

KIC 009846258

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})
009846258-01	OBS	No	0.639656	131.927490	27.4	2.902	9.5	12.3	1.66	6410	0.99	18231.35
009846258-02	OBS	No	213.903812	162.722647	383.5	14.707	9.9	5.4	1.66	6410	3.74	7.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009846258-01	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—LPP_ALT—CENT_UNRESOLVED_OFFSET
009846258-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—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.

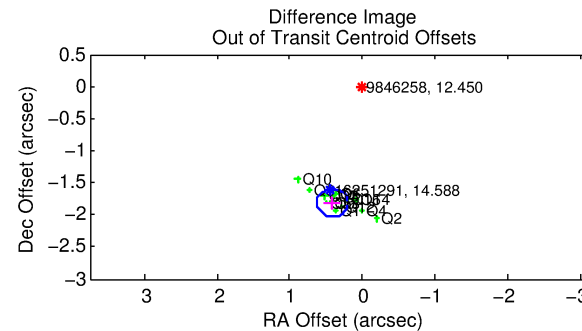
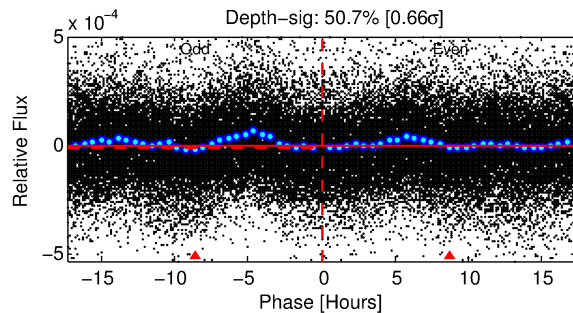
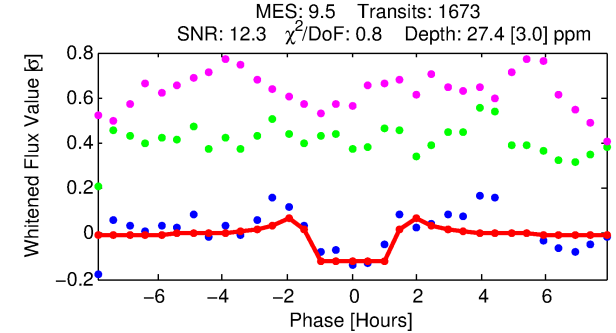
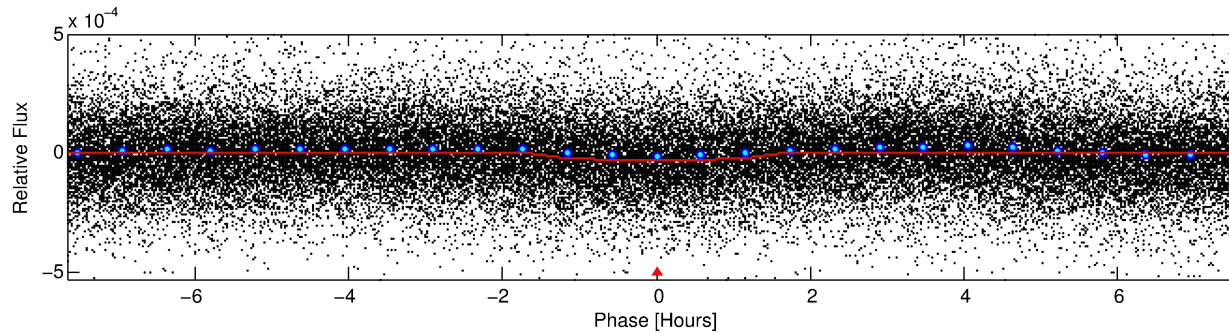
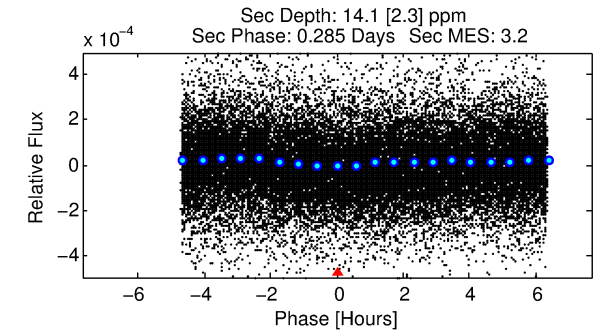
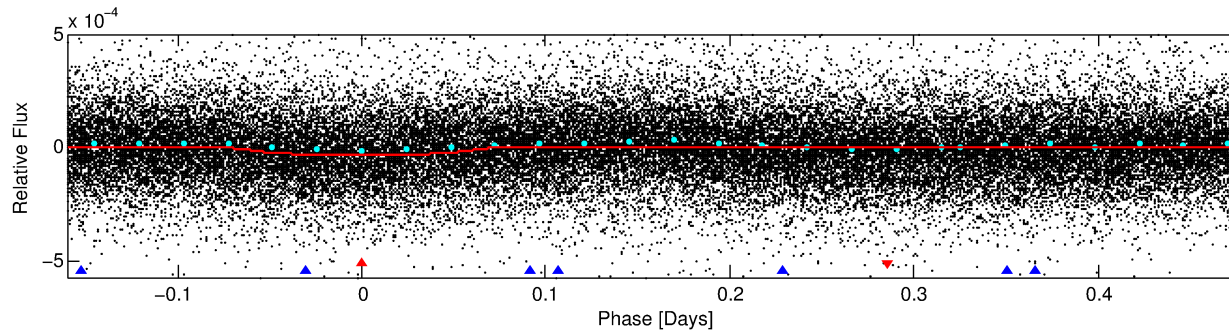
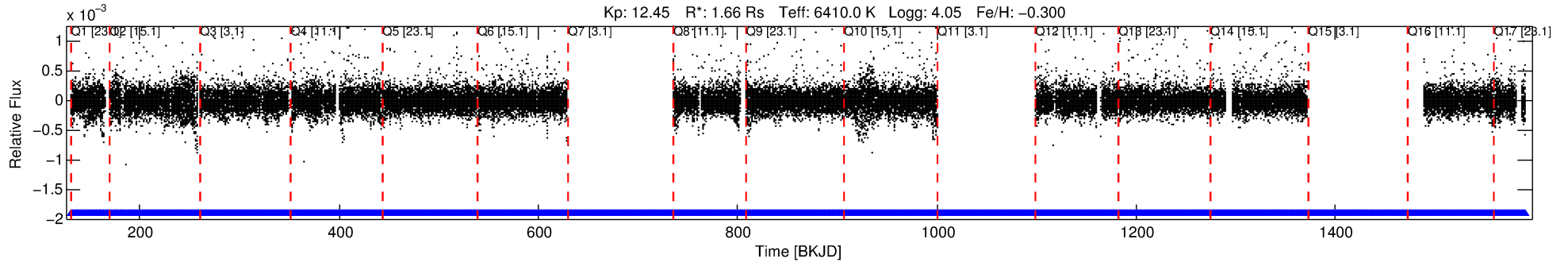
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009846258-01

No Significant Match Found

DV One-Page Summary

KIC: 9846258 Candidate: 1 of 2 Period: 0.640 d



DV Fit Results:

Period = 0.63966 [0.00001] d
Epoch = 131.9275 [0.0017] BKJD
Rp/R* = 0.0055 [0.0014]
a/R* = 1.27 [0.68]
b = 0.86 [0.44]
Seff = 18231.35 [8190.58]
Teq = 2963 [333] K
Rp = 0.99 [0.39] Re
a = 0.0151 [0.0041] AU
Ag = 1.82 [1.26] [0.65σ]
Teffp = 5319 [737] K [2.91σ]

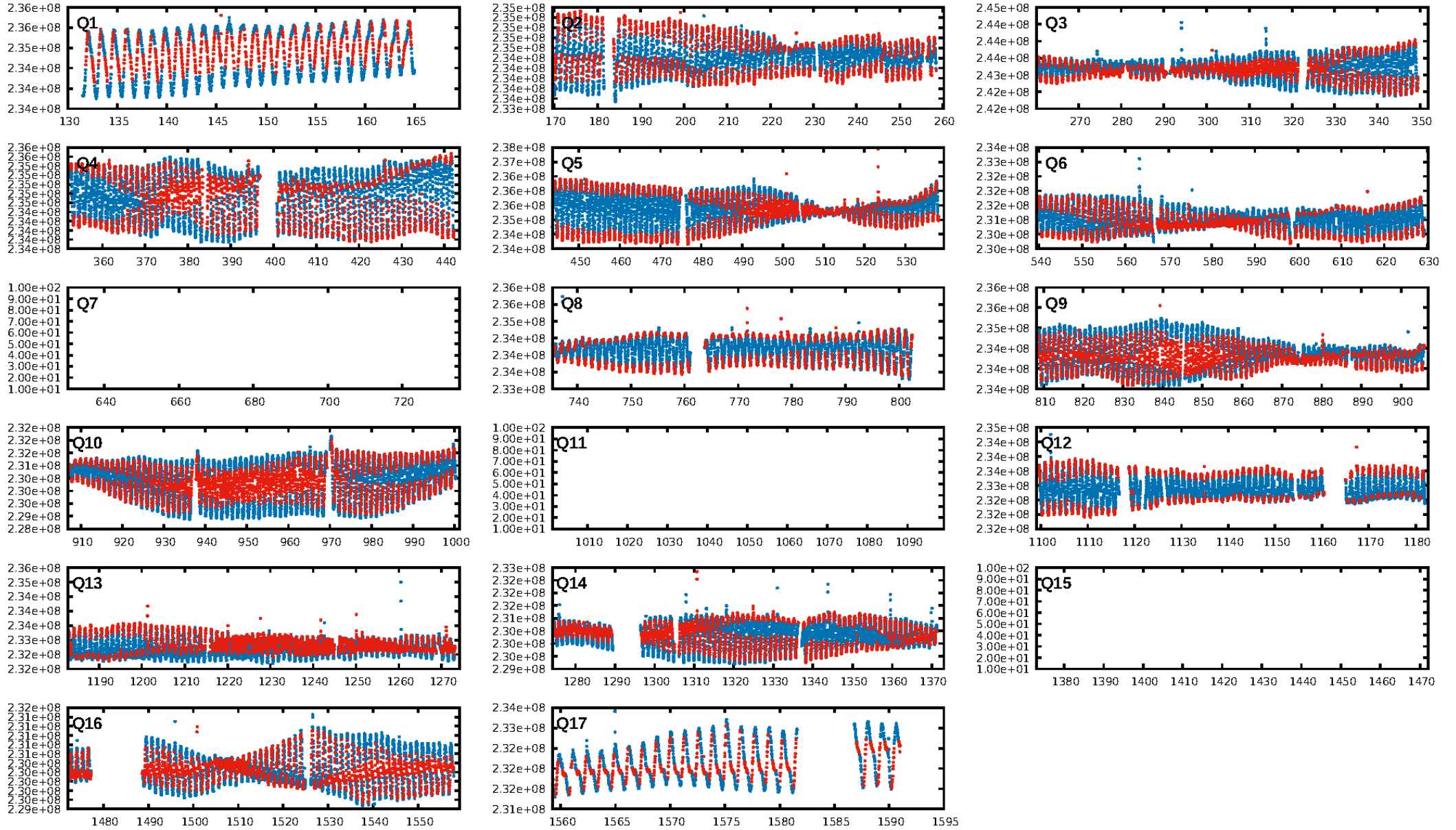
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [341.45σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.71e-16
RollingBand-fgt: 1.00 [1579/1579]
GhostDiagnostic-chr: 3.579
Centroid-sig: 0.0%
Centroid-so: 2.360 arcsec [2.93σ]
OotOffset-rm: 1.861 arcsec [25.85σ]
KicOffset-rm: 1.753 arcsec [23.98σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 1.00 [14/14]

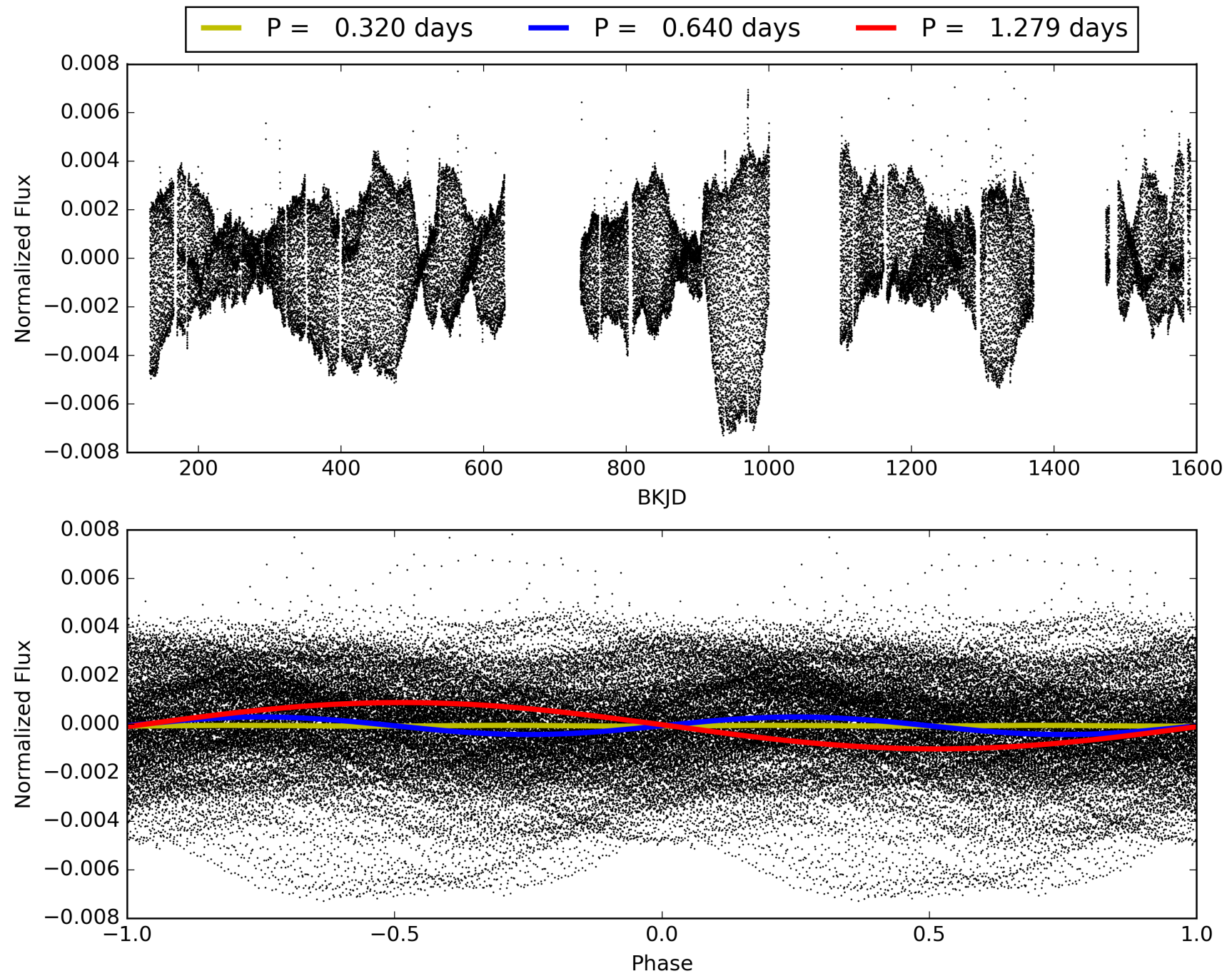
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:02:29 Z

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

TCE 009846258-01, PDC Light Curves

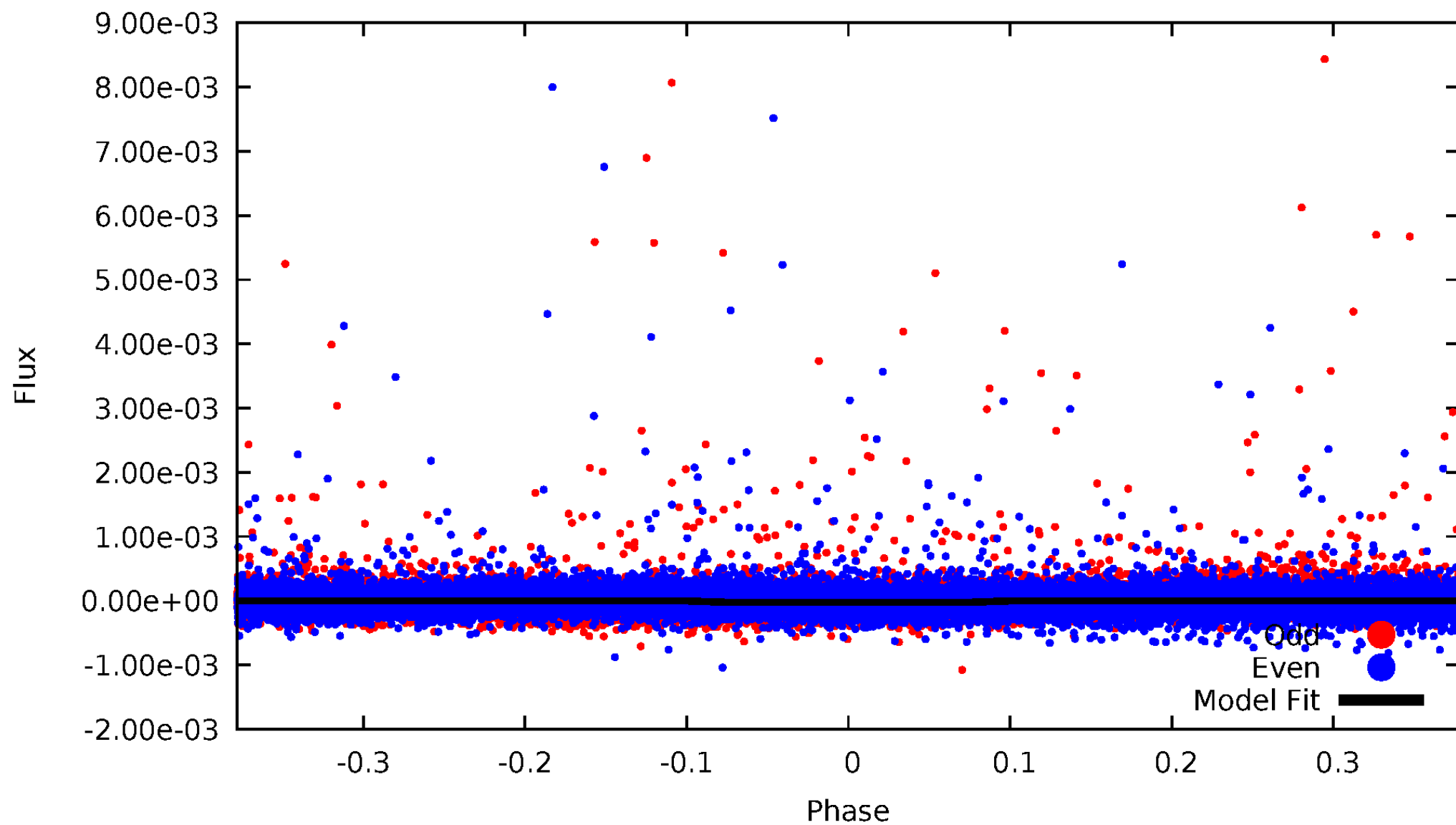


TCE 009846258-01



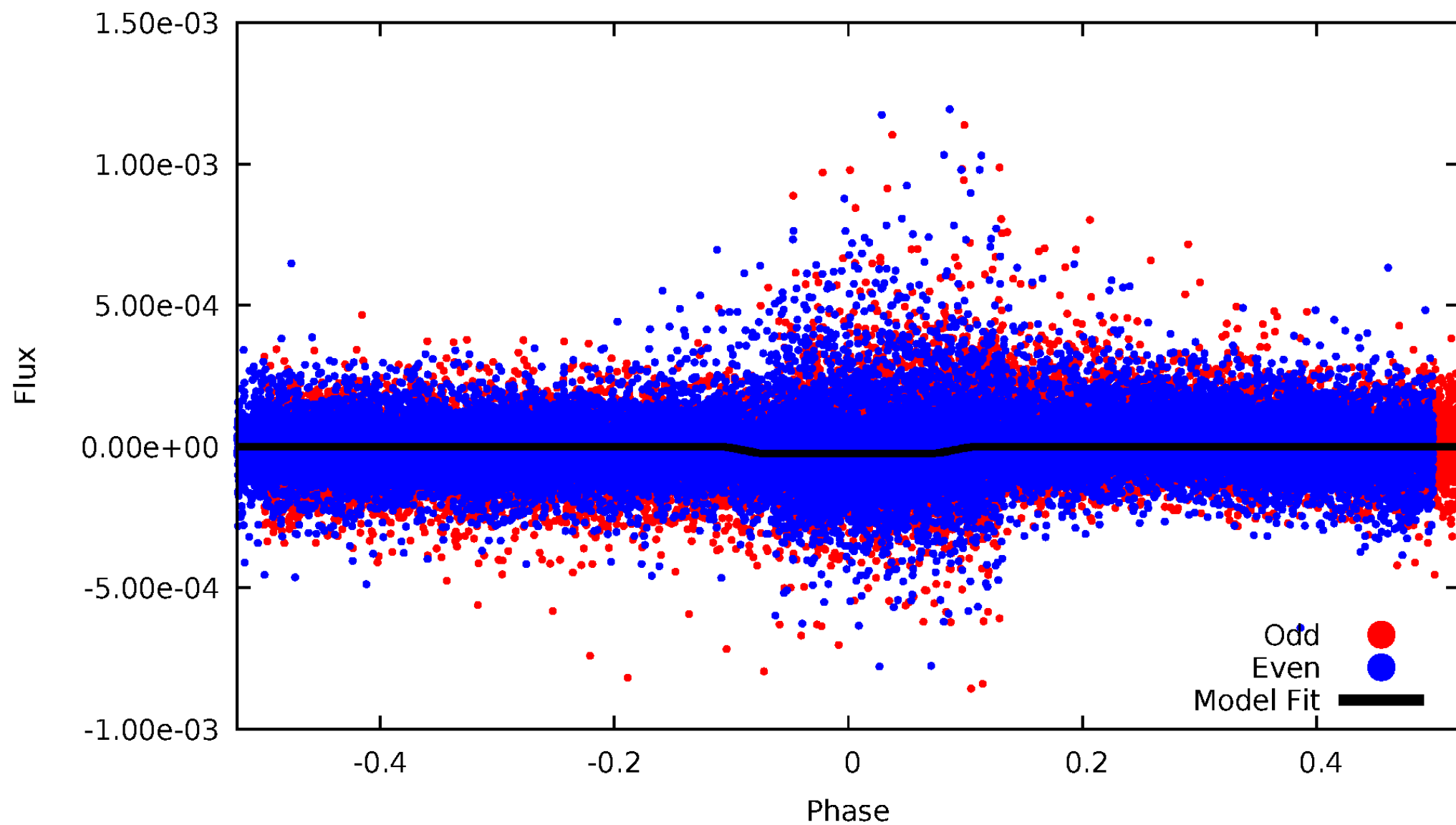
DV Odd/Even

TCE 009846258-01



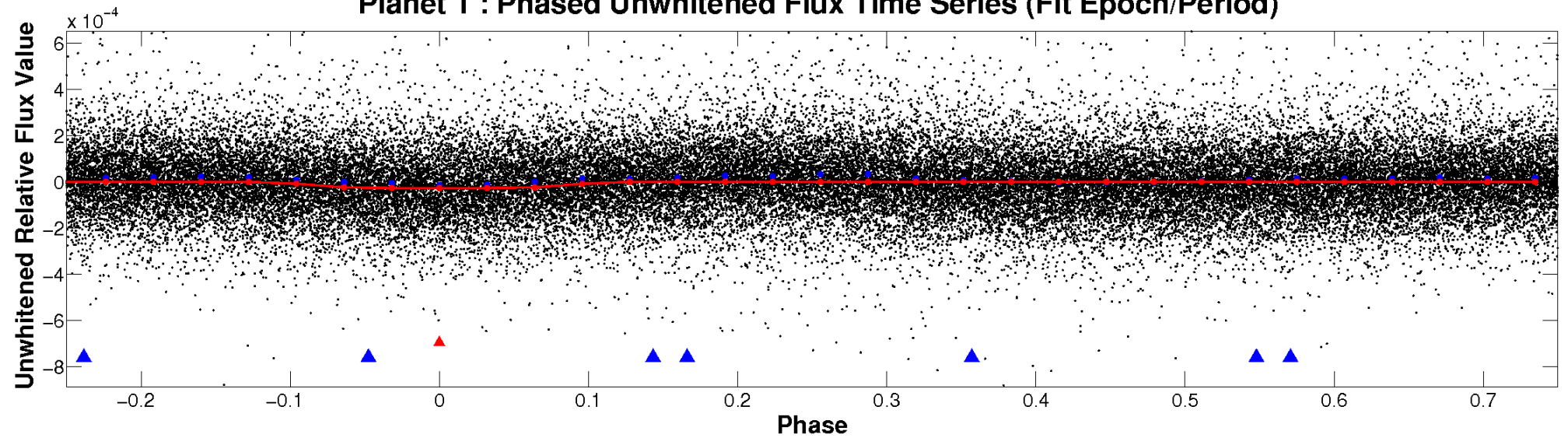
ALT Odd/Even

TCE 009846258-01

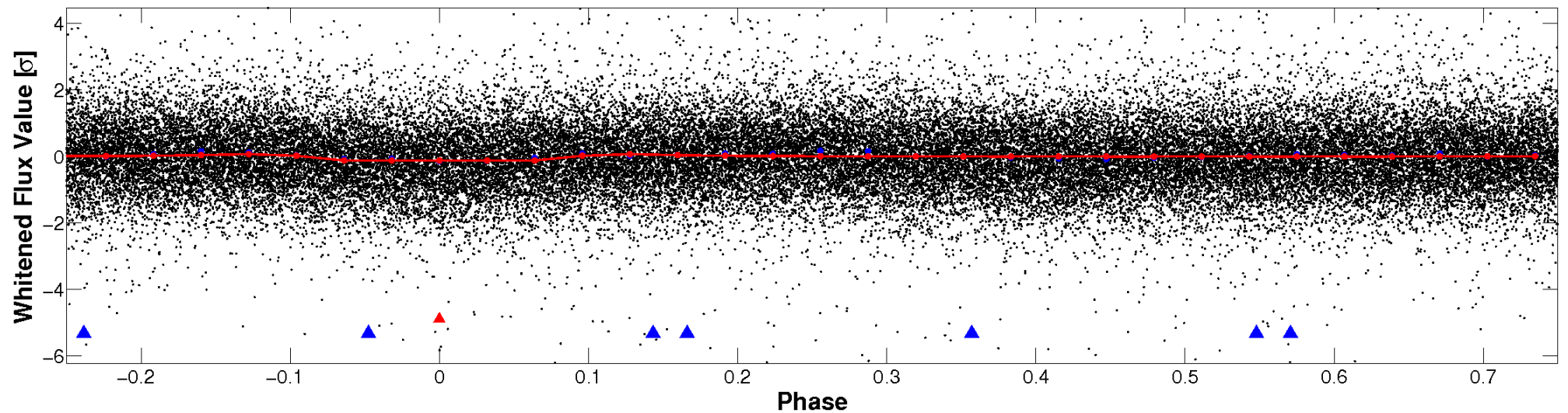


Non-Whitened Vs. Whitened Light Curve

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

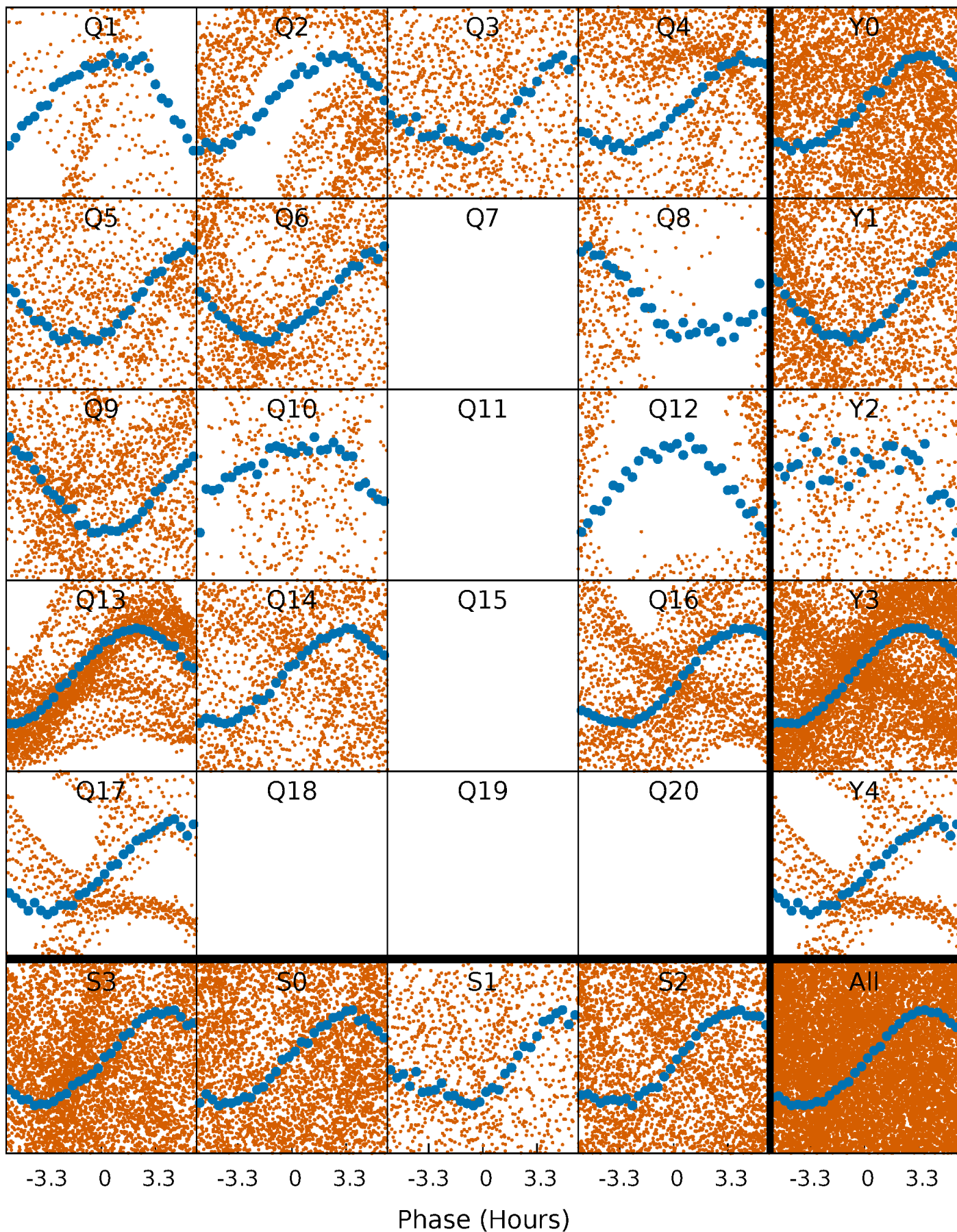


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



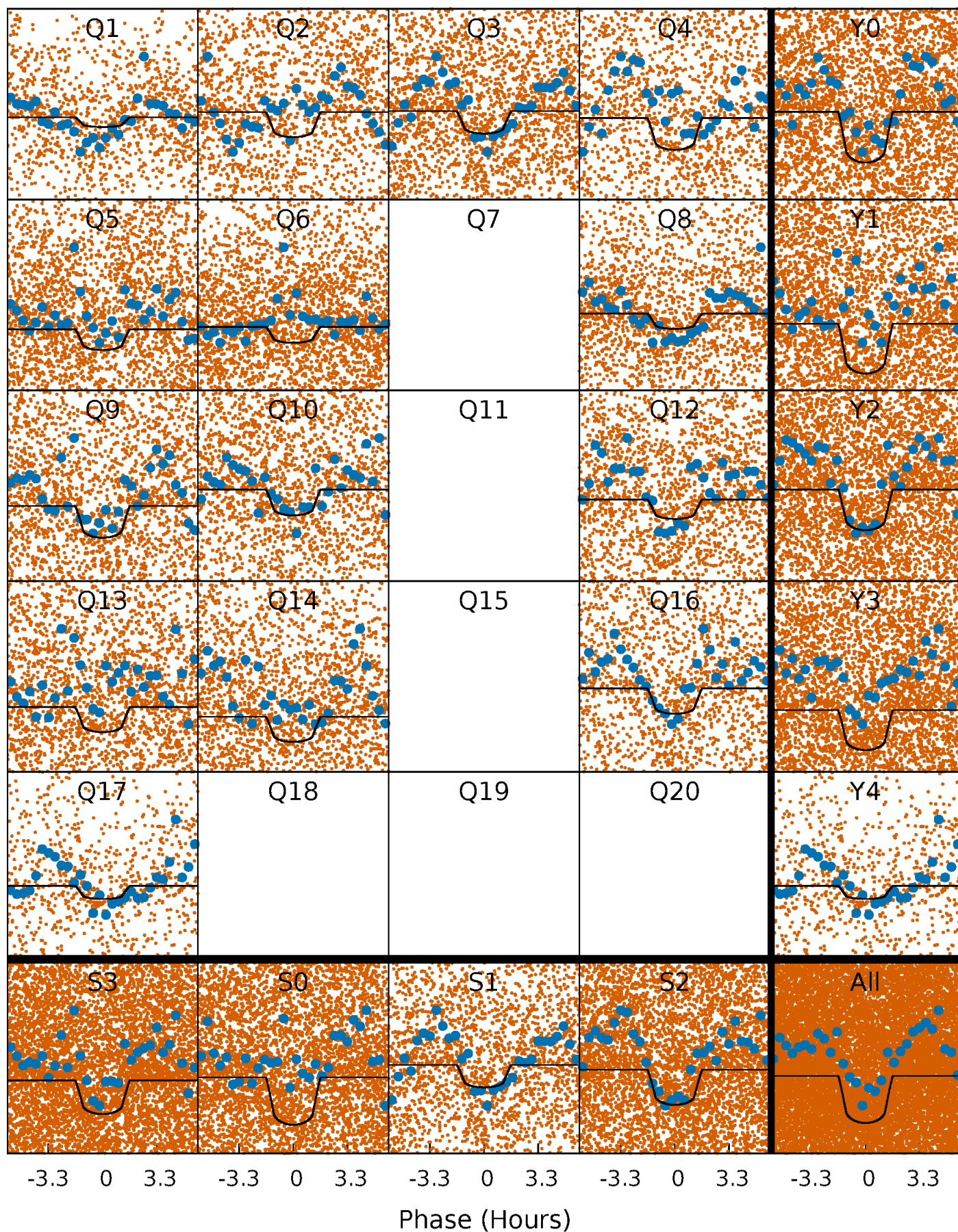
PDC Quarter-Phased Transit Curves

TCE 009846258-01 P= 0.639656 Days $T_0=131.927490$ (BKJD)



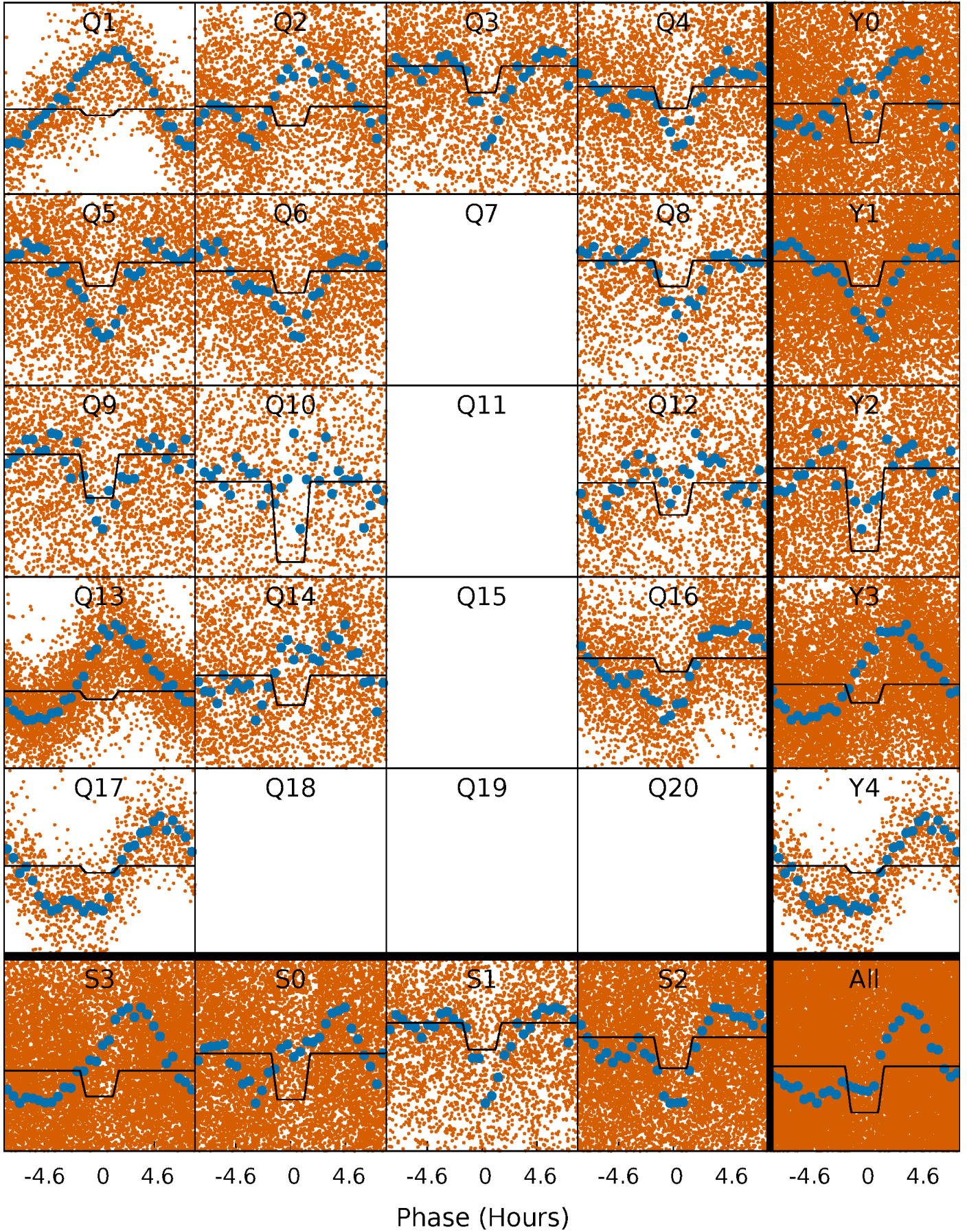
DV Quarter-Phased Transit Curves

TCE 009846258-01 P= 0.639656 Days $T_0=131.927490$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

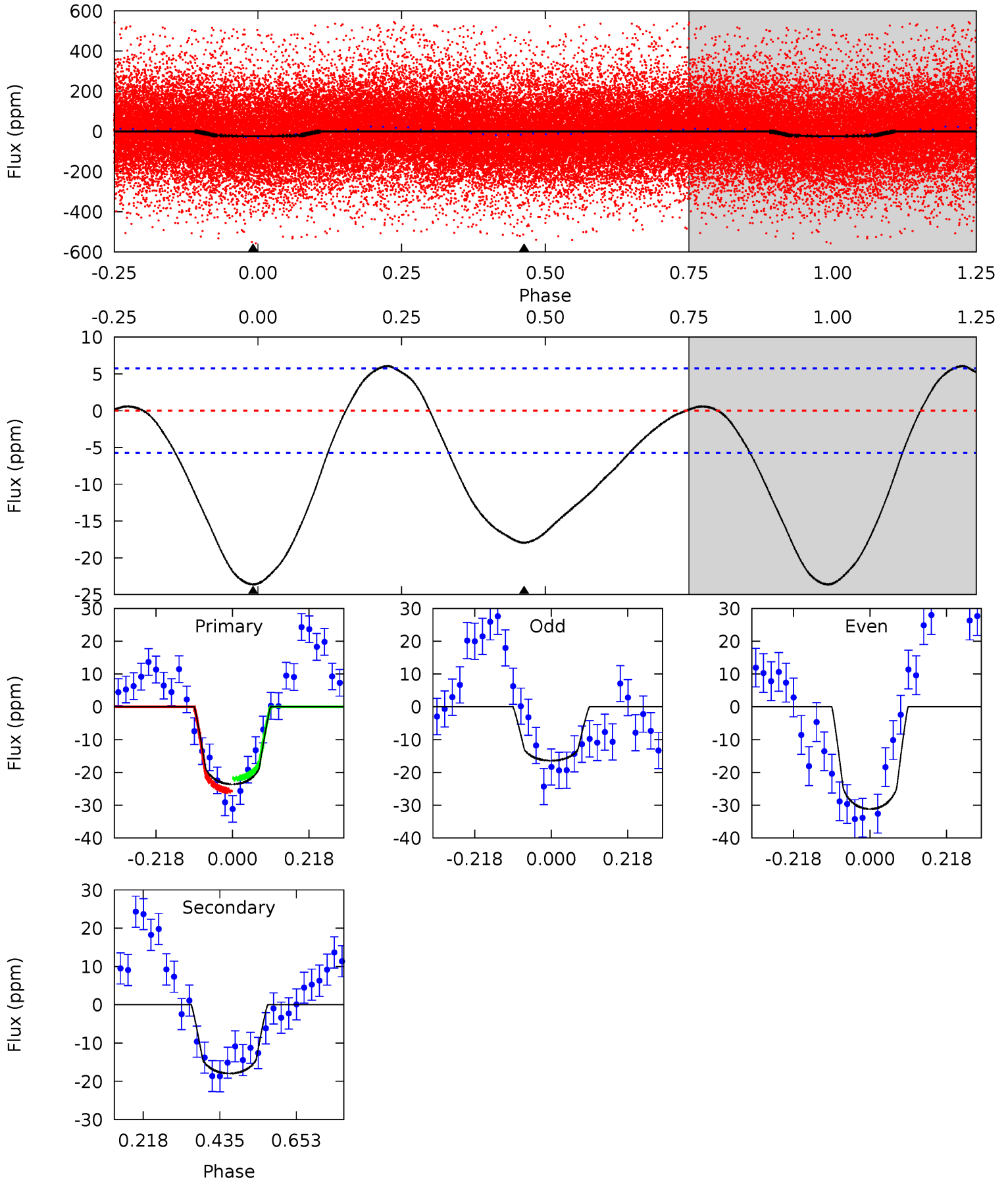
TCE 009846258-01 P= 0.639660 Days $T_0=131.898654$ (BKJD)



DV Model-Shift Uniqueness Test

009846258-01, P = 0.639656 Days, E = 131.287834 Days

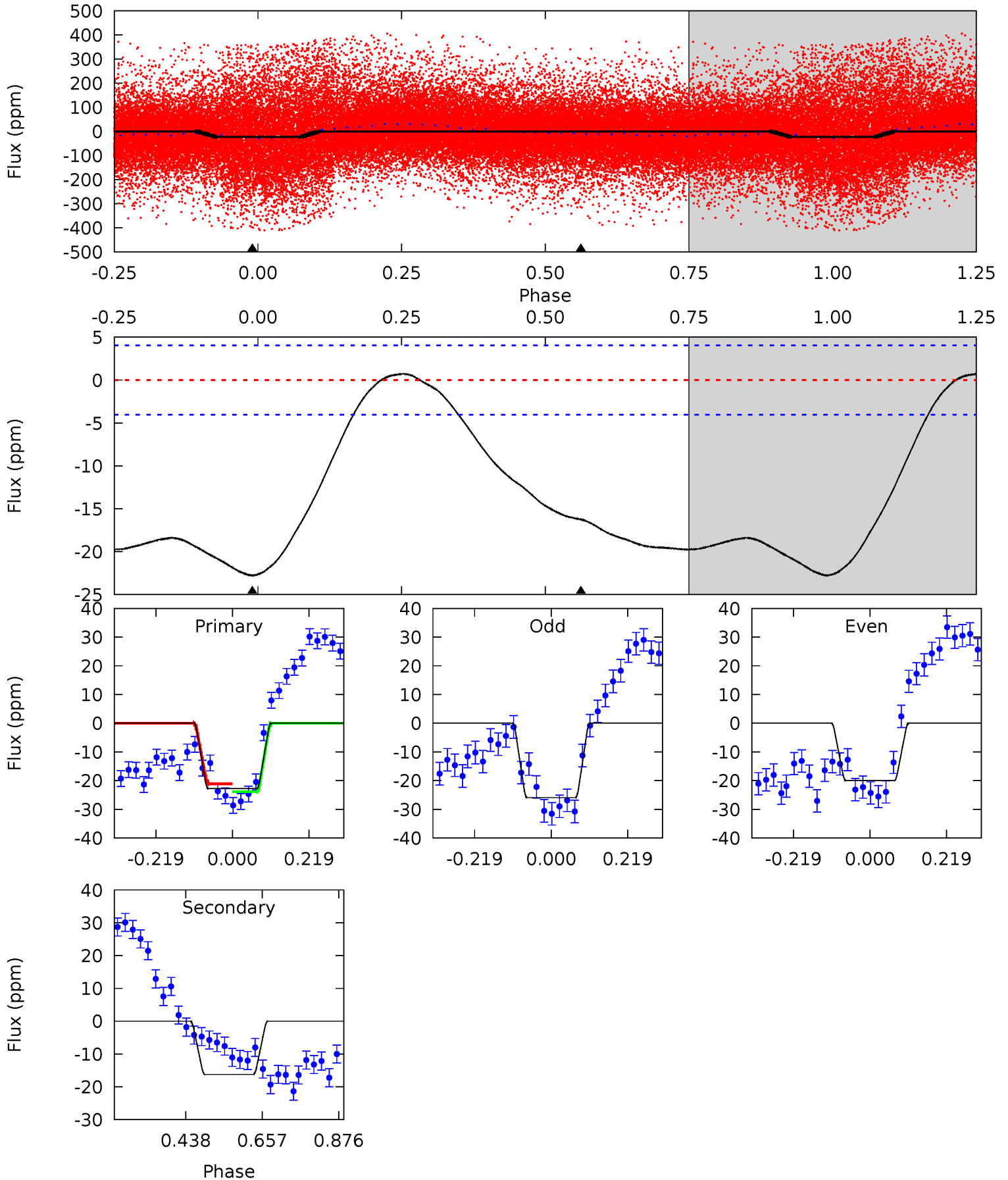
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	13.7	0	0	4.40	1.23	2.42	18.1	18.1	13.7	13.7	5.59	0.22	0.20	1.40



Alt Model-Shift Uniqueness Test

009846258-01, P = 0.639660 Days, E = 131.258994 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	17.6	0	0	4.40	1.23	1.26	24.7	24.7	17.6	17.6	3.24	0.48	0.03	1.57



Stellar Parameters For KIC 009846258

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6410^{+175}_{-194}	$4.050^{+0.252}_{-0.126}$	$-0.300^{+0.300}_{-0.300}$	$1.662^{+0.362}_{-0.483}$	$1.131^{+0.192}_{-0.157}$	$0.347^{+0.492}_{-0.133}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-29%	+17%/-14%	+142%/-38%
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 009846258-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-18 ± 1	$0.97^{+0.29}_{-0.30}$	4094^{+283}_{-302}	5496^{+1088}_{-636}	$2.450^{+2.800}_{-0.983}$
Alt.	-16 ± 1	$0.86^{+0.30}_{-0.27}$	4094^{+265}_{-334}	5601^{+1140}_{-691}	$2.768^{+2.991}_{-1.214}$

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

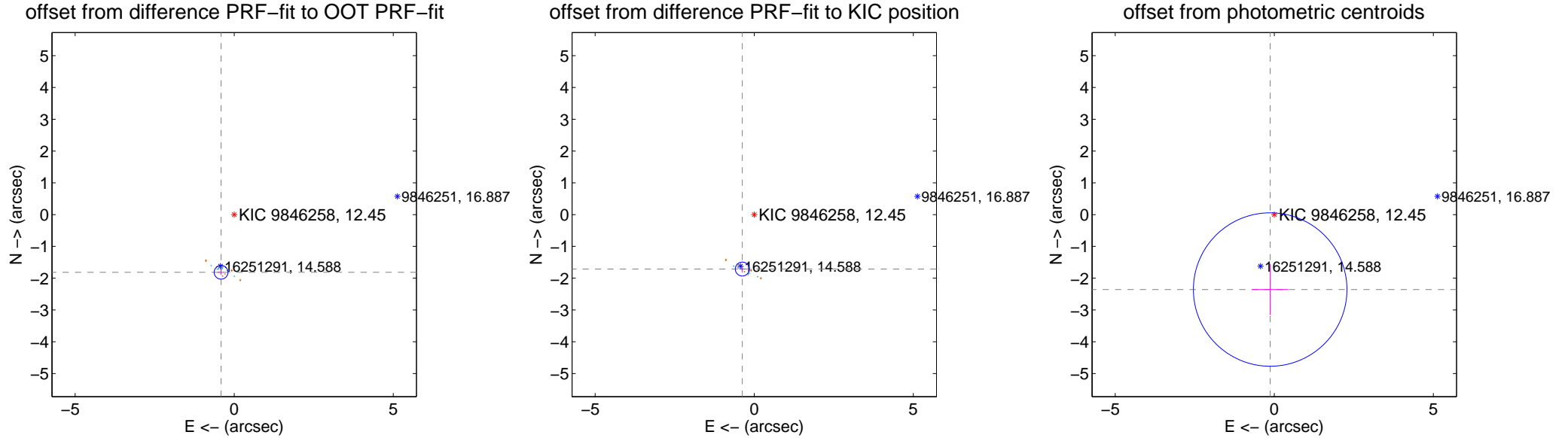
DV Centroid Data

Supplemental centroid analysis for 009846258-01. Kepler magnitude: 12.45. Transit SNR 12.29

There are 8 quarters with good PRF difference image offsets

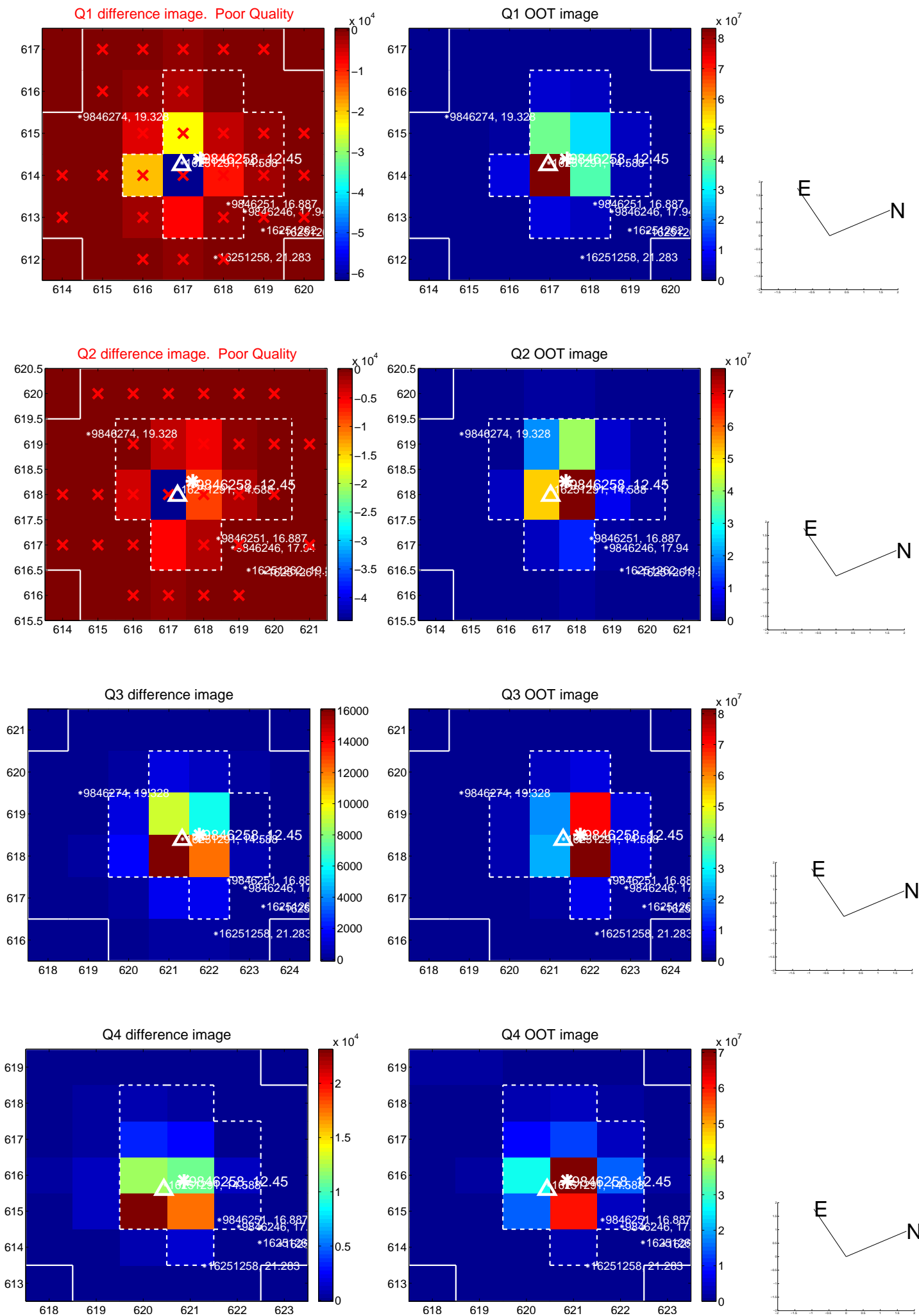
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.861 ± 0.072	25.85	0.413 ± 0.101	-1.815 ± 0.078
PRF-fit source offset from KIC position	1.753 ± 0.073	23.98	0.375 ± 0.092	-1.712 ± 0.072
photometric centroid source offset	2.36 ± 0.80	2.93	0.13 ± 0.57	-2.36 ± 0.80

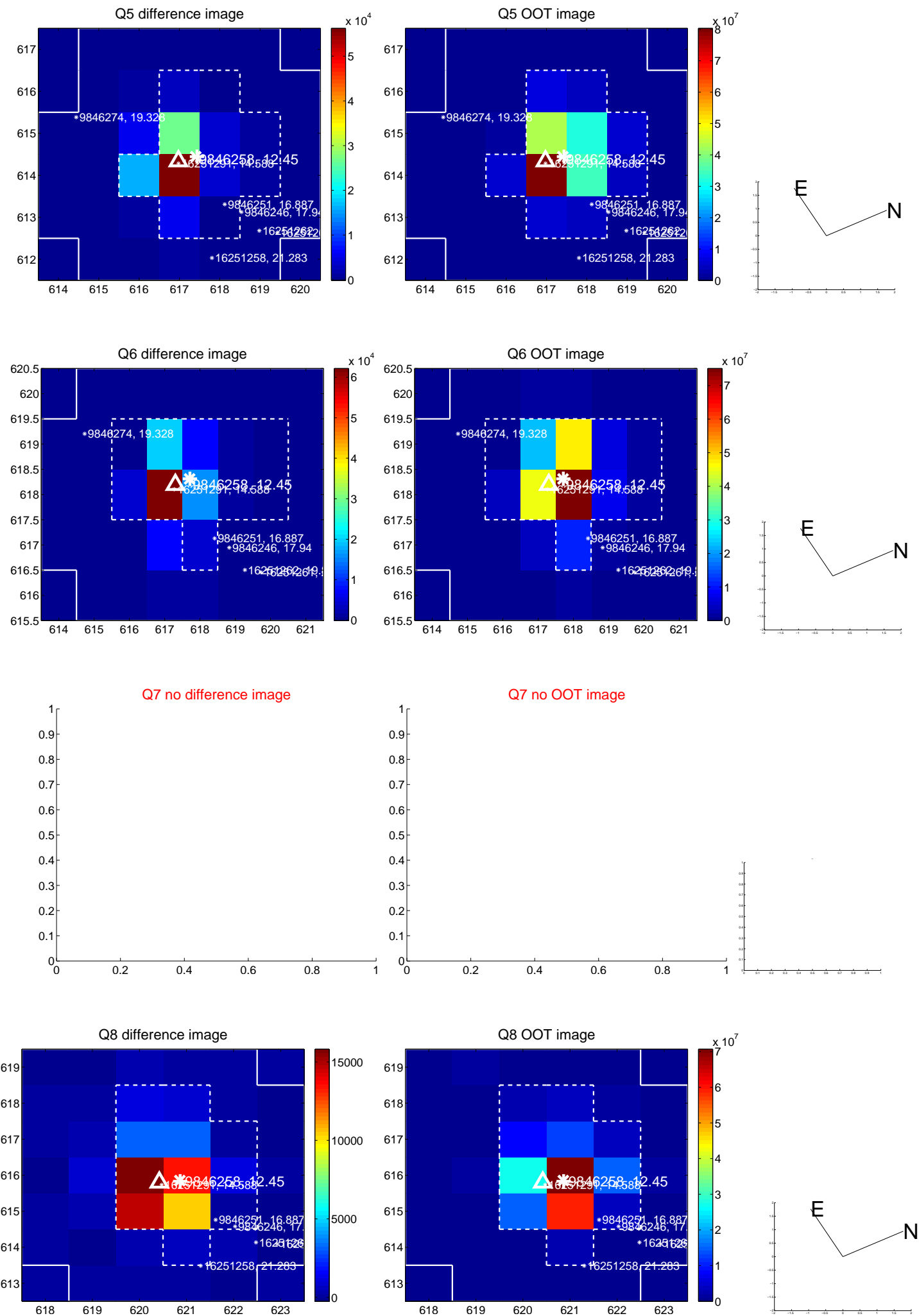


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

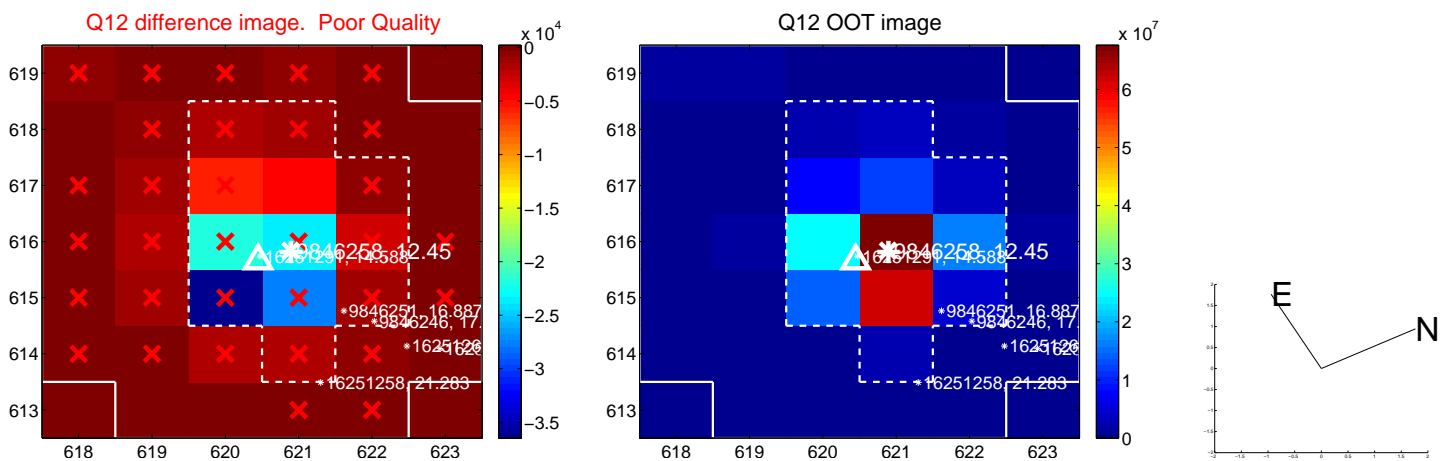
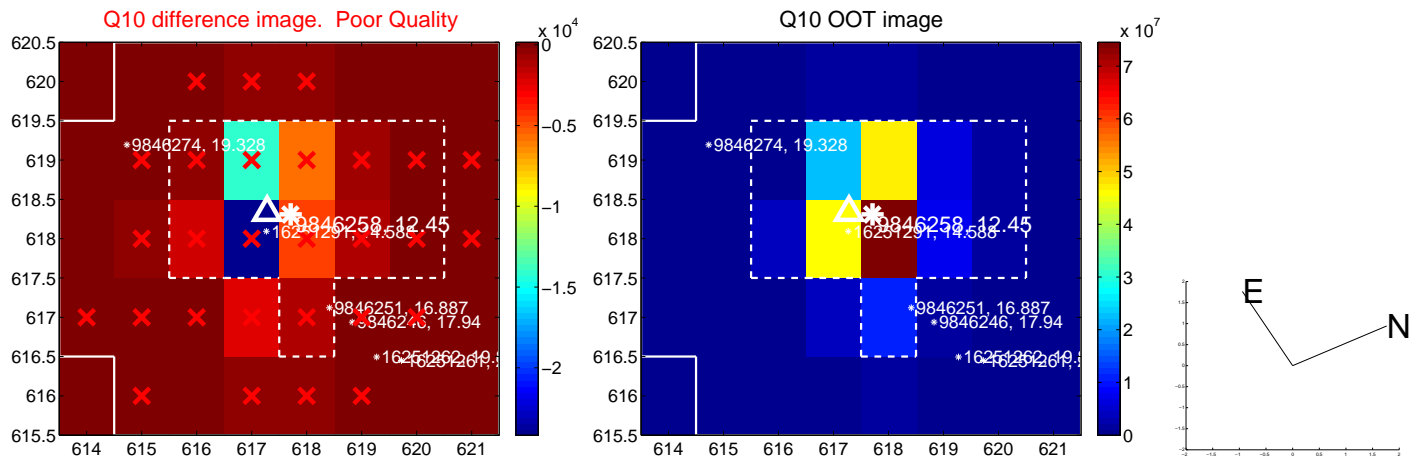
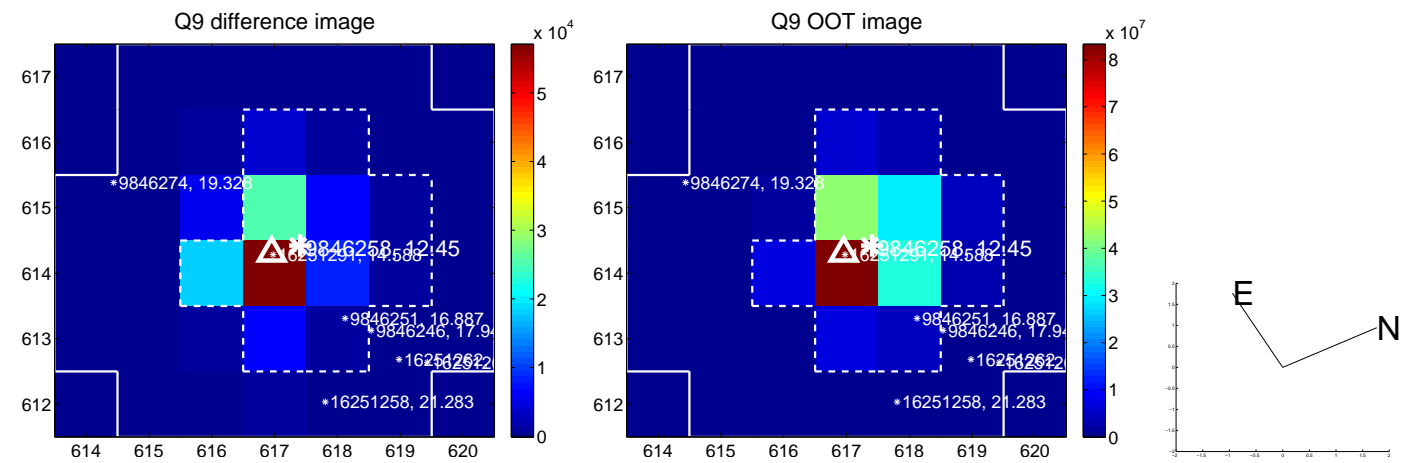
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



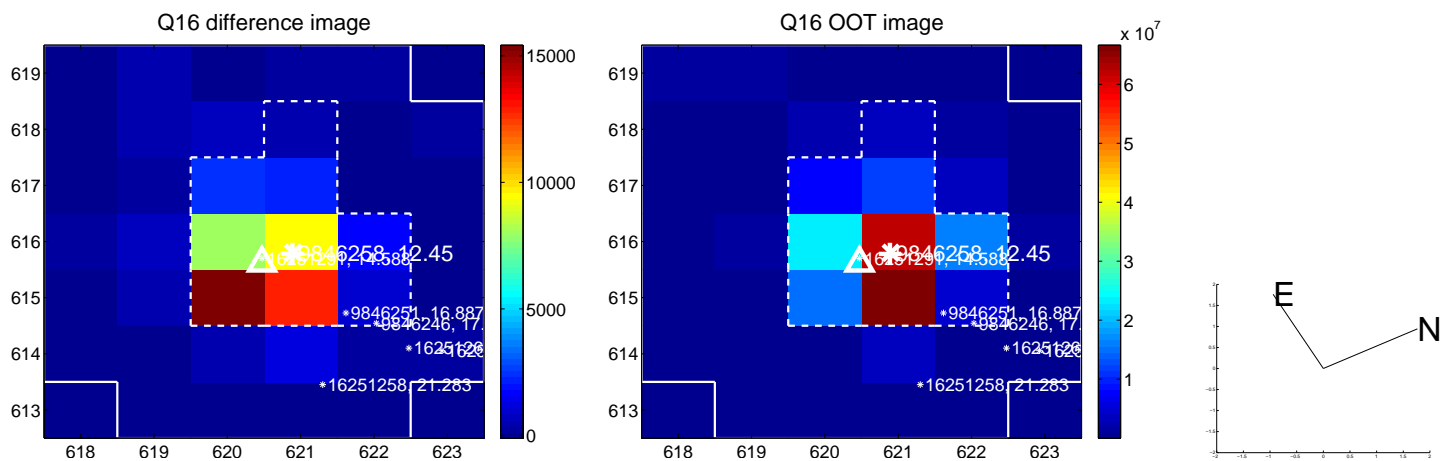
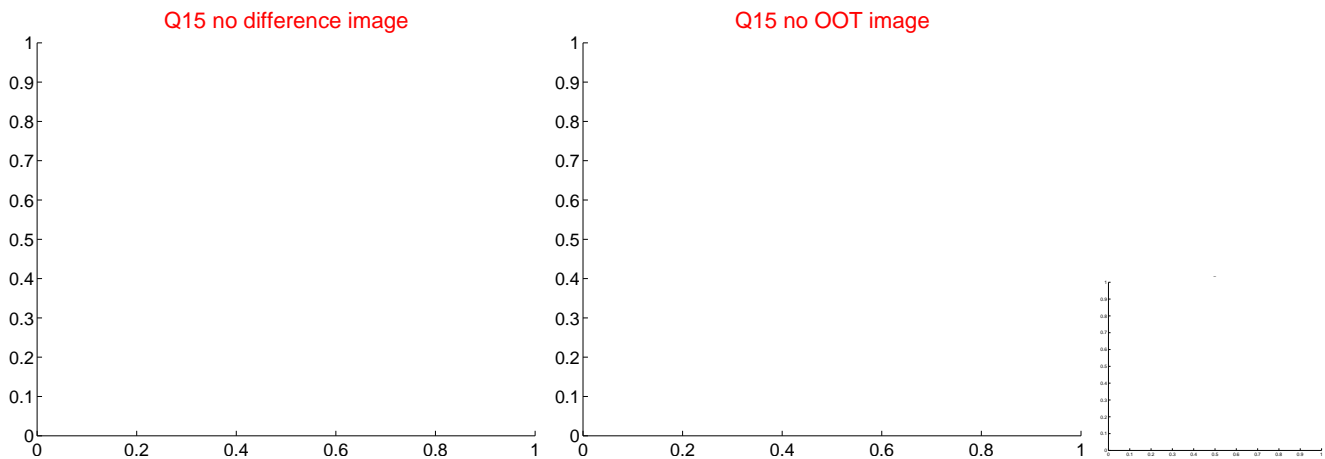
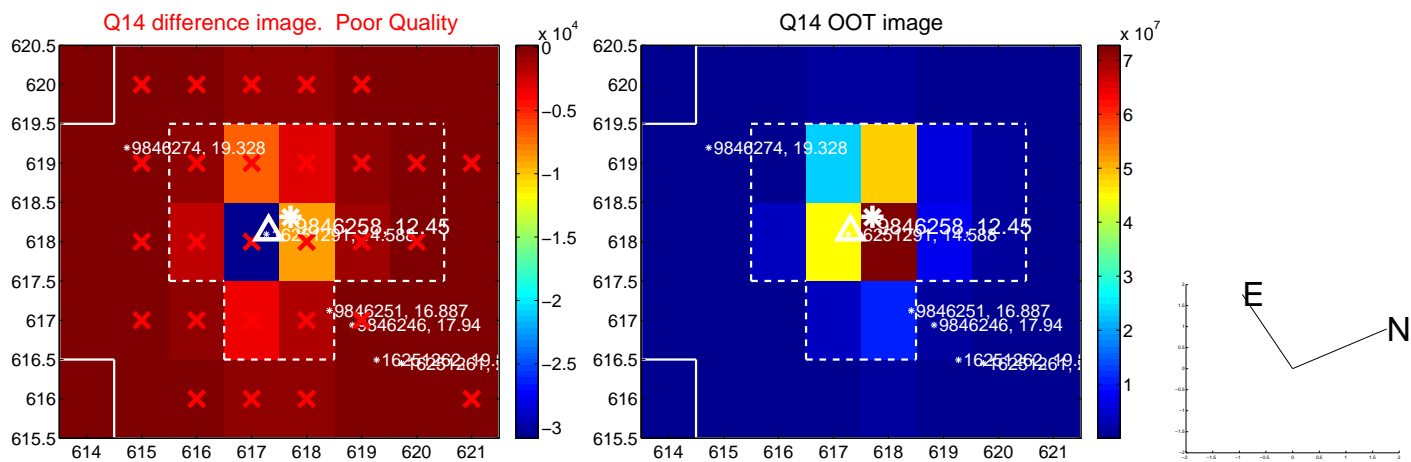
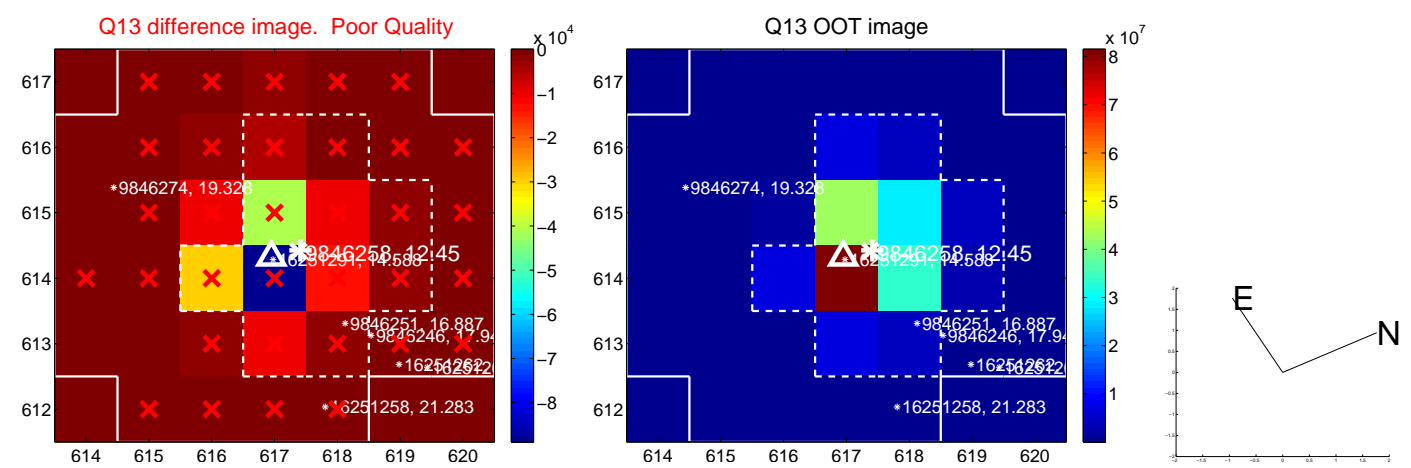
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



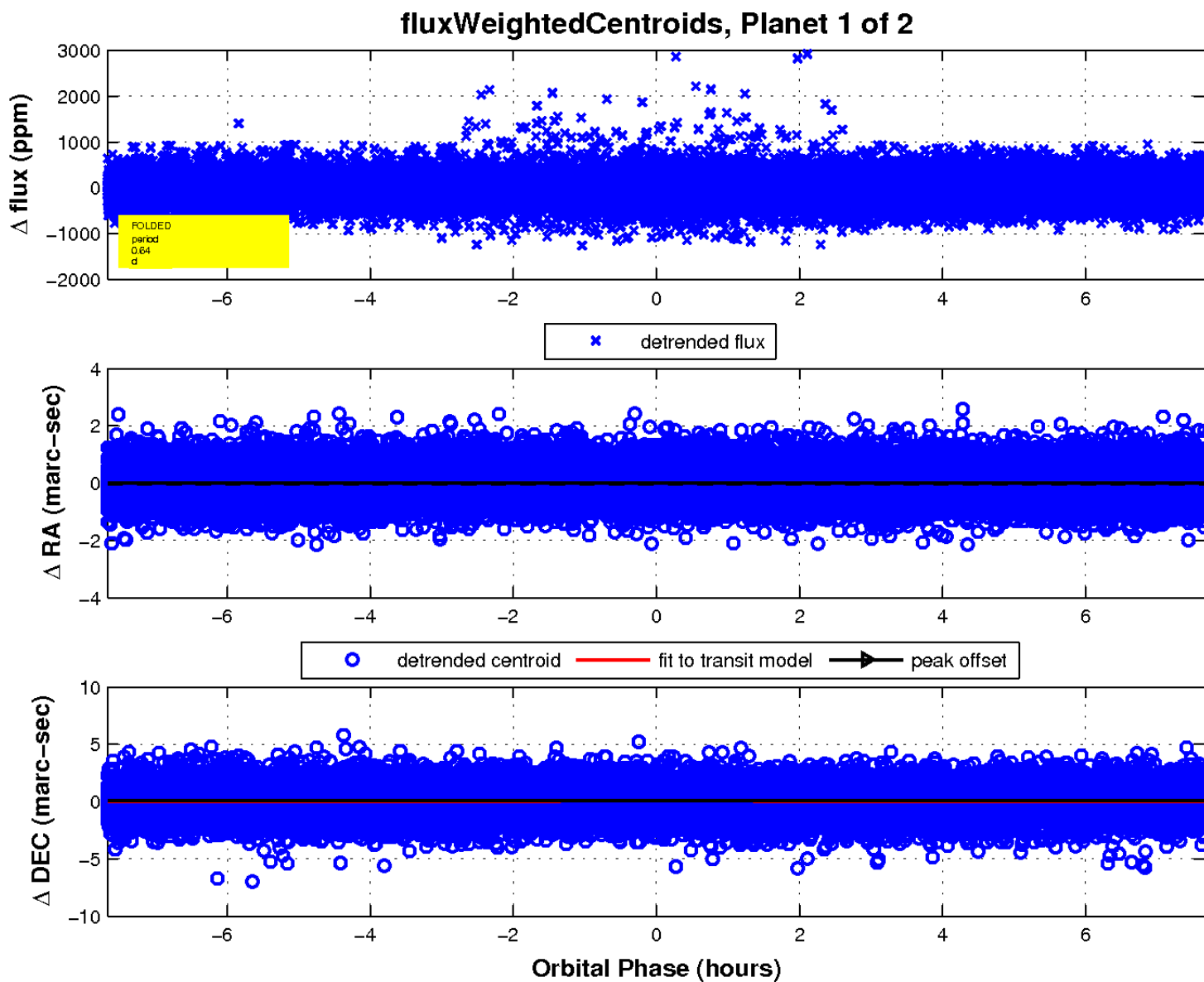
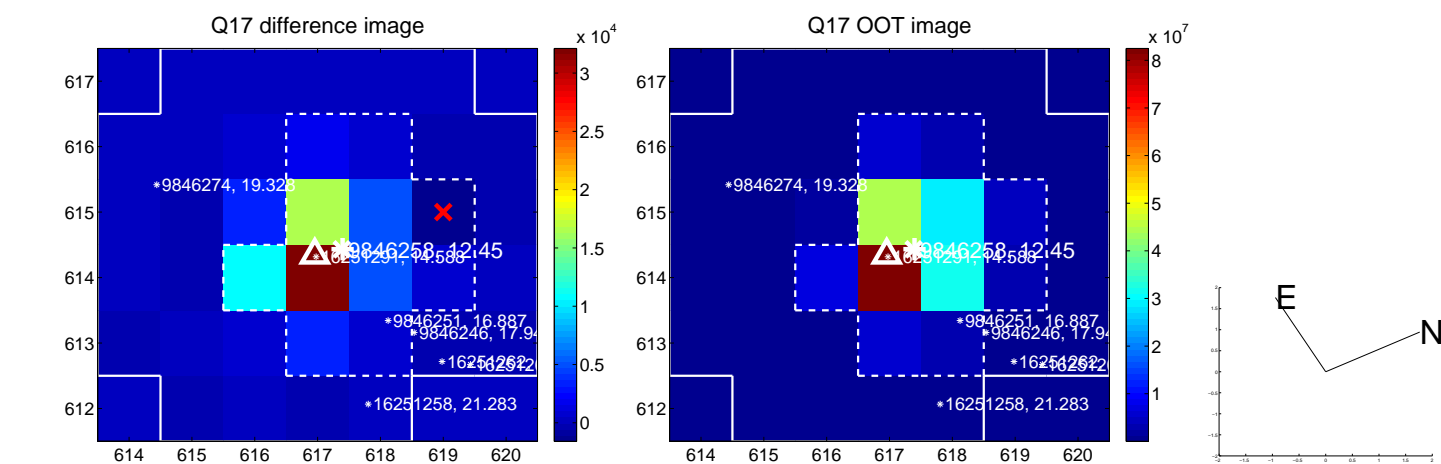
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

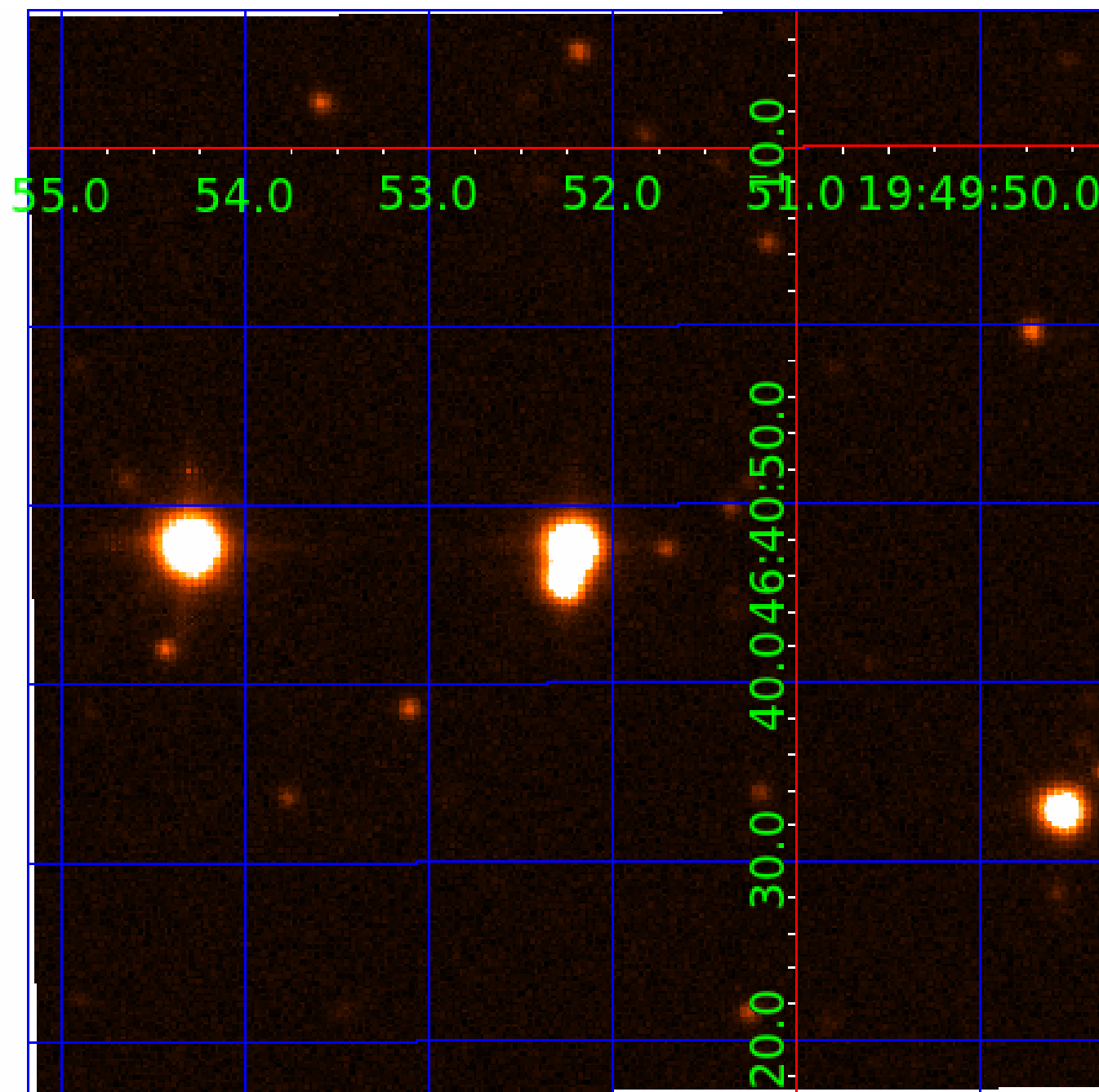


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009846258

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})
009846258-01	OBS	No	0.639656	131.927490	27.4	2.902	9.5	12.3	1.66	6410	0.99	18231.35
009846258-02	OBS	No	213.903812	162.722647	383.5	14.707	9.9	5.4	1.66	6410	3.74	7.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009846258-01	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—LPP_ALT—CENT_UNRESOLVED_OFFSET
009846258-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—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.

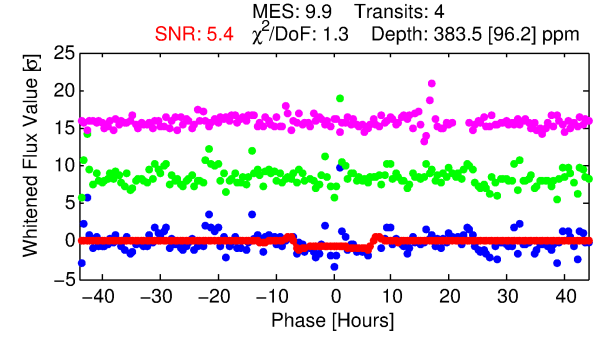
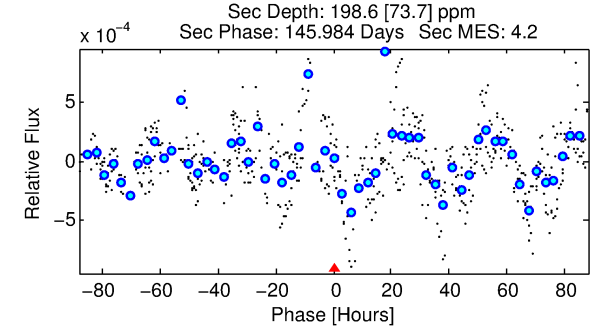
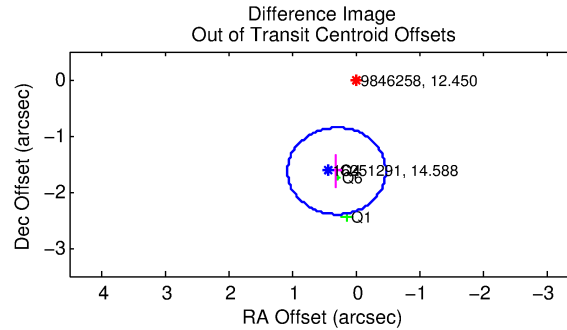
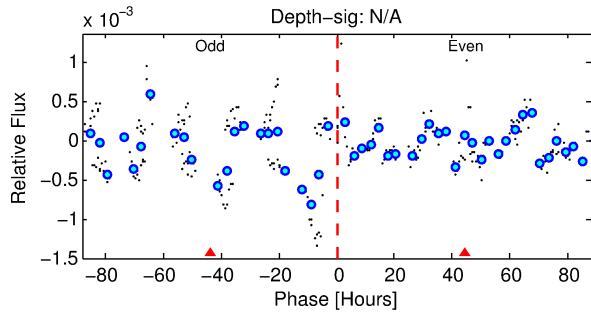
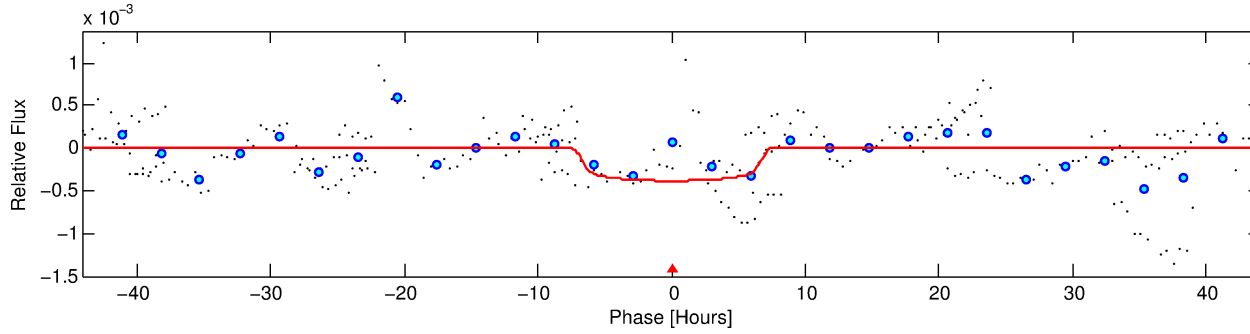
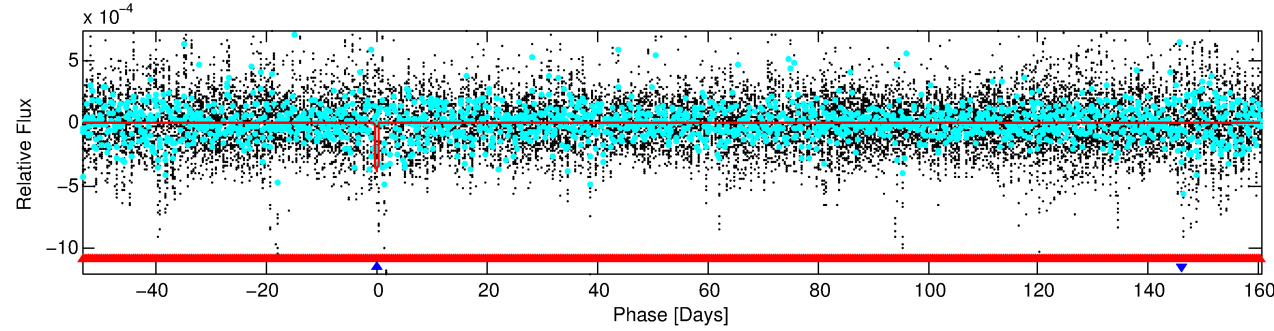
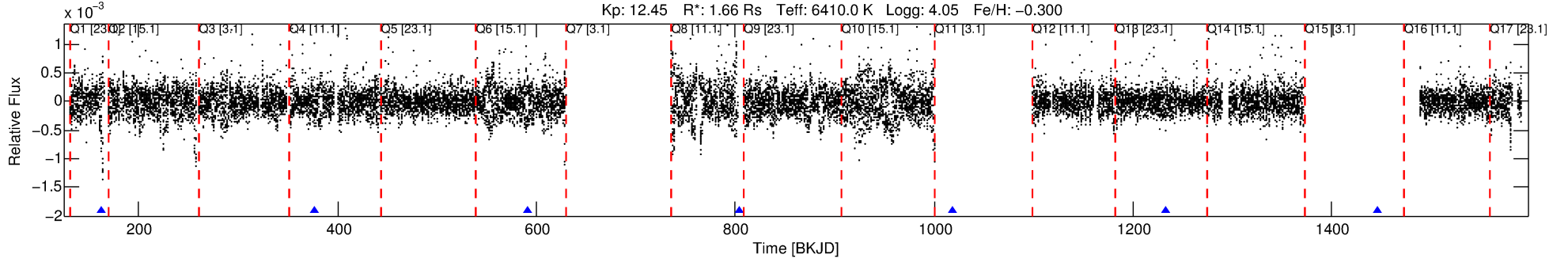
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009846258-02

No Significant Match Found

DV One-Page Summary

KIC: 9846258 Candidate: 2 of 2 Period: 213.904 d



DV Fit Results:

Period = 213.90381 [0.00535] d
Epoch = 162.7226 [0.0164] BKJD
Rp/R* = 0.0206 [0.0032]
a/R* = 57.80 [21.06]
b = 0.88 [0.10]
Seff = 7.85 [3.53]
Teq = 427 [48] K
Rp = 3.74 [1.23] Re
a = 0.7293 [0.1997] AU
Ag = 4148.94 [2695.73] [1.54σ]
Teffp = 5297 [662] K [7.34σ]

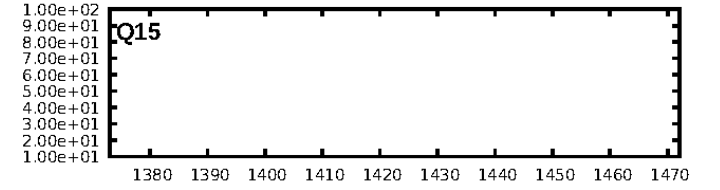
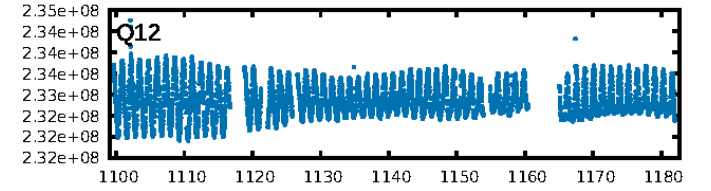
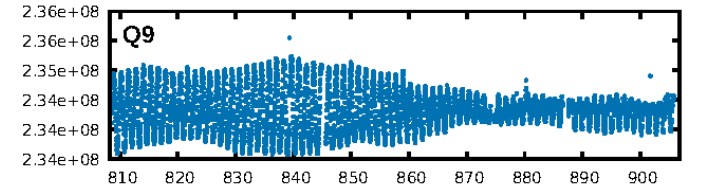
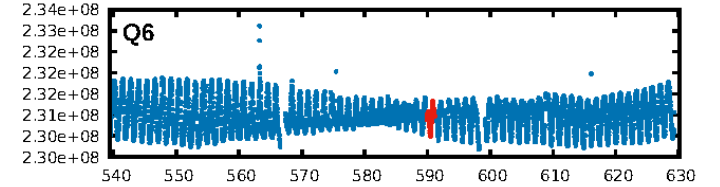
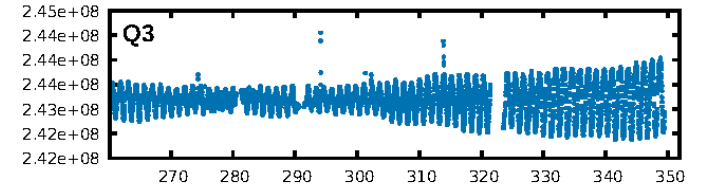
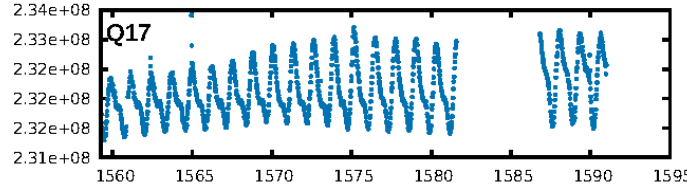
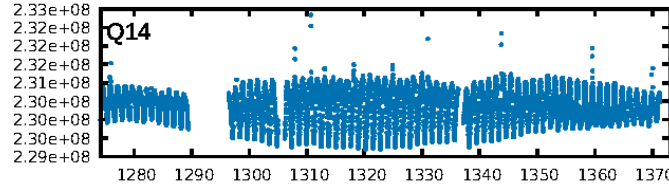
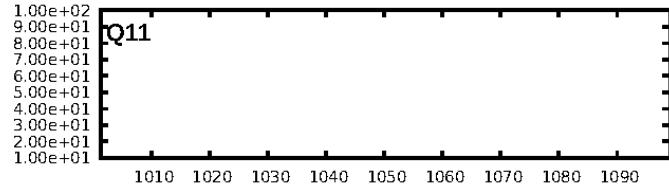
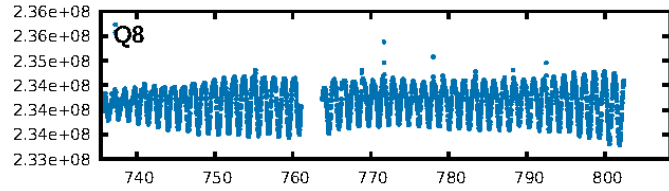
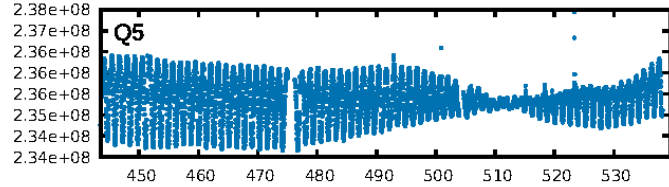
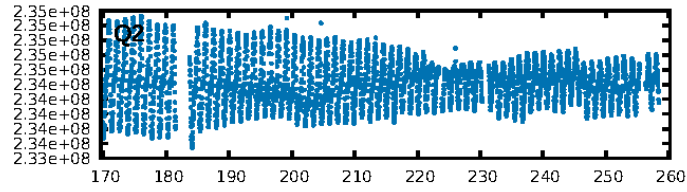
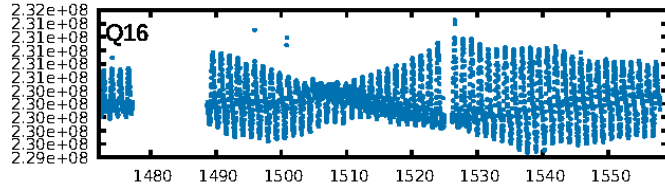
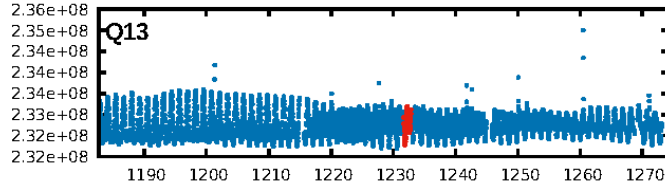
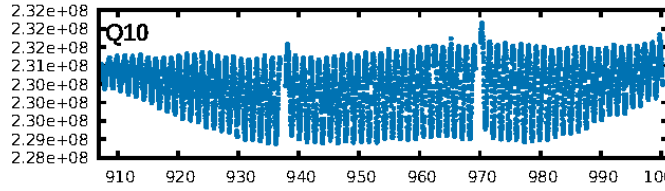
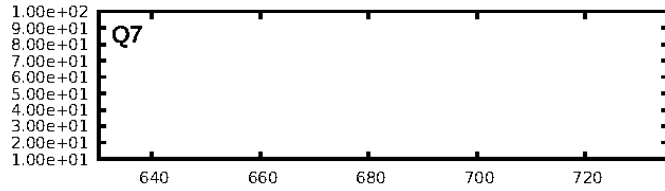
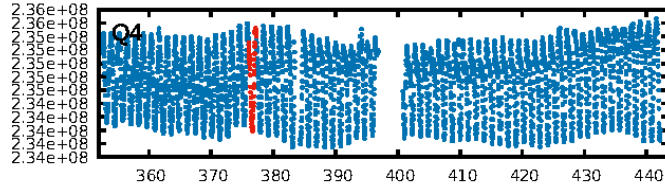
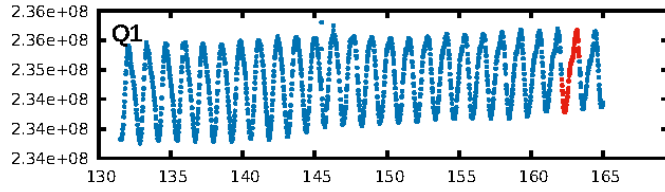
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [341.45σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.30e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.06961
Centroid-sig: 82.6%
Centroid-so: 0.246 arcsec [0.30σ]
OotOffset-rm: 1.659 arcsec [6.45σ]
KicOffset-rm: 1.642 arcsec [10.61σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
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DiffImageOverlap-fno: 0.00 [0/3]

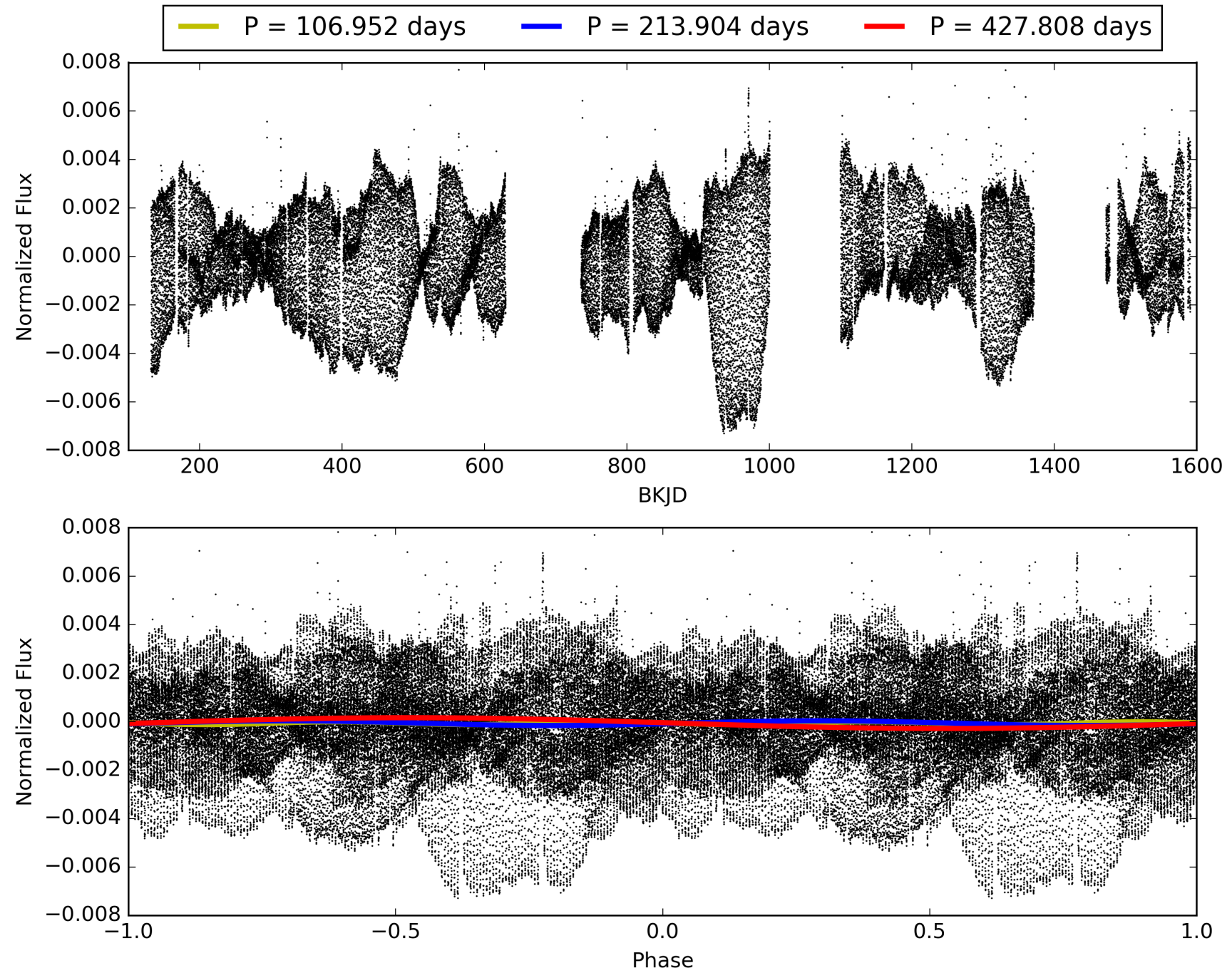
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009846258-02, PDC Light Curves

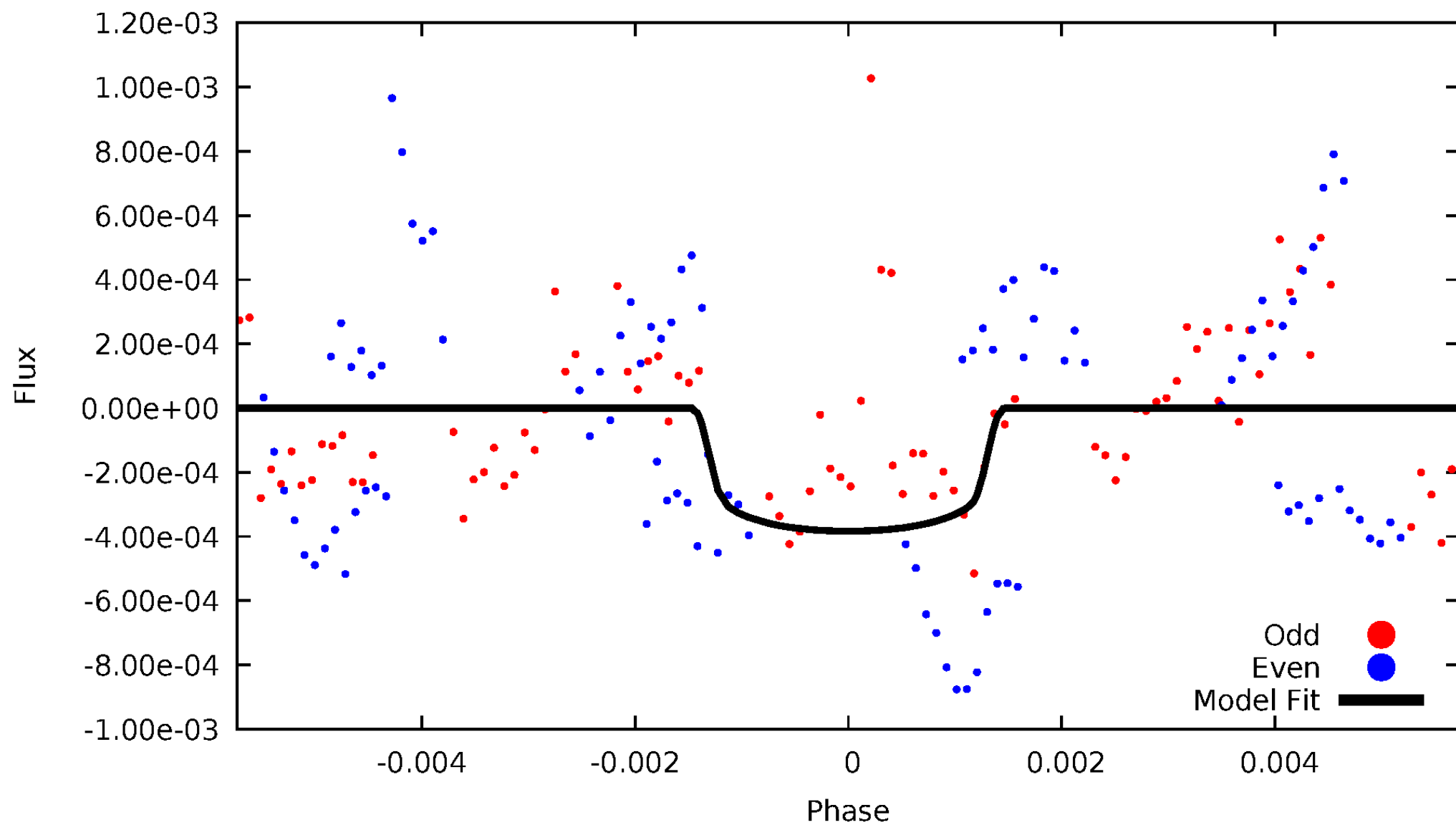


TCE 009846258-02



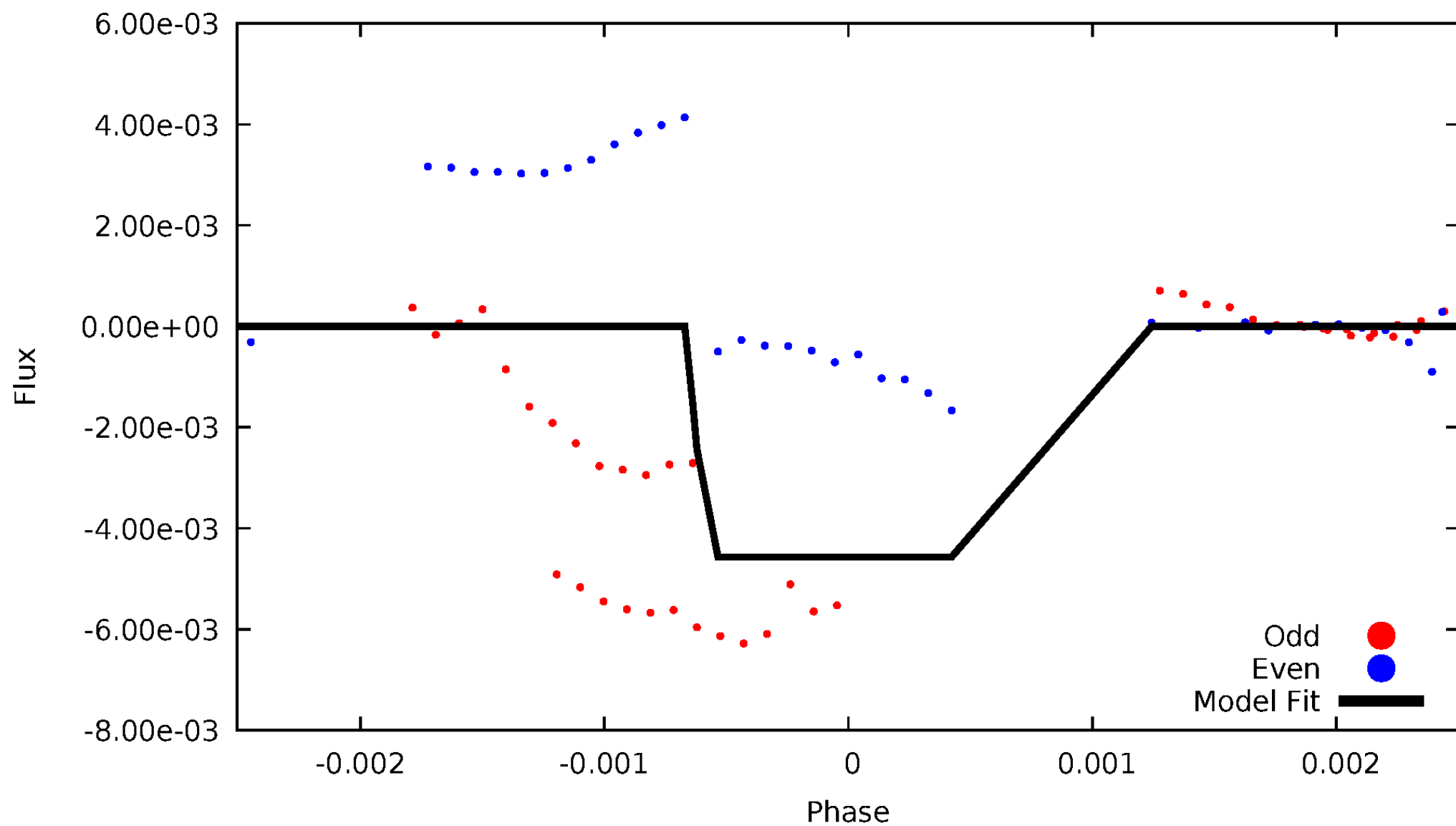
DV Odd/Even

TCE 009846258-02



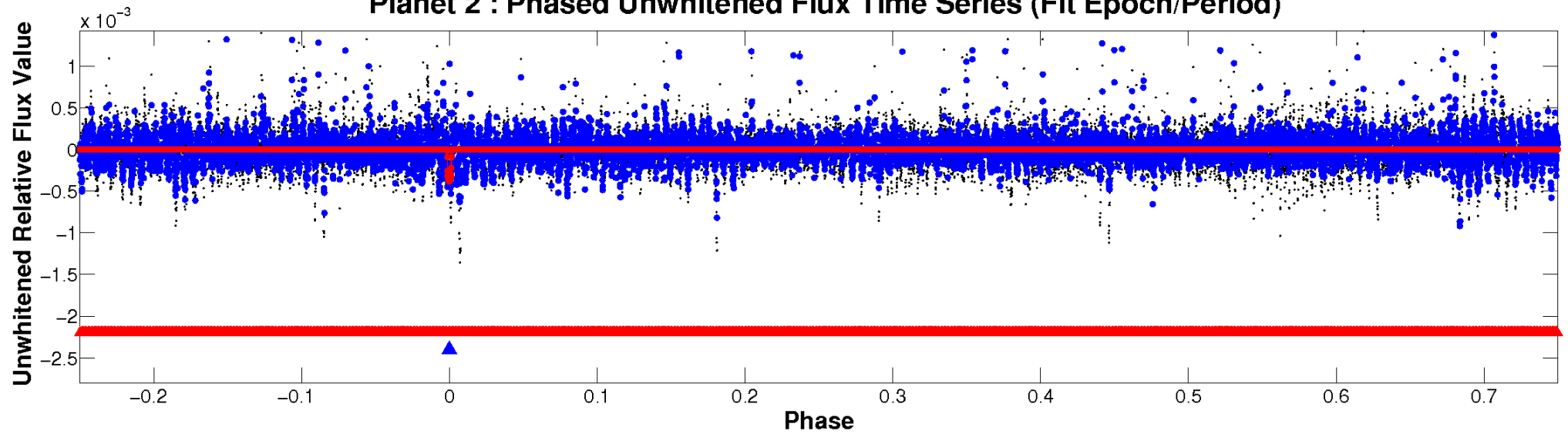
ALT Odd/Even

TCE 009846258-02

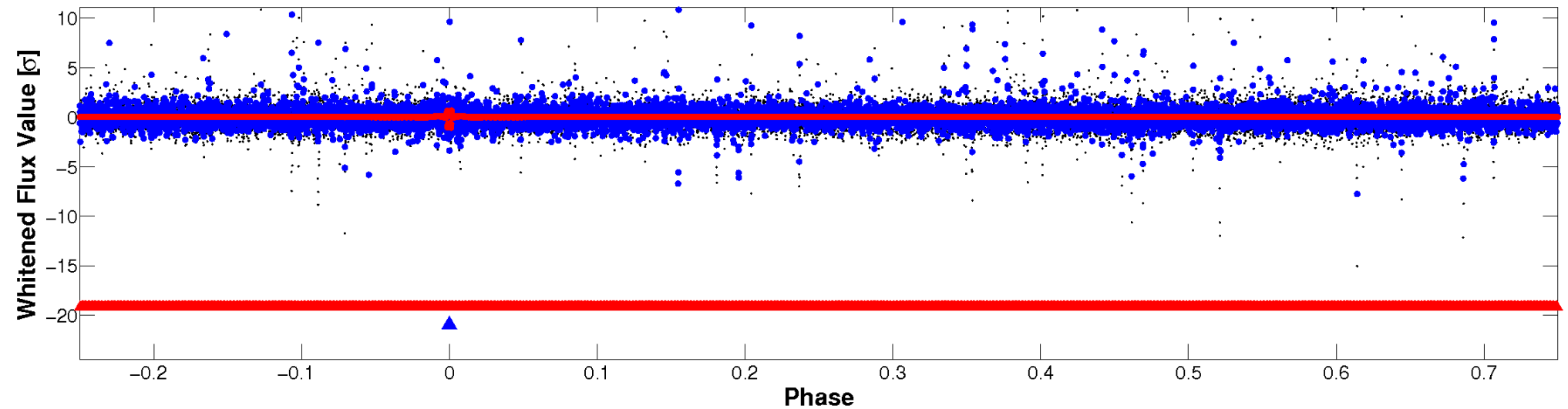


Non-Whitened Vs. Whitened Light Curve

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

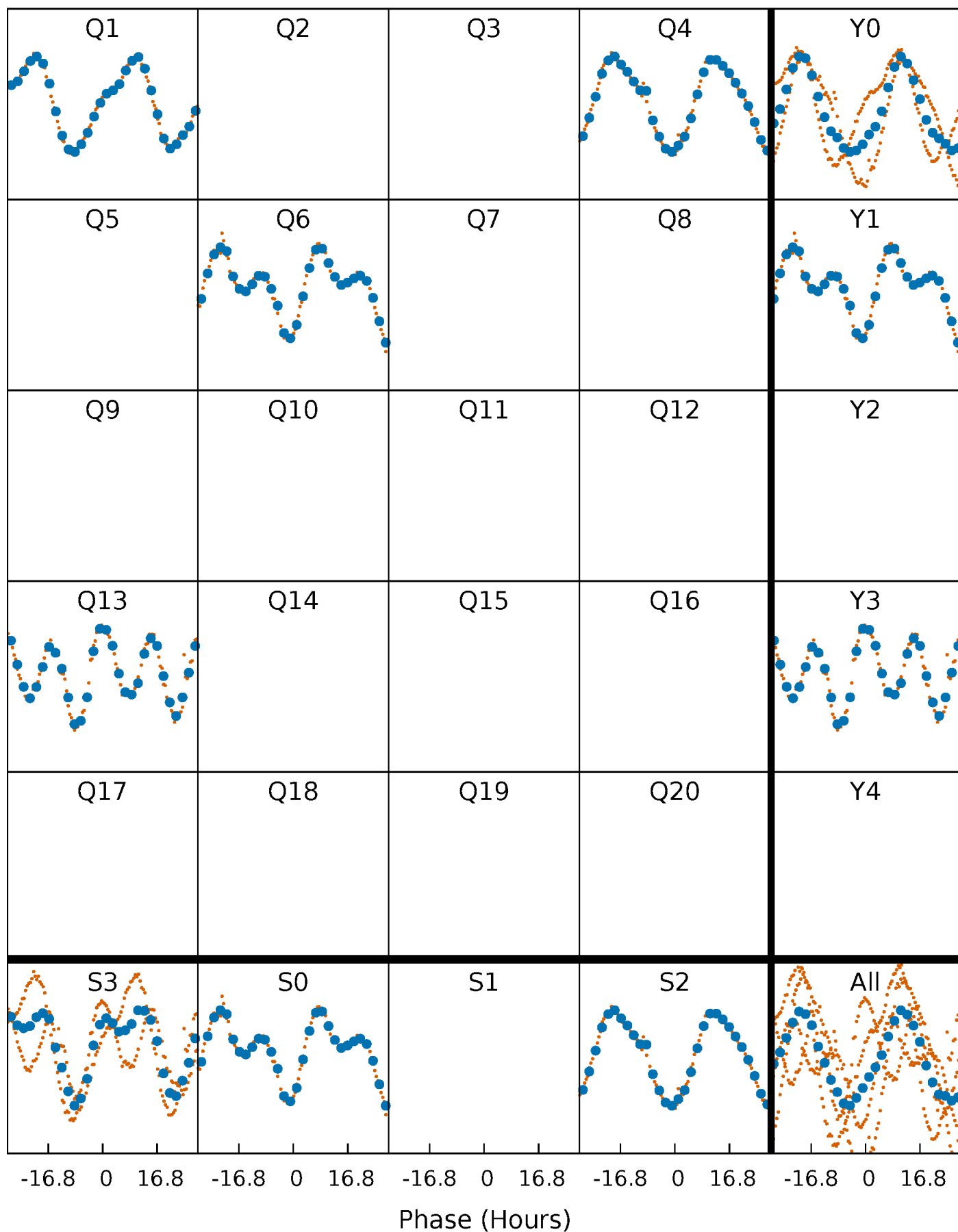


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



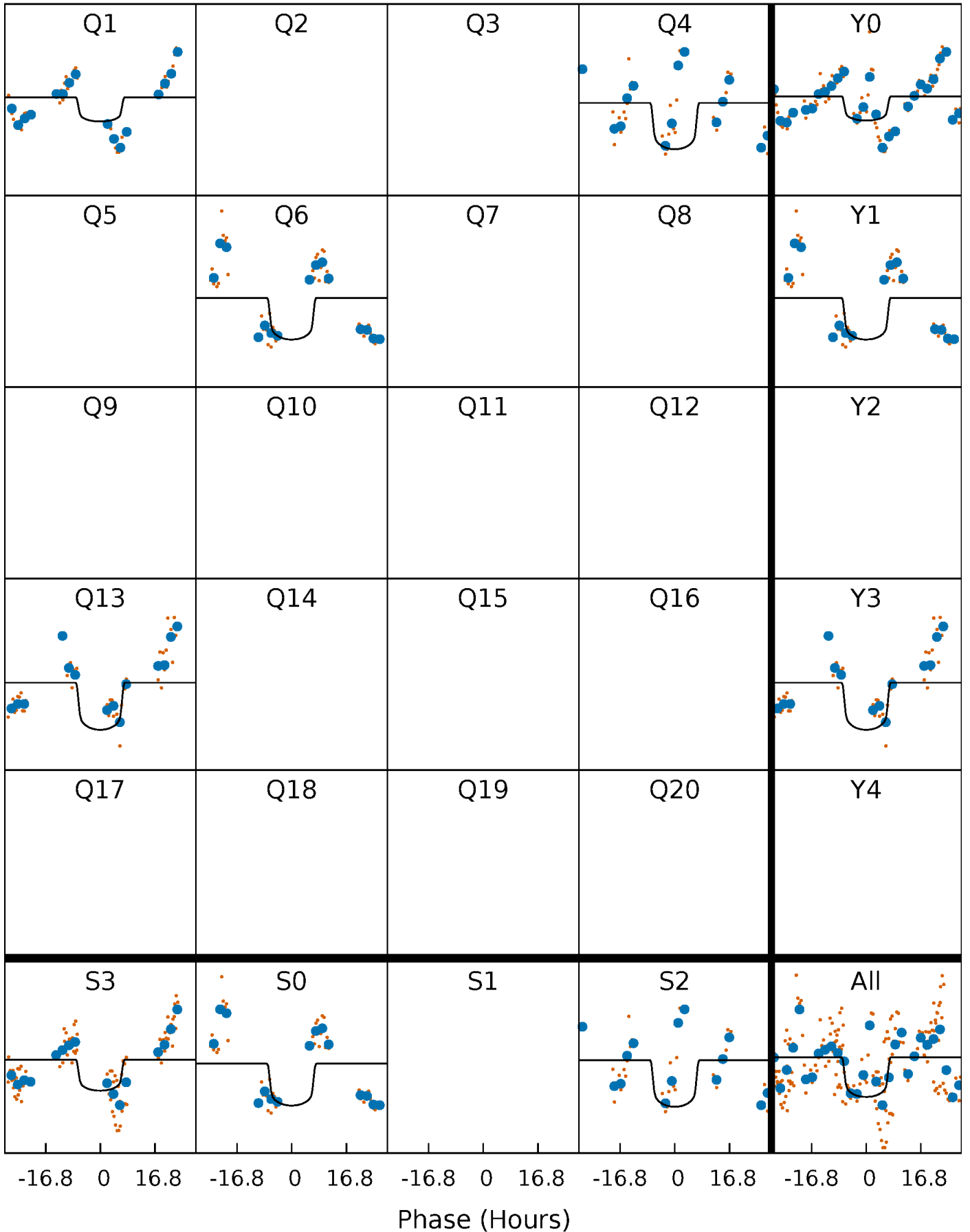
PDC Quarter-Phased Transit Curves

TCE 009846258-02 P=213.903812 Days $T_0=162.722647$ (BKJD)



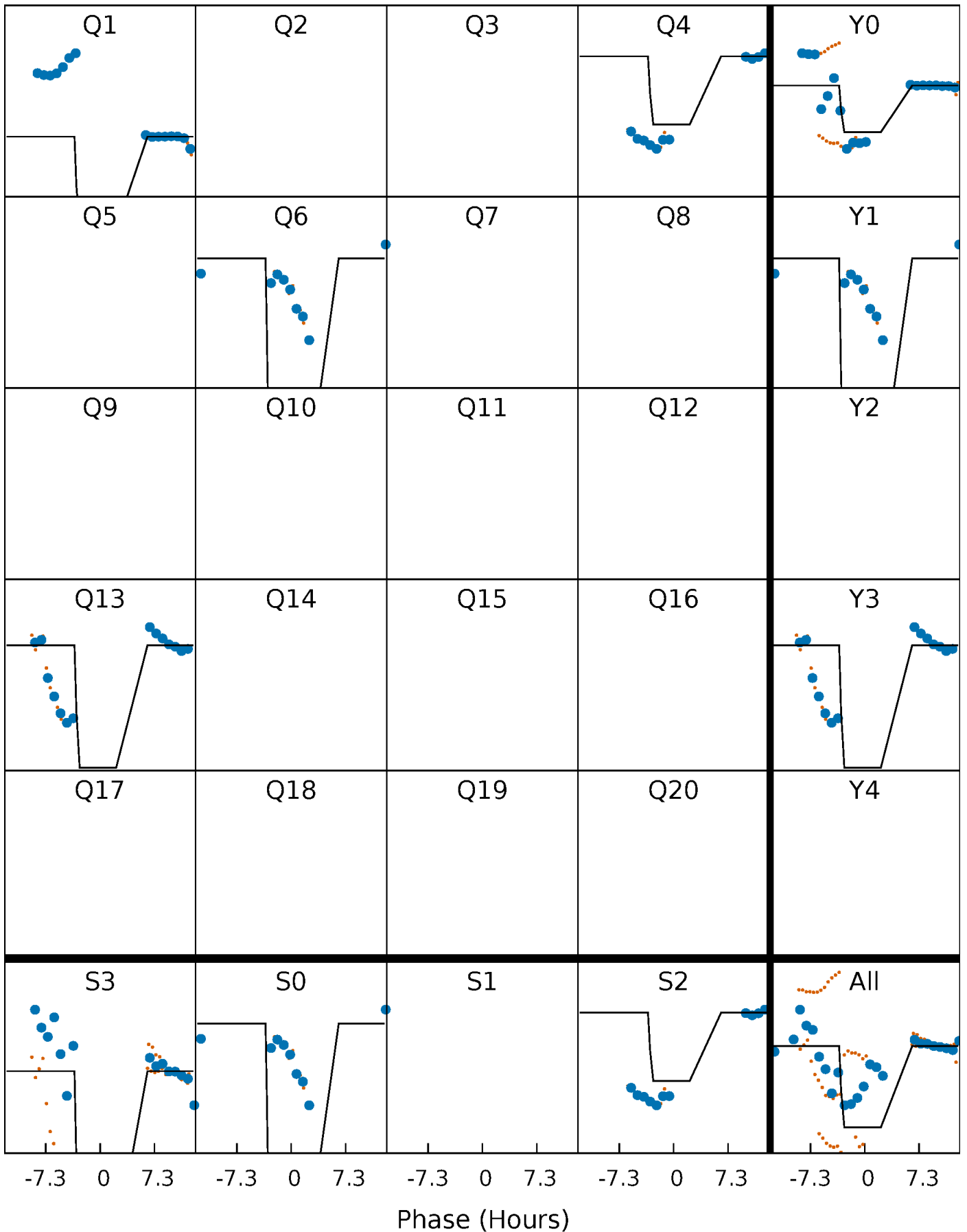
DV Quarter-Phased Transit Curves

TCE 009846258-02 $P=213.903812$ Days $T_0=162.722647$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

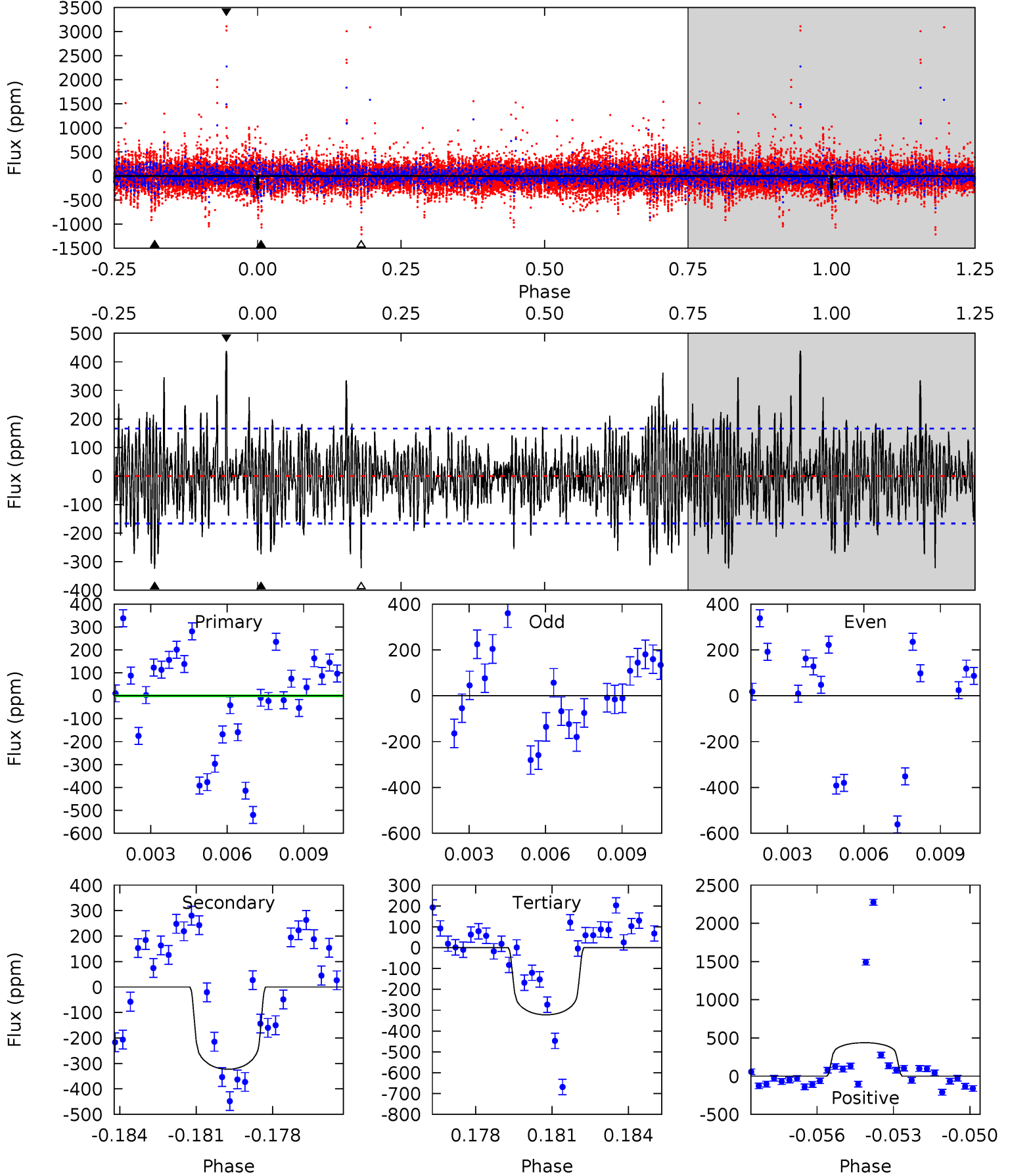
TCE 009846258-02 P=213.517080 Days $T_0=163.205687$ (BKJD)



DV Model-Shift Uniqueness Test

009846258-02, P = 213.903812 Days, E = 162.722647 Days

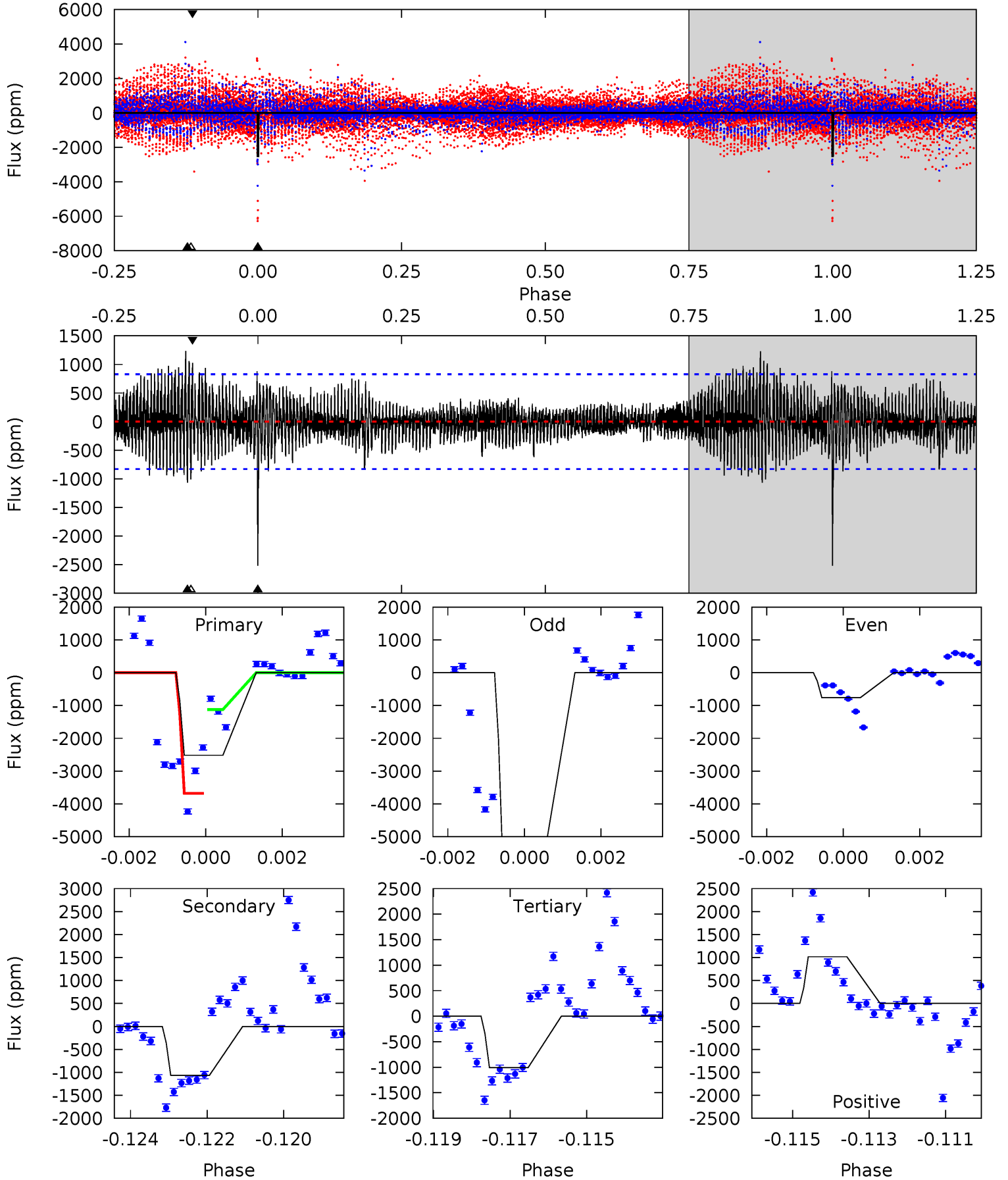
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.58	10.2	10.2	13.9	5.25	2.97	3.03	-1.63	-5.28	0.01	-3.64	5.96	1.42	0.58	0.79



Alt Model-Shift Uniqueness Test

009846258-02, P = 213.517080 Days, E = 163.205687 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	6.89	6.50	6.55	5.34	3.11	1.60	9.72	9.67	0.39	0.34	17.2	1.00	0.33	7.86



Stellar Parameters For KIC 009846258

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6410^{+175}_{-194}	$4.050^{+0.252}_{-0.126}$	$-0.300^{+0.300}_{-0.300}$	$1.662^{+0.362}_{-0.483}$	$1.131^{+0.192}_{-0.157}$	$0.347^{+0.492}_{-0.133}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-29%	+17%/-14%	+142%/-38%
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 009846258-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-323 ± 32	$3.65^{+0.81}_{-0.75}$	589^{+37}_{-45}	5964^{+543}_{-461}	7204^{+4370}_{-2344}
Alt.	-1069 ± 155	$12.06^{+1.74}_{-1.79}$	589^{+41}_{-40}	4602^{+198}_{-184}	2171^{+824}_{-556}

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

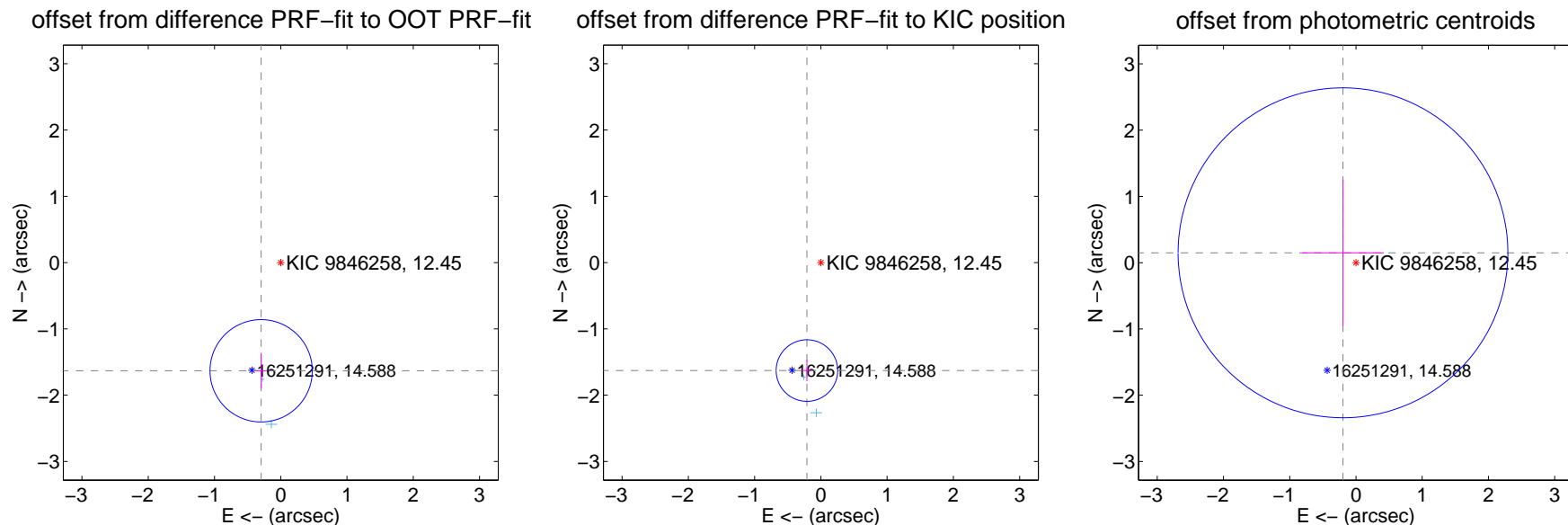
DV Centroid Data

Supplemental centroid analysis for 009846258-02. Kepler magnitude: 12.45. Transit SNR 5.41

There are 3 quarters with good PRF difference image offsets

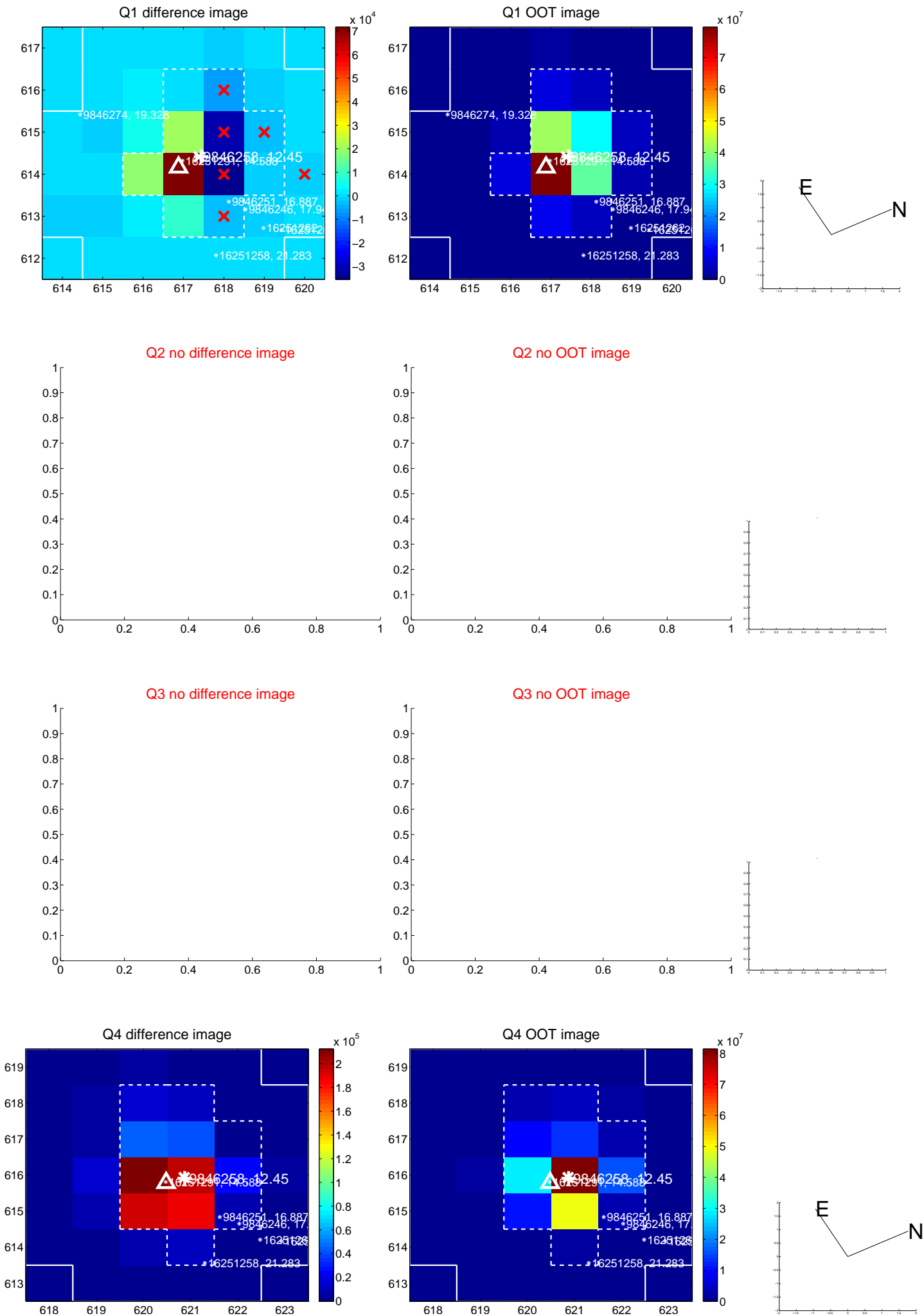
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.659 ± 0.257	6.45	0.296 ± 0.084	-1.632 ± 0.270
PRF-fit source offset from KIC position	1.642 ± 0.155	10.61	0.210 ± 0.076	-1.628 ± 0.160
photometric centroid source offset	0.25 ± 0.83	0.30	0.20 ± 0.62	0.15 ± 1.11

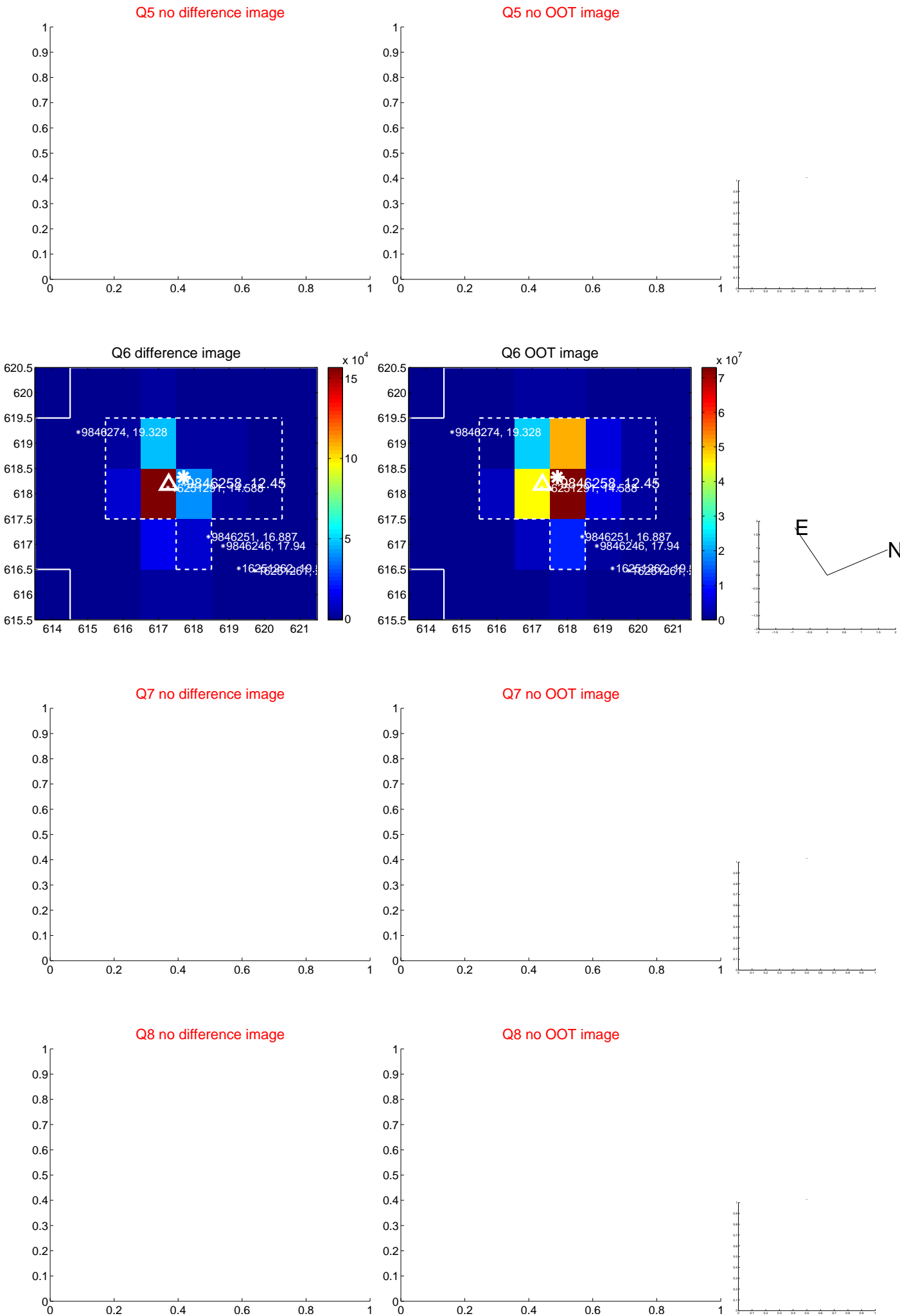


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



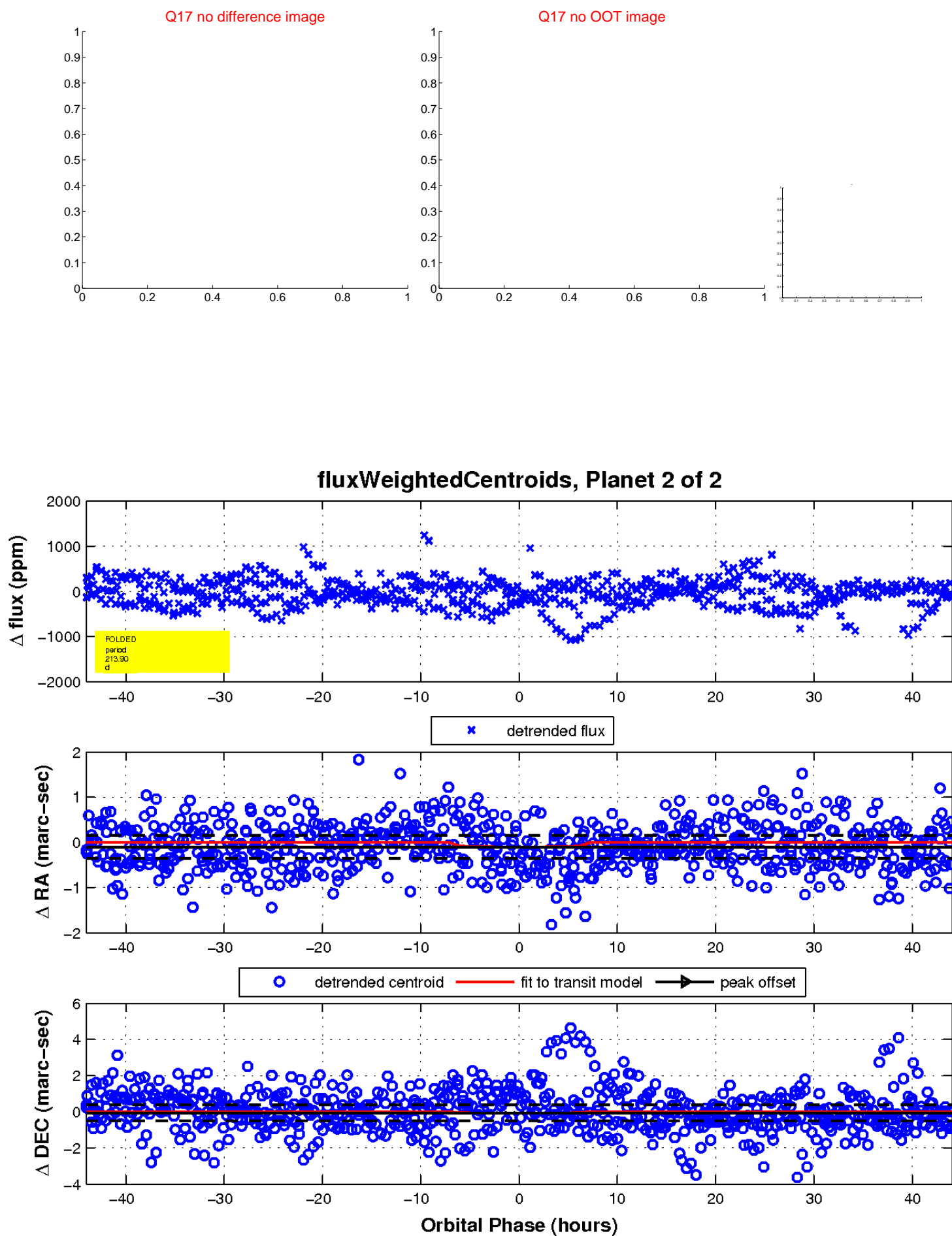
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

Declination

