

KIC 002569494

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})
002569494-01	OBS	3704.01	1.523312	132.318282	148689.6	4.773	792.8	492.4	0.87	5311	32.92	919.52
002569494-02	OBS	No	73.365065	151.136855	4380.4	0.977	10.4	2.3	0.87	5311	6.35	5.25
002569494-03	OBS	No	71.875562	164.361347	11268.8	3.500	9.7	-1.0	0.87	5311	9.01	5.39
002569494-04	OBS	No	70.500166	178.438961	8098.9	2.609	8.5	5.5	0.87	5311	7.84	5.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002569494-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_KIC_POS
002569494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002569494-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
002569494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

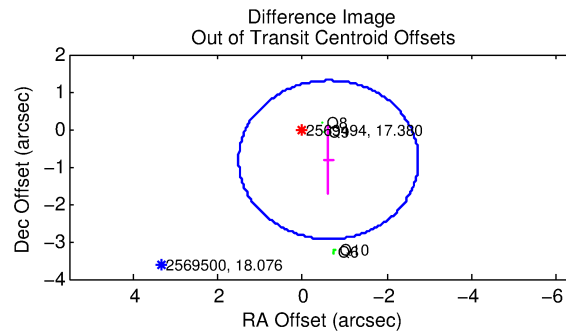
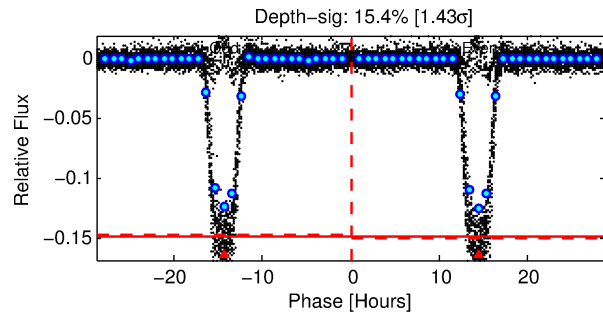
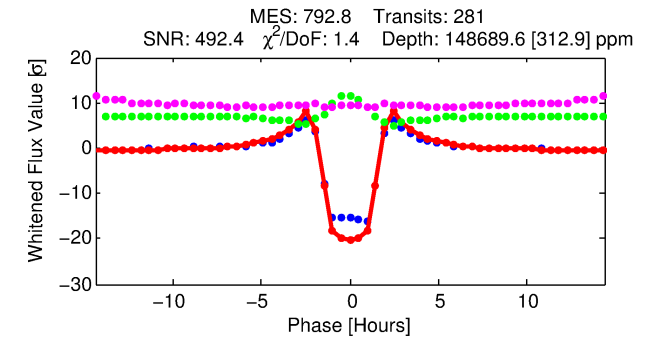
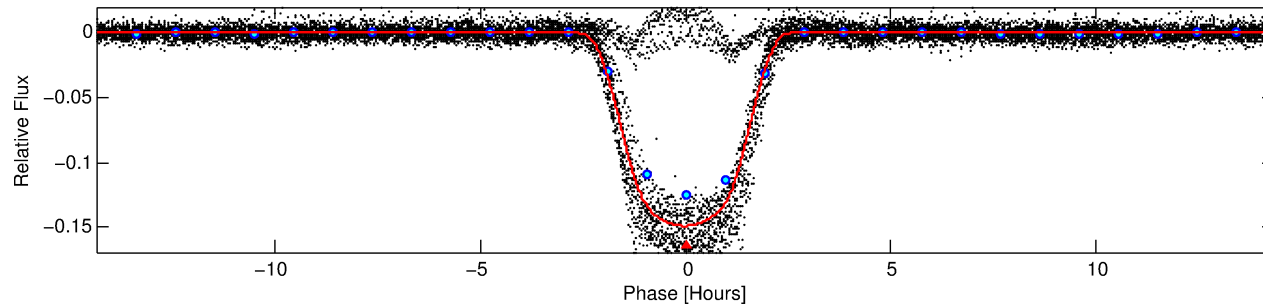
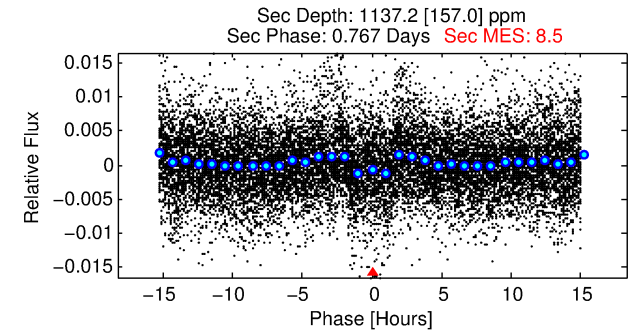
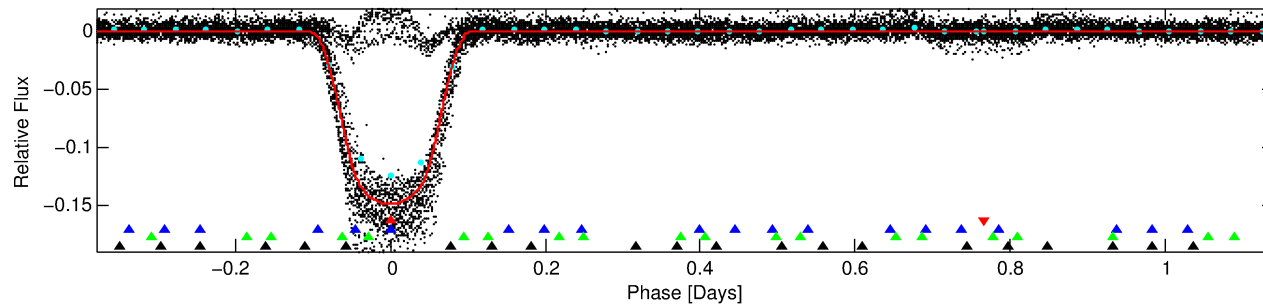
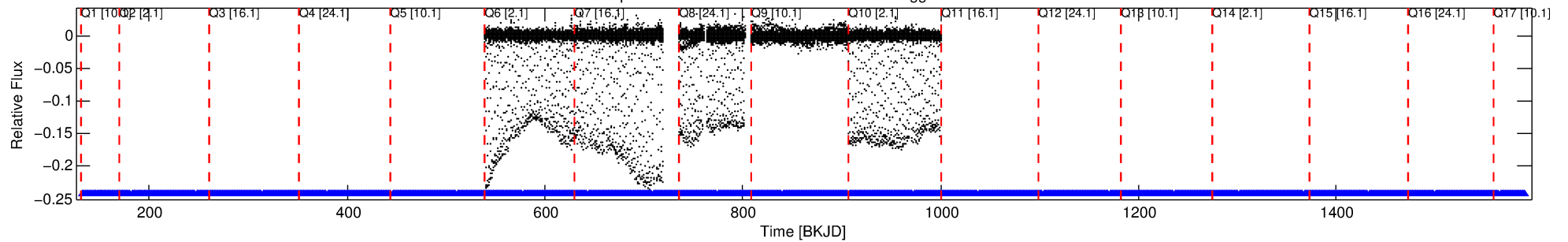
Ephemeris Match Information For 002569494-01

No Significant Match Found

DV One-Page Summary

KIC: 2569494 Candidate: 1 of 4 Period: 1.523 d
KOI: K03704.01 Corr: 0.965

Kp: 17.38 R*: 0.87 Rs Teff: 5311.0 K Logg: 4.47 Fe/H: -0.080



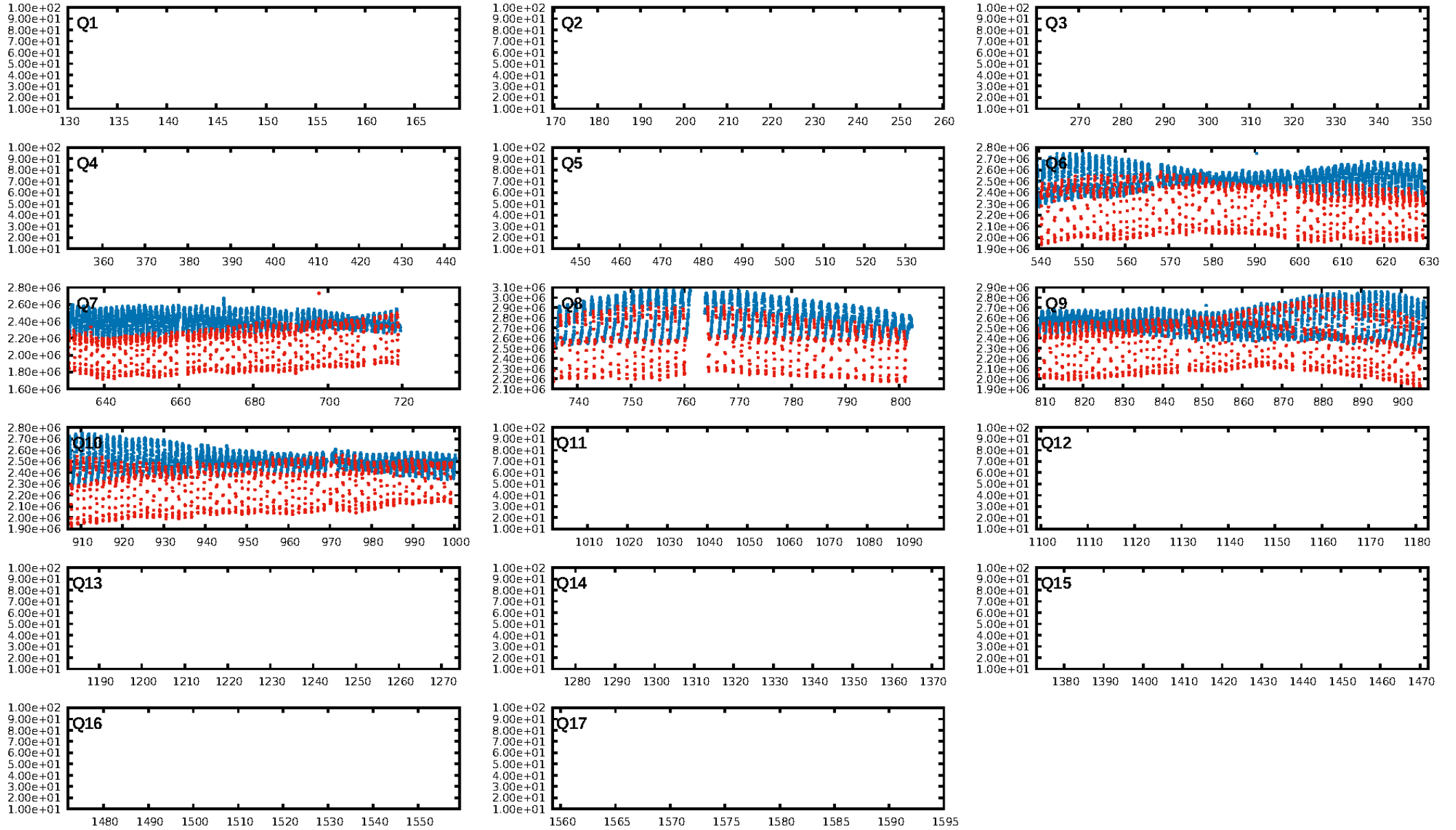
DV Fit Results:

Period = 1.52331 [0.00000] d
Epoch = 132.3183 [0.0001] BKJD
Rp/R* = 0.3484 [0.0005]
a/R* = 3.38 [0.01]
b = 0.00 [0.93]
Seff = 919.52 [250.84]
Teff = 1404 [96] K
Rp = 32.92 [5.59] Re
a = 0.0241 [0.0036] AU
Ag = 0.34 [0.09] [-7.49σ]
Teffp = 1652 [85] K [1.94σ]

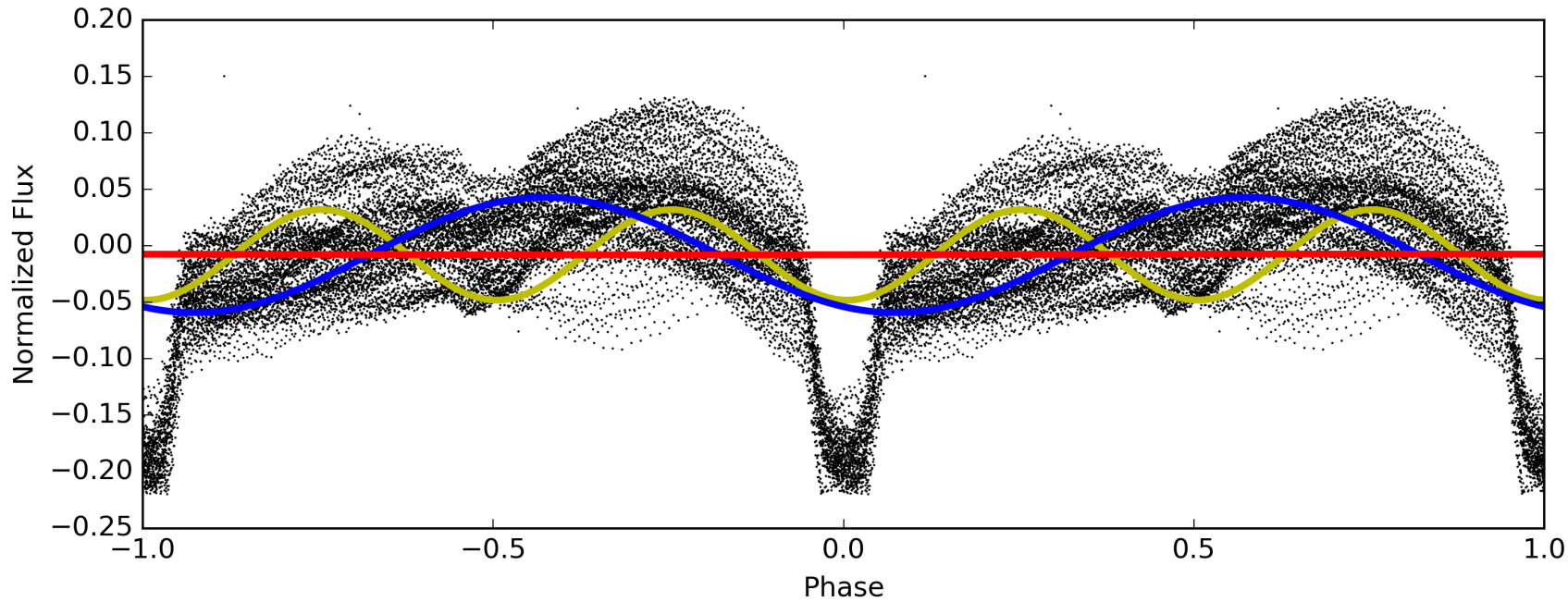
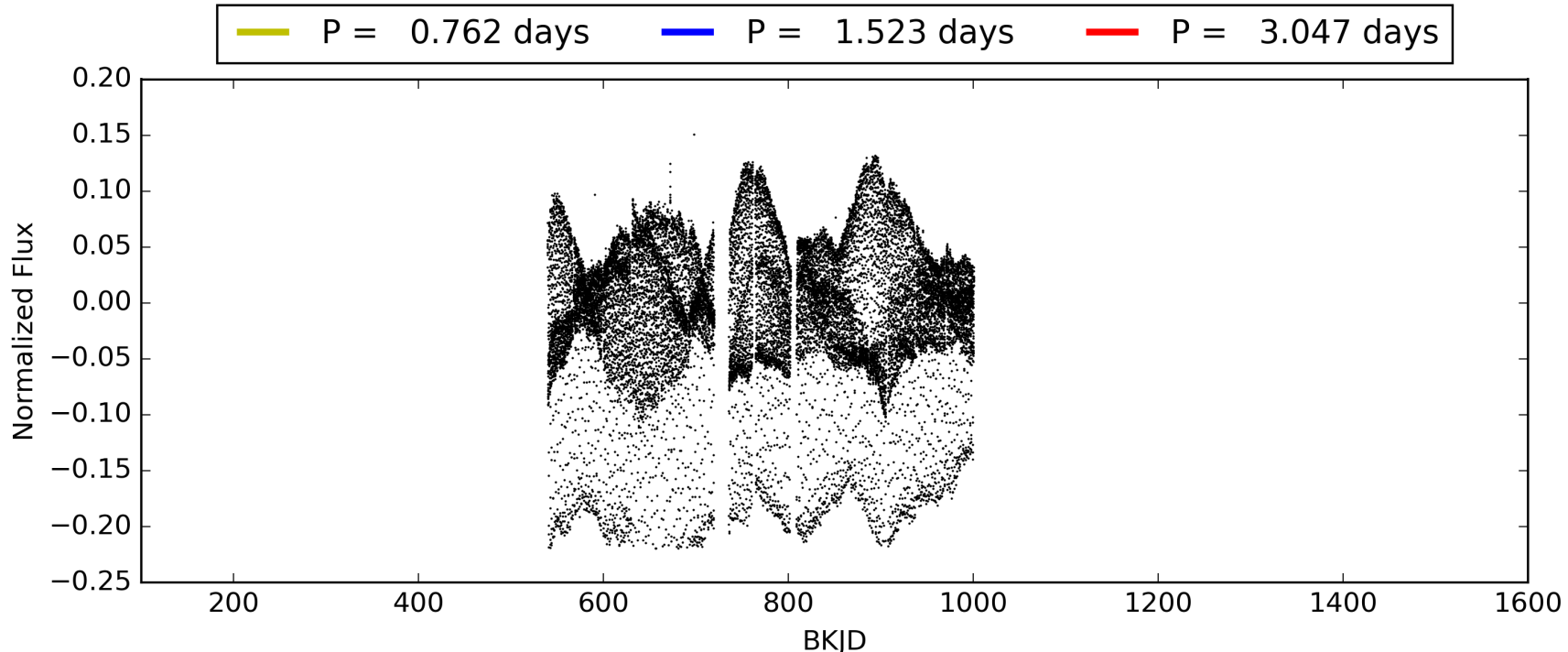
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [304.33σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [281/281]
GhostDiagnostic-chr: 1.281
Centroid-sig: N/A
Centroid-so: 0.951 arcsec [199.13σ]
OotOffset-rm: 1.028 arcsec [1.46σ]
KicOffset-rm: 0.050 arcsec [0.56σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/1/1/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [5/5]

TCE 002569494-01, PDC Light Curves

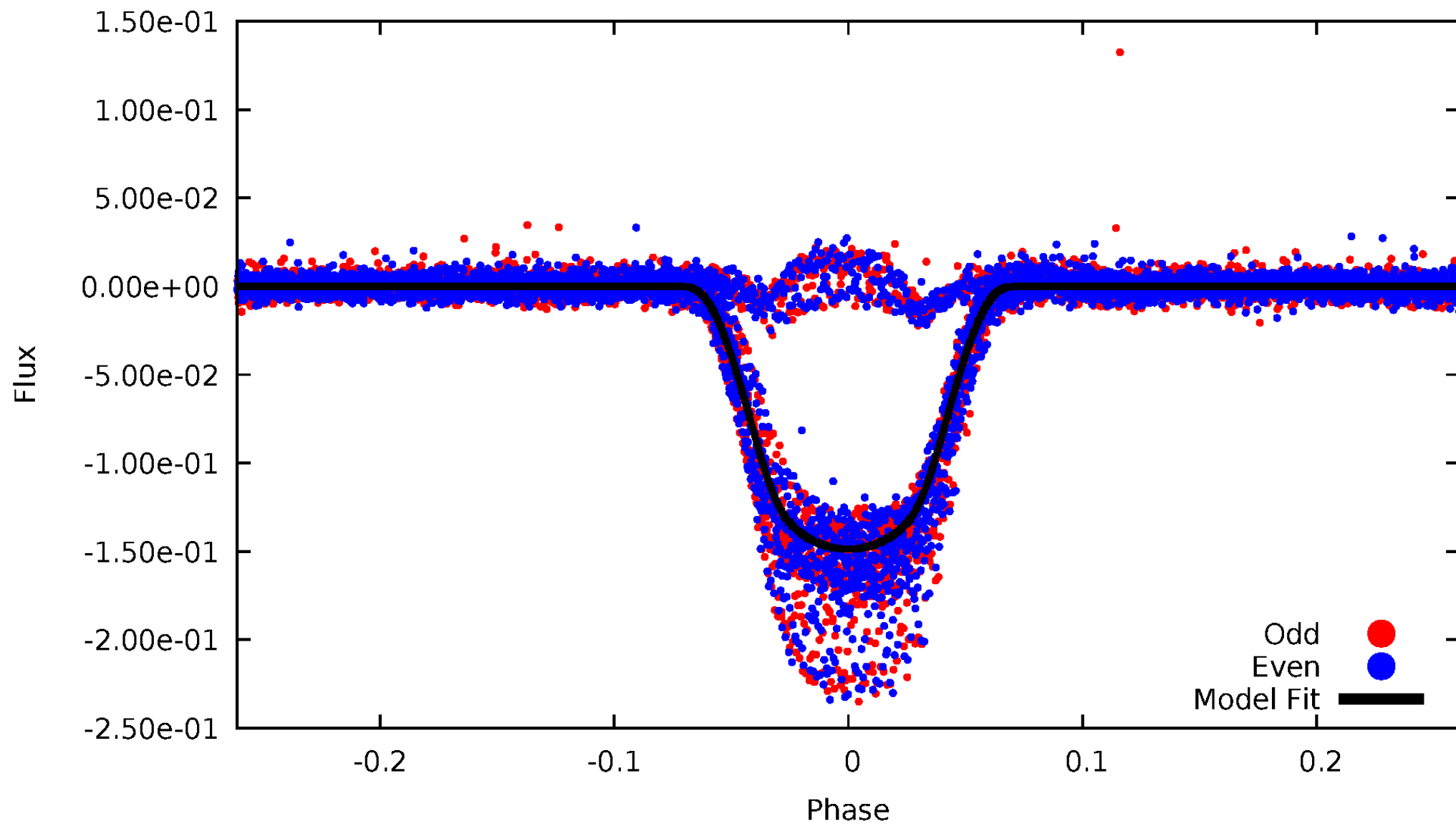


TCE 002569494-01



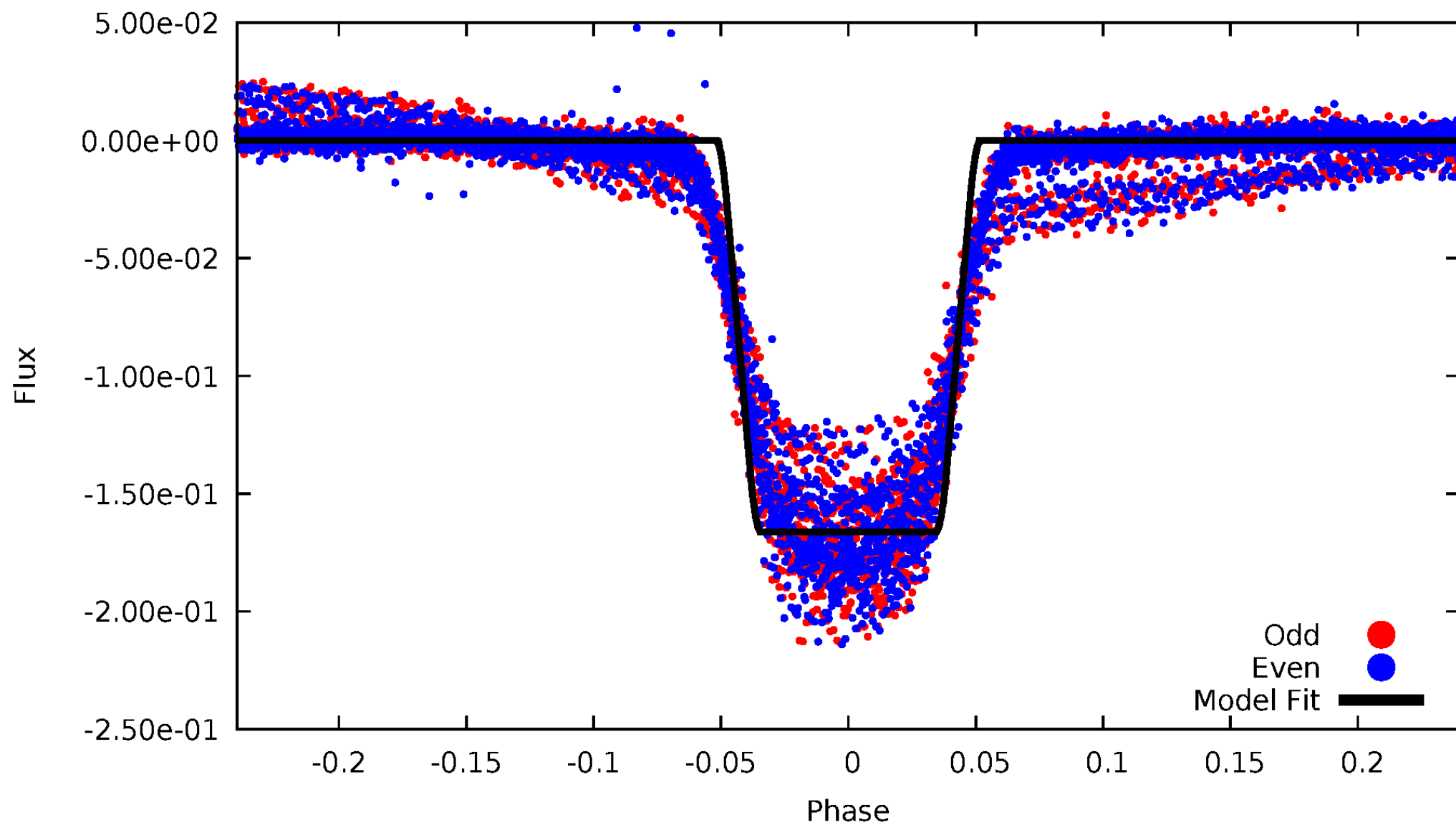
DV Odd/Even

TCE 002569494-01



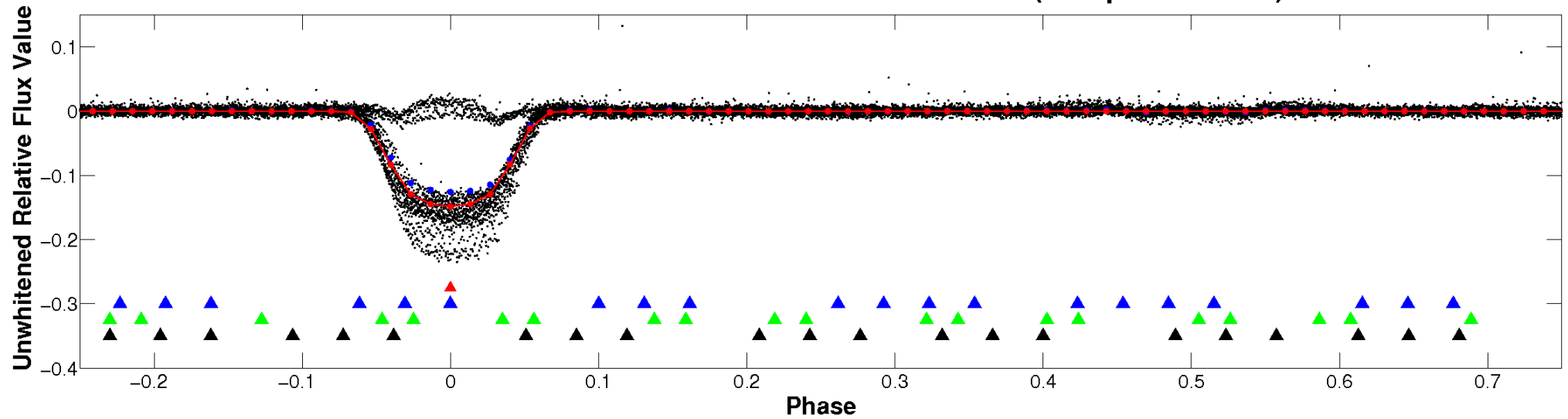
ALT Odd/Even

TCE 002569494-01

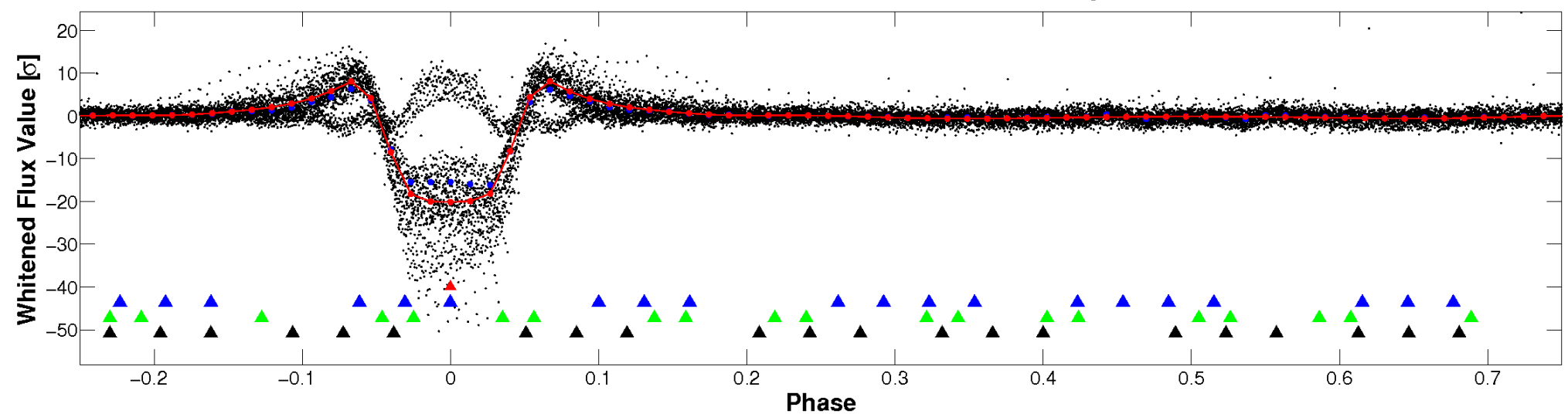


Non-Whitened Vs. Whitened Light Curve

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

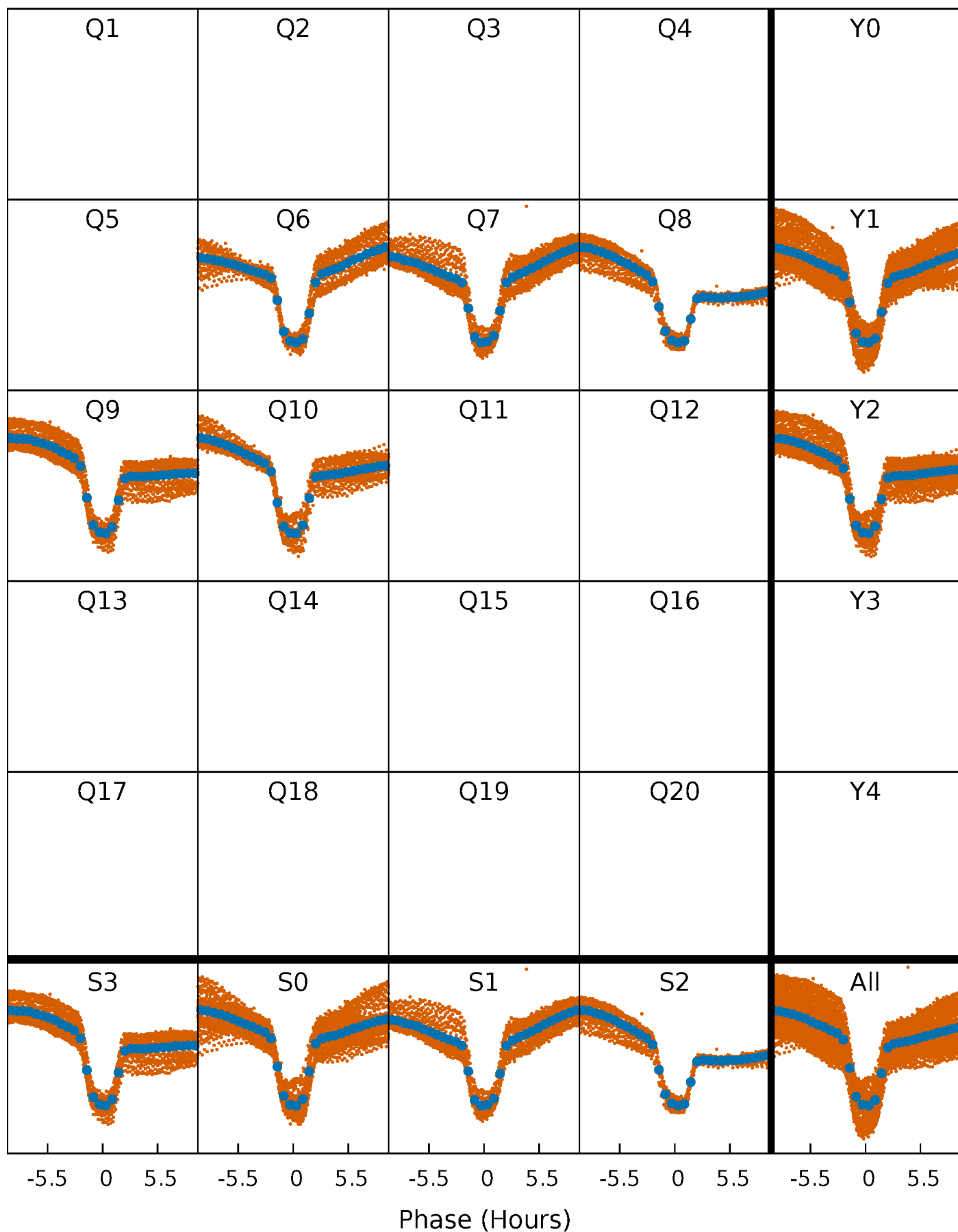


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



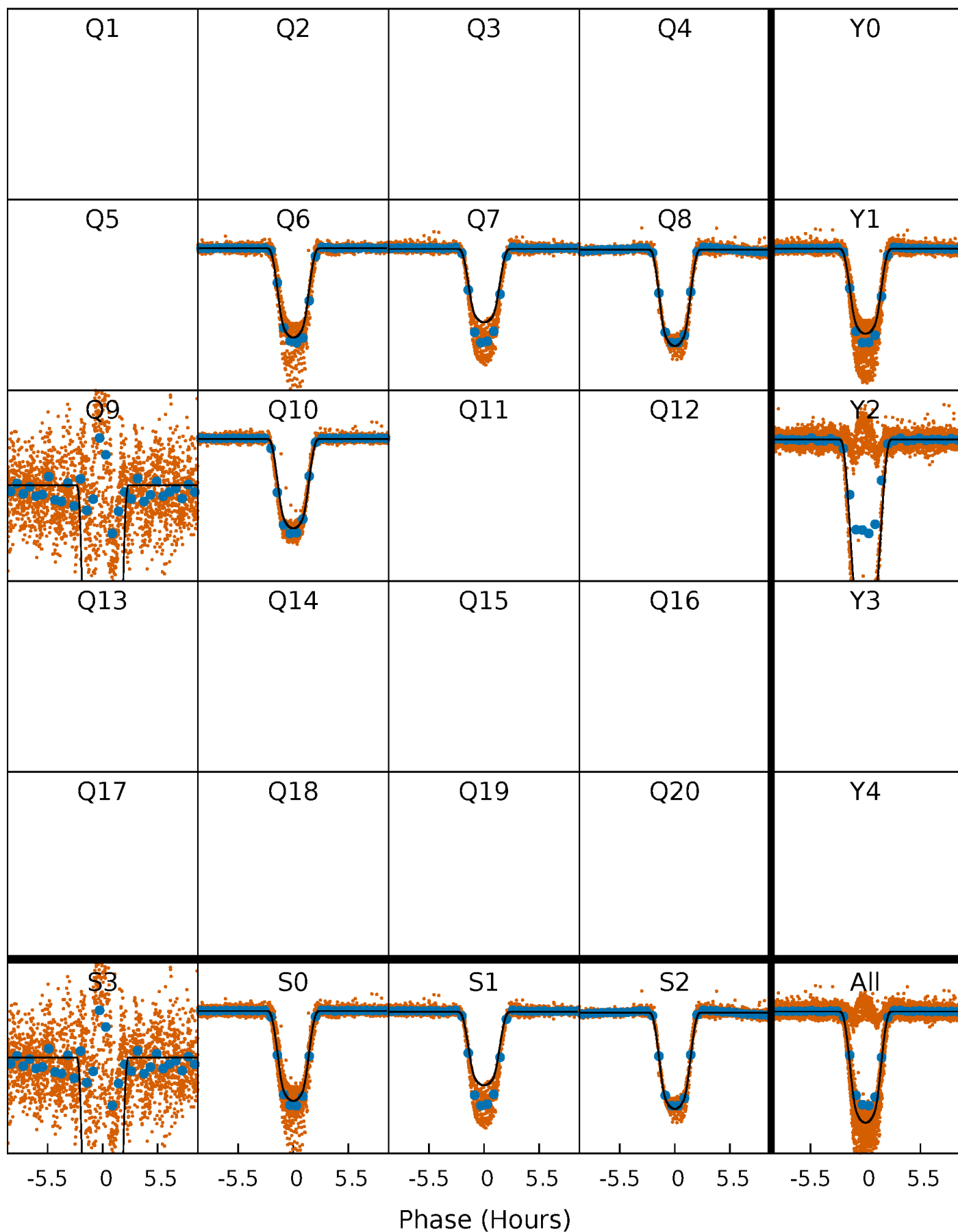
PDC Quarter-Phased Transit Curves

TCE 002569494-01 P= 1.523312 Days $T_0=132.318282$ (BKJD)



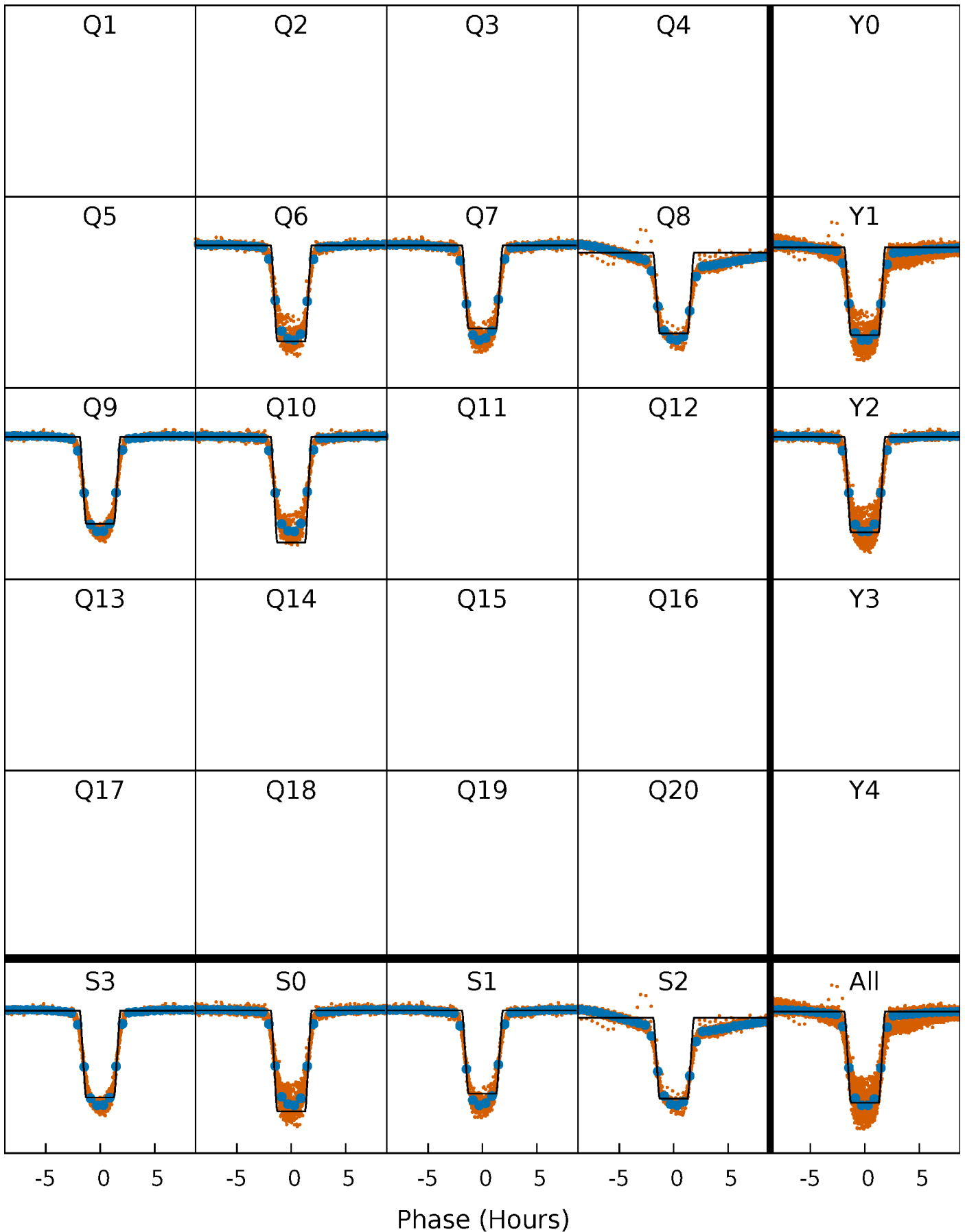
DV Quarter-Phased Transit Curves

TCE 002569494-01 P= 1.523312 Days $T_0=132.318282$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

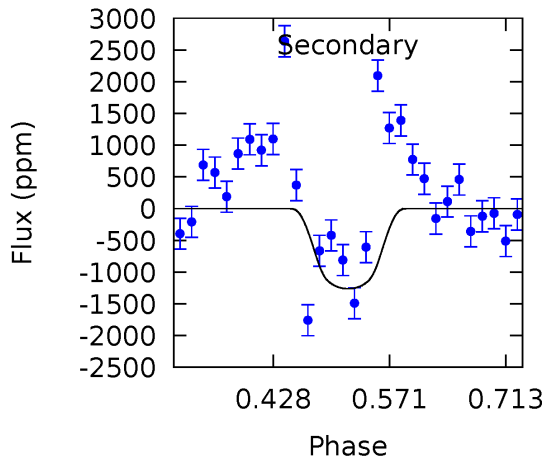
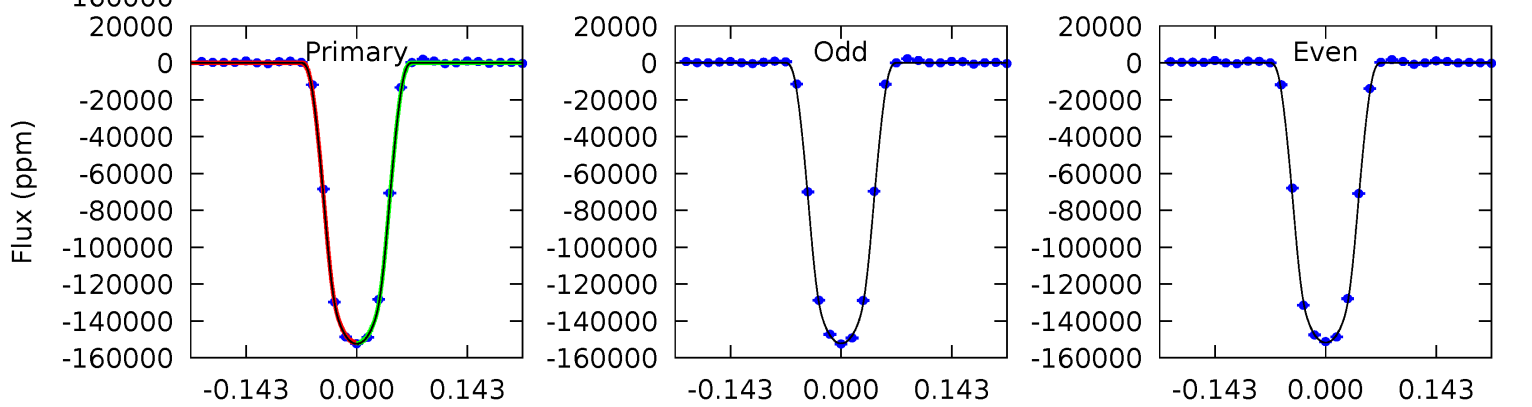
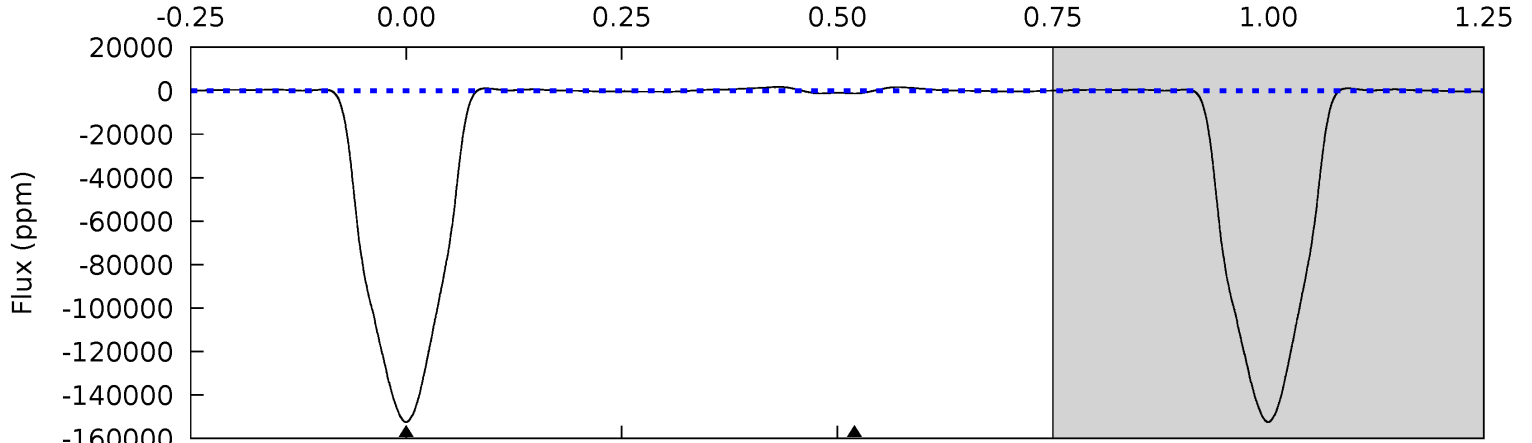
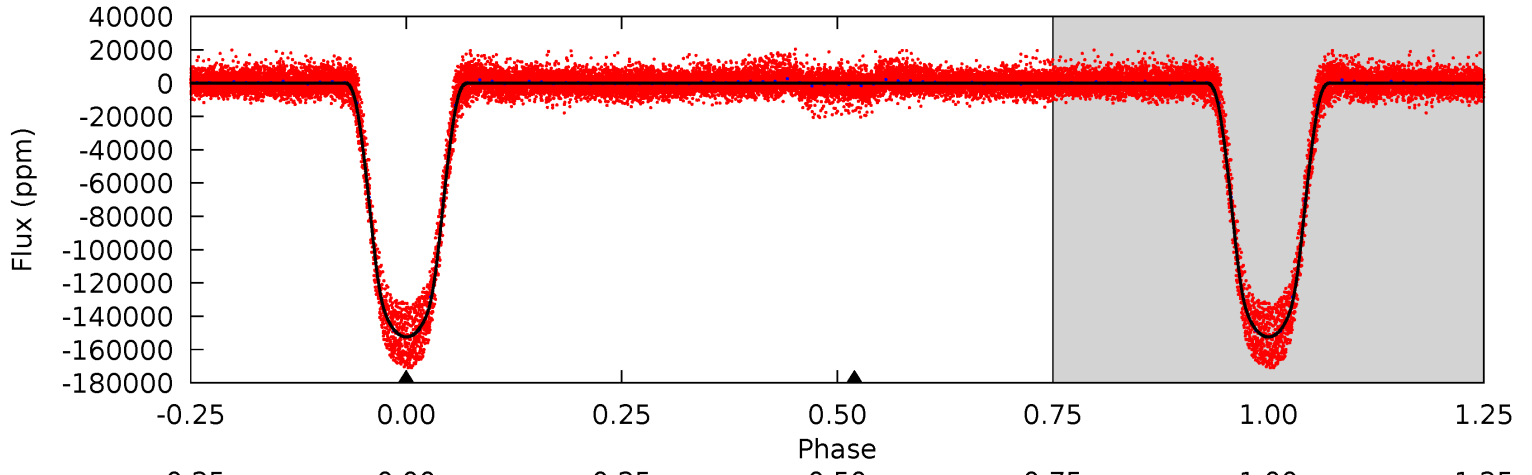
TCE 002569494-01 P= 1.523274 Days $T_0=132.333999$ (BKJD)



DV Model-Shift Uniqueness Test

002569494-01, P = 1.523312 Days, E = 132.318282 Days

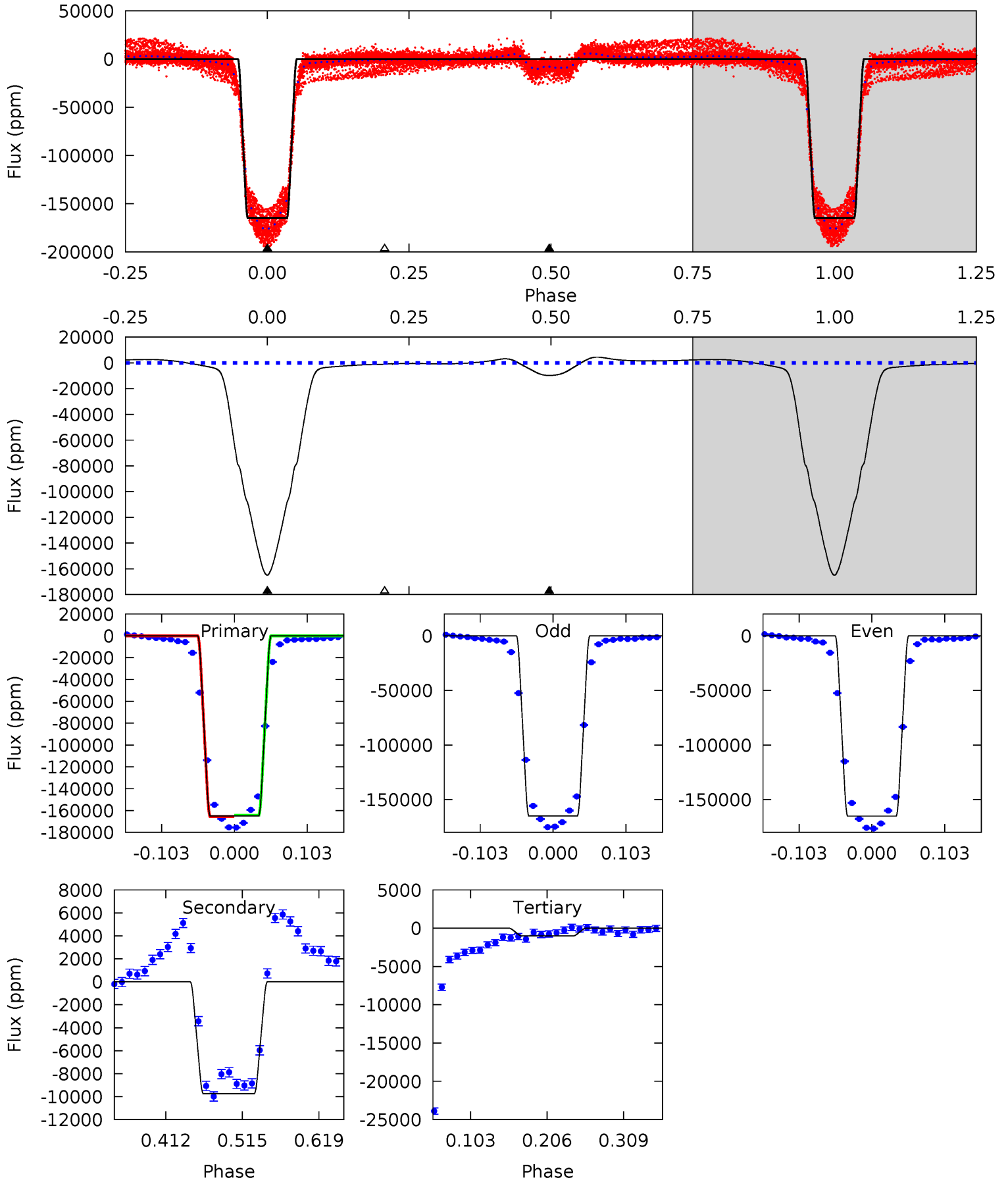
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1503	12.5	0	0	4.49	1.47	3.30	1503	1503	12.5	12.5	2.12	0.83	0.01	0



Alt Model-Shift Uniqueness Test

002569494-01, P = 1.523274 Days, E = 132.333999 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1223	72.2	7.54	0	4.56	1.63	12.6	1215	1223	64.6	72.2	0.62	0.97	0.03	0



Stellar Parameters For KIC 002569494

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5311^{+204}_{-185}	$4.469^{+0.104}_{-0.127}$	$-0.080^{+0.300}_{-0.300}$	$0.866^{+0.147}_{-0.107}$	$0.804^{+0.113}_{-0.061}$	$1.745^{+0.795}_{-0.644}$
	+4%/-3%	+2%/-3%	+375%/-375%	+17%/-12%	+14%/-8%	+46%/-37%
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 002569494-01 / KOI 3704.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1263±101	$32.92^{+3.53}_{-2.49}$	1965^{+123}_{-111}	2099^{+131}_{-387}	$0.375^{+0.066}_{-0.068}$
Alt.	-9734±135	$38.96^{+4.19}_{-2.83}$	1976^{+114}_{-102}	3125^{+79}_{-75}	$2.083^{+0.325}_{-0.340}$

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

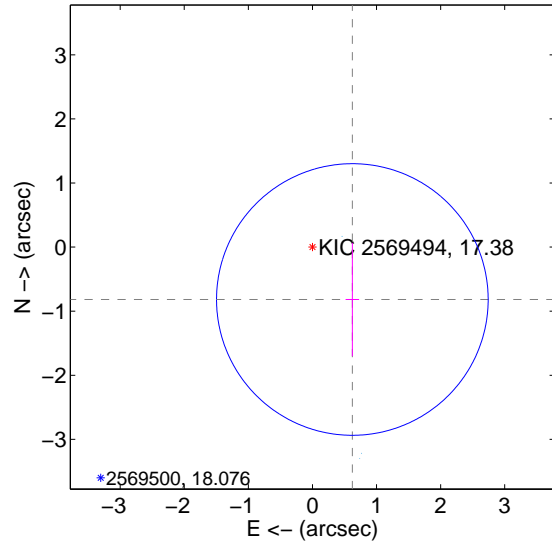
Supplemental centroid analysis for 002569494-01. Kepler magnitude: 17.38. Transit SNR 492.44

There are 5 quarters with good PRF difference image offsets

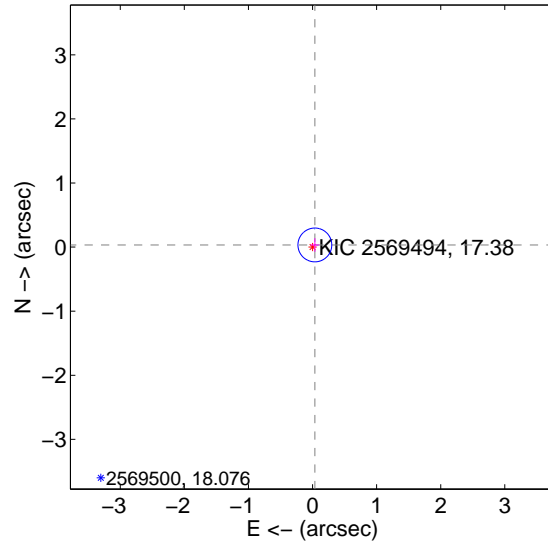
The OOT PRF centroid is offset from the target star catalog position by about 3.57 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.028 ± 0.706	1.46	-0.623 ± 0.105	-0.818 ± 0.884
PRF-fit source offset from KIC position	0.050 ± 0.088	0.56	-0.036 ± 0.069	0.034 ± 0.106
photometric centroid source offset	0.95 ± 0.00	199.13	0.20 ± 0.00	0.93 ± 0.00

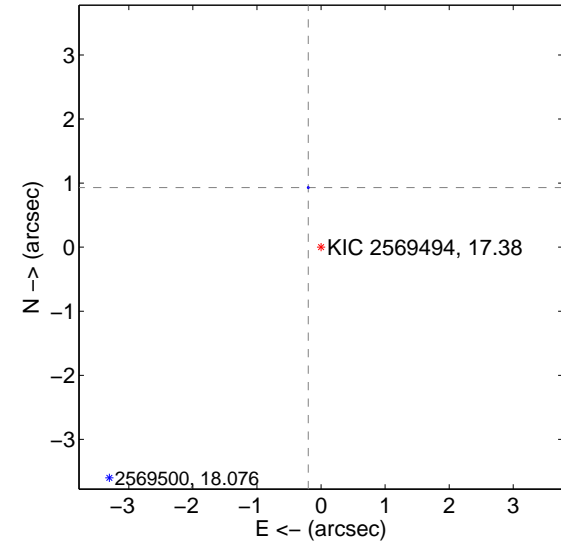
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

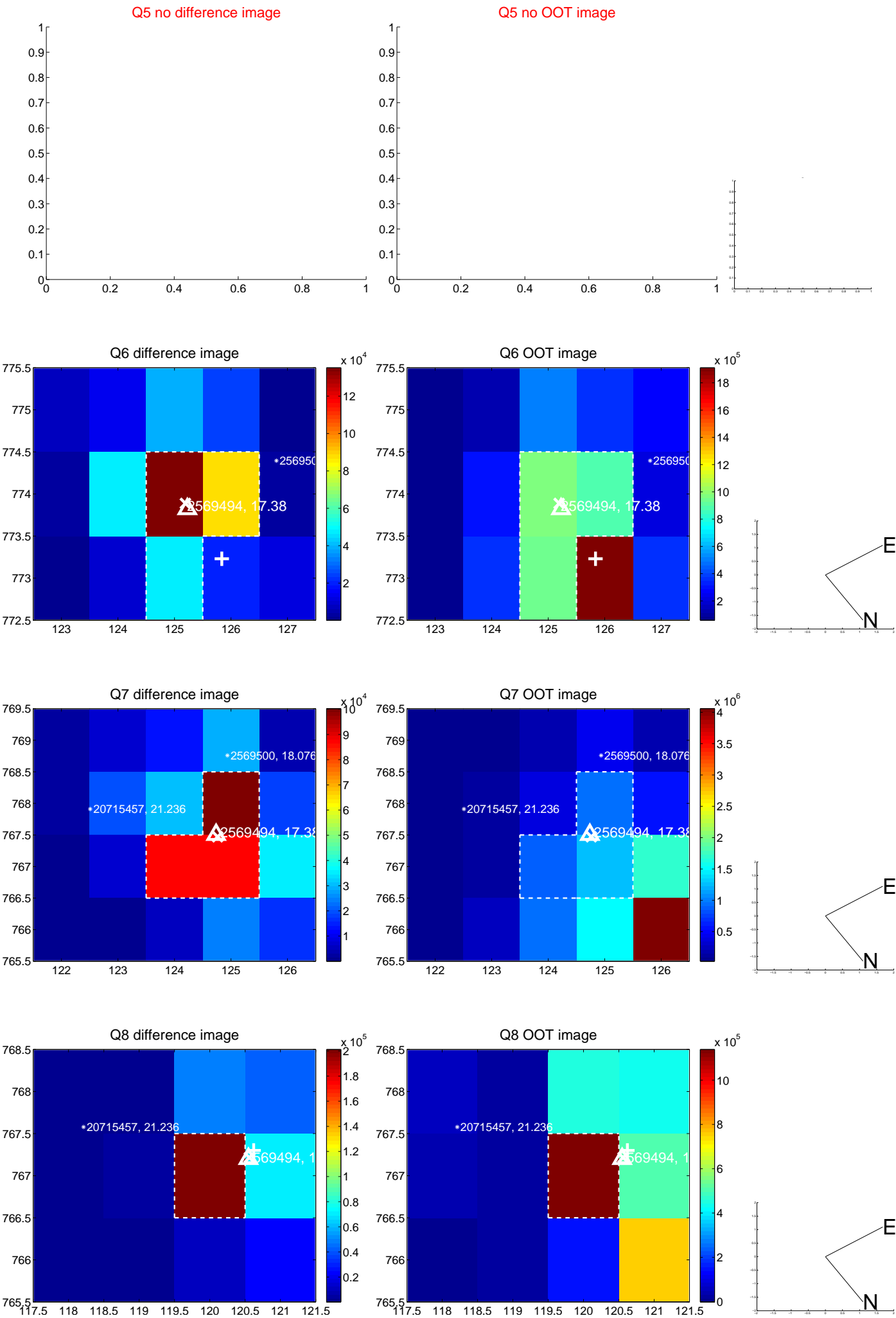


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

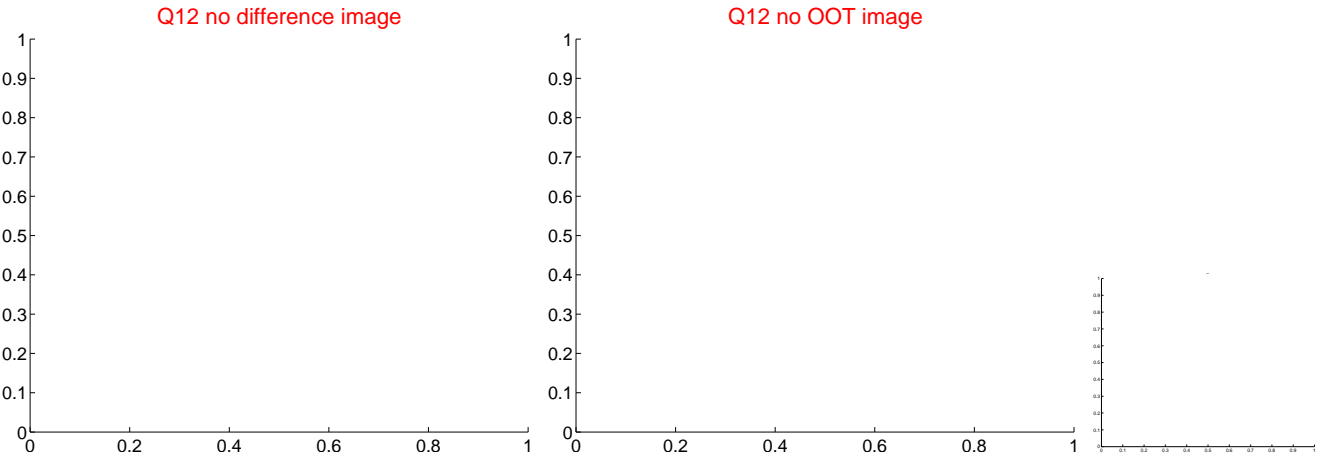
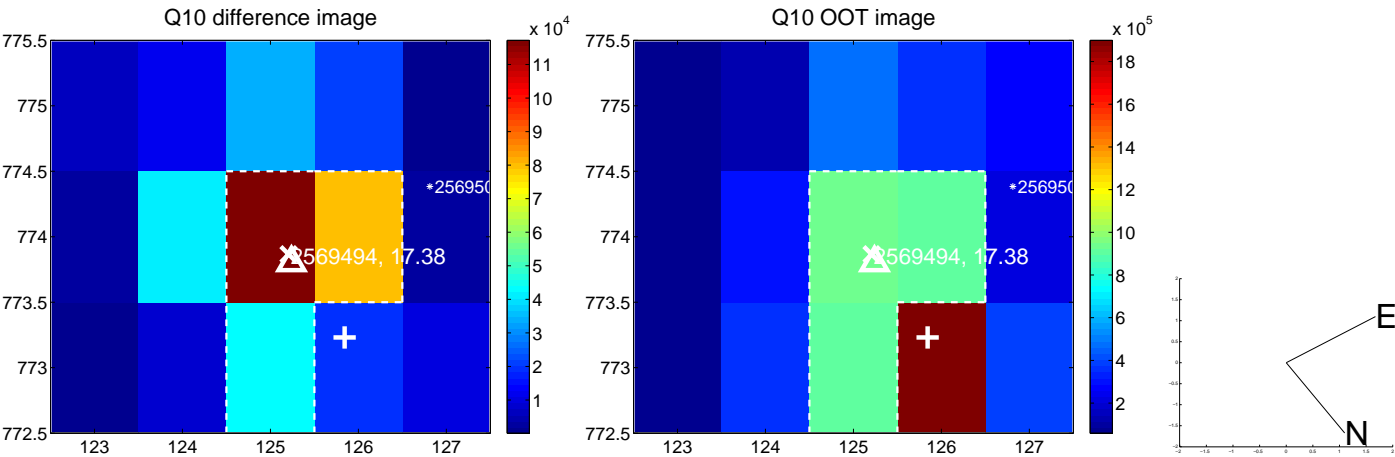
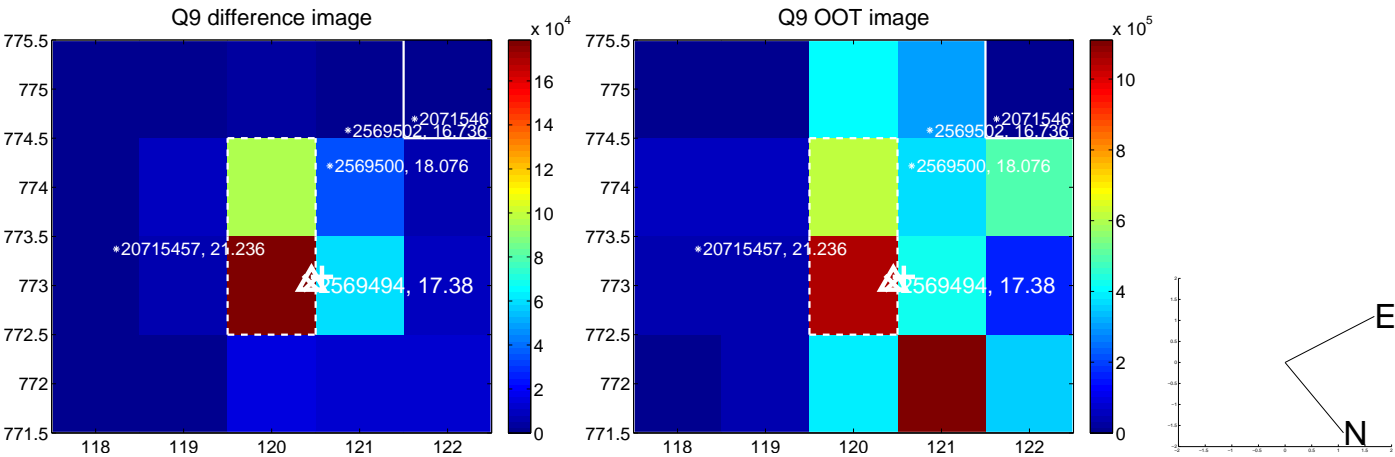
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



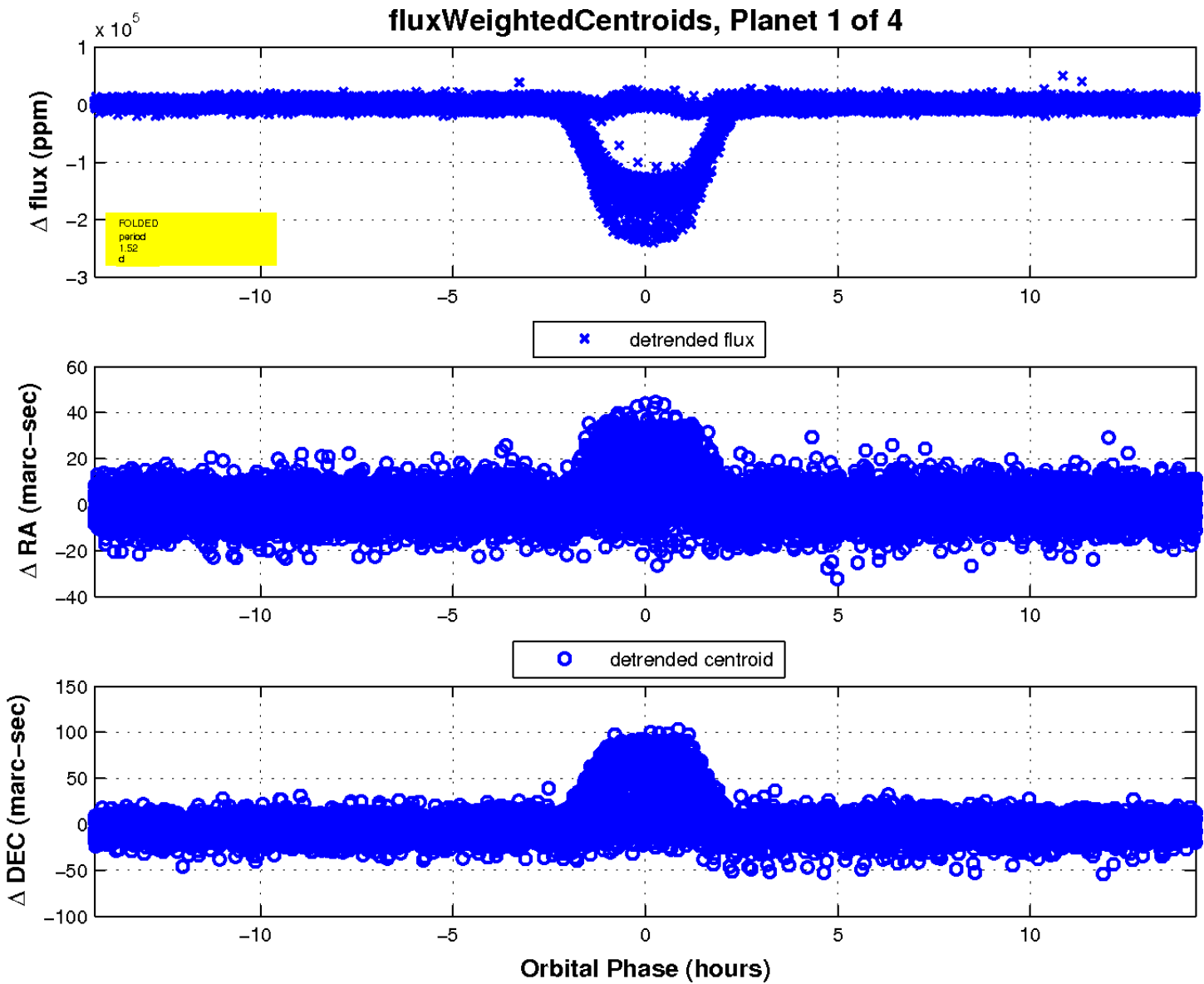
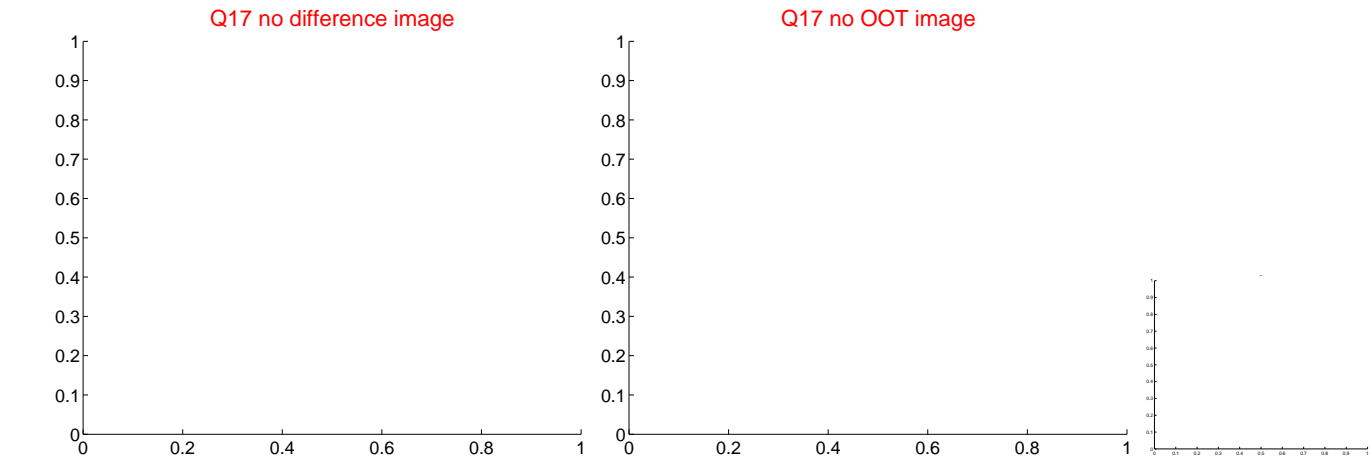
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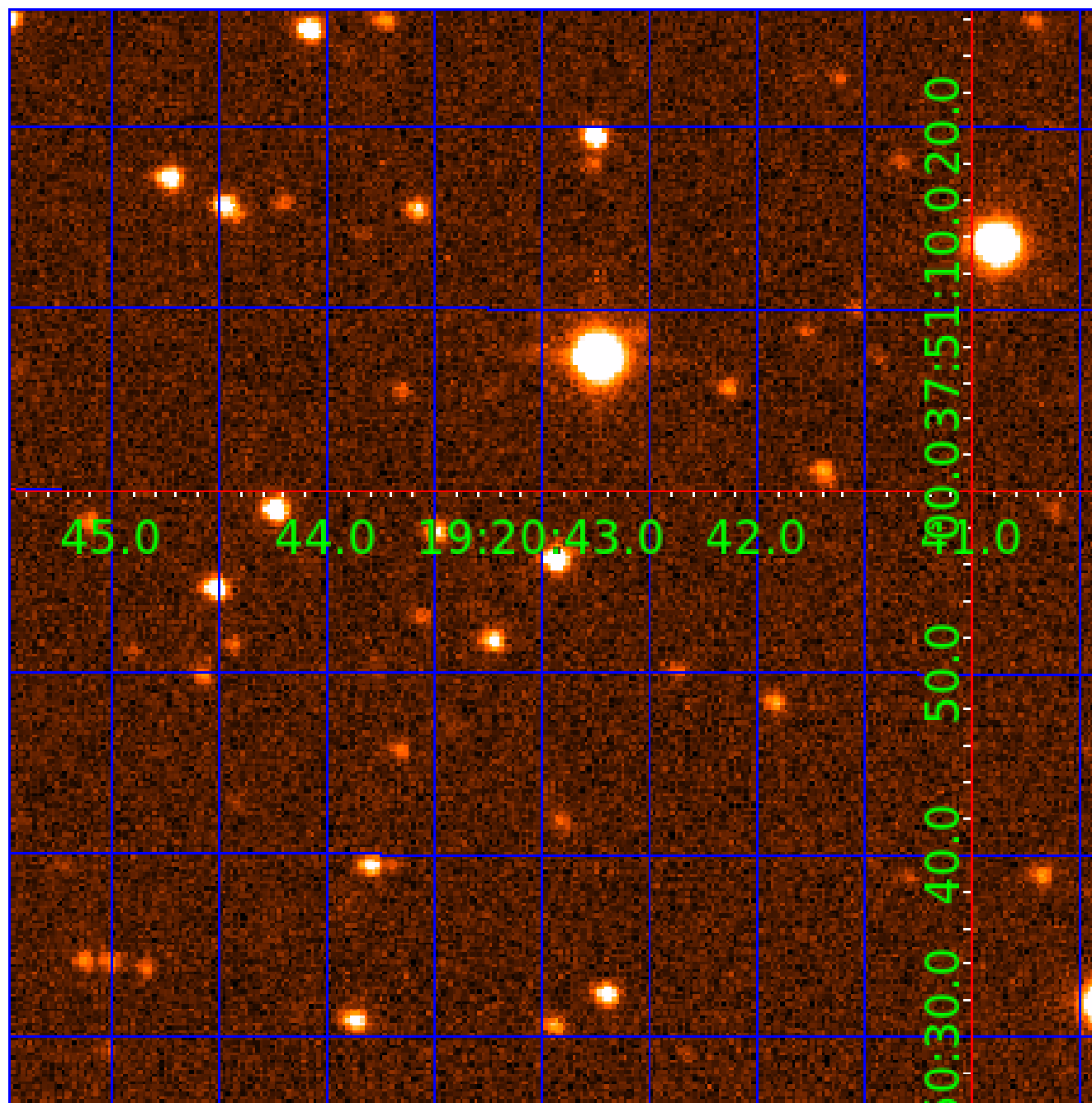


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002569494

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})
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002569494-03	OBS	No	71.875562	164.361347	11268.8	3.500	9.7	-1.0	0.87	5311	9.01	5.39
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002569494-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_KIC_POS
002569494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002569494-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
002569494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

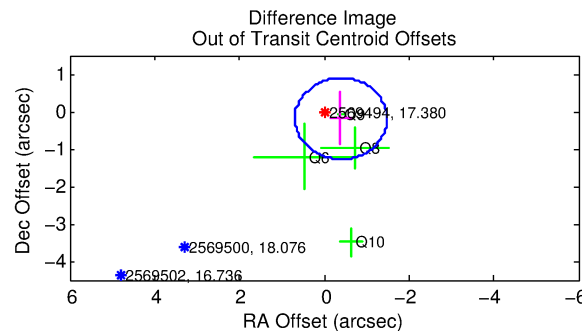
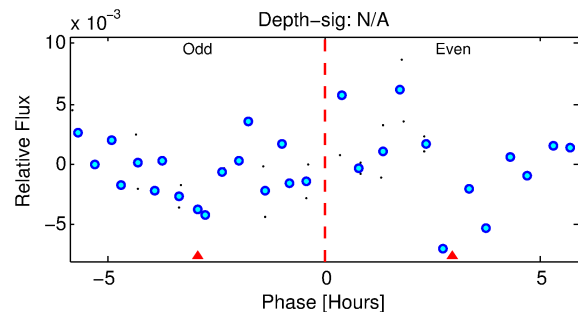
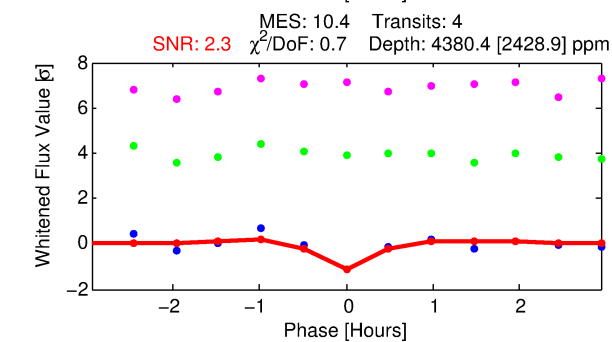
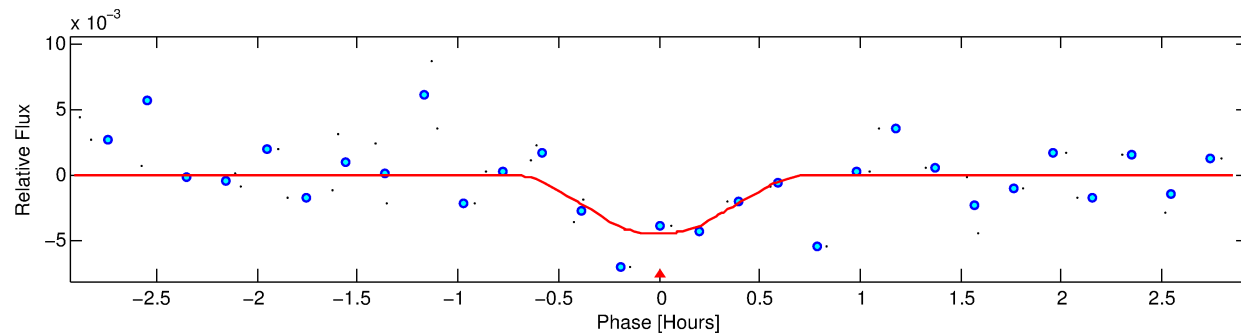
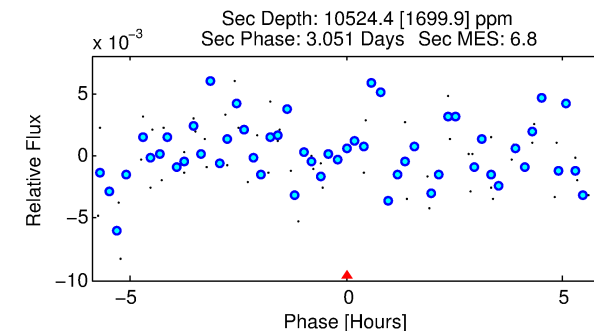
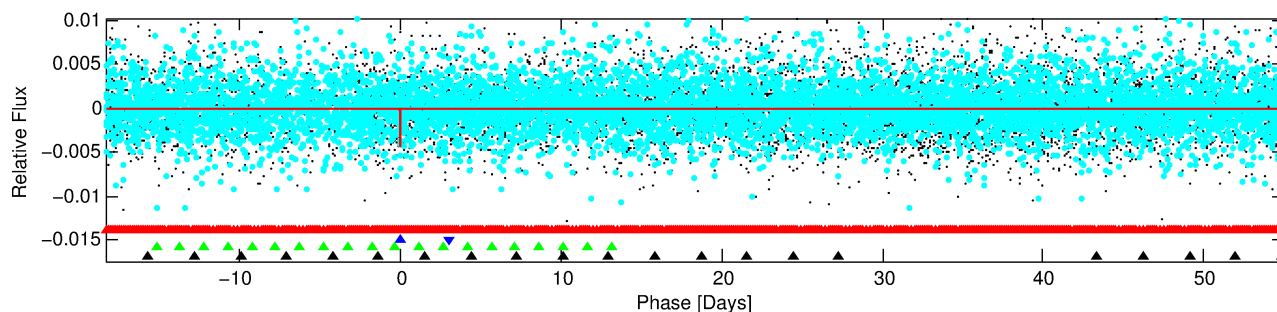
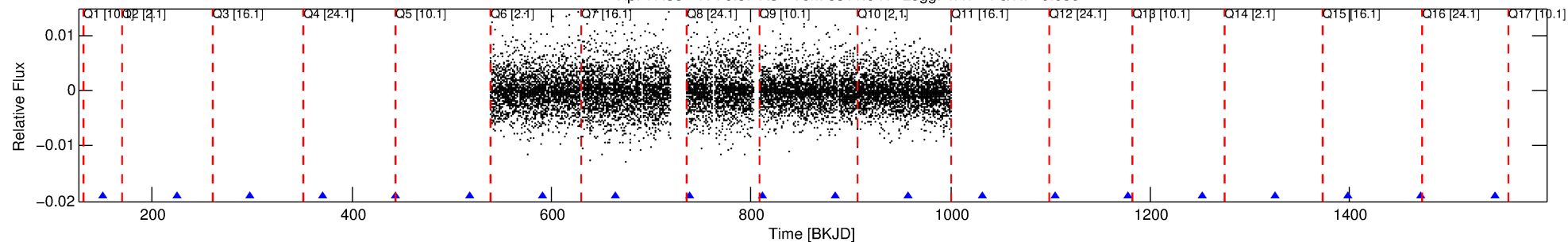
Ephemeris Match Information For 002569494-02

No Significant Match Found

DV One-Page Summary

KIC: 2569494 Candidate: 2 of 4 Period: 73.365 d
KOI: K03704 Corr: No Ephemeris Match

Kp: 17.38 R*: 0.87 Rs Teff: 5311.0 K Logg: 4.47 Fe/H: -0.080



DV Fit Results:

Period = 73.36507 [0.00631] d
Epoch = 151.1369 [0.0474] BKJD
Rp/R* = 0.0672 [0.4663]
a/R* = 433.10 [11269.68]
b = 0.75 [15.35]
Seff = 5.25 [1.43]
Teq = 386 [26] K
Rp = 6.35 [44.08] Re
a = 0.3192 [0.0477] AU
Ag = 14634.12 [203176.75] [0.07σ]
Teff = 6563 [22778] K [0.27σ]

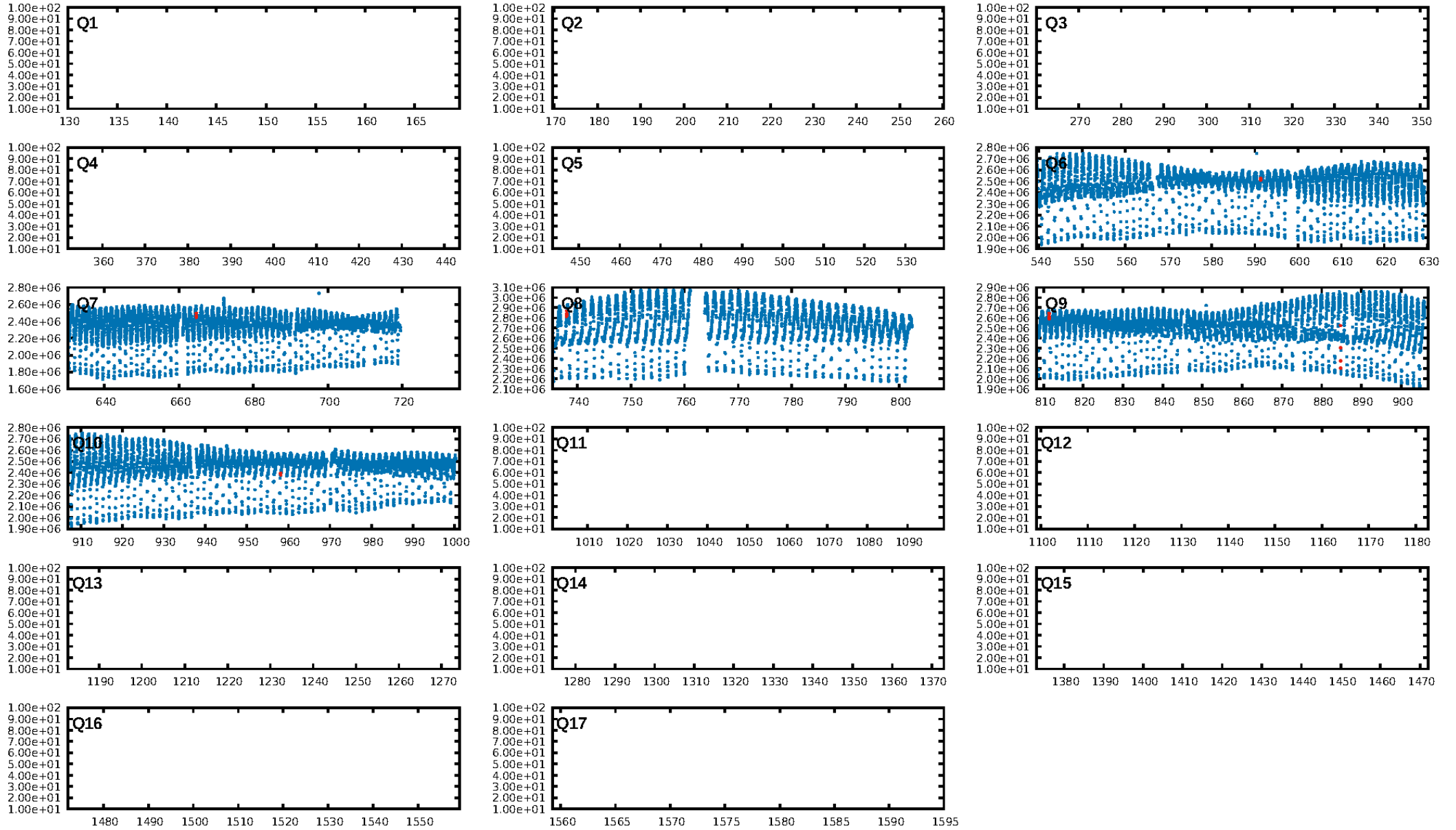
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.84σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.50e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.4288
Centroid-sig: N/A
Centroid-so: 0.587 arcsec [0.47σ]
OotOffset-rm: 0.439 arcsec [1.21σ]
KicOffset-rm: 0.169 arcsec [0.52σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/1/1/1 [5]
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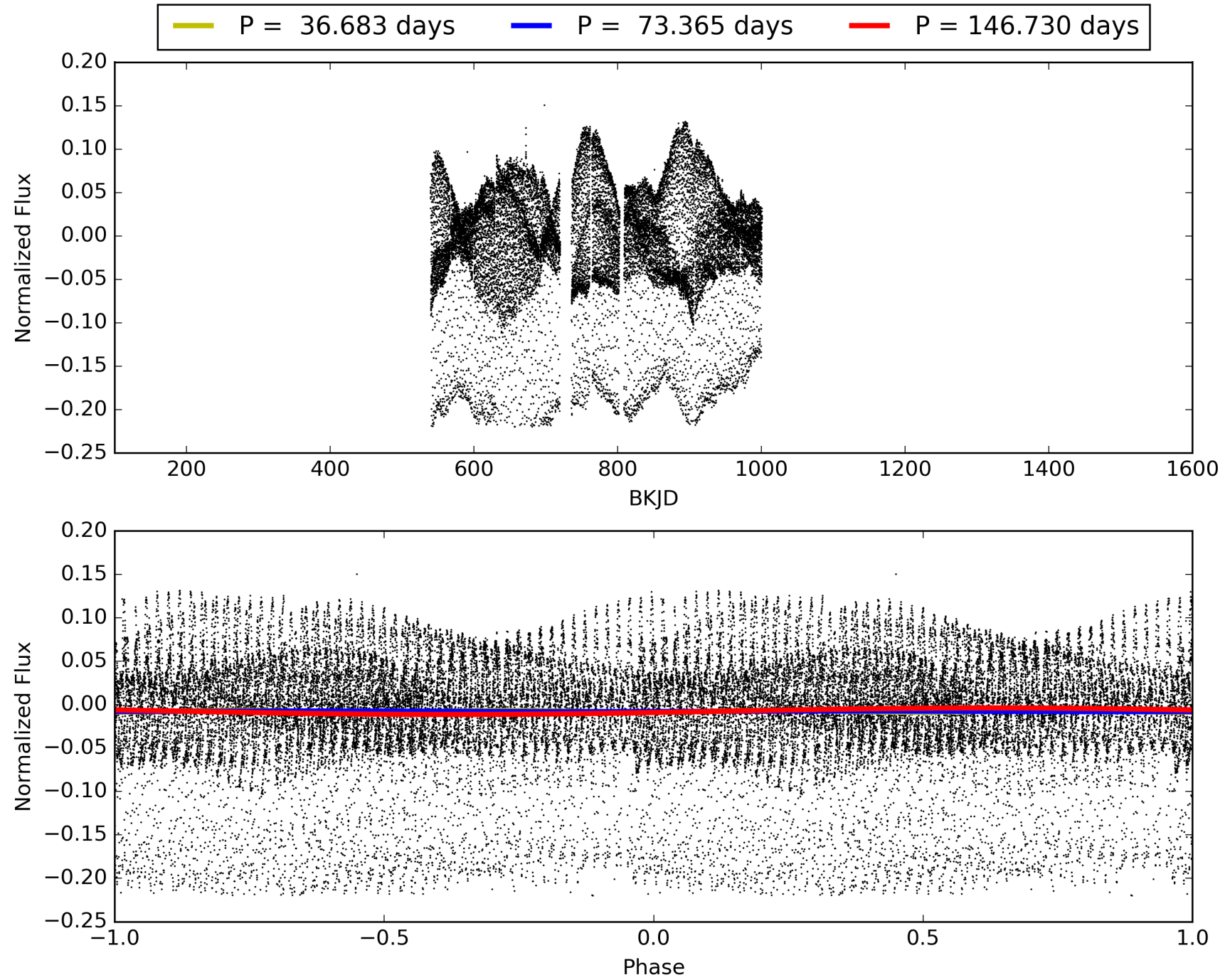
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002569494-02, PDC Light Curves

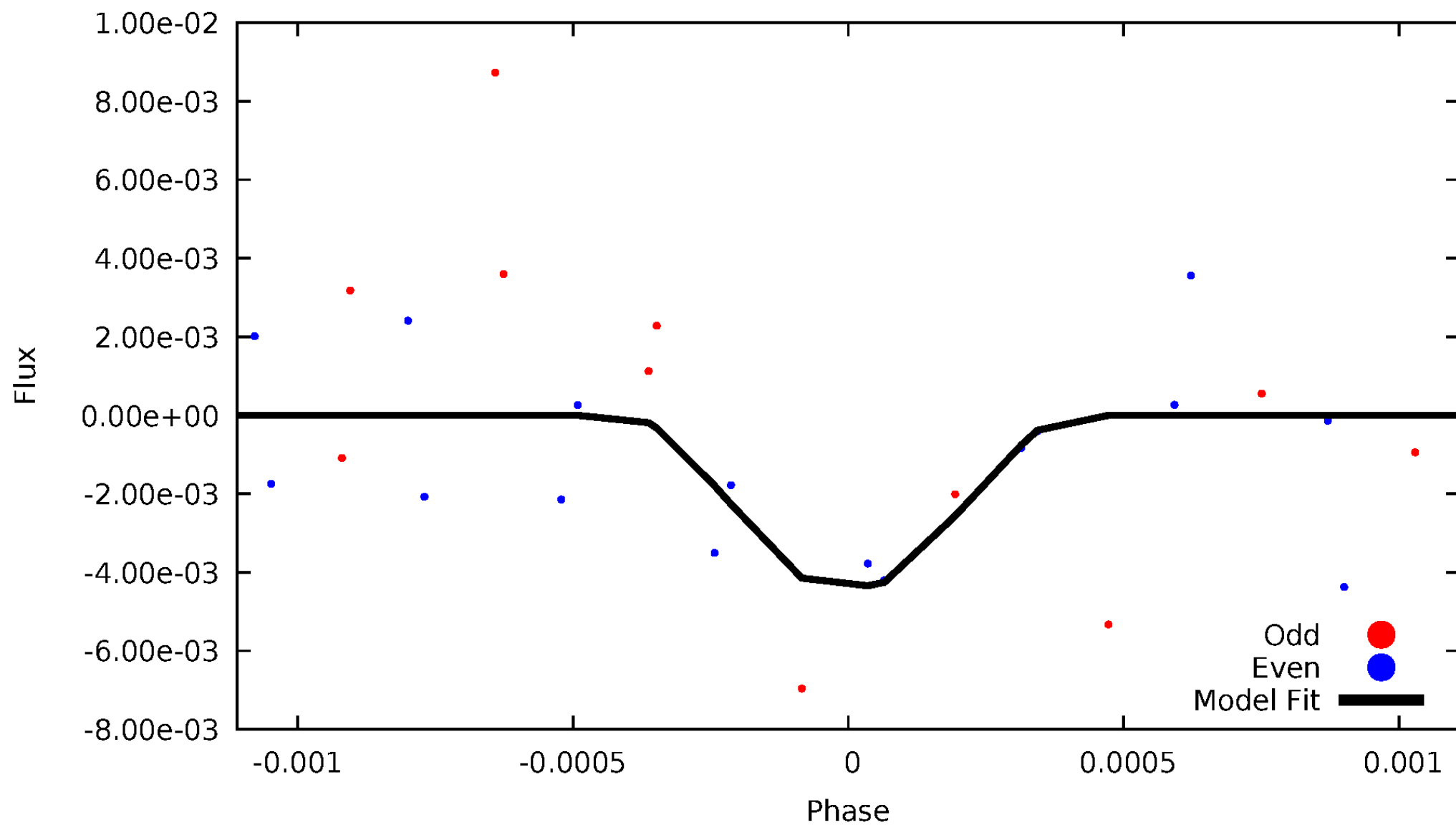


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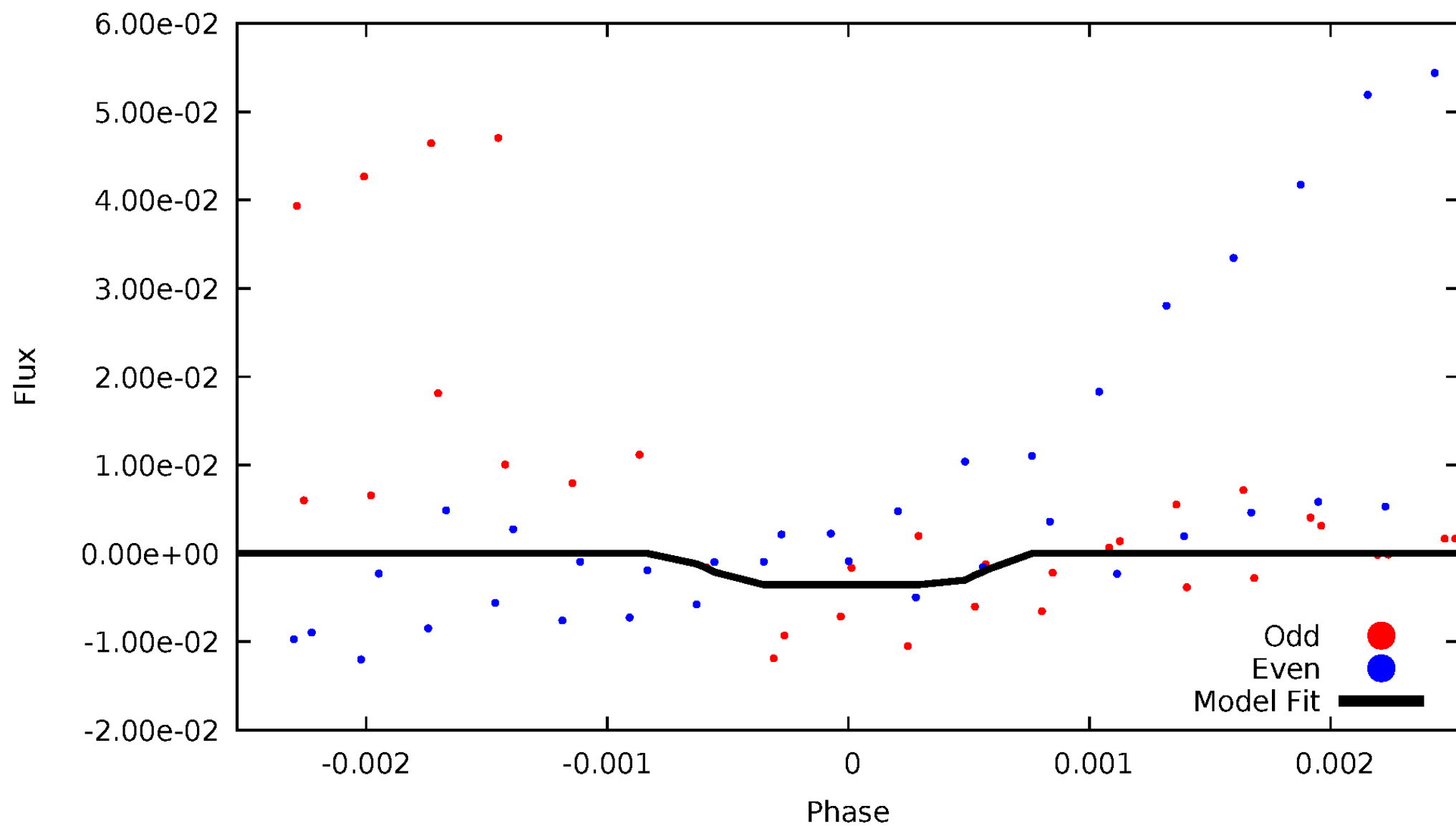
DV Odd/Even

TCE 002569494-02



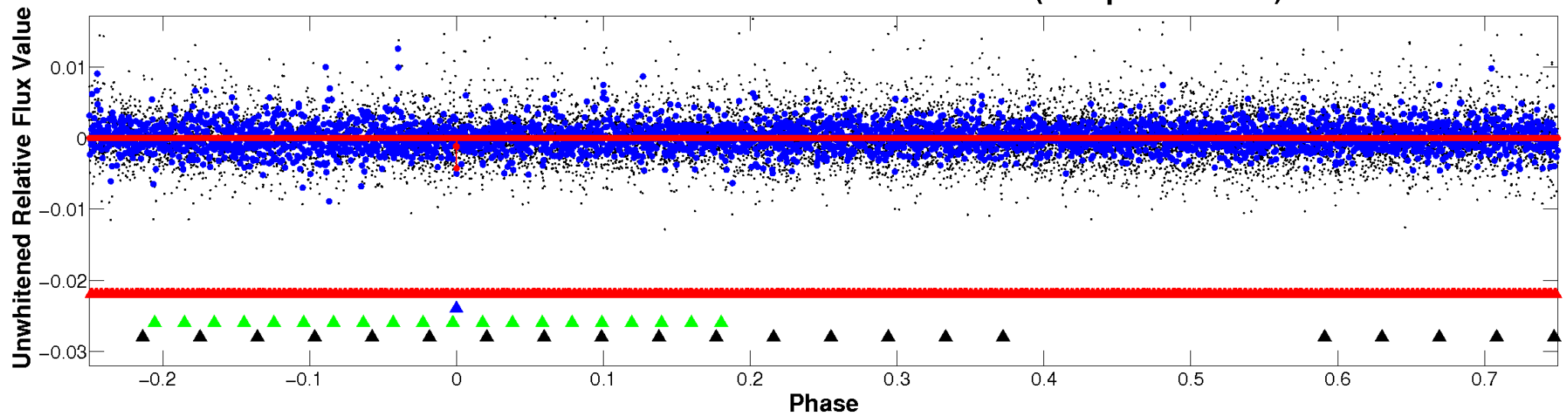
ALT Odd/Even

TCE 002569494-02

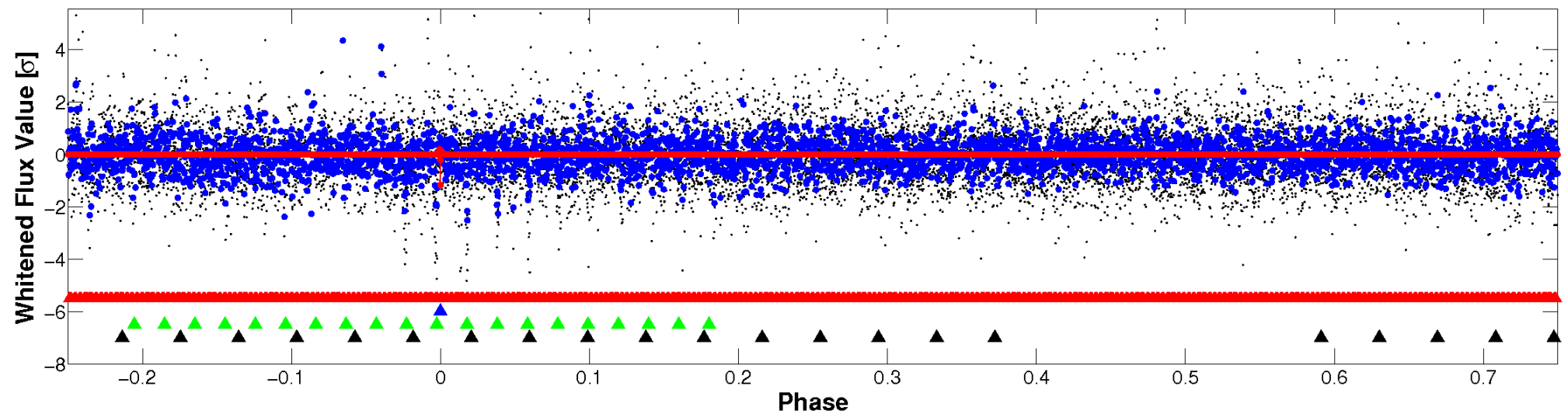


Non-Whitened Vs. Whitened Light Curve

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

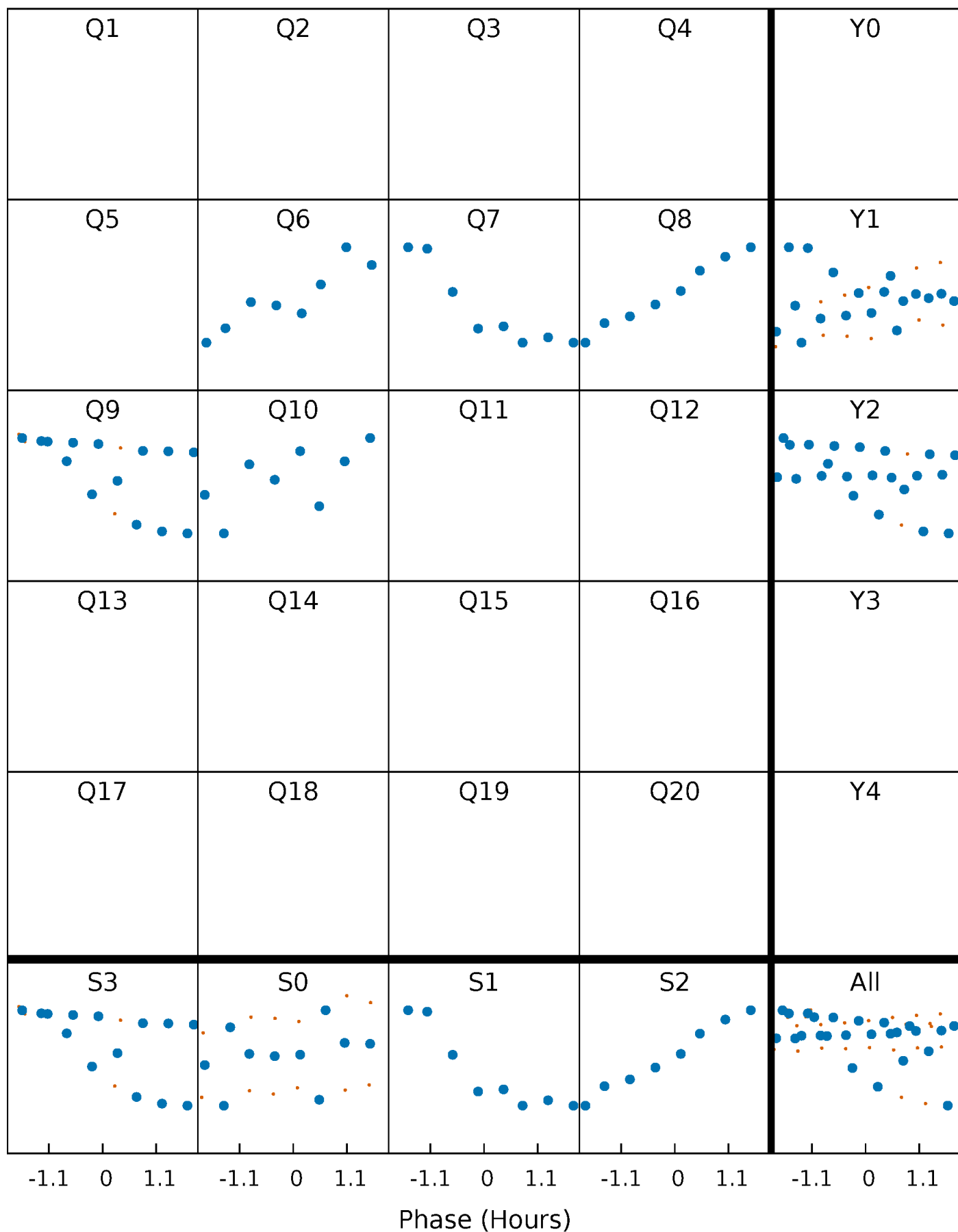


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



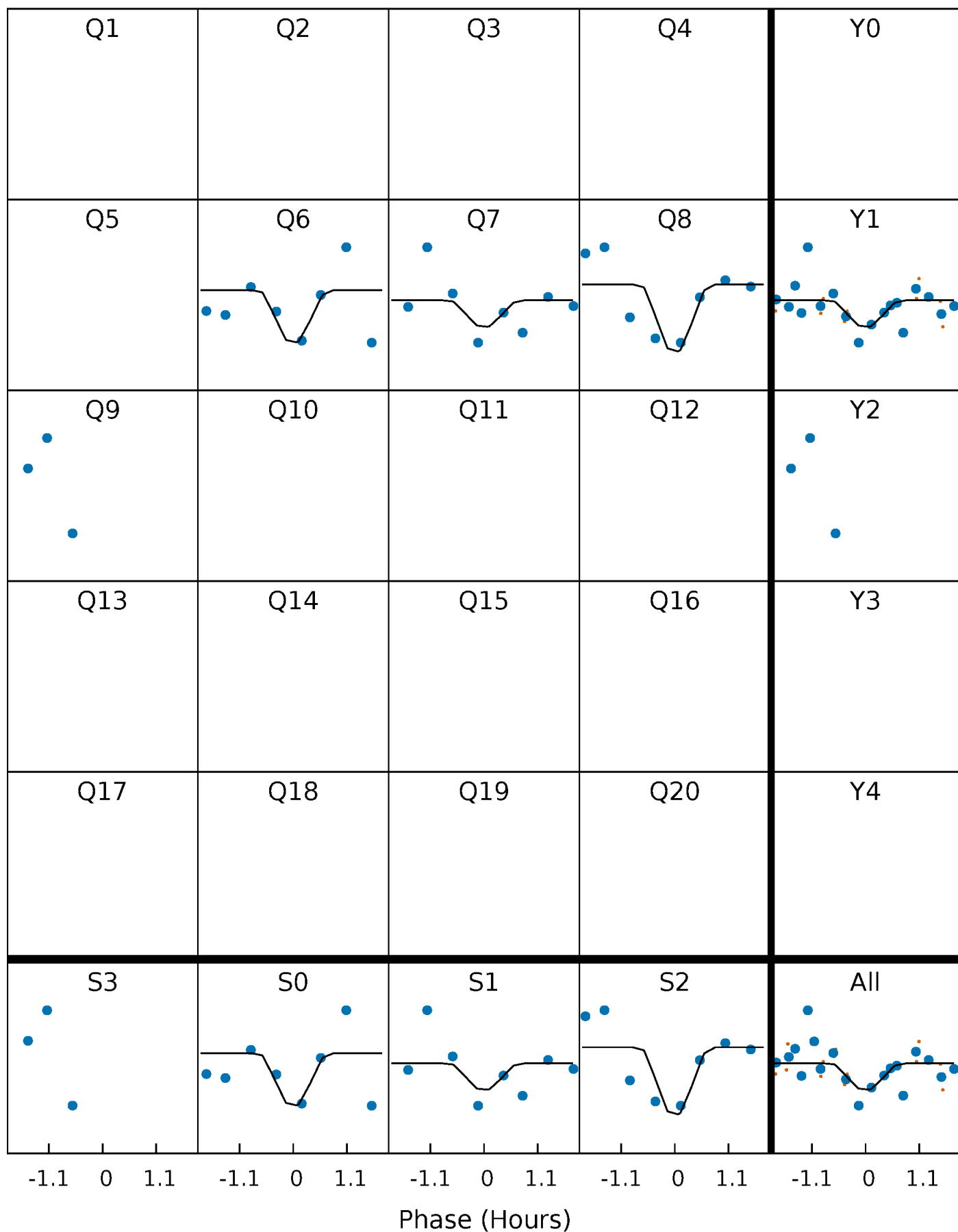
PDC Quarter-Phased Transit Curves

TCE 002569494-02 P= 73.365065 Days $T_0=151.136855$ (BKJD)



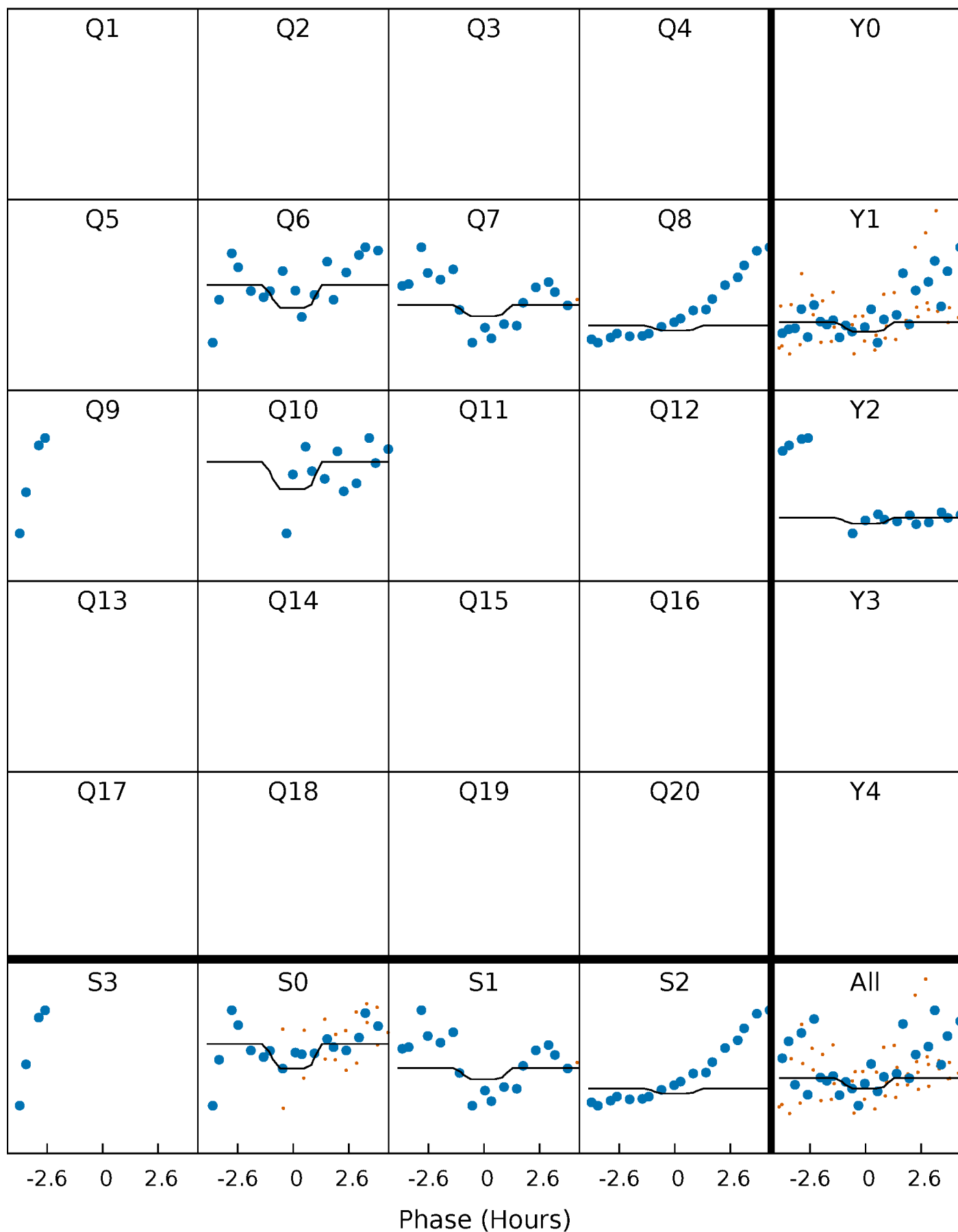
DV Quarter-Phased Transit Curves

TCE 002569494-02 P= 73.365065 Days $T_0=151.136855$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

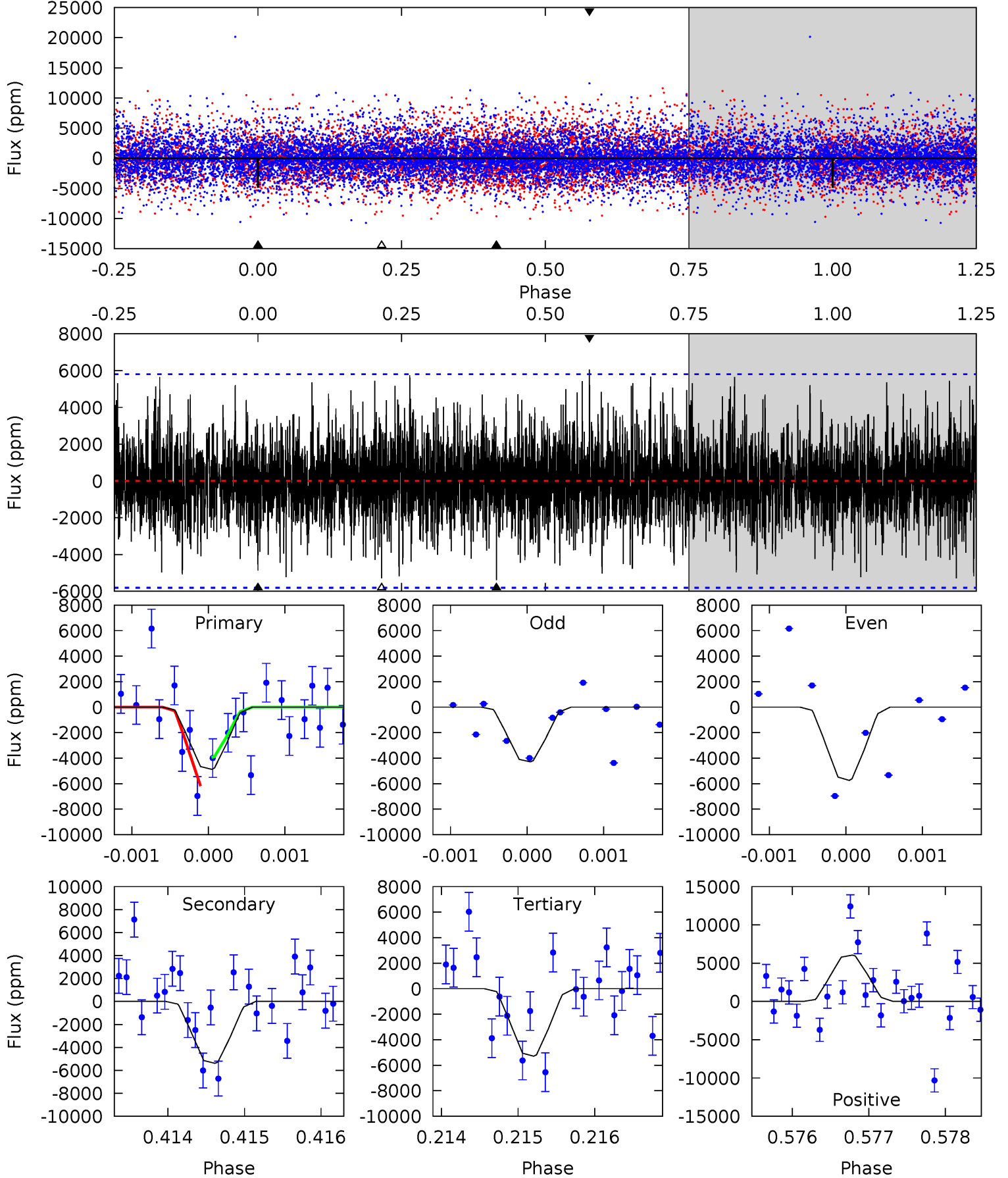
TCE 002569494-02 P= 73.397326 Days $T_0=150.927565$ (BKJD)



DV Model-Shift Uniqueness Test

002569494-02, P = 73.365065 Days, E = 151.136855 Days

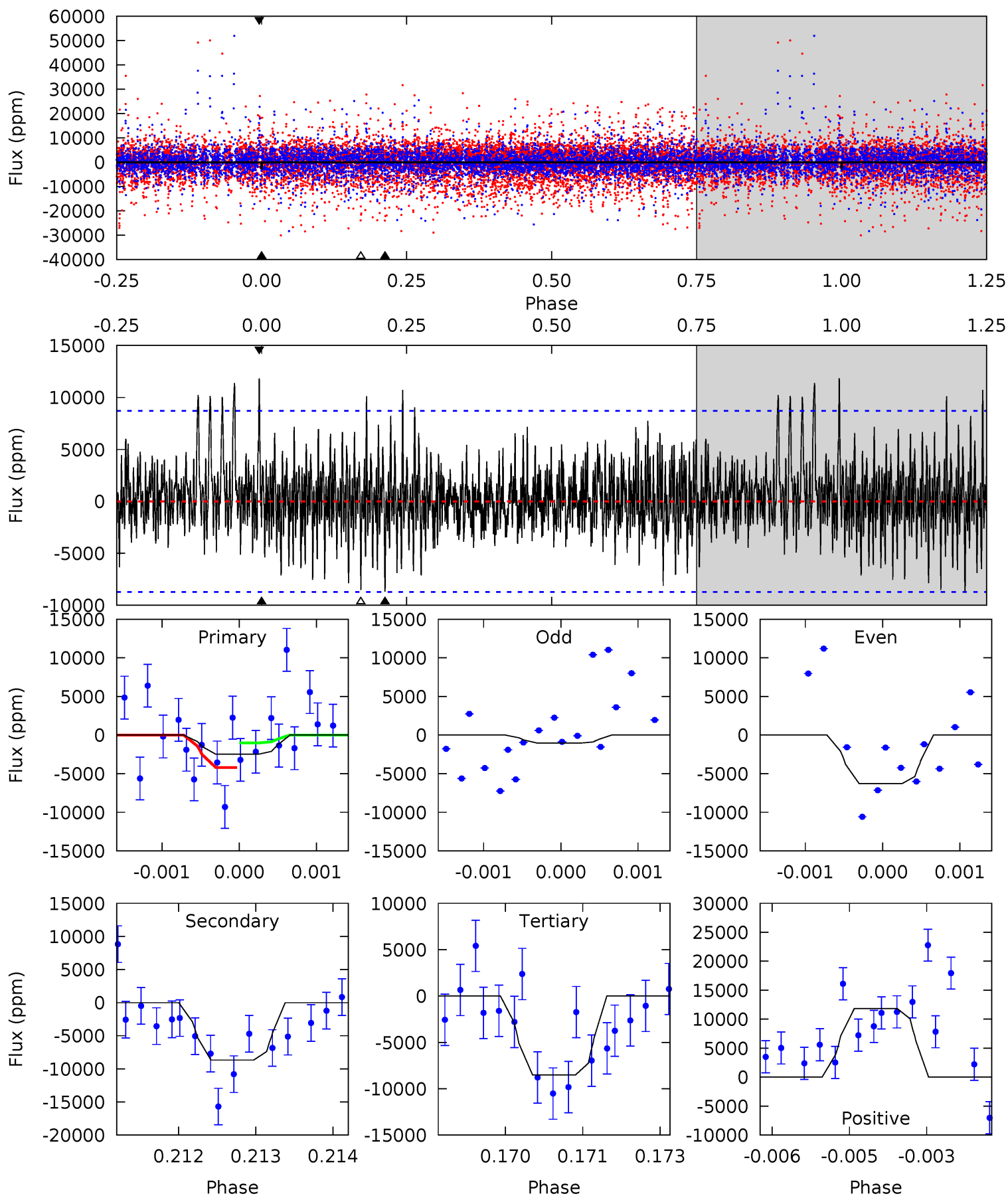
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.61	5.09	5.00	5.73	5.49	3.35	1.48	-0.39	-1.12	0.09	-0.64	0.68	1.10	0.53	1.02



Alt Model-Shift Uniqueness Test

002569494-02, P = 73.397326 Days, E = 150.927565 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.55	5.40	5.31	7.37	5.43	3.25	1.62	-3.76	-5.83	0.09	-1.97	1.09	1.19	0.58	1.00



Stellar Parameters For KIC 002569494

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5311^{+204}_{-185}	$4.469^{+0.104}_{-0.127}$	$-0.080^{+0.300}_{-0.300}$	$0.866^{+0.147}_{-0.107}$	$0.804^{+0.113}_{-0.061}$	$1.745^{+0.795}_{-0.644}$
	+4%/-3%	+2%/-3%	+375%/-375%	+17%/-12%	+14%/-8%	+46%/-37%
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 002569494-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-5389 ± 1058	$32.57^{+32.34}_{-22.68}$	543^{+29}_{-28}	3108^{+1435}_{-555}	301^{+2664}_{-230}
Alt.	-8671 ± 1606	$32.48^{+33.09}_{-23.01}$	543^{+31}_{-27}	3317^{+1707}_{-603}	462^{+4295}_{-348}

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

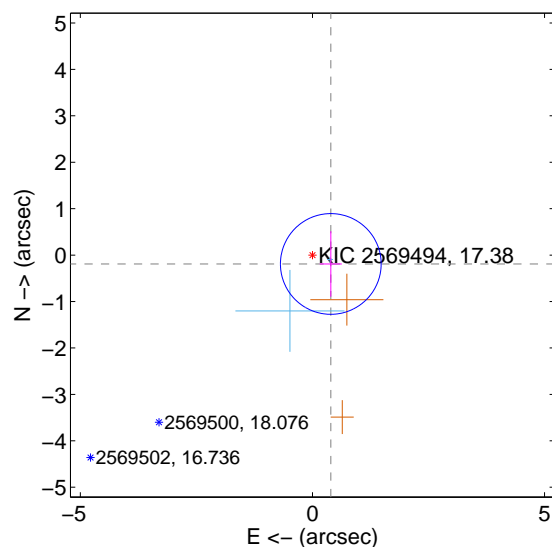
Supplemental centroid analysis for 002569494-02. Kepler magnitude: 17.38. Transit SNR 2.29

There are 3 quarters with good PRF difference image offsets

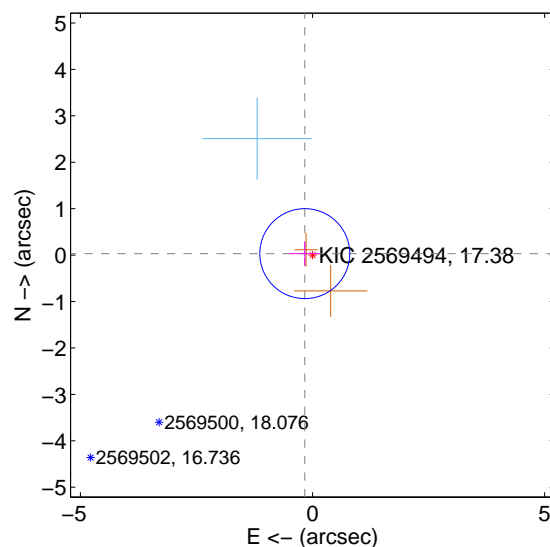
The OOT PRF centroid is offset from the target star catalog position by about 3.69 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.439 ± 0.362	1.21	-0.395 ± 0.238	-0.191 ± 0.706
PRF-fit source offset from KIC position	0.169 ± 0.323	0.52	0.166 ± 0.325	0.031 ± 0.260
photometric centroid source offset	0.59 ± 1.25	0.47	-0.49 ± 1.06	0.32 ± 1.61

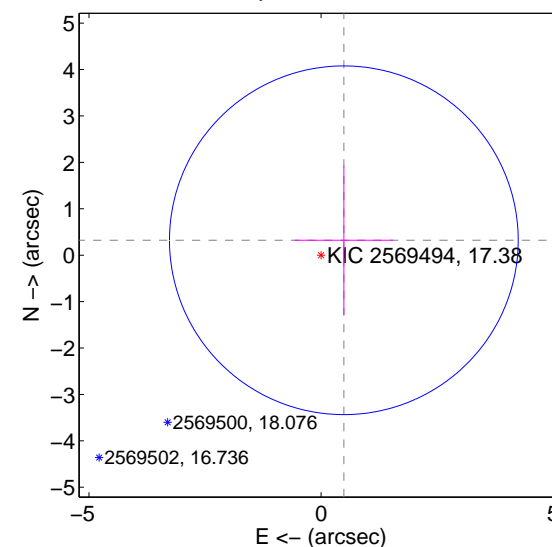
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

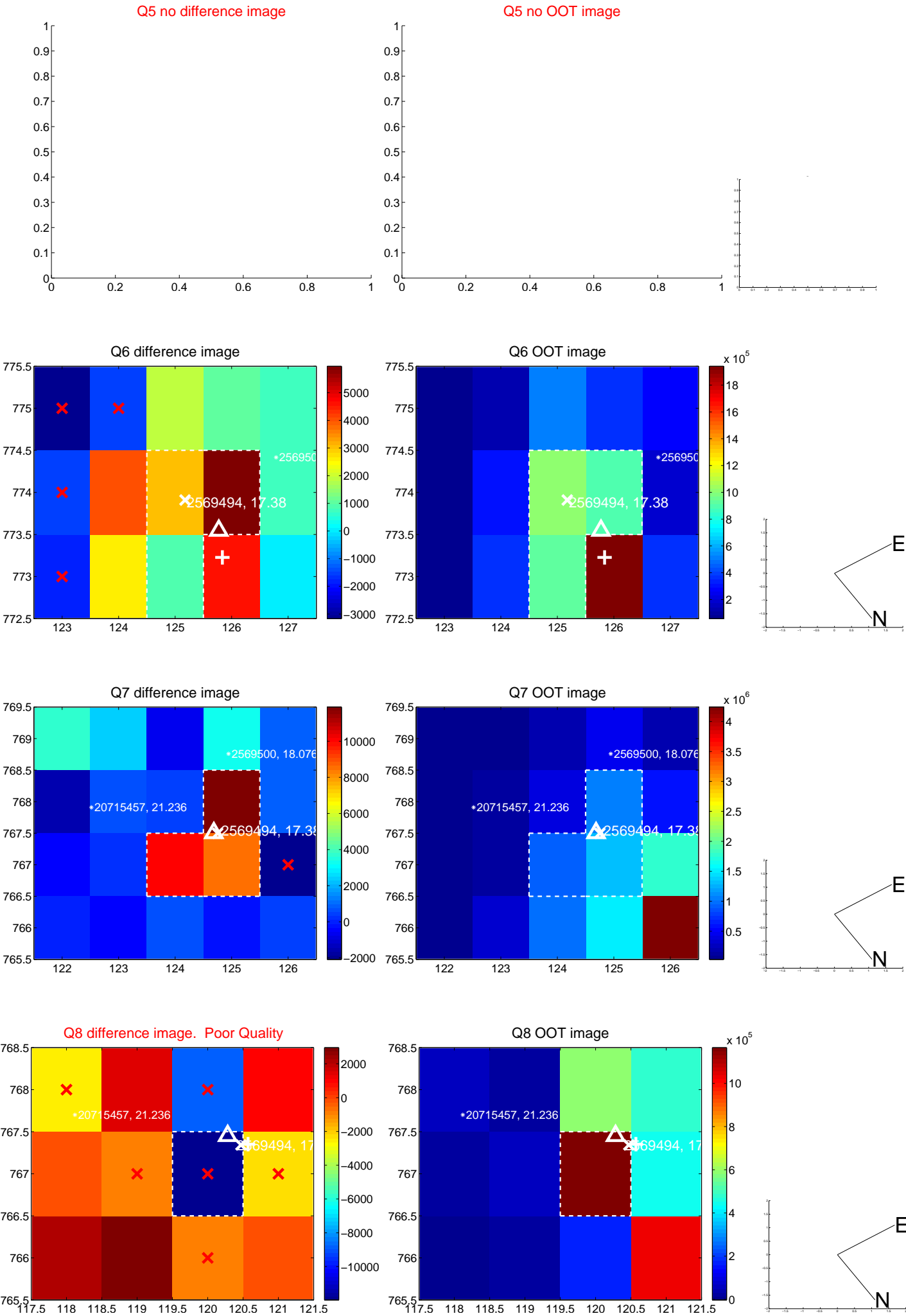


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

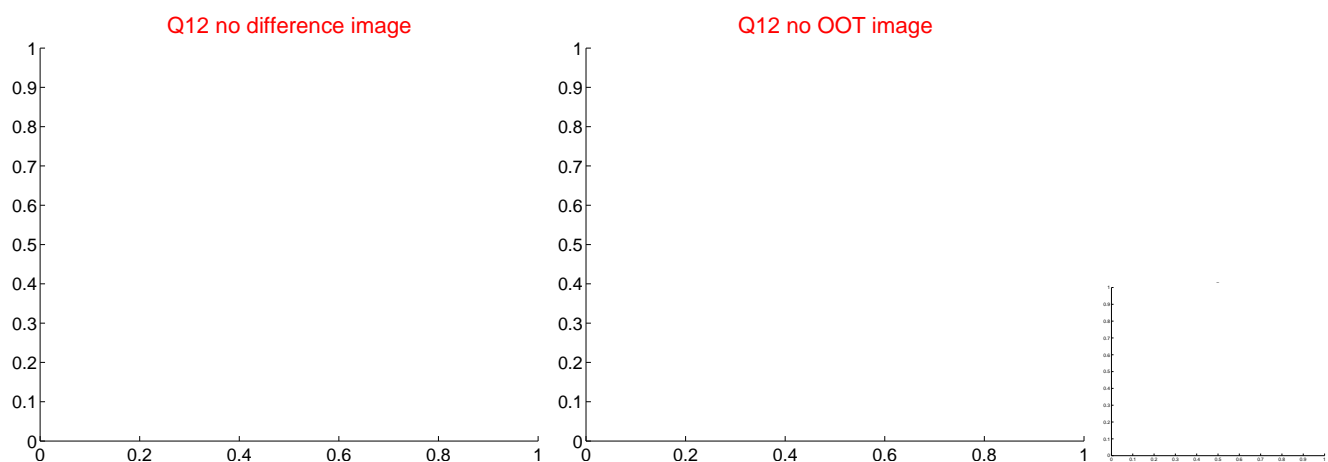
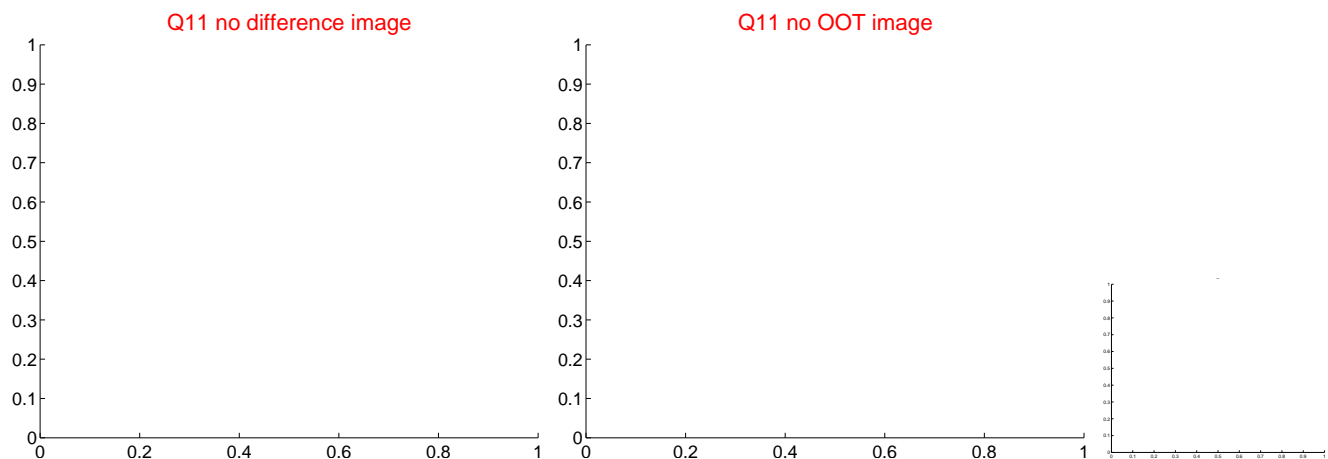
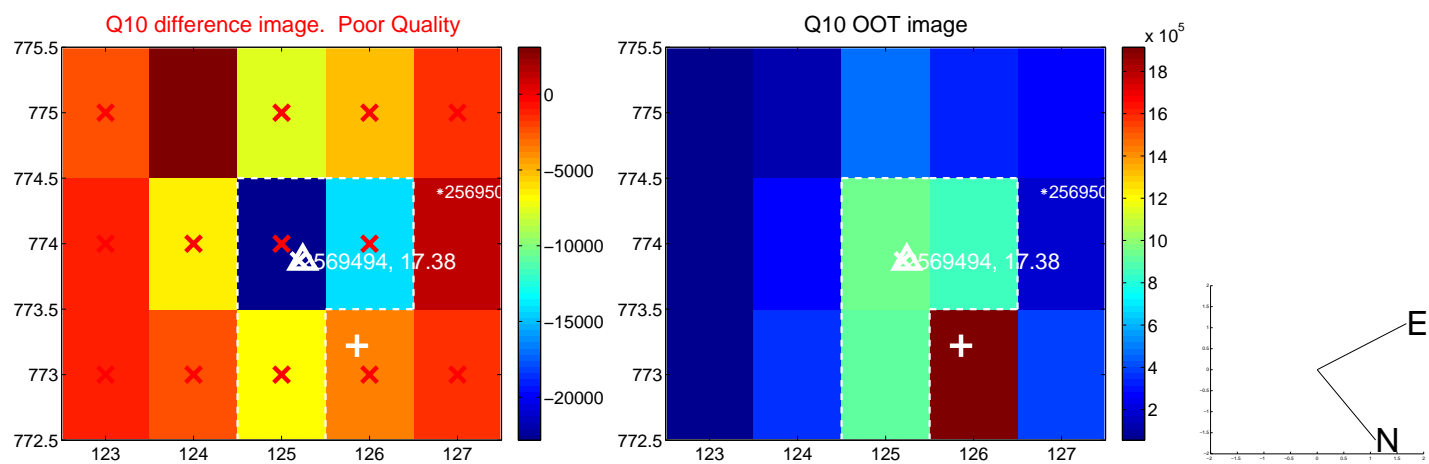
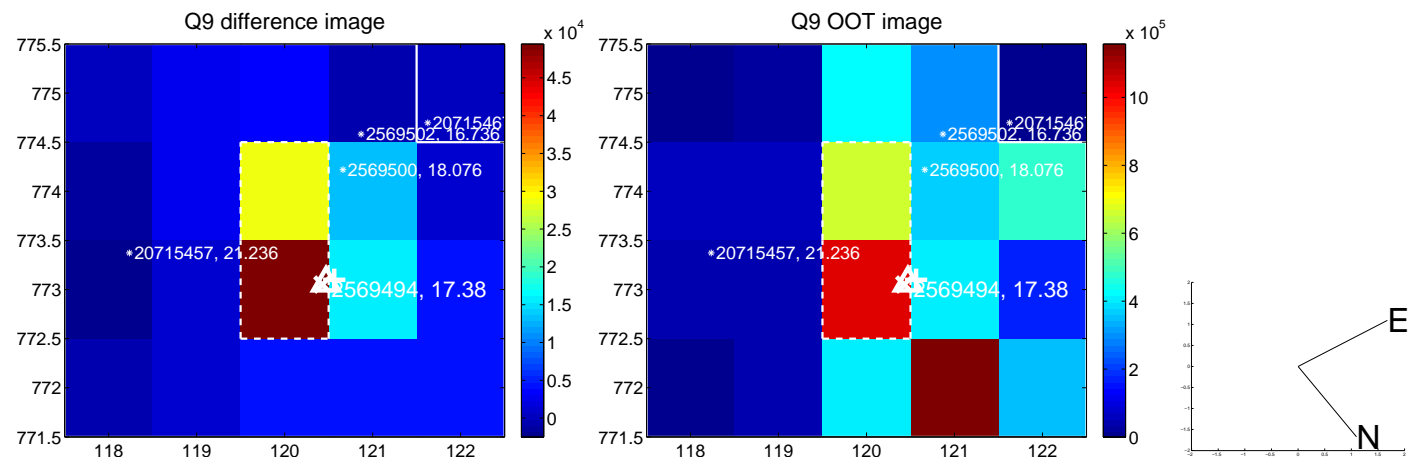
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



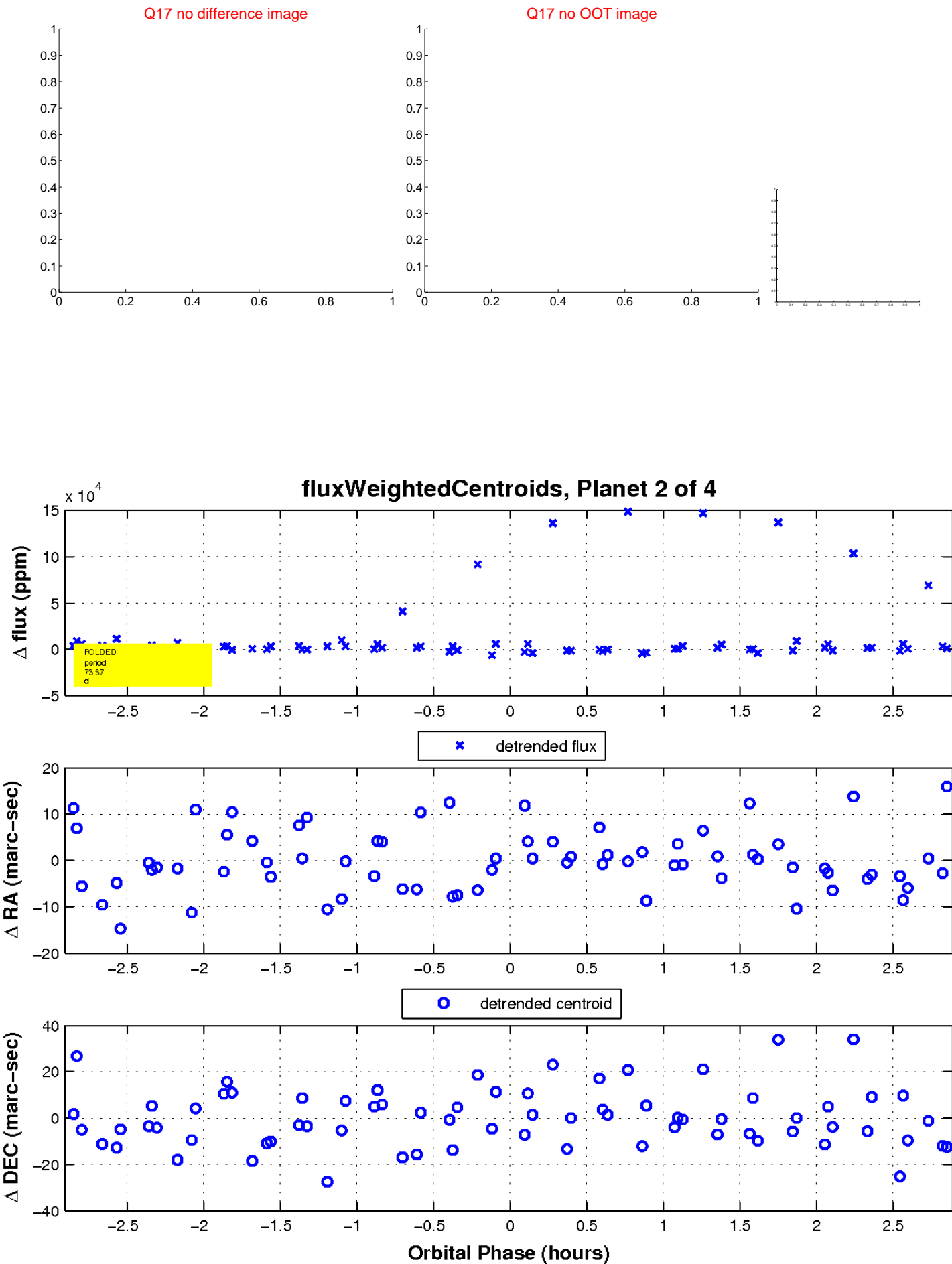
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

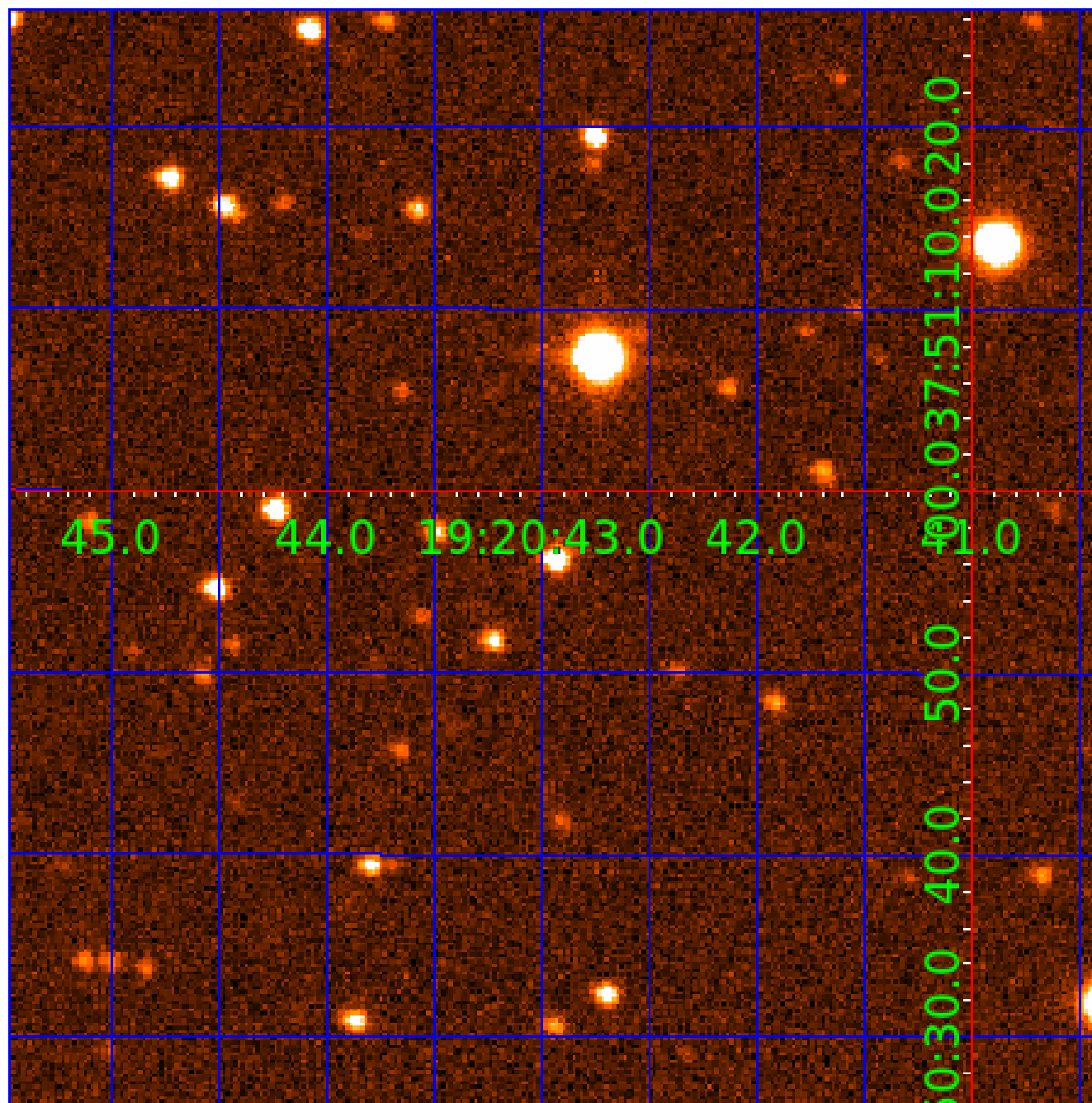


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002569494

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})
002569494-01	OBS	3704.01	1.523312	132.318282	148689.6	4.773	792.8	492.4	0.87	5311	32.92	919.52
002569494-02	OBS	No	73.365065	151.136855	4380.4	0.977	10.4	2.3	0.87	5311	6.35	5.25
002569494-03	OBS	No	71.875562	164.361347	11268.8	3.500	9.7	-1.0	0.87	5311	9.01	5.39
002569494-04	OBS	No	70.500166	178.438961	8098.9	2.609	8.5	5.5	0.87	5311	7.84	5.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002569494-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_KIC_POS
002569494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002569494-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
002569494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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 002569494-03

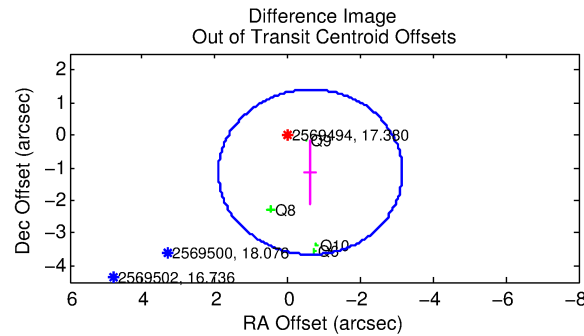
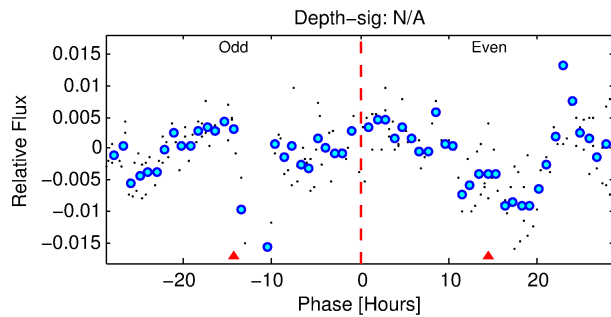
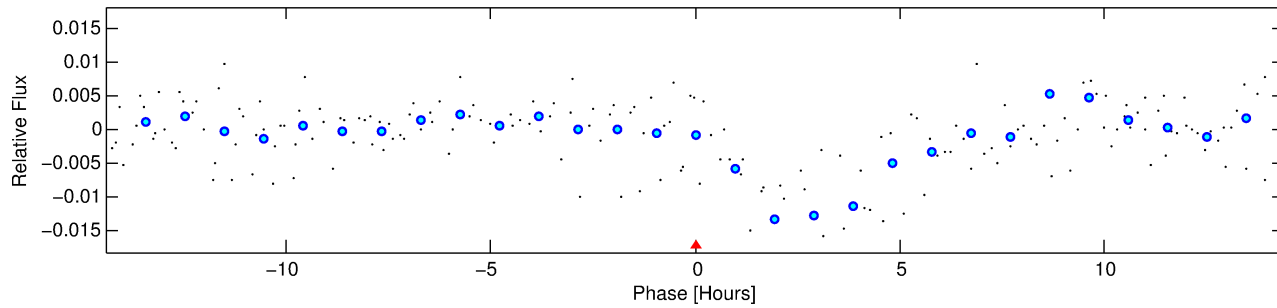
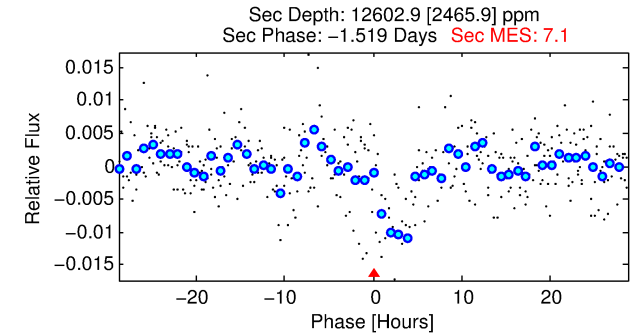
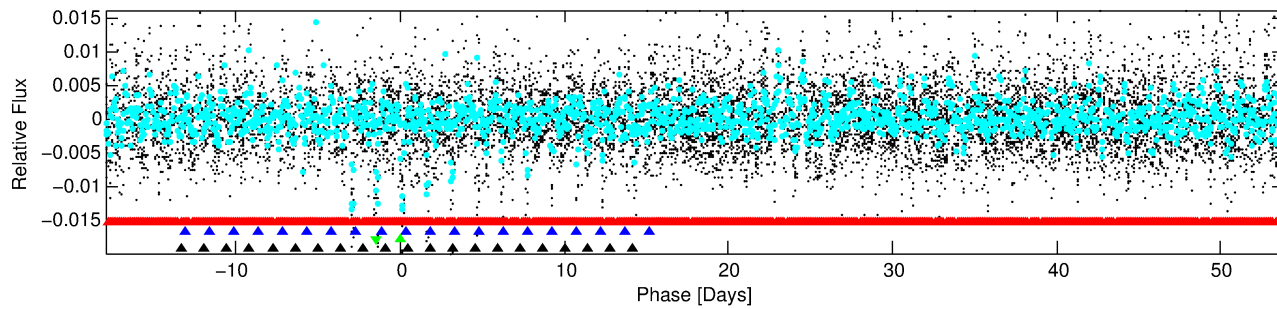
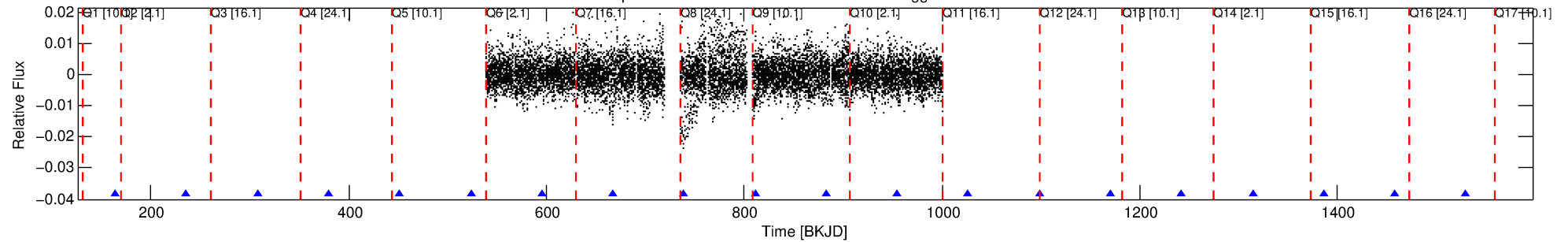
No Significant Match Found

DV One-Page Summary

KIC: 2569494 Candidate: 3 of 4 Period: 71.876 d

KOI: K03704 Corr: No Ephemeris Match

Kp: 17.38 R*: 0.87 Rs Teff: 5311.0 K Logg: 4.47 Fe/H: -0.080



TPS TCE Results:

Period = 71.87556 d
Epoch = 164.3613 BKJD

DV fit results are unavailable

DV Diagnostic Results:

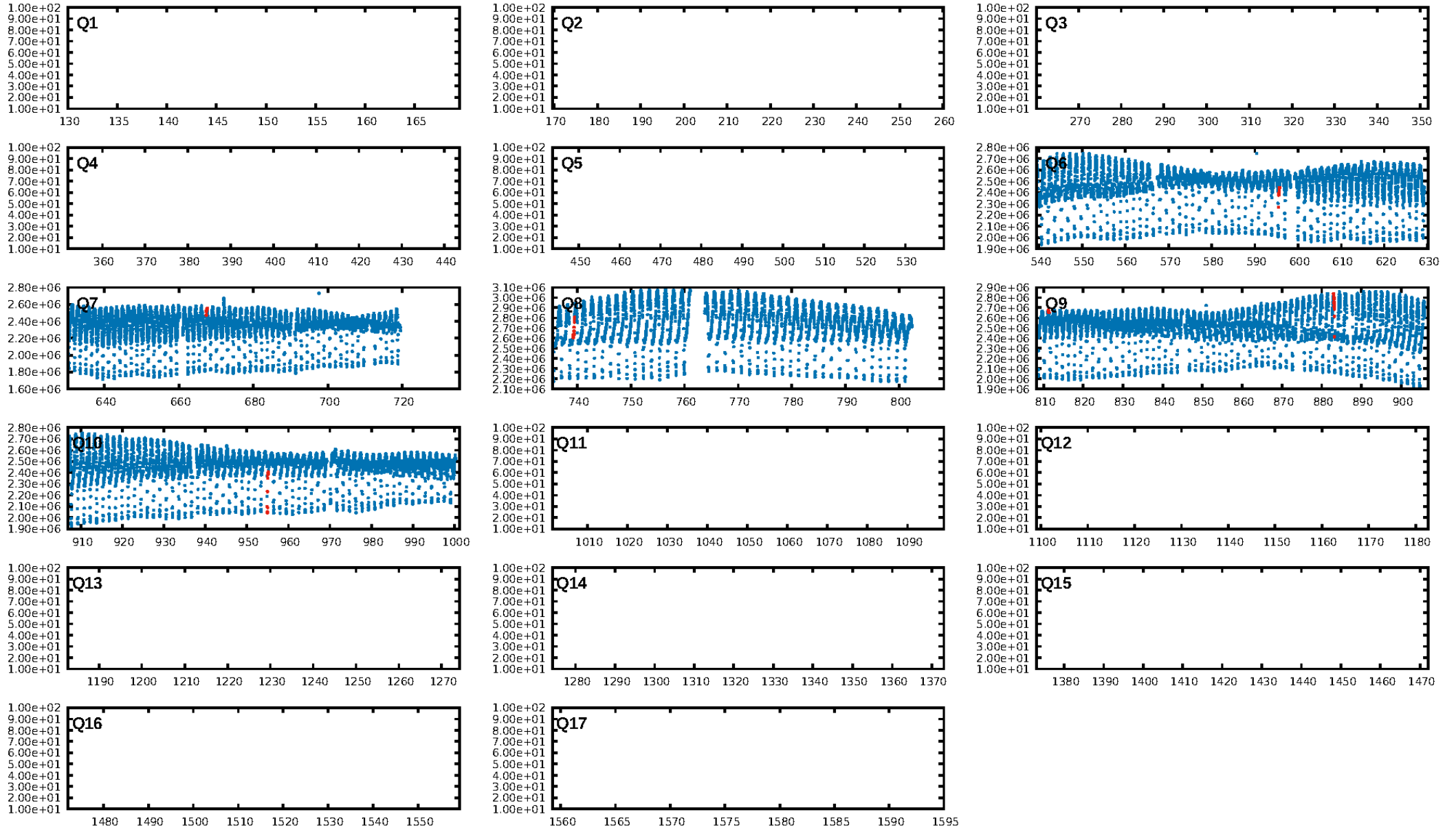
ShortPeriod-sig: 100.0% [7.56σ]
LongPeriod-sig: 100.0% [9.84σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.70e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 9.656

Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 1.292 arcsec [1.53σ]
KicOffset-rm: 0.019 arcsec [0.23σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/1/1/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.20 [1/5]

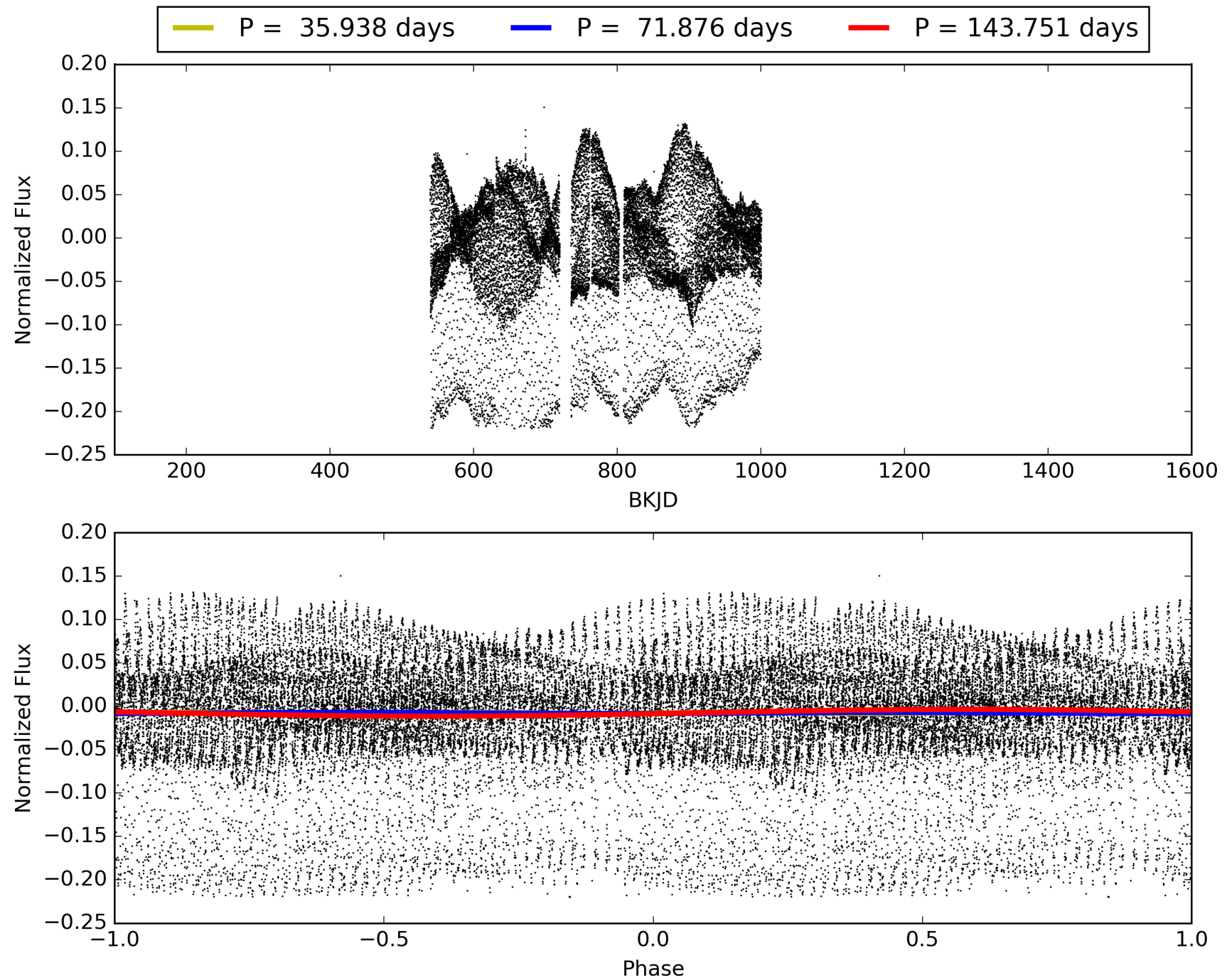
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:57:39 Z

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

TCE 002569494-03, PDC Light Curves

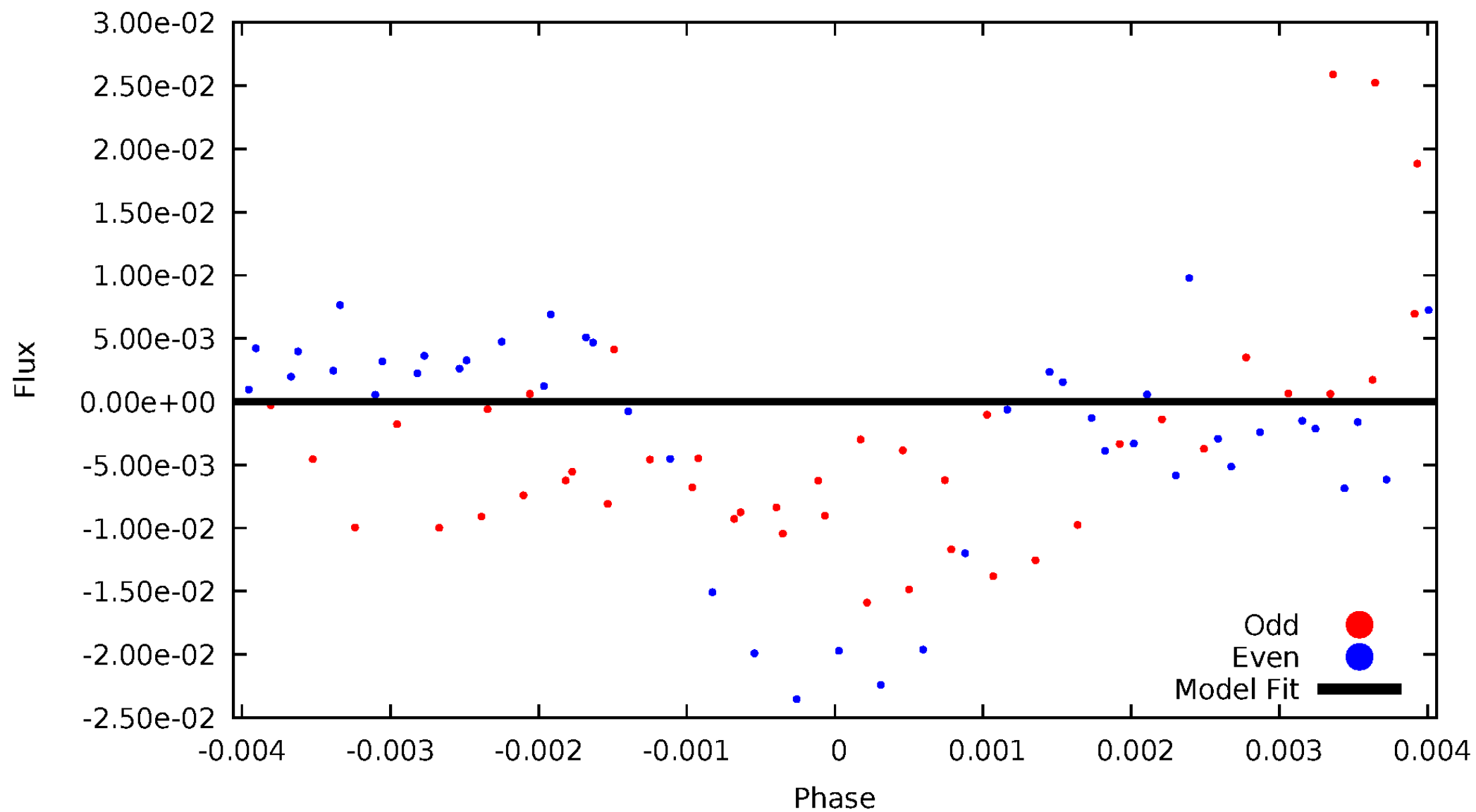


TCE 002569494-03



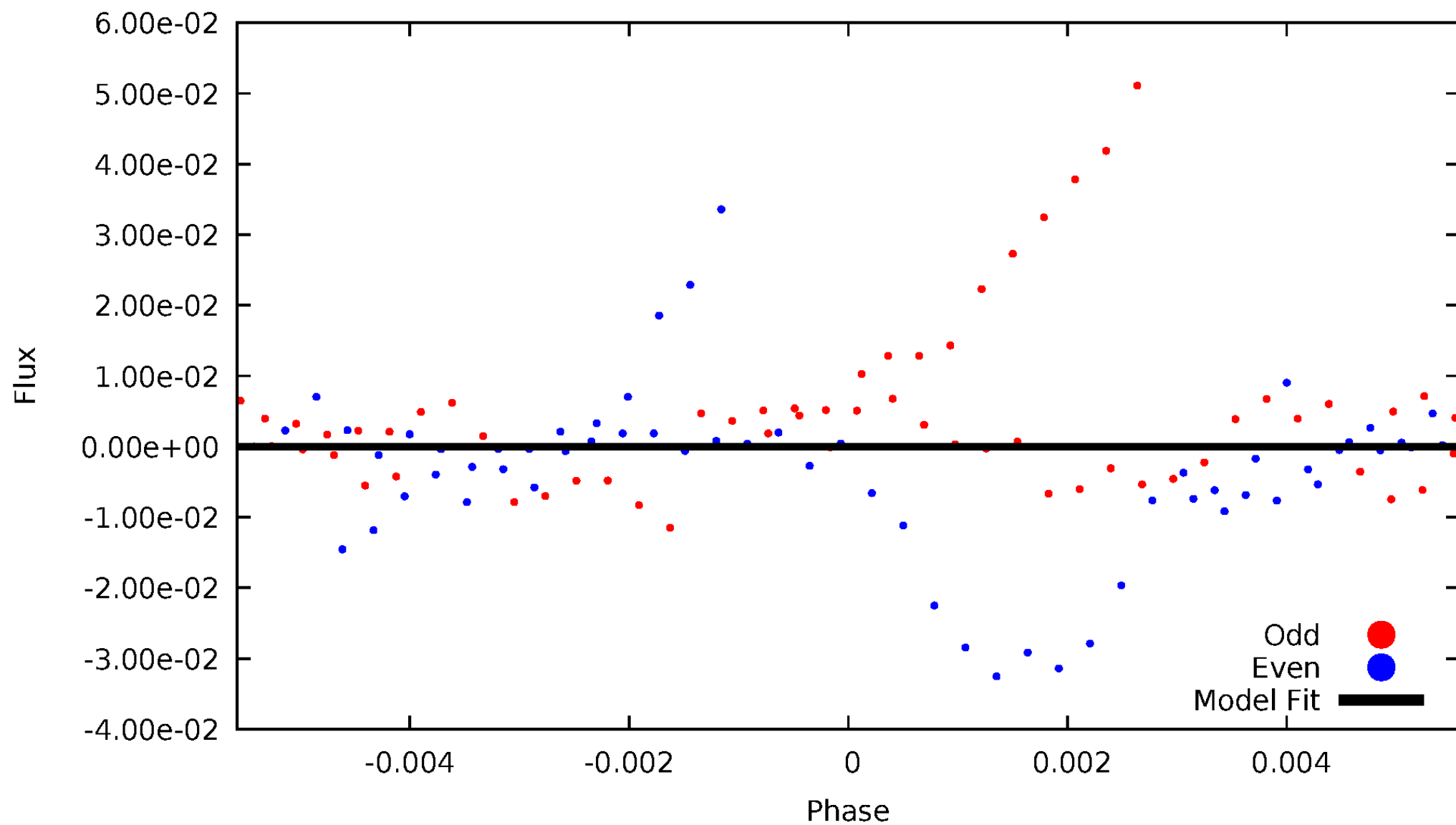
DV Odd/Even

TCE 002569494-03



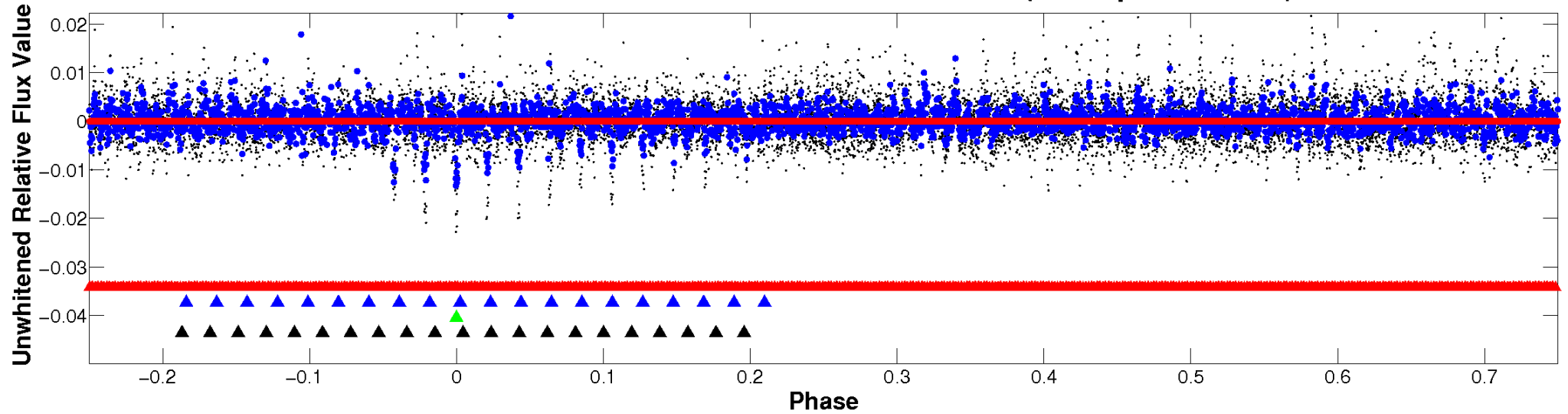
ALT Odd/Even

TCE 002569494-03



Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

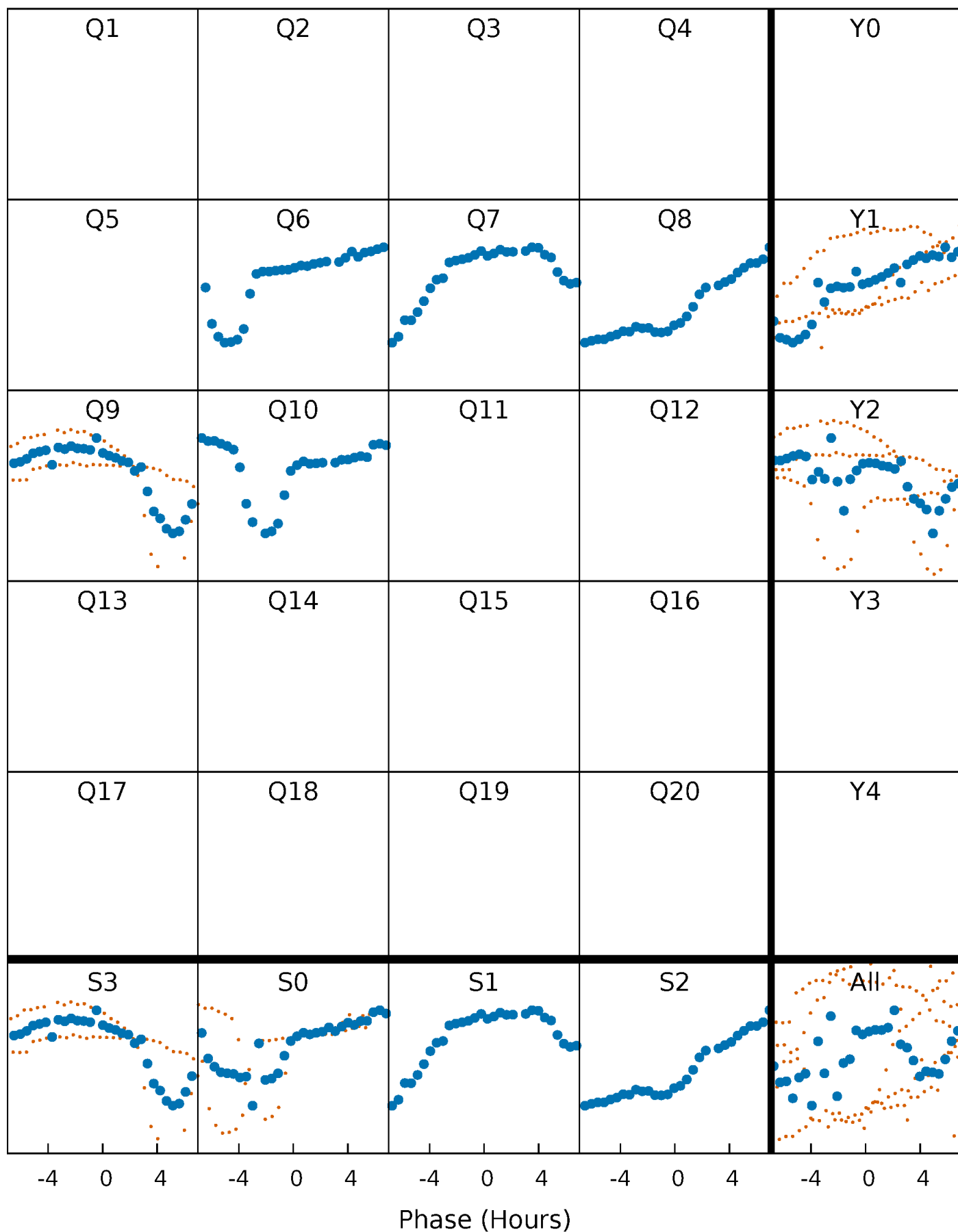


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



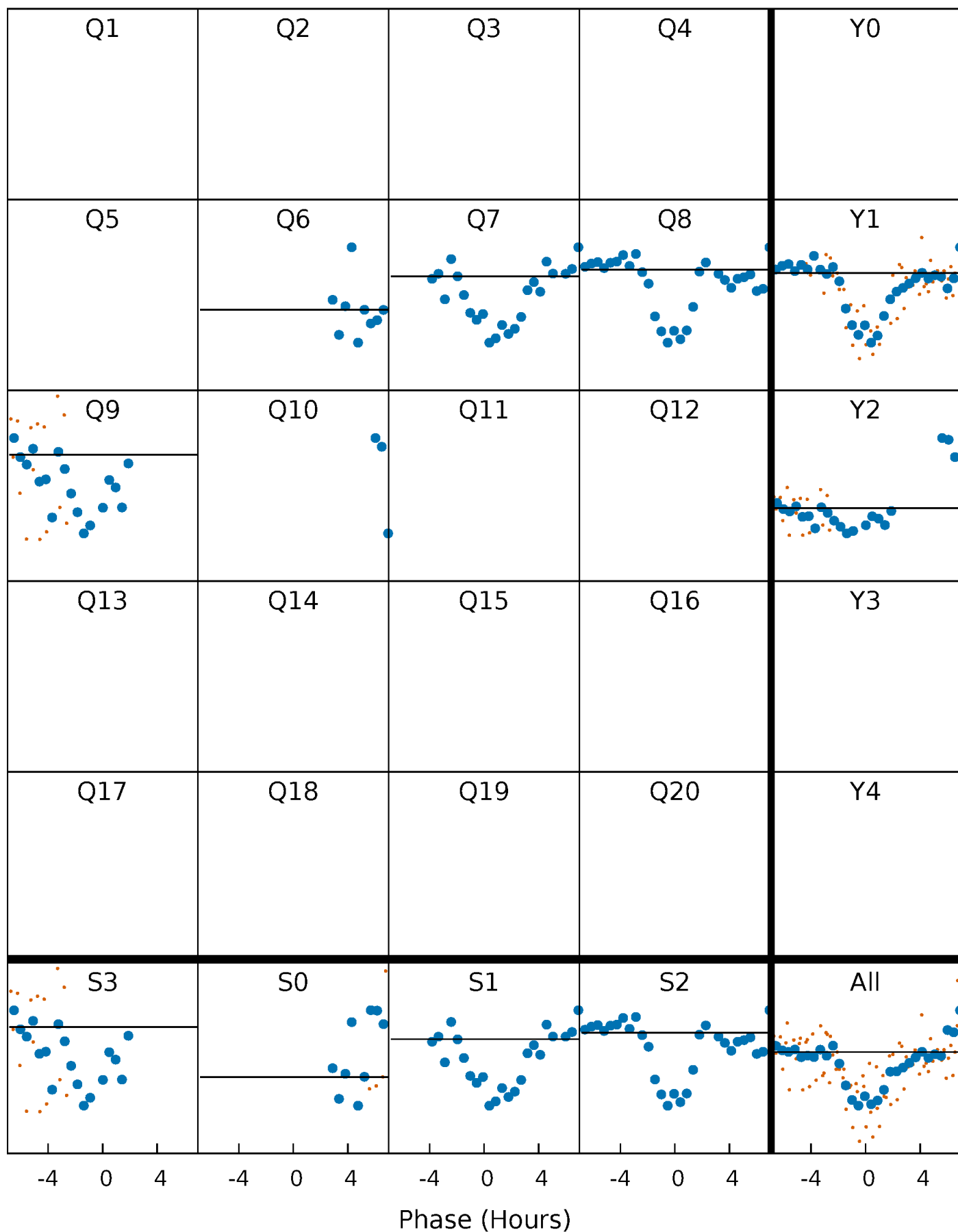
PDC Quarter-Phased Transit Curves

TCE 002569494-03 P= 71.875562 Days $T_0=164.361347$ (BKJD)



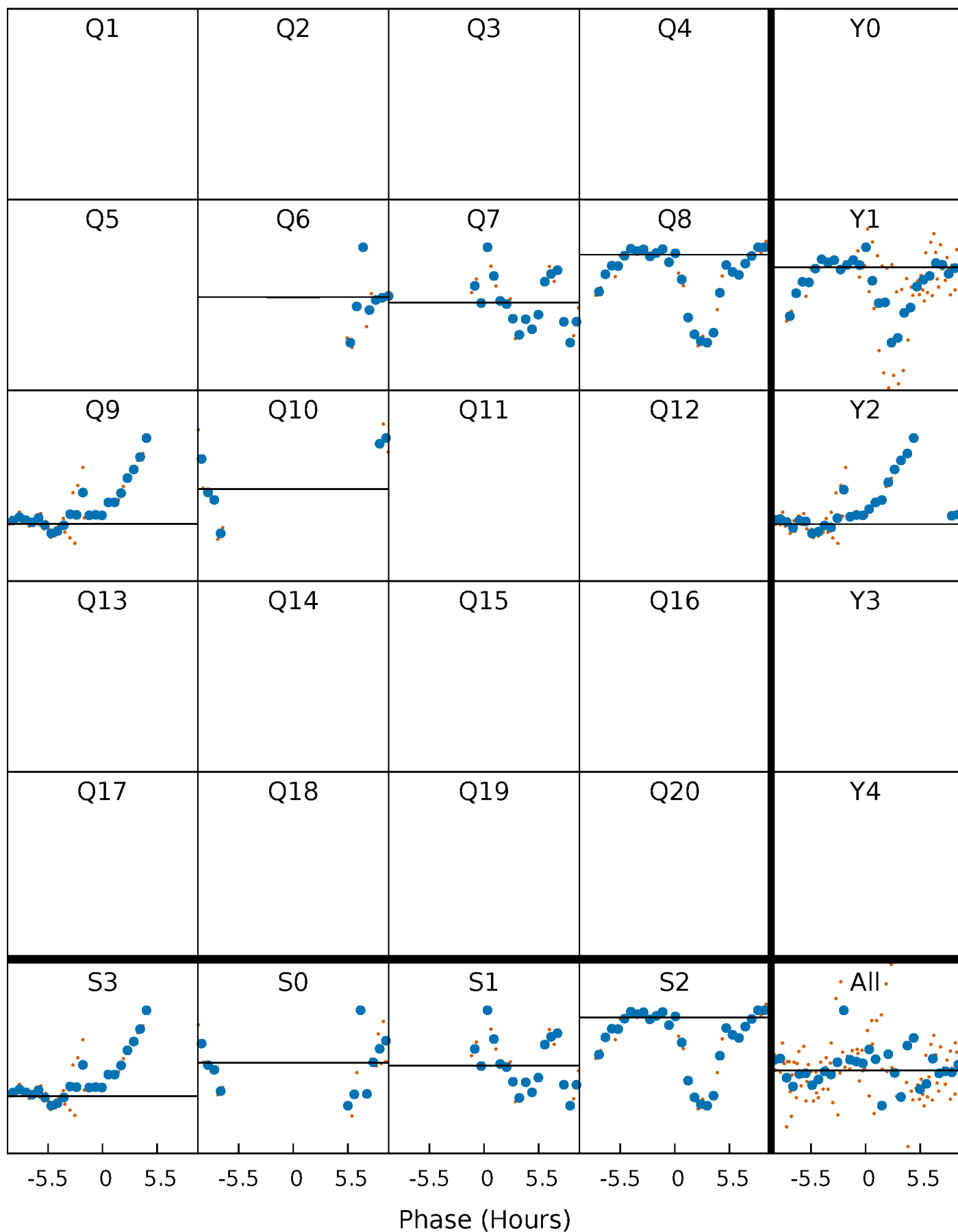
DV Quarter-Phased Transit Curves

TCE 002569494-03 $P = 71.875562$ Days $T_0 = 164.361347$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

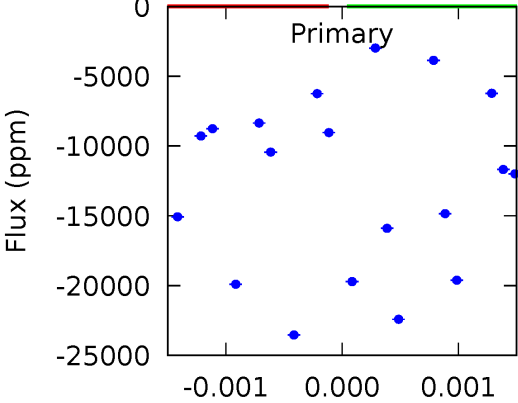
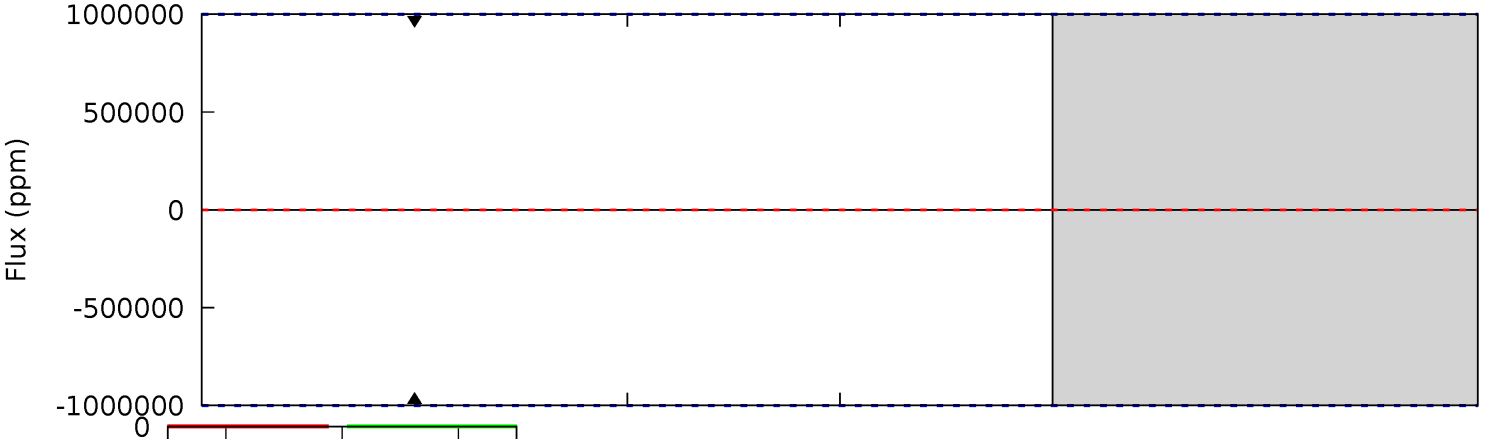
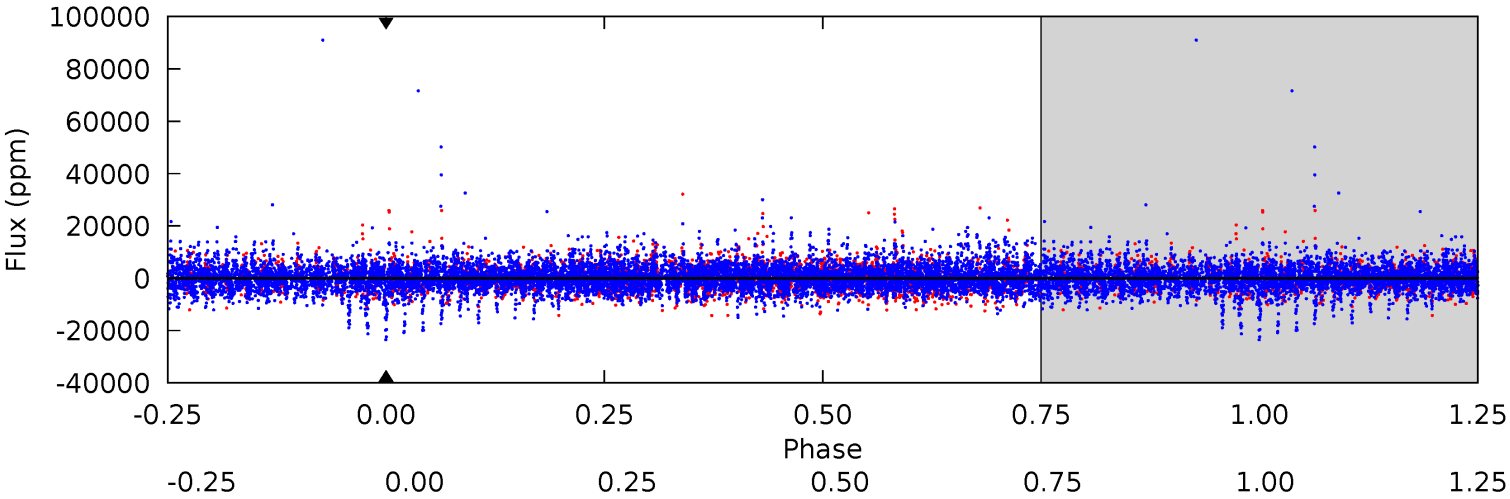
TCE 002569494-03 $P = 71.875562$ Days $T_0 = 164.245553$ (BKJD)



DV Model-Shift Uniqueness Test

002569494-03, P = 71.875562 Days, E = 164.361347 Days

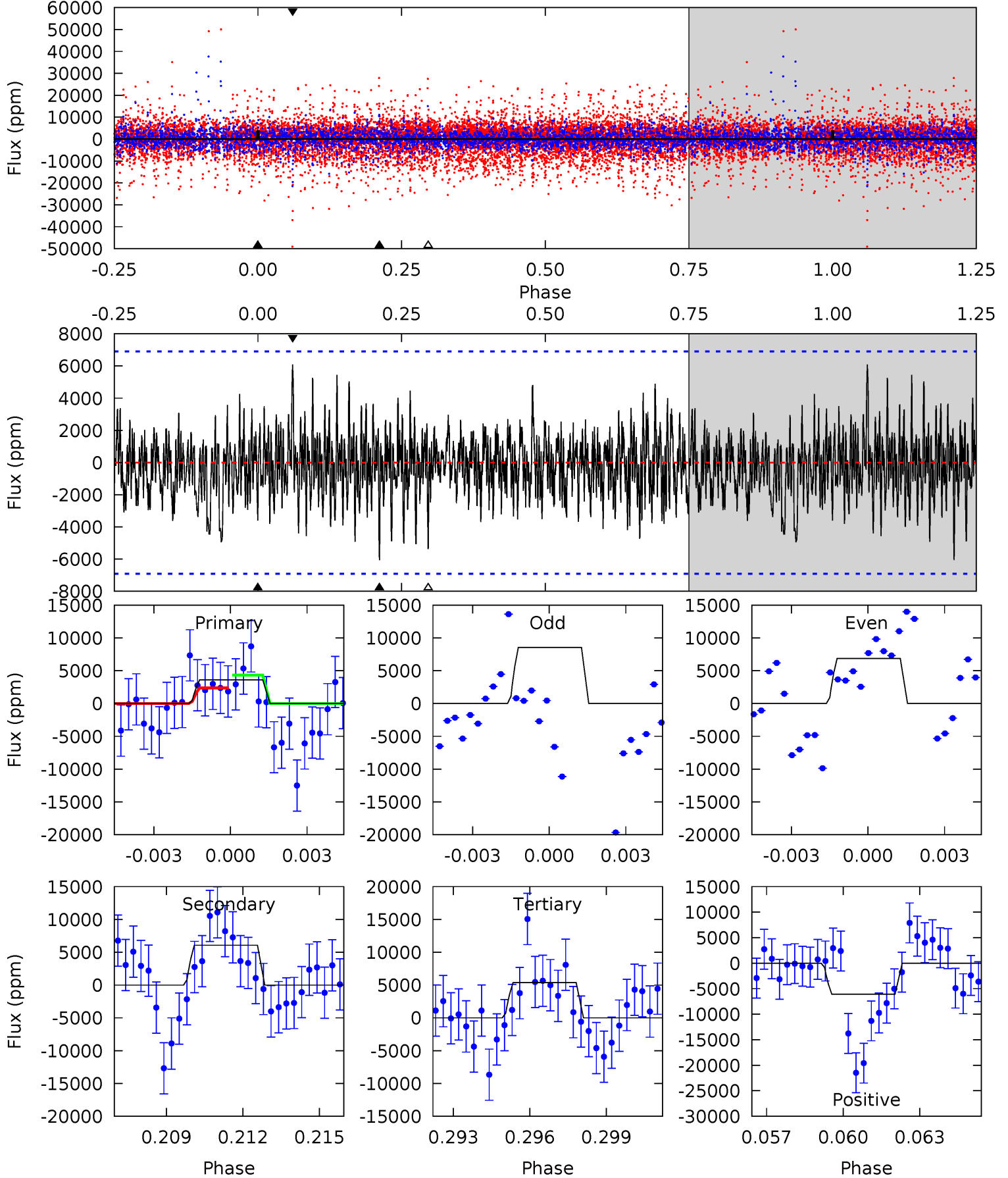
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002569494-03, P = 71.875562 Days, E = 164.245553 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.73	4.61	4.08	4.63	5.25	2.97	1.24	-1.35	-1.89	0.53	-0.02	0.39	1.55	0.50	0.76



Stellar Parameters For KIC 002569494

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5311^{+204}_{-185}	$4.469^{+0.104}_{-0.127}$	$-0.080^{+0.300}_{-0.300}$	$0.866^{+0.147}_{-0.107}$	$0.804^{+0.113}_{-0.061}$	$1.745^{+0.795}_{-0.644}$
	+4%/-3%	+2%/-3%	+375%/-375%	+17%/-12%	+14%/-8%	+46%/-37%
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 002569494-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$11.02^{+8.38}_{-6.61}$	546^{+32}_{-29}	-3633^{+14784}_{-6841}	$-969.755^{+77029.505}_{-61362.028}$
Alt.	-6061 ± 1316	$6.60^{+7.33}_{-4.41}$	547^{+32}_{-29}	5591^{+5346}_{-1469}	7448^{+67741}_{-5793}

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 $A_{obs} \gg 1.0$

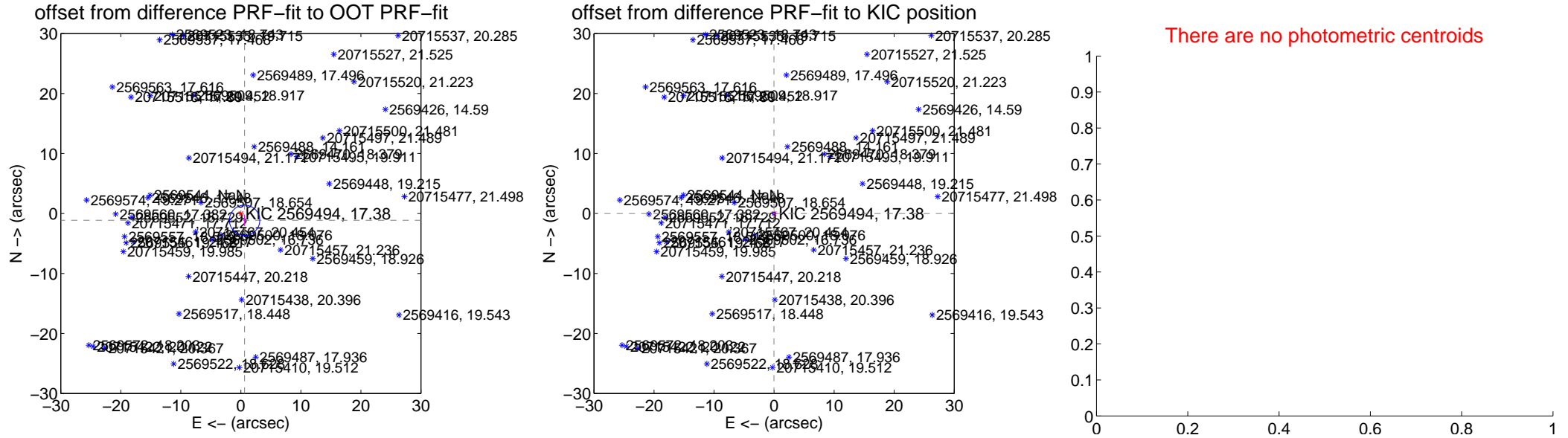
DV Centroid Data

Supplemental centroid analysis for 002569494-03. Kepler magnitude: 17.38. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.56 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.292 ± 0.843	1.53	-0.624 ± 0.149	-1.132 ± 0.959
PRF-fit source offset from KIC position	0.019 ± 0.080	0.23	0.017 ± 0.074	-0.008 ± 0.102
photometric centroid source offset	—	—	—	—

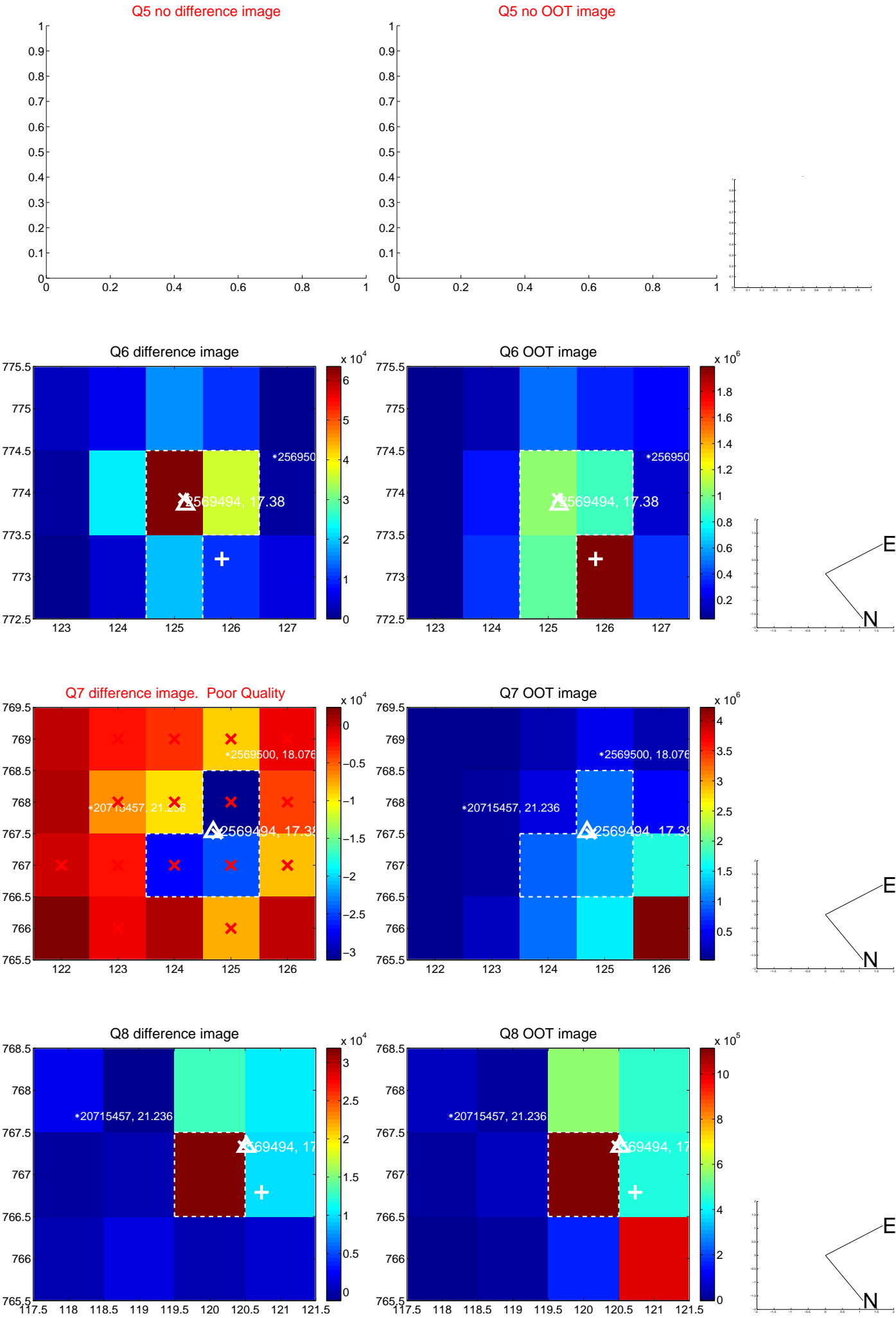


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

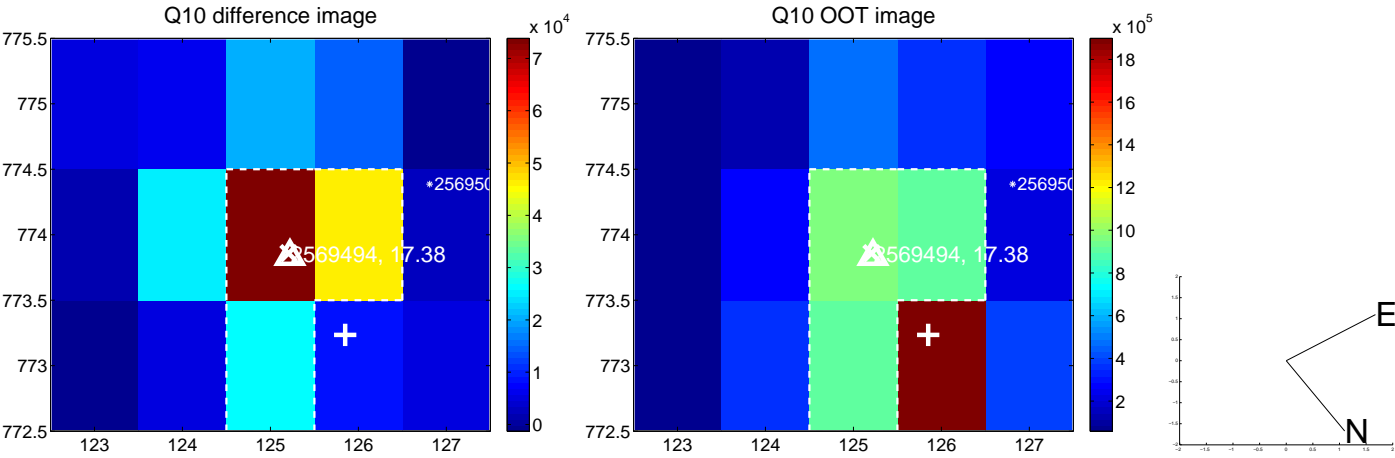
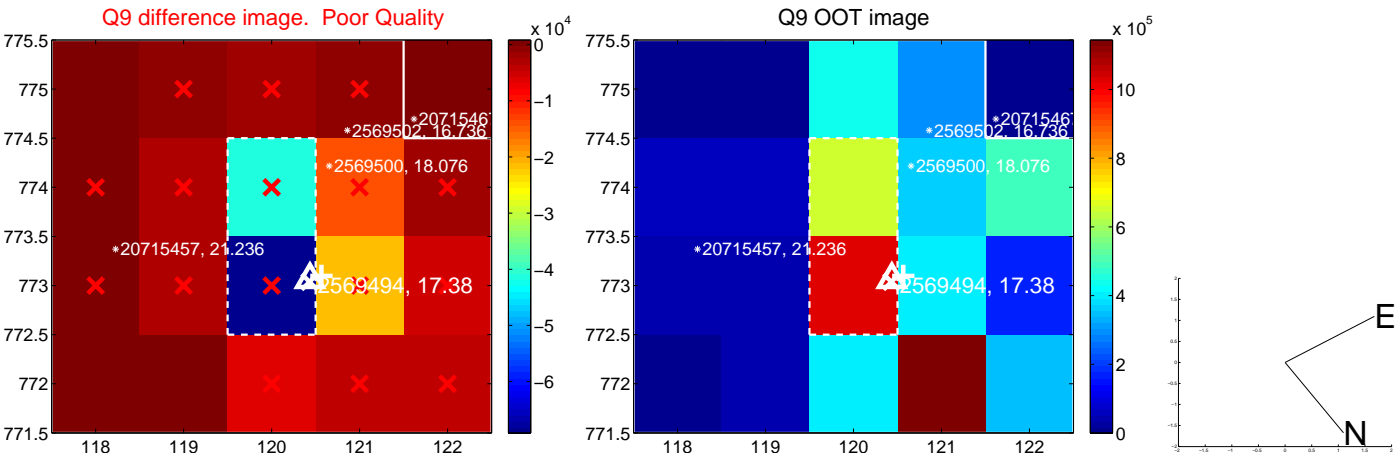
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



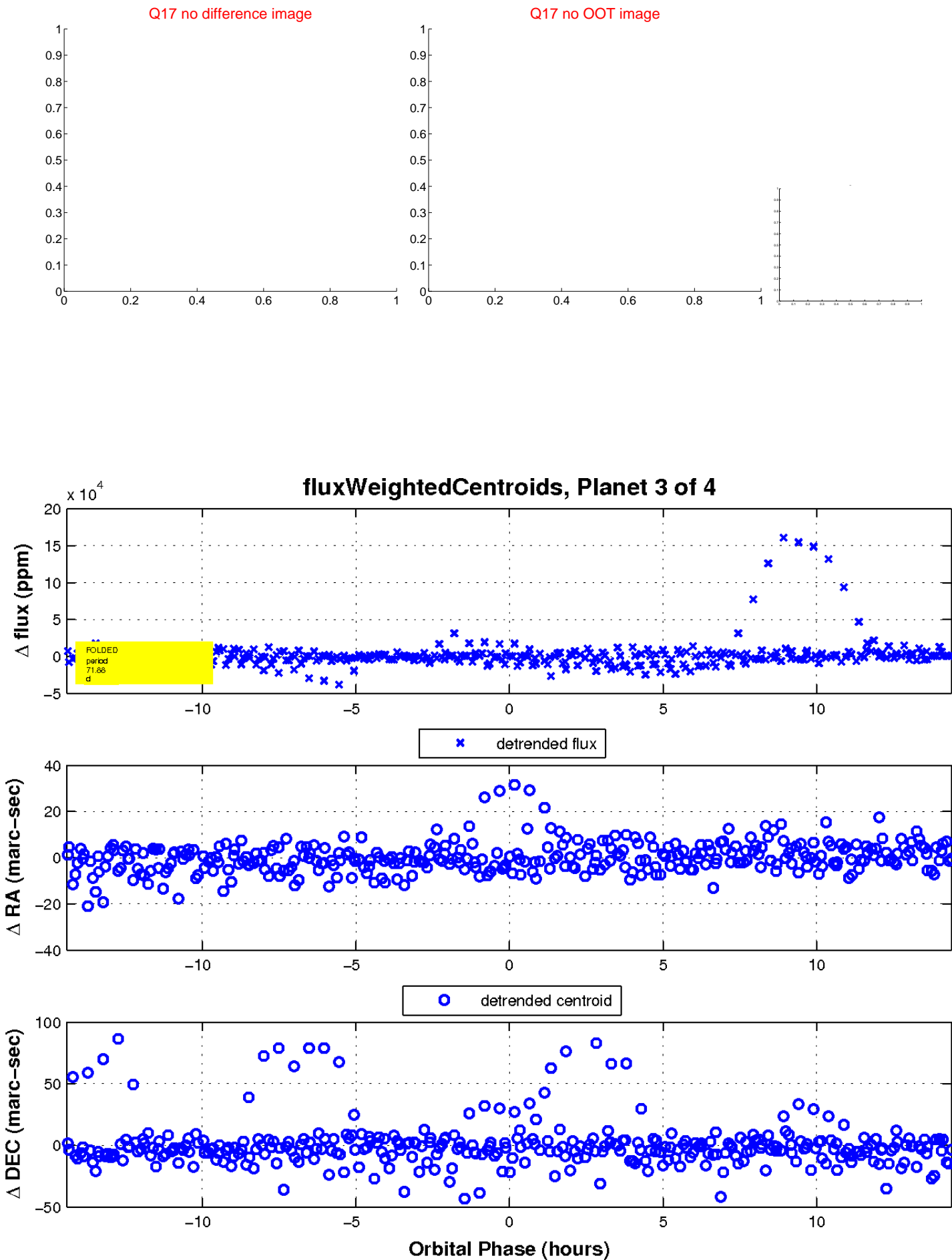
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

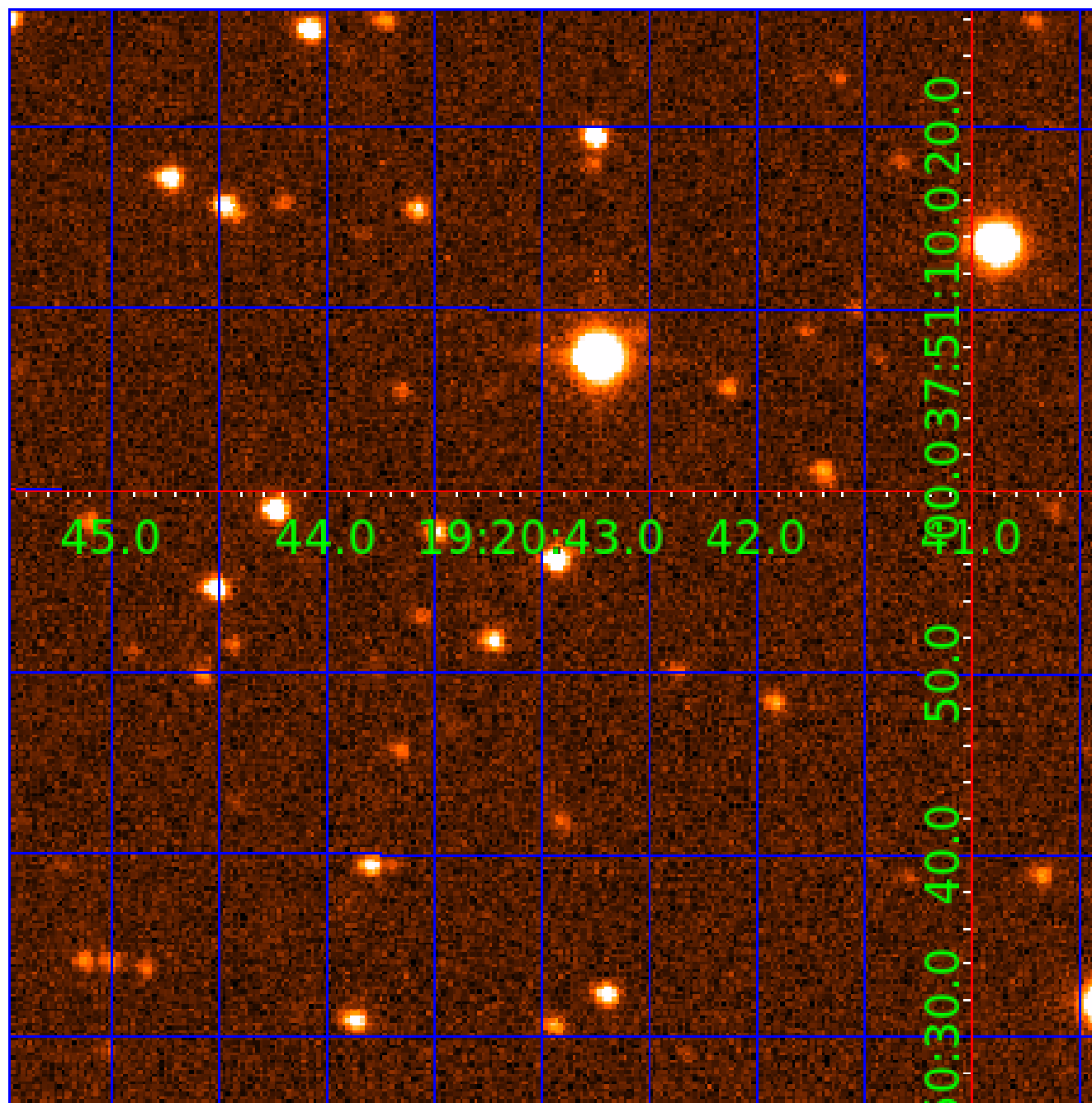


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002569494

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})
002569494-01	OBS	3704.01	1.523312	132.318282	148689.6	4.773	792.8	492.4	0.87	5311	32.92	919.52
002569494-02	OBS	No	73.365065	151.136855	4380.4	0.977	10.4	2.3	0.87	5311	6.35	5.25
002569494-03	OBS	No	71.875562	164.361347	11268.8	3.500	9.7	-1.0	0.87	5311	9.01	5.39
002569494-04	OBS	No	70.500166	178.438961	8098.9	2.609	8.5	5.5	0.87	5311	7.84	5.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002569494-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_KIC_POS
002569494-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002569494-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
002569494-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

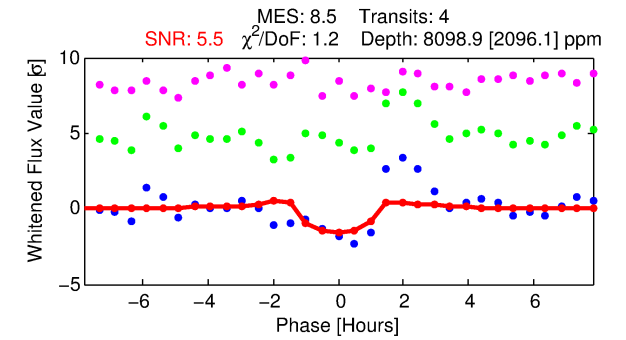
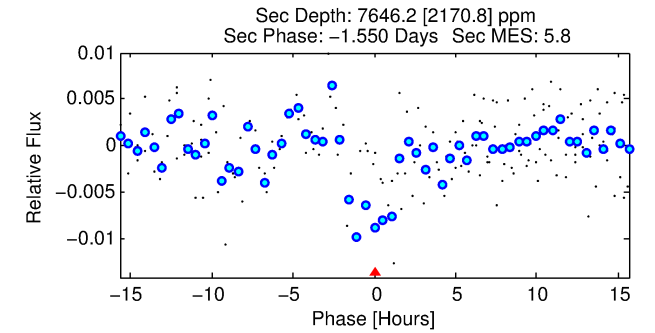
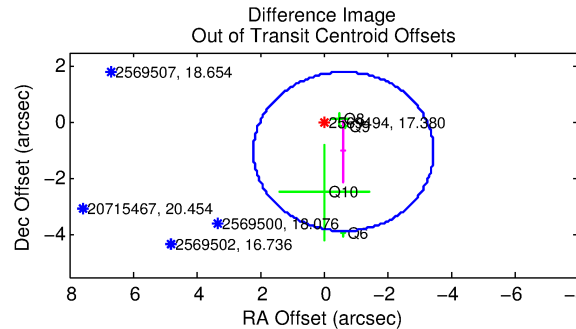
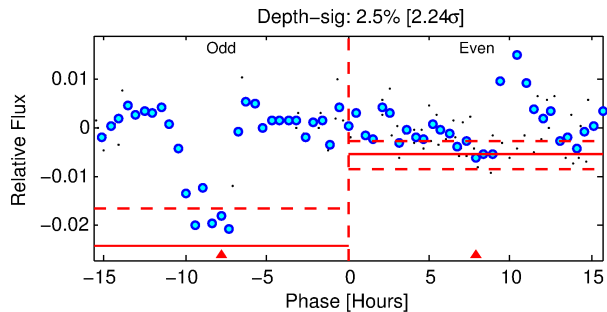
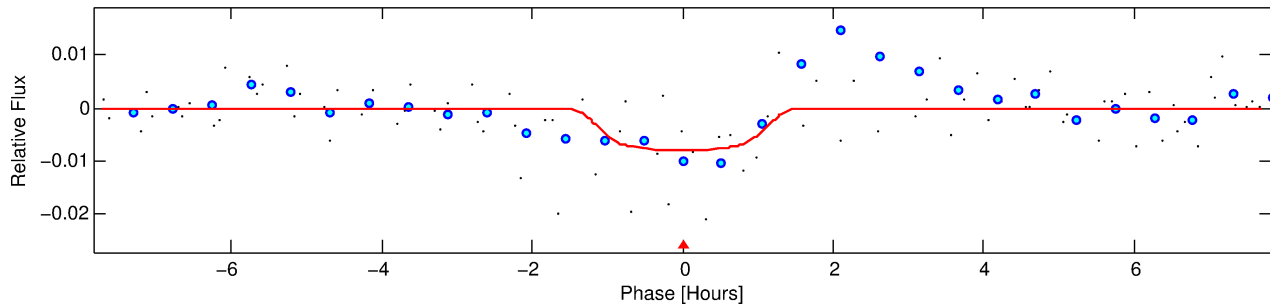
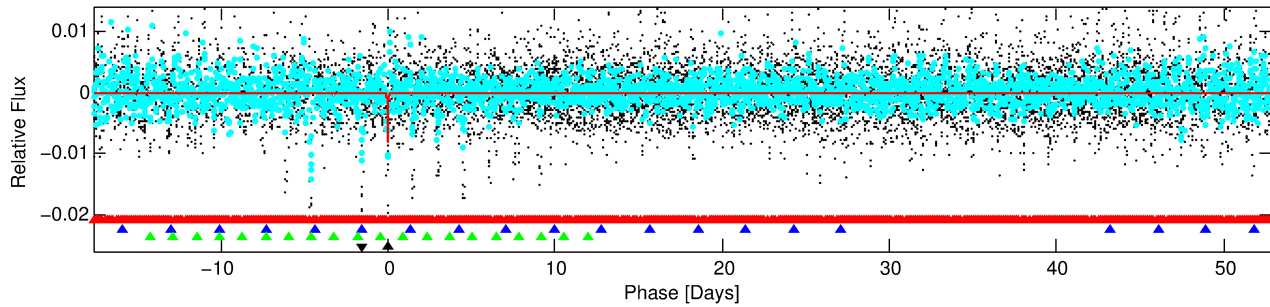
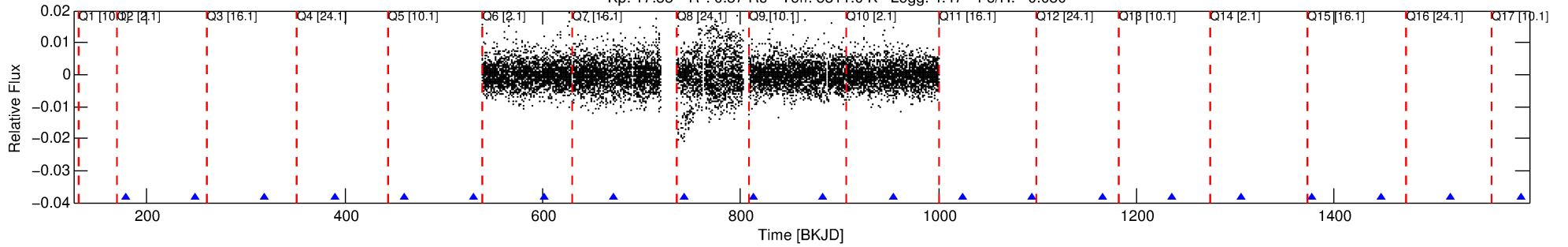
Ephemeris Match Information For 002569494-04

No Significant Match Found

DV One-Page Summary

KIC: 2569494 Candidate: 4 of 4 Period: 70.500 d
KOI: K03704 Corr: No Ephemeris Match

Kp: 17.38 R*: 0.87 Rs Teff: 5311.0 K Logg: 4.47 Fe/H: -0.080



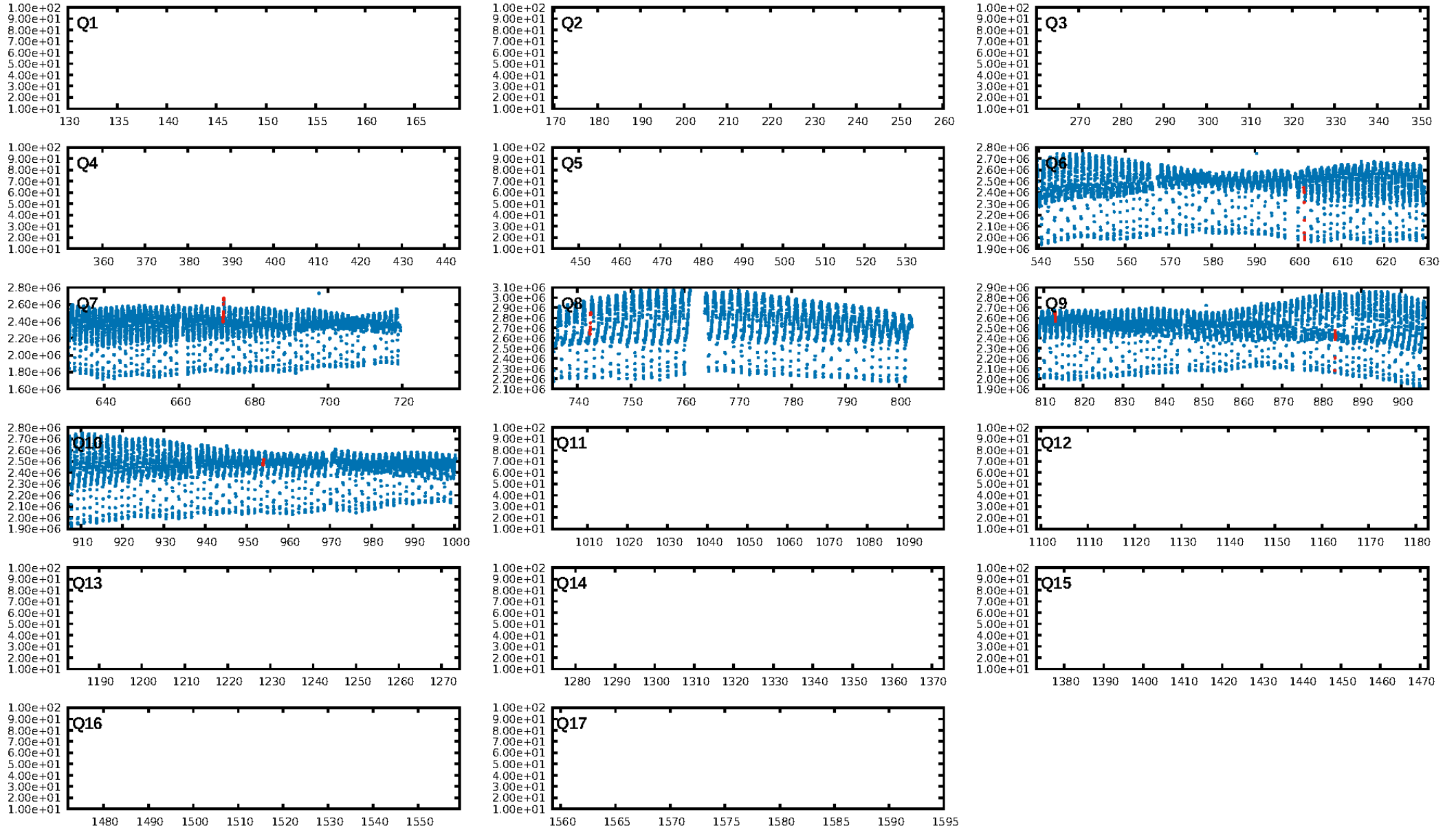
DV Fit Results:

Period = 70.50017 [0.00423] d
Epoch = 178.4390 [0.0400] BKJD
Rp/R* = 0.0830 [0.2706]
a/R* = 204.97 [2475.57]
b = 0.43 [23.11]
Seff = 5.53 [1.51]
Teq = 391 [27] K
Rp = 7.84 [25.61] Re
a = 0.3108 [0.0464] AU
Ag = 6611.46 [43193.66] [0.15σ]
Teffp = 5453 [8903] K [0.57σ]

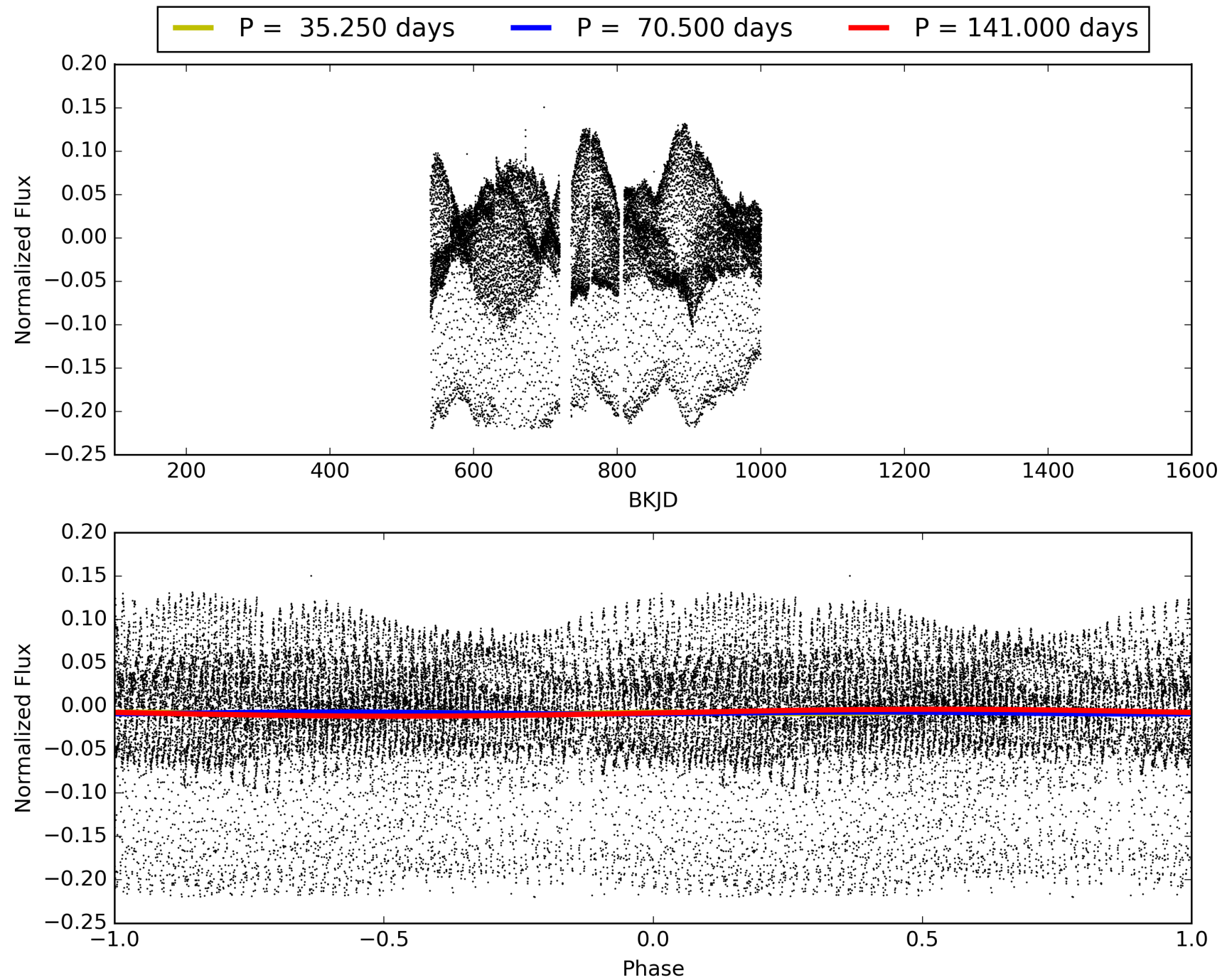
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [304.33σ]
LongPeriod-sig: 100.0% [7.56σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 89.9%
Bootstrap-pfa: 1.33e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.2914
Centroid-sig: N/A
Centroid-so: 1.162 arcsec [1.79σ]
OotOffset-rm: 1.207 arcsec [1.28σ]
KicOffset-rm: 0.028 arcsec [0.09σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/1/1/1 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.40 [2/5]

TCE 002569494-04, PDC Light Curves

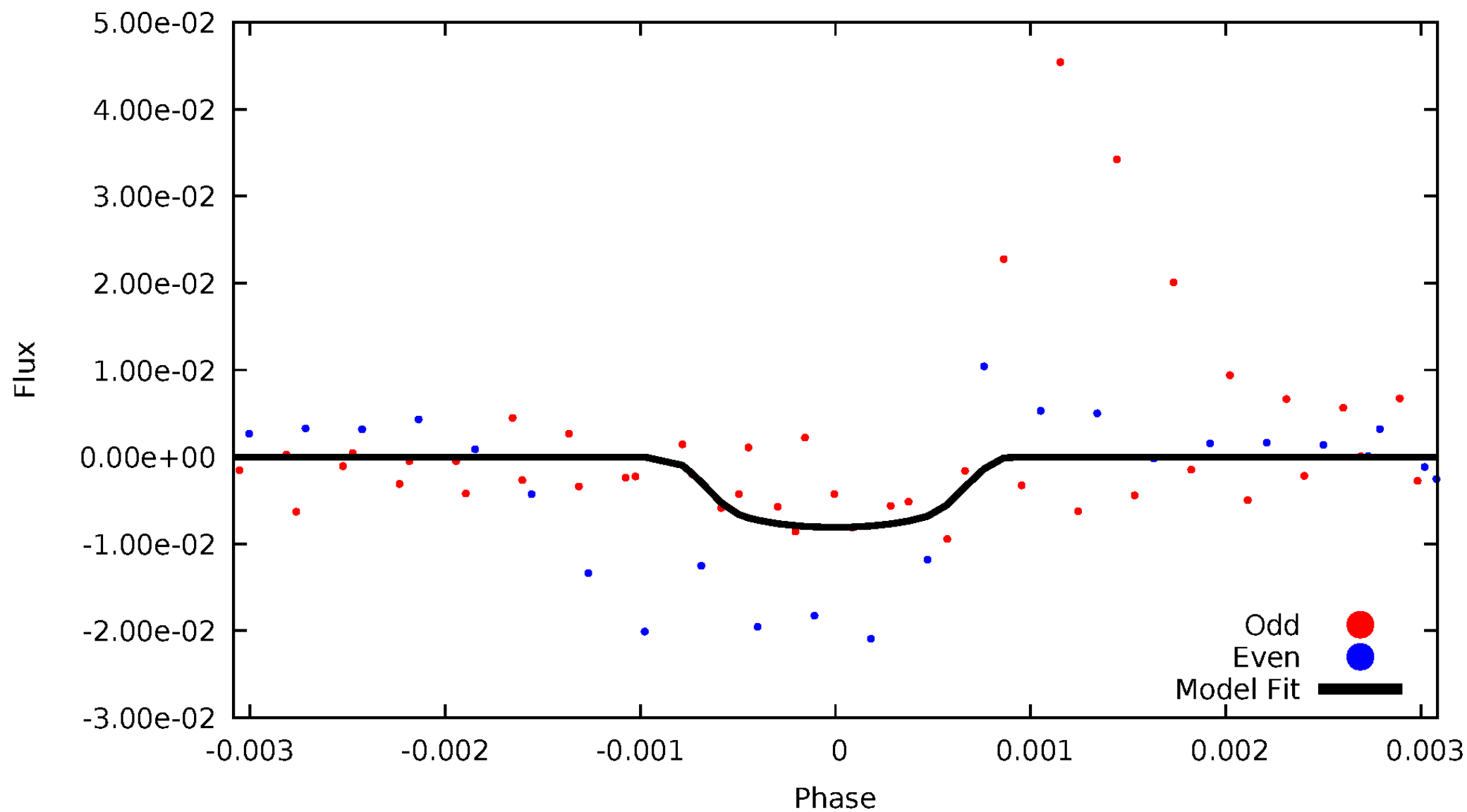


TCE 002569494-04



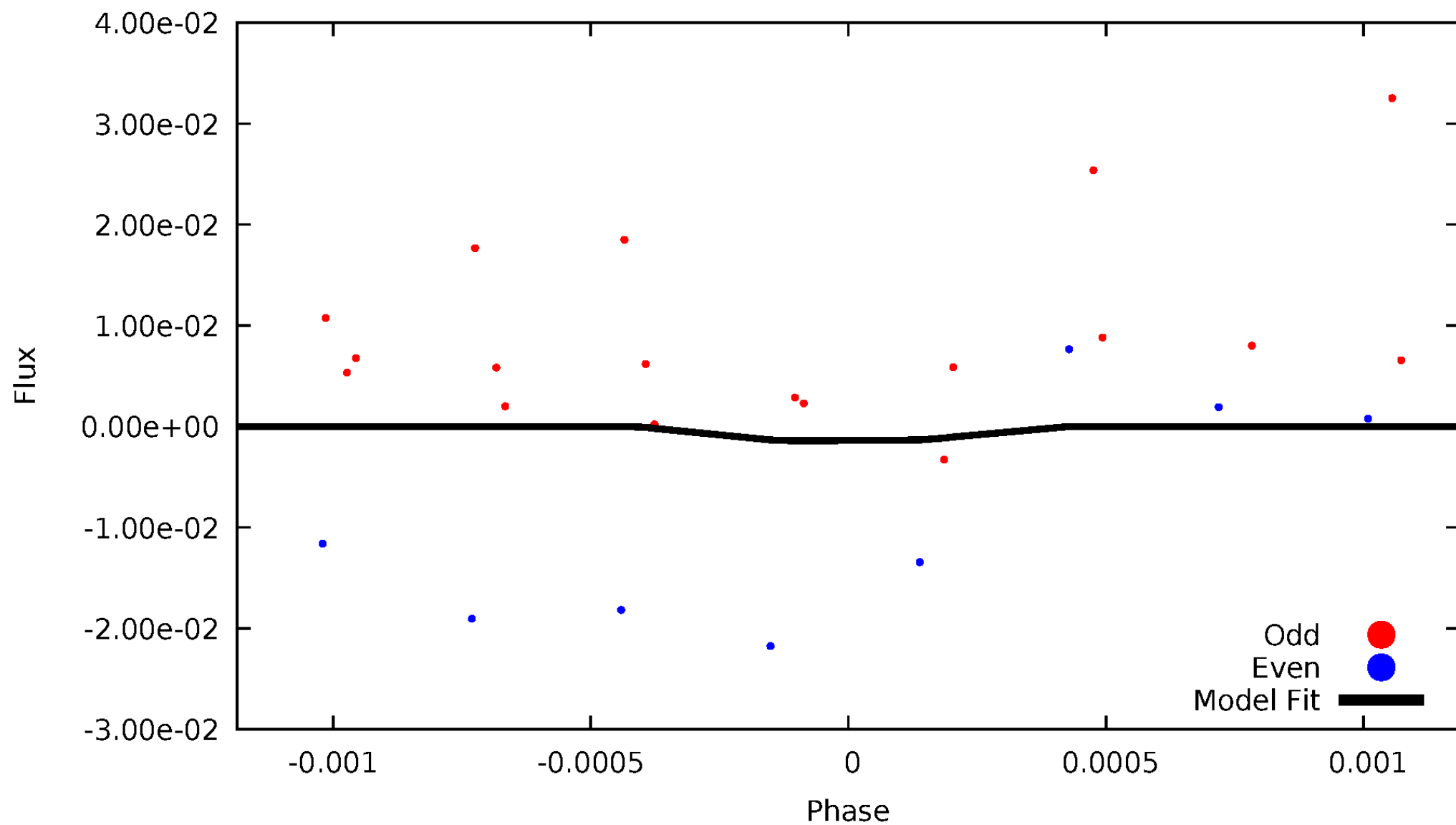
DV Odd/Even

TCE 002569494-04



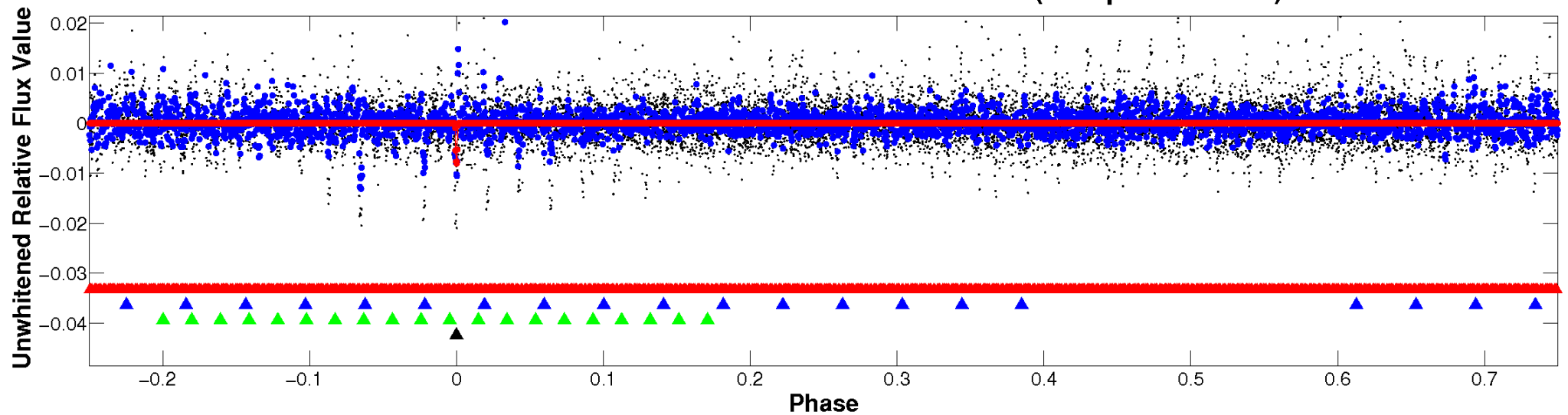
ALT Odd/Even

TCE 002569494-04

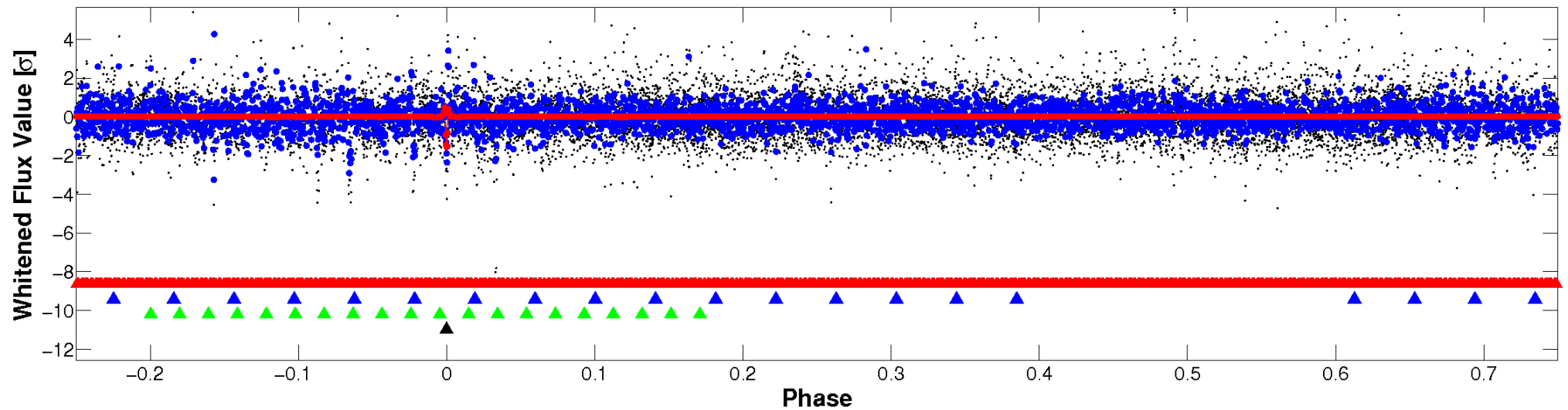


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

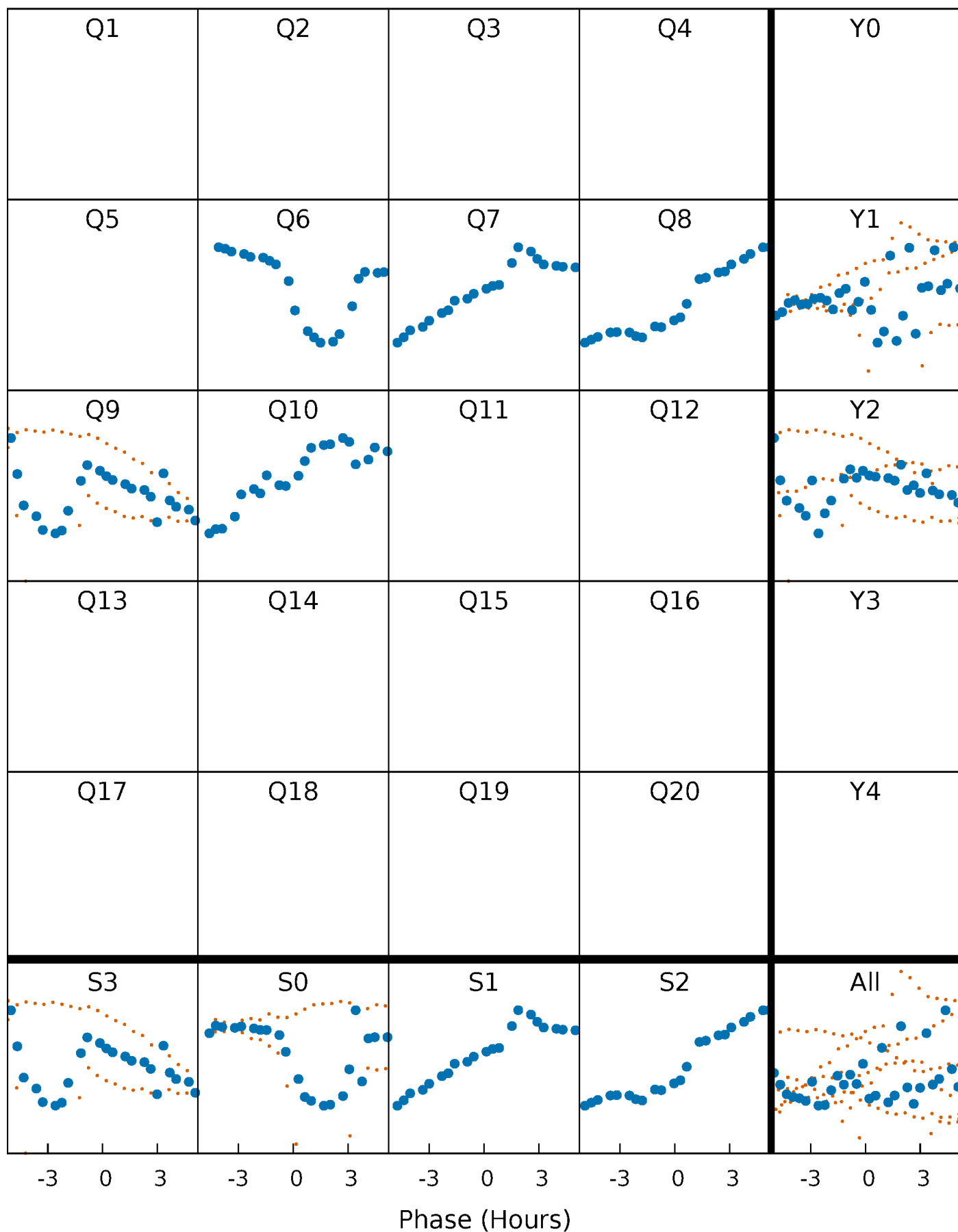


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



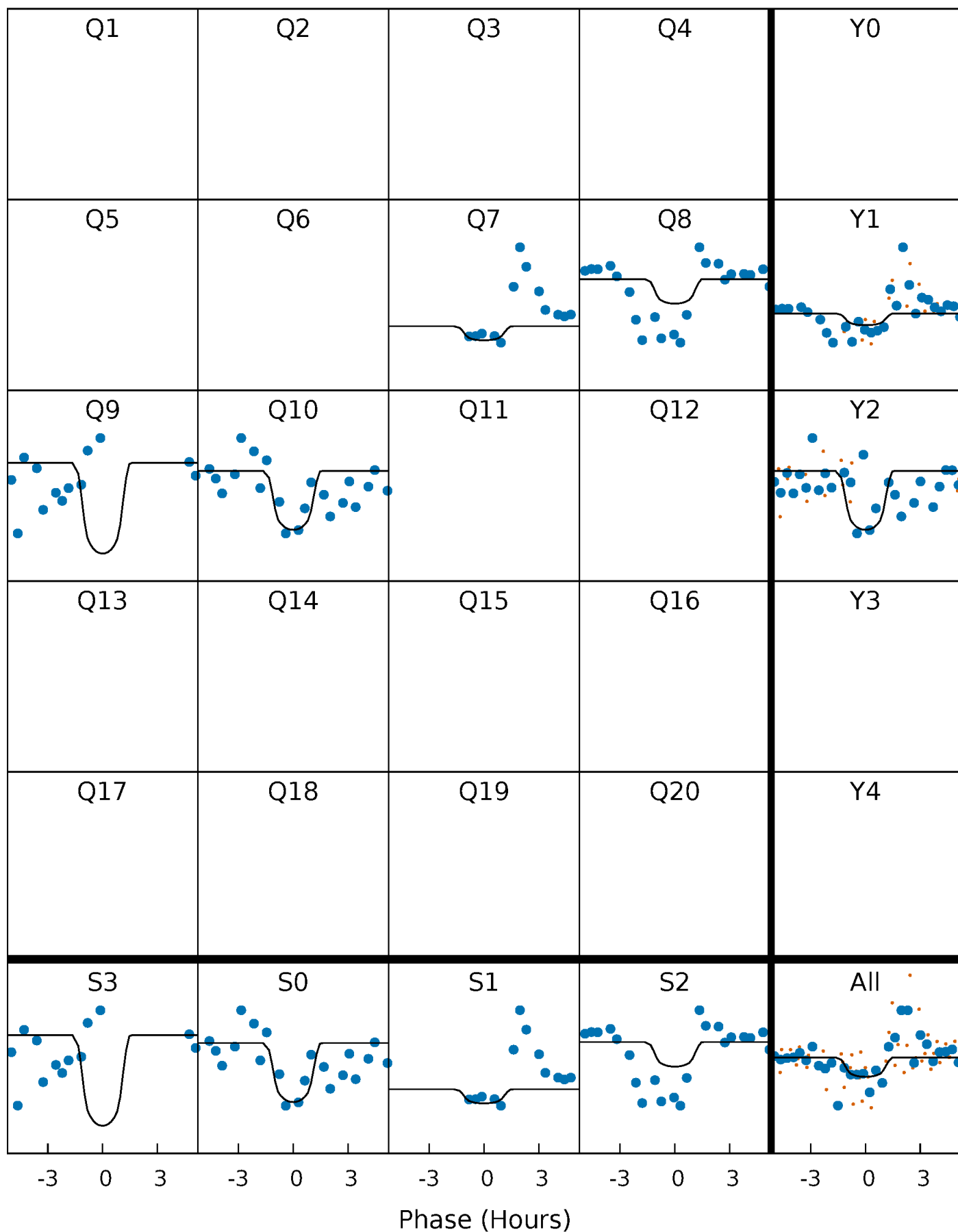
PDC Quarter-Phased Transit Curves

TCE 002569494-04 $P = 70.500166$ Days $T_0 = 178.438961$ (BKJD)



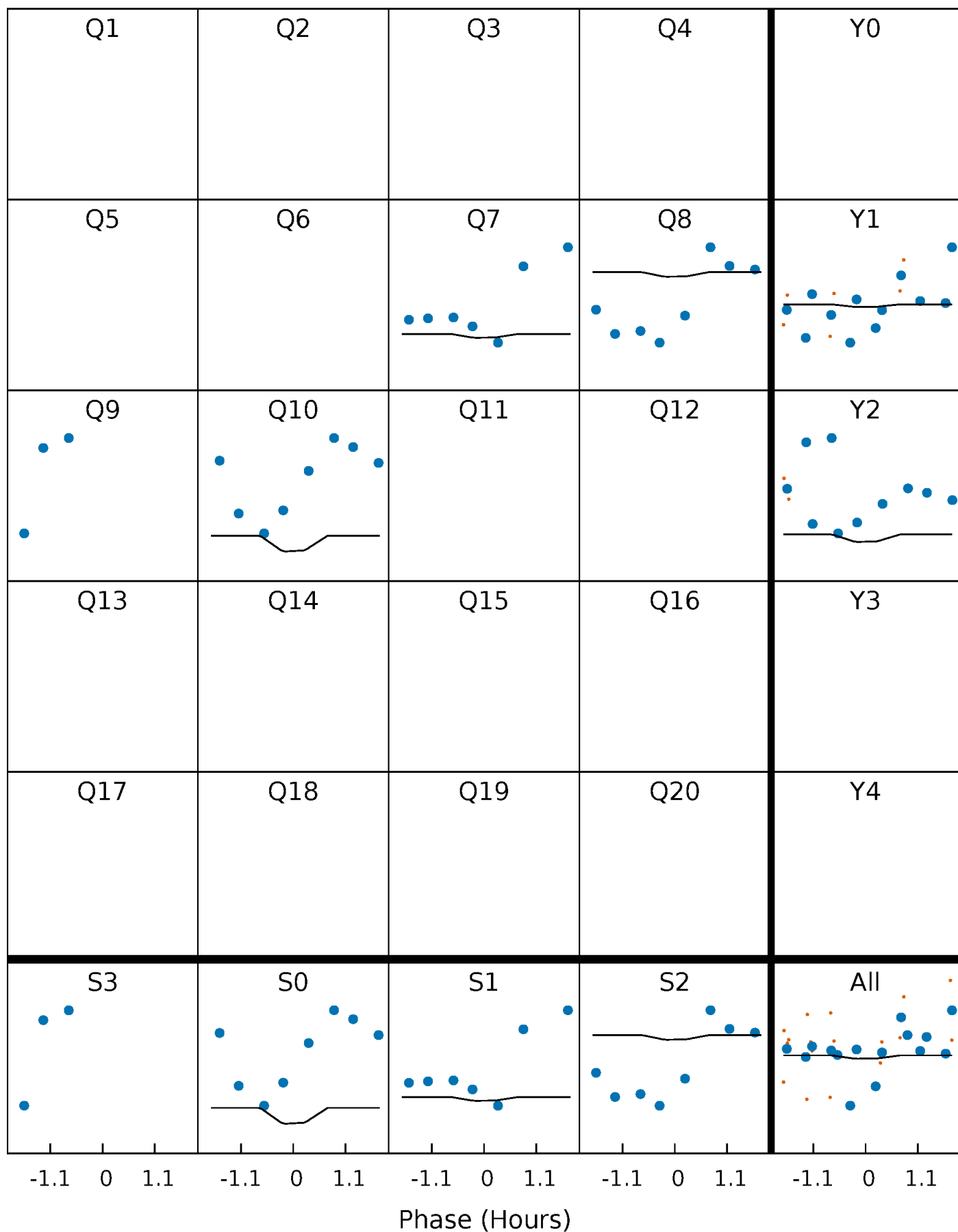
DV Quarter-Phased Transit Curves

TCE 002569494-04 $P = 70.500166$ Days $T_0 = 178.438961$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

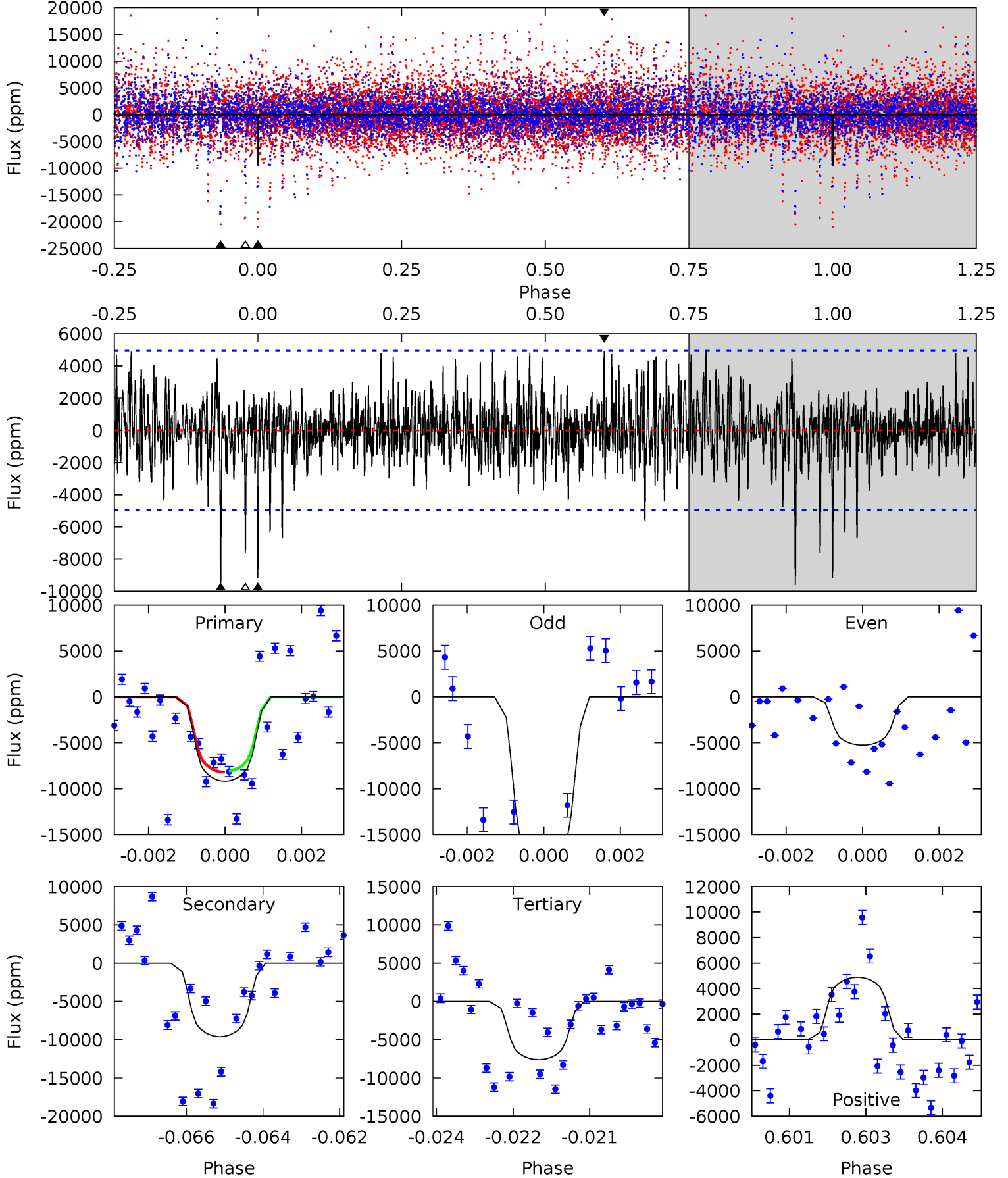
TCE 002569494-04 $P = 70.496360$ Days $T_0 = 178.492882$ (BKJD)



DV Model-Shift Uniqueness Test

002569494-04, P = 70.500166 Days, E = 178.438961 Days

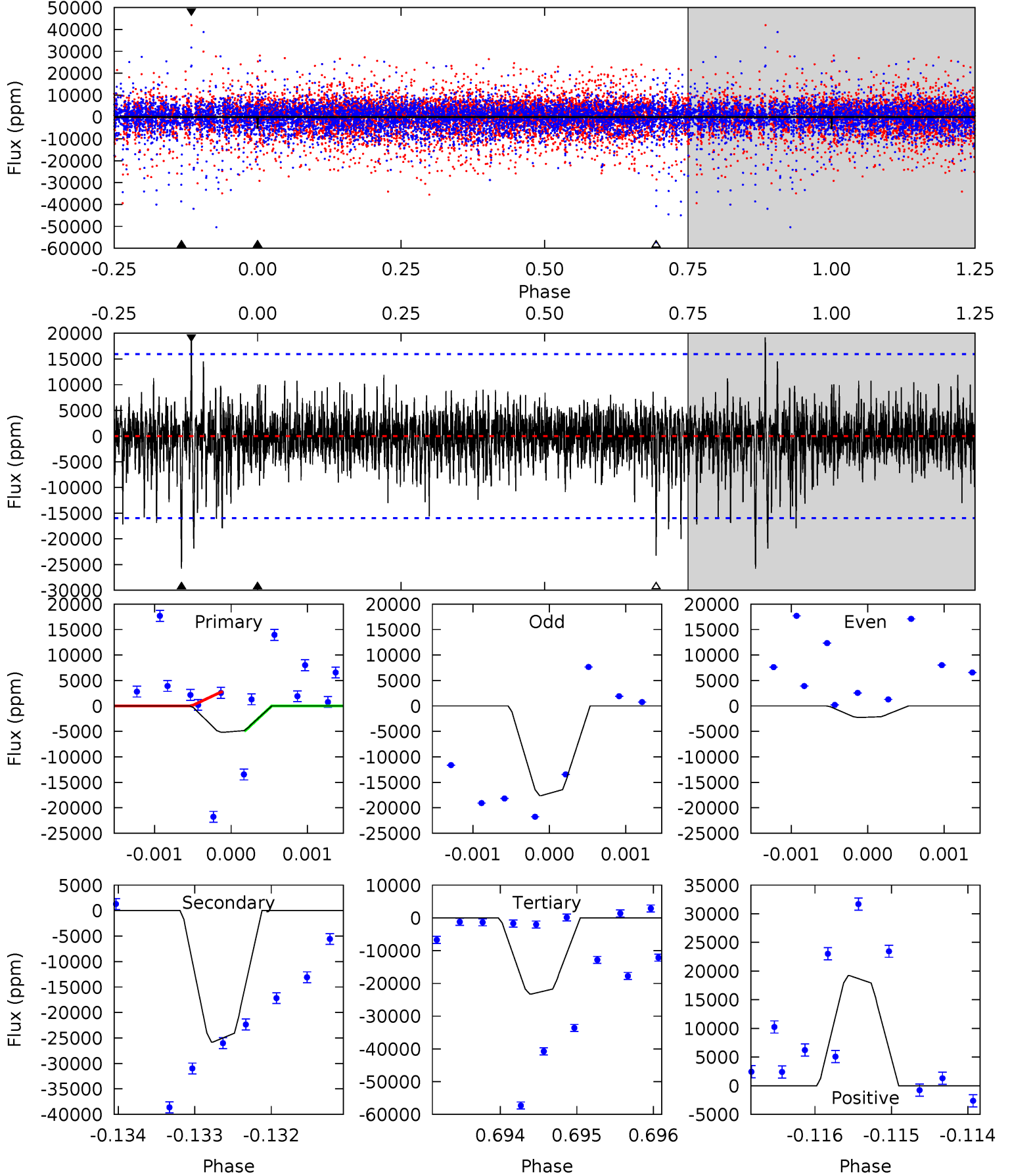
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.95	10.4	8.24	5.31	5.37	3.16	1.68	1.71	4.63	2.17	5.10	6.75	1.14	0.34	0.05



Alt Model-Shift Uniqueness Test

002569494-04, P = 70.496360 Days, E = 178.492882 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.78	8.87	8.00	6.61	5.49	3.35	1.27	-6.22	-4.82	0.87	2.26	1.62	-12.2	0.43	0.34



Stellar Parameters For KIC 002569494

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5311^{+204}_{-185}	$4.469^{+0.104}_{-0.127}$	$-0.080^{+0.300}_{-0.300}$	$0.866^{+0.147}_{-0.107}$	$0.804^{+0.113}_{-0.061}$	$1.745^{+0.795}_{-0.644}$
	+4%/-3%	+2%/-3%	+375%/-375%	+17%/-12%	+14%/-8%	+46%/-37%
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 002569494-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9600 ± 922	$20.90^{+21.52}_{-13.86}$	550^{+34}_{-27}	3920^{+2131}_{-791}	1186^{+9109}_{-887}
Alt.	-25787 ± 2907	$19.07^{+19.20}_{-13.69}$	547^{+32}_{-25}	4871^{+4541}_{-1099}	3843^{+43312}_{-2856}

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 $A_{obs} \gg 1.0$

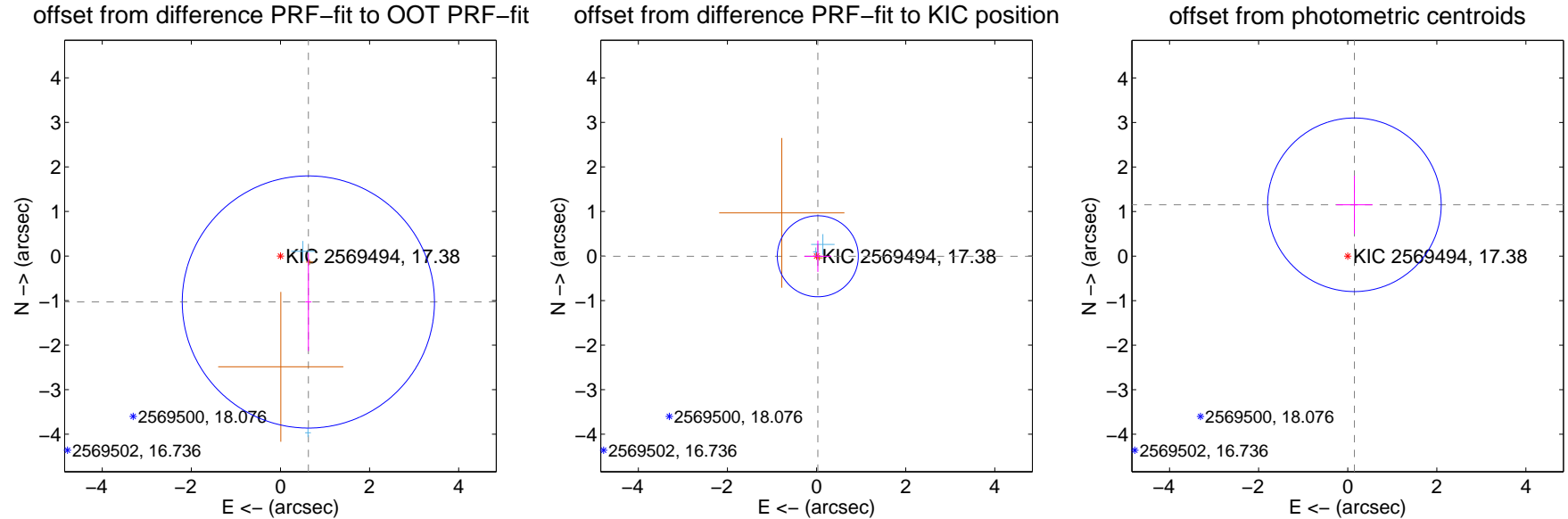
DV Centroid Data

Supplemental centroid analysis for 002569494-04. Kepler magnitude: 17.38. Transit SNR 5.50

There are 2 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.54 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.207 ± 0.943	1.28	-0.626 ± 0.070	-1.032 ± 1.103
PRF-fit source offset from KIC position	0.028 ± 0.303	0.09	-0.028 ± 0.301	-0.005 ± 0.352
photometric centroid source offset	1.16 ± 0.65	1.79	-0.15 ± 0.41	1.15 ± 0.65

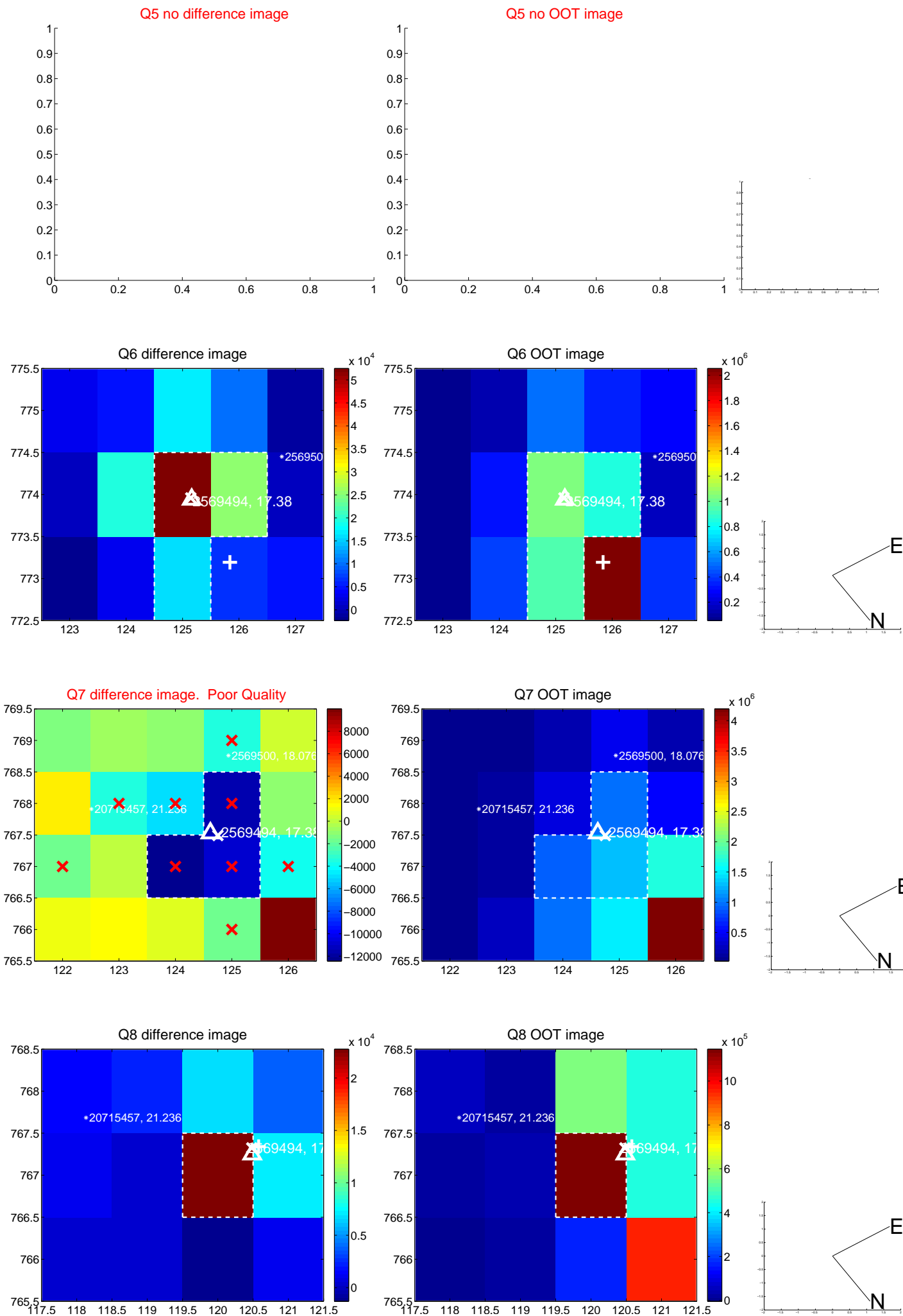


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

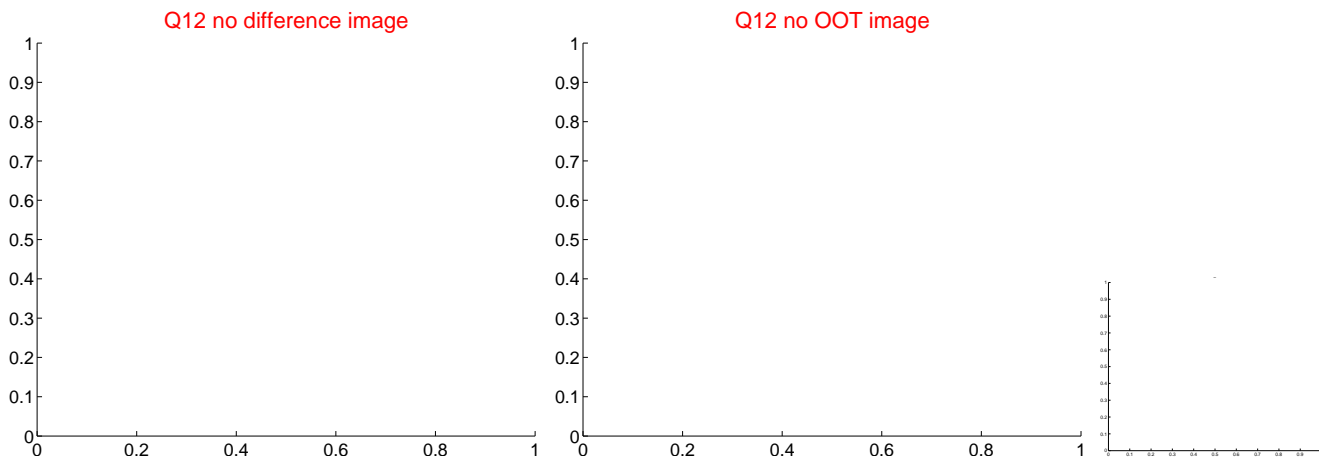
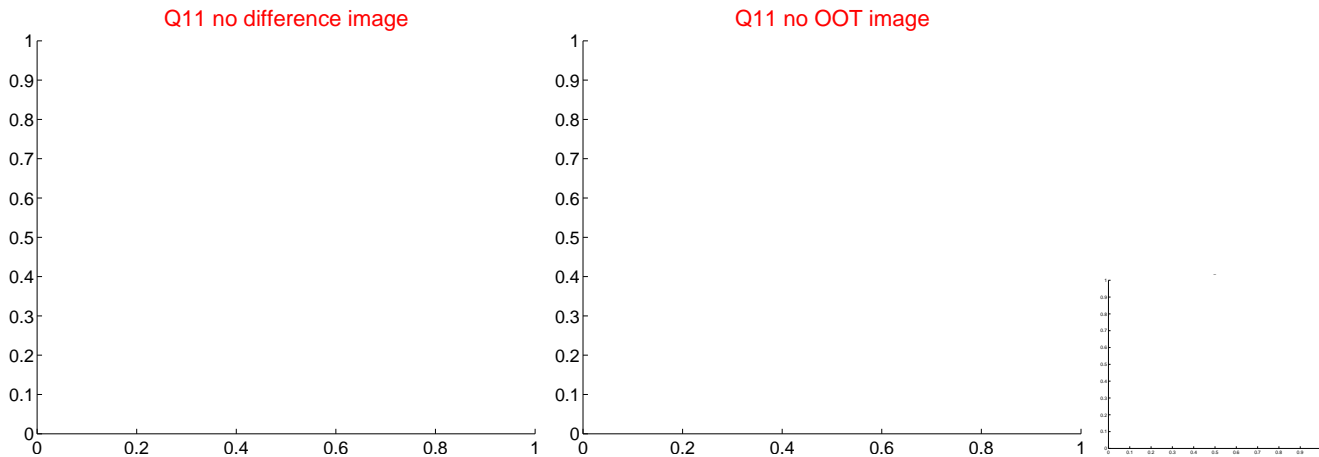
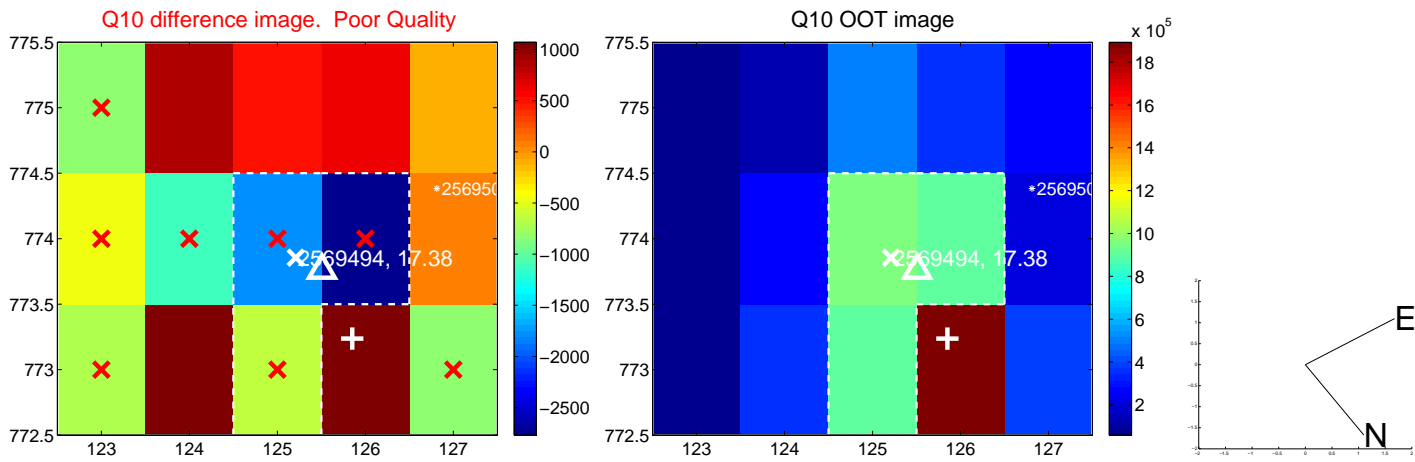
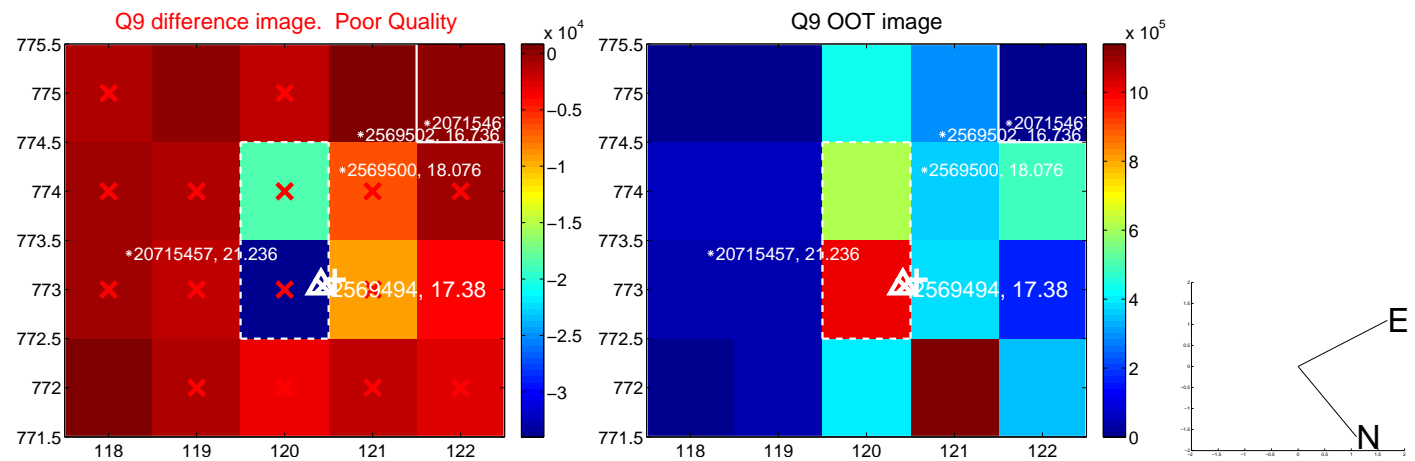
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



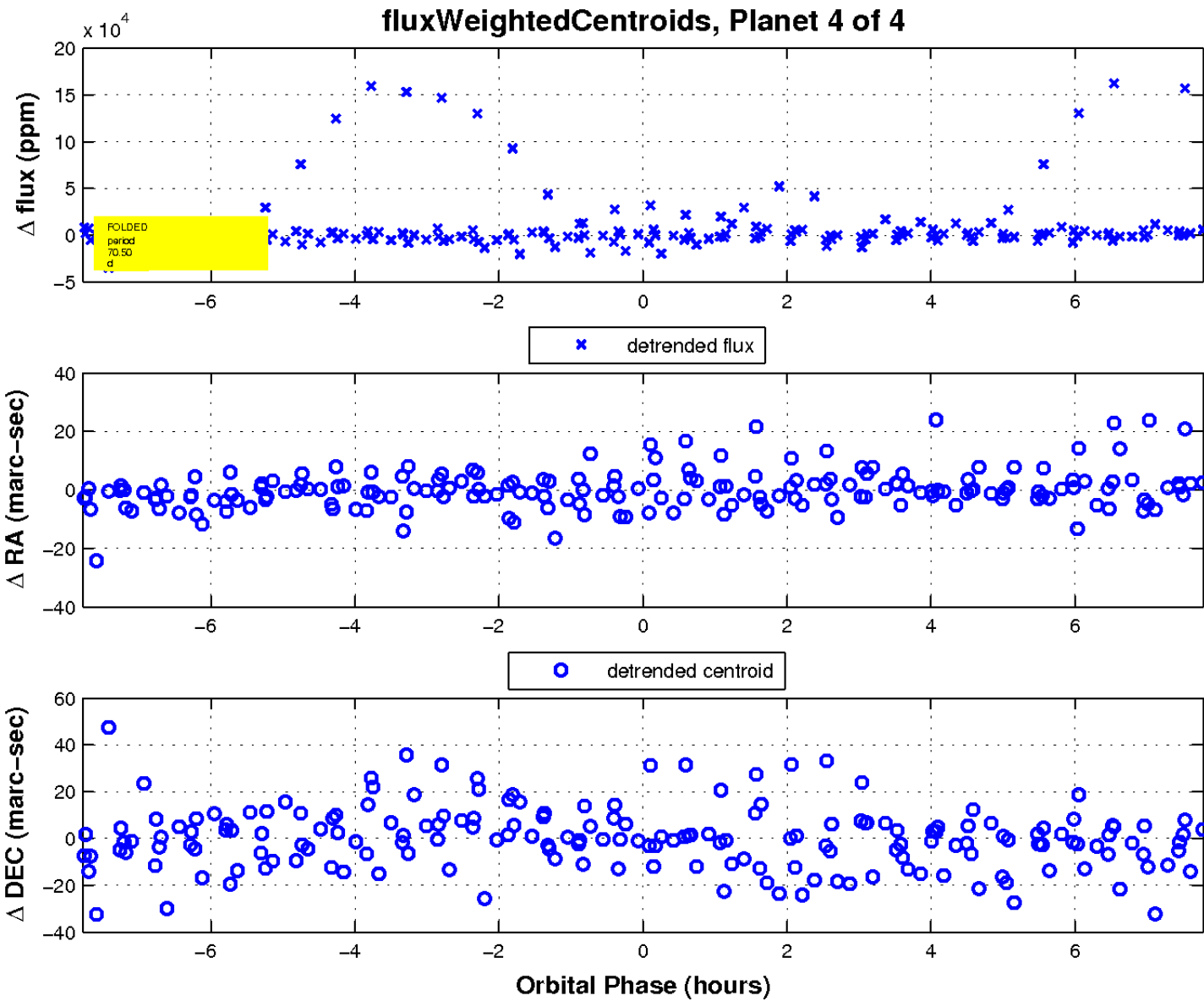
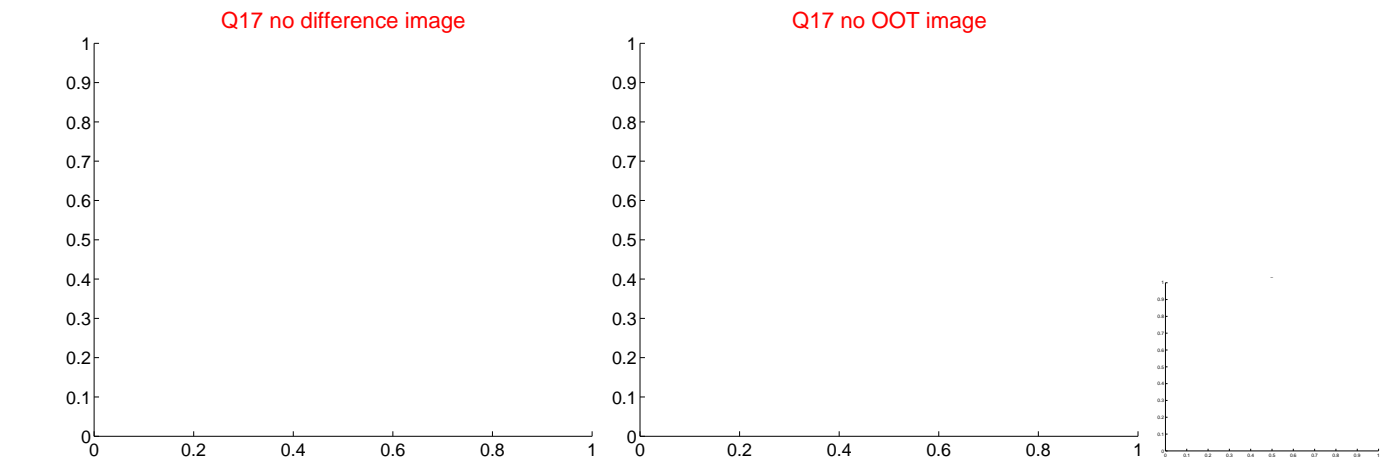
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

