

KIC 004458082

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})
004458082-01	OBS	2303.01	4.893340	133.645377	133.7	3.631	17.8	19.5	1.35	6688	1.81	843.69
004458082-02	OBS	2303.02	8.934911	133.385041	128.3	2.277	12.1	13.2	1.35	6688	1.74	378.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004458082-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004458082-02	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.

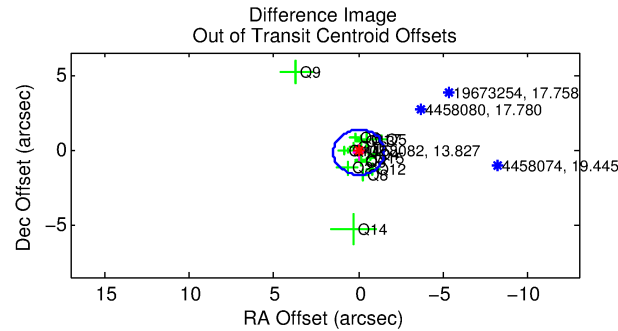
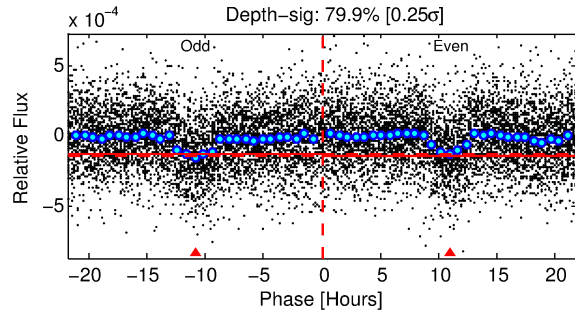
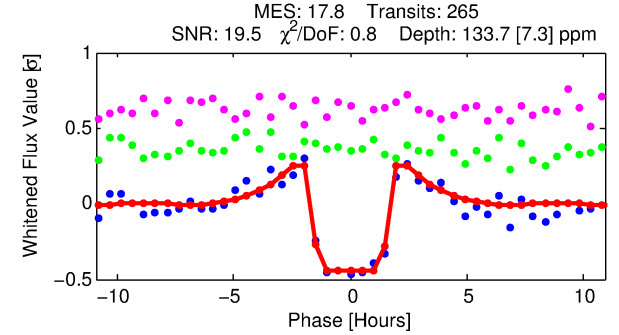
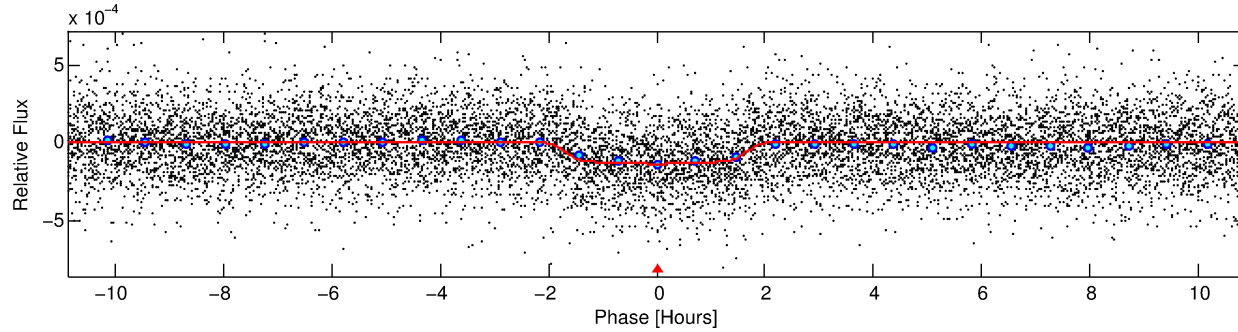
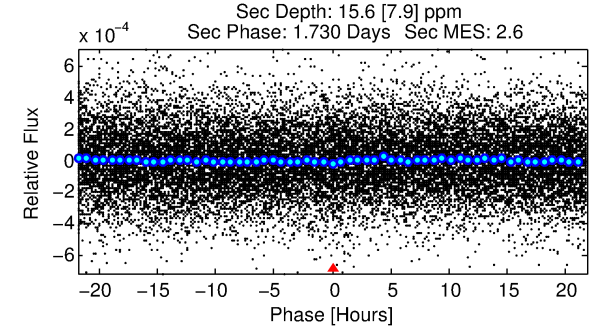
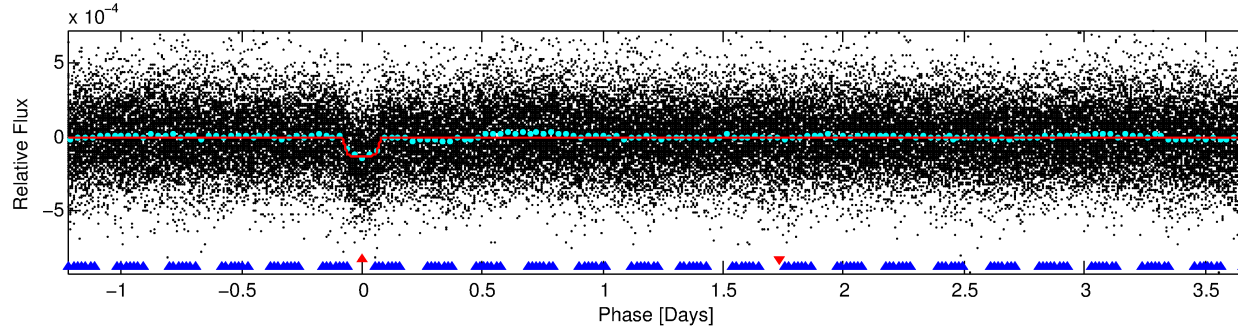
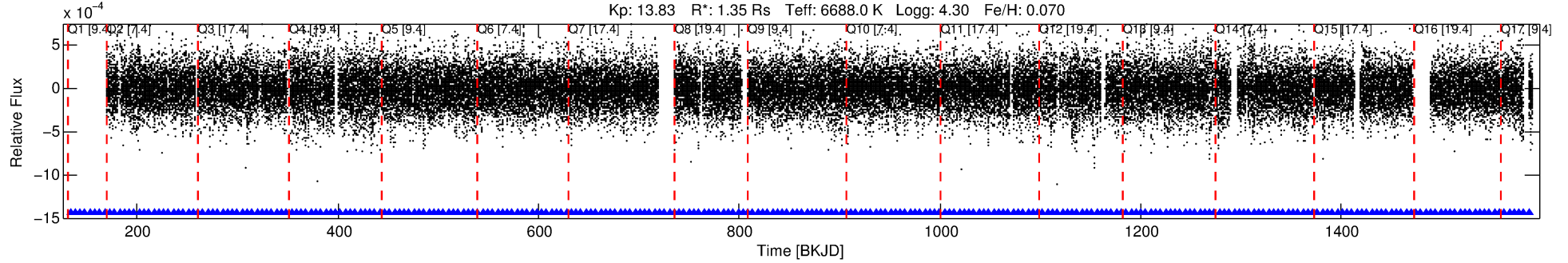
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004458082-01

No Significant Match Found

DV One-Page Summary

KIC: 4458082 Candidate: 1 of 2 Period: 4.893 d
KOI: K02303.01 Corr: 0.955



DV Fit Results:

Period = 4.89334 [0.00001] d
Epoch = 133.6454 [0.0018] BKJD
Rp/R* = 0.0123 [0.0017]
a/R* = 4.91 [3.63]
b = 0.90 [0.17]
Seff = 843.69 [379.51]
Teq = 1374 [155] K
Rp = 1.81 [0.68] Re
a = 0.0621 [0.0181] AU
Ag = 10.06 [7.15] [1.27σ]
Teffp = 3784 [567] K [4.10σ]

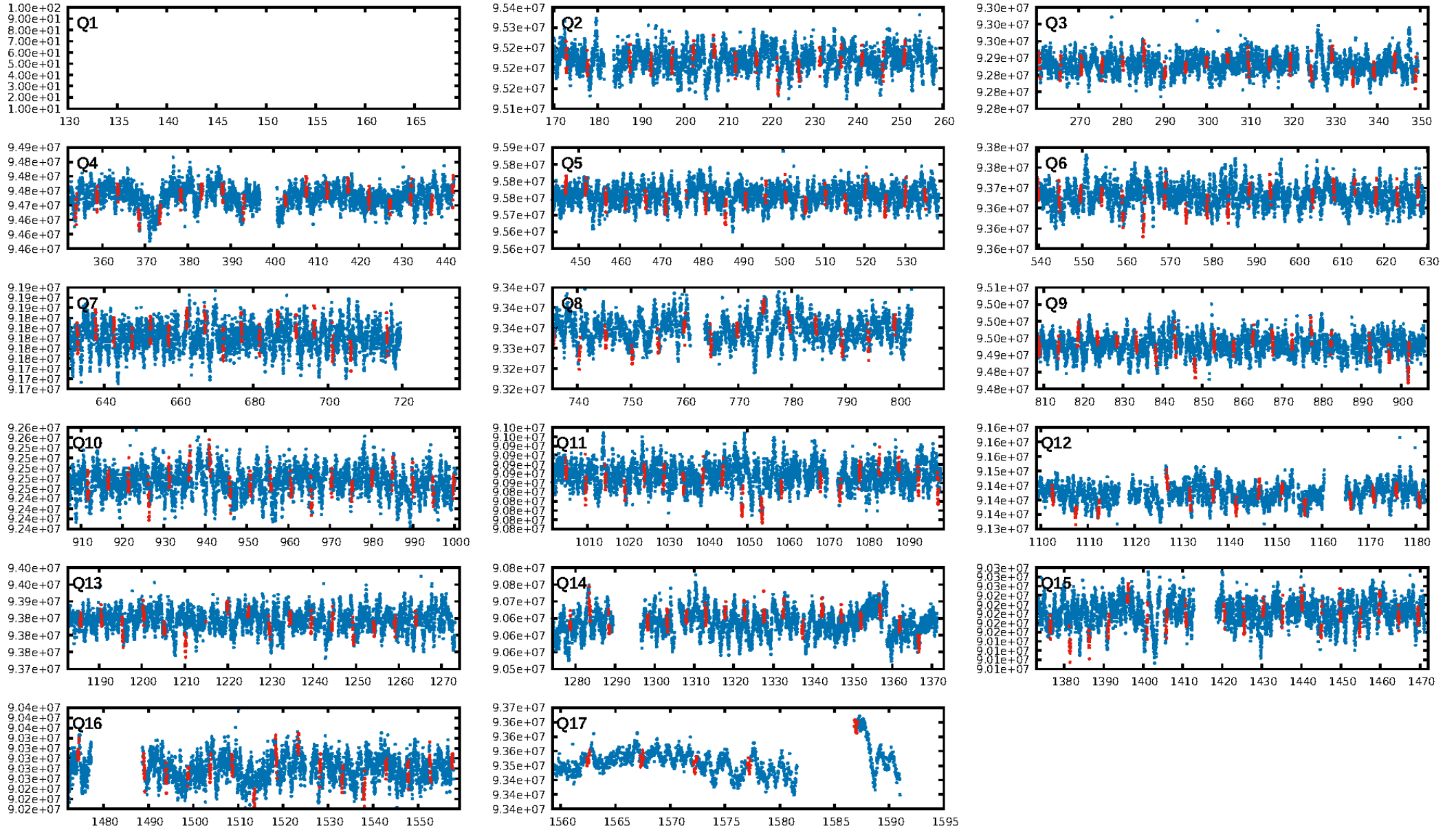
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [22.63σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.70e-70
RollingBand-fgt: 1.00 [260/260]
GhostDiagnostic-chr: 2.222
Centroid-sig: N/A
Centroid-so: 0.471 arcsec [1.42σ]
OotOffset-rm: 0.169 arcsec [0.34σ]
KicOffset-rm: 0.276 arcsec [0.59σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [16/16]

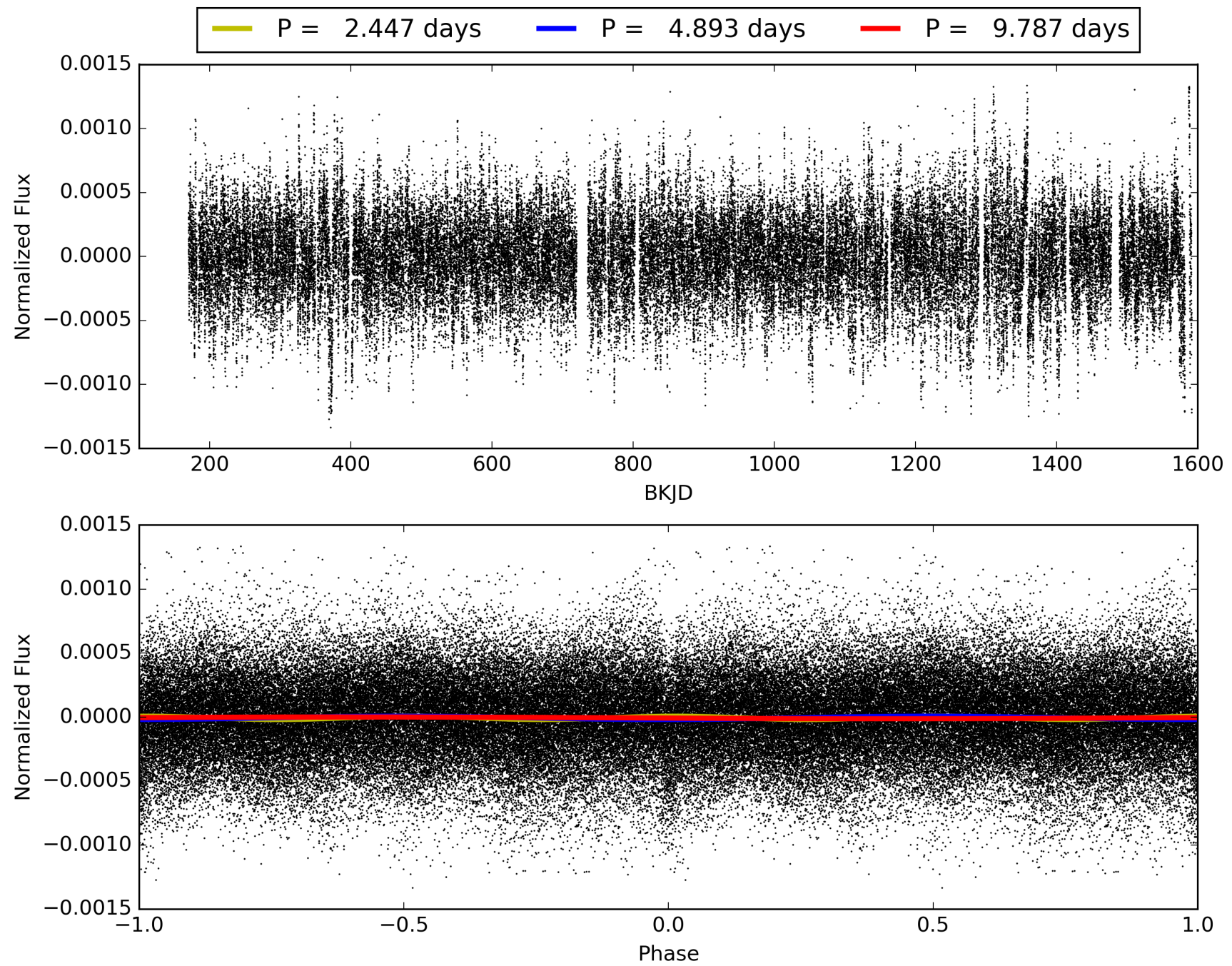
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:51:14 Z

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

TCE 004458082-01, PDC Light Curves

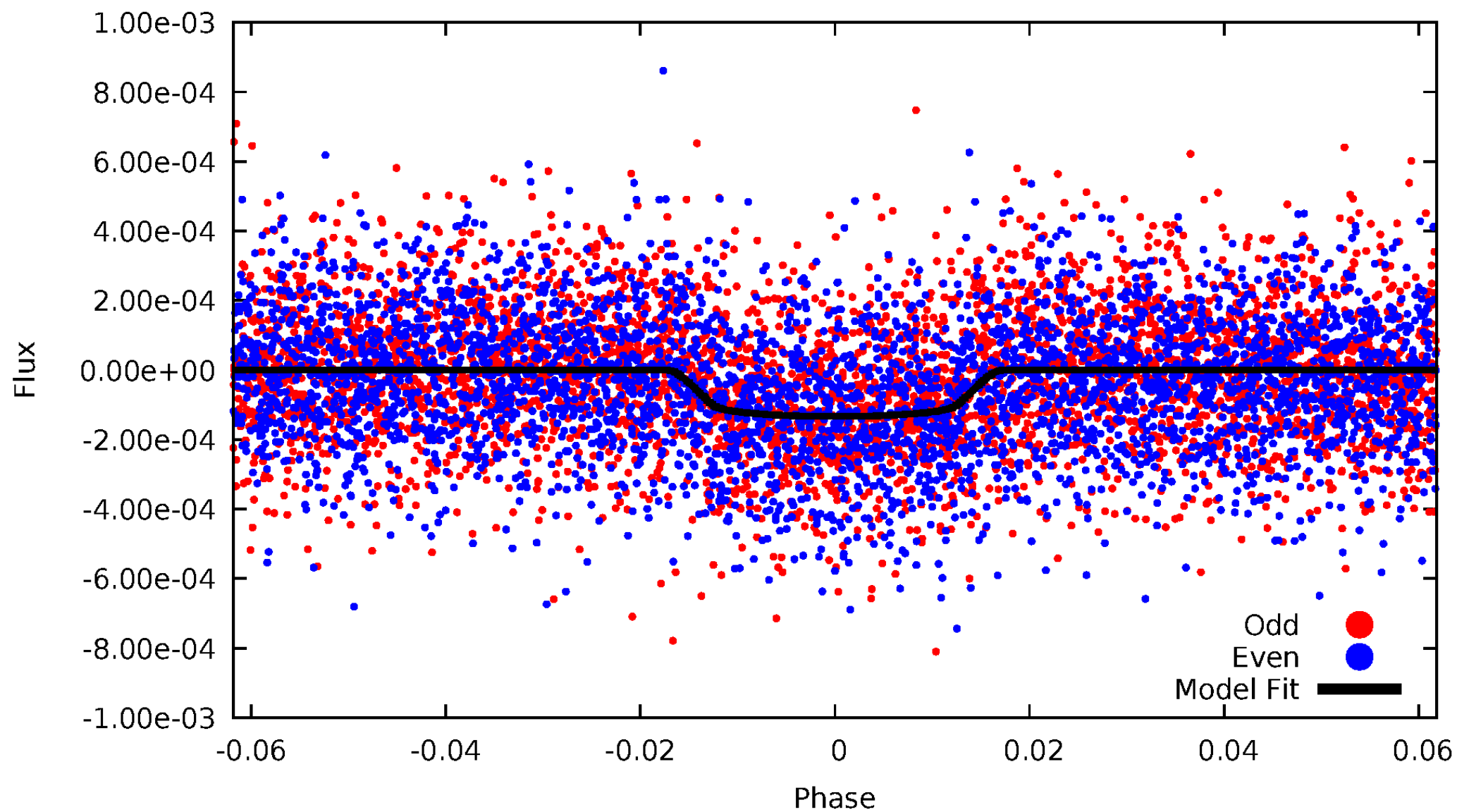


TCE 004458082-01



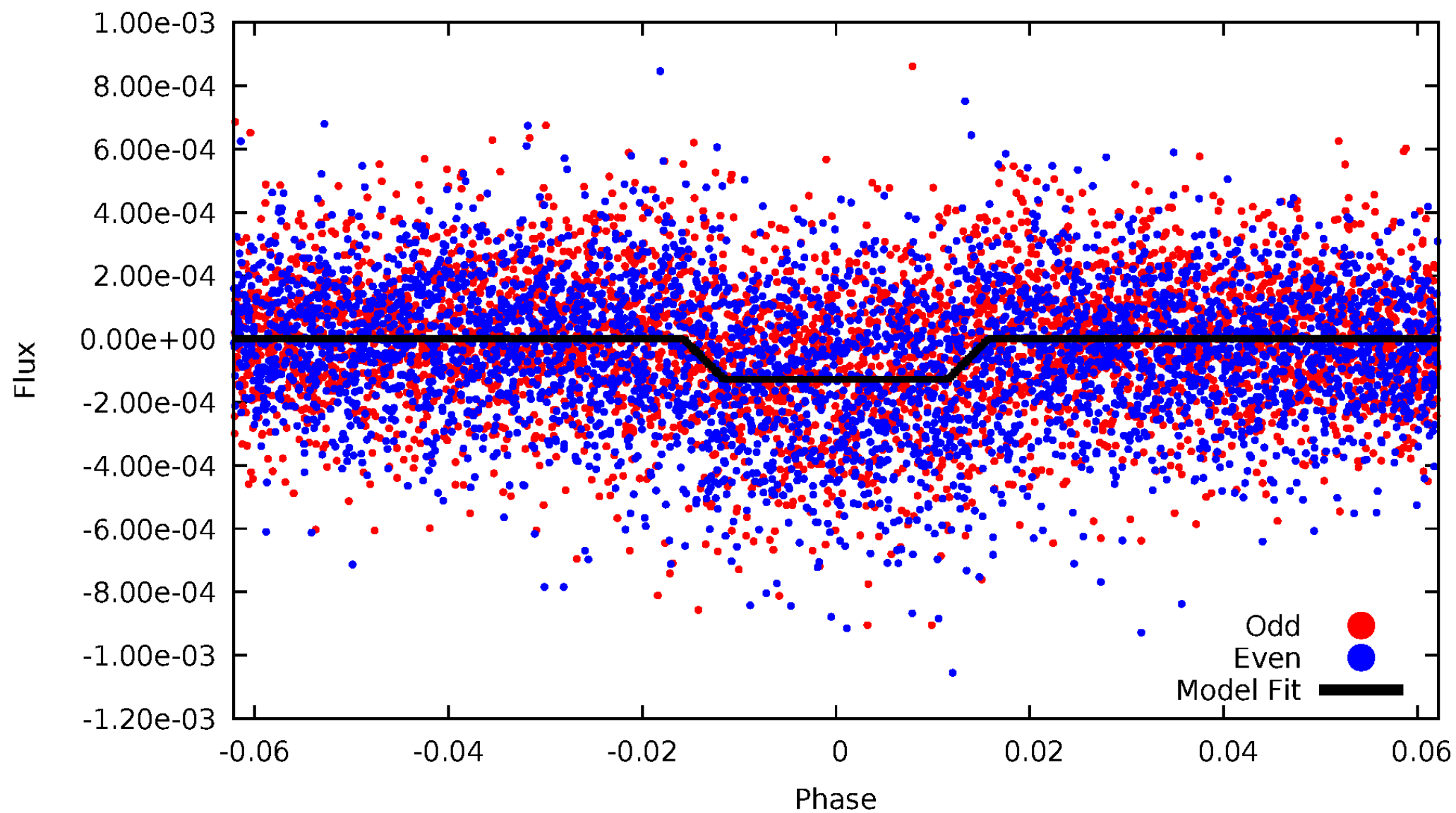
DV Odd/Even

TCE 004458082-01



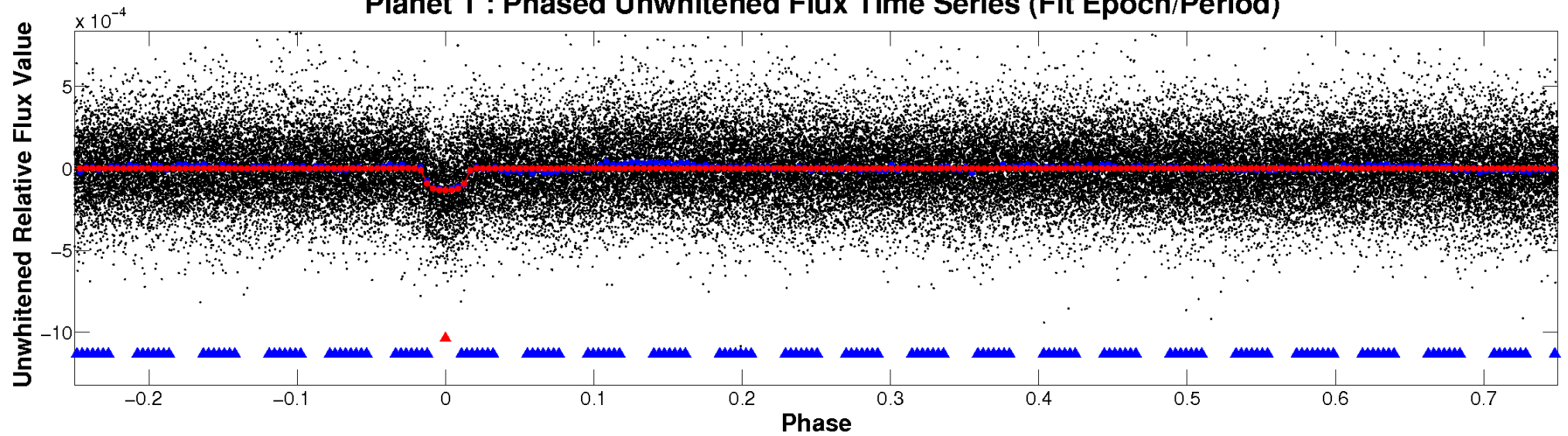
ALT Odd/Even

TCE 004458082-01

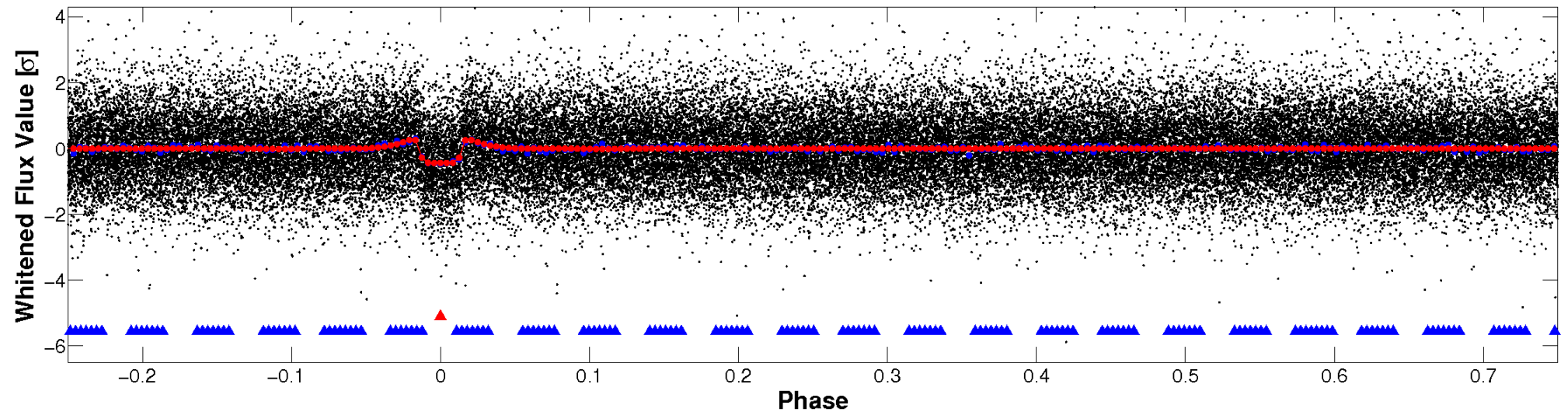


Non-Whitened Vs. Whitened Light Curve

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

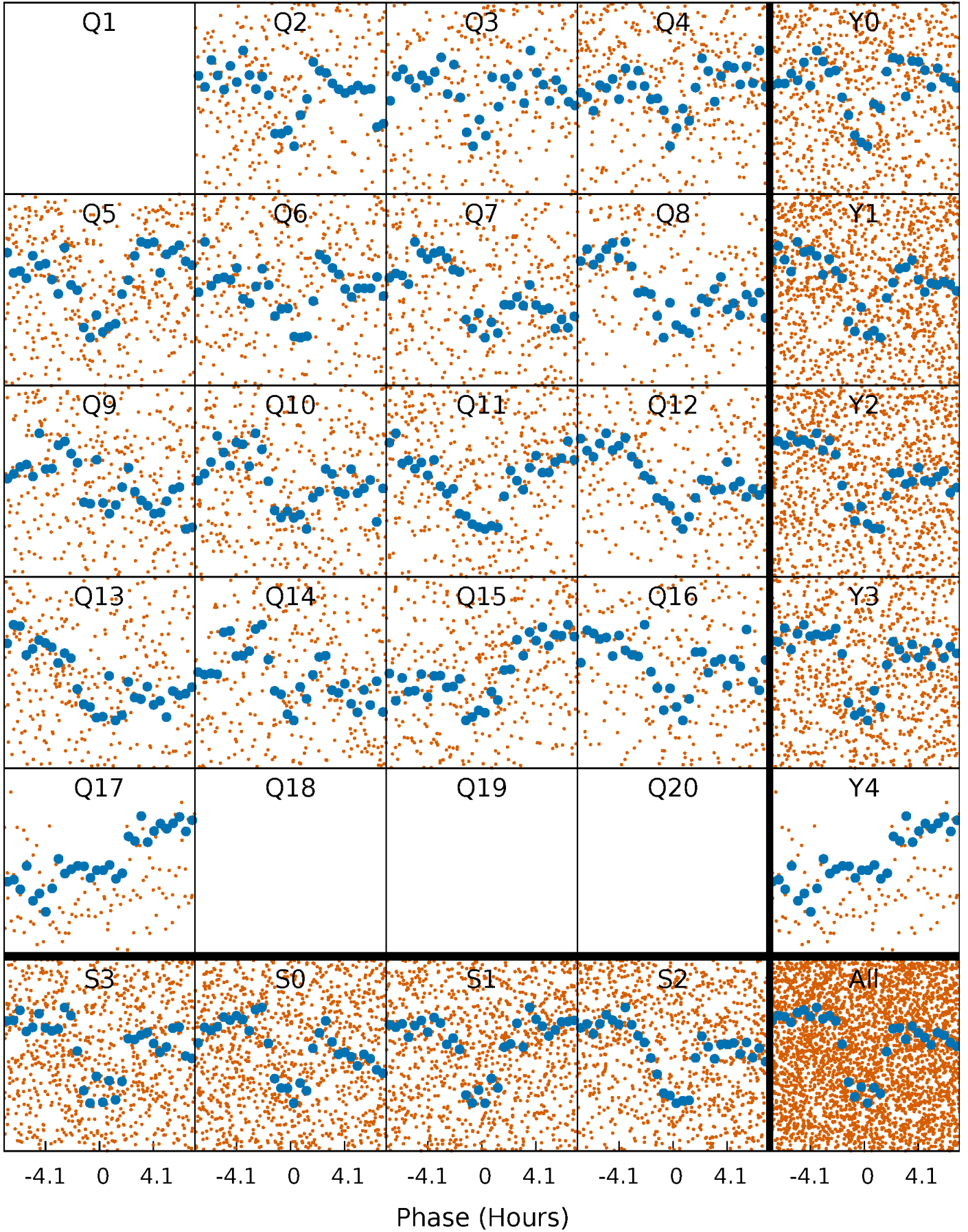


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



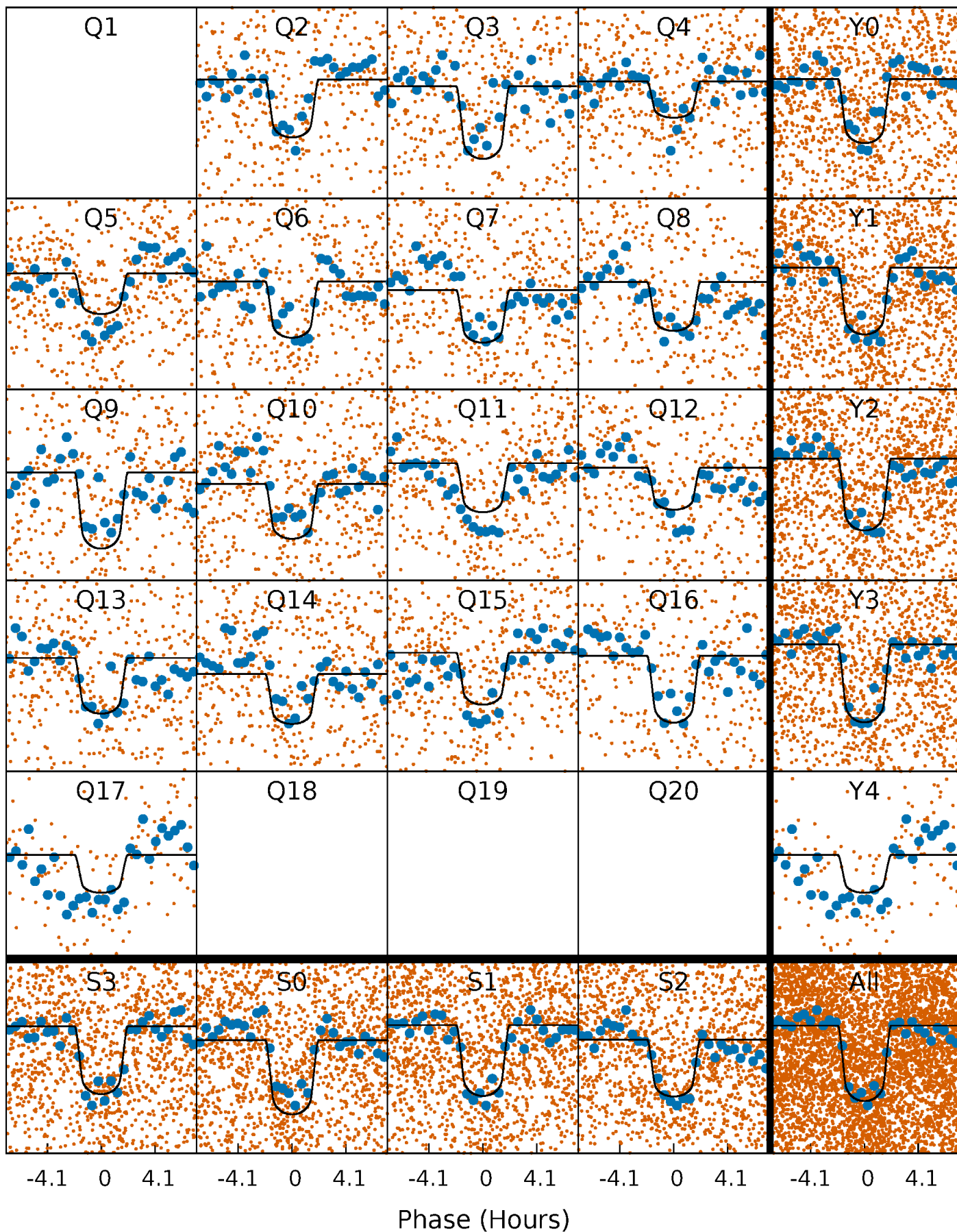
PDC Quarter-Phased Transit Curves

TCE 004458082-01 P= 4.893340 Days $T_0=133.645377$ (BKJD)



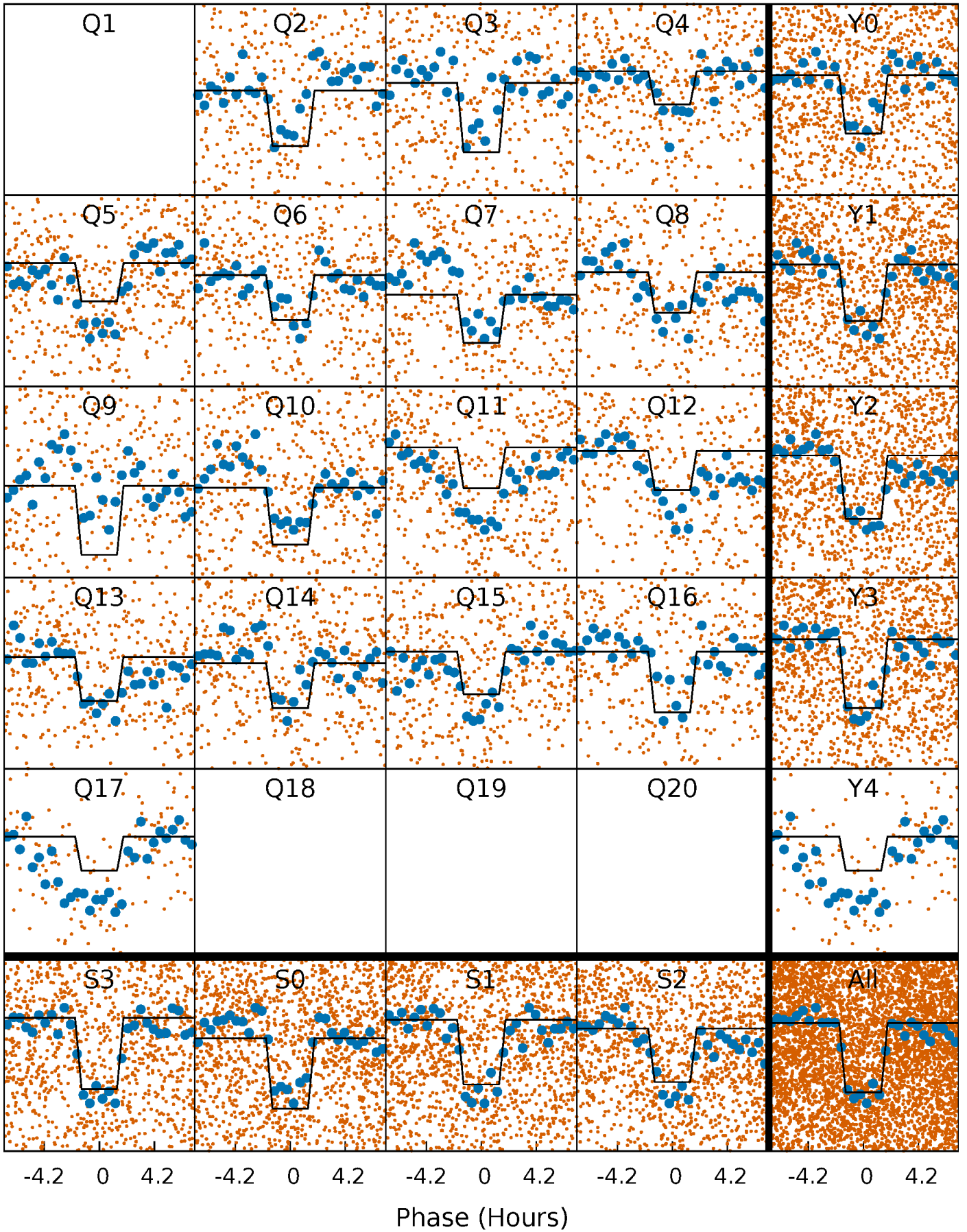
DV Quarter-Phased Transit Curves

TCE 004458082-01 P= 4.893340 Days $T_0=133.645377$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

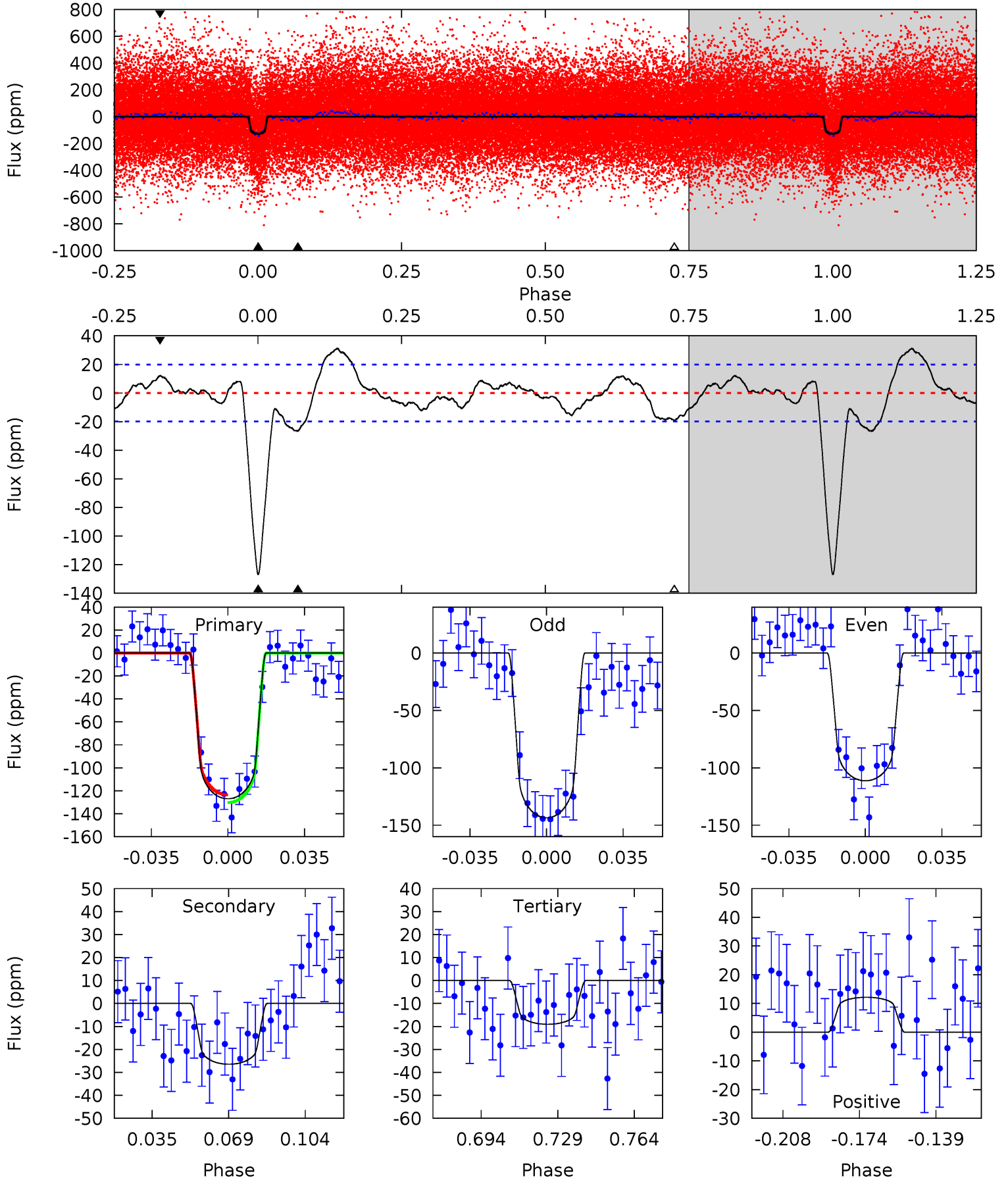
TCE 004458082-01 P= 4.893342 Days $T_0=133.647372$ (BKJD)



DV Model-Shift Uniqueness Test

004458082-01, P = 4.893340 Days, E = 133.645377 Days

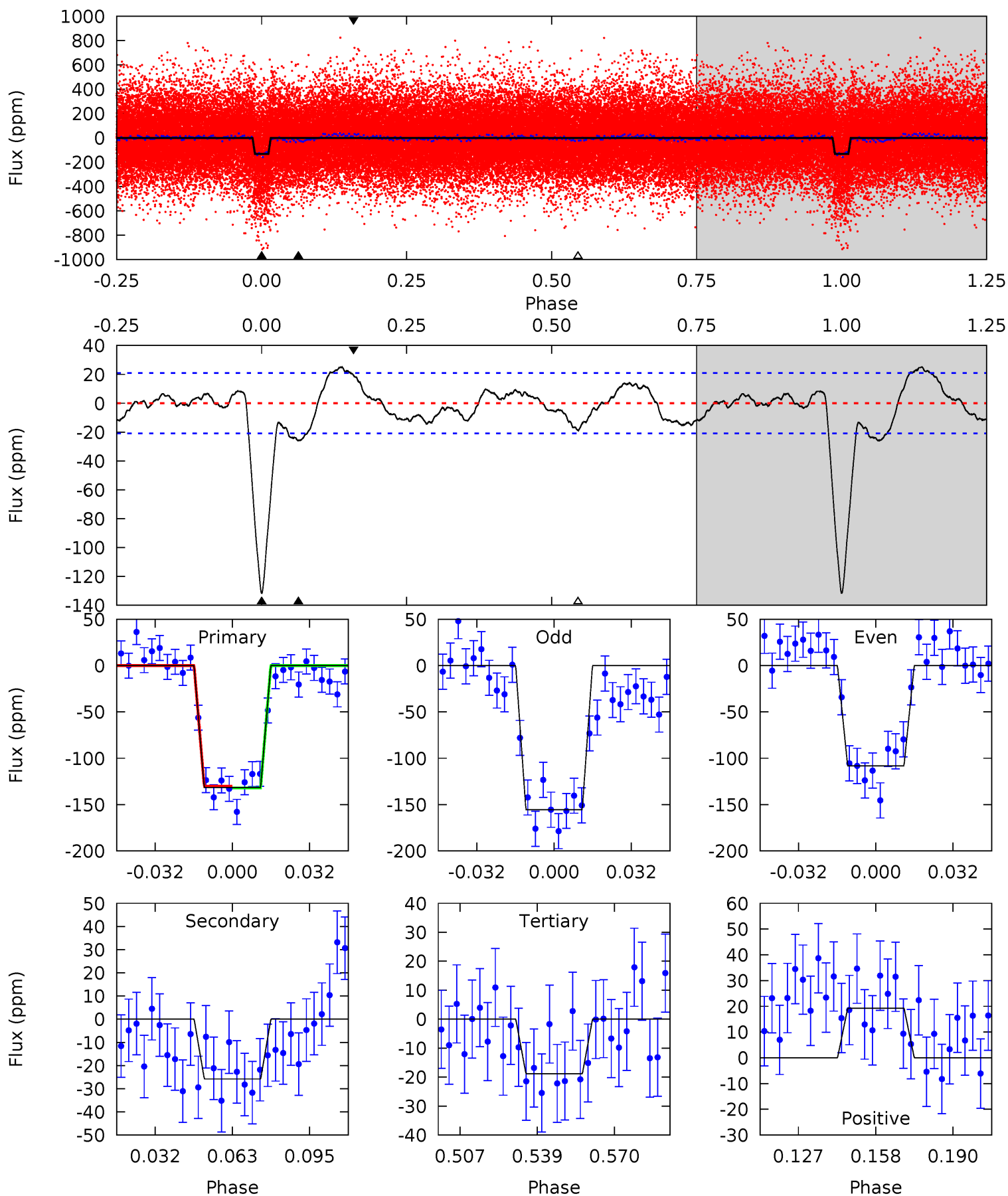
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.6	6.37	4.59	2.93	4.78	2.11	2.45	26.0	27.6	1.78	3.44	3.89	0.99	0.20	0.81



Alt Model-Shift Uniqueness Test

004458082-01, P = 4.893342 Days, E = 133.647372 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.2	5.92	4.33	4.42	4.80	2.15	2.19	25.9	25.8	1.59	1.51	5.43	1.13	0.16	0.22



Stellar Parameters For KIC 004458082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6688^{+187}_{-281}	$4.304^{+0.075}_{-0.225}$	$0.070^{+0.250}_{-0.350}$	$1.347^{+0.473}_{-0.169}$	$1.336^{+0.200}_{-0.200}$	$0.771^{+0.310}_{-0.420}$
	+3%/-4%	+2%/-5%	+357%/-500%	+35%/-13%	+15%/-15%	+40%/-55%
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 004458082-01 / KOI 2303.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-26 ± 4	$1.90^{+0.39}_{-0.31}$	1947^{+159}_{-114}	4447^{+317}_{-300}	15^{+8}_{-5}
Alt.	-26 ± 4	$1.73^{+0.37}_{-0.31}$	1953^{+162}_{-112}	4577^{+371}_{-302}	18^{+9}_{-6}

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 $A_{obs} \gg 1.0$

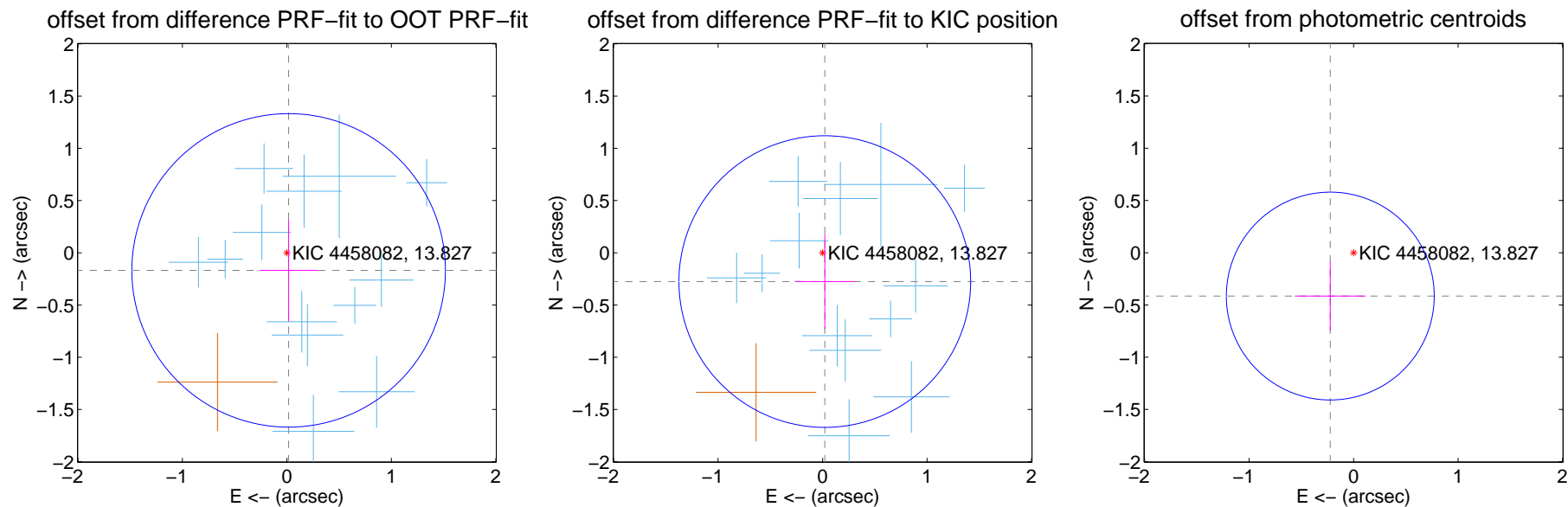
DV Centroid Data

Supplemental centroid analysis for 004458082-01. Kepler magnitude: 13.83. Transit SNR 19.54

There are 13 quarters with good PRF difference image offsets

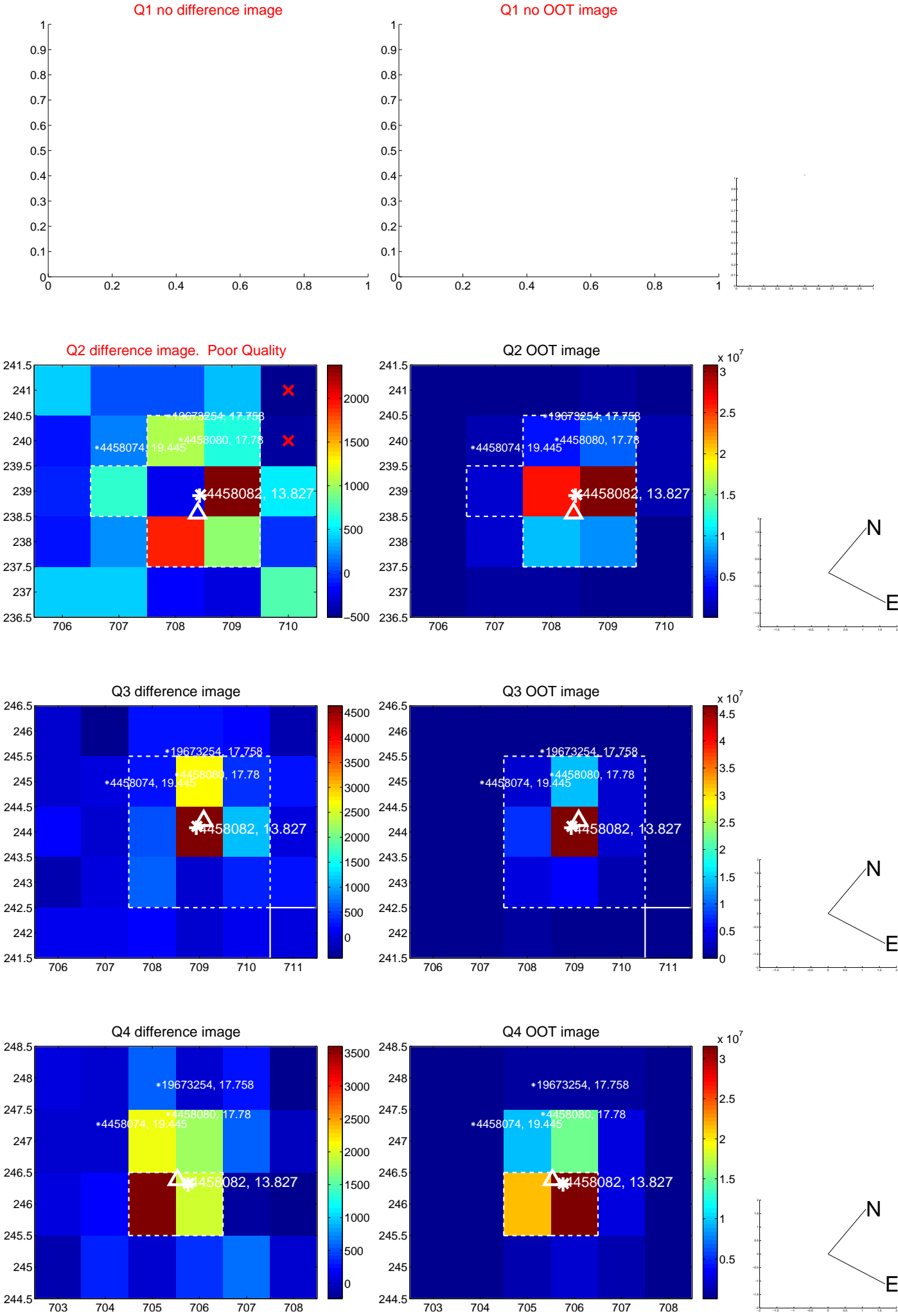
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.169 ± 0.500	0.34	-0.017 ± 0.279	-0.169 ± 0.489
PRF-fit source offset from KIC position	0.276 ± 0.465	0.59	-0.021 ± 0.287	-0.276 ± 0.454
photometric centroid source offset	0.47 ± 0.33	1.42	0.22 ± 0.34	-0.41 ± 0.33

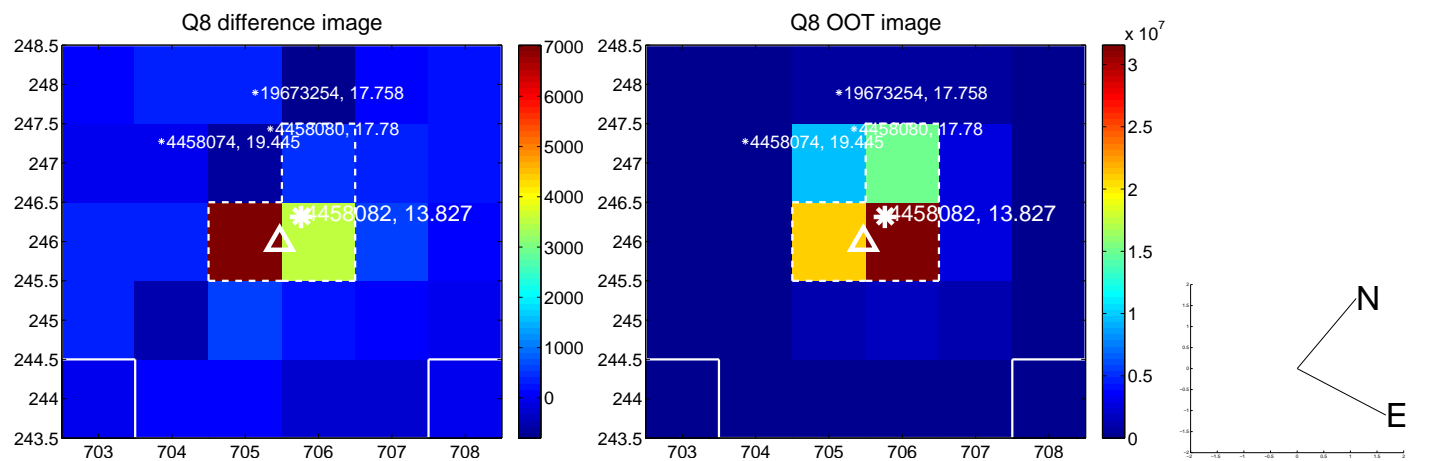
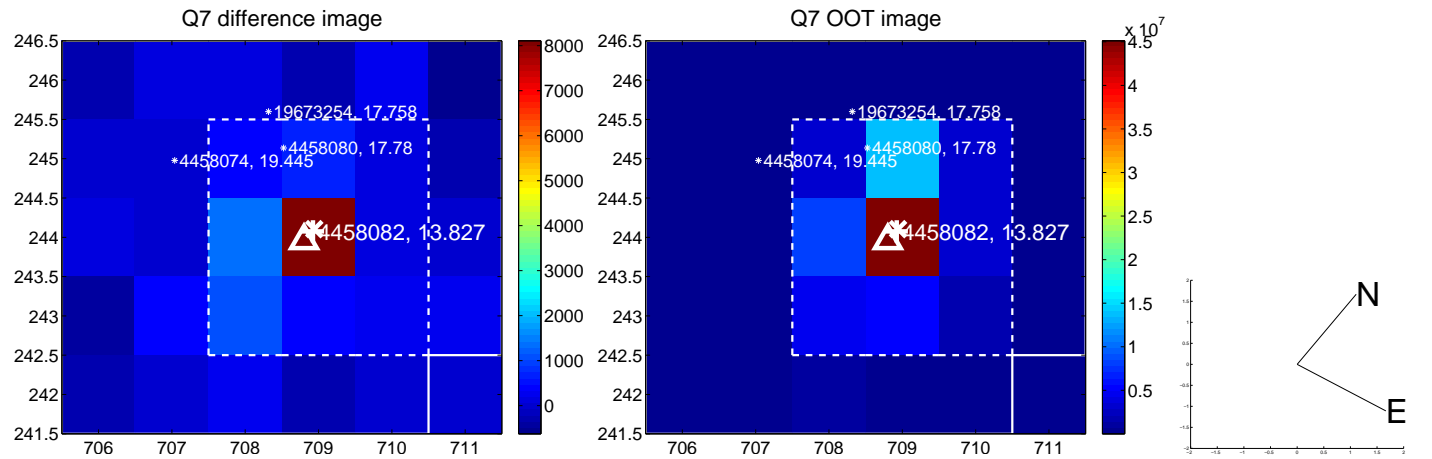
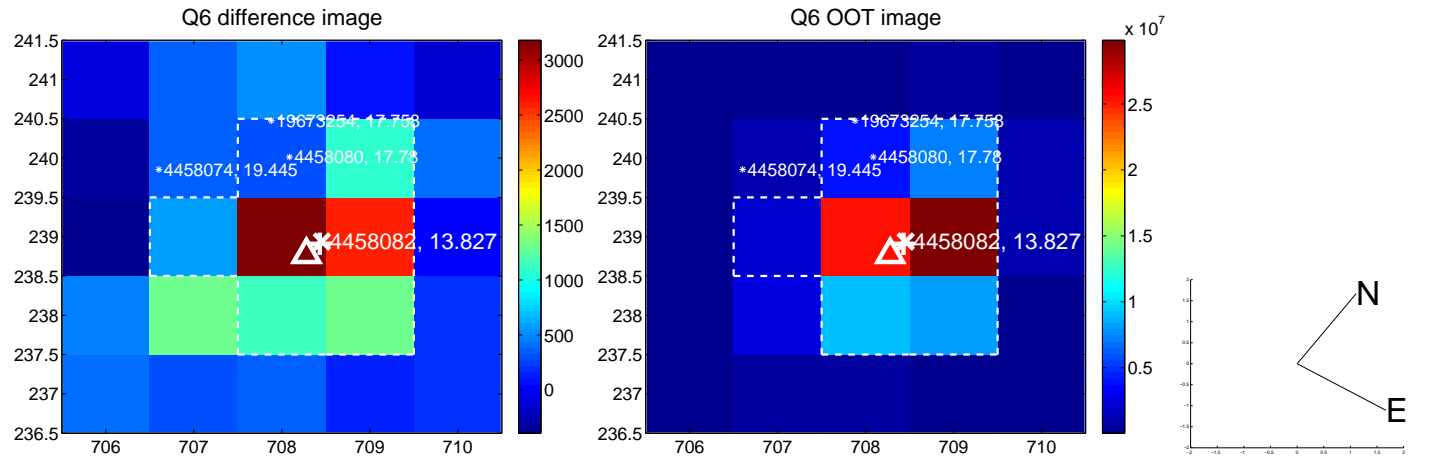
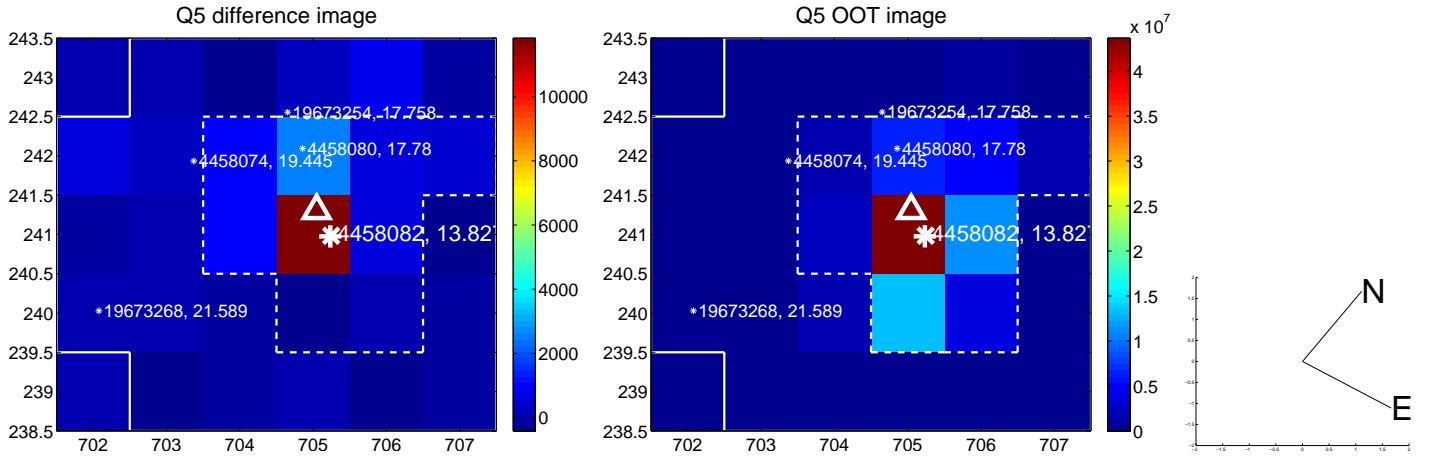


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

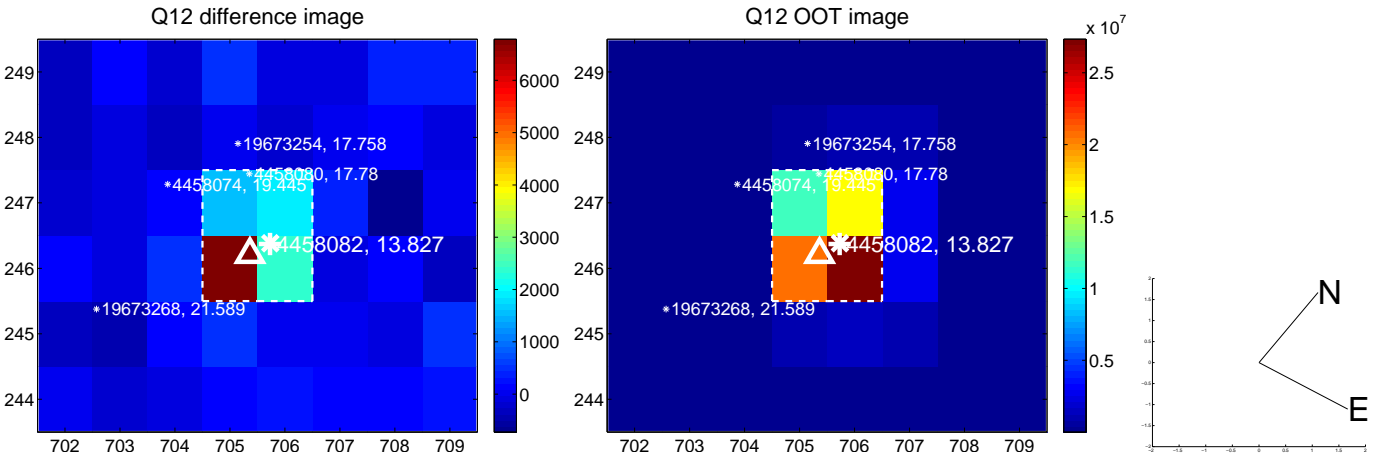
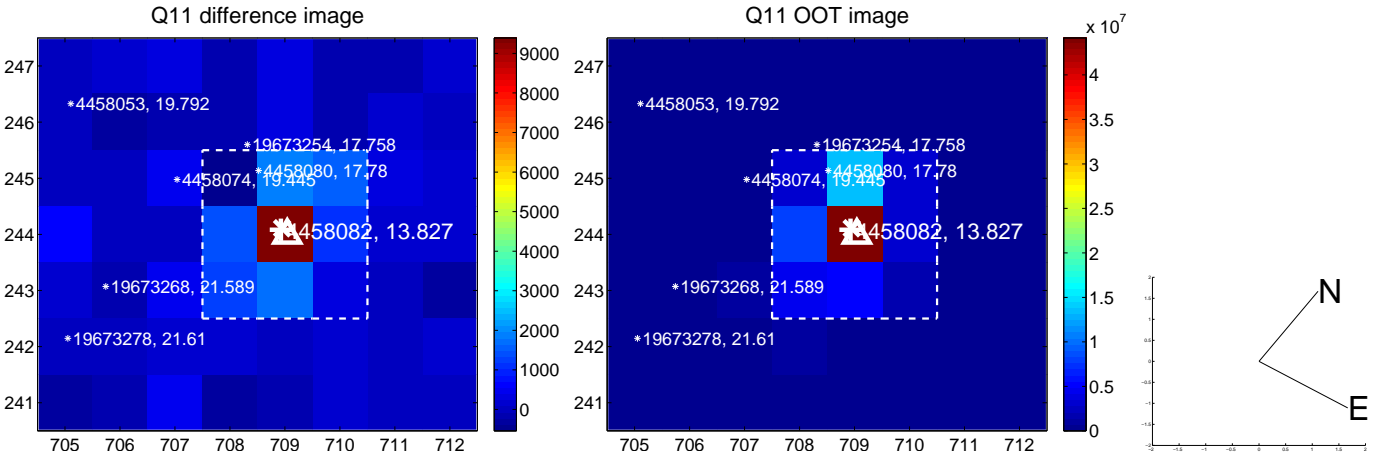
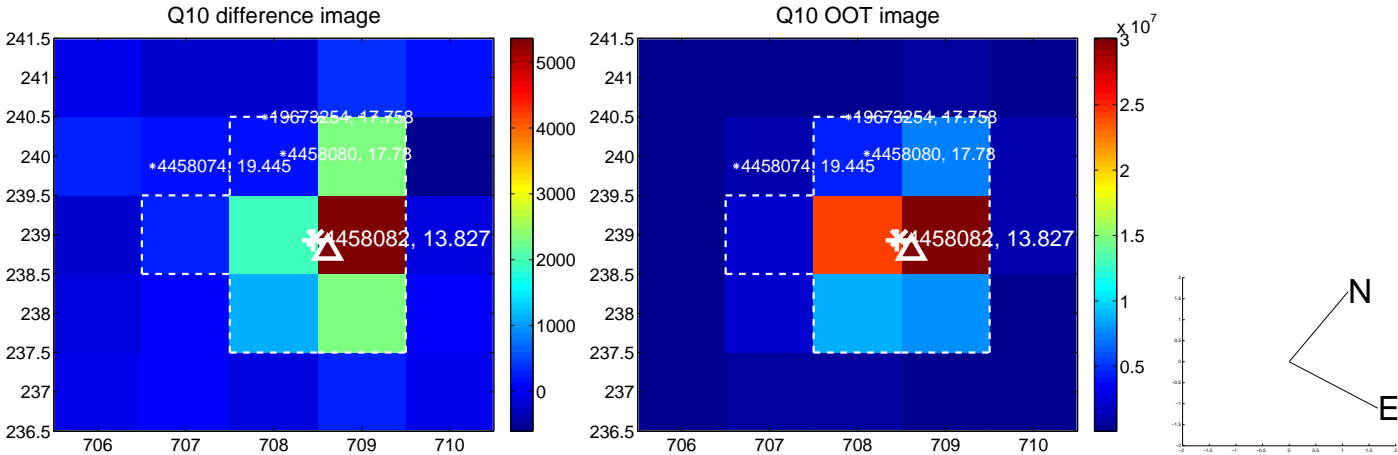
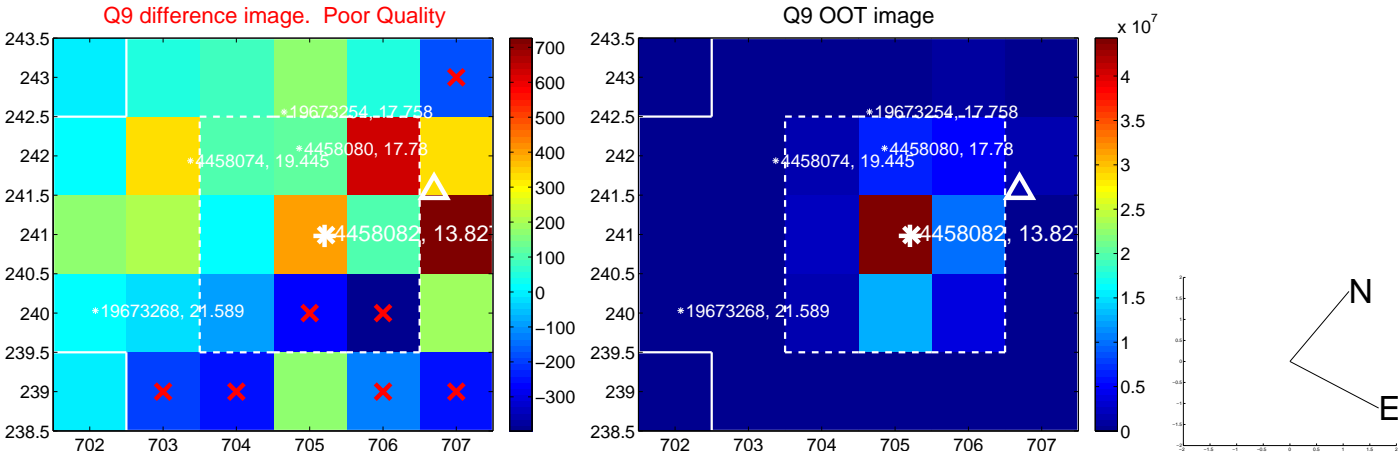
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



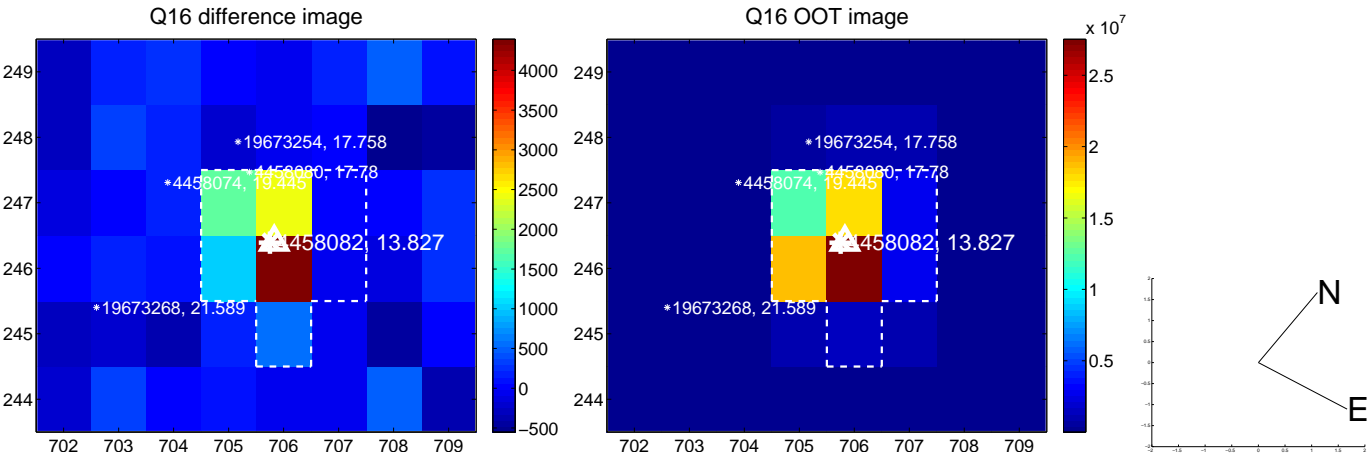
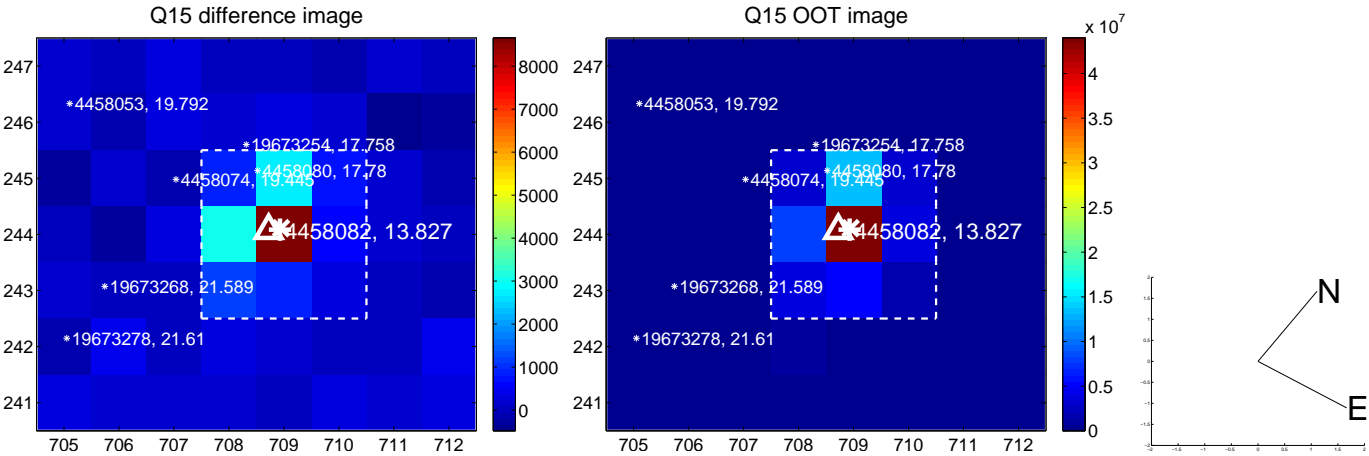
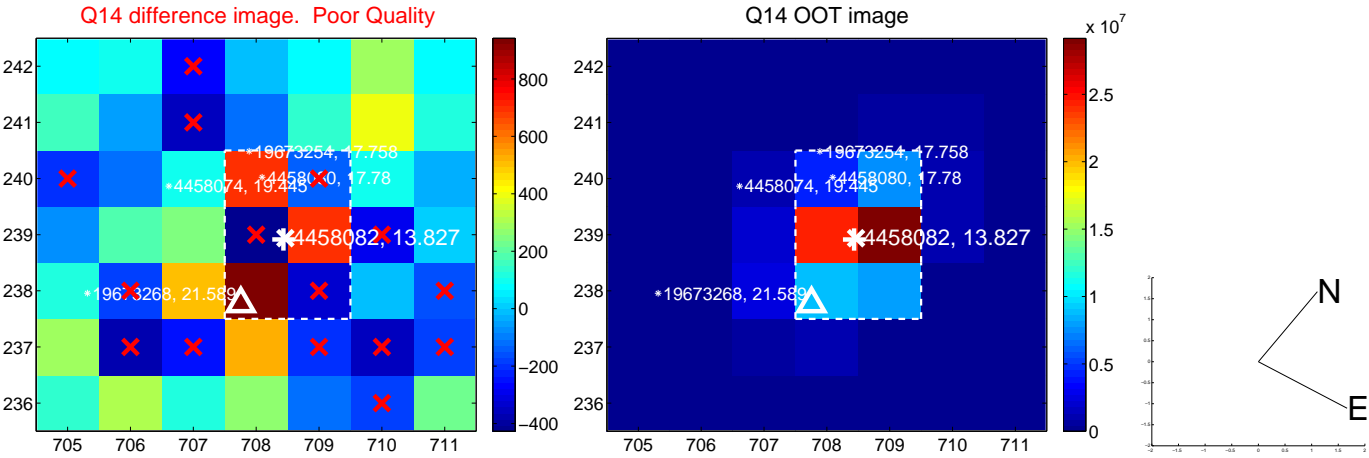
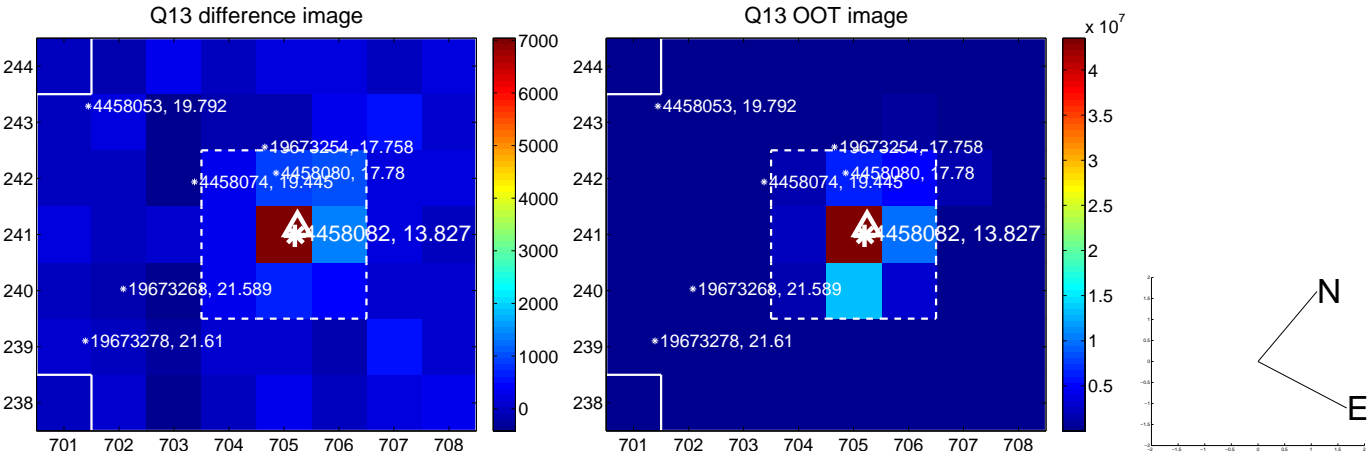
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



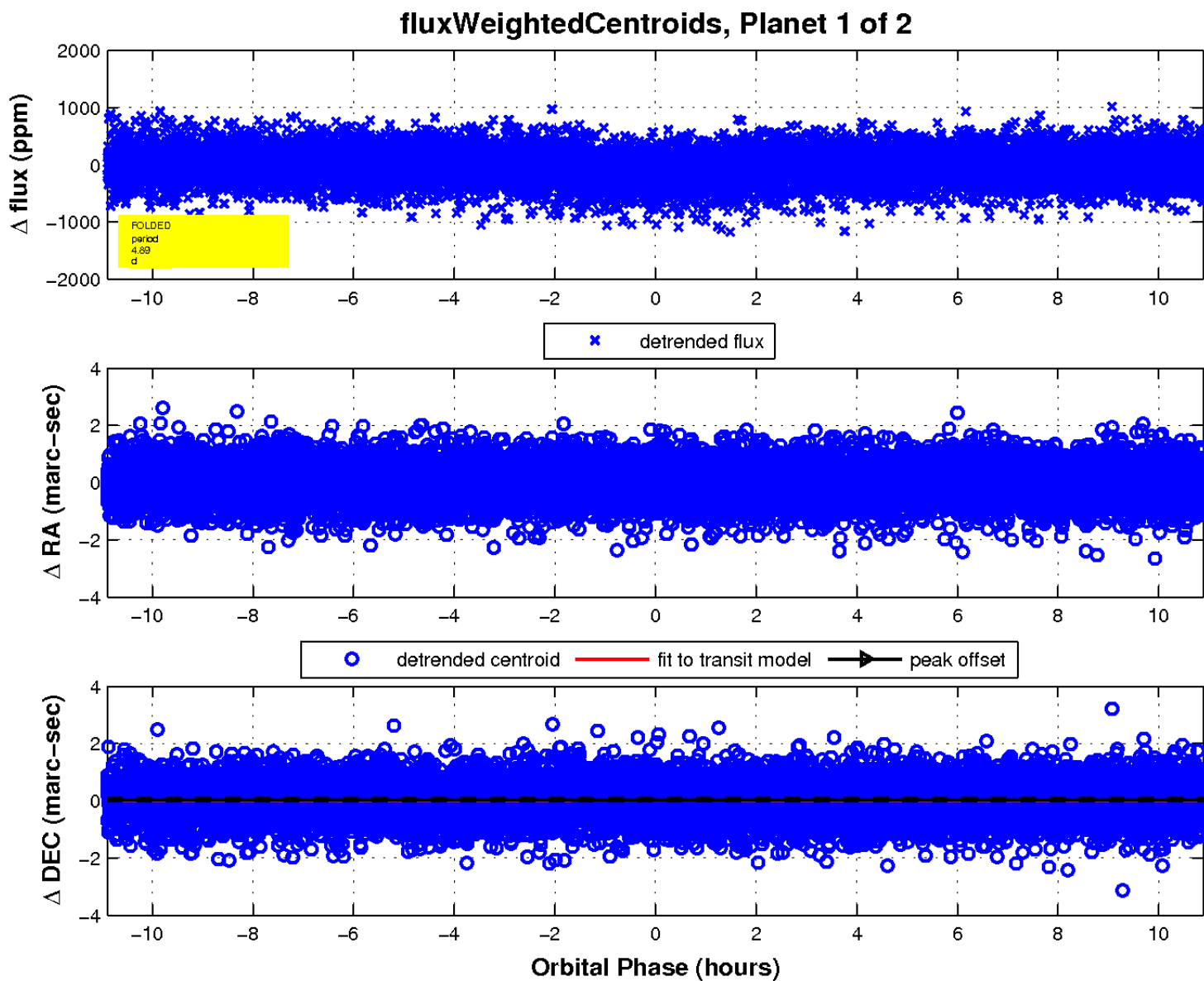
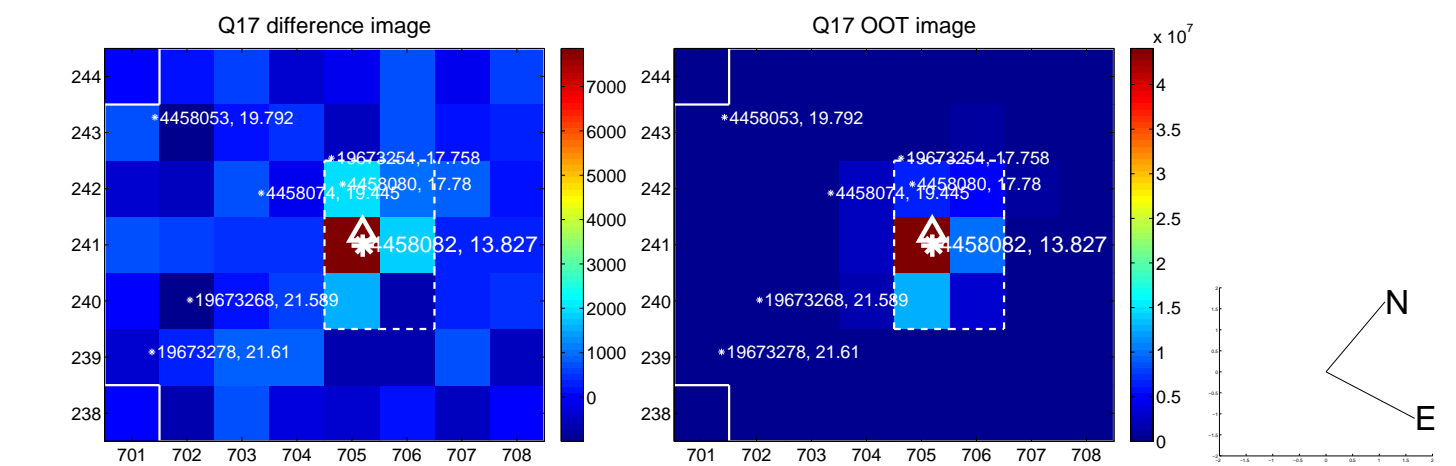
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

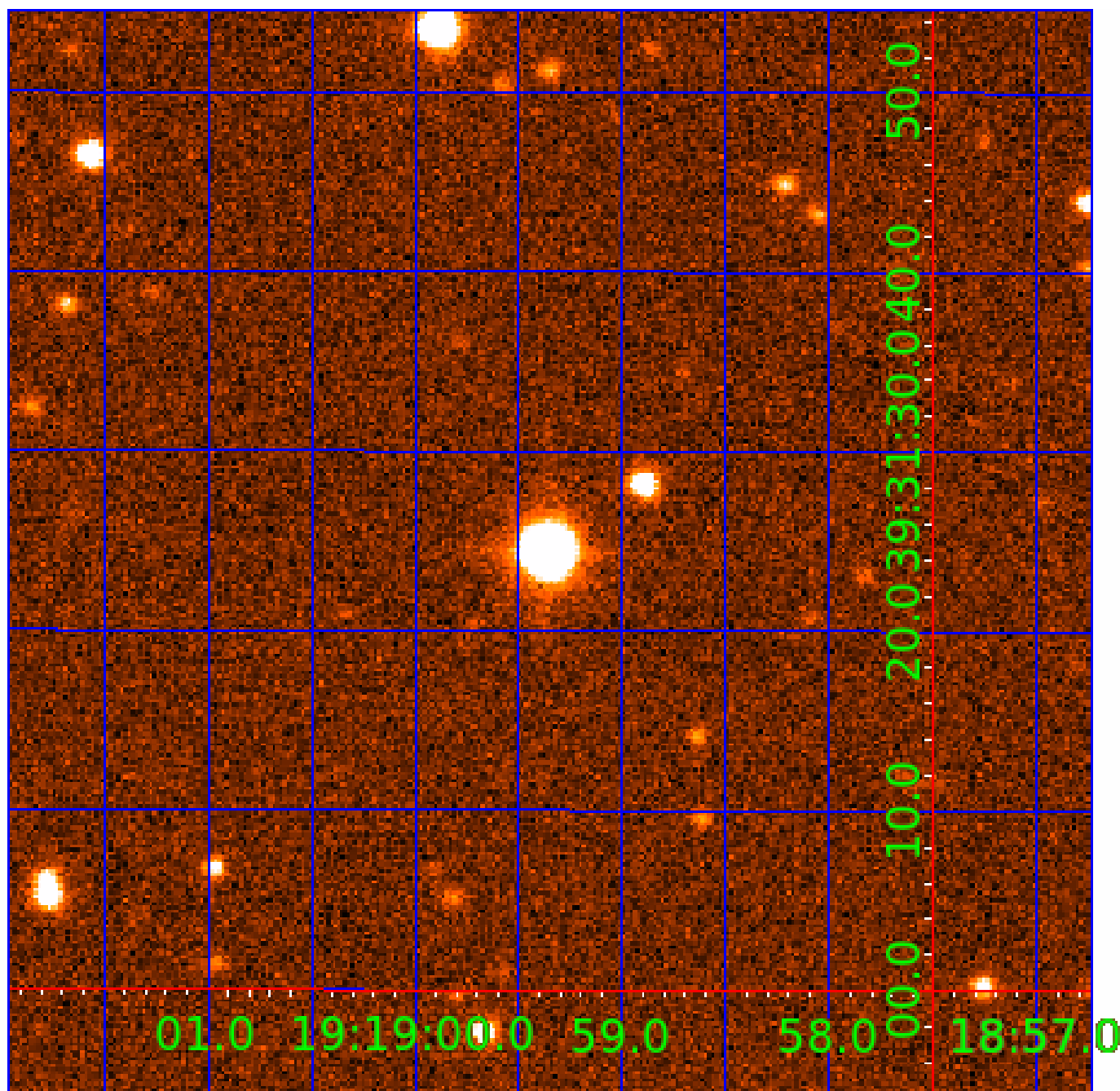


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004458082

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})
004458082-01	OBS	2303.01	4.893340	133.645377	133.7	3.631	17.8	19.5	1.35	6688	1.81	843.69
004458082-02	OBS	2303.02	8.934911	133.385041	128.3	2.277	12.1	13.2	1.35	6688	1.74	378.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004458082-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004458082-02	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.

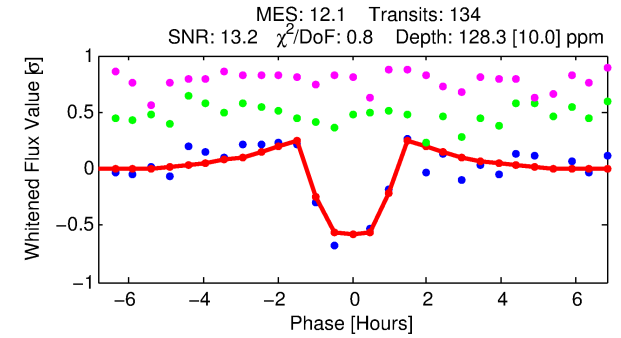
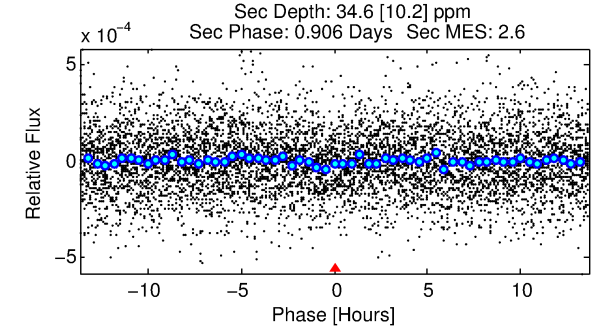
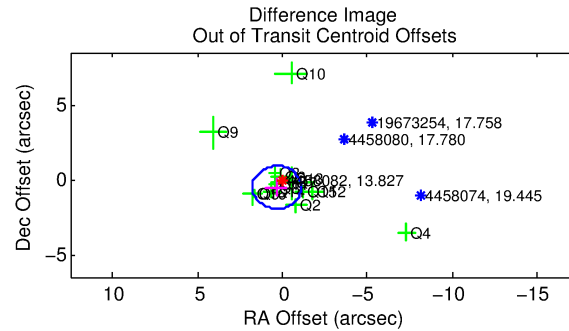
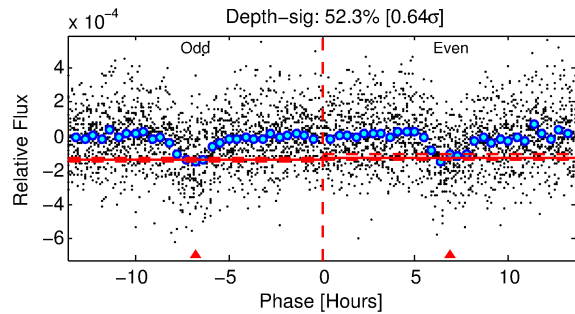
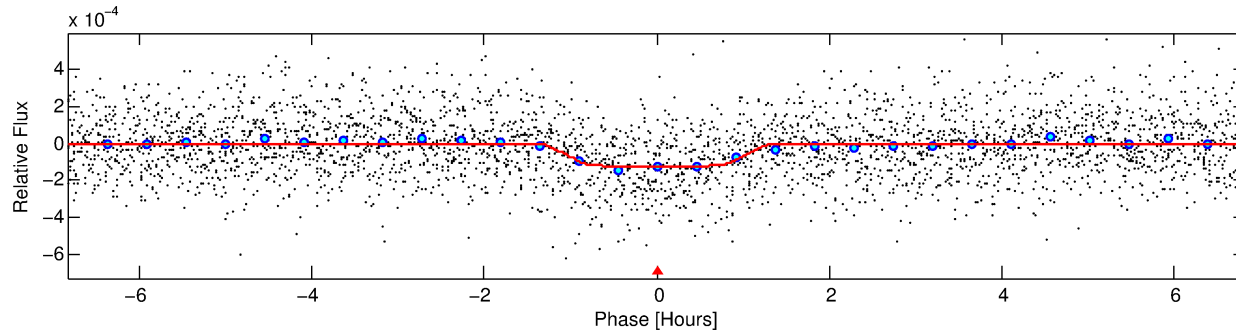
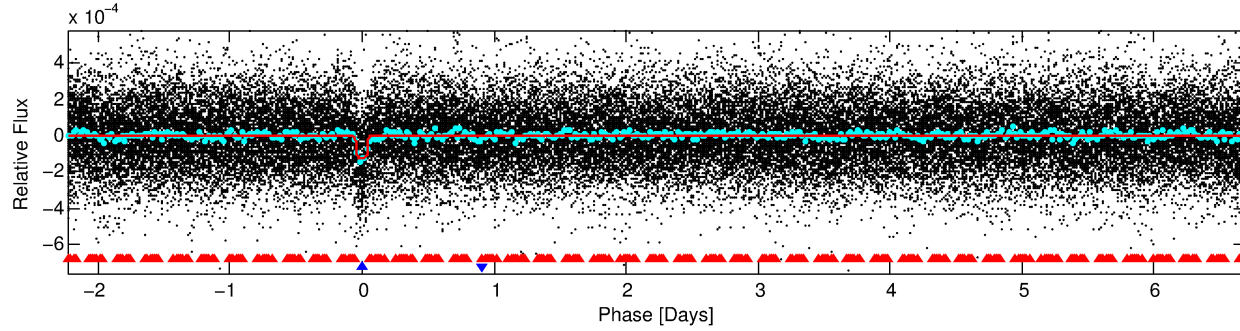
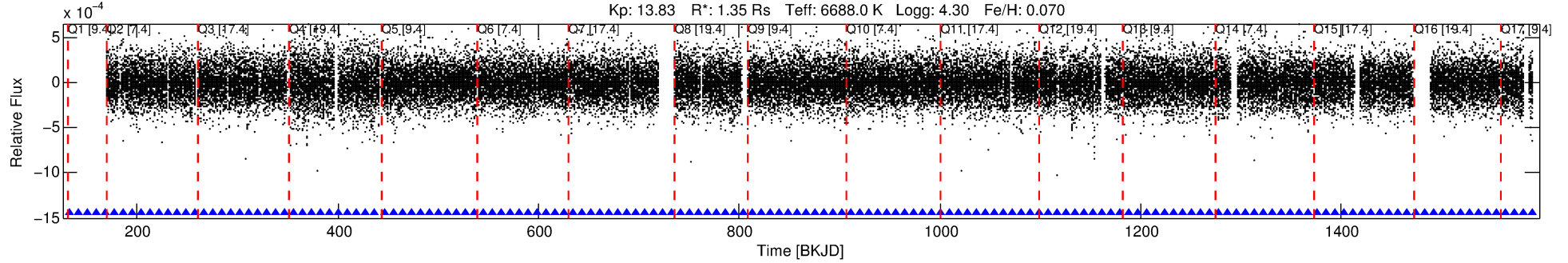
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004458082-02

No Significant Match Found

DV One-Page Summary

KIC: 4458082 Candidate: 2 of 2 Period: 8.935 d
KOI: K02303.02 Corr: 0.988



DV Fit Results:

Period = 8.93491 [0.00003] d
Epoch = 133.3850 [0.0030] BKJD
Rp/R* = 0.0119 [0.0045]
a/R* = 15.58 [33.38]
b = 0.87 [0.61]
Seff = 378.04 [170.05]
Teq = 1124 [126] K
Rp = 1.74 [0.90] Re
a = 0.0928 [0.0270] AU
Ag = 53.86 [49.09] [1.08 σ]
Teffp = 4709 [974] K [3.65 σ]

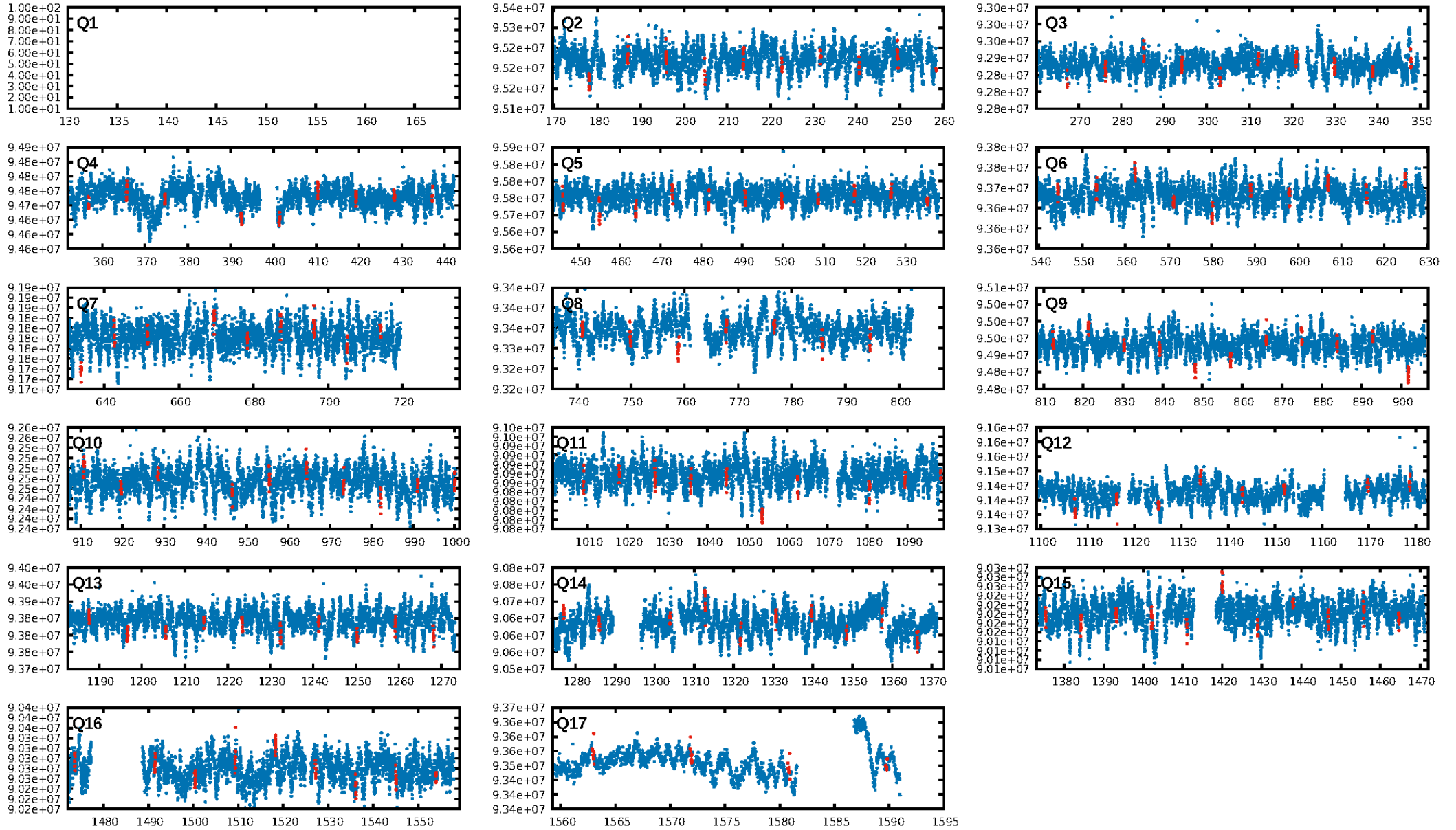
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.63 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.32e-33
RollingBand-fgt: 1.00 [130/130]
GhostDiagnostic-chr: 1.036
Centroid-sig: N/A
Centroid-so: 0.426 arcsec [0.73 σ]
OotOffset-rm: 0.606 arcsec [1.27 σ]
KicOffset-rm: 0.703 arcsec [1.63 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.80 [12/15]
DiffImageOverlap-fno: 1.00 [16/16]

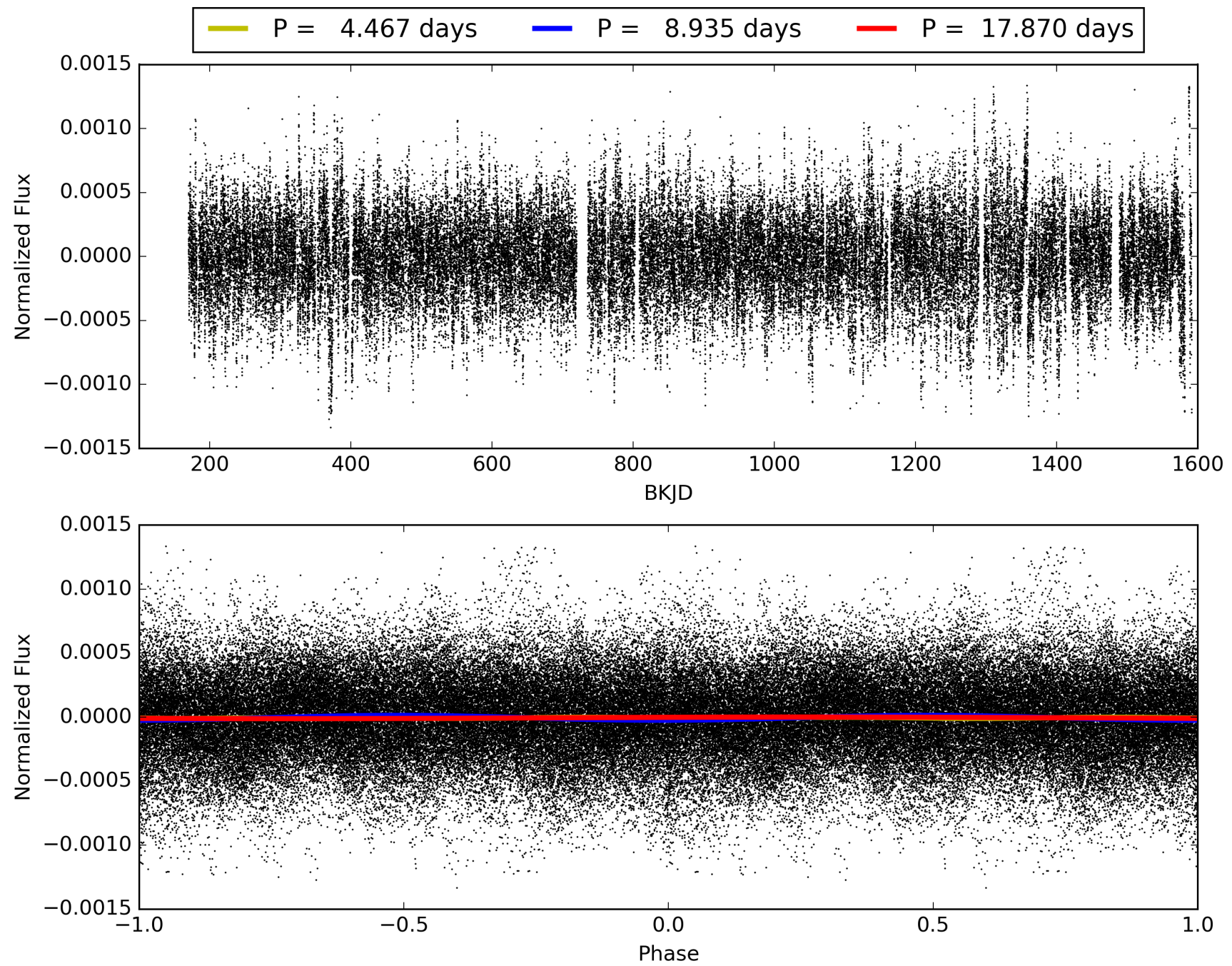
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:51:22 Z

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

TCE 004458082-02, PDC Light Curves

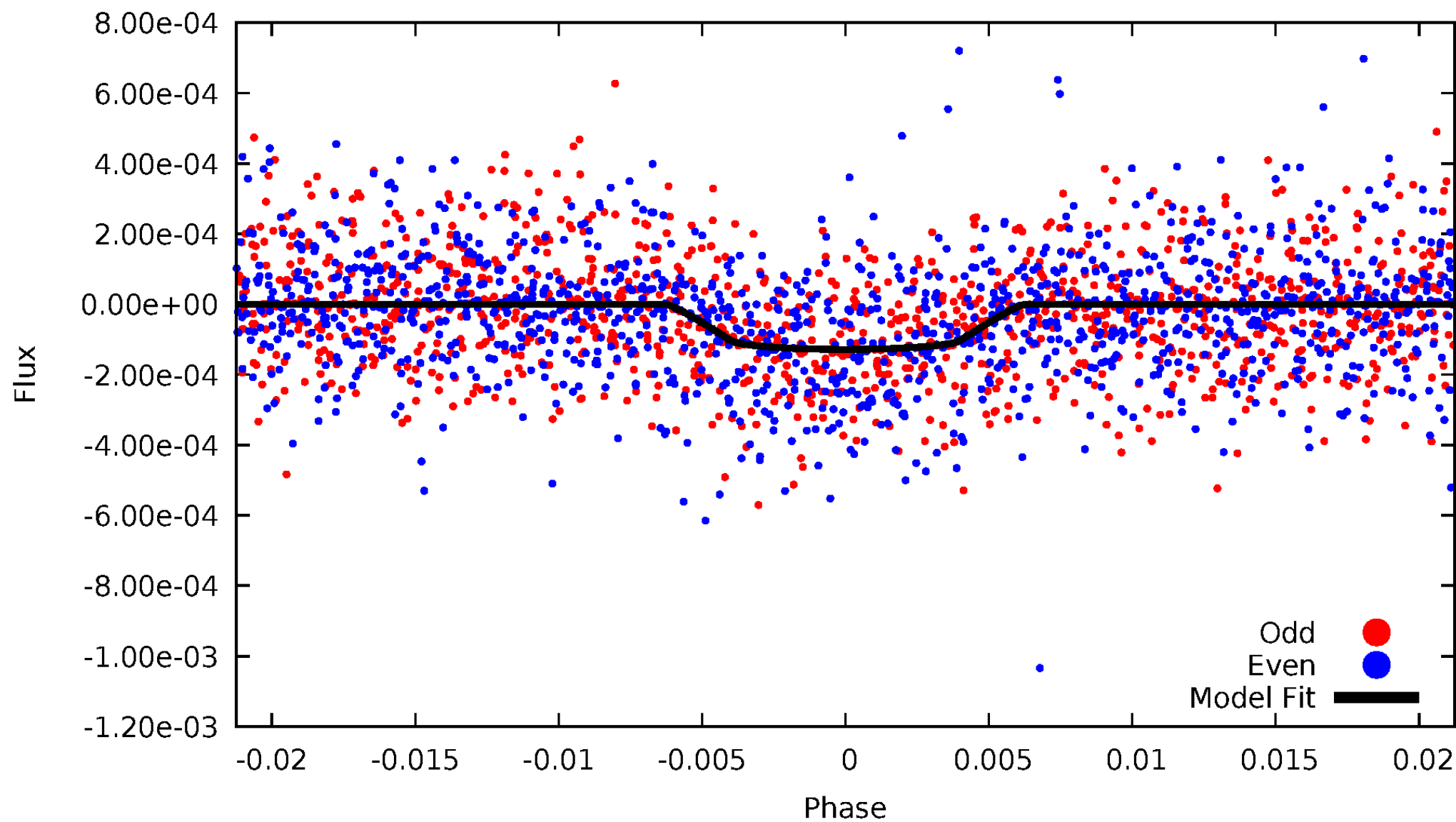


TCE 004458082-02



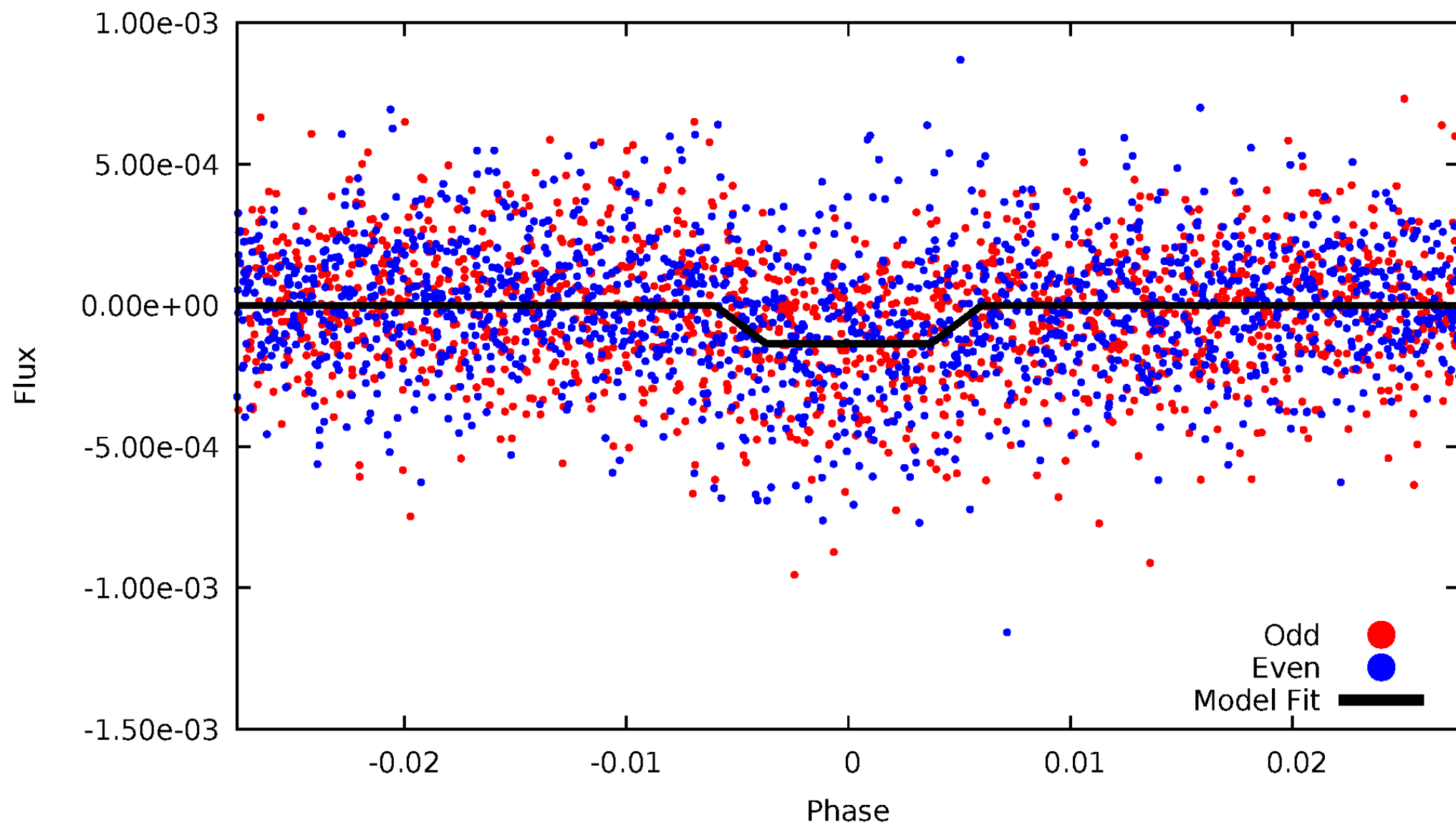
DV Odd/Even

TCE 004458082-02



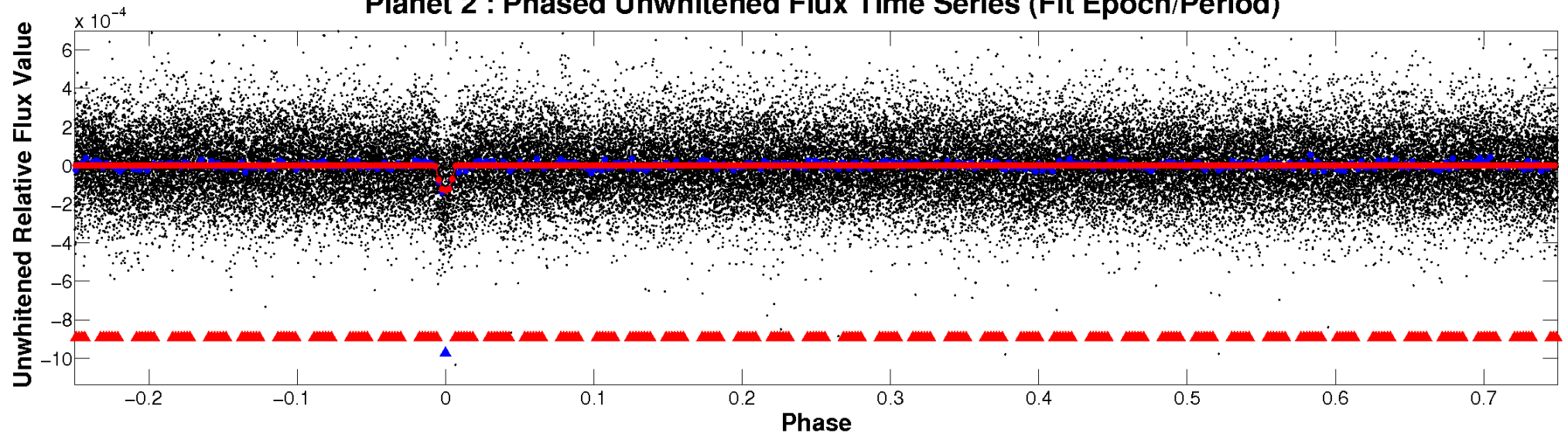
ALT Odd/Even

TCE 004458082-02

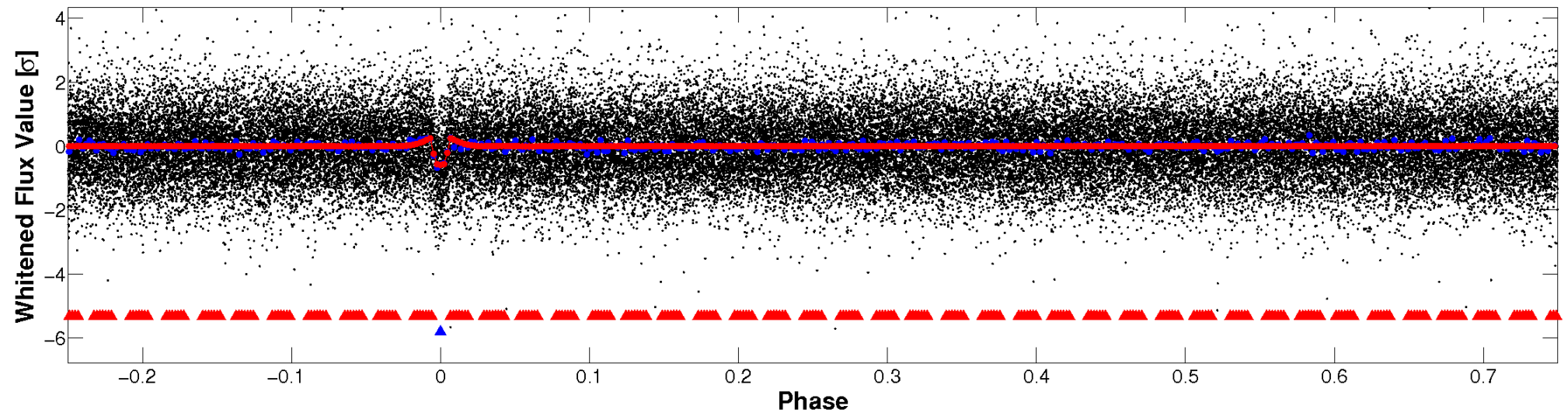


Non-Whitened Vs. Whitened Light Curve

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

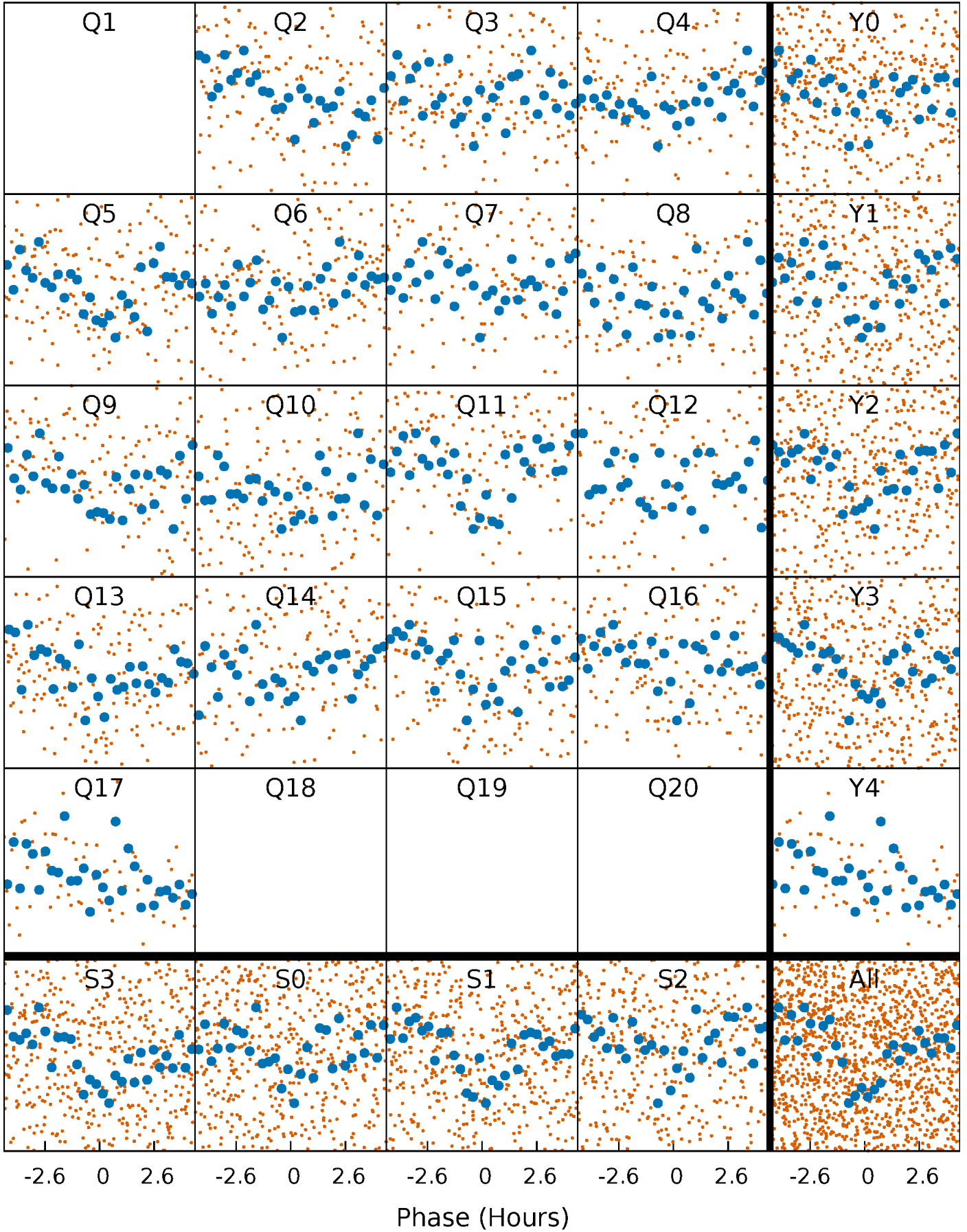


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



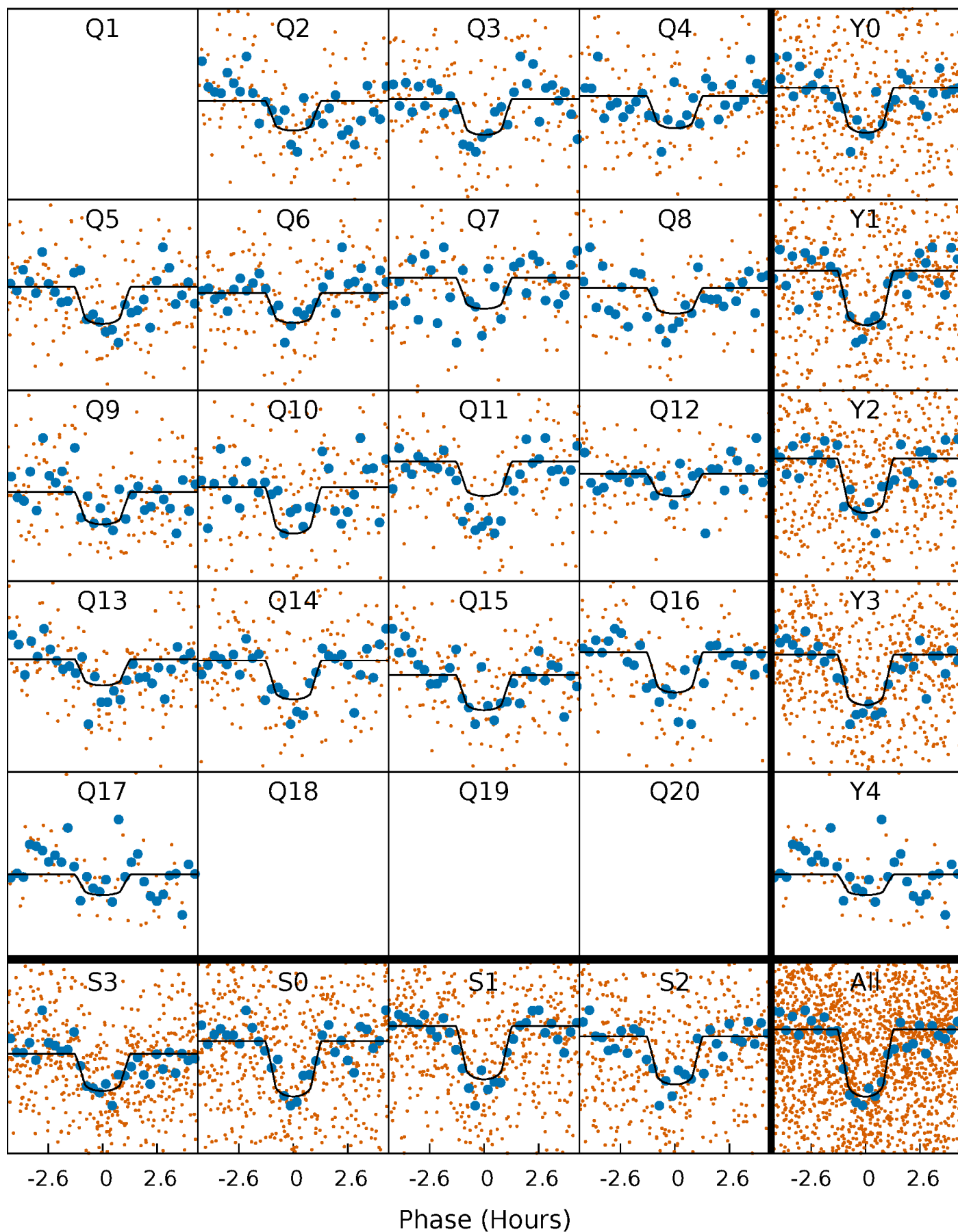
PDC Quarter-Phased Transit Curves

TCE 004458082-02 P= 8.934911 Days $T_0=133.385041$ (BKJD)



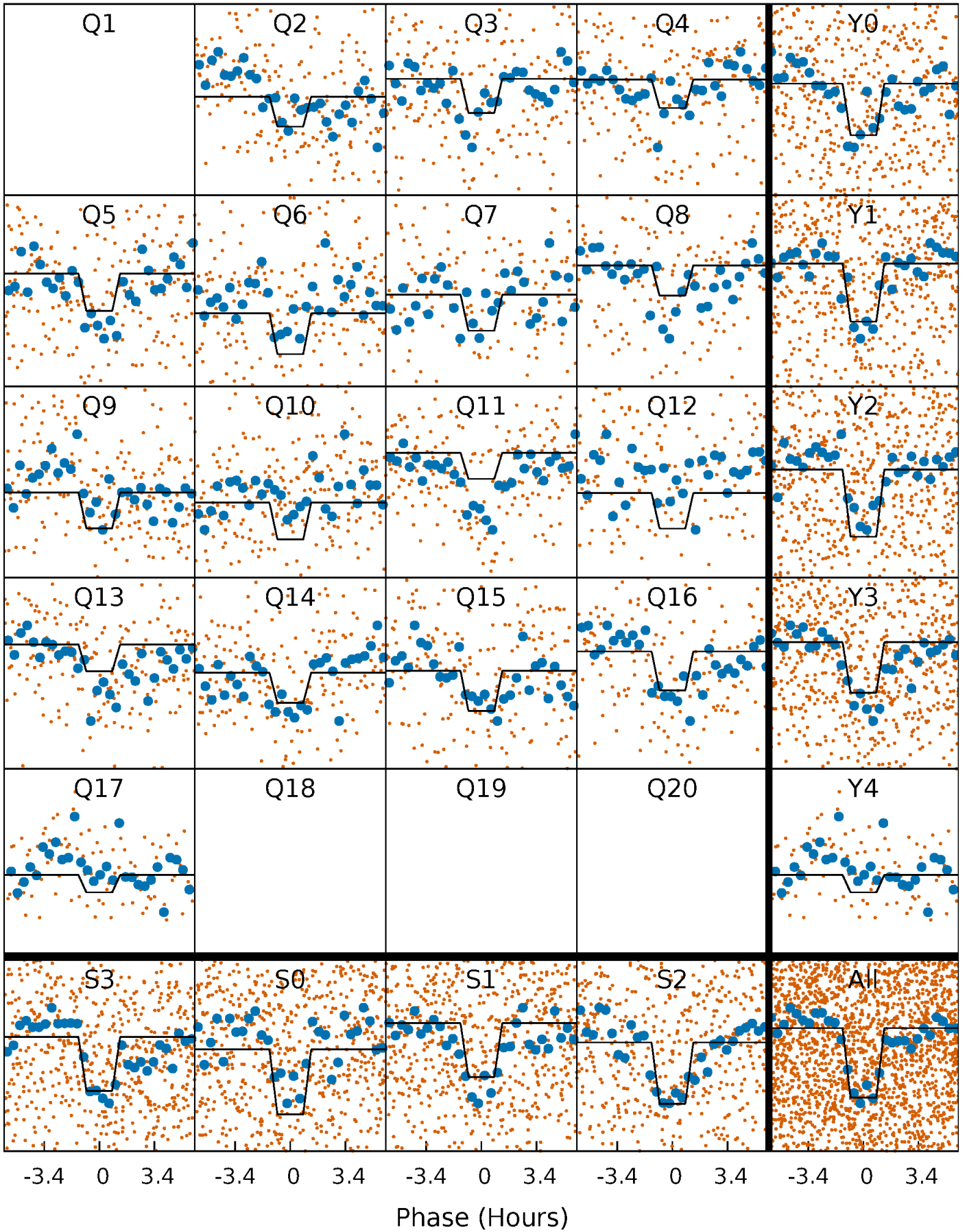
DV Quarter-Phased Transit Curves

TCE 004458082-02 P= 8.934911 Days $T_0=133.385041$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

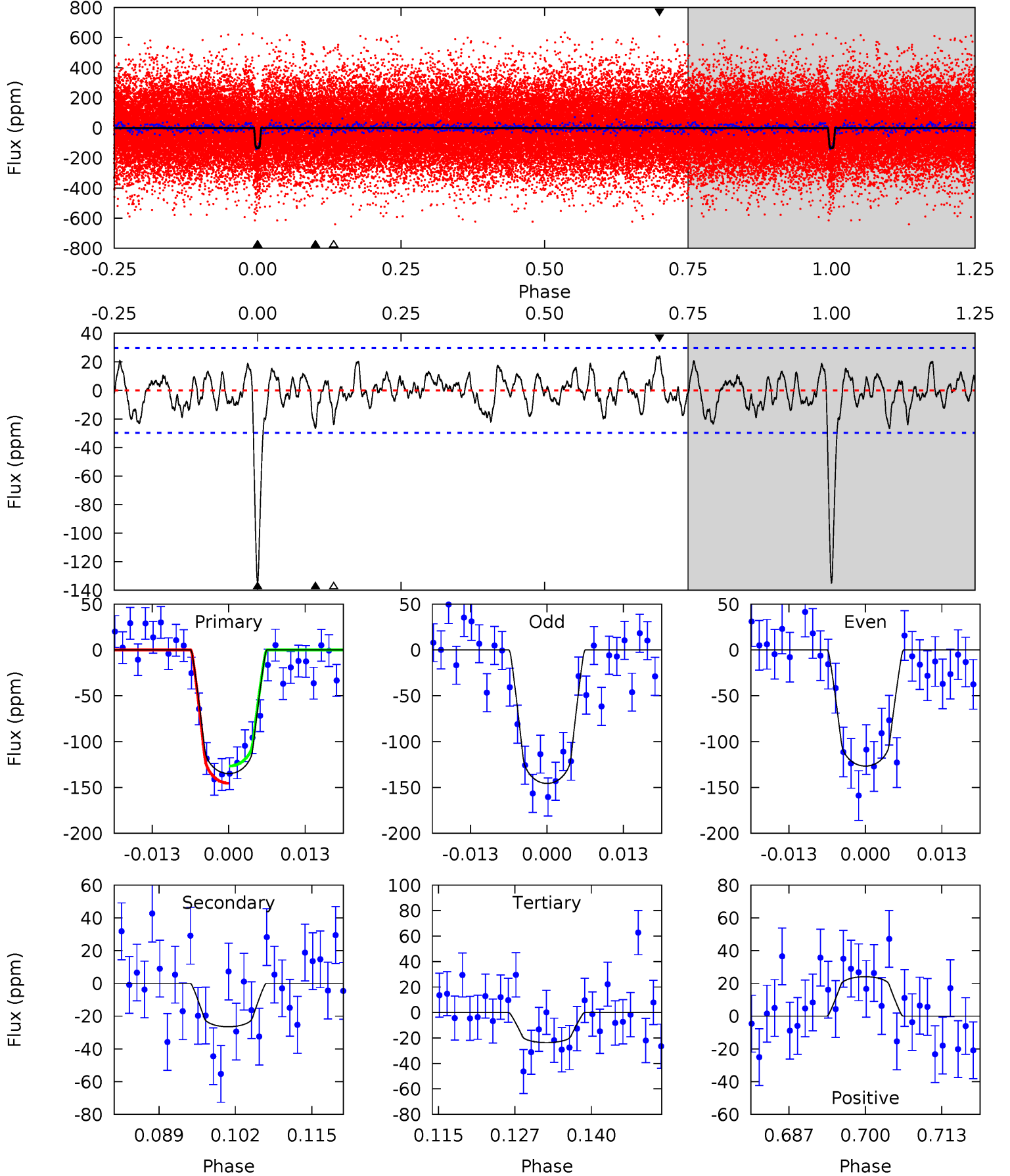
TCE 004458082-02 P= 8.934785 Days $T_0=133.395707$ (BKJD)



DV Model-Shift Uniqueness Test

004458082-02, P = 8.934911 Days, E = 133.385041 Days

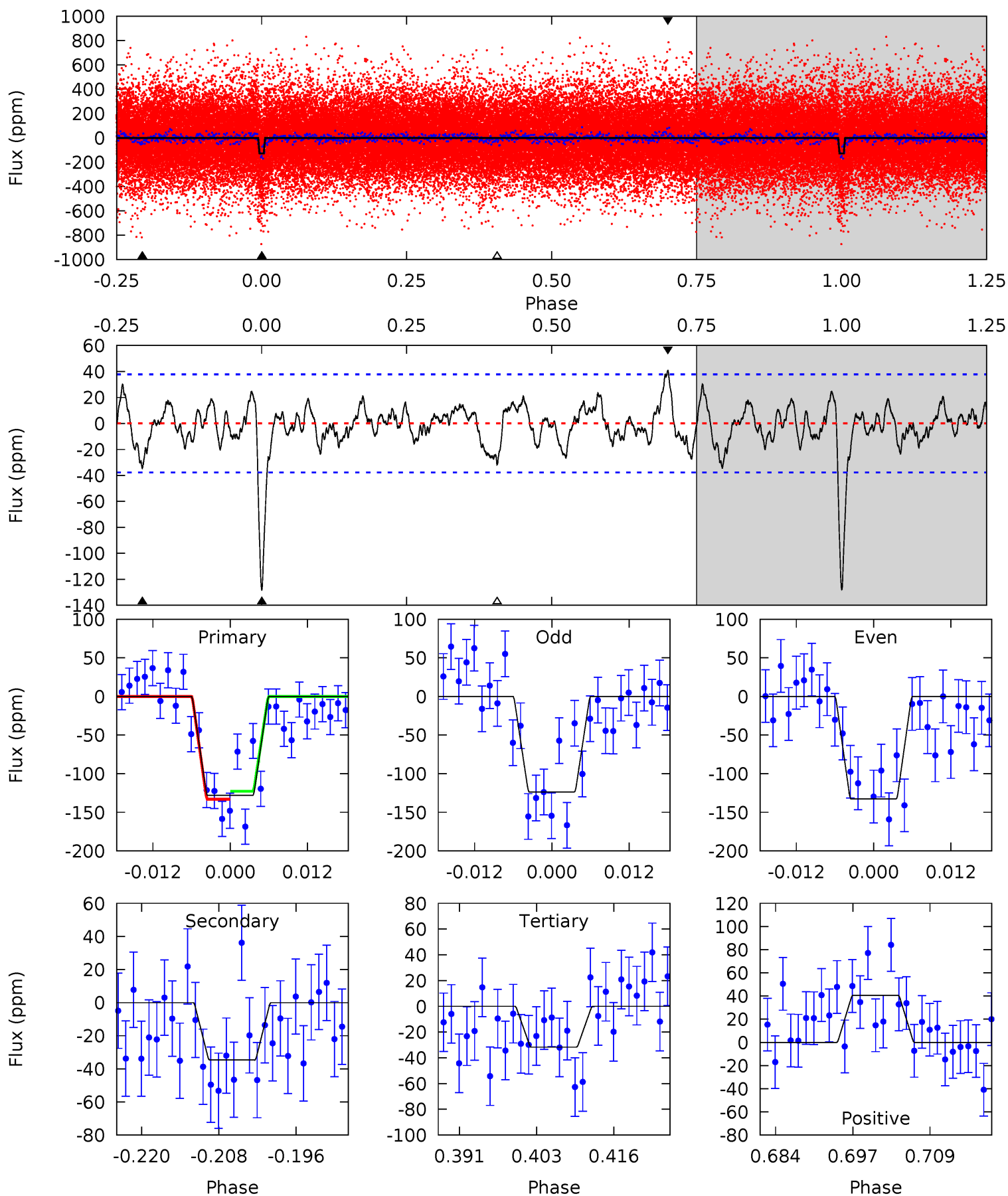
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	4.43	3.95	4.03	4.98	2.49	1.53	18.6	18.6	0.48	0.40	1.59	1.03	0.15	1.57



Alt Model-Shift Uniqueness Test

004458082-02, P = 8.934785 Days, E = 133.395707 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	4.57	4.19	5.36	4.99	2.51	1.60	12.7	11.6	0.39	-0.79	0.60	1.26	0.24	0.68



Stellar Parameters For KIC 004458082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6688^{+187}_{-281}	$4.304^{+0.075}_{-0.225}$	$0.070^{+0.250}_{-0.350}$	$1.347^{+0.473}_{-0.169}$	$1.336^{+0.200}_{-0.200}$	$0.771^{+0.310}_{-0.420}$
	+3%/-4%	+2%/-5%	+357%/-500%	+35%/-13%	+15%/-15%	+40%/-55%
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 004458082-02 / KOI 2303.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-26 ± 6	$1.84^{+0.78}_{-0.71}$	1595^{+125}_{-85}	4507^{+993}_{-557}	36^{+60}_{-20}
Alt.	-35 ± 8	$1.76^{+0.85}_{-0.69}$	1591^{+140}_{-83}	4845^{+1156}_{-664}	51^{+84}_{-28}

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 $A_{obs} \gg 1.0$

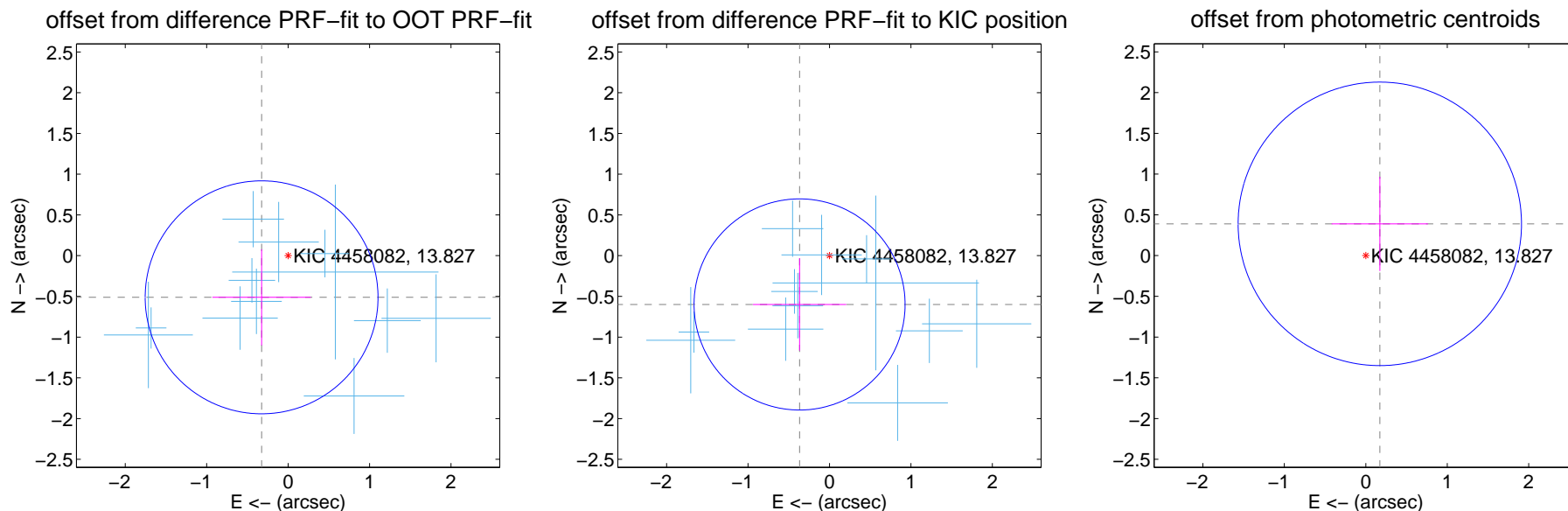
DV Centroid Data

Supplemental centroid analysis for 004458082-02. Kepler magnitude: 13.83. Transit SNR 13.16

There are 12 quarters with good PRF difference image offsets

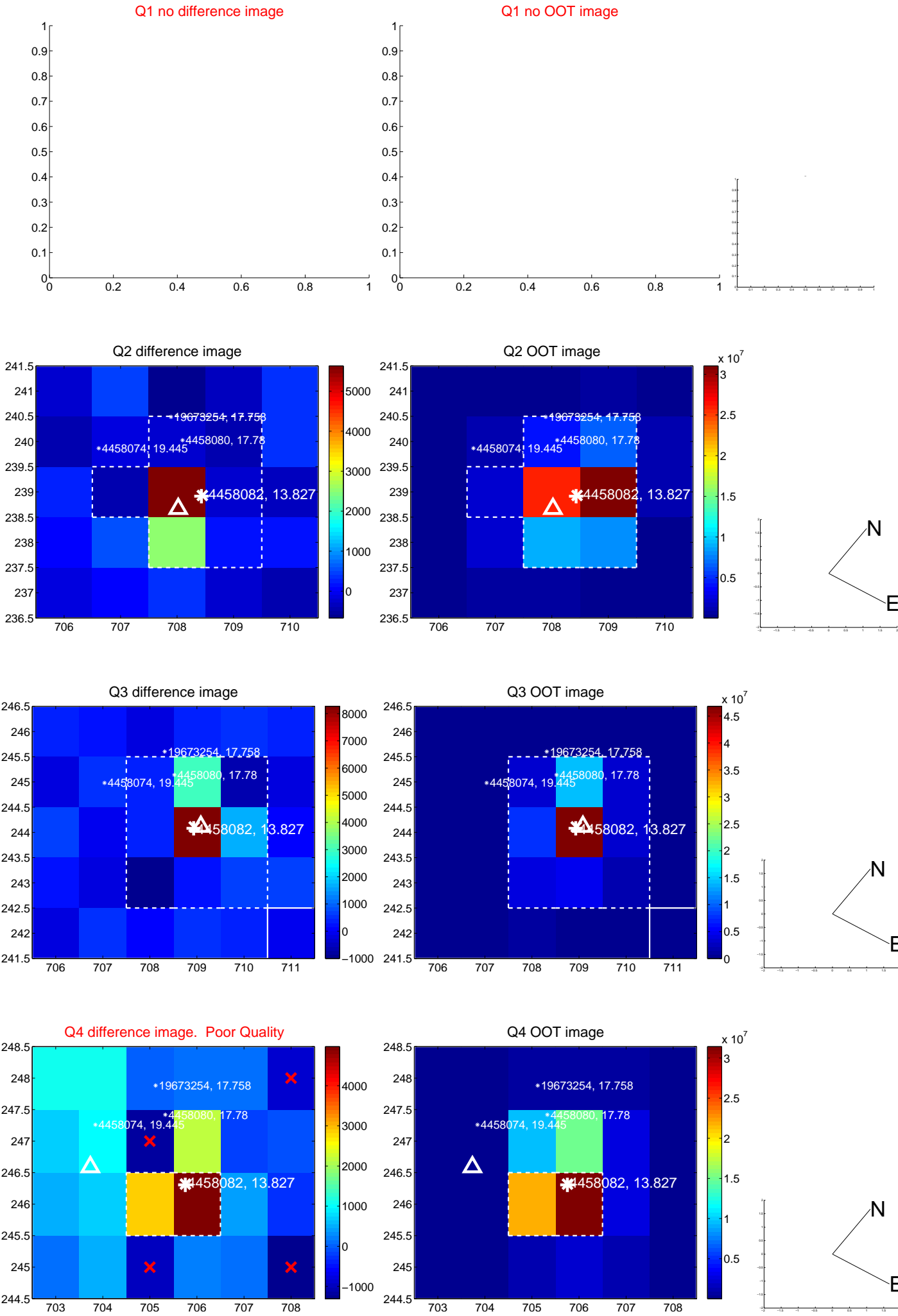
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.606 ± 0.477	1.27	0.326 ± 0.605	-0.512 ± 0.590
PRF-fit source offset from KIC position	0.703 ± 0.432	1.63	0.367 ± 0.573	-0.599 ± 0.566
photometric centroid source offset	0.43 ± 0.58	0.73	-0.17 ± 0.59	0.39 ± 0.58

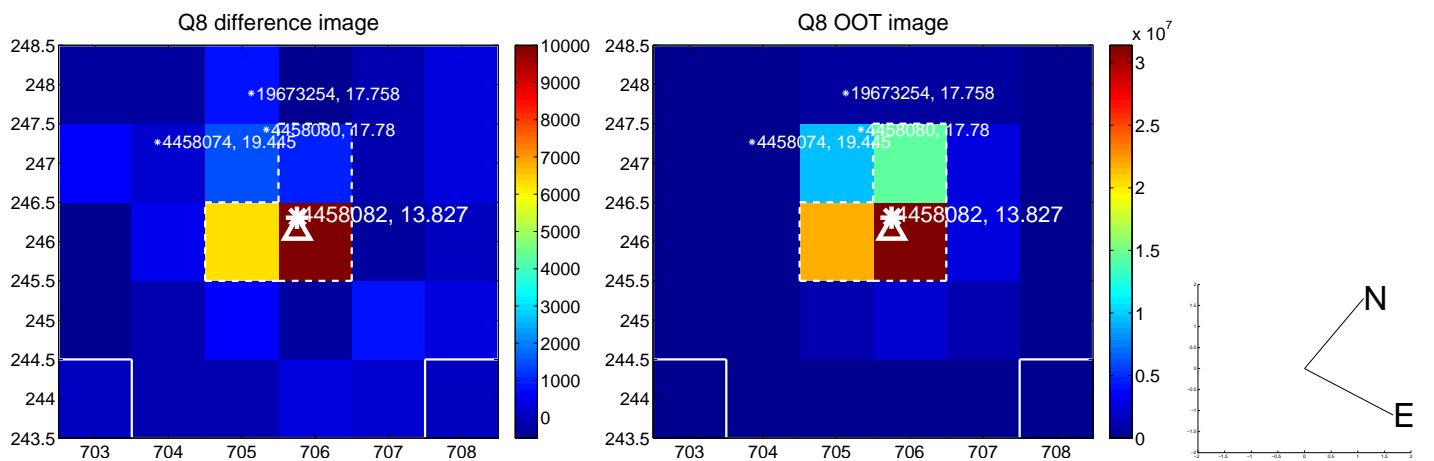
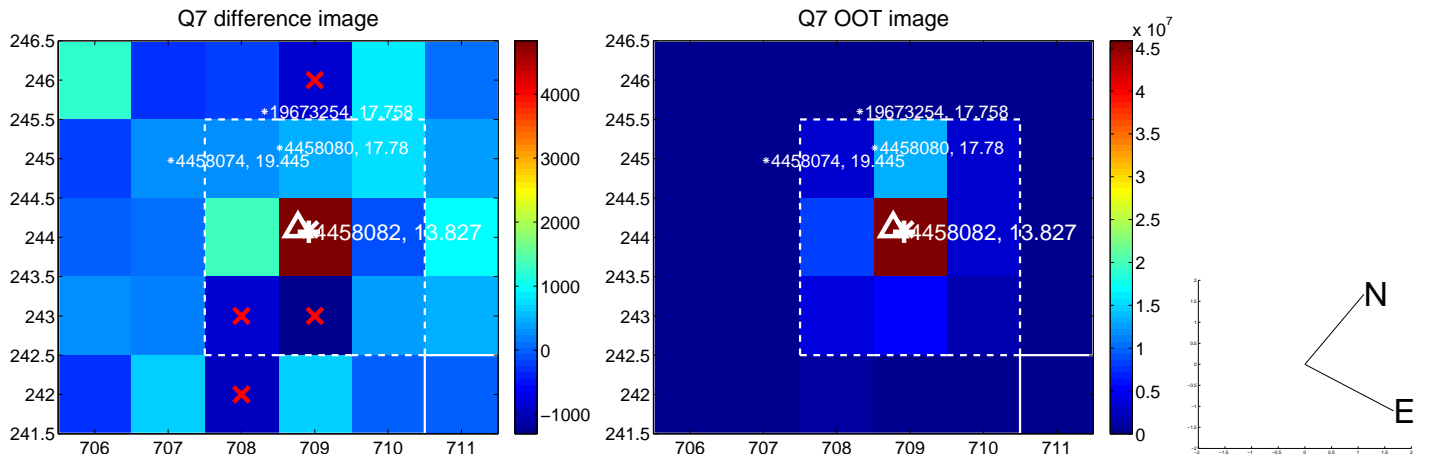
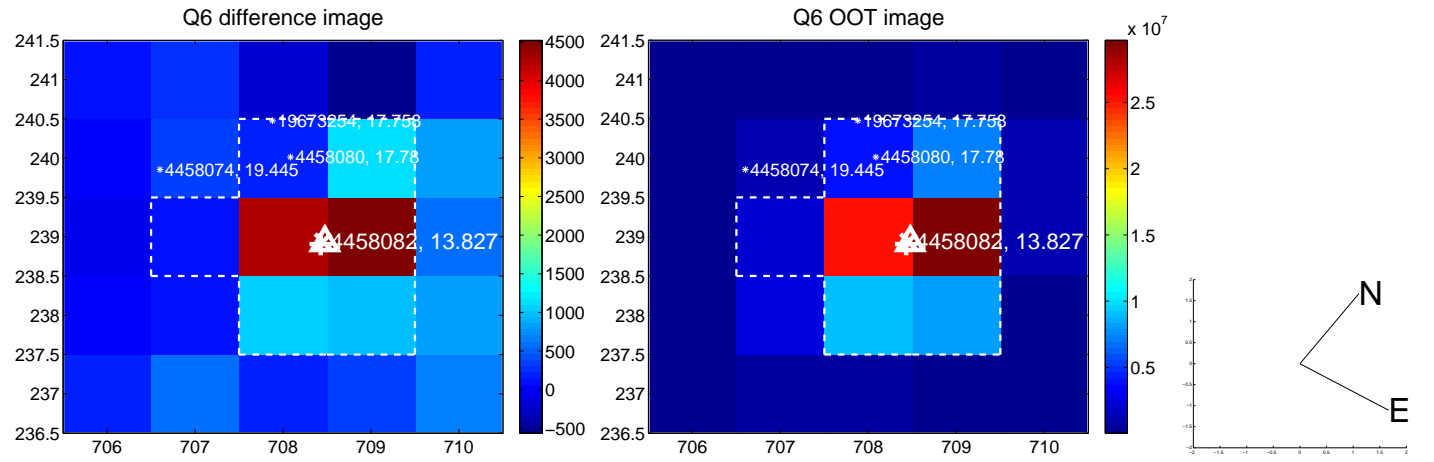
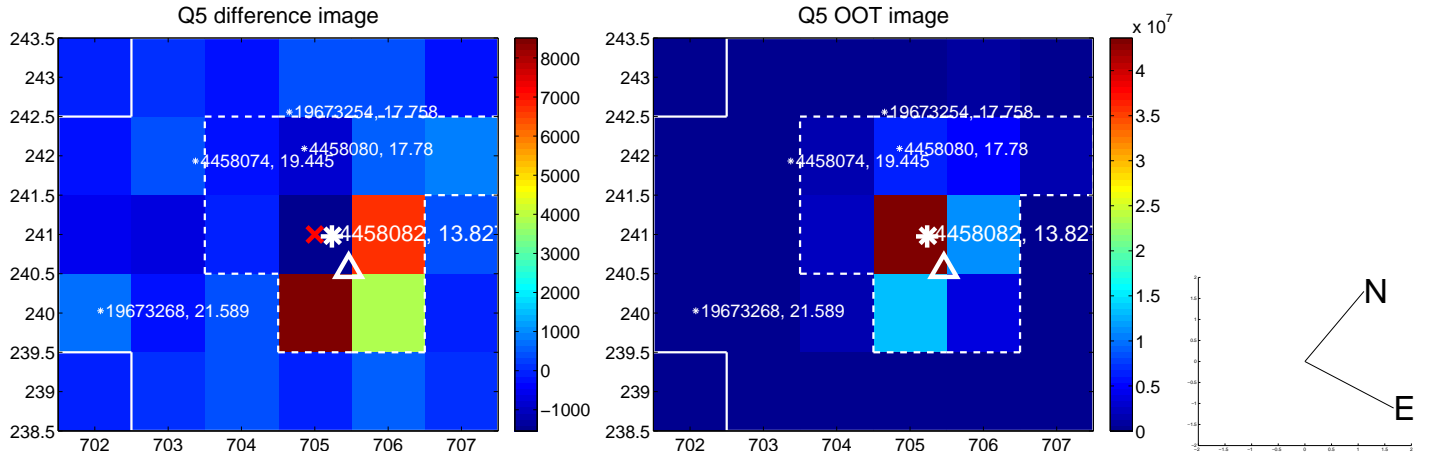


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

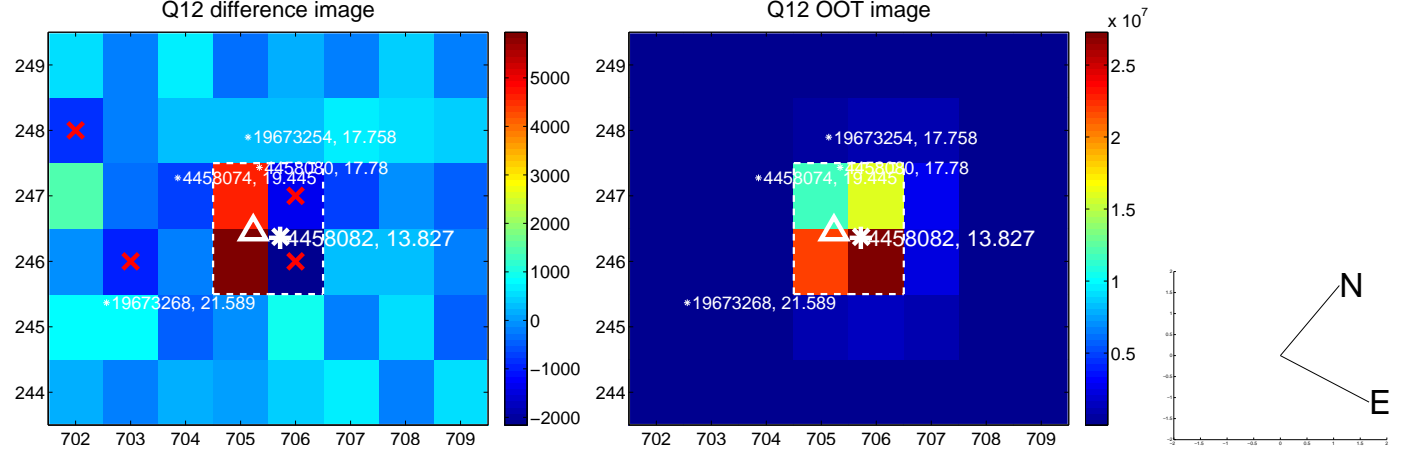
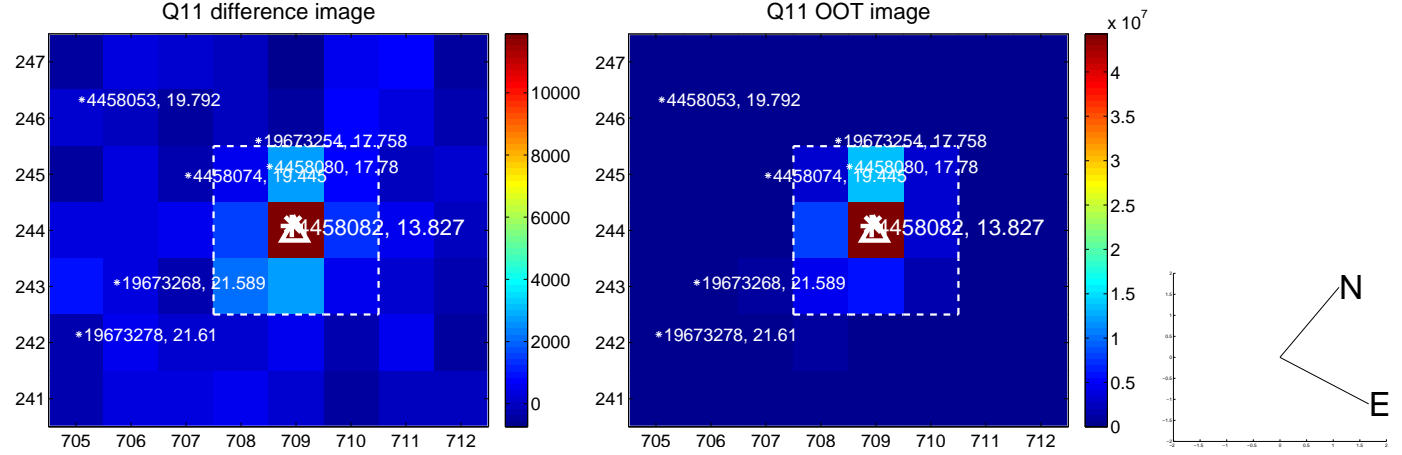
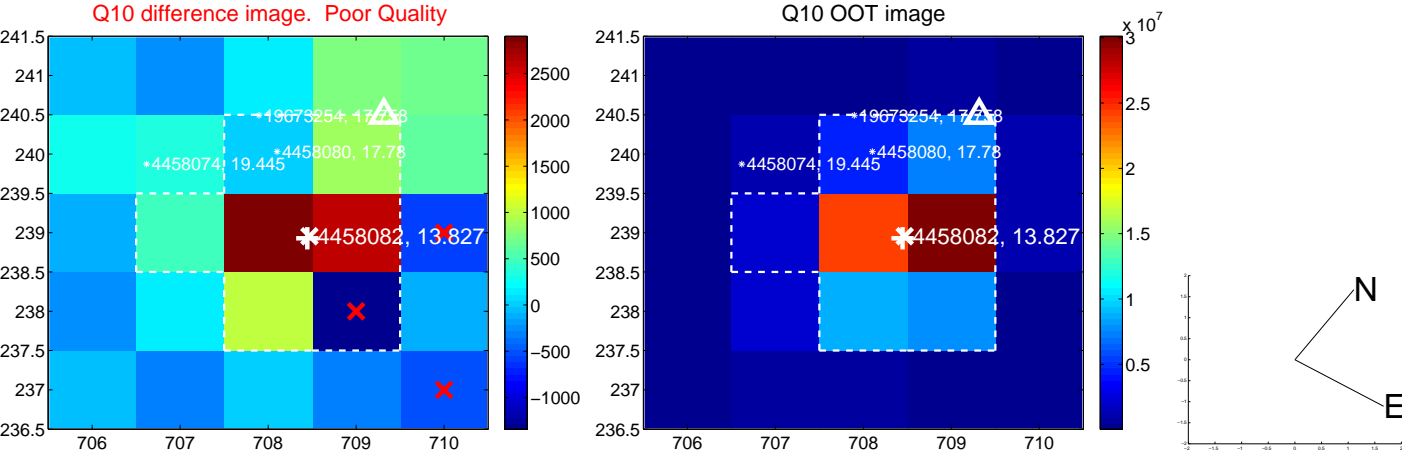
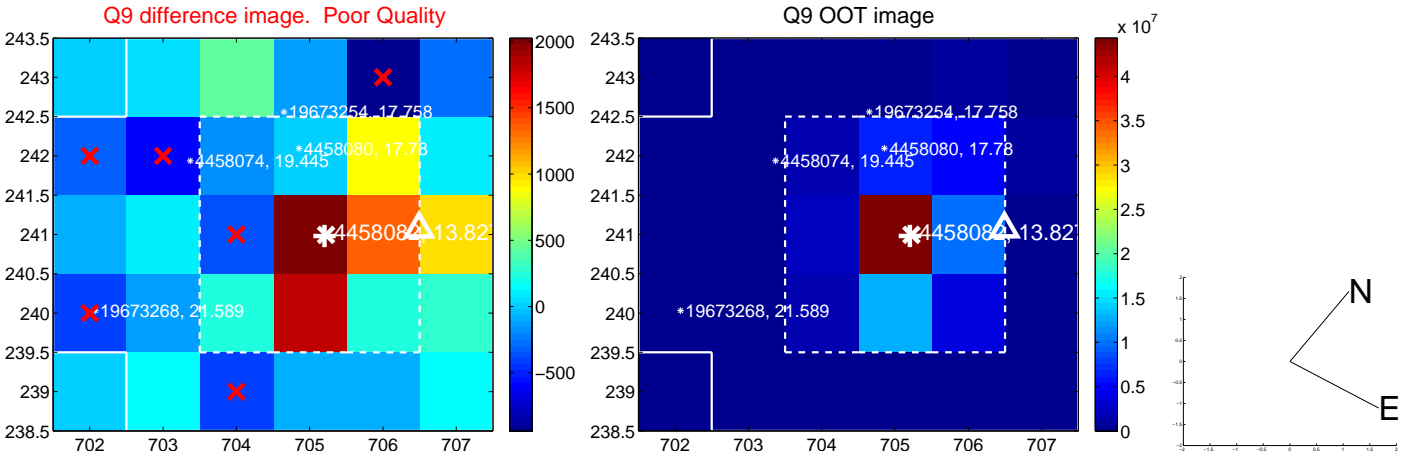
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



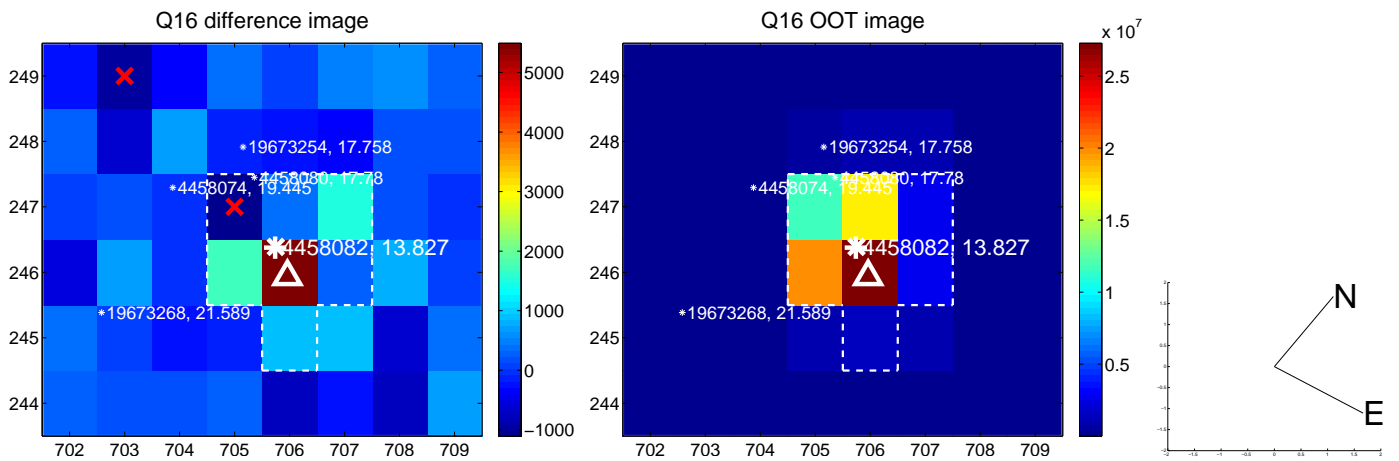
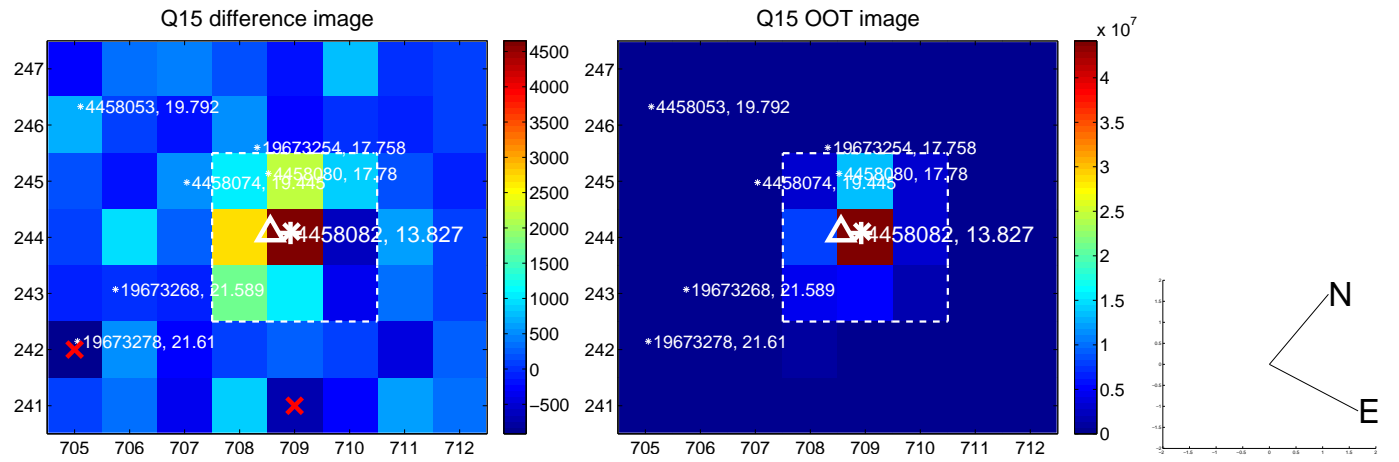
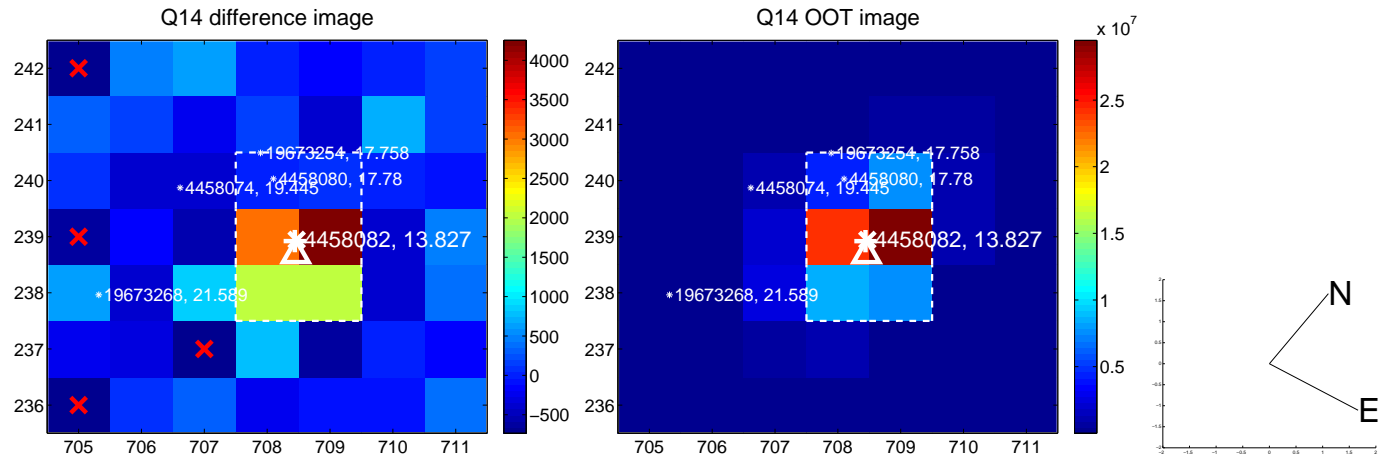
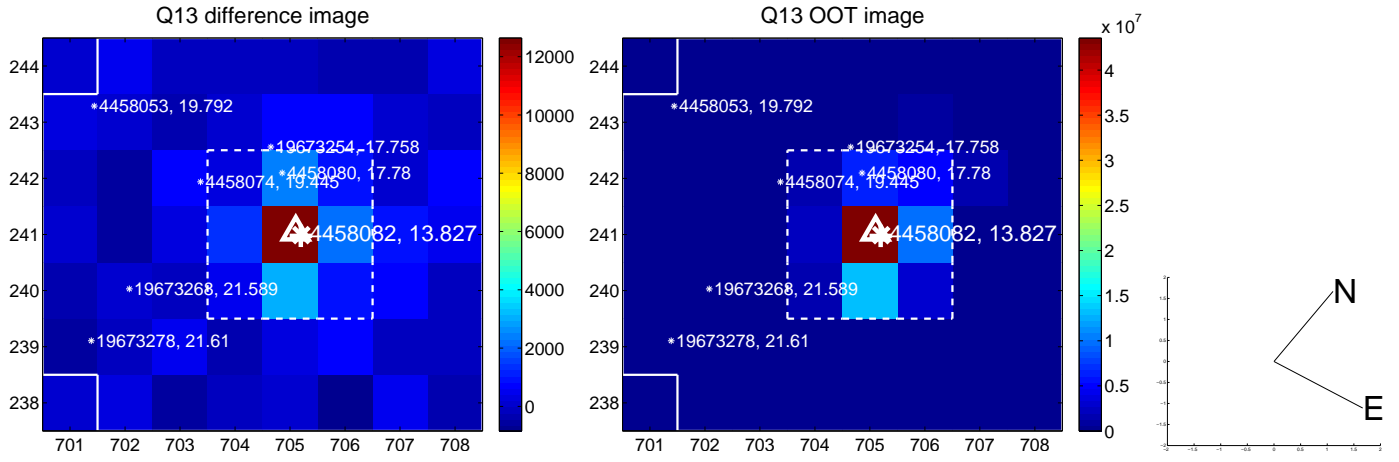
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



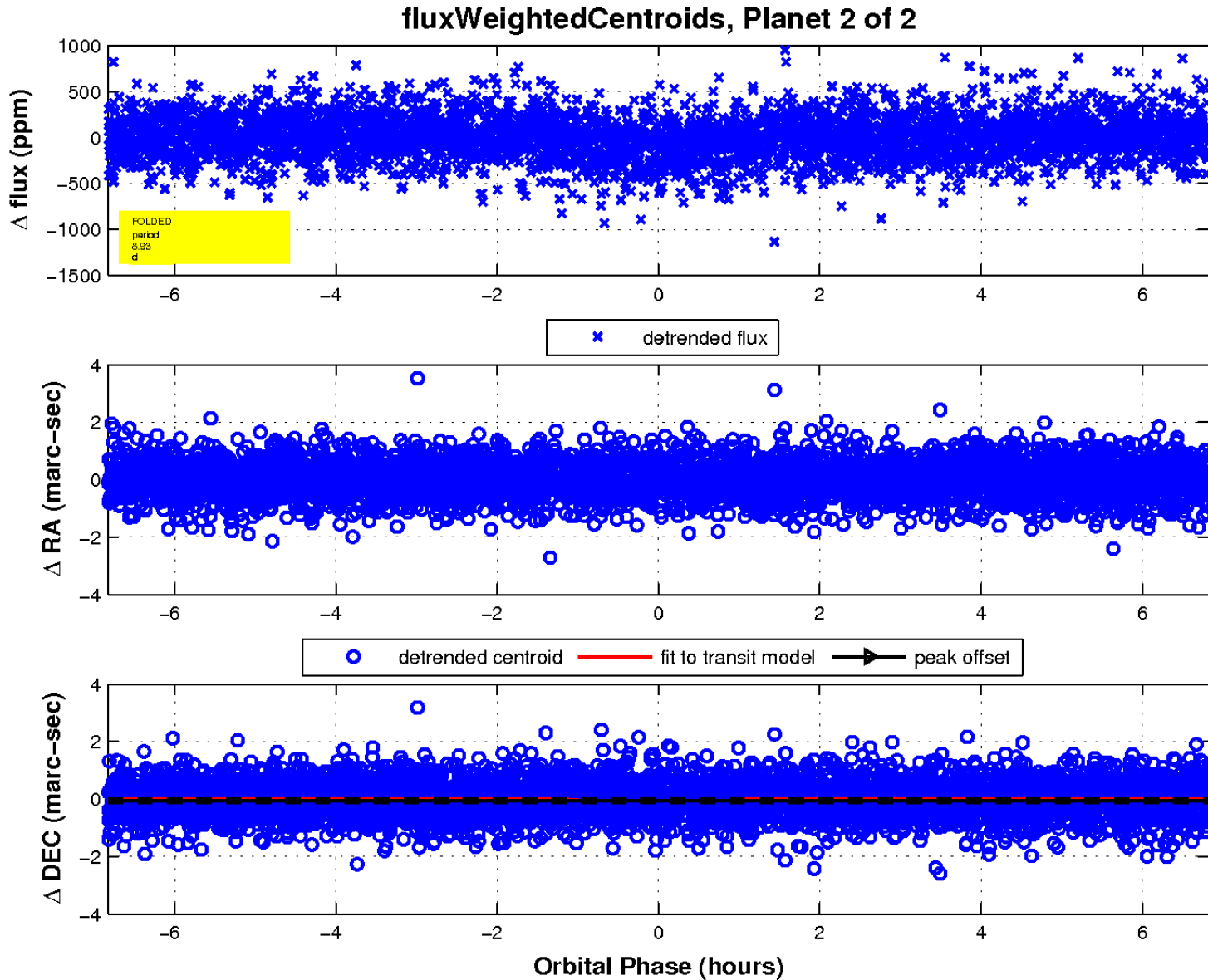
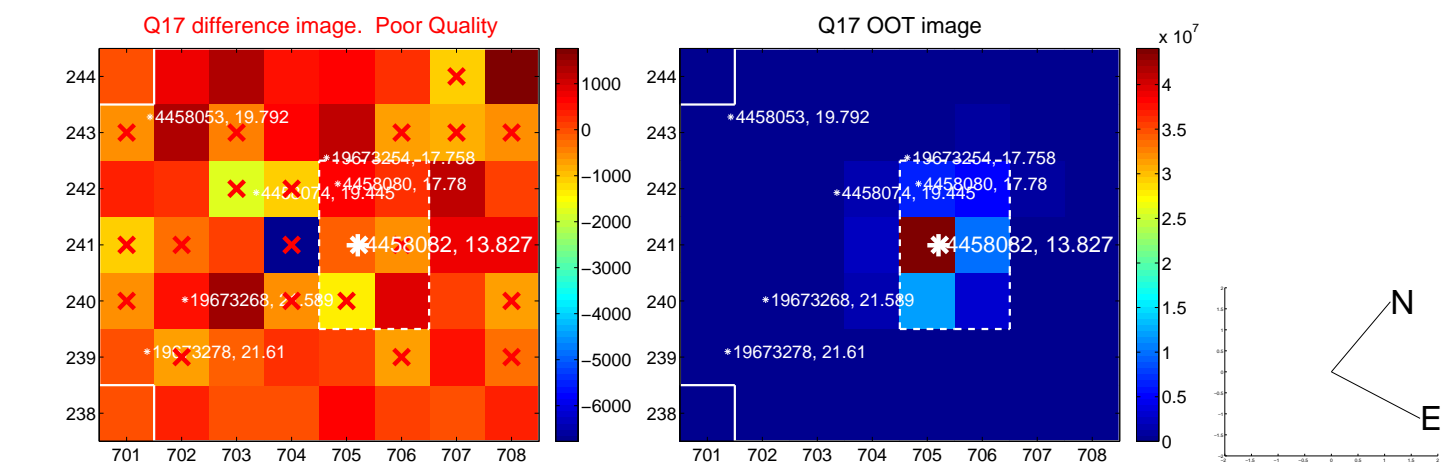
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

