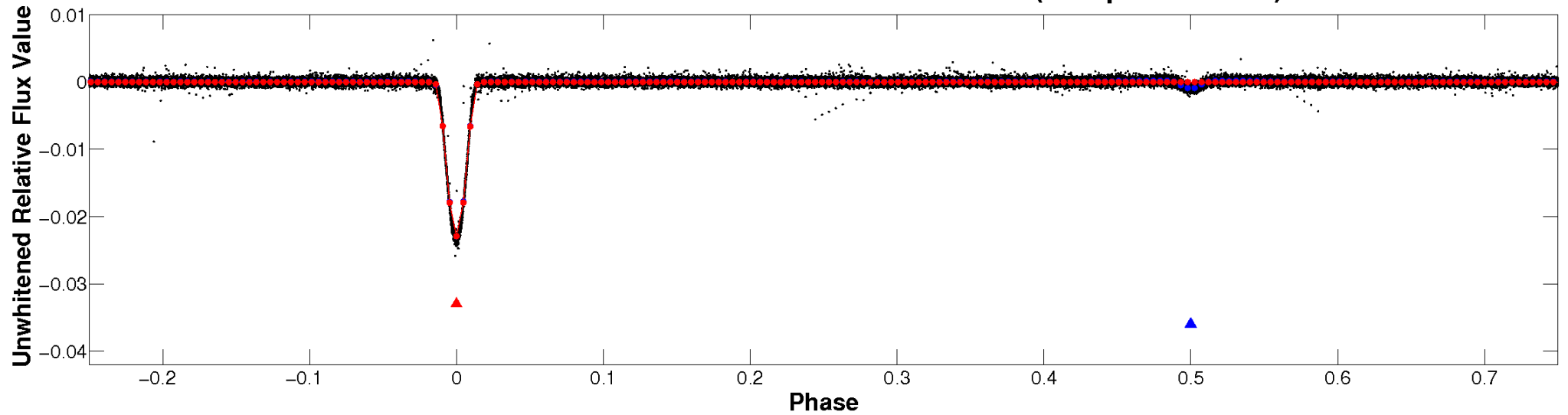
ALT Odd/Even

TCE 009002237-01

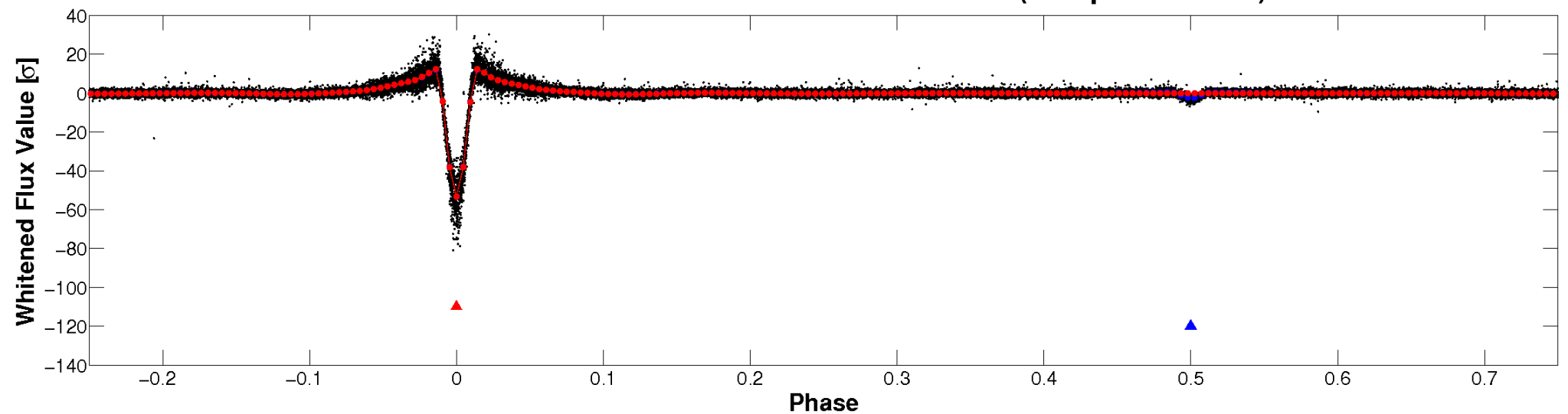


Non-Whitened Vs. Whitened Light Curve

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

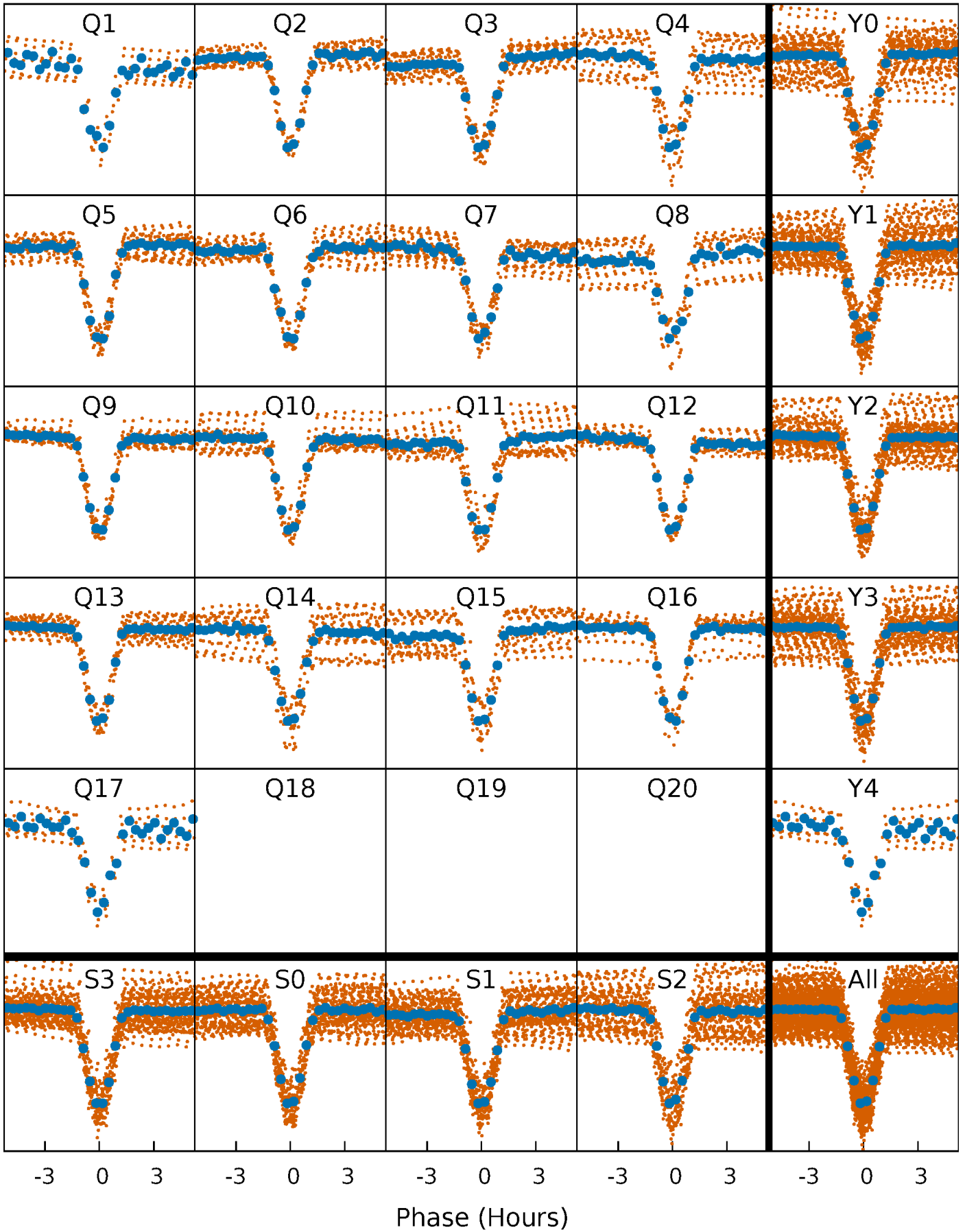


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



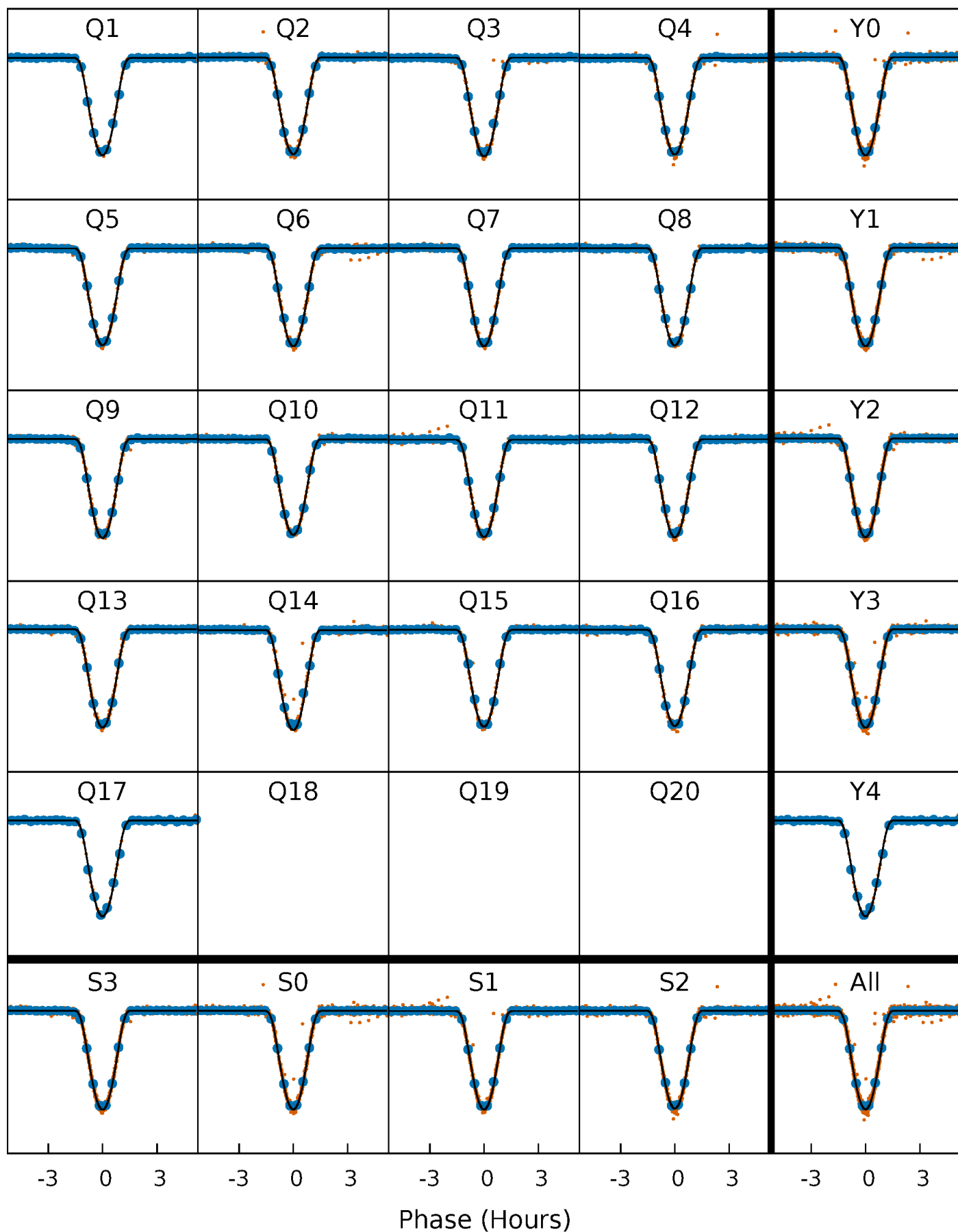
PDC Quarter-Phased Transit Curves

TCE 009002237-01 P= 4.350088 Days $T_0=134.800236$ (BKJD)



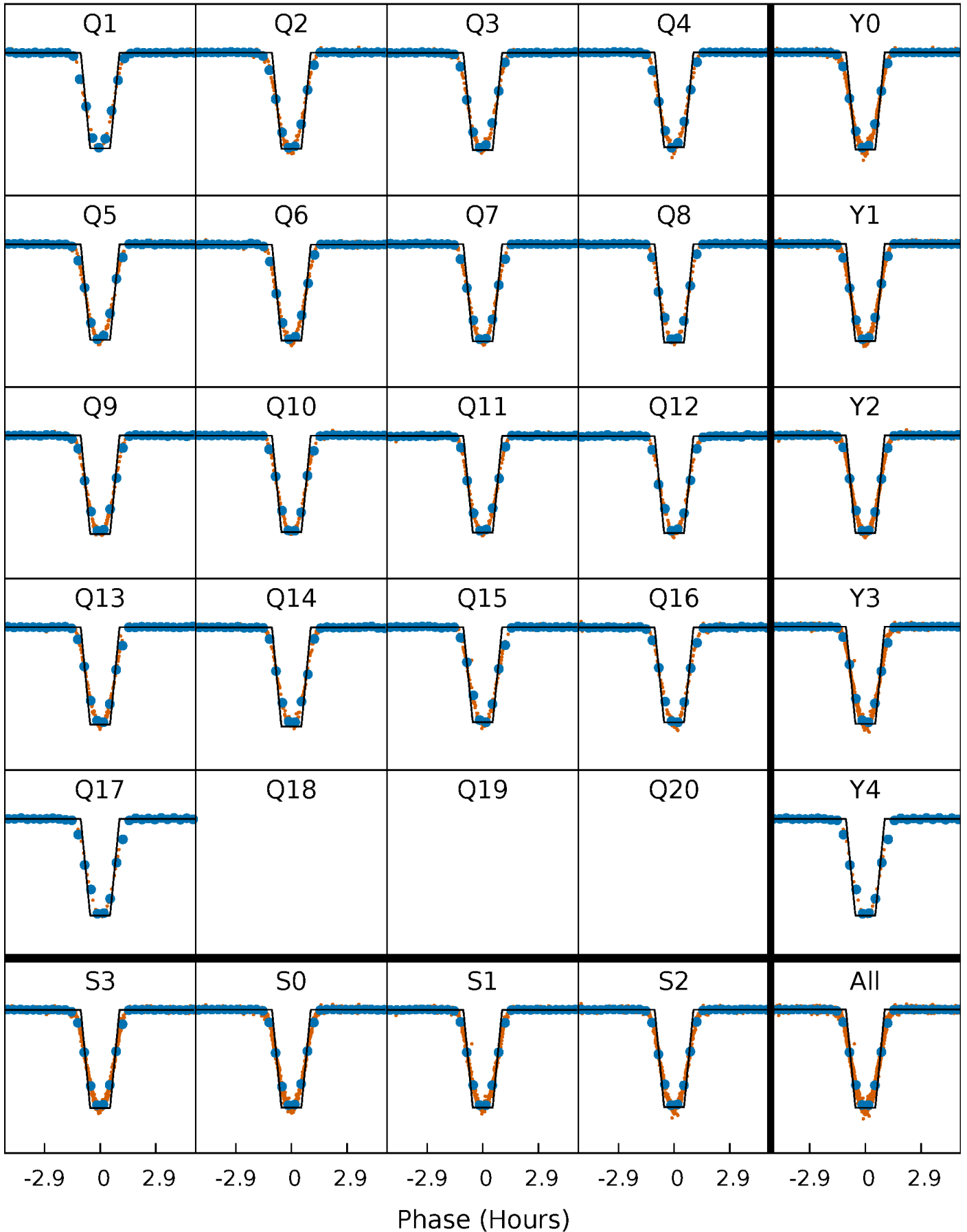
DV Quarter-Phased Transit Curves

TCE 009002237-01 P= 4.350088 Days $T_0=134.800236$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

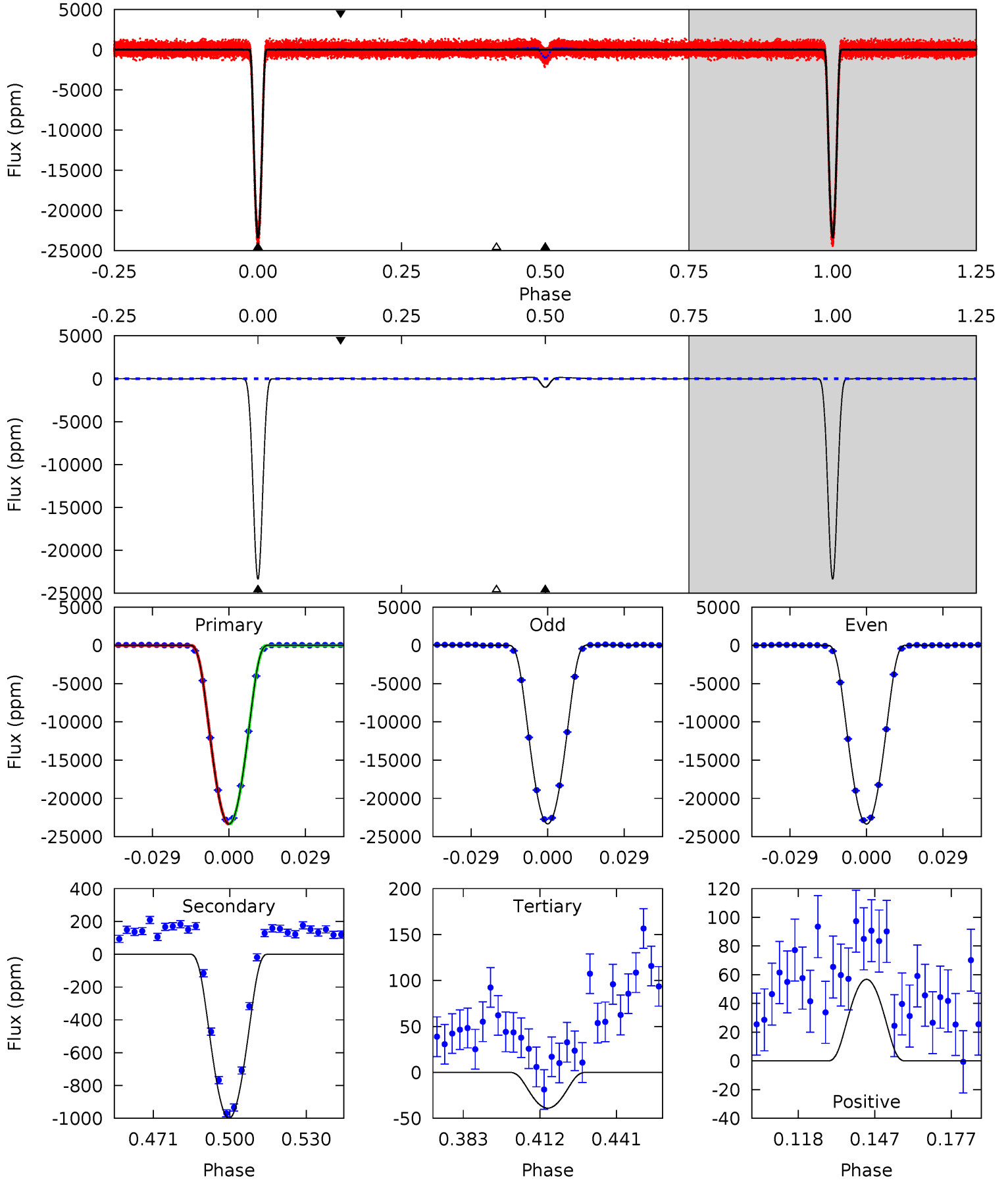
TCE 009002237-01 P= 4.350077 Days $T_0=134.802100$ (BKJD)



DV Model-Shift Uniqueness Test

009002237-01, P = 4.350088 Days, E = 130.450148 Days

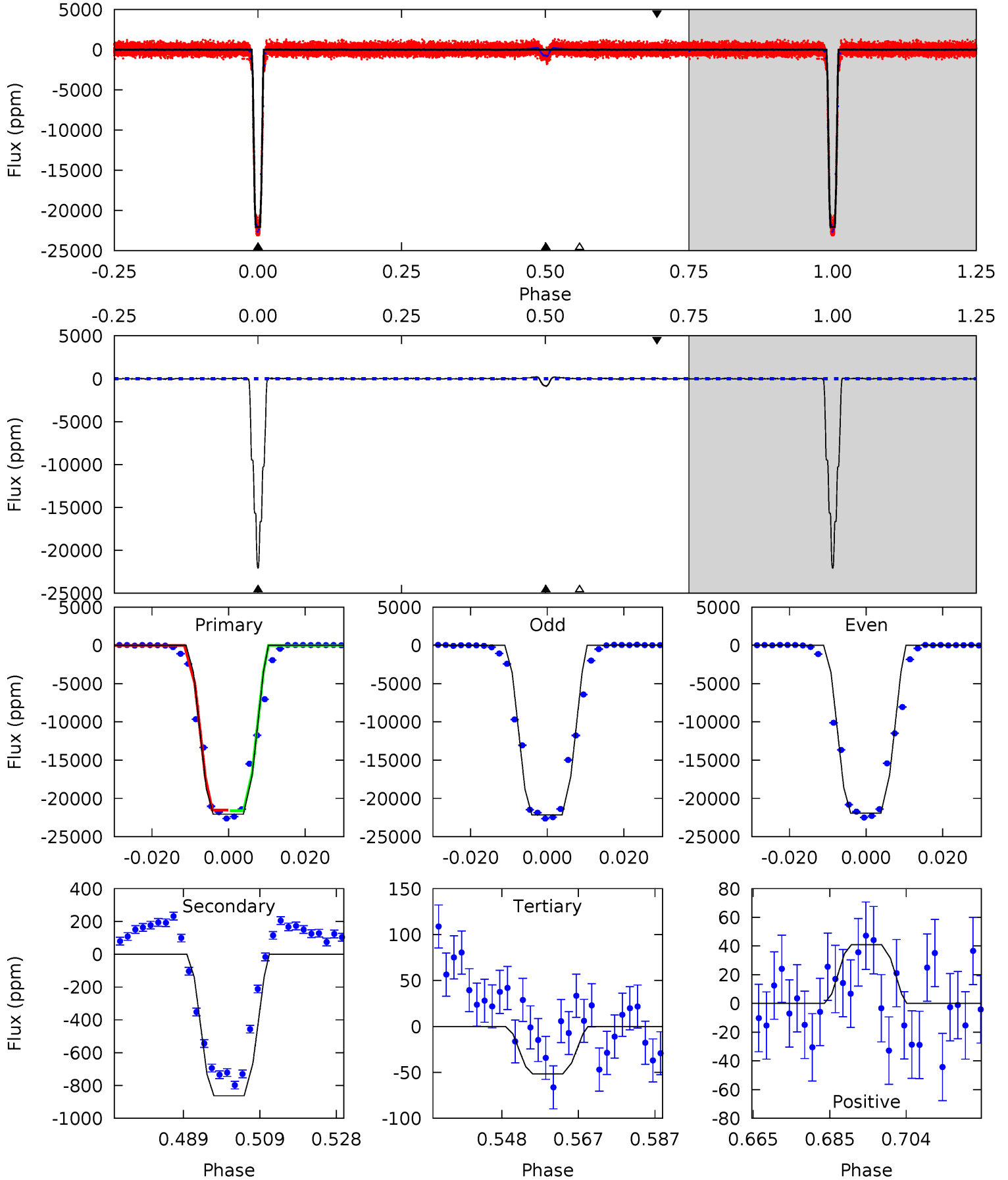
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2922	125.1	4.88	7.11	4.82	2.18	4.10	2917	2915	120.3	118.0	1.90	1.00	0.01	1.39



Alt Model-Shift Uniqueness Test

009002237-01, P = 4.350077 Days, E = 130.452023 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1661	65.0	3.88	3.08	4.90	2.33	2.13	1657	1658	61.1	61.9	8.74	1.00	0.01	0



Stellar Parameters For KIC 009002237

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6060^{+162}_{-198}	$4.495^{+0.052}_{-0.208}$	$-0.140^{+0.300}_{-0.300}$	$0.953^{+0.300}_{-0.100}$	$1.036^{+0.139}_{-0.139}$	$1.684^{+0.445}_{-0.887}$
	+3%/-3%	+1%/-5%	+214%/-214%	+31%/-10%	+13%/-13%	+26%/-53%
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 009002237-01 / KOI 1389.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1000 ± 8	$23.31^{+3.68}_{-2.09}$	1620^{+118}_{-78}	2938^{+50}_{-57}	$2.759^{+0.490}_{-0.610}$
Alt.	-863 ± 13	$16.45^{+2.78}_{-1.65}$	1621^{+125}_{-75}	3207^{+67}_{-82}	$4.788^{+0.956}_{-1.199}$

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 $A_{obs} \gg 1.0$

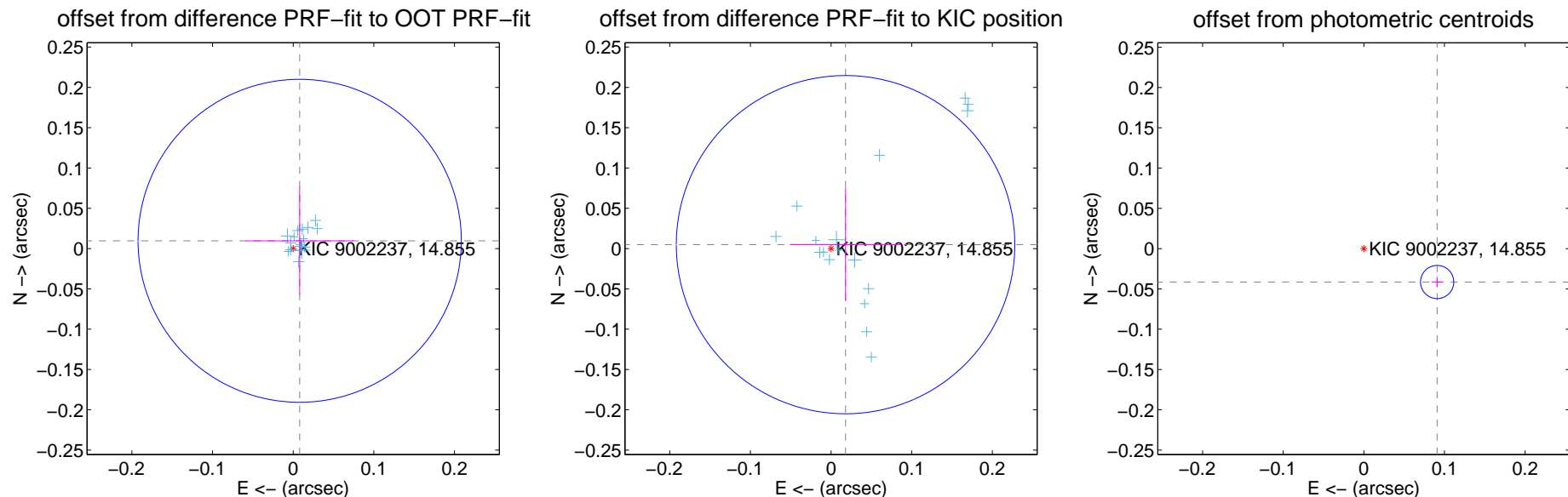
DV Centroid Data

Supplemental centroid analysis for 009002237-01. Kepler magnitude: 14.86. Transit SNR 1369.91

There are 17 quarters with good PRF difference image offsets

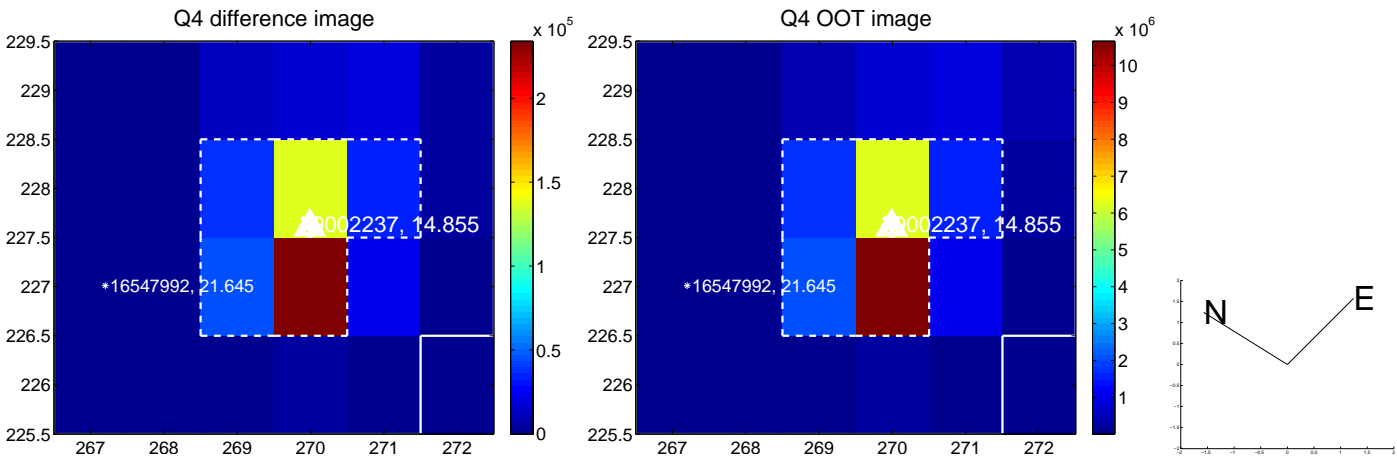
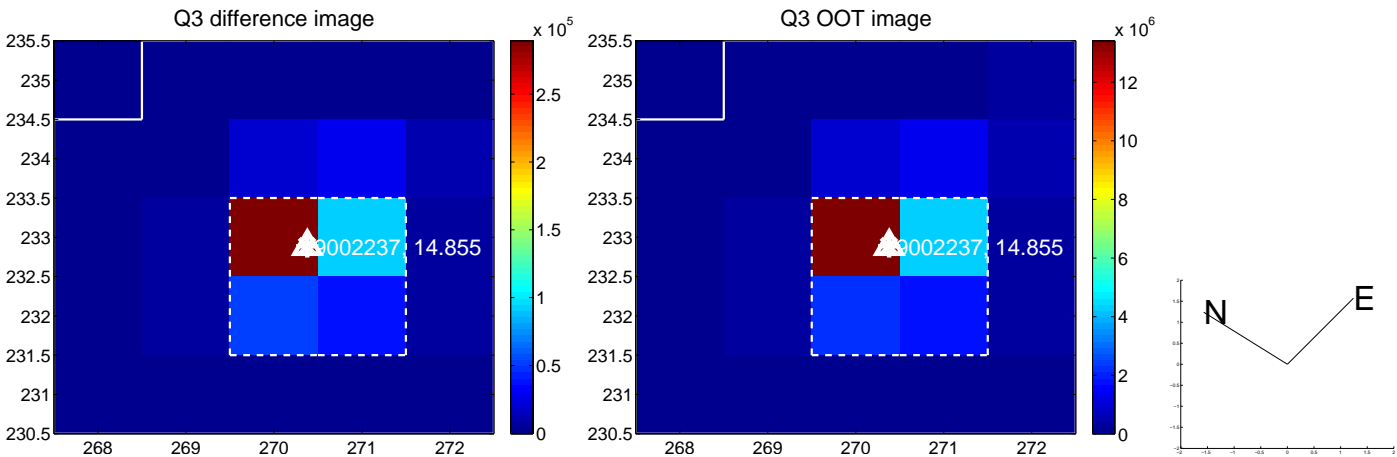
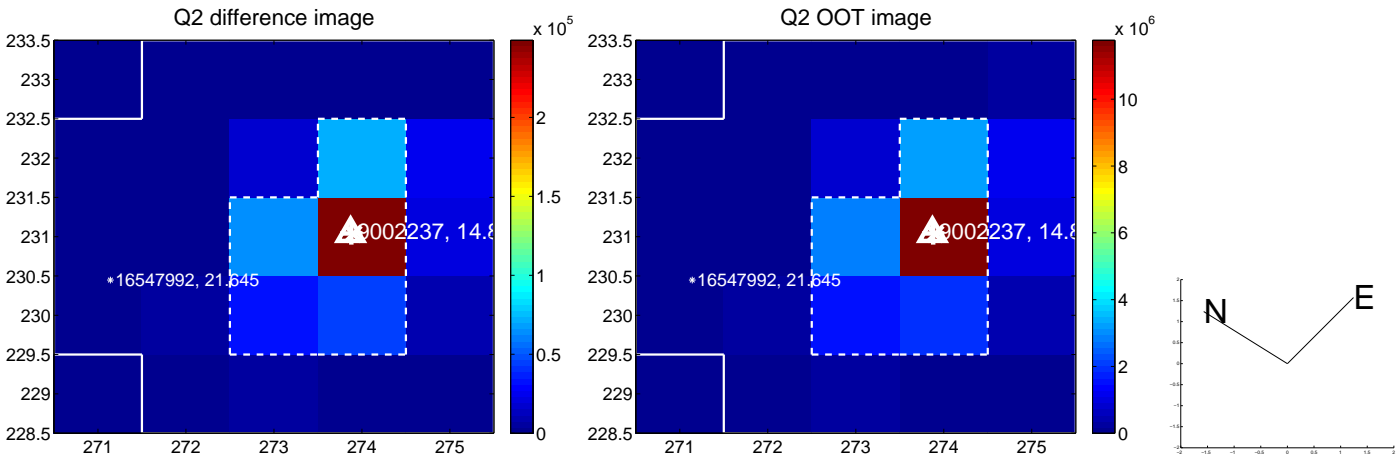
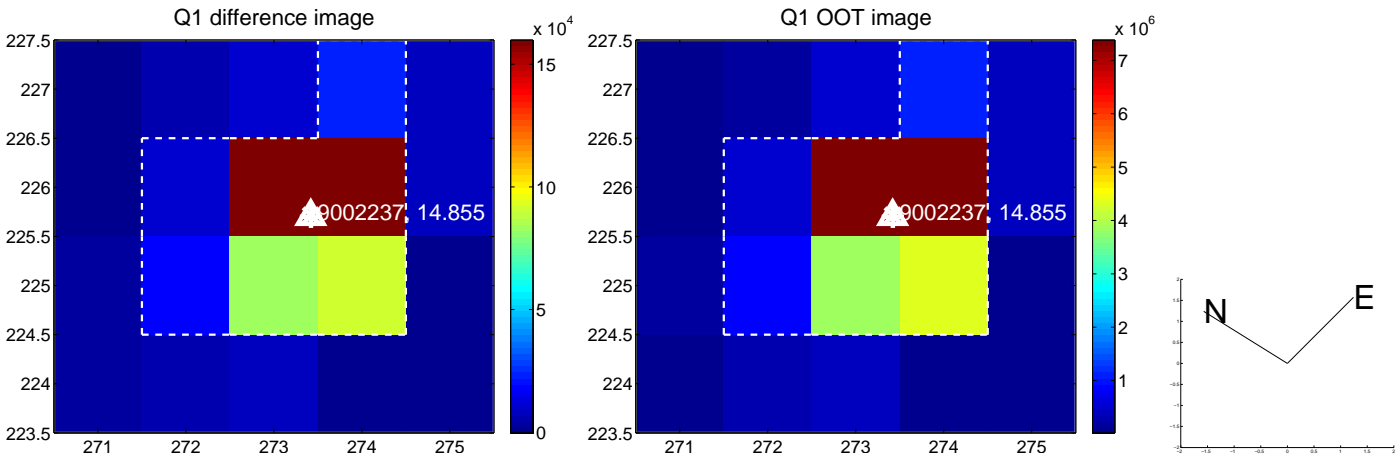
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.013 ± 0.067	0.19	-0.008 ± 0.067	0.010 ± 0.067
PRF-fit source offset from KIC position	0.019 ± 0.070	0.27	-0.018 ± 0.069	0.005 ± 0.070
photometric centroid source offset	0.10 ± 0.01	14.56	-0.09 ± 0.01	-0.04 ± 0.01

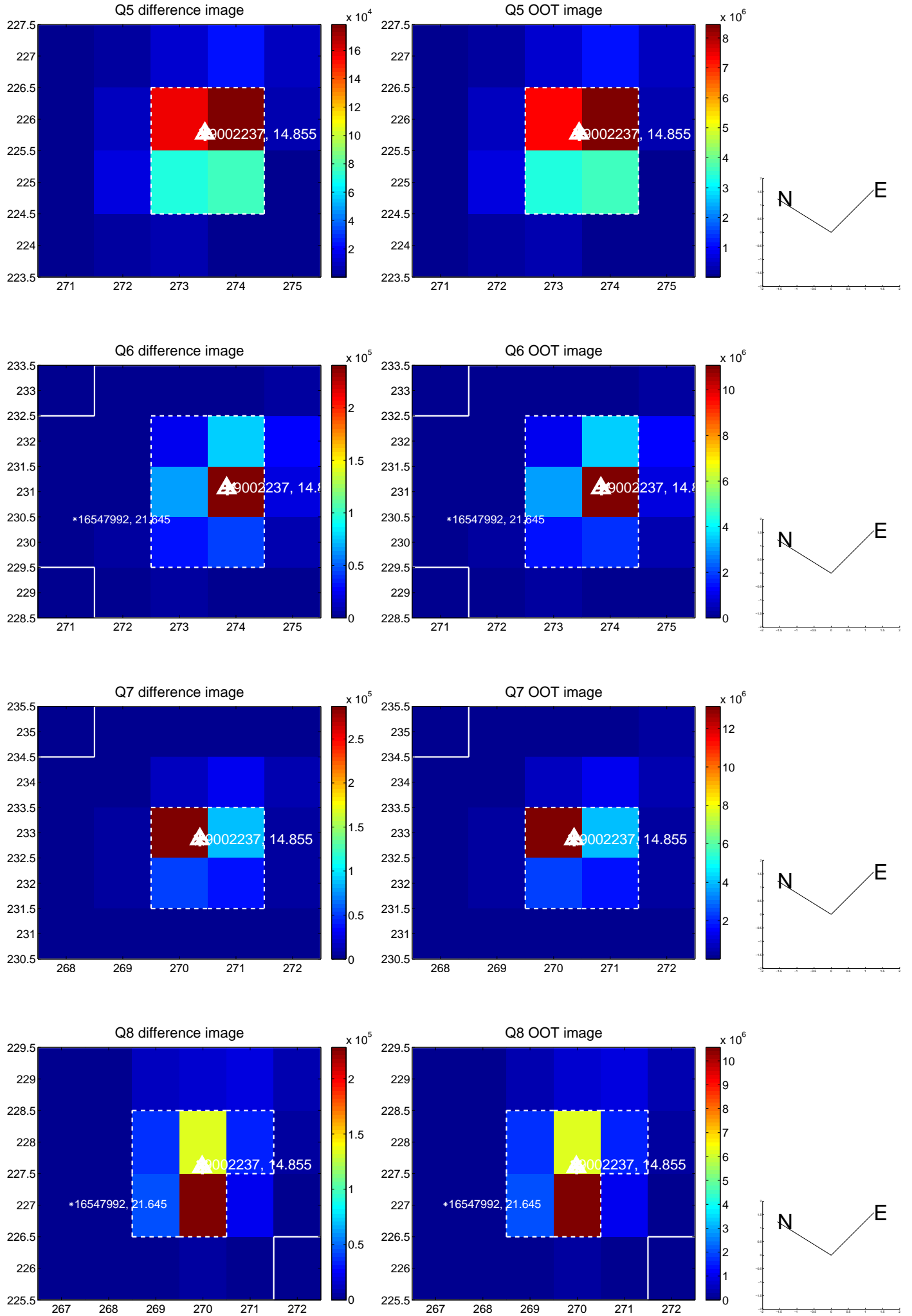


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

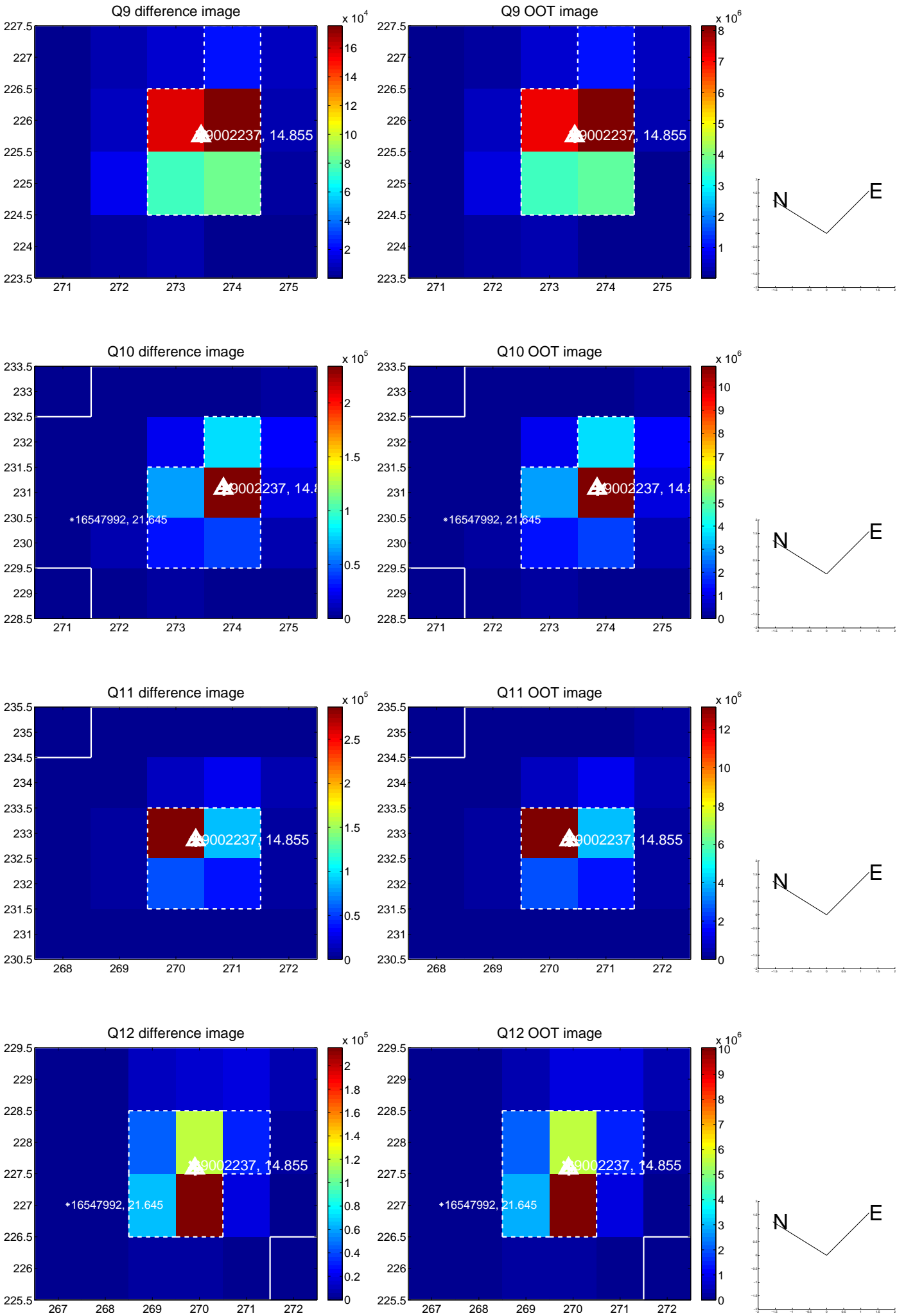
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



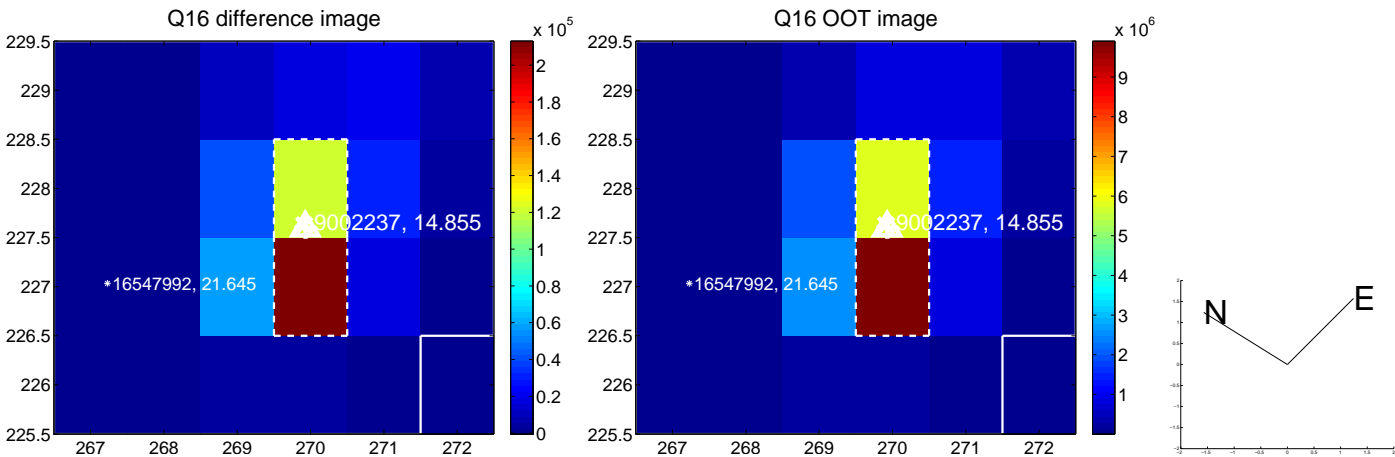
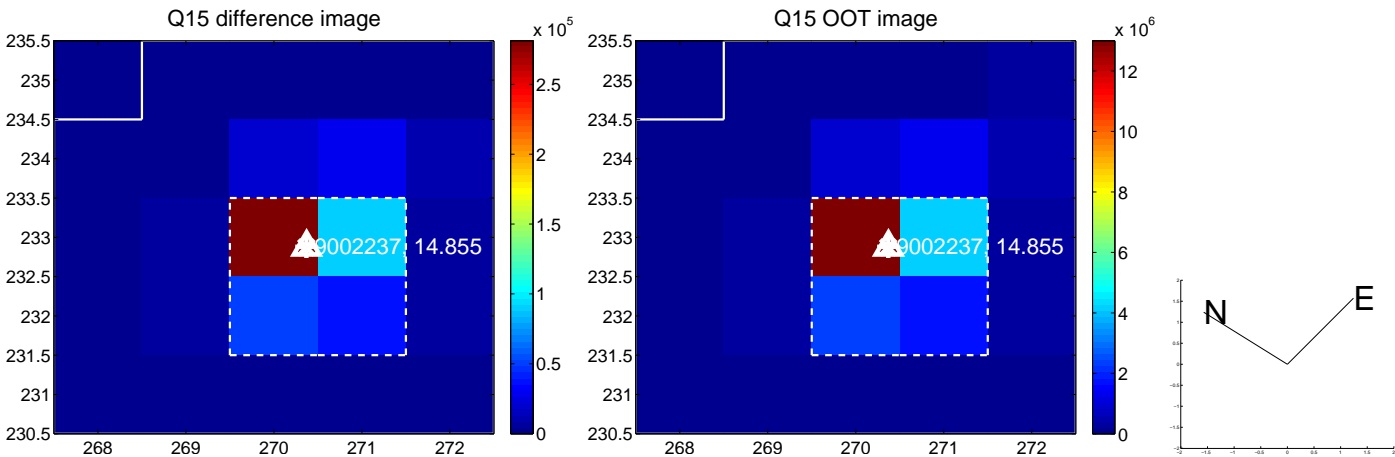
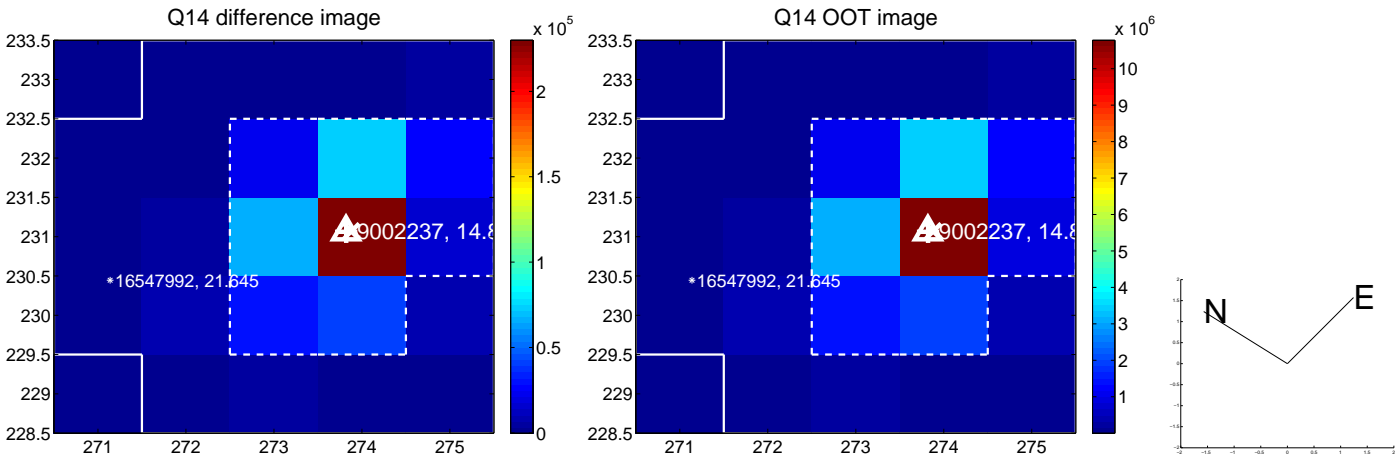
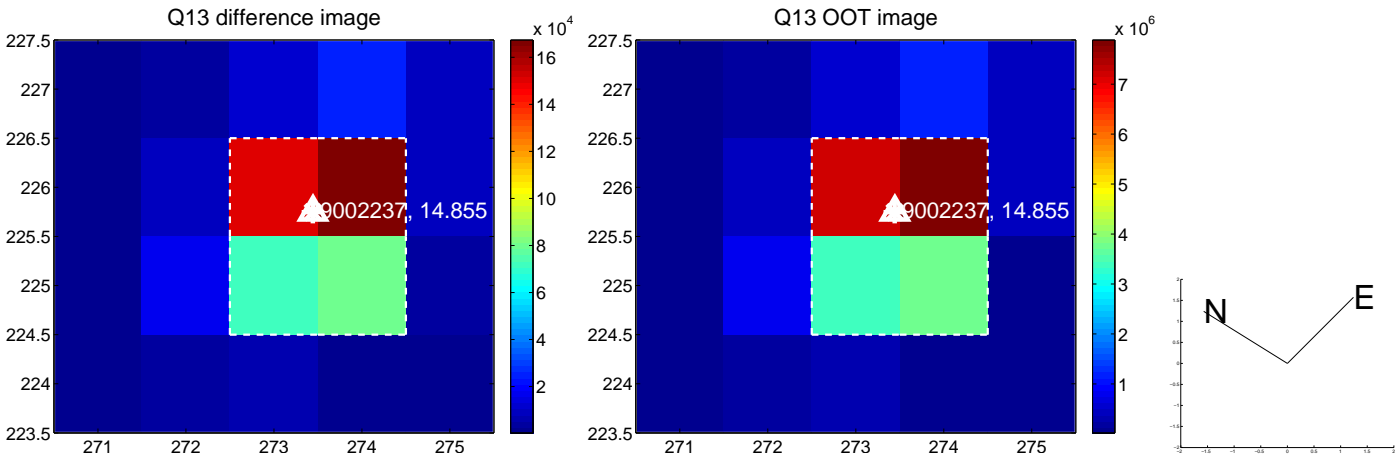
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



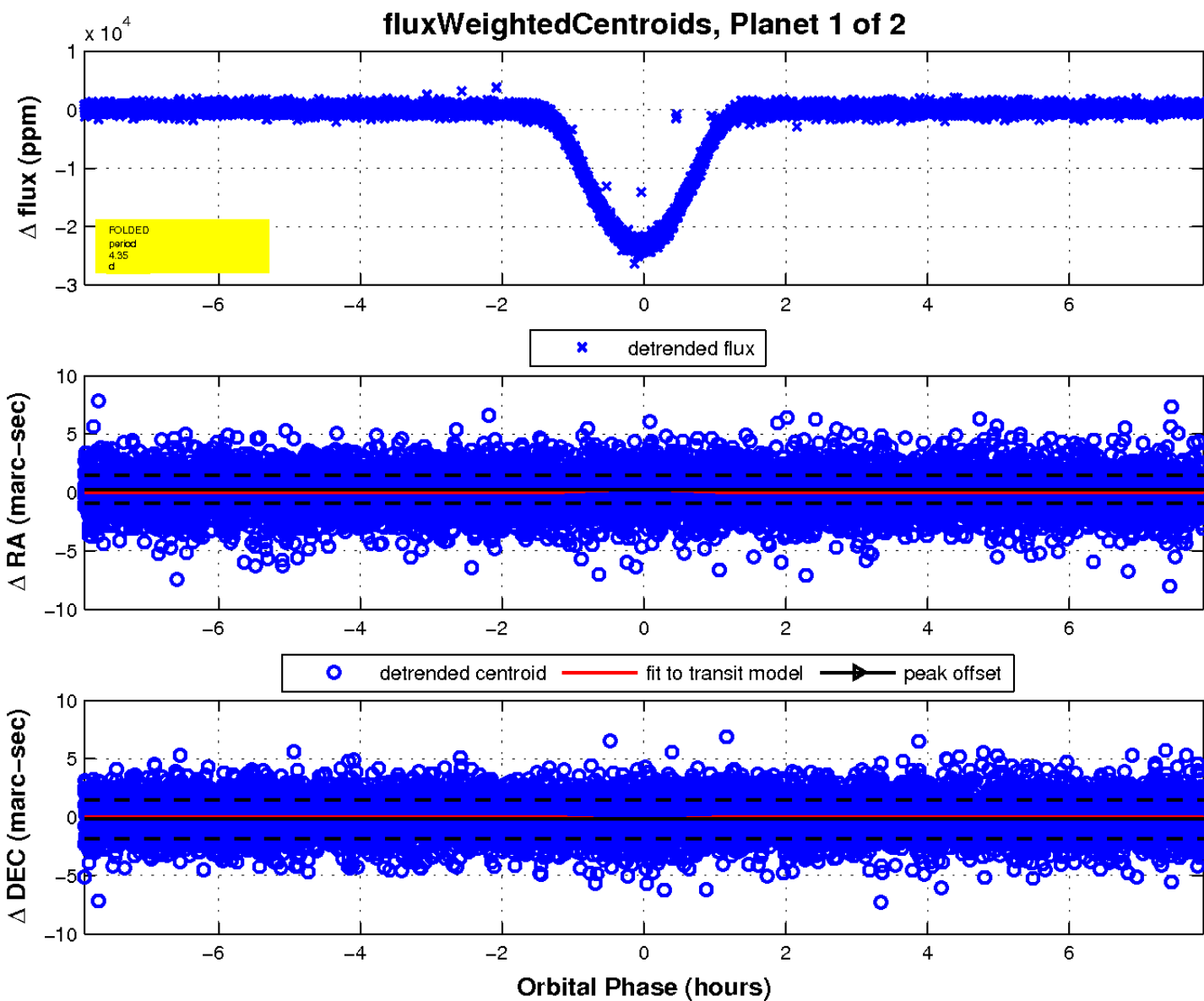
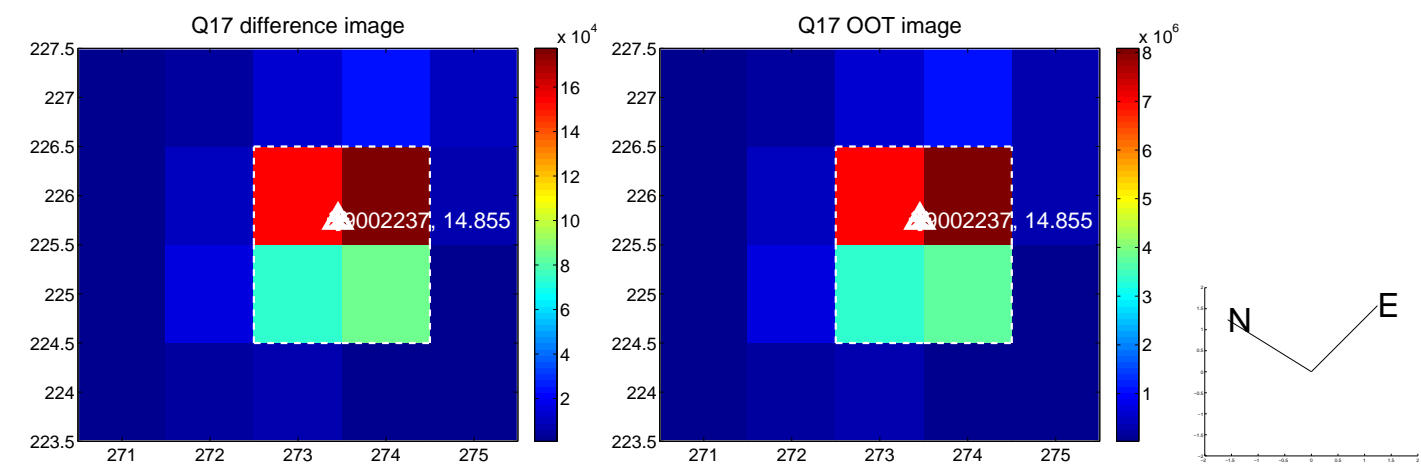
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

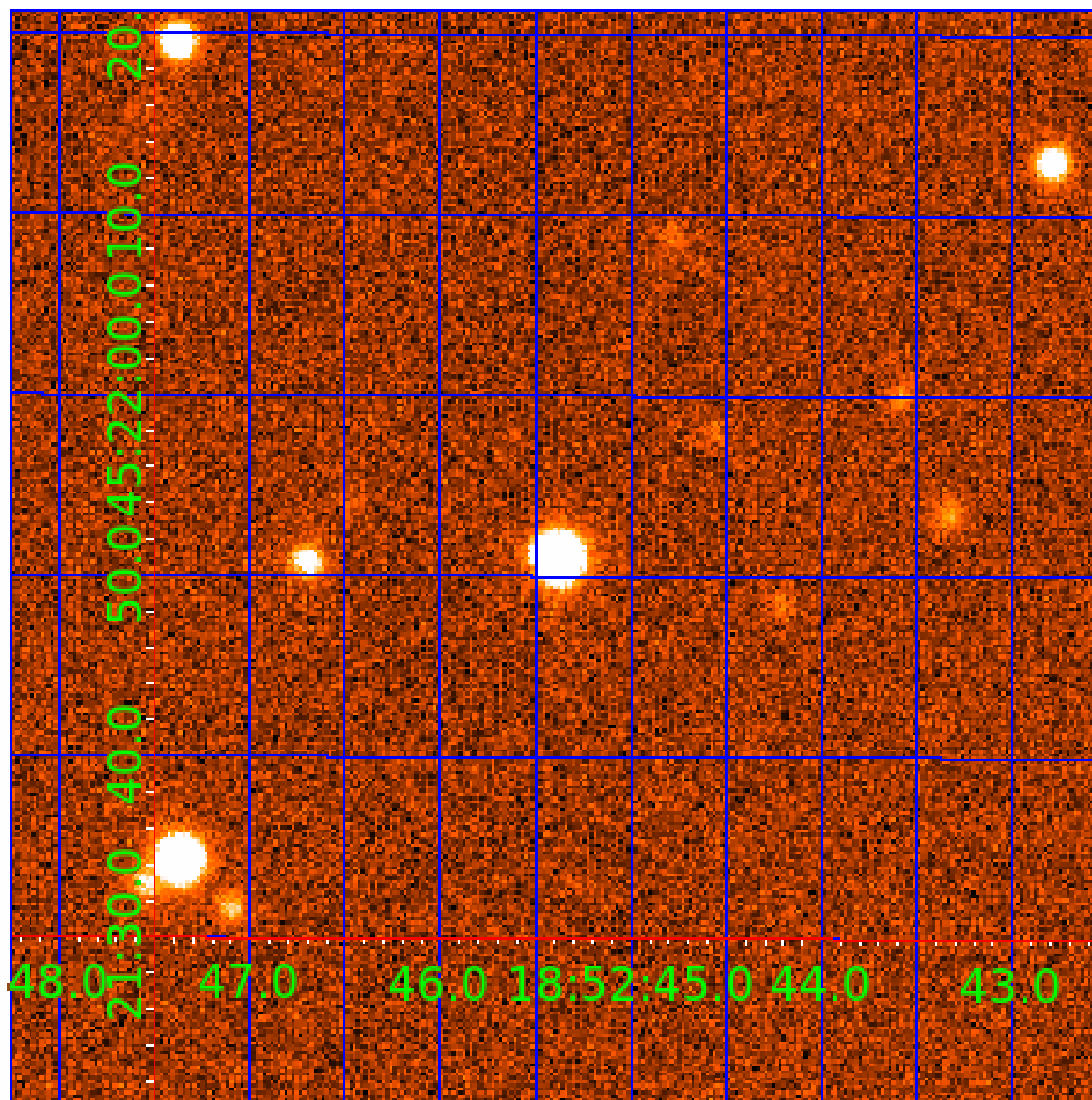


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009002237

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})
009002237-01	OBS	1389.01	4.350088	134.800236	23367.9	2.631	1435.2	1369.9	0.95	6060	22.60	394.02
009002237-02	OBS	No	4.350085	132.625652	1189.8	2.599	65.3	74.8	0.95	6060	6.16	394.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009002237-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009002237-02	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 009002237-02

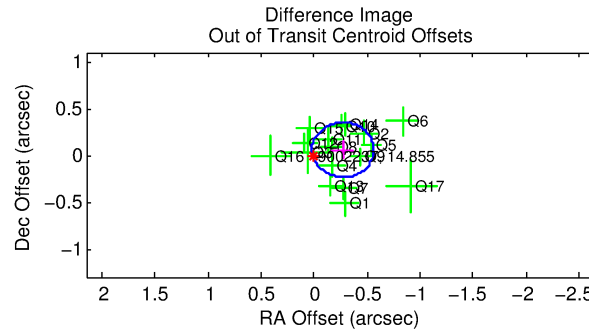
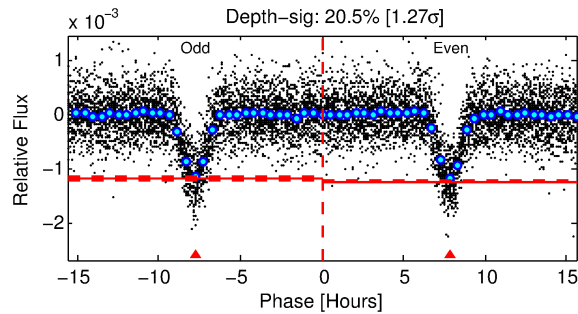
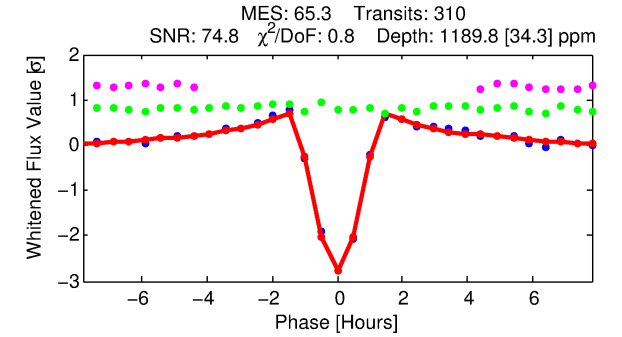
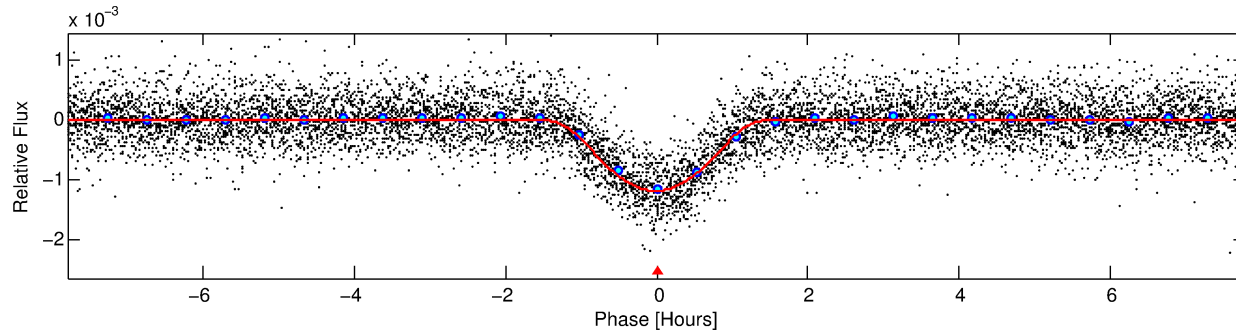
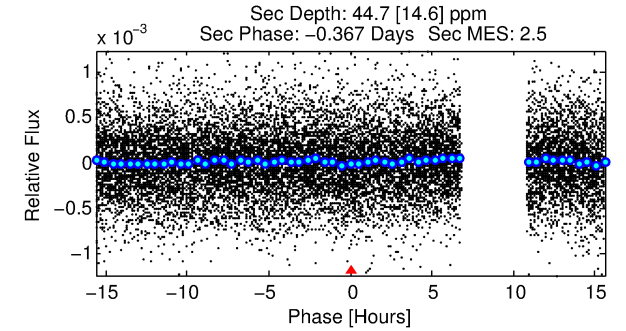
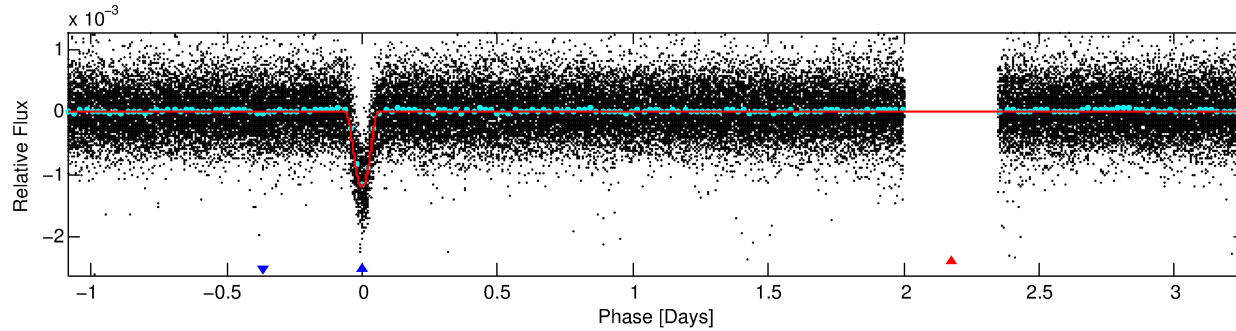
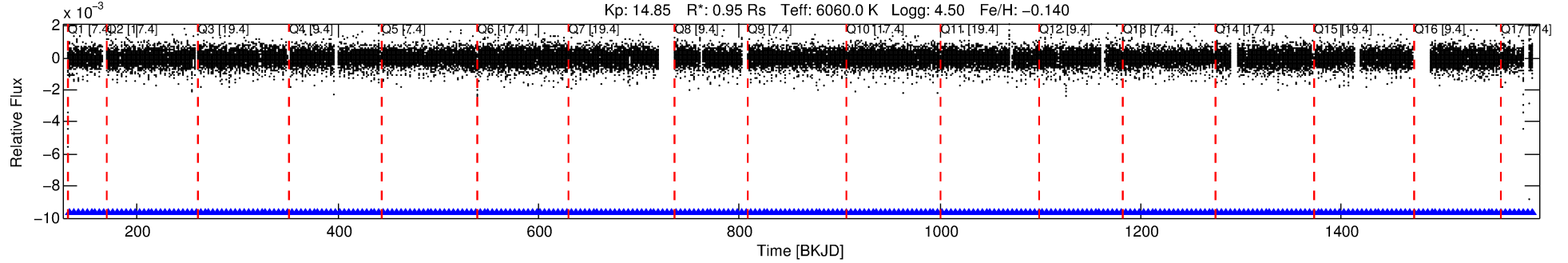
No Significant Match Found

DV One-Page Summary

KIC: 9002237 Candidate: 2 of 2 Period: 4.350 d

KOI: K01389 Corr: No Ephemeris Match

Kp: 14.85 R*: 0.95 Rs Teff: 6060.0 K Logg: 4.50 Fe/H: -0.140



DV Fit Results:

Period = 4.35008 [0.00000] d
Epoch = 132.6257 [0.0006] BKJD
Rp/R* = 0.0592 [0.0290]
a/R* = 4.66 [0.53]
b = 1.00 [0.04]
Seff = 394.02 [159.11]
Teq = 1136 [115] K
Rp = 6.16 [3.59] Re
a = 0.0528 [0.0139] AU
Ag = 1.80 [1.99] [0.40σ]
Teffp = 2035 [530] K [1.66σ]

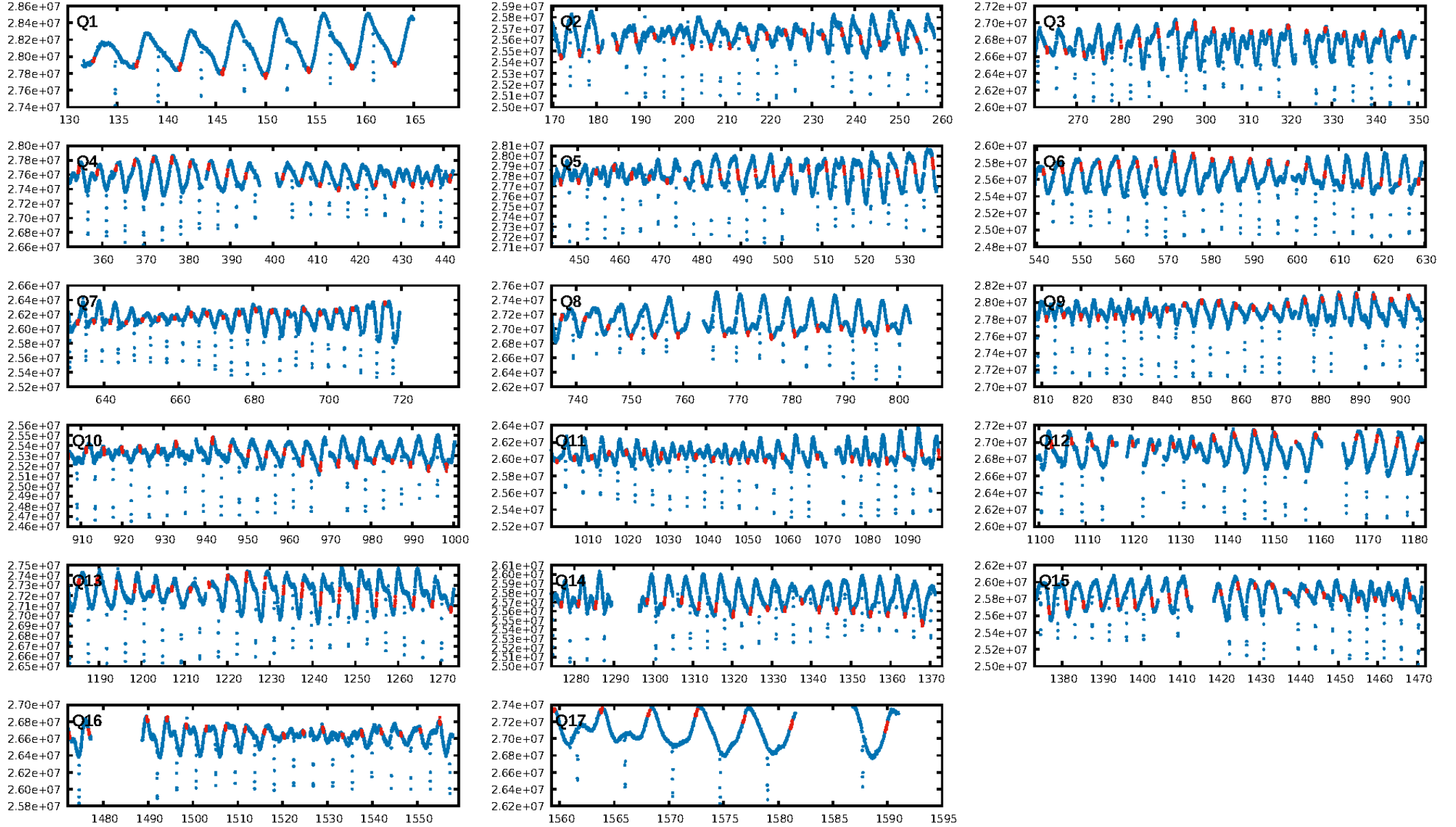
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [295/295]
GhostDiagnostic-chr: 3.275
Centroid-sig: 17.0%
Centroid-so: 0.157 arcsec [1.19σ]
OotOffset-rm: 0.276 arcsec [2.84σ]
KicOffset-rm: 0.306 arcsec [2.92σ]
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]

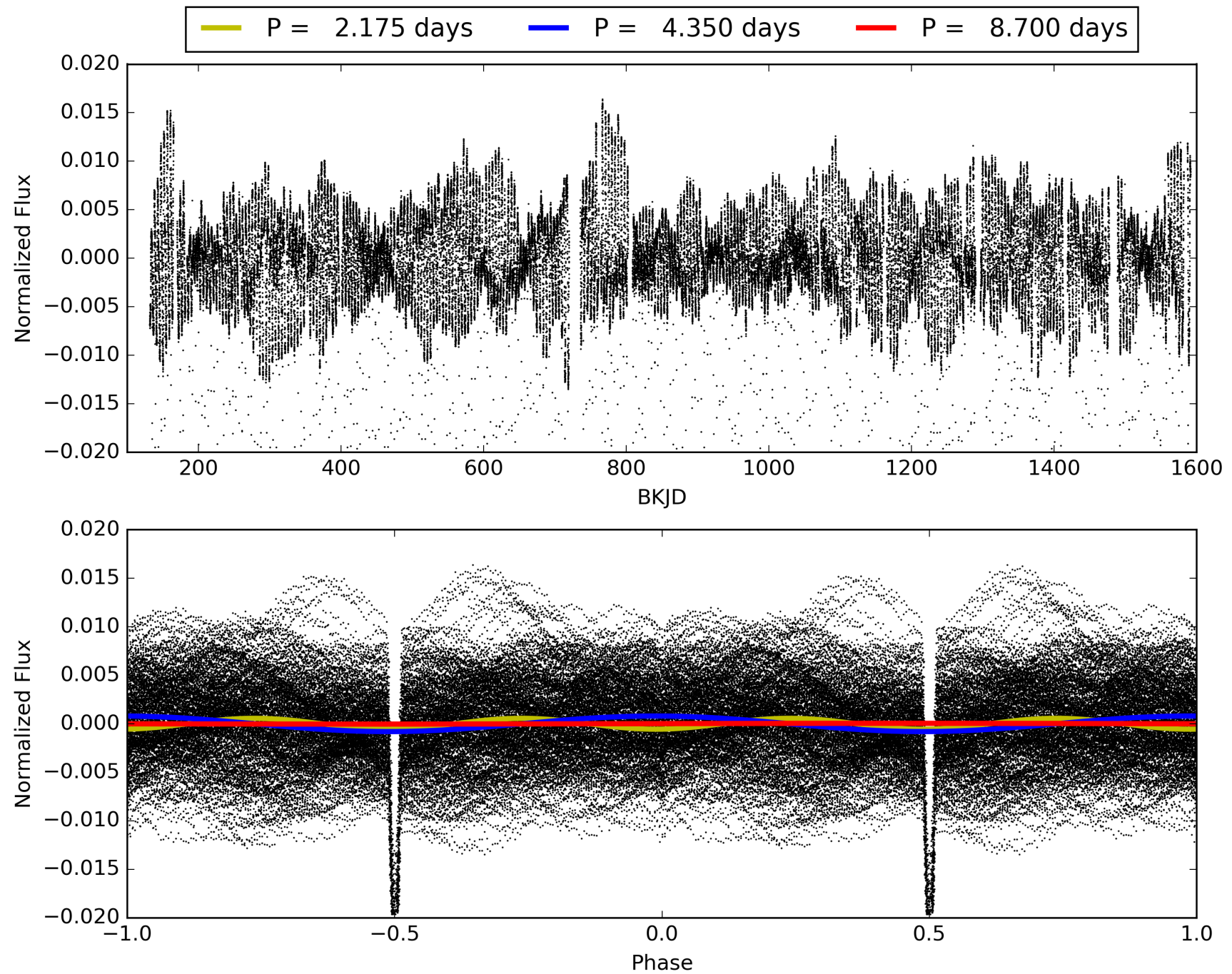
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:10:29 Z

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

TCE 009002237-02, PDC Light Curves

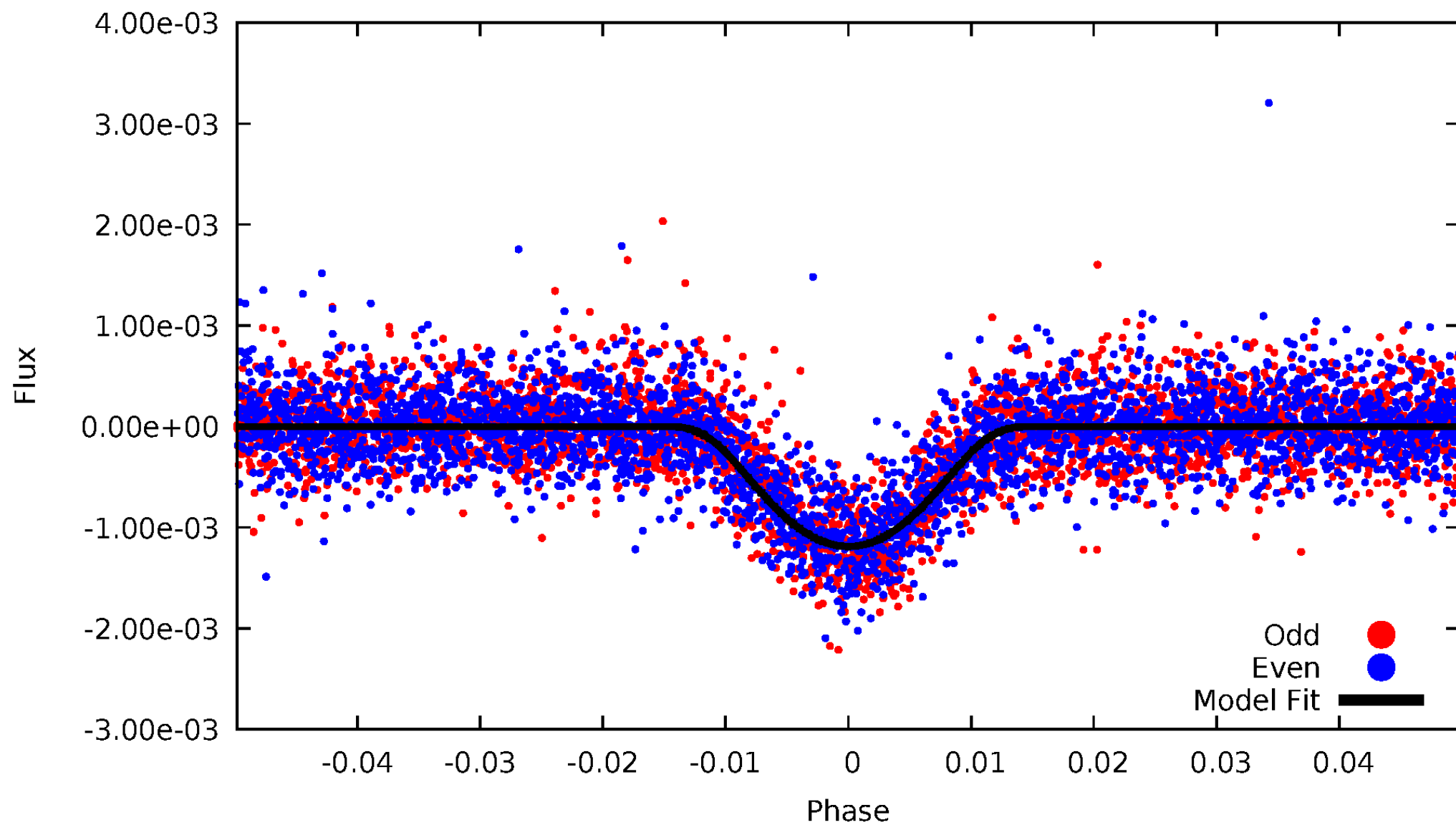


TCE 009002237-02



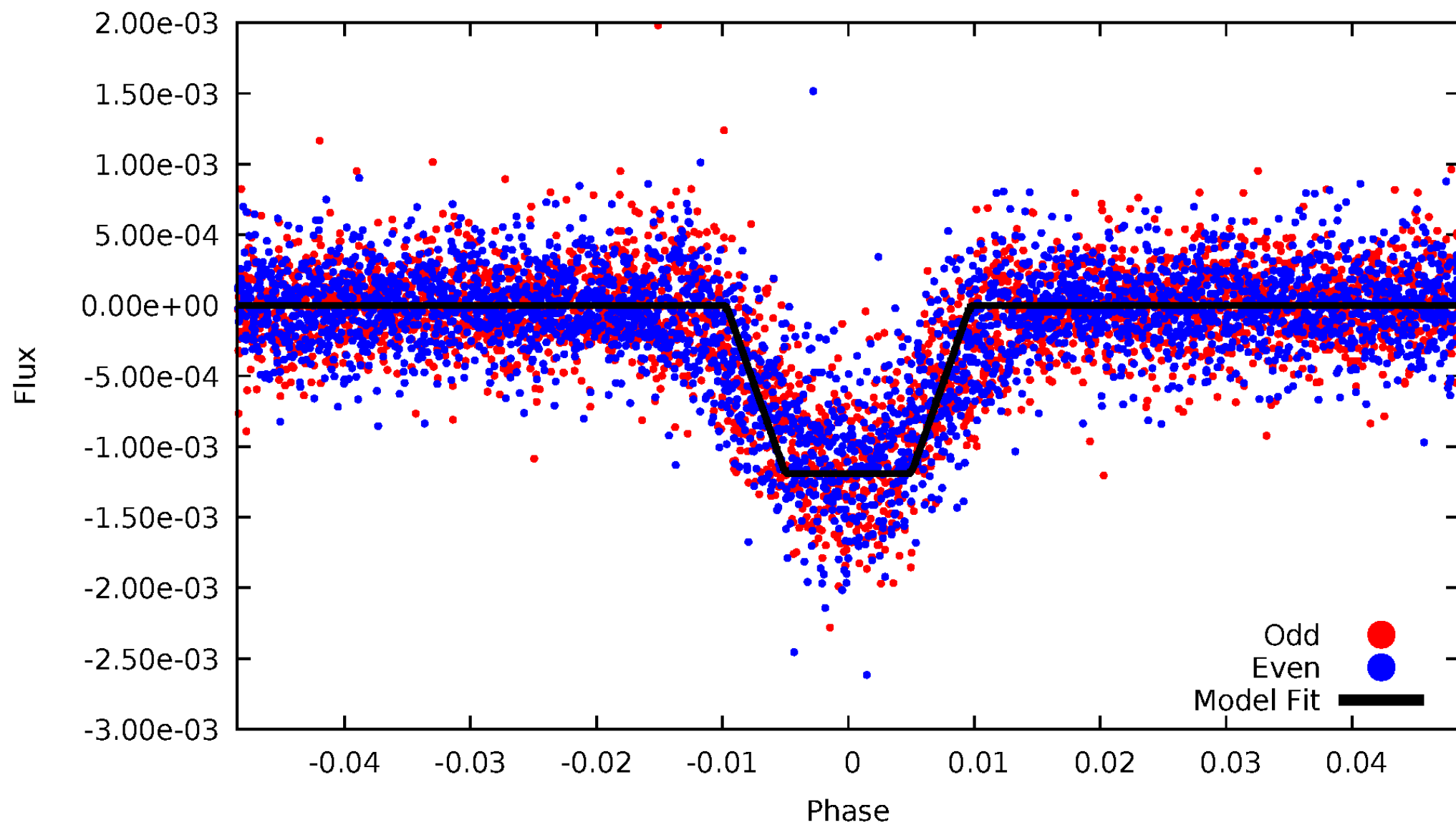
DV Odd/Even

TCE 009002237-02



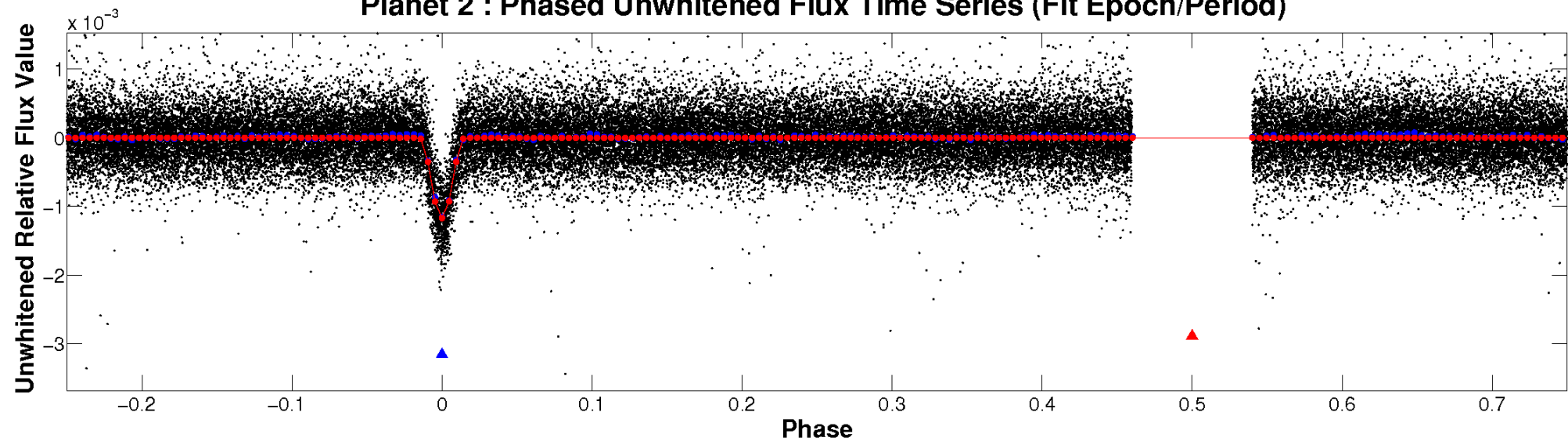
ALT Odd/Even

TCE 009002237-02

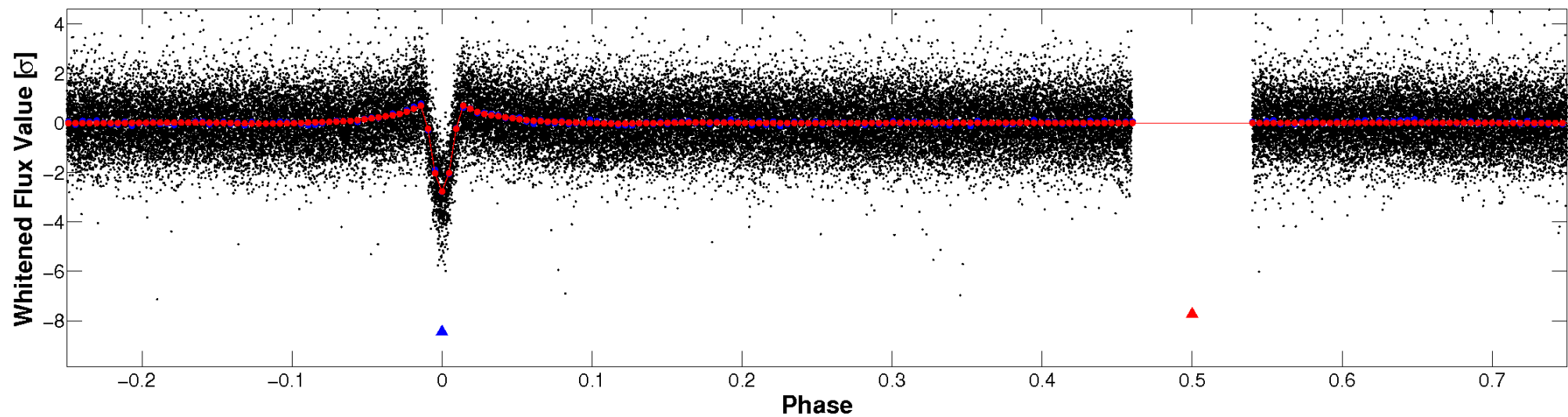


Non-Whitened Vs. Whitened Light Curve

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

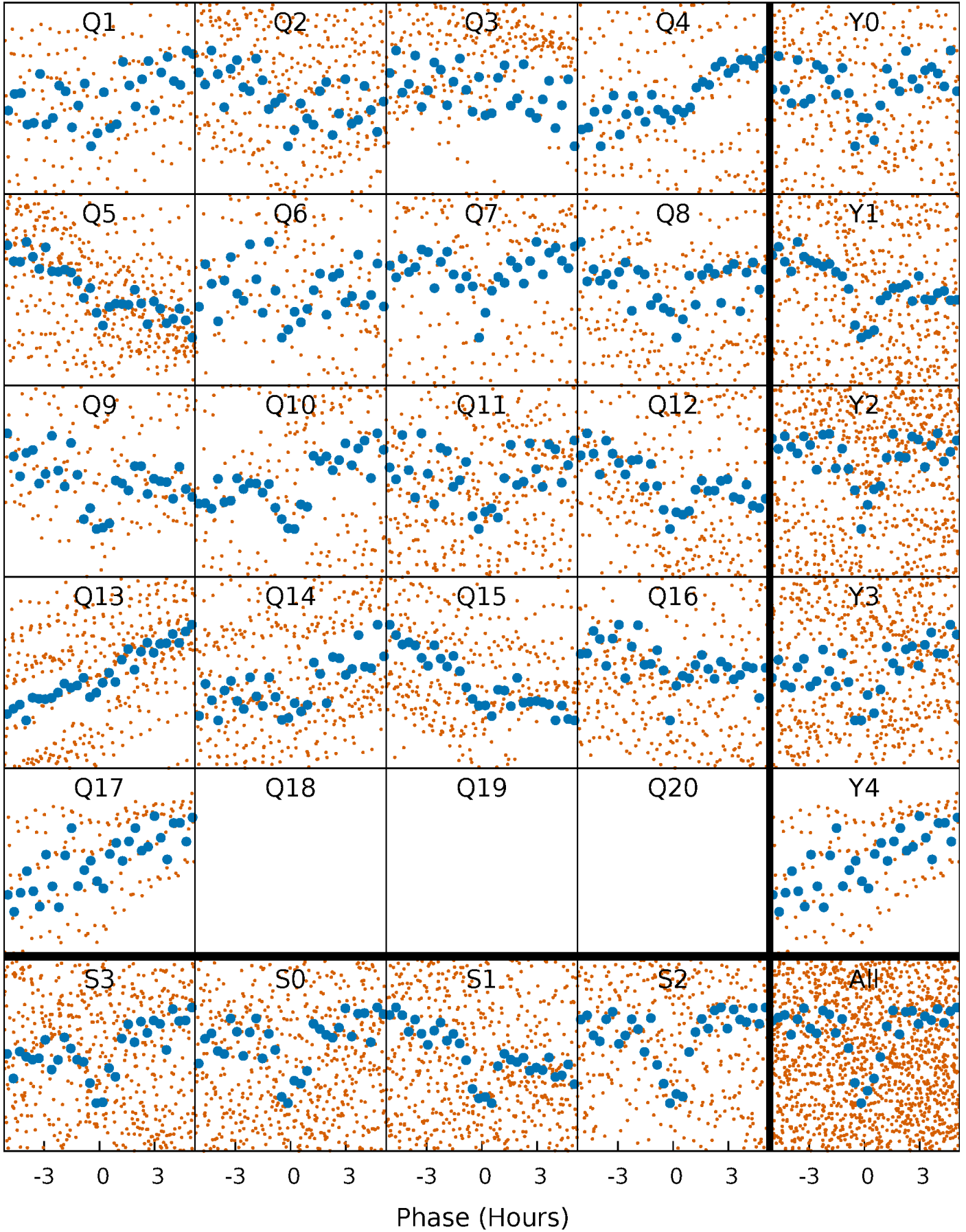


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



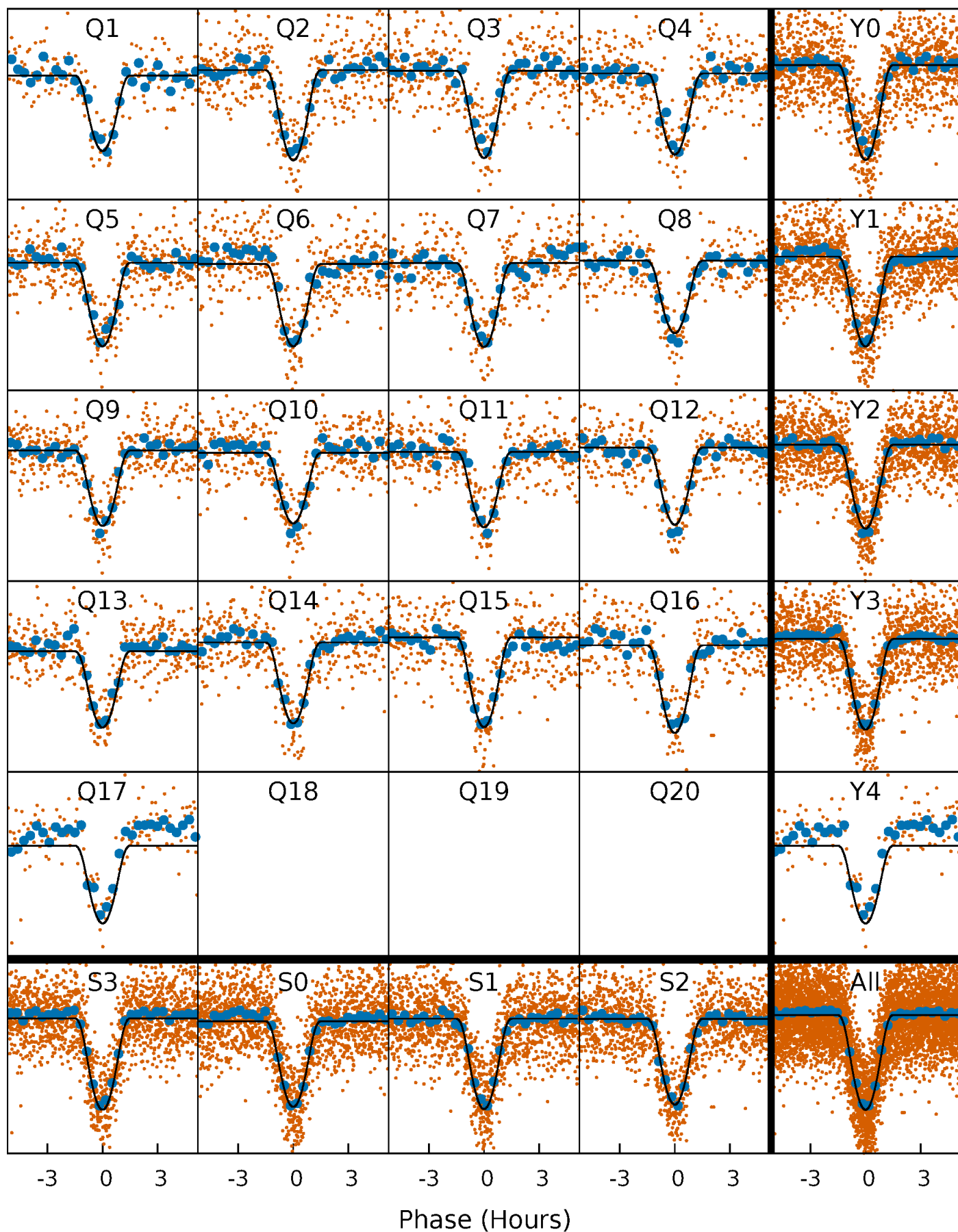
PDC Quarter-Phased Transit Curves

TCE 009002237-02 P= 4.350085 Days $T_0=132.625652$ (BKJD)



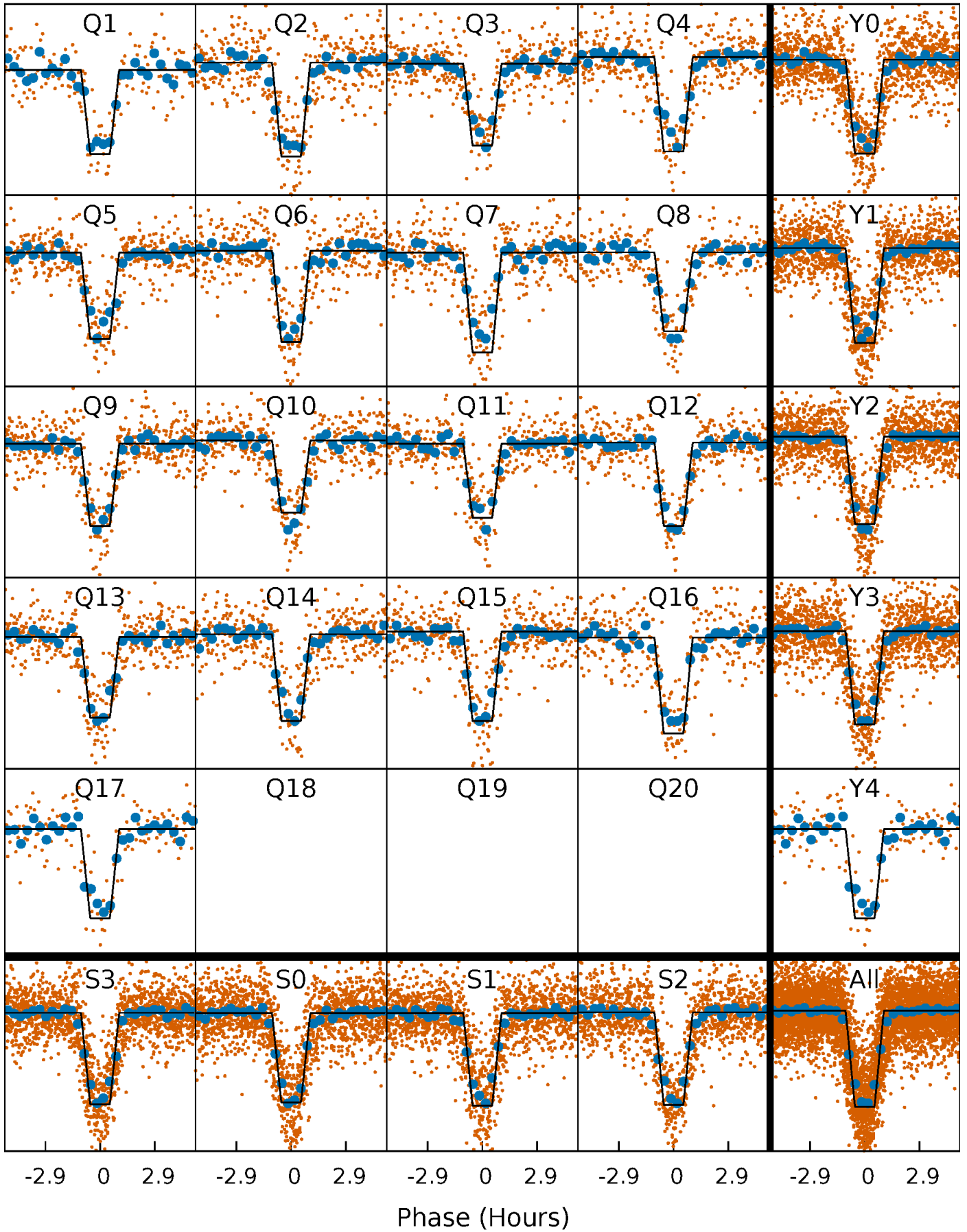
DV Quarter-Phased Transit Curves

TCE 009002237-02 P= 4.350085 Days $T_0=132.625652$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

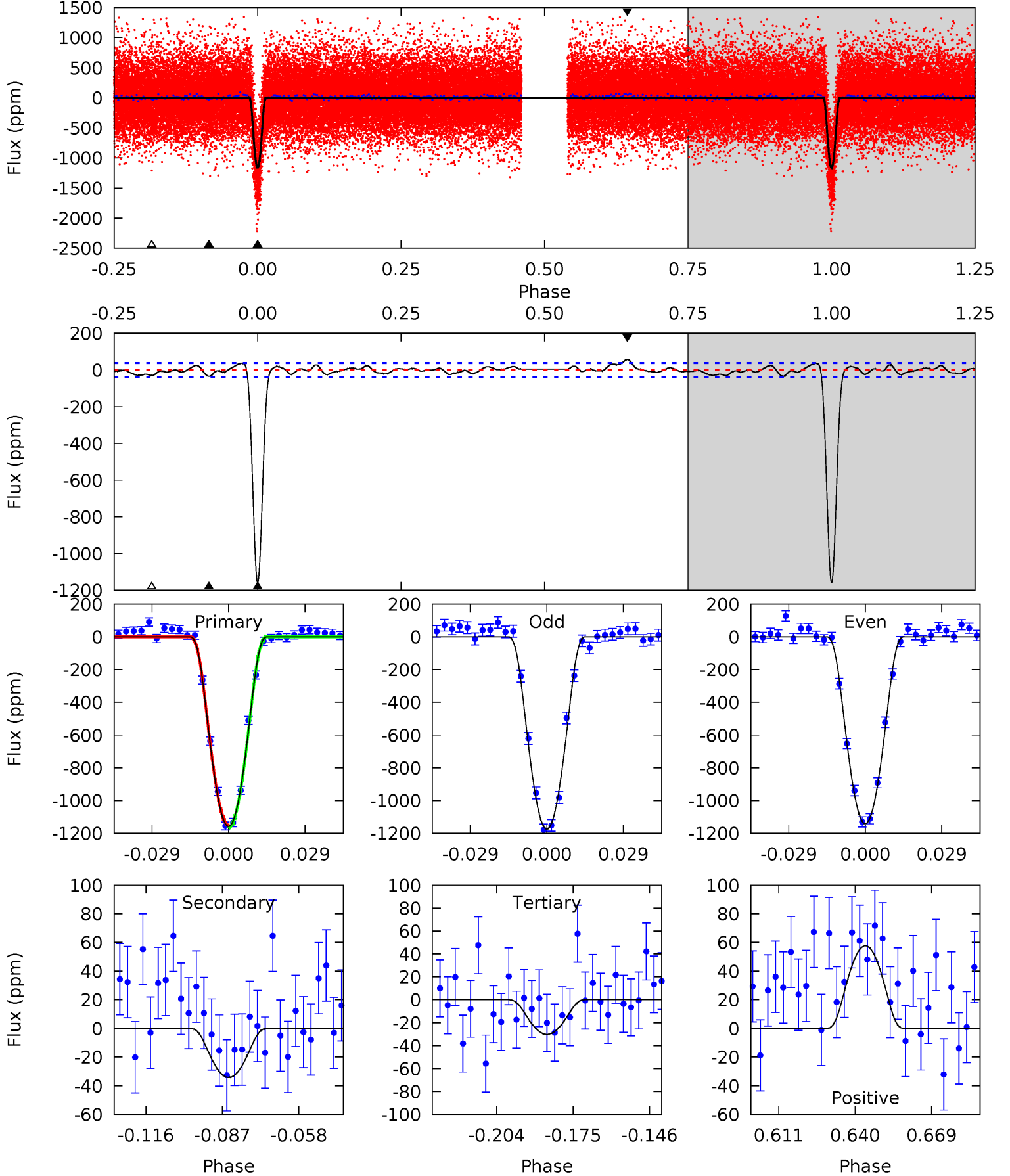
TCE 009002237-02 $P = 4.350086$ Days $T_0 = 132.625221$ (BKJD)



DV Model-Shift Uniqueness Test

009002237-02, P = 4.350085 Days, E = 128.275567 Days

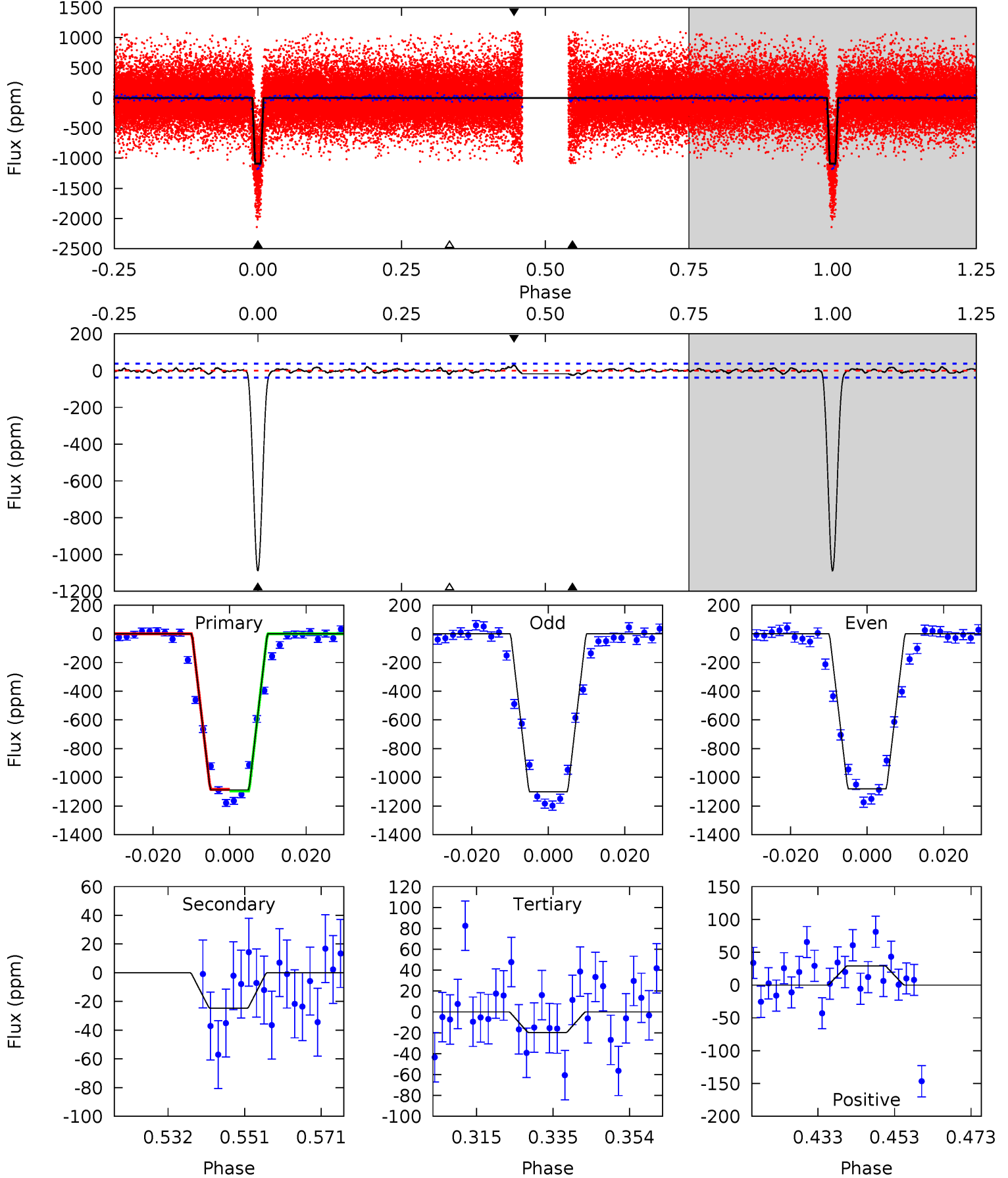
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
148.3	4.38	3.86	7.38	4.82	2.18	2.01	144.5	140.9	0.52	-3.00	2.10	0.98	0.05	0.87



Alt Model-Shift Uniqueness Test

009002237-02, P = 4.350086 Days, E = 128.275135 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
141.0	3.20	2.56	3.80	4.89	2.33	0.96	138.5	137.2	0.64	-0.60	1.33	1.00	0.03	0.74



Stellar Parameters For KIC 009002237

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6060^{+162}_{-198}	$4.495^{+0.052}_{-0.208}$	$-0.140^{+0.300}_{-0.300}$	$0.953^{+0.300}_{-0.100}$	$1.036^{+0.139}_{-0.139}$	$1.684^{+0.445}_{-0.887}$
	+3%/-3%	+1%/-5%	+214%/-214%	+31%/-10%	+13%/-13%	+26%/-53%
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 009002237-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-34 ± 8	$6.40^{+3.38}_{-2.69}$	1630^{+125}_{-84}	2593^{+500}_{-417}	$1.210^{+2.519}_{-0.713}$
Alt.	-25 ± 8	$4.09^{+3.04}_{-2.39}$	1622^{+125}_{-75}	2789^{+1029}_{-470}	$1.905^{+10.638}_{-1.242}$

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 $A_{obs} \gg 1.0$

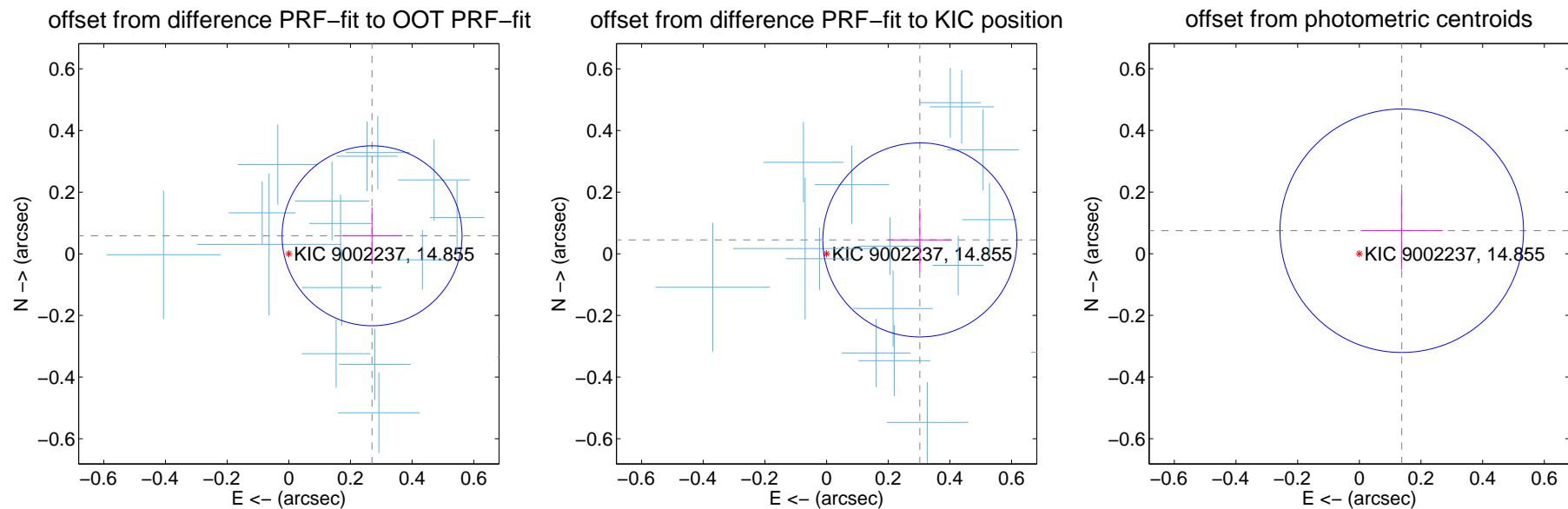
DV Centroid Data

Supplemental centroid analysis for 009002237-02. Kepler magnitude: 14.86. Transit SNR 74.79

There are 17 quarters with good PRF difference image offsets

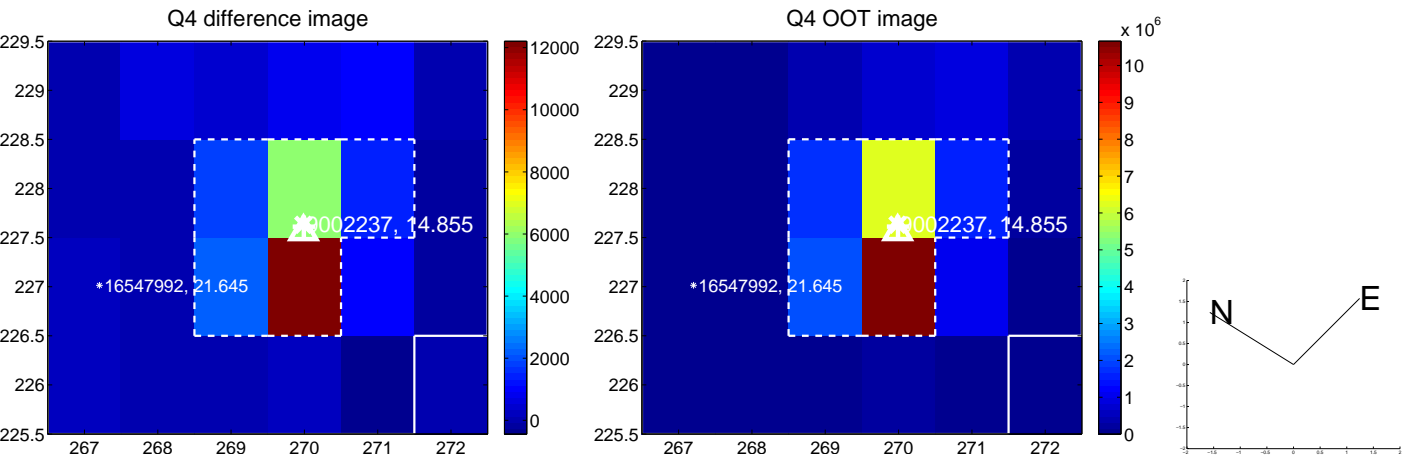
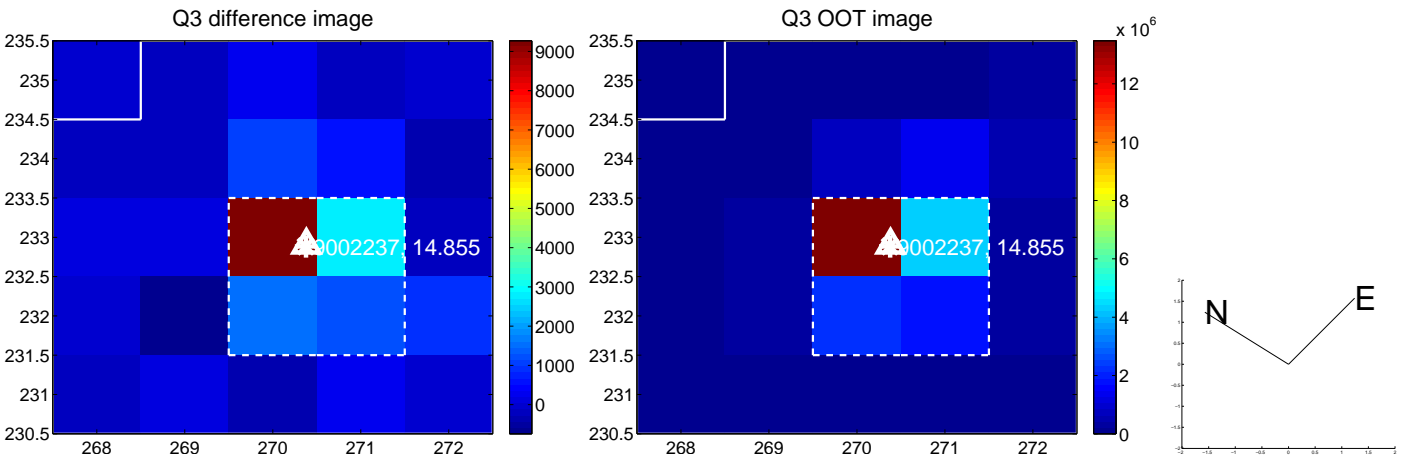
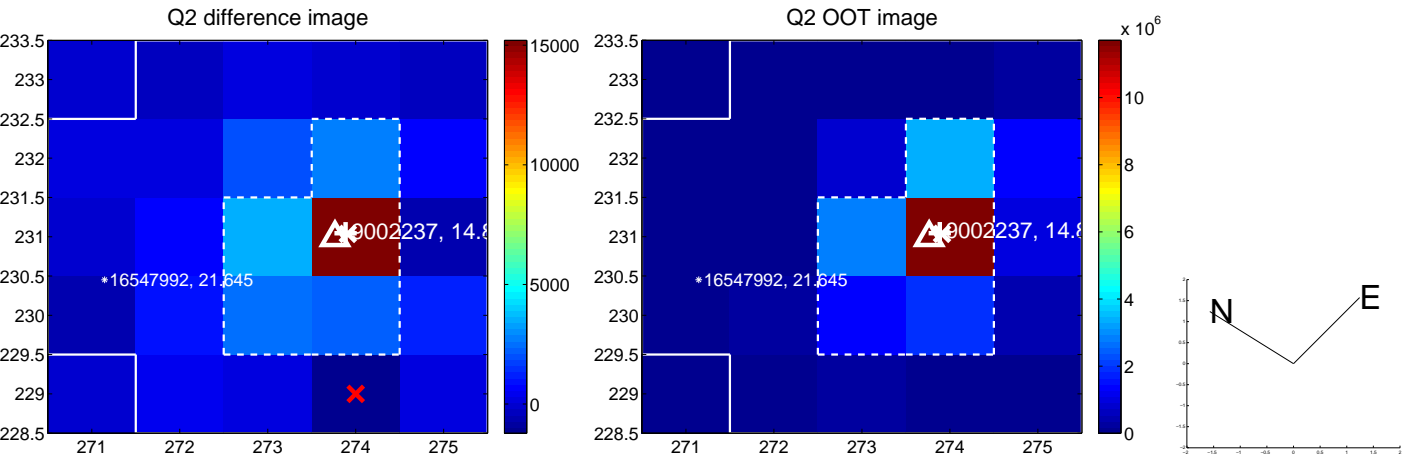
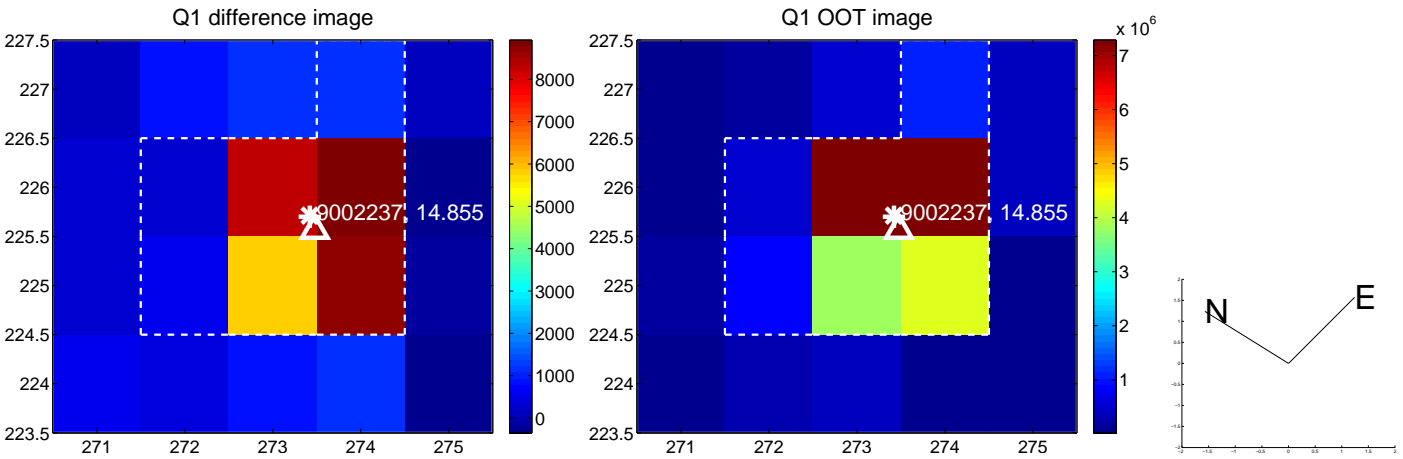
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.276 ± 0.097	2.84	-0.270 ± 0.098	0.058 ± 0.092
PRF-fit source offset from KIC position	0.306 ± 0.105	2.92	-0.303 ± 0.104	0.045 ± 0.103
photometric centroid source offset	0.16 ± 0.13	1.19	-0.14 ± 0.13	0.07 ± 0.13

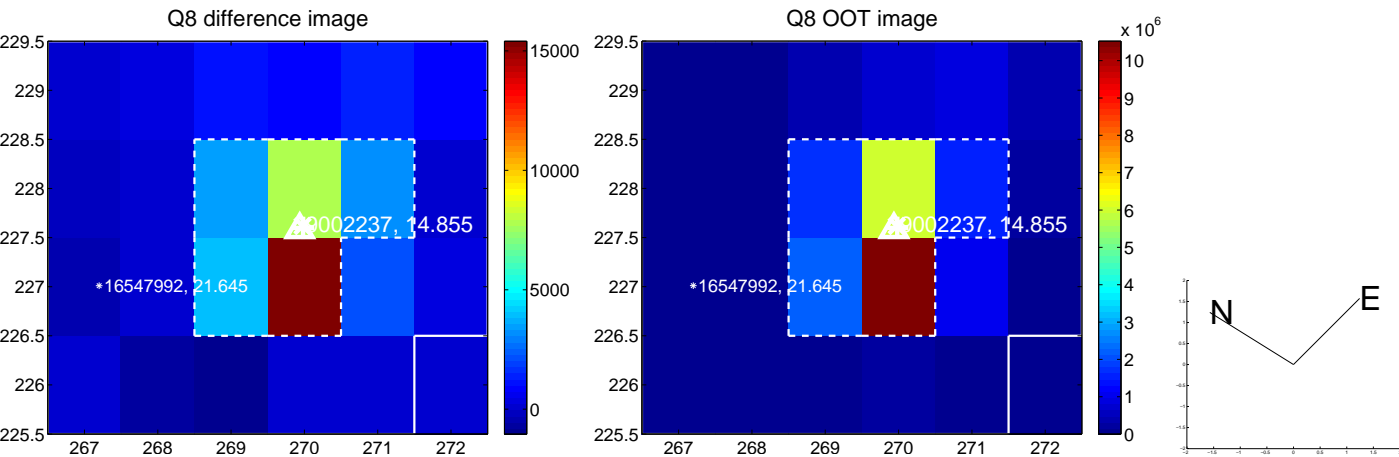
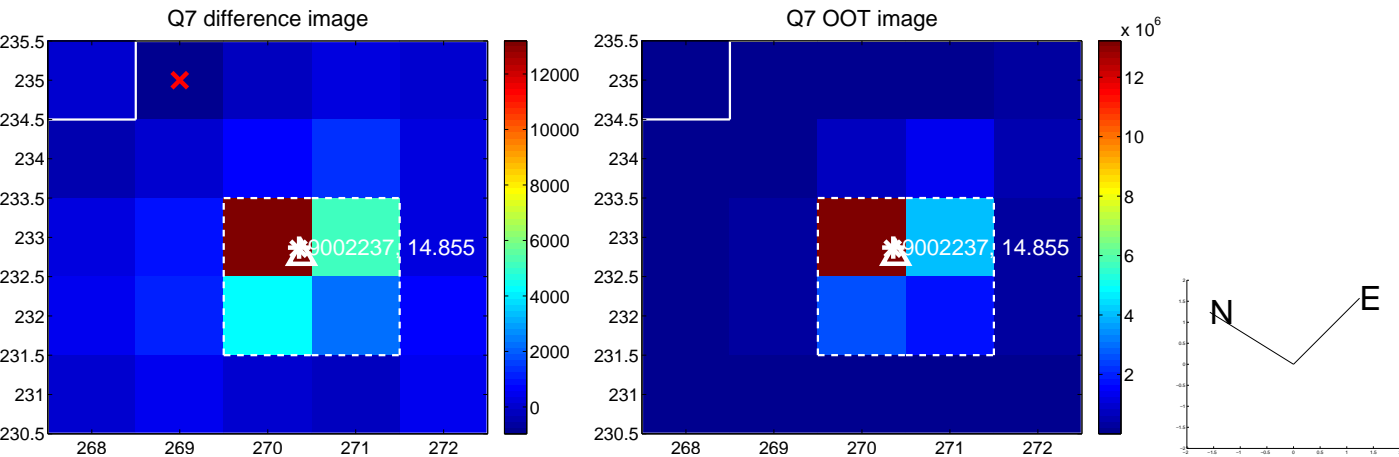
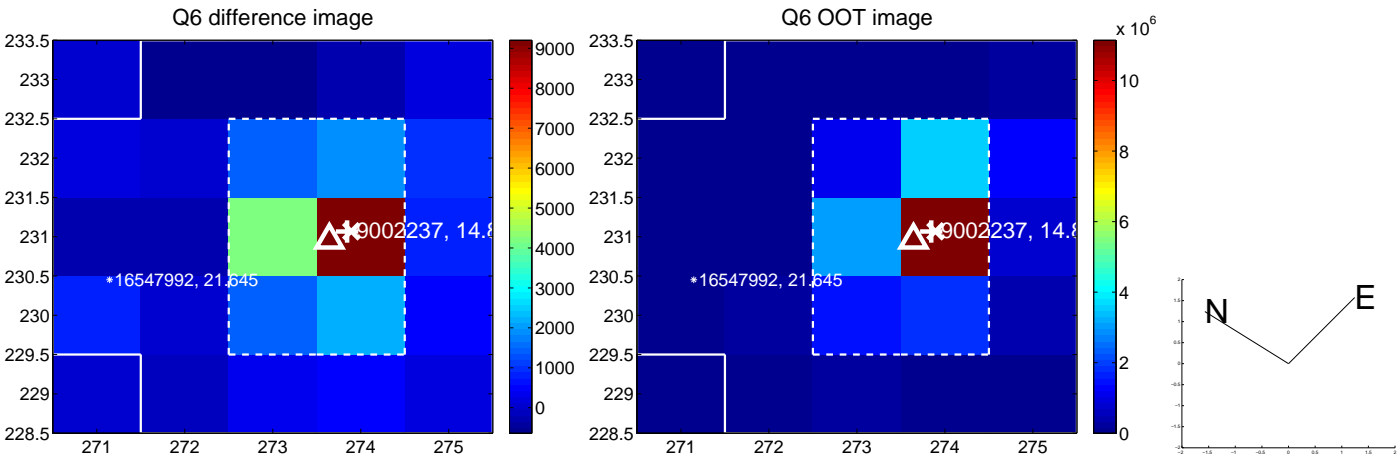
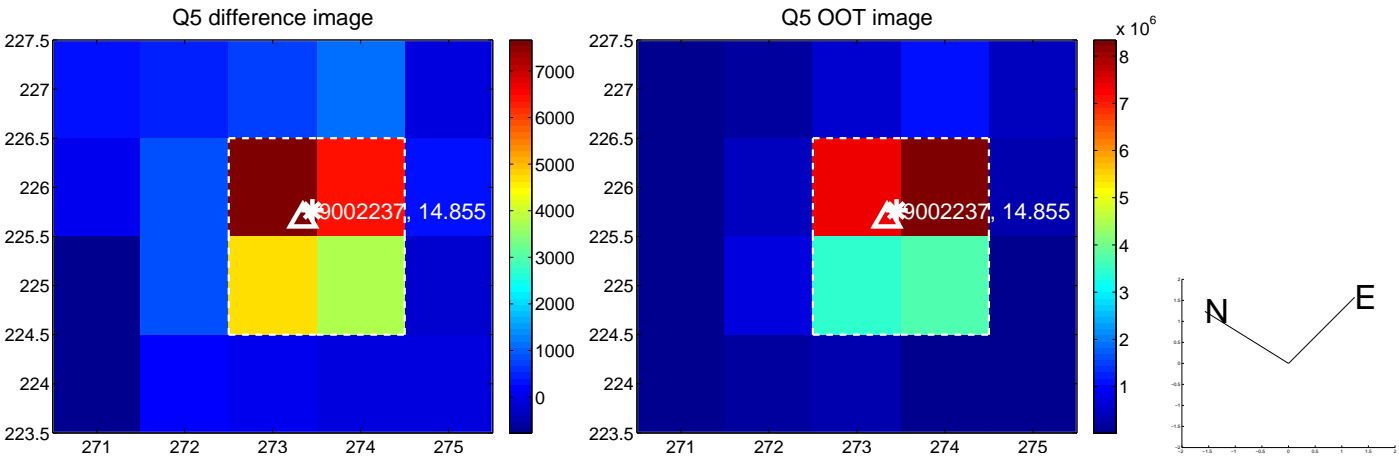


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

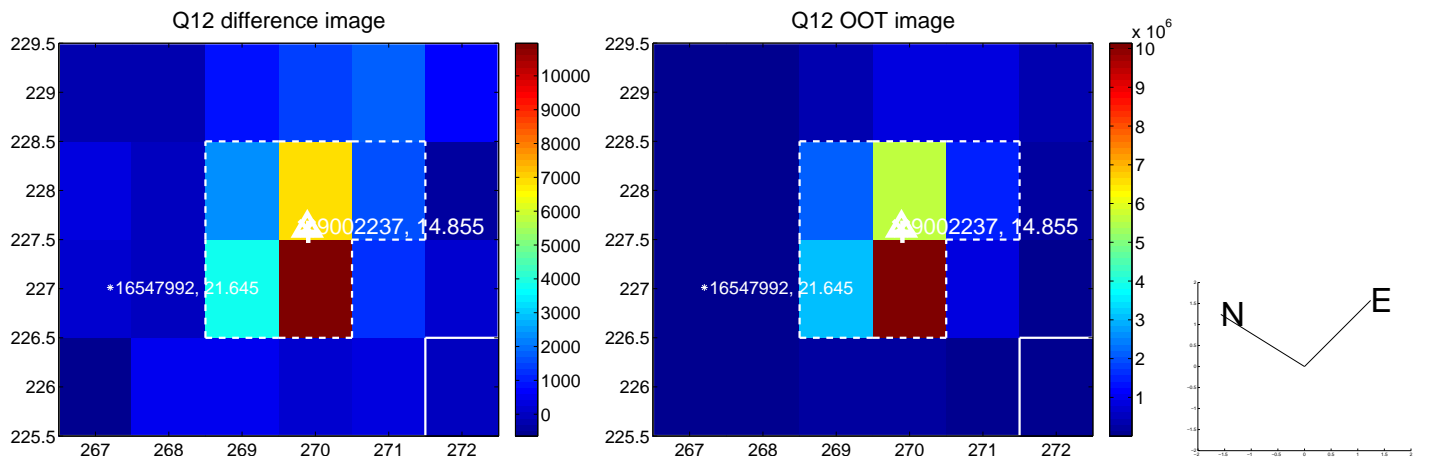
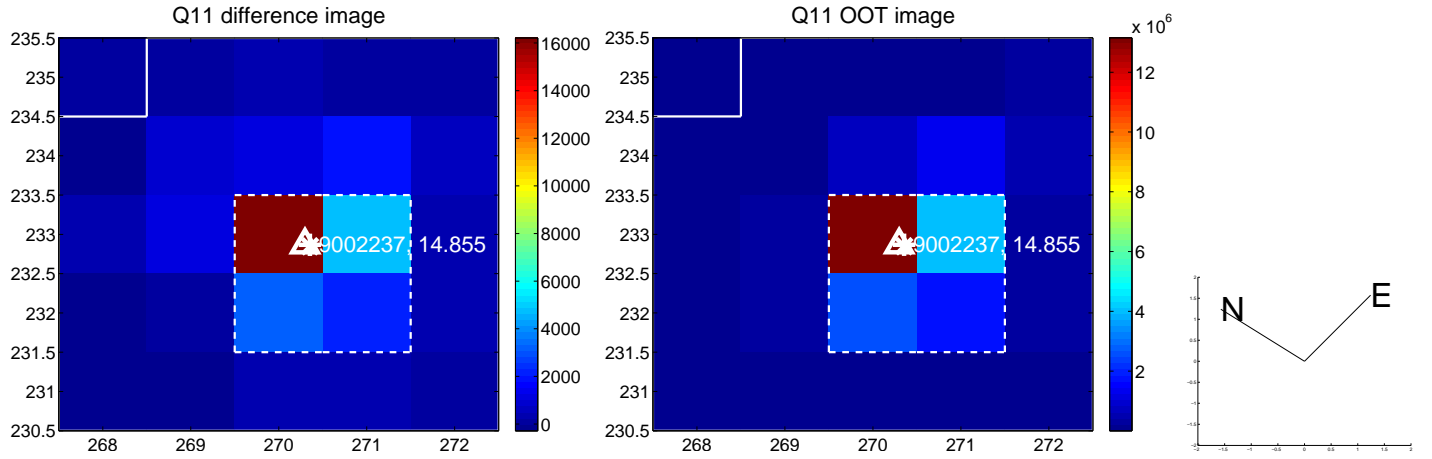
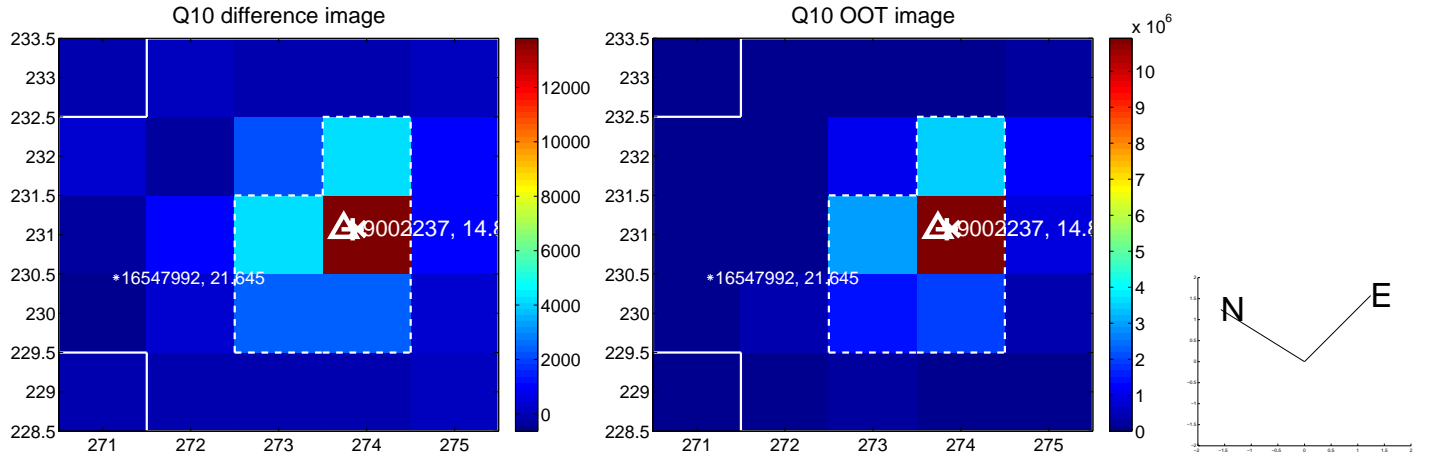
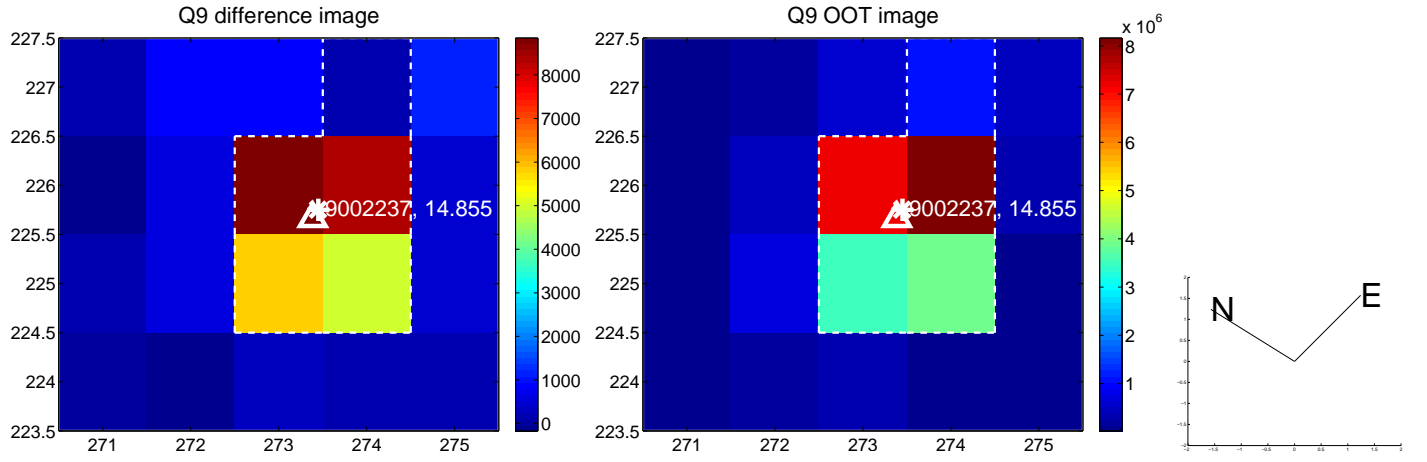
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



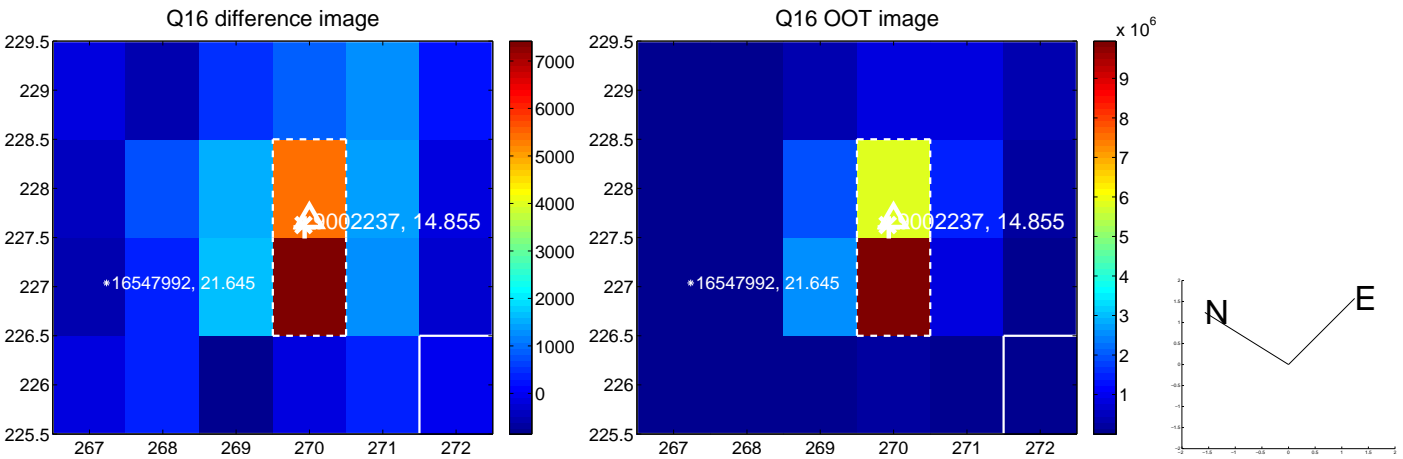
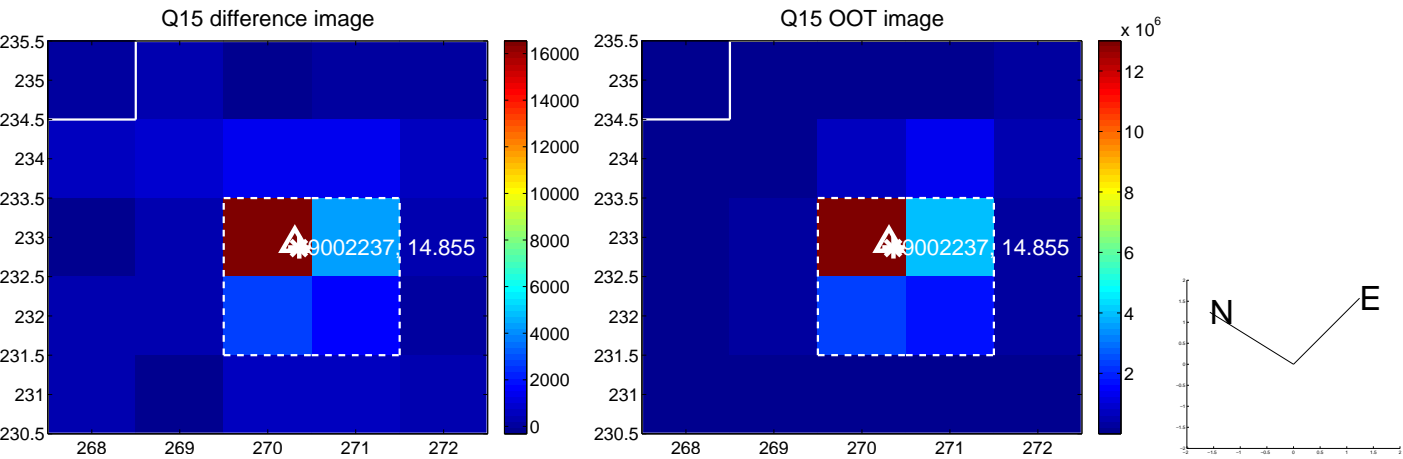
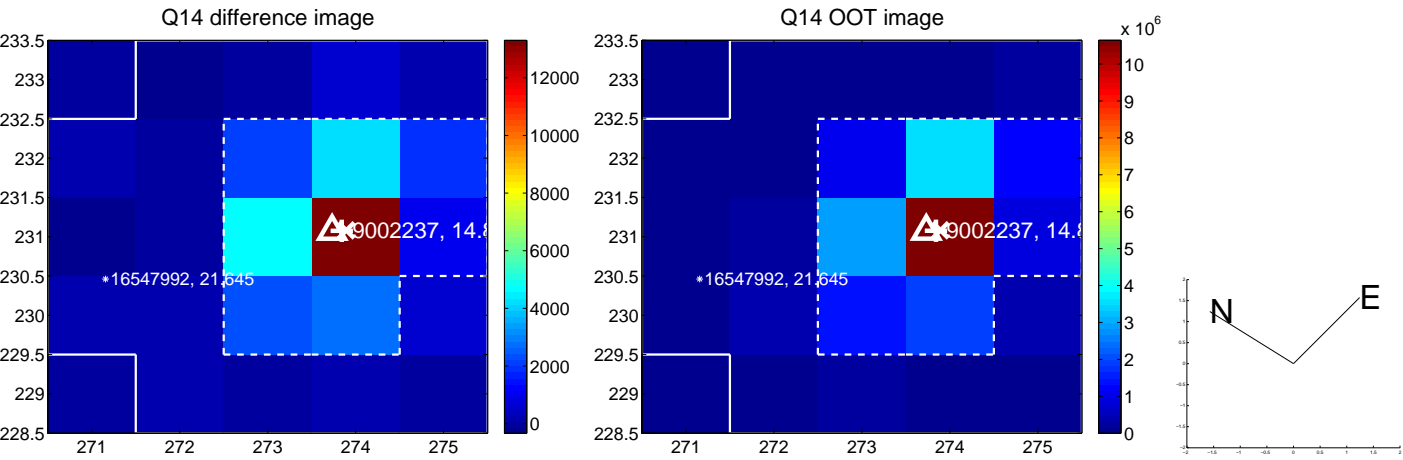
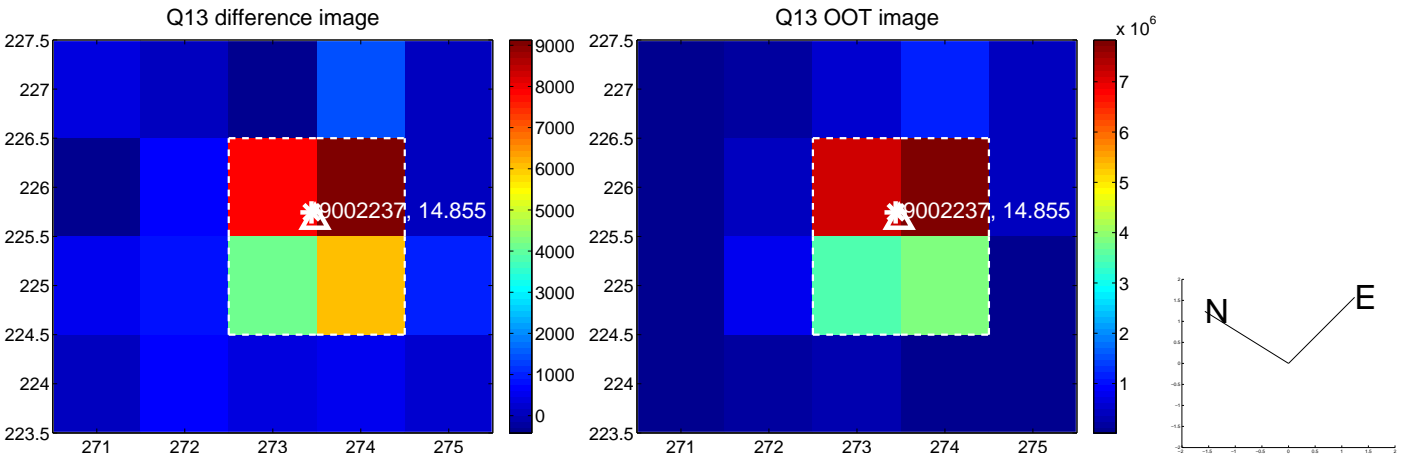
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



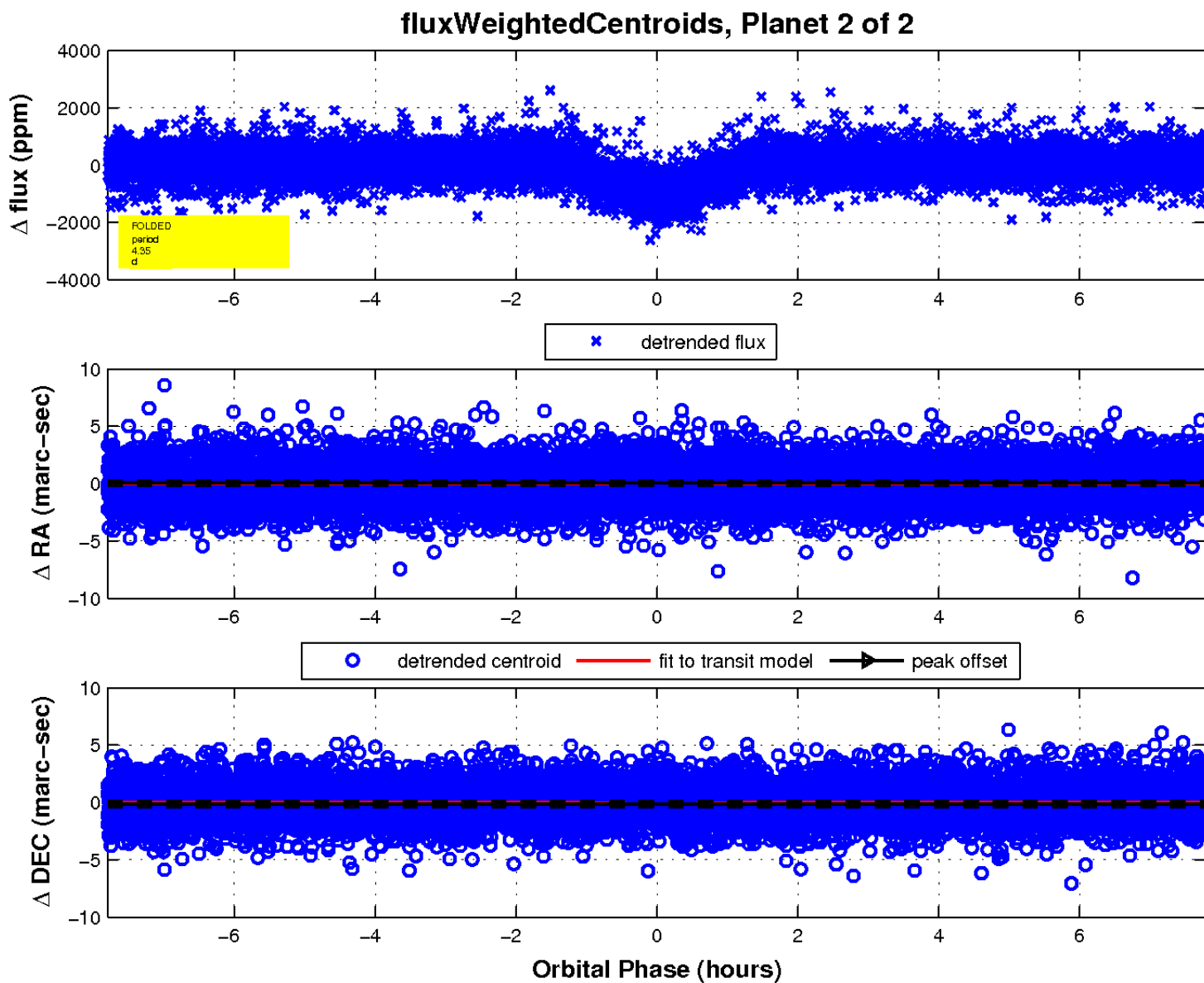
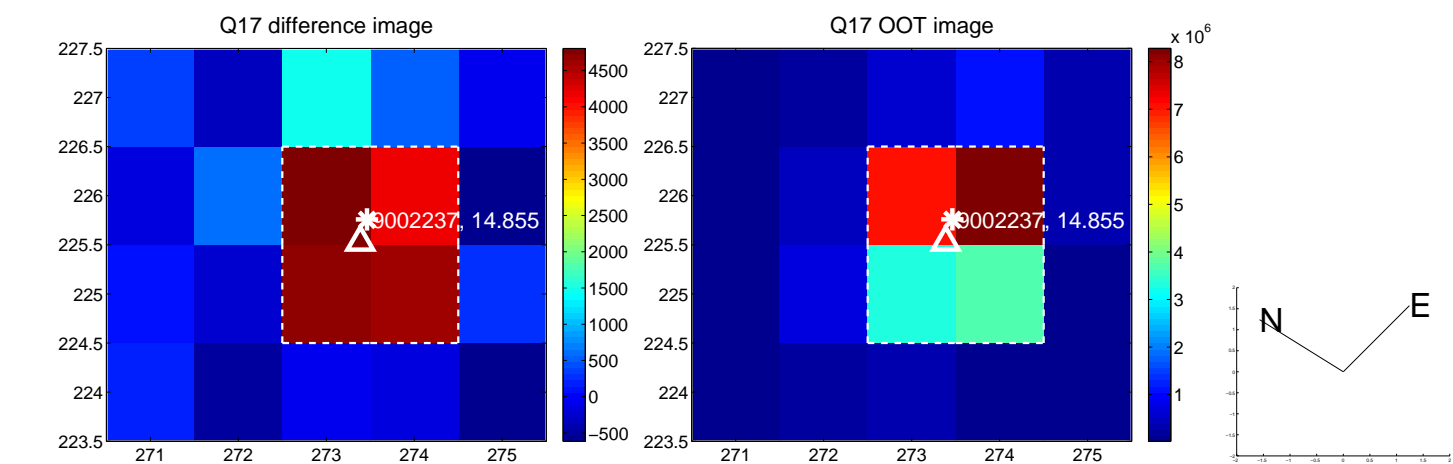
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

