

KIC 009754973

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})
009754973-01	OBS	No	611.171125	139.029599	1516.0	4.725	16.4	9.1	1.39	5858	7.87	1.18
009754973-02	OBS	No	555.512391	237.985617	1046.1	9.072	15.3	6.5	1.39	5858	4.48	1.34
009754973-03	OBS	No	229.618964	322.223904	604.3	5.464	13.7	5.6	1.39	5858	4.40	4.37
009754973-04	OBS	No	543.465456	194.059154	791.3	4.915	15.9	5.7	1.39	5858	4.14	1.39
009754973-05	OBS	No	397.796945	433.175849	527.0	3.000	11.9	-1.0	1.39	5858	3.18	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009754973-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-03	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—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009754973-04	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—CENT_FEW_DIFFS
009754973-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

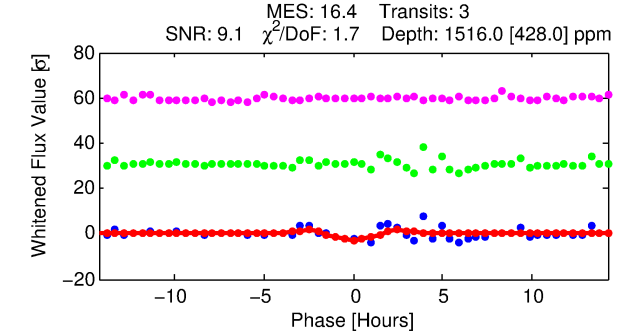
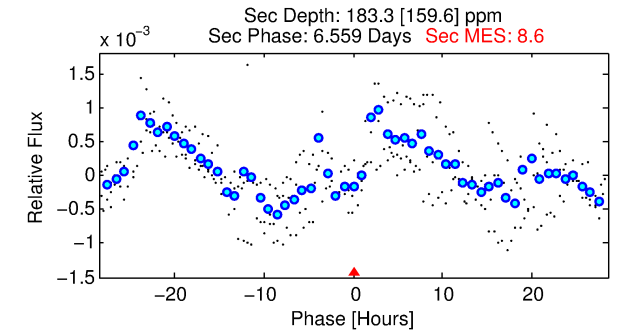
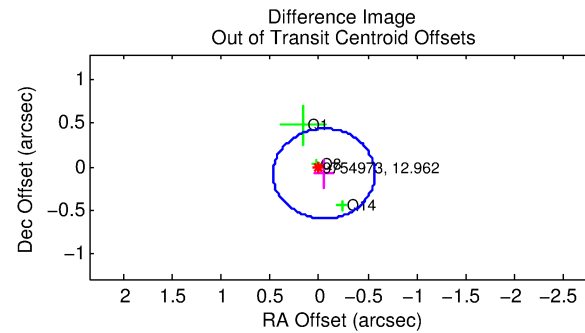
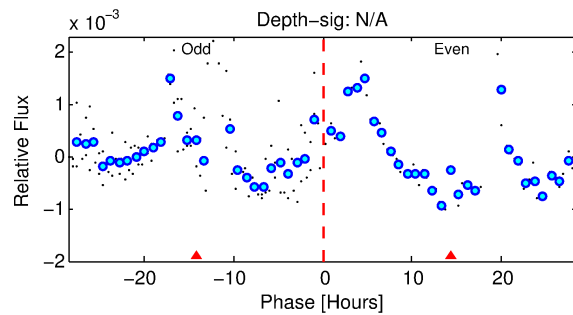
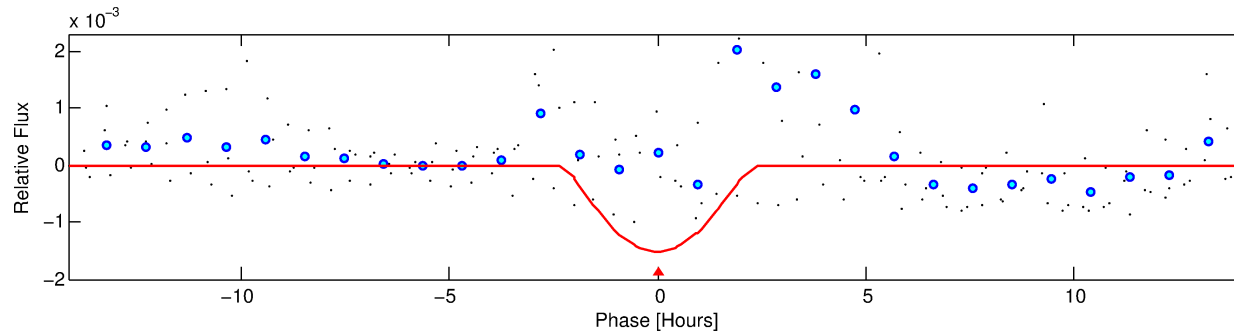
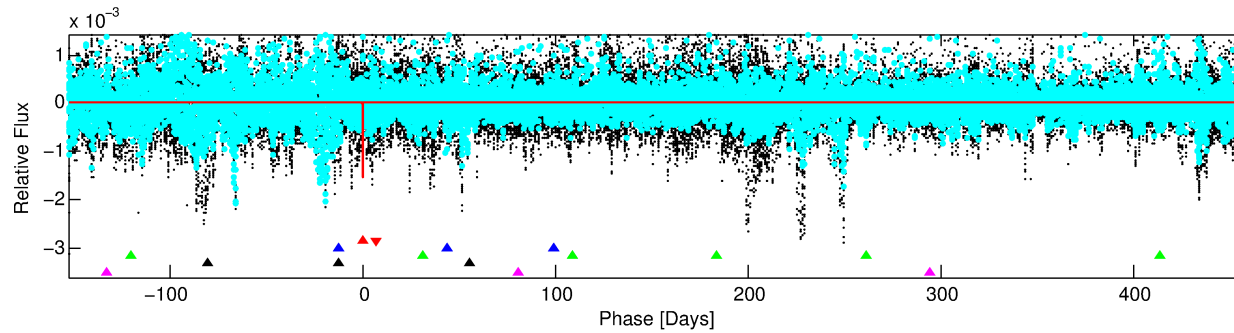
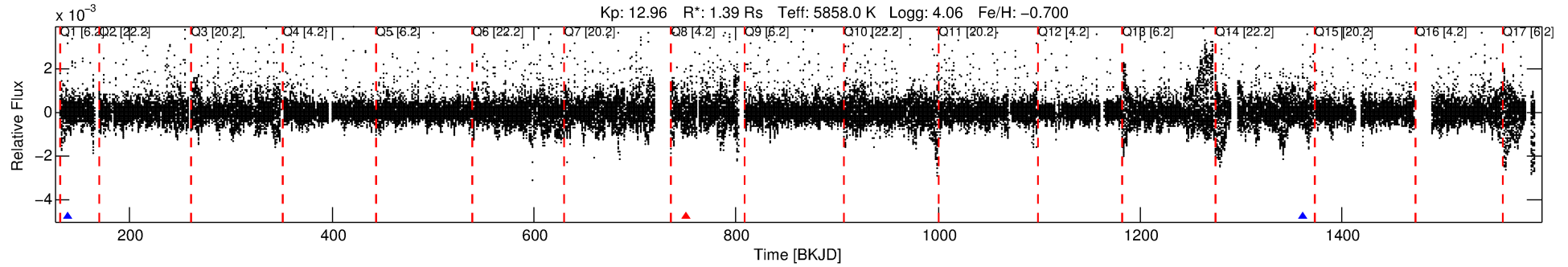
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009754973-01

No Significant Match Found

DV One-Page Summary

KIC: 9754973 Candidate: 1 of 5 Period: 611.171 d



DV Fit Results:

Period = 611.17113 [0.00865] d
Epoch = 139.0296 [0.0129] BKJD
Rp/R* = 0.0520 [0.0656]
a/R* = 393.38 [202.19]
b = 0.97 [0.13]
Seff = 1.18 [0.96]
Teq = 266 [54] K
Rp = 7.87 [10.45] Re
a = 1.3081 [0.6118] AU
Ag = 2787.76 [7762.82] [0.36σ]
Teffp = 2989 [1994] K [1.36σ]

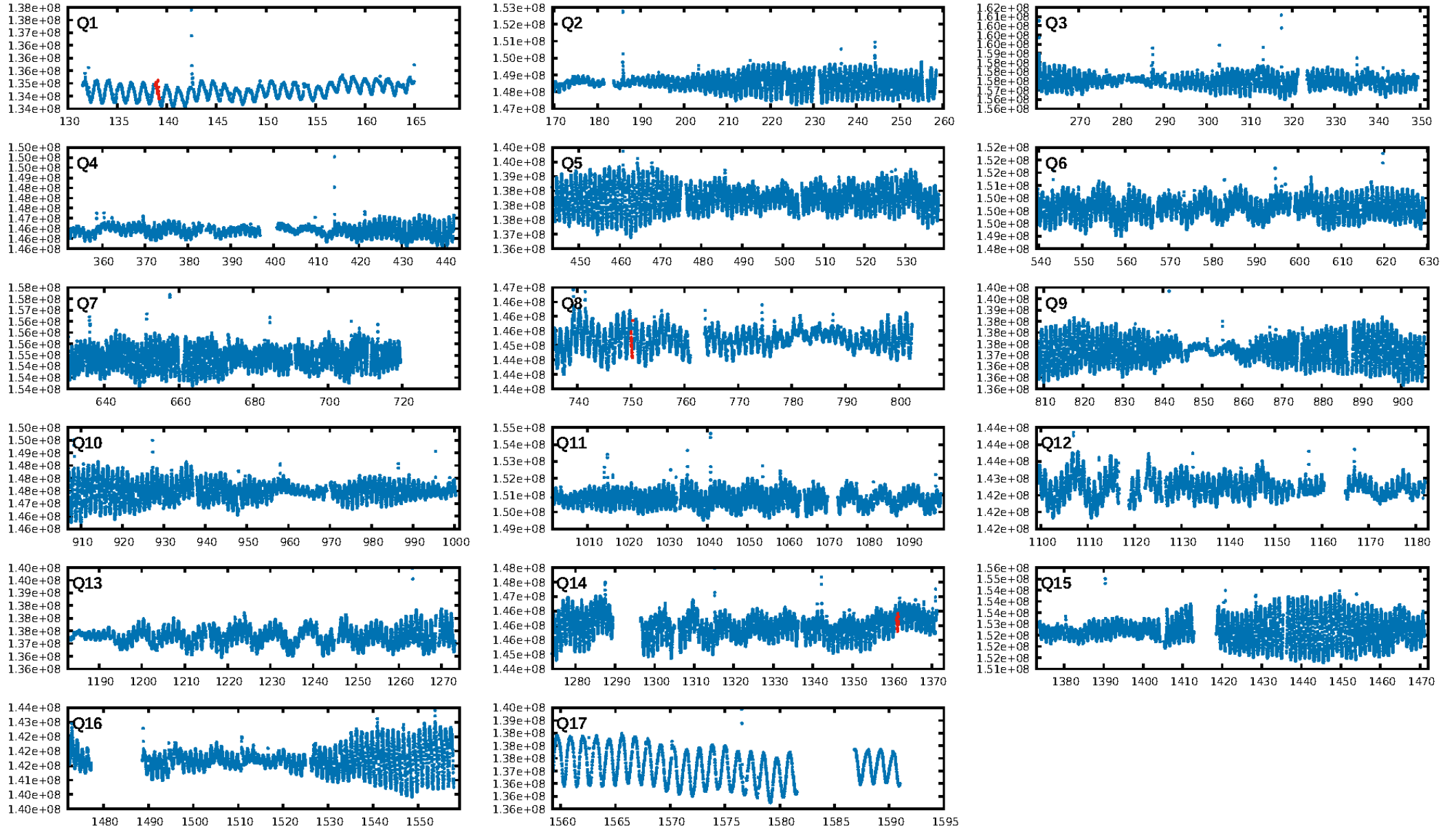
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [130.59σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.2%
ModelChiSquareGof-sig: 34.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.50 [1/2]
GhostDiagnostic-chr: 2.82
Centroid-sig: 29.8%
Centroid-so: 0.309 arcsec [0.78σ]
OotOffset-rm: 0.096 arcsec [0.55σ]
KicOffset-rm: 0.286 arcsec [1.09σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
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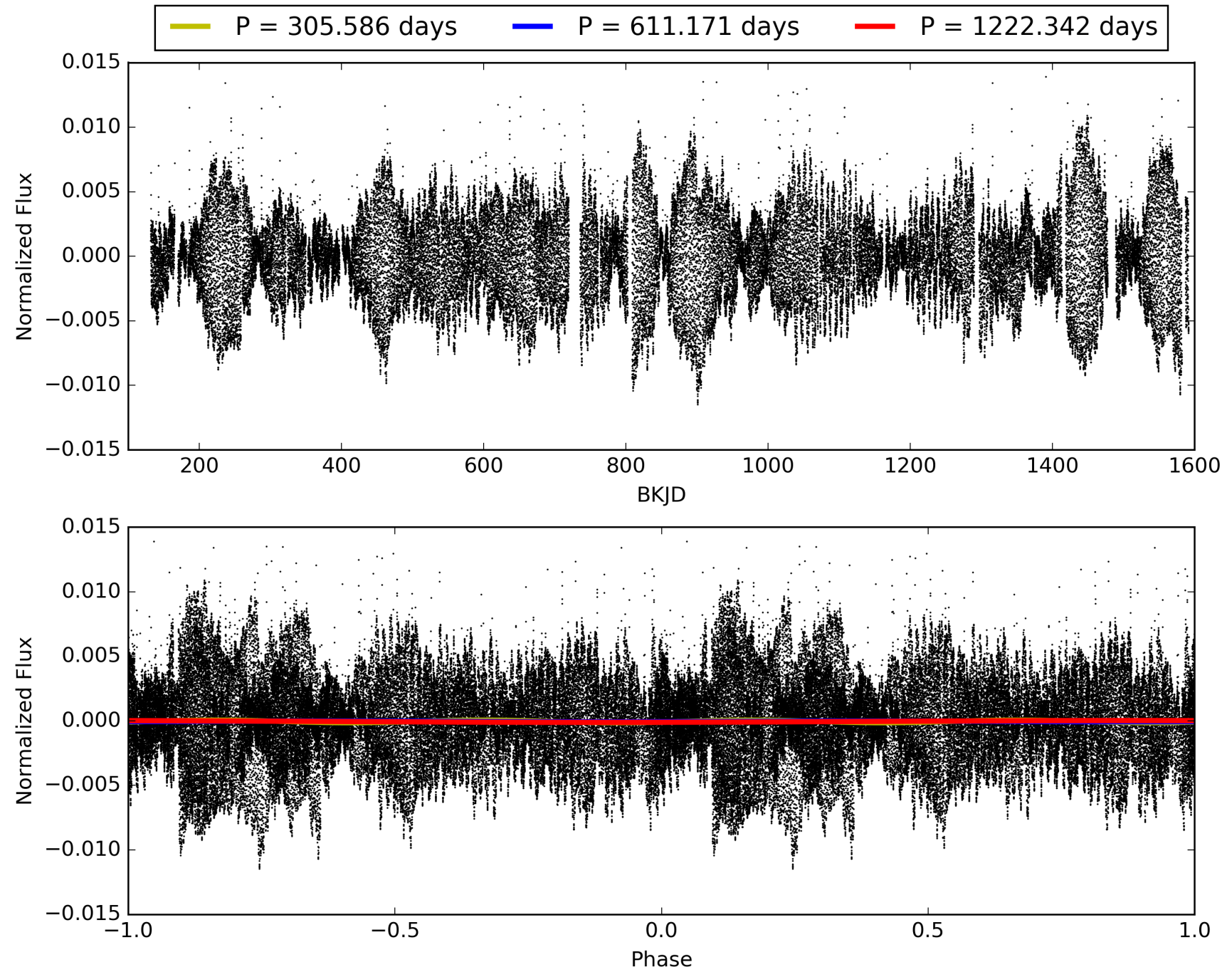
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:40:28 Z

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

TCE 009754973-01, PDC Light Curves

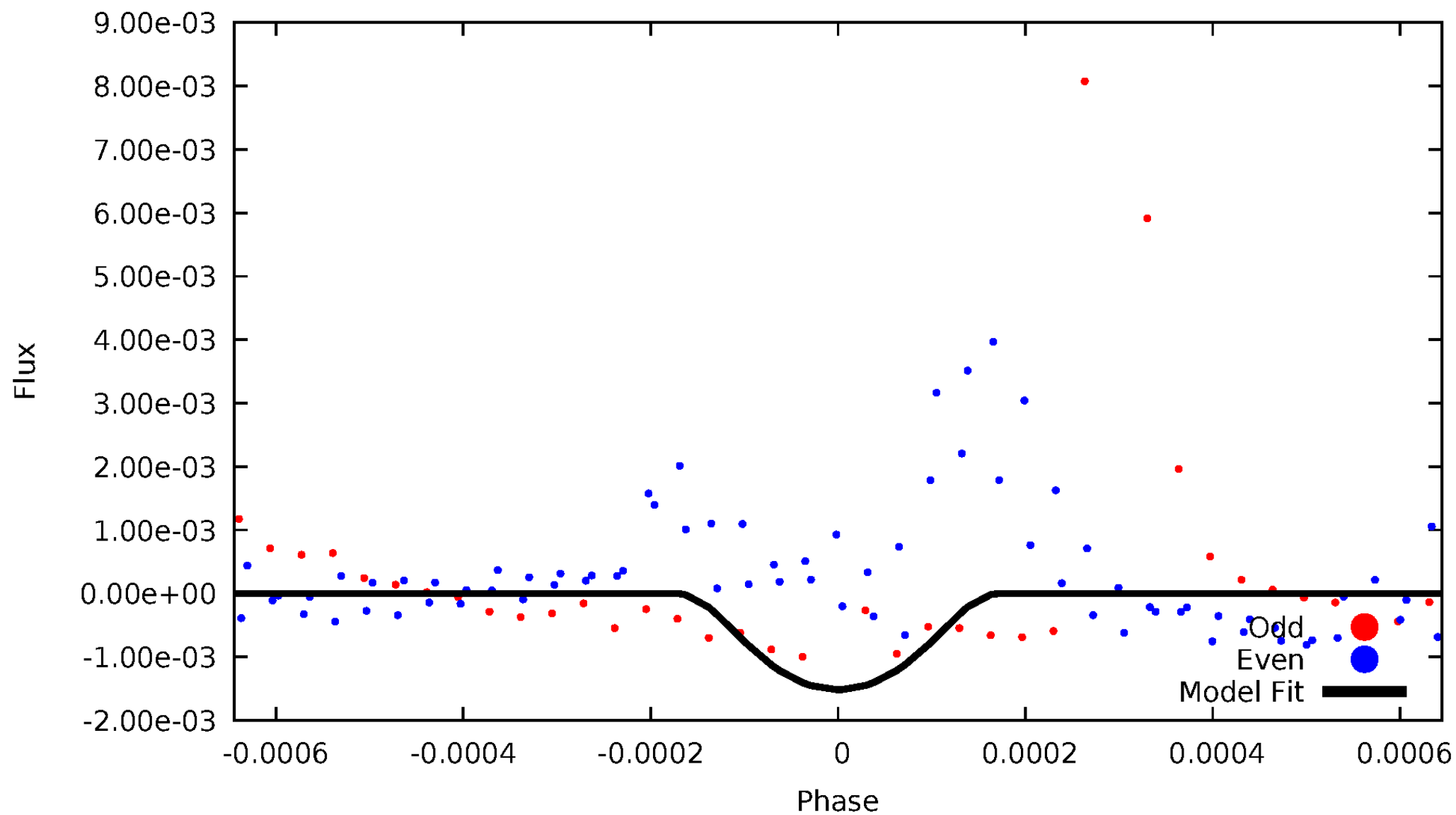


TCE 009754973-01



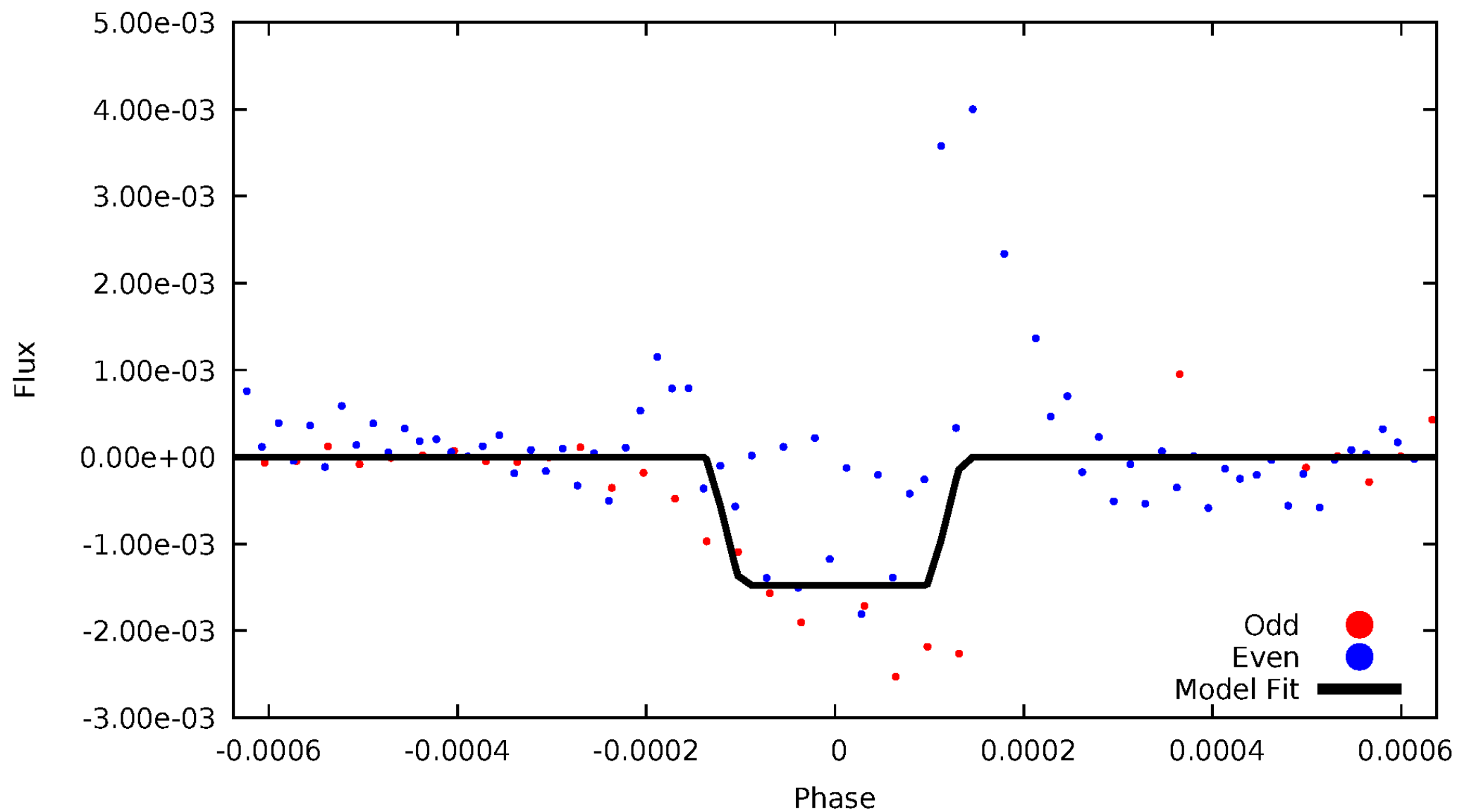
DV Odd/Even

TCE 009754973-01



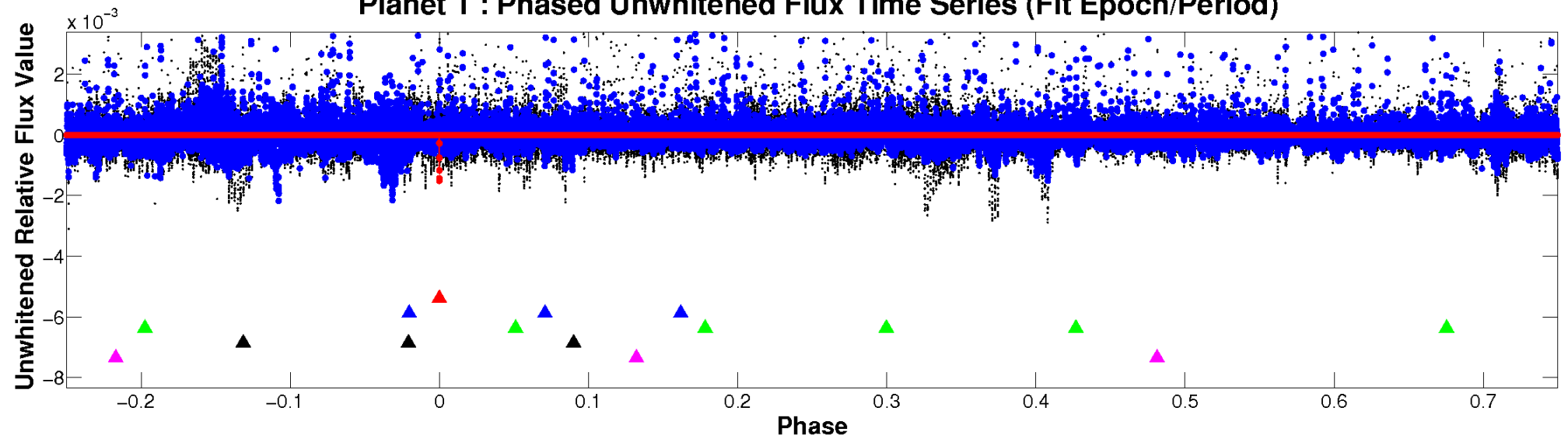
ALT Odd/Even

TCE 009754973-01

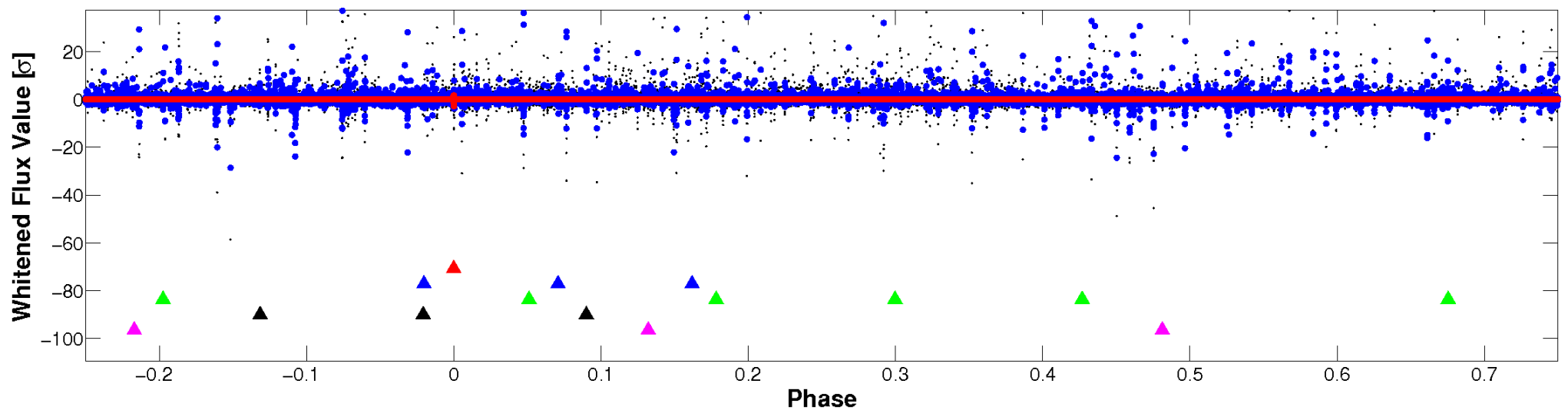


Non-Whitened Vs. Whitened Light Curve

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

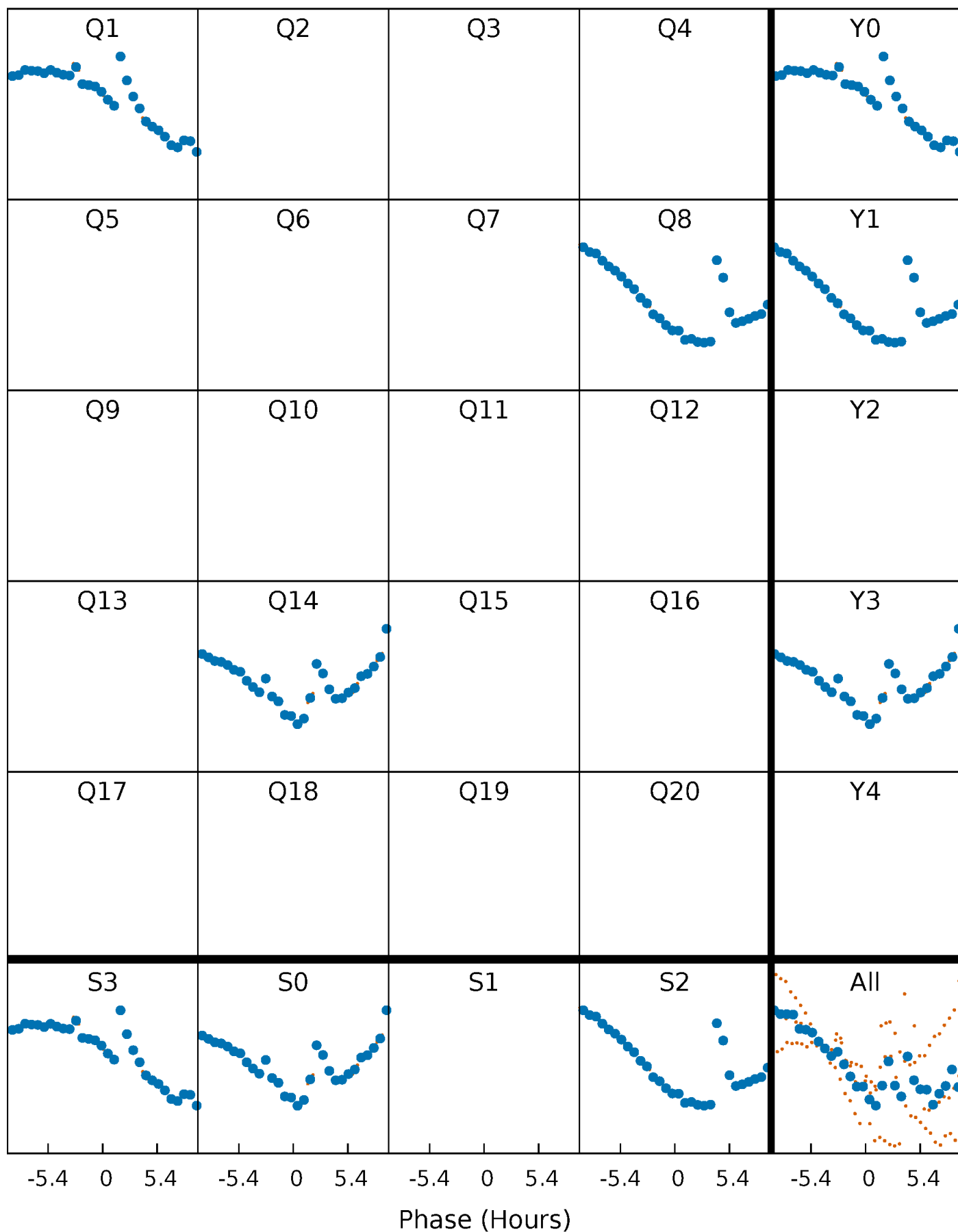


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



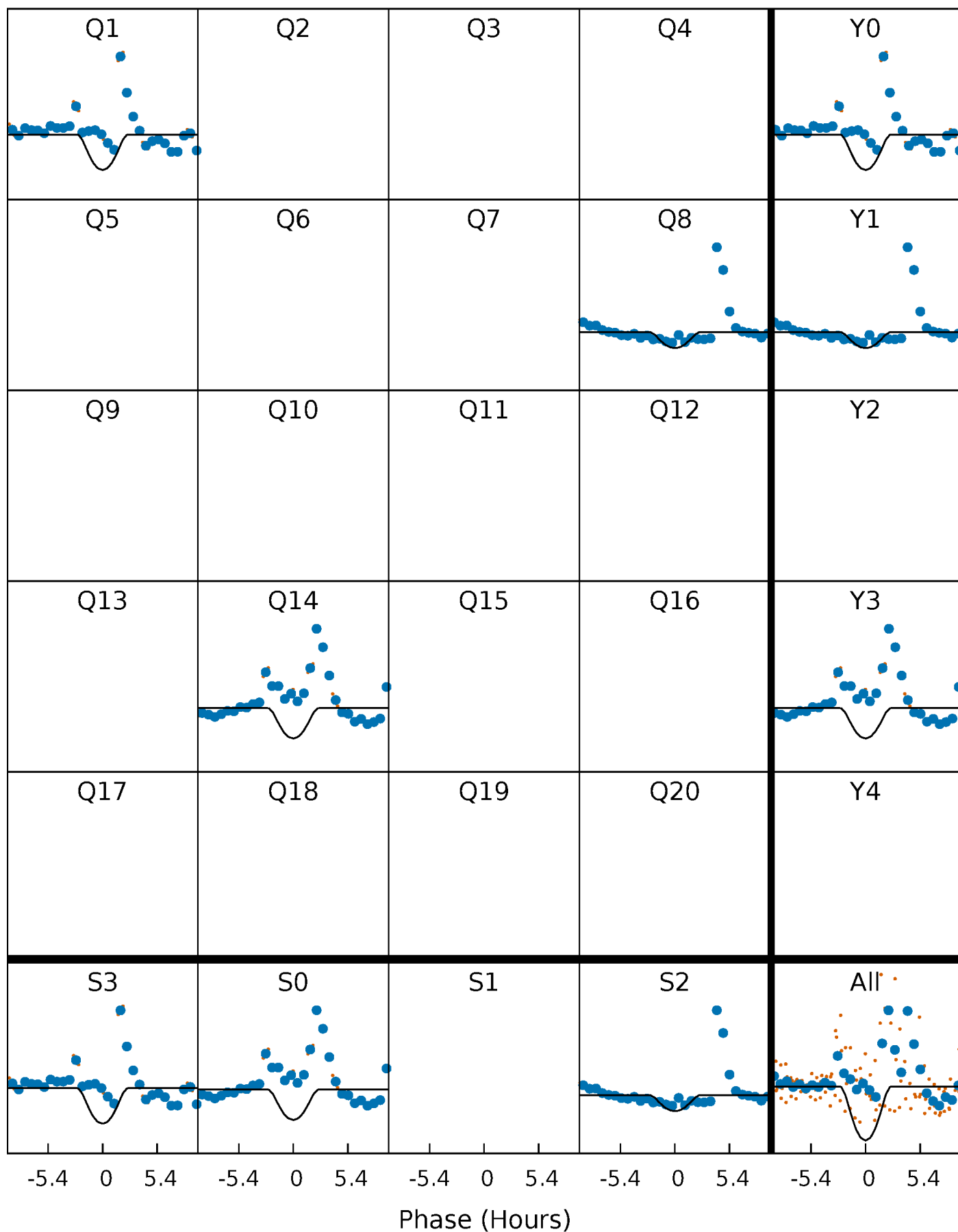
PDC Quarter-Phased Transit Curves

TCE 009754973-01 P=611.171125 Days $T_0=139.029599$ (BKJD)



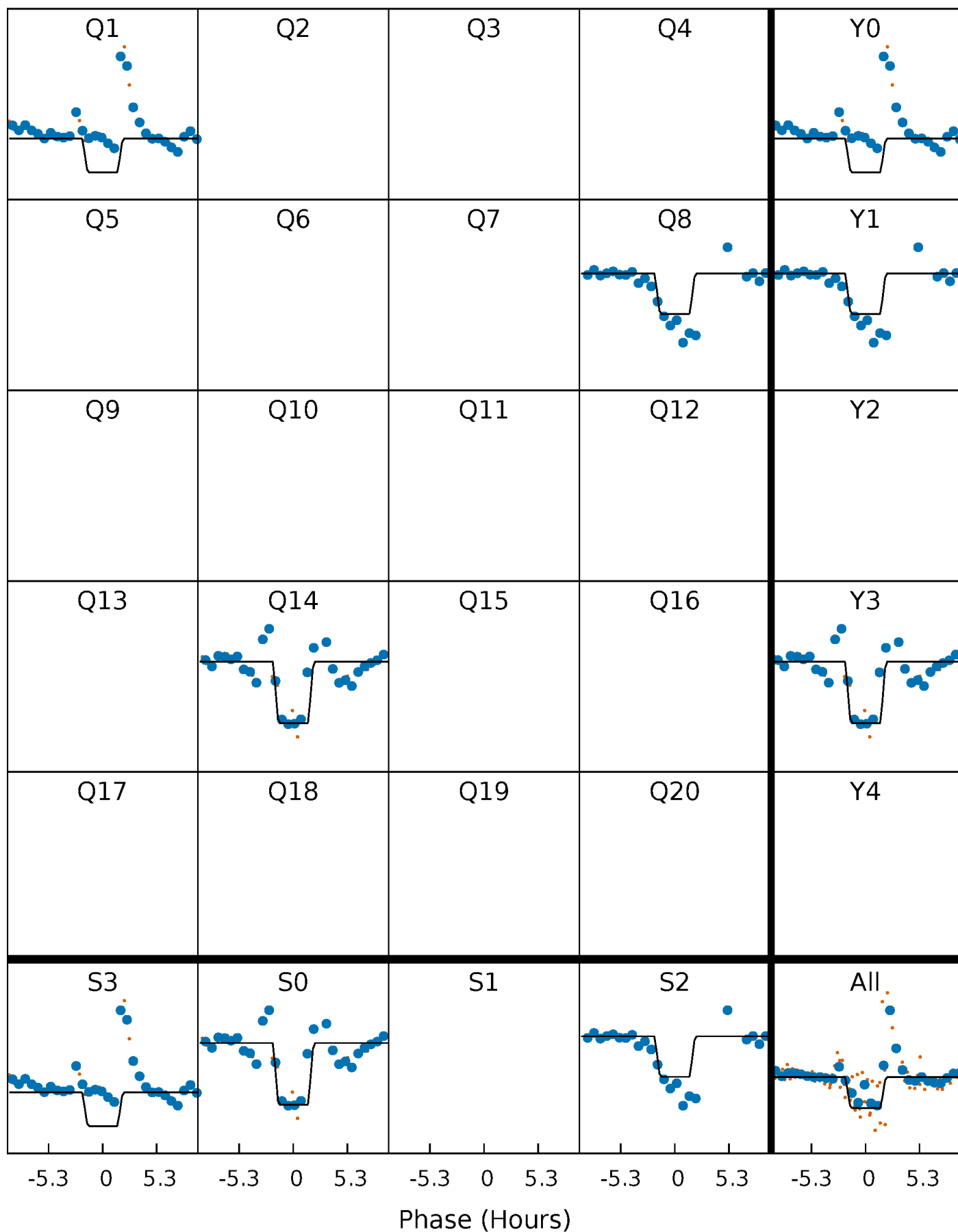
DV Quarter-Phased Transit Curves

TCE 009754973-01 P=611.171125 Days $T_0=139.029599$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

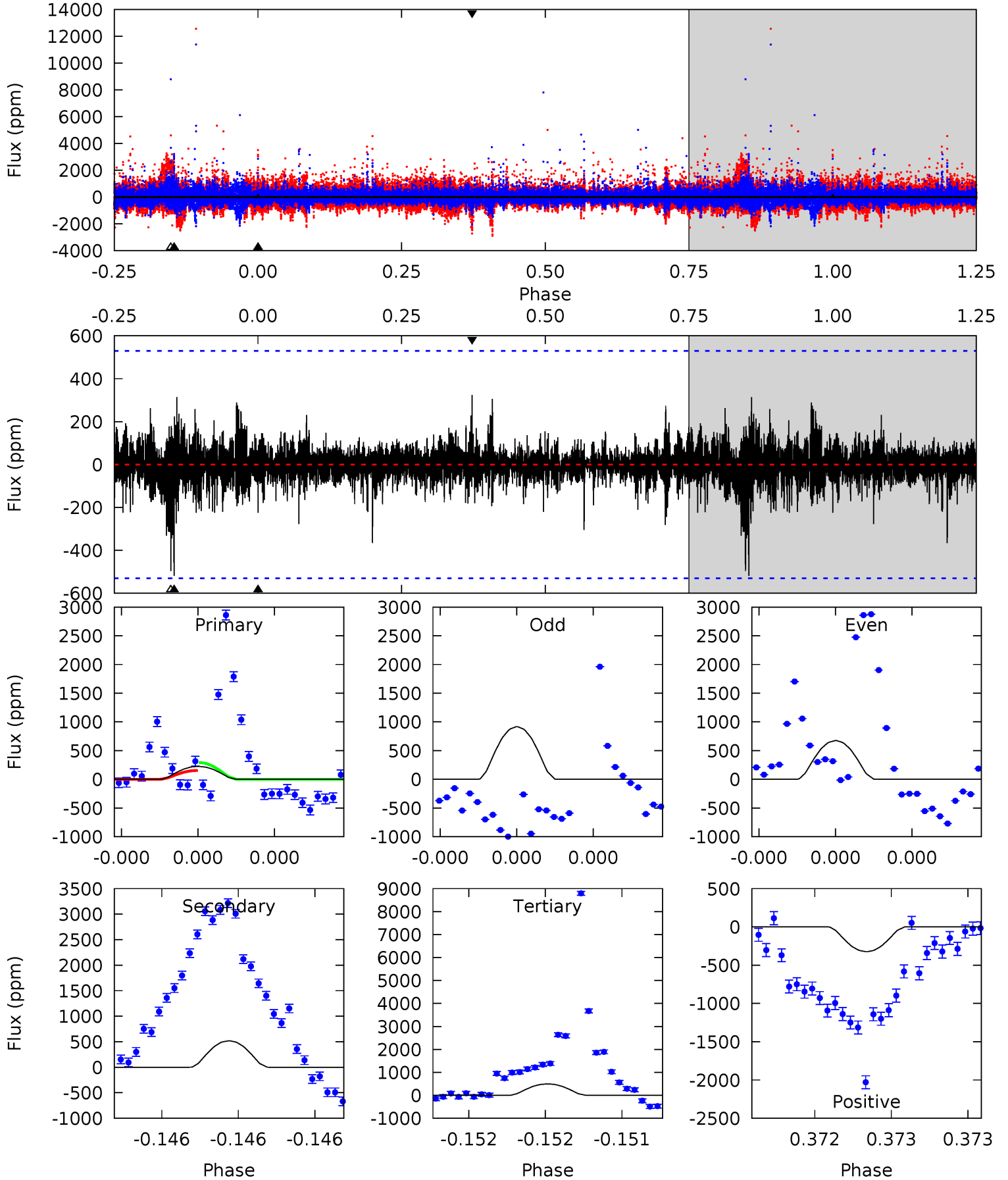
TCE 009754973-01 P=611.174591 Days $T_0=139.024987$ (BKJD)



DV Model-Shift Uniqueness Test

009754973-01, P = 611.171125 Days, E = 139.029599 Days

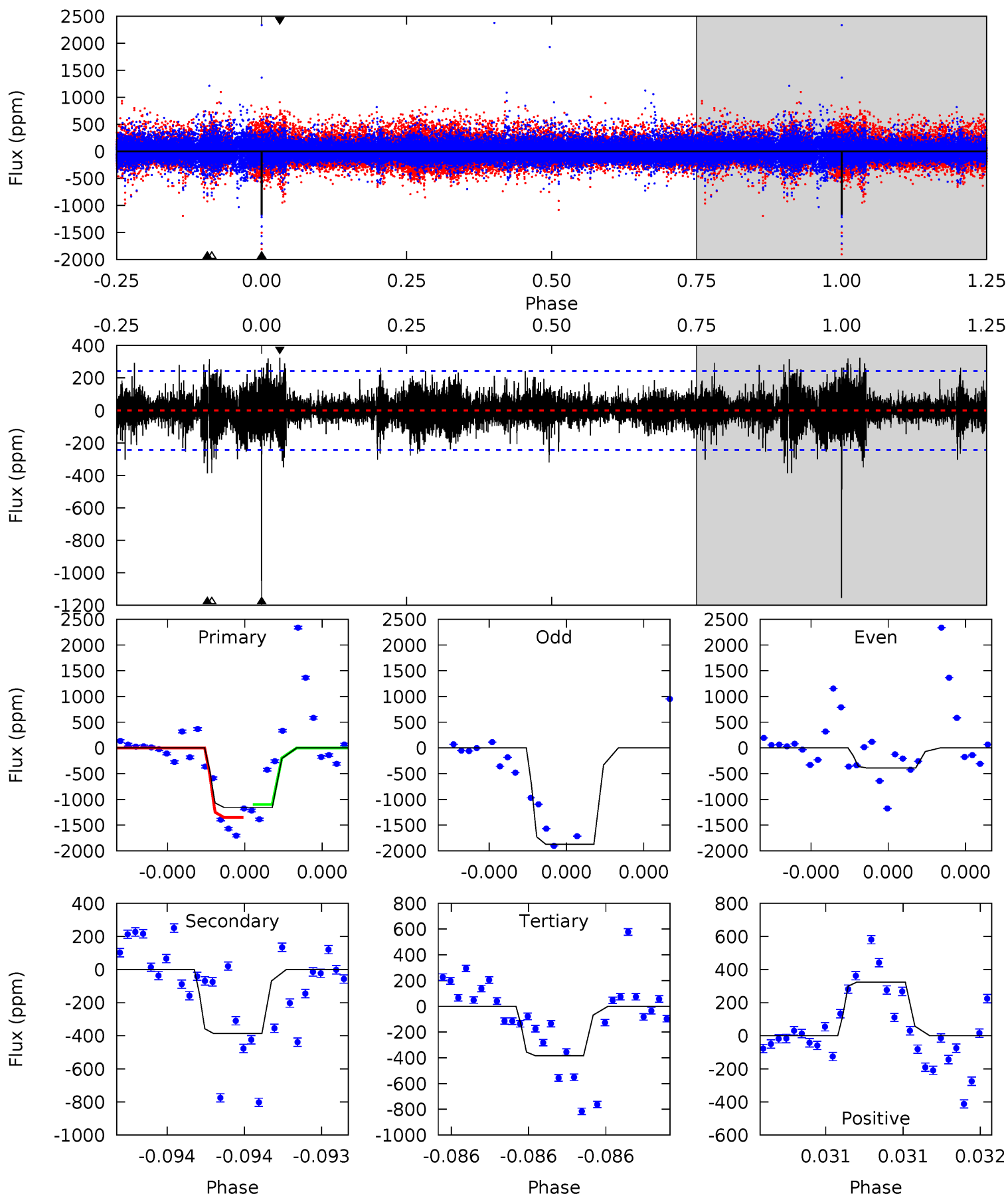
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.39	5.52	5.28	3.45	5.64	3.58	0.70	-2.89	-1.06	0.24	2.07	0.98	0.43	0.38	0.74



Alt Model-Shift Uniqueness Test

009754973-01, P = 611.174591 Days, E = 139.024987 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	9.03	8.96	7.57	5.68	3.64	1.46	18.0	19.4	0.07	1.46	16.7	0.79	0.22	2.82



Stellar Parameters For KIC 009754973

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5858^{+157}_{-157}	$4.057^{+0.490}_{-0.210}$	$-0.700^{+0.300}_{-0.300}$	$1.386^{+0.420}_{-0.578}$	$0.798^{+0.088}_{-0.064}$	$0.422^{+1.909}_{-0.213}$
	+3%/-3%	+12%/-5%	+43%/-43%	+30%/-42%	+11%/-8%	+452%/-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 009754973-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-519 ± 94	$9.86^{+8.84}_{-6.46}$	366^{+35}_{-45}	3717^{+1889}_{-617}	4963^{+36627}_{-3582}
Alt.	-387 ± 43	$8.87^{+8.70}_{-6.03}$	369^{+35}_{-49}	3697^{+1878}_{-674}	4689^{+38520}_{-3552}

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

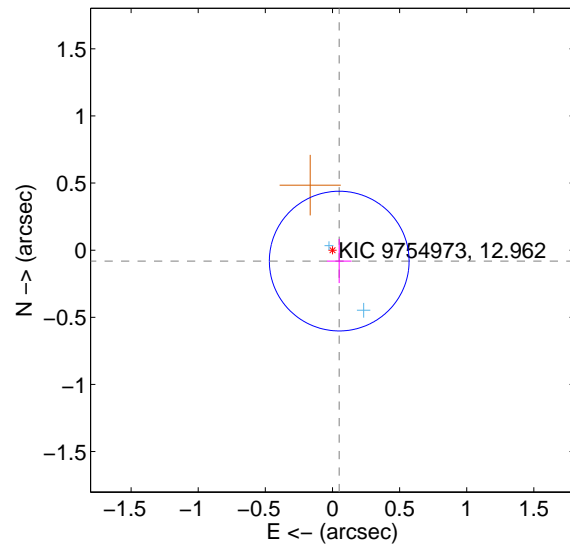
Supplemental centroid analysis for 009754973-01. Kepler magnitude: 12.96. Transit SNR 9.11

There are 2 quarters with good PRF difference image offsets

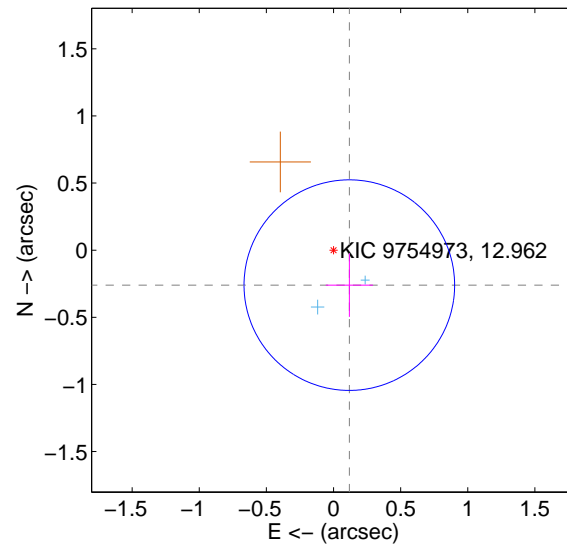
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.096 ± 0.173	0.55	-0.050 ± 0.091	-0.081 ± 0.164
PRF-fit source offset from KIC position	0.286 ± 0.261	1.09	-0.118 ± 0.176	-0.260 ± 0.236
photometric centroid source offset	0.31 ± 0.40	0.78	-0.26 ± 0.40	0.16 ± 0.39

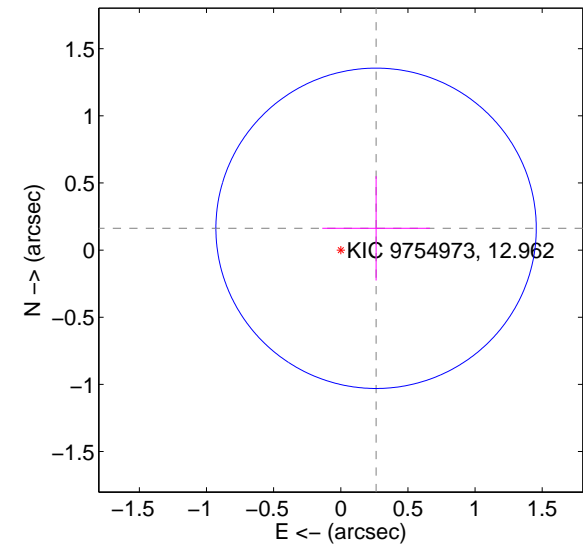
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

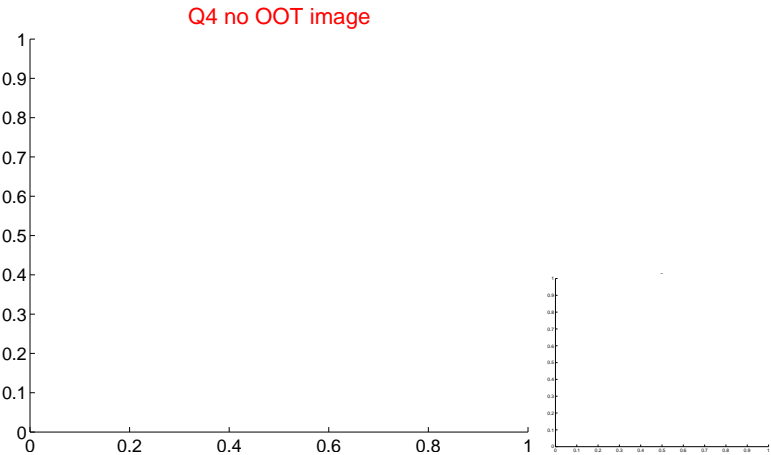
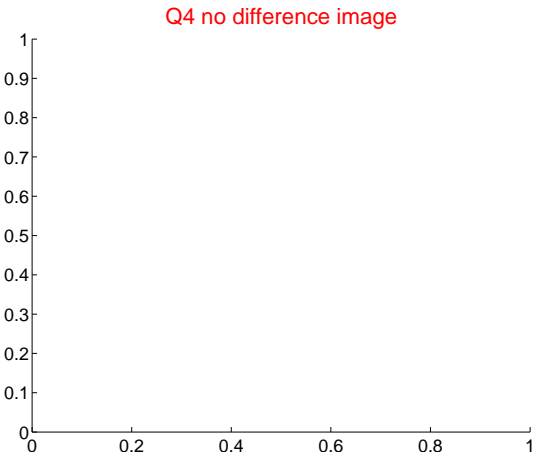
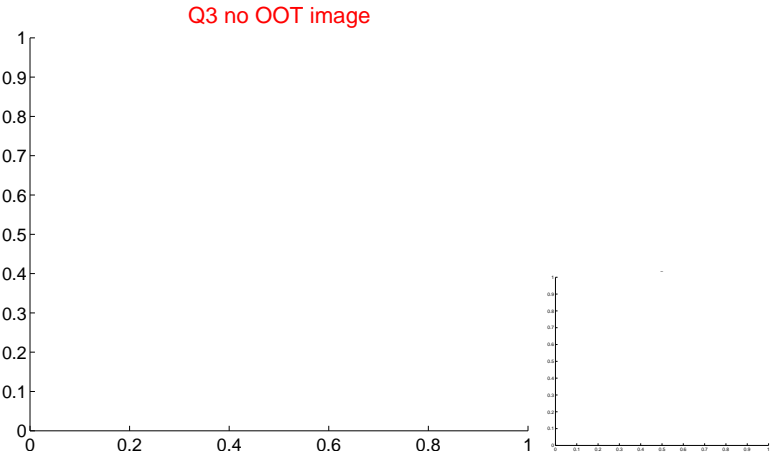
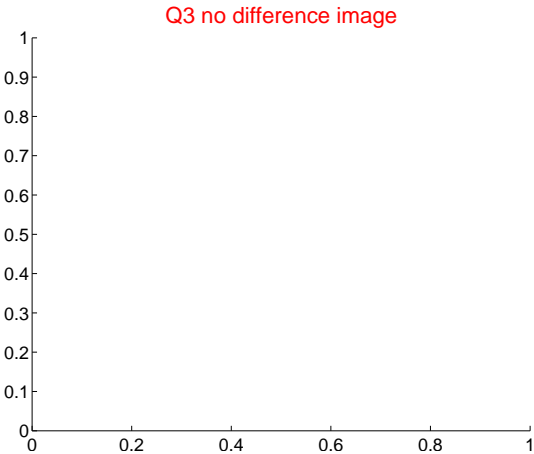
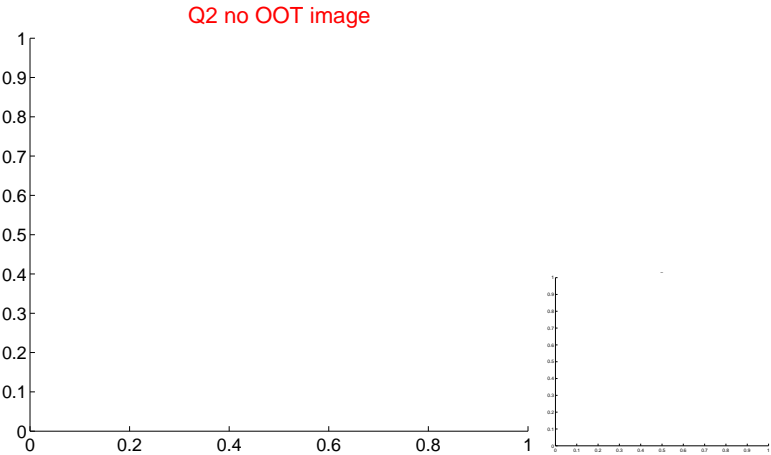
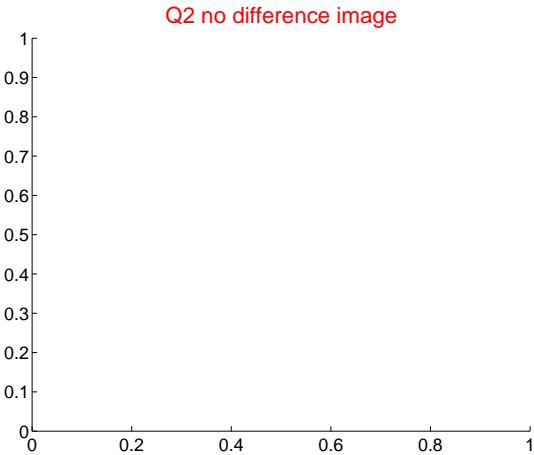
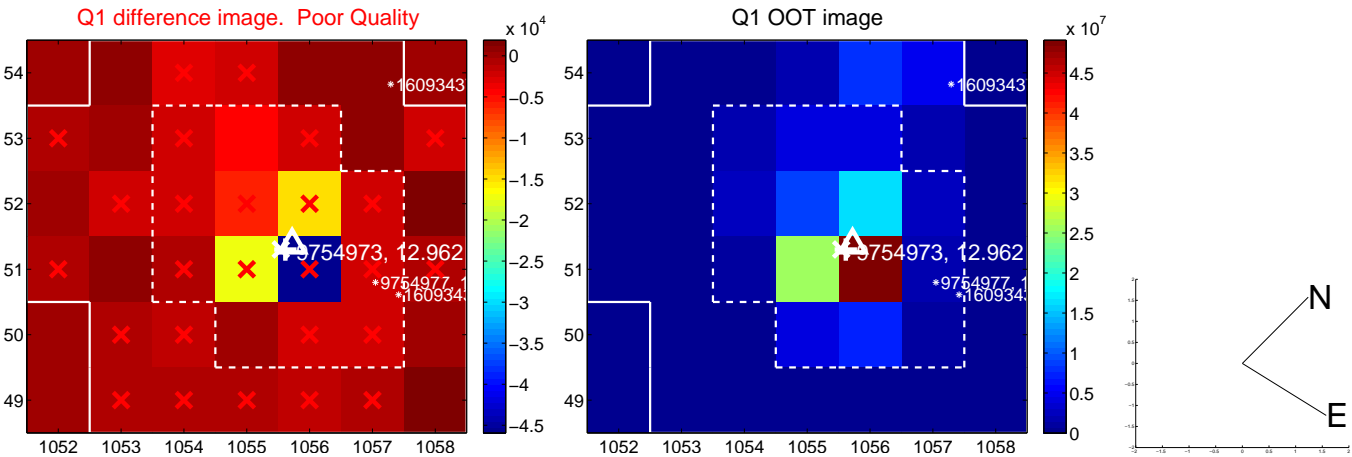


offset from photometric centroids

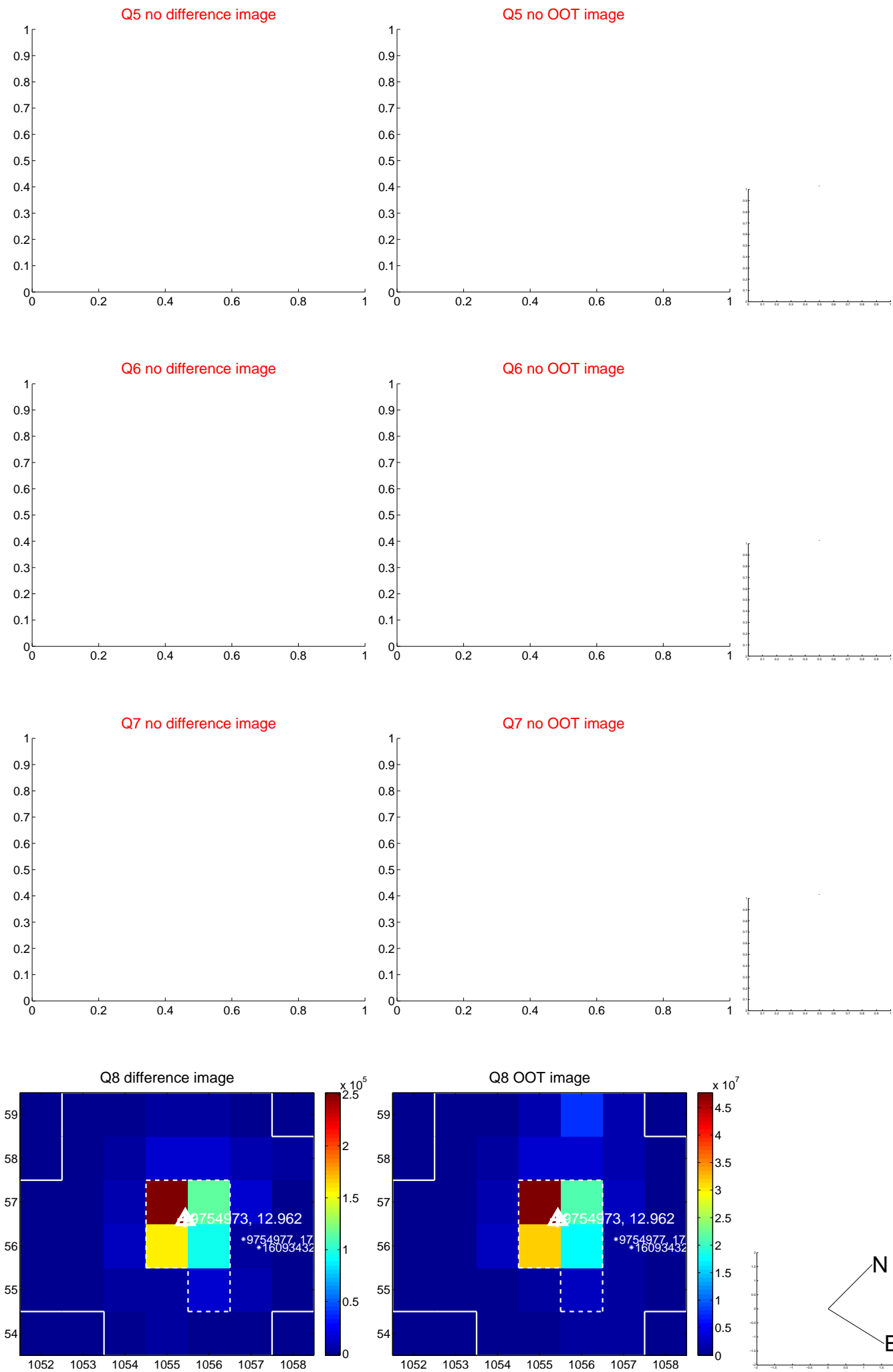


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

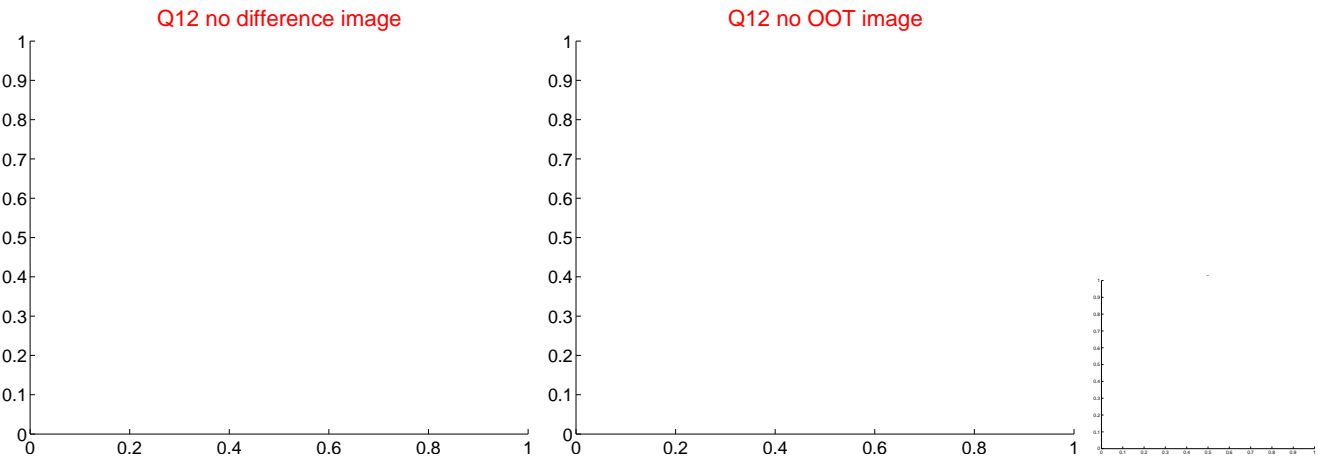
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



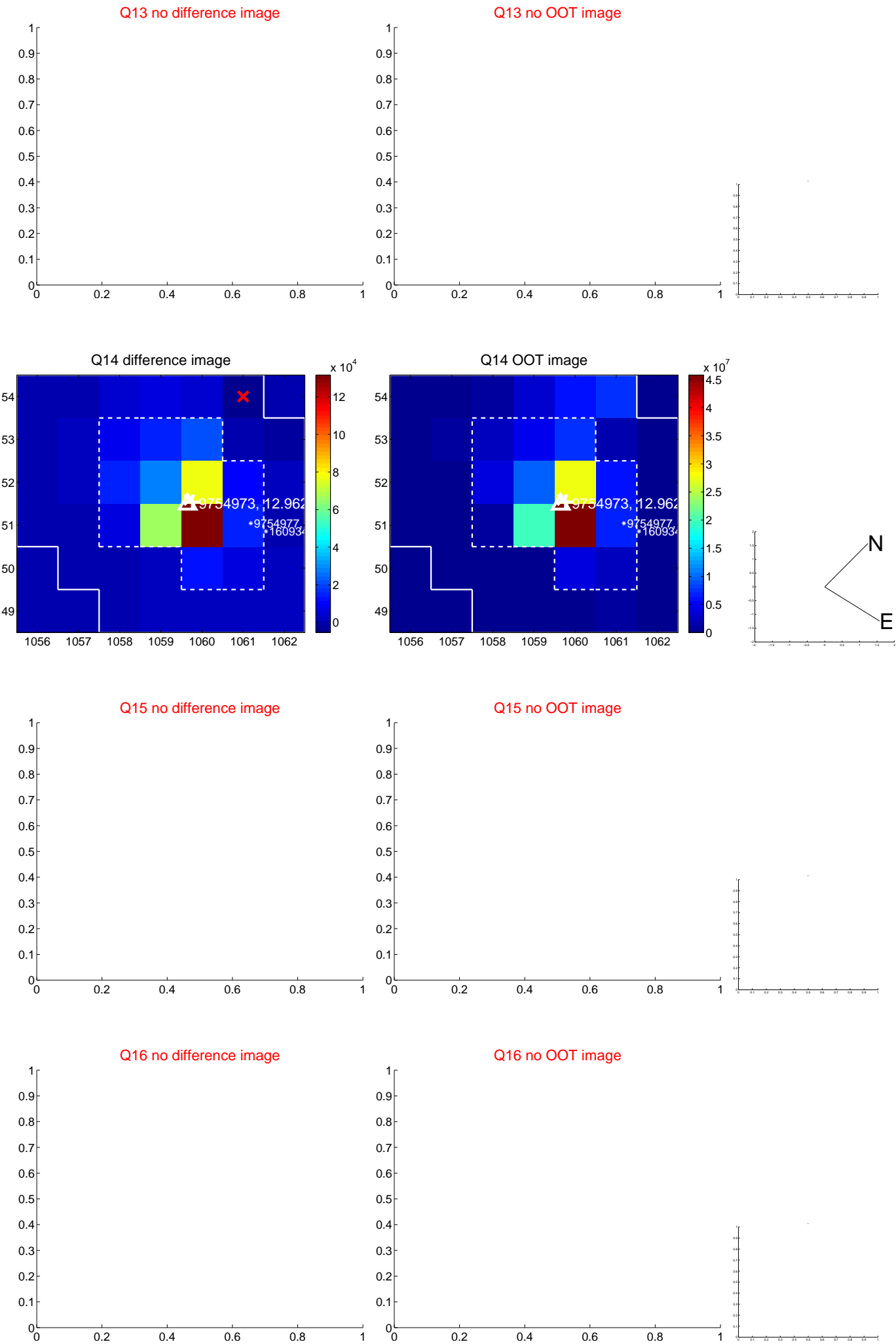
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



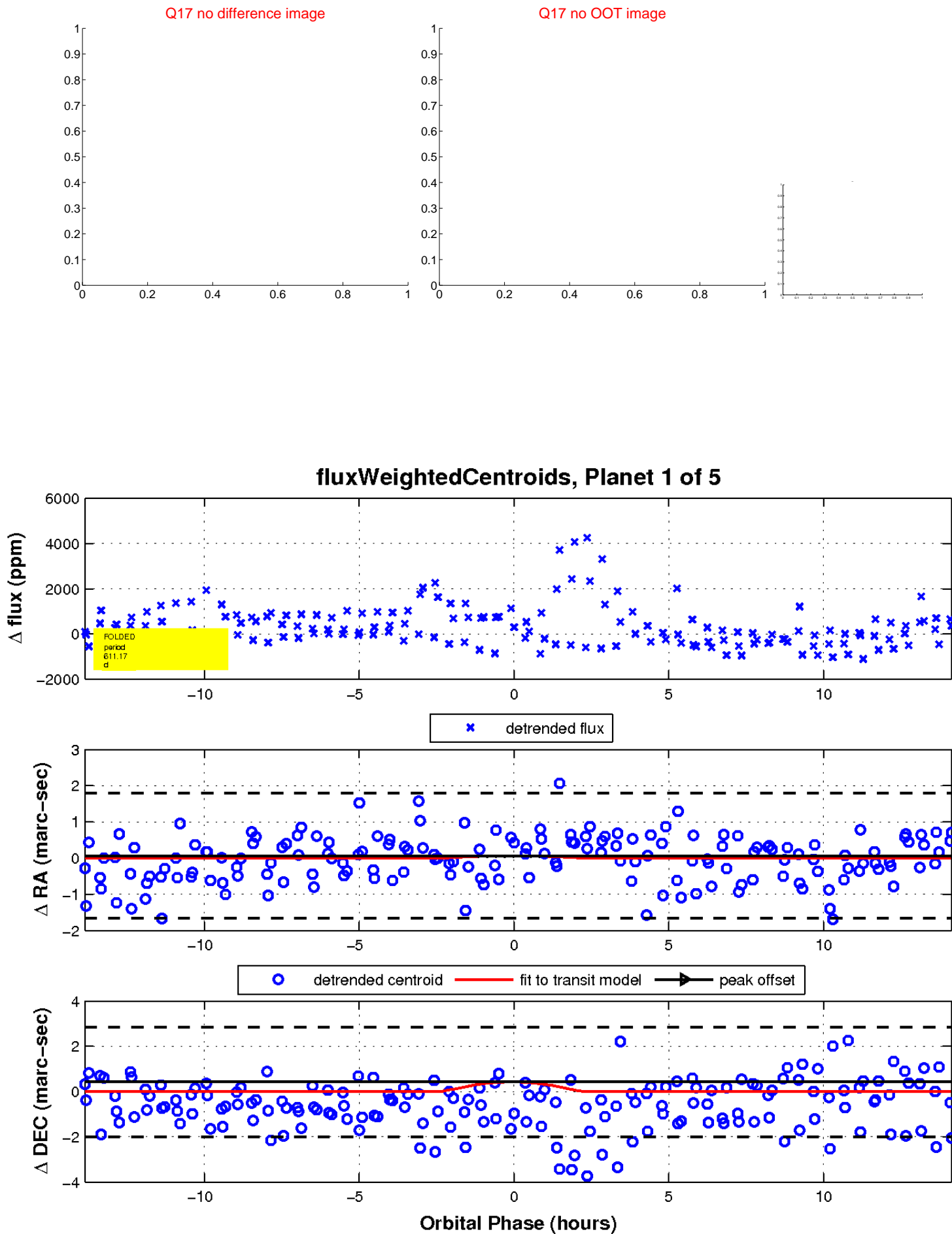
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



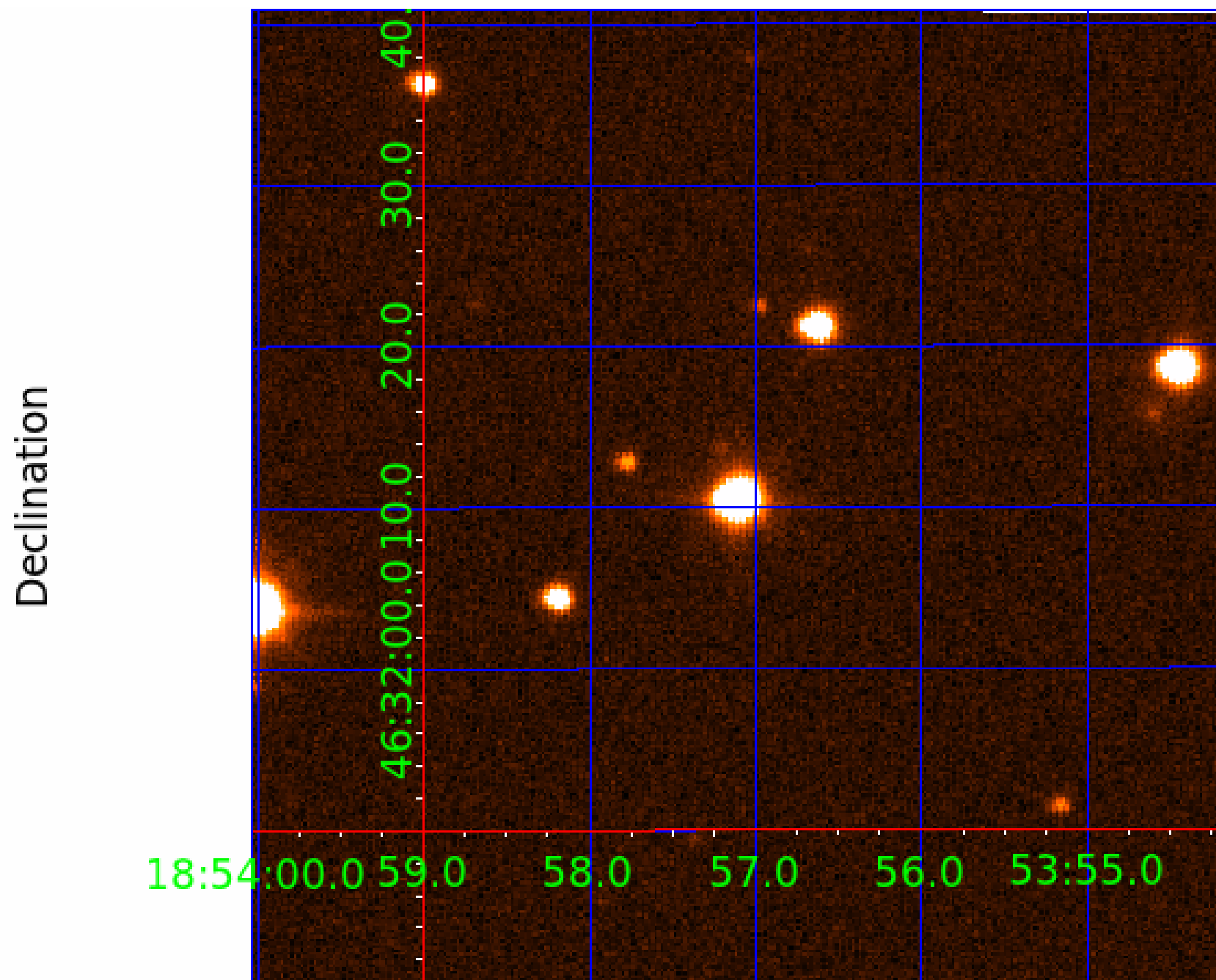
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009754973

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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Robovetter Results

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009754973-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-03	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—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009754973-04	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—CENT_FEW_DIFFS
009754973-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

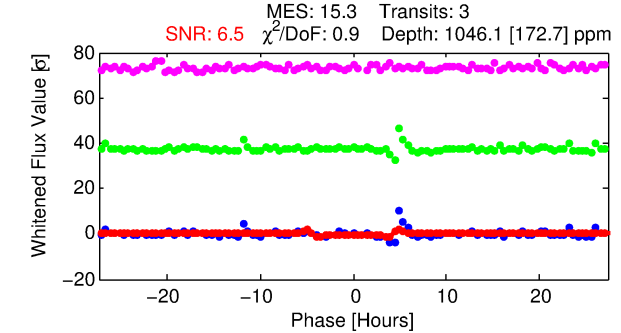
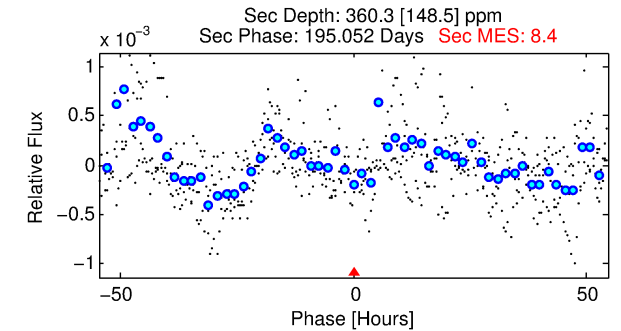
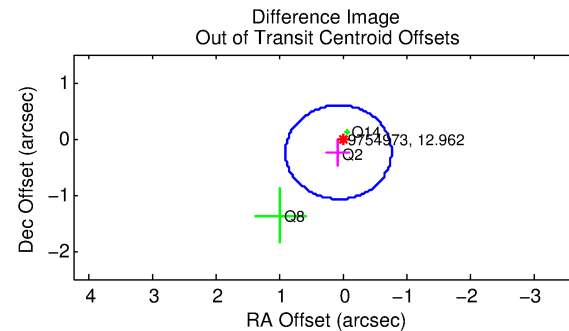
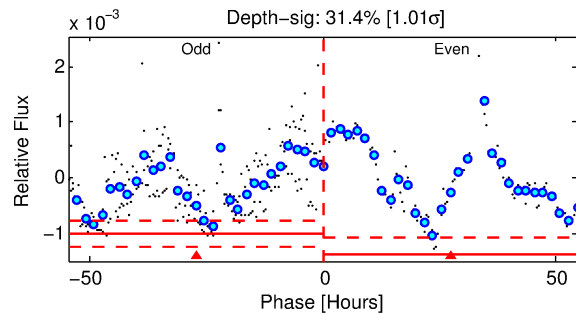
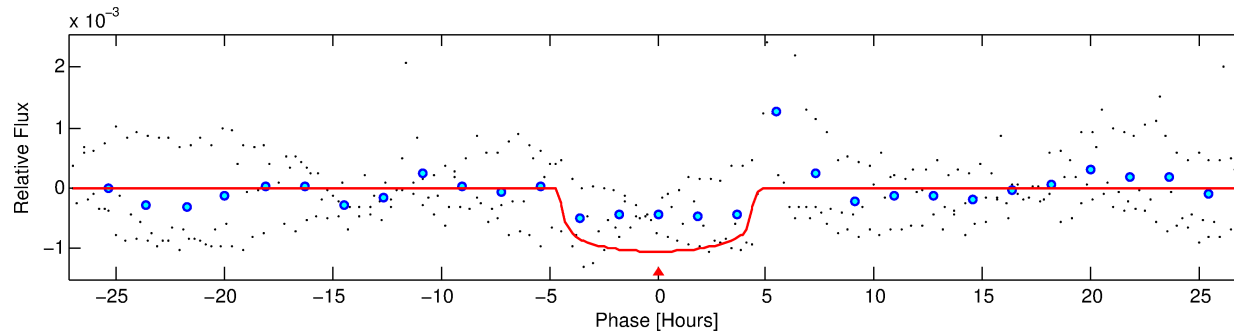
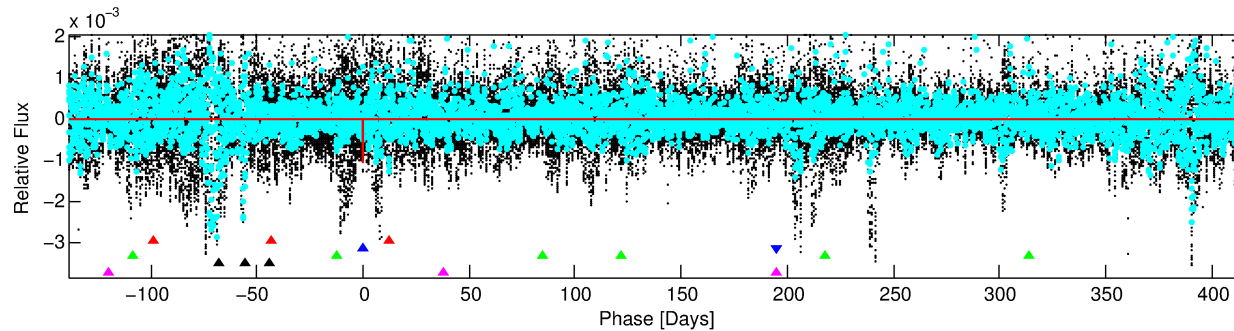
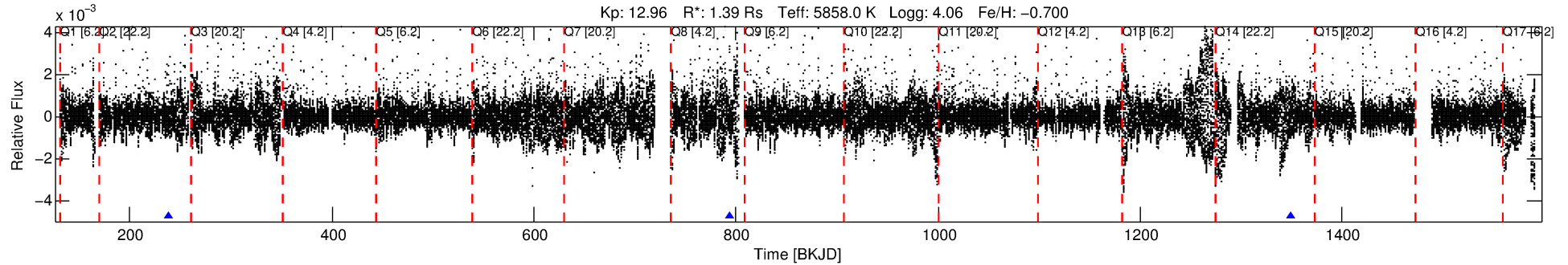
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009754973-02

No Significant Match Found

DV One-Page Summary

KIC: 9754973 Candidate: 2 of 5 Period: 555.512 d



DV Fit Results:

Period = 555.51239 [0.00405] d
Epoch = 237.9856 [0.0062] BKJD
Rp/R* = 0.0296 [0.0205]
a/R* = 481.31 [1652.93]
b = 0.04 [94.83]
Seff = 1.35 [1.09]
Teq = 275 [56] K
Rp = 4.48 [3.62] Re
a = 1.2274 [0.5741] AU
Ag = 14905.94 [24636.41] [0.60 σ]
Teffp = 4691 [1700] K [2.60 σ]

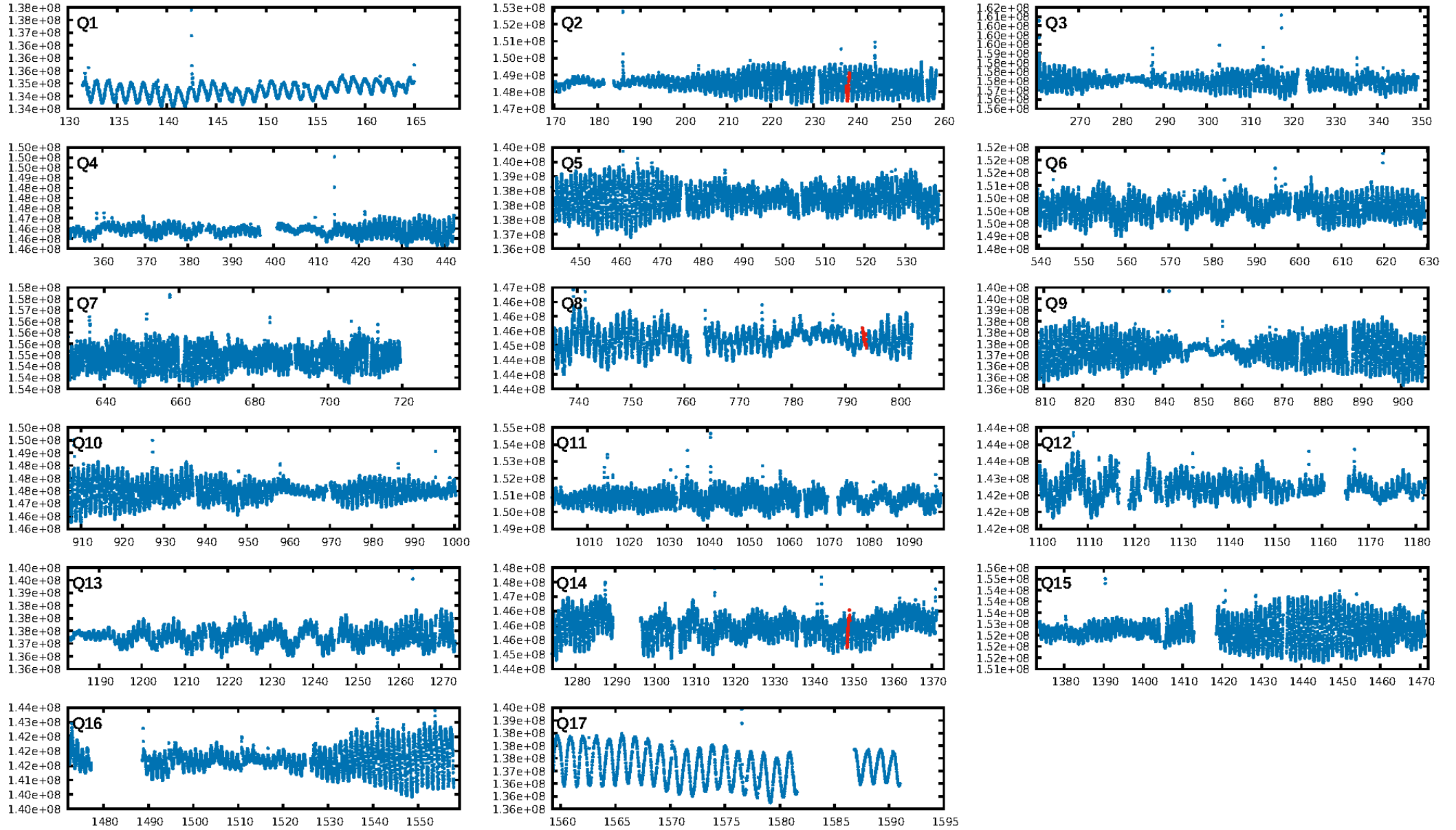
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.02 σ]
LongPeriod-sig: 100.0% [130.59 σ]
ModelChiSquare2-sig: 52.2%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.357
Centroid-sig: 53.9%
Centroid-so: 0.270 arcsec [0.82 σ]
OotOffset-rm: 0.254 arcsec [0.91 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.483 arcsec [1.06 σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

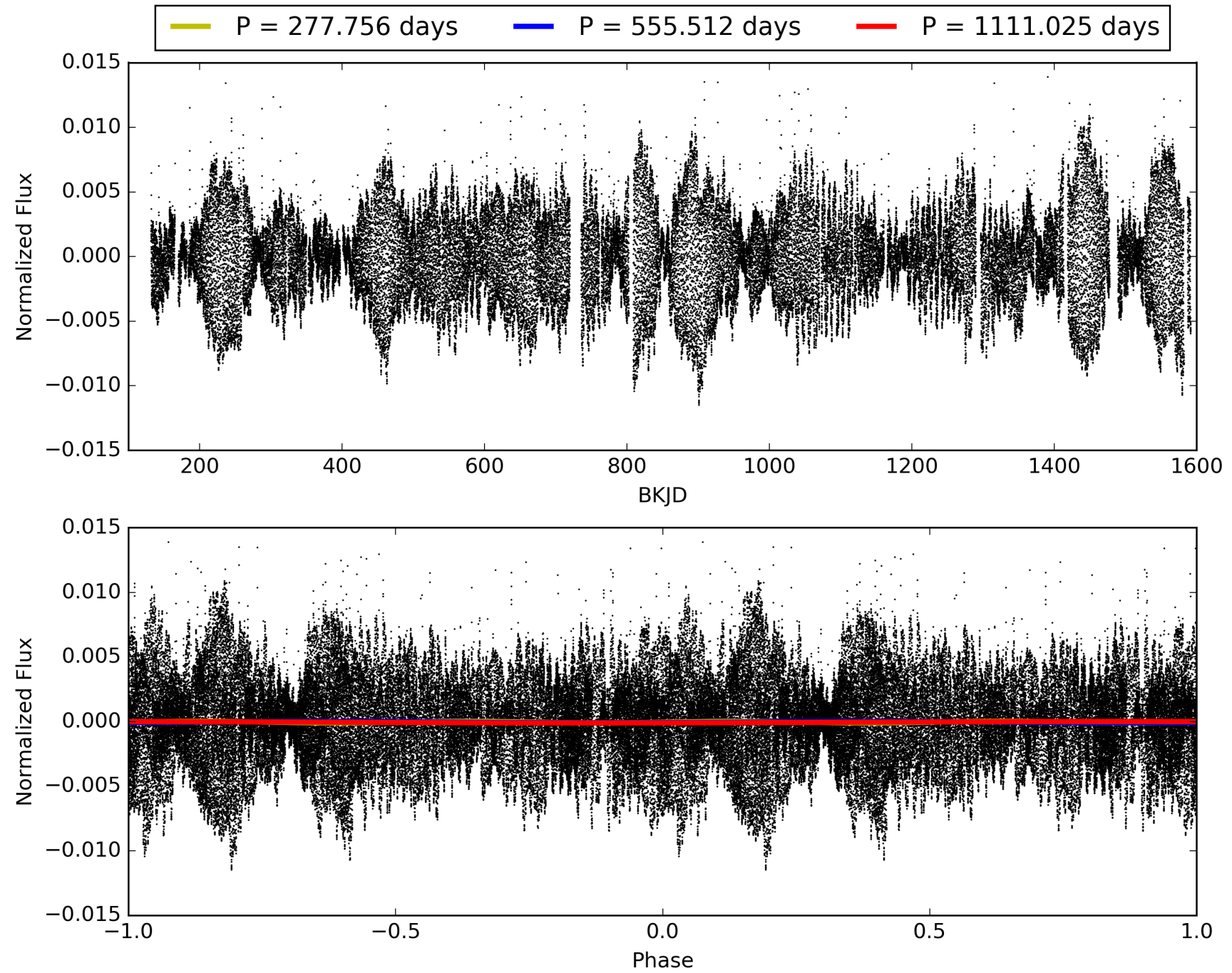
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:40:40 Z

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

TCE 009754973-02, PDC Light Curves

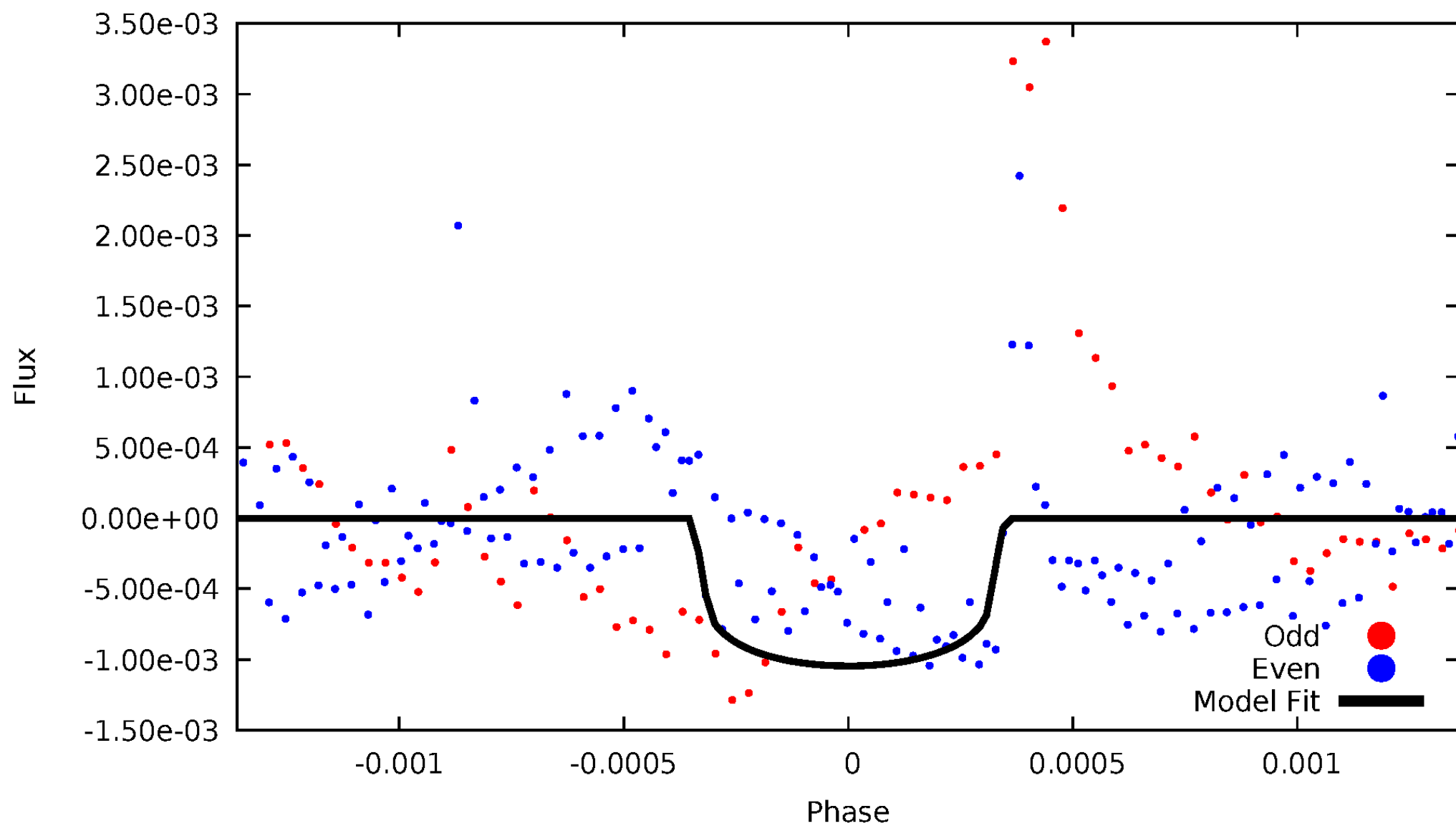


TCE 009754973-02



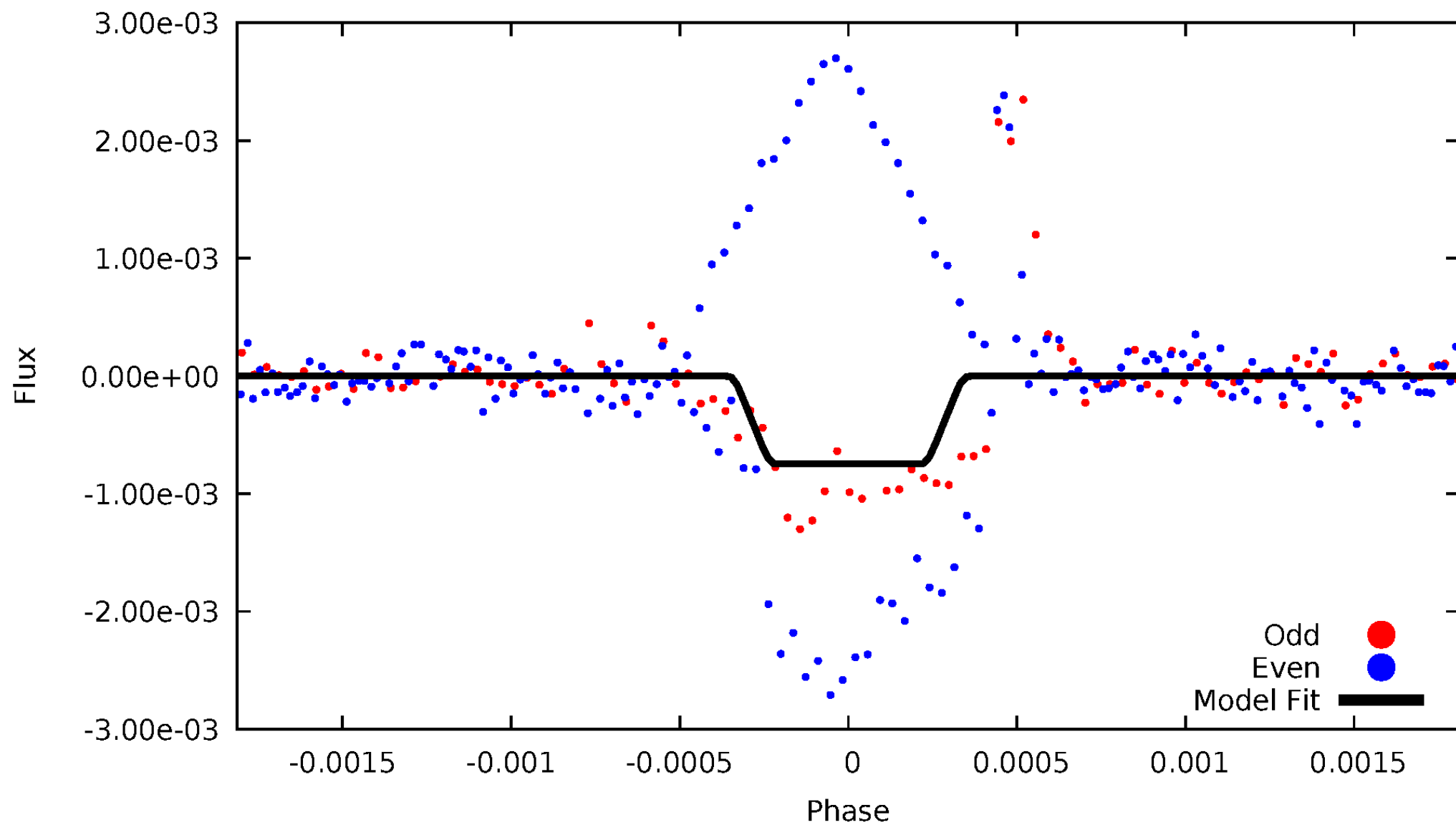
DV Odd/Even

TCE 009754973-02



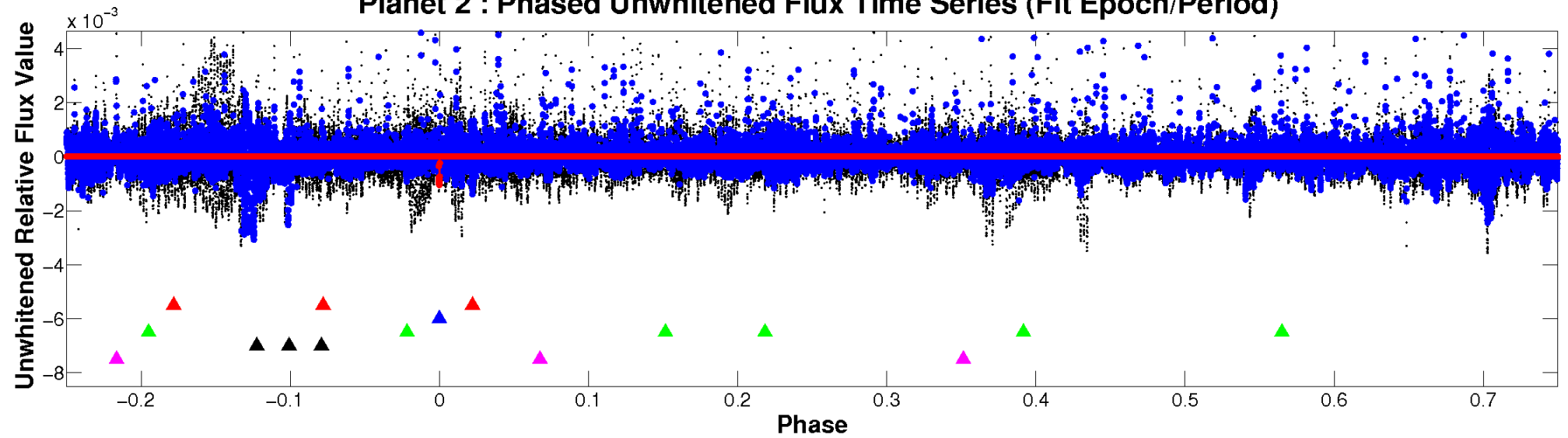
ALT Odd/Even

TCE 009754973-02

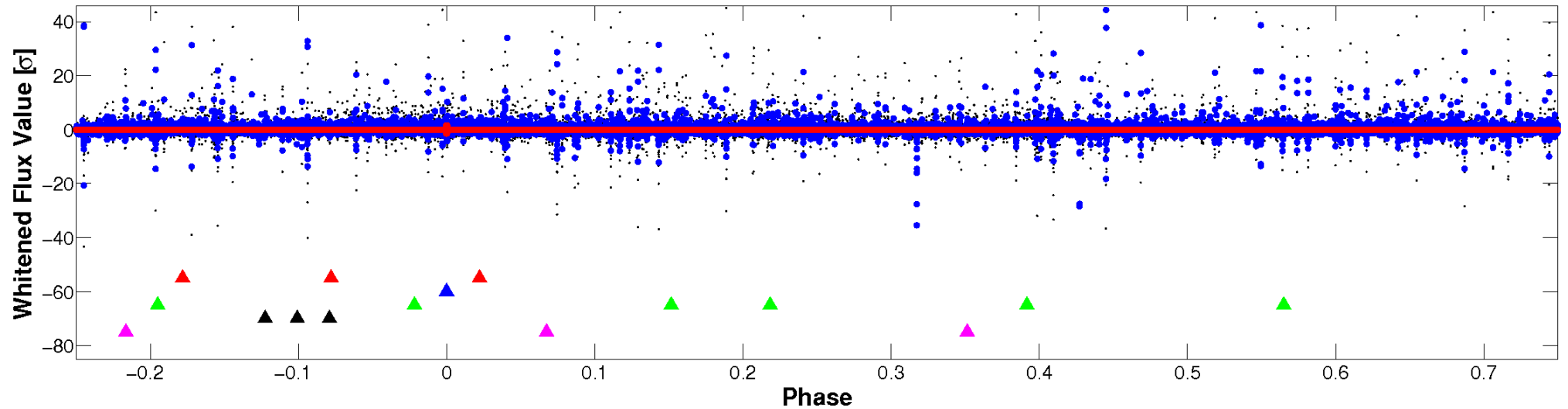


Non-Whitened Vs. Whitened Light Curve

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

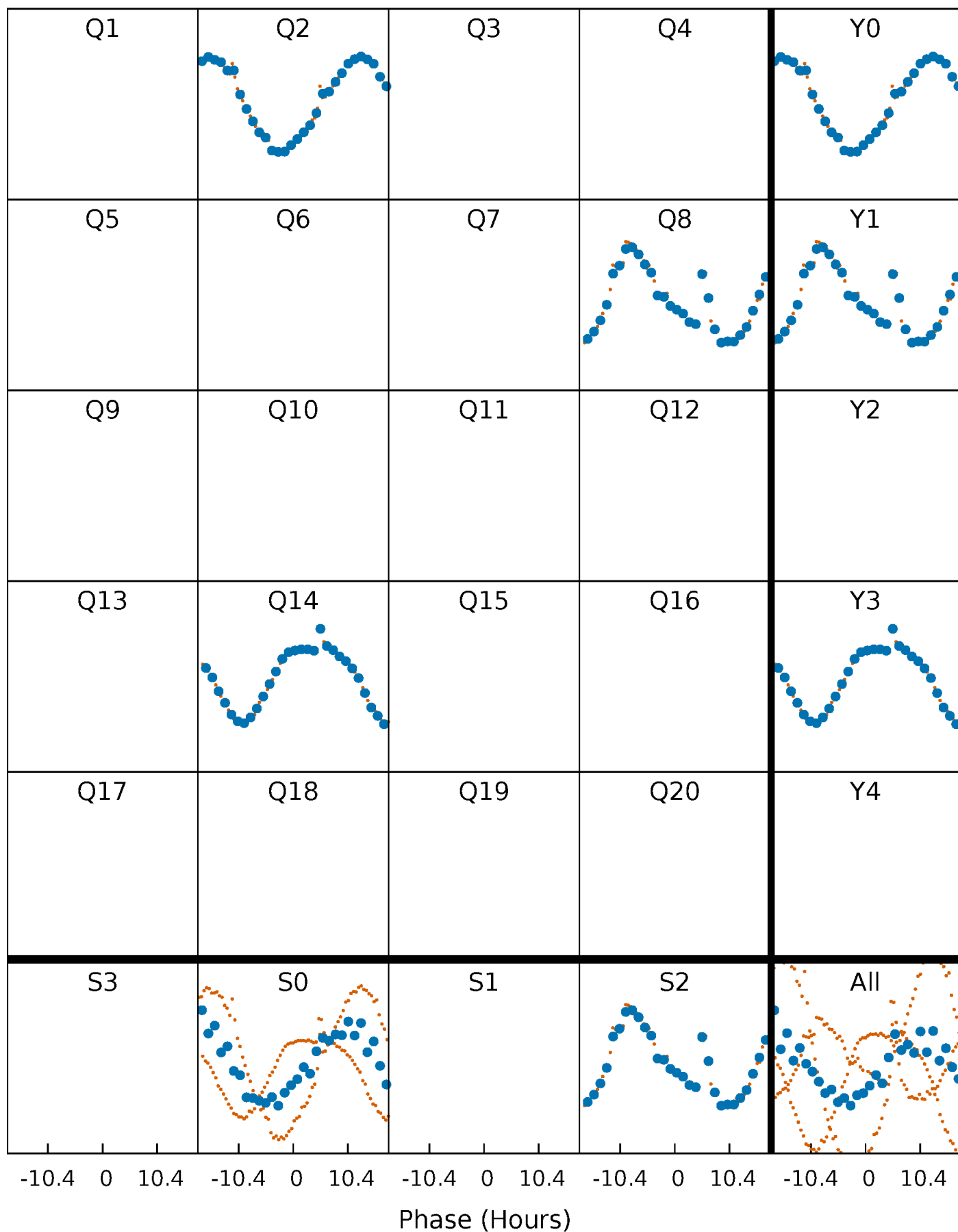


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



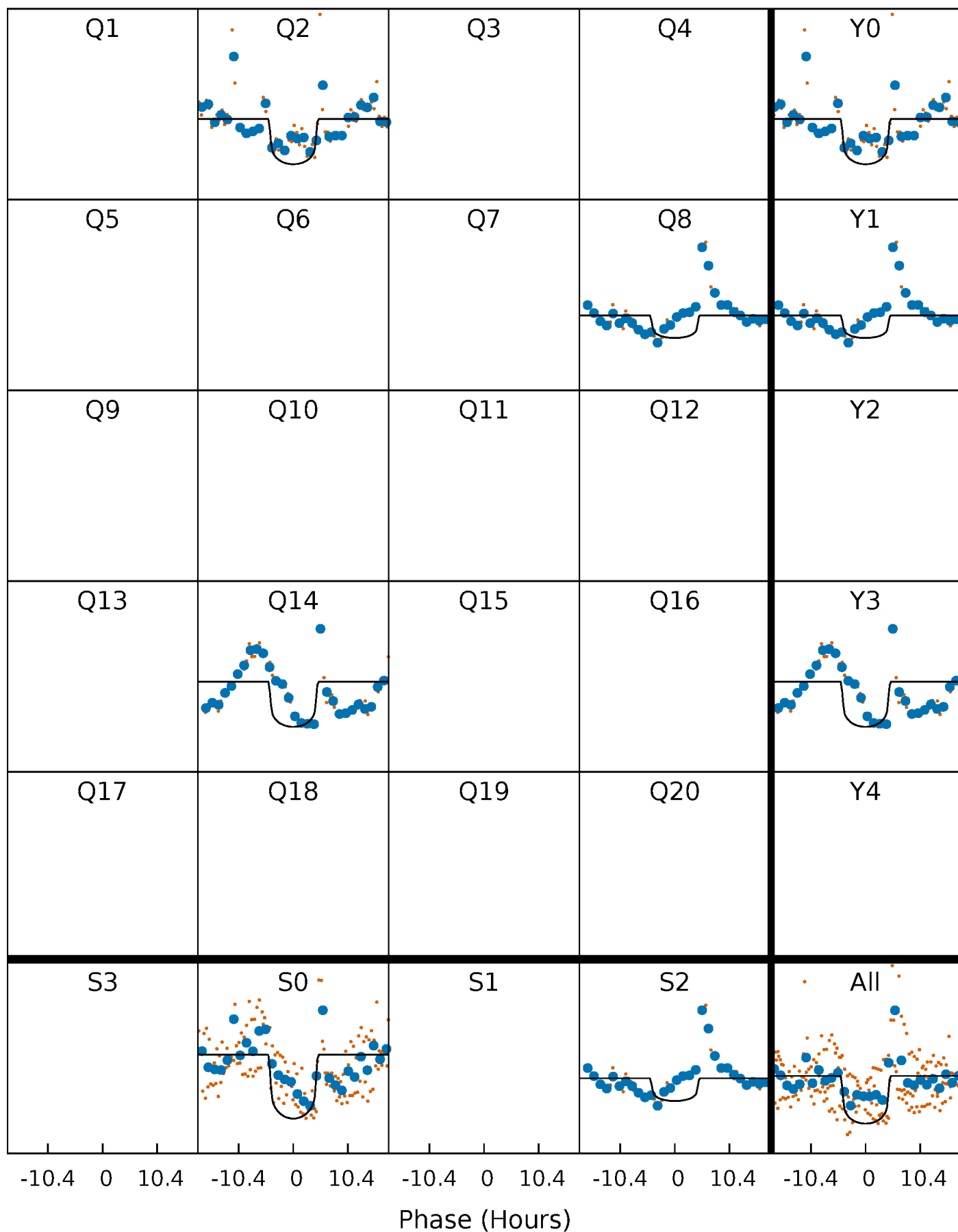
PDC Quarter-Phased Transit Curves

TCE 009754973-02 P=555.512391 Days $T_0=237.985617$ (BKJD)



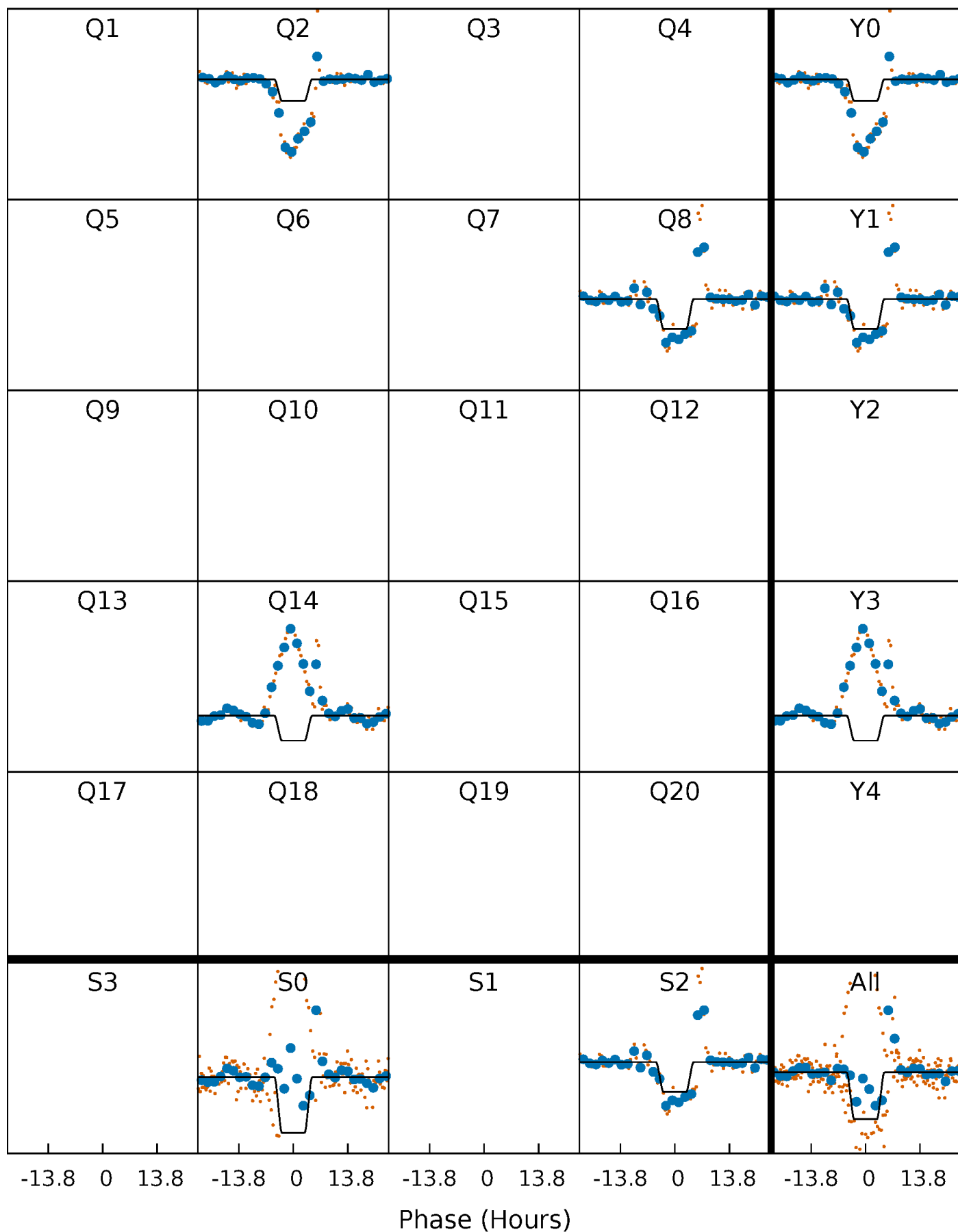
DV Quarter-Phased Transit Curves

TCE 009754973-02 P=555.512391 Days $T_0=237.985617$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

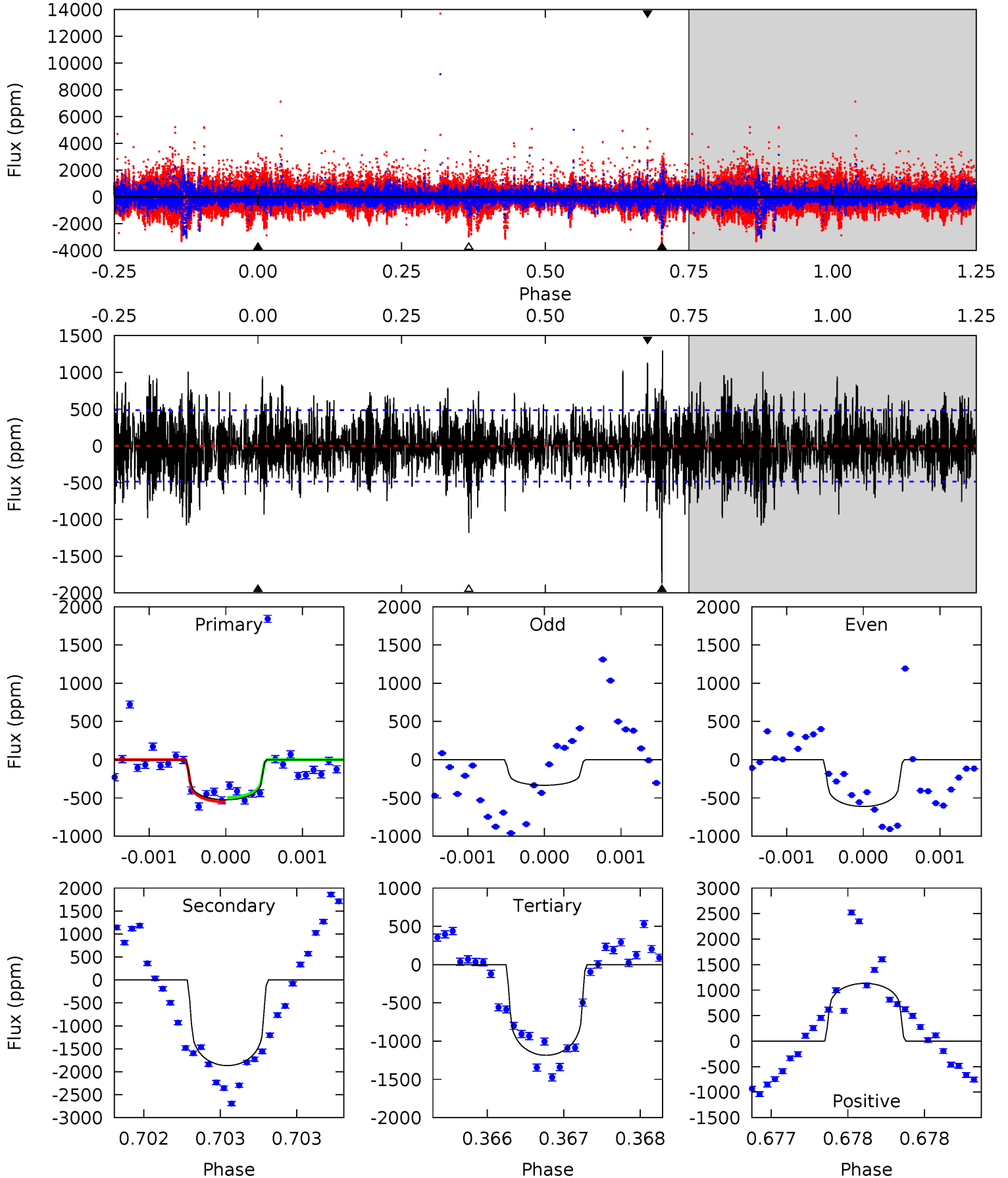
TCE 009754973-02 P=555.513573 Days $T_0=237.940886$ (BKJD)



DV Model-Shift Uniqueness Test

009754973-02, P = 555.512391 Days, E = 237.985617 Days

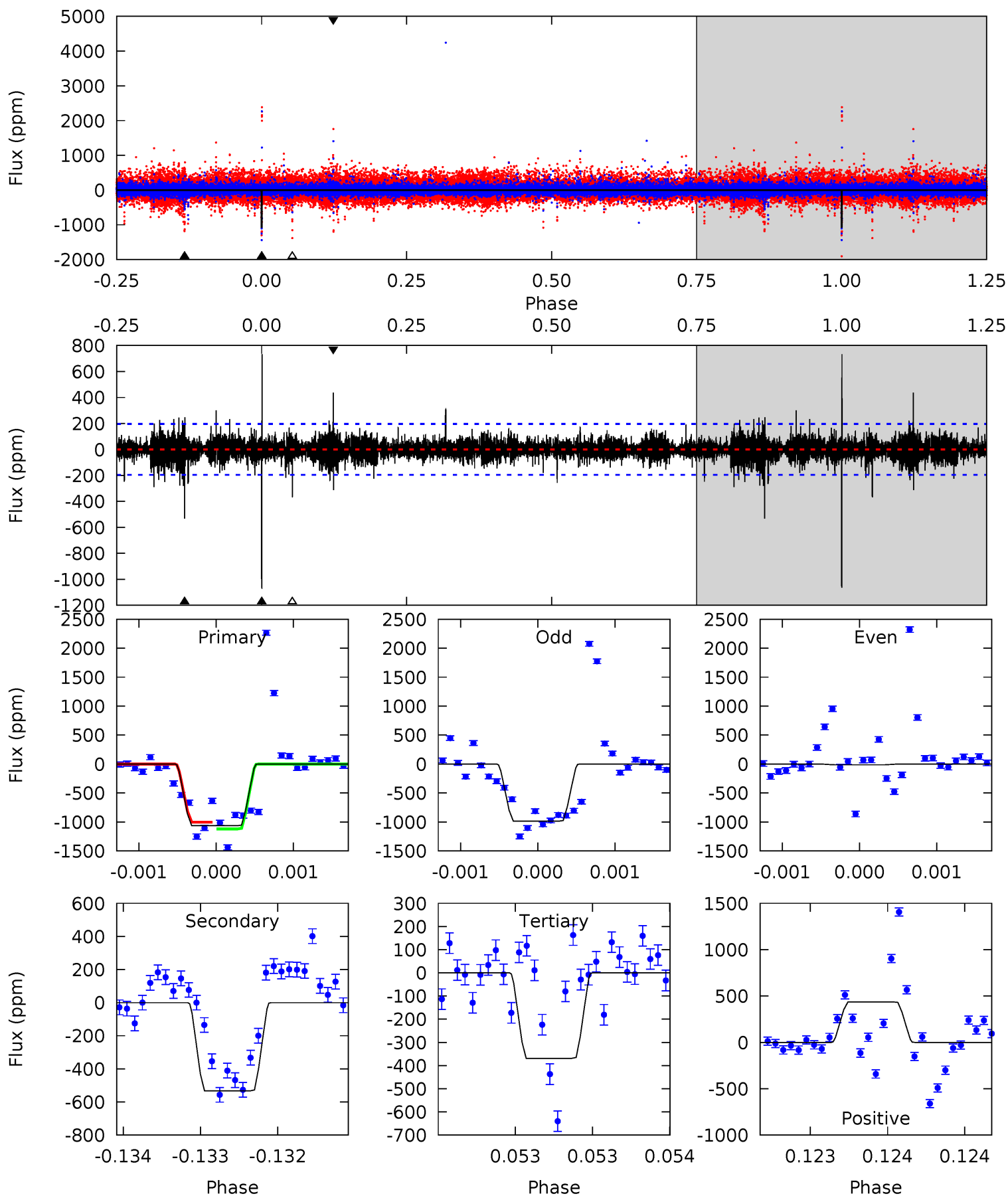
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.96	21.2	13.5	12.9	5.52	3.40	3.24	-7.53	-6.92	7.75	8.36	1.22	0.88	0.41	0.33



Alt Model-Shift Uniqueness Test

009754973-02, P = 555.513573 Days, E = 237.940886 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.0	15.0	10.4	12.3	5.52	3.40	1.46	19.6	17.7	4.62	2.74	19.0	0.37	0.41	0



Stellar Parameters For KIC 009754973

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5858^{+157}_{-157}	$4.057^{+0.490}_{-0.210}$	$-0.700^{+0.300}_{-0.300}$	$1.386^{+0.420}_{-0.578}$	$0.798^{+0.088}_{-0.064}$	$0.422^{+1.909}_{-0.213}$
	+3%/-3%	+12%/-5%	+43%/-43%	+30%/-42%	+11%/-8%	+452%/-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 009754973-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1866 ± 88	$4.28^{+3.32}_{-2.47}$	377^{+38}_{-47}	6905^{+5471}_{-1477}	$85366^{+386362}_{-58031}$
Alt.	-533 ± 35	$4.10^{+3.02}_{-2.49}$	375^{+35}_{-47}	5202^{+3010}_{-902}	$26490^{+146437}_{-17737}$

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

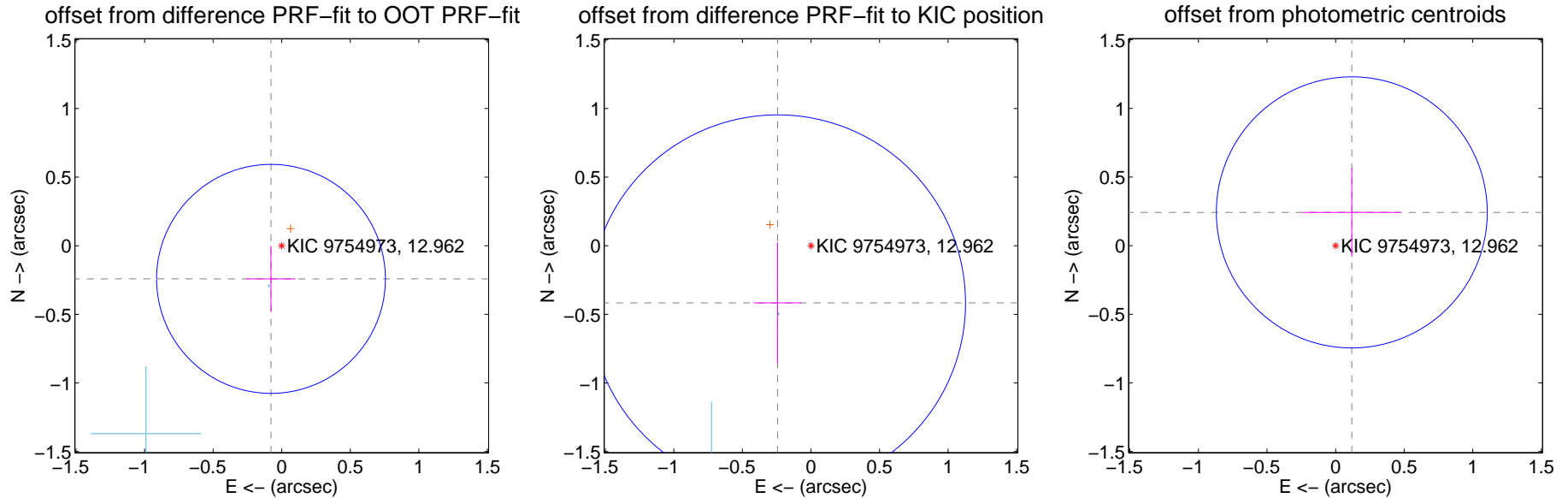
DV Centroid Data

Supplemental centroid analysis for 009754973-02. Kepler magnitude: 12.96. Transit SNR 6.51

There are 2 quarters with good PRF difference image offsets

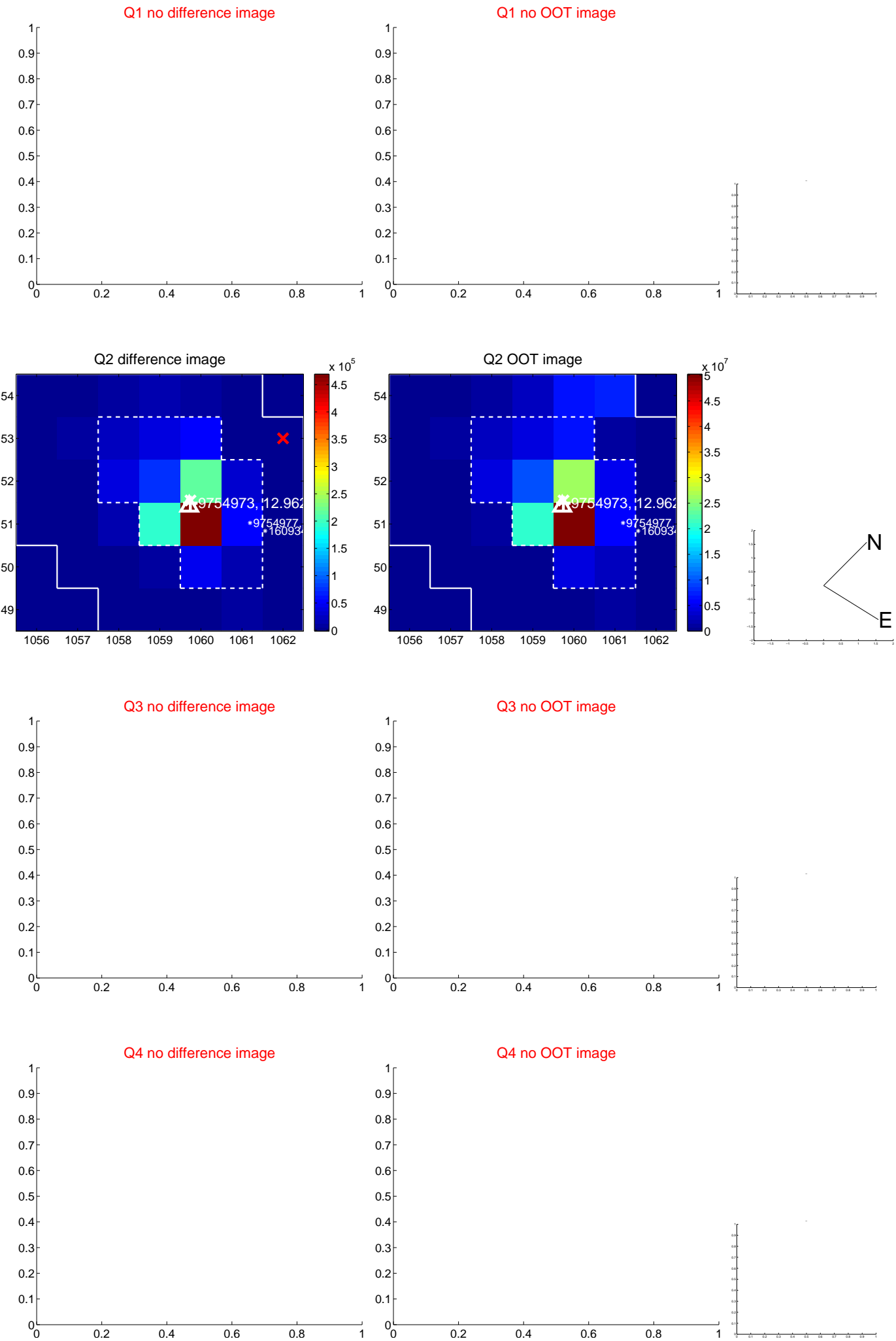
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.254 ± 0.278	0.91	0.078 ± 0.179	-0.242 ± 0.240
PRF-fit source offset from KIC position	0.483 ± 0.457	1.06	0.244 ± 0.173	-0.417 ± 0.441
photometric centroid source offset	0.27 ± 0.33	0.82	-0.12 ± 0.36	0.24 ± 0.32

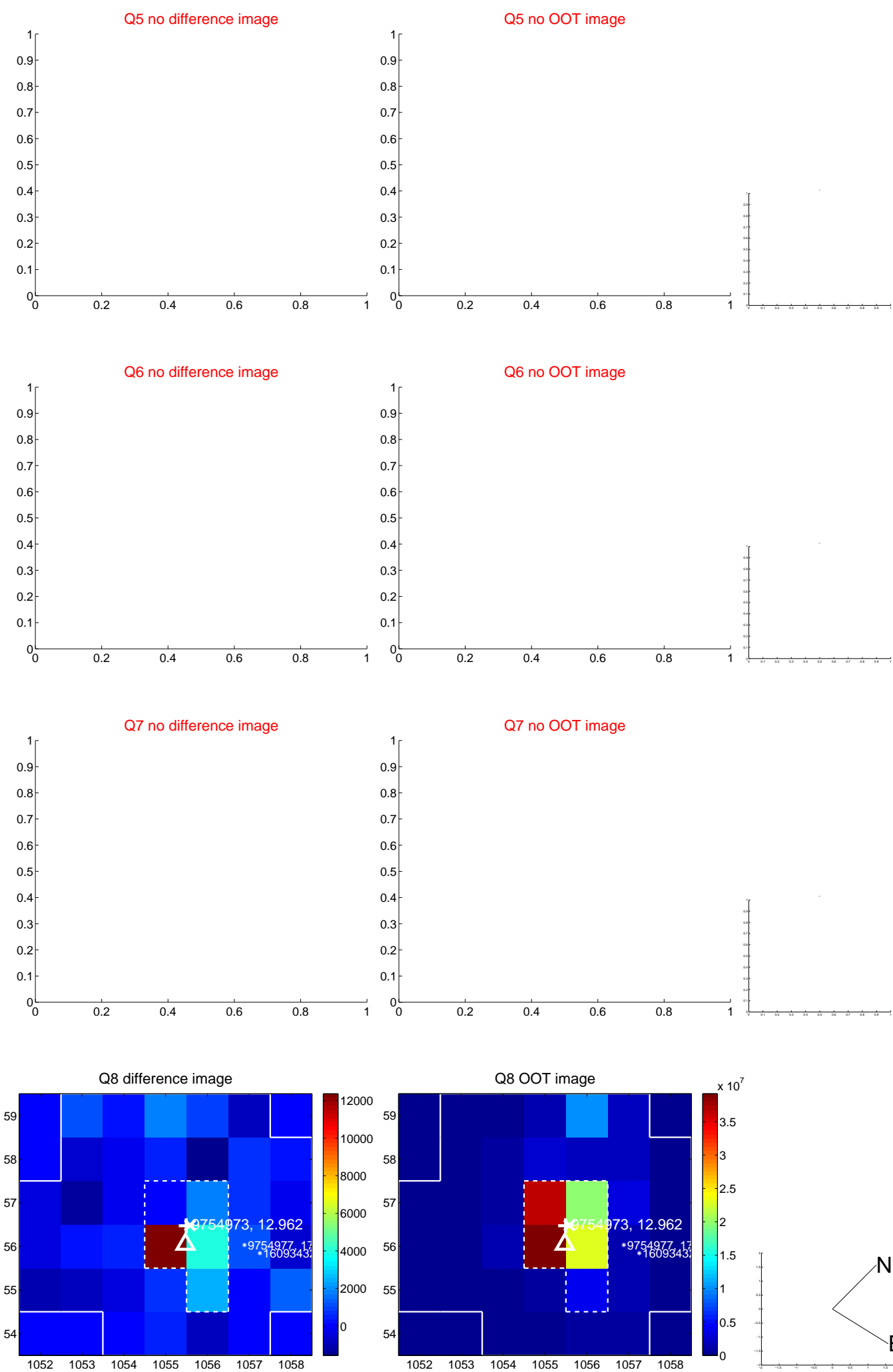


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



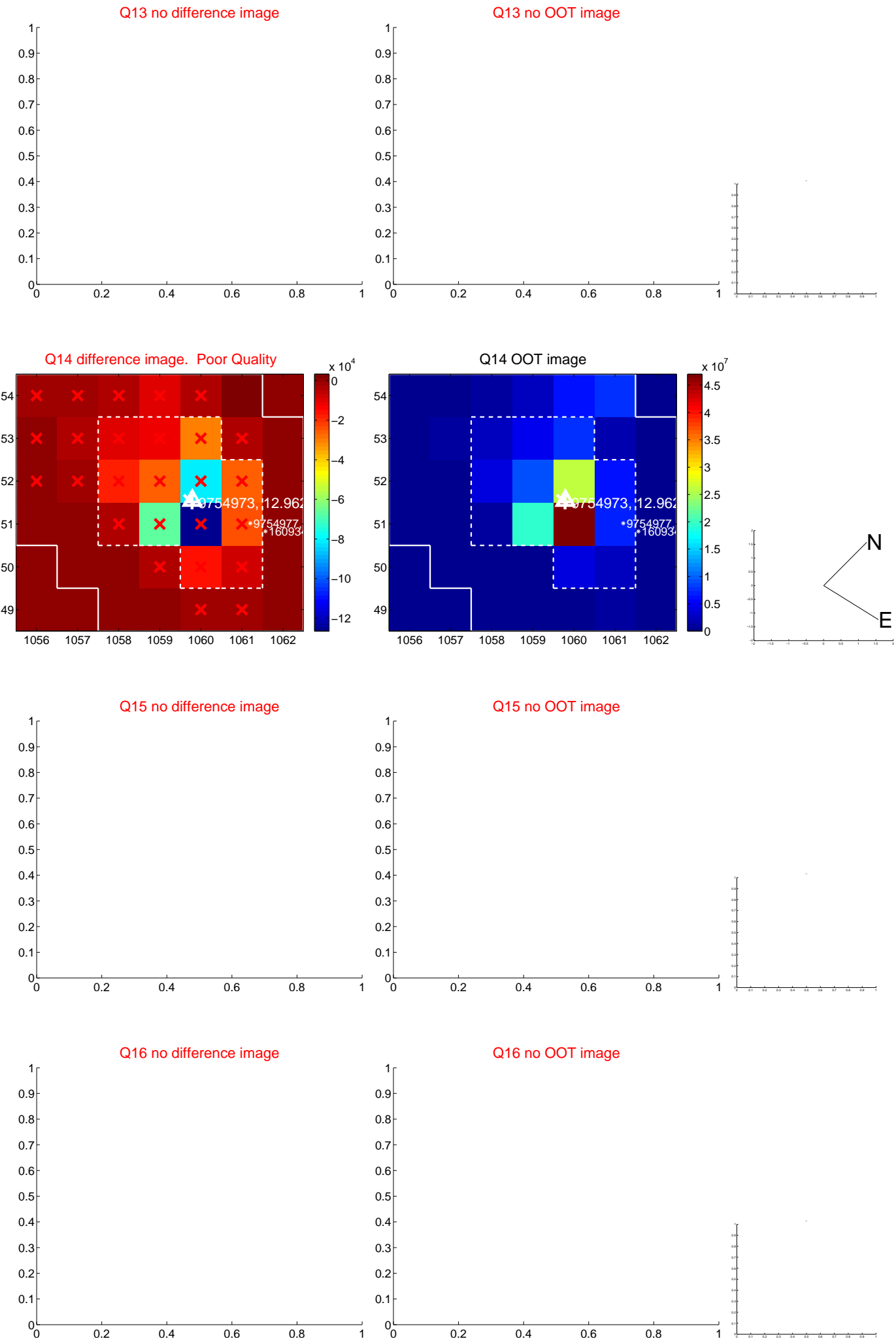
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



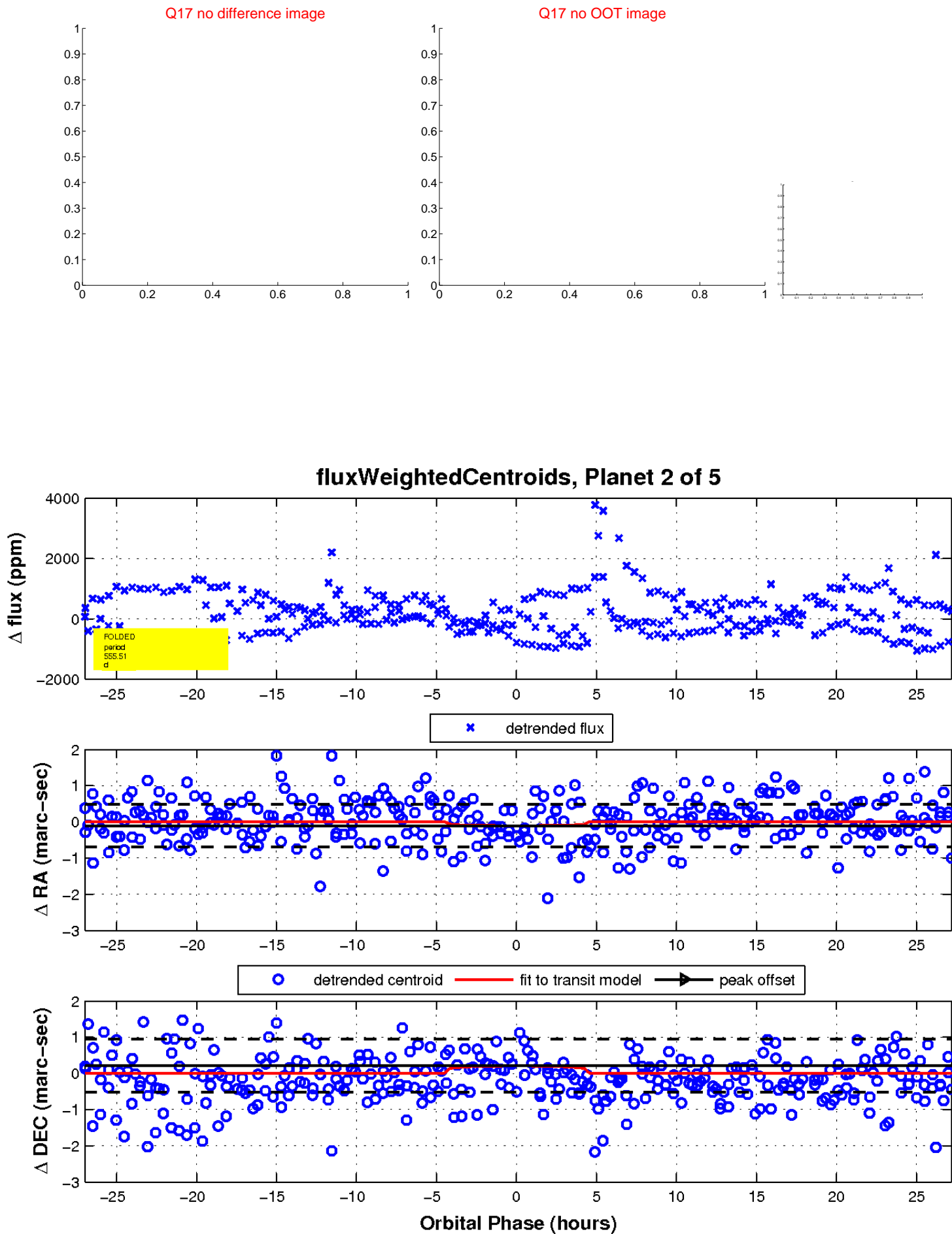
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



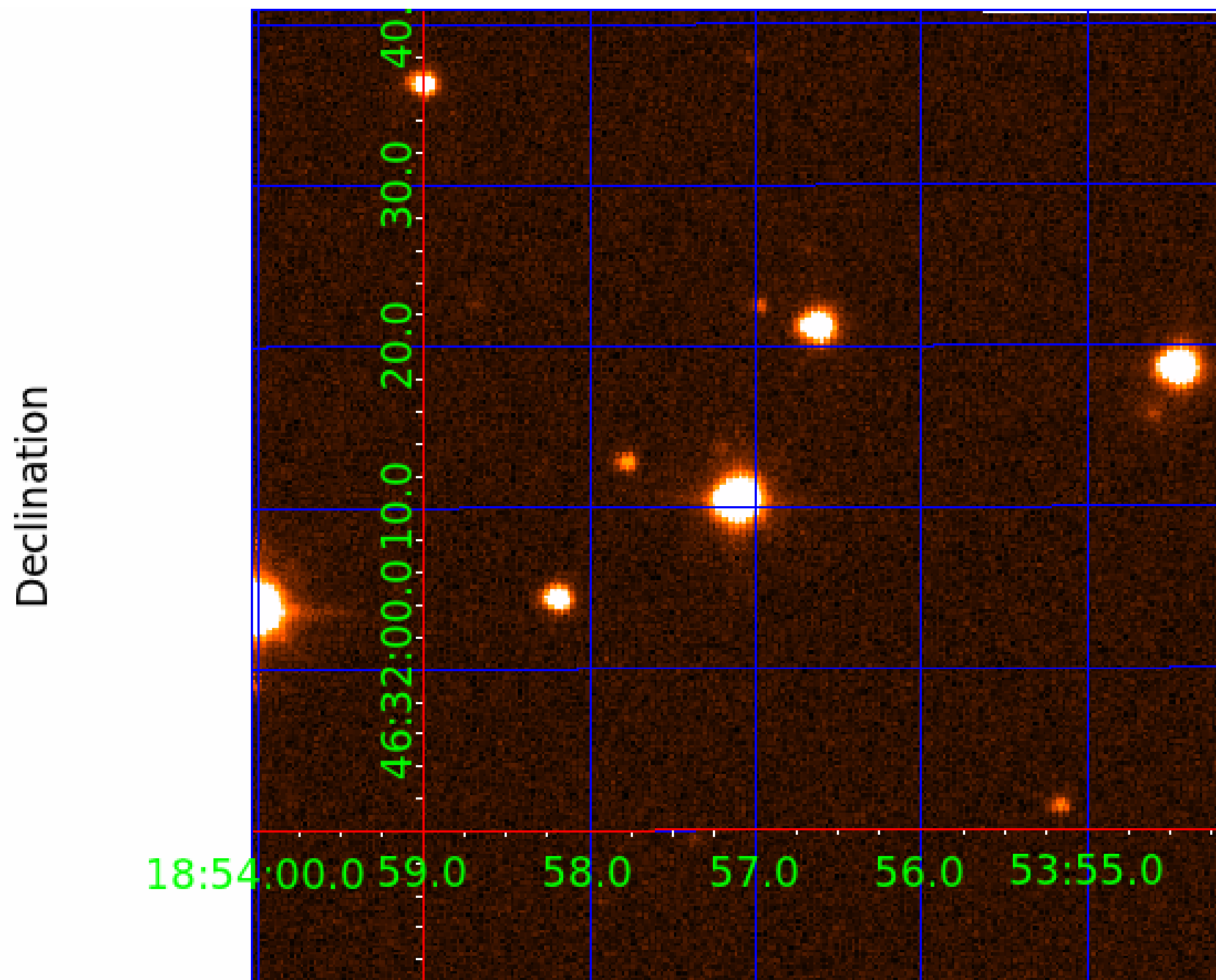
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009754973

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})
009754973-01	OBS	No	611.171125	139.029599	1516.0	4.725	16.4	9.1	1.39	5858	7.87	1.18
009754973-02	OBS	No	555.512391	237.985617	1046.1	9.072	15.3	6.5	1.39	5858	4.48	1.34
009754973-03	OBS	No	229.618964	322.223904	604.3	5.464	13.7	5.6	1.39	5858	4.40	4.37
009754973-04	OBS	No	543.465456	194.059154	791.3	4.915	15.9	5.7	1.39	5858	4.14	1.39
009754973-05	OBS	No	397.796945	433.175849	527.0	3.000	11.9	-1.0	1.39	5858	3.18	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009754973-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-03	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—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009754973-04	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—CENT_FEW_DIFFS
009754973-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

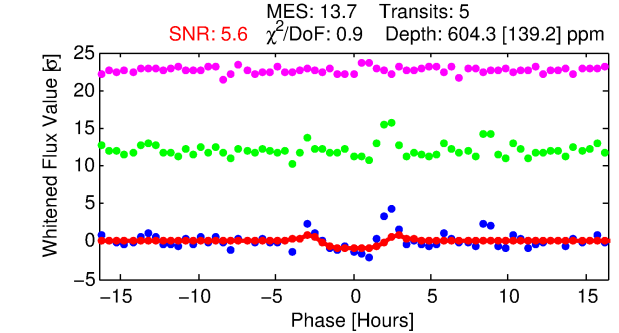
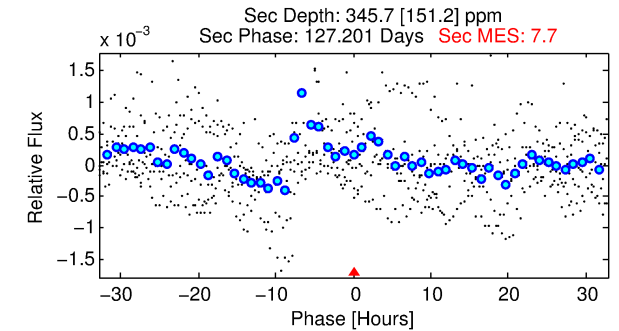
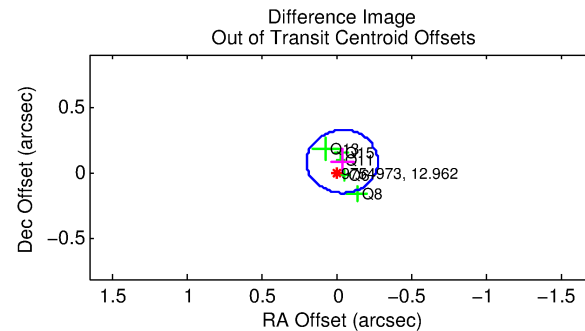
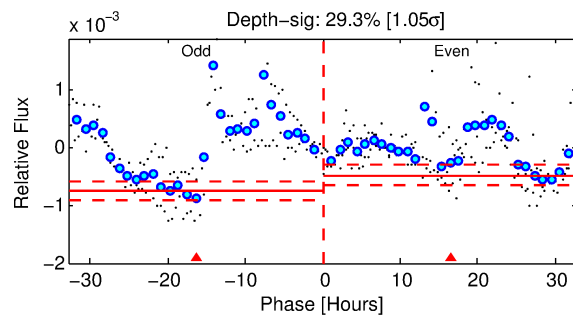
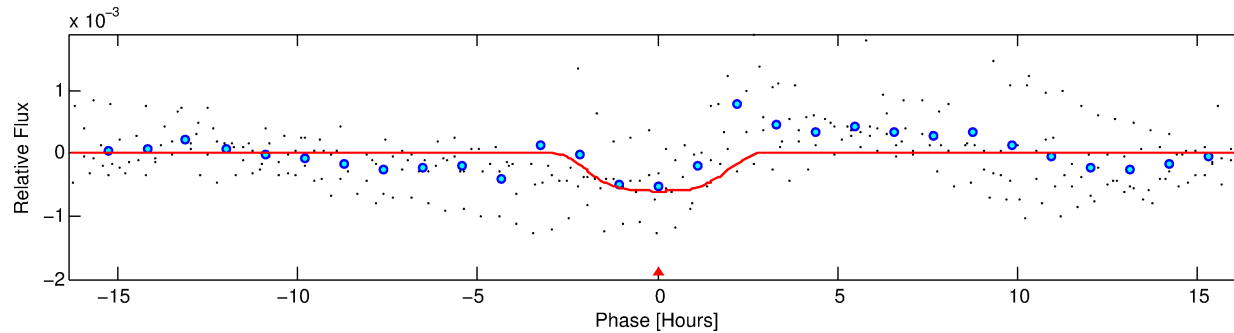
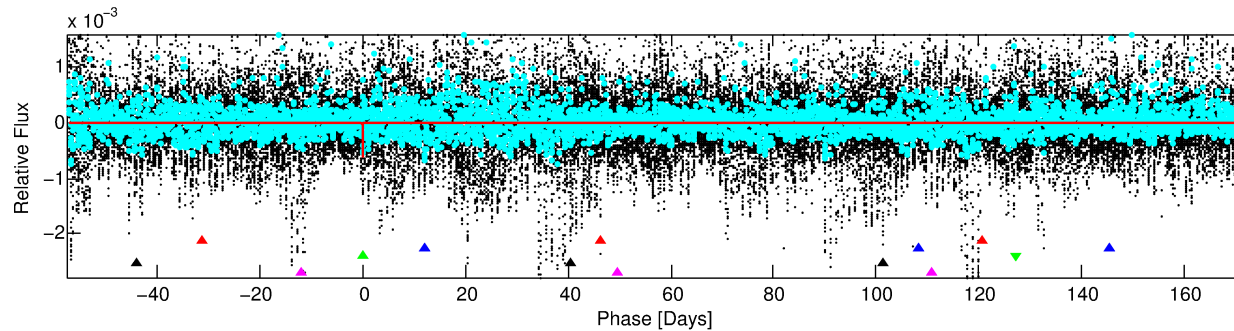
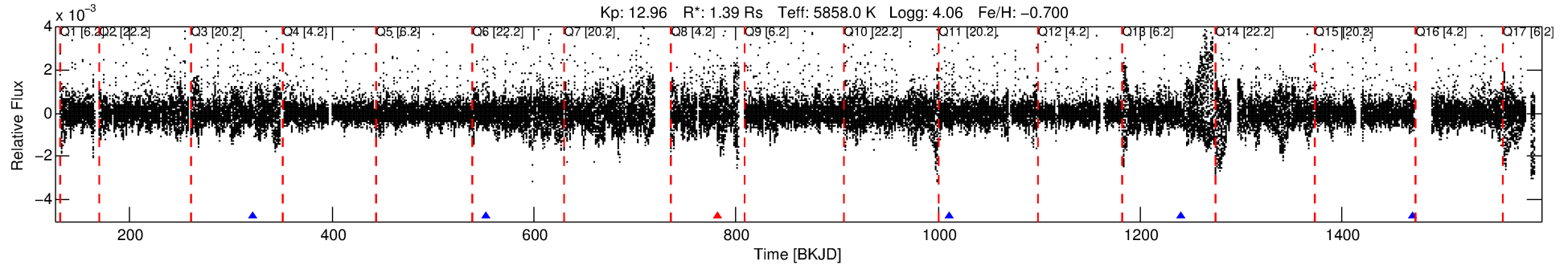
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009754973-03

No Significant Match Found

DV One-Page Summary

KIC: 9754973 Candidate: 3 of 5 Period: 229.619 d



DV Fit Results:

Period = 229.61896 [0.00517] d
Epoch = 322.2239 [0.0173] BKJD
Rp/R* = 0.0291 [0.0038]
a/R* = 115.33 [19.30]
b = 0.96 [0.01]
Seff = 4.37 [3.53]
Teq = 369 [75] K
Rp = 4.40 [1.92] Re
a = 0.6811 [0.3185] AU
Ag = 4562.38 [4331.47] [1.05 σ]
Teffp = 4684 [608] K [7.04 σ]

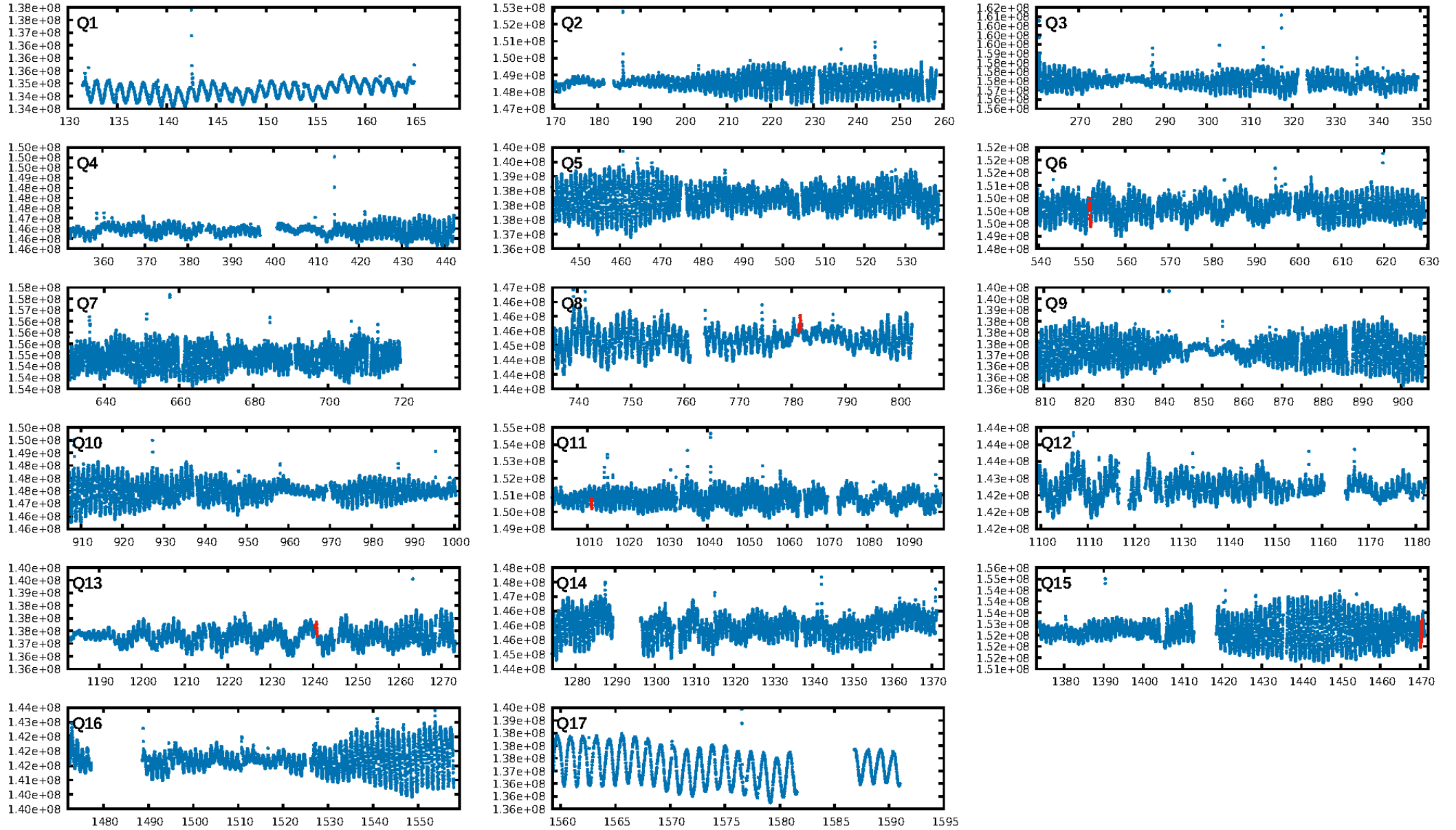
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [647.55 σ]
ModelChiSquare2-sig: 29.9%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: -7.007
Centroid-sig: 99.0%
Centroid-so: 0.458 arcsec [0.77 σ]
OotOffset-rm: 0.098 arcsec [1.24 σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-rm: 0.123 arcsec [1.09 σ]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 1.00 [5/5]

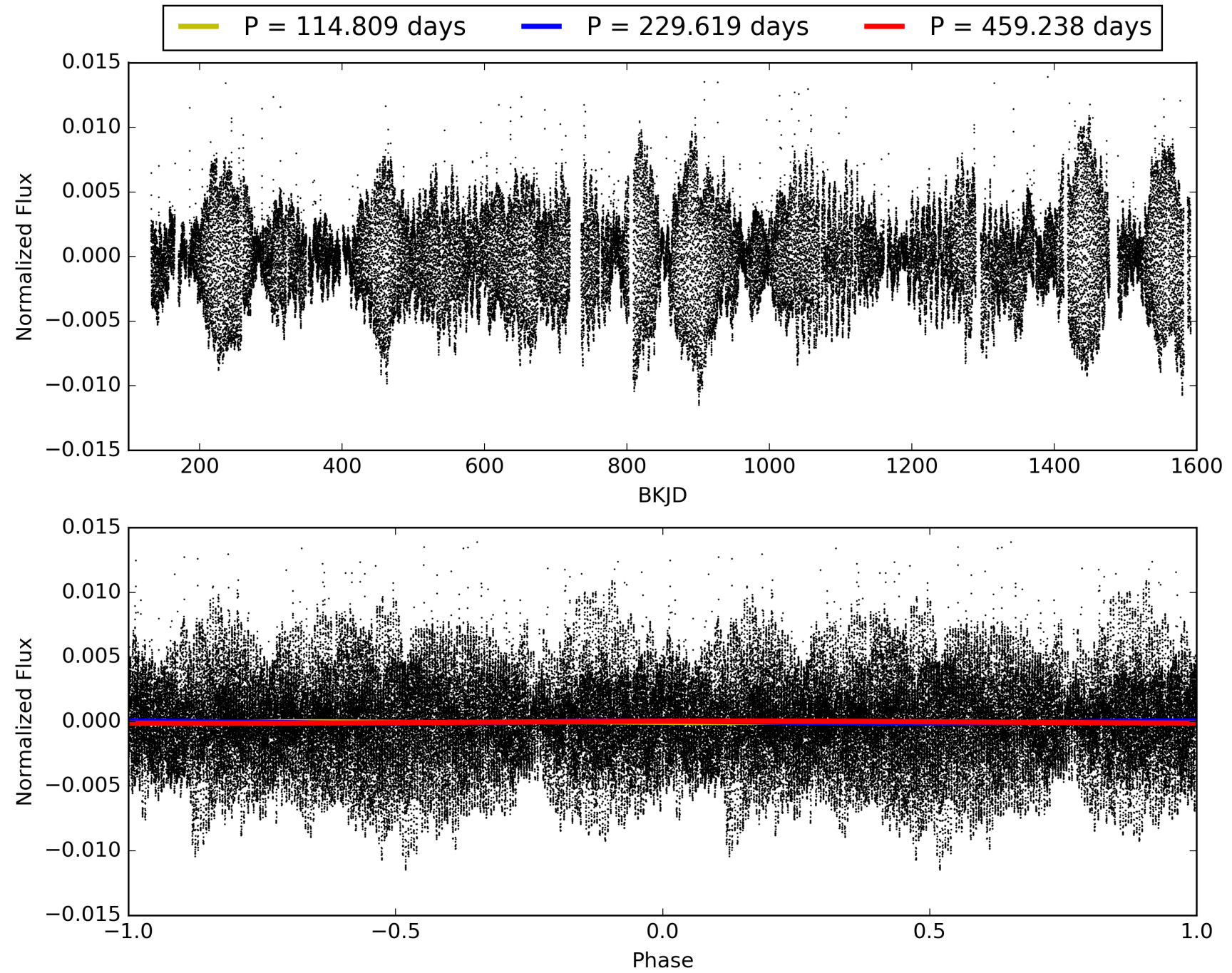
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:40:50 Z

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

TCE 009754973-03, PDC Light Curves

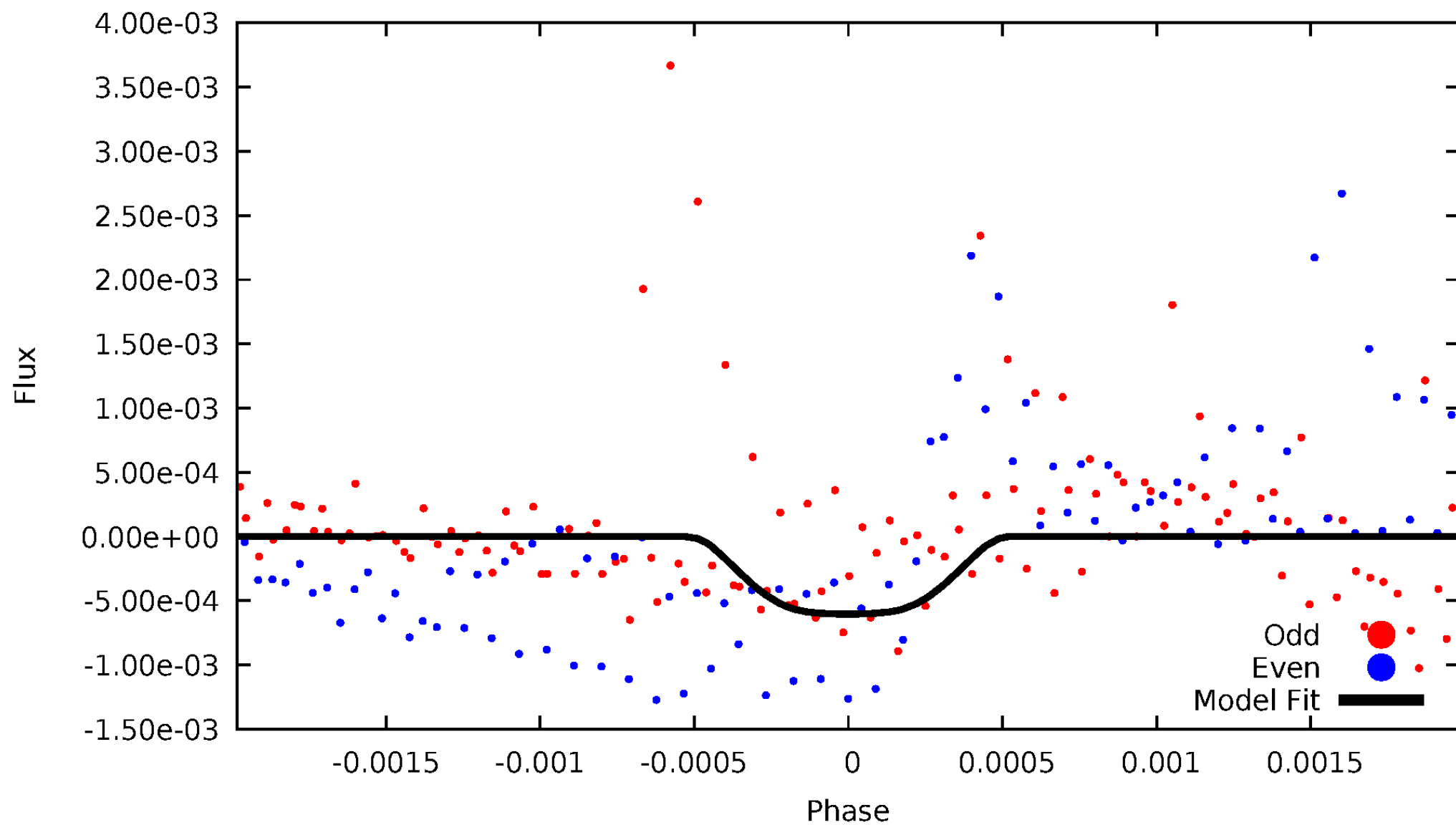


TCE 009754973-03



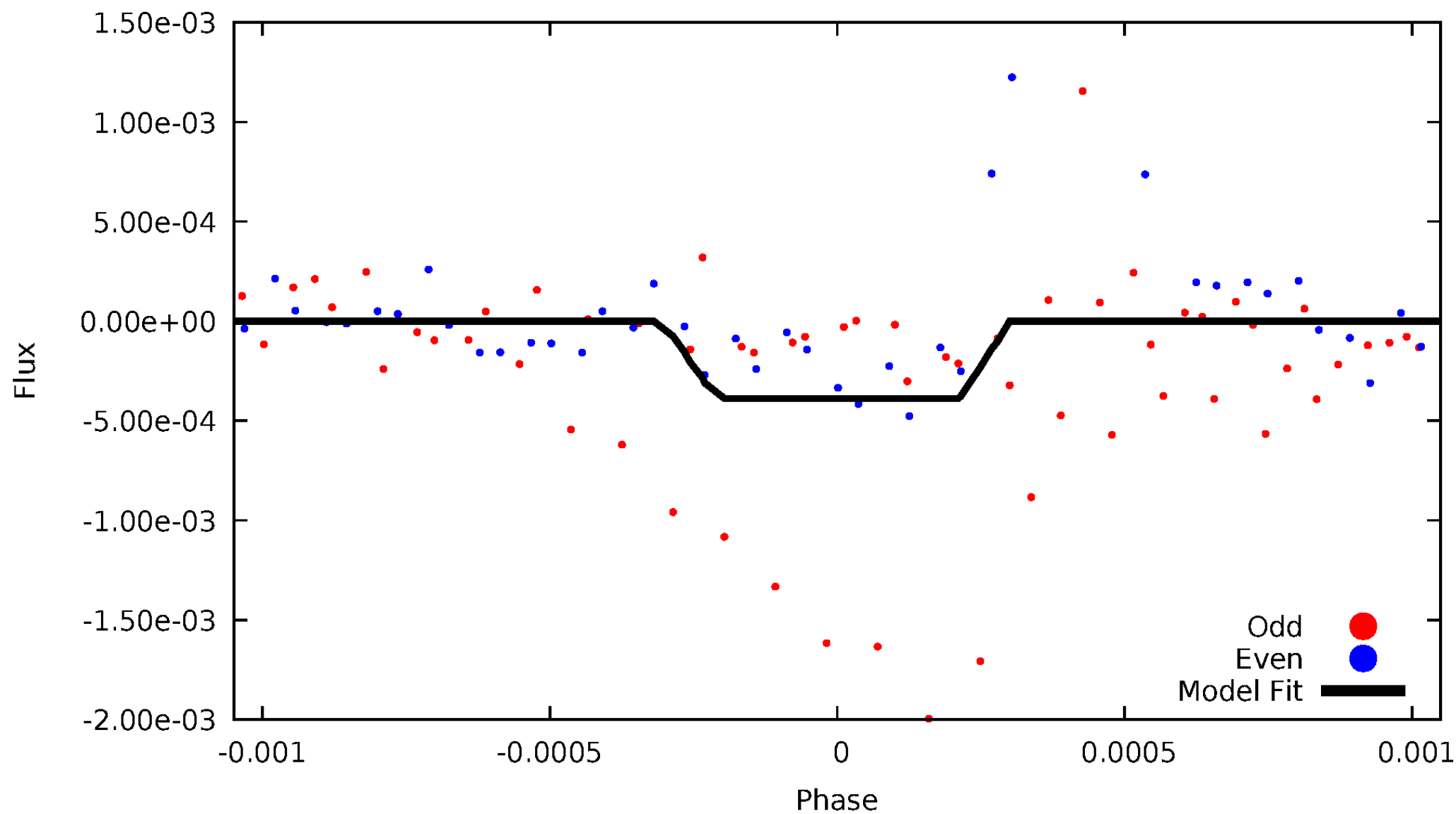
DV Odd/Even

TCE 009754973-03



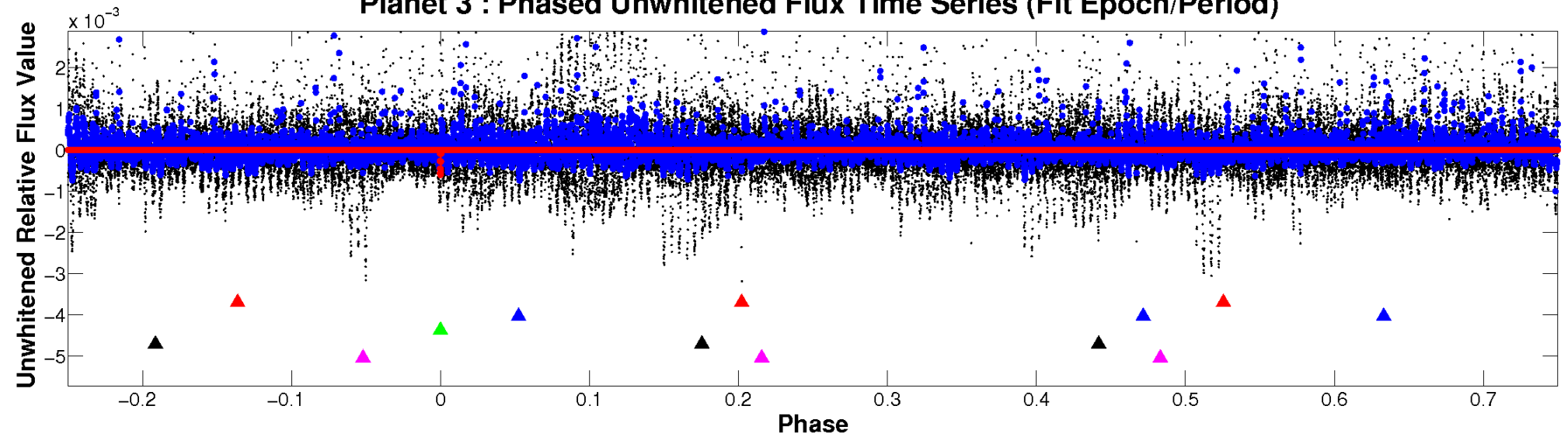
ALT Odd/Even

TCE 009754973-03

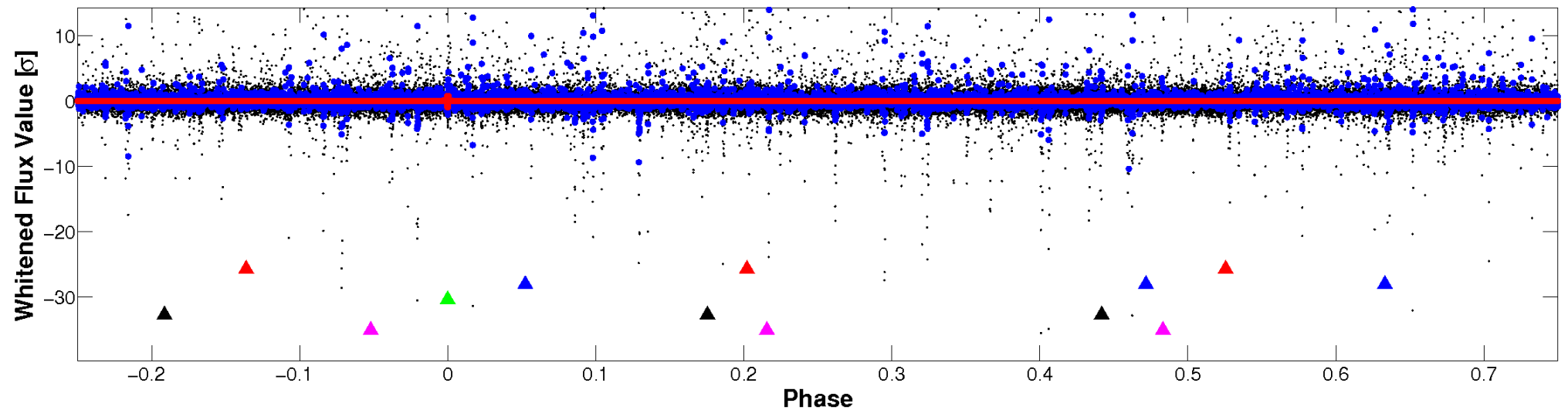


Non-Whitened Vs. Whitened Light Curve

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

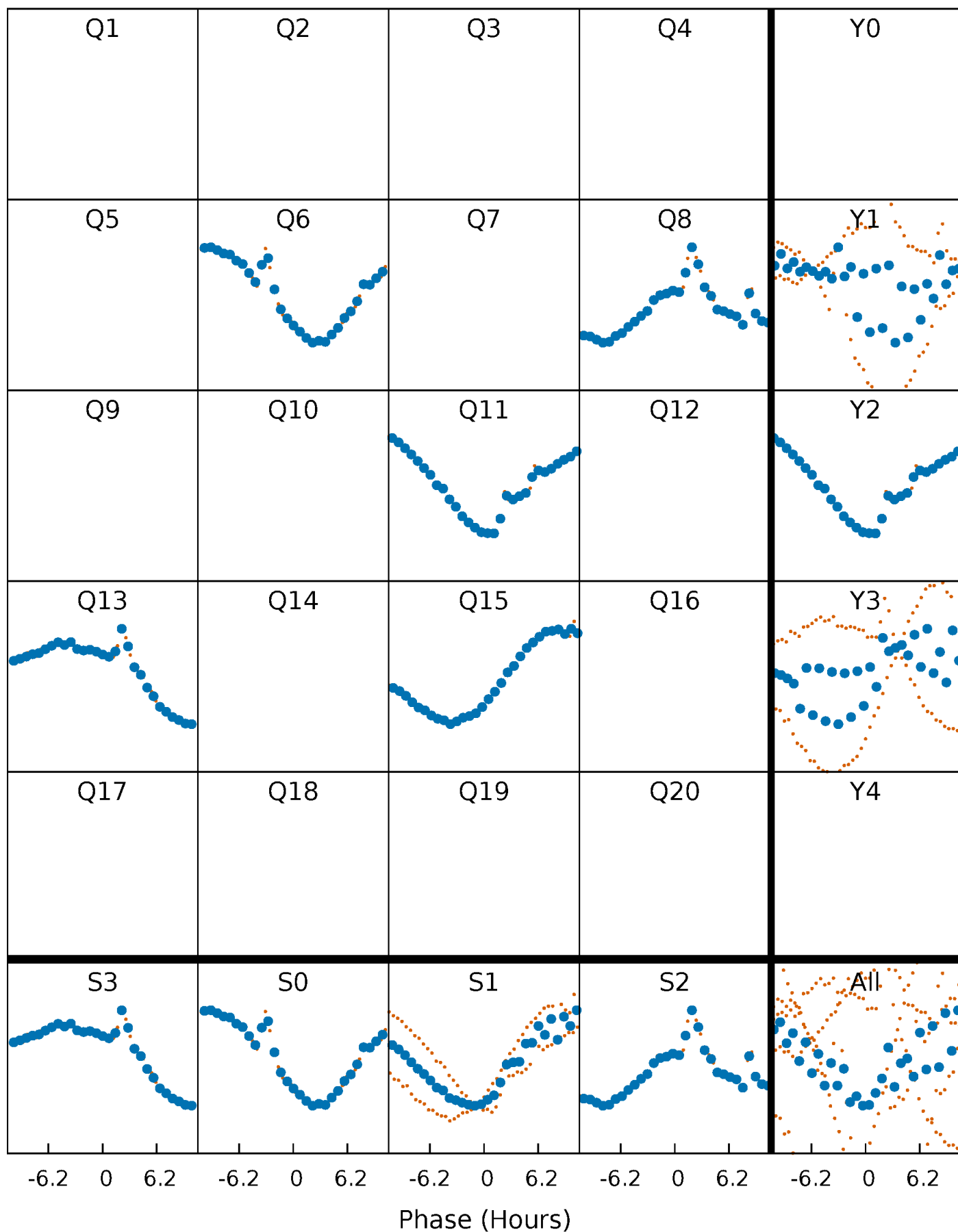


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



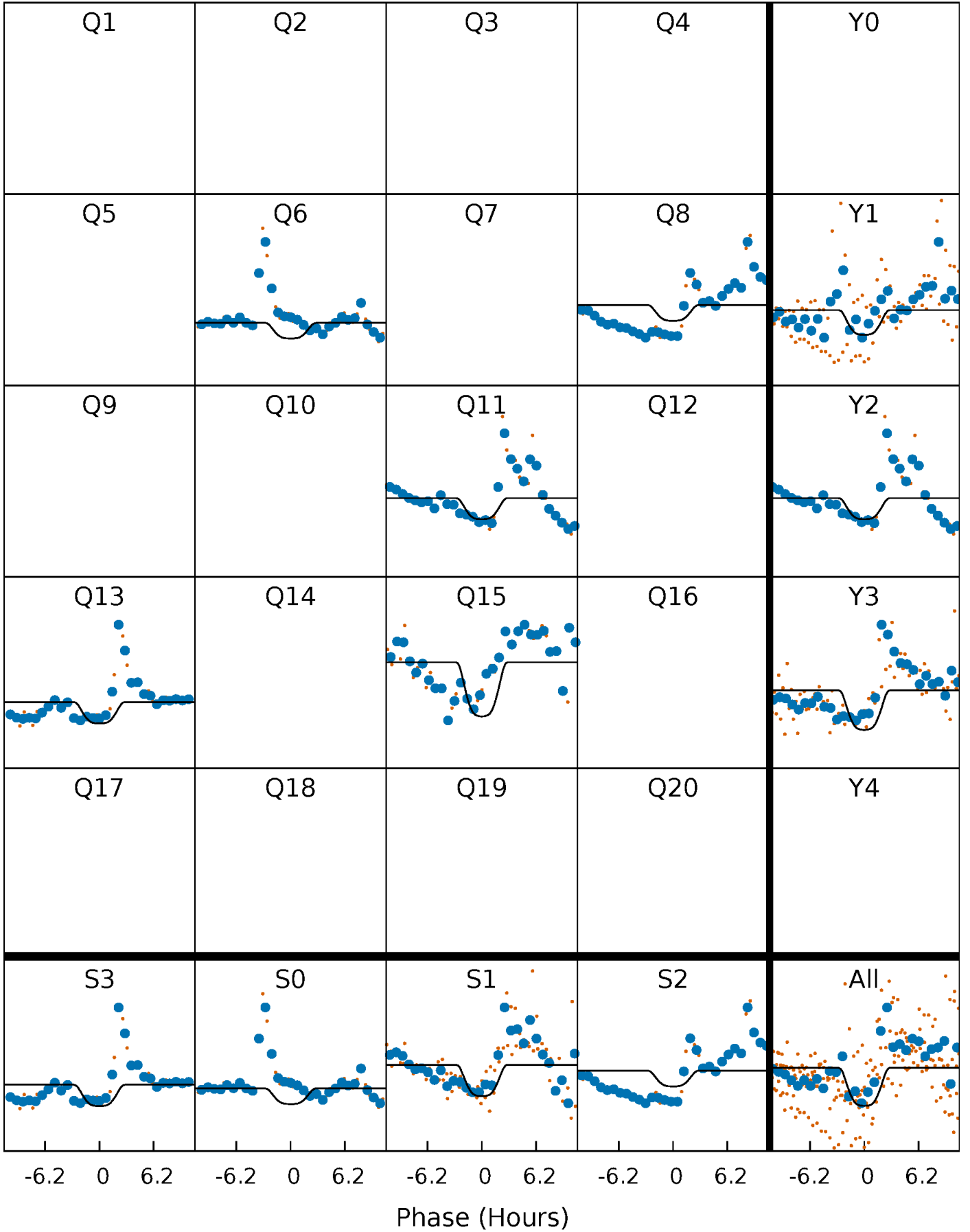
PDC Quarter-Phased Transit Curves

TCE 009754973-03 P=229.618964 Days $T_0=322.223904$ (BKJD)



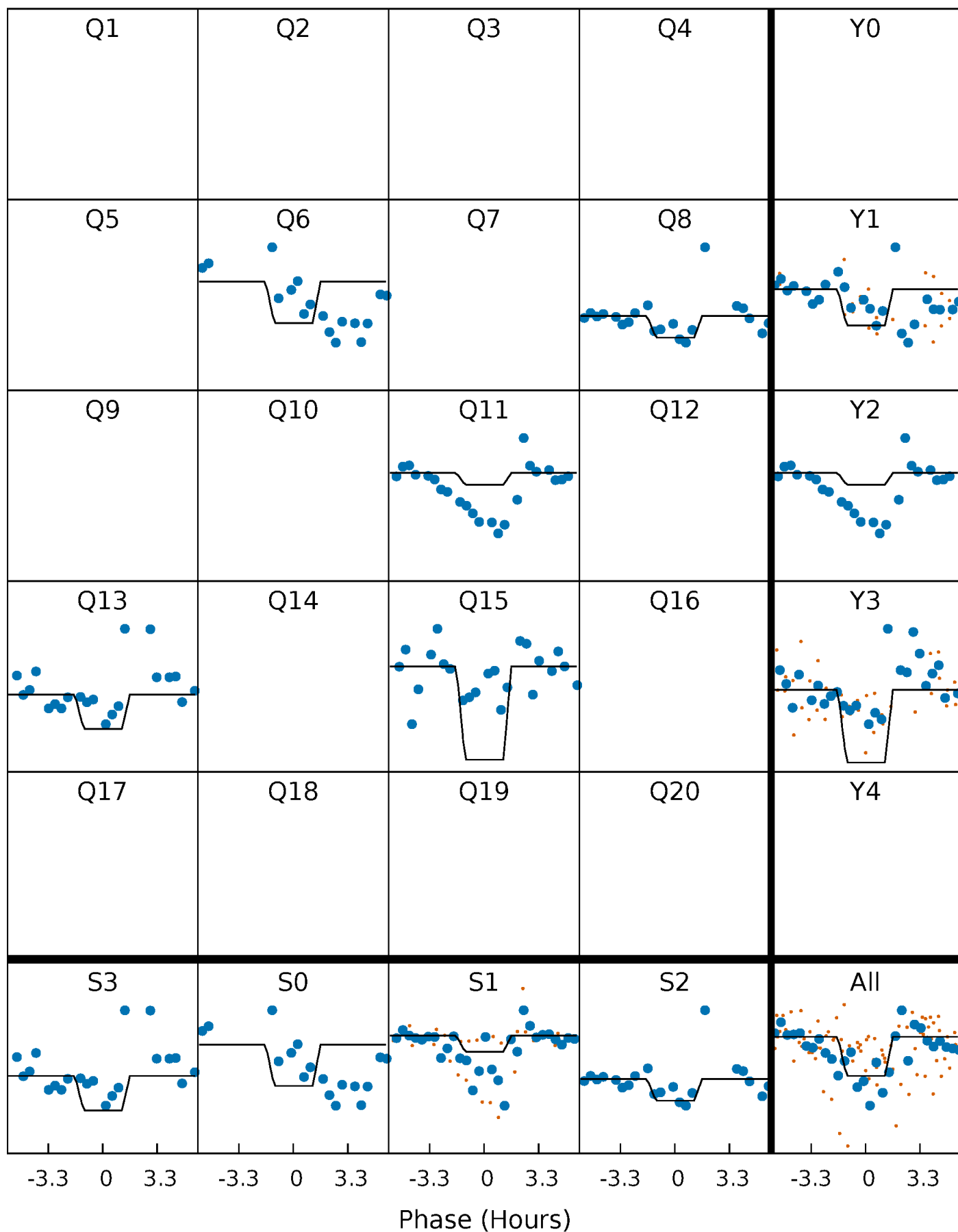
DV Quarter-Phased Transit Curves

TCE 009754973-03 $P=229.618964$ Days $T_0=322.223904$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

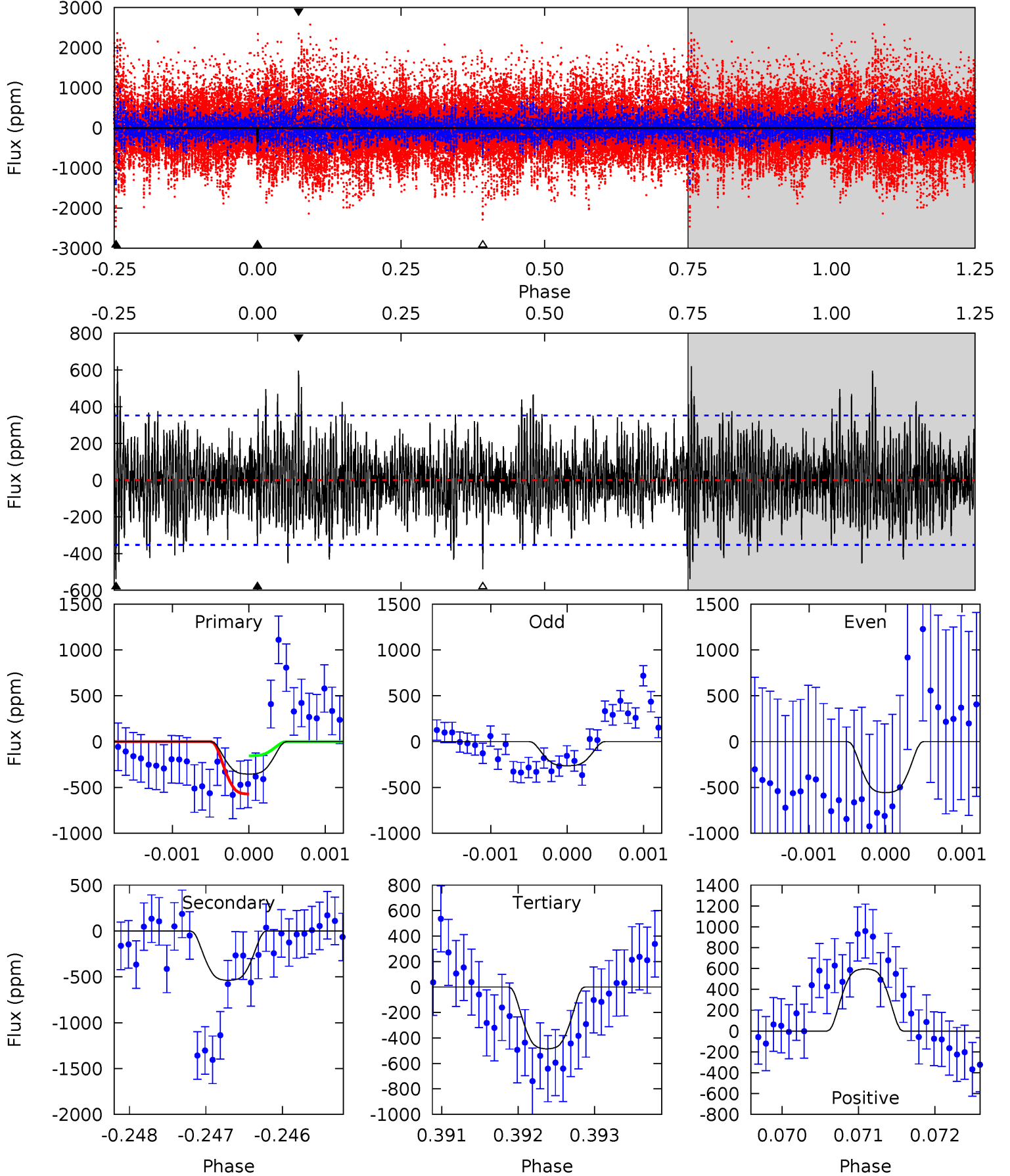
TCE 009754973-03 $P=229.627936$ Days $T_0=322.197433$ (BKJD)



DV Model-Shift Uniqueness Test

009754973-03, P = 229.618964 Days, E = 92.604940 Days

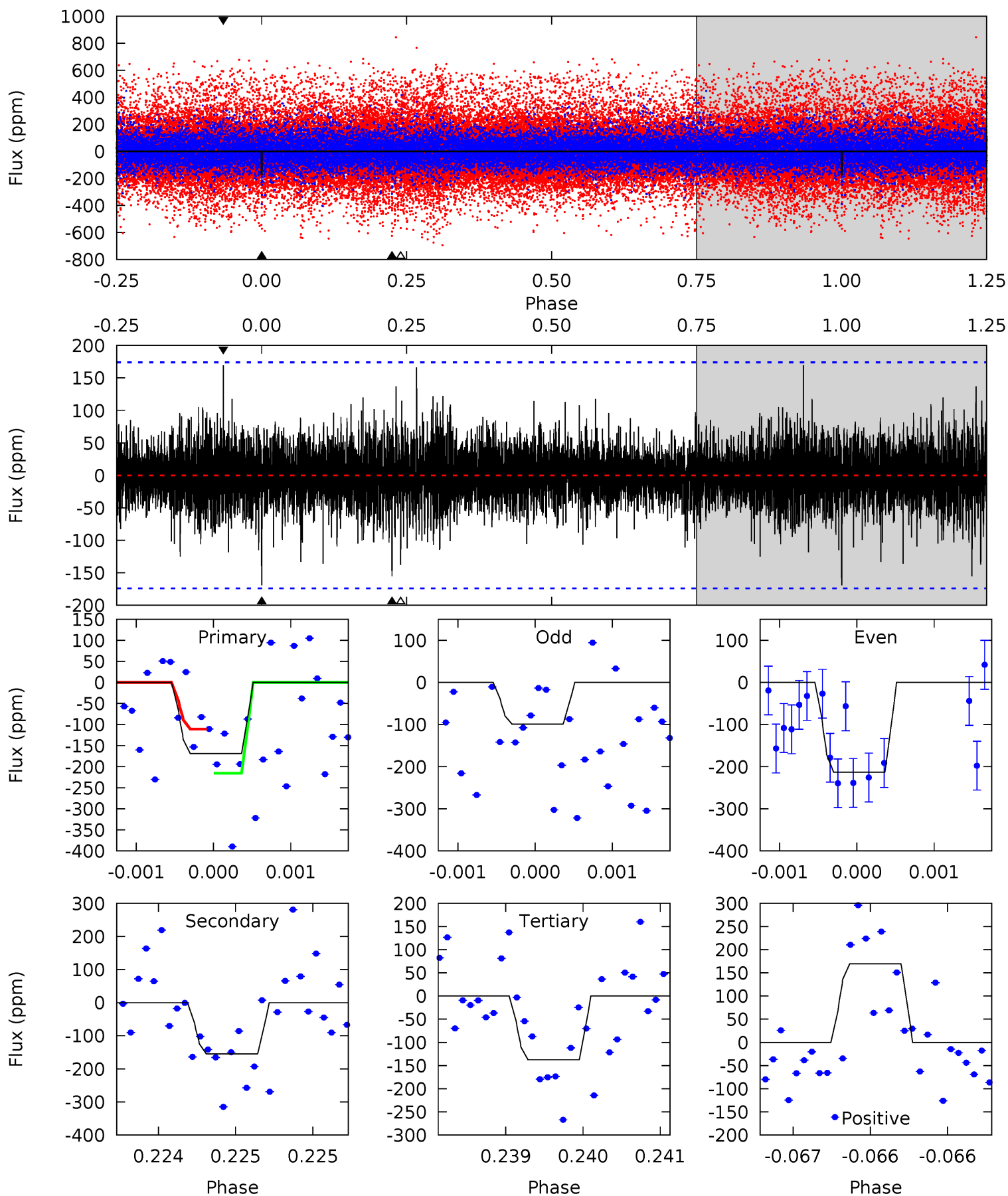
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.47	8.32	7.50	9.20	5.44	3.27	2.23	-2.03	-3.73	0.82	-0.89	2.02	1.15	0.54	3.22



Alt Model-Shift Uniqueness Test

009754973-03, P = 229.627936 Days, E = 92.569497 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.39	4.94	4.39	5.41	5.55	3.44	1.05	1.01	-0.01	0.56	-0.46	1.83	4.10	0.50	0



Stellar Parameters For KIC 009754973

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5858^{+157}_{-157}	$4.057^{+0.490}_{-0.210}$	$-0.700^{+0.300}_{-0.300}$	$1.386^{+0.420}_{-0.578}$	$0.798^{+0.088}_{-0.064}$	$0.422^{+1.909}_{-0.213}$
	+3%/-3%	+12%/-5%	+43%/-43%	+30%/-42%	+11%/-8%	+452%/-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 009754973-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-539 ± 65	$4.27^{+1.04}_{-1.02}$	509^{+50}_{-60}	5273^{+400}_{-335}	7517^{+6054}_{-2765}
Alt.	-155 ± 31	$2.86^{+0.87}_{-0.82}$	509^{+48}_{-64}	4751^{+537}_{-365}	4848^{+4752}_{-2174}

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

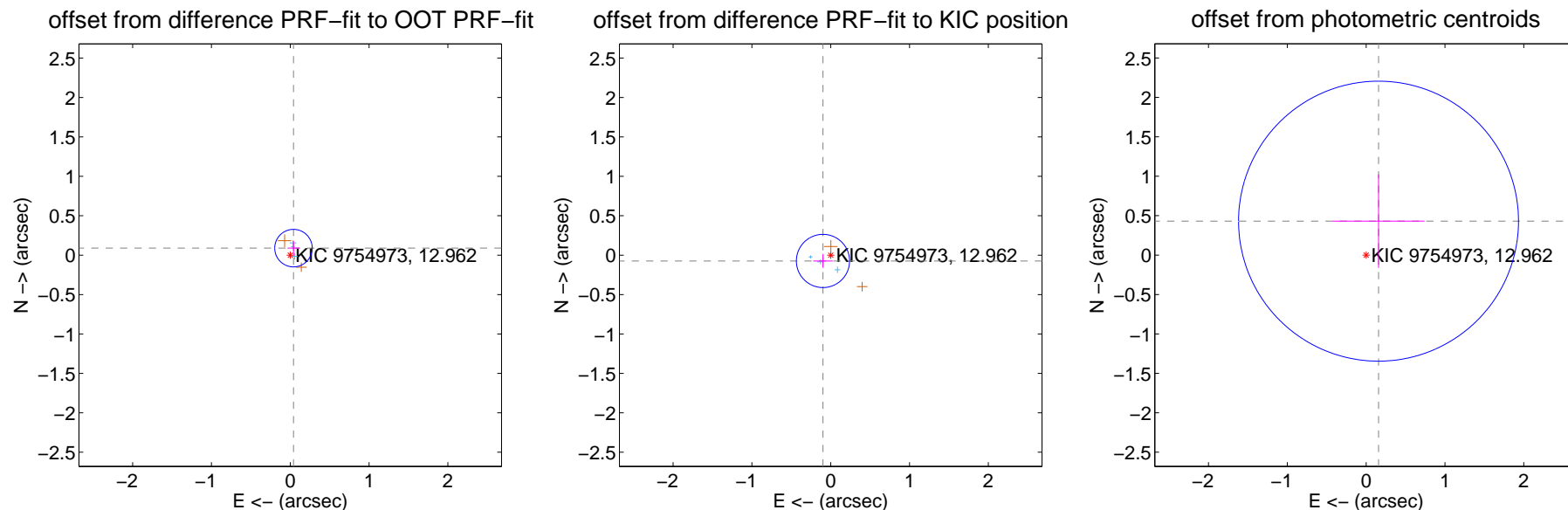
DV Centroid Data

Supplemental centroid analysis for 009754973-03. Kepler magnitude: 12.96. Transit SNR 5.62

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.098 ± 0.079	1.24	-0.041 ± 0.076	0.089 ± 0.092
PRF-fit source offset from KIC position	0.123 ± 0.113	1.09	0.098 ± 0.124	-0.074 ± 0.088
photometric centroid source offset	0.46 ± 0.59	0.77	-0.16 ± 0.58	0.43 ± 0.59

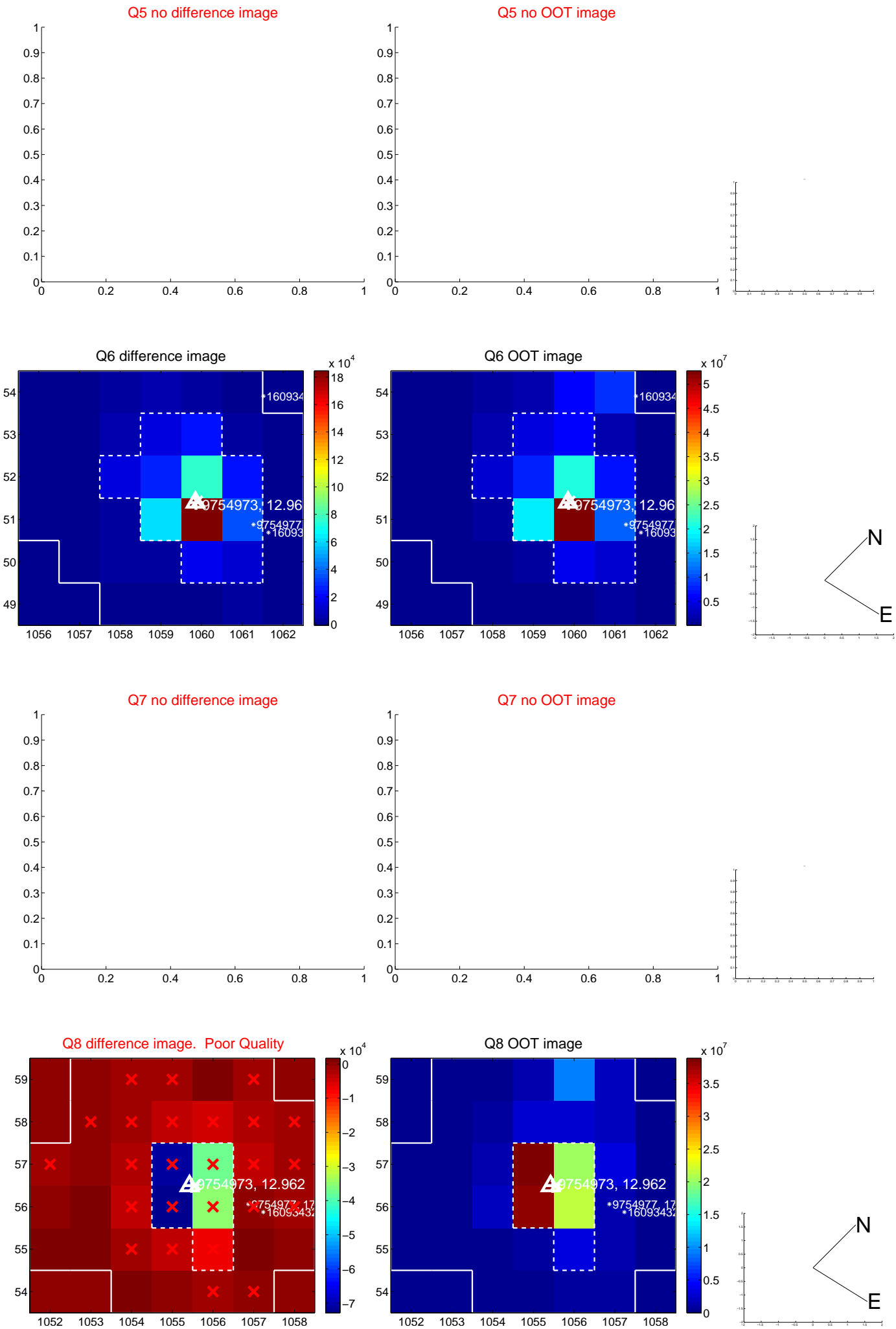


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

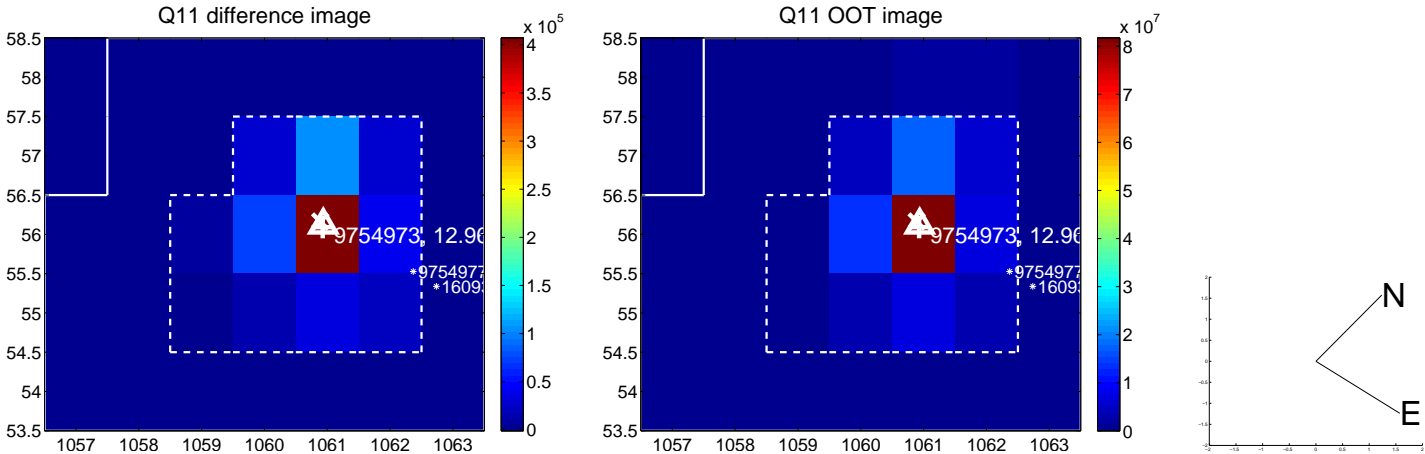
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



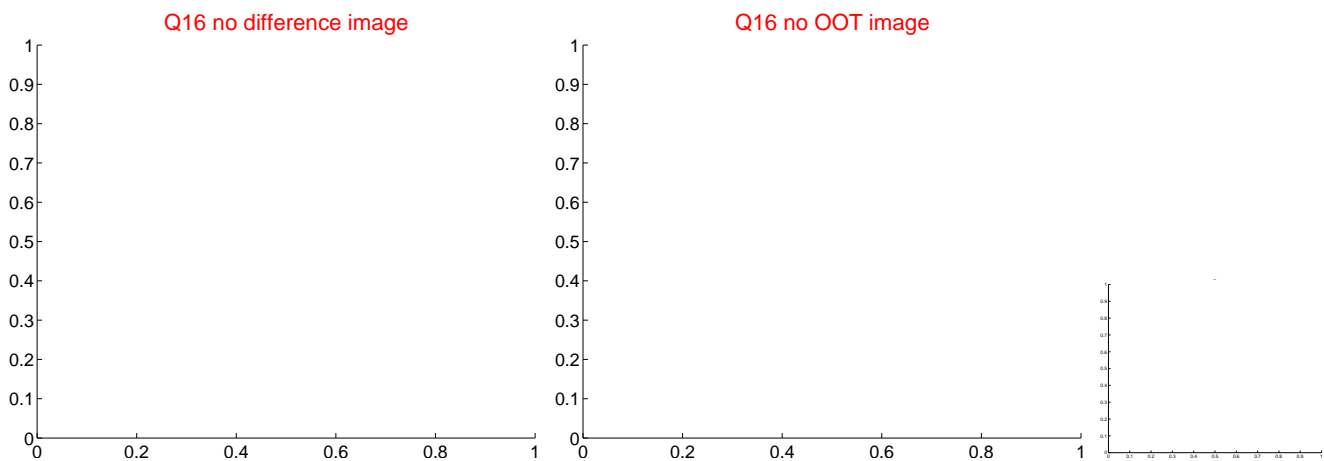
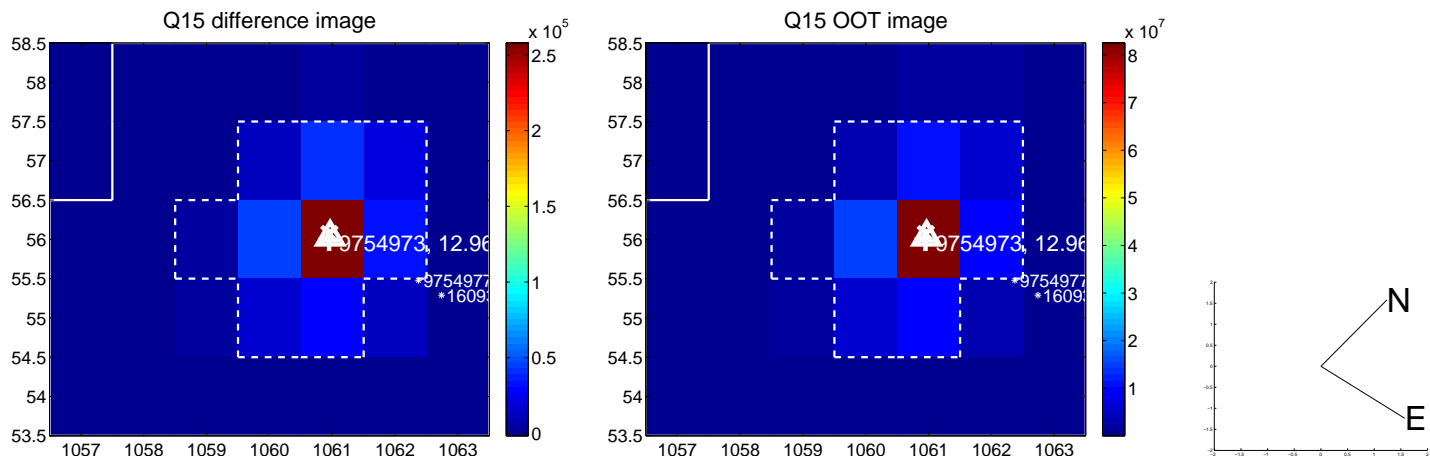
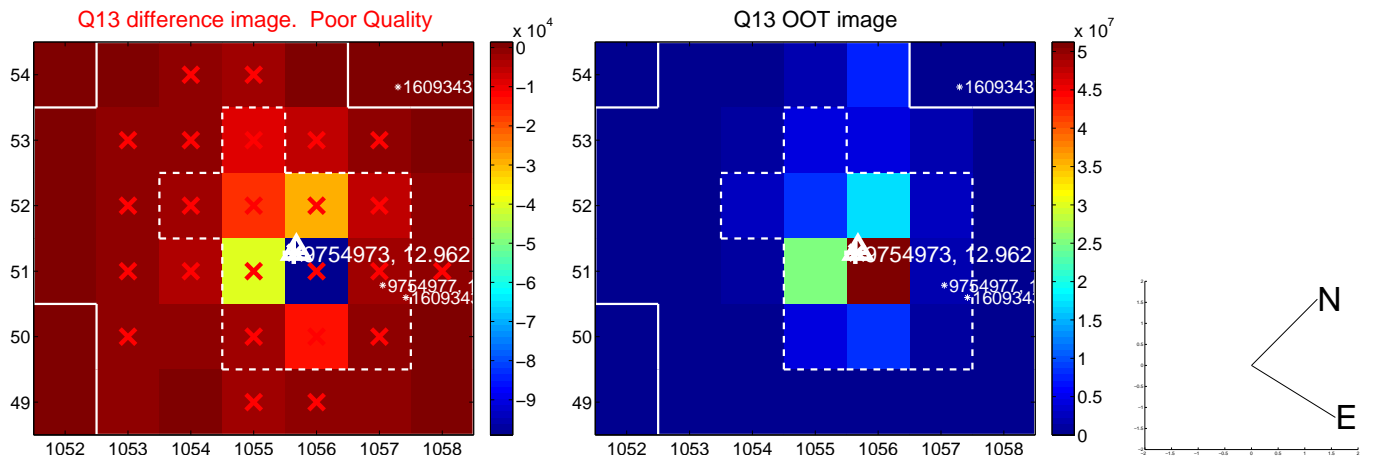
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



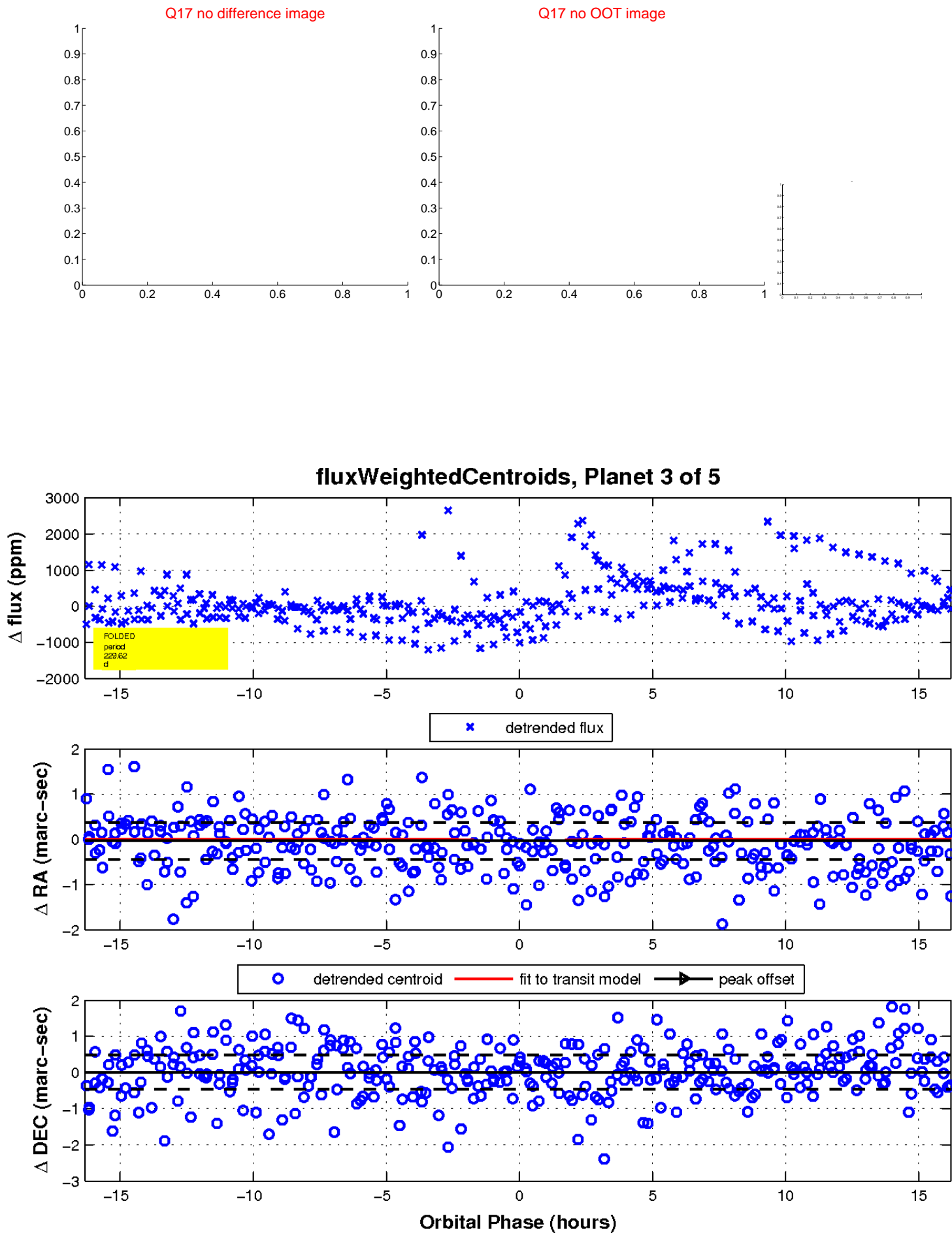
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



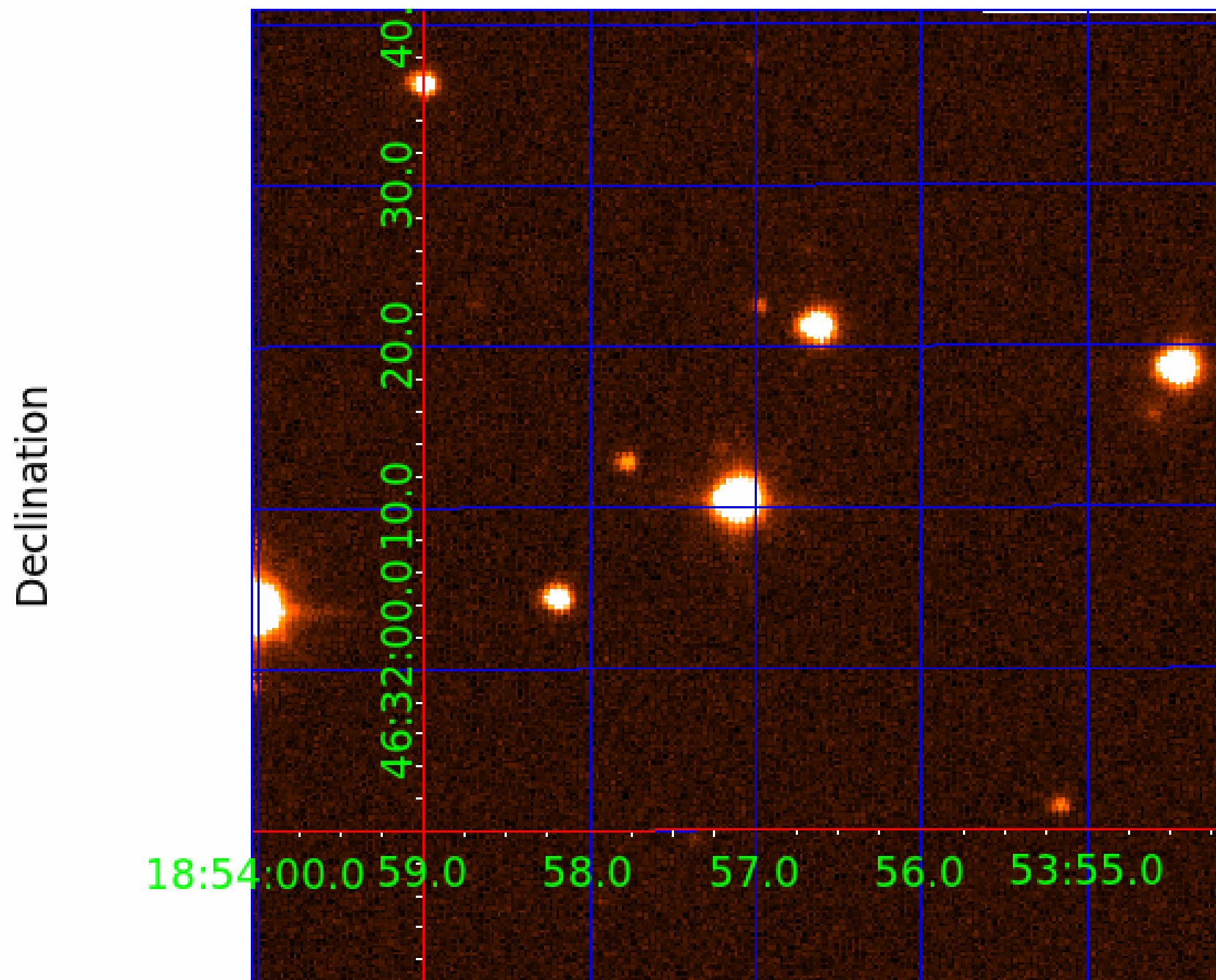
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009754973

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})
009754973-01	OBS	No	611.171125	139.029599	1516.0	4.725	16.4	9.1	1.39	5858	7.87	1.18
009754973-02	OBS	No	555.512391	237.985617	1046.1	9.072	15.3	6.5	1.39	5858	4.48	1.34
009754973-03	OBS	No	229.618964	322.223904	604.3	5.464	13.7	5.6	1.39	5858	4.40	4.37
009754973-04	OBS	No	543.465456	194.059154	791.3	4.915	15.9	5.7	1.39	5858	4.14	1.39
009754973-05	OBS	No	397.796945	433.175849	527.0	3.000	11.9	-1.0	1.39	5858	3.18	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009754973-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-03	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—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009754973-04	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—CENT_FEW_DIFFS
009754973-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

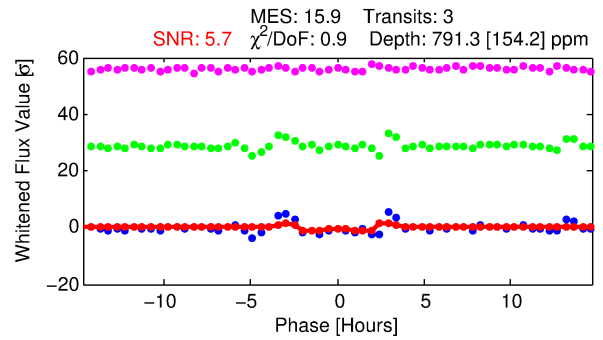
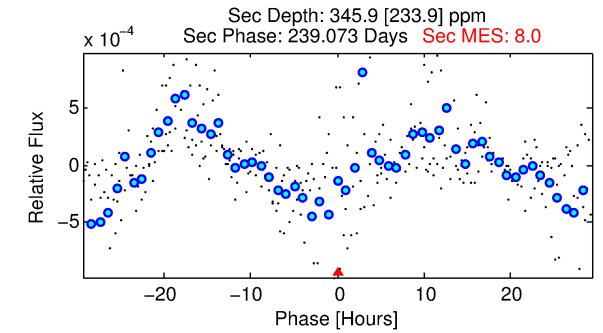
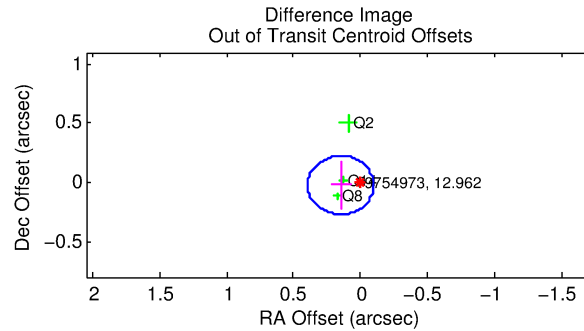
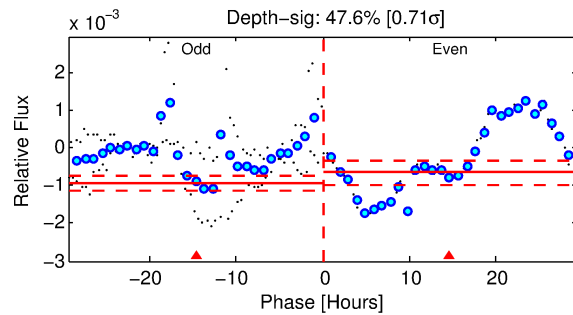
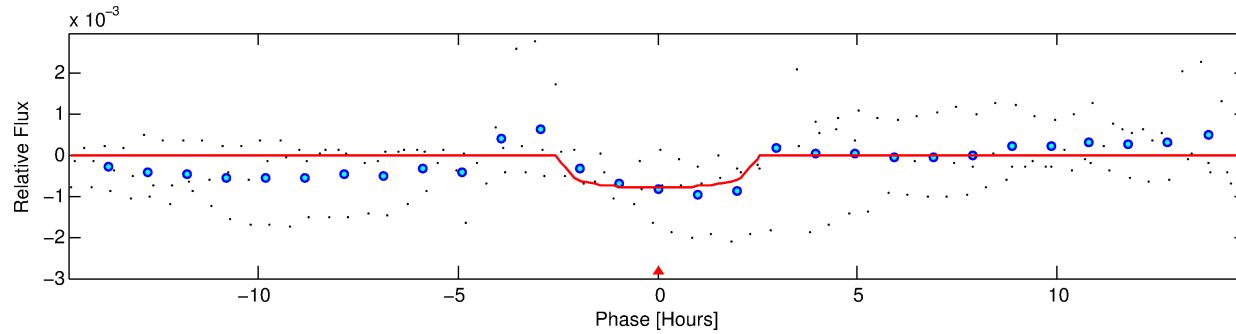
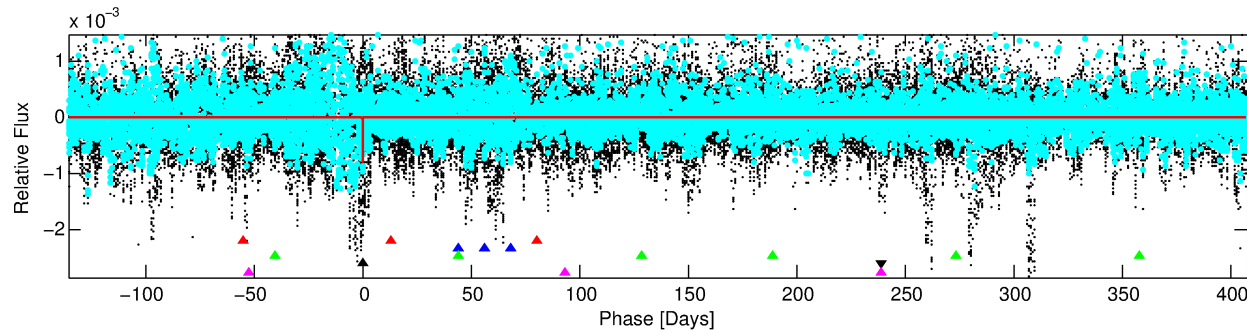
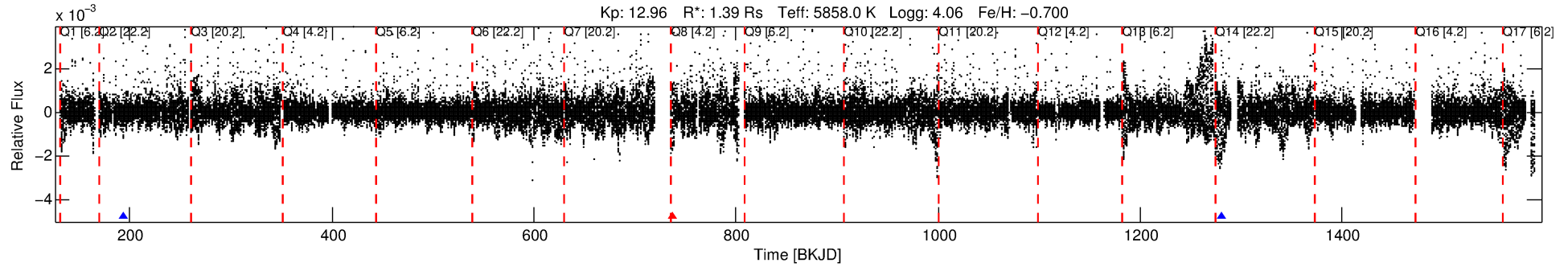
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009754973-04

No Significant Match Found

DV One-Page Summary

KIC: 9754973 Candidate: 4 of 5 Period: 543.465 d



DV Fit Results:

Period = 543.46546 [0.00474] d
Epoch = 194.0592 [0.0065] BKJD
Rp/R* = 0.0274 [0.0111]
a/R* = 652.81 [1180.32]
b = 0.68 [1.46]
Seff = 1.39 [1.12]
Teq = 277 [56] K
Rp = 4.14 [2.41] Re
a = 1.2096 [0.5657] AU
Ag = 16214.95 [21473.30] [0.76 σ]
Teff = 4826 [1278] K [3.56 σ]

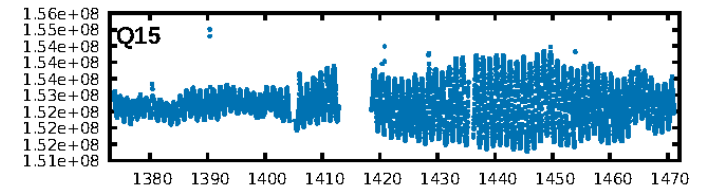
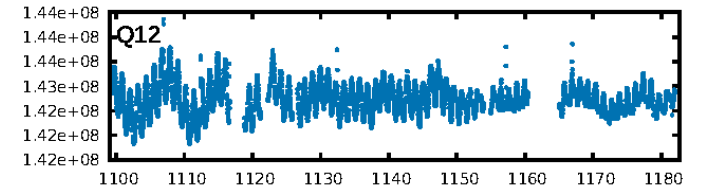
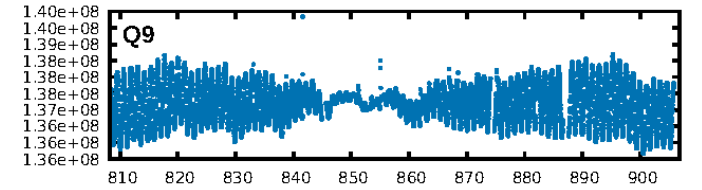
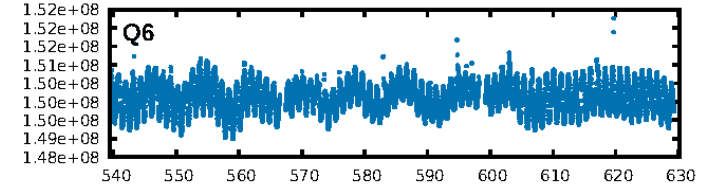
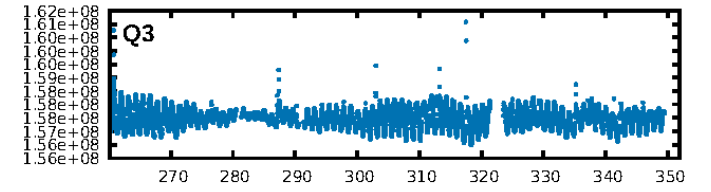
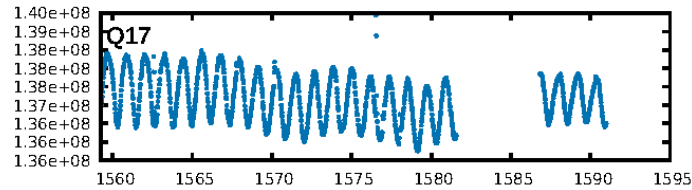
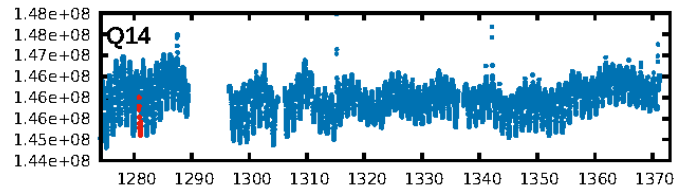
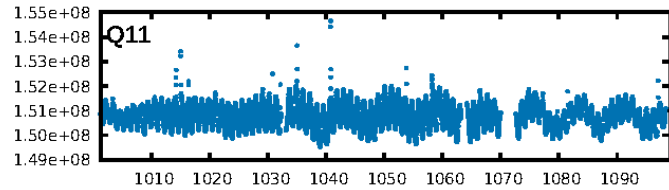
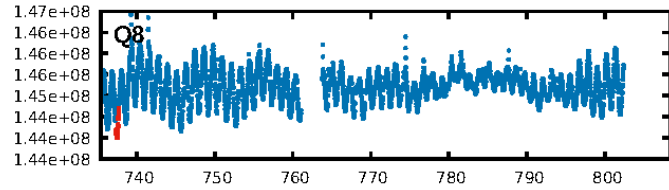
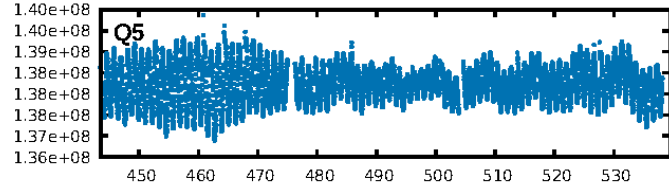
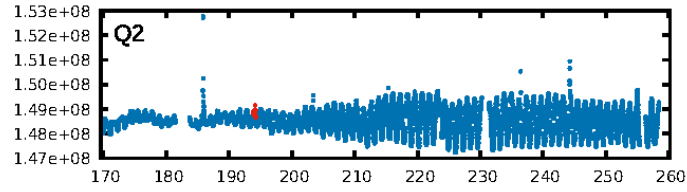
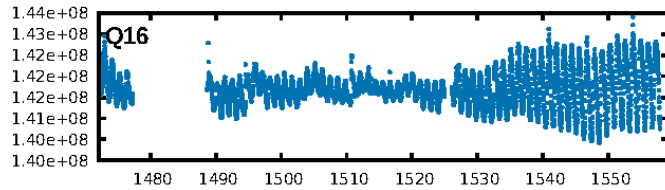
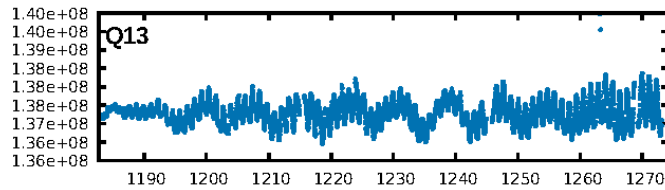
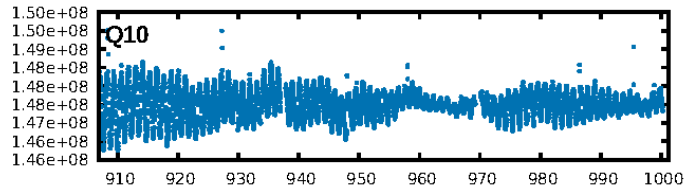
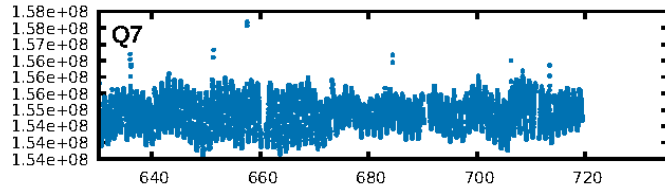
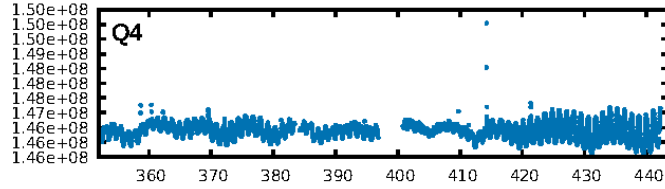
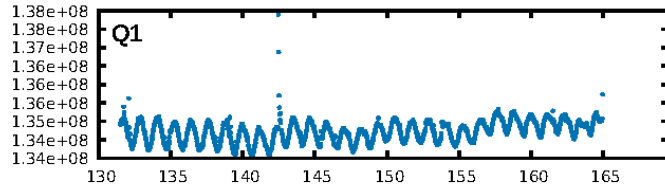
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [607.14 σ]
LongPeriod-sig: 100.0% [28.02 σ]
ModelChiSquare2-sig: 11.5%
ModelChiSquareGof-sig: 93.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -164.9
Centroid-sig: 12.0%
Centroid-so: 0.867 arcsec [1.50 σ]
OotOffset-rm: 0.151 arcsec [1.84 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.249 arcsec [1.13 σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

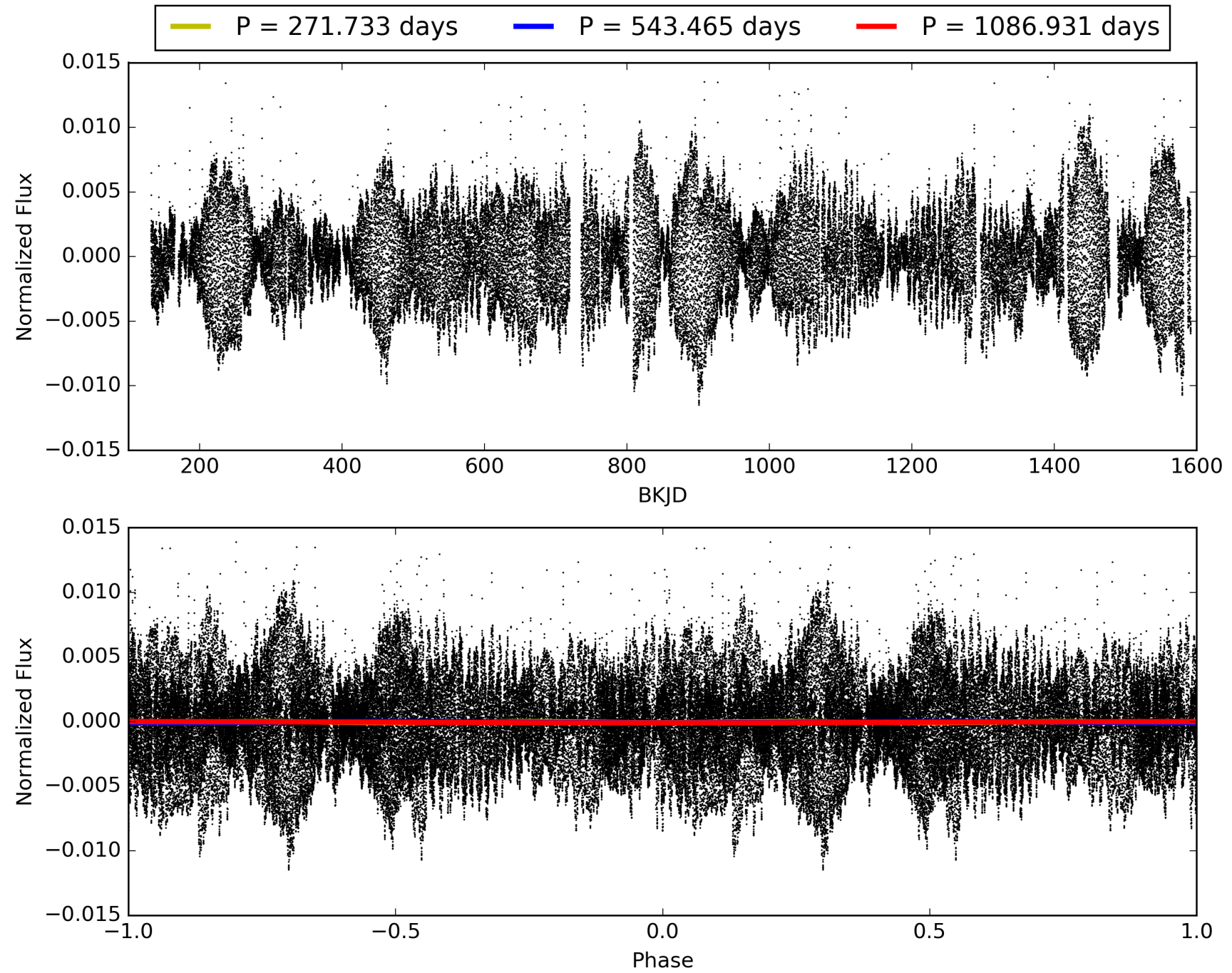
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:41:07 Z

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

TCE 009754973-04, PDC Light Curves

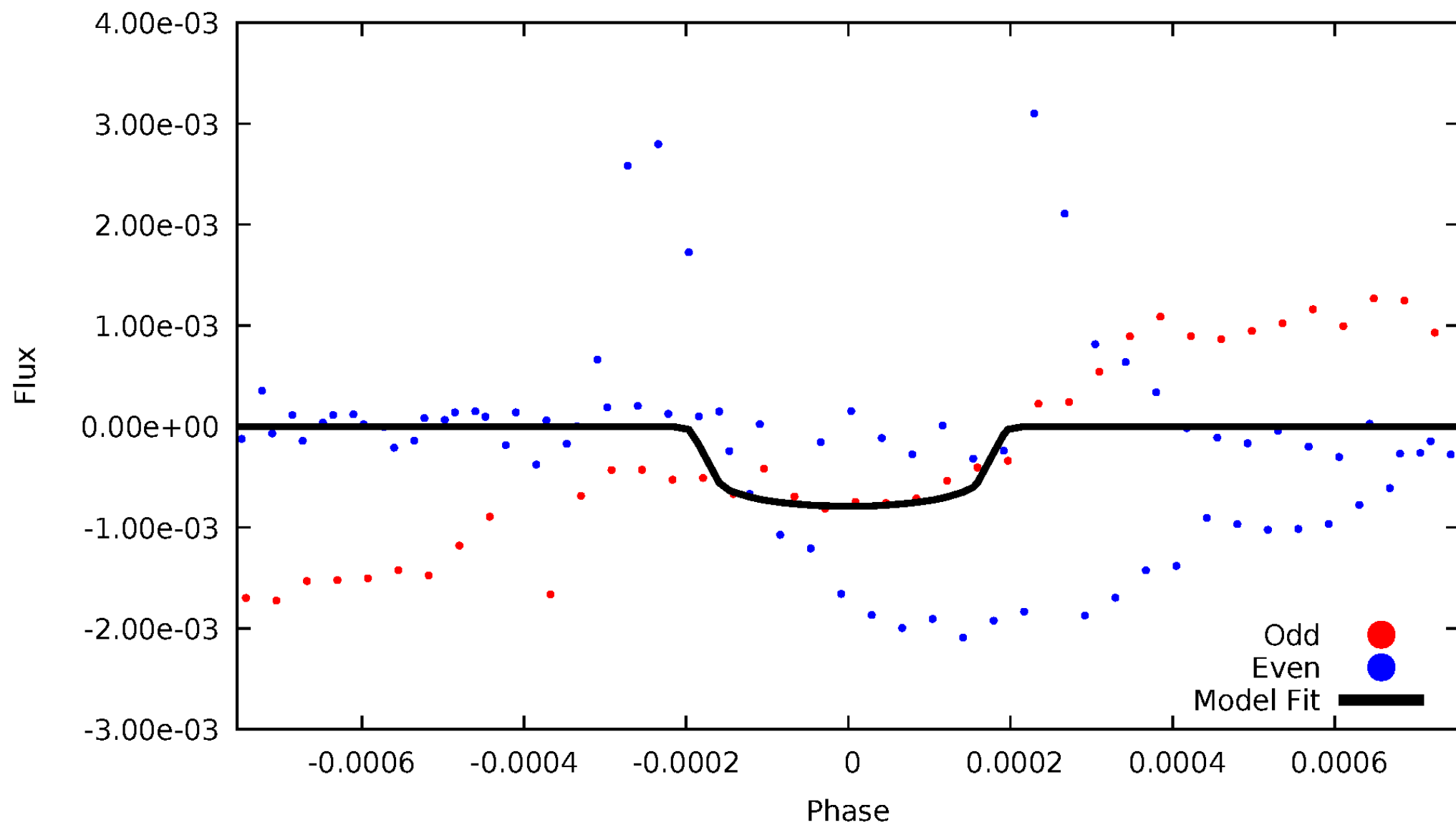


TCE 009754973-04



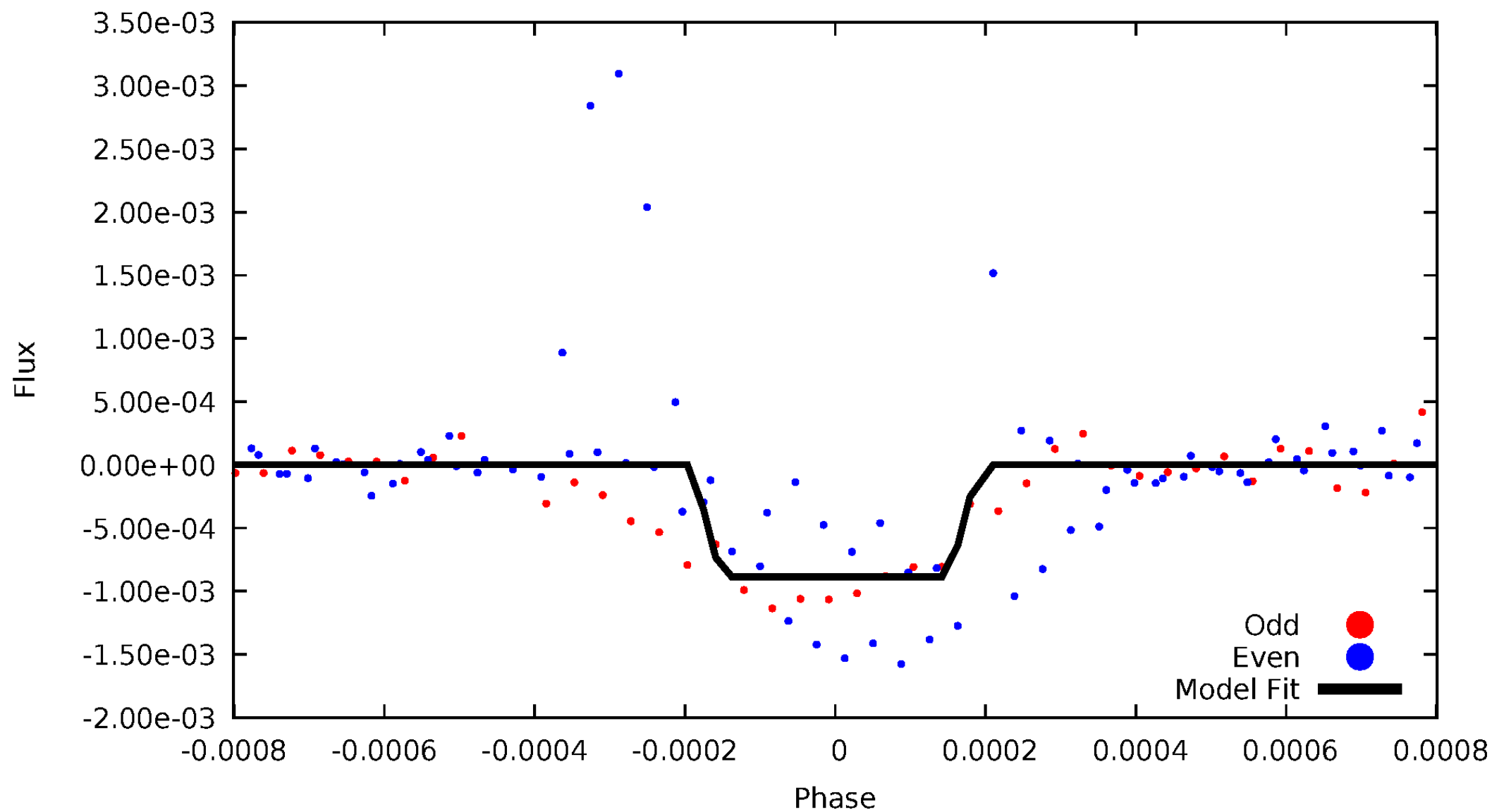
DV Odd/Even

TCE 009754973-04



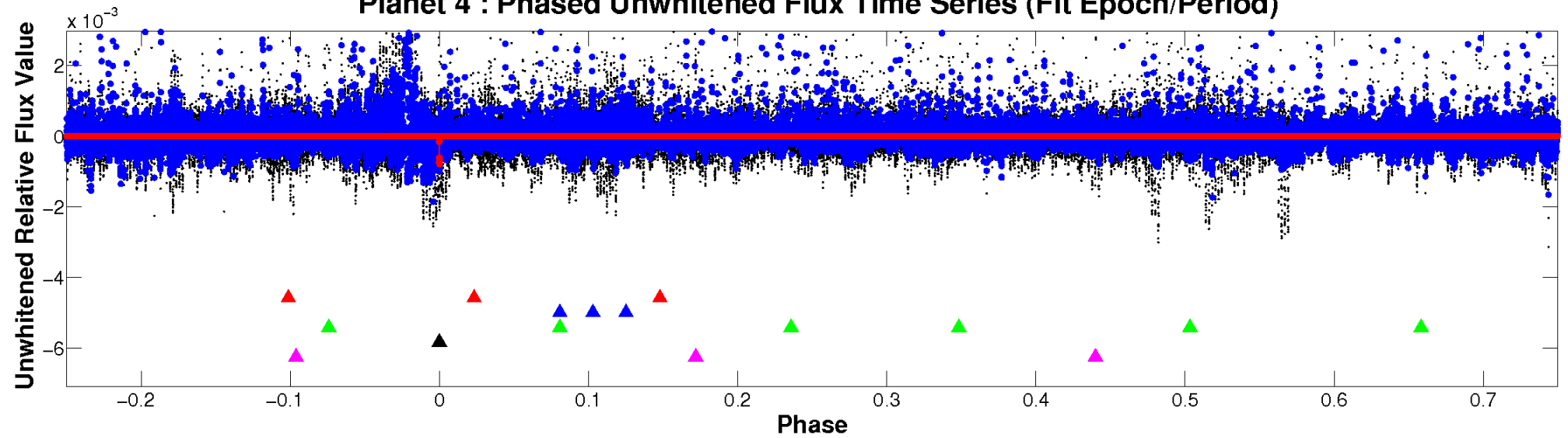
ALT Odd/Even

TCE 009754973-04

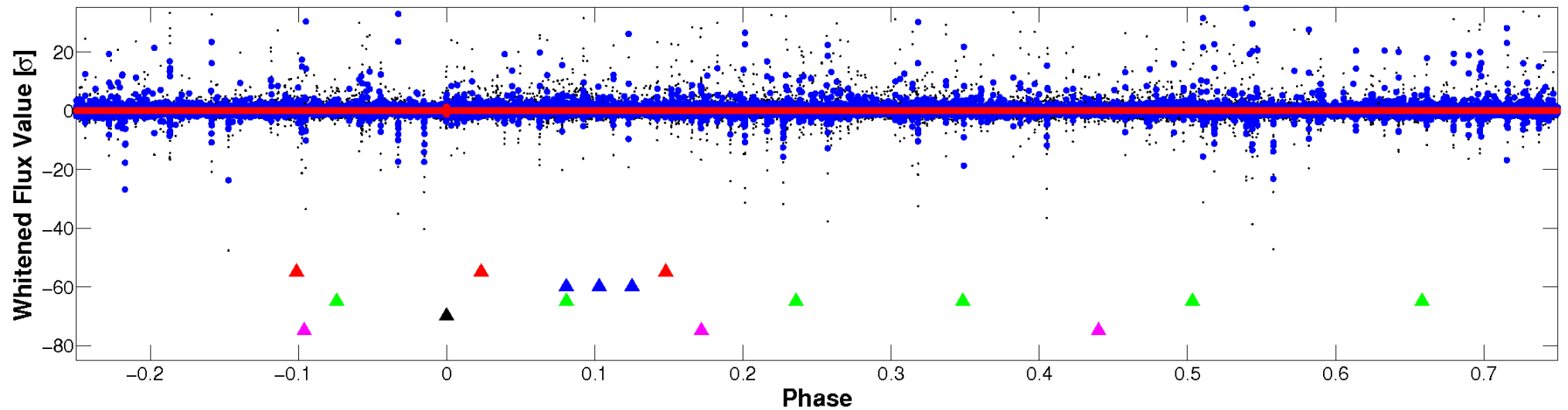


Non-Whitened Vs. Whitened Light Curve

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

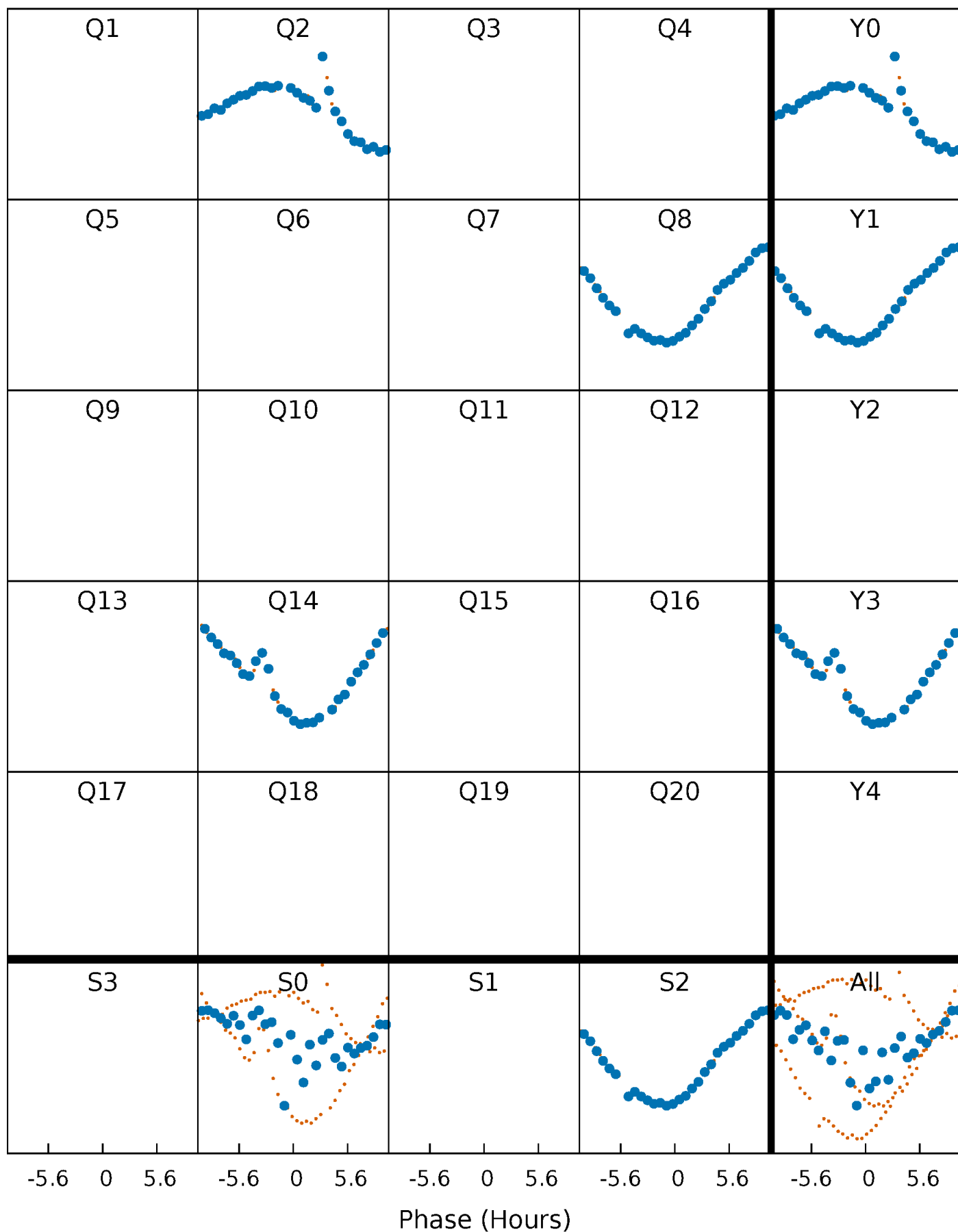


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



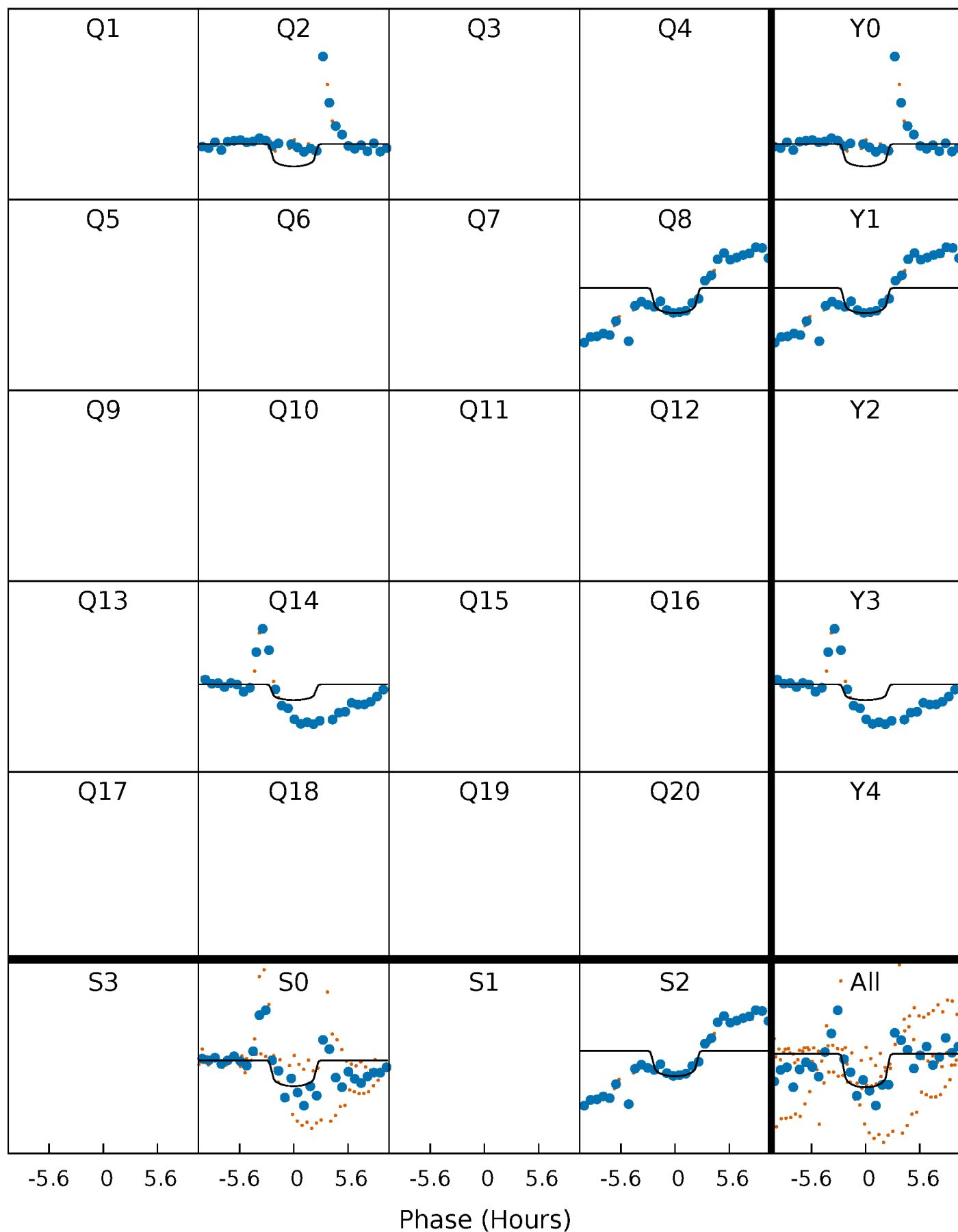
PDC Quarter-Phased Transit Curves

TCE 009754973-04 P=543.465456 Days $T_0=194.059154$ (BKJD)



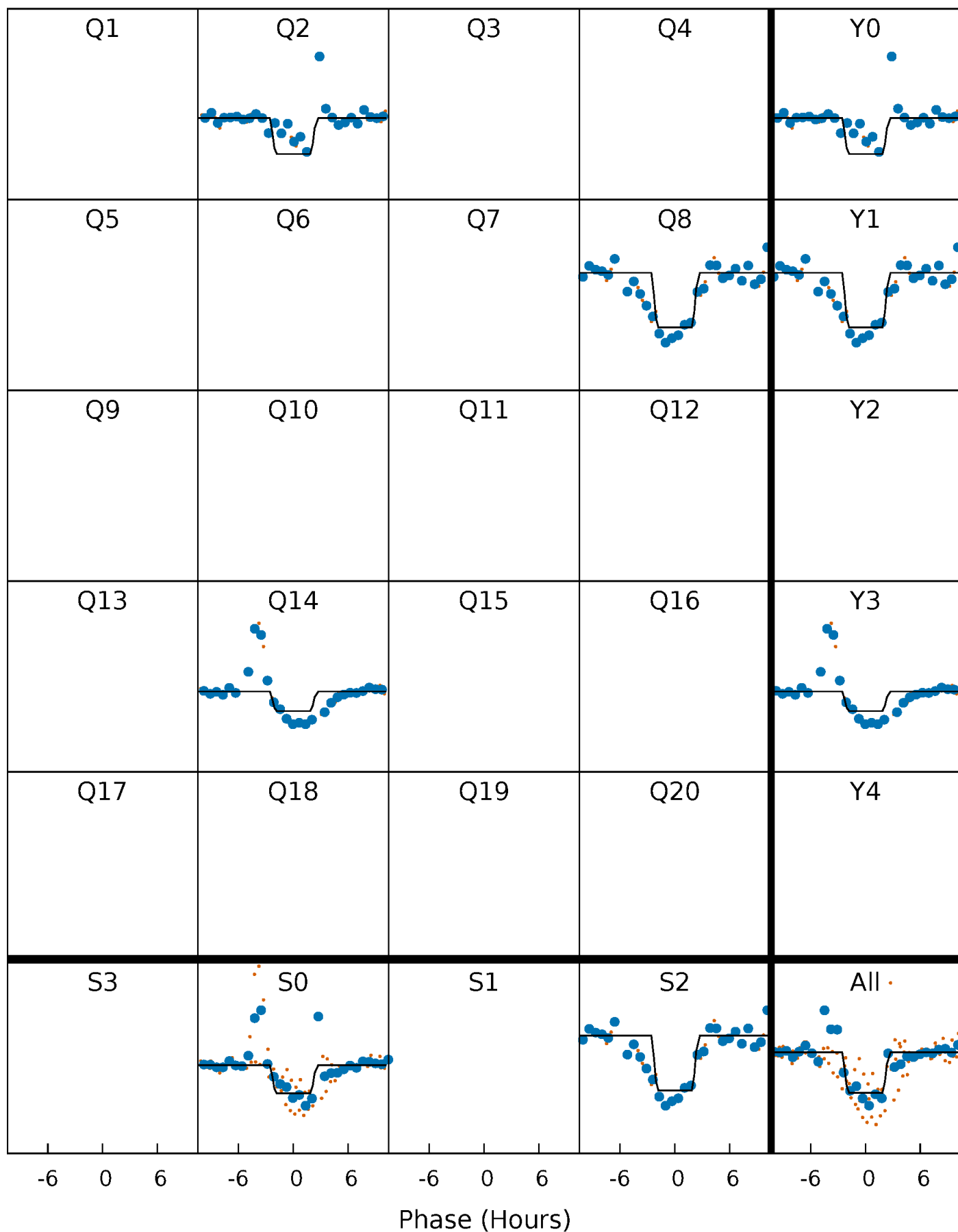
DV Quarter-Phased Transit Curves

TCE 009754973-04 $P=543.465456$ Days $T_0=194.059154$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

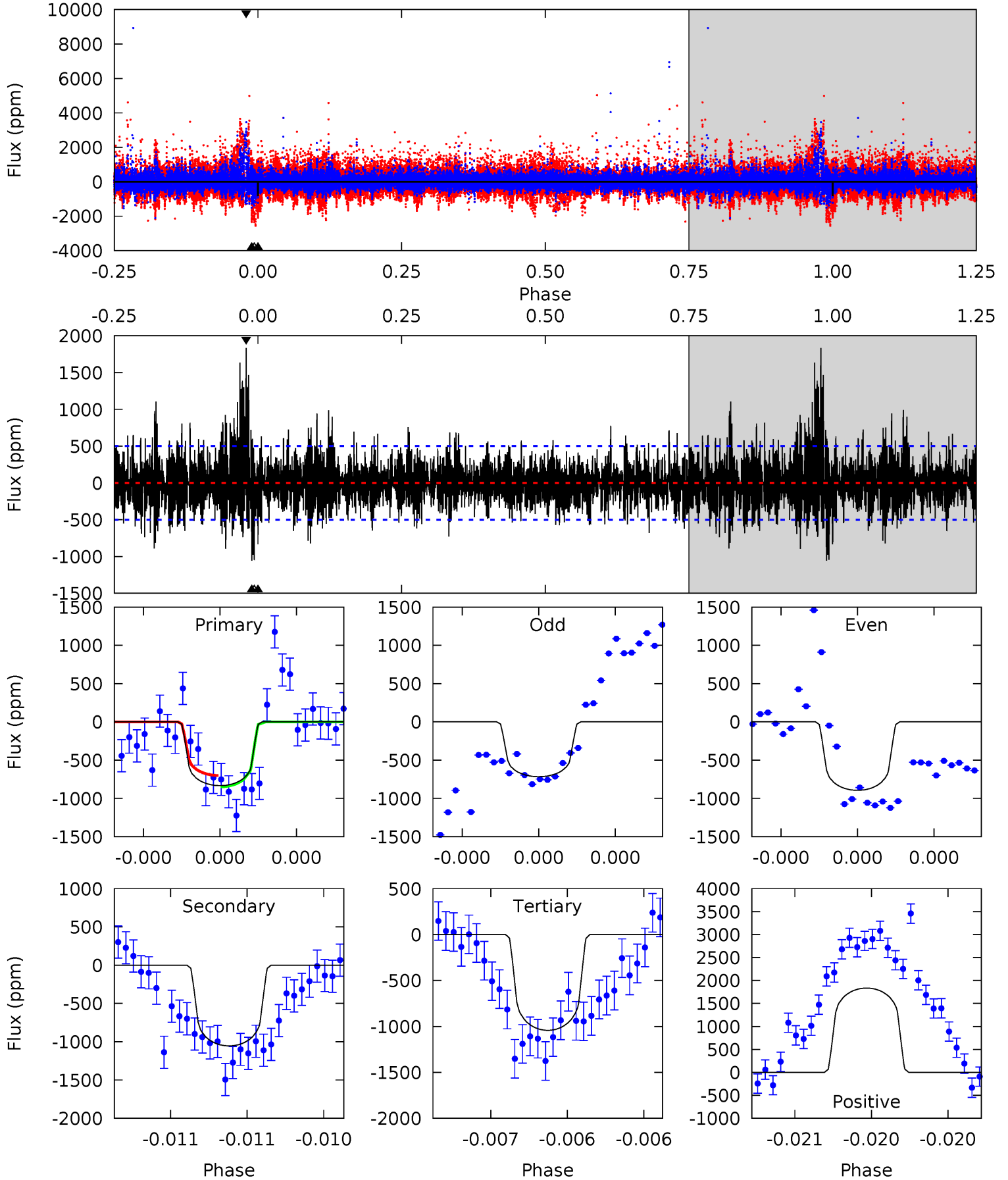
TCE 009754973-04 P=543.464584 Days $T_0=194.089962$ (BKJD)



DV Model-Shift Uniqueness Test

009754973-04, P = 543.465456 Days, E = 194.059154 Days

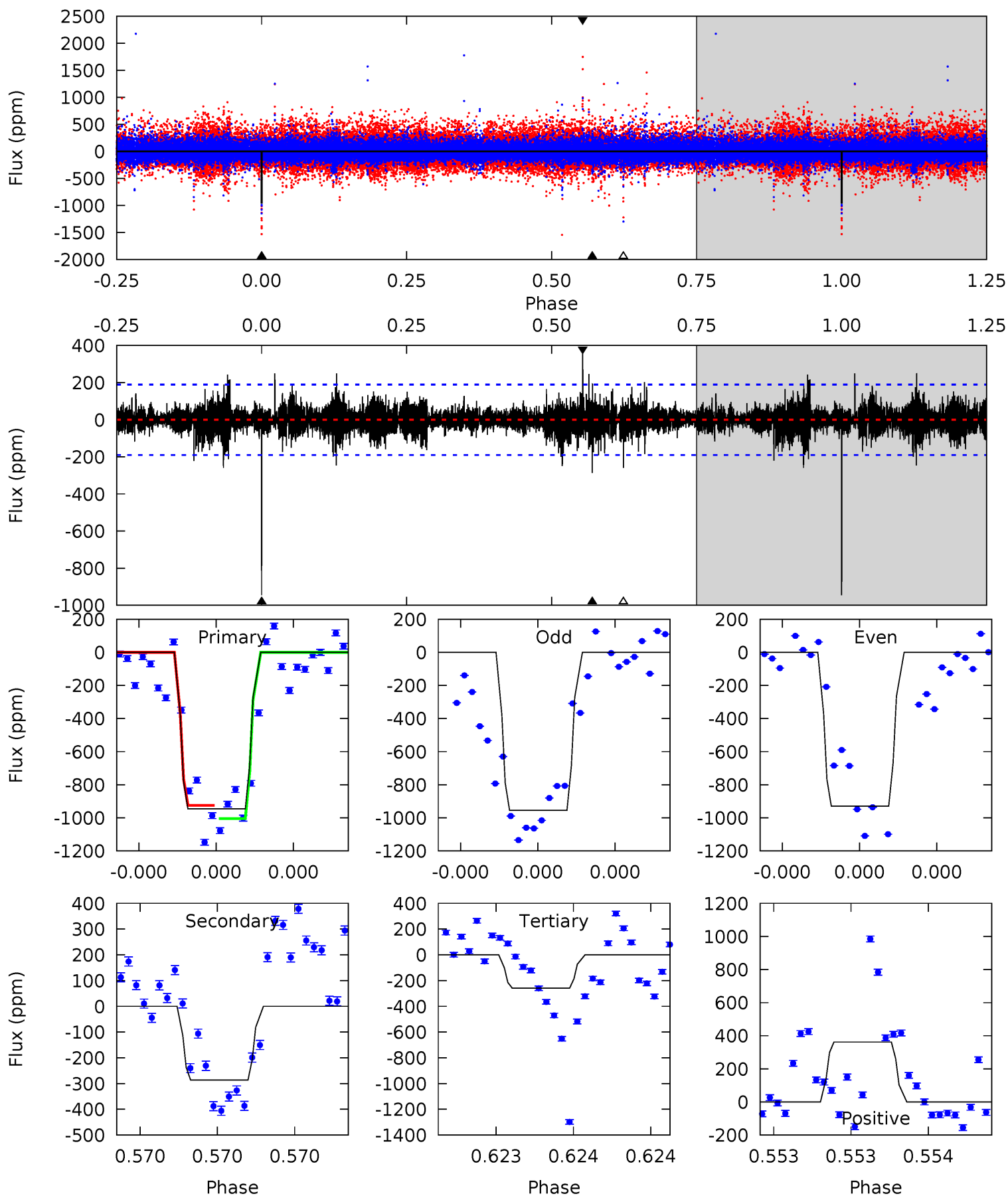
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.31	11.8	11.7	20.5	5.61	3.54	2.82	-2.35	-11.2	0.13	-8.73	0.74	1.12	0.64	0.80



Alt Model-Shift Uniqueness Test

009754973-04, P = 543.464584 Days, E = 194.089962 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.0	8.48	7.68	10.7	5.62	3.56	1.42	20.3	17.3	0.80	-2.25	0.36	0.96	0.28	1.15



Stellar Parameters For KIC 009754973

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5858^{+157}_{-157}	$4.057^{+0.490}_{-0.210}$	$-0.700^{+0.300}_{-0.300}$	$1.386^{+0.420}_{-0.578}$	$0.798^{+0.088}_{-0.064}$	$0.422^{+1.909}_{-0.213}$
	+3%/-3%	+12%/-5%	+43%/-43%	+30%/-42%	+11%/-8%	+452%/-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 009754973-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1054 ± 89	$3.83^{+2.02}_{-1.53}$	379^{+37}_{-45}	6287^{+2115}_{-903}	$57672^{+109608}_{-32440}$
Alt.	-286 ± 34	$4.32^{+1.75}_{-1.78}$	383^{+34}_{-46}	4566^{+1007}_{-497}	12482^{+23817}_{-6210}

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

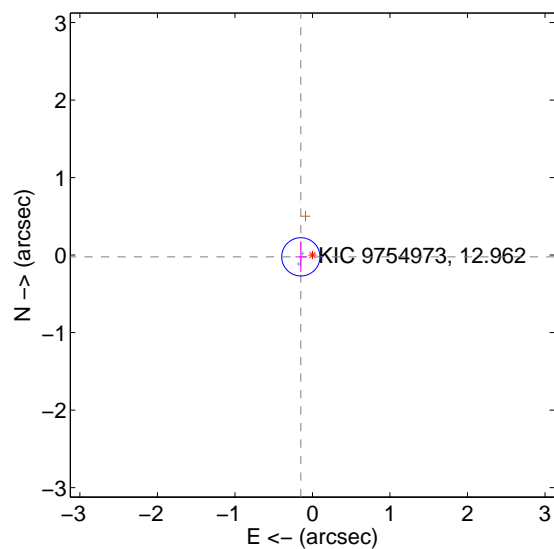
Supplemental centroid analysis for 009754973-04. Kepler magnitude: 12.96. Transit SNR 5.73

There are 2 quarters with good PRF difference image offsets

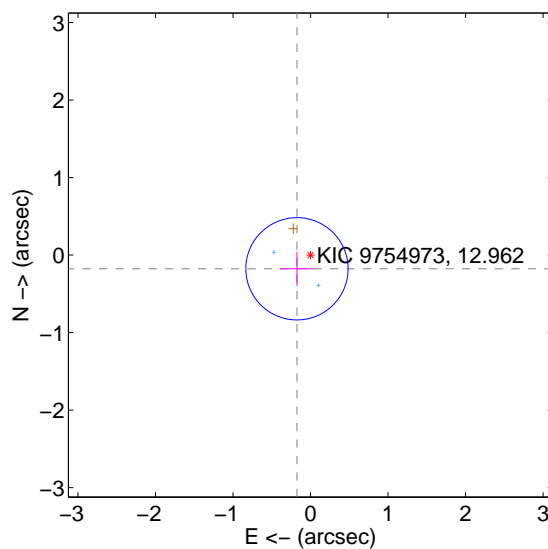
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.151 ± 0.082	1.84	0.150 ± 0.070	-0.023 ± 0.197
PRF-fit source offset from KIC position	0.249 ± 0.220	1.13	0.175 ± 0.221	-0.177 ± 0.219
photometric centroid source offset	0.87 ± 0.58	1.50	0.85 ± 0.58	0.18 ± 0.57

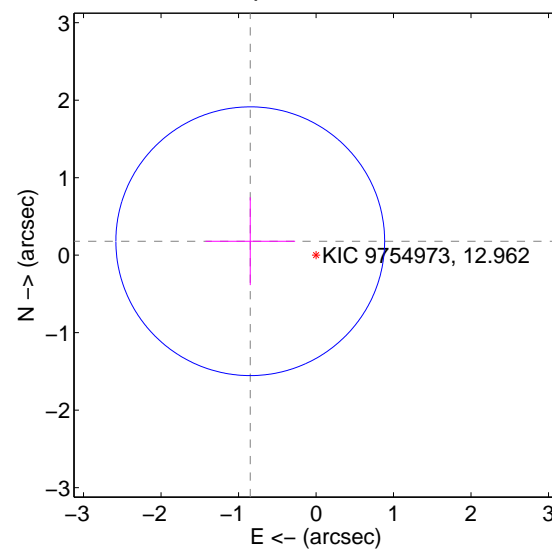
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

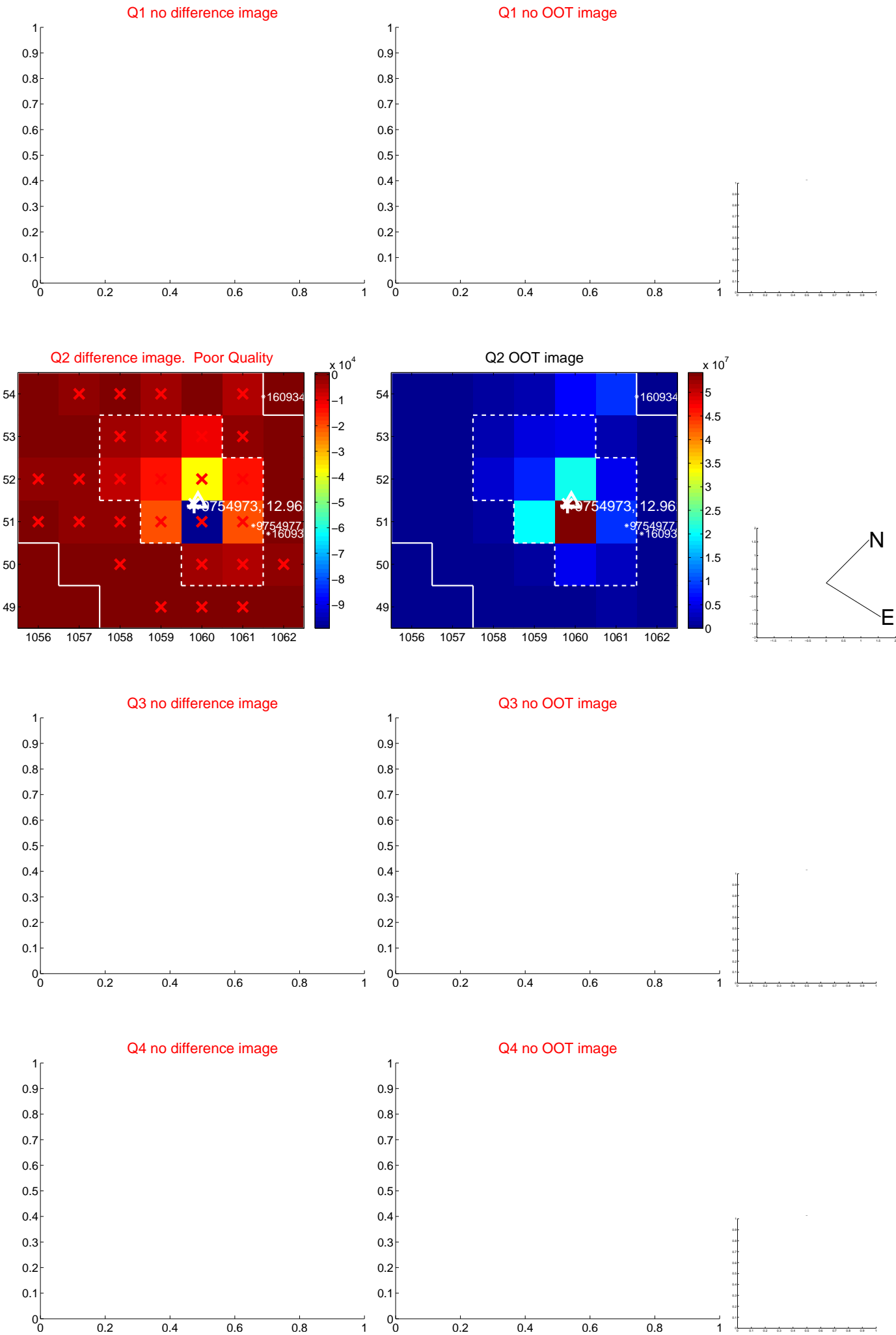


offset from photometric centroids

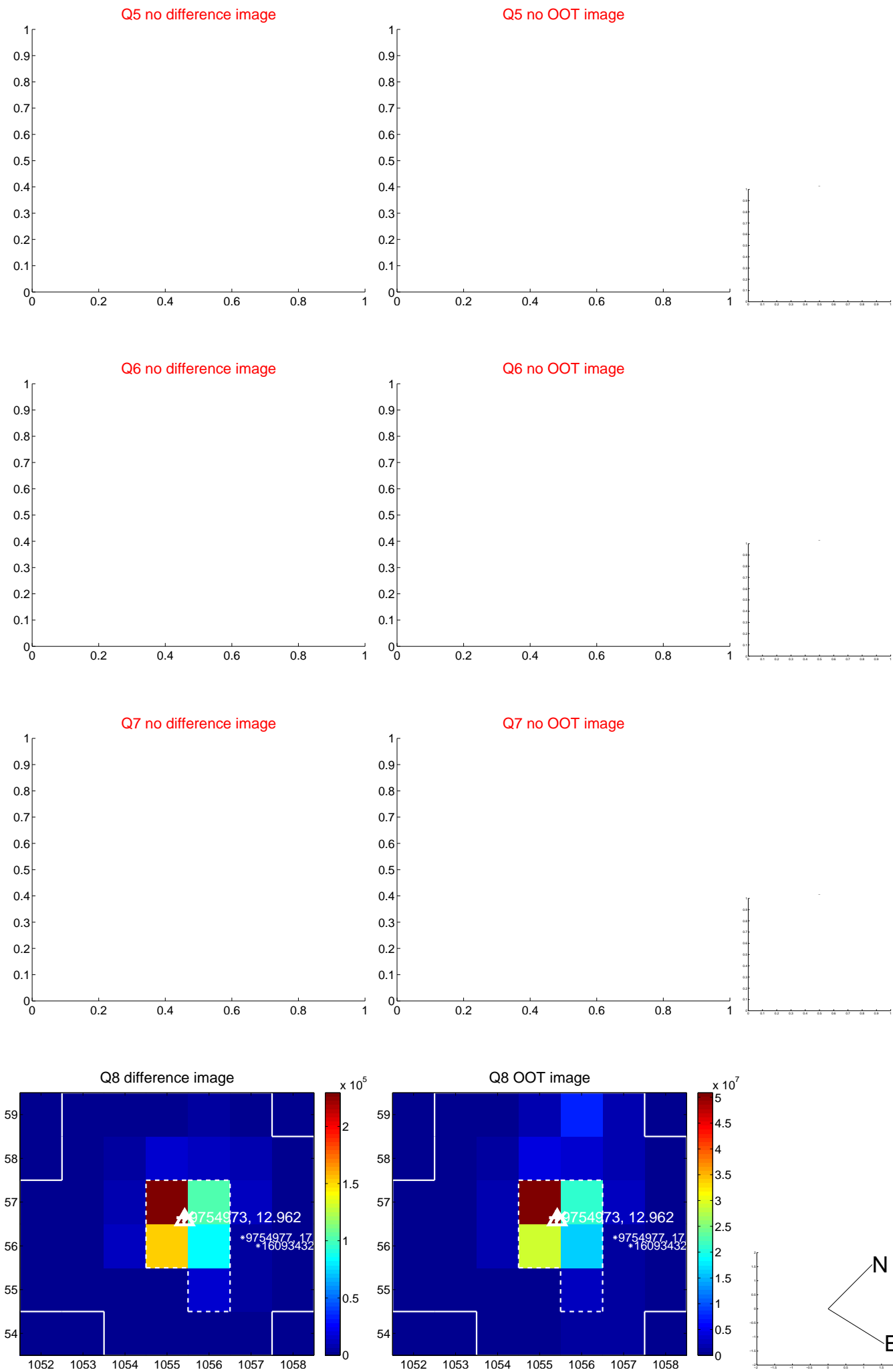


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



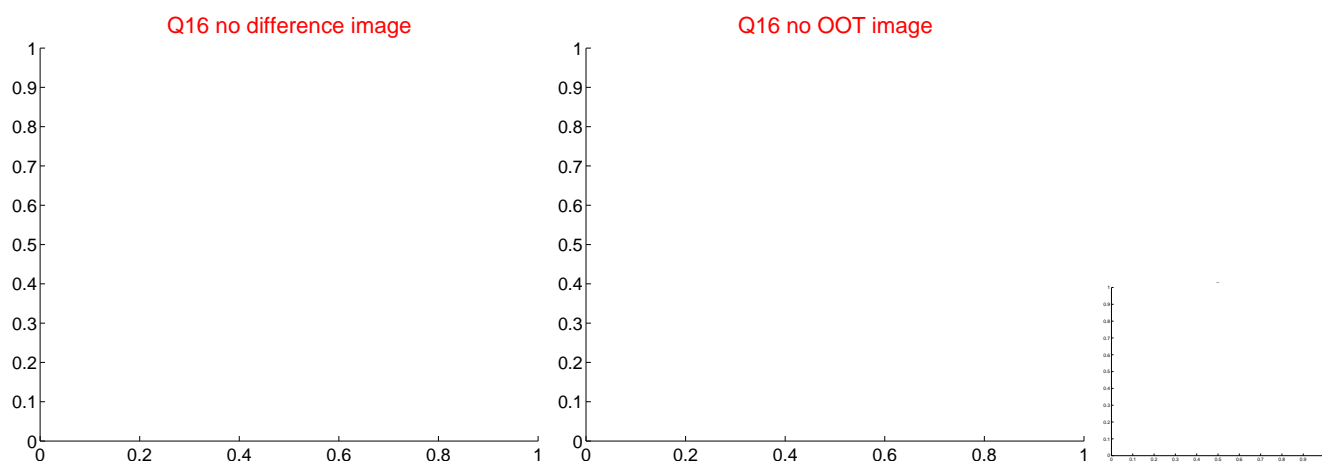
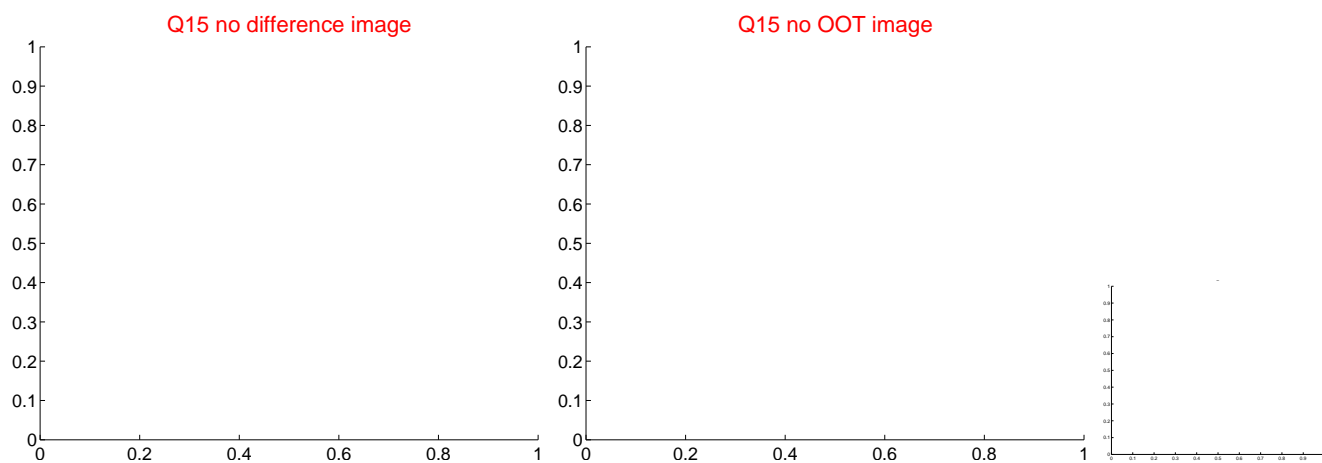
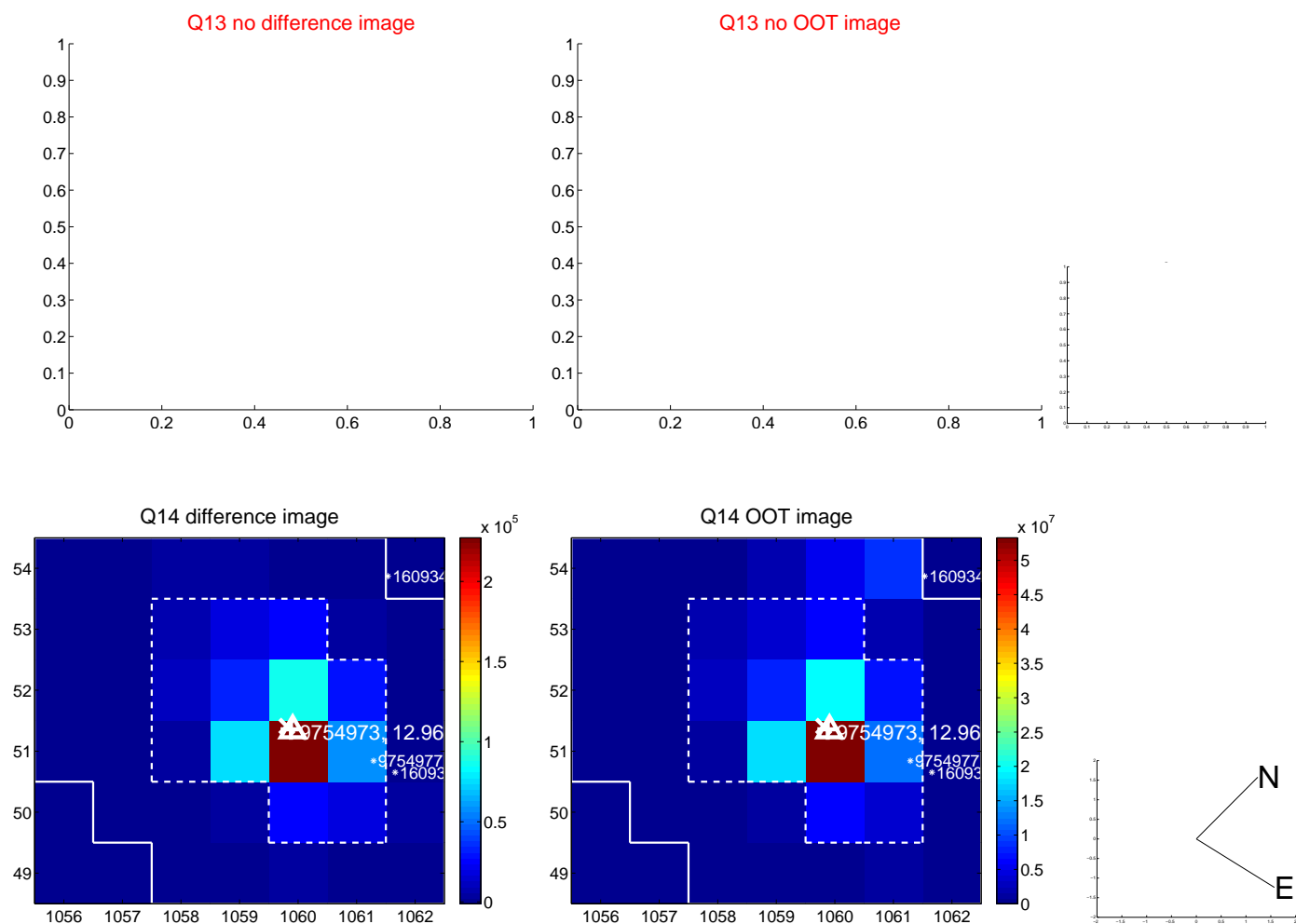
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



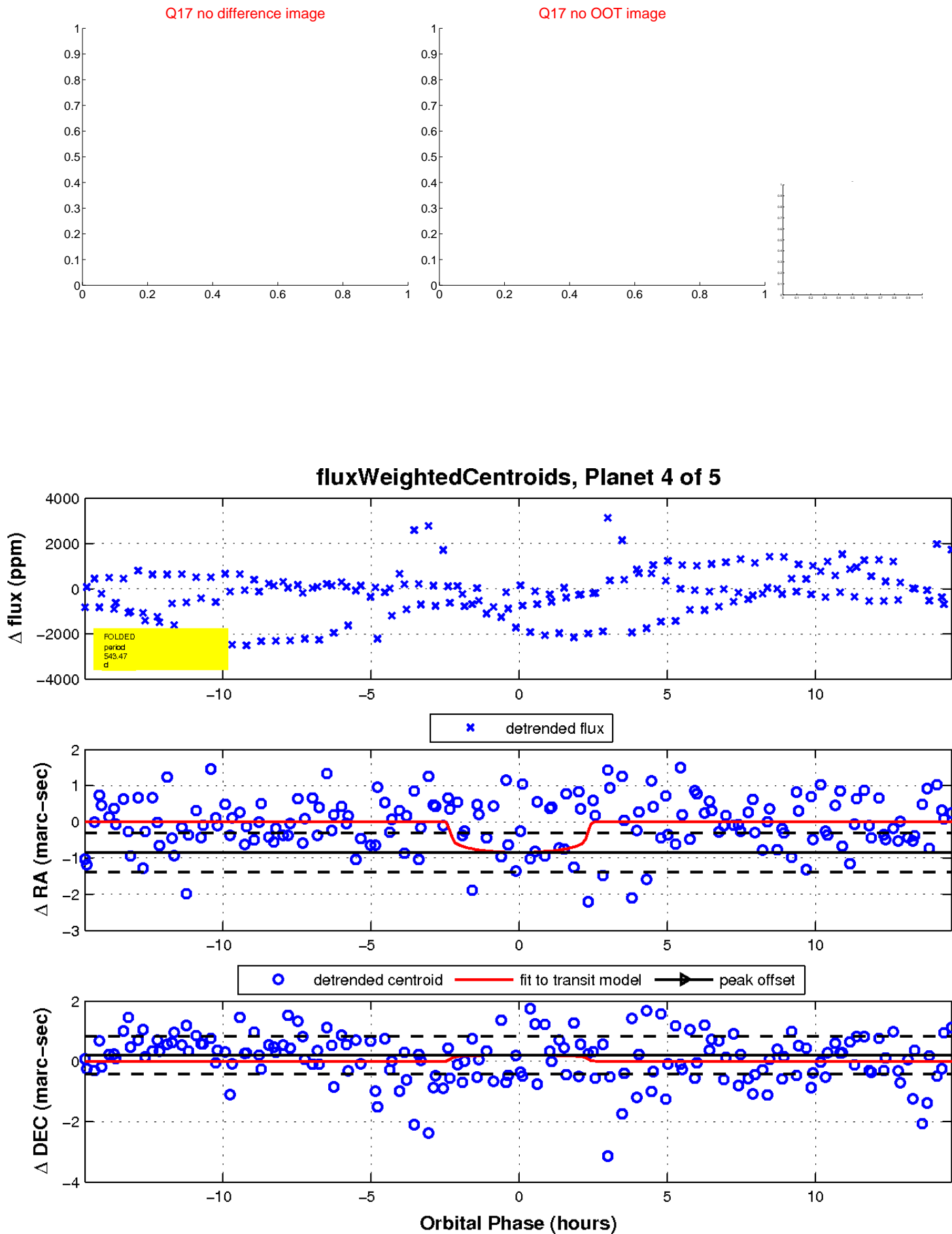
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



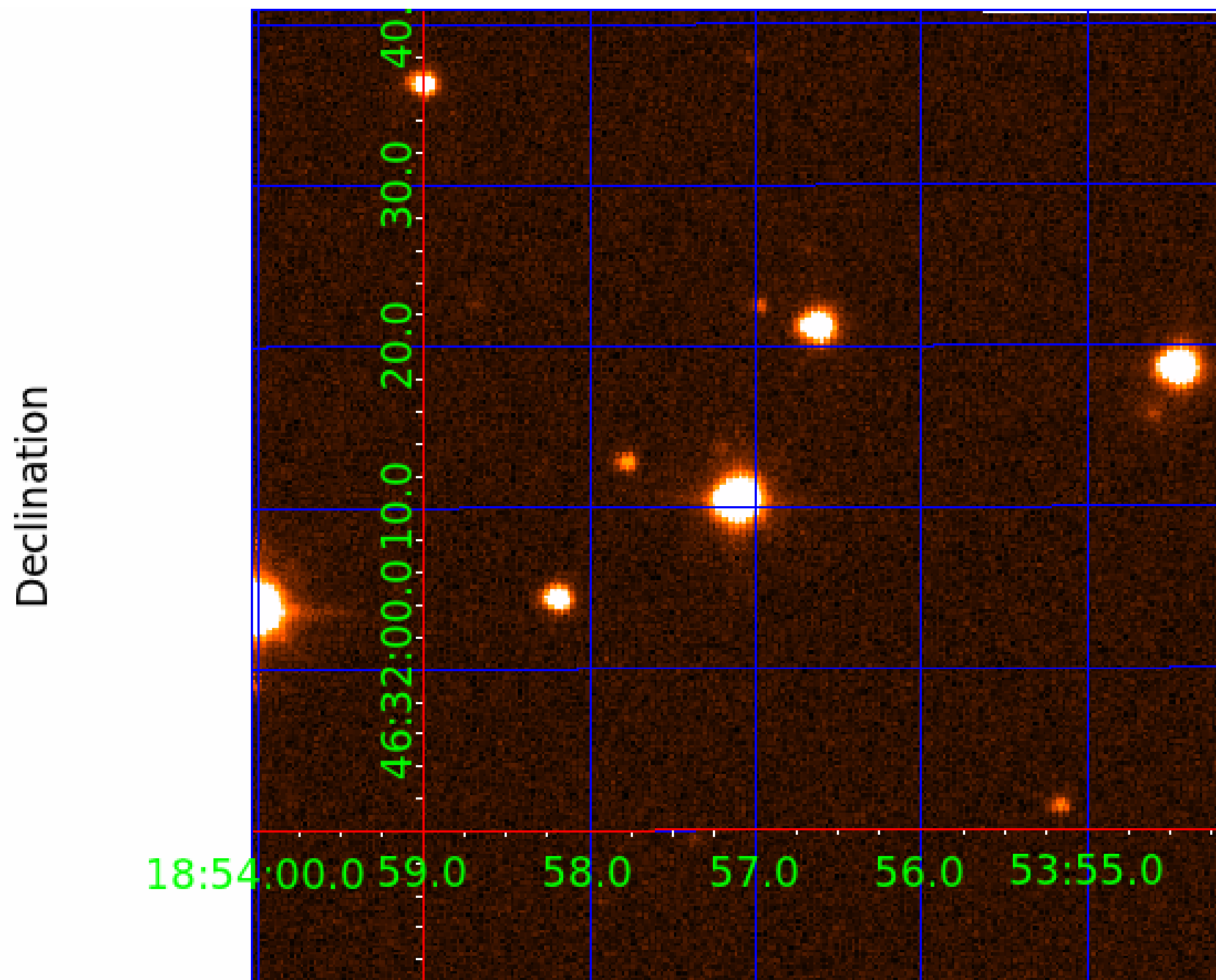
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 009754973

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})
009754973-01	OBS	No	611.171125	139.029599	1516.0	4.725	16.4	9.1	1.39	5858	7.87	1.18
009754973-02	OBS	No	555.512391	237.985617	1046.1	9.072	15.3	6.5	1.39	5858	4.48	1.34
009754973-03	OBS	No	229.618964	322.223904	604.3	5.464	13.7	5.6	1.39	5858	4.40	4.37
009754973-04	OBS	No	543.465456	194.059154	791.3	4.915	15.9	5.7	1.39	5858	4.14	1.39
009754973-05	OBS	No	397.796945	433.175849	527.0	3.000	11.9	-1.0	1.39	5858	3.18	2.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009754973-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009754973-03	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—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009754973-04	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—CENT_FEW_DIFFS
009754973-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

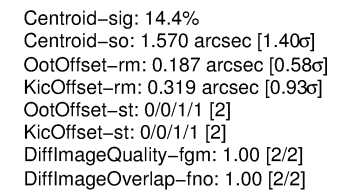
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

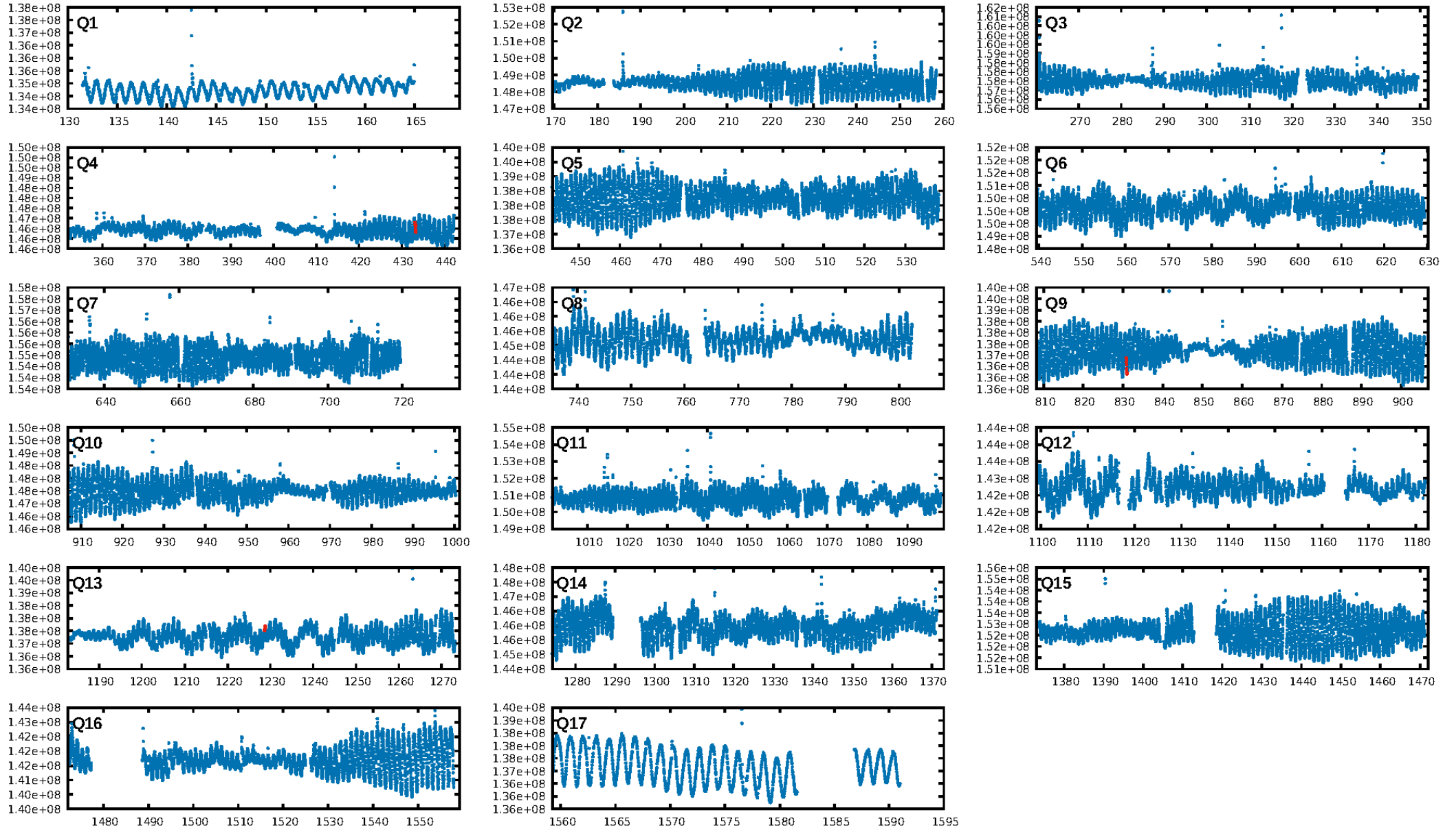
Ephemeris Match Information For 009754973-05

No Significant Match Found

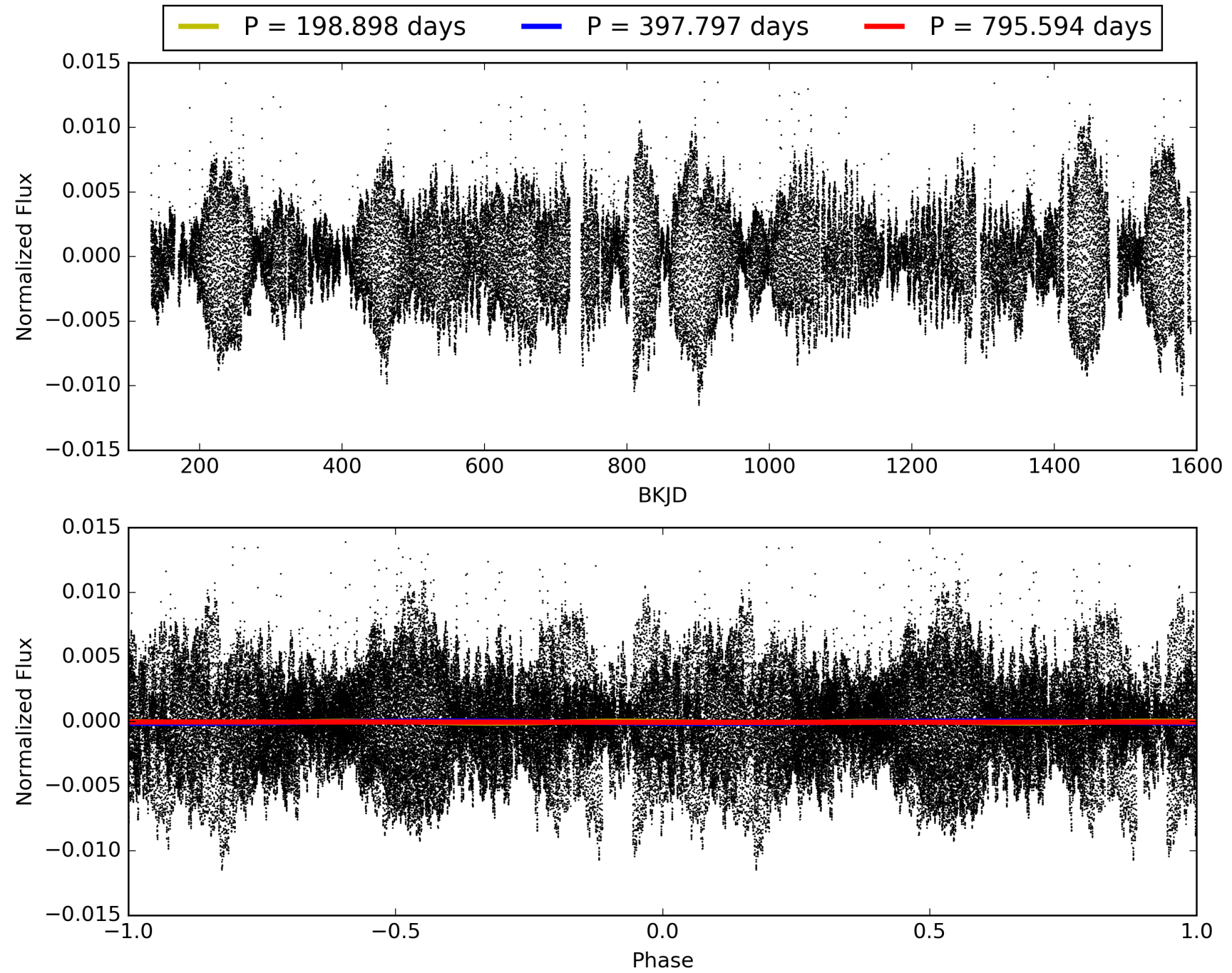
KIC: 9754973 Candidate: 5 of 5 Period: 397.797 d



TCE 009754973-05, PDC Light Curves

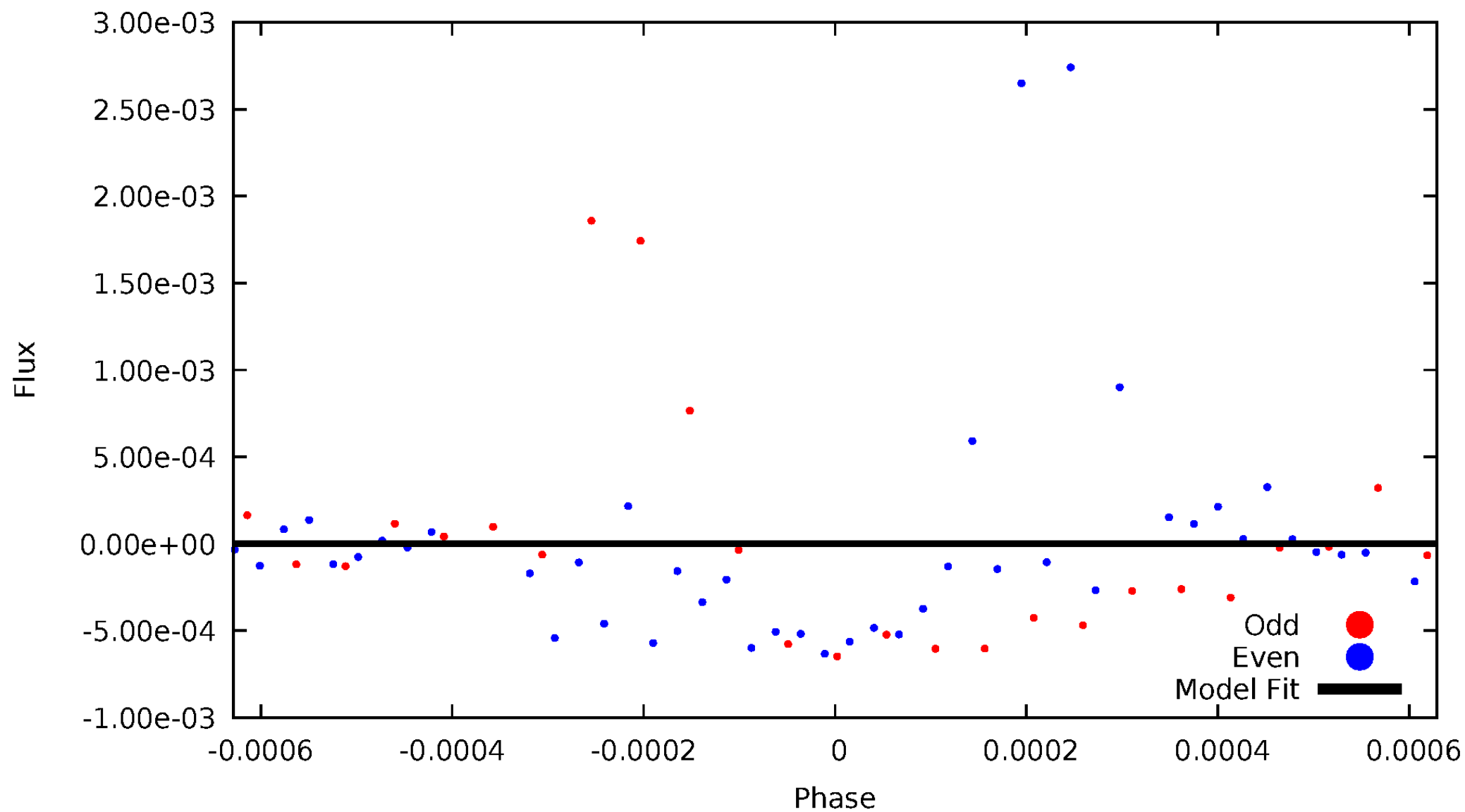


TCE 009754973-05



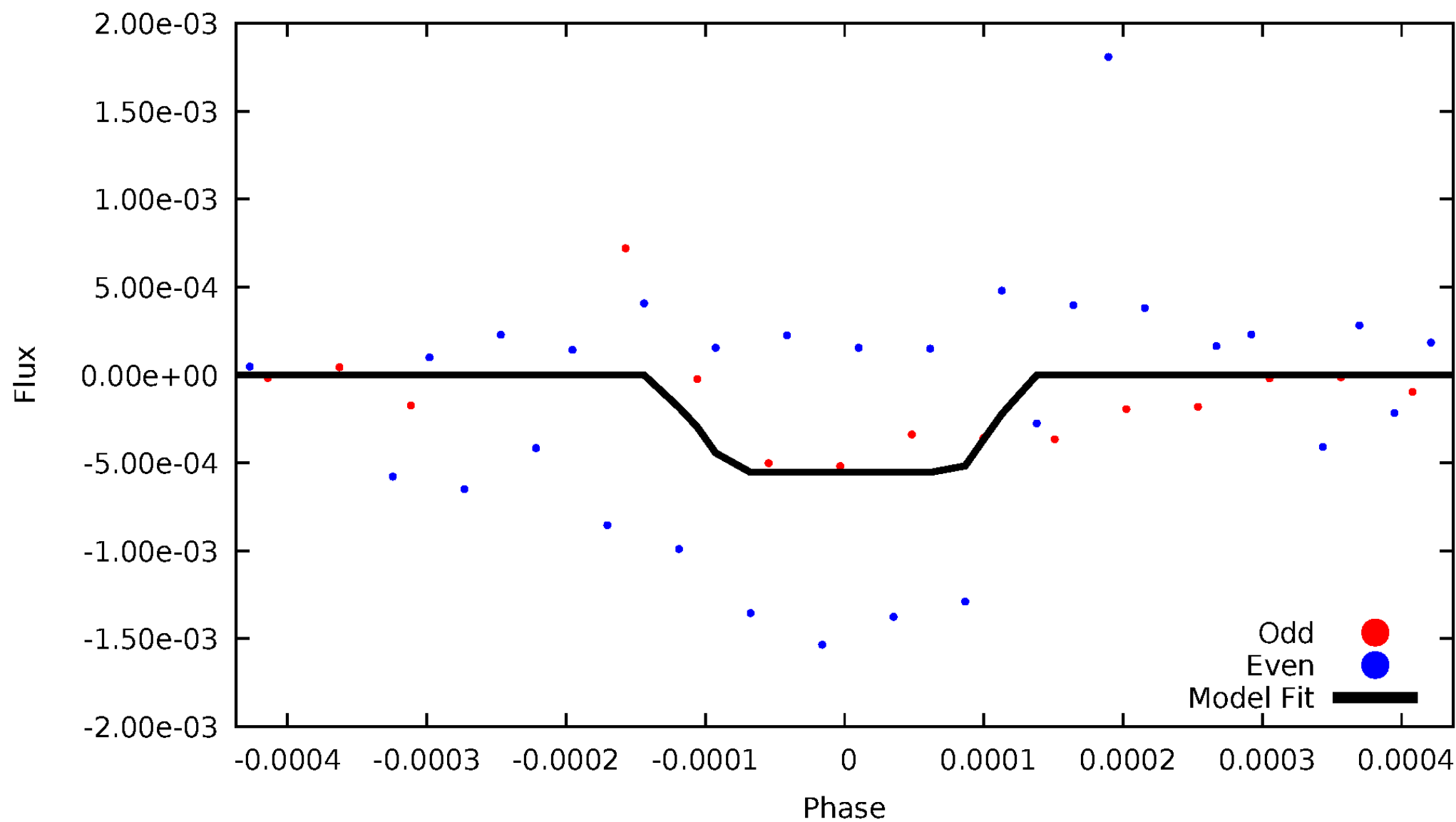
DV Odd/Even

TCE 009754973-05



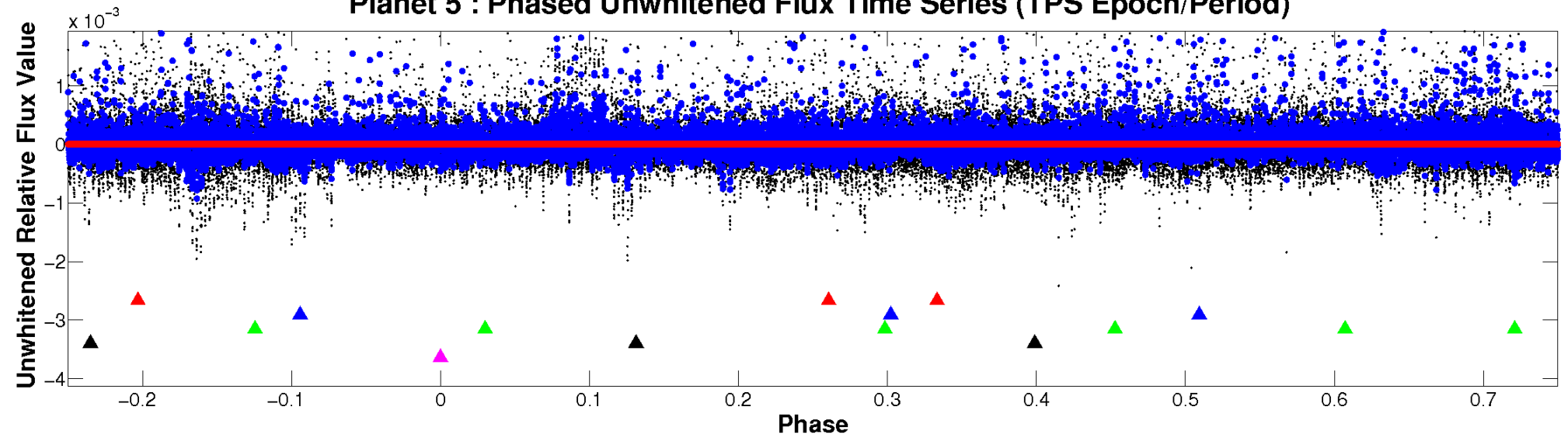
ALT Odd/Even

TCE 009754973-05

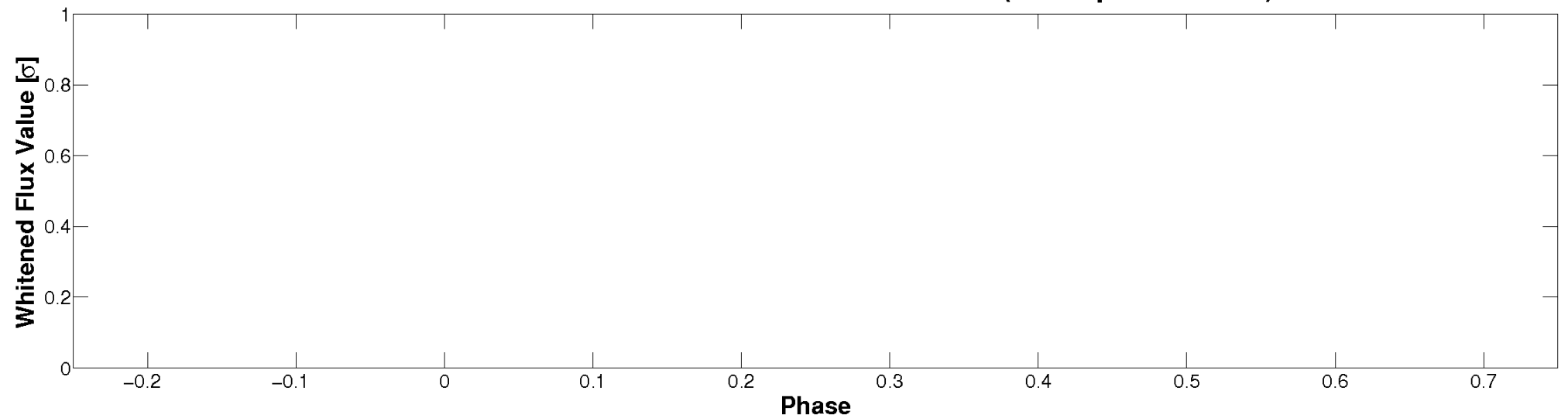


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

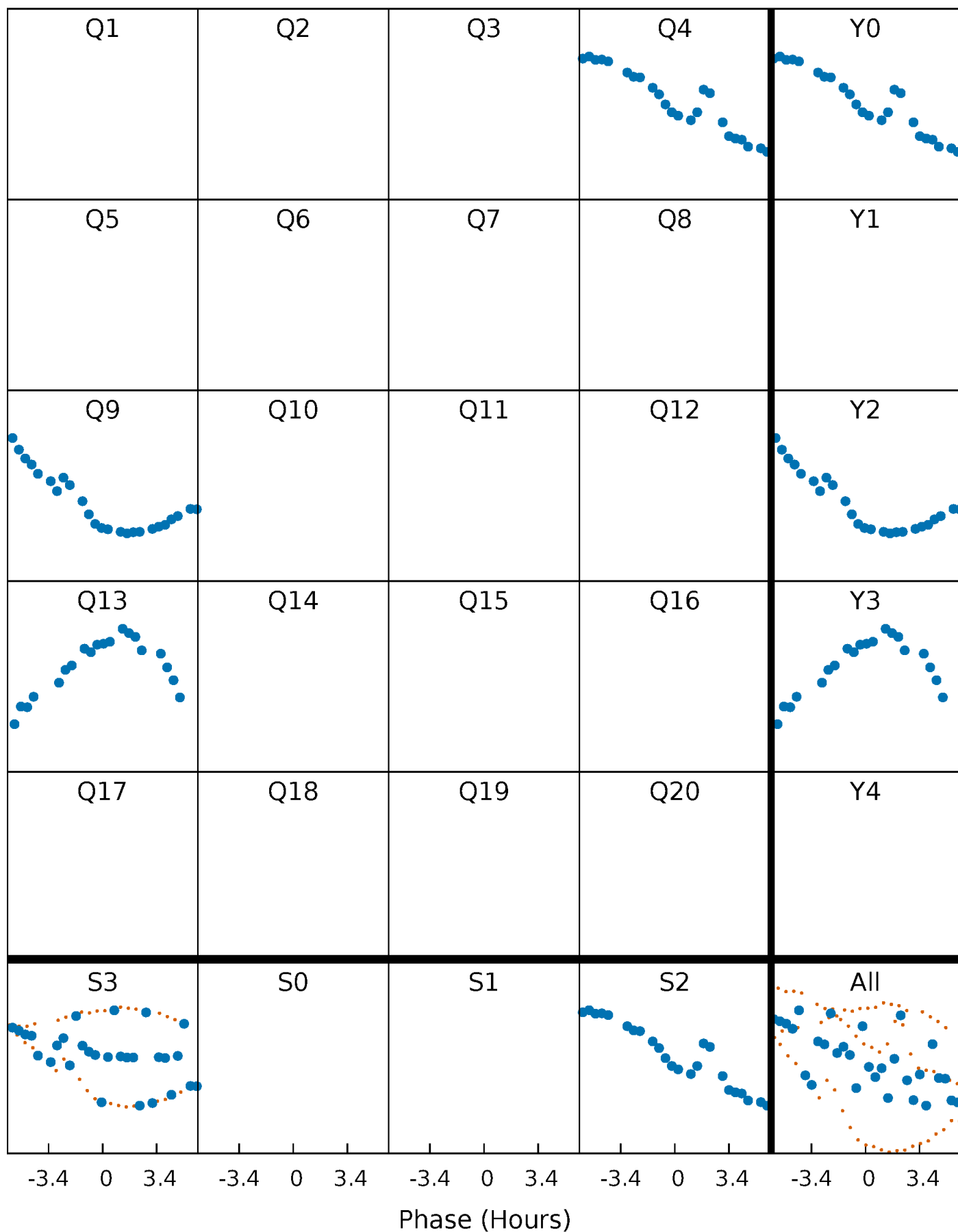


Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)



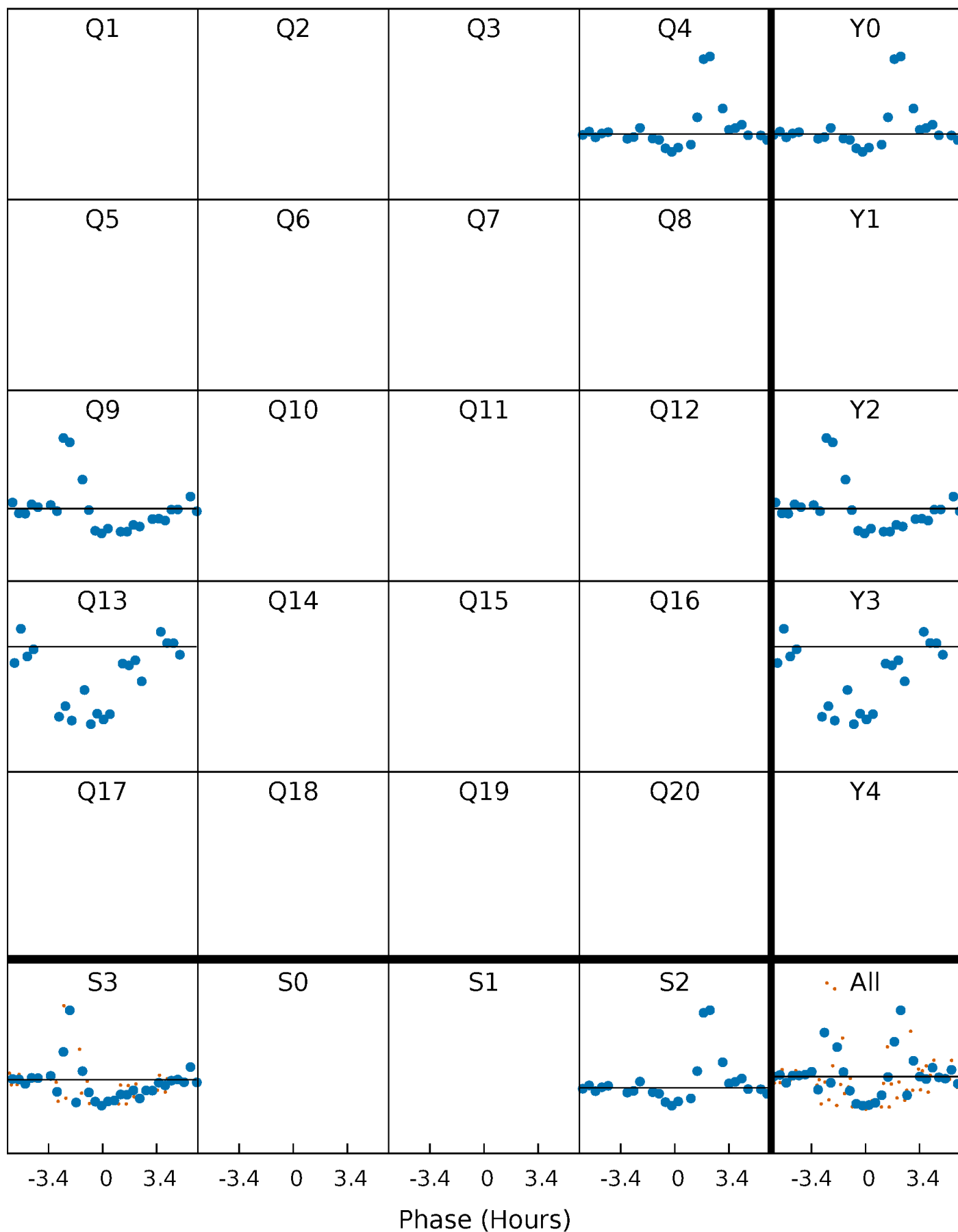
PDC Quarter-Phased Transit Curves

TCE 009754973-05 $P=397.796945$ Days $T_0=433.175849$ (BKJD)



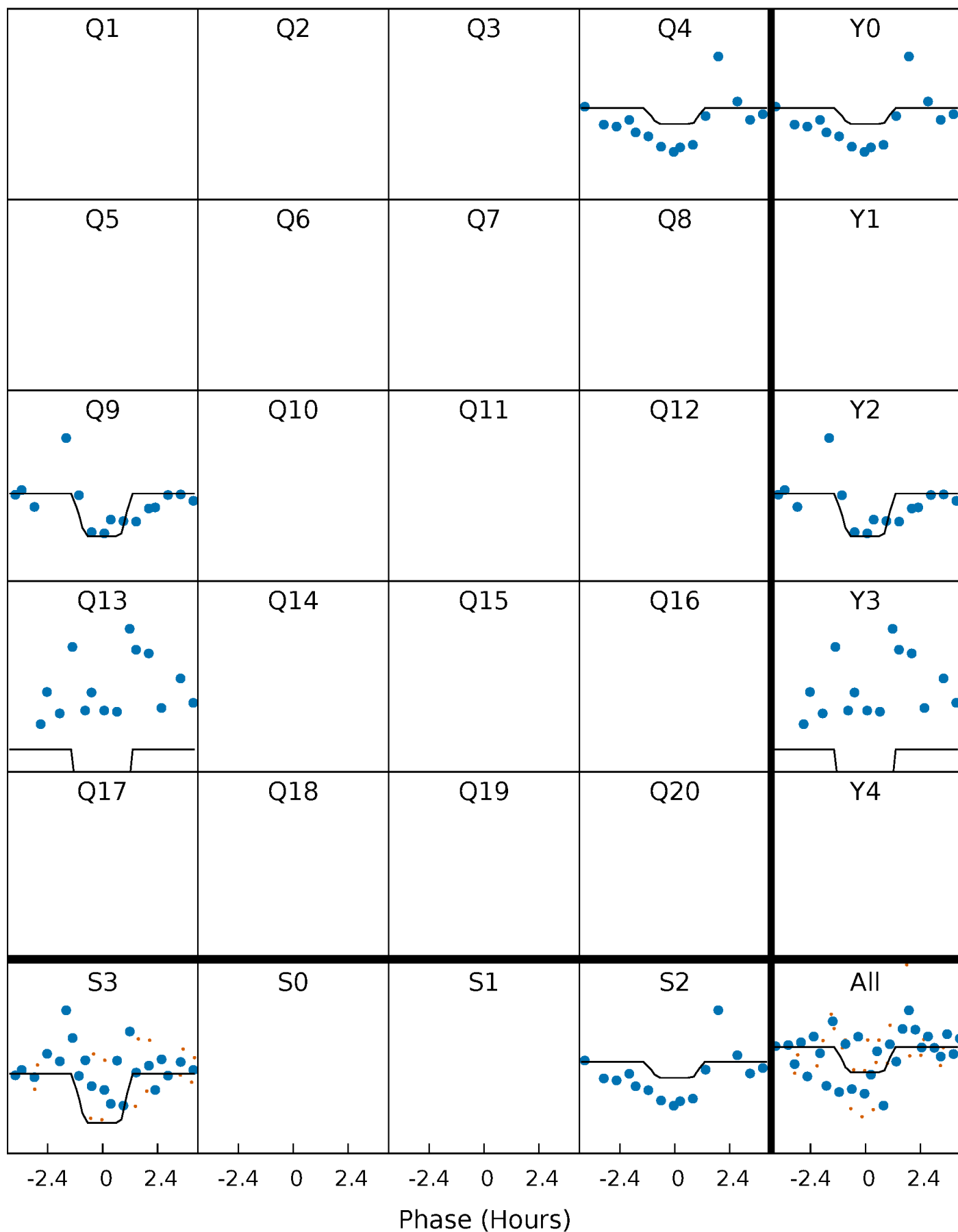
DV Quarter-Phased Transit Curves

TCE 009754973-05 $P=397.796945$ Days $T_0=433.175849$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

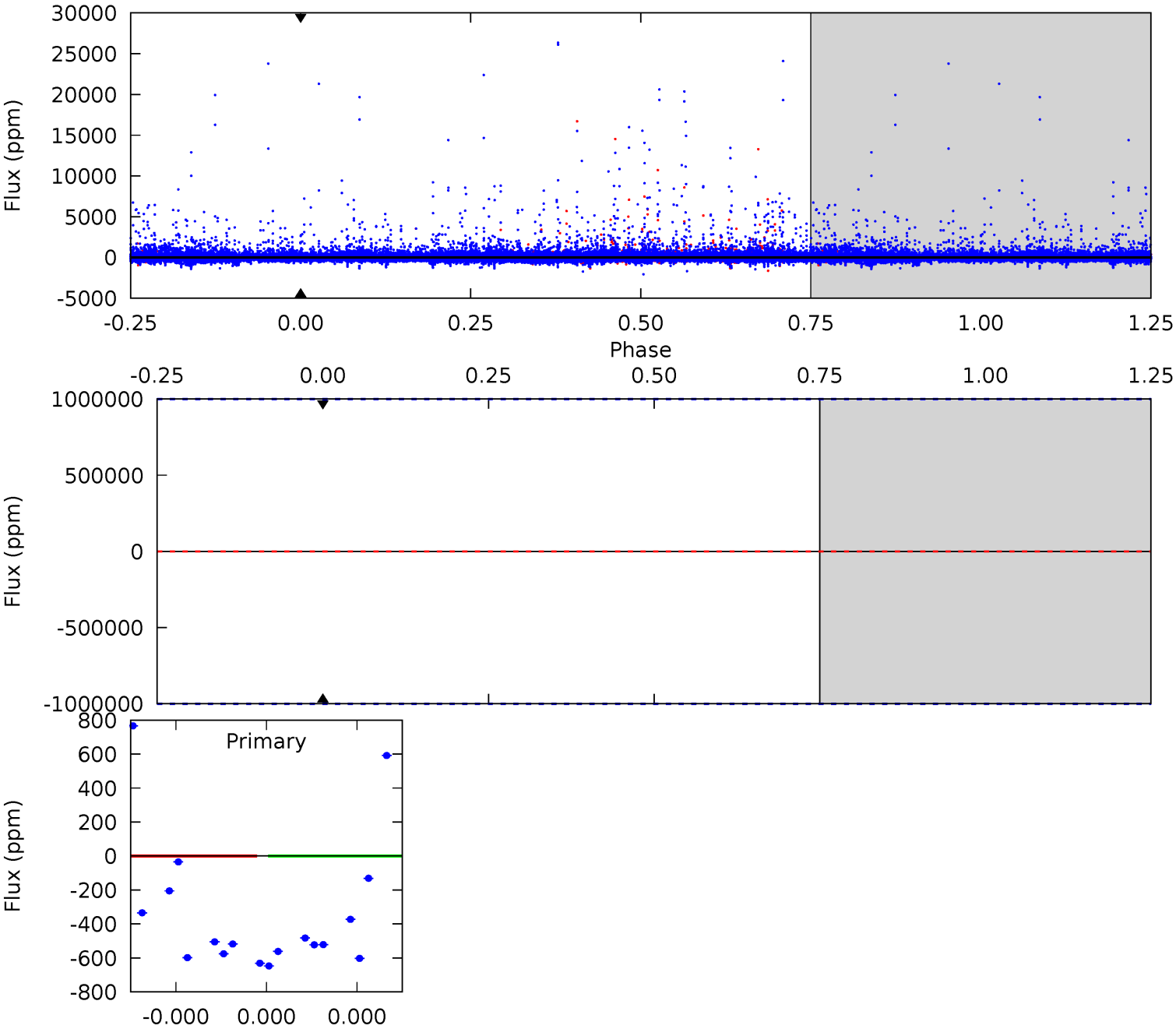
TCE 009754973-05 $P=397.796945$ Days $T_0=433.177978$ (BKJD)



DV Model-Shift Uniqueness Test

009754973-05, P = 397.796945 Days, E = 35.378904 Days

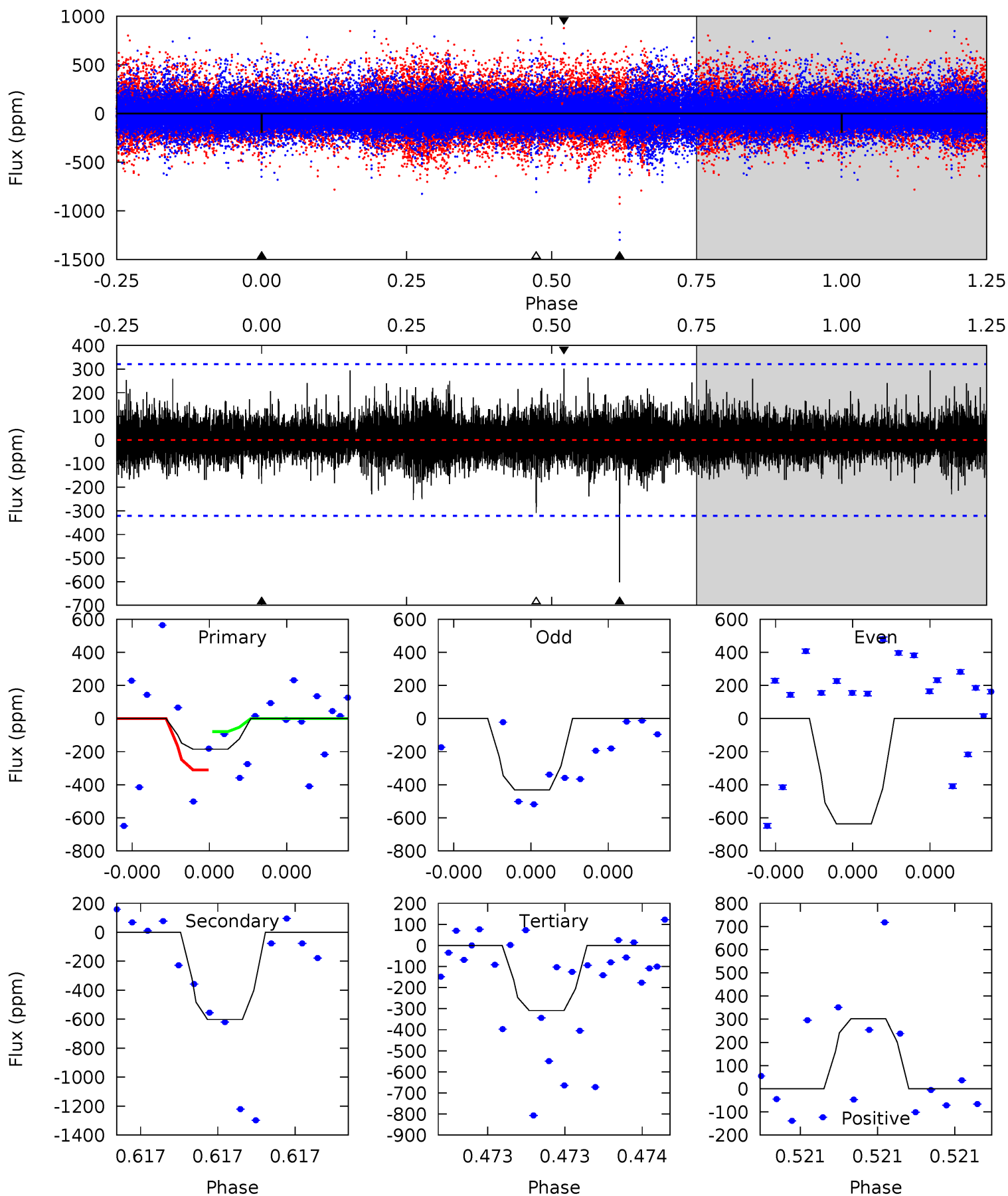
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009754973-05, $P = 397.796945$ Days, $E = 35.381033$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.29	10.7	5.48	5.34	5.69	3.66	0.99	-2.19	-2.06	5.20	5.33	2.25	1.29	0.33	2.06



Stellar Parameters For KIC 009754973

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5858^{+157}_{-157}	$4.057^{+0.490}_{-0.210}$	$-0.700^{+0.300}_{-0.300}$	$1.386^{+0.420}_{-0.578}$	$0.798^{+0.088}_{-0.064}$	$0.422^{+1.909}_{-0.213}$
	+3%/-3%	+12%/-5%	+43%/-43%	+30%/-42%	+11%/-8%	+452%/-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 009754973-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$11.27^{+11.77}_{-8.58}$	426^{+41}_{-56}	4531^{+19458}_{-22601}	$6868^{+1003466}_{-688493}$
Alt.	-602 ± 56	$10.35^{+11.39}_{-7.44}$	422^{+43}_{-50}	3789^{+2658}_{-753}	3033^{+37451}_{-2362}

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

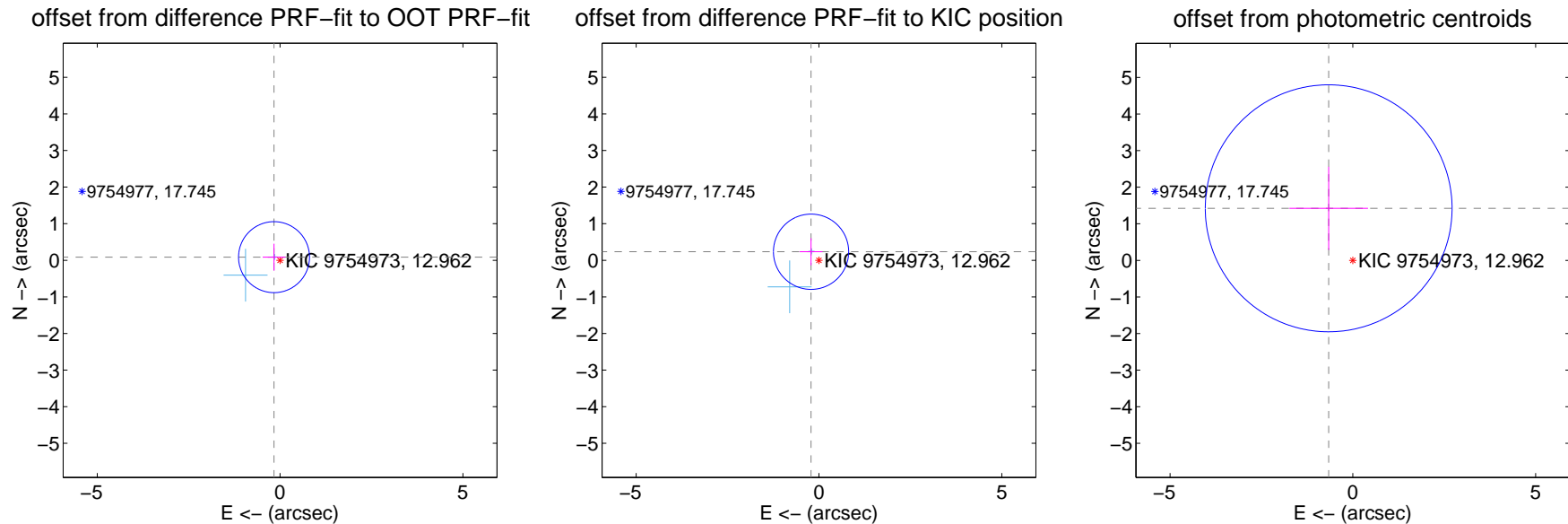
DV Centroid Data

Supplemental centroid analysis for 009754973-05. Kepler magnitude: 12.96. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

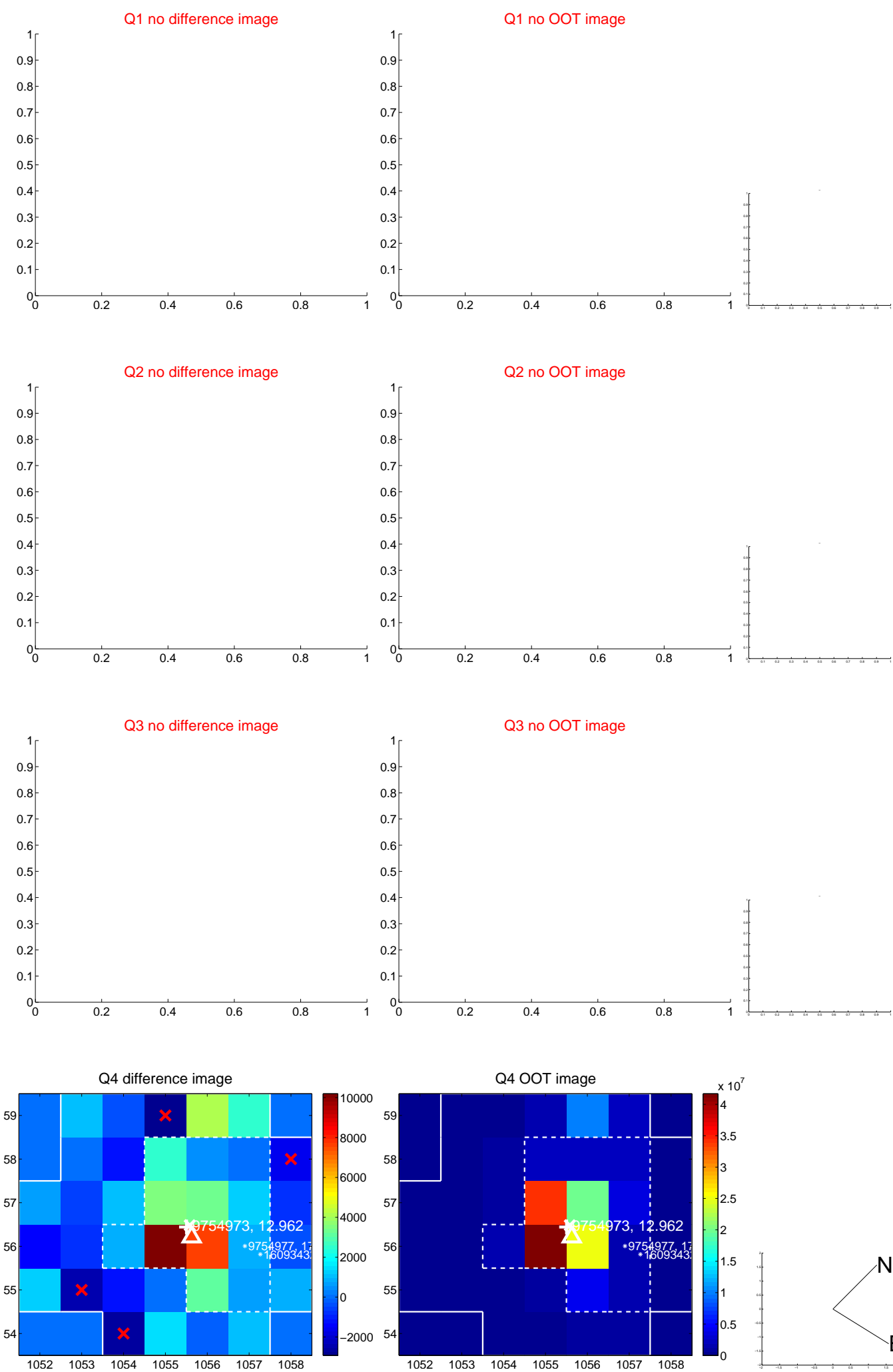
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.187 ± 0.323	0.58	0.166 ± 0.310	0.086 ± 0.369
PRF-fit source offset from KIC position	0.319 ± 0.343	0.93	0.217 ± 0.310	0.234 ± 0.369
photometric centroid source offset	1.57 ± 1.13	1.40	0.66 ± 1.08	1.42 ± 1.14



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.

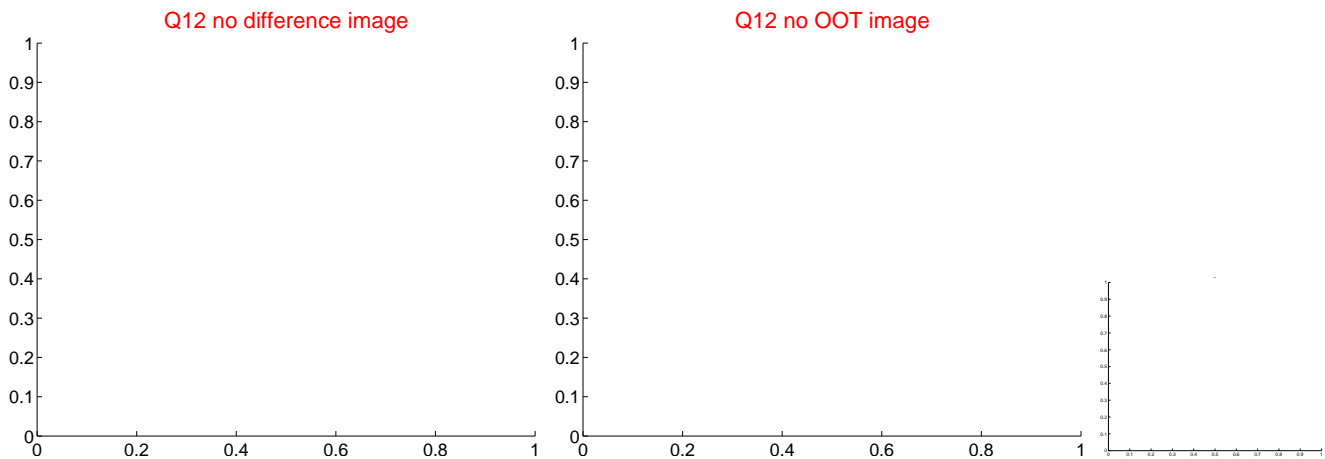
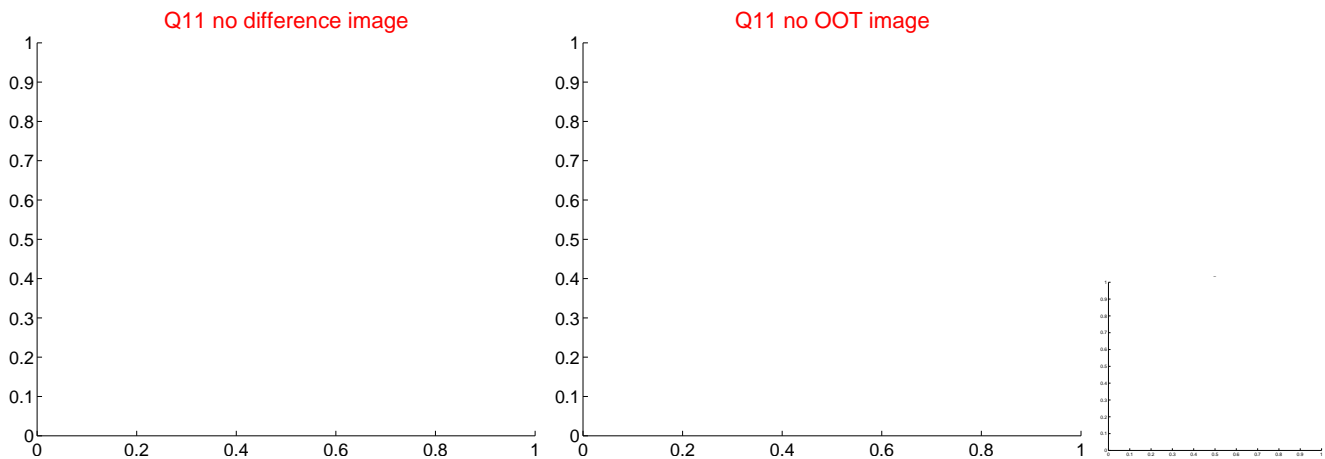
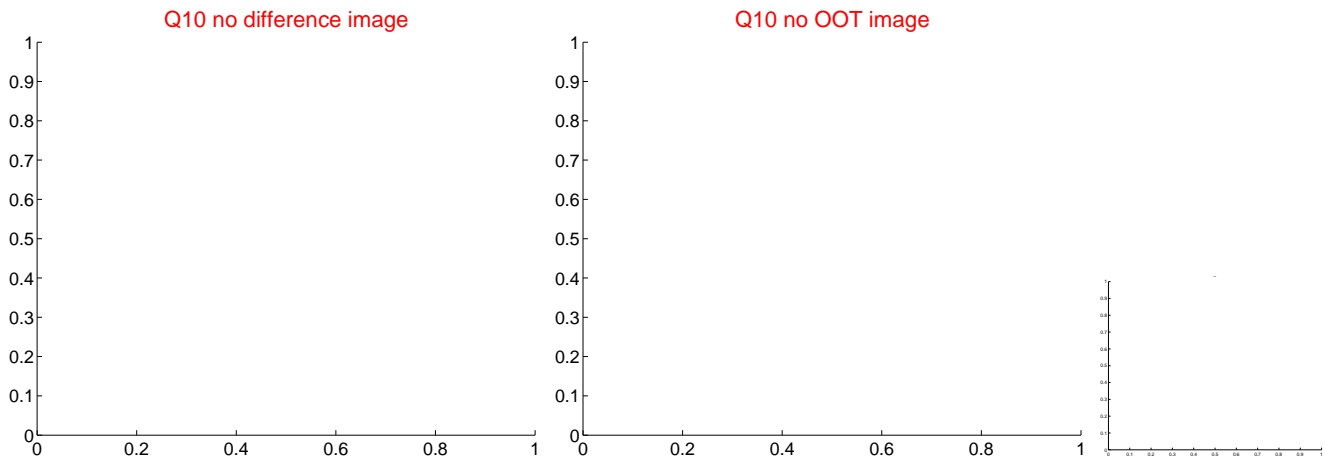
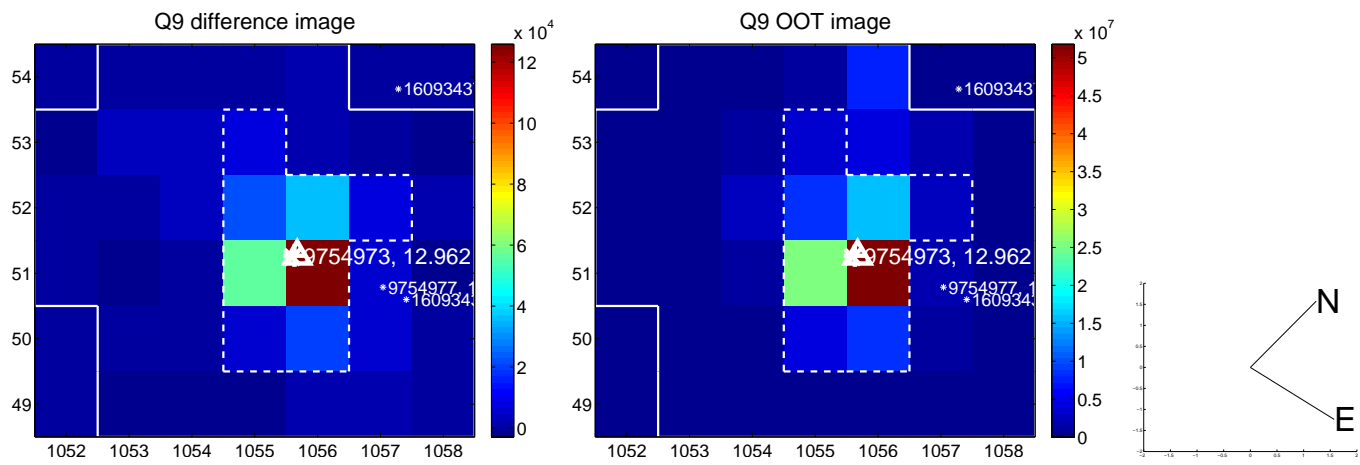
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



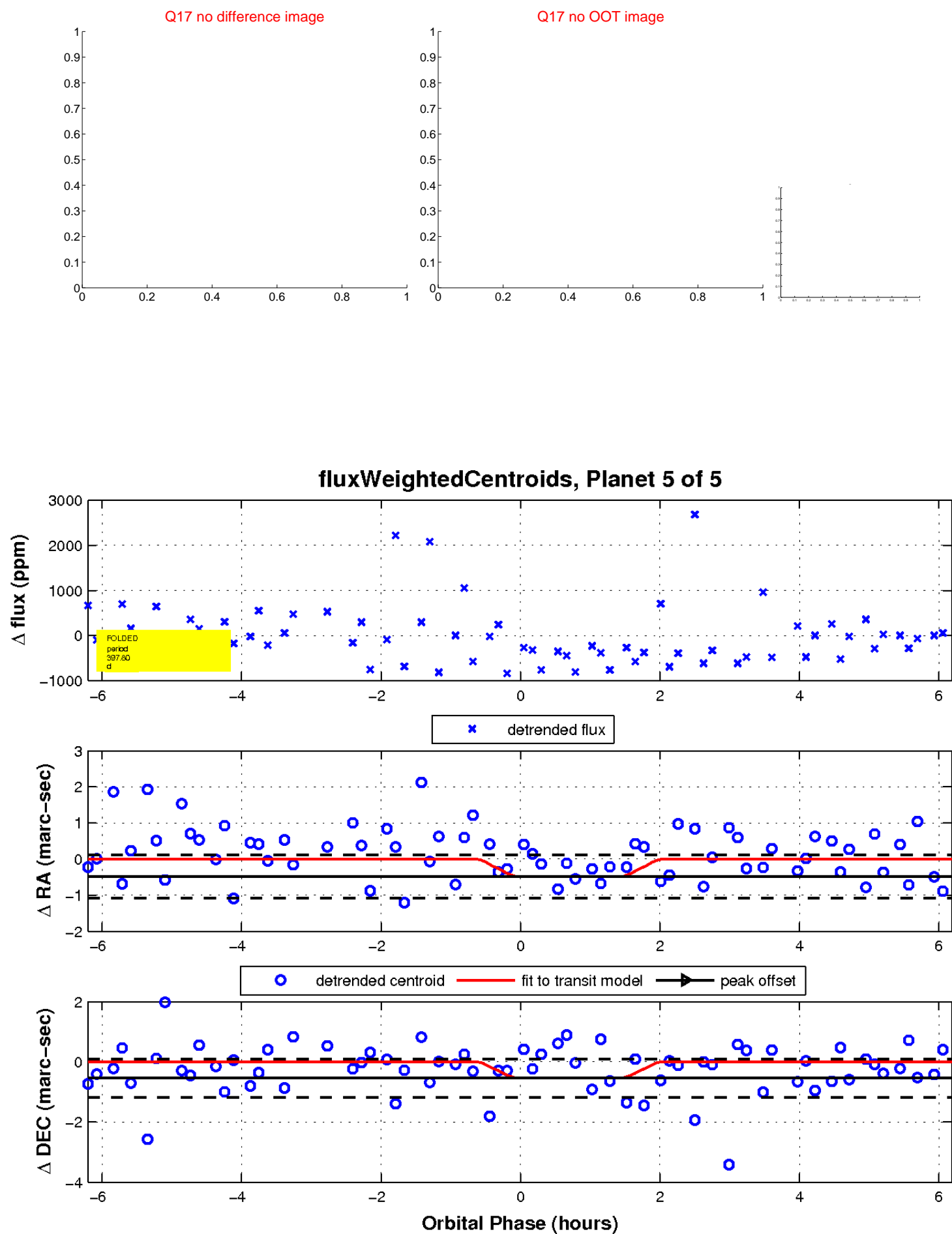
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

