

KIC 008188157

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})
008188157-01	OBS	No	0.914595	131.599129	5.8	3.216	8.9	10.2	1.35	6835	0.38	8424.18
008188157-02	OBS	No	1.828816	133.164184	5.8	5.609	9.0	9.7	1.35	6835	0.36	3344.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008188157-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
008188157-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

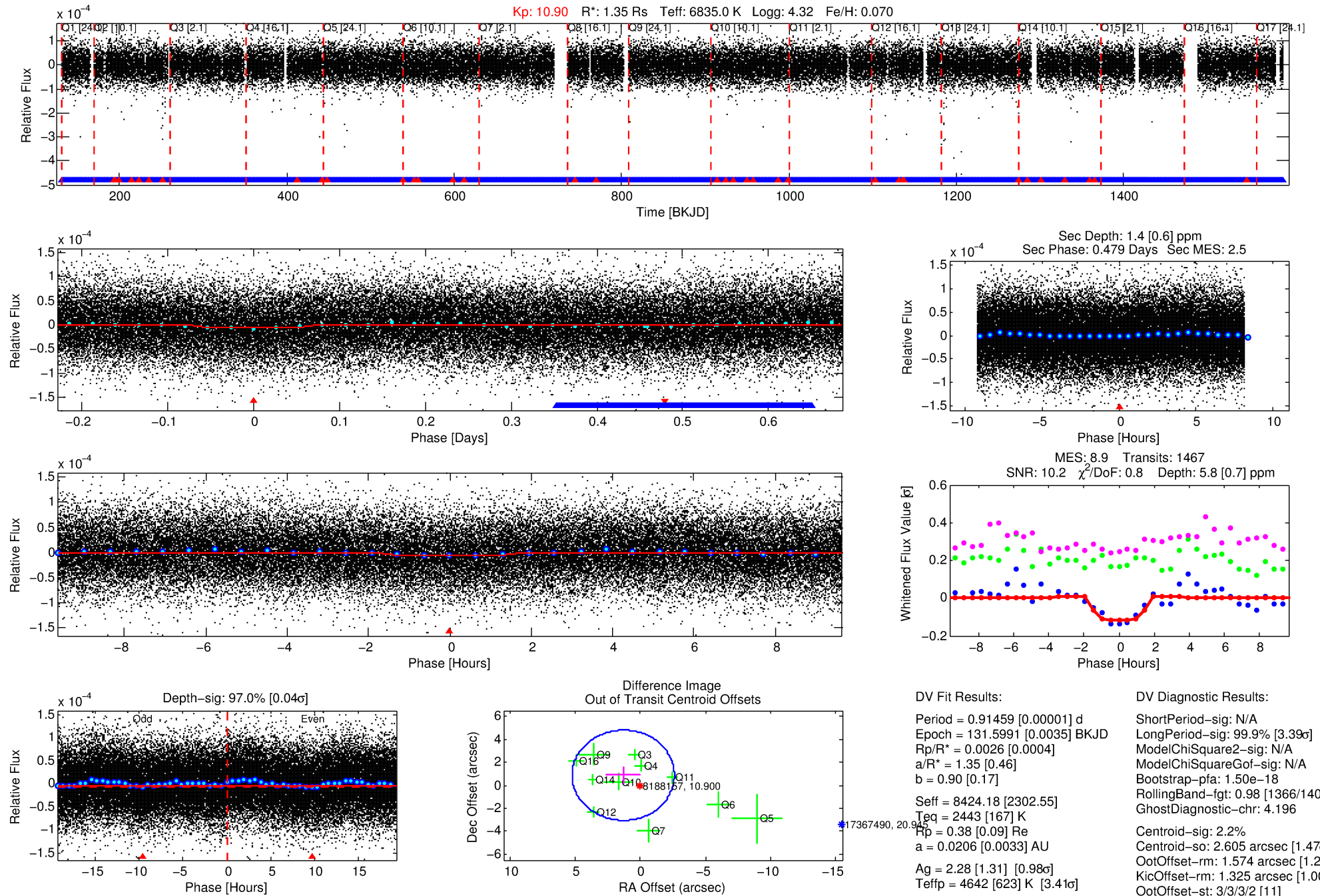
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008188157-01

No Significant Match Found

DV One-Page Summary

KIC: 8188157 Candidate: 1 of 2 Period: 0.915 d



DV Fit Results:

Period = 0.91459 [0.00001] d
 Epoch = 131.5991 [0.0035] BKJD
 $R_p/R^* = 0.0026$ [0.0004]
 $a/R^* = 1.35$ [0.46]
 $b = 0.90$ [0.17]
 $\text{Seff} = 8424.18$ [2302.55]
 $T_{\text{eq}} = 2443$ [167] K
 $R_p = 0.38$ [0.09] R_e
 $a = 0.0206$ [0.0033] AU
 $A_g = 2.28$ [1.31] [0.98 σ]
 $T_{\text{eff}} = 4642$ [623] K [3.41 σ]

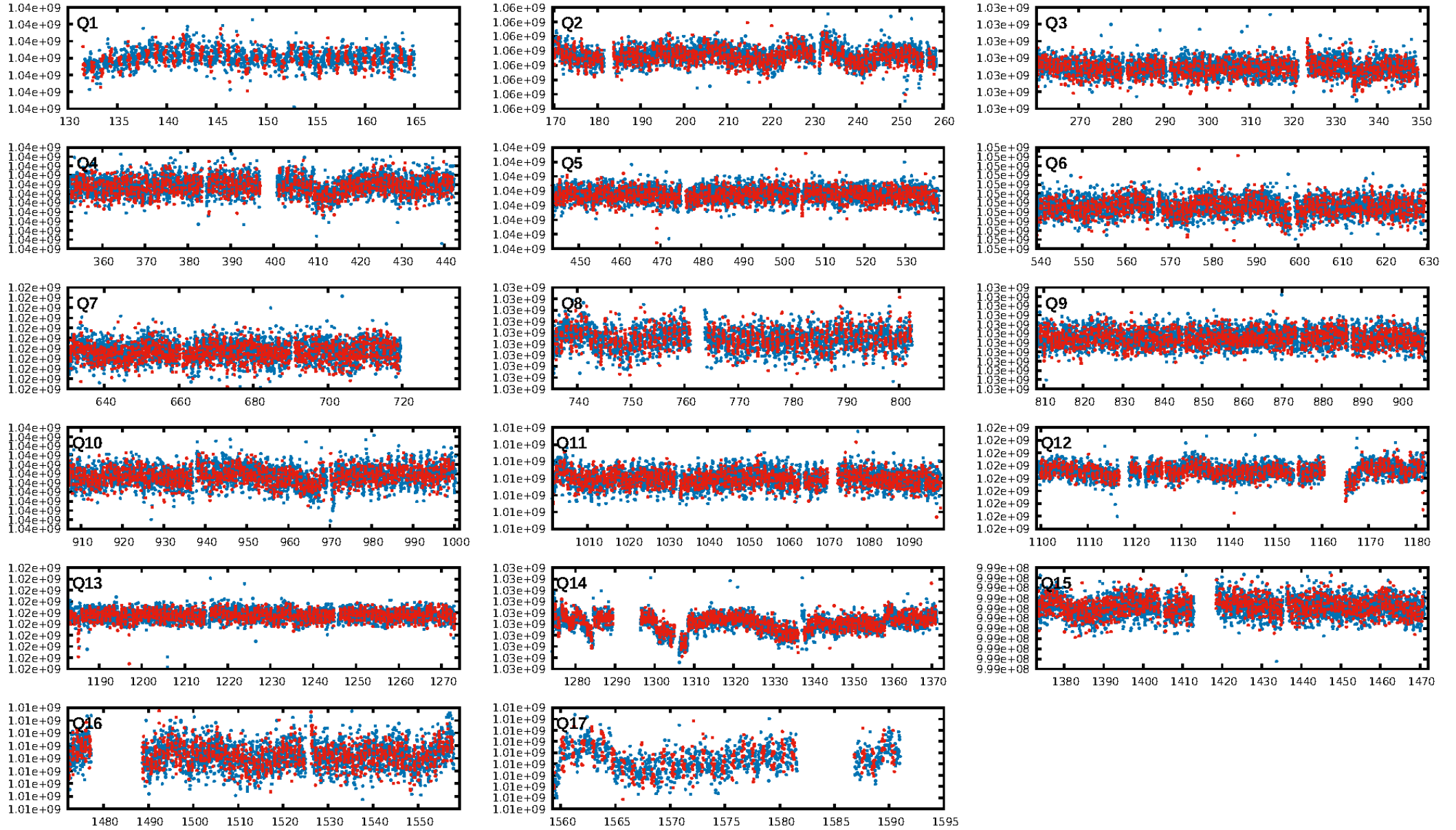
DV Diagnostic Results:

ShortPeriod-sig: N/A
 LongPeriod-sig: 99.9% [3.39 σ]
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: 1.50e-18
 RollingBand-fgt: 0.98 [1366/1401]
 GhostDiagnostic-chr: 4.196
 Centroid-sig: 2.2%
 Centroid-so: 2.605 arcsec [1.47 σ]
 OotOffset-rm: 1.574 arcsec [1.20 σ]
 KicOffset-rm: 1.325 arcsec [1.00 σ]
 OotOffset-st: 3/3/2 [11]
 KicOffset-st: 3/3/2 [11]
 DiffImageQuality-fgm: 0.36 [4/11]
 DiffImageOverlap-fno: 1.00 [17/17]

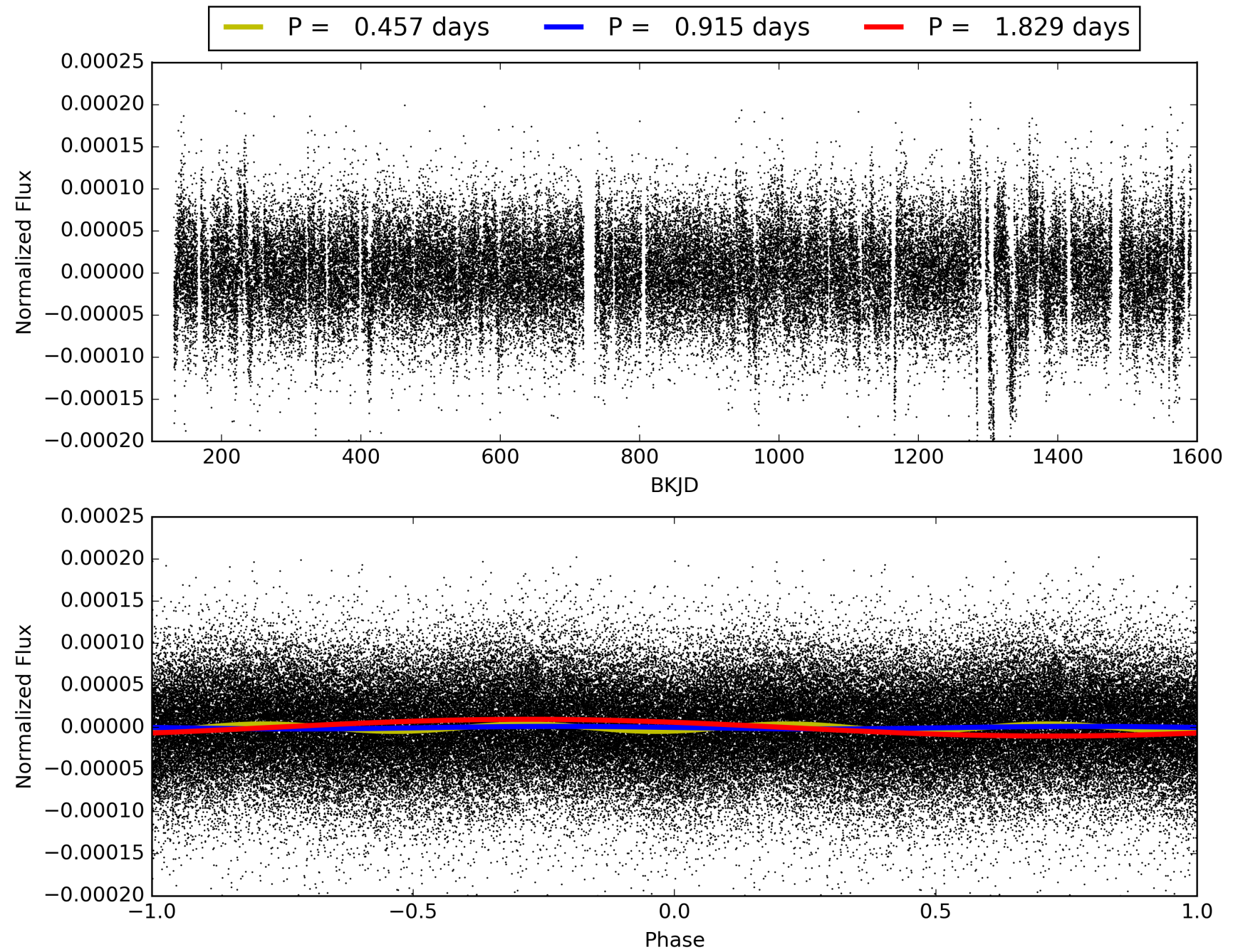
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:49:31 Z

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

TCE 008188157-01, PDC Light Curves

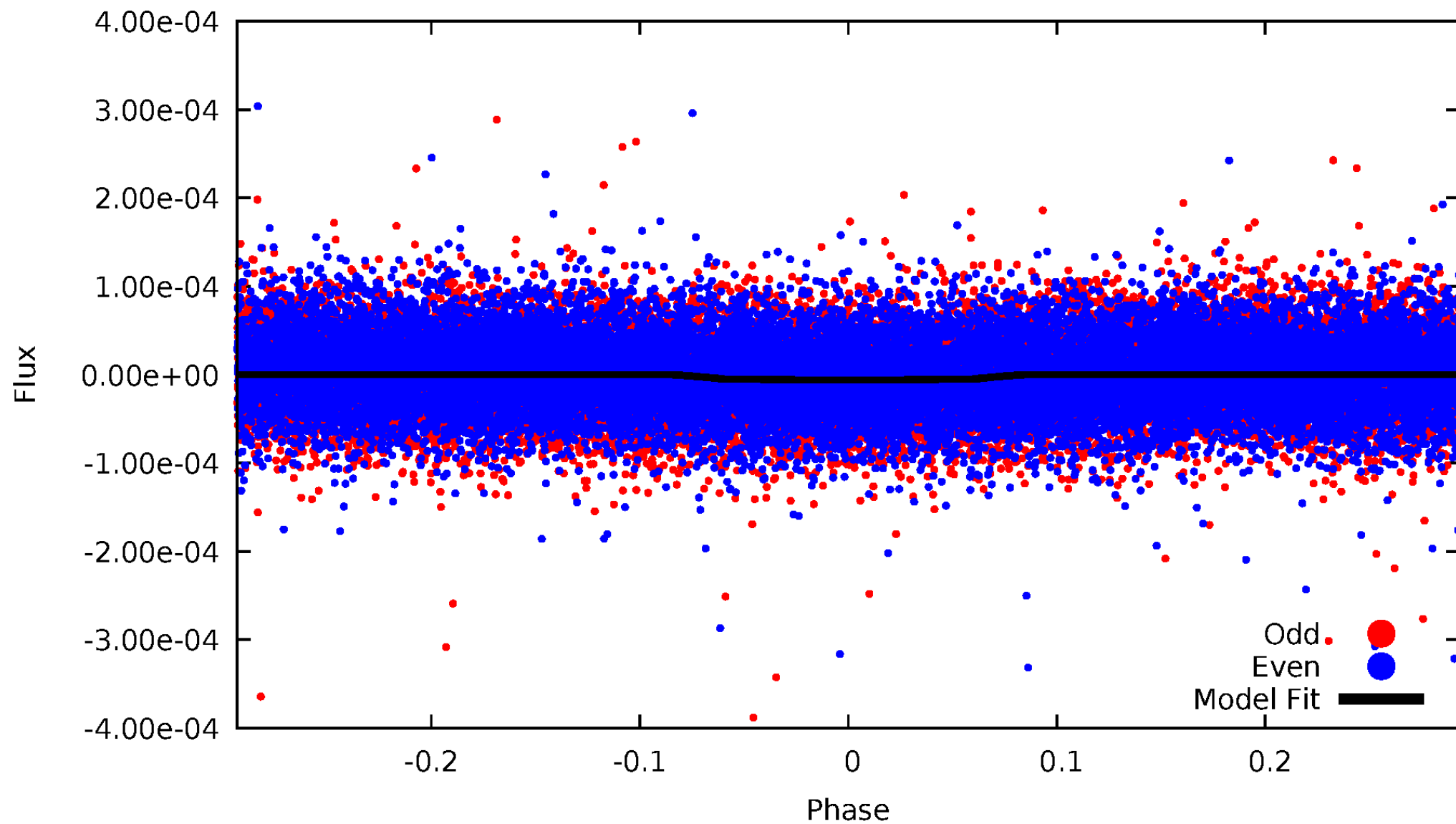


TCE 008188157-01



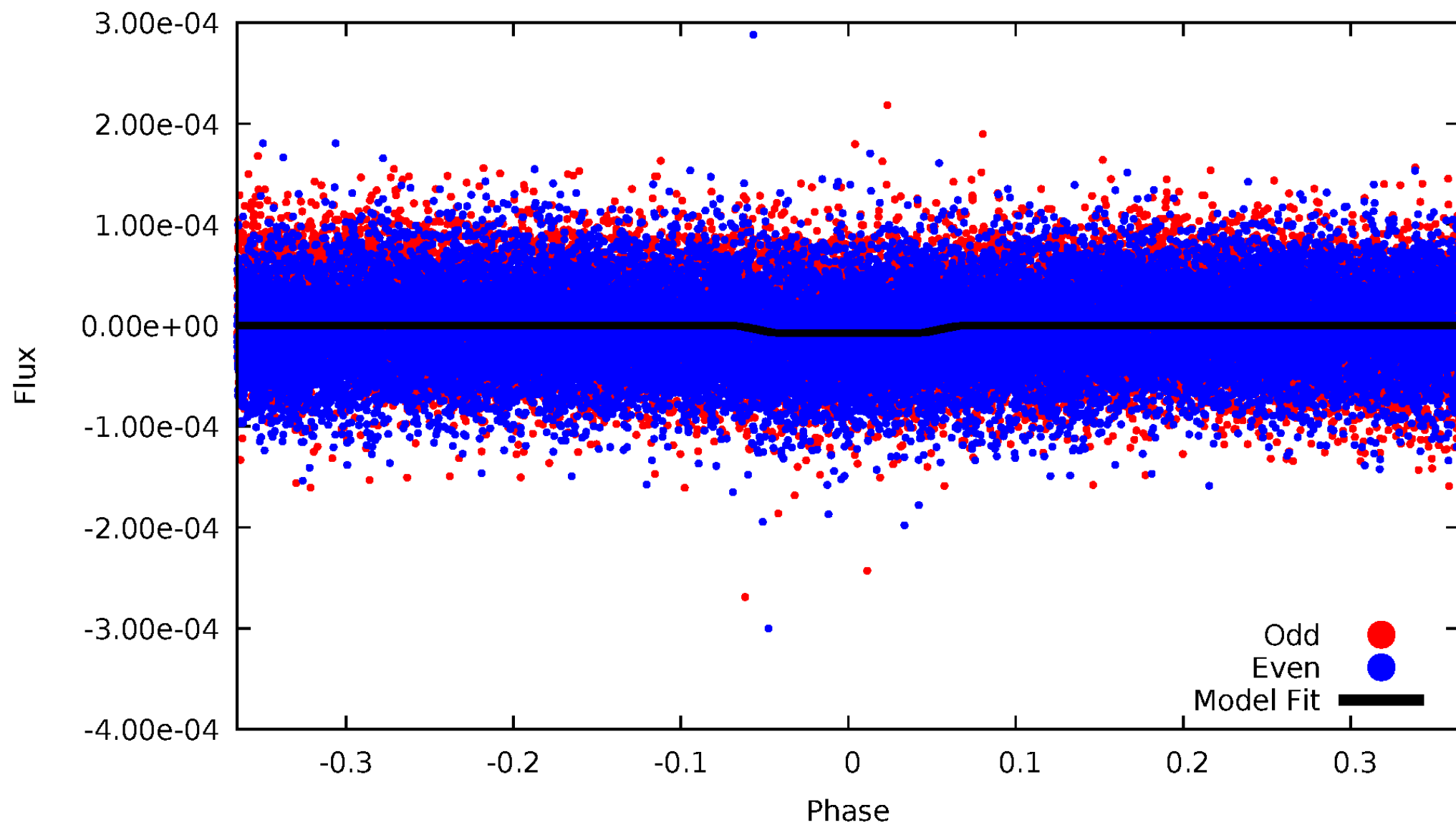
DV Odd/Even

TCE 008188157-01



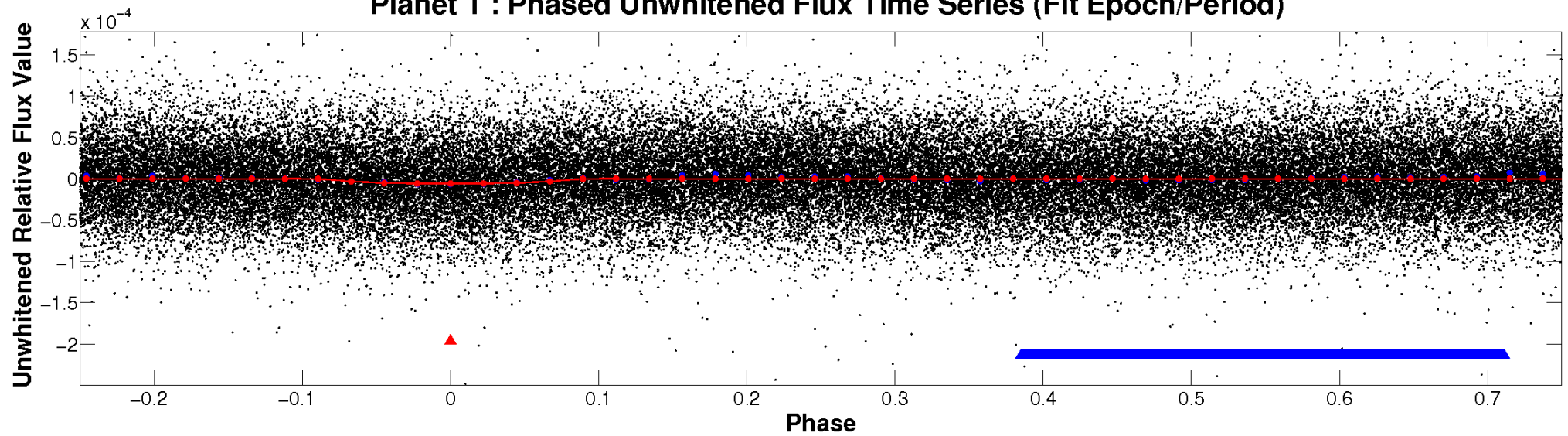
ALT Odd/Even

TCE 008188157-01

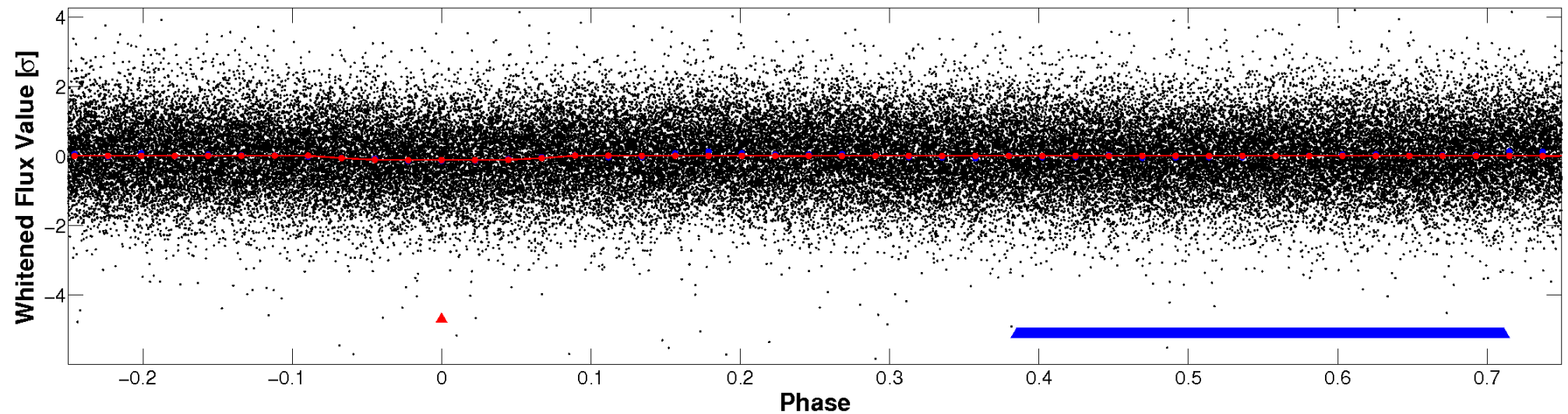


Non-Whitened Vs. Whitened Light Curve

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

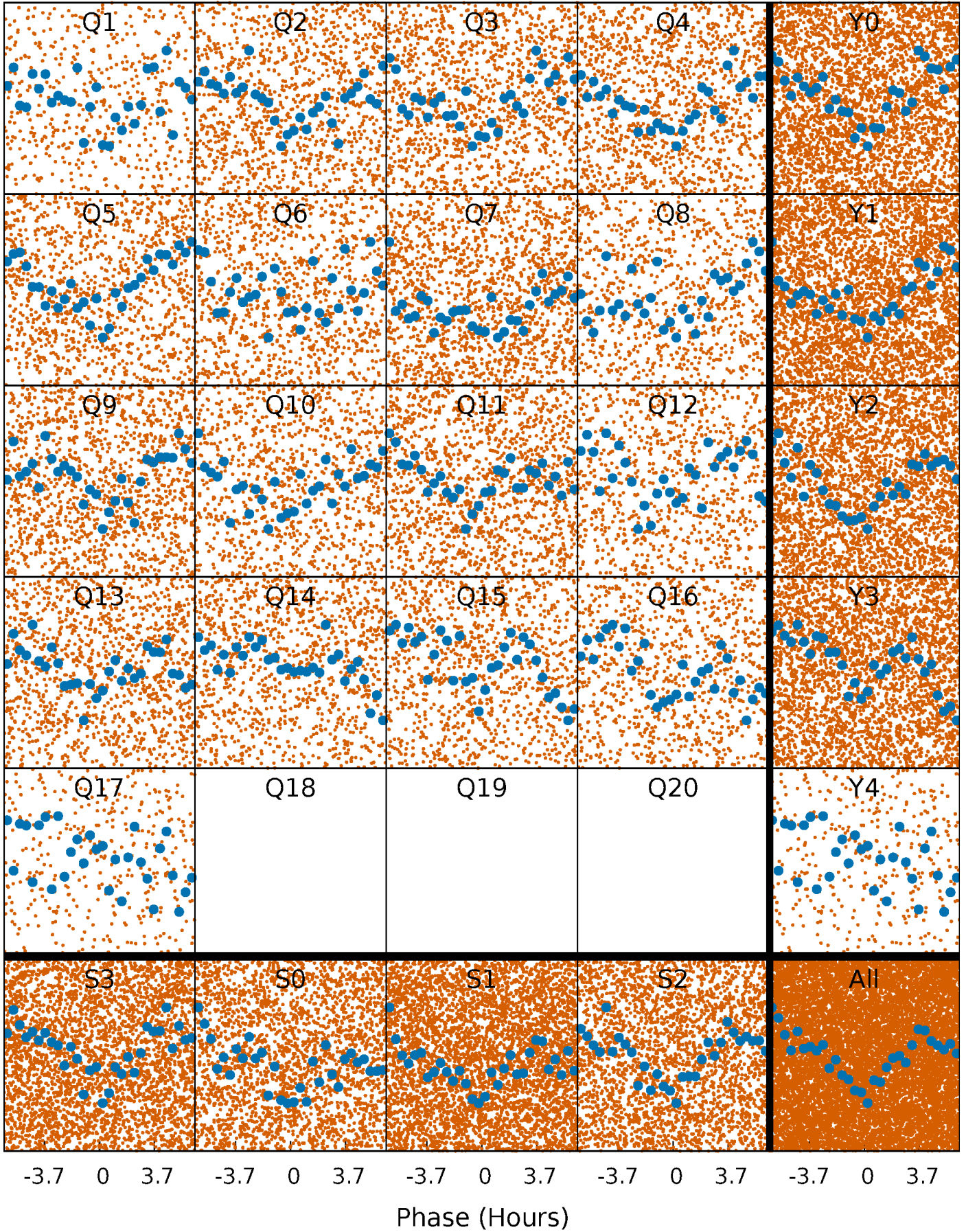


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



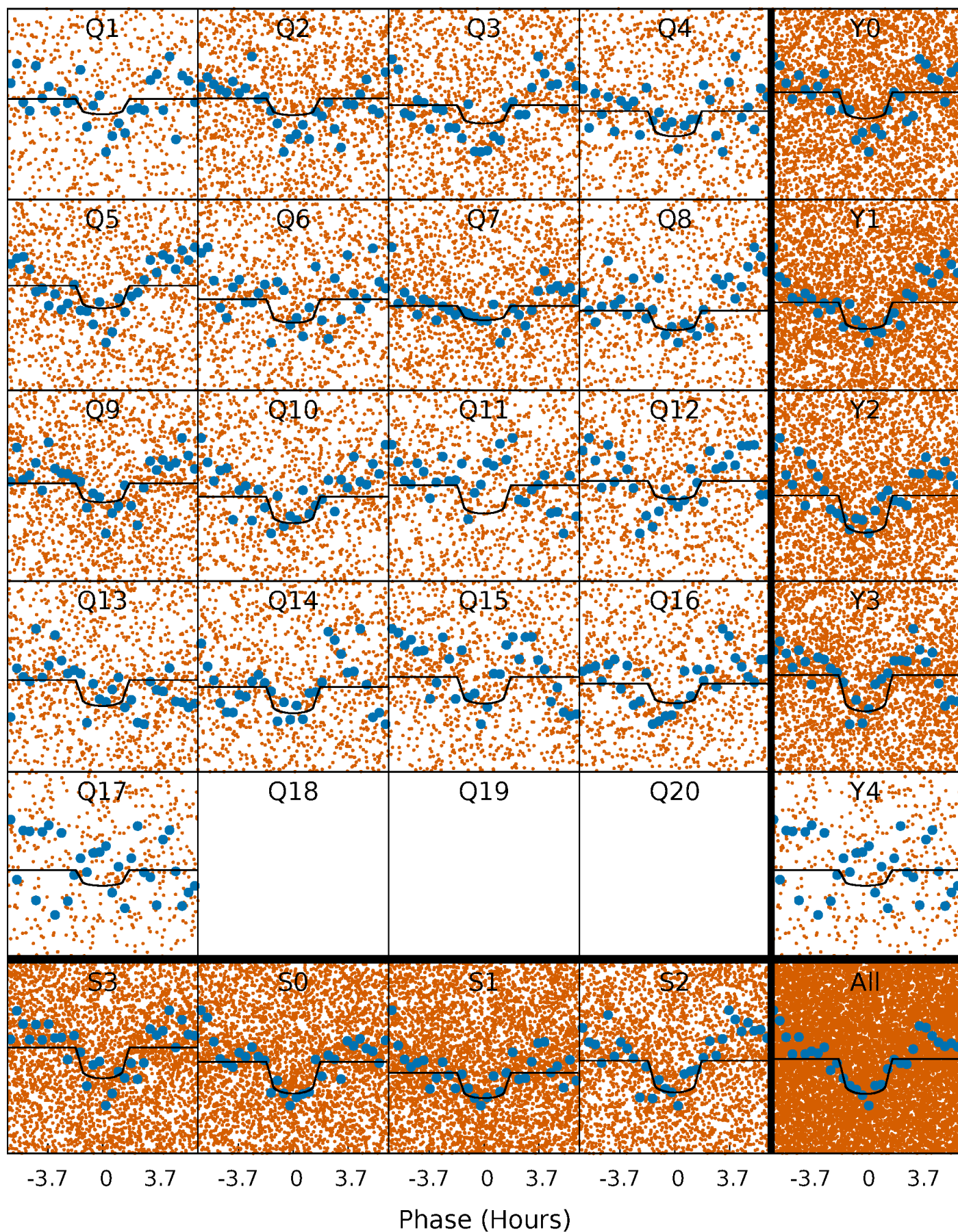
PDC Quarter-Phased Transit Curves

TCE 008188157-01 P= 0.914595 Days $T_0=131.599129$ (BKJD)



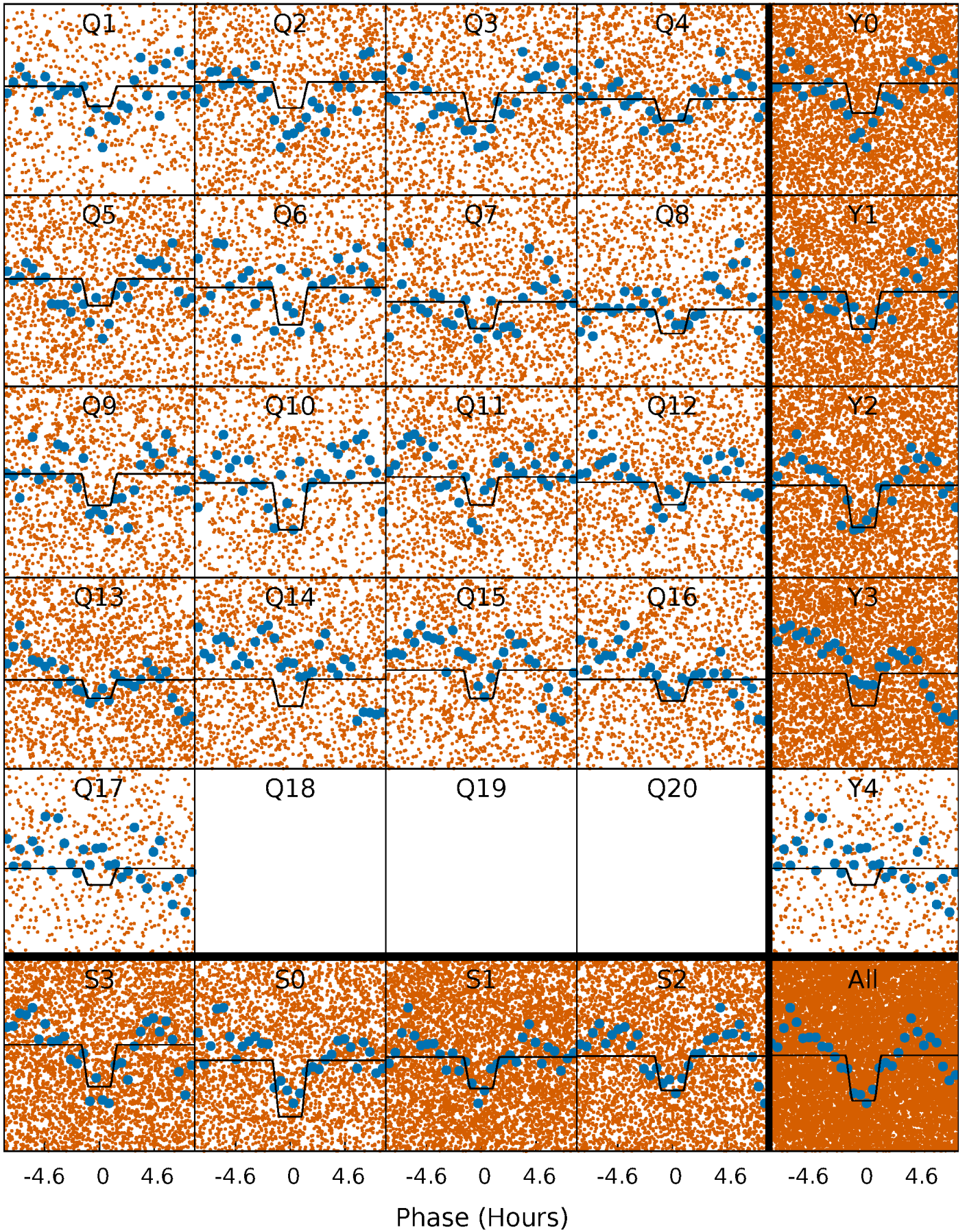
DV Quarter-Phased Transit Curves

TCE 008188157-01 P= 0.914595 Days $T_0=131.599129$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

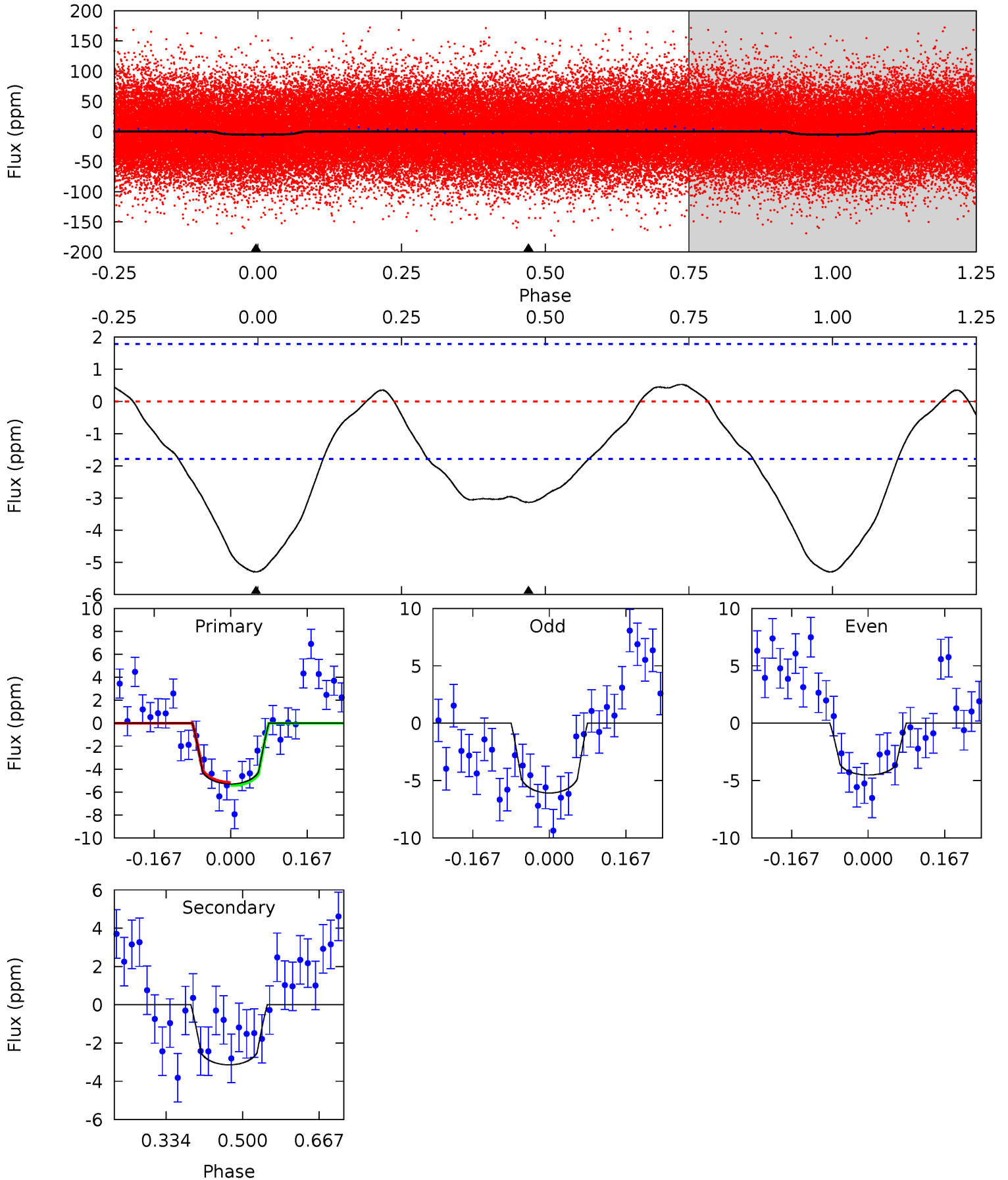
TCE 008188157-01 P= 0.914580 Days $T_0=131.603690$ (BKJD)



DV Model-Shift Uniqueness Test

008188157-01, P = 0.914595 Days, E = 130.684534 Days

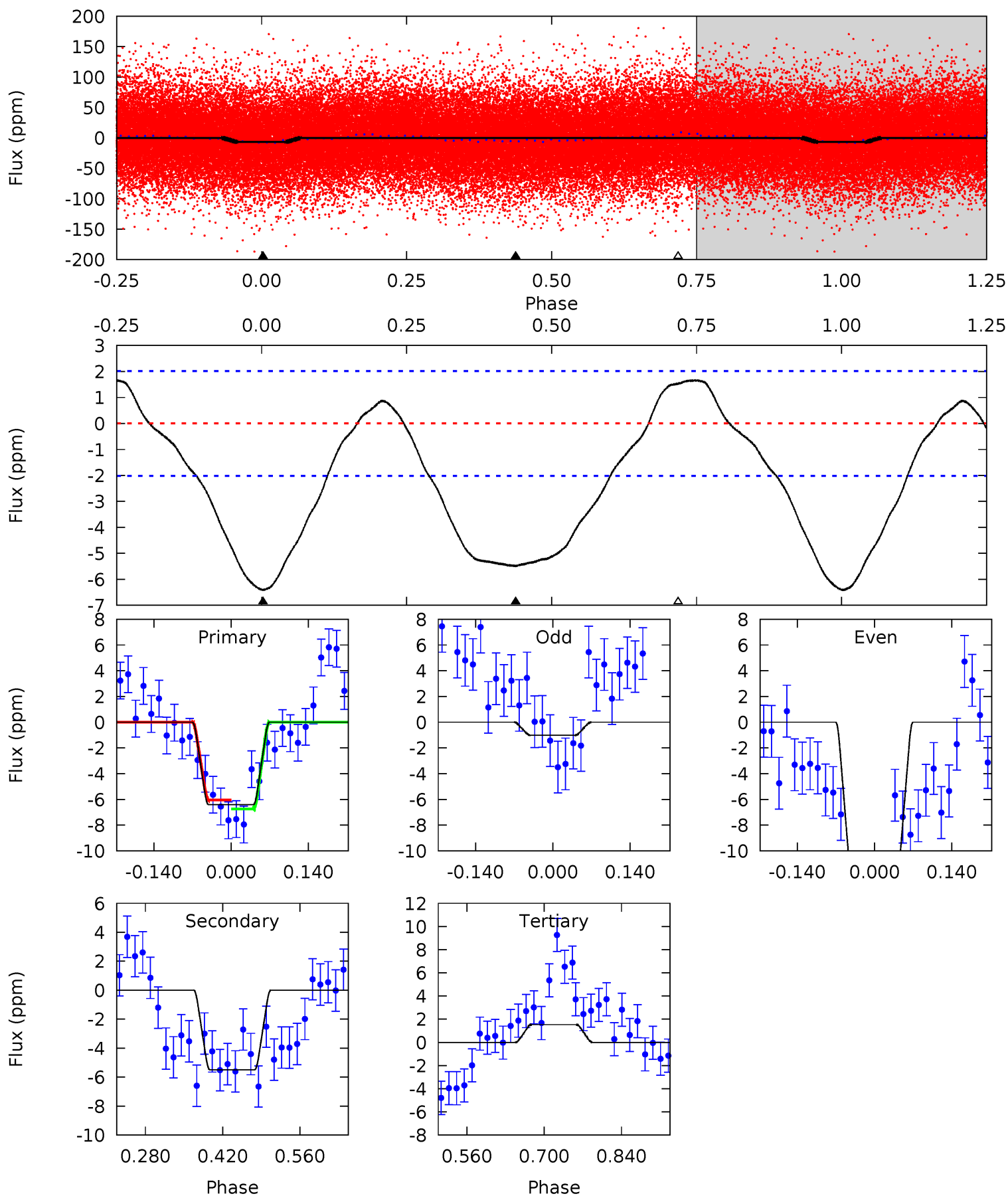
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	7.83	0	0	4.46	1.38	1.59	13.2	13.2	7.83	7.83	1.96	1.09	0.09	0.34



Alt Model-Shift Uniqueness Test

008188157-01, P = 0.914580 Days, E = 130.689110 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	12.2	-3.41	0	4.49	1.48	2.64	17.7	14.3	15.6	12.2	12.0	0.98	0.21	0.79



Stellar Parameters For KIC 008188157

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6835^{+163}_{-225}	$4.320^{+0.057}_{-0.133}$	$0.070^{+0.150}_{-0.450}$	$1.352^{+0.254}_{-0.191}$	$1.392^{+0.120}_{-0.223}$	$0.794^{+0.237}_{-0.306}$
	+2%/-3%	+1%/-3%	+214%/-643%	+19%/-14%	+9%/-16%	+30%/-39%
Source	PHO1	FLK73	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 008188157-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 0	$0.38^{+0.06}_{-0.06}$	3456^{+169}_{-145}	5598^{+516}_{-375}	$4.914^{+2.148}_{-1.482}$
Alt.	-5 ± 0	$0.40^{+0.07}_{-0.06}$	3445^{+180}_{-146}	6258^{+487}_{-445}	$7.631^{+2.753}_{-2.114}$

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 $A_{obs} \gg 1.0$

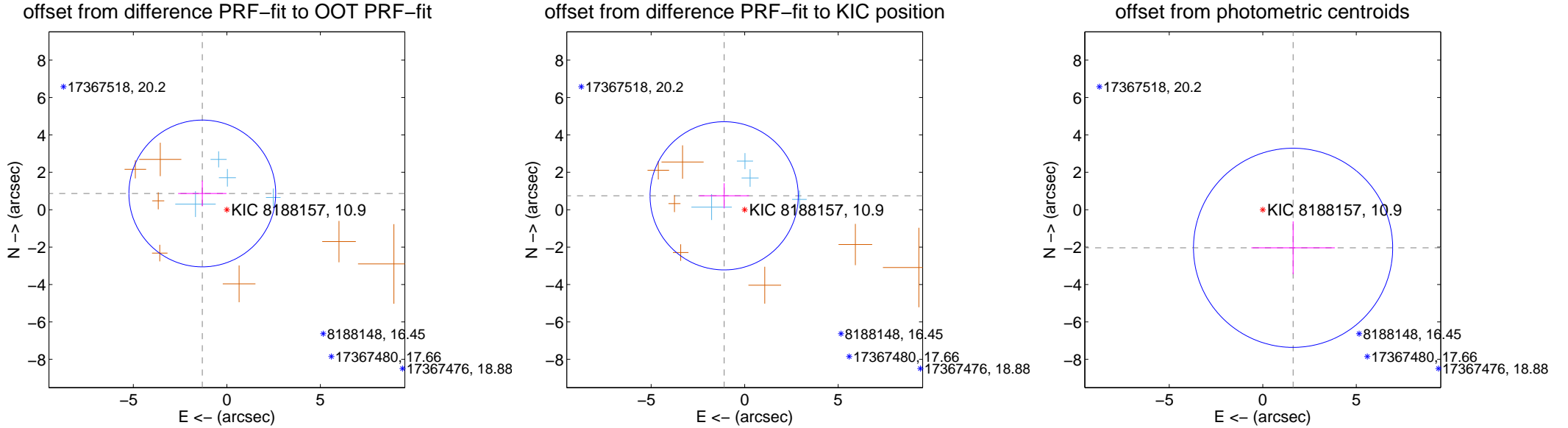
DV Centroid Data

Supplemental centroid analysis for 008188157-01. **Kepler magnitude: 10.90.** Transit SNR 10.19

There are 4 quarters with good PRF difference image offsets

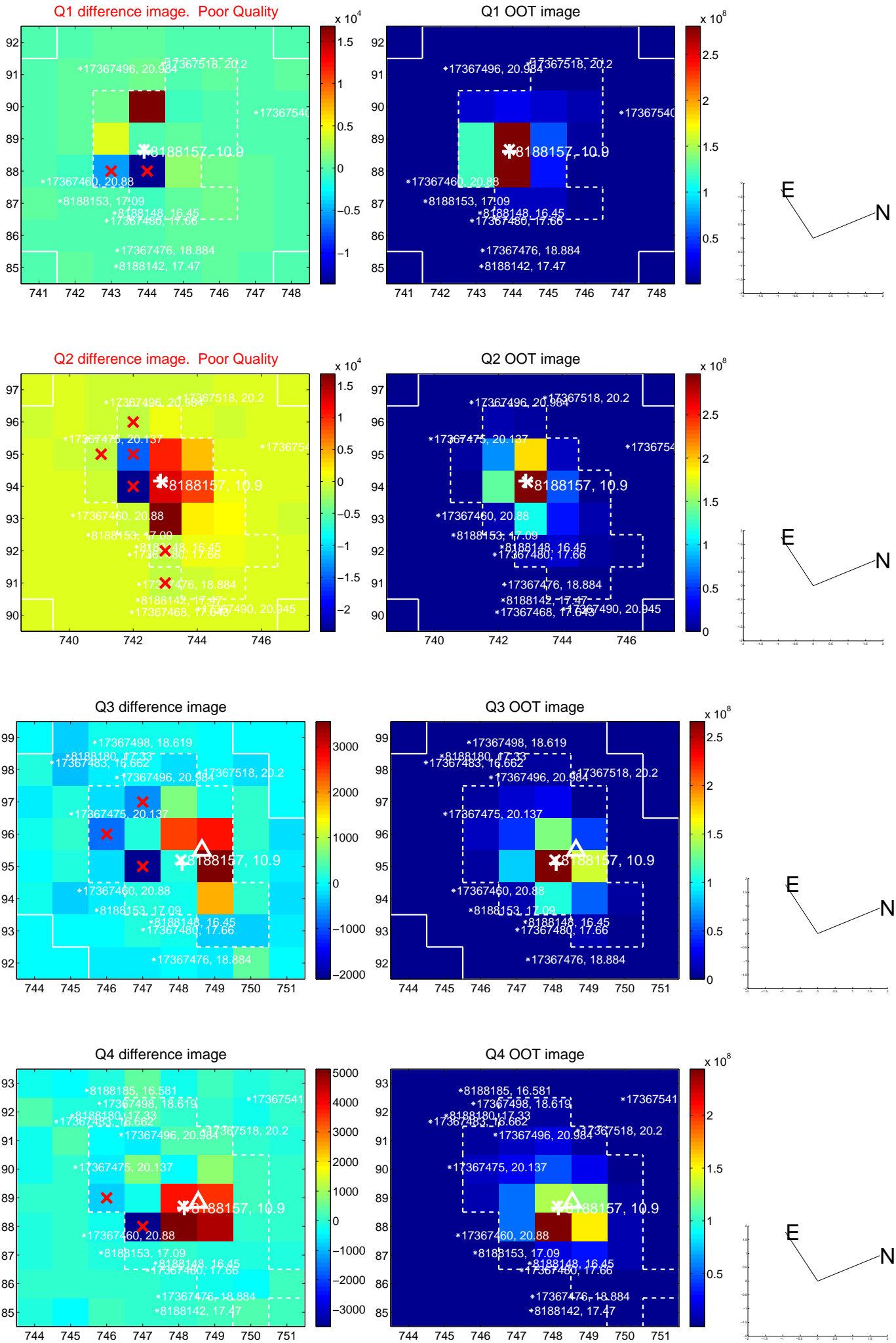
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.574 ± 1.308	1.20	1.313 ± 1.293	0.869 ± 0.686
PRF-fit source offset from KIC position	1.325 ± 1.321	1.00	1.097 ± 1.331	0.744 ± 0.672
photometric centroid source offset	2.60 ± 1.78	1.47	-1.62 ± 2.23	-2.04 ± 1.41

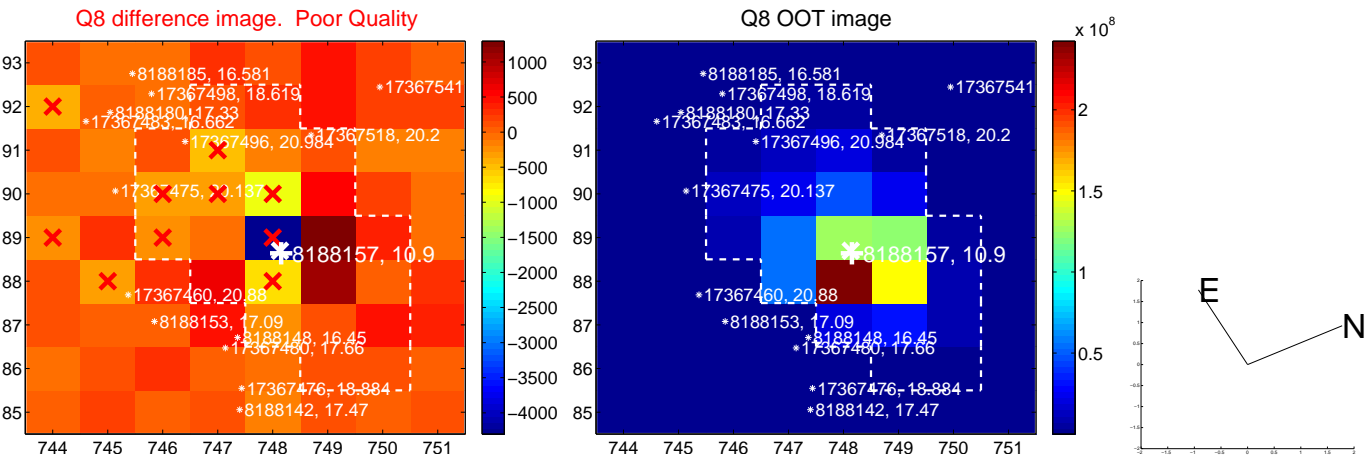
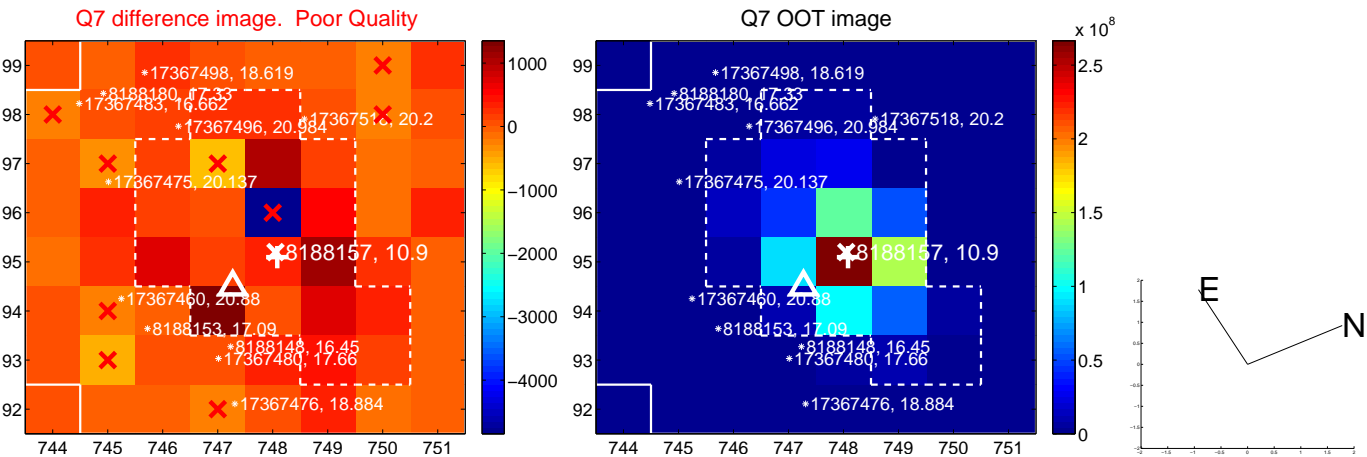
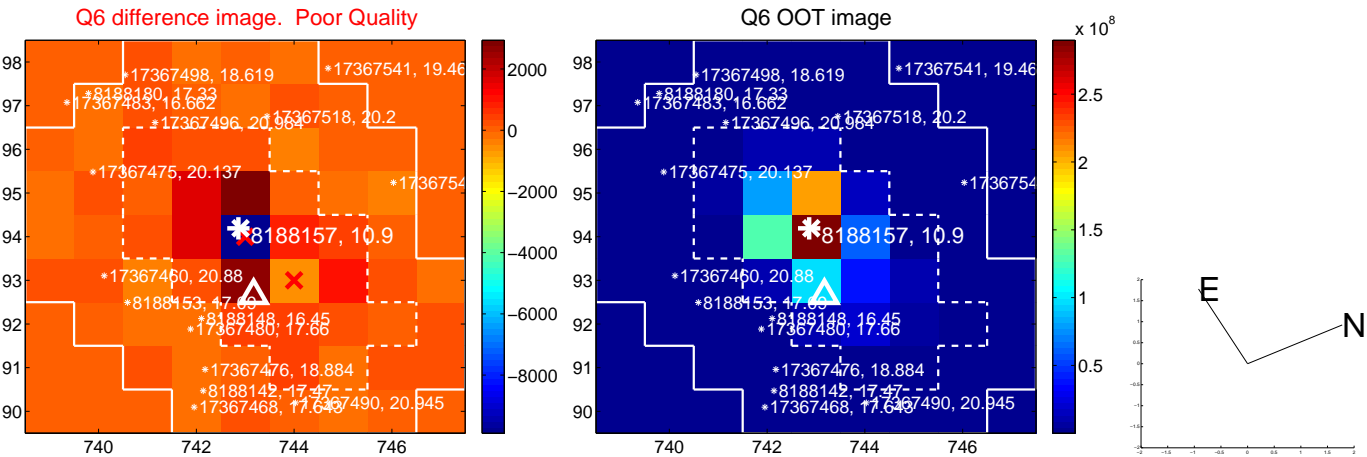
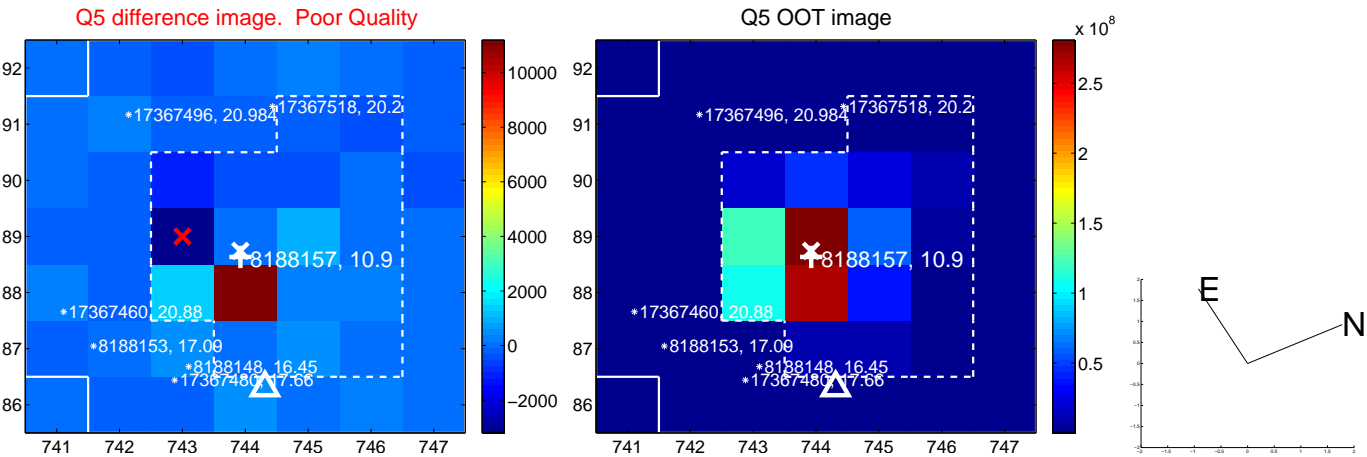


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

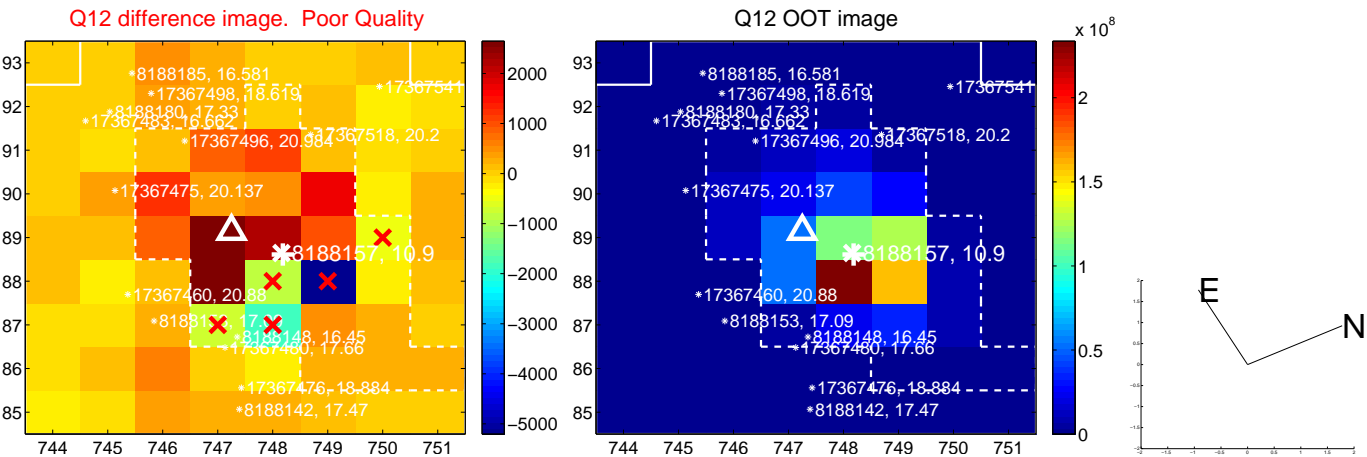
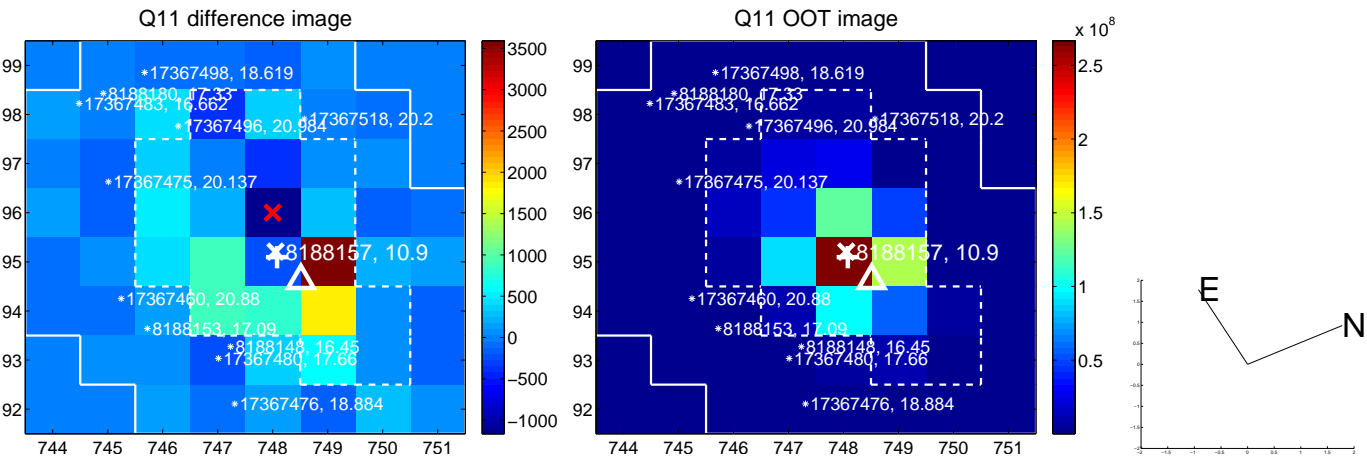
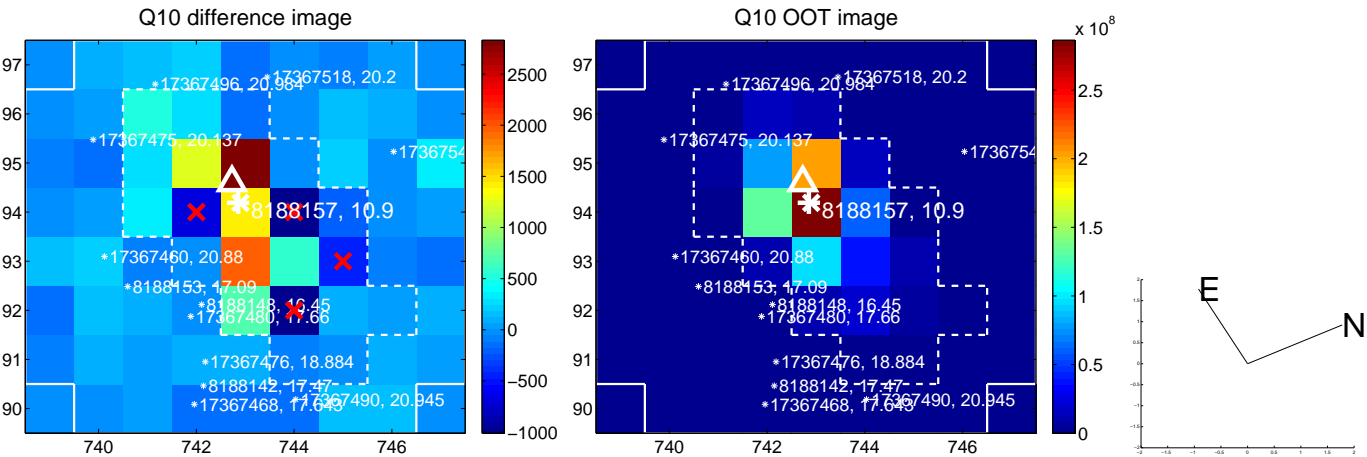
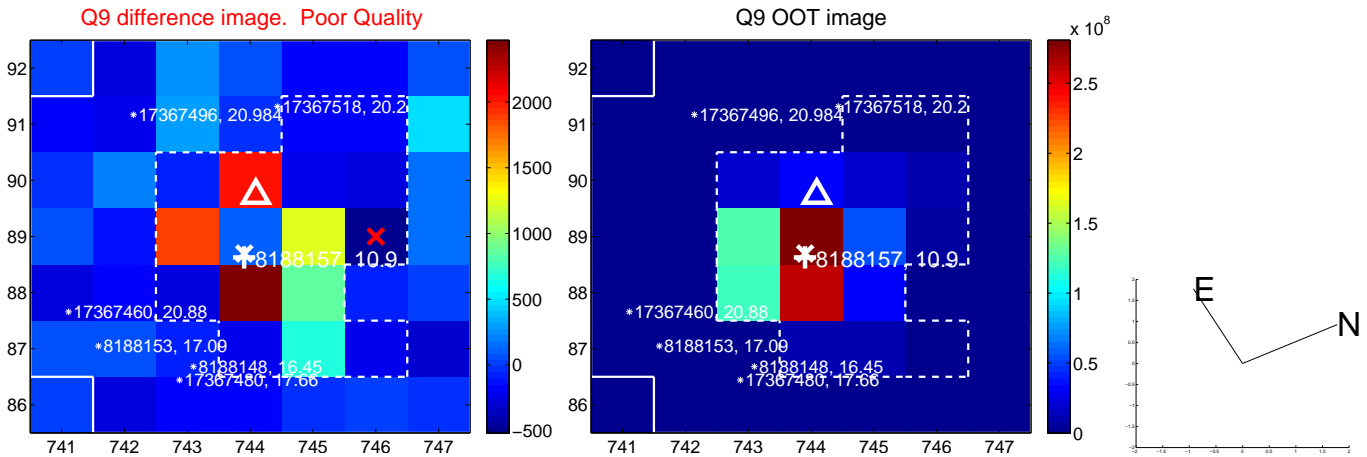
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



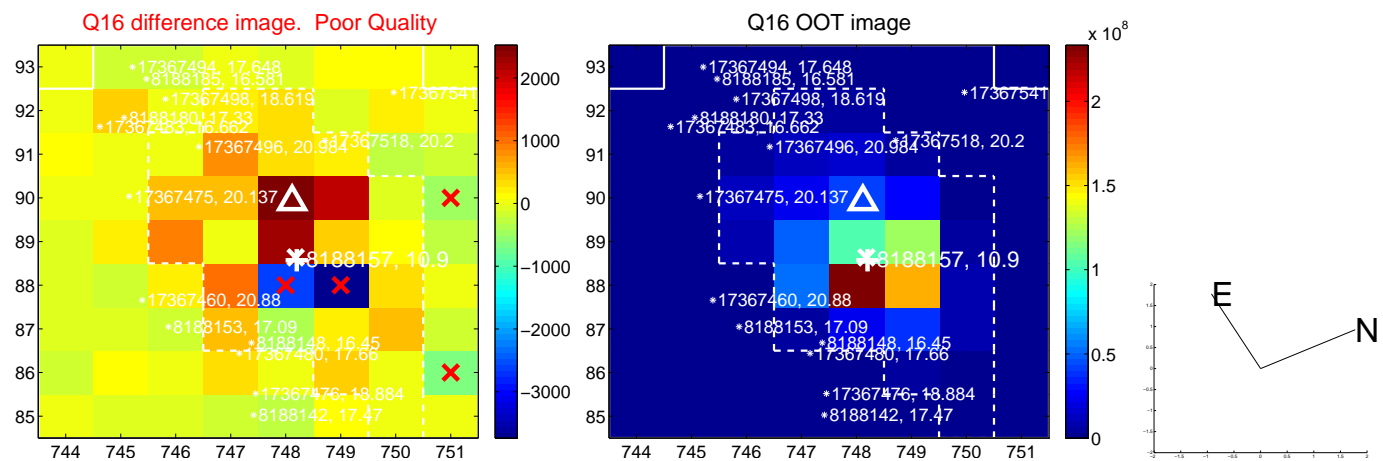
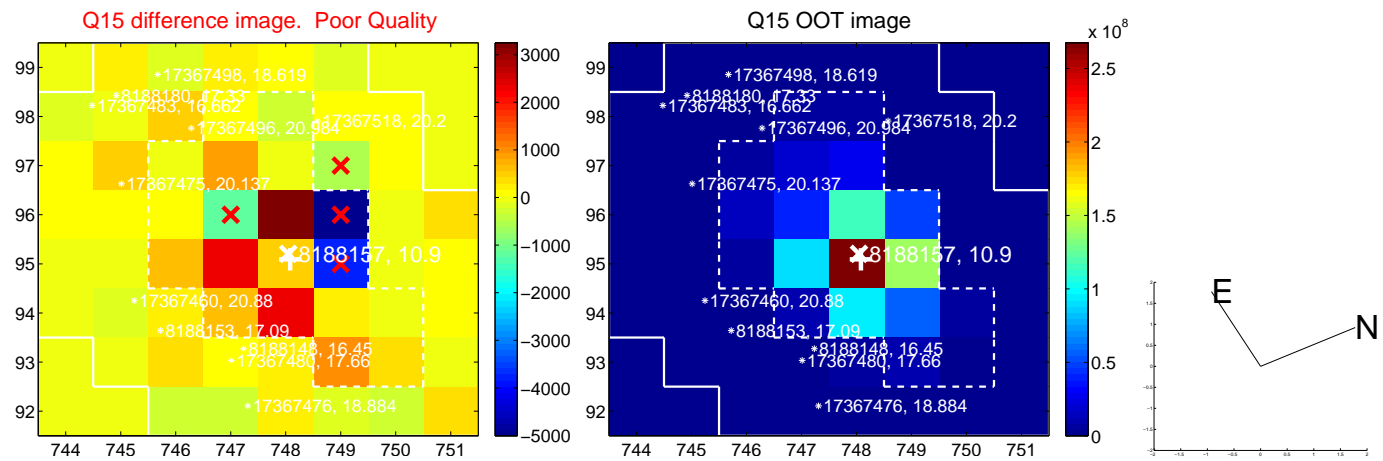
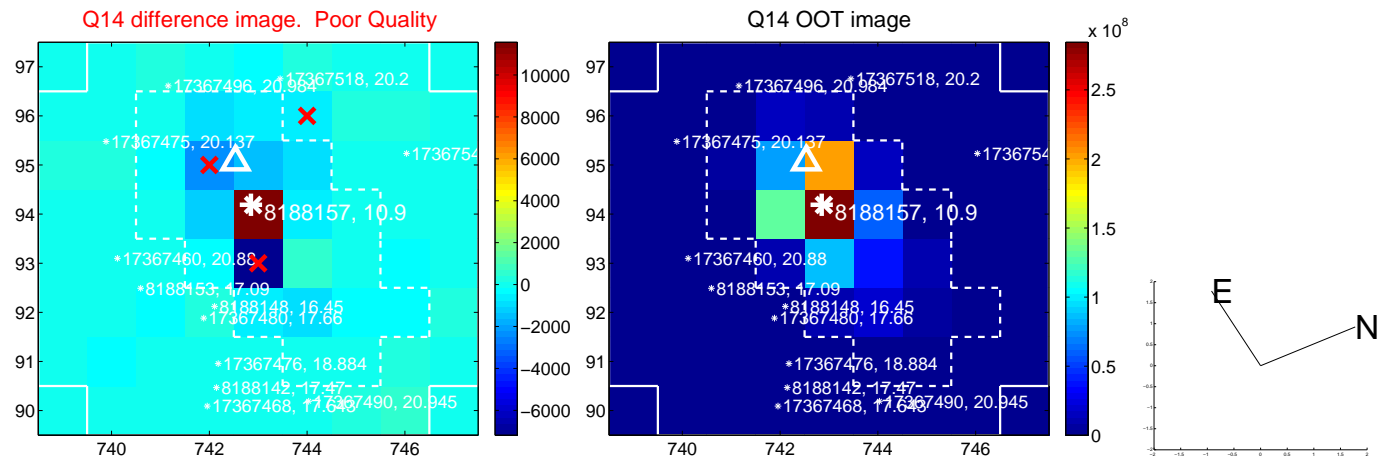
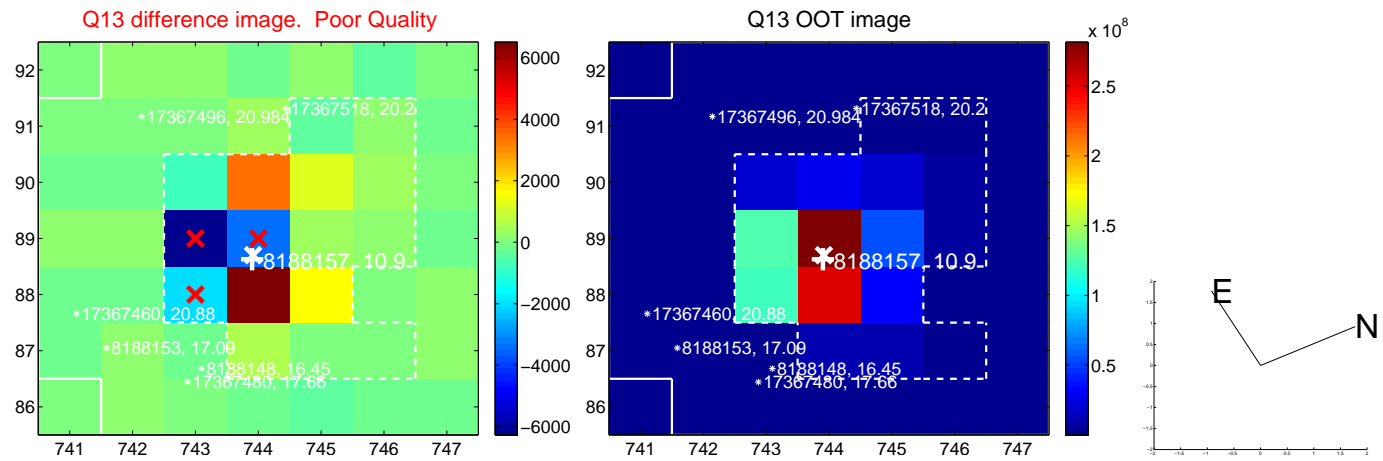
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



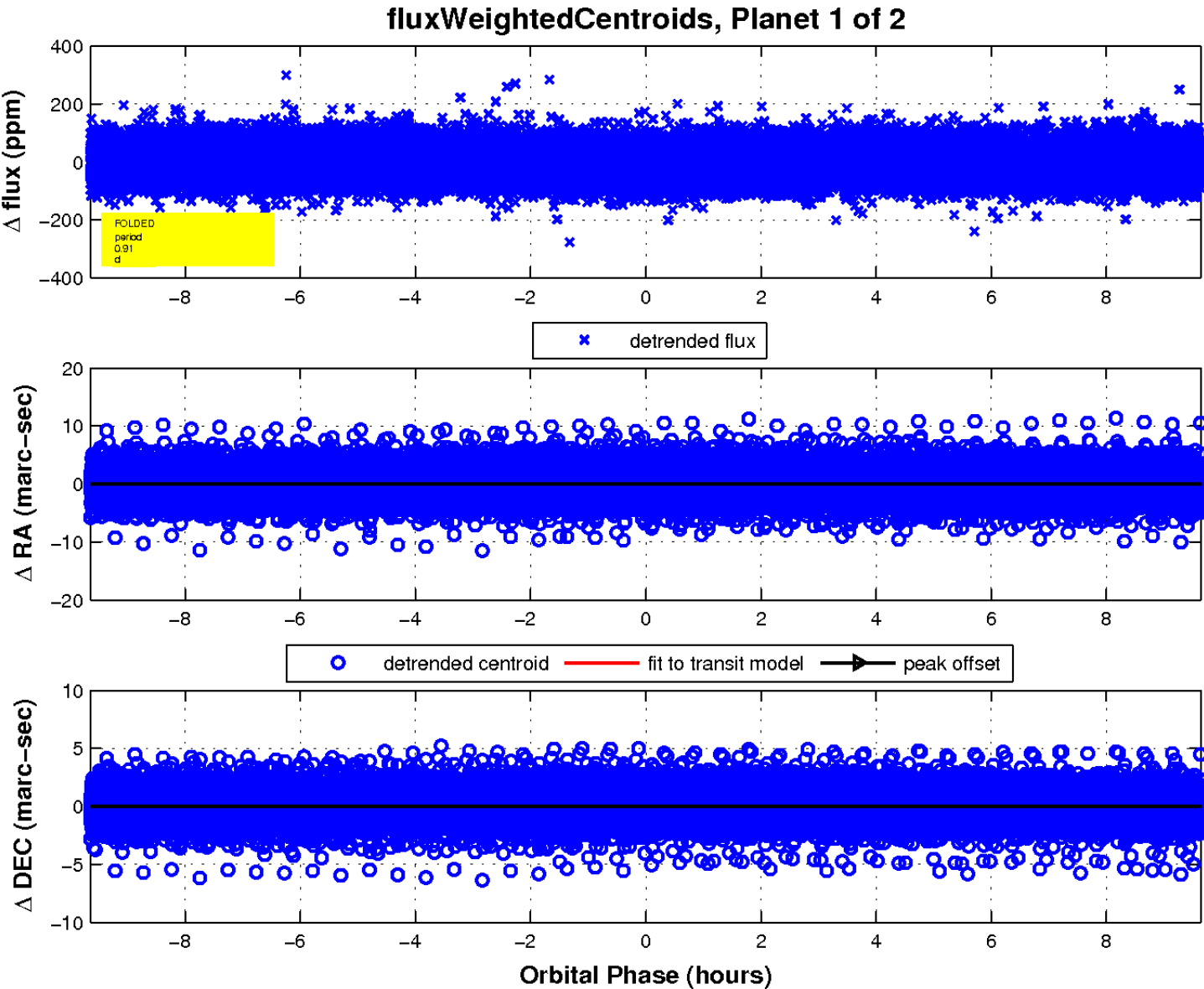
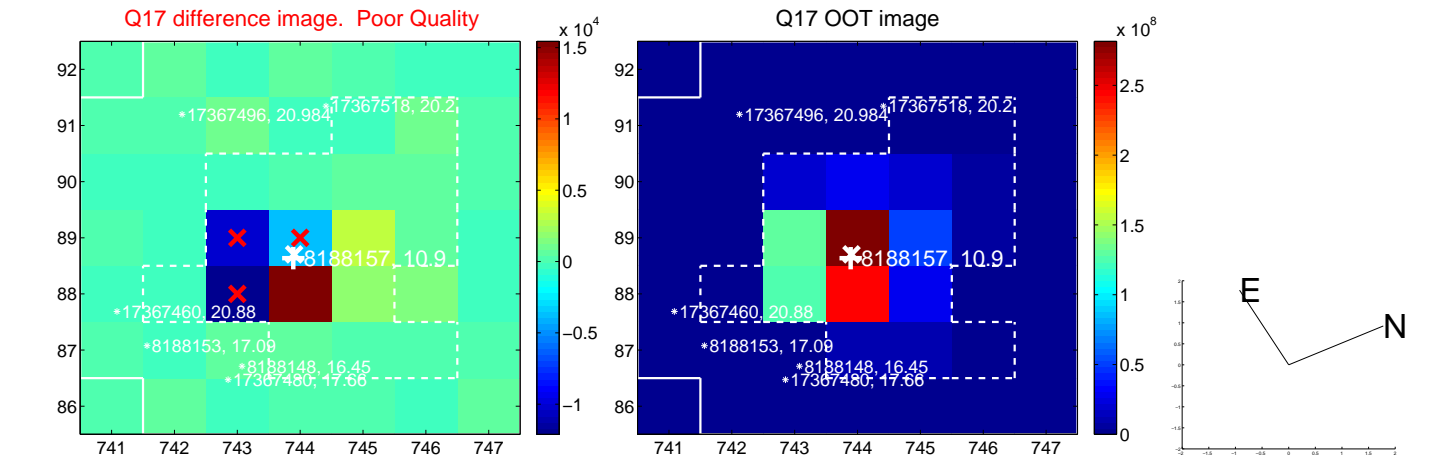
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

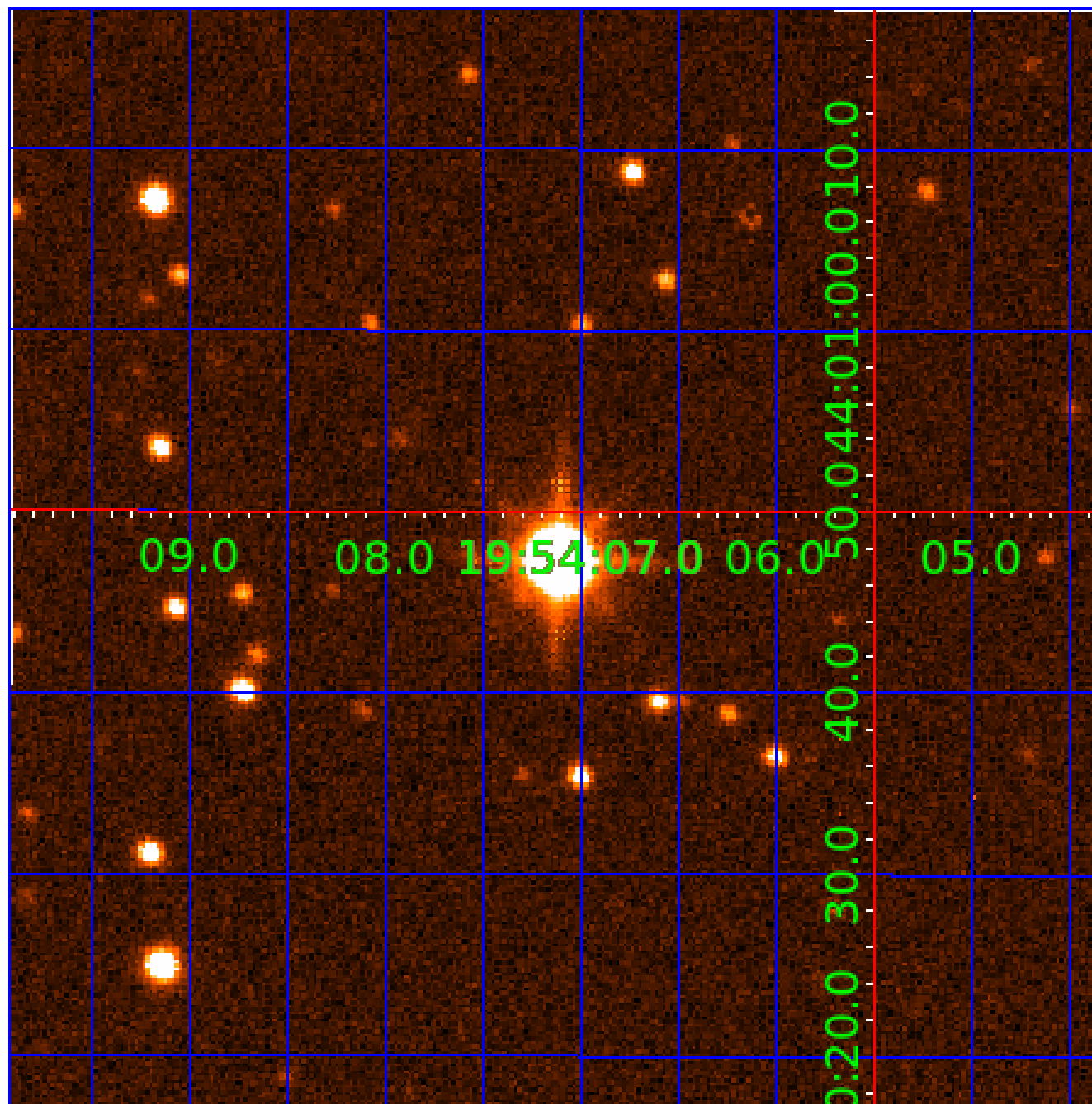


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008188157

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})
008188157-01	OBS	No	0.914595	131.599129	5.8	3.216	8.9	10.2	1.35	6835	0.38	8424.18
008188157-02	OBS	No	1.828816	133.164184	5.8	5.609	9.0	9.7	1.35	6835	0.36	3344.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008188157-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
008188157-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

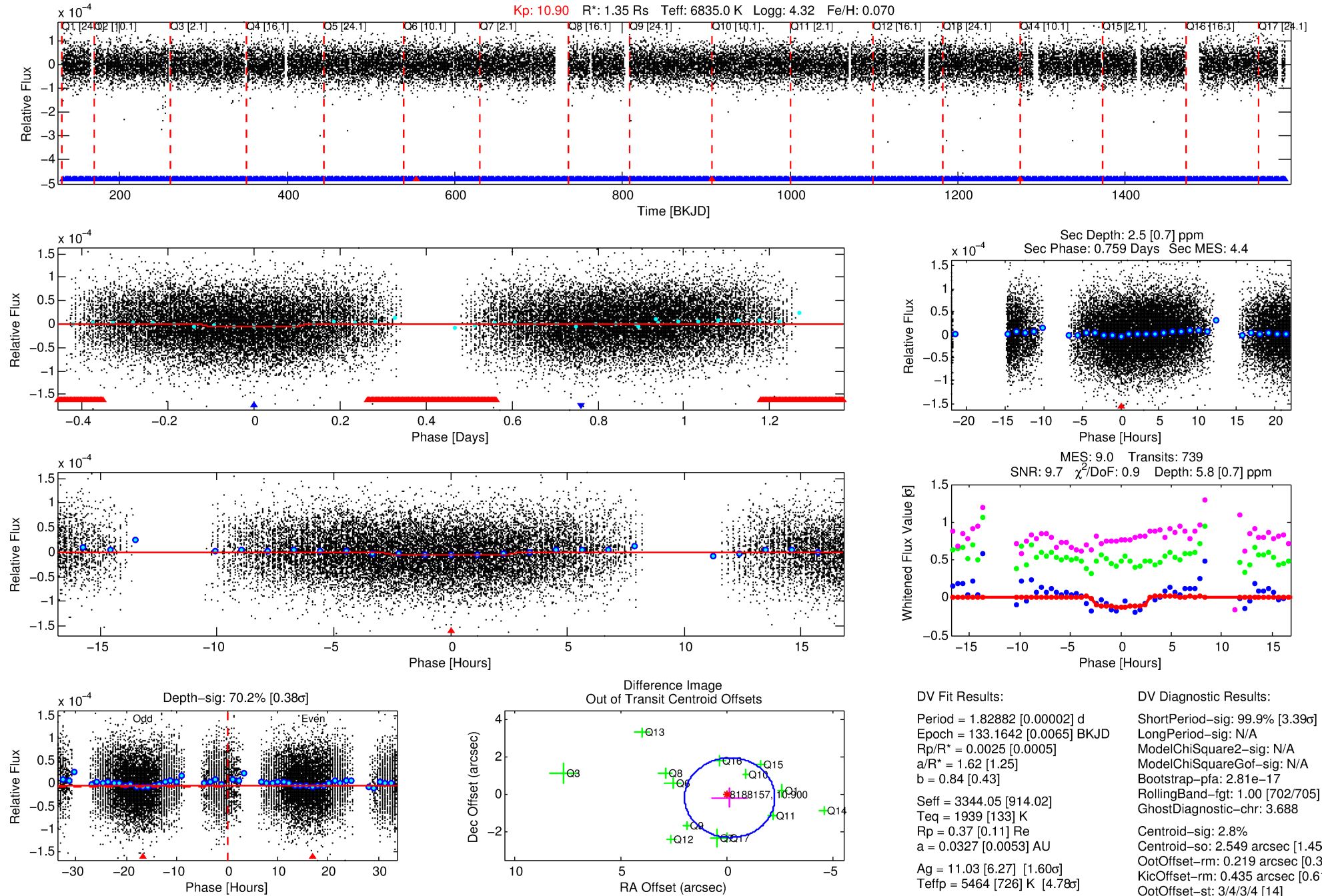
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008188157-02

No Significant Match Found

DV One-Page Summary

KIC: 8188157 Candidate: 2 of 2 Period: 1.829 d



DV Fit Results:

Period = 1.82882 [0.00002] d
Epoch = 133.1642 [0.0065] BKJD
 $R_p/R^* = 0.0025$ [0.0005]
 $a/R^* = 1.62$ [1.25]
 $b = 0.84$ [0.43]
 $\text{Seff} = 3344.05$ [914.02]
 $T_{\text{eq}} = 1939$ [133] K
 $R_p = 0.37$ [0.11] R_{e}
 $a = 0.0327$ [0.0053] AU
 $A_g = 11.03$ [6.27] [1.60 σ]
 $T_{\text{eff}} = 5464$ [726] K [4.78 σ]

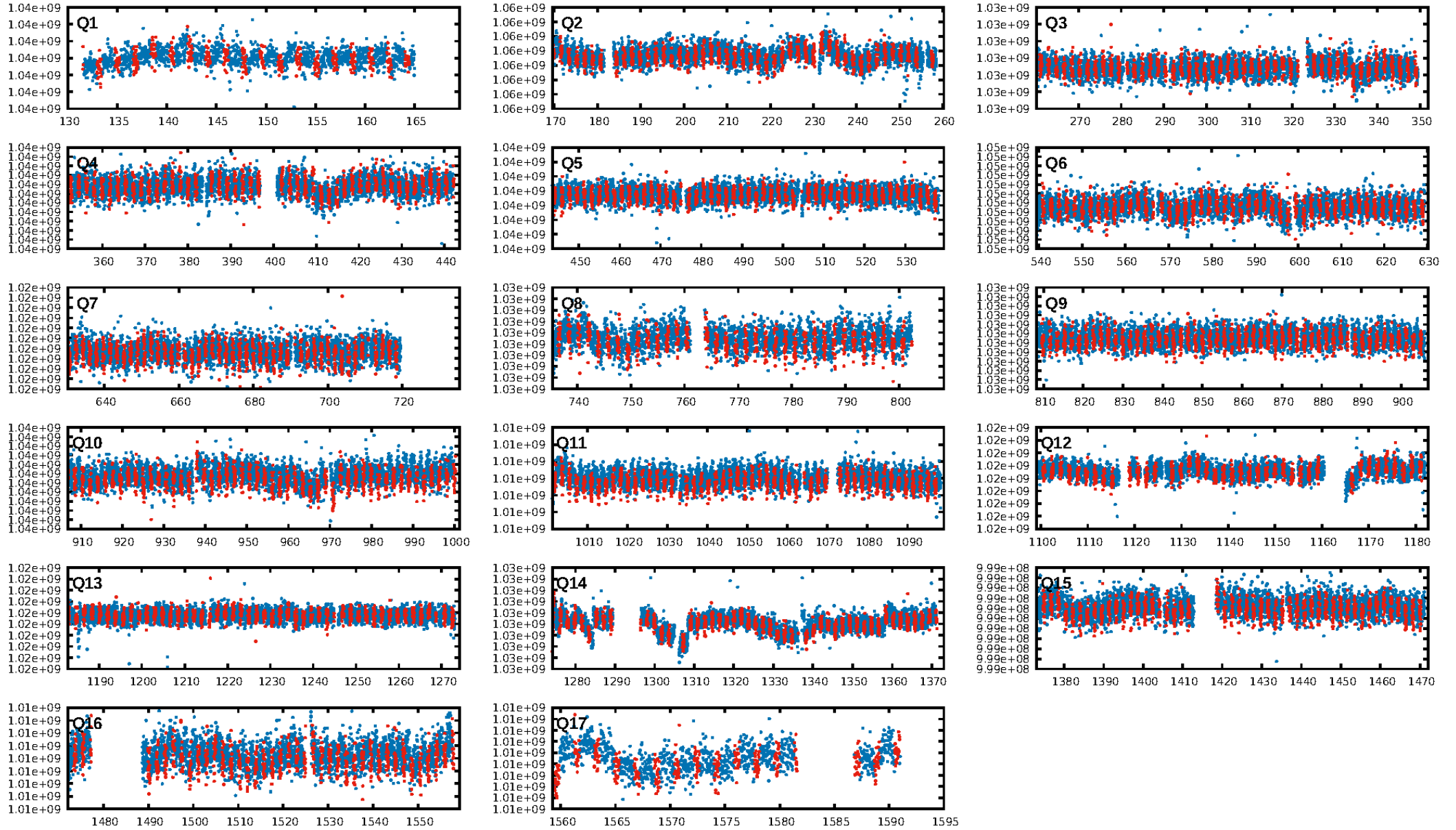
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.39 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.81e-17
RollingBand-fgt: 1.00 [702/705]
GhostDiagnostic-chr: 3.688
Centroid-sig: 2.8%
Centroid-so: 2.549 arcsec [1.45 σ]
OotOffset-rm: 0.219 arcsec [0.31 σ]
KicOffset-rm: 0.435 arcsec [0.61 σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 0.71 [10/14]
DiffImageOverlap-fno: 0.00 [0/17]

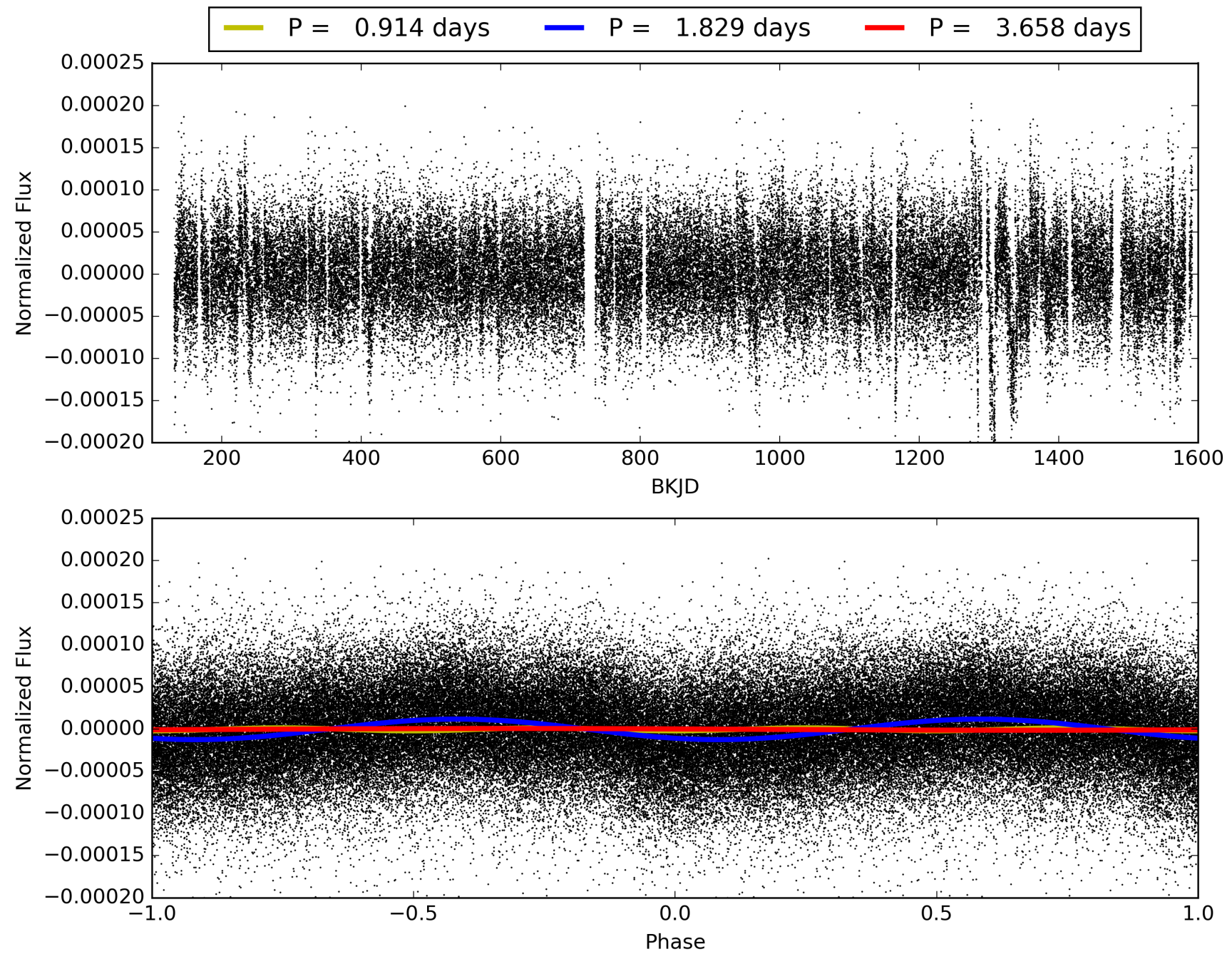
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:49:42 Z

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

TCE 008188157-02, PDC Light Curves

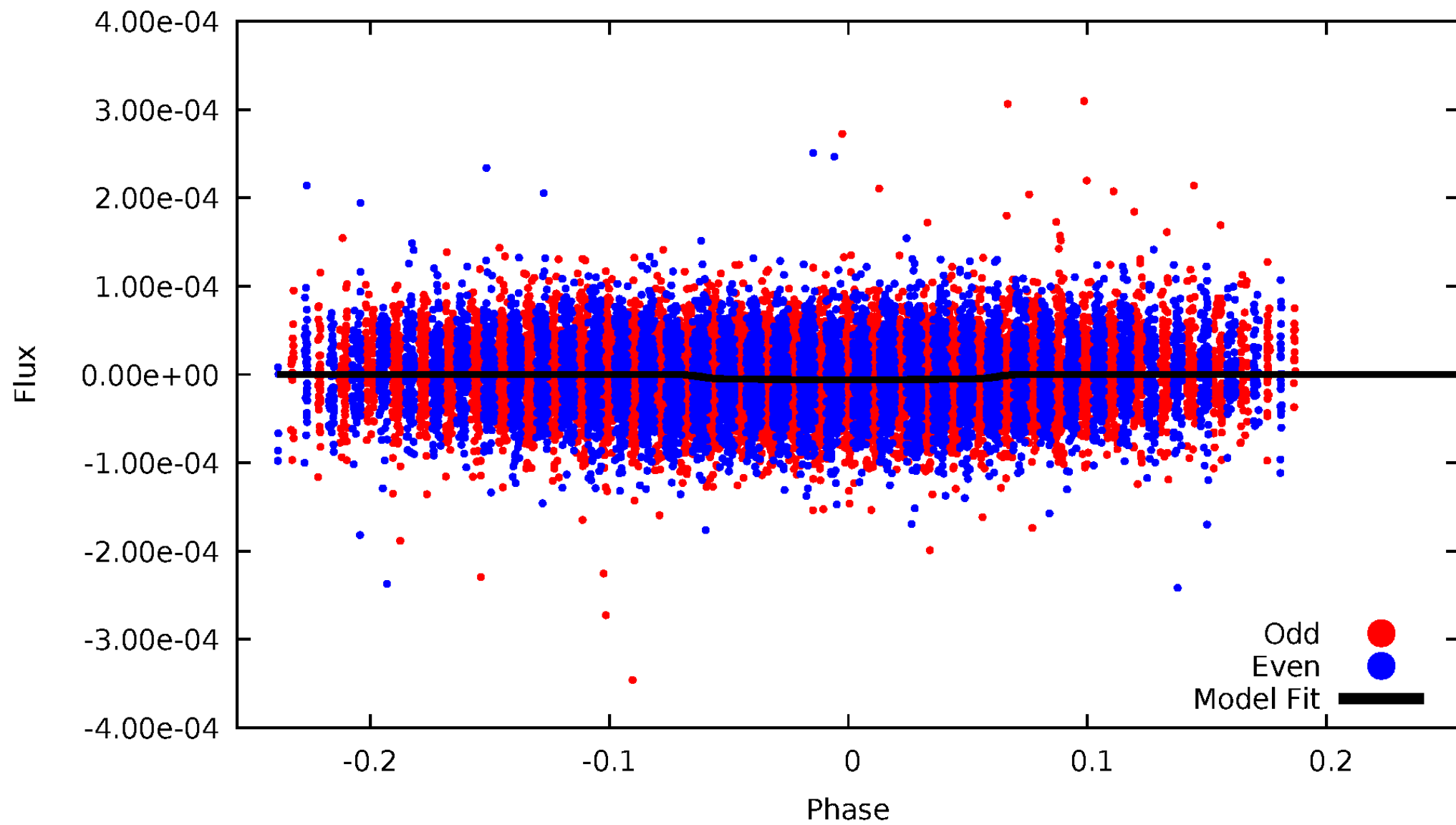


TCE 008188157-02



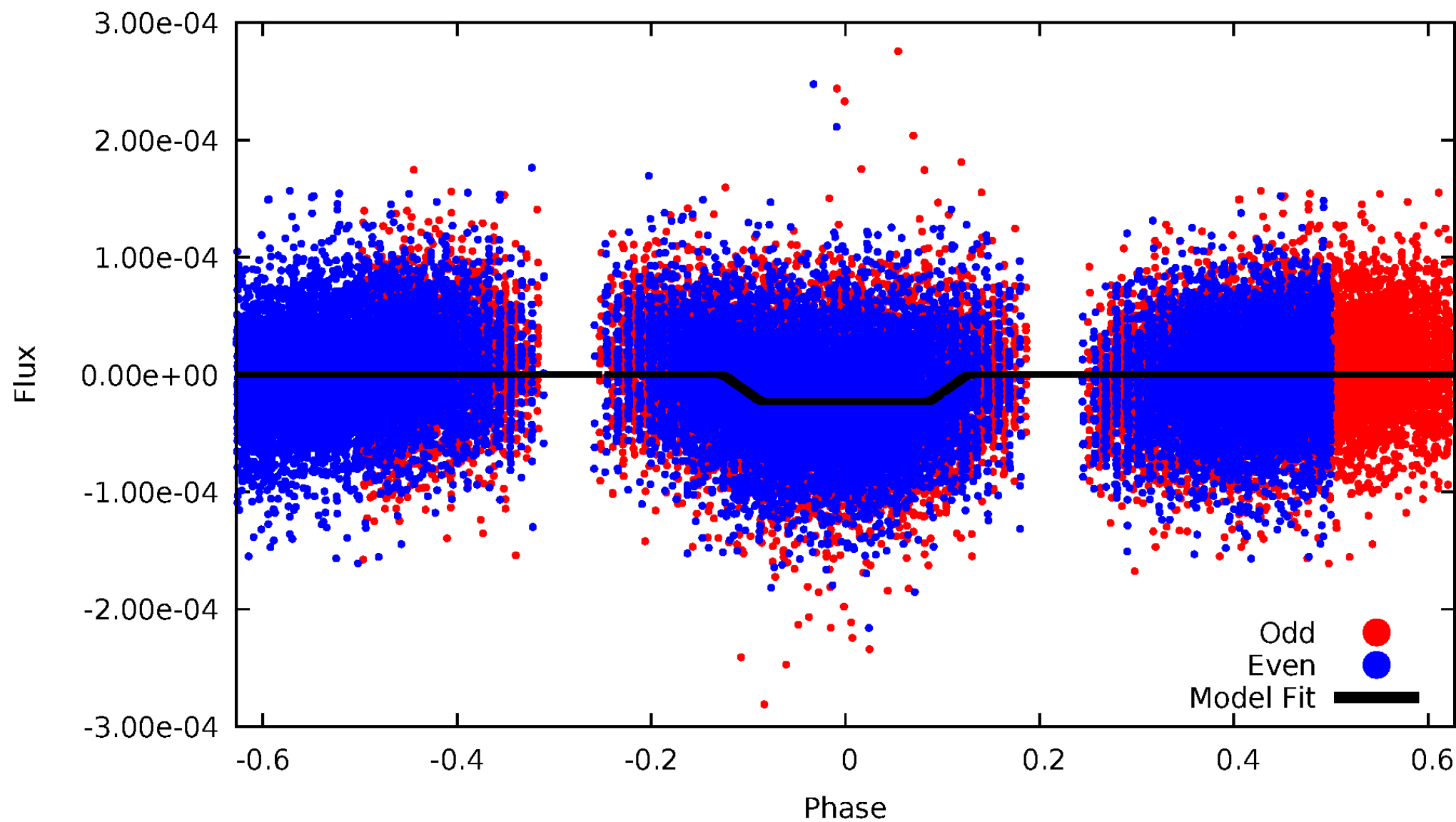
DV Odd/Even

TCE 008188157-02



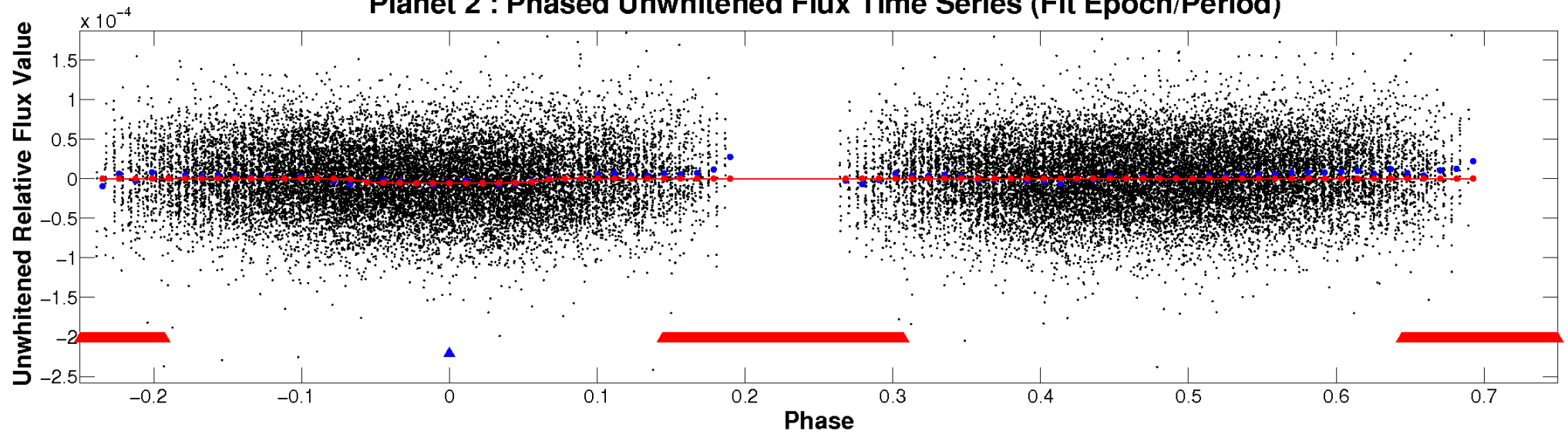
ALT Odd/Even

TCE 008188157-02

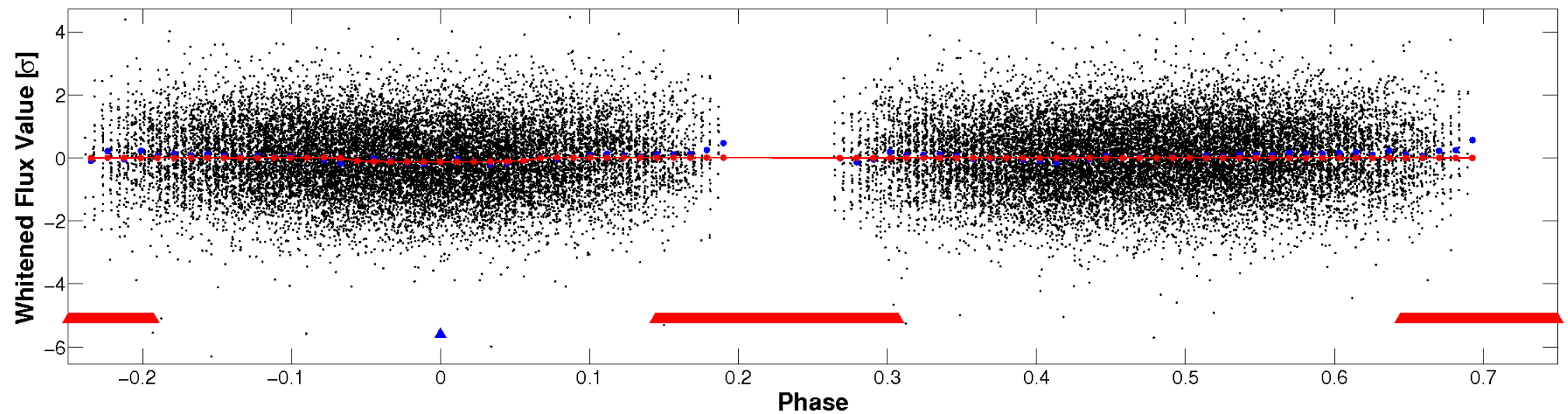


Non-Whitened Vs. Whitened Light Curve

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

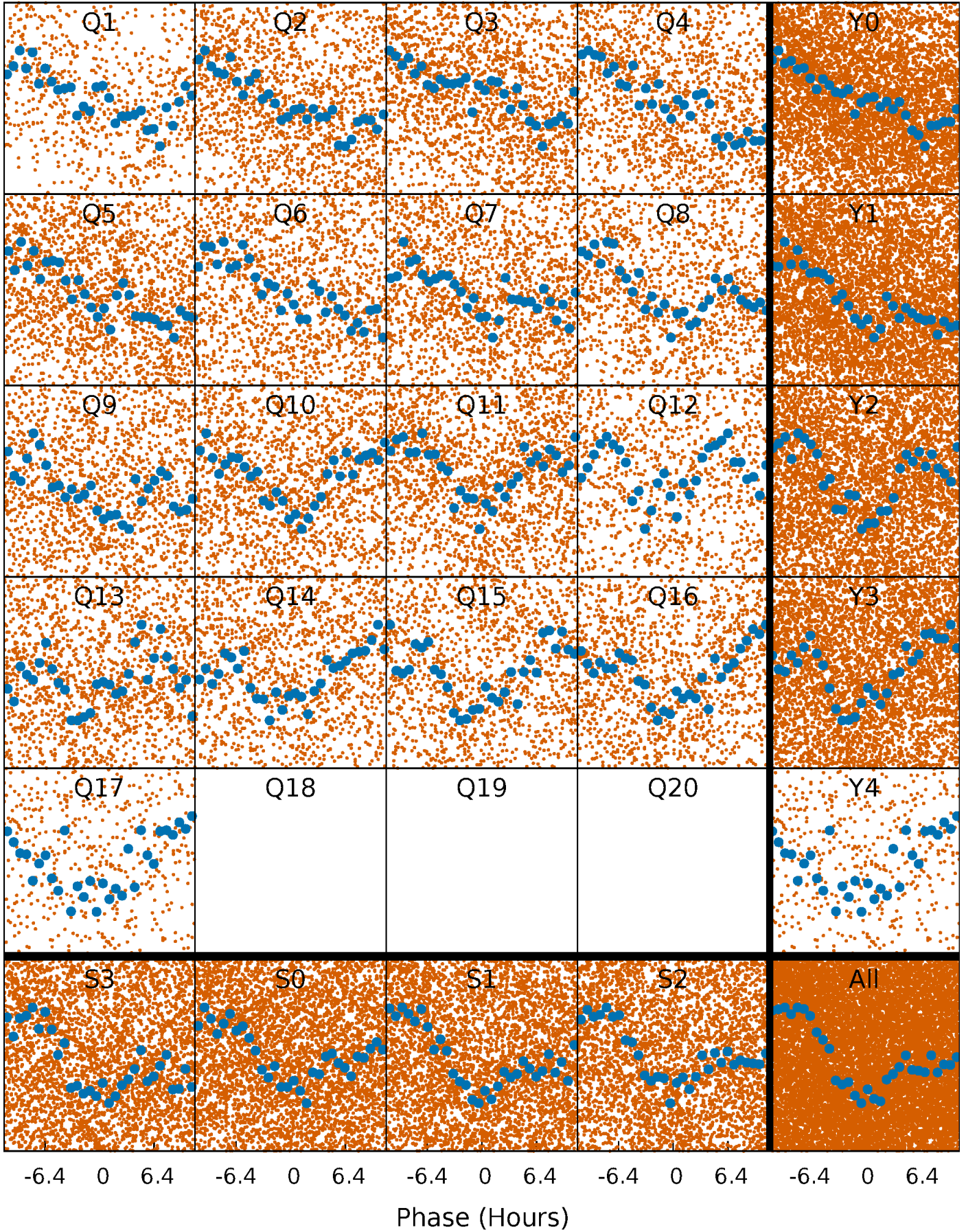


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



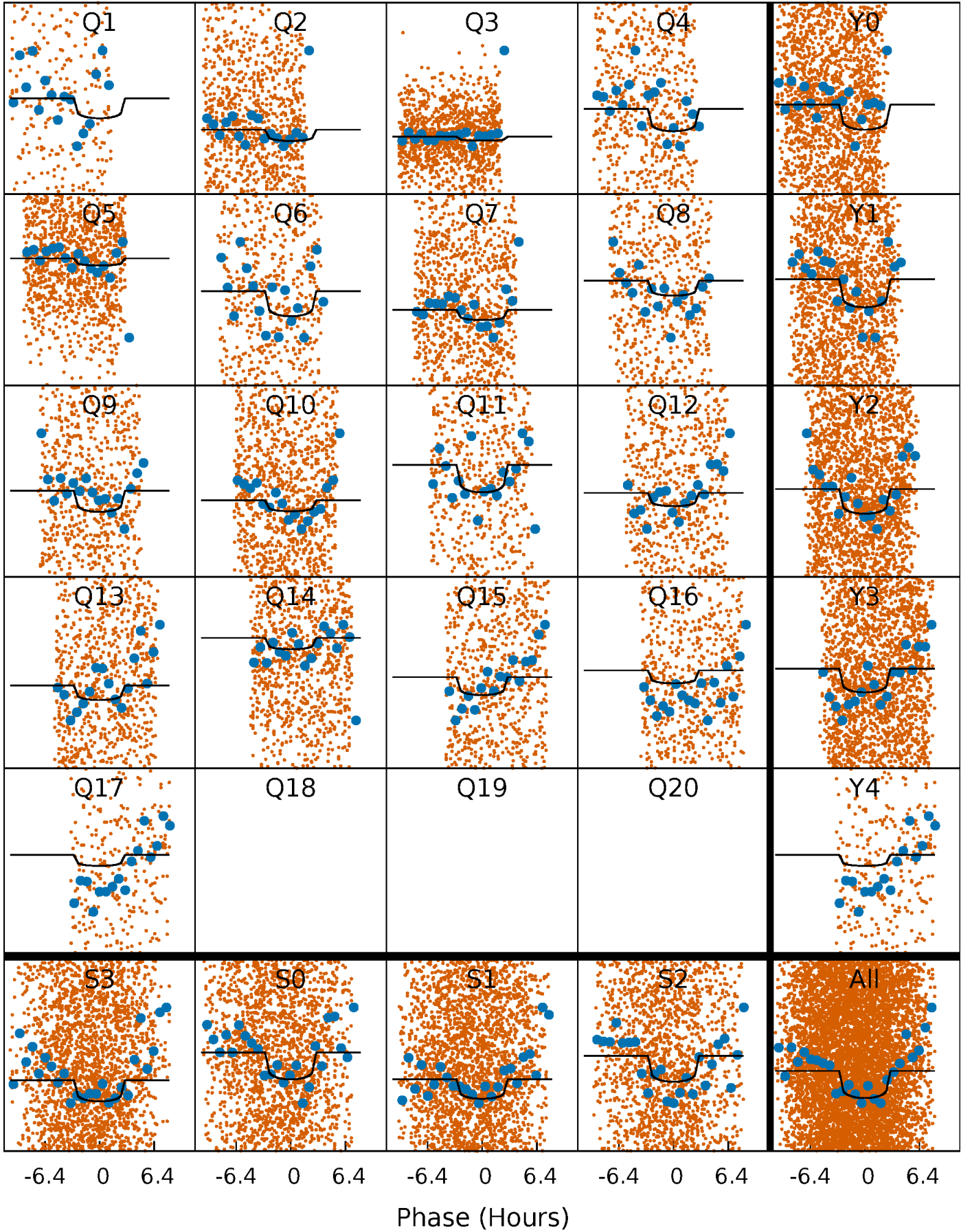
PDC Quarter-Phased Transit Curves

TCE 008188157-02 P= 1.828816 Days $T_0=133.164184$ (BKJD)



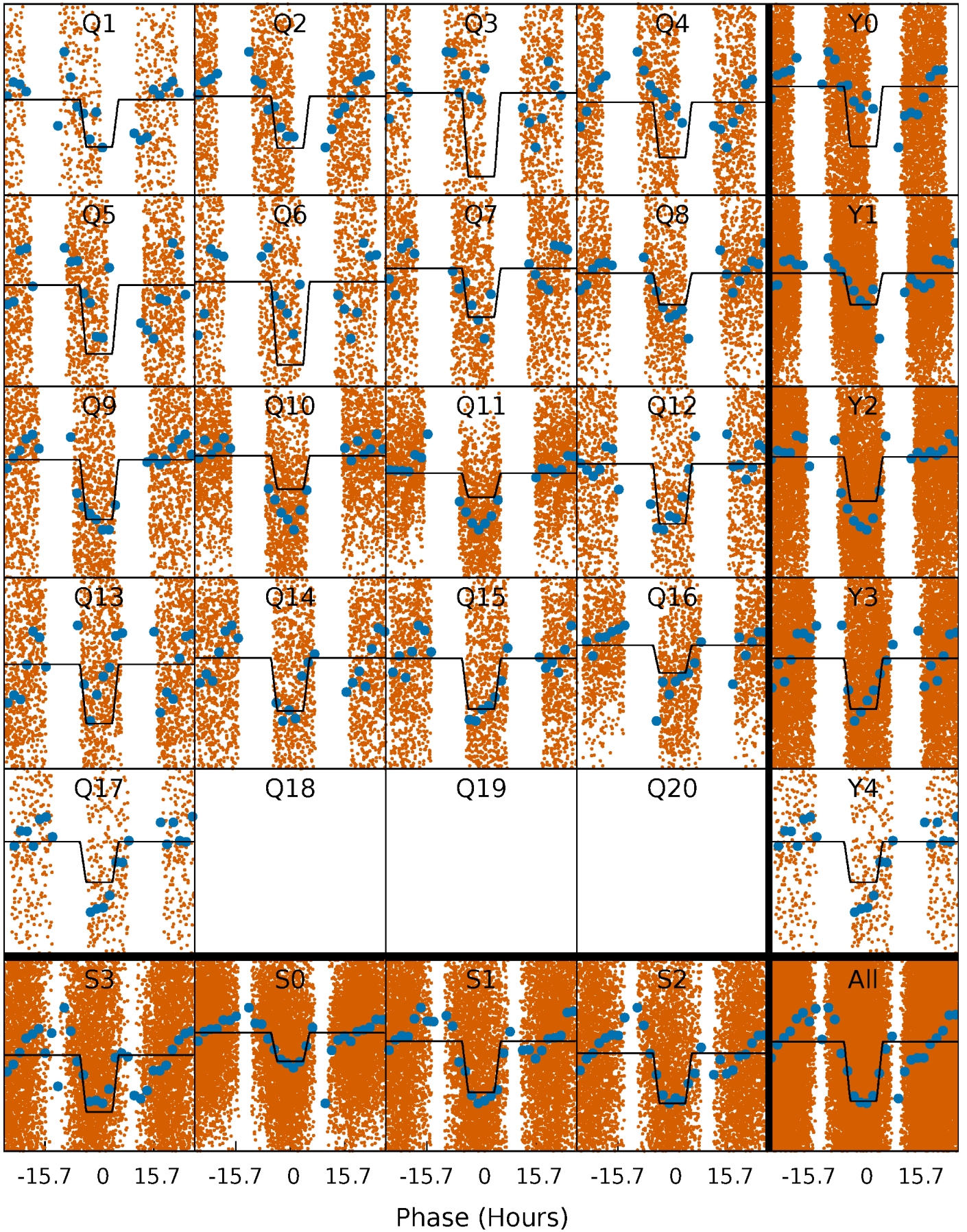
DV Quarter-Phased Transit Curves

TCE 008188157-02 P= 1.828816 Days $T_0=133.164184$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

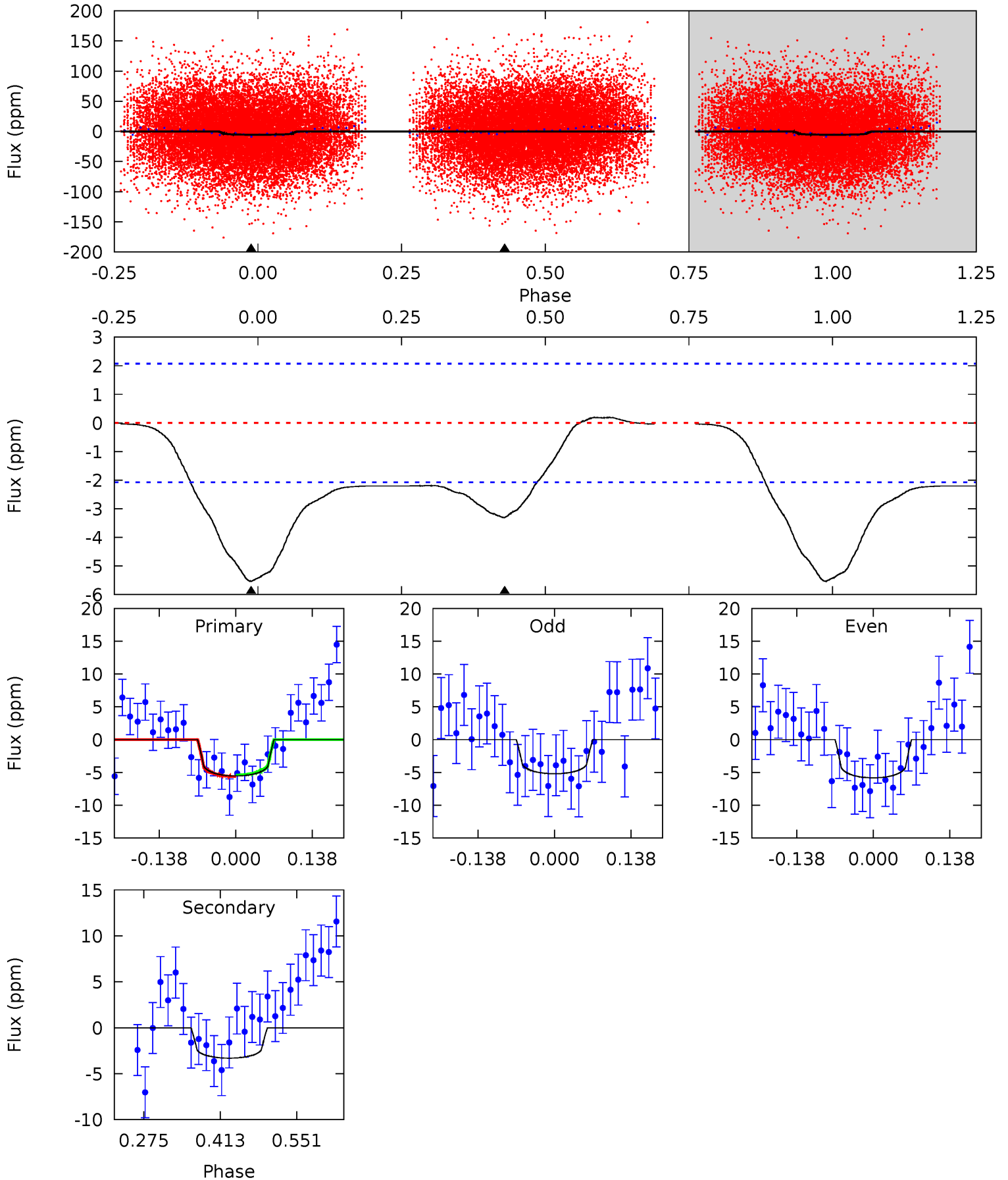
TCE 008188157-02 P= 1.828770 Days $T_0=133.200990$ (BKJD)



DV Model-Shift Uniqueness Test

008188157-02, P = 1.828816 Days, E = 131.335368 Days

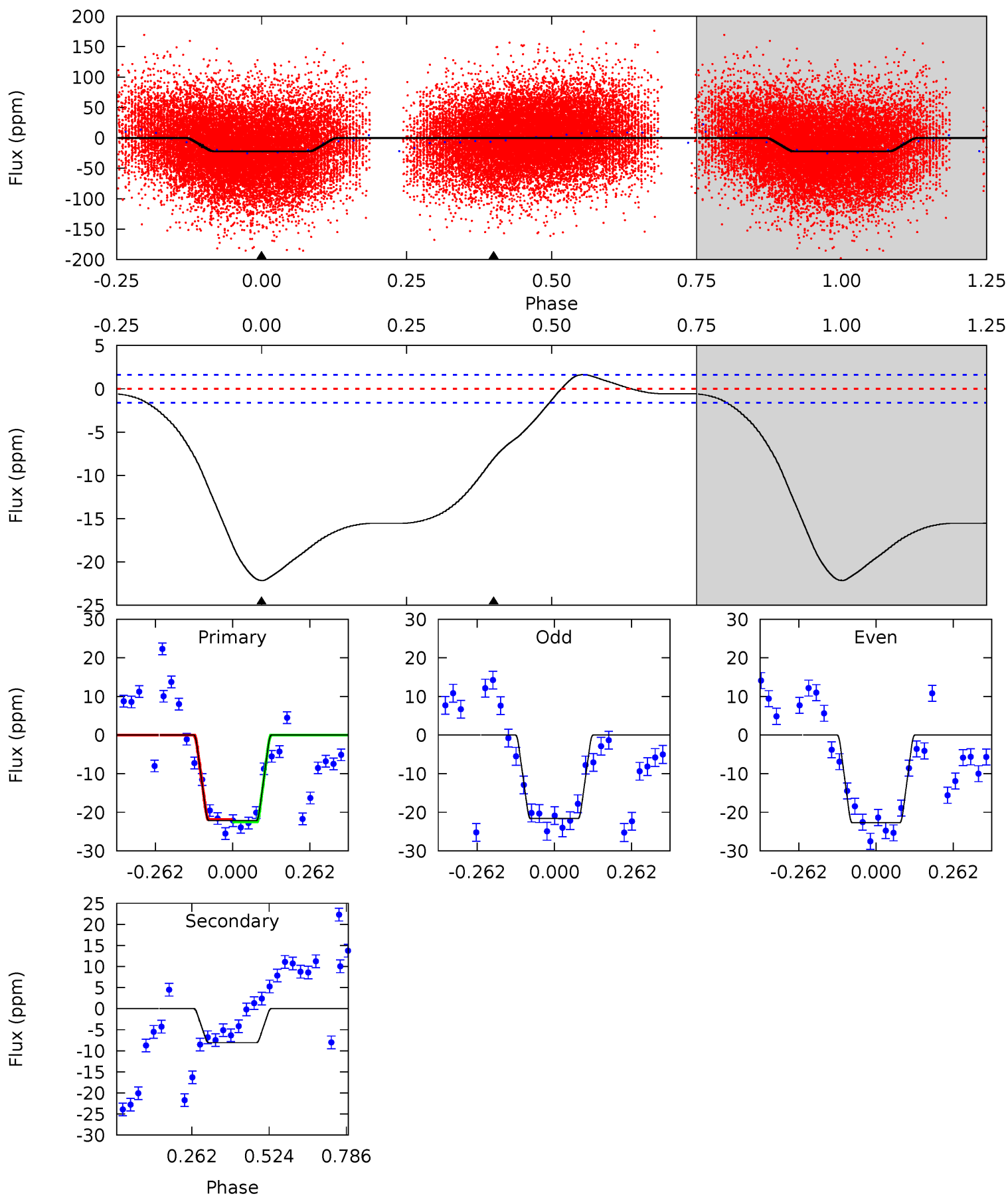
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	7.19	0	0	4.50	1.48	1.94	12.0	12.0	7.19	7.19	0.69	1.08	0.03	0.26



Alt Model-Shift Uniqueness Test

008188157-02, P = 1.828770 Days, E = 131.372220 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.9	21.8	0	0	4.36	1.12	5.09	59.9	59.9	21.8	21.8	1.46	1.05	0.07	0.78



Stellar Parameters For KIC 008188157

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6835^{+163}_{-225}	$4.320^{+0.057}_{-0.133}$	$0.070^{+0.150}_{-0.450}$	$1.352^{+0.254}_{-0.191}$	$1.392^{+0.120}_{-0.223}$	$0.794^{+0.237}_{-0.306}$
	+2%/-3%	+1%/-3%	+214%/-643%	+19%/-14%	+9%/-16%	+30%/-39%
Source	PHO1	FLK73	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 008188157-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3 ± 0	$0.38^{+0.10}_{-0.08}$	2736^{+141}_{-114}	5772^{+735}_{-591}	13^{+9}_{-5}
Alt.	-8 ± 0	$0.72^{+0.11}_{-0.10}$	2745^{+135}_{-120}	5238^{+318}_{-275}	$8.801^{+3.091}_{-2.035}$

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

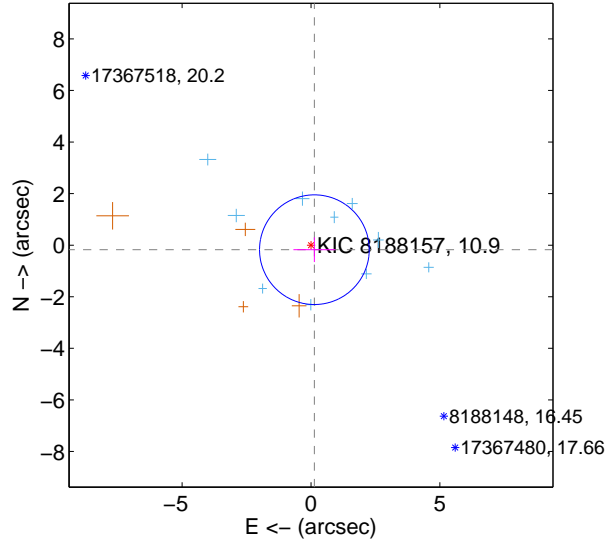
Supplemental centroid analysis for 008188157-02. **Kepler magnitude: 10.90.** Transit SNR 9.71

There are 10 quarters with good PRF difference image offsets

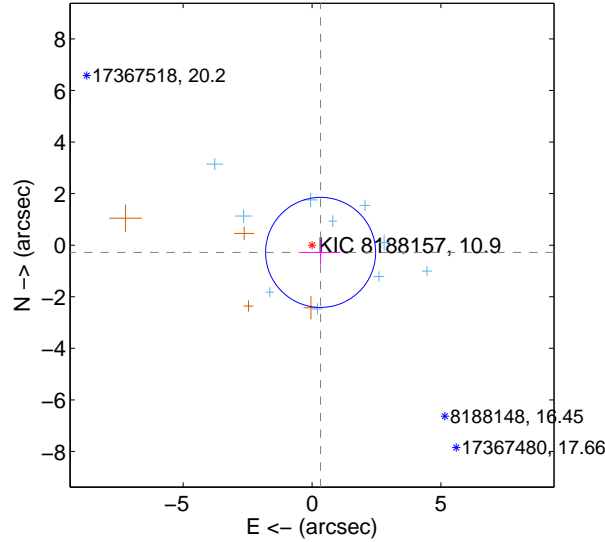
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.219 ± 0.709	0.31	-0.132 ± 0.812	-0.175 ± 0.479
PRF-fit source offset from KIC position	0.435 ± 0.711	0.61	-0.333 ± 0.758	-0.280 ± 0.464
photometric centroid source offset	2.55 ± 1.76	1.45	-0.24 ± 2.91	-2.54 ± 1.74

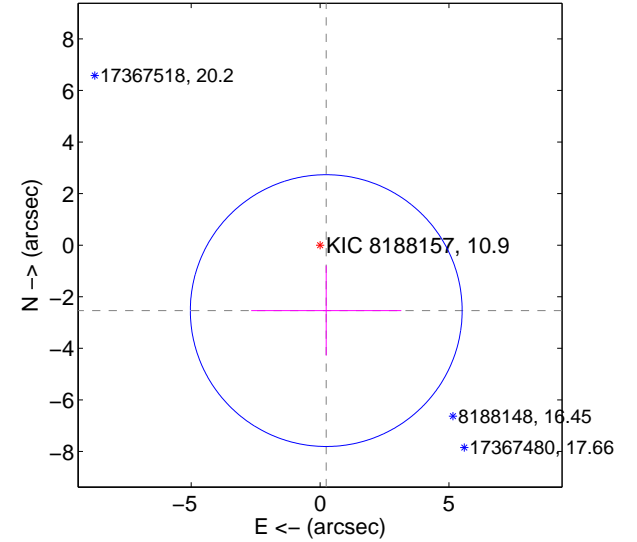
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

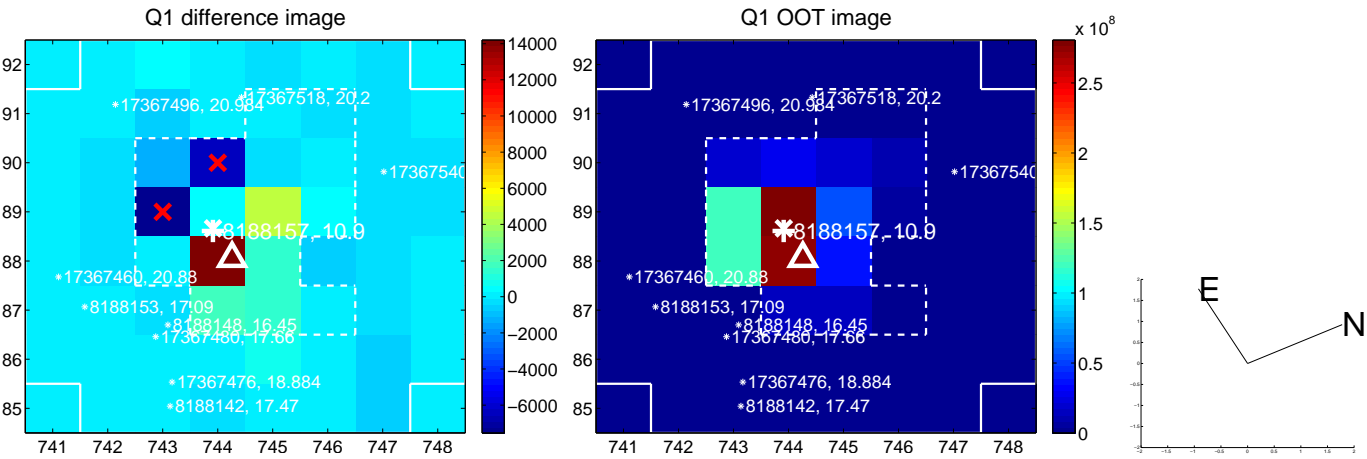


offset from photometric centroids

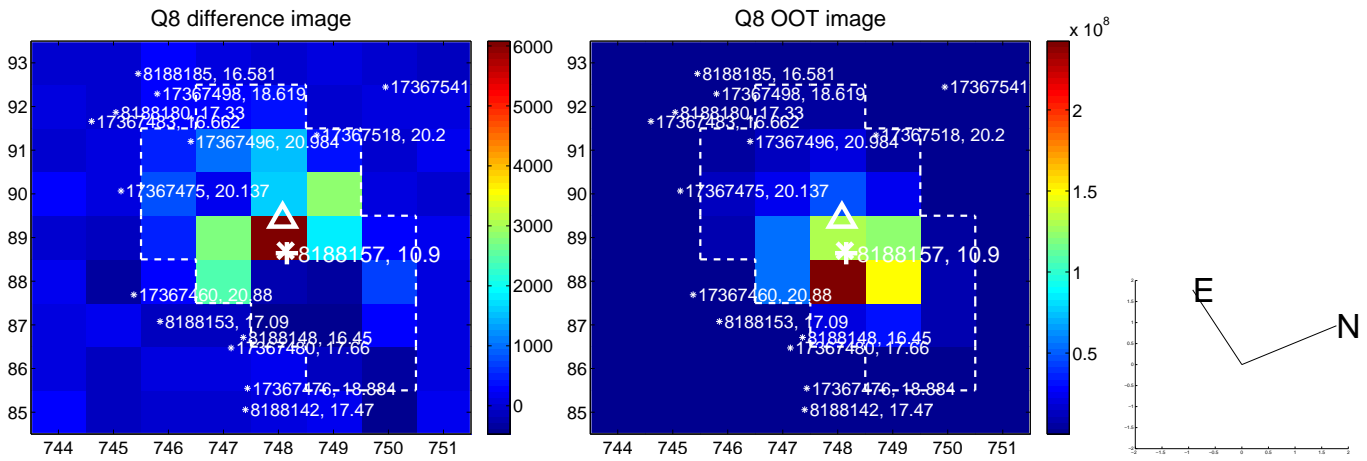
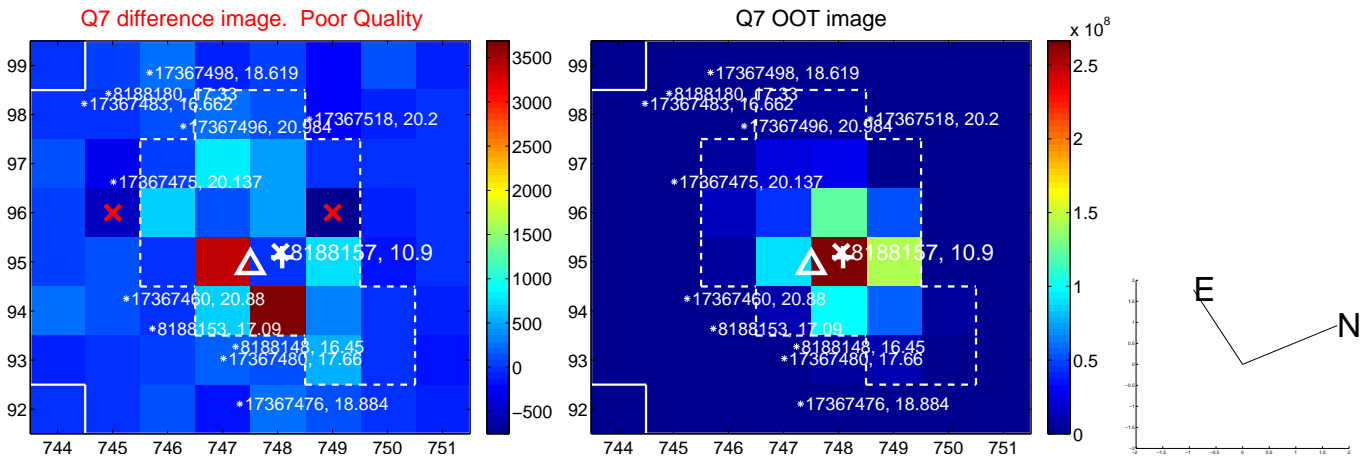
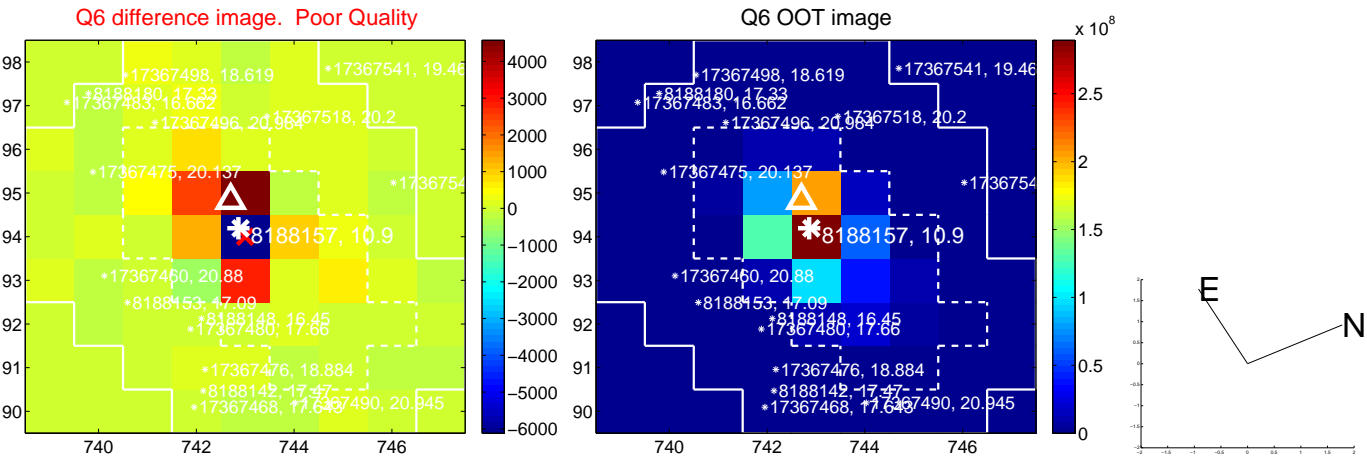
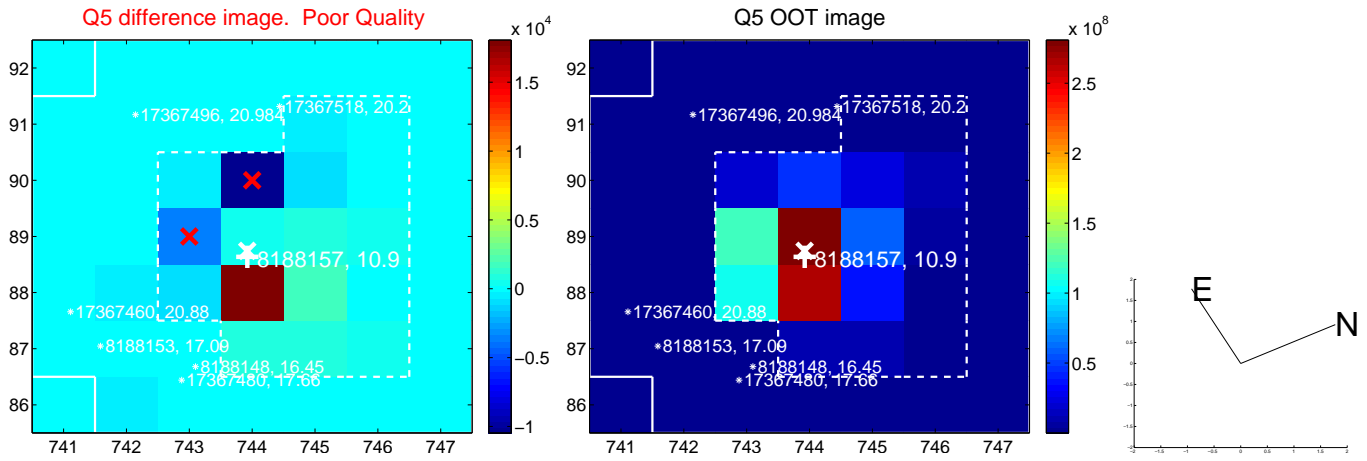


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

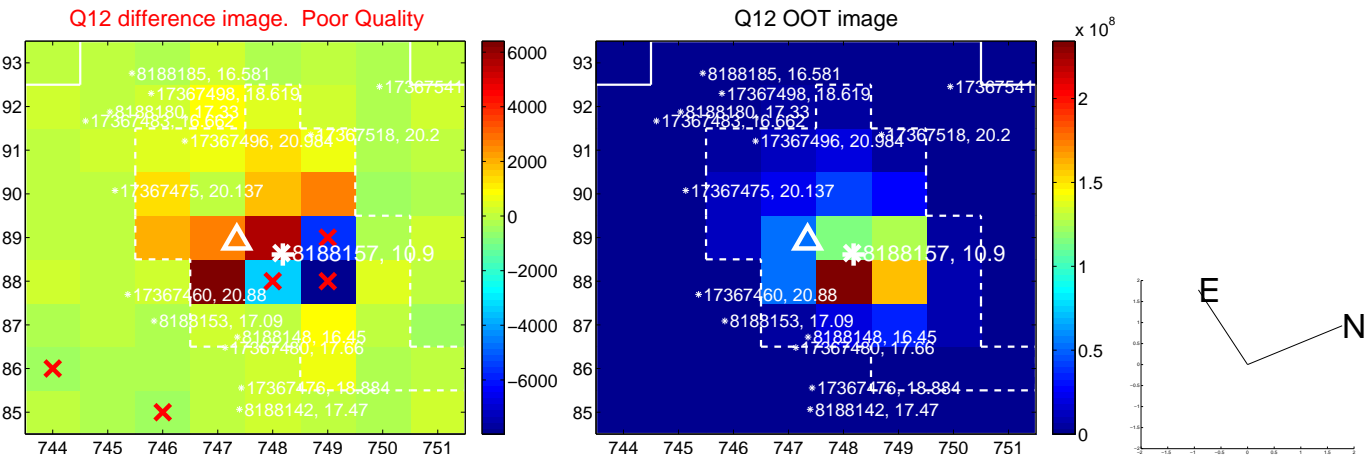
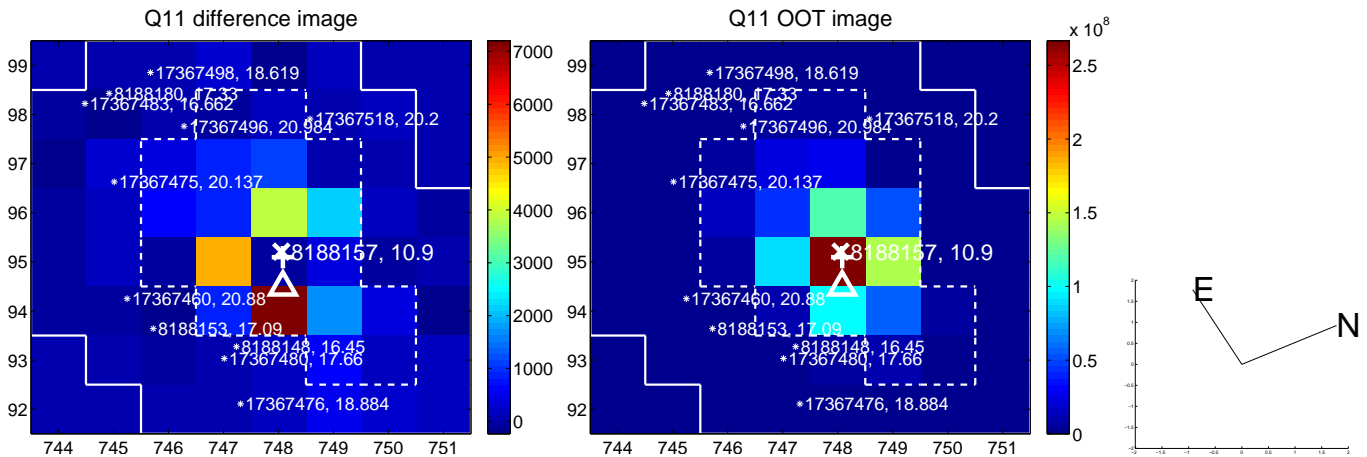
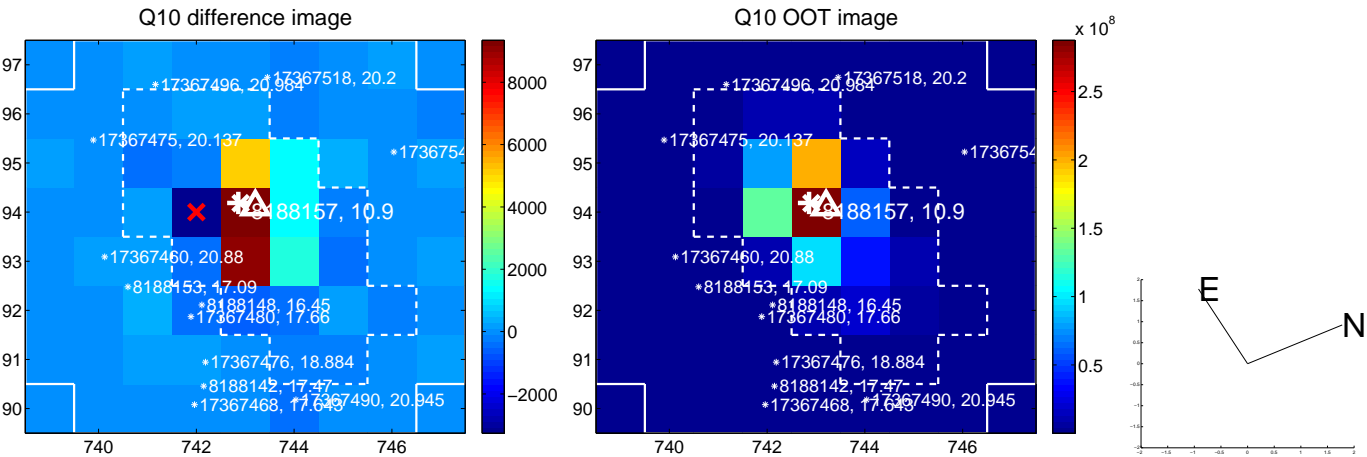
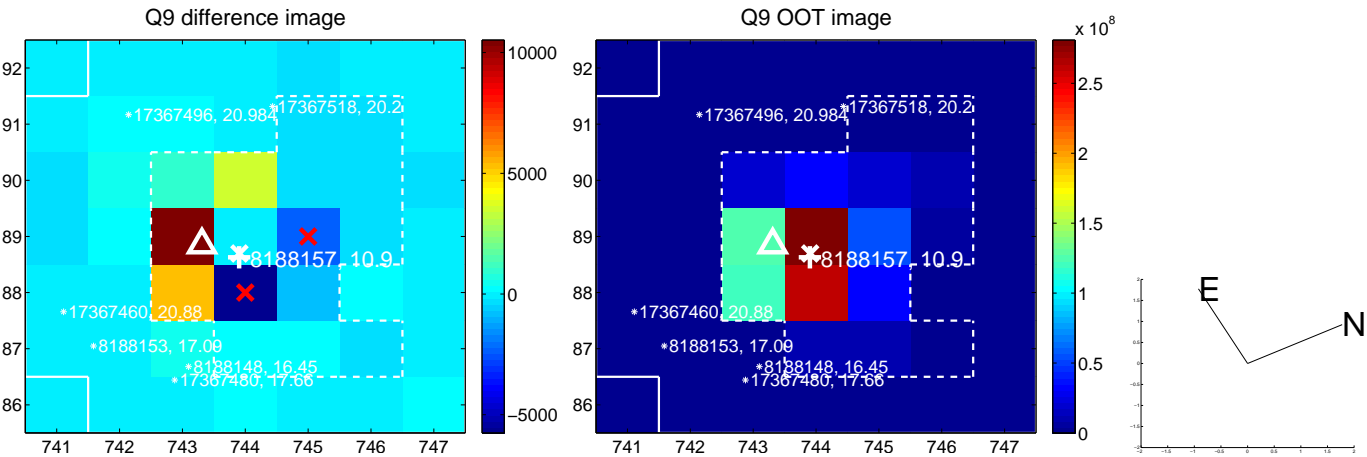
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



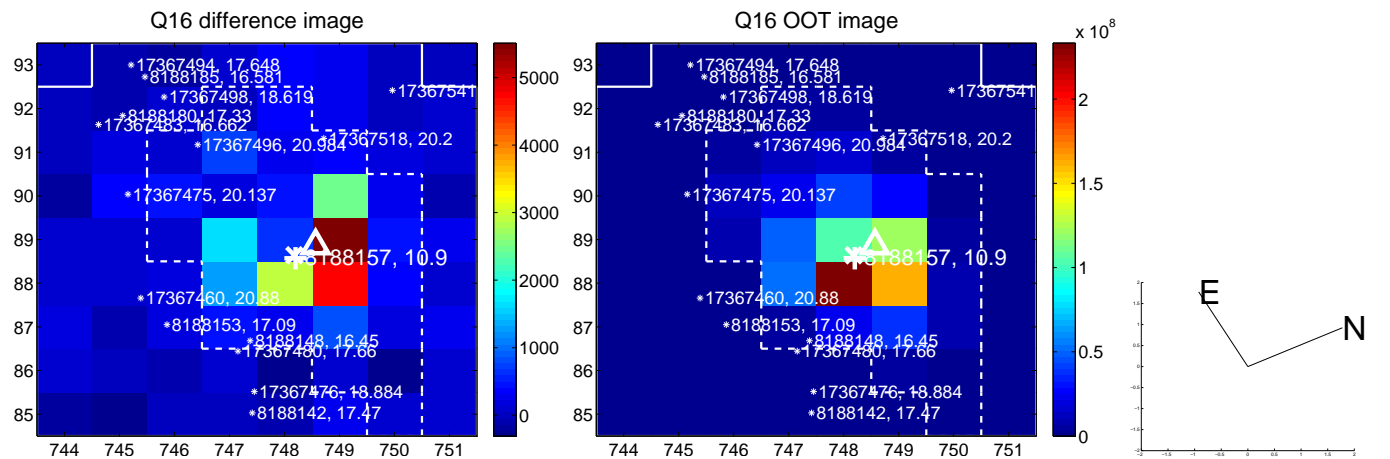
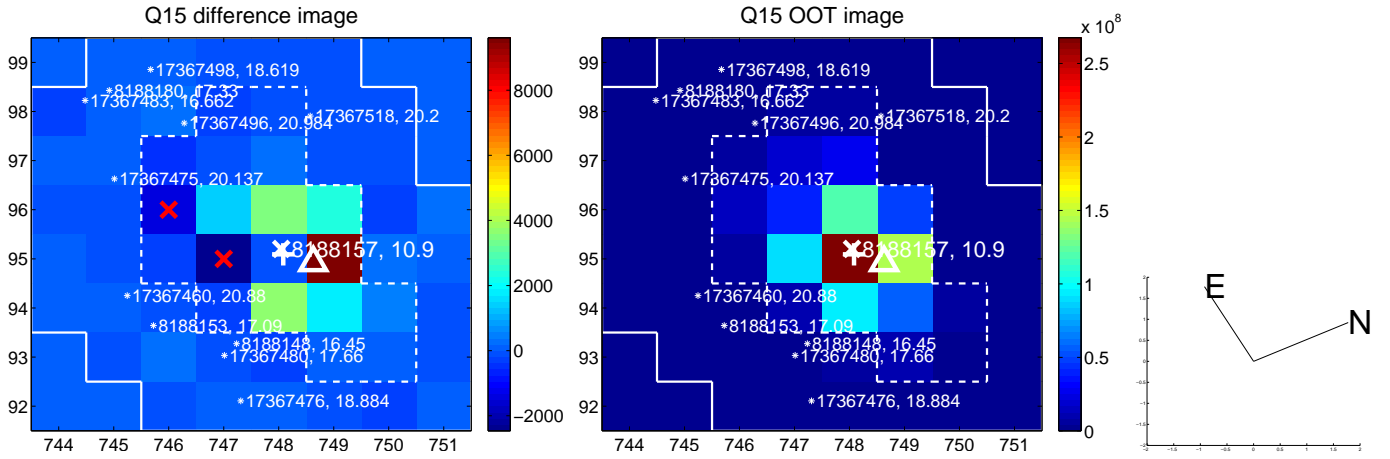
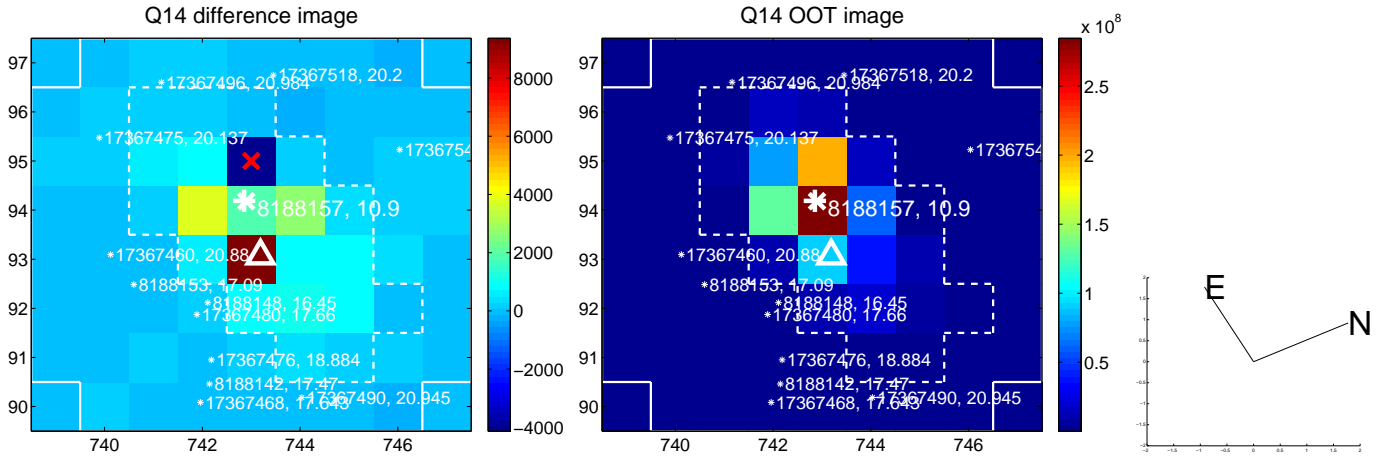
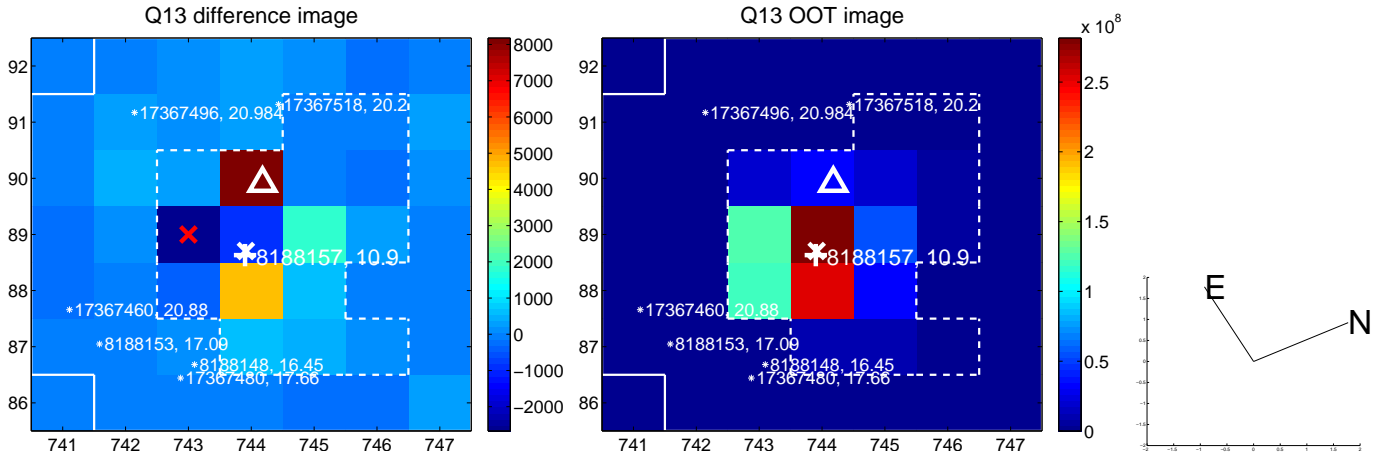
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



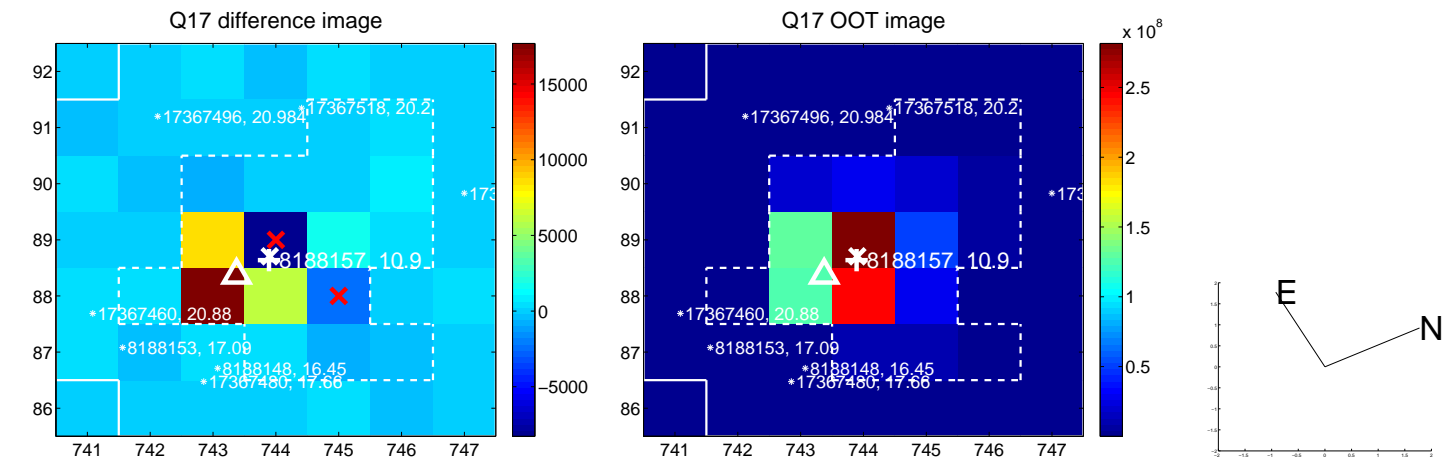
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



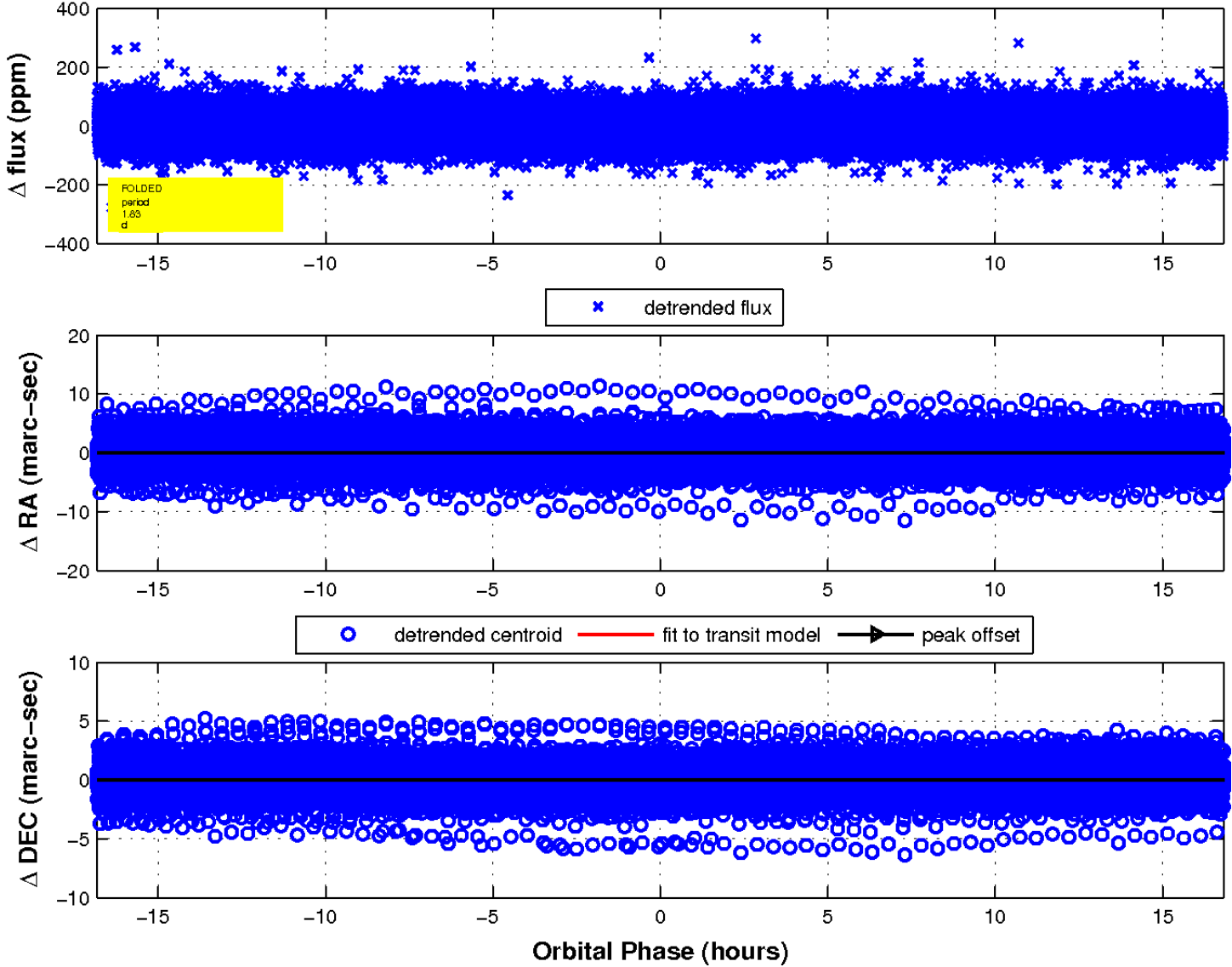
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

