

KIC 009415300

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})
009415300-01	OBS	No	0.939904	132.279096	56.0	3.215	9.5	6.3	1.77	7244	1.53	16647.37
009415300-02	OBS	No	0.722858	131.640245	69.7	3.982	8.1	7.5	1.77	7244	1.53	23625.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009415300-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009415300-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

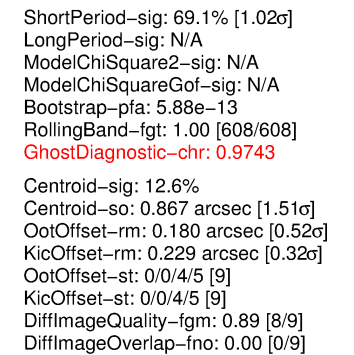
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

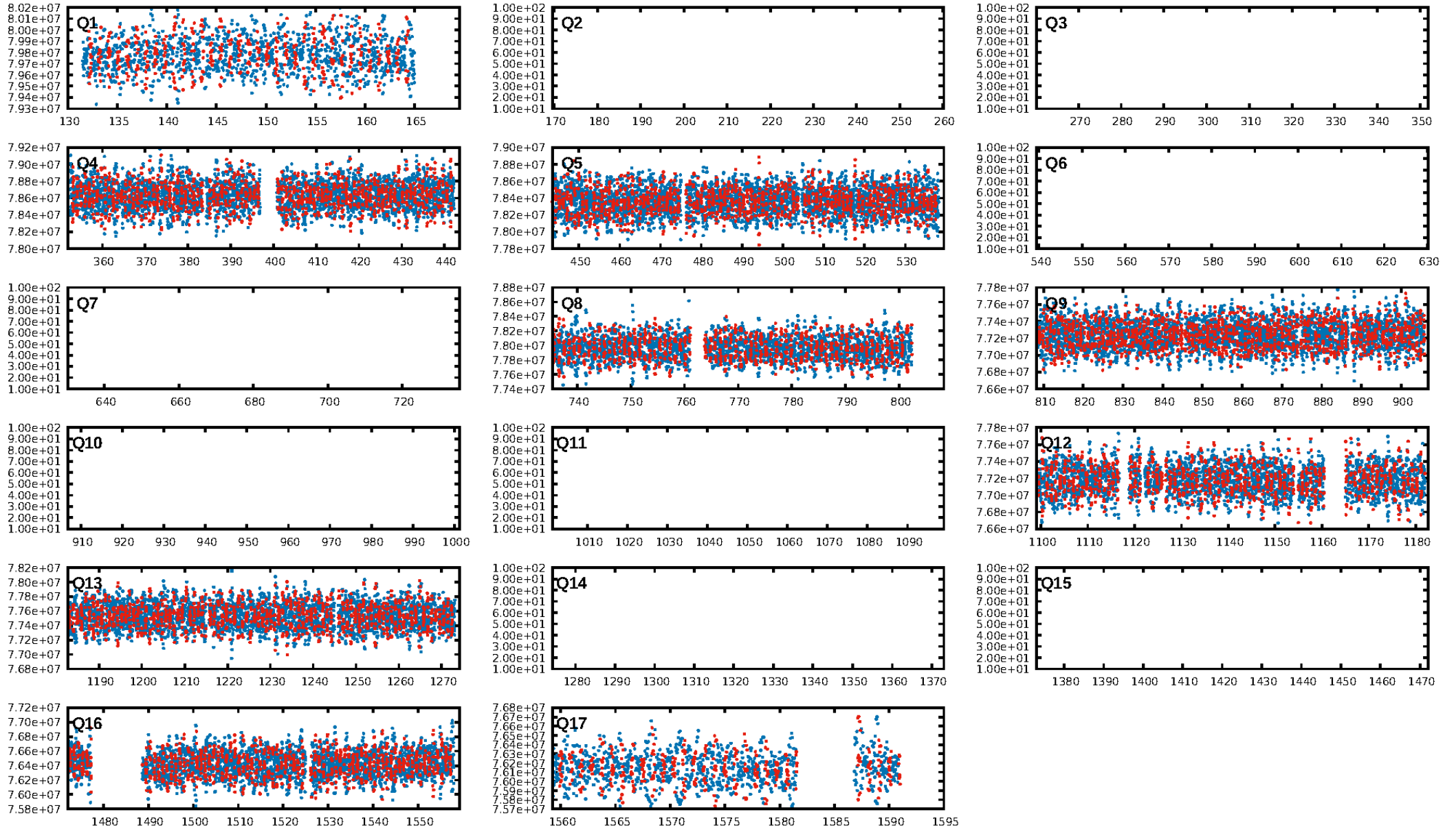
Ephemeris Match Information For 009415300-01

No Significant Match Found

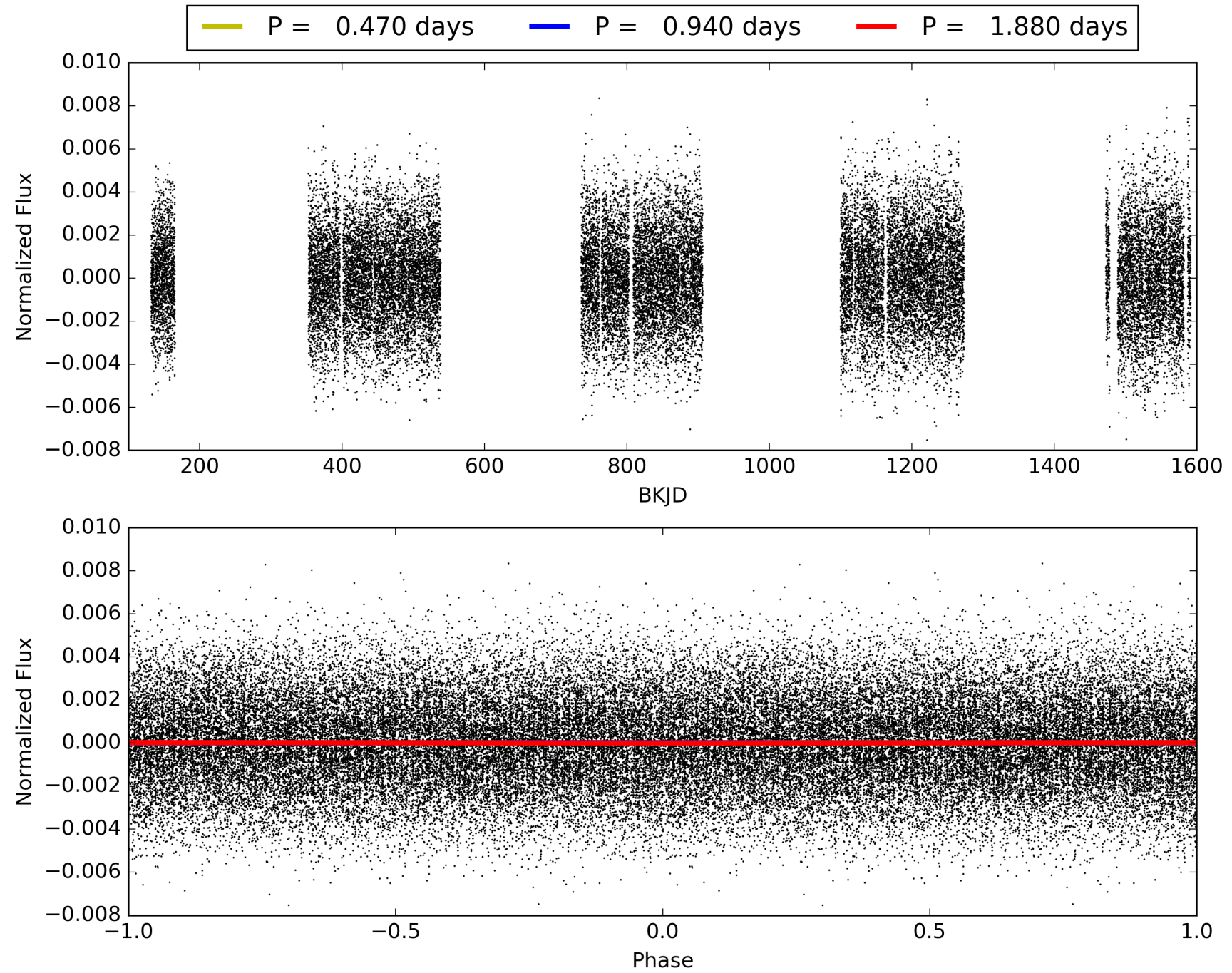
KIC: 9415300 Candidate: 1 of 2 Period: 0.940 d



TCE 009415300-01, PDC Light Curves

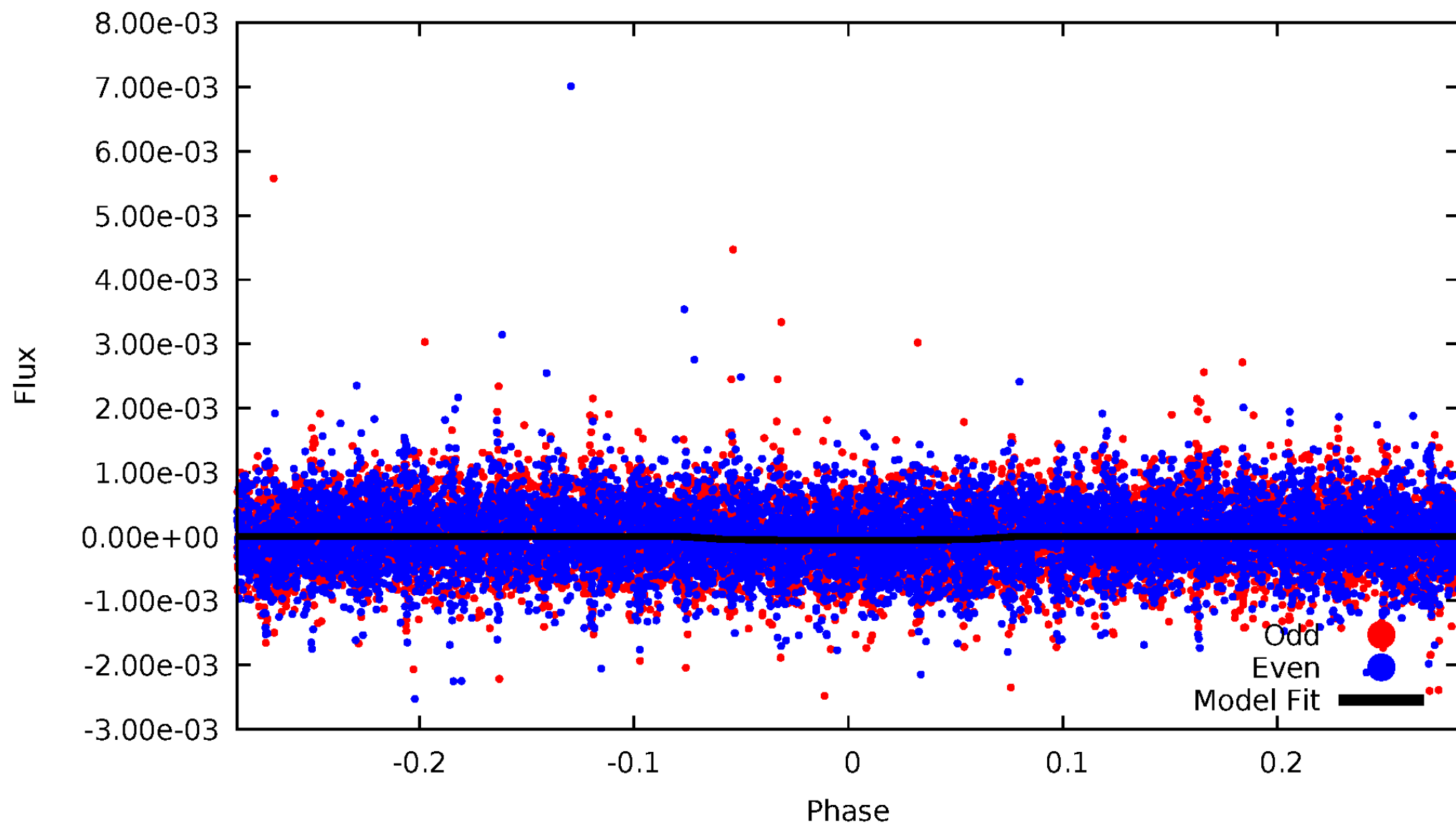


TCE 009415300-01



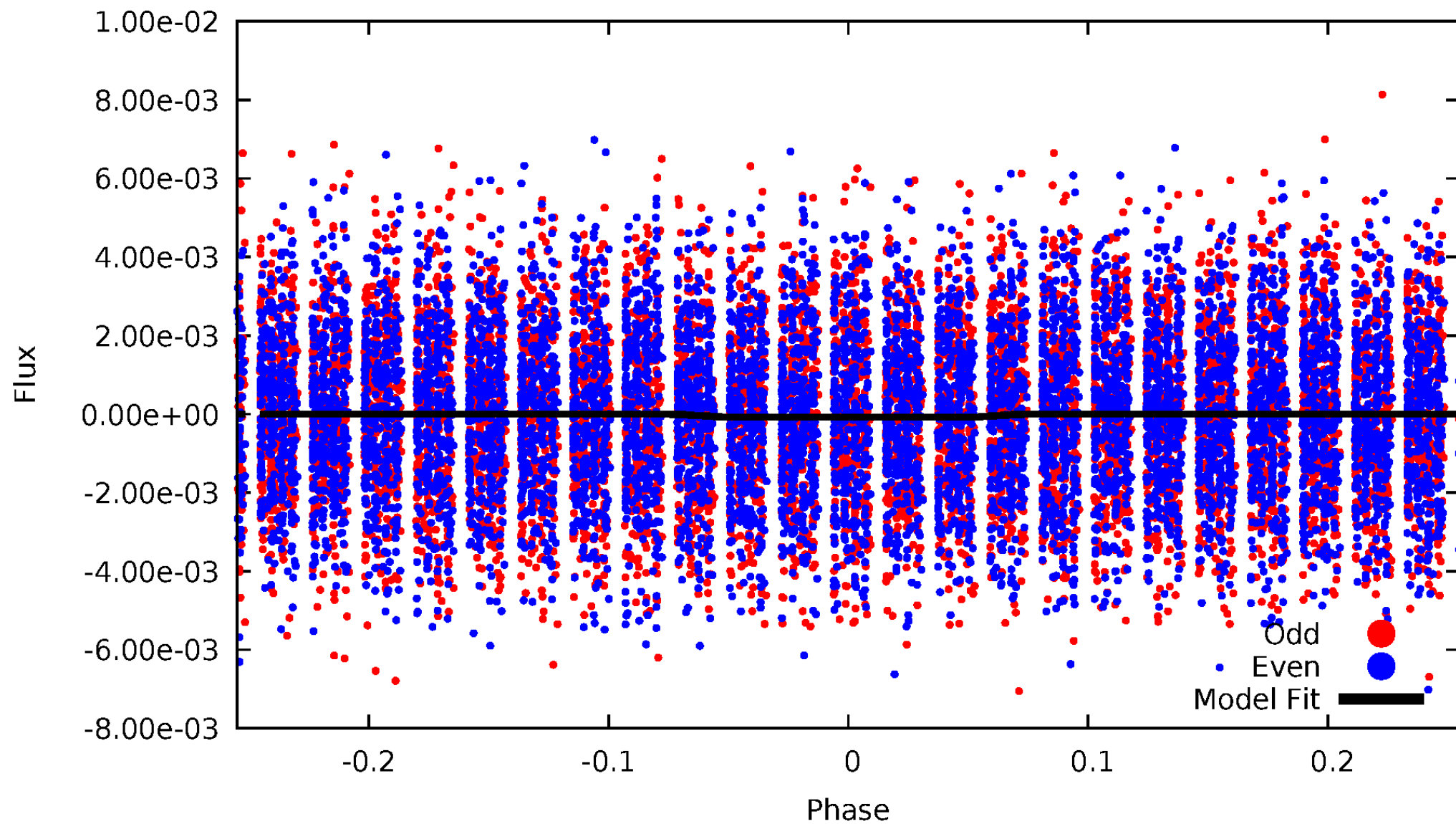
DV Odd/Even

TCE 009415300-01



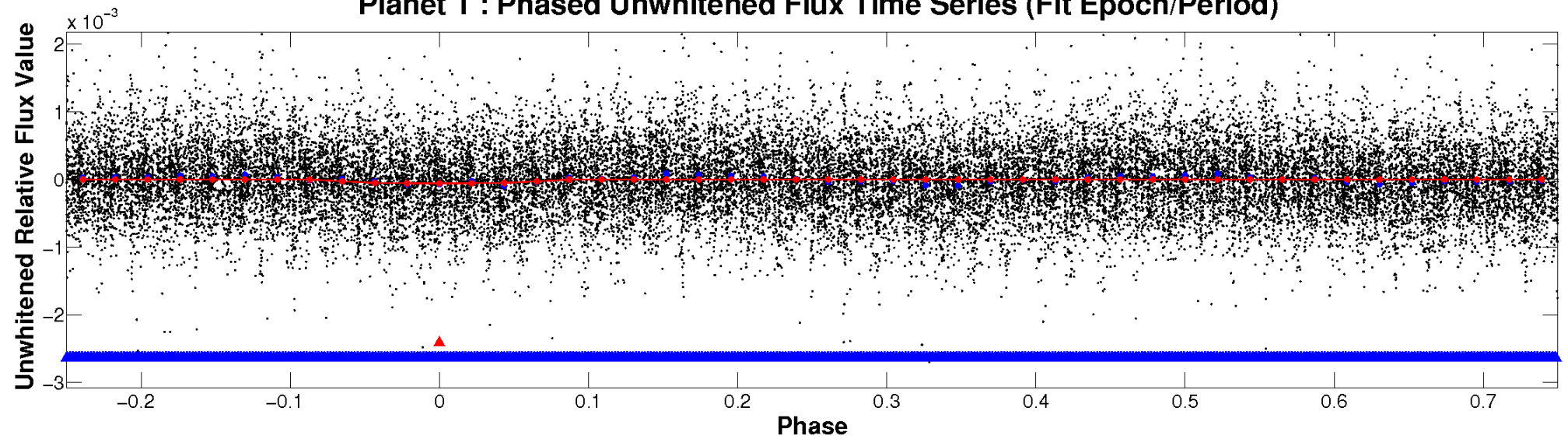
ALT Odd/Even

TCE 009415300-01

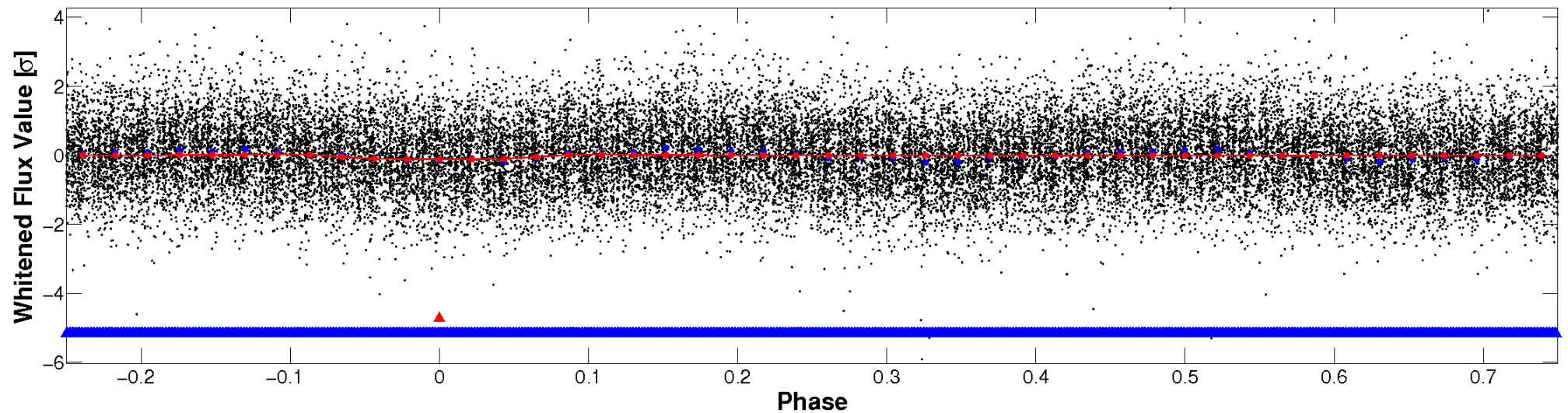


Non-Whitened Vs. Whitened Light Curve

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

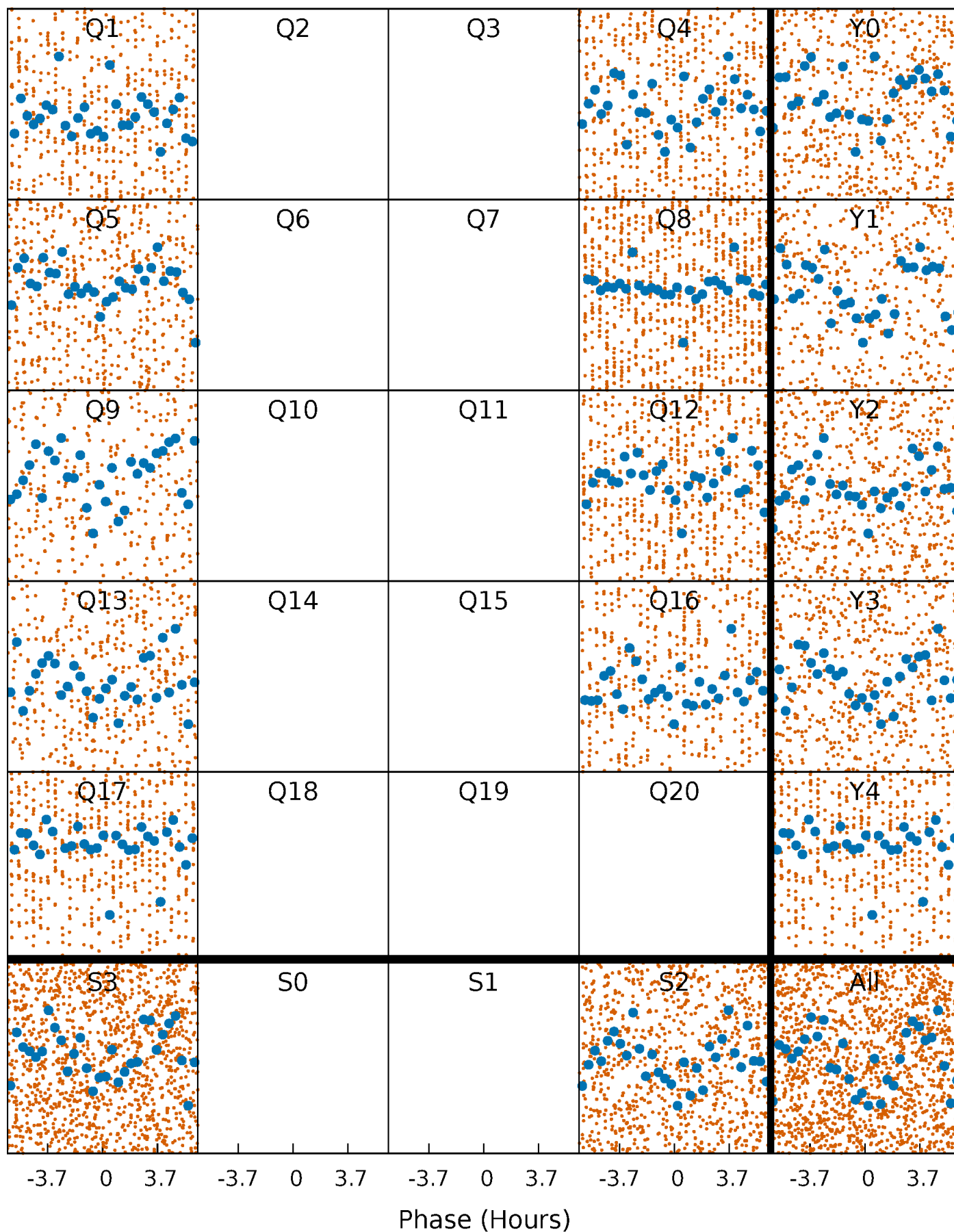


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



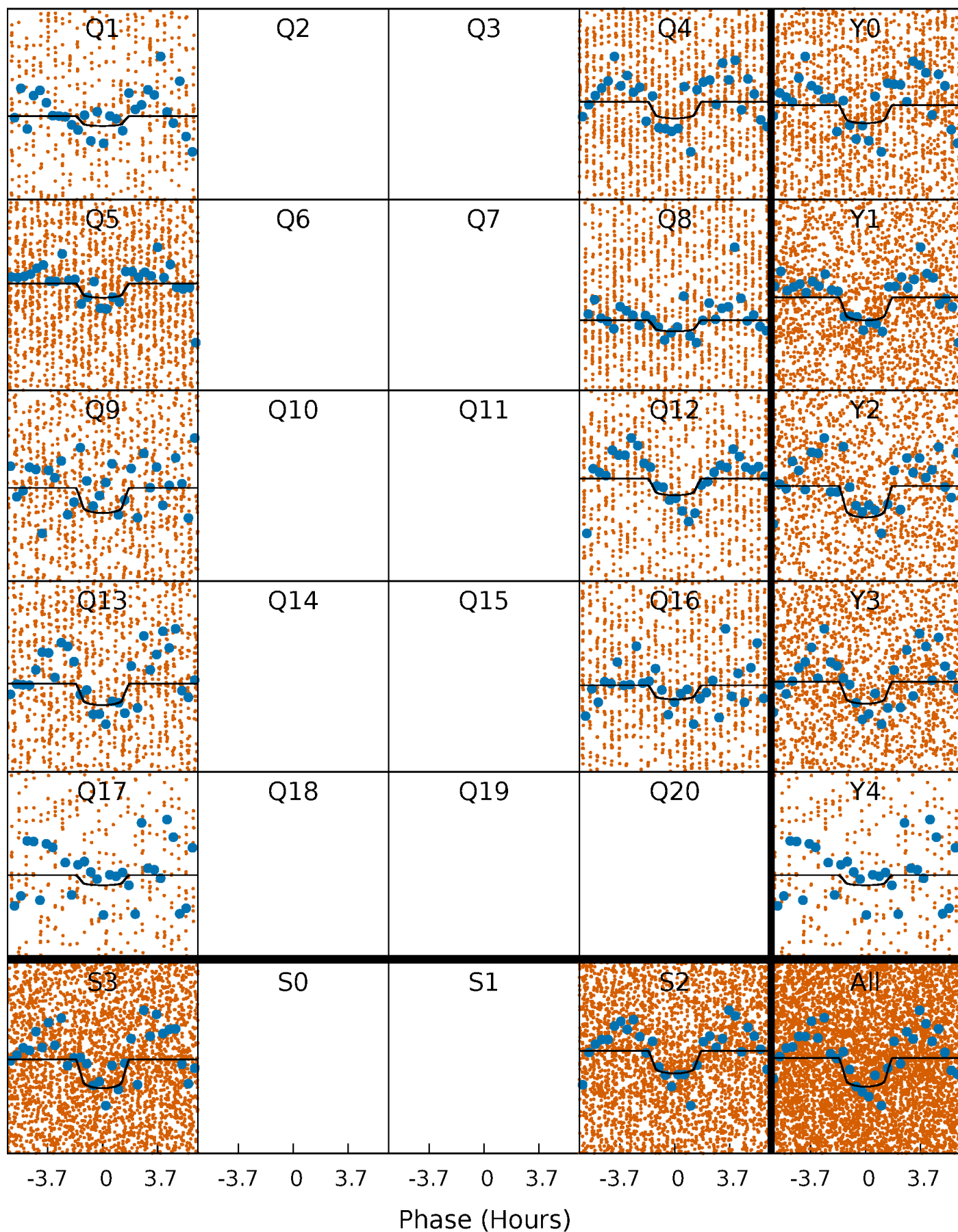
PDC Quarter-Phased Transit Curves

TCE 009415300-01 P= 0.939904 Days $T_0=132.279096$ (BKJD)



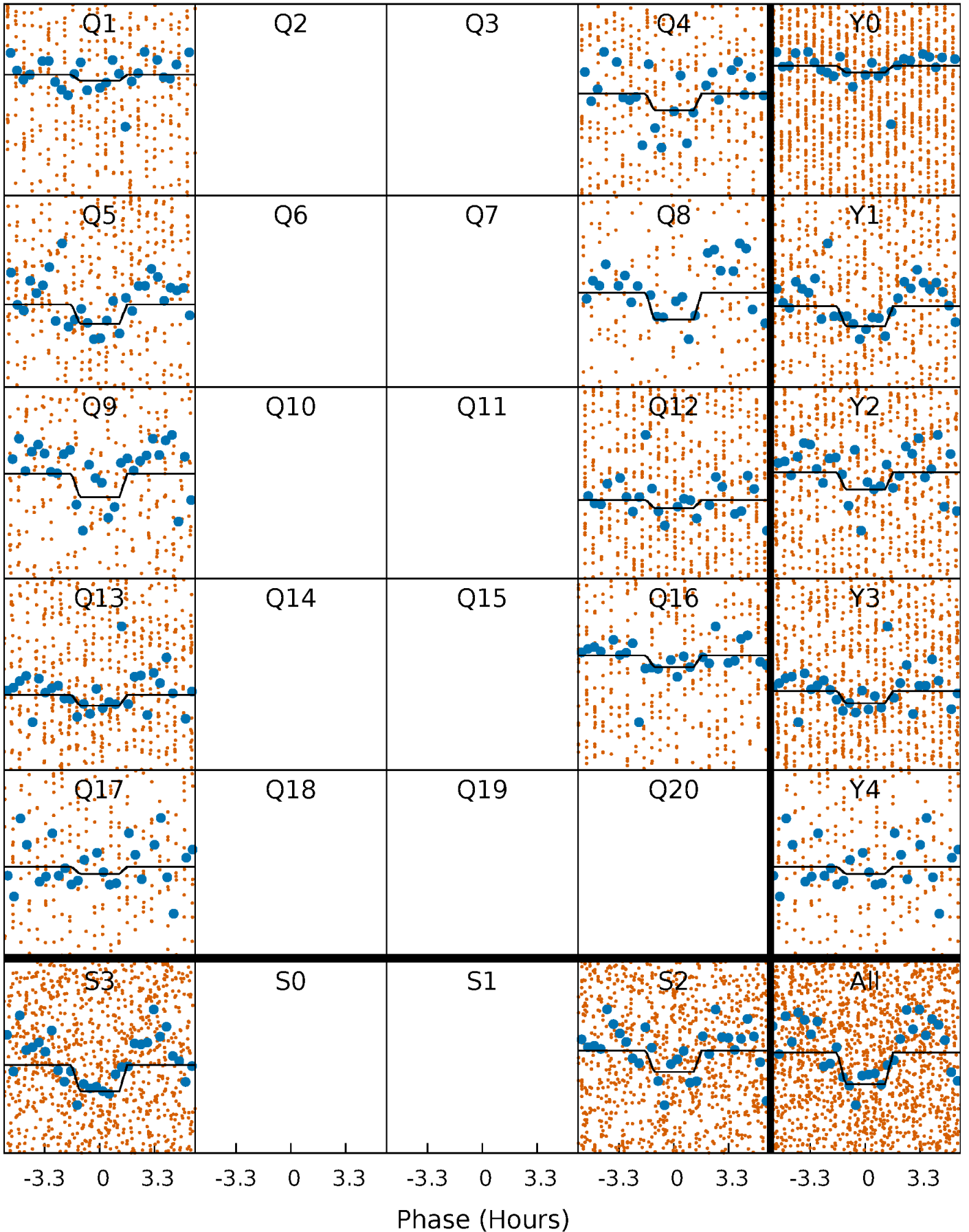
DV Quarter-Phased Transit Curves

TCE 009415300-01 P= 0.939904 Days $T_0=132.279096$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

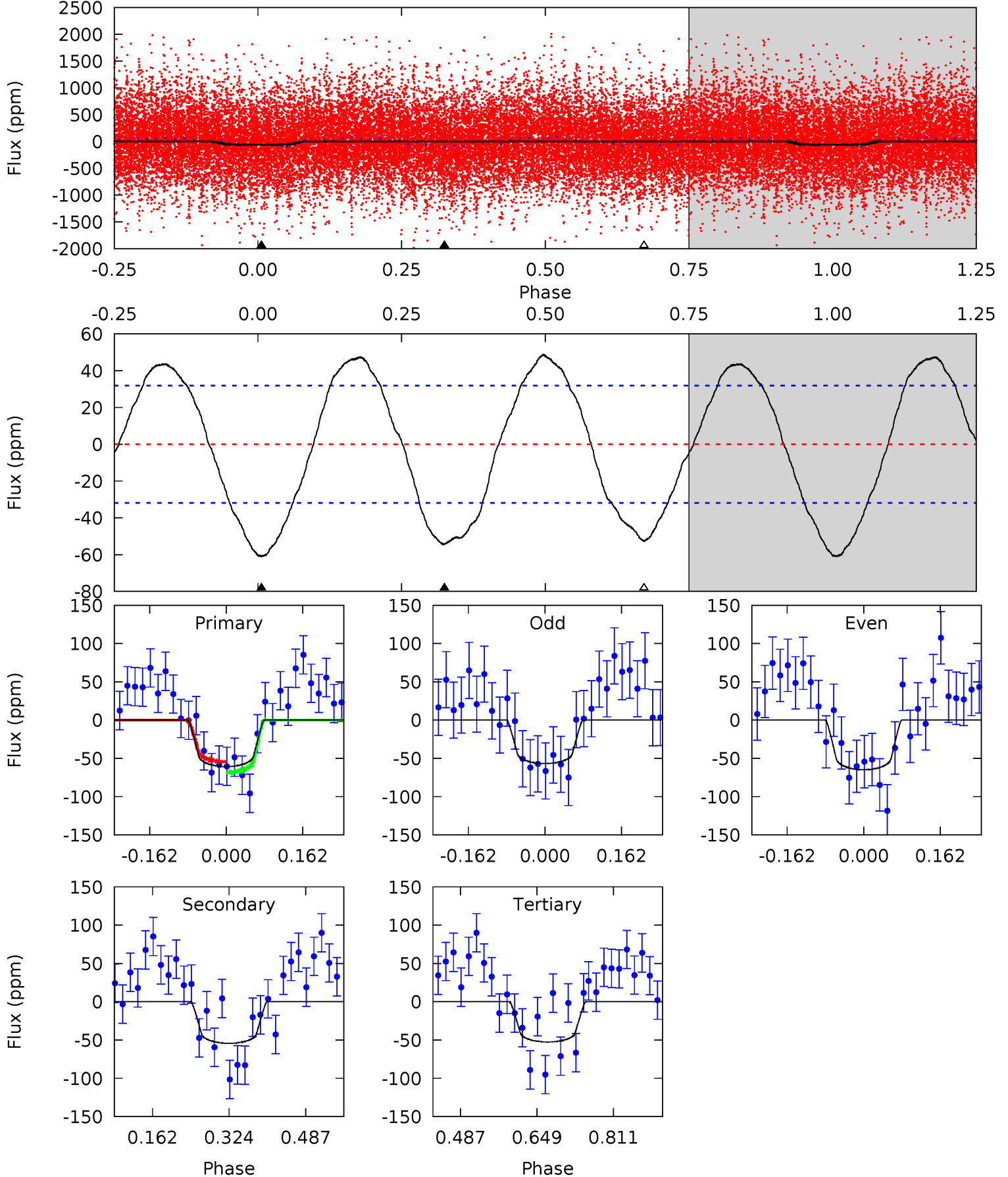
TCE 009415300-01 P= 0.939935 Days $T_0=132.273877$ (BKJD)



DV Model-Shift Uniqueness Test

009415300-01, P = 0.939904 Days, E = 131.339192 Days

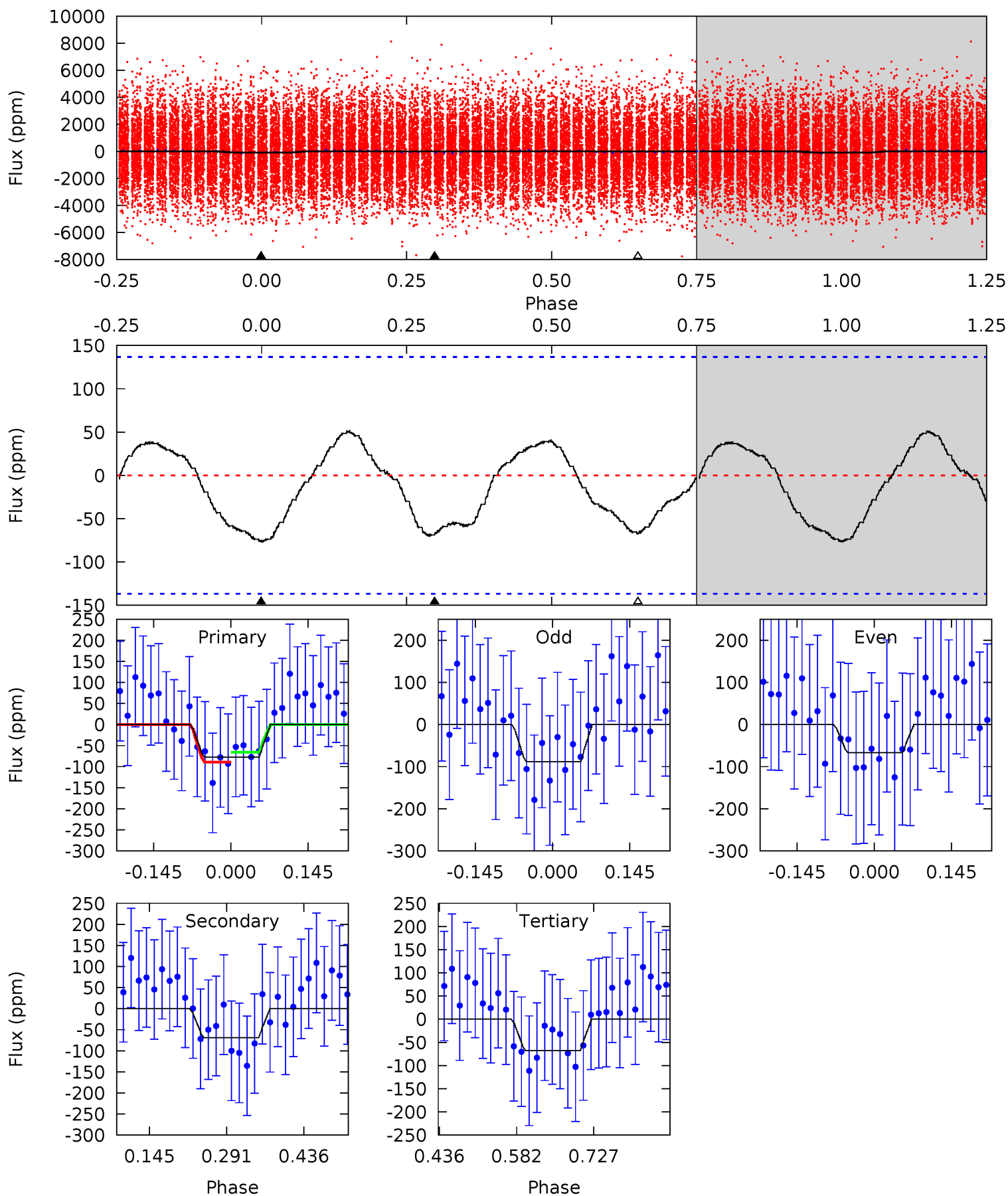
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.52	7.61	7.37	0	4.46	1.40	4.85	1.16	8.52	0.24	7.61	0.57	1.00	0.44	1.00



Alt Model-Shift Uniqueness Test

009415300-01, P = 0.939935 Days, E = 131.333942 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.54	2.26	2.23	0	4.49	1.46	1.20	0.31	2.54	0.03	2.26	0.34	1.05	0.40	0.39



Stellar Parameters For KIC 009415300

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7244^{+230}_{-316}	$4.121^{+0.149}_{-0.182}$	$-0.080^{+0.250}_{-0.350}$	$1.770^{+0.563}_{-0.375}$	$1.508^{+0.236}_{-0.236}$	$0.383^{+0.296}_{-0.196}$
	+3%/-4%	+4%/-4%	+312%/-438%	+32%/-21%	+16%/-16%	+77%/-51%
Source	KIC0	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 009415300-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-54 ± 7	$1.72^{+1.18}_{-0.98}$	4063^{+304}_{-291}	6421^{+4875}_{-1530}	$4.552^{+21.085}_{-2.966}$
Alt.	-69 ± 30	$1.85^{+1.10}_{-1.02}$	4034^{+326}_{-269}	6480^{+4741}_{-1621}	$4.790^{+19.620}_{-3.236}$

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

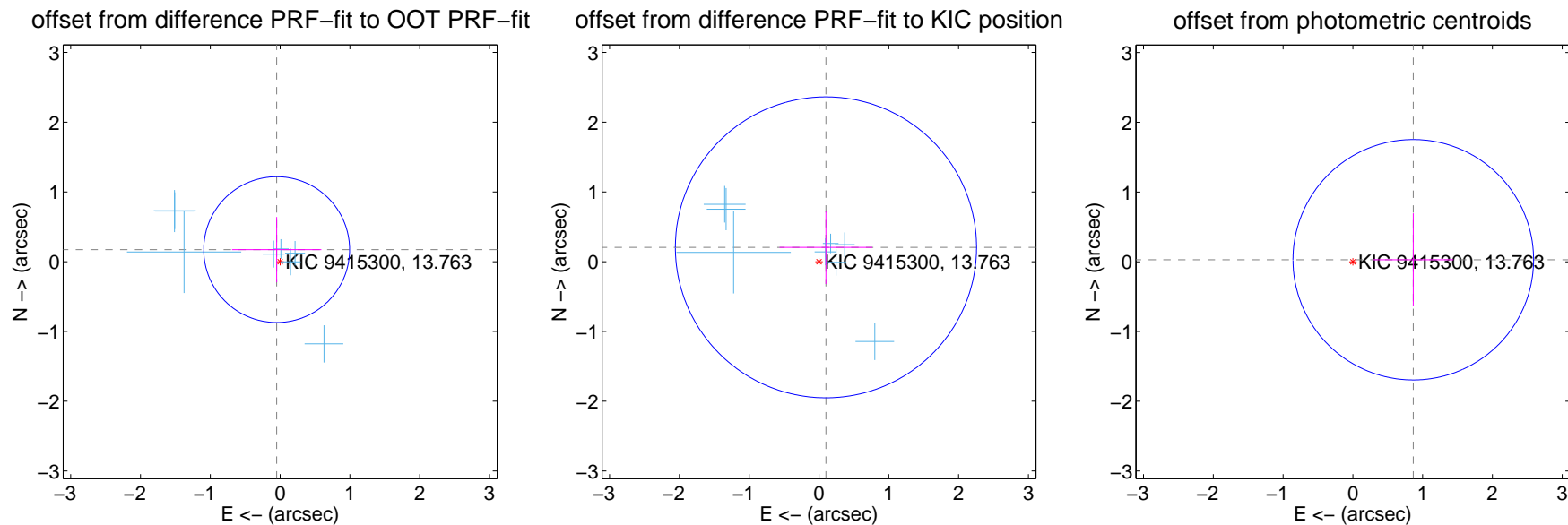
DV Centroid Data

Supplemental centroid analysis for 009415300-01. Kepler magnitude: 13.76. Transit SNR 6.31

There are 8 quarters with good PRF difference image offsets

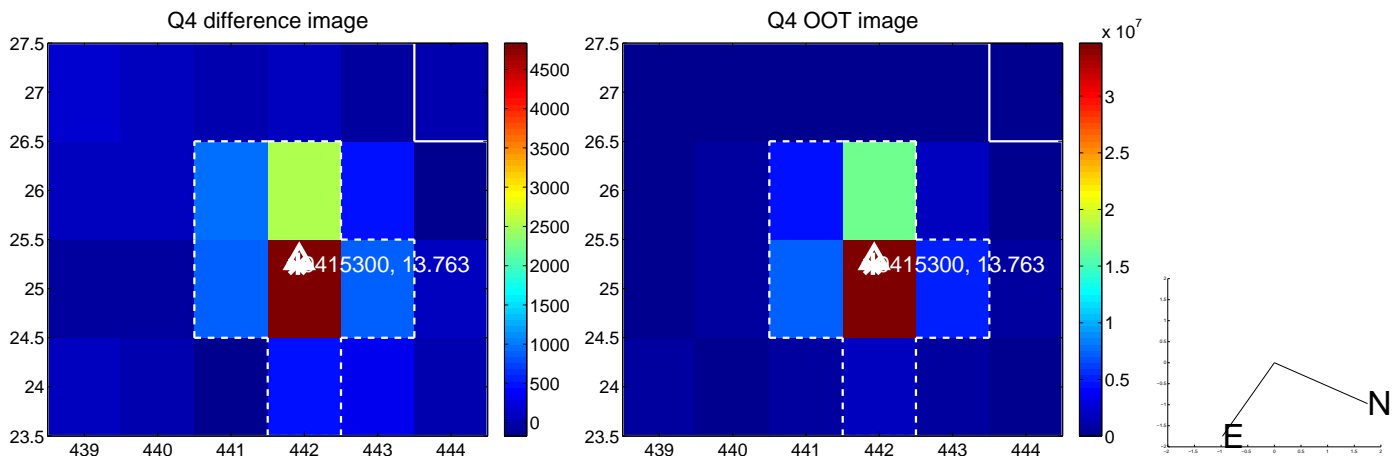
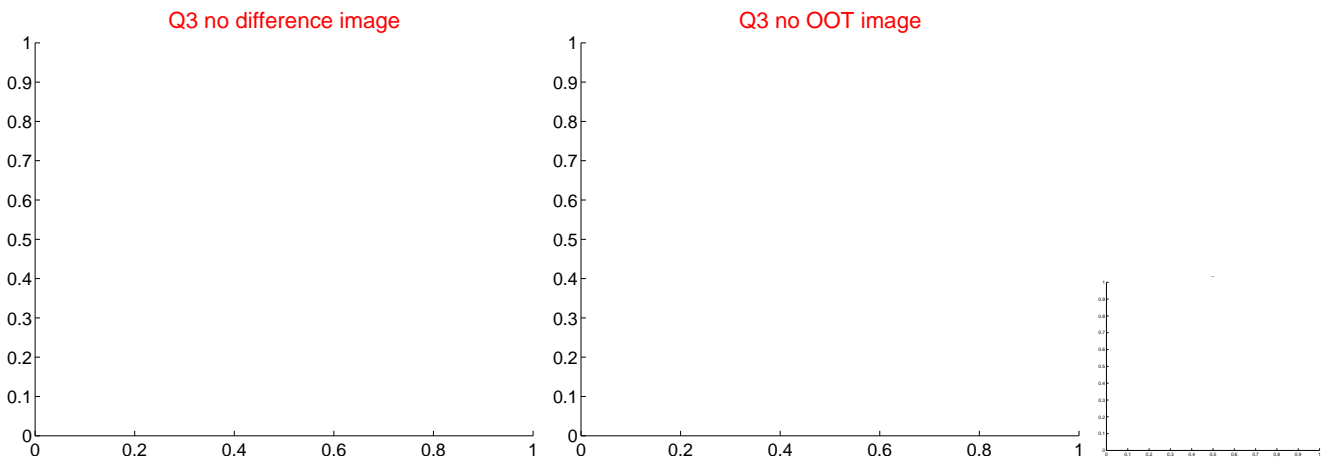
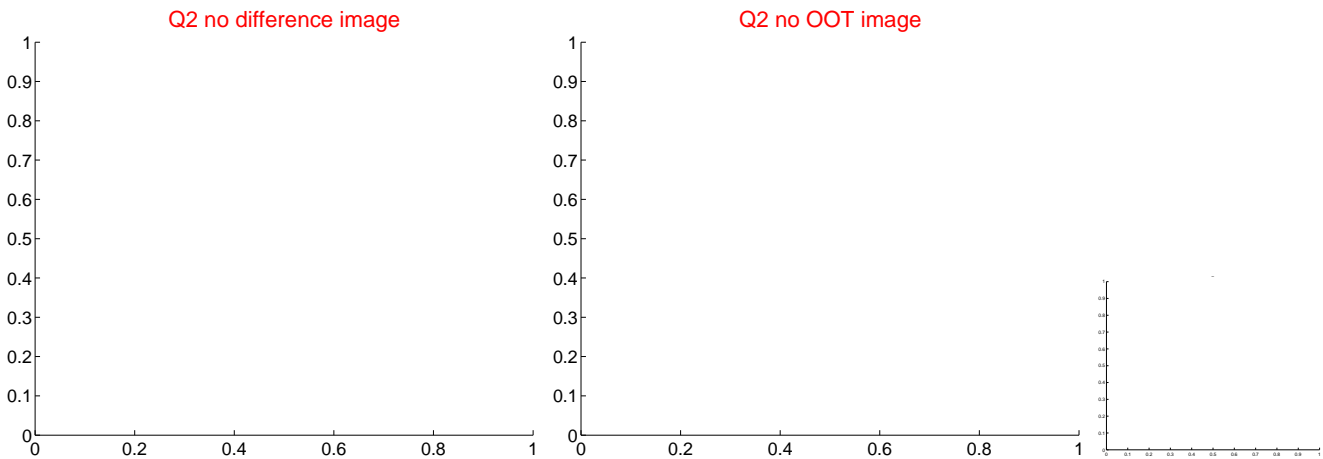
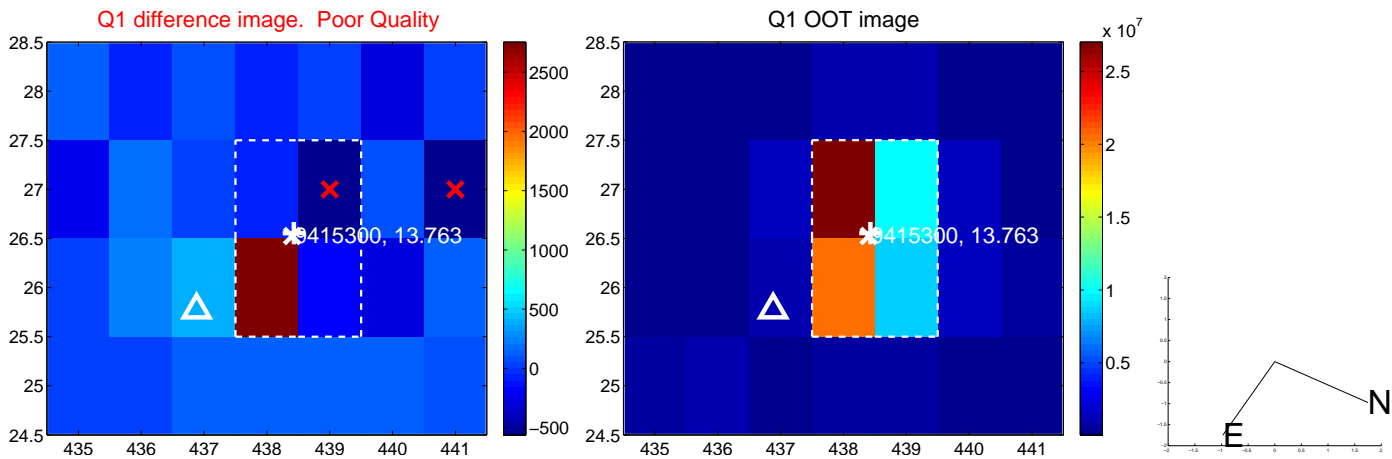
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.180 ± 0.348	0.52	0.049 ± 0.640	0.173 ± 0.468
PRF-fit source offset from KIC position	0.229 ± 0.719	0.32	-0.100 ± 0.664	0.206 ± 0.525
photometric centroid source offset	0.87 ± 0.57	1.51	-0.87 ± 0.57	0.03 ± 0.67

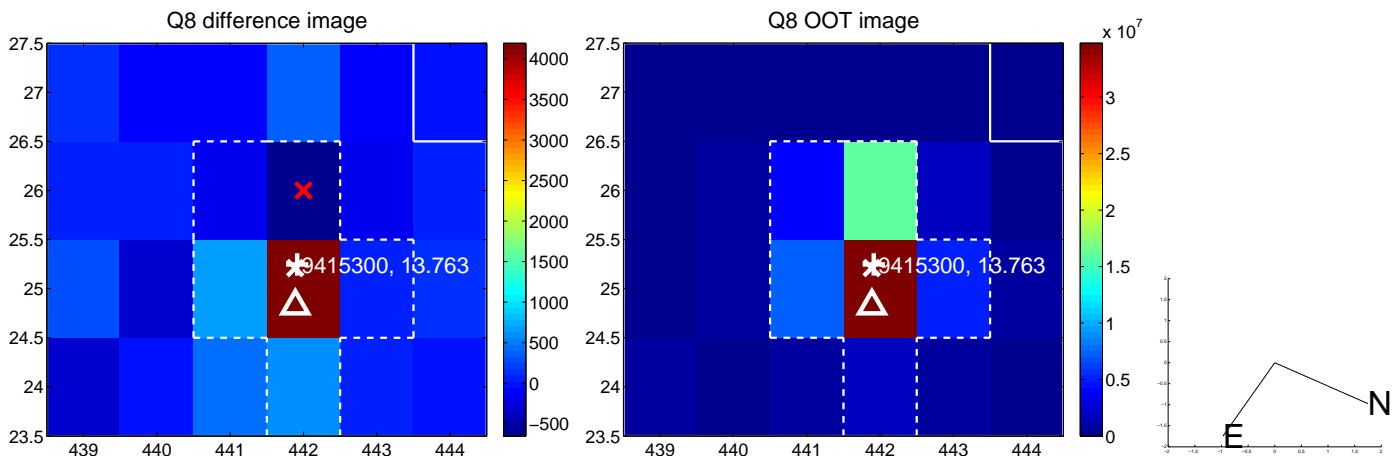
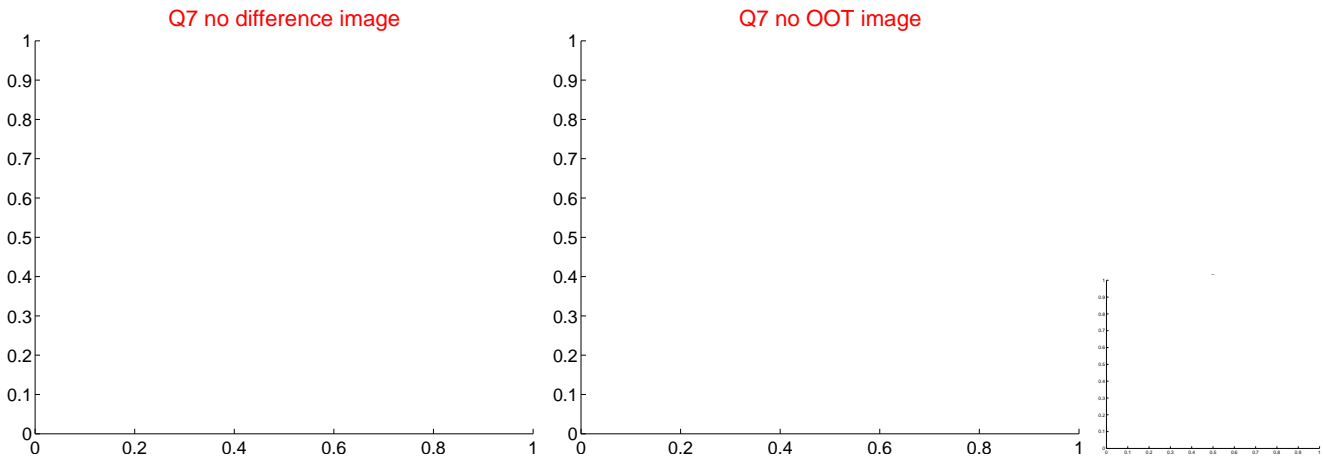
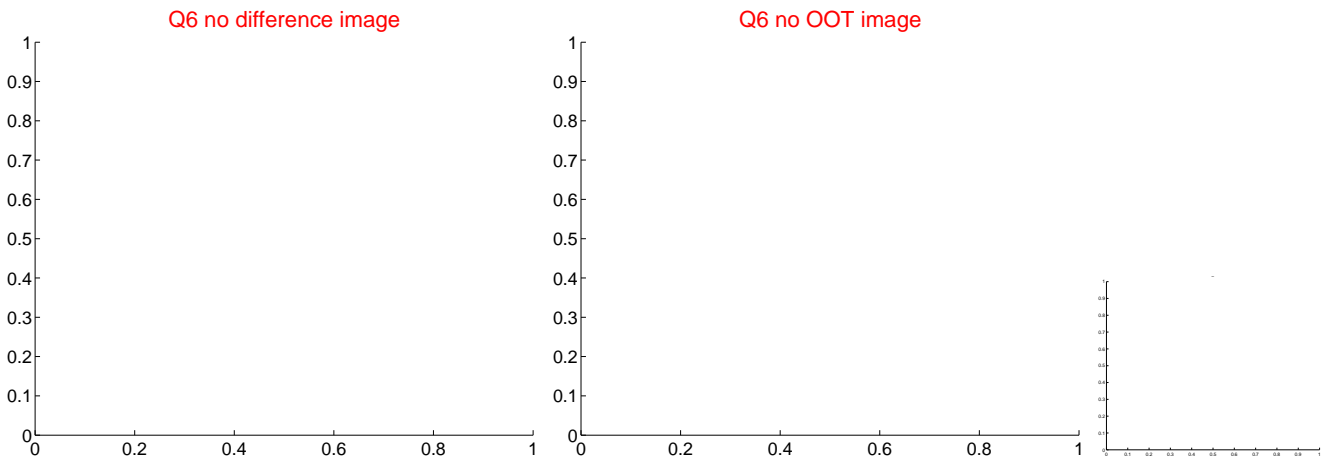
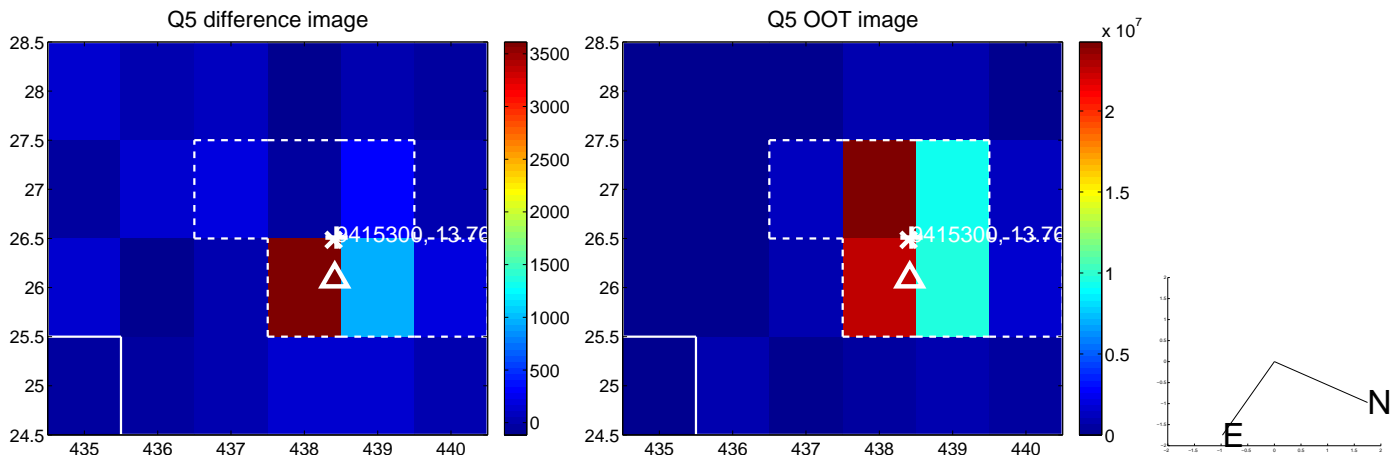


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

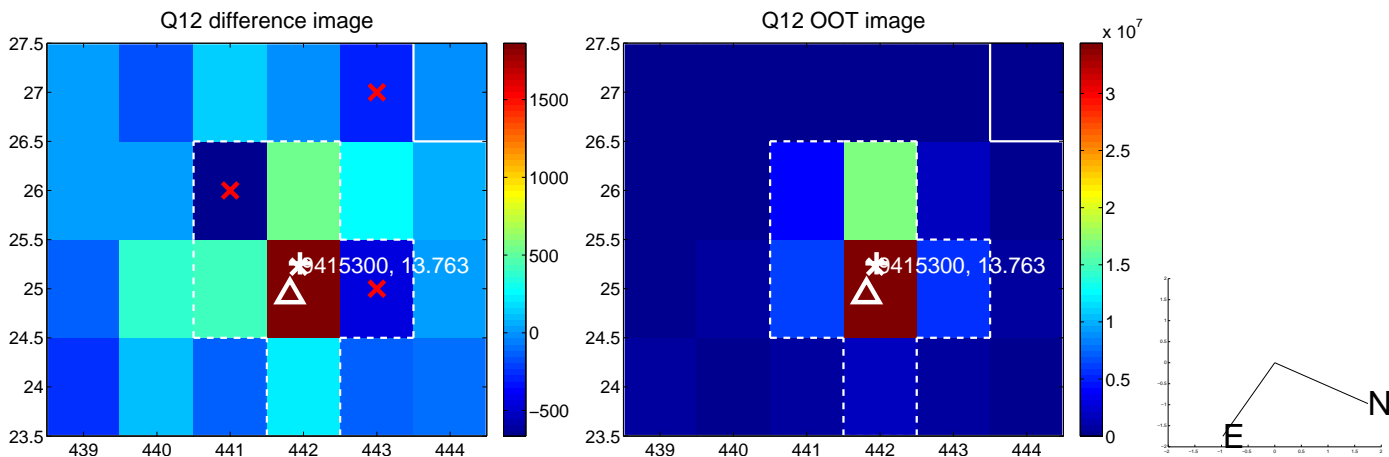
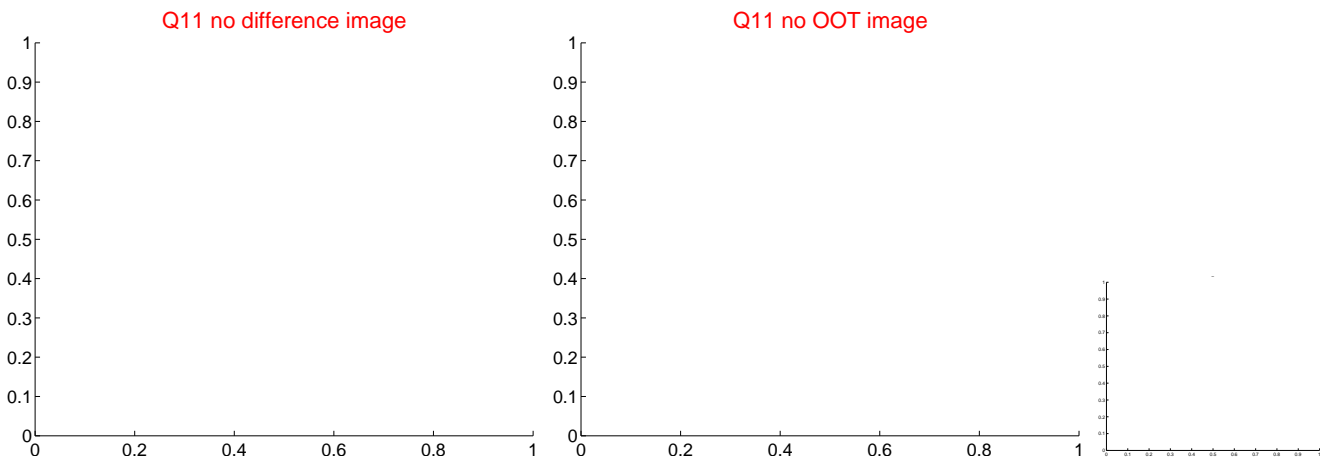
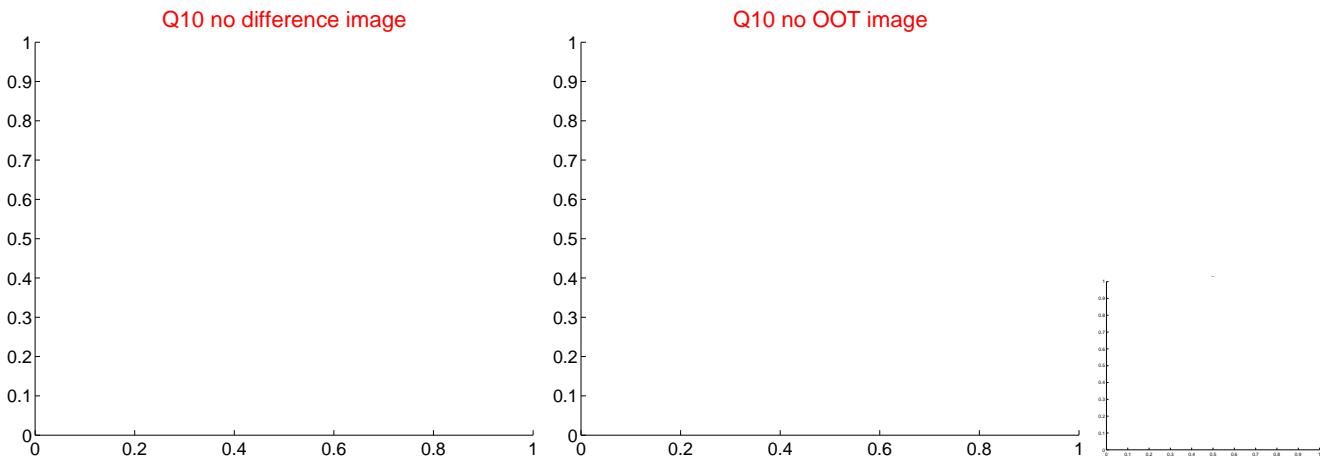
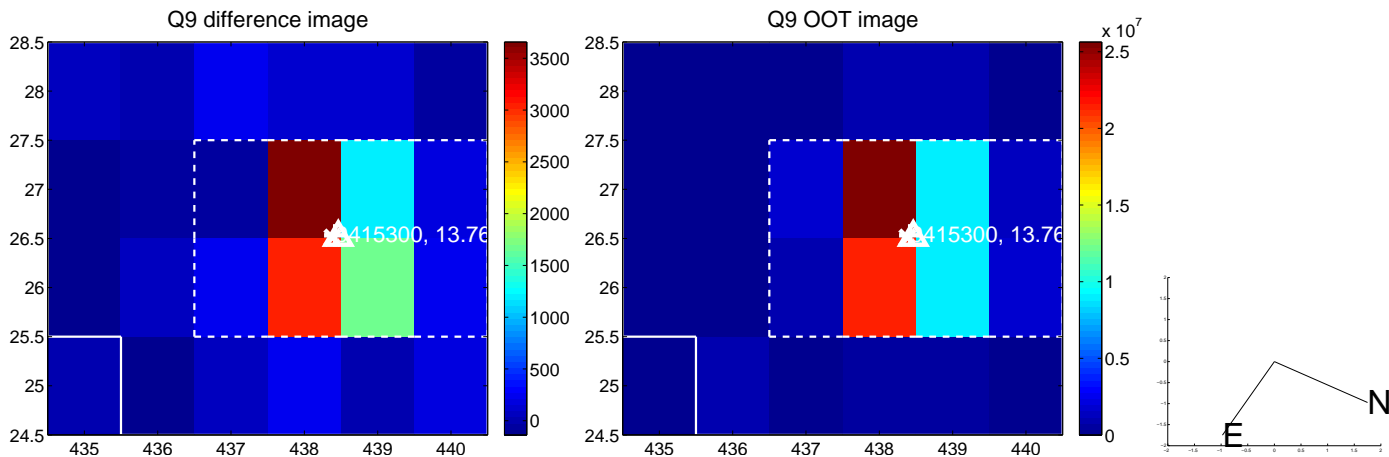
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



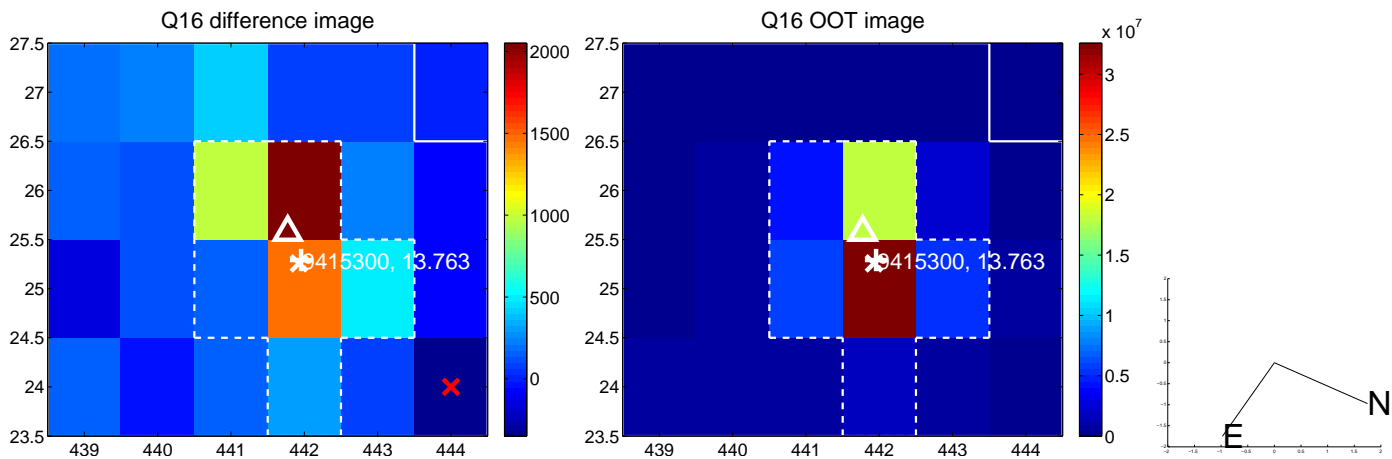
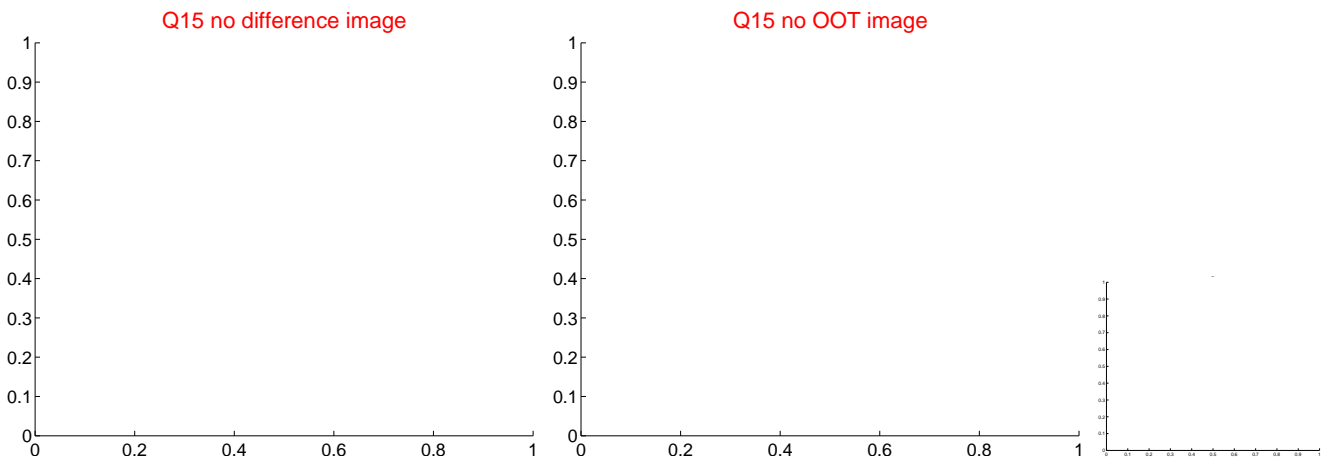
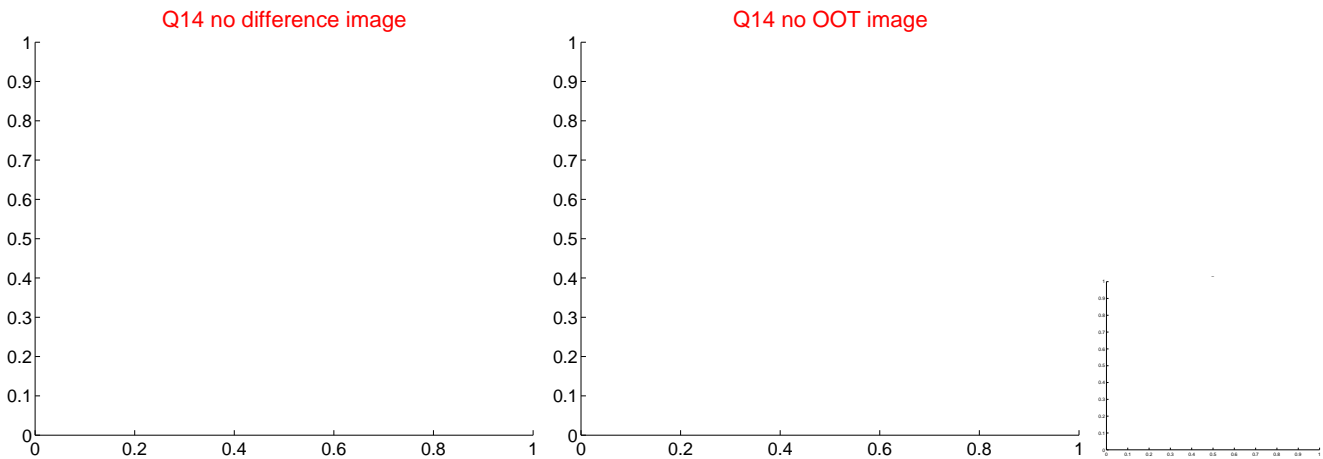
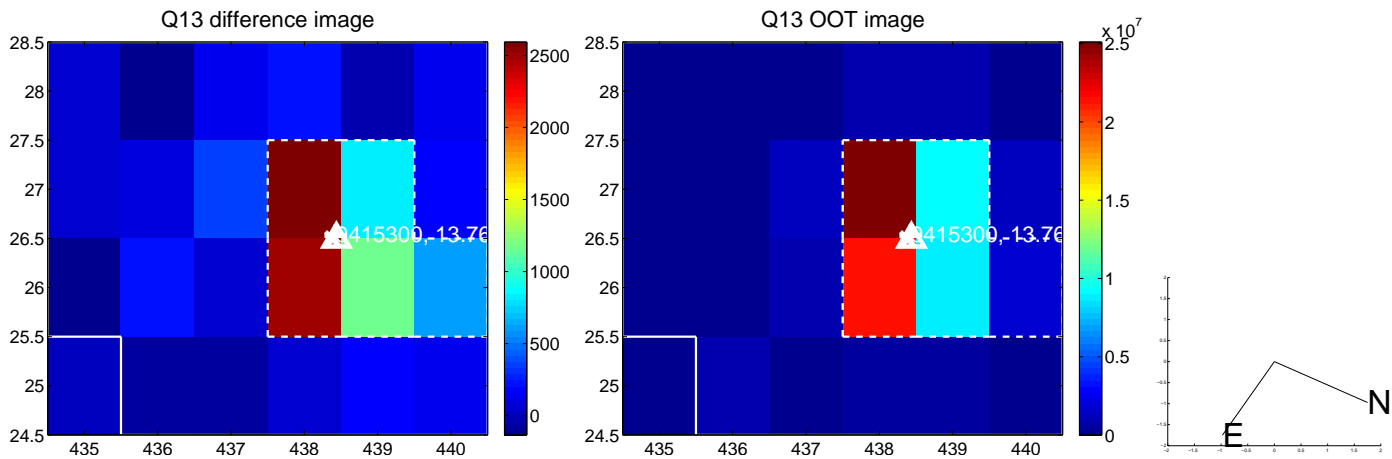
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



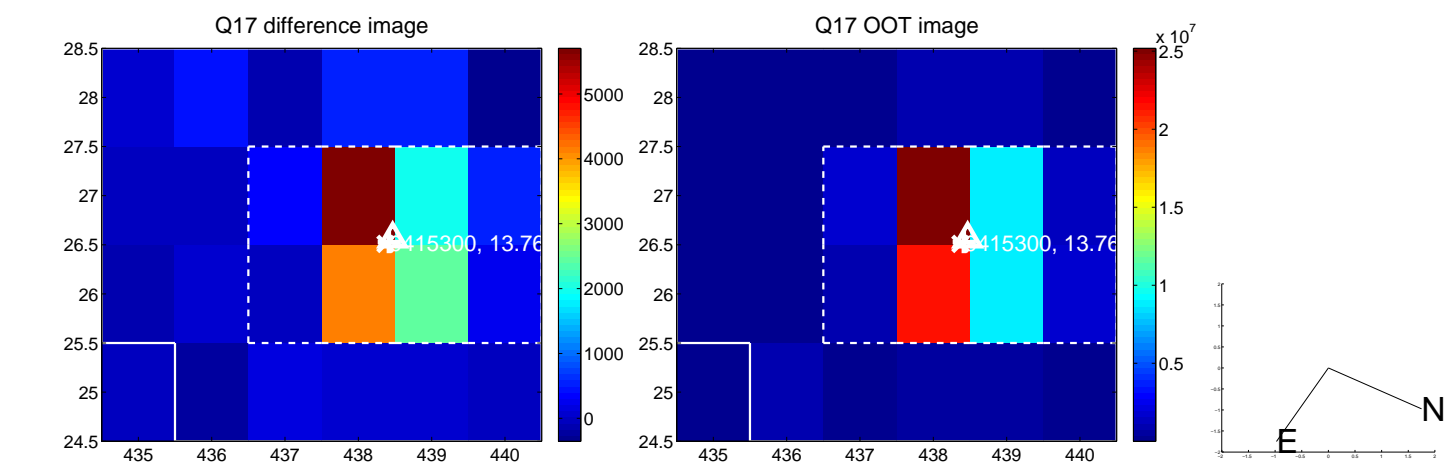
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



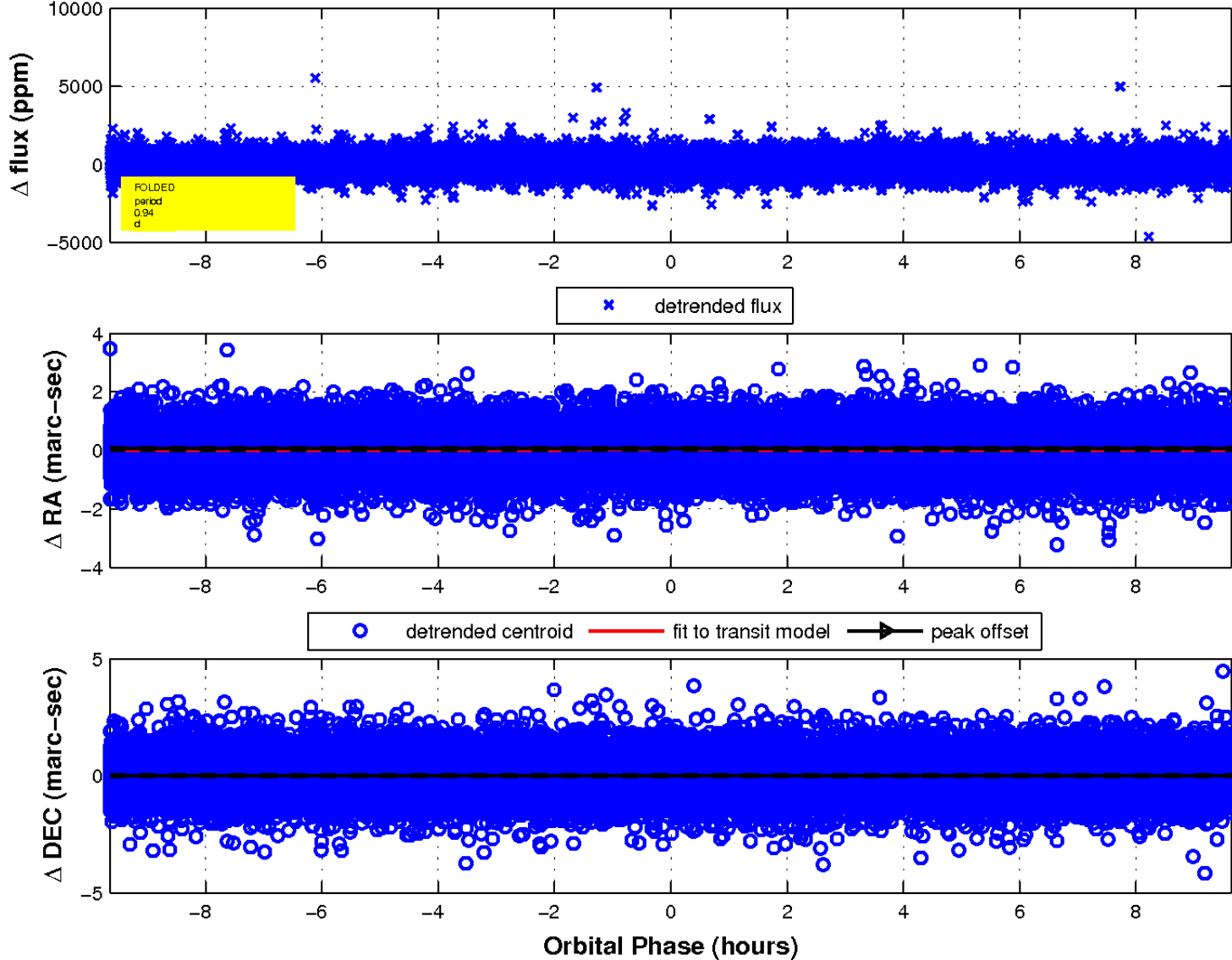
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

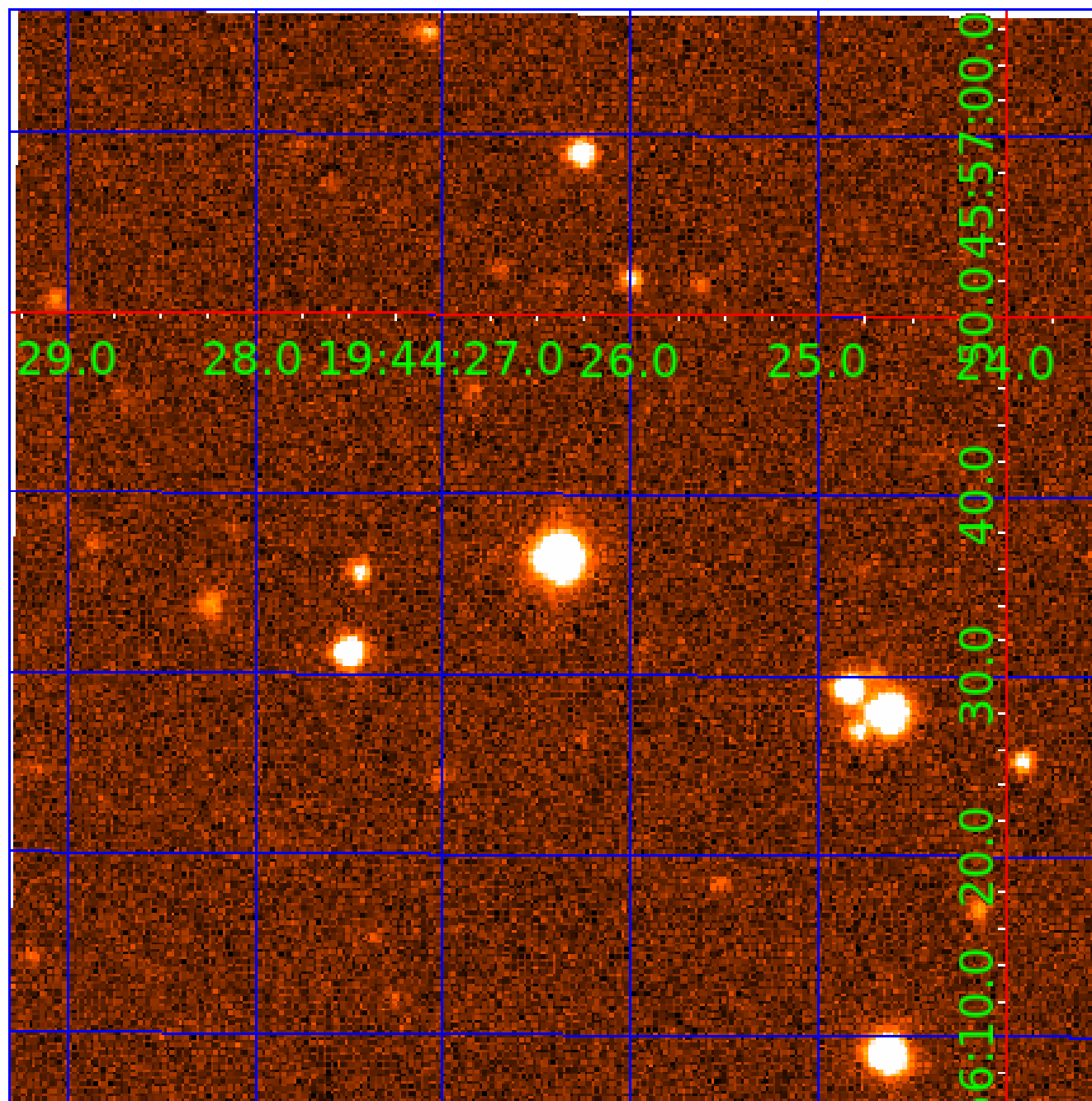


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009415300

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})
009415300-01	OBS	No	0.939904	132.279096	56.0	3.215	9.5	6.3	1.77	7244	1.53	16647.37
009415300-02	OBS	No	0.722858	131.640245	69.7	3.982	8.1	7.5	1.77	7244	1.53	23625.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009415300-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009415300-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

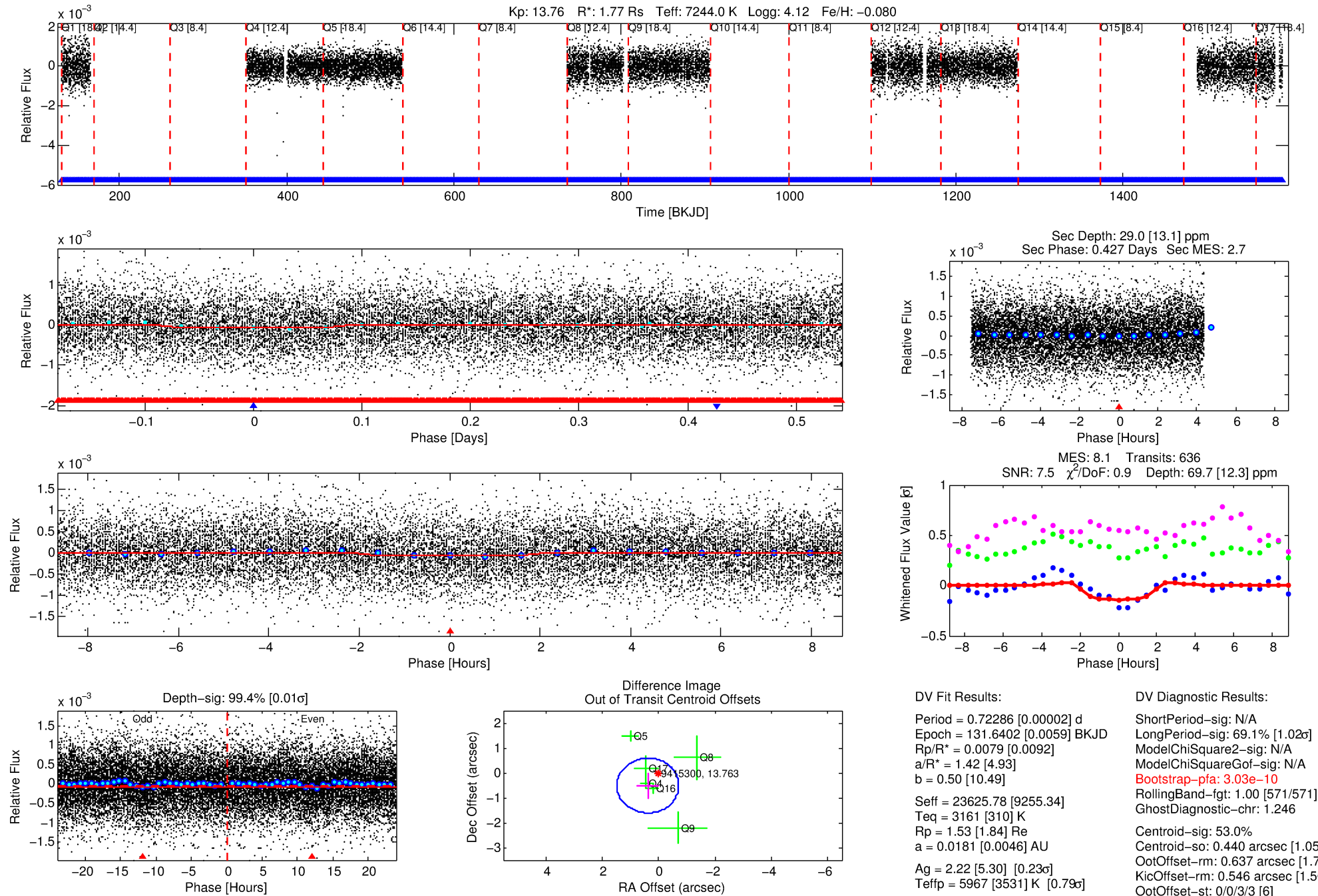
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009415300-02

No Significant Match Found

DV One-Page Summary

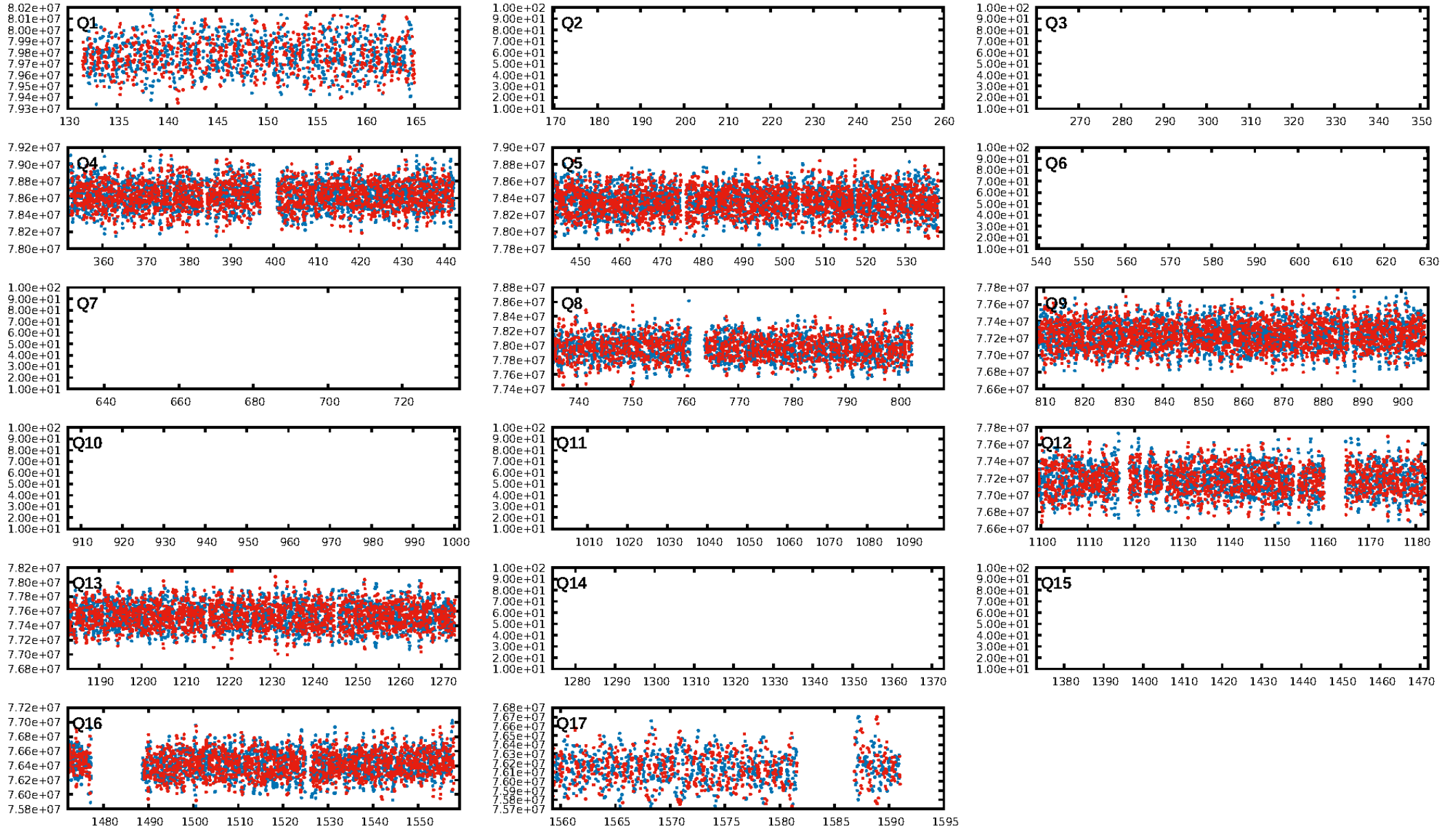
KIC: 9415300 Candidate: 2 of 2 Period: 0.723 d



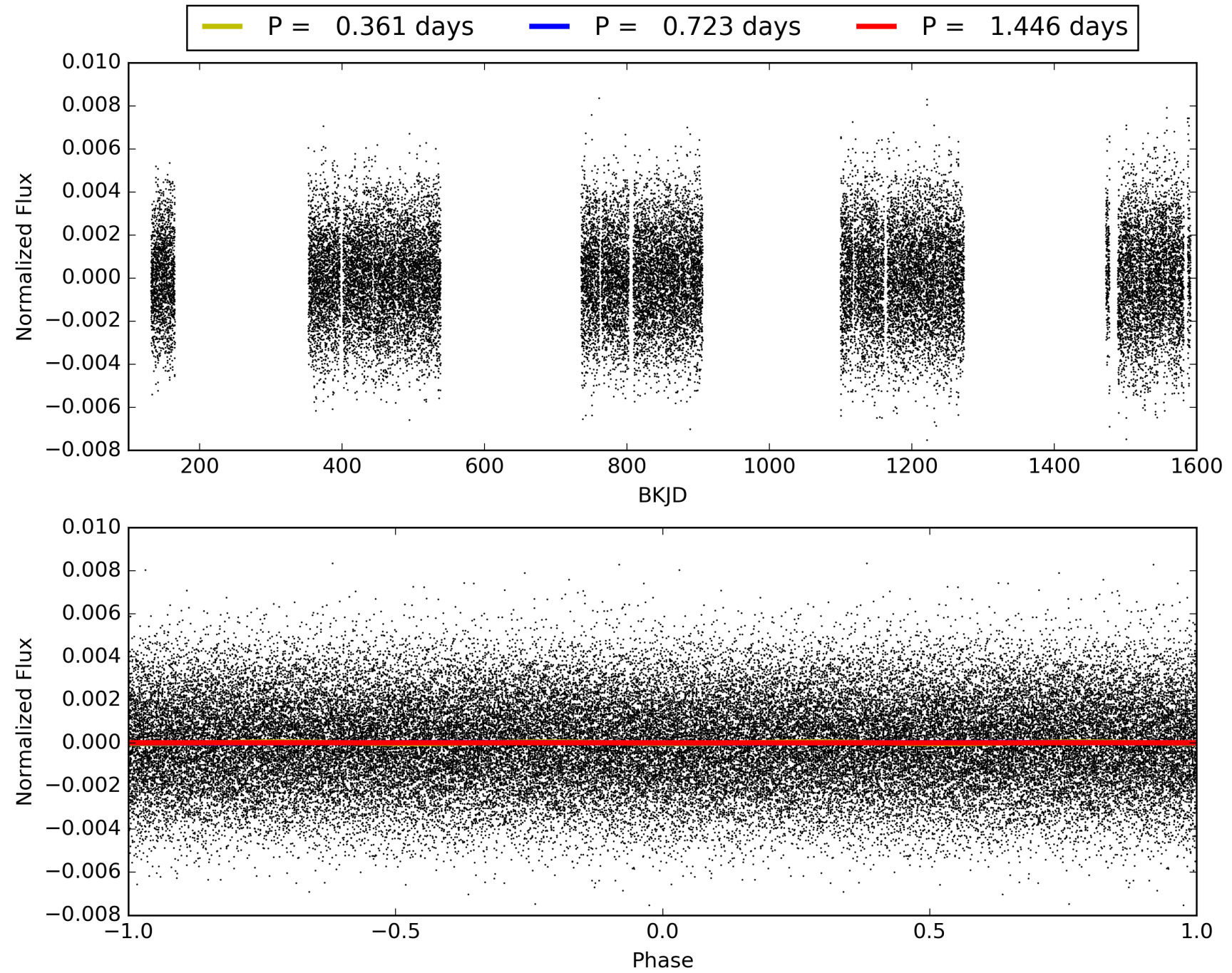
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:49:11 Z

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

TCE 009415300-02, PDC Light Curves

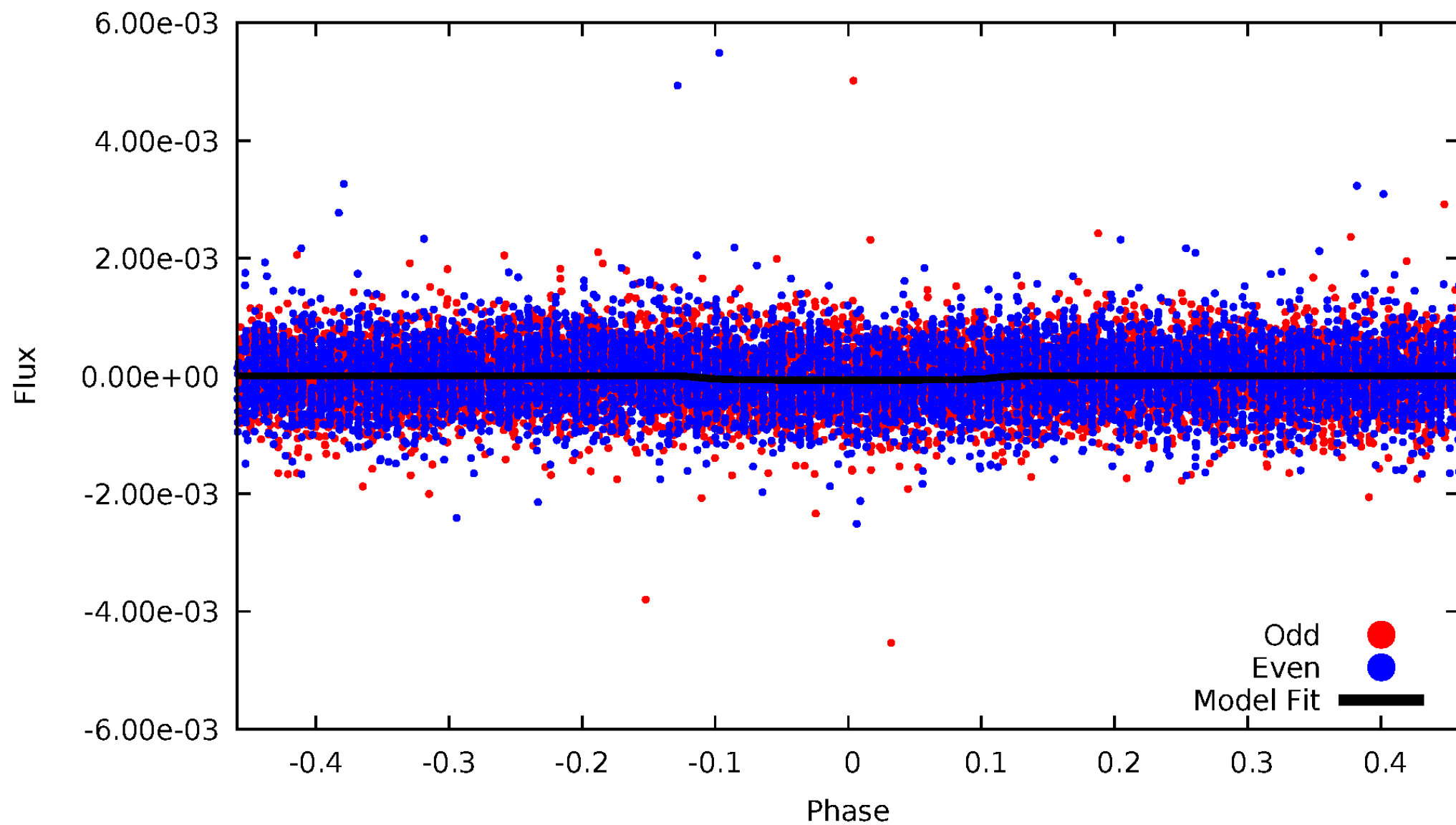


TCE 009415300-02



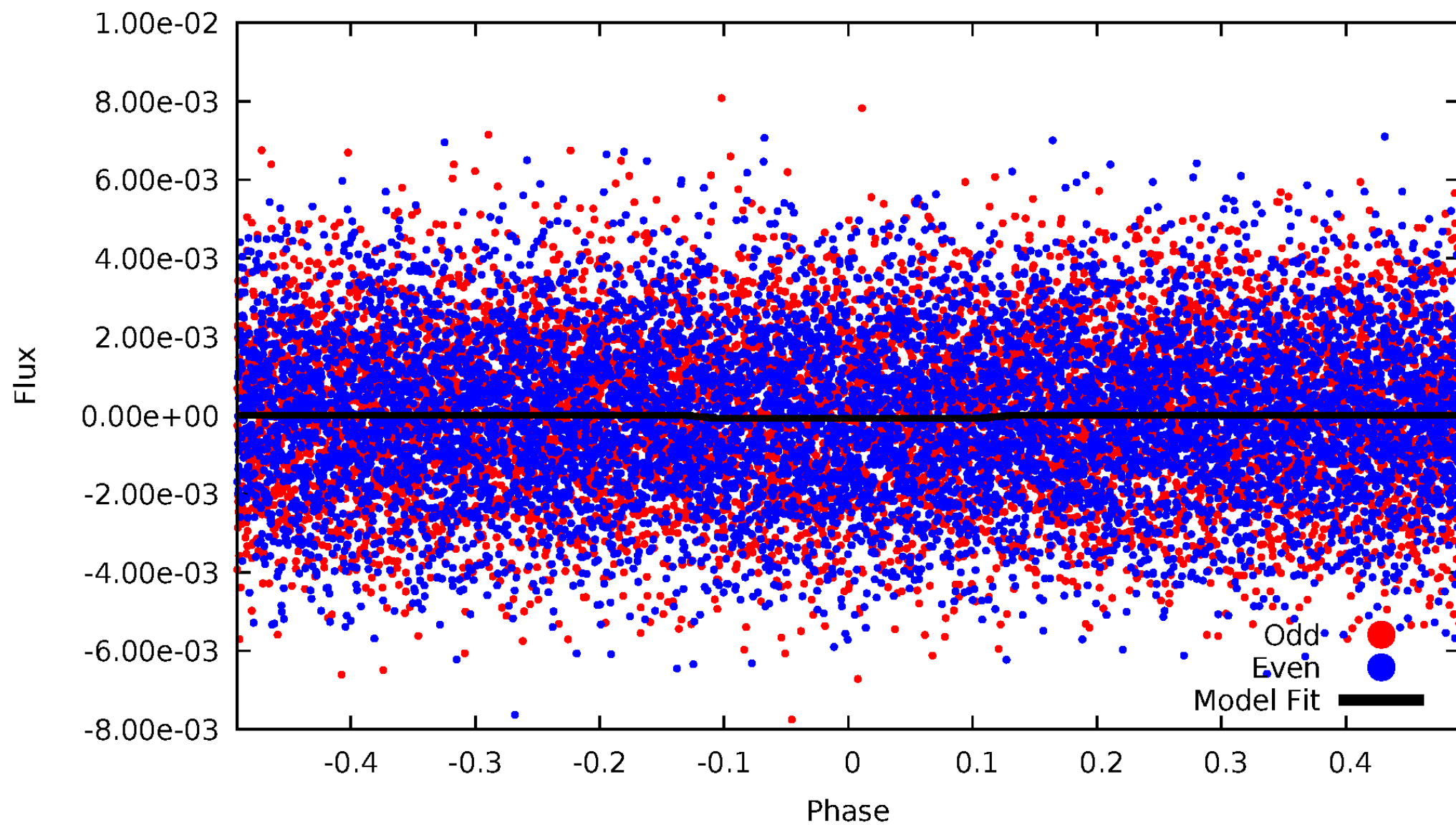
DV Odd/Even

TCE 009415300-02



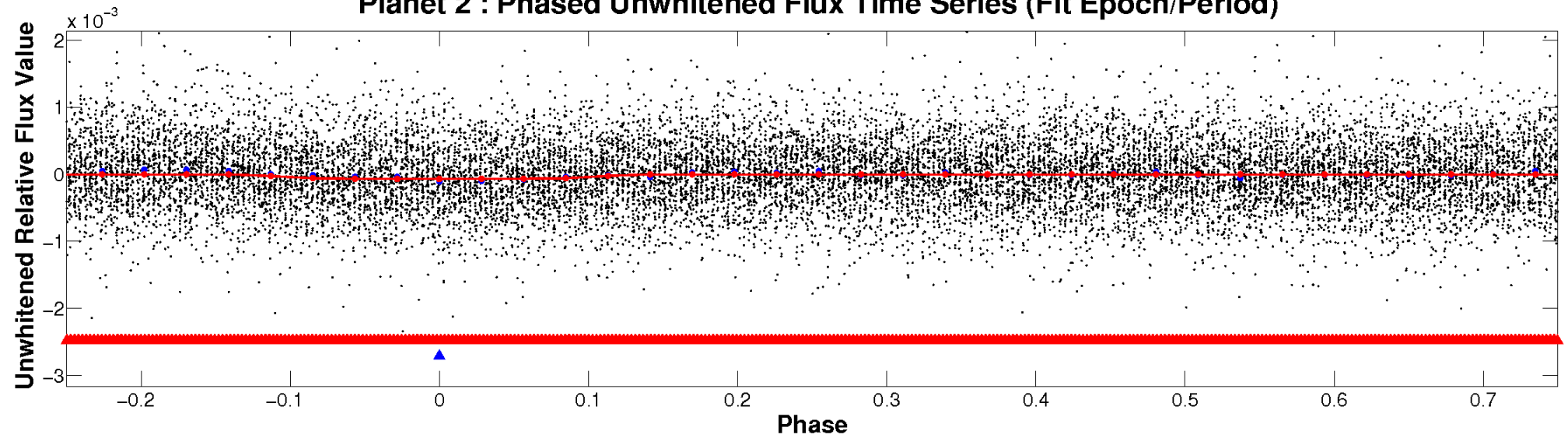
ALT Odd/Even

TCE 009415300-02

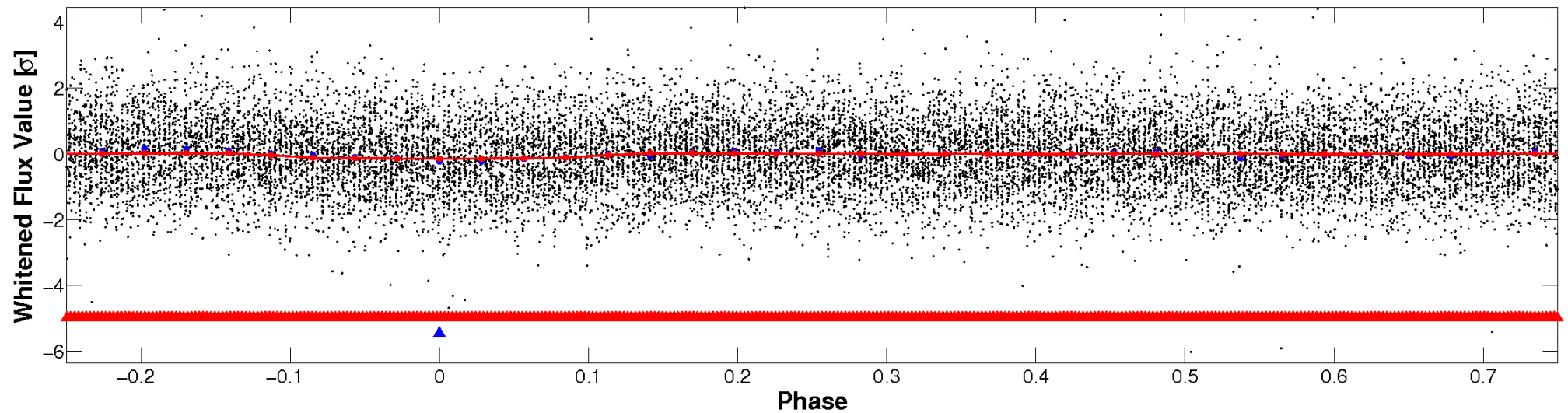


Non-Whitened Vs. Whitened Light Curve

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

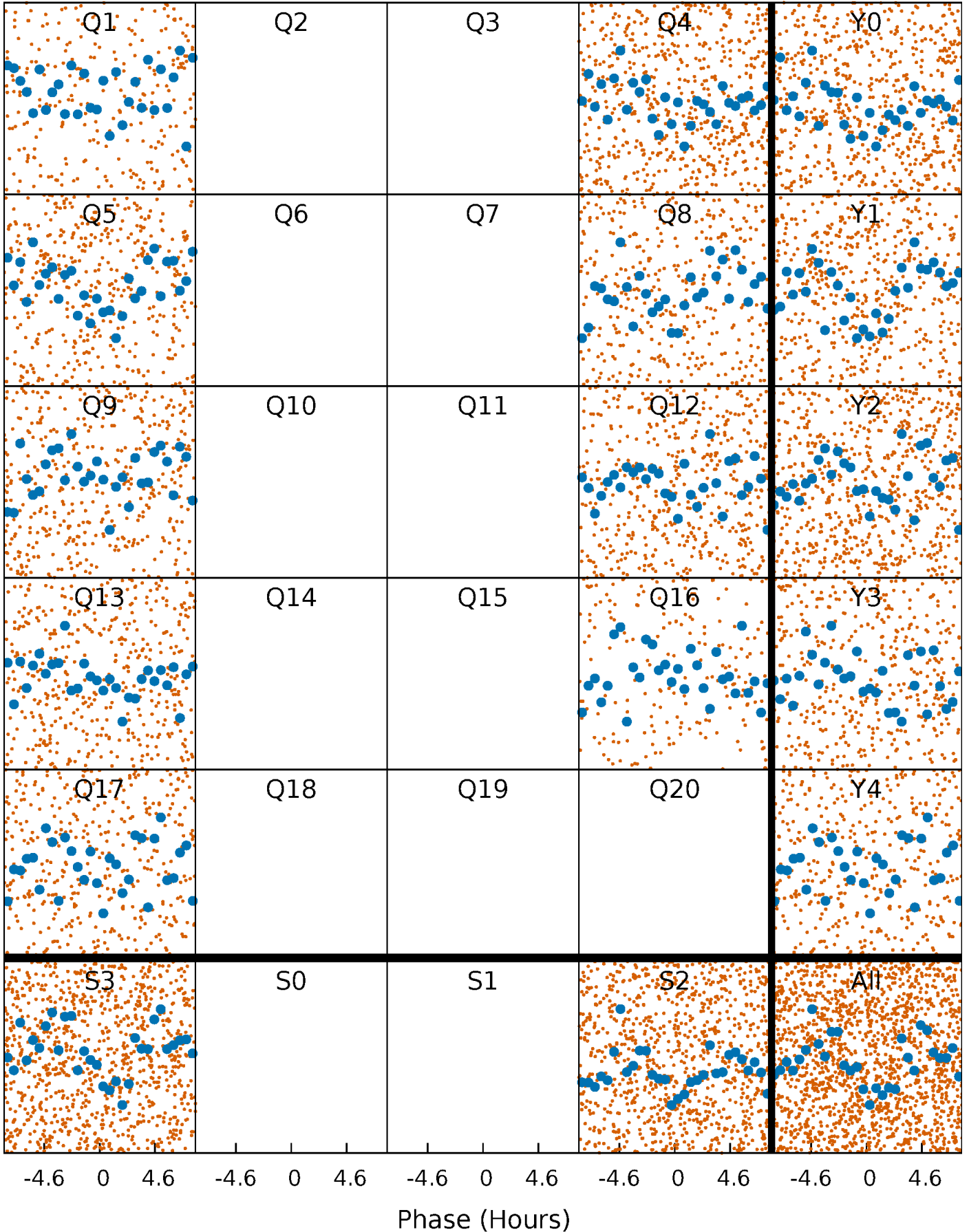


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



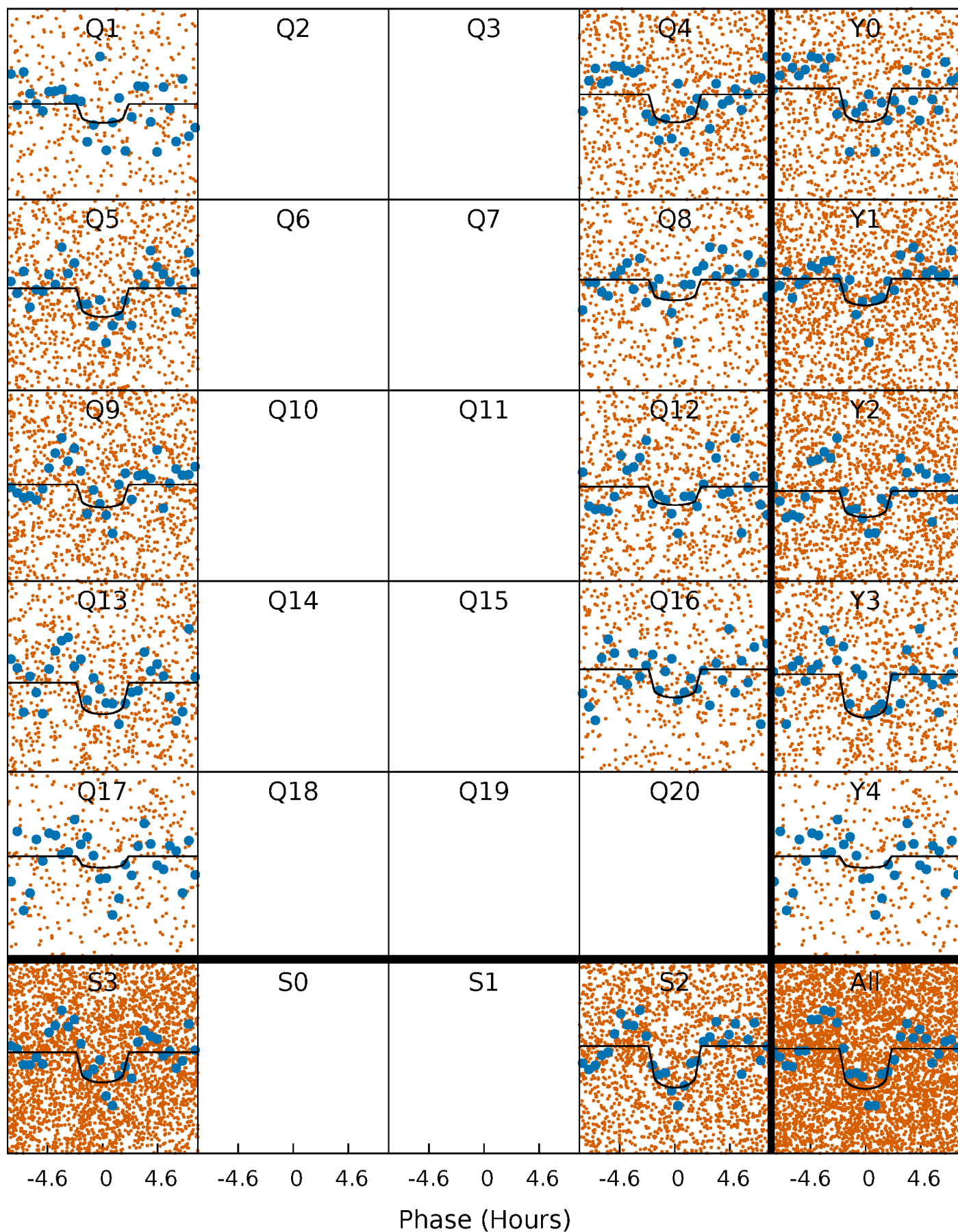
PDC Quarter-Phased Transit Curves

TCE 009415300-02 $P = 0.722858$ Days $T_0 = 131.640245$ (BKJD)



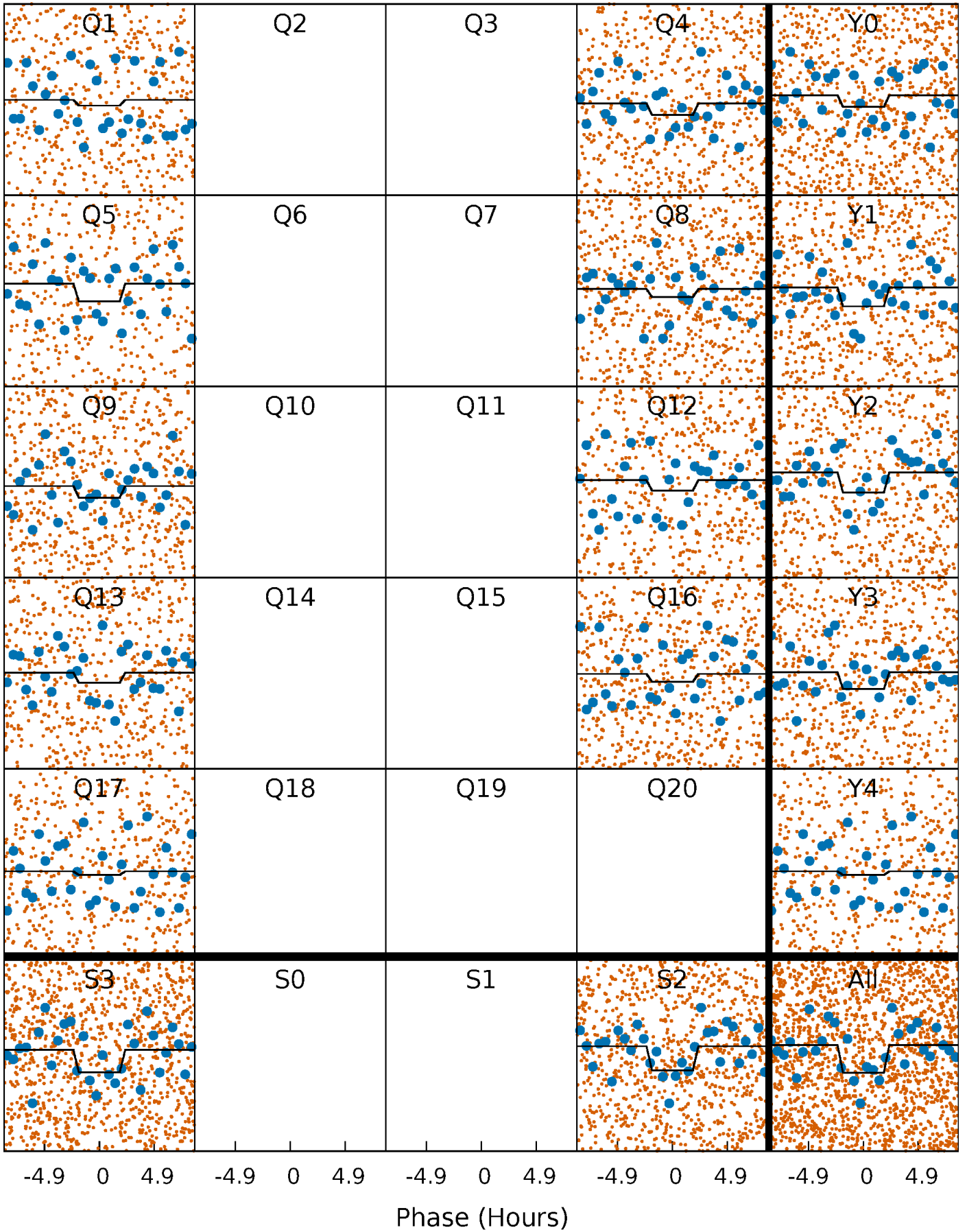
DV Quarter-Phased Transit Curves

TCE 009415300-02 P= 0.722858 Days $T_0=131.640245$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

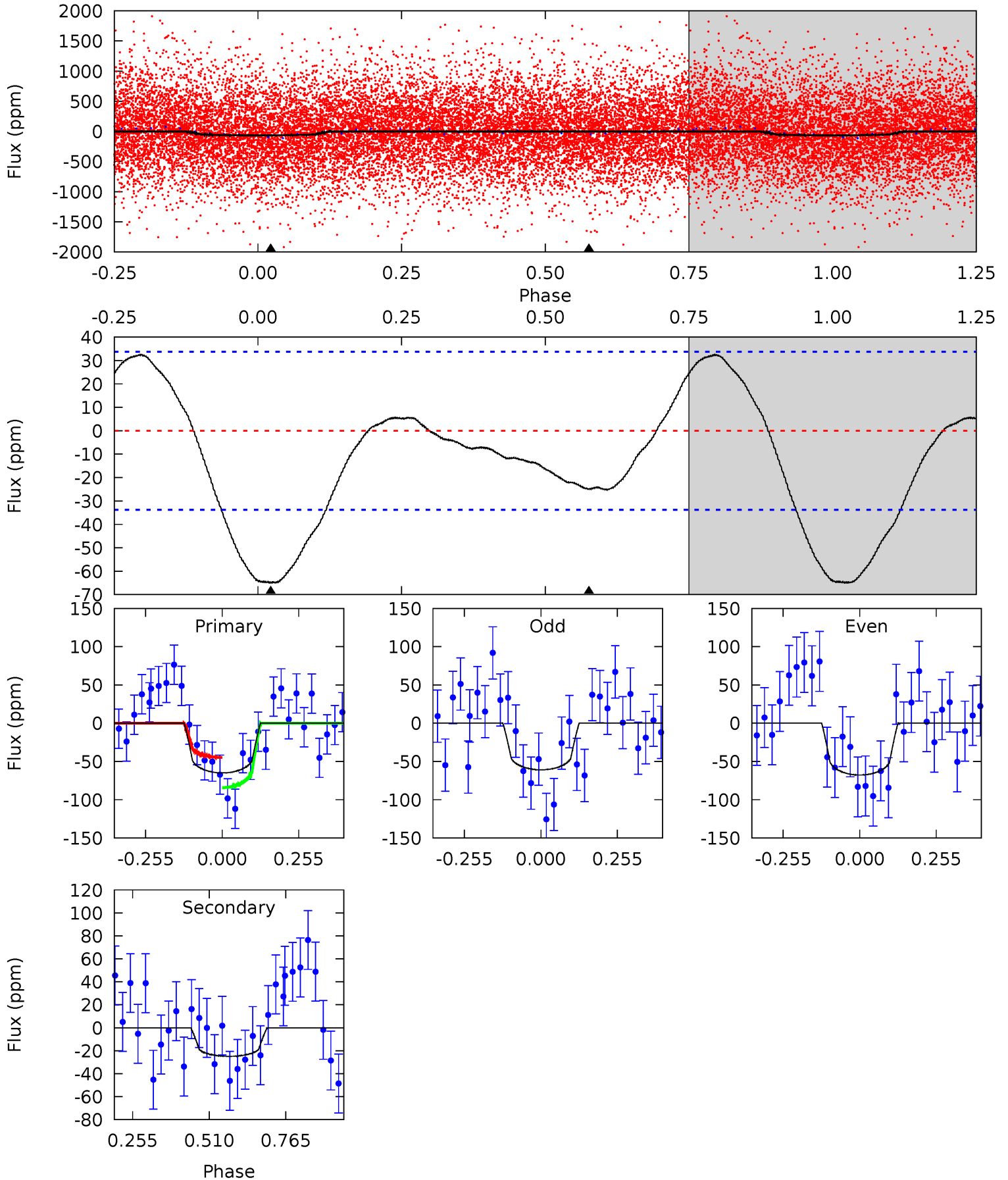
TCE 009415300-02 $P = 0.722874$ Days $T_0 = 131.630290$ (BKJD)



DV Model-Shift Uniqueness Test

009415300-02, P = 0.722858 Days, E = 130.917387 Days

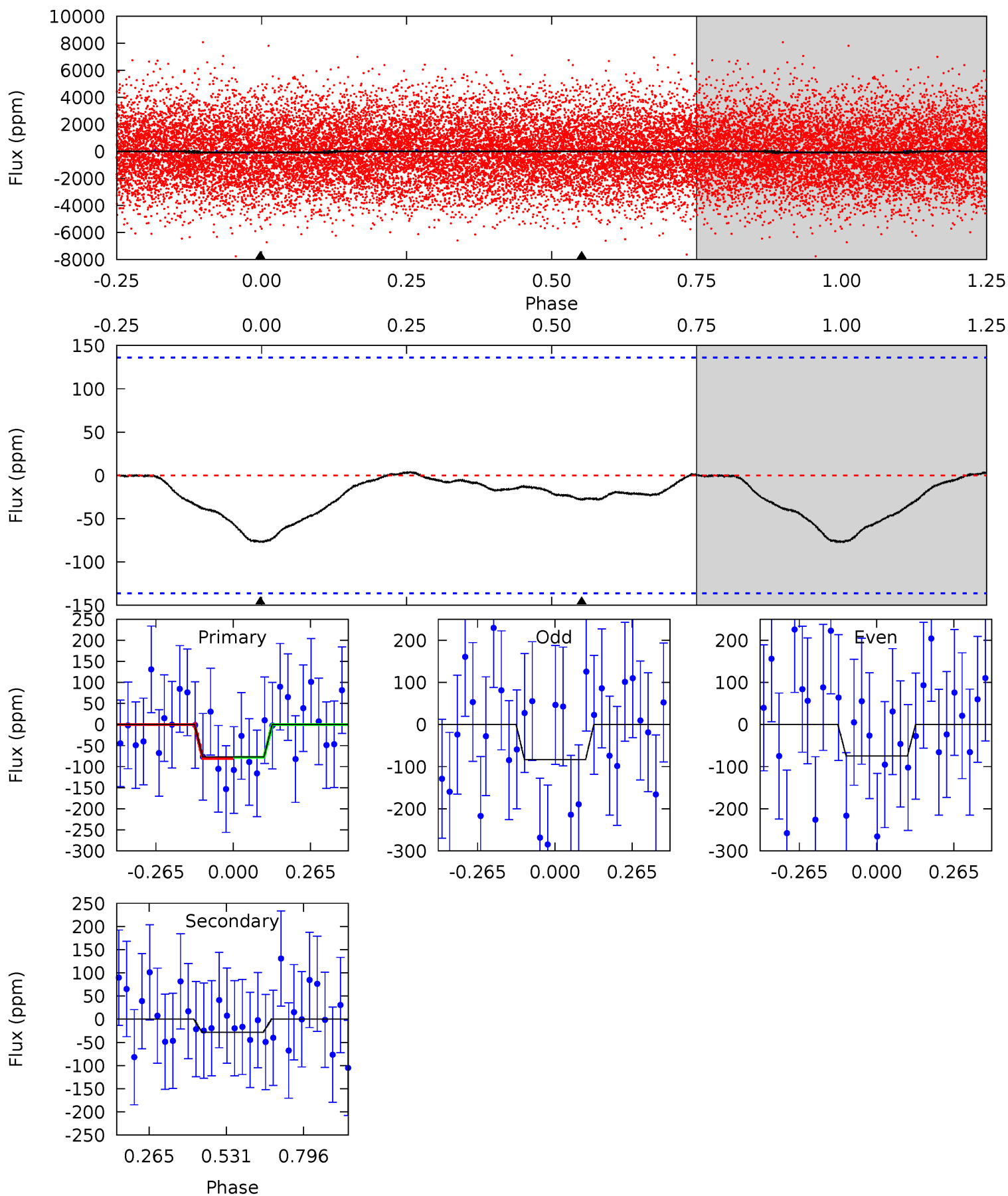
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.40	3.22	0	0	4.36	1.14	0.50	8.40	8.40	3.22	3.22	0.44	1.15	0.33	2.56



Alt Model-Shift Uniqueness Test

009415300-02, P = 0.722874 Days, E = 130.907416 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.46	0.90	0	0	4.36	1.11	0.13	2.46	2.46	0.90	0.90	0.14	0.86	0.05	0.04



Stellar Parameters For KIC 009415300

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7244^{+230}_{-316}	$4.121^{+0.149}_{-0.182}$	$-0.080^{+0.250}_{-0.350}$	$1.770^{+0.563}_{-0.375}$	$1.508^{+0.236}_{-0.236}$	$0.383^{+0.296}_{-0.196}$
	+3%/-4%	+4%/-4%	+312%/-438%	+32%/-21%	+16%/-16%	+77%/-51%
Source	KIC0	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 009415300-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 8	$1.91^{+1.70}_{-1.23}$	4445^{+359}_{-297}	4747^{+4389}_{-2445}	$1.113^{+7.887}_{-0.808}$
Alt.	-28 ± 31	$2.09^{+1.73}_{-1.42}$	4424^{+326}_{-316}	4567^{+4213}_{-8565}	$0.985^{+8.214}_{-1.015}$

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

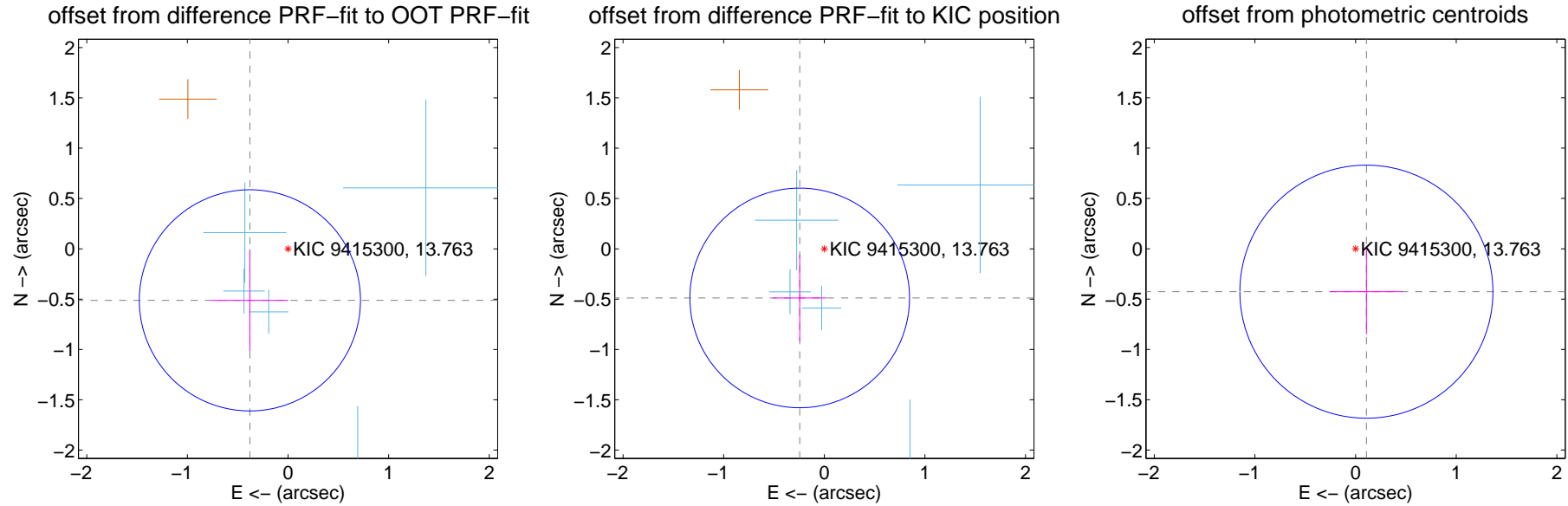
DV Centroid Data

Supplemental centroid analysis for 009415300-02. Kepler magnitude: 13.76. Transit SNR 7.48

There are 5 quarters with good PRF difference image offsets

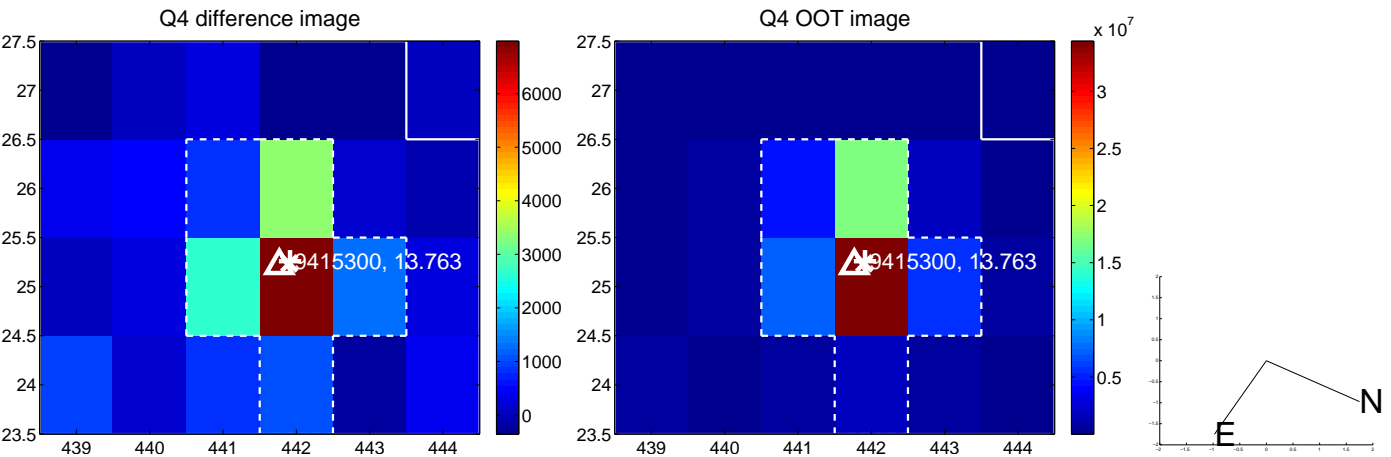
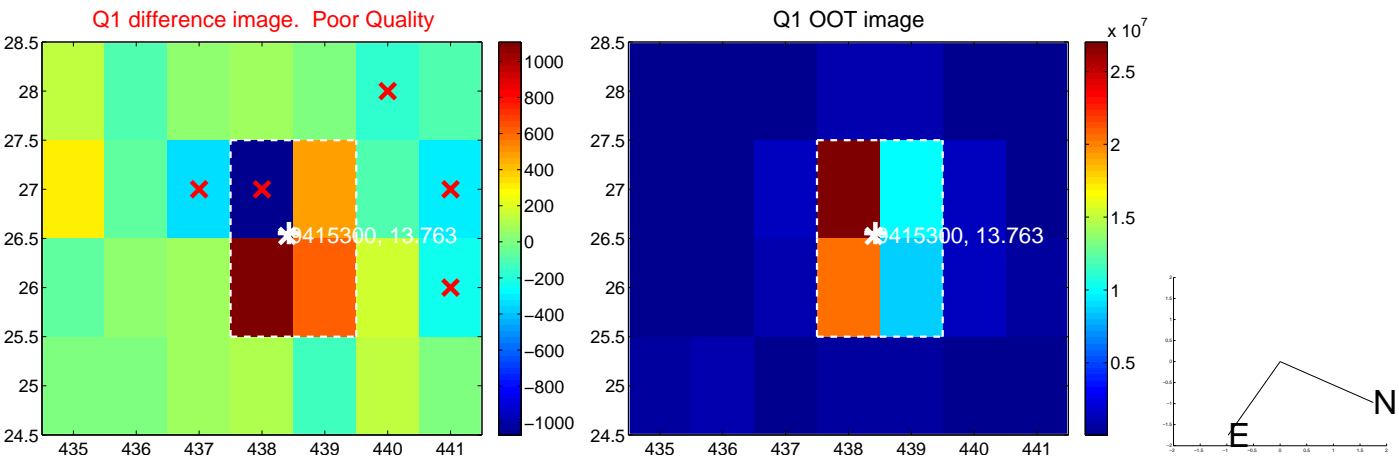
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.637 ± 0.366	1.74	0.379 ± 0.381	-0.512 ± 0.505
PRF-fit source offset from KIC position	0.546 ± 0.364	1.50	0.244 ± 0.267	-0.488 ± 0.430
photometric centroid source offset	0.44 ± 0.42	1.05	-0.11 ± 0.36	-0.43 ± 0.42

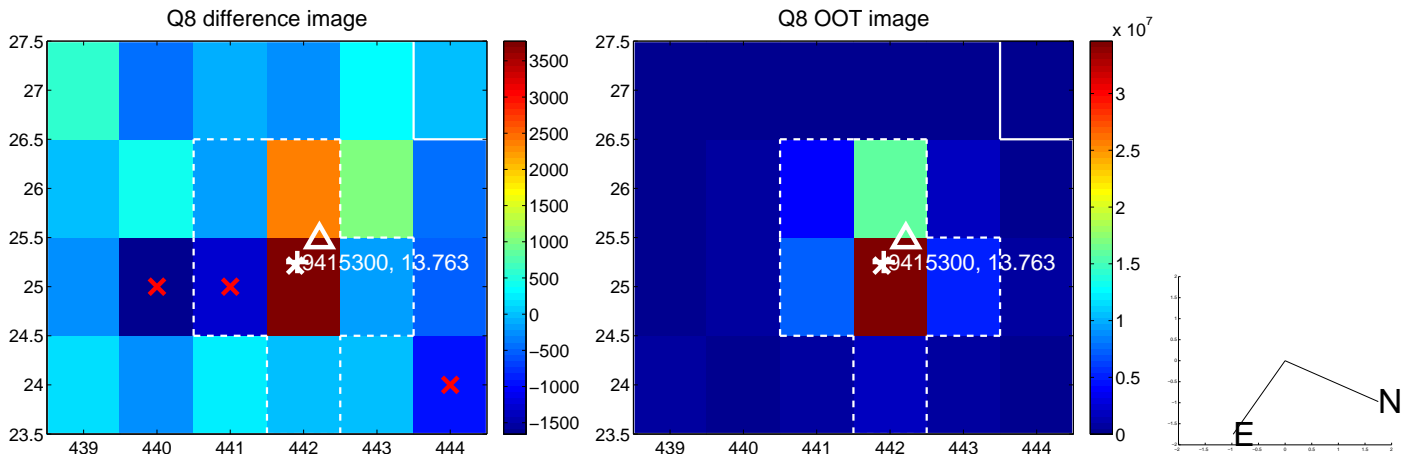
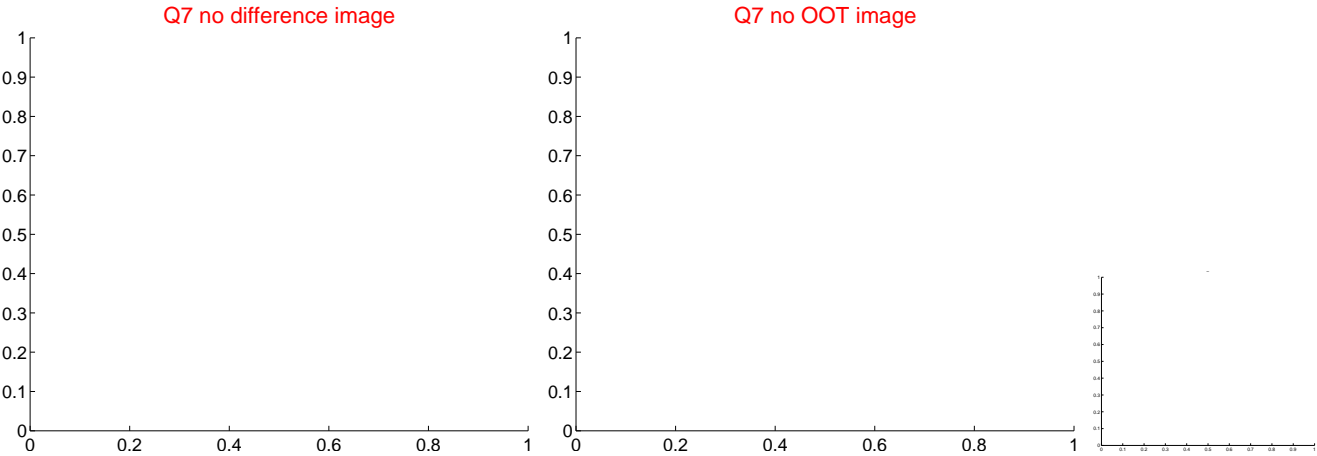
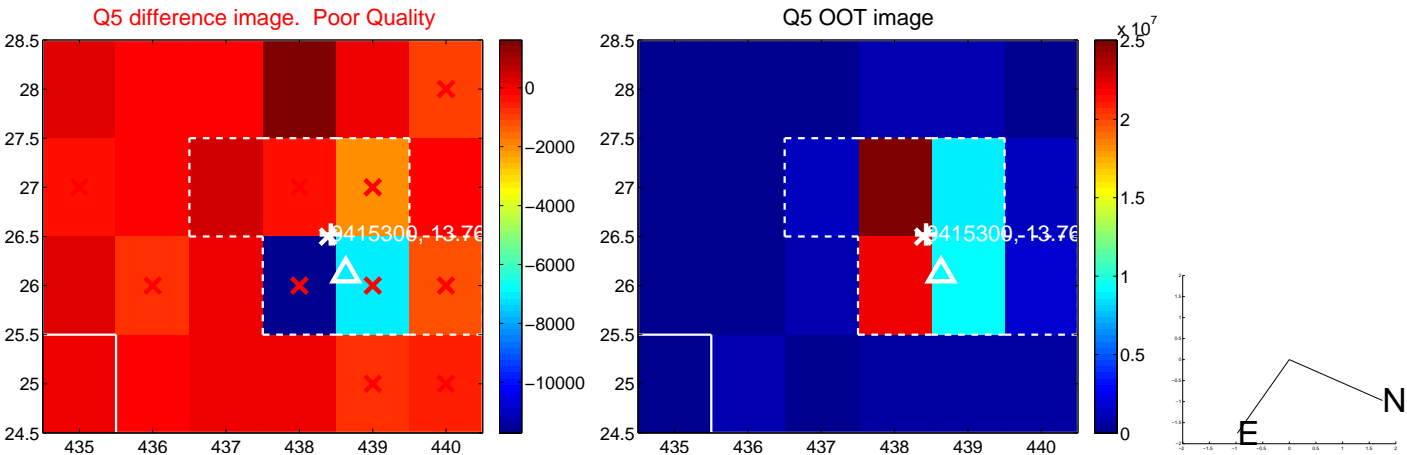


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

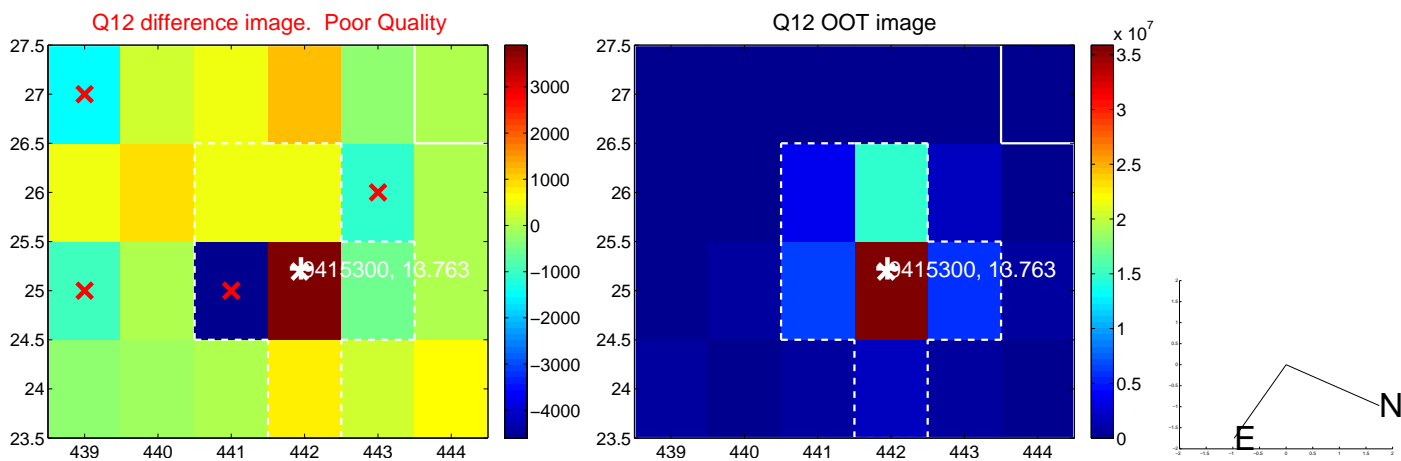
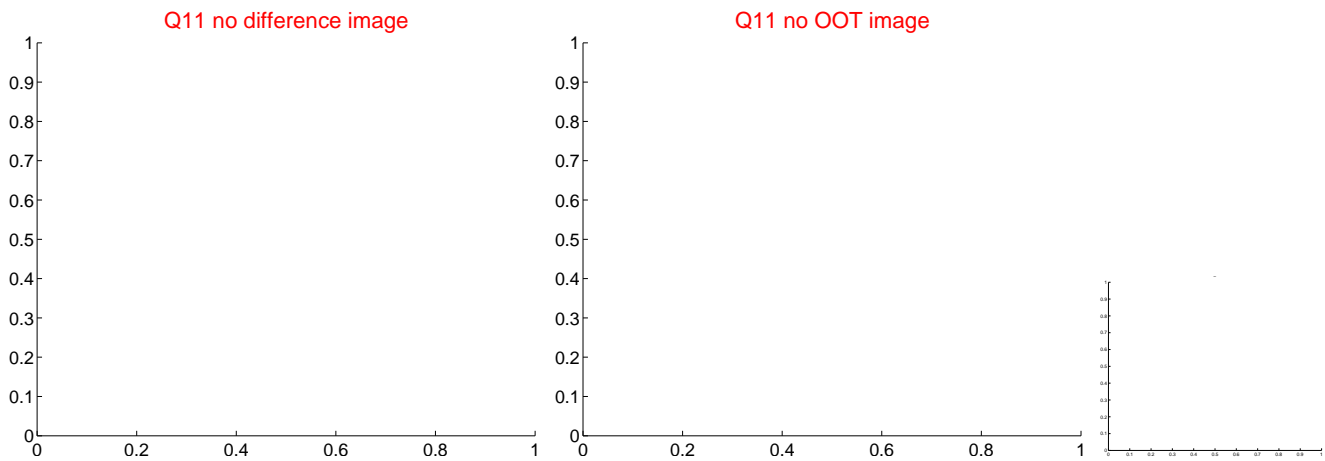
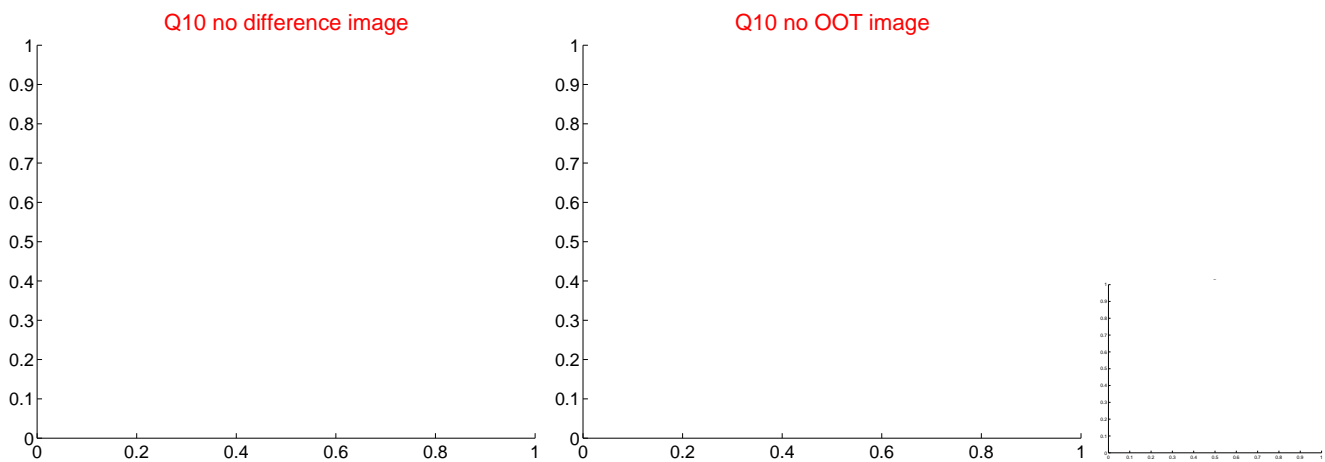
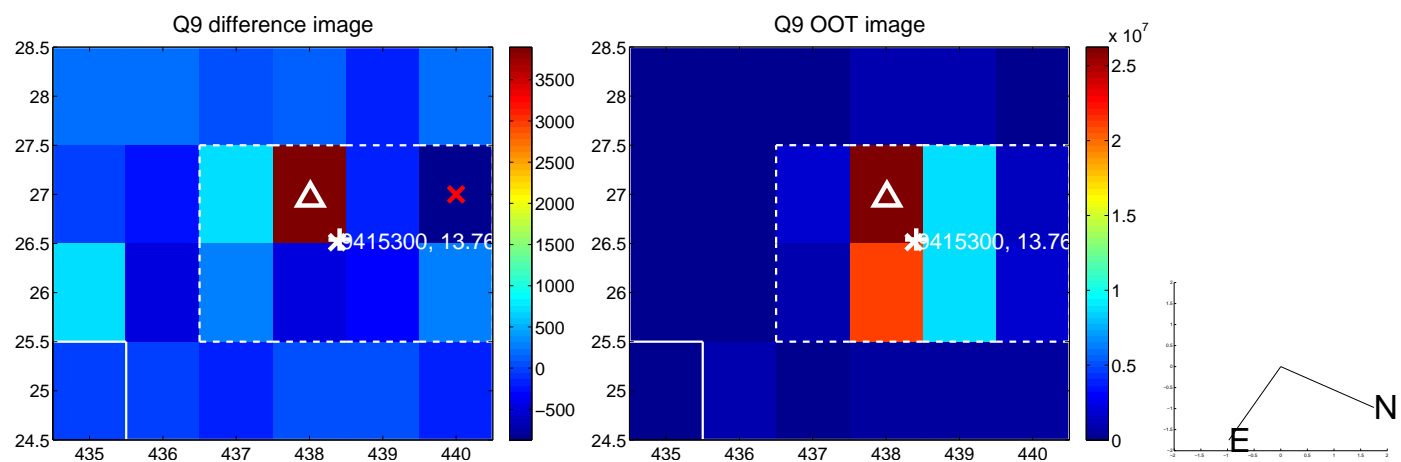
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



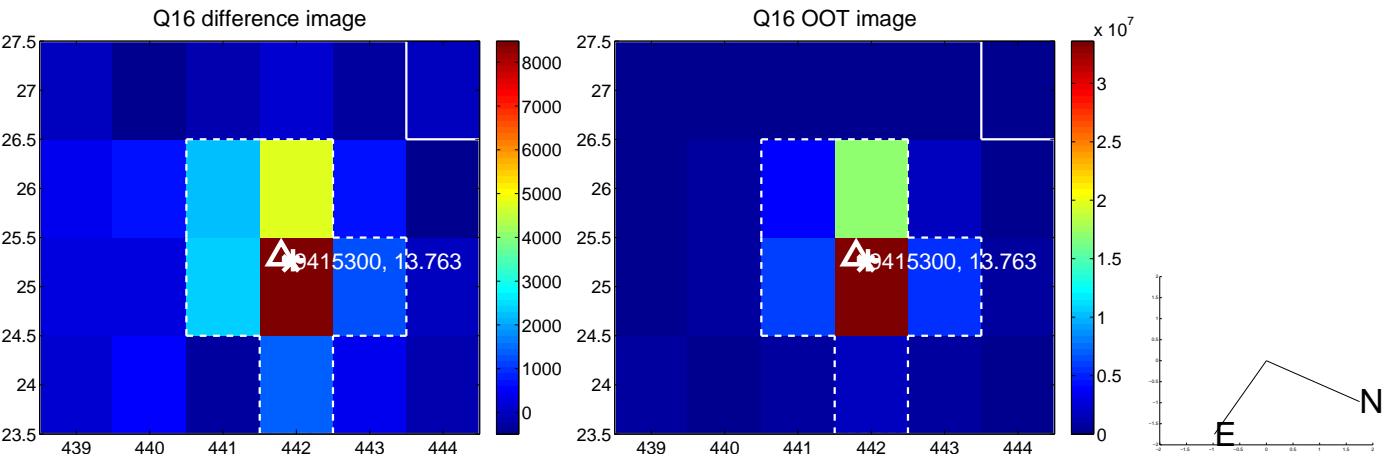
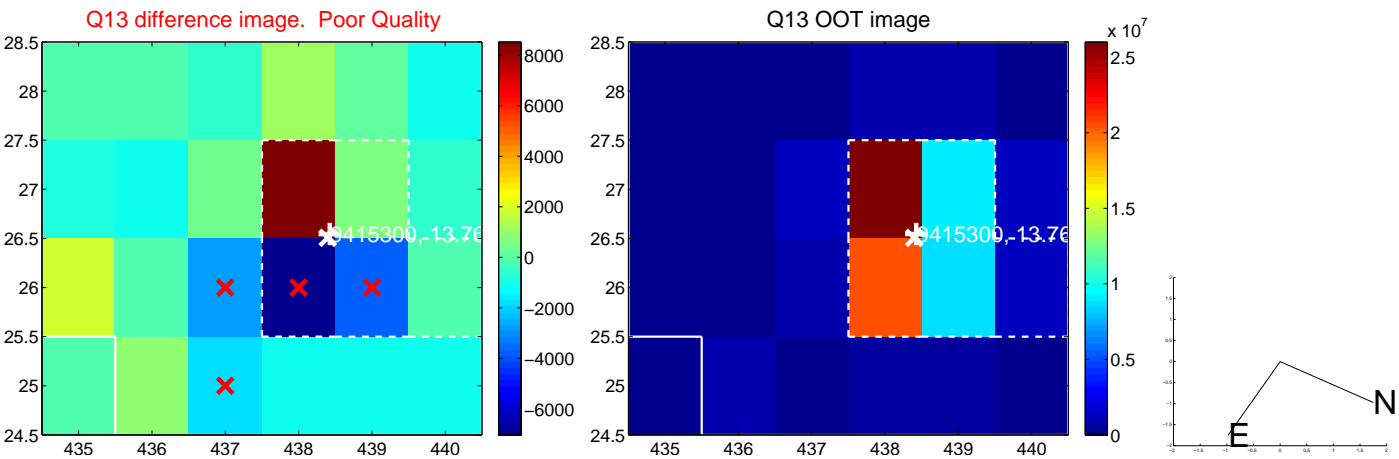
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



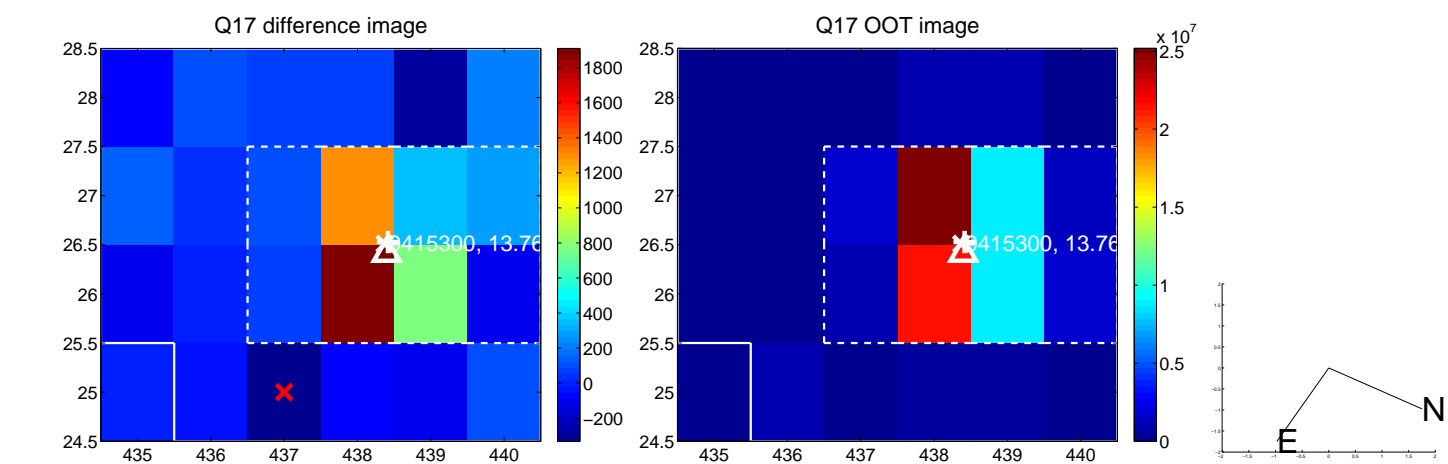
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



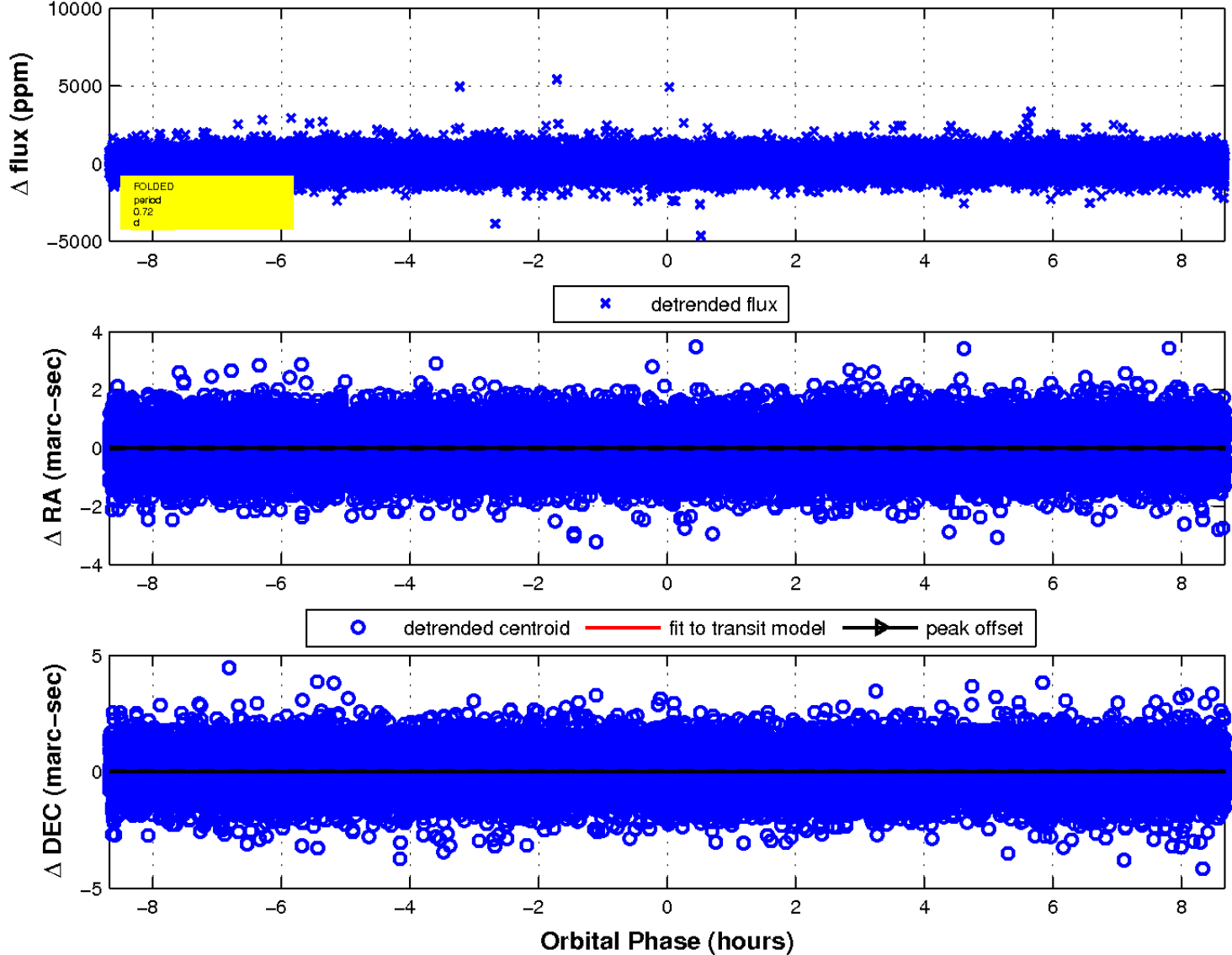
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

