

KIC 007902097

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})
007902097-01	OBS	No	376.314696	153.202488	501.7	3.831	14.1	7.7	0.87	5831	2.07	0.78
007902097-02	OBS	No	382.498256	488.499181	580.9	2.858	11.1	7.2	0.87	5831	2.24	0.76
007902097-03	OBS	No	394.706986	357.748730	400.6	4.083	13.7	6.7	0.87	5831	1.89	0.73
007902097-04	OBS	No	575.703282	239.981286	564.7	3.528	13.4	7.0	0.87	5831	2.70	0.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007902097-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007902097-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

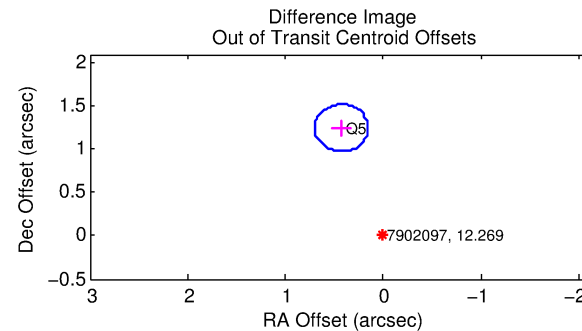
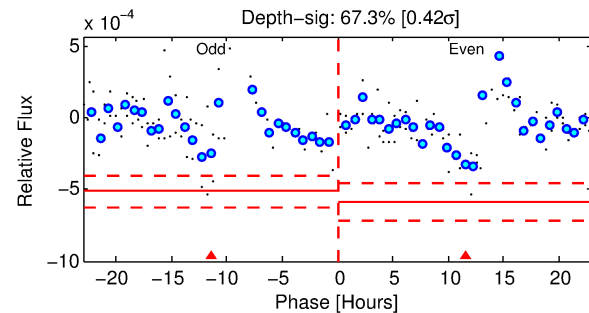
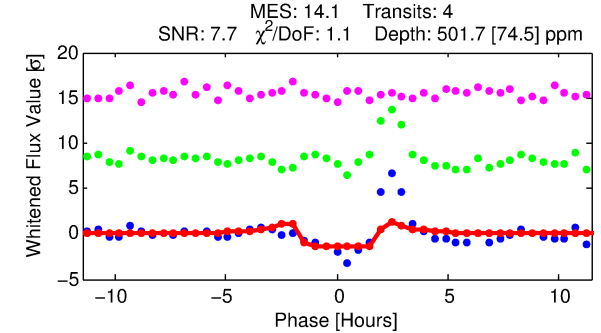
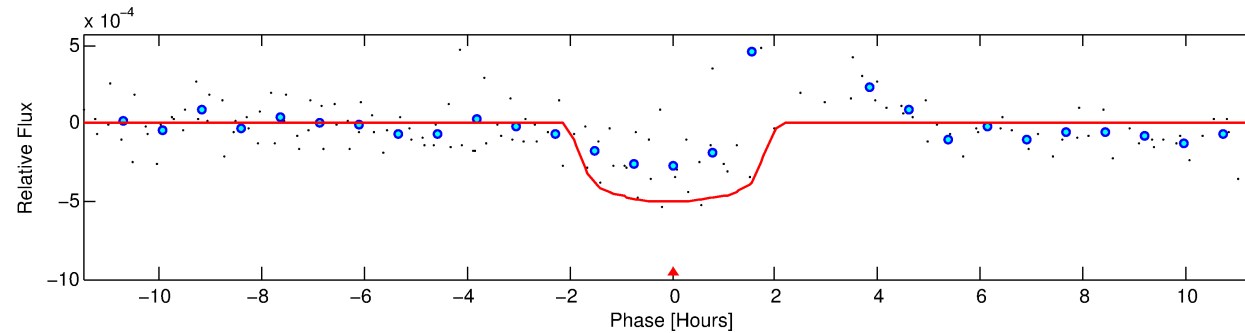
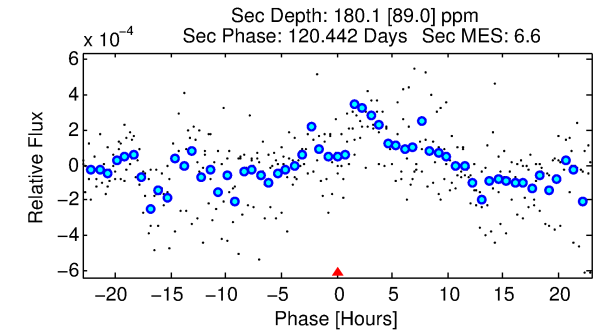
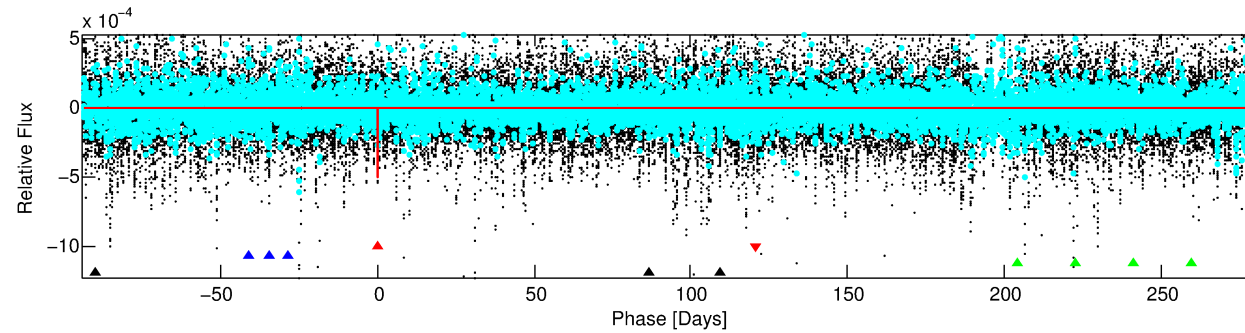
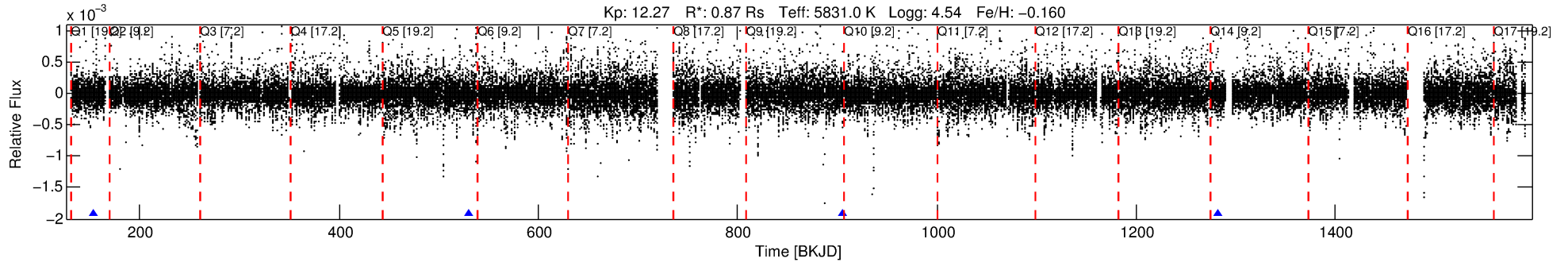
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007902097-01

No Significant Match Found

DV One-Page Summary

KIC: 7902097 Candidate: 1 of 4 Period: 376.315 d



DV Fit Results:

Period = 376.31470 [0.00289] d
Epoch = 153.2025 [0.0050] BKJD
Rp/R* = 0.0217 [0.0373]
a/R* = 588.40 [4652.60]
b = 0.66 [6.96]
Seff = 0.78 [0.29]
Teq = 240 [22] K
Rp = 2.07 [3.60] Re
a = 1.0079 [0.2388] AU
Ag = 23572.53 [82455.32] [0.29σ]
Teffp = 4589 [3995] K [1.09σ]

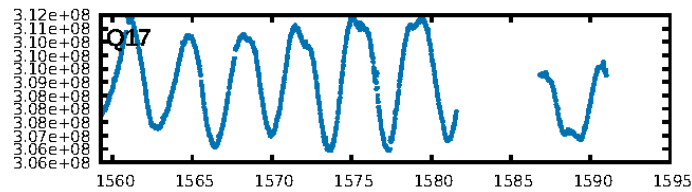
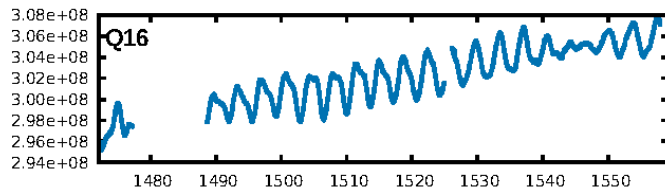
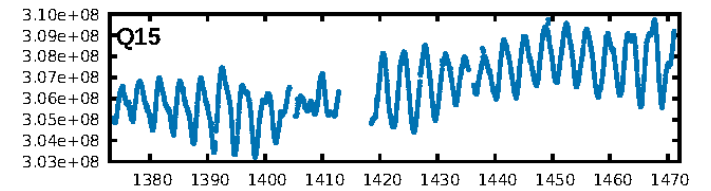
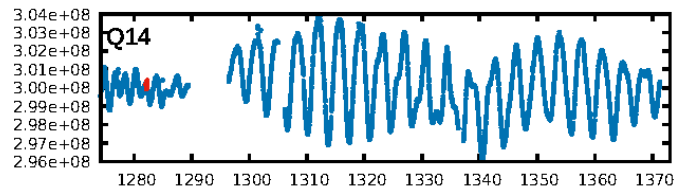
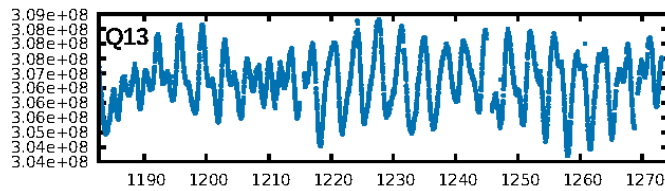
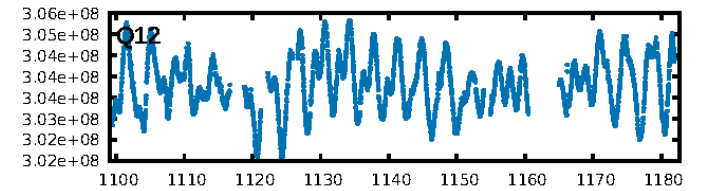
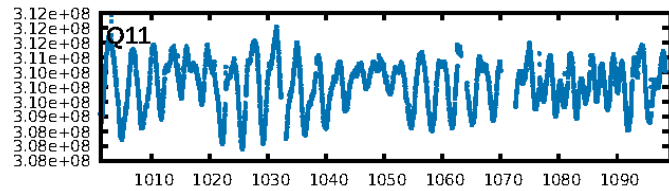
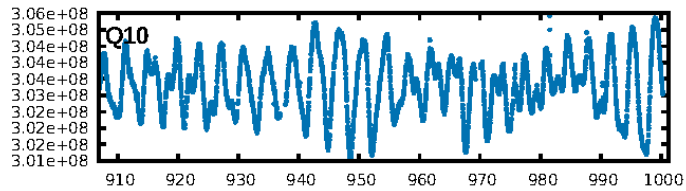
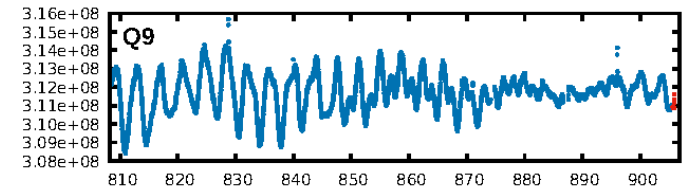
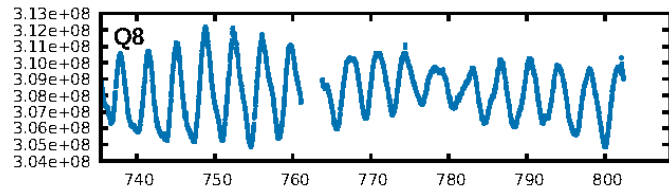
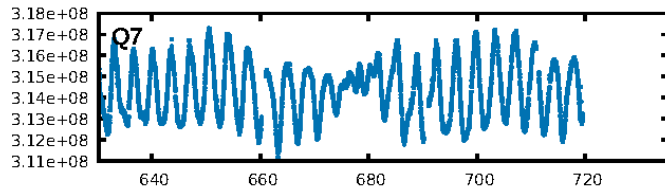
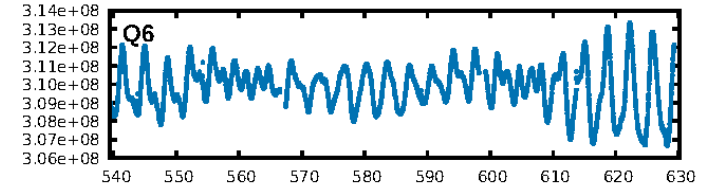
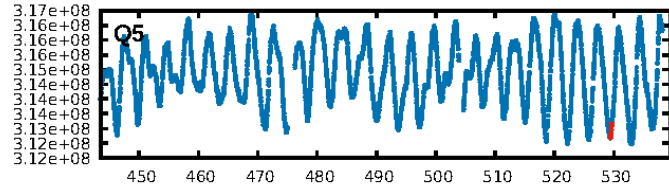
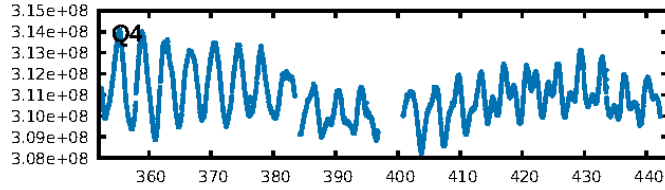
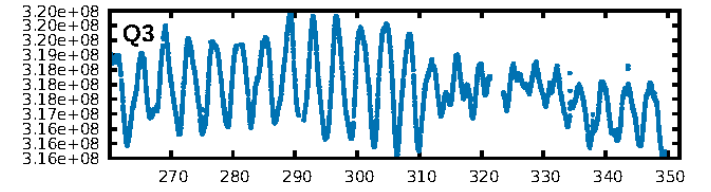
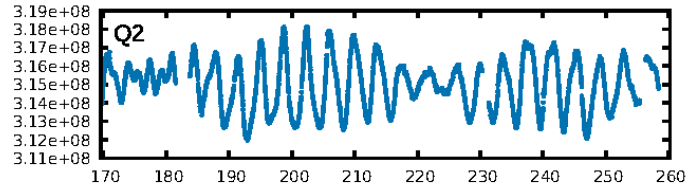
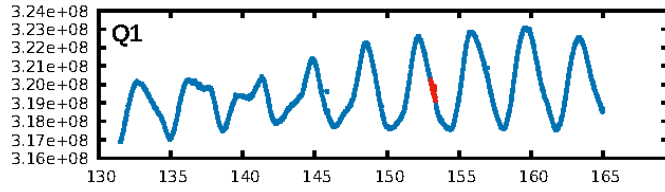
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [31.05σ]
ModelChiSquare2-sig: 10.1%
ModelChiSquareGof-sig: 89.9%
Bootstrap-pfa: 1.65e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9694
Centroid-sig: 4.0%
Centroid-so: 0.646 arcsec [1.51σ]
OotOffset-rm: 1.320 arcsec [14.50σ]
KicOffset-rm: 1.377 arcsec [15.10σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

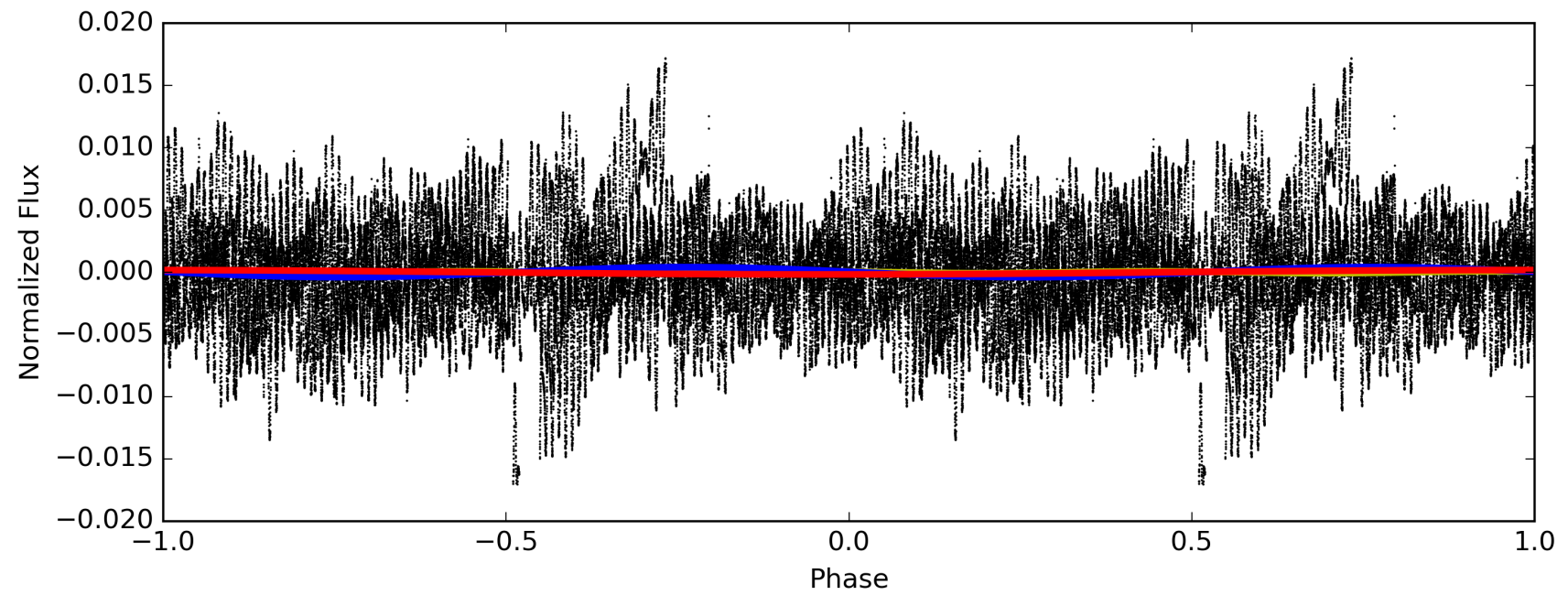
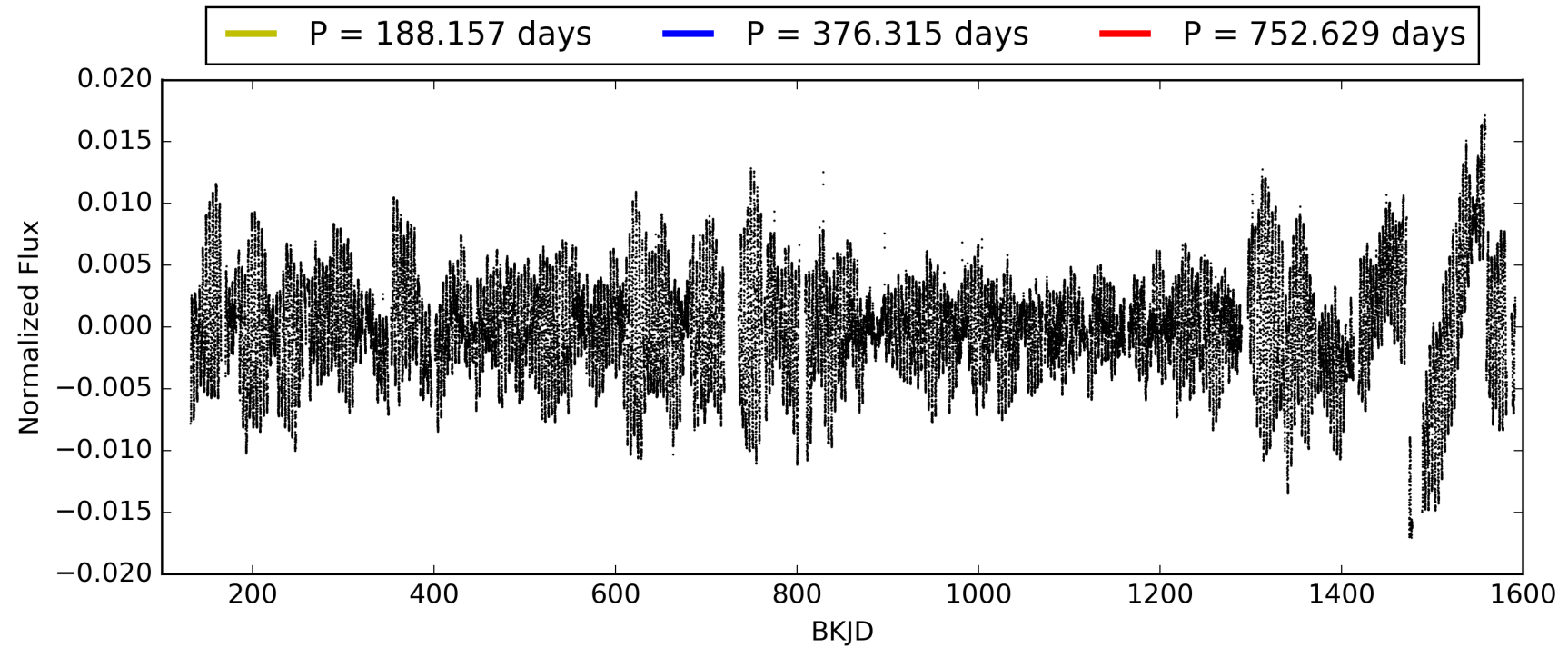
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:17:56 Z

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

TCE 007902097-01, PDC Light Curves

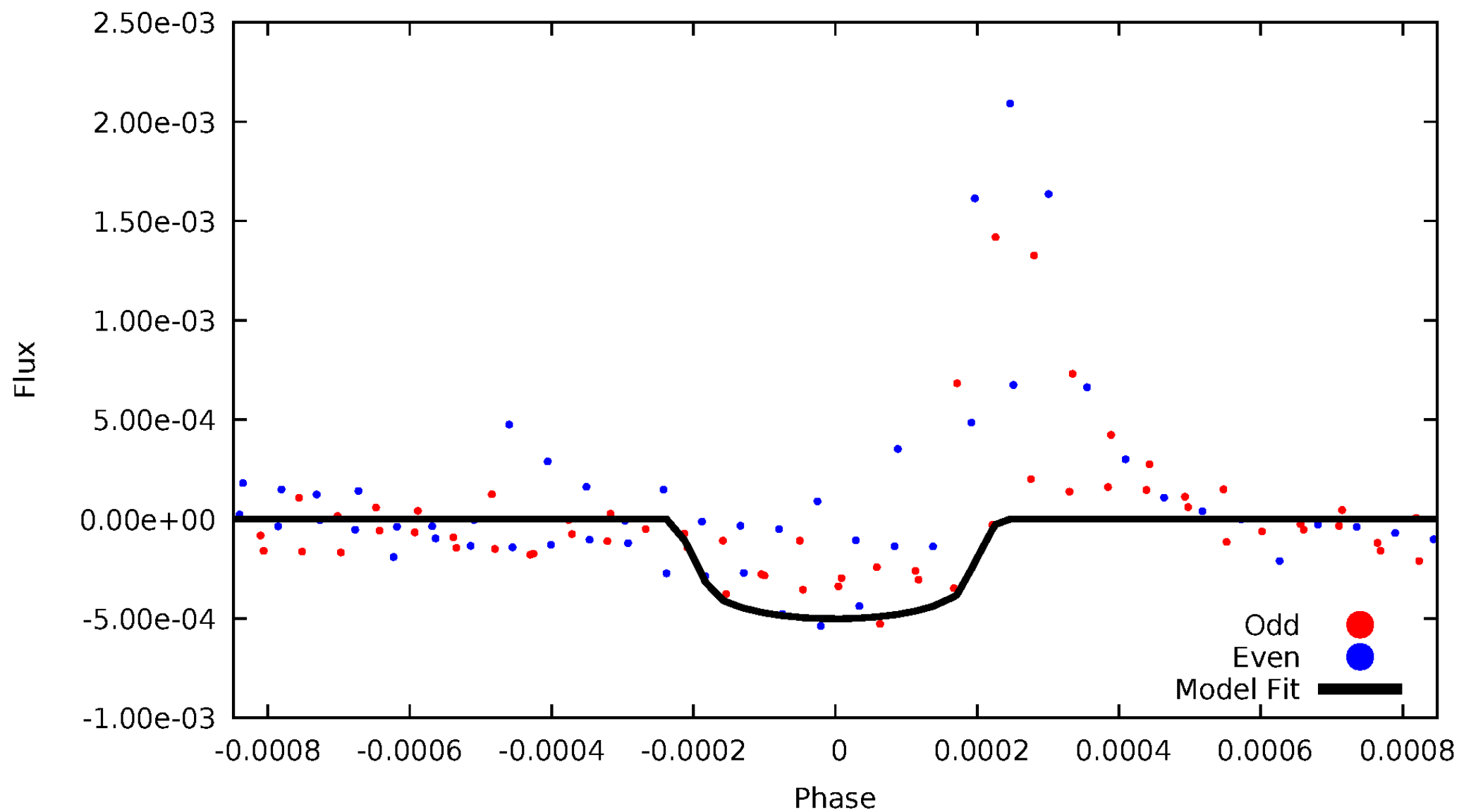


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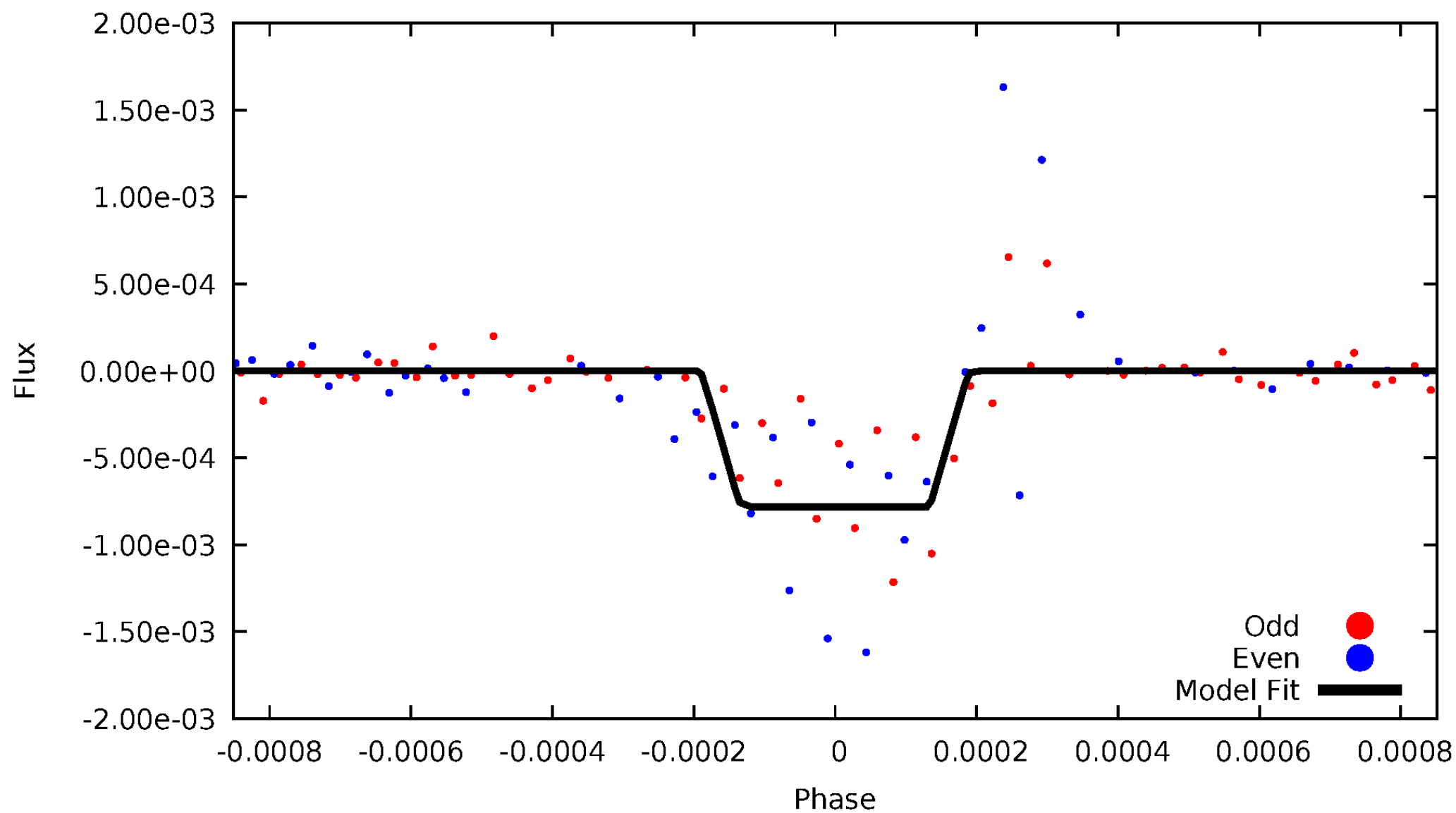
DV Odd/Even

TCE 007902097-01



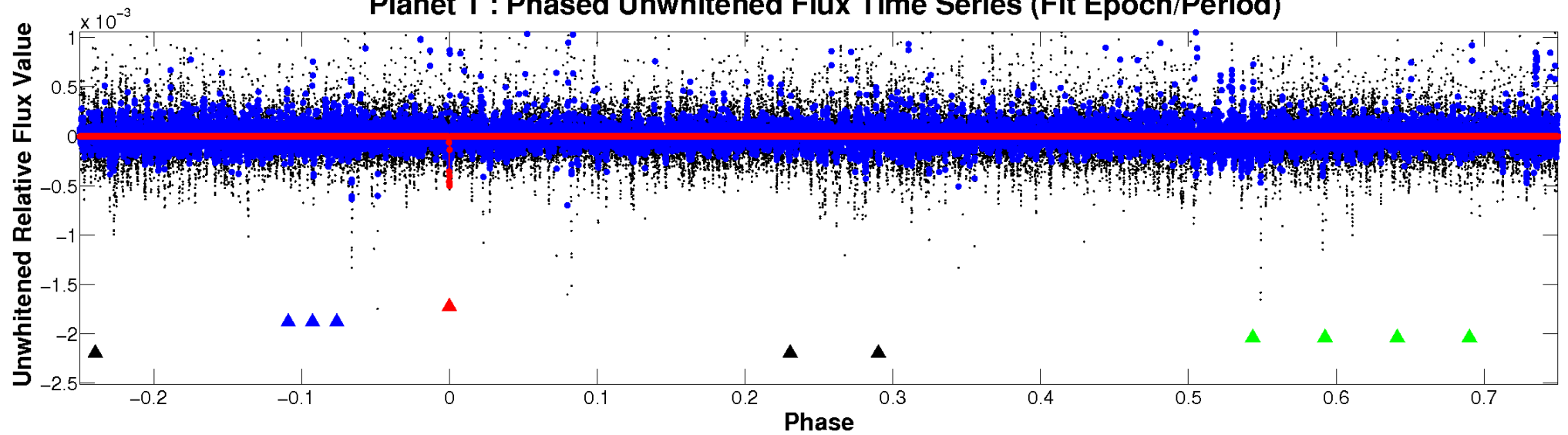
ALT Odd/Even

TCE 007902097-01

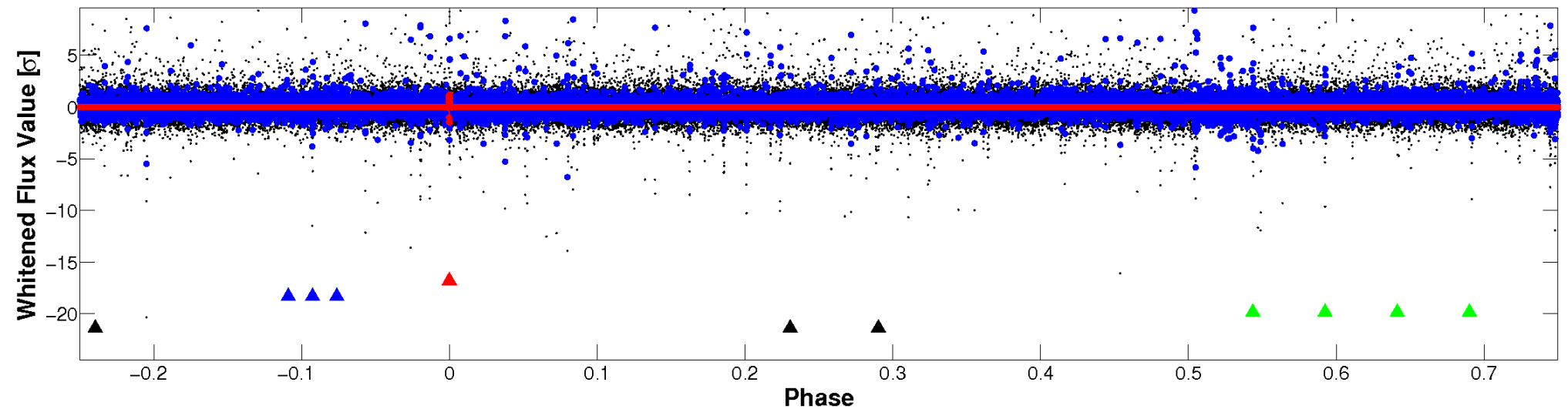


Non-Whitened Vs. Whitened Light Curve

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

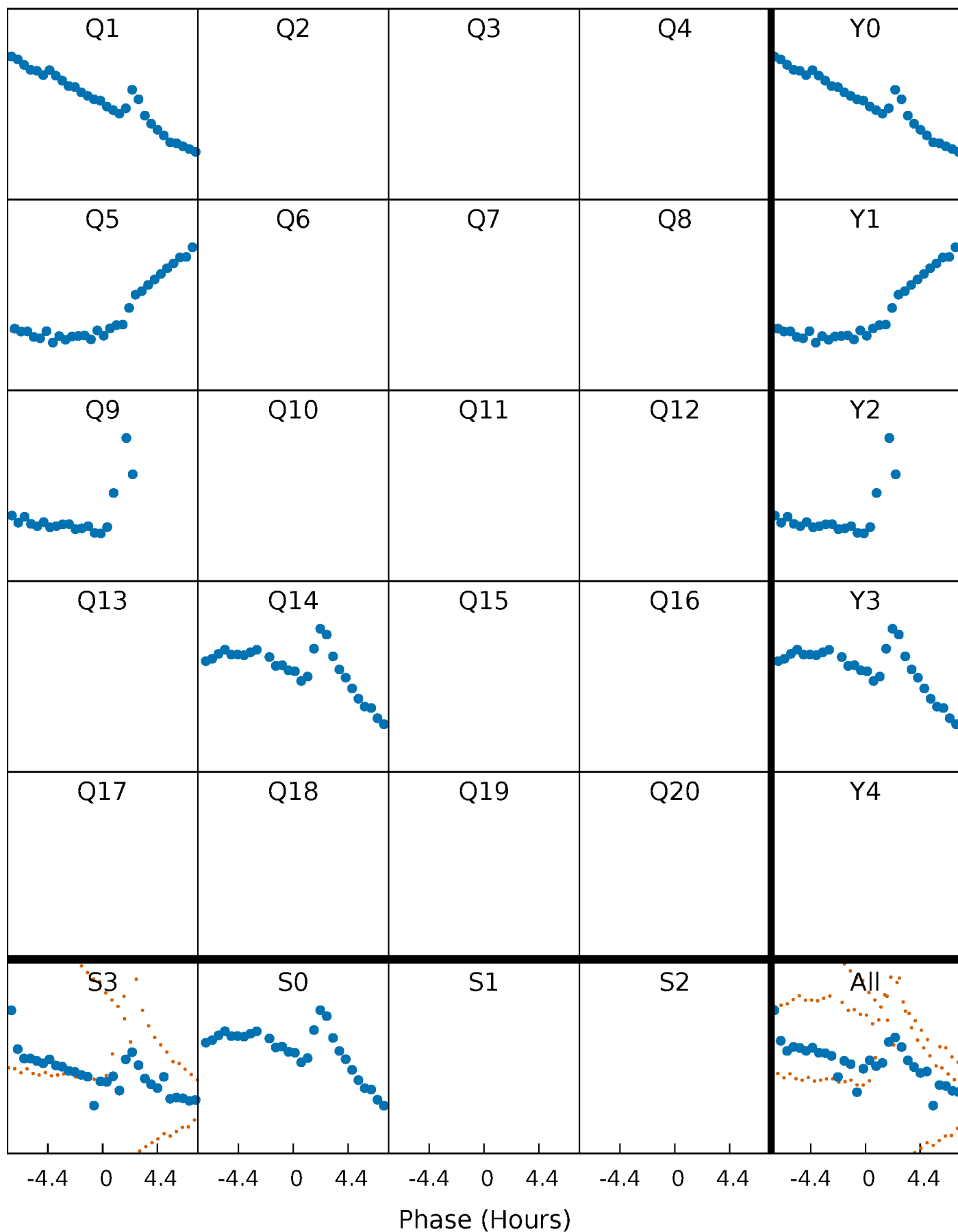


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



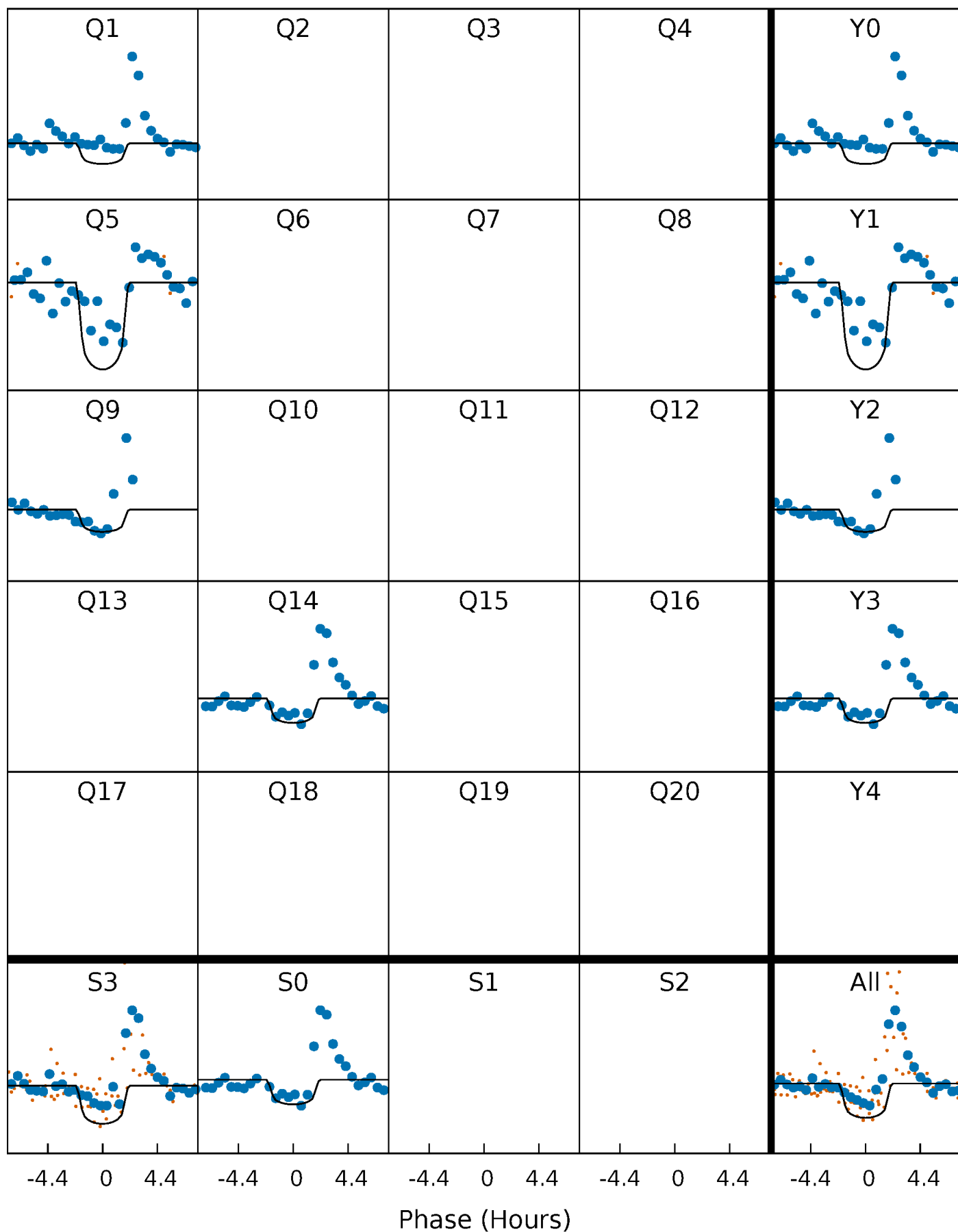
PDC Quarter-Phased Transit Curves

TCE 007902097-01 P=376.314696 Days $T_0=153.202488$ (BKJD)



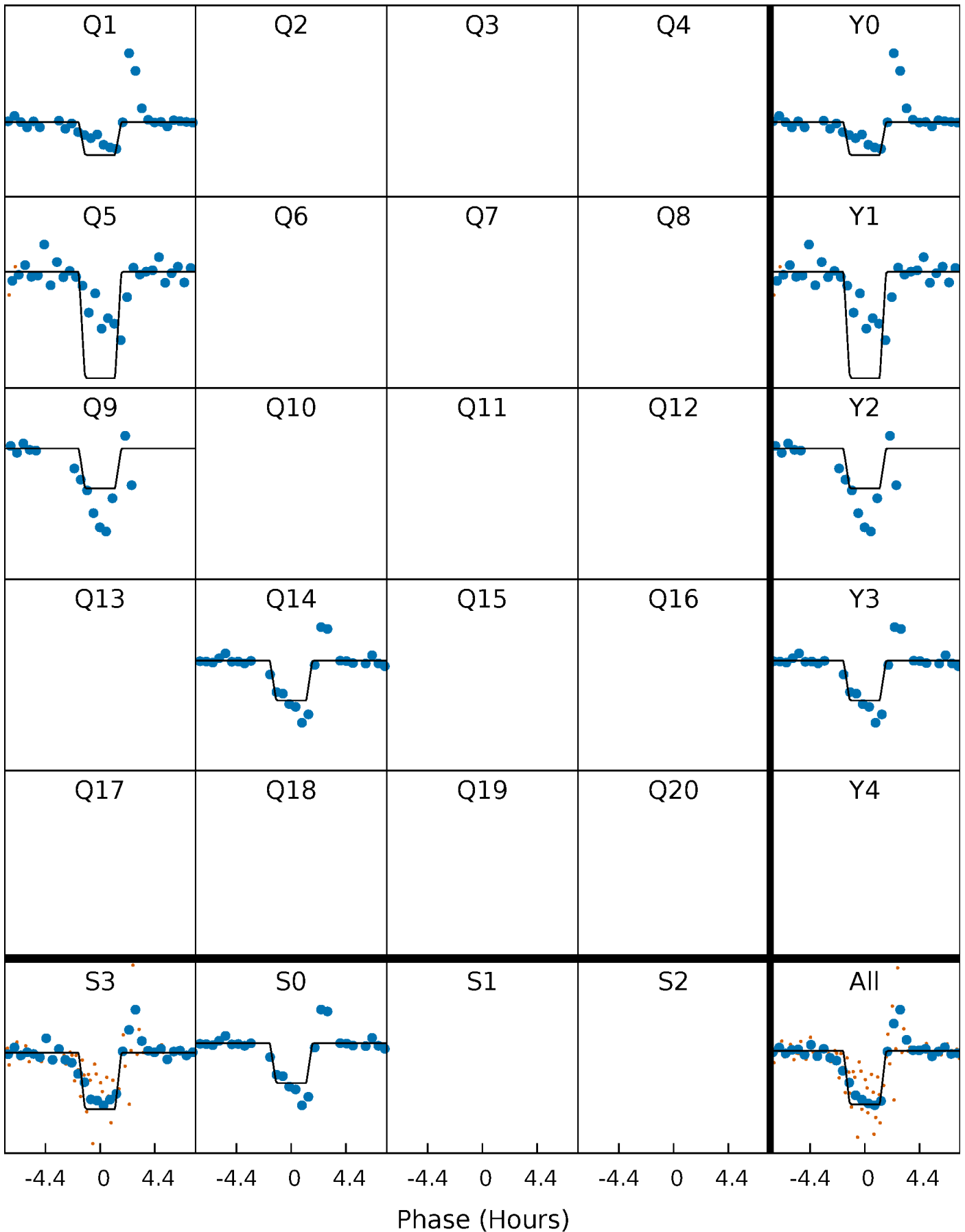
DV Quarter-Phased Transit Curves

TCE 007902097-01 P=376.314696 Days $T_0=153.202488$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

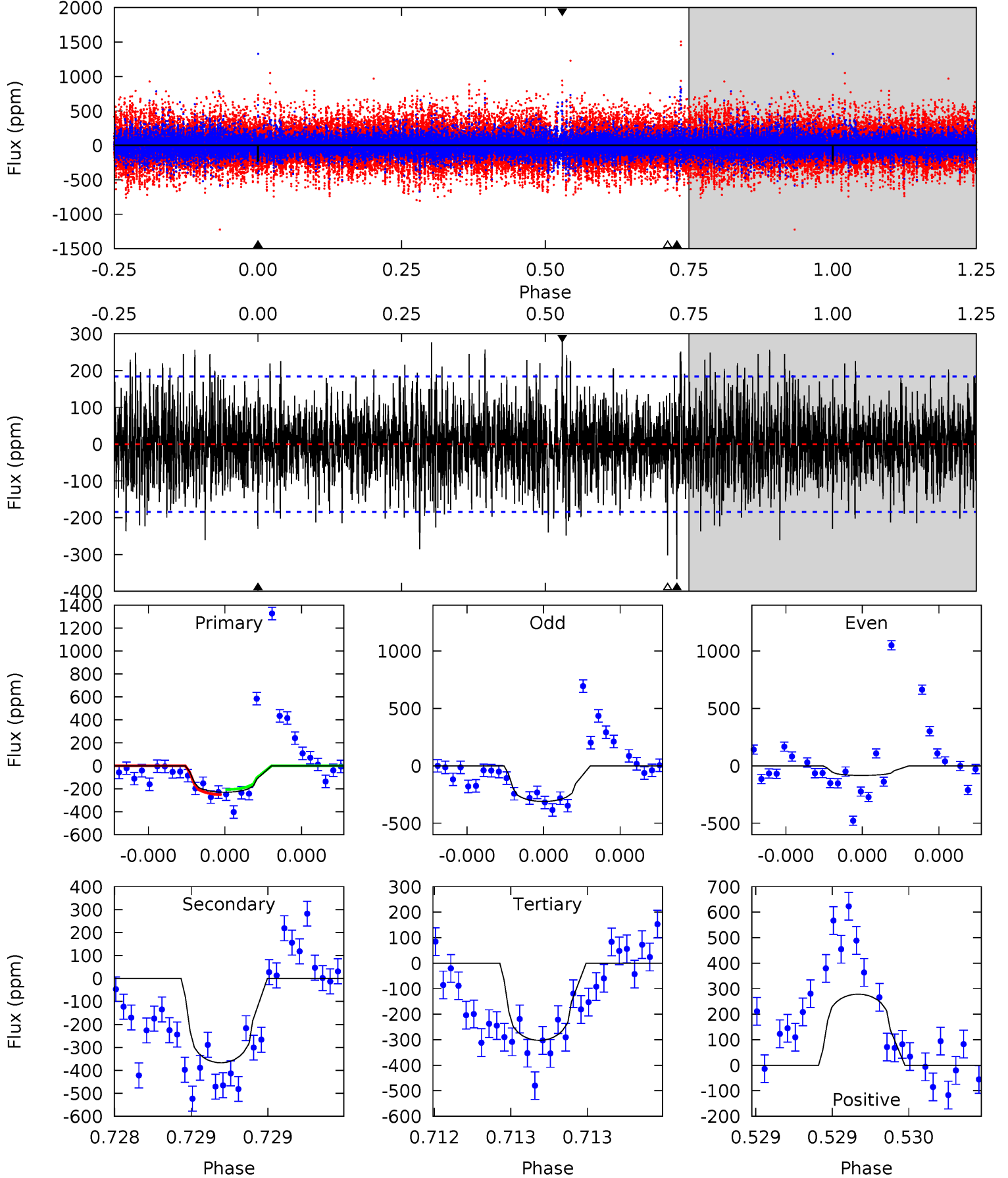
TCE 007902097-01 P=376.311252 Days $T_0=153.205577$ (BKJD)



DV Model-Shift Uniqueness Test

007902097-01, P = 376.314696 Days, E = 153.202488 Days

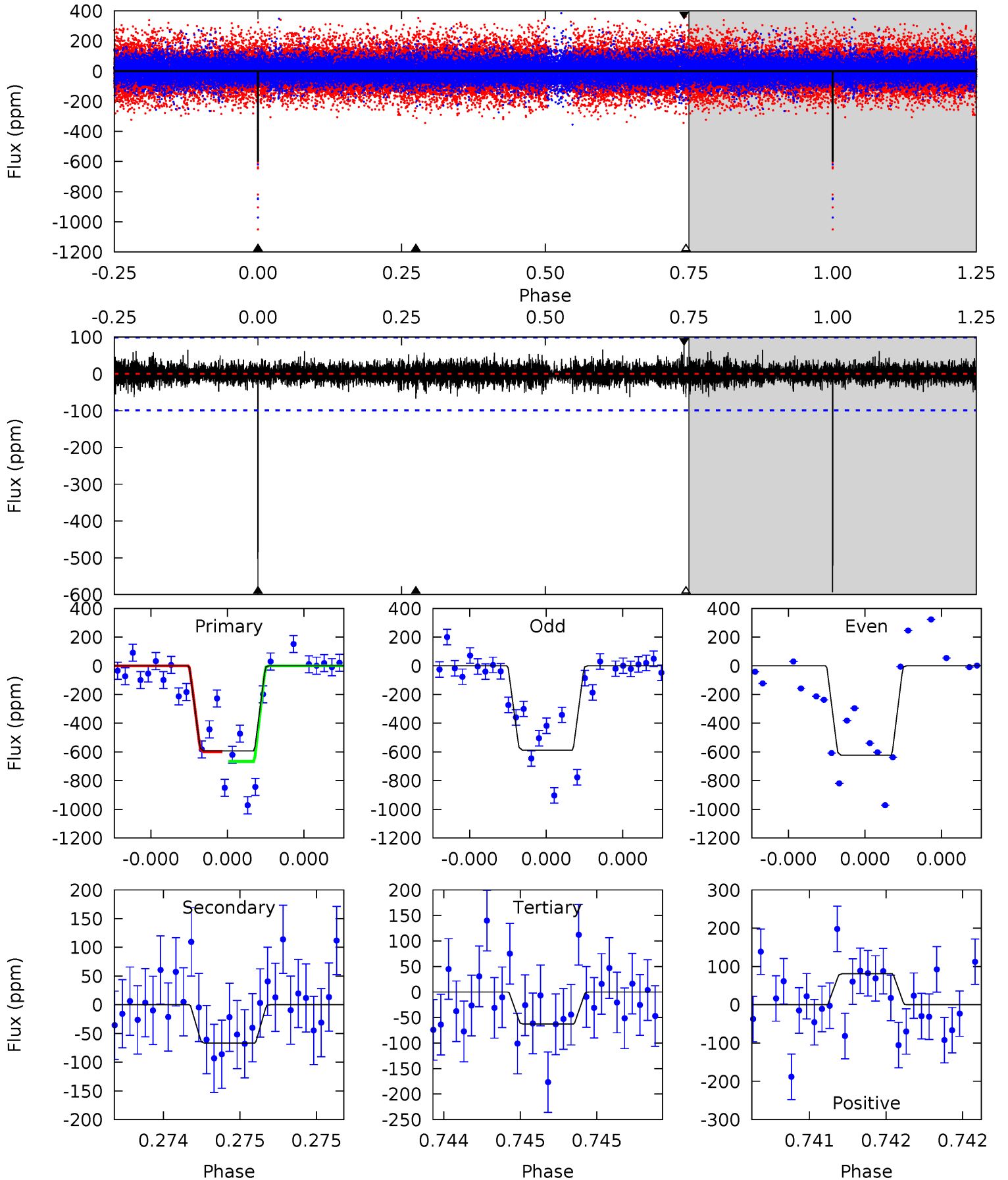
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.99	11.1	9.18	8.46	5.59	3.50	2.13	-2.19	-1.47	1.96	2.69	3.39	0.85	0.43	0.69



Alt Model-Shift Uniqueness Test

007902097-01, P = 376.311252 Days, E = 153.205577 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.6	3.79	3.57	4.59	5.62	3.55	0.79	30.1	29.1	0.22	-0.80	1.05	1.08	0.12	0



Stellar Parameters For KIC 007902097

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5831^{+145}_{-159}	$4.539^{+0.046}_{-0.196}$	$-0.160^{+0.300}_{-0.300}$	$0.874^{+0.240}_{-0.080}$	$0.963^{+0.108}_{-0.120}$	$2.032^{+0.394}_{-1.038}$
	+2%/-3%	+1%/-4%	+188%/-188%	+27%/-9%	+11%/-12%	+19%/-51%
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 007902097-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-367 ± 33	$3.33^{+3.40}_{-2.20}$	341^{+20}_{-15}	4585^{+3255}_{-987}	$18247^{+135946}_{-13730}$
Alt.	-67 ± 18	$3.92^{+3.29}_{-2.53}$	342^{+22}_{-16}	3238^{+1346}_{-535}	2310^{+14921}_{-1660}

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

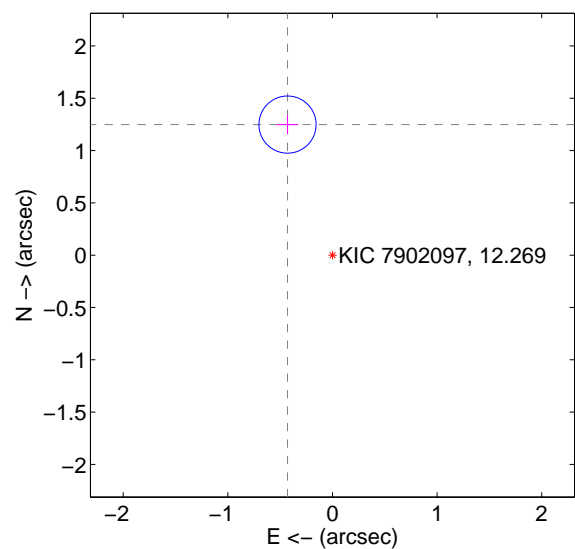
Supplemental centroid analysis for 007902097-01. Kepler magnitude: 12.27. Transit SNR 7.72

There are 1 quarters with good PRF difference image offsets

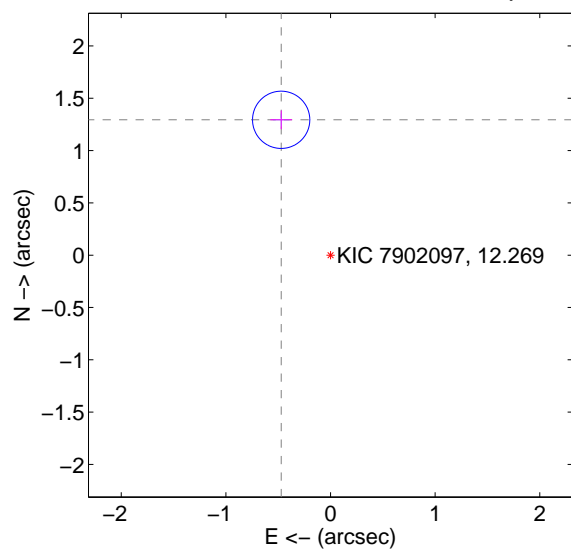
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.320 ± 0.091	14.50	0.430 ± 0.103	1.248 ± 0.089
PRF-fit source offset from KIC position	1.377 ± 0.091	15.10	0.472 ± 0.103	1.293 ± 0.089
photometric centroid source offset	0.65 ± 0.43	1.51	-0.01 ± 0.39	0.65 ± 0.43

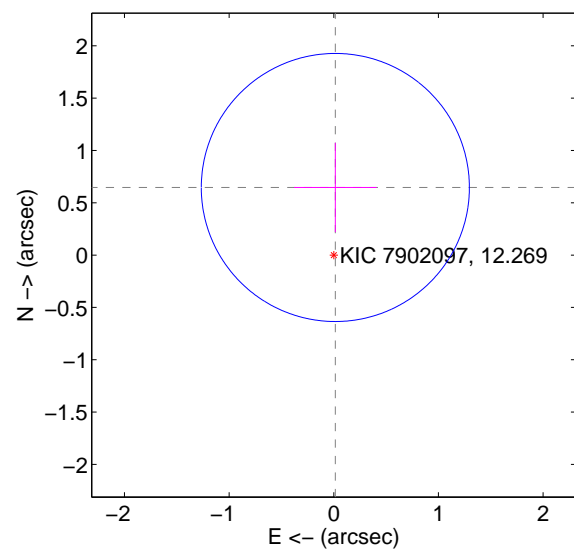
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

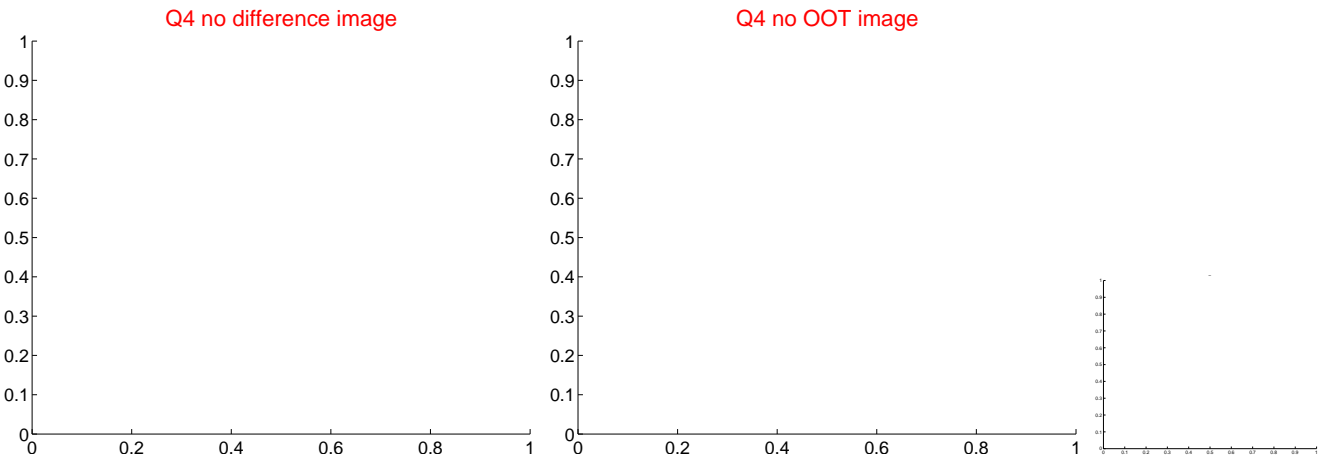
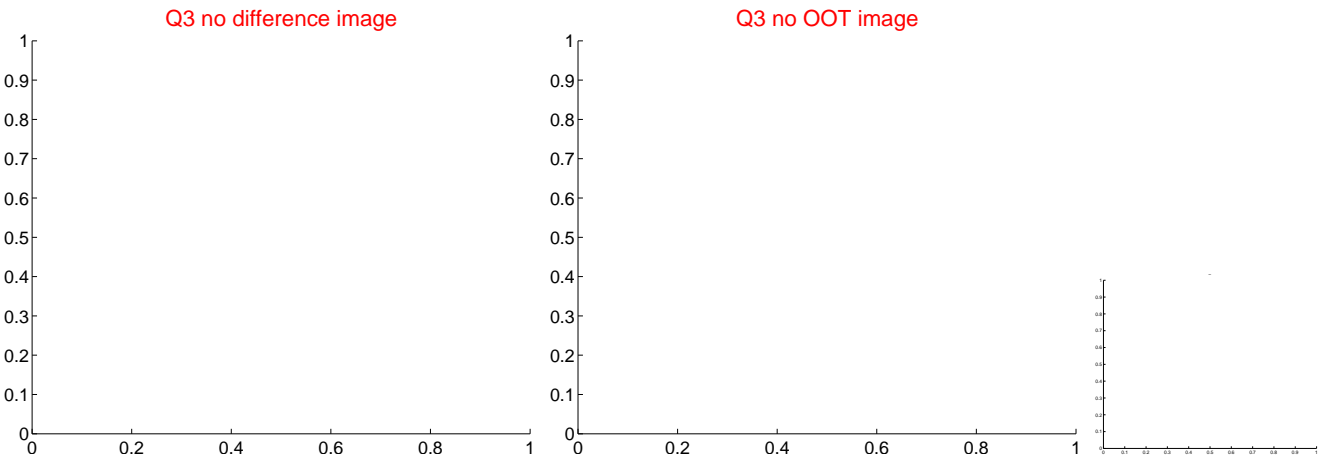
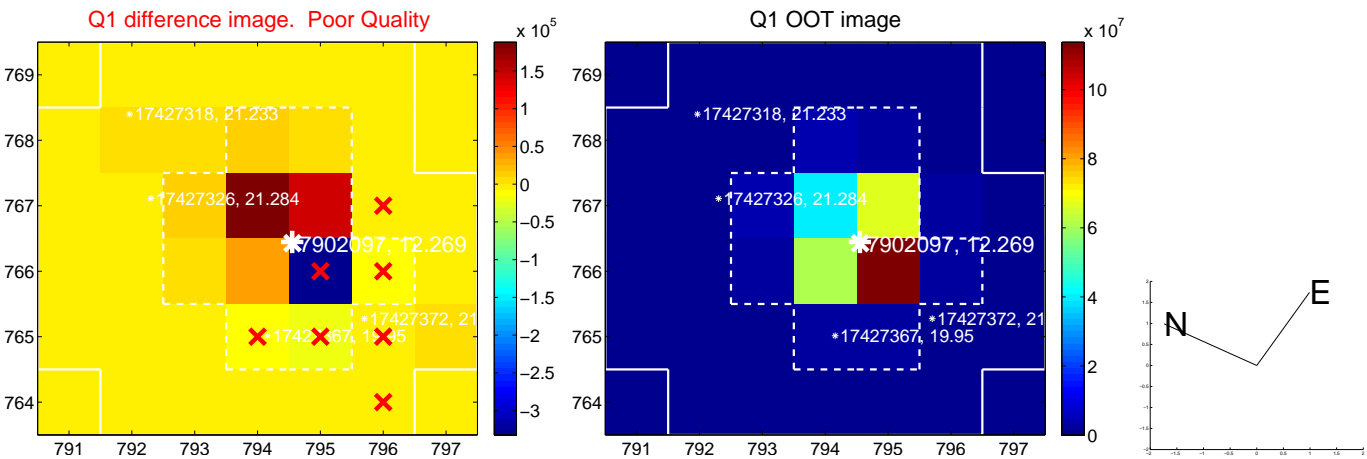


offset from photometric centroids

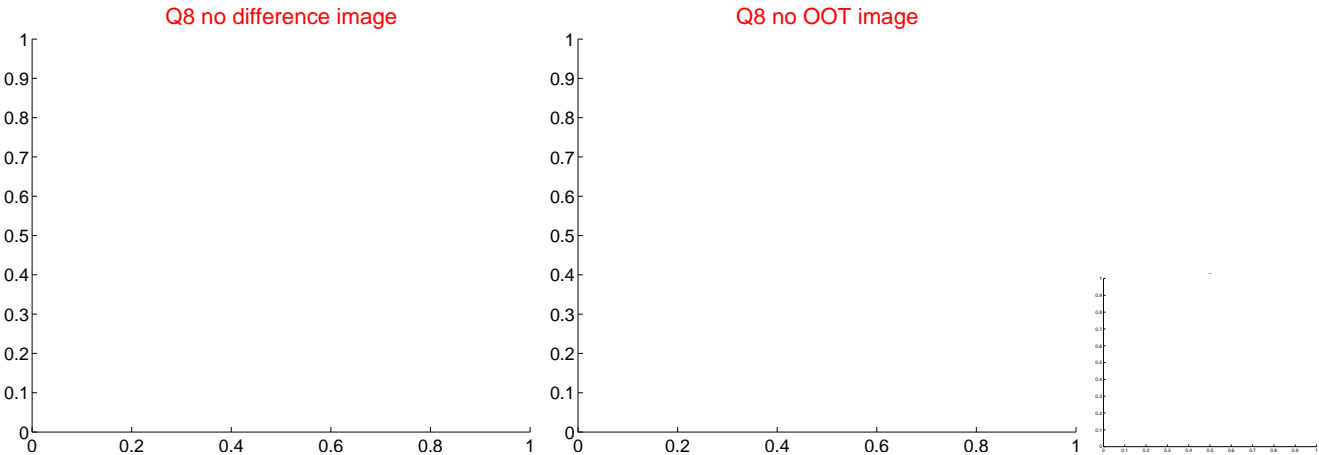
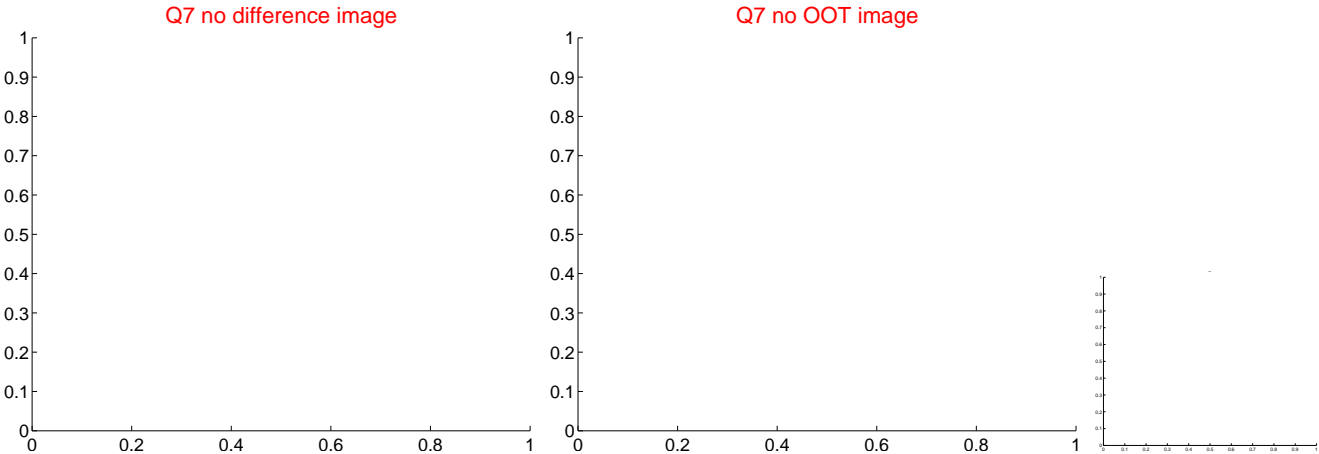
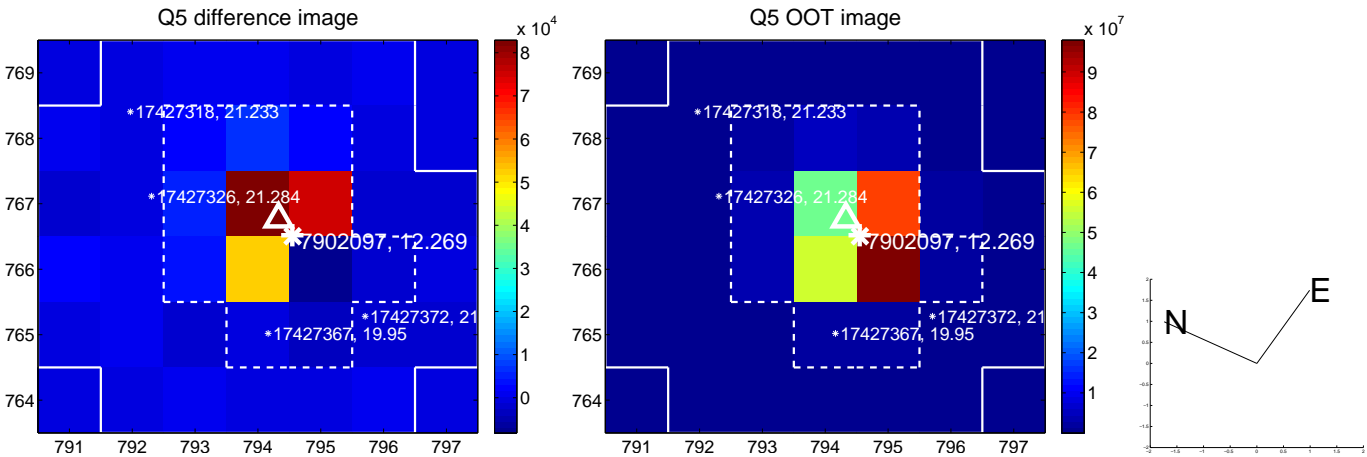


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



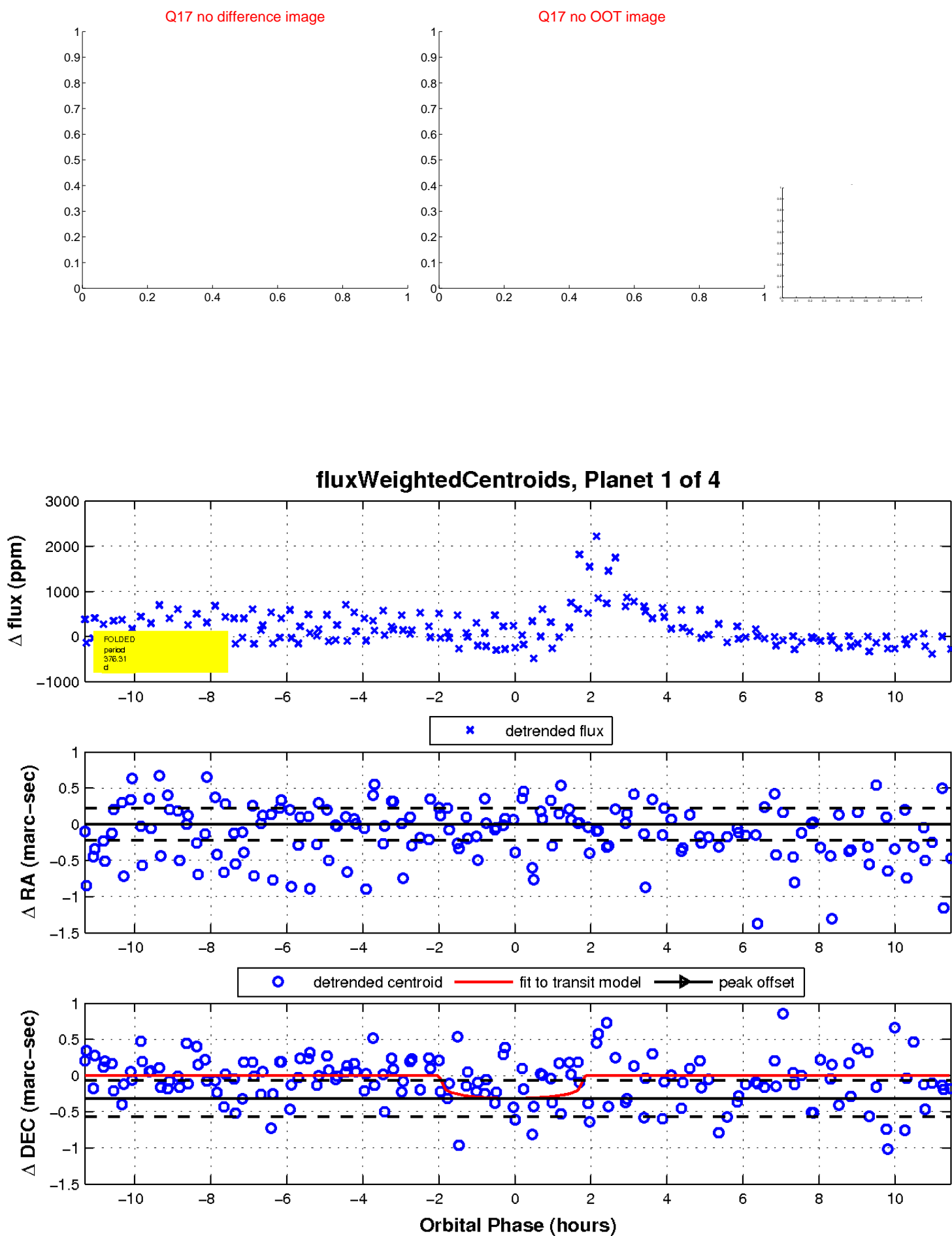
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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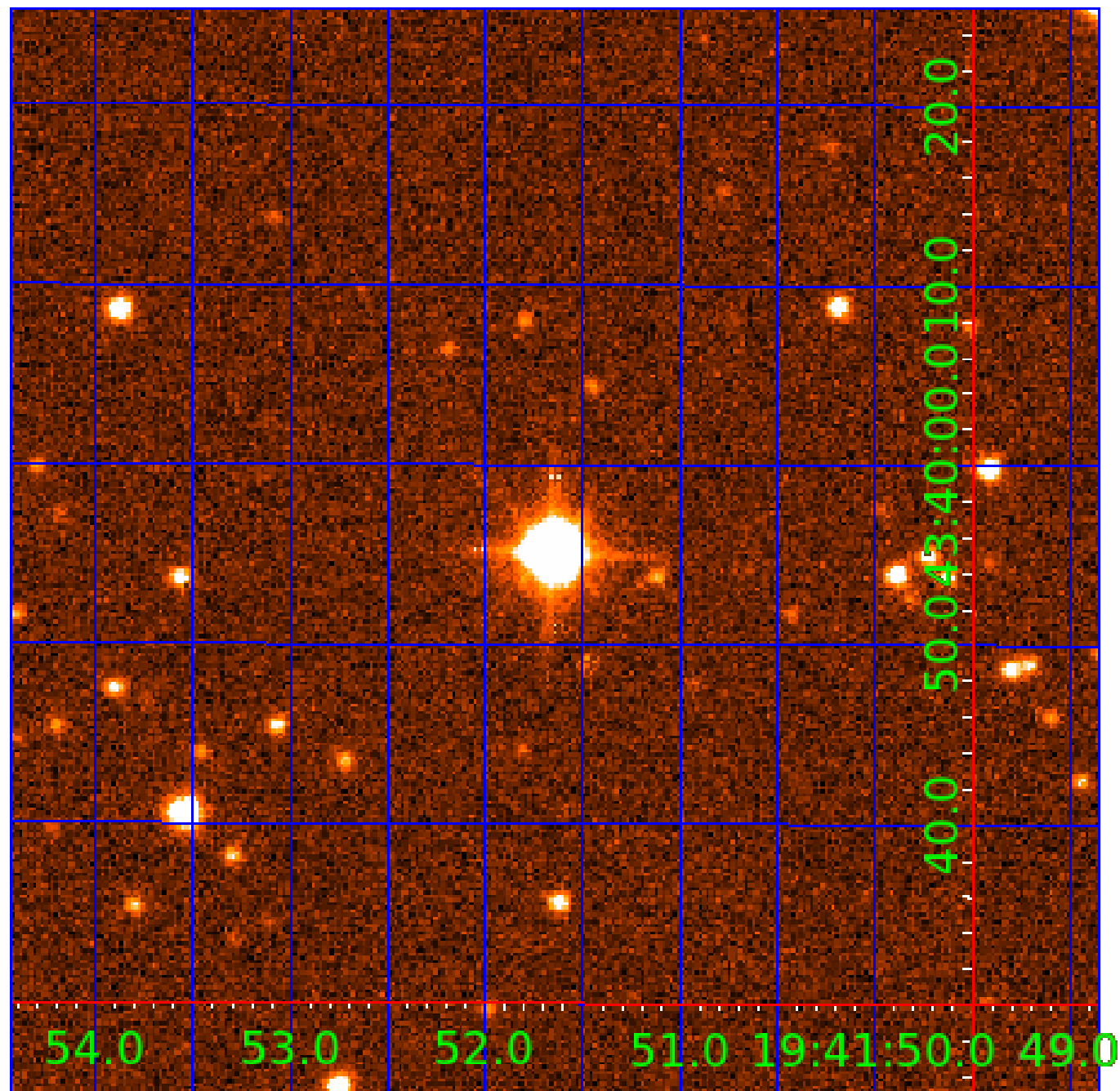


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007902097

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})
007902097-01	OBS	No	376.314696	153.202488	501.7	3.831	14.1	7.7	0.87	5831	2.07	0.78
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Robovetter Results

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007902097-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007902097-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

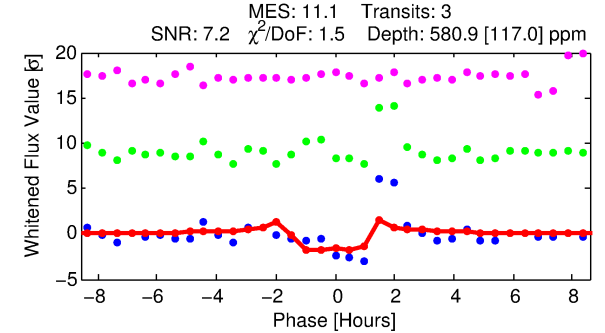
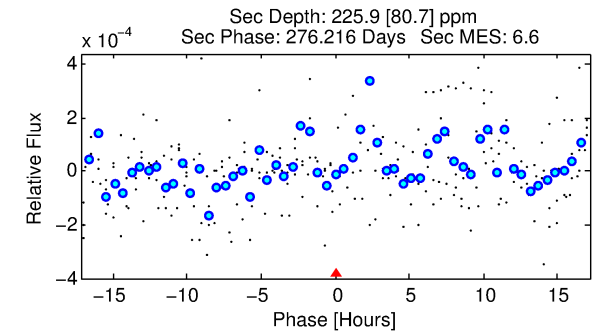
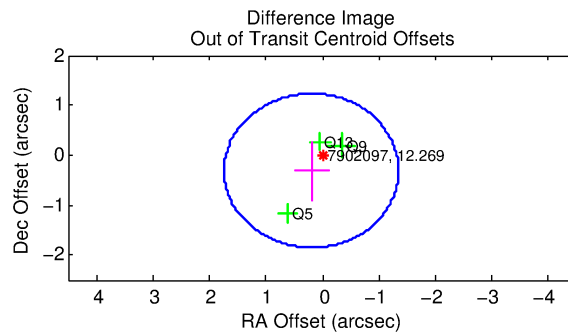
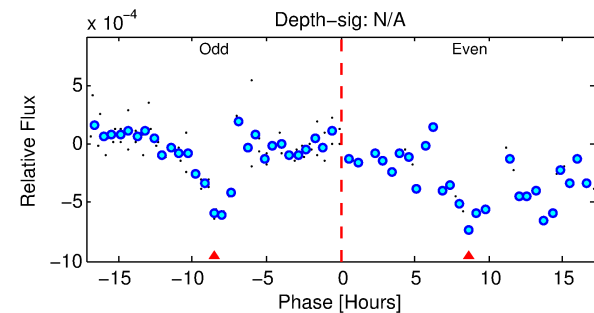
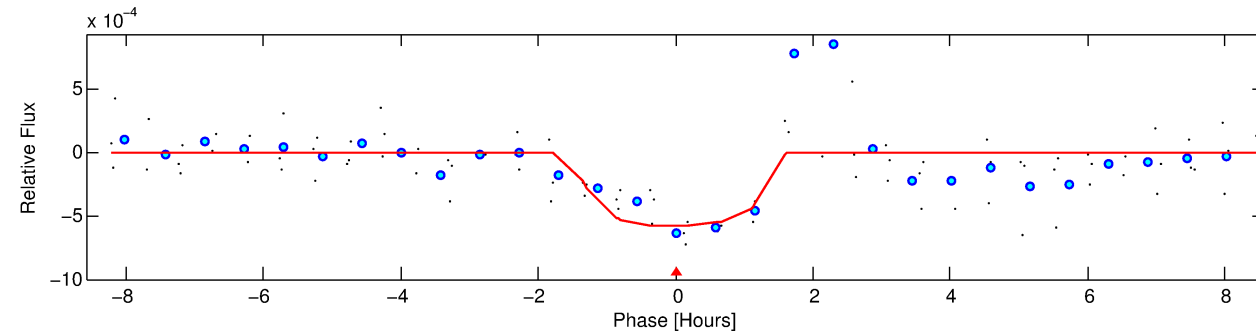
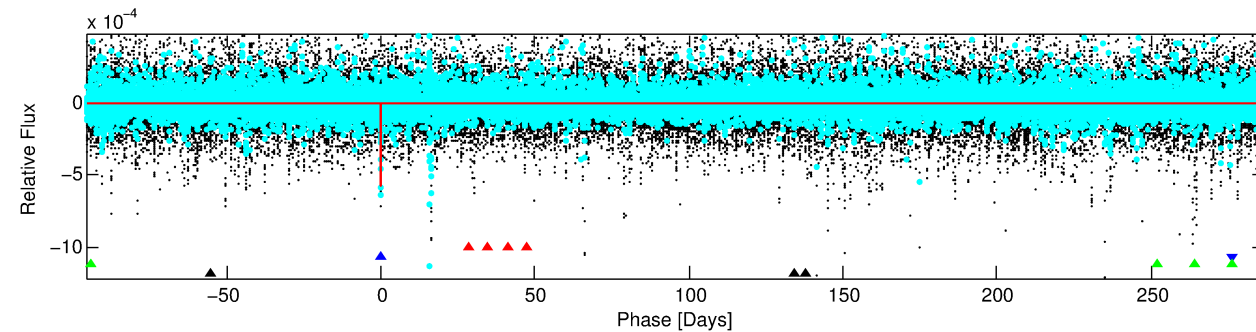
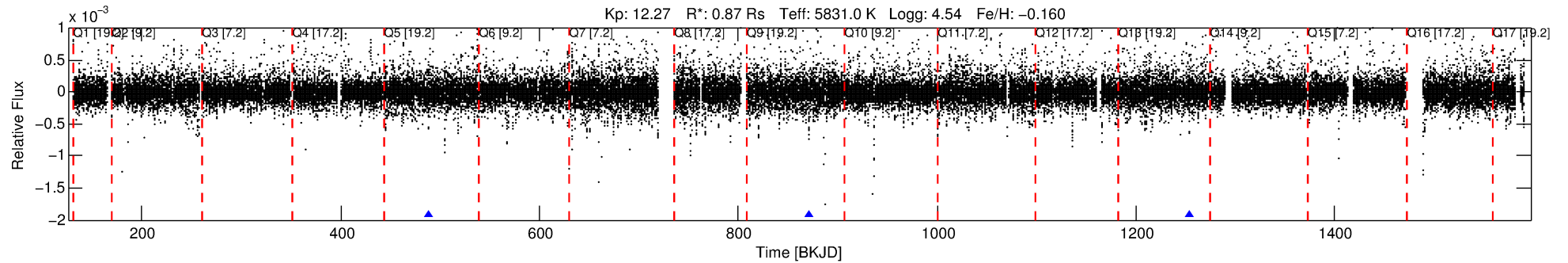
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007902097-02

No Significant Match Found

DV One-Page Summary

KIC: 7902097 Candidate: 2 of 4 Period: 382.498 d



DV Fit Results:

Period = 382.49826 [0.00477] d
Epoch = 488.4992 [0.0060] BKJD
Rp/R* = 0.0235 [0.0261]
a/R* = 783.53 [3853.68]
b = 0.68 [3.97]
Seff = 0.76 [0.28]
Teff = 238 [22] K
Rp = 2.24 [2.56] Re
a = 1.0189 [0.2414] AU
Ag = 25709.34 [58498.12] [0.44σ]
Teffp = 4664 [2624] K [1.69σ]

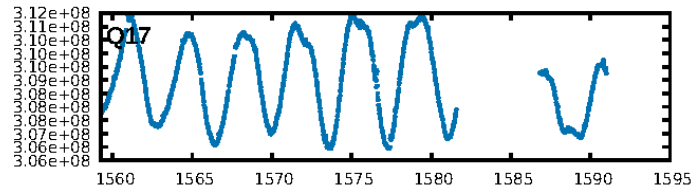
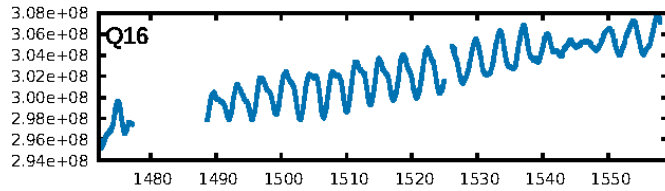
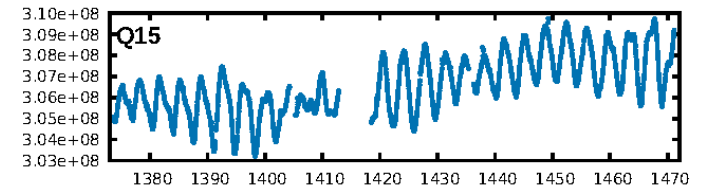
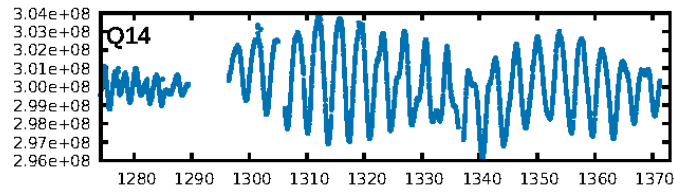
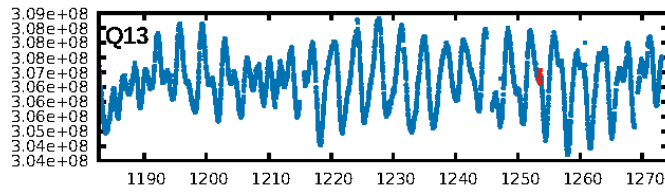
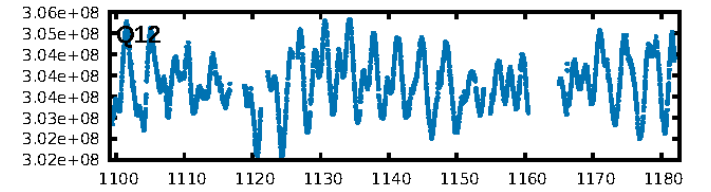
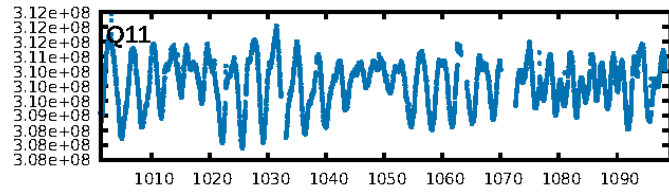
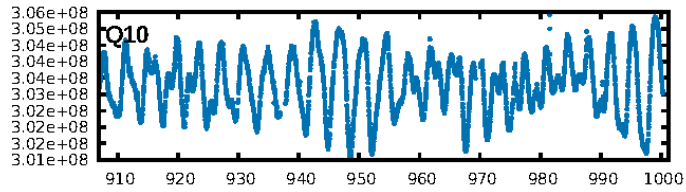
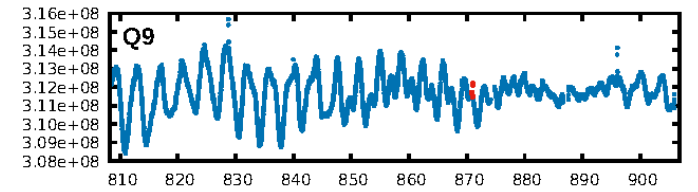
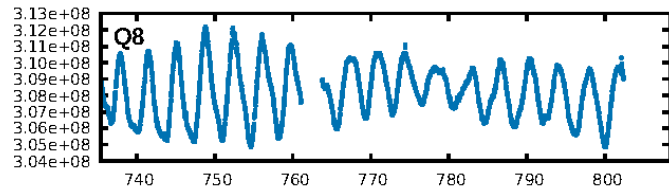
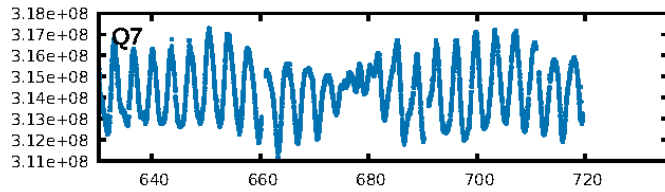
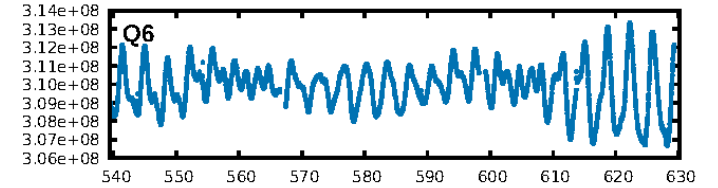
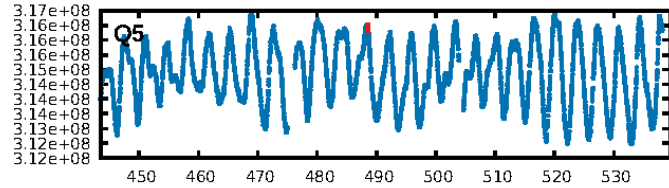
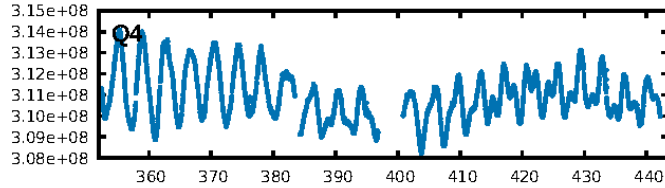
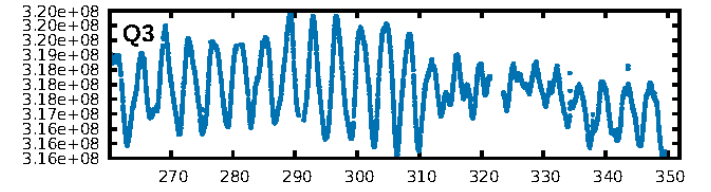
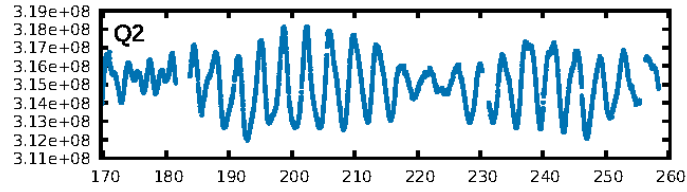
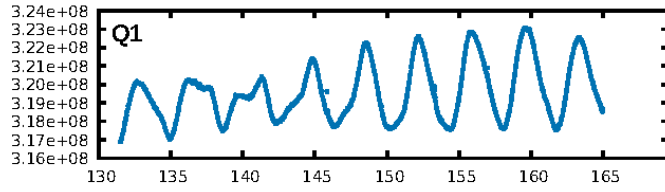
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.05σ]
LongPeriod-sig: 100.0% [58.79σ]
ModelChiSquare2-sig: 3.0%
ModelChiSquareGof-sig: 45.3%
Bootstrap-pfa: 2.09e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.838
Centroid-sig: 7.9%
Centroid-so: 0.633 arcsec [1.48σ]
OotOffset-rm: 0.366 arcsec [0.71σ]
KicOffset-rm: 0.402 arcsec [0.77σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

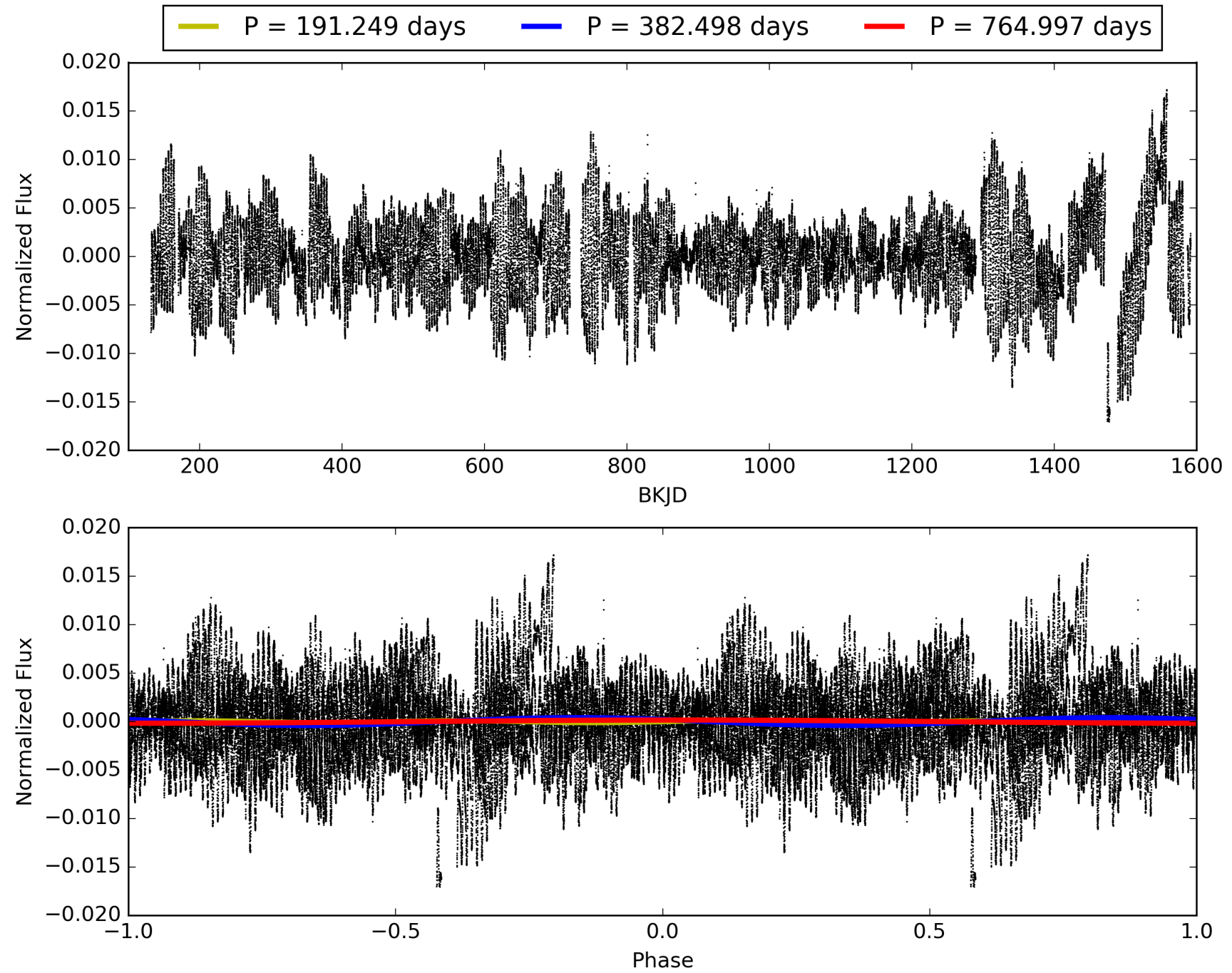
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:18:16 Z

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

TCE 007902097-02, PDC Light Curves

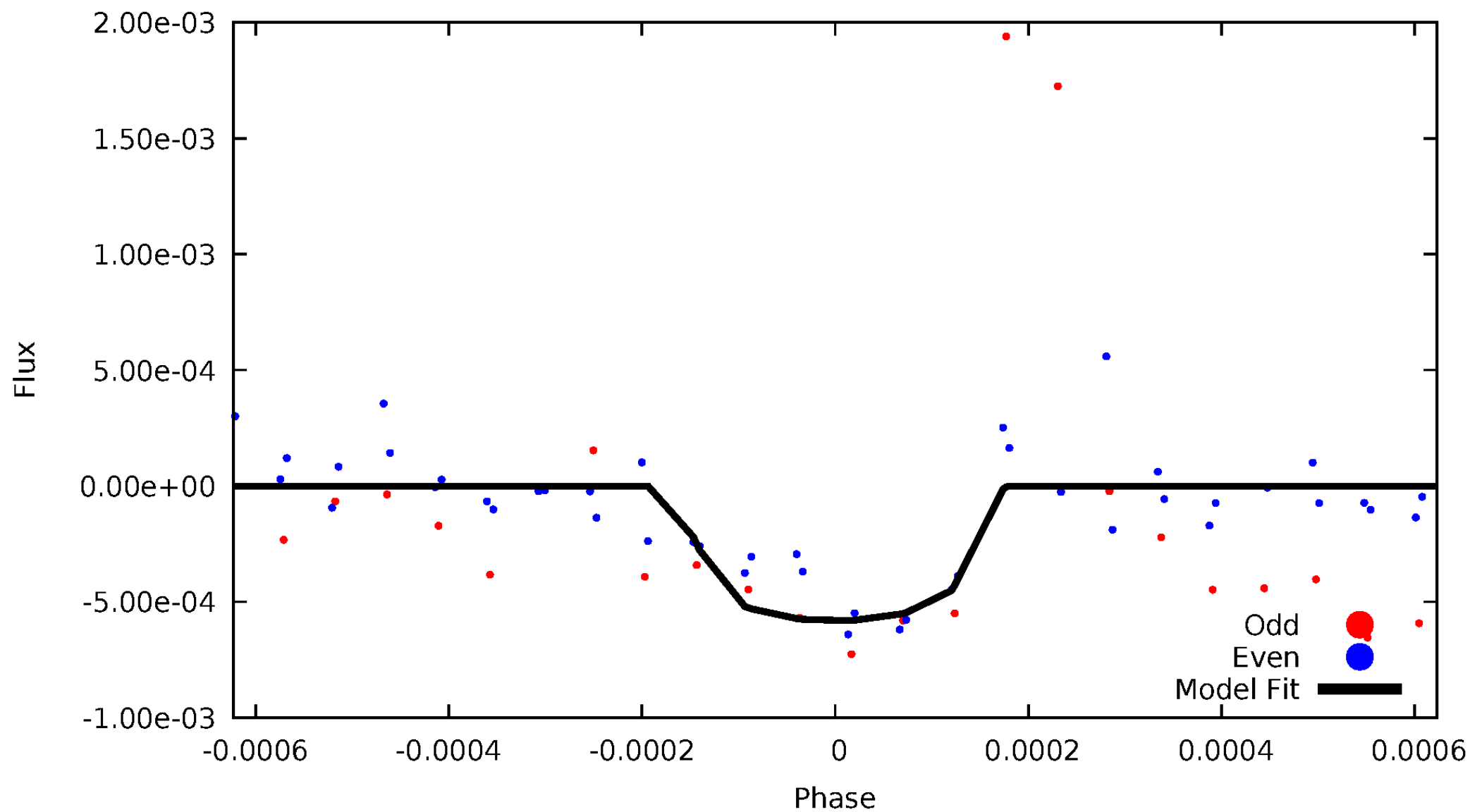


TCE 007902097-02



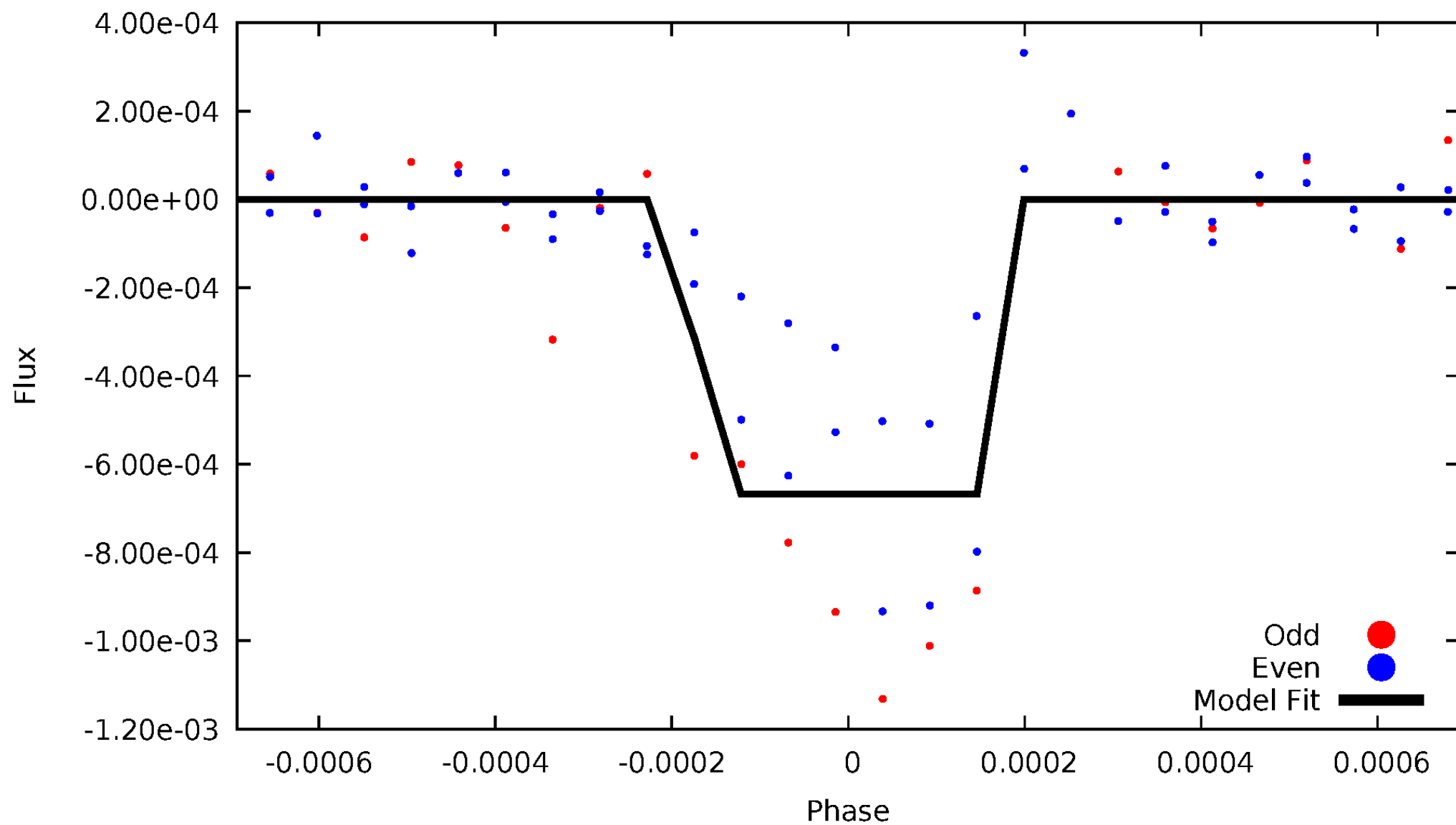
DV Odd/Even

TCE 007902097-02



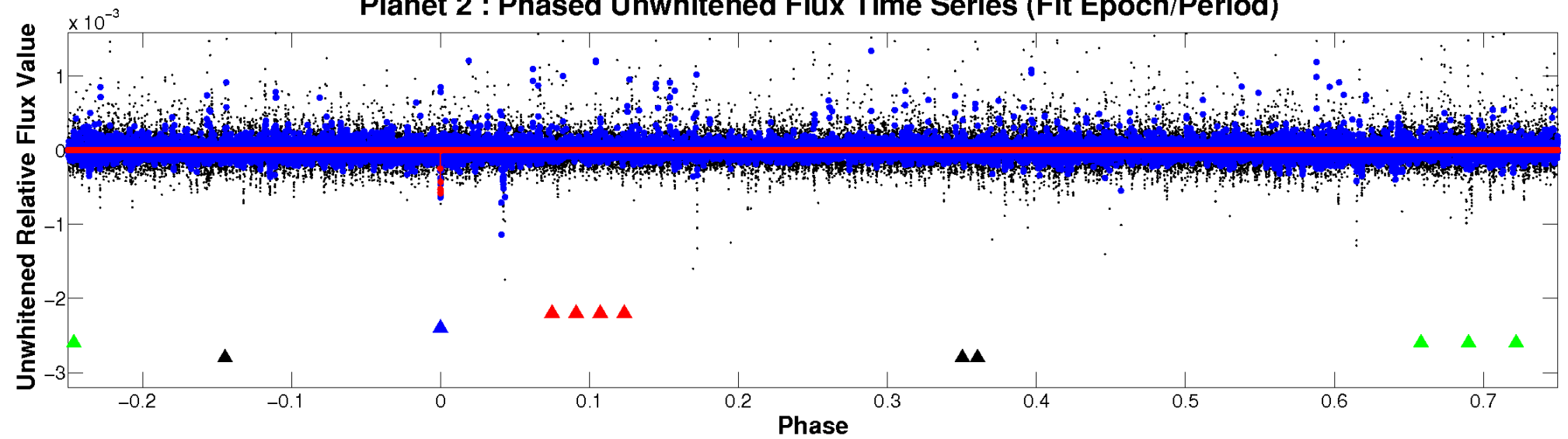
ALT Odd/Even

TCE 007902097-02

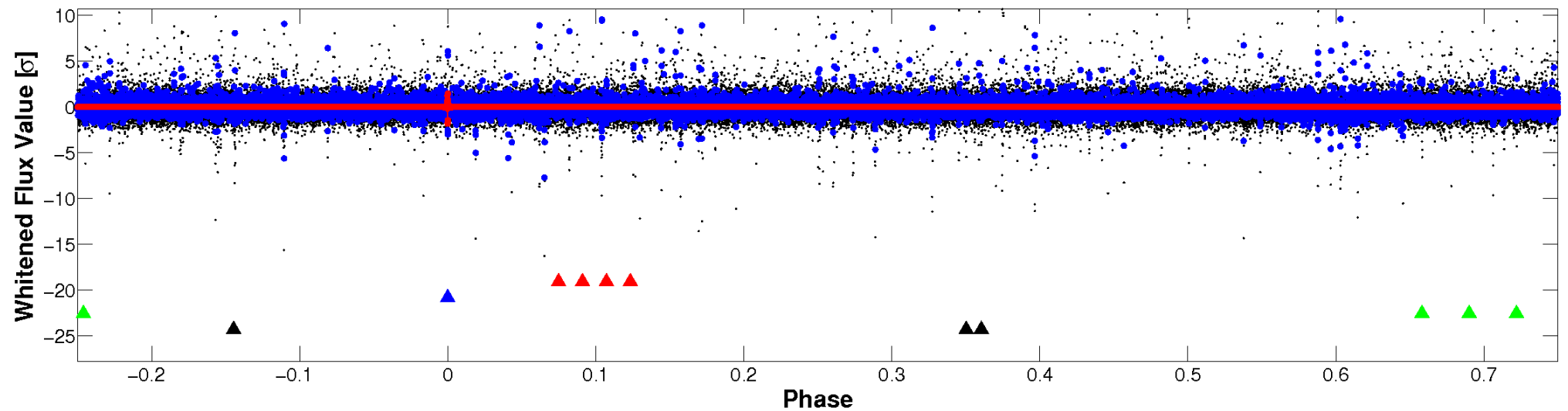


Non-Whitened Vs. Whitened Light Curve

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

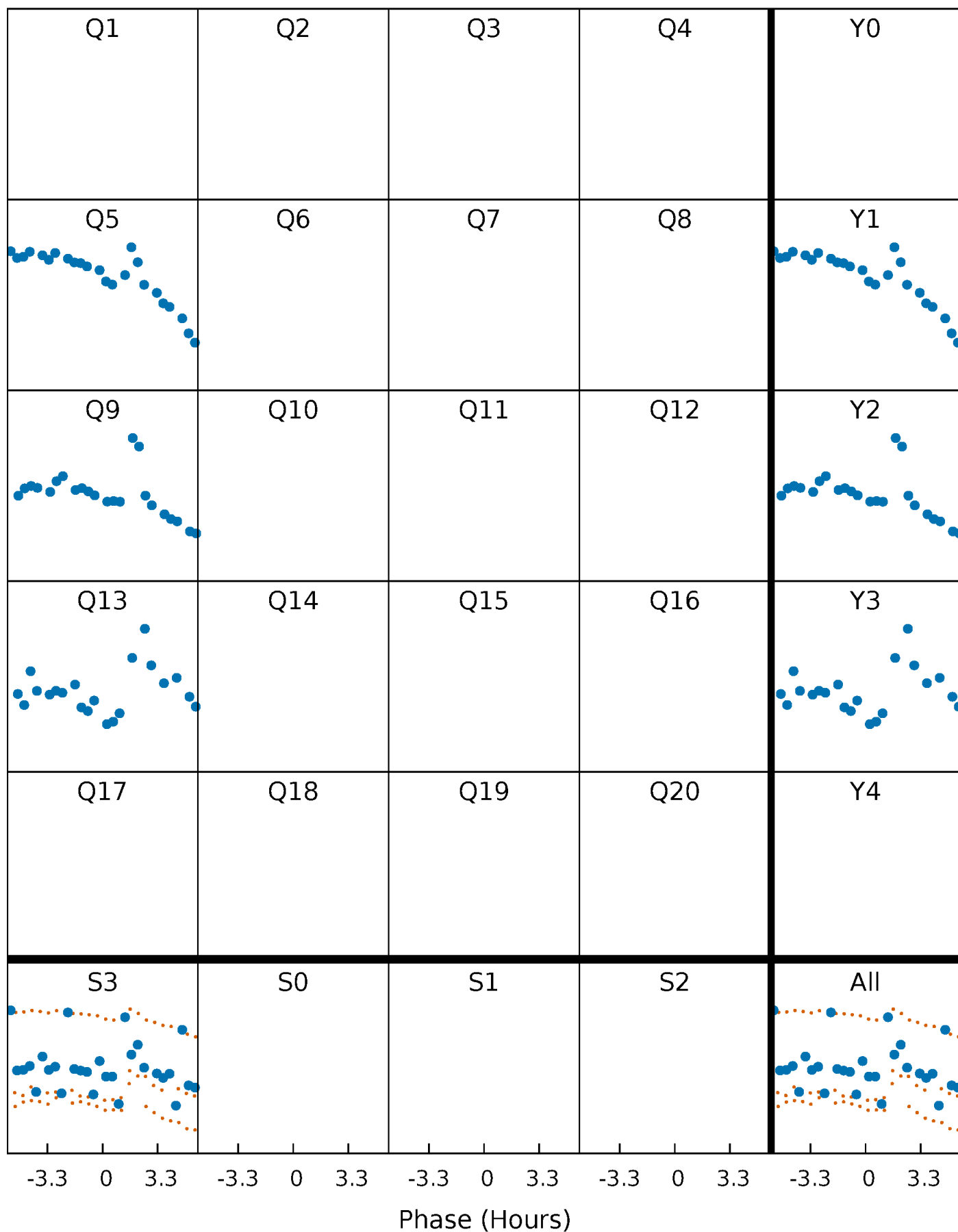


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



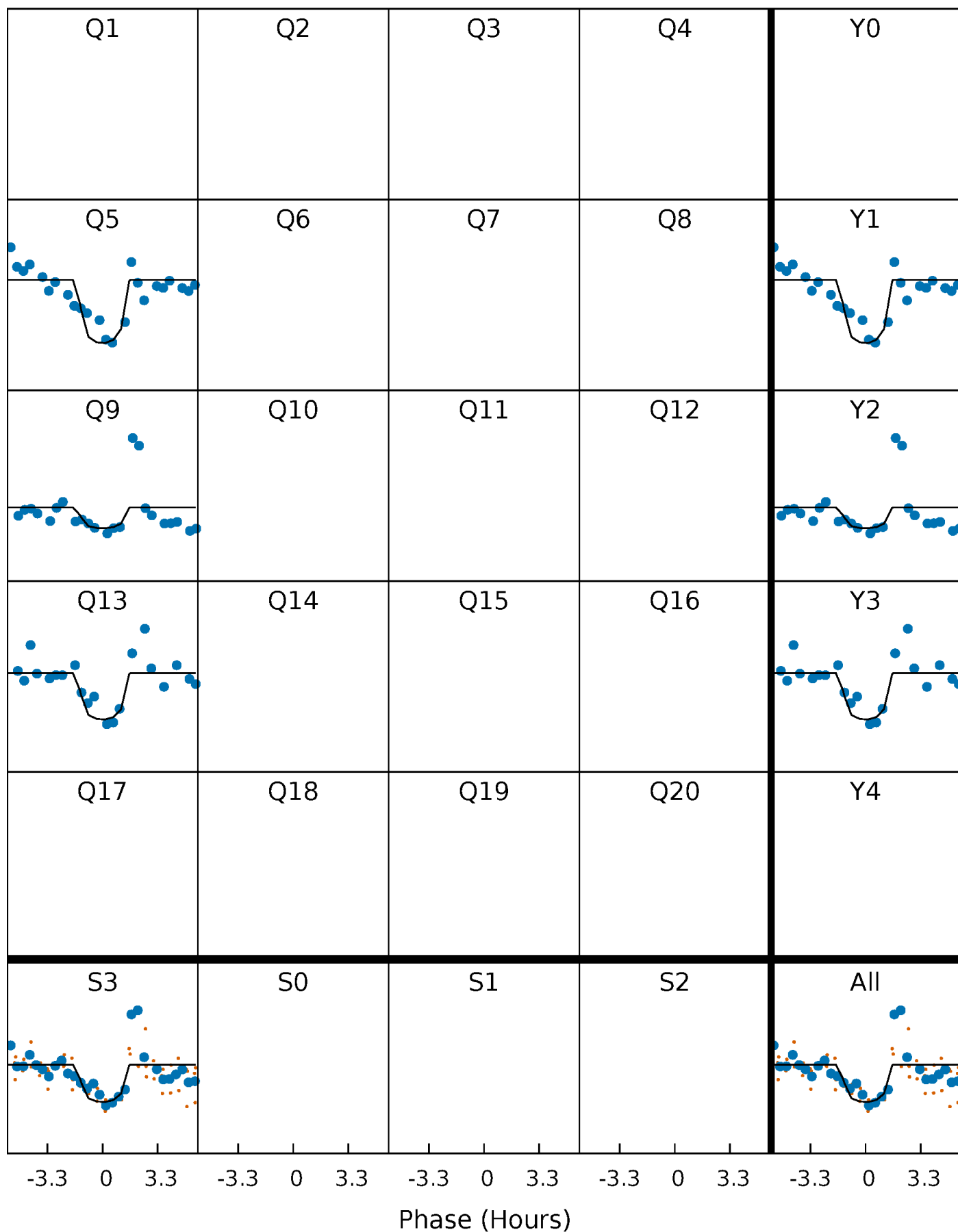
PDC Quarter-Phased Transit Curves

TCE 007902097-02 $P=382.498256$ Days $T_0=488.499181$ (BKJD)



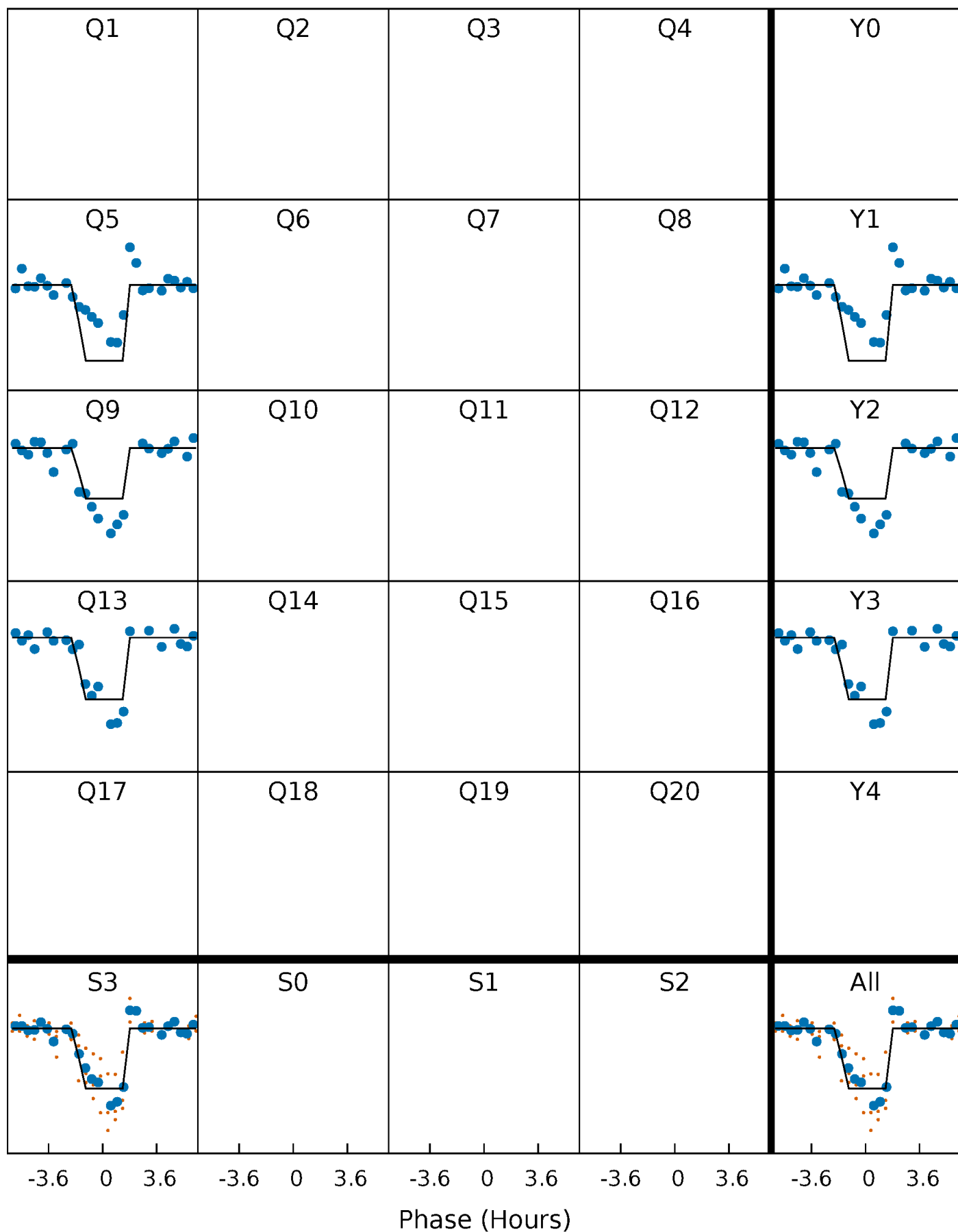
DV Quarter-Phased Transit Curves

TCE 007902097-02 $P=382.498256$ Days $T_0=488.499181$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

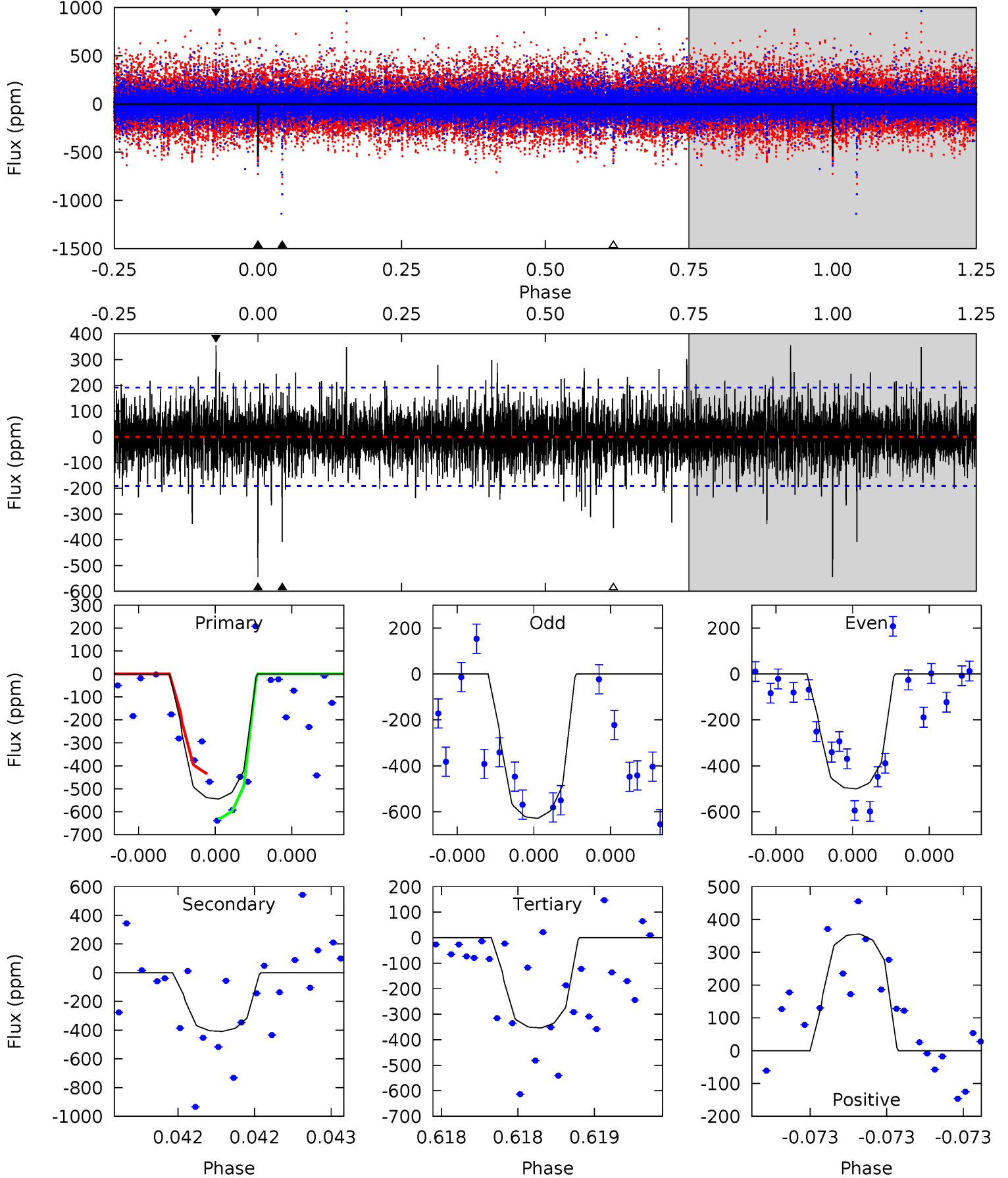
TCE 007902097-02 $P=382.496941$ Days $T_0=488.492066$ (BKJD)



DV Model-Shift Uniqueness Test

007902097-02, P = 382.498256 Days, E = 106.000925 Days

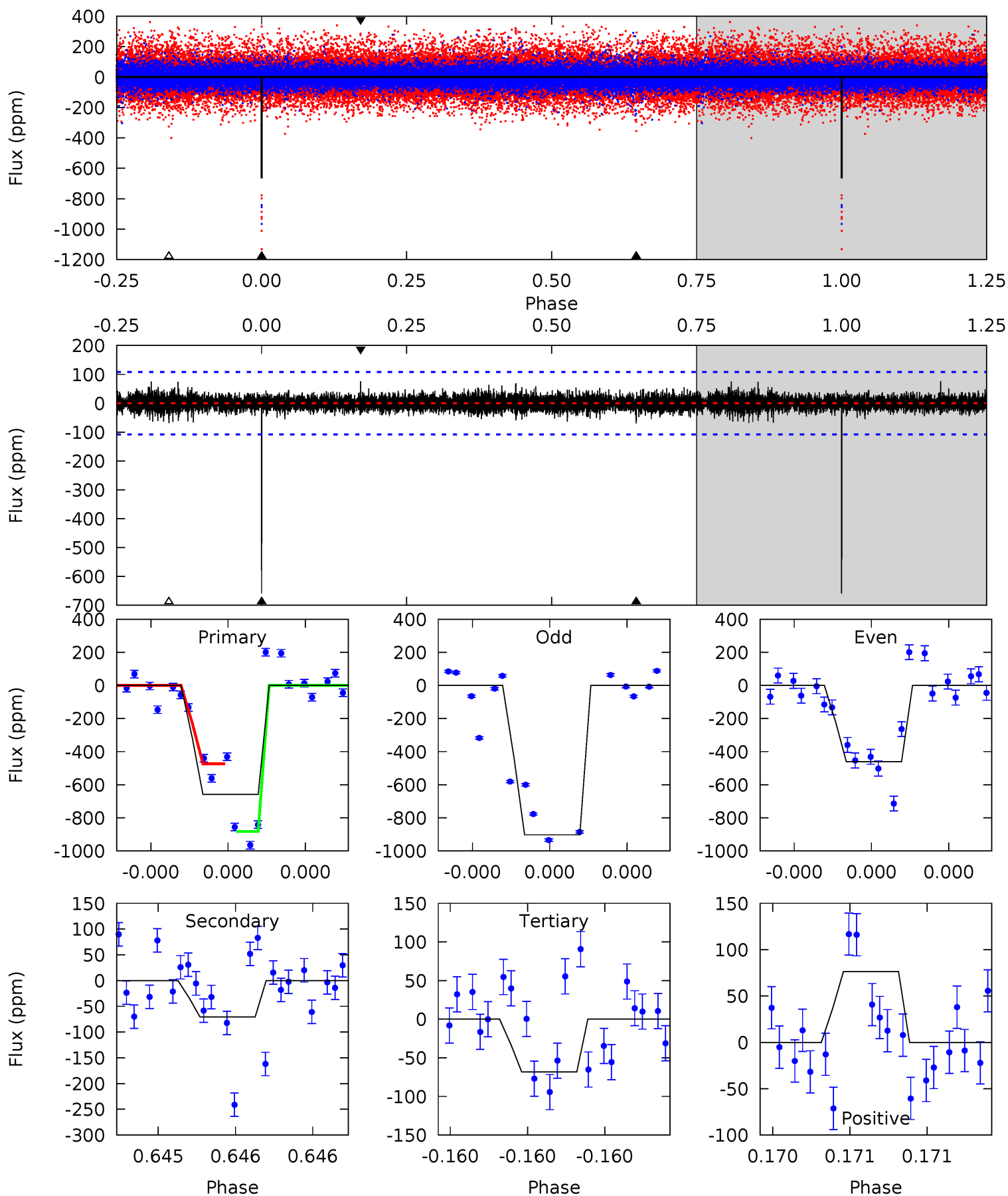
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	12.1	10.4	10.5	5.65	3.60	1.95	5.63	5.58	1.61	1.56	1.61	1.05	0.40	2.90



Alt Model-Shift Uniqueness Test

007902097-02, $P = 382.496941$ Days, $E = 105.995125$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.2	3.67	3.54	3.96	5.62	3.56	0.77	30.7	30.3	0.13	-0.28	11.9	0.93	0.10	10.6



Stellar Parameters For KIC 007902097

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5831^{+145}_{-159}	$4.539^{+0.046}_{-0.196}$	$-0.160^{+0.300}_{-0.300}$	$0.874^{+0.240}_{-0.080}$	$0.963^{+0.108}_{-0.120}$	$2.032^{+0.394}_{-1.038}$
	+2%/-3%	+1%/-4%	+188%/-188%	+27%/-9%	+11%/-12%	+19%/-51%
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 007902097-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-408 ± 34	$2.95^{+2.37}_{-1.89}$	341^{+23}_{-15}	4931^{+3409}_{-992}	$26251^{+177625}_{-18368}$
Alt.	-71 ± 19	$3.01^{+2.43}_{-1.94}$	341^{+22}_{-15}	3556^{+1645}_{-603}	4347^{+30682}_{-3077}

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

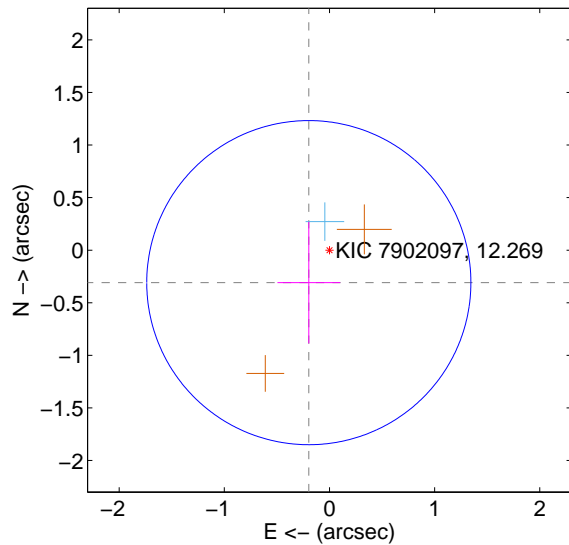
Supplemental centroid analysis for 007902097-02. Kepler magnitude: 12.27. Transit SNR 7.16

There are 1 quarters with good PRF difference image offsets

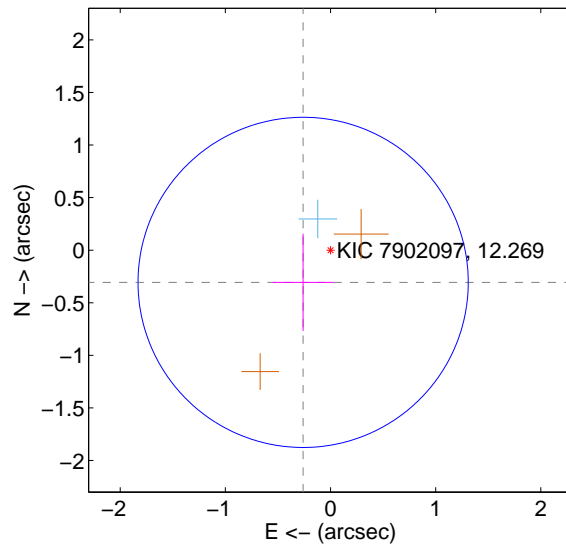
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.366 ± 0.514	0.71	0.196 ± 0.299	-0.309 ± 0.579
PRF-fit source offset from KIC position	0.402 ± 0.524	0.77	0.260 ± 0.289	-0.306 ± 0.462
photometric centroid source offset	0.63 ± 0.43	1.48	0.40 ± 0.42	0.49 ± 0.44

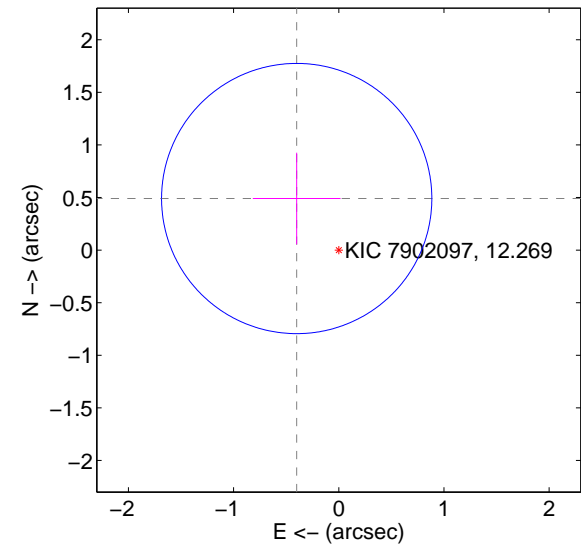
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

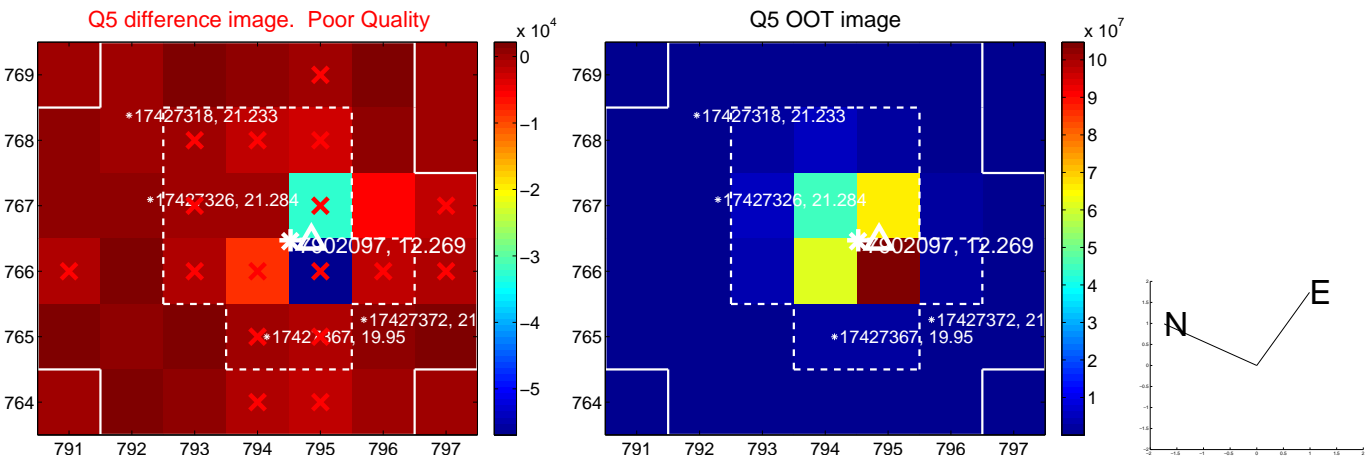


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

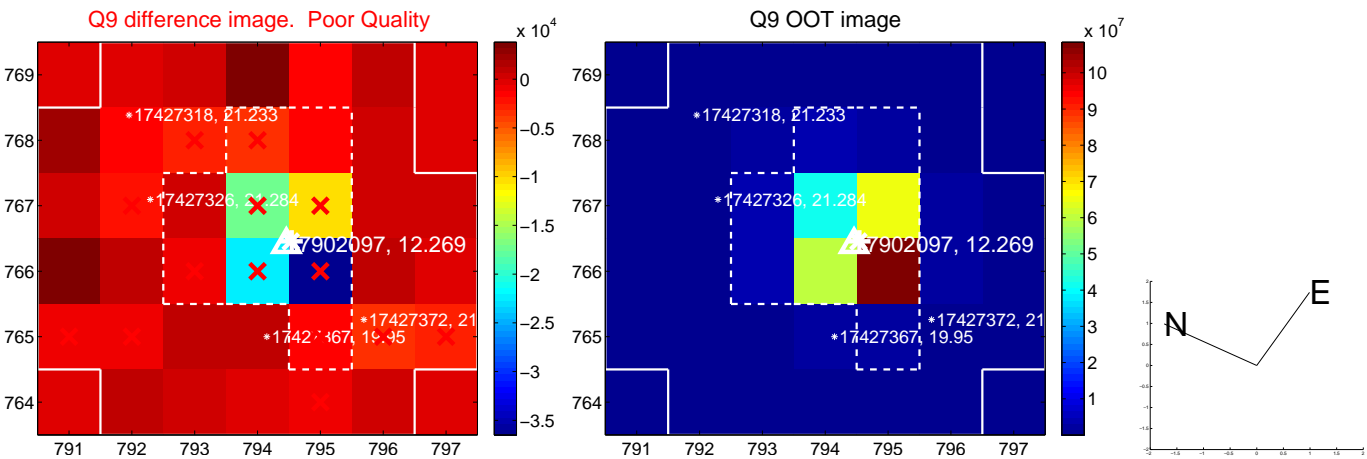
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



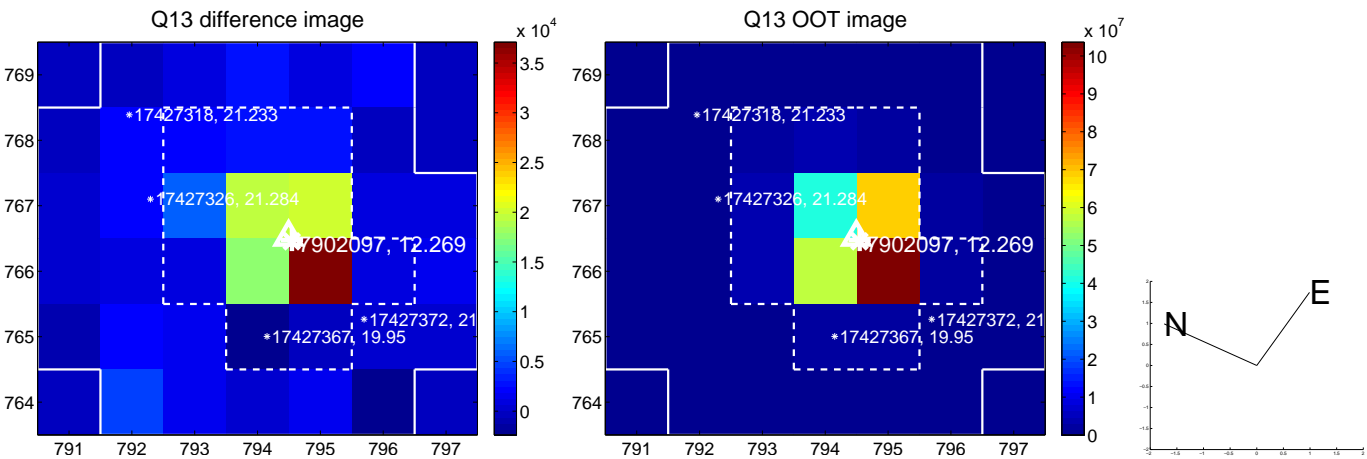
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



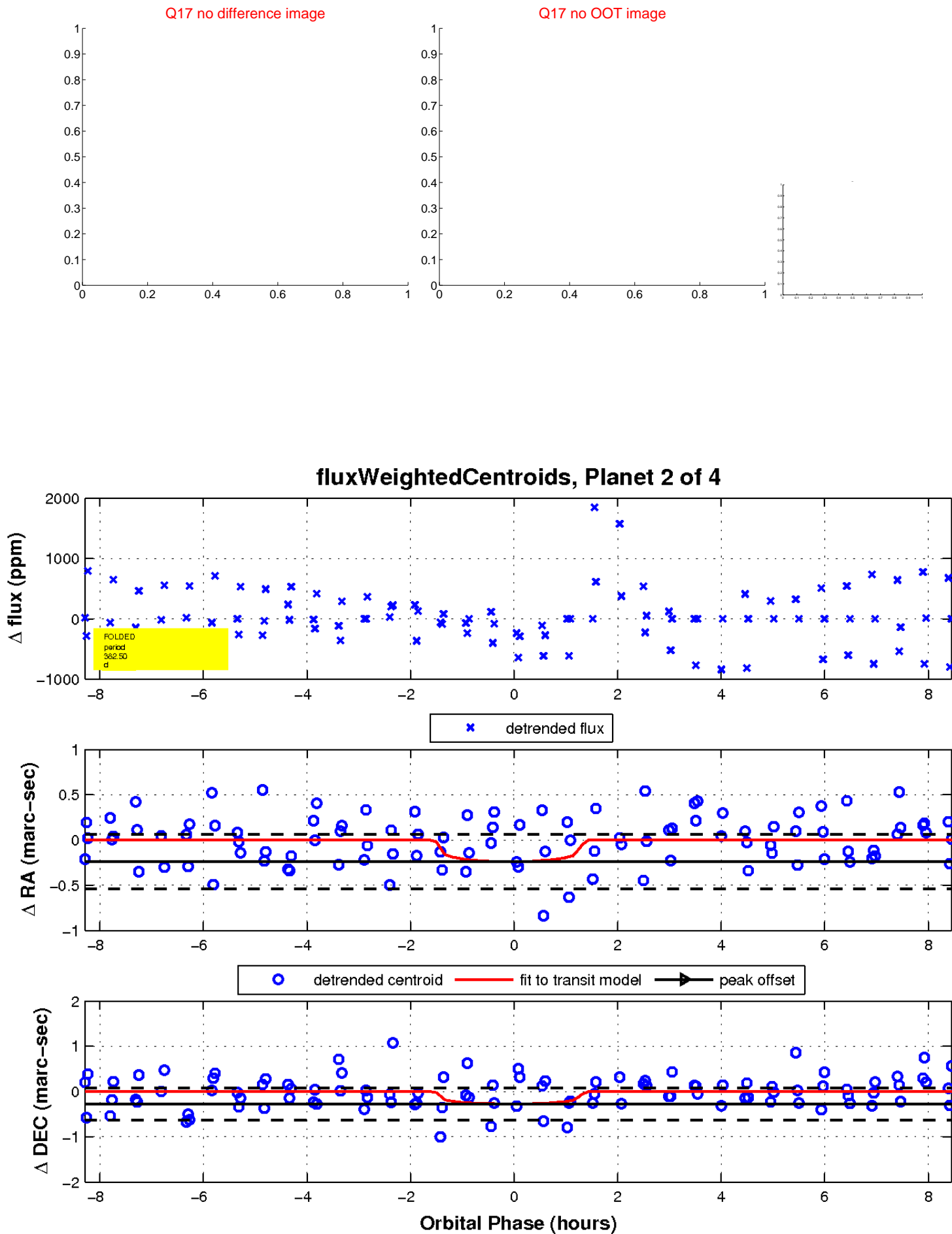
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

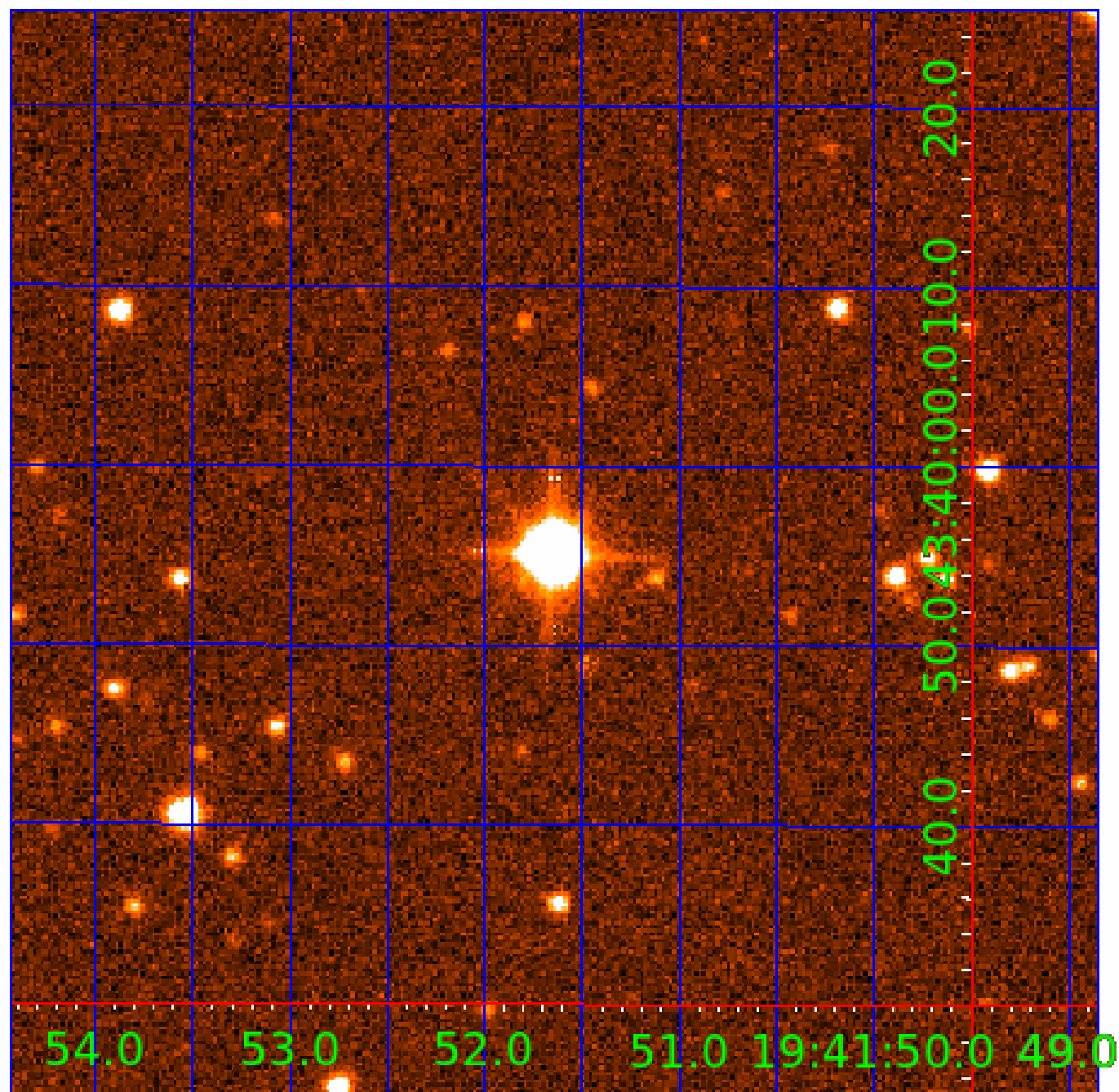


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007902097

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})
007902097-01	OBS	No	376.314696	153.202488	501.7	3.831	14.1	7.7	0.87	5831	2.07	0.78
007902097-02	OBS	No	382.498256	488.499181	580.9	2.858	11.1	7.2	0.87	5831	2.24	0.76
007902097-03	OBS	No	394.706986	357.748730	400.6	4.083	13.7	6.7	0.87	5831	1.89	0.73
007902097-04	OBS	No	575.703282	239.981286	564.7	3.528	13.4	7.0	0.87	5831	2.70	0.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007902097-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007902097-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

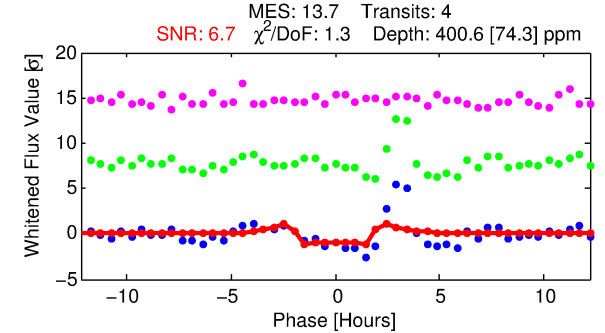
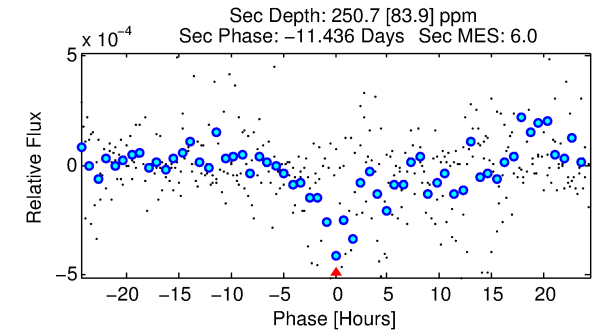
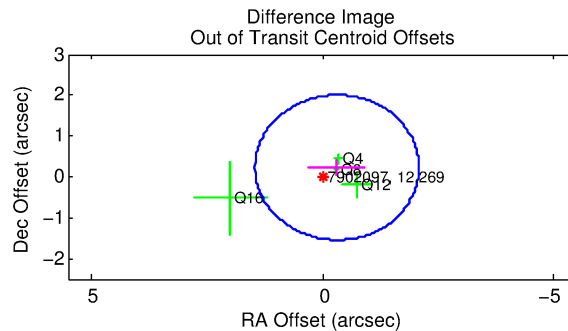
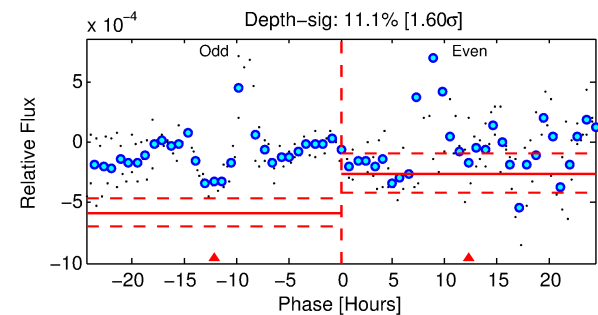
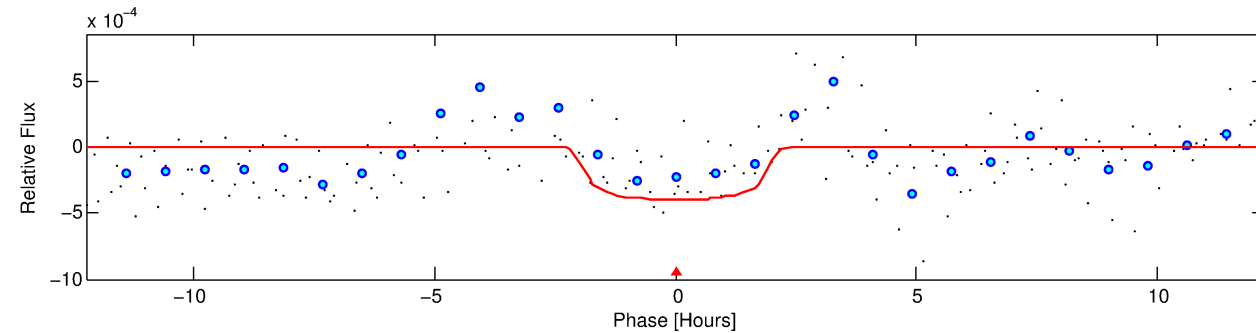
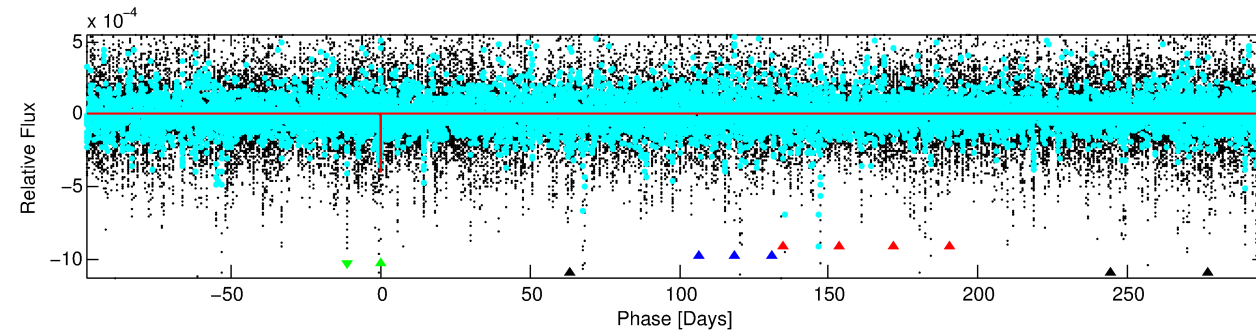
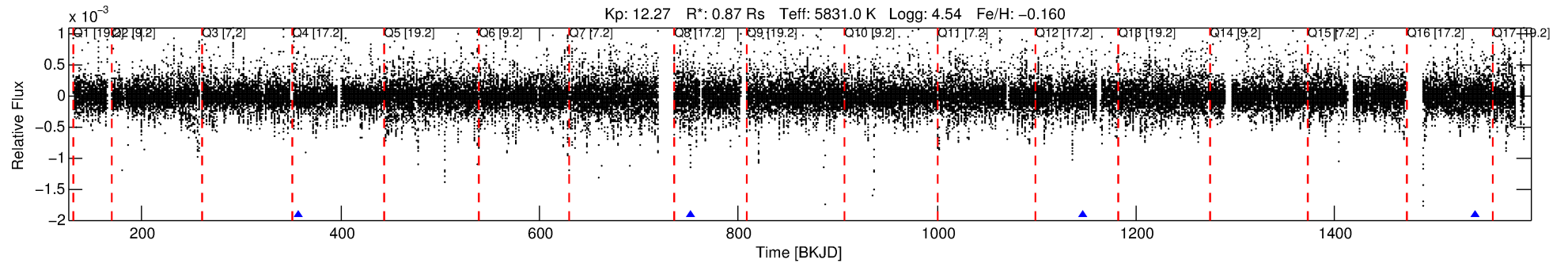
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007902097-03

No Significant Match Found

DV One-Page Summary

KIC: 7902097 Candidate: 3 of 4 Period: 394.707 d



DV Fit Results:

Period = 394.70699 [0.00338] d
Epoch = 357.7487 [0.0061] BKJD
Rp/R* = 0.0198 [0.0161]
a/R* = 523.34 [1947.82]
b = 0.73 [2.37]
Seff = 0.73 [0.27]
Teq = 236 [22] K
Rp = 1.89 [1.62] Re
a = 1.0405 [0.2465] AU
Ag = 41845.23 [70905.39] [0.59 σ]
Teffp = 5214 [2165] K [2.30 σ]

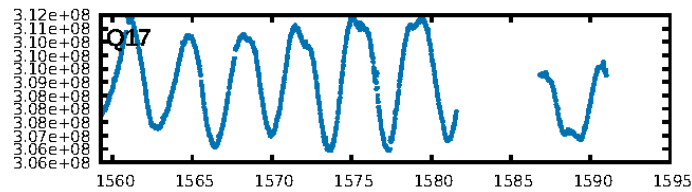
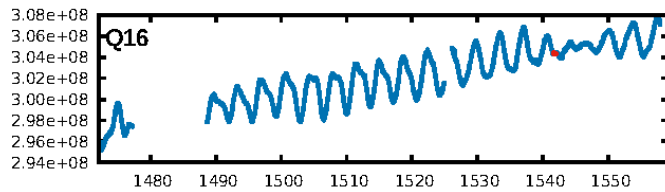
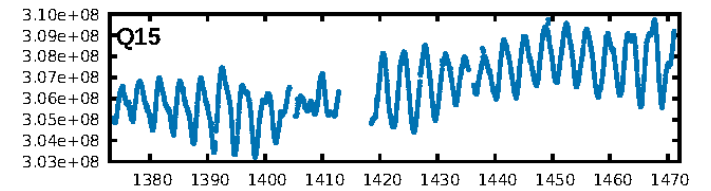
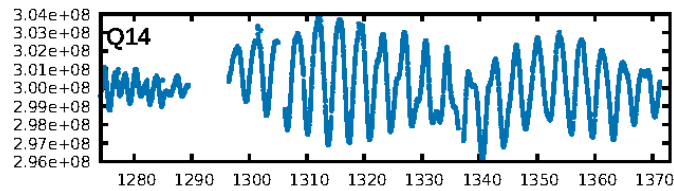
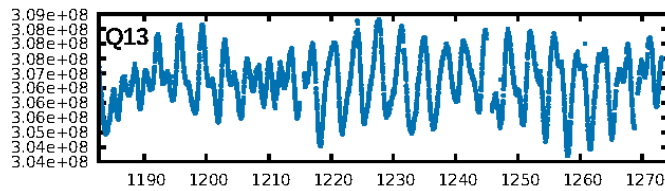
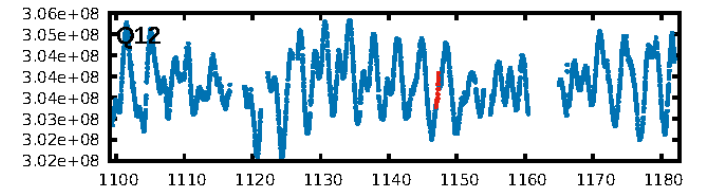
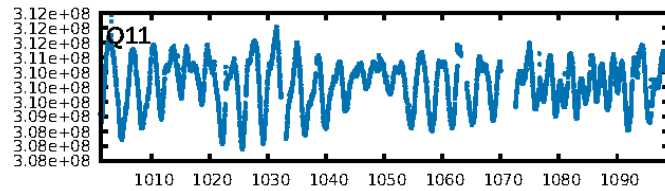
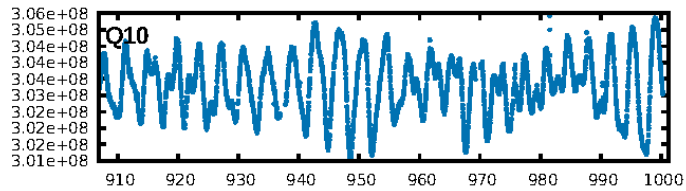
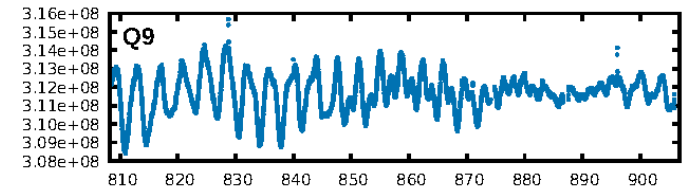
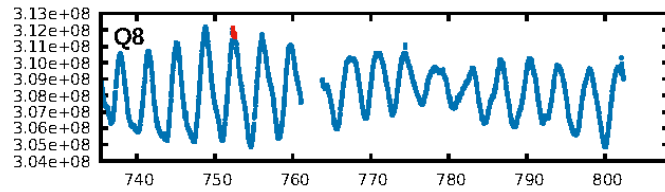
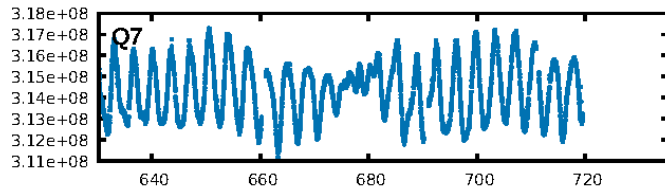
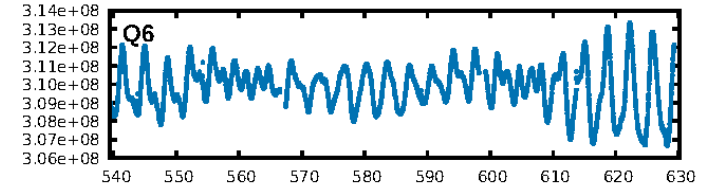
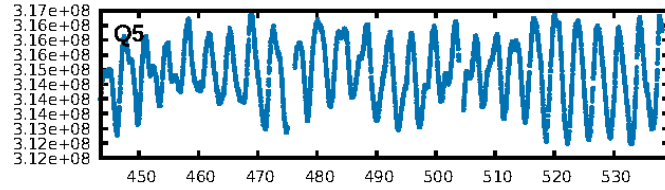
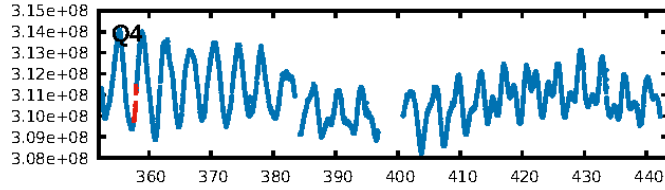
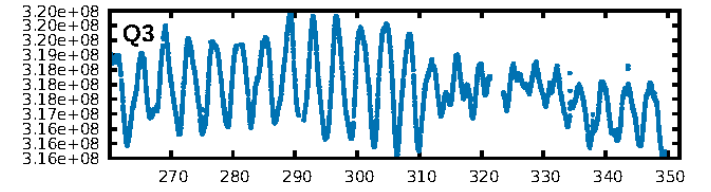
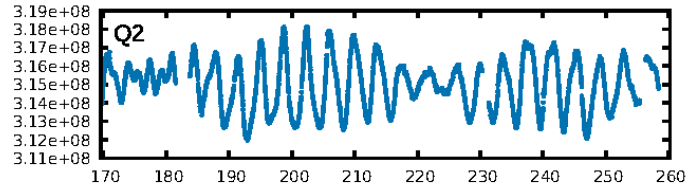
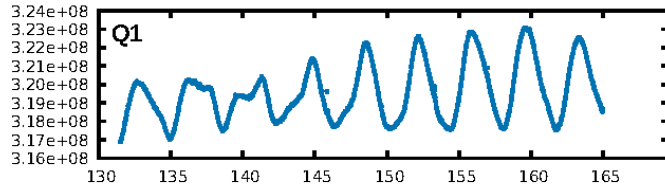
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.79 σ]
LongPeriod-sig: 100.0% [805.05 σ]
ModelChiSquare2-sig: 5.2%
ModelChiSquareGof-sig: 84.6%
Bootstrap-pfa: 4.30e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.8071
Centroid-sig: 9.2%
Centroid-so: 0.708 arcsec [1.34 σ]
OotOffset-rm: 0.389 arcsec [0.66 σ]
KicOffset-rm: 0.422 arcsec [1.18 σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

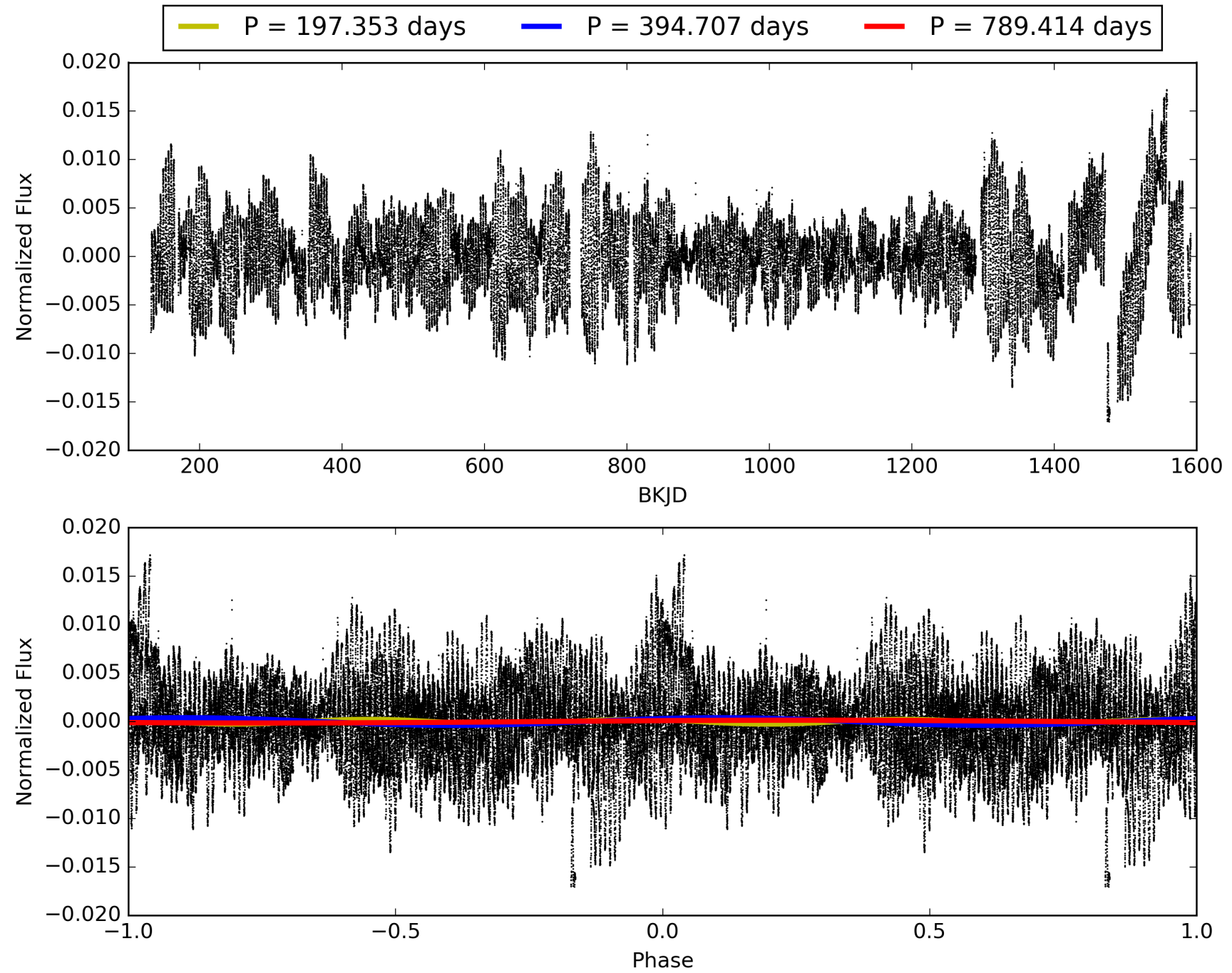
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:18:31 Z

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

TCE 007902097-03, PDC Light Curves

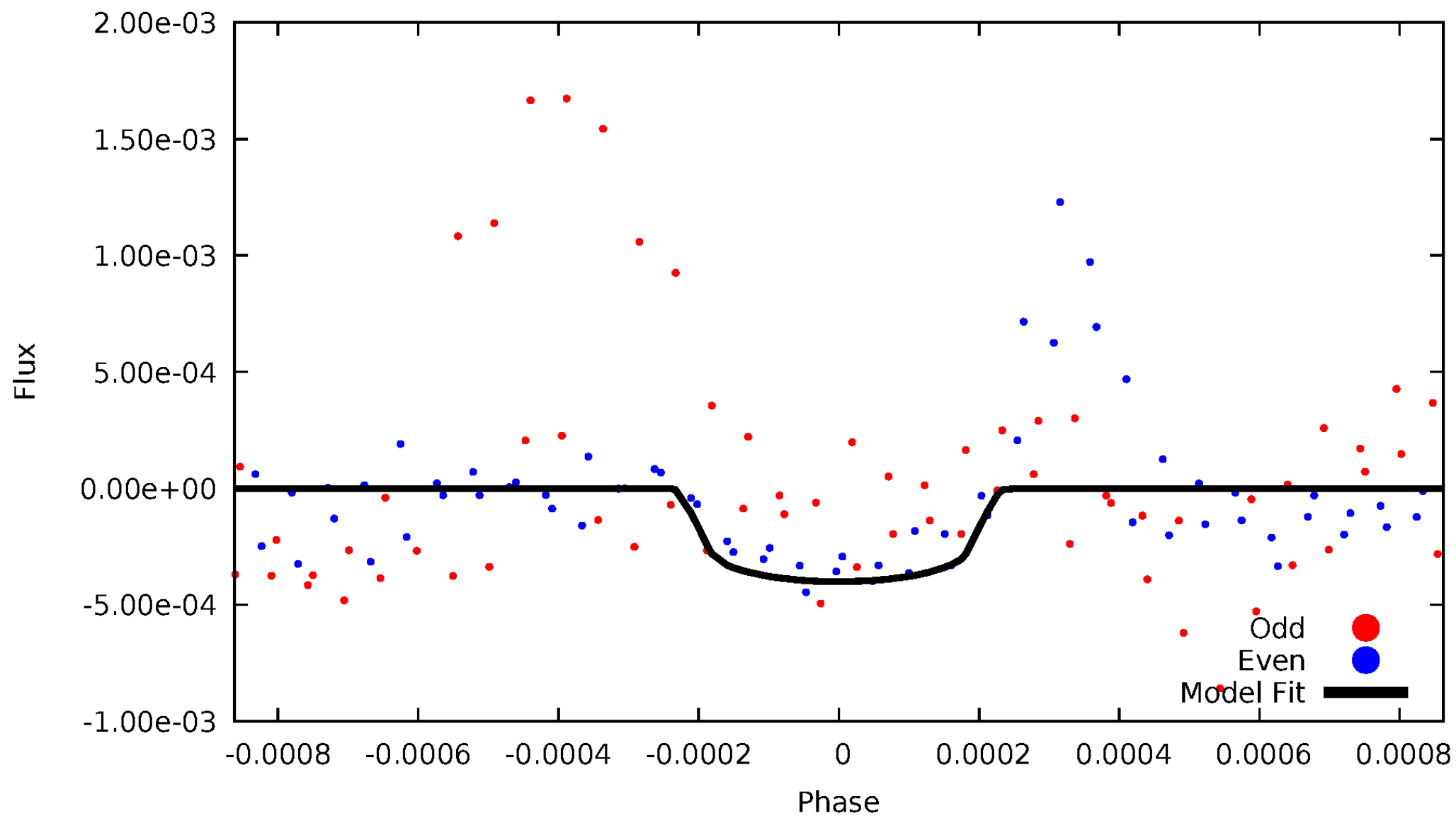


TCE 007902097-03



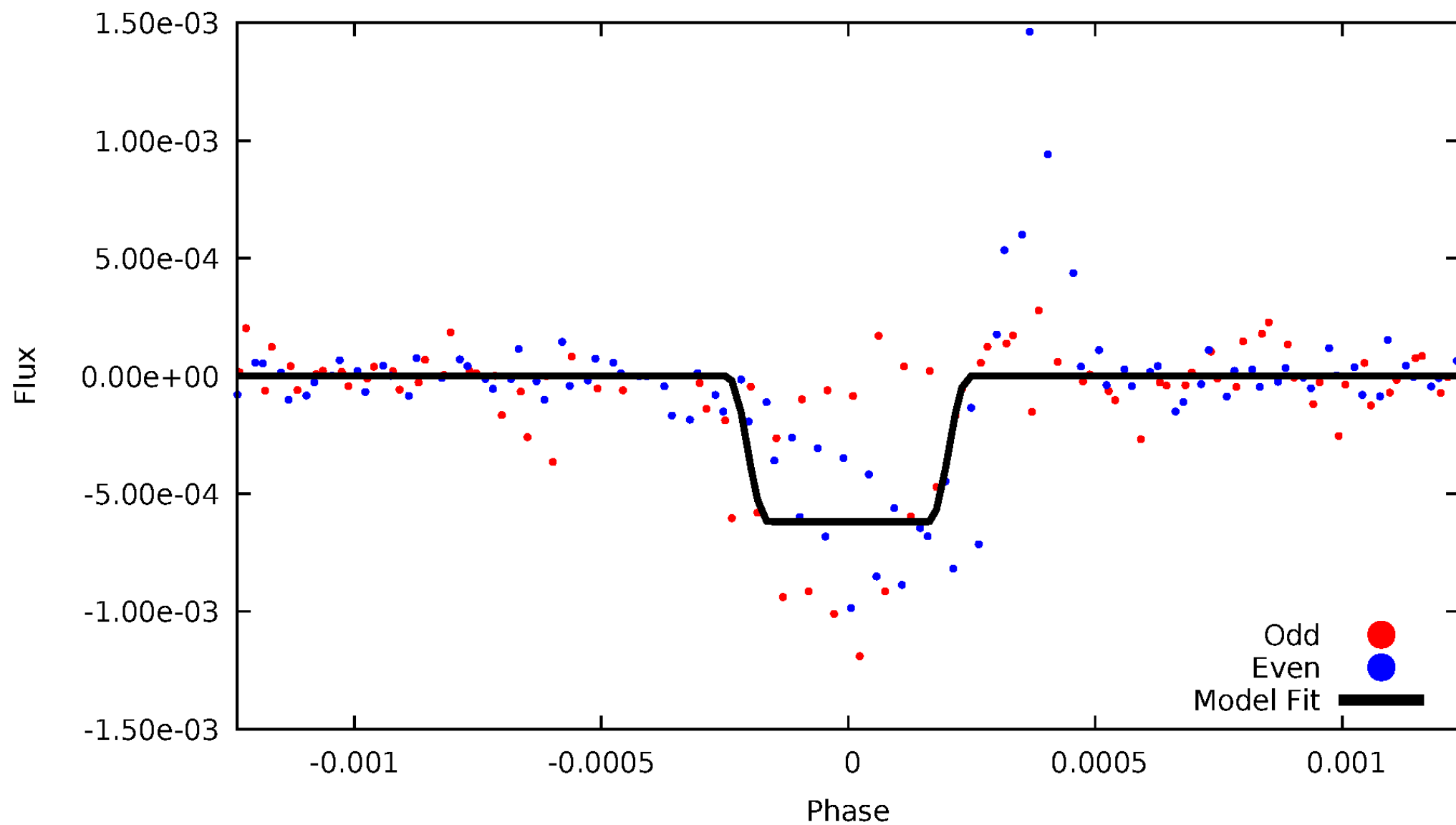
DV Odd/Even

TCE 007902097-03

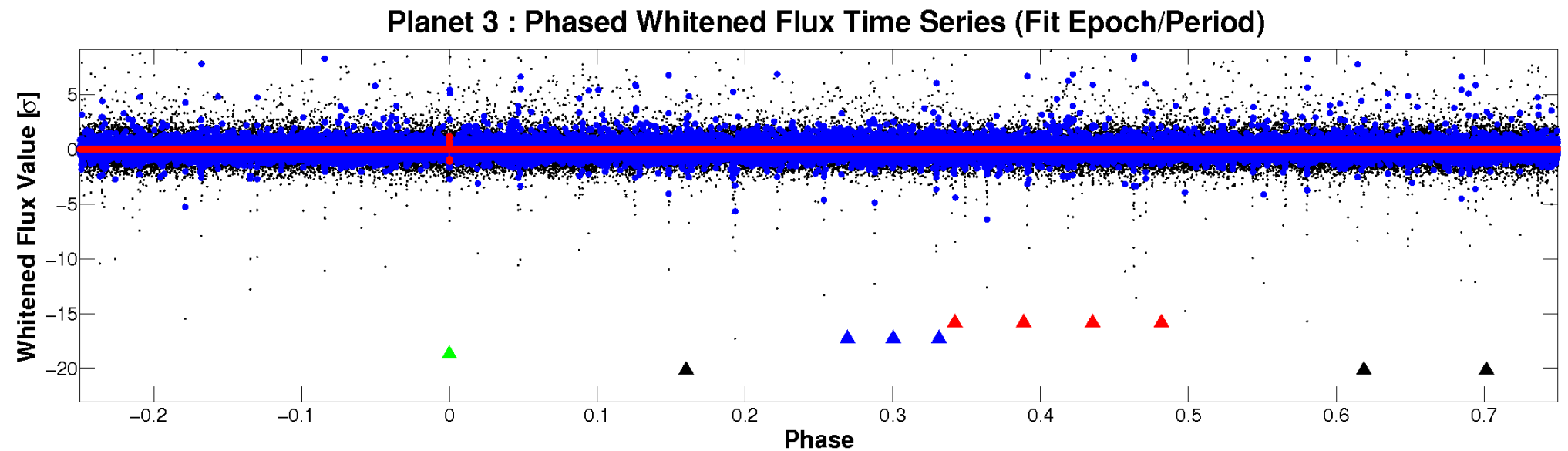
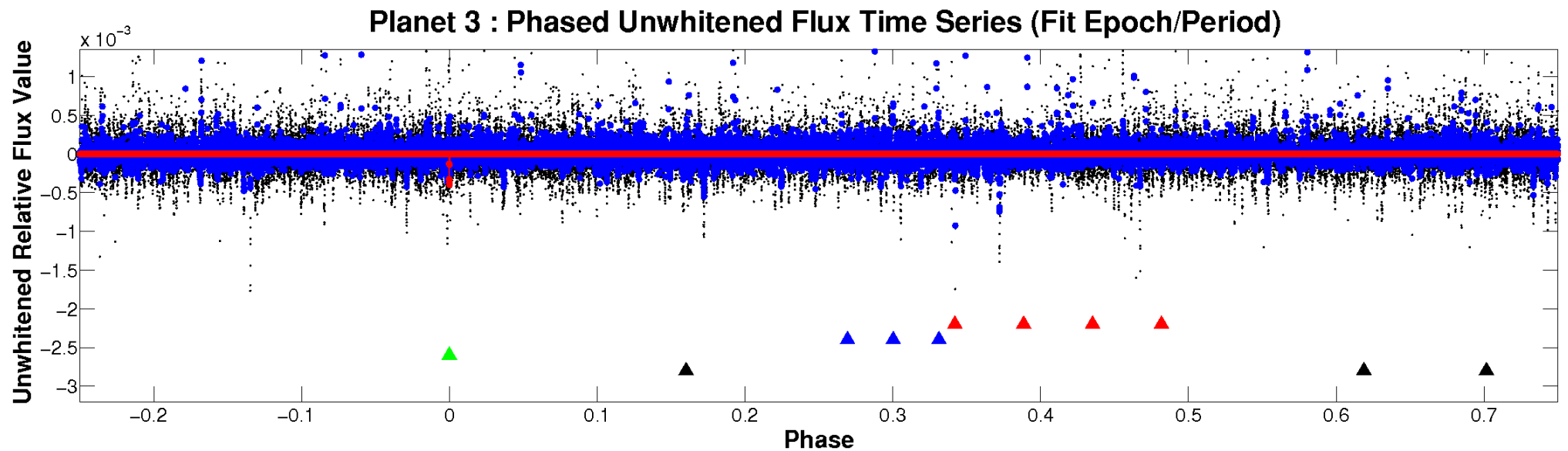


ALT Odd/Even

TCE 007902097-03

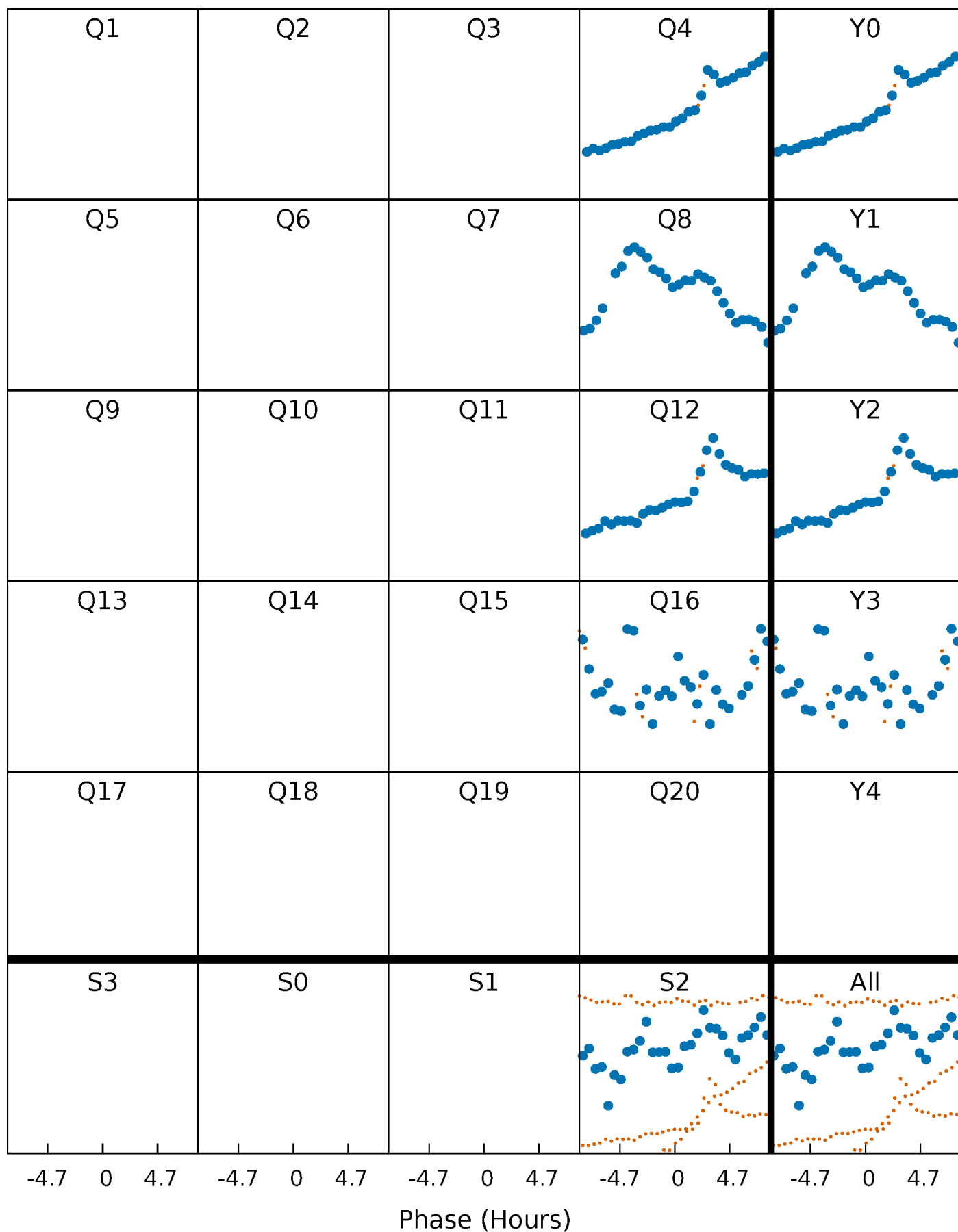


Non-Whitened Vs. Whitened Light Curve



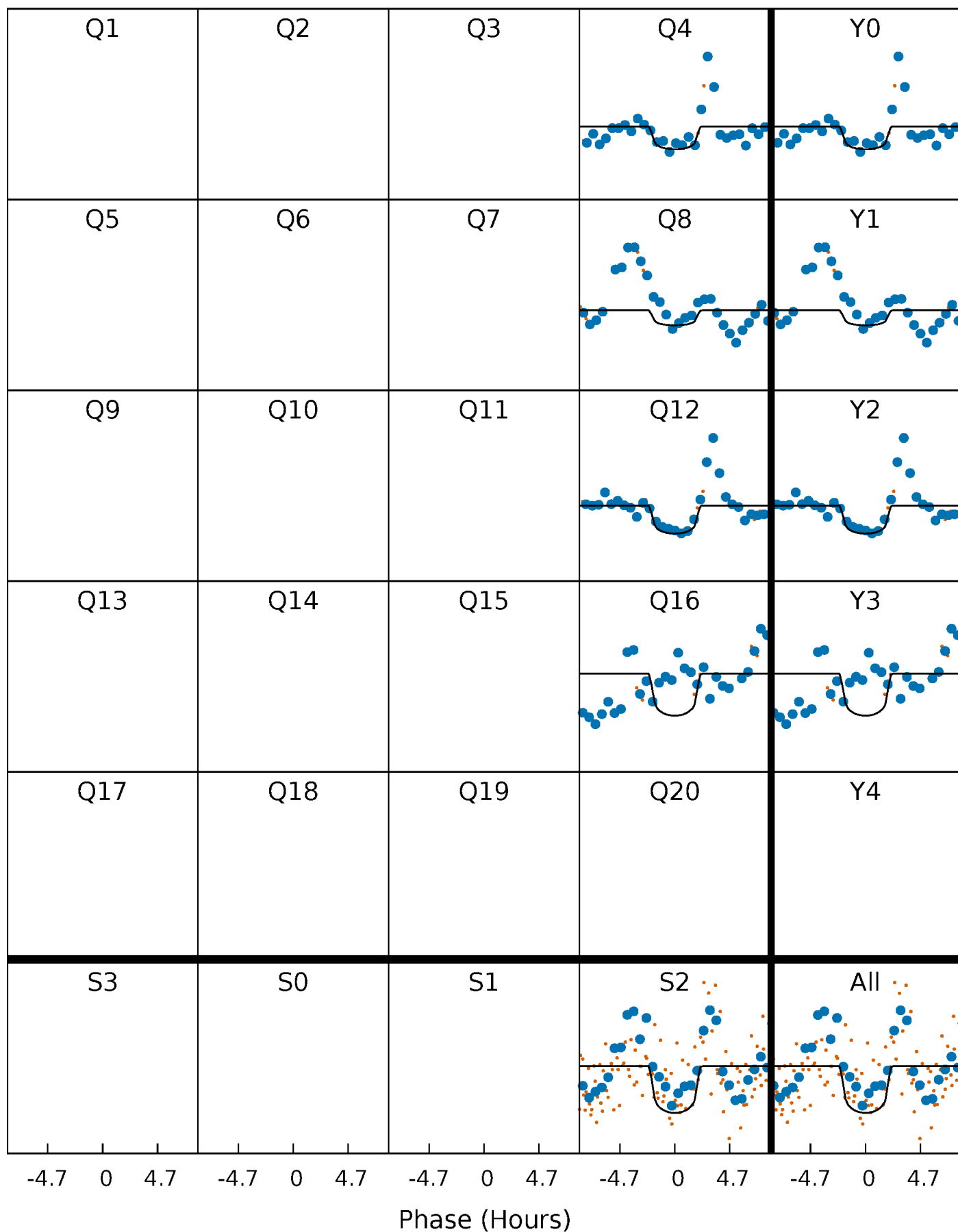
PDC Quarter-Phased Transit Curves

TCE 007902097-03 $P=394.706986$ Days $T_0=357.748730$ (BKJD)



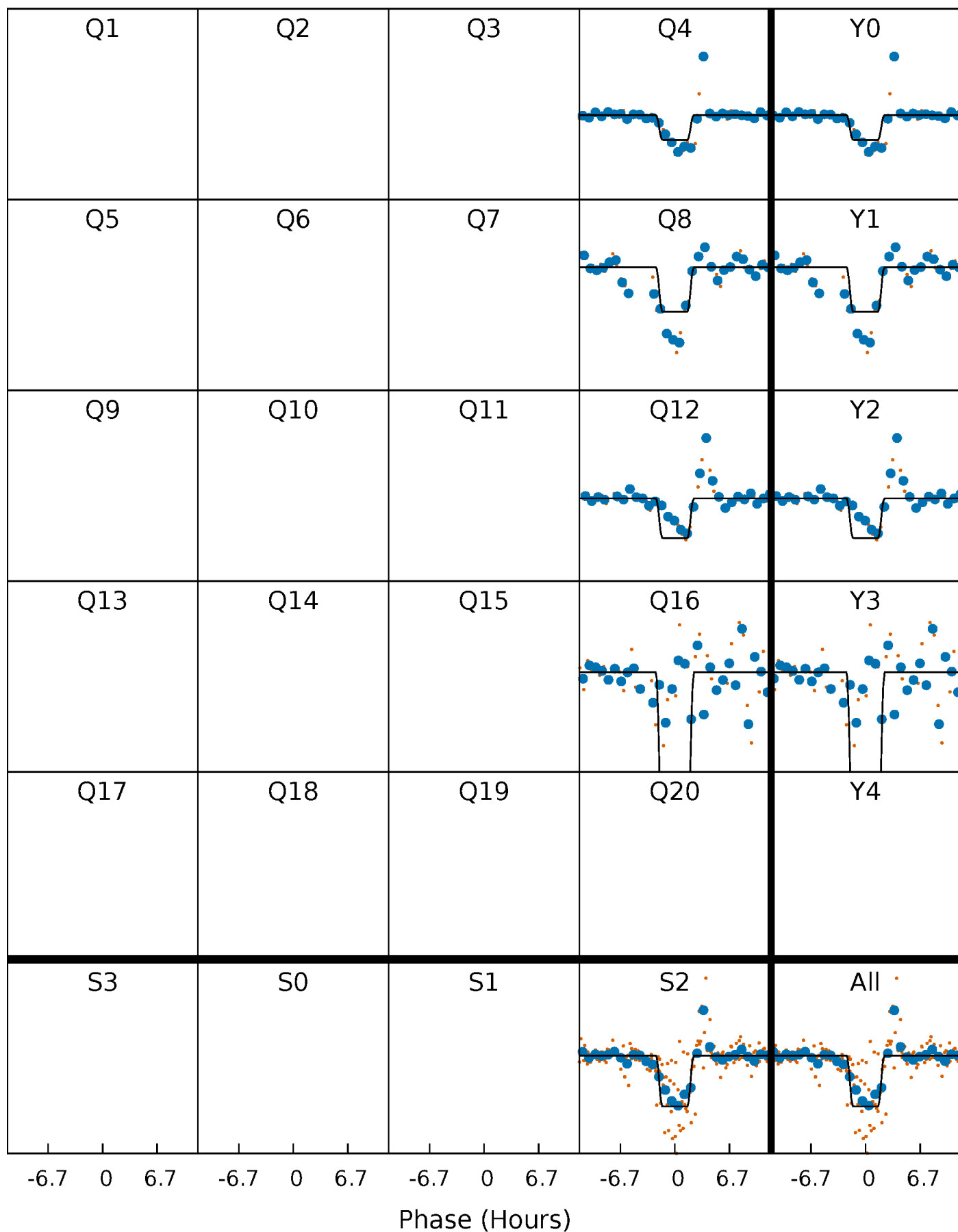
DV Quarter-Phased Transit Curves

TCE 007902097-03 $P=394.706986$ Days $T_0=357.748730$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

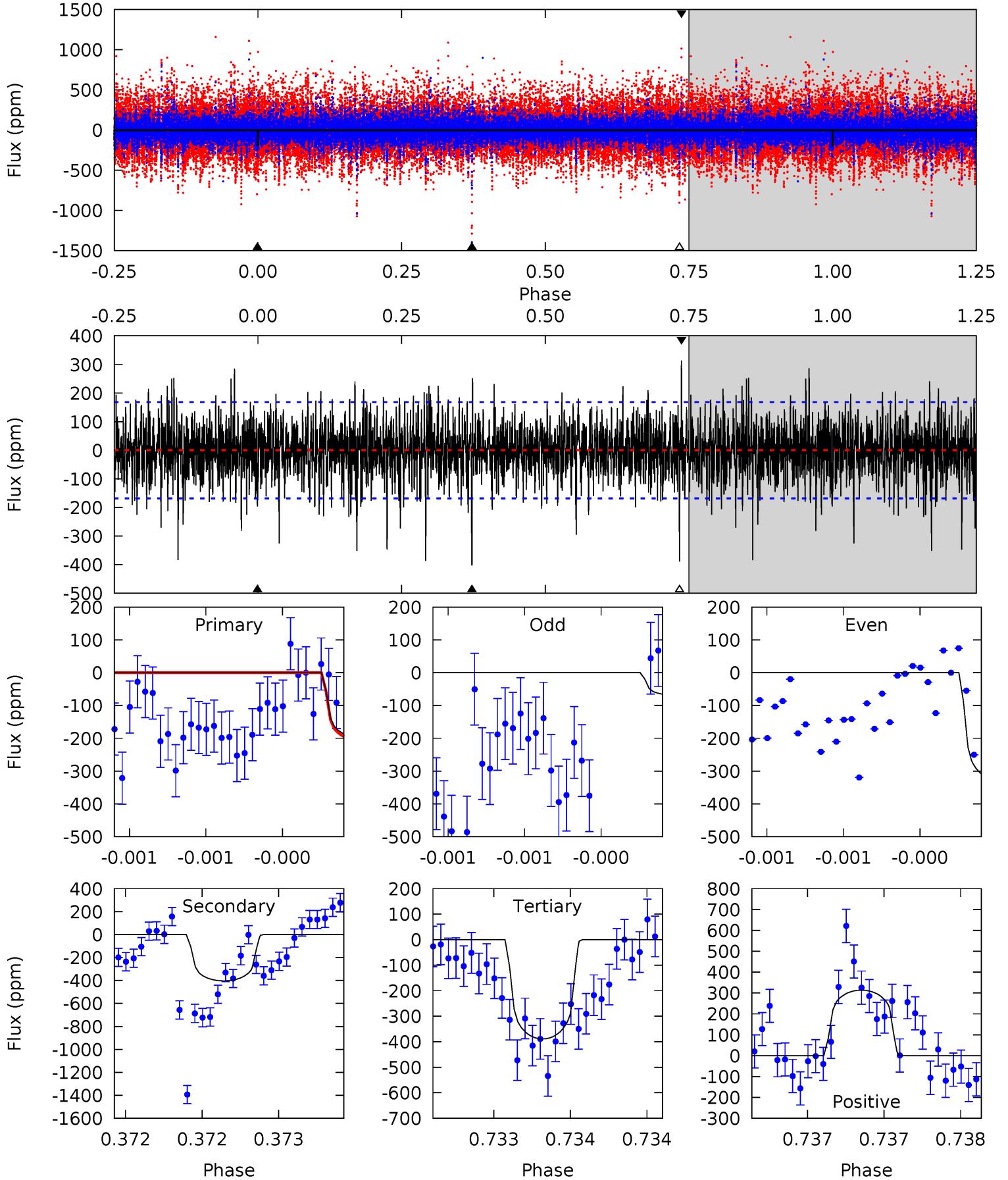
TCE 007902097-03 P=394.708267 Days $T_0=357.728199$ (BKJD)



DV Model-Shift Uniqueness Test

007902097-03, P = 394.706986 Days, E = 357.748730 Days

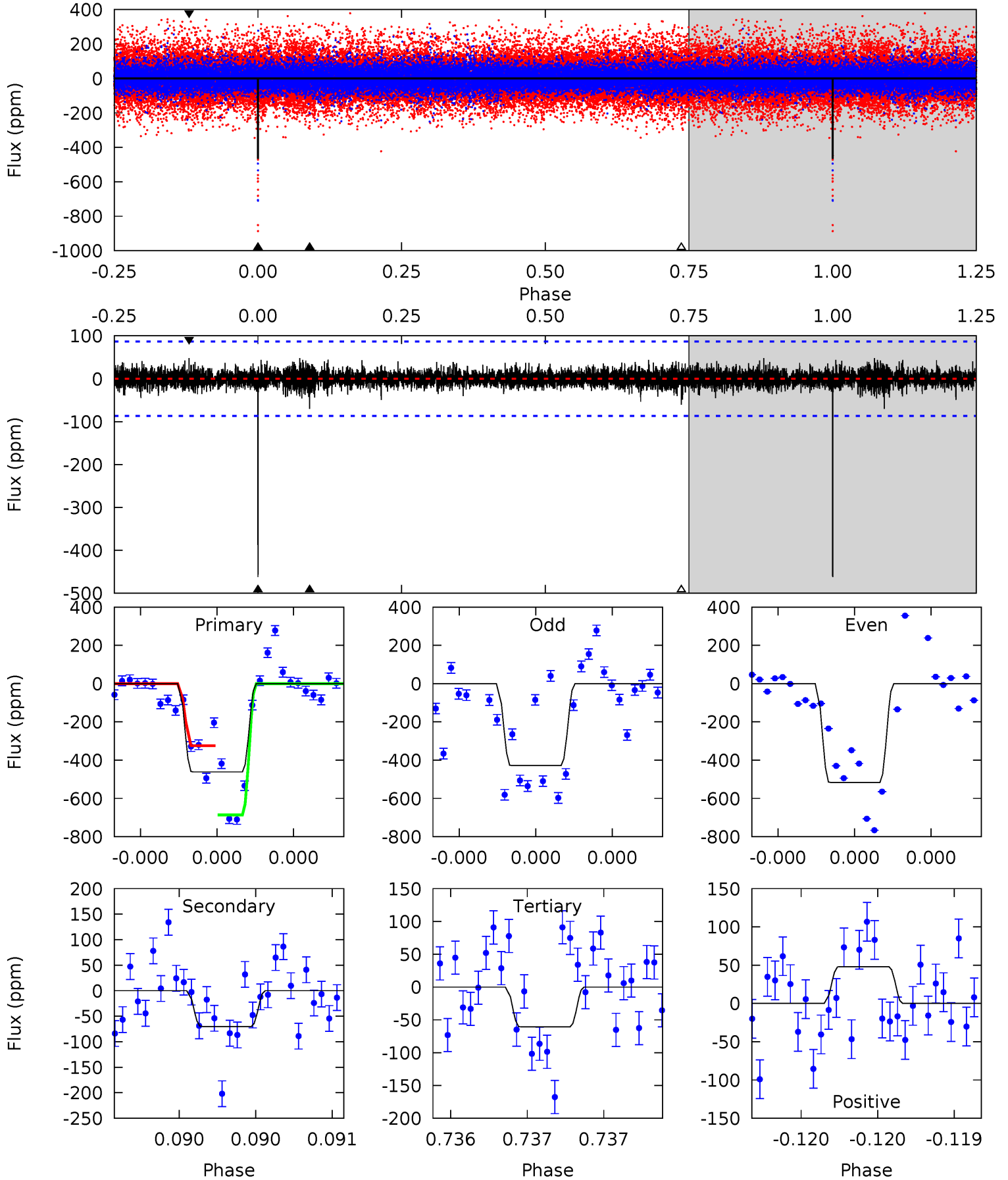
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.50	13.4	12.9	10.4	5.58	3.49	2.45	-6.36	-3.87	0.49	2.98	3.92	0.93	0.44	0.28



Alt Model-Shift Uniqueness Test

007902097-03, P = 394.708267 Days, E = 357.728199 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.7	4.50	3.89	3.08	5.58	3.49	0.72	25.8	26.6	0.61	1.41	3.08	0.90	0.09	11.4



Stellar Parameters For KIC 007902097

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5831^{+145}_{-159}	$4.539^{+0.046}_{-0.196}$	$-0.160^{+0.300}_{-0.300}$	$0.874^{+0.240}_{-0.080}$	$0.963^{+0.108}_{-0.120}$	$2.032^{+0.394}_{-1.038}$
	+2%/-3%	+1%/-4%	+188%/-188%	+27%/-9%	+11%/-12%	+19%/-51%
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 007902097-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-404 ± 30	$2.19^{+1.53}_{-1.44}$	336^{+20}_{-14}	5565^{+4949}_{-1089}	$48242^{+389759}_{-31165}$
Alt.	-70 ± 16	$2.66^{+1.60}_{-1.50}$	336^{+21}_{-15}	3689^{+1304}_{-538}	5796^{+24007}_{-3703}

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 $A_{obs} \gg 1.0$

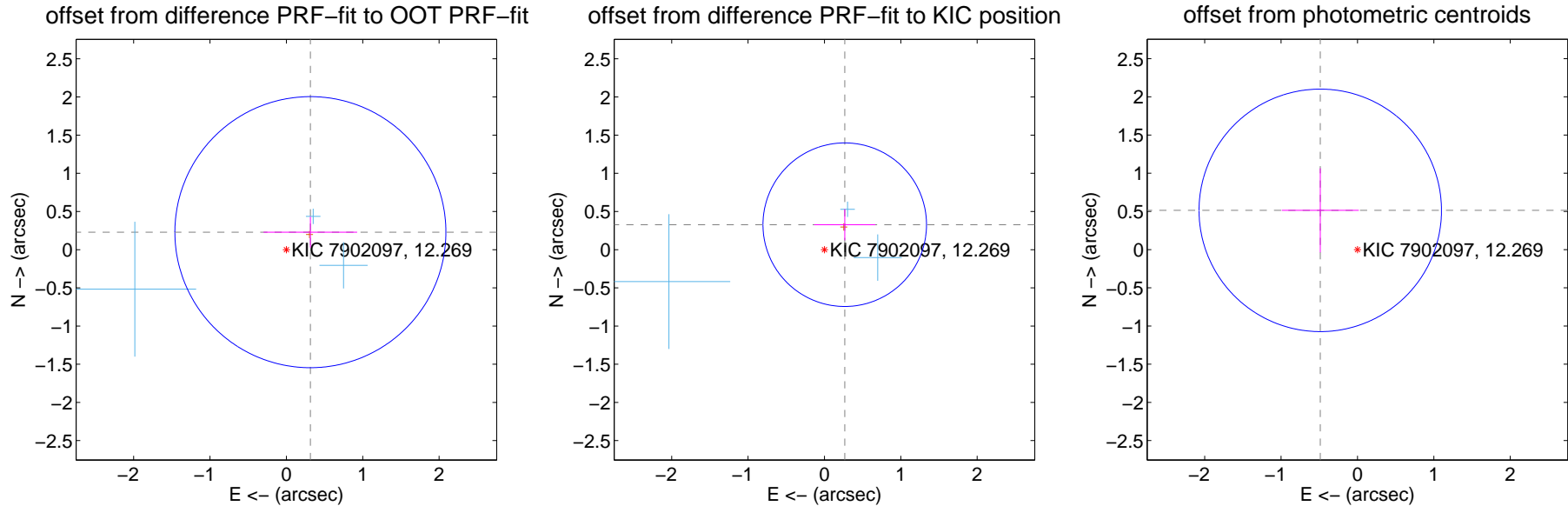
DV Centroid Data

Supplemental centroid analysis for 007902097-03. Kepler magnitude: 12.27. Transit SNR 6.72

There are 3 quarters with good PRF difference image offsets

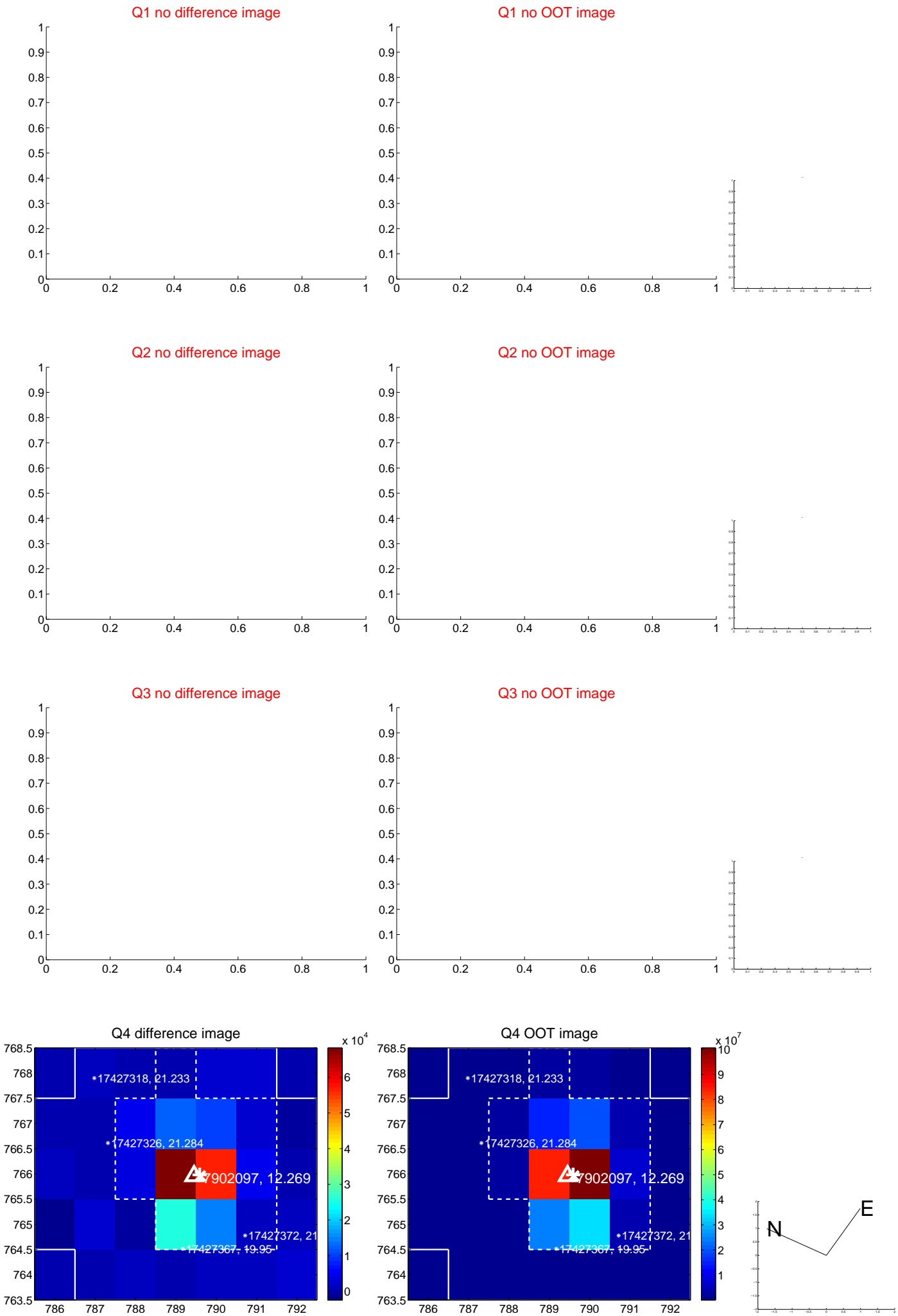
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.389 ± 0.592	0.66	-0.315 ± 0.613	0.229 ± 0.203
PRF-fit source offset from KIC position	0.422 ± 0.357	1.18	-0.266 ± 0.399	0.327 ± 0.204
photometric centroid source offset	0.71 ± 0.53	1.34	0.49 ± 0.50	0.51 ± 0.55

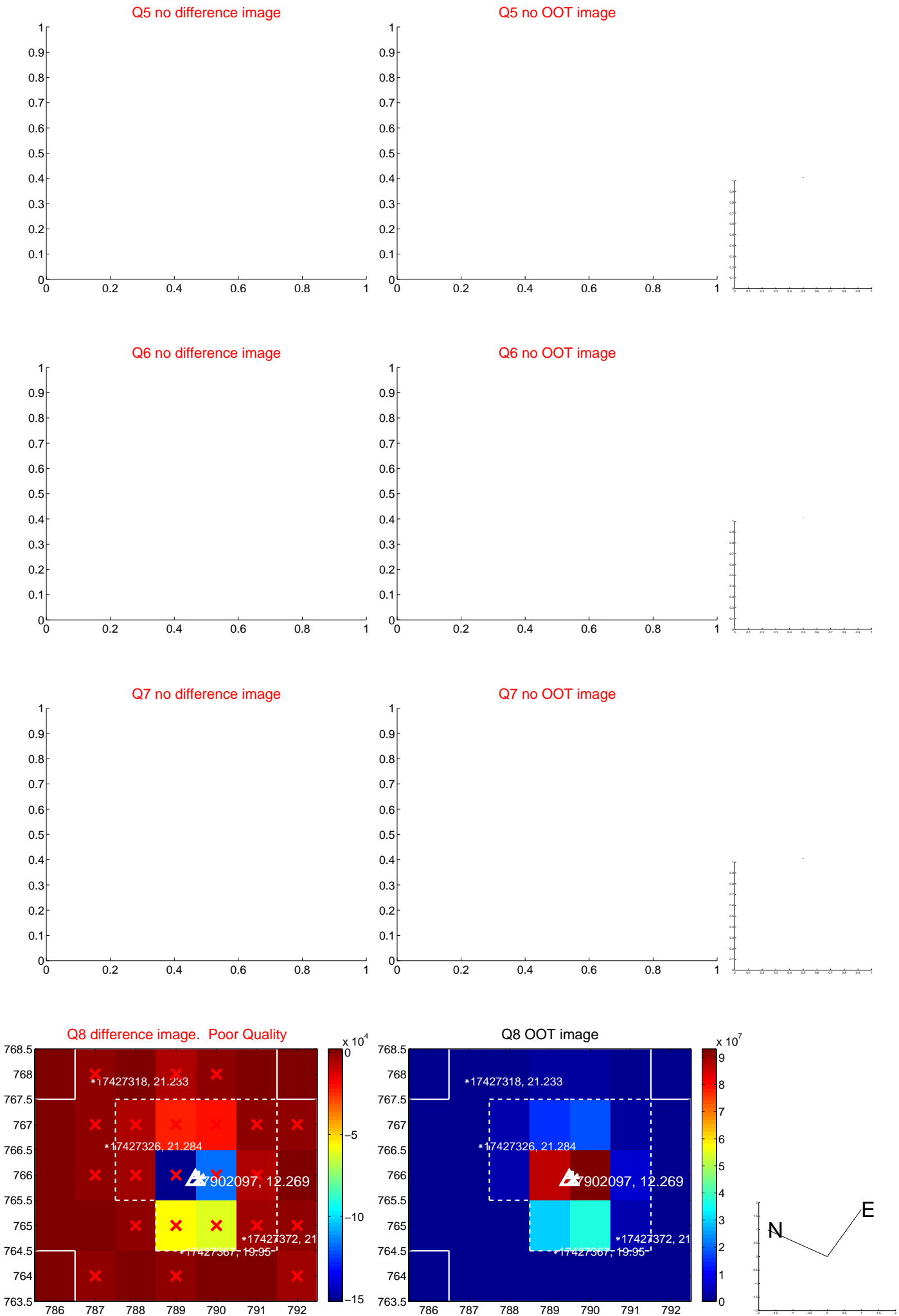


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

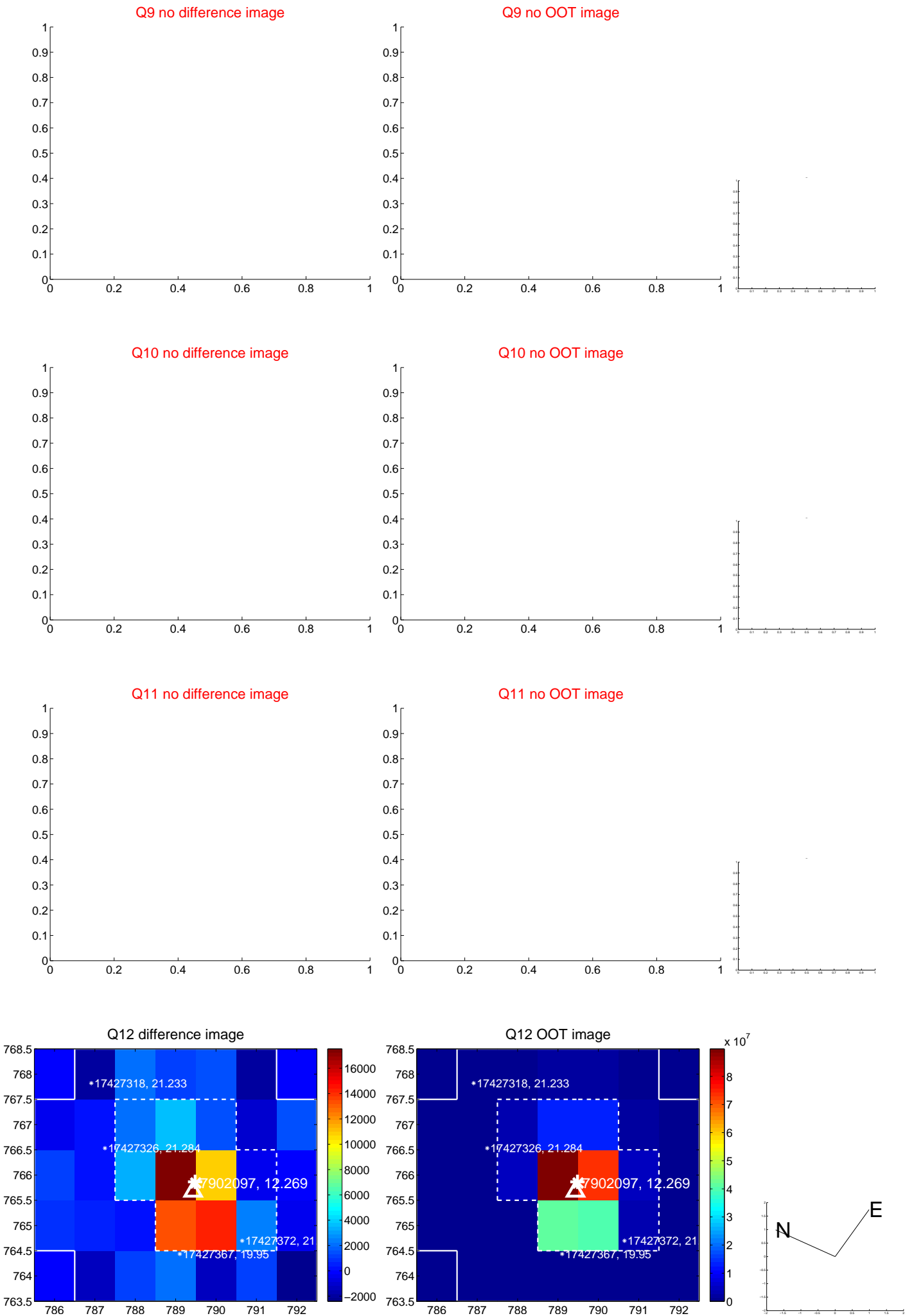
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



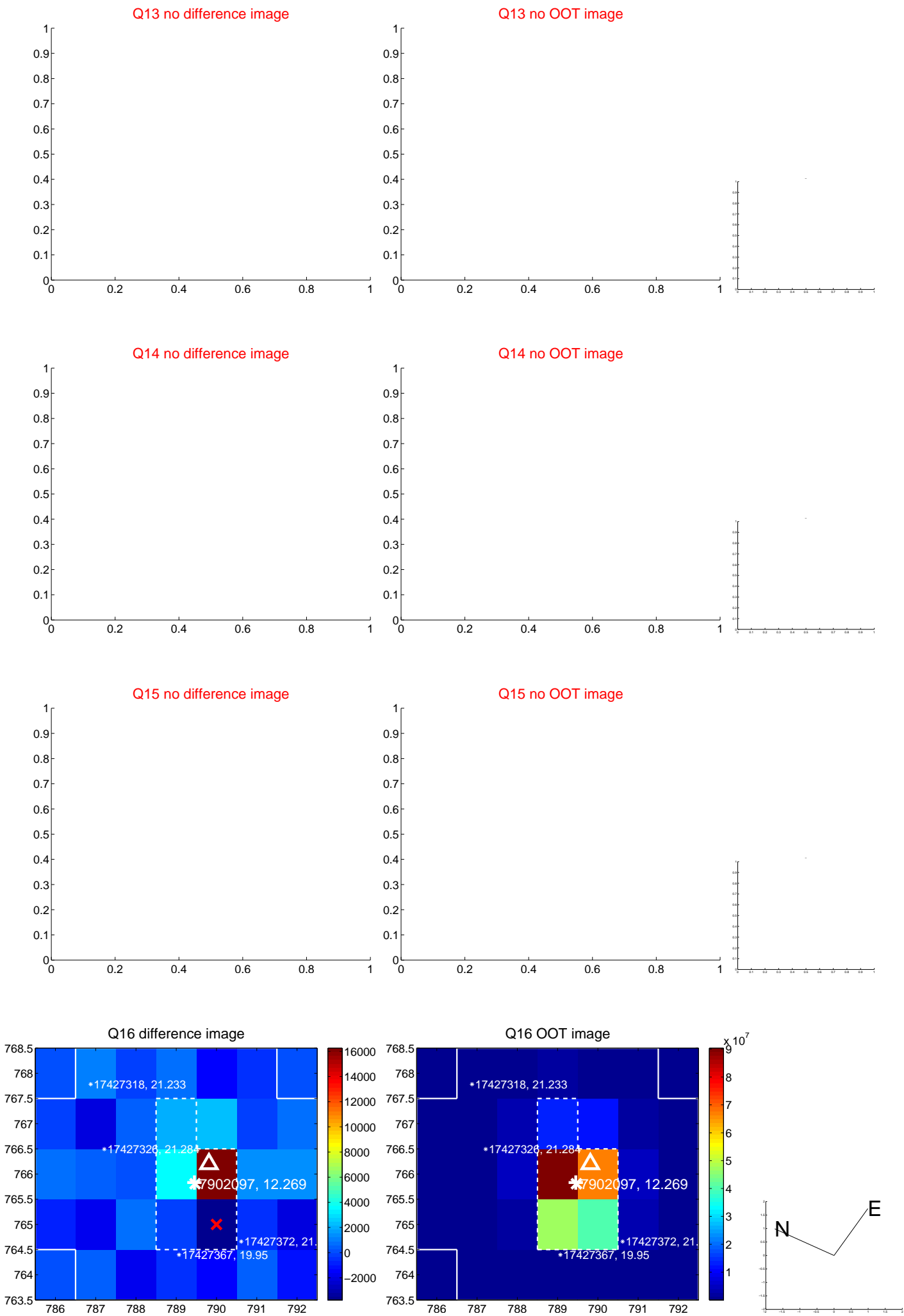
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



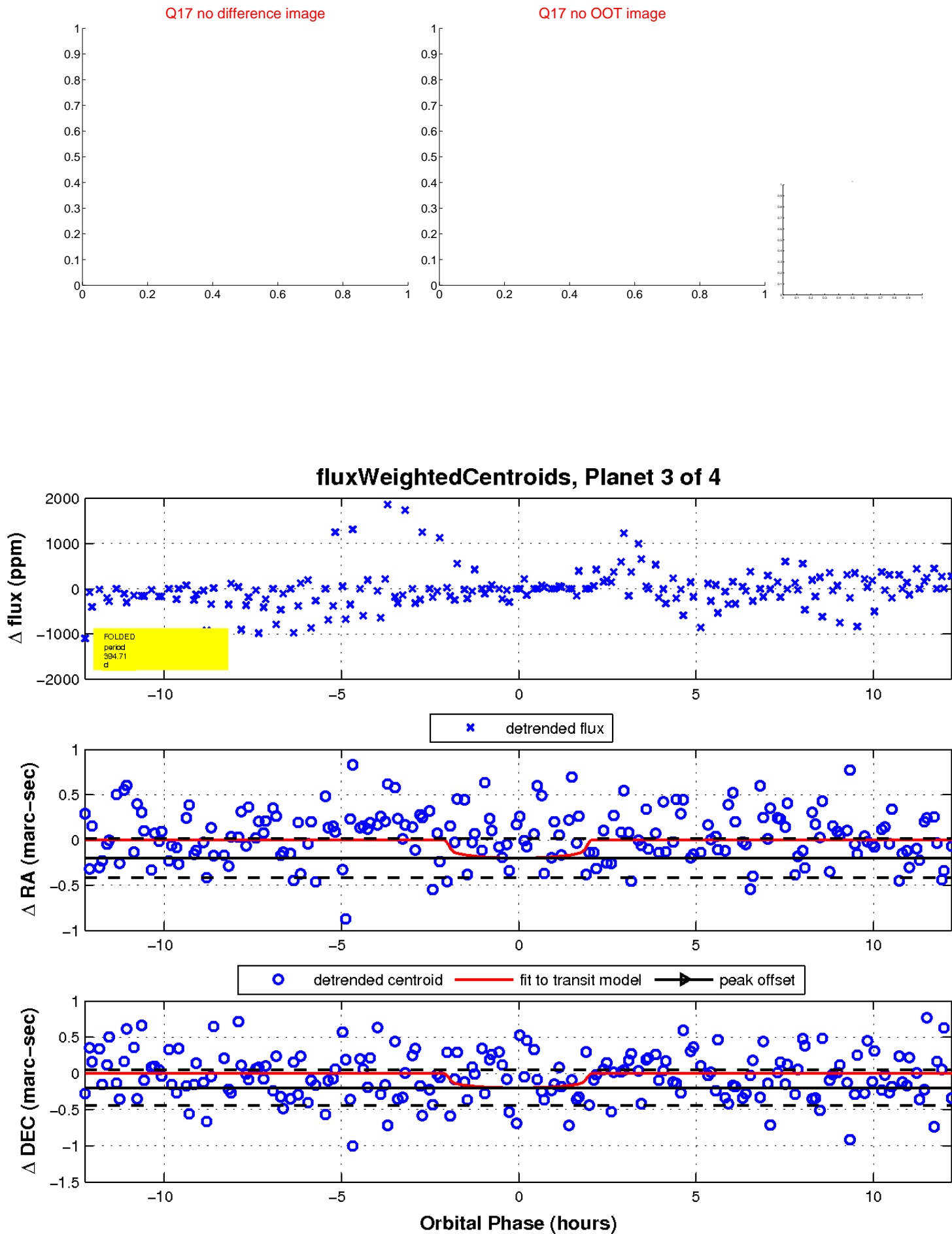
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

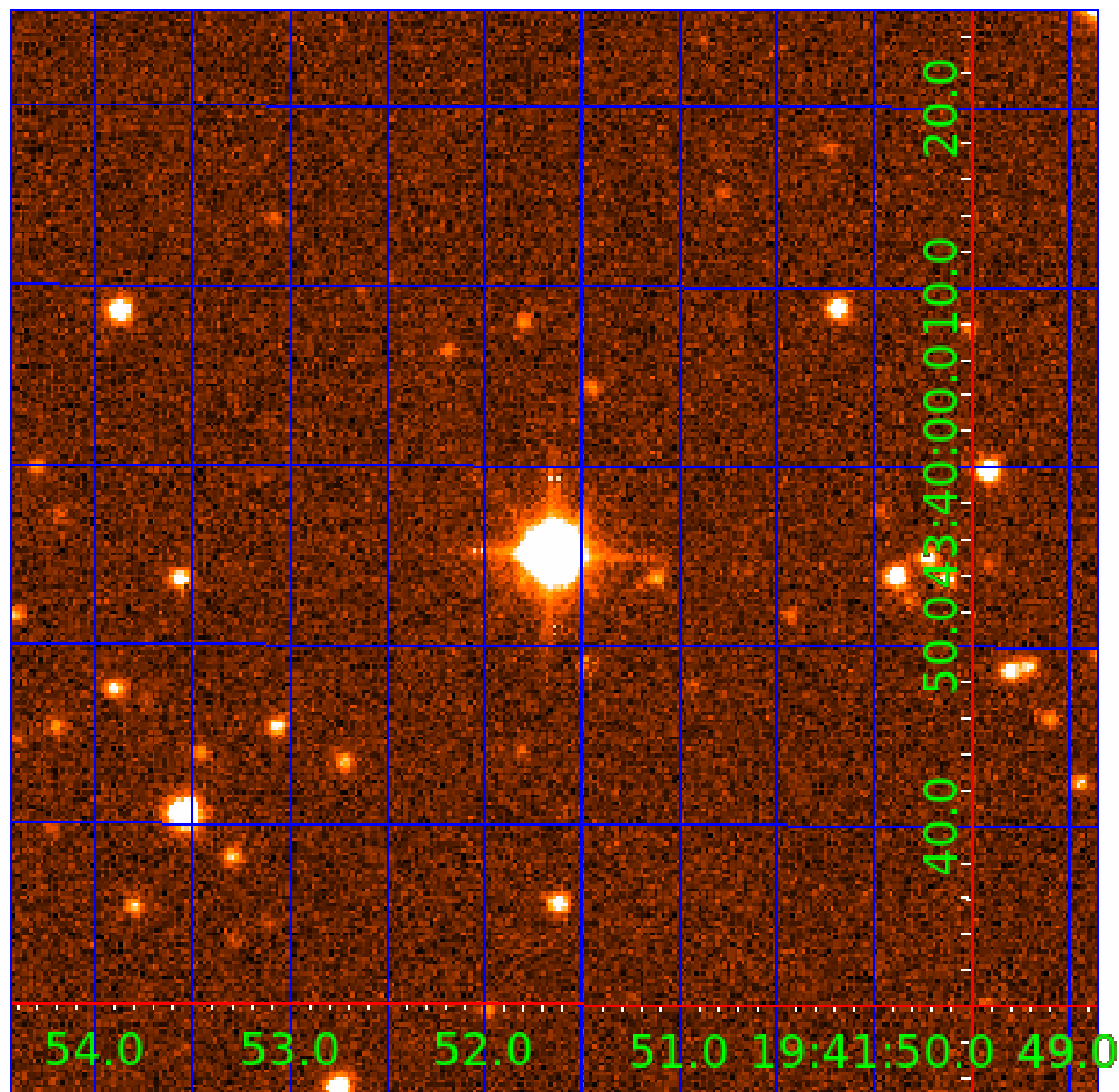


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007902097

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})
007902097-01	OBS	No	376.314696	153.202488	501.7	3.831	14.1	7.7	0.87	5831	2.07	0.78
007902097-02	OBS	No	382.498256	488.499181	580.9	2.858	11.1	7.2	0.87	5831	2.24	0.76
007902097-03	OBS	No	394.706986	357.748730	400.6	4.083	13.7	6.7	0.87	5831	1.89	0.73
007902097-04	OBS	No	575.703282	239.981286	564.7	3.528	13.4	7.0	0.87	5831	2.70	0.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007902097-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007902097-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007902097-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

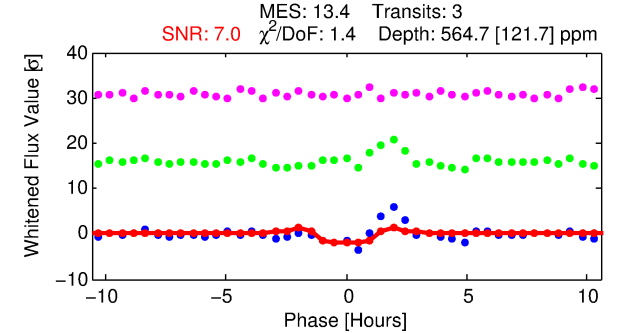
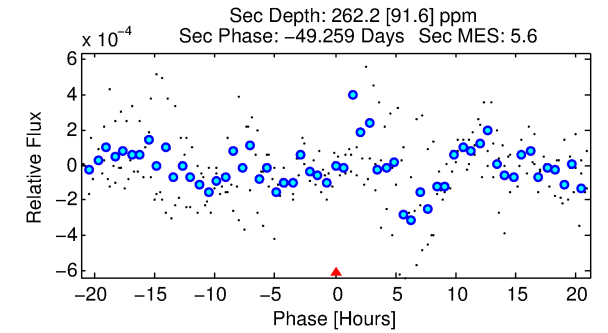
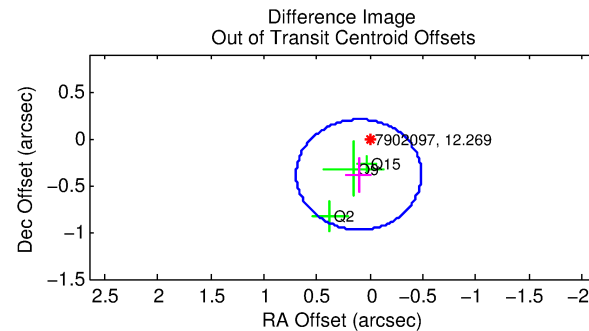
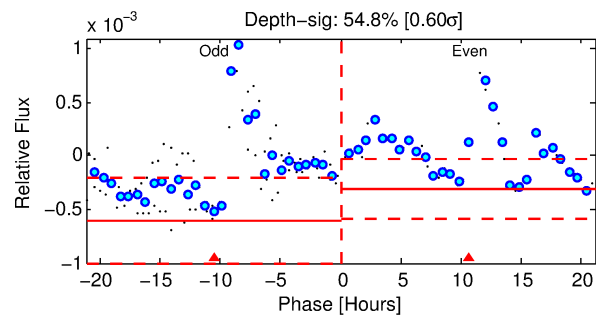
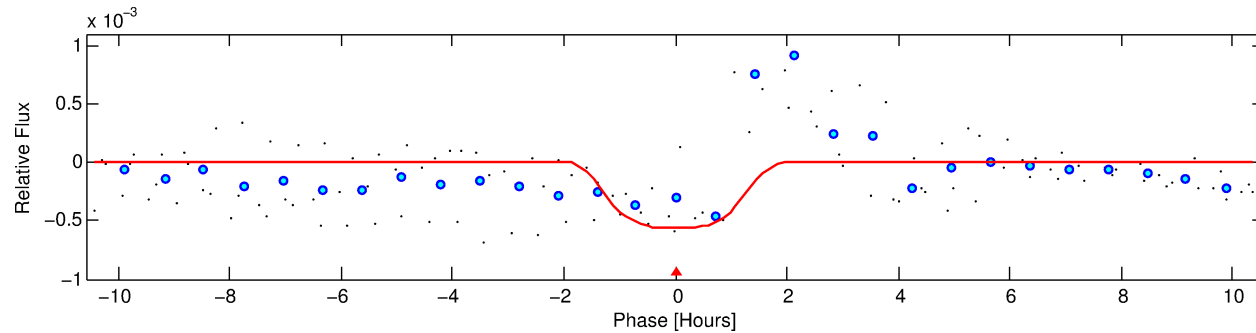
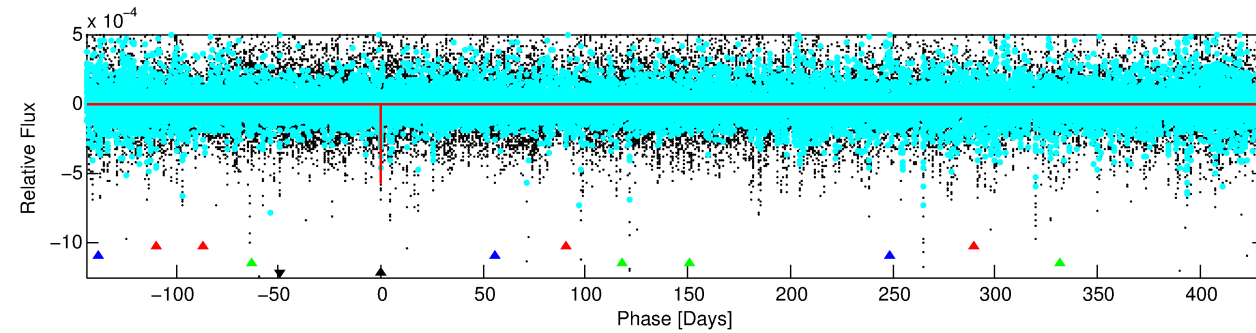
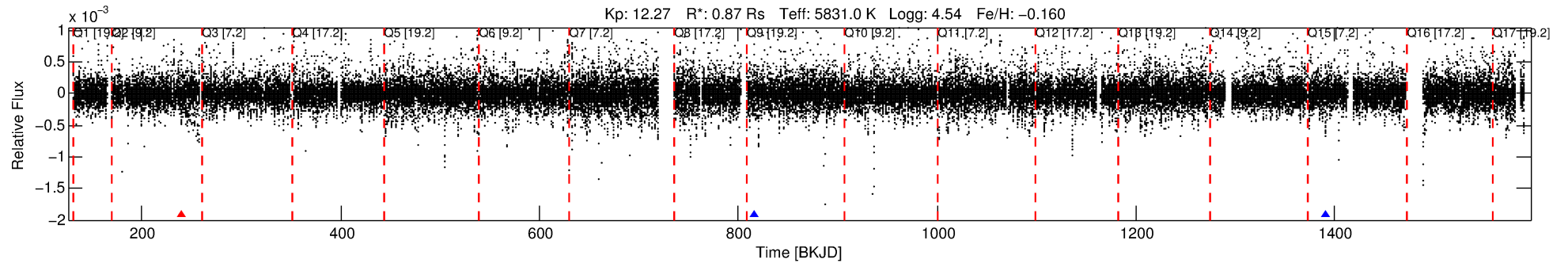
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007902097-04

No Significant Match Found

DV One-Page Summary

KIC: 7902097 Candidate: 4 of 4 Period: 575.703 d



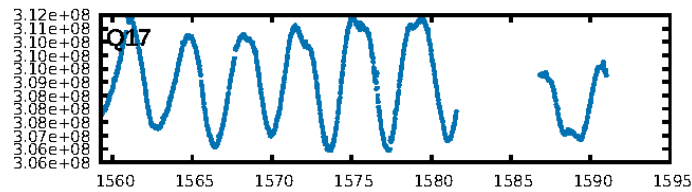
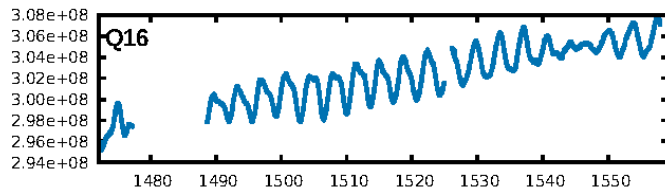
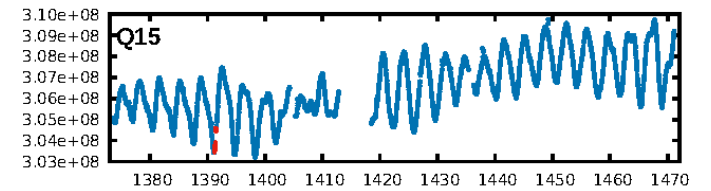
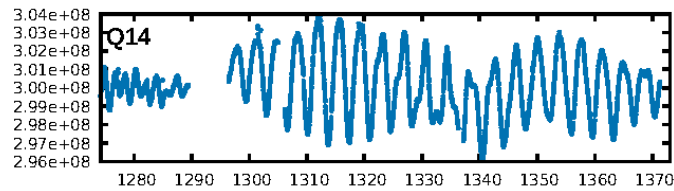
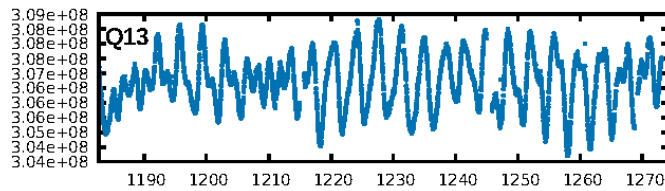
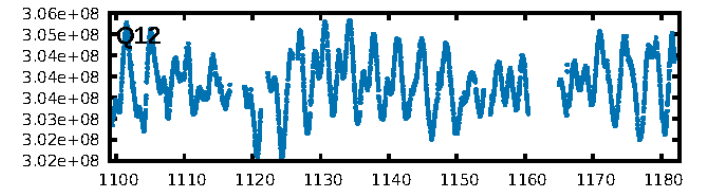
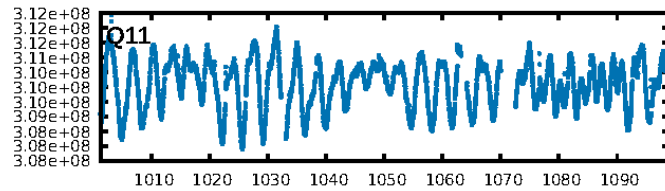
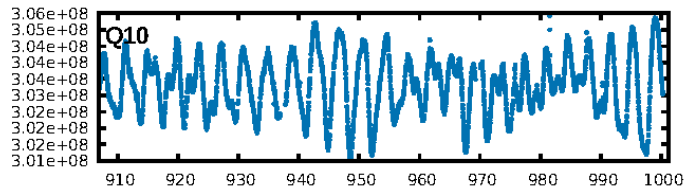
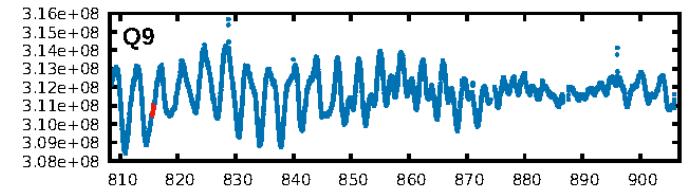
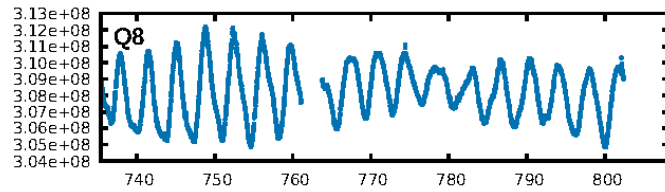
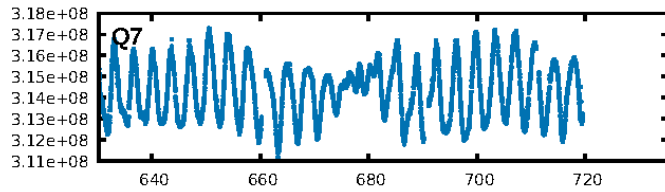
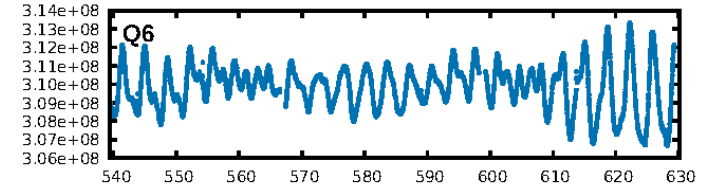
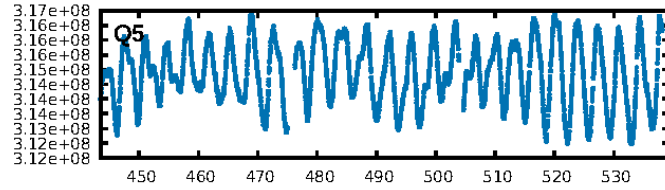
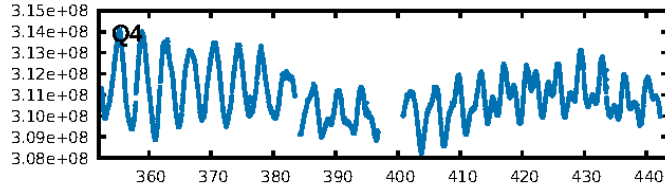
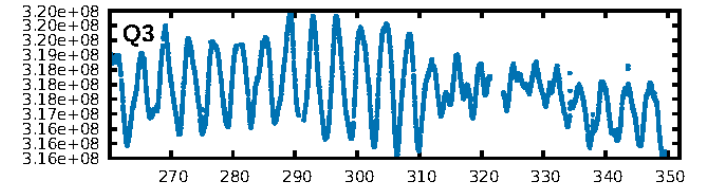
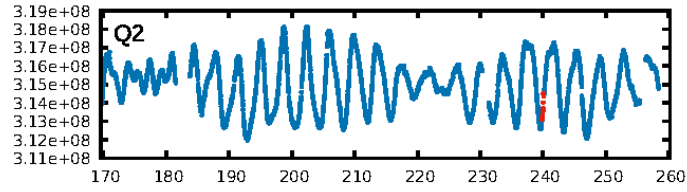
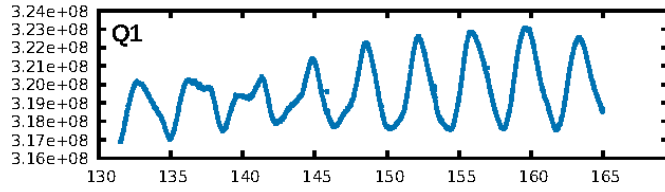
DV Fit Results:

Period = 575.70328 [0.00600] d
Epoch = 239.9813 [0.0077] BKJD
Rp/R* = 0.0283 [0.0036]
a/R* = 454.24 [98.85]
b = 0.96 [0.02]
Seff = 0.44 [0.16]
Teq = 208 [19] K
Rp = 2.70 [0.82] Re
a = 1.3381 [0.3171] AU
Ag = 35543.54 [19825.88] [1.79 σ]
Teffp = 4413 [492] K [8.54 σ]

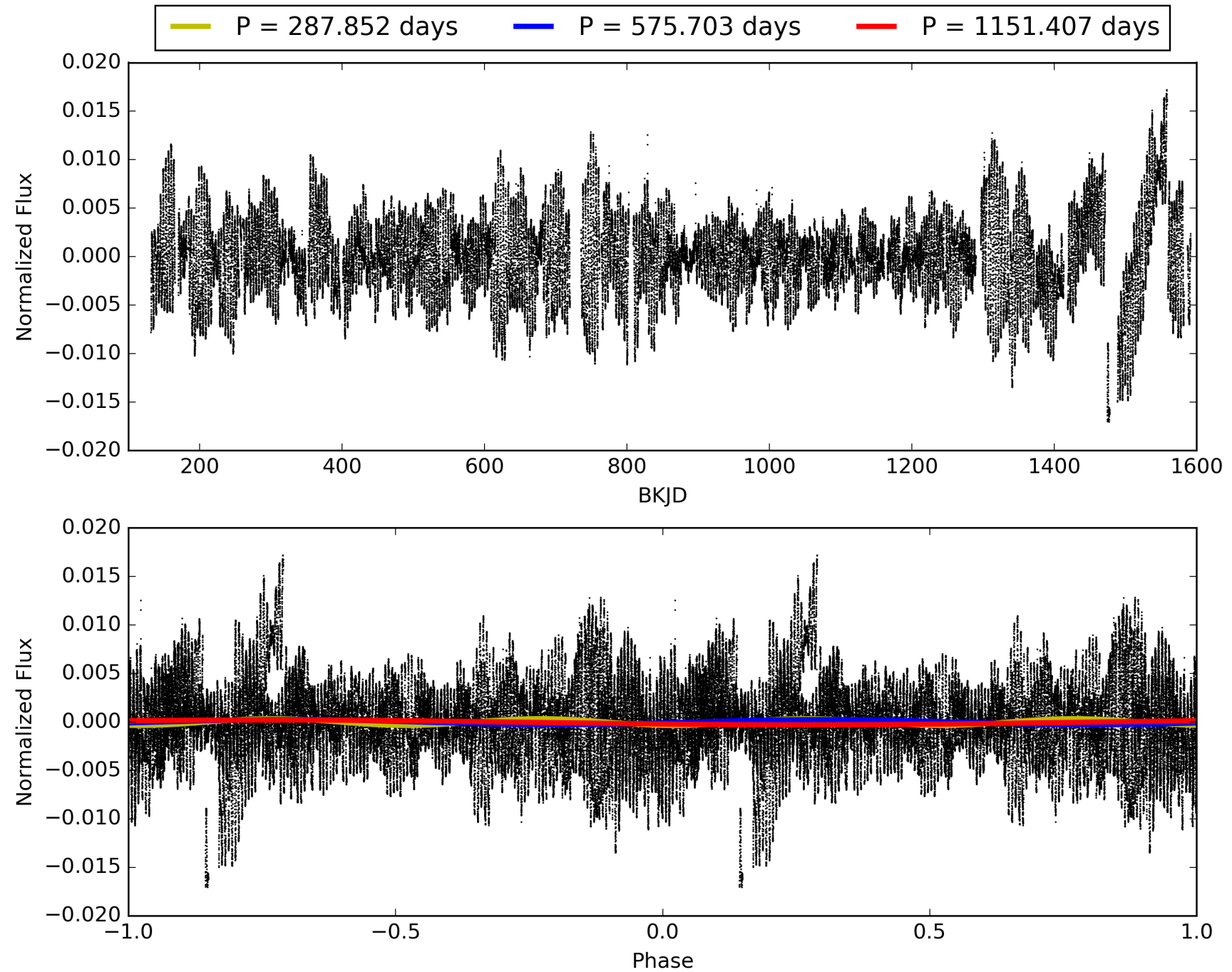
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [805.05 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 37.5%
ModelChiSquareGof-sig: 70.7%
Bootstrap-pfa: 1.05e-11
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 13.04
Centroid-sig: 43.3%
Centroid-so: 0.374 arcsec [0.78 σ]
OotOffset-rm: 0.399 arcsec [2.03 σ]
KicOffset-rm: 0.351 arcsec [1.78 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 007902097-04, PDC Light Curves

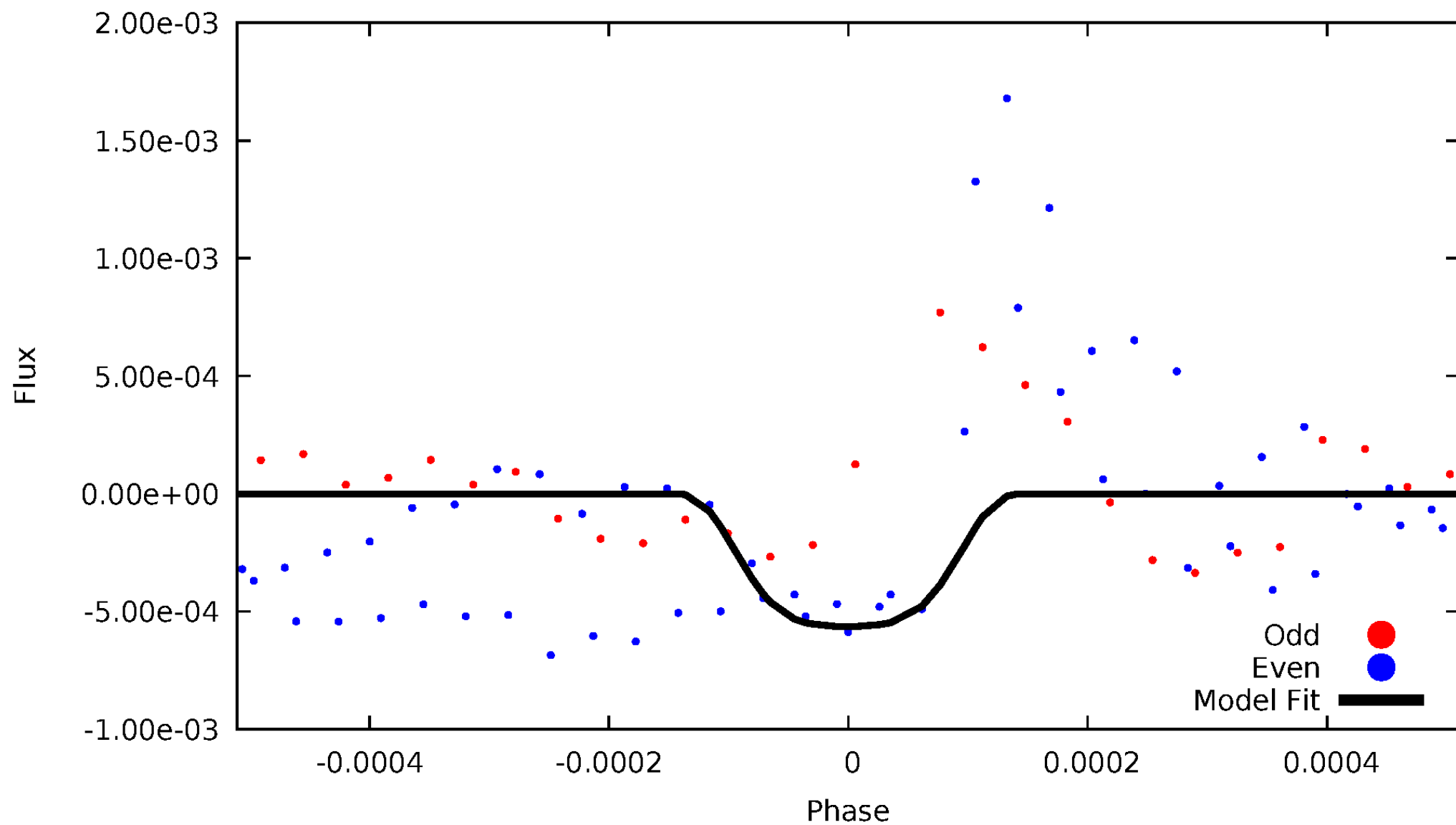


TCE 007902097-04



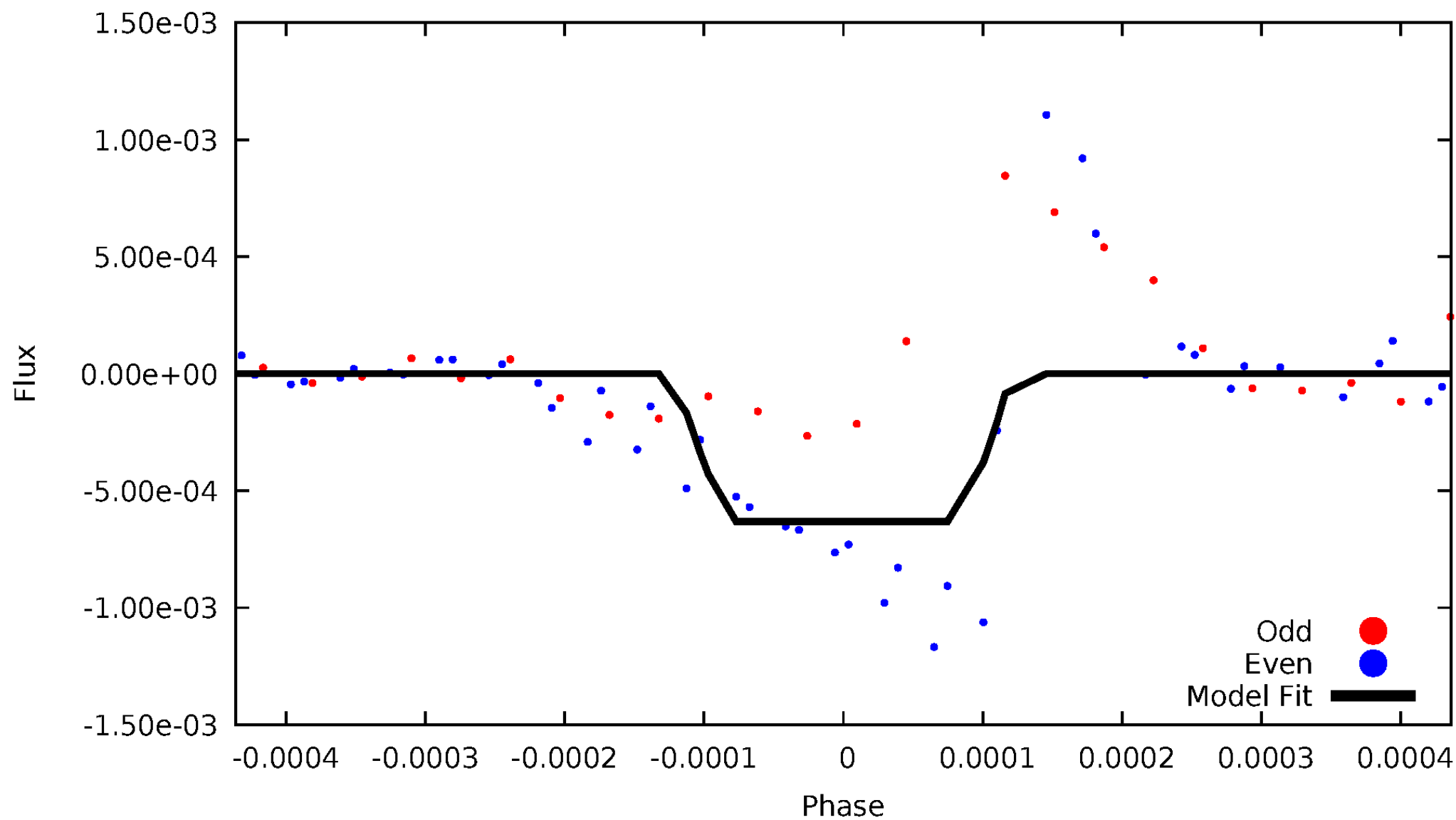
DV Odd/Even

TCE 007902097-04



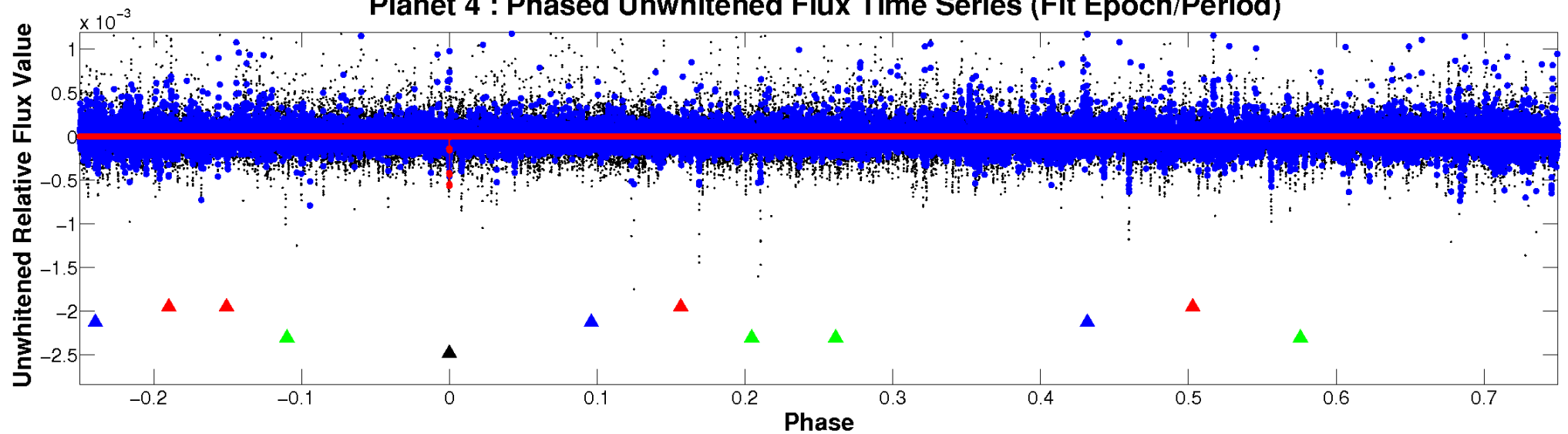
ALT Odd/Even

TCE 007902097-04

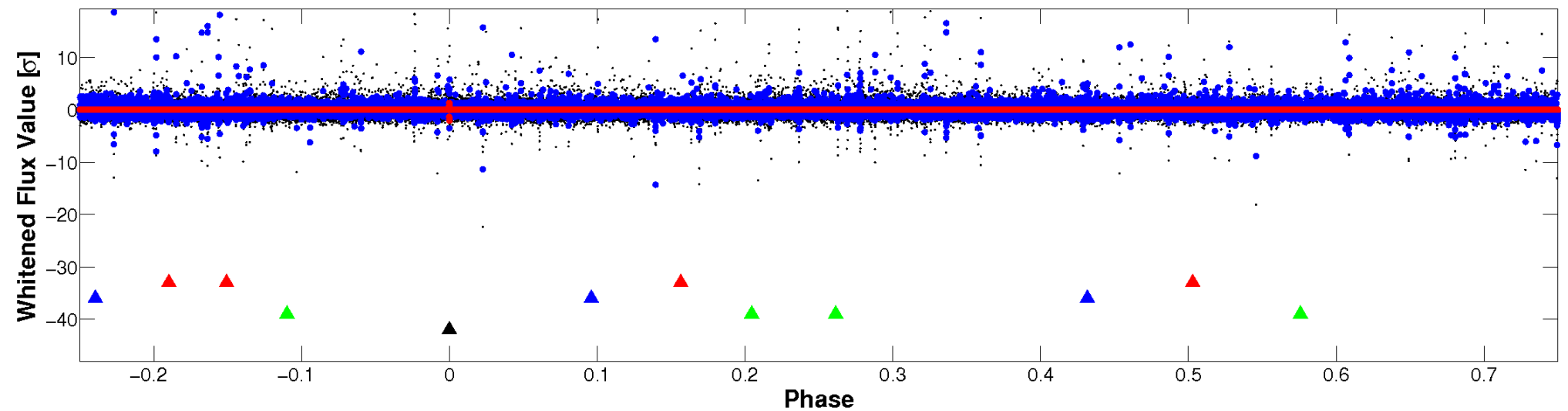


Non-Whitened Vs. Whitened Light Curve

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

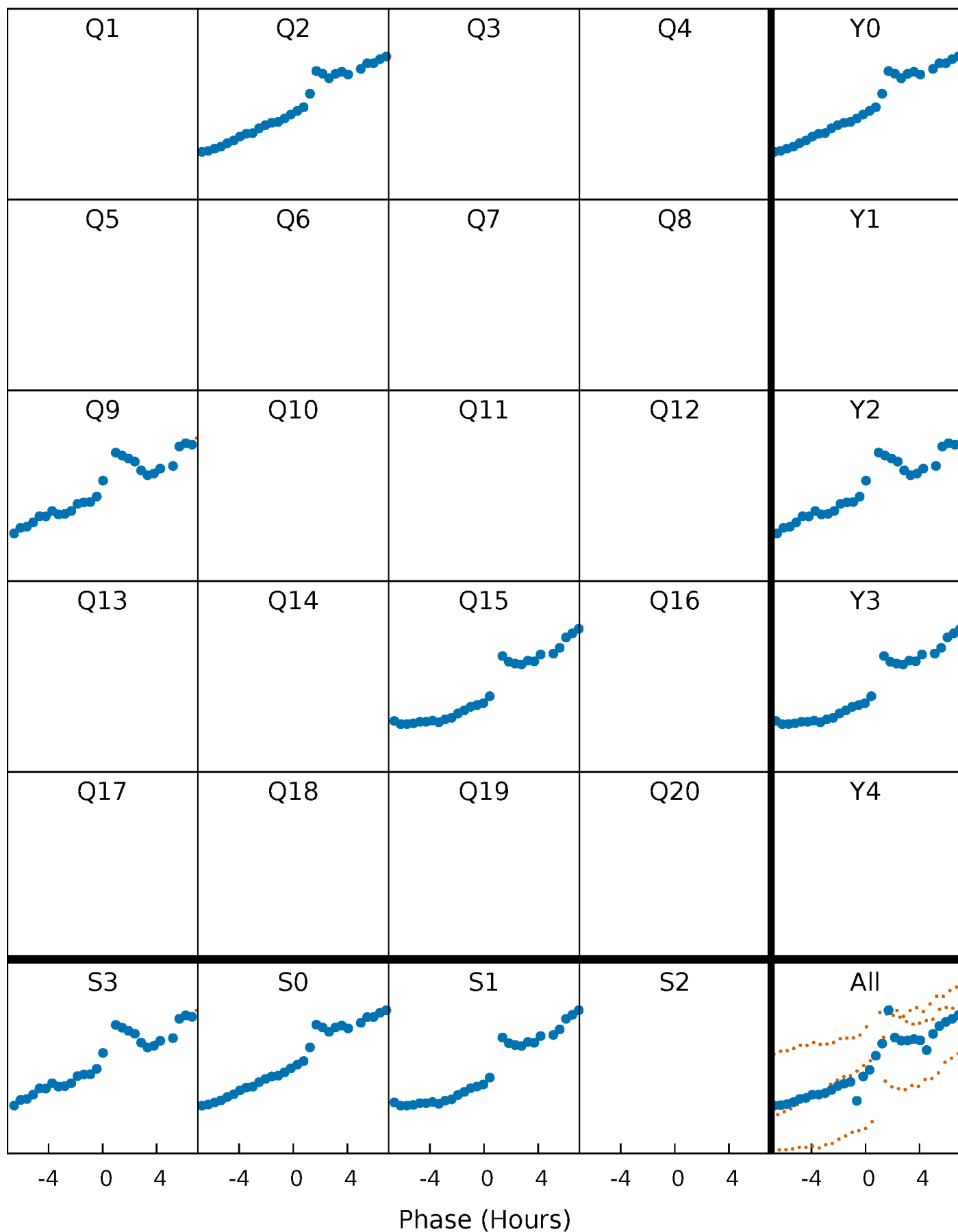


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



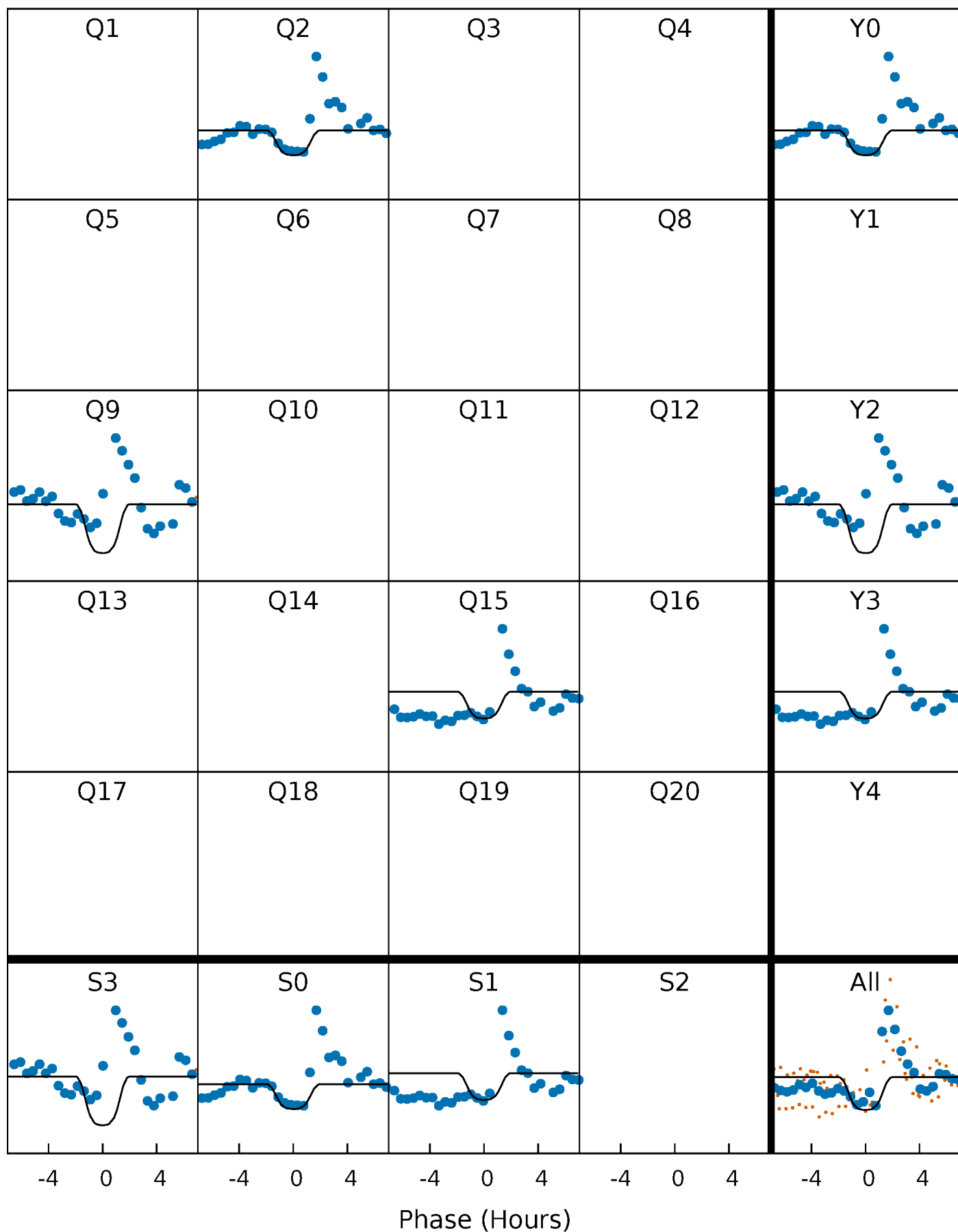
PDC Quarter-Phased Transit Curves

TCE 007902097-04 P=575.703282 Days $T_0=239.981287$ (BKJD)



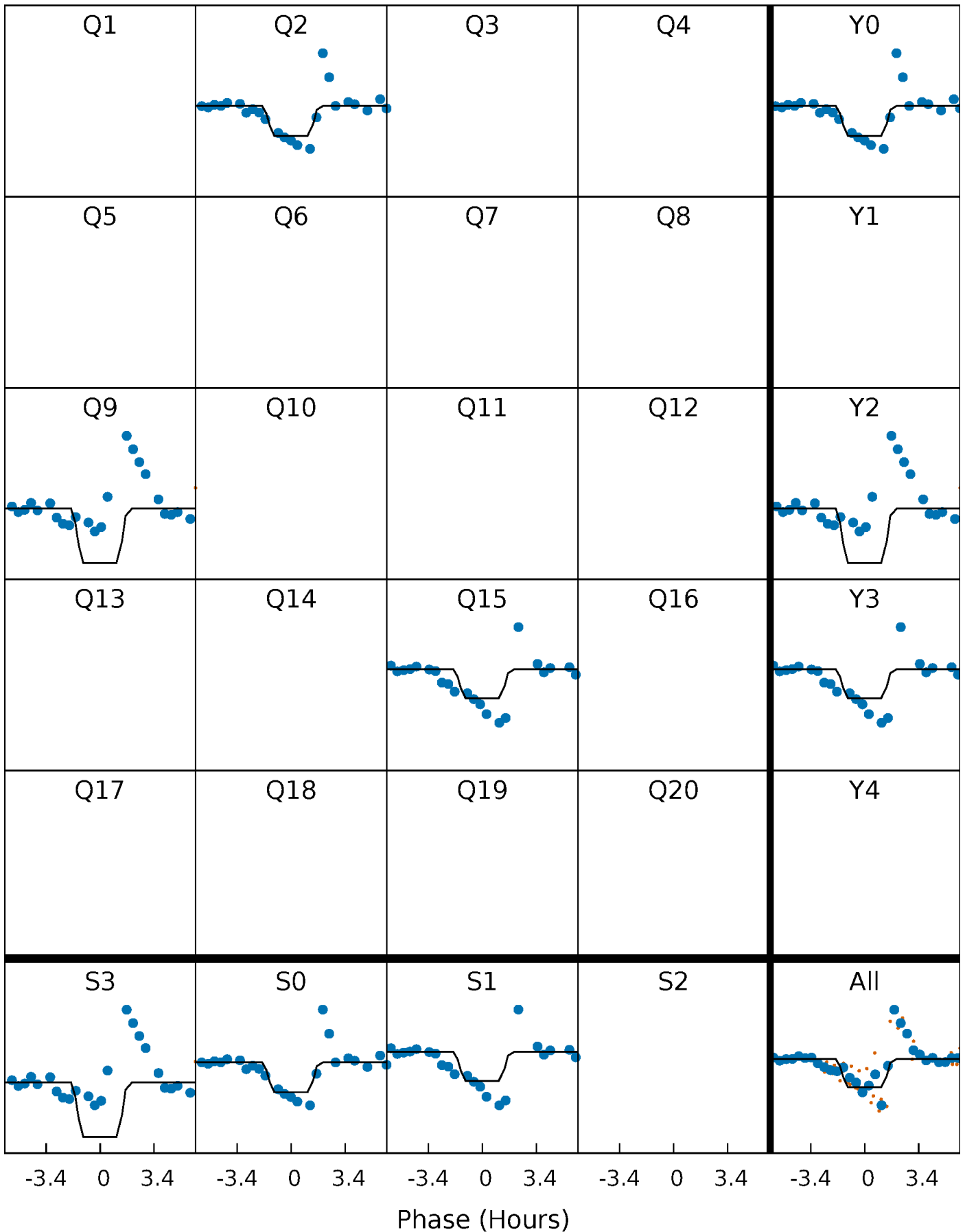
DV Quarter-Phased Transit Curves

TCE 007902097-04 $P=575.703282$ Days $T_0=239.981287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

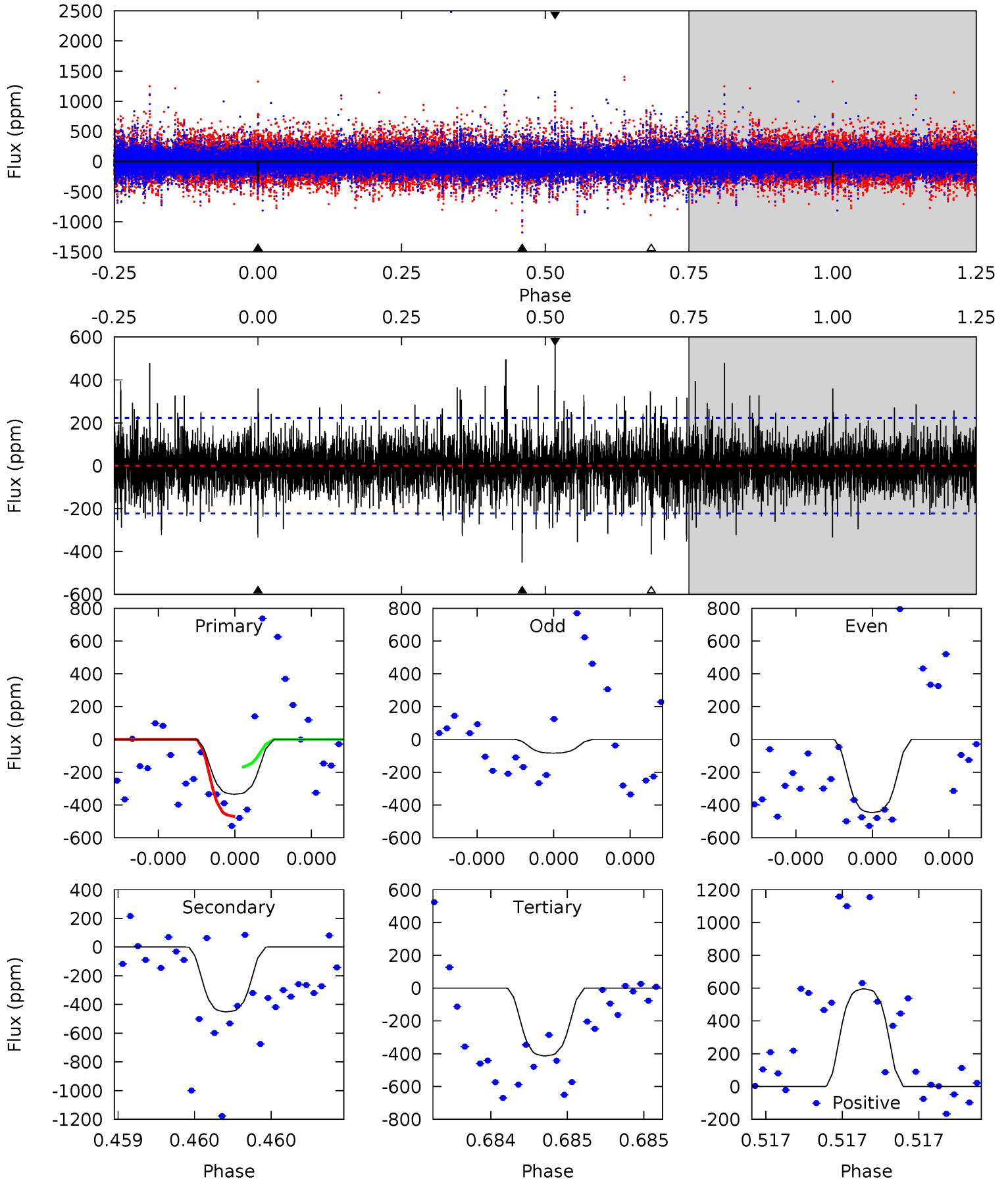
TCE 007902097-04 P=575.688308 Days $T_0=239.973692$ (BKJD)



DV Model-Shift Uniqueness Test

007902097-04, P = 575.703282 Days, E = 239.981287 Days

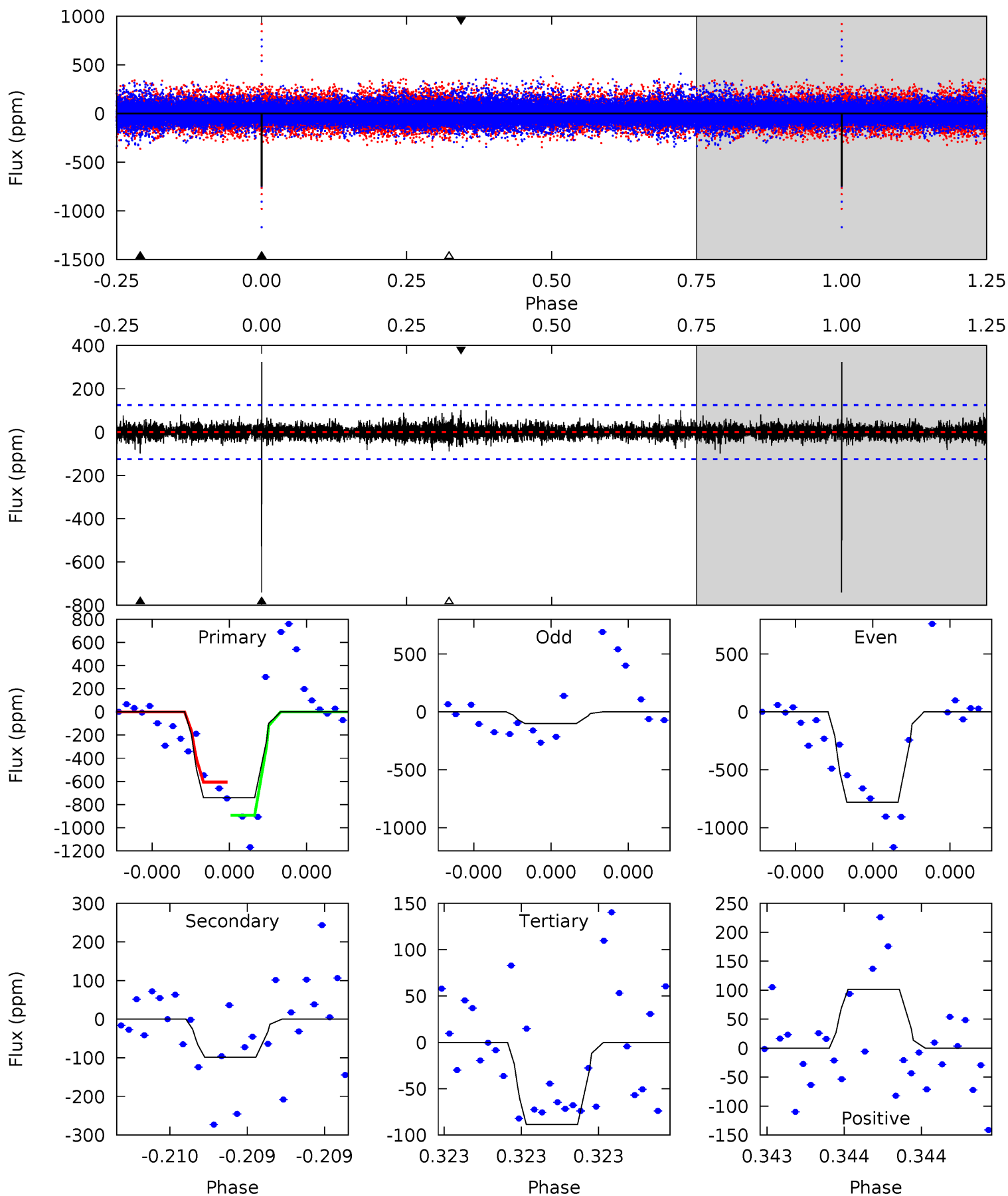
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.53	11.5	10.5	15.2	5.67	3.64	1.97	-2.01	-6.66	0.96	-3.69	3.85	0.62	0.57	3.60



Alt Model-Shift Uniqueness Test

007902097-04, P = 575.688308 Days, E = 239.973692 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.8	4.48	4.04	4.63	5.71	3.69	0.78	29.7	29.2	0.44	-0.15	15.5	0.79	0.30	6.56



Stellar Parameters For KIC 007902097

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5831^{+145}_{-159}	$4.539^{+0.046}_{-0.196}$	$-0.160^{+0.300}_{-0.300}$	$0.874^{+0.240}_{-0.080}$	$0.963^{+0.108}_{-0.120}$	$2.032^{+0.394}_{-1.038}$
	+2%/-3%	+1%/-4%	+188%/-188%	+27%/-9%	+11%/-12%	+19%/-51%
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 007902097-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-451 ± 39	$2.81^{+0.48}_{-0.43}$	296^{+21}_{-12}	5128^{+335}_{-303}	55637^{+20467}_{-15463}
Alt.	-98 ± 22	$2.47^{+0.47}_{-0.39}$	295^{+17}_{-12}	3984^{+263}_{-269}	15365^{+7540}_{-5299}

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

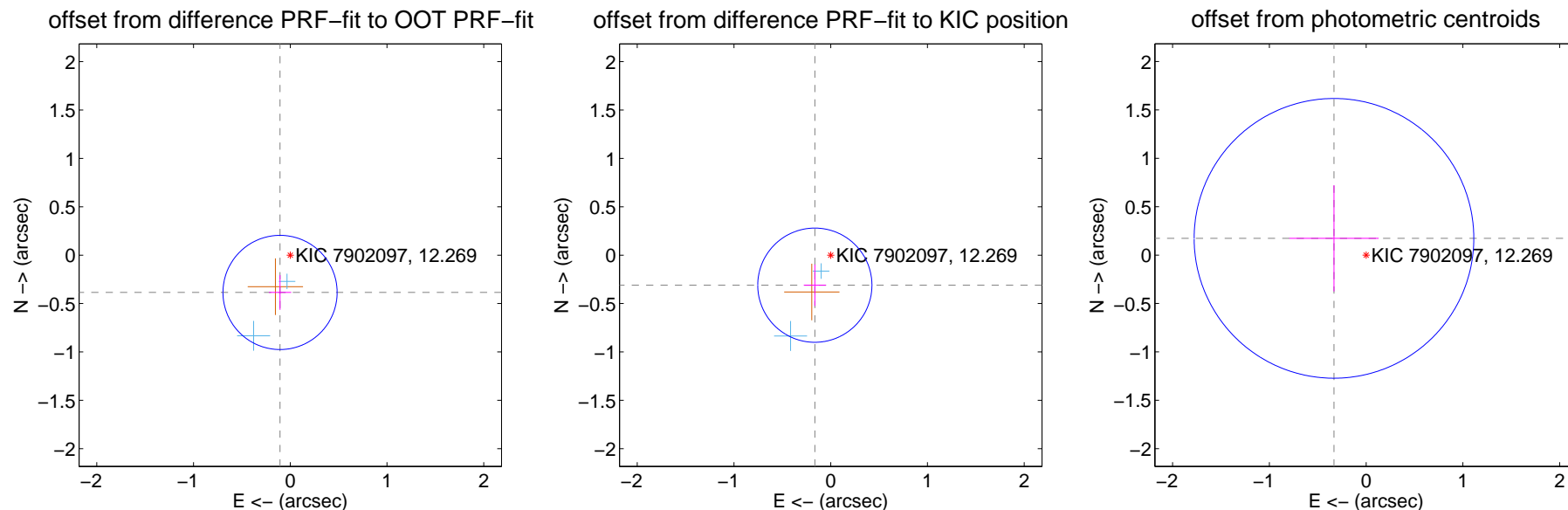
DV Centroid Data

Supplemental centroid analysis for 007902097-04. Kepler magnitude: 12.27. Transit SNR 7.04

There are 2 quarters with good PRF difference image offsets

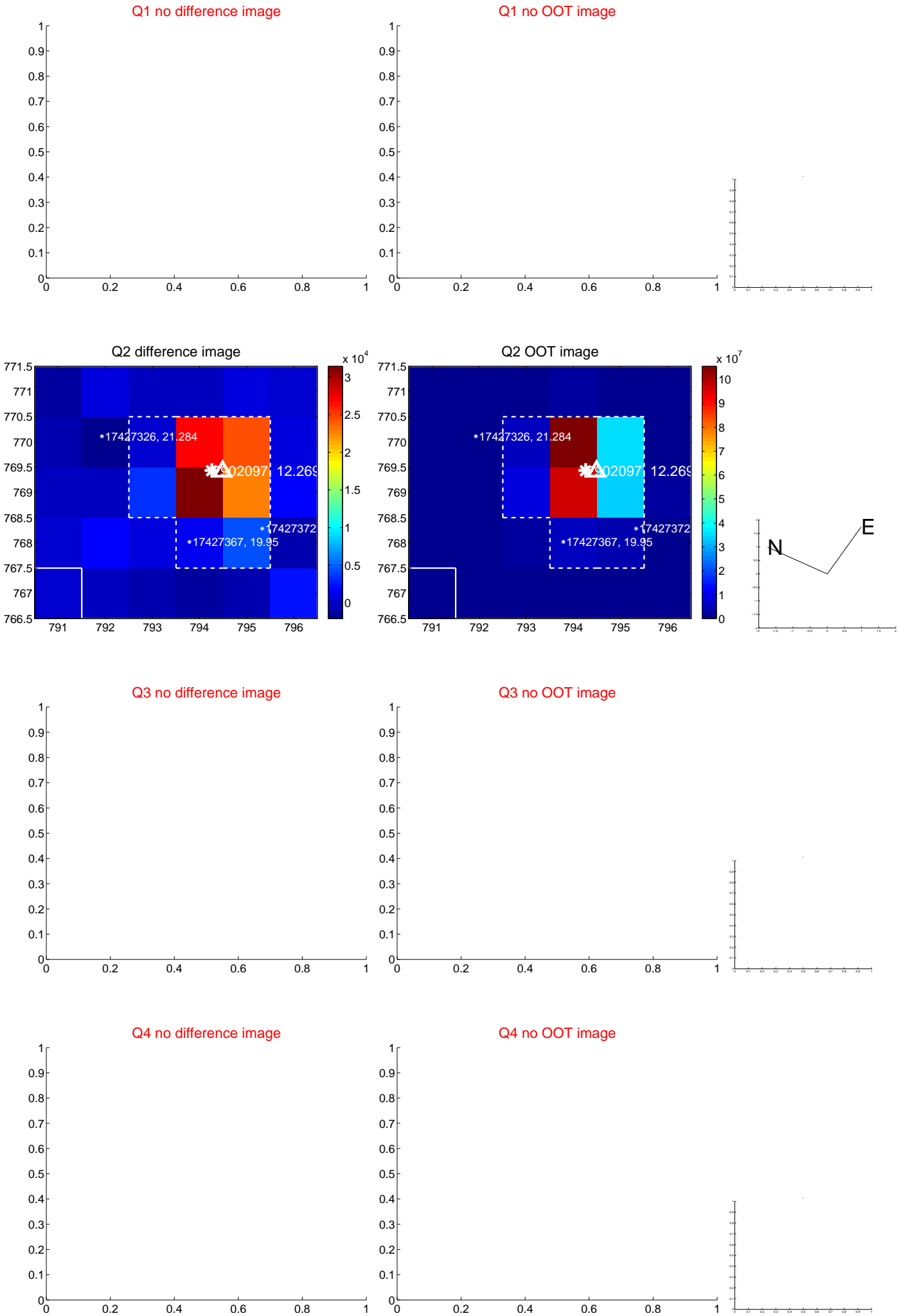
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.399 ± 0.197	2.03	0.106 ± 0.115	-0.385 ± 0.179
PRF-fit source offset from KIC position	0.351 ± 0.197	1.78	0.164 ± 0.115	-0.310 ± 0.214
photometric centroid source offset	0.37 ± 0.48	0.78	0.33 ± 0.46	0.17 ± 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.

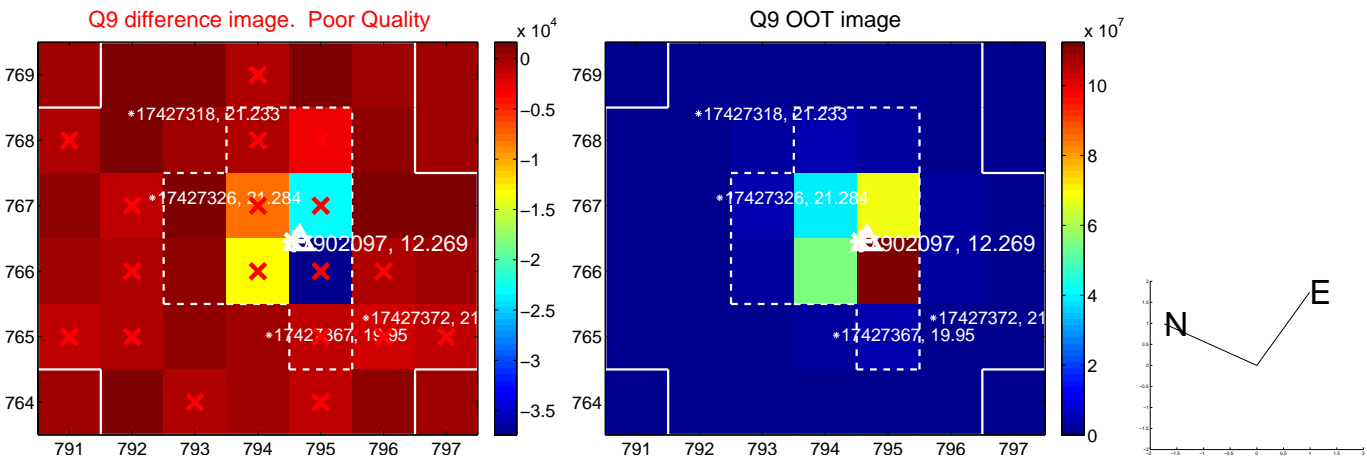
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



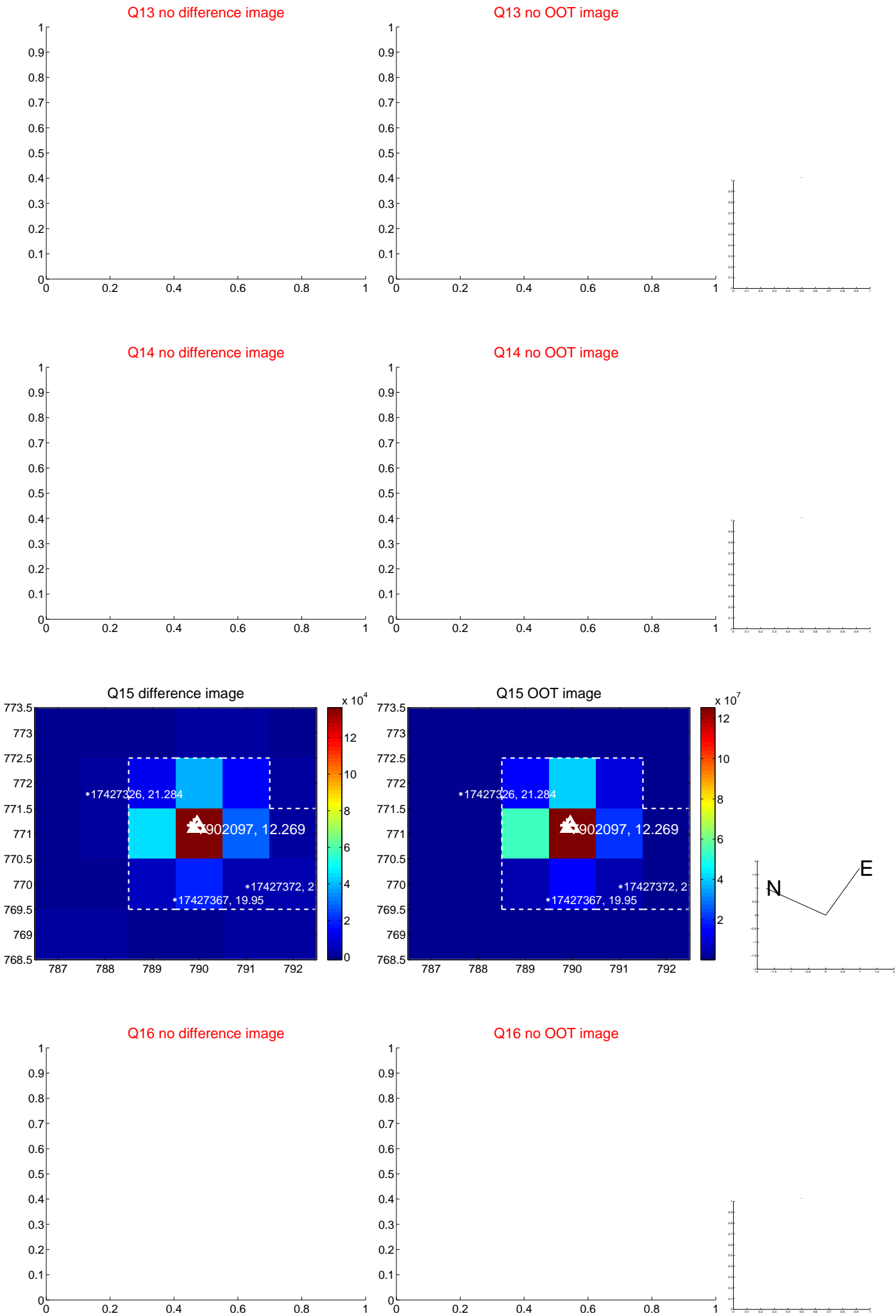
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



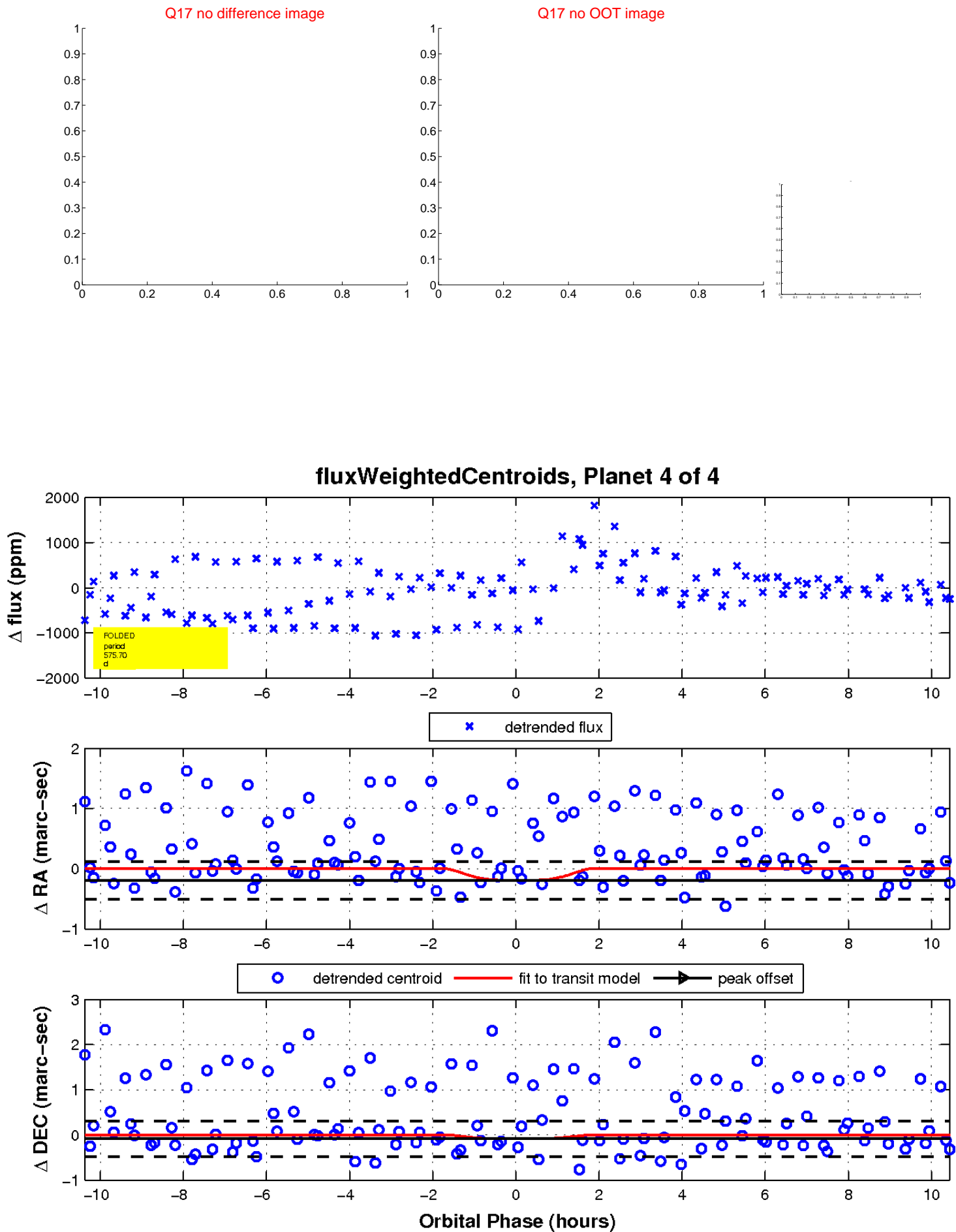
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

