

KIC 009761615

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})
009761615-01	OBS	3911.01	1.791075	131.968164	135.1	2.424	22.4	25.8	1.00	6040	1.37	1363.33
009761615-02	OBS	No	379.237179	509.410027	831.2	35.934	7.8	8.1	1.00	6040	3.40	1.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009761615-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009761615-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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.

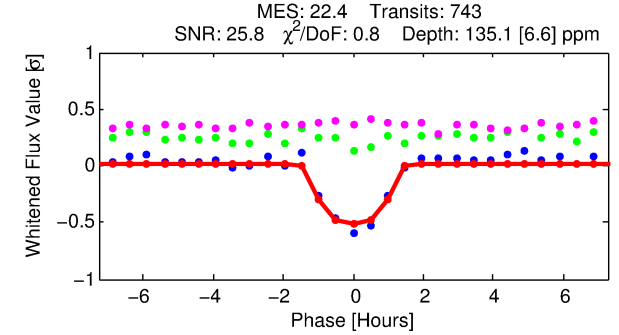
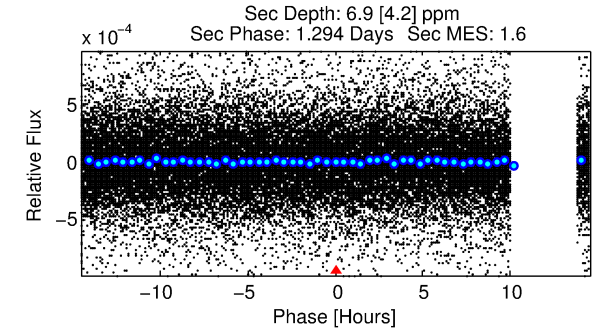
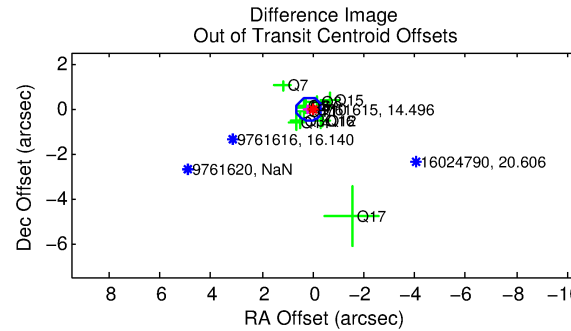
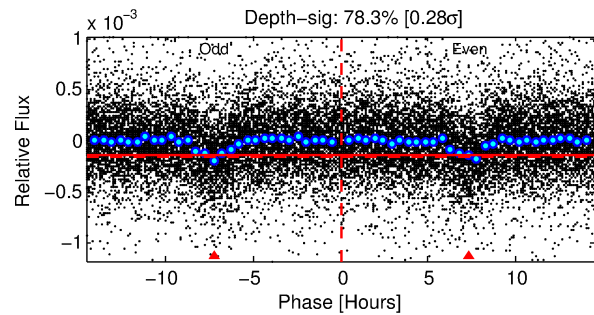
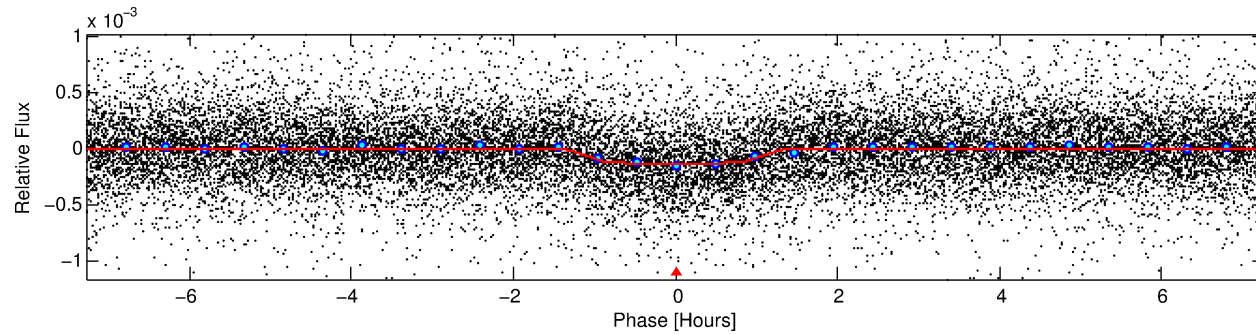
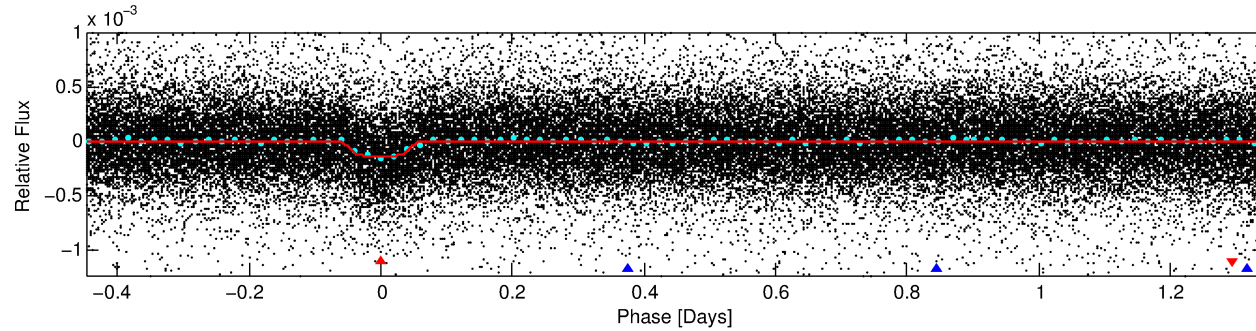
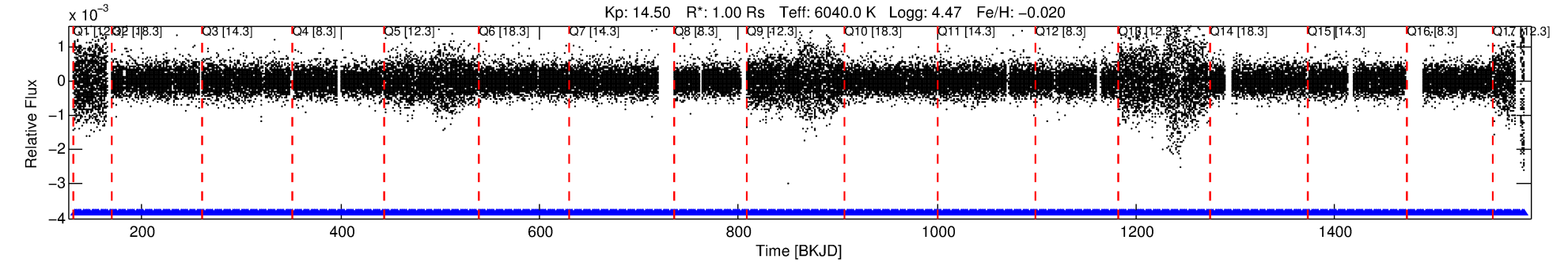
Ephemeris Match Information For 009761615-01

No Significant Match Found

DV One-Page Summary

KIC: 9761615 Candidate: 1 of 2 Period: 1.791 d

KOI: K03911.01 Corr: 0.902



DV Fit Results:

Period = 1.79107 [0.00001] d
Epoch = 131.9682 [0.0014] BKJD
Rp/R* = 0.0126 [0.0035]
a/R* = 2.76 [3.41]
b = 0.90 [0.30]
Seff = 1363.33 [565.97]
Teff = 1549 [161] K
Rp = 1.37 [0.58] Re
a = 0.0295 [0.0080] AU
Ag = 1.76 [1.61] [0.47 σ]
Teffp = 2760 [577] K [2.02 σ]

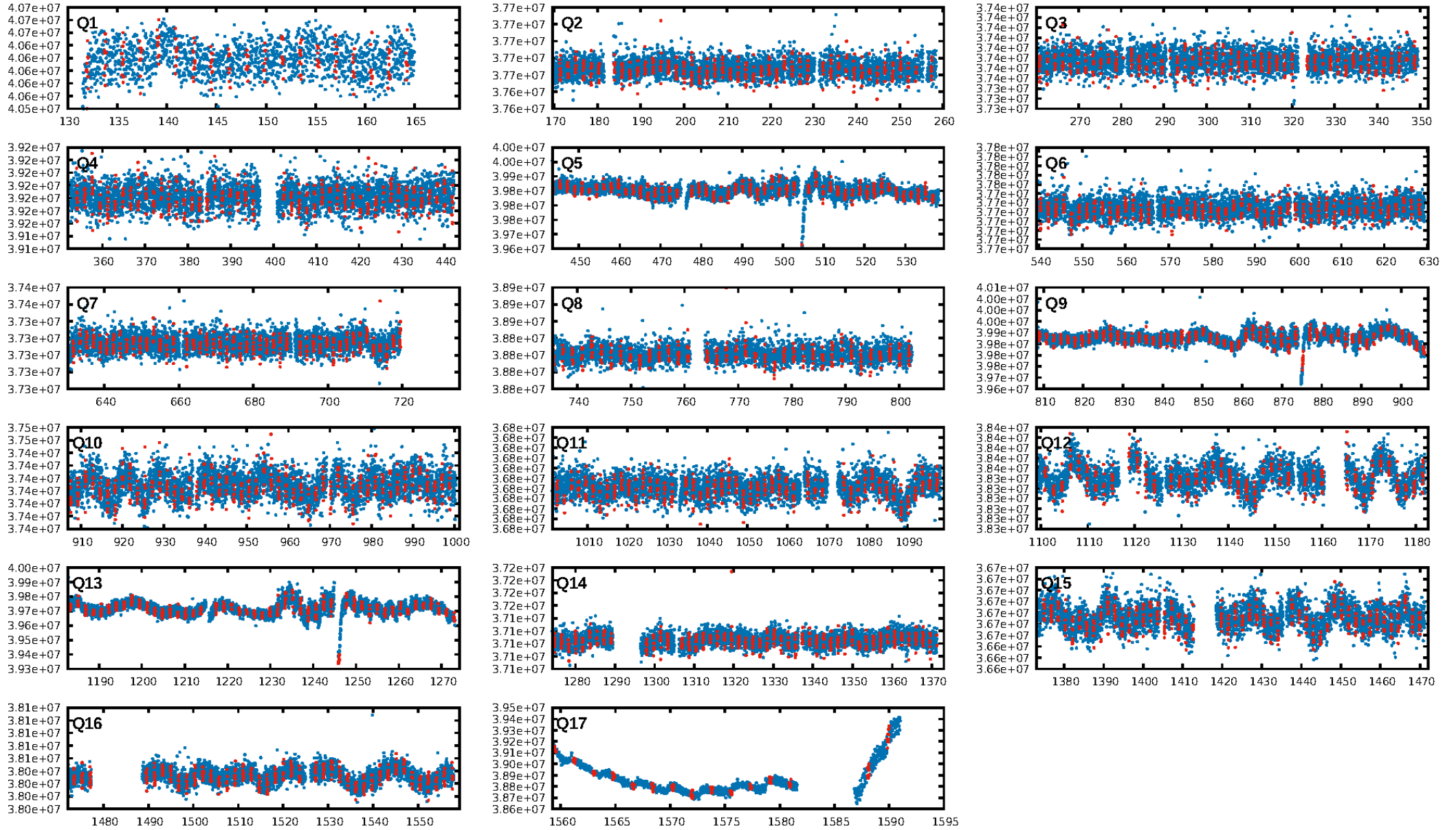
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [251.52 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.36e-107
RollingBand-fgt: 1.00 [709/709]
GhostDiagnostic-chr: 5.744
Centroid-sig: 10.9%
Centroid-so: 0.765 arcsec [1.45 σ]
OotOffset-rm: 0.167 arcsec [0.99 σ]
KicOffset-rm: 0.213 arcsec [0.97 σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 1.00 [17/17]

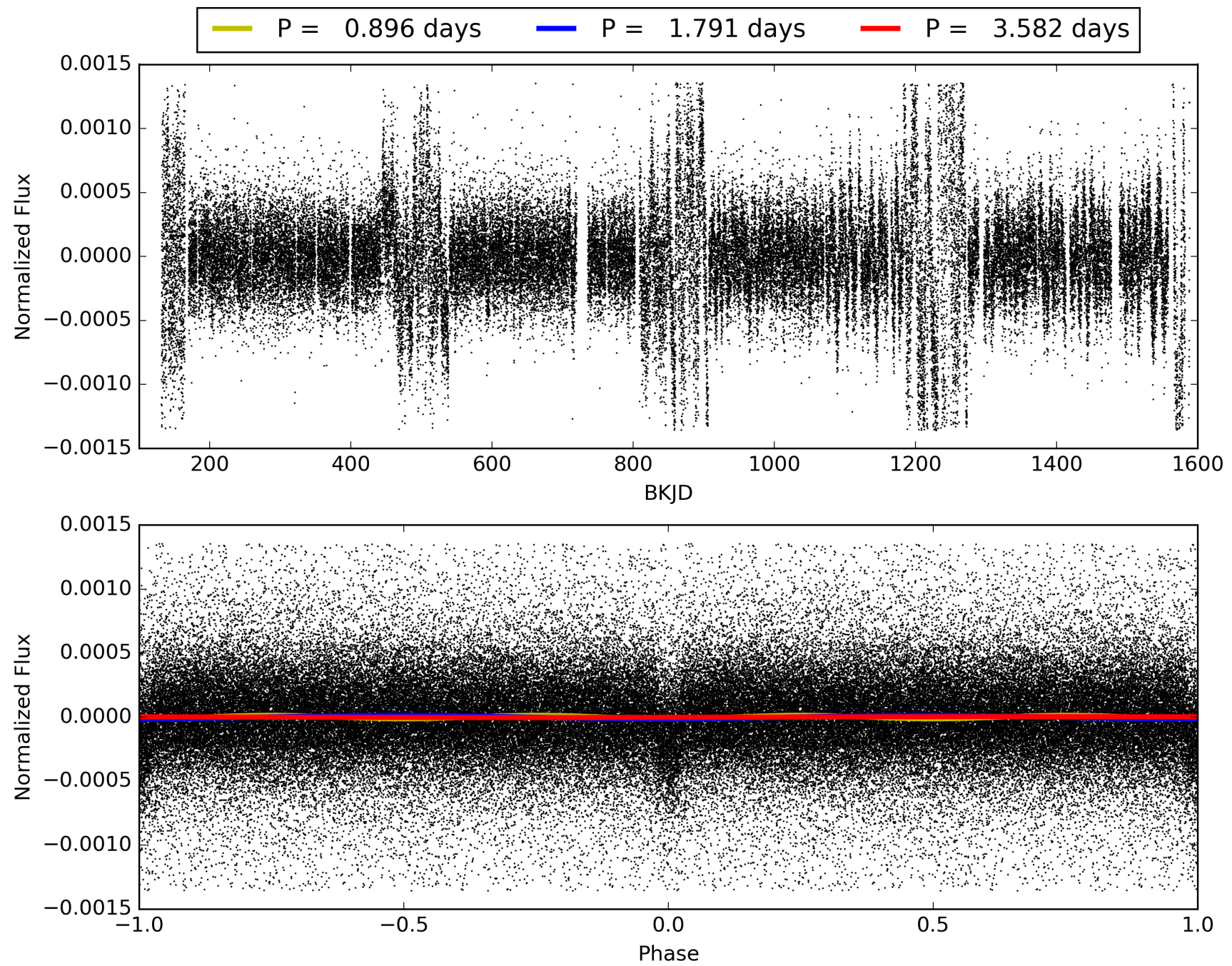
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:27:55 Z

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

TCE 009761615-01, PDC Light Curves

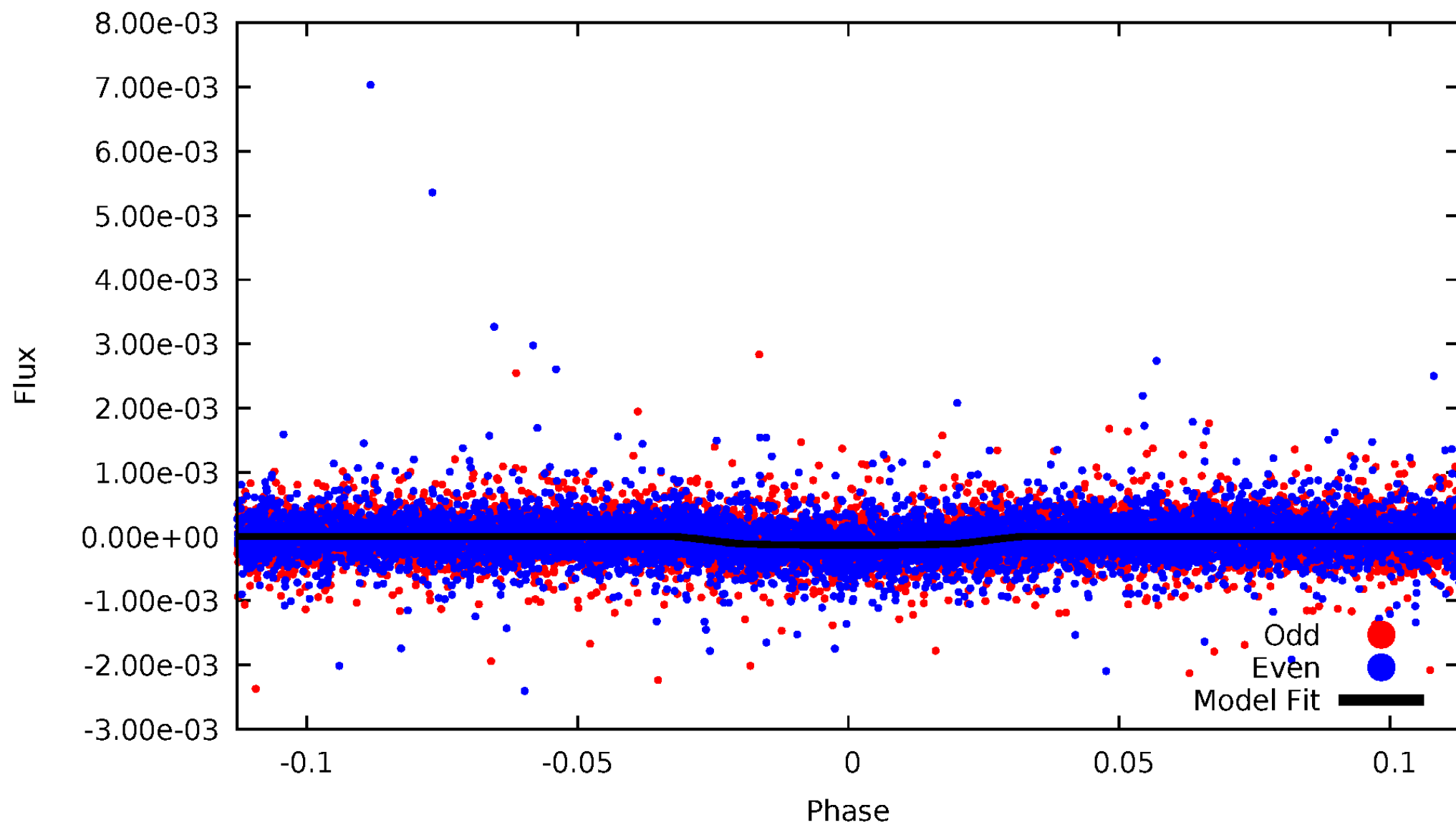


TCE 009761615-01



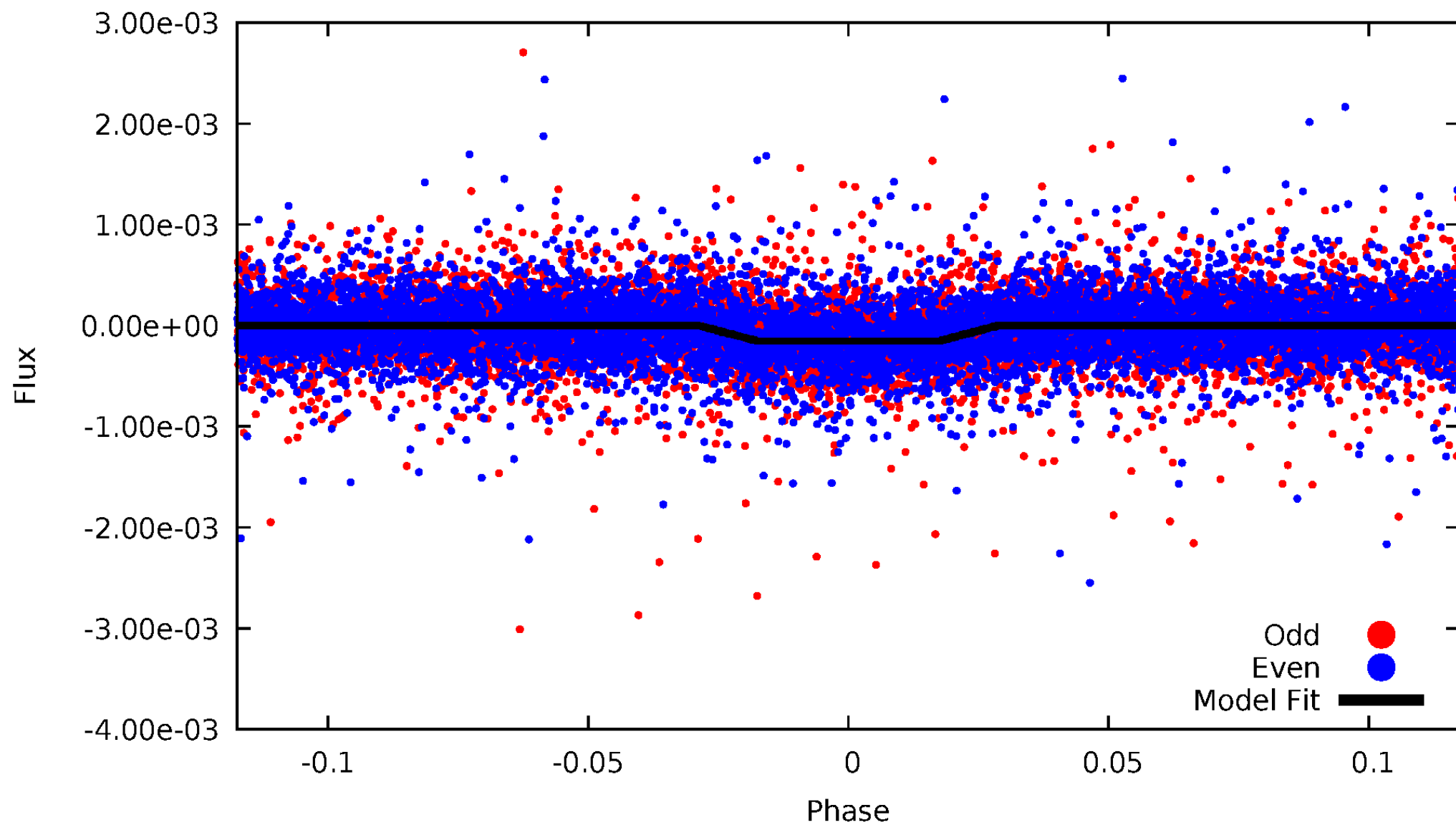
DV Odd/Even

TCE 009761615-01



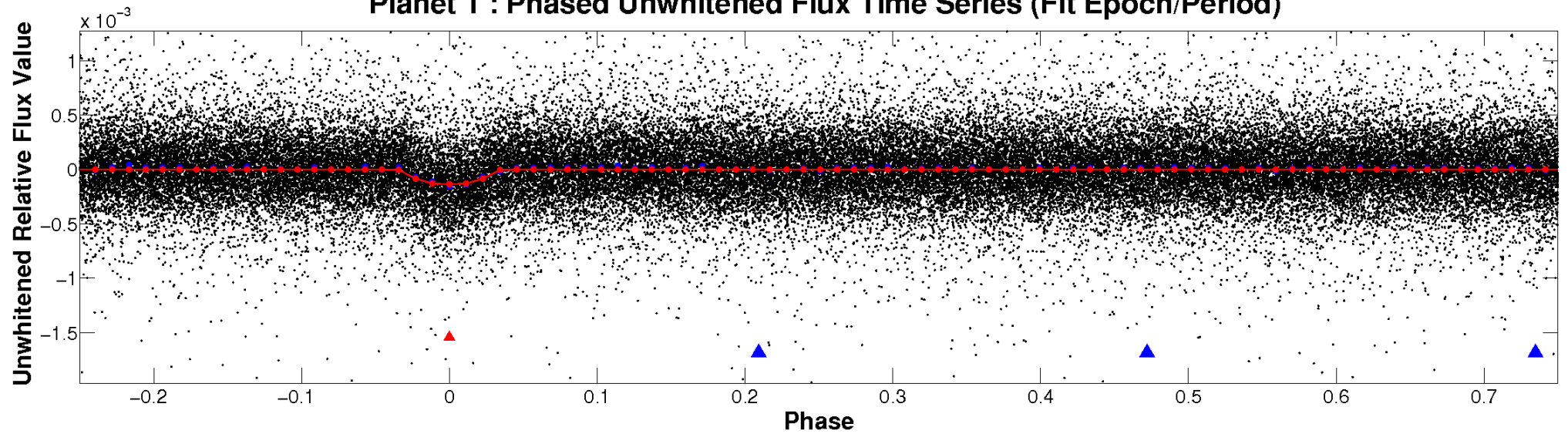
ALT Odd/Even

TCE 009761615-01

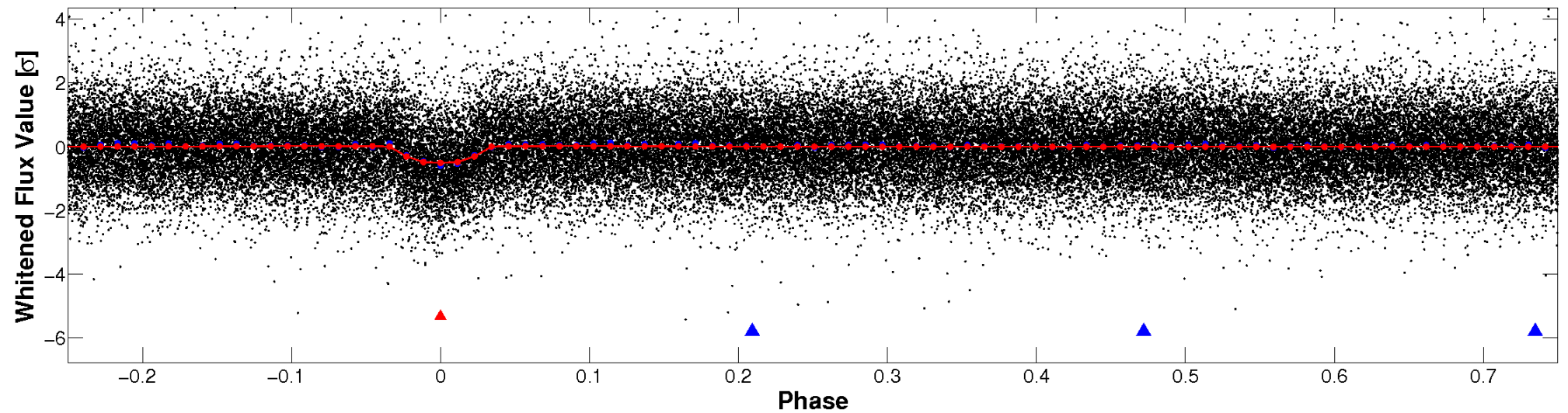


Non-Whitened Vs. Whitened Light Curve

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

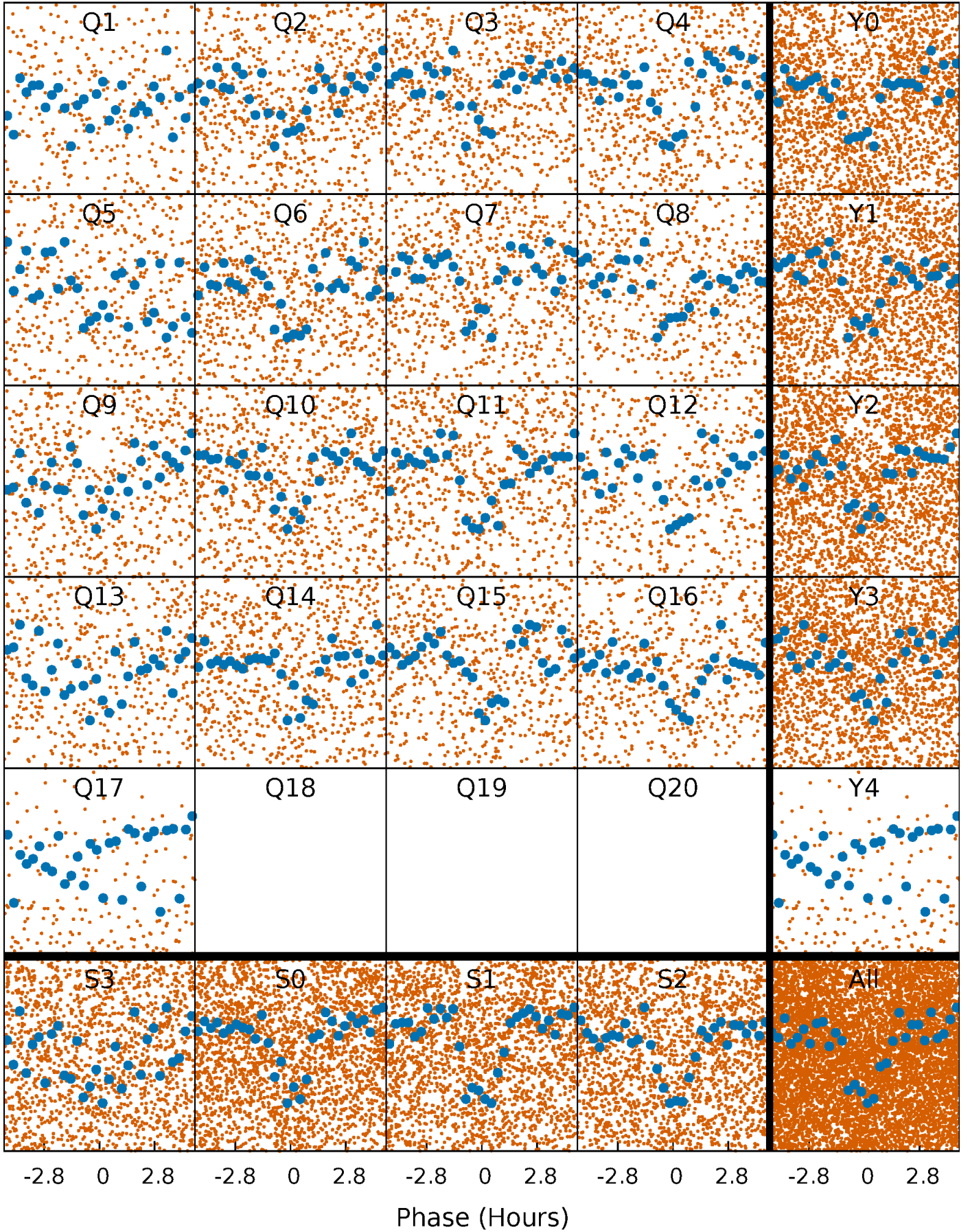


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



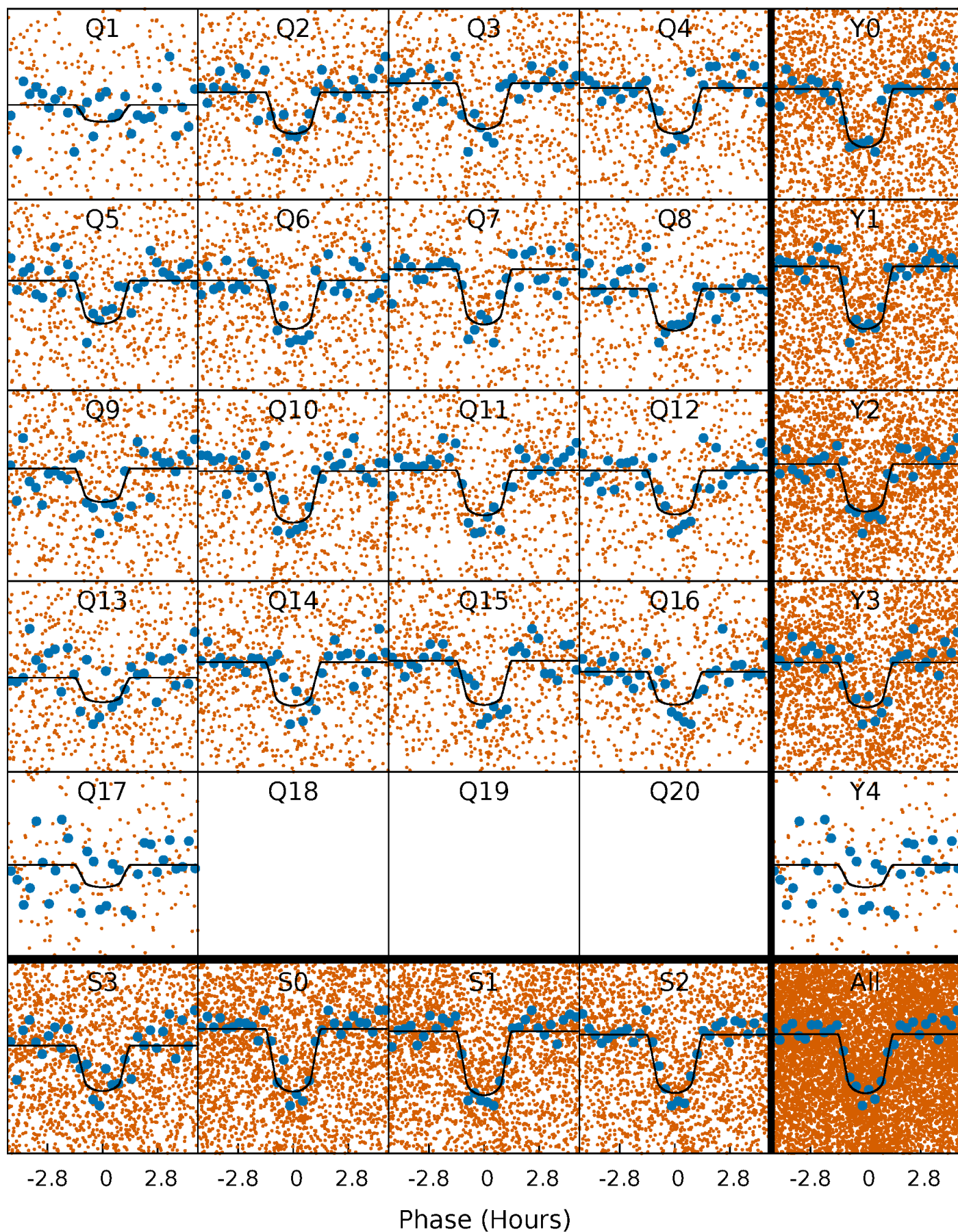
PDC Quarter-Phased Transit Curves

TCE 009761615-01 P= 1.791075 Days $T_0=131.968164$ (BKJD)



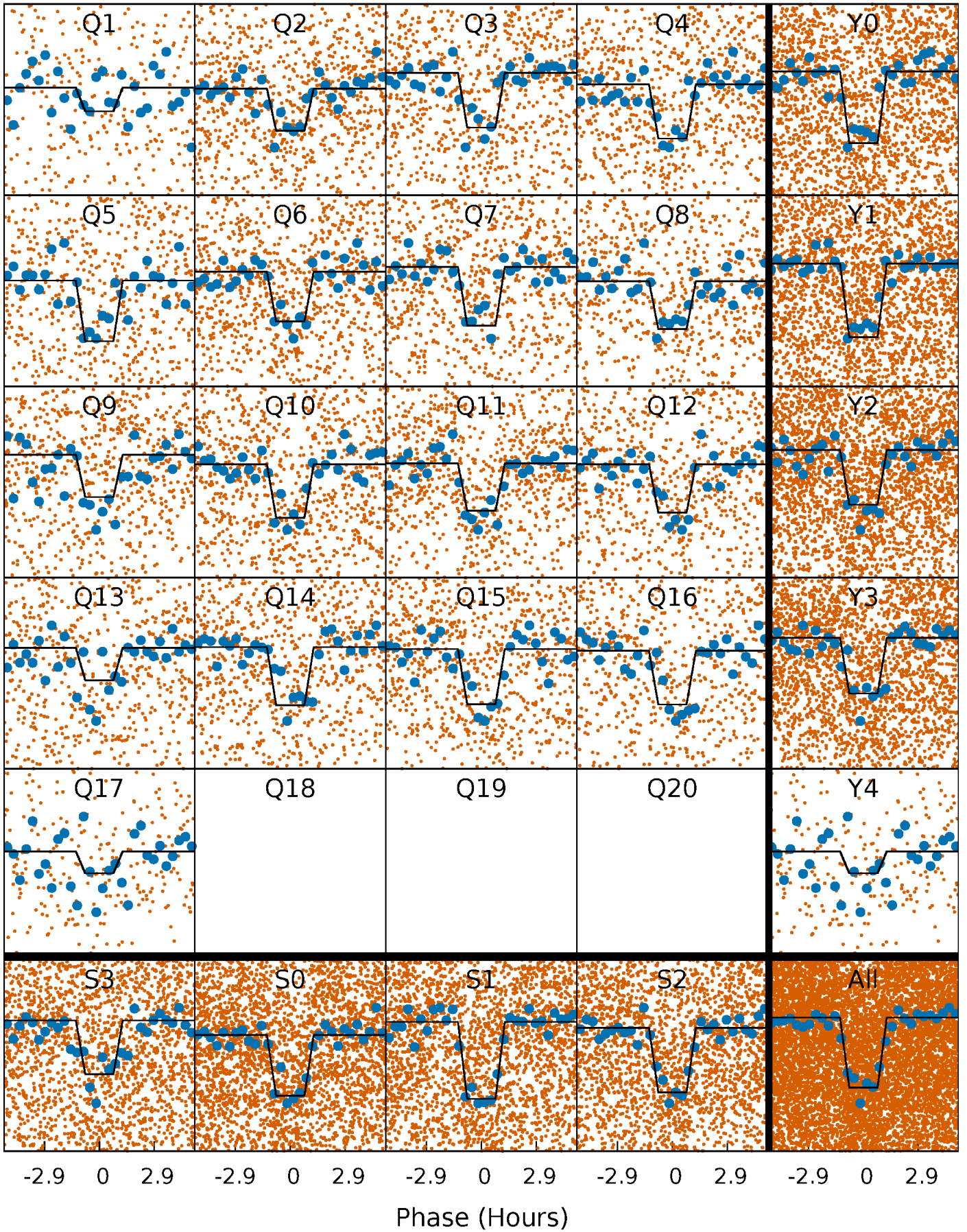
DV Quarter-Phased Transit Curves

TCE 009761615-01 P= 1.791075 Days $T_0=131.968164$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

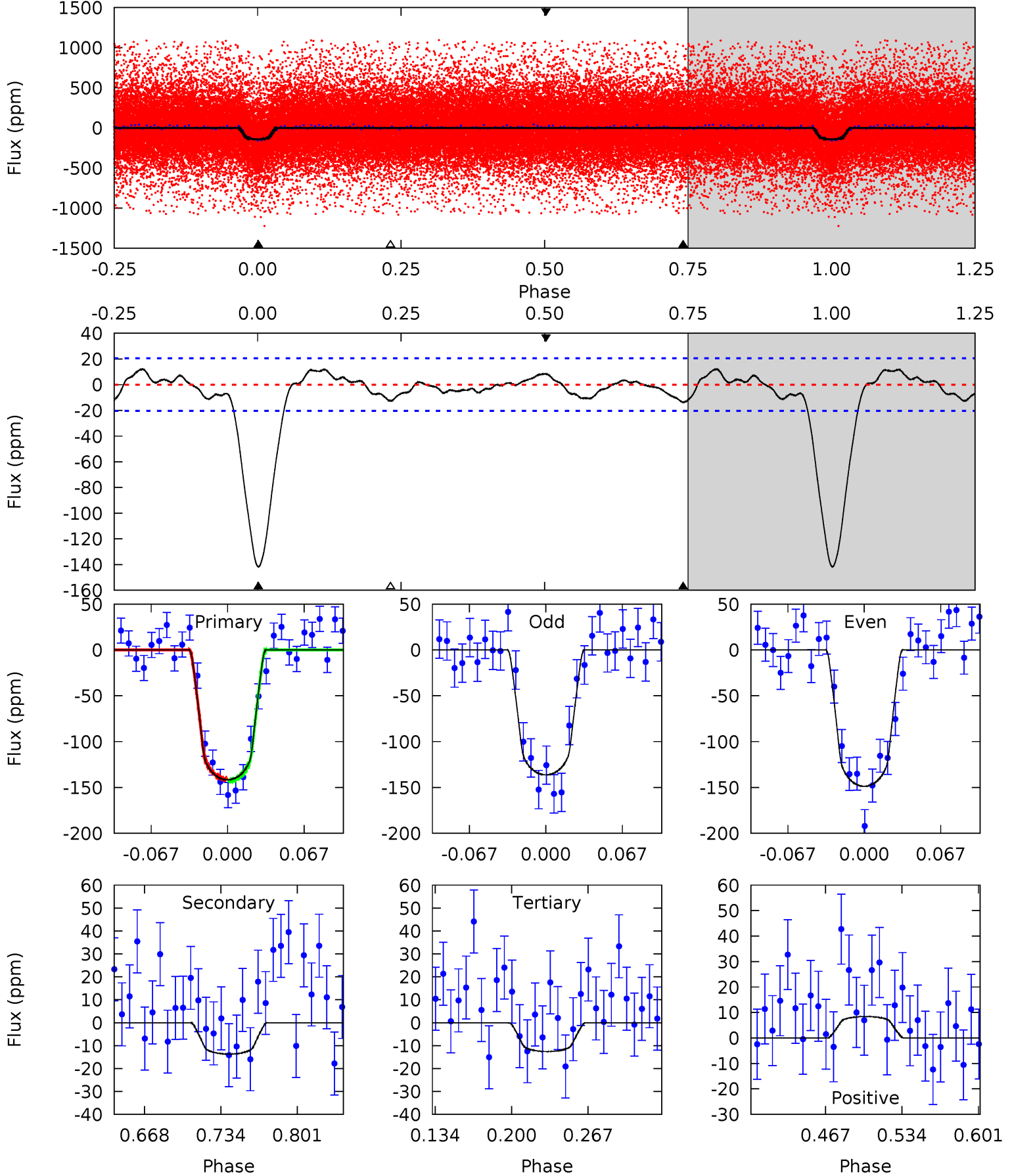
TCE 009761615-01 P= 1.791079 Days $T_0=131.967826$ (BKJD)



DV Model-Shift Uniqueness Test

009761615-01, P = 1.791075 Days, E = 130.177089 Days

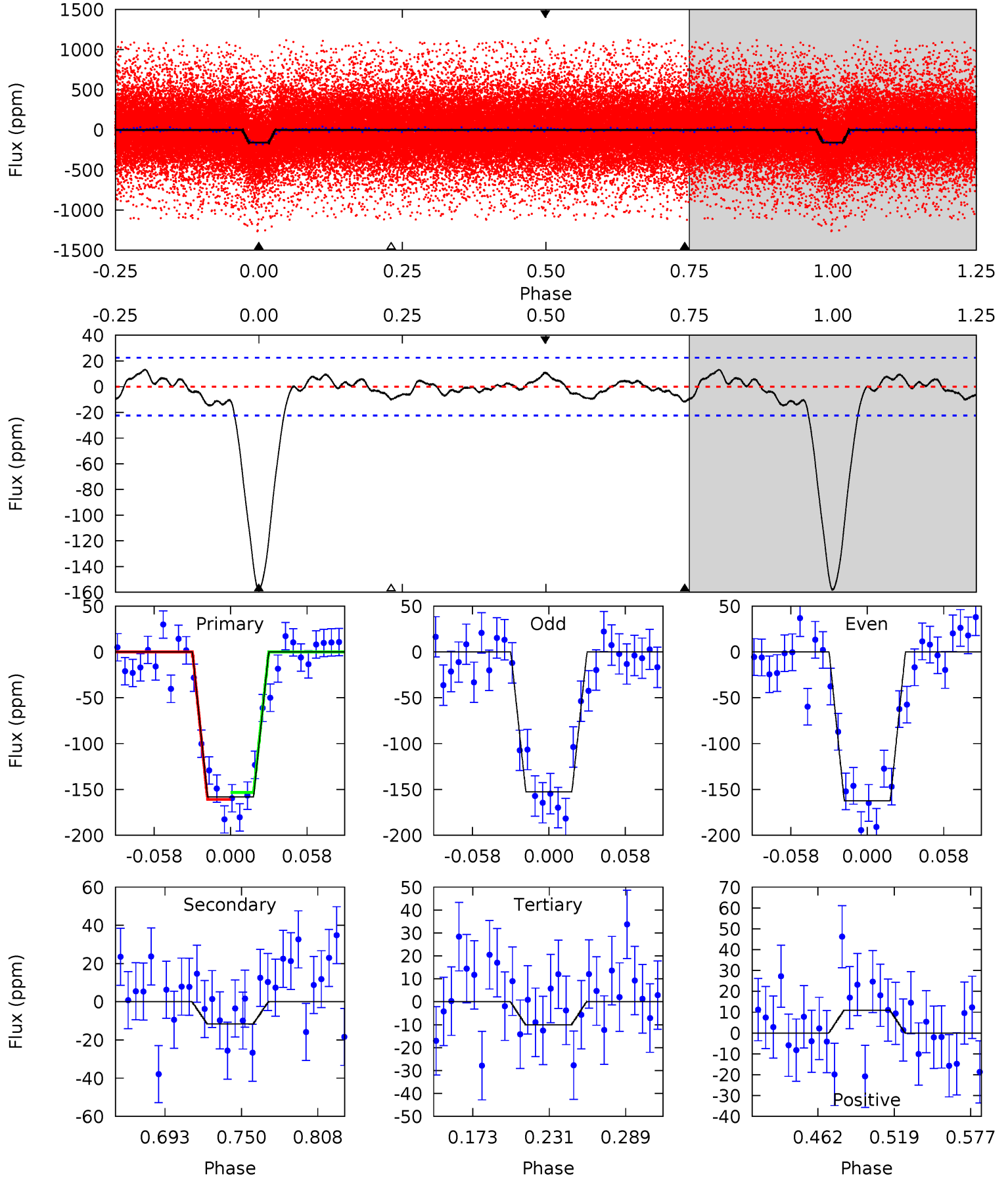
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.2	3.11	2.86	1.91	4.65	1.83	1.31	29.3	30.3	0.25	1.20	1.42	0.94	0.08	0.24



Alt Model-Shift Uniqueness Test

009761615-01, P = 1.791079 Days, E = 130.176747 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.9	2.42	2.09	2.26	4.68	1.90	1.14	30.8	30.6	0.34	0.16	1.01	0.99	0.08	0.80



Stellar Parameters For KIC 009761615

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6040^{+163}_{-199}	$4.469^{+0.054}_{-0.216}$	$-0.020^{+0.250}_{-0.300}$	$0.999^{+0.318}_{-0.106}$	$1.070^{+0.134}_{-0.147}$	$1.513^{+0.432}_{-0.842}$
	+3%/-3%	+1%/-5%	+1250%/-1500%	+32%/-11%	+13%/-14%	+29%/-56%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009761615-01 / KOI 3911.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-14 ± 4	$1.43^{+0.44}_{-0.42}$	2202^{+172}_{-103}	3629^{+529}_{-404}	$3.111^{+3.445}_{-1.525}$
Alt.	-12 ± 5	$1.42^{+0.45}_{-0.38}$	2204^{+168}_{-102}	3514^{+491}_{-430}	$2.627^{+2.776}_{-1.376}$

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

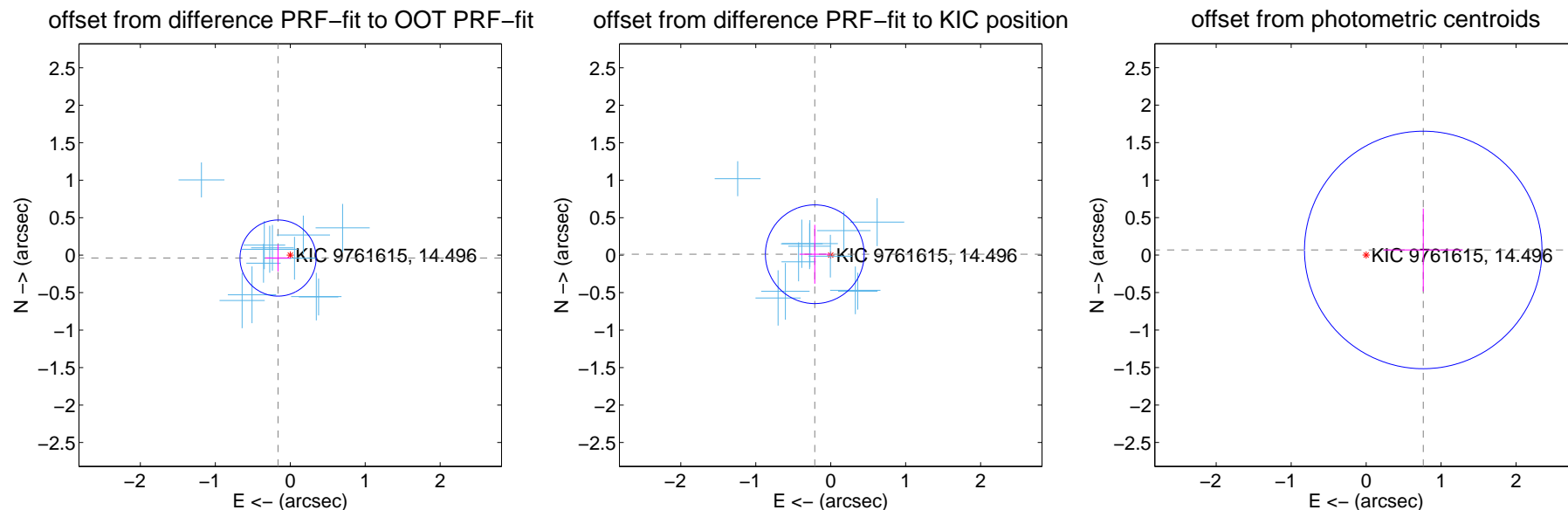
DV Centroid Data

Supplemental centroid analysis for 009761615-01. Kepler magnitude: 14.50. Transit SNR 25.77

There are 12 quarters with good PRF difference image offsets

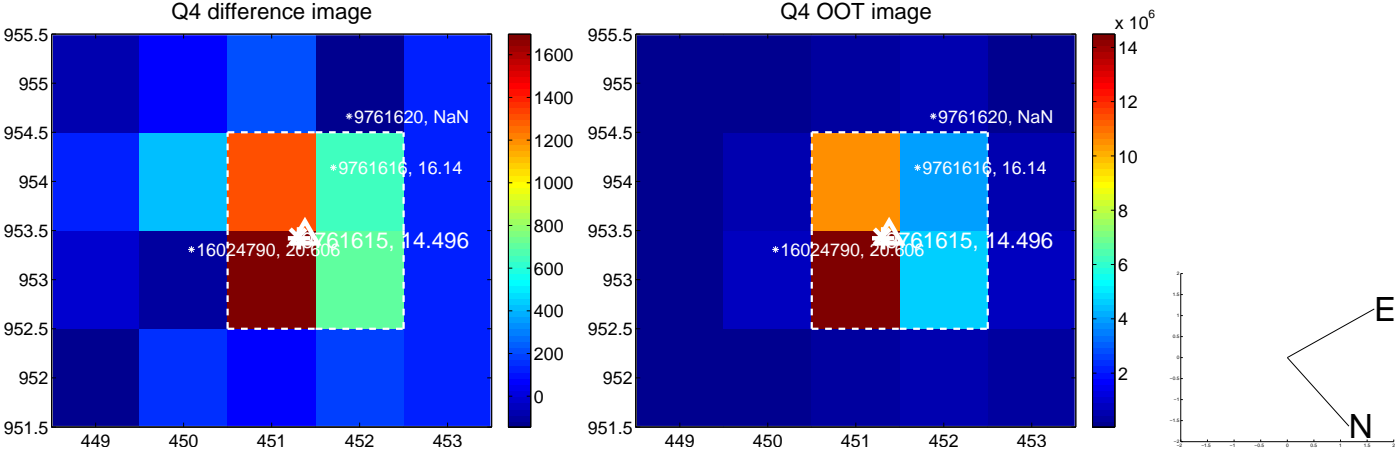
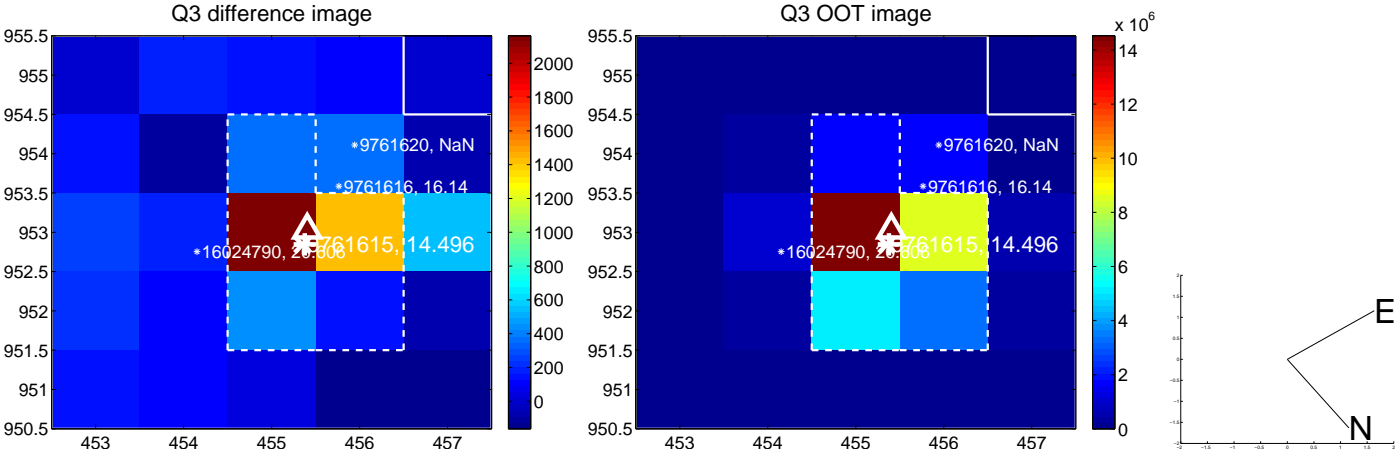
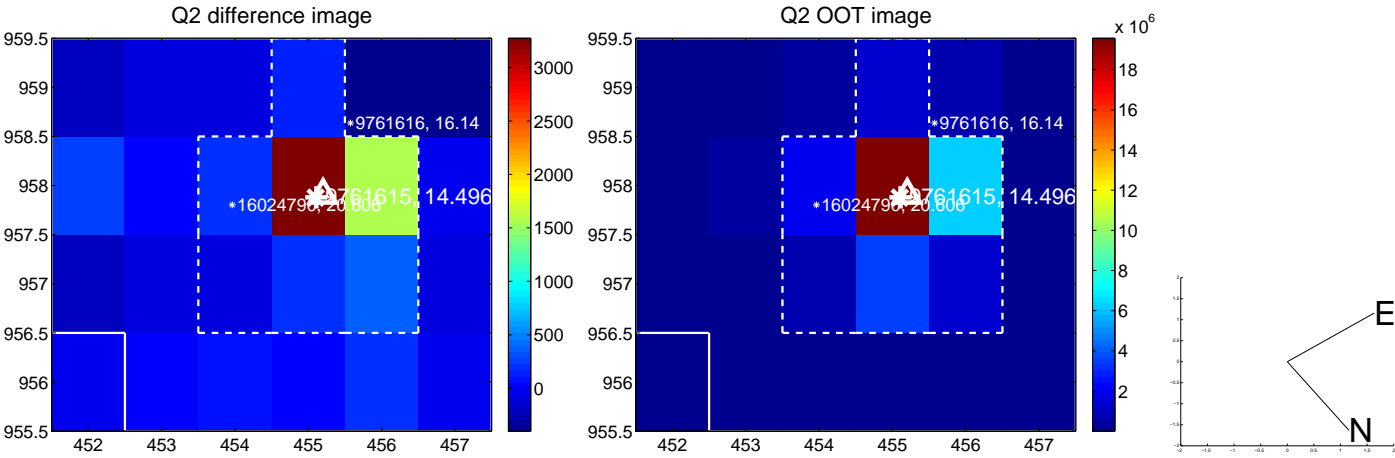
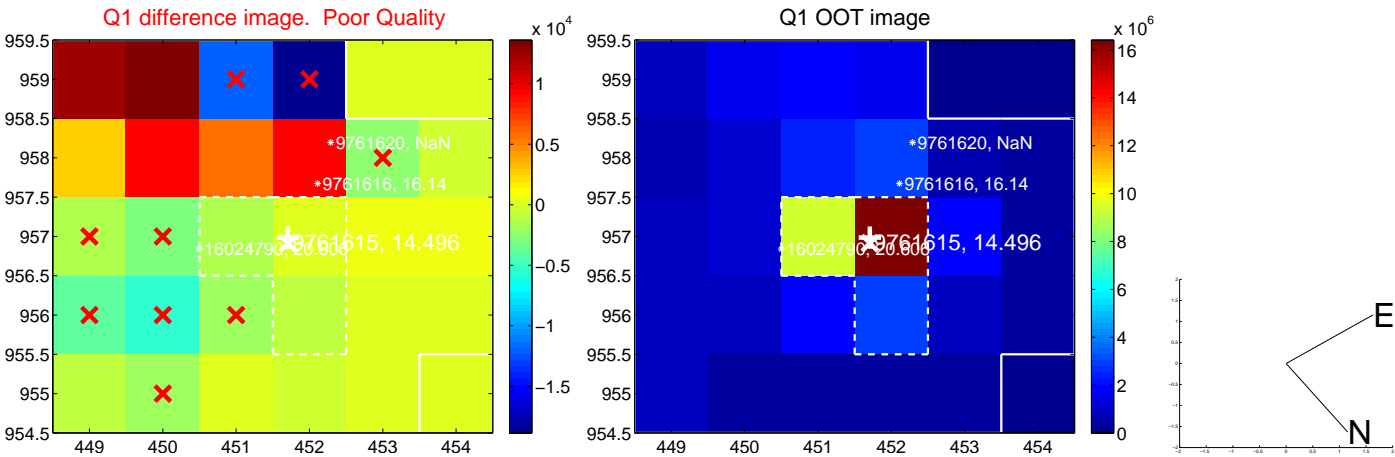
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.167 ± 0.169	0.99	0.163 ± 0.169	-0.039 ± 0.178
PRF-fit source offset from KIC position	0.213 ± 0.220	0.97	0.213 ± 0.205	0.012 ± 0.393
photometric centroid source offset	0.77 ± 0.53	1.45	-0.76 ± 0.53	0.07 ± 0.55

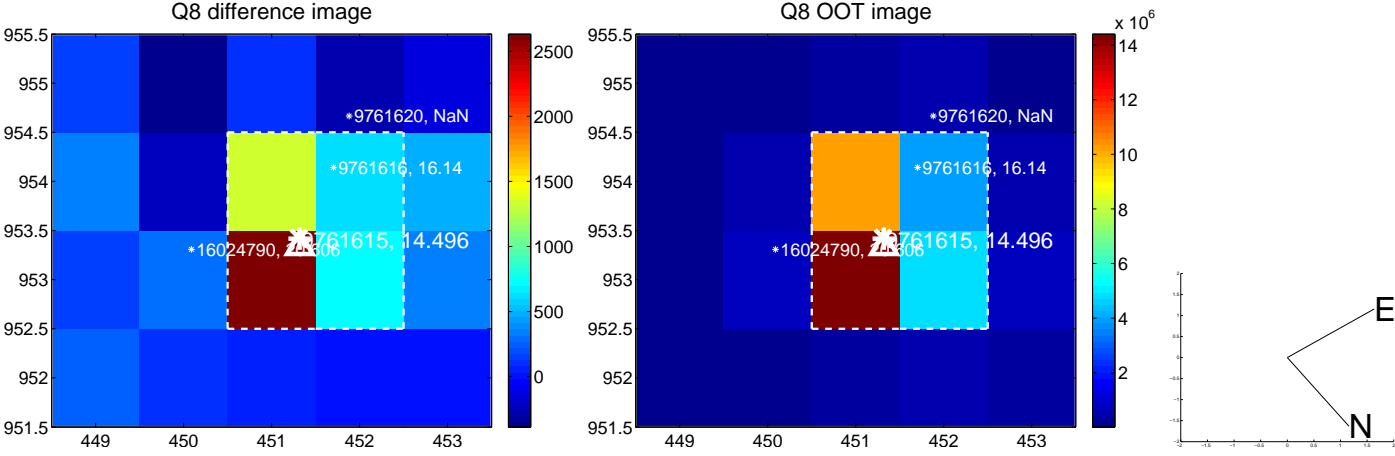
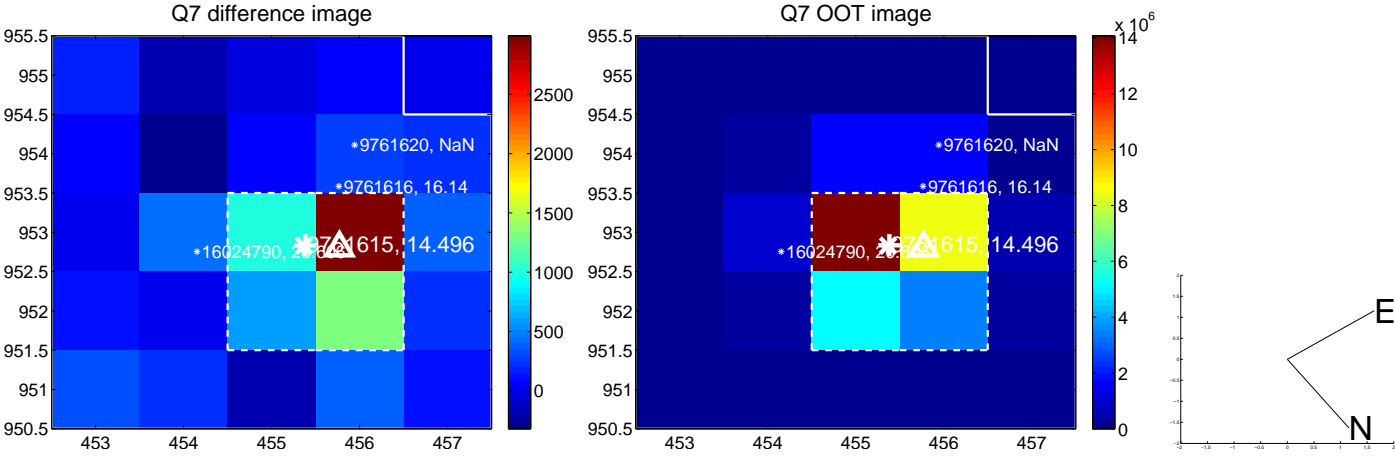
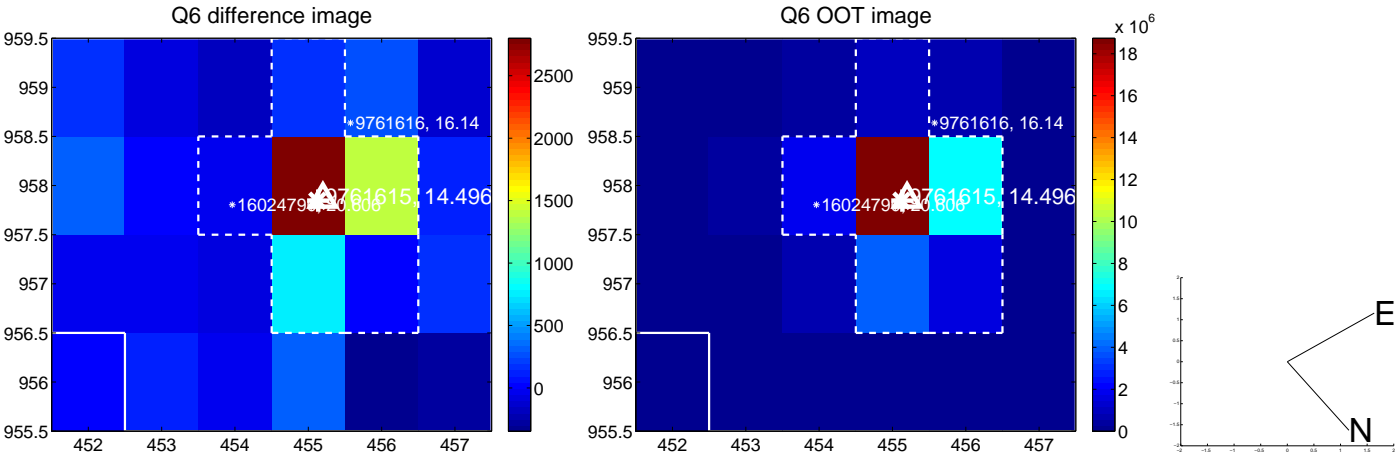
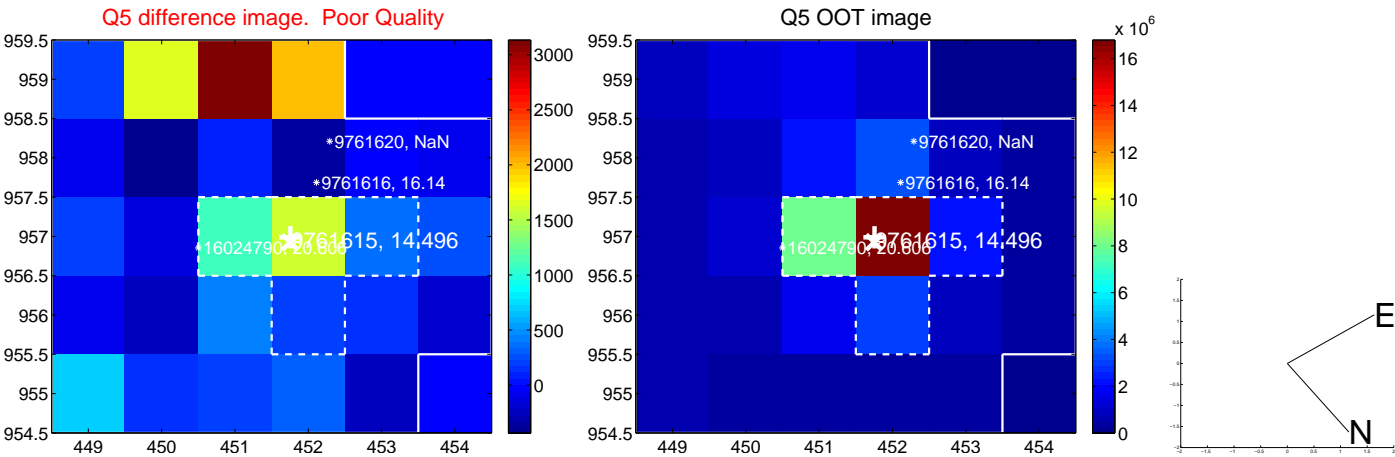


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

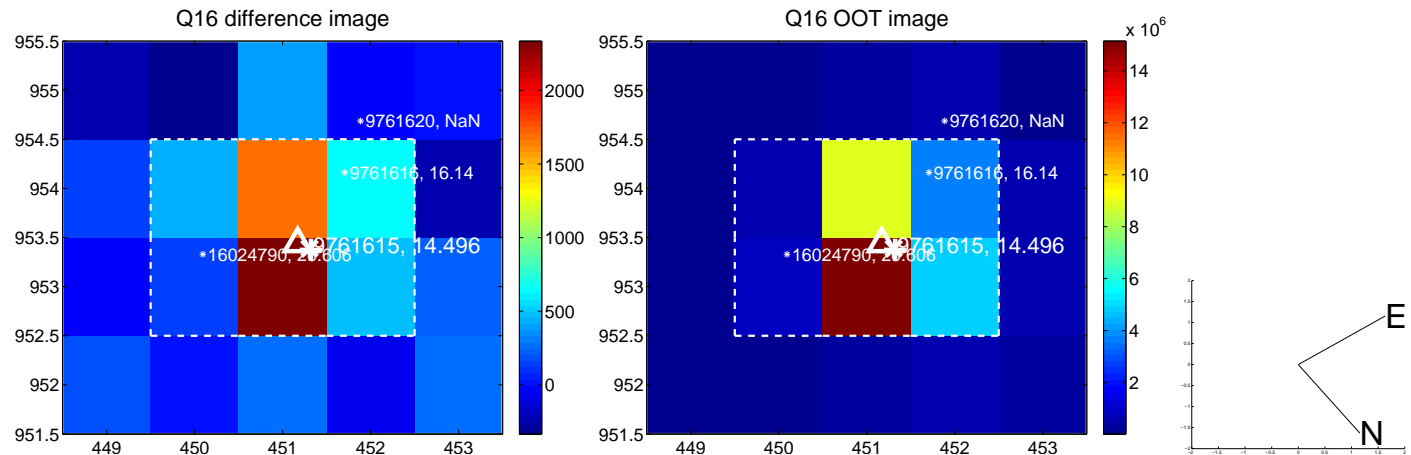
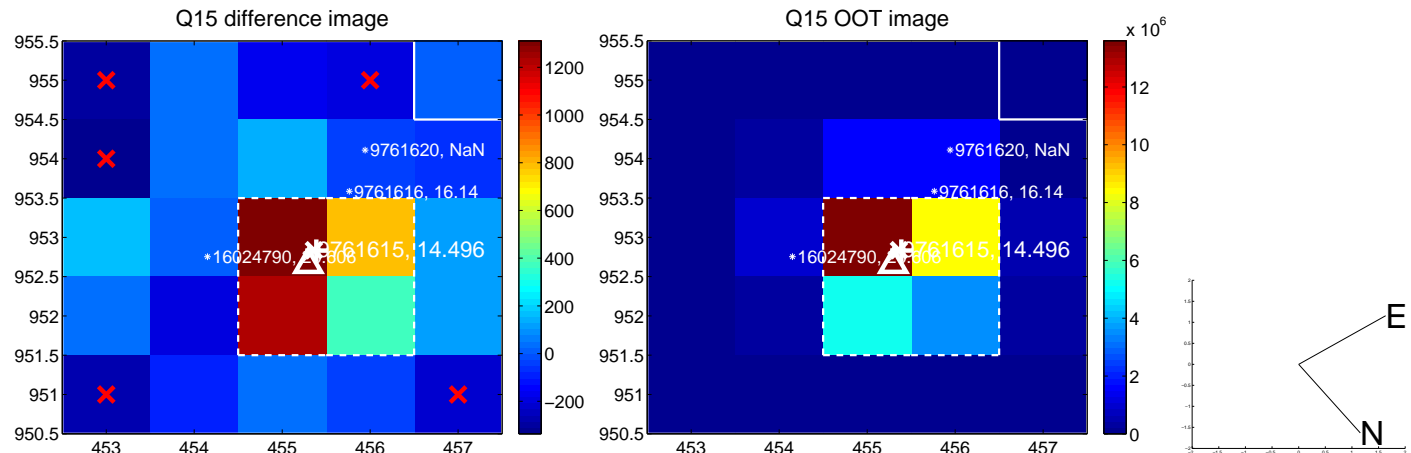
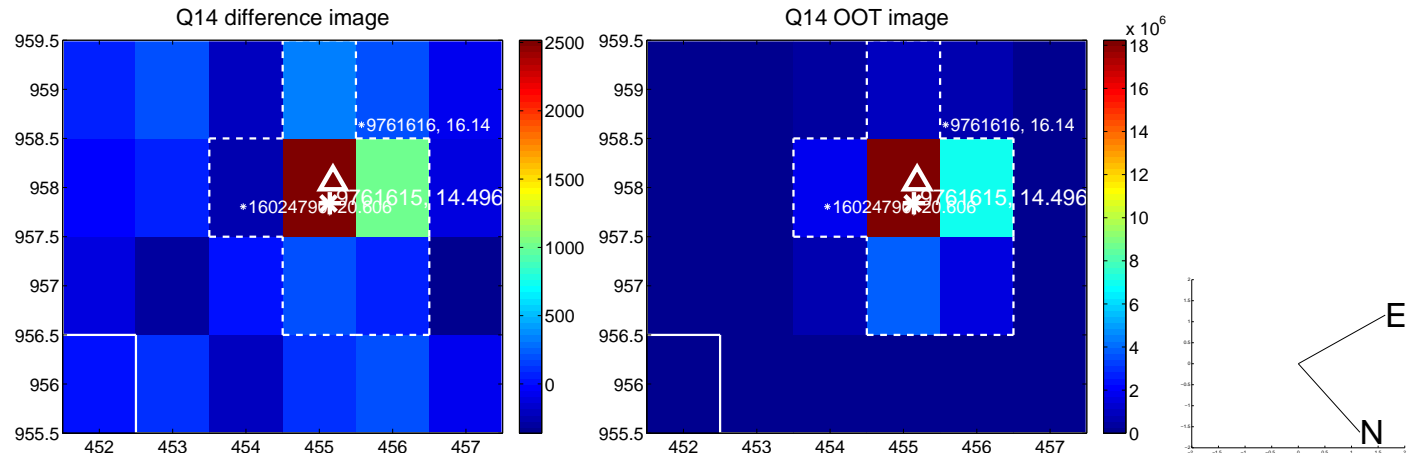
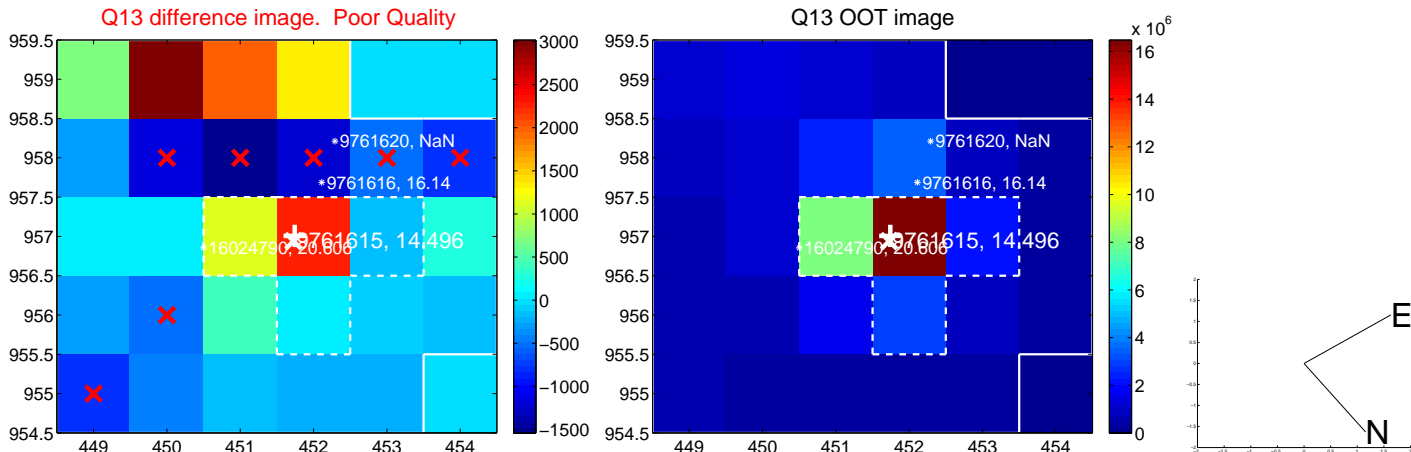
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



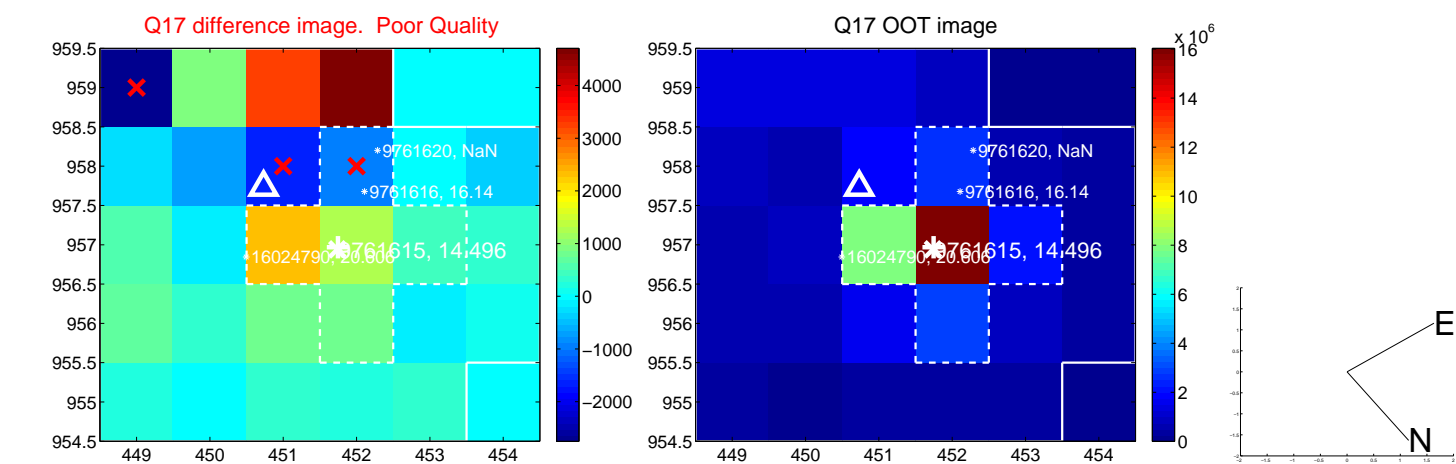
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



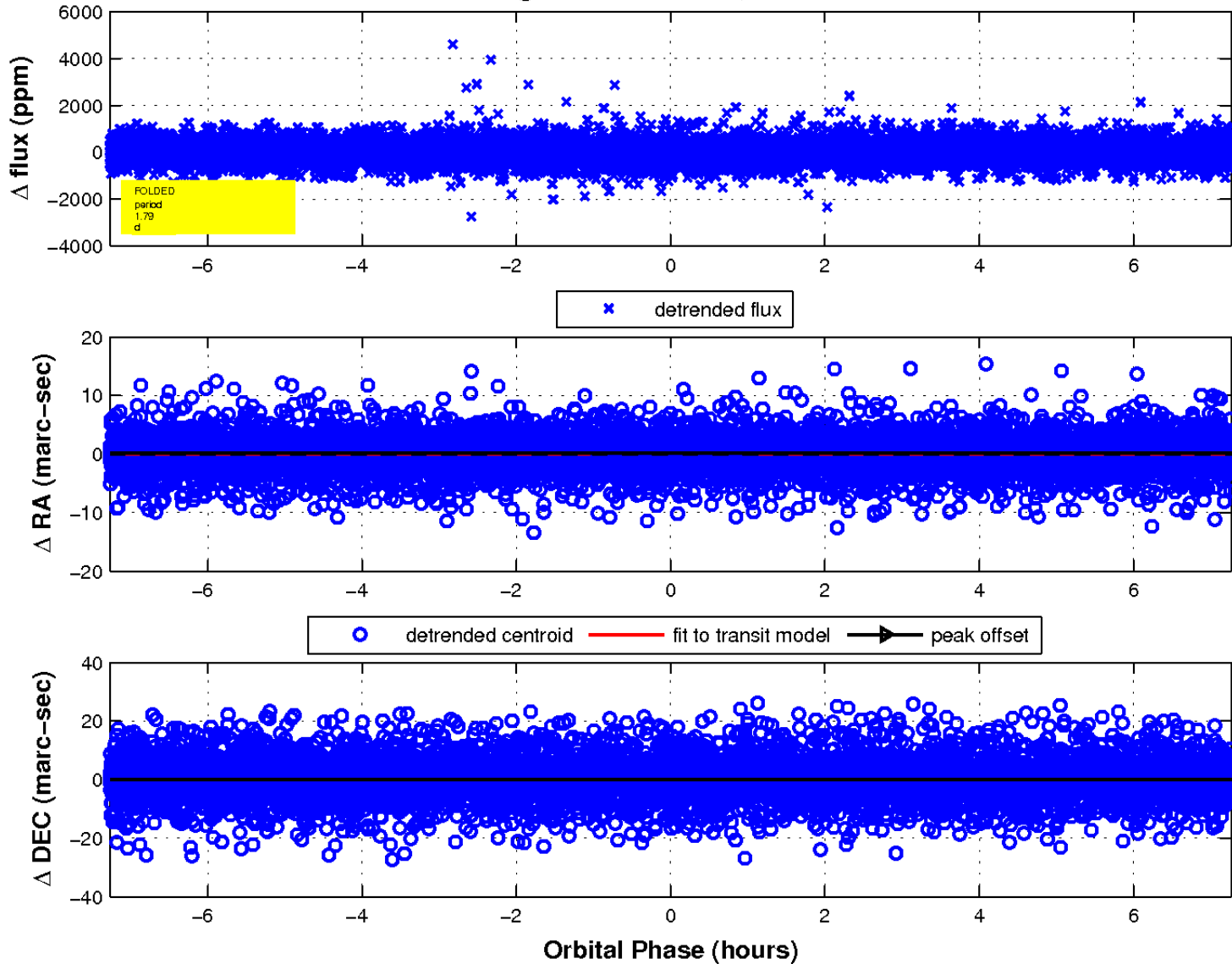
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

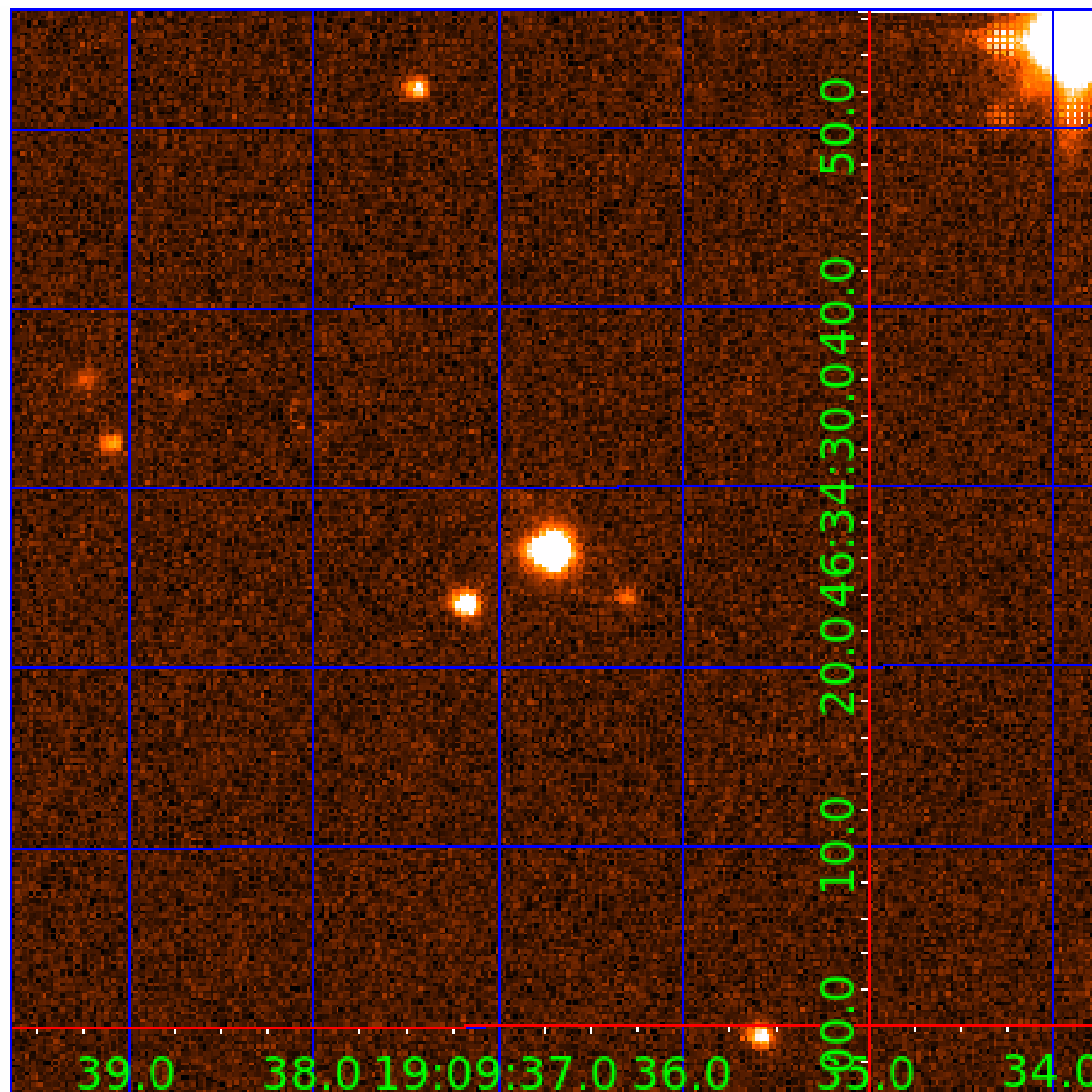


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009761615

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})
009761615-01	OBS	3911.01	1.791075	131.968164	135.1	2.424	22.4	25.8	1.00	6040	1.37	1363.33
009761615-02	OBS	No	379.237179	509.410027	831.2	35.934	7.8	8.1	1.00	6040	3.40	1.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009761615-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009761615-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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 009761615-02

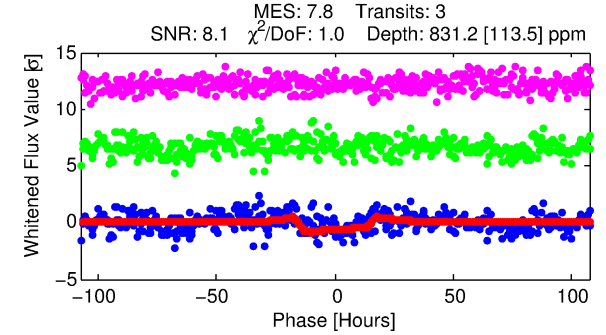
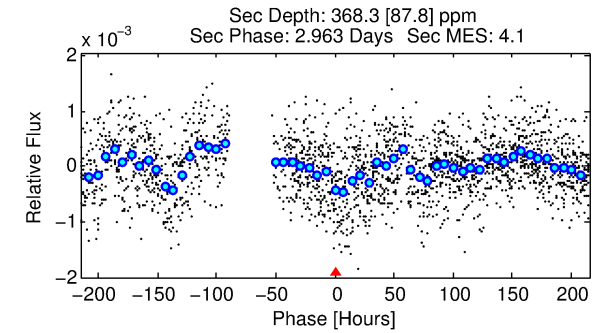
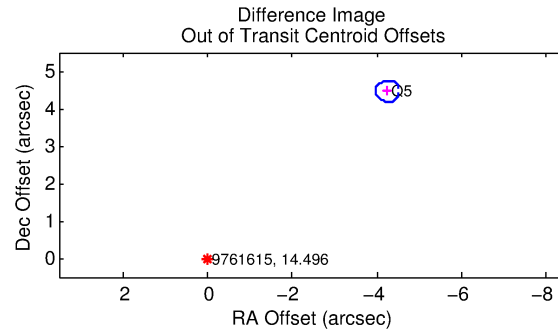
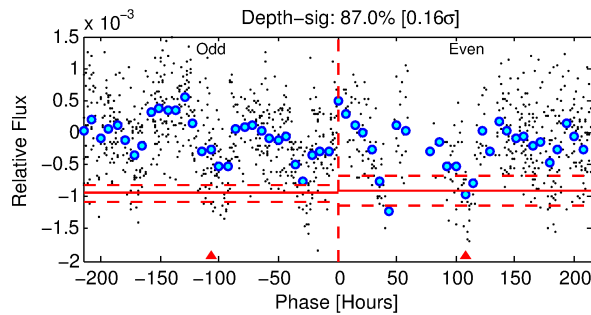
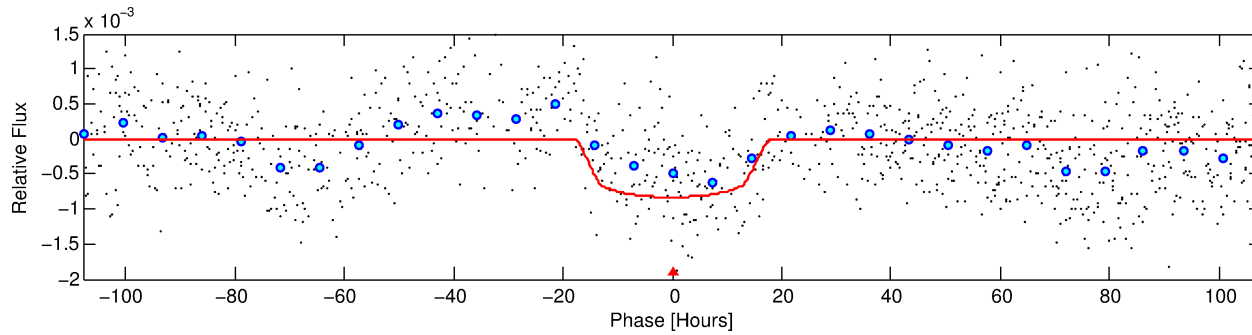
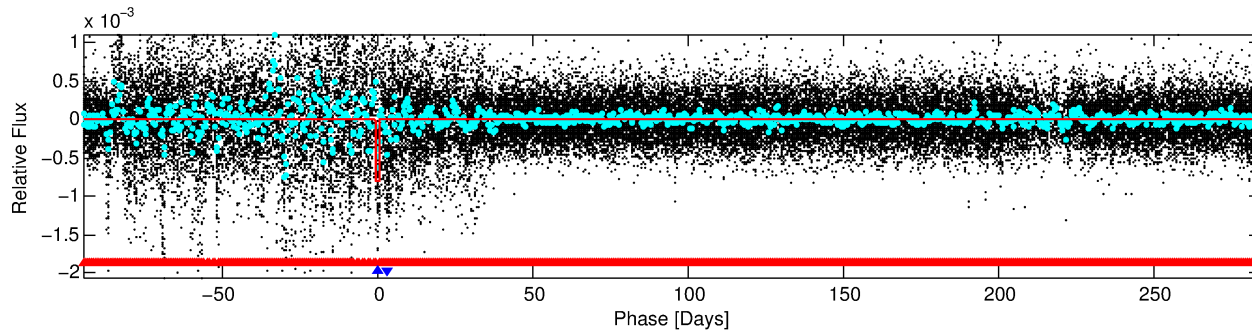
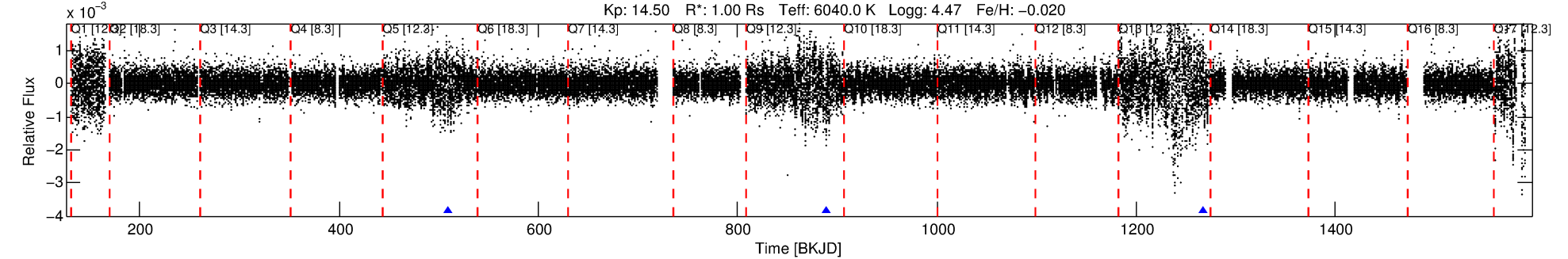
No Significant Match Found

DV One-Page Summary

KIC: 9761615 Candidate: 2 of 2 Period: 379.237 d

KOI: K03911 Corr: No Ephemeris Match

Kp: 14.50 R*: 1.00 Rs Teff: 6040.0 K Logg: 4.47 Fe/H: -0.020



DV Fit Results:

Period = 379.23718 [0.03686] d
Epoch = 509.4100 [0.0386] BKJD
Rp/R* = 0.0311 [0.0028]
a/R* = 40.84 [9.77]
b = 0.90 [0.05]
Seff = 1.08 [0.45]
Teq = 260 [27] K
Rp = 3.40 [1.12] Re
a = 1.0496 [0.2826] AU
Ag = 19362.63 [9550.18] [2.03σ]
Teffp = 4741 [385] K [11.60σ]

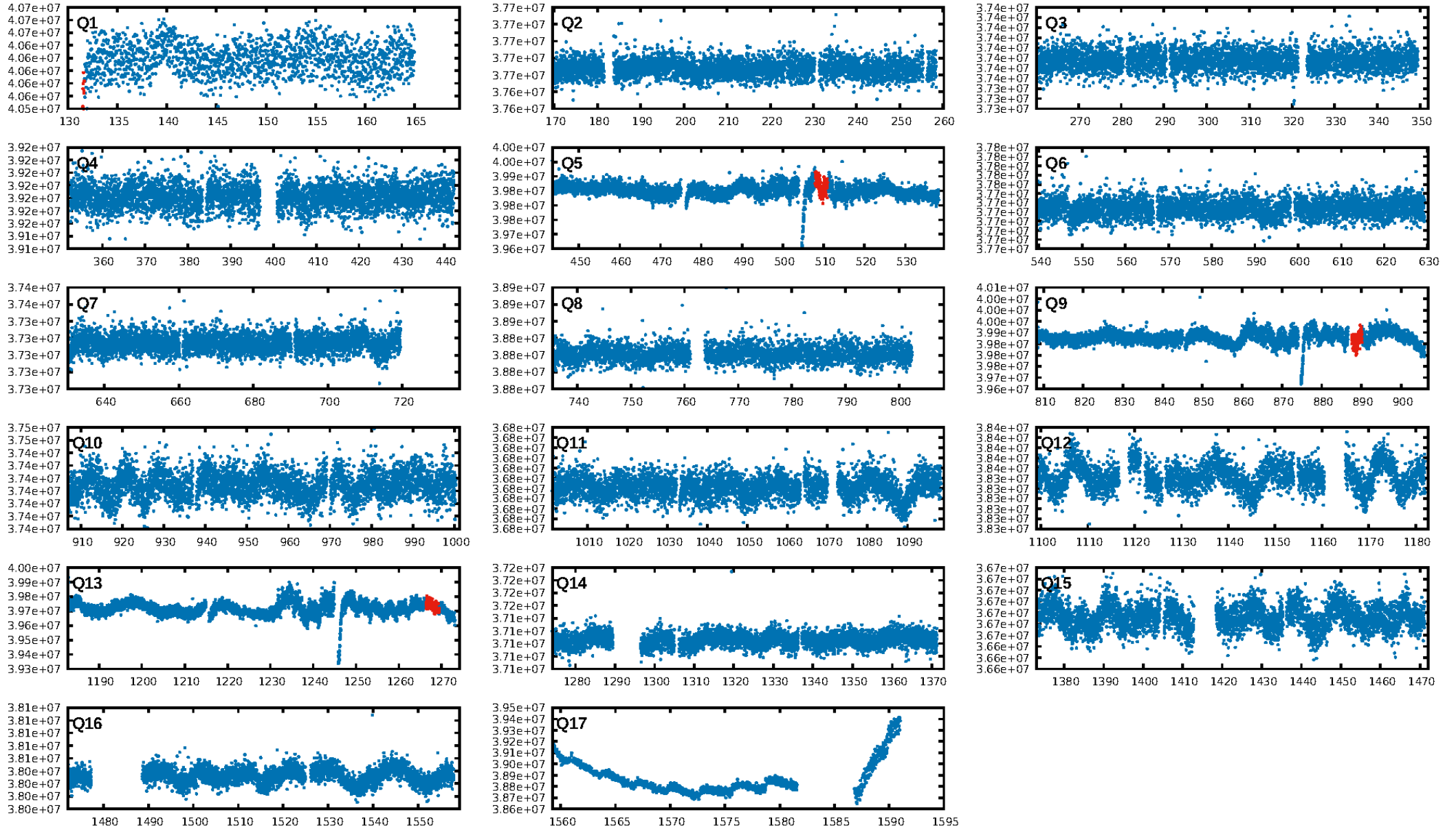
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [251.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 84.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.93e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.942
Centroid-sig: 33.1%
Centroid-so: 2.422 arcsec [0.90σ]
OotOffset-rm: 6.164 arcsec [65.54σ]
KicOffset-rm: 5.770 arcsec [61.38σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/1]

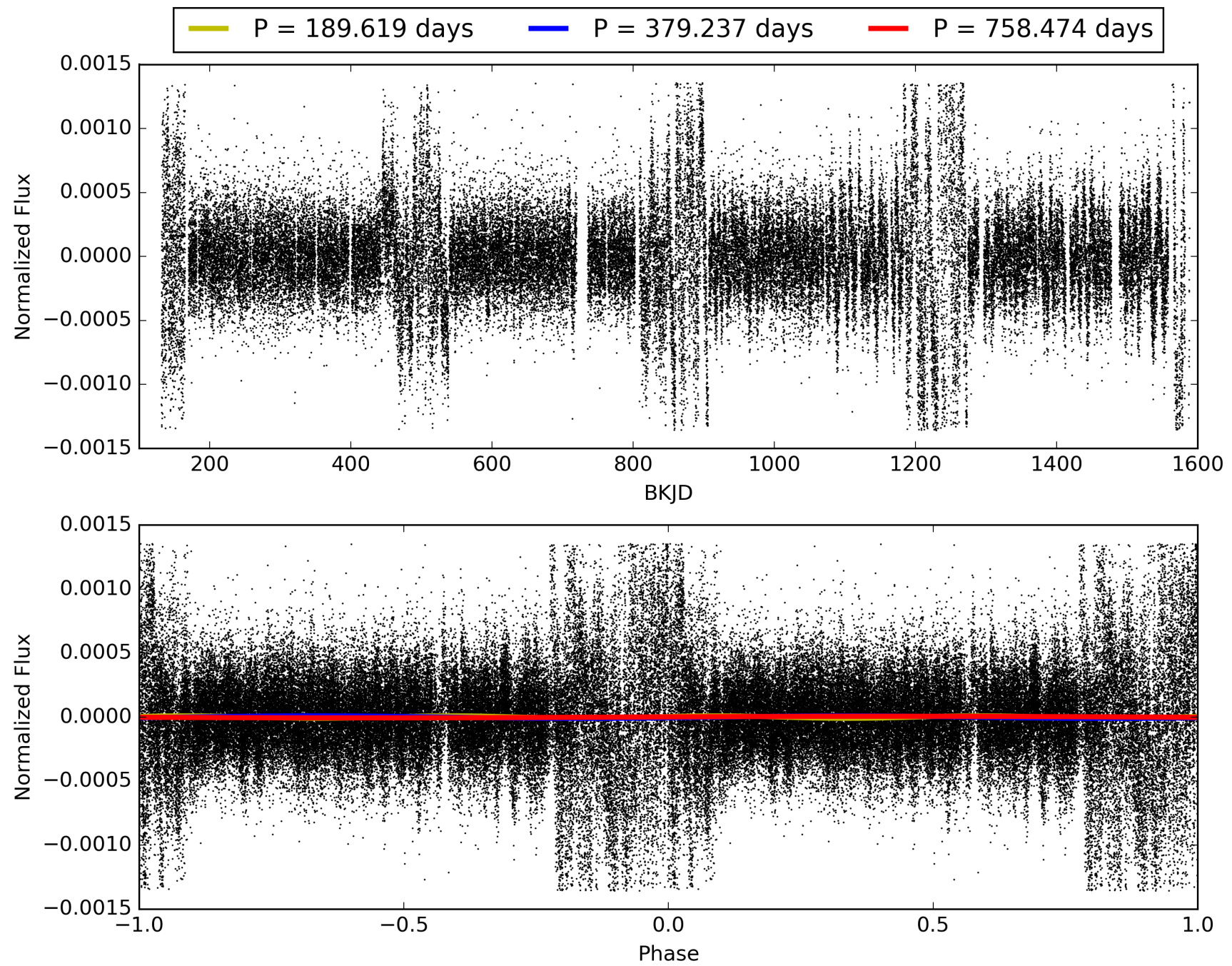
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:28:05 Z

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

TCE 009761615-02, PDC Light Curves

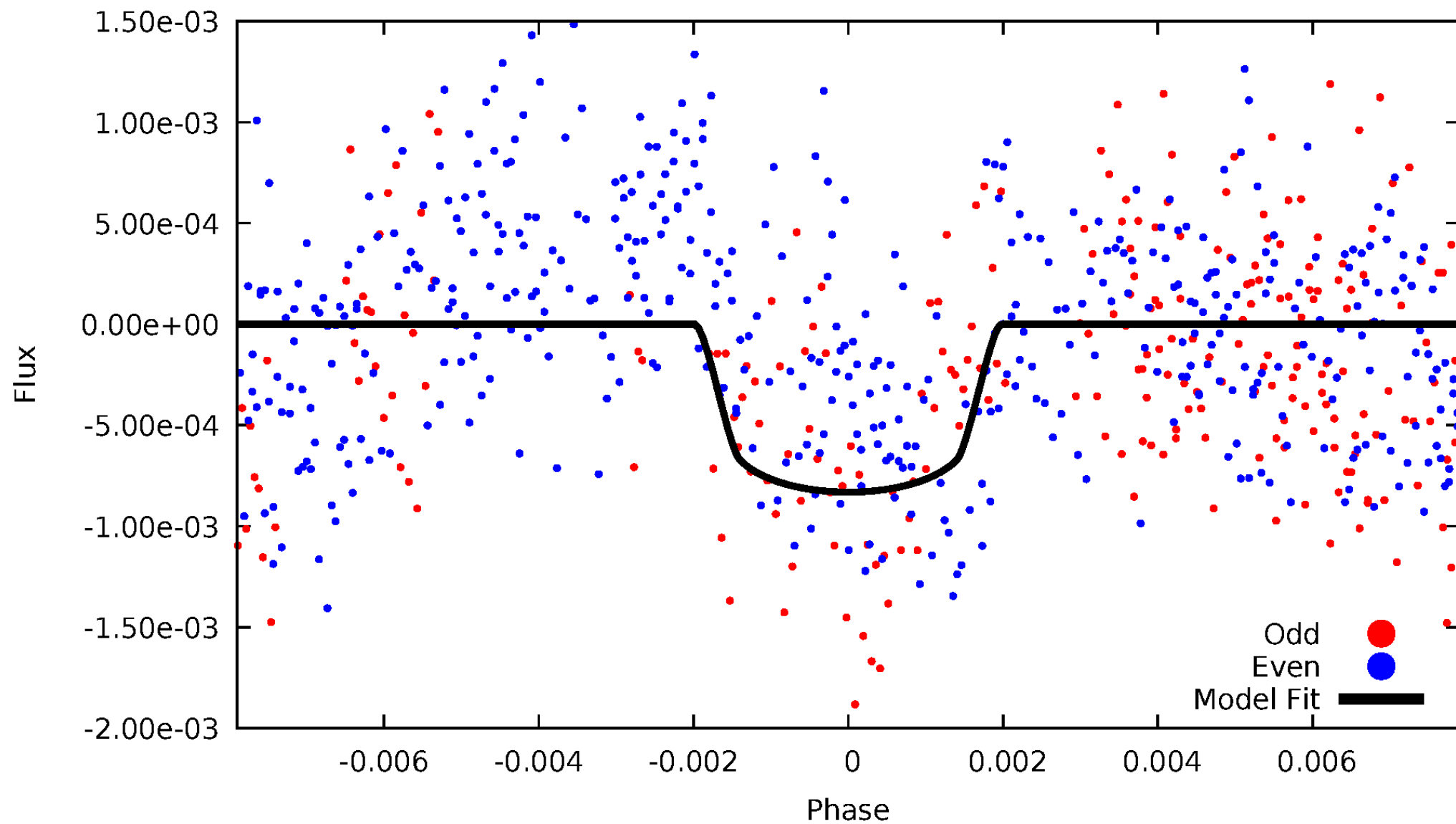


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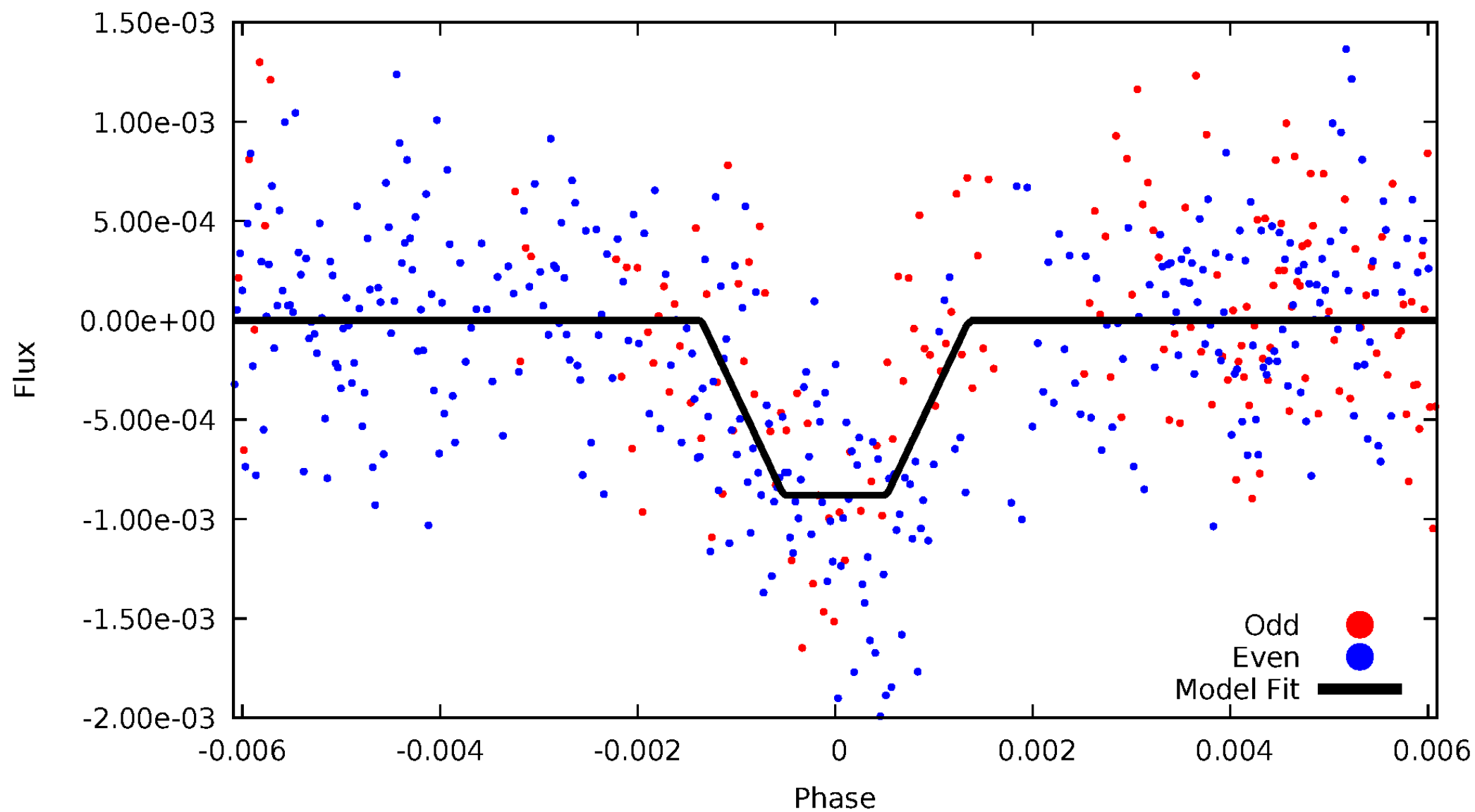
DV Odd/Even

TCE 009761615-02



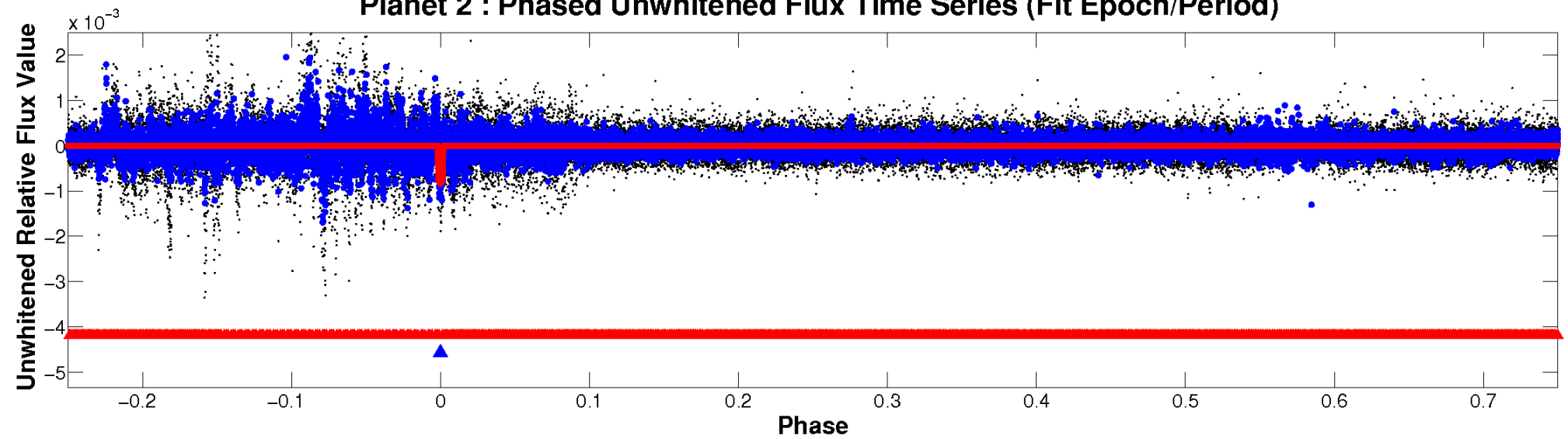
ALT Odd/Even

TCE 009761615-02

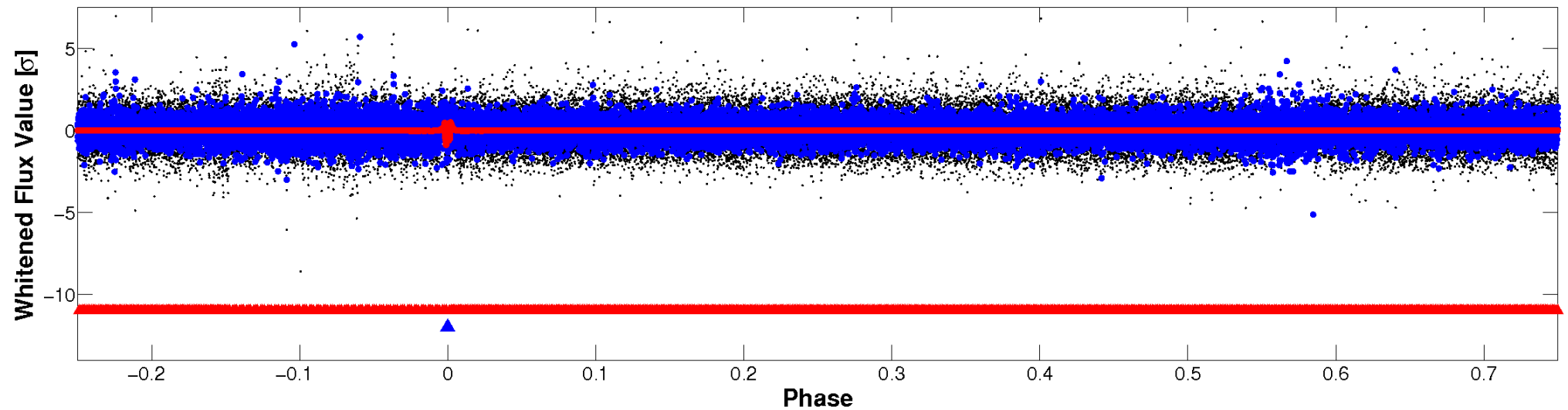


Non-Whitened Vs. Whitened Light Curve

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

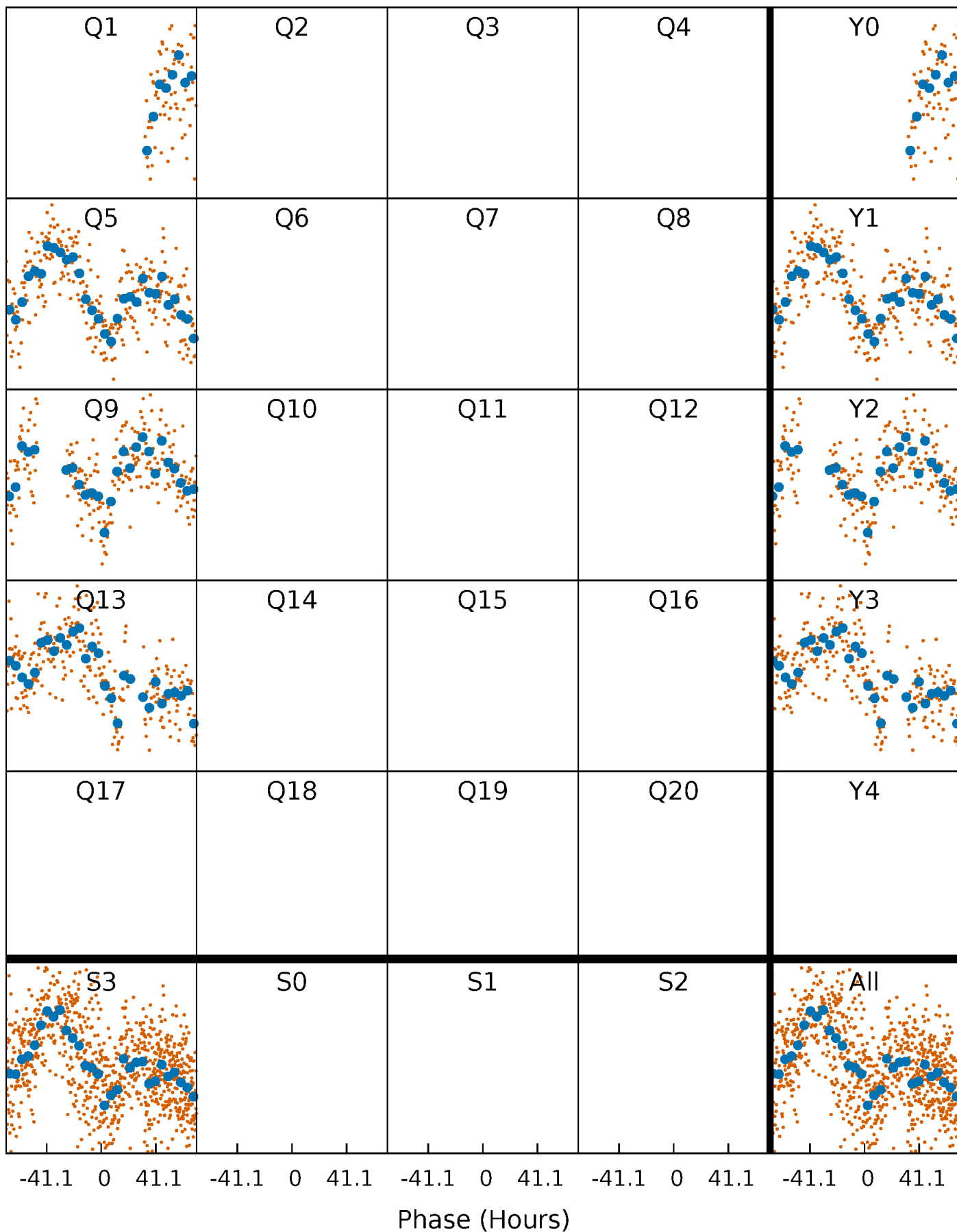


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



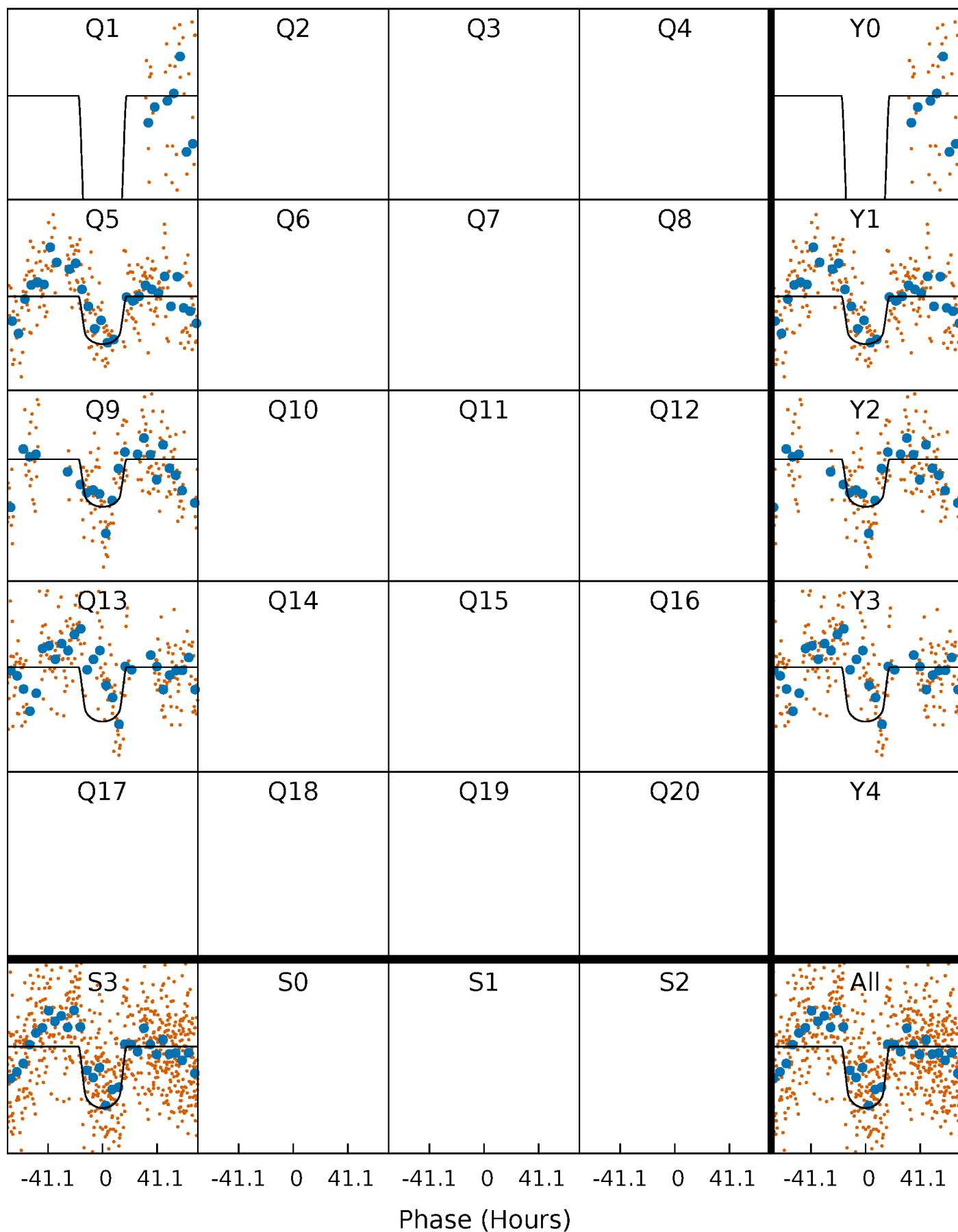
PDC Quarter-Phased Transit Curves

TCE 009761615-02 $P=379.237179$ Days $T_0=509.410028$ (BKJD)



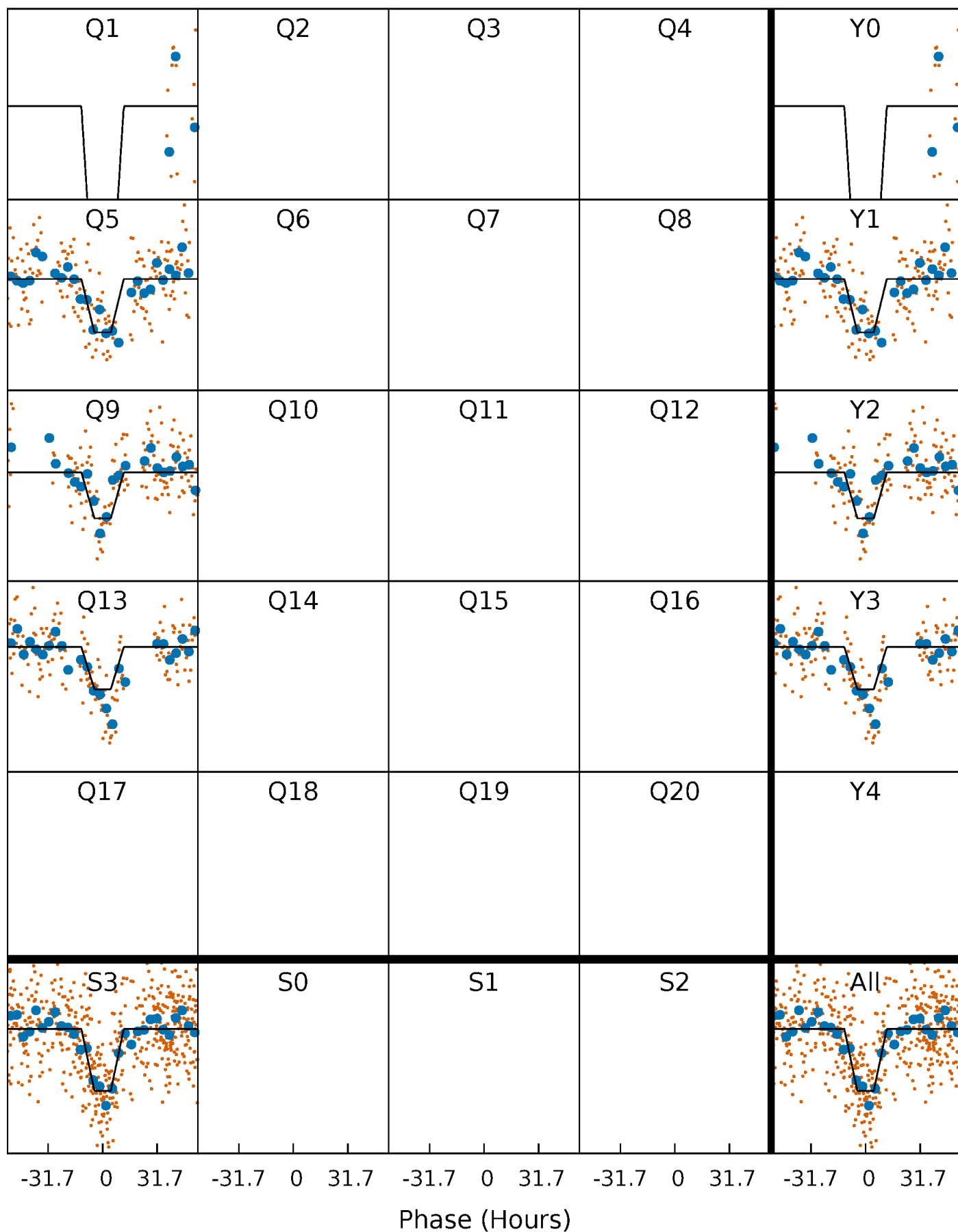
DV Quarter-Phased Transit Curves

TCE 009761615-02 $P=379.237179$ Days $T_0=509.410028$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

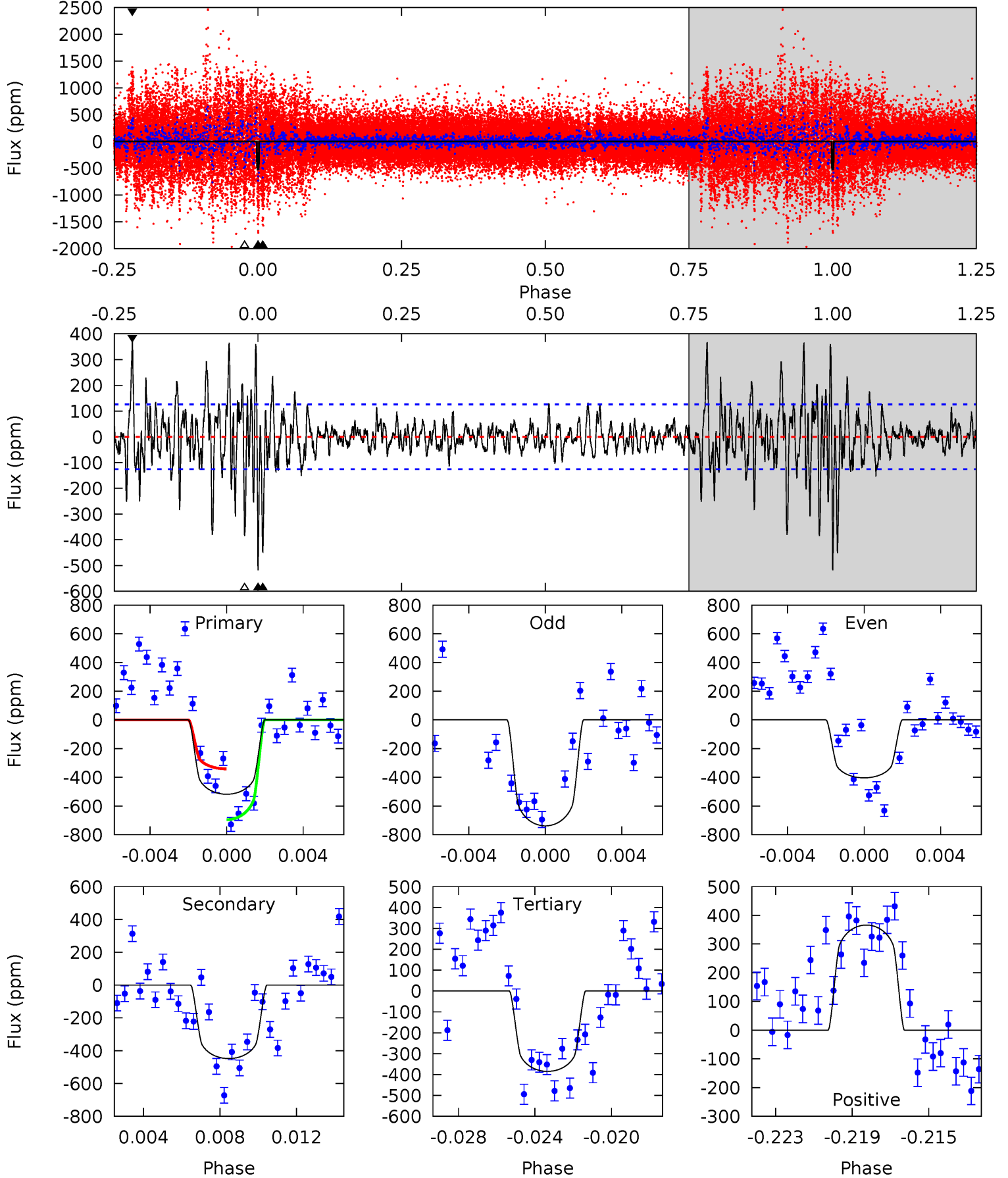
TCE 009761615-02 P=379.417153 Days $T_0=509.389033$ (BKJD)



DV Model-Shift Uniqueness Test

009761615-02, P = 379.237179 Days, E = 130.172849 Days

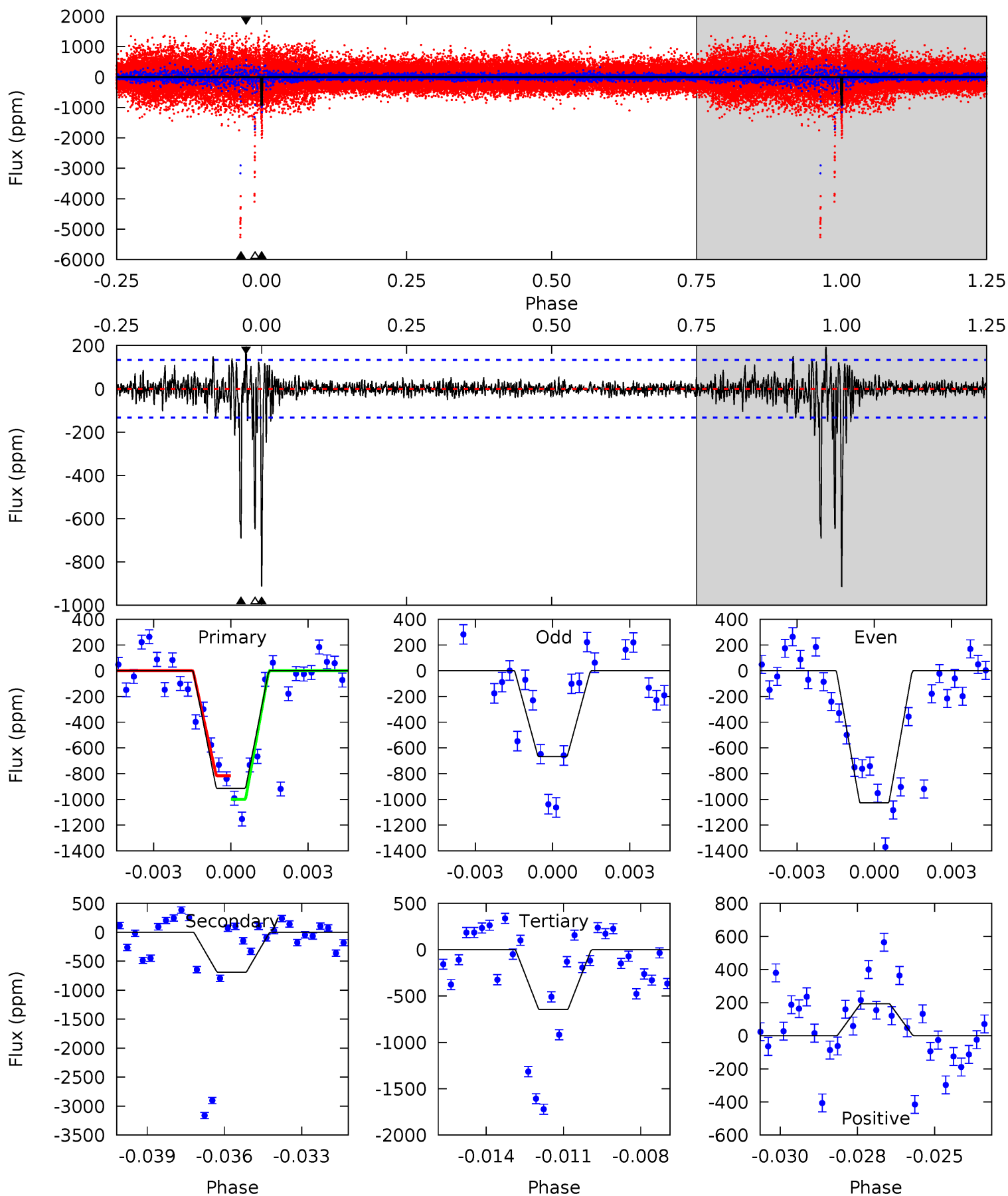
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	18.5	15.9	15.1	5.20	2.88	2.95	5.51	6.28	2.61	3.39	6.58	1.00	0.41	7.16



Alt Model-Shift Uniqueness Test

009761615-02, P = 379.417153 Days, E = 129.971880 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.1	27.3	25.5	7.63	5.27	2.99	1.57	10.6	28.5	1.76	19.6	6.86	1.13	0.17	3.60



Stellar Parameters For KIC 009761615

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6040^{+163}_{-199}	$4.469^{+0.054}_{-0.216}$	$-0.020^{+0.250}_{-0.300}$	$0.999^{+0.318}_{-0.106}$	$1.070^{+0.134}_{-0.147}$	$1.513^{+0.432}_{-0.842}$
	+3%/-3%	+1%/-5%	+1250%/-1500%	+32%/-11%	+13%/-14%	+29%/-56%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009761615-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-448 ± 24	$3.53^{+0.62}_{-0.46}$	370^{+26}_{-18}	5055^{+253}_{-258}	21220^{+6586}_{-5535}
Alt.	-690 ± 25	$3.38^{+0.61}_{-0.44}$	371^{+27}_{-19}	5679^{+329}_{-297}	35598^{+10885}_{-9121}

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

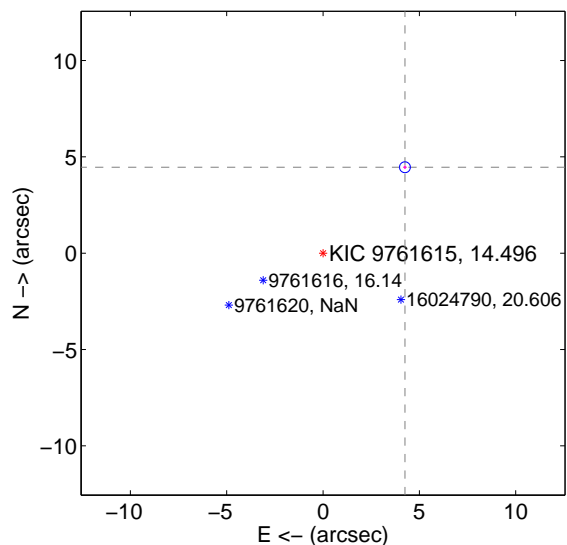
Supplemental centroid analysis for 009761615-02. Kepler magnitude: 14.50. Transit SNR 8.09

There are 0 quarters with good PRF difference image offsets

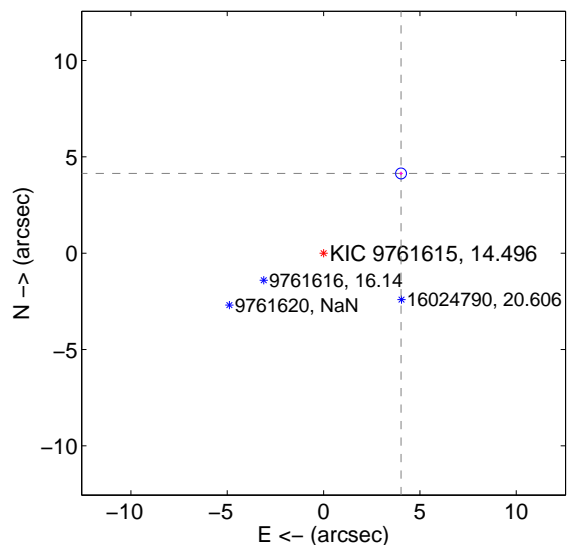
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.164 ± 0.094	65.54	-4.253 ± 0.092	4.462 ± 0.096
PRF-fit source offset from KIC position	5.770 ± 0.094	61.38	-4.021 ± 0.092	4.138 ± 0.096
photometric centroid source offset	2.42 ± 2.68	0.90	0.54 ± 1.70	2.36 ± 2.72

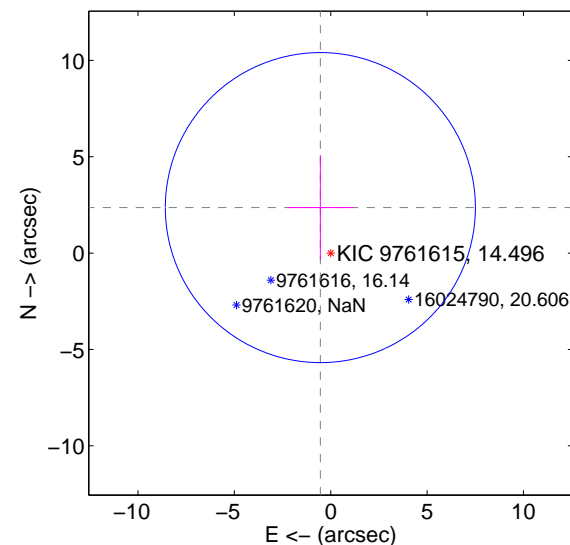
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

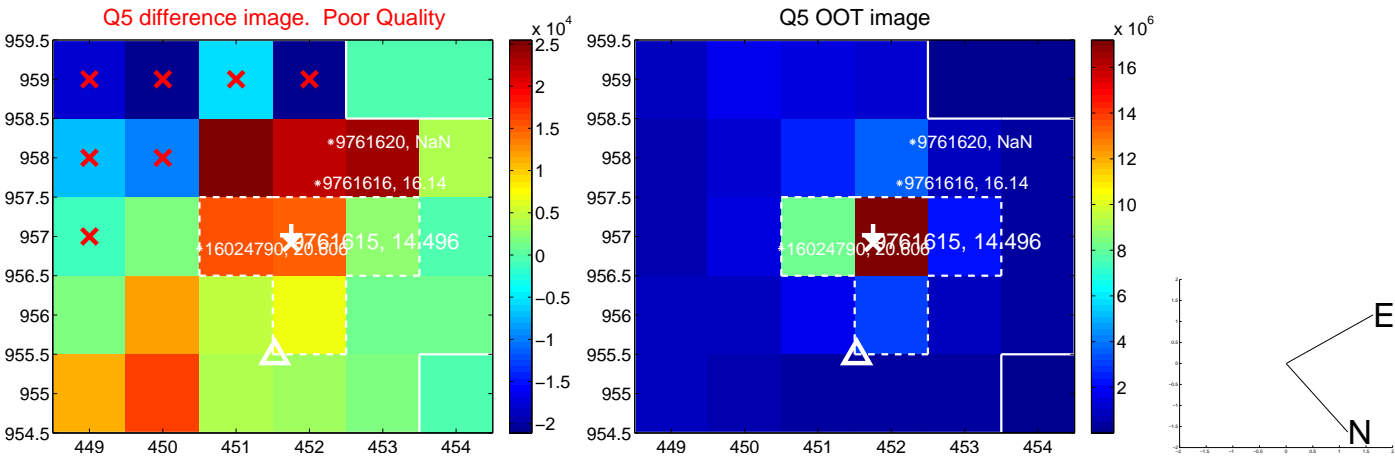


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



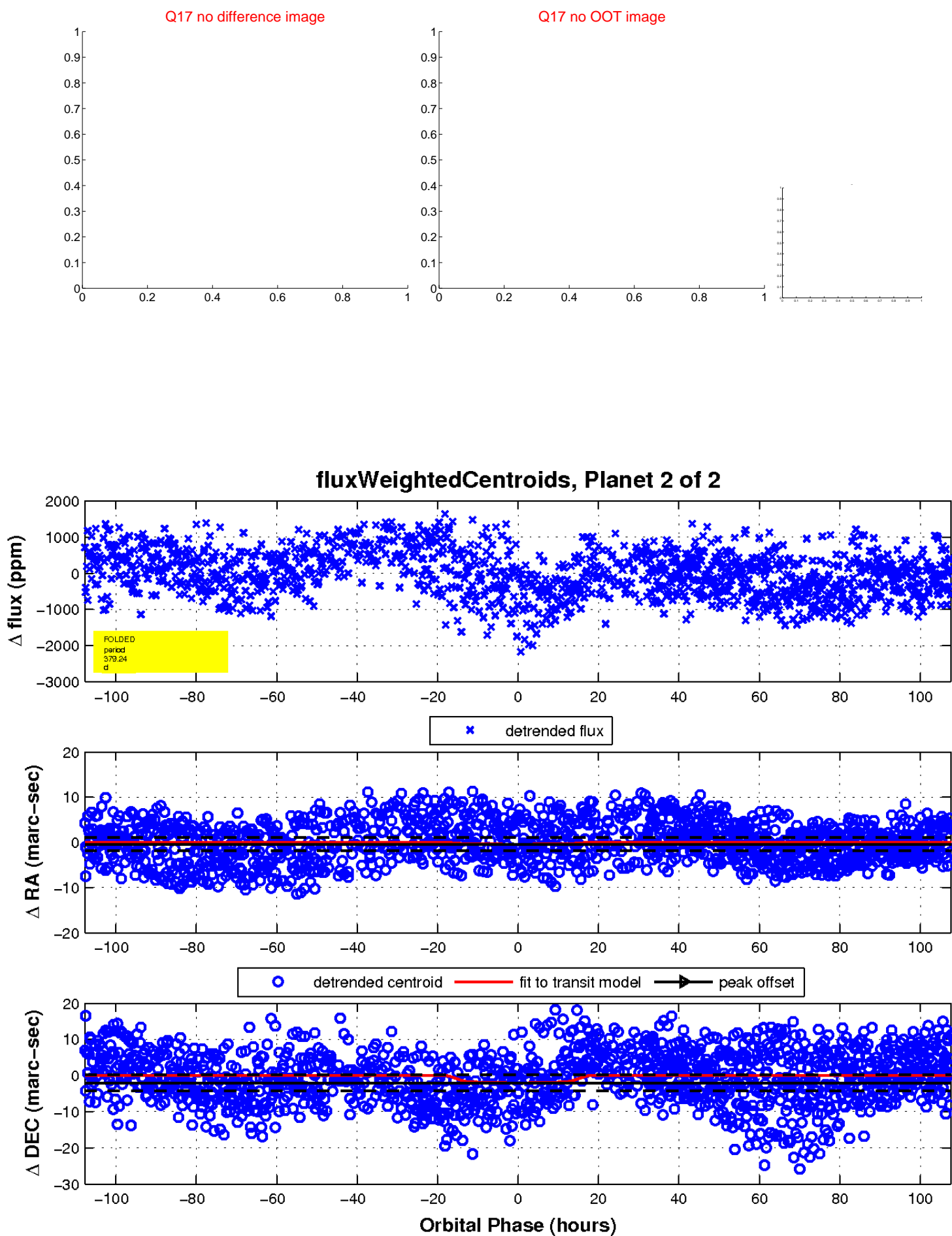
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

