

KIC 010389121

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})
010389121-01	OBS	No	409.467824	370.511359	1242.4	7.779	15.2	5.8	0.57	4638	2.01	0.17
010389121-02	OBS	No	279.622957	166.895186	410.5	3.333	12.9	2.7	0.57	4638	1.32	0.28
010389121-03	OBS	No	537.112135	317.884026	873.7	4.367	14.5	6.1	0.57	4638	1.91	0.12
010389121-04	OBS	No	332.140216	305.582179	897.1	3.741	12.4	5.0	0.57	4638	1.72	0.22
010389121-05	OBS	No	507.258664	197.435820	932.1	4.272	12.0	5.1	0.57	4638	1.69	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010389121-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010389121-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
010389121-03	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—CENT_FEW_DIFFS
010389121-04	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—CENT_FEW_DIFFS
010389121-05	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

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

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

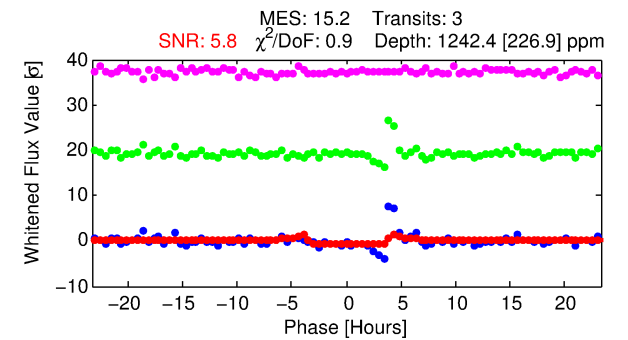
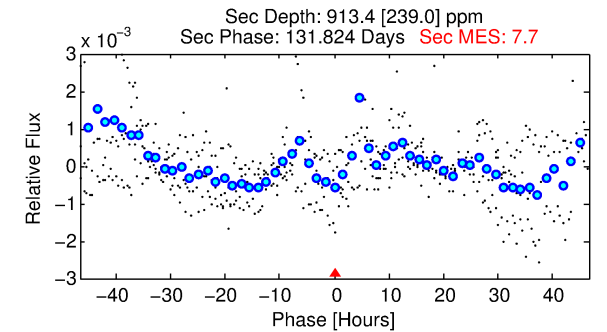
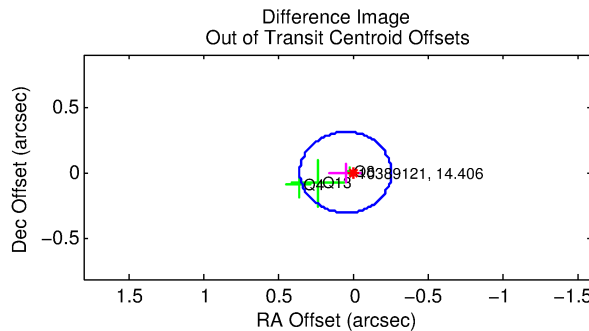
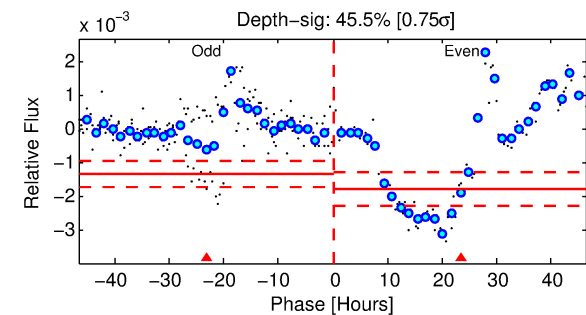
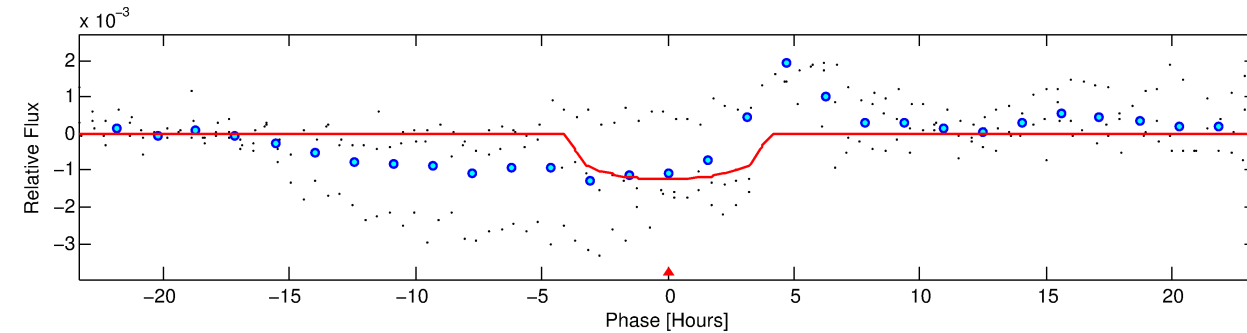
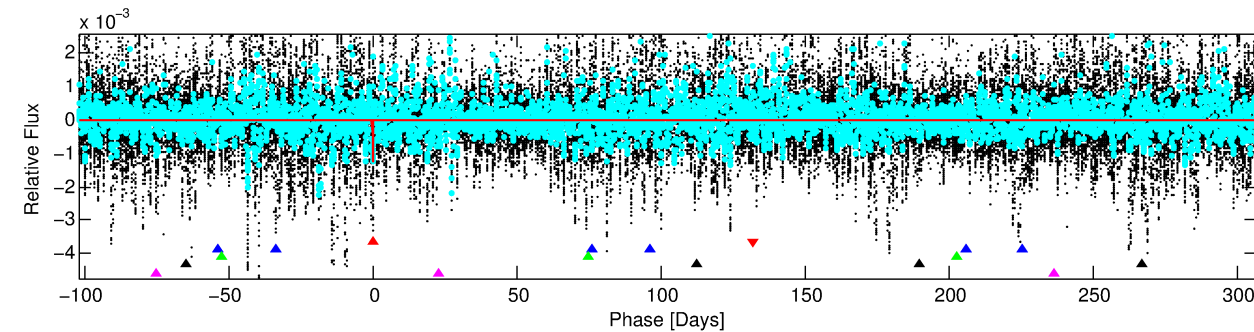
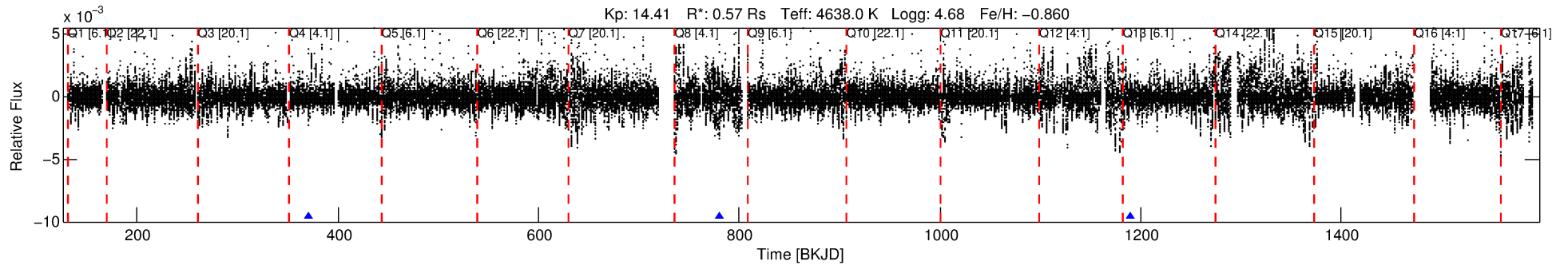
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010389121-01

No Significant Match Found

DV One-Page Summary

KIC: 10389121 Candidate: 1 of 5 Period: 409.468 d



DV Fit Results:

Period = 409.46782 [0.00546] d
Epoch = 370.5114 [0.0069] BKJD
Rp/R* = 0.0323 [0.0482]
a/R* = 373.86 [1962.43]
b = 0.45 [9.47]
Seff = 0.17 [0.03]
Teq = 164 [6] K
Rp = 2.01 [3.00] Re
a = 0.8914 [0.0572] AU
Ag = 98904.21 [296544.85] [0.33 σ]
Teffp = 4486 [3364] K [1.29 σ]

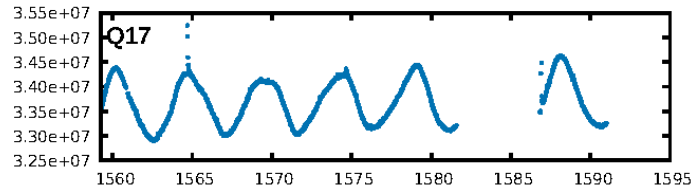
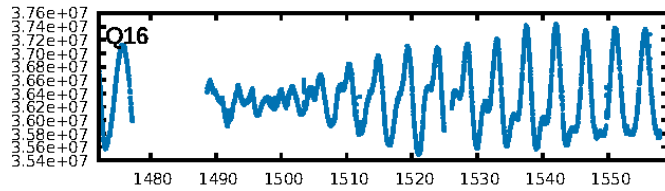
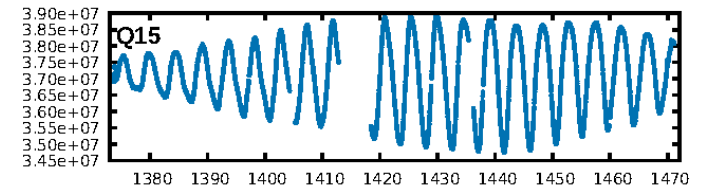
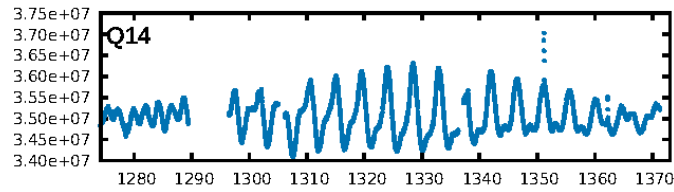
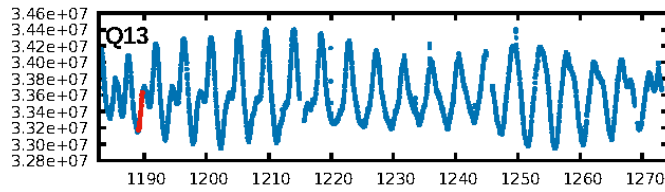
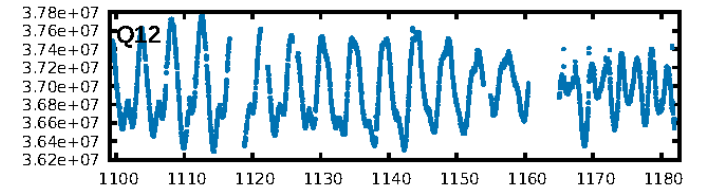
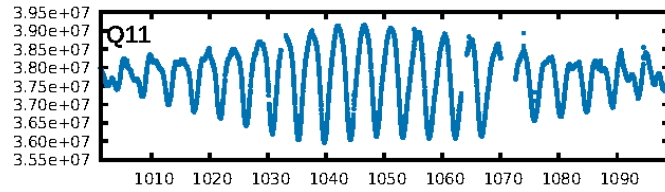
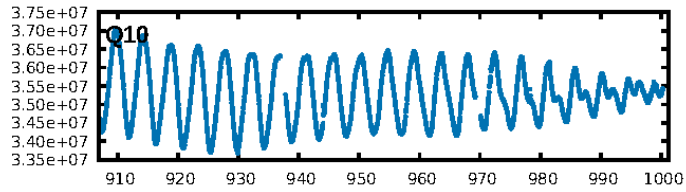
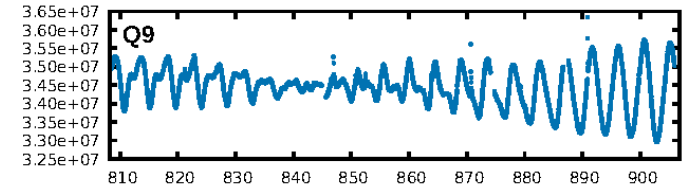
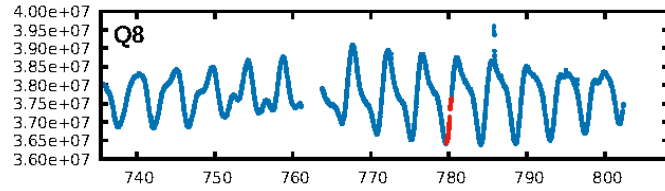
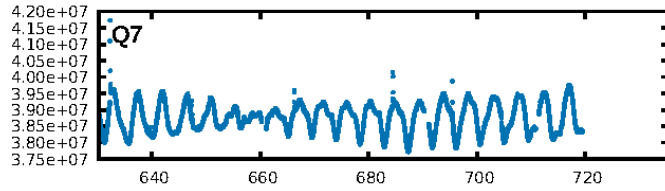
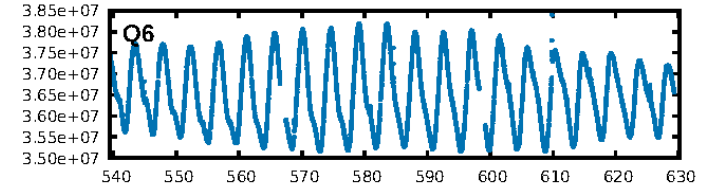
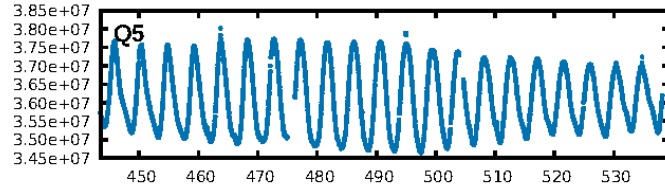
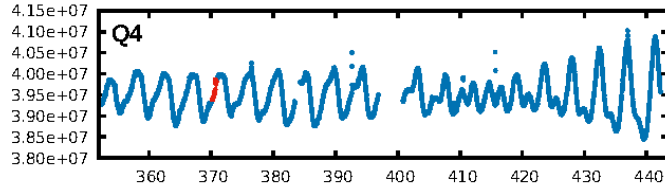
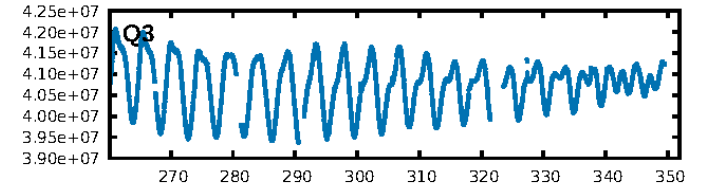
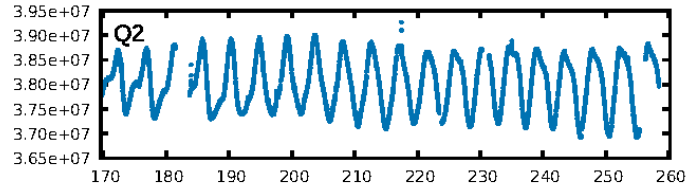
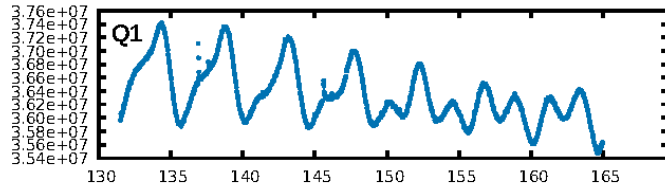
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [215.01 σ]
LongPeriod-sig: 100.0% [264.45 σ]
ModelChiSquare2-sig: 7.6%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 3.17e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7993
Centroid-sig: 8.2%
Centroid-so: 0.808 arcsec [1.54 σ]
OotOffset-rm: 0.047 arcsec [0.47 σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-rm: 0.109 arcsec [1.04 σ]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

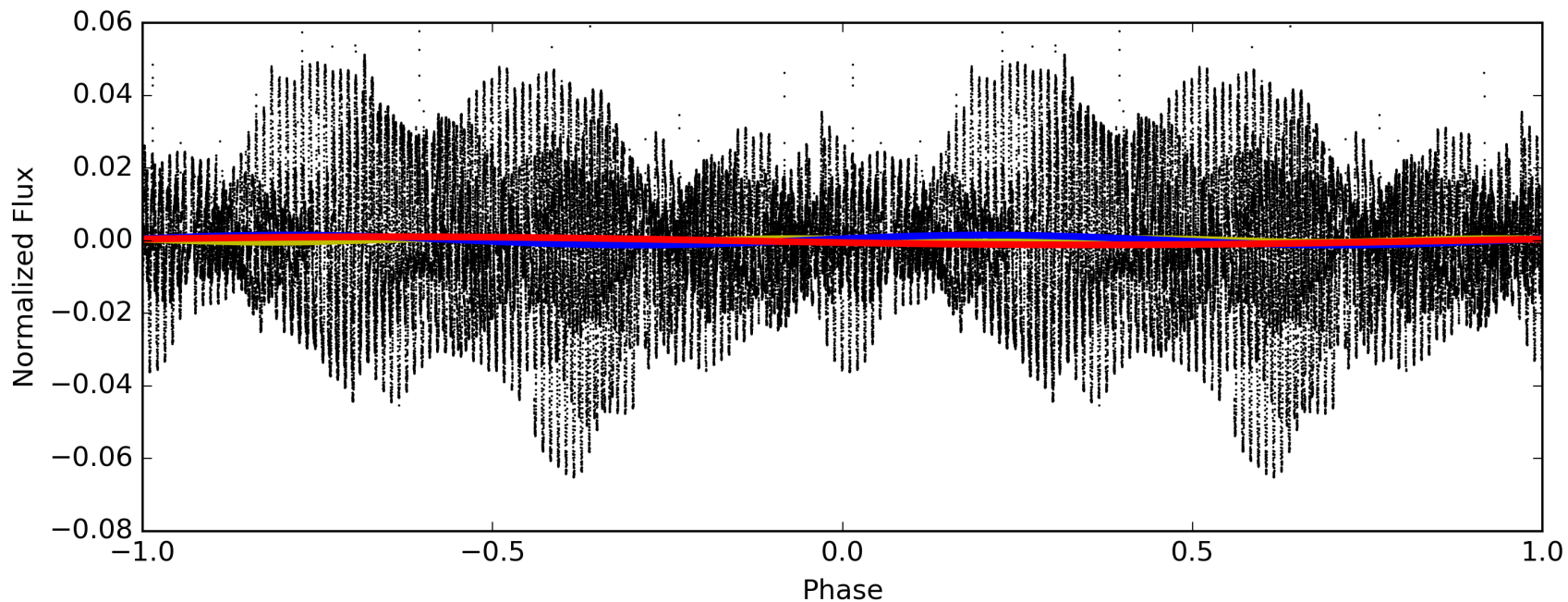
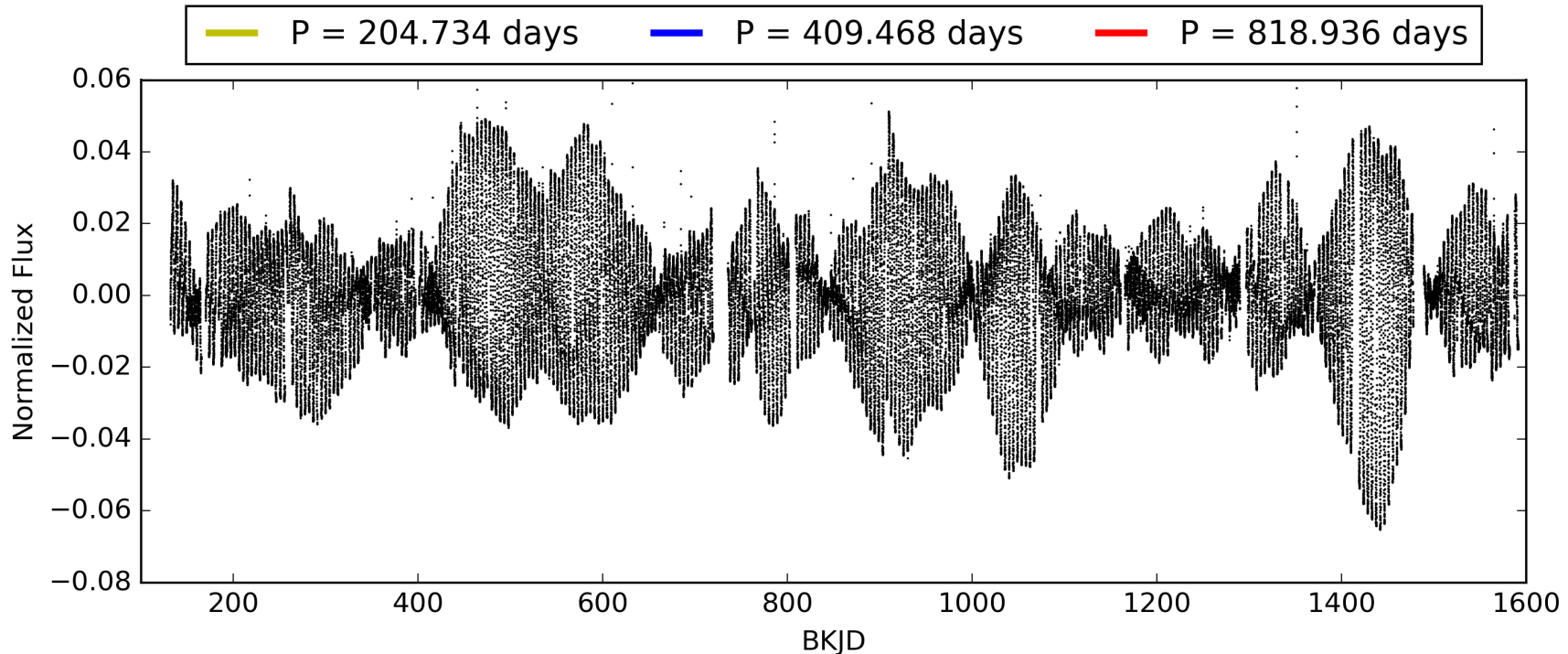
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:42:27 Z

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

TCE 010389121-01, PDC Light Curves

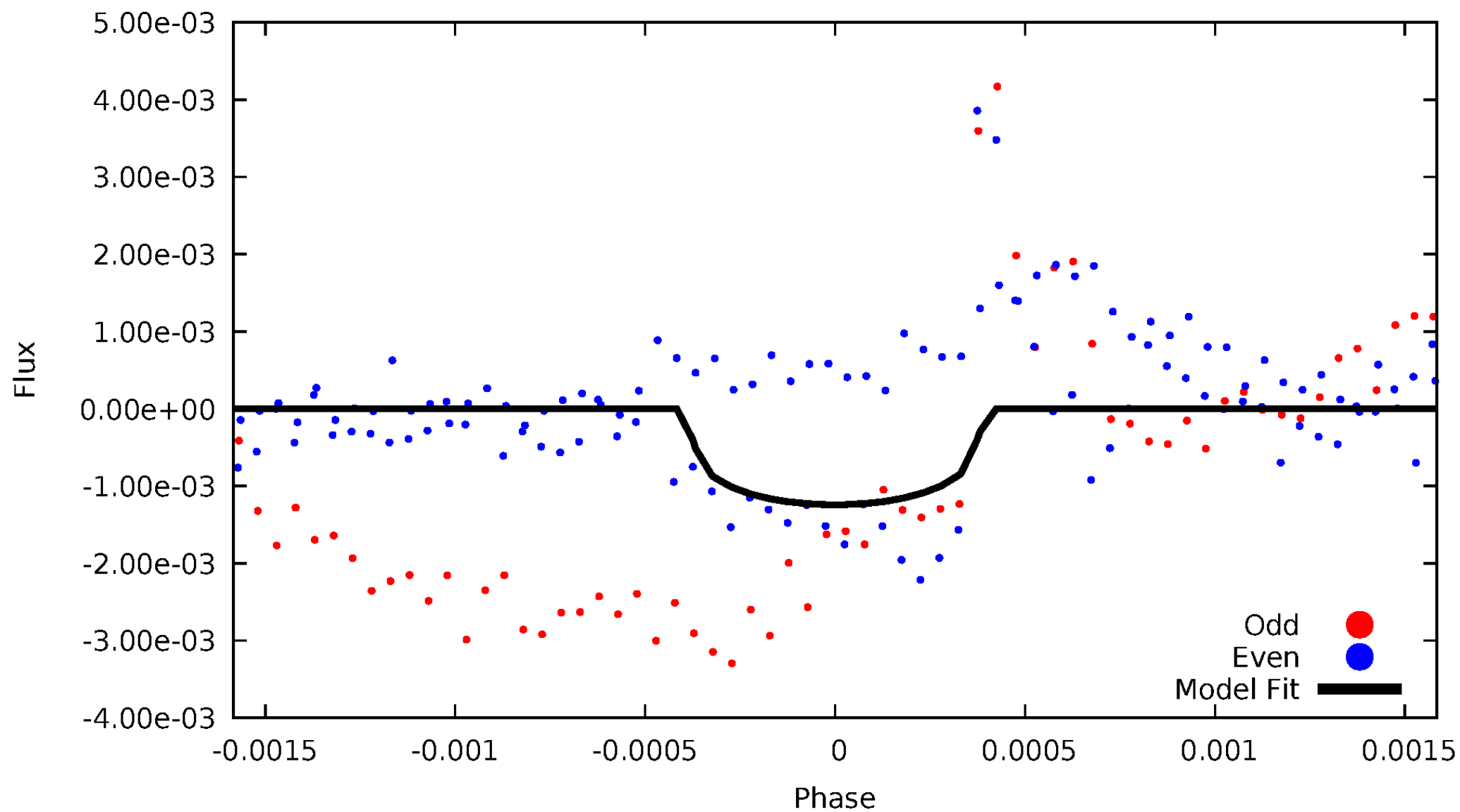


TCE 010389121-01



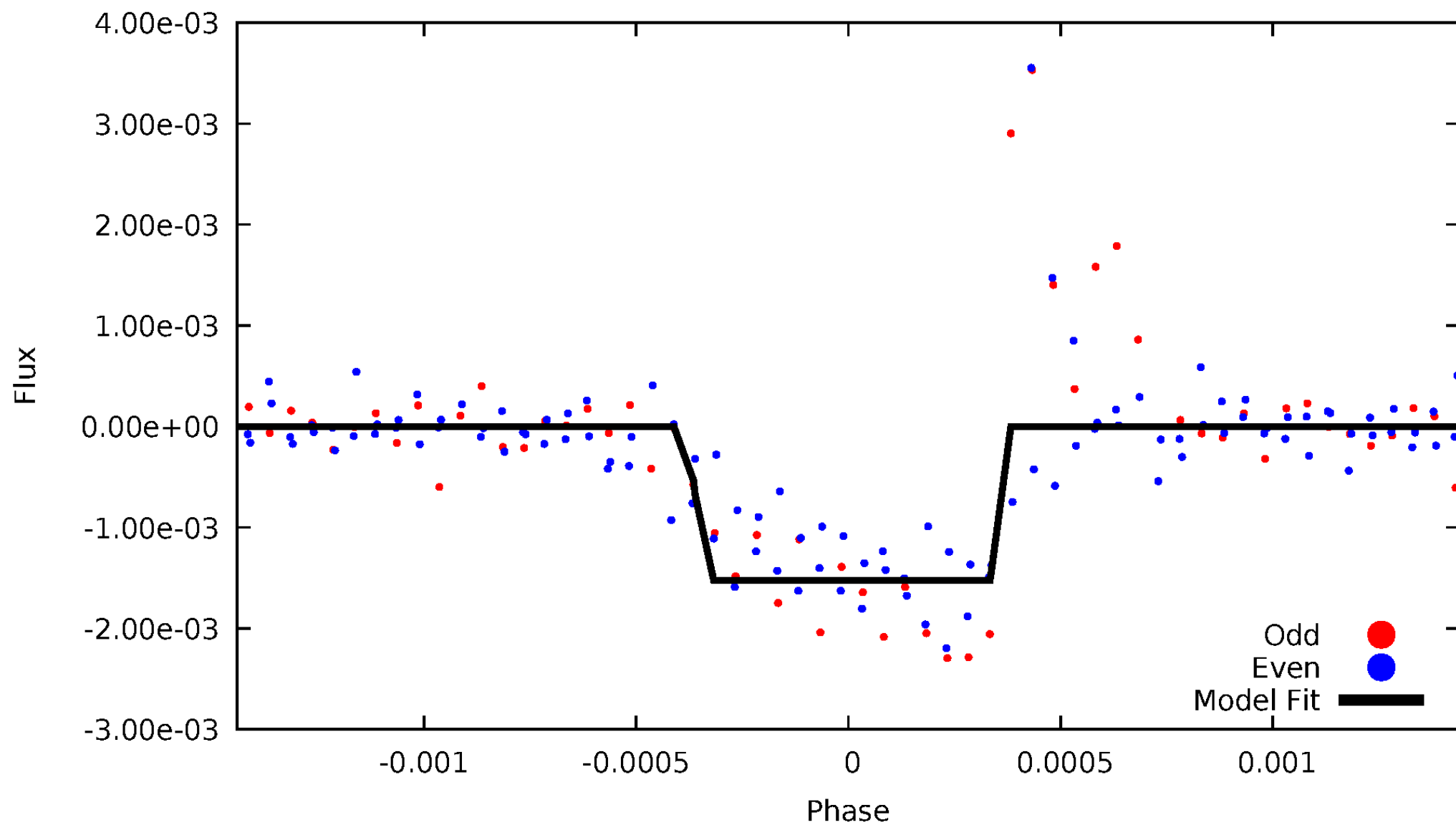
DV Odd/Even

TCE 010389121-01



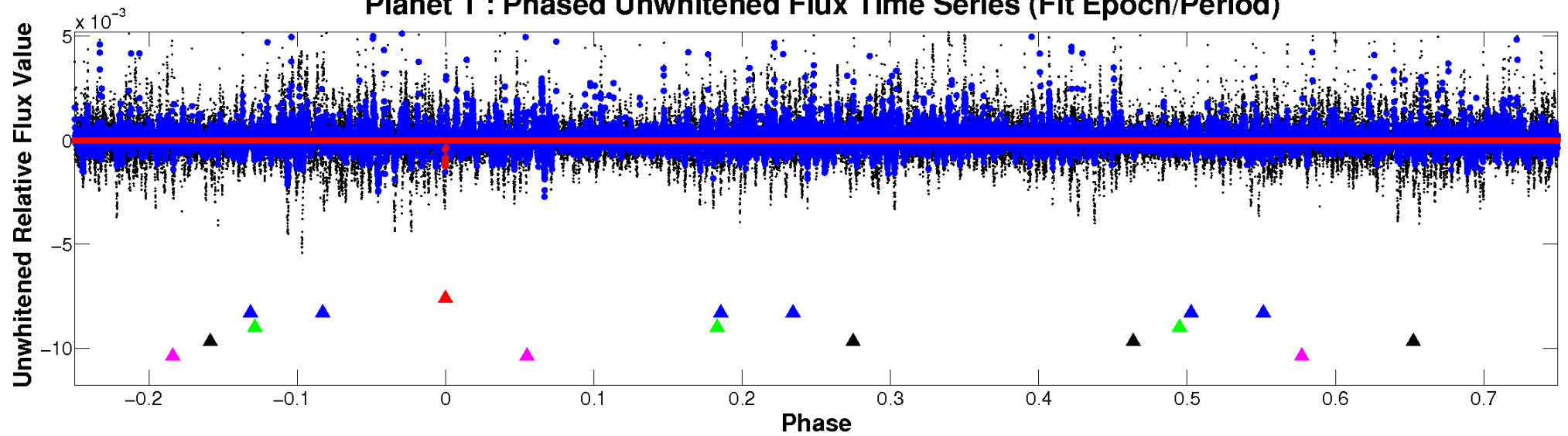
ALT Odd/Even

TCE 010389121-01

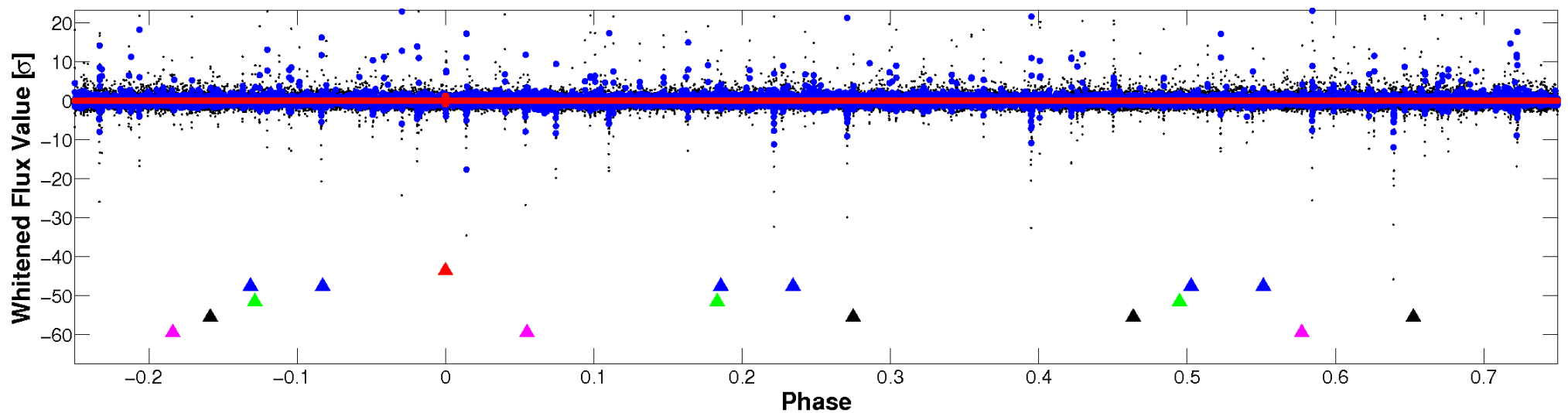


Non-Whitened Vs. Whitened Light Curve

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

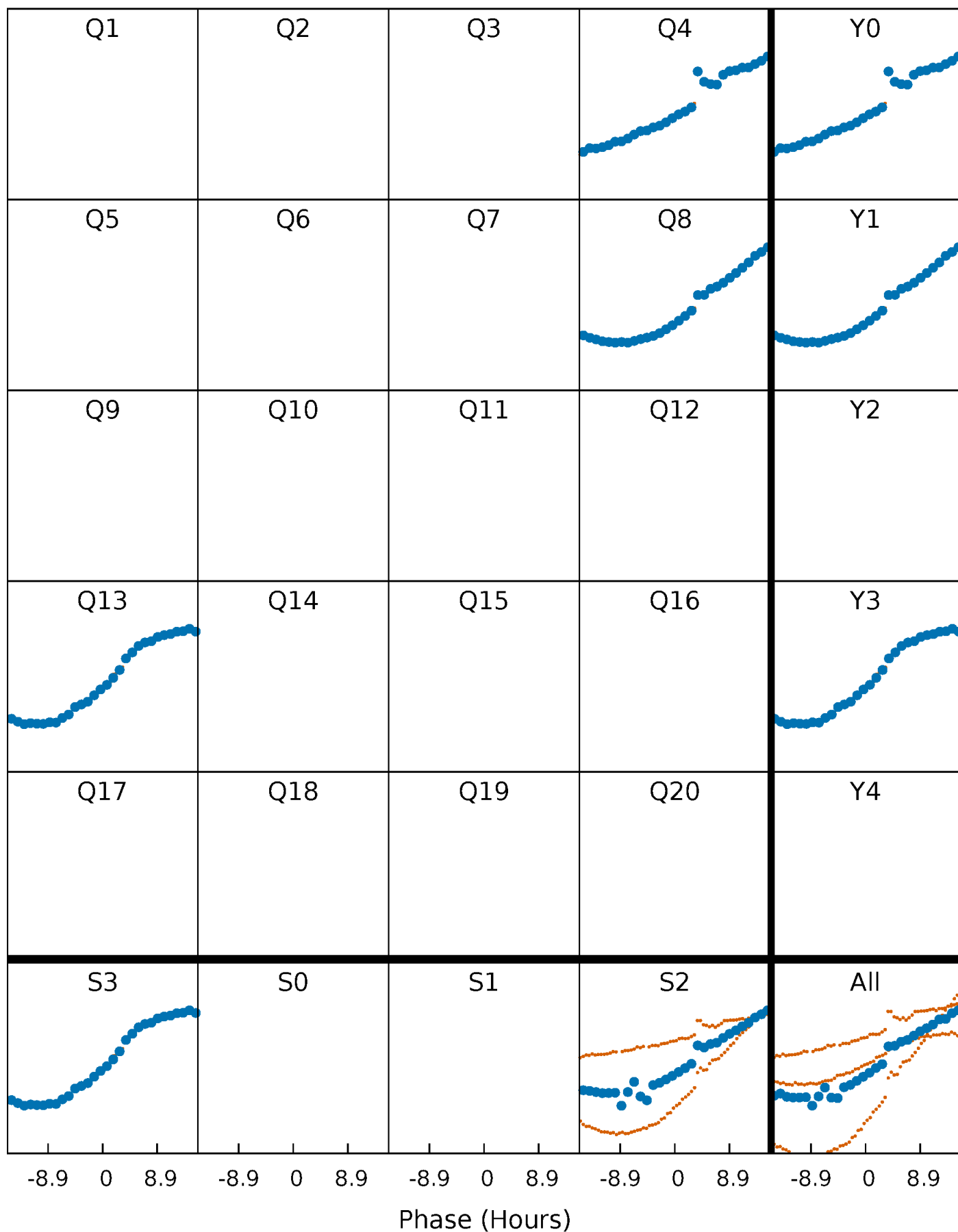


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



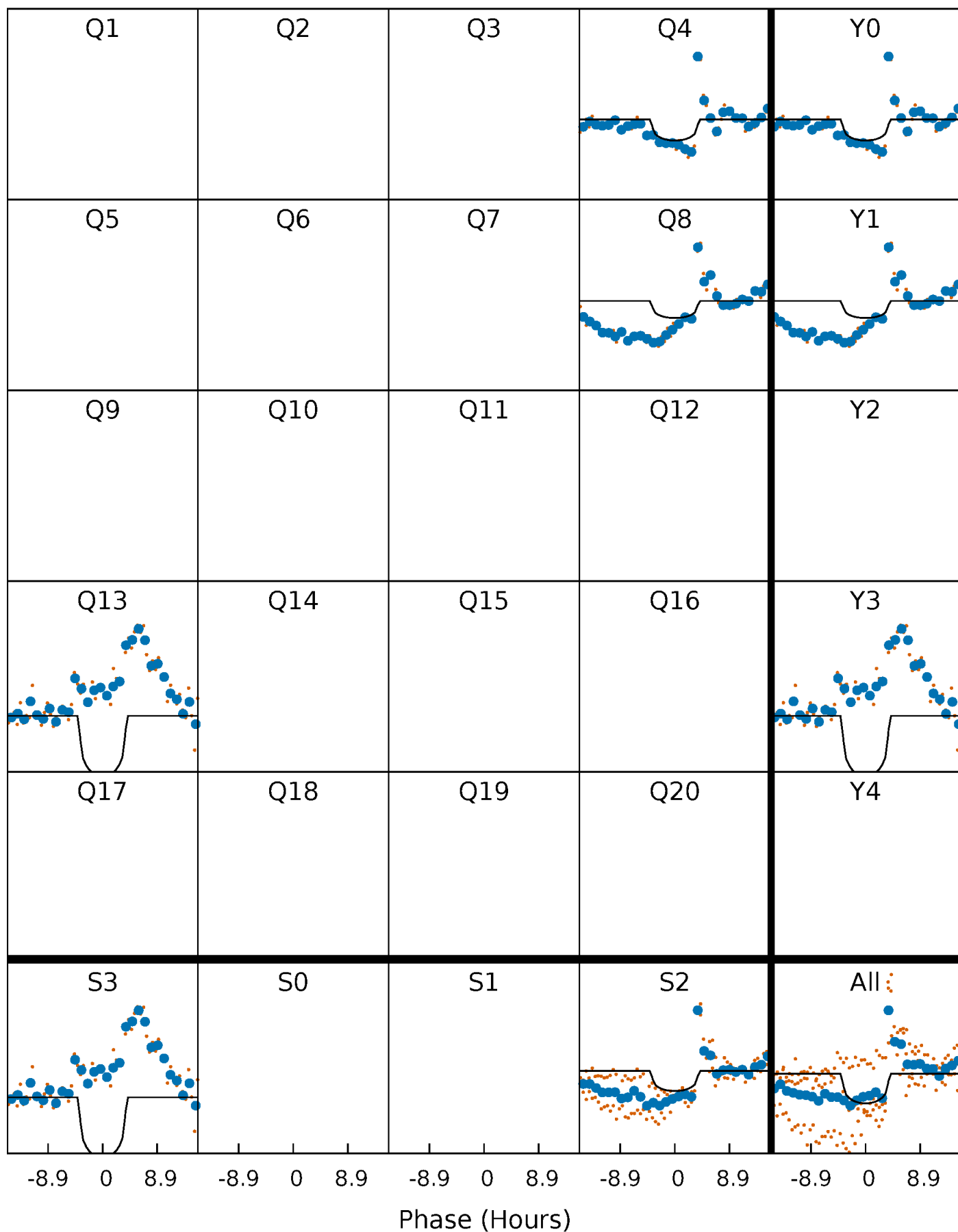
PDC Quarter-Phased Transit Curves

TCE 010389121-01 P=409.467824 Days $T_0=370.511359$ (BKJD)



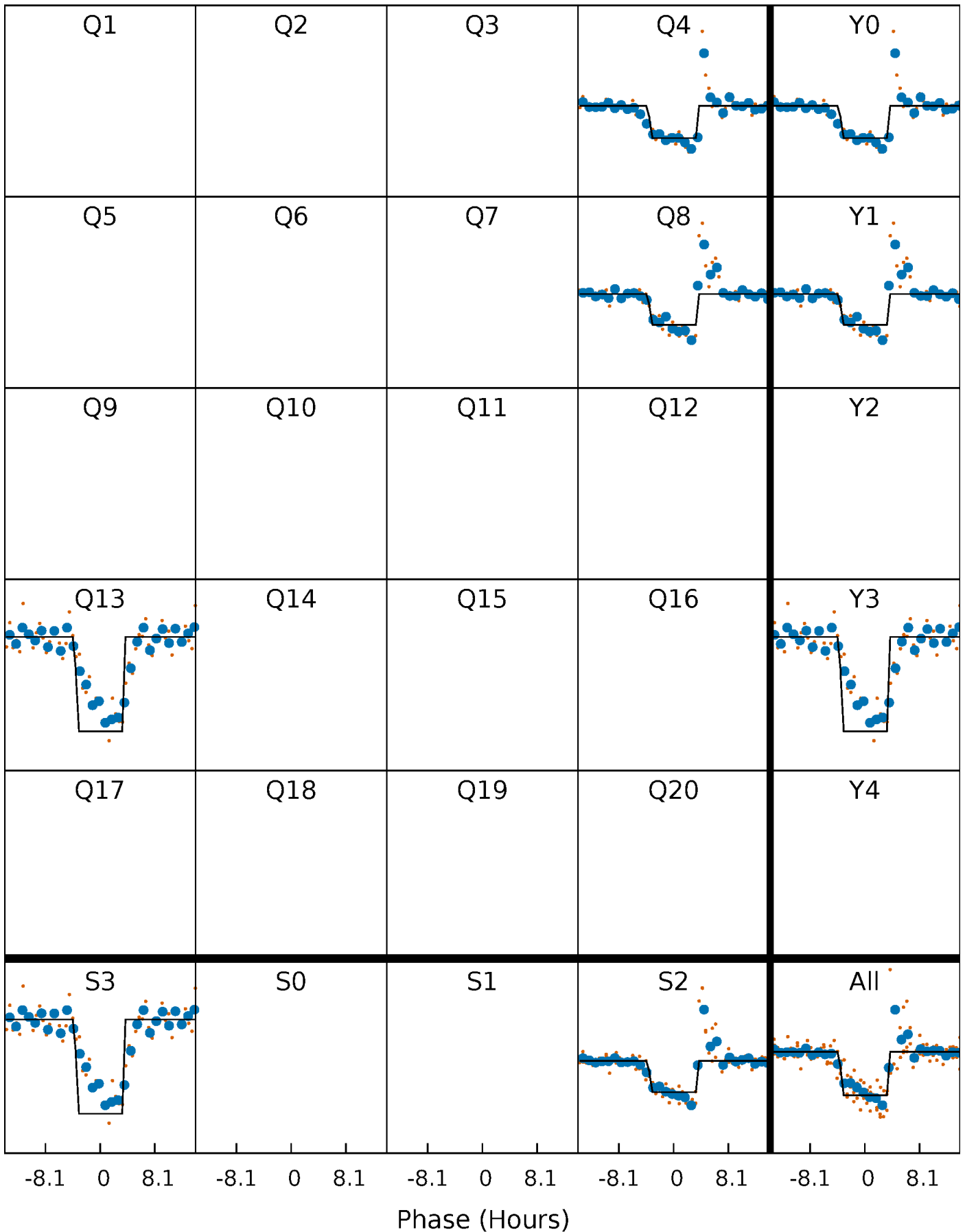
DV Quarter-Phased Transit Curves

TCE 010389121-01 P=409.467824 Days $T_0=370.511359$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

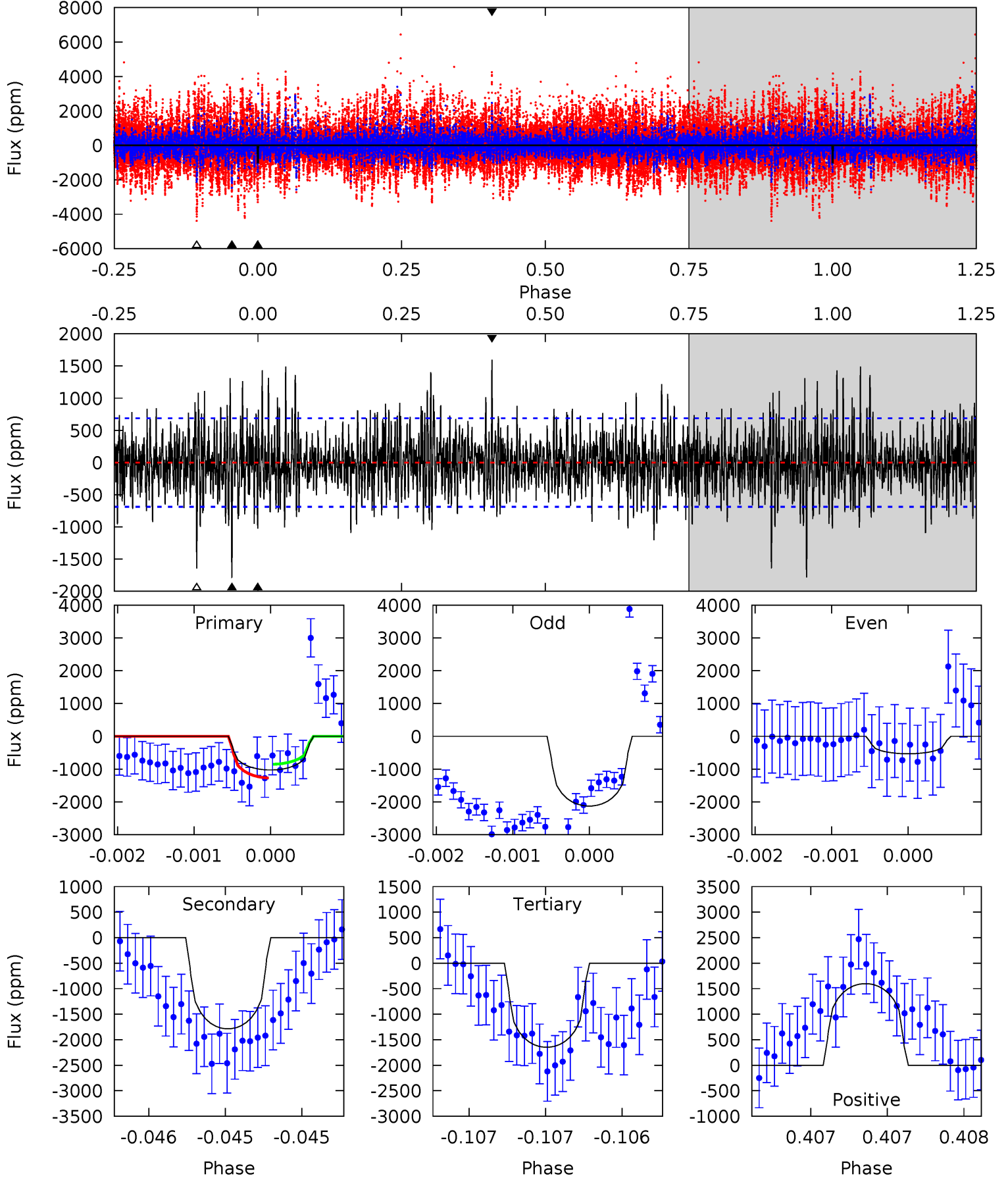
TCE 010389121-01 P=409.468109 Days $T_0=370.508505$ (BKJD)



DV Model-Shift Uniqueness Test

010389121-01, P = 409.467824 Days, E = 370.511359 Days

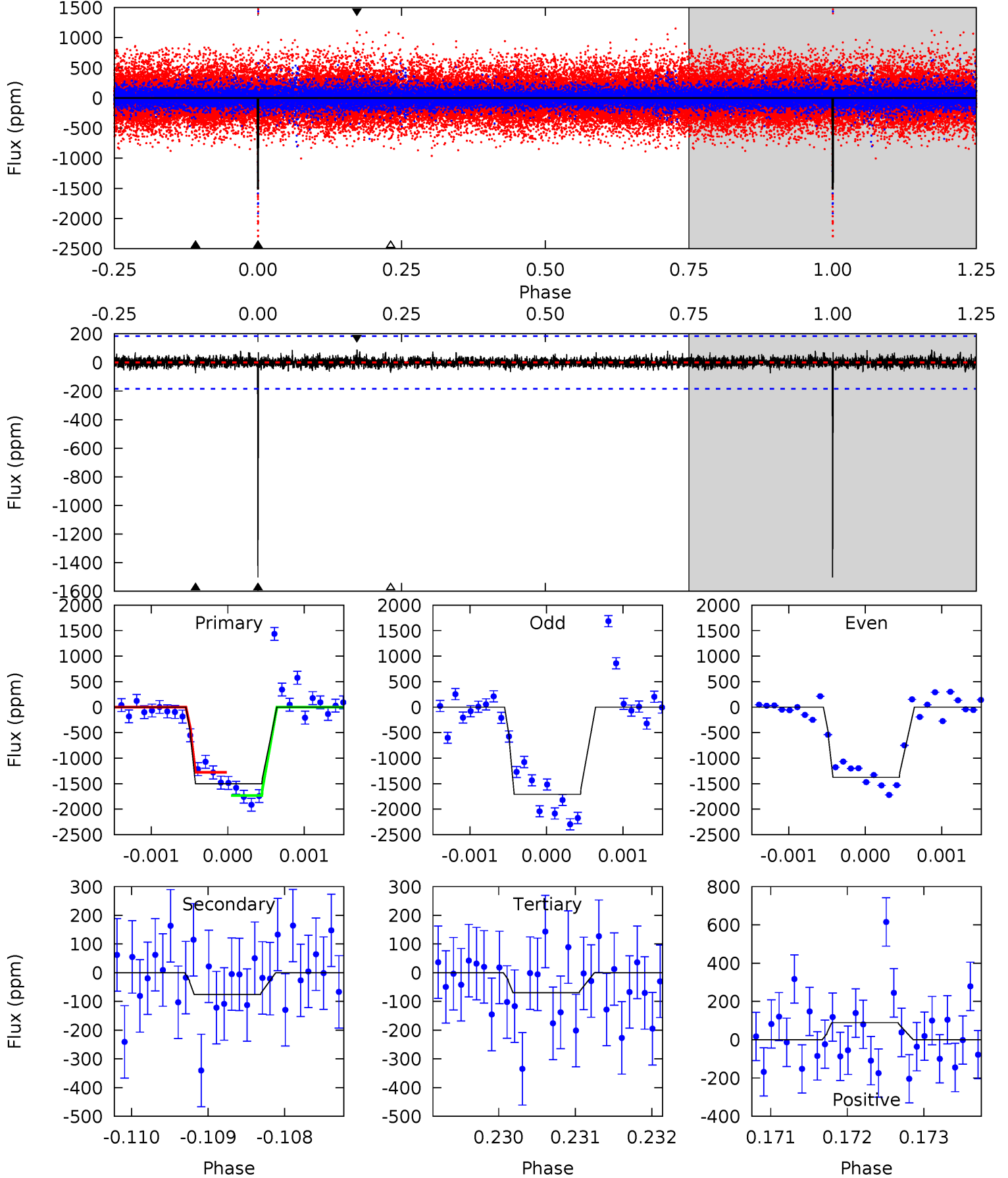
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.20	14.3	13.2	12.8	5.50	3.37	2.87	-4.96	-4.57	1.11	1.50	5.17	0.65	0.47	1.67



Alt Model-Shift Uniqueness Test

010389121-01, P = 409.468109 Days, E = 370.508505 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.9	2.27	2.07	2.67	5.50	3.37	0.51	42.8	42.2	0.20	-0.40	4.57	0.92	0.06	6.83



Stellar Parameters For KIC 010389121

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4638^{+139}_{-139}	$4.677^{+0.052}_{-0.032}$	$-0.860^{+0.350}_{-0.300}$	$0.570^{+0.043}_{-0.043}$	$0.564^{+0.051}_{-0.028}$	$4.282^{+0.902}_{-0.556}$
	+3%/-3%	+1%/-1%	+41%/-35%	+8%/-8%	+9%/-5%	+21%/-13%
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 010389121-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1786 ± 125	$2.85^{+2.57}_{-1.75}$	227^{+8}_{-8}	4442^{+2517}_{-874}	$95904^{+577943}_{-69410}$
Alt.	-76 ± 33	$3.10^{+2.63}_{-2.03}$	227^{+7}_{-8}	2626^{+1044}_{-383}	3162^{+26858}_{-2352}

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

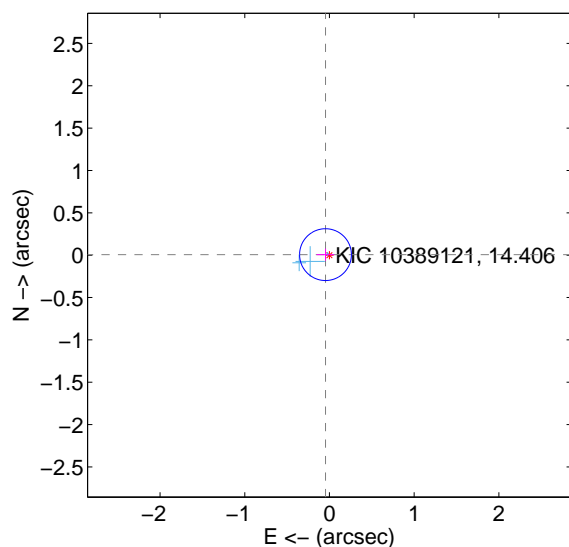
Supplemental centroid analysis for 010389121-01. Kepler magnitude: 14.41. Transit SNR 5.84

There are 3 quarters with good PRF difference image offsets

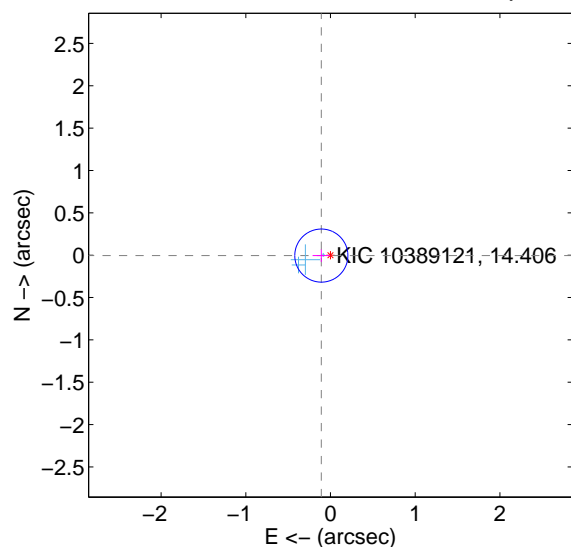
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.102	0.47	0.047 ± 0.105	0.006 ± 0.072
PRF-fit source offset from KIC position	0.109 ± 0.105	1.04	0.108 ± 0.104	-0.005 ± 0.074
photometric centroid source offset	0.81 ± 0.52	1.54	0.46 ± 0.54	-0.67 ± 0.52

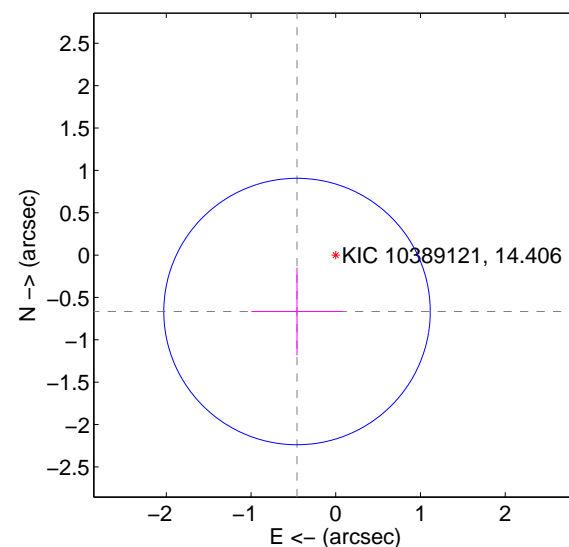
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

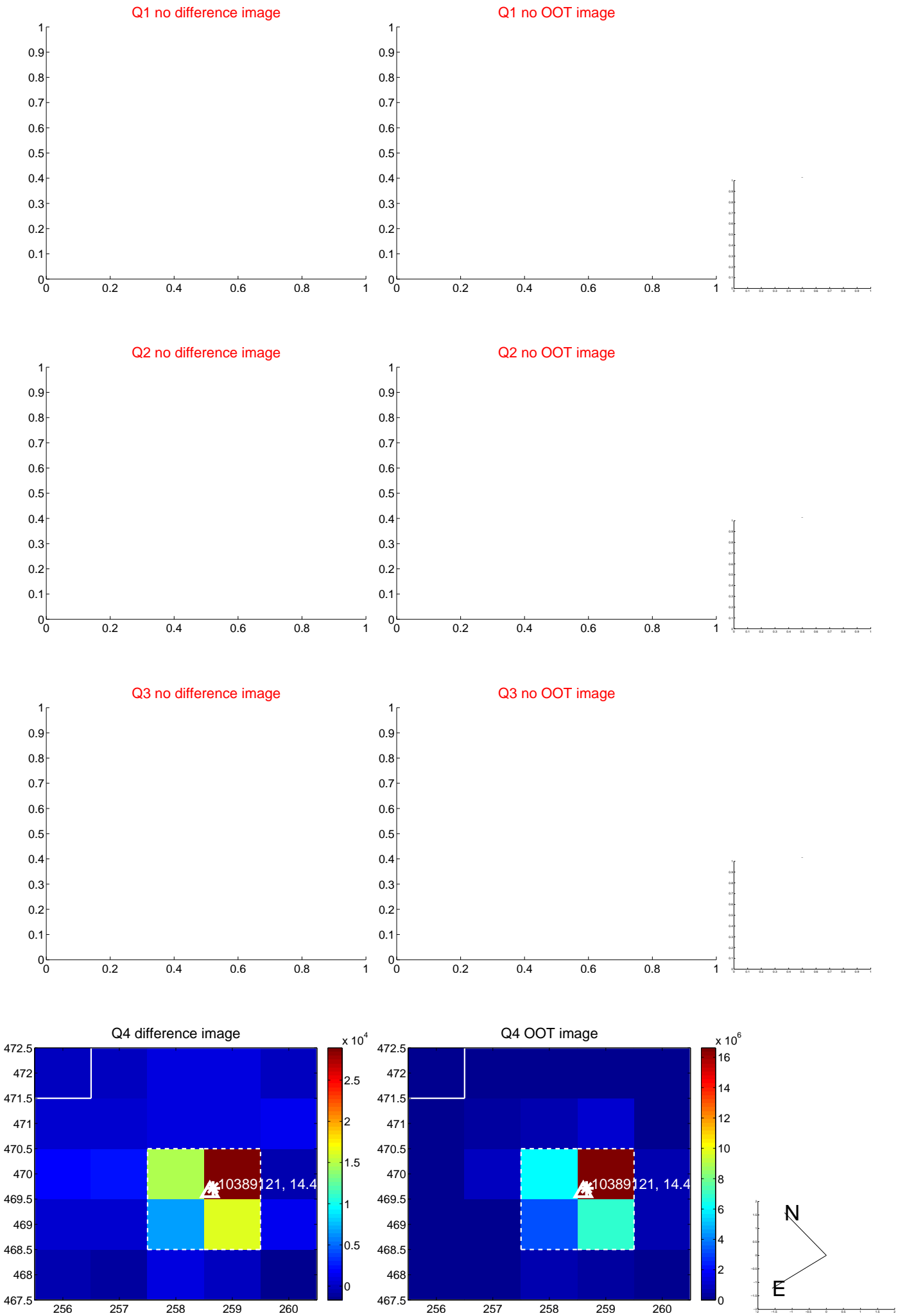


offset from photometric centroids

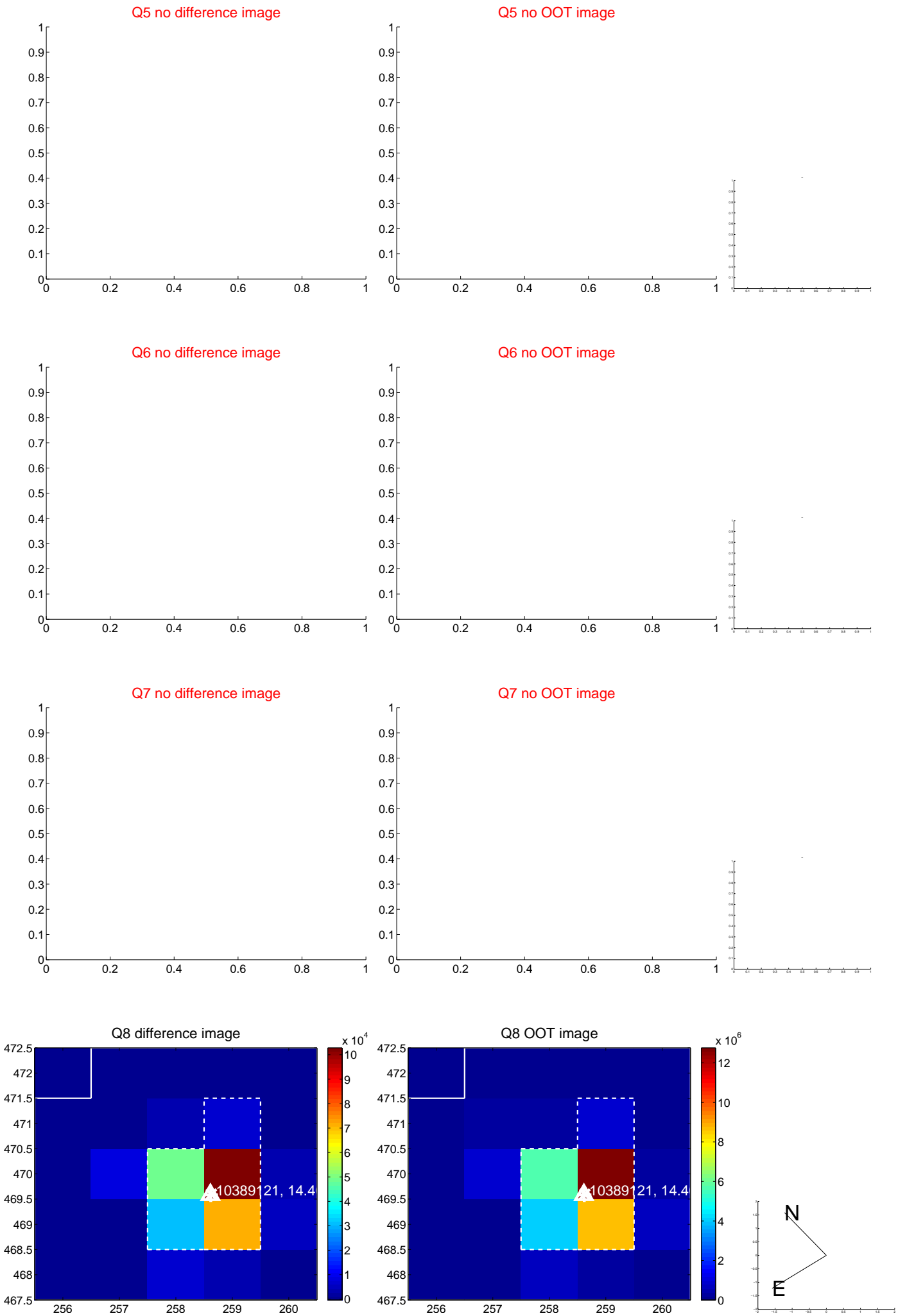


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



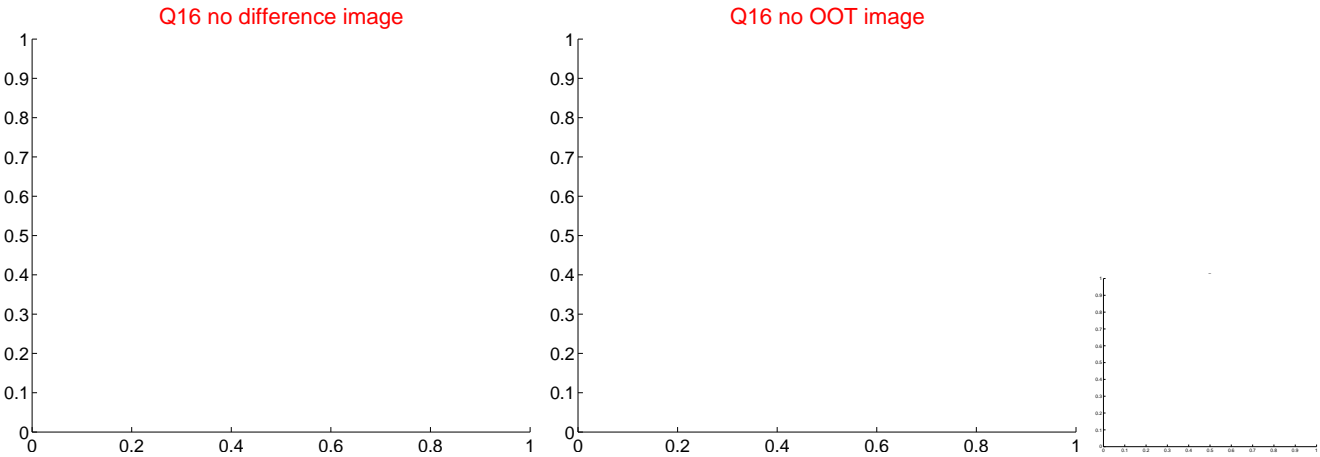
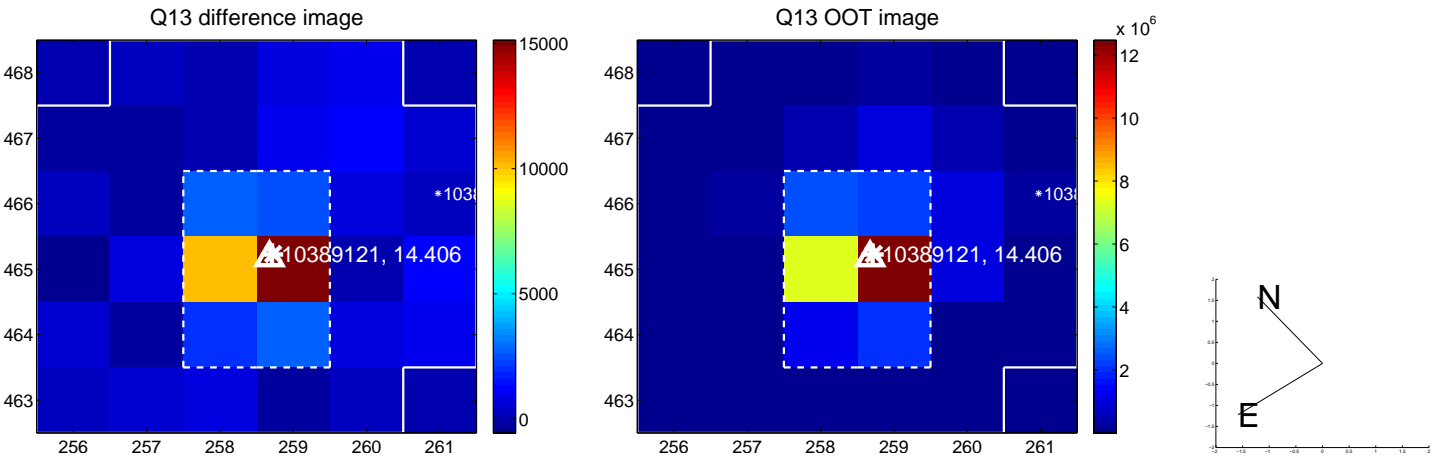
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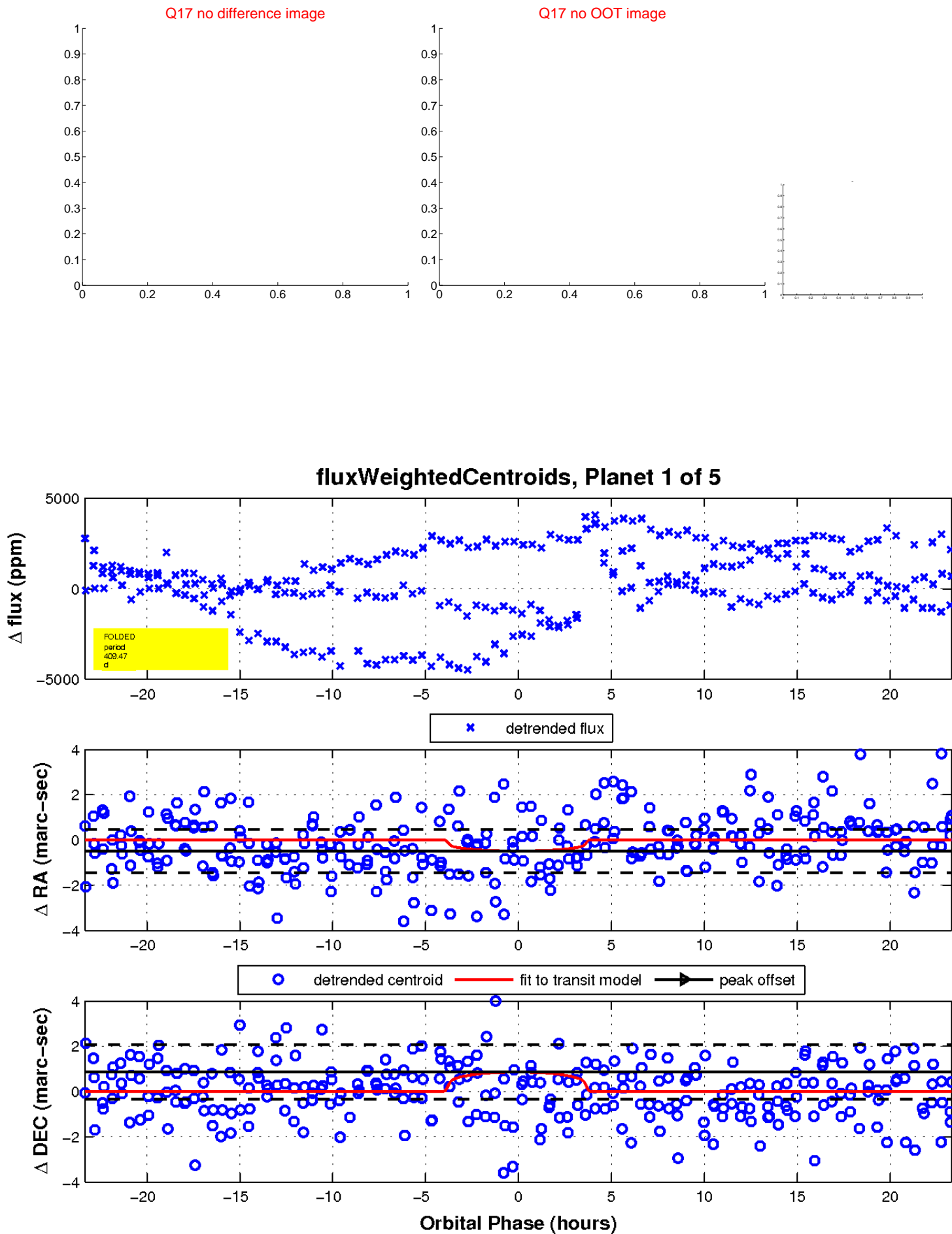
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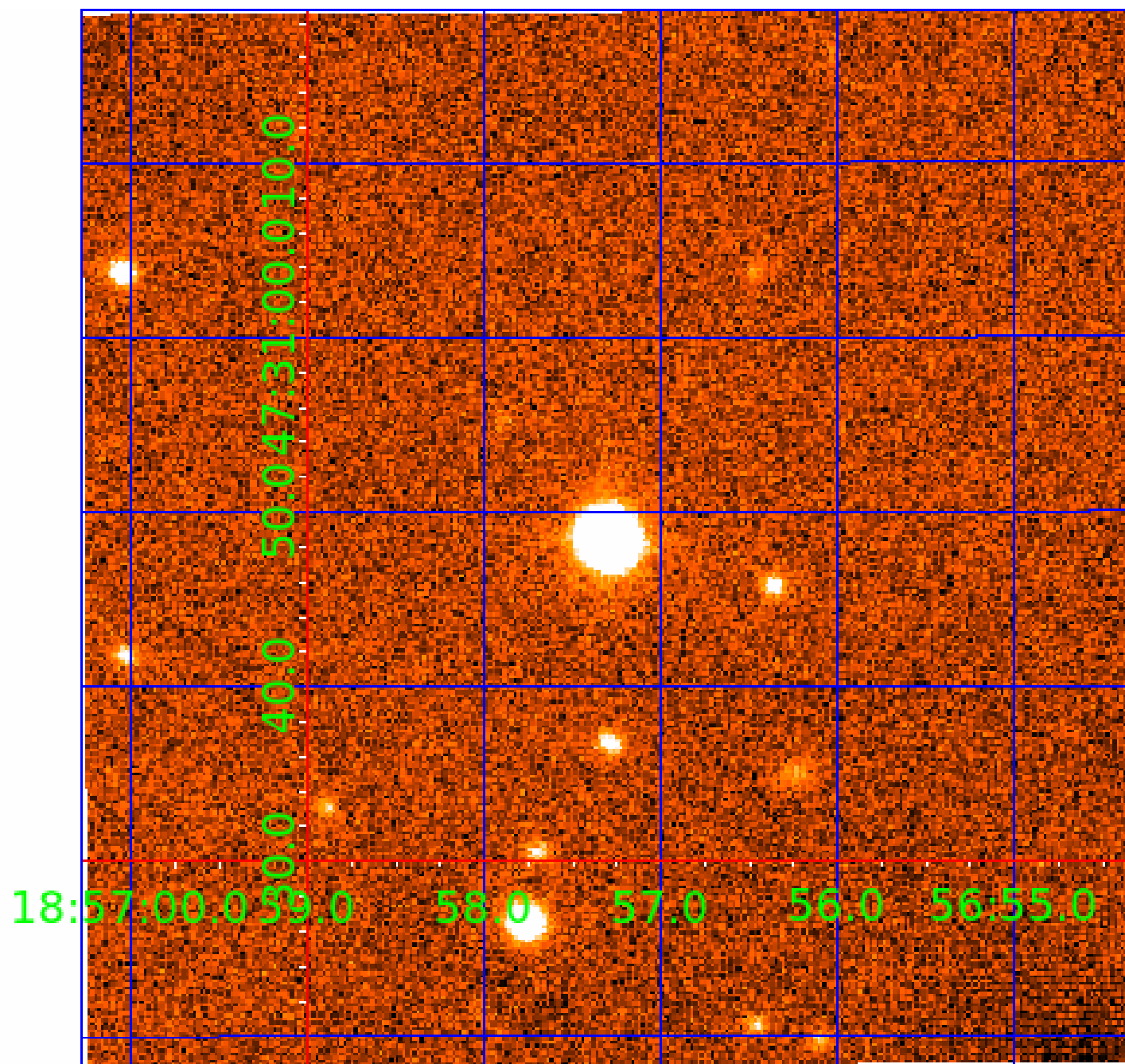


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010389121

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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010389121-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
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010389121-04	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—CENT_FEW_DIFFS
010389121-05	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

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

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

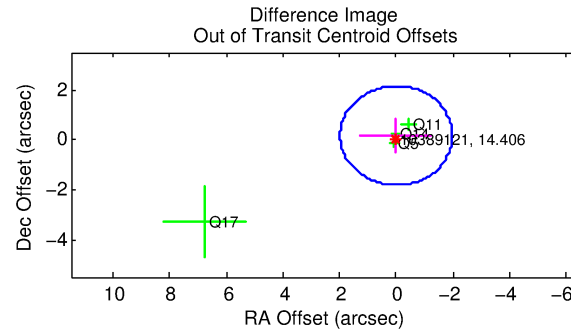
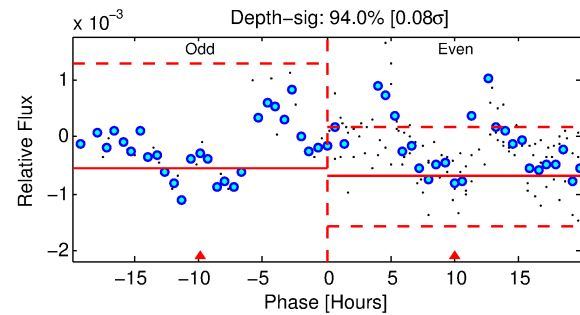
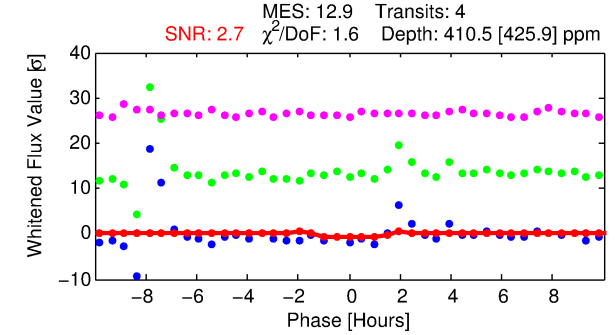
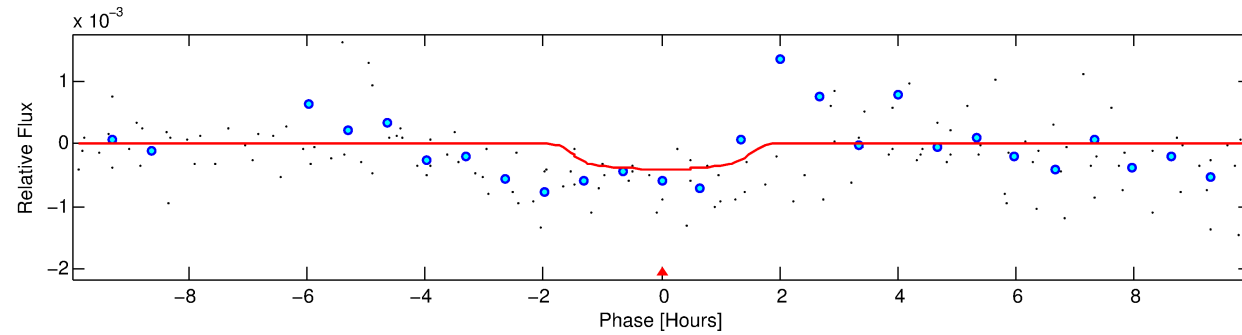
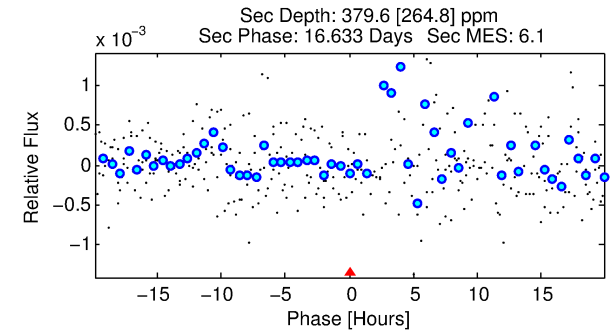
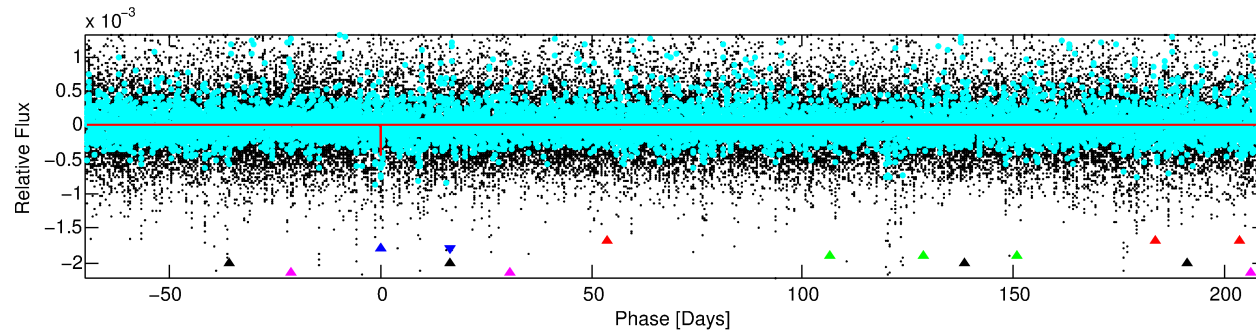
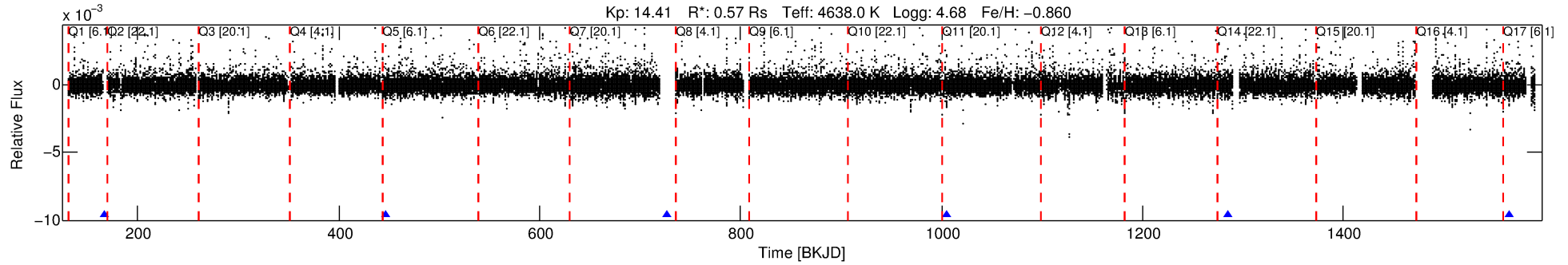
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010389121-02

No Significant Match Found

DV One-Page Summary

KIC: 10389121 Candidate: 2 of 5 Period: 279.623 d



DV Fit Results:

Period = 279.62296 [0.01692] d
Epoch = 166.8952 [0.0622] BKJD
Rp/R* = 0.0213 [0.1375]
a/R* = 376.34 [8960.61]
b = 0.84 [8.85]
Seff = 0.28 [0.04]
Teq = 186 [7] K
Rp = 1.32 [8.55] Re
a = 0.6913 [0.0444] AU
Ag = 56956.07 [737046.81] [0.08σ]
Teffp = 4438 [14357] K [0.30σ]

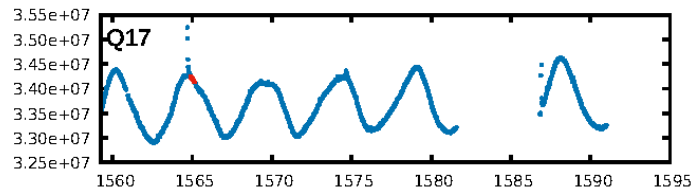
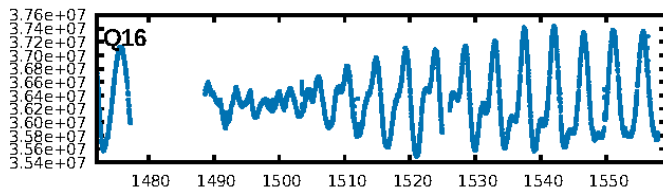
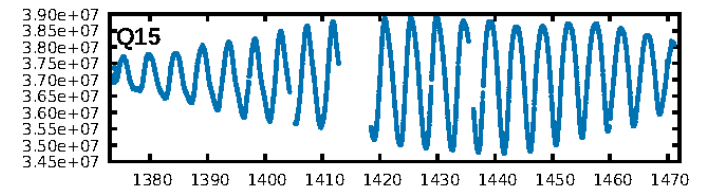
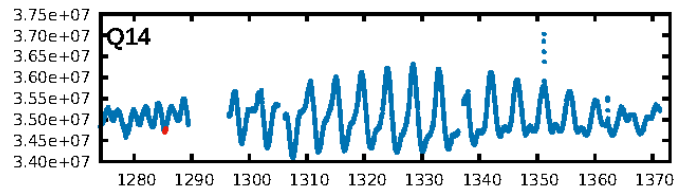
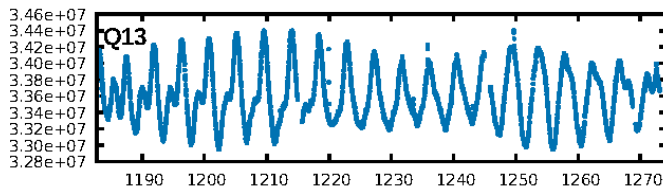
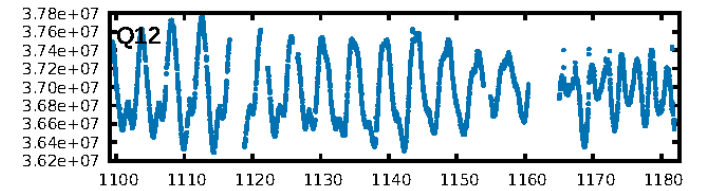
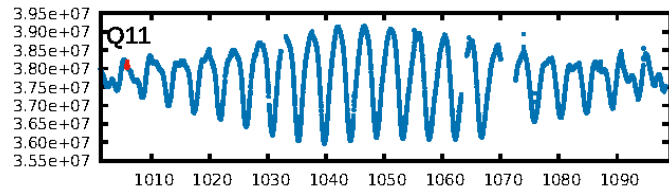
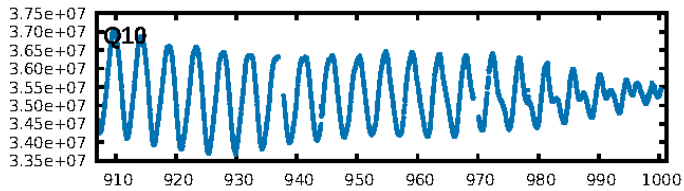
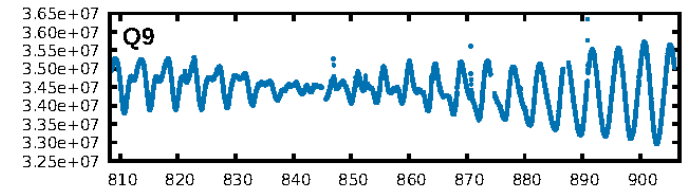
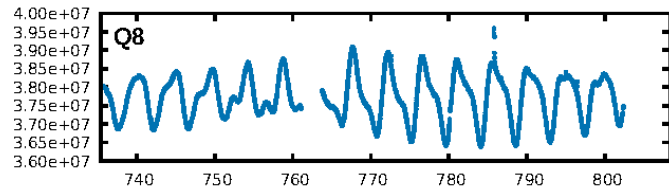
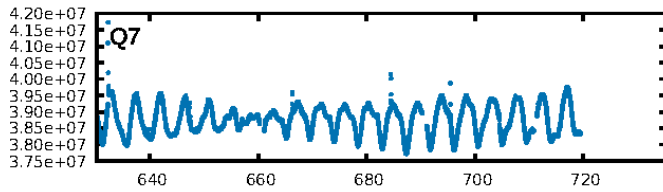
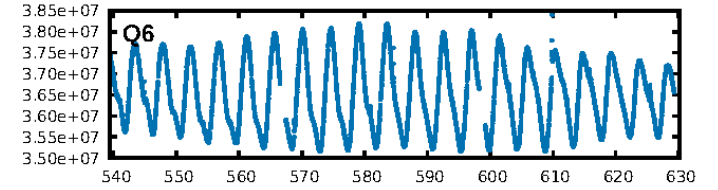
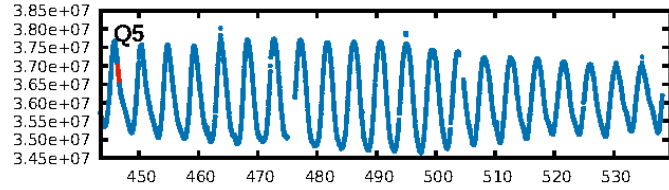
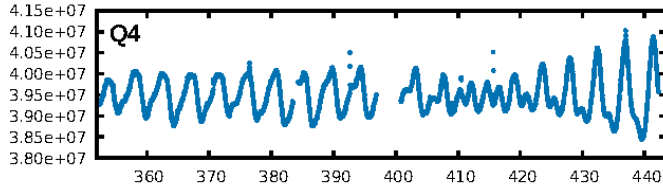
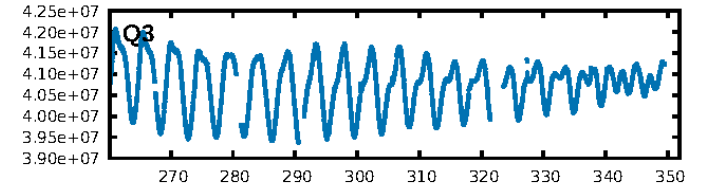
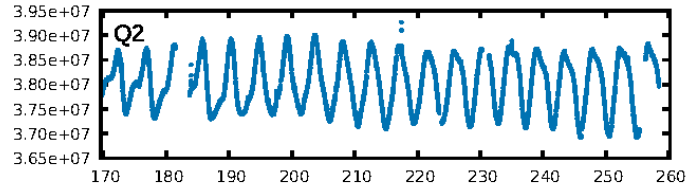
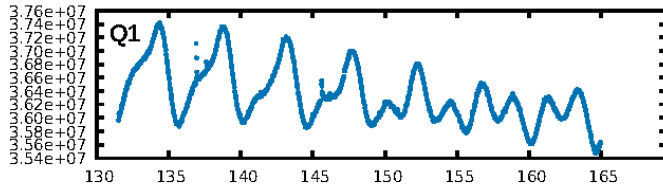
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [251.56σ]
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 73.2%
Bootstrap-pfa: 6.69e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -9.163
Centroid-sig: 42.4%
Centroid-so: 1.445 arcsec [0.71σ]
OotOffset-rm: 0.162 arcsec [0.24σ]
KicOffset-rm: 0.151 arcsec [0.40σ]
OotOffset-st: 1/1/0/2 [4]
KicOffset-st: 1/1/0/2 [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 05:42:41 Z

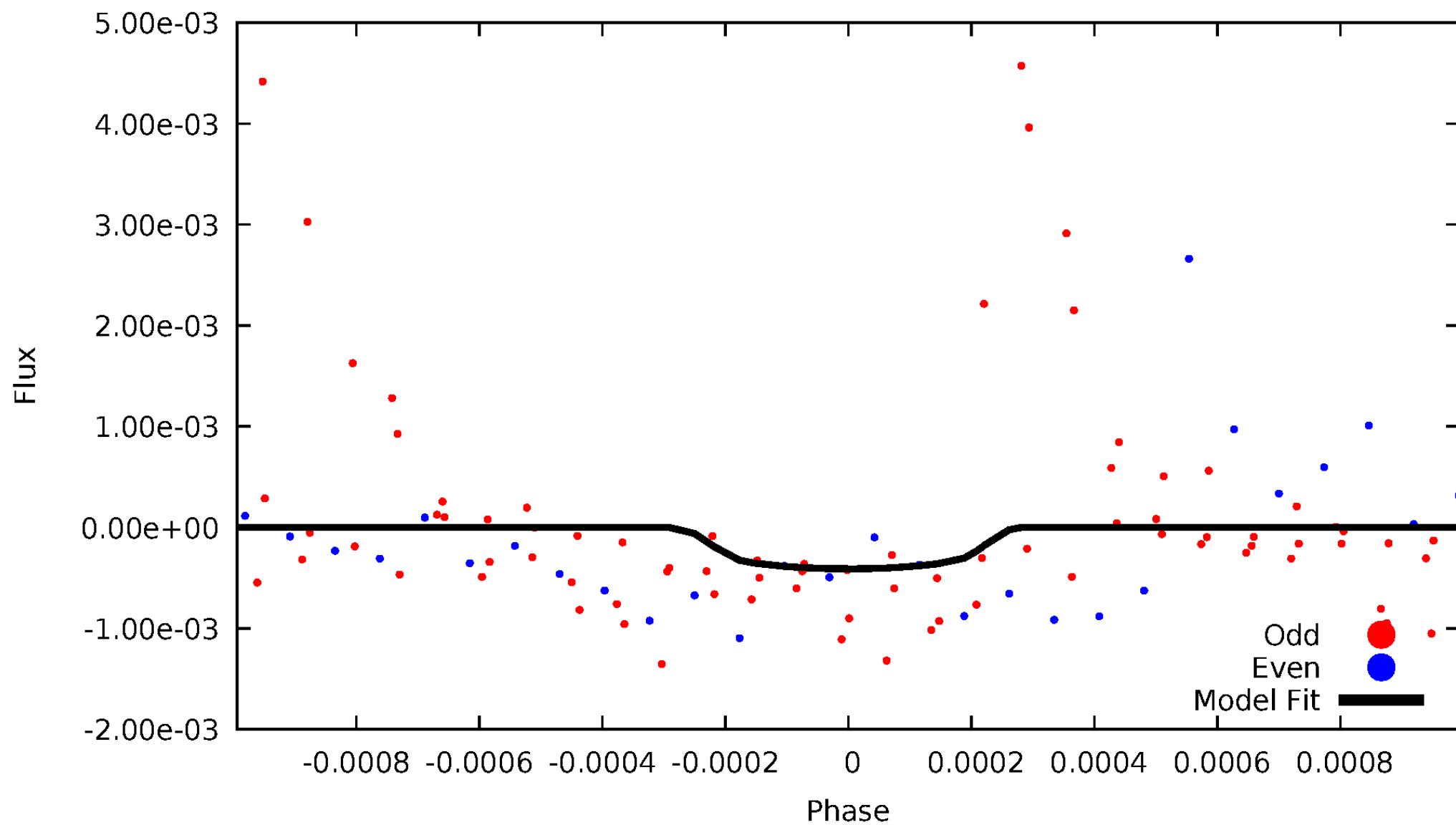
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010389121-02, PDC Light Curves



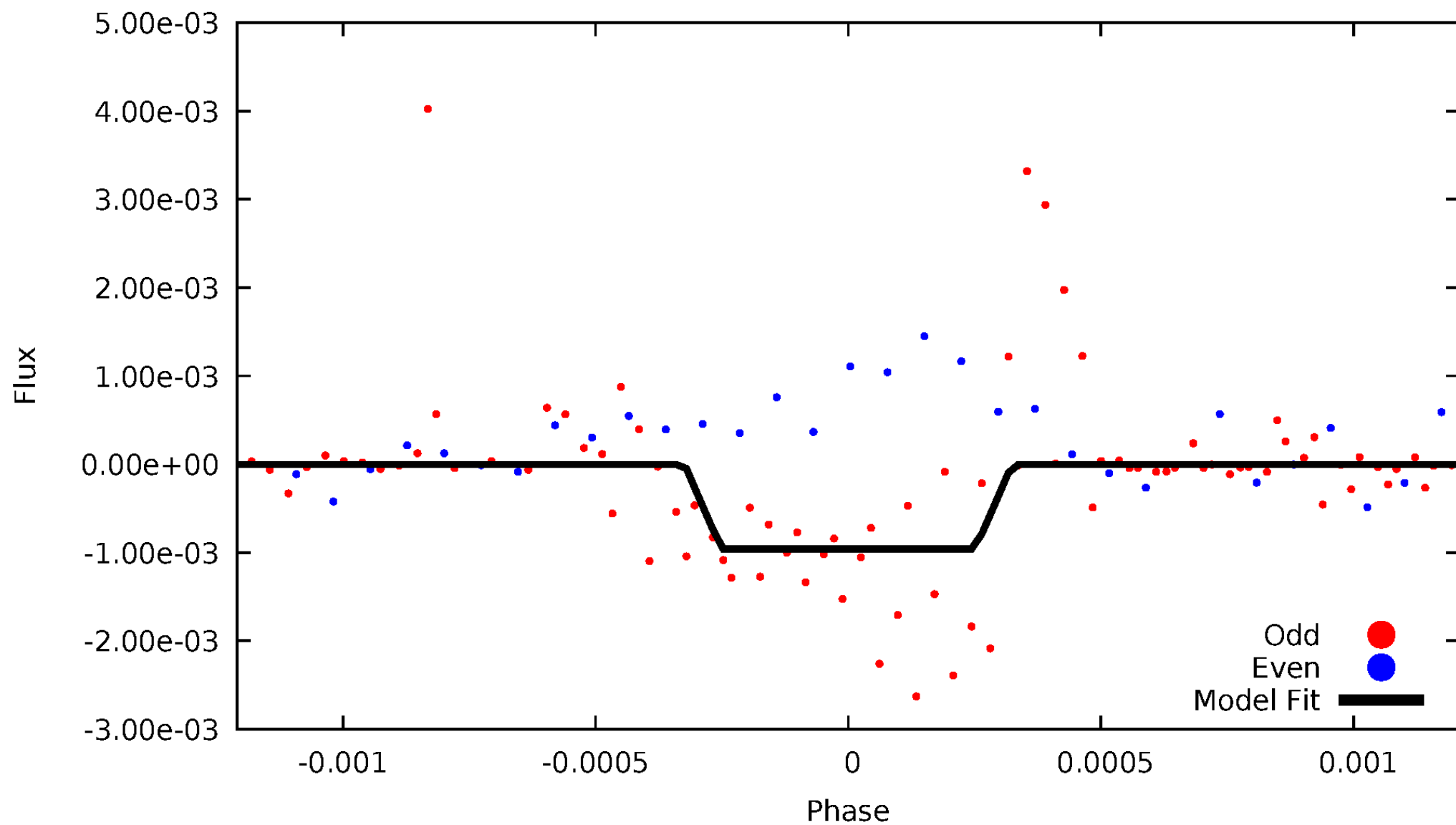
DV Odd/Even

TCE 010389121-02



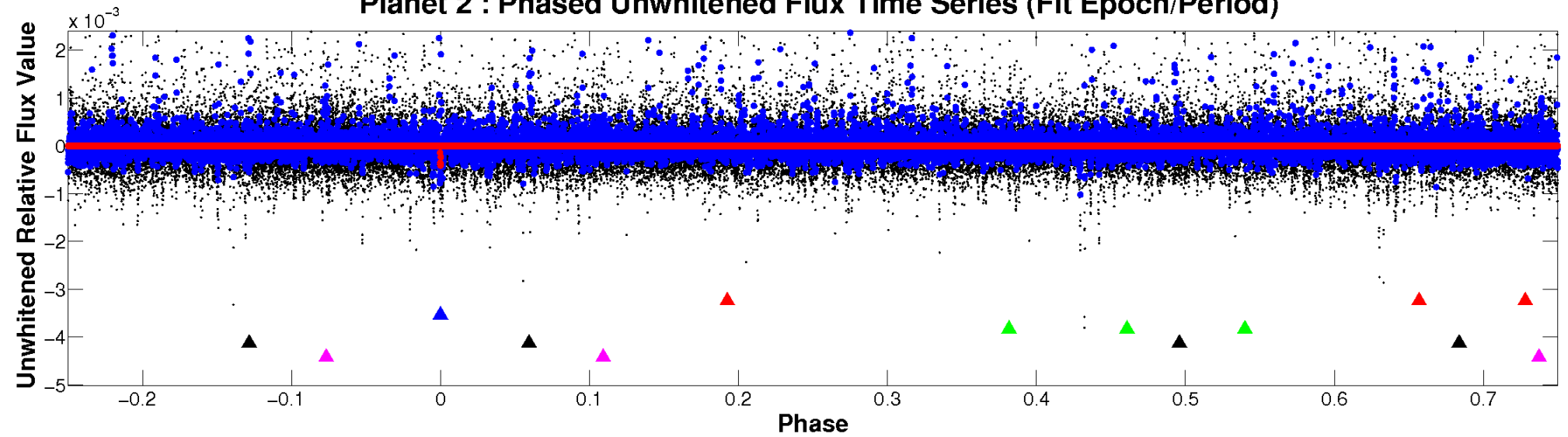
ALT Odd/Even

TCE 010389121-02

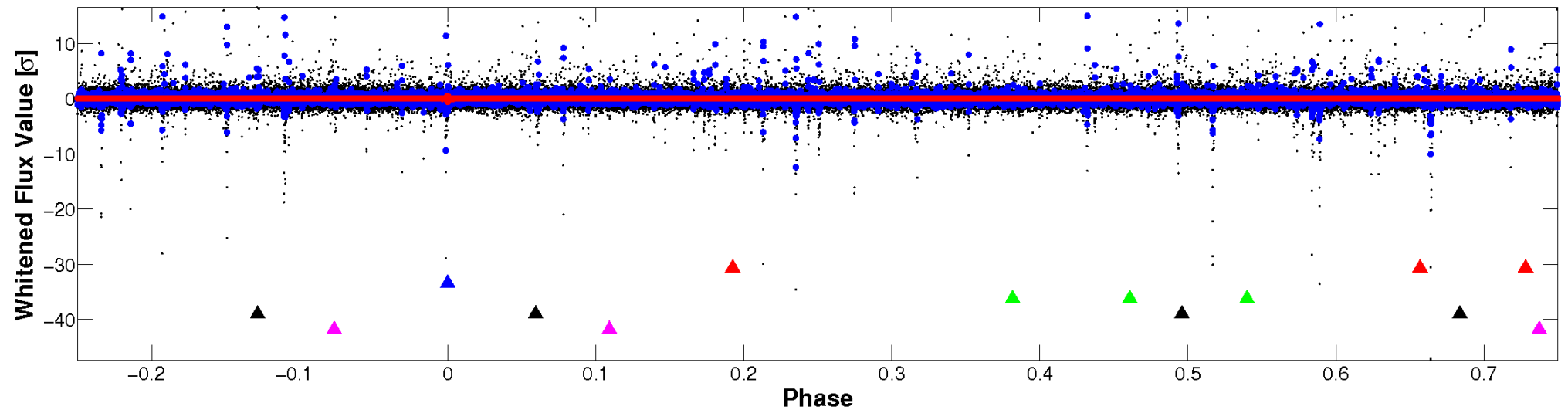


Non-Whitened Vs. Whitened Light Curve

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

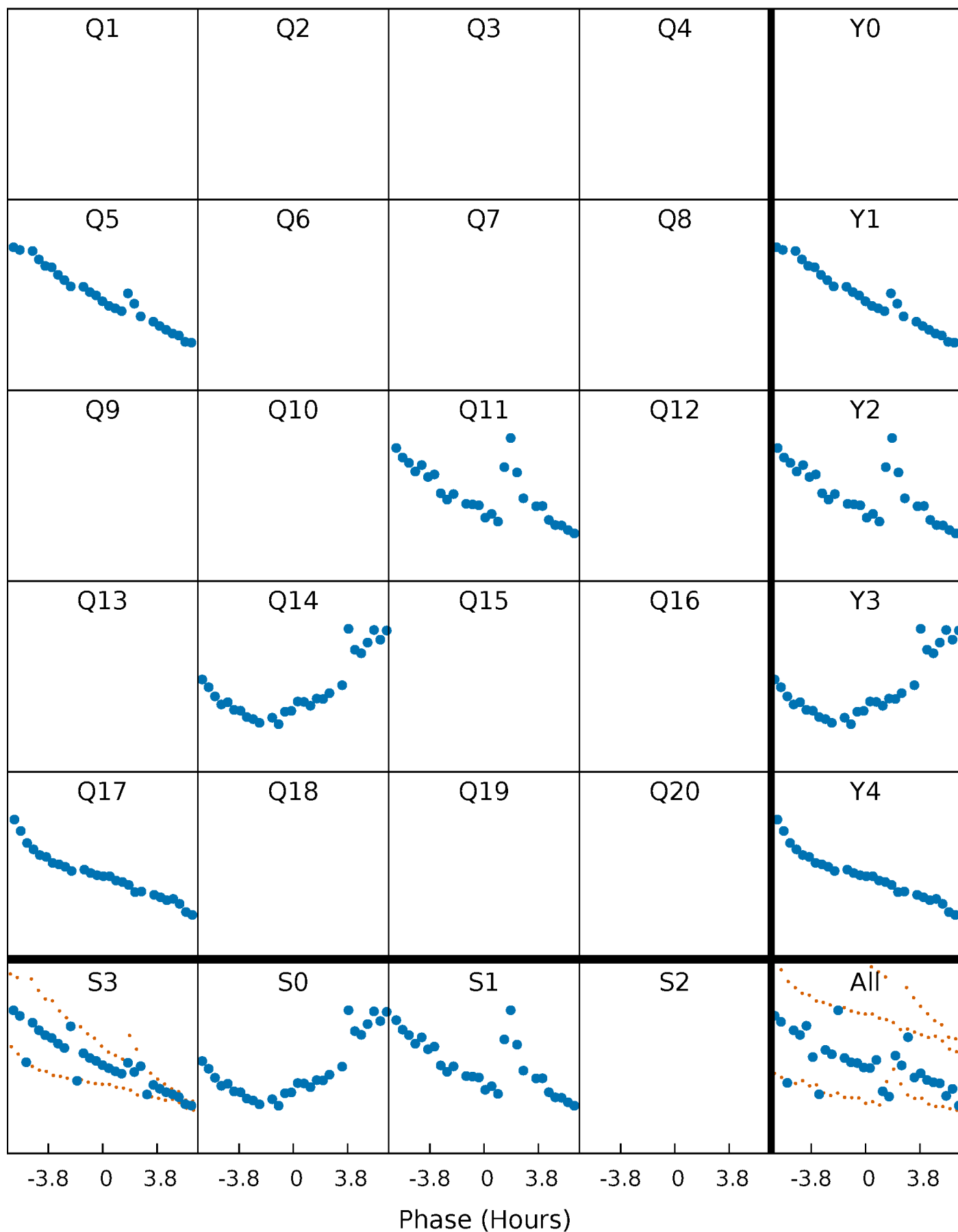


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



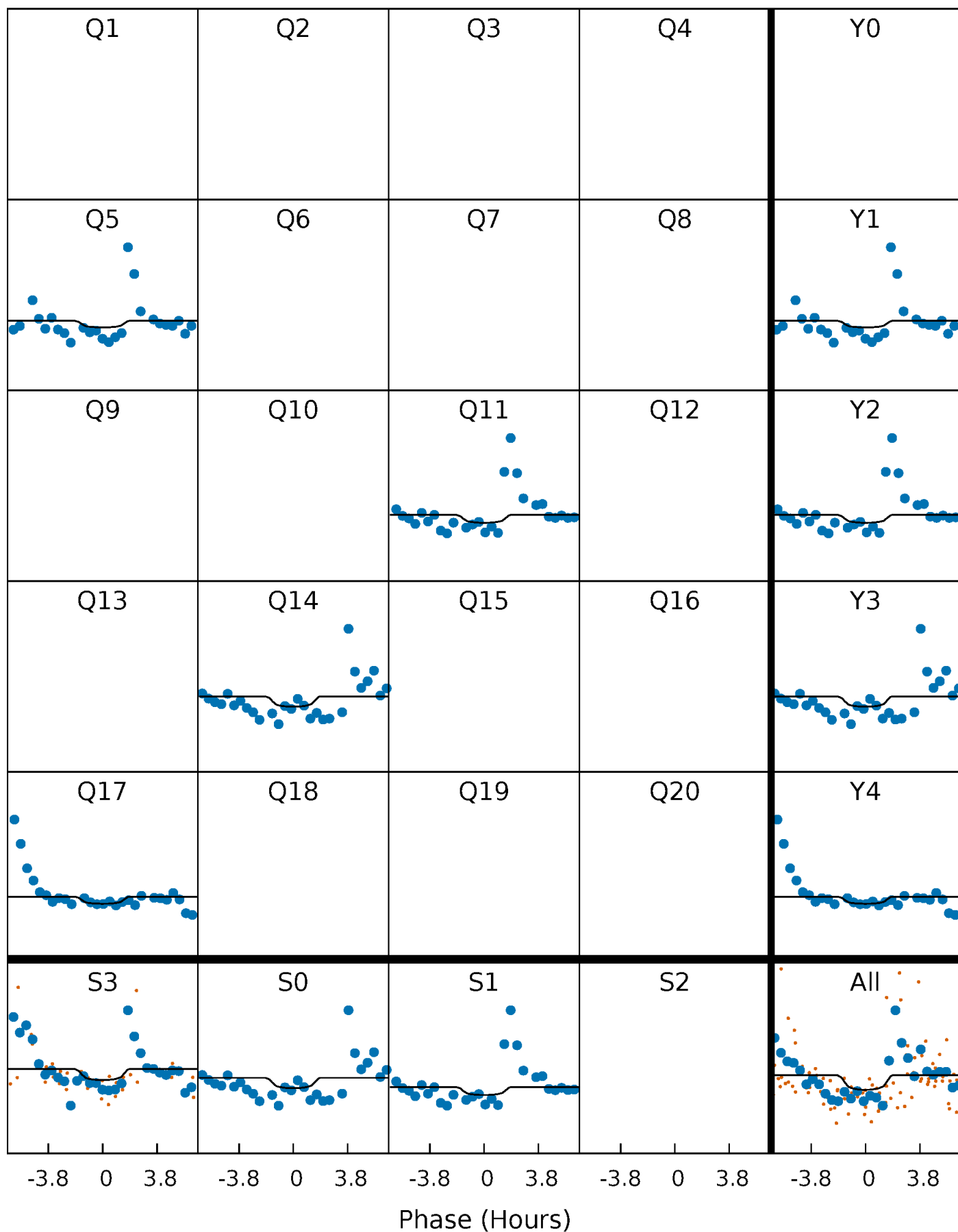
PDC Quarter-Phased Transit Curves

TCE 010389121-02 P=279.622957 Days $T_0=166.895186$ (BKJD)



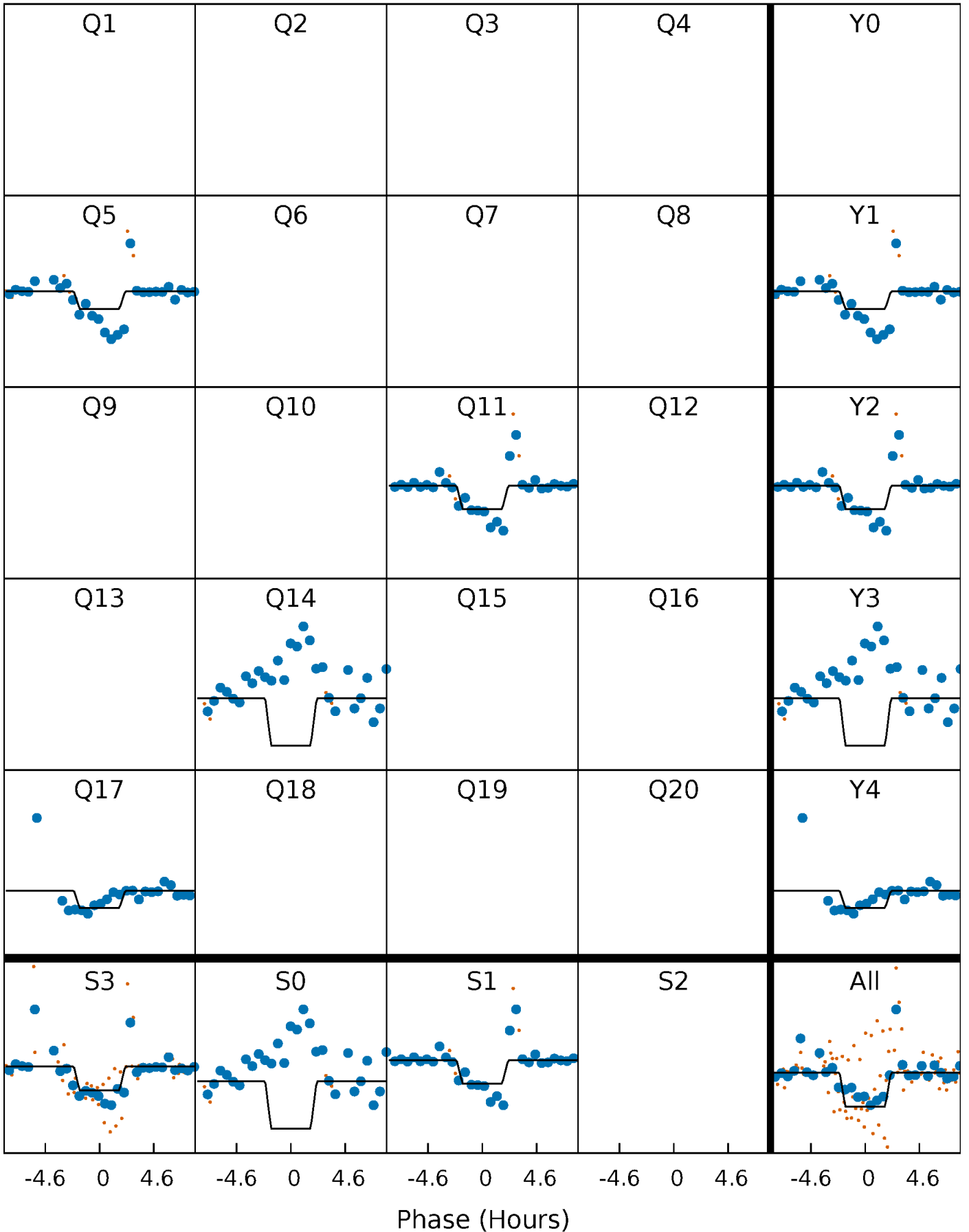
DV Quarter-Phased Transit Curves

TCE 010389121-02 P=279.622957 Days $T_0=166.895186$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

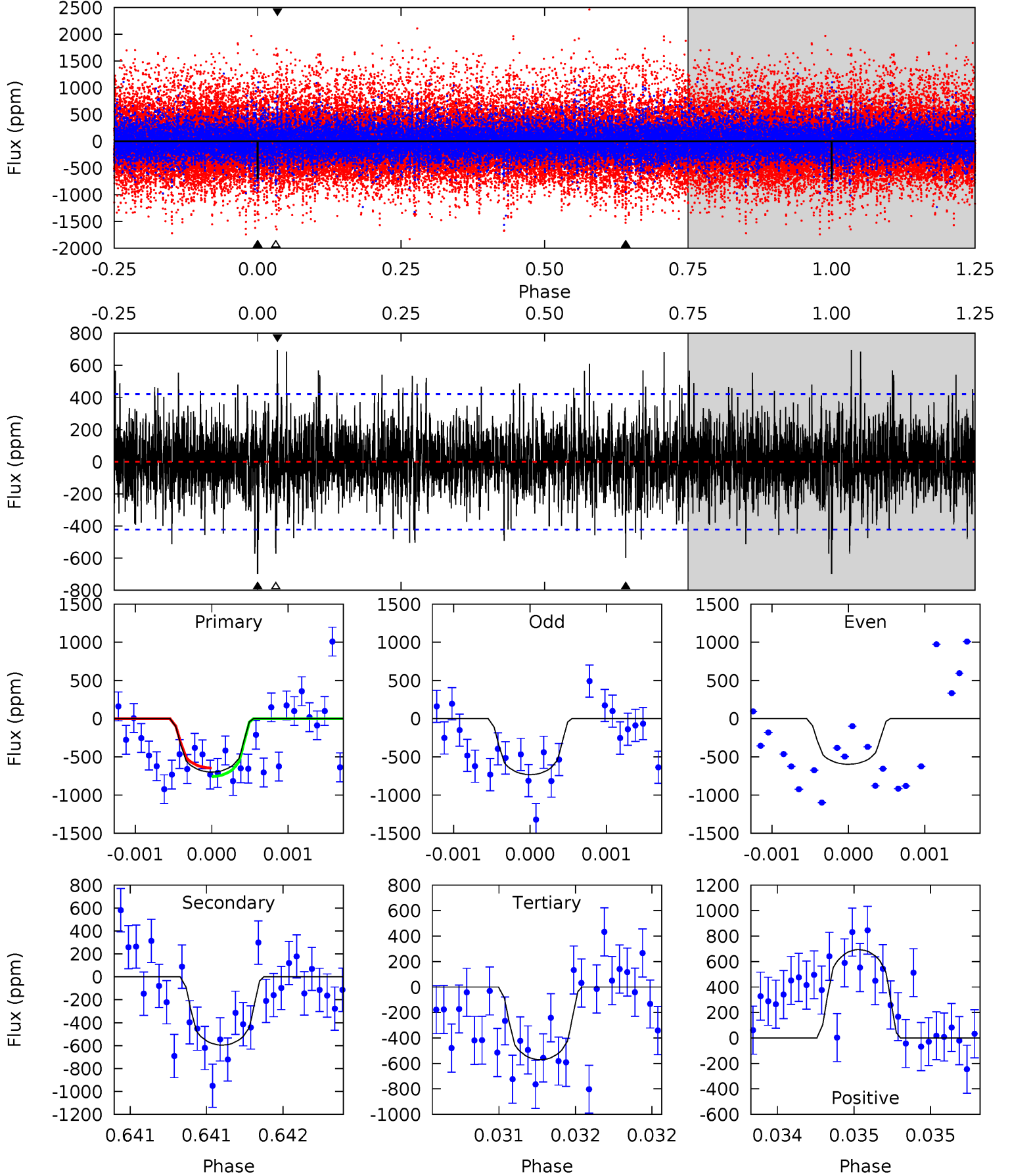
TCE 010389121-02 P=279.619646 Days $T_0=166.878226$ (BKJD)



DV Model-Shift Uniqueness Test

010389121-02, $P = 279.622957$ Days, $E = 166.895186$ Days

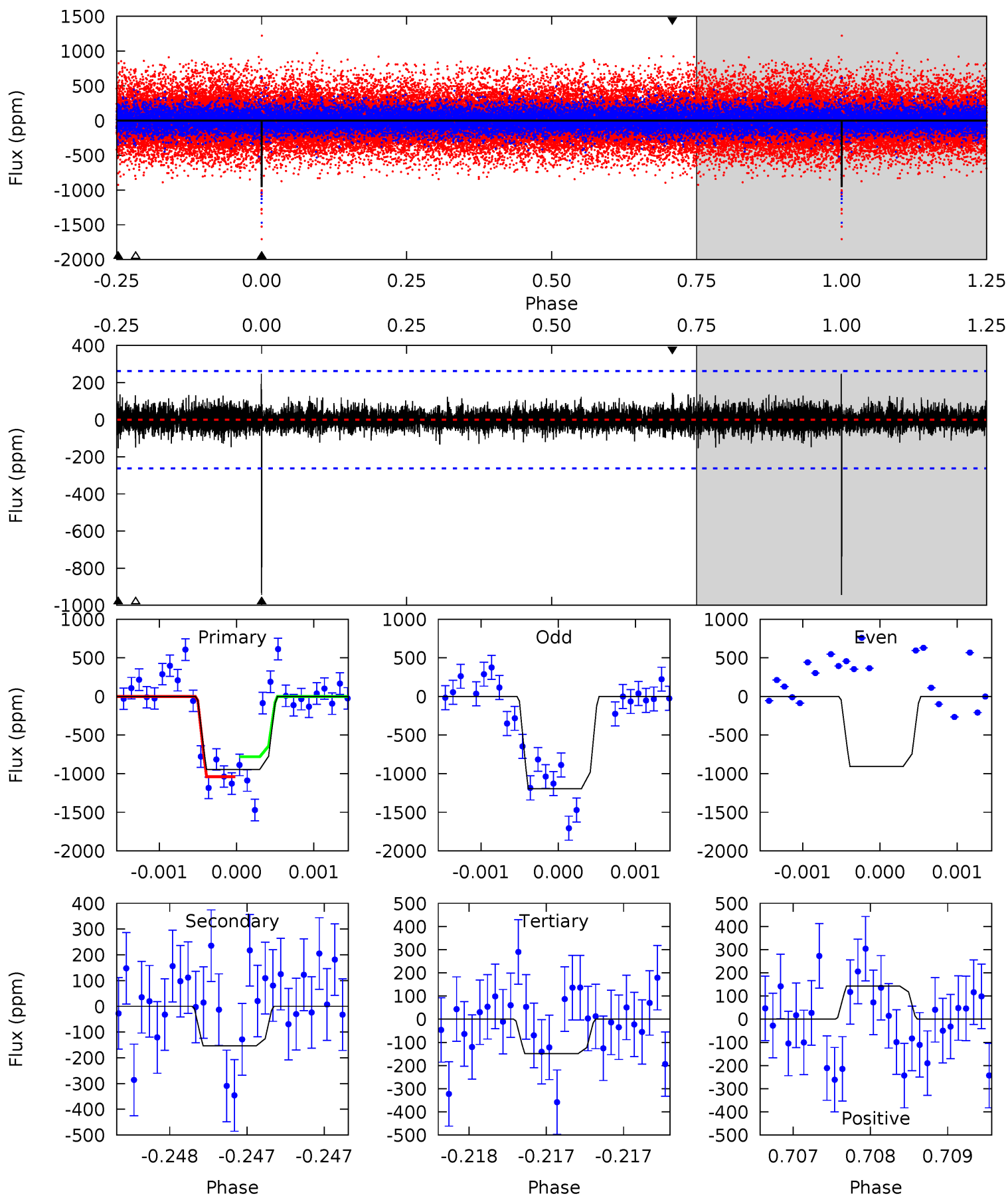
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.21	7.85	7.52	9.14	5.56	3.46	1.96	1.69	0.07	0.33	-1.29	0.72	1.17	0.50	0.74



Alt Model-Shift Uniqueness Test

010389121-02, P = 279.619646 Days, E = 166.878226 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	3.23	3.14	3.02	5.53	3.42	0.69	16.8	16.9	0.09	0.21	3.17	0.74	0.21	2.68



Stellar Parameters For KIC 010389121

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4638^{+139}_{-139}	$4.677^{+0.052}_{-0.032}$	$-0.860^{+0.350}_{-0.300}$	$0.570^{+0.043}_{-0.043}$	$0.564^{+0.051}_{-0.028}$	$4.282^{+0.902}_{-0.556}$
	+3%/-3%	+1%/-1%	+41%/-35%	+8%/-8%	+9%/-5%	+21%/-13%
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 010389121-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-596 ± 76	$6.00^{+6.60}_{-4.04}$	258^{+10}_{-9}	2926^{+1233}_{-482}	4439^{+35936}_{-3398}
Alt.	-153 ± 47	$6.62^{+6.69}_{-4.33}$	259^{+9}_{-9}	2423^{+767}_{-385}	942^{+6449}_{-737}

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

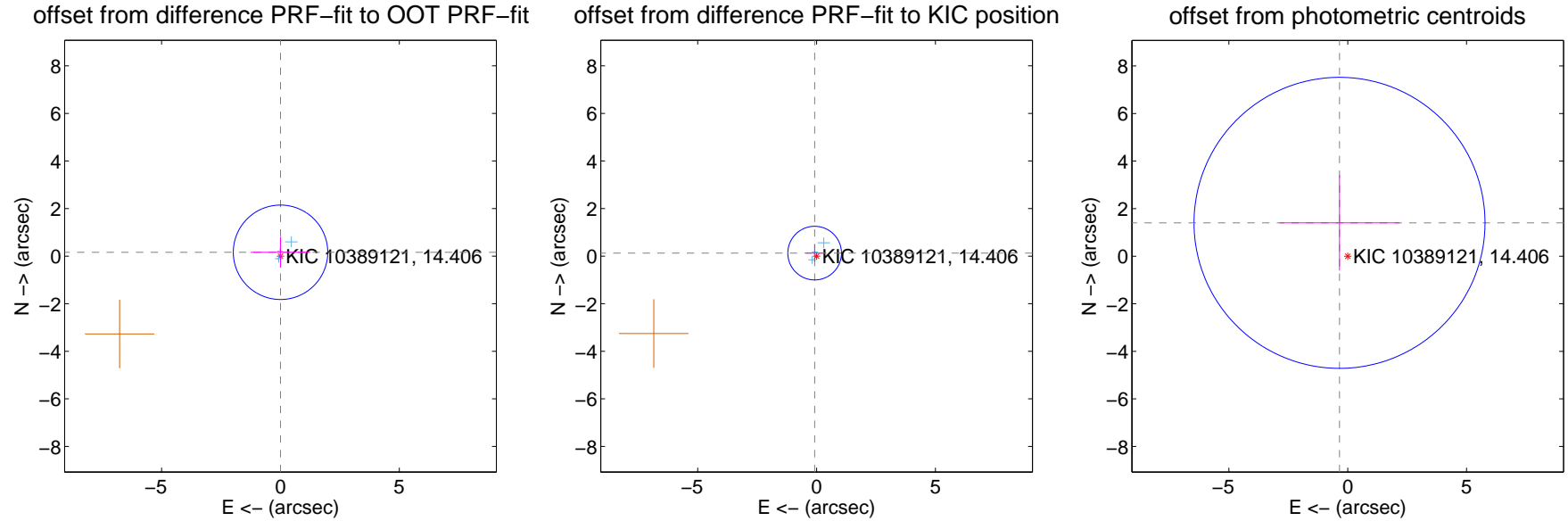
DV Centroid Data

Supplemental centroid analysis for 010389121-02. Kepler magnitude: 14.41. Transit SNR 2.75

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.162 ± 0.662	0.24	-0.003 ± 1.253	0.162 ± 0.640
PRF-fit source offset from KIC position	0.151 ± 0.376	0.40	0.081 ± 0.380	0.127 ± 0.374
photometric centroid source offset	1.44 ± 2.04	0.71	0.35 ± 2.52	1.40 ± 2.01

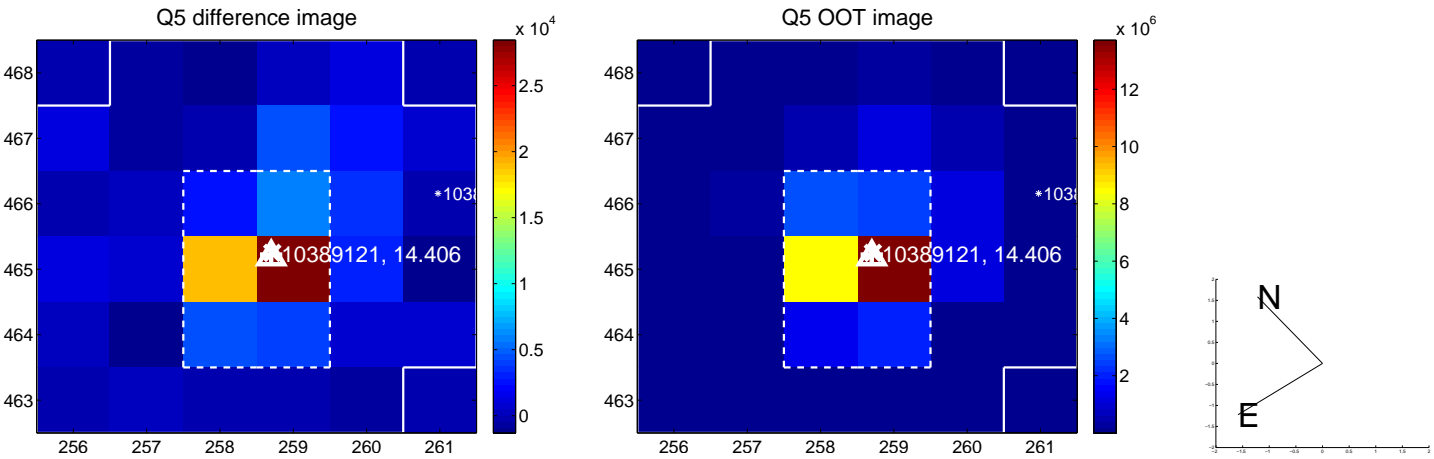


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

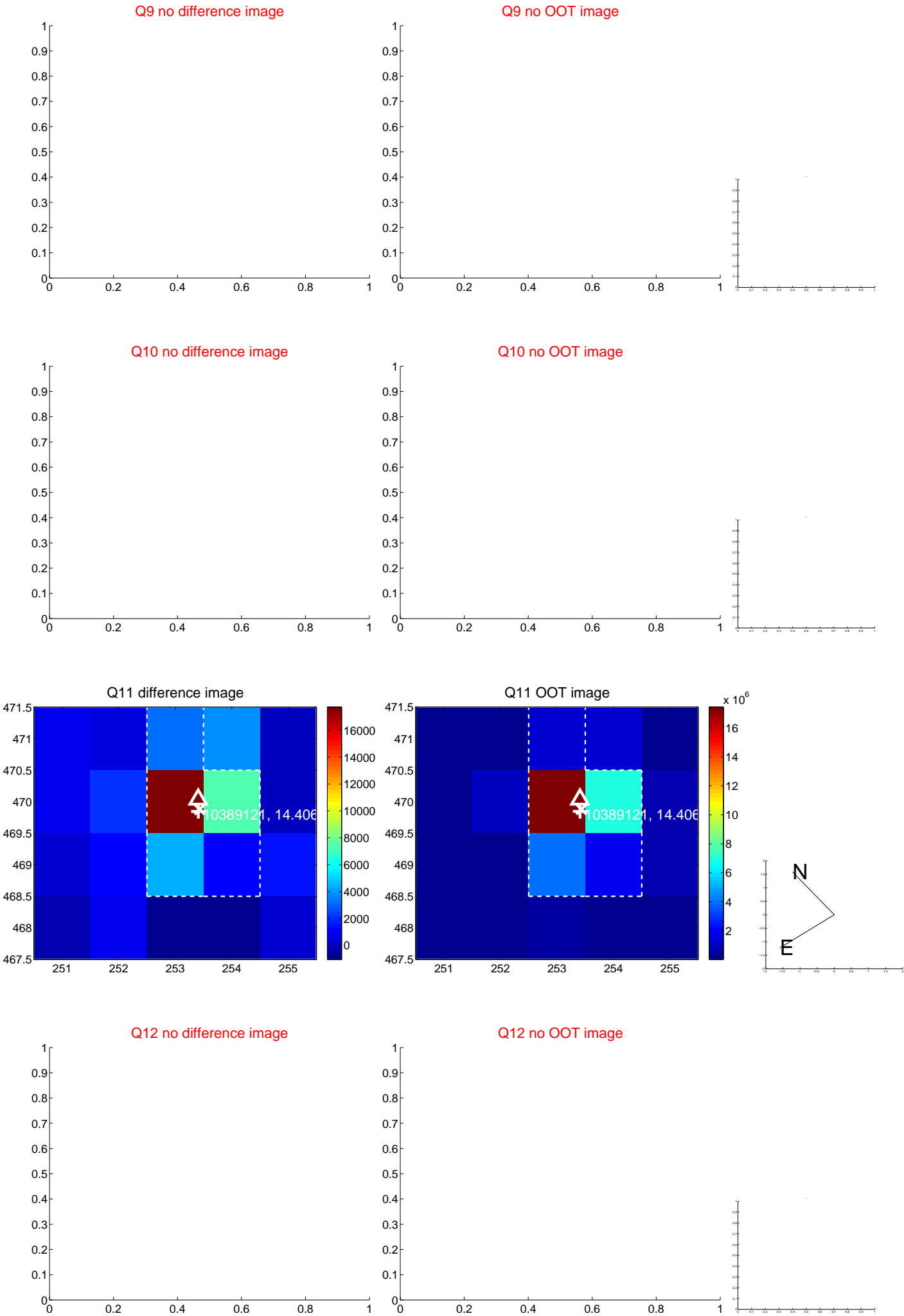
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

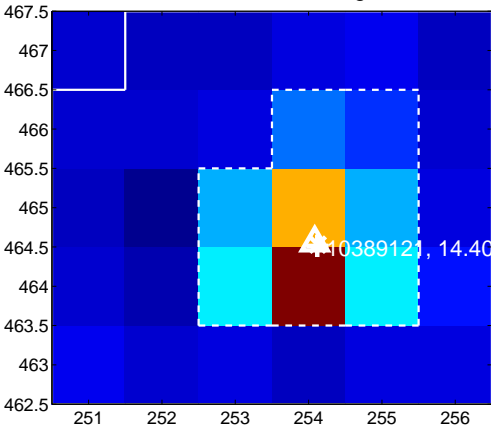
Q13 no difference image



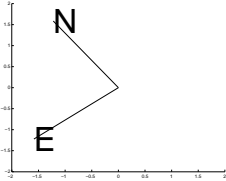
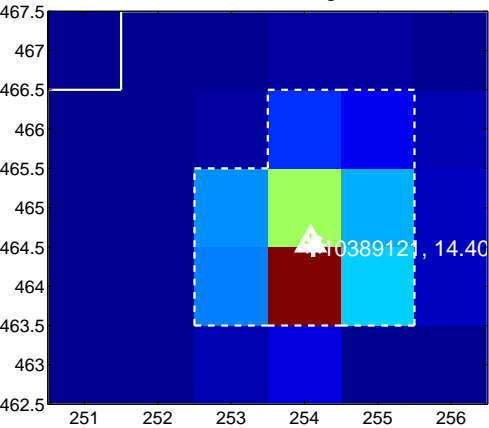
Q13 no OOT image



Q14 difference image



Q14 OOT image



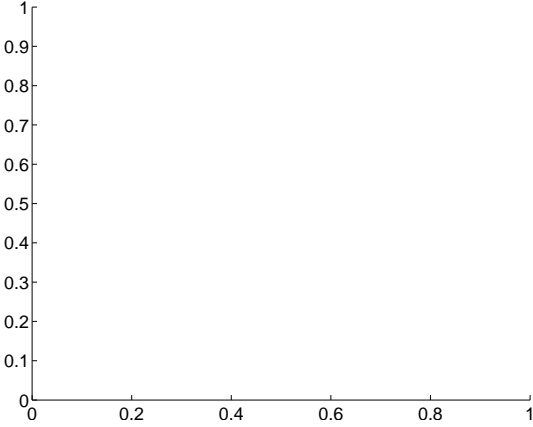
Q15 no difference image



Q15 no OOT image



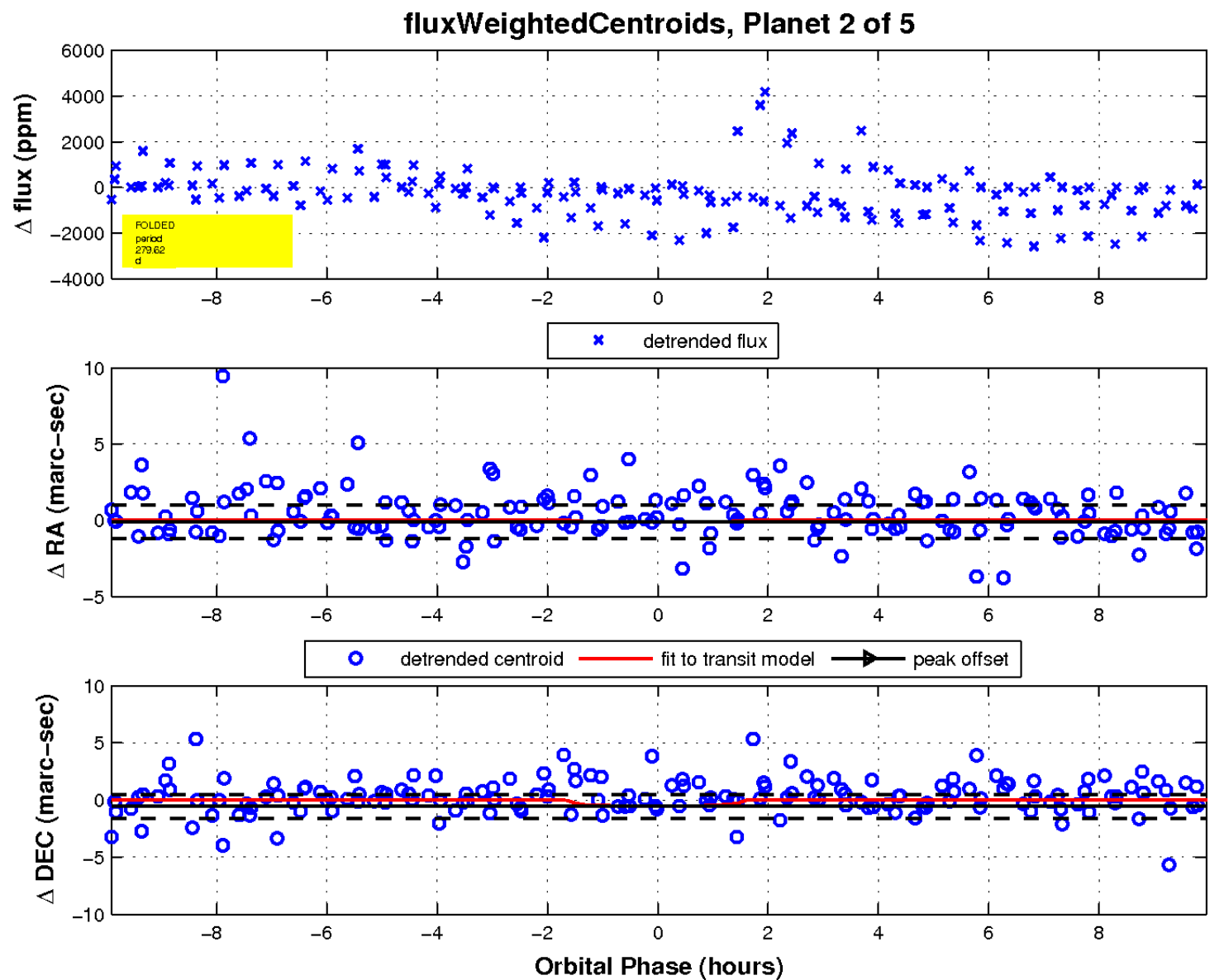
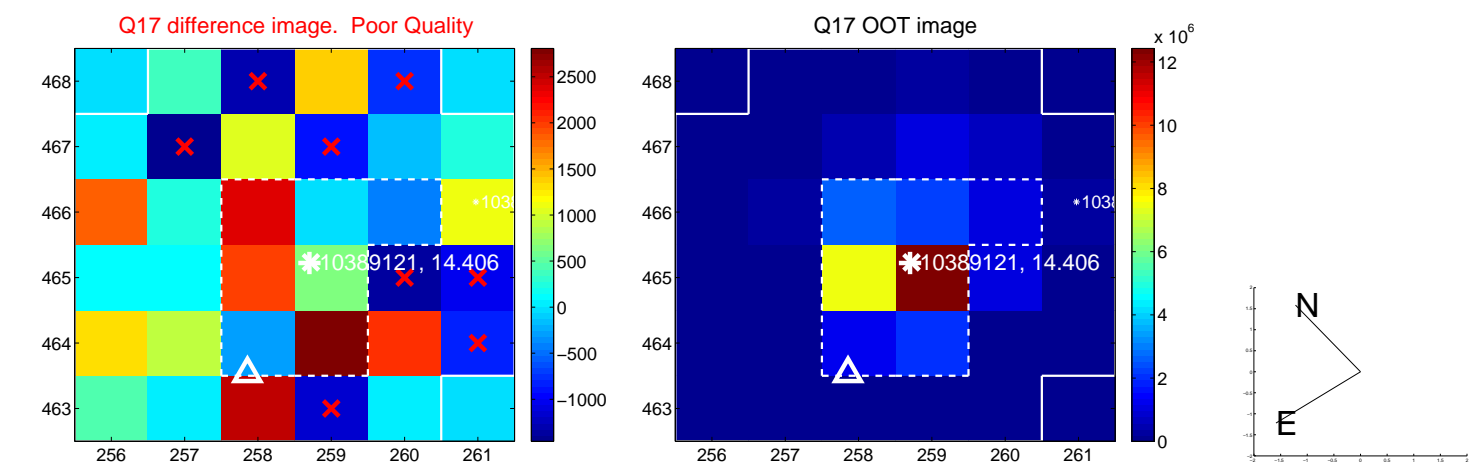
Q16 no difference image



Q16 no OOT image

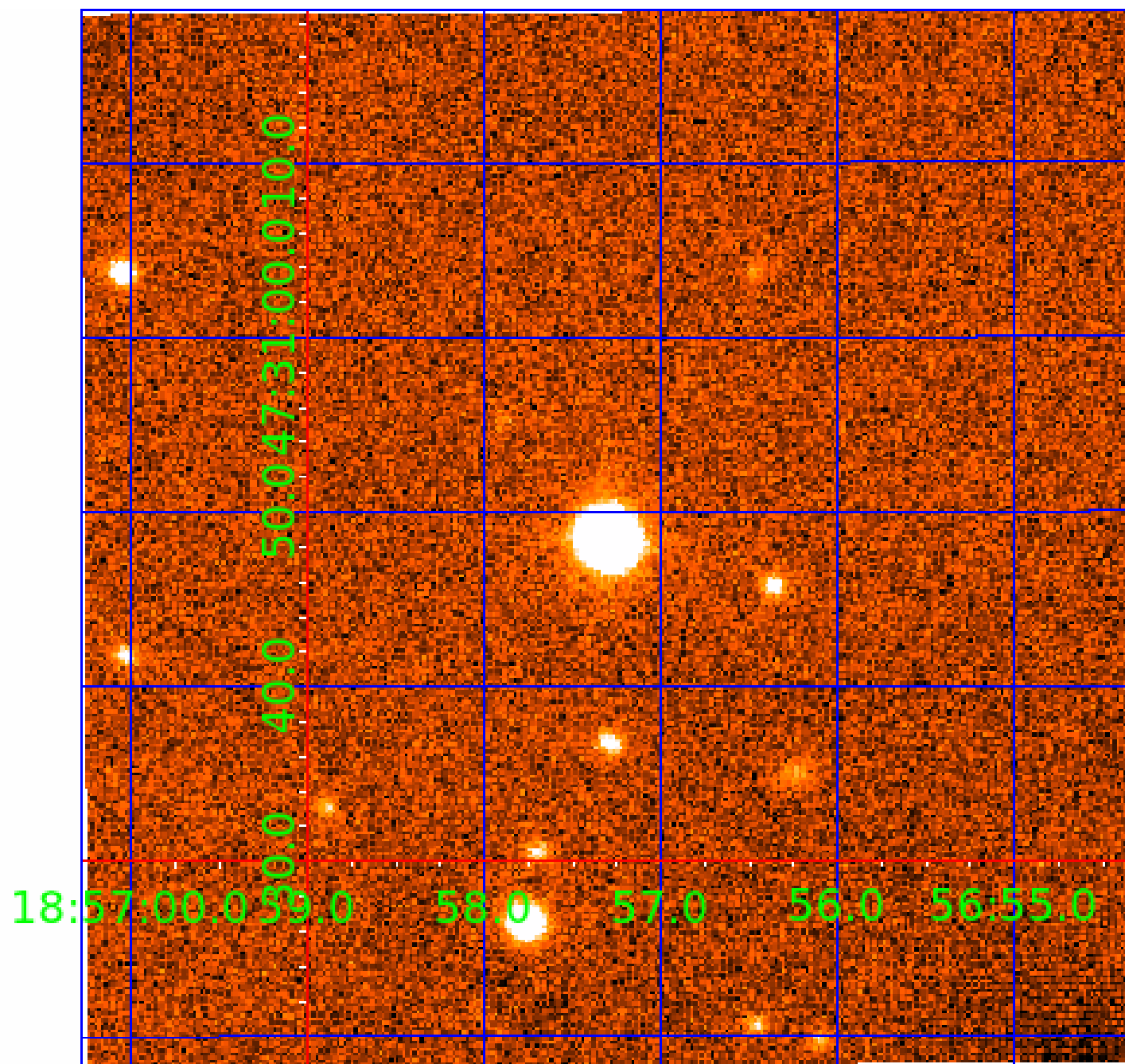


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010389121

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})
010389121-01	OBS	No	409.467824	370.511359	1242.4	7.779	15.2	5.8	0.57	4638	2.01	0.17
010389121-02	OBS	No	279.622957	166.895186	410.5	3.333	12.9	2.7	0.57	4638	1.32	0.28
010389121-03	OBS	No	537.112135	317.884026	873.7	4.367	14.5	6.1	0.57	4638	1.91	0.12
010389121-04	OBS	No	332.140216	305.582179	897.1	3.741	12.4	5.0	0.57	4638	1.72	0.22
010389121-05	OBS	No	507.258664	197.435820	932.1	4.272	12.0	5.1	0.57	4638	1.69	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010389121-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010389121-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
010389121-03	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—CENT_FEW_DIFFS
010389121-04	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—CENT_FEW_DIFFS
010389121-05	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

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

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

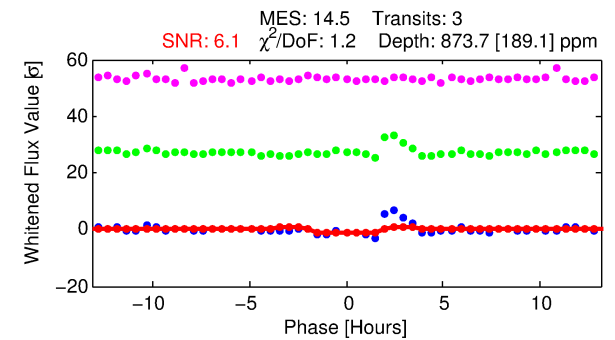
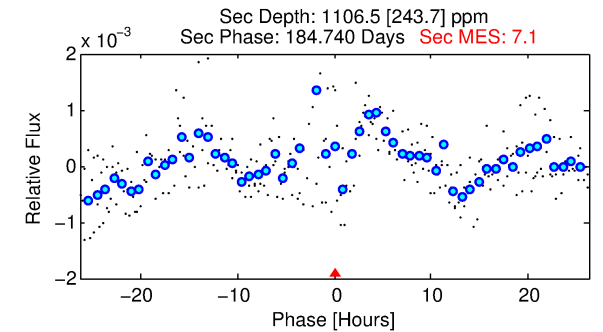
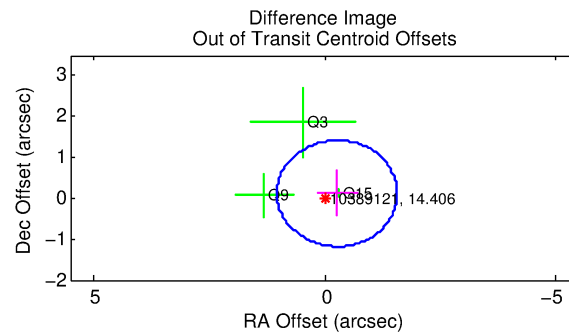
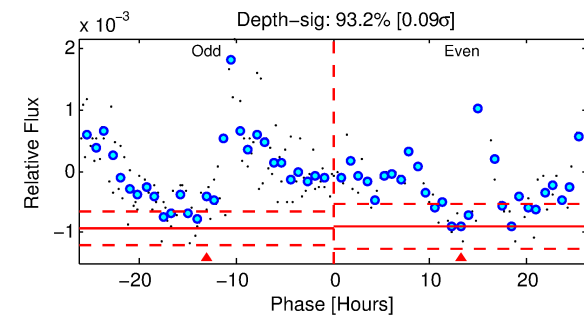
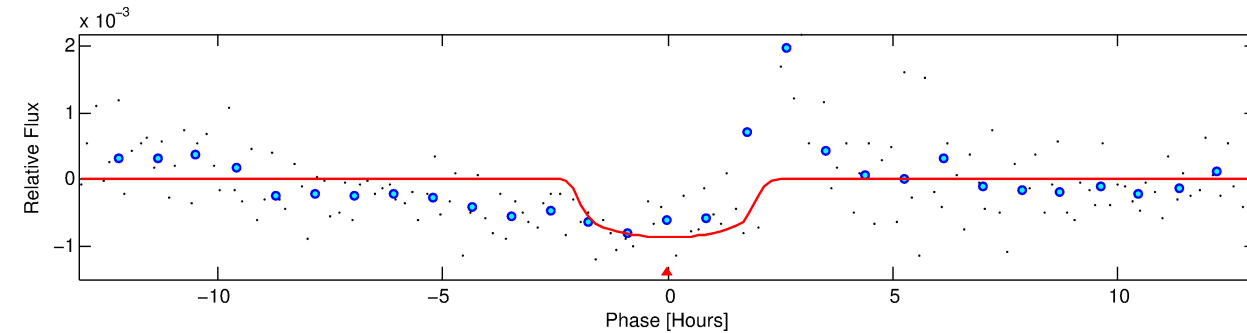
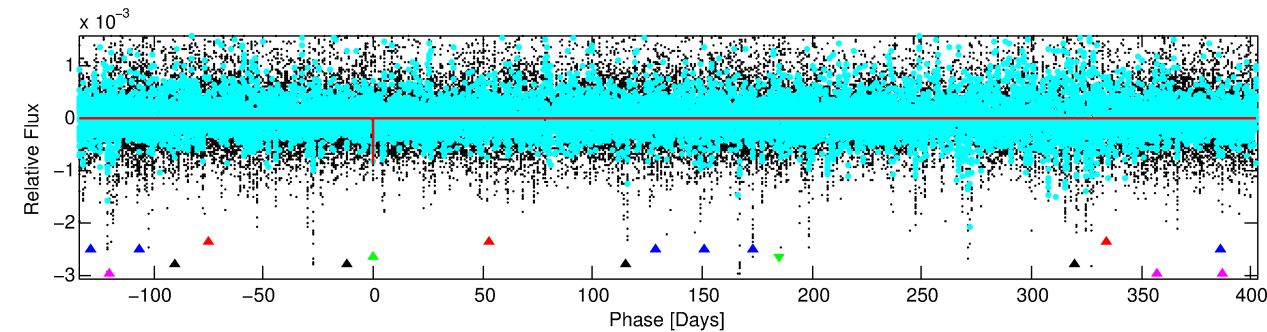
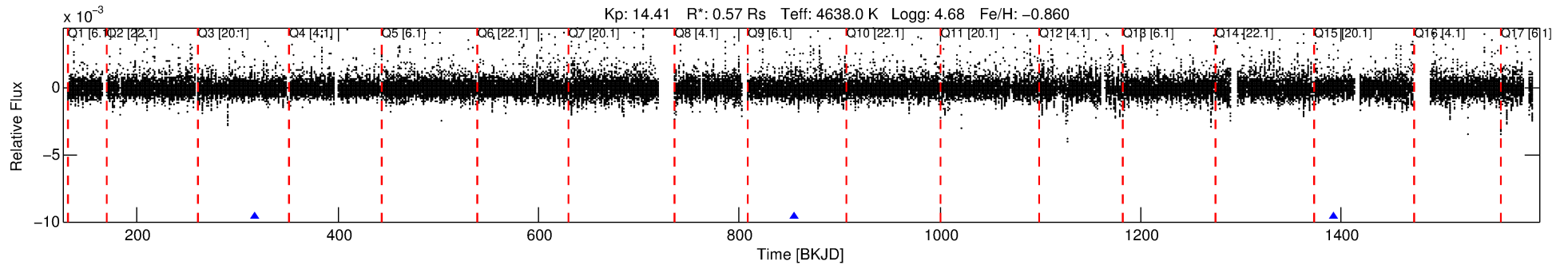
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010389121-03

No Significant Match Found

DV One-Page Summary

KIC: 10389121 Candidate: 3 of 5 Period: 537.112 d



DV Fit Results:

Period = 537.11213 [0.00713] d
Epoch = 317.8840 [0.0072] BKJD
Rp/R* = 0.0307 [0.0184]
a/R* = 588.76 [1230.87]
b = 0.82 [0.86]
Seff = 0.12 [0.02]
Teq = 149 [6] K
Rp = 1.91 [1.15] Re
a = 1.0682 [0.0686] AU
Ag = 190886.65 [233766.94] [0.82 σ]
Teffp = 4830 [1482] K [3.16 σ]

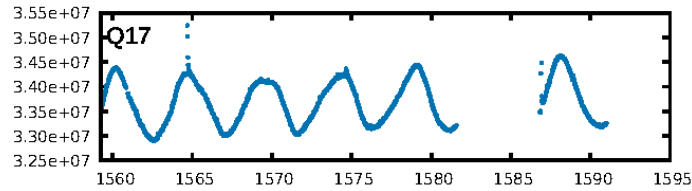
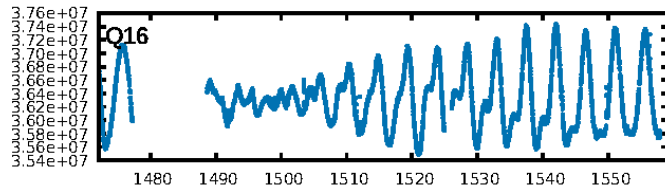
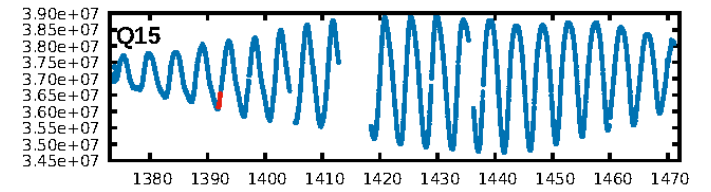
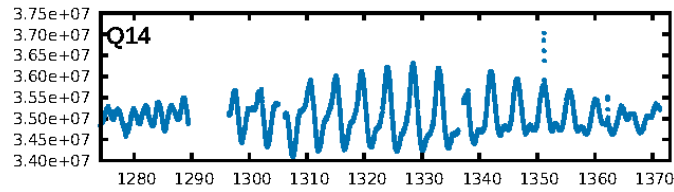
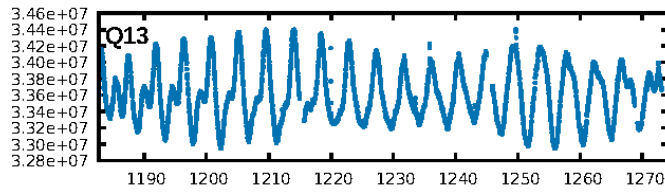
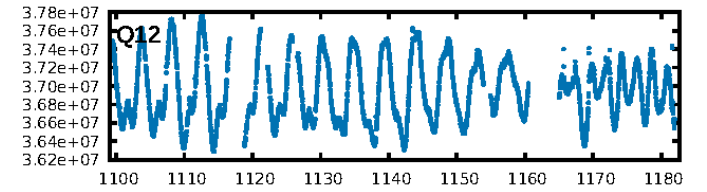
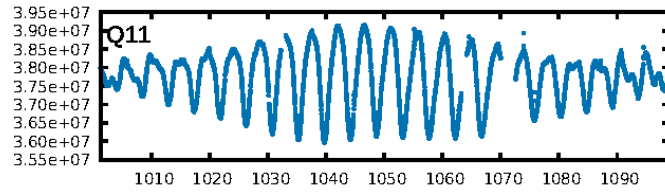
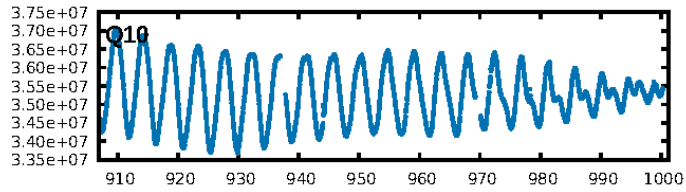
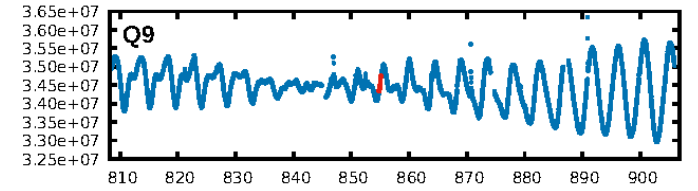
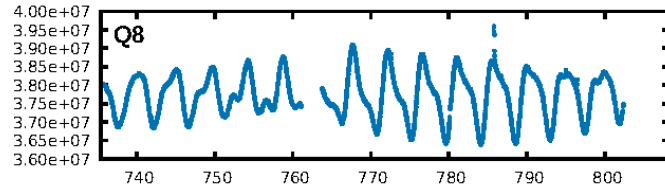
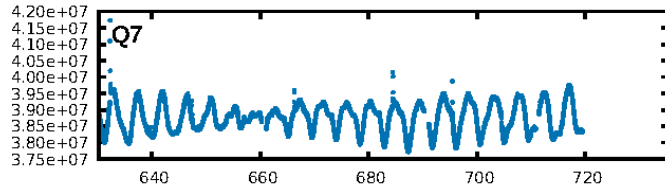
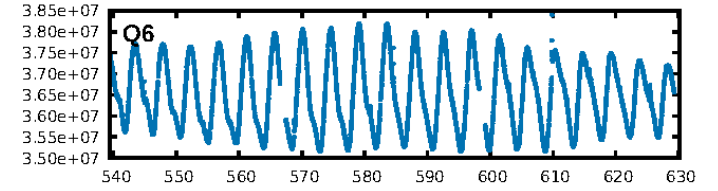
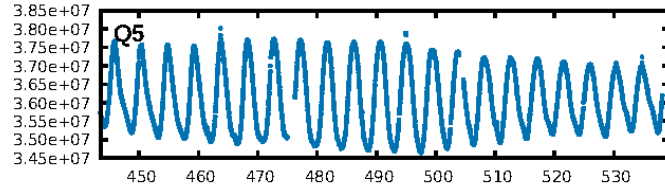
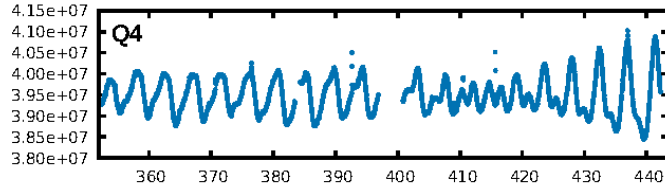
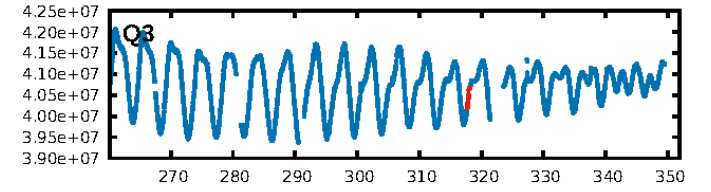
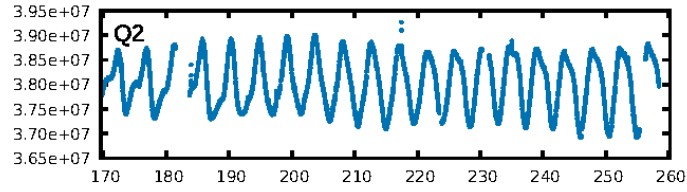
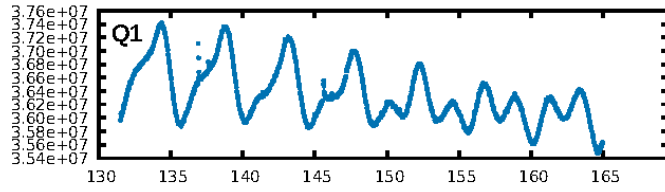
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [117.29 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 45.8%
ModelChiSquareGof-sig: 98.5%
Bootstrap-pfa: 7.99e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.96
Centroid-sig: 33.1%
Centroid-so: 0.685 arcsec [0.77 σ]
OotOffset-rm: 0.292 arcsec [0.67 σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-rm: 0.154 arcsec [0.30 σ]
KicOffset-st: 0/2/0/1 [3]
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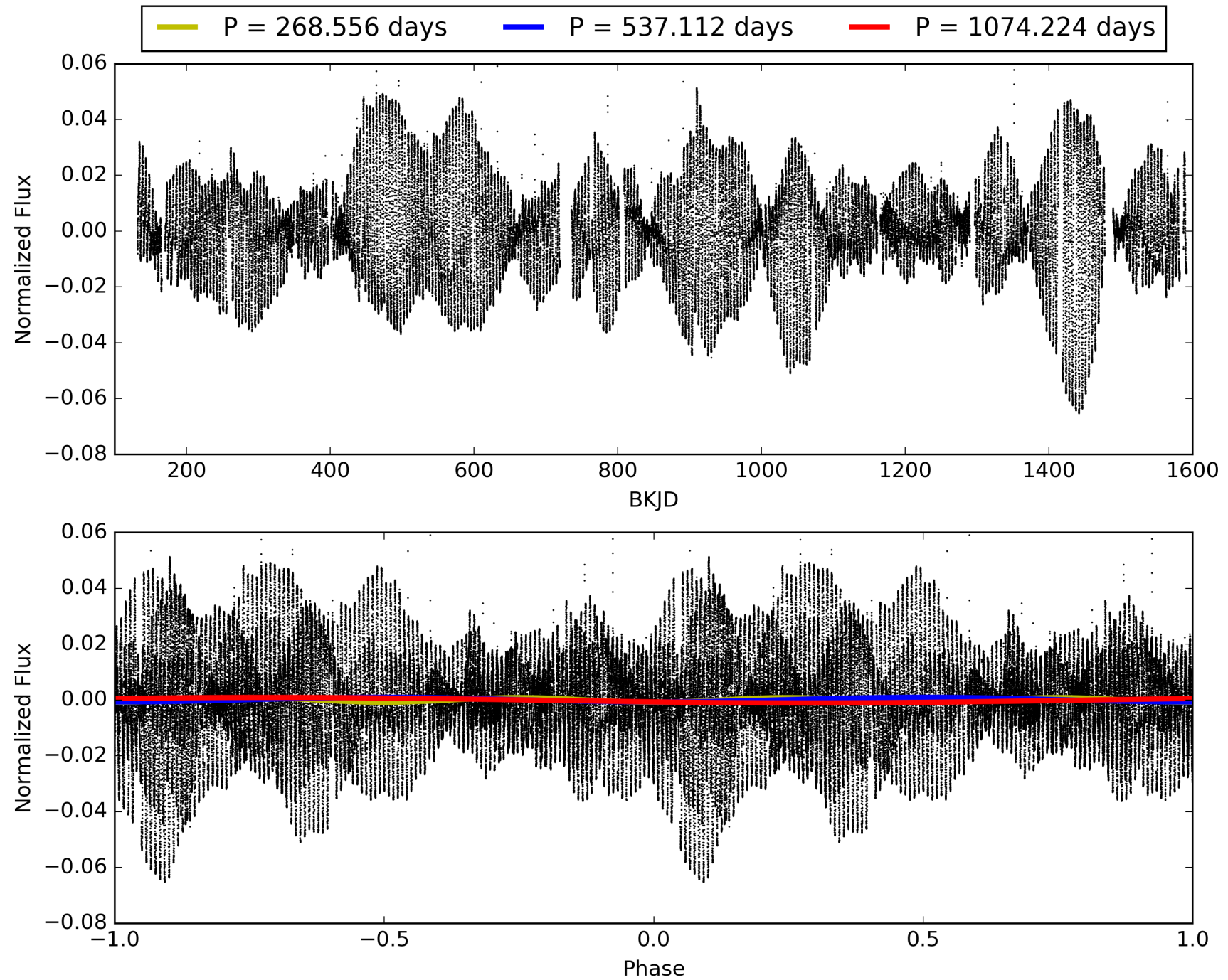
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:42:59 Z

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

TCE 010389121-03, PDC Light Curves

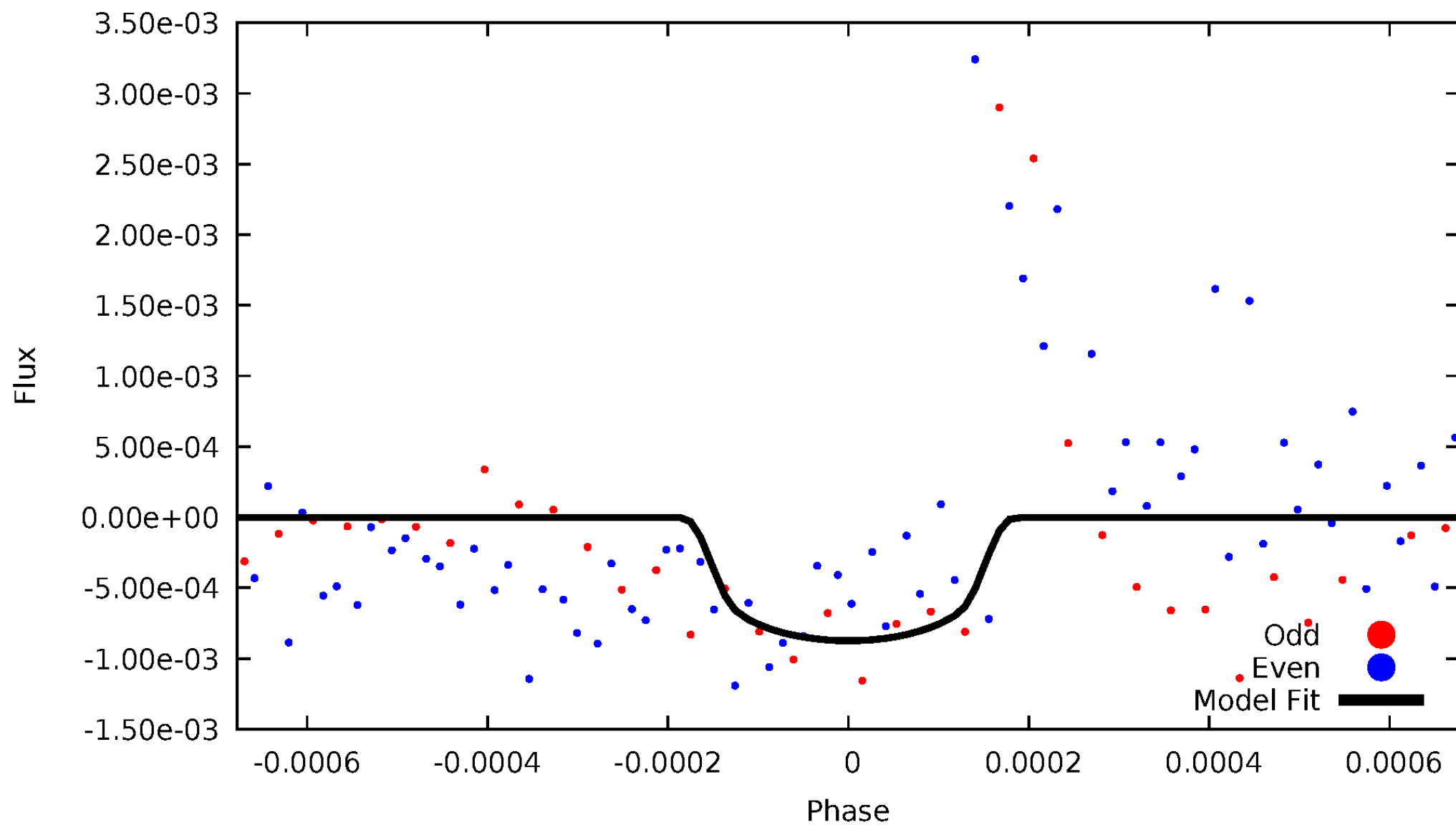


TCE 010389121-03



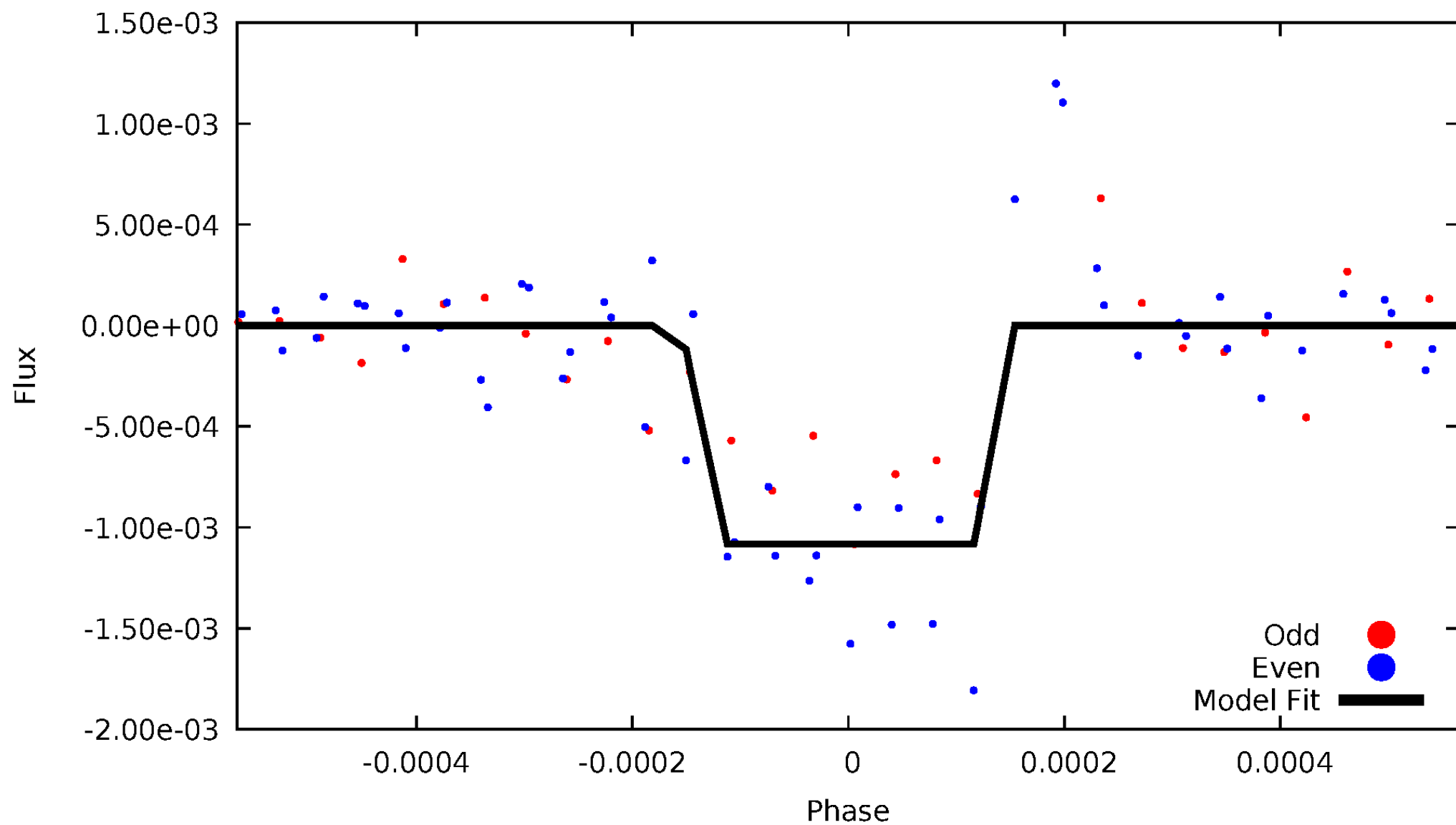
DV Odd/Even

TCE 010389121-03



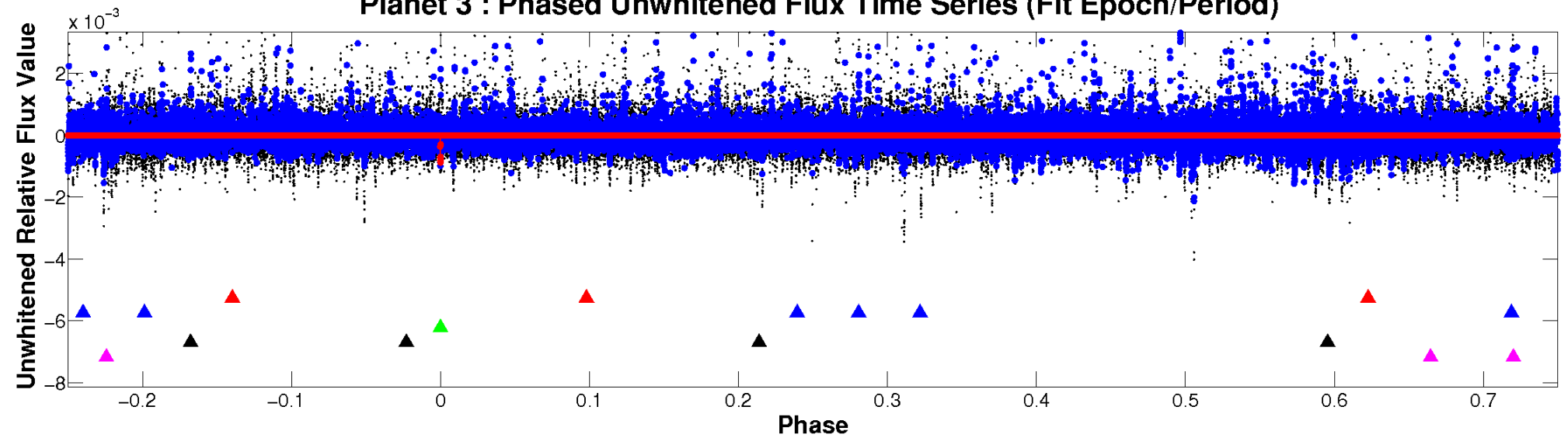
ALT Odd/Even

TCE 010389121-03

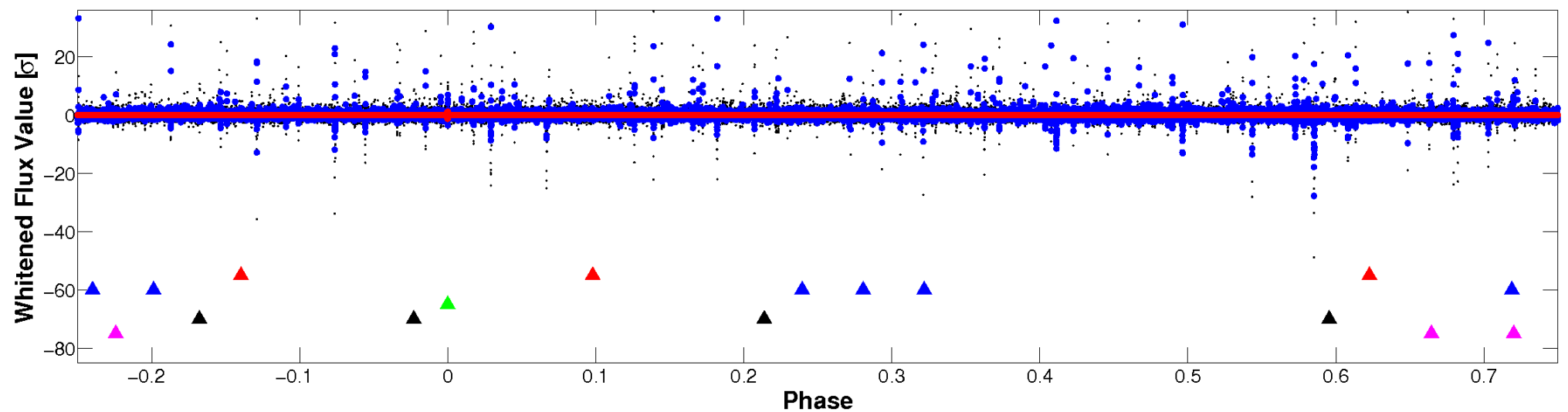


Non-Whitened Vs. Whitened Light Curve

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

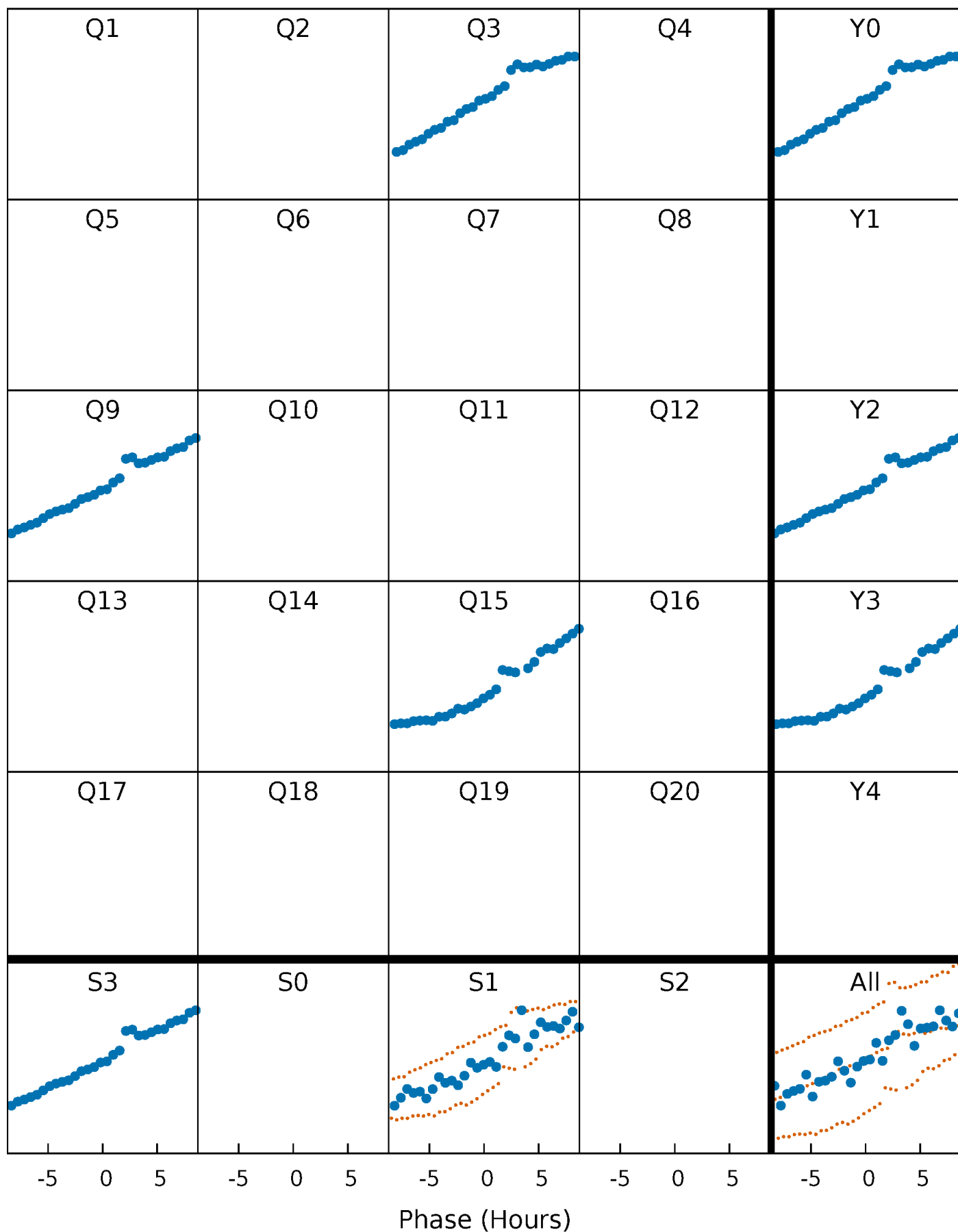


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



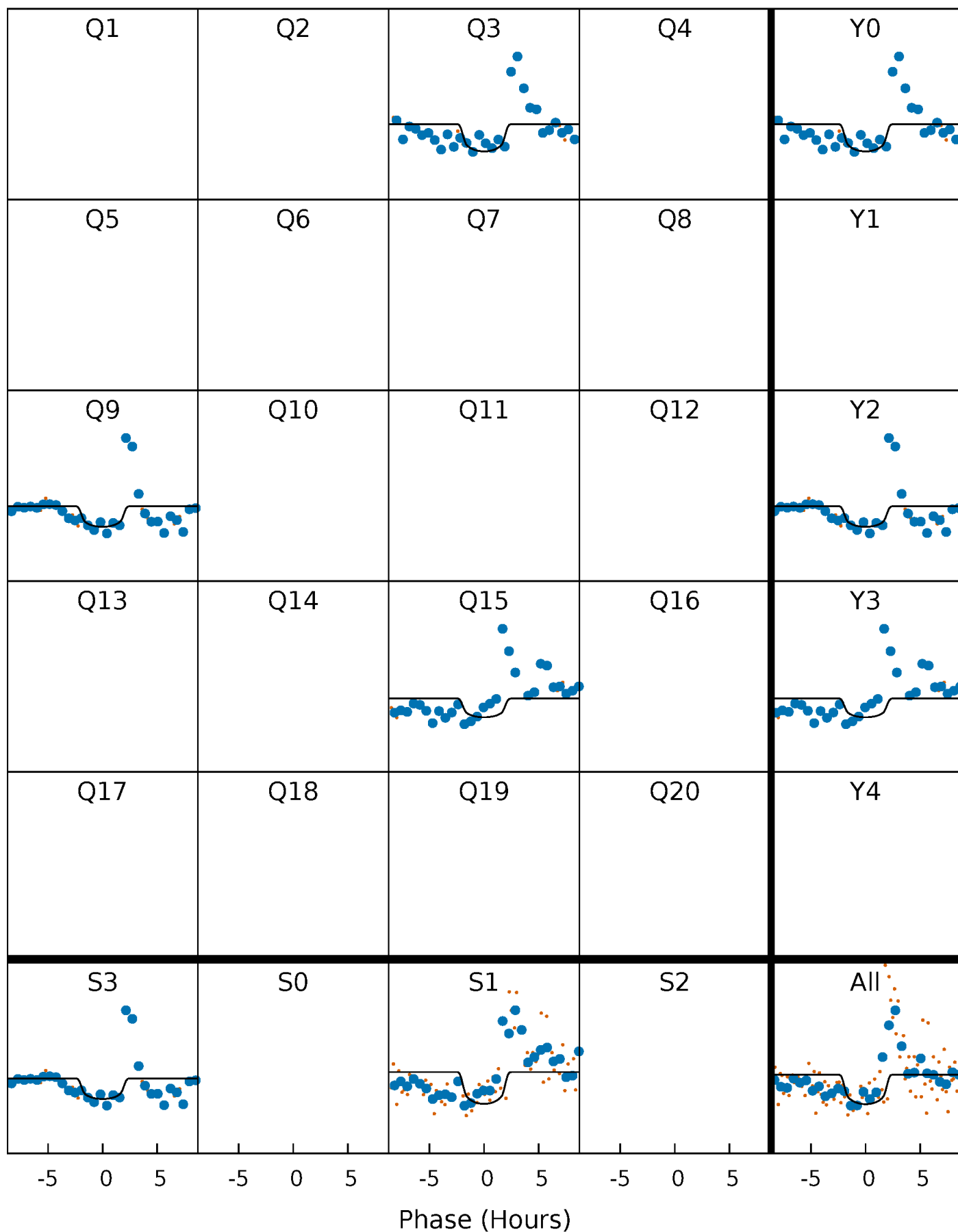
PDC Quarter-Phased Transit Curves

TCE 010389121-03 P=537.112135 Days $T_0=317.884026$ (BKJD)



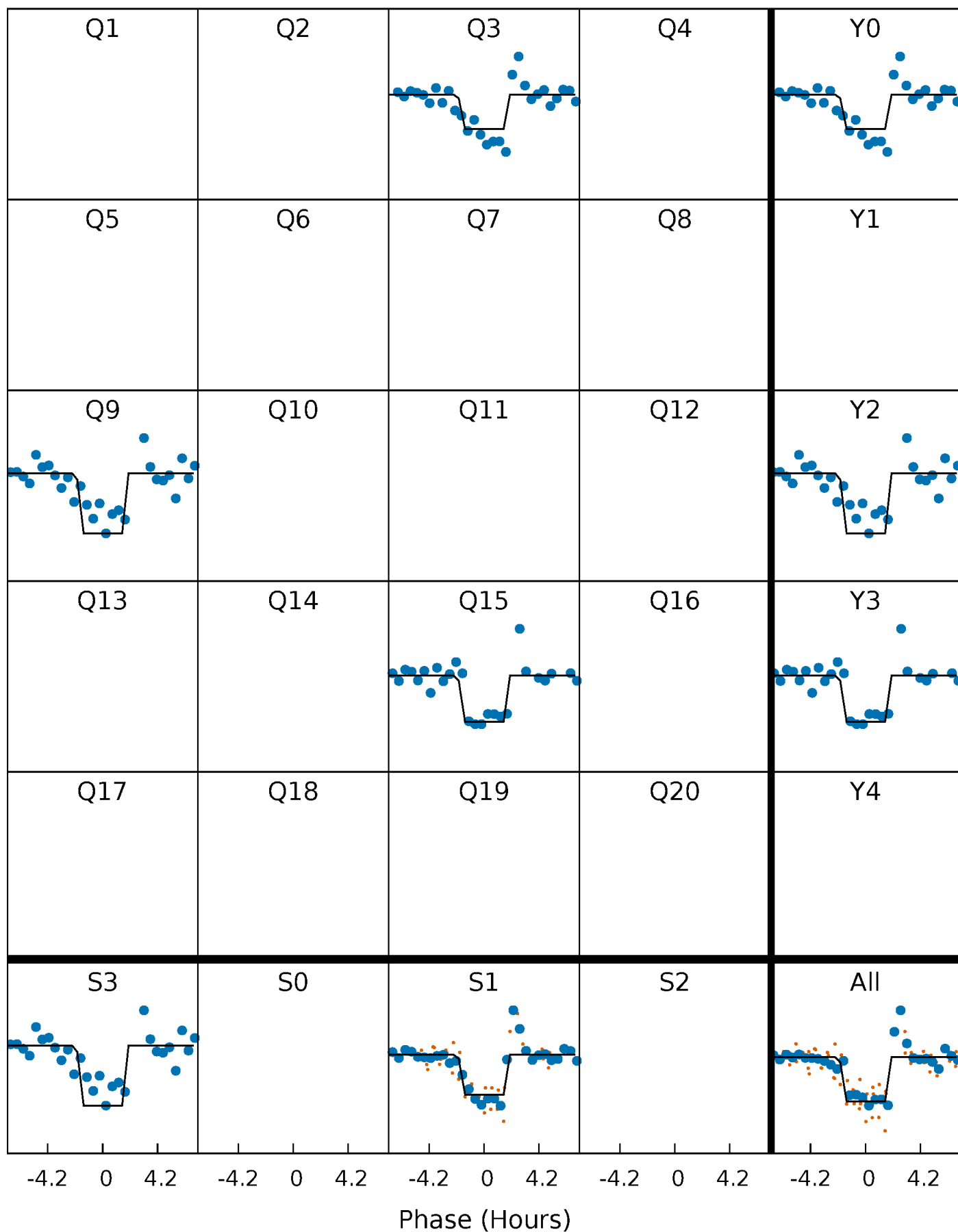
DV Quarter-Phased Transit Curves

TCE 010389121-03 $P=537.112135$ Days $T_0=317.884026$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

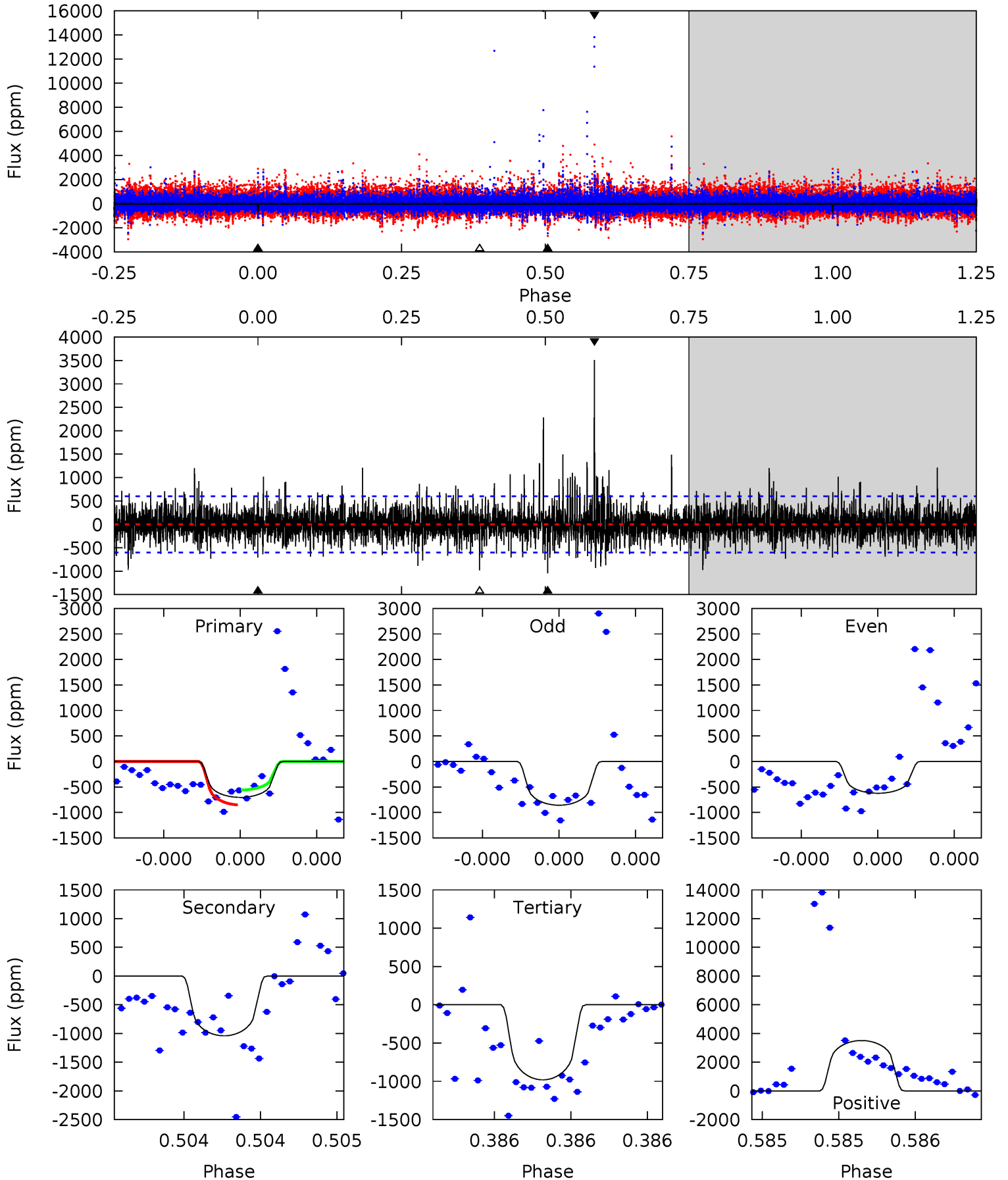
TCE 010389121-03 P=537.096125 Days $T_0=317.905237$ (BKJD)



DV Model-Shift Uniqueness Test

010389121-03, P = 537.112135 Days, E = 317.884026 Days

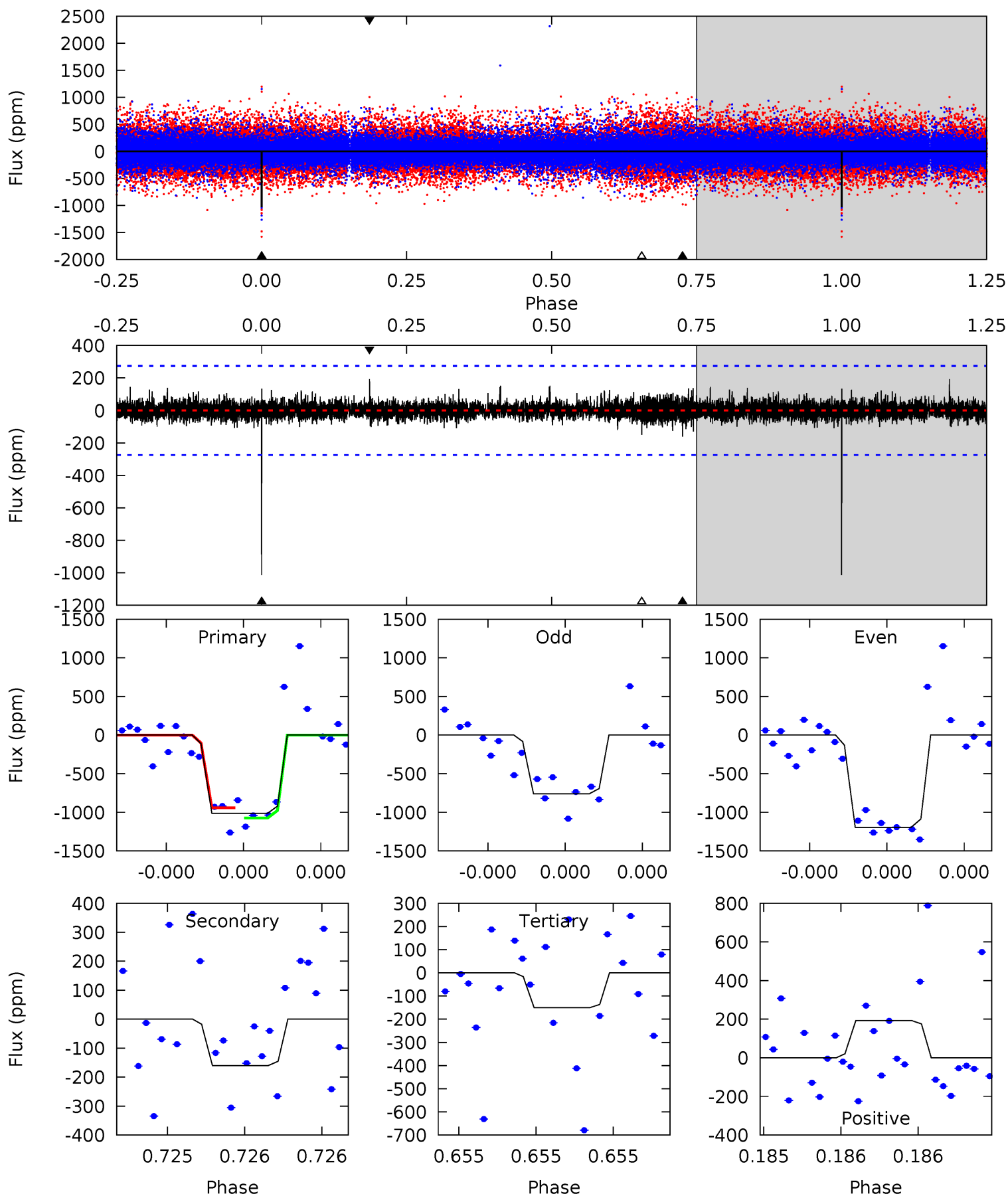
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.61	9.78	9.21	33.0	5.64	3.58	2.35	-2.60	-26.4	0.57	-23.2	0.78	0.85	0.77	1.37



Alt Model-Shift Uniqueness Test

010389121-03, P = 537.096125 Days, E = 317.905237 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	3.31	3.11	4.00	5.68	3.64	0.58	17.9	17.0	0.20	-0.68	4.45	1.04	0.16	1.37



Stellar Parameters For KIC 010389121

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4638^{+139}_{-139}	$4.677^{+0.052}_{-0.032}$	$-0.860^{+0.350}_{-0.300}$	$0.570^{+0.043}_{-0.043}$	$0.564^{+0.051}_{-0.028}$	$4.282^{+0.902}_{-0.556}$
	+3%/-3%	+1%/-1%	+41%/-35%	+8%/-8%	+9%/-5%	+21%/-13%
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 010389121-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1041 ± 106	$2.03^{+1.09}_{-1.12}$	208^{+7}_{-8}	4671^{+2140}_{-729}	$159814^{+699443}_{-91404}$
Alt.	-160 ± 48	$2.09^{+1.24}_{-1.05}$	208^{+7}_{-7}	3279^{+864}_{-438}	23114^{+67706}_{-14895}

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

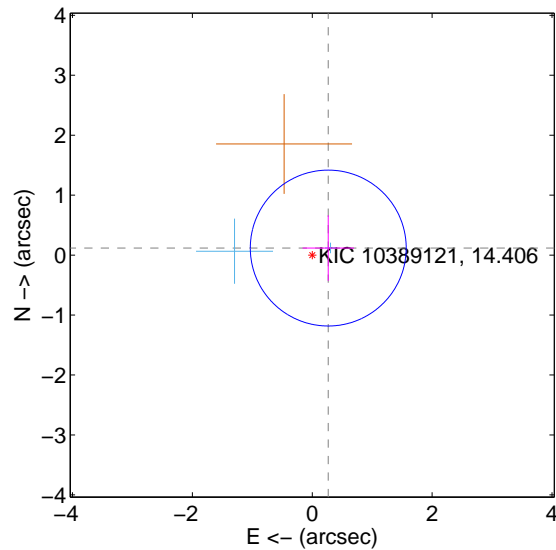
Supplemental centroid analysis for 010389121-03. Kepler magnitude: 14.41. Transit SNR 6.10

There are 2 quarters with good PRF difference image offsets

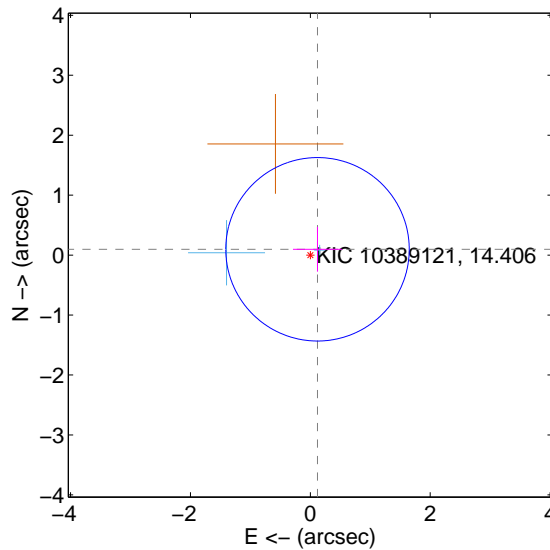
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.292 ± 0.433	0.67	-0.267 ± 0.429	0.117 ± 0.547
PRF-fit source offset from KIC position	0.154 ± 0.510	0.30	-0.120 ± 0.409	0.097 ± 0.373
photometric centroid source offset	0.69 ± 0.89	0.77	0.07 ± 0.91	0.68 ± 0.89

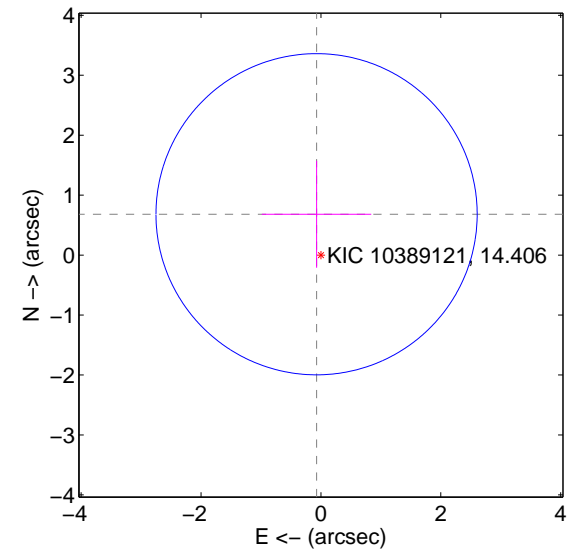
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

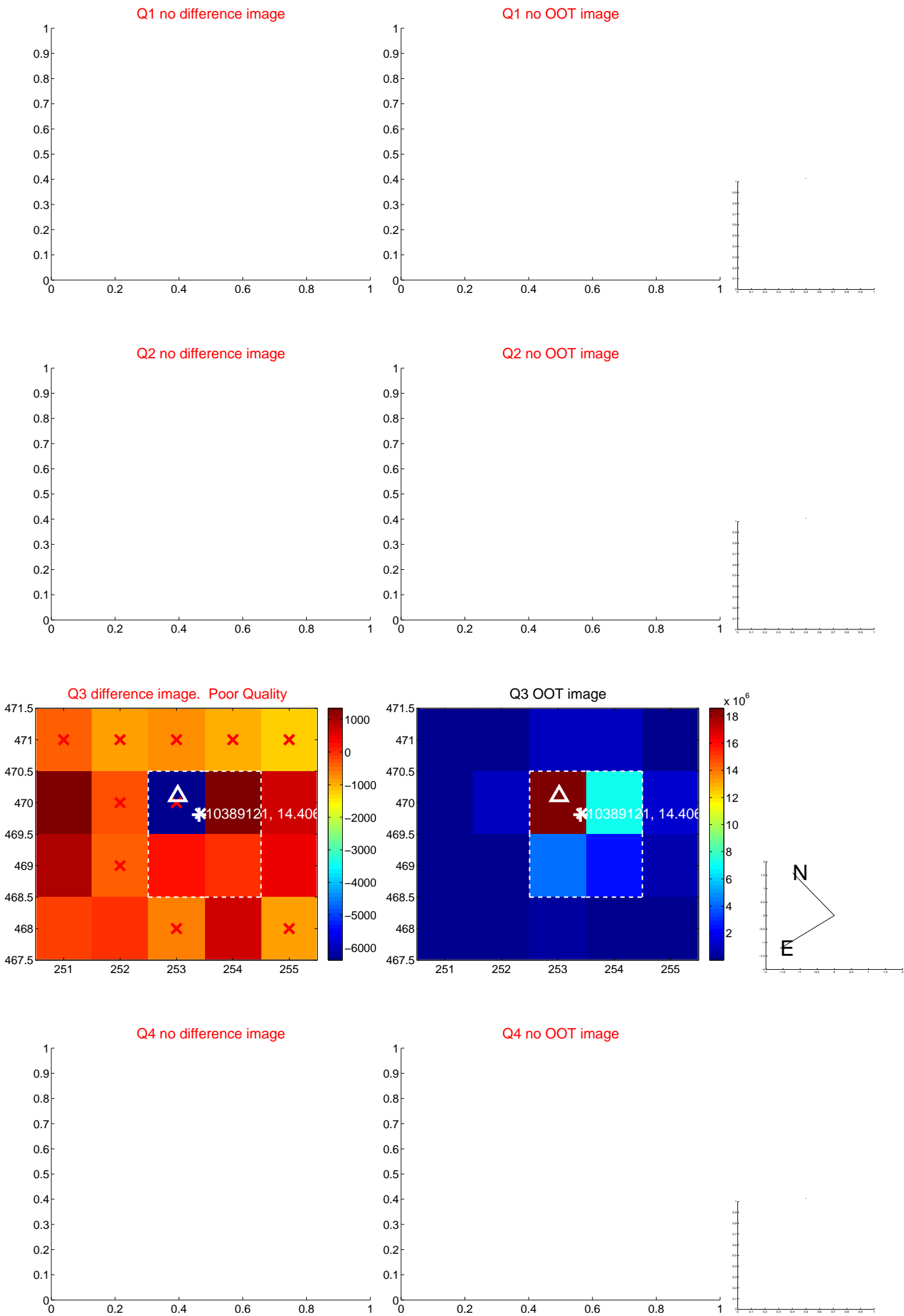


offset from photometric centroids

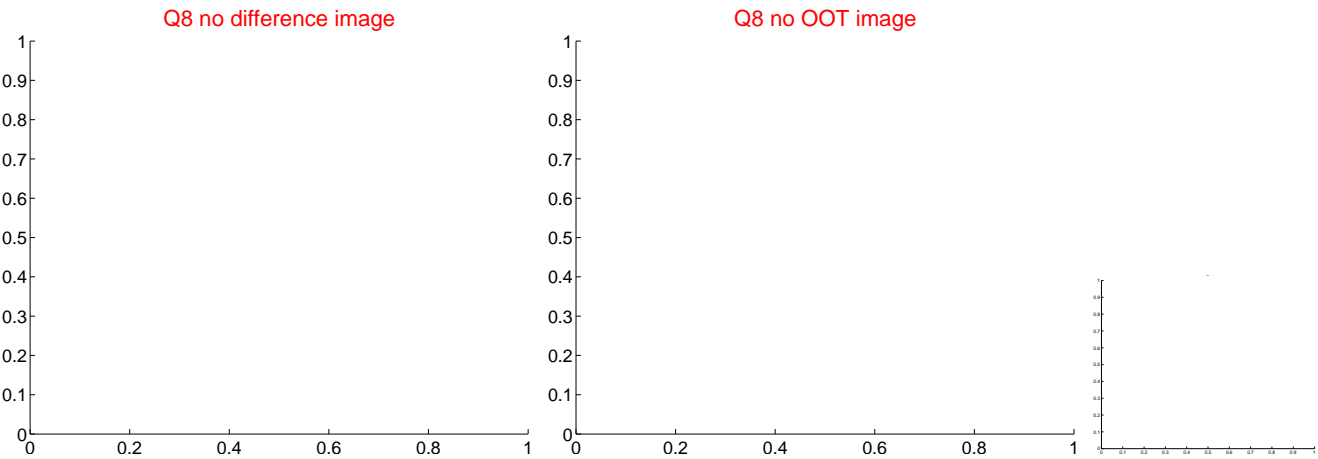
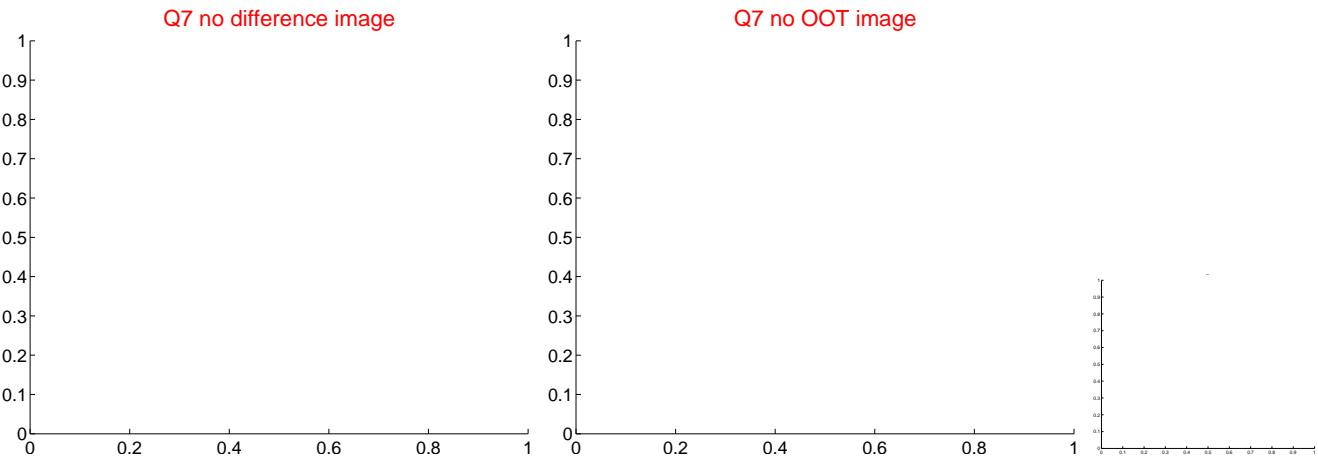
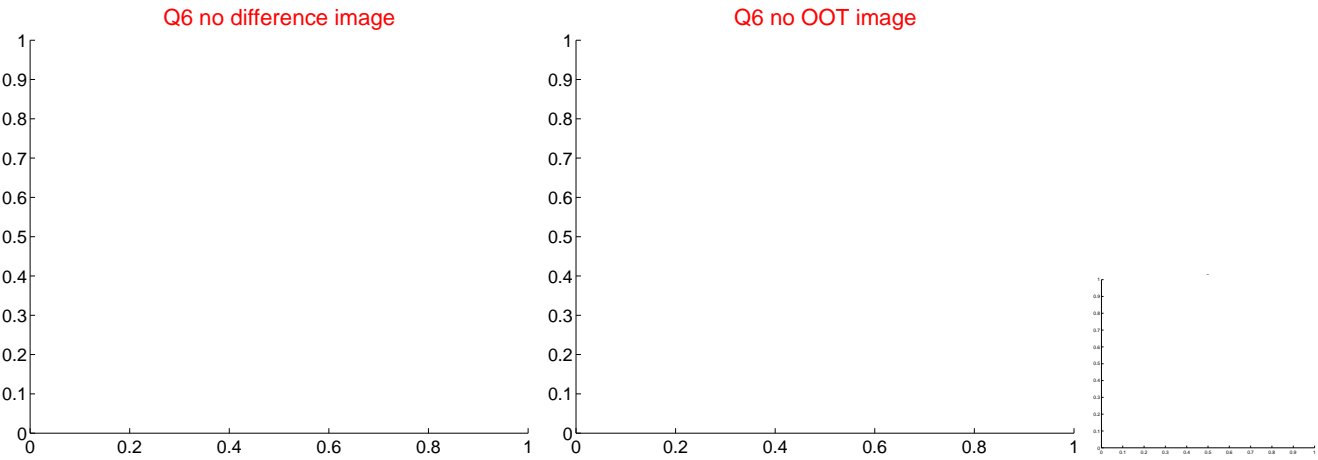
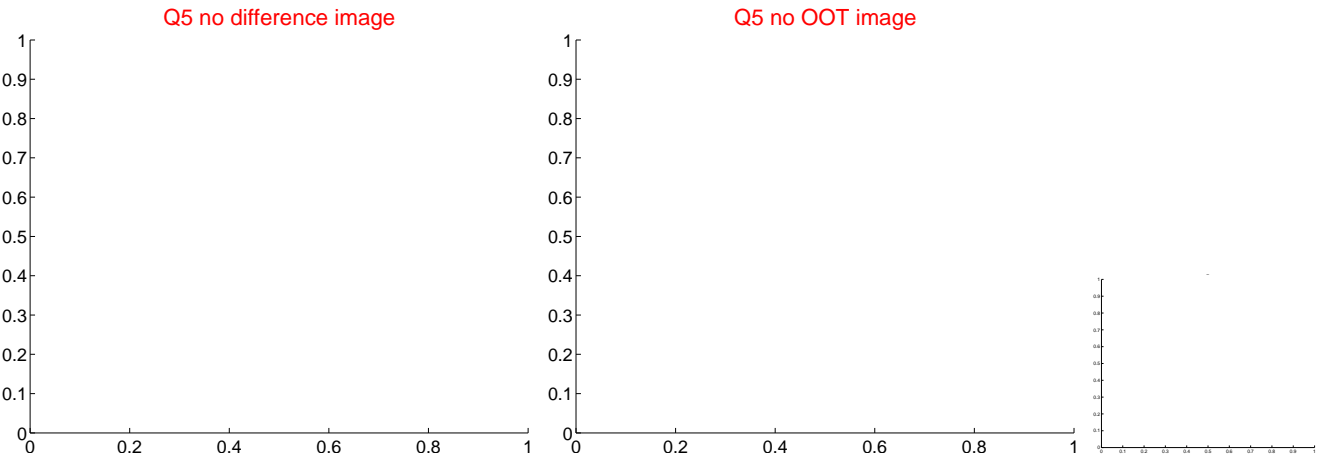


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

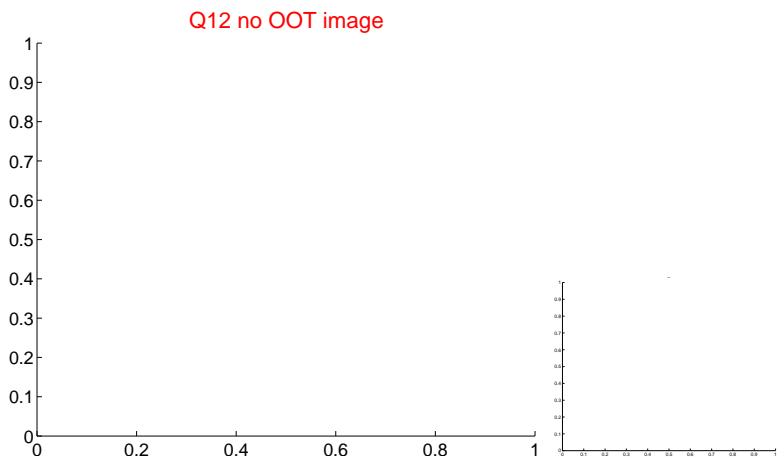
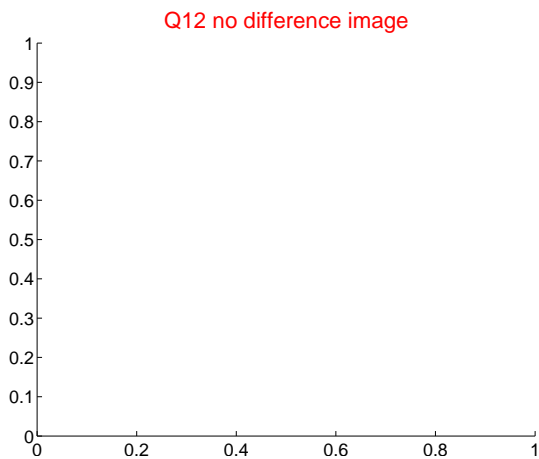
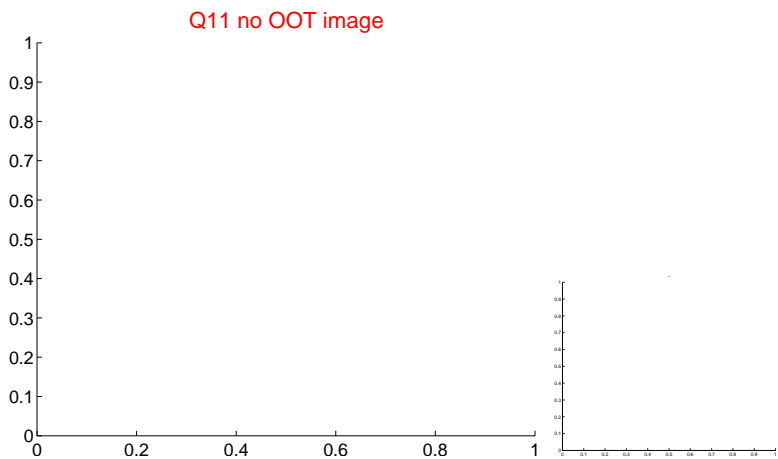
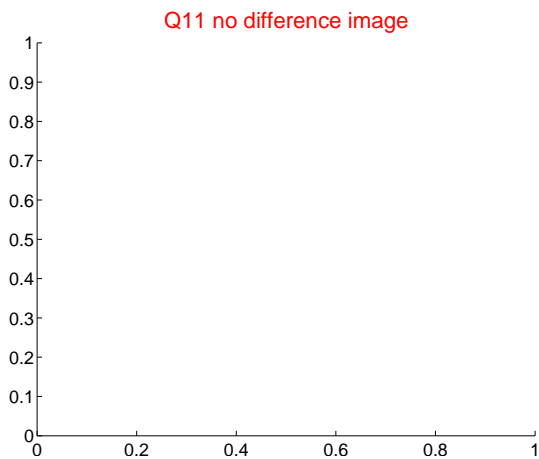
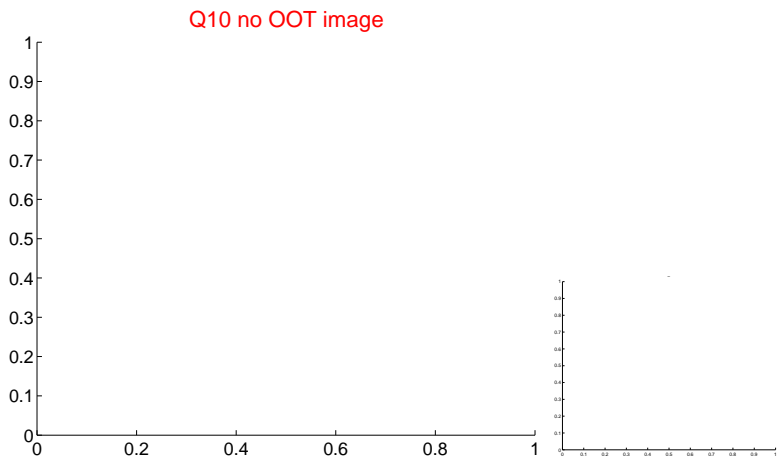
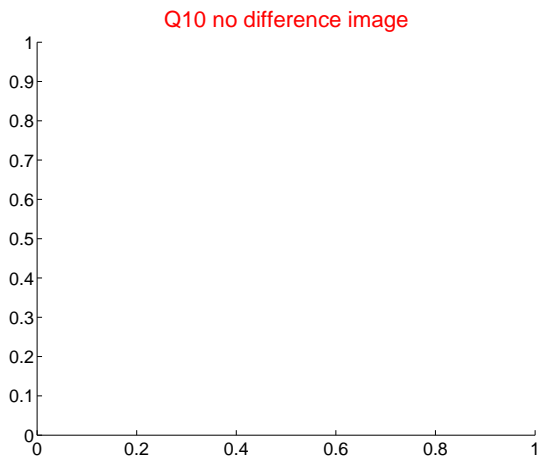
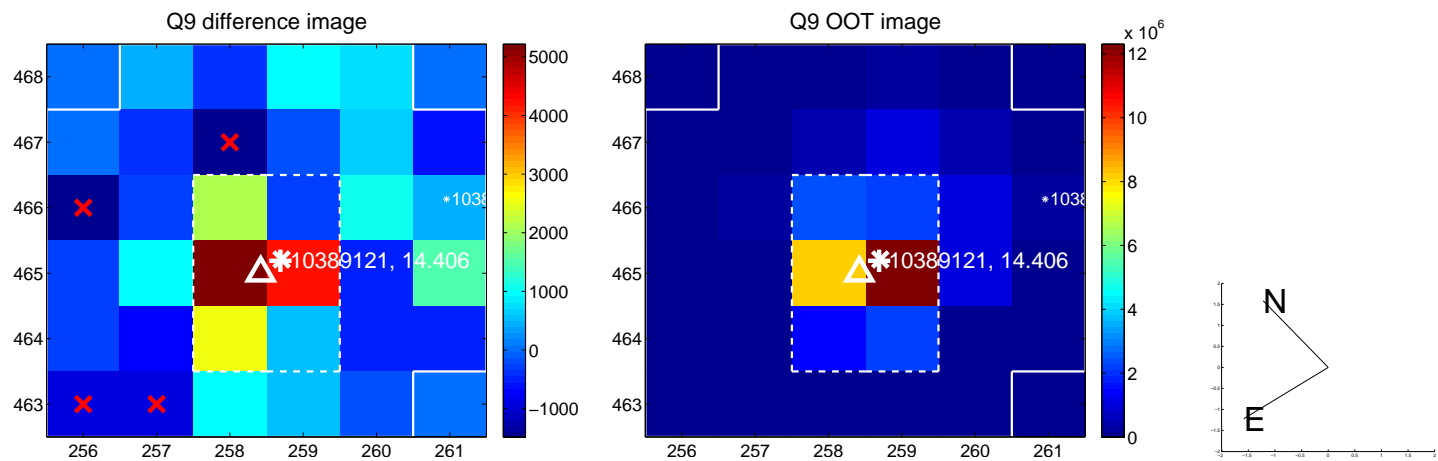
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



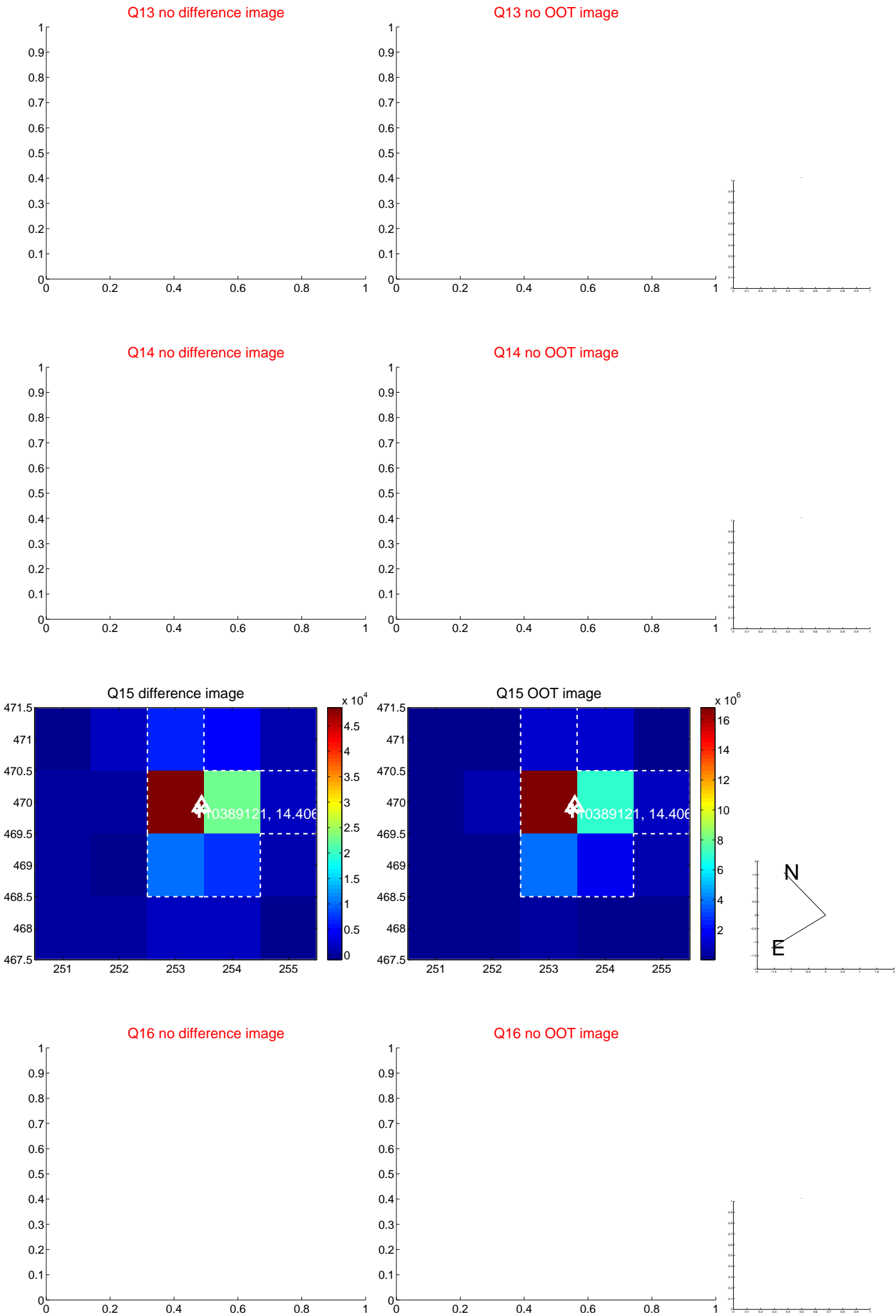
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



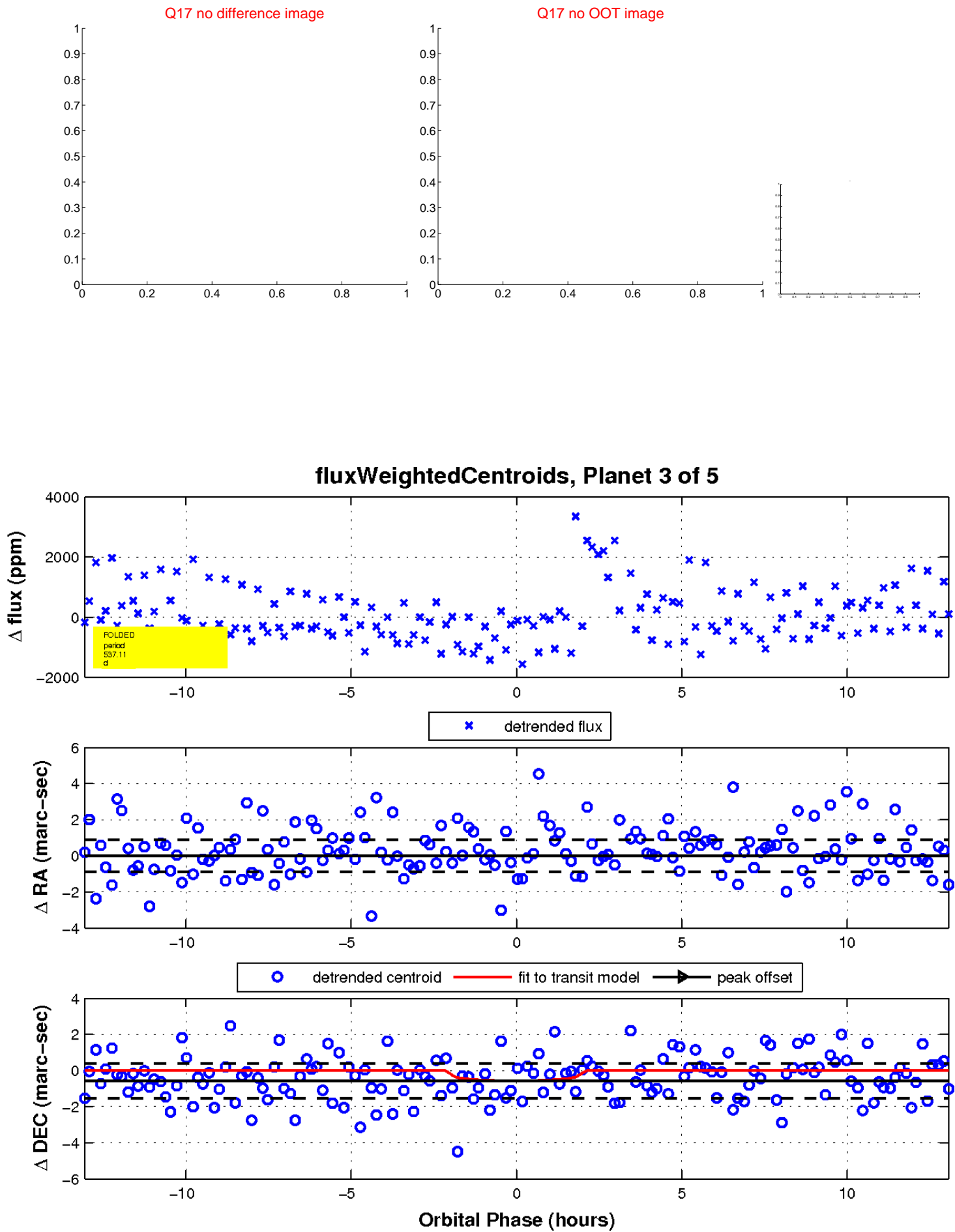
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

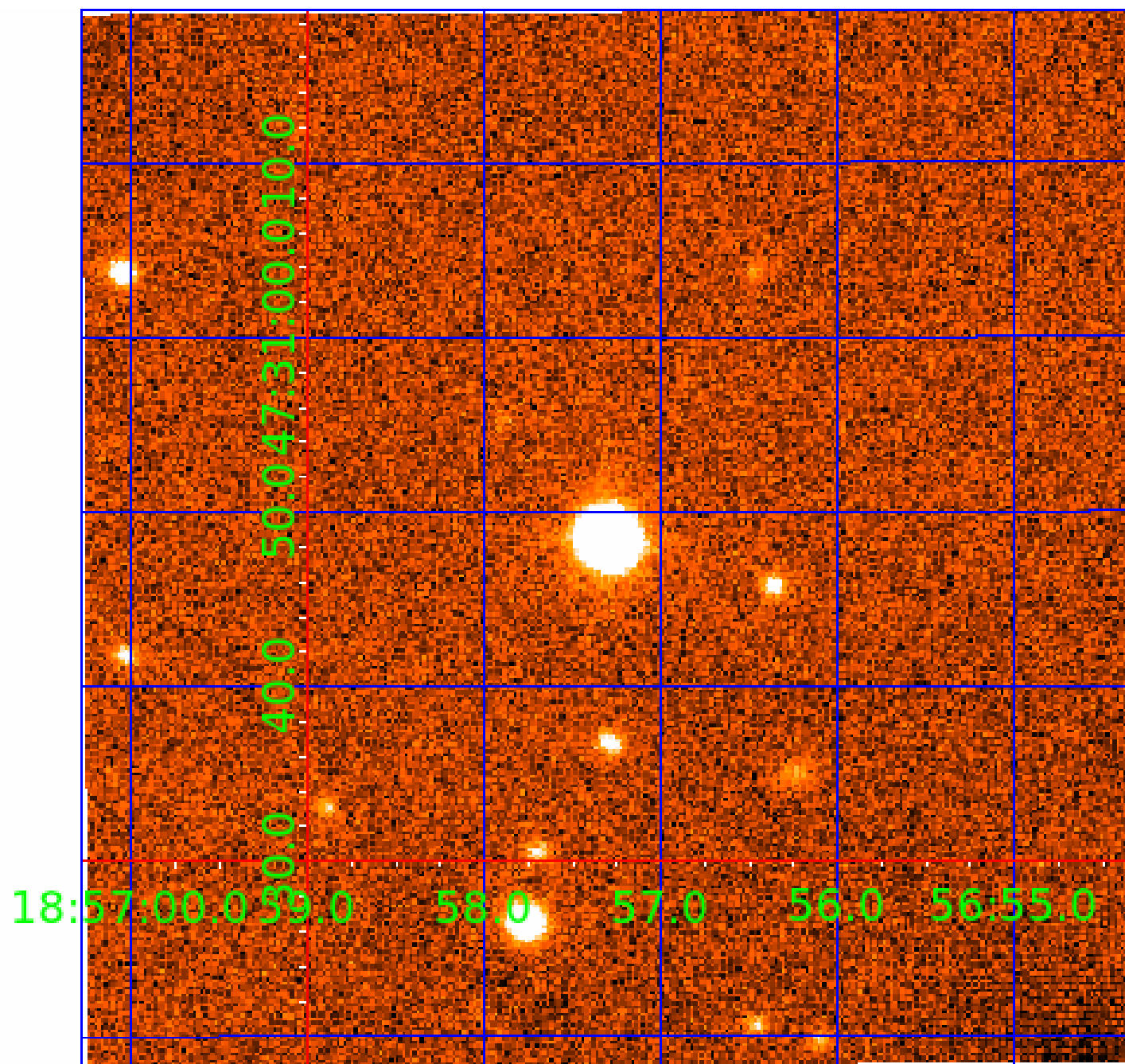


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010389121

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})
010389121-01	OBS	No	409.467824	370.511359	1242.4	7.779	15.2	5.8	0.57	4638	2.01	0.17
010389121-02	OBS	No	279.622957	166.895186	410.5	3.333	12.9	2.7	0.57	4638	1.32	0.28
010389121-03	OBS	No	537.112135	317.884026	873.7	4.367	14.5	6.1	0.57	4638	1.91	0.12
010389121-04	OBS	No	332.140216	305.582179	897.1	3.741	12.4	5.0	0.57	4638	1.72	0.22
010389121-05	OBS	No	507.258664	197.435820	932.1	4.272	12.0	5.1	0.57	4638	1.69	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010389121-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010389121-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
010389121-03	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—CENT_FEW_DIFFS
010389121-04	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—CENT_FEW_DIFFS
010389121-05	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

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

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

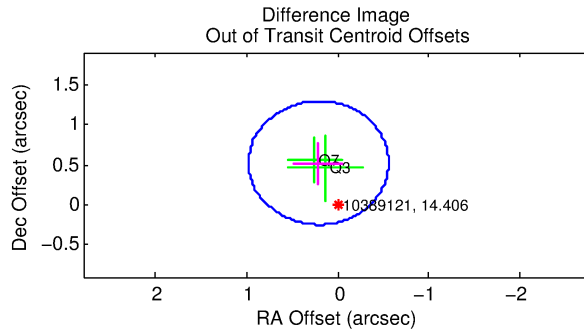
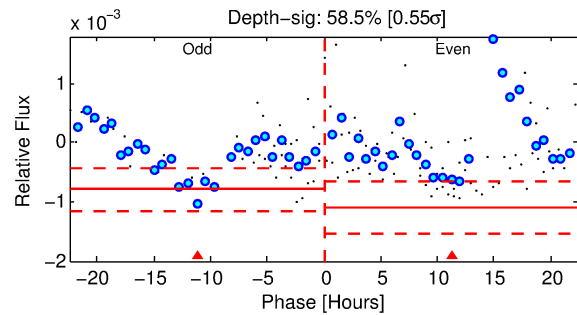
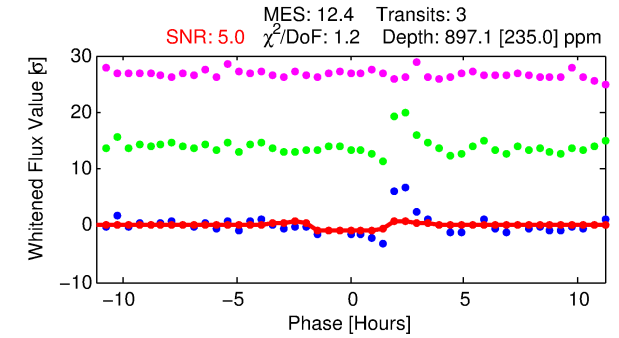
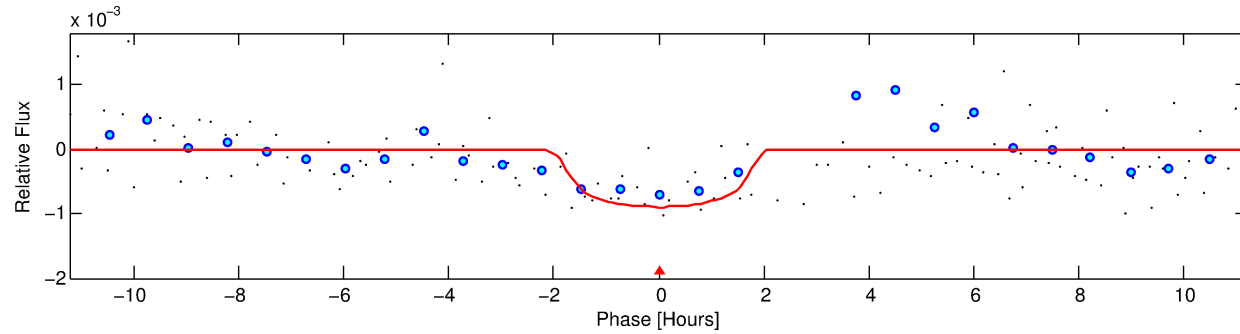
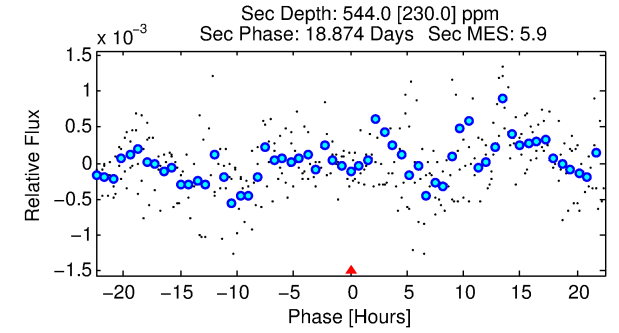
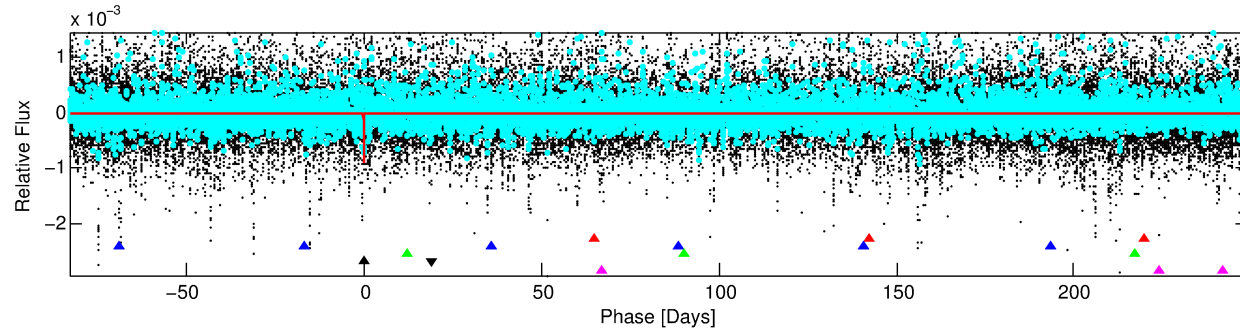
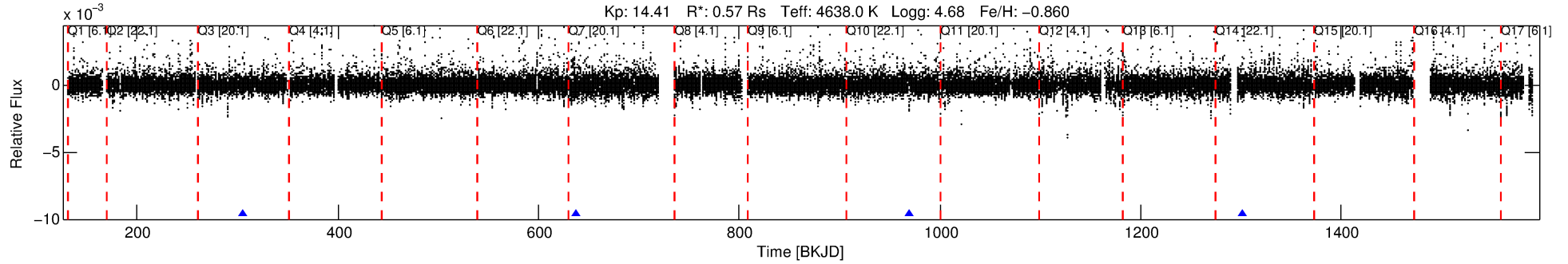
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010389121-04

No Significant Match Found

DV One-Page Summary

KIC: 10389121 Candidate: 4 of 5 Period: 332.140 d



DV Fit Results:

Period = 332.14022 [0.00474] d
Epoch = 305.5822 [0.0098] BKJD
Rp/R* = 0.0276 [0.0887]
a/R* = 616.54 [6823.51]
b = 0.48 [18.09]
Seff = 0.22 [0.03]
Teq = 175 [7] K
Rp = 1.72 [5.52] Re
a = 0.7753 [0.0498] AU
Ag = 61032.24 [393034.98] [0.16 σ]
Teffp = 4263 [6864] K [0.60 σ]

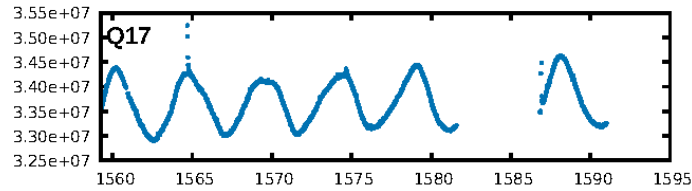
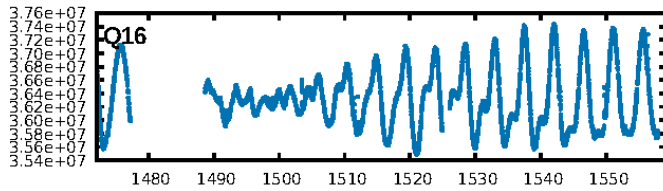
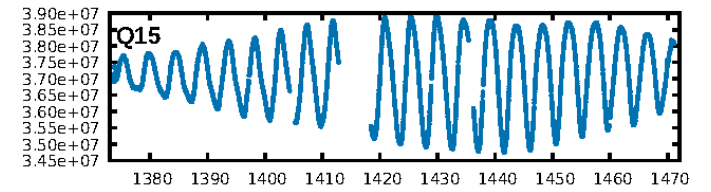
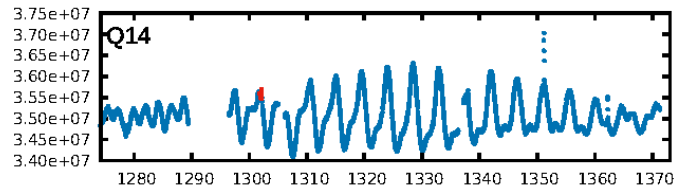
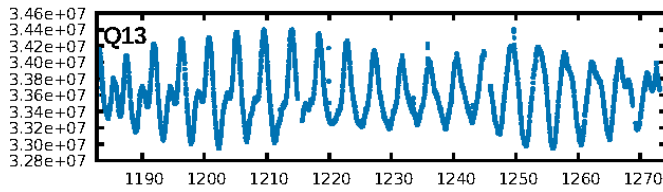
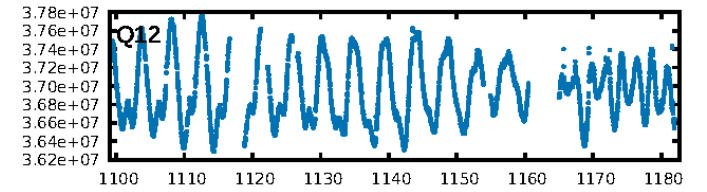
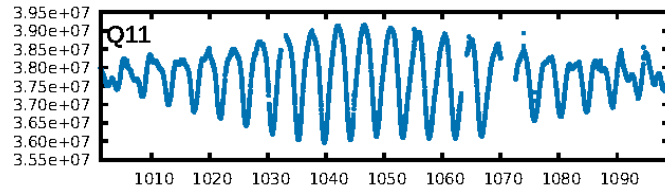
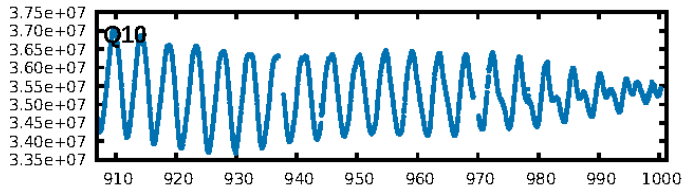
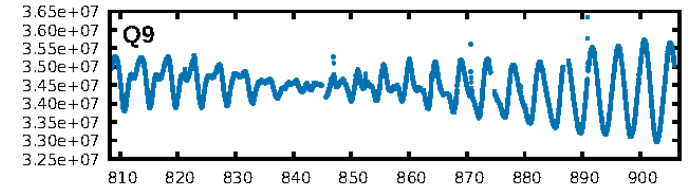
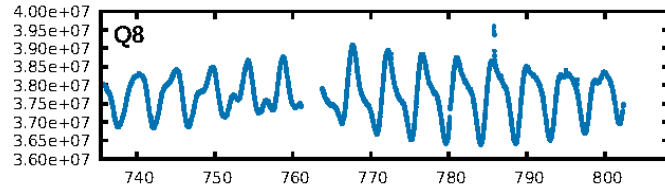
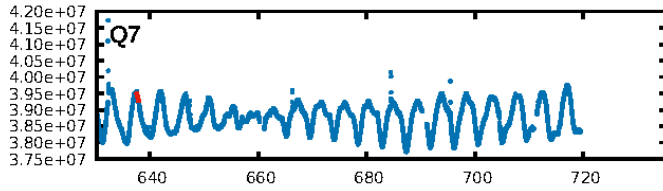
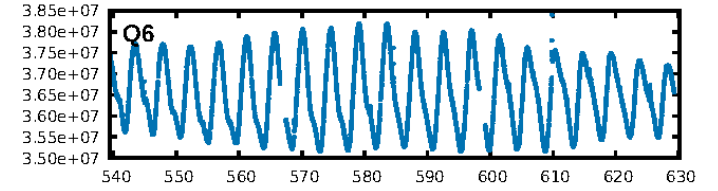
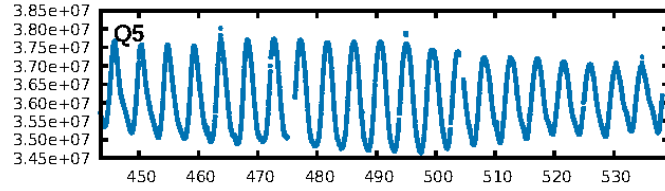
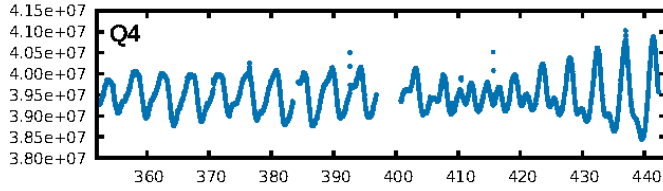
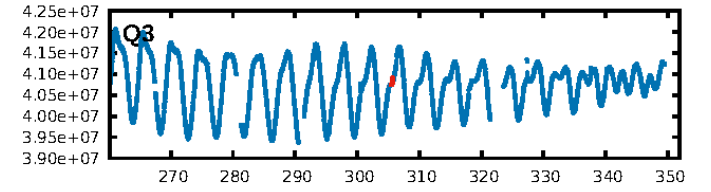
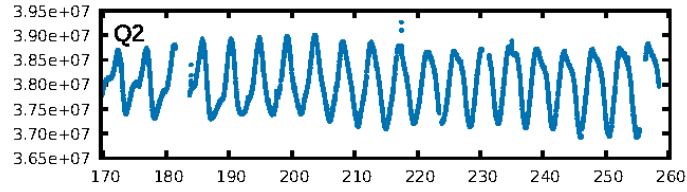
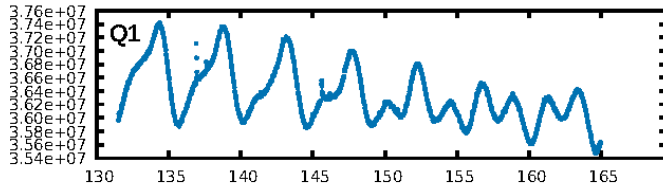
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [251.56 σ]
LongPeriod-sig: 100.0% [215.01 σ]
ModelChiSquare2-sig: 1.1%
ModelChiSquareGof-sig: 82.0%
Bootstrap-pfa: 6.99e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -4.025
Centroid-sig: 90.3%
Centroid-so: 0.318 arcsec [0.36 σ]
OotOffset-rm: 0.562 arcsec [2.19 σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-rm: 0.590 arcsec [2.28 σ]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

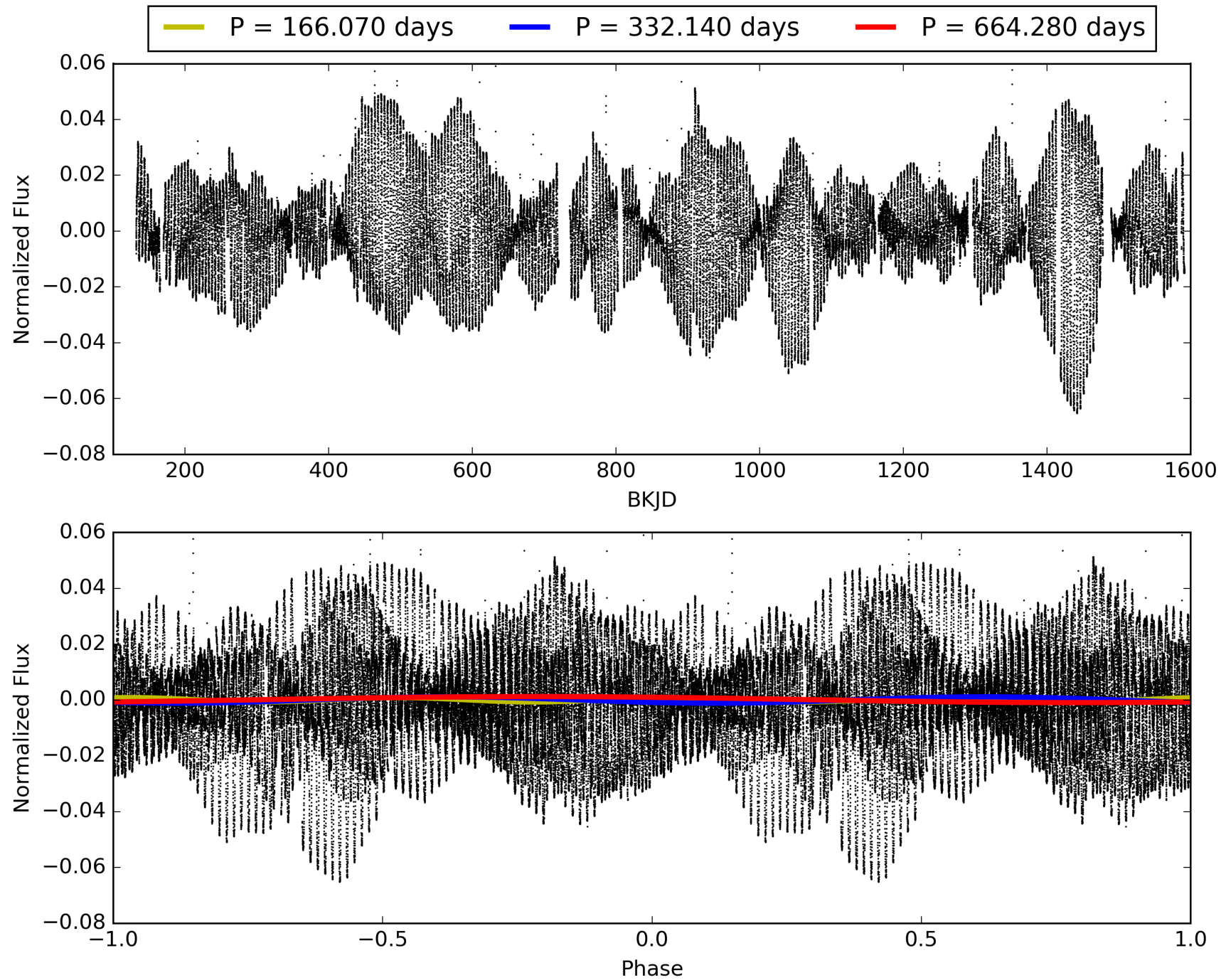
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:43:14 Z

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

TCE 010389121-04, PDC Light Curves

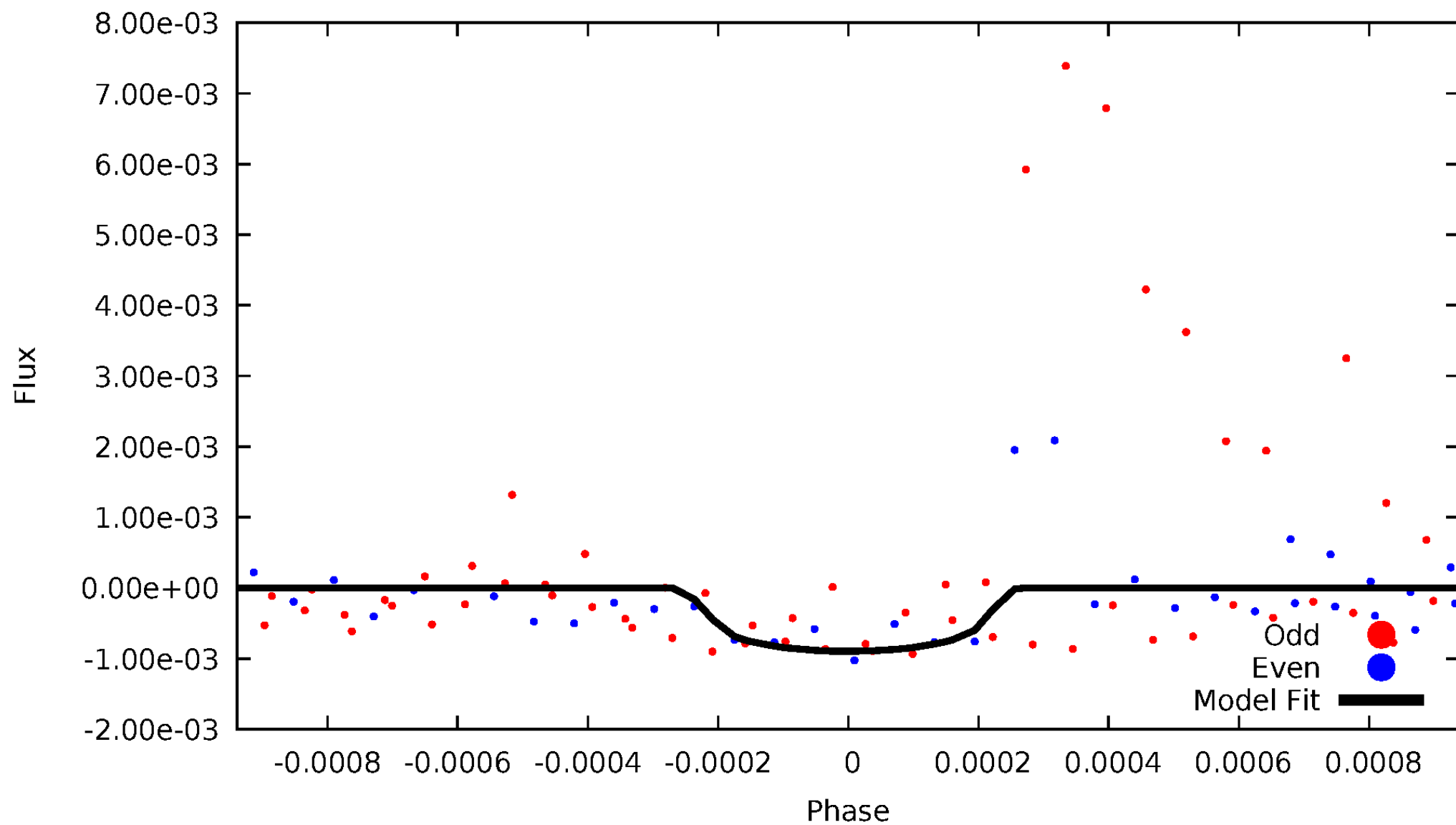


TCE 010389121-04



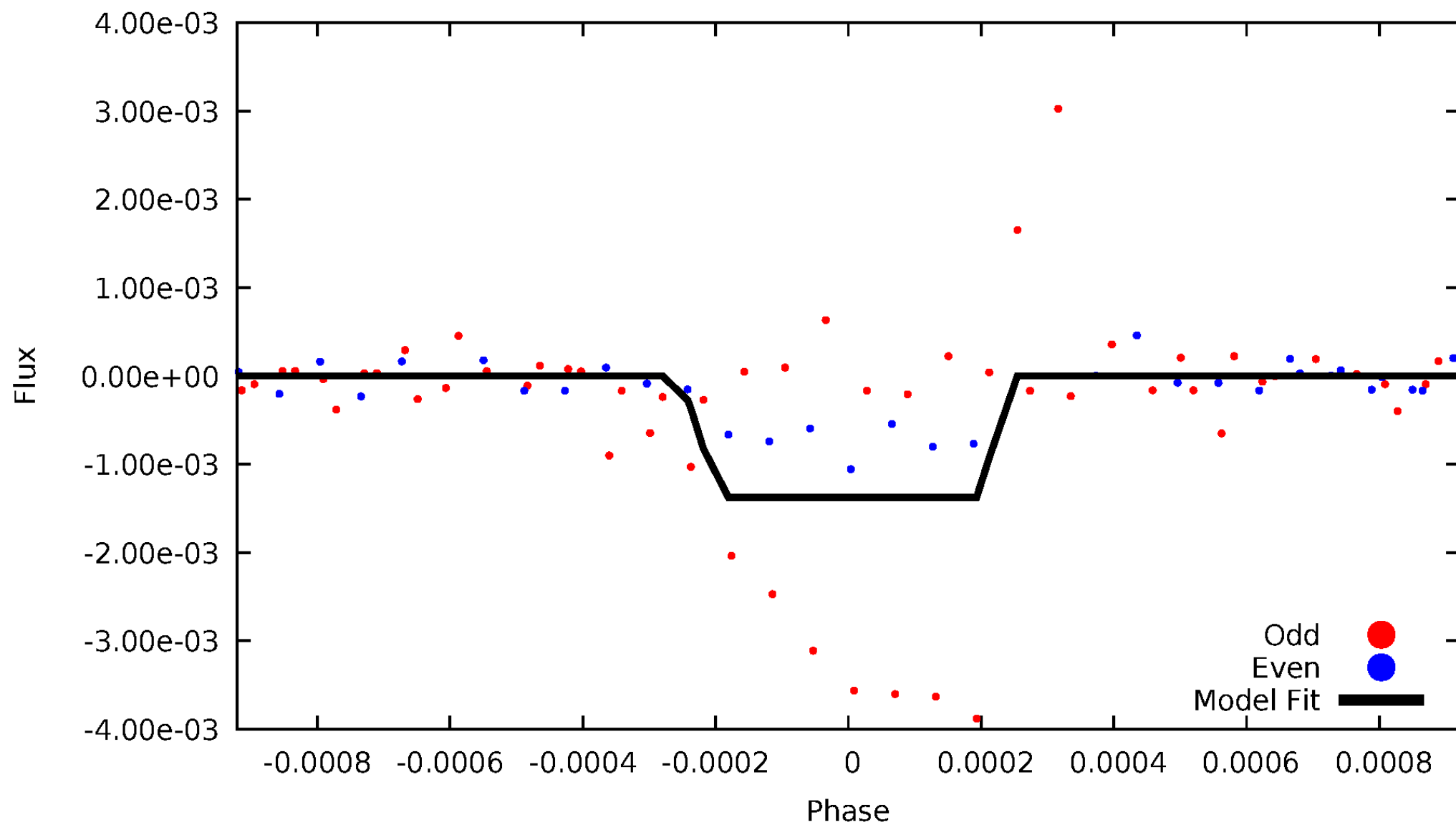
DV Odd/Even

TCE 010389121-04



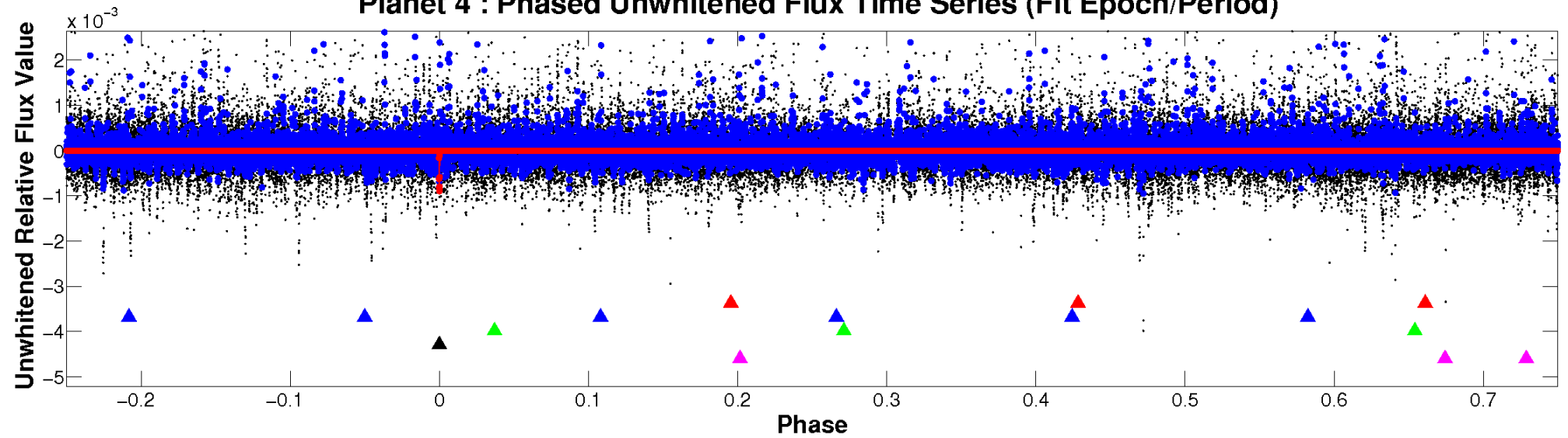
ALT Odd/Even

TCE 010389121-04

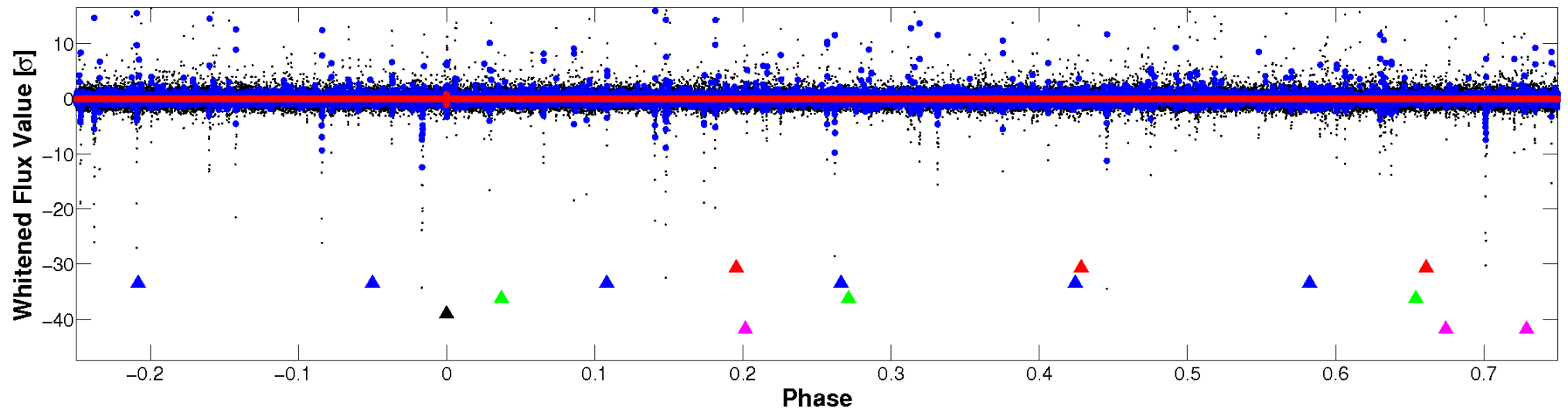


Non-Whitened Vs. Whitened Light Curve

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

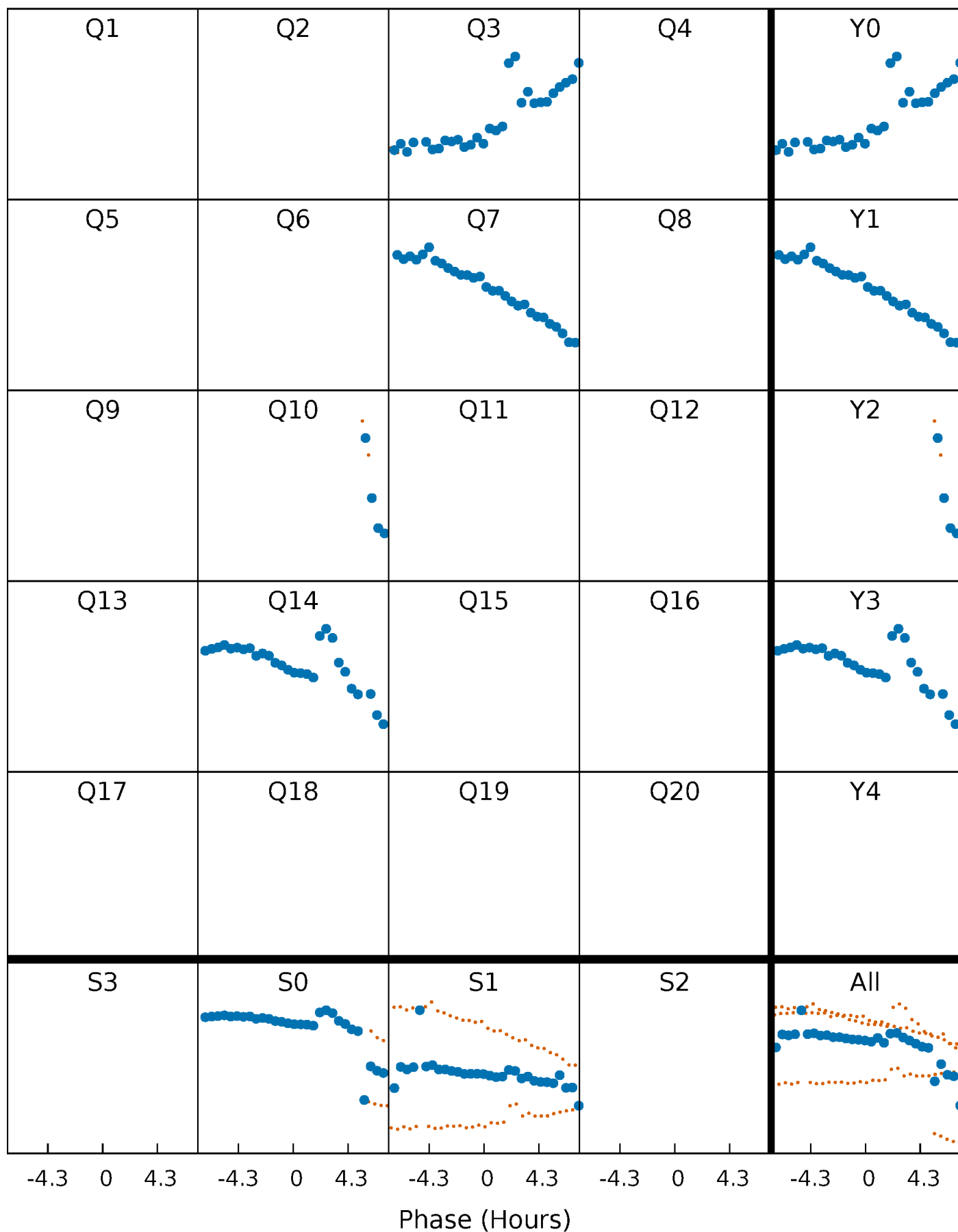


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



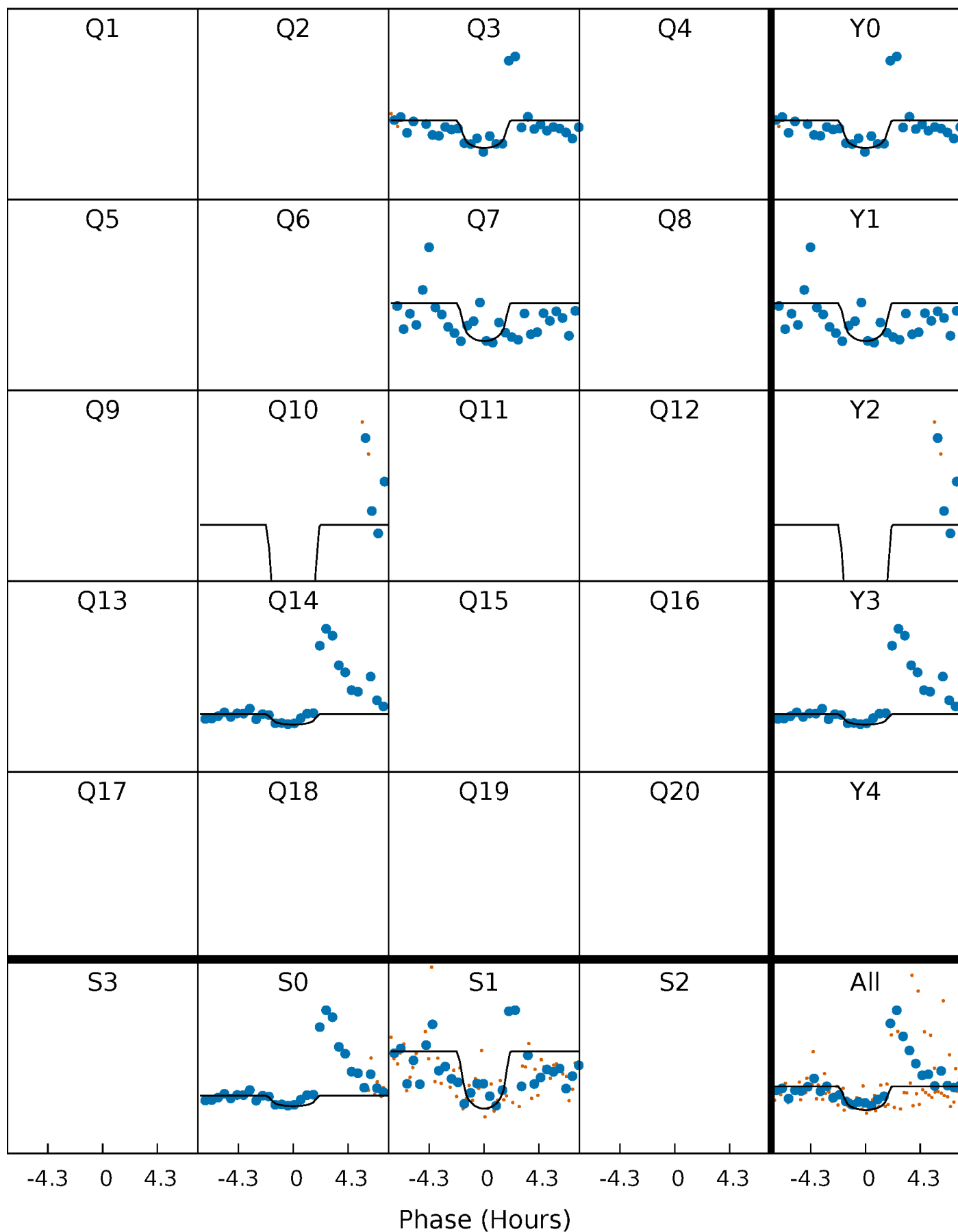
PDC Quarter-Phased Transit Curves

TCE 010389121-04 P=332.140216 Days $T_0=305.582179$ (BKJD)



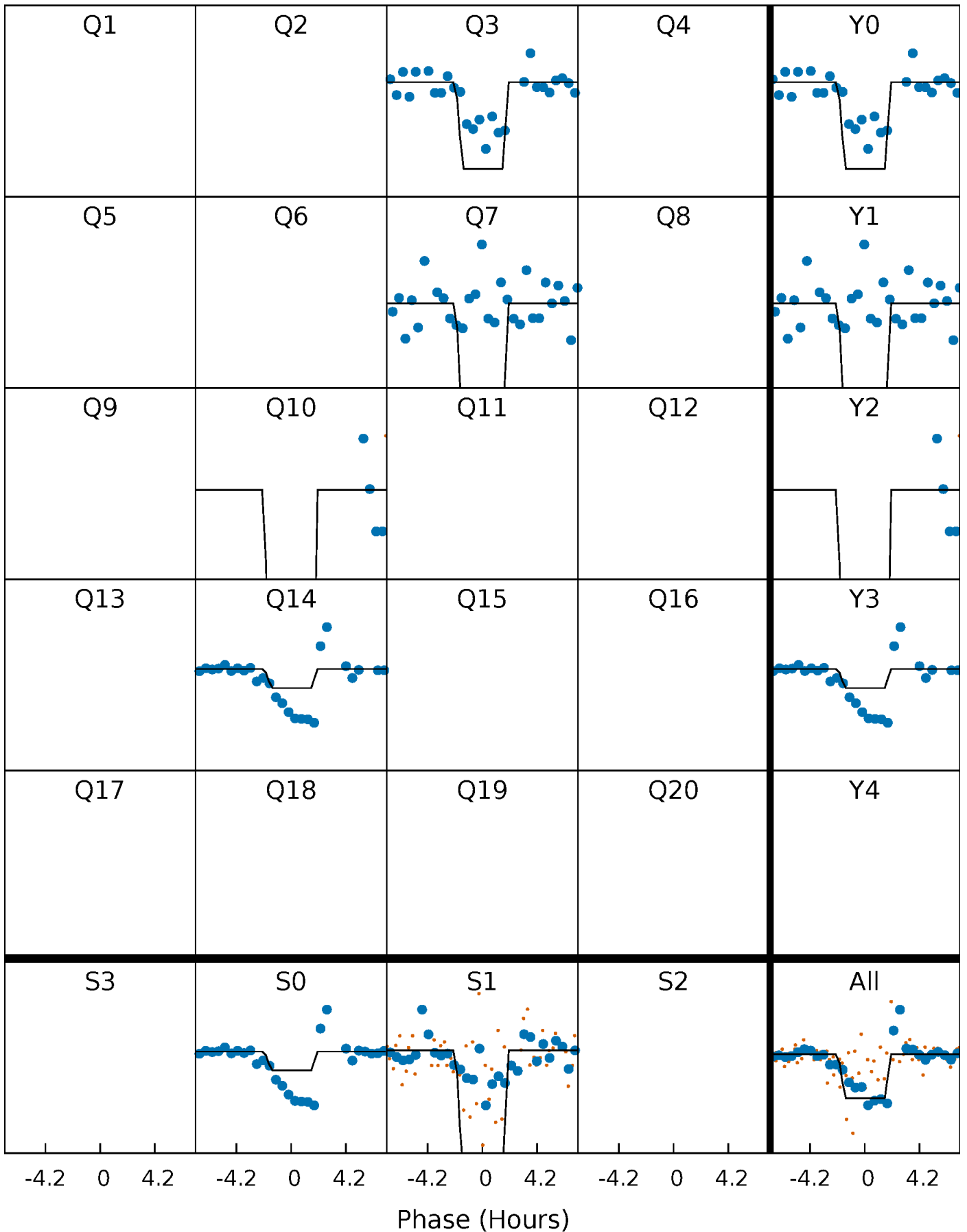
DV Quarter-Phased Transit Curves

TCE 010389121-04 P=332.140216 Days $T_0=305.582179$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

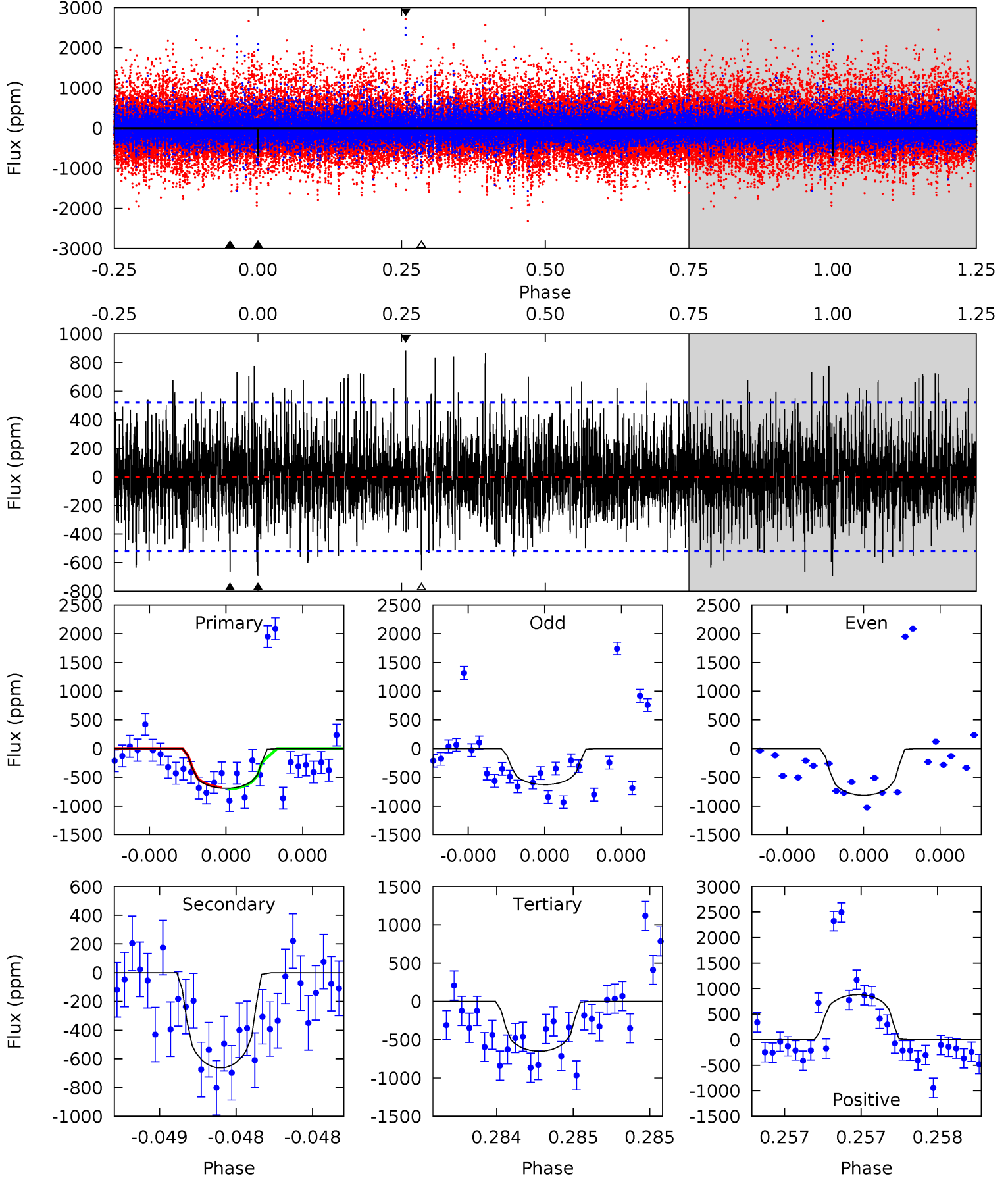
TCE 010389121-04 P=332.141572 Days $T_0=305.583987$ (BKJD)



DV Model-Shift Uniqueness Test

010389121-04, P = 332.140216 Days, E = 305.582179 Days

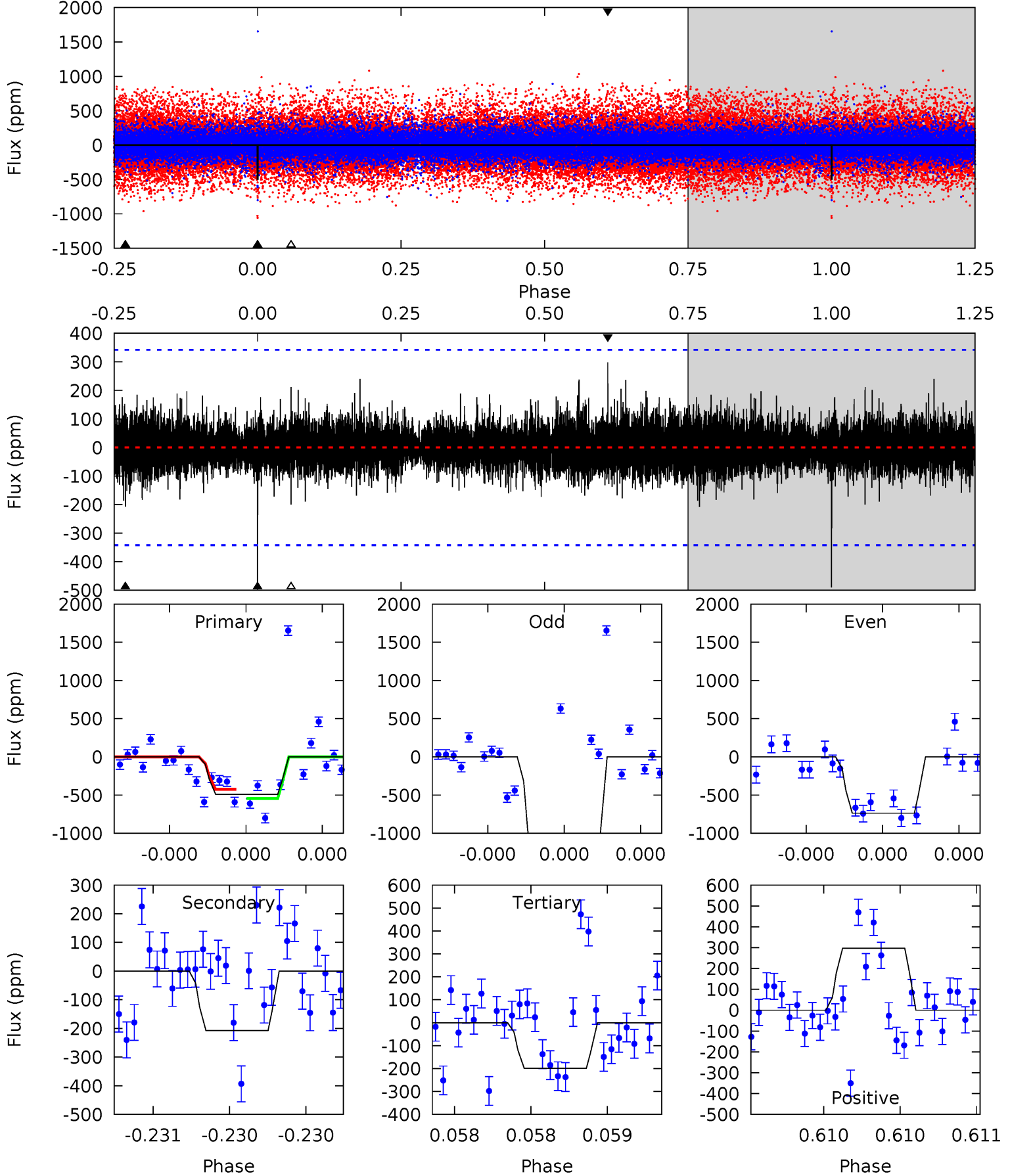
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.43	7.12	6.99	9.50	5.58	3.49	2.01	0.45	-2.07	0.13	-2.38	0.86	1.04	0.56	0.16



Alt Model-Shift Uniqueness Test

010389121-04, P = 332.141572 Days, E = 305.583987 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.00	3.40	3.26	4.86	5.59	3.51	0.78	4.74	3.14	0.14	-1.46	8.24	1.74	0.38	0



Stellar Parameters For KIC 010389121

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4638^{+139}_{-139}	$4.677^{+0.052}_{-0.032}$	$-0.860^{+0.350}_{-0.300}$	$0.570^{+0.043}_{-0.043}$	$0.564^{+0.051}_{-0.028}$	$4.282^{+0.902}_{-0.556}$
	+3%/-3%	+1%/-1%	+41%/-35%	+8%/-8%	+9%/-5%	+21%/-13%
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 010389121-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-663 ± 93	$4.21^{+4.45}_{-2.92}$	244^{+9}_{-8}	3316^{+1733}_{-617}	$12697^{+120063}_{-9758}$
Alt.	-208 ± 61	$4.86^{+4.39}_{-3.12}$	245^{+7}_{-8}	2702^{+995}_{-421}	2931^{+20515}_{-2165}

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 $A_{obs} \gg 1.0$

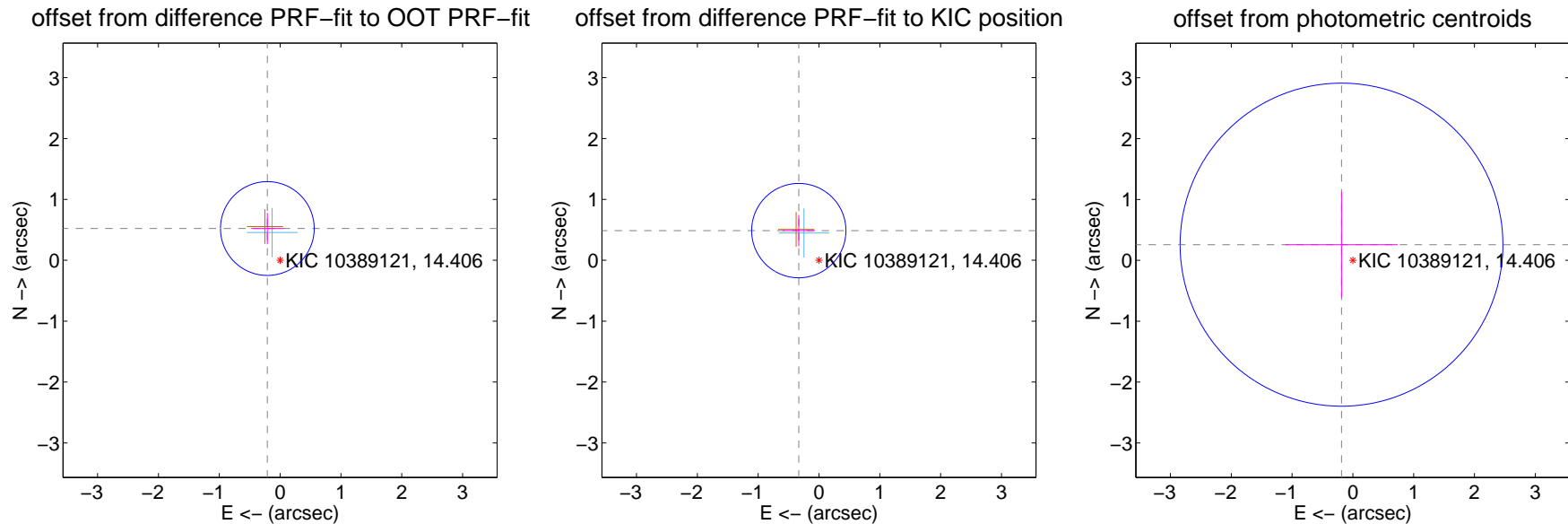
DV Centroid Data

Supplemental centroid analysis for 010389121-04. Kepler magnitude: 14.41. Transit SNR 5.01

There are 1 quarters with good PRF difference image offsets

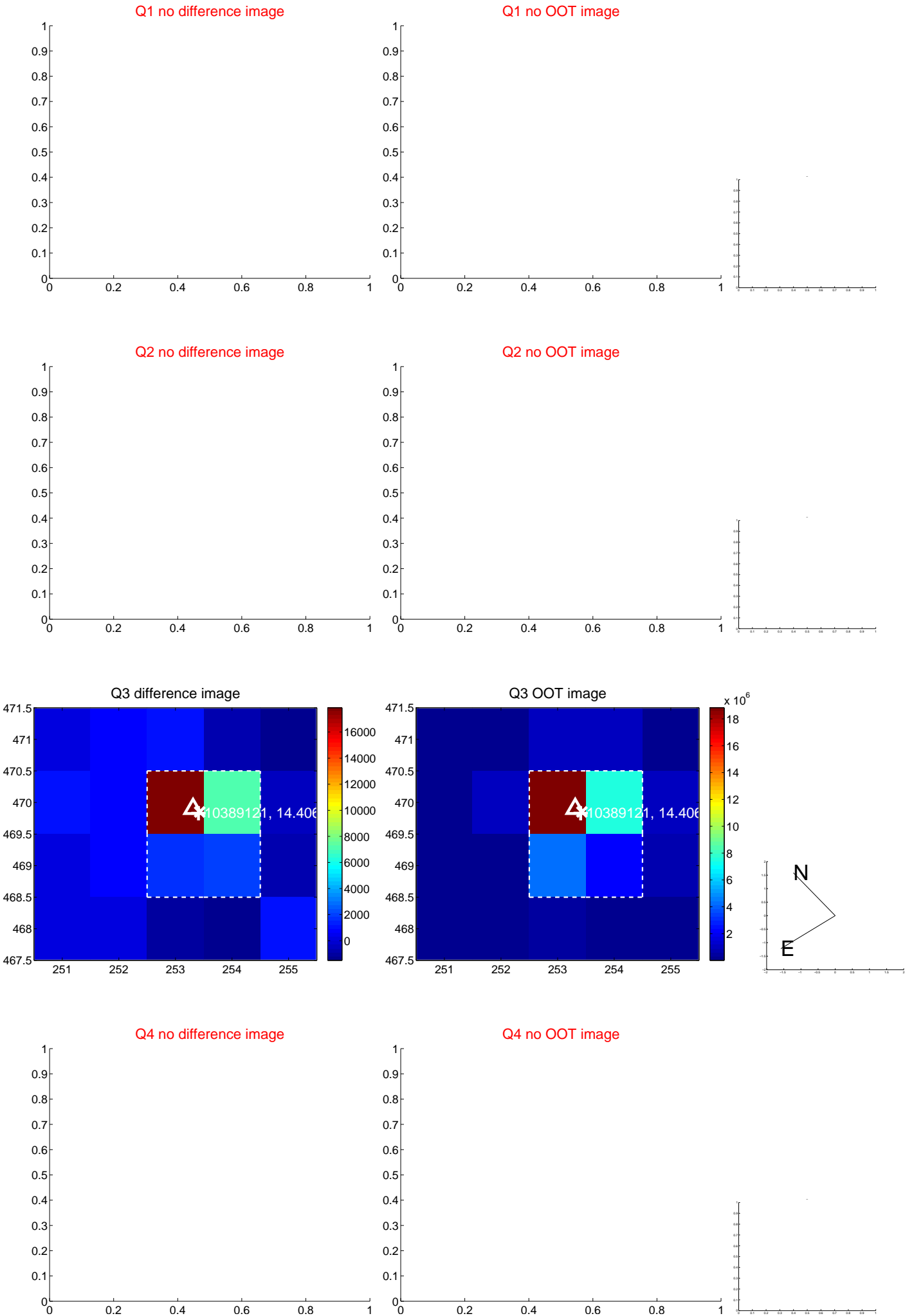
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.562 ± 0.257	2.19	0.210 ± 0.264	0.522 ± 0.256
PRF-fit source offset from KIC position	0.590 ± 0.258	2.28	0.332 ± 0.264	0.488 ± 0.256
photometric centroid source offset	0.32 ± 0.88	0.36	0.19 ± 0.92	0.26 ± 0.86

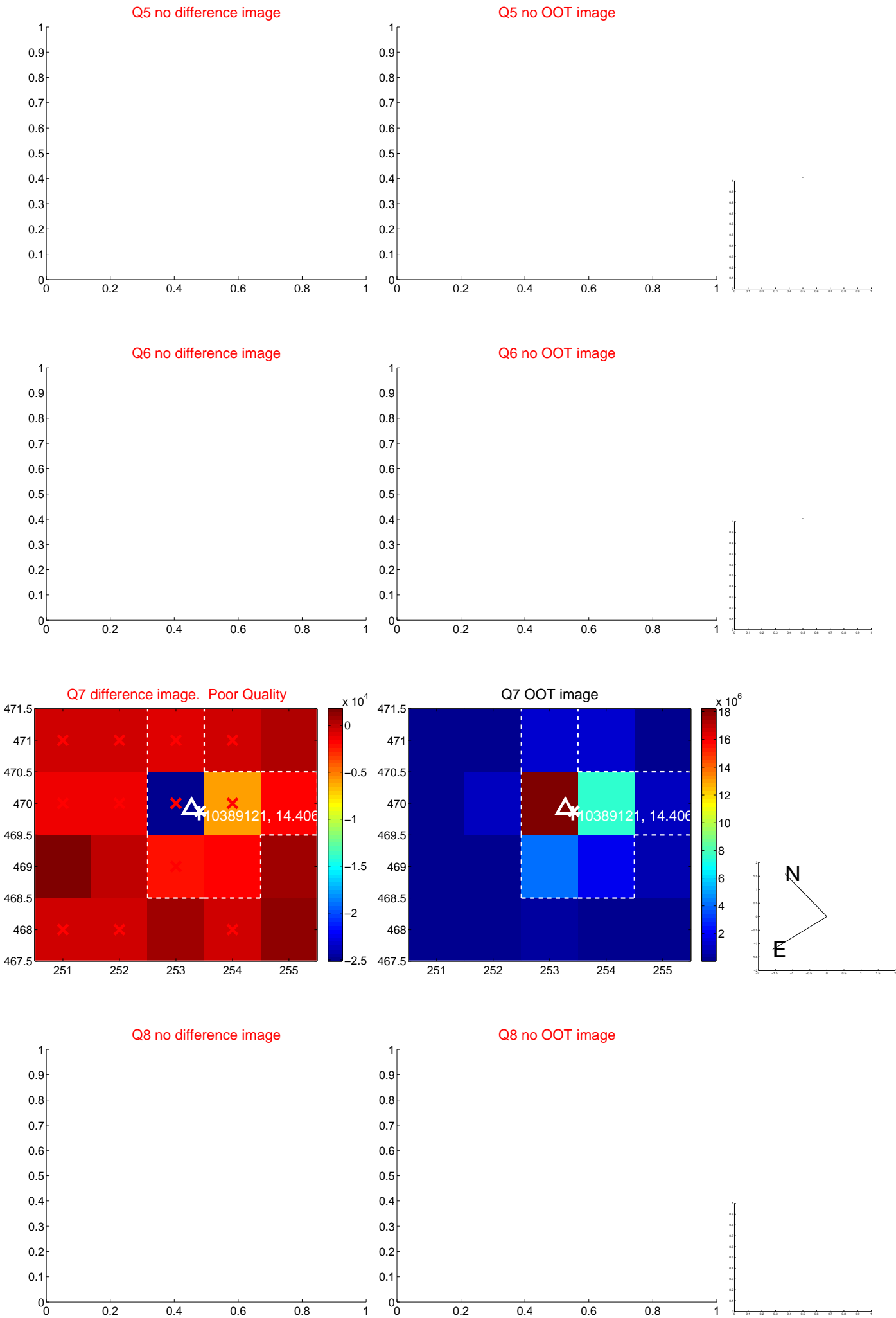


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



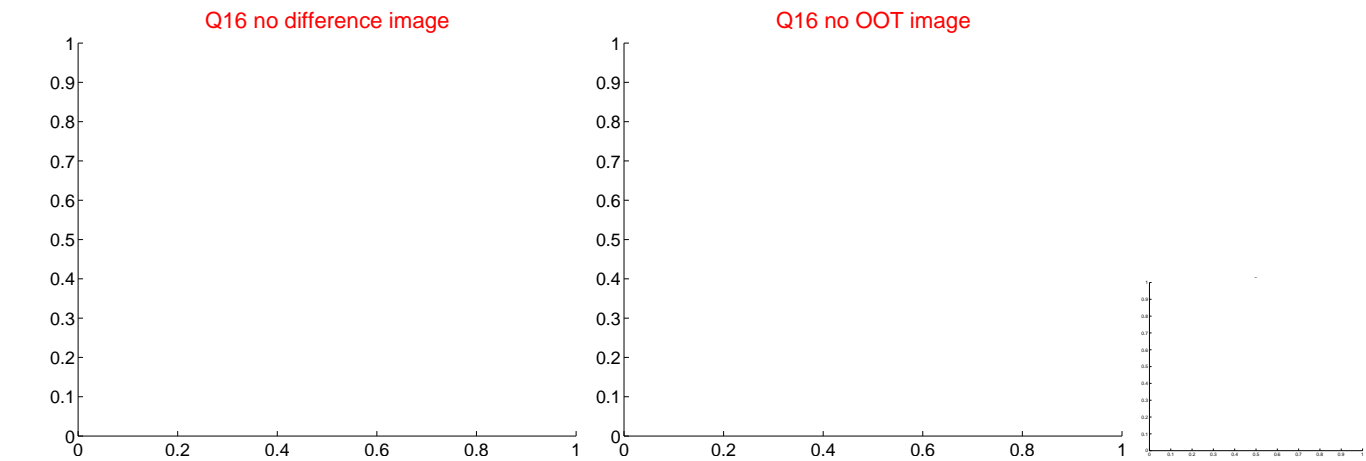
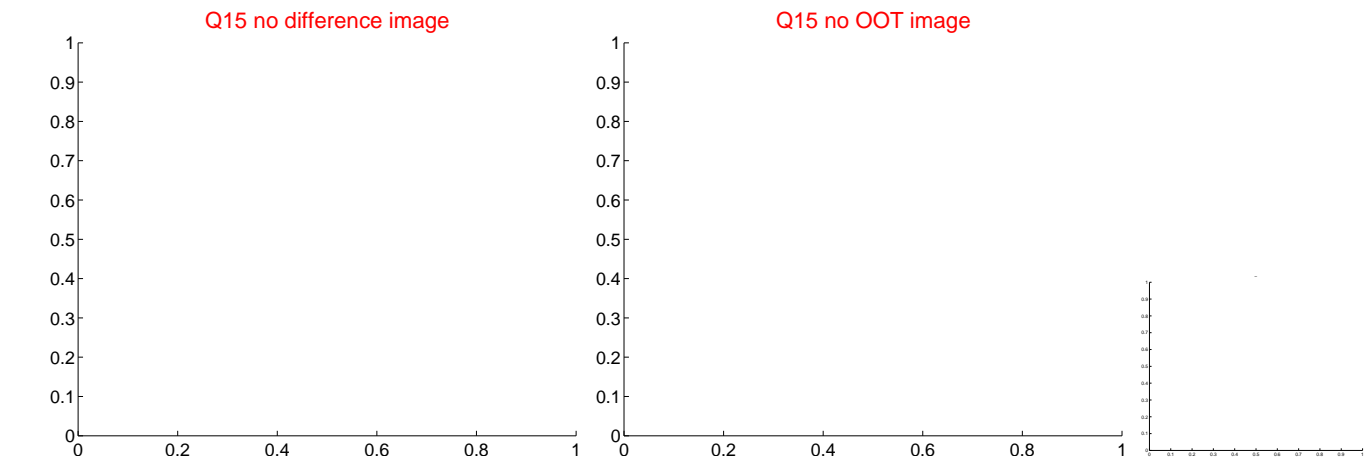
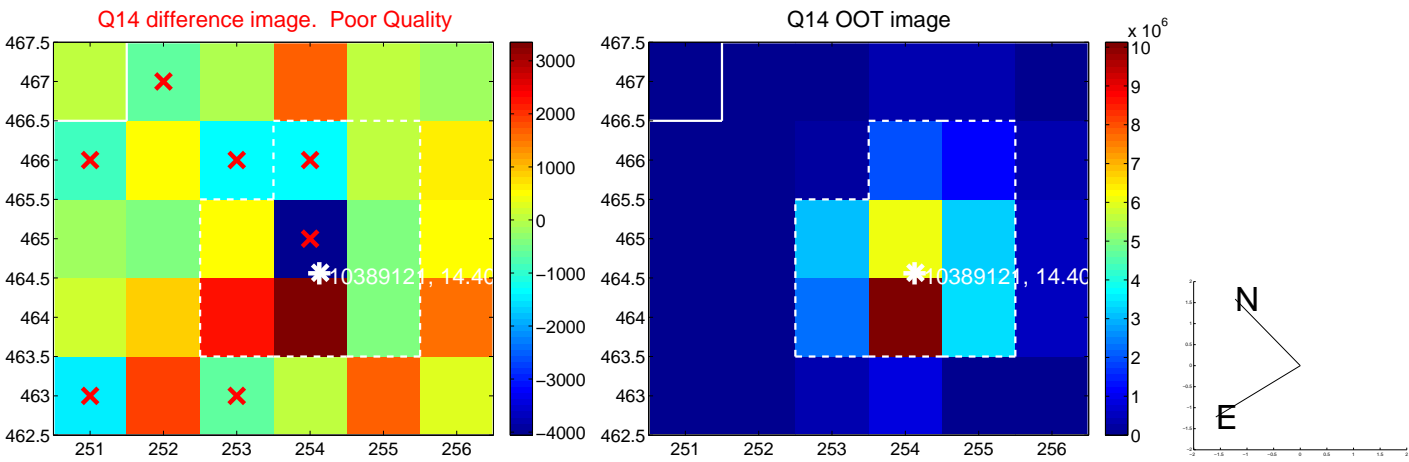
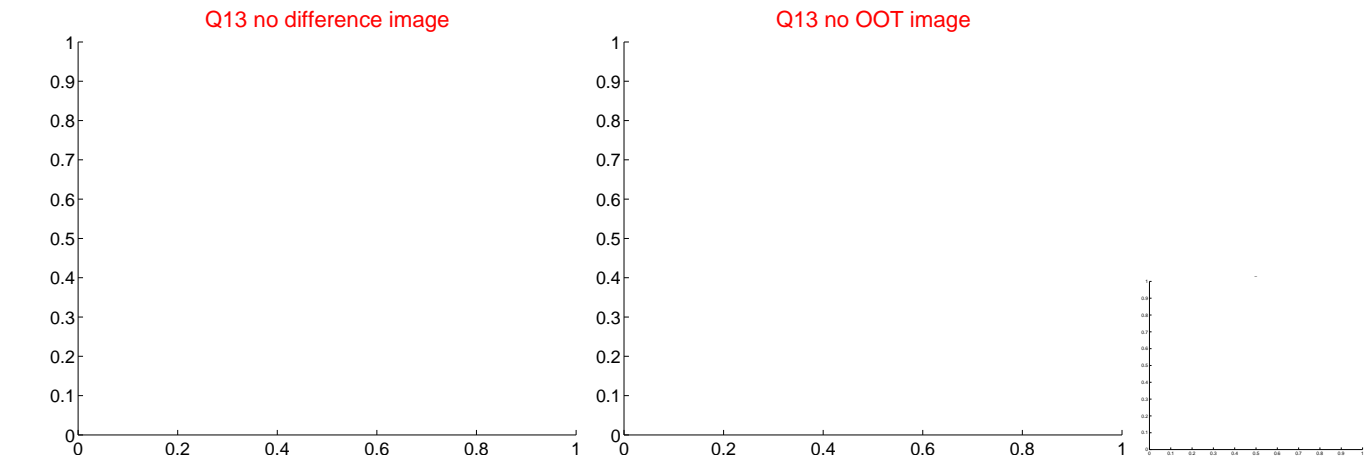
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



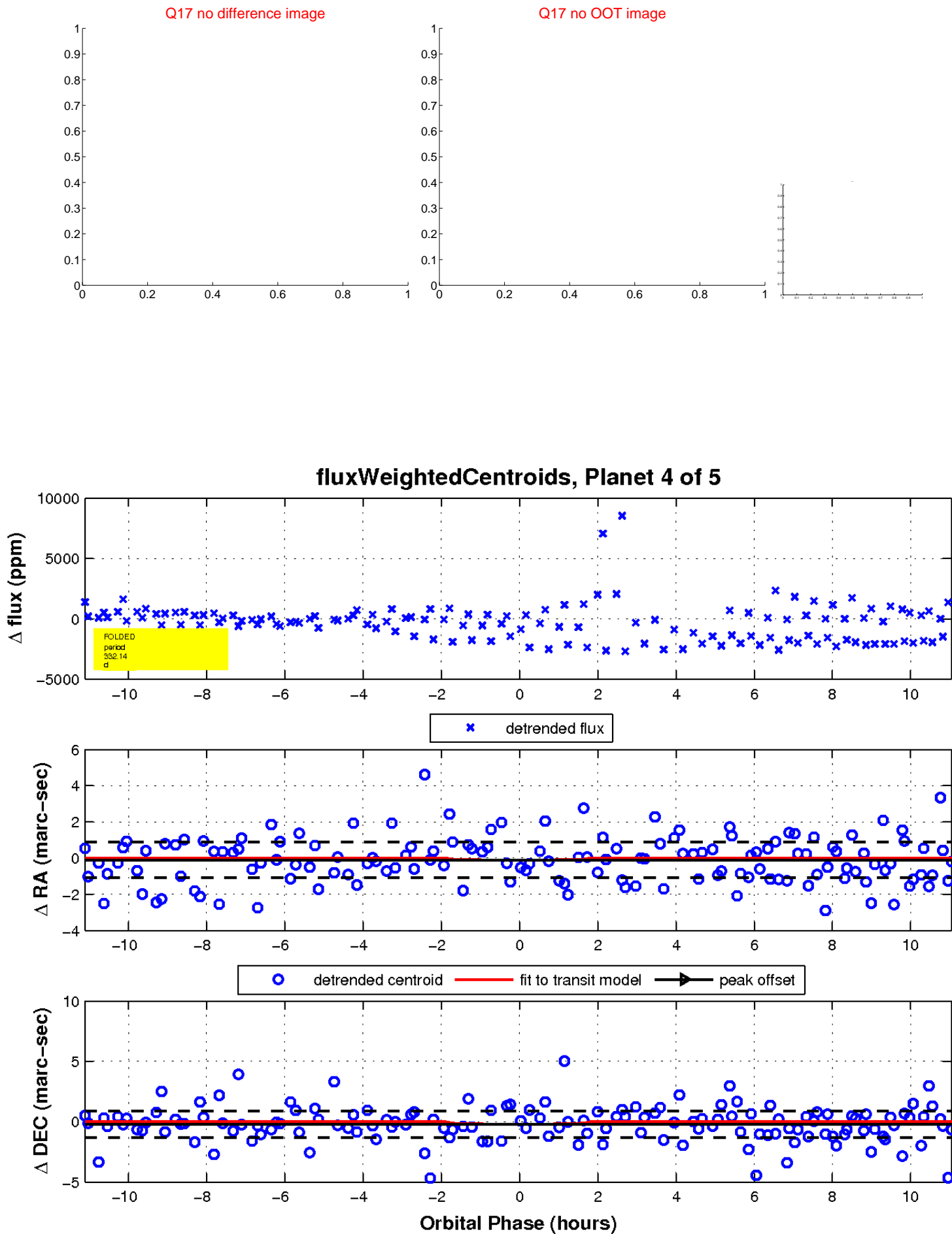
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

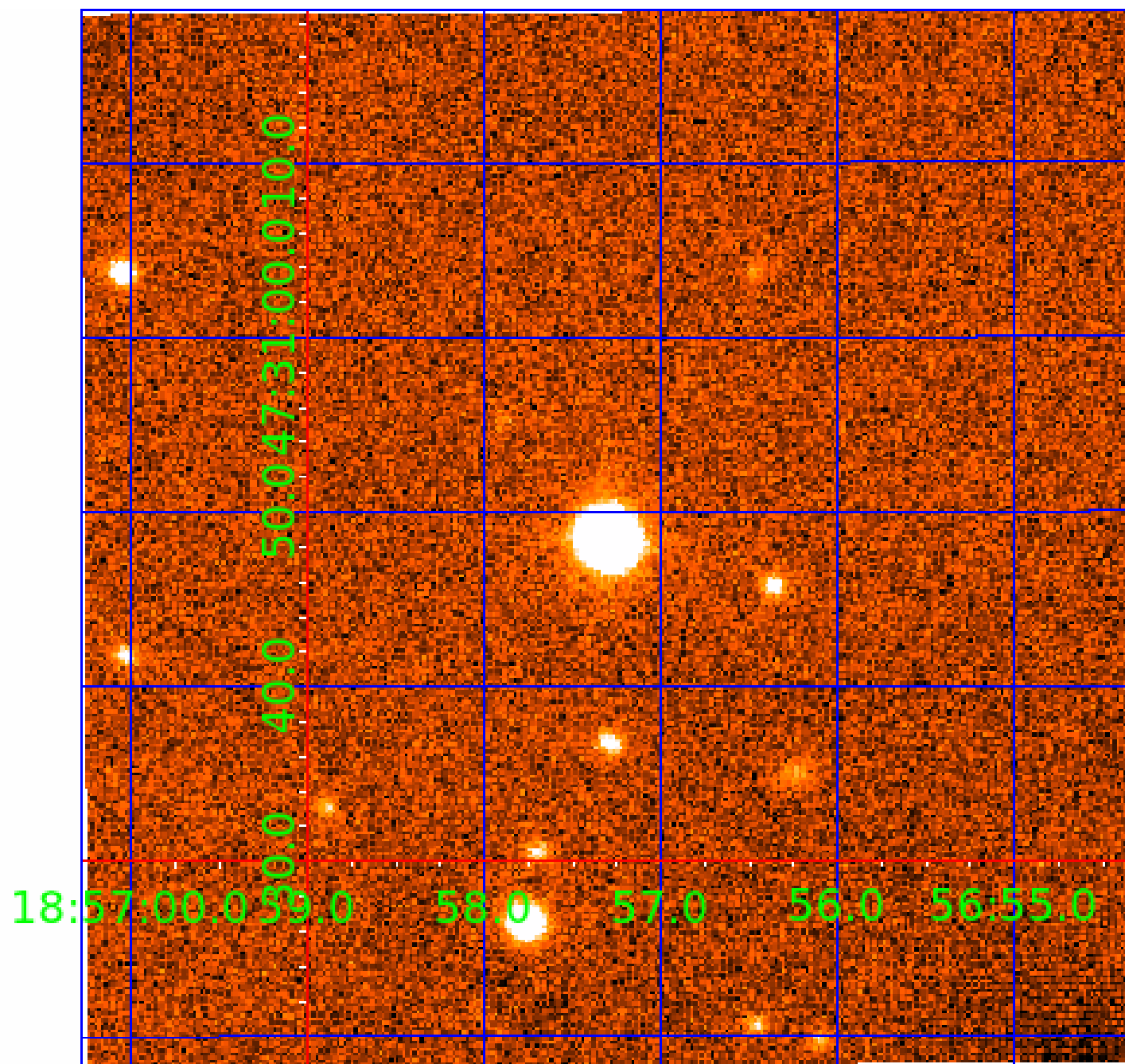


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010389121

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})
010389121-01	OBS	No	409.467824	370.511359	1242.4	7.779	15.2	5.8	0.57	4638	2.01	0.17
010389121-02	OBS	No	279.622957	166.895186	410.5	3.333	12.9	2.7	0.57	4638	1.32	0.28
010389121-03	OBS	No	537.112135	317.884026	873.7	4.367	14.5	6.1	0.57	4638	1.91	0.12
010389121-04	OBS	No	332.140216	305.582179	897.1	3.741	12.4	5.0	0.57	4638	1.72	0.22
010389121-05	OBS	No	507.258664	197.435820	932.1	4.272	12.0	5.1	0.57	4638	1.69	0.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010389121-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010389121-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
010389121-03	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—CENT_FEW_DIFFS
010389121-04	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—CENT_FEW_DIFFS
010389121-05	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

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

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

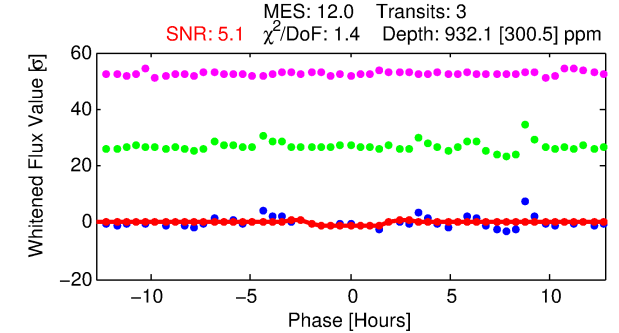
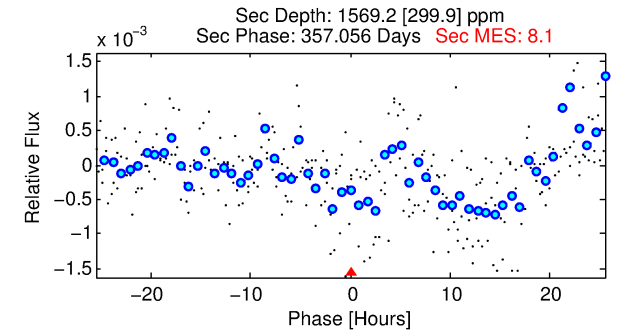
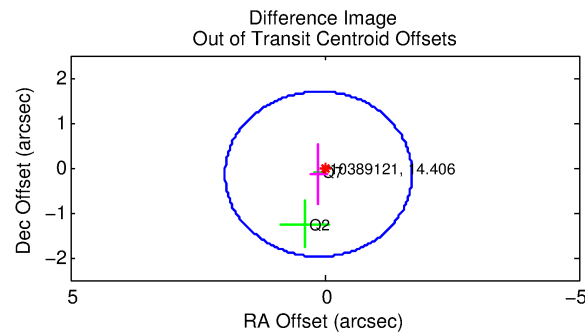
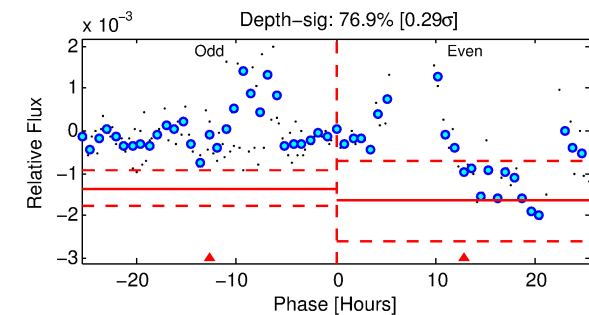
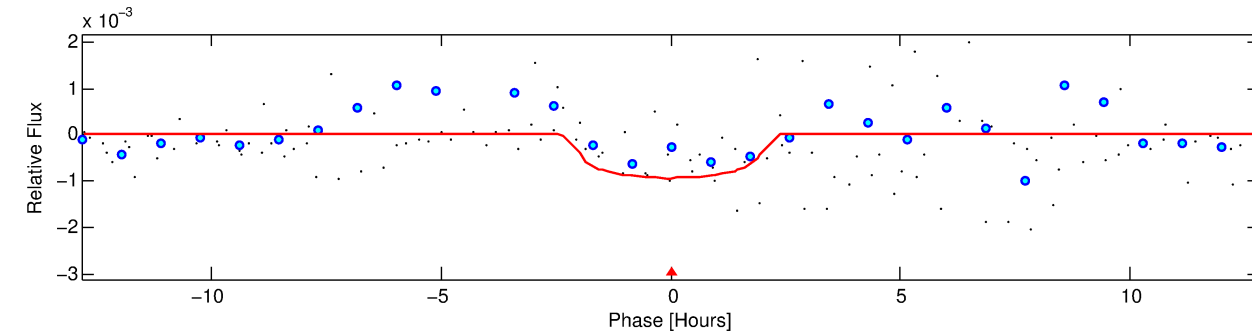
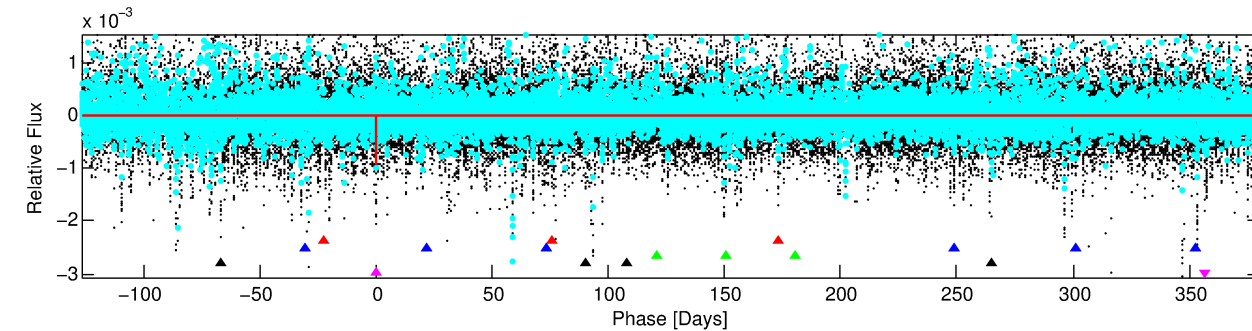
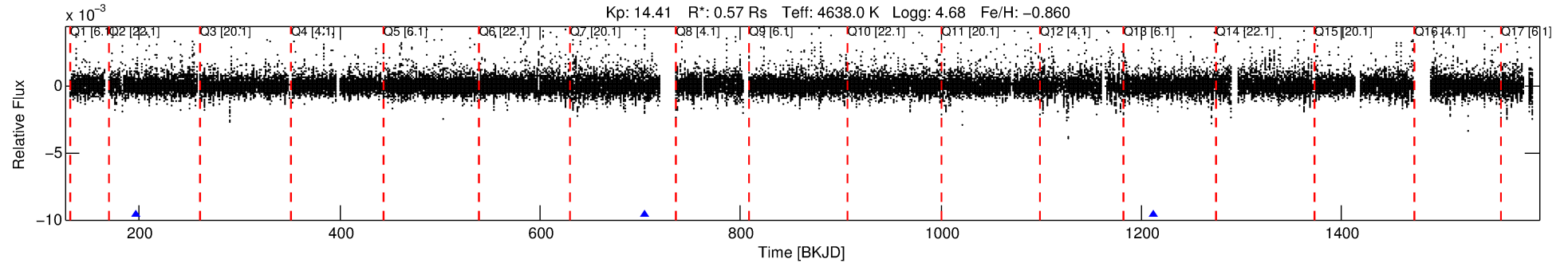
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010389121-05

No Significant Match Found

DV One-Page Summary

KIC: 10389121 Candidate: 5 of 5 Period: 507.259 d



DV Fit Results:

Period = 507.25866 [0.01061] d
Epoch = 197.4358 [0.0139] BKJD
Rp/R* = 0.0271 [0.1791]
a/R* = 931.60 [21359.44]
b = 0.01 [1787.99]
Seff = 0.13 [0.02]
Teq = 152 [6] K
Rp = 1.69 [11.14] Re
a = 1.0283 [0.0660] AU
Ag = 320952.07 [4240506.42] [0.08]
Teffp = 5606 [18518] K [0.29 σ]

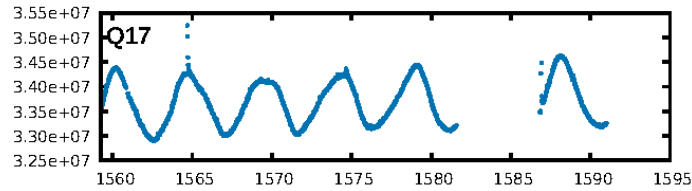
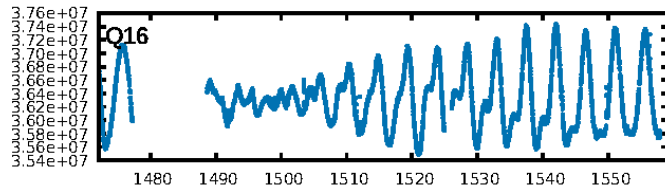
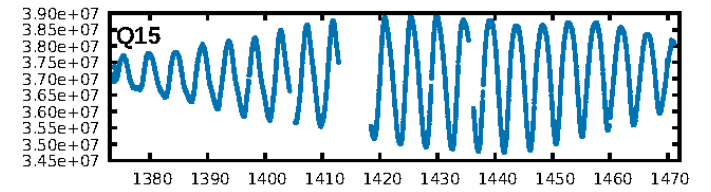
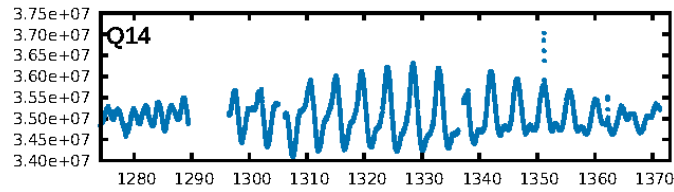
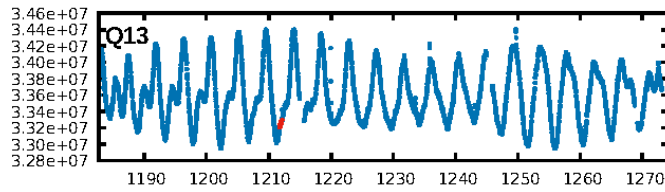
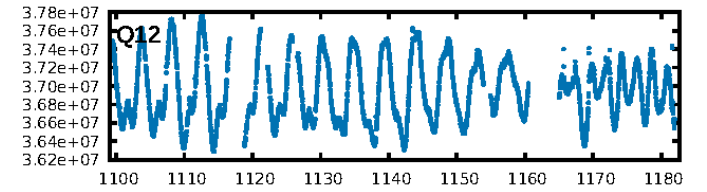
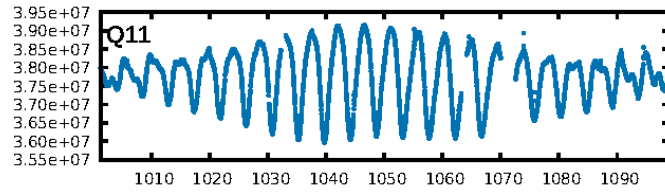
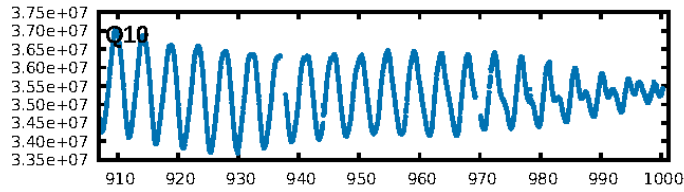
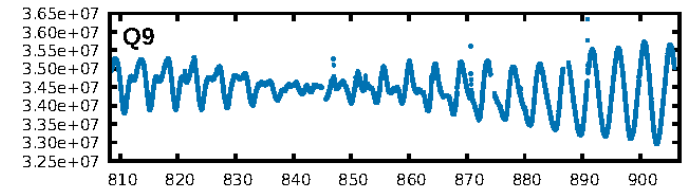
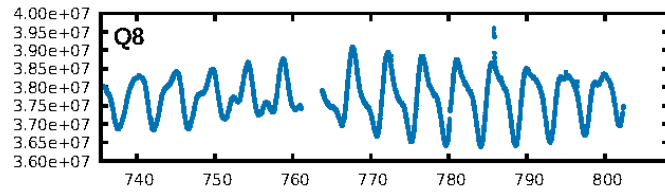
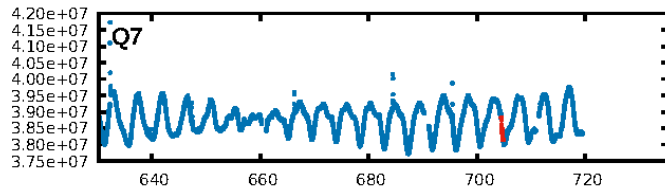
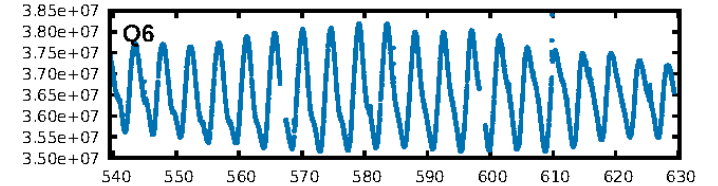
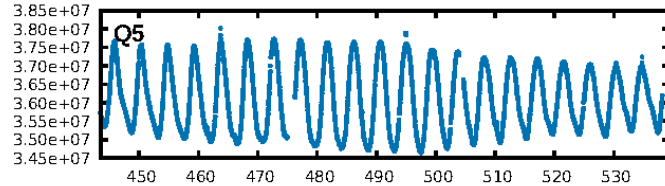
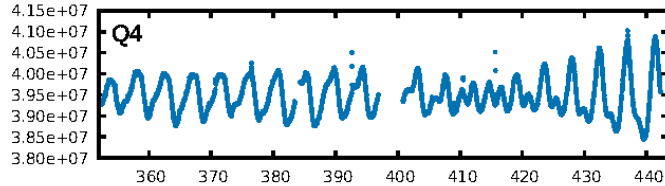
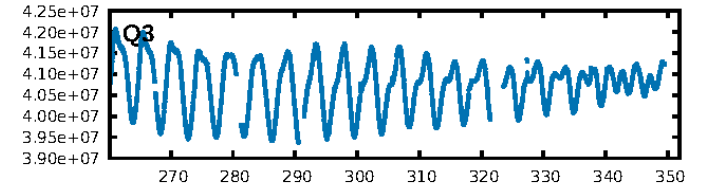
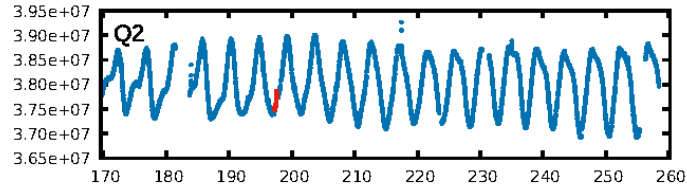
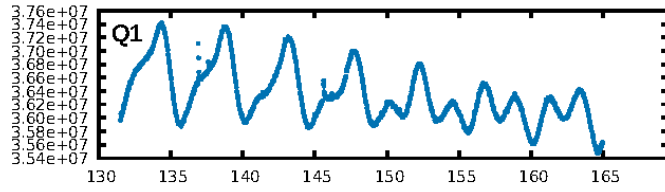
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [264.45 σ]
LongPeriod-sig: 100.0% [117.29 σ]
ModelChiSquare2-sig: 34.5%
ModelChiSquareGof-sig: 75.1%
Bootstrap-pfa: 1.24e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 5.759
Centroid-sig: 62.2%
Centroid-so: 0.634 arcsec [0.67 σ]
OotOffset-rm: 0.186 arcsec [0.30 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.299 arcsec [1.15 σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

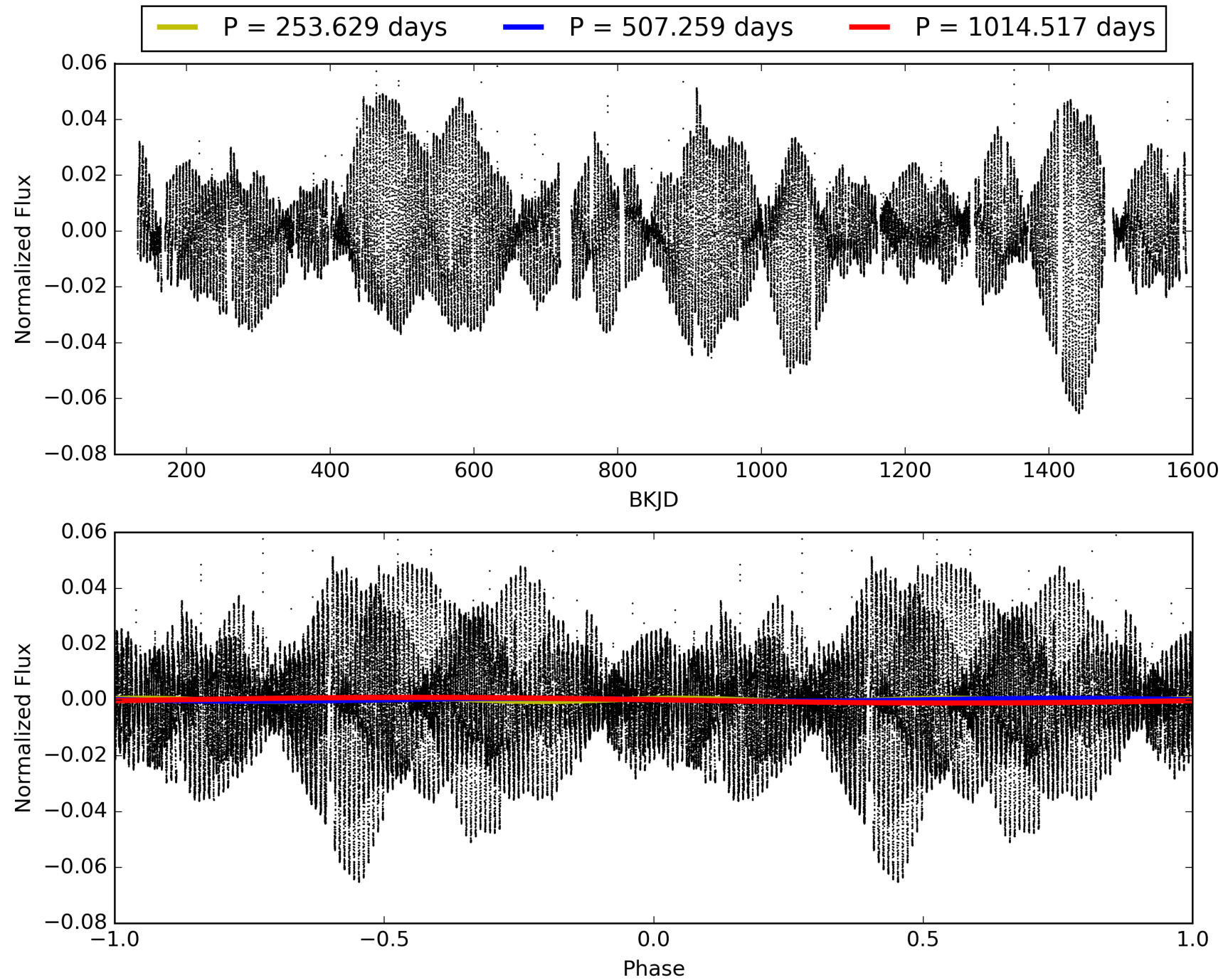
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:43:31 Z

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

TCE 010389121-05, PDC Light Curves

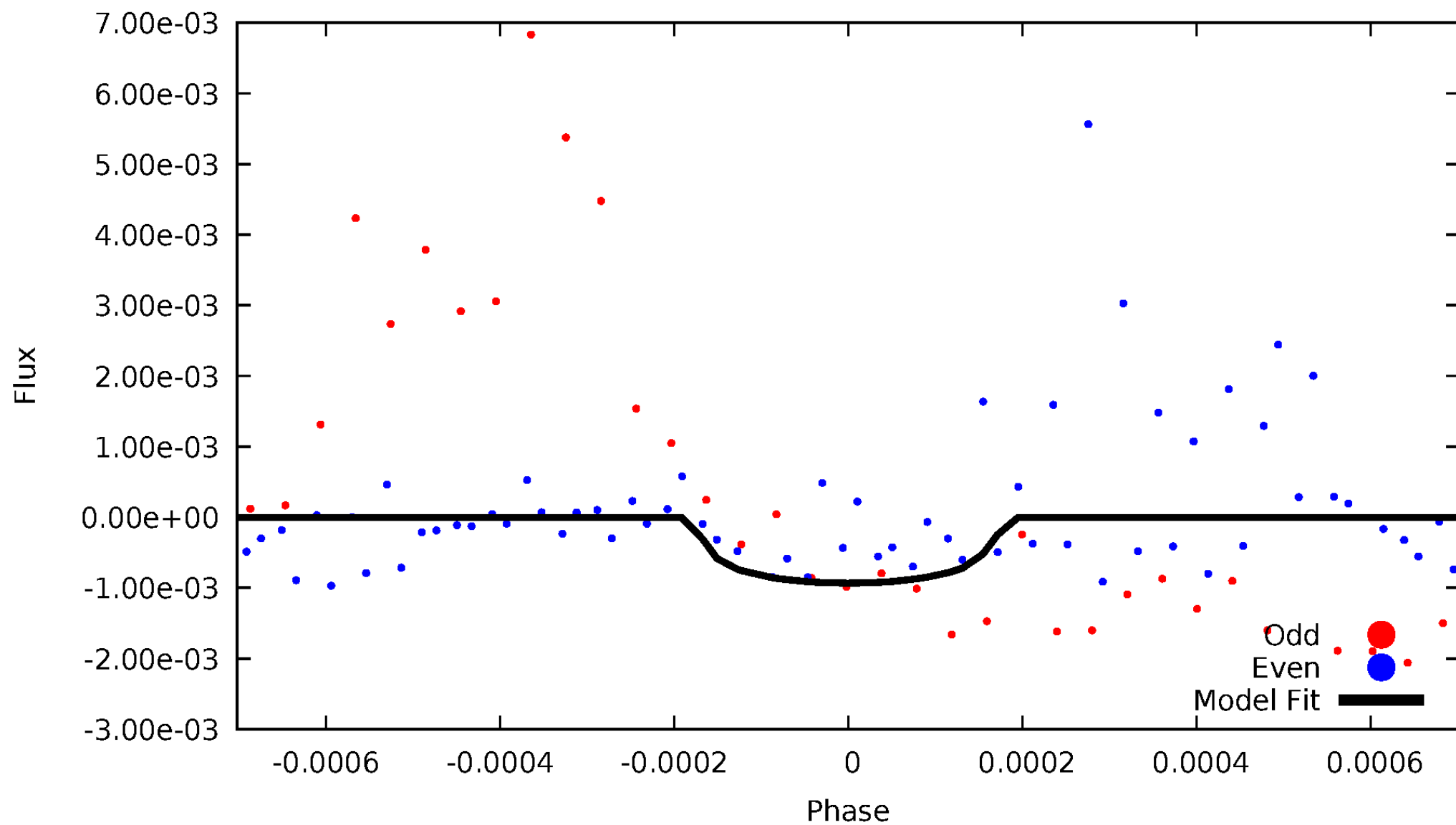


TCE 010389121-05



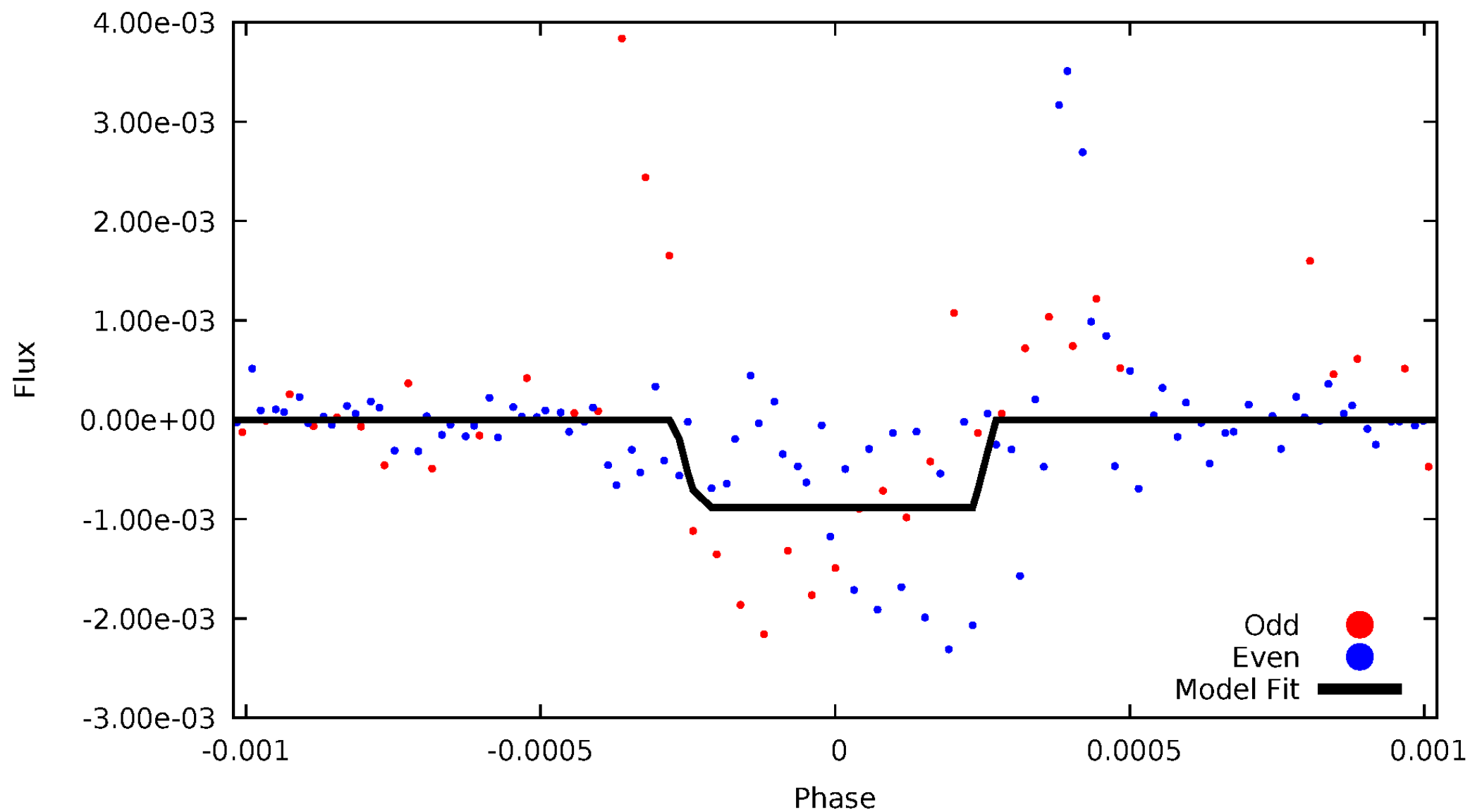
DV Odd/Even

TCE 010389121-05



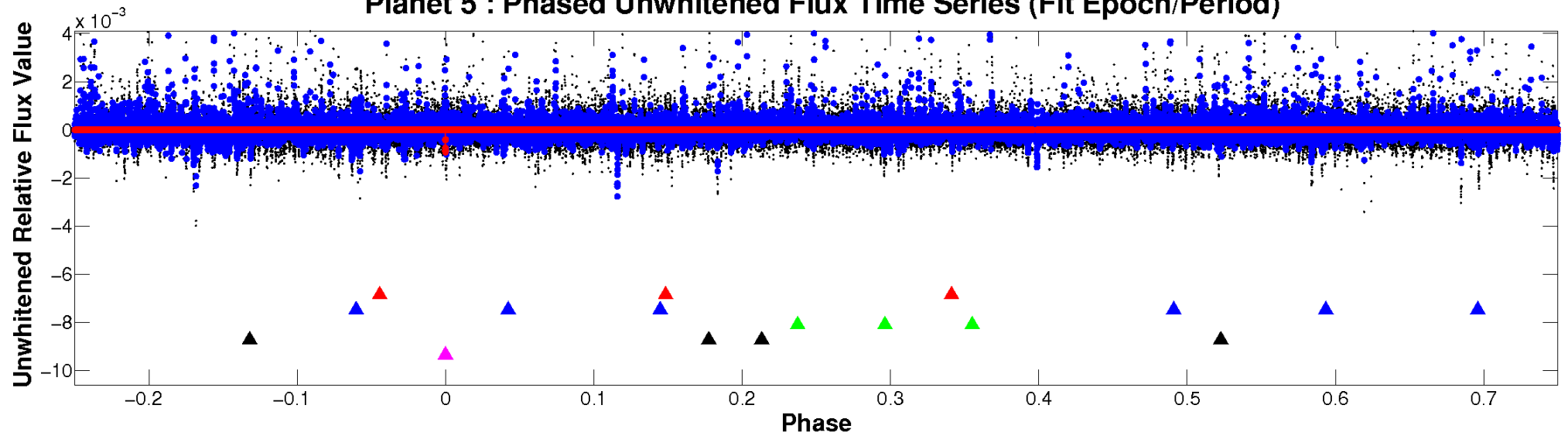
ALT Odd/Even

TCE 010389121-05

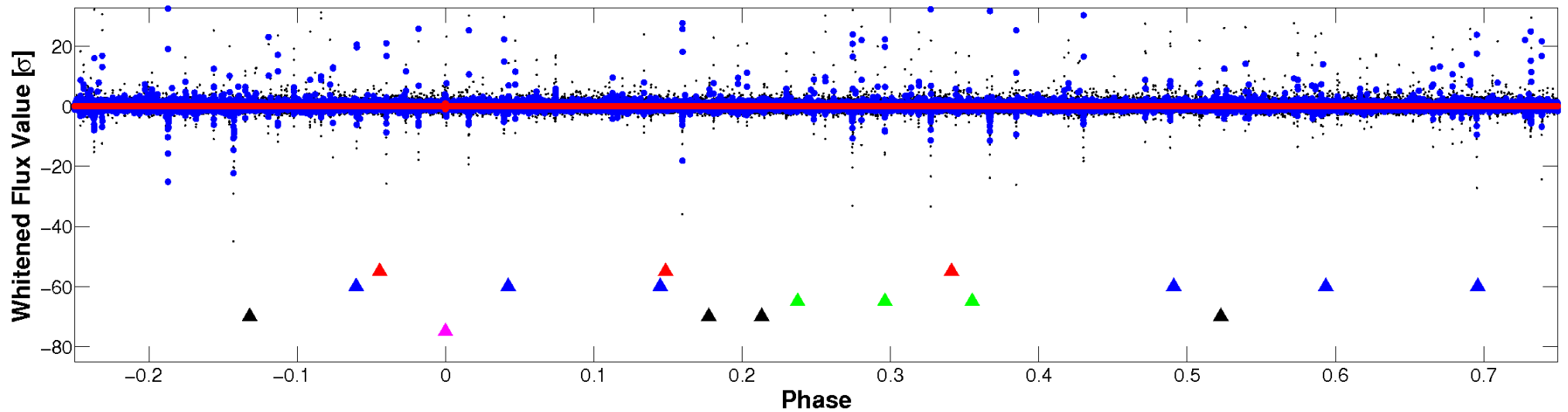


Non-Whitened Vs. Whitened Light Curve

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

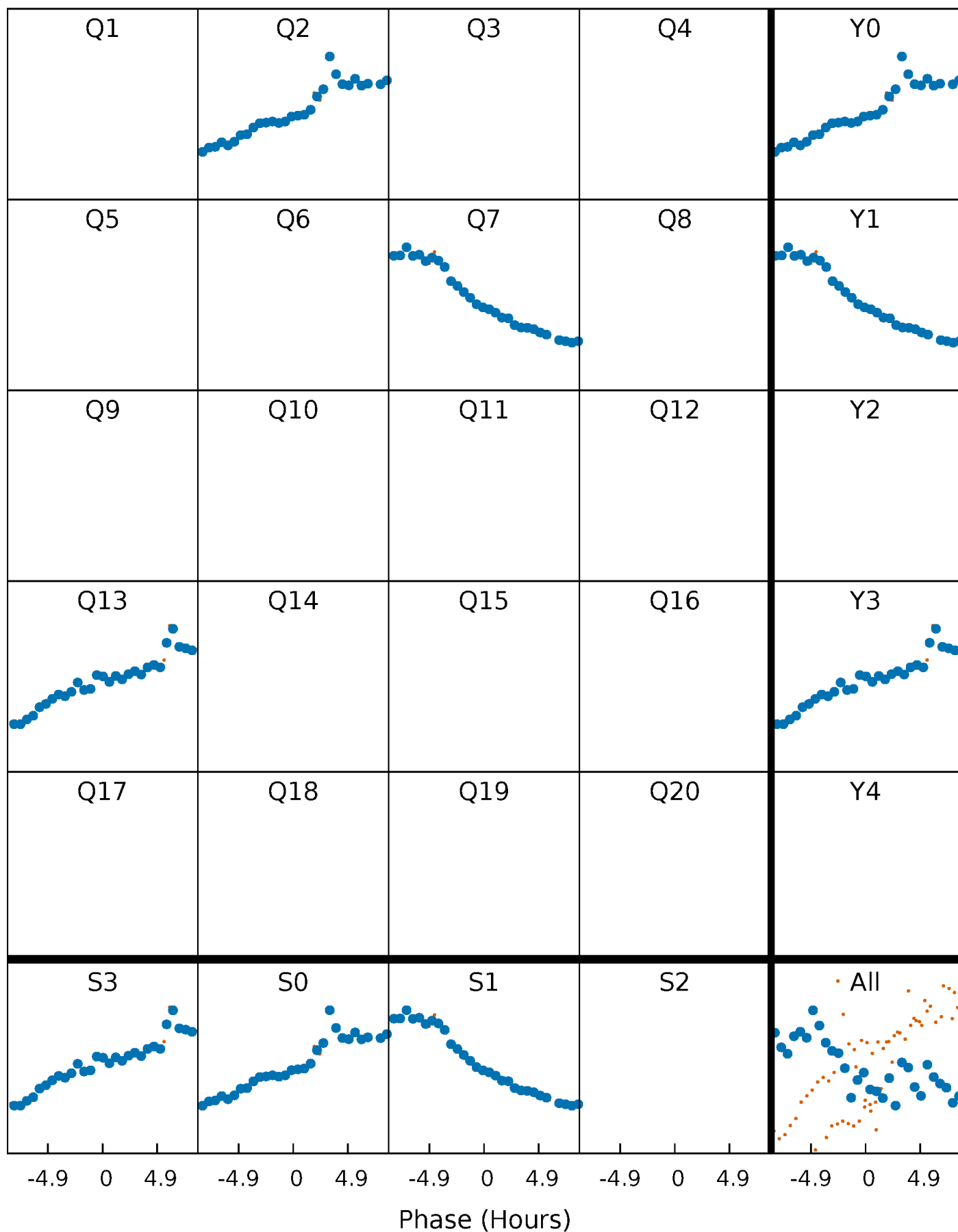


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



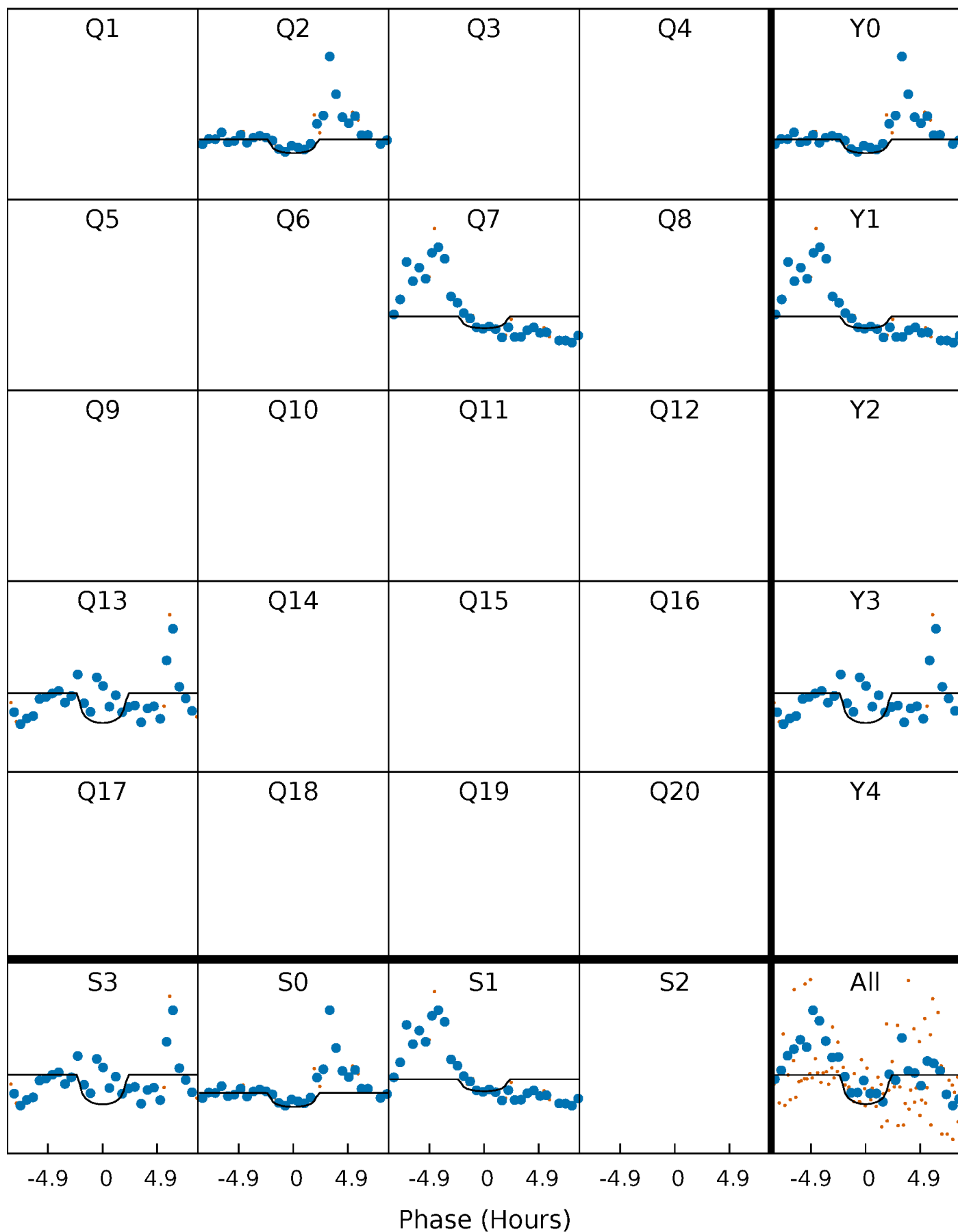
PDC Quarter-Phased Transit Curves

TCE 010389121-05 $P=507.258664$ Days $T_0=197.435820$ (BKJD)



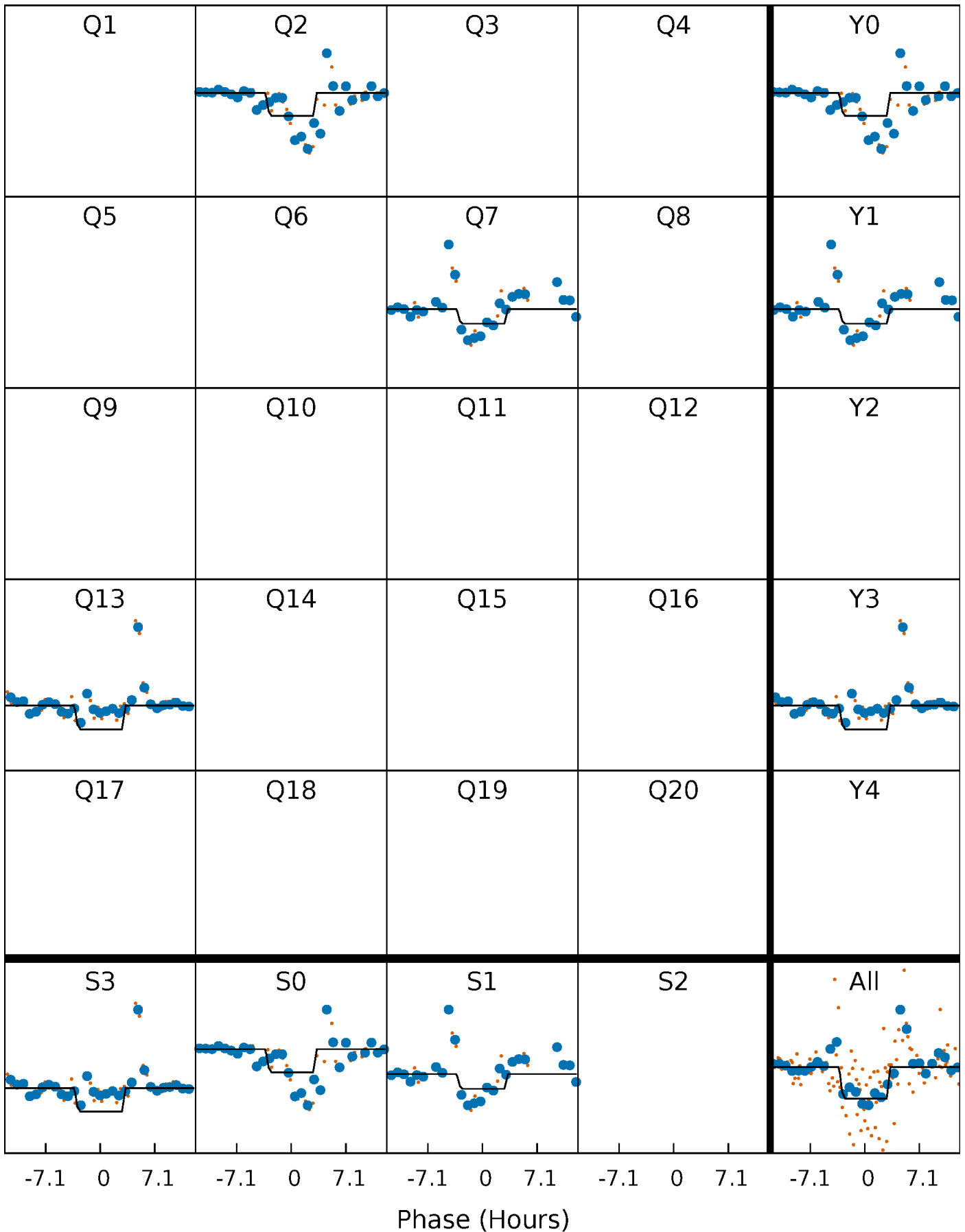
DV Quarter-Phased Transit Curves

TCE 010389121-05 $P=507.258664$ Days $T_0=197.435820$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

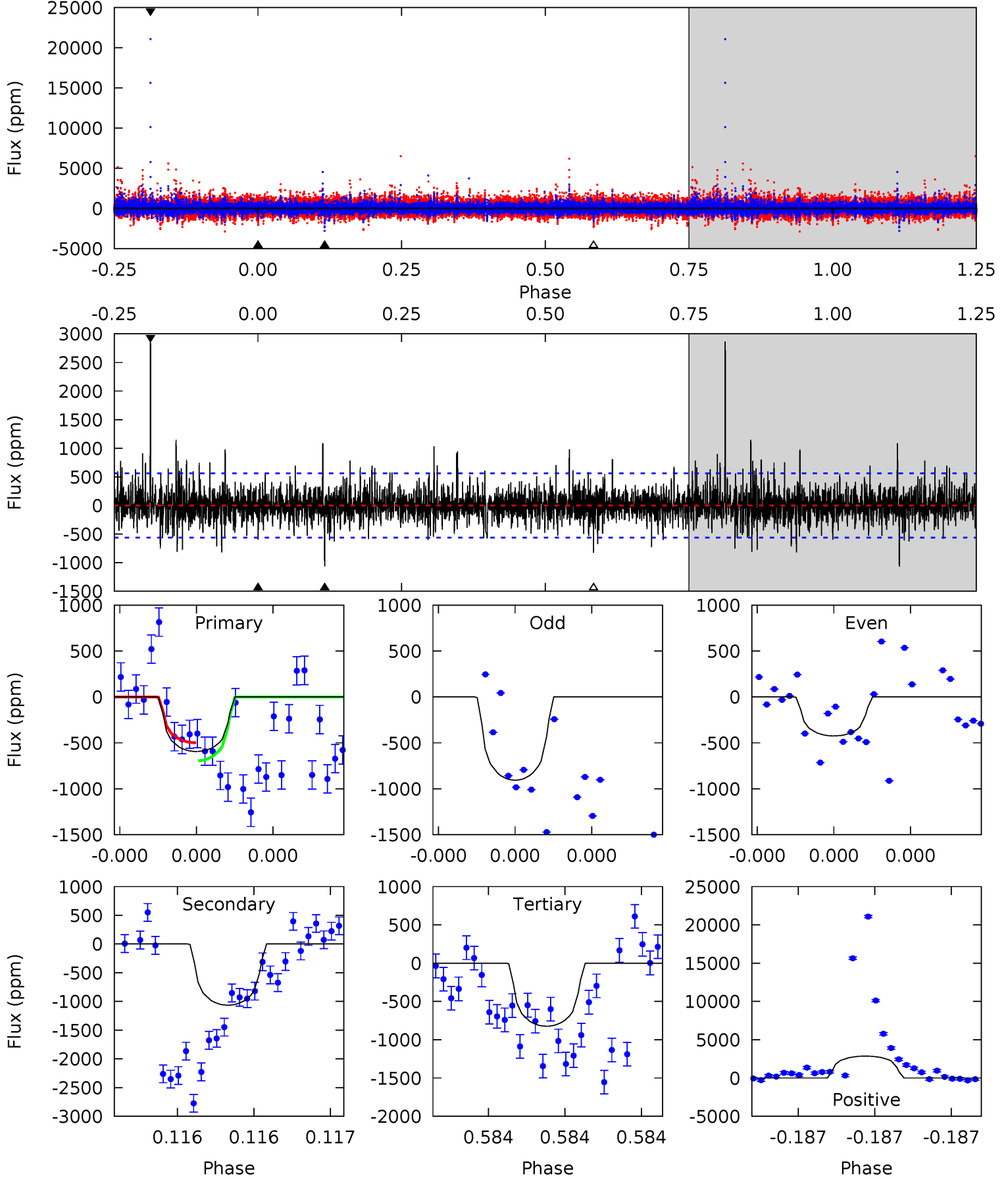
TCE 010389121-05 $P=507.317616$ Days $T_0=197.375612$ (BKJD)



DV Model-Shift Uniqueness Test

010389121-05, P = 507.258664 Days, E = 197.435820 Days

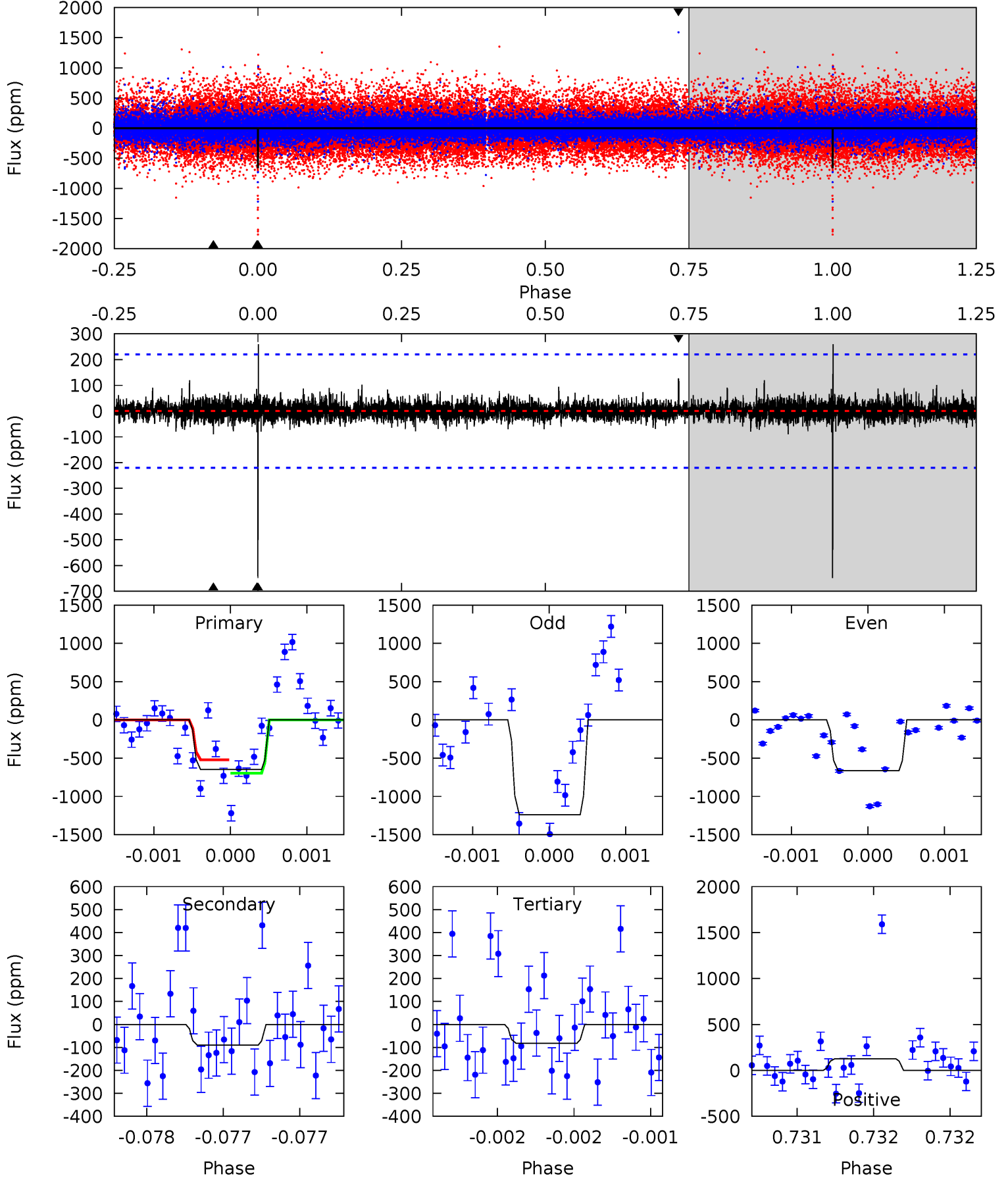
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.94	10.6	8.23	28.6	5.62	3.55	1.90	-2.29	-22.7	2.42	-18.0	1.72	1.12	0.73	0.99



Alt Model-Shift Uniqueness Test

010389121-05, P = 507.317616 Days, E = 197.375612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	2.26	2.07	3.19	5.56	3.46	0.51	14.3	13.2	0.19	-0.93	7.05	0.78	0.29	2.20



Stellar Parameters For KIC 010389121

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4638^{+139}_{-139}	$4.677^{+0.052}_{-0.032}$	$-0.860^{+0.350}_{-0.300}$	$0.570^{+0.043}_{-0.043}$	$0.564^{+0.051}_{-0.028}$	$4.282^{+0.902}_{-0.556}$
	+3%/-3%	+1%/-1%	+41%/-35%	+8%/-8%	+9%/-5%	+21%/-13%
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 010389121-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1065 ± 100	$8.19^{+8.25}_{-5.73}$	212^{+7}_{-7}	2928^{+1429}_{-485}	9539^{+99706}_{-7217}
Alt.	-90 ± 40	$8.16^{+8.56}_{-5.46}$	212^{+7}_{-7}	2150^{+695}_{-331}	704^{+7047}_{-557}

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

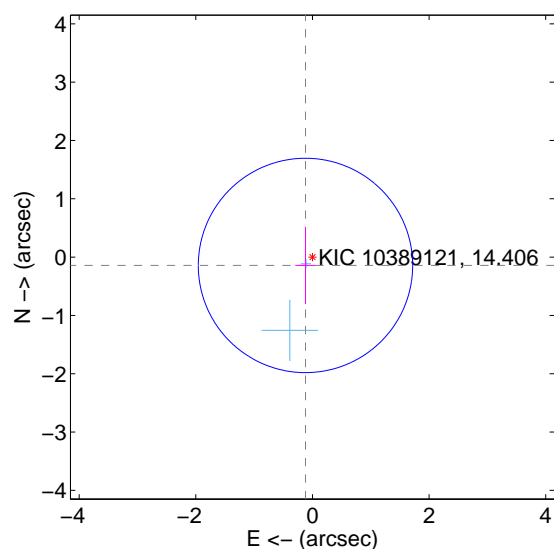
Supplemental centroid analysis for 010389121-05. Kepler magnitude: 14.41. Transit SNR 5.08

There are 2 quarters with good PRF difference image offsets

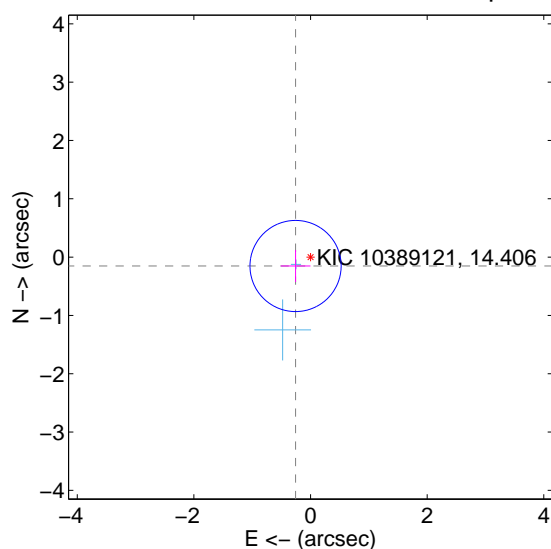
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.186 ± 0.613	0.30	0.119 ± 0.173	-0.143 ± 0.663
PRF-fit source offset from KIC position	0.299 ± 0.260	1.15	0.257 ± 0.256	-0.153 ± 0.274
photometric centroid source offset	0.63 ± 0.94	0.67	0.57 ± 0.95	-0.27 ± 0.91

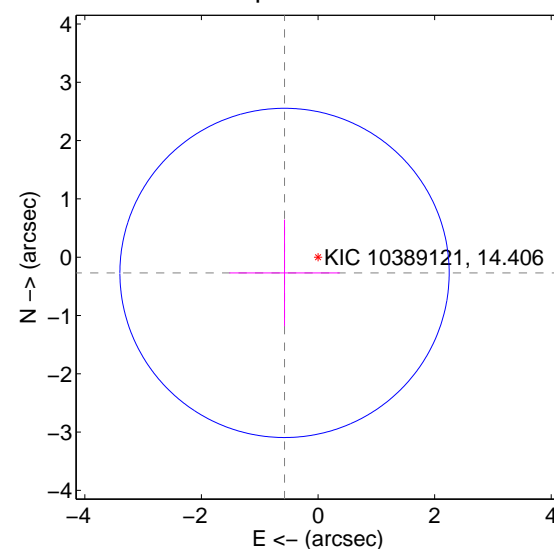
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



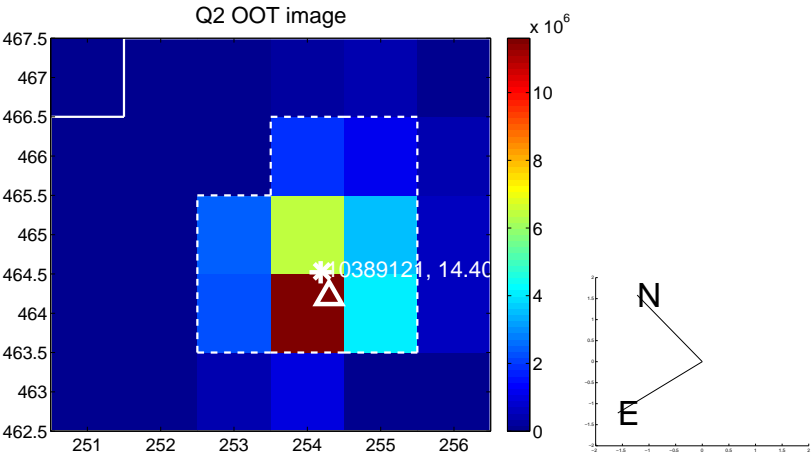
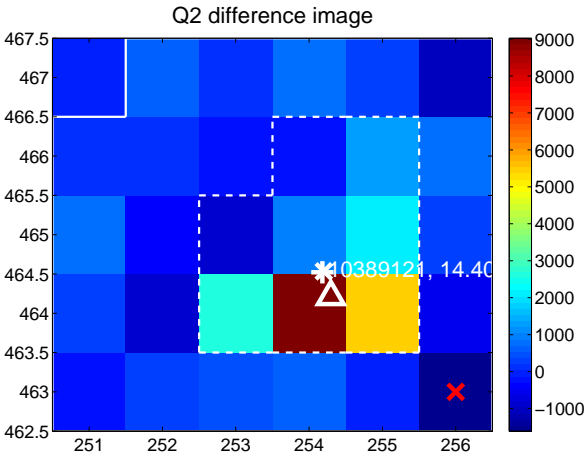
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

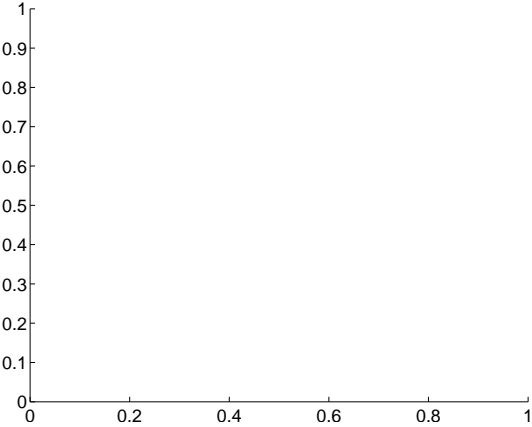
Q1 no difference image



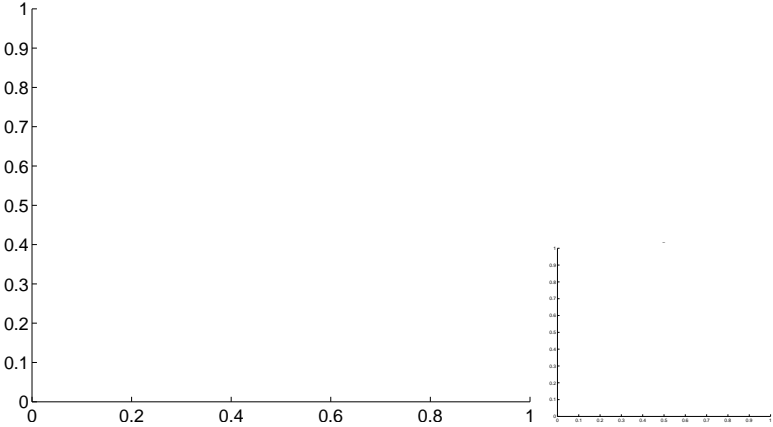
Q1 no OOT image



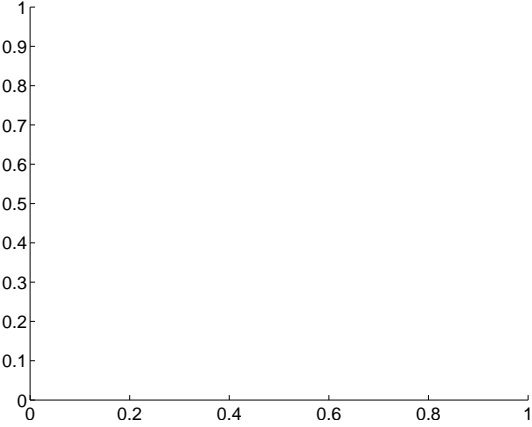
Q3 no difference image



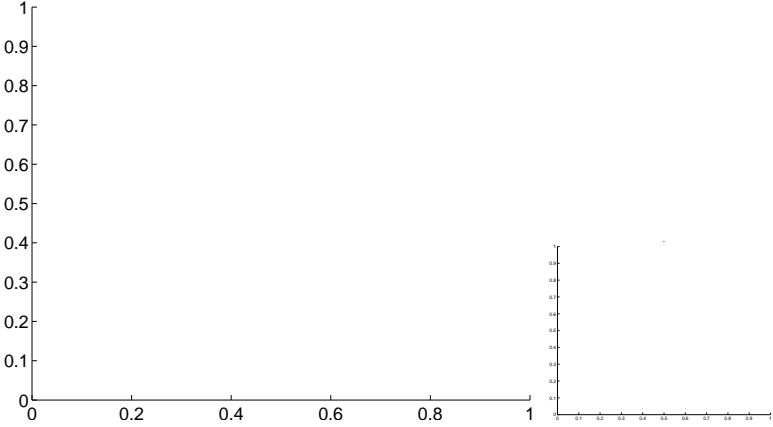
Q3 no OOT image



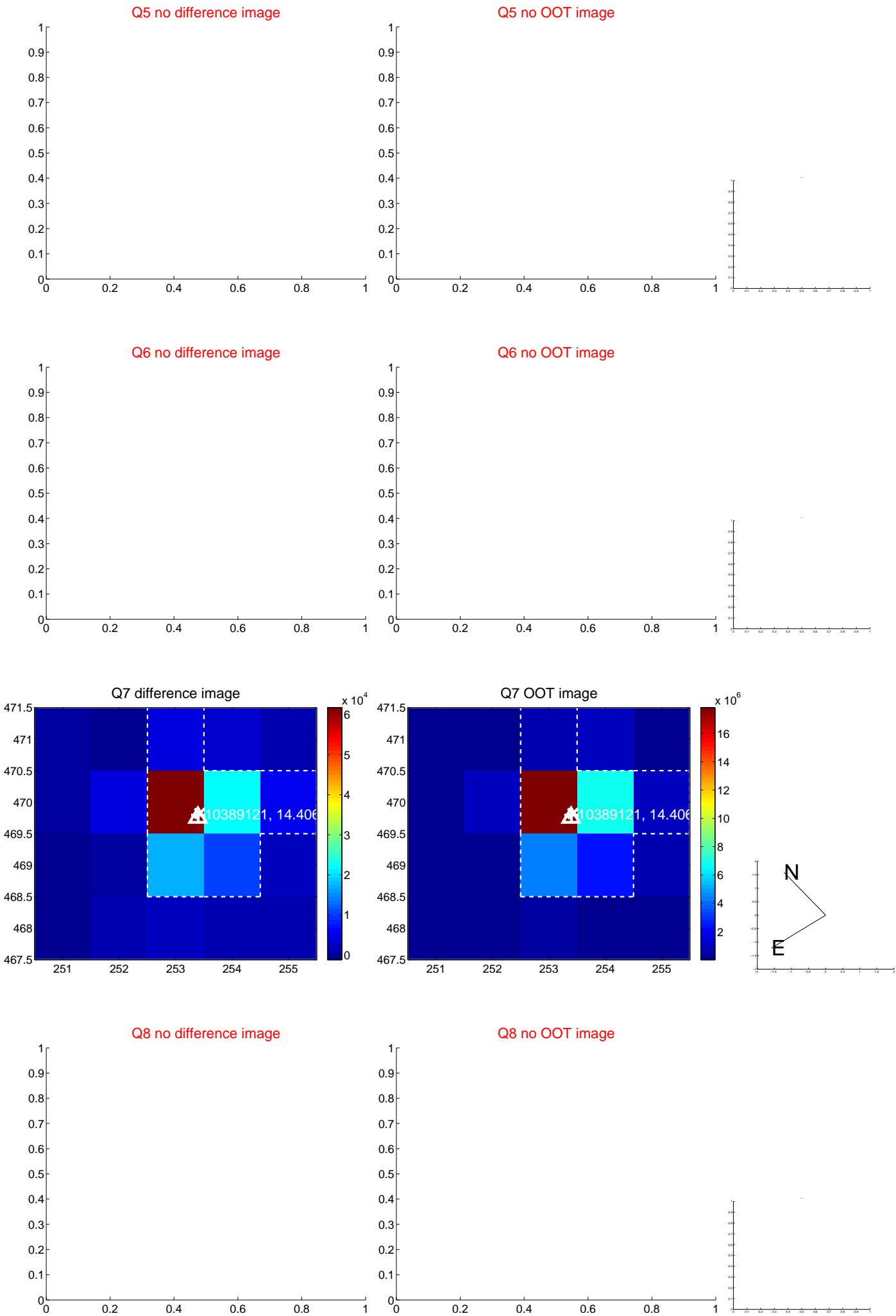
Q4 no difference image



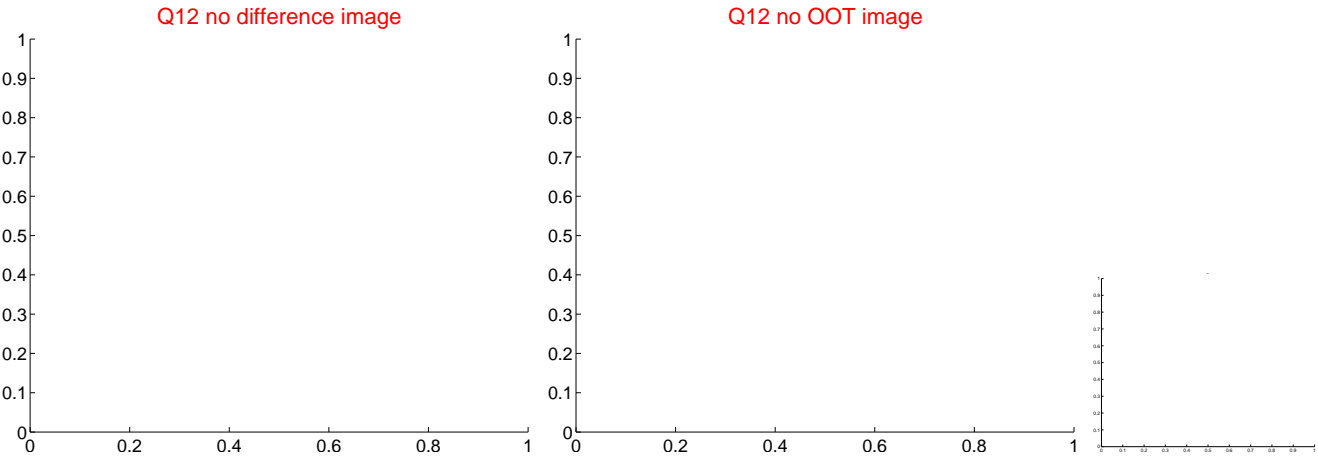
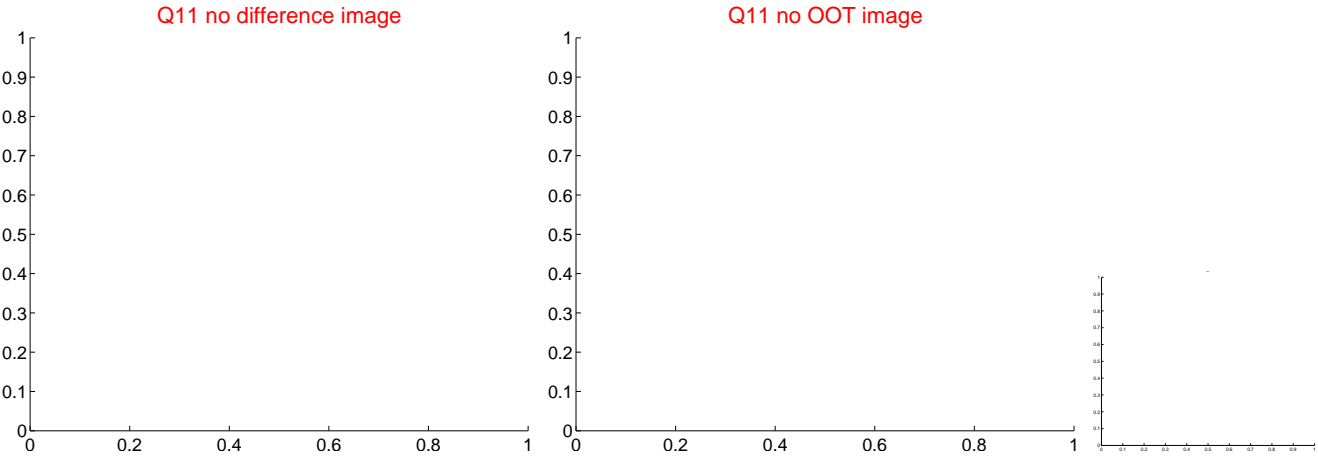
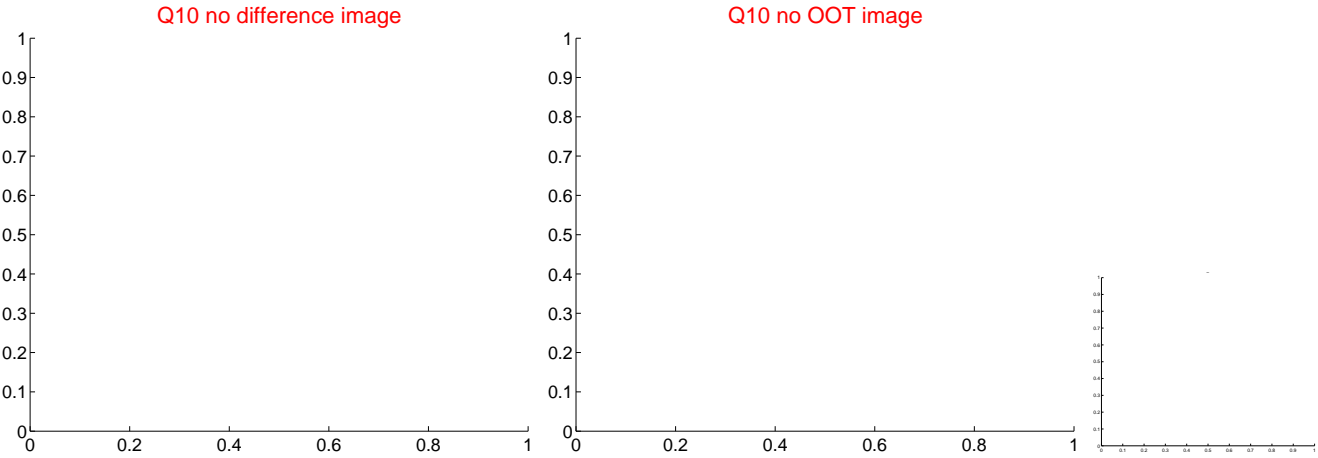
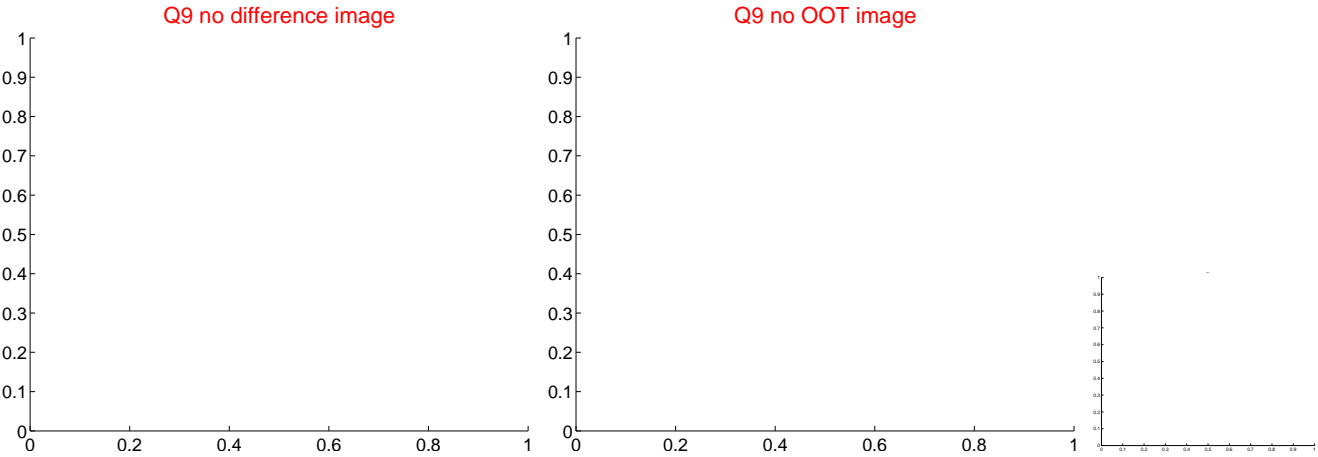
Q4 no OOT image



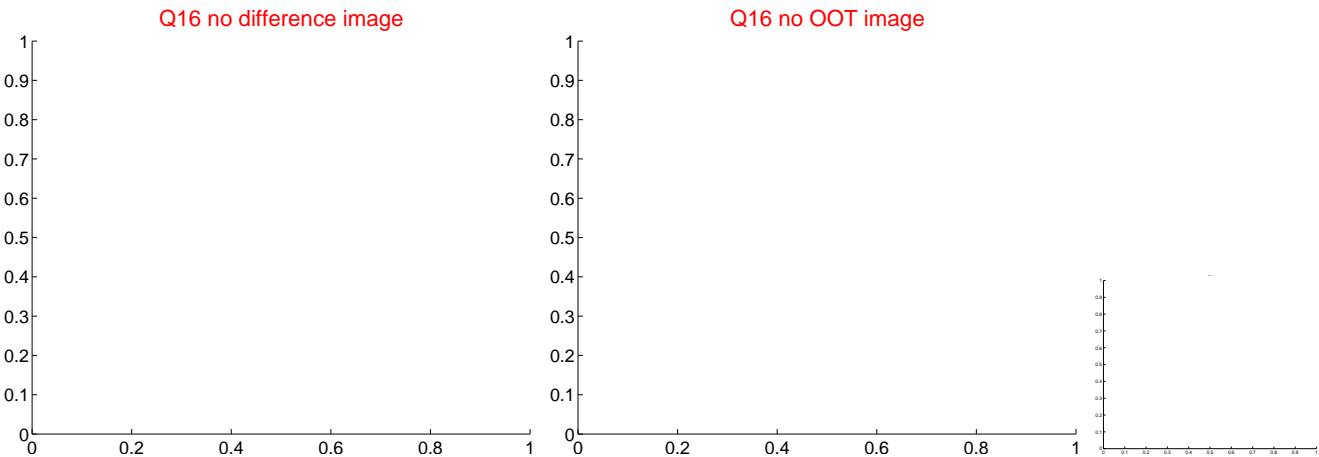
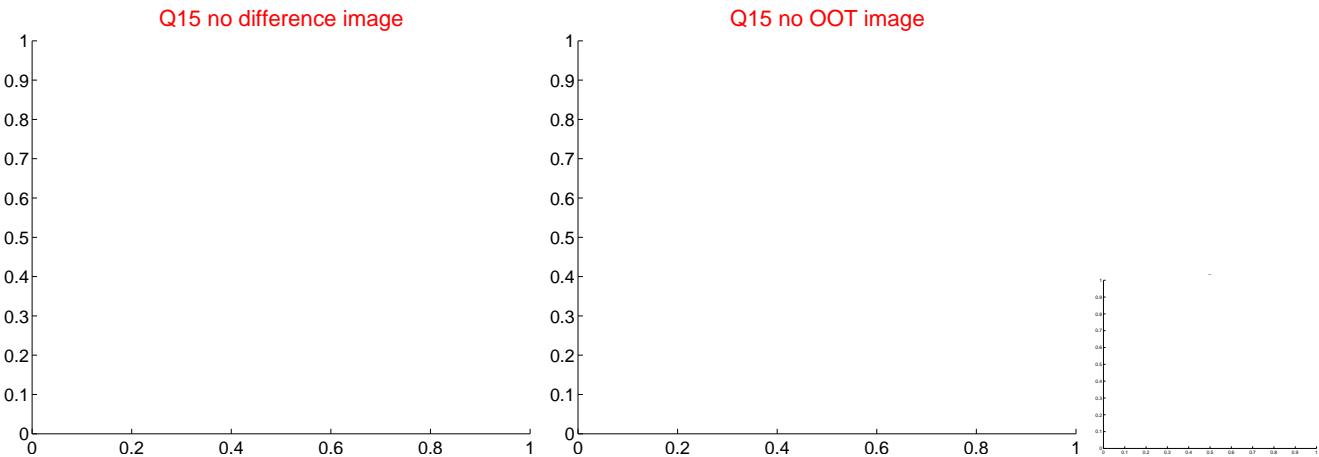
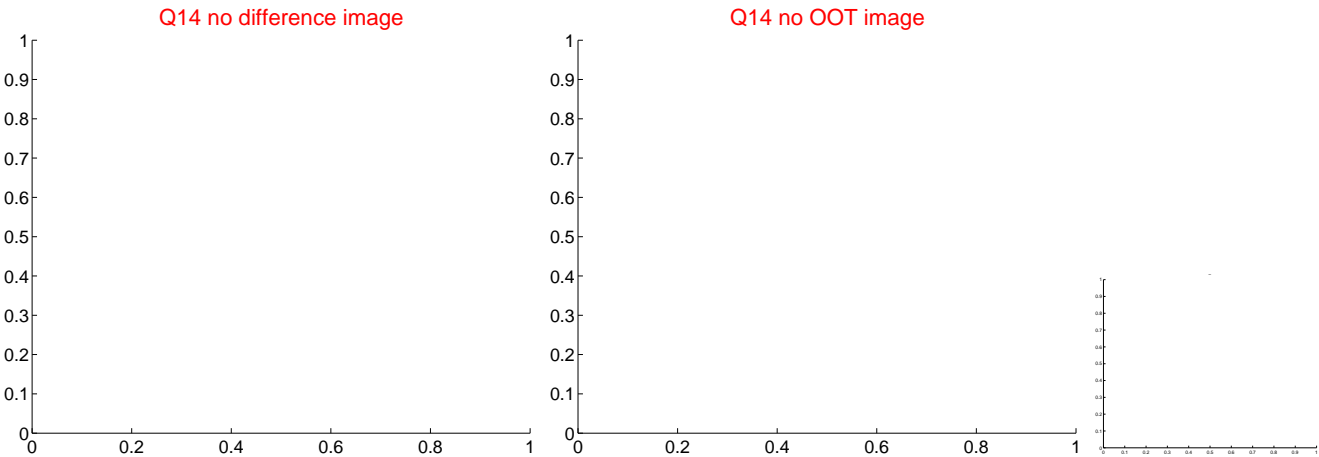
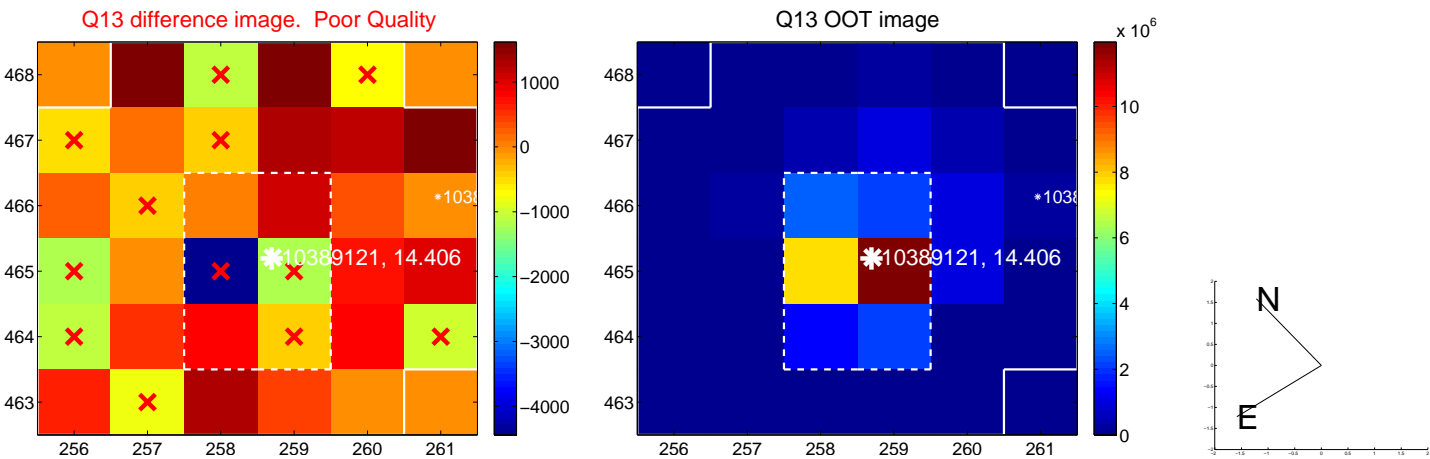
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



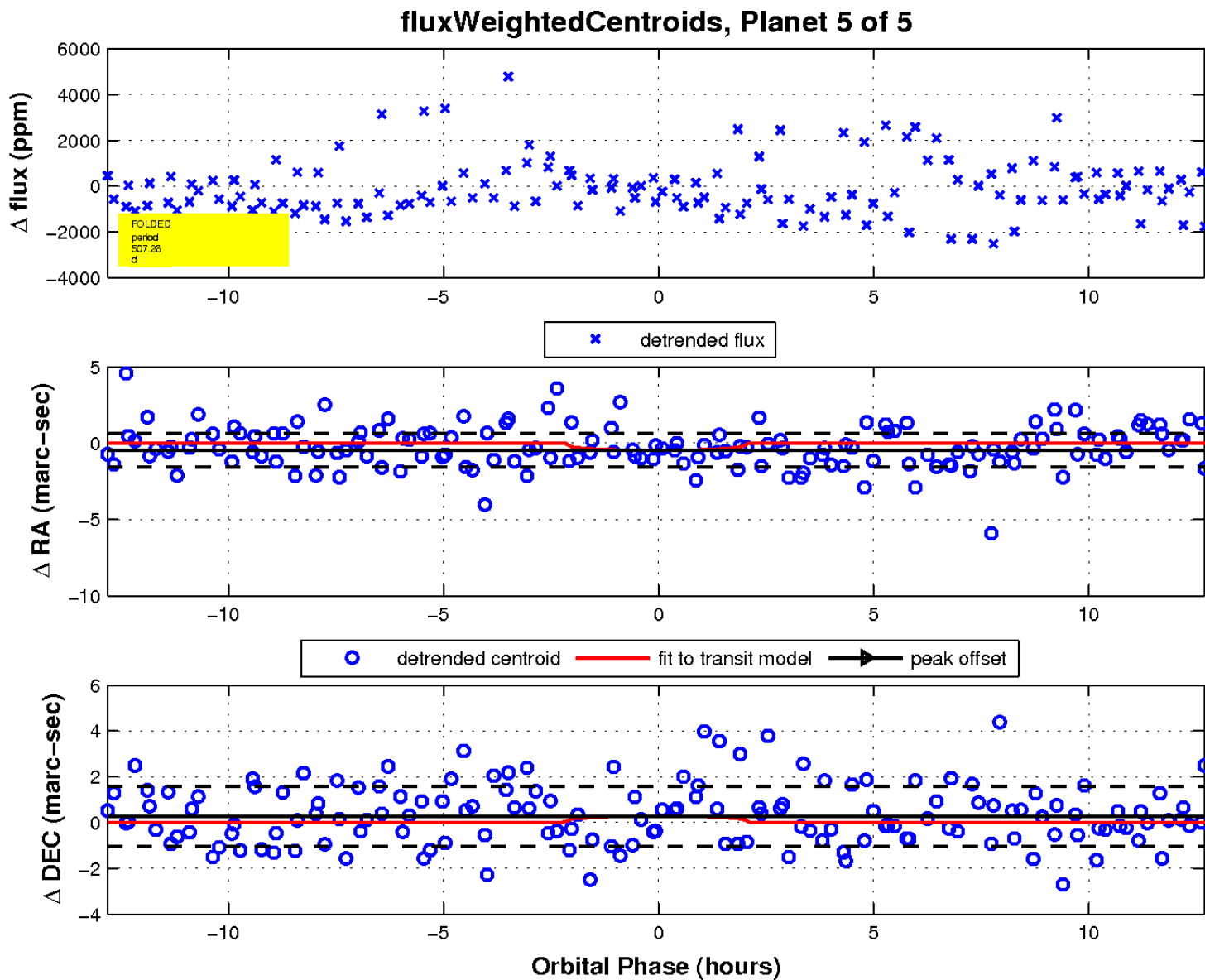
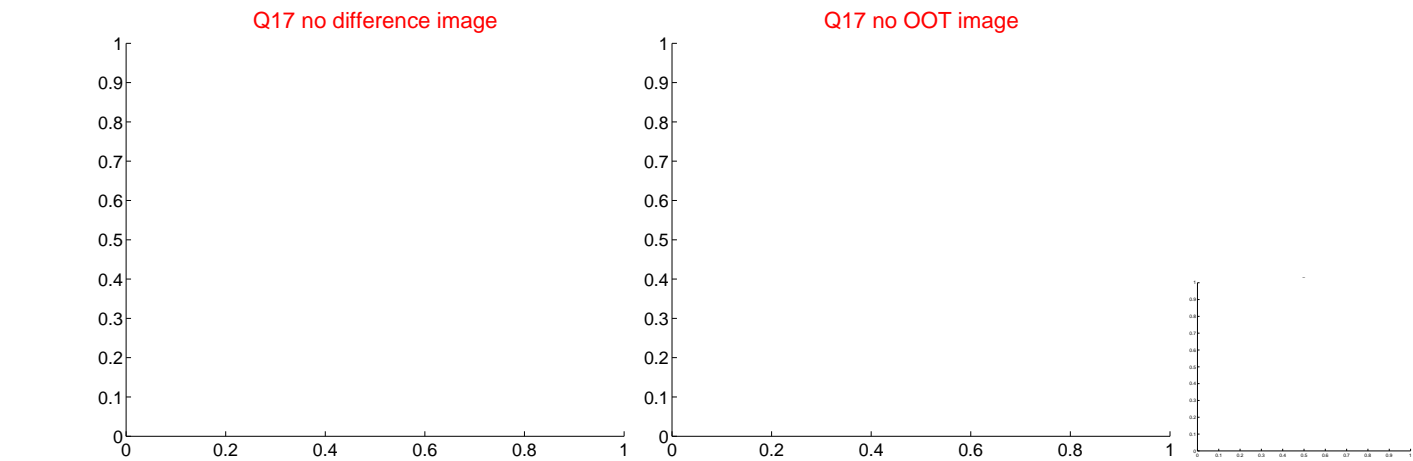
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image

Declination

