

KIC 008518402

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})
008518402-01	OBS	No	11.737305	141.573305	28.4	2.130	7.9	10.1	12.85	4861	8.79	4013.76
008518402-03	OBS	No	78.960868	174.643415	794.4	6.487	14.6	13.0	12.85	4861	75.16	316.05
008518402-04	OBS	No	62.228741	178.259122	214.3	2.000	14.8	-1.0	12.85	4861	18.16	434.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008518402-01	OBS	FP	0.00	1	0	0	0	LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008518402-03	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008518402-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

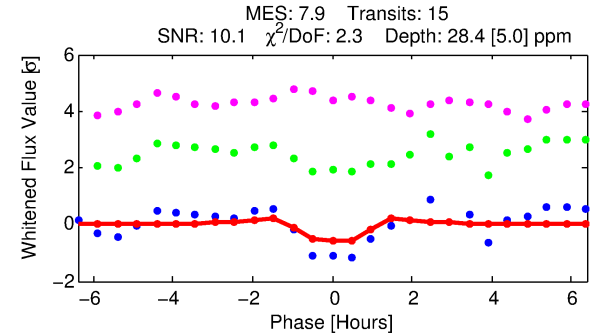
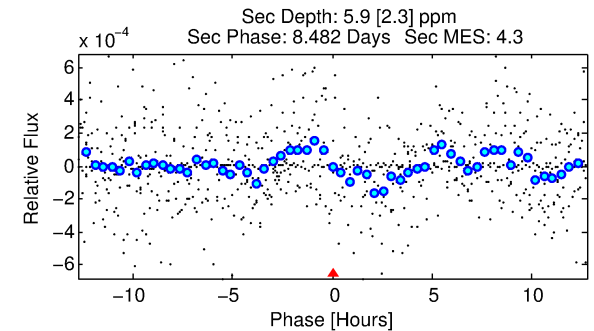
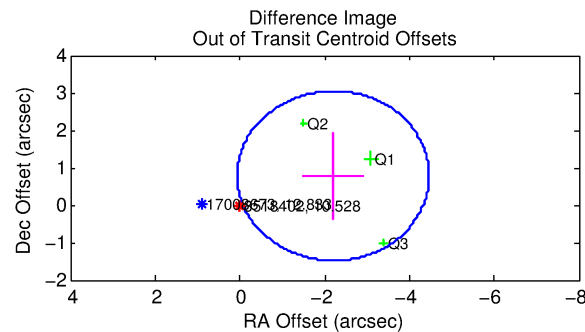
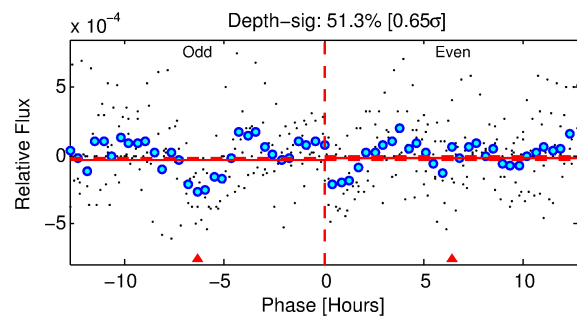
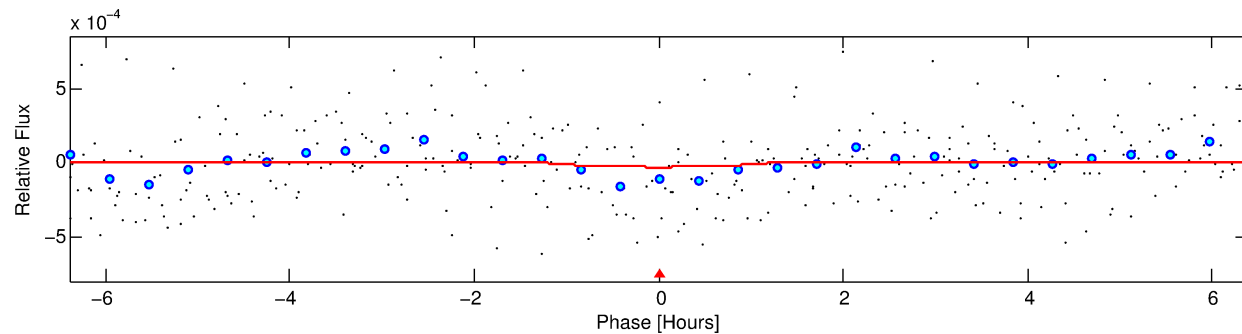
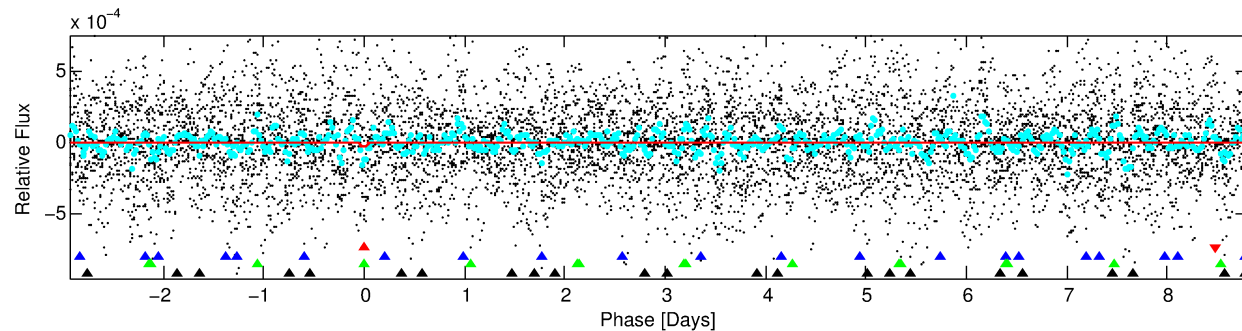
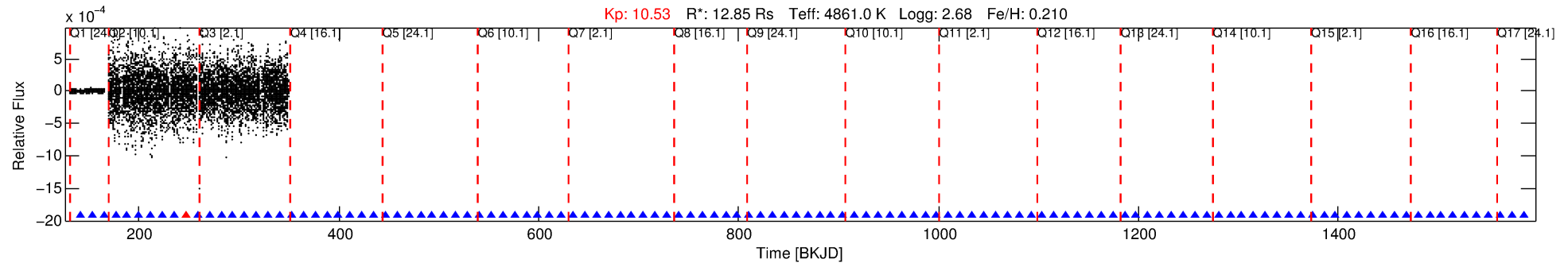
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008518402-01

No Significant Match Found

DV One-Page Summary

KIC: 8518402 Candidate: 1 of 4 Period: 11.737 d



DV Fit Results:

Period = 11.73730 [0.00261] d
Epoch = 141.5733 [0.0049] BKJD
Rp/R* = 0.0063 [0.0037]
a/R* = 16.01 [38.30]
b = 0.93 [0.35]
Seff = 4013.76 [883.01]
Teq = 2030 [112] K
Rp = 8.79 [5.75] Re
a = 0.1434 [0.0273] AU
Ag = 0.87 [1.09] [-0.12 σ]
Teffp = 3026 [943] K [1.05 σ]

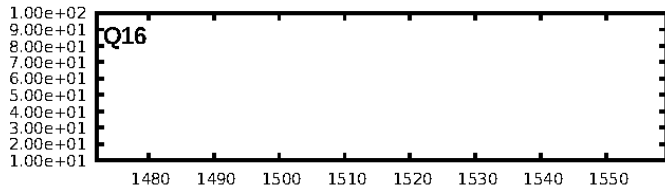
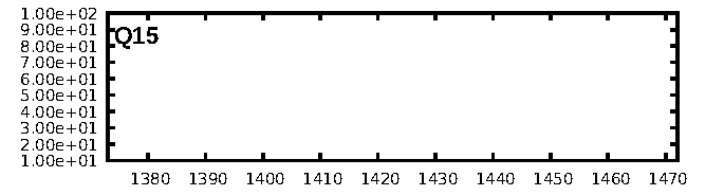
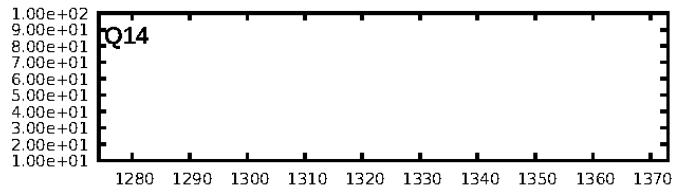
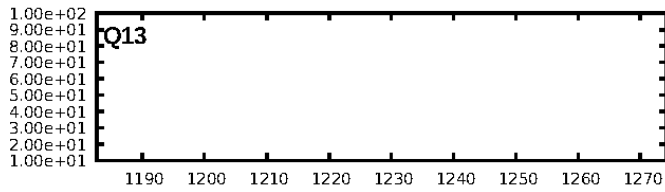
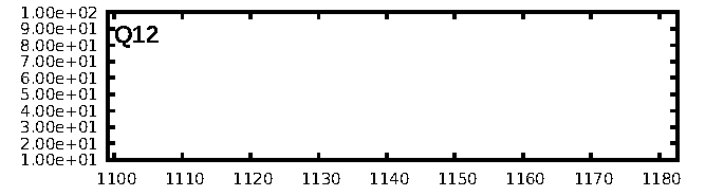
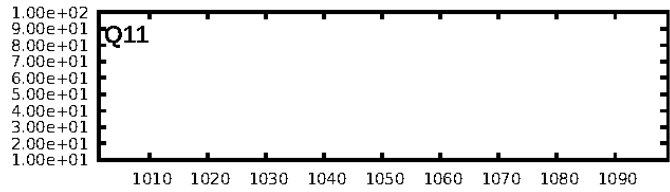
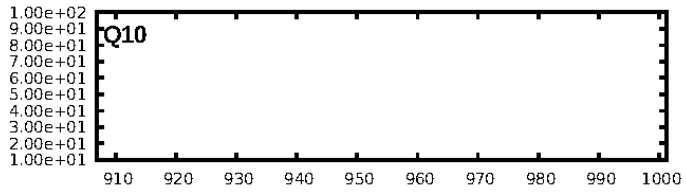
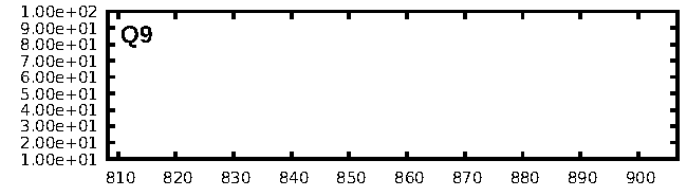
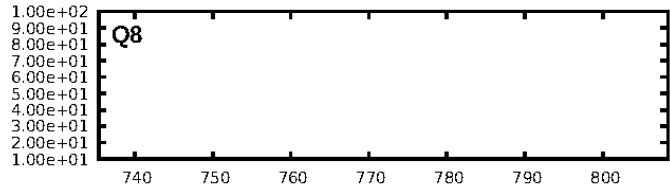
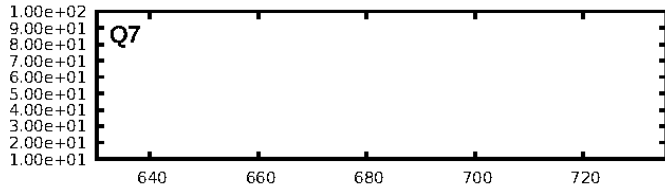
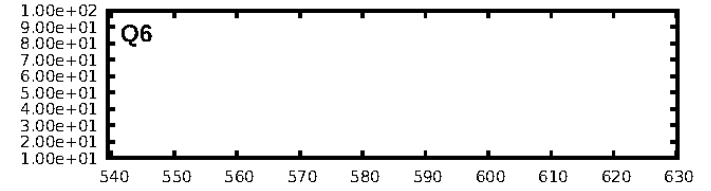
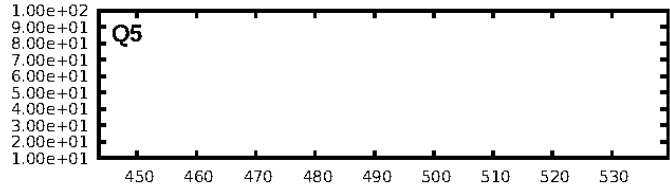
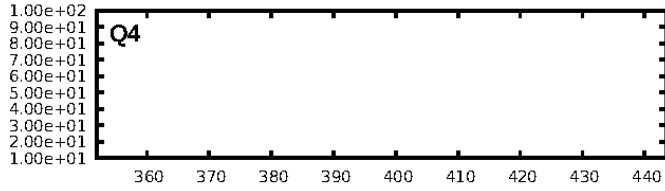
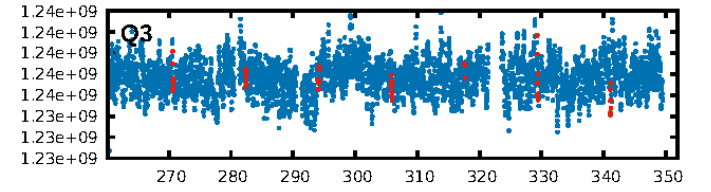
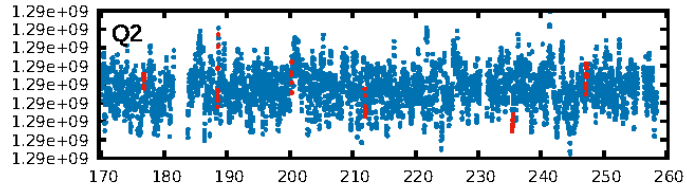
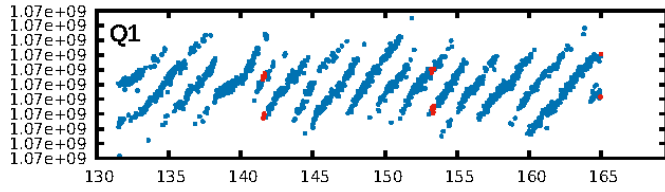
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [414.80 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [12/13]
GhostDiagnostic-chr: 0.269
Centroid-sig: N/A
Centroid-so: 5.602 arcsec [1.28 σ]
OotOffset-rm: 2.335 arcsec [3.09 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 1.930 arcsec [1.95 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

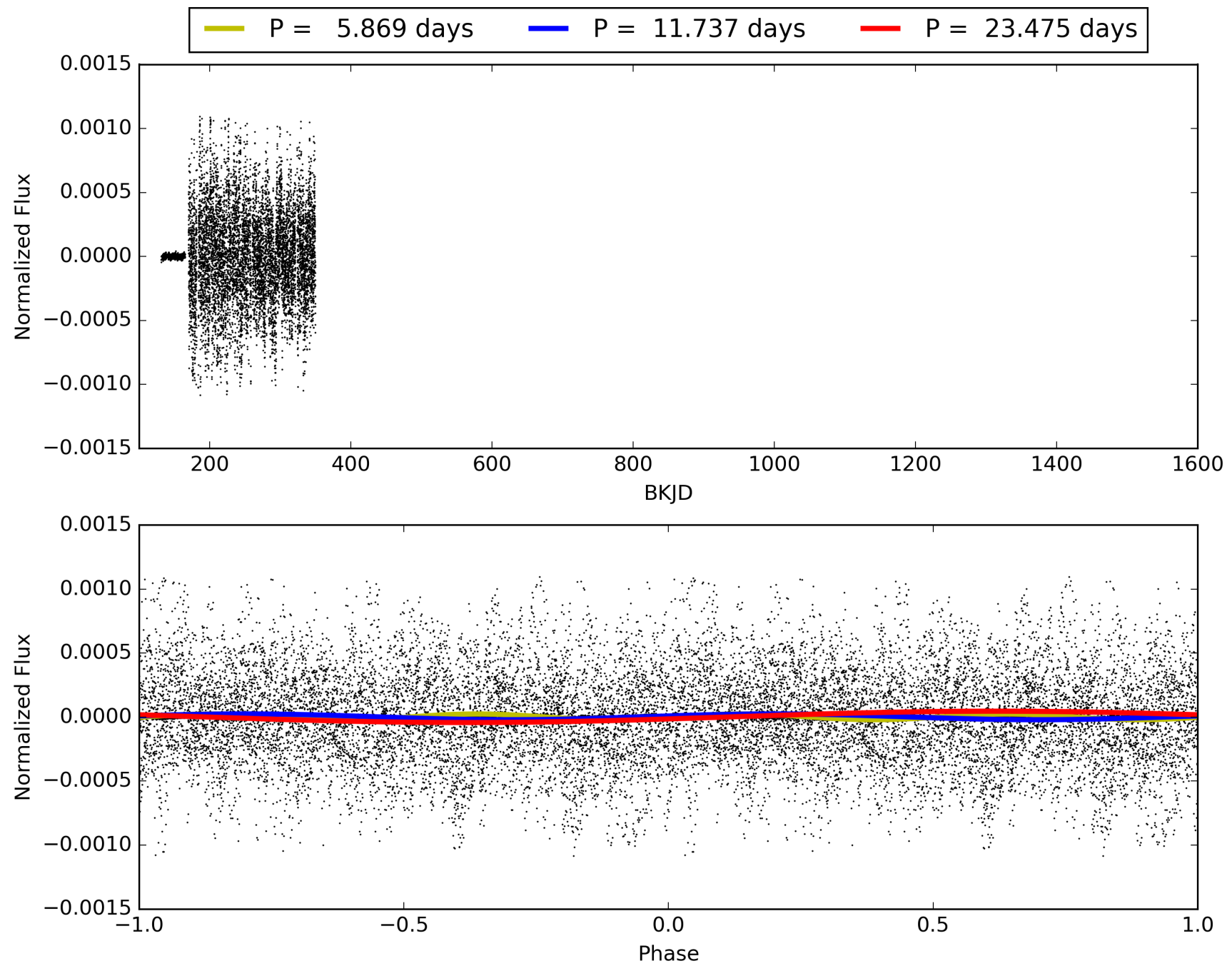
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008518402-01, PDC Light Curves

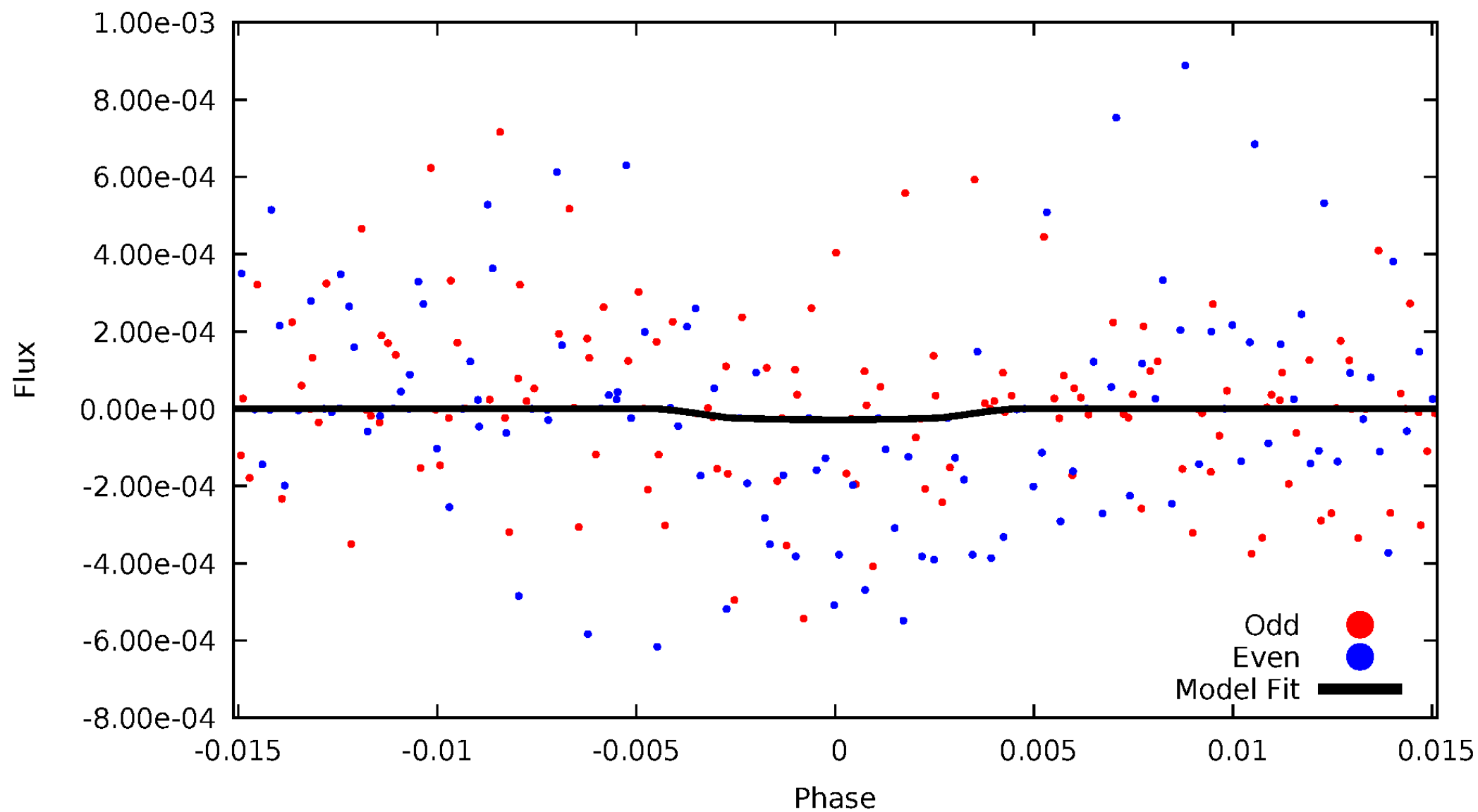


TCE 008518402-01



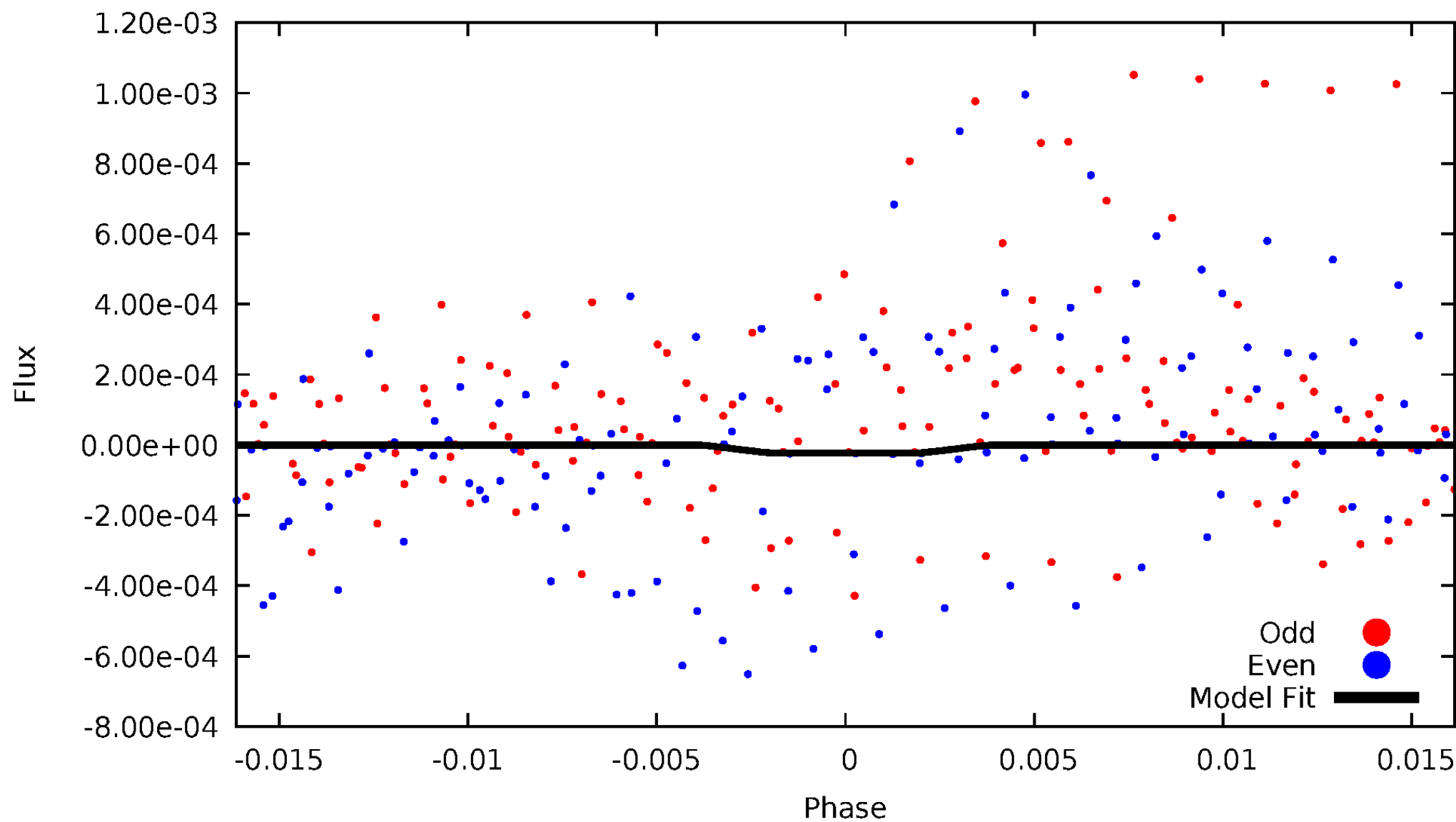
DV Odd/Even

TCE 008518402-01

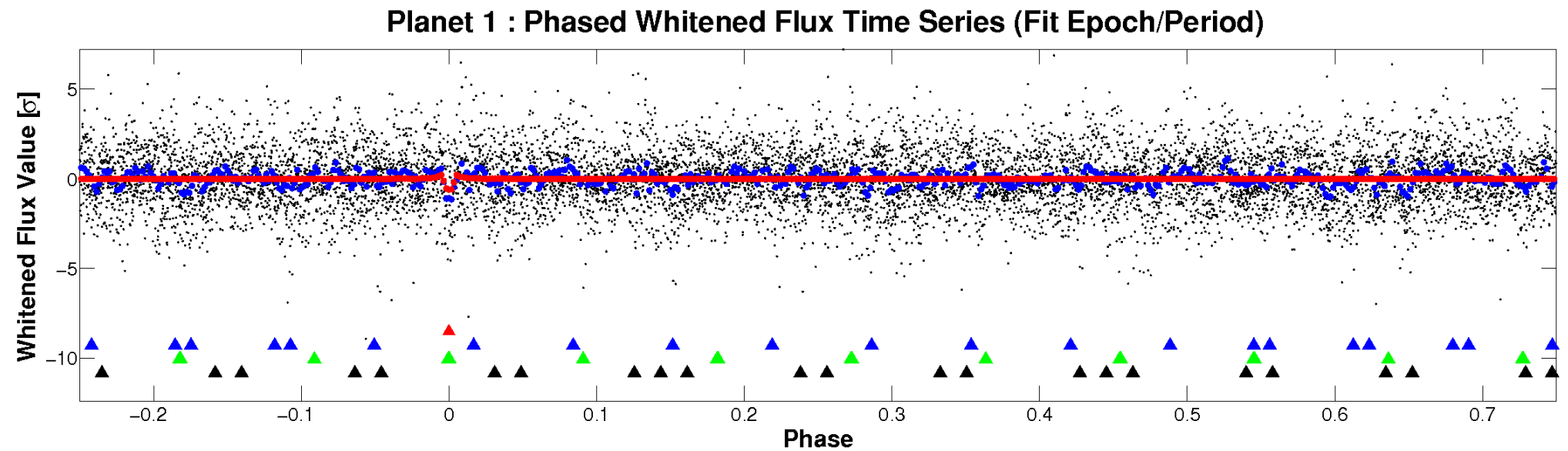
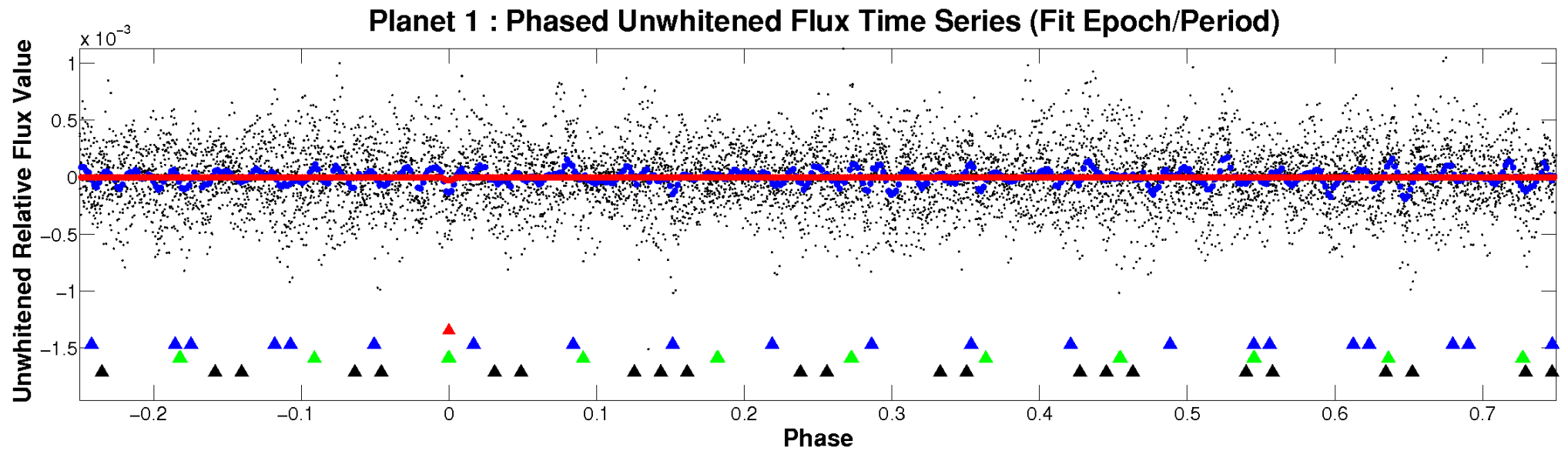


ALT Odd/Even

TCE 008518402-01

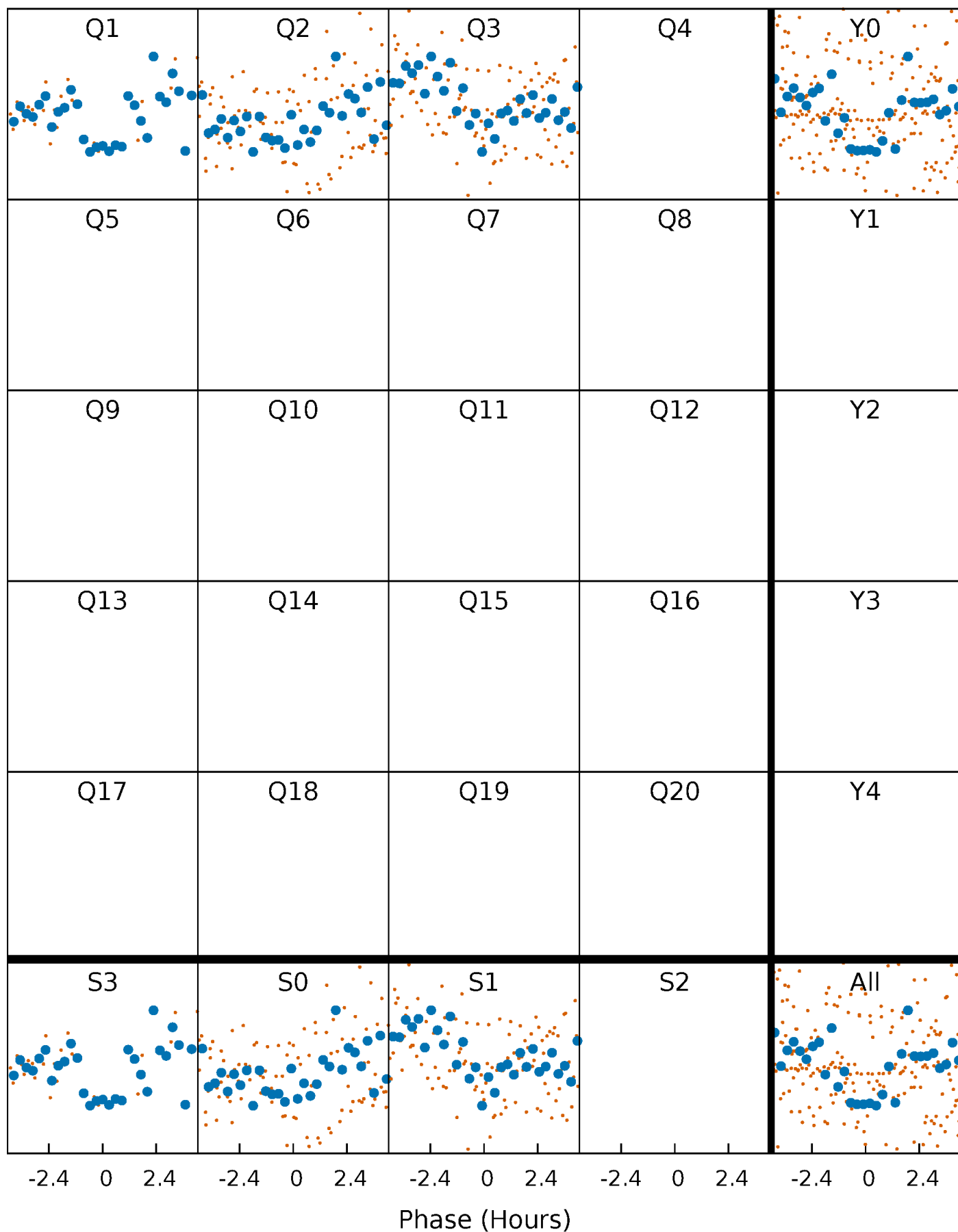


Non-Whitened Vs. Whitened Light Curve



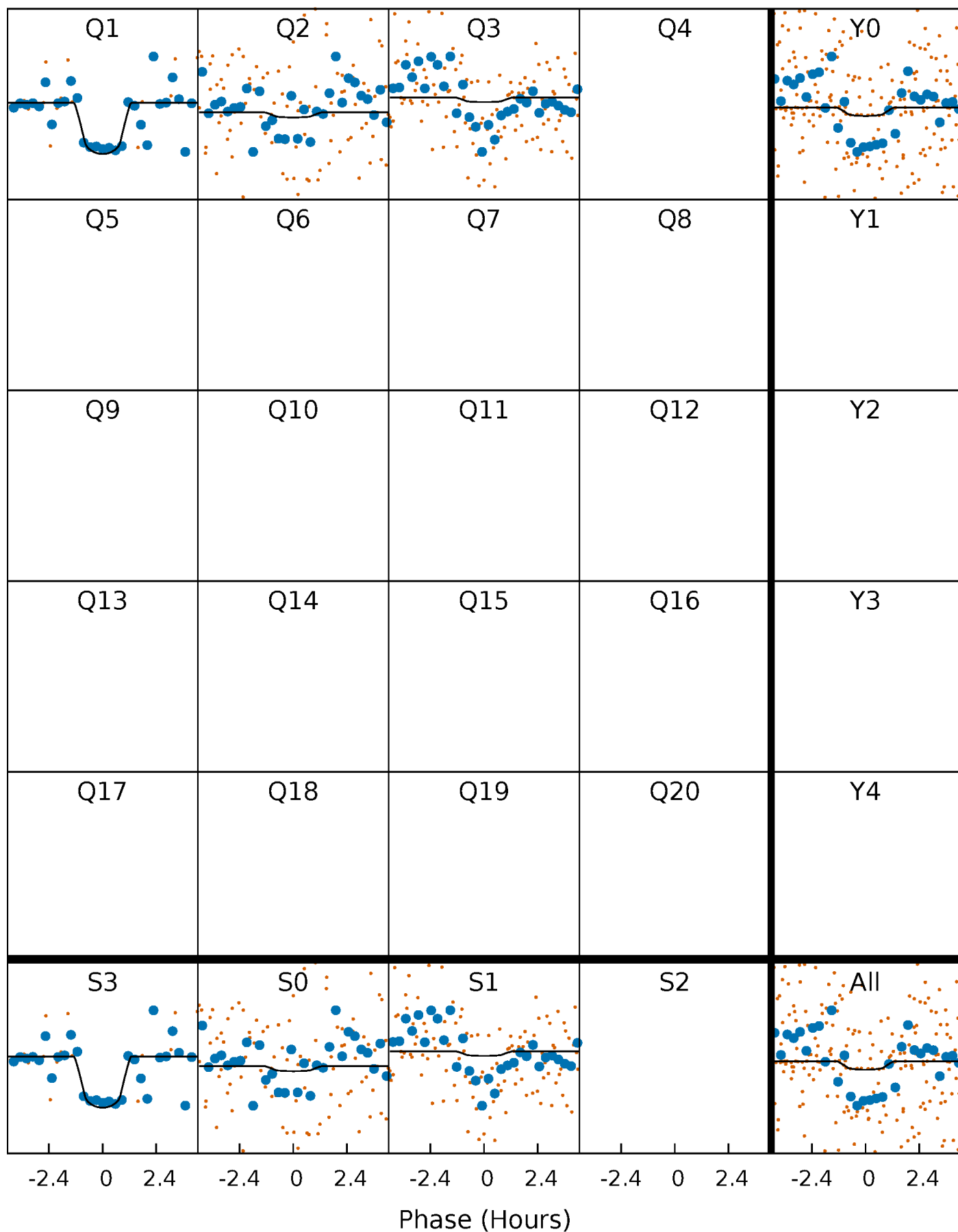
PDC Quarter-Phased Transit Curves

TCE 008518402-01 $P = 11.737305$ Days $T_0 = 141.573305$ (BKJD)



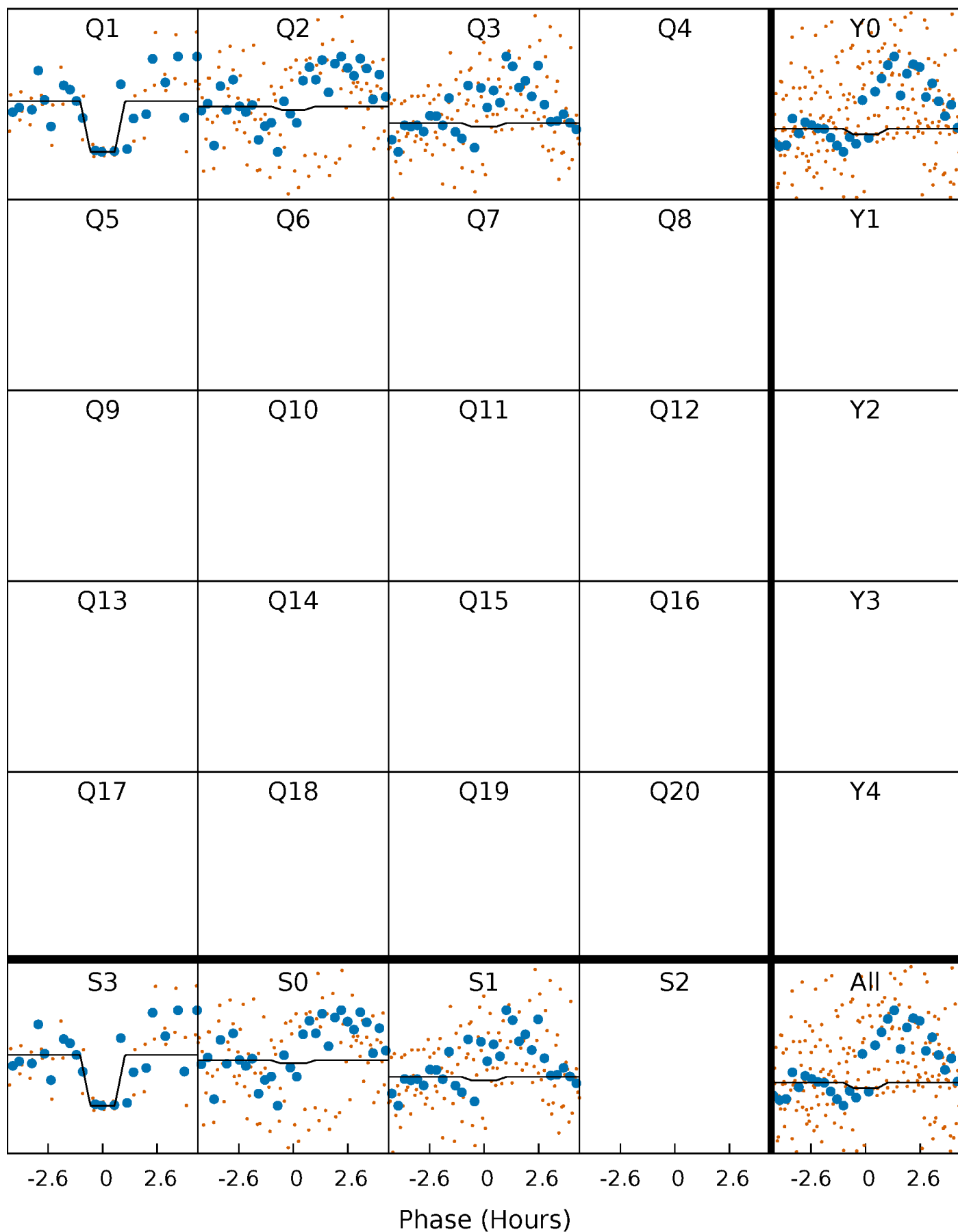
DV Quarter-Phased Transit Curves

TCE 008518402-01 P= 11.737305 Days $T_0=141.573305$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

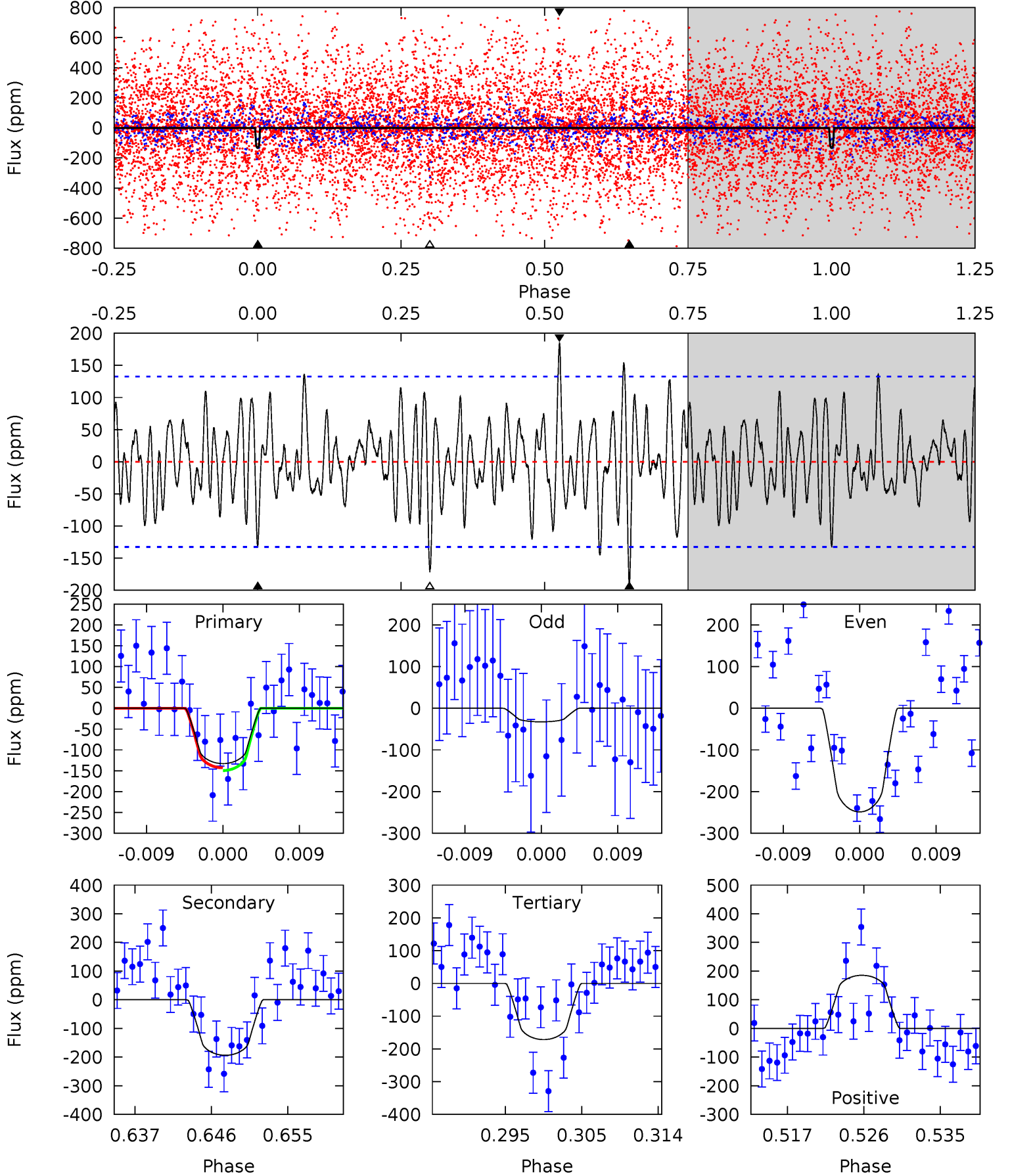
TCE 008518402-01 P= 11.751845 Days $T_0=141.562430$ (BKJD)



DV Model-Shift Uniqueness Test

008518402-01, P = 11.737305 Days, E = 129.836000 Days

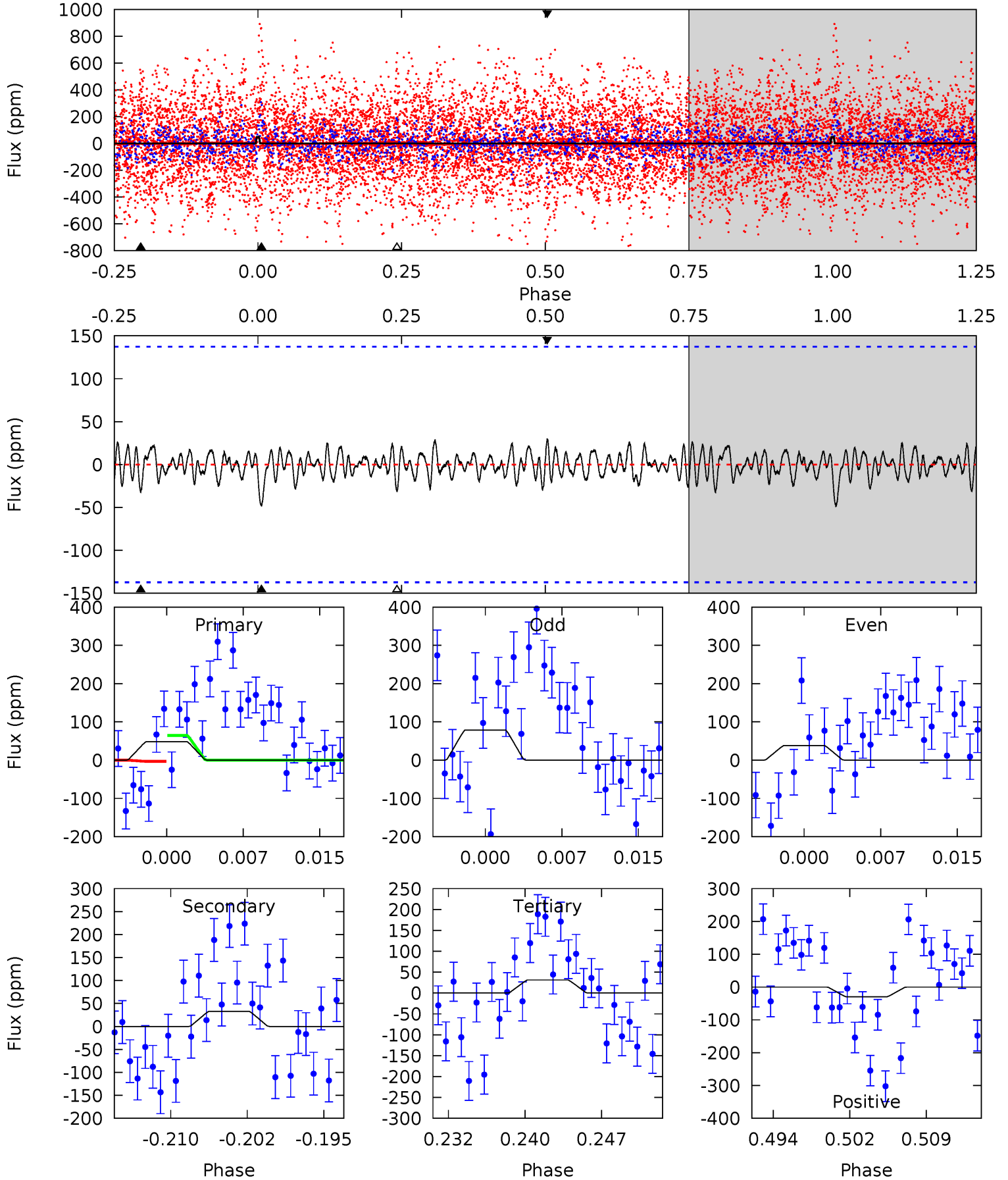
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.05	7.37	6.53	7.04	5.04	2.60	2.02	-1.48	-2.00	0.84	0.32	4.16	1.02	0.49	0.13



Alt Model-Shift Uniqueness Test

008518402-01, $P = 11.751845$ Days, $E = 129.810585$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.79	1.20	1.15	1.10	5.08	2.67	0.43	0.64	0.69	0.05	0.10	0.74	1.06	0.38	1.14



Stellar Parameters For KIC 008518402

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4861^{+72}_{-121}	$2.676^{+0.036}_{-0.027}$	$0.210^{+0.150}_{-0.250}$	$12.846^{+0.604}_{-3.627}$	$2.852^{+0.142}_{-1.277}$	$0.002^{+0.001}_{-0.000}$
	+1%/-2%	+1%/-1%	+71%/-119%	+5%/-28%	+5%/-45%	+44%/-9%
Source	SPE74	AST9	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 008518402-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-194 ± 26	$8.85^{+5.29}_{-4.72}$	2831^{+61}_{-79}	6994^{+4774}_{-1453}	27^{+100}_{-16}
Alt.	-32 ± 27	$7.39^{+4.97}_{-4.14}$	2835^{+58}_{-83}	4757^{+2849}_{-1791}	$5.636^{+30.664}_{-5.031}$

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

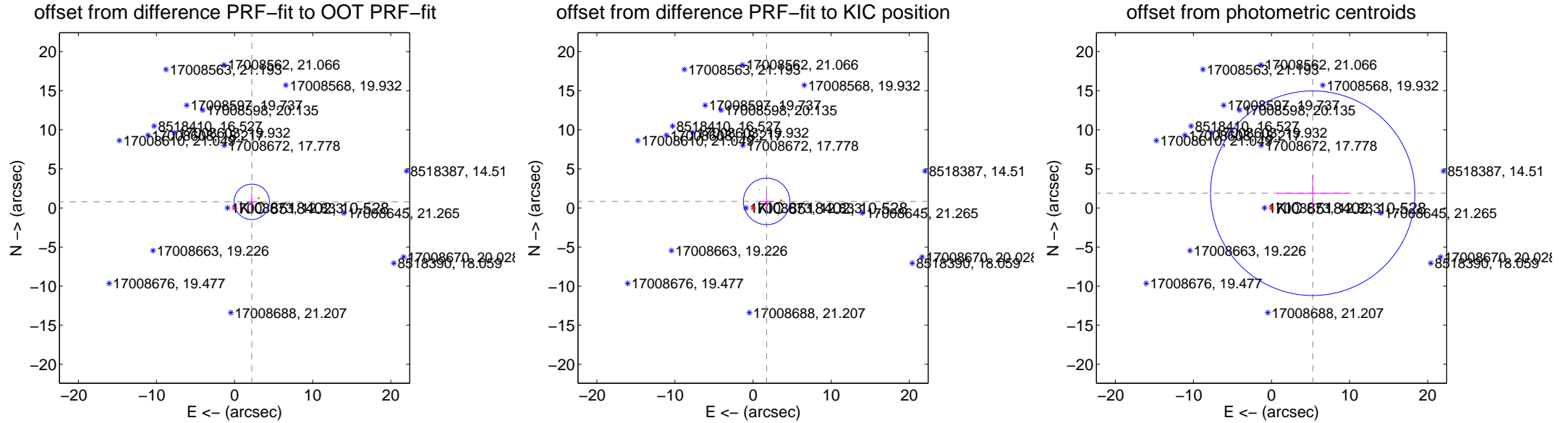
DV Centroid Data

Supplemental centroid analysis for 008518402-01. **Kepler magnitude: 10.53.** Transit SNR 10.09

There are 2 quarters with good PRF difference image offsets

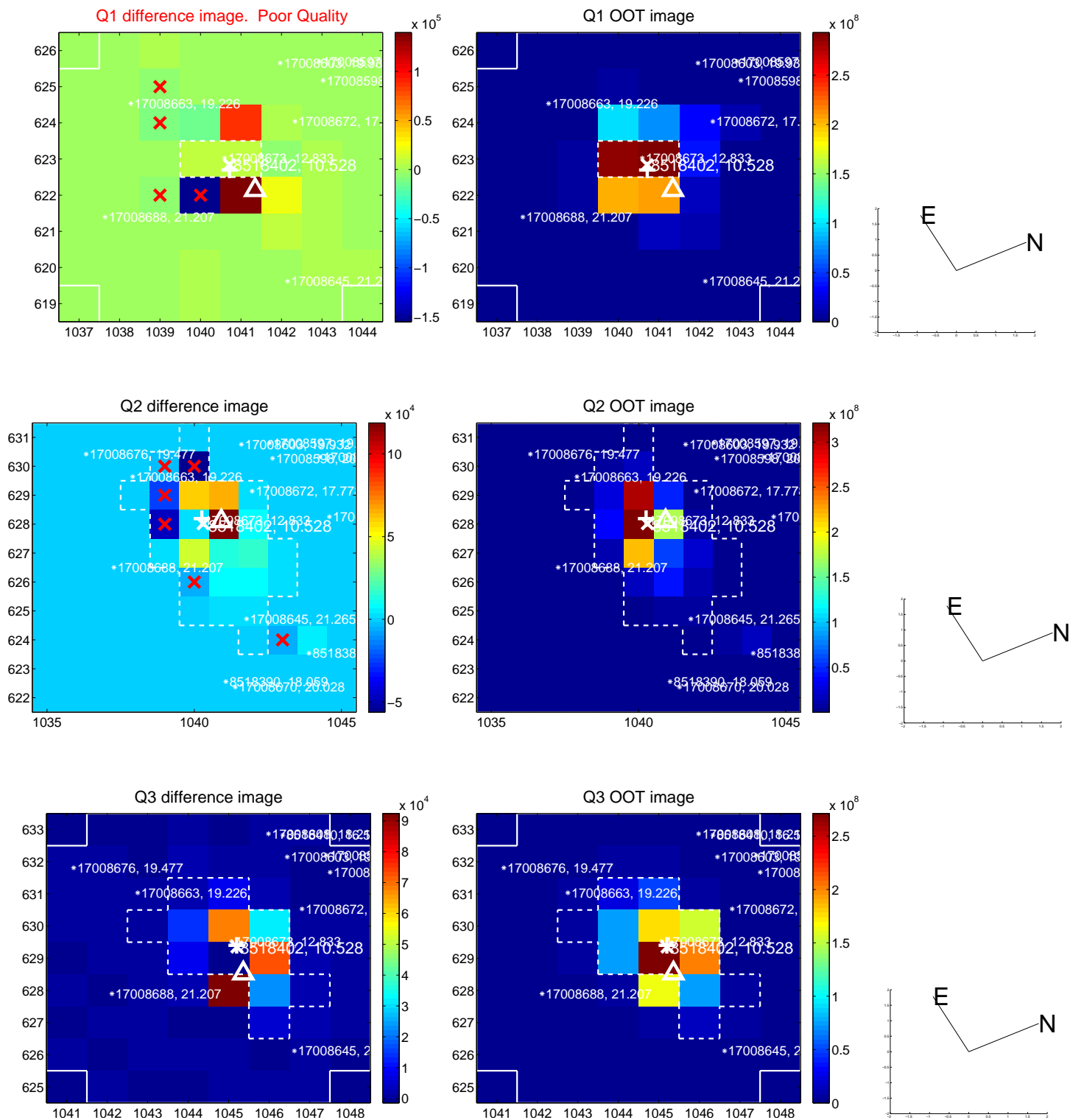
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.335 \pm 0.755	3.09	-2.200 \pm 0.689	0.782 \pm 1.148
PRF-fit source offset from KIC position	1.930 \pm 0.991	1.95	-1.740 \pm 0.948	0.836 \pm 1.161
photometric centroid source offset	5.60 \pm 4.36	1.28	-5.28 \pm 4.56	1.89 \pm 2.26



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.



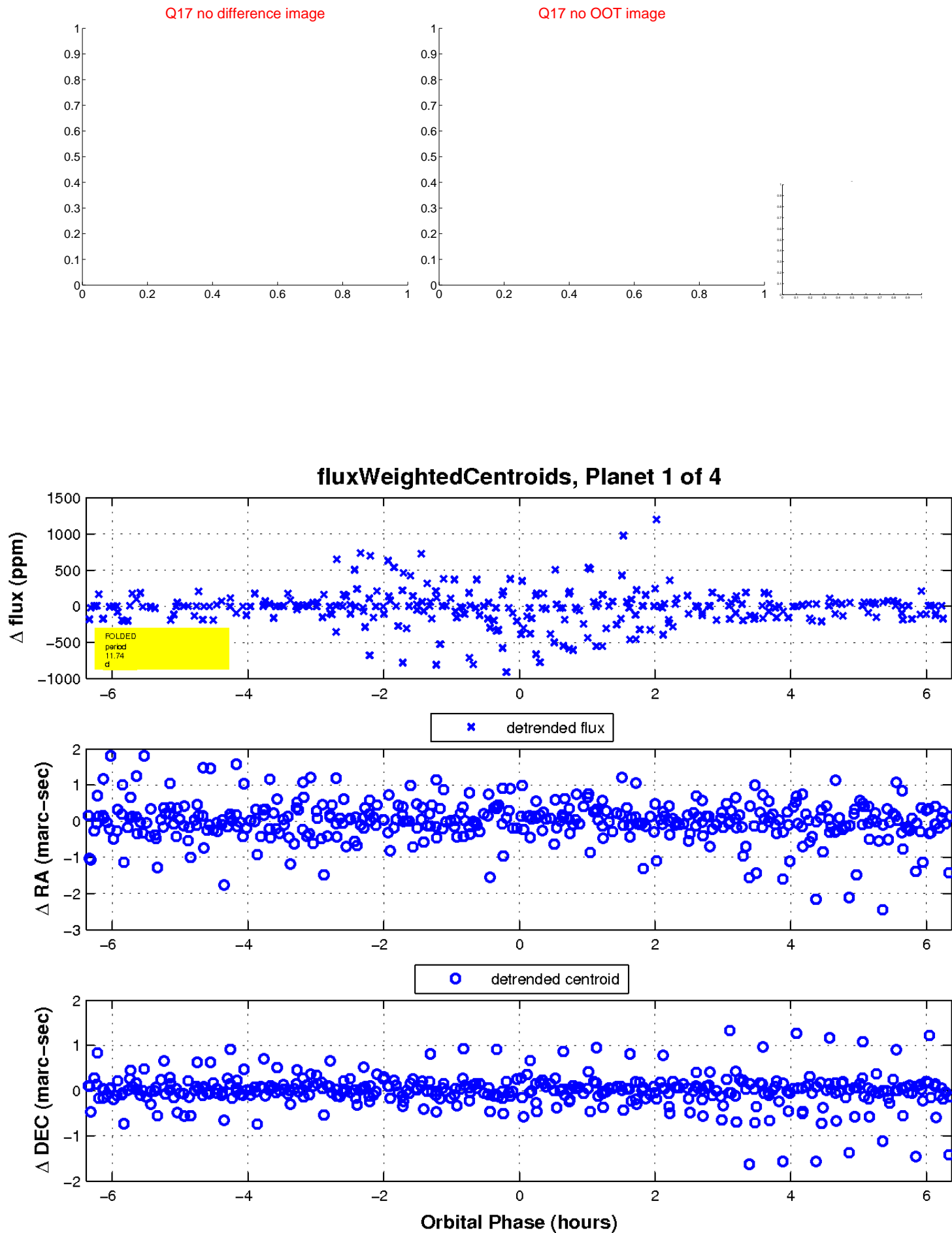
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



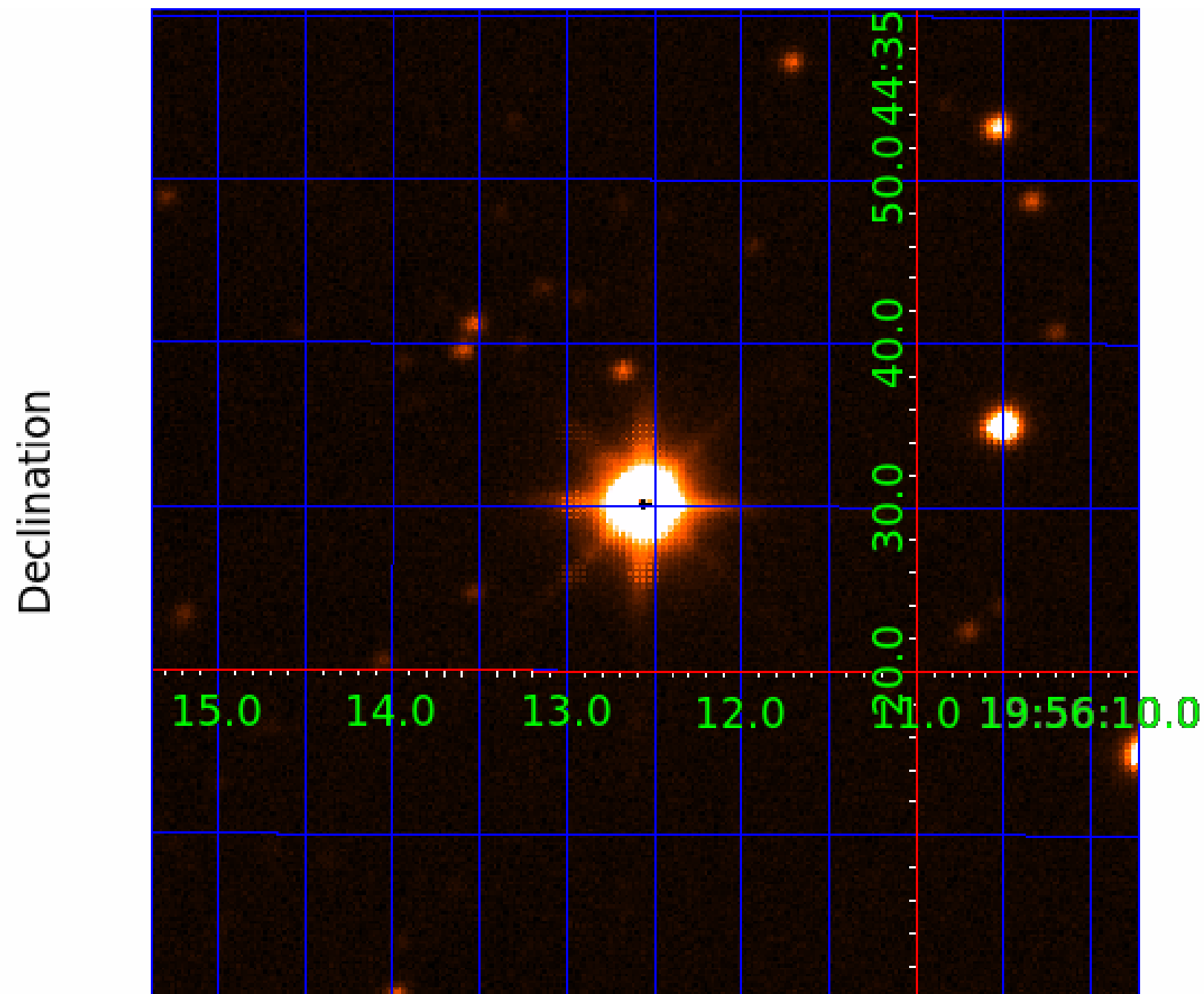
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008518402

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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008518402-04	OBS	No	62.228741	178.259122	214.3	2.000	14.8	-1.0	12.85	4861	18.16	434.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008518402-01	OBS	FP	0.00	1	0	0	0	LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008518402-03	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008518402-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

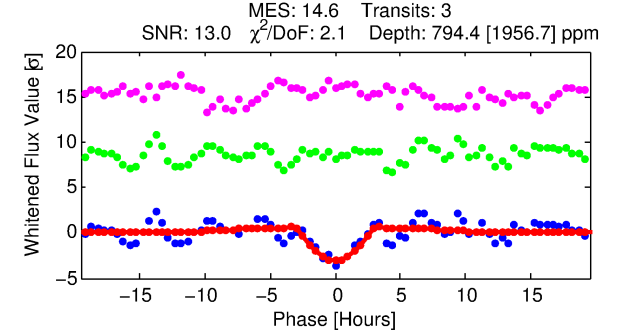
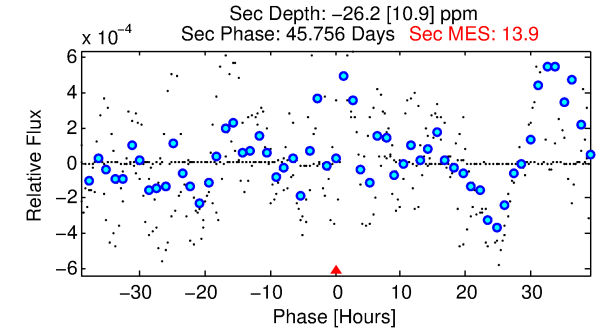
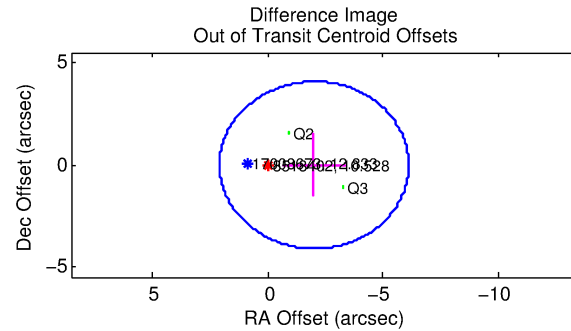
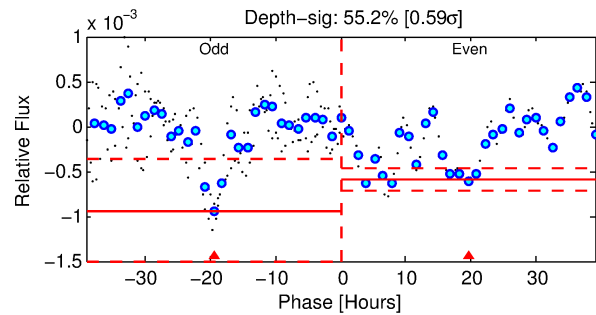
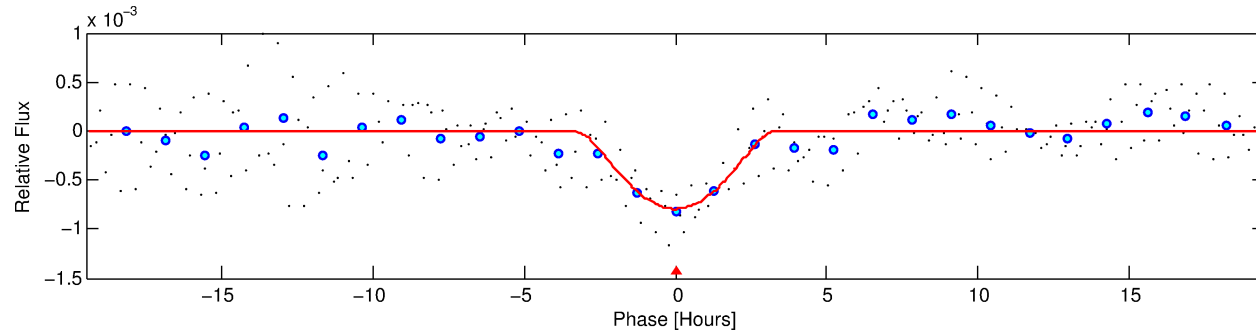
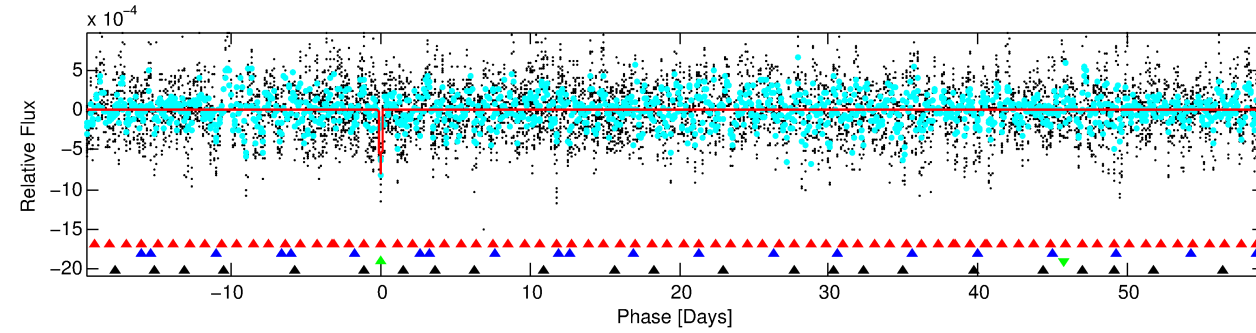
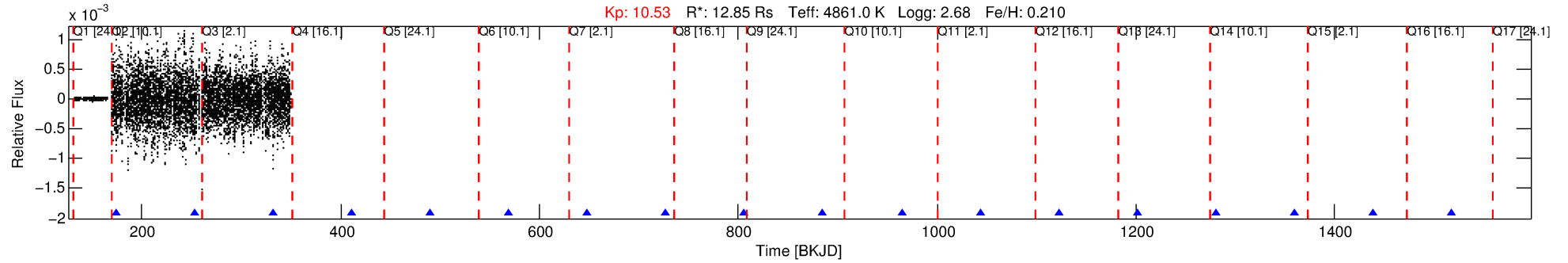
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008518402-03

No Significant Match Found

DV One-Page Summary

KIC: 8518402 Candidate: 3 of 4 Period: 78.961 d



DV Fit Results:

Period = 78.96087 [0.01050] d
Epoch = 174.6434 [0.0123] BKJD
Rp/R* = 0.0536 [0.1465]
a/R* = 30.87 [18.96]
b = 1.00 [0.29]
Seff = 316.05 [69.53]
Teq = 1075 [59] K
Rp = 75.16 [206.52] Re
a = 0.5111 [0.0972] AU
Ag = N/A
Teffp = N/A

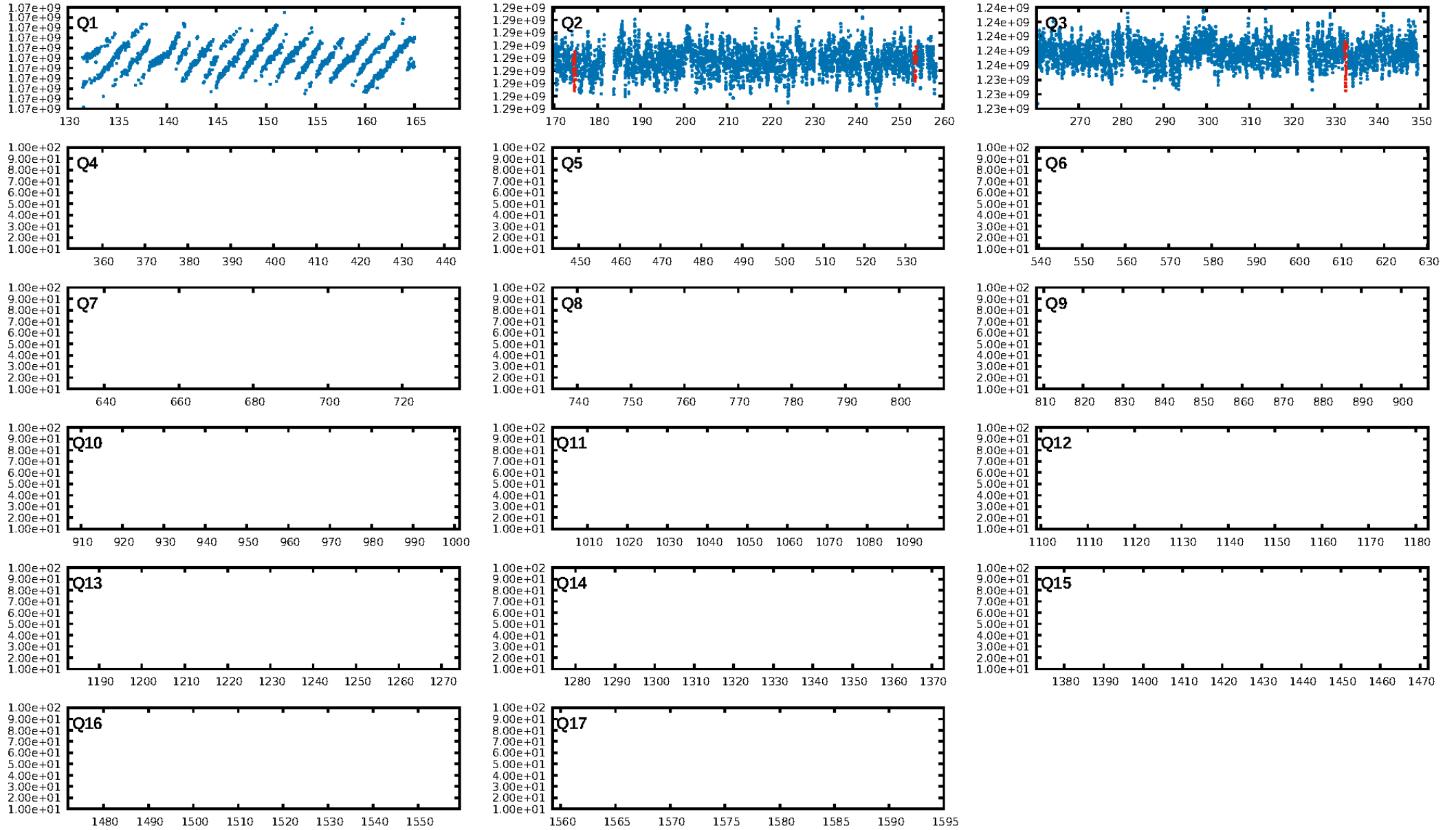
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.15 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.8%
ModelChiSquareGof-sig: 23.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.277
Centroid-sig: N/A
Centroid-so: 0.576 arcsec [1.79 σ]
OotOffset-rm: 2.011 arcsec [1.47 σ]
KicOffset-rm: 1.578 arcsec [0.99 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

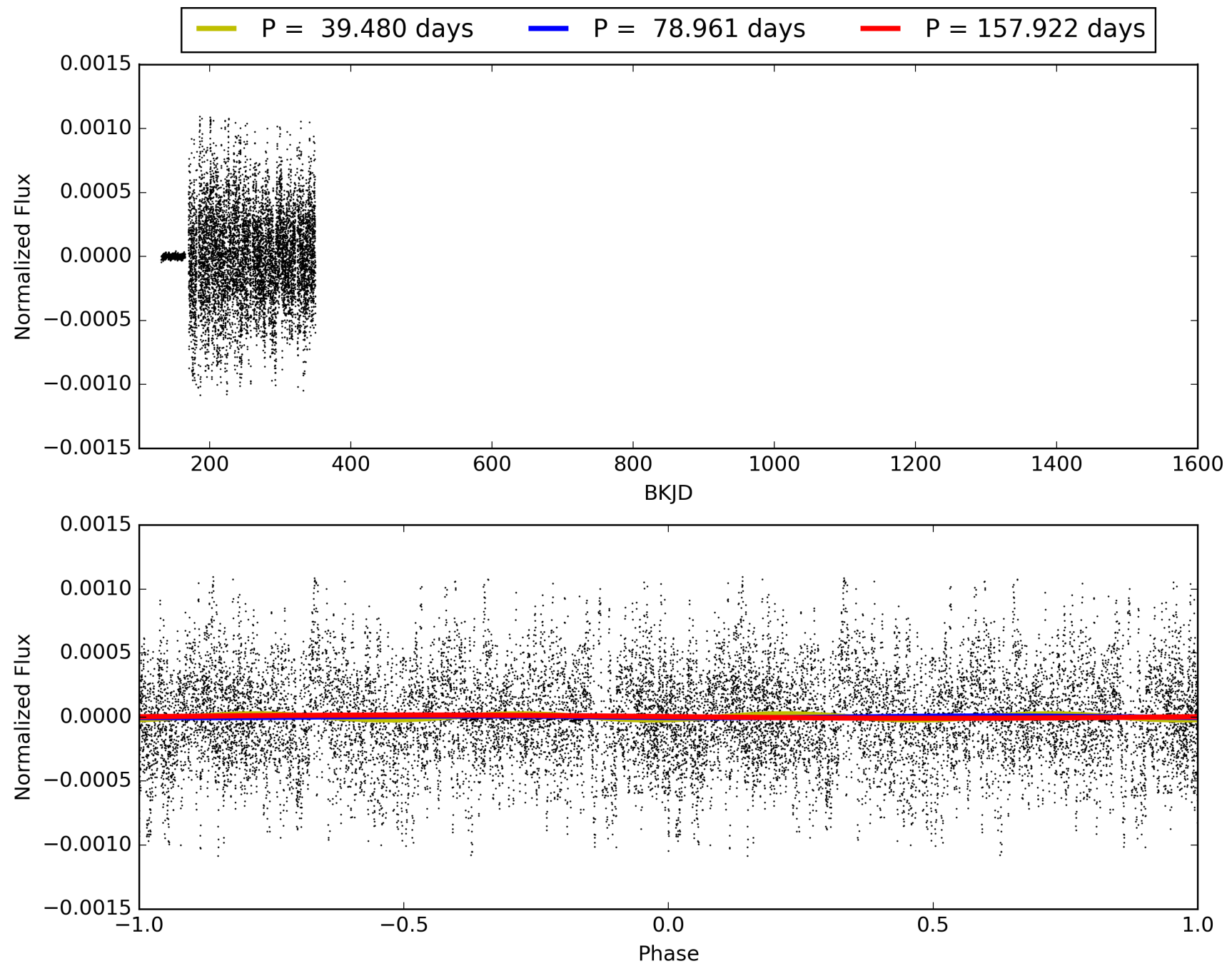
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:35:07 Z

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

TCE 008518402-03, PDC Light Curves

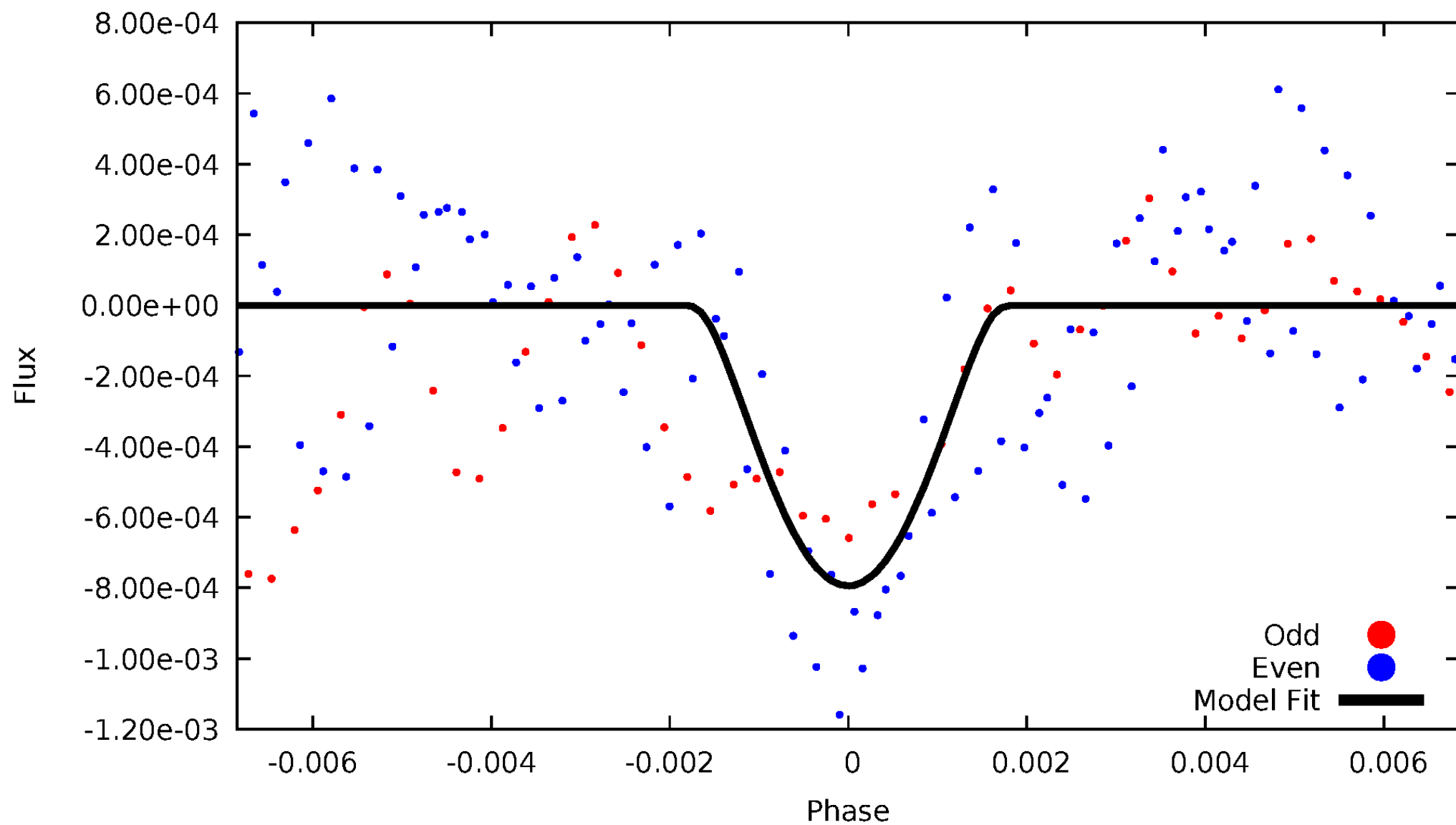


TCE 008518402-03



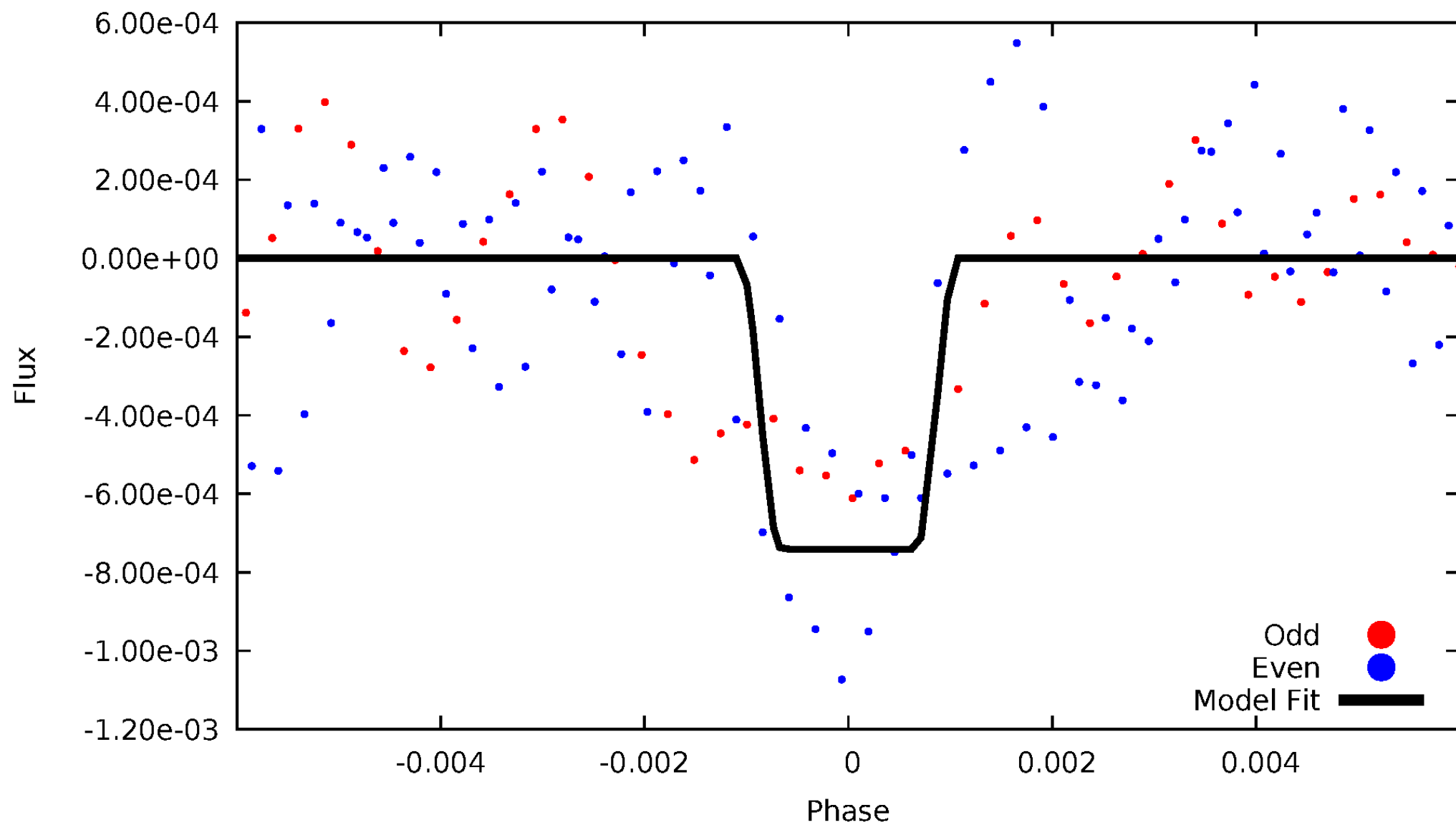
DV Odd/Even

TCE 008518402-03



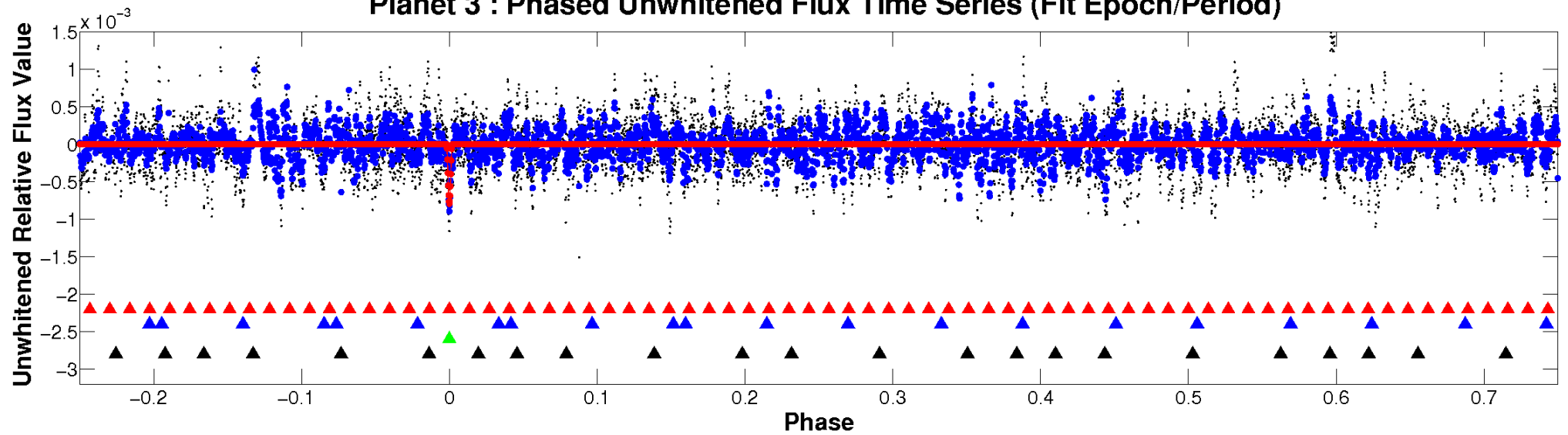
ALT Odd/Even

TCE 008518402-03

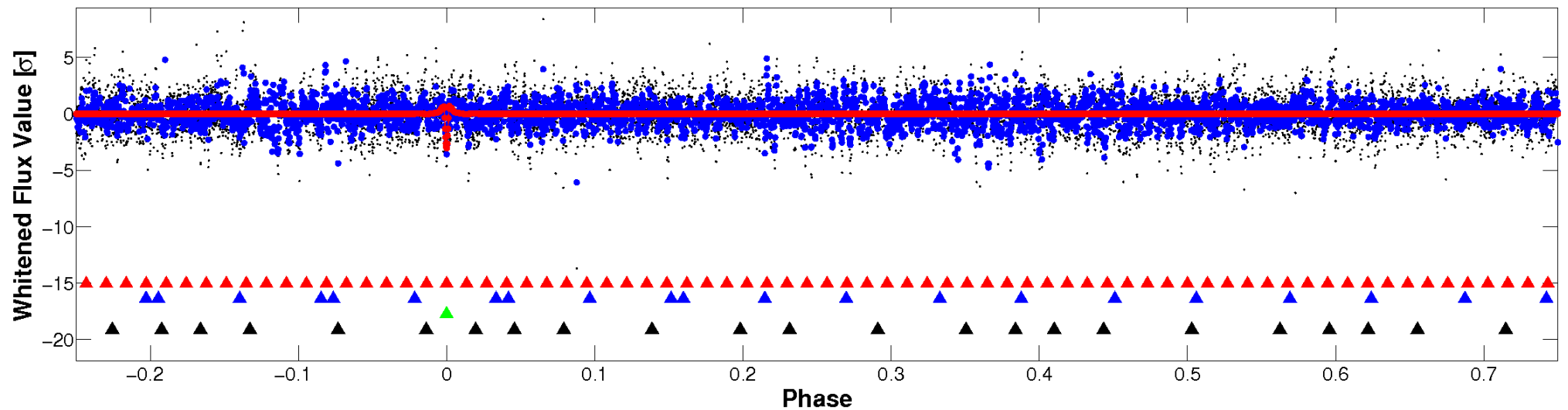


Non-Whitened Vs. Whitened Light Curve

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

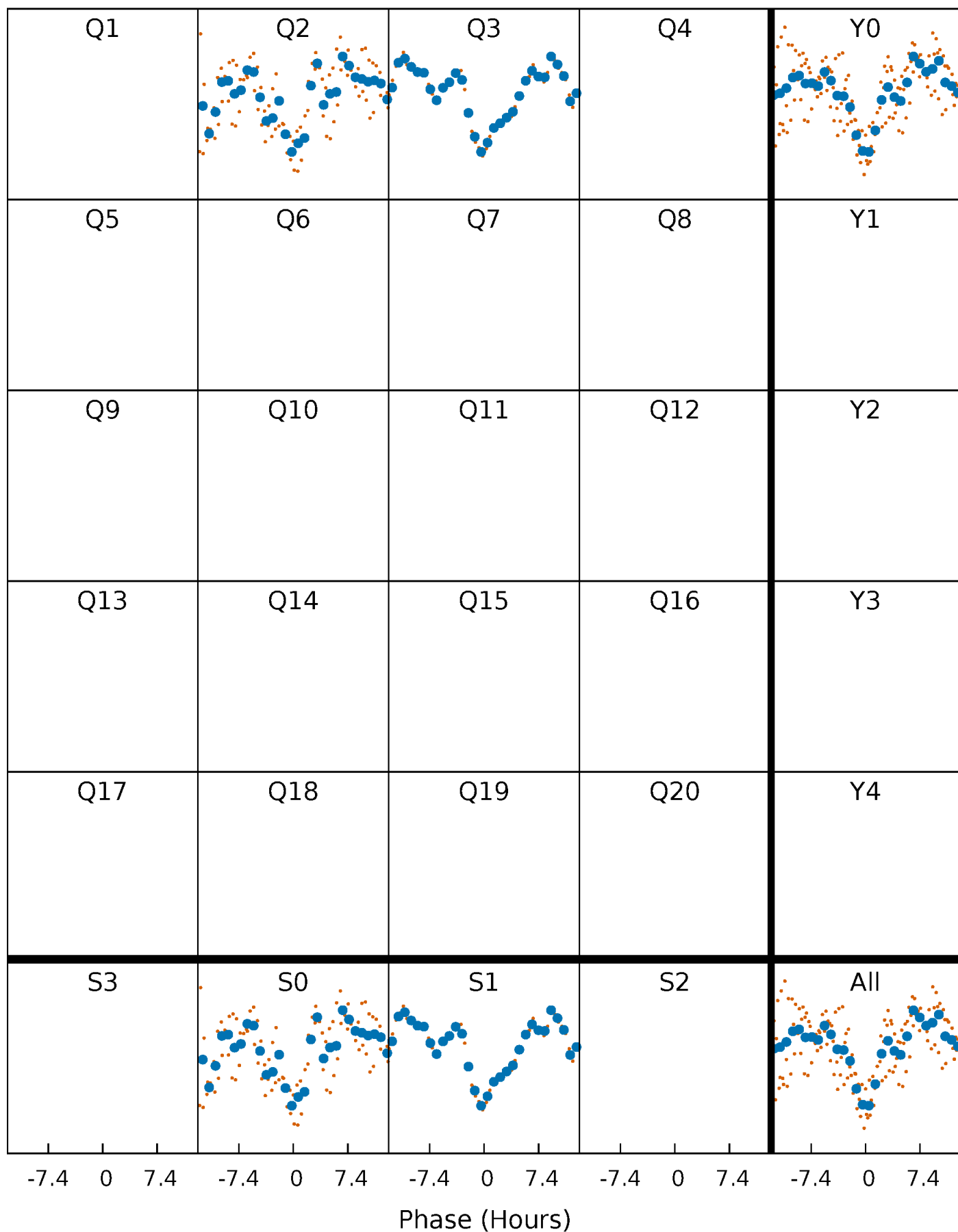


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



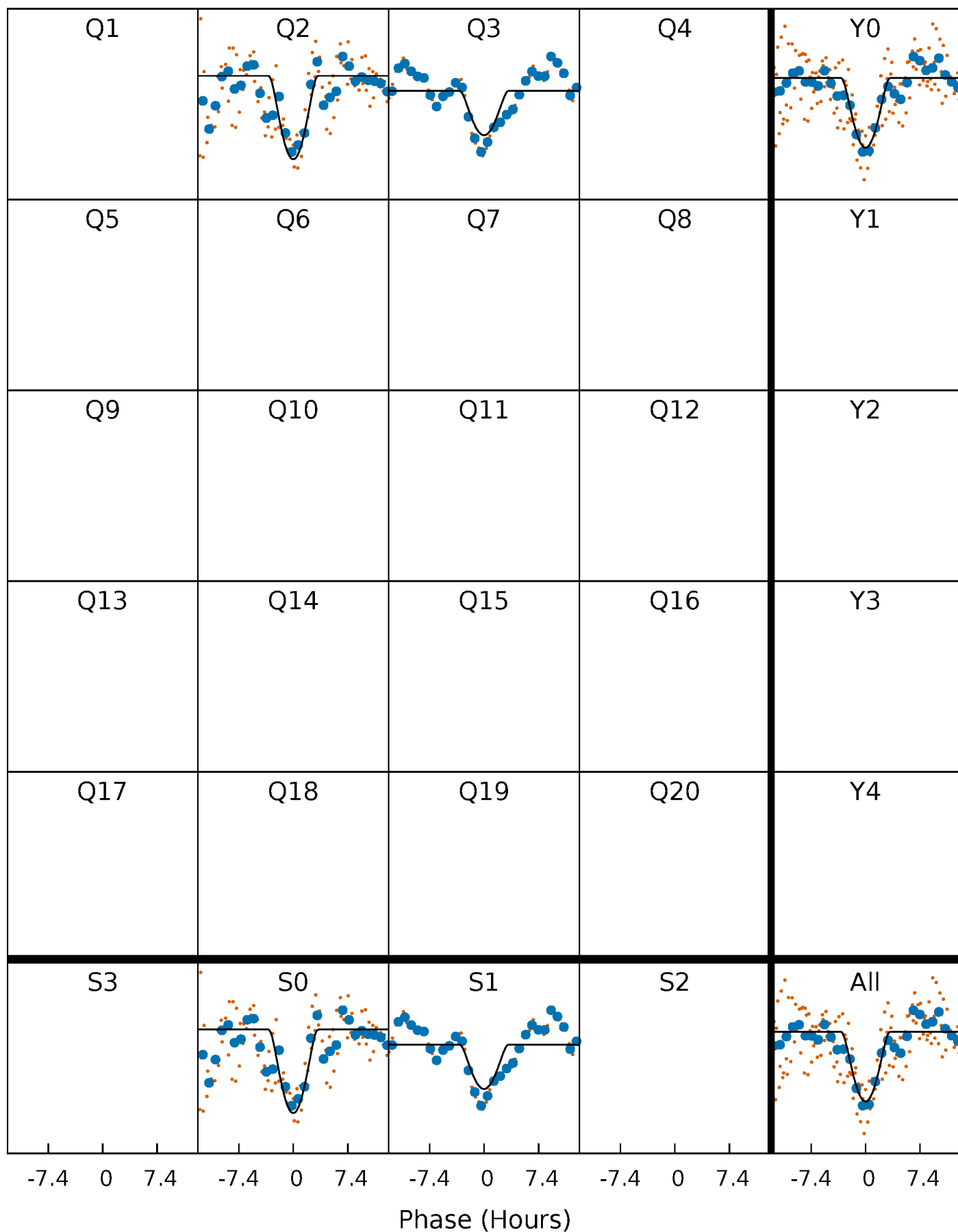
PDC Quarter-Phased Transit Curves

TCE 008518402-03 $P = 78.960868$ Days $T_0 = 174.643415$ (BKJD)



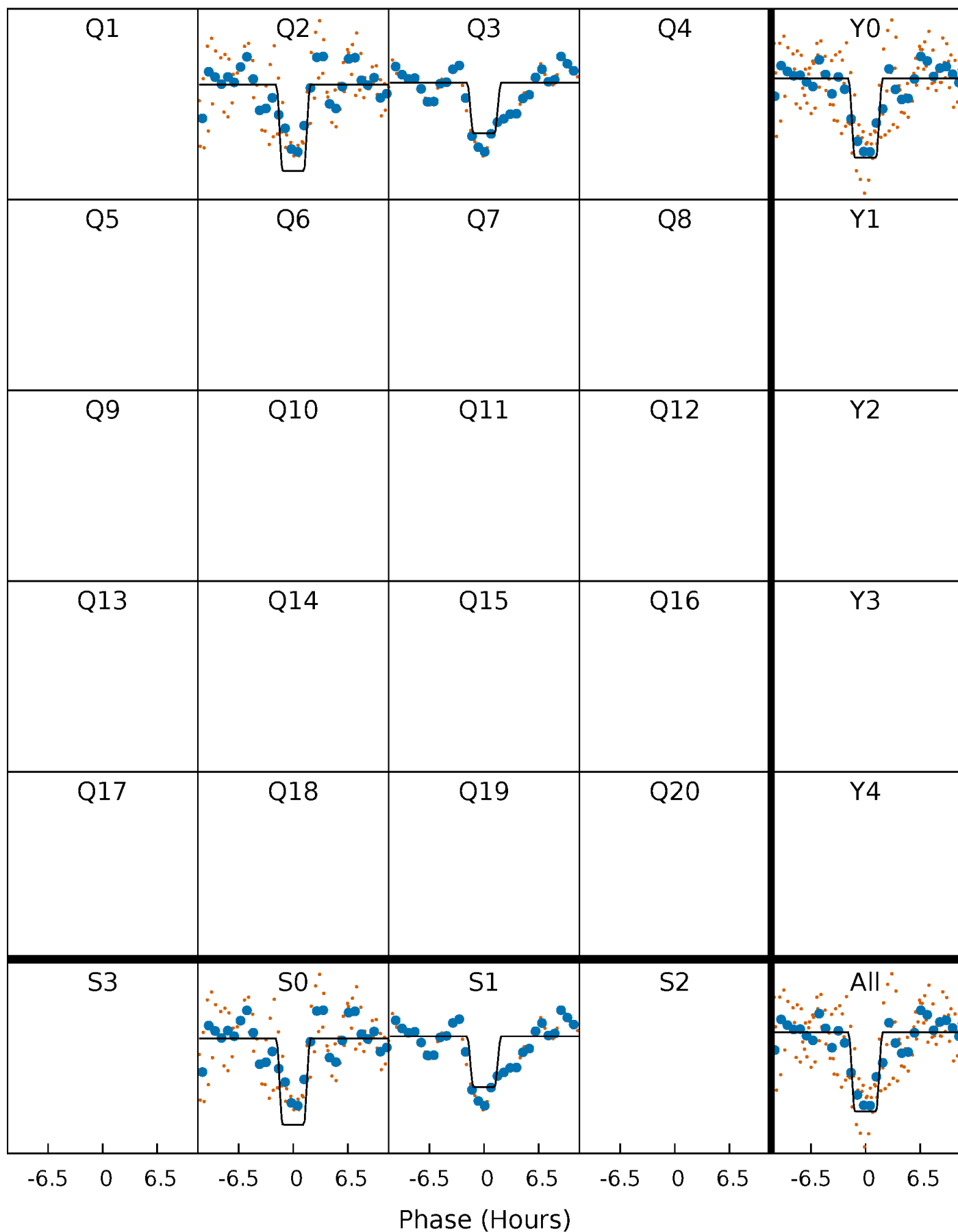
DV Quarter-Phased Transit Curves

TCE 008518402-03 $P = 78.960868$ Days $T_0 = 174.643415$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

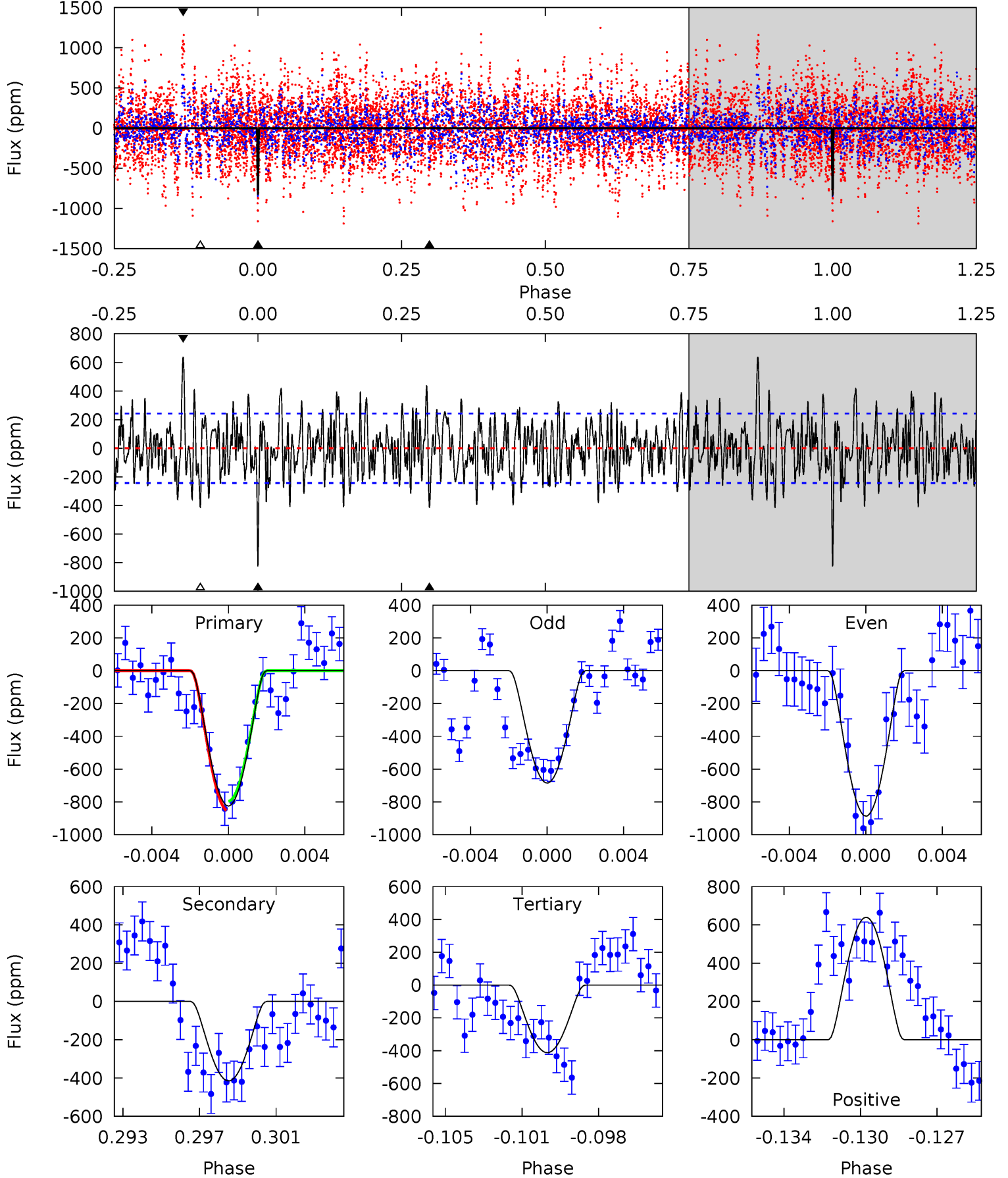
TCE 008518402-03 P= 78.960749 Days $T_0=174.640841$ (BKJD)



DV Model-Shift Uniqueness Test

008518402-03, P = 78.960868 Days, E = 95.682547 Days

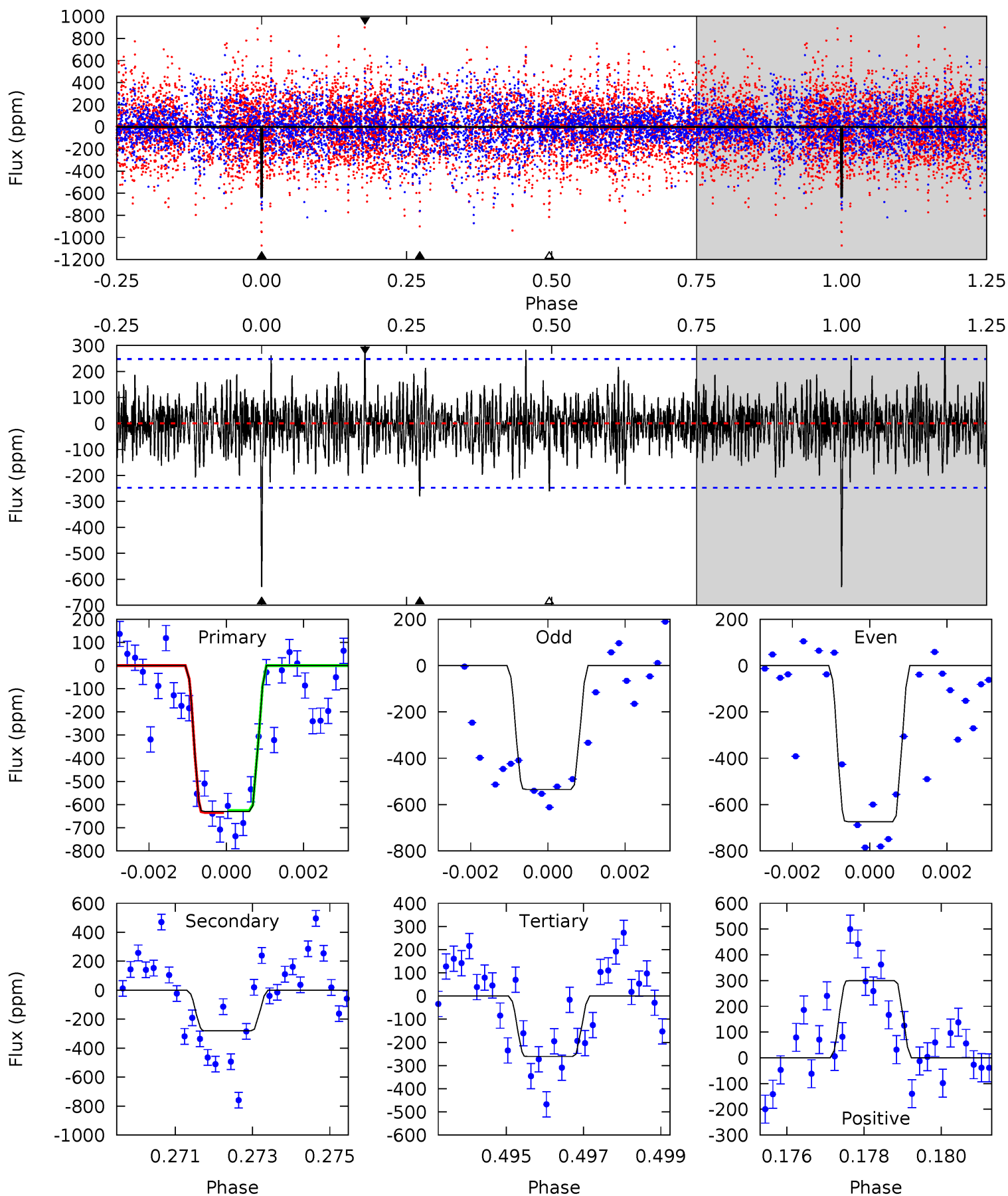
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	8.91	8.85	13.7	5.22	2.91	3.36	8.86	3.98	0.06	-4.82	1.85	1.16	0.44	0.61



Alt Model-Shift Uniqueness Test

008518402-03, P = 78.960749 Days, E = 95.680092 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	6.02	5.61	6.44	5.32	3.08	1.58	7.93	7.10	0.41	-0.42	1.28	1.17	0.32	0.09



Stellar Parameters For KIC 008518402

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4861^{+72}_{-121}	$2.676^{+0.036}_{-0.027}$	$0.210^{+0.150}_{-0.250}$	$12.846^{+0.604}_{-3.627}$	$2.852^{+0.142}_{-1.277}$	$0.002^{+0.001}_{-0.000}$
	+1%/-2%	+1%/-1%	+71%/-119%	+5%/-28%	+5%/-45%	+44%/-9%
Source	SPE74	AST9	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 008518402-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-415 ± 47	$169.35^{+173.88}_{-119.86}$	1500^{+31}_{-41}	2648^{+1315}_{-577}	$2.076^{+22.008}_{-1.574}$
Alt.	-280 ± 47	$156.29^{+150.33}_{-108.46}$	1498^{+31}_{-43}	2564^{+1155}_{-647}	$1.603^{+16.850}_{-1.208}$

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

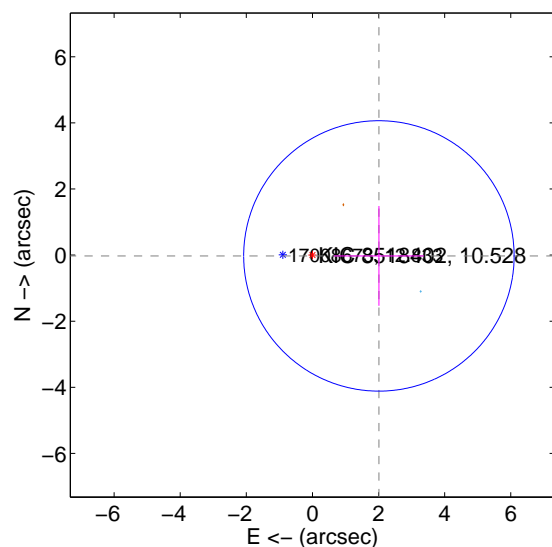
Supplemental centroid analysis for 008518402-03. **Kepler magnitude: 10.53.** Transit SNR 13.04

There are 1 quarters with good PRF difference image offsets

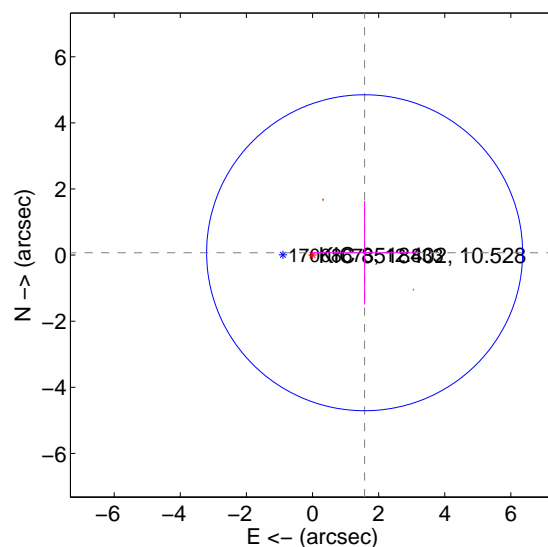
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.011 ± 1.364	1.47	-2.011 ± 1.364	-0.025 ± 1.510
PRF-fit source offset from KIC position	1.578 ± 1.593	0.99	-1.576 ± 1.593	0.071 ± 1.566
photometric centroid source offset	0.58 ± 0.32	1.79	-0.44 ± 0.39	-0.37 ± 0.19

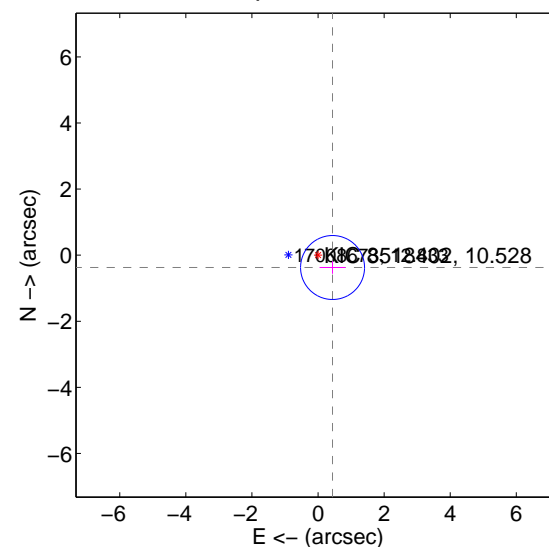
offset from difference PRF-fit to OOT PRF-fit



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.

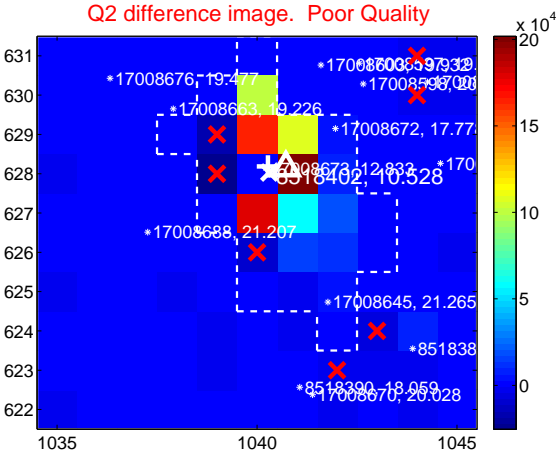
Q1 no difference image



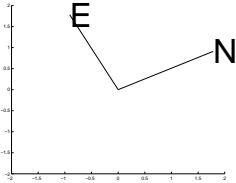
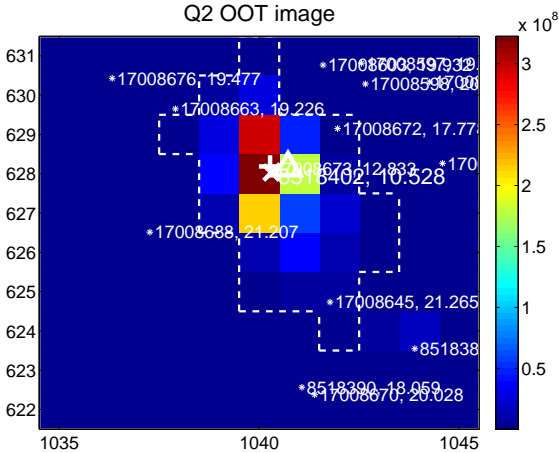
Q1 no OOT image



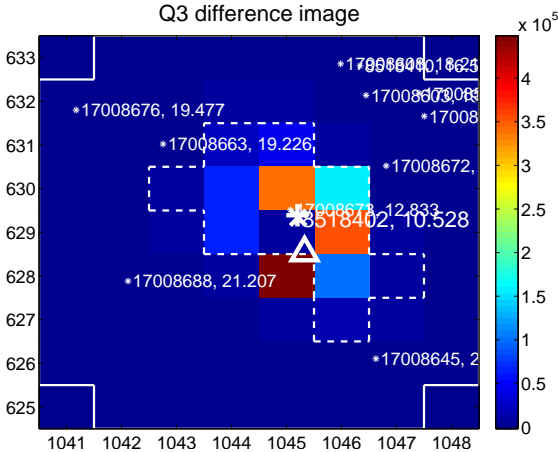
Q2 difference image. Poor Quality



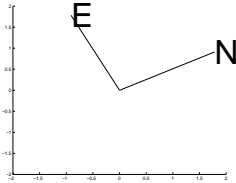
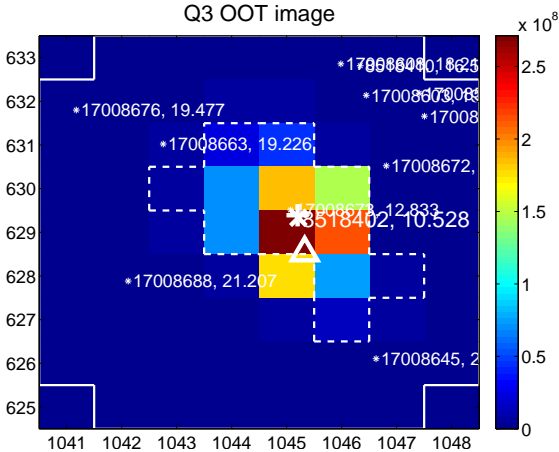
Q2 OOT image



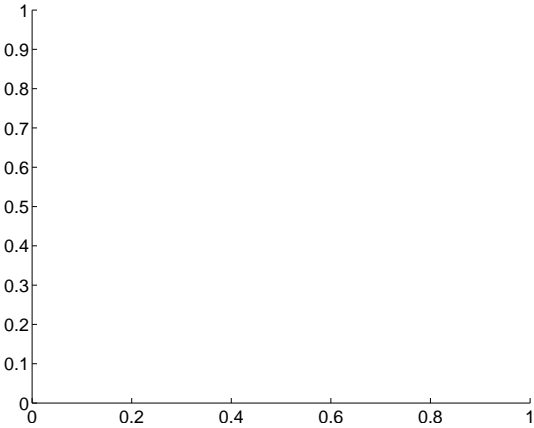
Q3 difference image



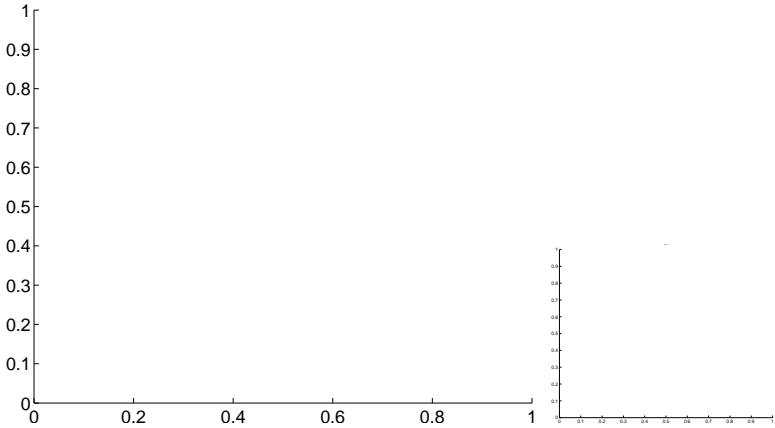
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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



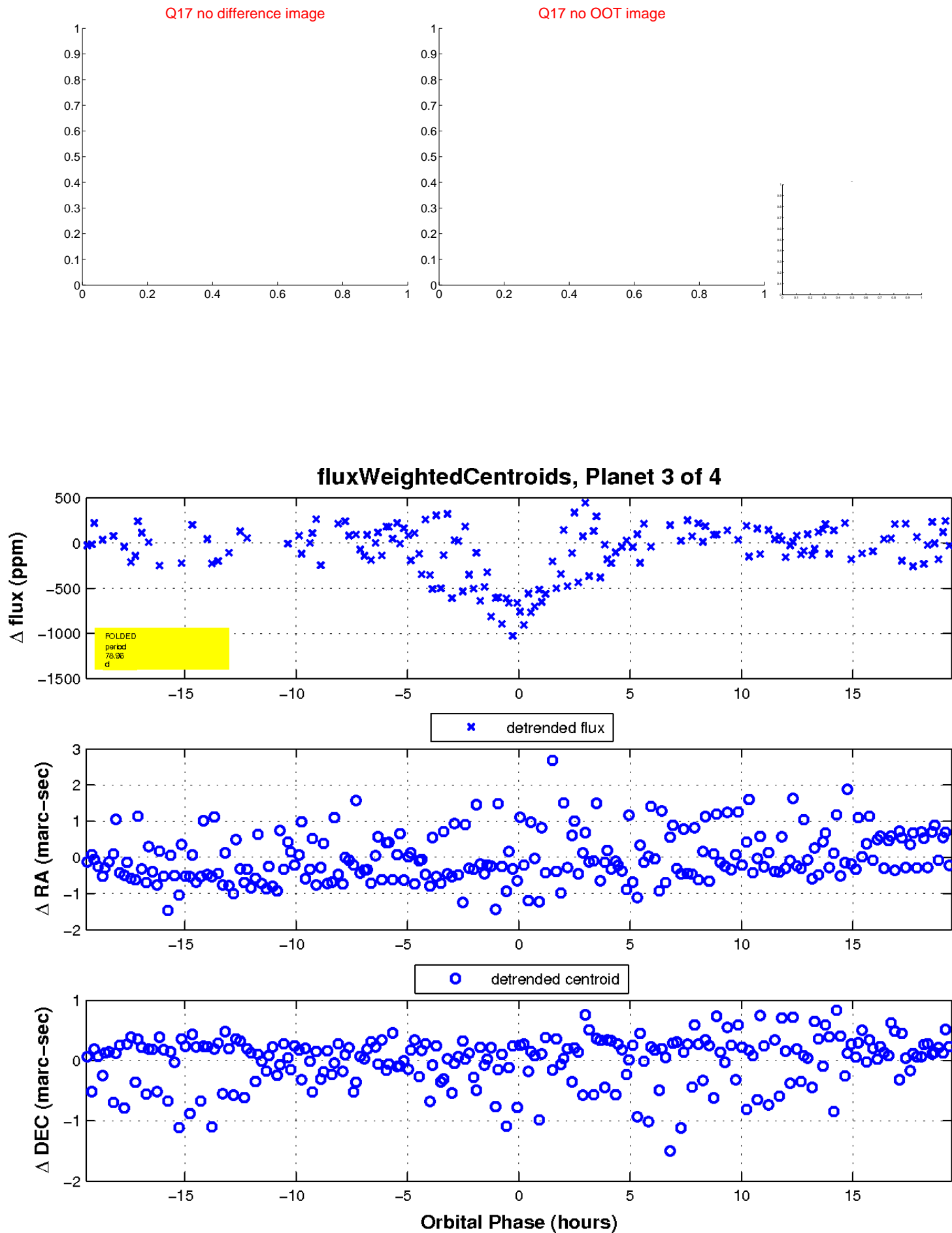
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



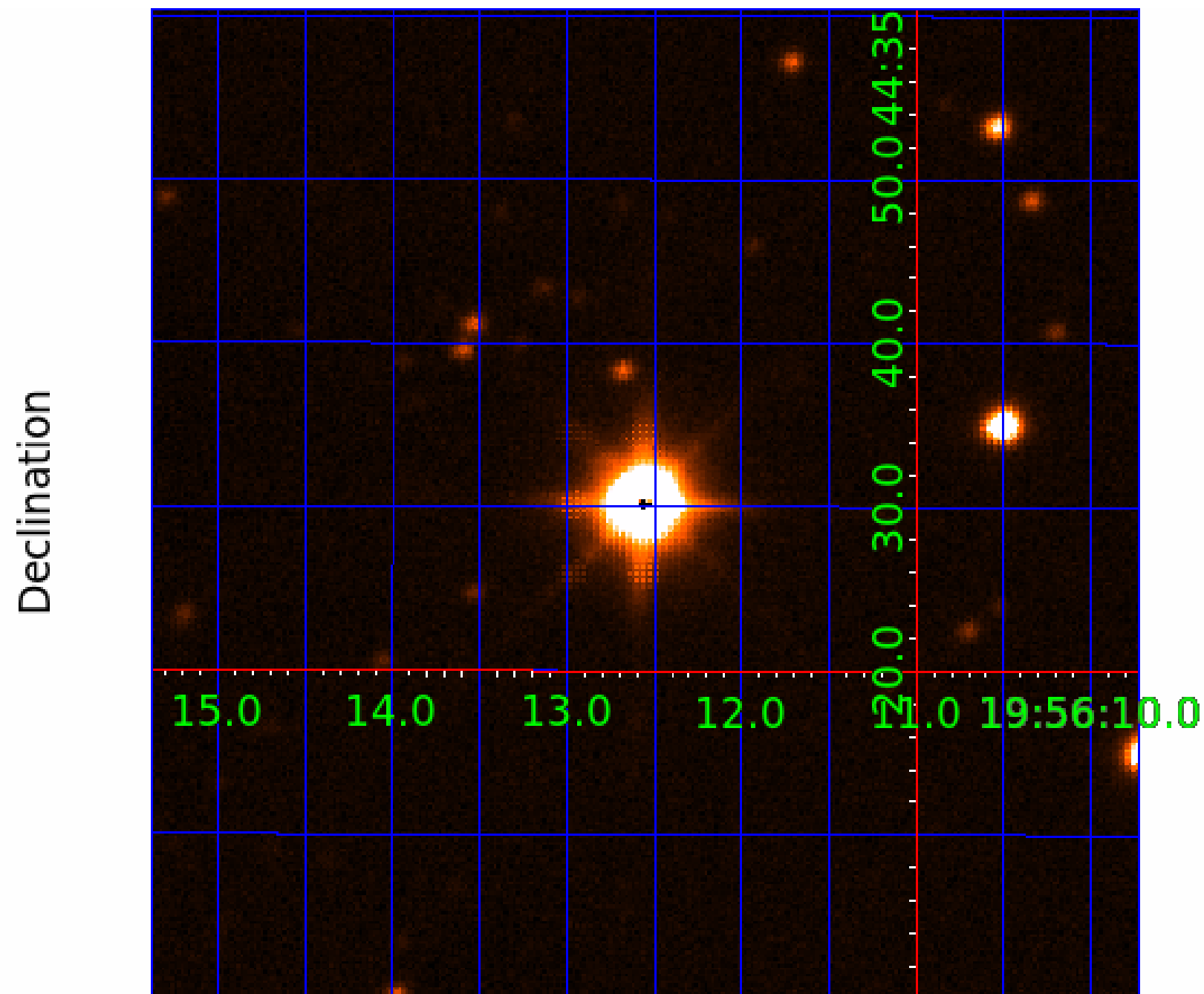
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008518402

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})
008518402-01	OBS	No	11.737305	141.573305	28.4	2.130	7.9	10.1	12.85	4861	8.79	4013.76
008518402-03	OBS	No	78.960868	174.643415	794.4	6.487	14.6	13.0	12.85	4861	75.16	316.05
008518402-04	OBS	No	62.228741	178.259122	214.3	2.000	14.8	-1.0	12.85	4861	18.16	434.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008518402-01	OBS	FP	0.00	1	0	0	0	LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008518402-03	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008518402-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

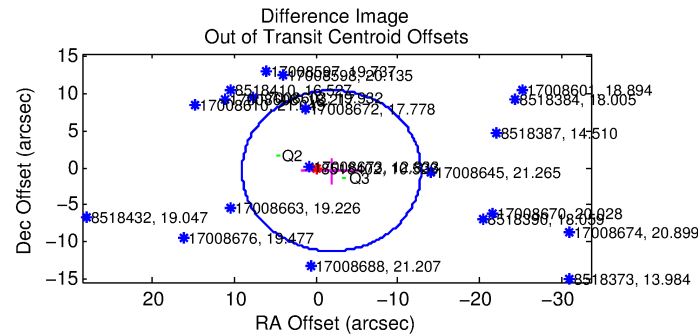
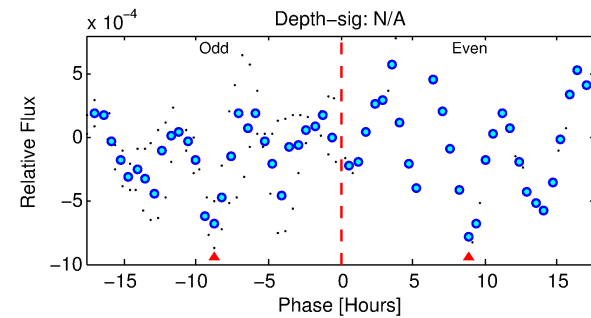
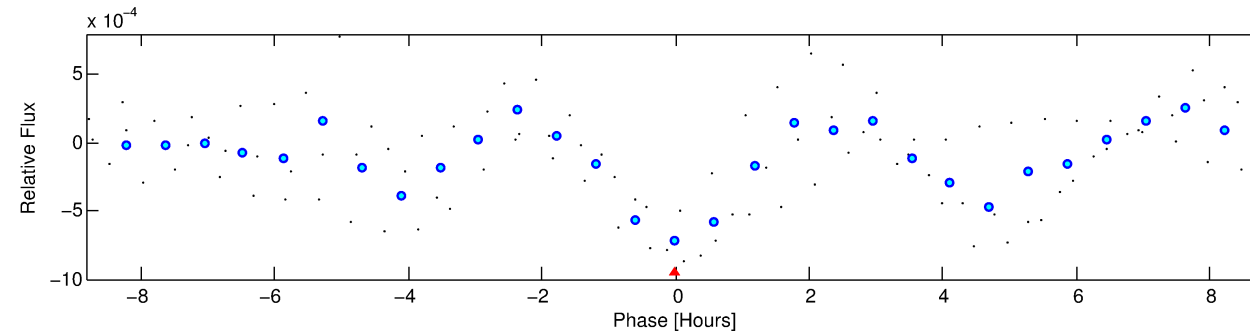
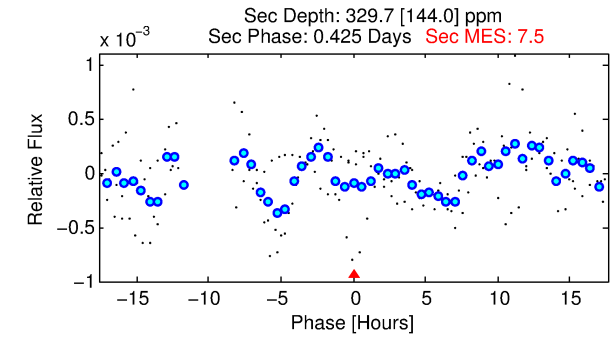
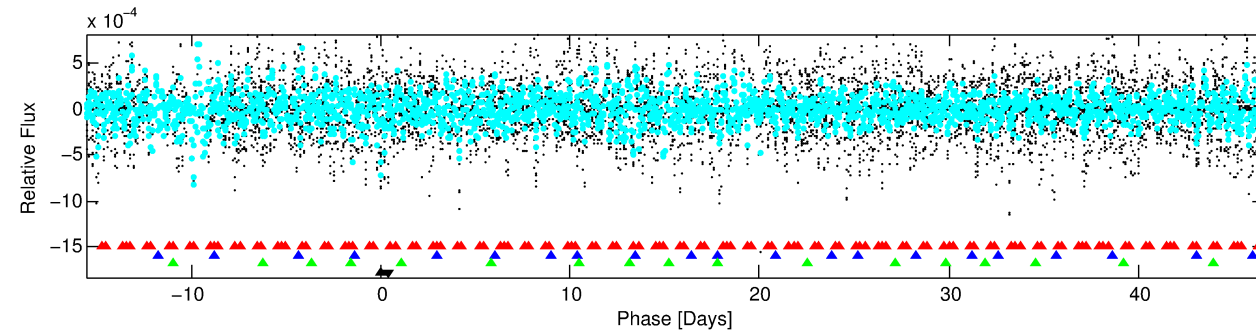
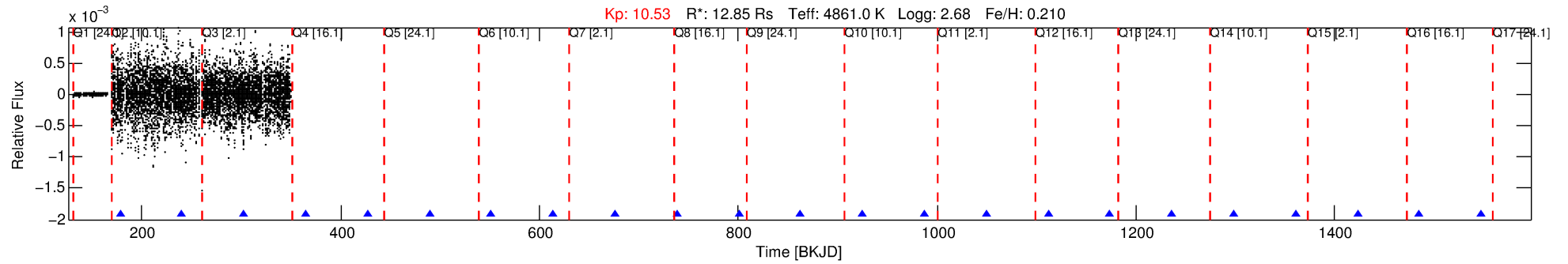
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008518402-04

No Significant Match Found

DV One-Page Summary

KIC: 8518402 Candidate: 4 of 4 Period: 62.229 d



TPS TCE Results:

Period = 62.22874 d
Epoch = 178.2591 BKJD

DV fit results are unavailable

DV Diagnostic Results:

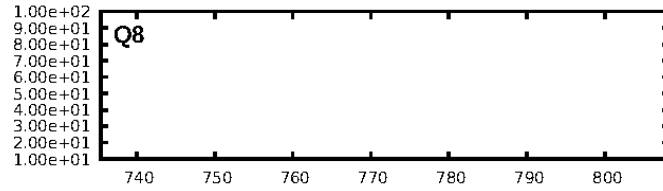
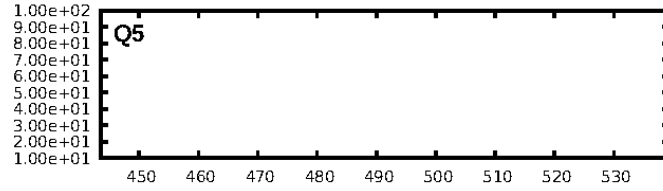
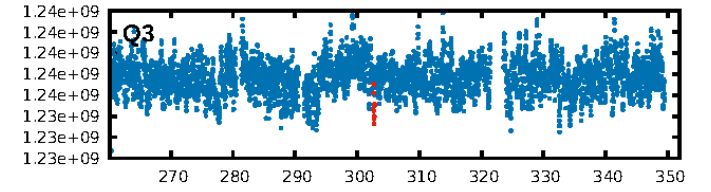
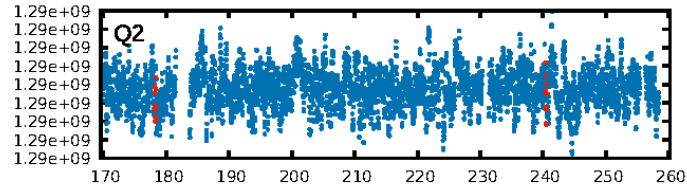
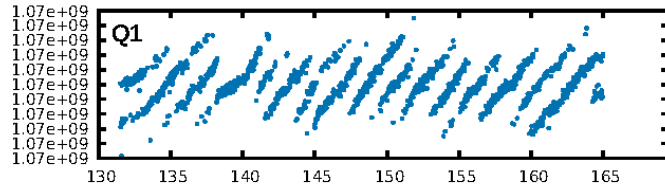
ShortPeriod-sig: 100.0% [414.80σ]
LongPeriod-sig: 100.0% [43.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5184

Centroid-sig: N/A
Centroid-so: 1.409 arcsec [3.59σ]
OotOffset-rm: 1.953 arcsec [0.54σ]
KicOffset-rm: 1.648 arcsec [0.38σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

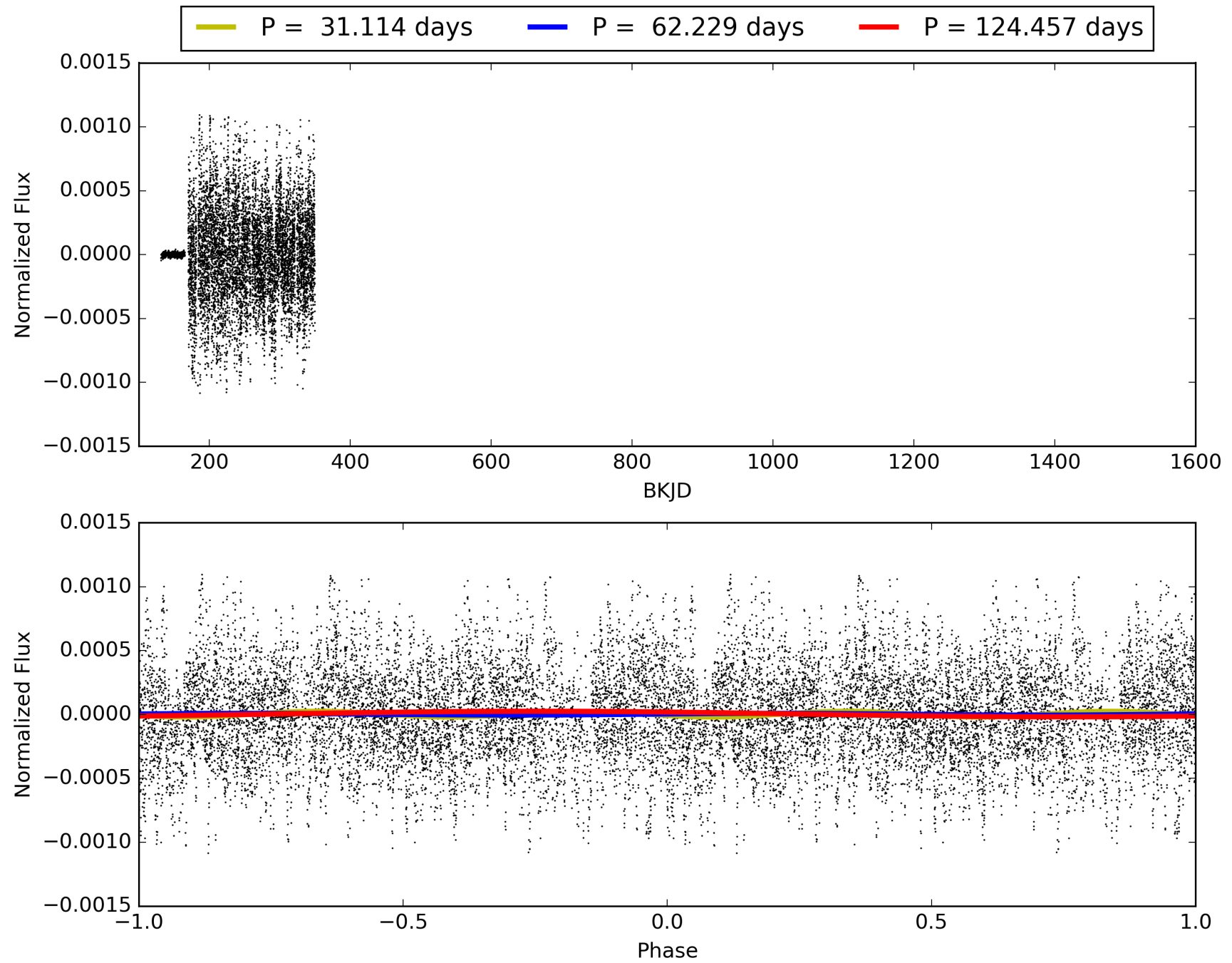
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:35:10 Z

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

TCE 008518402-04, PDC Light Curves

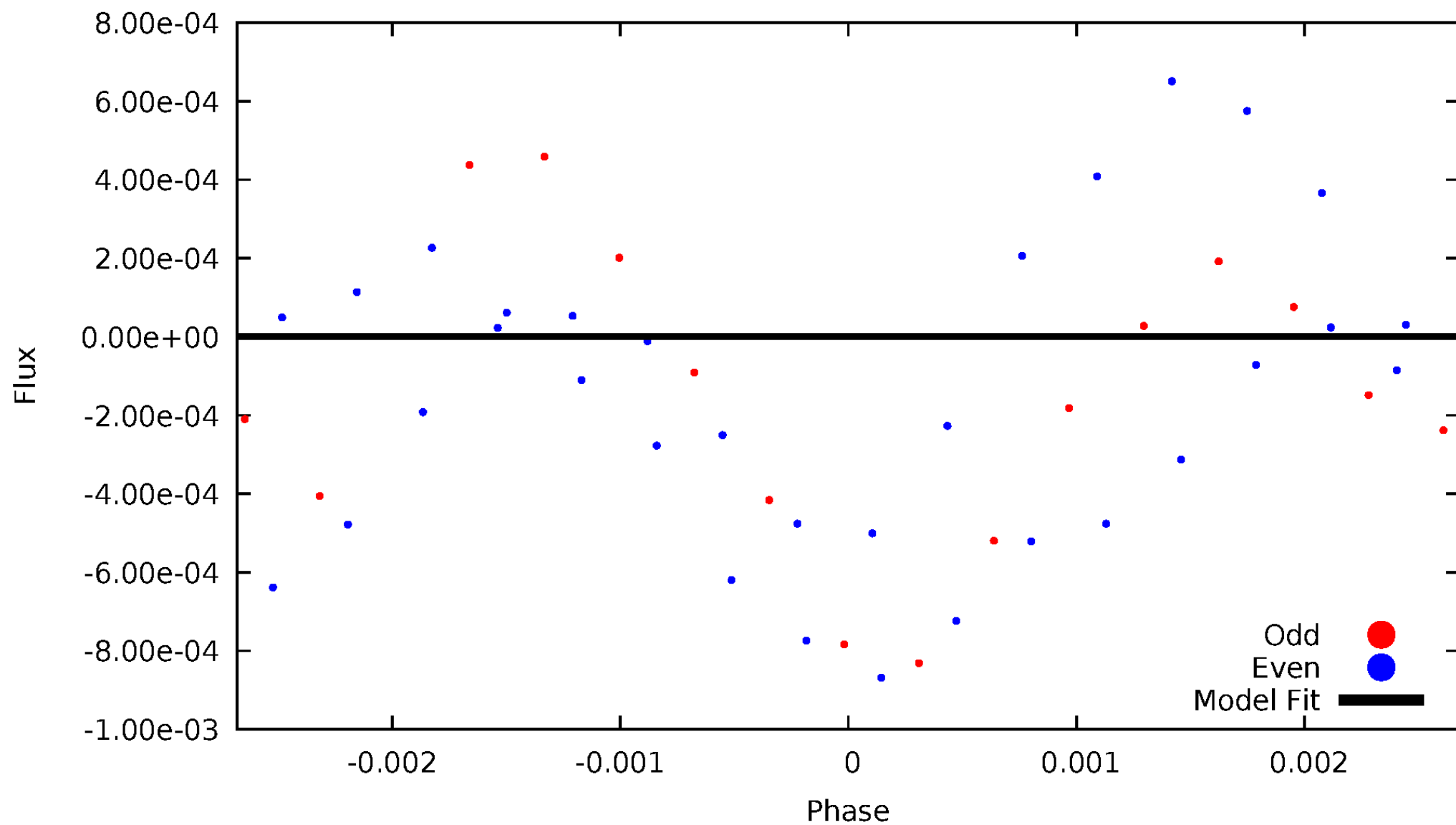


TCE 008518402-04



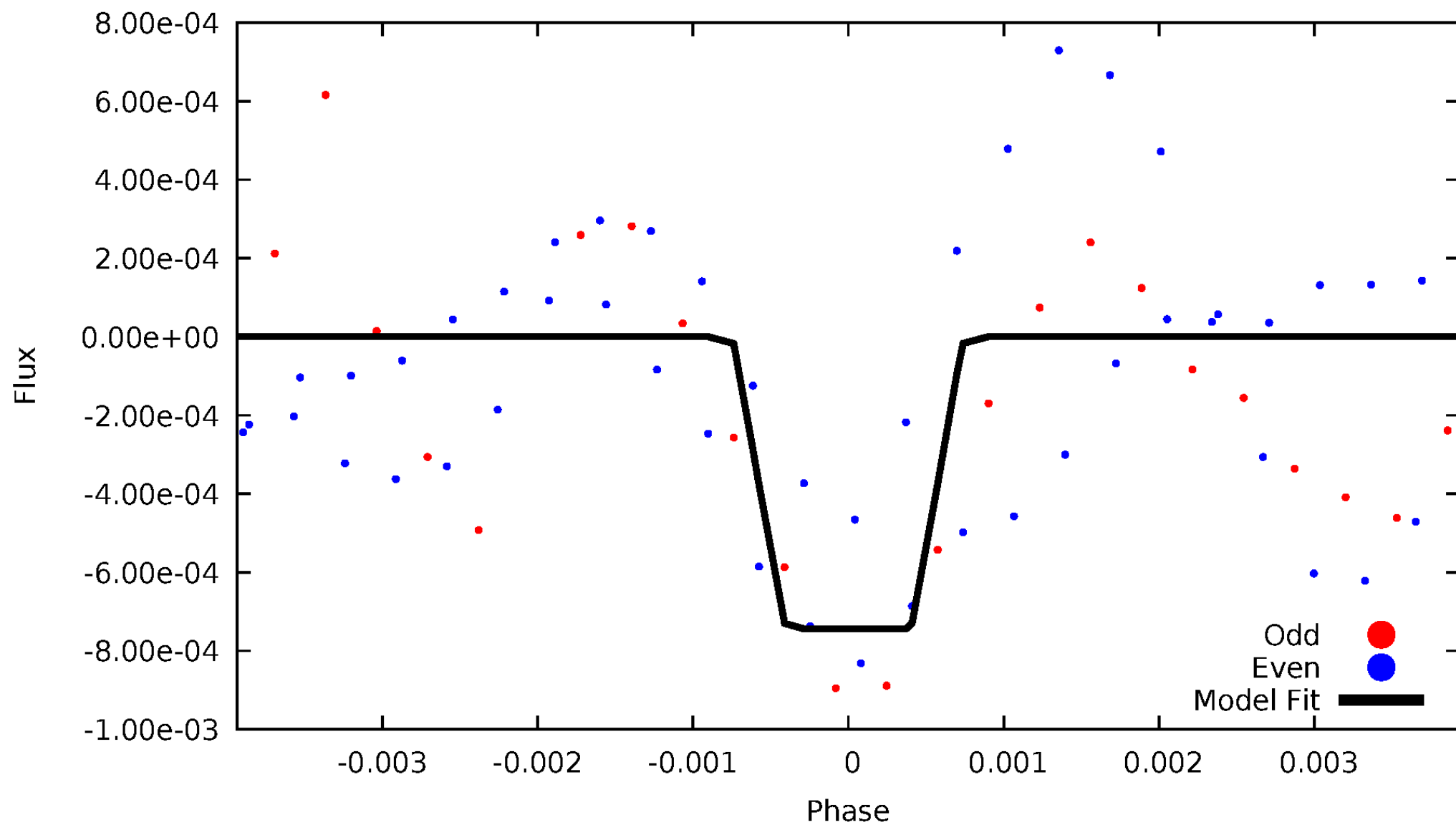
DV Odd/Even

TCE 008518402-04

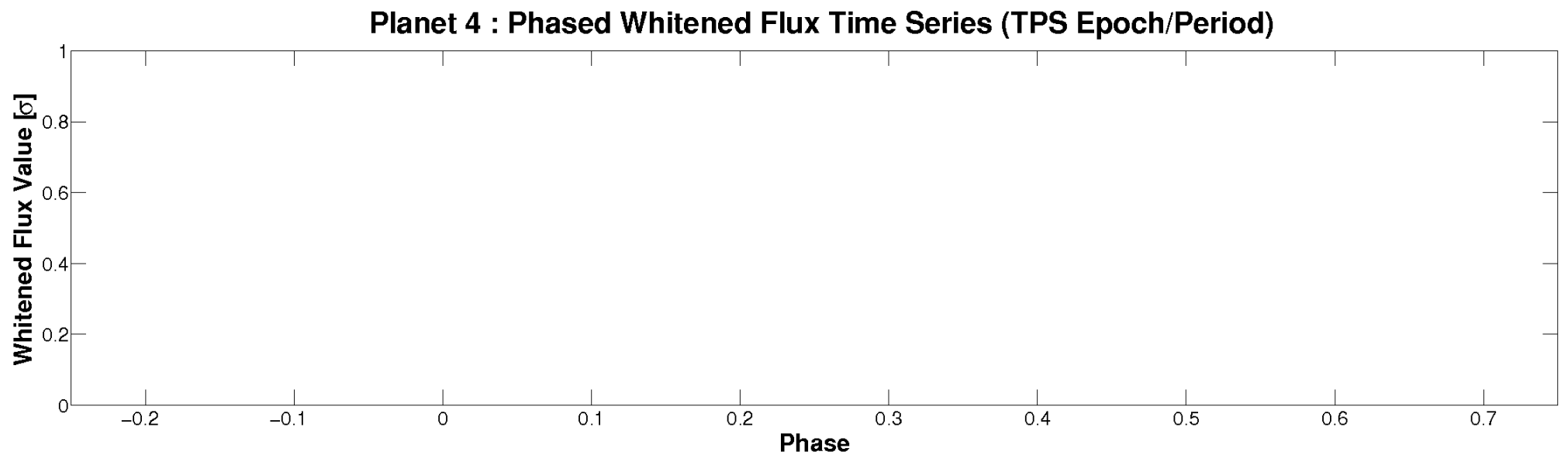
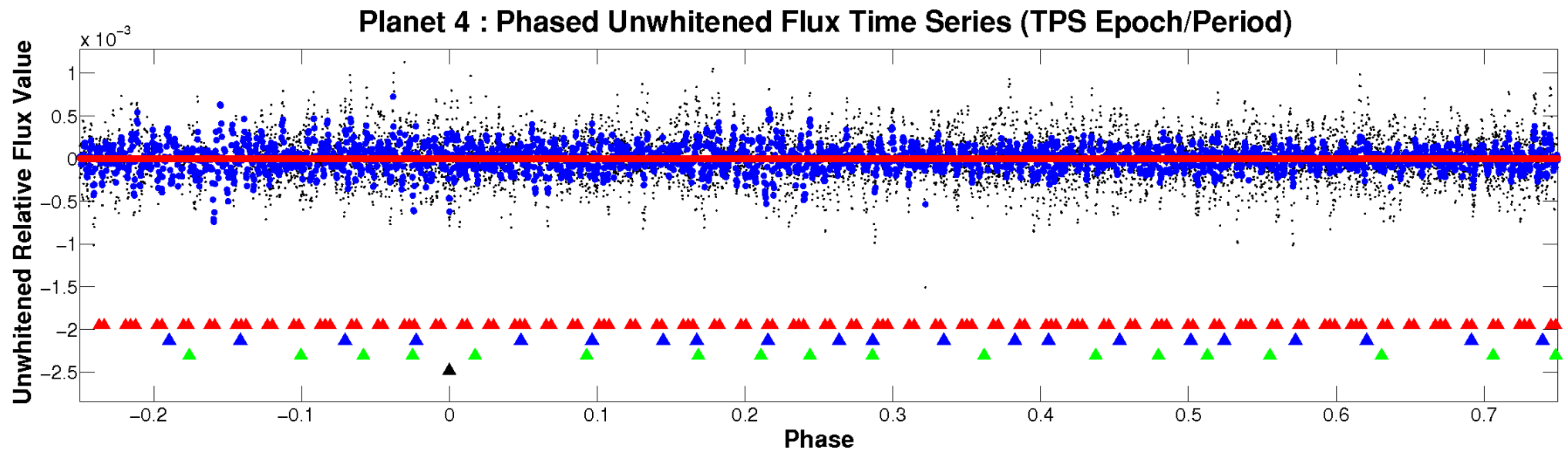


ALT Odd/Even

TCE 008518402-04

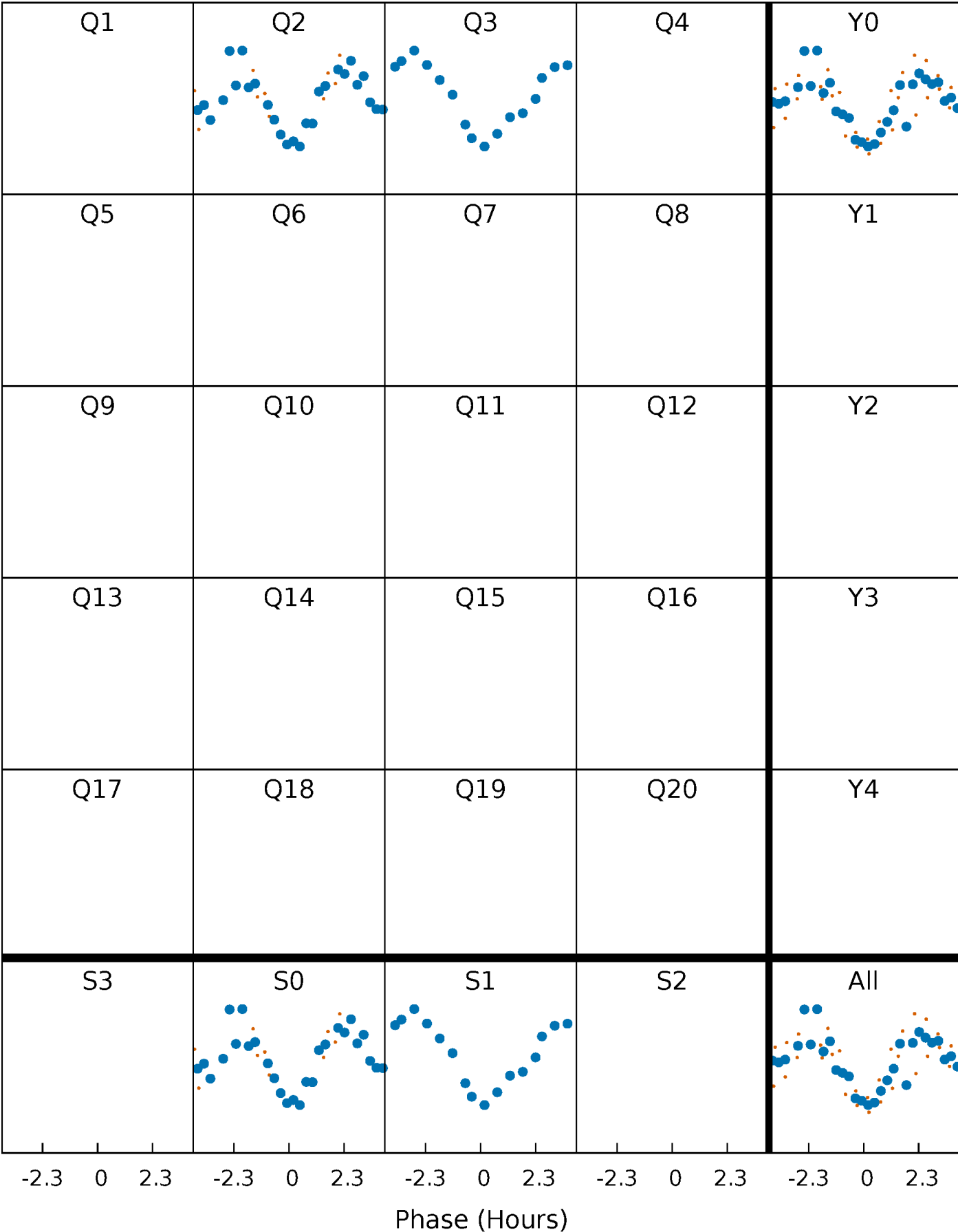


Non-Whitened Vs. Whitened Light Curve



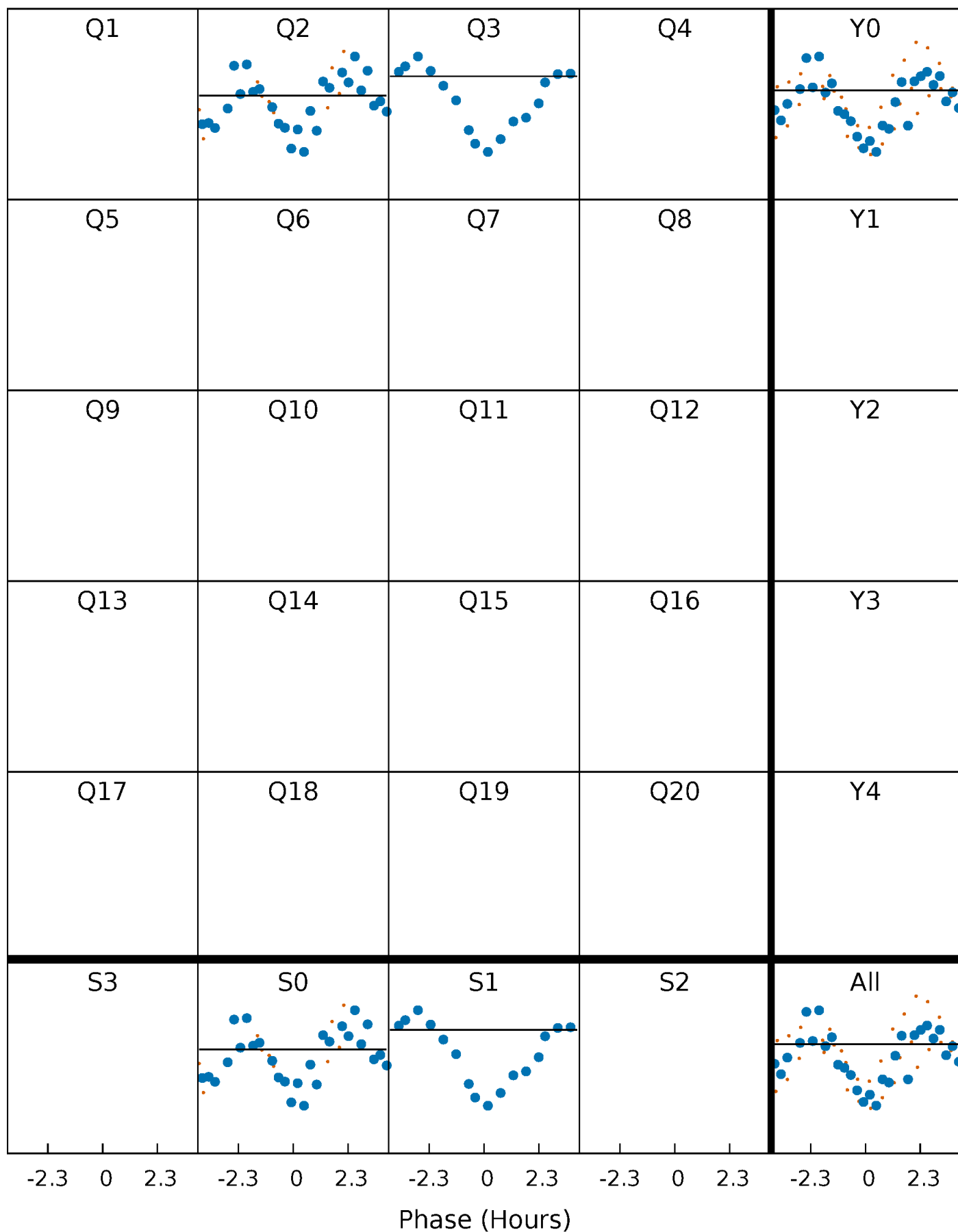
PDC Quarter-Phased Transit Curves

TCE 008518402-04 P= 62.228741 Days T₀=178.259121 (BKJD)



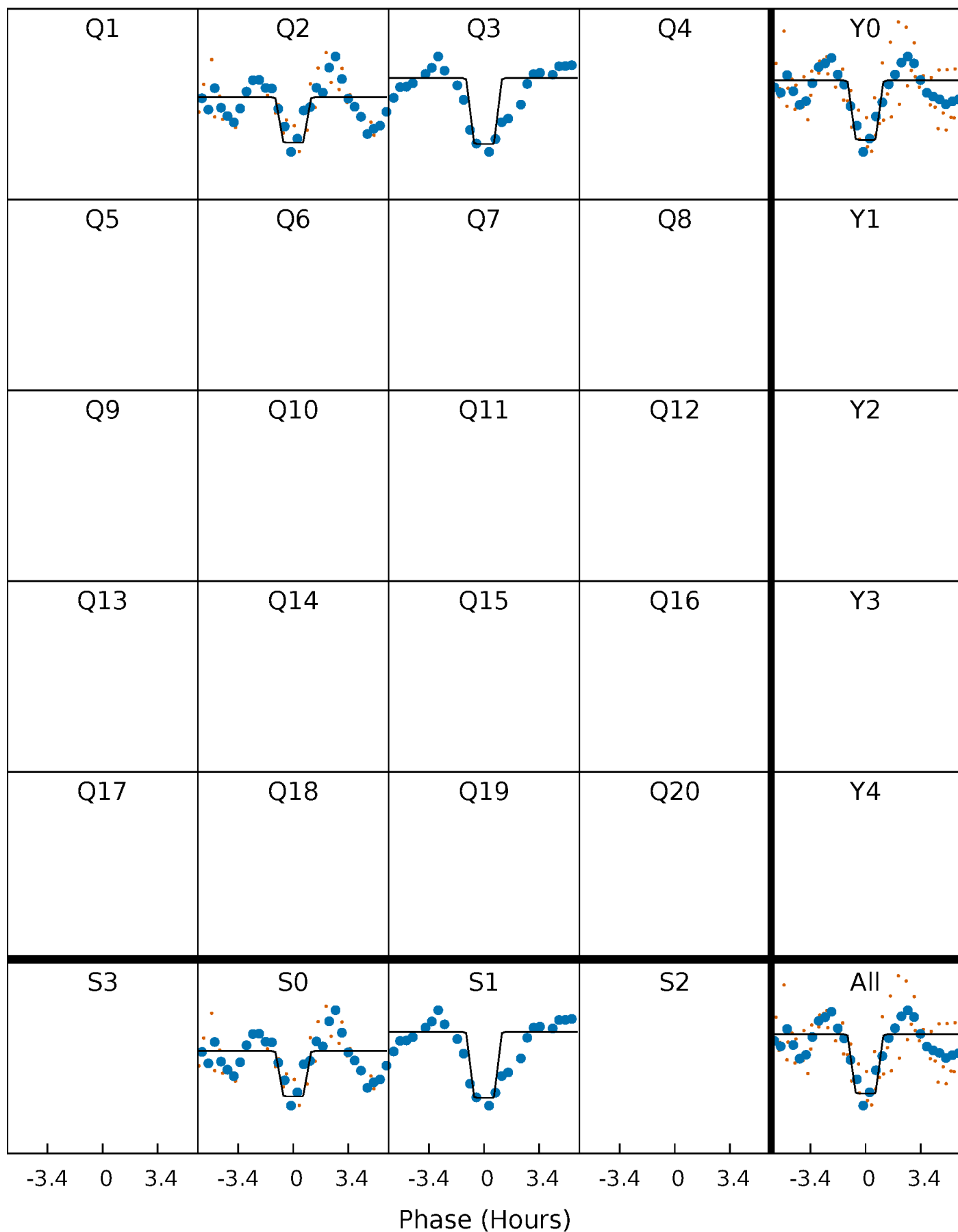
DV Quarter-Phased Transit Curves

TCE 008518402-04 P= 62.228741 Days $T_0=178.259121$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

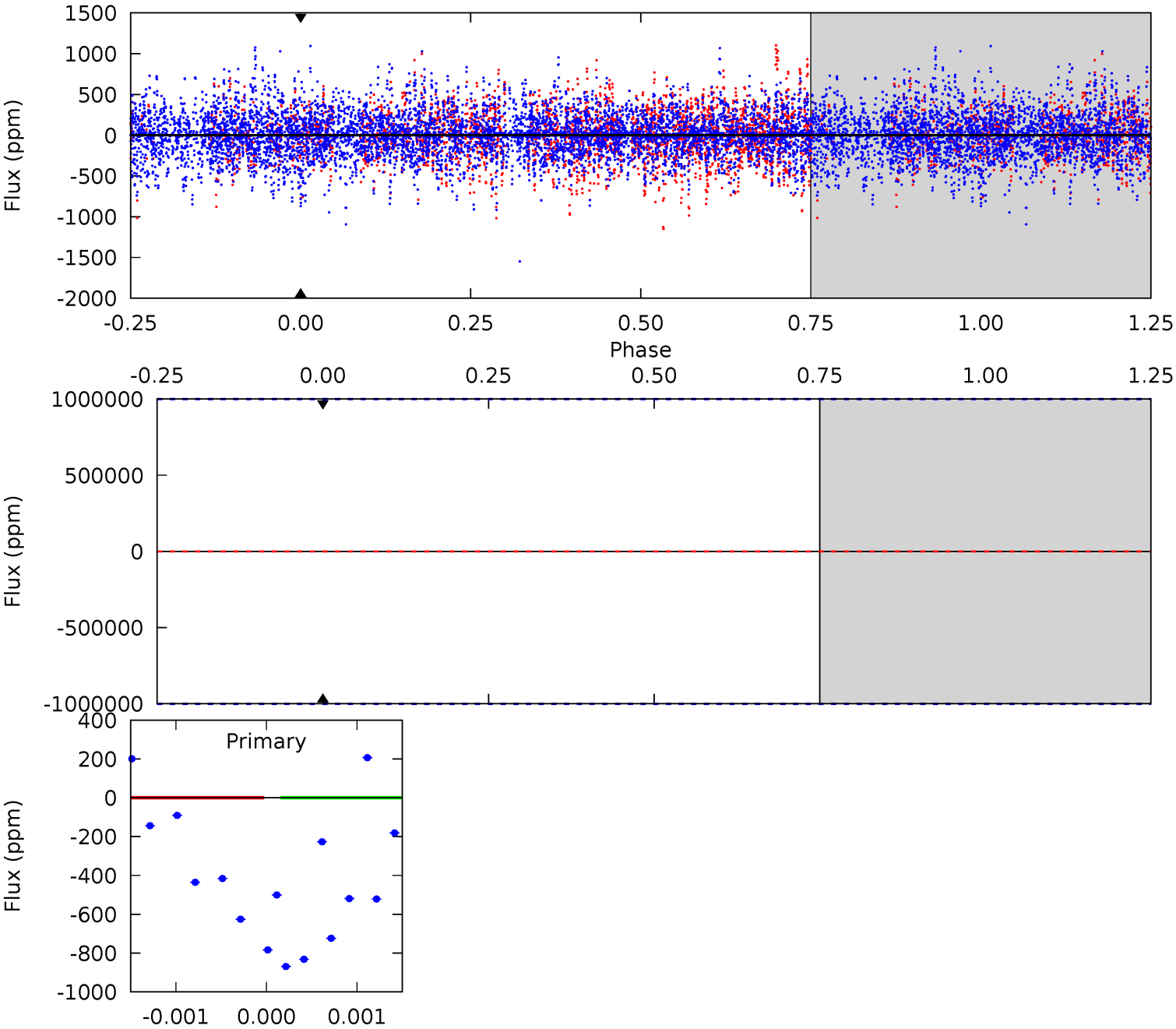
TCE 008518402-04 $P = 62.228741$ Days $T_0 = 178.263047$ (BKJD)



DV Model-Shift Uniqueness Test

008518402-04, P = 62.228741 Days, E = 116.030380 Days

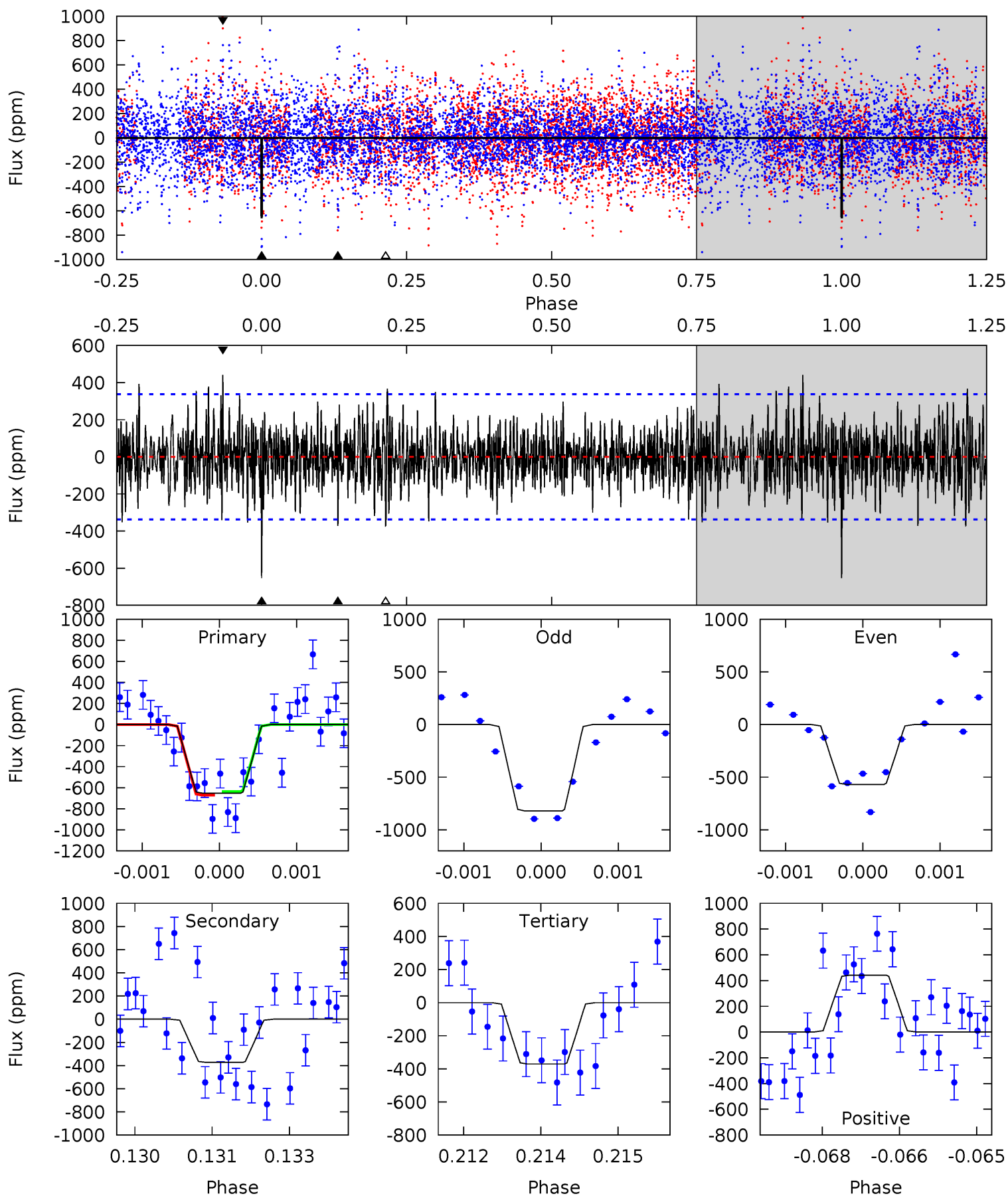
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008518402-04, P = 62.228741 Days, E = 116.034306 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	5.95	5.93	7.06	5.40	3.20	1.75	4.52	3.39	0.02	-1.11	1.89	0.82	0.40	0.27



Stellar Parameters For KIC 008518402

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4861^{+72}_{-121}	$2.676^{+0.036}_{-0.027}$	$0.210^{+0.150}_{-0.250}$	$12.846^{+0.604}_{-3.627}$	$2.852^{+0.142}_{-1.277}$	$0.002^{+0.001}_{-0.000}$
	+1%/-2%	+1%/-1%	+71%/-119%	+5%/-28%	+5%/-45%	+44%/-9%
Source	SPE74	AST9	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 008518402-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$99.36^{+100.74}_{-69.87}$	1628^{+31}_{-46}	3683^{+12339}_{-16518}	11^{+2238}_{-1355}
Alt.	-372 ± 62	$106.73^{+106.18}_{-76.31}$	1624^{+33}_{-45}	2966^{+1548}_{-593}	$3.331^{+34.763}_{-2.518}$

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 $A_{obs} \gg 1.0$

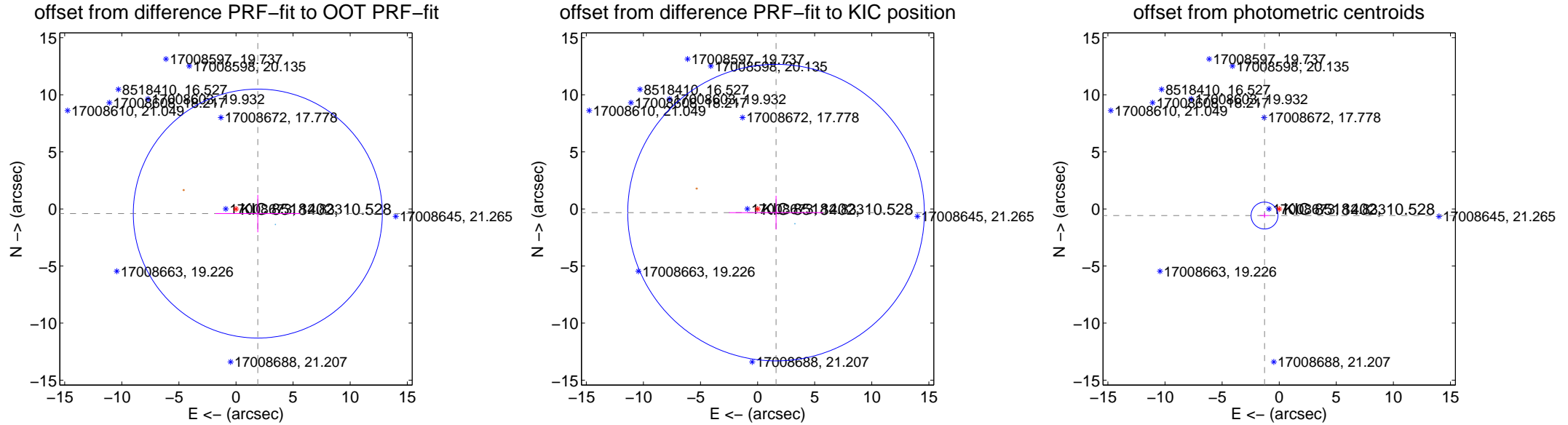
DV Centroid Data

Supplemental centroid analysis for 008518402-04. **Kepler magnitude: 10.53.** Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.953 ± 3.635	0.54	-1.910 ± 3.700	-0.407 ± 1.638
PRF-fit source offset from KIC position	1.648 ± 4.329	0.38	-1.616 ± 4.120	-0.323 ± 1.478
photometric centroid source offset	1.41 ± 0.39	3.59	1.28 ± 0.42	-0.58 ± 0.21



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.

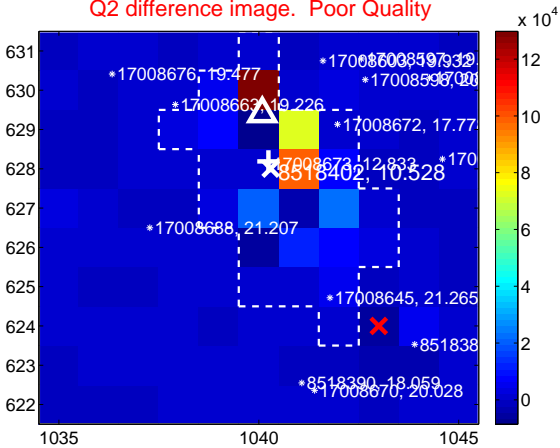
Q1 no difference image



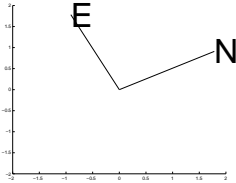
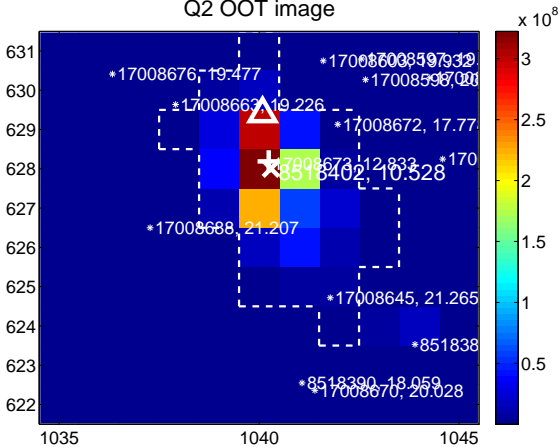
Q1 no OOT image



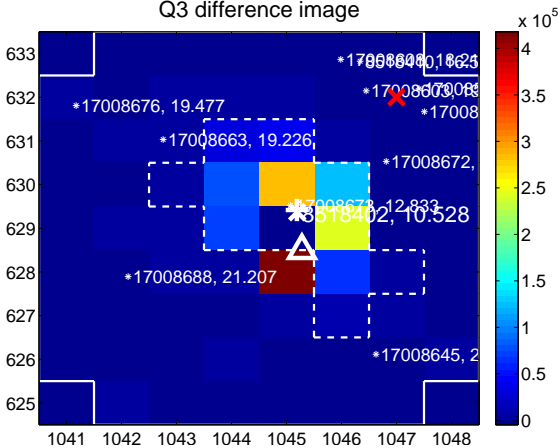
Q2 difference image. Poor Quality



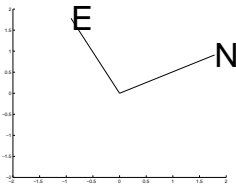
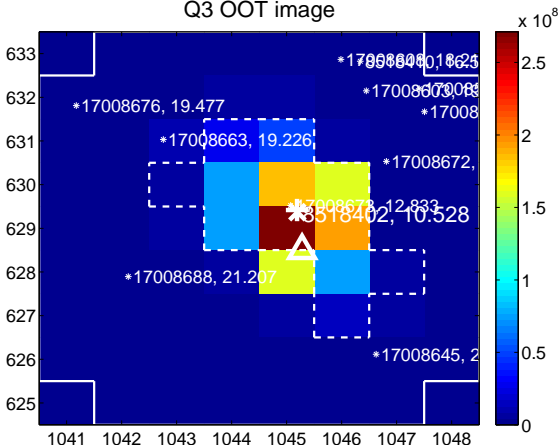
Q2 OOT image



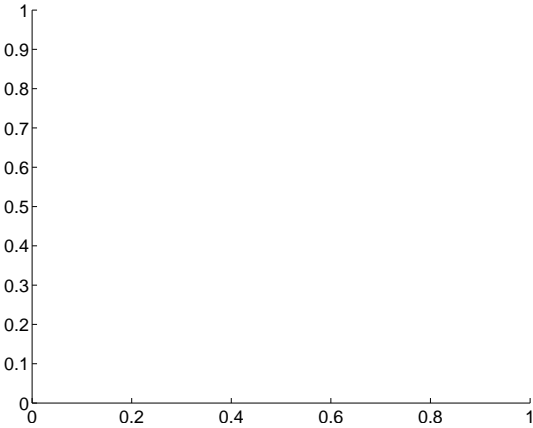
Q3 difference image



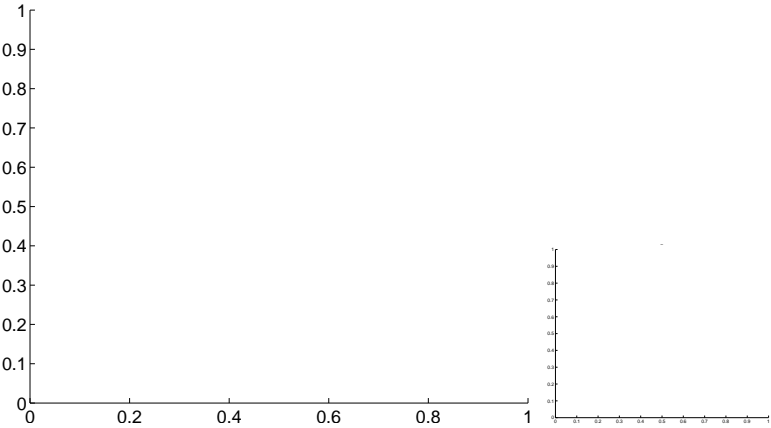
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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



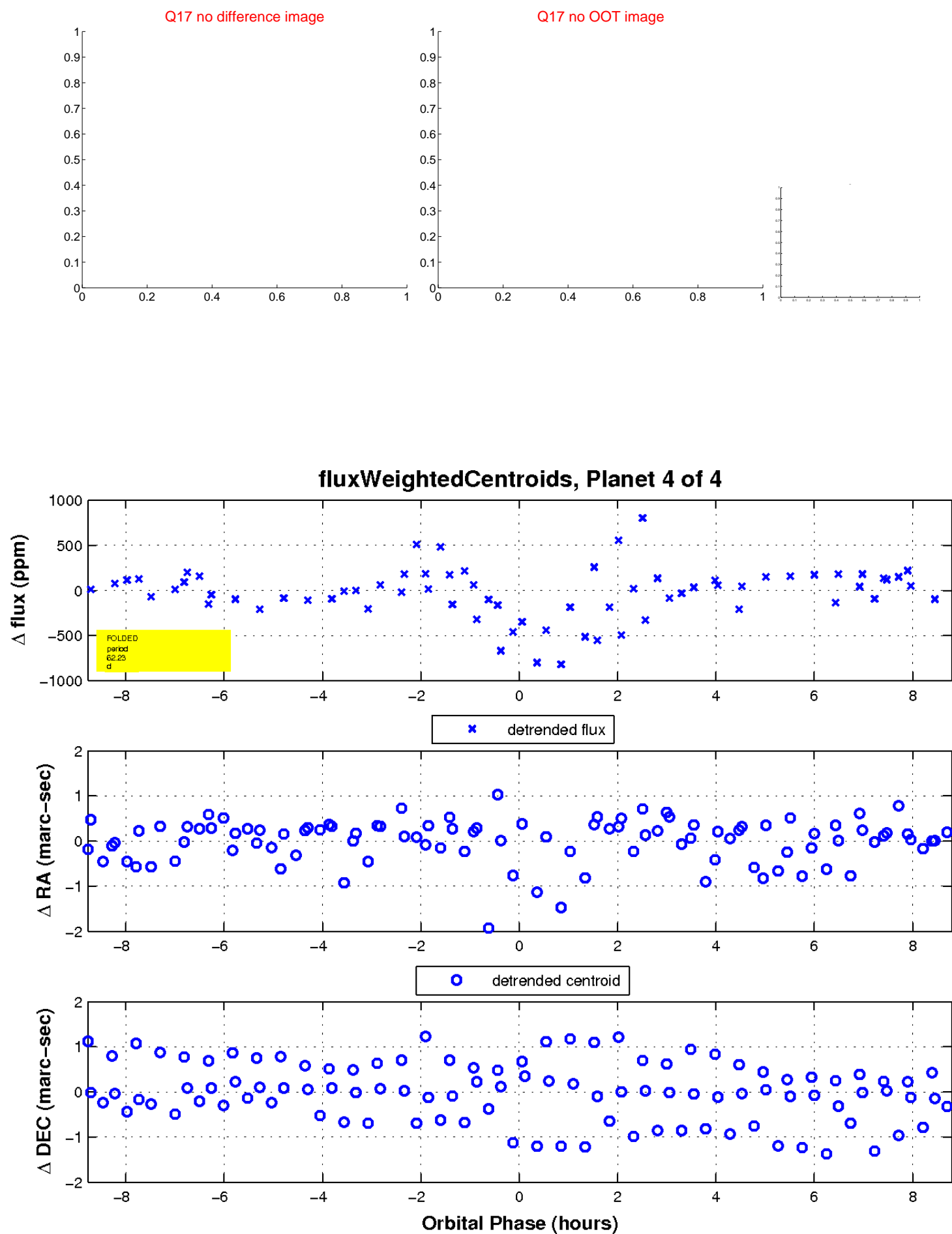
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \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

