

KIC 009661979

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})
009661979-01	OBS	2132.01	69.895595	160.669906	536.8	5.800	17.7	18.8	1.10	5390	3.22	9.01
009661979-02	OBS	No	380.520708	479.952157	421.8	13.041	8.6	8.5	1.10	5390	2.31	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009661979-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009661979-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—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 009661979-01

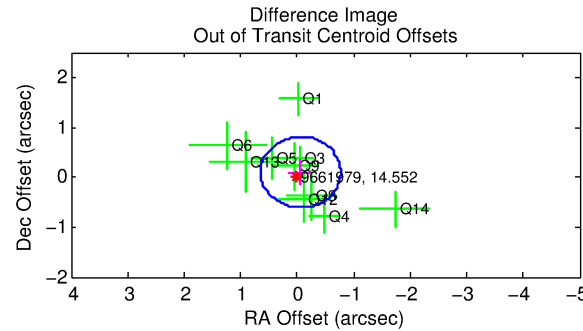
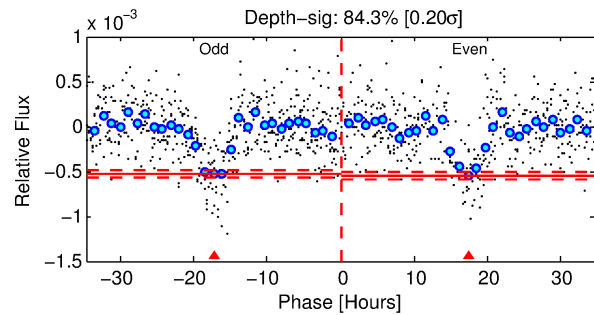
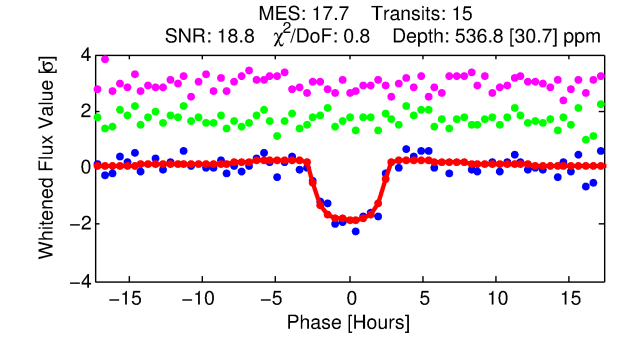
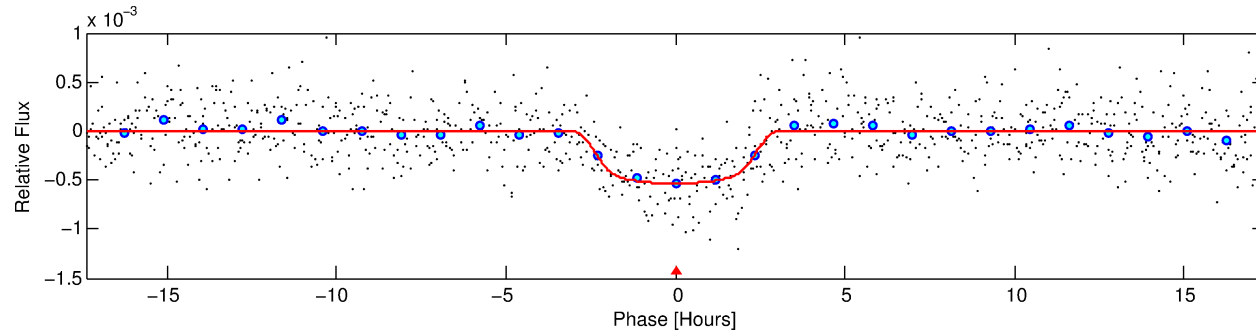
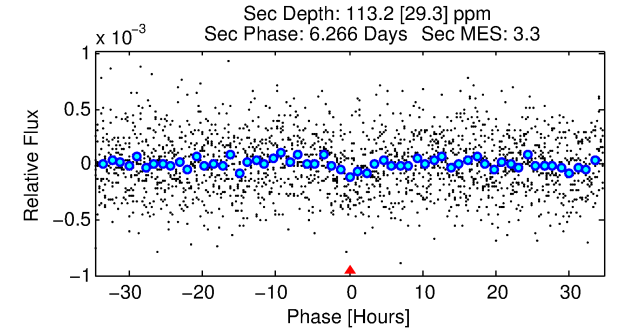
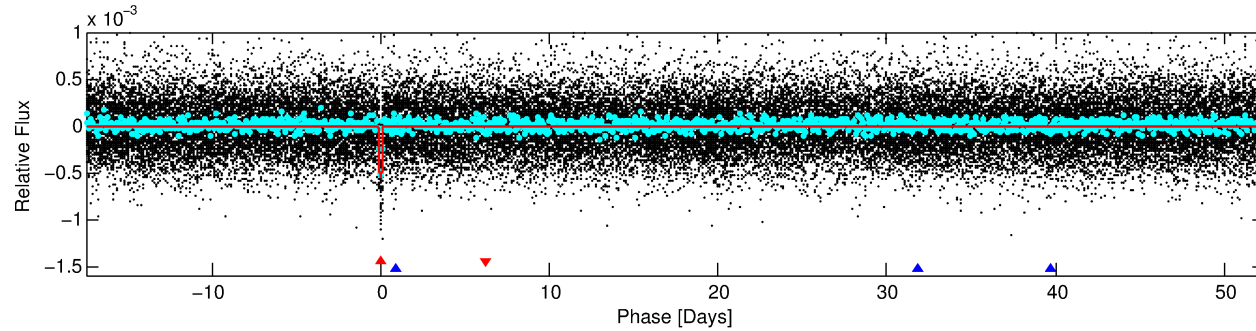
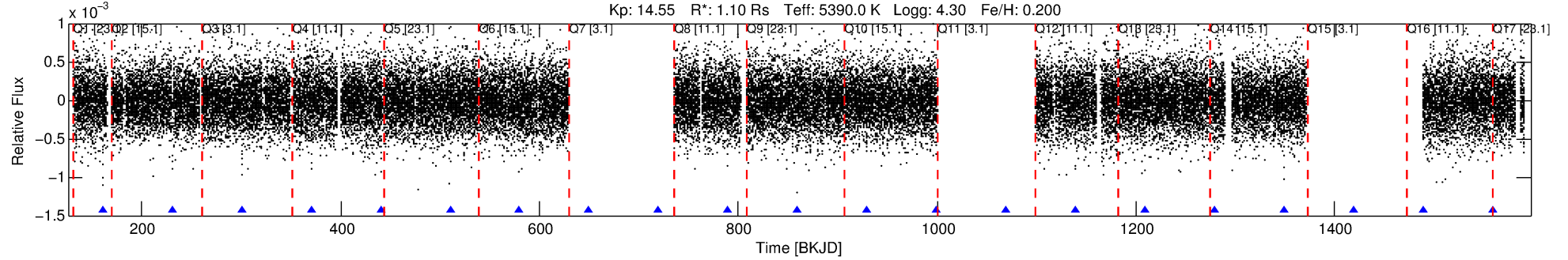
No Significant Match Found

DV One-Page Summary

KIC: 9661979 Candidate: 1 of 2 Period: 69.896 d

KOI: K02132.01 Corr: 0.920

Kp: 14.55 R*: 1.10 Rs Teff: 5390.0 K Logg: 4.30 Fe/H: 0.200



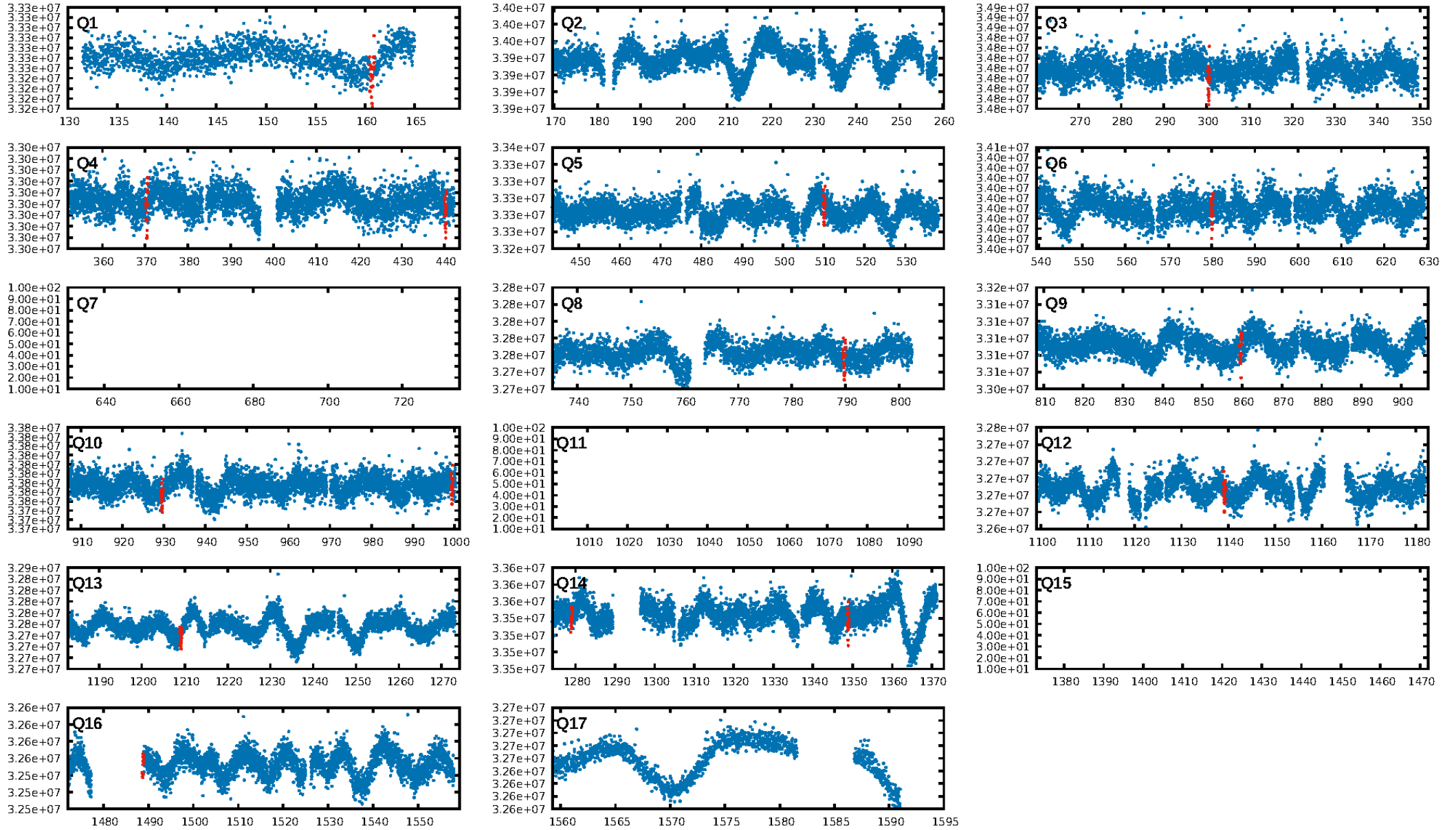
DV Fit Results:

Period = 69.89560 [0.00060] d
Epoch = 160.6699 [0.0068] BKJD
Rp/R* = 0.0267 [0.0018]
a/R* = 39.54 [9.39]
b = 0.93 [0.03]
Seff = 9.01 [2.71]
Teff = 442 [33] K
Rp = 3.22 [0.69] Re
a = 0.3199 [0.0605] AU
Ag = 614.95 [254.30] [2.41σ]
Teffp = 3401 [252] K [11.66σ]

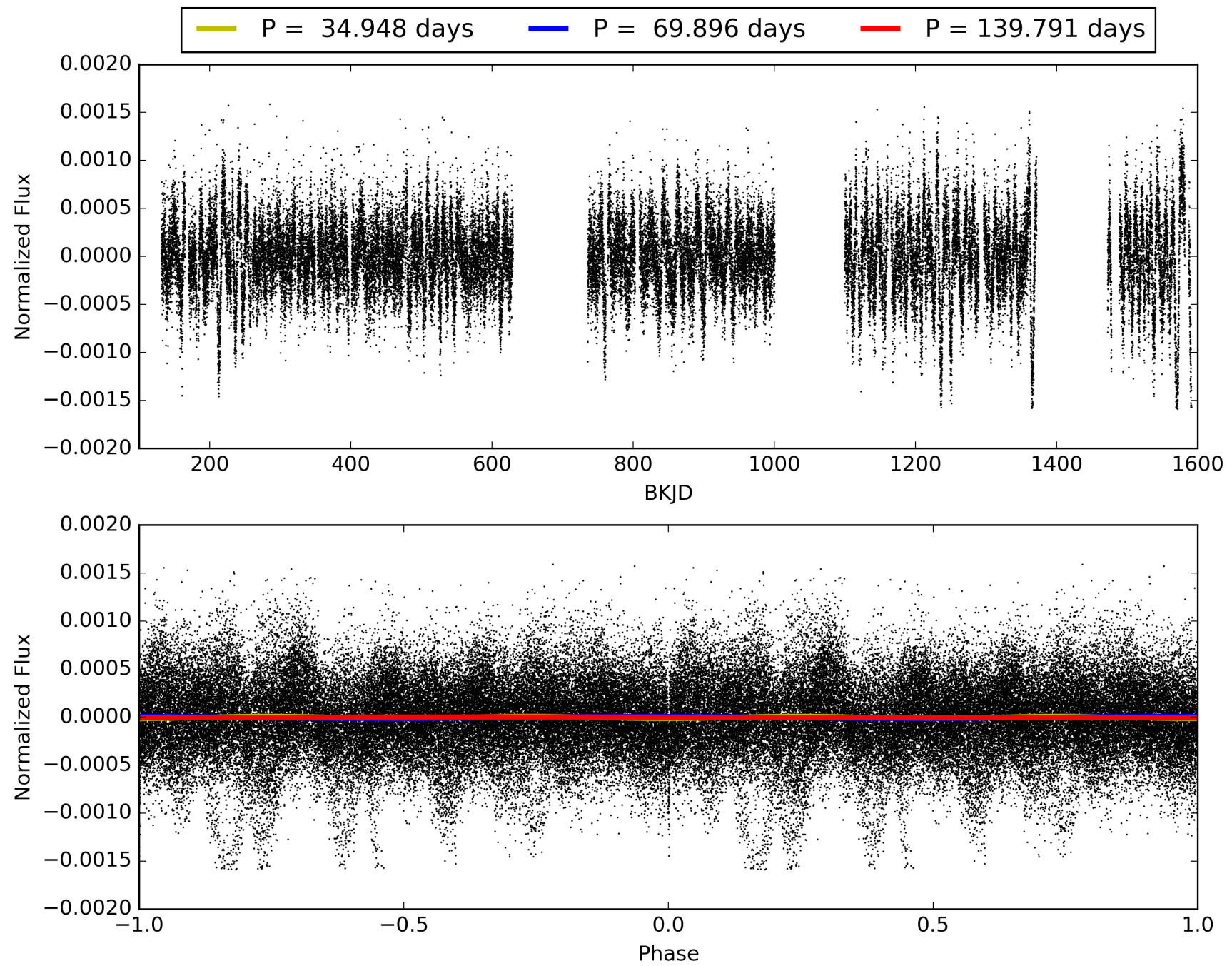
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [522.34σ]
ModelChiSquare2-sig: 62.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.36e-66
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: 5.914
Centroid-sig: 79.5%
Centroid-so: 0.595 arcsec [0.92σ]
OotOffset-rm: 0.115 arcsec [0.49σ]
KicOffset-rm: 0.042 arcsec [0.18σ]
OotOffset-st: 2/1/3/4 [10]
KicOffset-st: 2/1/3/4 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 1.00 [11/11]

TCE 009661979-01, PDC Light Curves

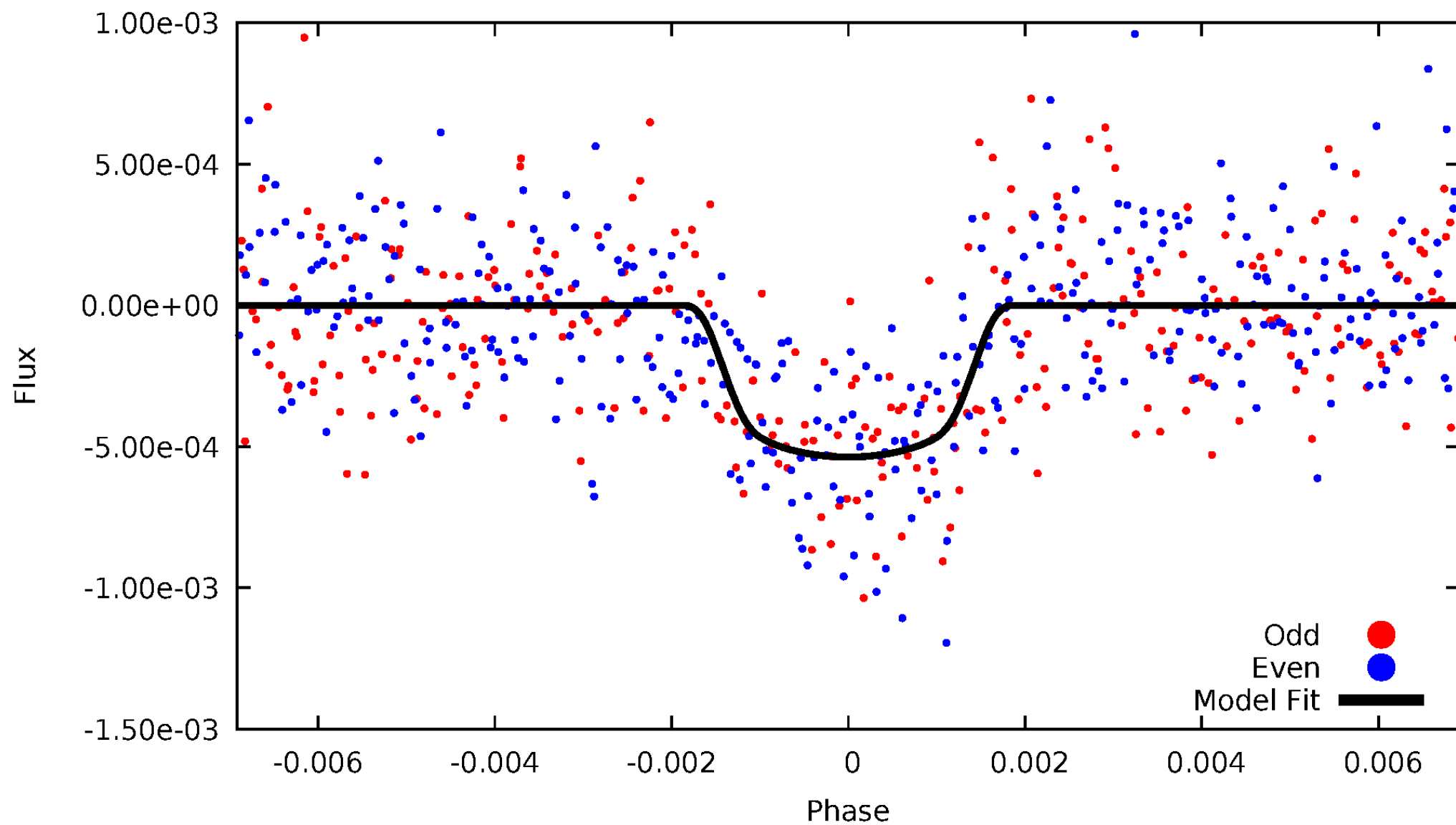


TCE 009661979-01



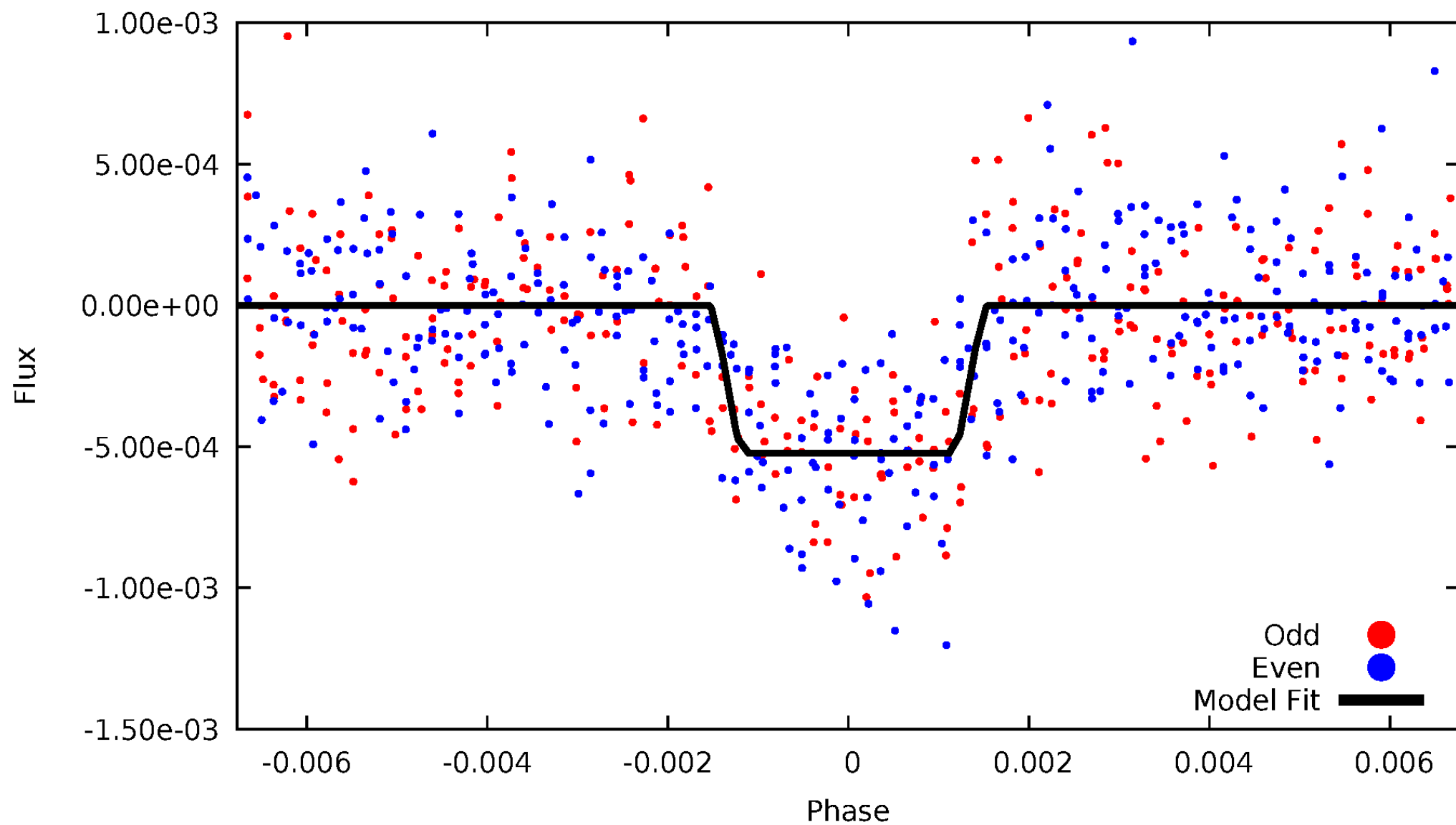
DV Odd/Even

TCE 009661979-01

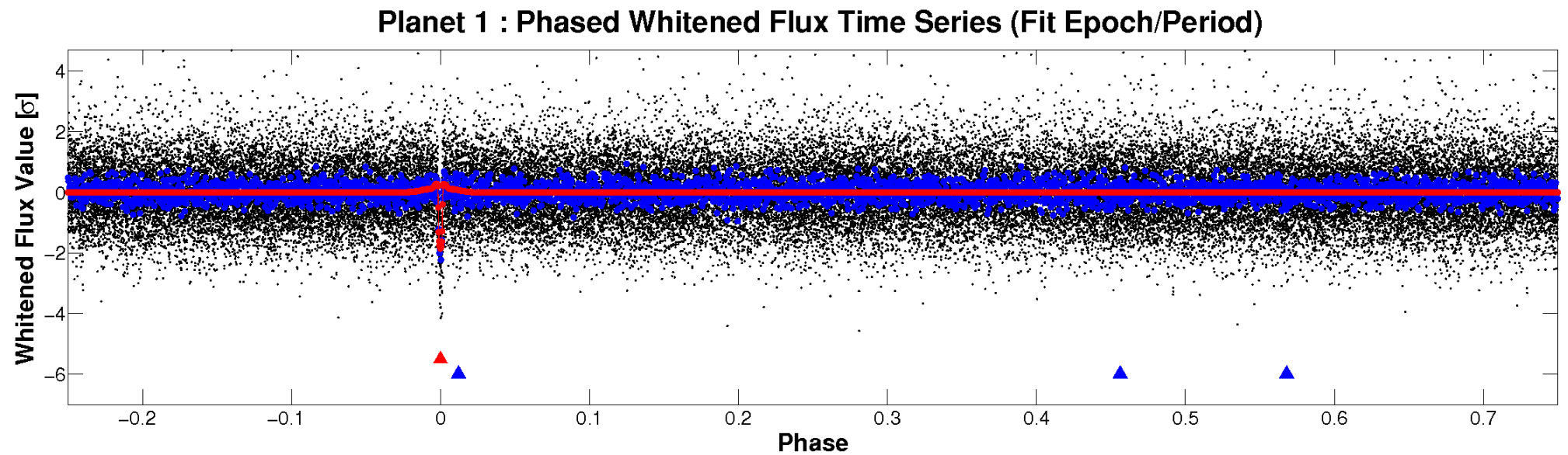
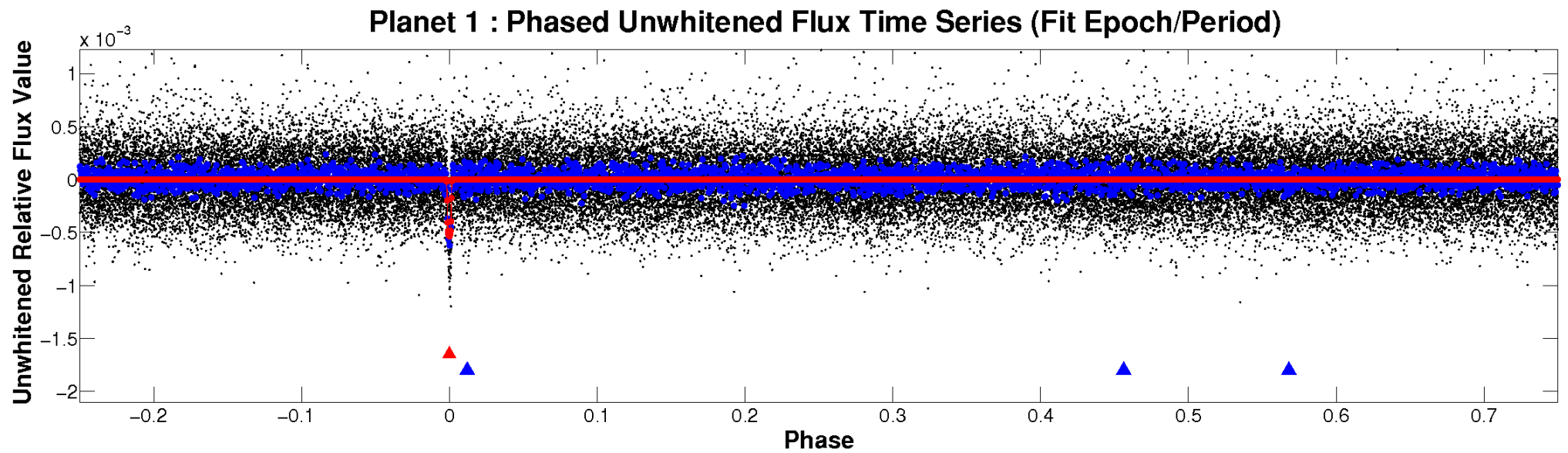


ALT Odd/Even

TCE 009661979-01

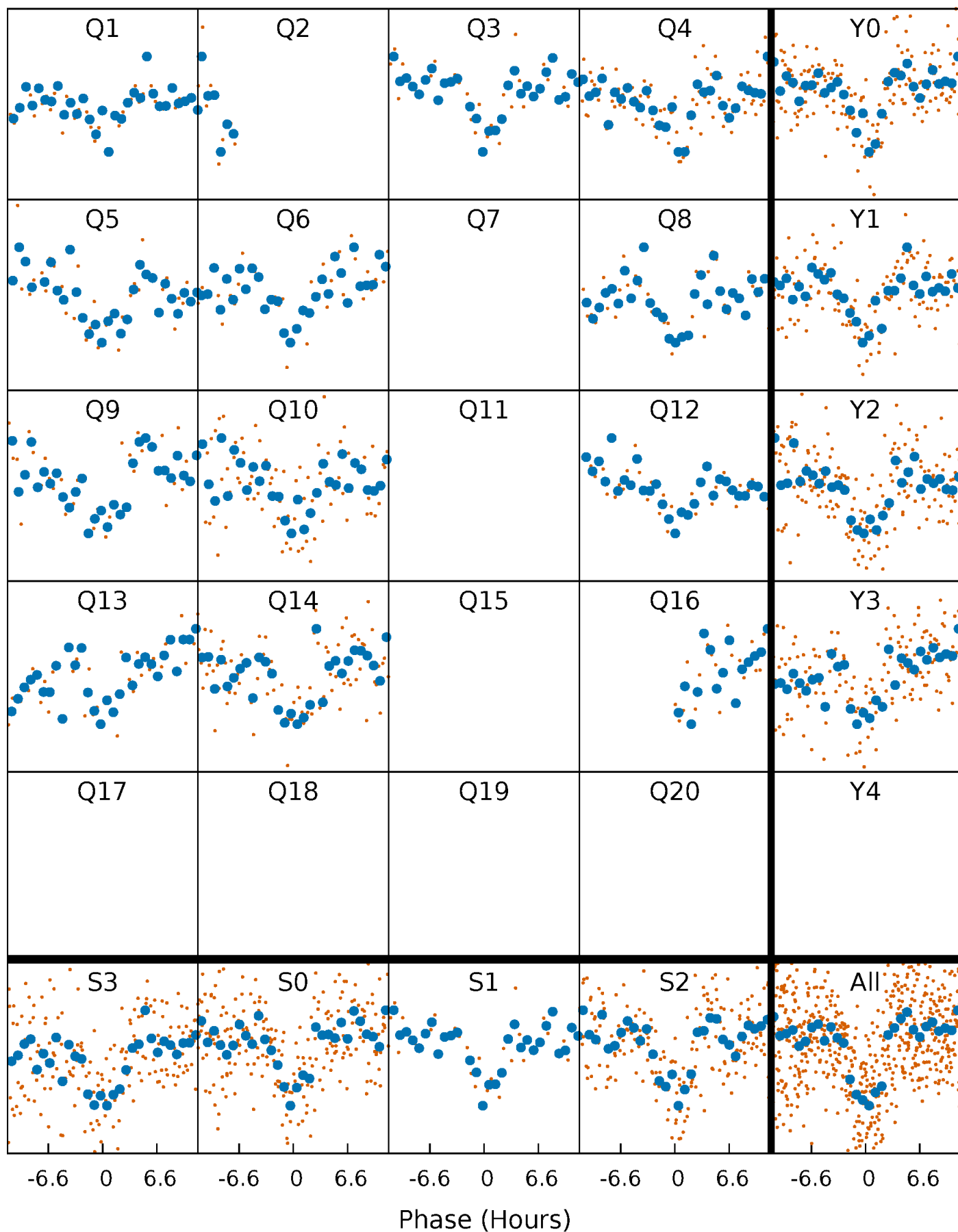


Non-Whitened Vs. Whitened Light Curve



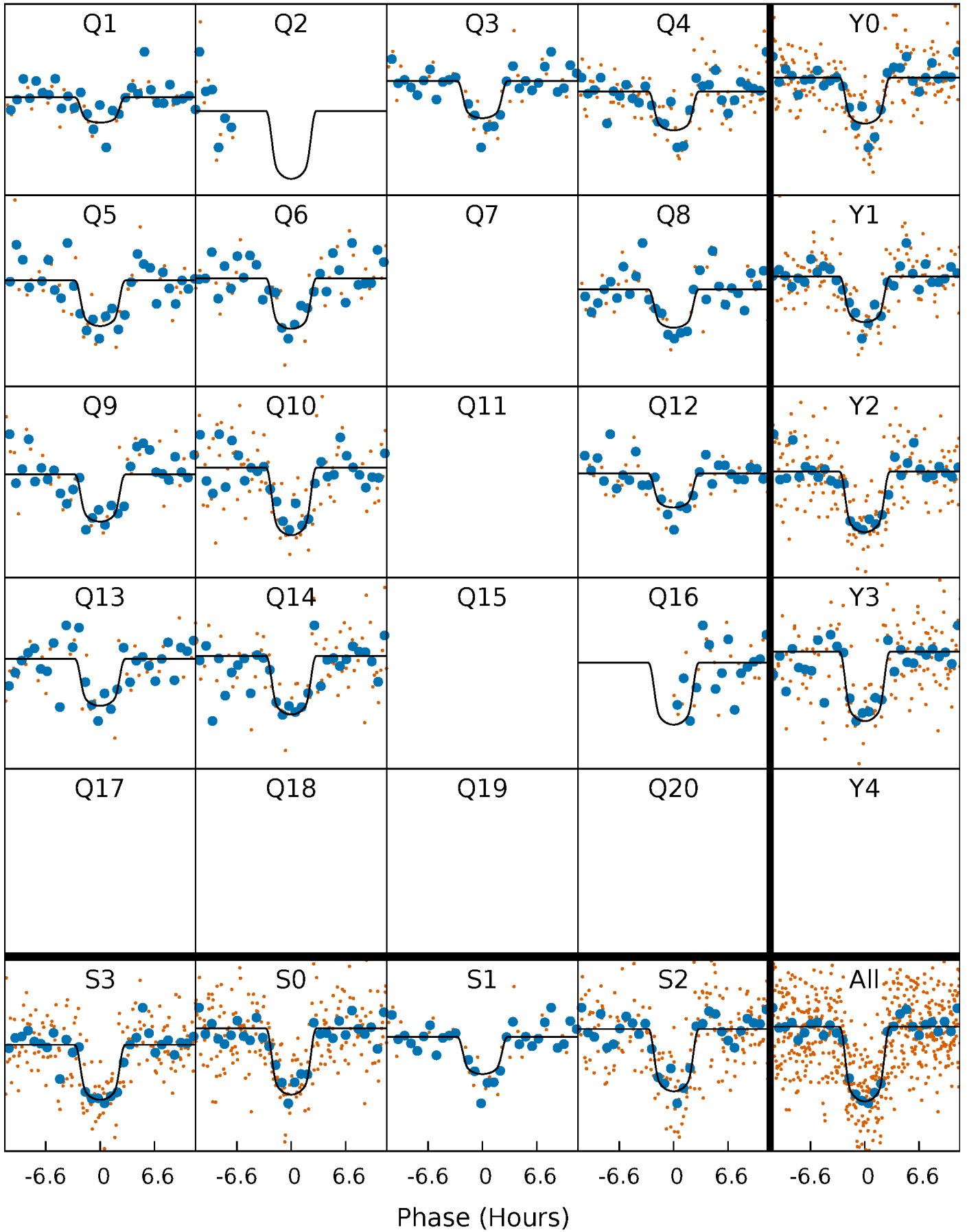
PDC Quarter-Phased Transit Curves

TCE 009661979-01 P= 69.895595 Days $T_0=160.669906$ (BKJD)



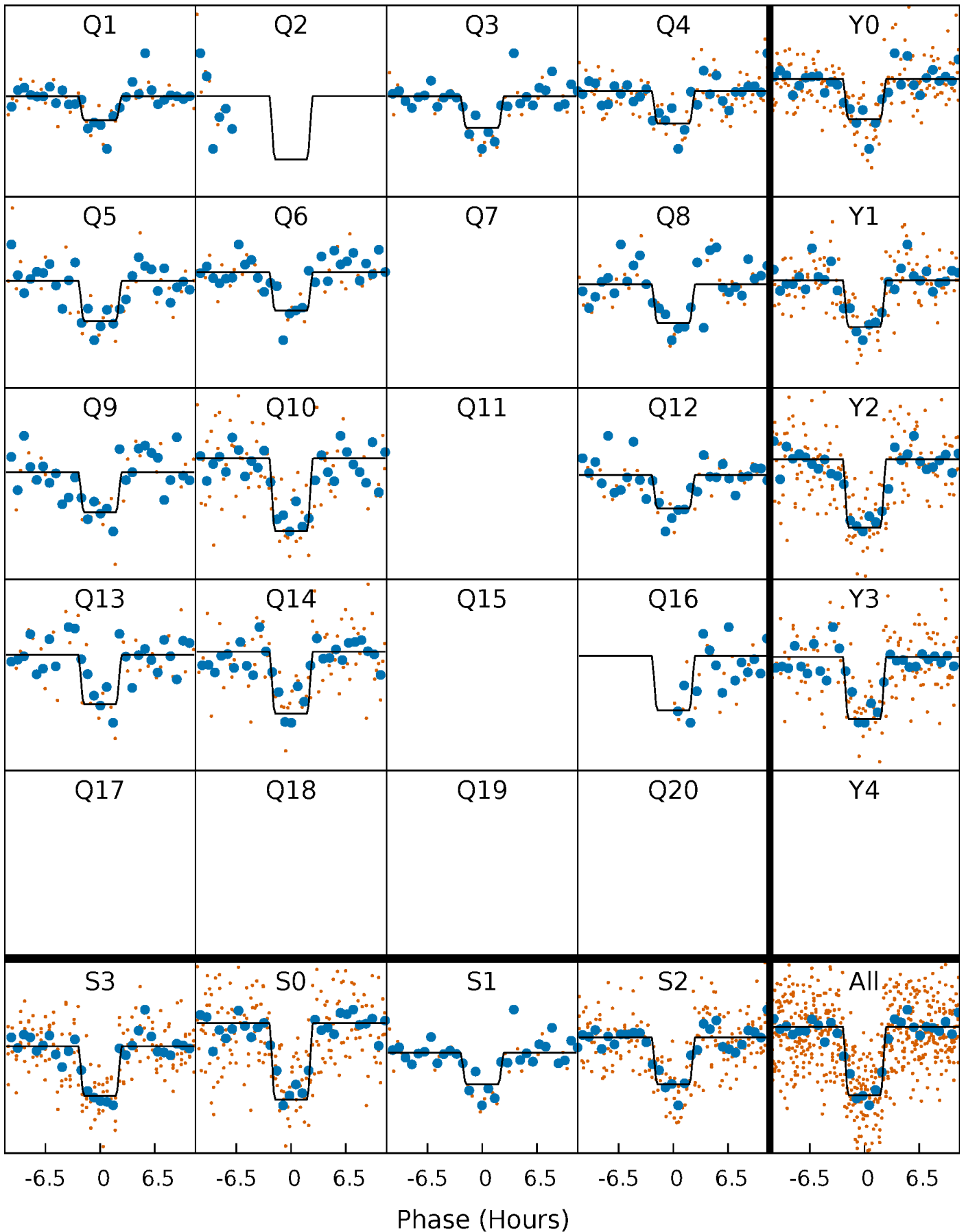
DV Quarter-Phased Transit Curves

TCE 009661979-01 P= 69.895595 Days $T_0=160.669906$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

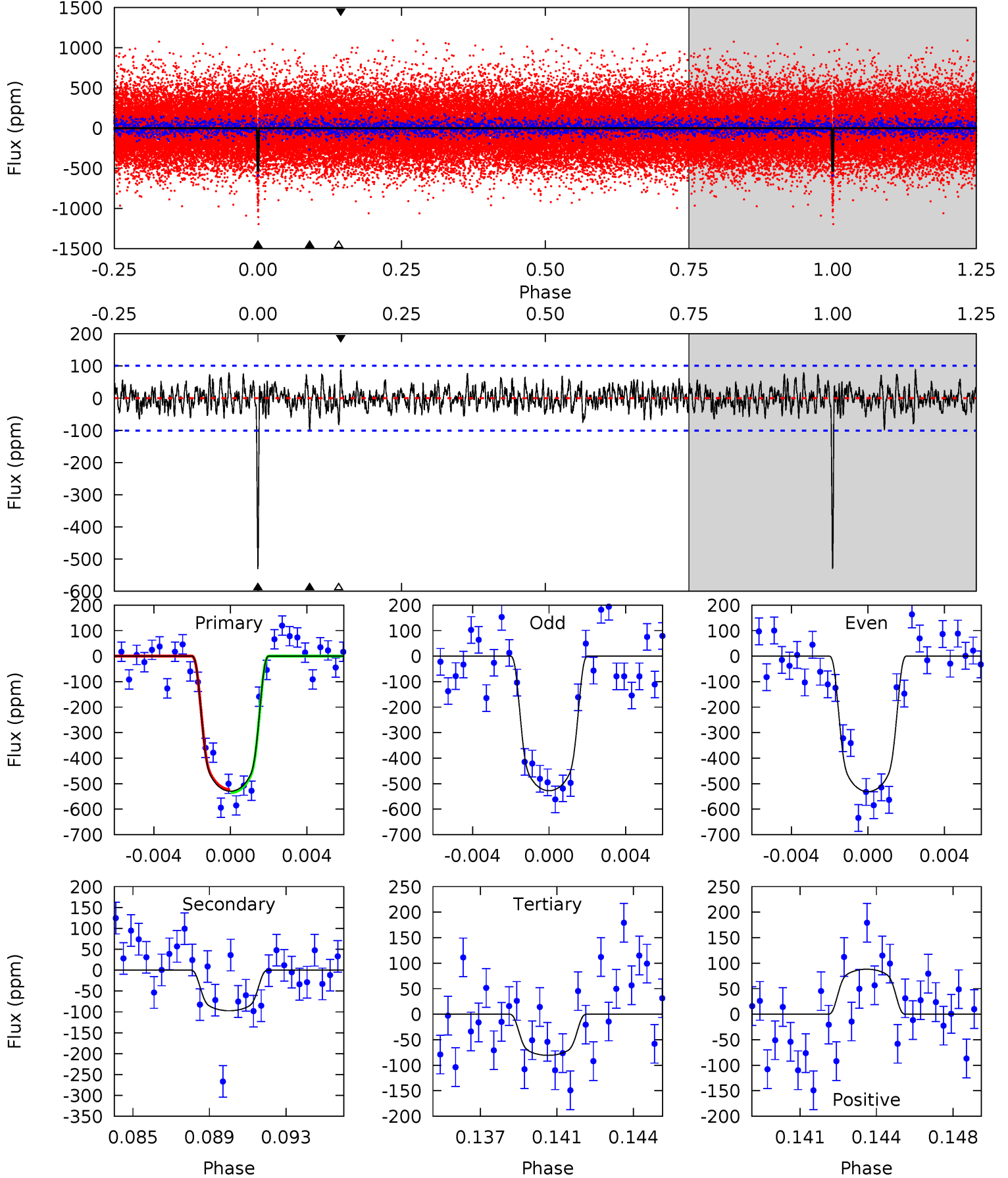
TCE 009661979-01 P= 69.895093 Days $T_0=160.676524$ (BKJD)



DV Model-Shift Uniqueness Test

009661979-01, P = 69.895595 Days, E = 90.774311 Days

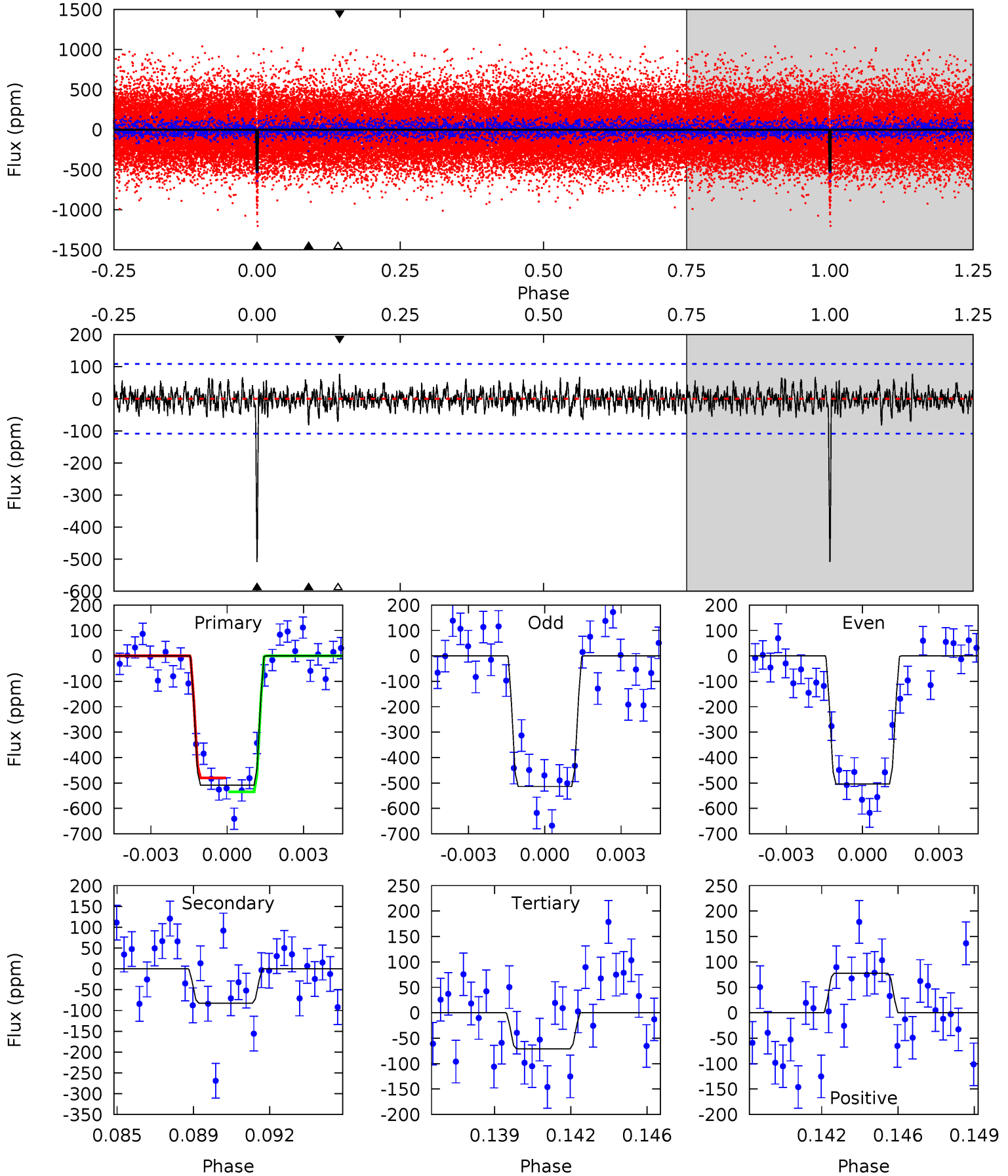
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.4	5.03	4.17	4.56	5.21	2.90	1.37	23.2	22.8	0.86	0.47	0.09	0.99	0.14	0.32



Alt Model-Shift Uniqueness Test

009661979-01, P = 69.895093 Days, E = 90.781431 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.5	3.99	3.42	3.76	5.24	2.95	1.07	21.1	20.8	0.57	0.23	0.23	0.97	0.13	1.31



Stellar Parameters For KIC 009661979

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5390^{+80}_{-72}	$4.303^{+0.170}_{-0.155}$	$0.200^{+0.150}_{-0.150}$	$1.104^{+0.227}_{-0.185}$	$0.893^{+0.061}_{-0.035}$	$0.935^{+0.693}_{-0.399}$
	+1%/-1%	+4%/-4%	+75%/-75%	+21%/-17%	+7%/-4%	+74%/-43%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009661979-01 / KOI 2132.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-97 ± 19	$3.24^{+0.44}_{-0.39}$	618^{+36}_{-32}	3681^{+153}_{-157}	529^{+187}_{-154}
Alt.	-83 ± 21	$2.73^{+0.41}_{-0.35}$	616^{+34}_{-32}	3773^{+199}_{-215}	615^{+283}_{-213}

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 $A_{obs} \gg 1.0$

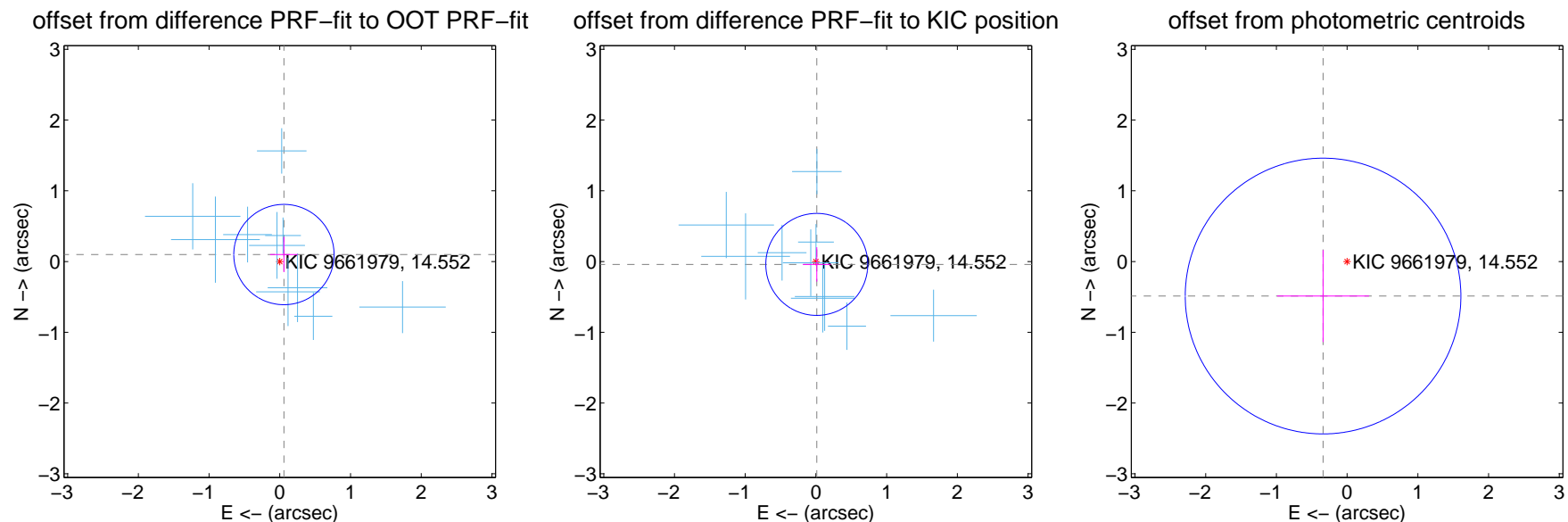
DV Centroid Data

Supplemental centroid analysis for 009661979-01. Kepler magnitude: 14.55. Transit SNR 18.81

There are 10 quarters with good PRF difference image offsets

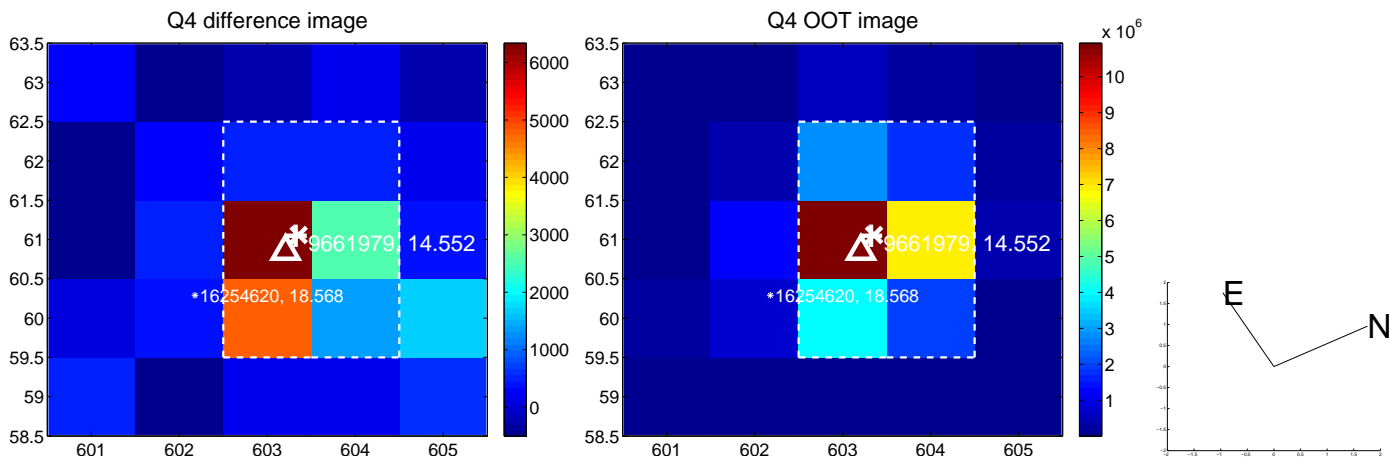
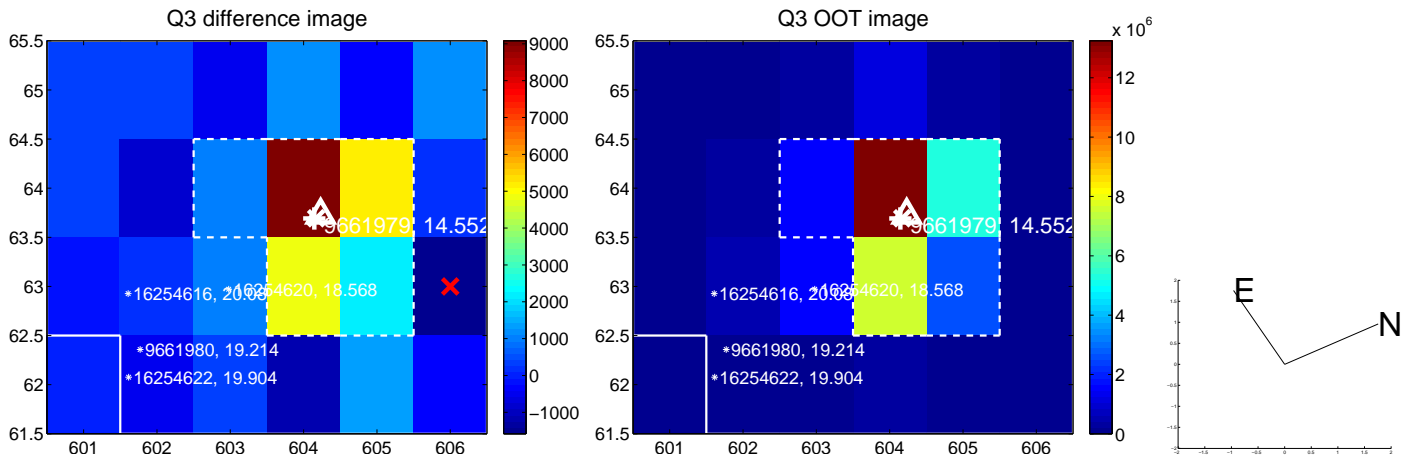
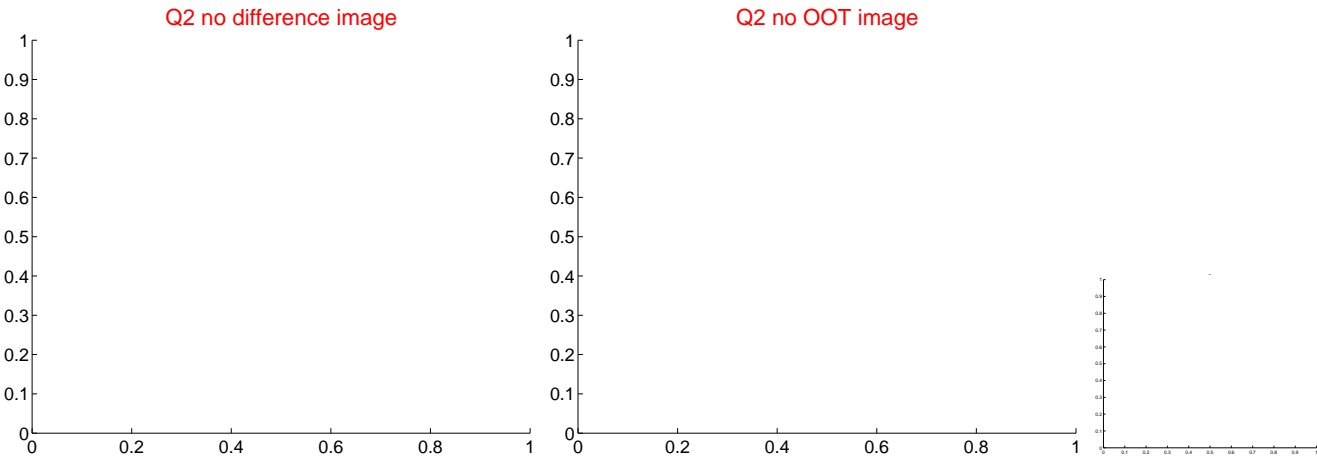
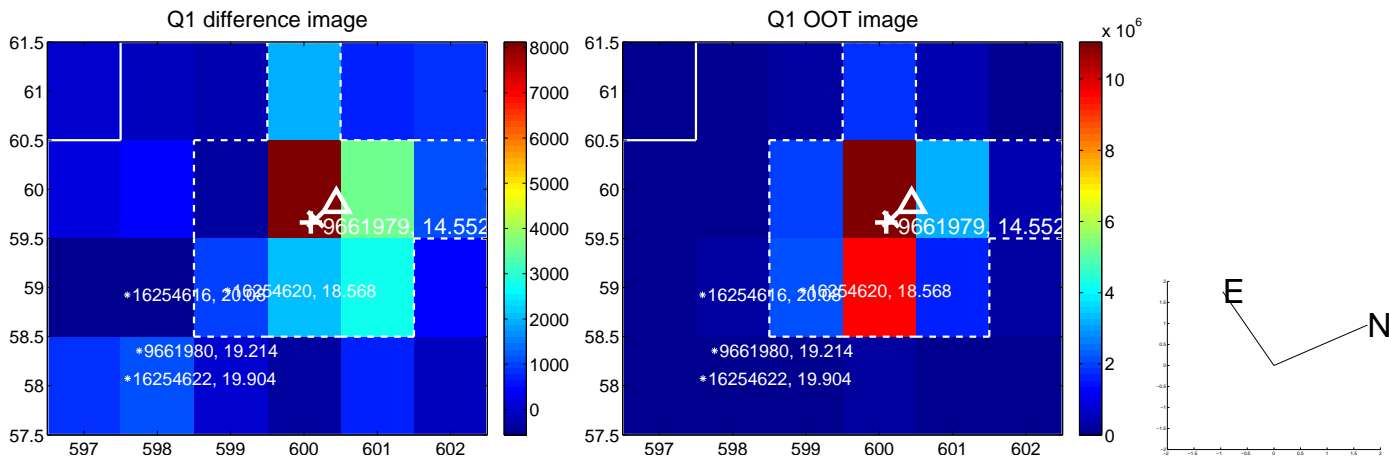
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.115 ± 0.236	0.49	-0.058 ± 0.196	0.099 ± 0.249
PRF-fit source offset from KIC position	0.042 ± 0.240	0.18	-0.012 ± 0.199	-0.040 ± 0.244
photometric centroid source offset	0.59 ± 0.65	0.92	0.34 ± 0.65	-0.49 ± 0.65

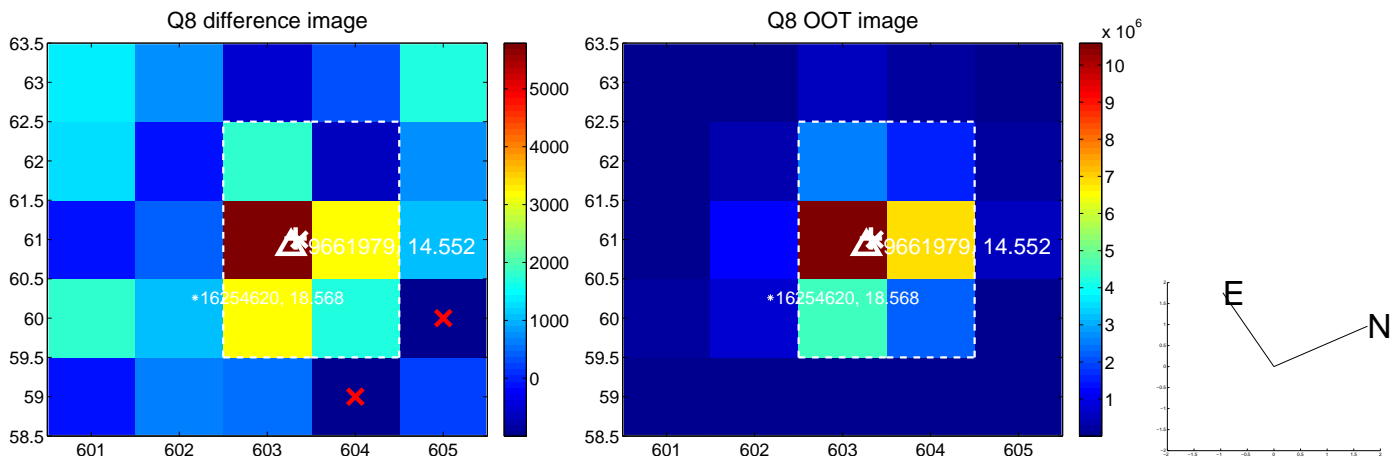
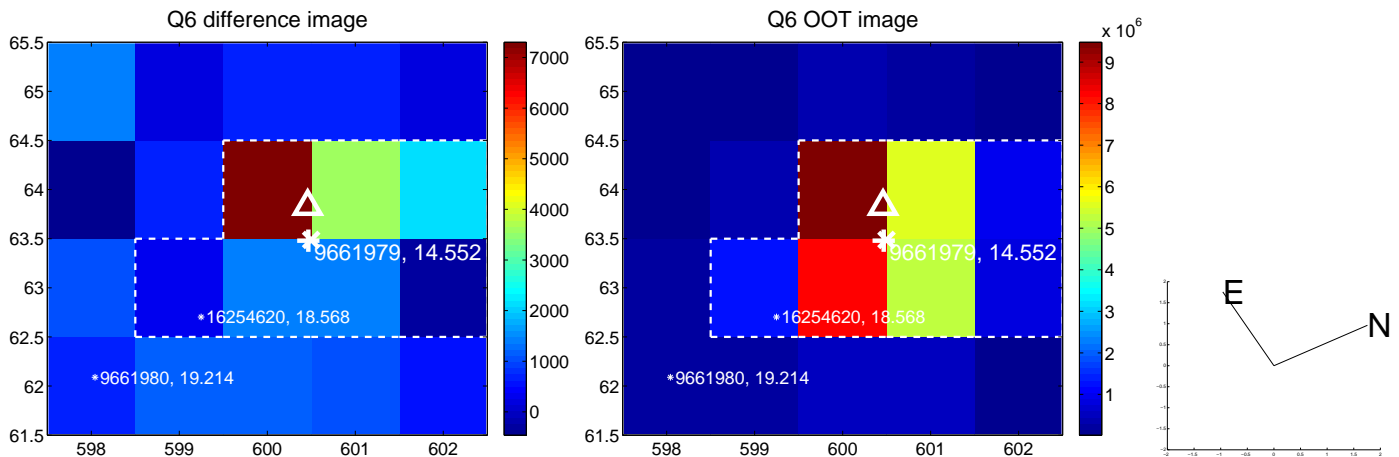
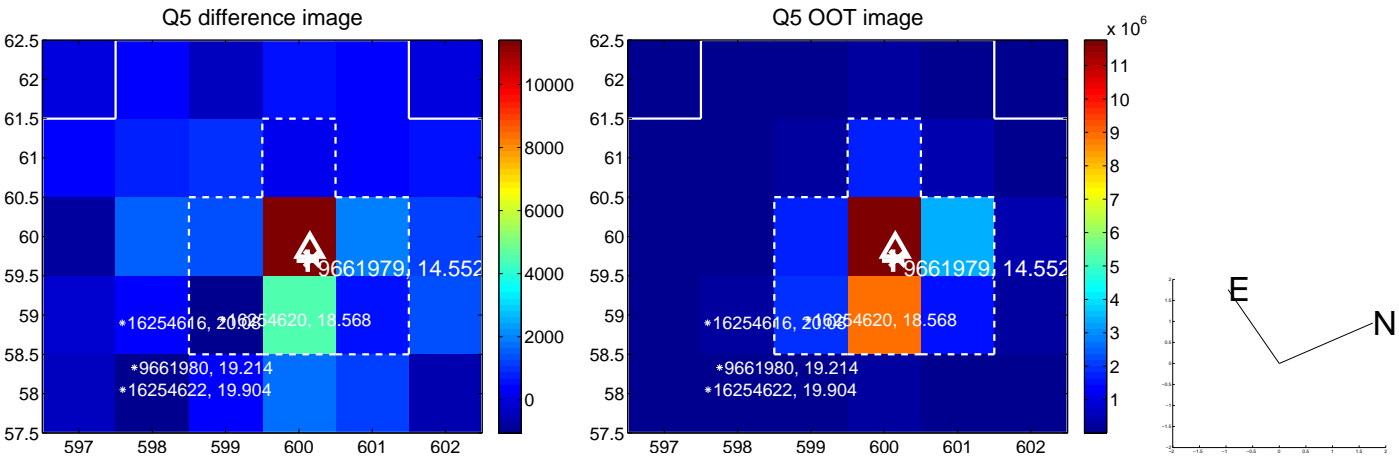


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

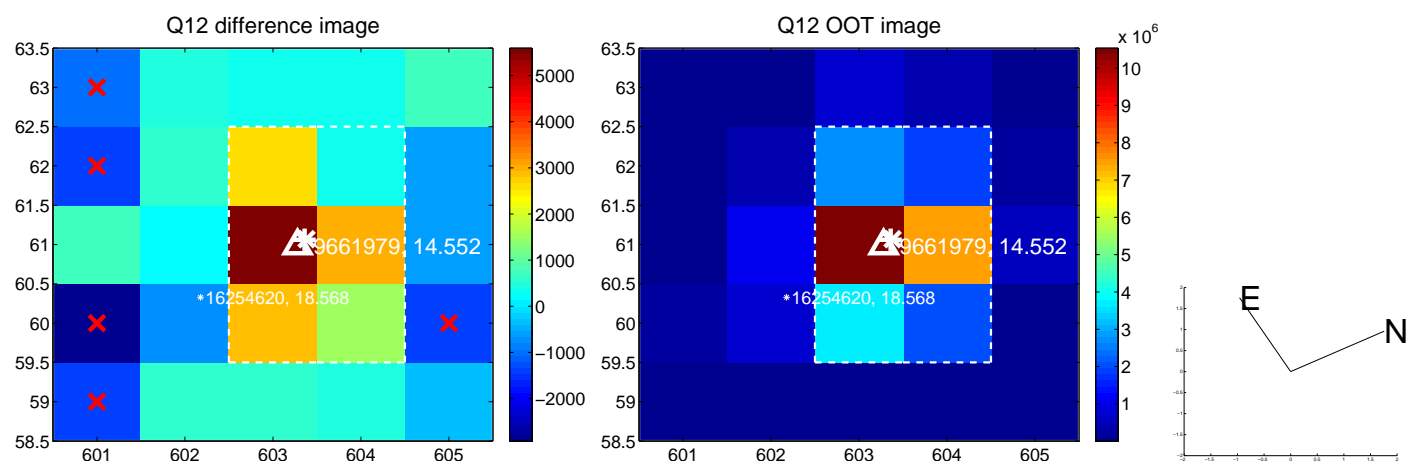
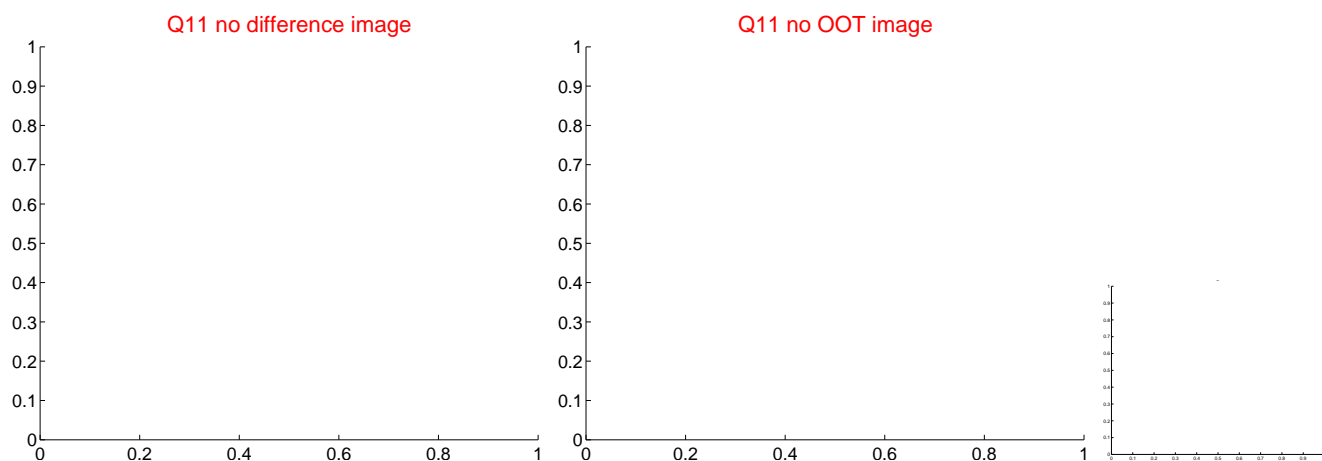
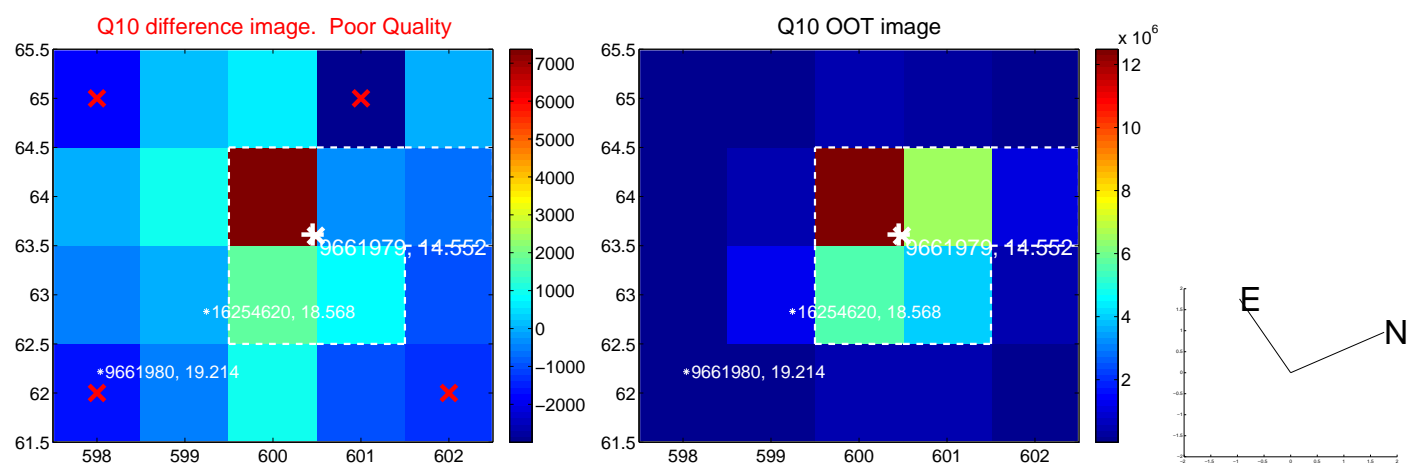
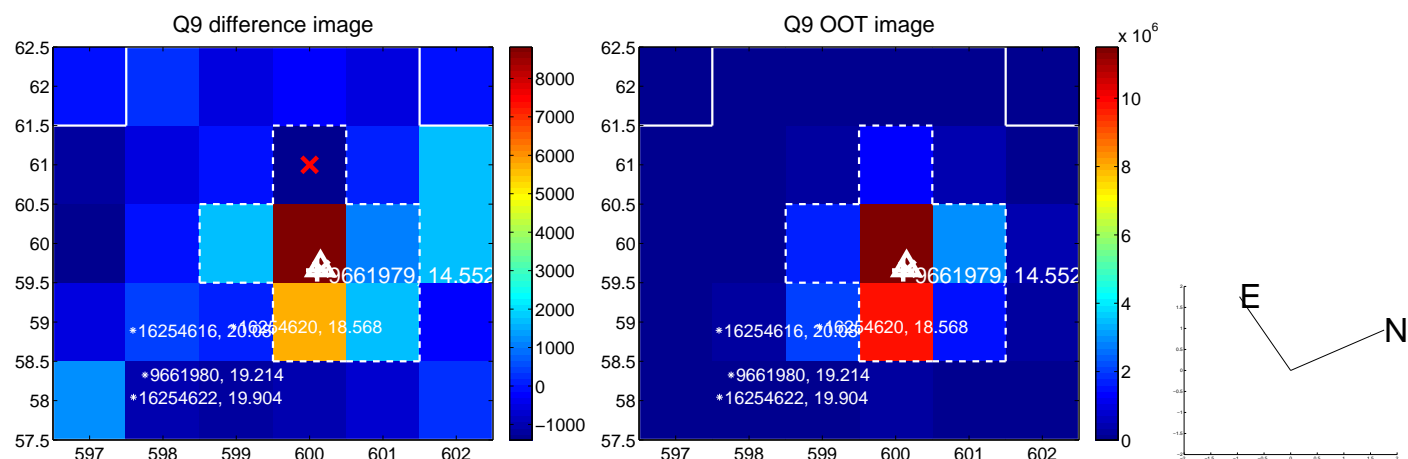
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



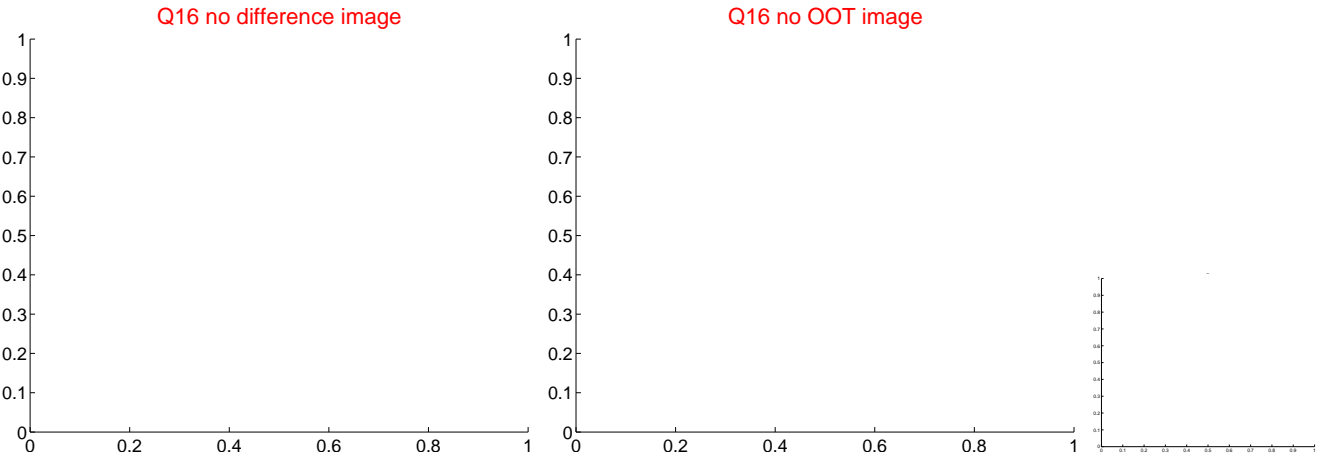
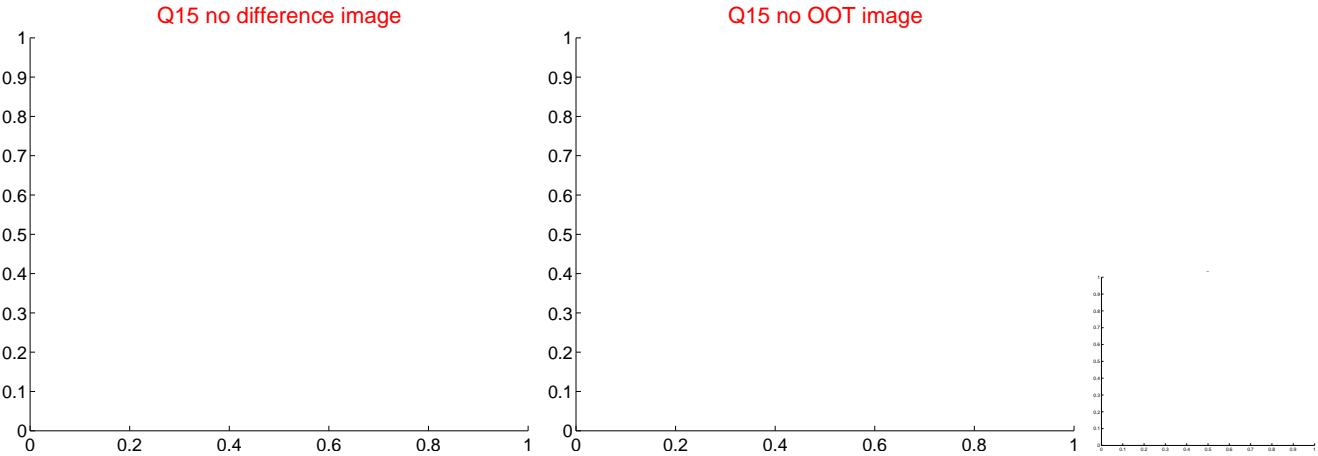
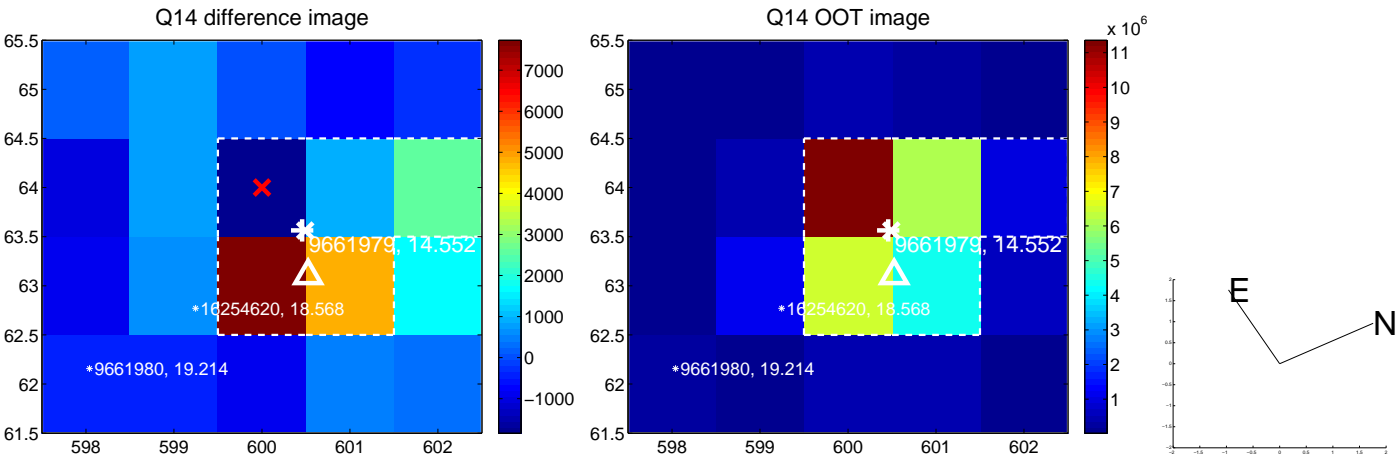
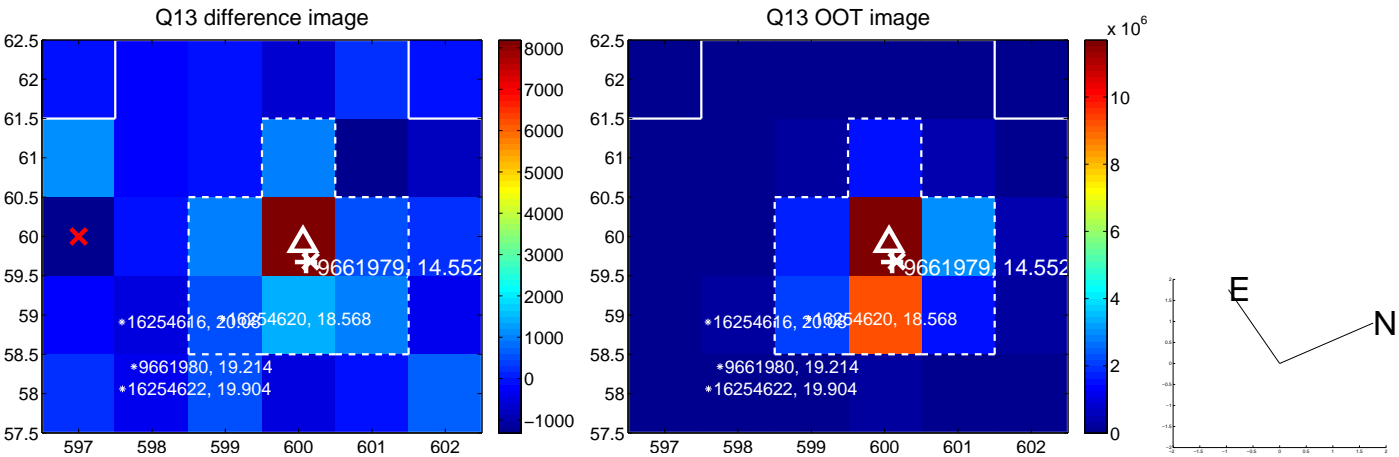
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



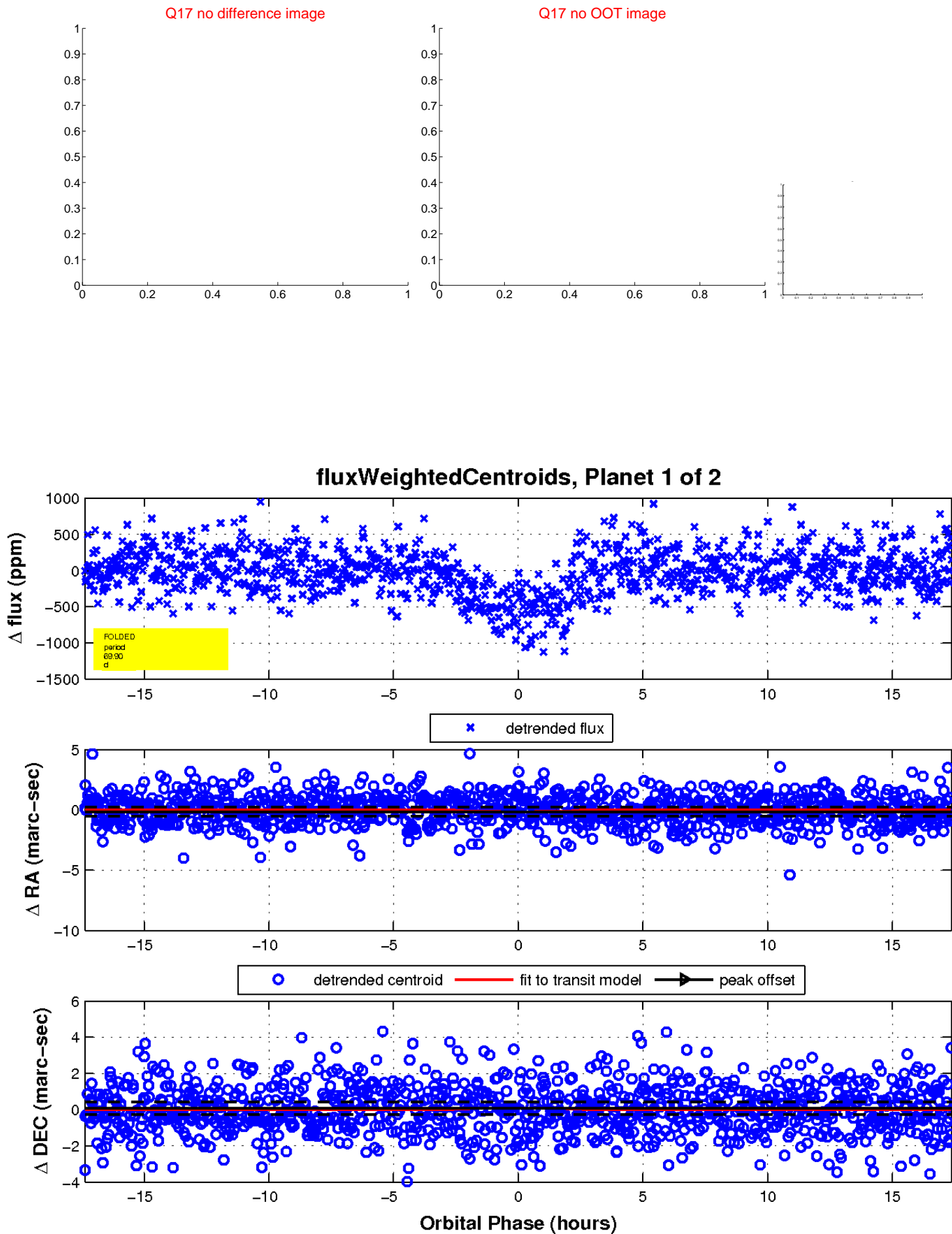
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

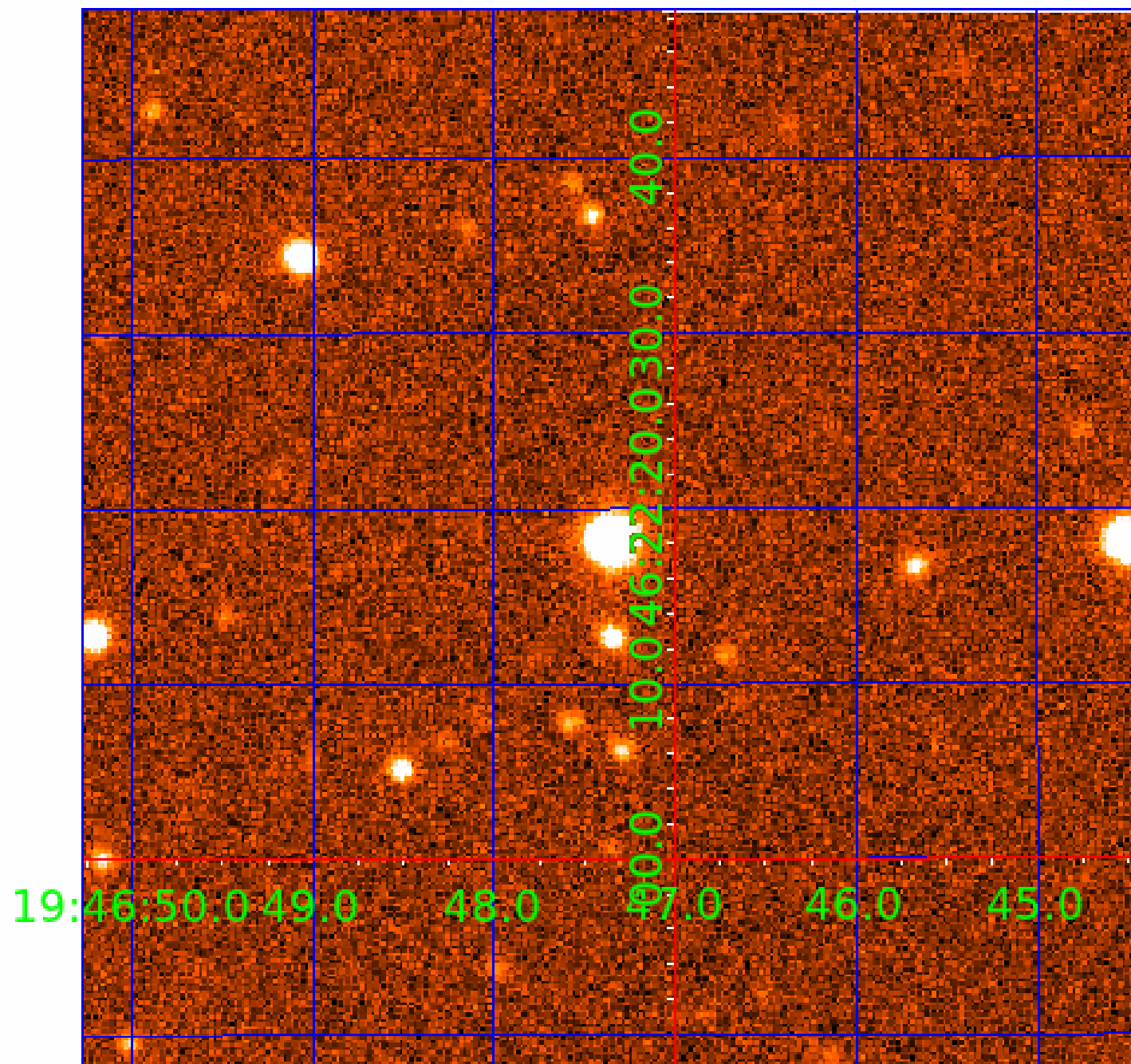


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009661979

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})
009661979-01	OBS	2132.01	69.895595	160.669906	536.8	5.800	17.7	18.8	1.10	5390	3.22	9.01
009661979-02	OBS	No	380.520708	479.952157	421.8	13.041	8.6	8.5	1.10	5390	2.31	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009661979-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009661979-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—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 009661979-02

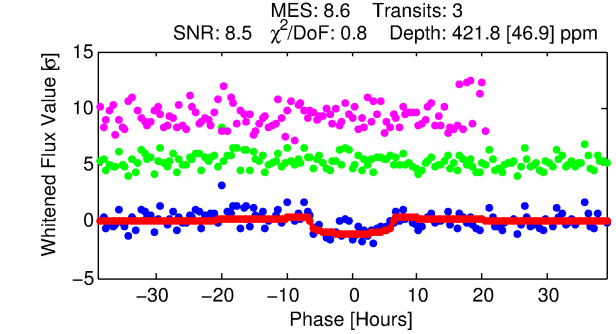
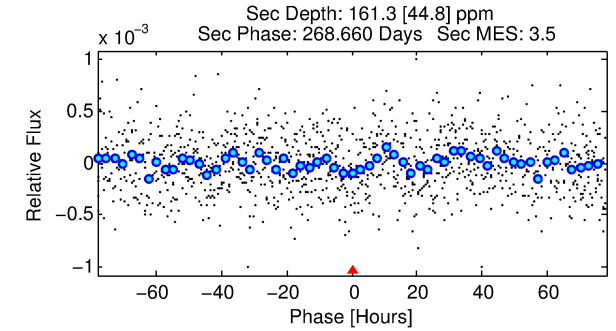
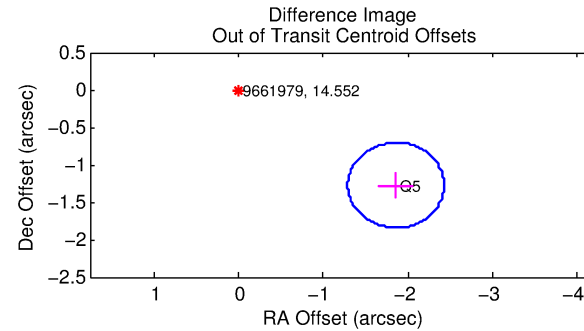
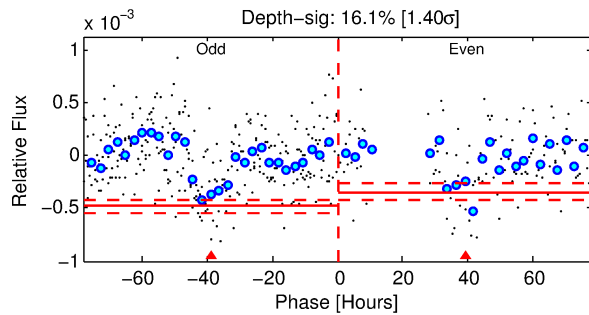
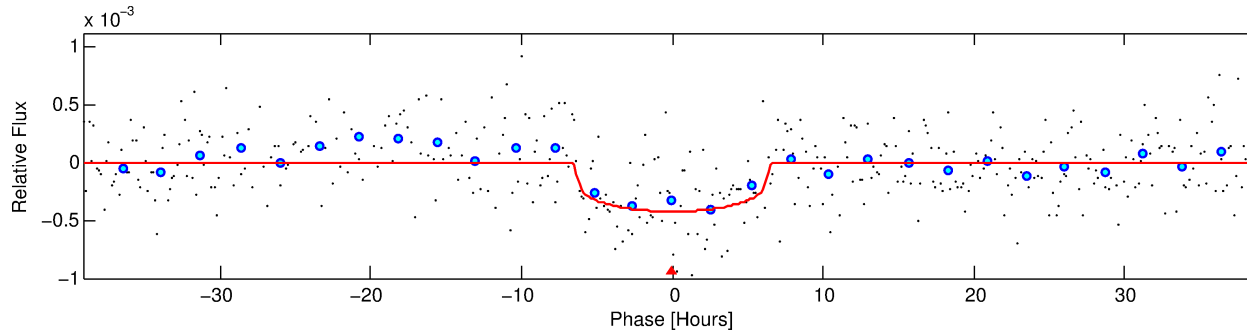
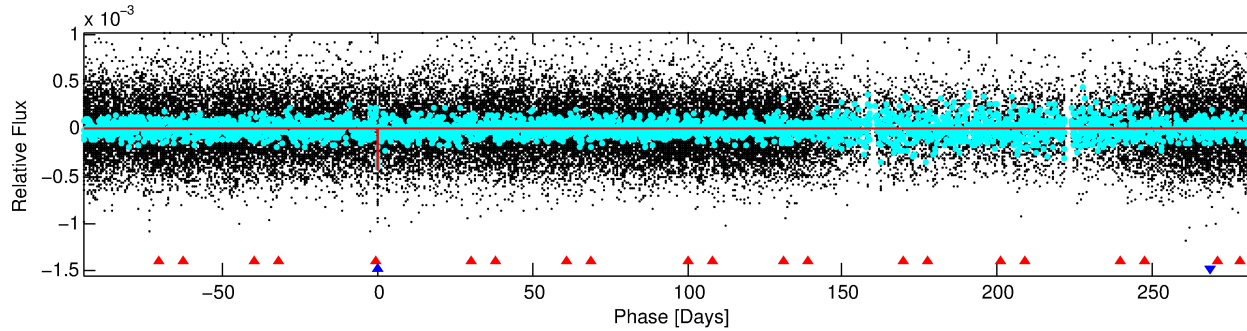
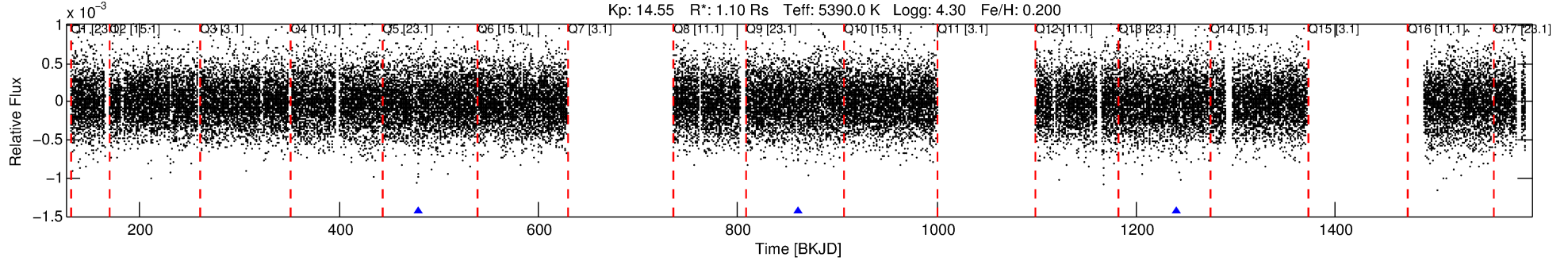
No Significant Match Found

DV One-Page Summary

KIC: 9661979 Candidate: 2 of 2 Period: 380.521 d

KOI: K02132 Corr: No Ephemeris Match

Kp: 14.55 R*: 1.10 Rs Teff: 5390.0 K Logg: 4.30 Fe/H: 0.200



DV Fit Results:

Period = 380.52071 [0.01246] d
Epoch = 479.9522 [0.0164] BKJD
Rp/R* = 0.0192 [0.0157]
a/R* = 194.15 [600.60]
b = 0.53 [4.25]
Seff = 0.94 [0.28]
Teq = 251 [19] K
Rp = 2.31 [1.95] Re
a = 0.9899 [0.1873] AU
Ag = 16288.72 [27484.86] [0.59σ]
Teffp = 4386 [1823] K [2.27σ]

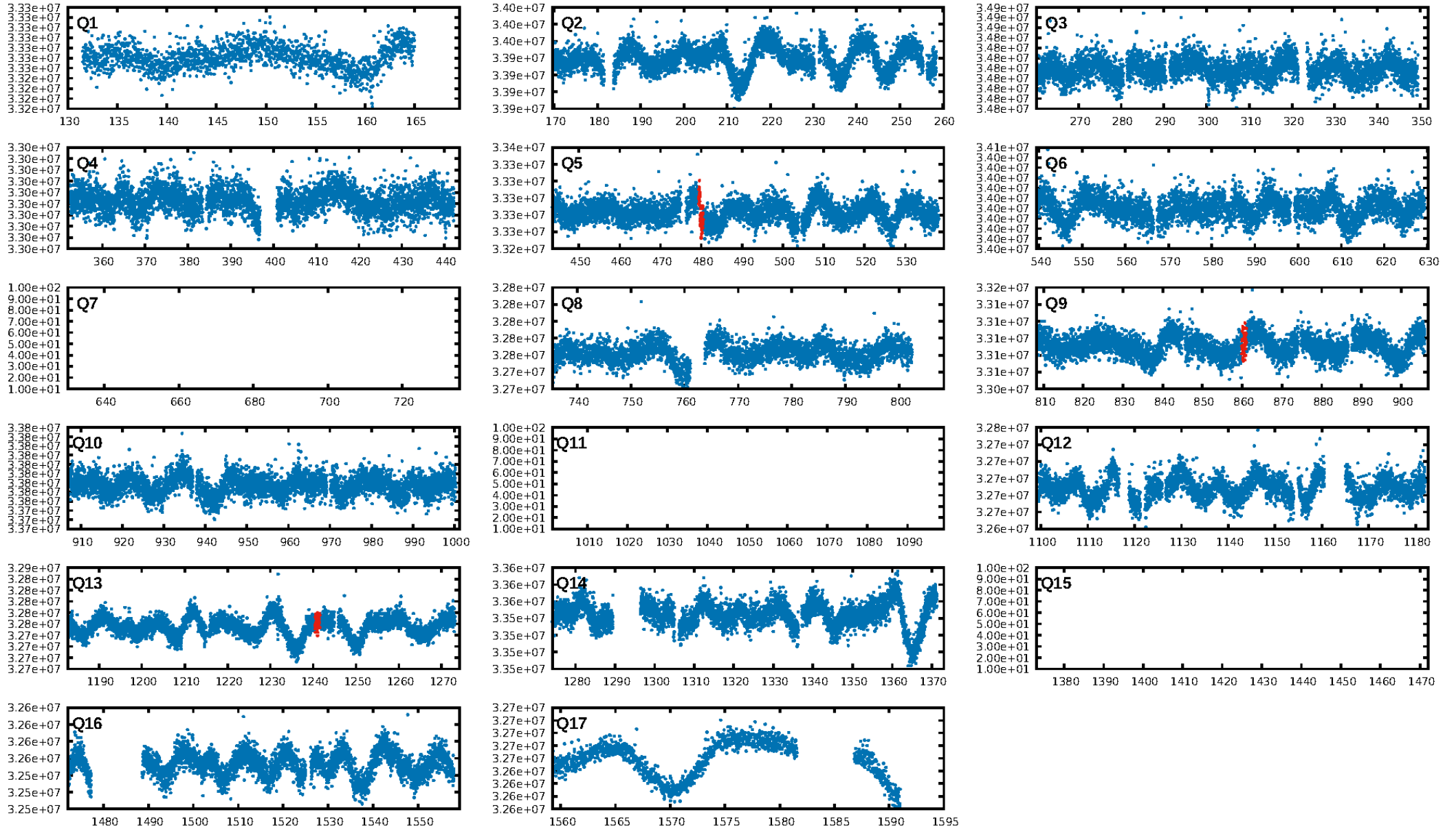
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [522.34σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 20.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.44e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 215.3
Centroid-sig: 2.1%
Centroid-so: 2.807 arcsec [2.25σ]
OotOffset-rm: 2.255 arcsec [11.90σ]
KicOffset-rm: 2.375 arcsec [12.70σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
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DiffImageOverlap-fno: 0.50 [1/2]

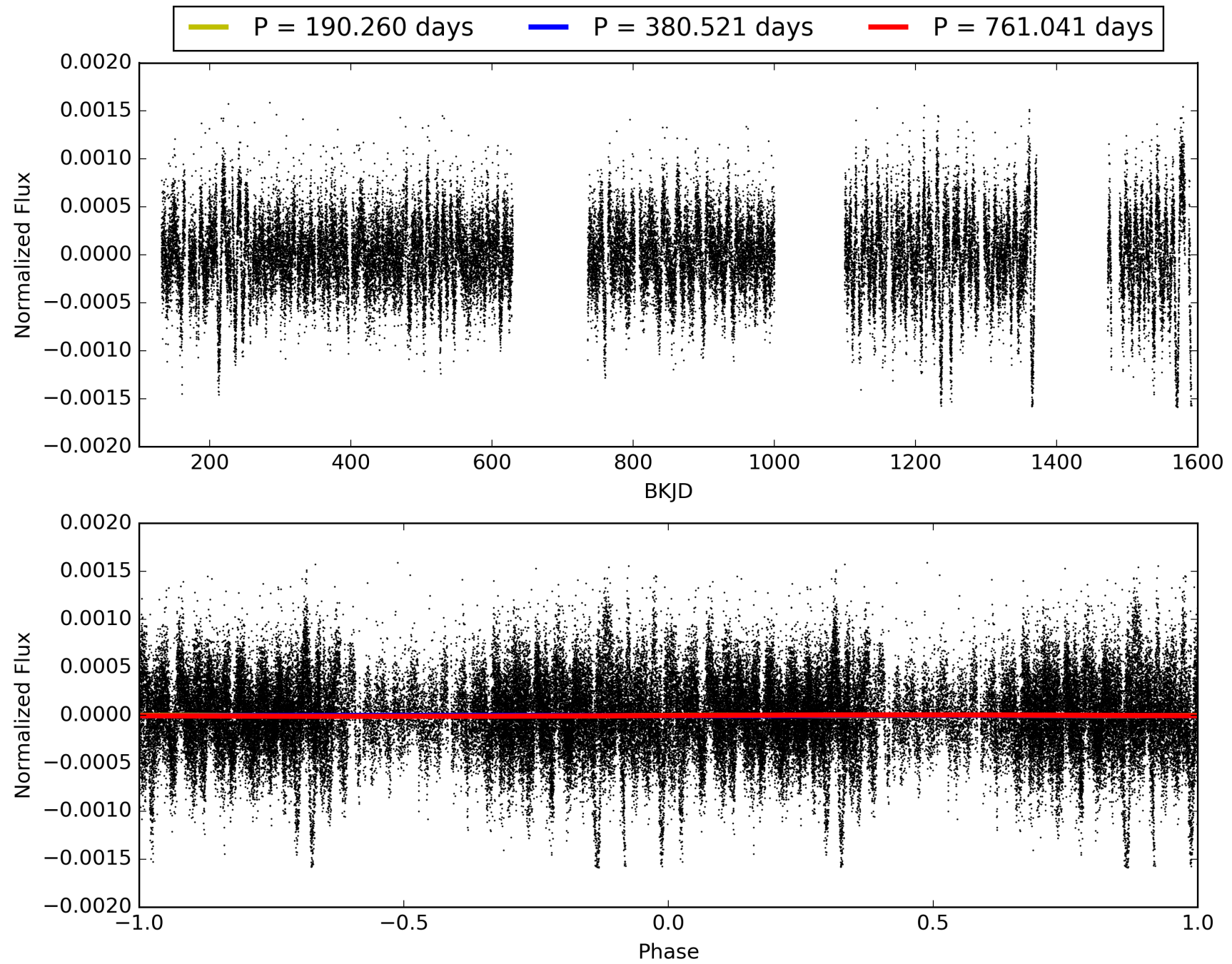
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:16:04 Z

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

TCE 009661979-02, PDC Light Curves

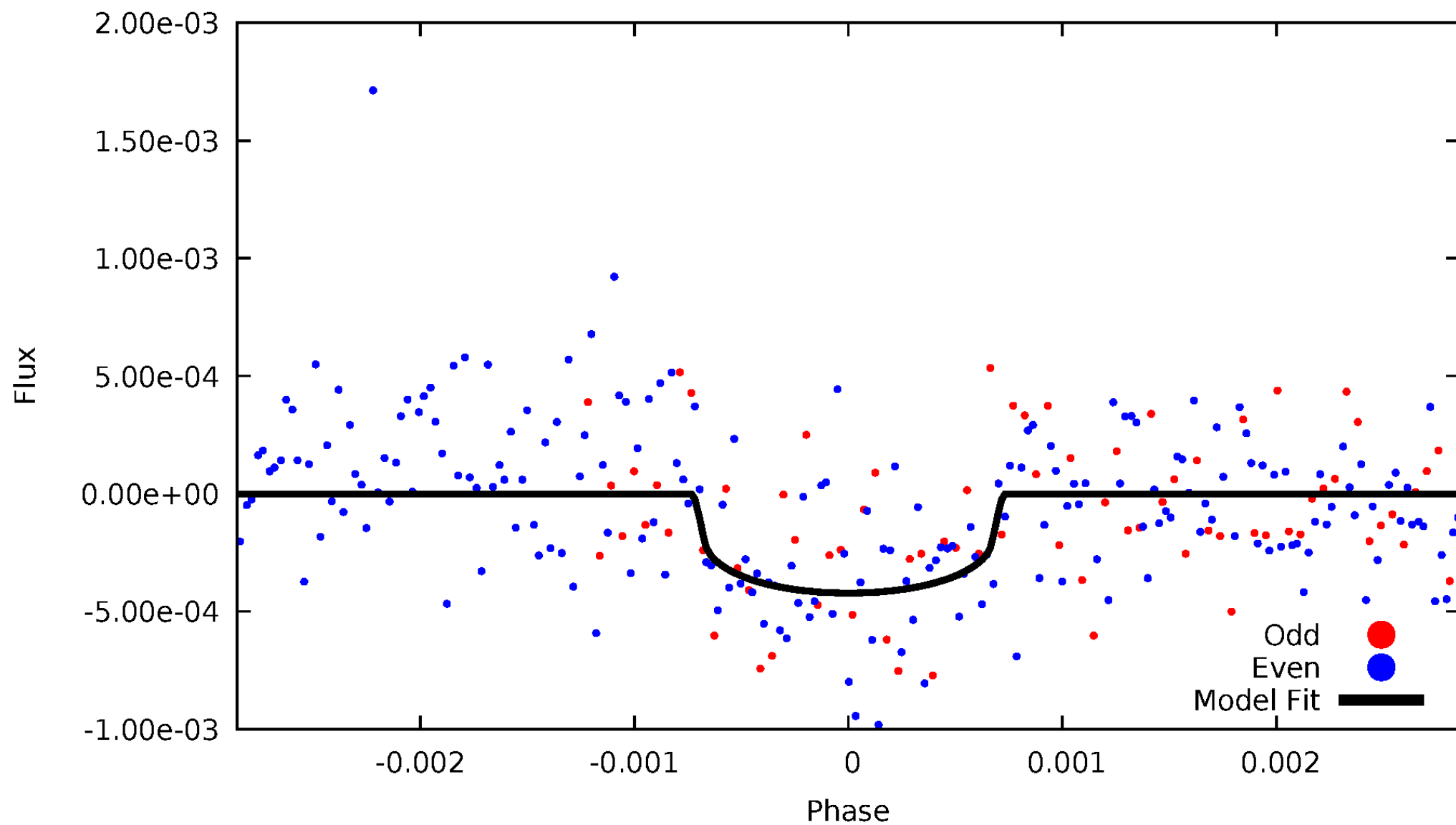


TCE 009661979-02



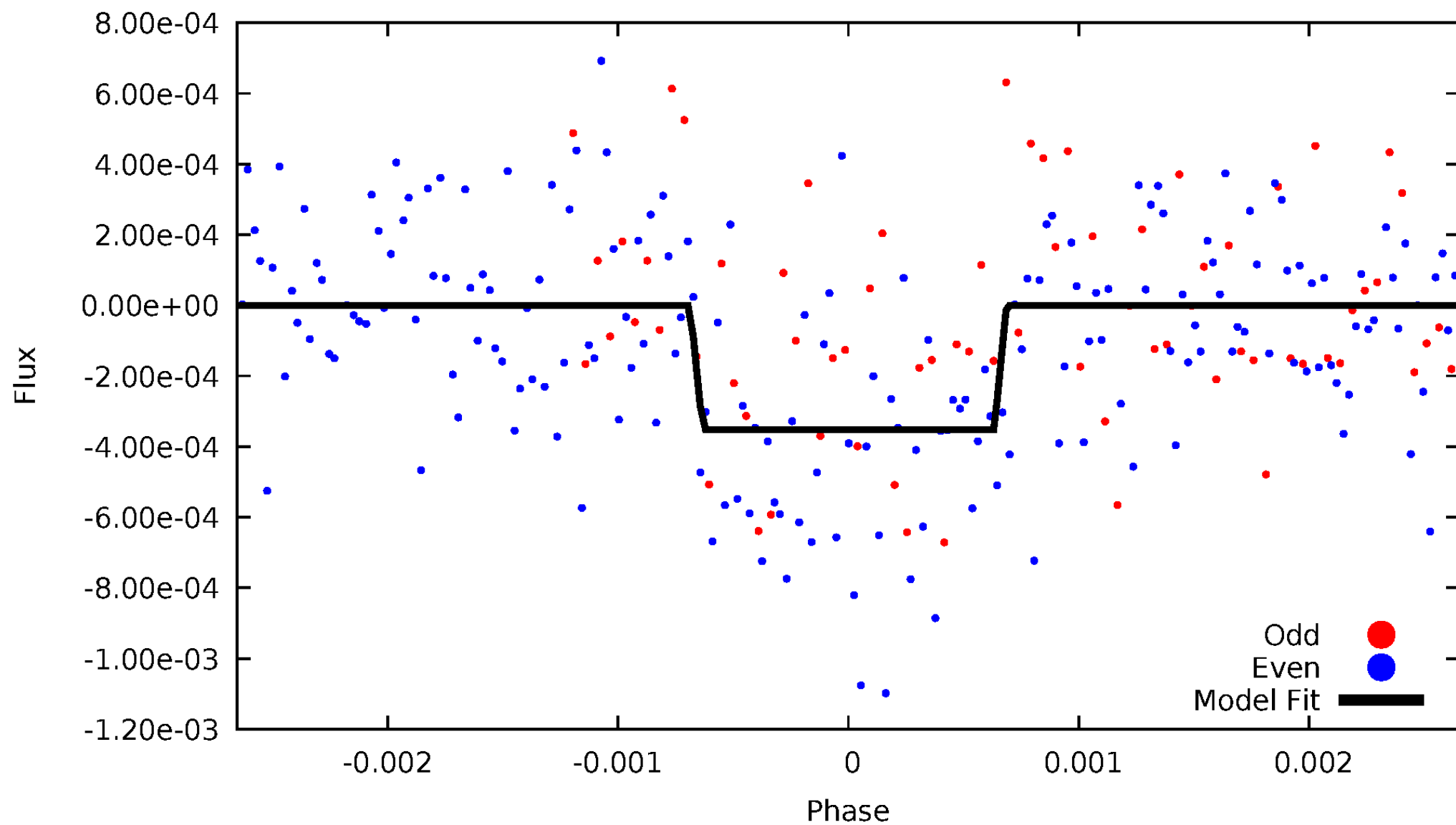
DV Odd/Even

TCE 009661979-02



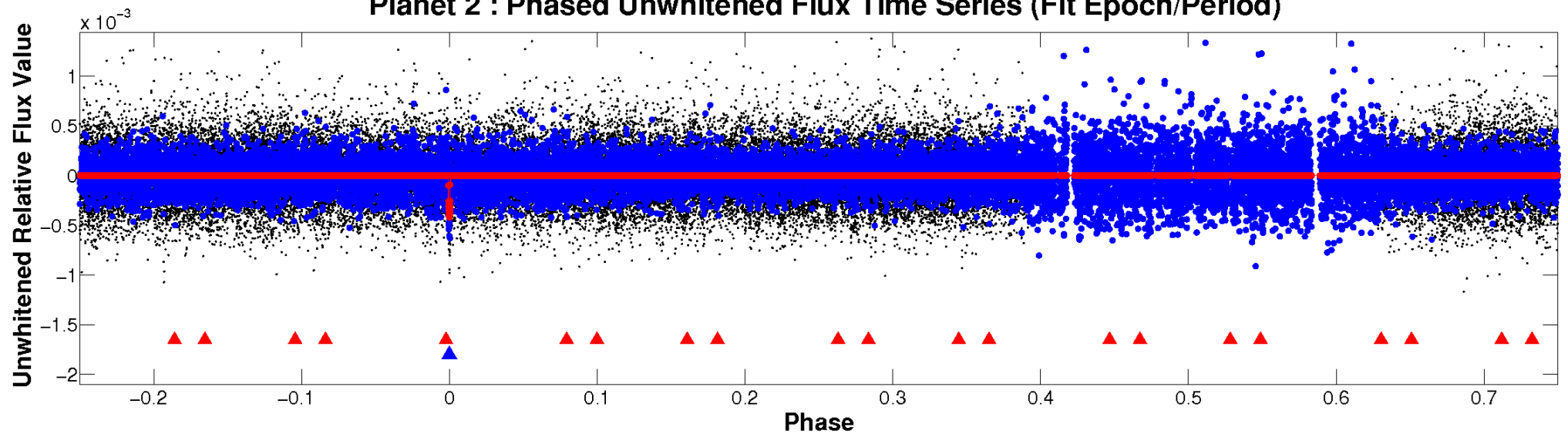
ALT Odd/Even

TCE 009661979-02

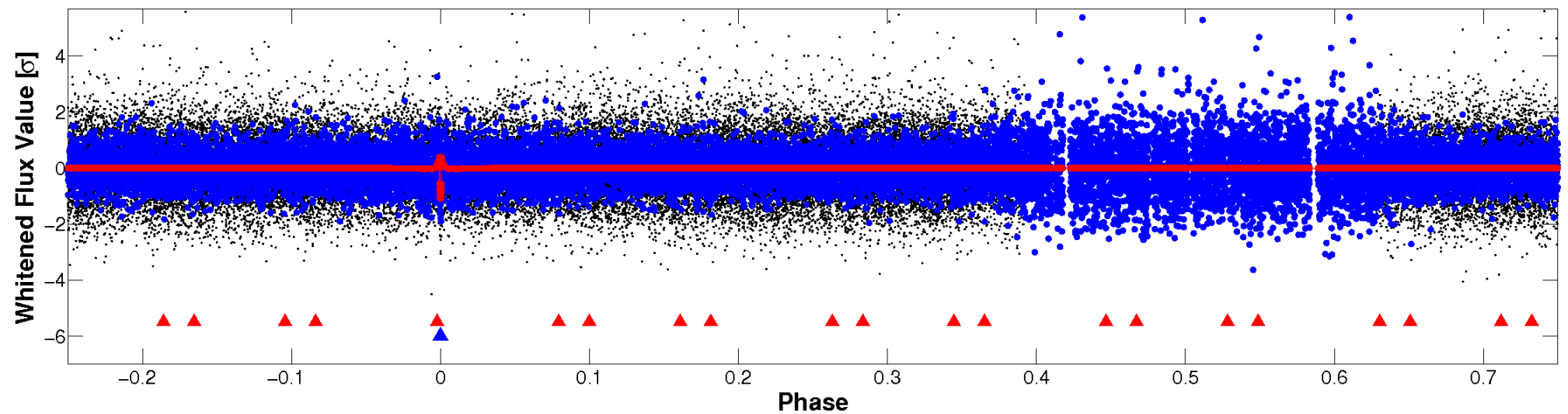


Non-Whitened Vs. Whitened Light Curve

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

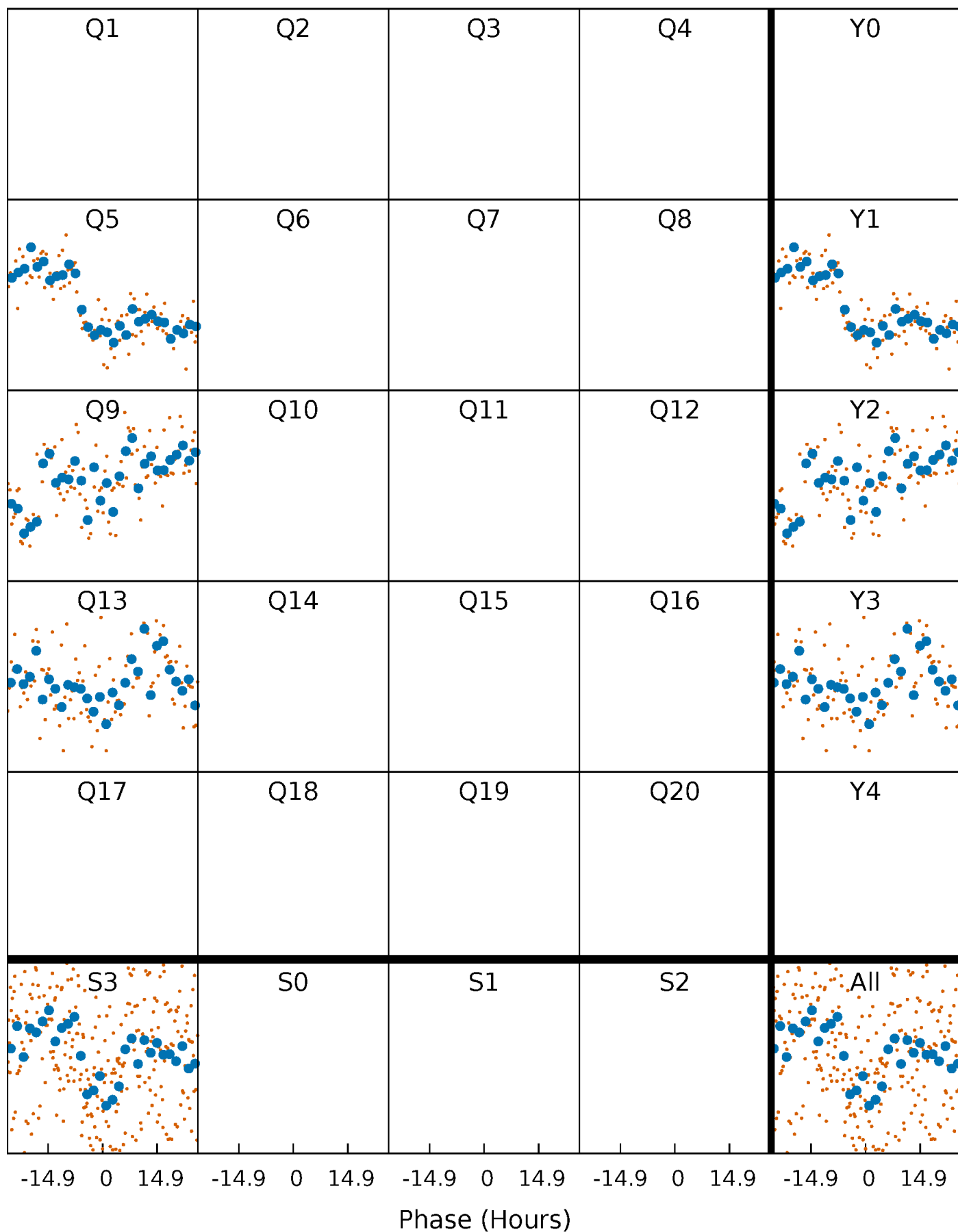


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



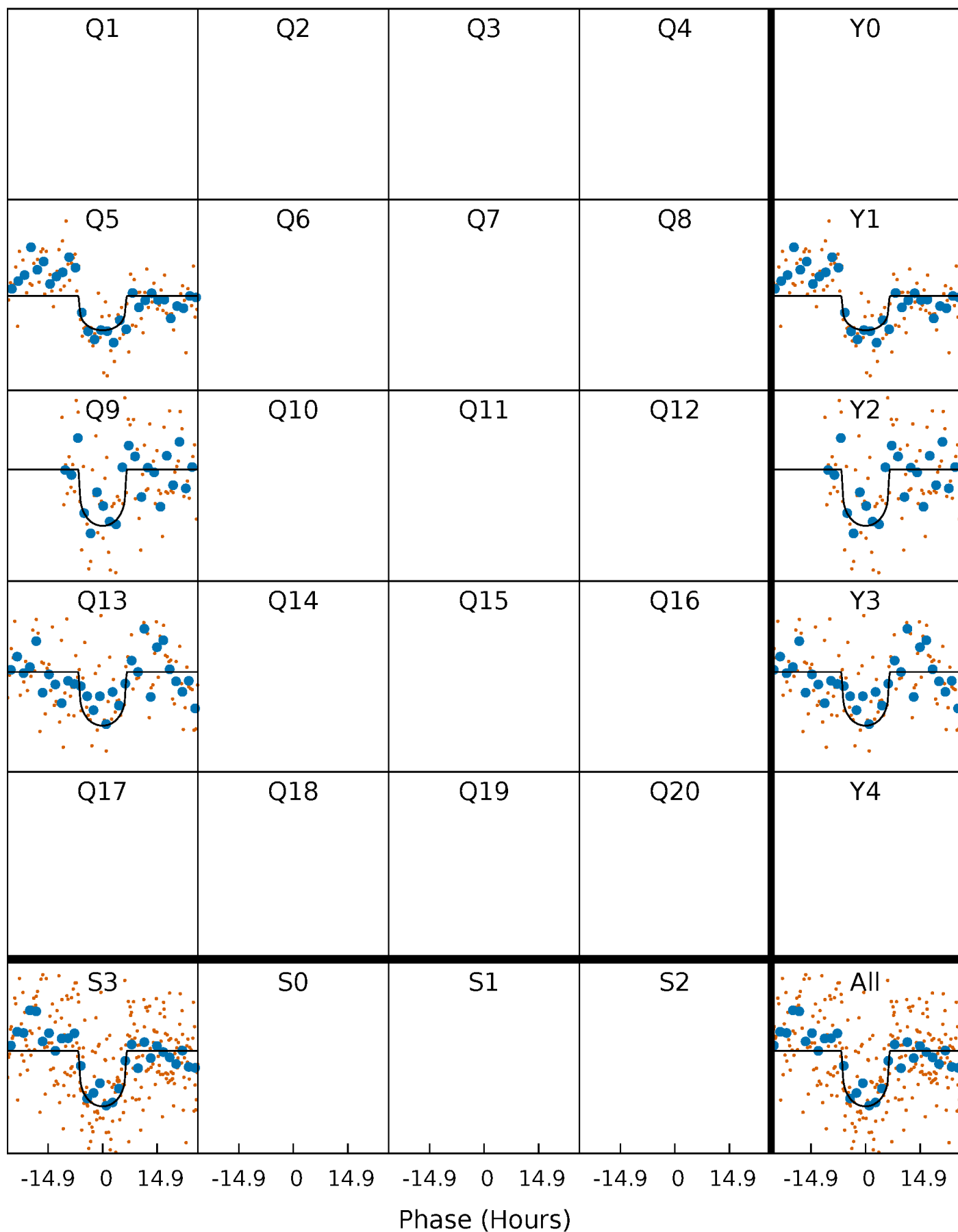
PDC Quarter-Phased Transit Curves

TCE 009661979-02 $P=380.520708$ Days $T_0=479.952157$ (BKJD)



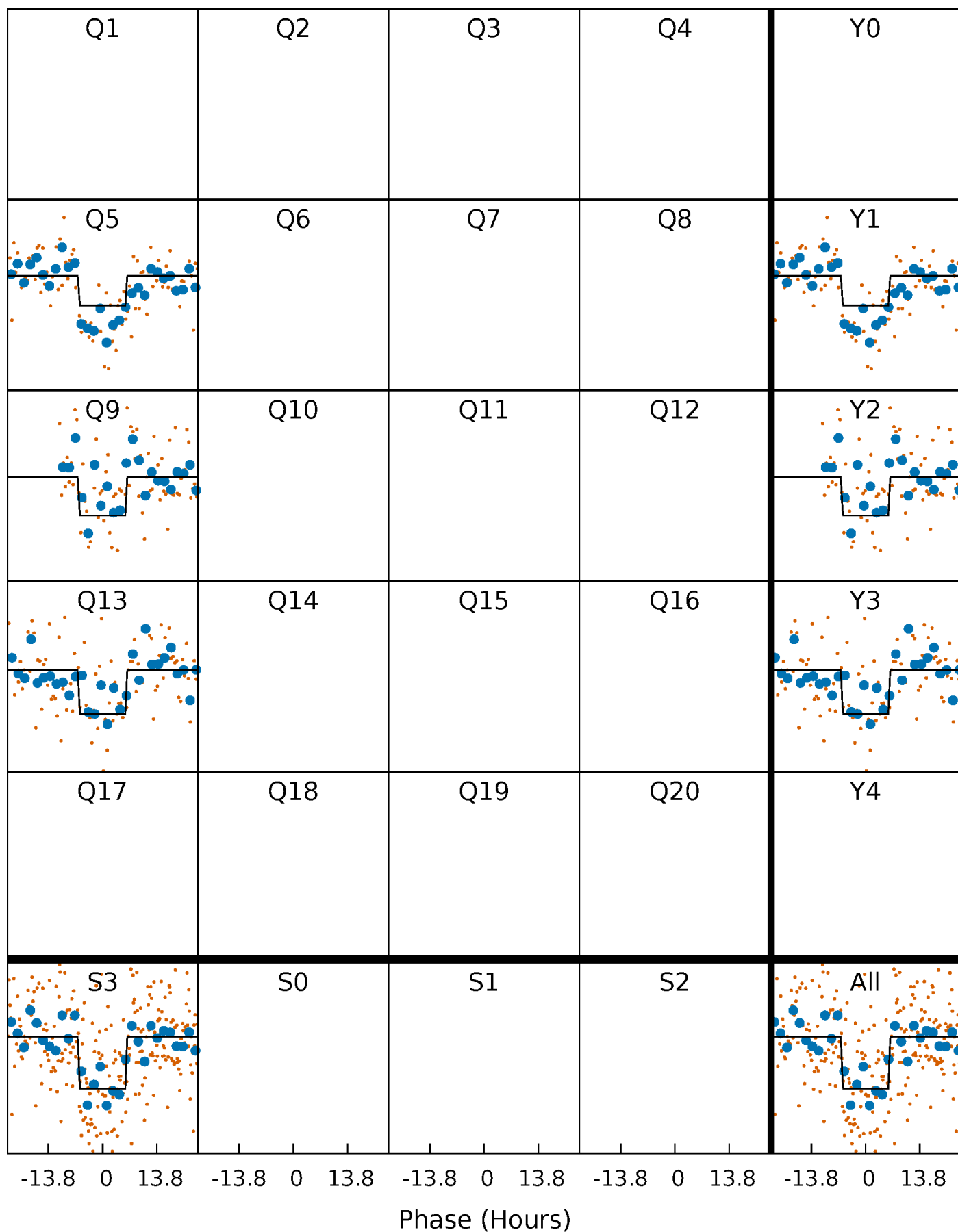
DV Quarter-Phased Transit Curves

TCE 009661979-02 $P=380.520708$ Days $T_0=479.952157$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

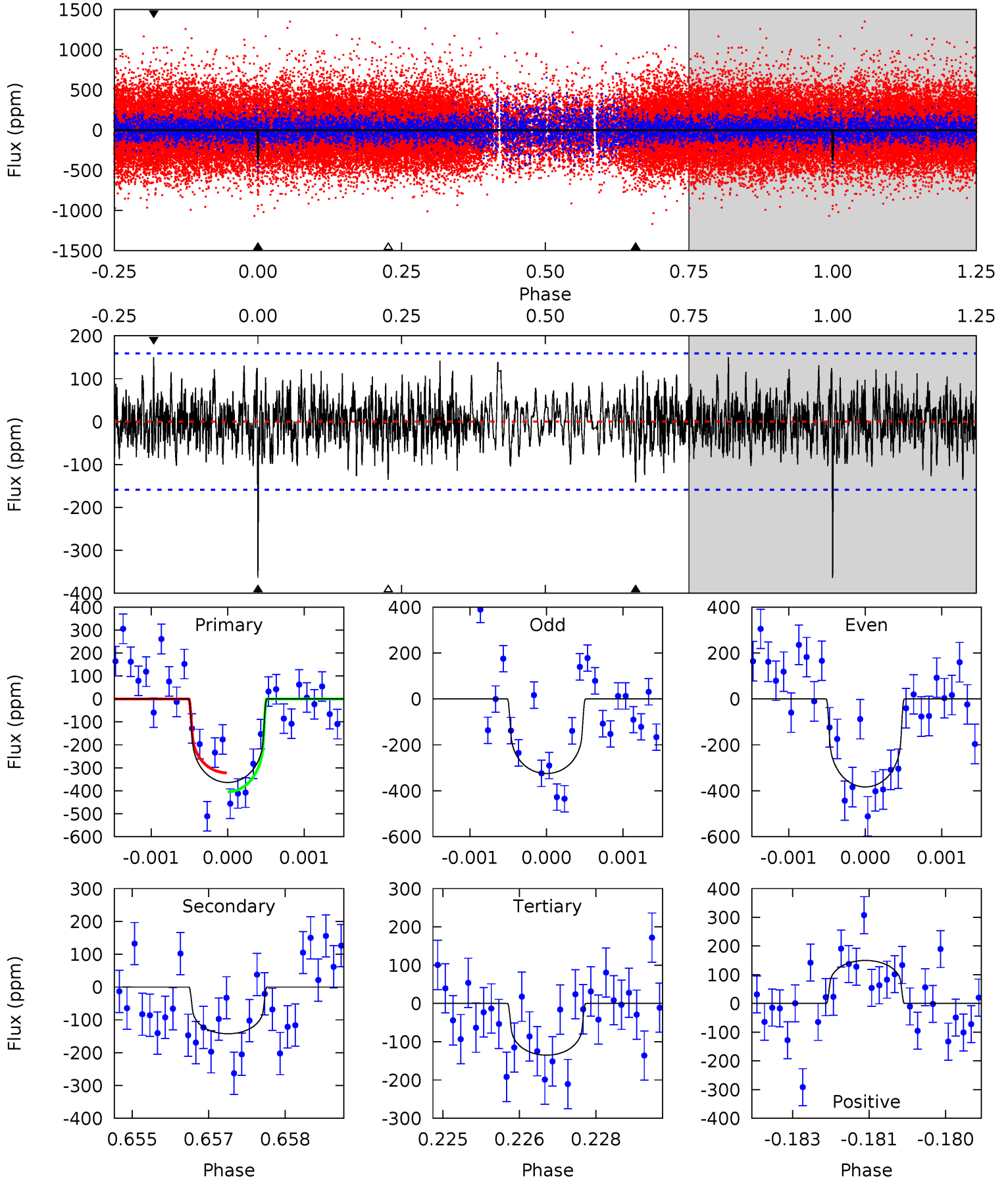
TCE 009661979-02 $P=380.520565$ Days $T_0=479.944137$ (BKJD)



DV Model-Shift Uniqueness Test

009661979-02, P = 380.520708 Days, E = 99.431449 Days

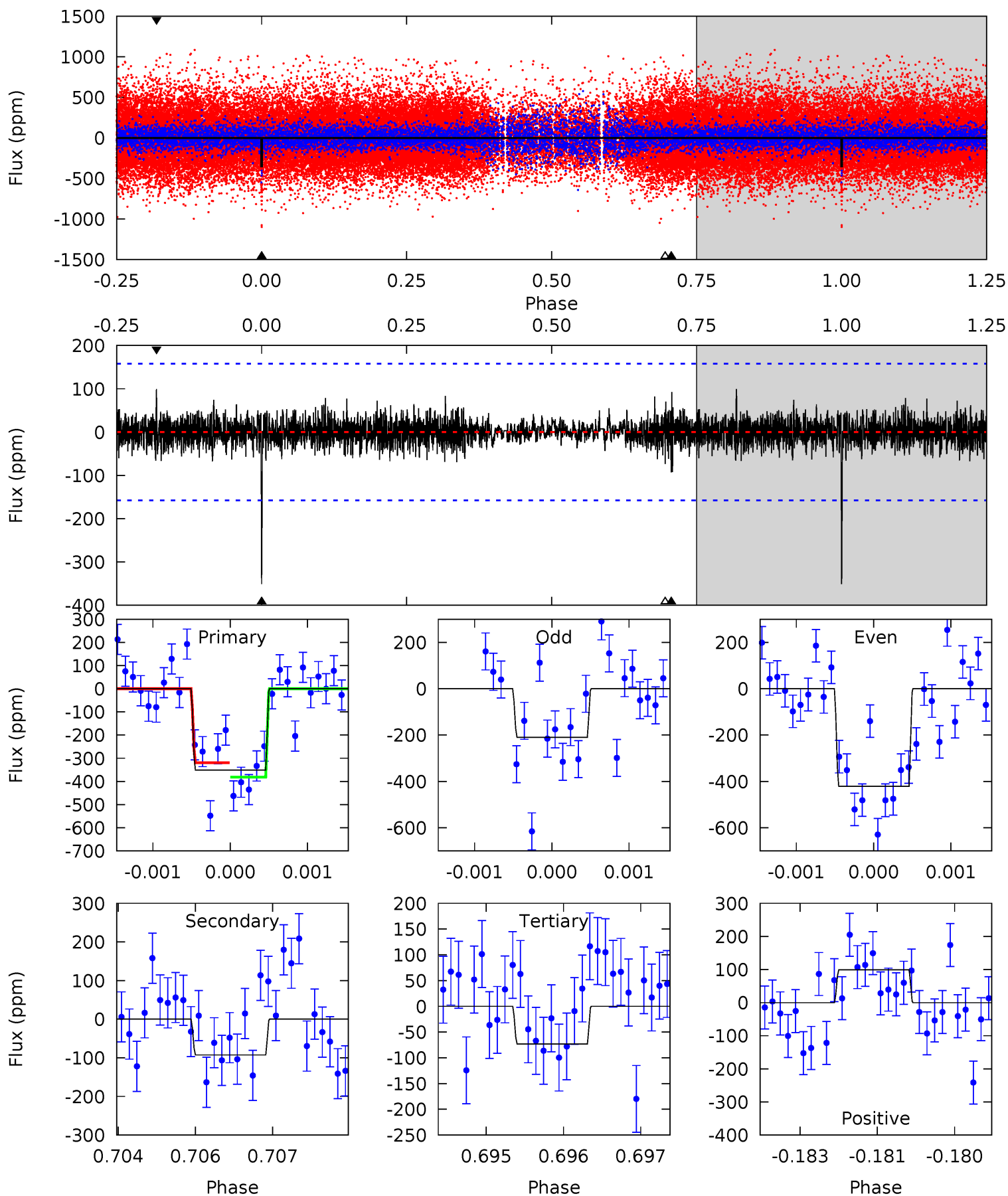
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	4.83	4.58	5.08	5.38	3.18	1.43	7.76	7.26	0.25	-0.25	0.94	1.12	0.29	1.39



Alt Model-Shift Uniqueness Test

009661979-02, P = 380.520565 Days, E = 99.423572 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	3.17	2.50	3.40	5.39	3.20	0.74	9.48	8.58	0.66	-0.23	3.44	1.34	0.22	1.07



Stellar Parameters For KIC 009661979

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5390^{+80}_{-72}	$4.303^{+0.170}_{-0.155}$	$0.200^{+0.150}_{-0.150}$	$1.104^{+0.227}_{-0.185}$	$0.893^{+0.061}_{-0.035}$	$0.935^{+0.693}_{-0.399}$
	+1%/-1%	+4%/-4%	+75%/-75%	+21%/-17%	+7%/-4%	+74%/-43%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009661979-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-142 ± 30	$2.56^{+1.93}_{-1.49}$	350^{+19}_{-18}	4229^{+2022}_{-713}	11452^{+57098}_{-7547}
Alt.	-93 ± 29	$2.57^{+1.76}_{-1.56}$	351^{+21}_{-18}	3962^{+1719}_{-662}	7620^{+37536}_{-5127}

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

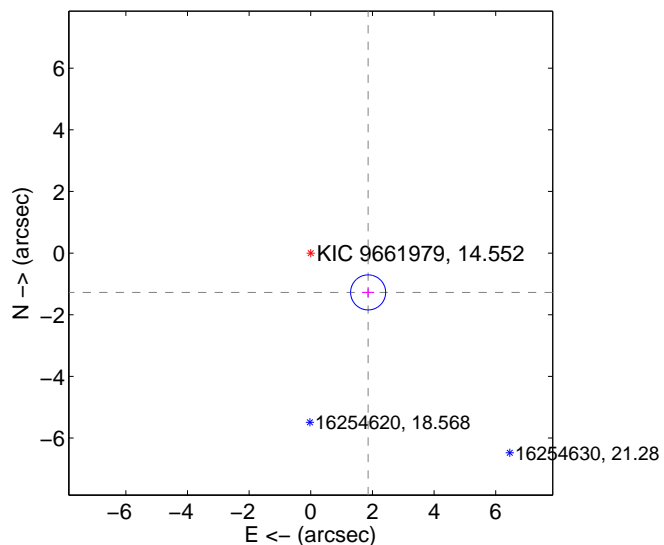
Supplemental centroid analysis for 009661979-02. Kepler magnitude: 14.55. Transit SNR 8.49

There are 1 quarters with good PRF difference image offsets

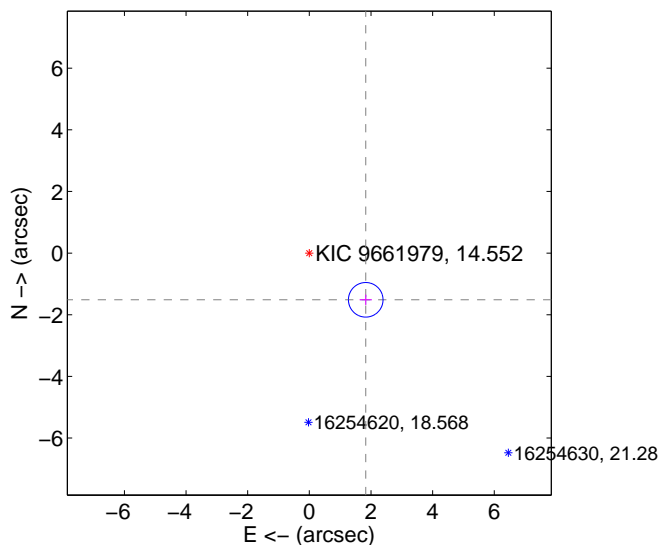
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.255 ± 0.189	11.90	-1.860 ± 0.198	-1.275 ± 0.169
PRF-fit source offset from KIC position	2.375 ± 0.187	12.70	-1.829 ± 0.198	-1.515 ± 0.169
photometric centroid source offset	2.81 ± 1.25	2.25	-2.13 ± 1.25	-1.83 ± 1.24

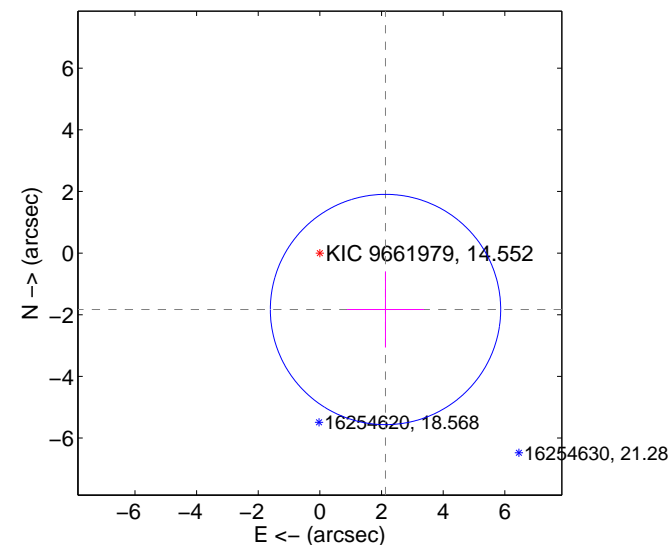
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

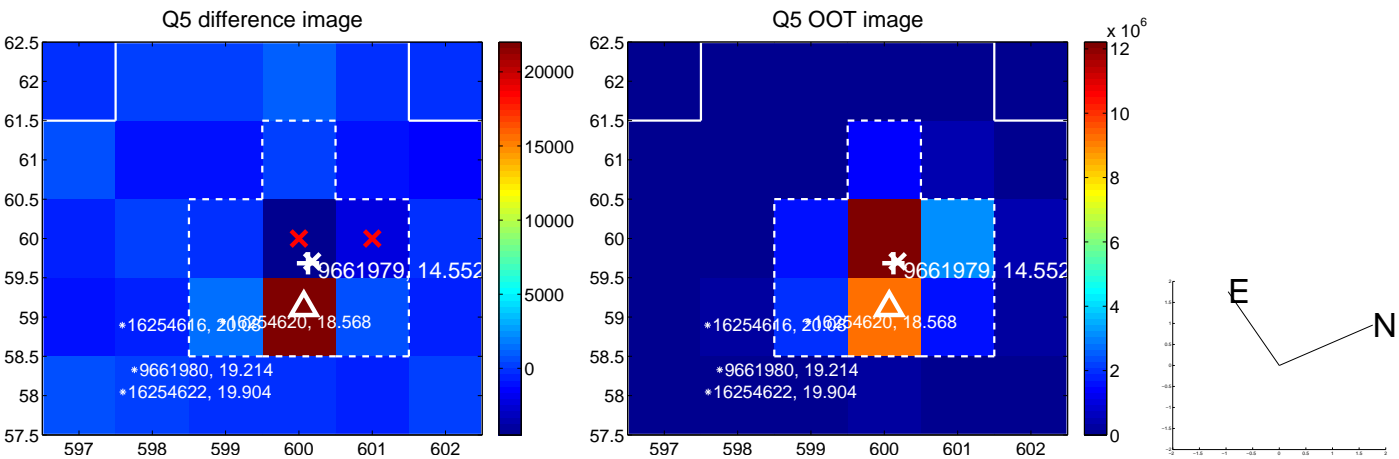


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

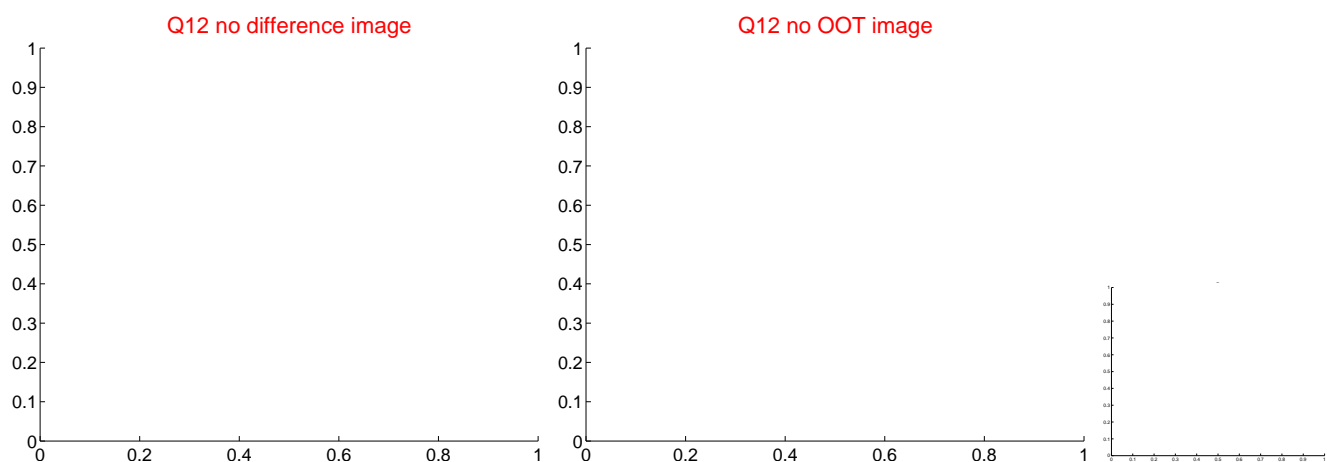
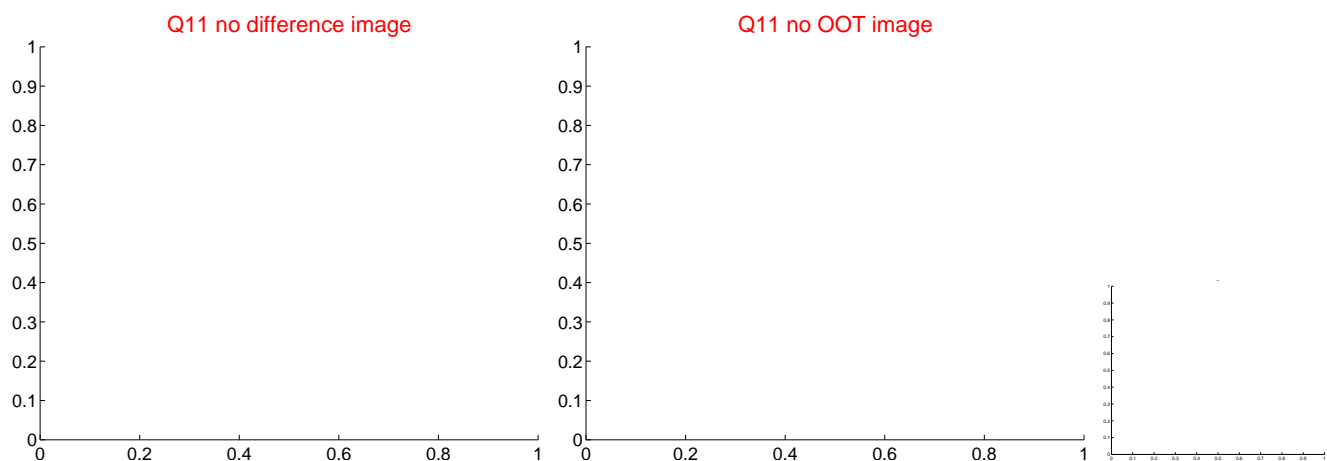
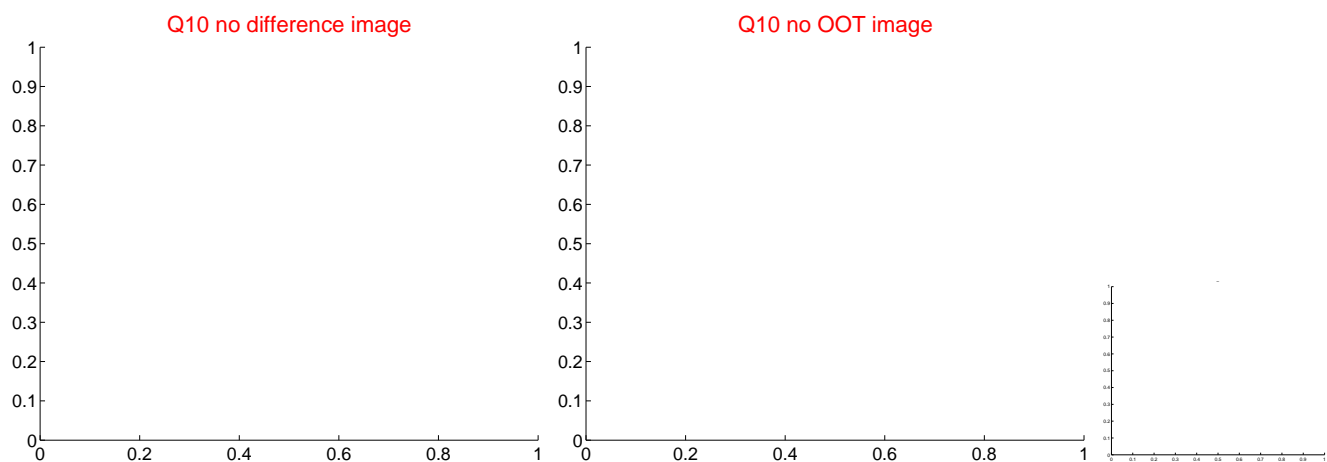
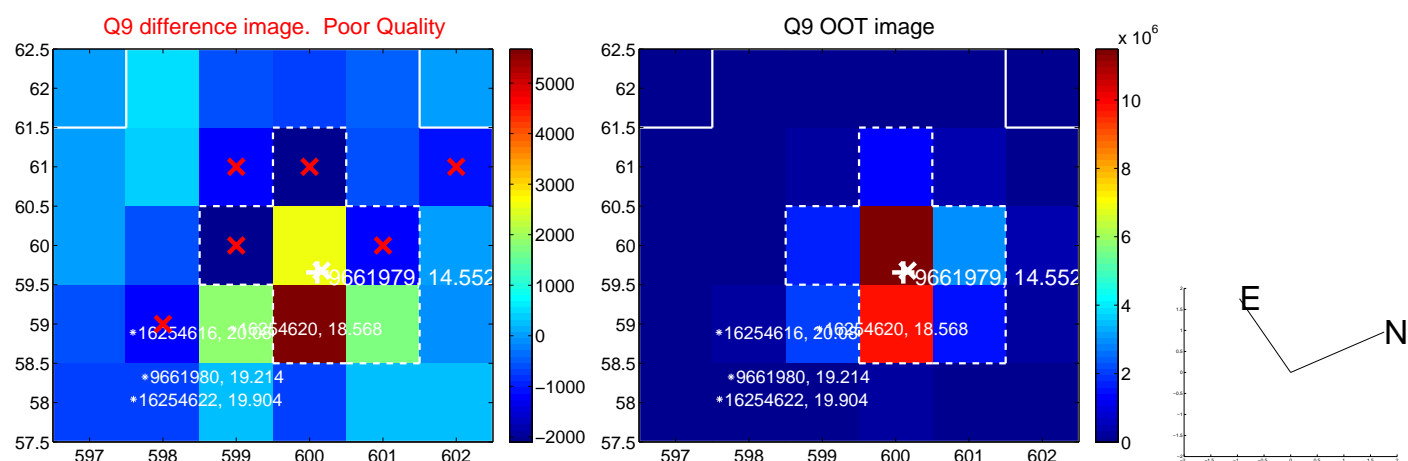
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



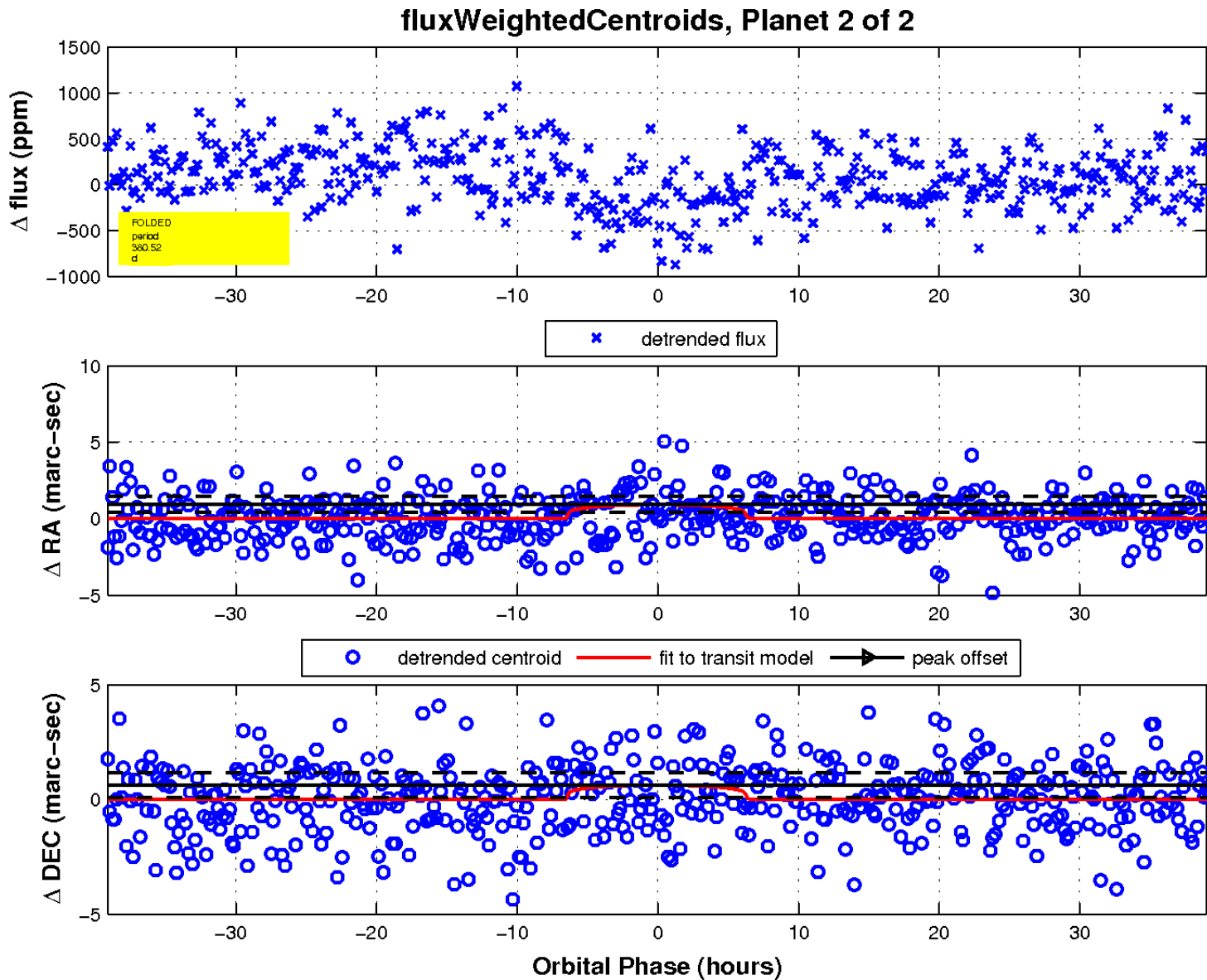
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

