

KIC 002452185

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})
002452185-01	OBS	No	1.953164	132.896394	22.5	8.433	7.4	7.1	1.62	6704	0.82	4314.89
002452185-02	OBS	No	252.520758	186.373950	431.0	3.181	8.7	8.5	1.62	6704	3.75	6.60
002452185-03	OBS	No	365.252318	286.190245	346.0	3.558	7.6	7.7	1.62	6704	3.52	4.04
002452185-04	OBS	No	415.953886	421.126974	316.1	6.886	7.3	7.8	1.62	6704	3.16	3.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002452185-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
002452185-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002452185-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002452185-04	OBS	FP	0.01	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

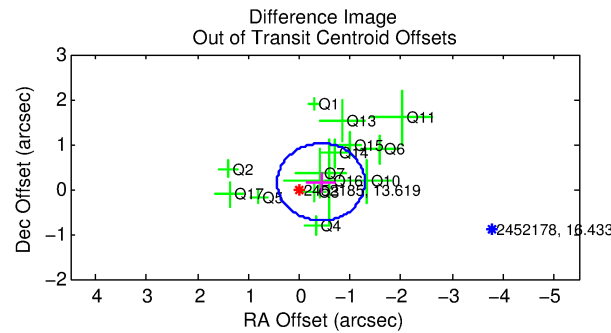
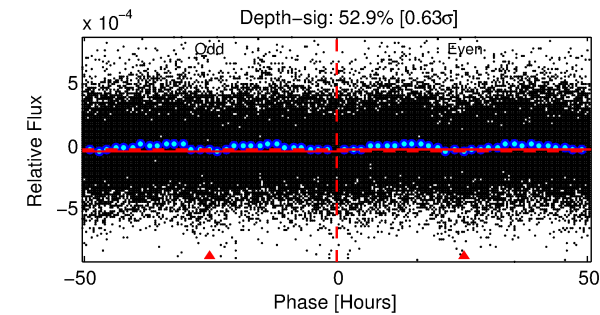
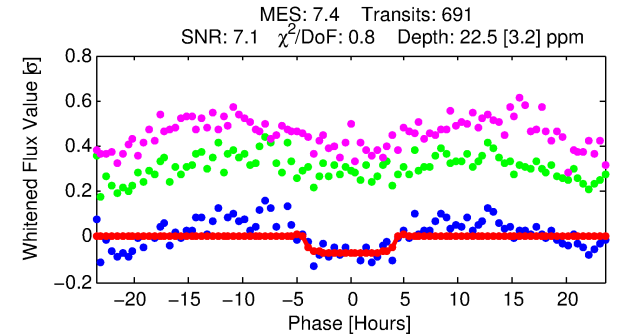
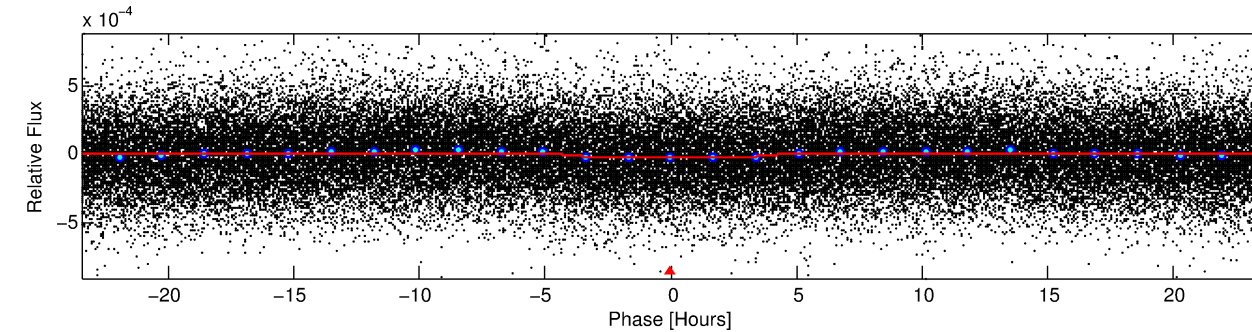
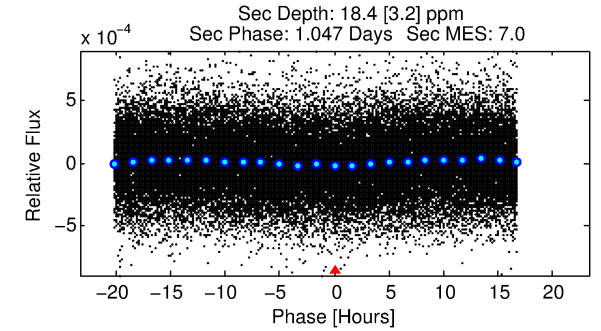
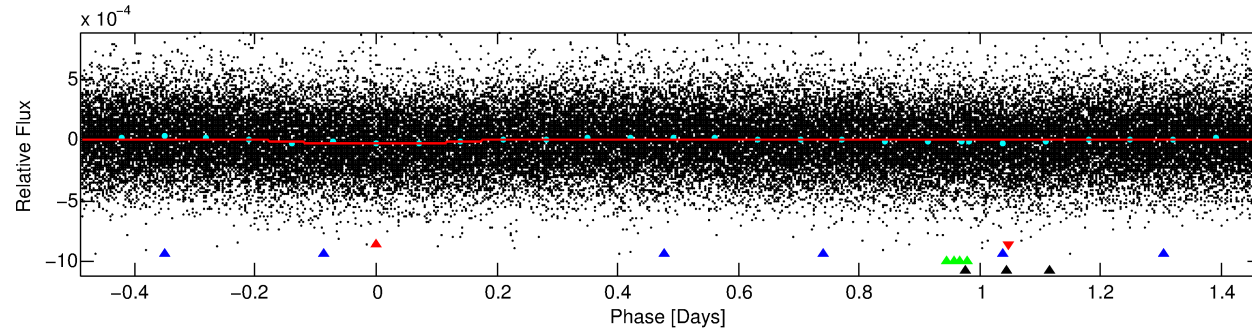
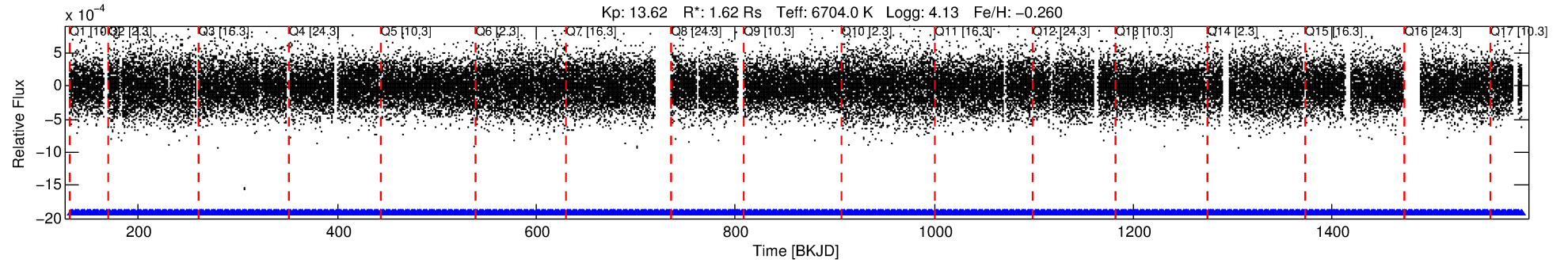
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002452185-01

No Significant Match Found

DV One-Page Summary

KIC: 2452185 Candidate: 1 of 4 Period: 1.953 d



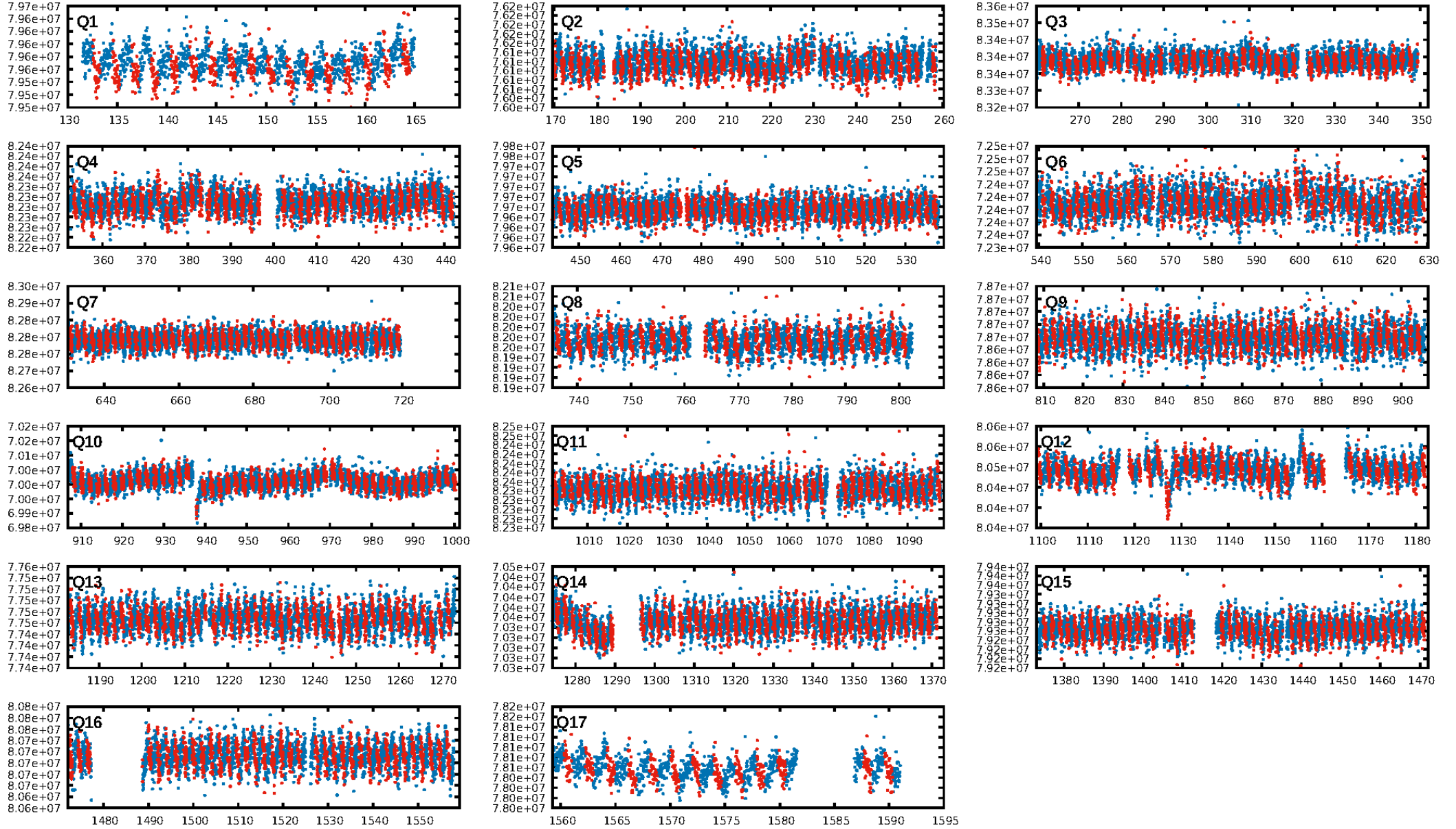
DV Fit Results:

Period = 1.95316 [0.00004] d
Epoch = 132.8964 [0.0095] BKJD
Rp/R* = 0.0046 [0.0019]
a/R* = 1.56 [2.17]
b = 0.66 [2.03]
Seff = 4314.89 [1148.34]
Teq = 2067 [138] K
Rp = 0.82 [0.38] Re
a = 0.0333 [0.0057] AU
Ag = 16.80 [14.99] [1.05σ]
Teffp = 6469 [1382] K [3.17σ]

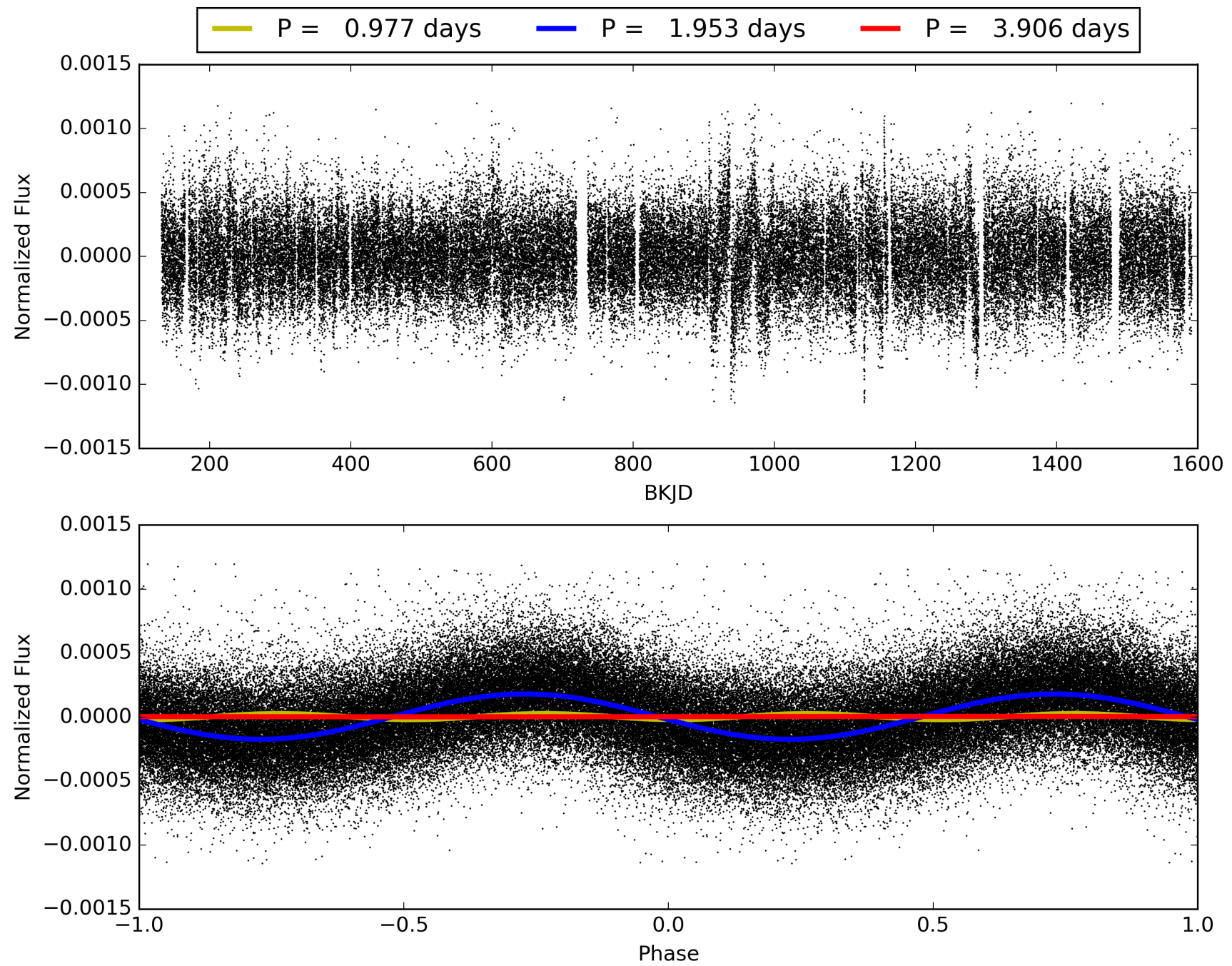
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [667.22σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.29e-09
RollingBand-fgt: 1.00 [661/661]
GhostDiagnostic-chr: 8.072
Centroid-sig: 14.5%
Centroid-so: 1.987 arcsec [1.48σ]
OotOffset-rm: 0.455 arcsec [1.58σ]
KicOffset-rm: 0.463 arcsec [1.64σ]
OotOffset-st: 4/4/2/4 [14]
KicOffset-st: 4/4/2/4 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 002452185-01, PDC Light Curves

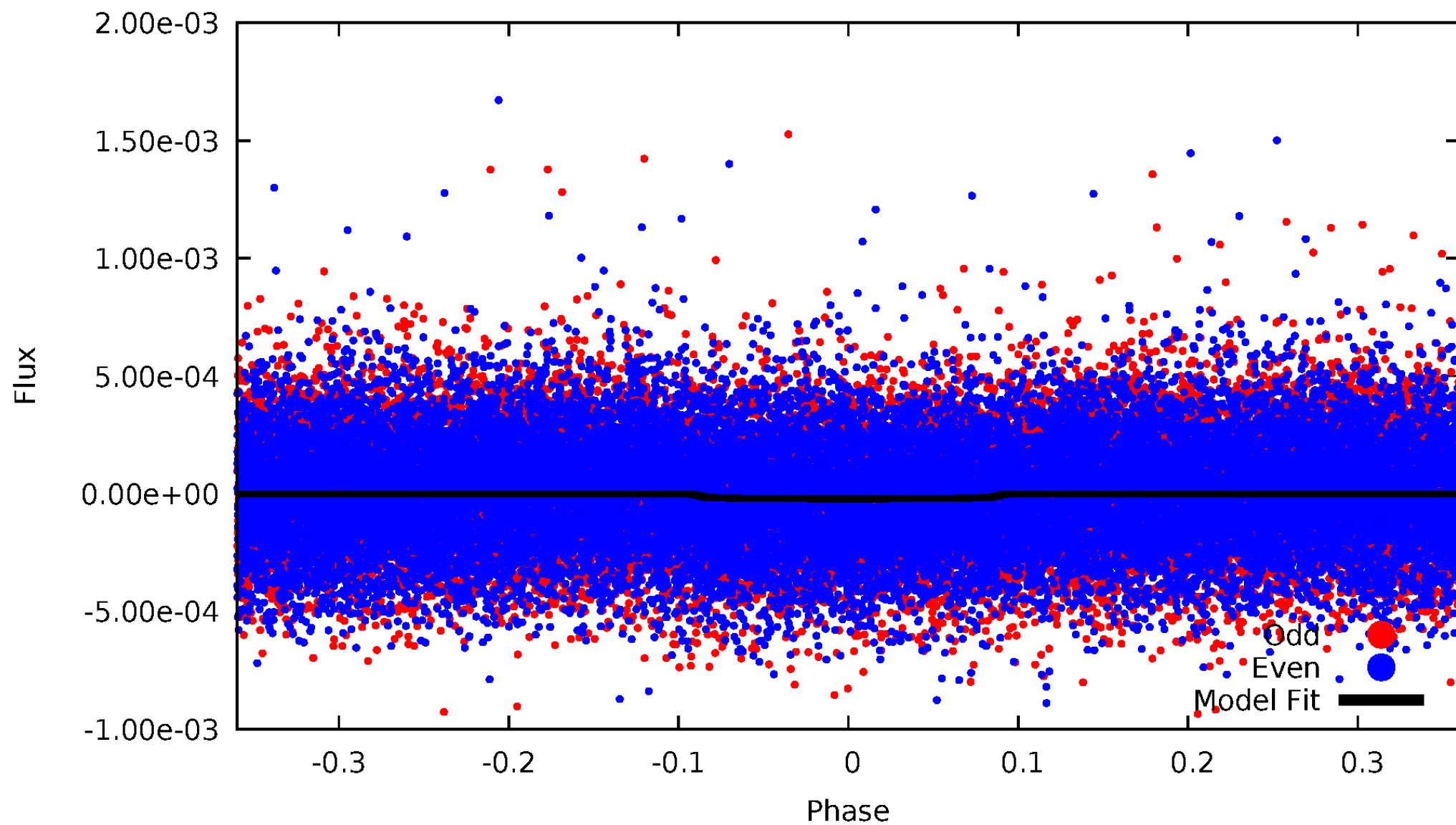


TCE 002452185-01



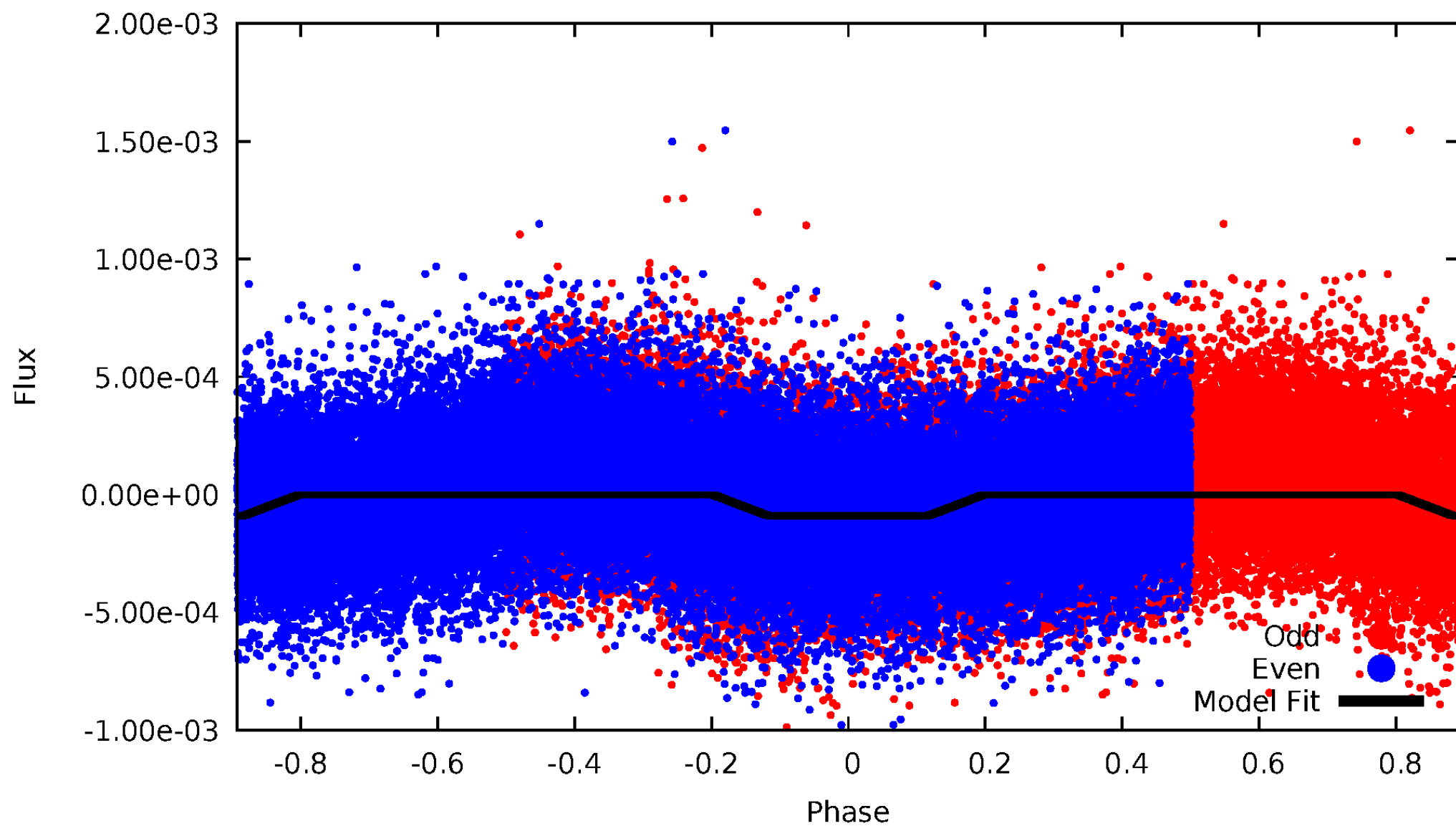
DV Odd/Even

TCE 002452185-01

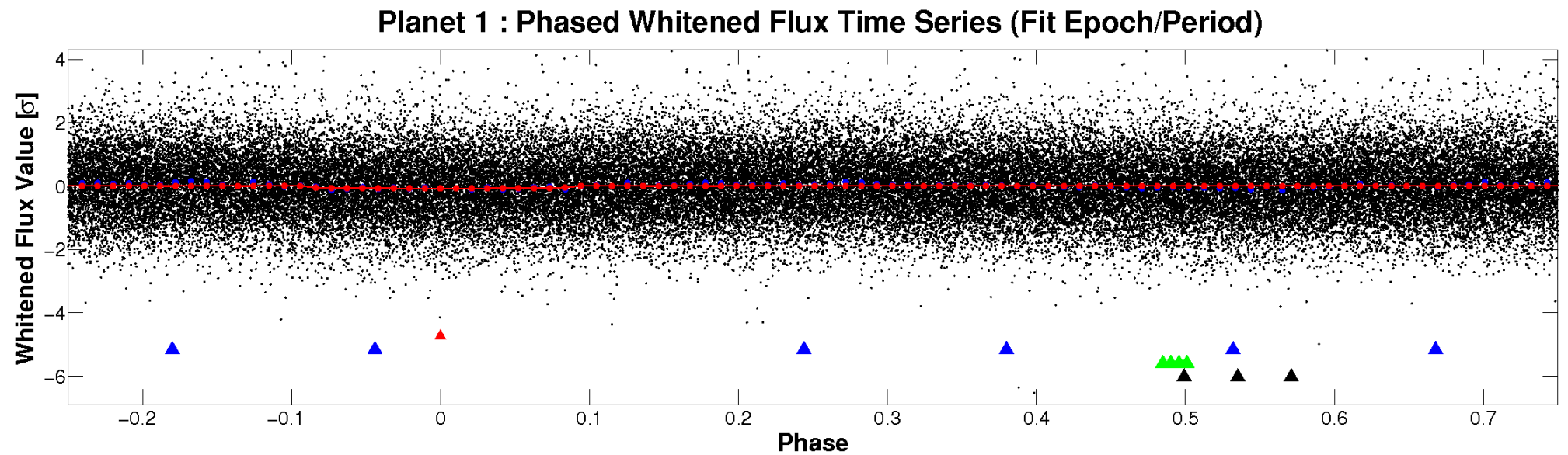
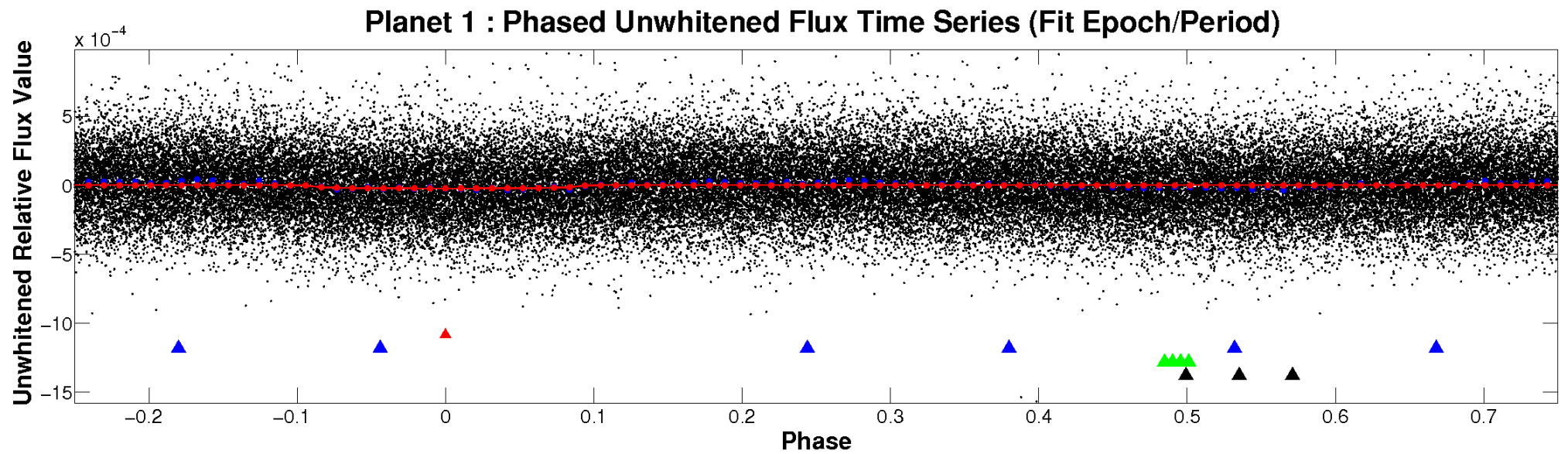


ALT Odd/Even

TCE 002452185-01

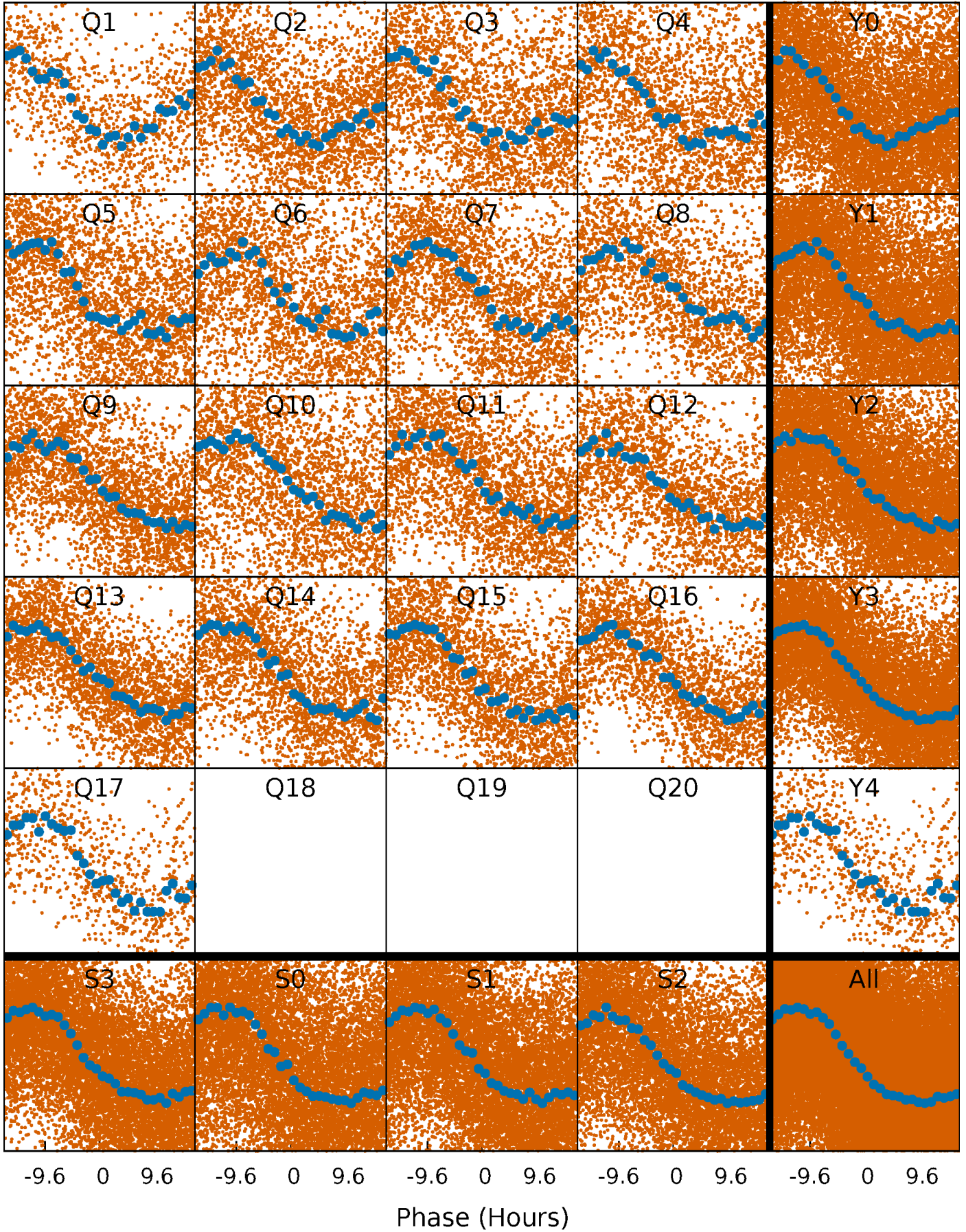


Non-Whitened Vs. Whitened Light Curve



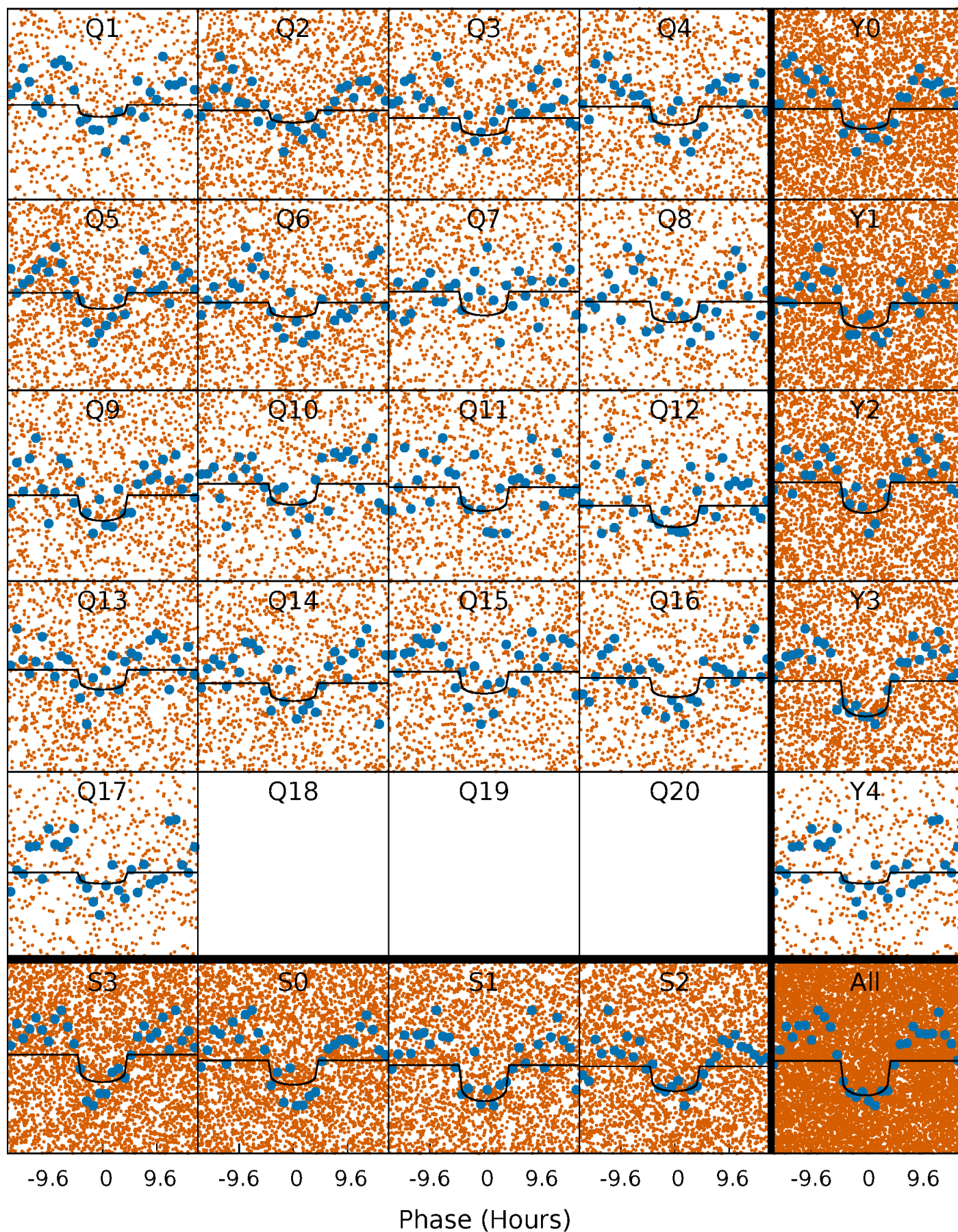
PDC Quarter-Phased Transit Curves

TCE 002452185-01 P= 1.953164 Days $T_0=132.896394$ (BKJD)



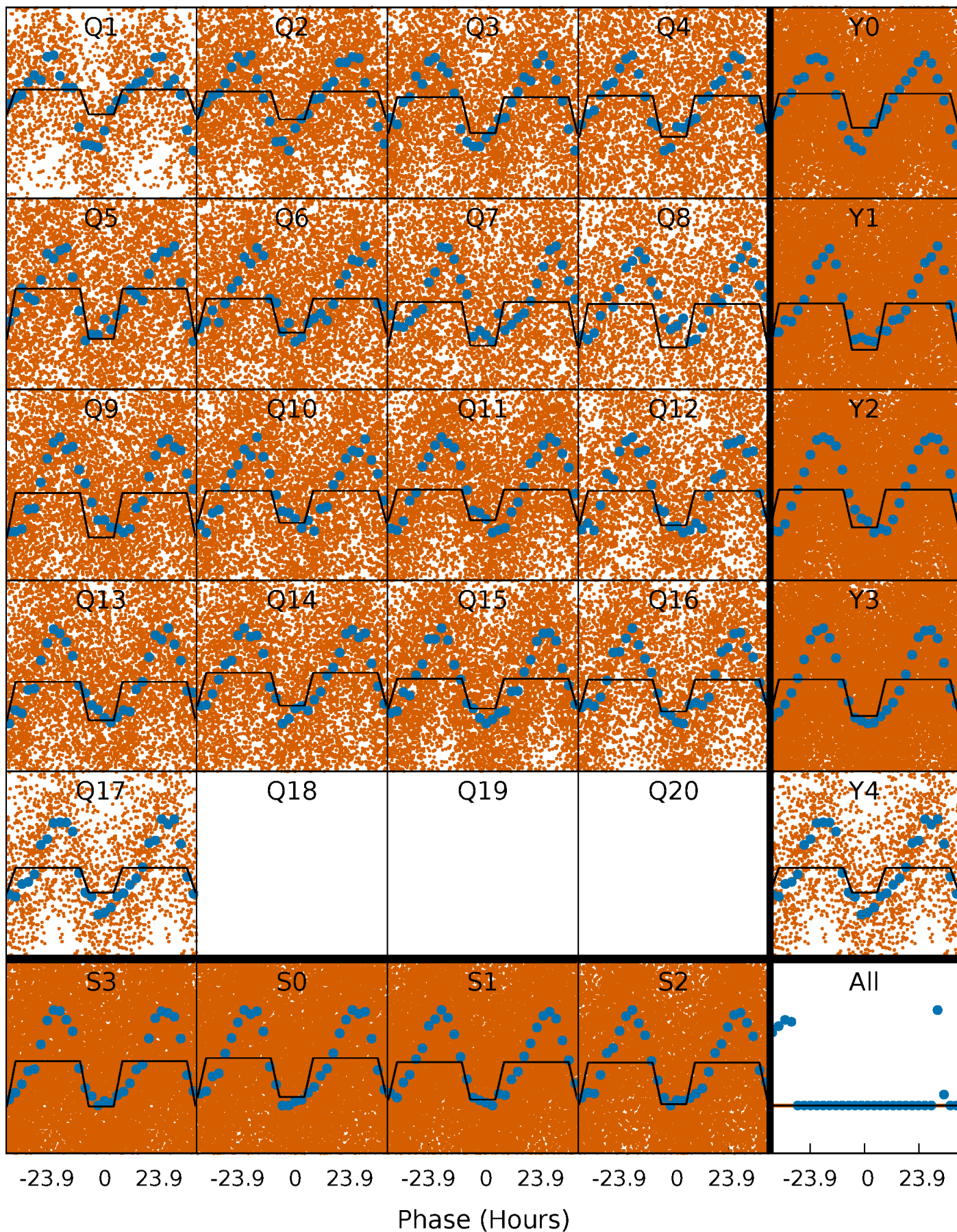
DV Quarter-Phased Transit Curves

TCE 002452185-01 P= 1.953164 Days $T_0=132.896394$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

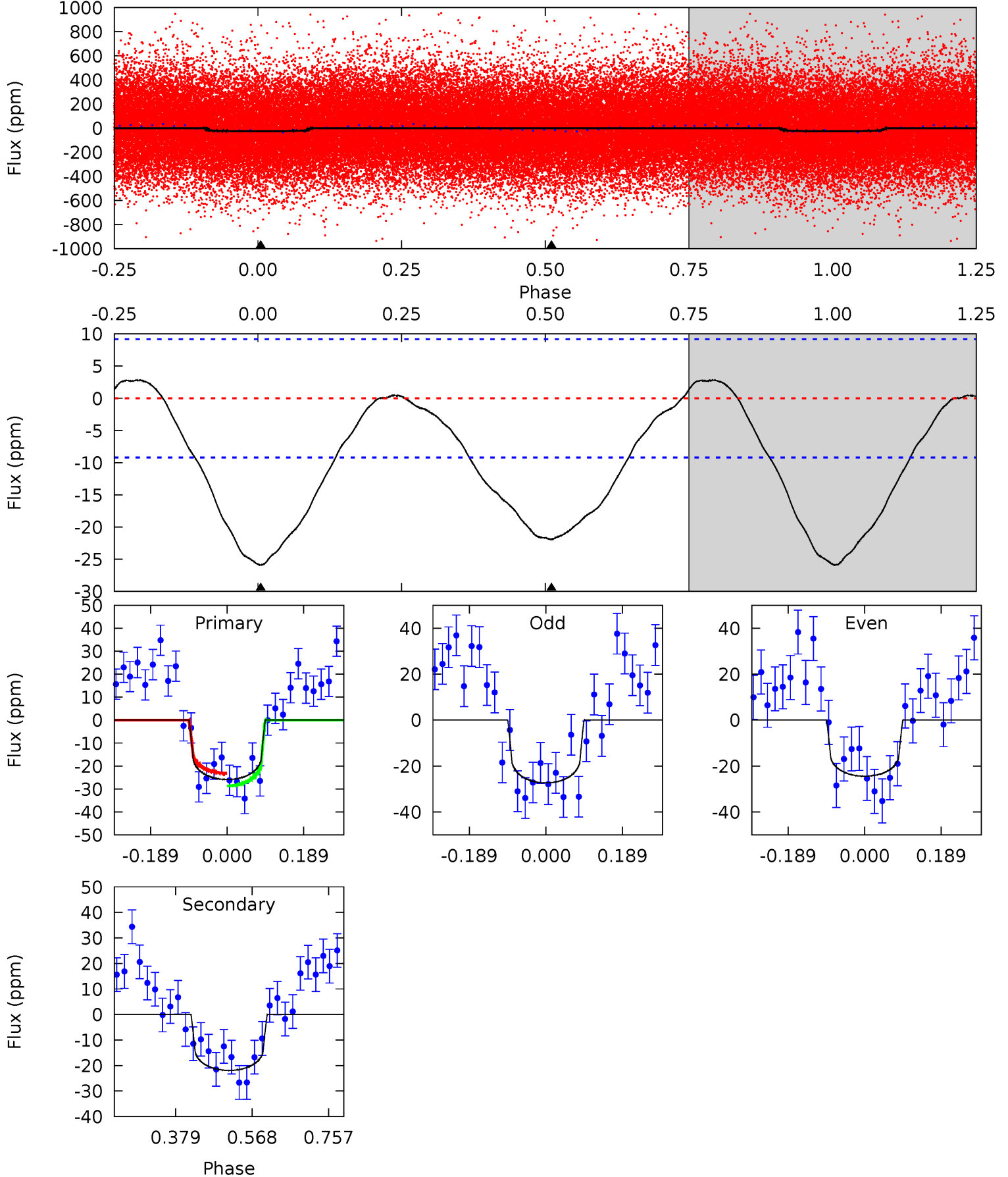
TCE 002452185-01 P= 1.953209 Days $T_0=133.156618$ (BKJD)



DV Model-Shift Uniqueness Test

002452185-01, P = 1.953164 Days, E = 130.943230 Days

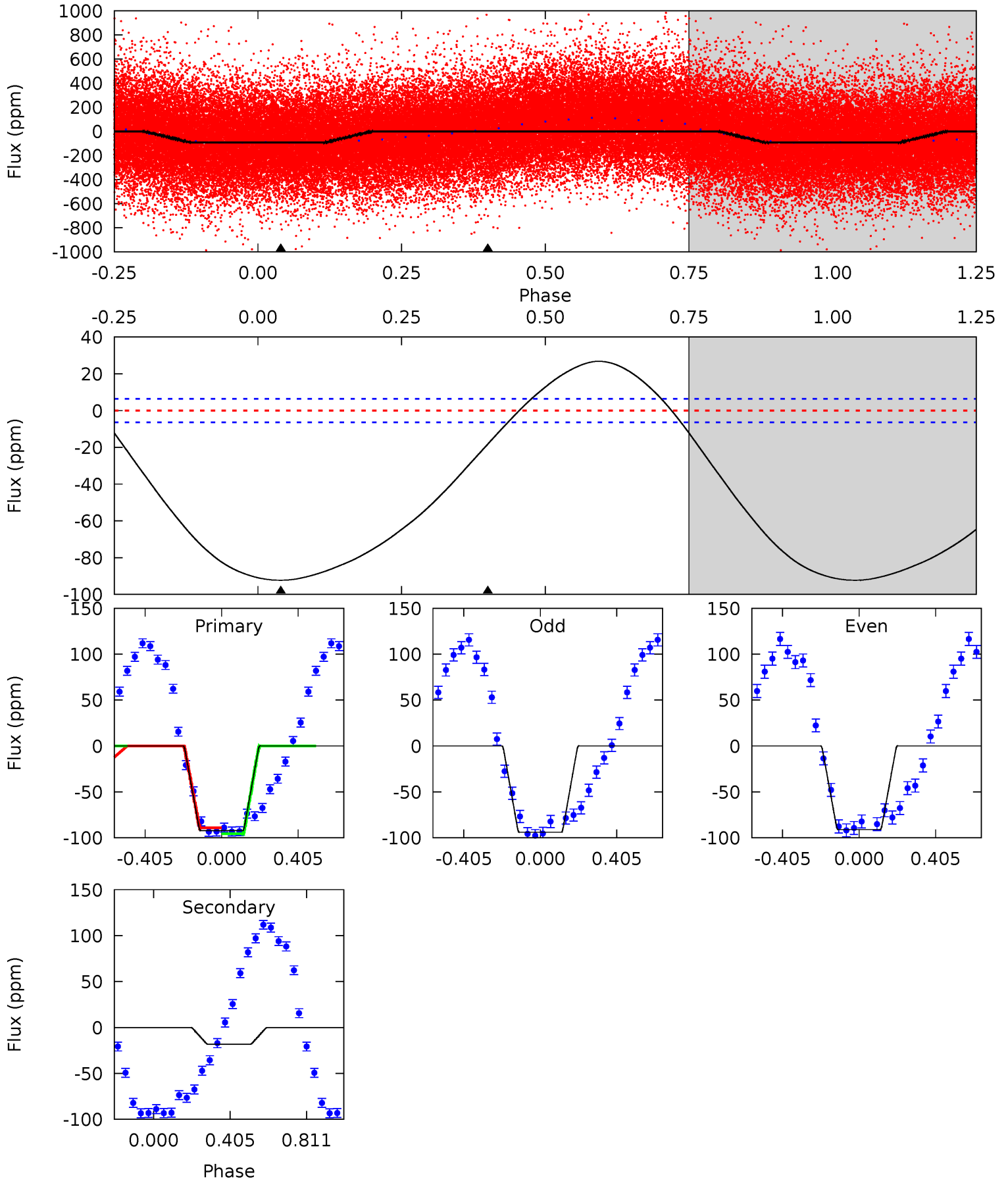
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	10.6	0	0	4.43	1.31	0.88	12.5	12.5	10.6	10.6	0.70	1.07	0.10	1.34



Alt Model-Shift Uniqueness Test

002452185-01, P = 1.953209 Days, E = 131.203409 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
61.6	12.2	0	0	4.26	0.83	7.20	61.6	61.6	12.2	12.2	0.98	1.11	0.23	2.25



Stellar Parameters For KIC 002452185

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6704^{+80}_{-80}	$4.126^{+0.148}_{-0.108}$	$-0.260^{+0.150}_{-0.150}$	$1.624^{+0.259}_{-0.317}$	$1.294^{+0.086}_{-0.124}$	$0.425^{+0.328}_{-0.135}$
	+1%/-1%	+4%/-3%	+58%/-58%	+16%/-20%	+7%/-10%	+77%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002452185-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-22 ± 2	$0.79^{+0.34}_{-0.33}$	2881^{+126}_{-140}	6780^{+2648}_{-1165}	21^{+41}_{-11}
Alt.	-18 ± 1	$1.66^{+0.40}_{-0.38}$	2889^{+128}_{-157}	4561^{+509}_{-346}	$4.003^{+2.831}_{-1.395}$

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 $A_{obs} \gg 1.0$

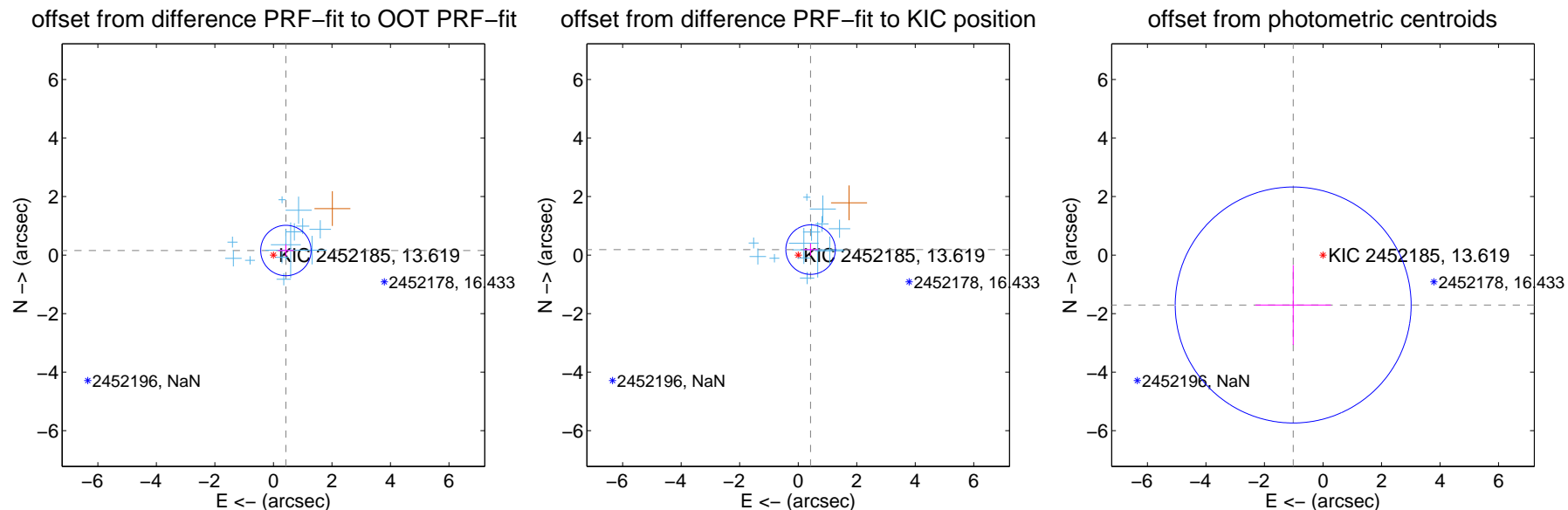
DV Centroid Data

Supplemental centroid analysis for 002452185-01. Kepler magnitude: 13.62. Transit SNR 7.13

There are 13 quarters with good PRF difference image offsets

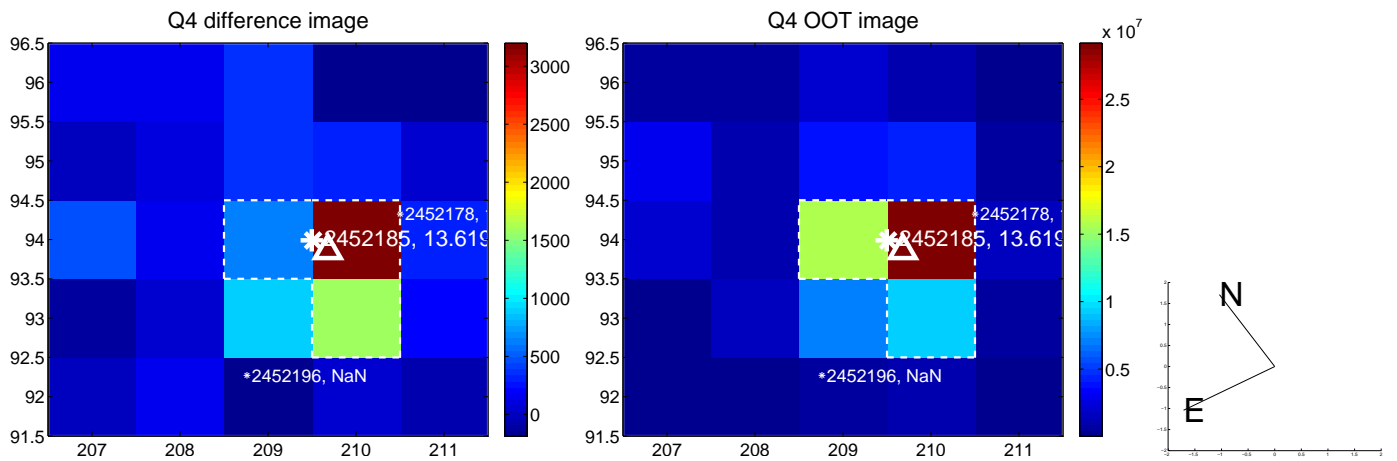
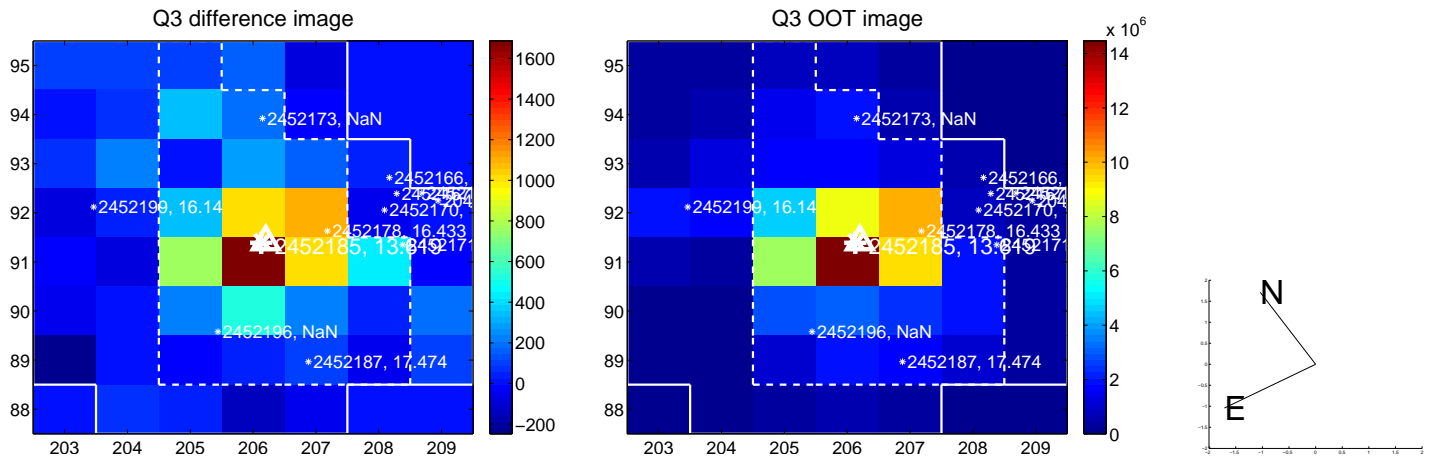
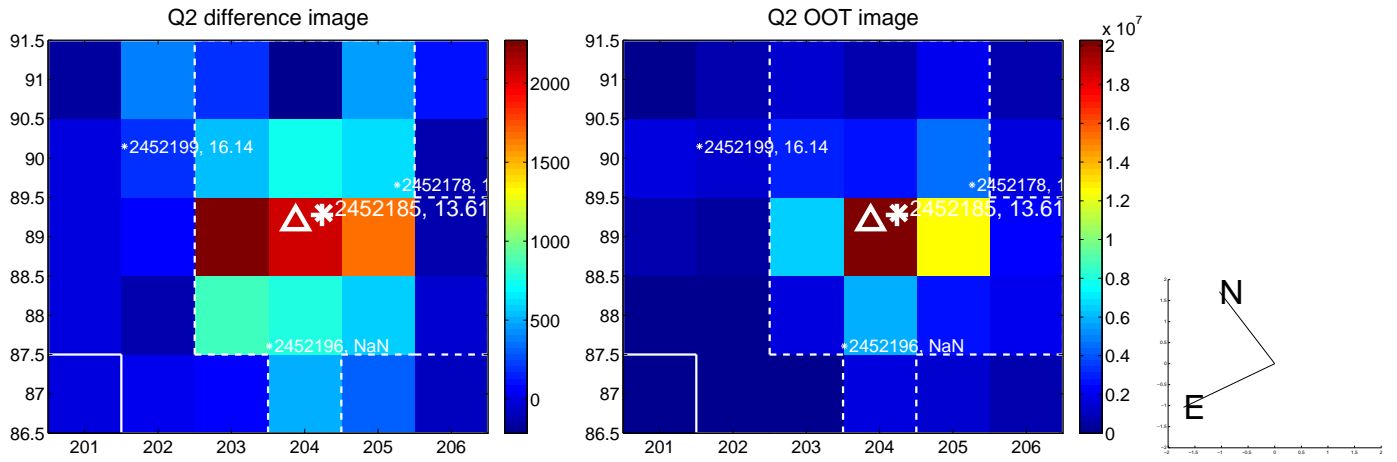
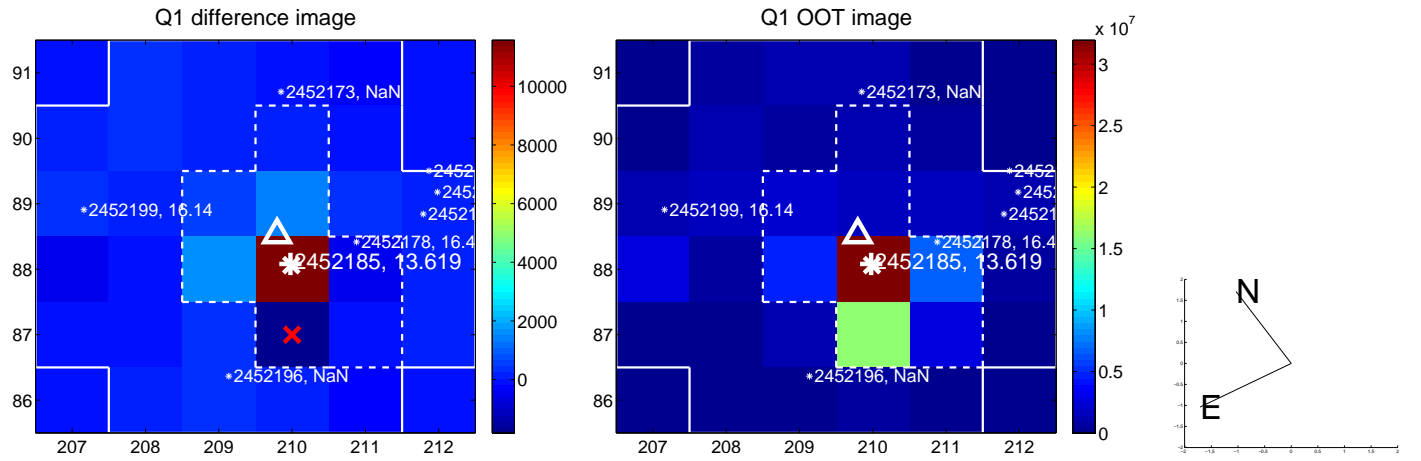
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.455 ± 0.287	1.58	-0.427 ± 0.267	0.157 ± 0.210
PRF-fit source offset from KIC position	0.463 ± 0.282	1.64	-0.424 ± 0.251	0.187 ± 0.214
photometric centroid source offset	1.99 ± 1.34	1.48	1.02 ± 1.29	-1.71 ± 1.36

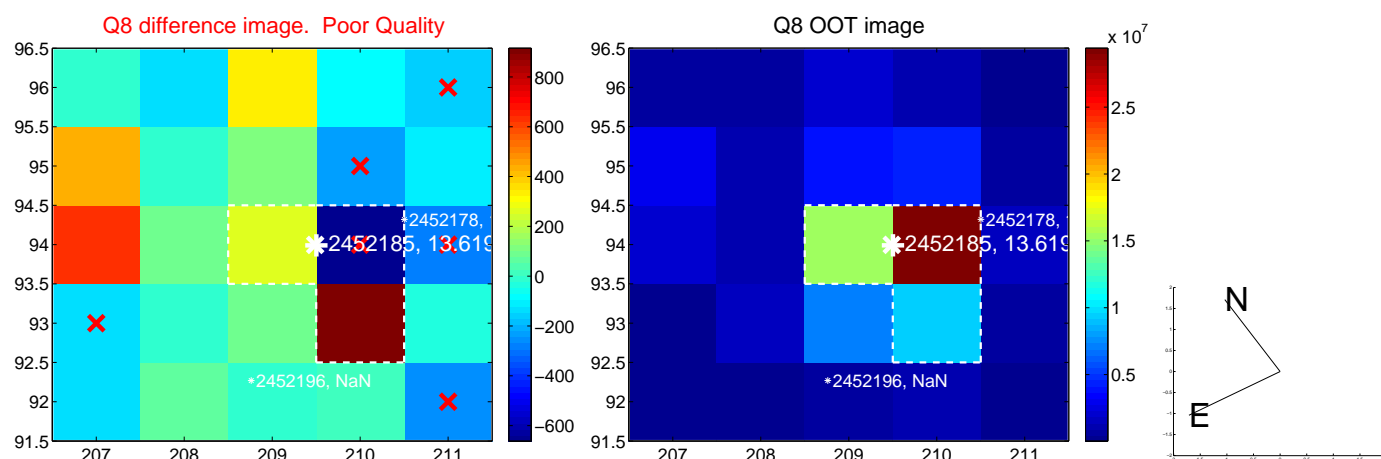
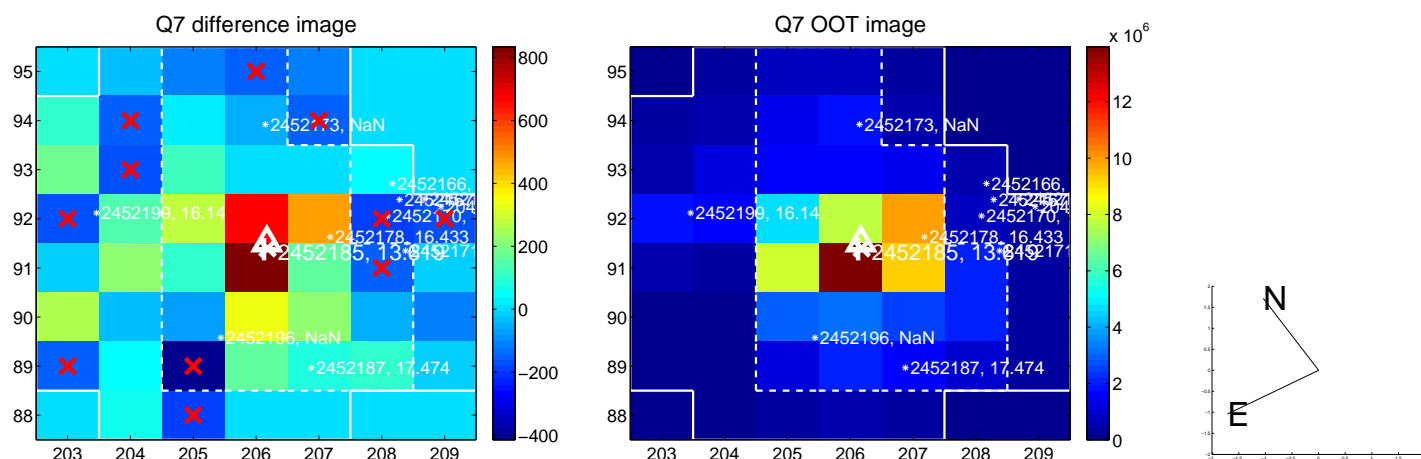
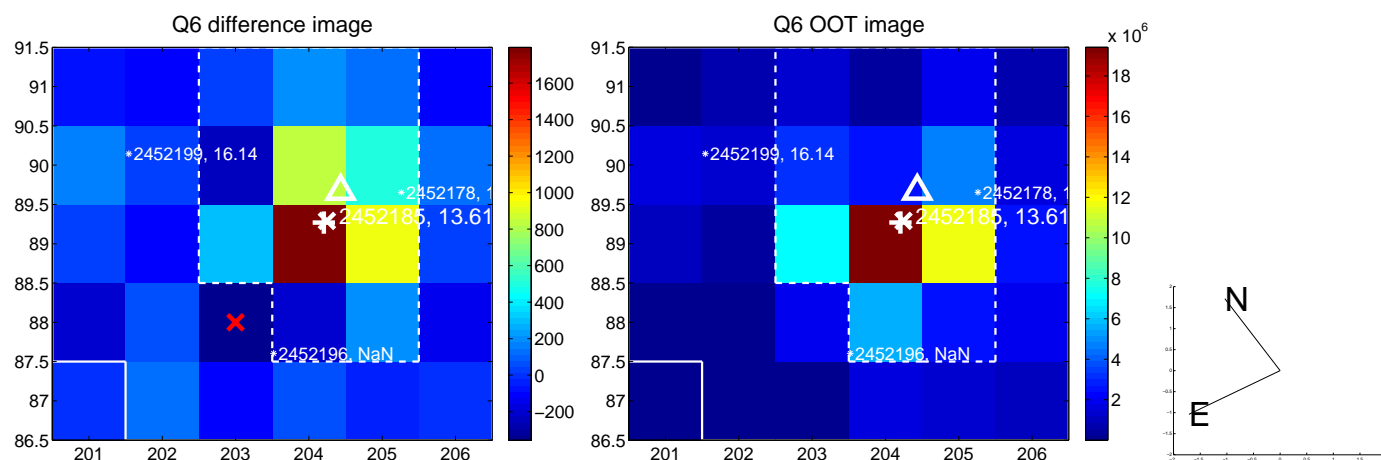
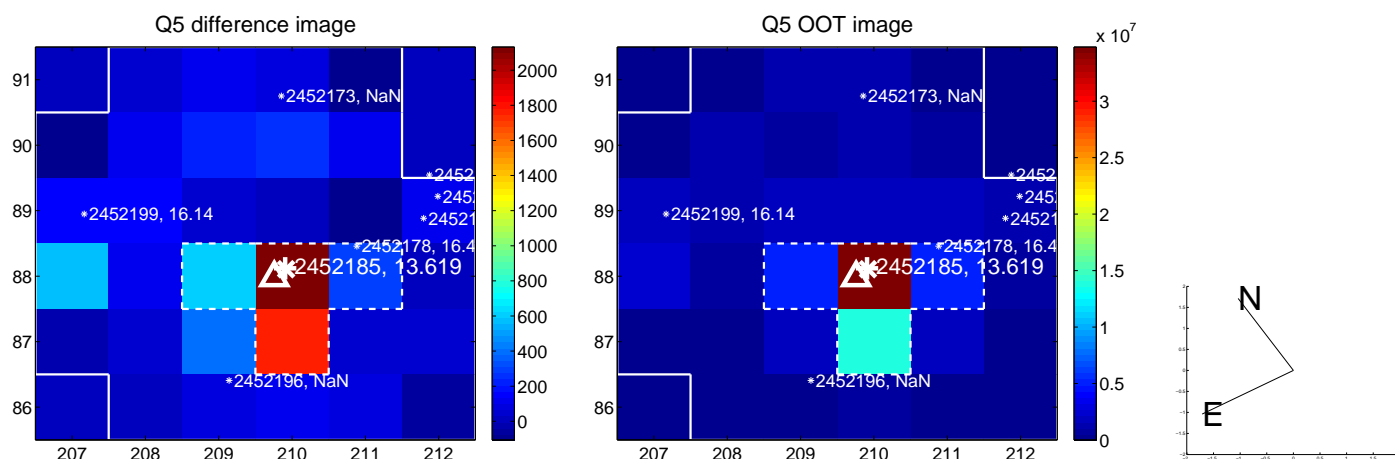


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

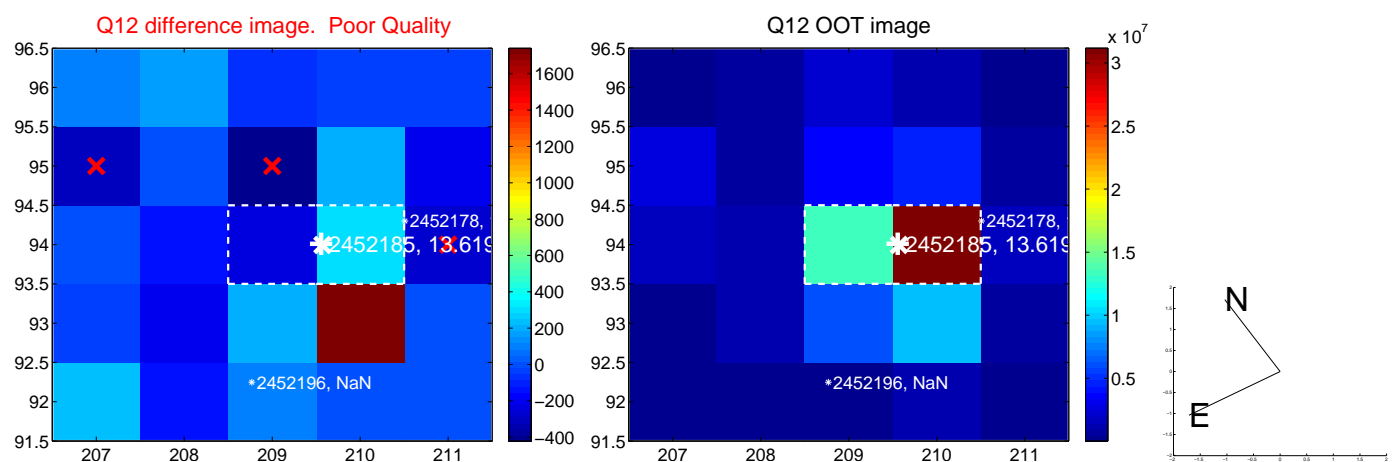
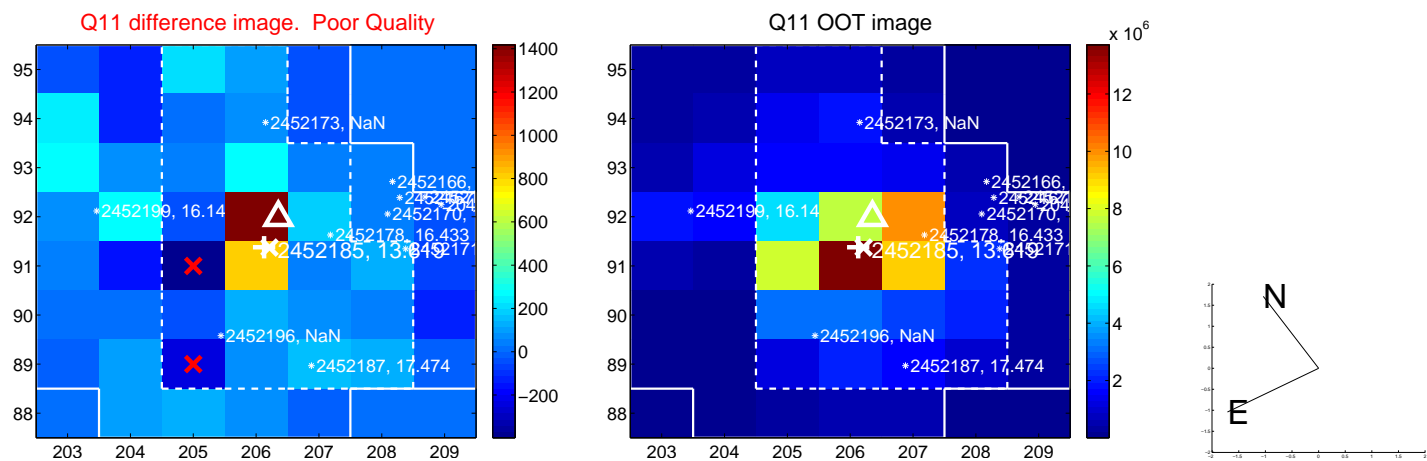
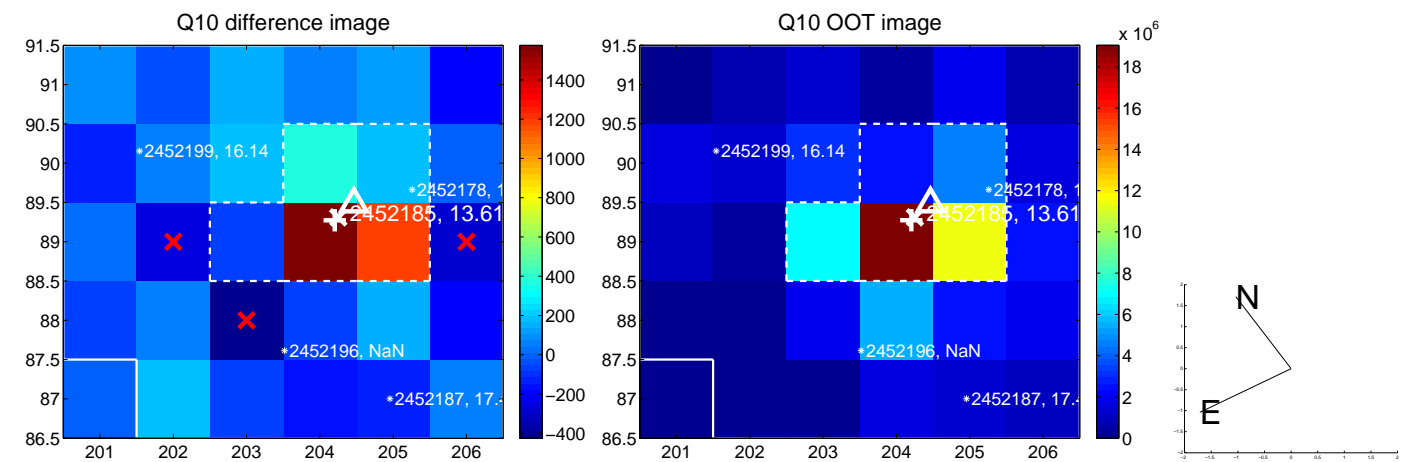
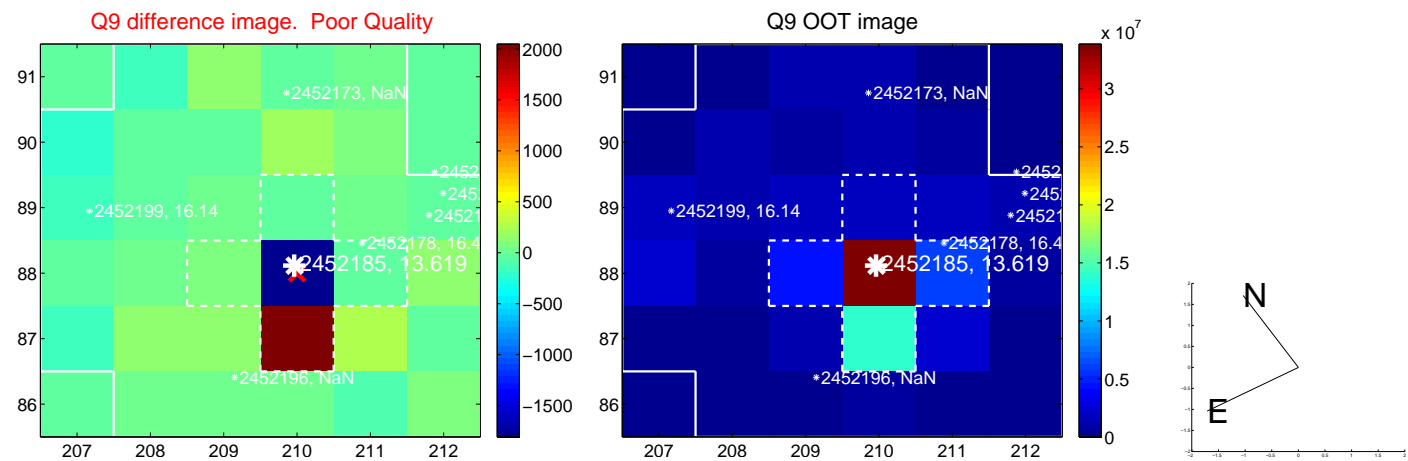
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



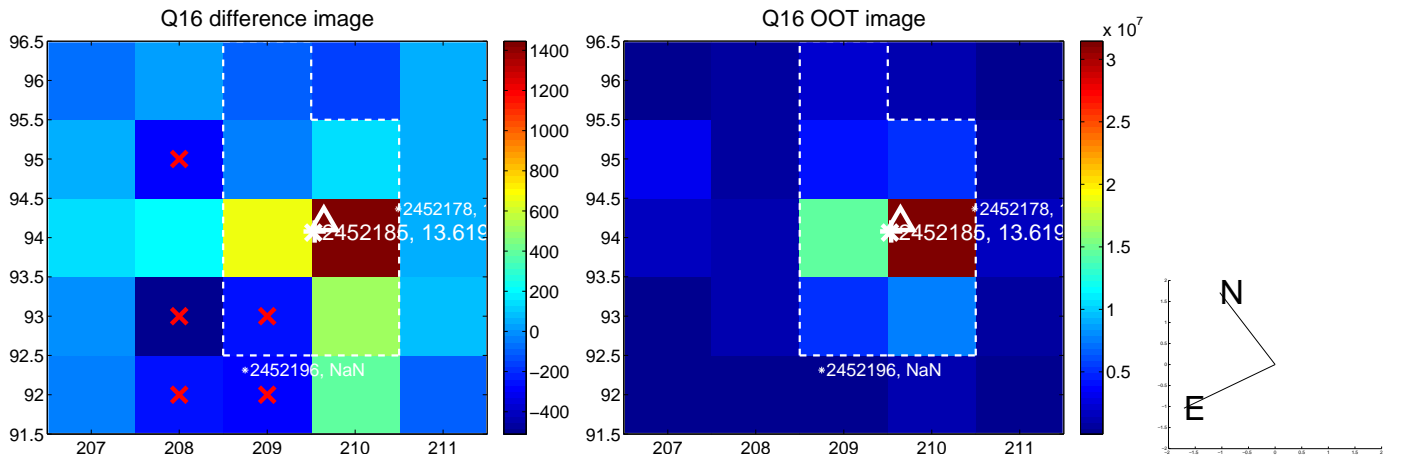
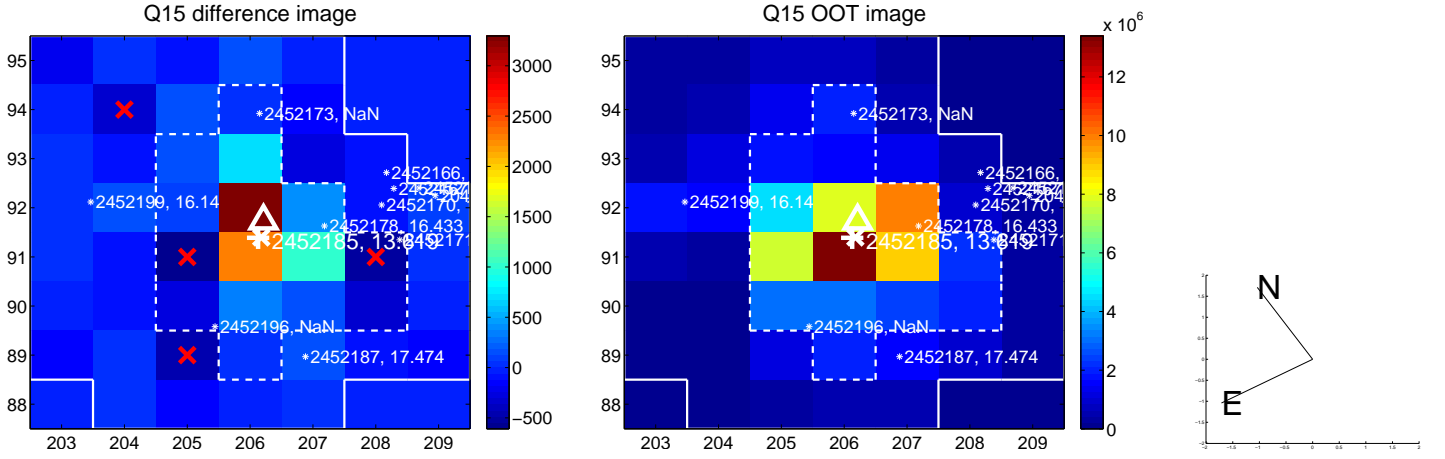
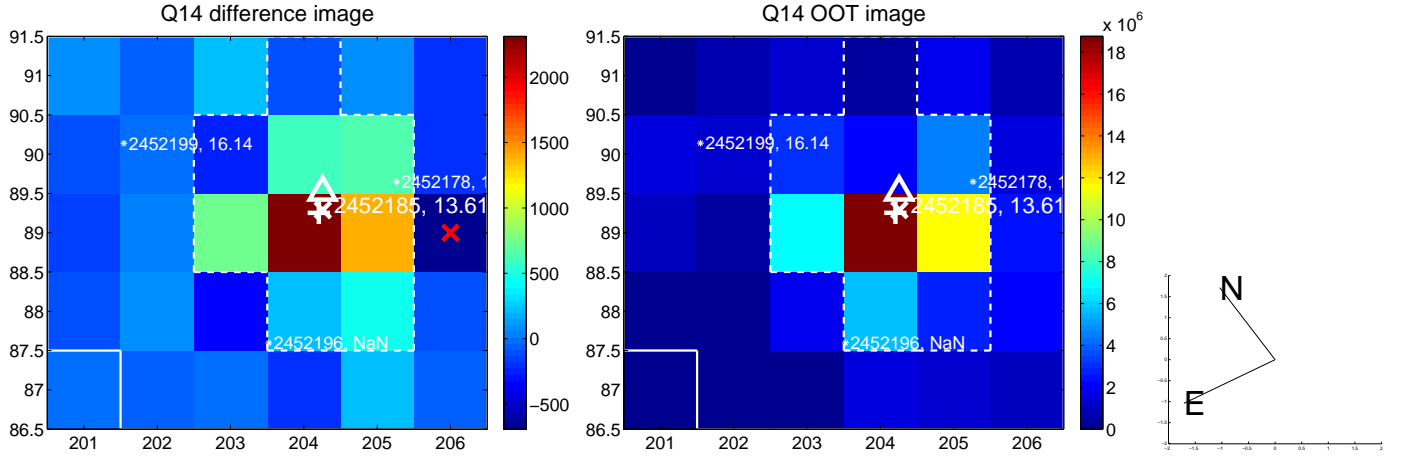
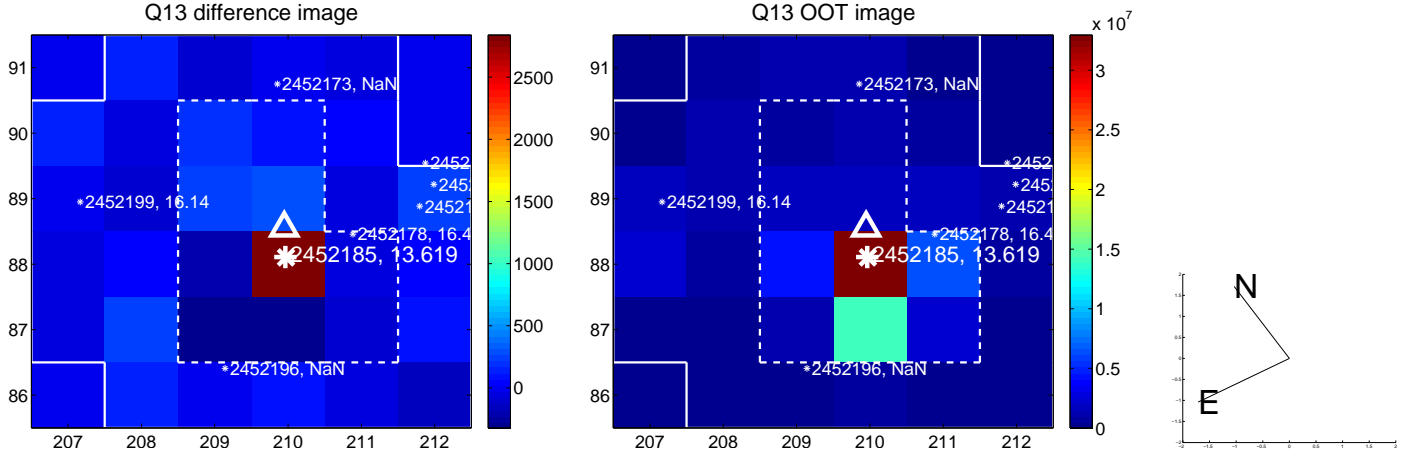
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



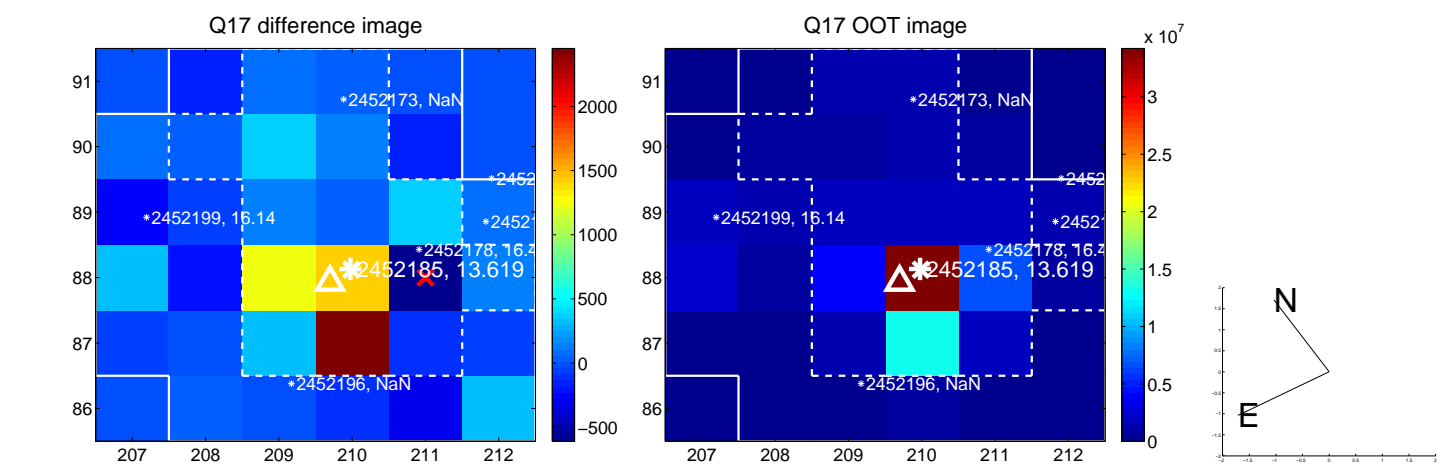
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



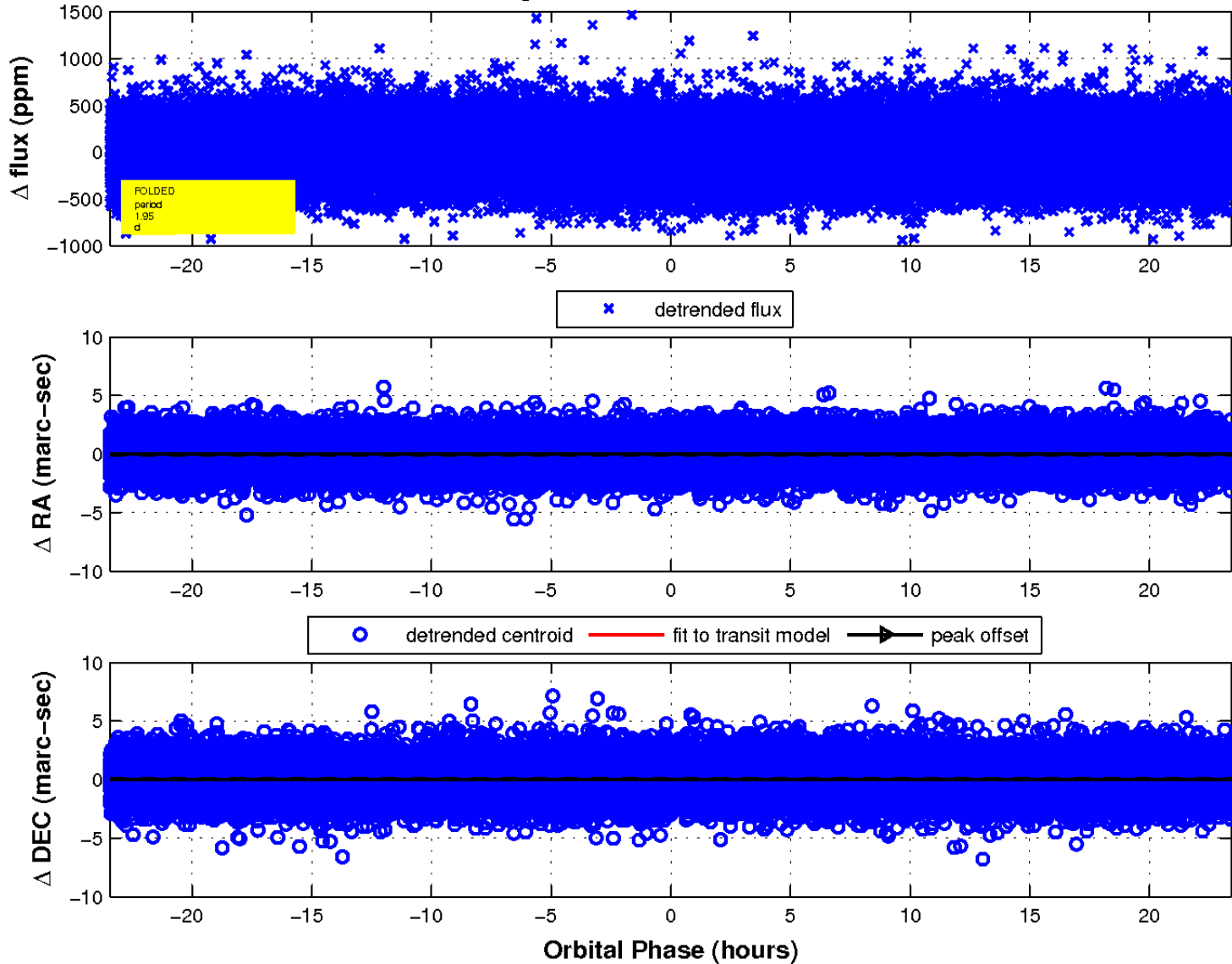
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

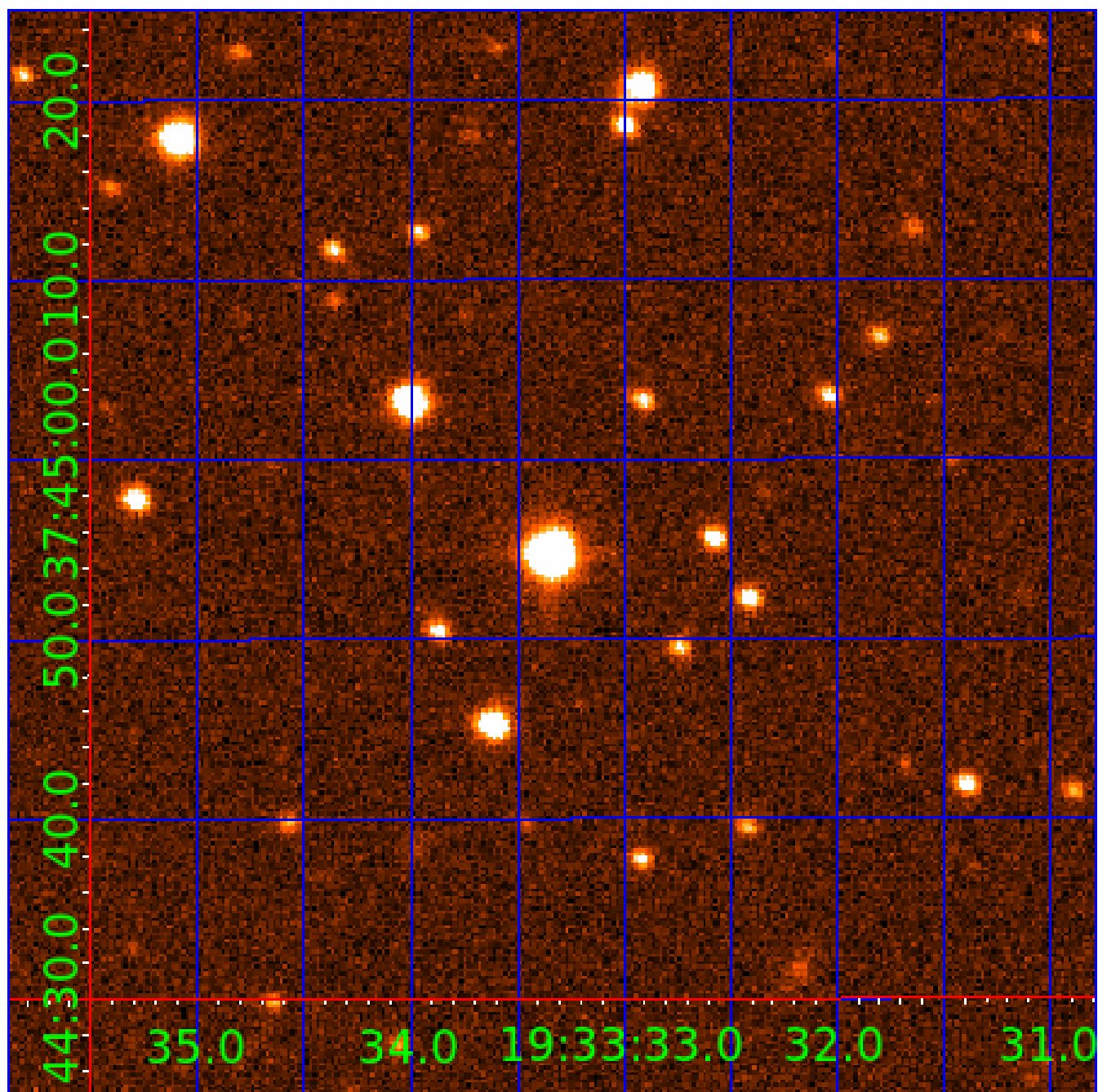


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 002452185

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})
002452185-01	OBS	No	1.953164	132.896394	22.5	8.433	7.4	7.1	1.62	6704	0.82	4314.89
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Robovetter Results

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002452185-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002452185-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002452185-04	OBS	FP	0.01	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

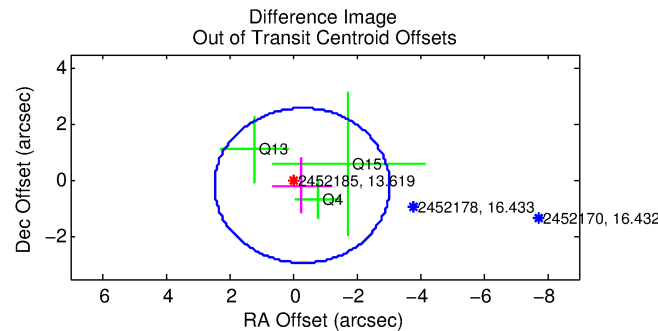
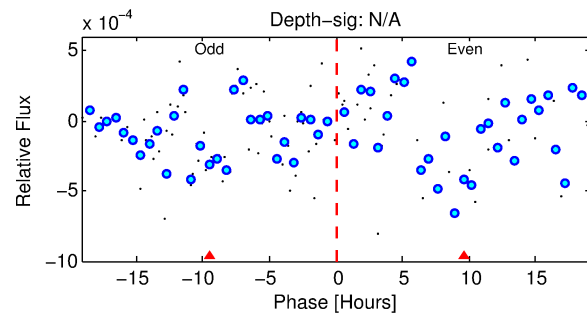
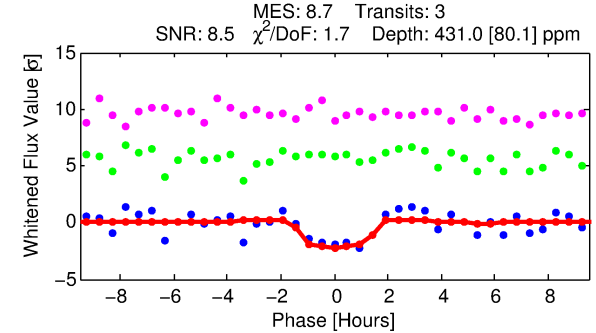
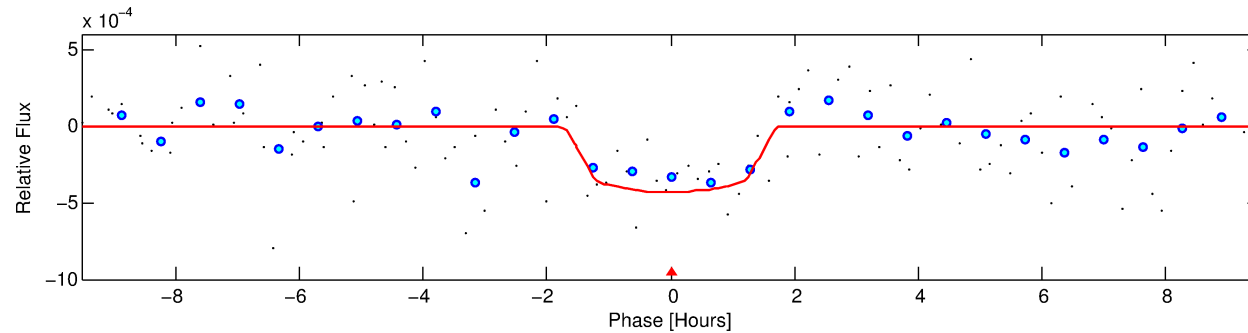
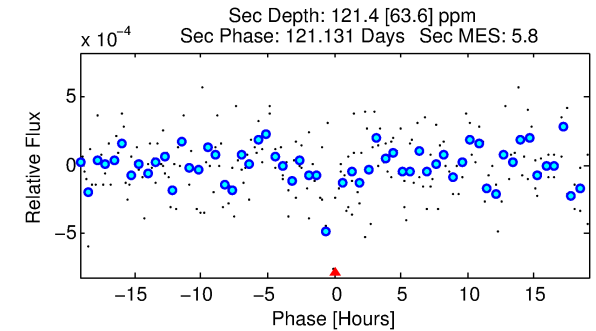
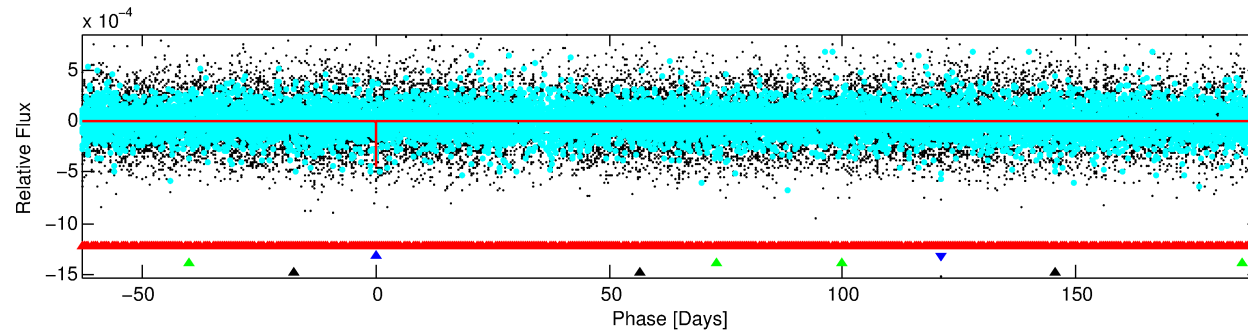
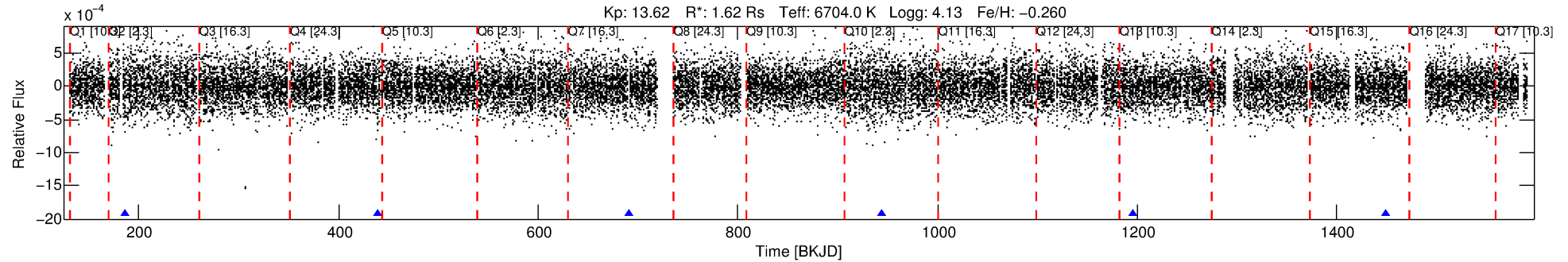
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002452185-02

No Significant Match Found

DV One-Page Summary

KIC: 2452185 Candidate: 2 of 4 Period: 252.521 d



DV Fit Results:

Period = 252.52076 [0.00373] d
Epoch = 186.3739 [0.0104] BKJD
Rp/R* = 0.0212 [0.0213]
a/R* = 370.68 [2117.66]
b = 0.82 [2.34]
Seff = 6.60 [1.76]
Teq = 409 [27] K
Rp = 3.75 [3.85] Re
a = 0.8504 [0.1469] AU
Ag = 3433.30 [7199.99] [0.48σ]
Teffp = 4837 [2517] K [1.76σ]

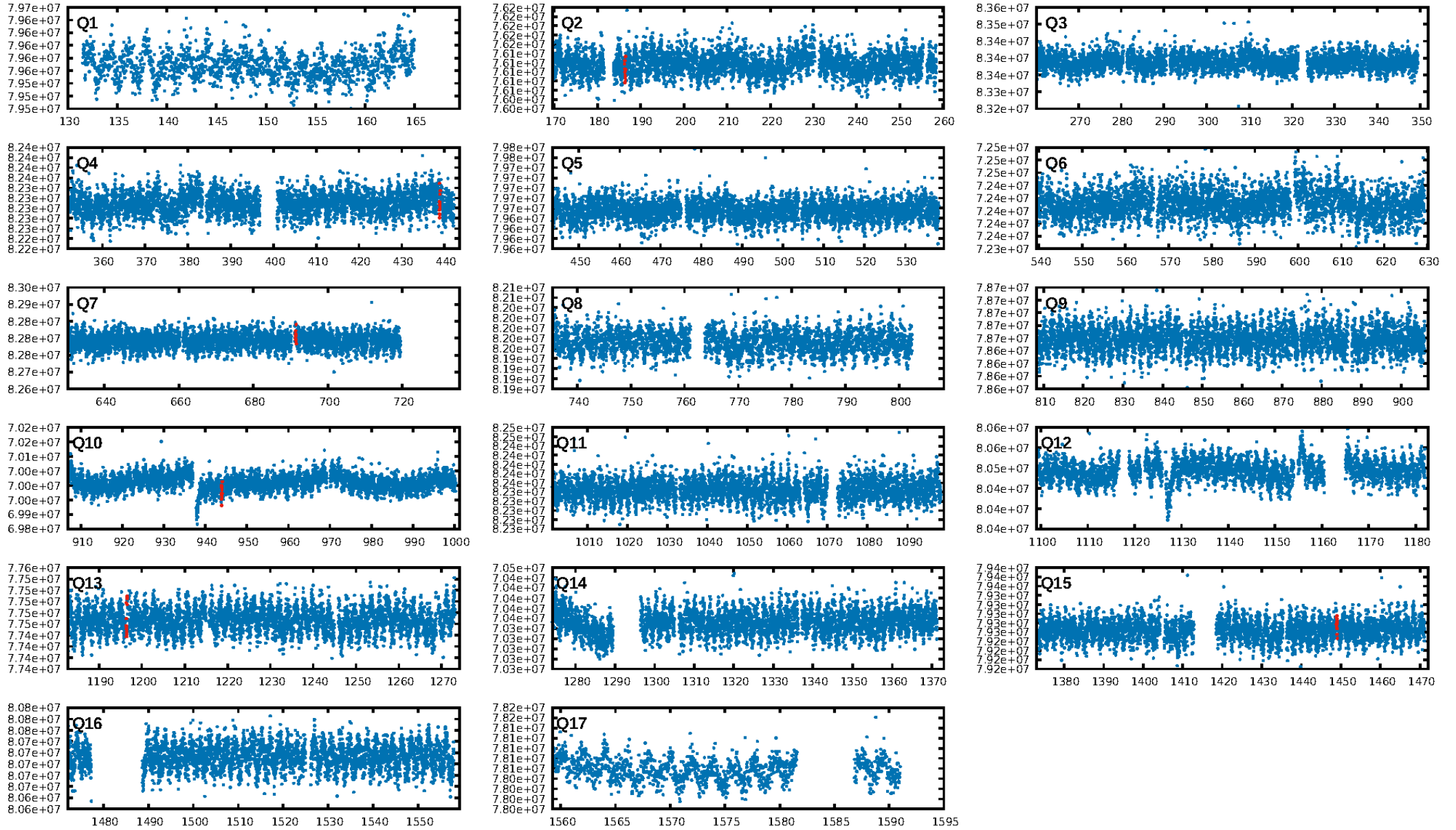
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [667.22σ]
LongPeriod-sig: 100.0% [566.84σ]
ModelChiSquare2-sig: 60.2%
ModelChiSquareGof-sig: 88.2%
Bootstrap-pfa: 2.51e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.164
Centroid-sig: 74.4%
Centroid-so: 0.640 arcsec [0.50σ]
OotOffset-rm: 0.339 arcsec [0.37σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-rm: 0.280 arcsec [0.31σ]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.60 [3/5]

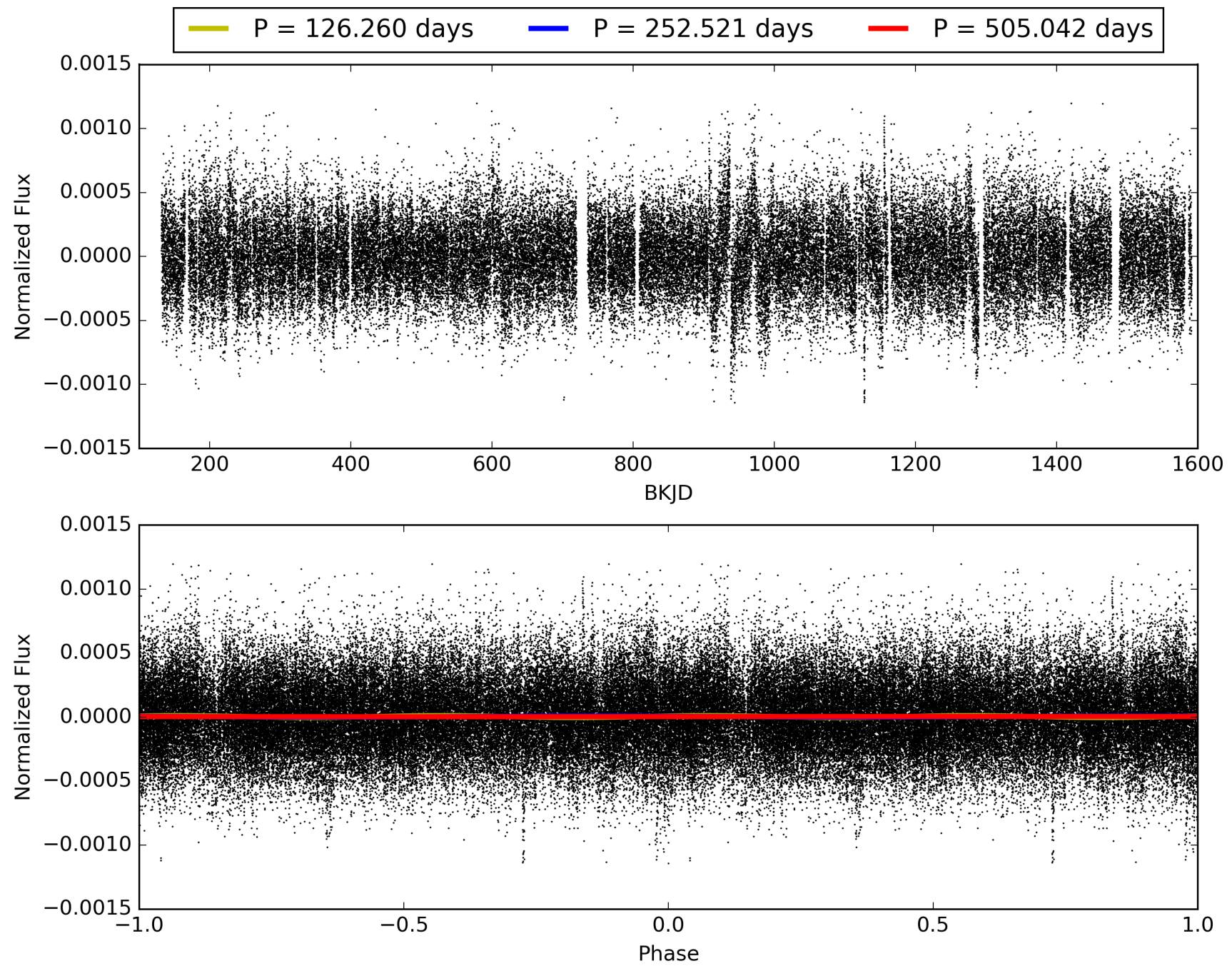
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:22:19 Z

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

TCE 002452185-02, PDC Light Curves

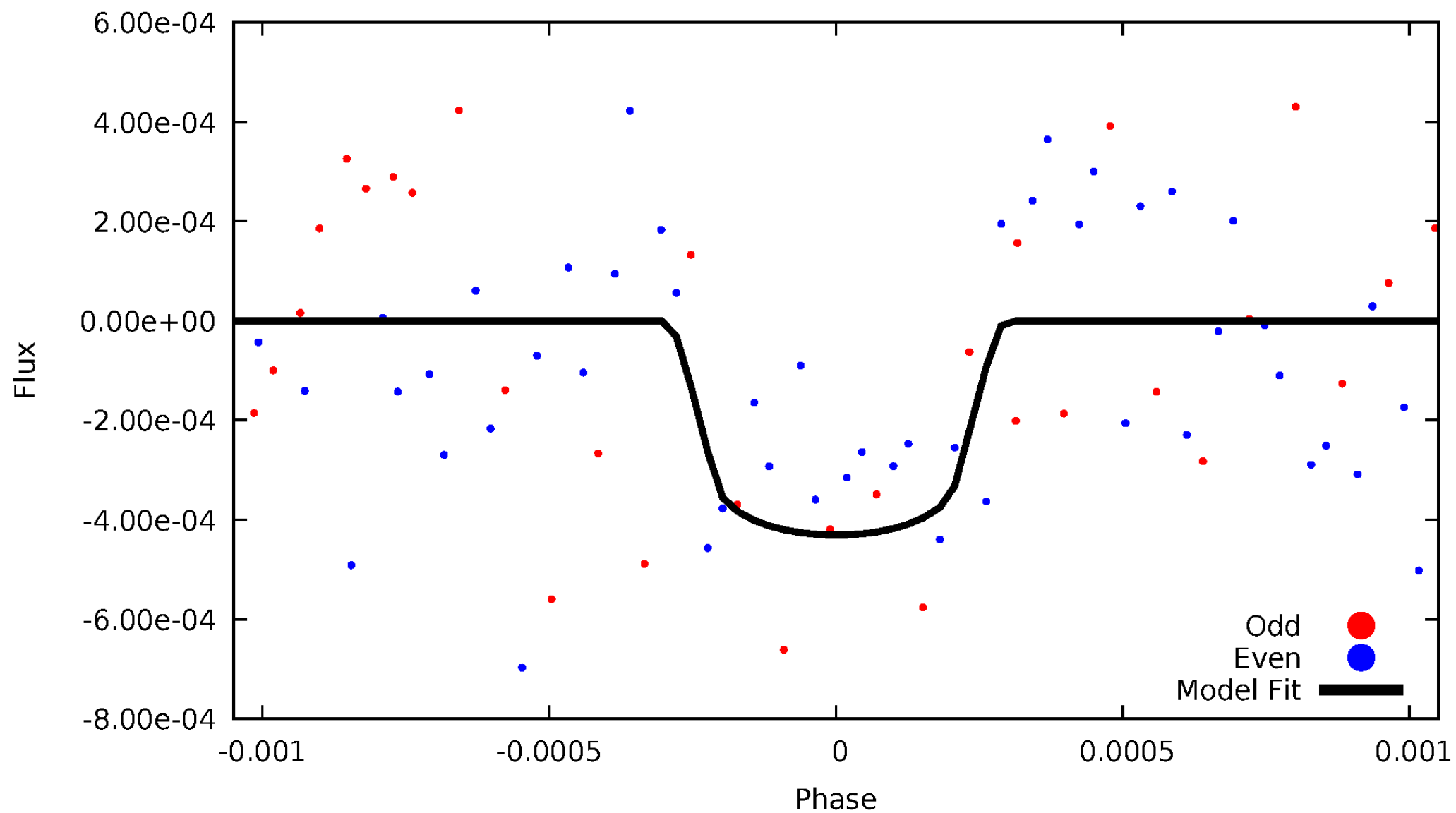


TCE 002452185-02



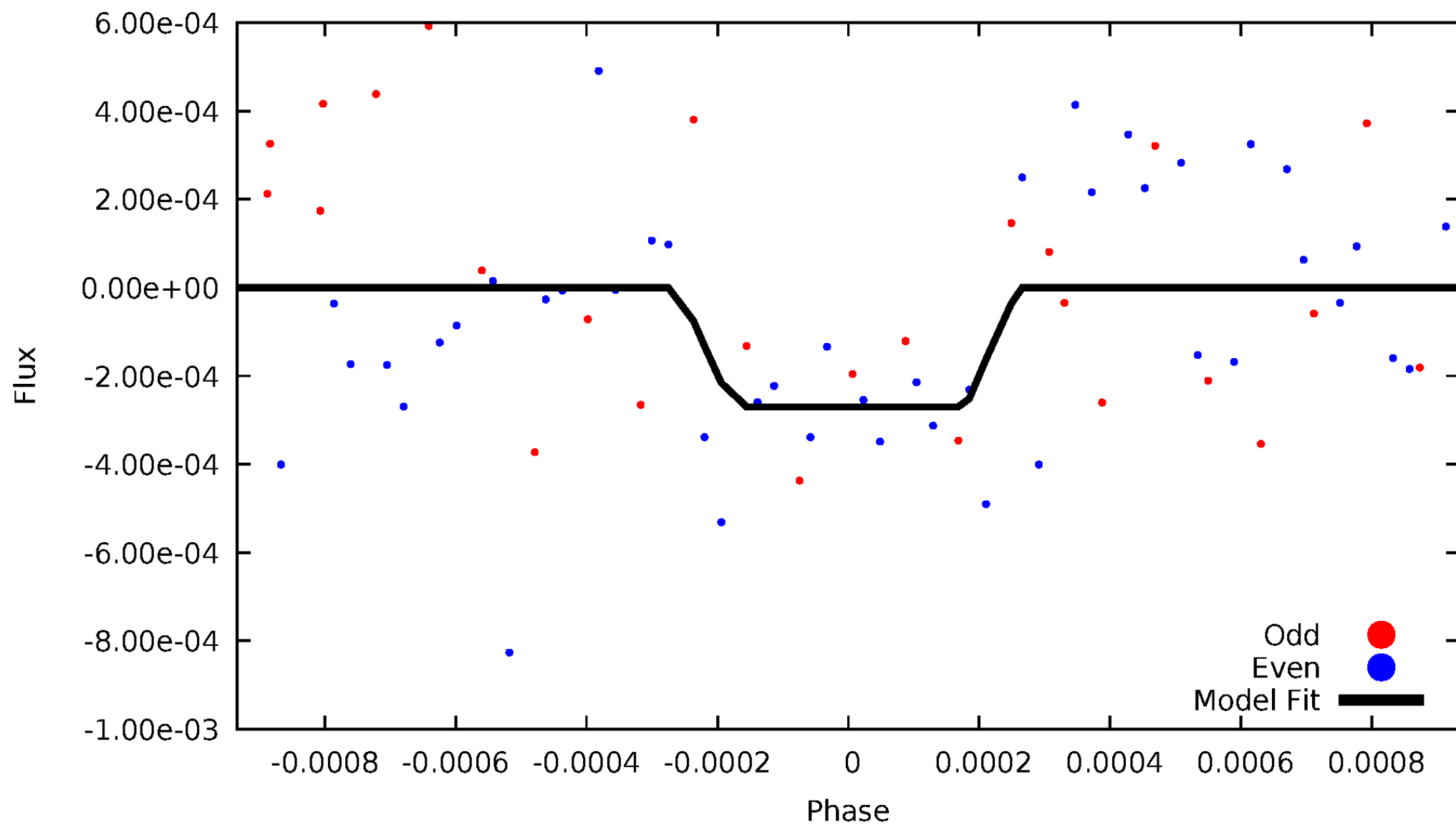
DV Odd/Even

TCE 002452185-02



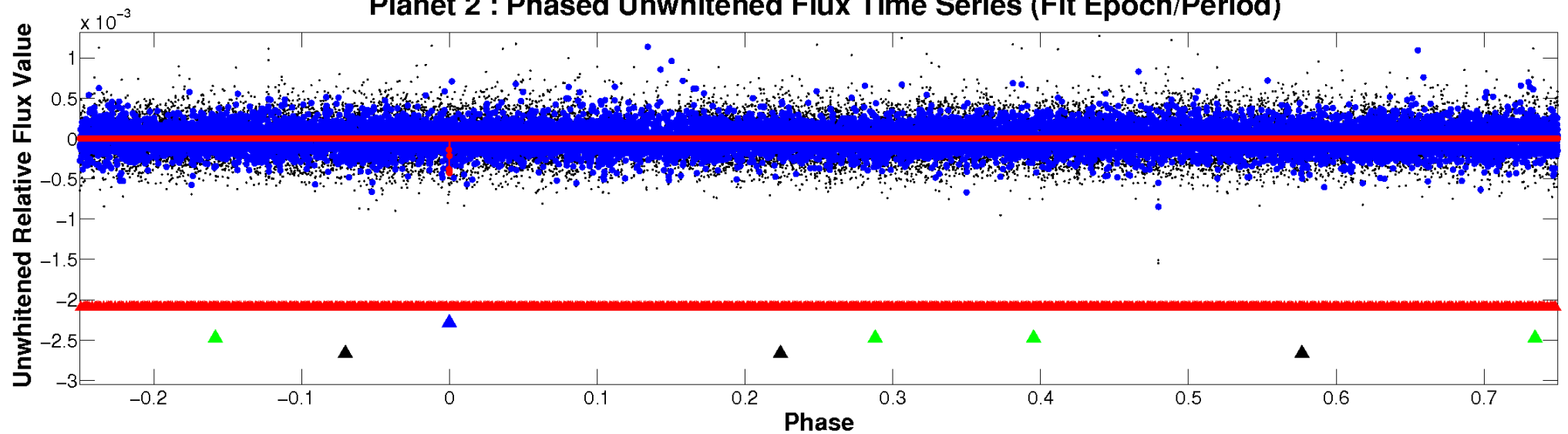
ALT Odd/Even

TCE 002452185-02

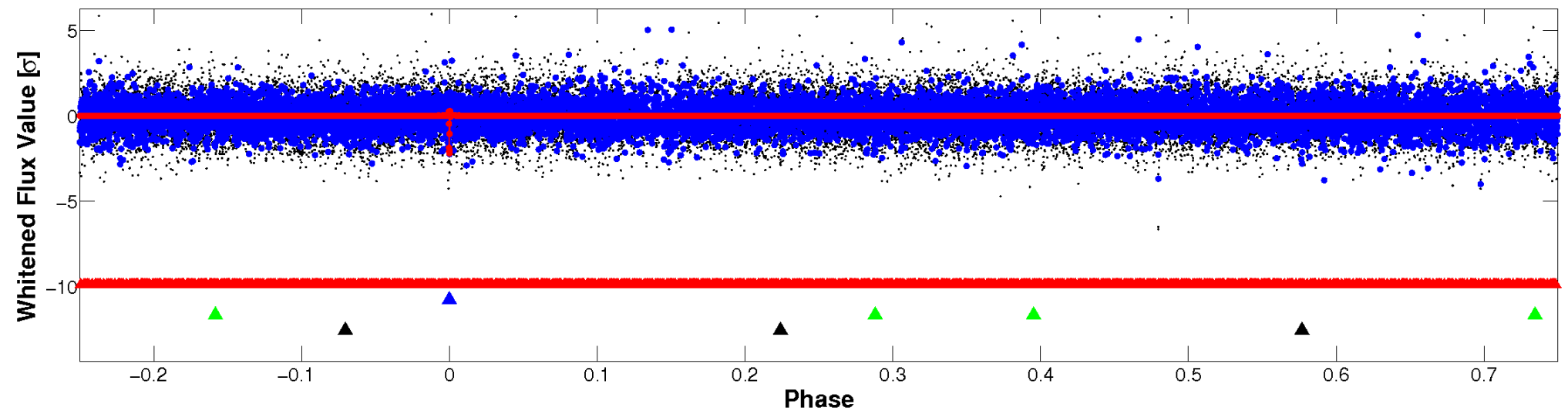


Non-Whitened Vs. Whitened Light Curve

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

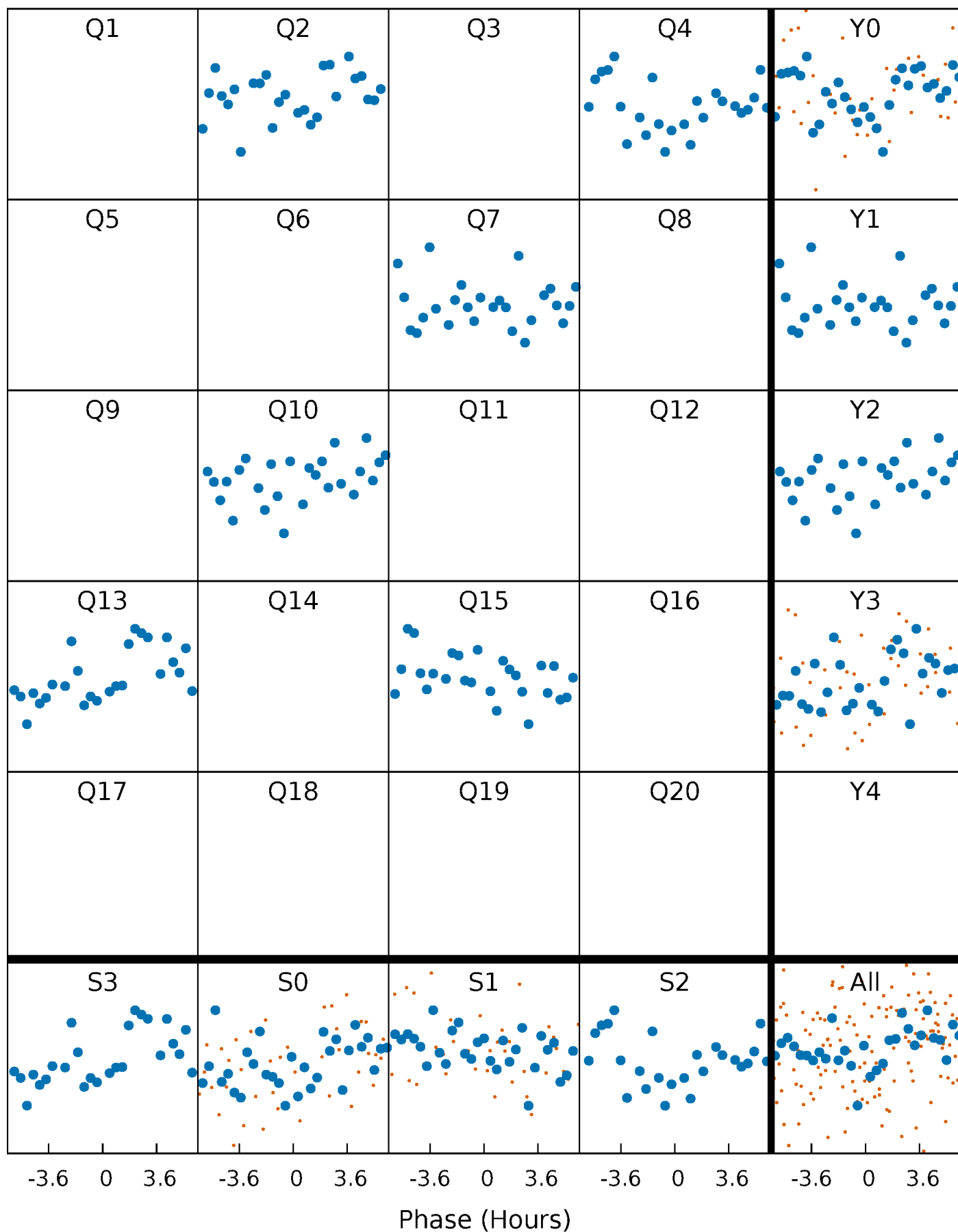


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



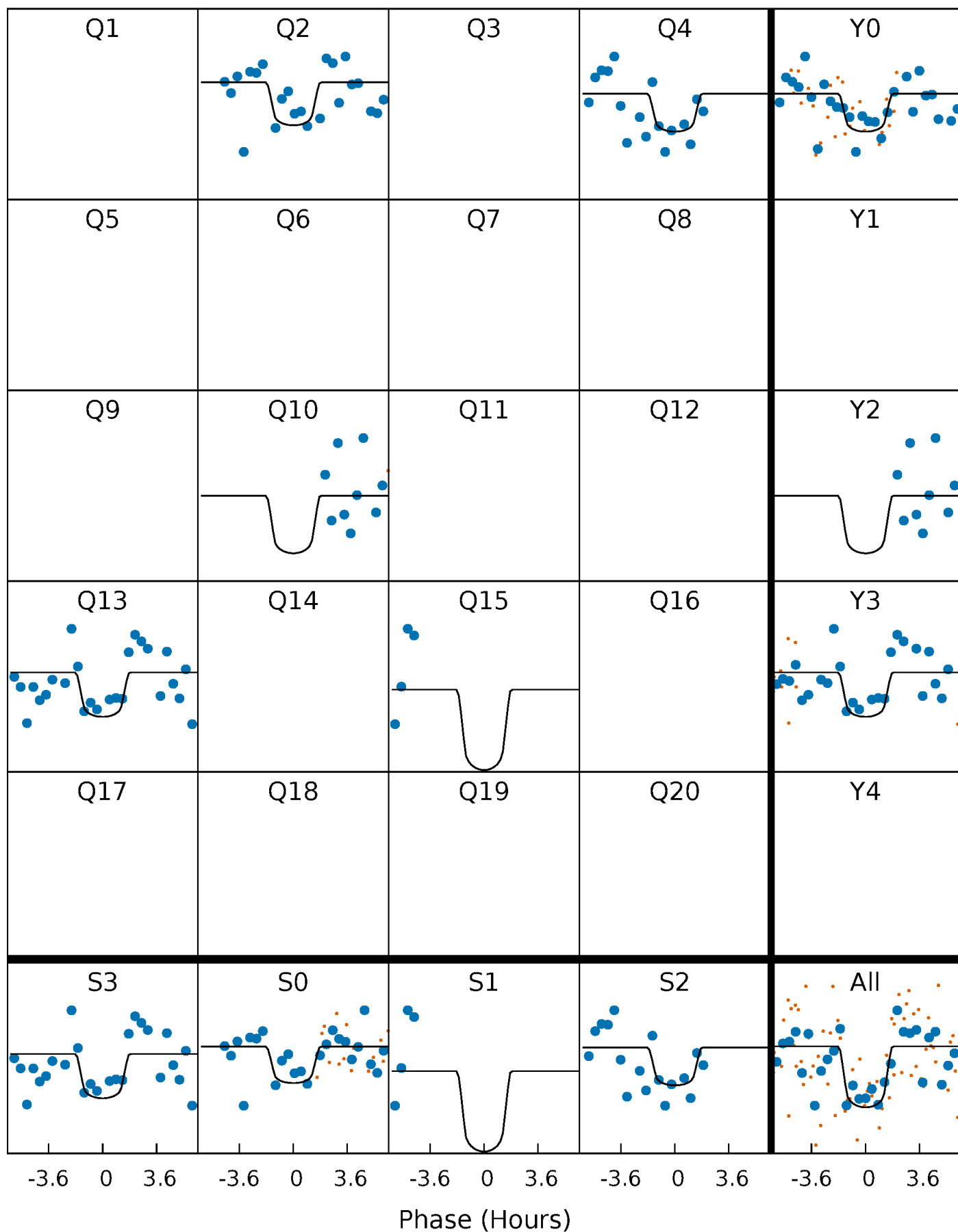
PDC Quarter-Phased Transit Curves

TCE 002452185-02 $P=252.520758$ Days $T_0=186.373950$ (BKJD)



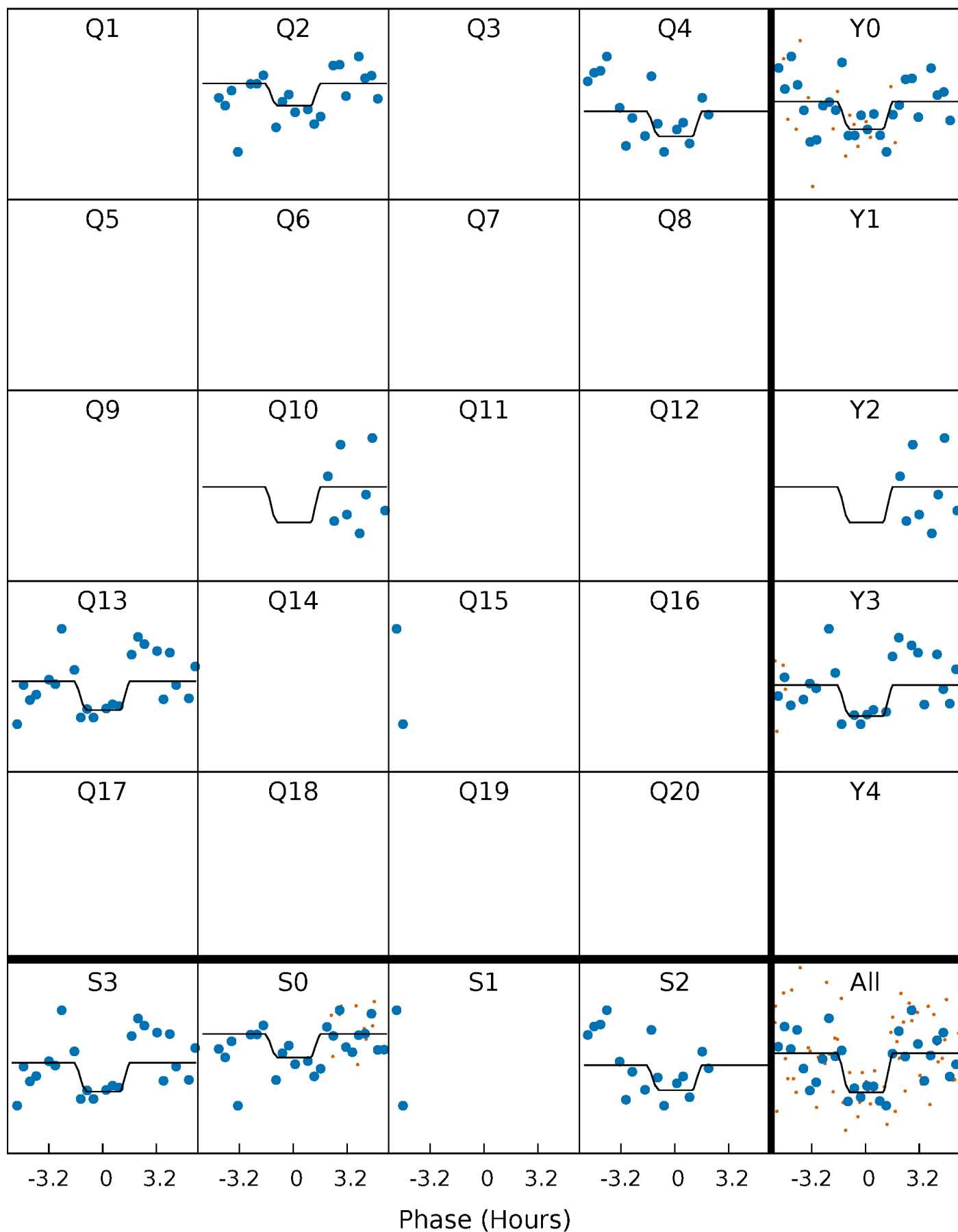
DV Quarter-Phased Transit Curves

TCE 002452185-02 $P=252.520758$ Days $T_0=186.373950$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

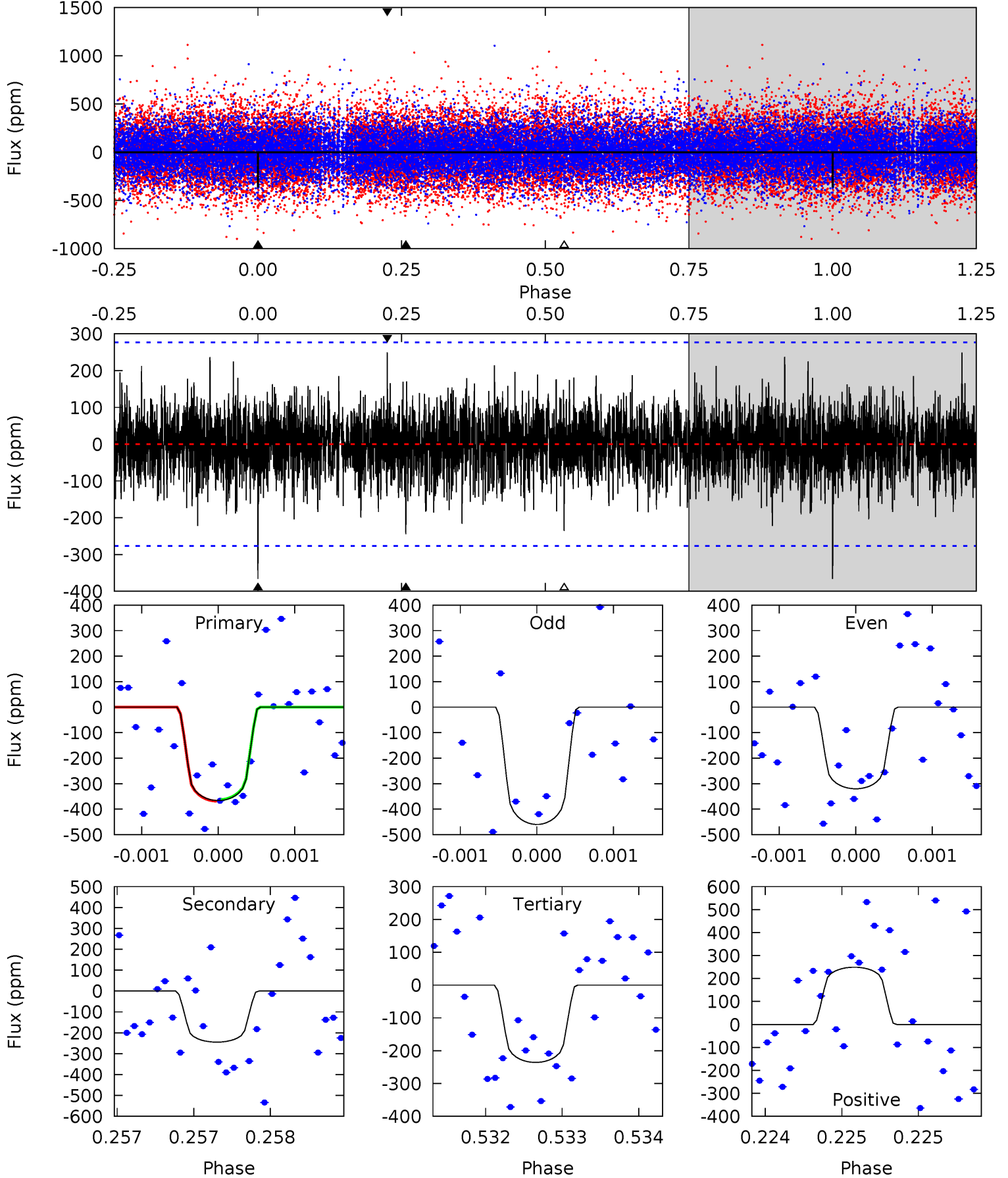
TCE 002452185-02 P=252.523993 Days $T_0=186.366546$ (BKJD)



DV Model-Shift Uniqueness Test

002452185-02, P = 252.520758 Days, E = 186.373950 Days

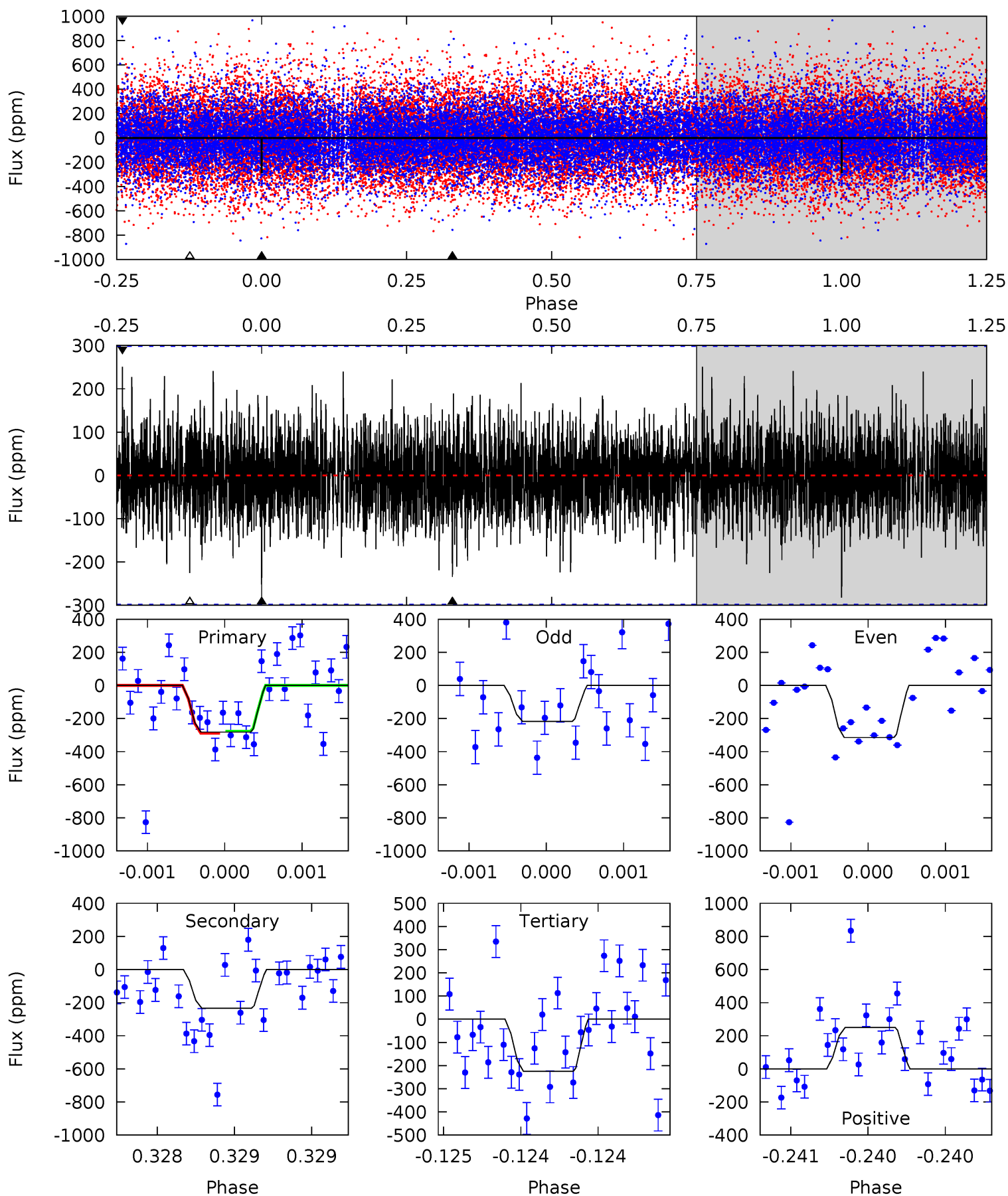
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.34	4.91	4.73	5.00	5.55	3.45	1.27	2.61	2.35	0.18	-0.08	1.29	1.14	0.40	0.06



Alt Model-Shift Uniqueness Test

002452185-02, P = 252.523993 Days, E = 186.366546 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.26	4.37	4.20	4.68	5.57	3.48	1.21	1.06	0.59	0.16	-0.31	0.87	1.00	0.47	0.11



Stellar Parameters For KIC 002452185

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6704^{+80}_{-80}	$4.126^{+0.148}_{-0.108}$	$-0.260^{+0.150}_{-0.150}$	$1.624^{+0.259}_{-0.317}$	$1.294^{+0.086}_{-0.124}$	$0.425^{+0.328}_{-0.135}$
	+1%/-1%	+4%/-3%	+58%/-58%	+16%/-20%	+7%/-10%	+77%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002452185-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-245 ± 50	$4.24^{+3.47}_{-2.66}$	569^{+25}_{-28}	5377^{+3809}_{-1158}	5460^{+34718}_{-3916}
Alt.	-234 ± 54	$4.00^{+3.52}_{-2.61}$	570^{+25}_{-29}	5489^{+4228}_{-1232}	5600^{+41288}_{-3950}

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 $A_{obs} \gg 1.0$

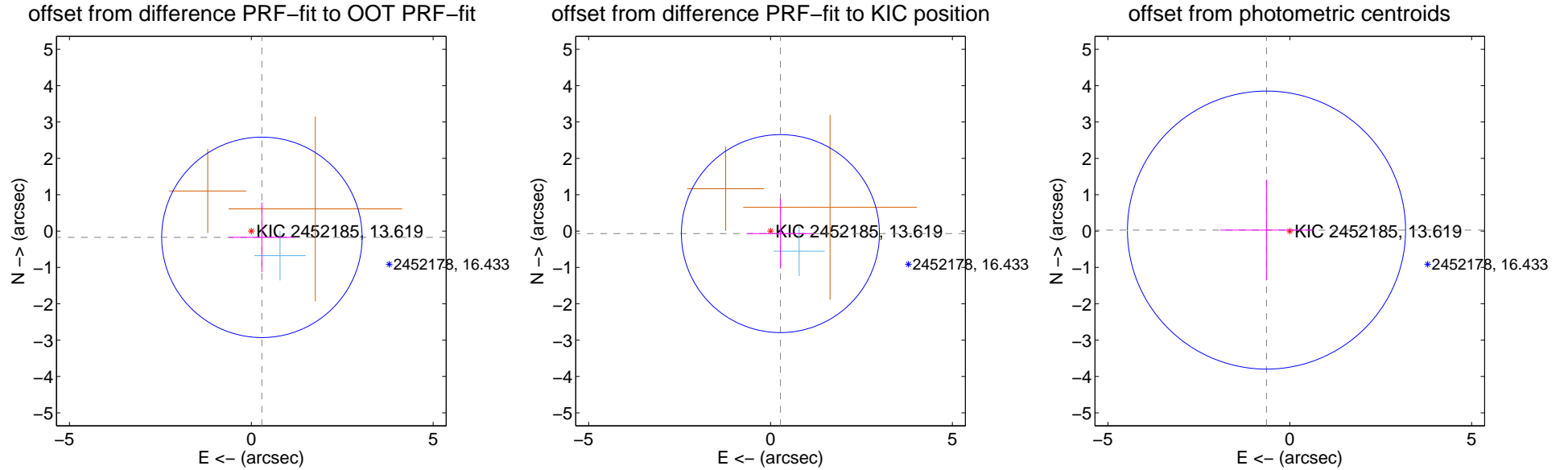
DV Centroid Data

Supplemental centroid analysis for 002452185-02. Kepler magnitude: 13.62. Transit SNR 8.55

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	0.339 ± 0.919	0.37	-0.291 ± 0.904	-0.173 ± 0.960
PRF-fit source offset from KIC position	0.280 ± 0.908	0.31	-0.271 ± 0.904	-0.070 ± 0.960
photometric centroid source offset	0.64 ± 1.27	0.50	0.64 ± 1.27	0.03 ± 1.39



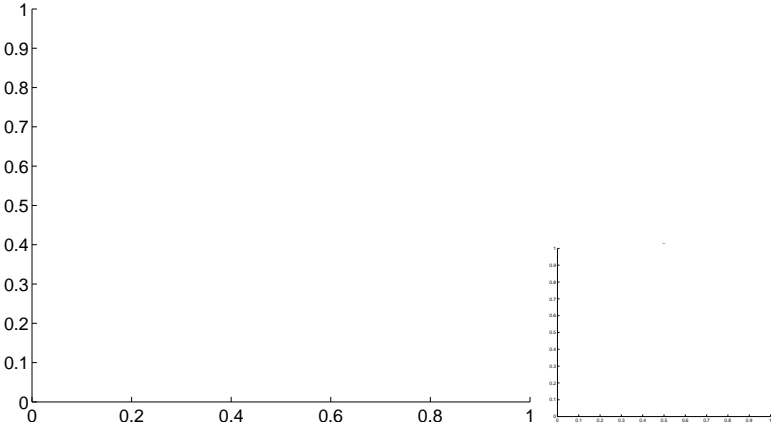
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

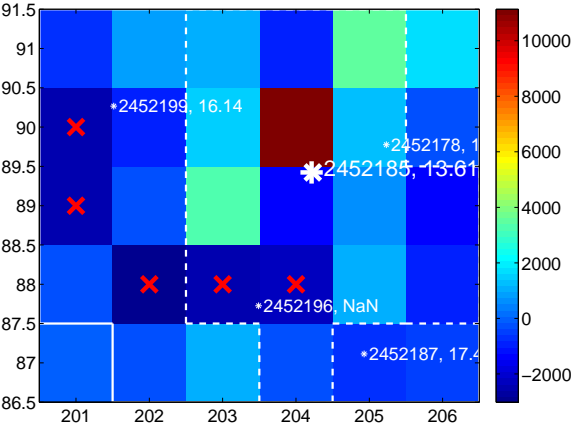
Q1 no difference image



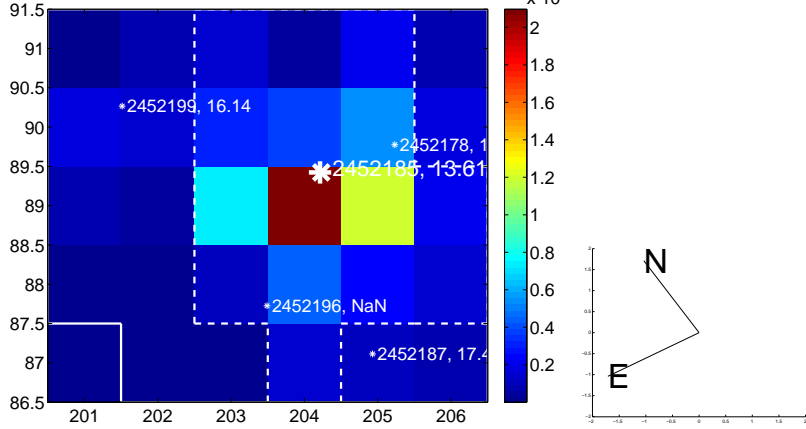
Q1 no OOT image



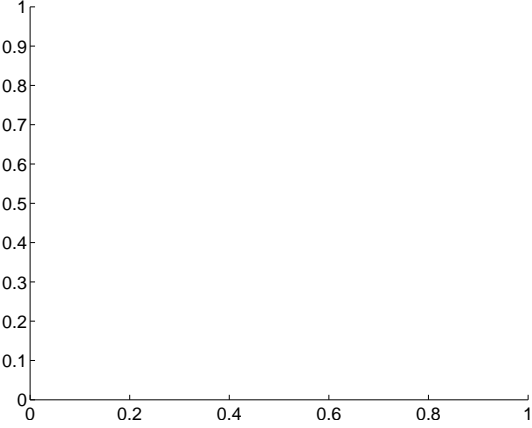
Q2 difference image. Poor Quality



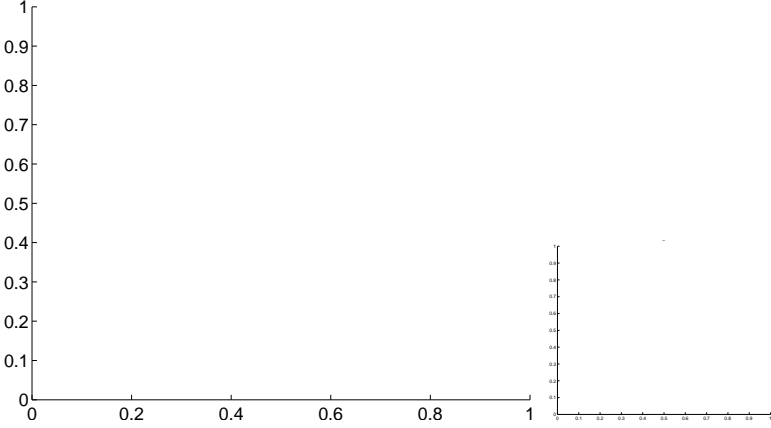
Q2 OOT image



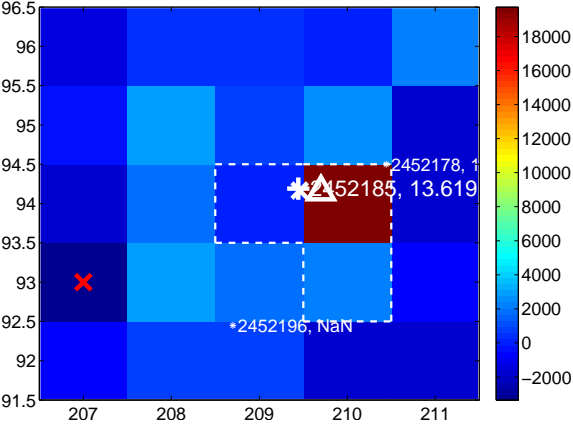
Q3 no difference image



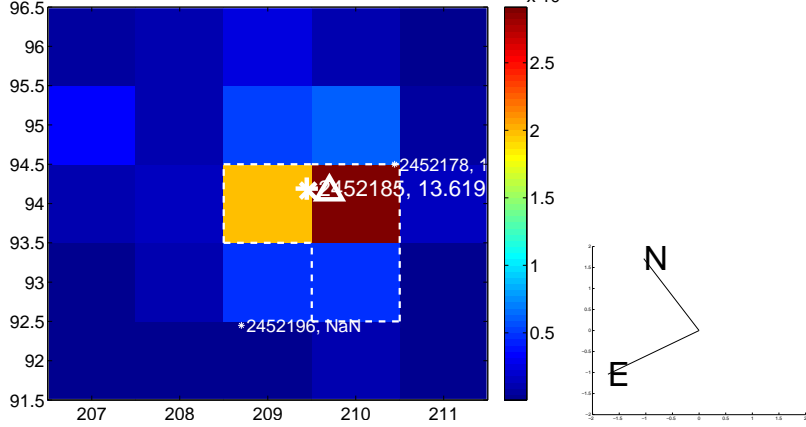
Q3 no OOT image



Q4 difference image



Q4 OOT image



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.

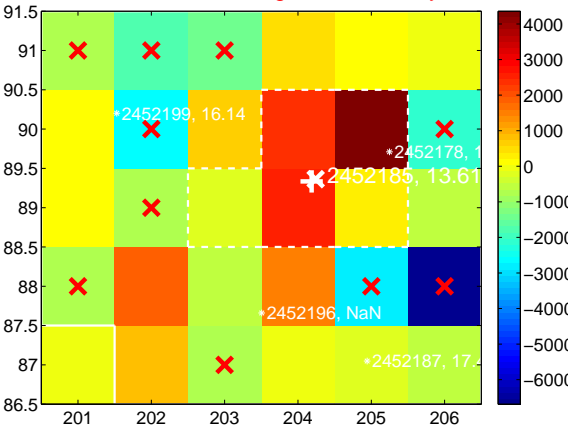
Q9 no difference image



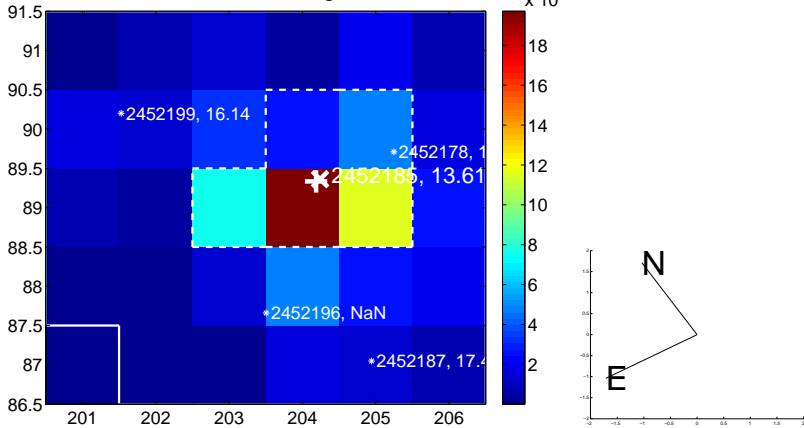
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



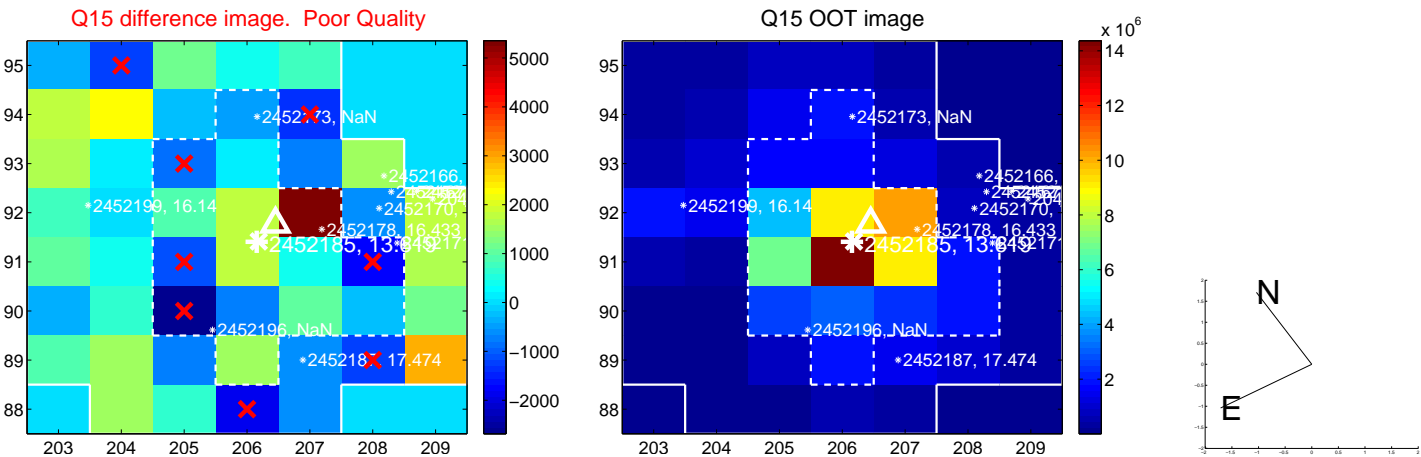
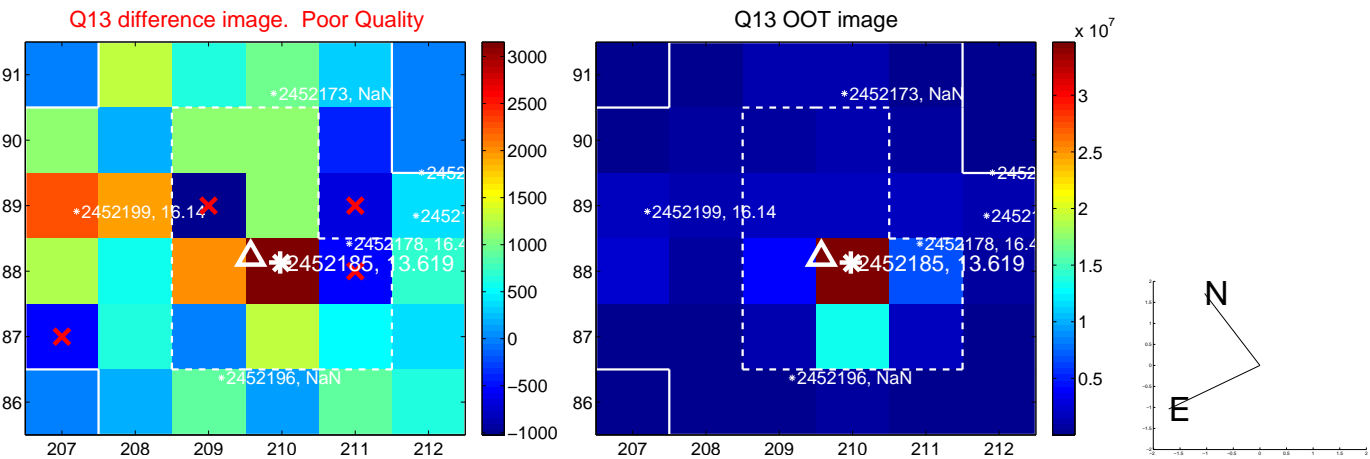
Q12 no difference image



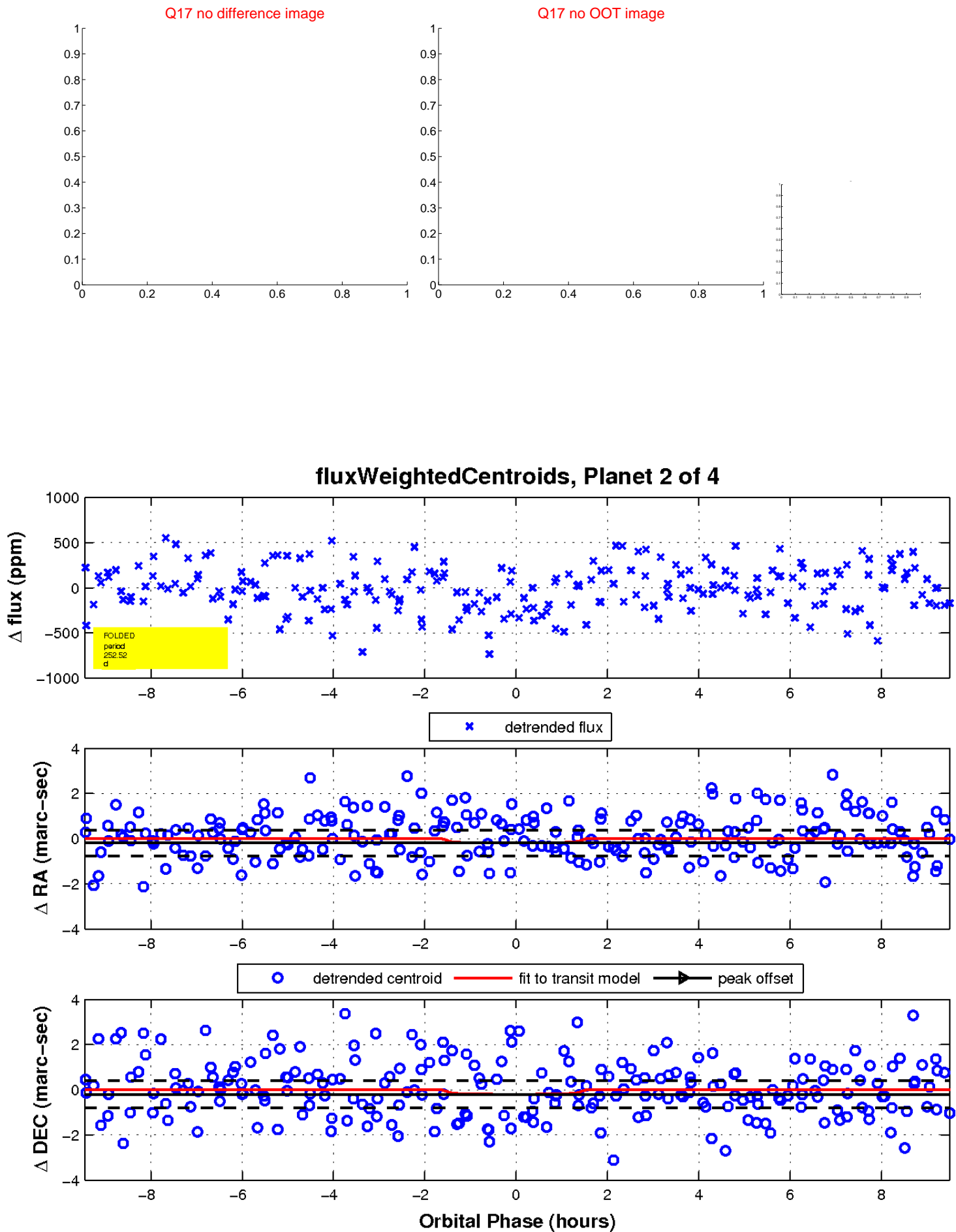
Q12 no OOT image



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

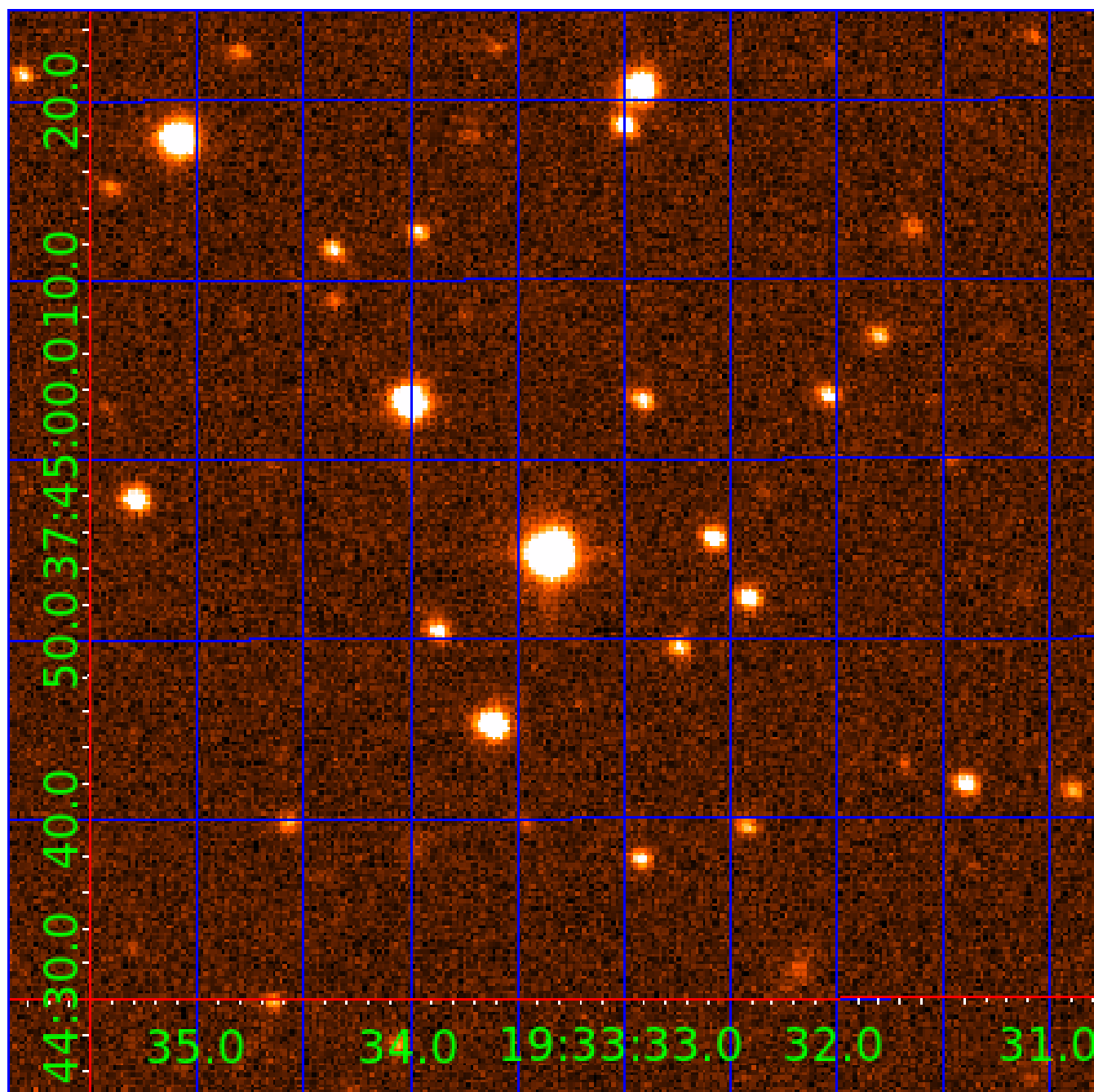


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002452185

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})
002452185-01	OBS	No	1.953164	132.896394	22.5	8.433	7.4	7.1	1.62	6704	0.82	4314.89
002452185-02	OBS	No	252.520758	186.373950	431.0	3.181	8.7	8.5	1.62	6704	3.75	6.60
002452185-03	OBS	No	365.252318	286.190245	346.0	3.558	7.6	7.7	1.62	6704	3.52	4.04
002452185-04	OBS	No	415.953886	421.126974	316.1	6.886	7.3	7.8	1.62	6704	3.16	3.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002452185-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
002452185-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002452185-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002452185-04	OBS	FP	0.01	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

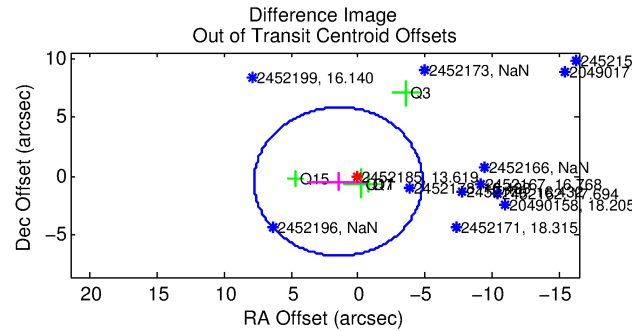
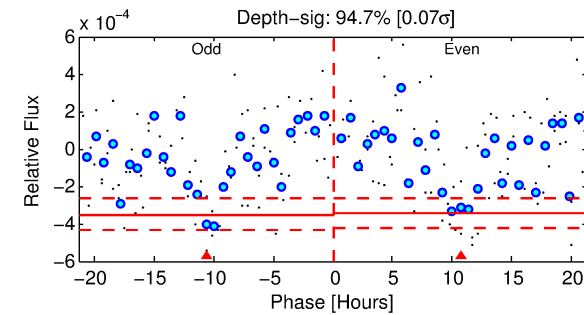
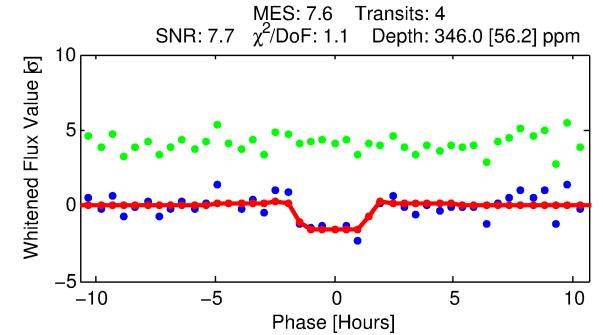
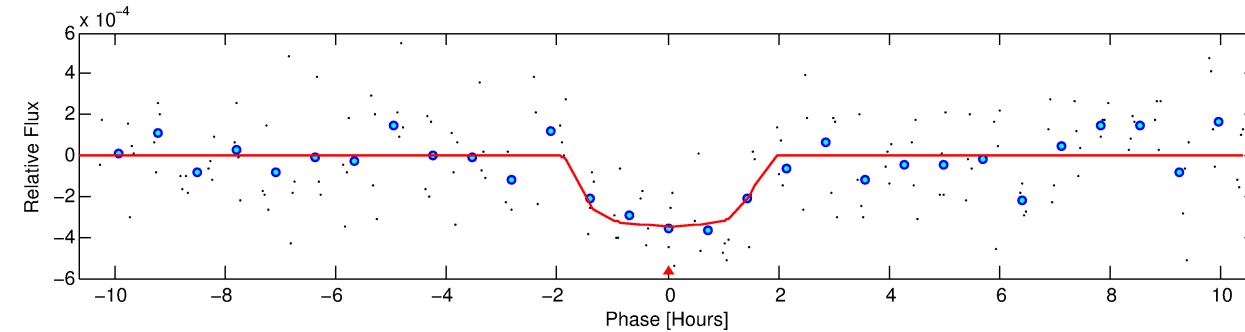
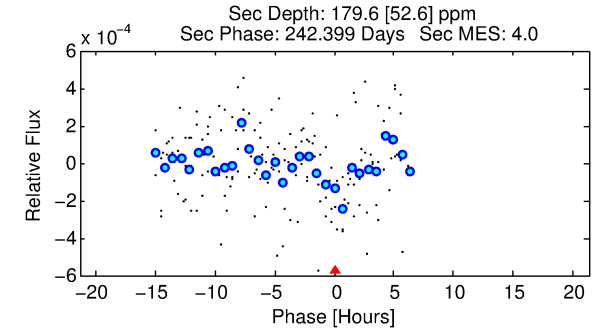
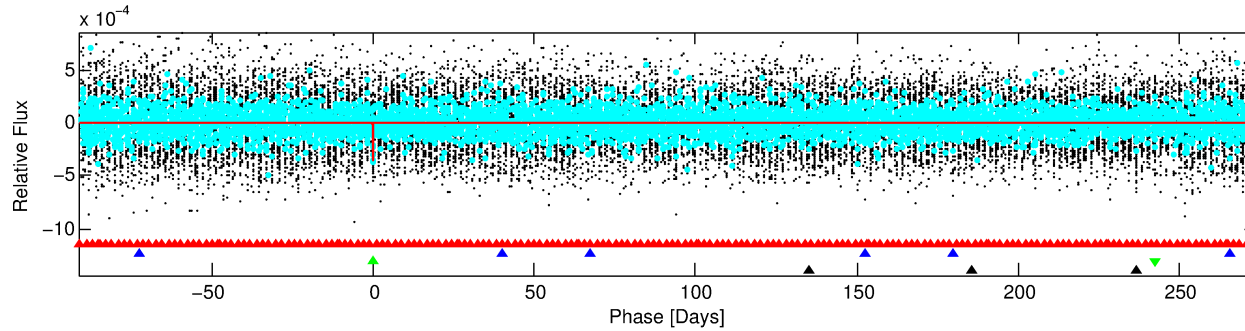
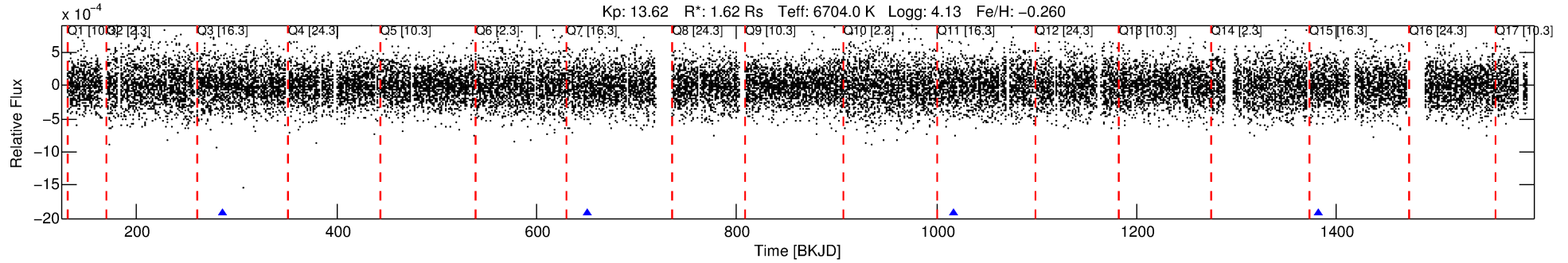
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002452185-03

No Significant Match Found

DV One-Page Summary

KIC: 2452185 Candidate: 3 of 4 Period: 365.252 d



DV Fit Results:

Period = 365.25232 [0.00496] d
Epoch = 286.1902 [0.0104] BKJD
Rp/R* = 0.0199 [0.0079]
a/R* = 376.15 [864.98]
b = 0.90 [0.49]
Seff = 4.03 [1.07]
Teq = 361 [24] K
Rp = 3.52 [1.56] Re
a = 1.0876 [0.1879] AU
Ag = 9433.06 [8385.19] [1.12σ]
Teffp = 5507 [1171] K [4.39σ]

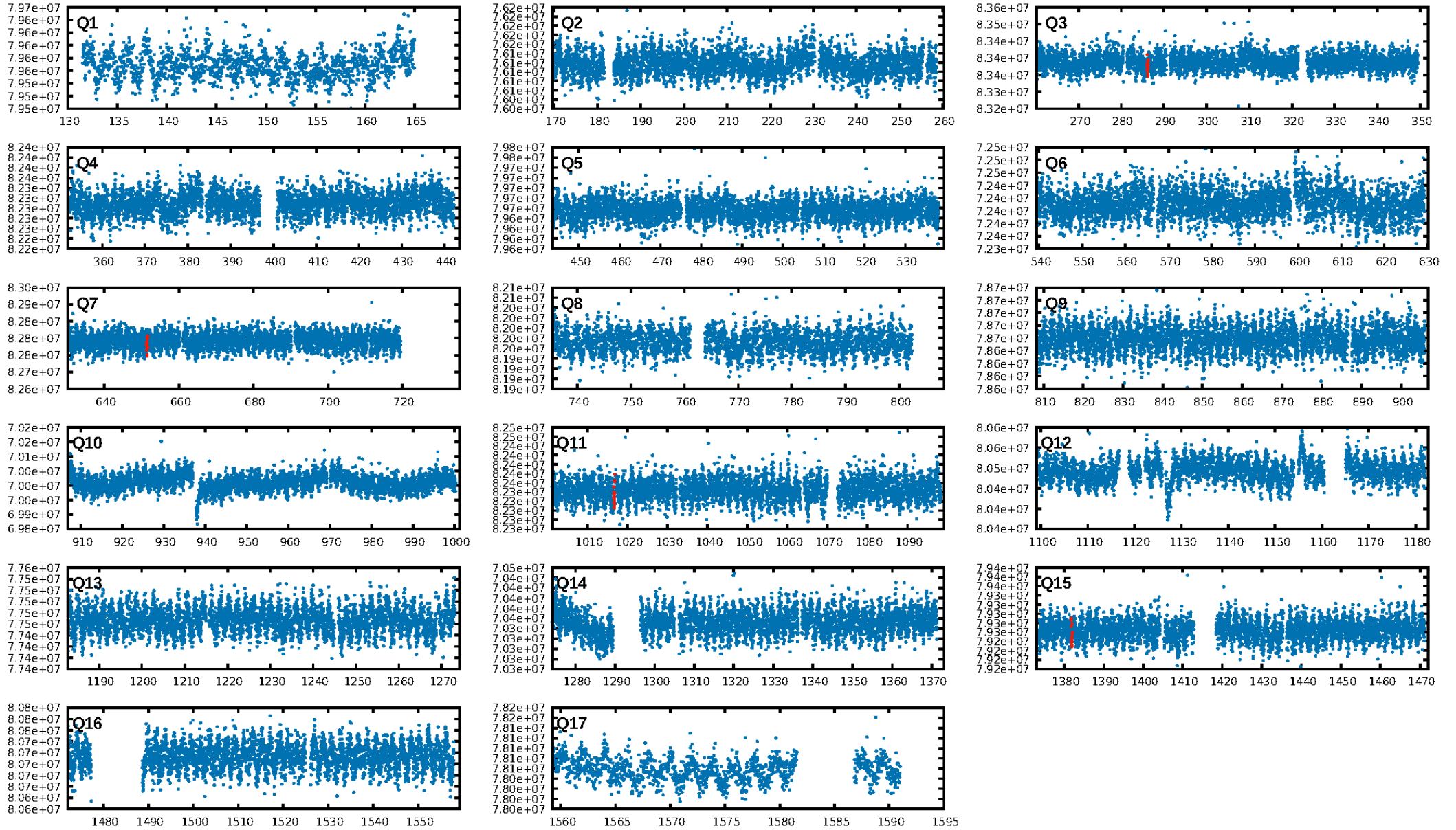
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [566.84σ]
LongPeriod-sig: 100.0% [156.99σ]
ModelChiSquare2-sig: 73.1%
ModelChiSquareGof-sig: 98.2%
Bootstrap-pfa: 6.23e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -62
Centroid-sig: 63.2%
Centroid-so: 0.814 arcsec [0.37σ]
OotOffset-rm: 1.535 arcsec [0.73σ]
OotOffset-st: 0/4/0/0 [4]
KicOffset-rm: 1.814 arcsec [0.84σ]
KicOffset-st: 0/4/0/0 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 1.00 [4/4]

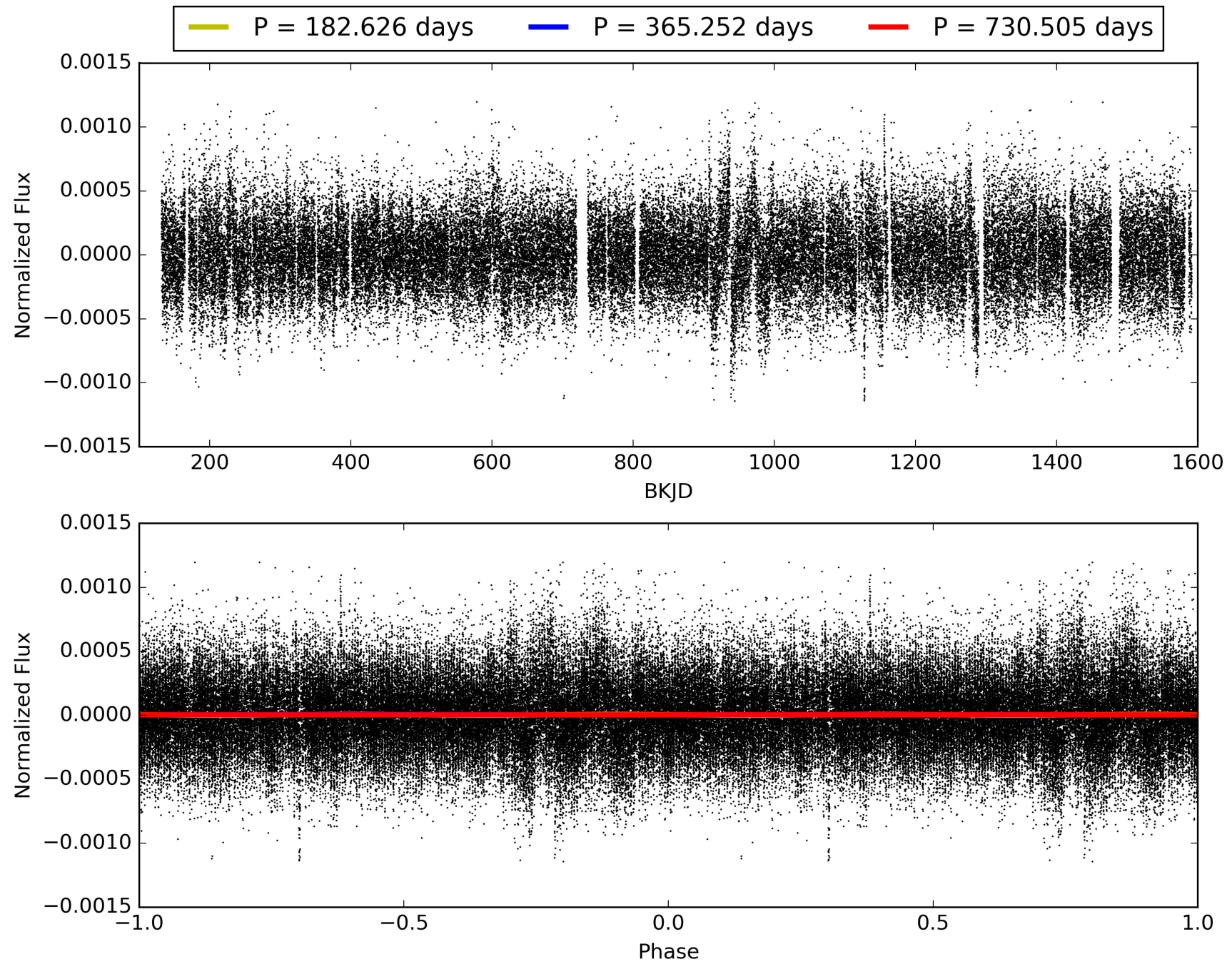
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:22:28 Z

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

TCE 002452185-03, PDC Light Curves

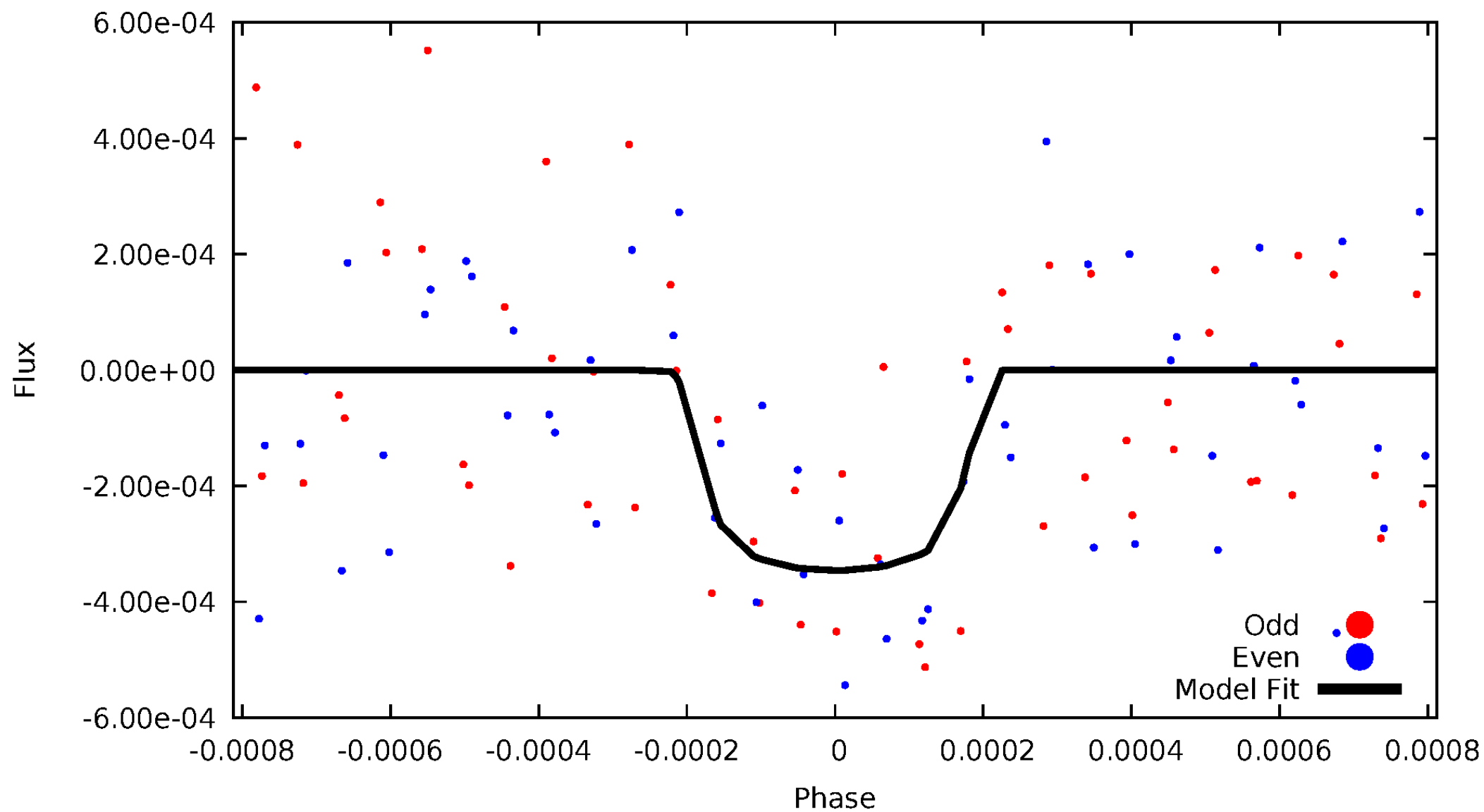


TCE 002452185-03



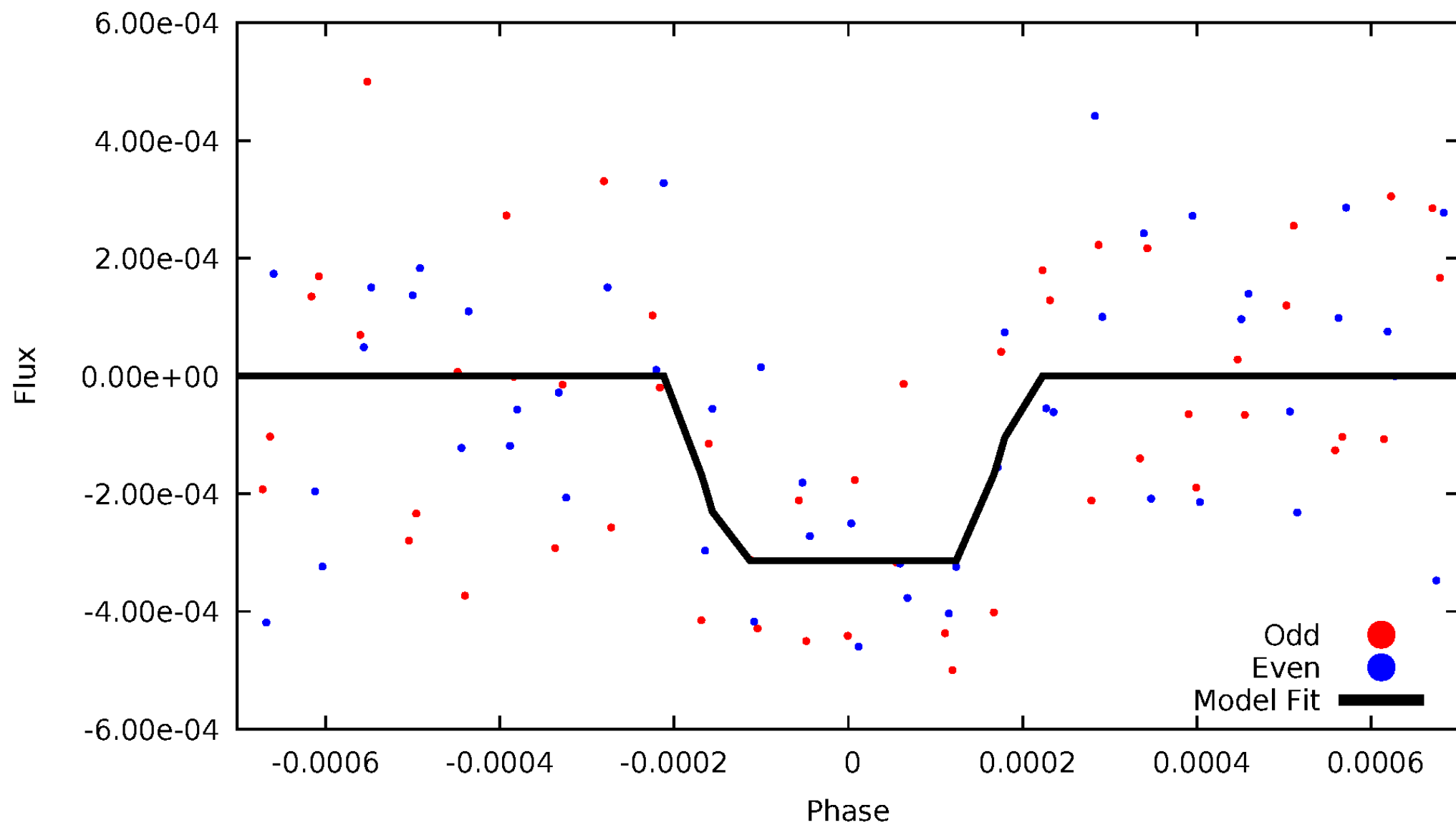
DV Odd/Even

TCE 002452185-03



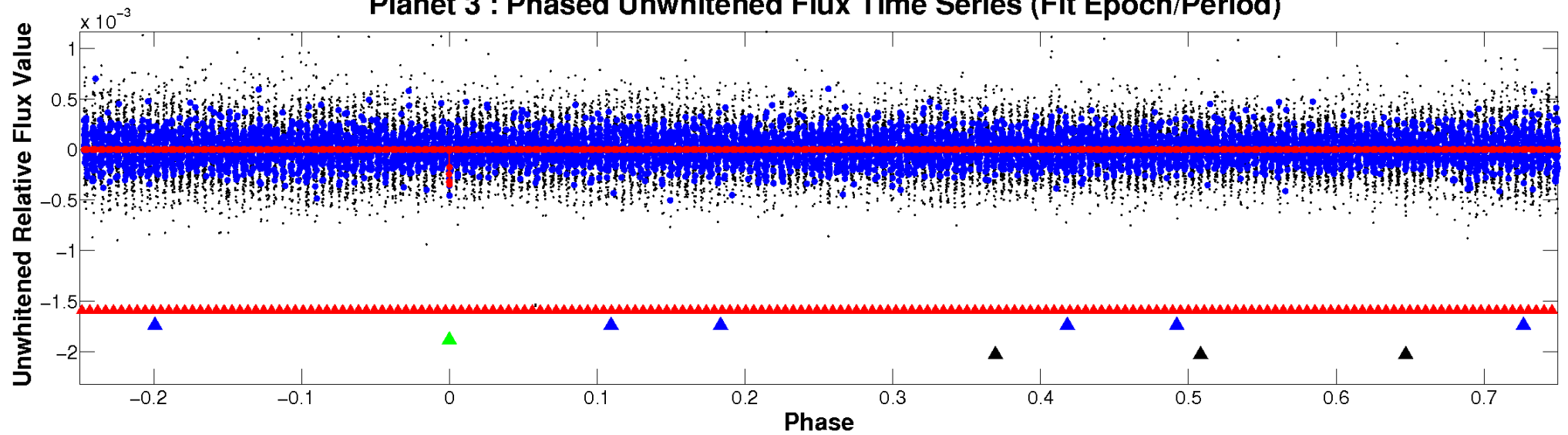
ALT Odd/Even

TCE 002452185-03

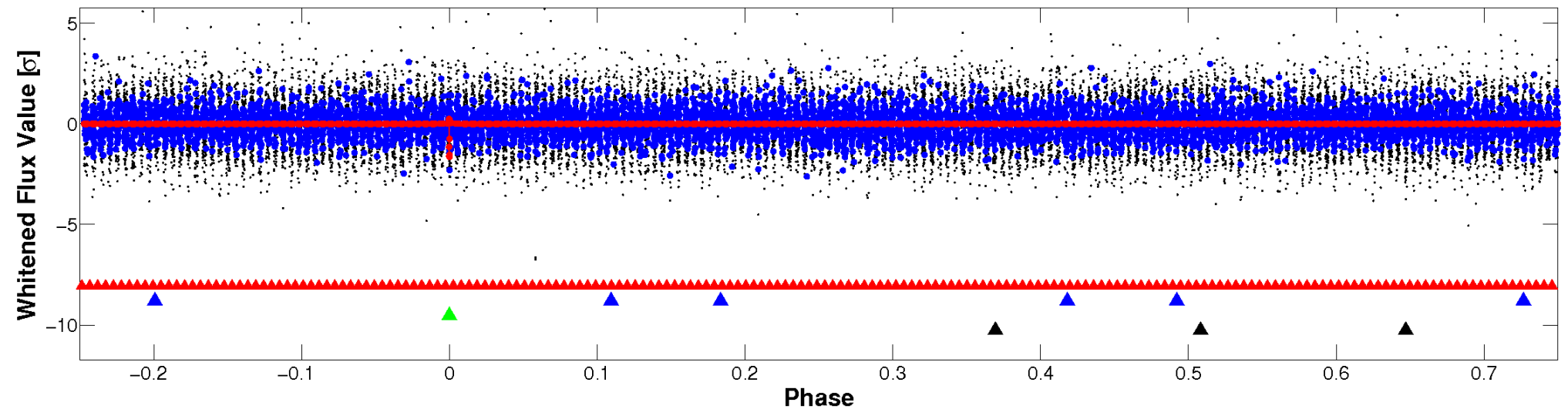


Non-Whitened Vs. Whitened Light Curve

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

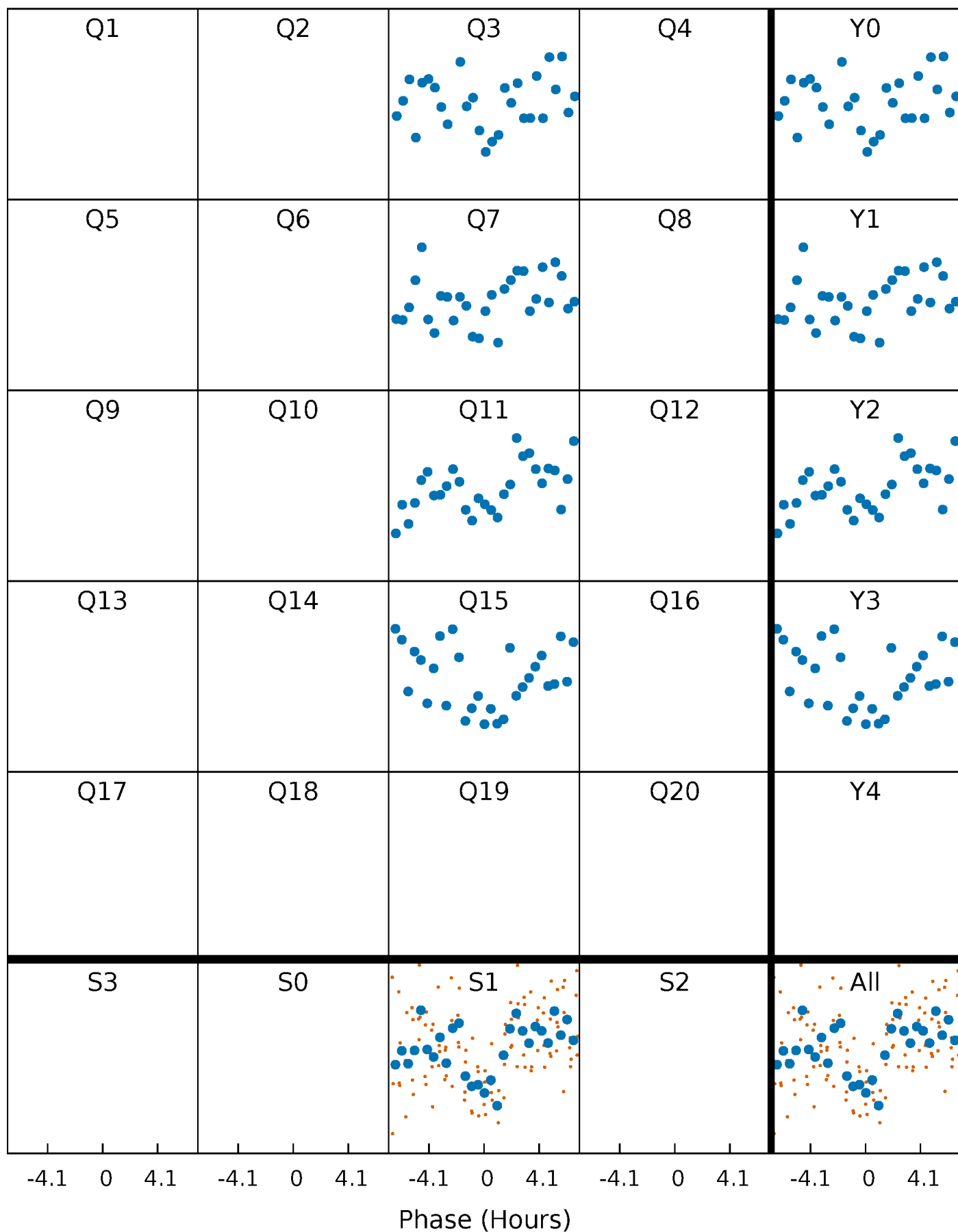


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



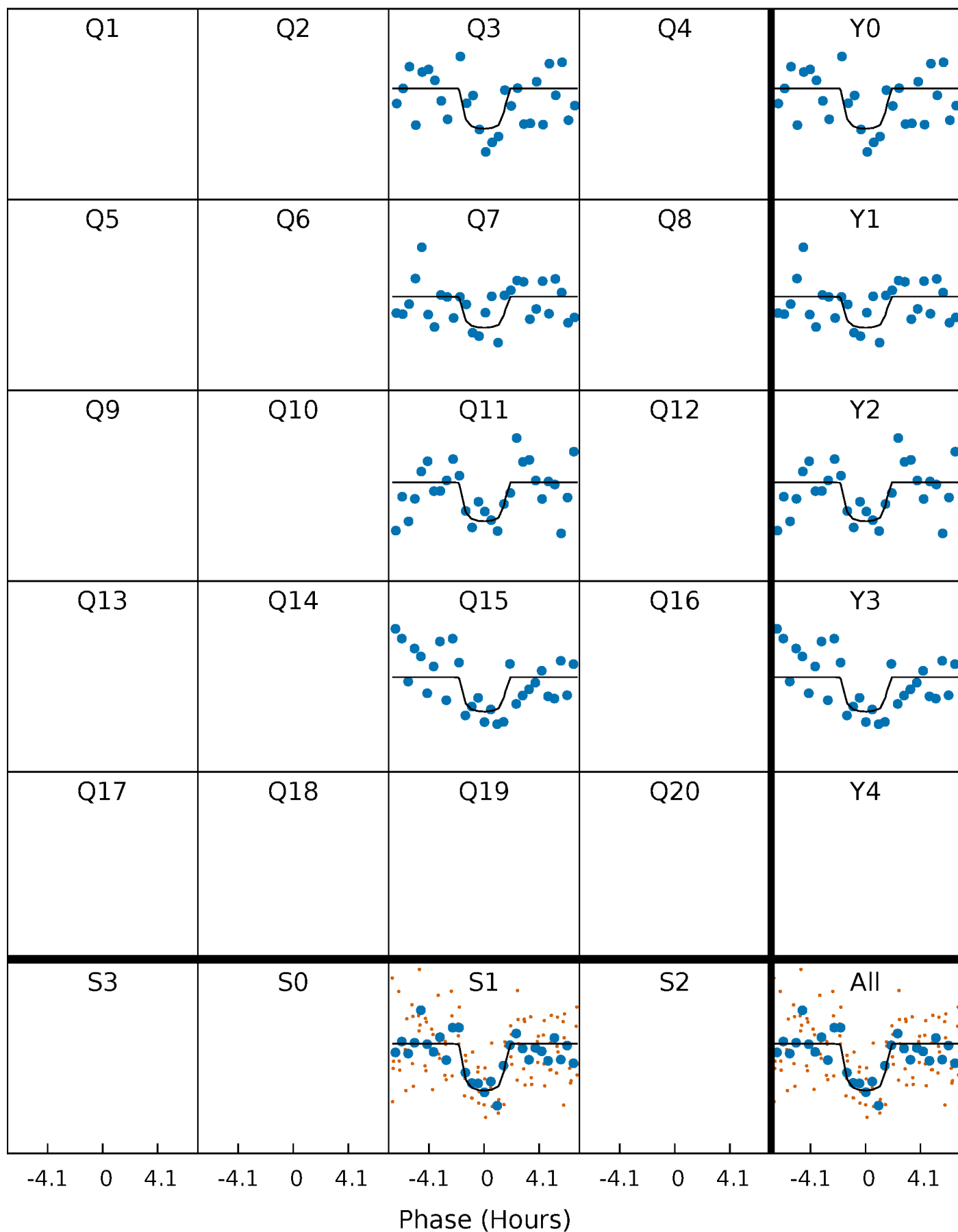
PDC Quarter-Phased Transit Curves

TCE 002452185-03 $P=365.252318$ Days $T_0=286.190245$ (BKJD)



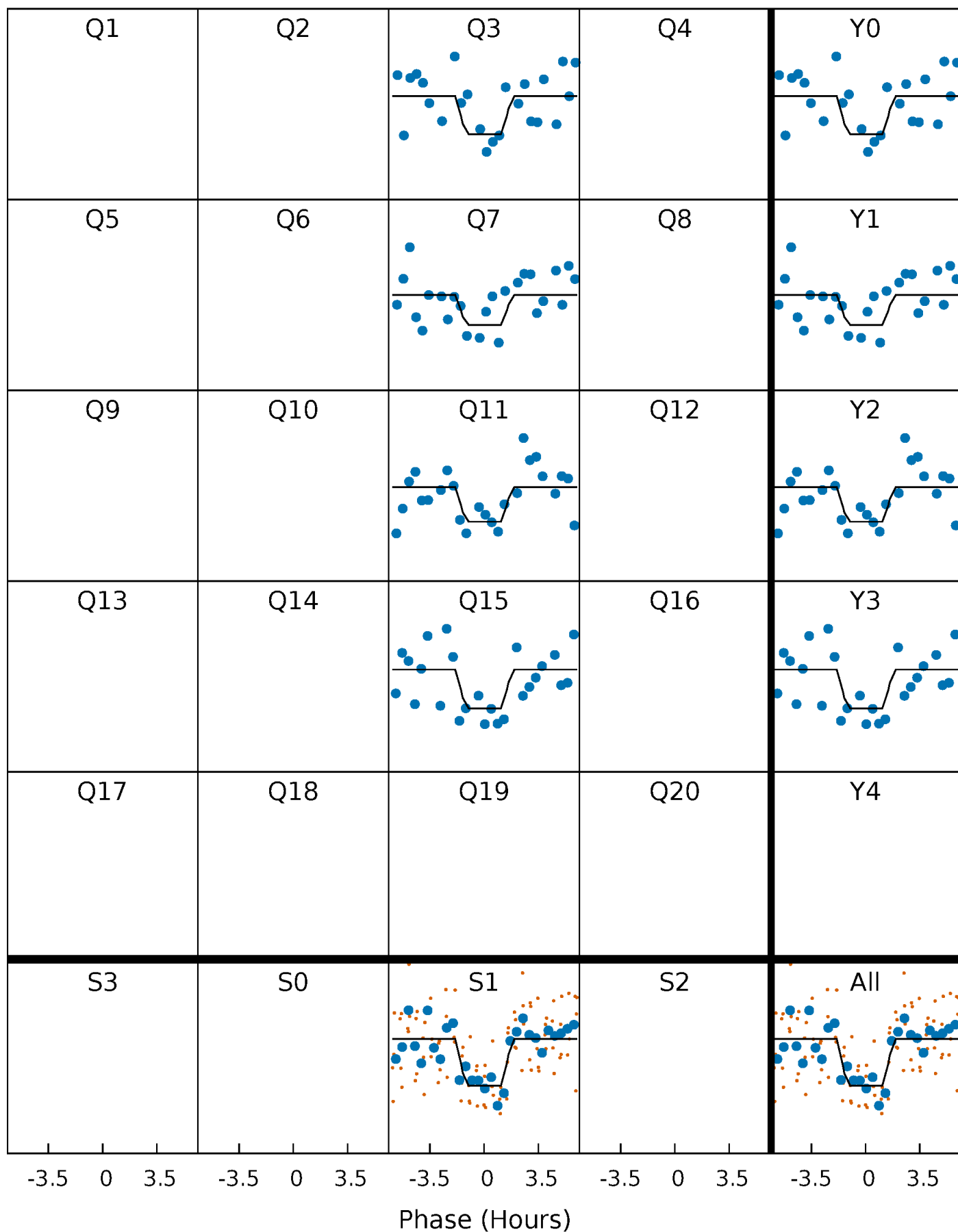
DV Quarter-Phased Transit Curves

TCE 002452185-03 $P=365.252318$ Days $T_0=286.190245$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

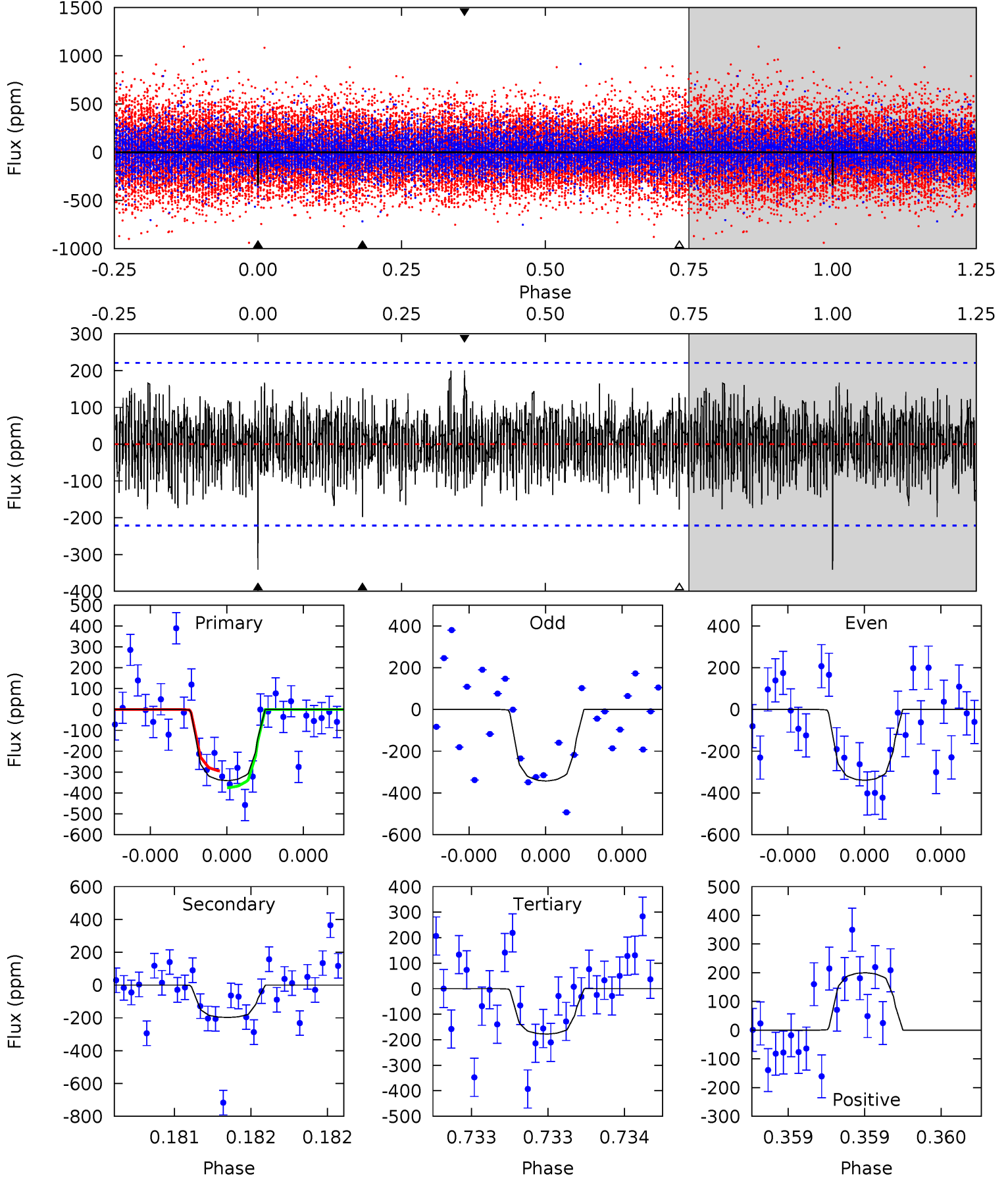
TCE 002452185-03 P=365.252417 Days $T_0=286.190863$ (BKJD)



DV Model-Shift Uniqueness Test

002452185-03, P = 365.252318 Days, E = 286.190245 Days

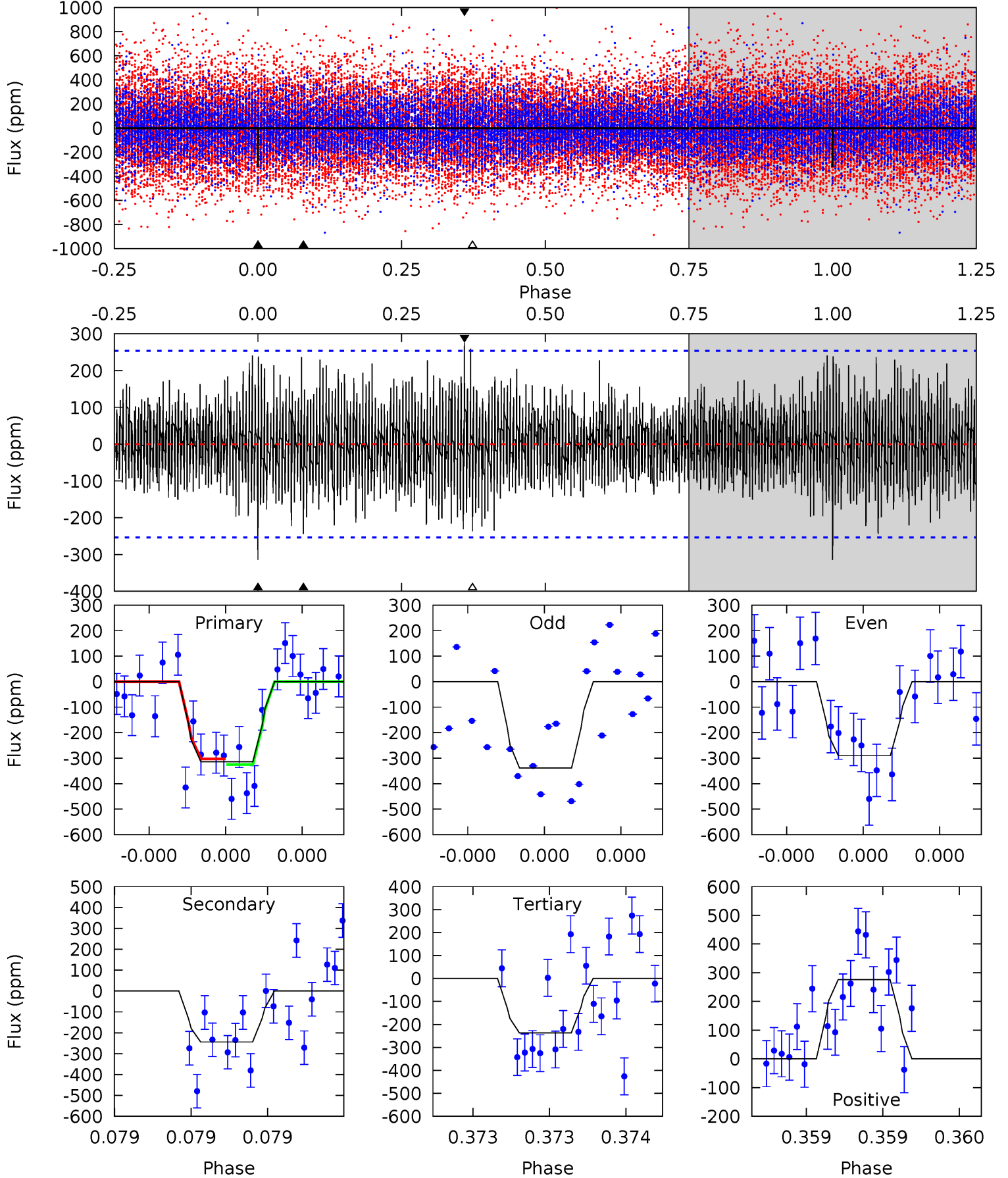
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.62	4.99	4.50	5.06	5.59	3.51	1.36	4.13	3.57	0.50	-0.06	0.04	1.00	0.37	1.01



Alt Model-Shift Uniqueness Test

002452185-03, P = 365.252417 Days, E = 286.190863 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	5.42	5.27	6.13	5.64	3.58	1.66	1.72	0.85	0.16	-0.71	0.54	1.02	0.47	0.25



Stellar Parameters For KIC 002452185

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6704^{+80}_{-80}	$4.126^{+0.148}_{-0.108}$	$-0.260^{+0.150}_{-0.150}$	$1.624^{+0.259}_{-0.317}$	$1.294^{+0.086}_{-0.124}$	$0.425^{+0.328}_{-0.135}$
	+1%/-1%	+4%/-3%	+58%/-58%	+16%/-20%	+7%/-10%	+77%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002452185-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-198 ± 40	$3.48^{+1.46}_{-1.39}$	505^{+23}_{-23}	5599^{+1682}_{-805}	10491^{+18748}_{-5553}
Alt.	-244 ± 45	$3.13^{+1.43}_{-1.40}$	504^{+21}_{-23}	6262^{+2438}_{-1021}	16155^{+36452}_{-8722}

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

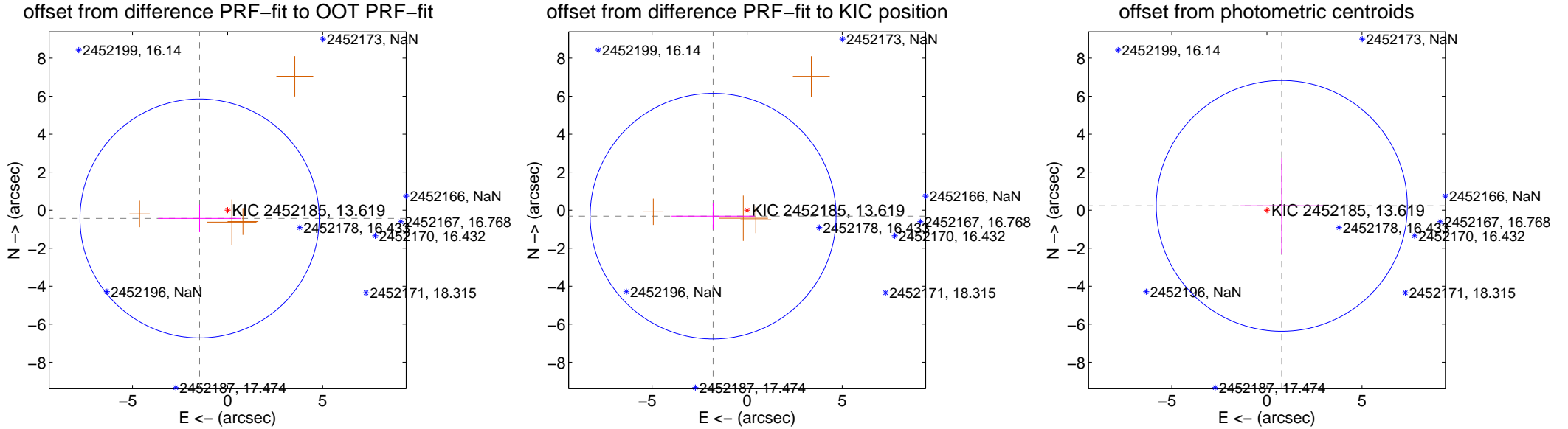
DV Centroid Data

Supplemental centroid analysis for 002452185-03. Kepler magnitude: 13.62. Transit SNR 7.65

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.535 ± 2.096	0.73	1.472 ± 2.174	-0.433 ± 0.720
PRF-fit source offset from KIC position	1.814 ± 2.155	0.84	1.787 ± 2.184	-0.313 ± 0.708
photometric centroid source offset	0.81 ± 2.20	0.37	-0.78 ± 2.17	0.23 ± 2.53



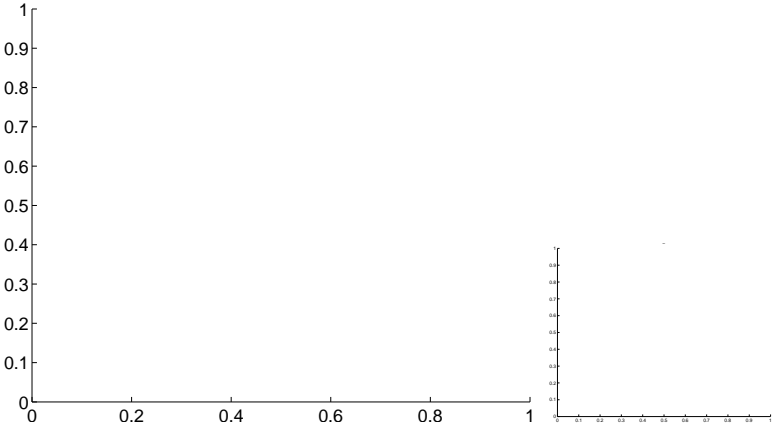
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

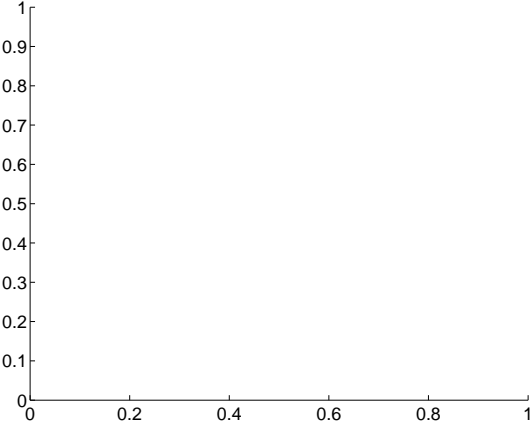
Q1 no difference image



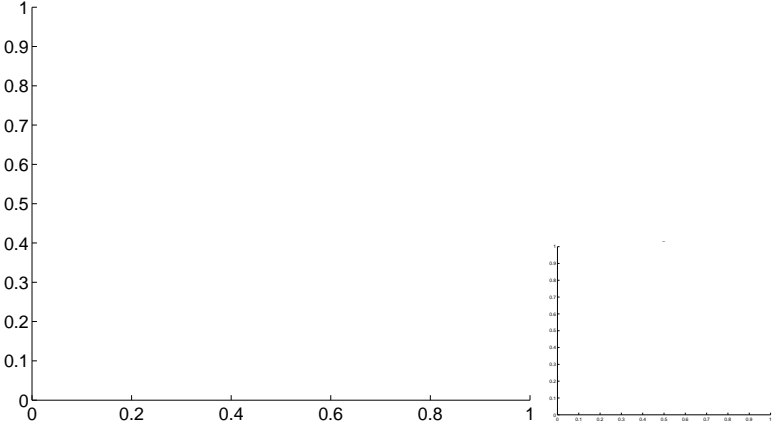
Q1 no OOT image



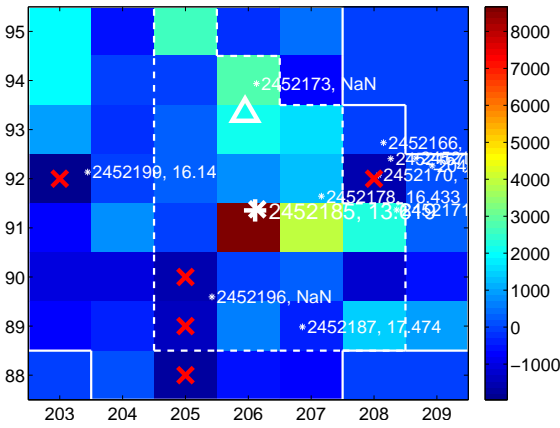
Q2 no difference image



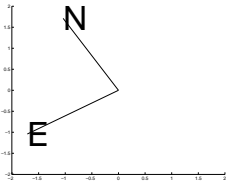
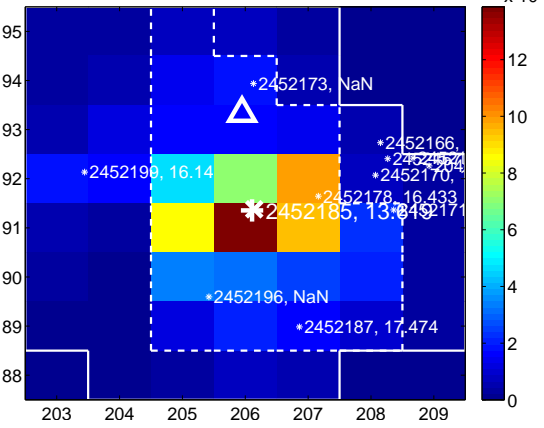
Q2 no OOT image



Q3 difference image. Poor Quality



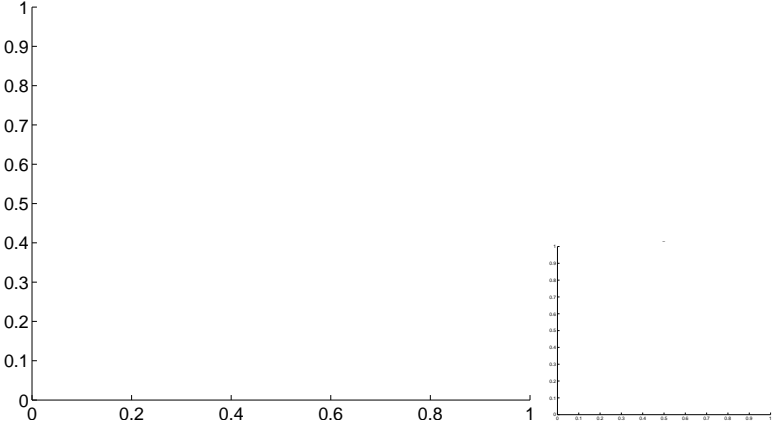
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



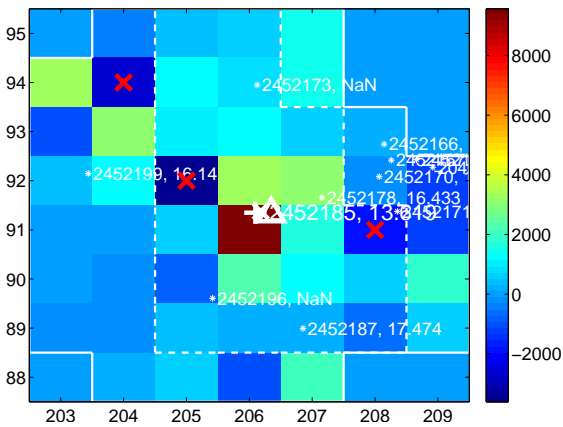
Q6 no difference image



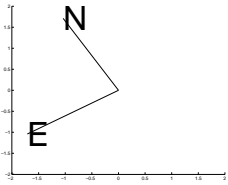
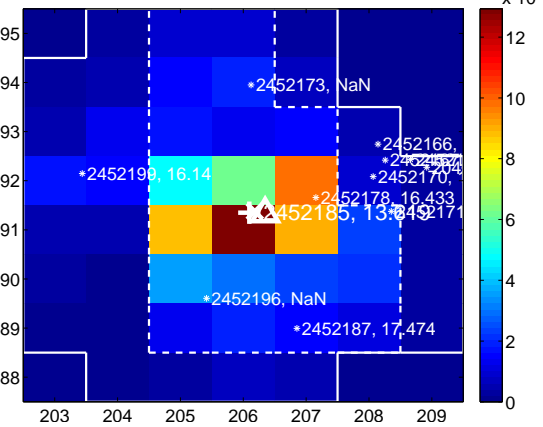
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



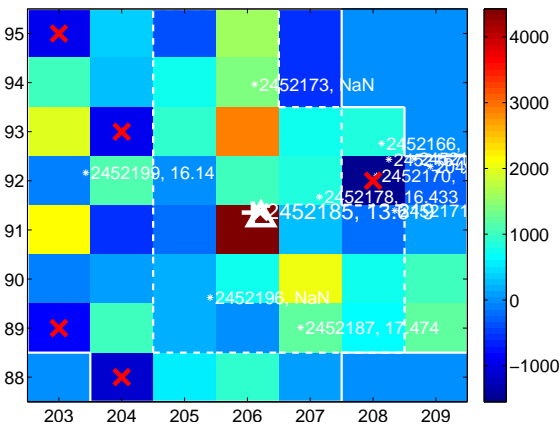
Q10 no difference image



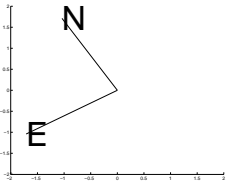
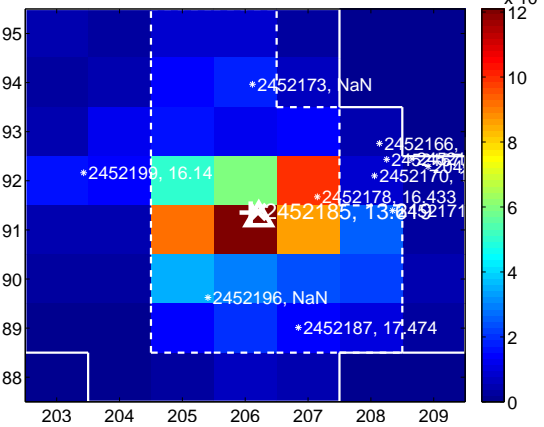
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image



Q12 no OOT image



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

Q13 no difference image



Q13 no OOT image



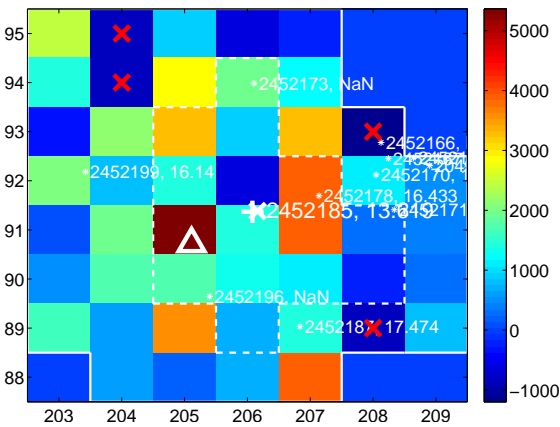
Q14 no difference image



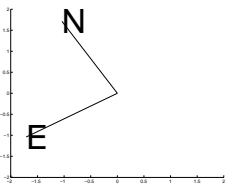
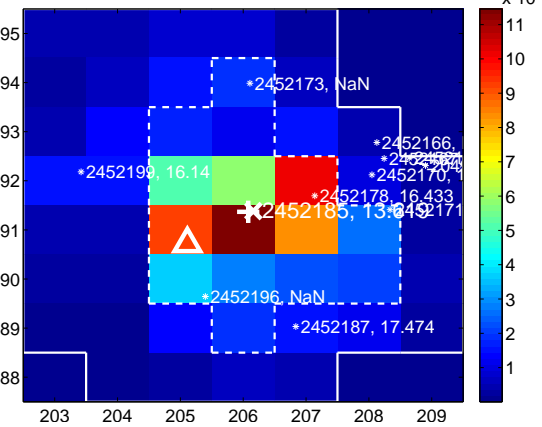
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



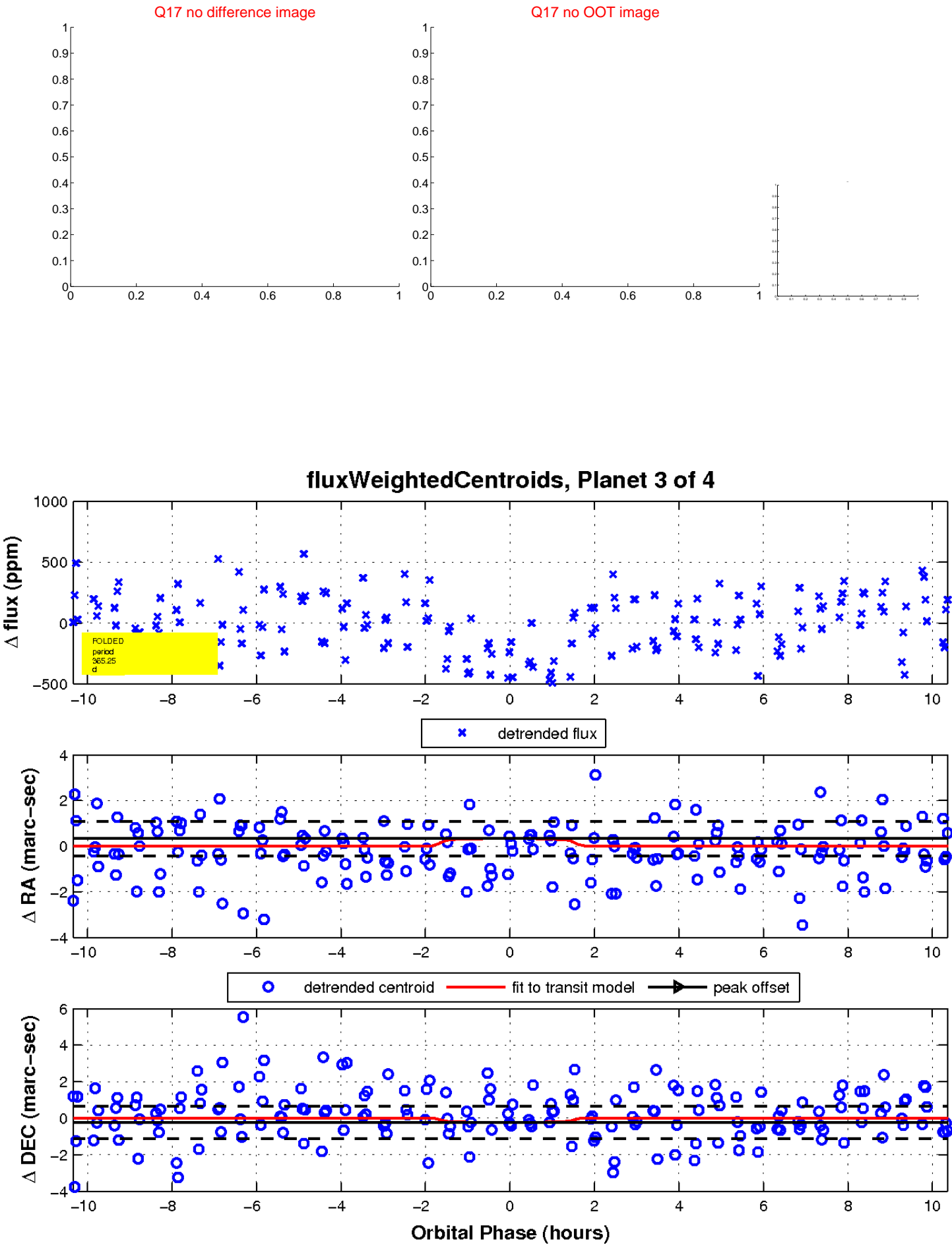
Q16 no difference image



Q16 no OOT image

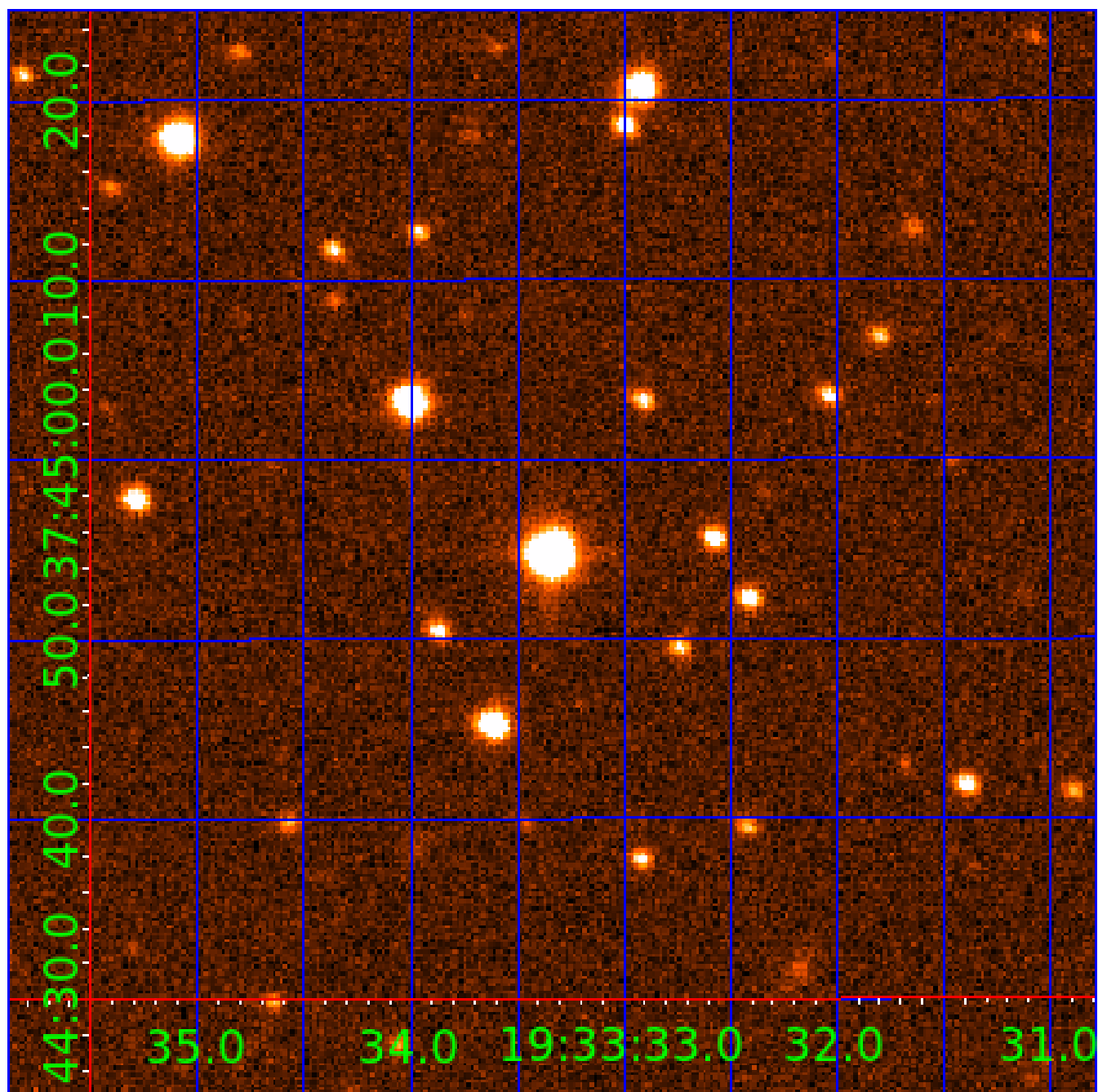


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002452185

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})
002452185-01	OBS	No	1.953164	132.896394	22.5	8.433	7.4	7.1	1.62	6704	0.82	4314.89
002452185-02	OBS	No	252.520758	186.373950	431.0	3.181	8.7	8.5	1.62	6704	3.75	6.60
002452185-03	OBS	No	365.252318	286.190245	346.0	3.558	7.6	7.7	1.62	6704	3.52	4.04
002452185-04	OBS	No	415.953886	421.126974	316.1	6.886	7.3	7.8	1.62	6704	3.16	3.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002452185-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
002452185-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002452185-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002452185-04	OBS	FP	0.01	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

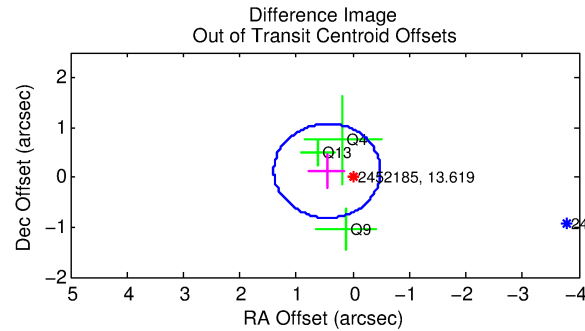
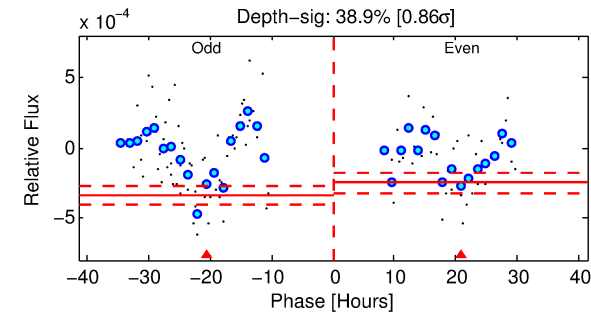
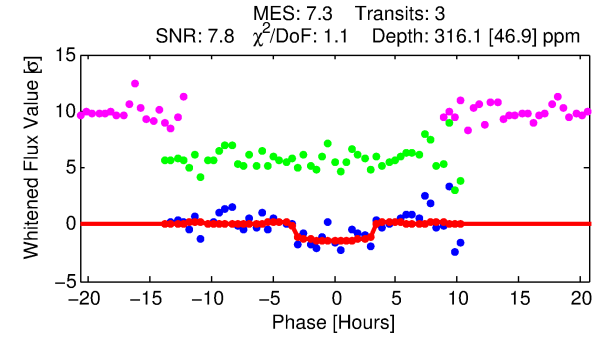
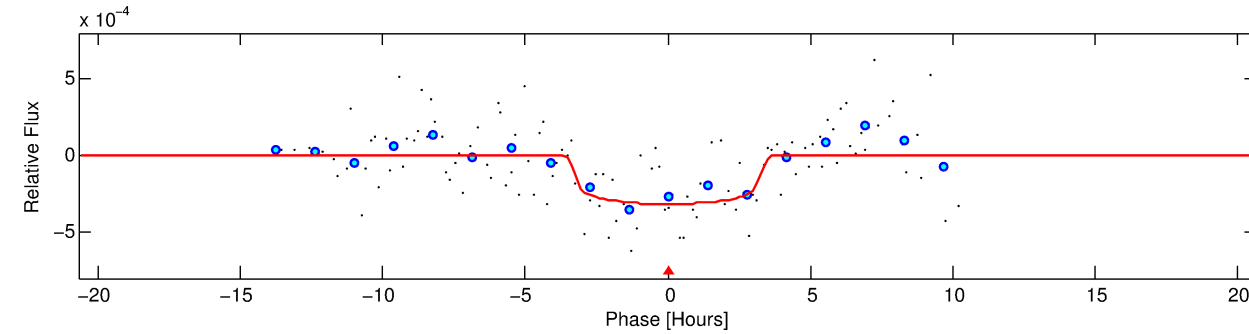
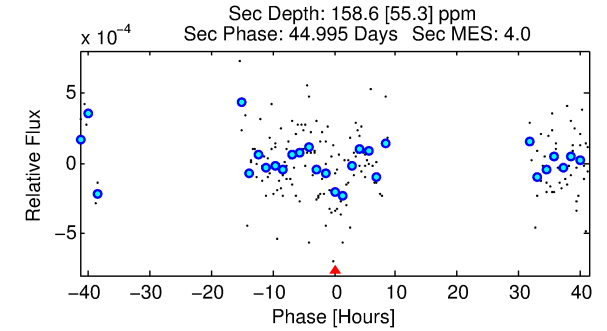
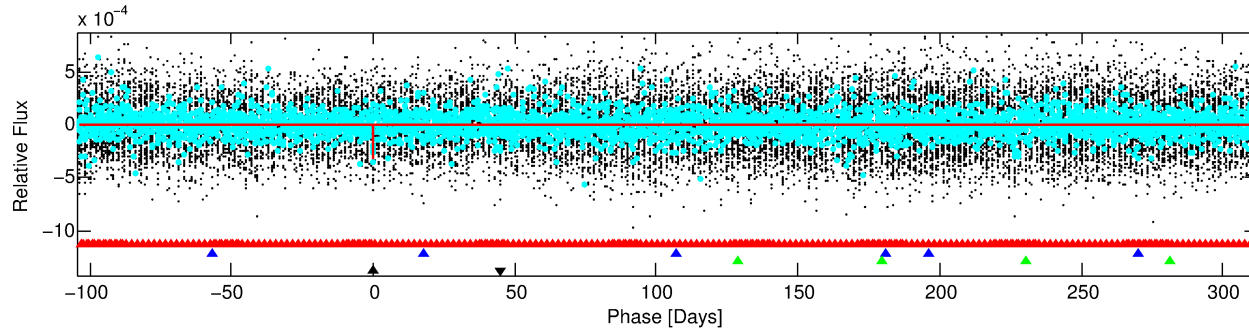
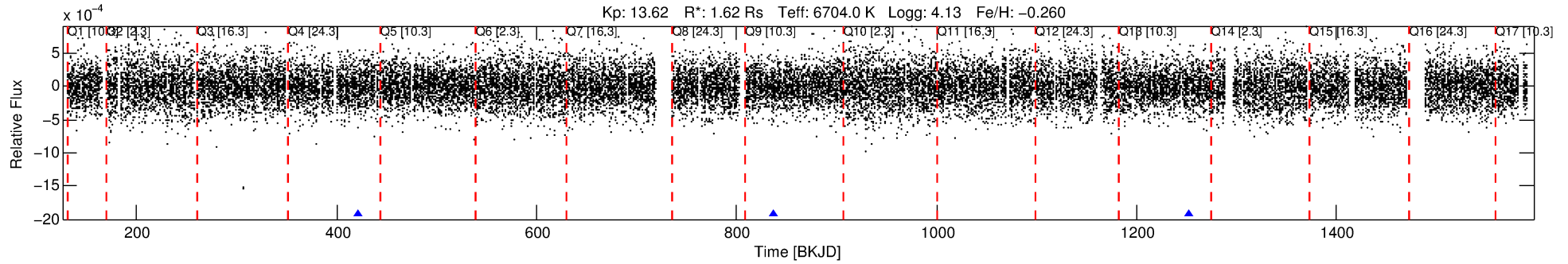
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002452185-04

No Significant Match Found

DV One-Page Summary

KIC: 2452185 Candidate: 4 of 4 Period: 415.954 d



DV Fit Results:

Period = 415.95389 [0.01029] d
Epoch = 421.1270 [0.0128] BKJD
Rp/R* = 0.0178 [0.0085]
a/R* = 302.54 [803.37]
b = 0.78 [1.36]
Seff = 3.39 [0.90]
Teq = 346 [23] K
Rp = 3.16 [1.62] Re
a = 1.1861 [0.2049] AU
Ag = 12277.94 [12809.06] [0.96σ]
Teffp = 5632 [1424] K [3.71σ]

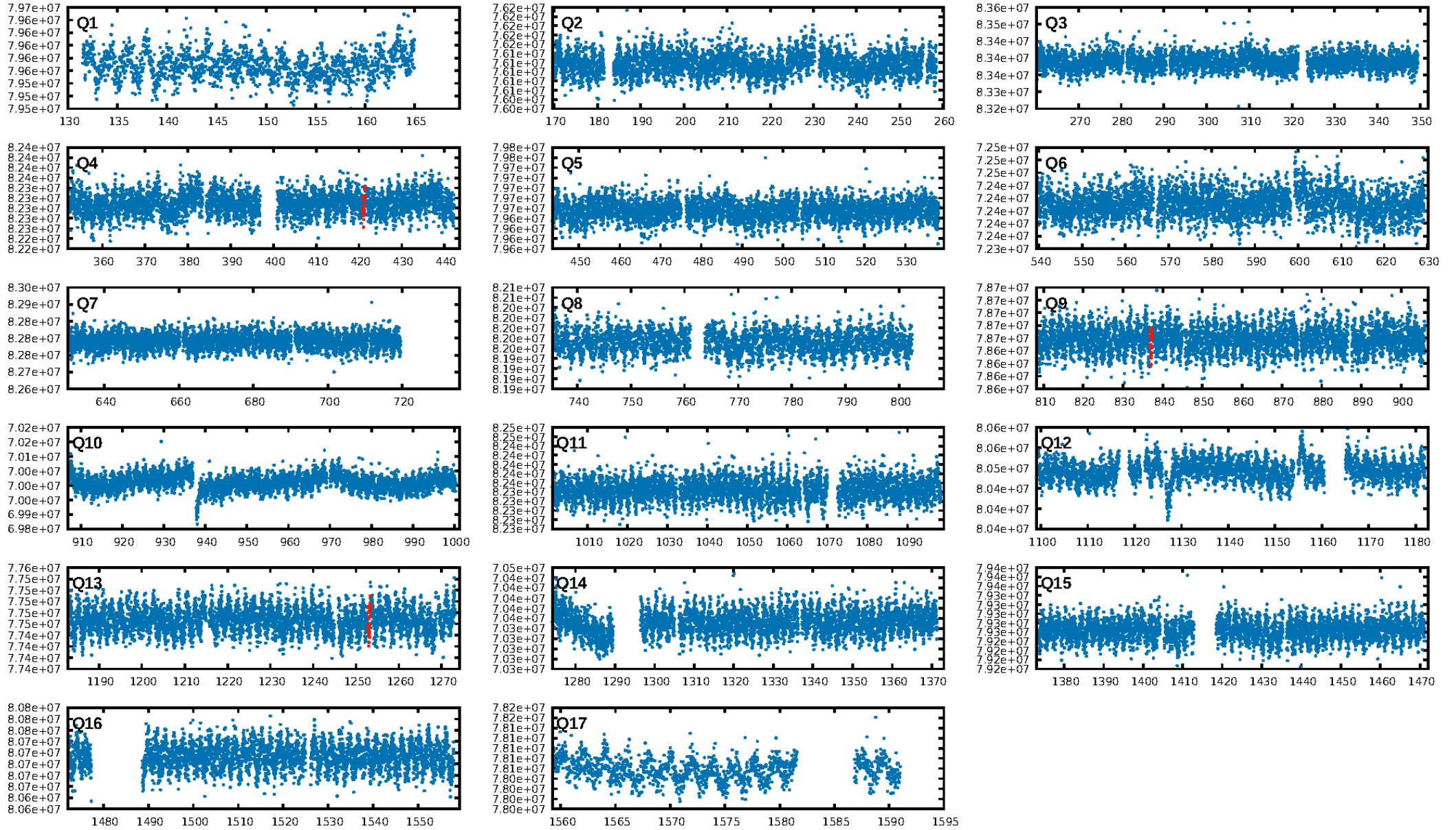
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [156.99σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 86.7%
ModelChiSquareGof-sig: 94.7%
Bootstrap-pfa: 1.72e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.548
Centroid-sig: 33.3%
Centroid-so: 1.593 arcsec [1.12σ]
OotOffset-rm: 0.472 arcsec [1.50σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-rm: 0.490 arcsec [1.55σ]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

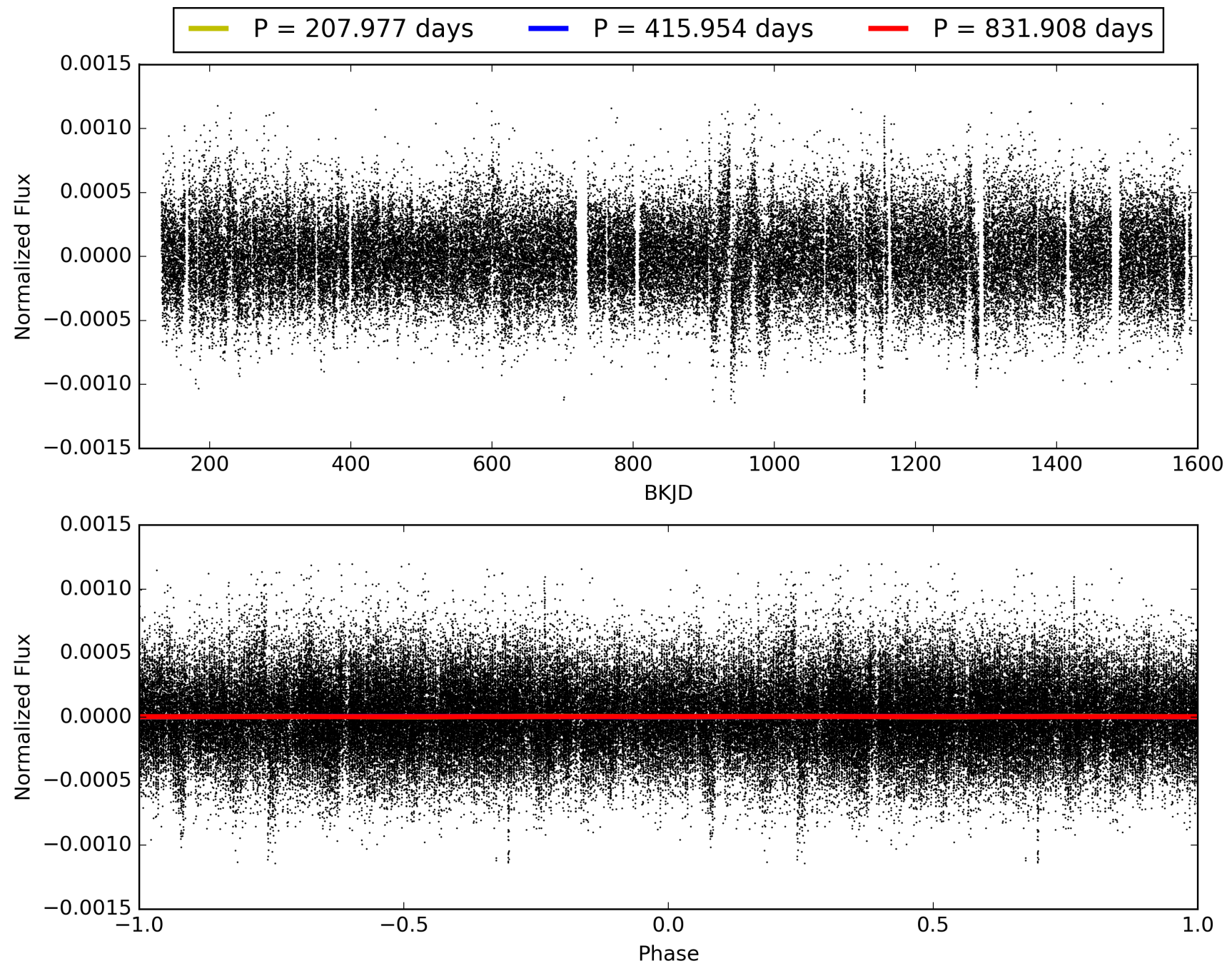
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:22:36 Z

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

TCE 002452185-04, PDC Light Curves

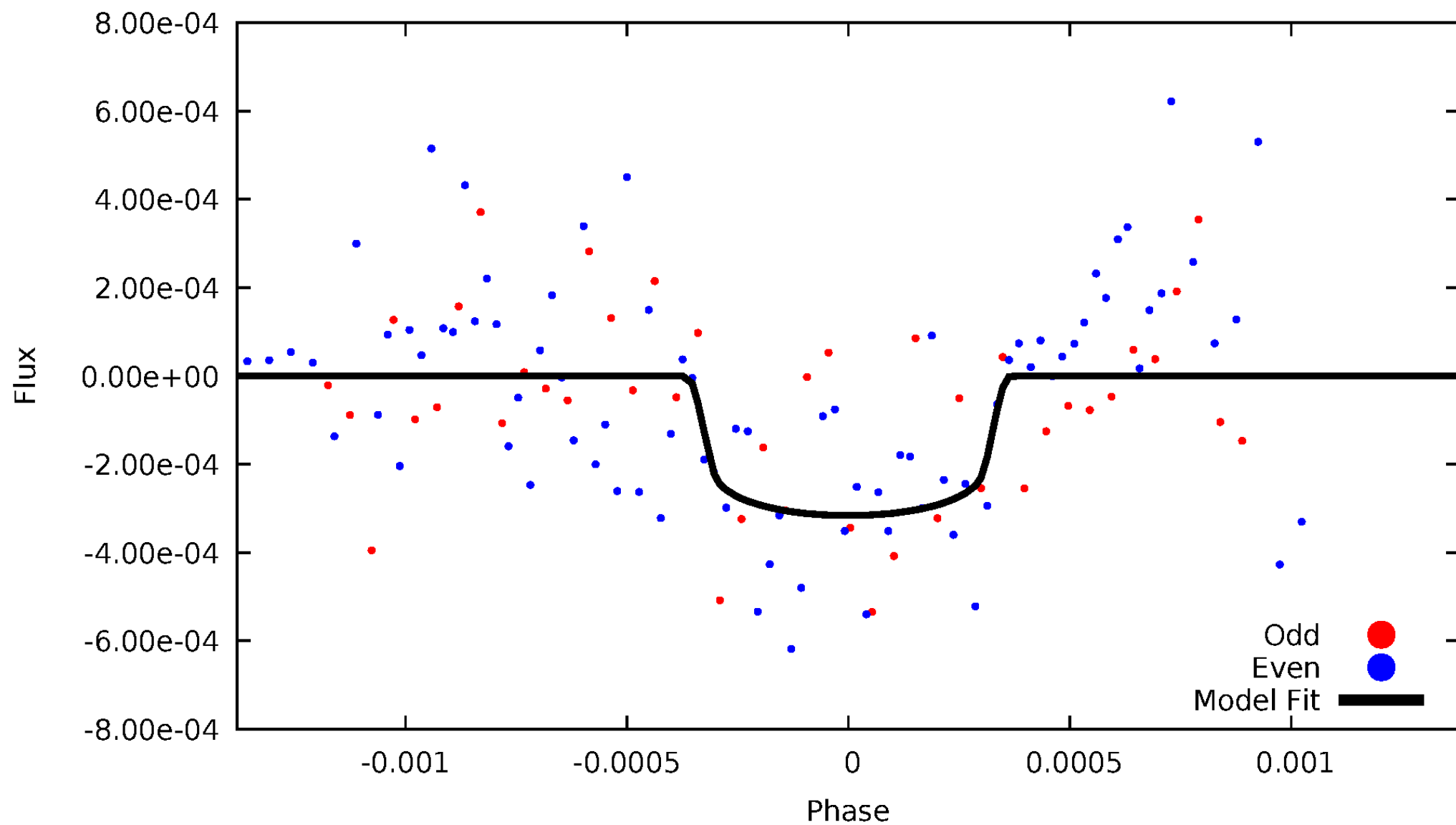


TCE 002452185-04



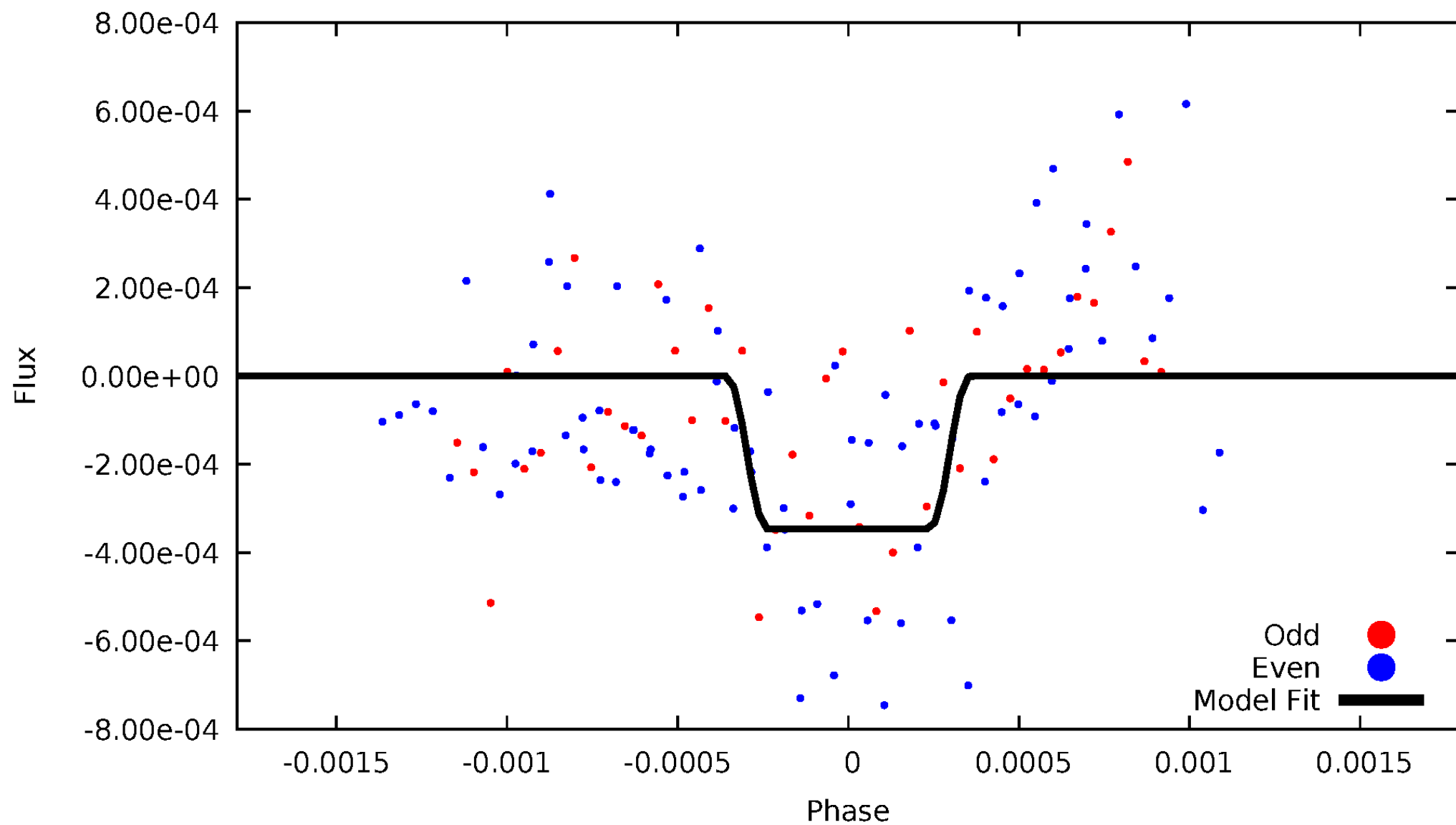
DV Odd/Even

TCE 002452185-04



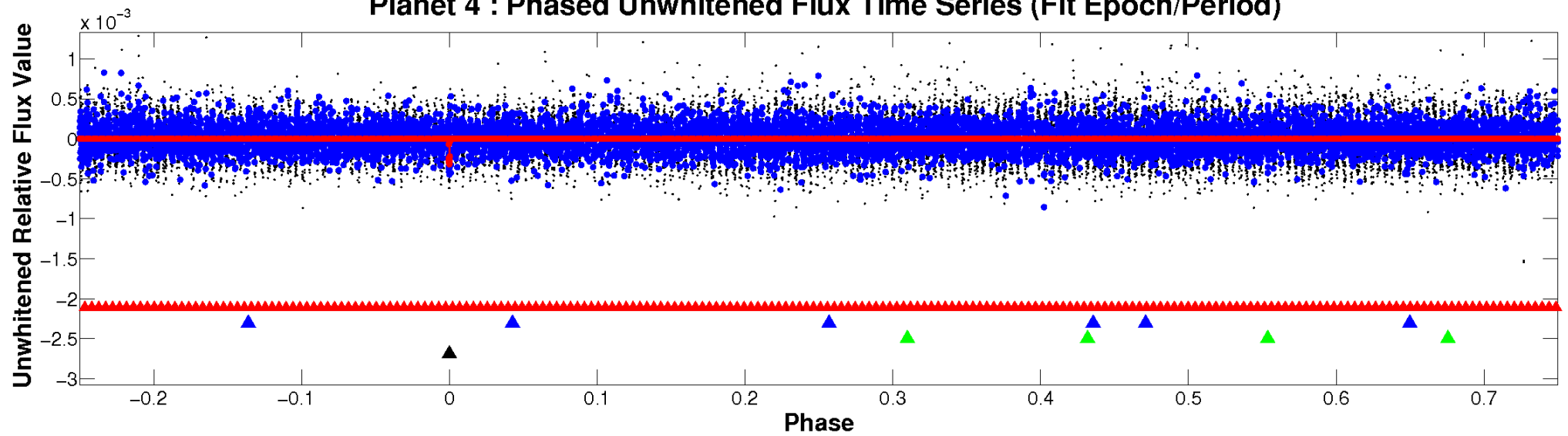
ALT Odd/Even

TCE 002452185-04

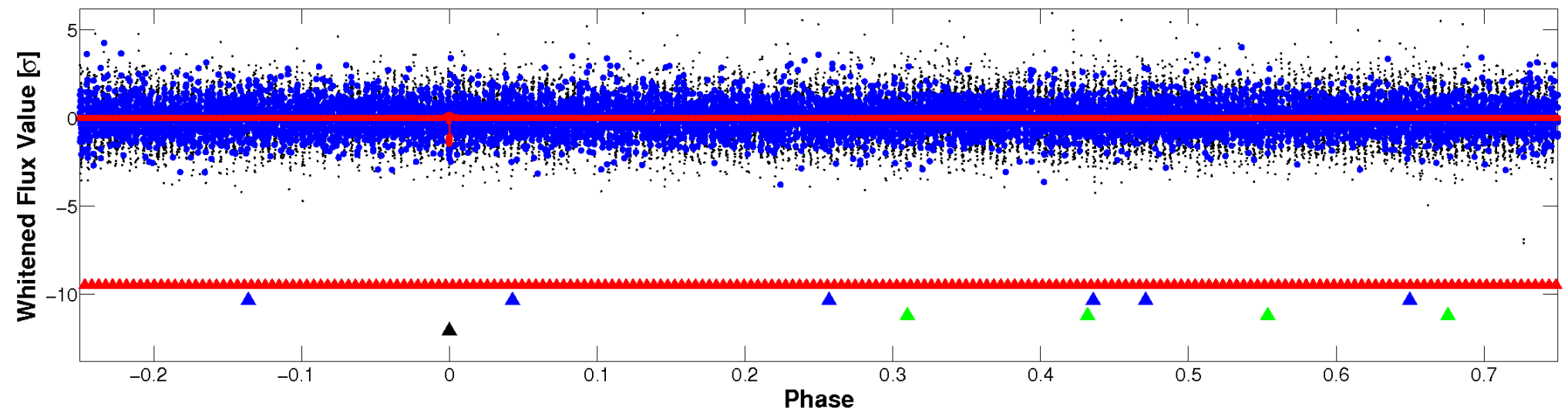


Non-Whitened Vs. Whitened Light Curve

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

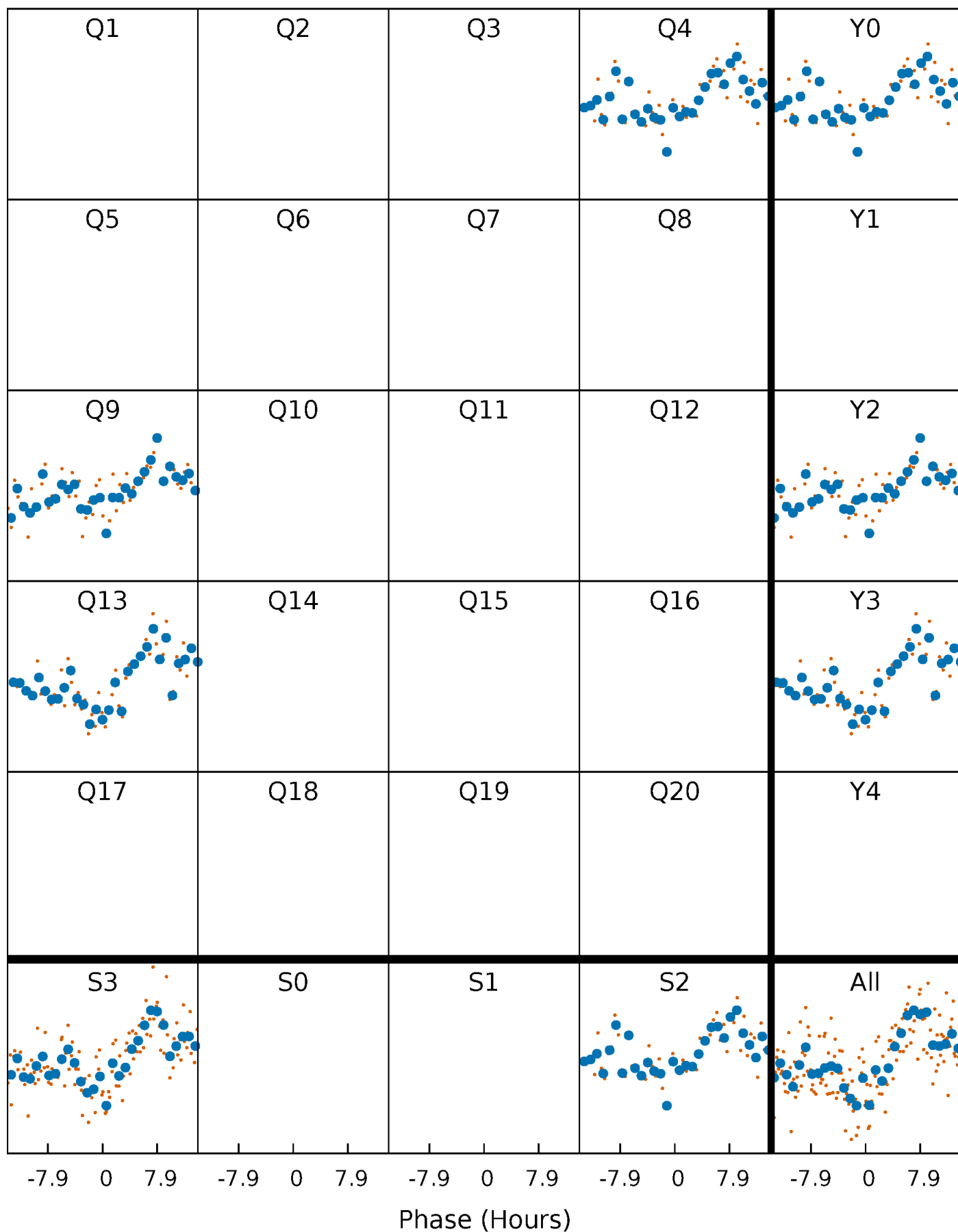


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 002452185-04 P=415.953886 Days $T_0=421.126974$ (BKJD)



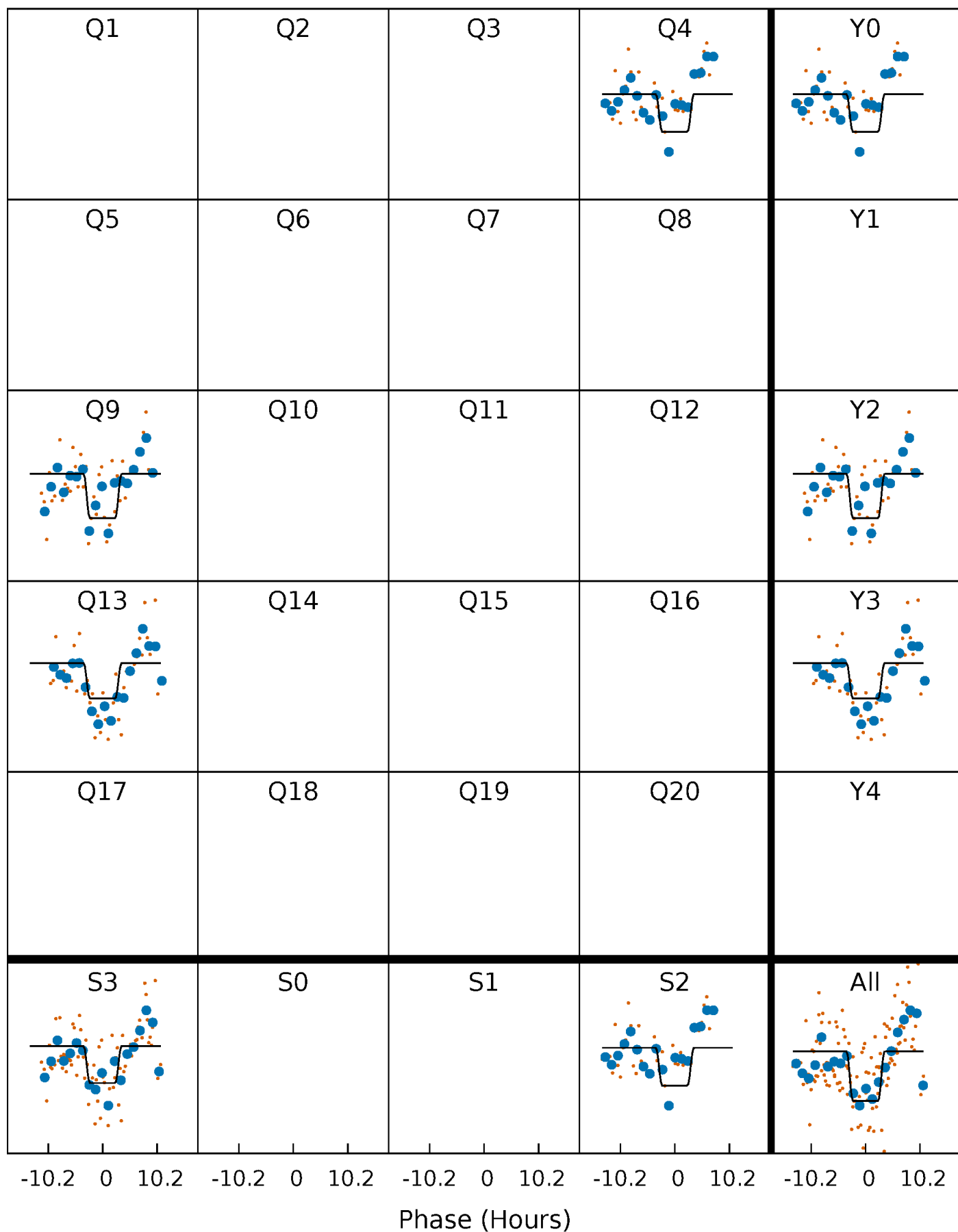
DV Quarter-Phased Transit Curves

TCE 002452185-04 $P=415.953886$ Days $T_0=421.126974$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

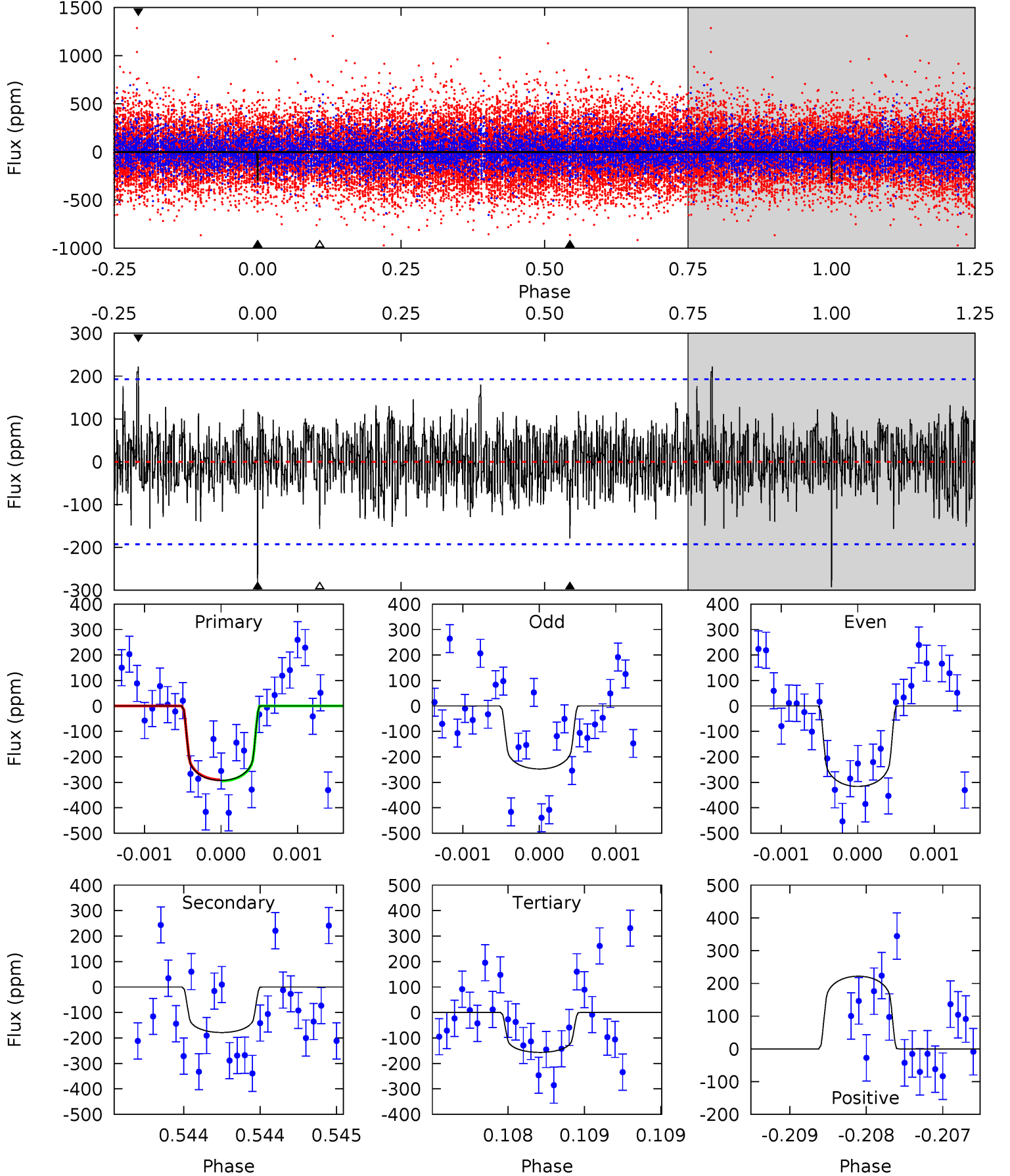
TCE 002452185-04 P=415.938736 Days $T_0=421.130499$ (BKJD)



DV Model-Shift Uniqueness Test

002452185-04, P = 415.953886 Days, E = 5.173088 Days

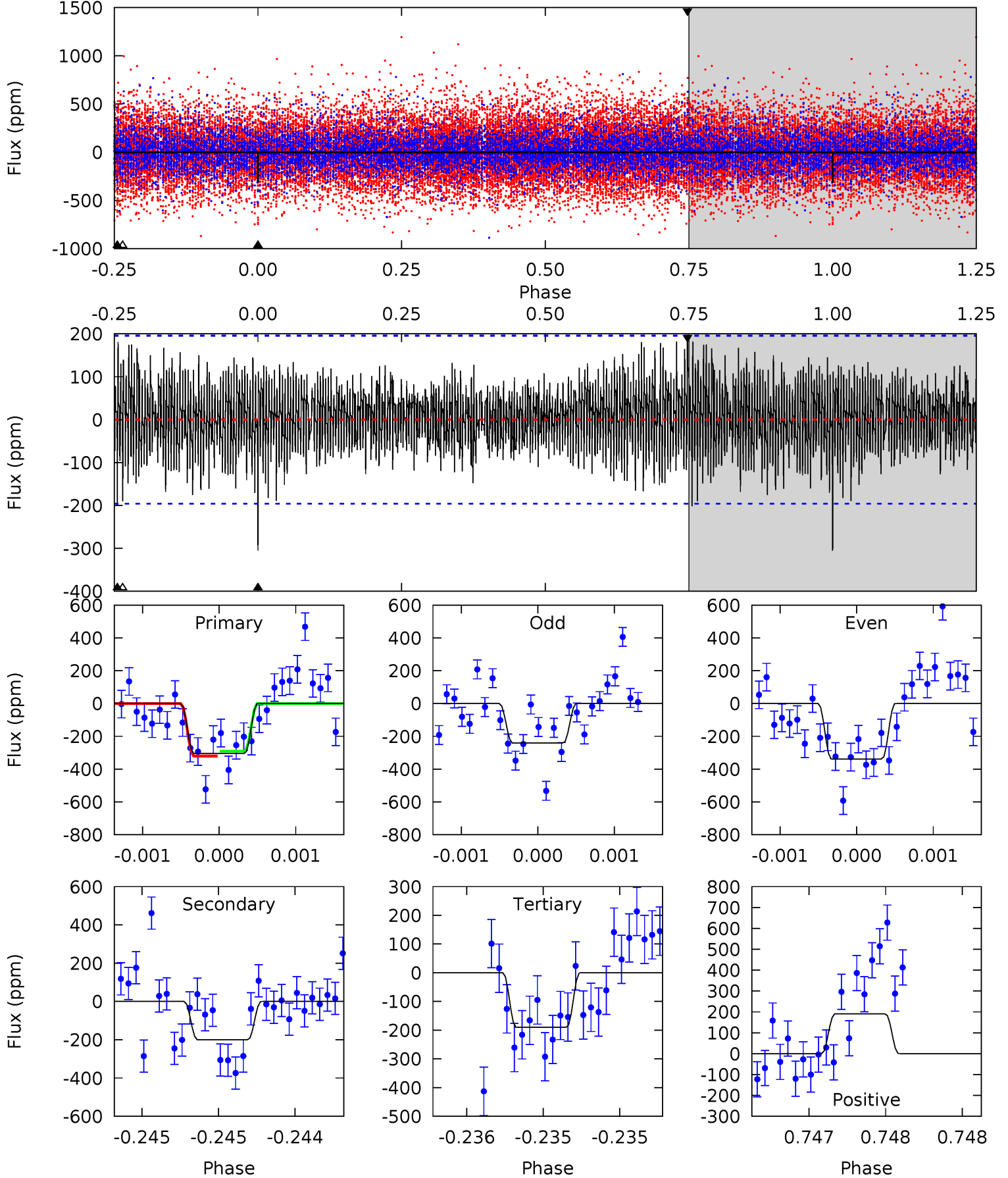
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.37	5.11	4.48	6.34	5.51	3.38	1.36	3.89	2.02	0.63	-1.24	0.93	0.97	0.43	0.06



Alt Model-Shift Uniqueness Test

002452185-04, P = 415.938736 Days, E = 5.191763 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.59	5.63	5.35	5.36	5.51	3.38	1.68	3.23	3.22	0.27	0.26	1.28	1.25	0.38	0.41



Stellar Parameters For KIC 002452185

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6704^{+80}_{-80}	$4.126^{+0.148}_{-0.108}$	$-0.260^{+0.150}_{-0.150}$	$1.624^{+0.259}_{-0.317}$	$1.294^{+0.086}_{-0.124}$	$0.425^{+0.328}_{-0.135}$
	+1%/-1%	+4%/-3%	+58%/-58%	+16%/-20%	+7%/-10%	+77%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002452185-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-179 ± 35	$3.09^{+1.56}_{-1.27}$	483^{+22}_{-24}	5773^{+1986}_{-921}	14197^{+27494}_{-8210}
Alt.	-200 ± 36	$3.24^{+1.46}_{-1.44}$	485^{+20}_{-23}	5839^{+2237}_{-939}	14422^{+32242}_{-7742}

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 $A_{obs} \gg 1.0$

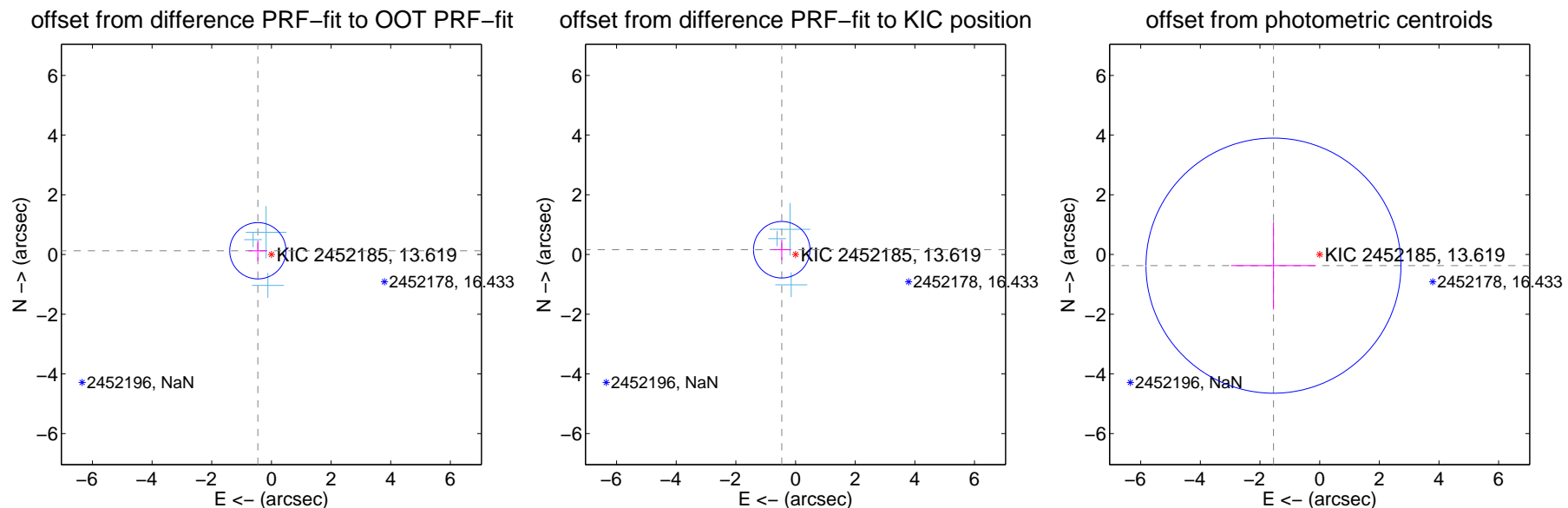
DV Centroid Data

Supplemental centroid analysis for 002452185-04. Kepler magnitude: 13.62. Transit SNR 7.84

There are 3 quarters with good PRF difference image offsets

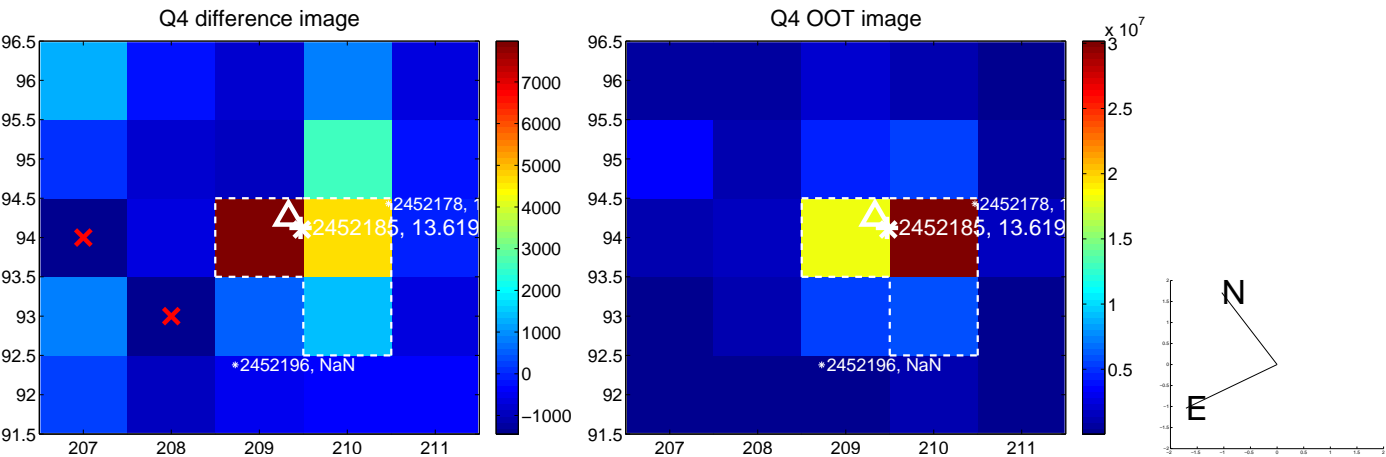
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.472 ± 0.314	1.50	0.454 ± 0.312	0.126 ± 0.342
PRF-fit source offset from KIC position	0.490 ± 0.315	1.55	0.463 ± 0.312	0.160 ± 0.342
photometric centroid source offset	1.59 ± 1.42	1.12	1.55 ± 1.42	-0.37 ± 1.47



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.

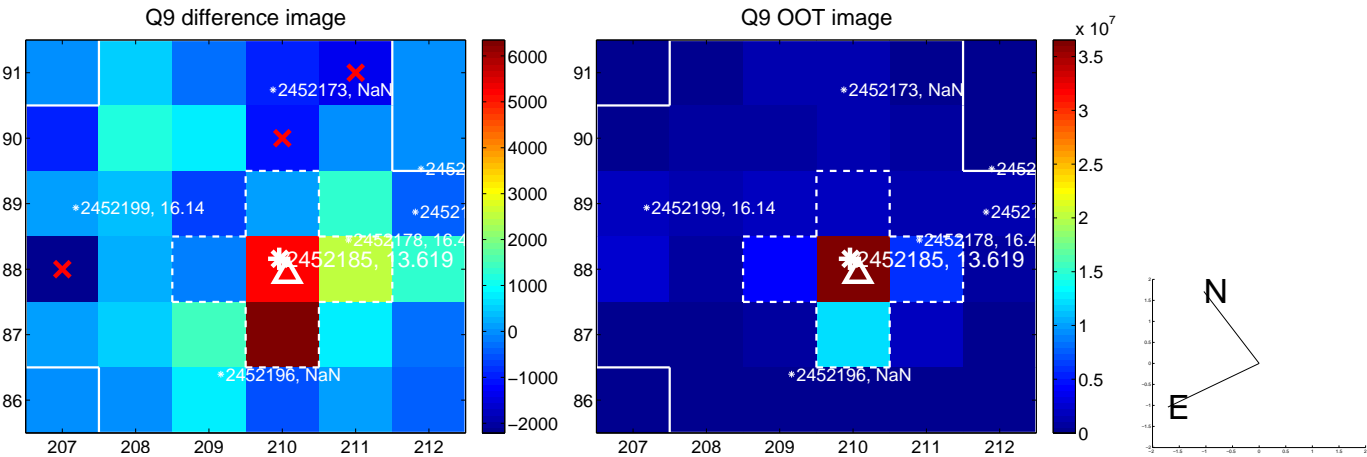
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



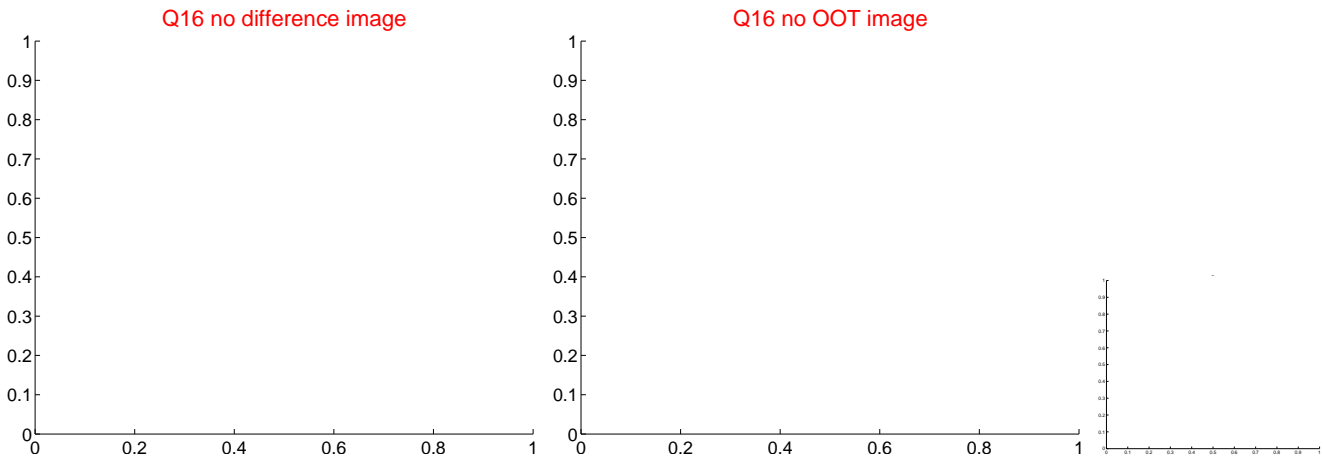
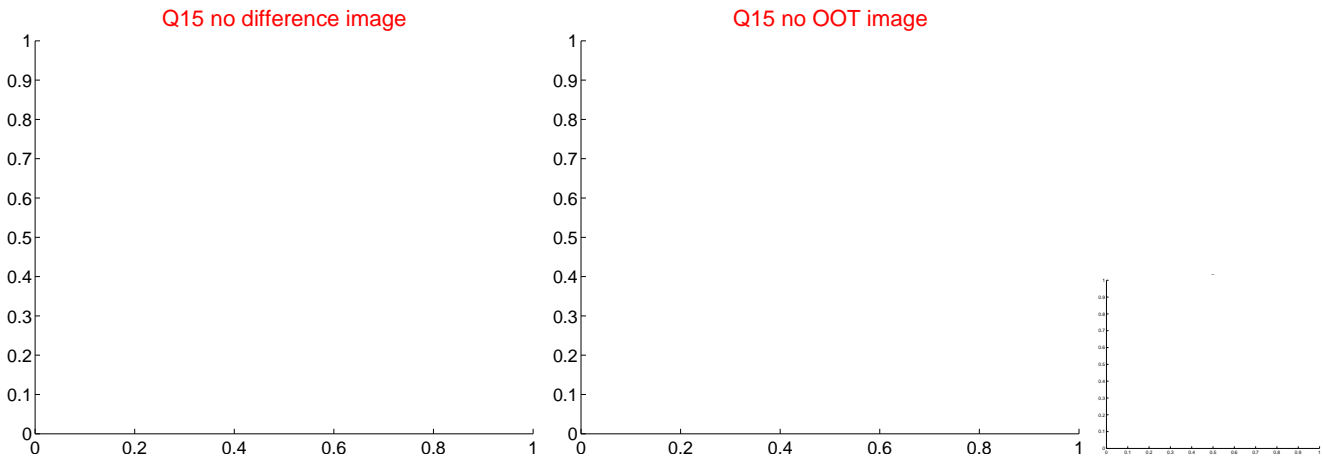
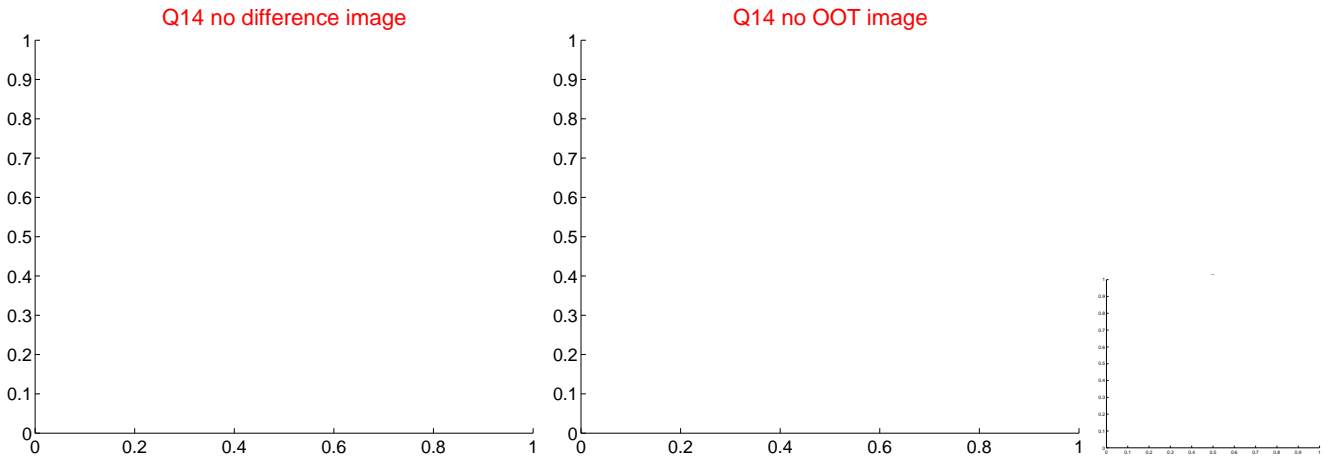
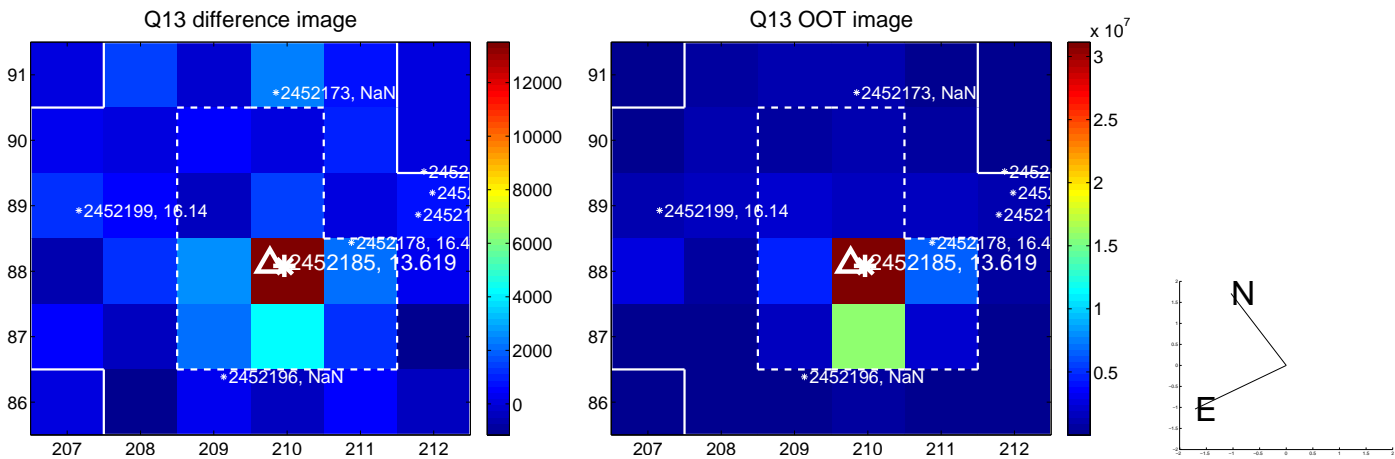
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



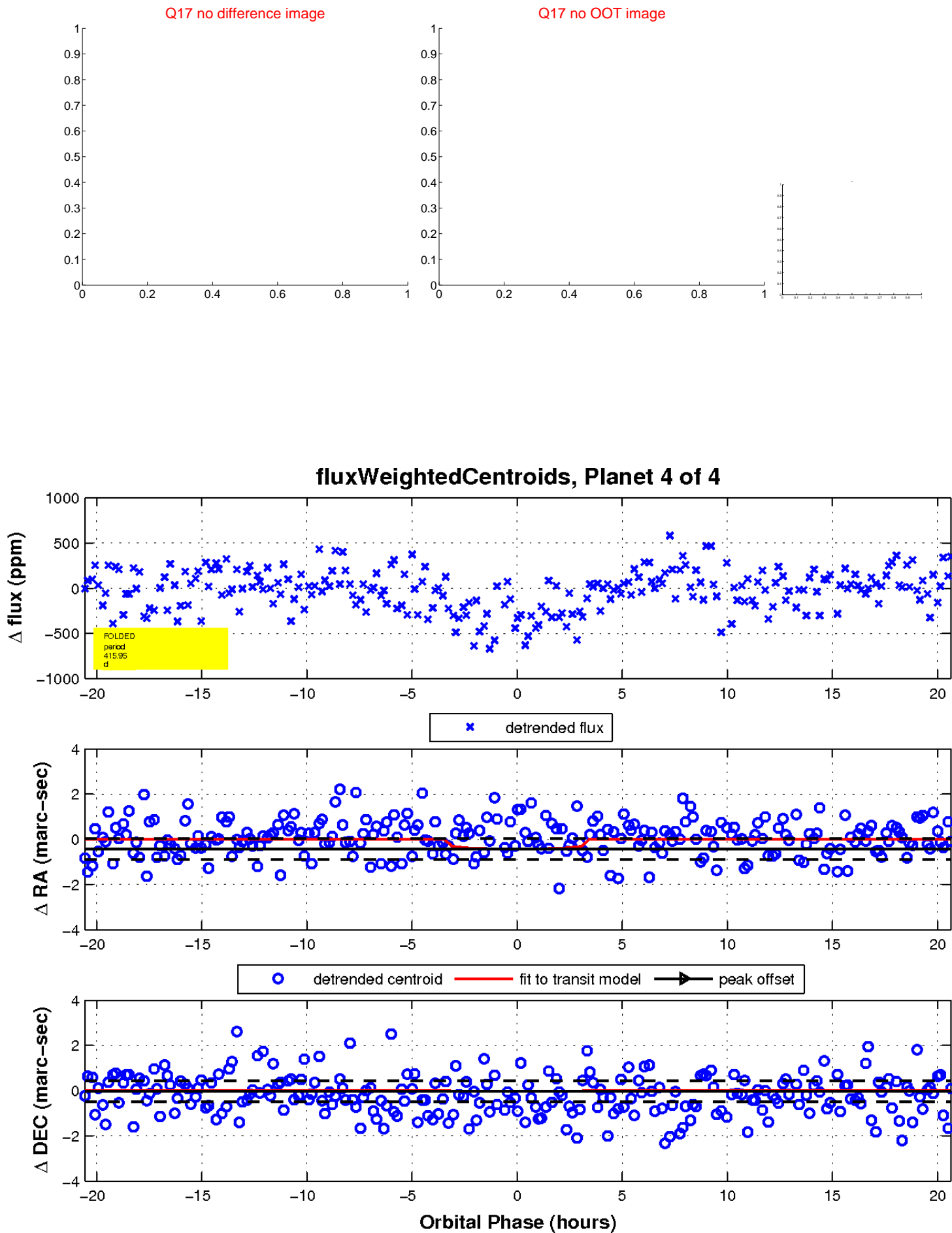
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

