

KIC 004548098

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})
004548098-01	OBS	4157.01	3.823158	133.069333	46.9	2.344	13.4	13.7	1.12	6202	0.87	640.40
004548098-02	OBS	4157.02	5.215761	133.403556	45.5	1.285	7.8	9.1	1.12	6202	0.90	423.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004548098-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004548098-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

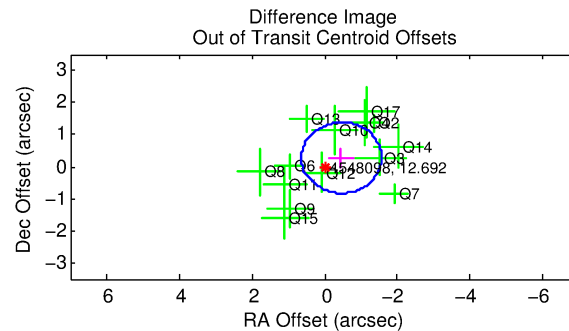
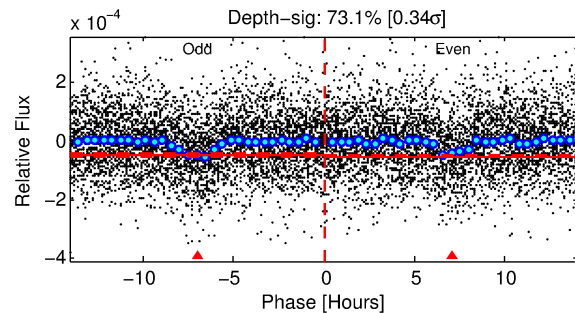
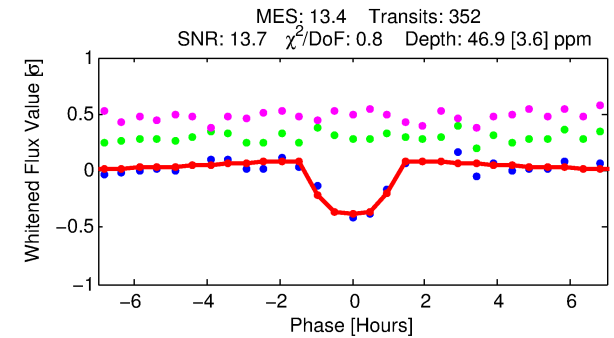
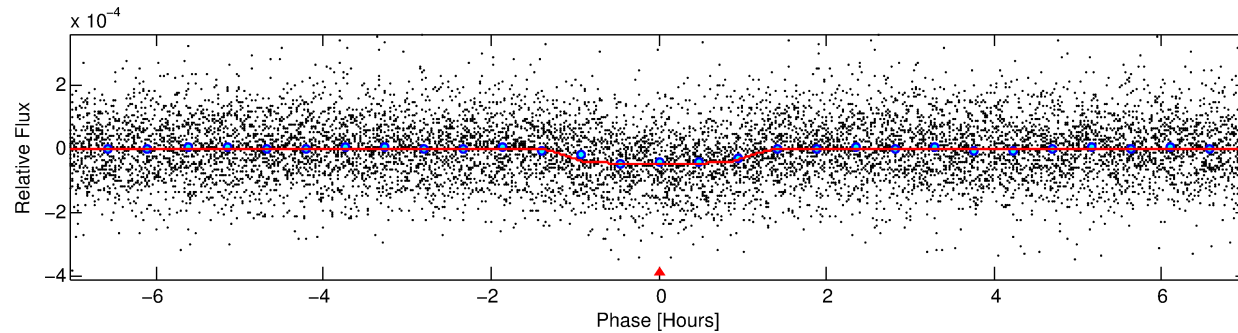
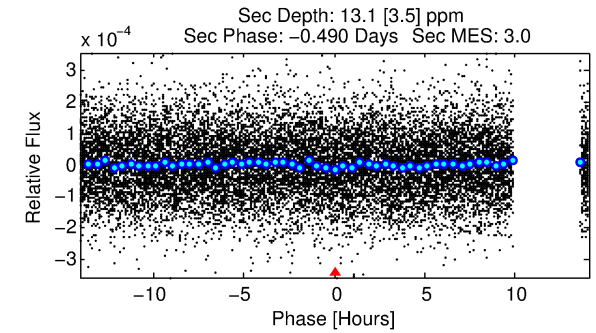
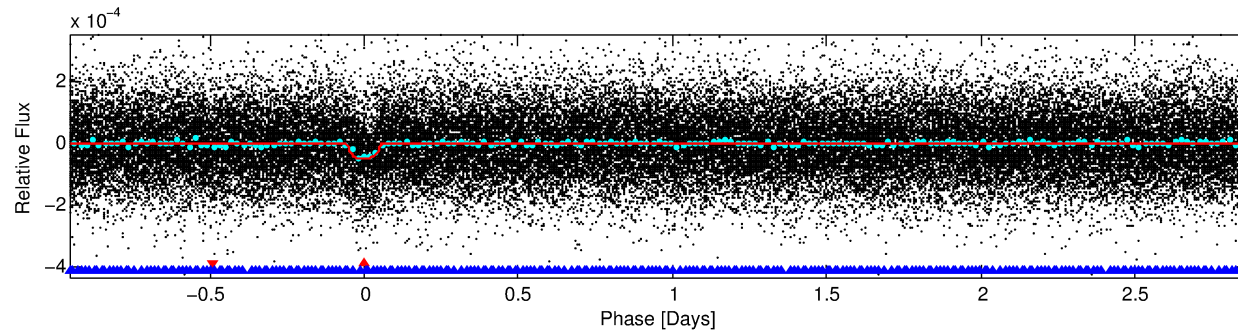
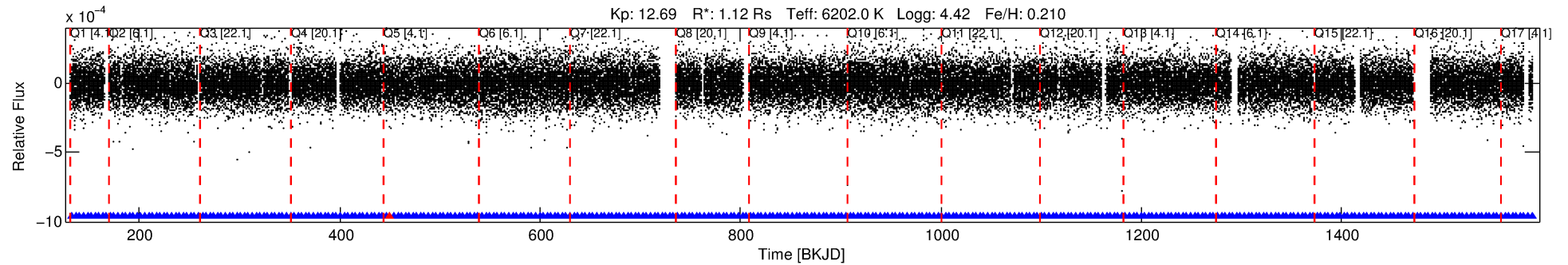
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004548098-01

No Significant Match Found

DV One-Page Summary

KIC: 4548098 Candidate: 1 of 2 Period: 3.823 d
KOI: K04157.01 Corr: 0.960



DV Fit Results:

Period = 3.82316 [0.00002] d
Epoch = 133.0693 [0.0025] BKJD
Rp/R* = 0.0071 [0.0023]
a/R* = 7.08 [11.05]
b = 0.83 [0.59]
Seff = 640.40 [166.57]
Teq = 1283 [83] K
Rp = 0.87 [0.32] Re
a = 0.0510 [0.0082] AU
Ag = 24.98 [18.37] [1.31σ]
Teffp = 4434 [777] K [4.03σ]

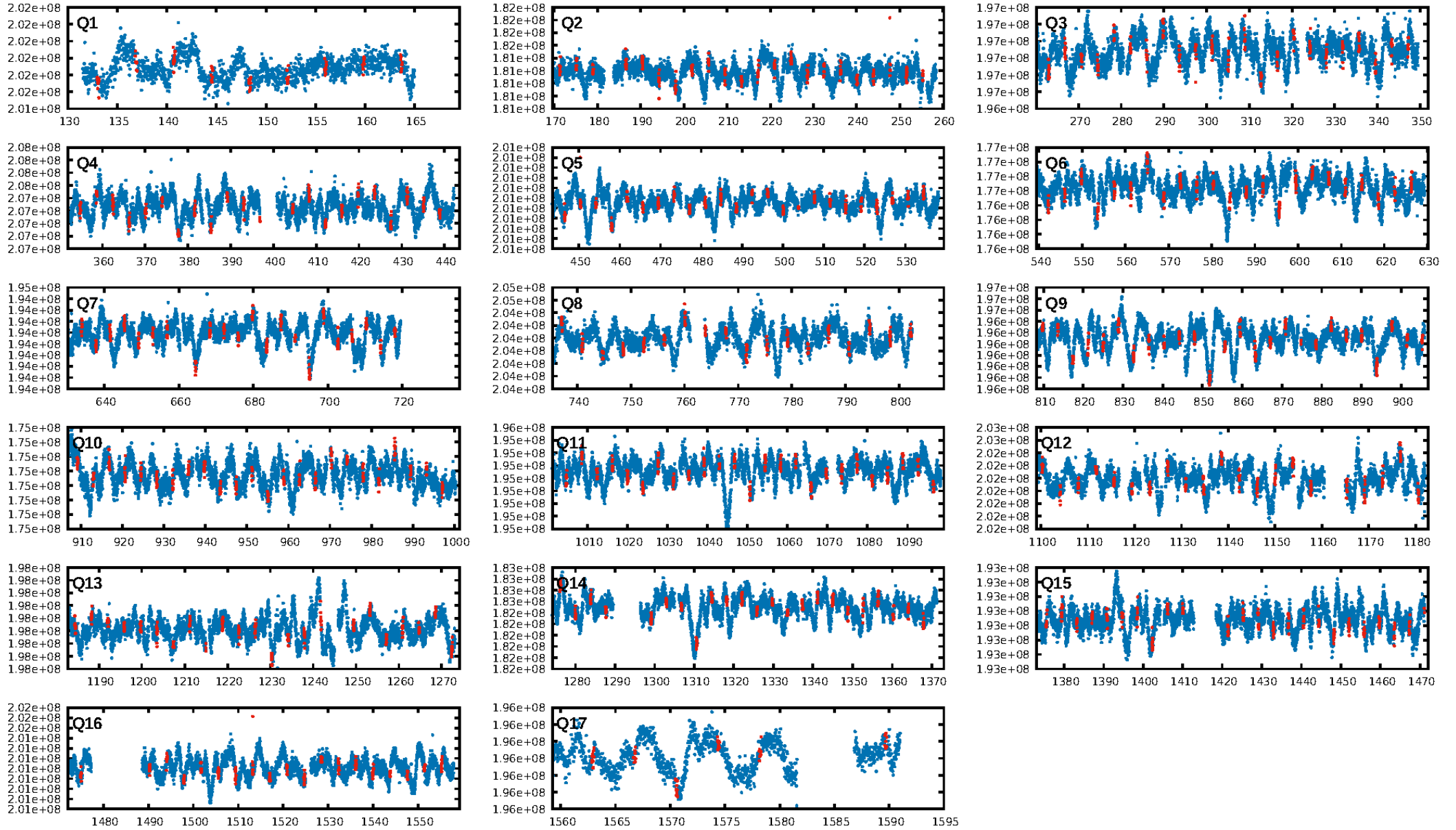
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [12.50σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.20e-40
RollingBand-fgt: 1.00 [336/337]
GhostDiagnostic-chr: 10.46
Centroid-sig: 2.2%
Centroid-so: 0.914 arcsec [1.40σ]
OotOffset-rm: 0.538 arcsec [1.46σ]
KicOffset-rm: 0.574 arcsec [1.43σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [17/17]

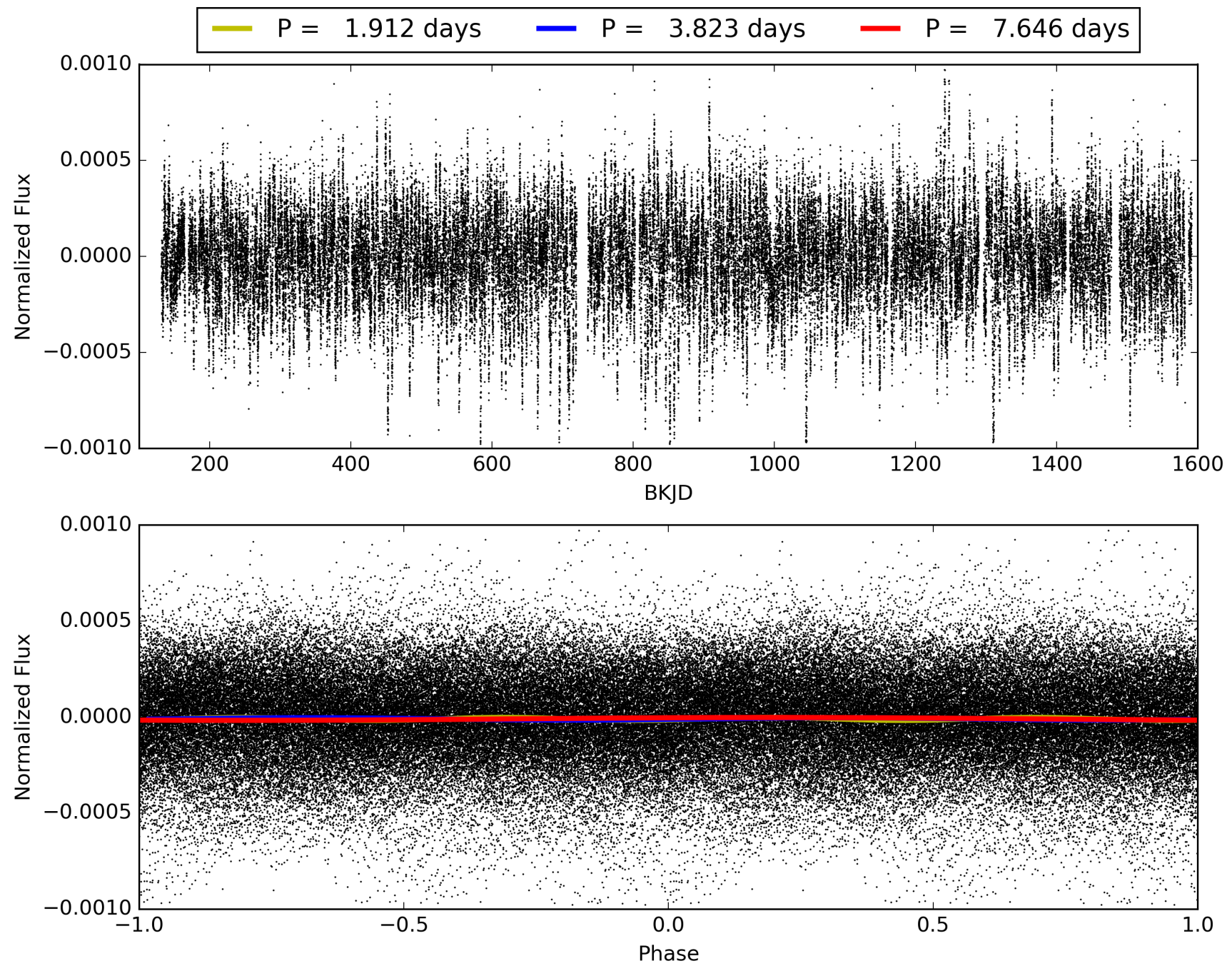
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:38:15 Z

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

TCE 004548098-01, PDC Light Curves

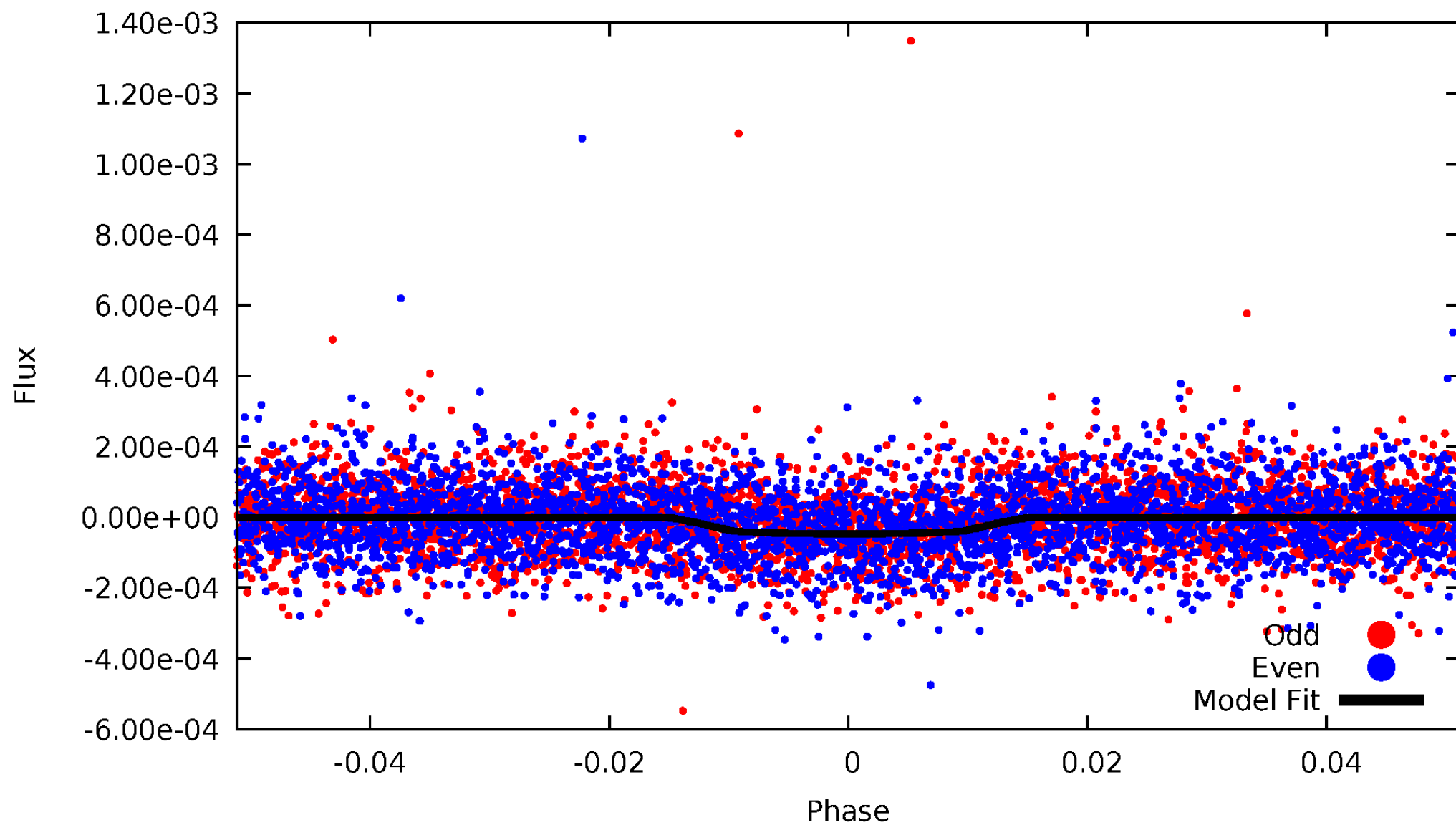


TCE 004548098-01



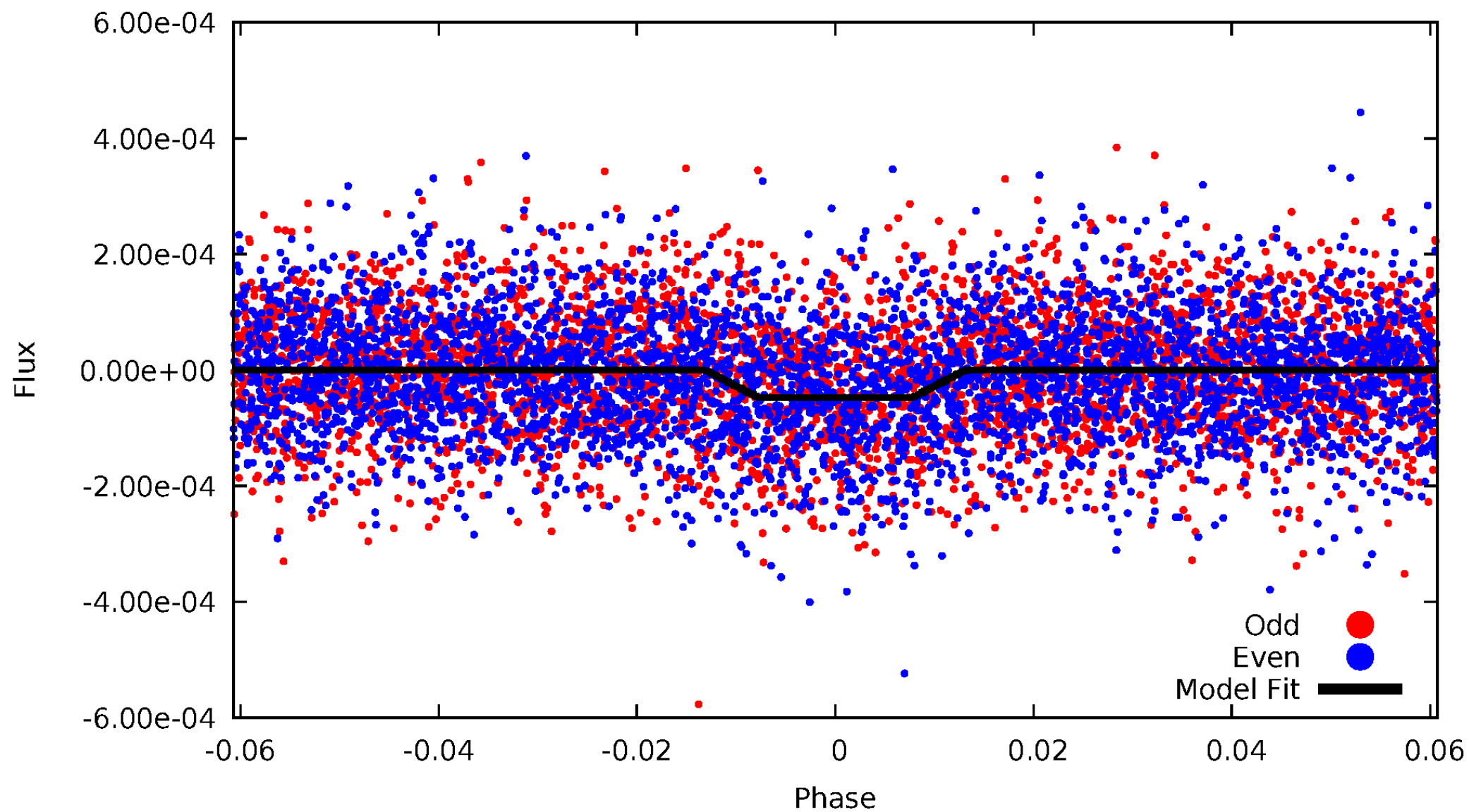
DV Odd/Even

TCE 004548098-01



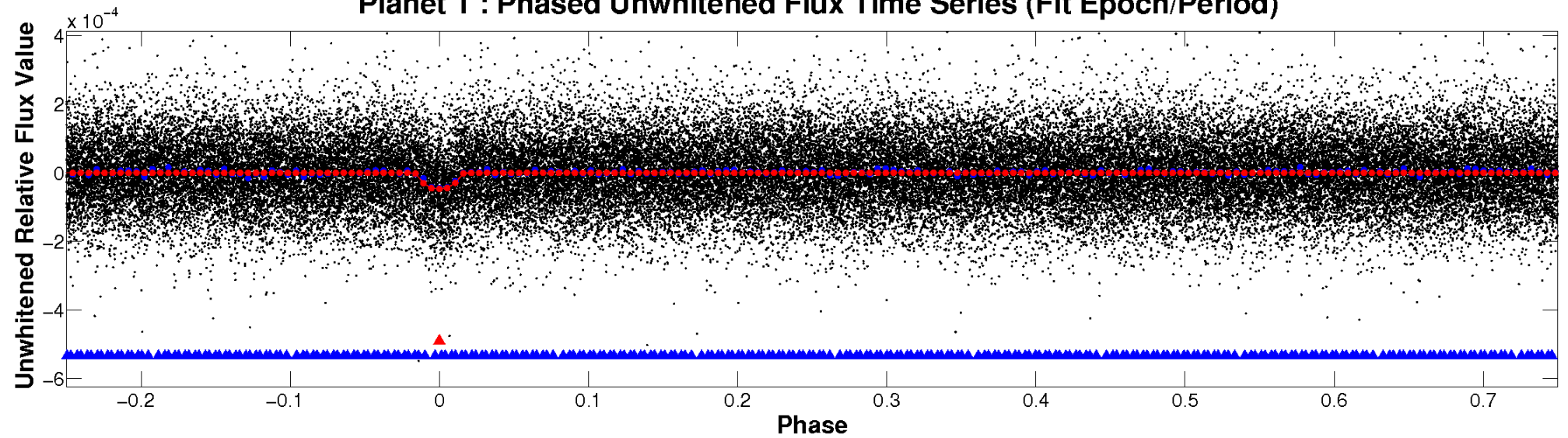
ALT Odd/Even

TCE 004548098-01

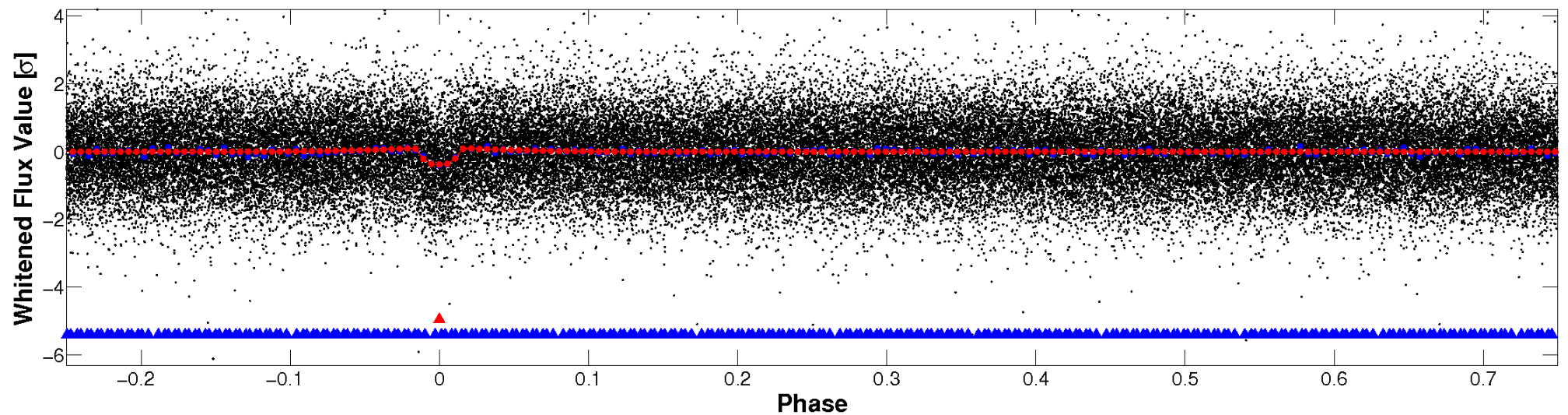


Non-Whitened Vs. Whitened Light Curve

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

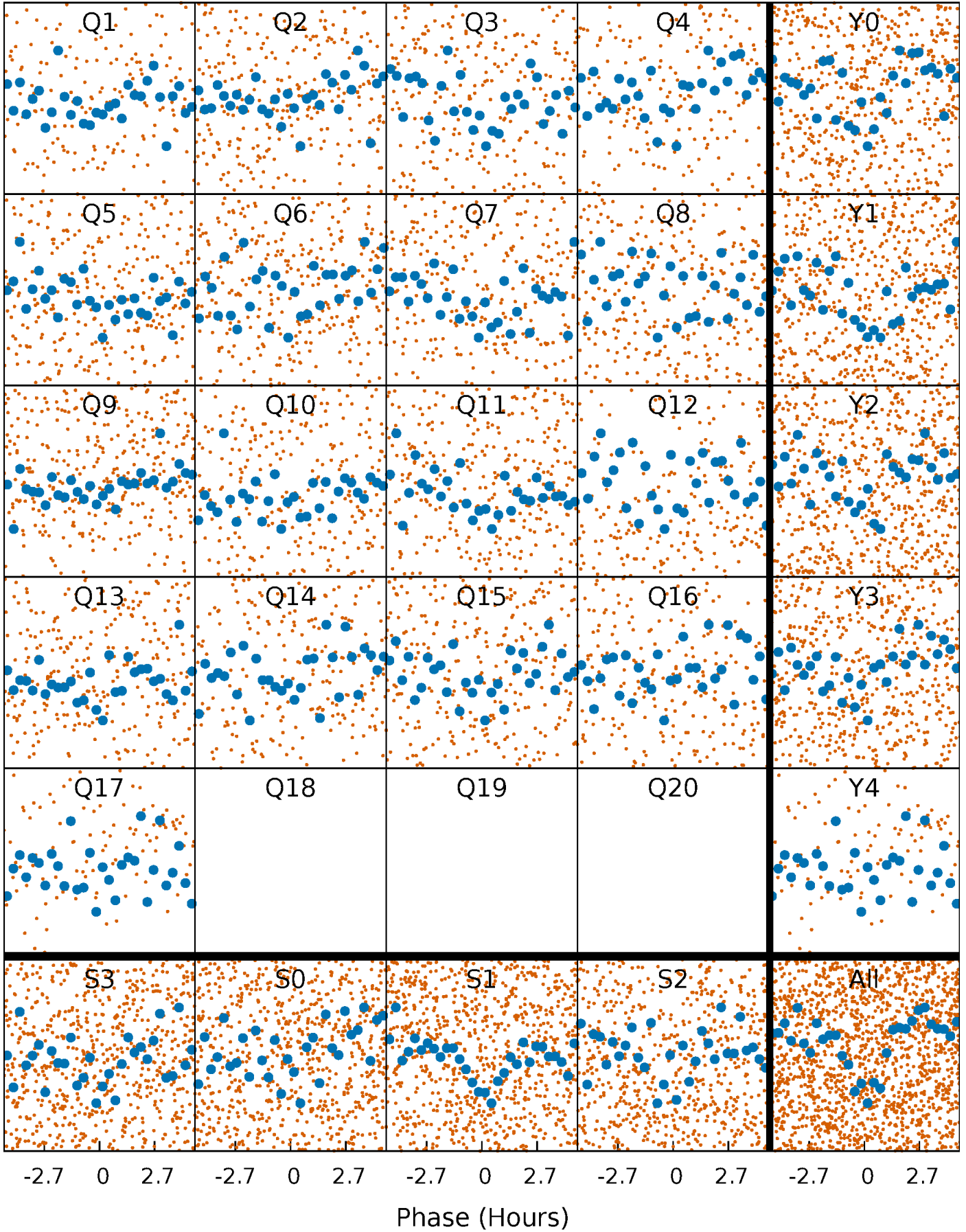


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



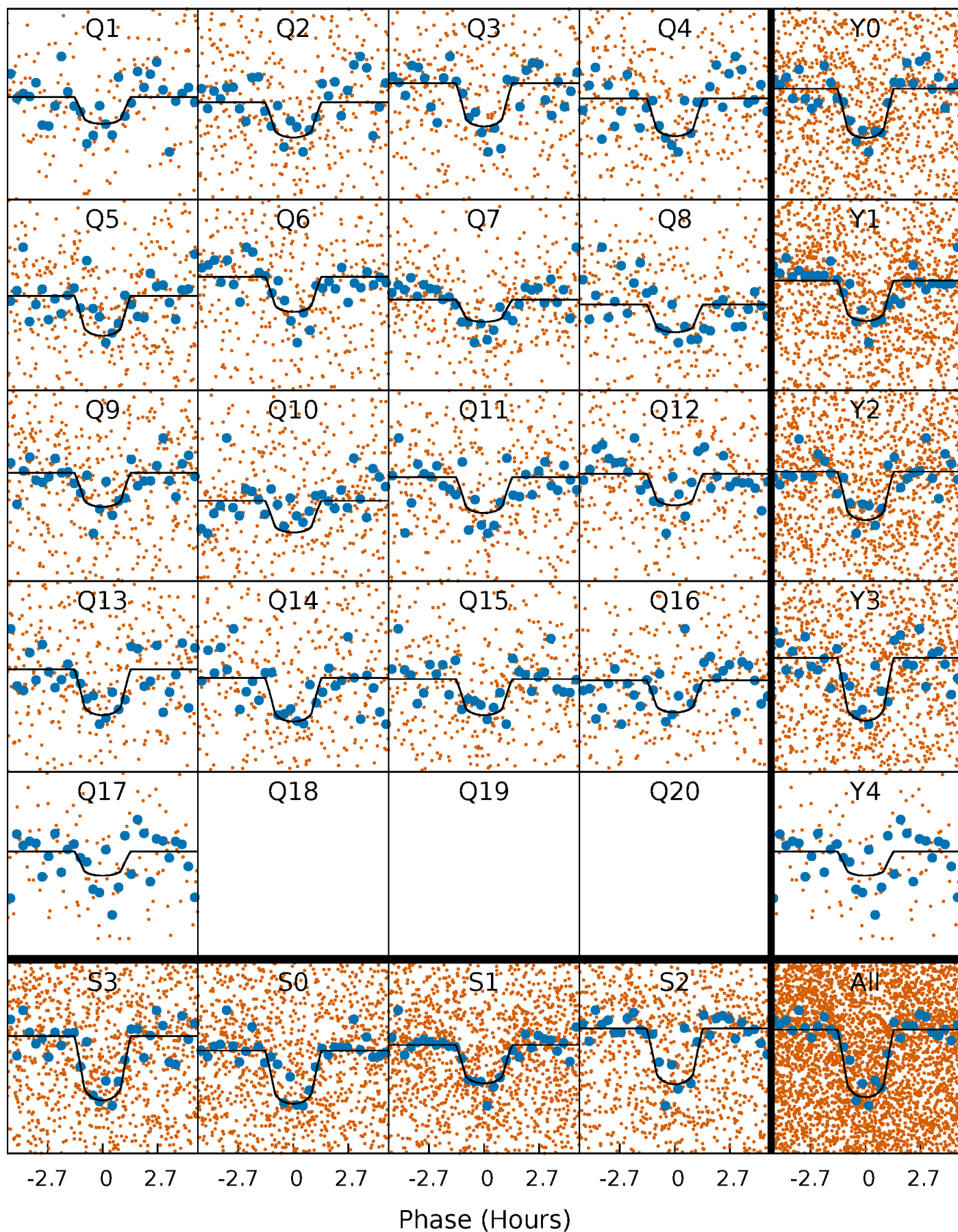
PDC Quarter-Phased Transit Curves

TCE 004548098-01 P= 3.823158 Days $T_0=133.069333$ (BKJD)



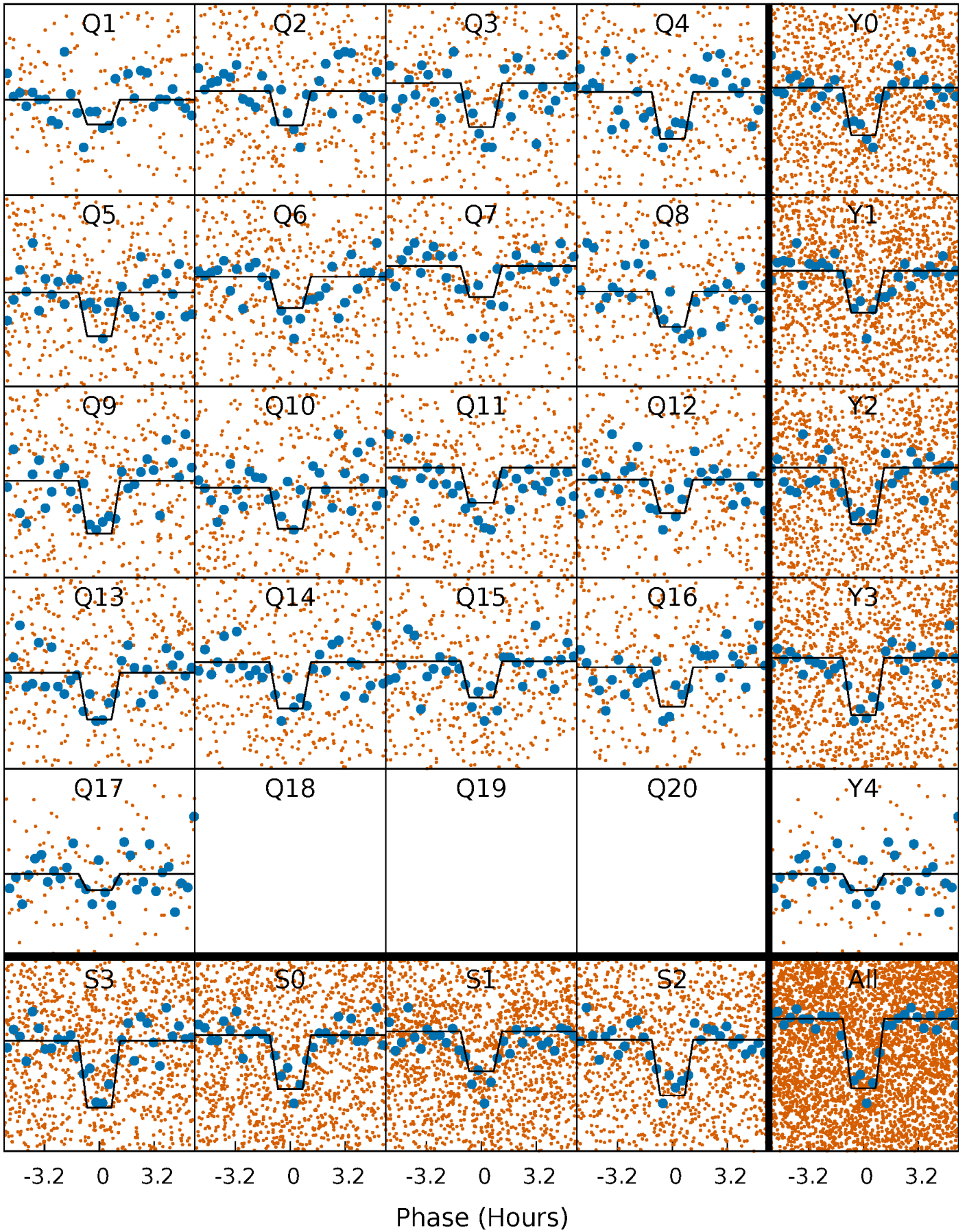
DV Quarter-Phased Transit Curves

TCE 004548098-01 P= 3.823158 Days $T_0=133.069333$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

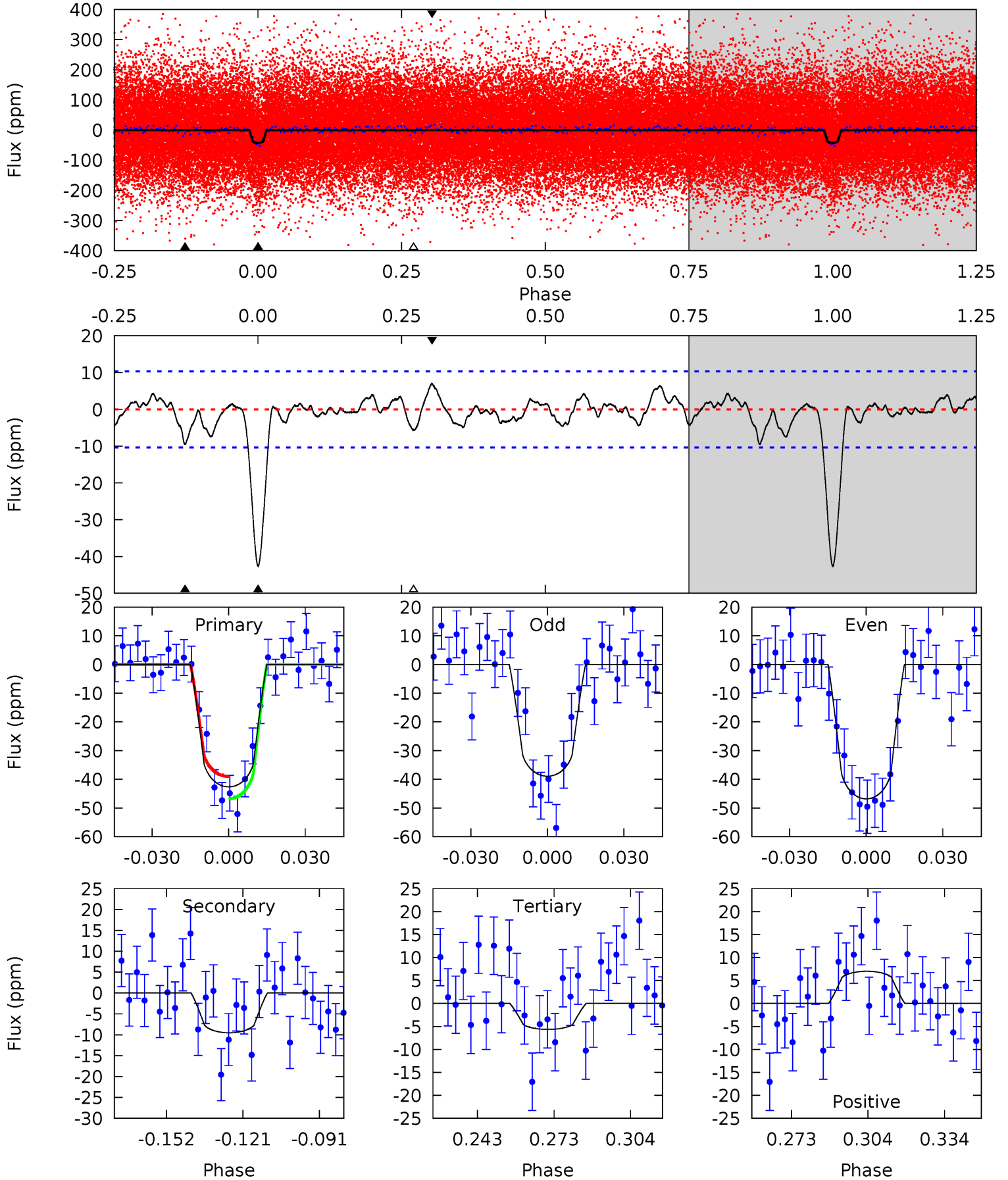
TCE 004548098-01 P= 3.823166 Days $T_0=133.068866$ (BKJD)



DV Model-Shift Uniqueness Test

004548098-01, P = 3.823158 Days, E = 129.246175 Days

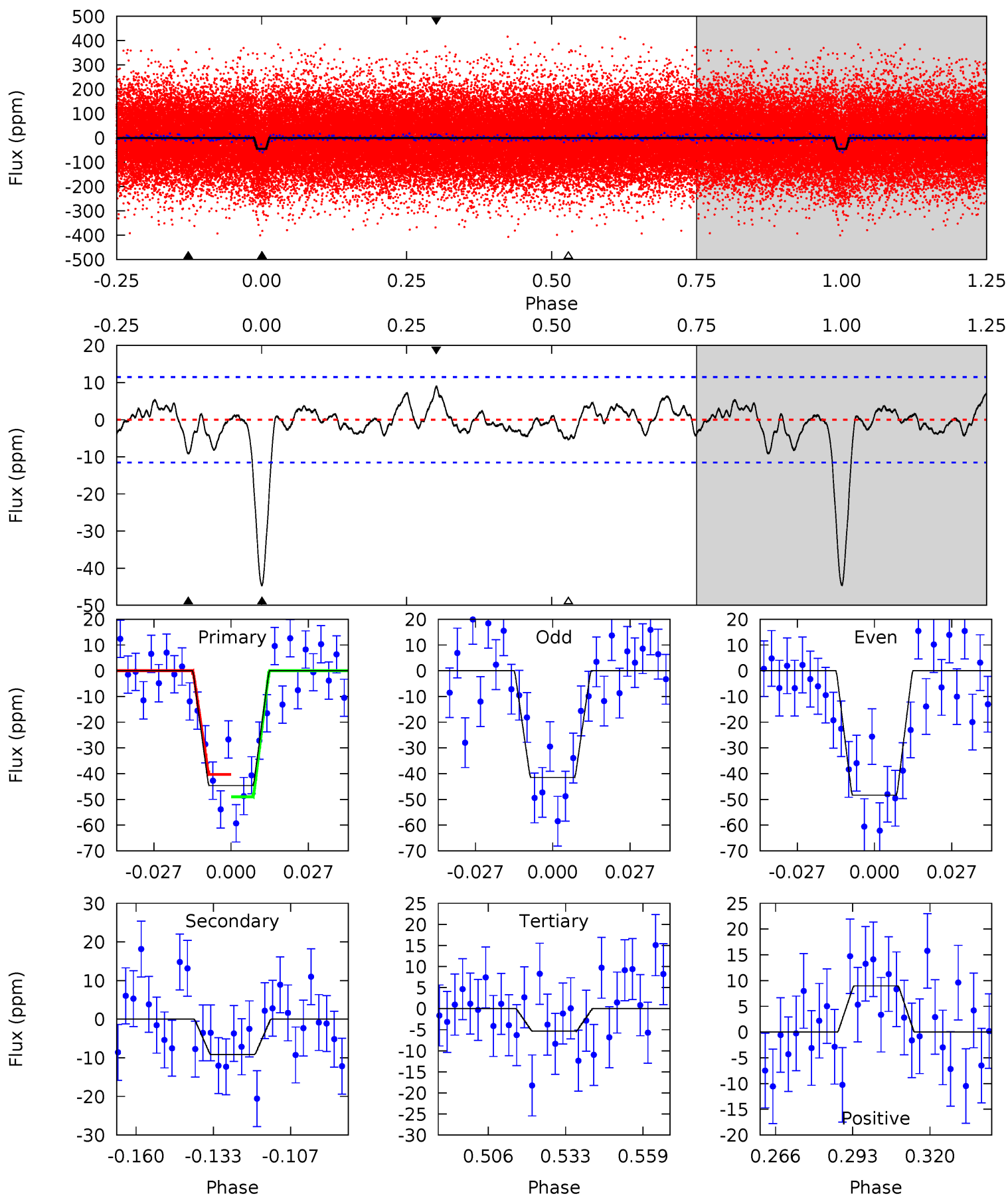
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	4.42	2.62	3.25	4.81	2.17	1.23	17.2	16.5	1.80	1.17	1.83	0.96	0.14	1.81



Alt Model-Shift Uniqueness Test

004548098-01, P = 3.823166 Days, E = 129.245700 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.7	3.84	2.24	3.76	4.83	2.22	1.23	16.5	15.0	1.60	0.08	1.46	1.06	0.17	1.83



Stellar Parameters For KIC 004548098

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6202^{+99}_{-149}	$4.422^{+0.026}_{-0.136}$	$0.210^{+0.150}_{-0.150}$	$1.122^{+0.205}_{-0.058}$	$1.213^{+0.076}_{-0.093}$	$1.211^{+0.152}_{-0.455}$
	+2%/-2%	+1%/-3%	+71%/-71%	+18%/-5%	+6%/-8%	+13%/-38%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 004548098-01 / KOI 4157.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 2	$0.90^{+0.30}_{-0.29}$	1813^{+81}_{-55}	4277^{+802}_{-439}	16^{+21}_{-7}
Alt.	-9 ± 2	$0.86^{+0.31}_{-0.29}$	1815^{+78}_{-56}	4296^{+756}_{-464}	16^{+21}_{-8}

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

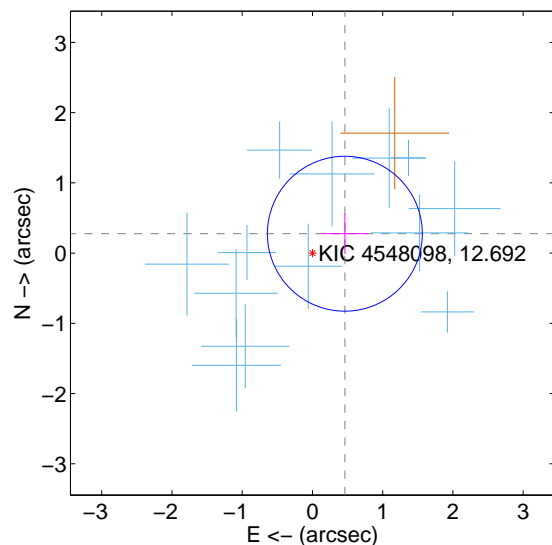
Supplemental centroid analysis for 004548098-01. Kepler magnitude: 12.69. Transit SNR 13.74

There are 13 quarters with good PRF difference image offsets

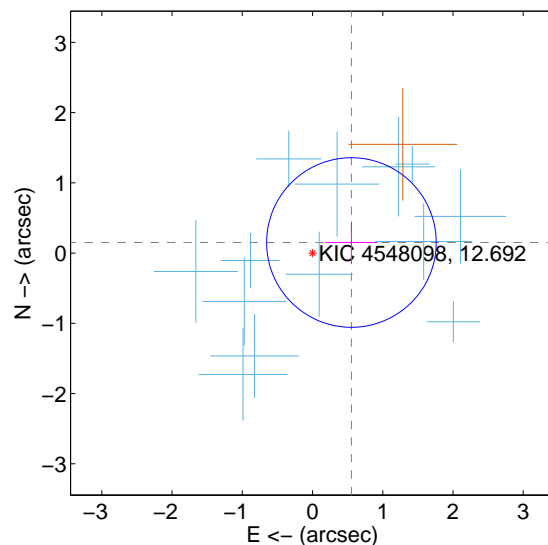
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.538 ± 0.368	1.46	-0.462 ± 0.326	0.276 ± 0.287
PRF-fit source offset from KIC position	0.574 ± 0.402	1.43	-0.554 ± 0.370	0.151 ± 0.299
photometric centroid source offset	0.91 ± 0.65	1.40	0.77 ± 0.65	0.49 ± 0.66

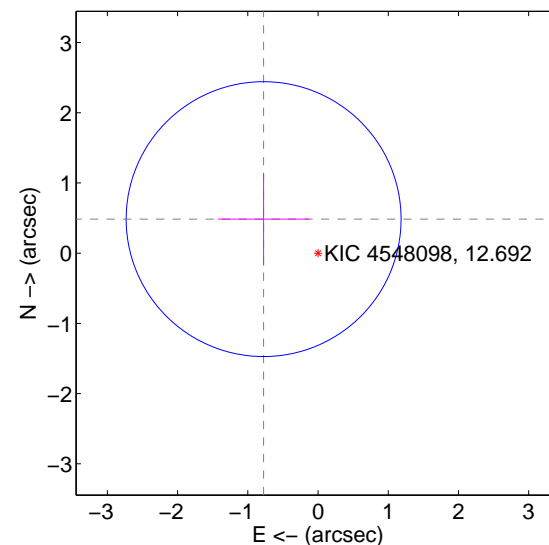
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

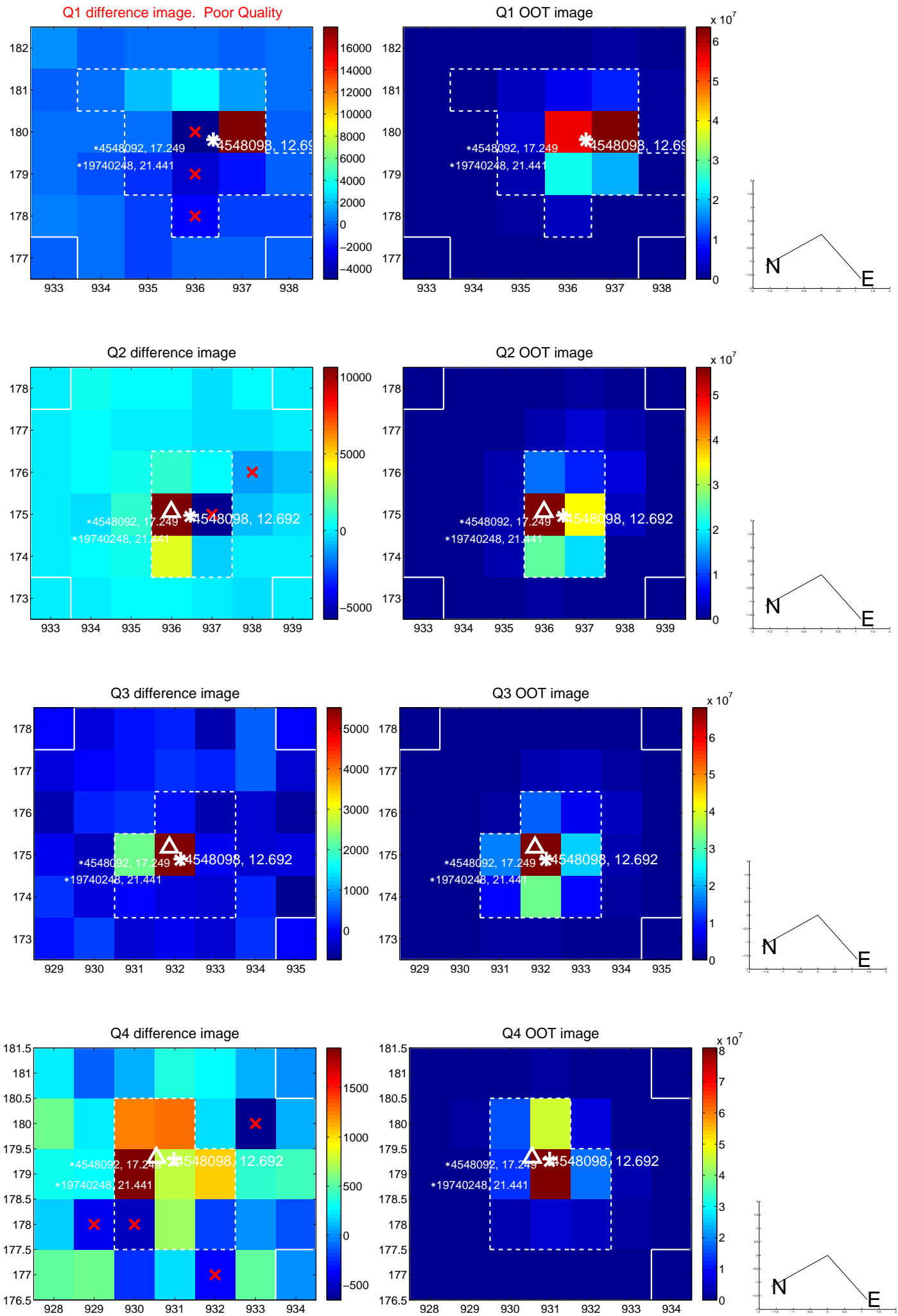


offset from photometric centroids

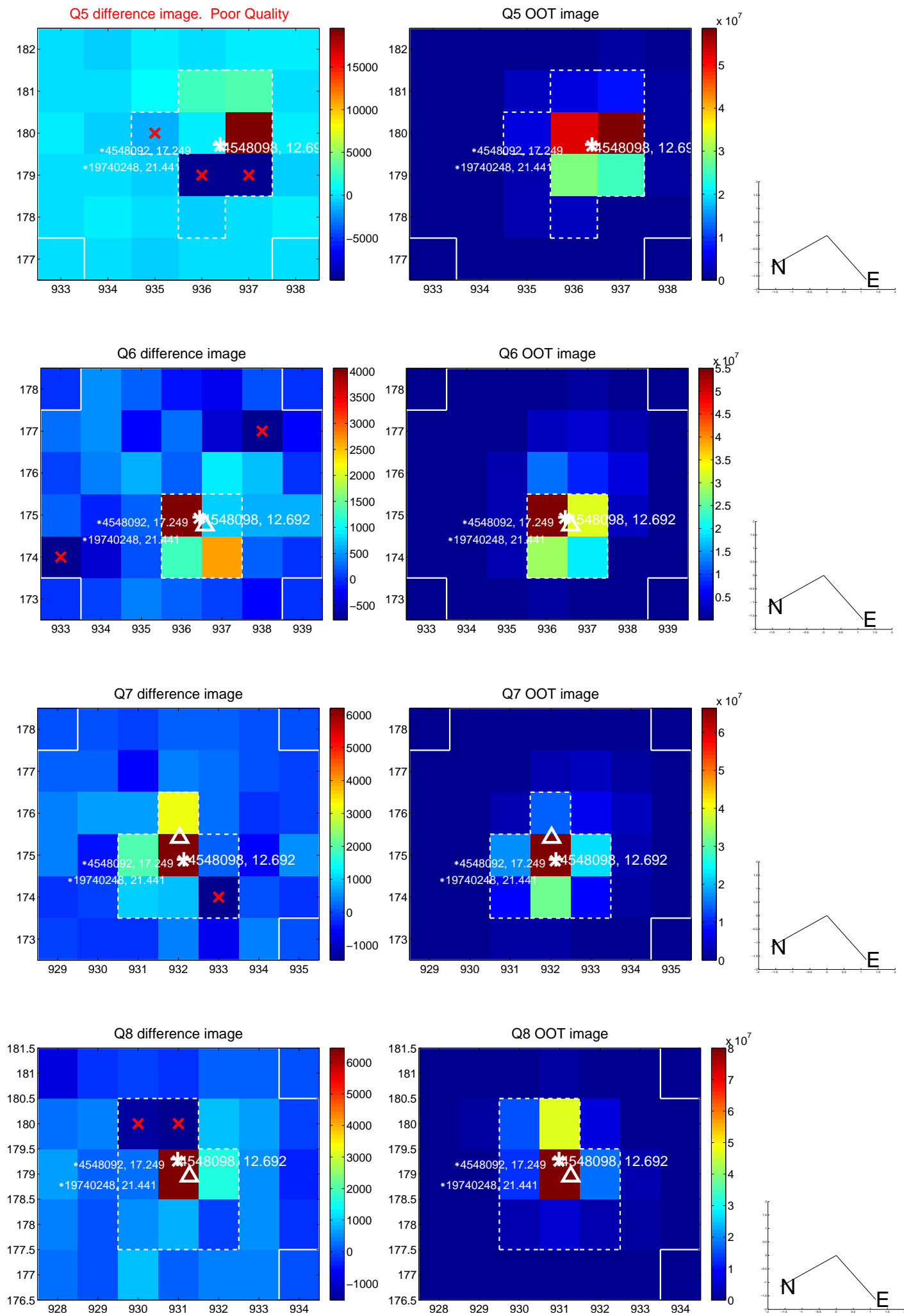


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

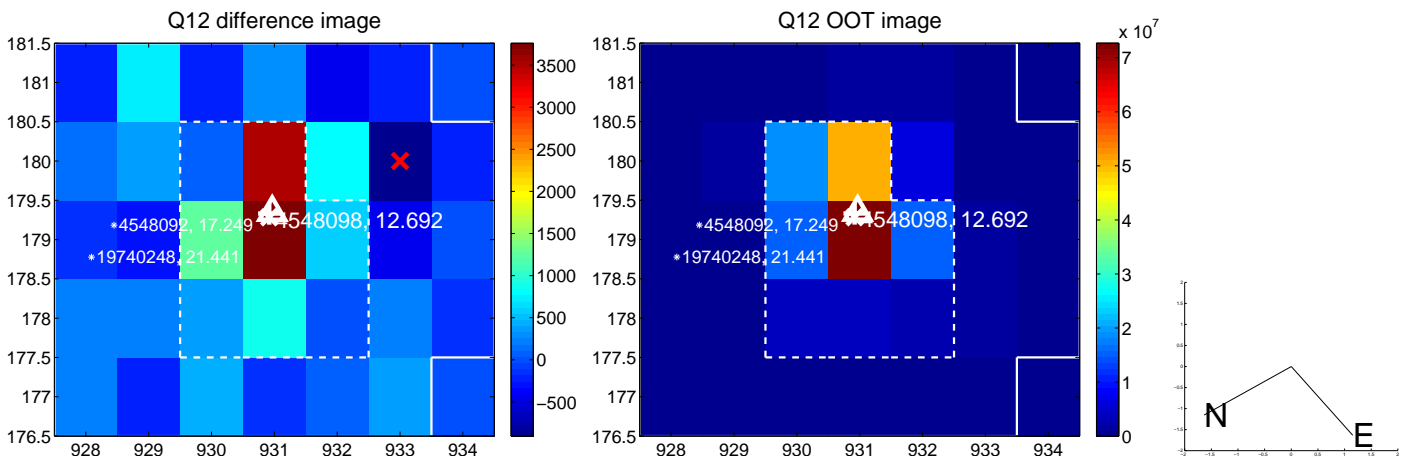
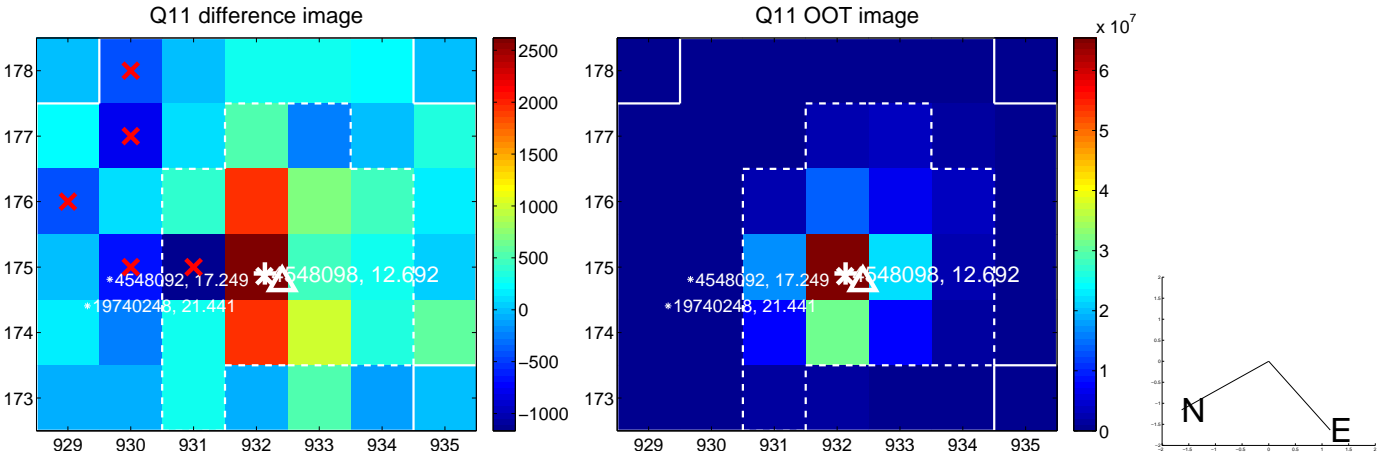
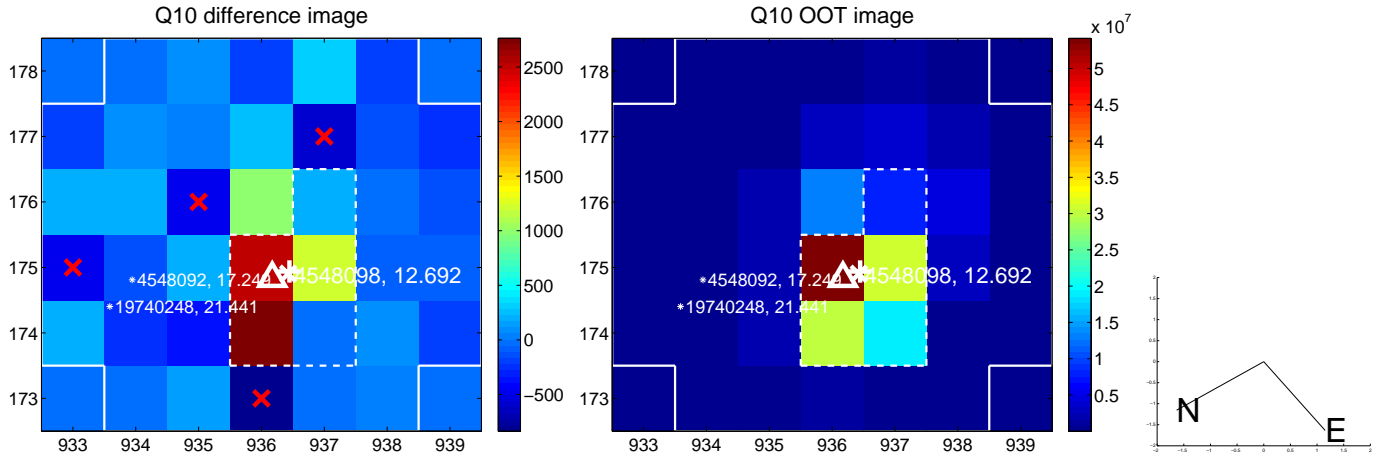
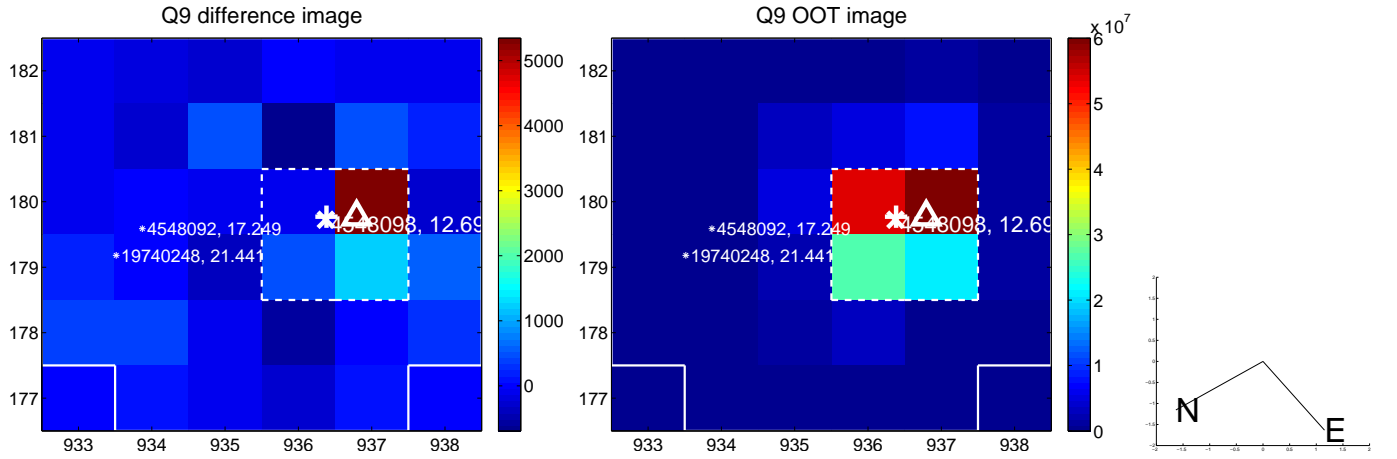
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



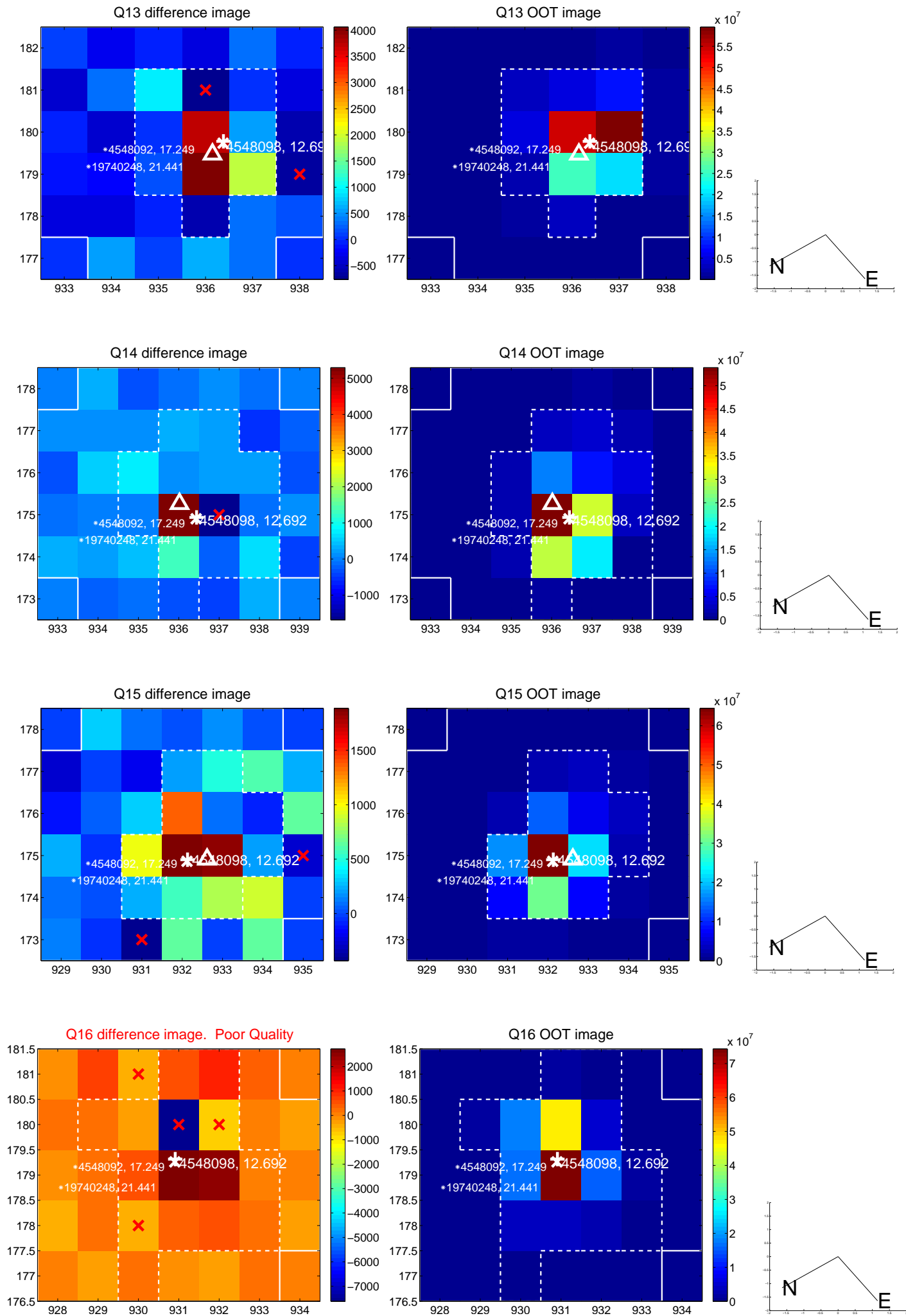
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



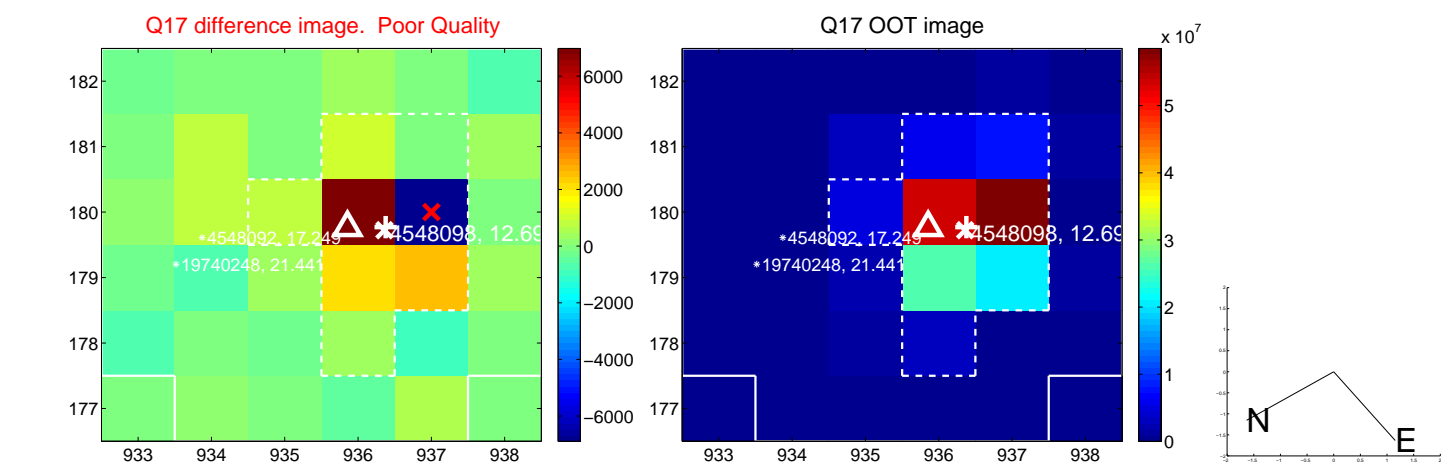
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



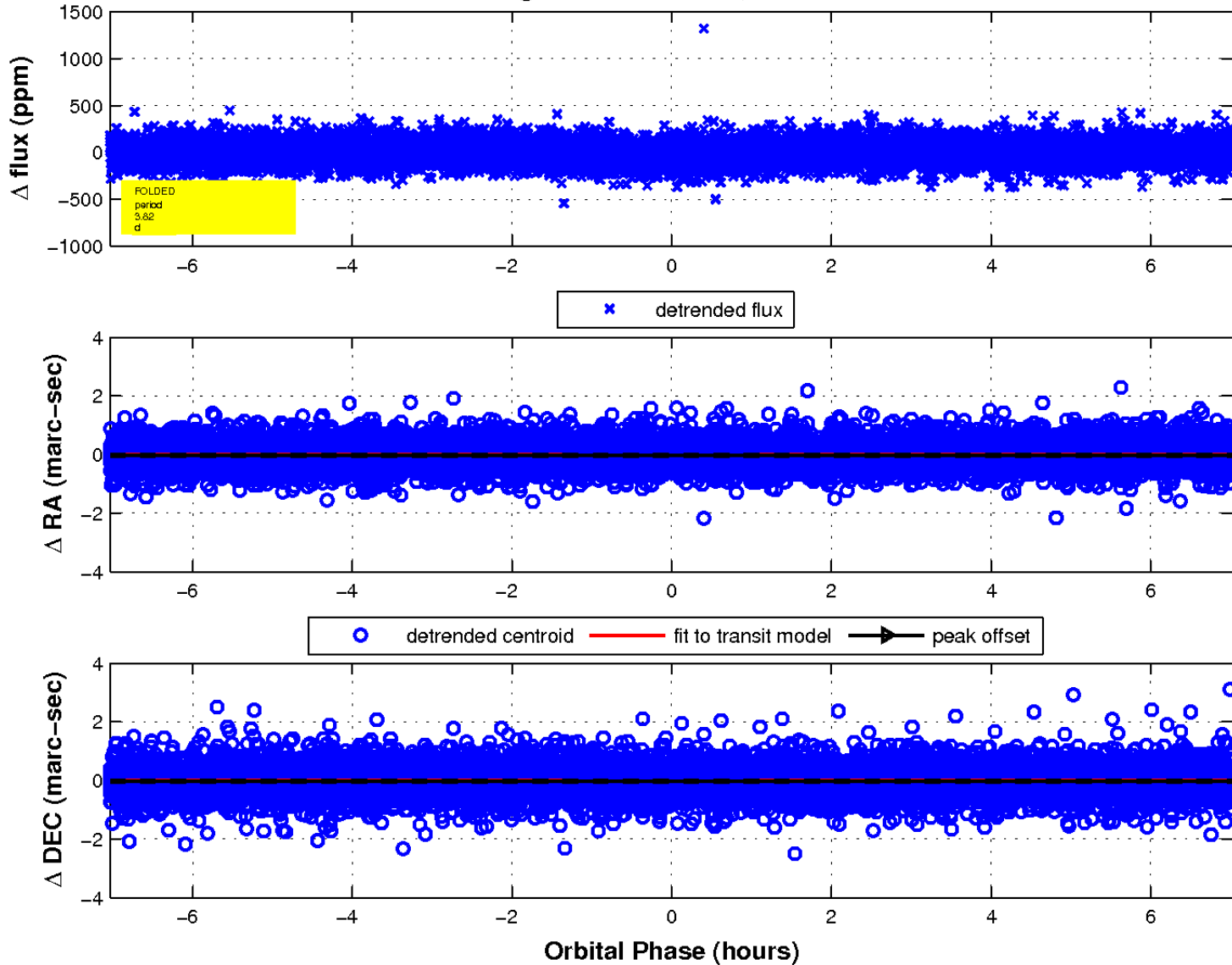
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



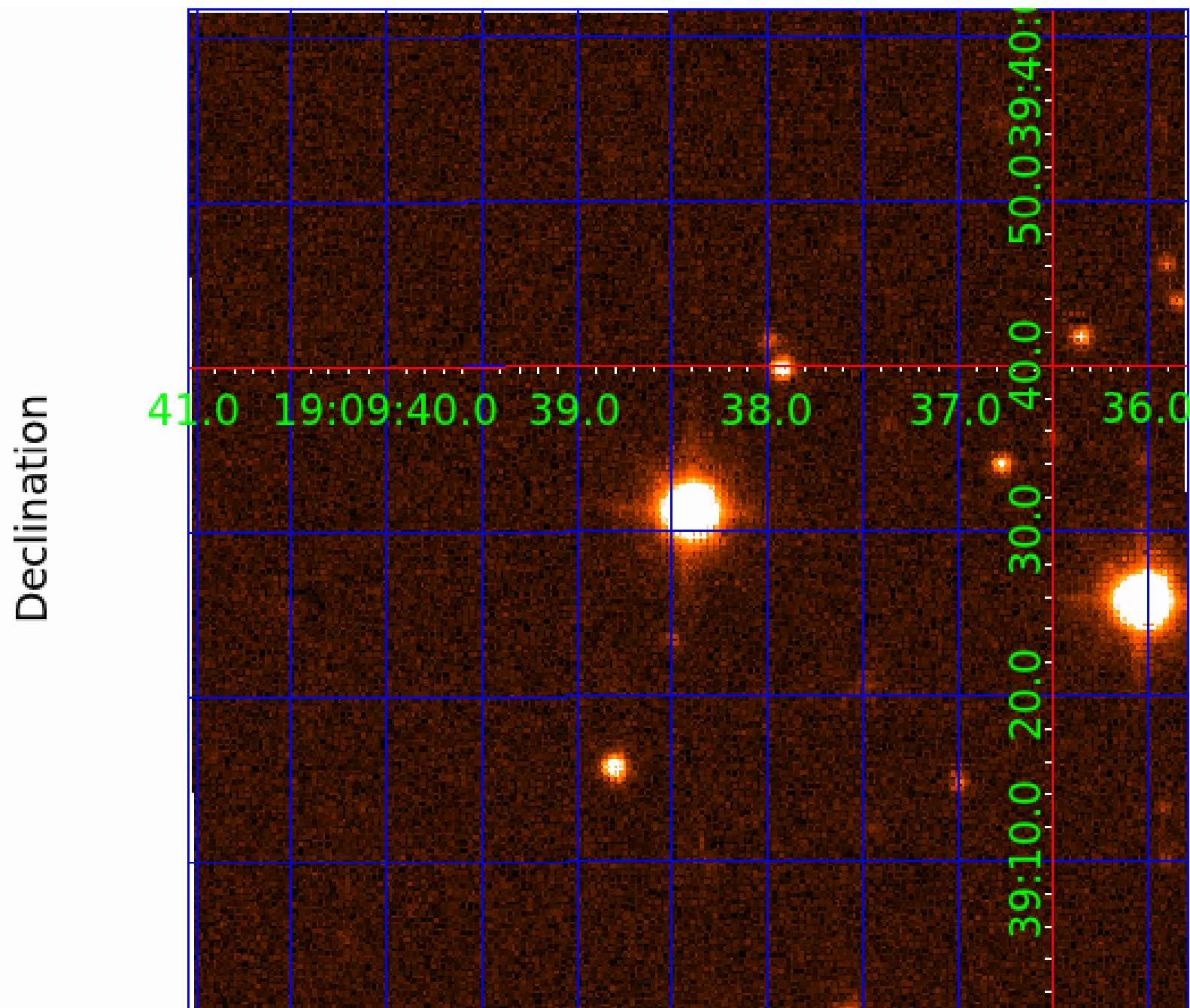
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 004548098

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})
004548098-01	OBS	4157.01	3.823158	133.069333	46.9	2.344	13.4	13.7	1.12	6202	0.87	640.40
004548098-02	OBS	4157.02	5.215761	133.403556	45.5	1.285	7.8	9.1	1.12	6202	0.90	423.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004548098-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004548098-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

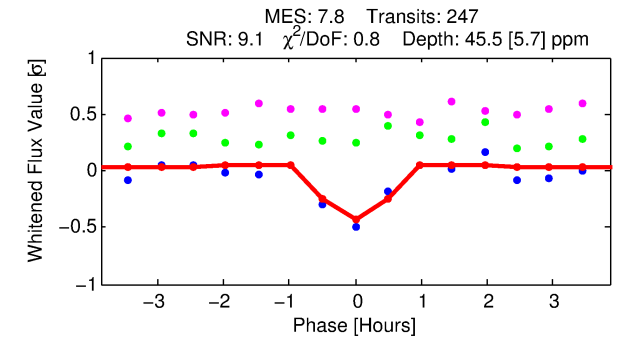
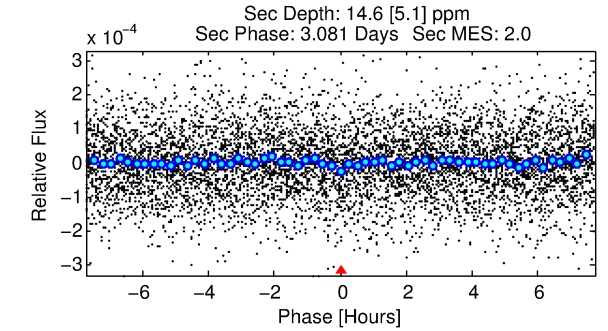
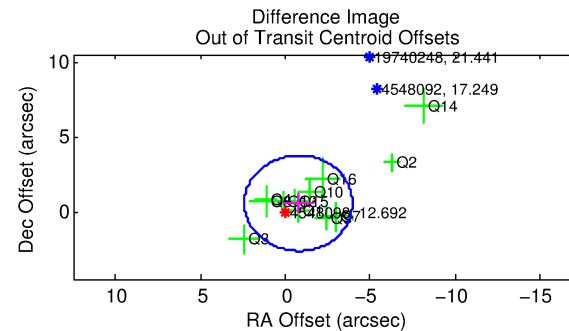
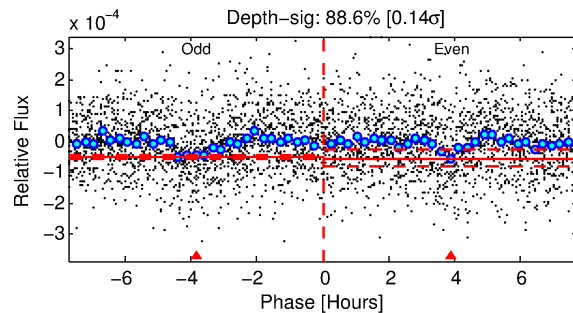
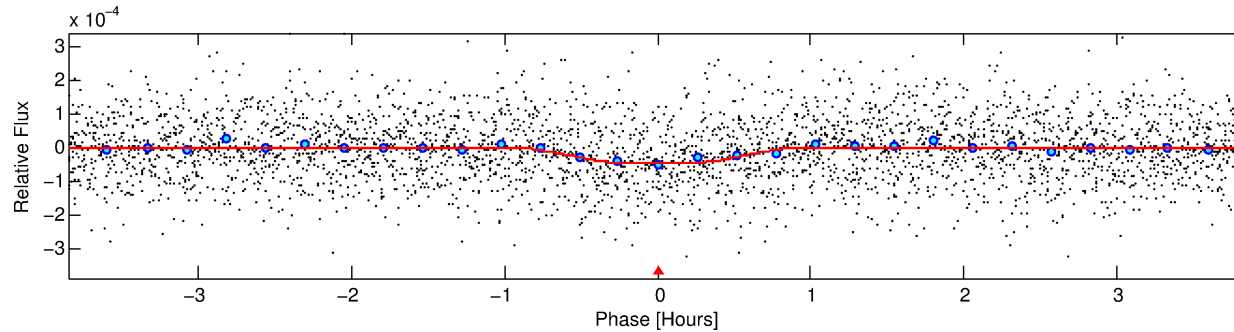
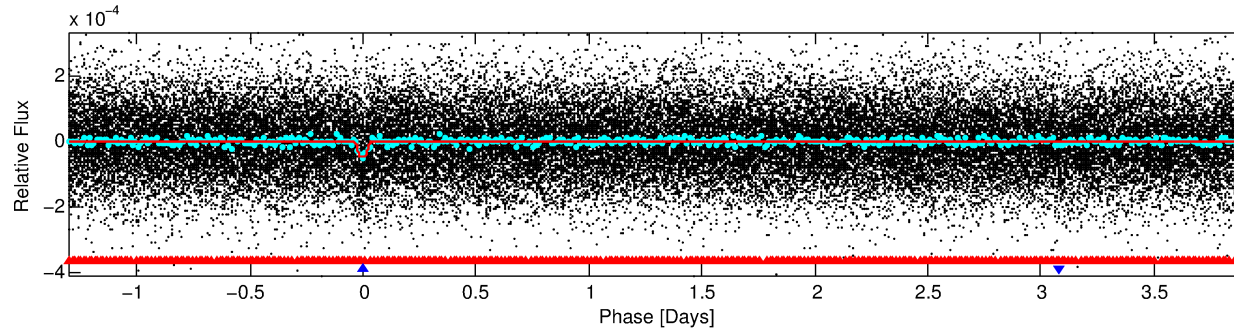
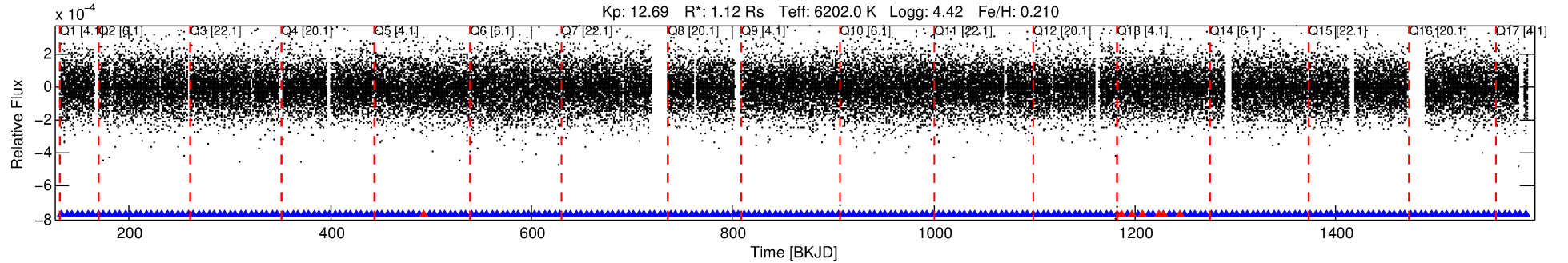
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004548098-02

No Significant Match Found

DV One-Page Summary

KIC: 4548098 Candidate: 2 of 2 Period: 5.216 d
KOI: K04157.02 Corr: 0.962



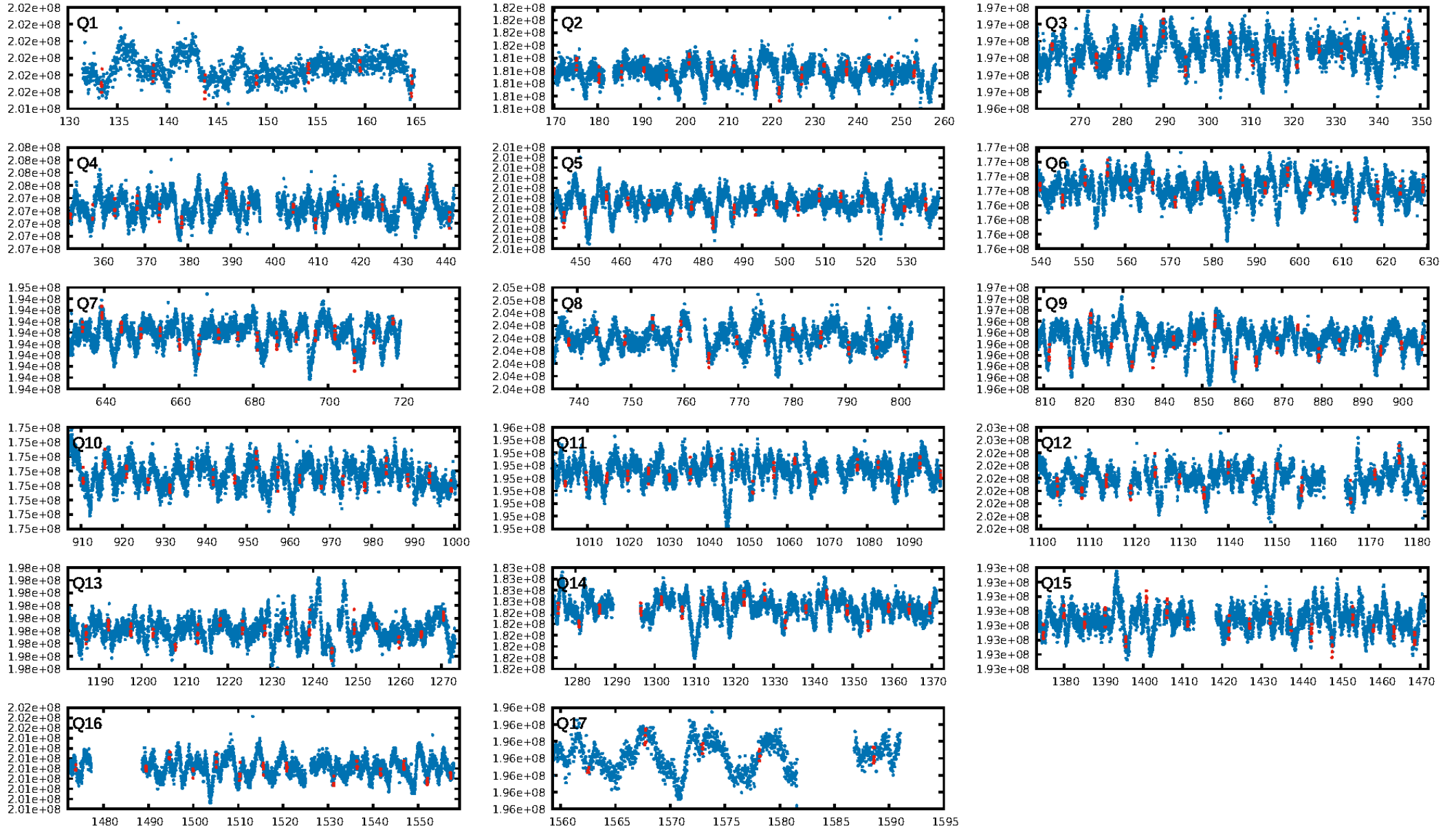
DV Fit Results:

Period = 5.21576 [0.00002] d
Epoch = 133.4036 [0.0028] BKJD
Rp/R* = 0.0073 [0.0031]
a/R* = 13.91 [30.05]
b = 0.90 [0.46]
Seff = 423.25 [110.09]
Teq = 1157 [75] K
Rp = 0.90 [0.41] Re
a = 0.0628 [0.0101] AU
Ag = 39.17 [36.91] [1.03 σ]
Teffp = 4474 [1024] K [3.23 σ]

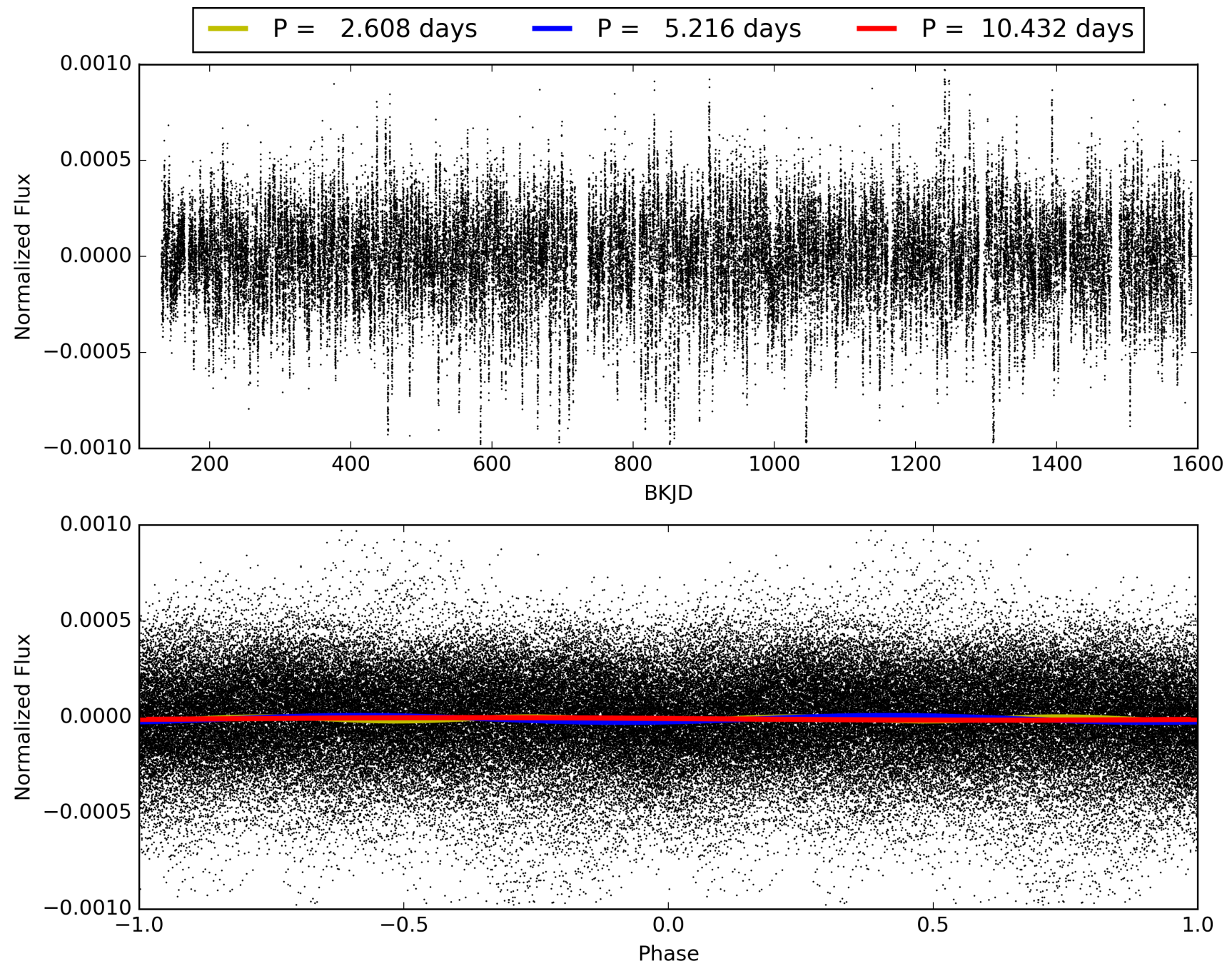
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.50 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.42e-14
RollingBand-fgt: 0.97 [229/236]
GhostDiagnostic-chr: 11.37
Centroid-sig: 0.2%
Centroid-so: 2.524 arcsec [2.42 σ]
OotOffset-rm: 0.954 arcsec [0.90 σ]
KicOffset-rm: 0.985 arcsec [0.99 σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 004548098-02, PDC Light Curves

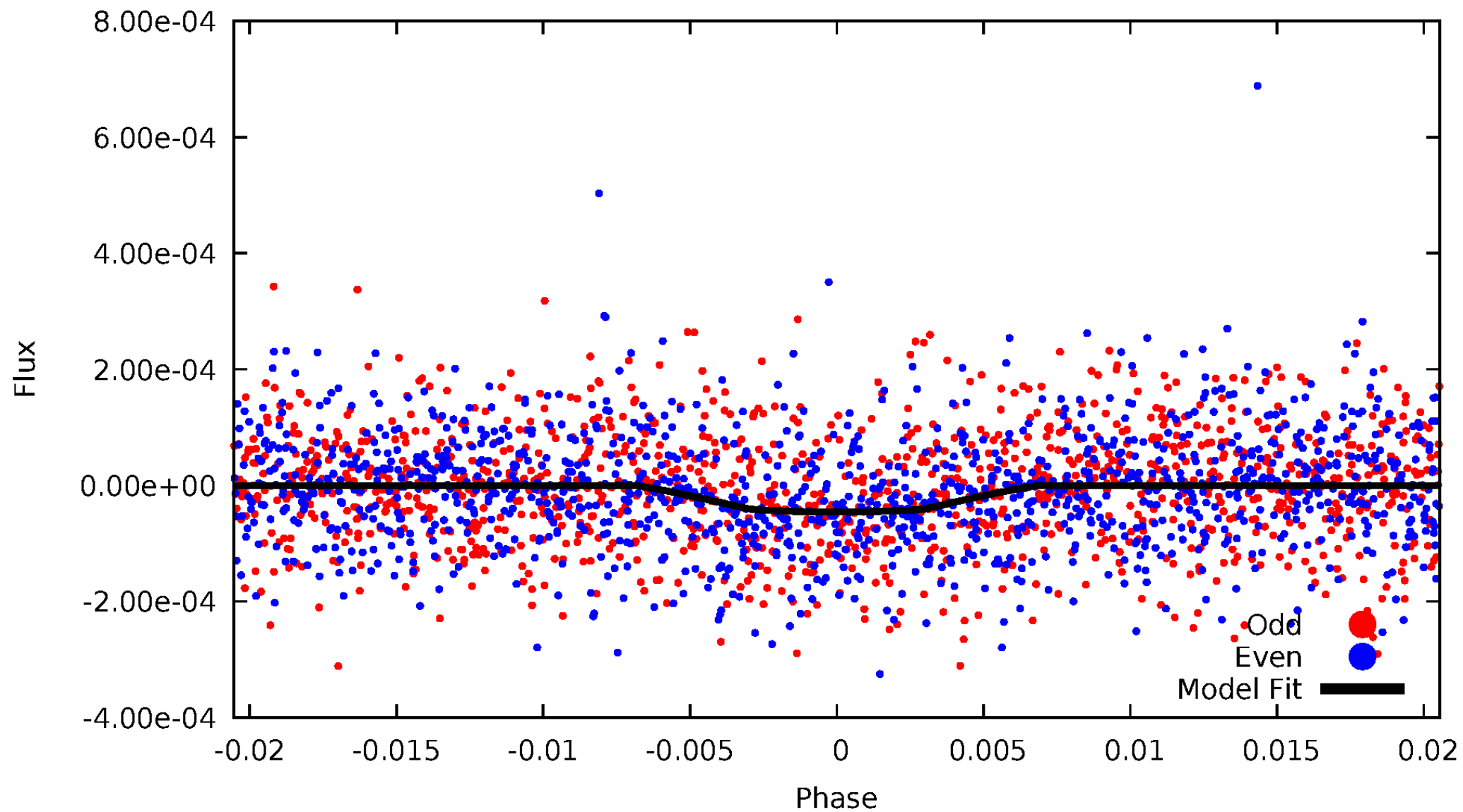


TCE 004548098-02



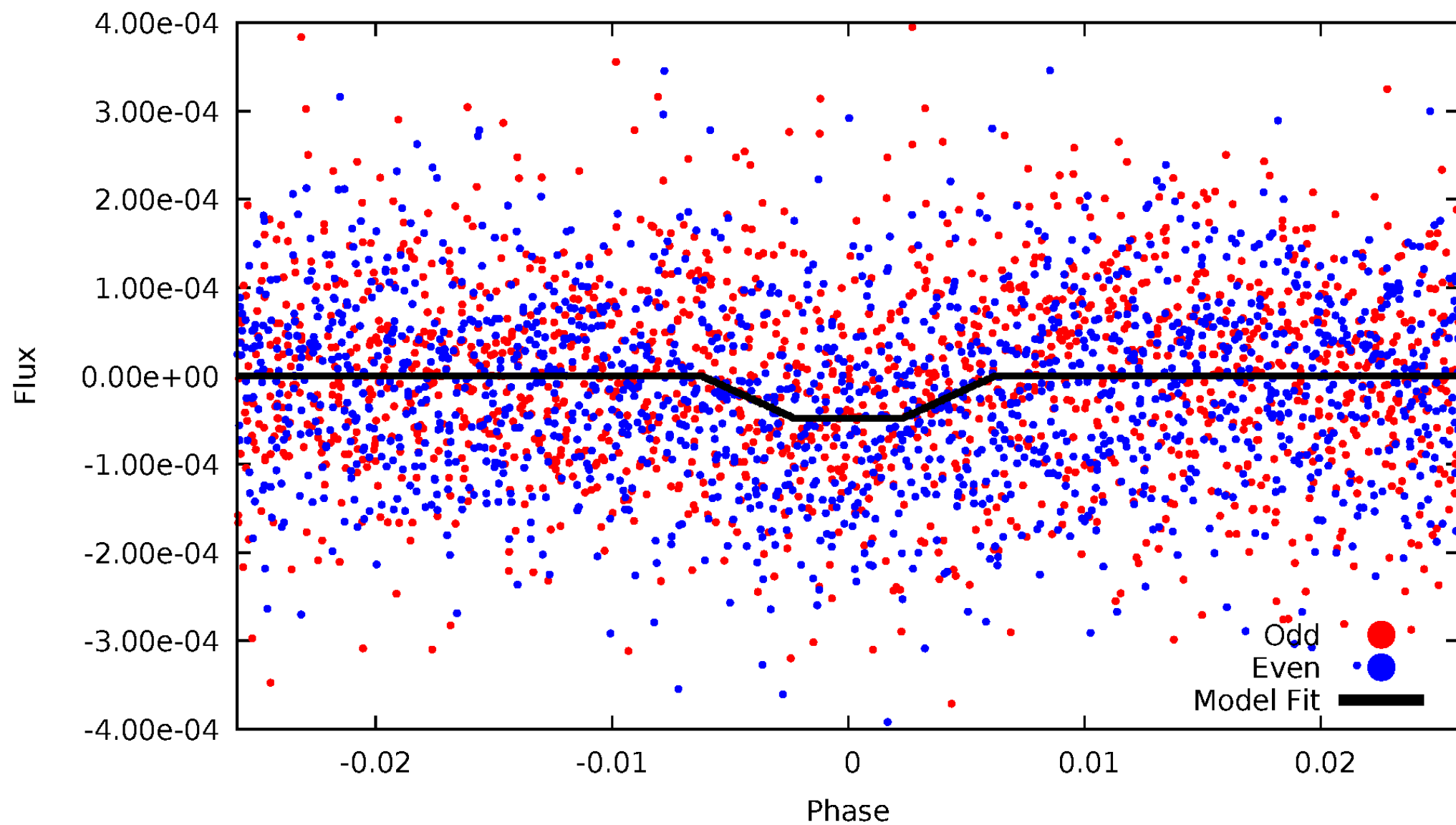
DV Odd/Even

TCE 004548098-02



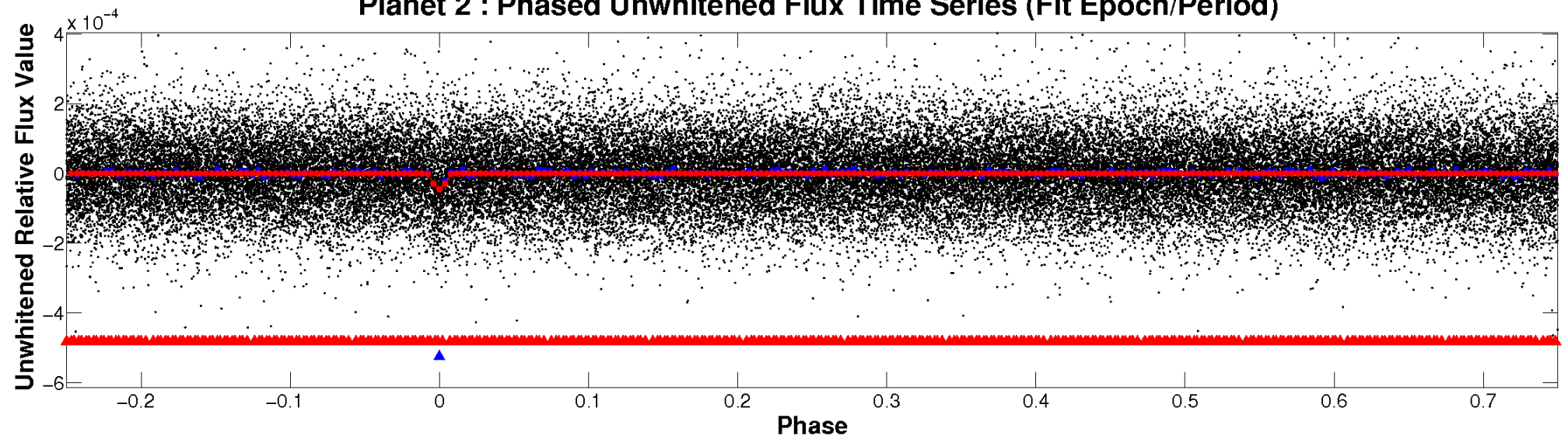
ALT Odd/Even

TCE 004548098-02

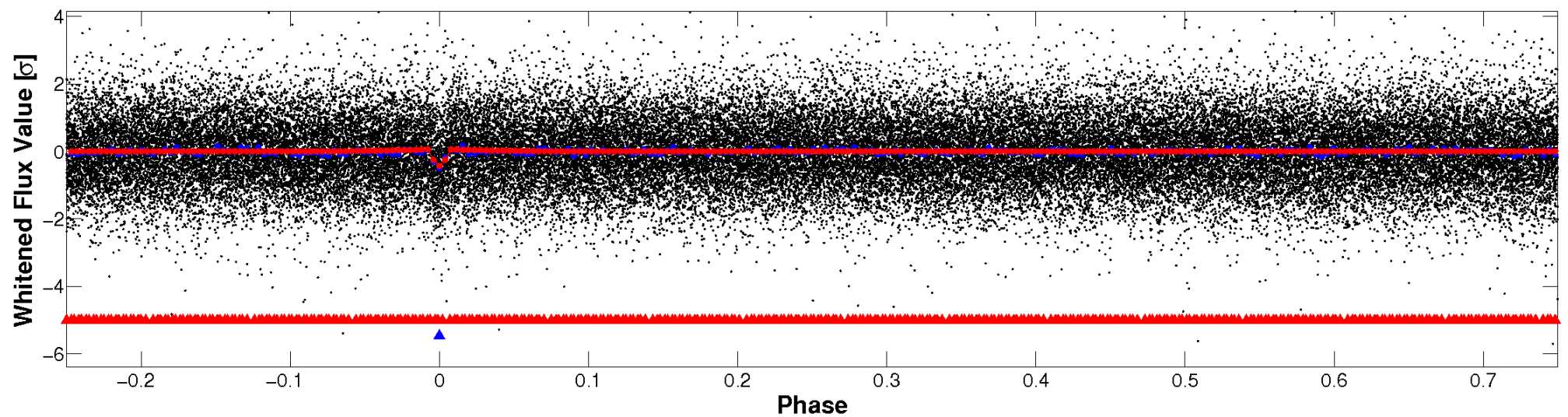


Non-Whitened Vs. Whitened Light Curve

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

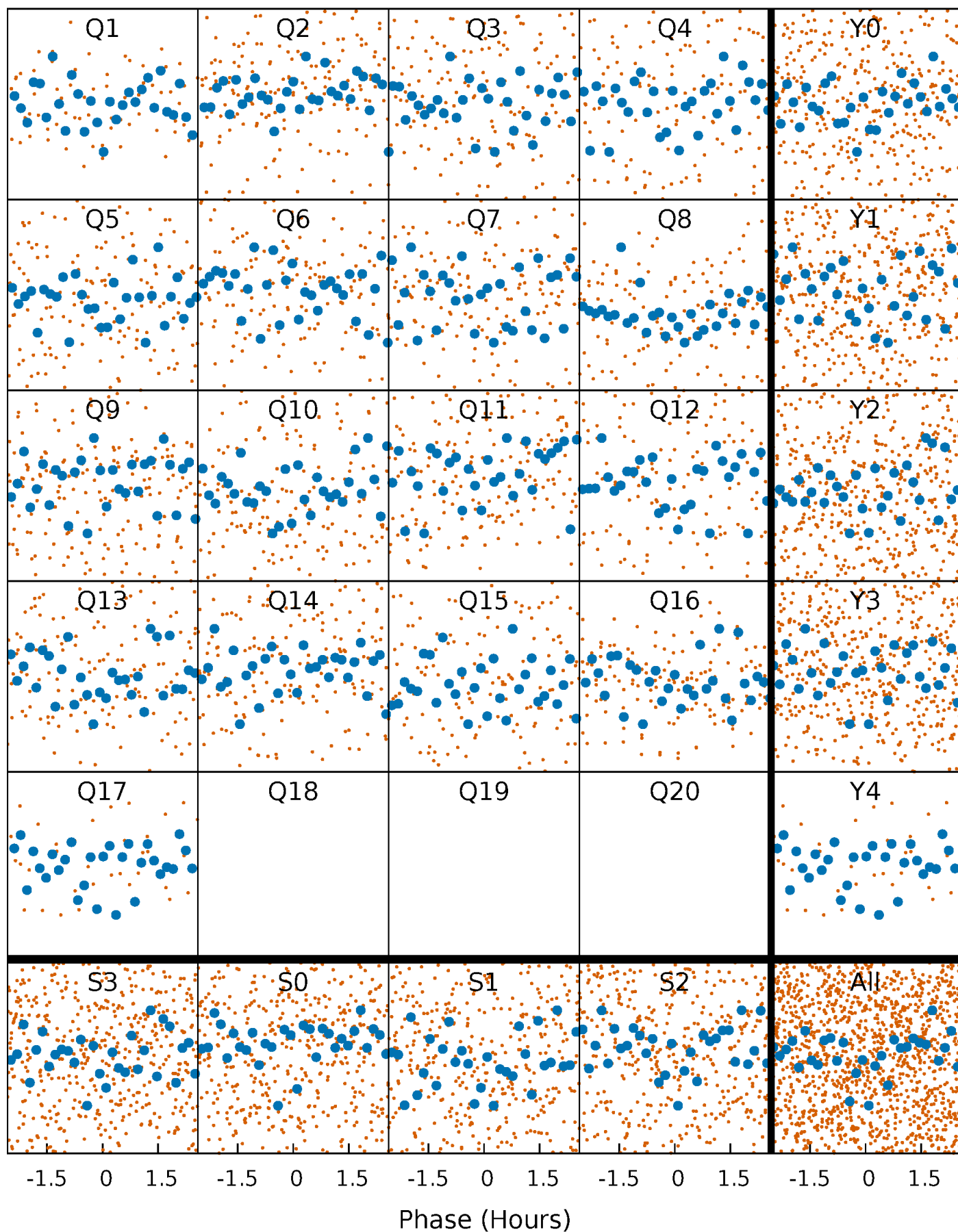


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



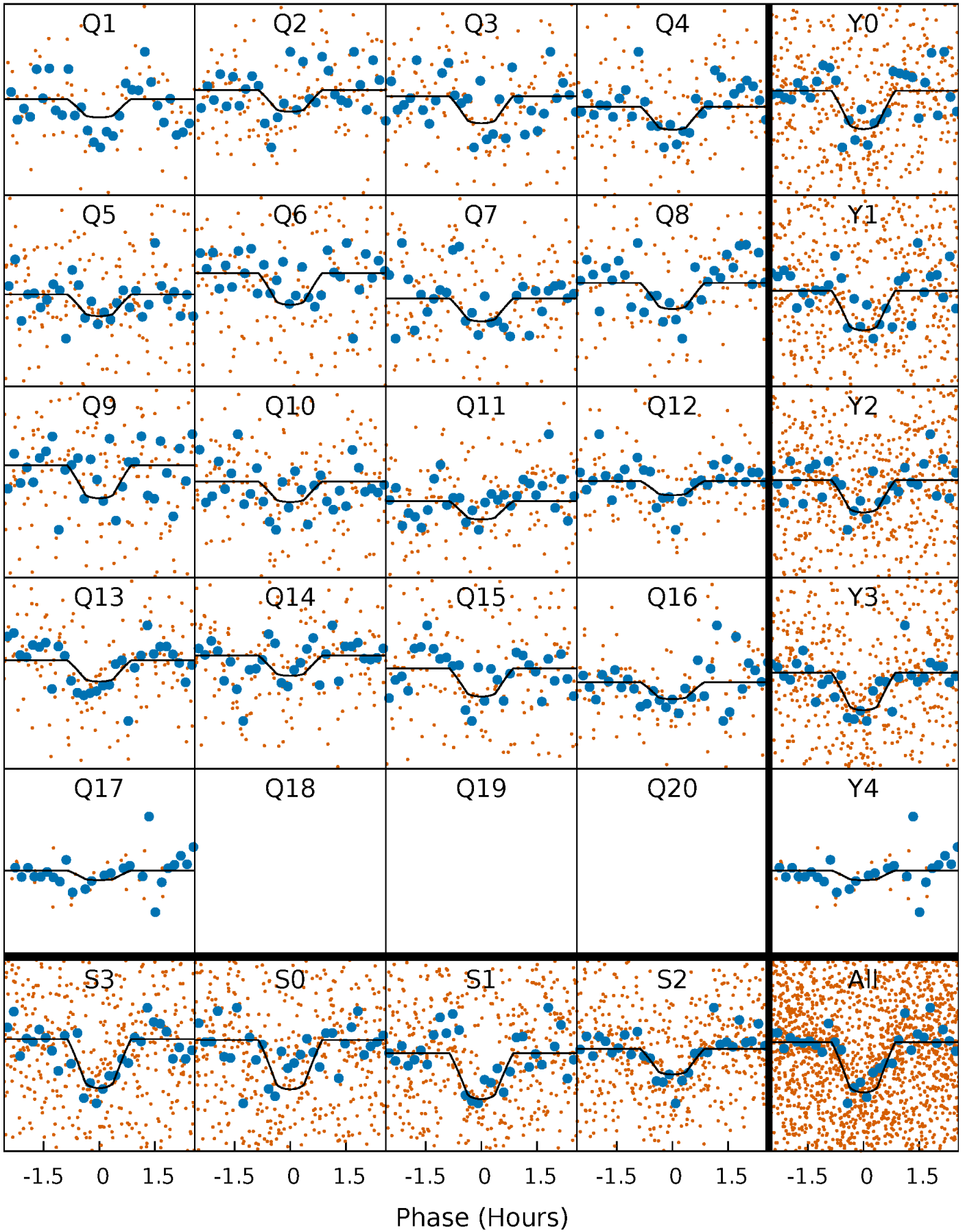
PDC Quarter-Phased Transit Curves

TCE 004548098-02 P= 5.215761 Days $T_0=133.403556$ (BKJD)



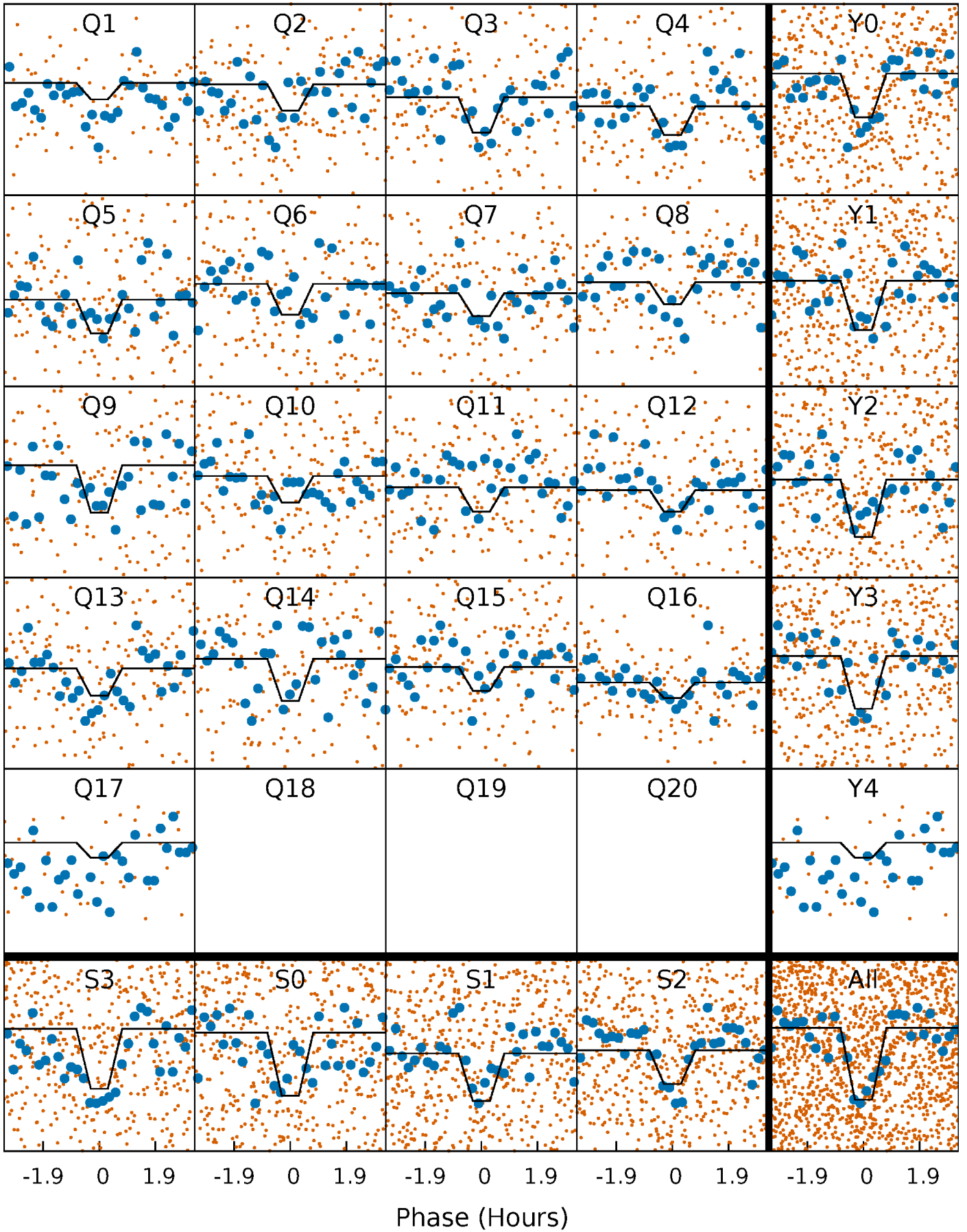
DV Quarter-Phased Transit Curves

TCE 004548098-02 P= 5.215761 Days $T_0=133.403556$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

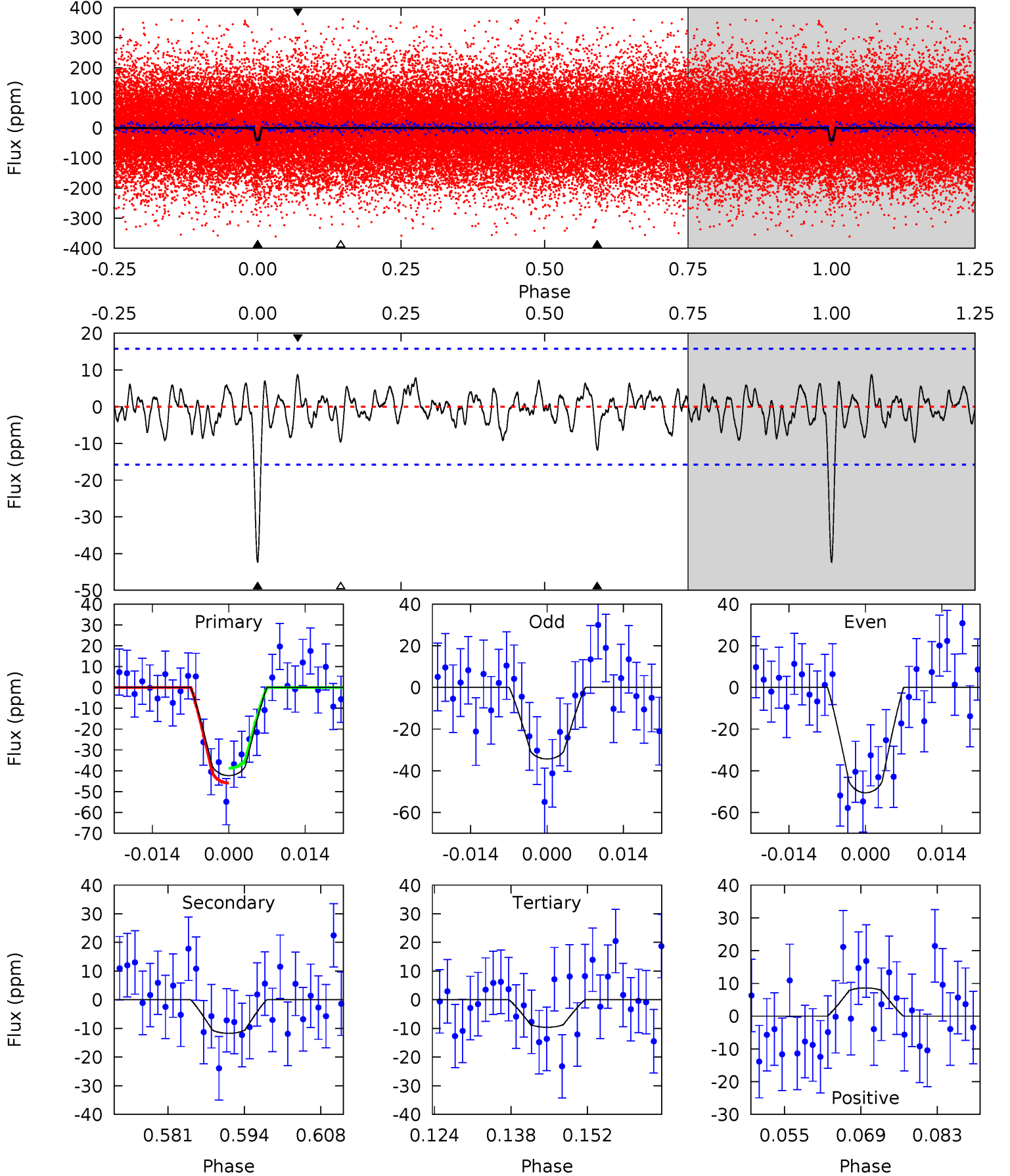
TCE 004548098-02 P= 5.215768 Days $T_0=133.401805$ (BKJD)



DV Model-Shift Uniqueness Test

004548098-02, P = 5.215761 Days, E = 128.187795 Days

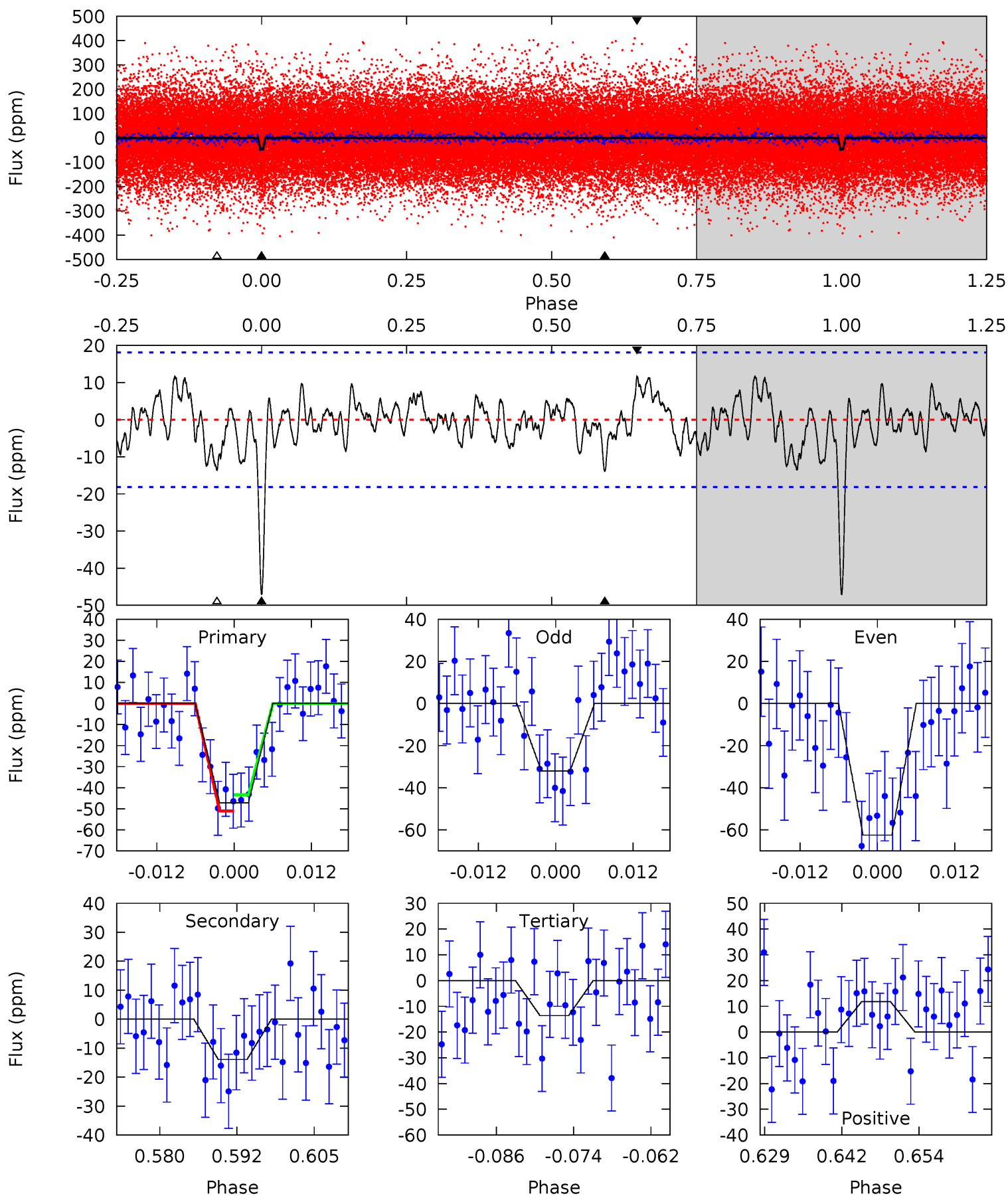
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	3.68	3.02	2.71	4.96	2.46	1.11	10.3	10.6	0.66	0.97	2.56	0.87	0.17	1.12



Alt Model-Shift Uniqueness Test

004548098-02, P = 5.215768 Days, E = 128.186037 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	3.82	3.74	3.25	4.99	2.50	1.35	9.22	9.71	0.09	0.58	4.19	1.00	0.20	1.06



Stellar Parameters For KIC 004548098

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6202^{+99}_{-149}	$4.422^{+0.026}_{-0.136}$	$0.210^{+0.150}_{-0.150}$	$1.122^{+0.205}_{-0.058}$	$1.213^{+0.076}_{-0.093}$	$1.211^{+0.152}_{-0.455}$
	+2%/-2%	+1%/-3%	+71%/-71%	+18%/-5%	+6%/-8%	+13%/-38%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 004548098-02 / KOI 4157.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-12 ± 3	$0.96^{+0.36}_{-0.39}$	1630^{+72}_{-46}	4378^{+1013}_{-559}	28^{+50}_{-15}
Alt.	-14 ± 4	$0.91^{+0.40}_{-0.40}$	1634^{+74}_{-50}	4601^{+1416}_{-595}	36^{+84}_{-19}

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 $A_{obs} \gg 1.0$

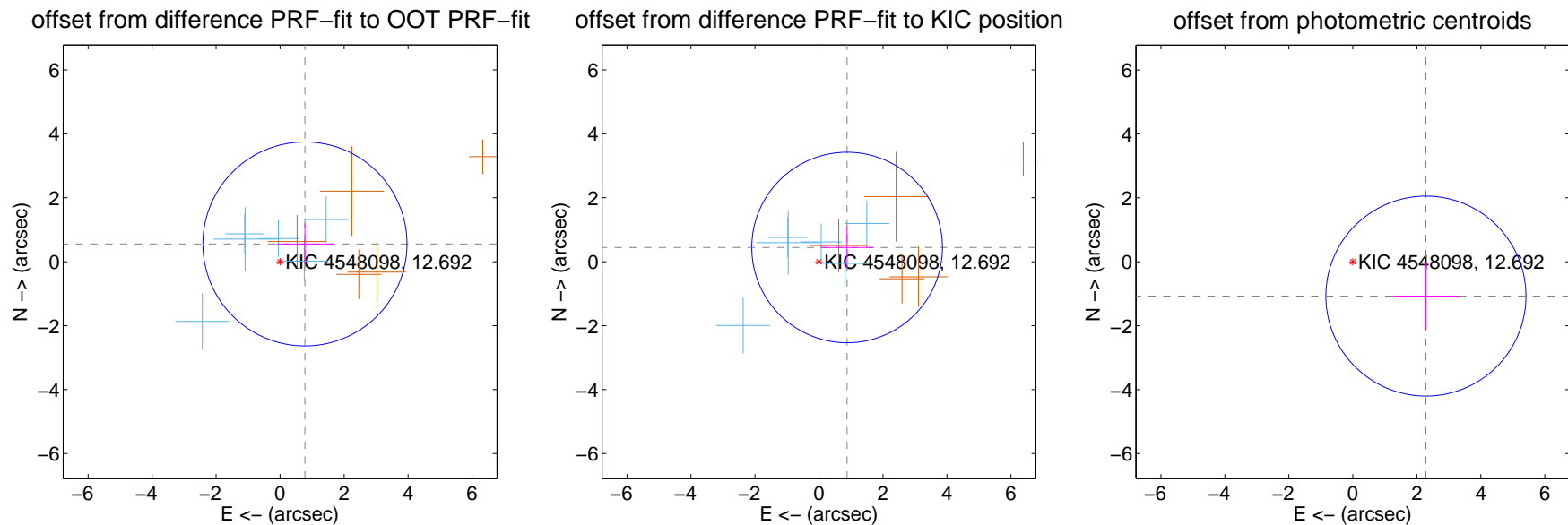
DV Centroid Data

Supplemental centroid analysis for 004548098-02. Kepler magnitude: 12.69. Transit SNR 9.05

There are 6 quarters with good PRF difference image offsets

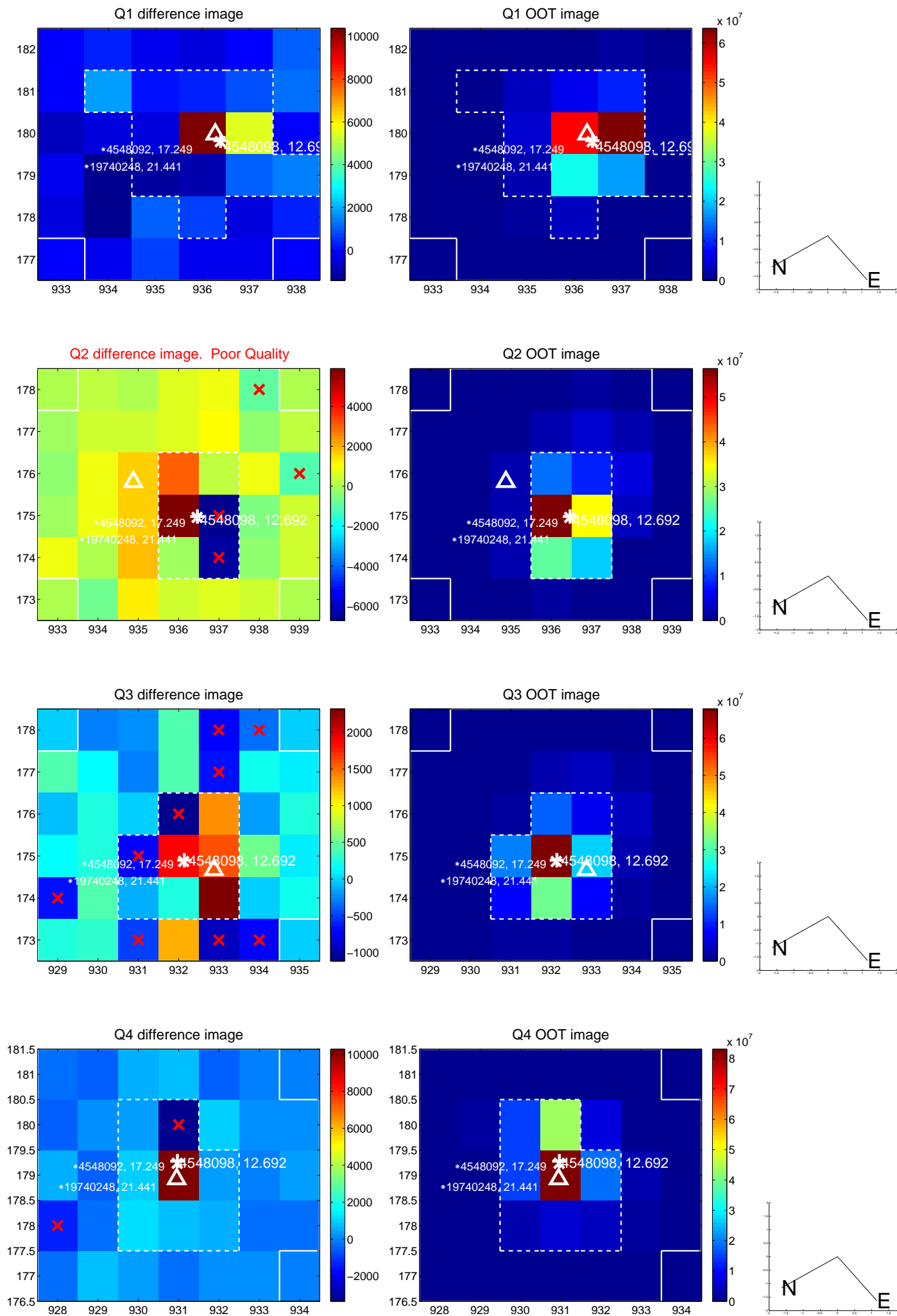
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.954 ± 1.063	0.90	-0.776 ± 0.897	0.555 ± 0.642
PRF-fit source offset from KIC position	0.985 ± 0.993	0.99	-0.879 ± 0.832	0.444 ± 0.644
photometric centroid source offset	2.52 ± 1.04	2.42	-2.28 ± 1.04	-1.07 ± 1.05

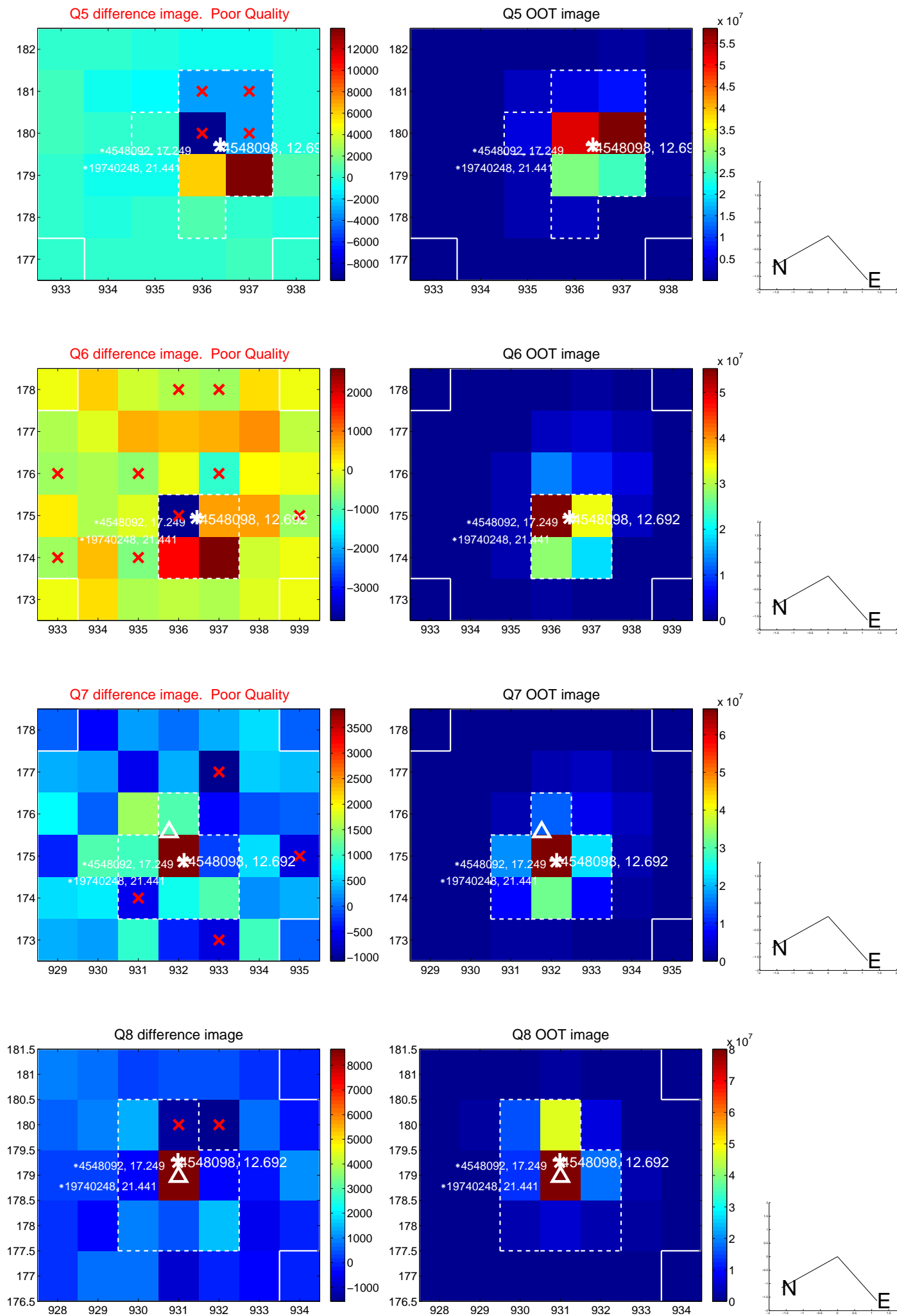


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

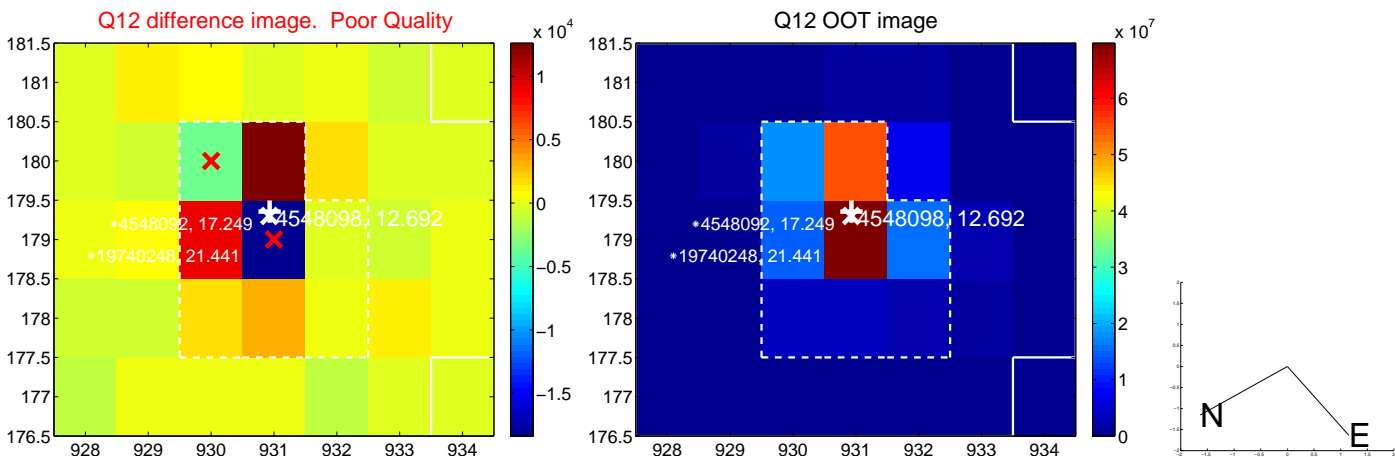
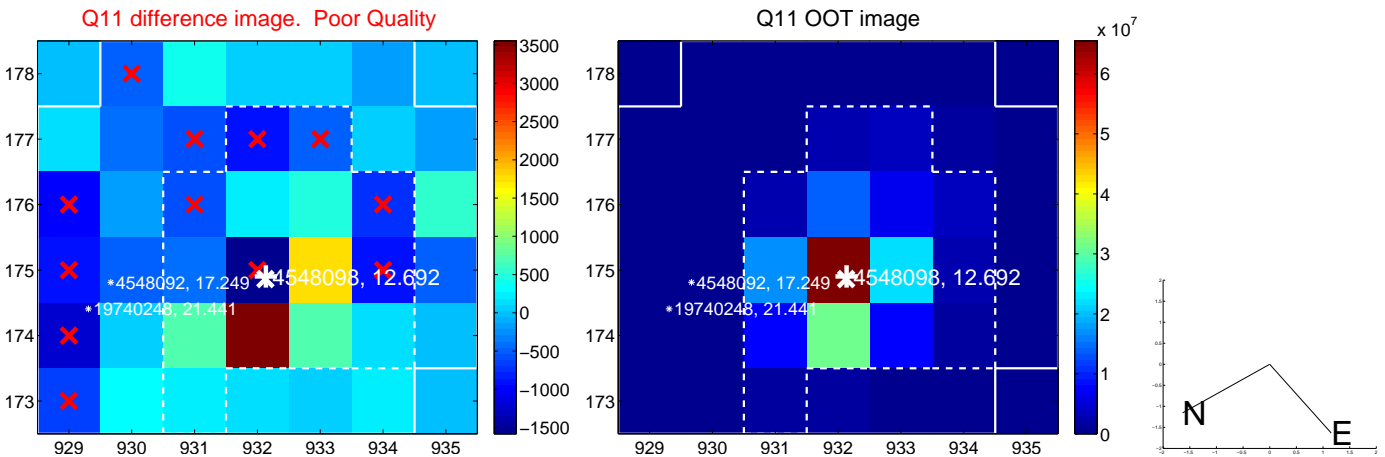
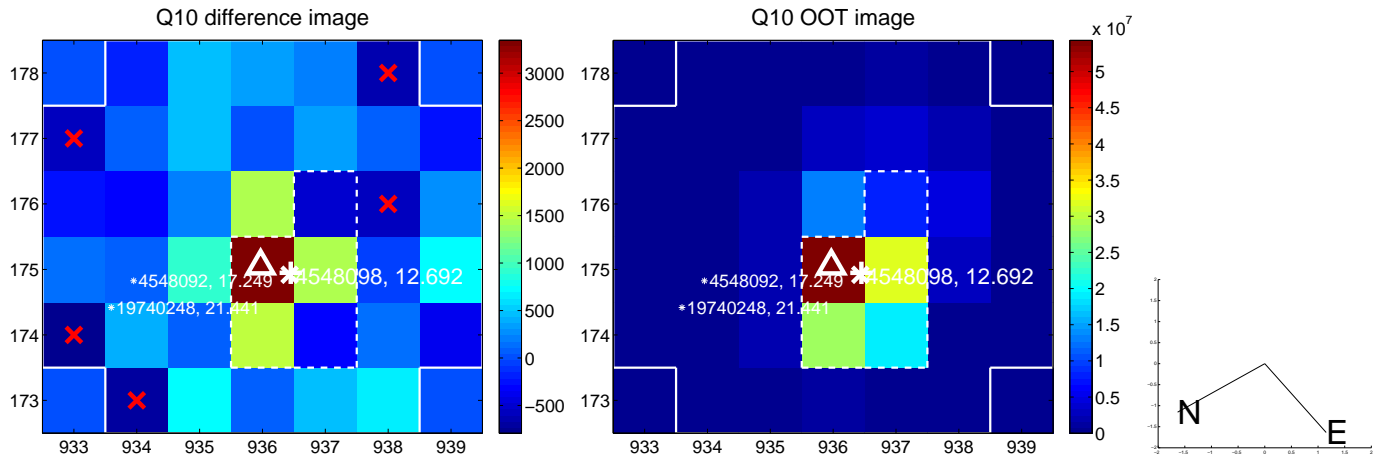
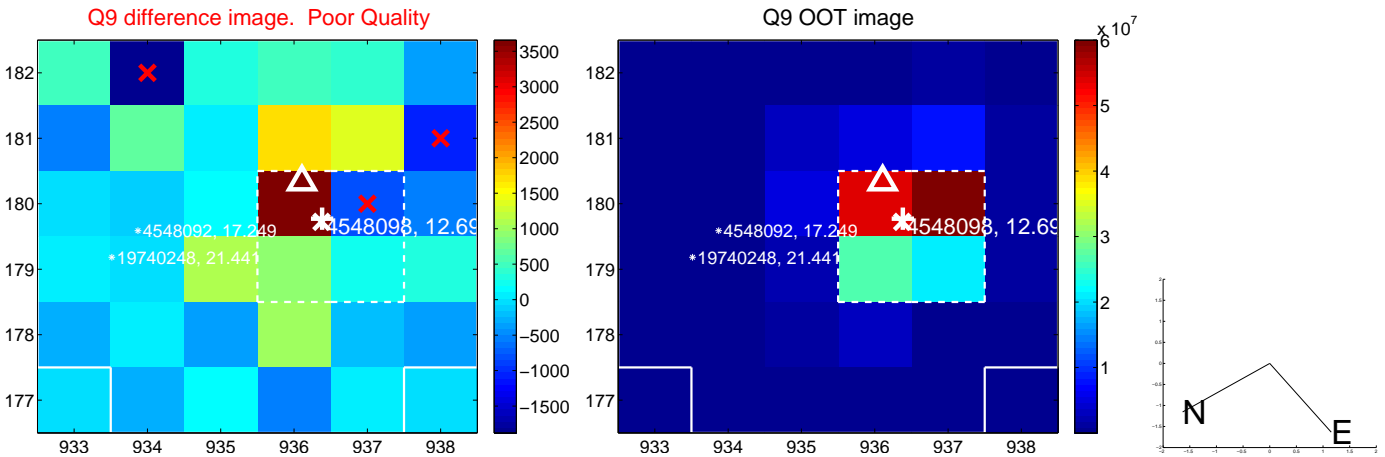
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



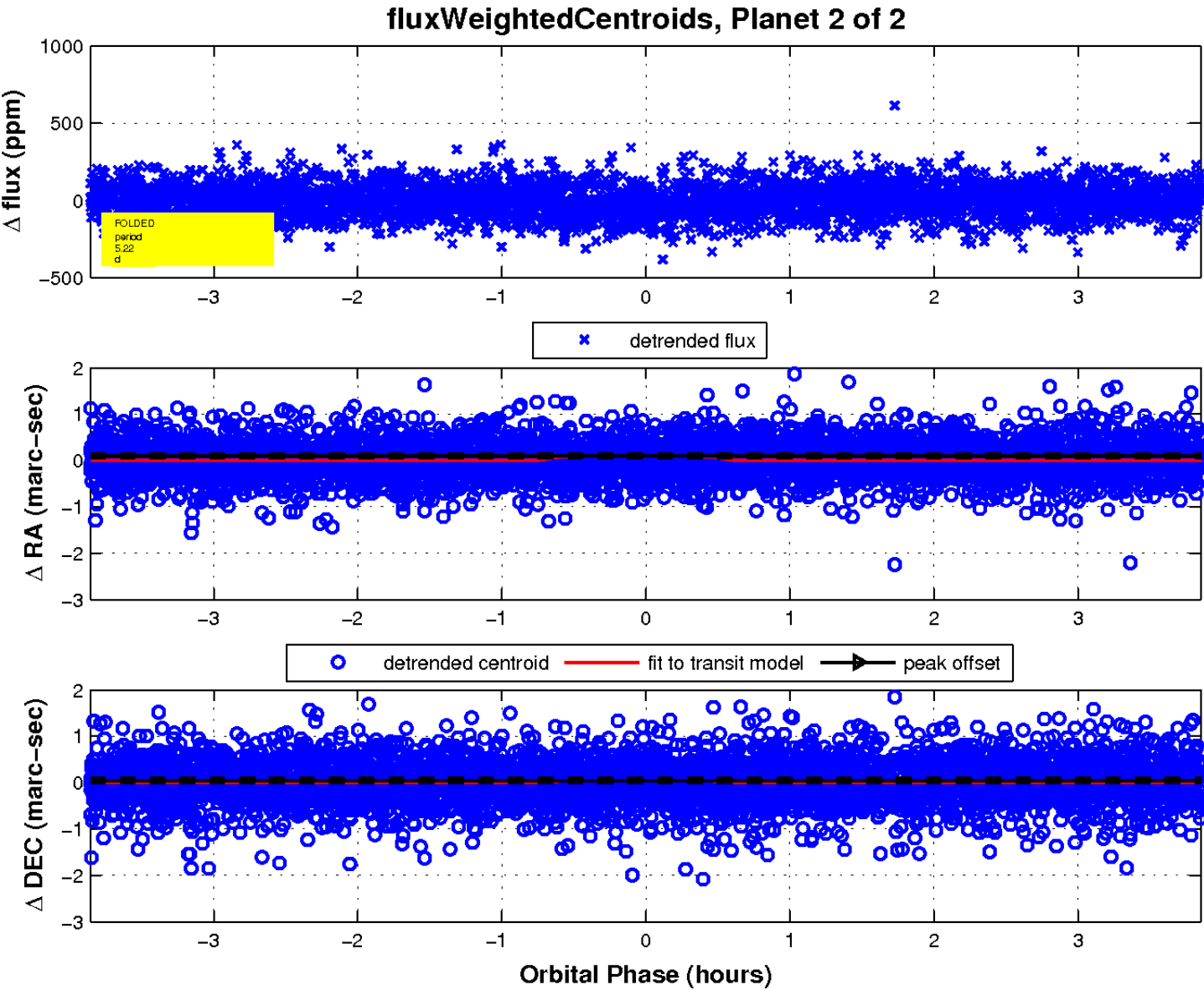
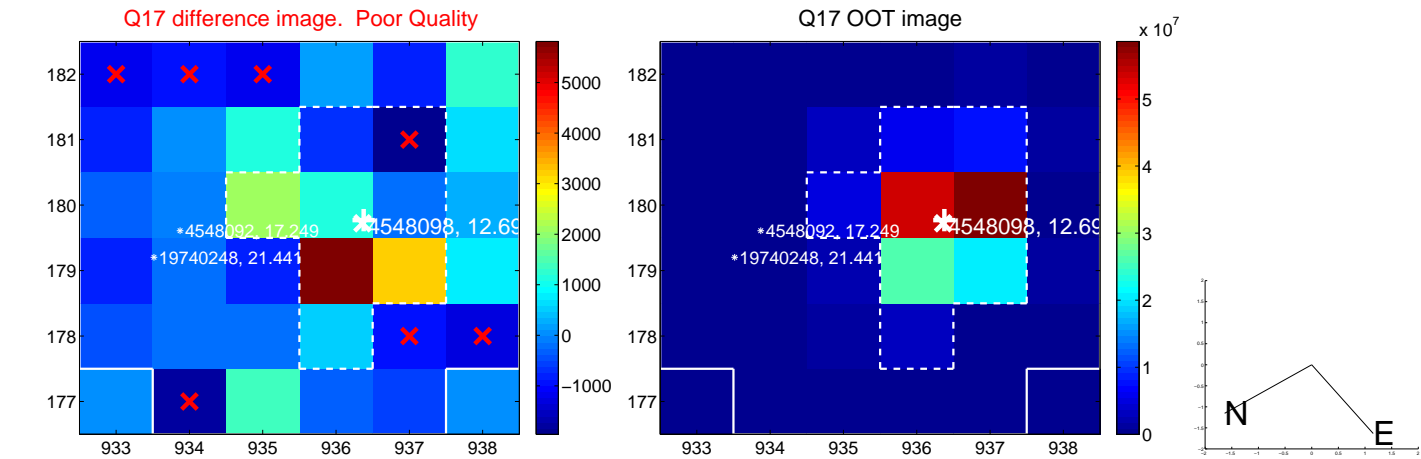
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

