

KIC 009289704

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})
009289704-01	OBS	2222.01	34.135929	157.798523	540.7	9.751	14.7	15.5	5.55	7818	15.78	1284.65
009289704-02	OBS	No	0.716737	131.602844	49.2	4.176	13.2	8.0	5.55	7818	4.06	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009289704-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009289704-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

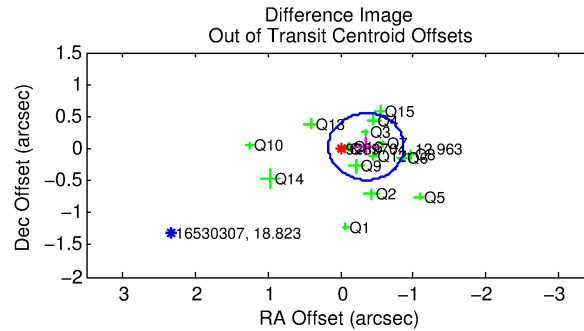
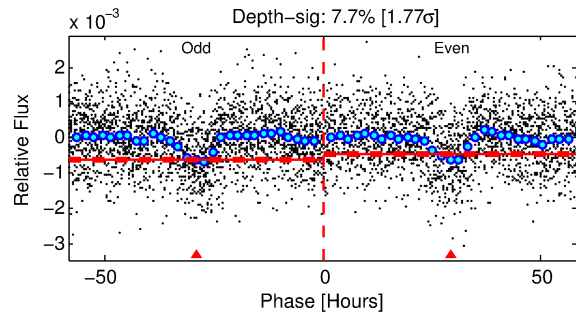
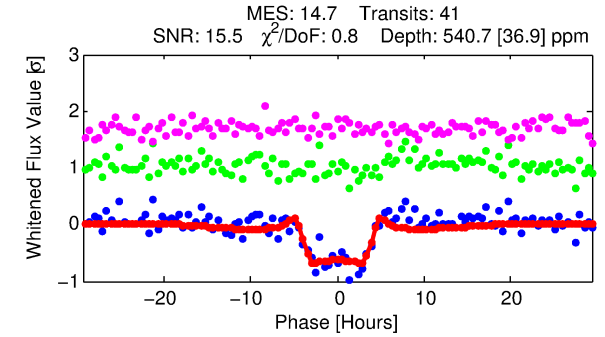
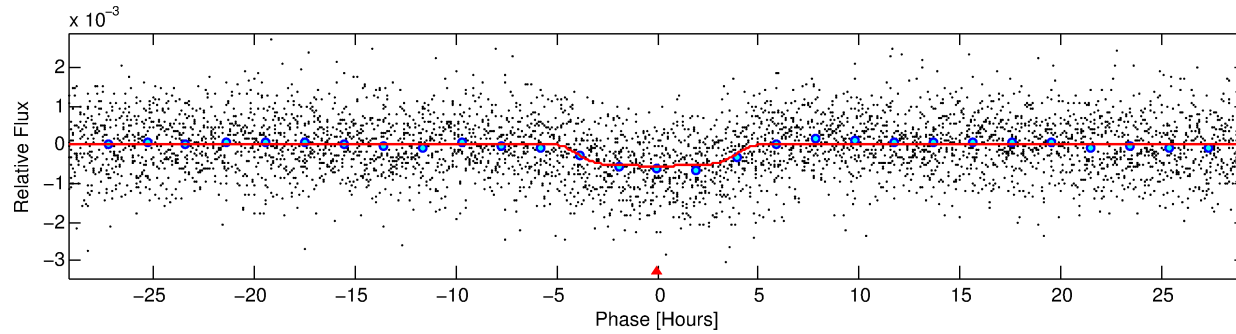
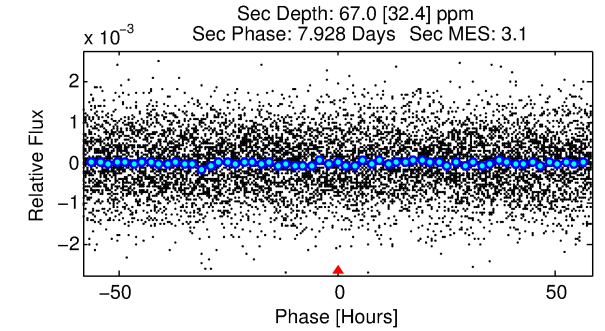
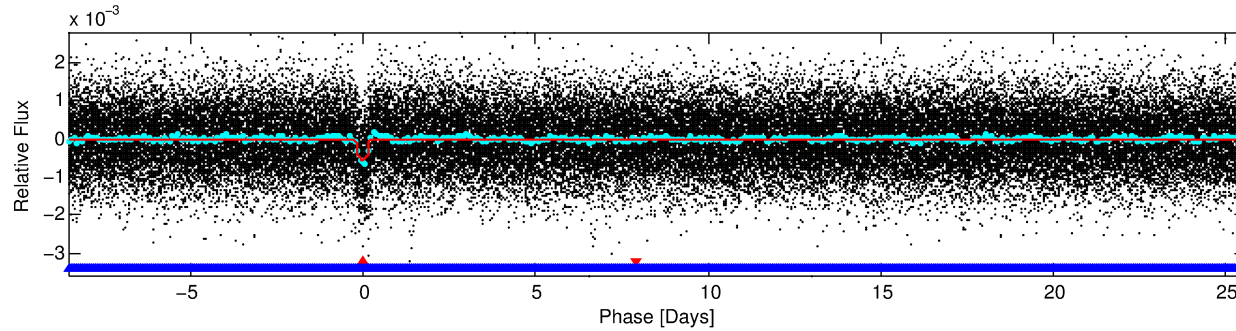
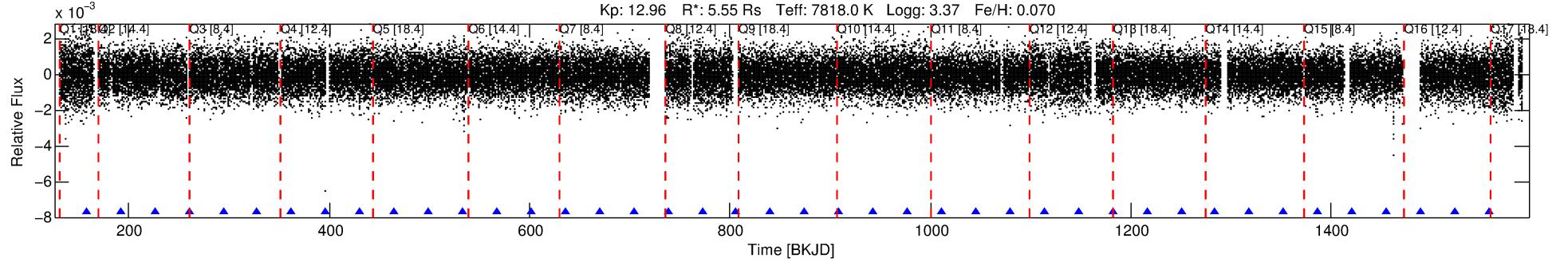
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009289704-01

No Significant Match Found

DV One-Page Summary

KIC: 9289704 Candidate: 1 of 2 Period: 34.136 d
KOI: K02222.01 Corr: 0.969



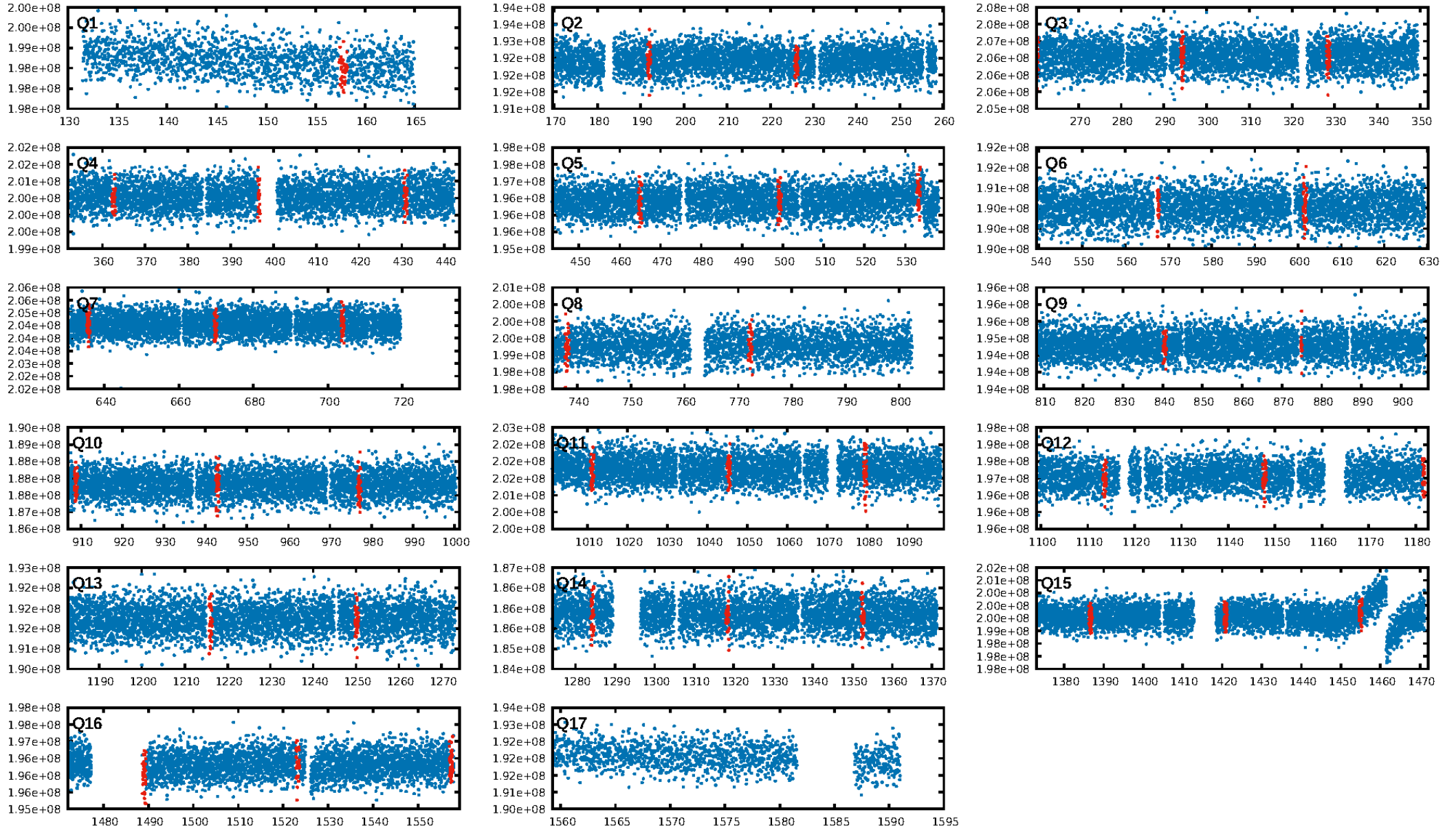
DV Fit Results:

Period = 34.13593 [0.00045] d
Epoch = 157.7985 [0.0109] BKJD
Rp/R* = 0.0260 [0.0012]
a/R* = 10.84 [1.57]
b = 0.94 [0.02]
Seff = 1284.65 [1504.49]
Teq = 1527 [447] K
Rp = 15.78 [9.96] Re
a = 0.2835 [0.1940] AU
Ag = 11.90 [14.99] [0.73σ]
Teffp = 4384 [569] K [3.95σ]

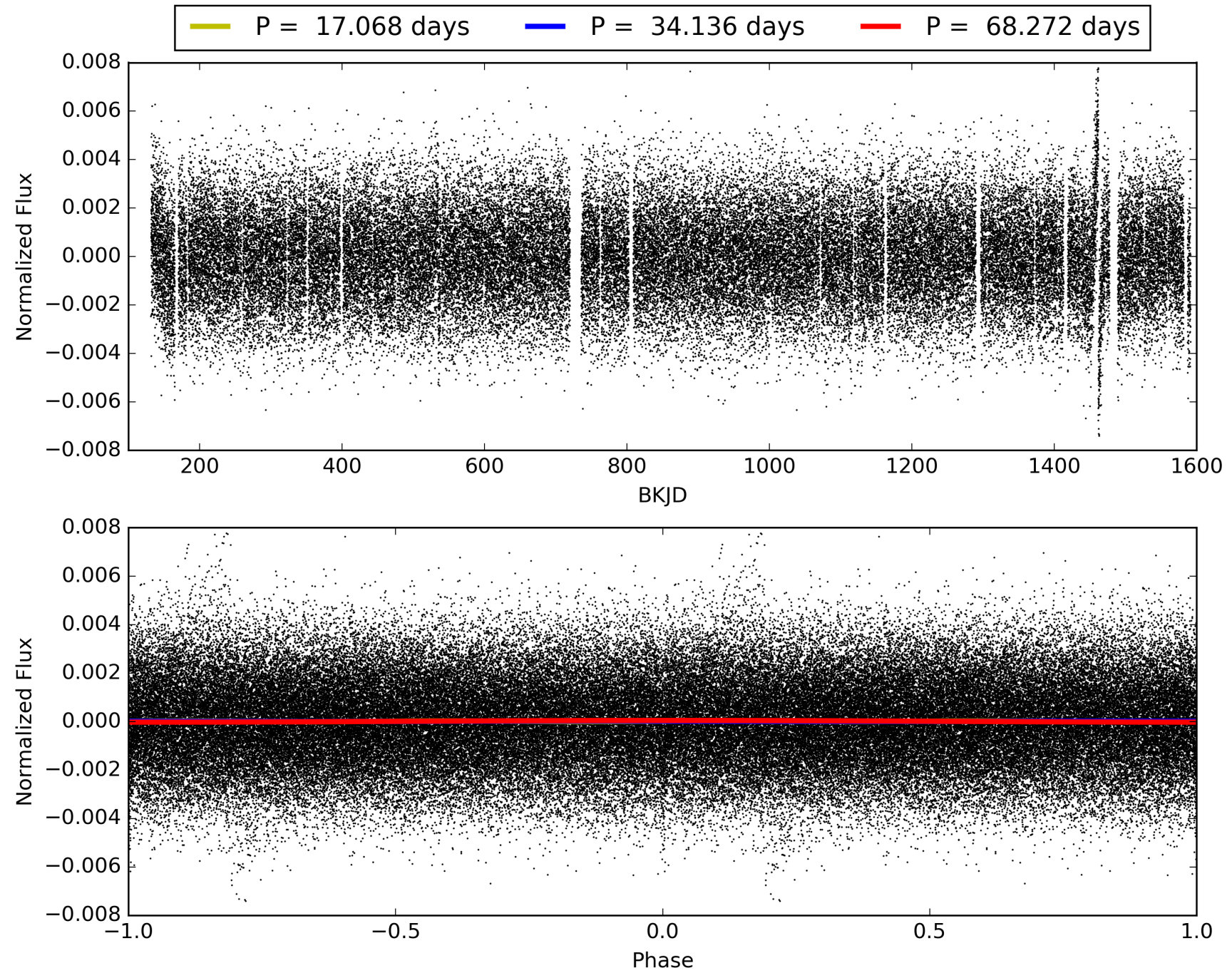
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [75.61σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 10.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.68e-35
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: 1.04
Centroid-sig: 46.3%
Centroid-so: 0.136 arcsec [1.14σ]
OotOffset-rm: 0.355 arcsec [2.05σ]
KicOffset-rm: 0.458 arcsec [2.71σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/16]

TCE 009289704-01, PDC Light Curves

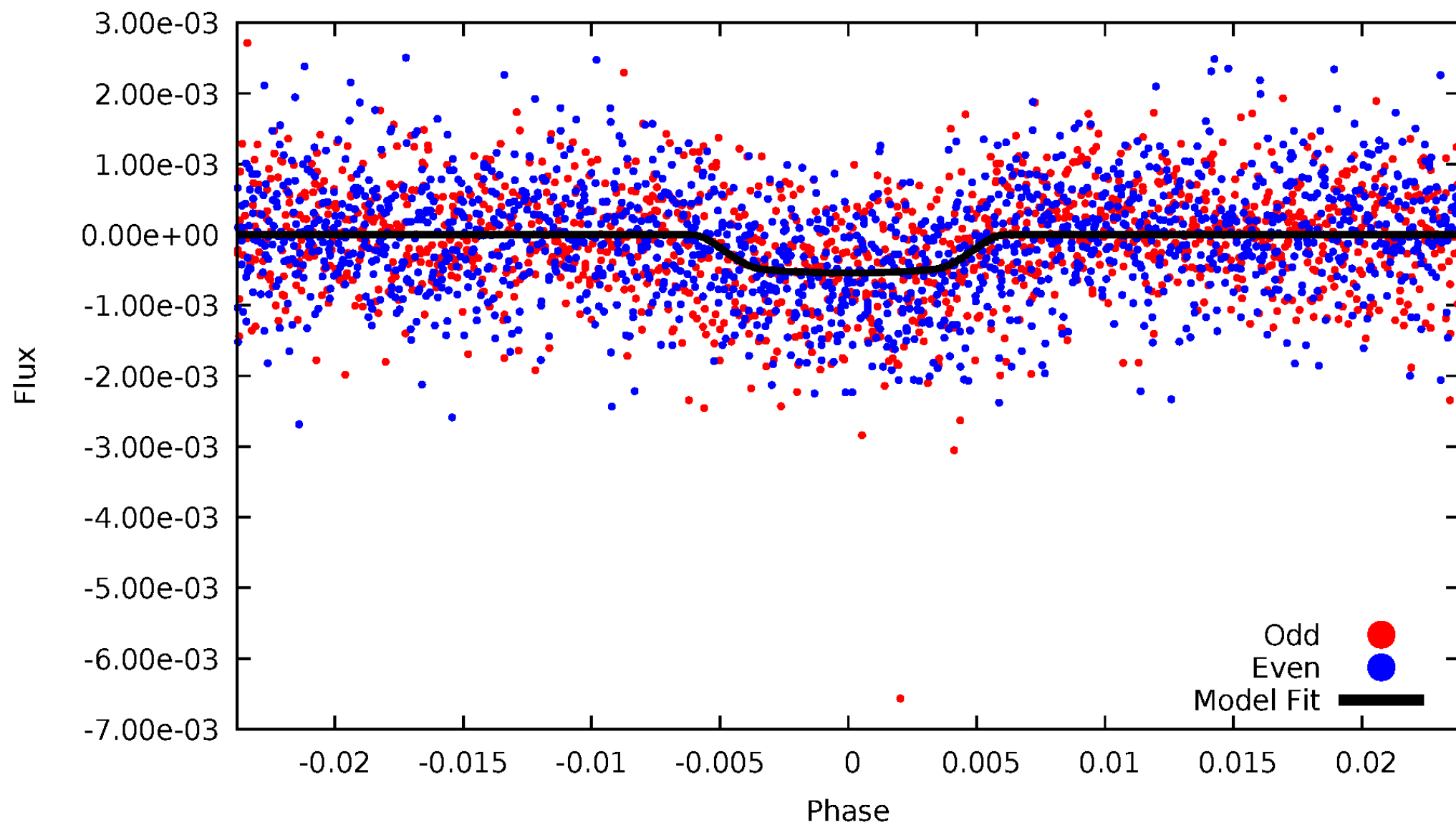


TCE 009289704-01



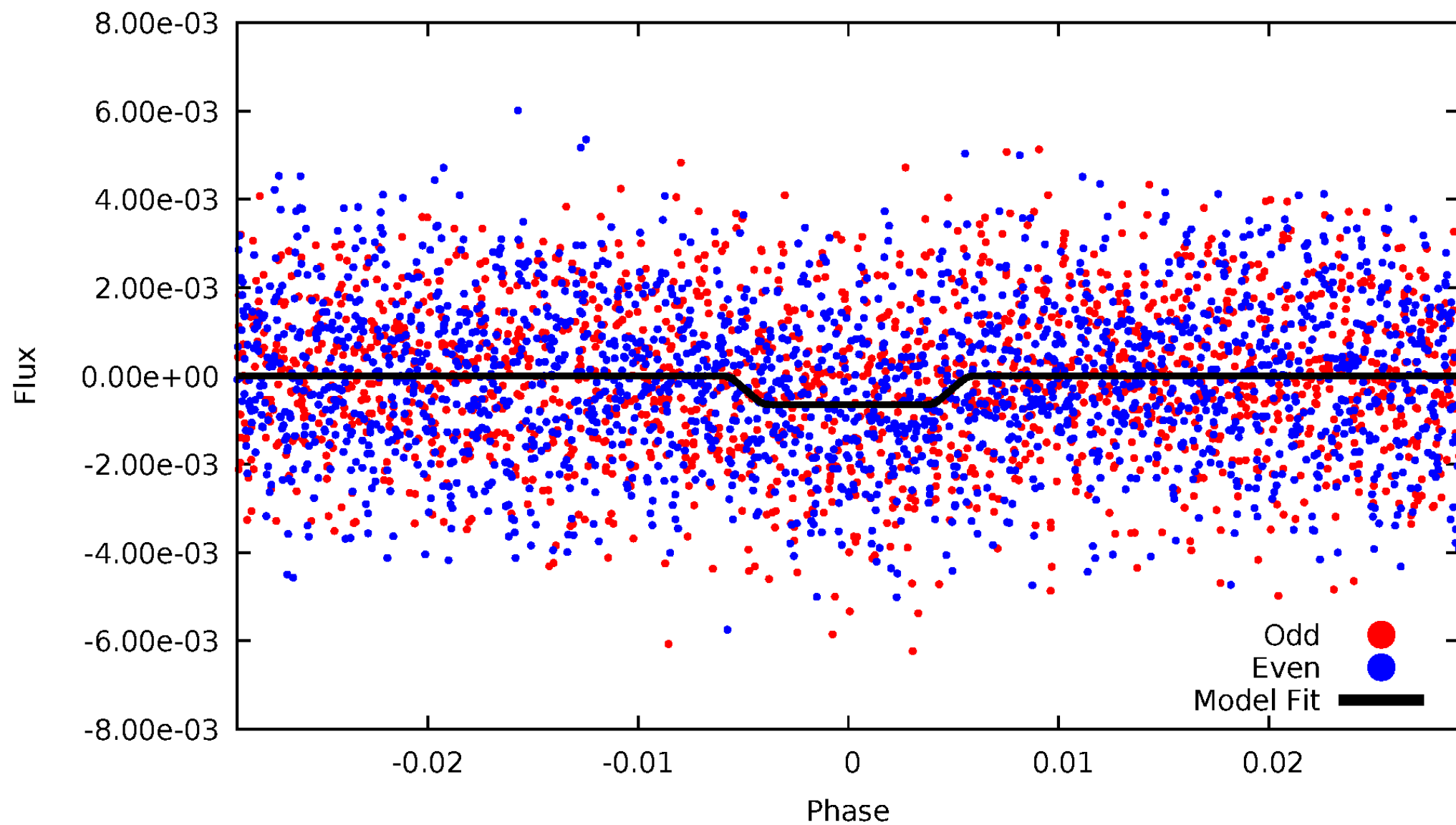
DV Odd/Even

TCE 009289704-01



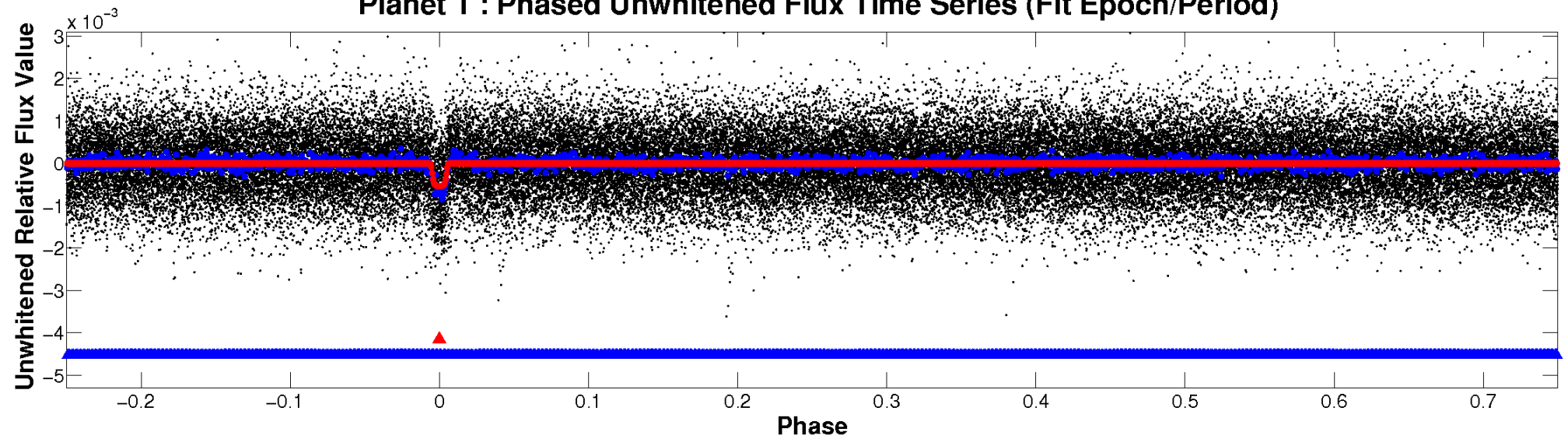
ALT Odd/Even

TCE 009289704-01

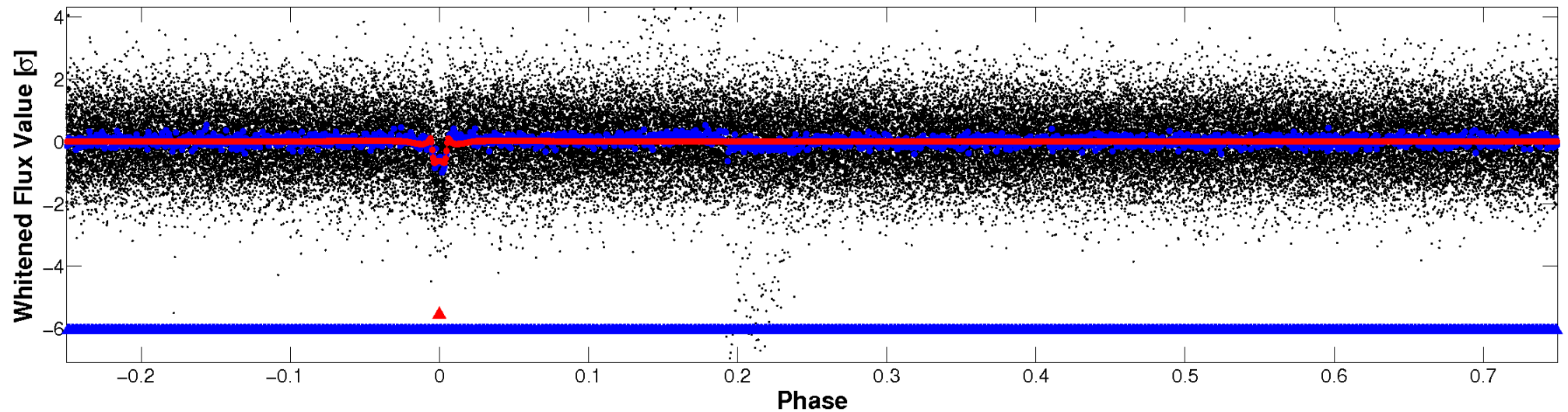


Non-Whitened Vs. Whitened Light Curve

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

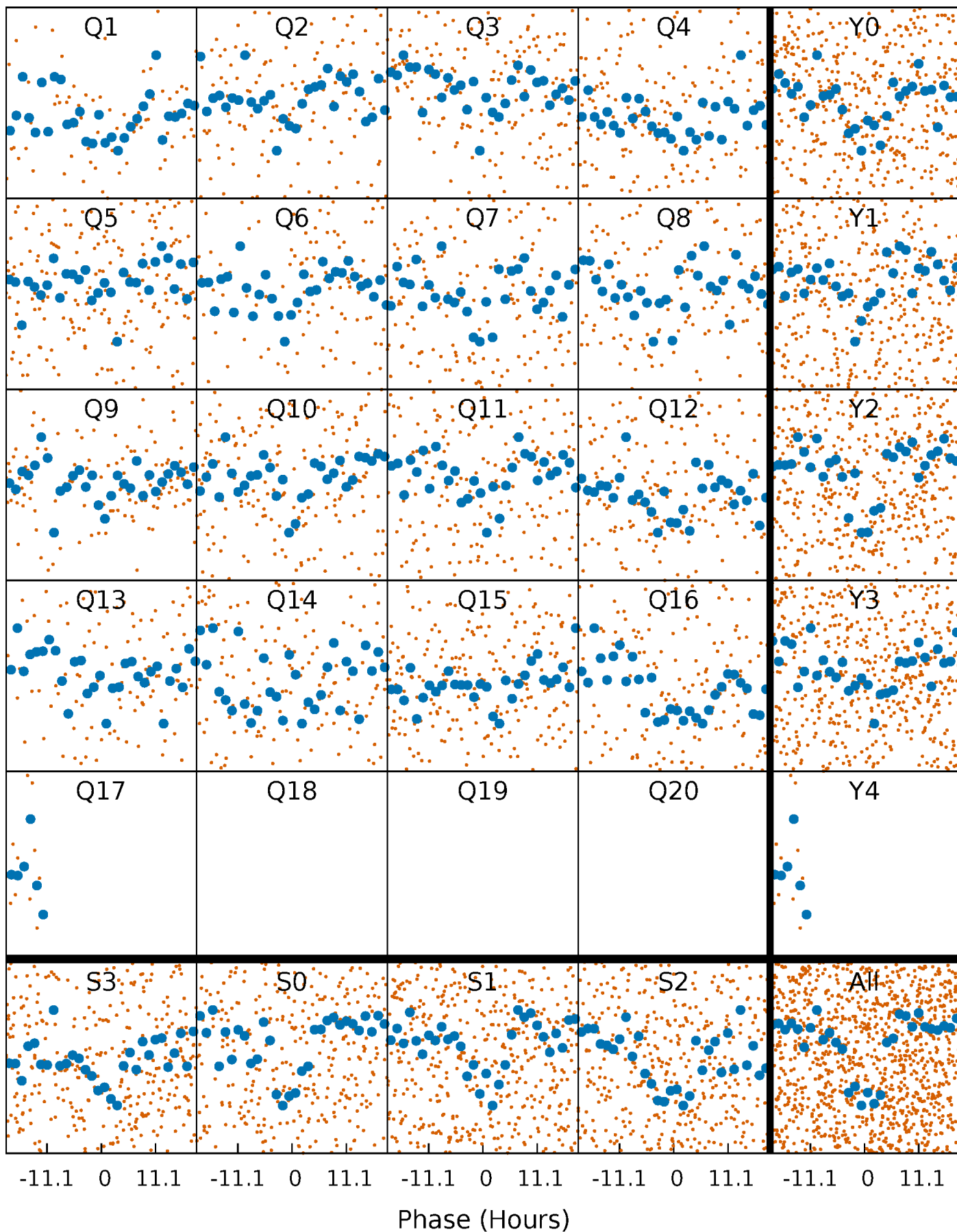


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



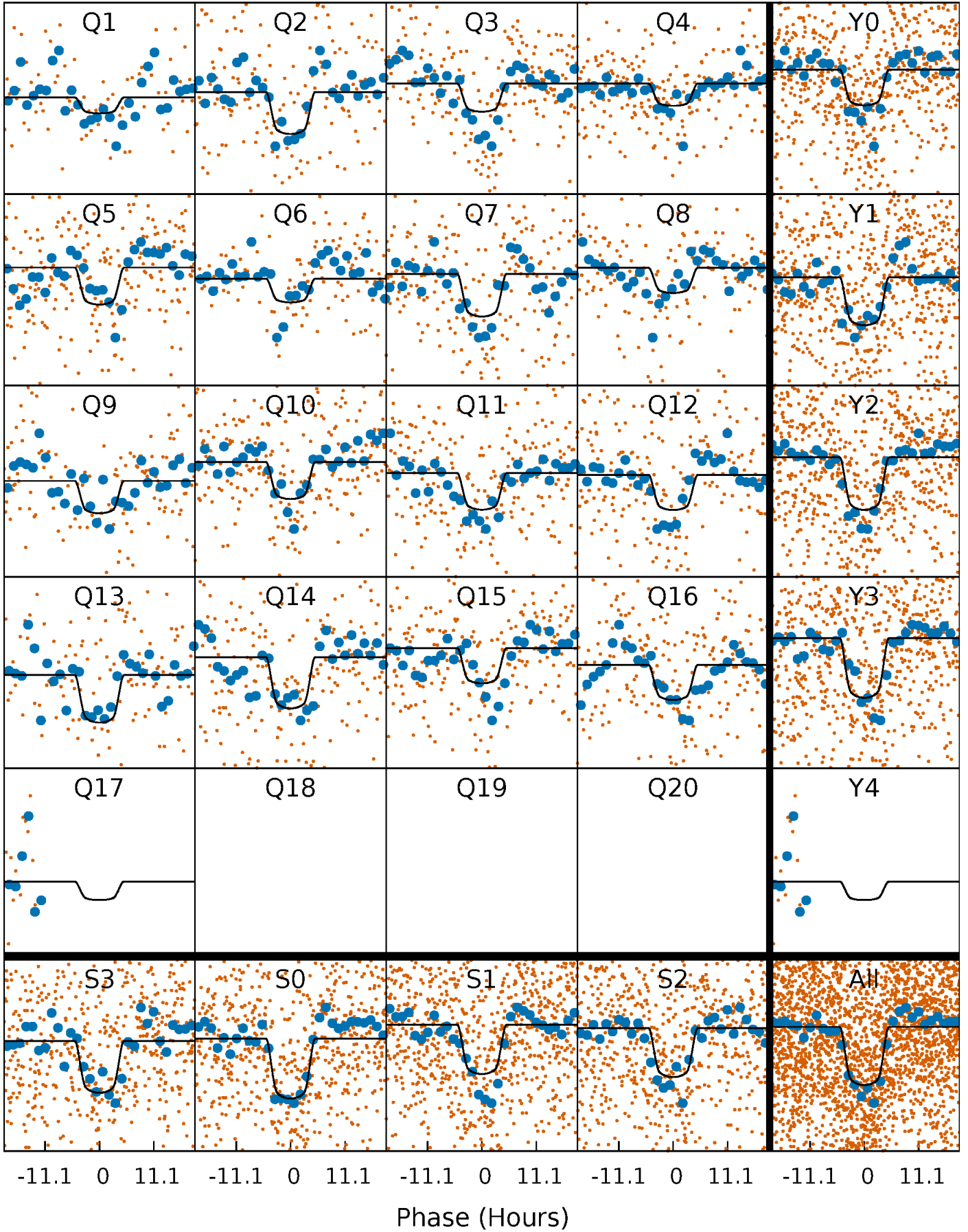
PDC Quarter-Phased Transit Curves

TCE 009289704-01 P= 34.135929 Days $T_0=157.798523$ (BKJD)



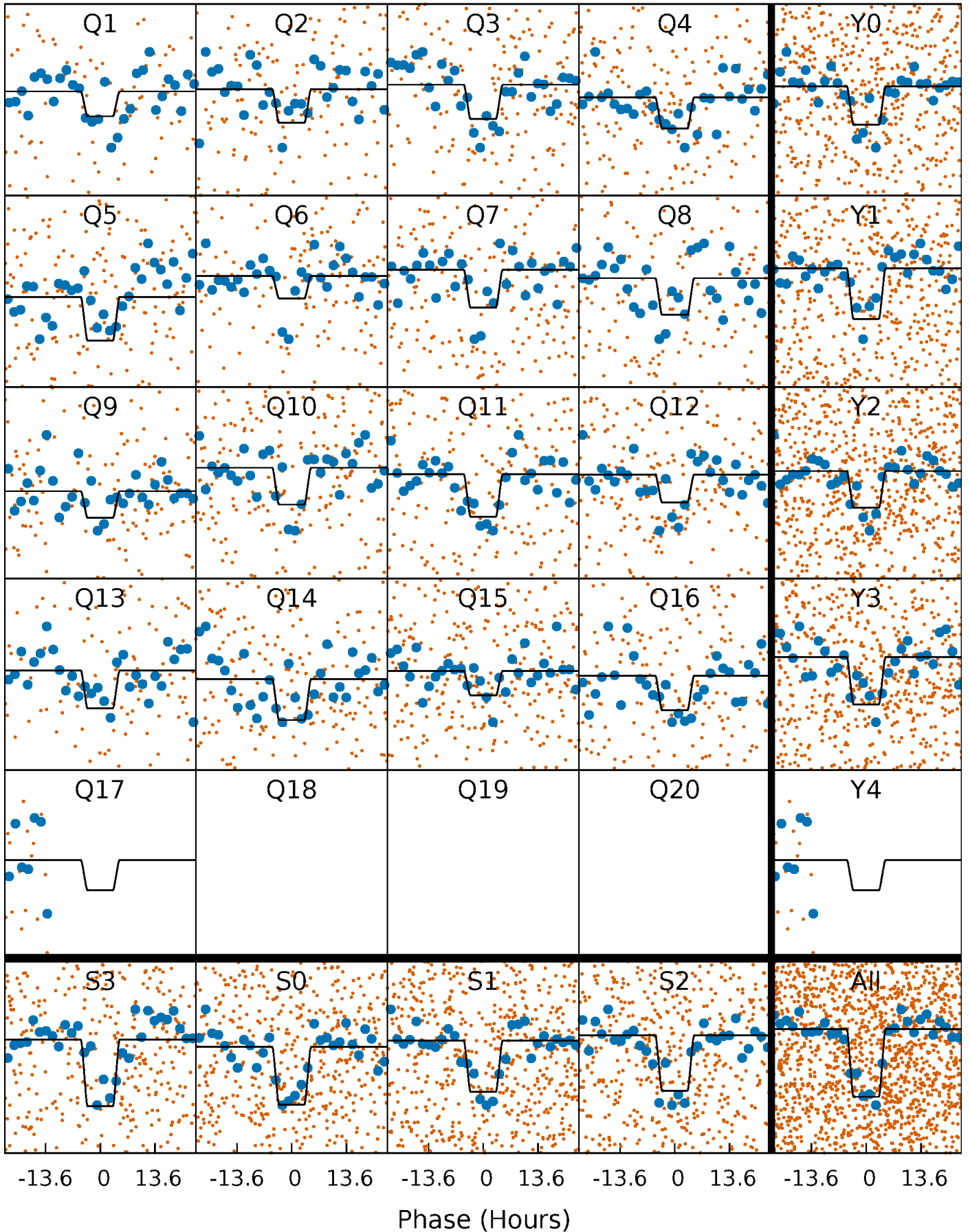
DV Quarter-Phased Transit Curves

TCE 009289704-01 P= 34.135929 Days $T_0=157.798523$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

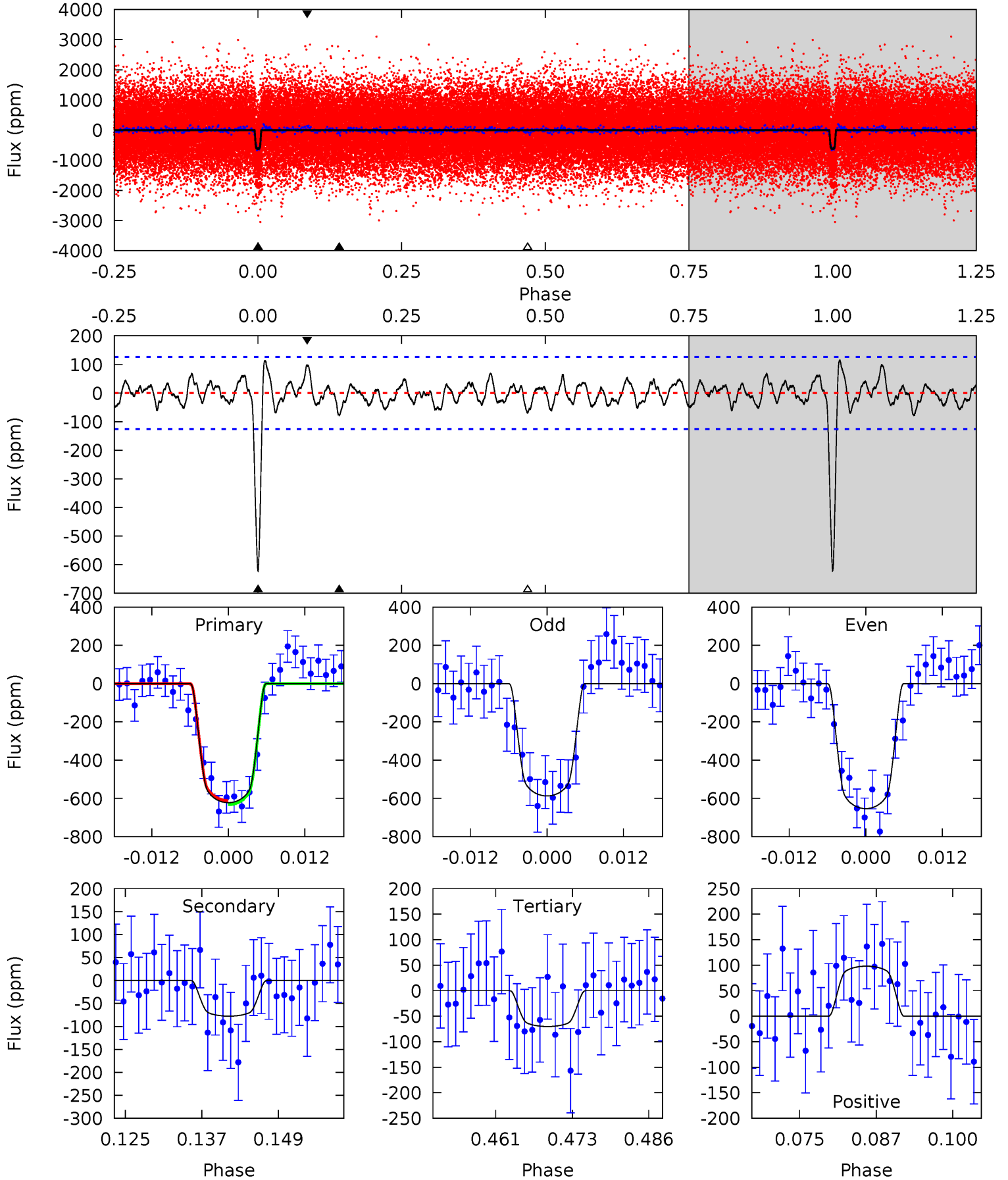
TCE 009289704-01 P= 34.137698 Days $T_0=157.766716$ (BKJD)



DV Model-Shift Uniqueness Test

009289704-01, P = 34.135929 Days, E = 123.662594 Days

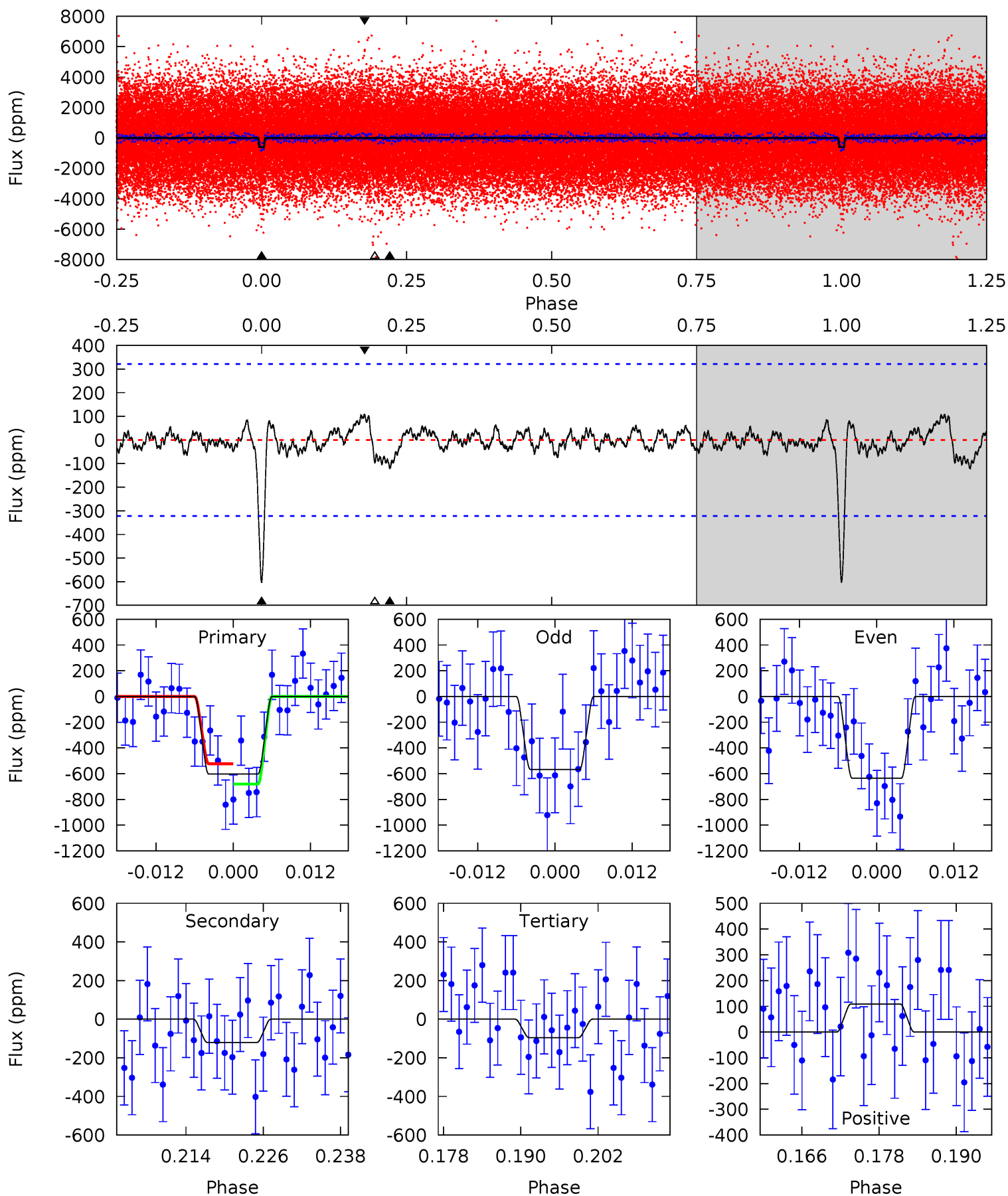
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.7	3.08	2.78	3.89	4.98	2.50	1.24	21.9	20.8	0.30	-0.81	1.32	1.02	0.15	0.42



Alt Model-Shift Uniqueness Test

009289704-01, $P = 34.137698$ Days, $E = 123.629018$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.37	1.88	1.48	1.69	4.99	2.52	0.54	7.88	7.67	0.40	0.19	0.53	0.95	0.15	1.23



Stellar Parameters For KIC 009289704

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7818^{+216}_{-325}	$3.365^{+0.704}_{-0.176}$	$0.070^{+0.250}_{-0.350}$	$5.555^{+1.883}_{-3.496}$	$2.607^{+0.165}_{-0.934}$	$0.021^{+0.305}_{-0.011}$
	+3%/-4%	+21%/-5%	+357%/-500%	+34%/-63%	+6%/-36%	+1426%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009289704-01 / KOI 2222.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-78 ± 25	$14.45^{+3.46}_{-4.60}$	2052^{+235}_{-336}	4583^{+322}_{-347}	16^{+16}_{-7}
Alt.	-121 ± 64	$13.87^{+3.40}_{-4.63}$	2038^{+223}_{-355}	5057^{+530}_{-773}	25^{+39}_{-15}

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

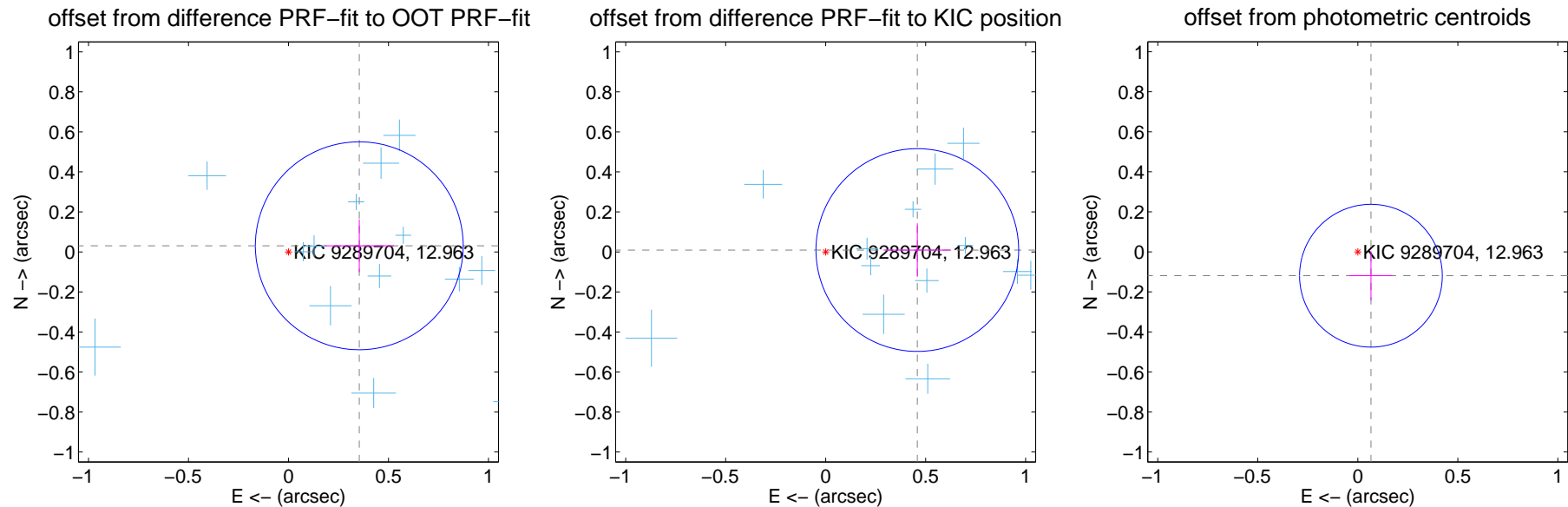
DV Centroid Data

Supplemental centroid analysis for 009289704-01. Kepler magnitude: 12.96. Transit SNR 15.48

There are 16 quarters with good PRF difference image offsets

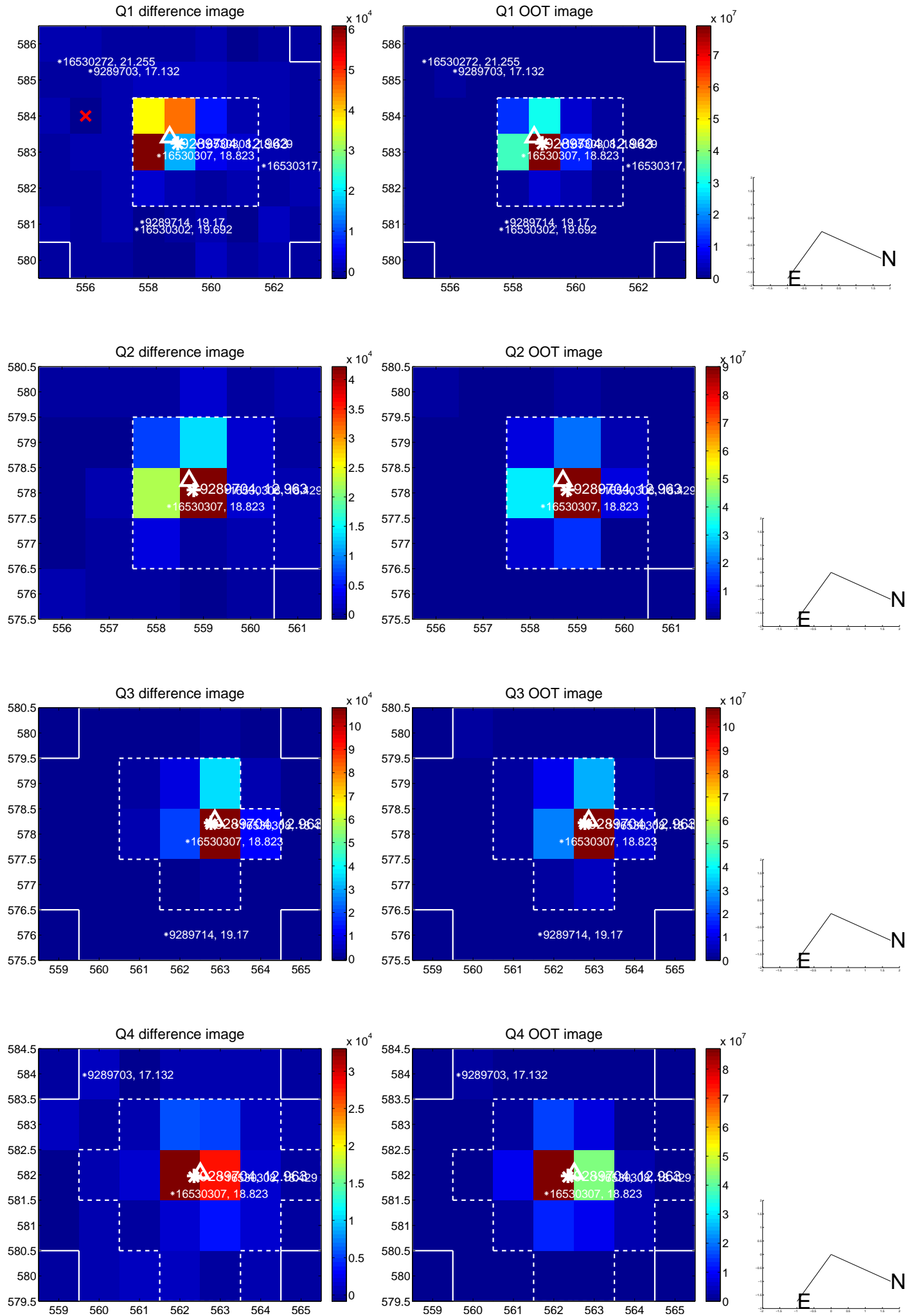
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.355 ± 0.173	2.05	-0.354 ± 0.173	0.031 ± 0.132
PRF-fit source offset from KIC position	0.458 ± 0.169	2.71	-0.458 ± 0.169	0.009 ± 0.134
photometric centroid source offset	0.14 ± 0.12	1.14	-0.07 ± 0.11	-0.12 ± 0.12

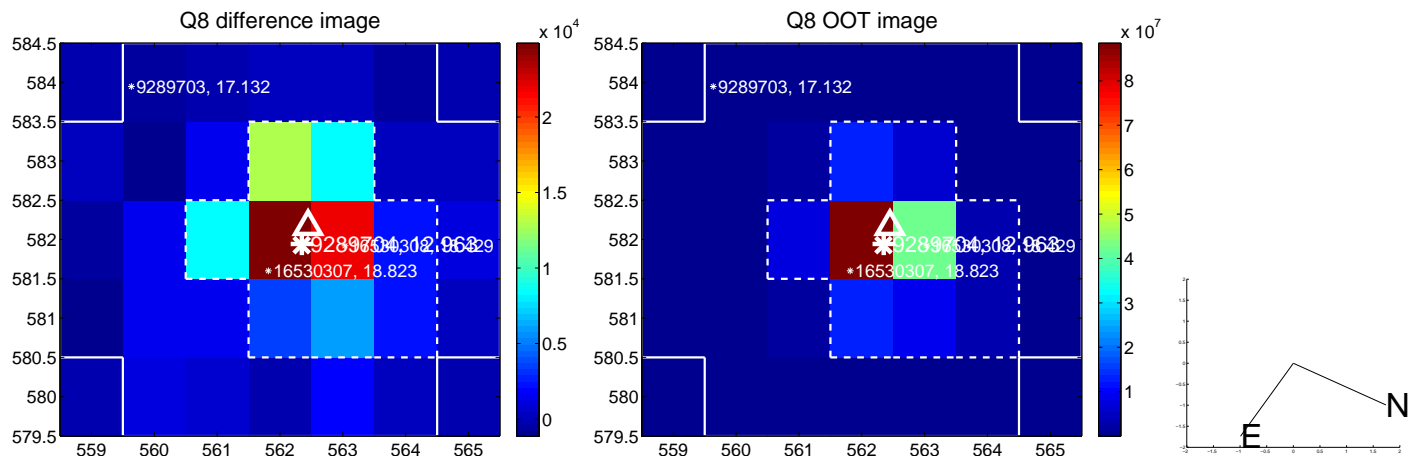
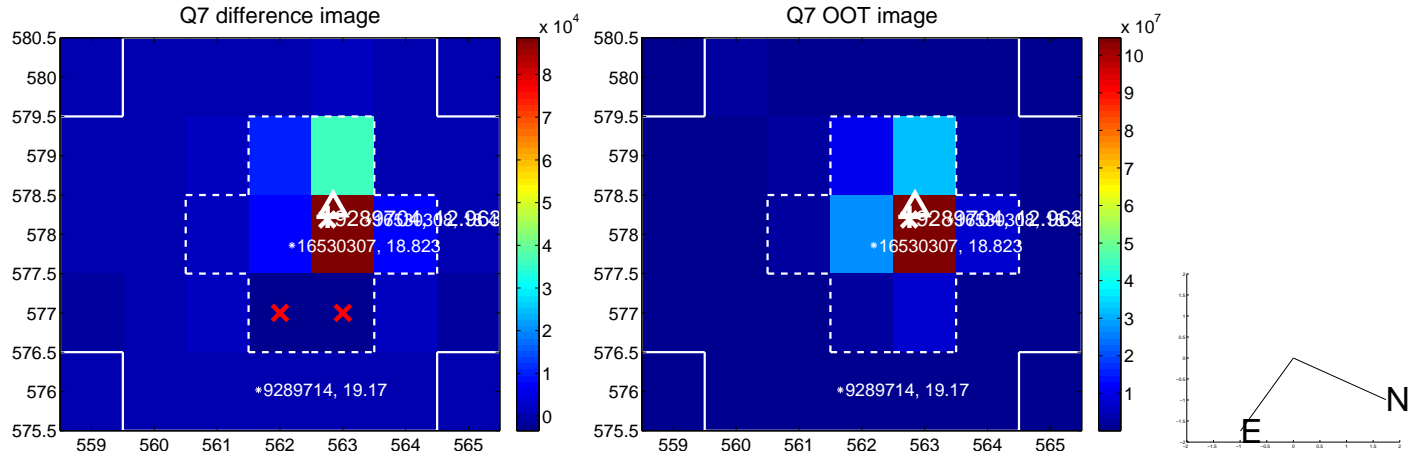
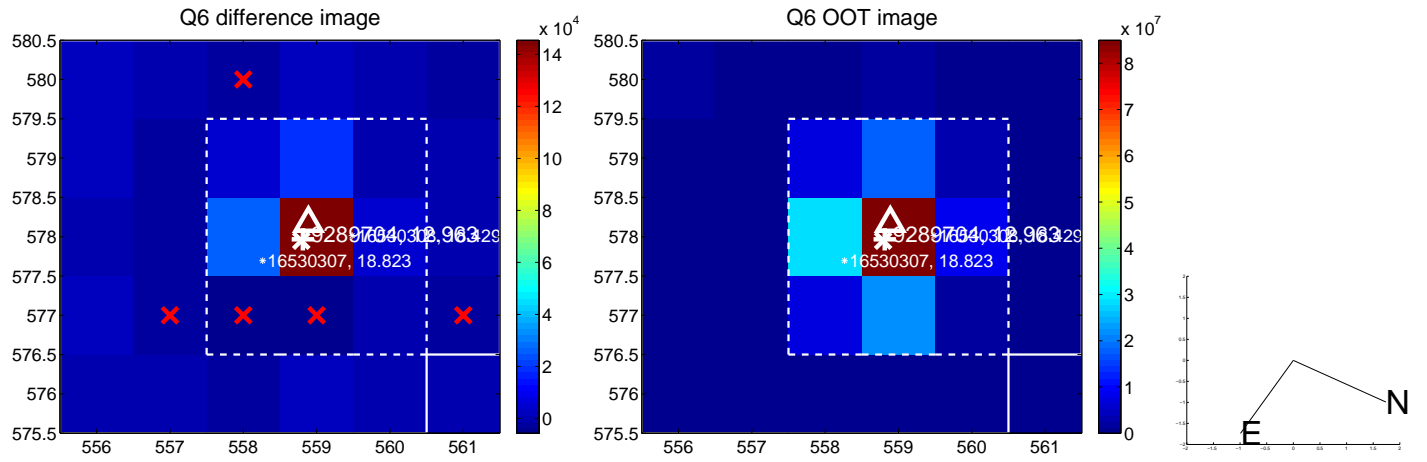
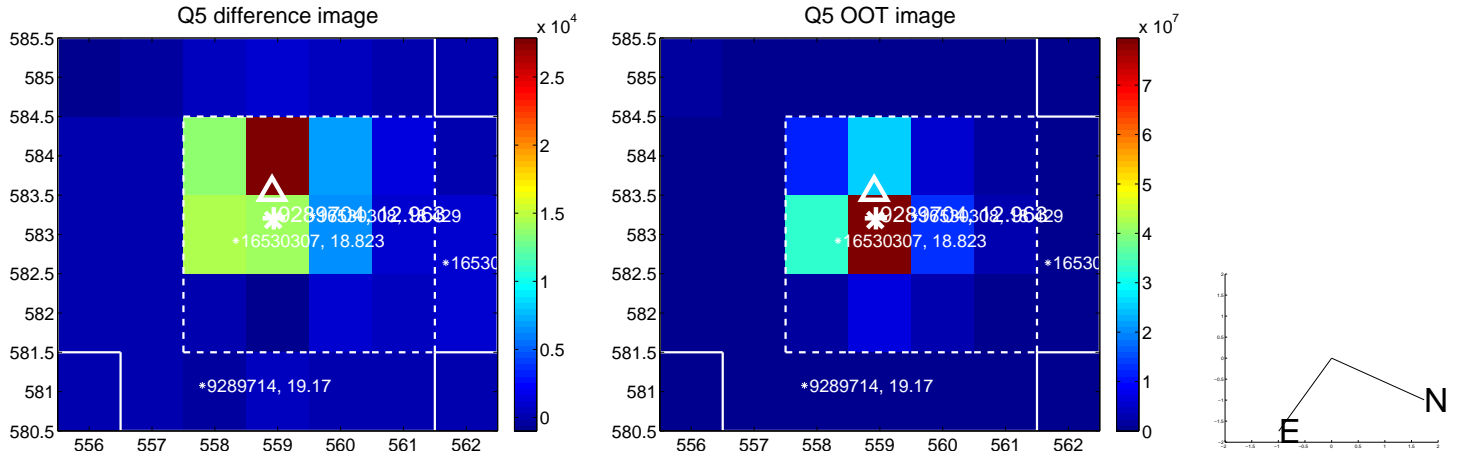


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

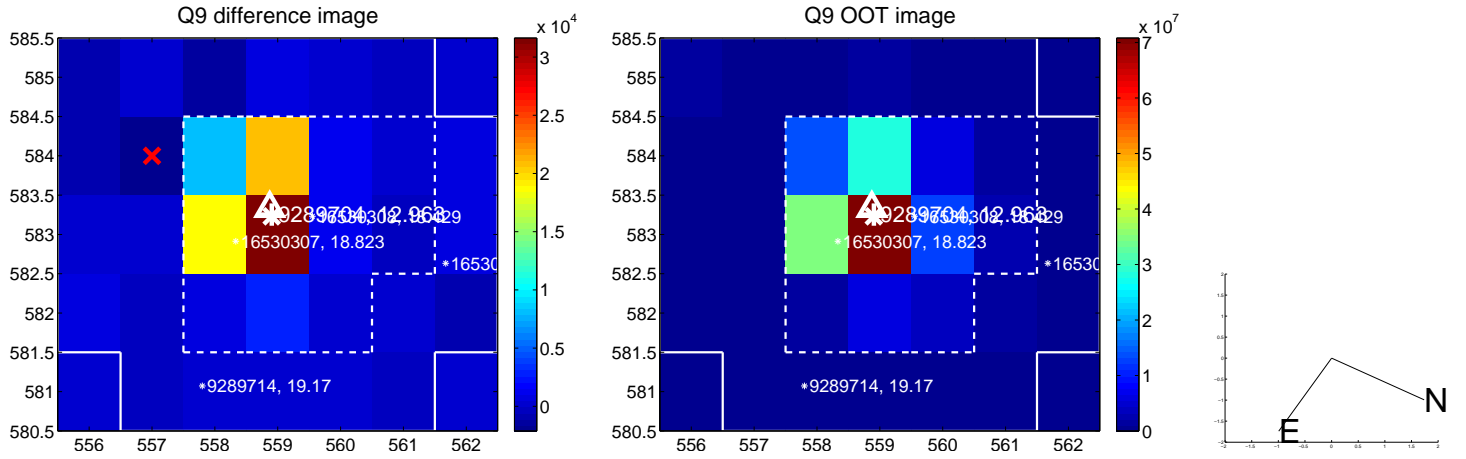
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



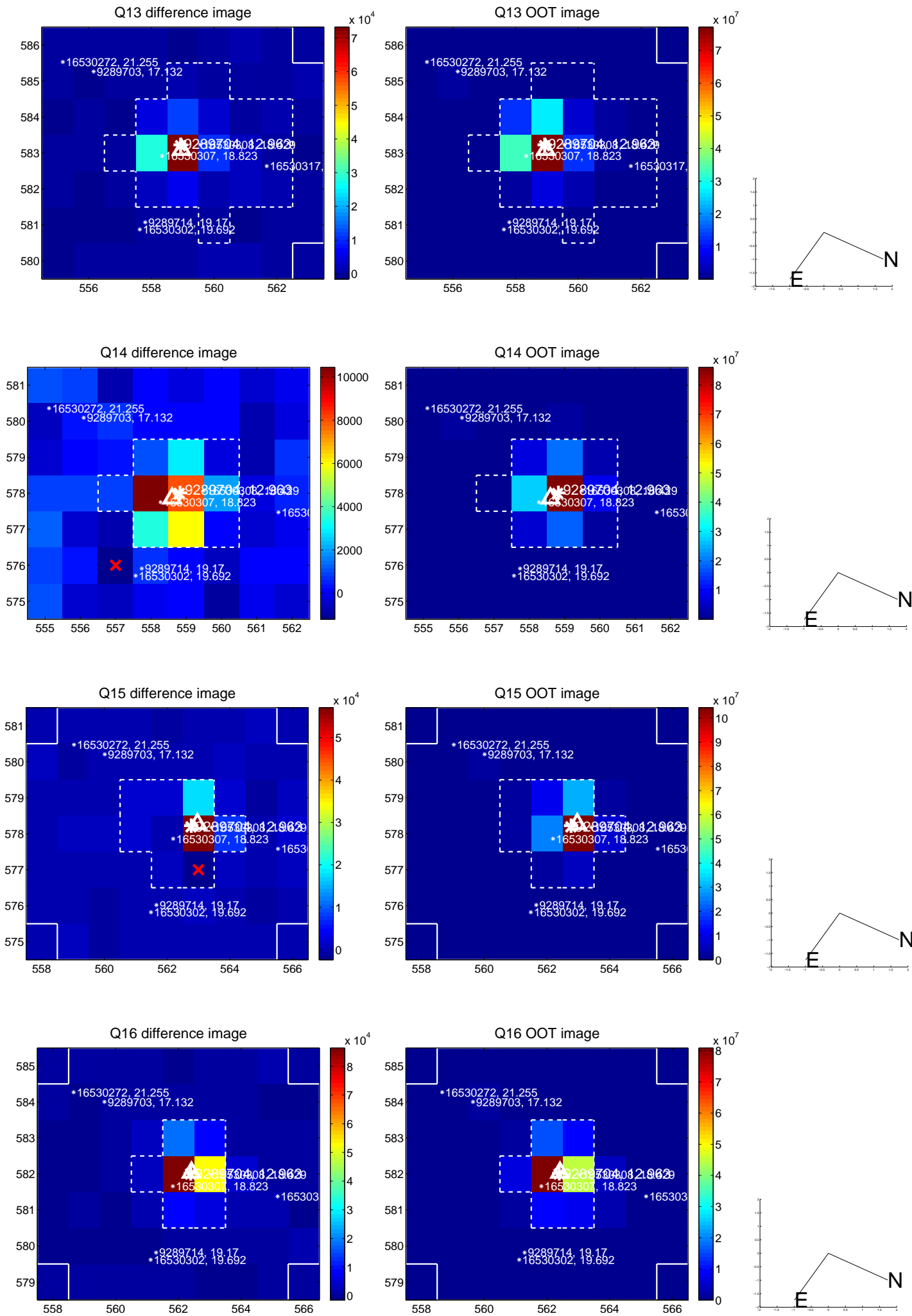
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



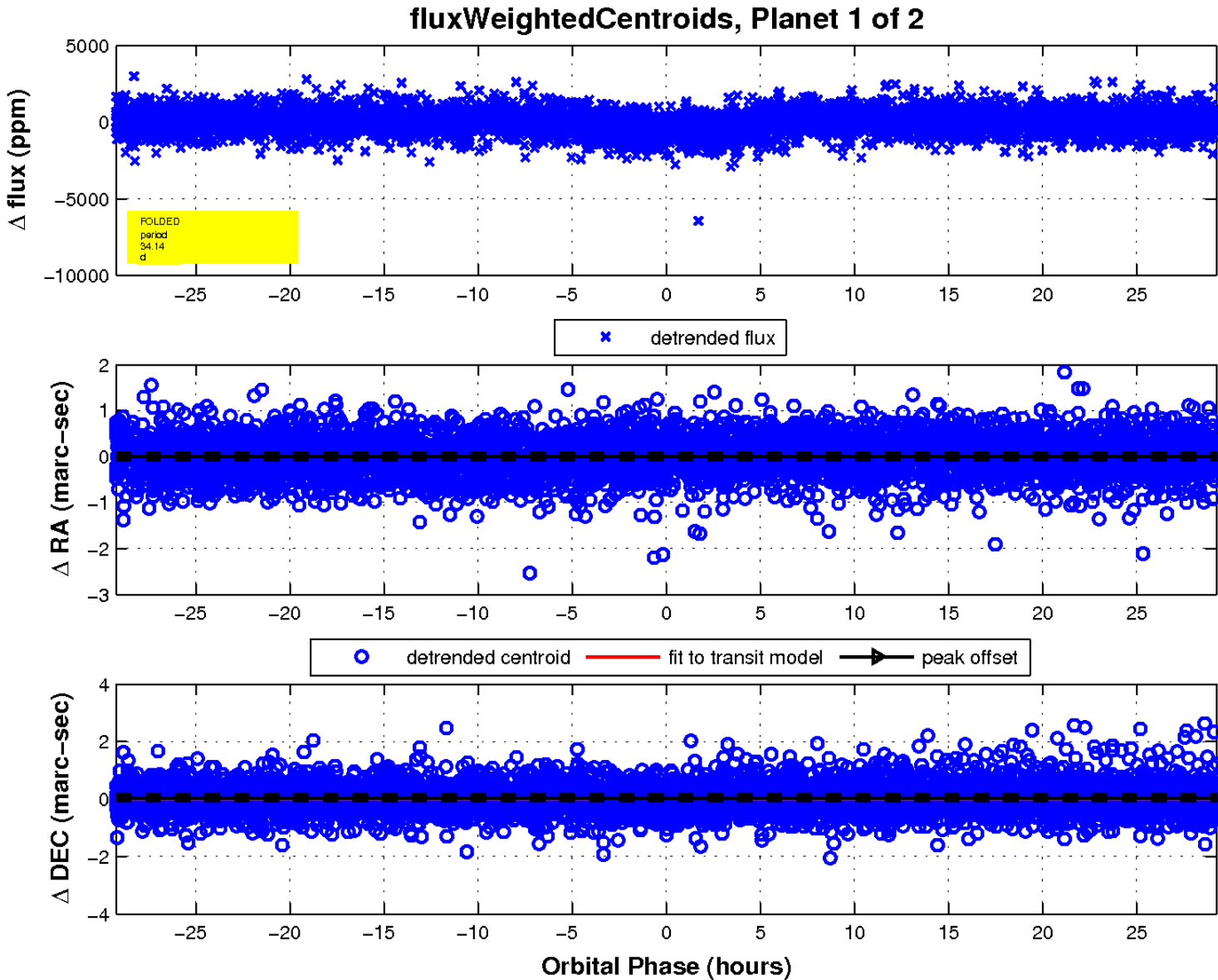
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

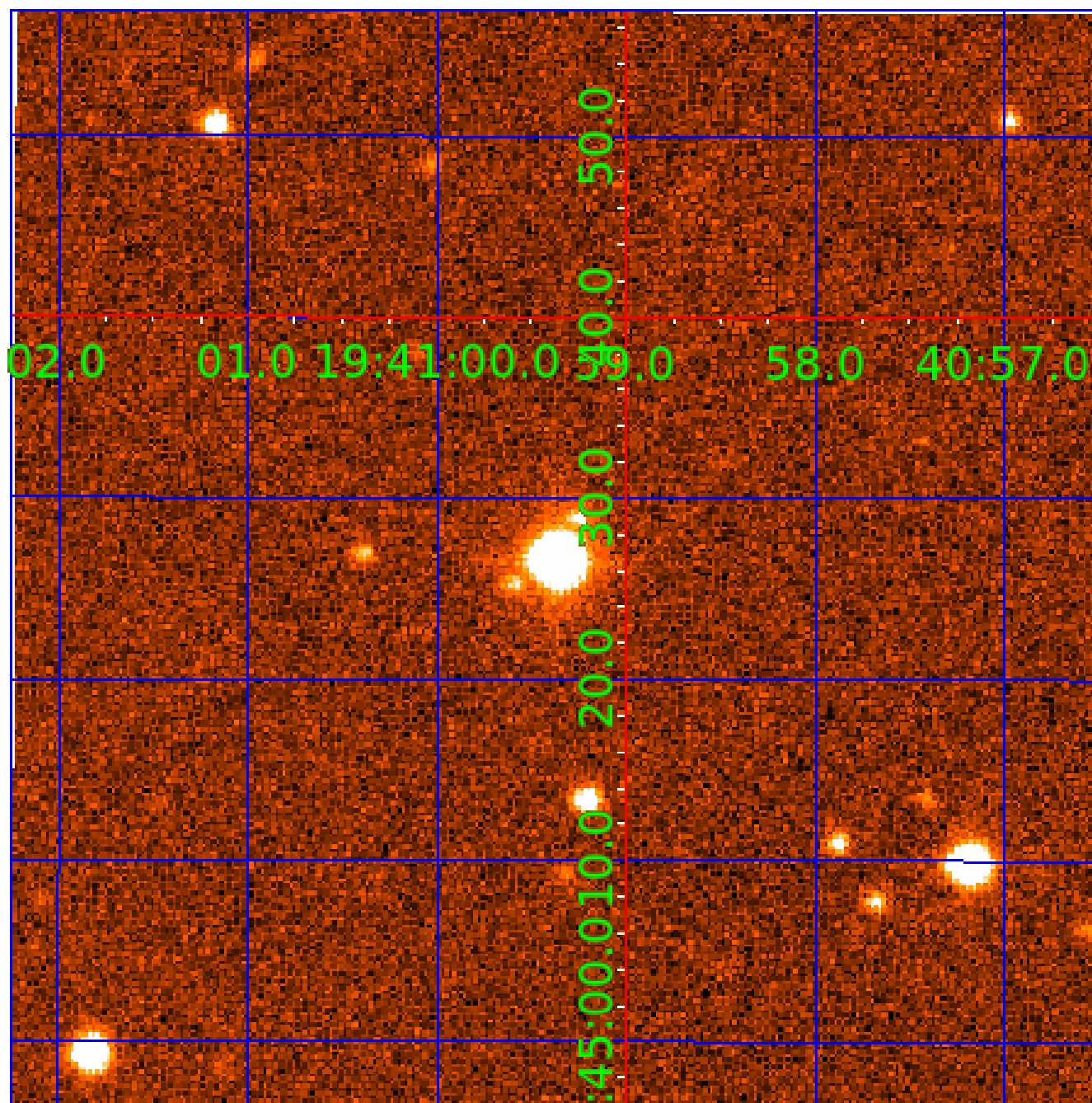
Q17 no difference image

Q17 no OOT image



UKIRT Image

Declination



KIC 009289704

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})
009289704-01	OBS	2222.01	34.135929	157.798523	540.7	9.751	14.7	15.5	5.55	7818	15.78	1284.65
009289704-02	OBS	No	0.716737	131.602844	49.2	4.176	13.2	8.0	5.55	7818	4.06	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009289704-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009289704-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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.

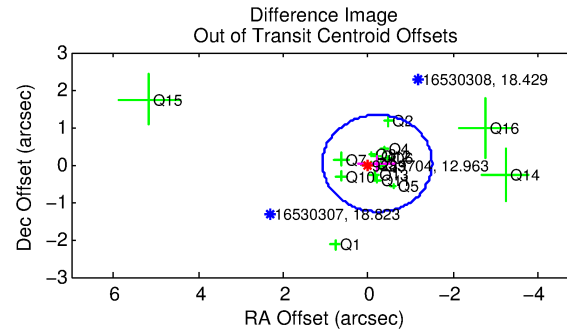
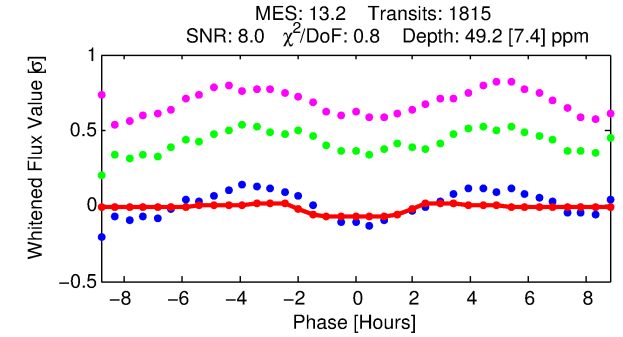
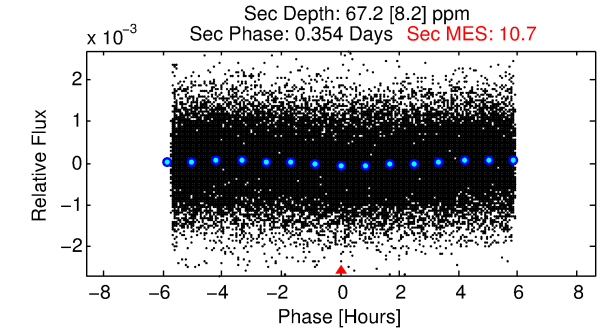
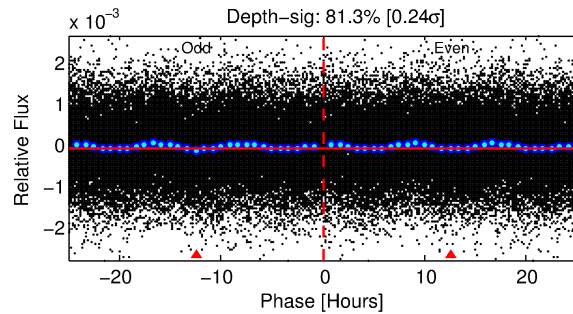
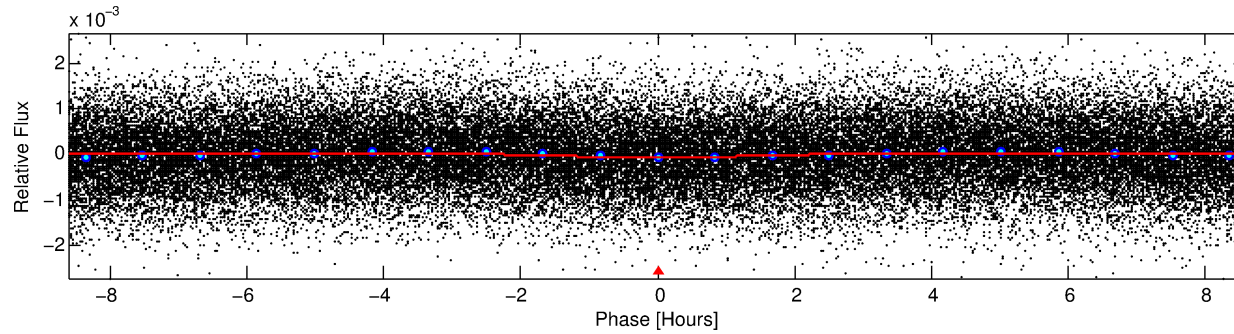
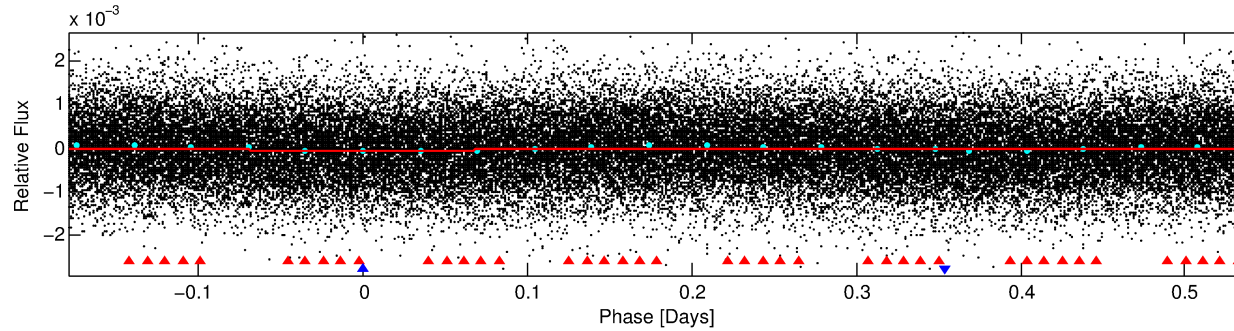
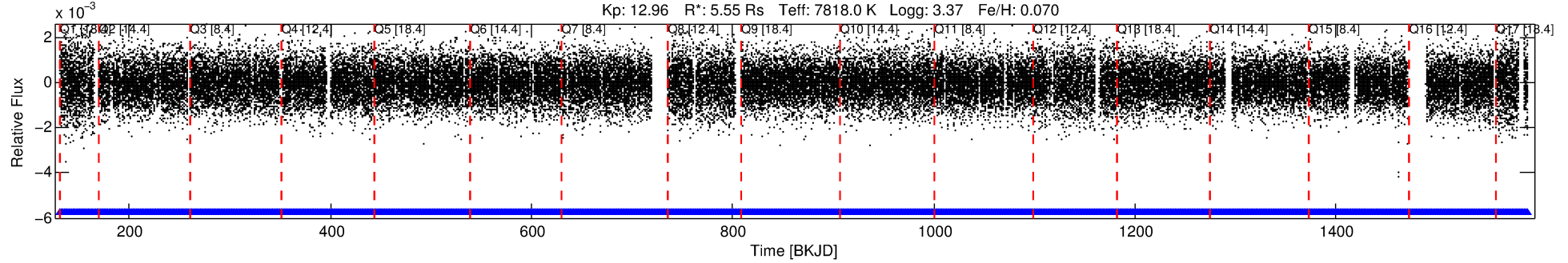
Ephemeris Match Information For 009289704-02

No Significant Match Found

DV One-Page Summary

KIC: 9289704 Candidate: 2 of 2 Period: 0.717 d
KOI: K02222 Corr: No Ephemeris Match

Kp: 12.96 R*: 5.55 Rs Teff: 7818.0 K Logg: 3.37 Fe/H: 0.070



DV Fit Results:

Period = 0.71674 [0.00001] d
Epoch = 131.6028 [0.0051] BKJD
Rp/R* = 0.0067 [0.0061]
a/R* = 1.33 [2.86]
b = 0.56 [6.09]
Seff = N/A
Teq = N/A
Rp = 4.06 [4.51] Re
a = N/A
Ag = N/A
Teffp = N/A

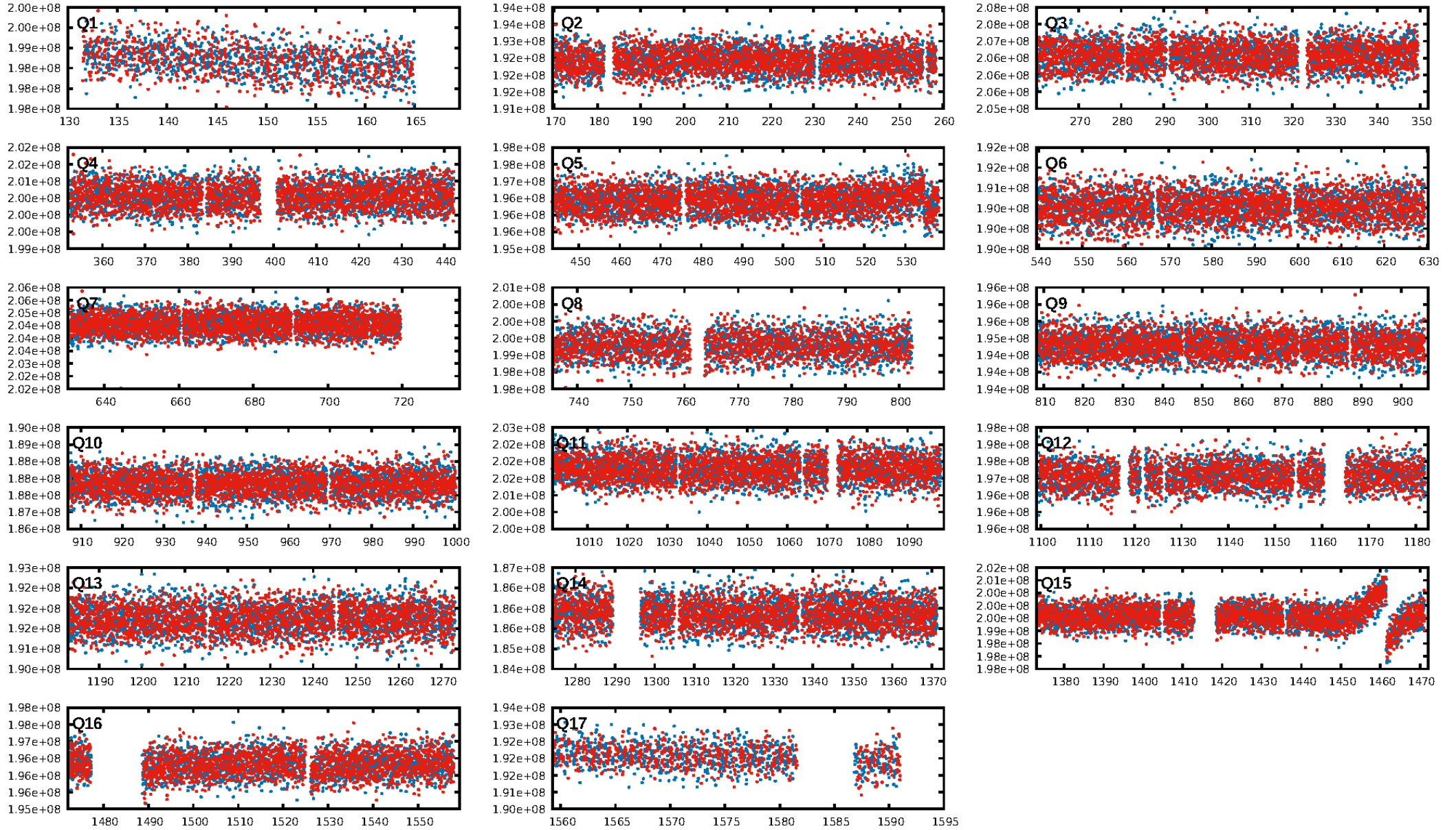
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [75.61σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.10e-27
RollingBand-fgt: 1.00 [1732/1732]
GhostDiagnostic-chr: 1.877
Centroid-sig: 13.0%
Centroid-so: 0.273 arcsec [1.15σ]
OotOffset-rm: 0.225 arcsec [0.52σ]
KicOffset-rm: 0.312 arcsec [0.72σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.75 [12/16]
DiffImageOverlap-fno: 1.00 [17/17]

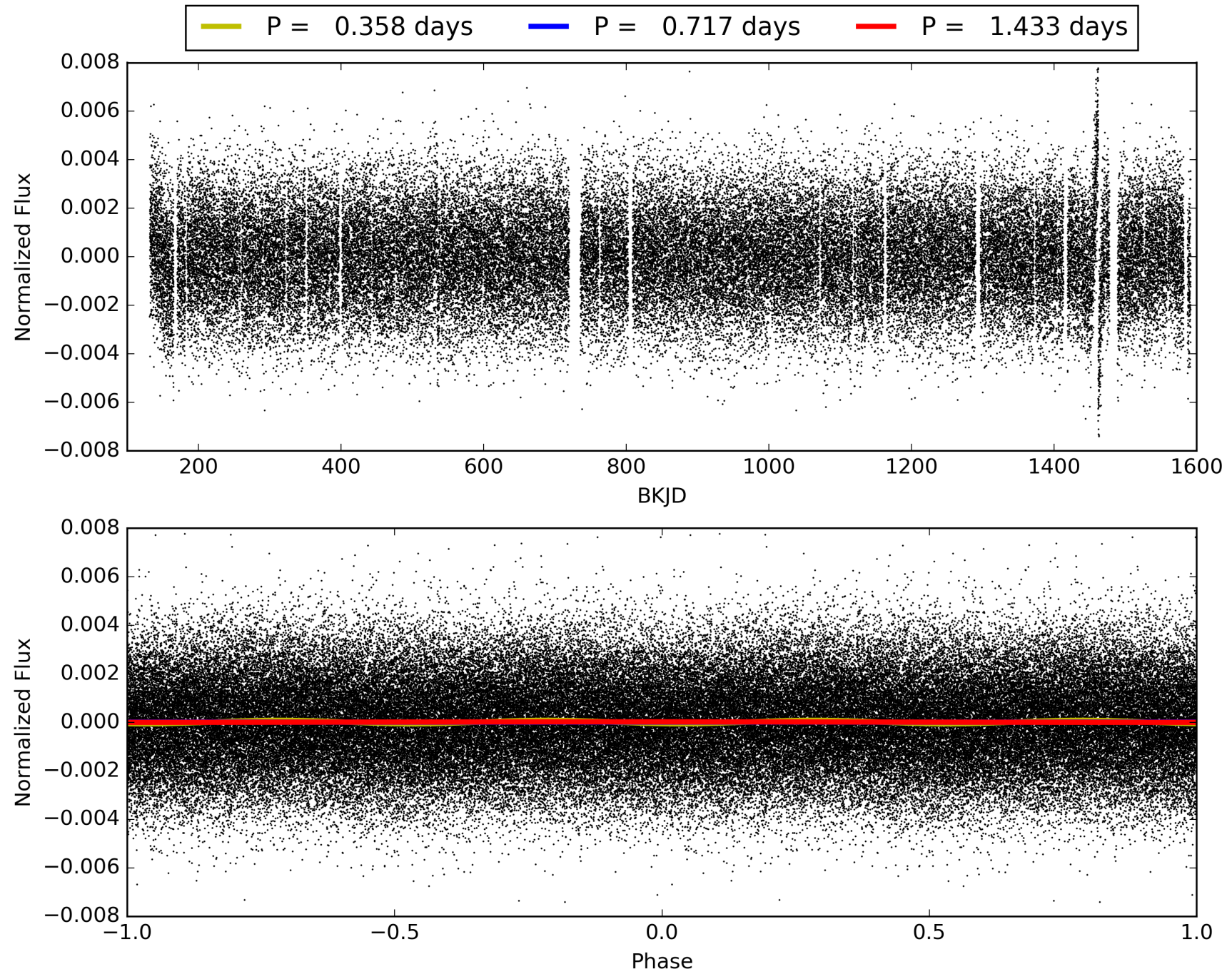
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 00:56:28 Z

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

TCE 009289704-02, PDC Light Curves

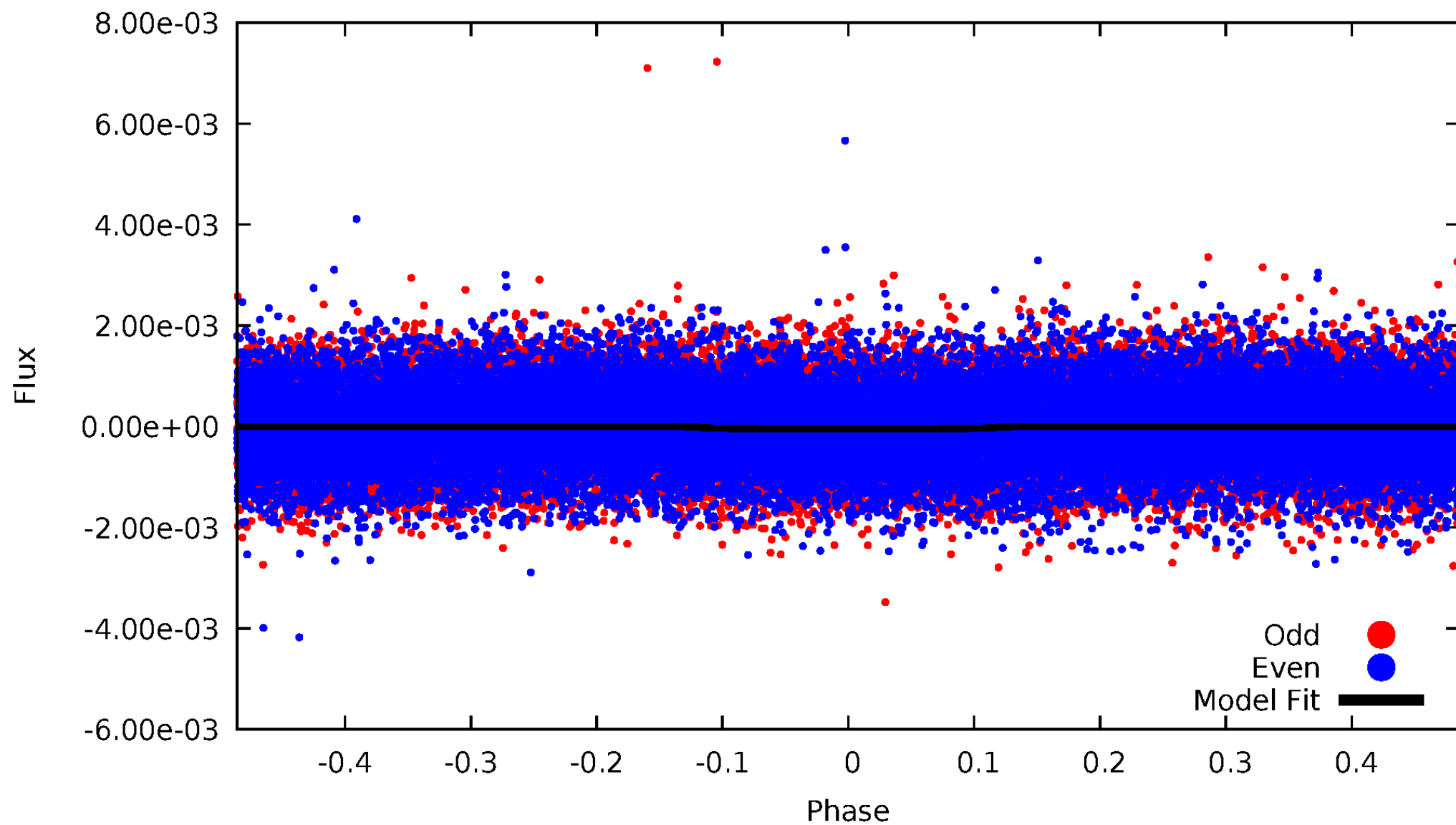


TCE 009289704-02



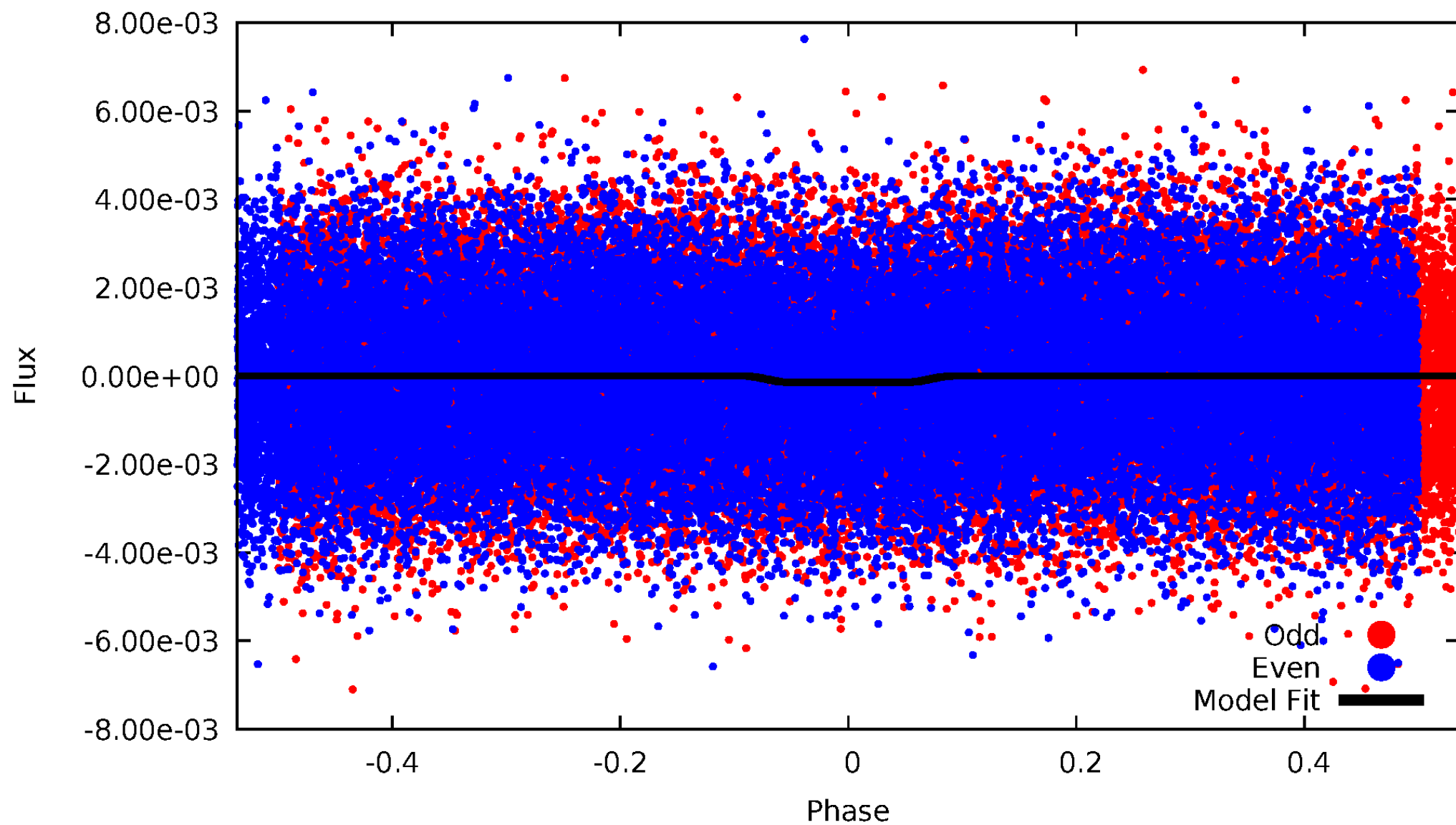
DV Odd/Even

TCE 009289704-02



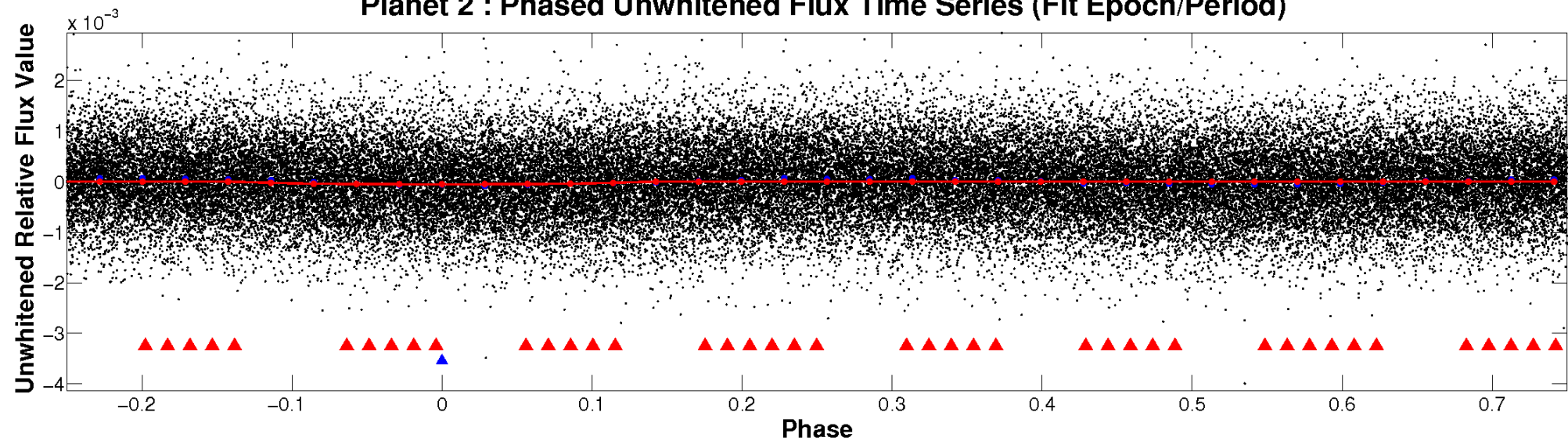
ALT Odd/Even

TCE 009289704-02

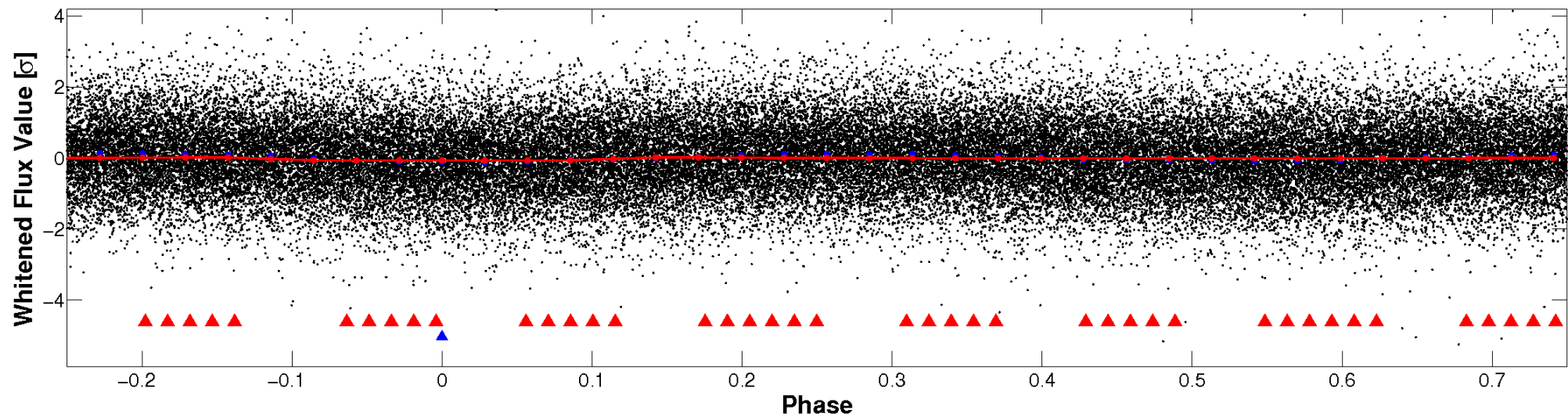


Non-Whitened Vs. Whitened Light Curve

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

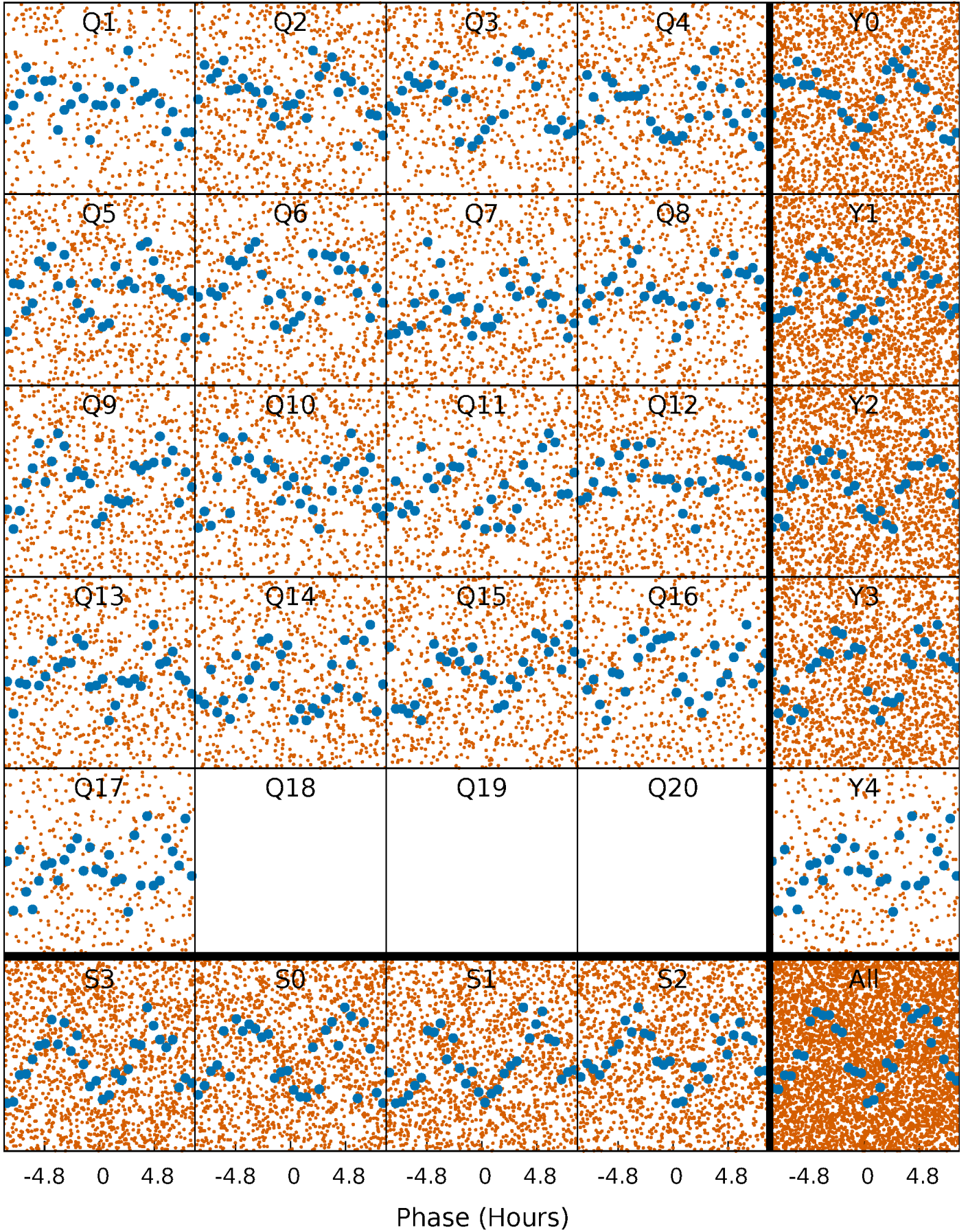


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



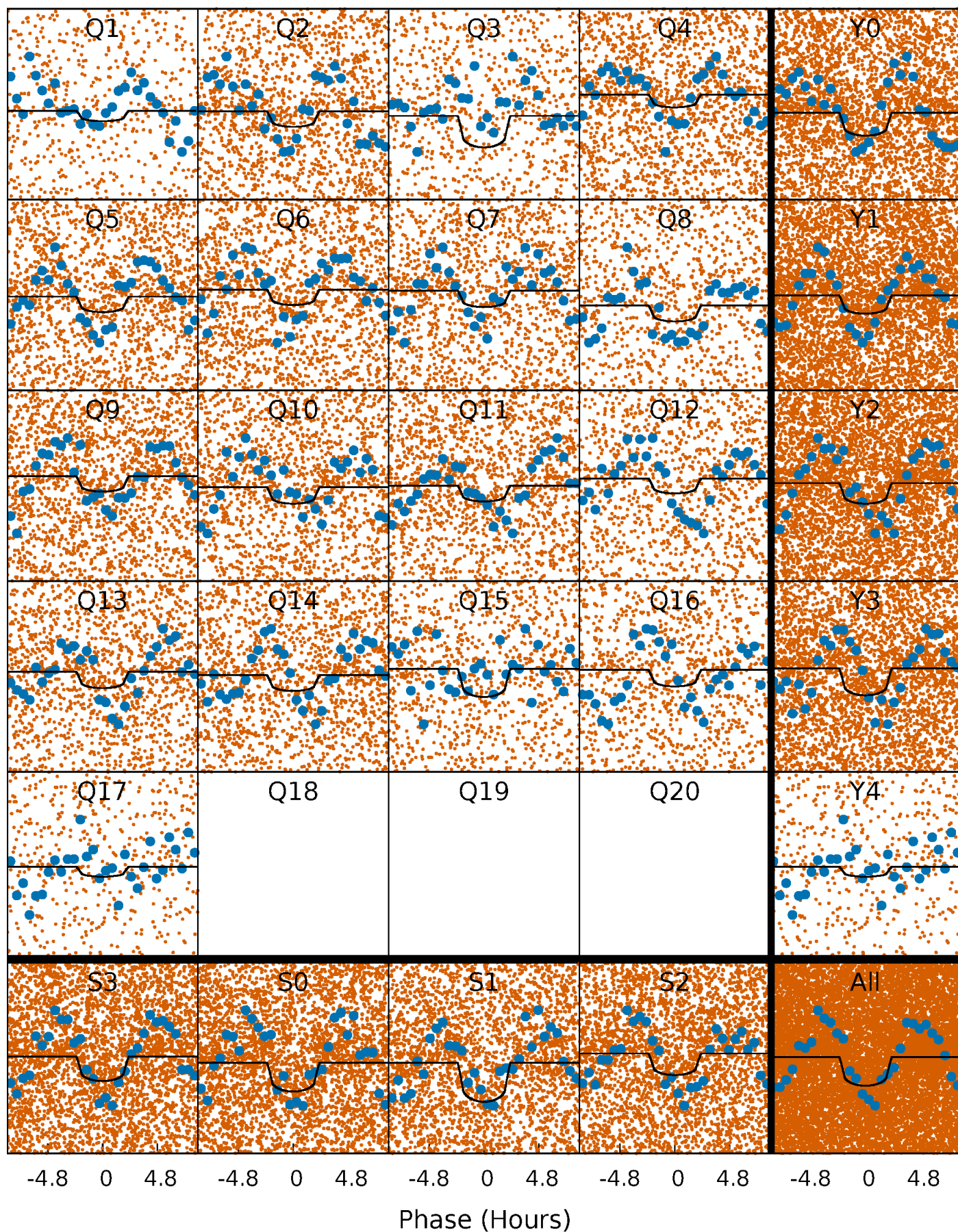
PDC Quarter-Phased Transit Curves

TCE 009289704-02 P= 0.716737 Days $T_0=131.602844$ (BKJD)



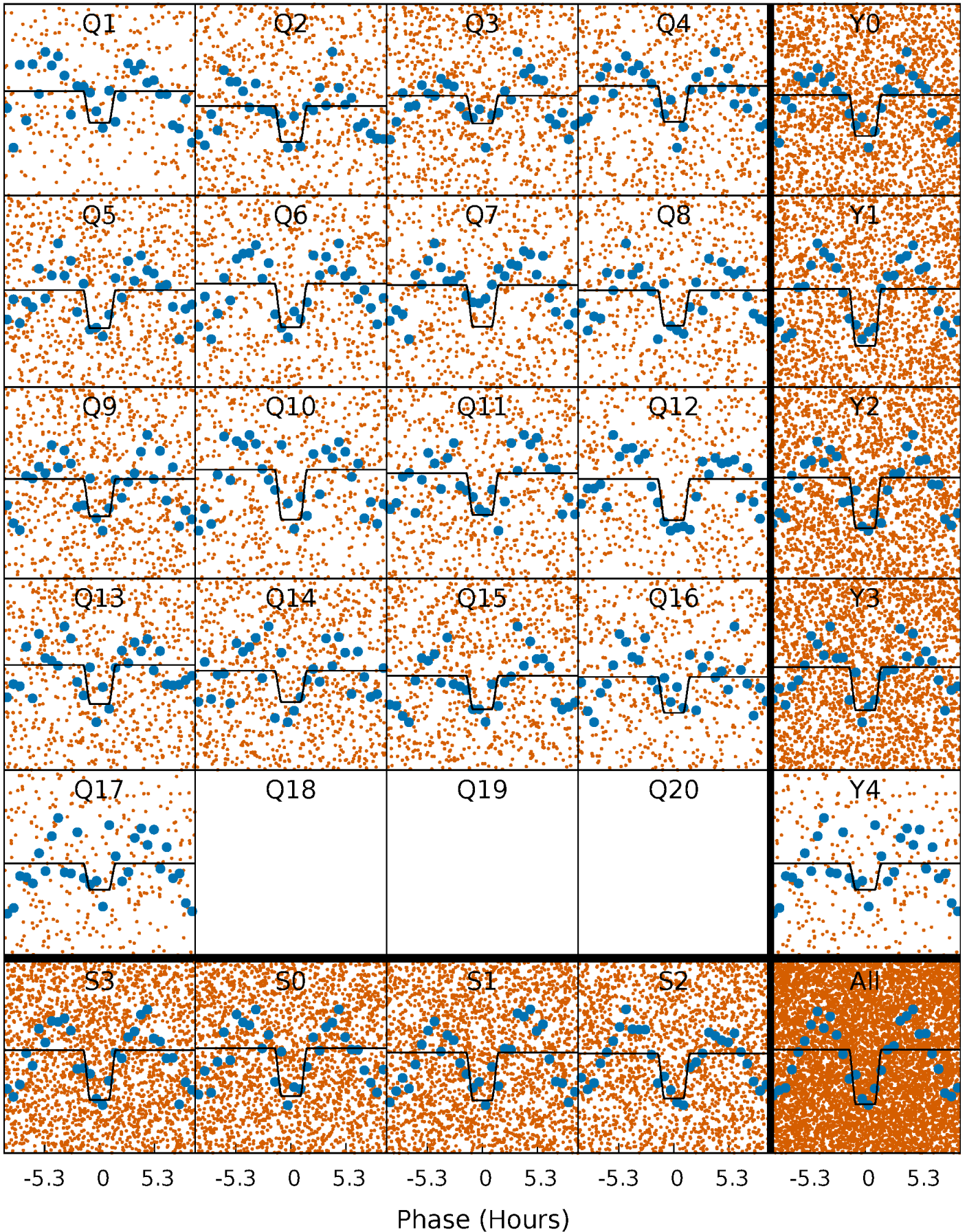
DV Quarter-Phased Transit Curves

TCE 009289704-02 P= 0.716737 Days $T_0=131.602844$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

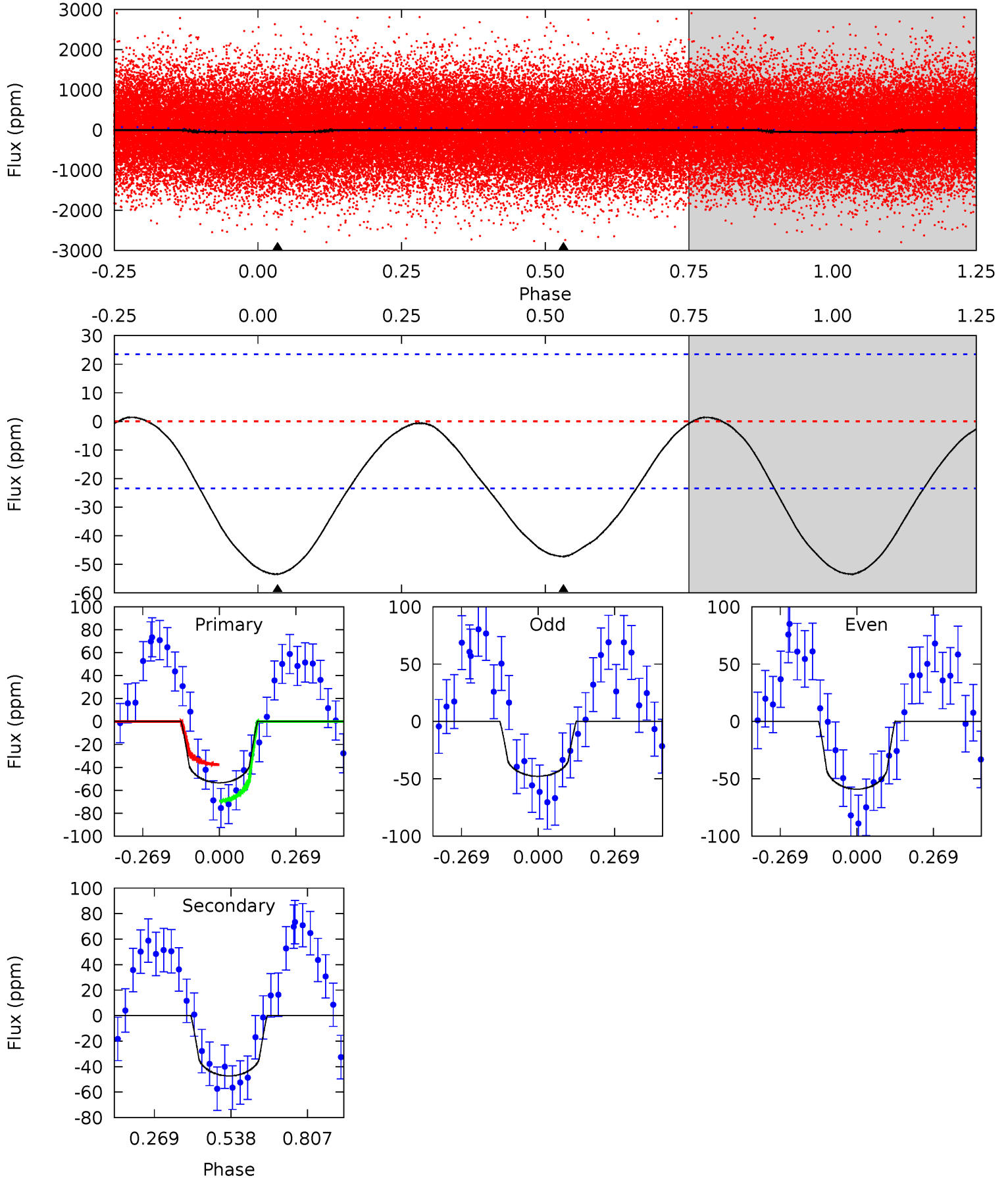
TCE 009289704-02 $P = 0.716803$ Days $T_0 = 131.558504$ (BKJD)



DV Model-Shift Uniqueness Test

009289704-02, P = 0.716737 Days, E = 130.886107 Days

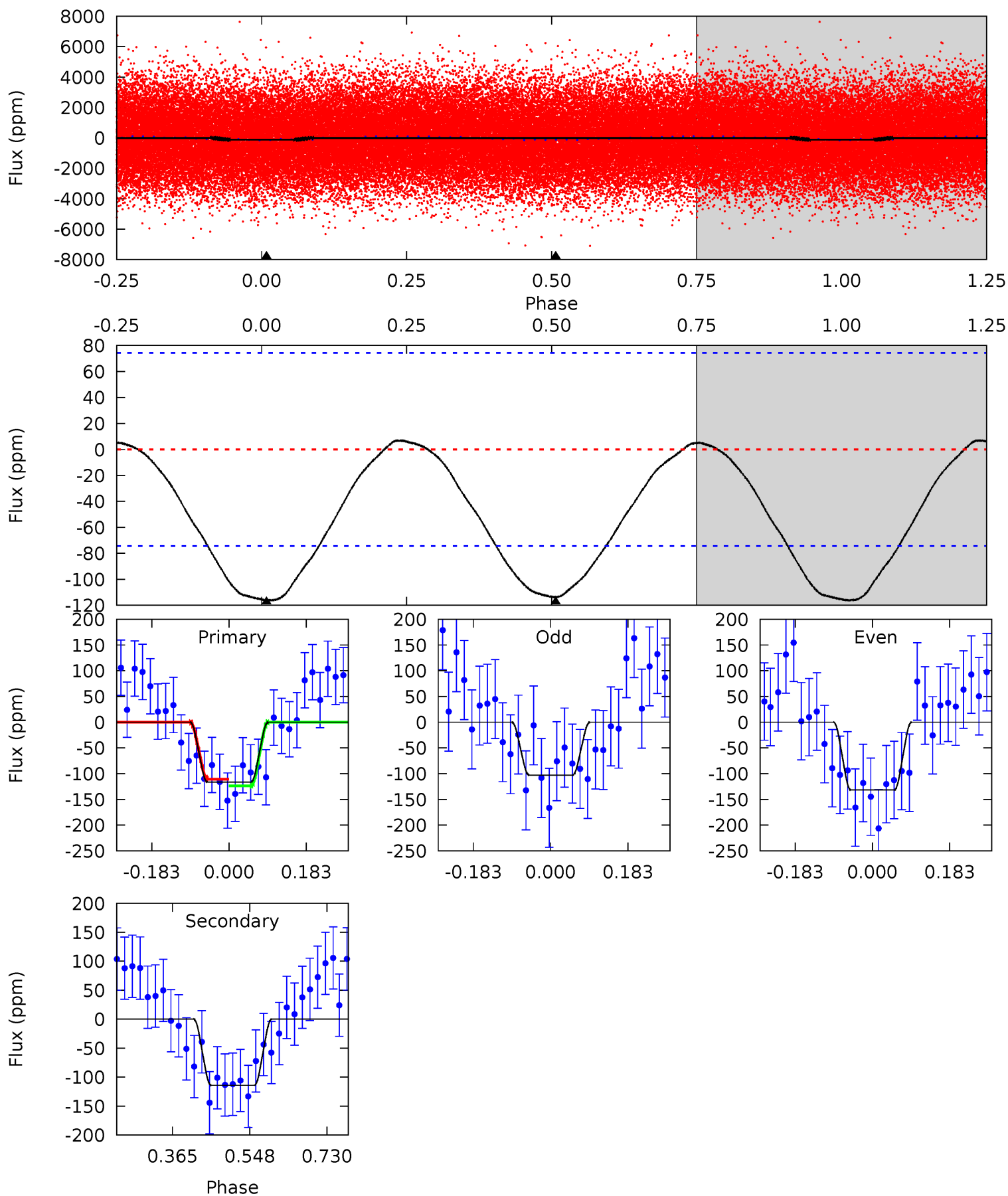
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.92	8.77	0	0	4.35	1.11	0.20	9.92	9.92	8.77	8.77	1.05	0.98	0.03	2.95



Alt Model-Shift Uniqueness Test

009289704-02, P = 0.716803 Days, E = 130.841701 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.94	6.81	0	0	4.44	1.33	0.38	6.94	6.94	6.81	6.81	0.86	0.94	0.06	0.38



Stellar Parameters For KIC 009289704

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7818^{+216}_{-325}	$3.365^{+0.704}_{-0.176}$	$0.070^{+0.250}_{-0.350}$	$5.555^{+1.883}_{-3.496}$	$2.607^{+0.165}_{-0.934}$	$0.021^{+0.305}_{-0.011}$
	+3%/-4%	+21%/-5%	+357%/-500%	+34%/-63%	+6%/-36%	+1426%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009289704-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 5	$3.76^{+3.80}_{-2.38}$	7422^{+795}_{-1198}	6249^{+7365}_{-11054}	$0.788^{+4.762}_{-0.590}$
Alt.	-114 ± 17	$6.22^{+4.07}_{-3.12}$	7388^{+836}_{-1221}	6067^{+4000}_{-9899}	$0.722^{+2.230}_{-0.452}$

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

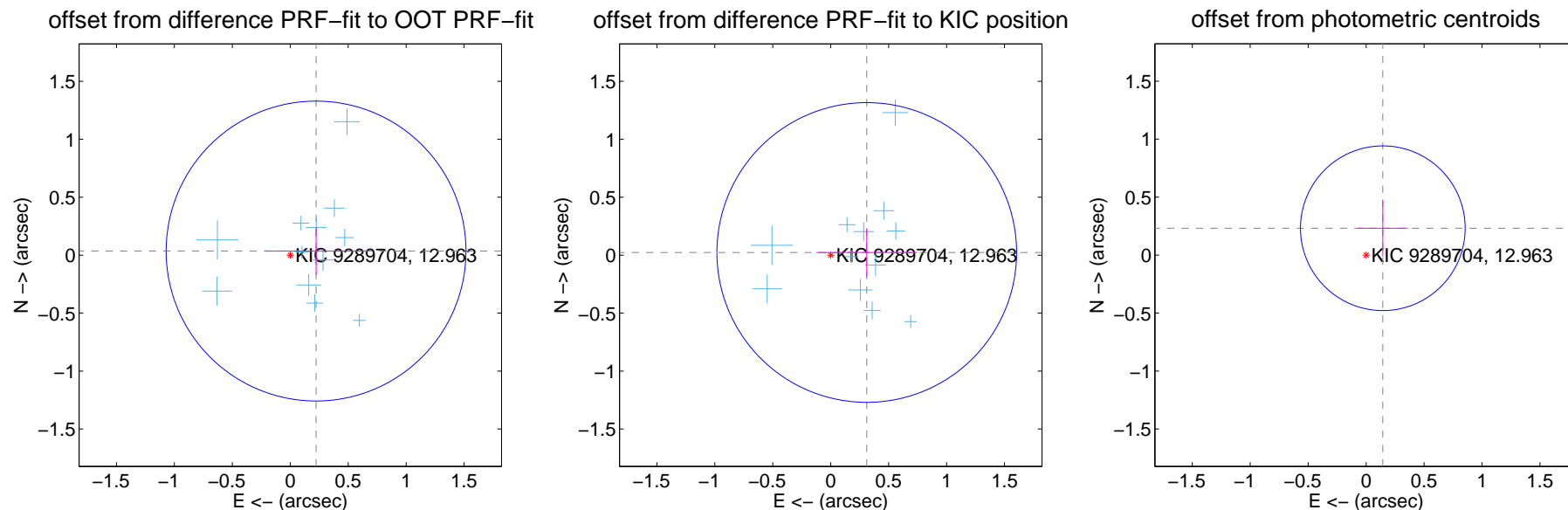
DV Centroid Data

Supplemental centroid analysis for 009289704-02. Kepler magnitude: 12.96. Transit SNR 8.01

There are 12 quarters with good PRF difference image offsets

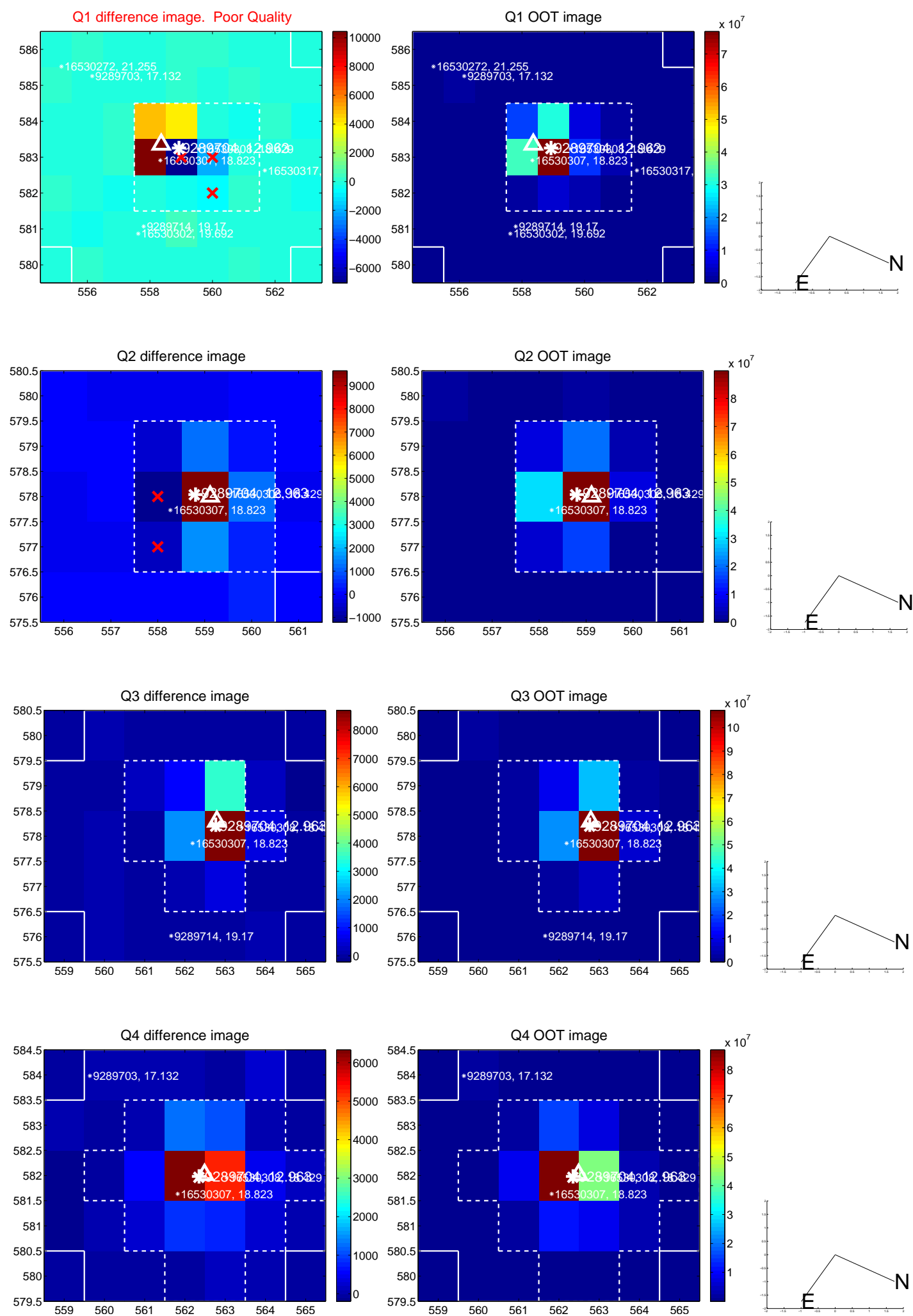
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.225 ± 0.431	0.52	-0.223 ± 0.441	0.035 ± 0.203
PRF-fit source offset from KIC position	0.312 ± 0.431	0.72	-0.311 ± 0.434	0.023 ± 0.208
photometric centroid source offset	0.27 ± 0.24	1.15	-0.14 ± 0.22	0.23 ± 0.24

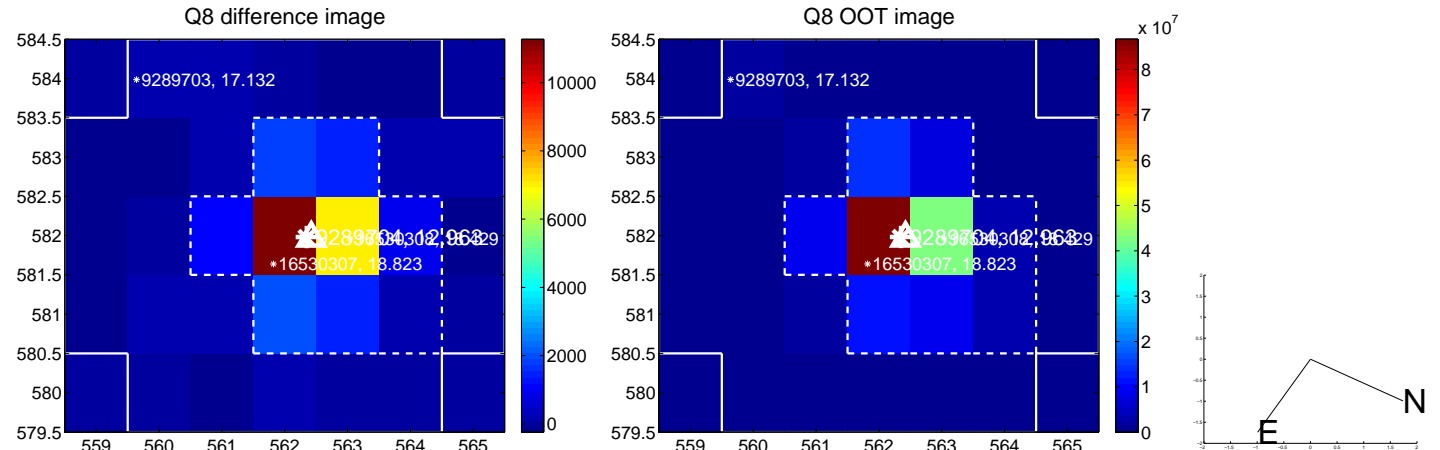
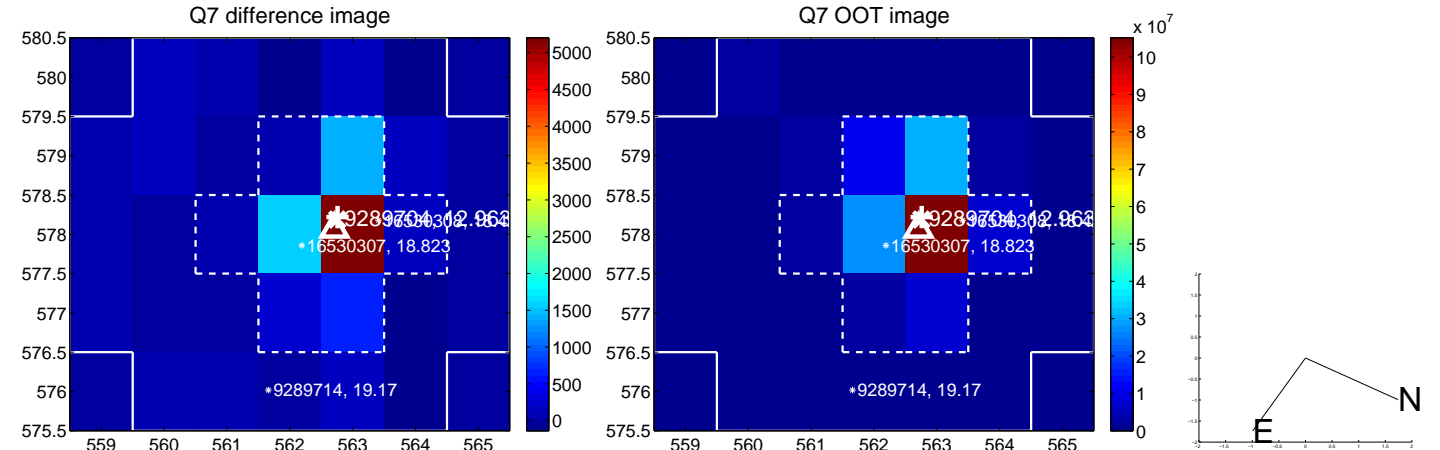
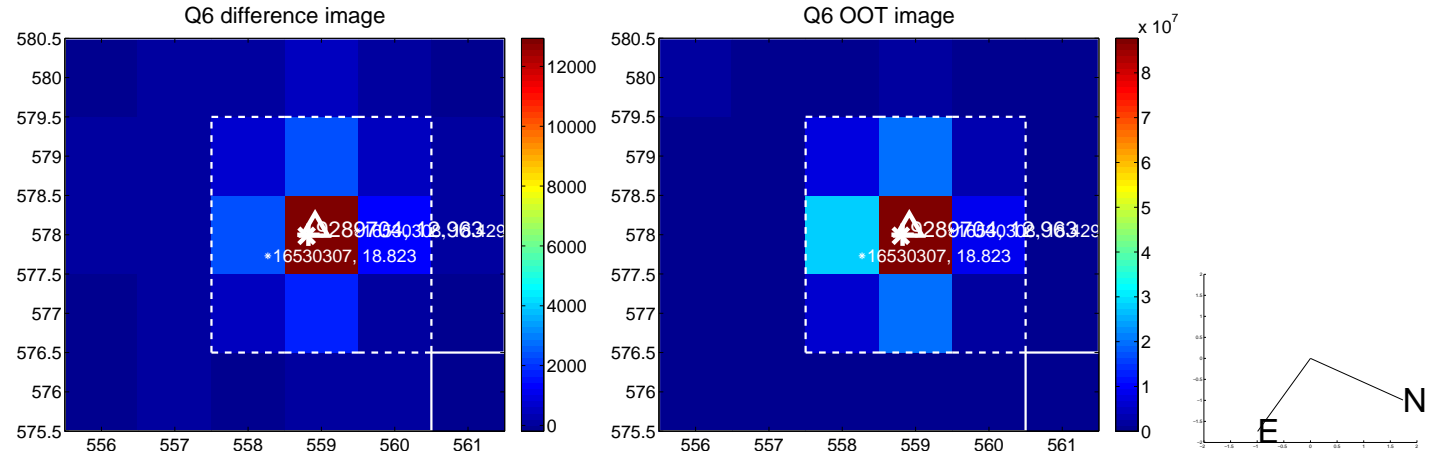
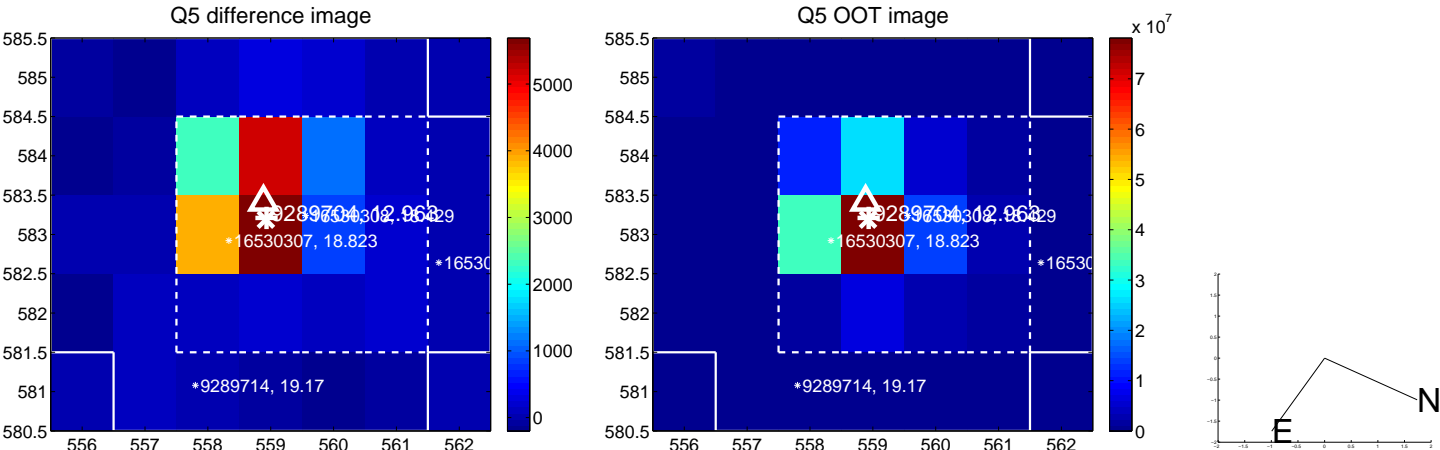


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

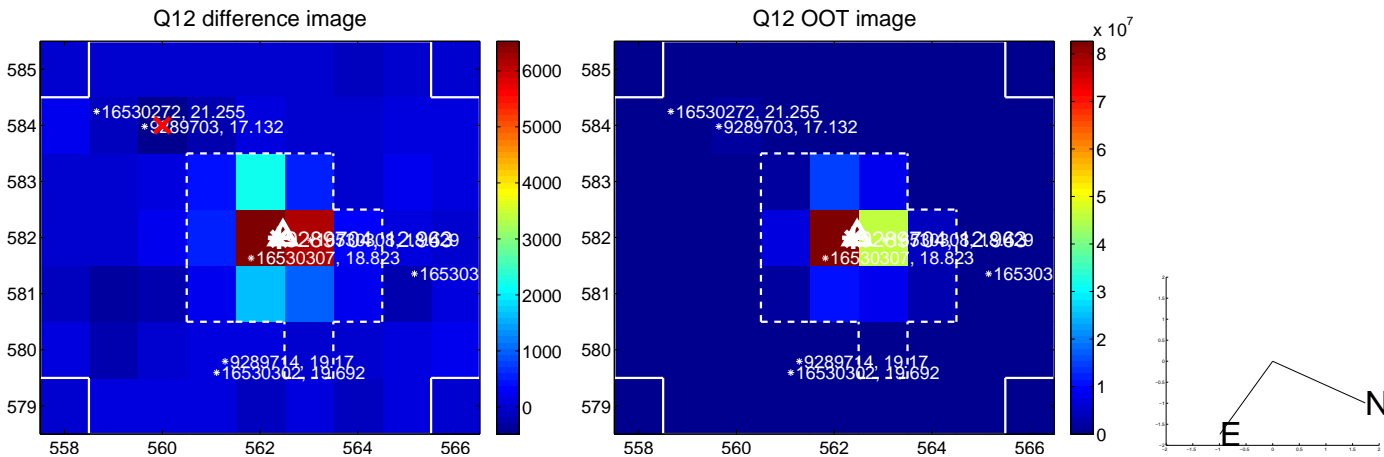
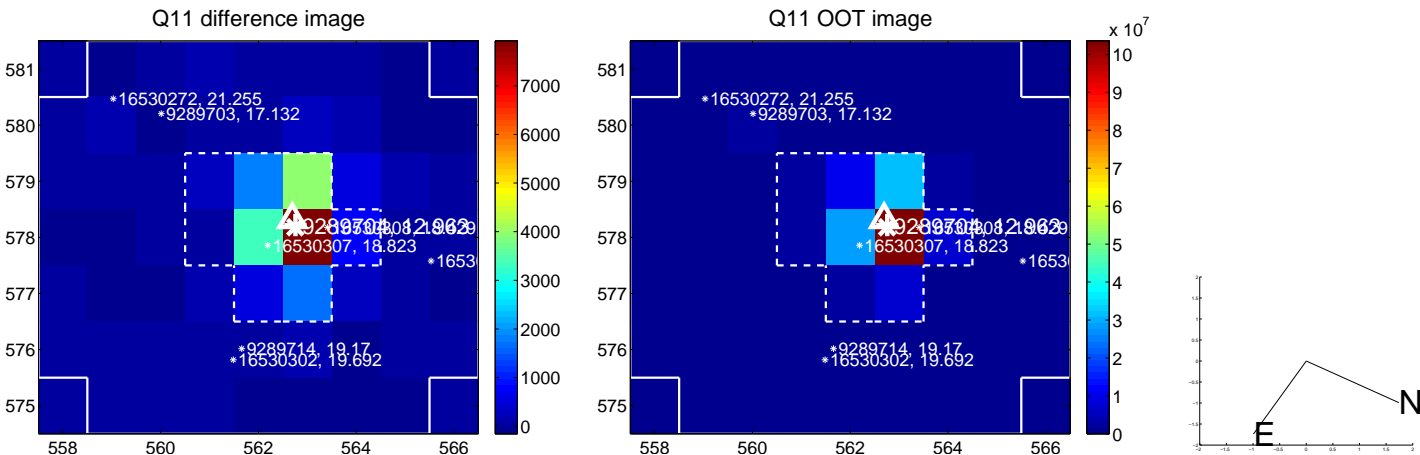
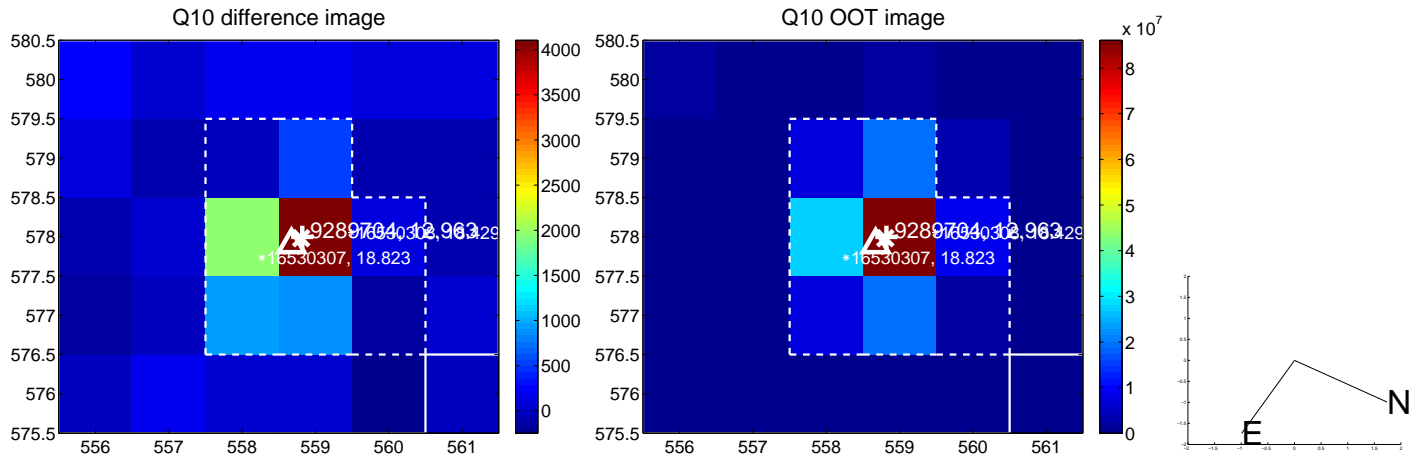
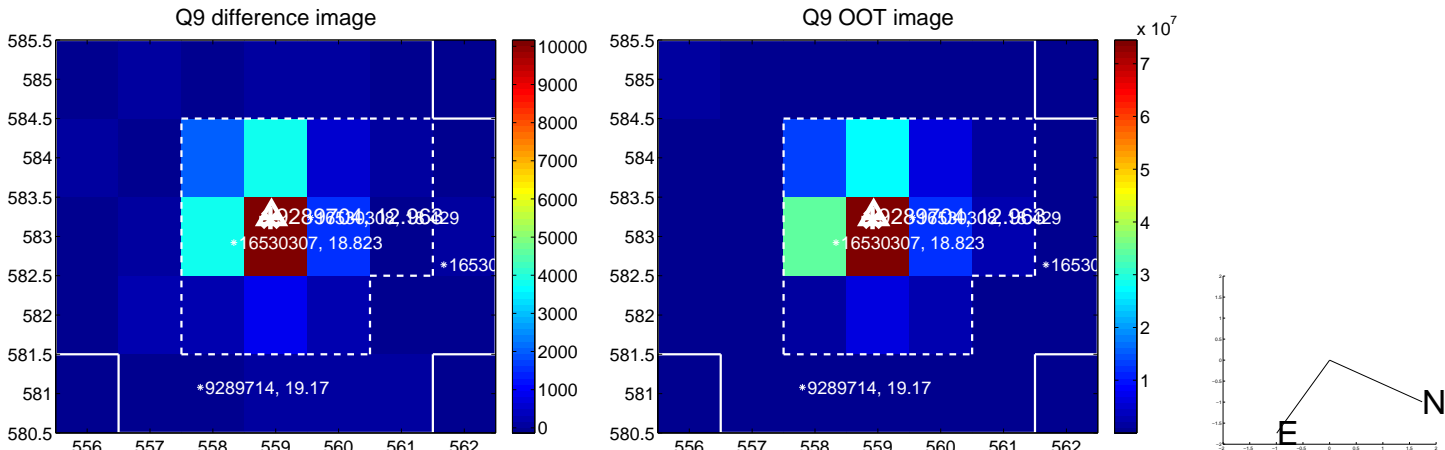
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



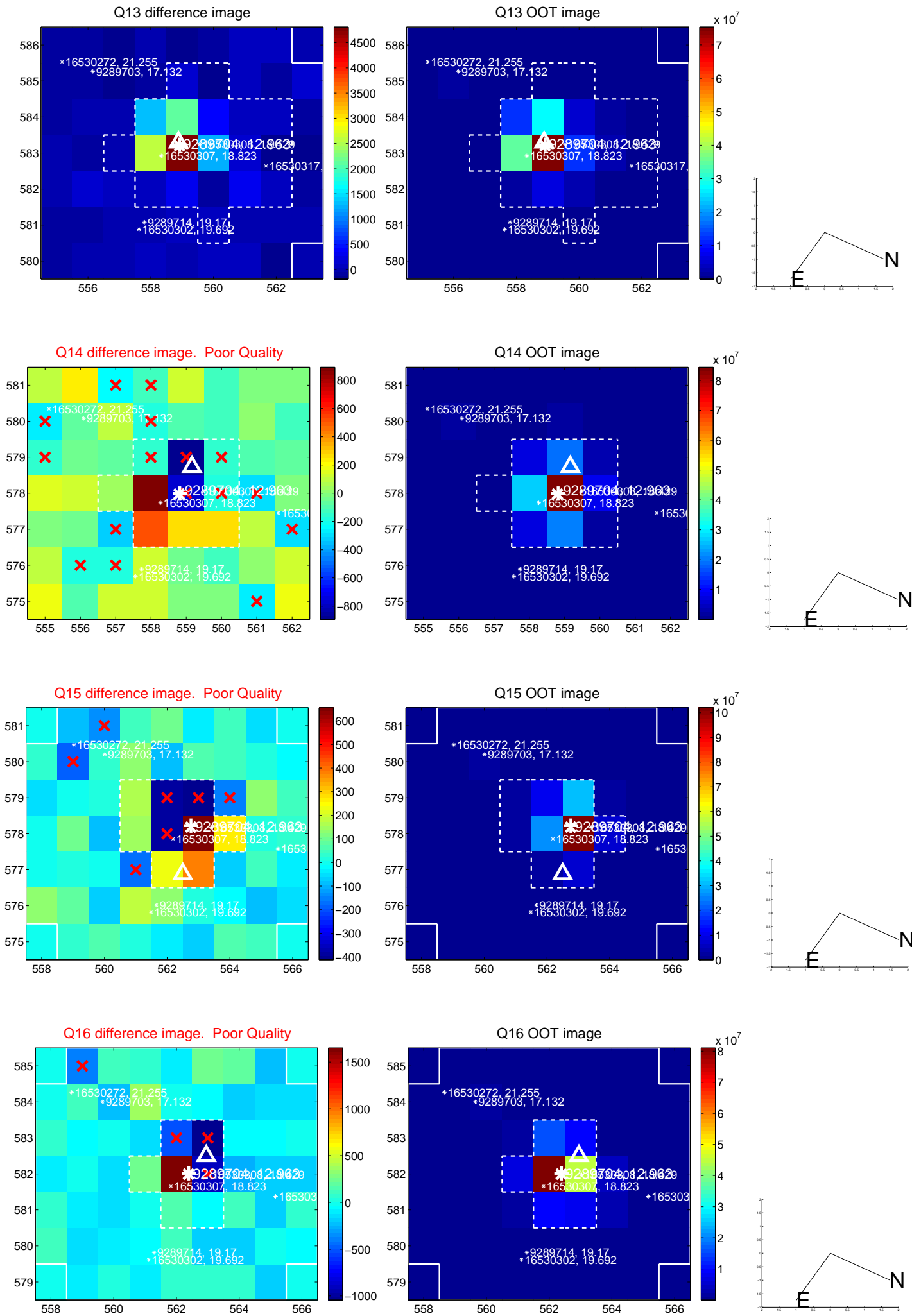
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



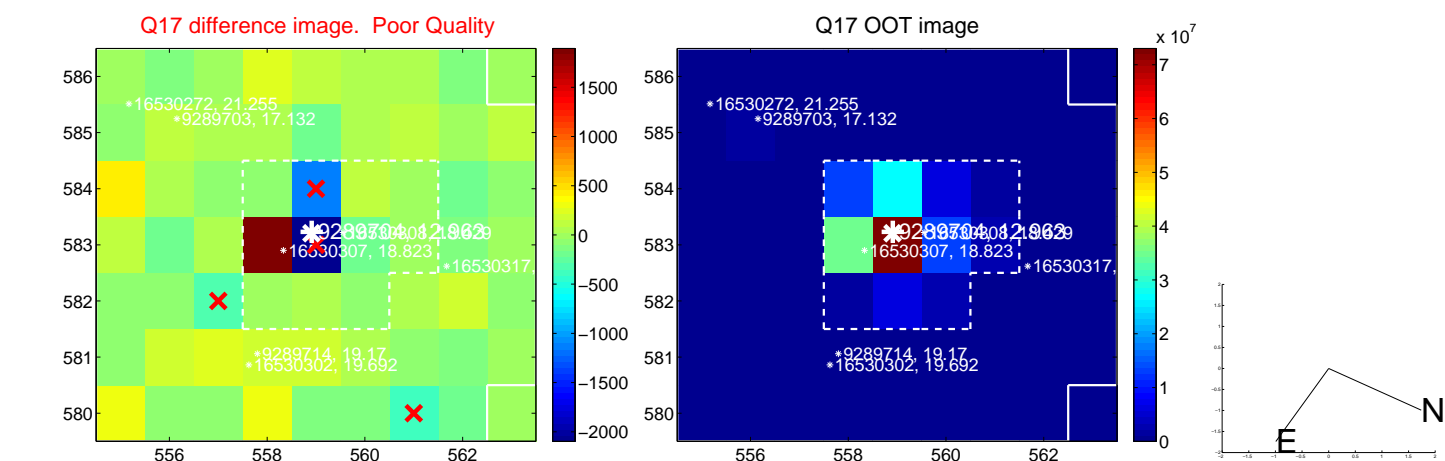
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



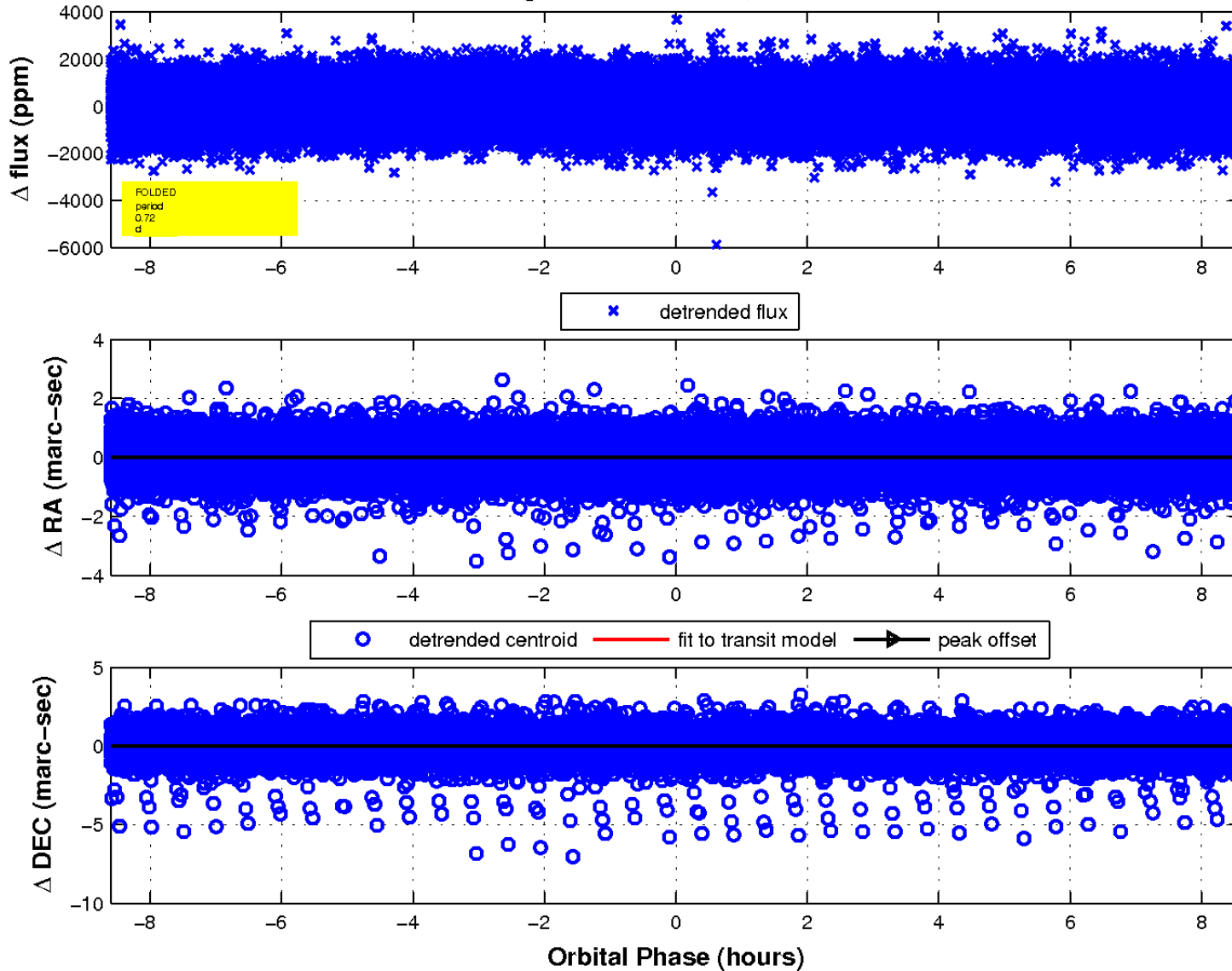
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

