

KIC 009157908

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})
009157908-01	OBS	1400.01	9.414745	132.916512	241.3	4.389	67.9	37.8	1.03	6406	2.02	203.03
009157908-02	OBS	No	9.414661	135.856497	121.7	4.161	18.6	19.4	1.03	6406	1.53	203.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009157908-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
009157908-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST

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 009157908-01

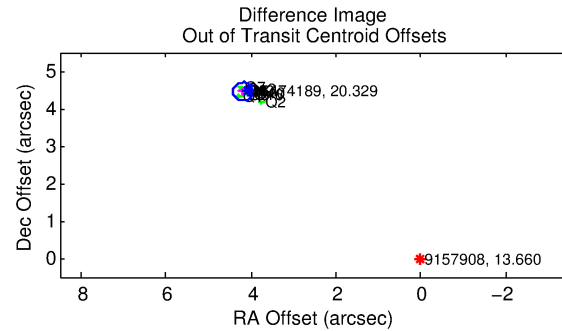
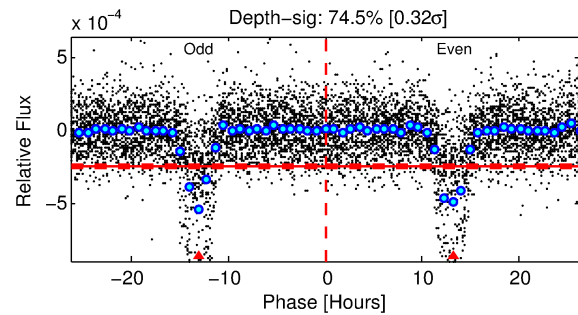
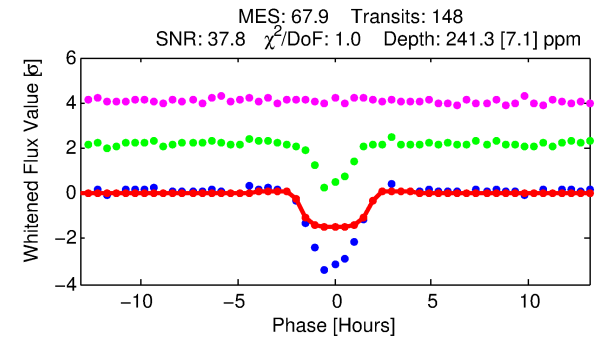
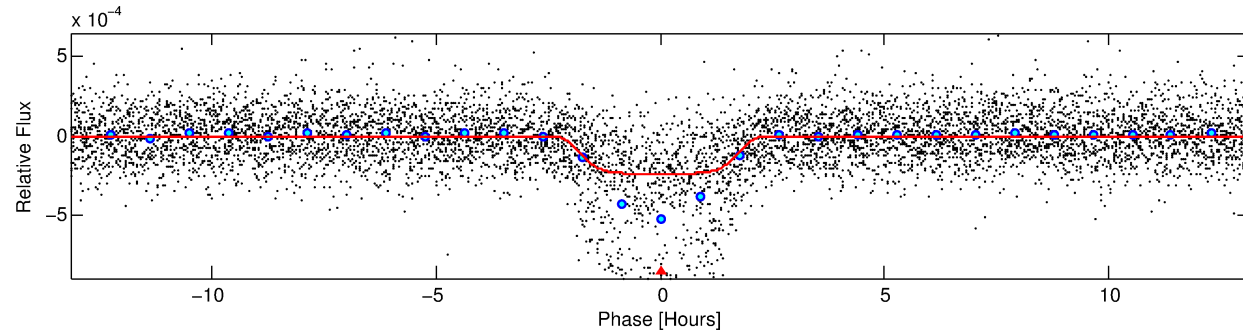
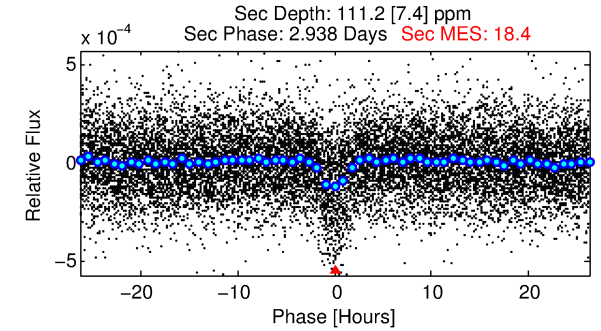
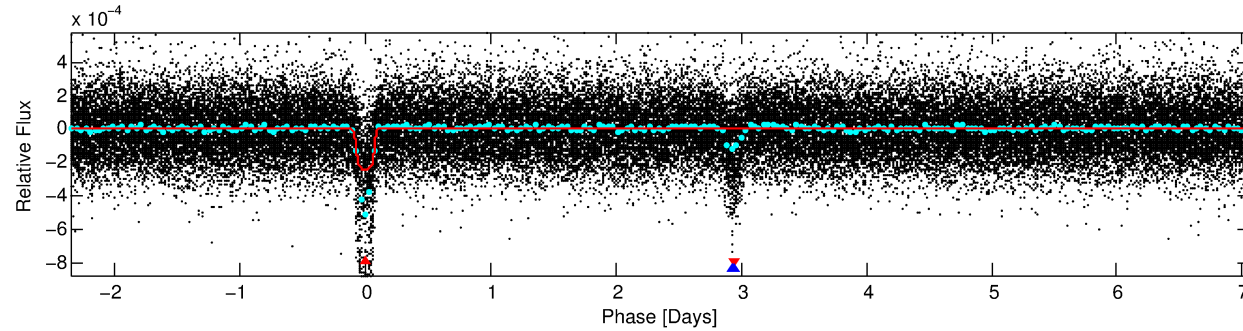
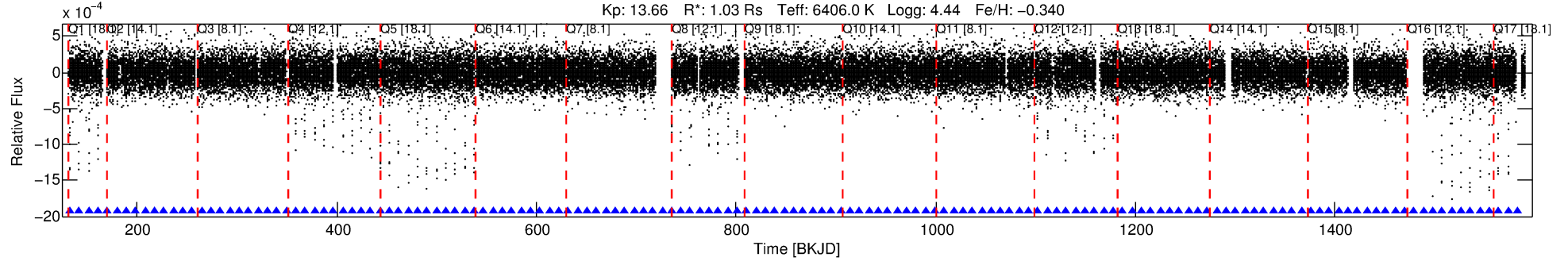
No Significant Match Found

DV One-Page Summary

KIC: 9157908 Candidate: 1 of 2 Period: 9.415 d

KOI: K01400.01 Corr: 0.974

Kp: 13.66 R*: 1.03 Rs Teff: 6406.0 K Logg: 4.44 Fe/H: -0.340



DV Fit Results:

Period = 9.41474 [0.00003] d
Epoch = 132.9165 [0.0024] BKJD
Rp/R* = 0.0180 [0.0005]
a/R* = 5.58 [0.60]
b = 0.96 [0.01]
Seff = 203.03 [84.30]
Teq = 963 [100] K
Rp = 2.02 [0.65] Re
a = 0.0891 [0.0241] AU
Ag = 118.47 [47.83] [2.46σ]
Teff = 4910 [189] K [18.47σ]

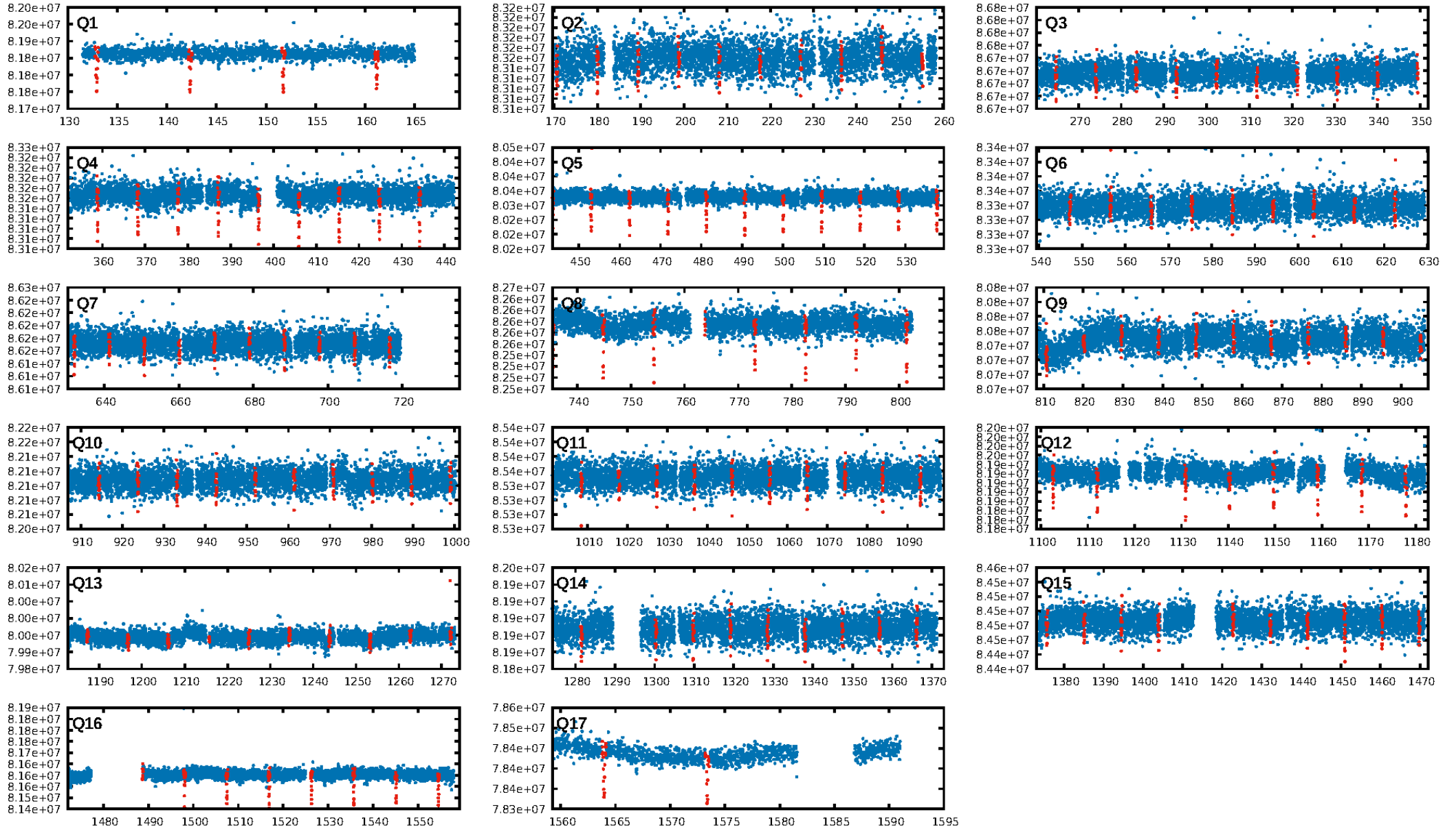
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [142/142]
GhostDiagnostic-chr: -0.2744
Centroid-sig: 0.0%
Centroid-so: 27.073 arcsec [96.39σ]
OotOffset-rm: 6.122 arcsec [76.04σ]
KicOffset-rm: 6.069 arcsec [74.92σ]
OotOffset-st: 2/1/4/5 [12]
KicOffset-st: 2/1/4/5 [12]
DiffImageQuality-fgm: 1.00 [12/12]
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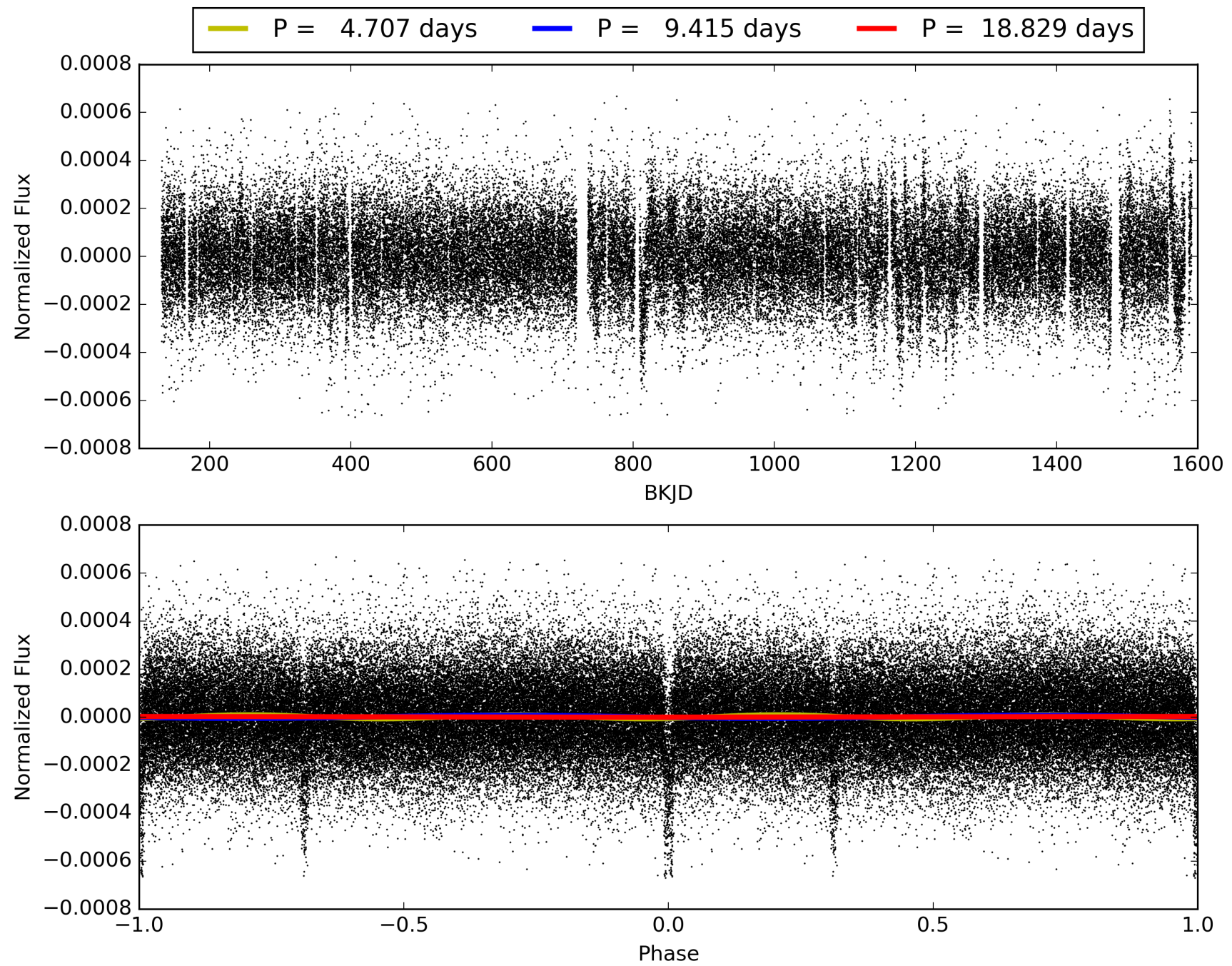
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:05:57 Z

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

TCE 009157908-01, PDC Light Curves

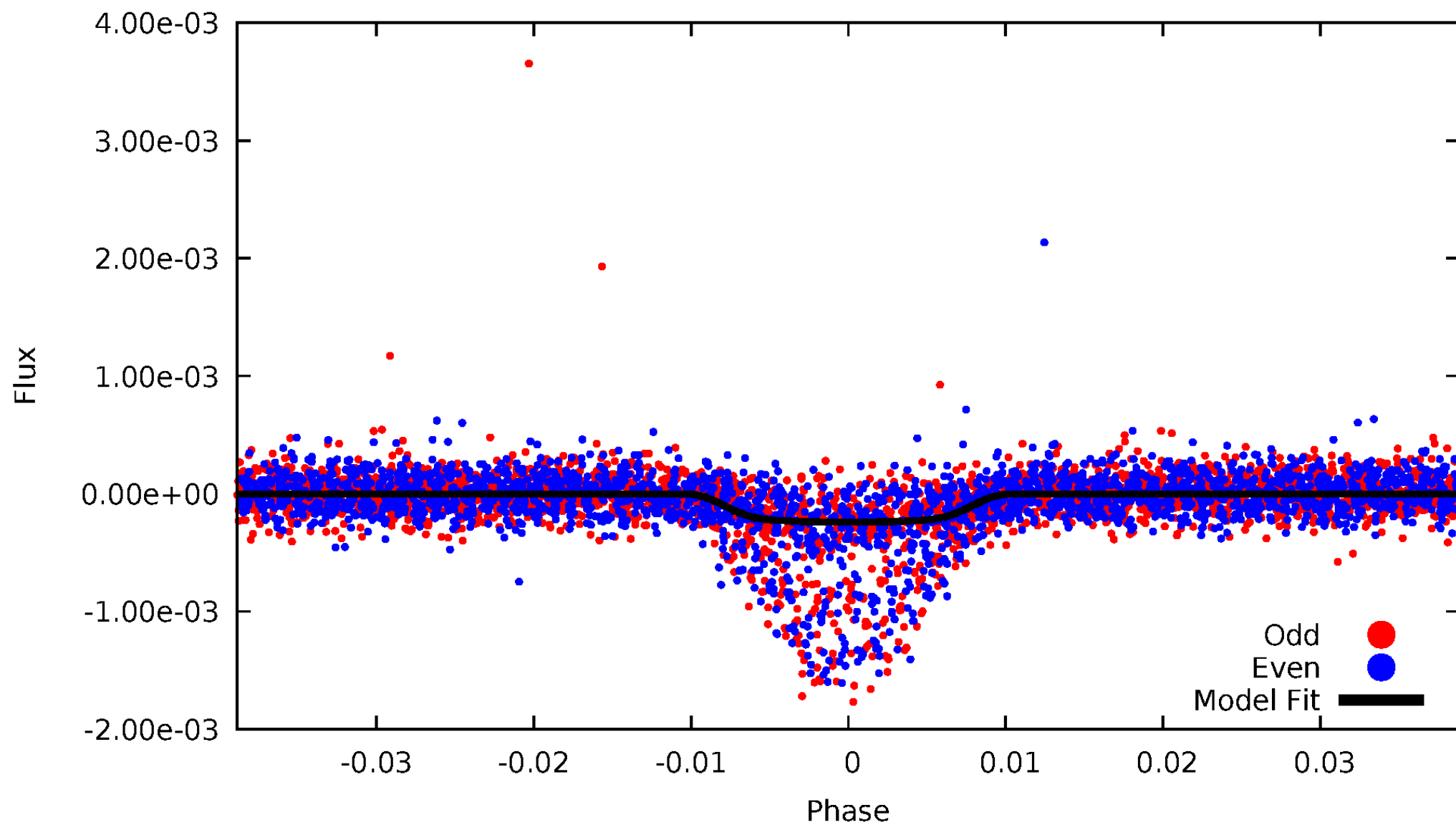


TCE 009157908-01



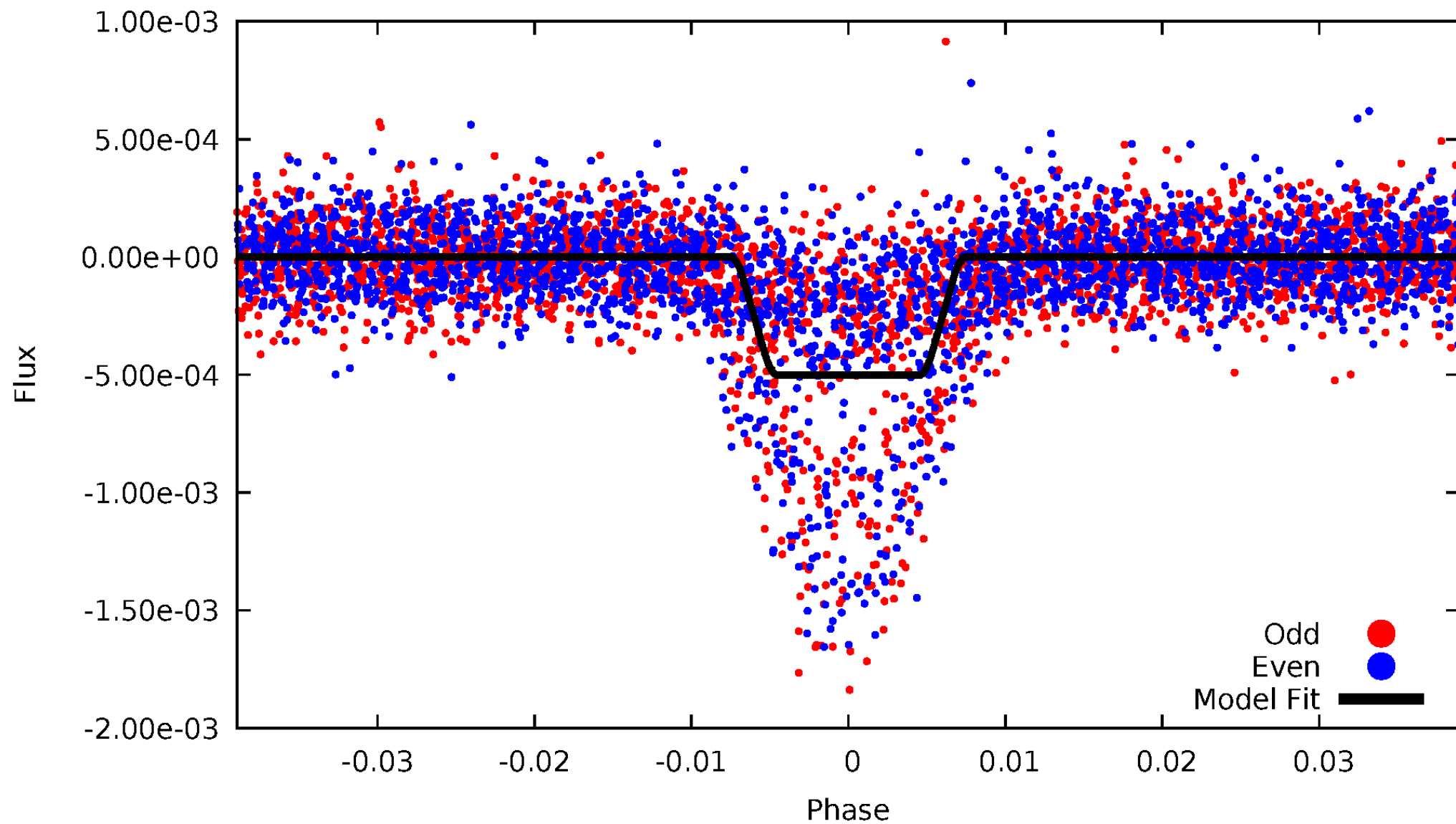
DV Odd/Even

TCE 009157908-01



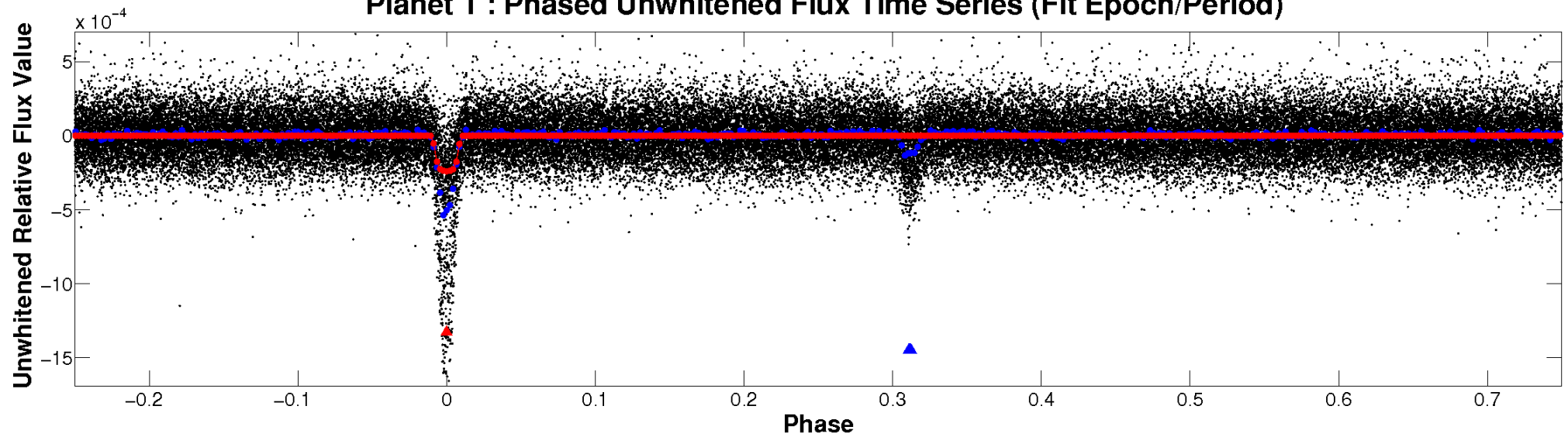
ALT Odd/Even

TCE 009157908-01

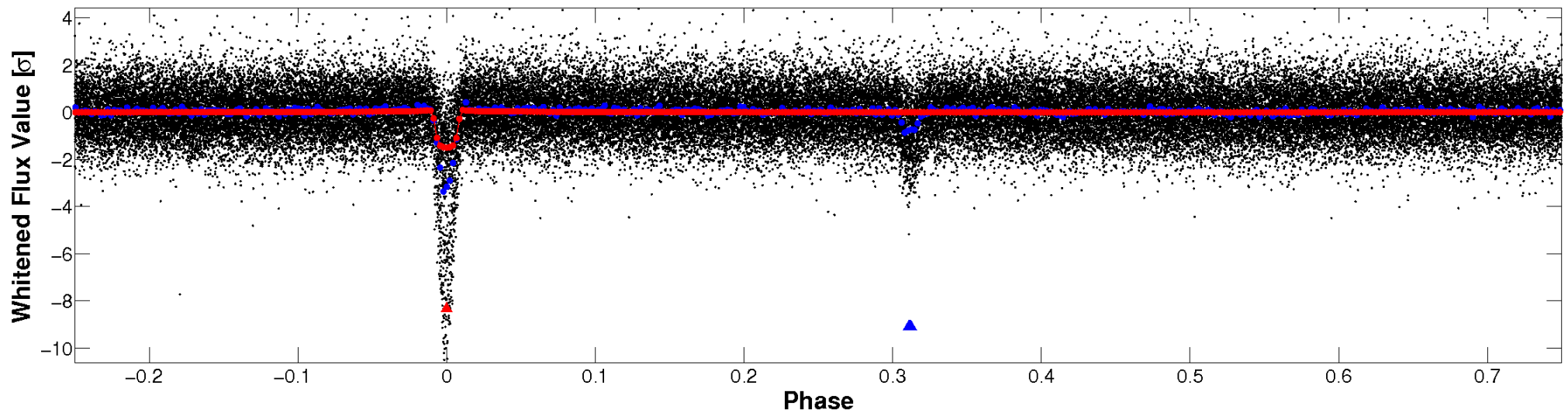


Non-Whitened Vs. Whitened Light Curve

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

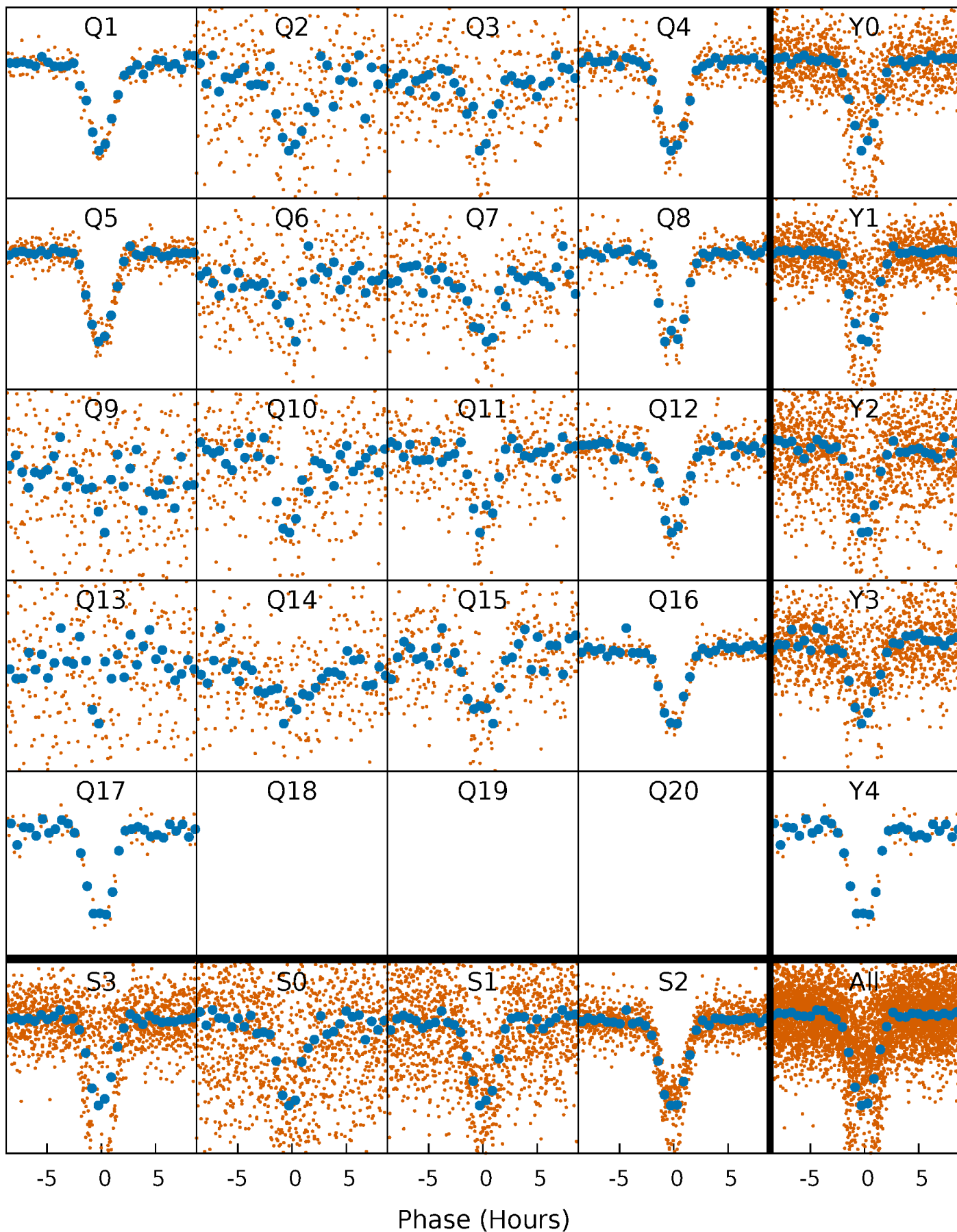


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



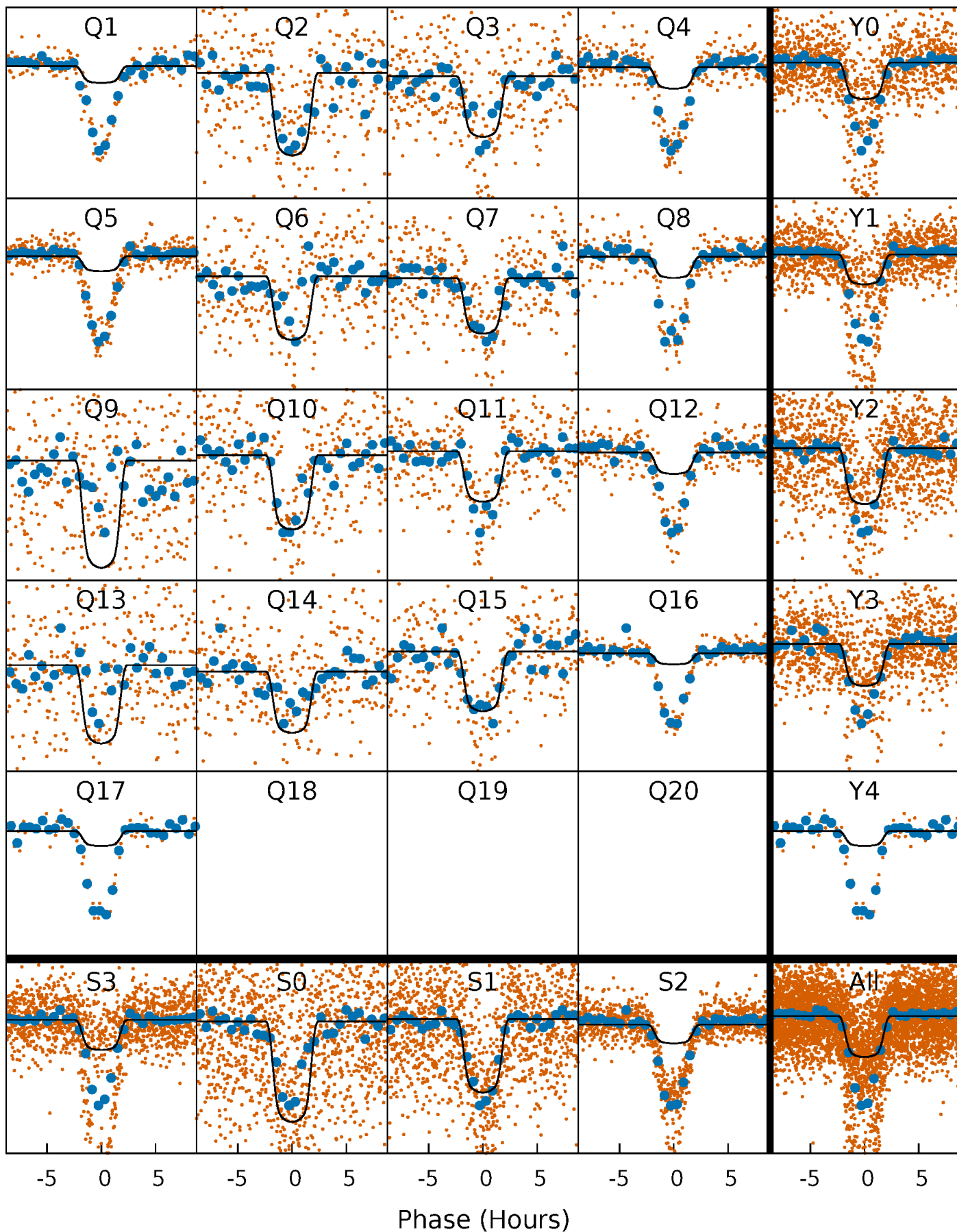
PDC Quarter-Phased Transit Curves

TCE 009157908-01 P= 9.414745 Days $T_0=132.916513$ (BKJD)



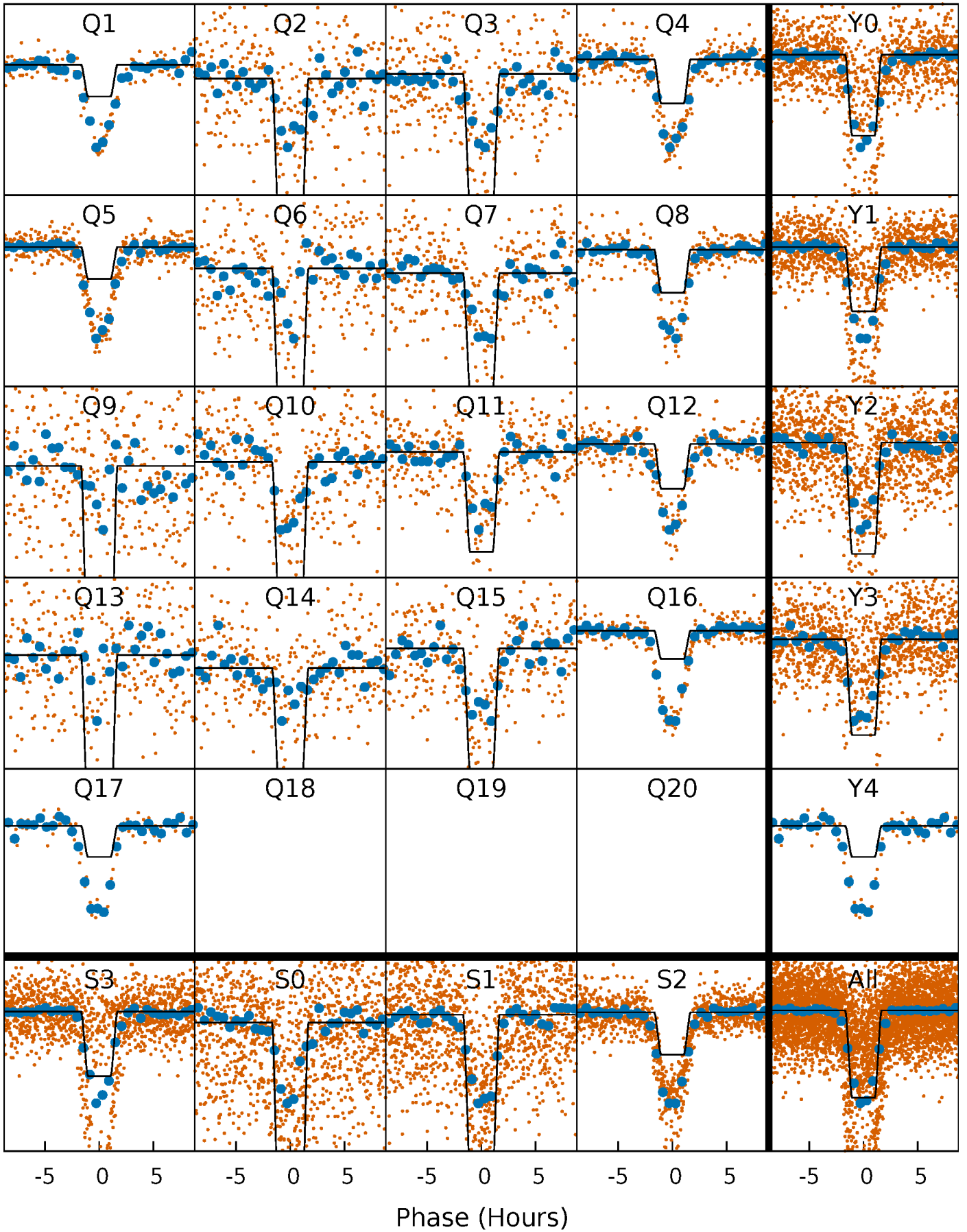
DV Quarter-Phased Transit Curves

TCE 009157908-01 P= 9.414745 Days $T_0=132.916513$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

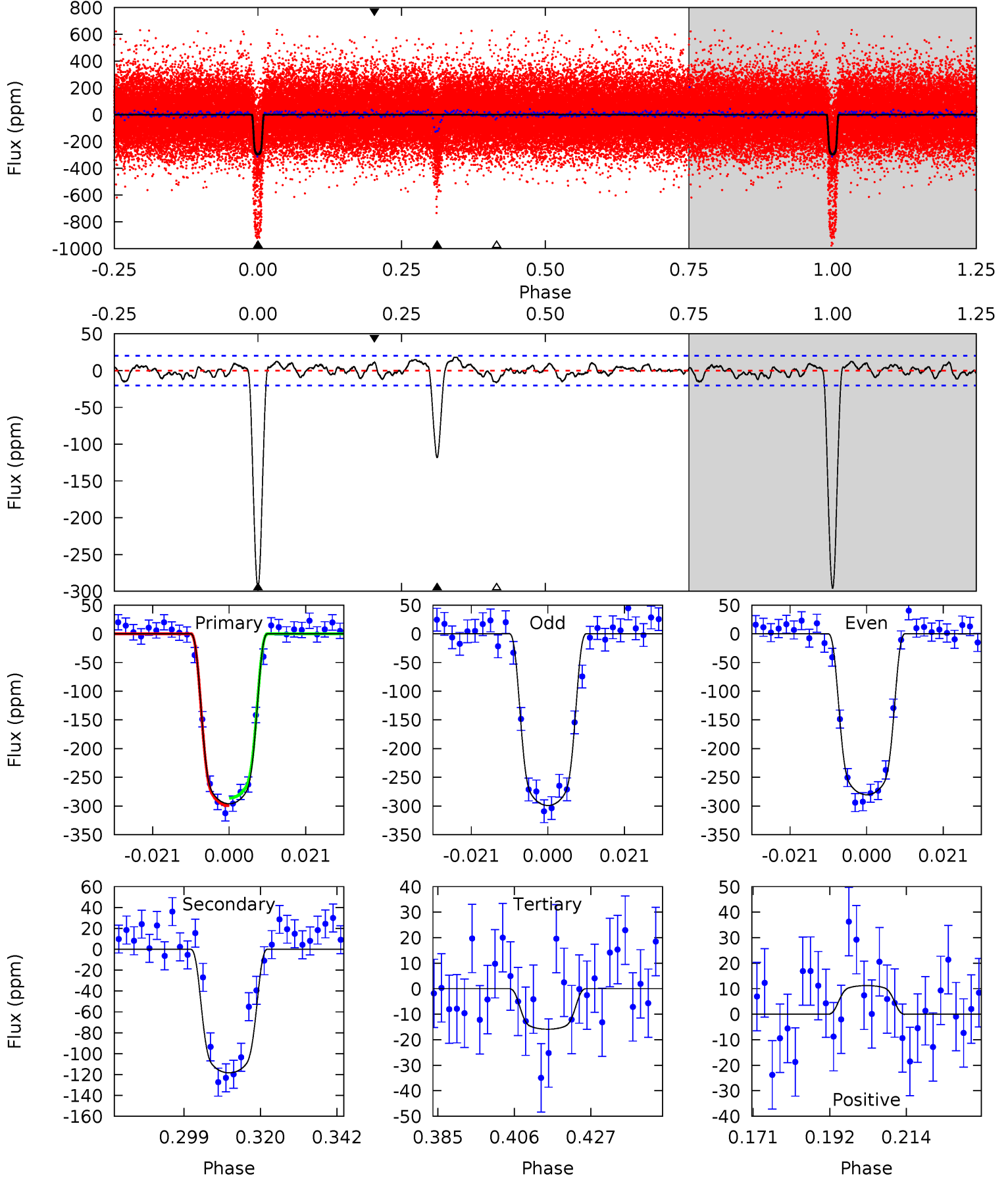
TCE 009157908-01 P= 9.414801 Days $T_0=132.910380$ (BKJD)



DV Model-Shift Uniqueness Test

009157908-01, P = 9.414745 Days, E = 123.501768 Days

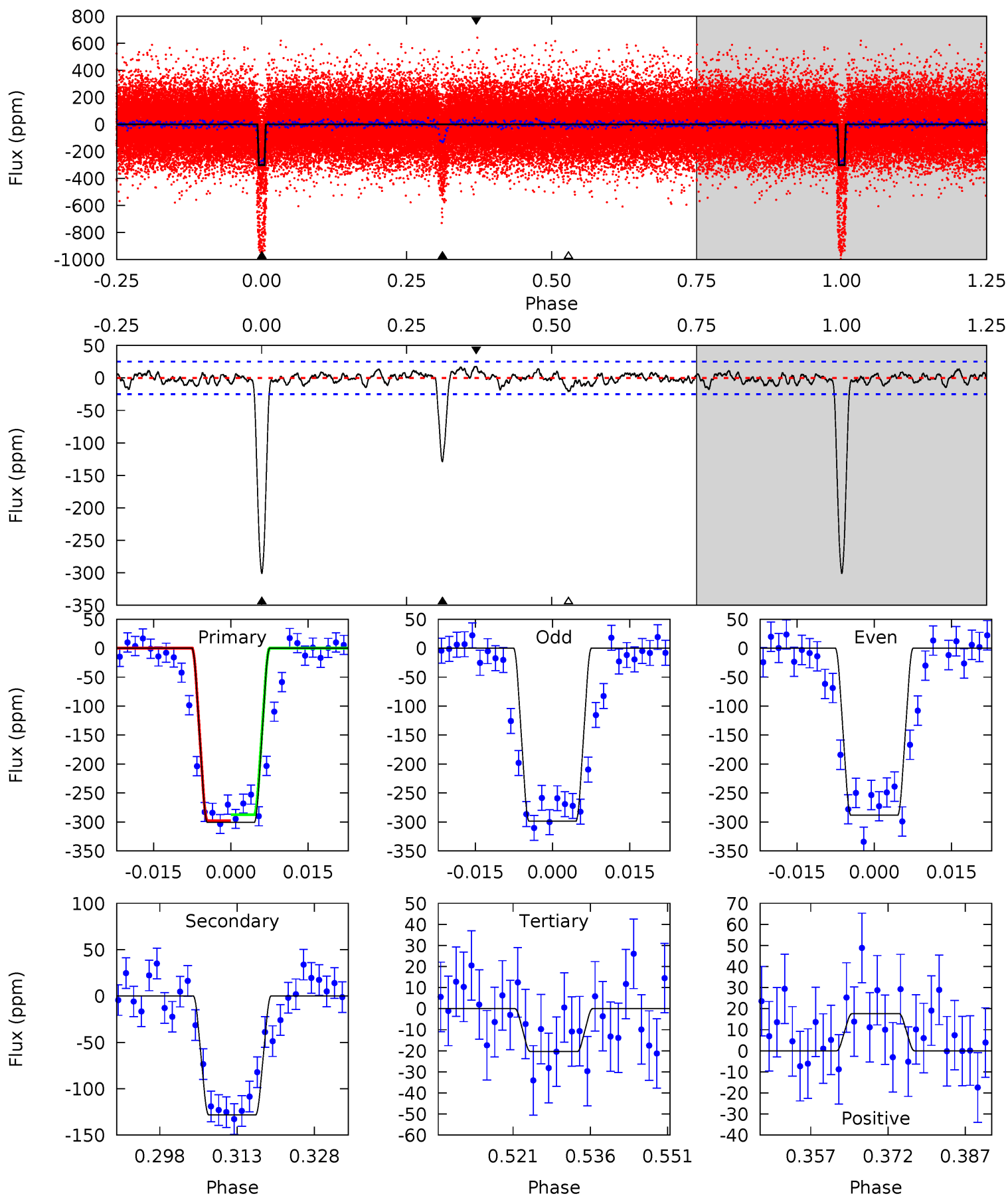
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.5	28.6	3.84	2.71	4.88	2.30	1.55	67.7	68.8	24.8	25.9	2.26	1.78	0.06	1.58



Alt Model-Shift Uniqueness Test

009157908-01, P = 9.414801 Days, E = 123.495579 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.5	25.4	4.03	3.49	4.95	2.44	1.32	55.5	56.0	21.4	21.9	1.01	1.81	0.06	1.03



Stellar Parameters For KIC 009157908

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6406^{+158}_{-206}	$4.436^{+0.067}_{-0.216}$	$-0.340^{+0.250}_{-0.300}$	$1.033^{+0.332}_{-0.111}$	$1.061^{+0.156}_{-0.128}$	$1.355^{+0.385}_{-0.710}$
	+2%/-3%	+2%/-5%	+74%/-88%	+32%/-11%	+15%/-12%	+28%/-52%
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 009157908-01 / KOI 1400.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-118 ± 4	$2.09^{+0.38}_{-0.18}$	1375^{+106}_{-71}	5051^{+124}_{-142}	115^{+22}_{-30}
Alt.	-128 ± 5	$2.59^{+0.44}_{-0.21}$	1368^{+99}_{-69}	4689^{+113}_{-119}	82^{+14}_{-21}

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

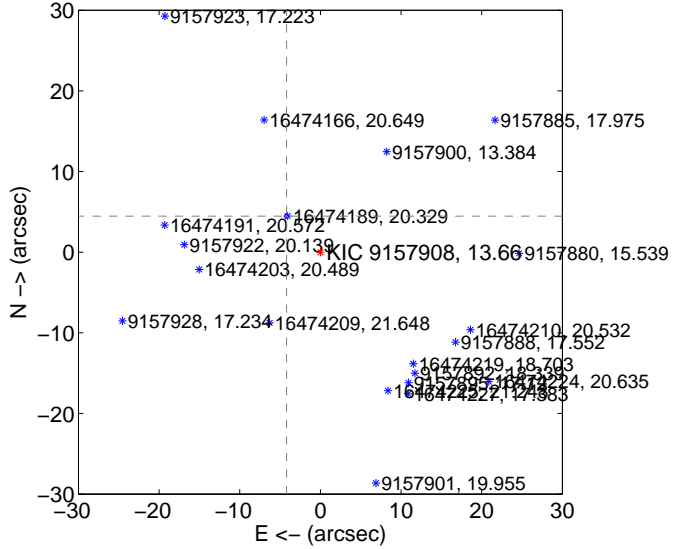
Supplemental centroid analysis for 009157908-01. Kepler magnitude: 13.66. Transit SNR 37.85

There are 12 quarters with good PRF difference image offsets

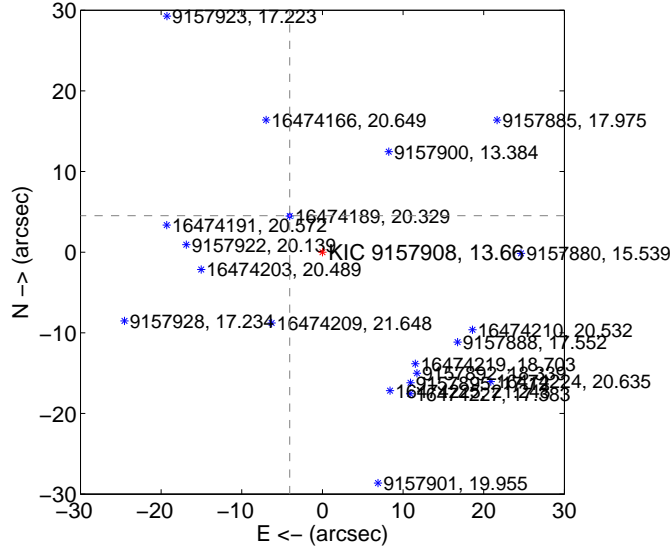
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.122 \pm 0.081	76.04	4.194 \pm 0.076	4.460 \pm 0.073
PRF-fit source offset from KIC position	6.069 \pm 0.081	74.92	4.054 \pm 0.079	4.516 \pm 0.073
photometric centroid source offset	27.07 \pm 0.28	96.39	18.60 \pm 0.28	19.67 \pm 0.28

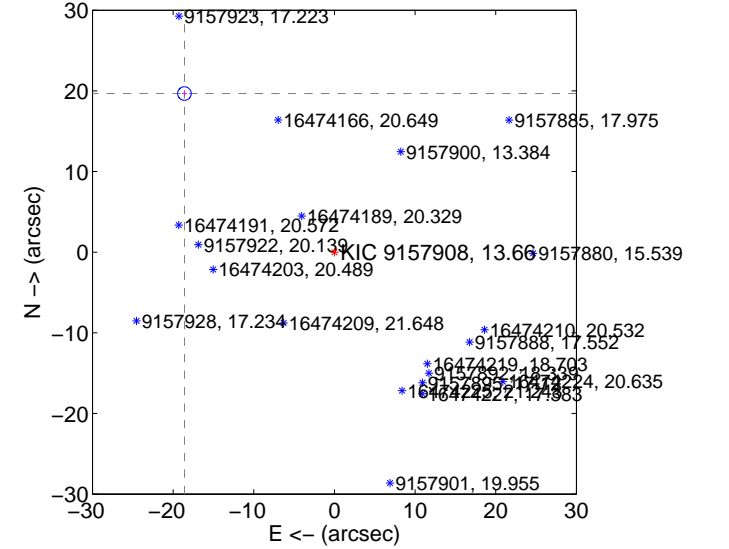
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

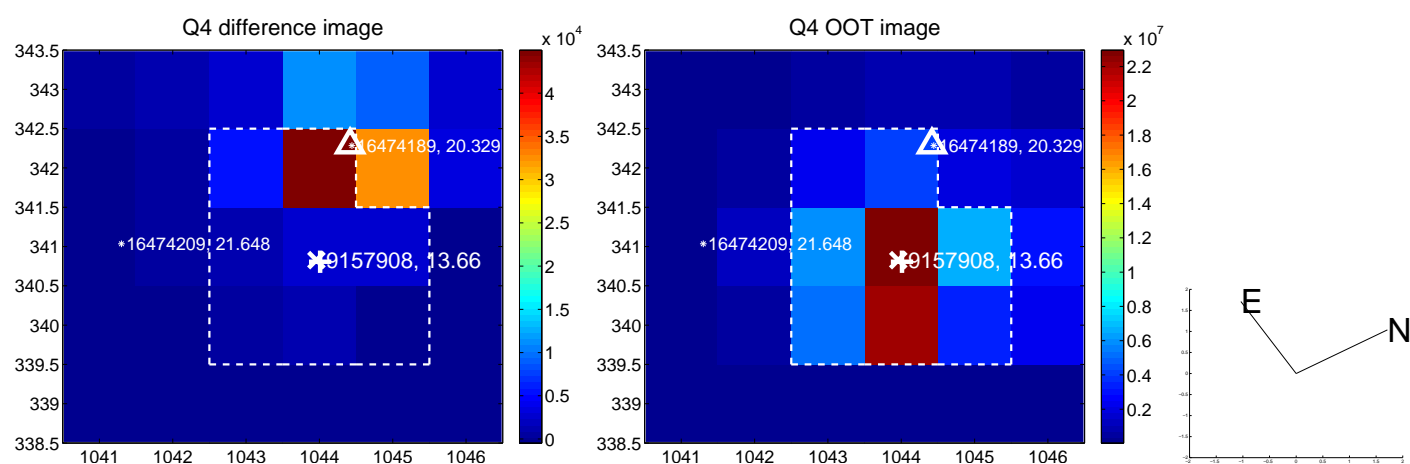
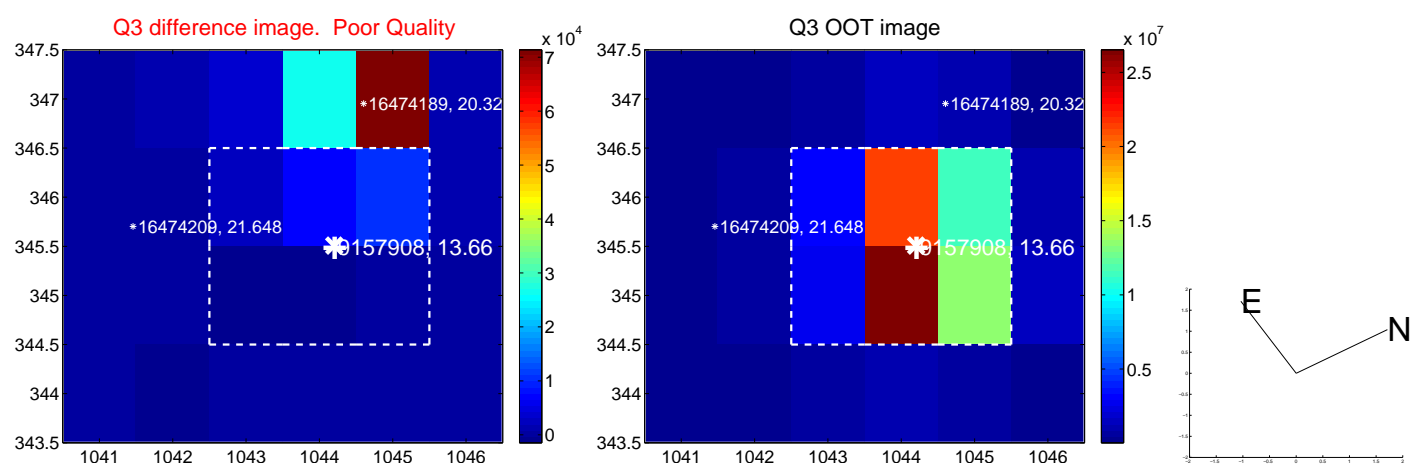
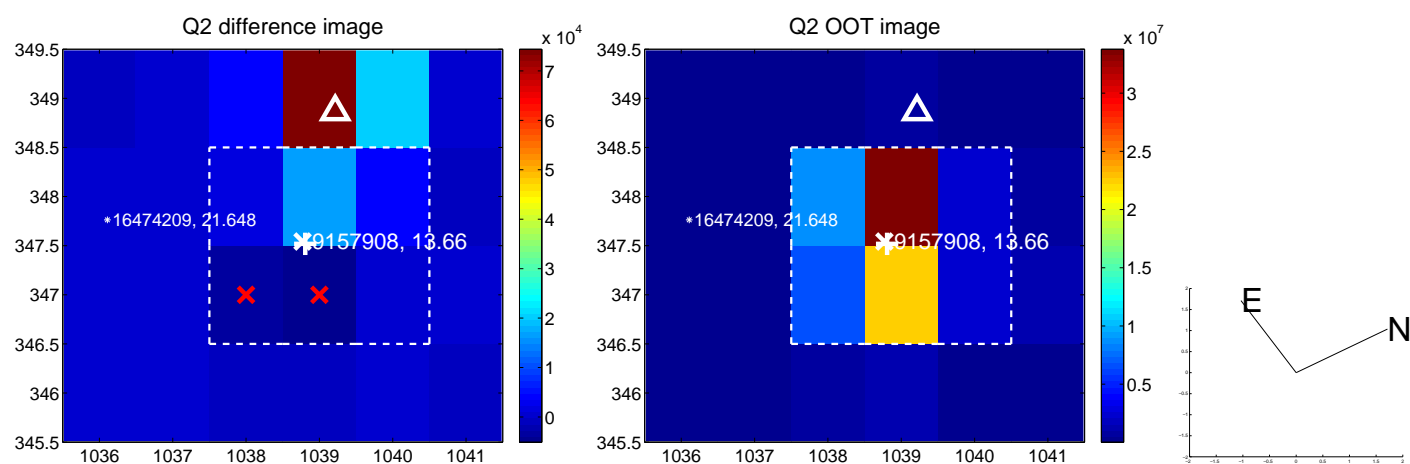
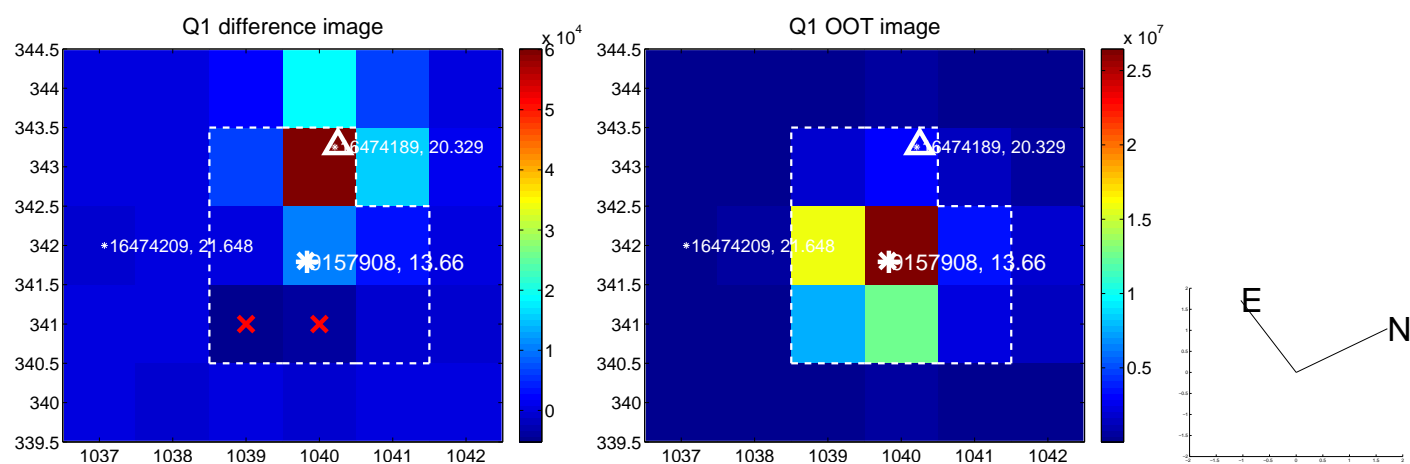


offset from photometric centroids

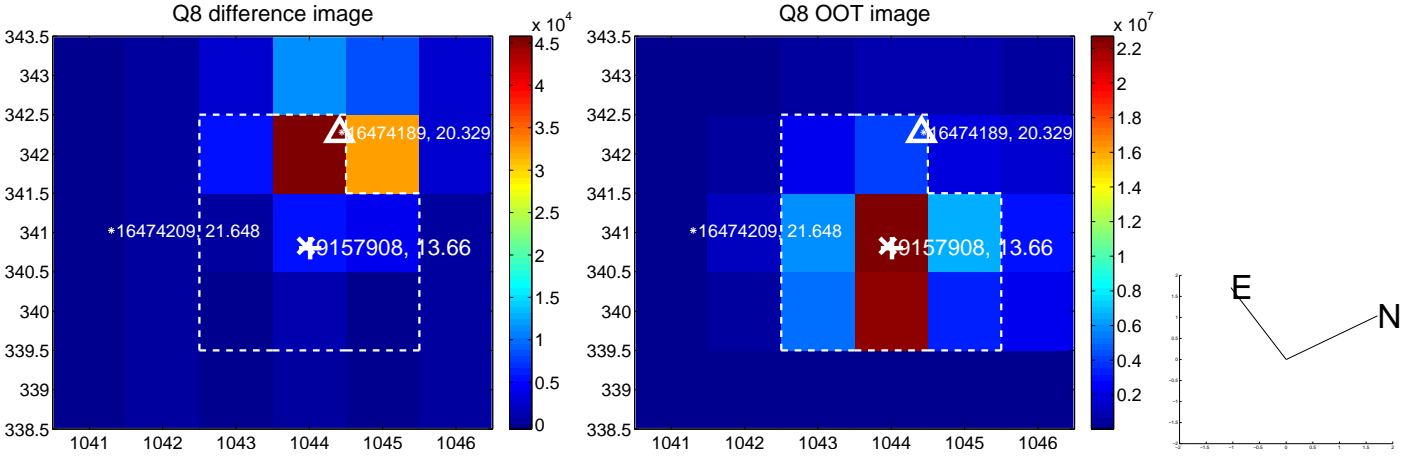
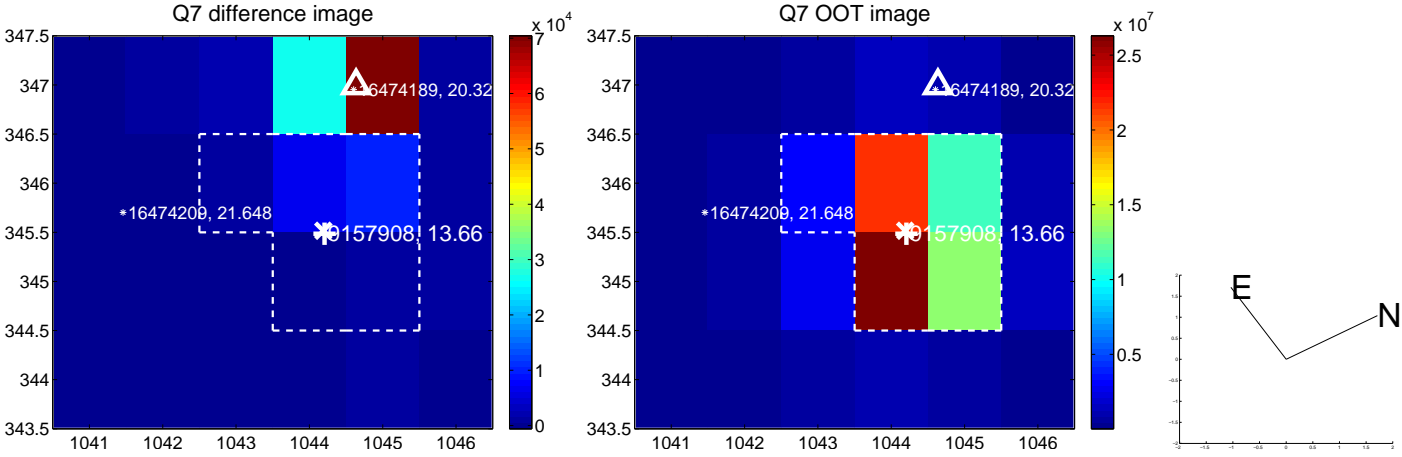
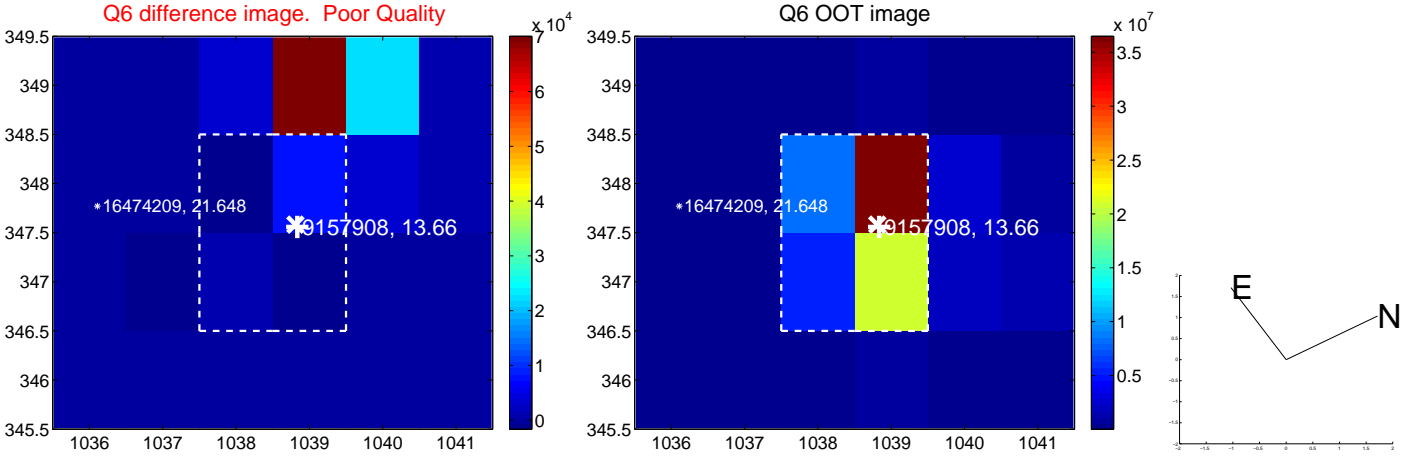
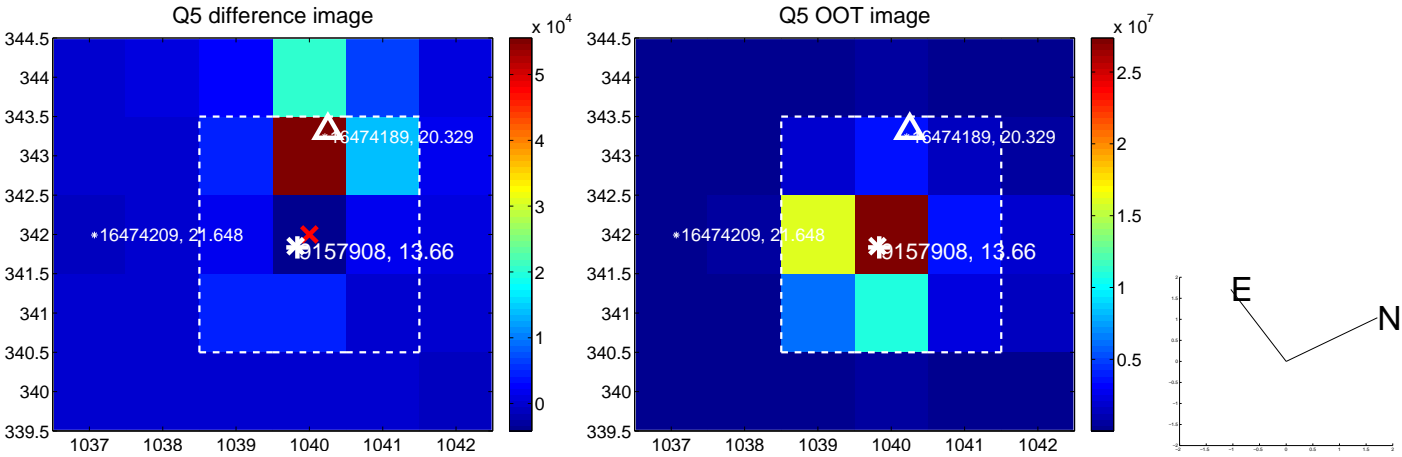


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

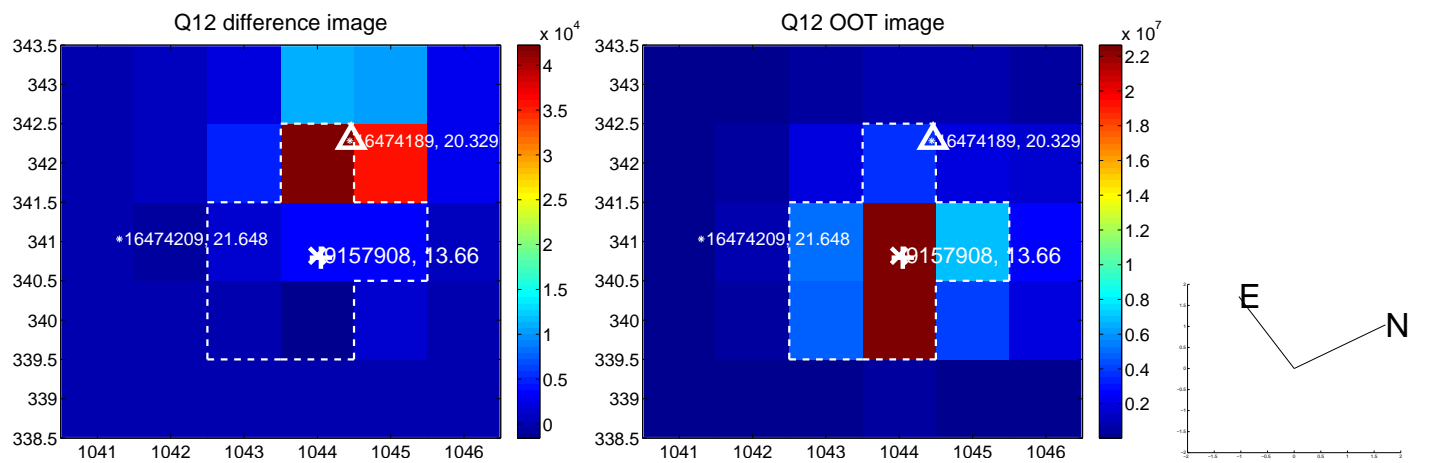
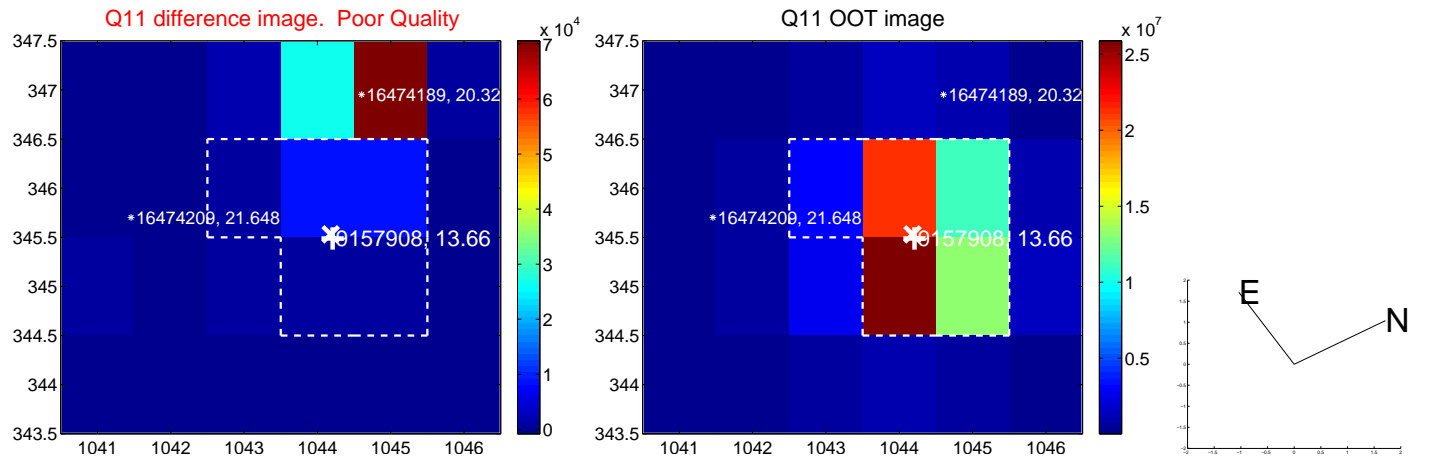
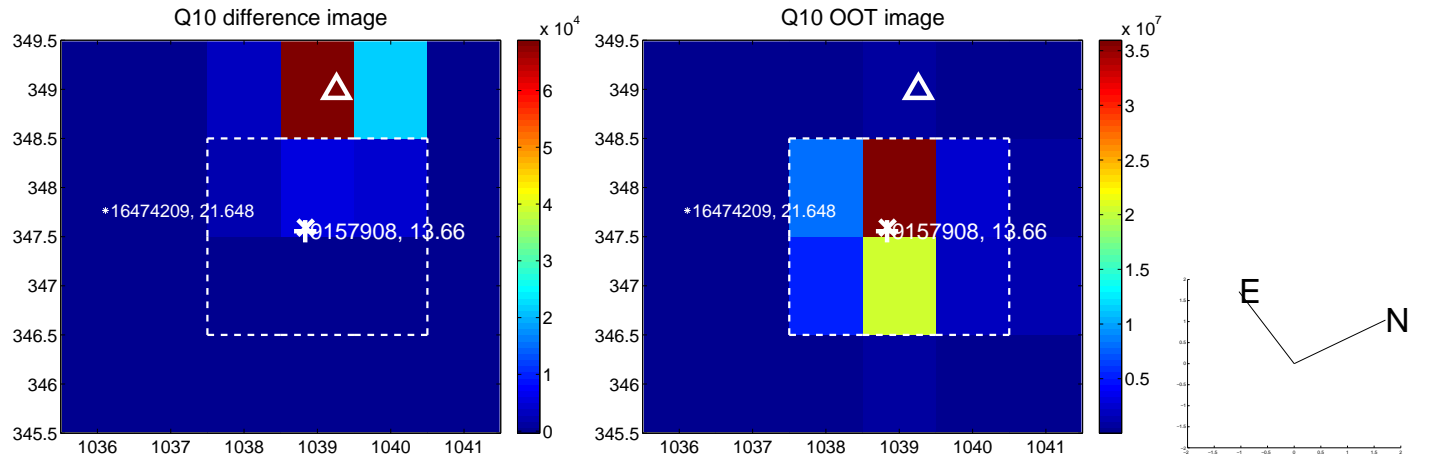
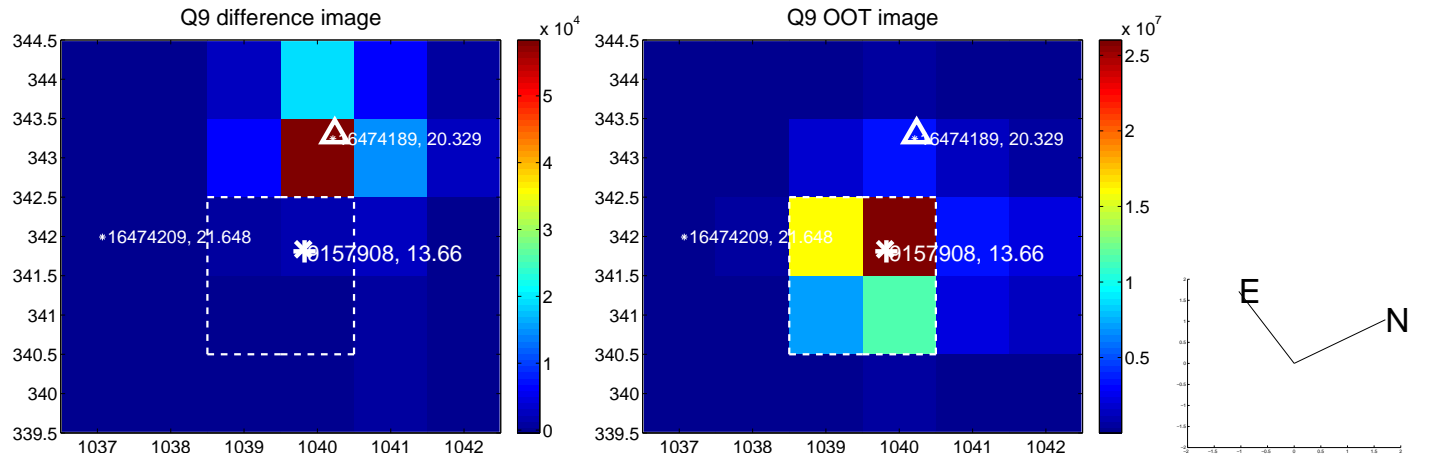
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



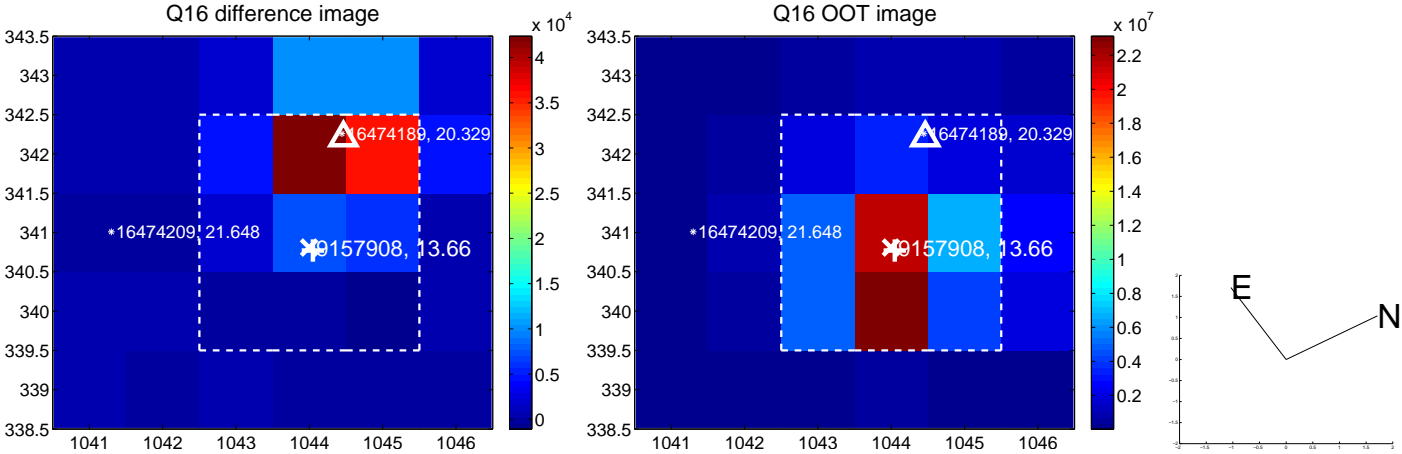
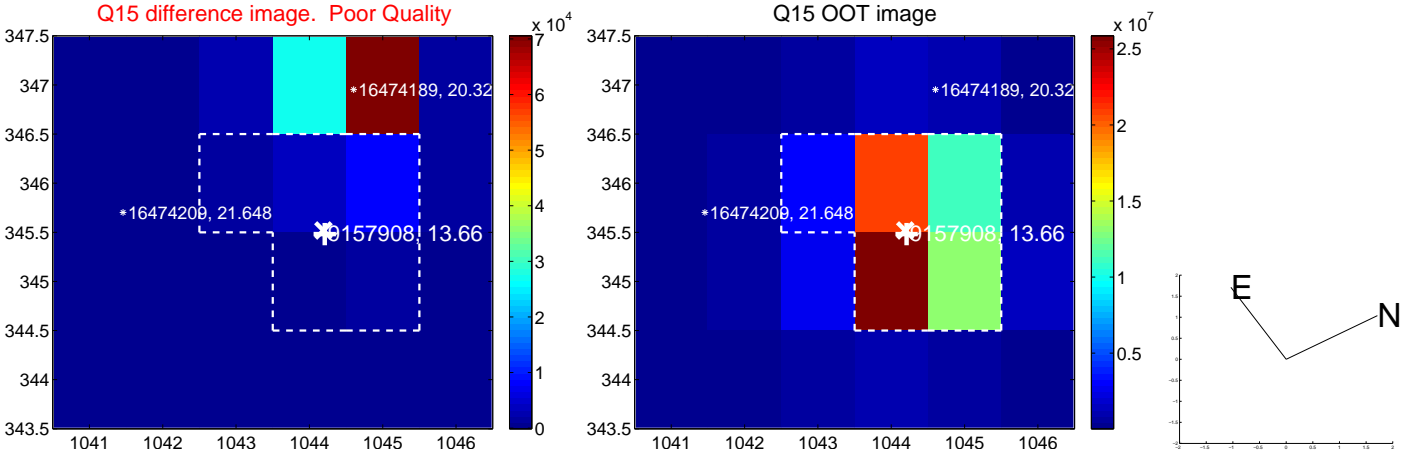
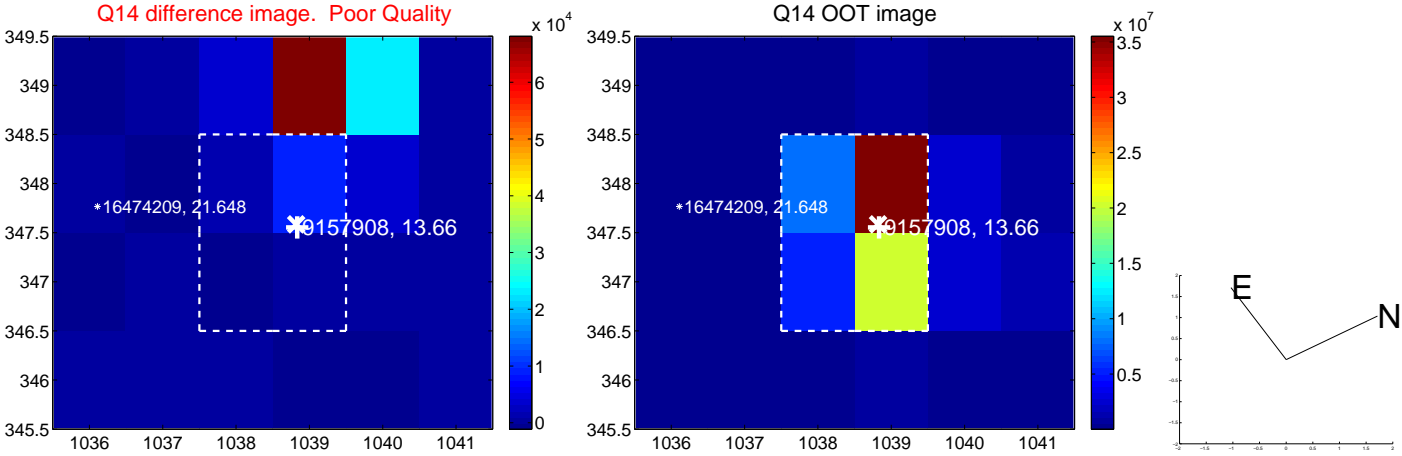
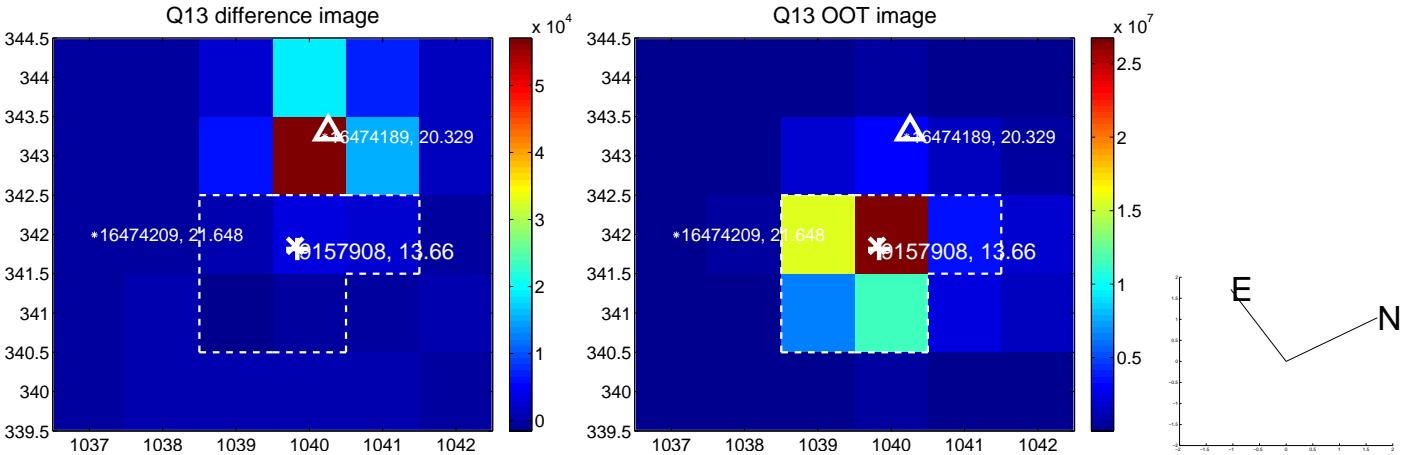
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



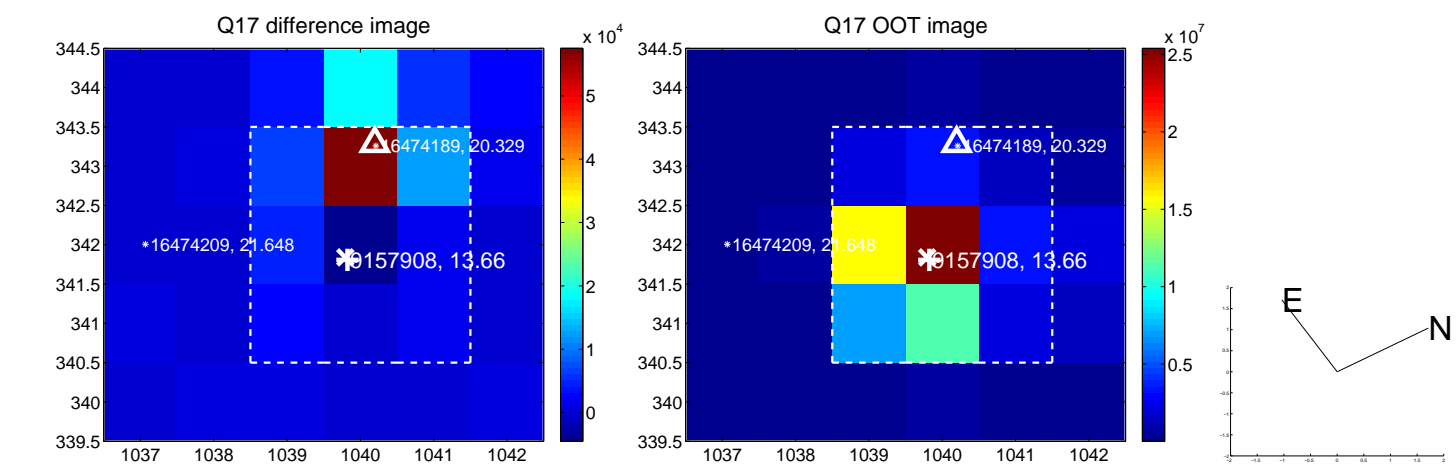
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



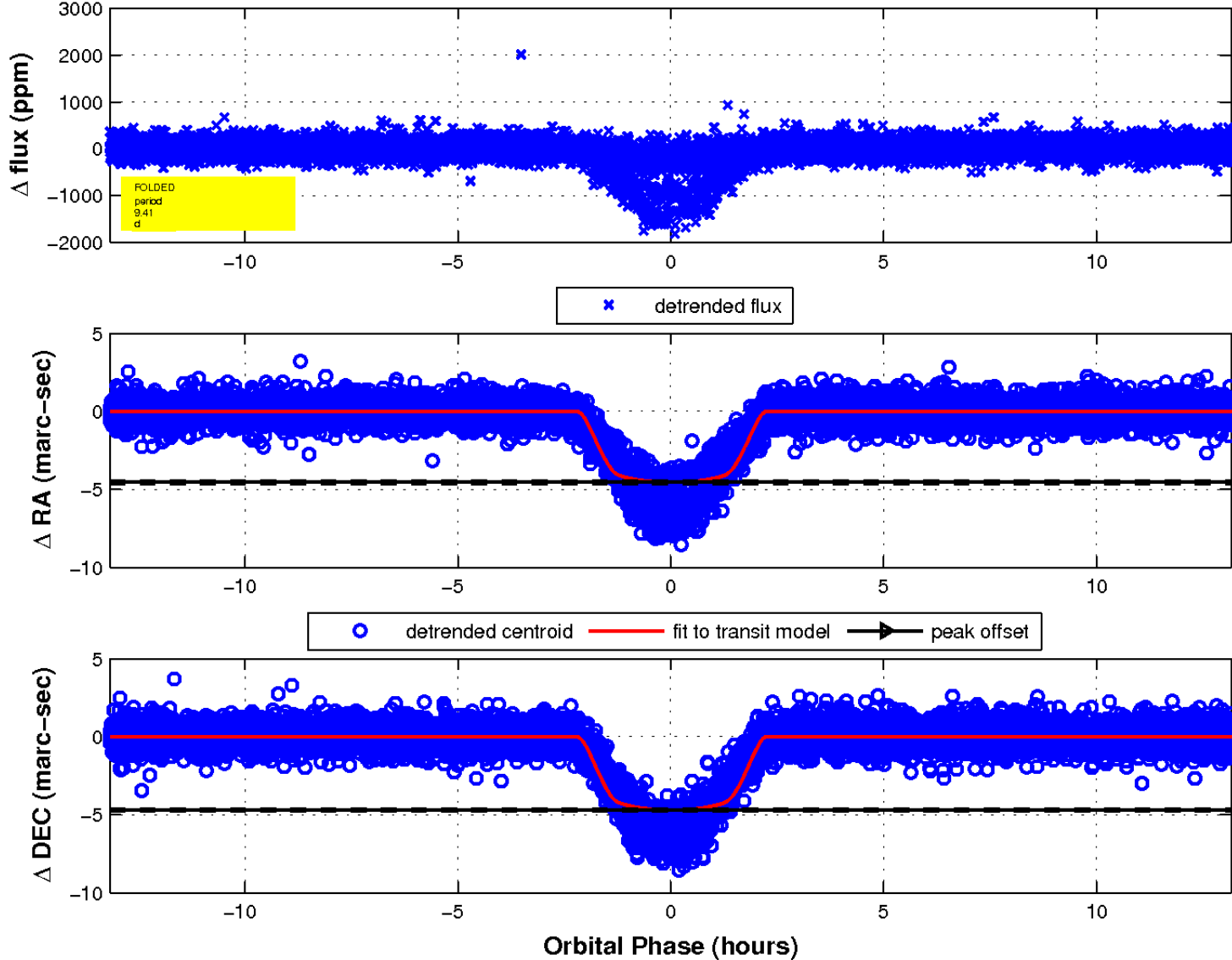
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

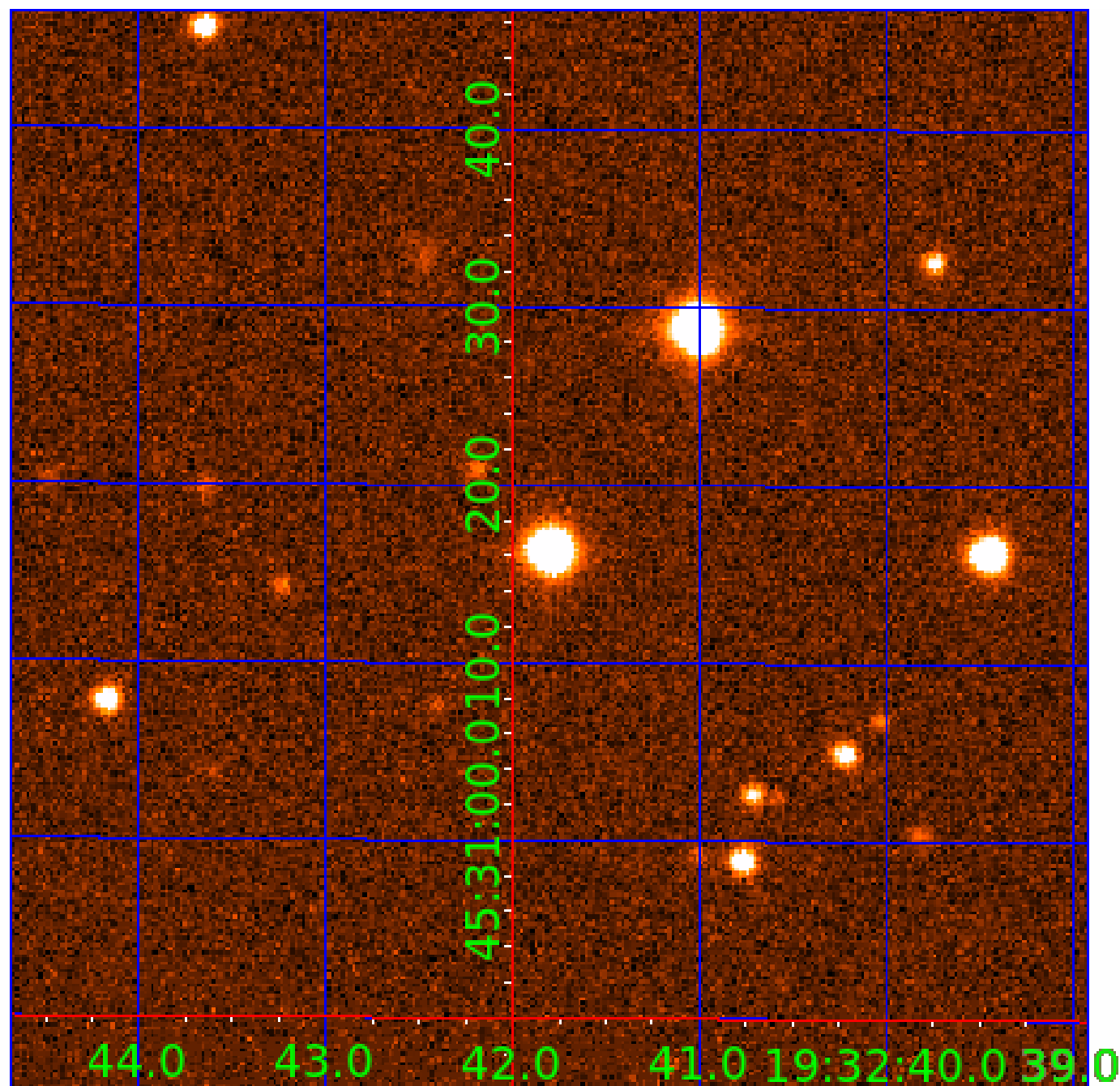


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009157908

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})
009157908-01	OBS	1400.01	9.414745	132.916512	241.3	4.389	67.9	37.8	1.03	6406	2.02	203.03
009157908-02	OBS	No	9.414661	135.856497	121.7	4.161	18.6	19.4	1.03	6406	1.53	203.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009157908-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
009157908-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST

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.

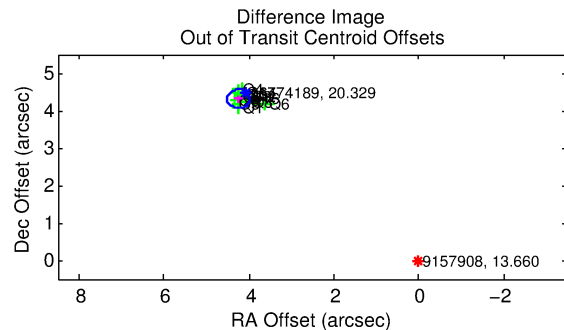
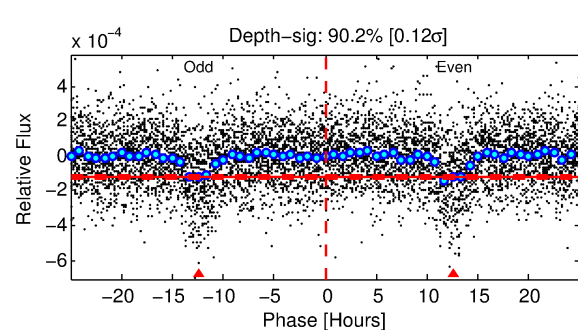
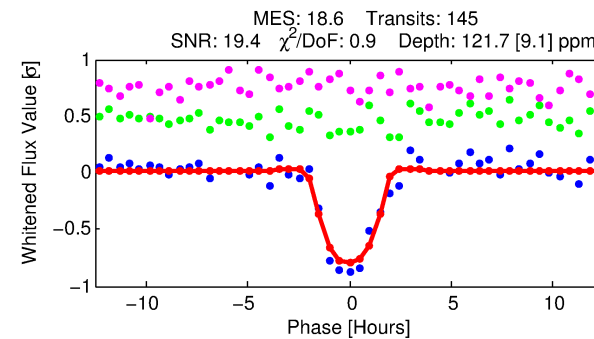
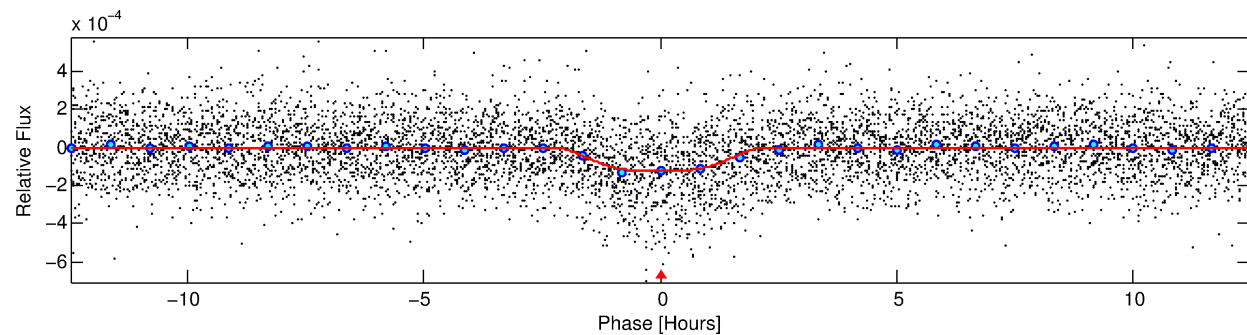
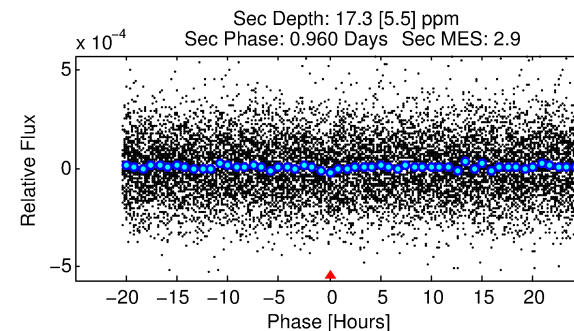
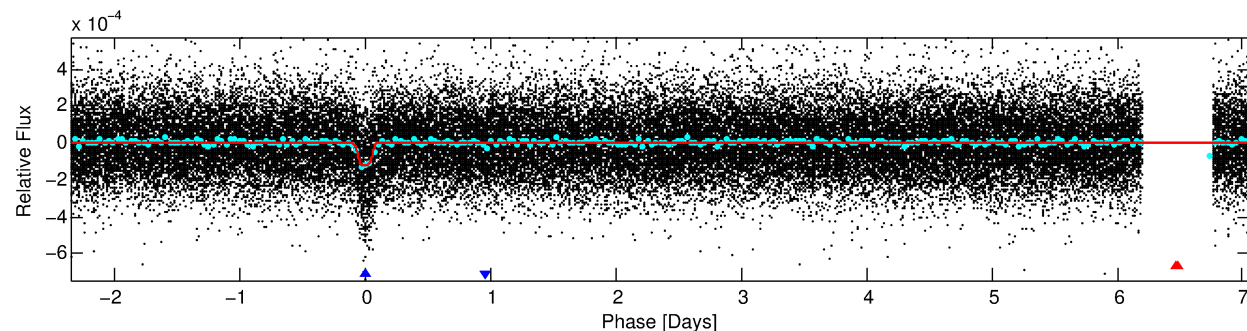
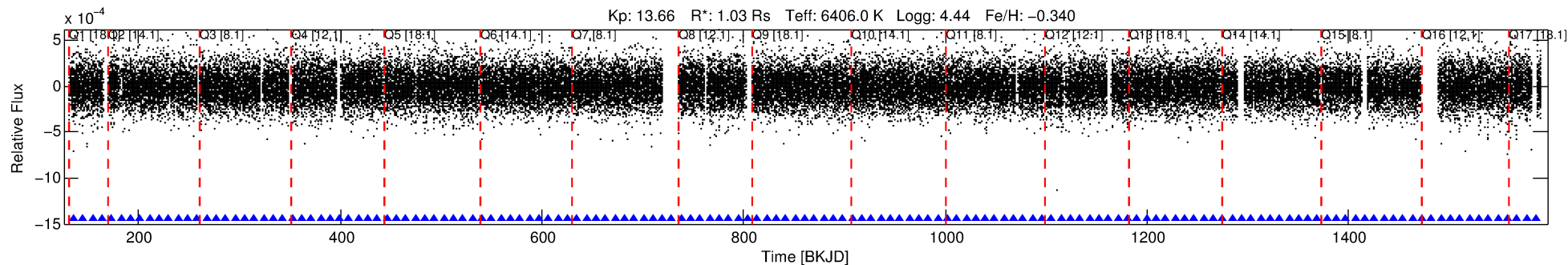
Ephemeris Match Information For 009157908-02

No Significant Match Found

DV One-Page Summary

KIC: 9157908 Candidate: 2 of 2 Period: 9.415 d
KOI: K01400 Corr: No Ephemeris Match

Kp: 13.66 R*: 1.03 Rs Teff: 6406.0 K Logg: 4.44 Fe/H: -0.340



DV Fit Results:

Period = 9.41466 [0.00006] d
Epoch = 135.8565 [0.0051] BKJD
Rp/R* = 0.0136 [0.0007]
a/R* = 4.35 [0.53]
b = 0.98 [0.00]
Seff = 203.03 [84.30]
Teq = 963 [100] K
Rp = 1.54 [0.50] Re
a = 0.0890 [0.0241] AU
Ag = 31.97 [16.57] [1.87σ]
Teffp = 3539 [318] K [7.72σ]

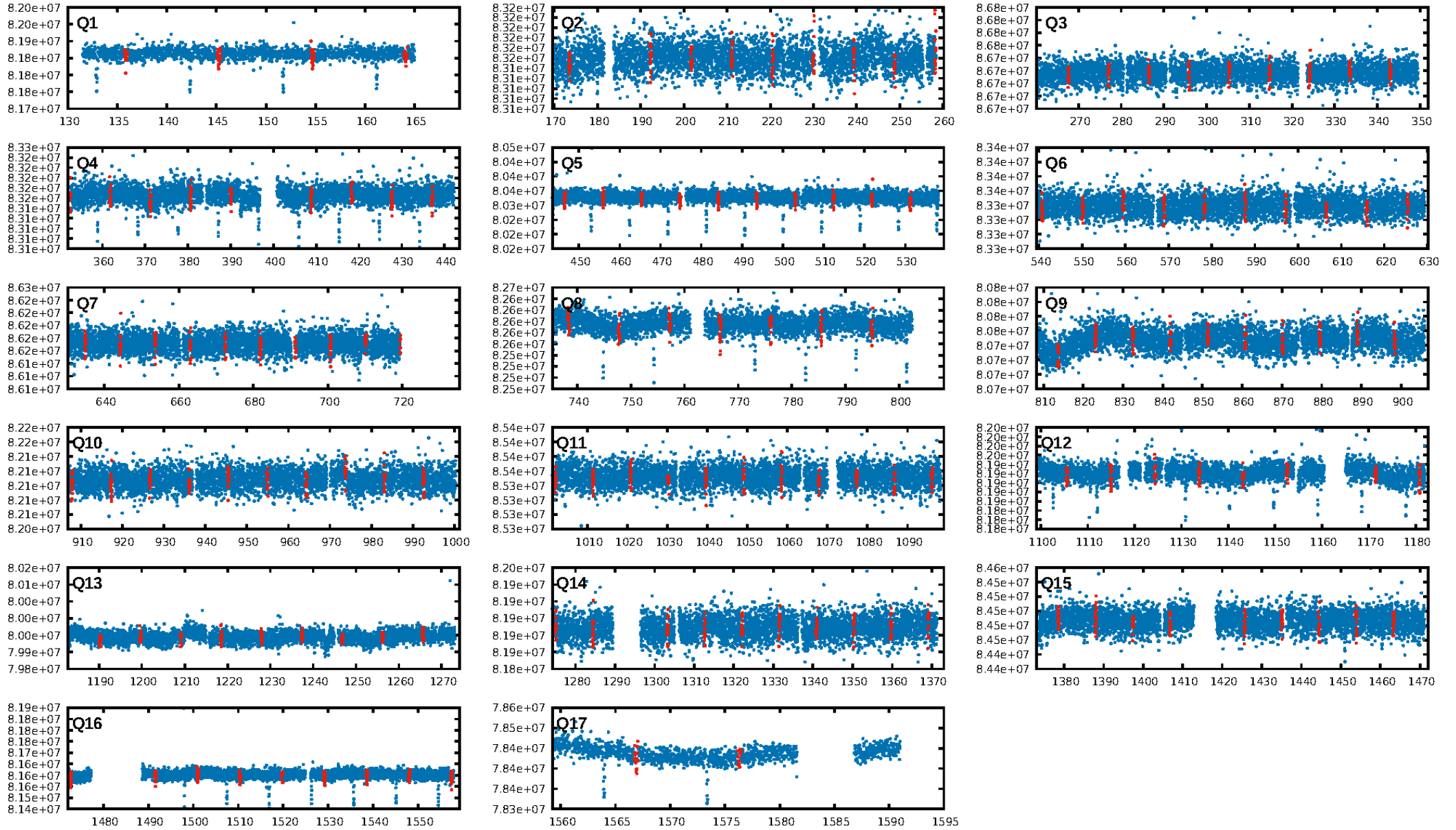
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.42e-75
RollingBand-fgt: 1.00 [139/139]
GhostDiagnostic-chr: -0.09102
Centroid-sig: 0.0%
Centroid-so: 17.525 arcsec [28.76σ]
OotOffset-rm: 6.051 arcsec [70.34σ]
KicOffset-rm: 5.997 arcsec [70.22σ]
OotOffset-st: 1/1/4/5 [11]
KicOffset-st: 1/1/4/5 [11]
DiffImageQuality-fgm: 1.00 [11/11]
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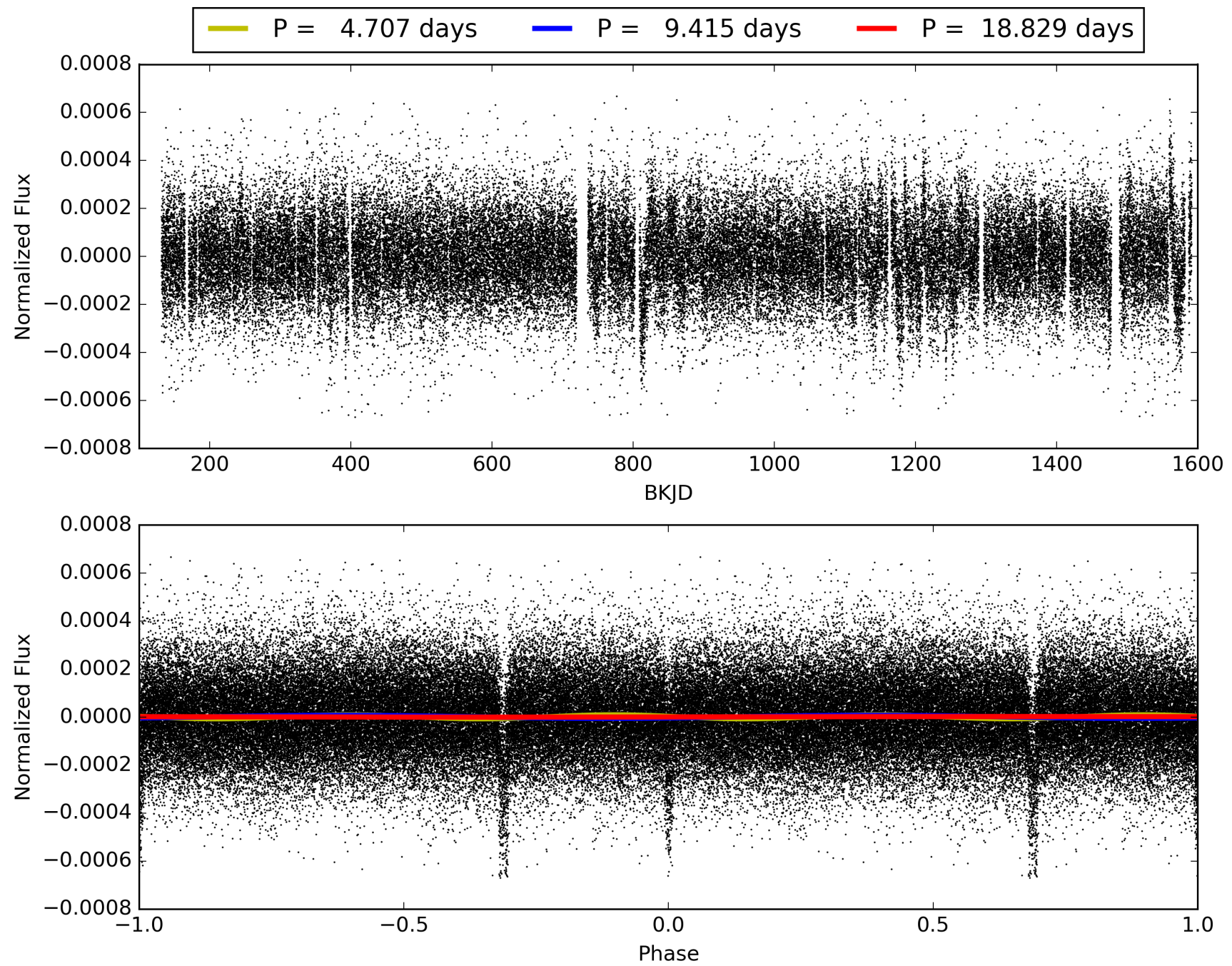
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:06:04 Z

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

TCE 009157908-02, PDC Light Curves

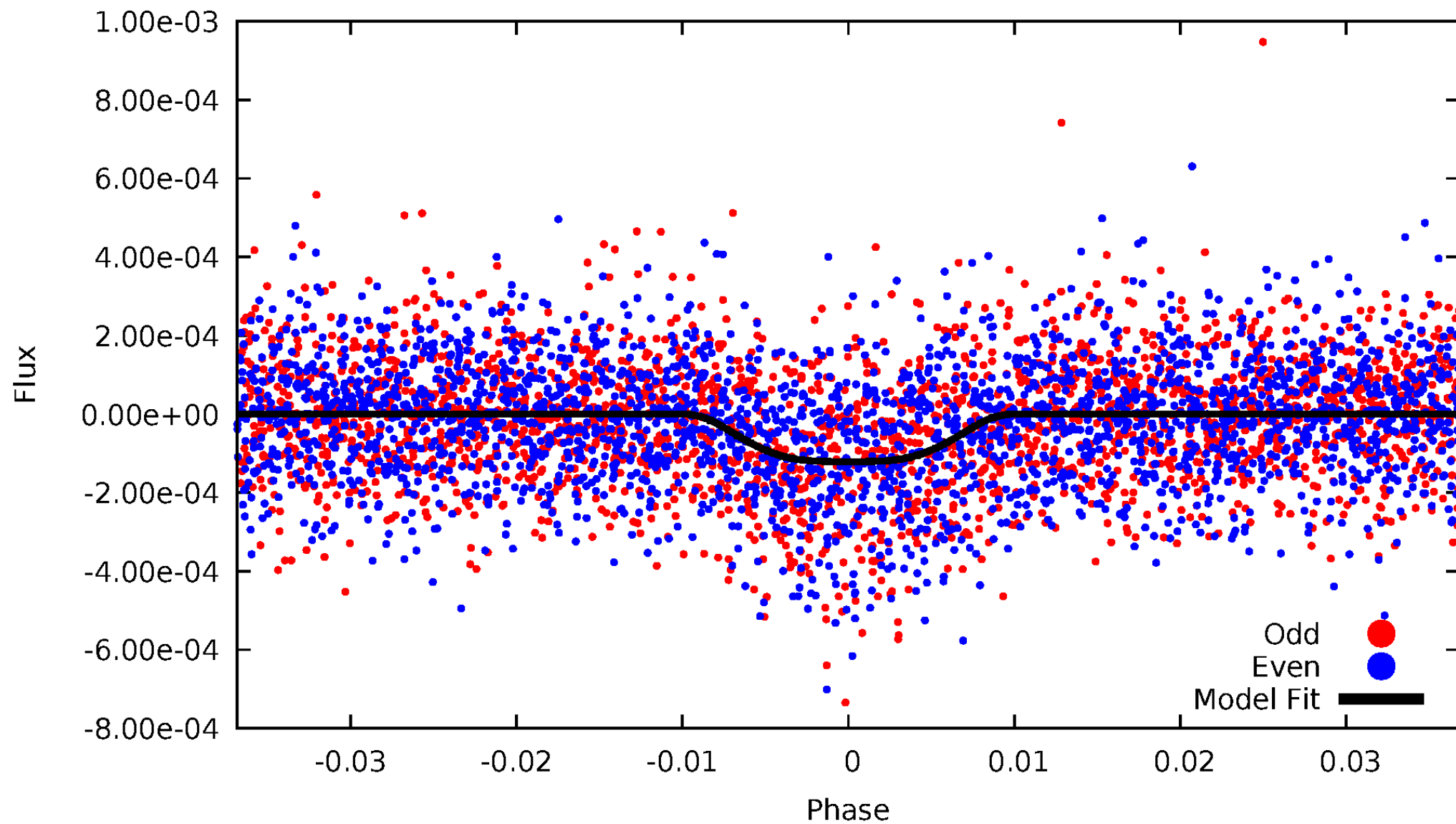


TCE 009157908-02



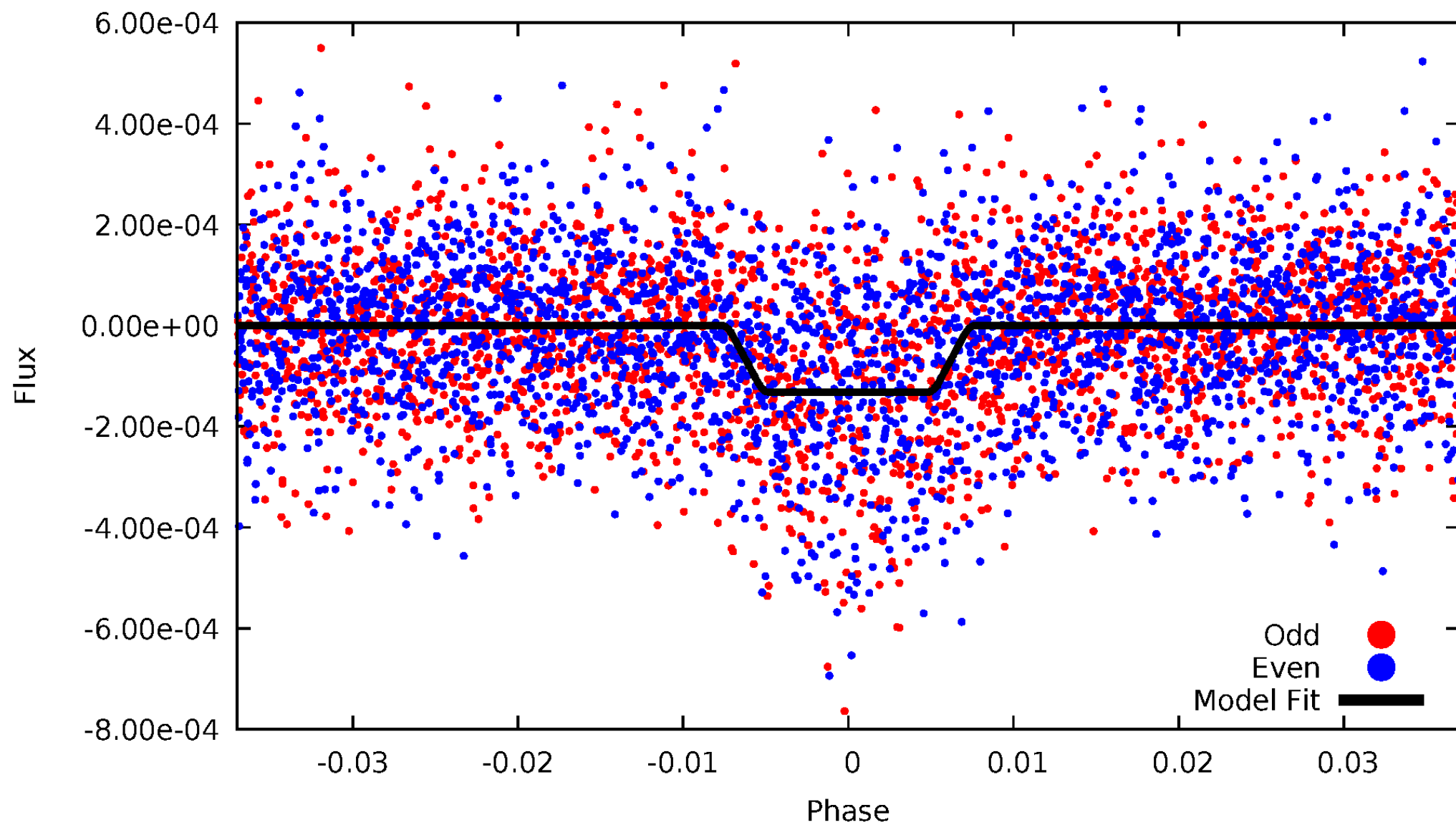
DV Odd/Even

TCE 009157908-02



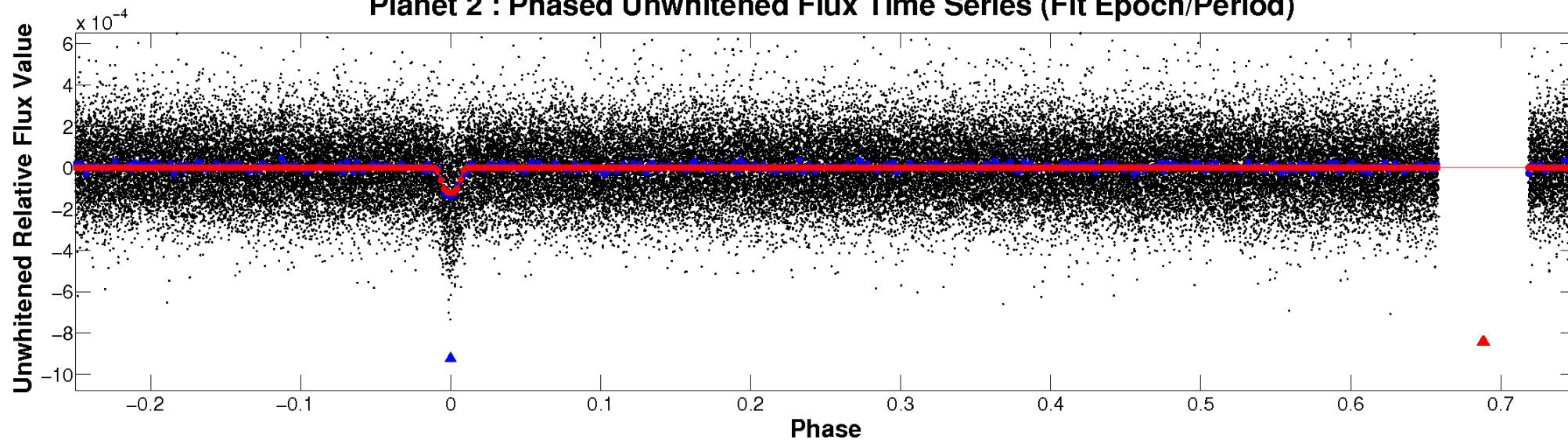
ALT Odd/Even

TCE 009157908-02

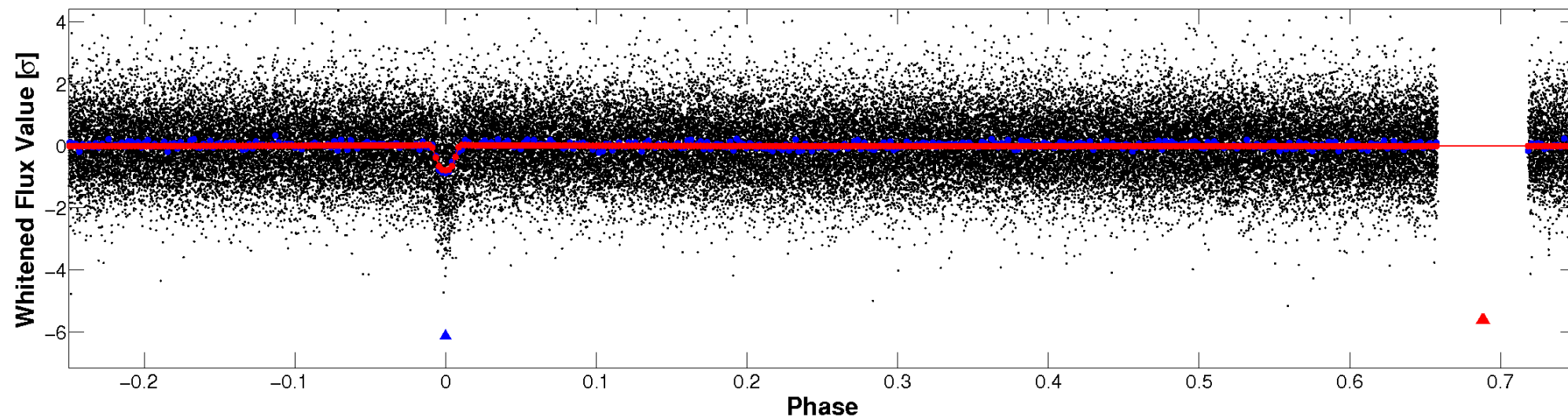


Non-Whitened Vs. Whitened Light Curve

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

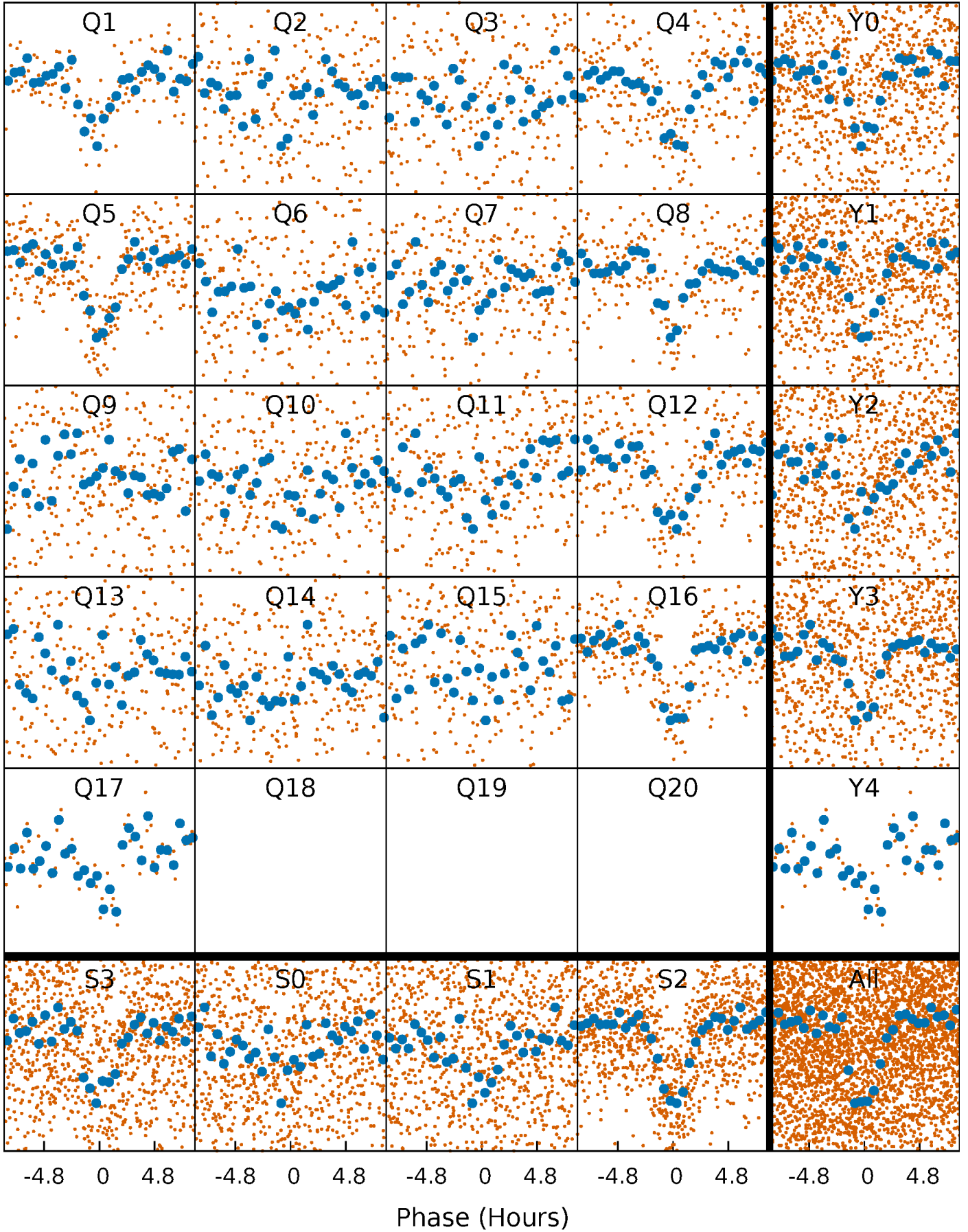


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



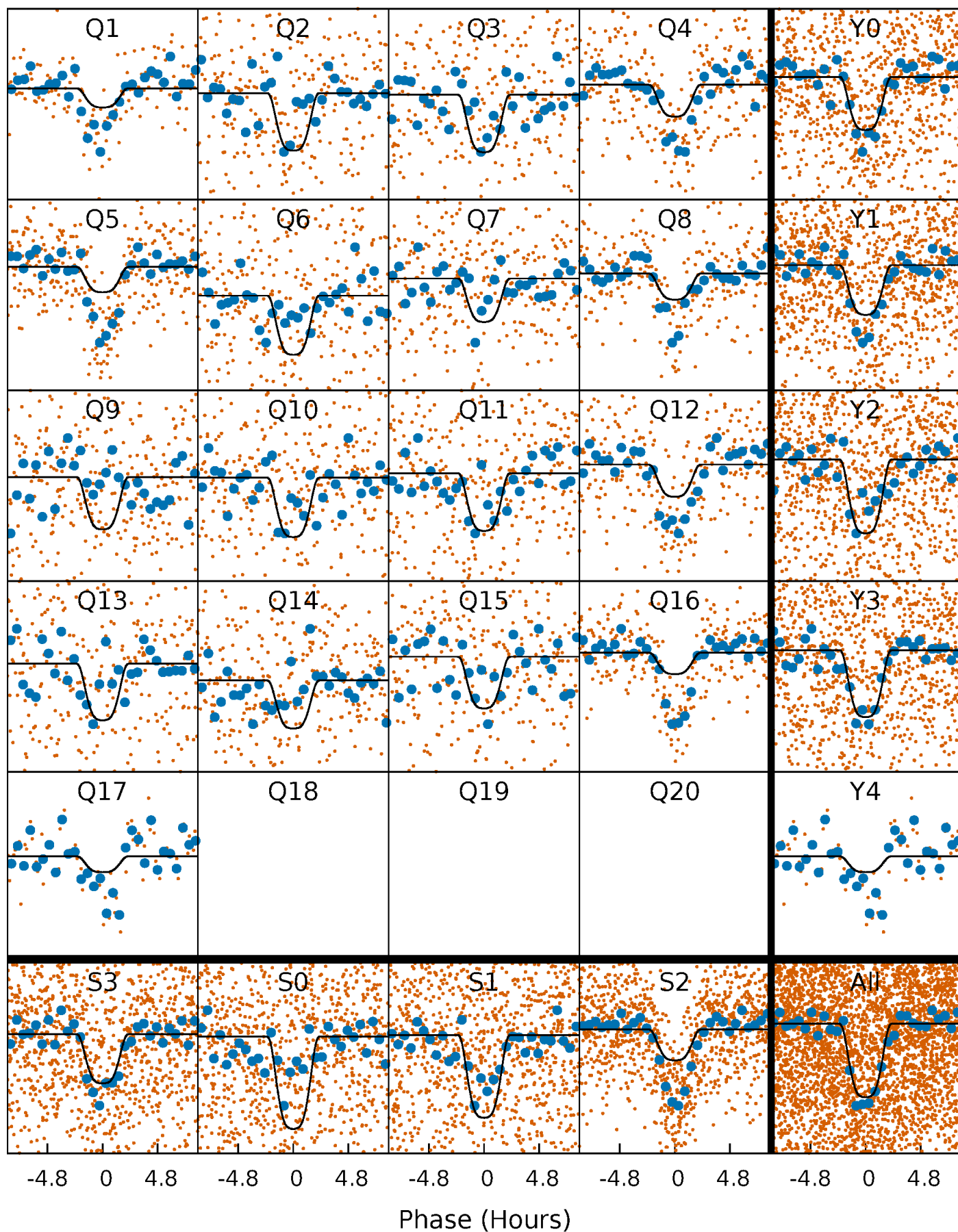
PDC Quarter-Phased Transit Curves

TCE 009157908-02 P= 9.414661 Days $T_0=135.856497$ (BKJD)



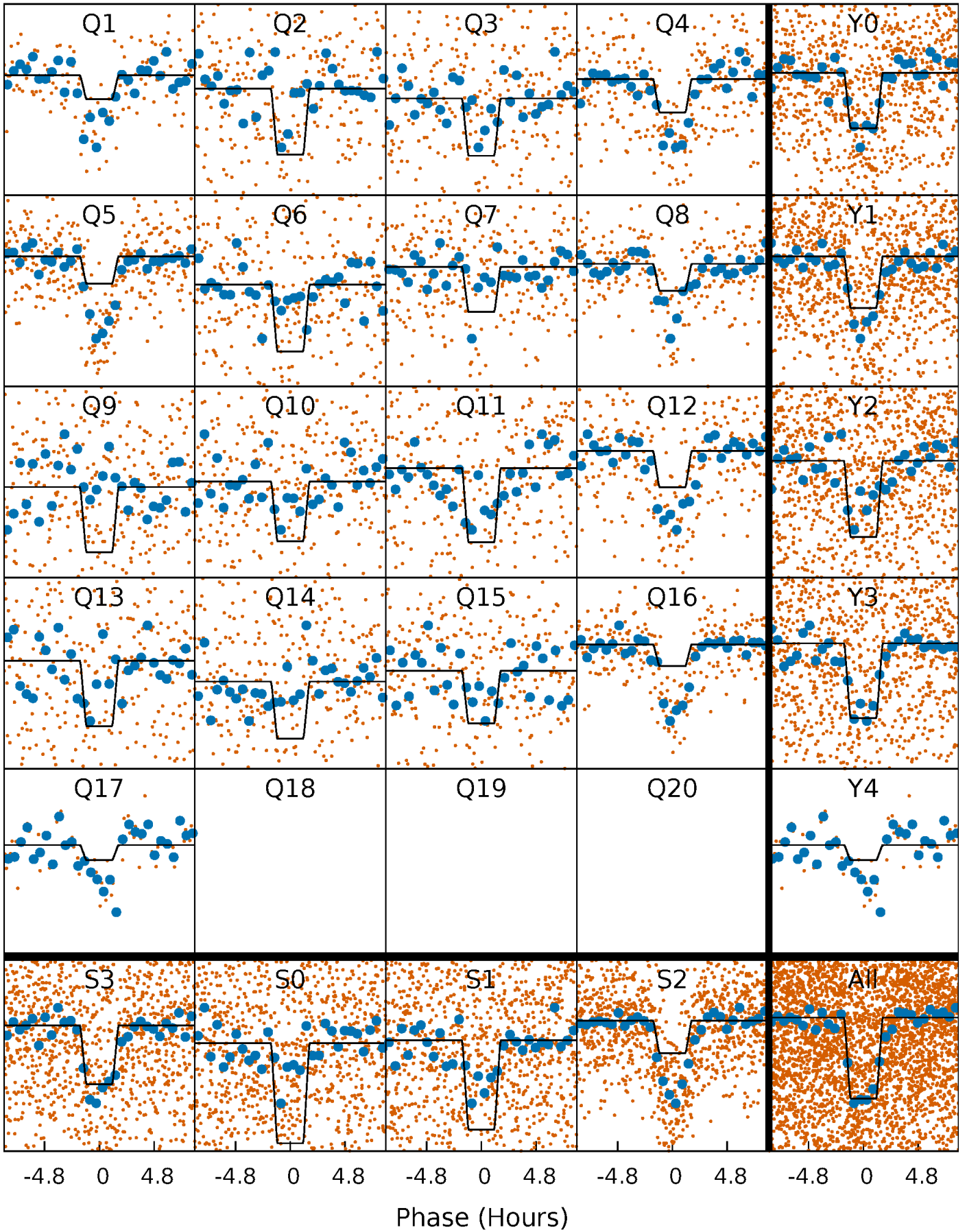
DV Quarter-Phased Transit Curves

TCE 009157908-02 P= 9.414661 Days $T_0=135.856497$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

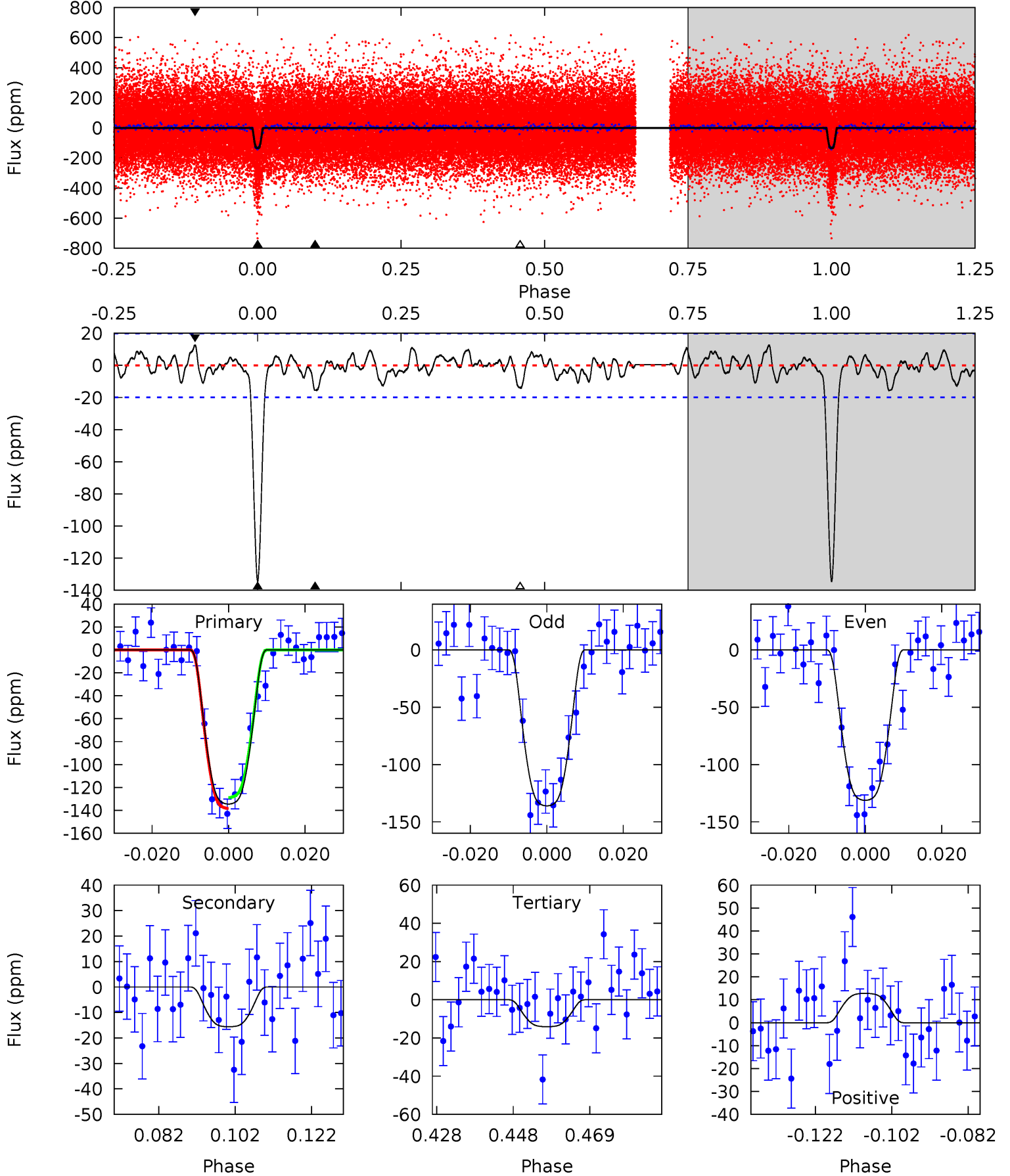
TCE 009157908-02 P= 9.414674 Days $T_0=135.855052$ (BKJD)



DV Model-Shift Uniqueness Test

009157908-02, P = 9.414661 Days, E = 126.441836 Days

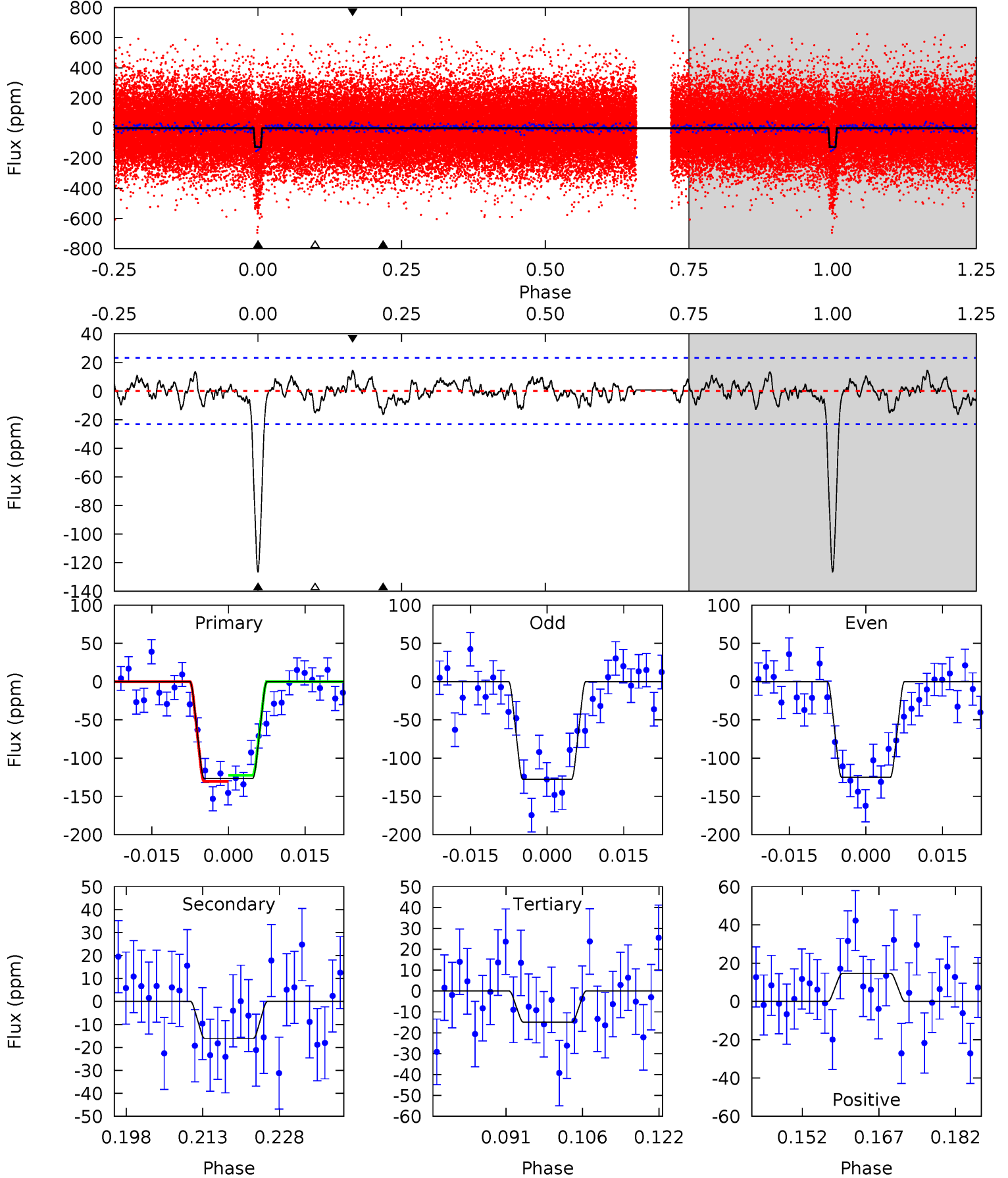
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.0	3.83	3.46	3.13	4.89	2.32	1.23	29.5	29.9	0.37	0.69	0.59	1.47	0.09	1.16



Alt Model-Shift Uniqueness Test

009157908-02, P = 9.414674 Days, E = 126.440378 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.9	3.43	3.17	3.11	4.95	2.43	1.11	23.7	23.8	0.25	0.32	0.28	1.50	0.10	0.85



Stellar Parameters For KIC 009157908

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6406^{+158}_{-206}	$4.436^{+0.067}_{-0.216}$	$-0.340^{+0.250}_{-0.300}$	$1.033^{+0.332}_{-0.111}$	$1.061^{+0.156}_{-0.128}$	$1.355^{+0.385}_{-0.710}$
	+2%/-3%	+2%/-5%	+74%/-88%	+32%/-11%	+15%/-12%	+28%/-52%
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 009157908-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-16 ± 4	$1.58^{+0.30}_{-0.16}$	1369^{+105}_{-70}	3814^{+183}_{-225}	26^{+11}_{-9}
Alt.	-16 ± 5	$1.35^{+0.25}_{-0.16}$	1372^{+106}_{-70}	4061^{+249}_{-266}	36^{+17}_{-13}

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

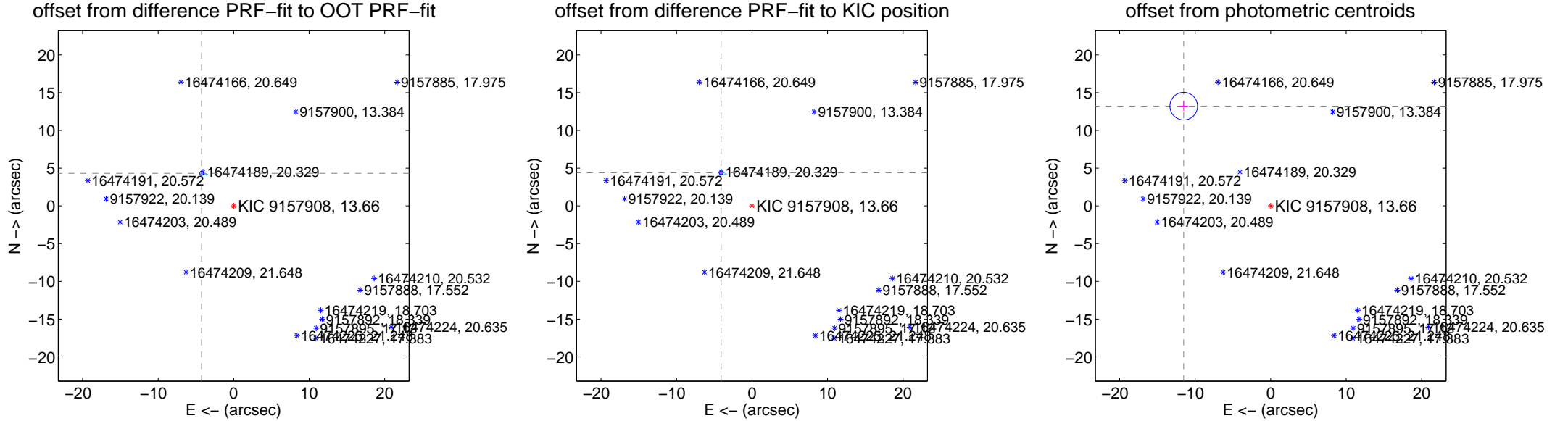
DV Centroid Data

Supplemental centroid analysis for 009157908-02. Kepler magnitude: 13.66. Transit SNR 19.37

There are 11 quarters with good PRF difference image offsets

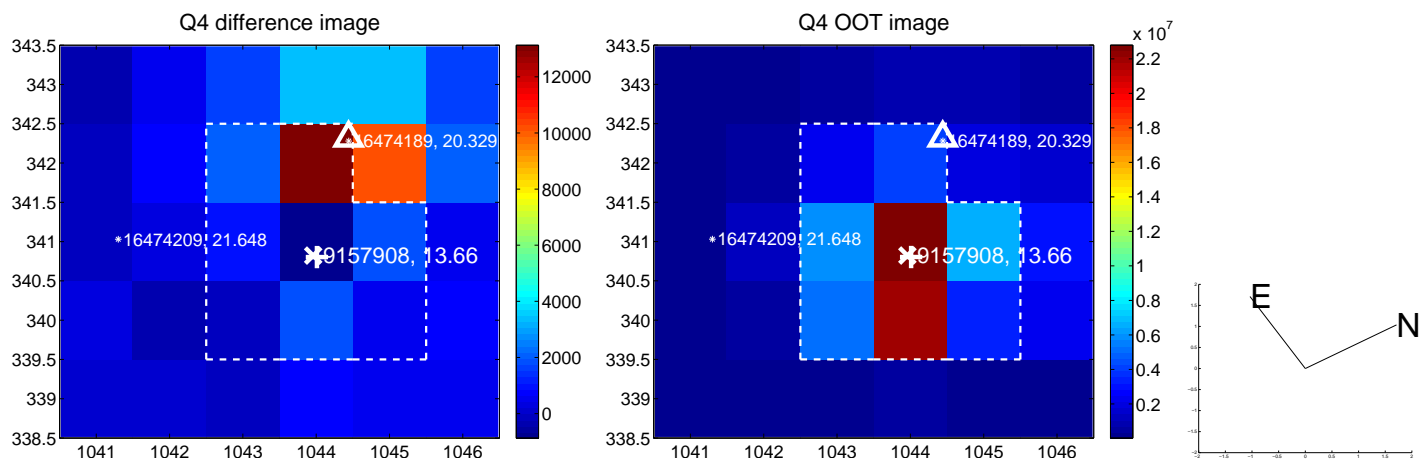
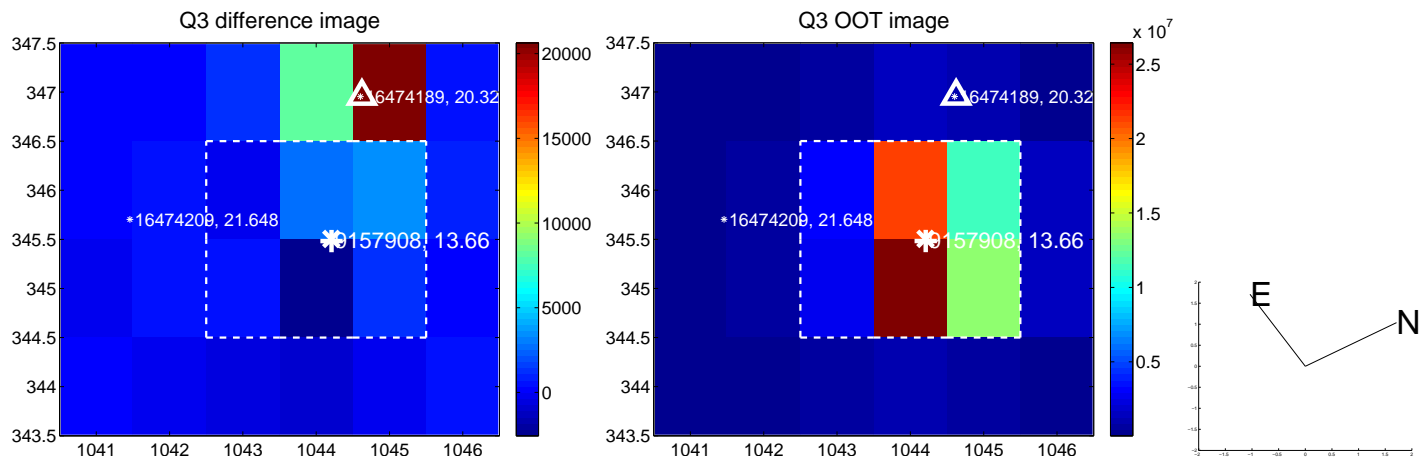
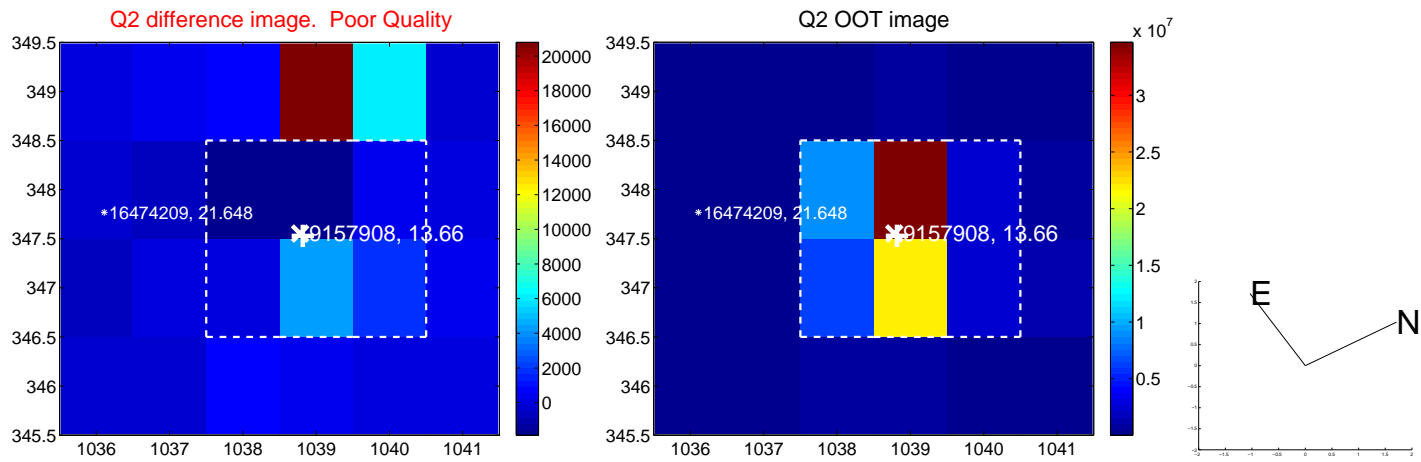
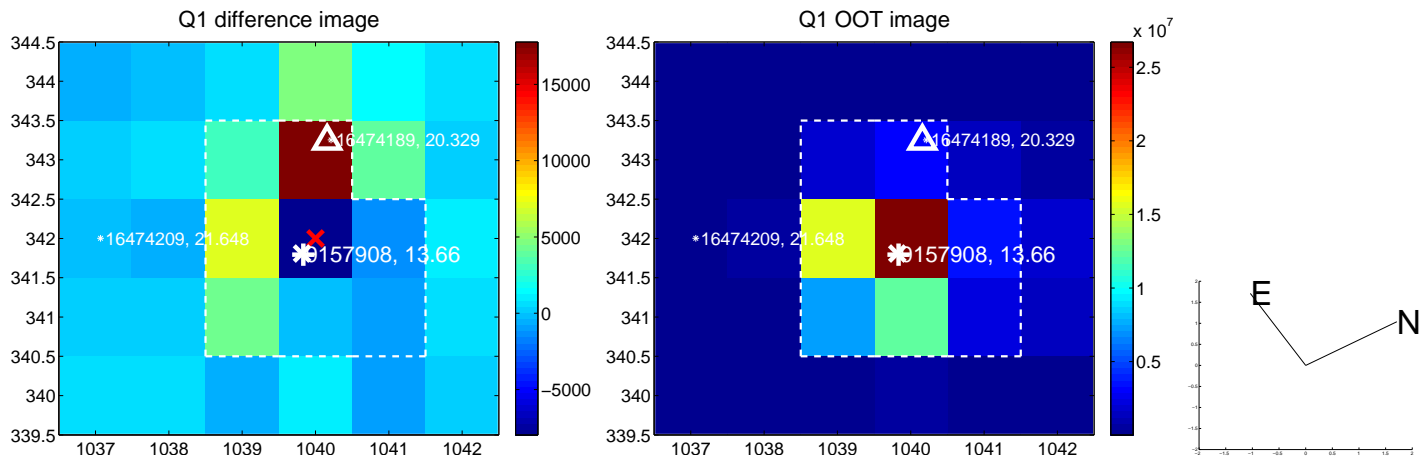
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.051 \pm 0.086	70.34	4.243 \pm 0.089	4.314 \pm 0.079
PRF-fit source offset from KIC position	5.997 \pm 0.085	70.22	4.095 \pm 0.085	4.382 \pm 0.082
photometric centroid source offset	17.52 \pm 0.61	28.76	11.51 \pm 0.61	13.21 \pm 0.61

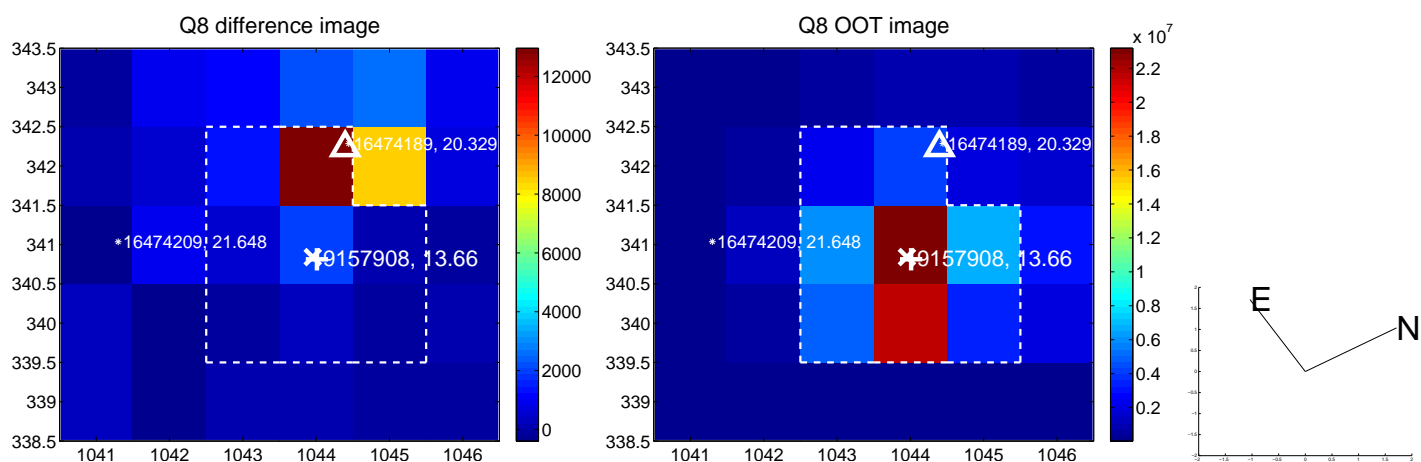
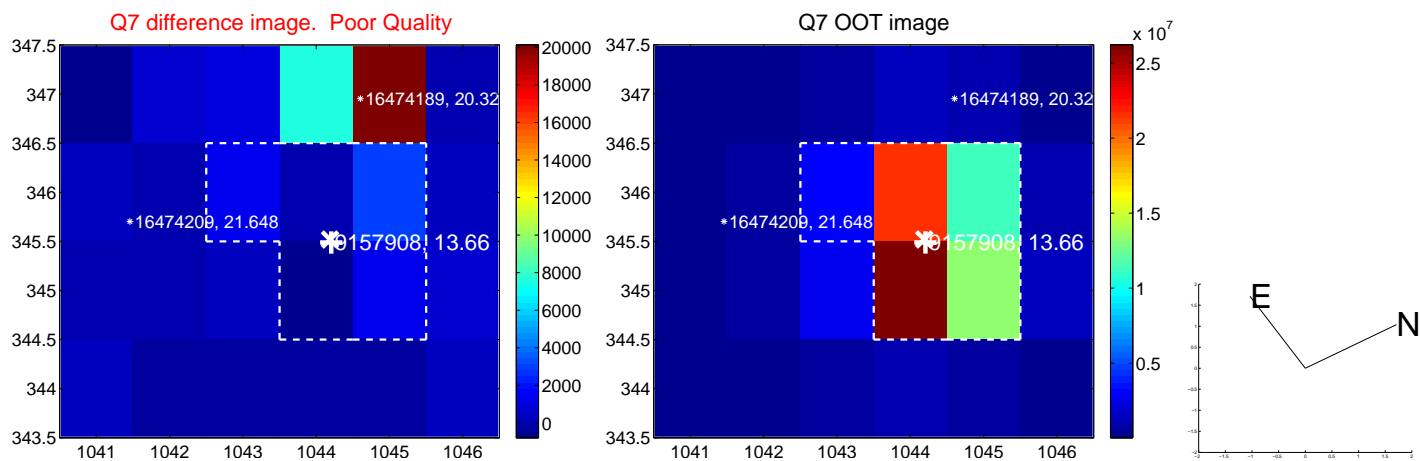
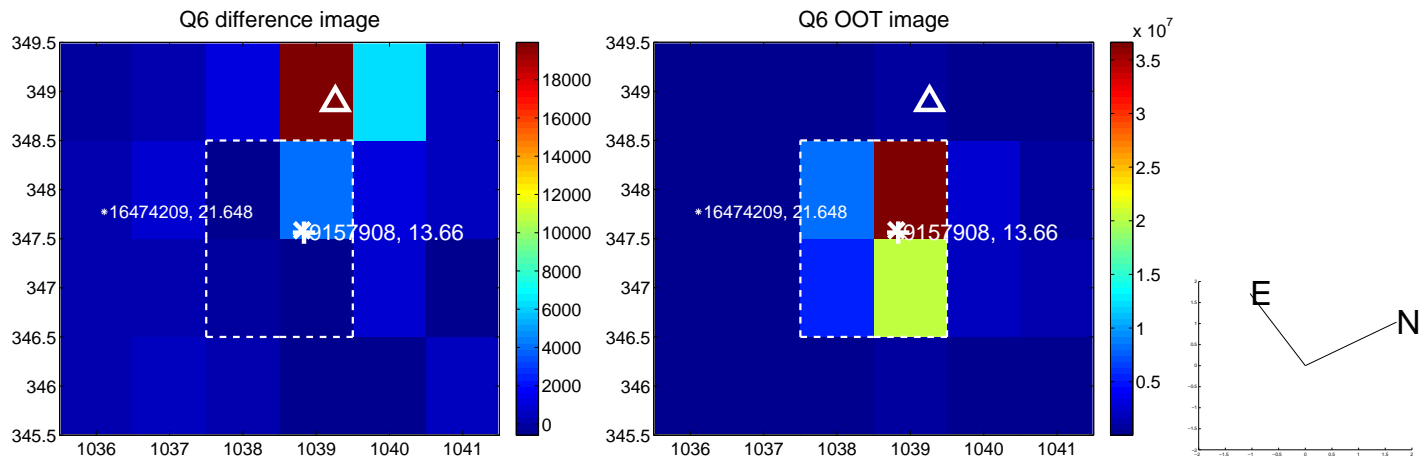
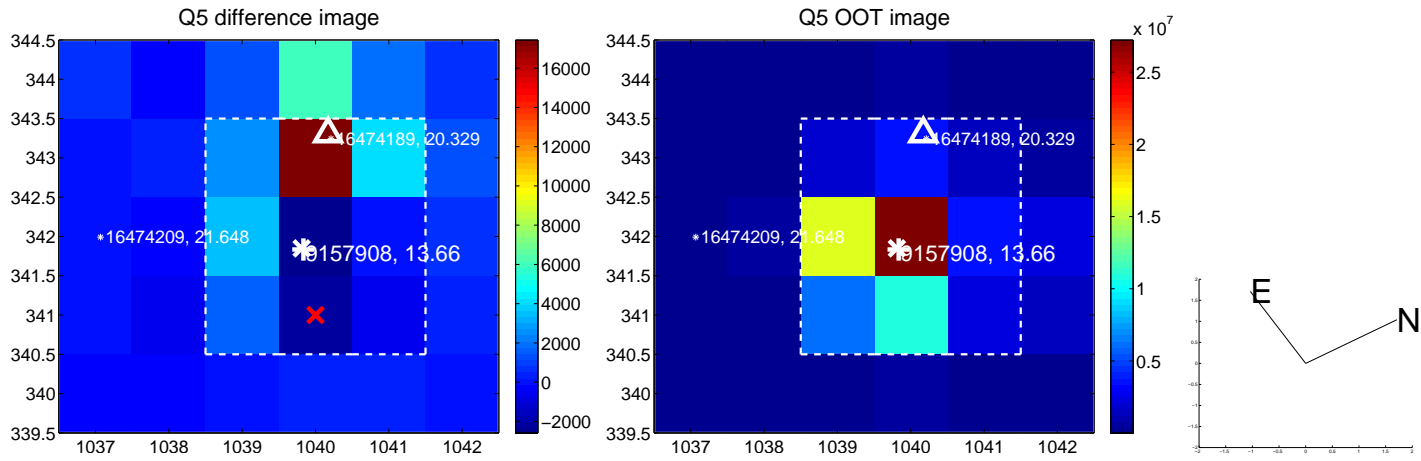


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

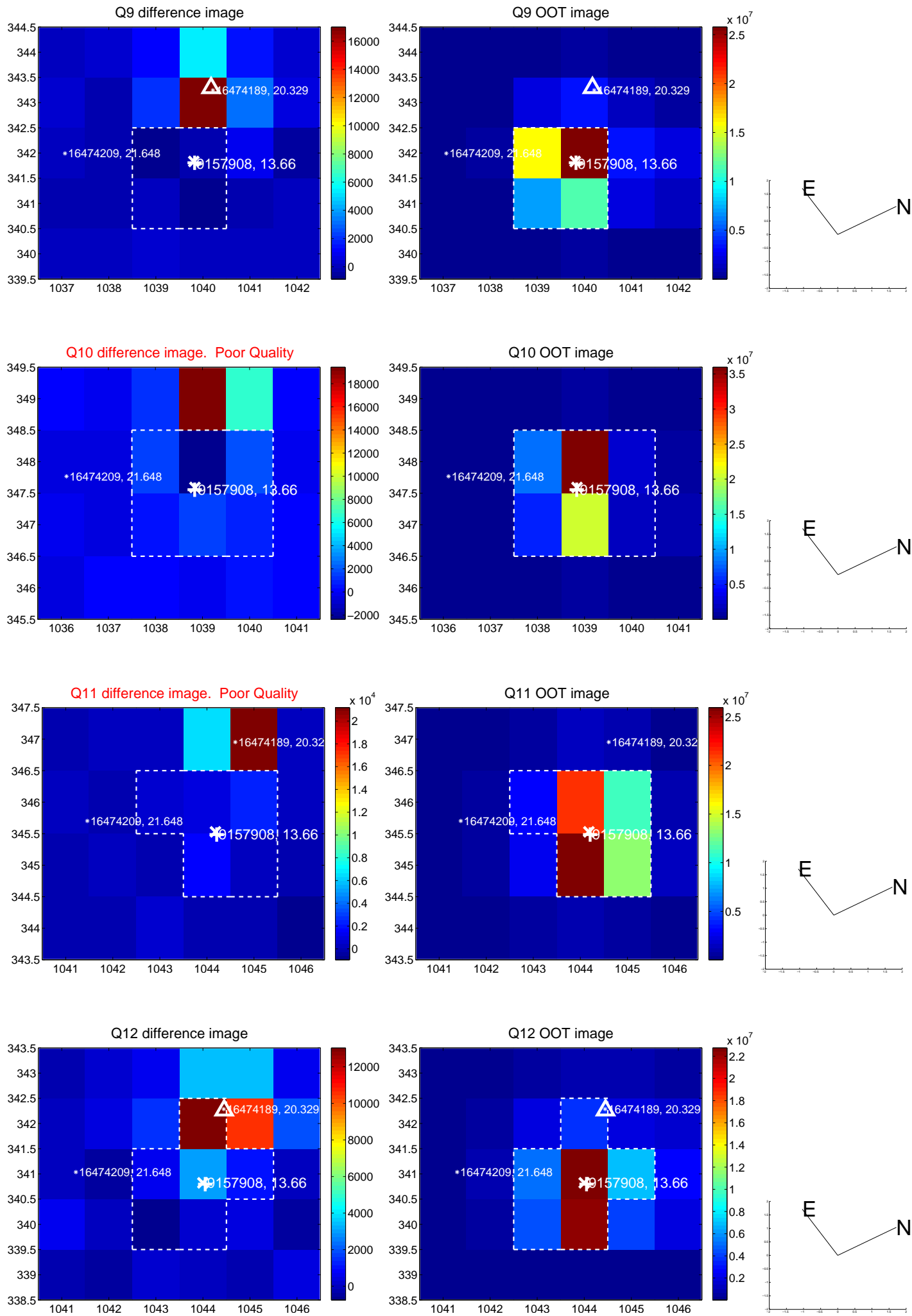
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



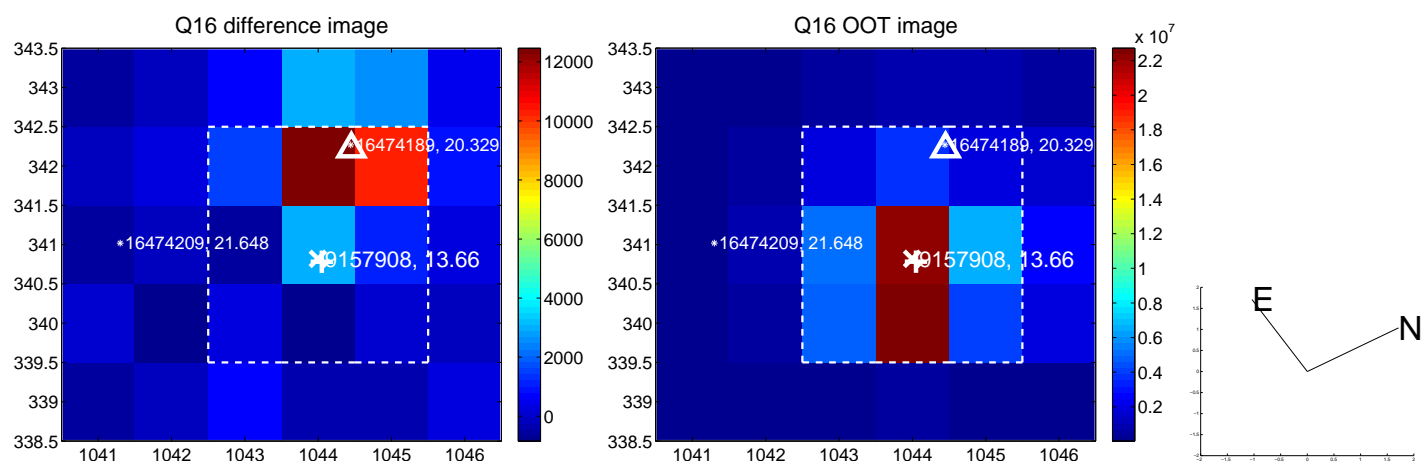
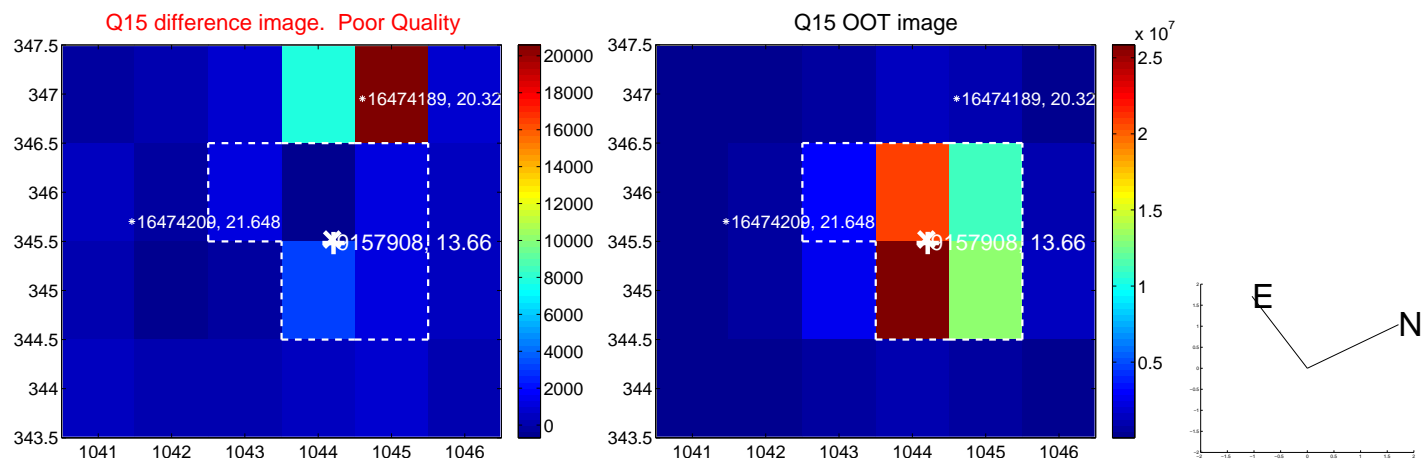
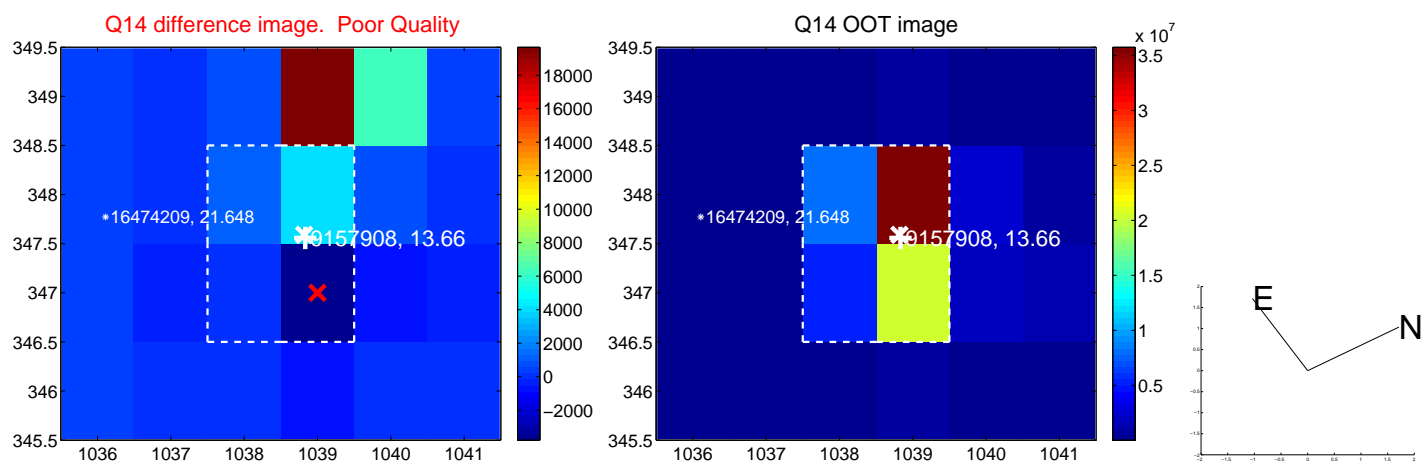
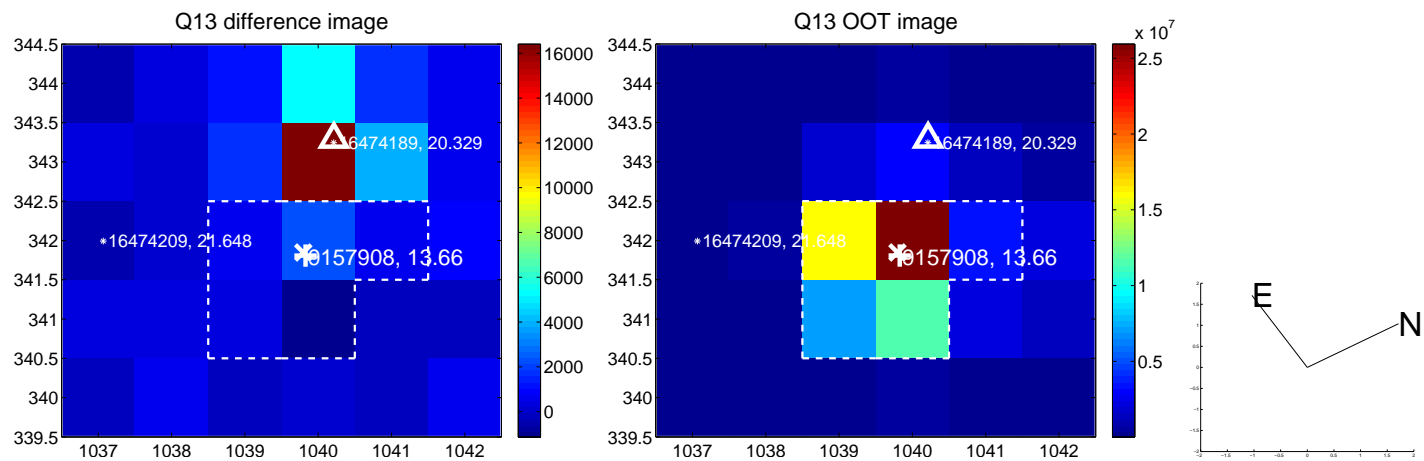
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



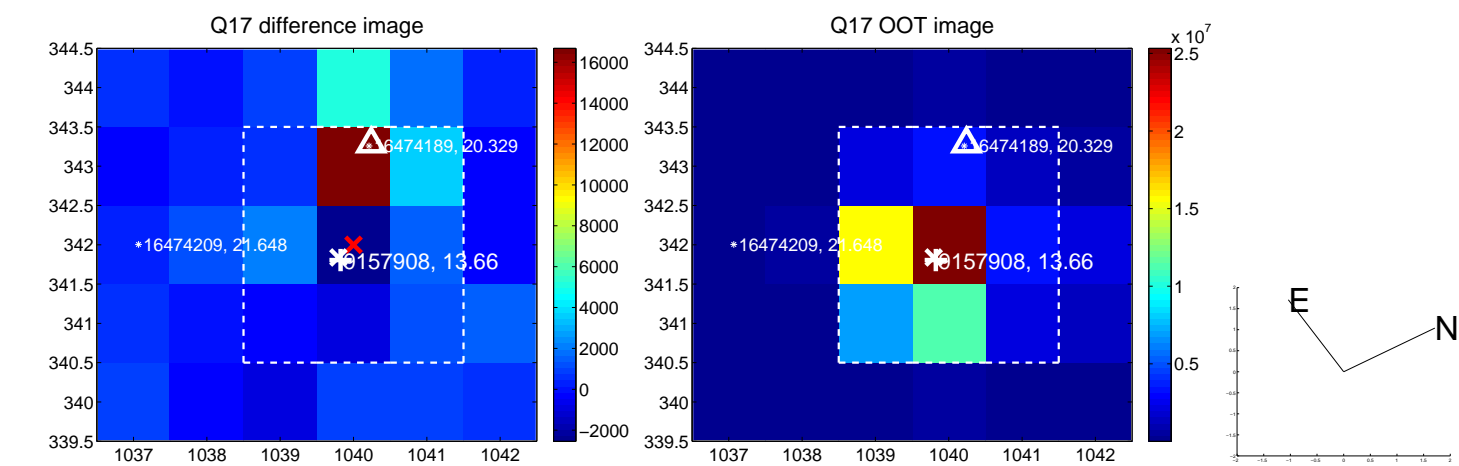
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



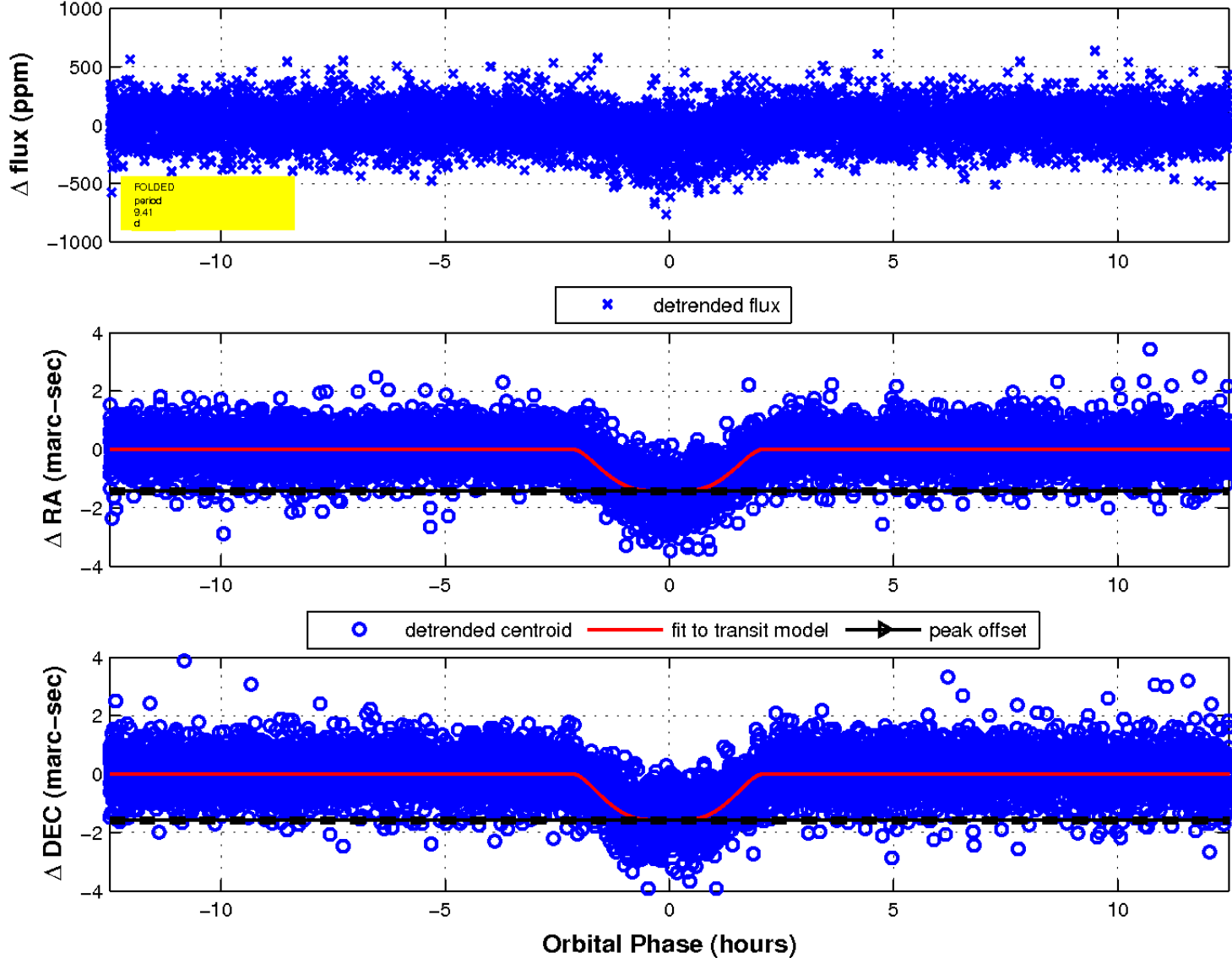
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

