

KIC 008616637

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})
008616637-01	OBS	0579.01	2.019999	131.690266	316.0	1.878	44.0	51.2	0.79	5103	1.67	437.57
008616637-02	OBS	0579.02	3.763040	132.592979	331.6	1.668	30.7	36.4	0.79	5103	1.79	190.90
008616637-03	OBS	No	417.306910	259.158752	583.4	4.038	7.7	7.5	0.79	5103	2.10	0.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008616637-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—INCONSISTENT_TRANS—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.

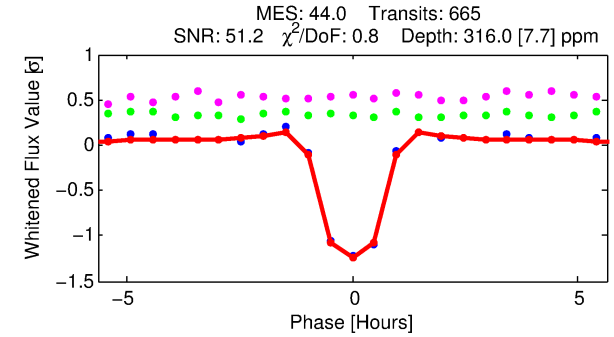
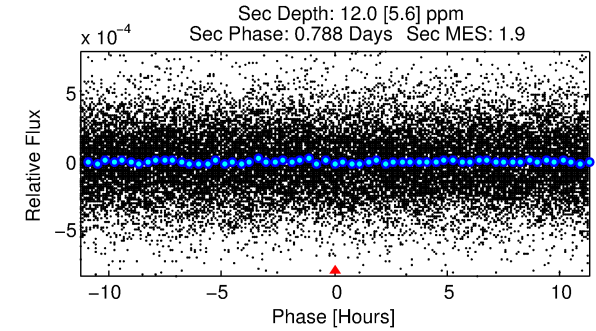
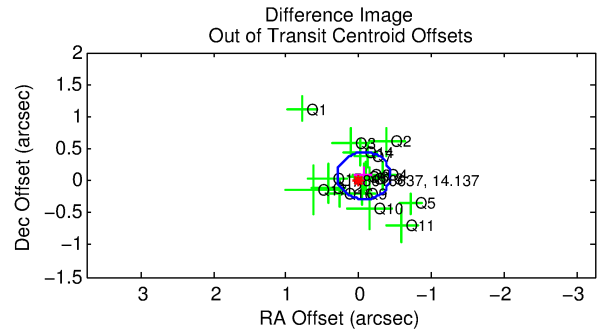
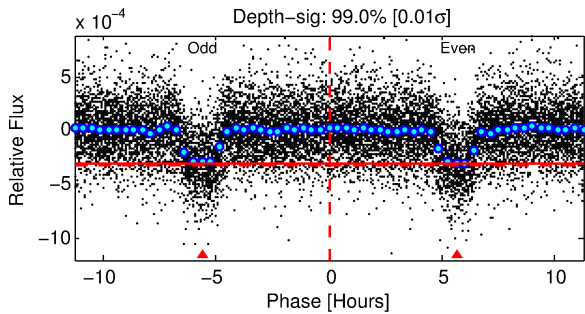
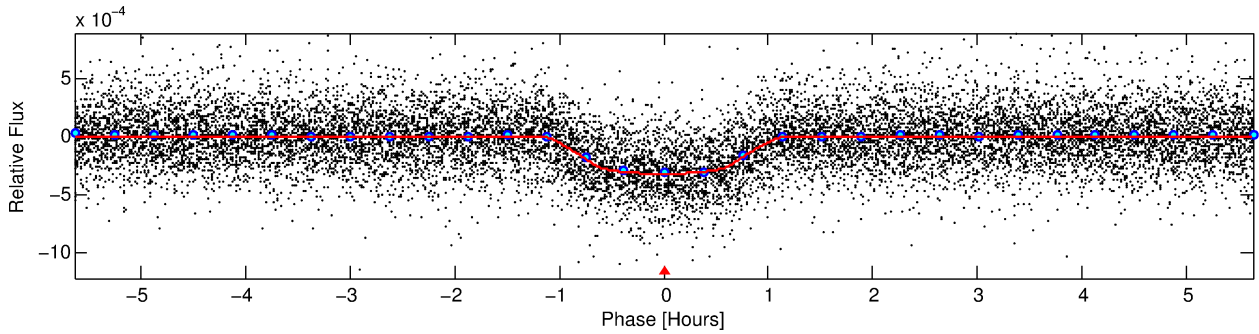
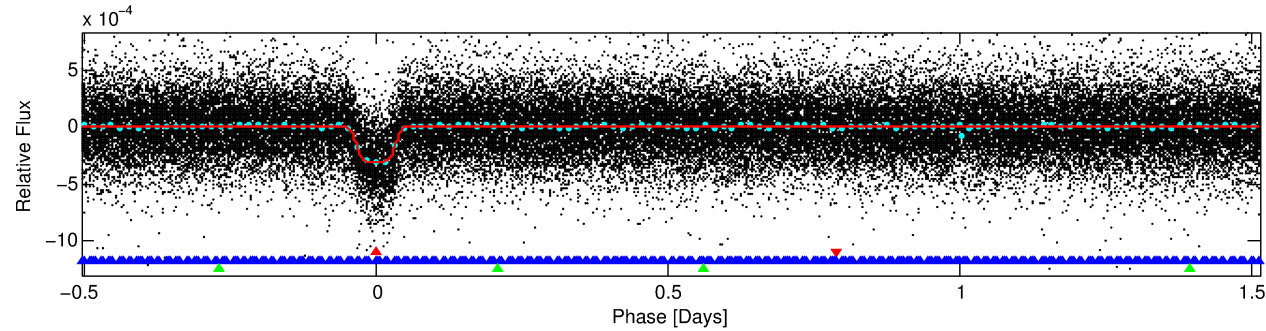
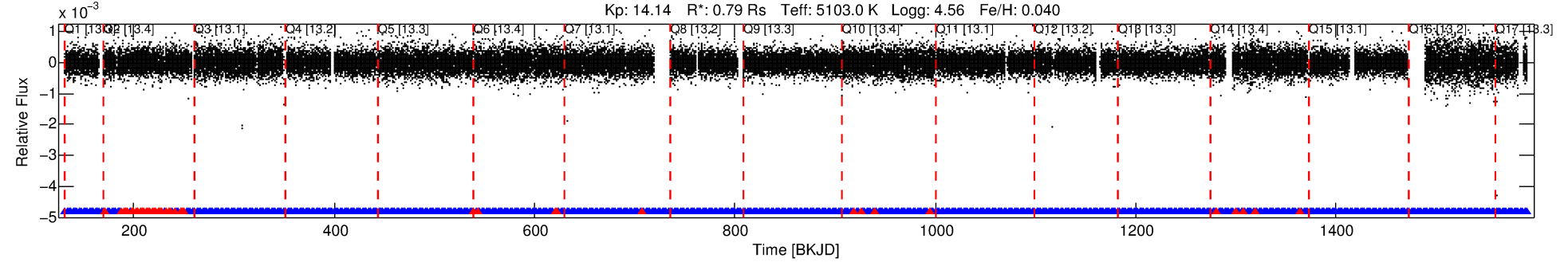
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008616637-01

No Significant Match Found

DV One-Page Summary

KIC: 8616637 Candidate: 1 of 3 Period: 2.020 d
KOI: K00579.01 Name: Kepler-190b Corr: 0.989



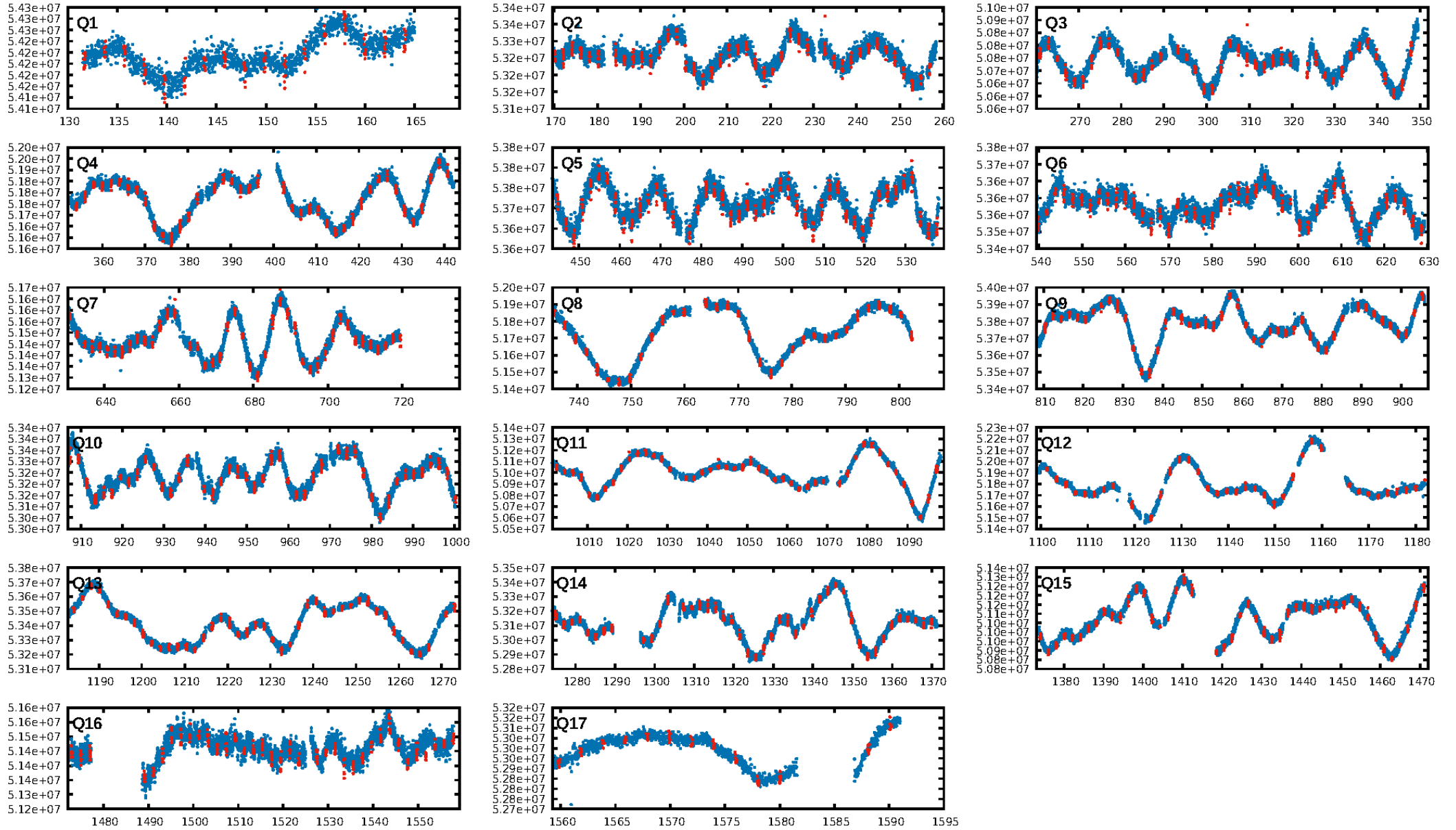
DV Fit Results:

Period = 2.02000 [0.00000] d
Epoch = 131.6903 [0.0005] BKJD
Rp/R* = 0.0194 [0.0034]
a/R* = 4.31 [2.77]
b = 0.88 [0.18]
Seff = 437.57 [52.70]
Teff = 1166 [35] K
Rp = 1.67 [0.31] Re
a = 0.0293 [0.0017] AU
Ag = 2.04 [1.20] [0.87 σ]
Teffp = 2155 [316] K [3.11 σ]

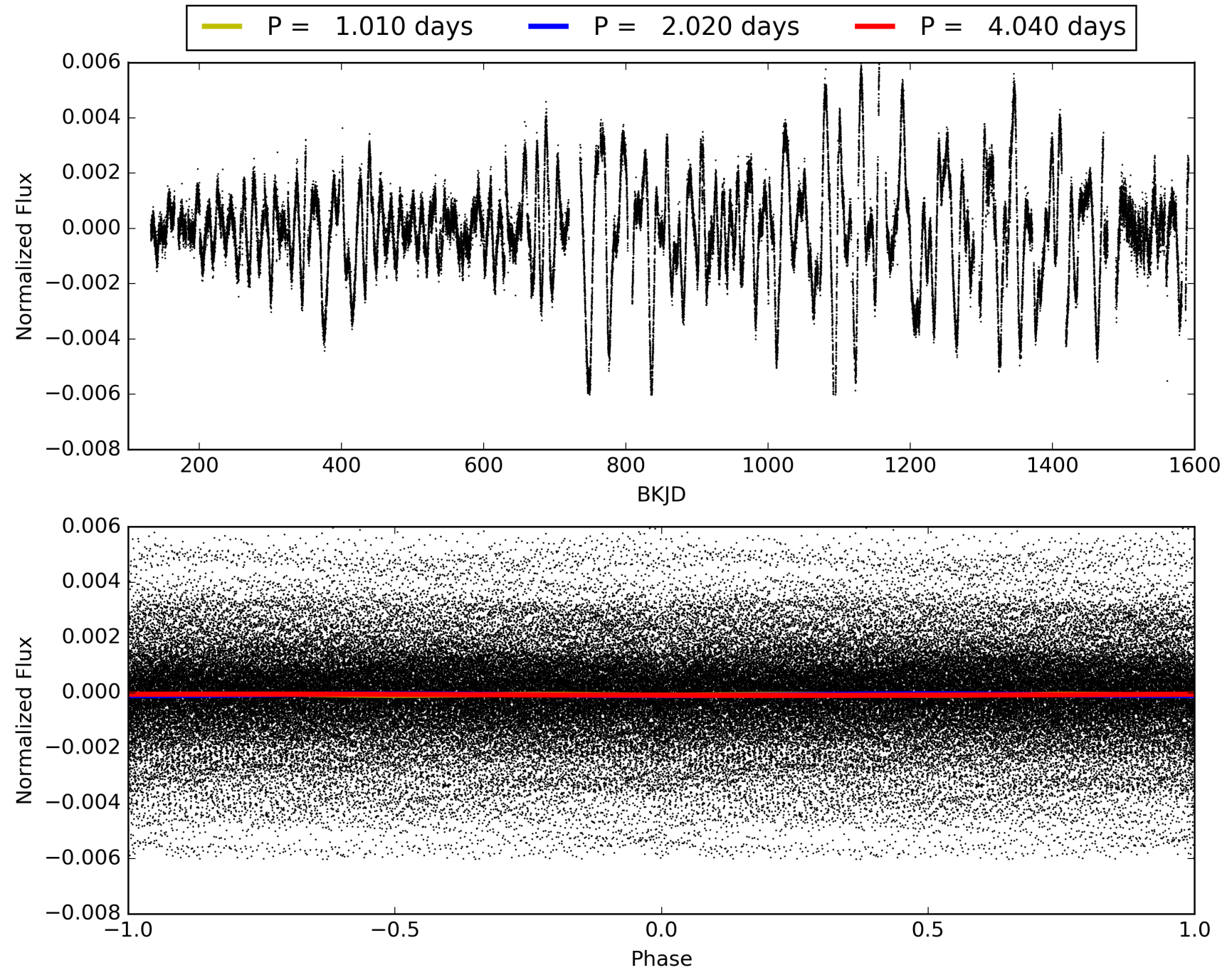
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [16.65 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.93 [593/635]
GhostDiagnostic-chr: 7.622
Centroid-sig: N/A
Centroid-so: 0.406 arcsec [1.78 σ]
OotOffset-rm: 0.103 arcsec [0.85 σ]
KicOffset-rm: 0.189 arcsec [1.36 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008616637-01, PDC Light Curves

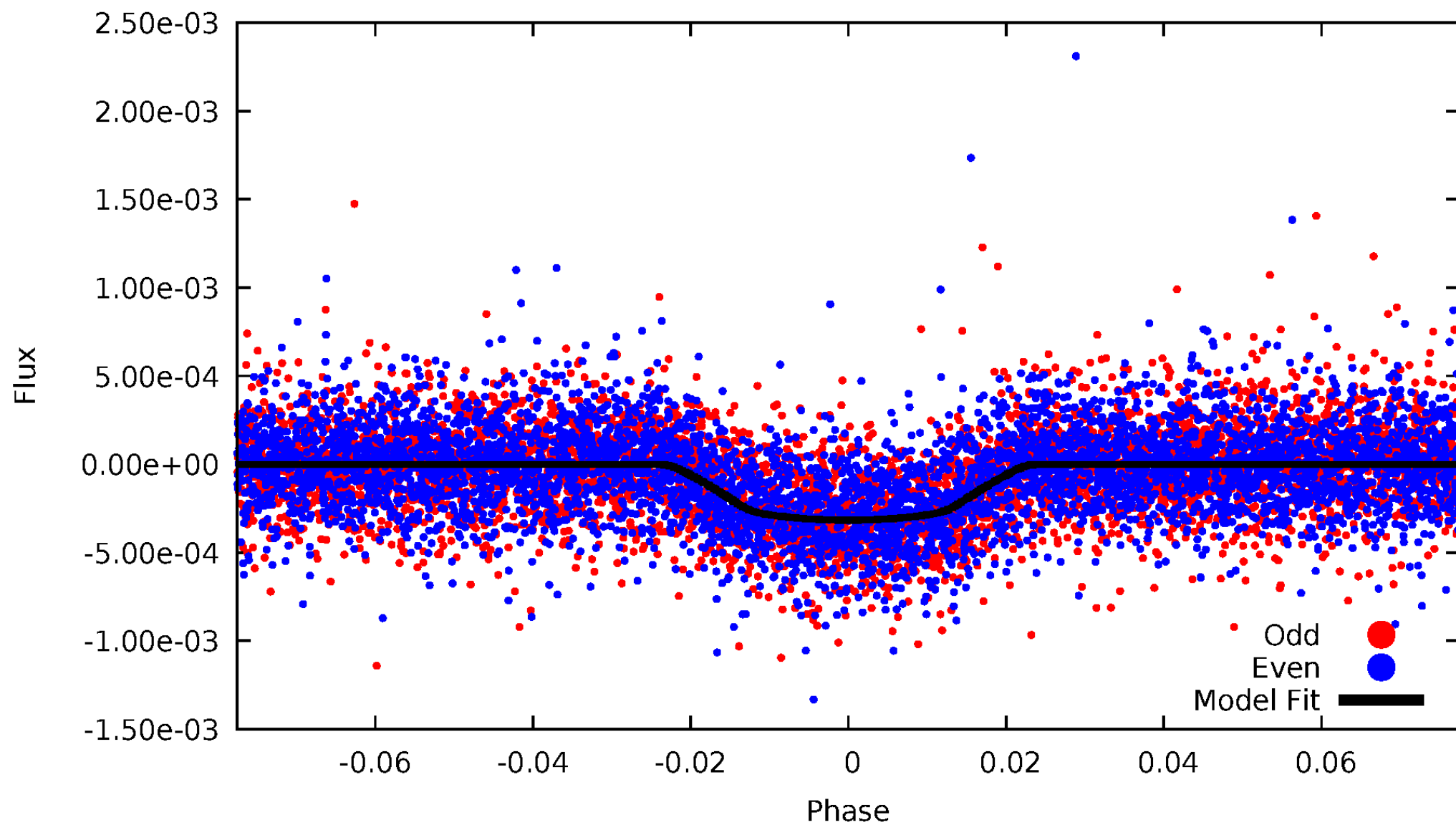


TCE 008616637-01



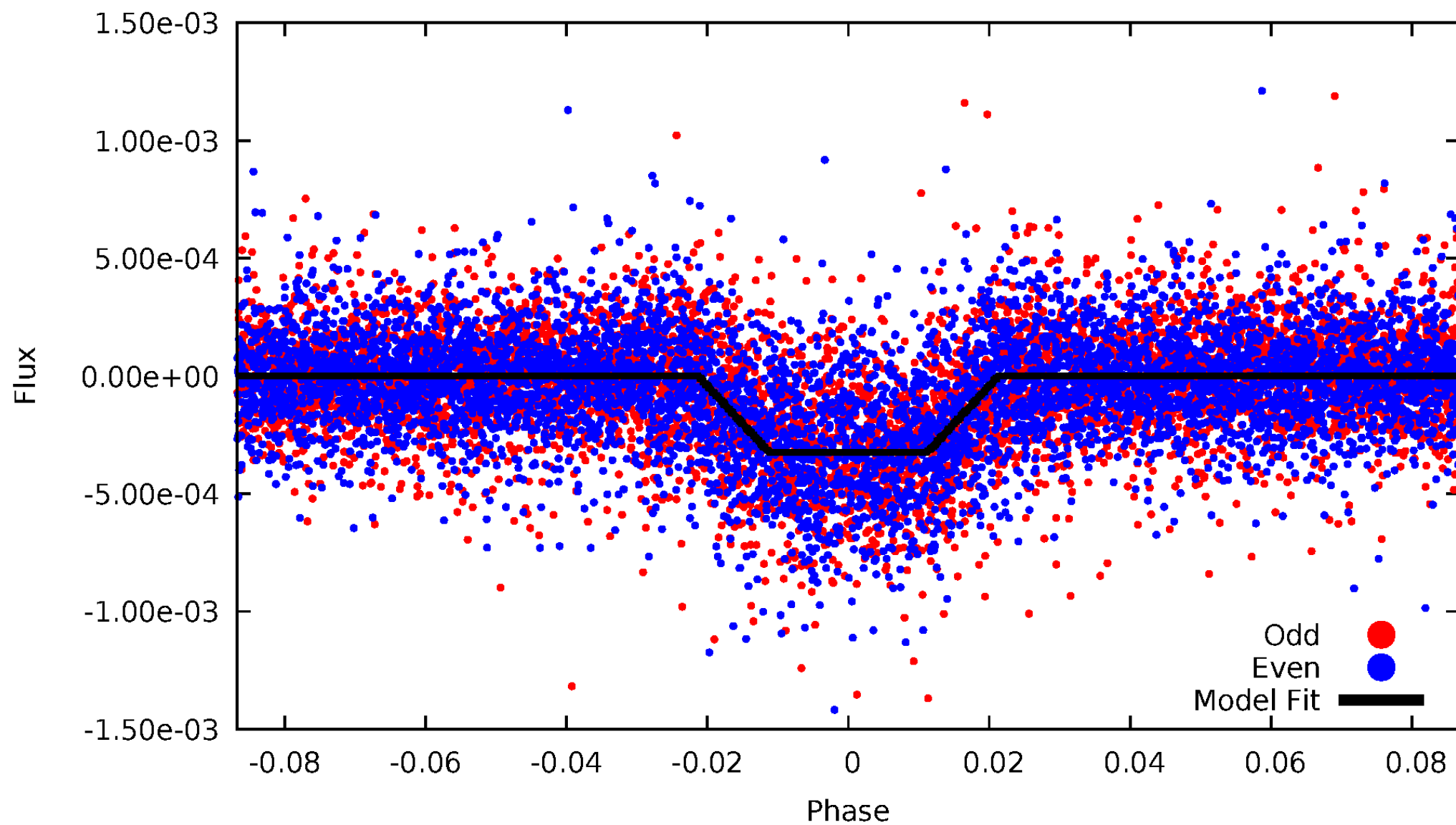
DV Odd/Even

TCE 008616637-01



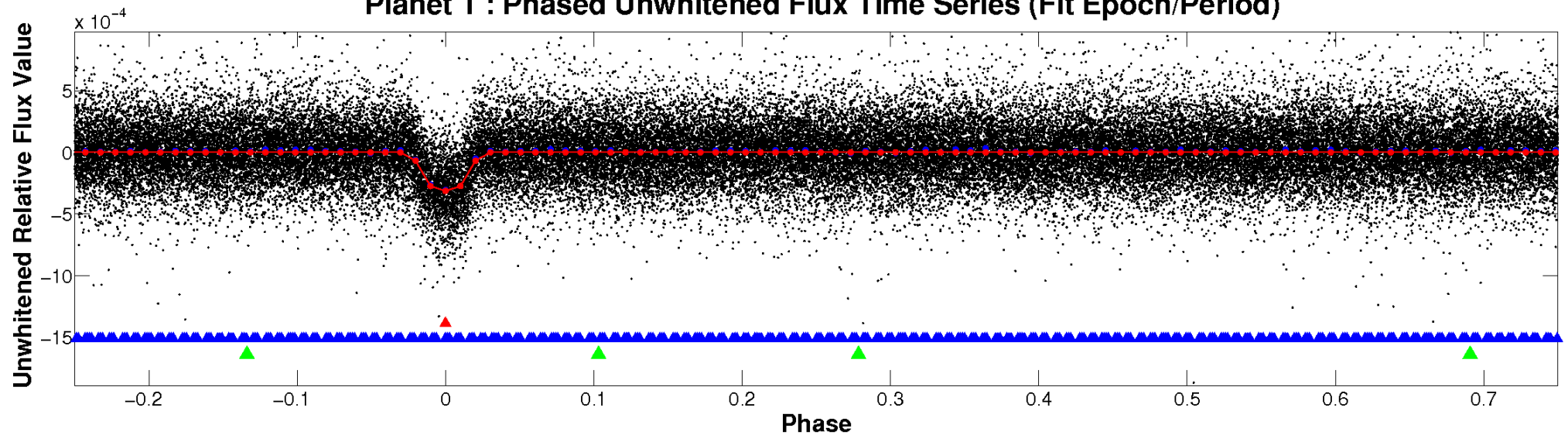
ALT Odd/Even

TCE 008616637-01

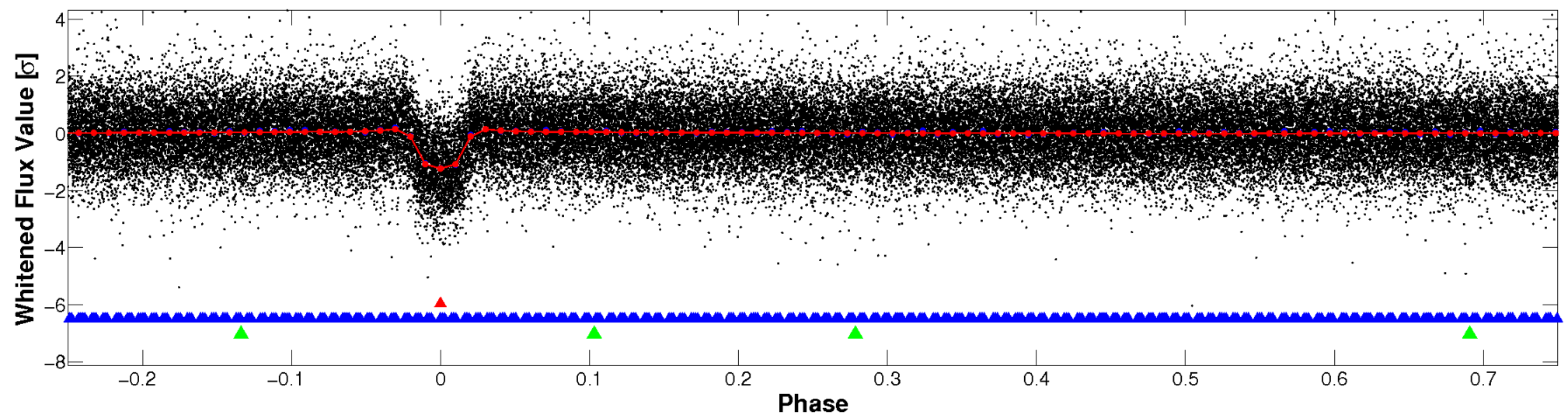


Non-Whitened Vs. Whitened Light Curve

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

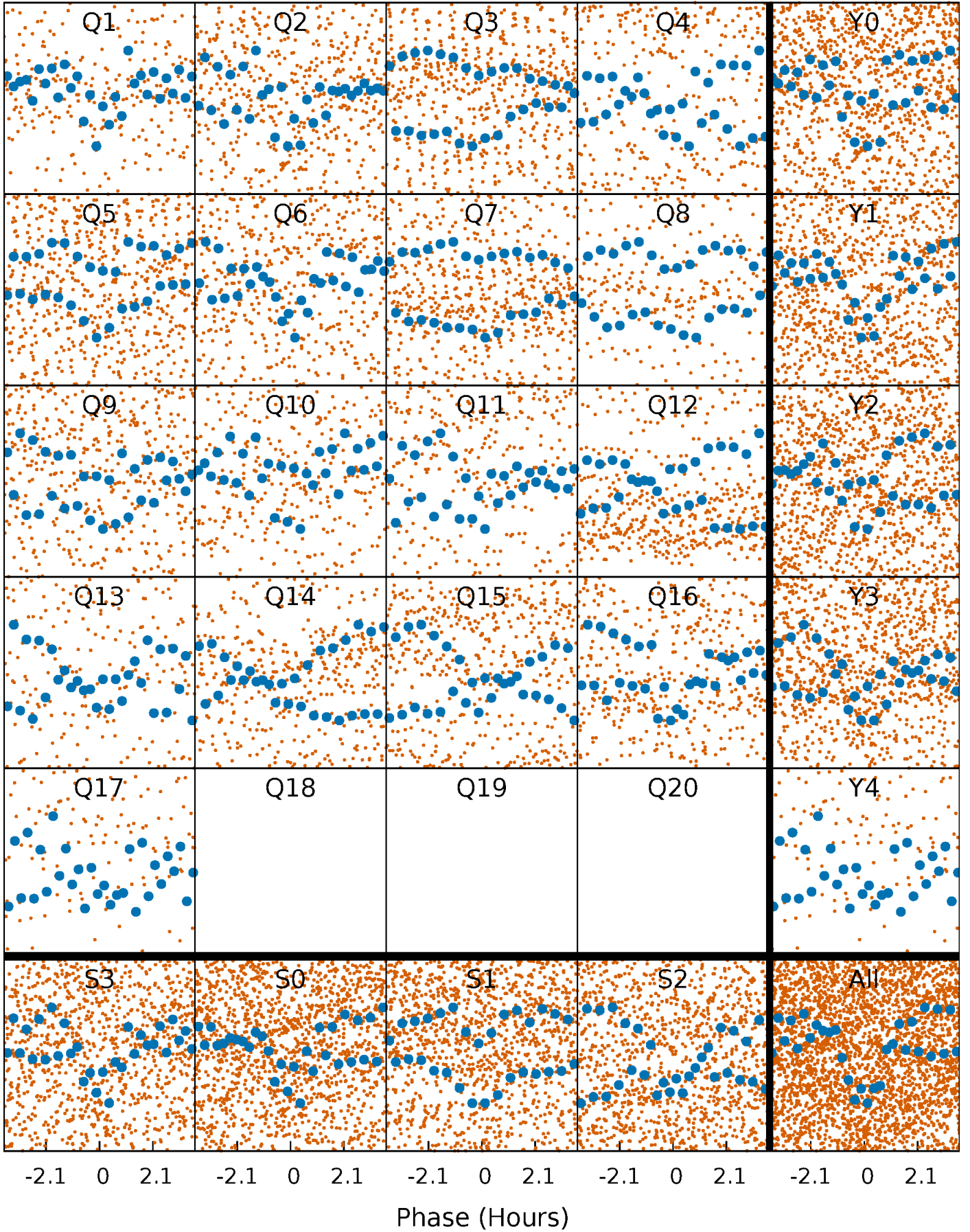


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



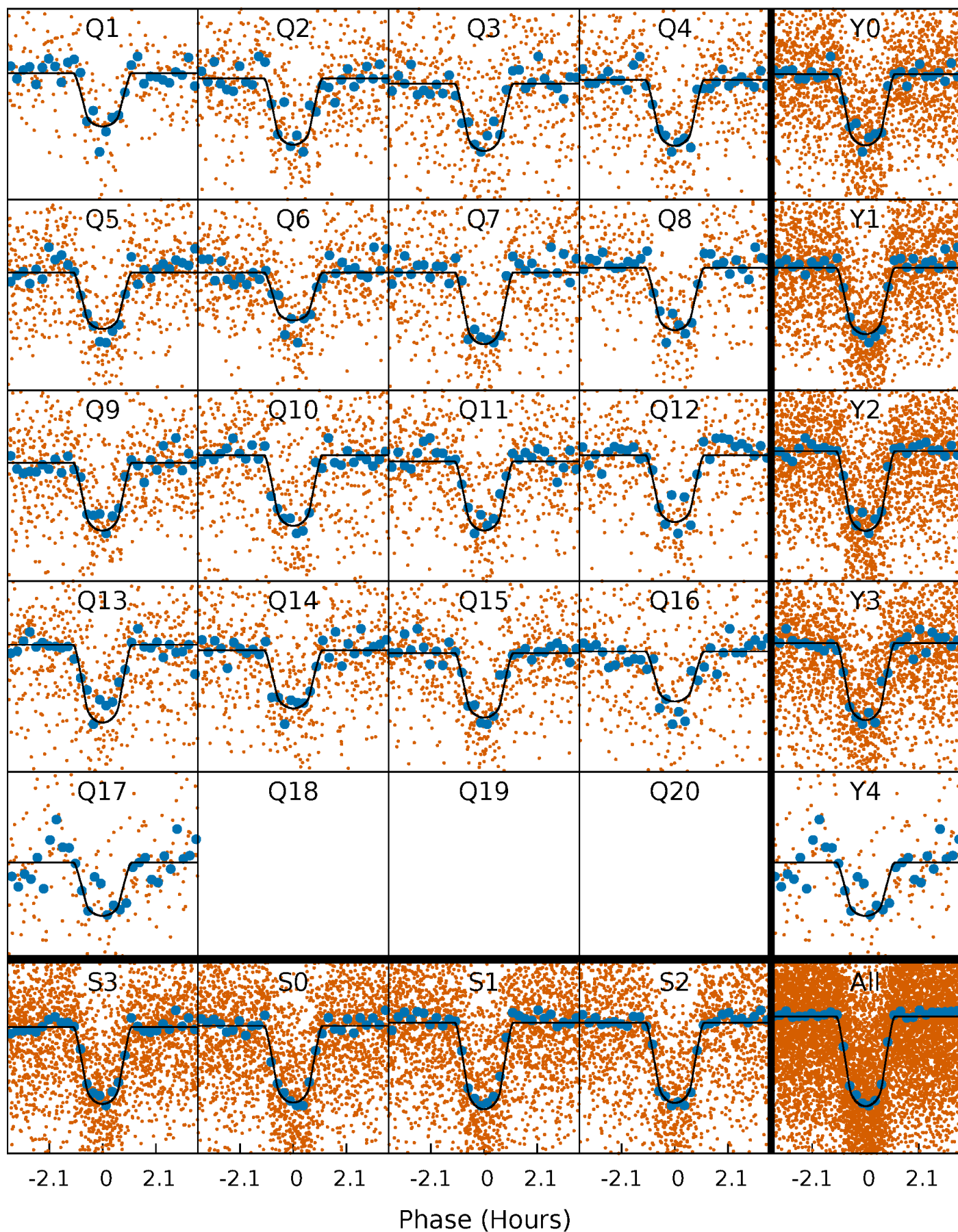
PDC Quarter-Phased Transit Curves

TCE 008616637-01 P= 2.019999 Days $T_0=131.690266$ (BKJD)



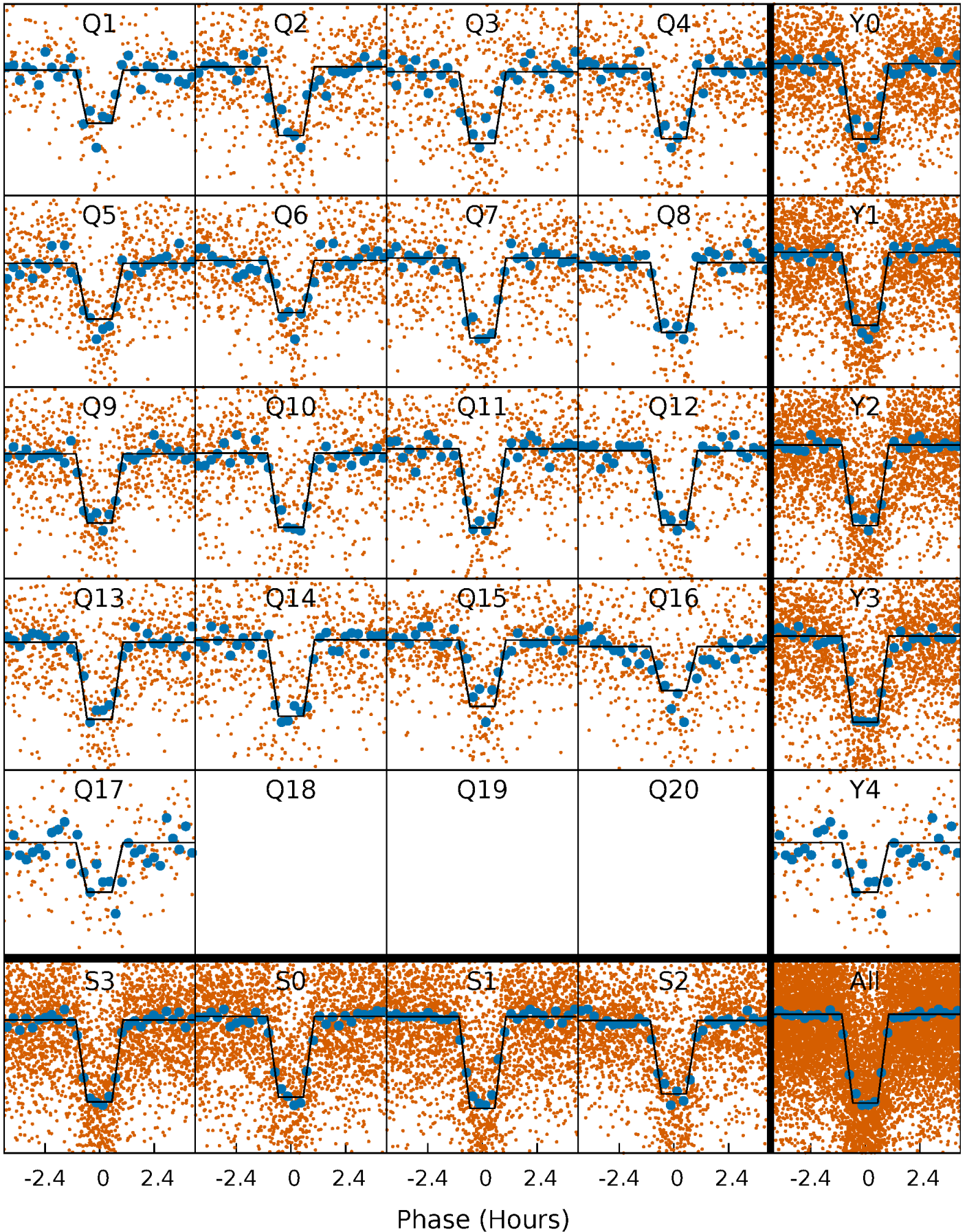
DV Quarter-Phased Transit Curves

TCE 008616637-01 P= 2.019999 Days $T_0=131.690266$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

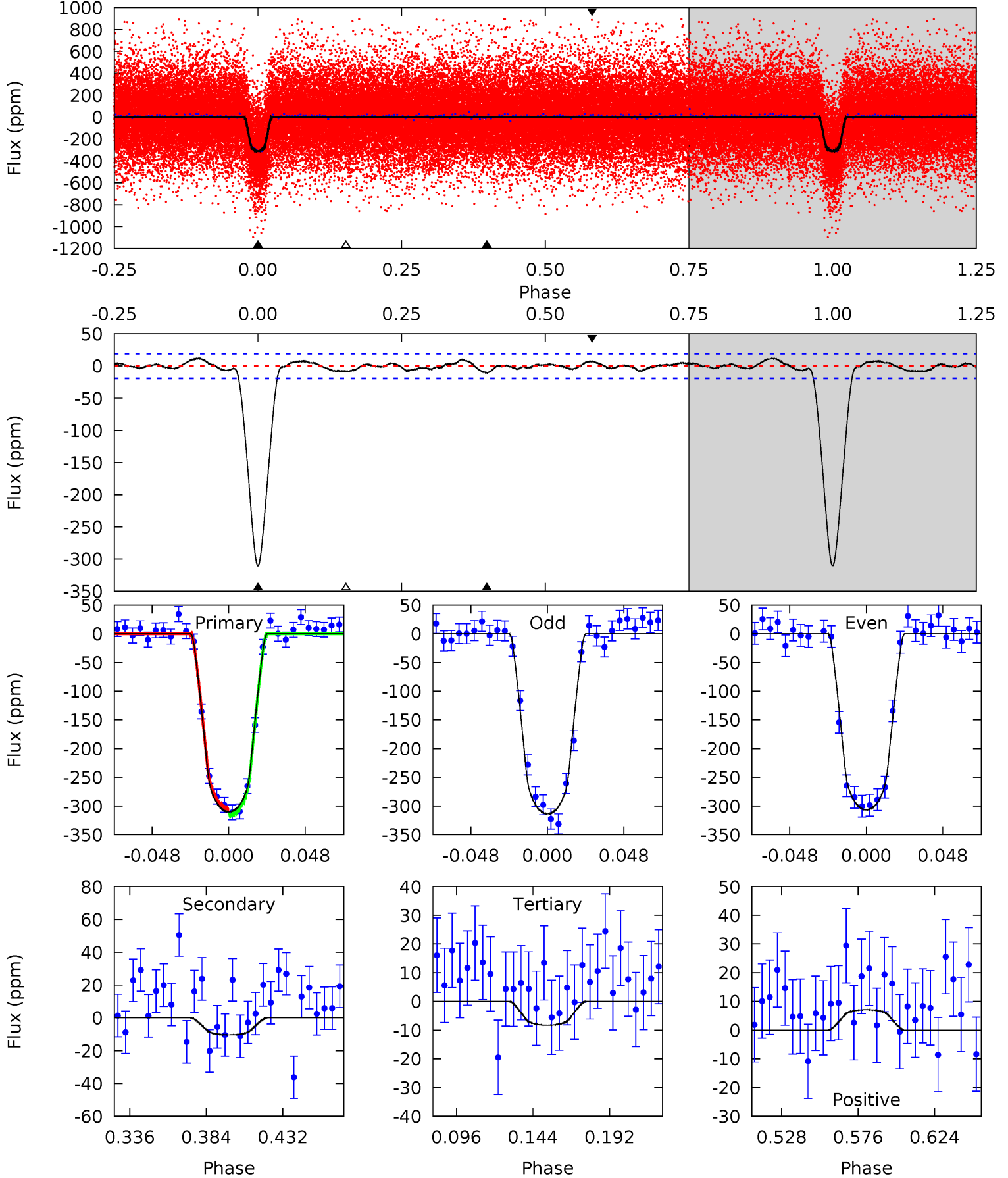
TCE 008616637-01 P= 2.019986 Days $T_0=131.694844$ (BKJD)



DV Model-Shift Uniqueness Test

008616637-01, P = 2.019999 Days, E = 129.670267 Days

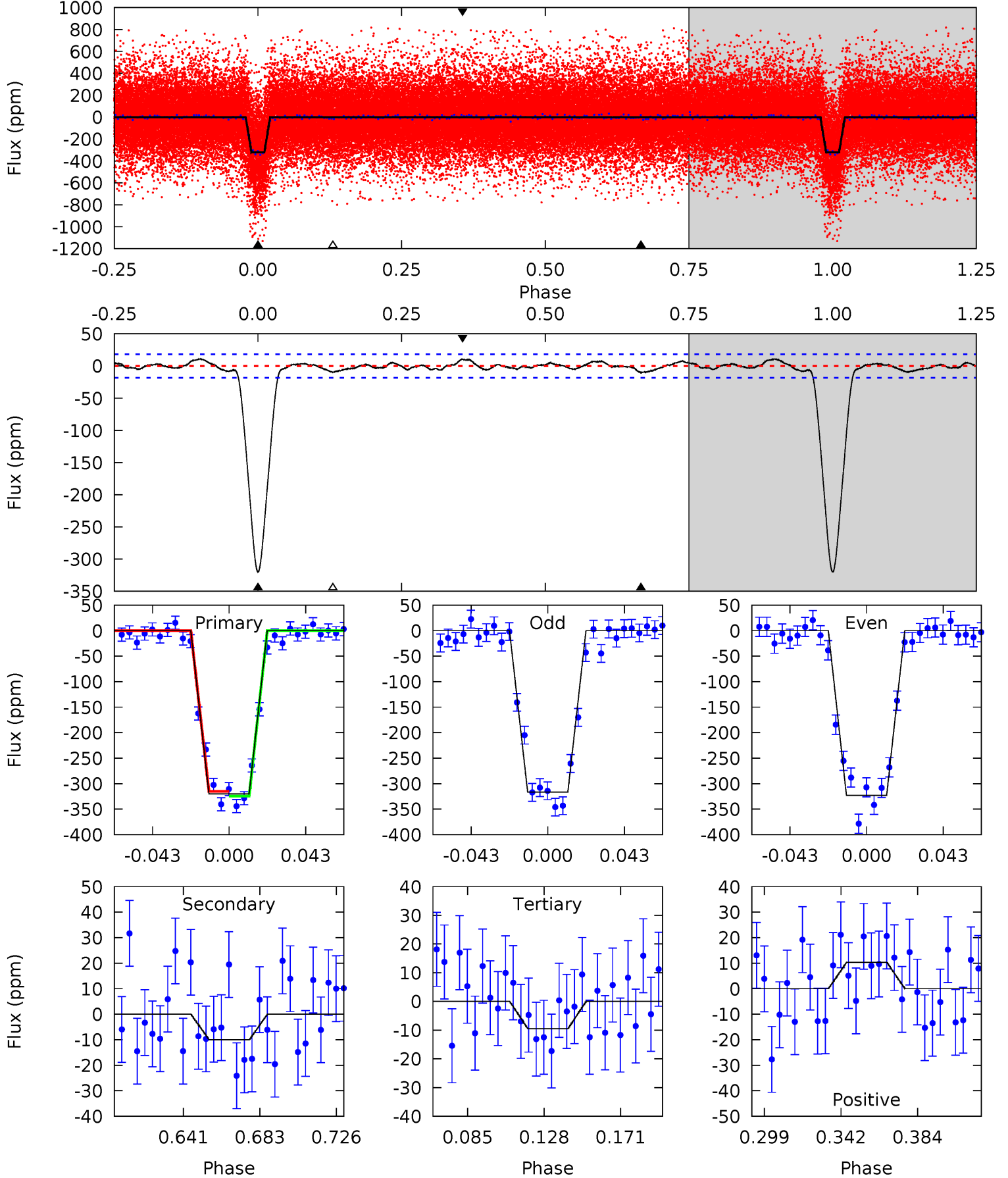
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
76.5	2.55	2.04	1.76	4.72	1.98	1.07	74.4	74.7	0.51	0.79	0.87	1.01	0.04	1.55



Alt Model-Shift Uniqueness Test

008616637-01, P = 2.019986 Days, E = 129.674858 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.8	2.59	2.45	2.68	4.74	2.03	1.12	80.3	80.1	0.14	-0.09	0.87	1.02	0.03	1.23



Stellar Parameters For KIC 008616637

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5103^{+101}_{-101}	$4.562^{+0.032}_{-0.052}$	$0.040^{+0.150}_{-0.150}$	$0.787^{+0.051}_{-0.039}$	$0.823^{+0.043}_{-0.047}$	$2.381^{+0.341}_{-0.389}$
	+2%/-2%	+1%/-1%	+375%/-375%	+6%/-5%	+5%/-6%	+14%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 008616637-01 / KOI 0579.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-10 ± 4	$1.69^{+0.29}_{-0.31}$	1635^{+39}_{-40}	2727^{+246}_{-248}	$1.727^{+1.305}_{-0.721}$
Alt.	-10 ± 4	$1.53^{+0.27}_{-0.27}$	1634^{+39}_{-41}	2772^{+235}_{-258}	$1.969^{+1.296}_{-0.902}$

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

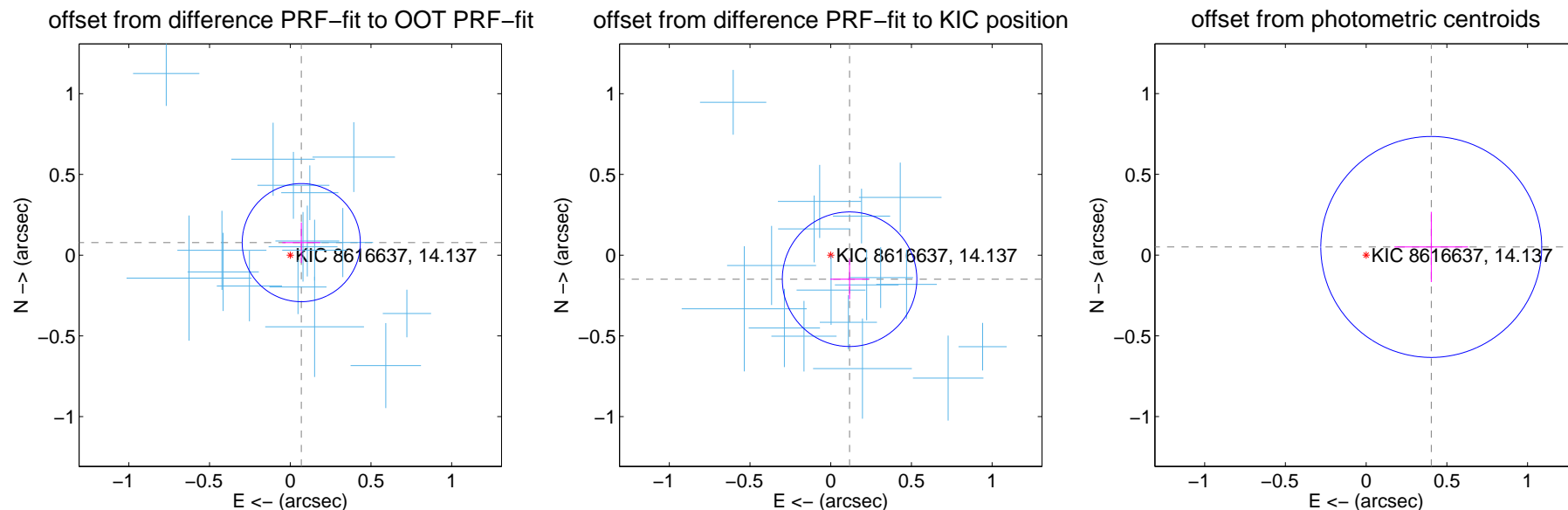
DV Centroid Data

Supplemental centroid analysis for 008616637-01. Kepler magnitude: 14.14. Transit SNR 51.25

There are 17 quarters with good PRF difference image offsets

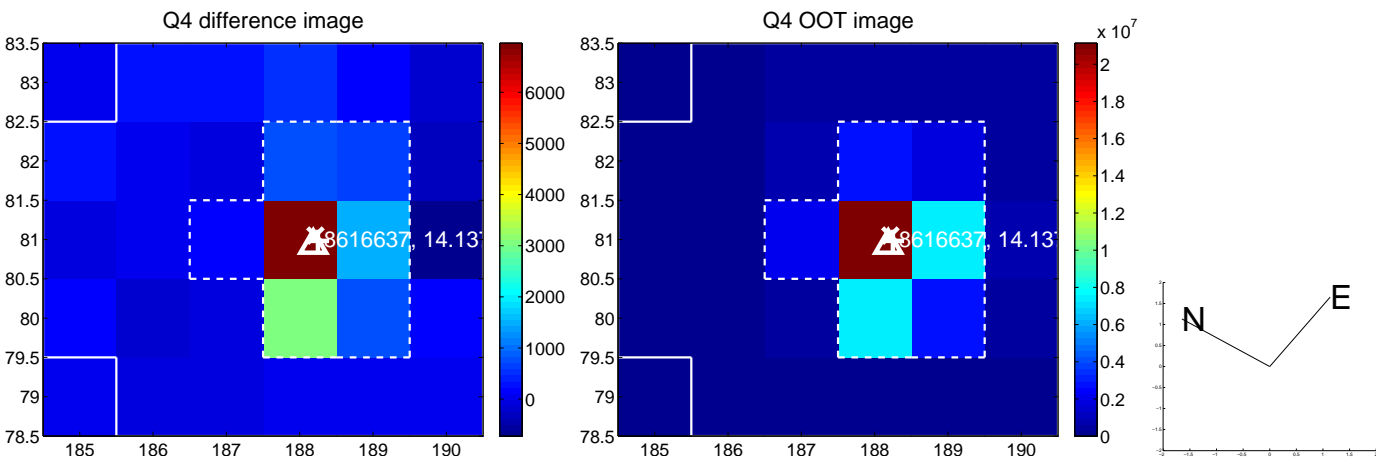
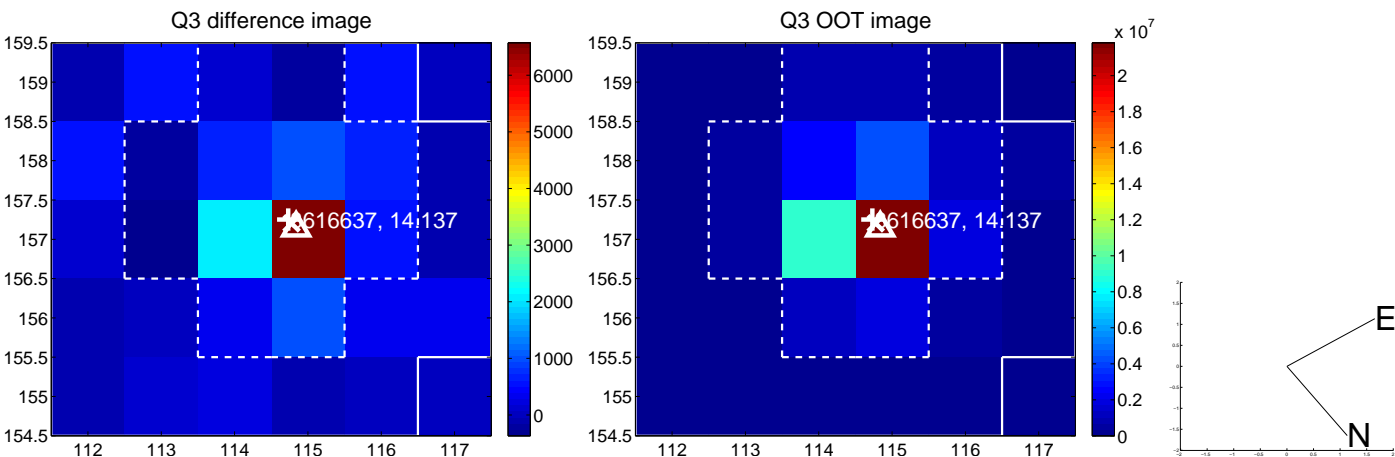
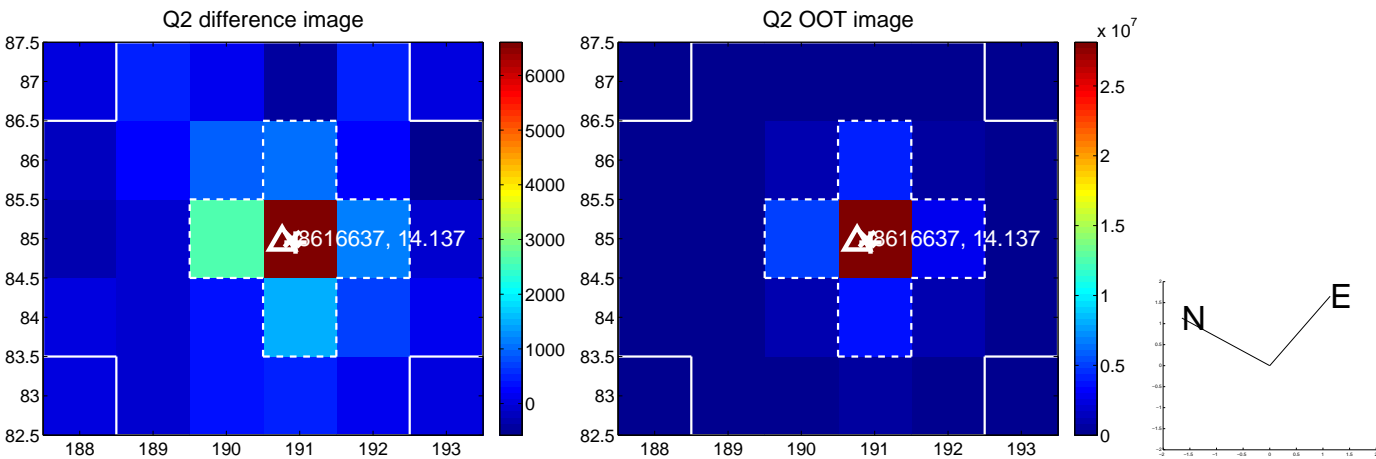
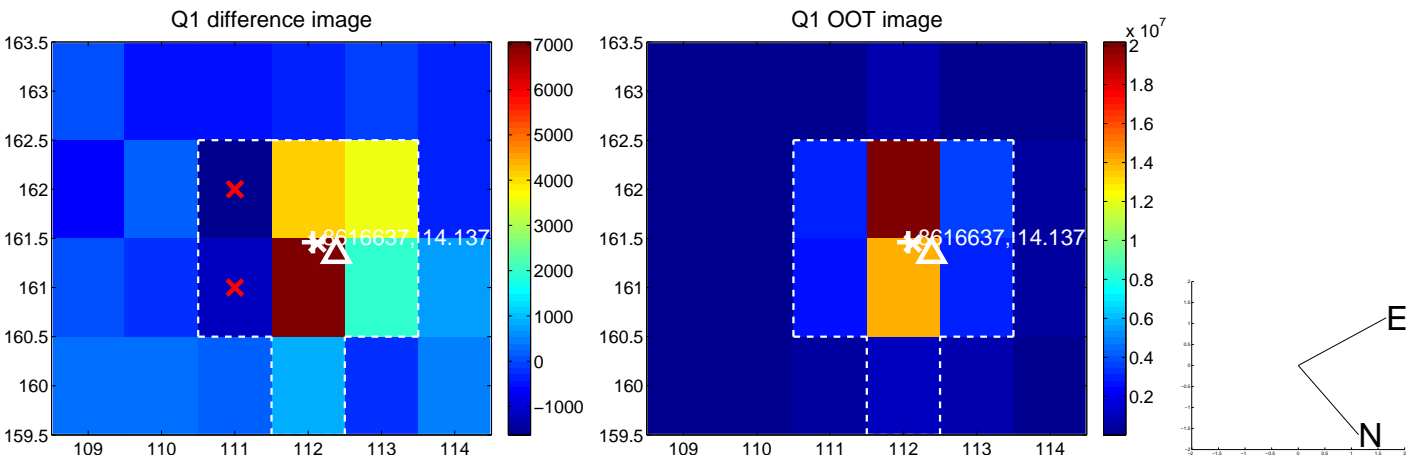
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.103 ± 0.122	0.85	-0.068 ± 0.117	0.078 ± 0.125
PRF-fit source offset from KIC position	0.189 ± 0.139	1.36	-0.117 ± 0.120	-0.149 ± 0.124
photometric centroid source offset	0.41 ± 0.23	1.78	-0.40 ± 0.23	0.05 ± 0.22

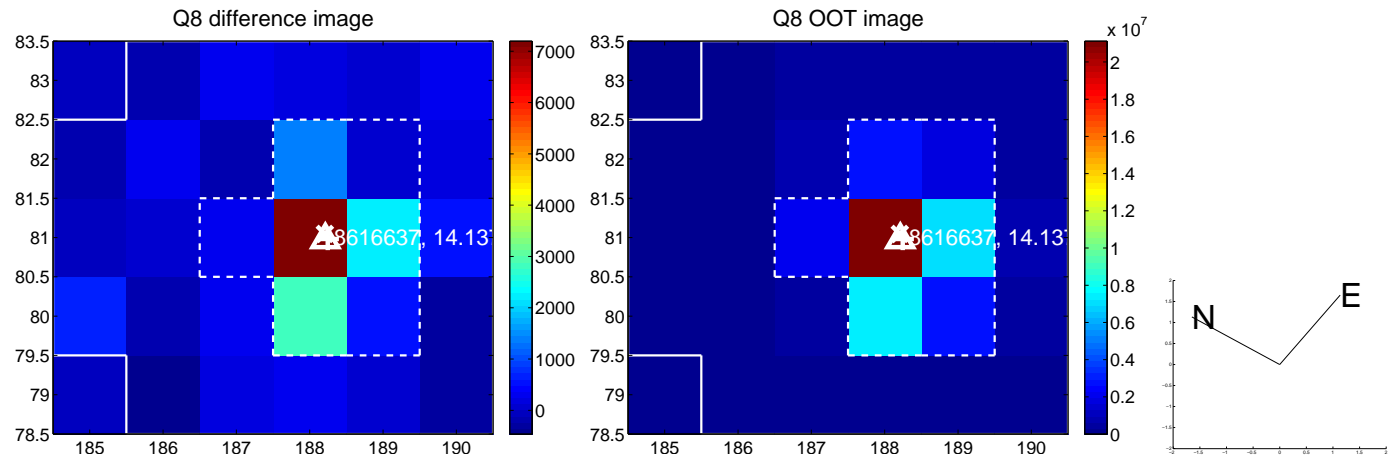
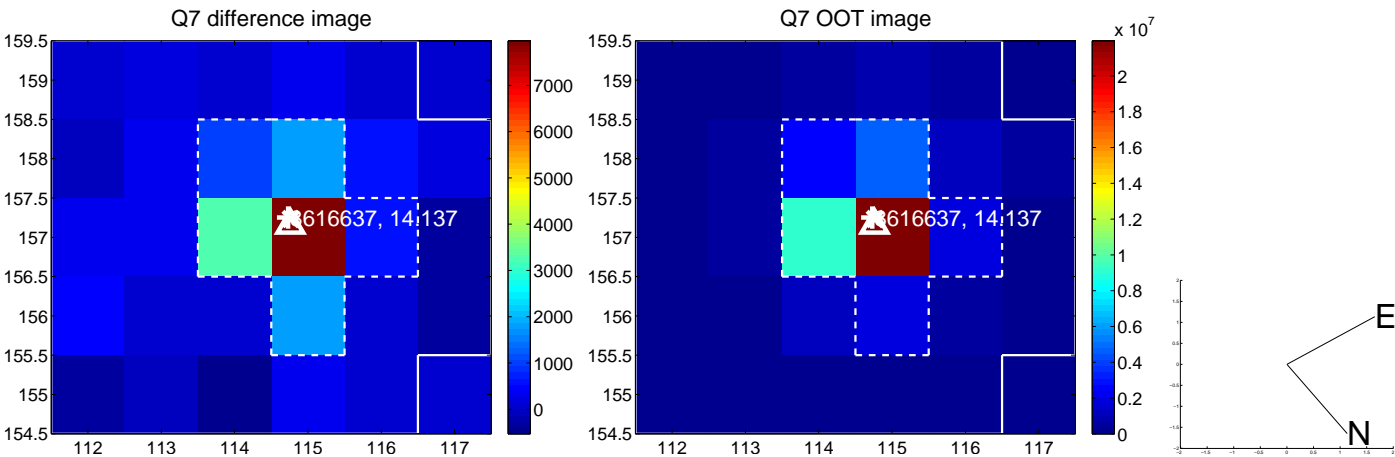
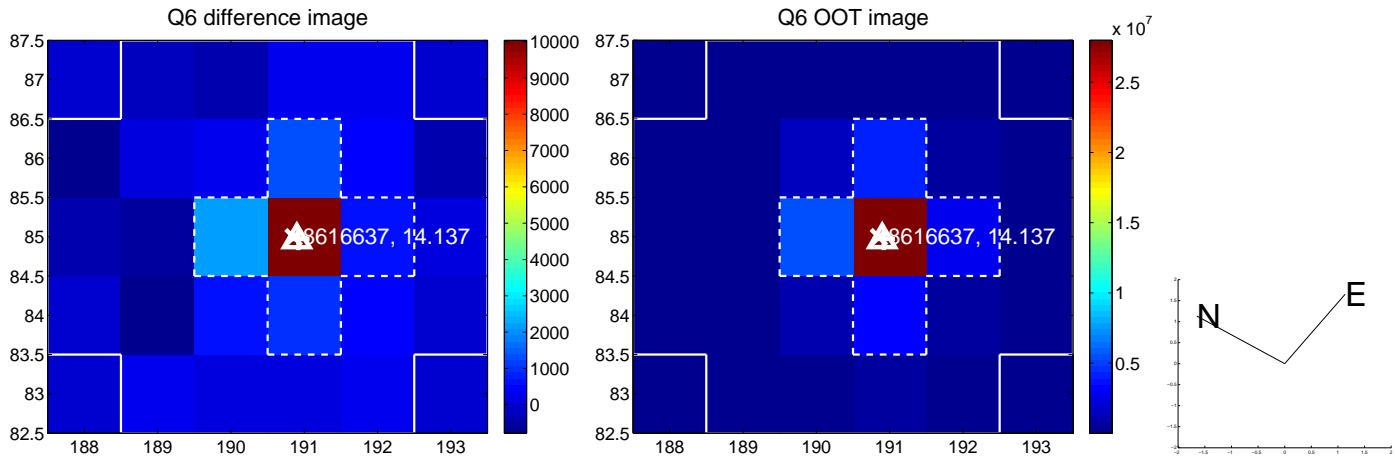
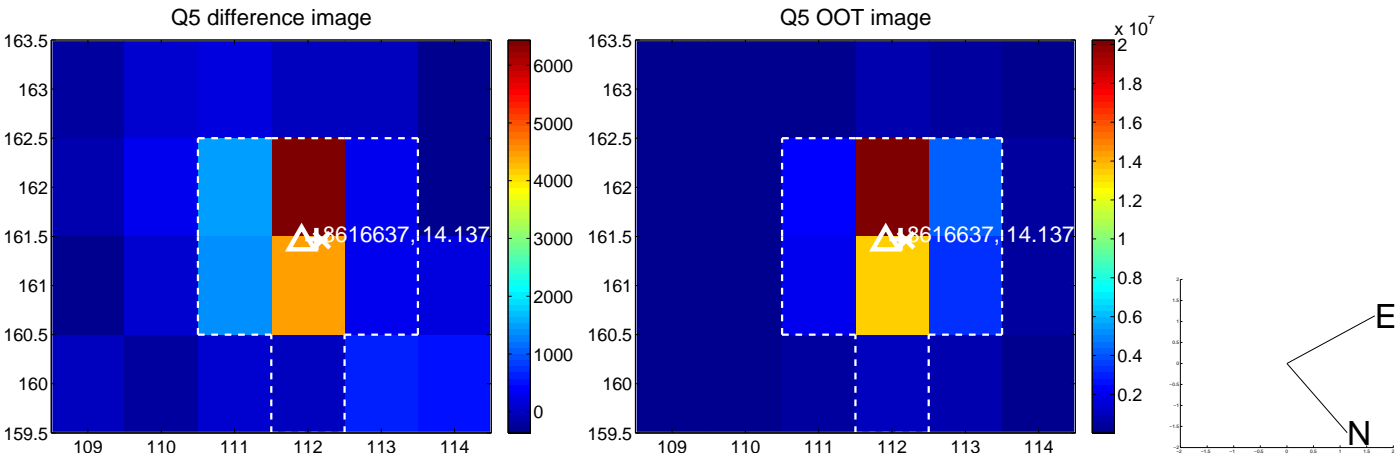


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

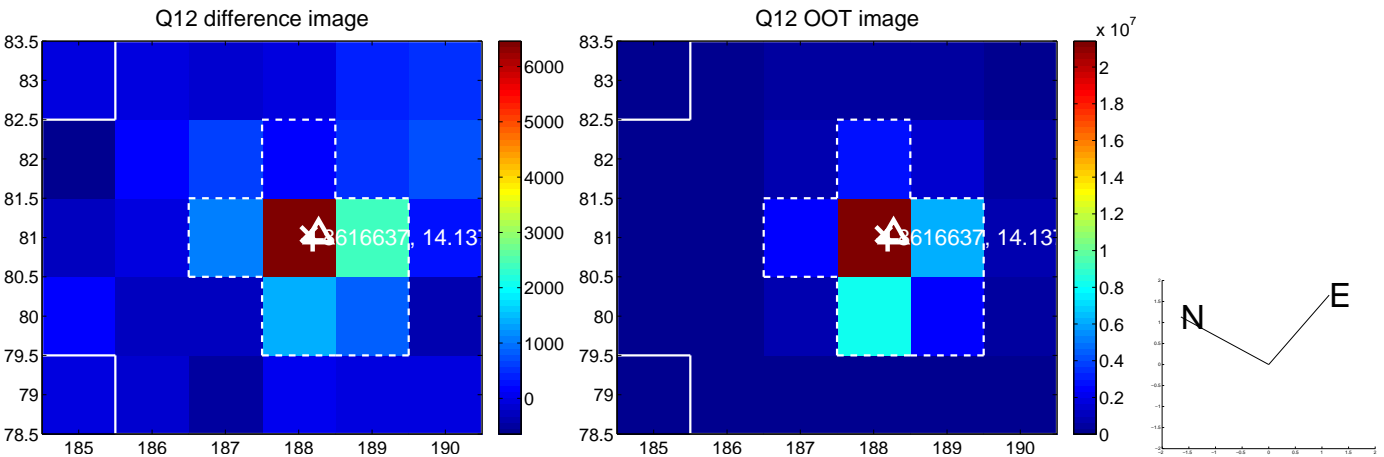
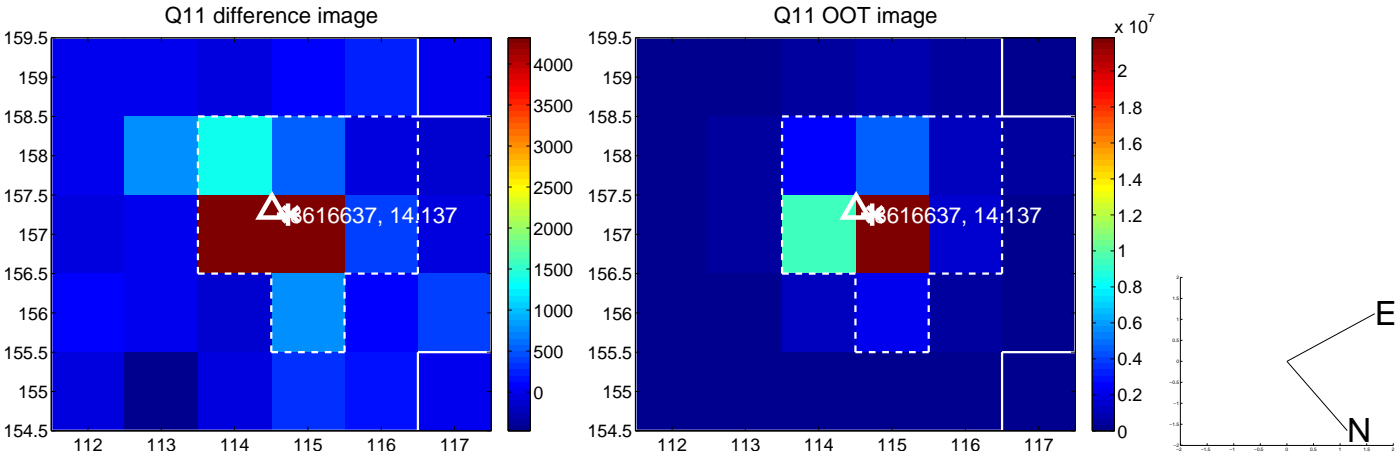
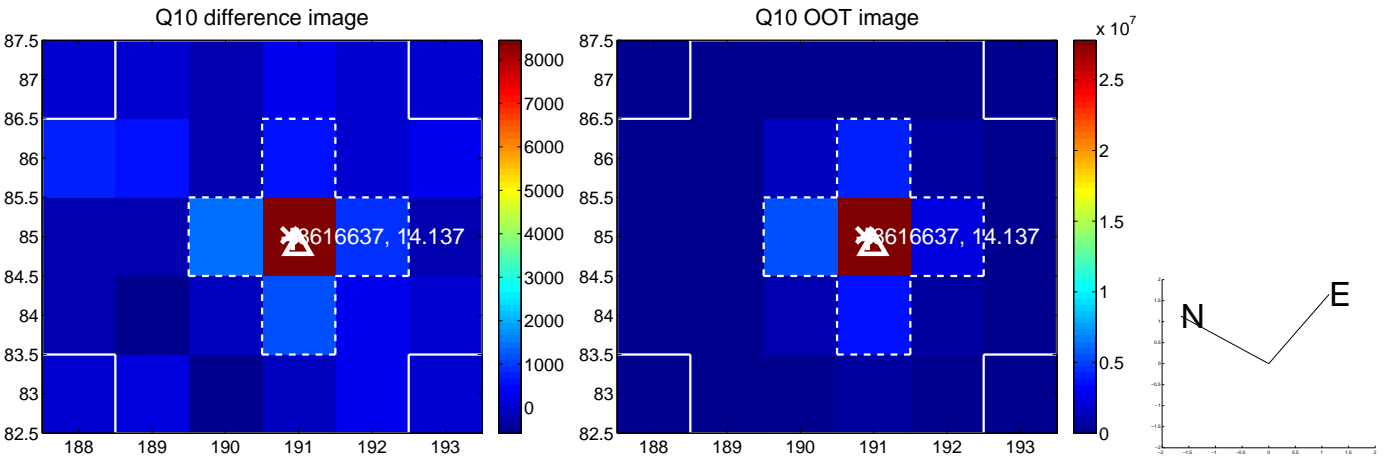
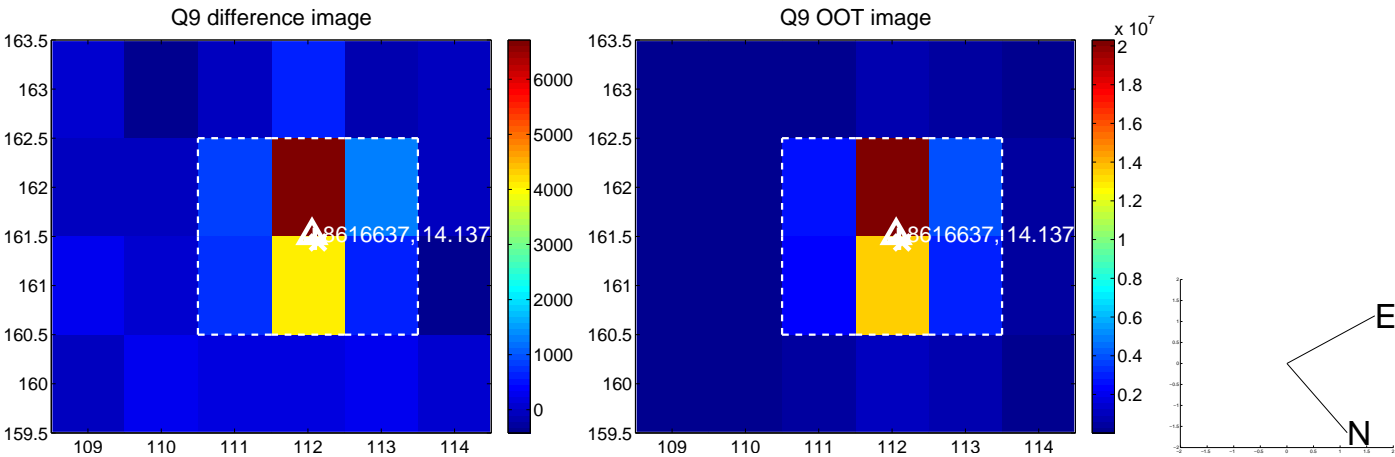
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



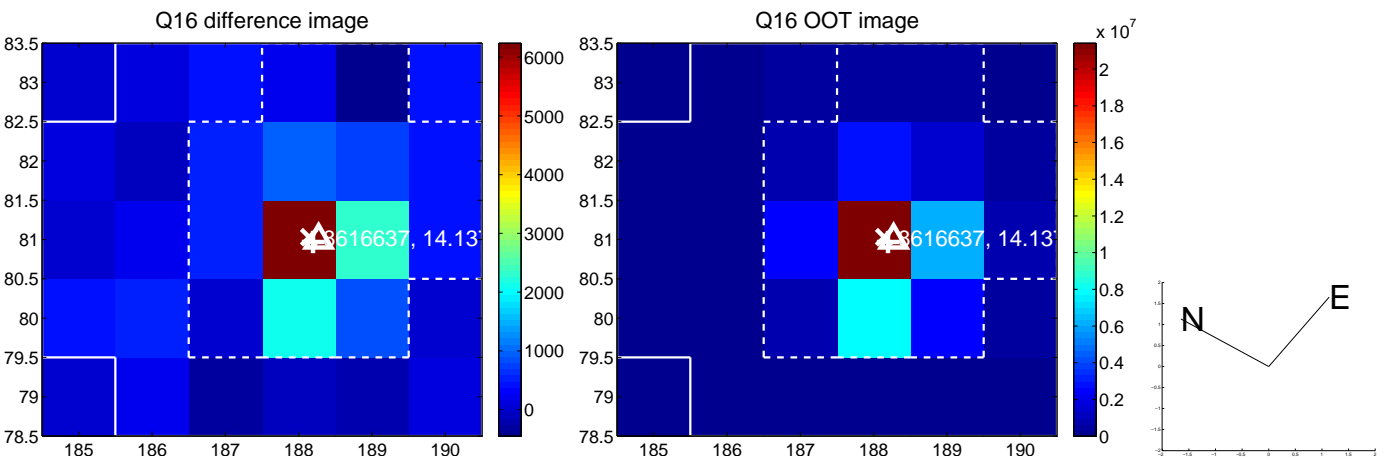
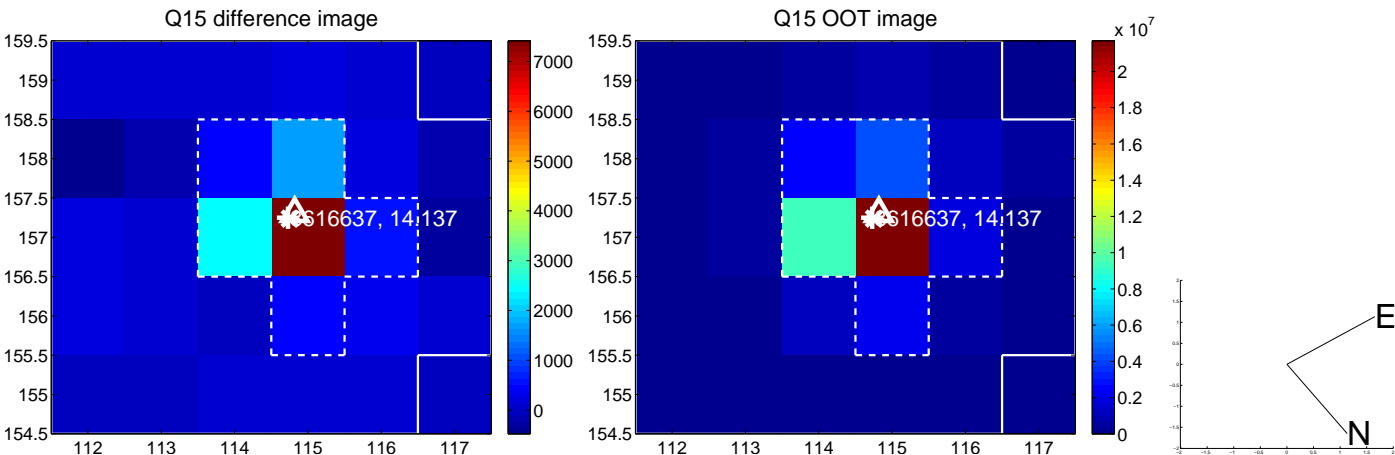
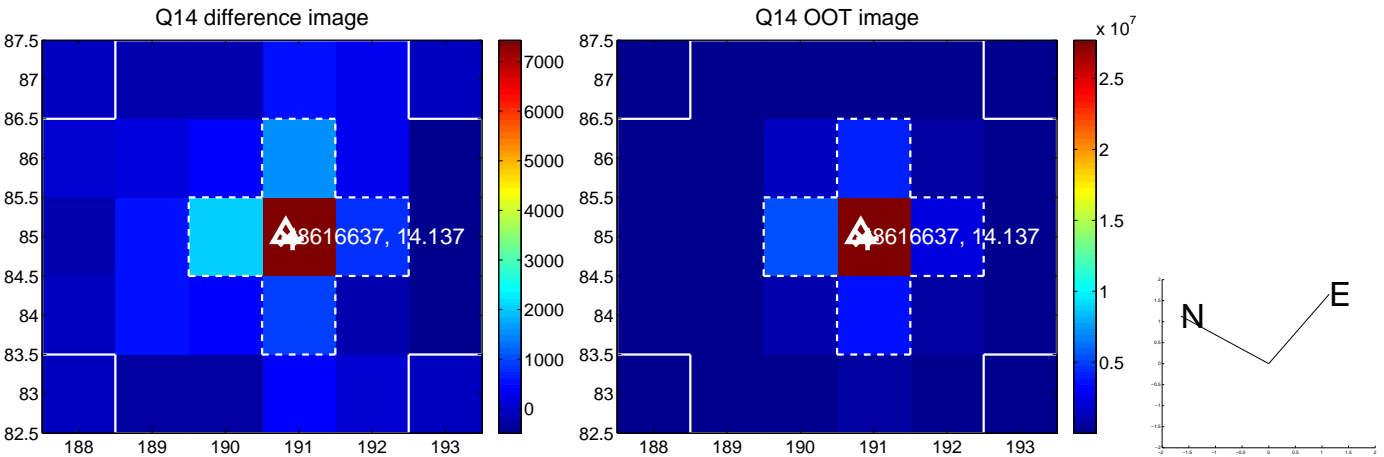
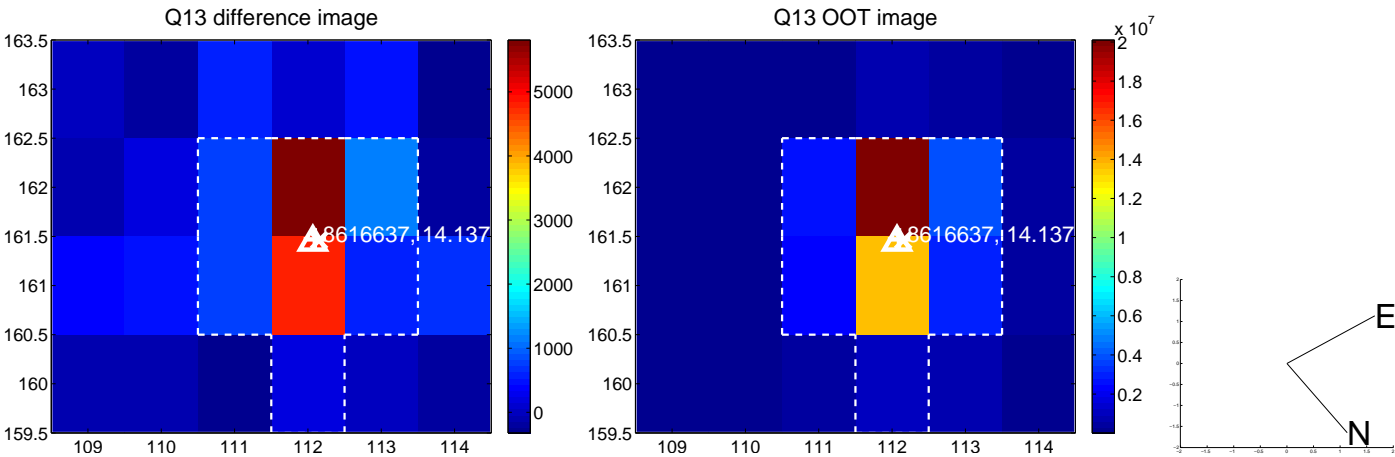
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



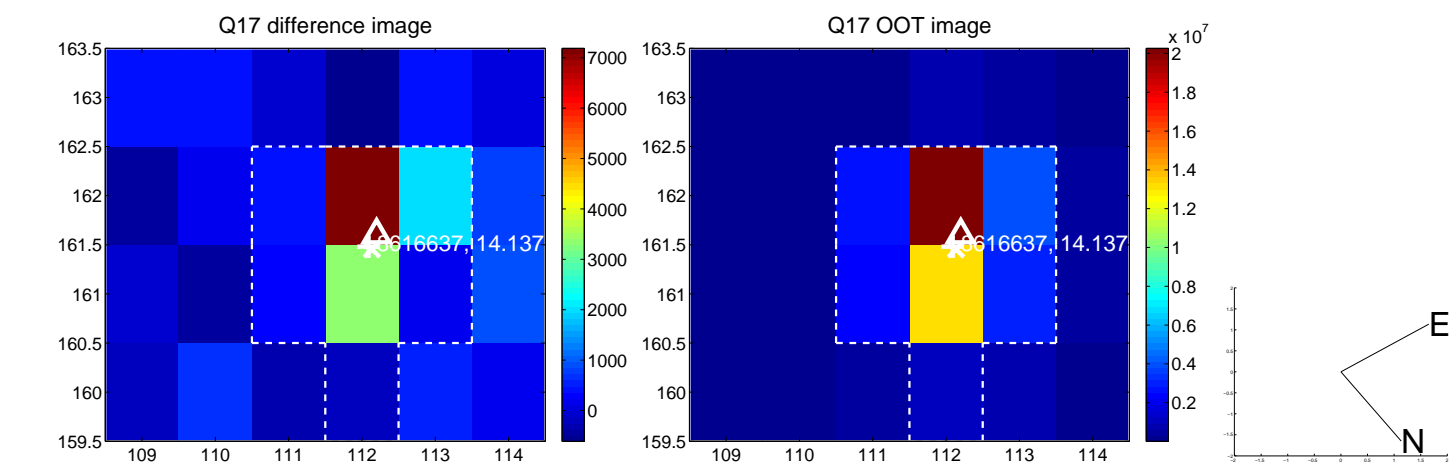
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



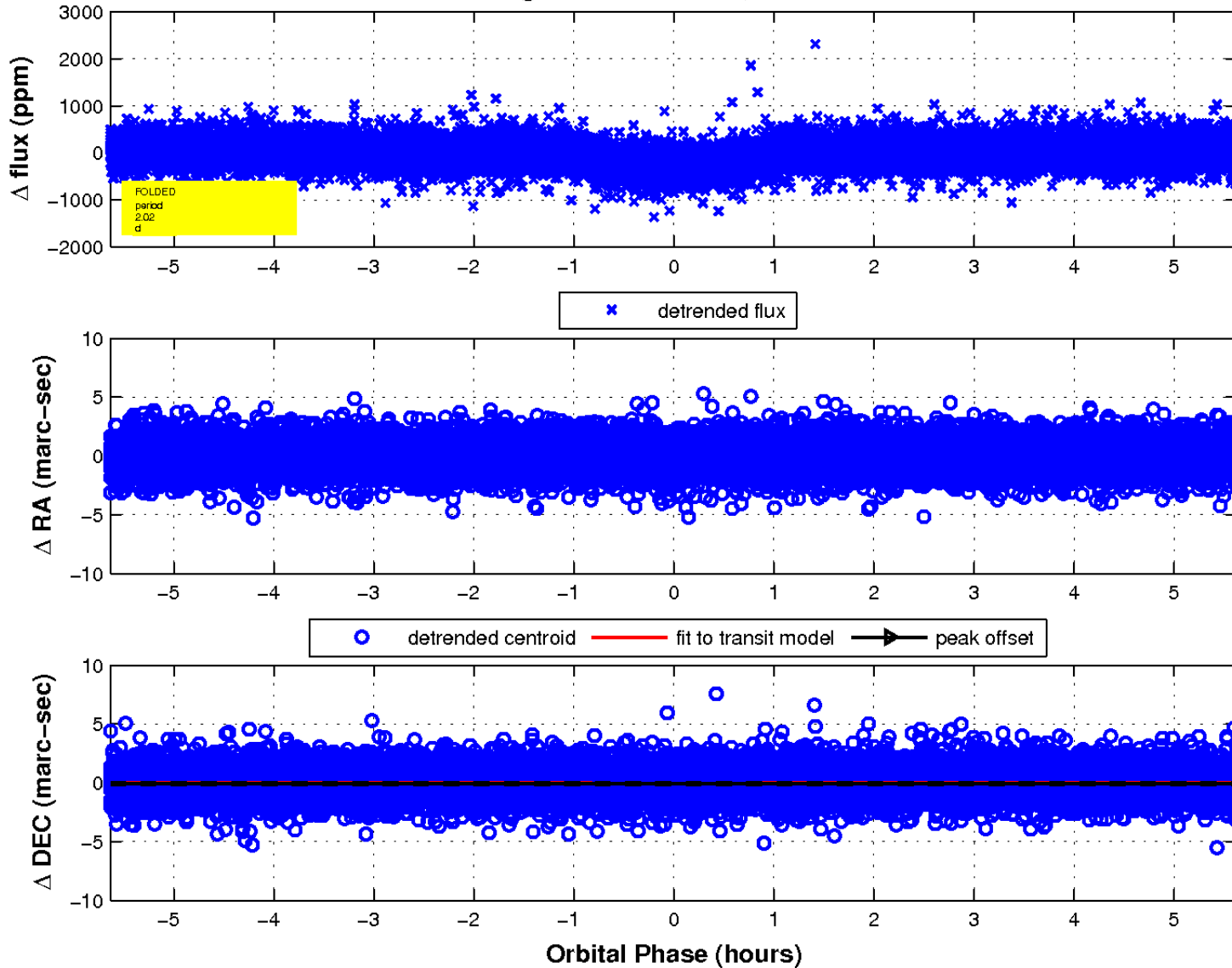
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

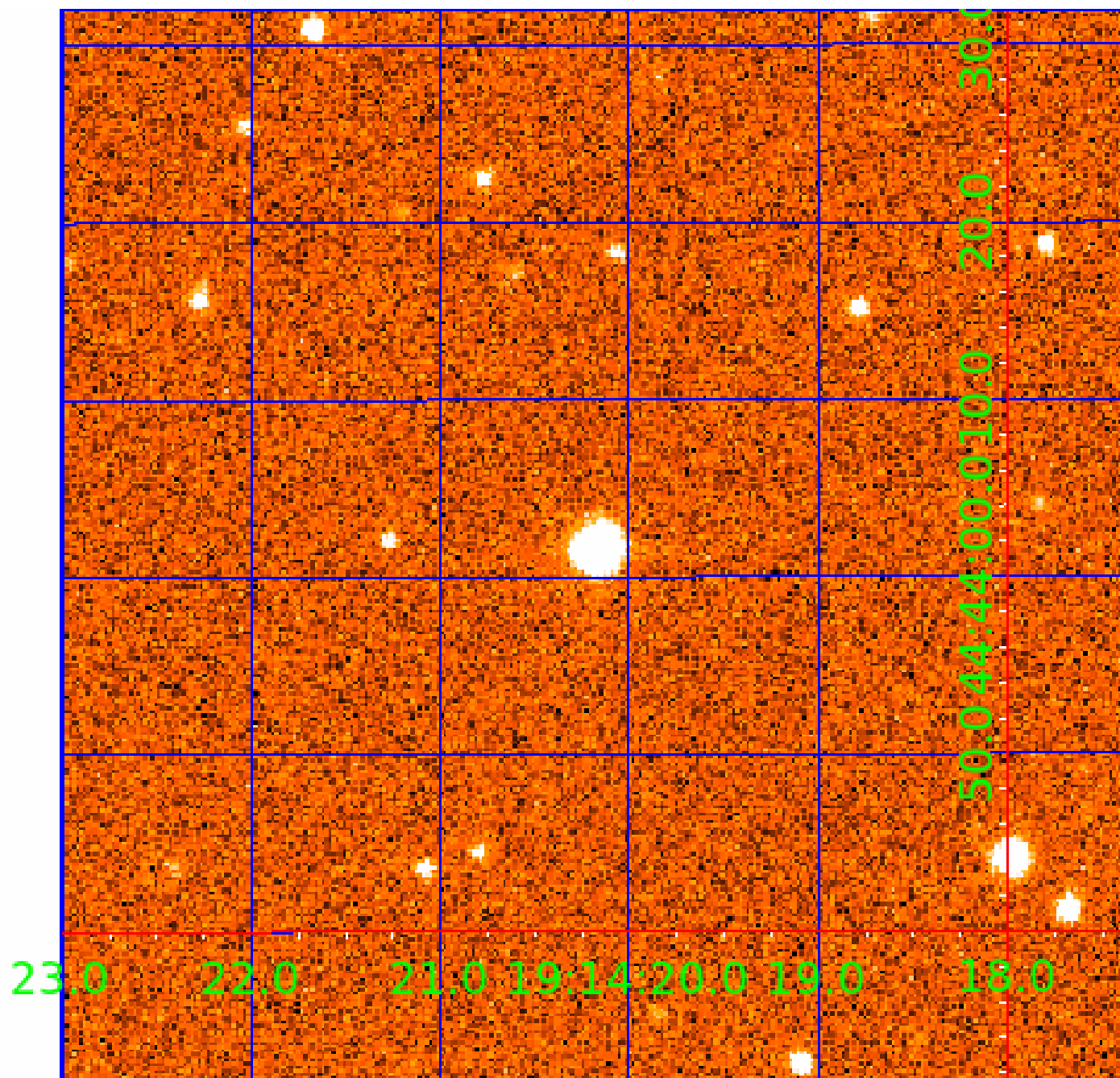


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 008616637

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})
008616637-01	OBS	0579.01	2.019999	131.690266	316.0	1.878	44.0	51.2	0.79	5103	1.67	437.57
008616637-02	OBS	0579.02	3.763040	132.592979	331.6	1.668	30.7	36.4	0.79	5103	1.79	190.90
008616637-03	OBS	No	417.306910	259.158752	583.4	4.038	7.7	7.5	0.79	5103	2.10	0.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008616637-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—INCONSISTENT_TRANS—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.

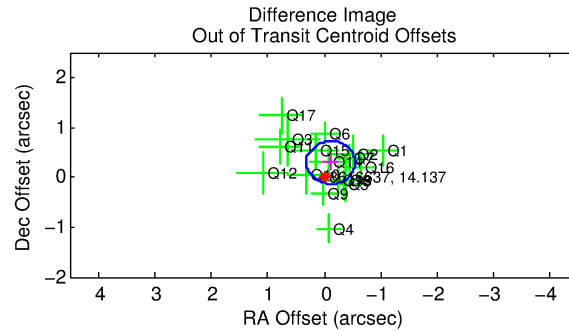
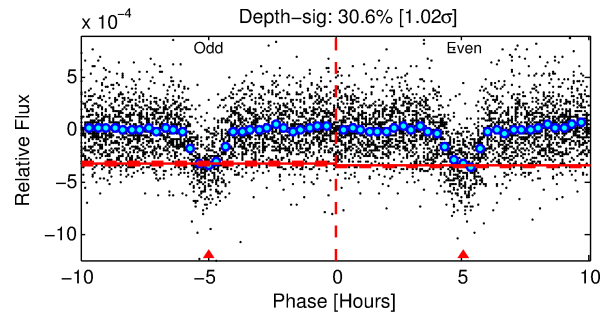
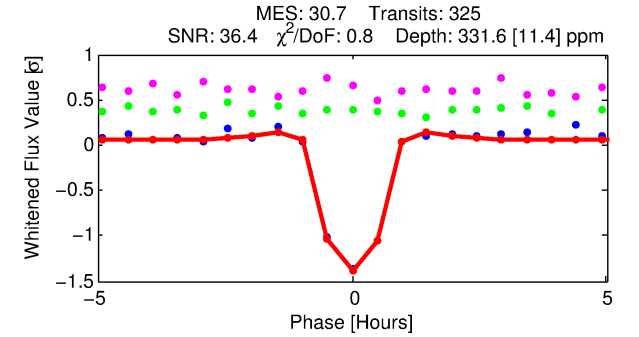
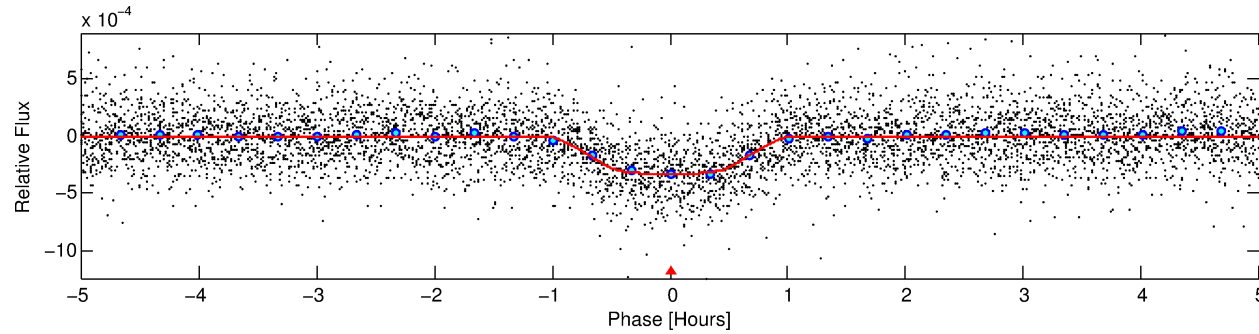
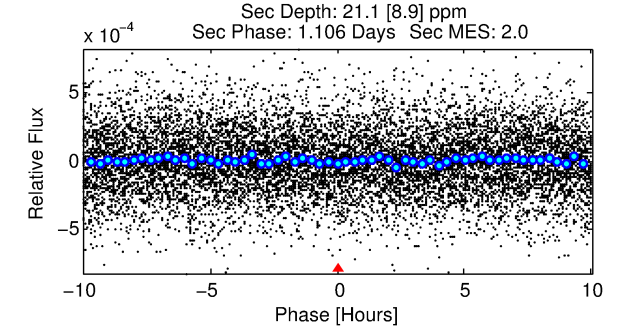
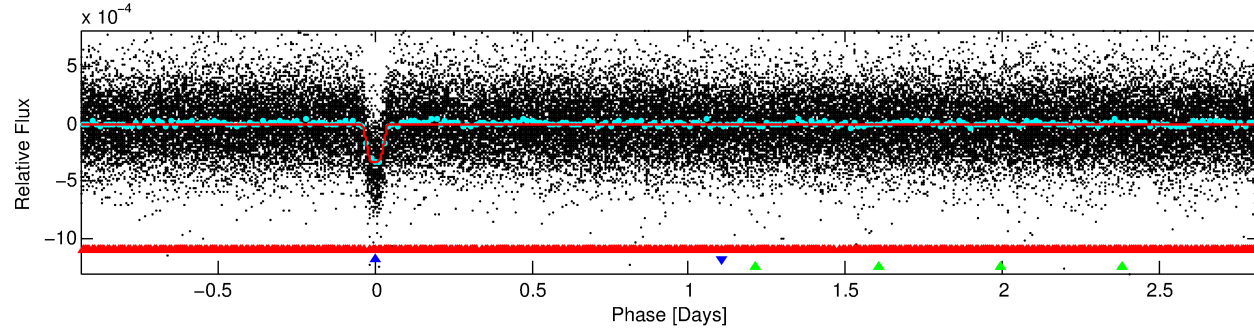
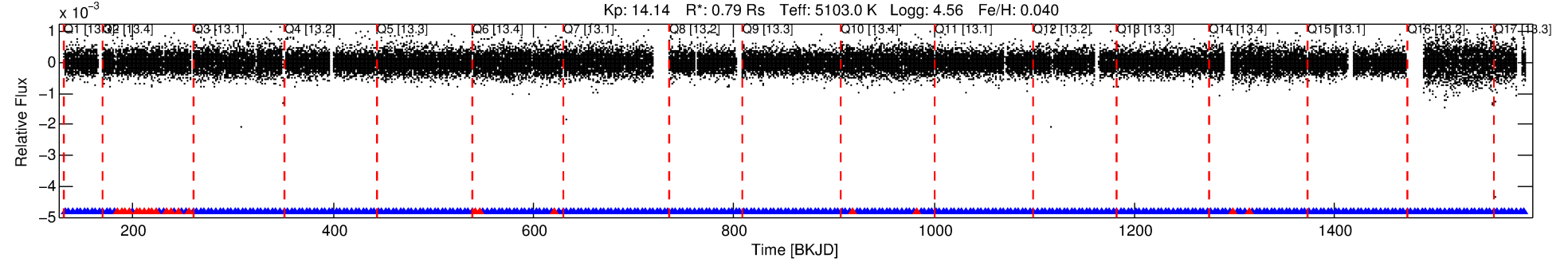
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008616637-02

No Significant Match Found

DV One-Page Summary

KIC: 8616637 Candidate: 2 of 3 Period: 3.763 d
KOI: K00579.02 Name: Kepler-190c Corr: 0.953



DV Fit Results:

Period = 3.76304 [0.00000] d
Epoch = 132.5930 [0.0008] BKJD
Rp/R* = 0.0208 [0.0034]
a/R* = 7.73 [5.12]
b = 0.92 [0.12]
Seff = 190.90 [22.99]
Teq = 948 [29] K
Rp = 1.79 [0.32] Re
a = 0.0444 [0.0026] AU
Ag = 7.15 [3.88] [1.58σ]
Teffp = 2396 [324] K [4.45σ]

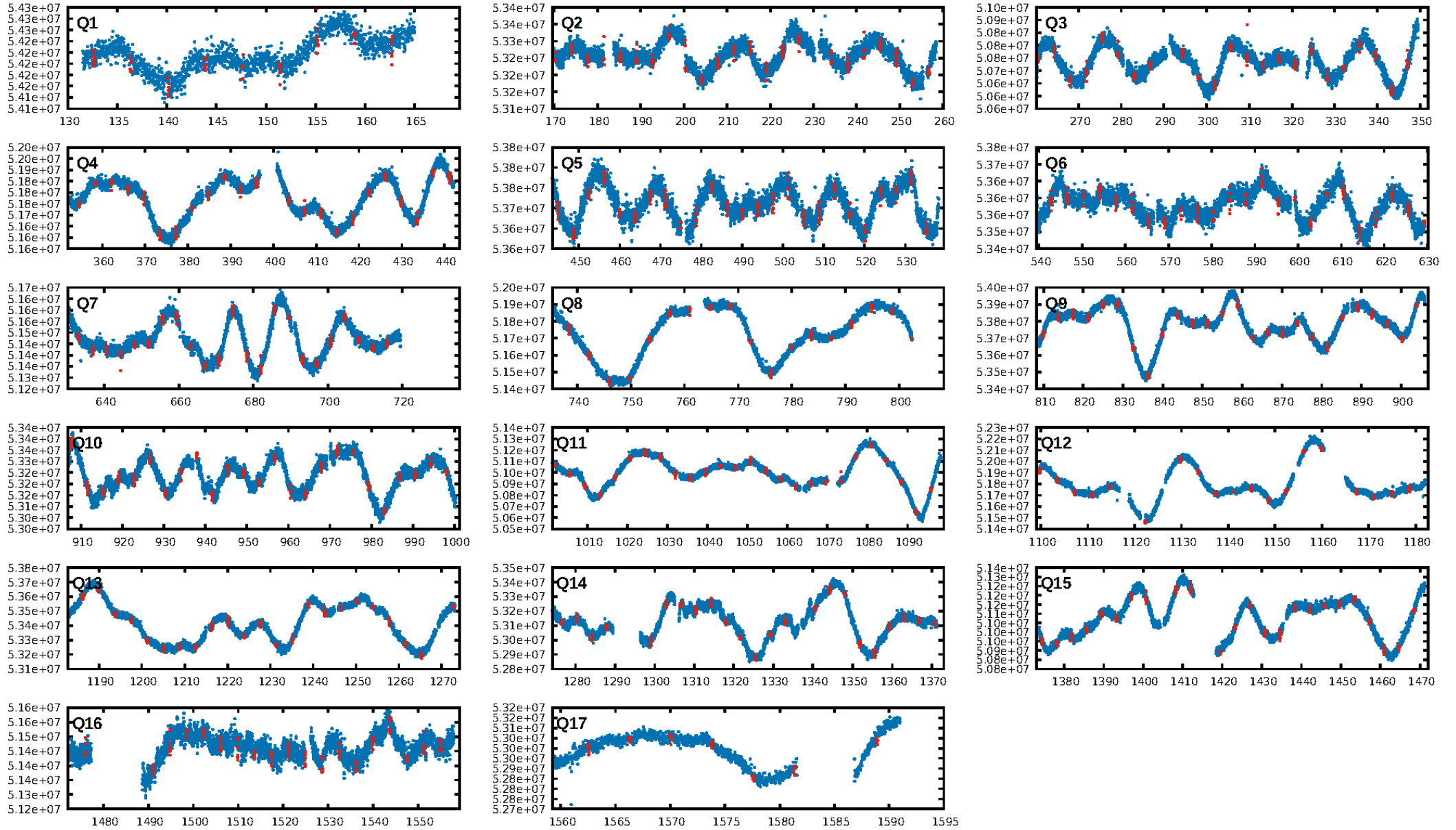
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [16.65σ]
LongPeriod-sig: 100.0% [2271.84σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.84e-196
RollingBand-fgt: 0.93 [289/310]
GhostDiagnostic-chr: 4.266
Centroid-sig: N/A
Centroid-so: 0.263 arcsec [0.84σ]
OotOffset-rm: 0.314 arcsec [2.20σ]
KicOffset-rm: 0.210 arcsec [1.41σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

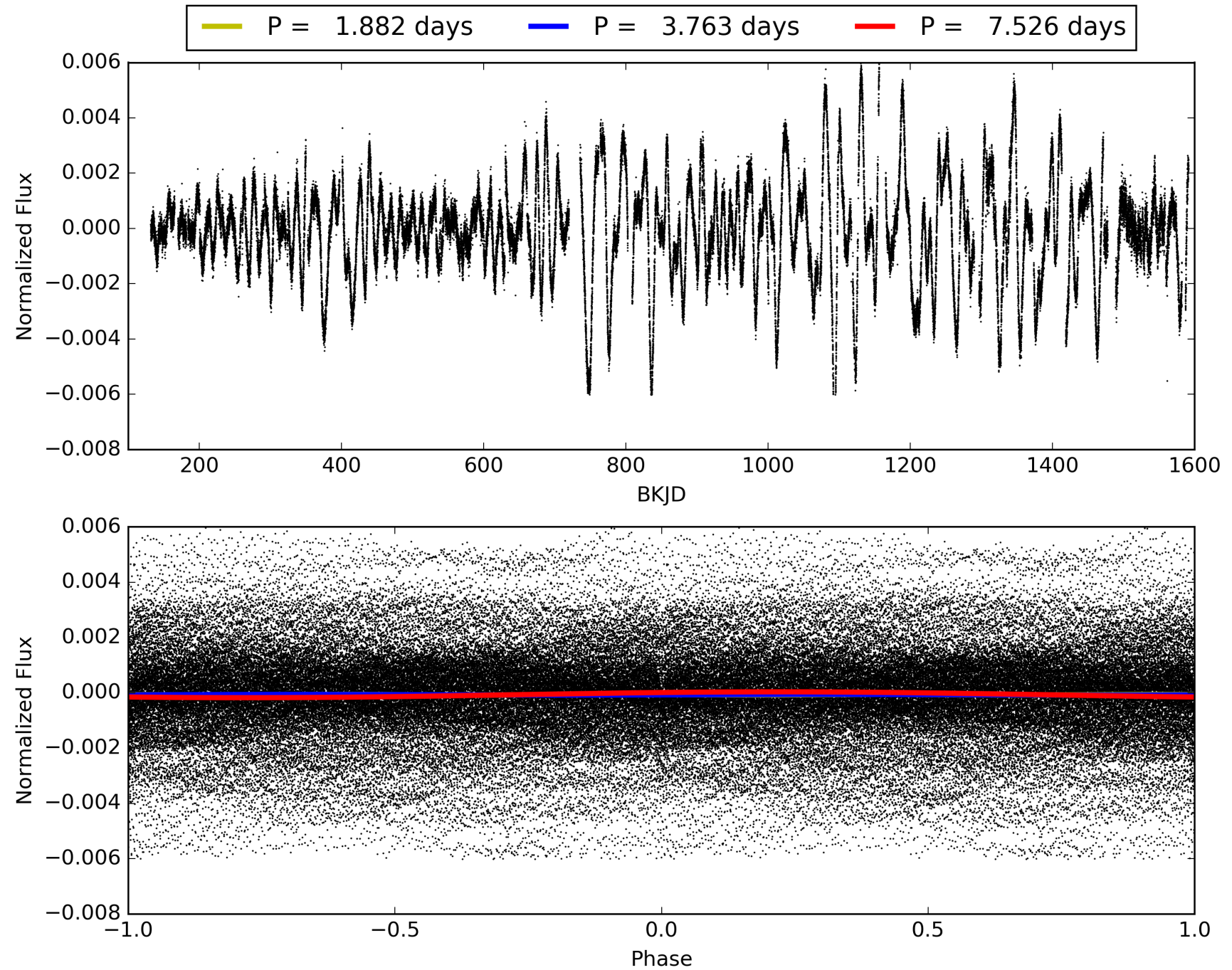
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:47:35 Z

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

TCE 008616637-02, PDC Light Curves

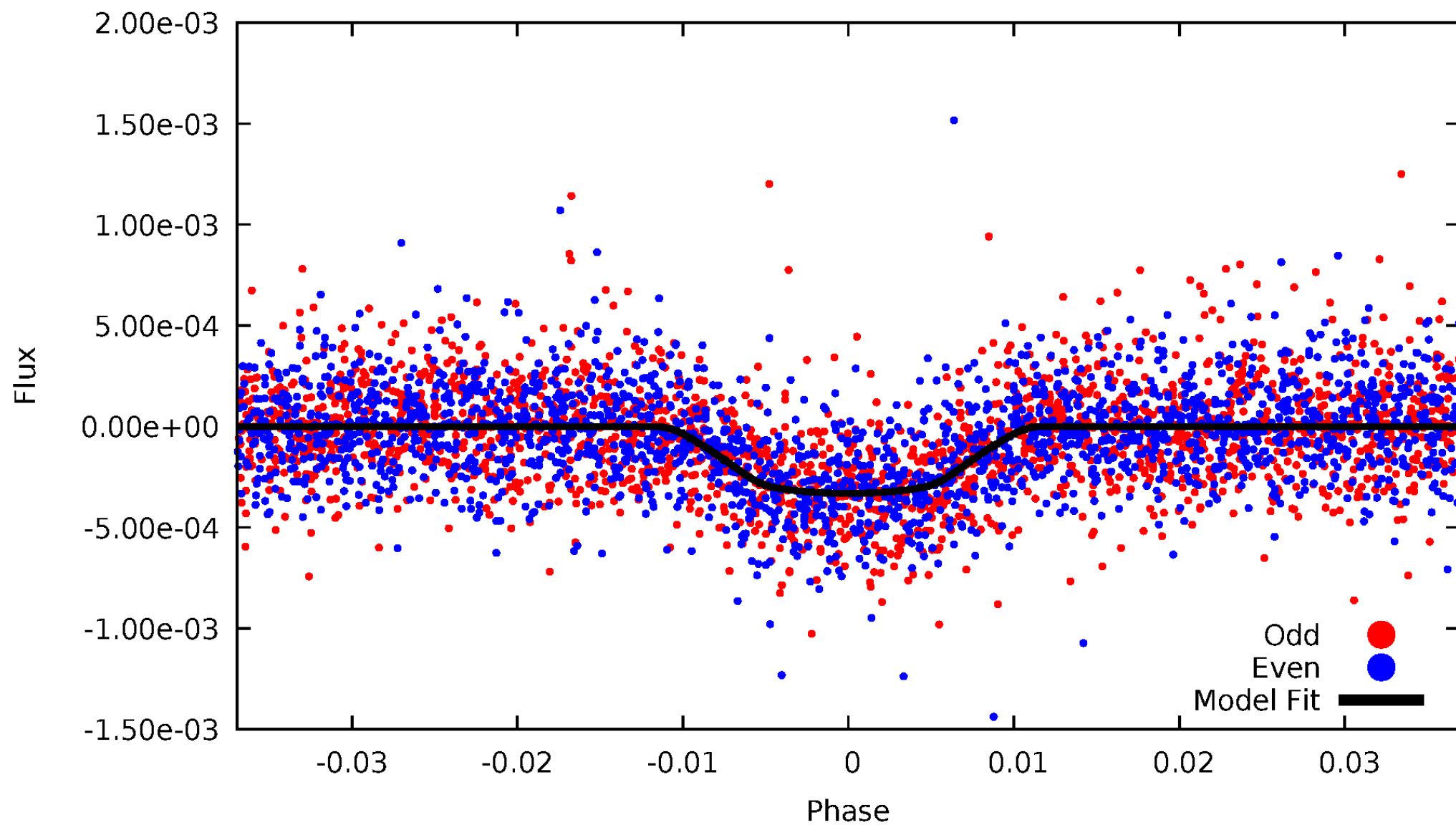


TCE 008616637-02



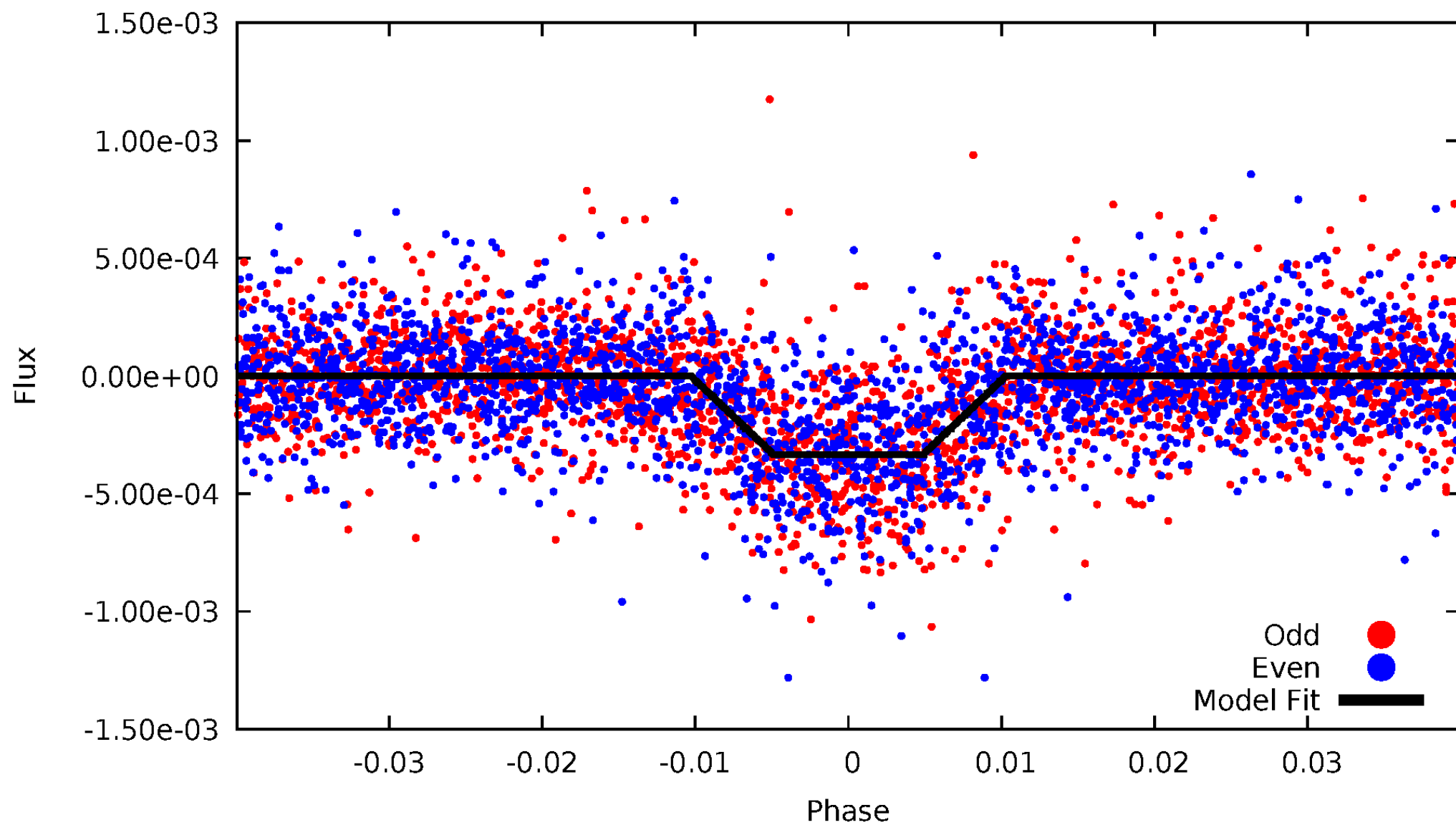
DV Odd/Even

TCE 008616637-02



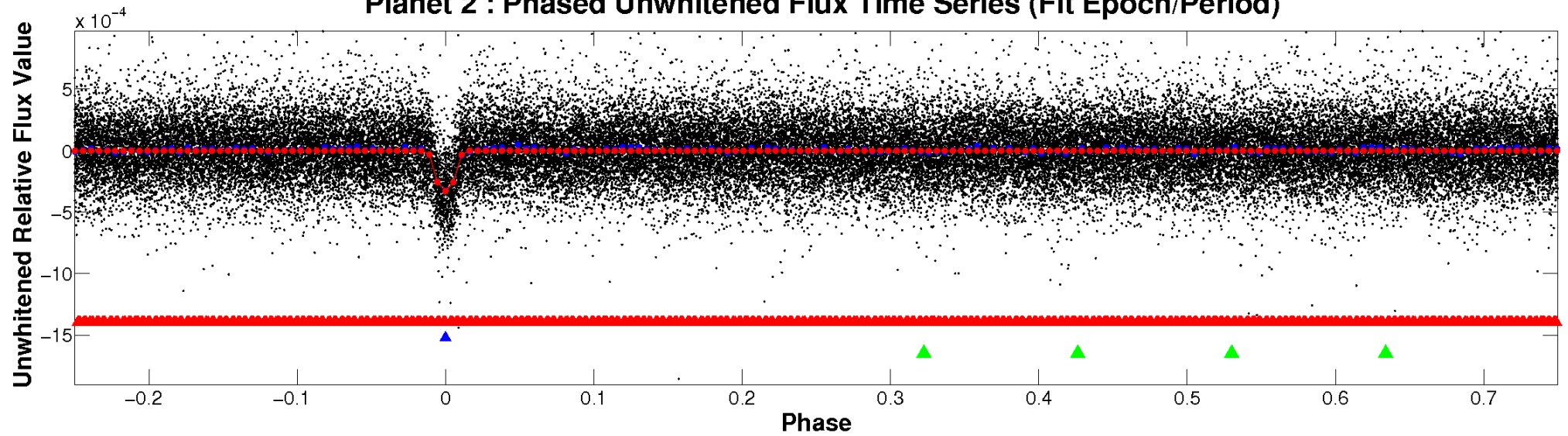
ALT Odd/Even

TCE 008616637-02

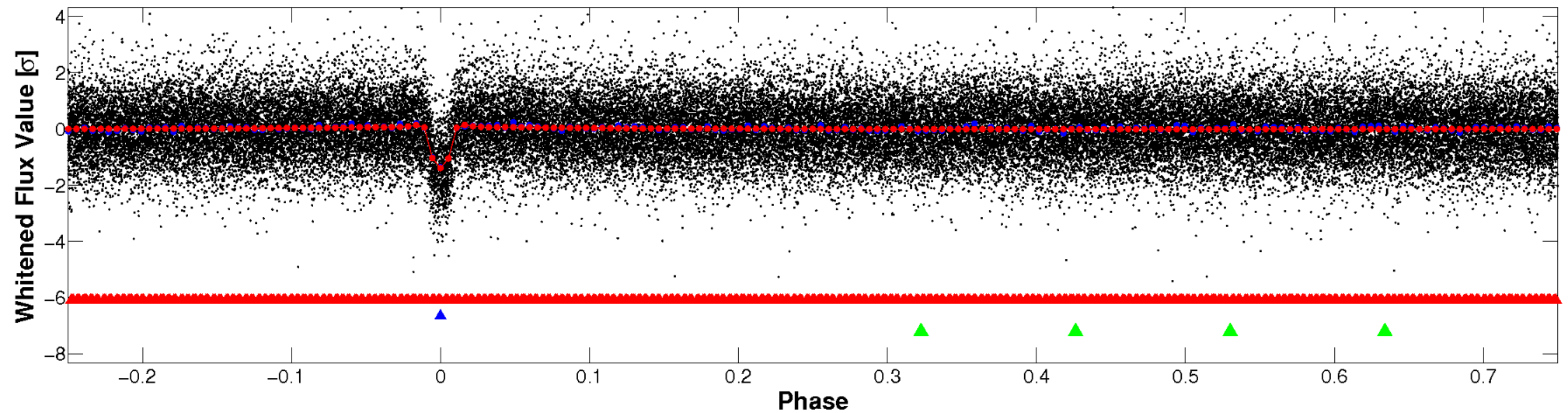


Non-Whitened Vs. Whitened Light Curve

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

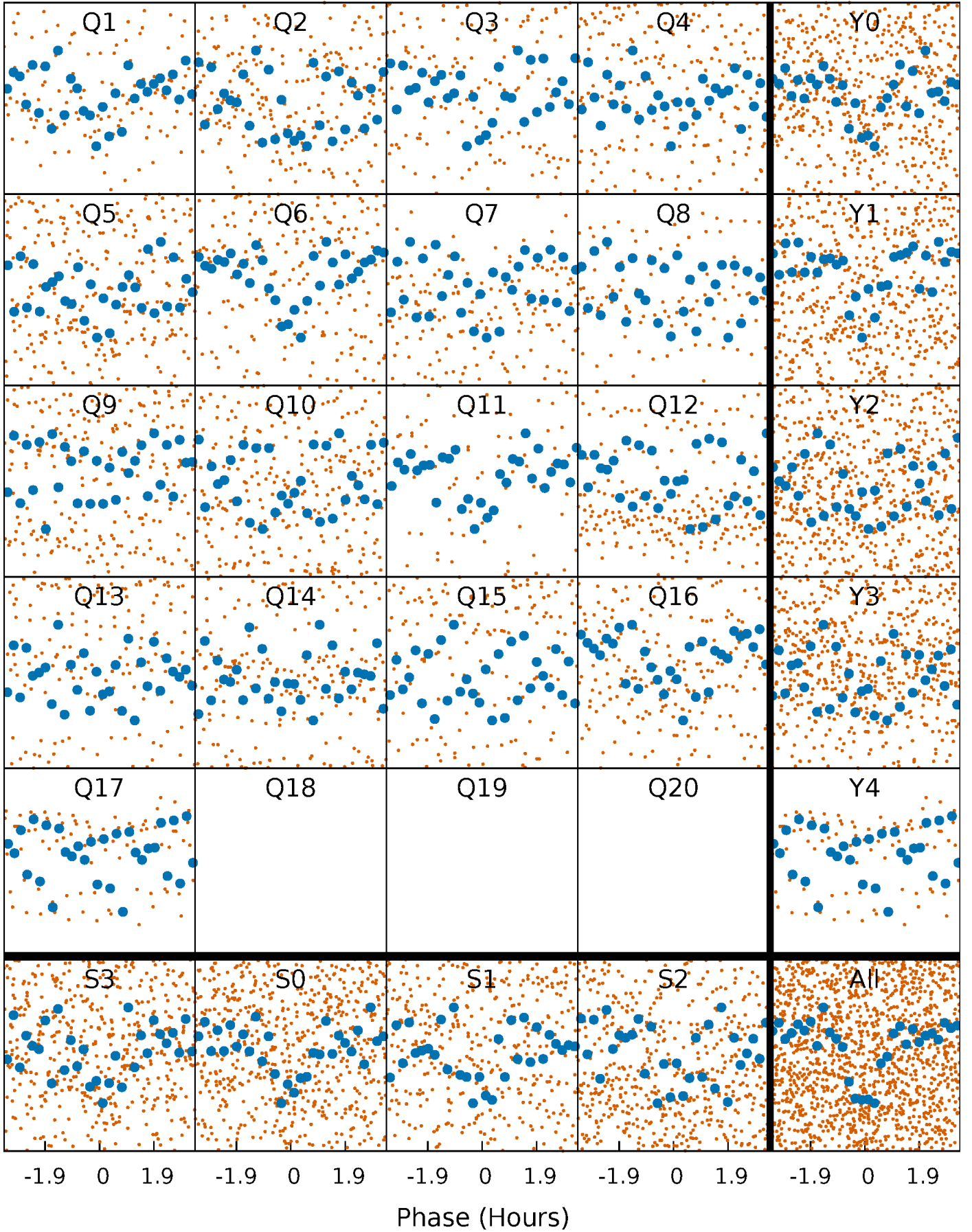


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



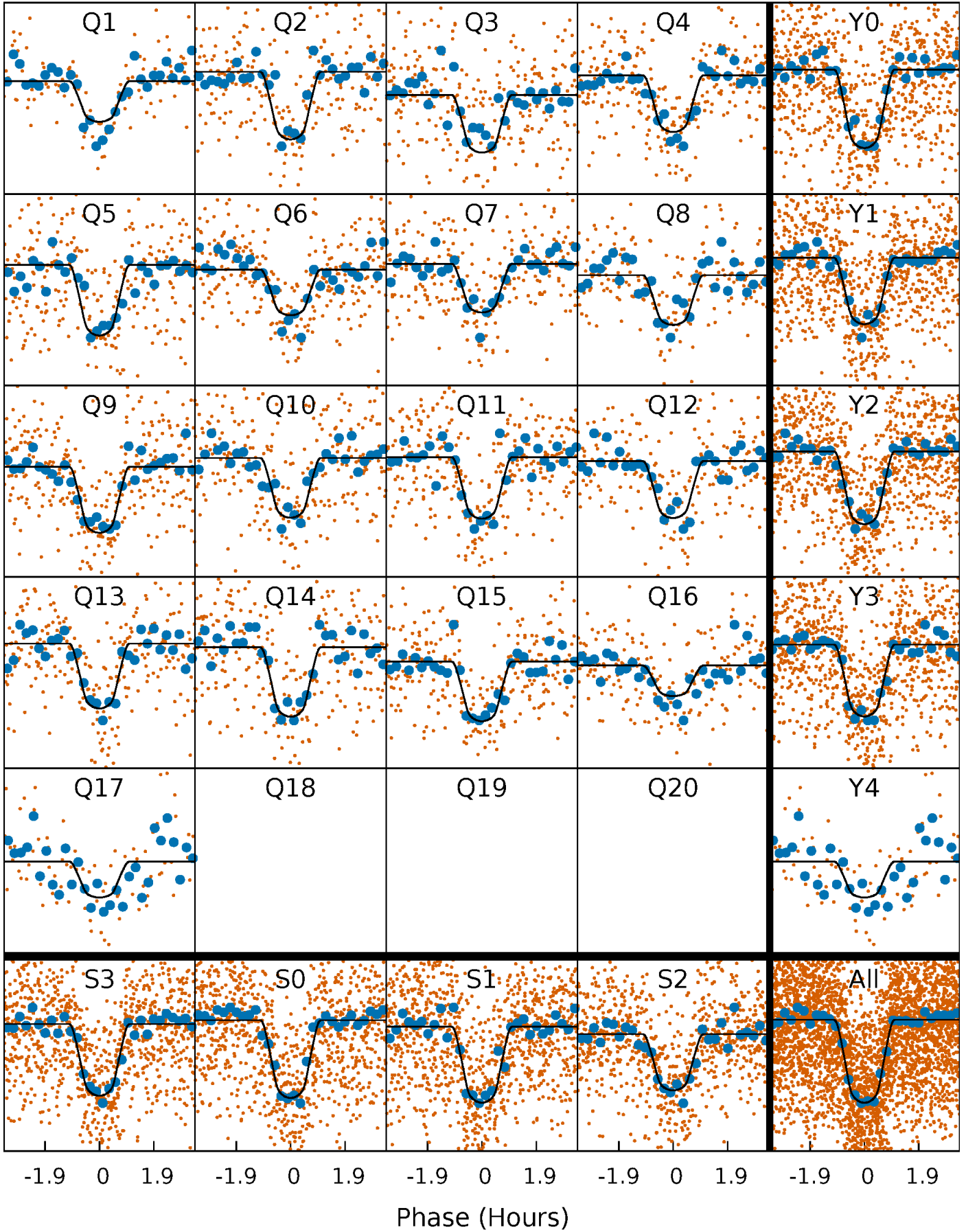
PDC Quarter-Phased Transit Curves

TCE 008616637-02 P= 3.763040 Days $T_0=132.592979$ (BKJD)



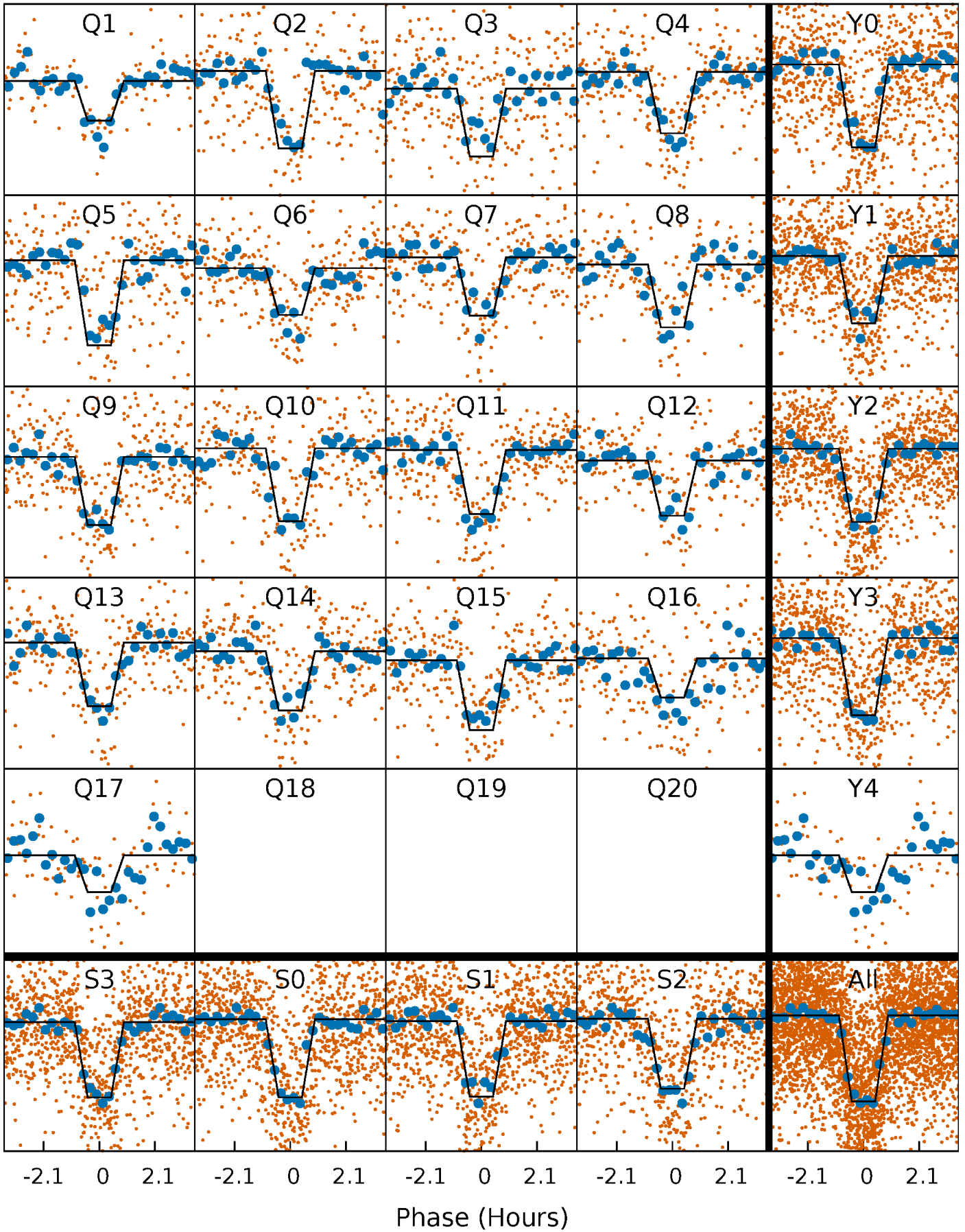
DV Quarter-Phased Transit Curves

TCE 008616637-02 P= 3.763040 Days $T_0=132.592979$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

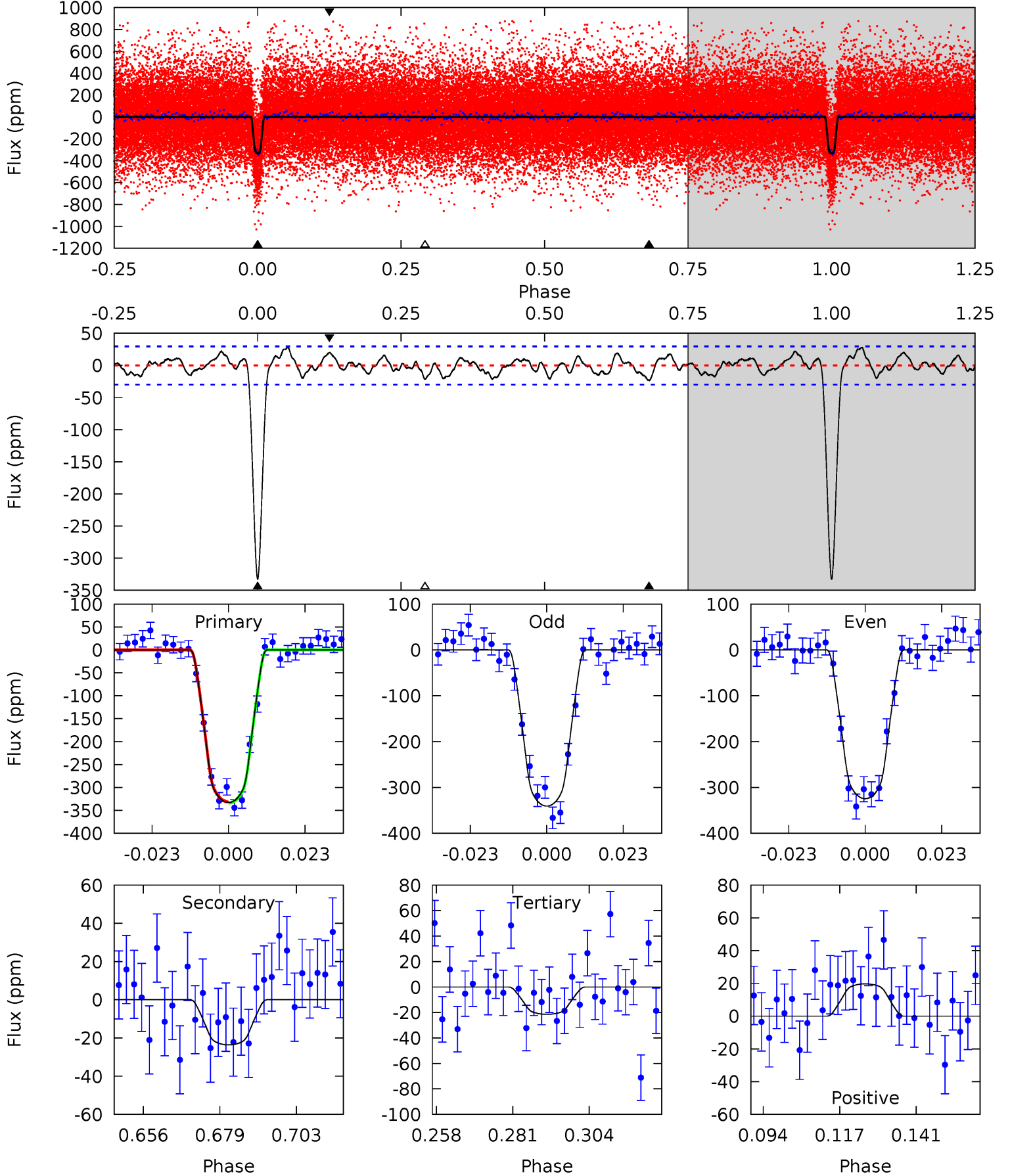
TCE 008616637-02 P= 3.763035 Days $T_0=132.594377$ (BKJD)



DV Model-Shift Uniqueness Test

008616637-02, P = 3.763040 Days, E = 128.829939 Days

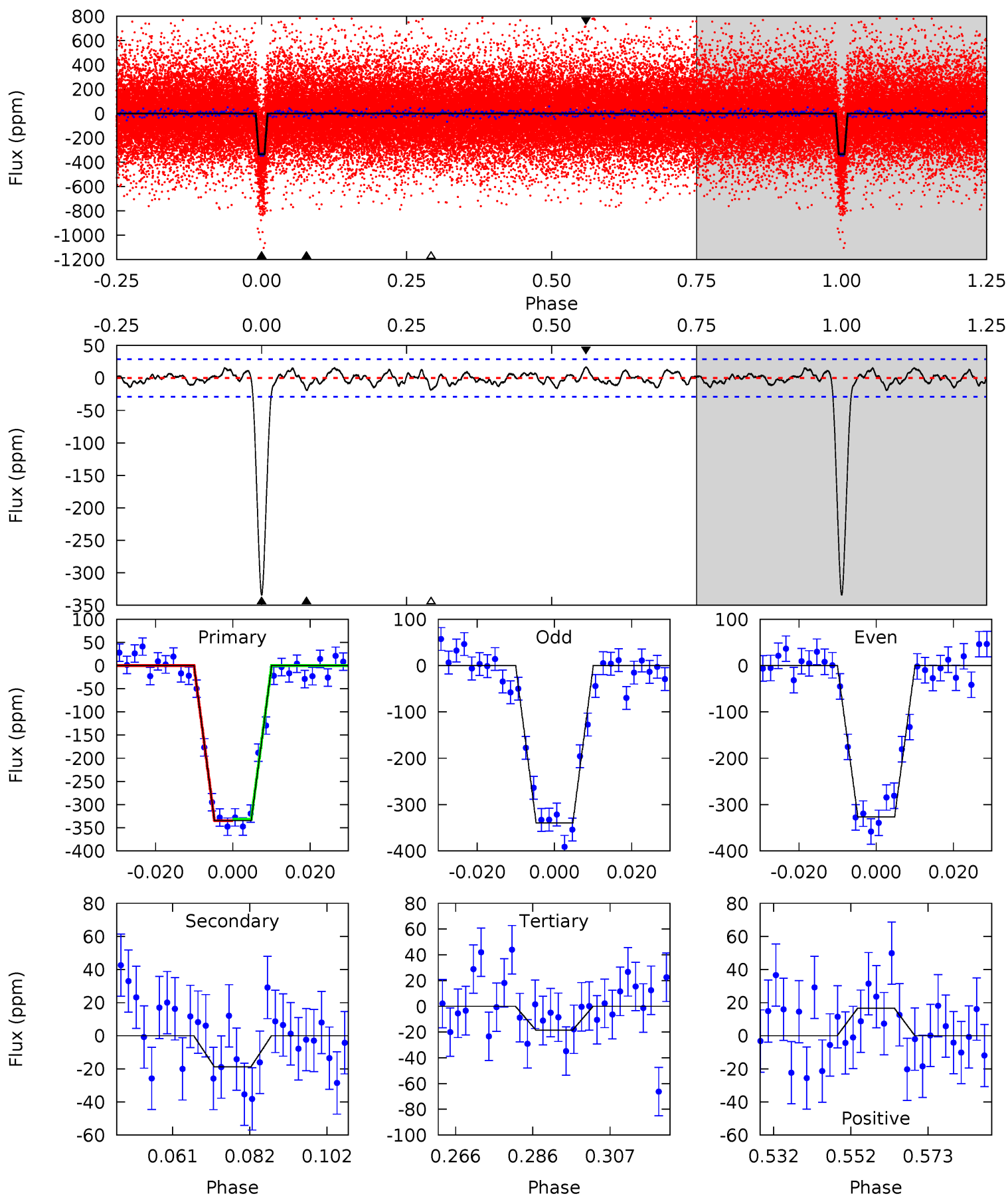
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.3	3.86	3.49	3.22	4.86	2.27	1.64	50.8	51.1	0.37	0.64	1.32	1.01	0.08	0.20



Alt Model-Shift Uniqueness Test

008616637-02, P = 3.763035 Days, E = 128.831342 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.5	3.17	3.13	2.81	4.89	2.32	1.19	53.4	53.7	0.04	0.36	1.06	1.01	0.05	0.23



Stellar Parameters For KIC 008616637

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5103^{+101}_{-101}	$4.562^{+0.032}_{-0.052}$	$0.040^{+0.150}_{-0.150}$	$0.787^{+0.051}_{-0.039}$	$0.823^{+0.043}_{-0.047}$	$2.381^{+0.341}_{-0.389}$
	+2%/-2%	+1%/-1%	+375%/-375%	+6%/-5%	+5%/-6%	+14%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 008616637-02 / KOI 0579.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24 ± 6	$1.80^{+0.29}_{-0.30}$	1329^{+34}_{-34}	3050^{+221}_{-172}	$7.869^{+4.240}_{-2.580}$
Alt.	-19 ± 6	$1.59^{+0.29}_{-0.31}$	1330^{+33}_{-34}	3071^{+238}_{-222}	$8.124^{+4.762}_{-3.328}$

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

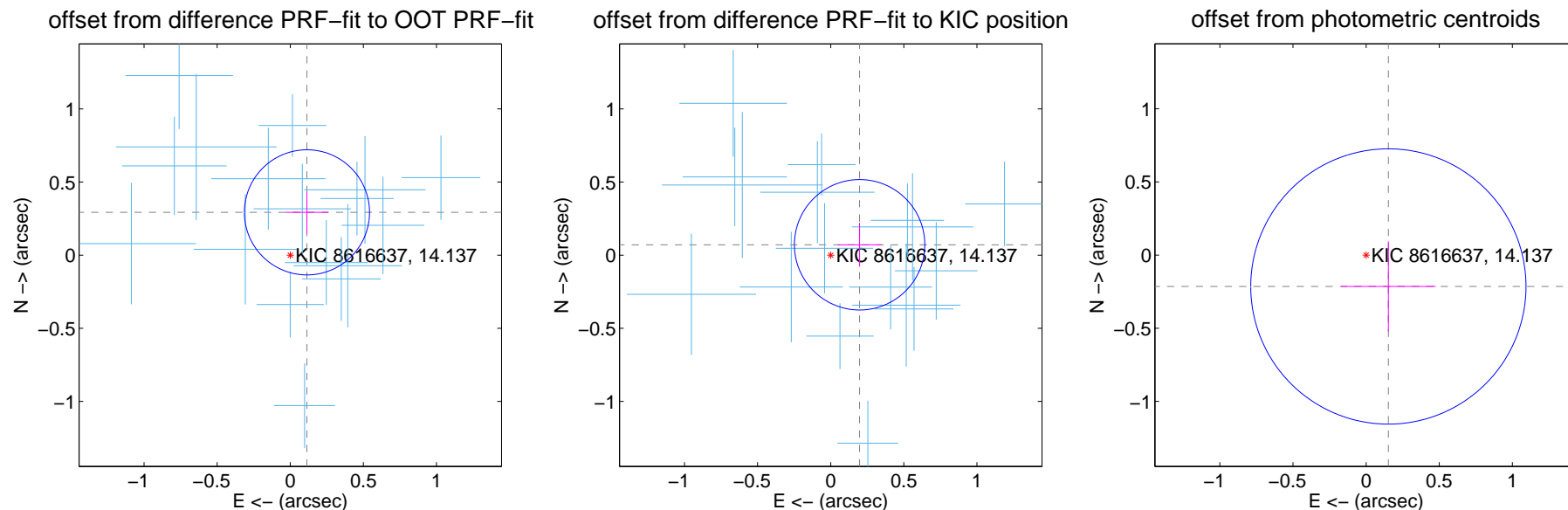
DV Centroid Data

Supplemental centroid analysis for 008616637-02. Kepler magnitude: 14.14. Transit SNR 36.38

There are 17 quarters with good PRF difference image offsets

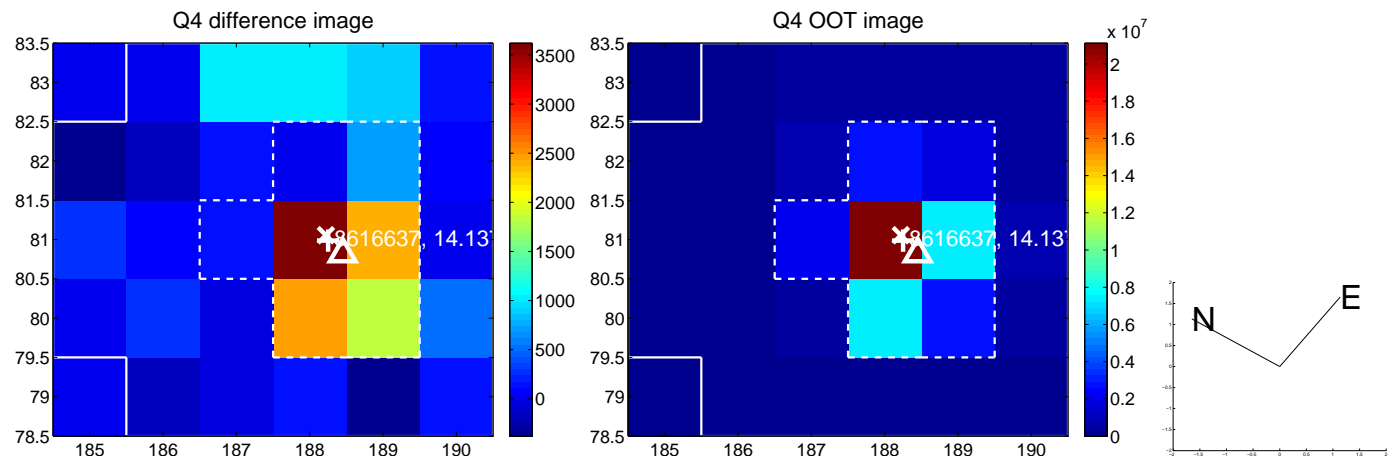
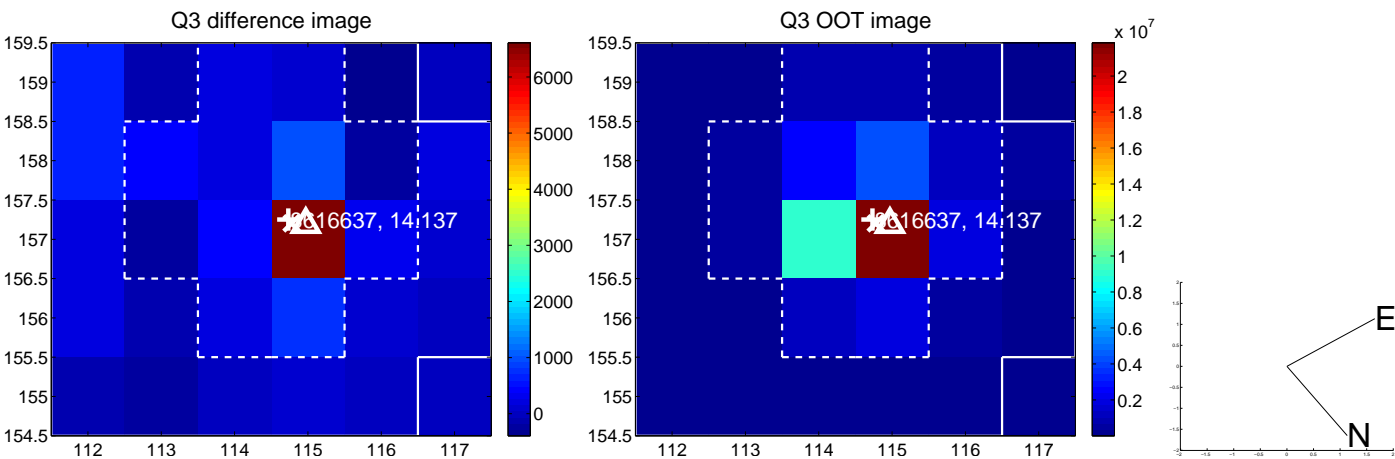
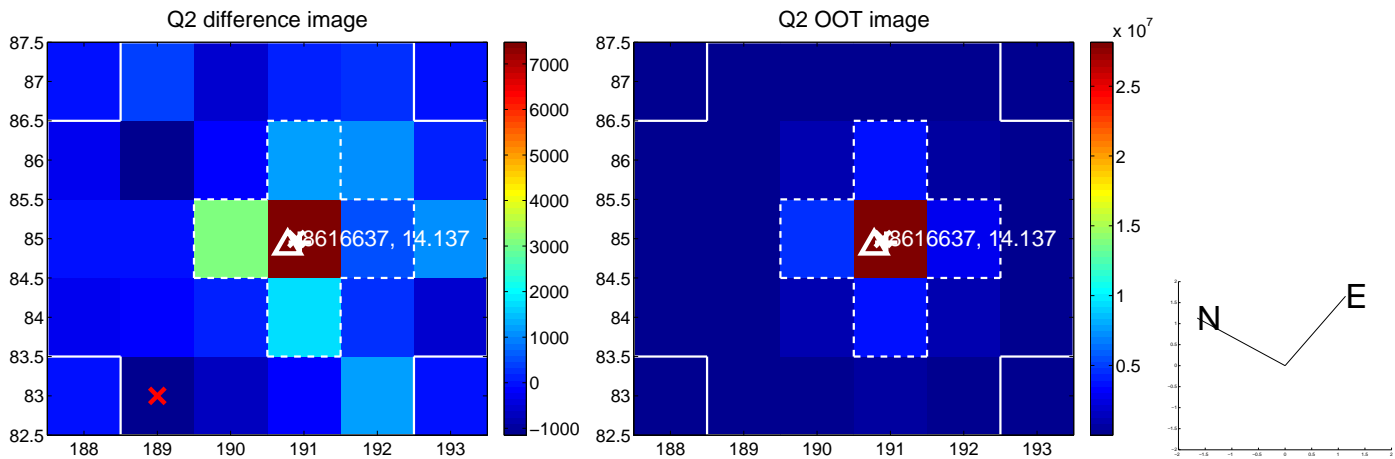
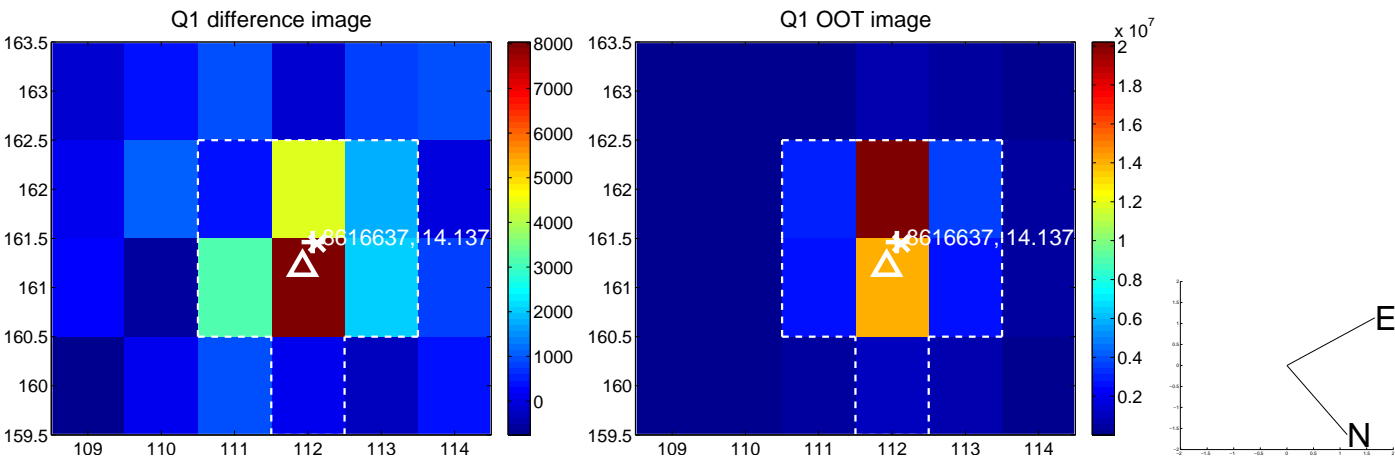
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.314 ± 0.143	2.20	-0.114 ± 0.146	0.293 ± 0.142
PRF-fit source offset from KIC position	0.210 ± 0.149	1.41	-0.198 ± 0.148	0.071 ± 0.150
photometric centroid source offset	0.26 ± 0.31	0.84	-0.15 ± 0.32	-0.21 ± 0.31

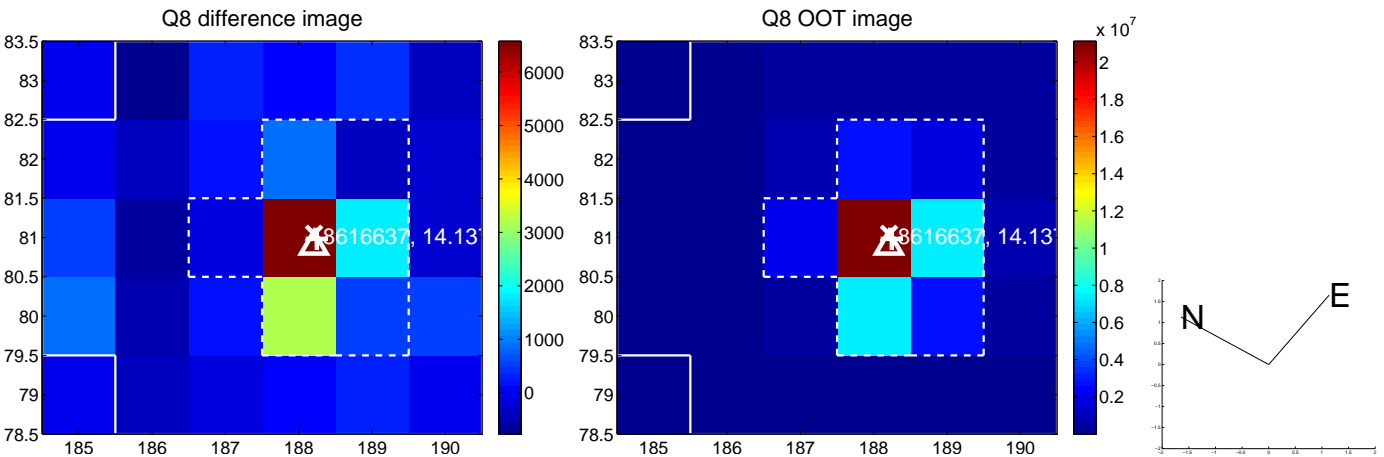
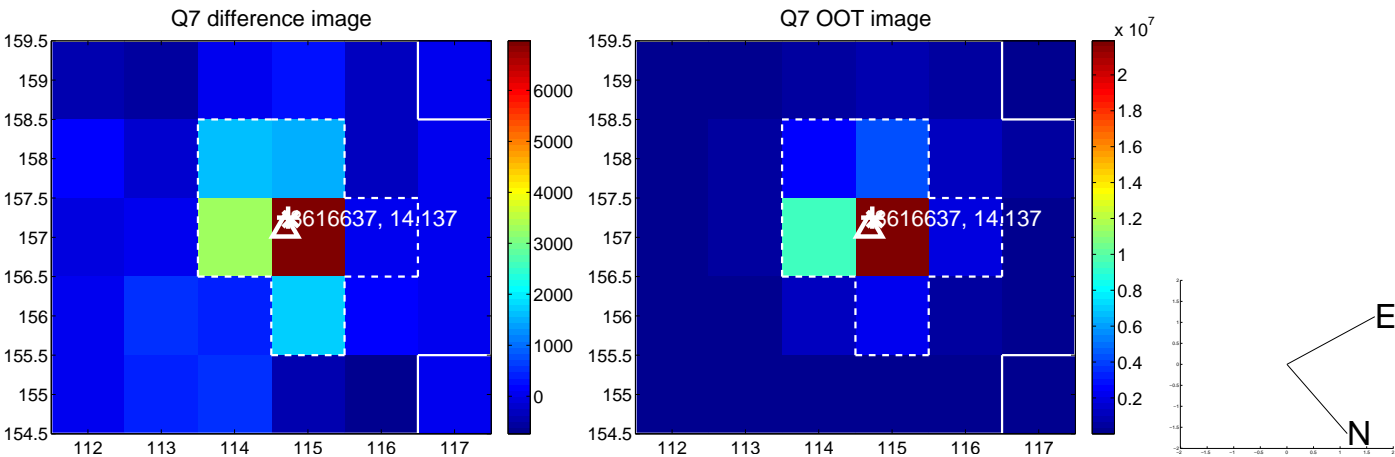
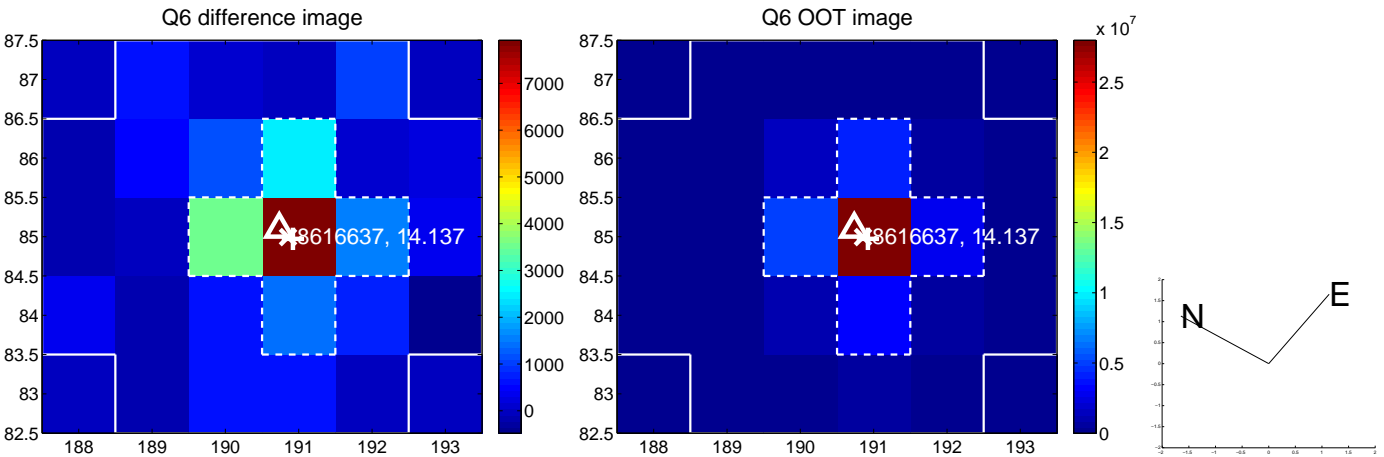
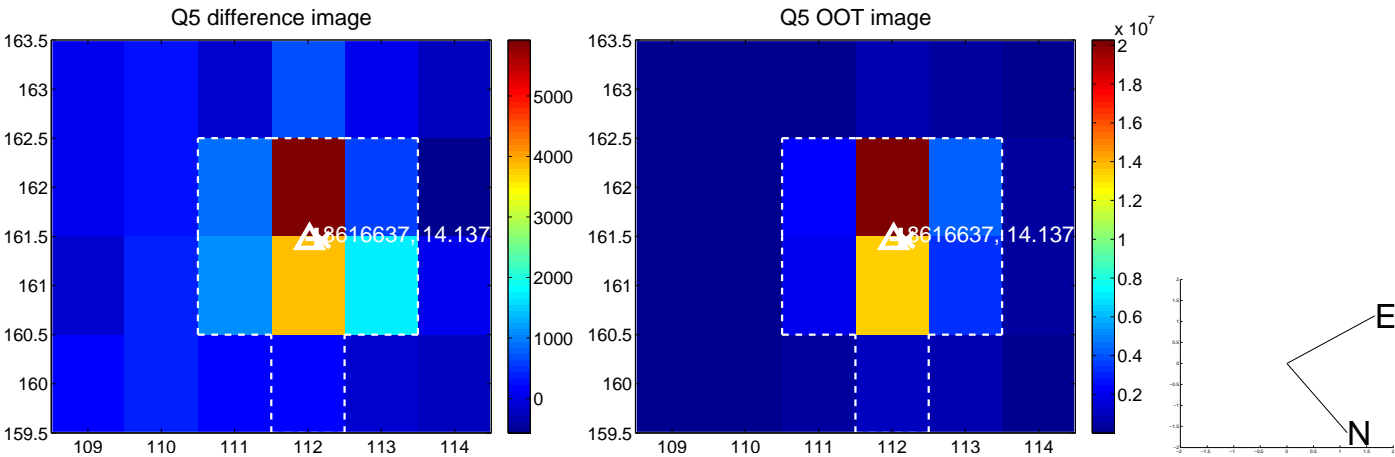


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

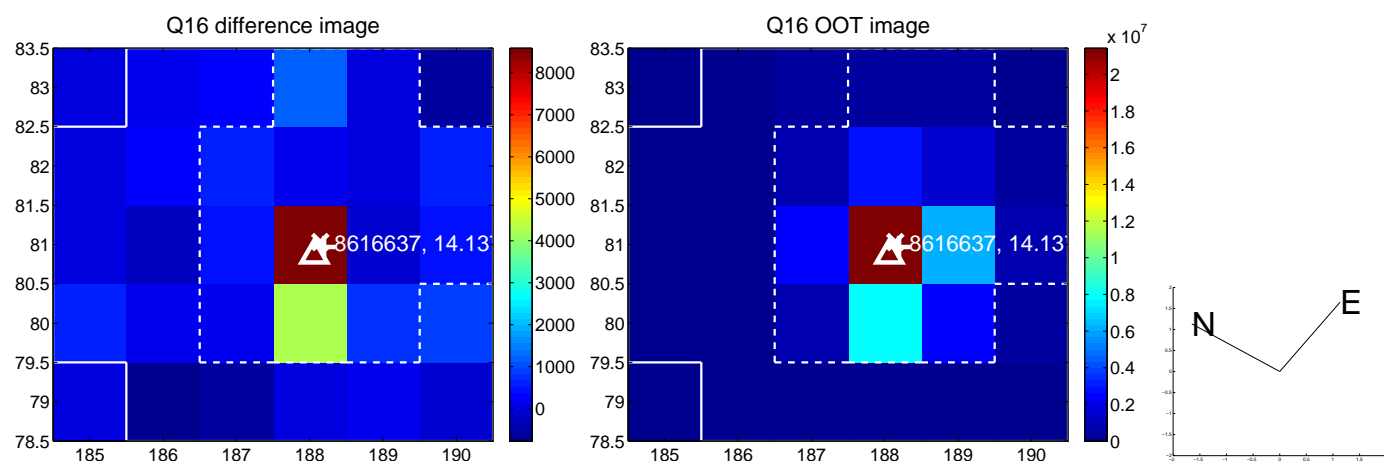
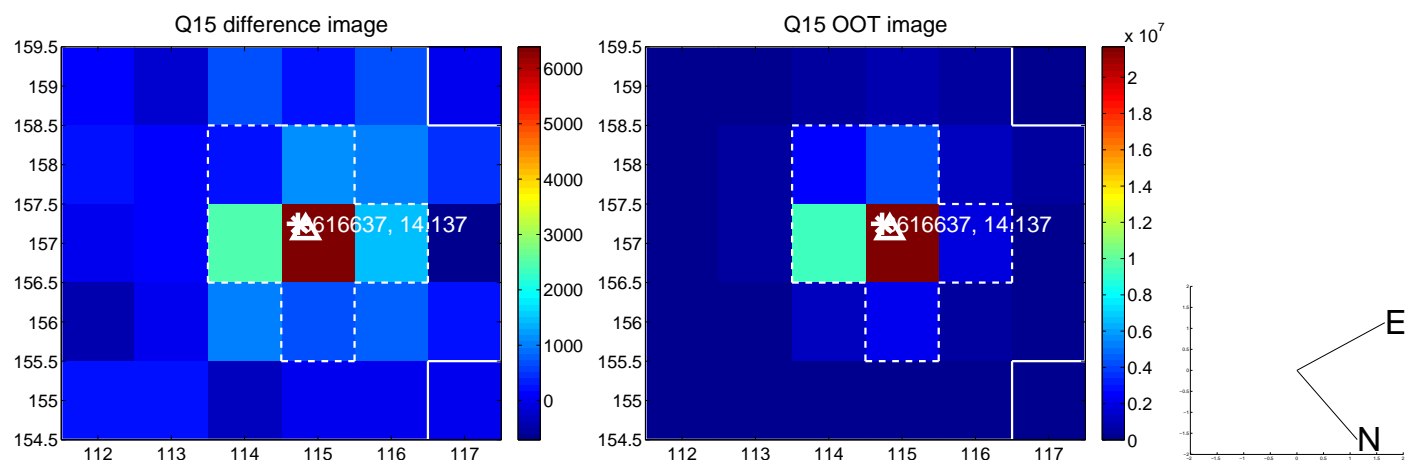
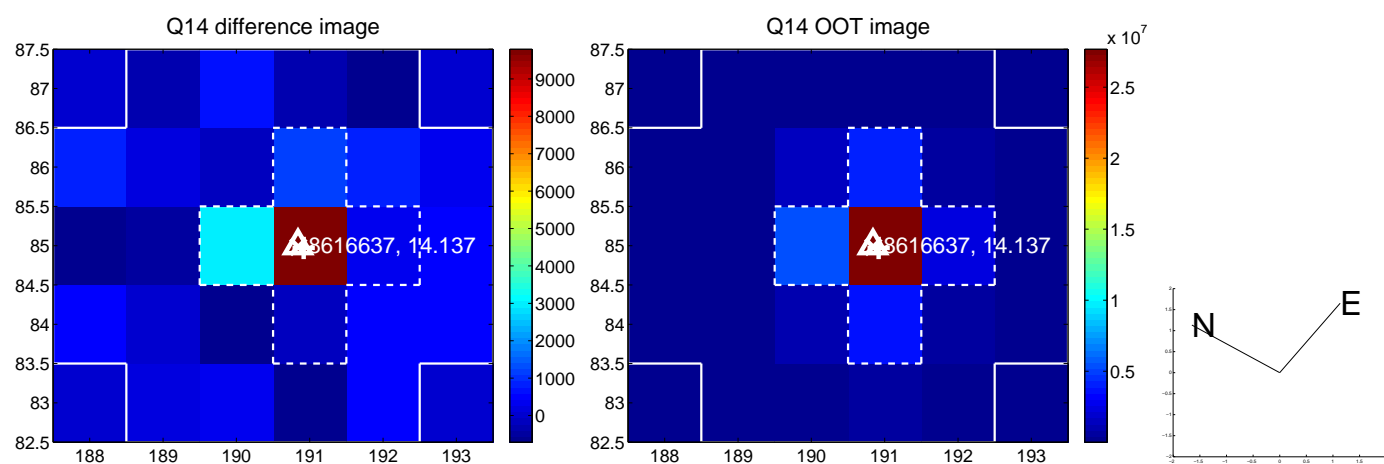
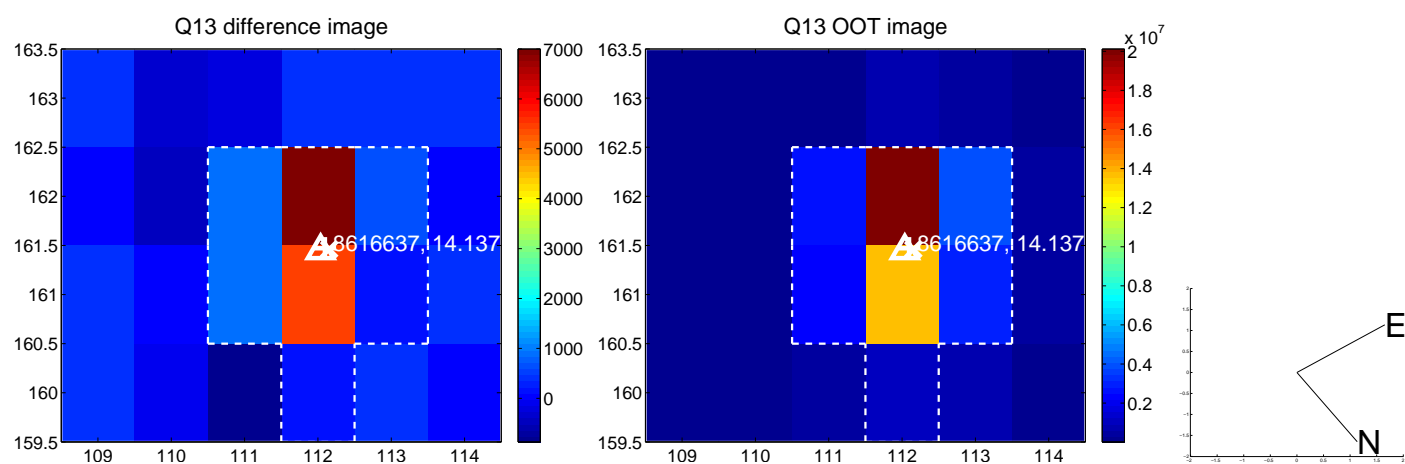
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



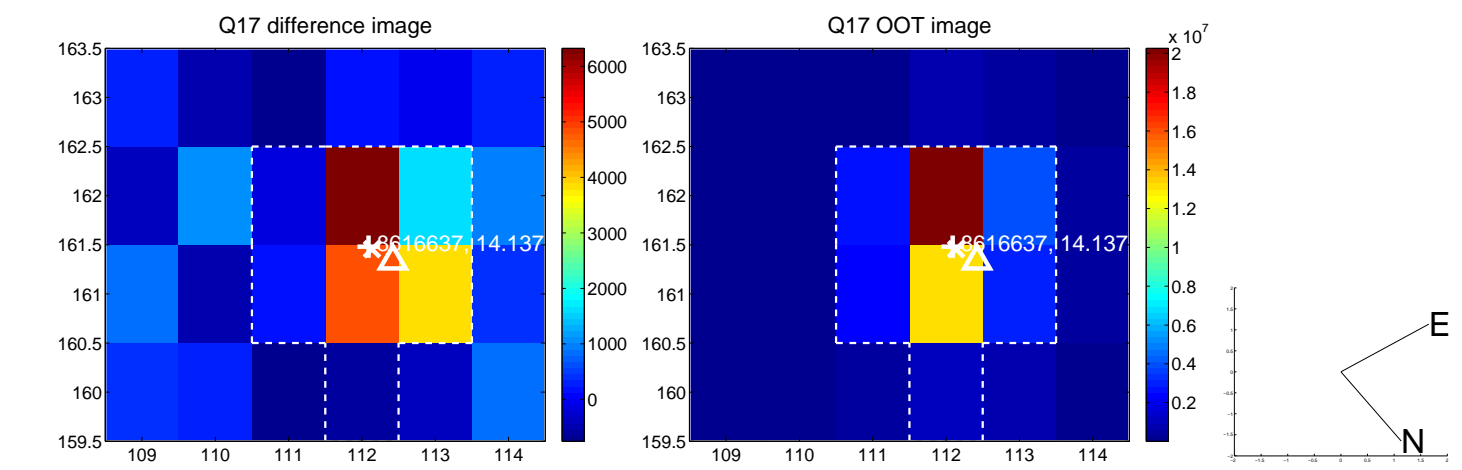
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



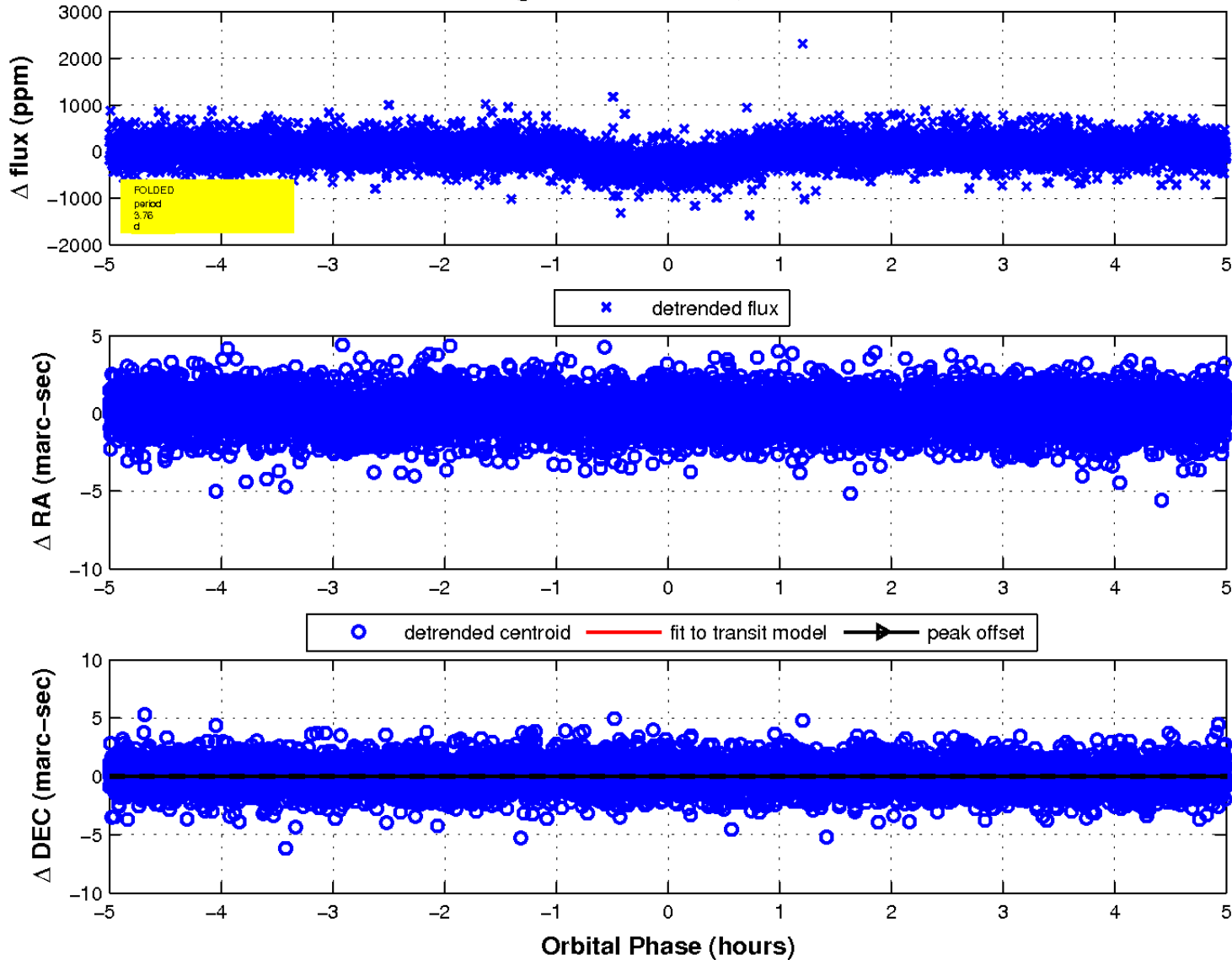
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

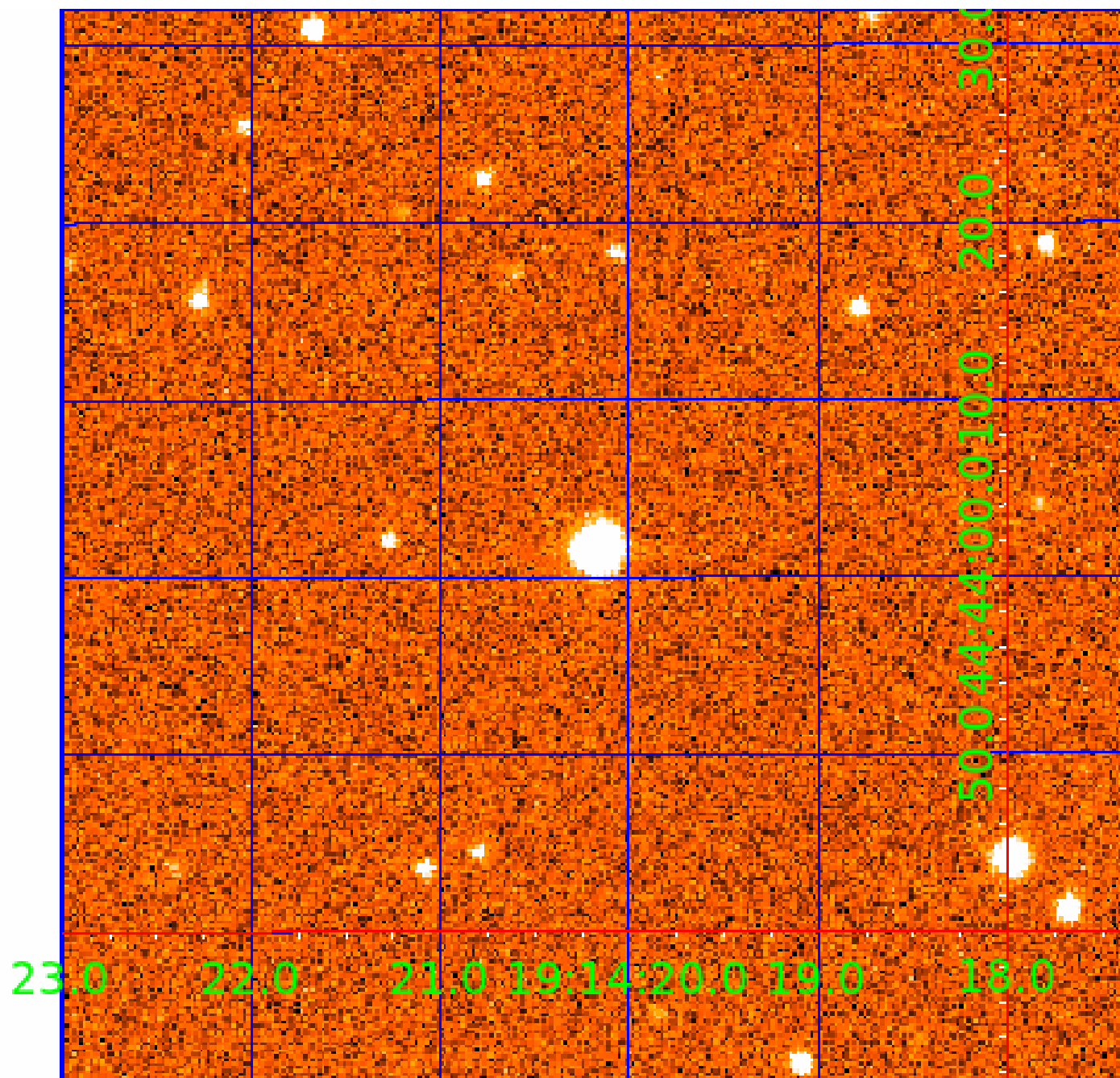


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 008616637

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})
008616637-01	OBS	0579.01	2.019999	131.690266	316.0	1.878	44.0	51.2	0.79	5103	1.67	437.57
008616637-02	OBS	0579.02	3.763040	132.592979	331.6	1.668	30.7	36.4	0.79	5103	1.79	190.90
008616637-03	OBS	No	417.306910	259.158752	583.4	4.038	7.7	7.5	0.79	5103	2.10	0.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008616637-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008616637-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—INCONSISTENT_TRANS—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.

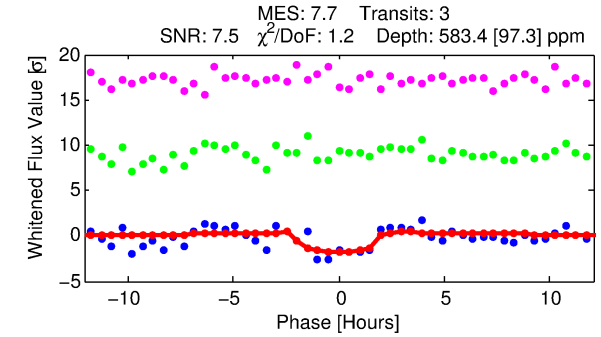
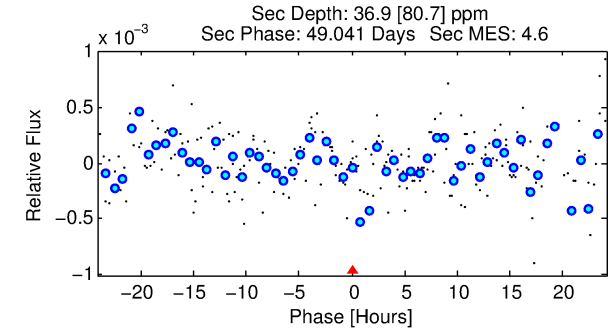
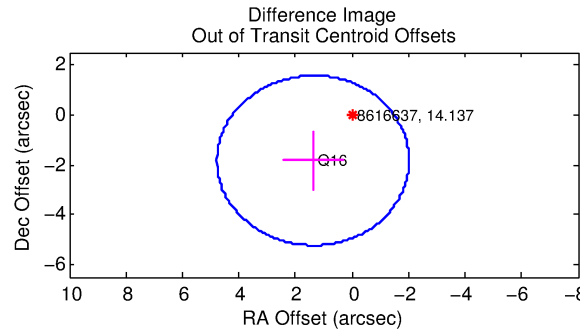
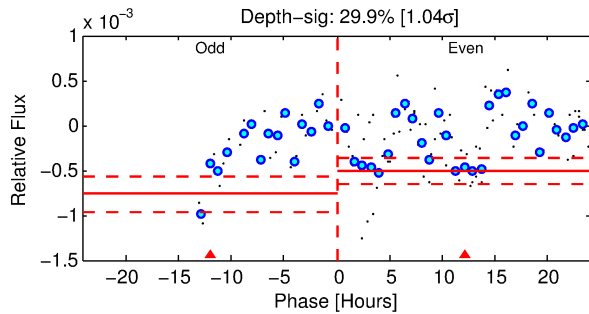
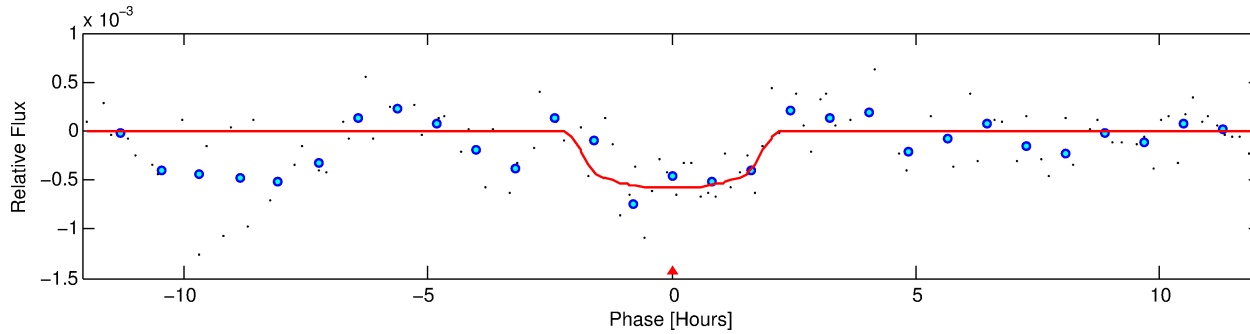
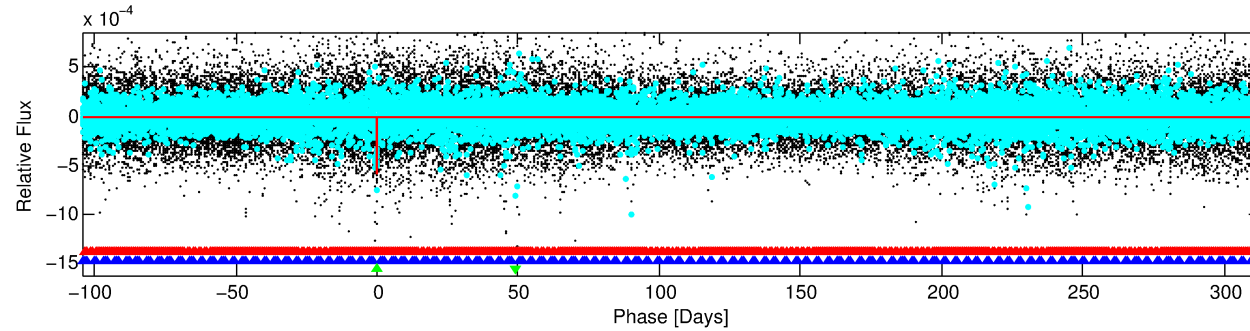
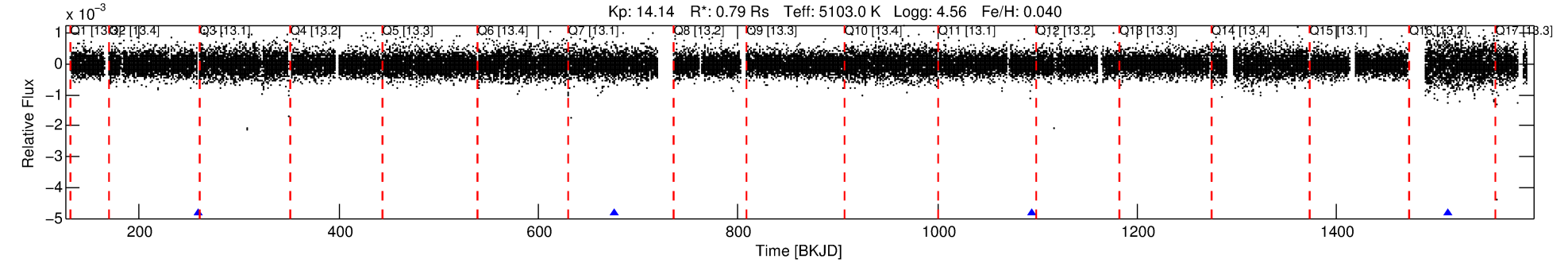
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008616637-03

No Significant Match Found

DV One-Page Summary

KIC: 8616637 Candidate: 3 of 3 Period: 417.307 d
KOI: K00579 Name: Kepler-190 Corr: No Ephemeris Match



DV Fit Results:

Period = 417.30691 [0.00850] d
Epoch = 259.1588 [0.0176] BKJD
Rp/R* = 0.0244 [0.0422]
a/R* = 529.04 [3342.75]
b = 0.77 [3.32]
Seff = 0.36 [0.04]
Teq = 197 [6] K
Rp = 2.10 [3.63] Re
a = 1.0248 [0.0603] AU
Ag = 4841.22 [19815.26] [0.24 σ]
Teffp = 2544 [2603] K [0.90 σ]

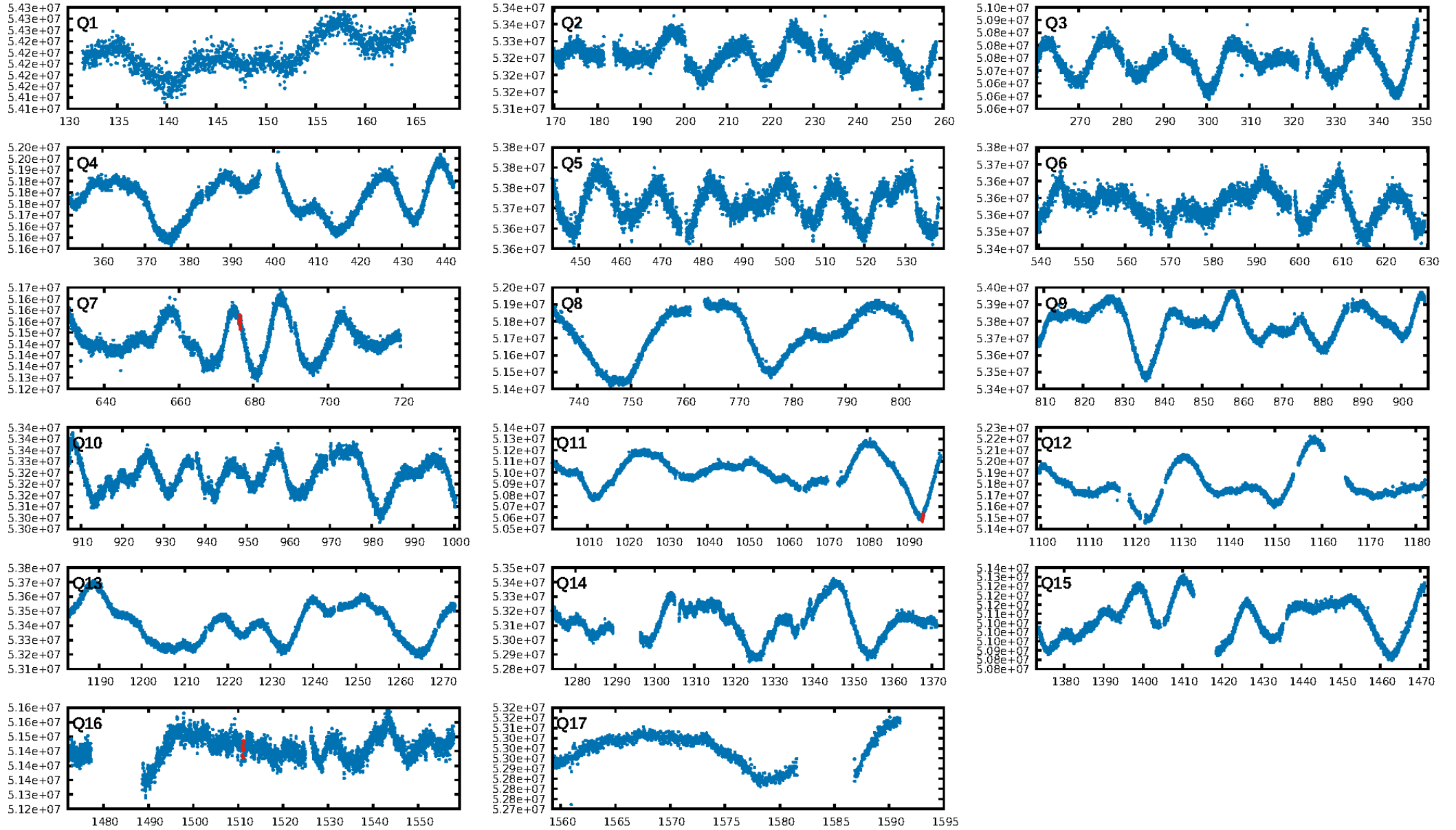
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [2271.84 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 35.9%
ModelChiSquareGof-sig: 93.2%
Bootstrap-pfa: 1.16e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -14.12
Centroid-sig: N/A
Centroid-so: 0.874 arcsec [0.67 σ]
OotOffset-rm: 2.295 arcsec [2.03 σ]
KicOffset-rm: 2.501 arcsec [2.19 σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.50 [1/2]

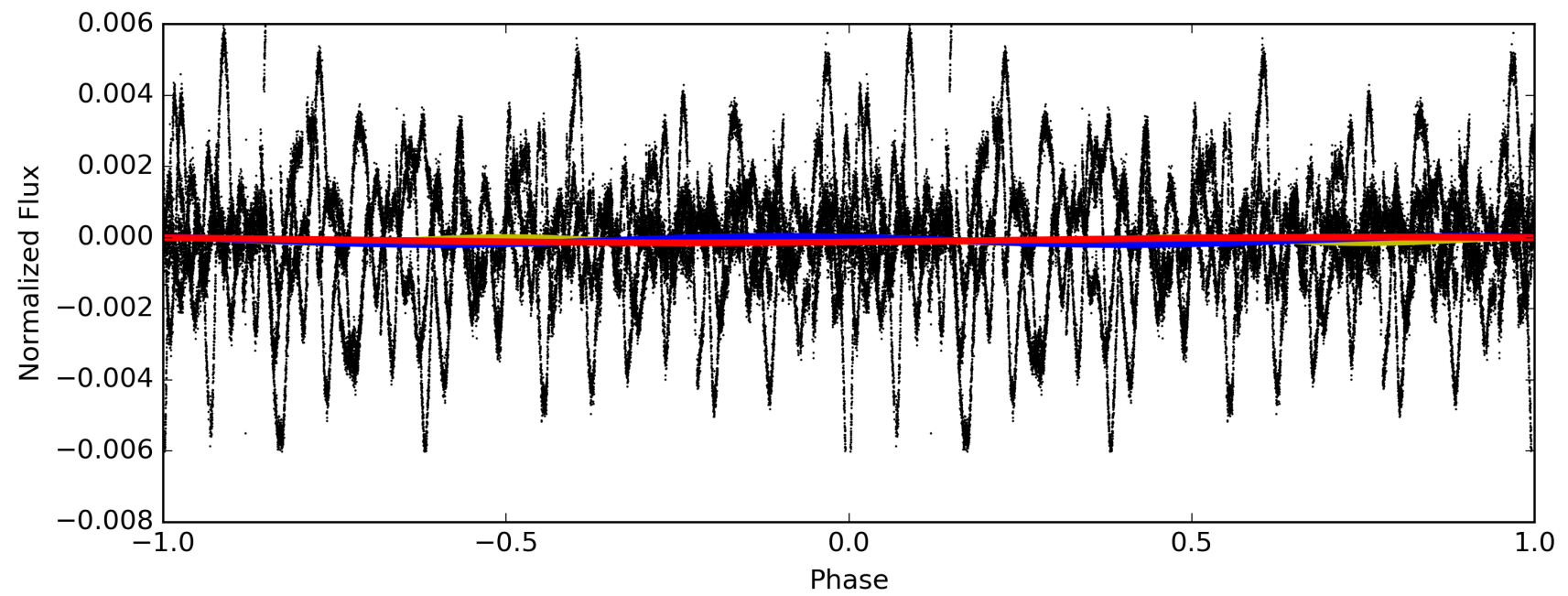
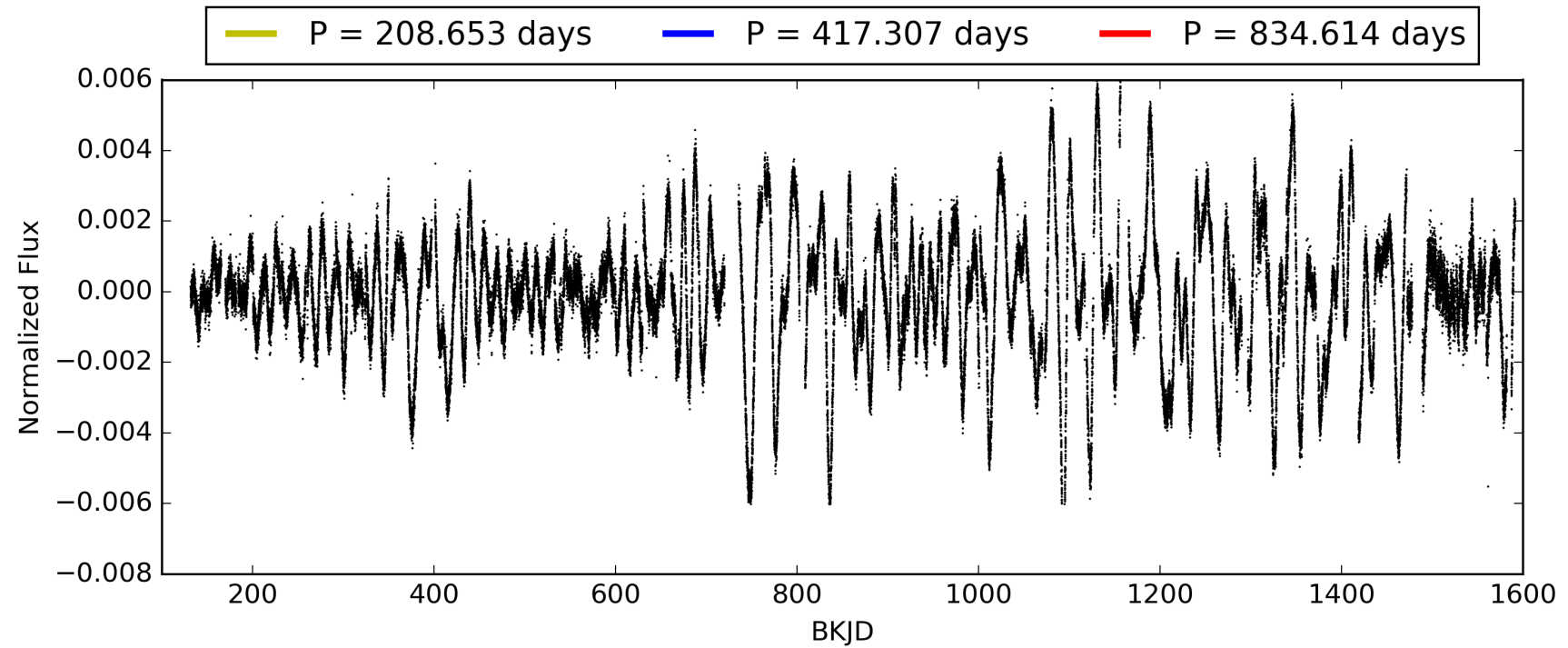
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:47:50 Z

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

TCE 008616637-03, PDC Light Curves

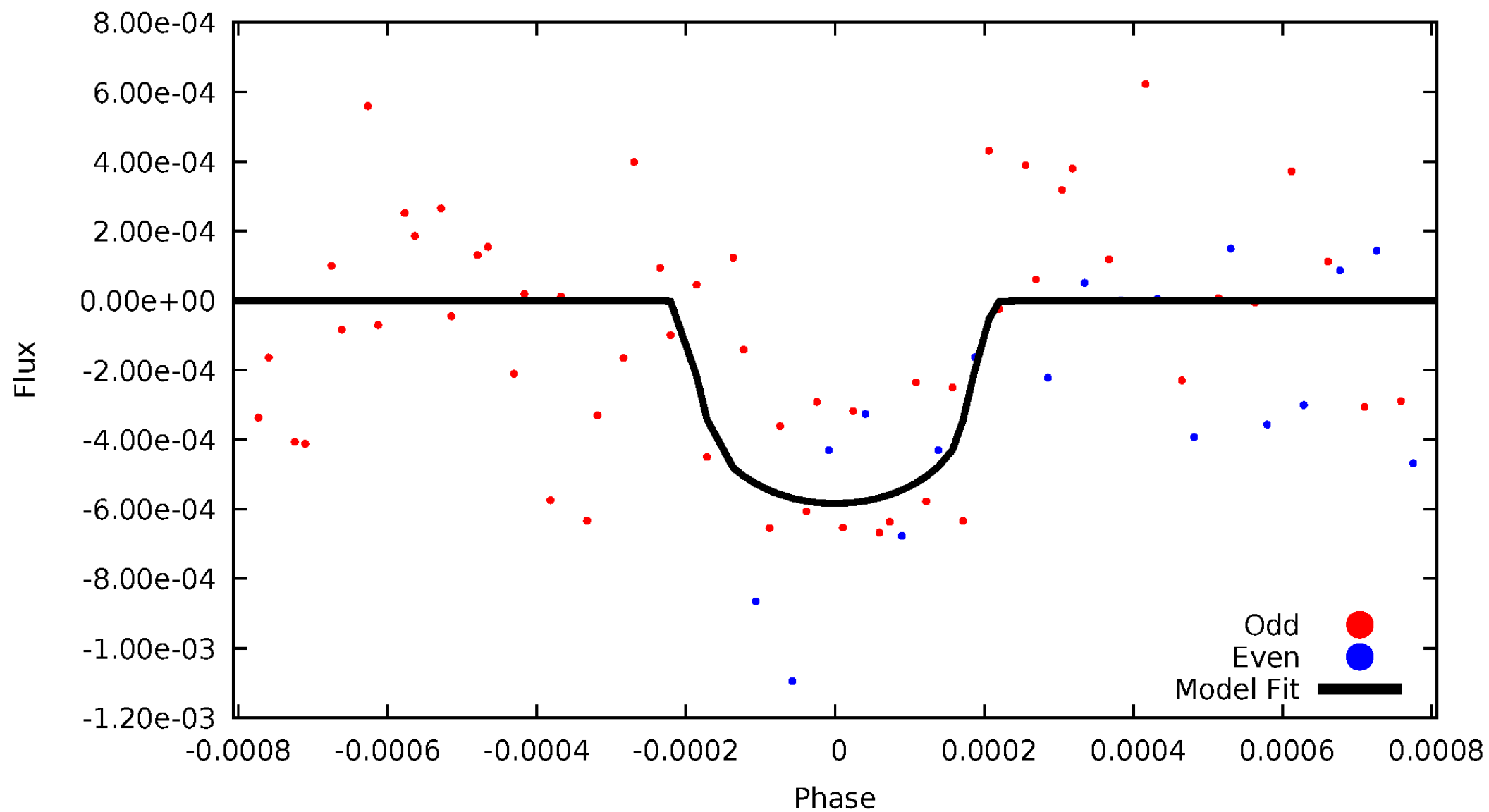


TCE 008616637-03



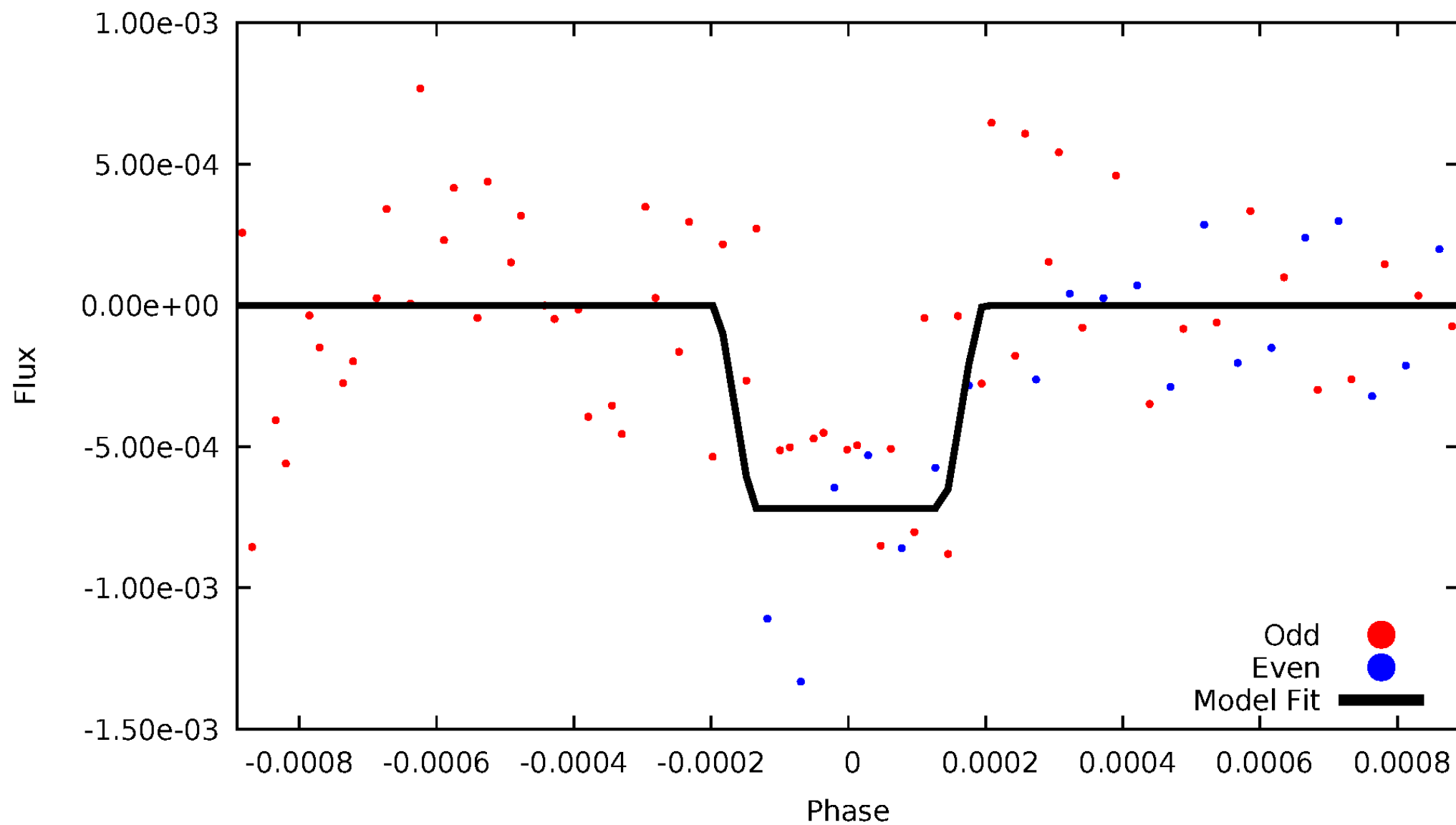
DV Odd/Even

TCE 008616637-03



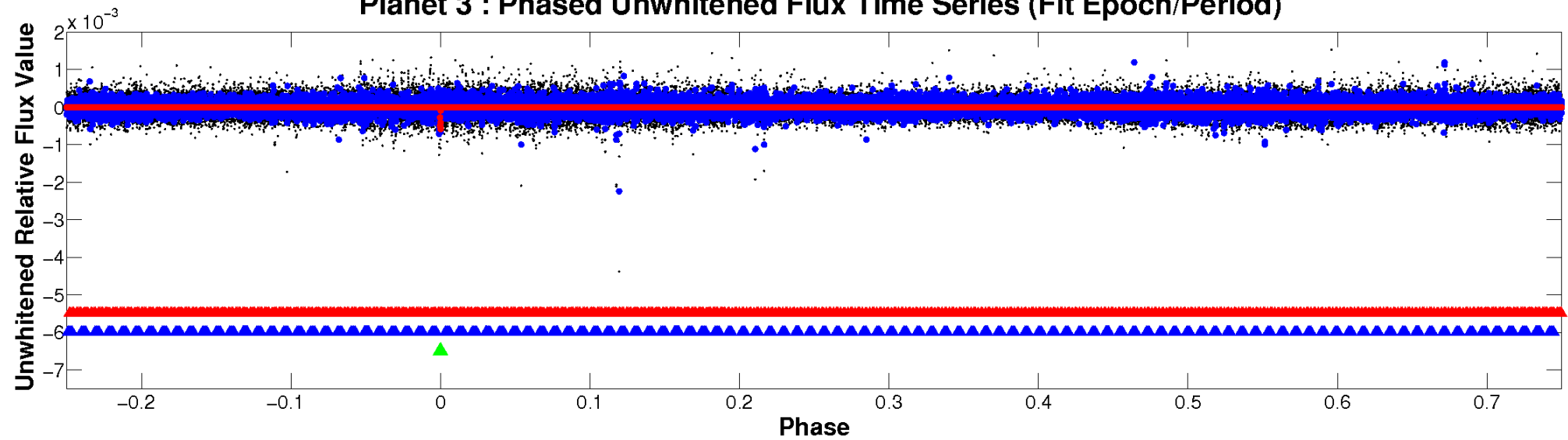
ALT Odd/Even

TCE 008616637-03

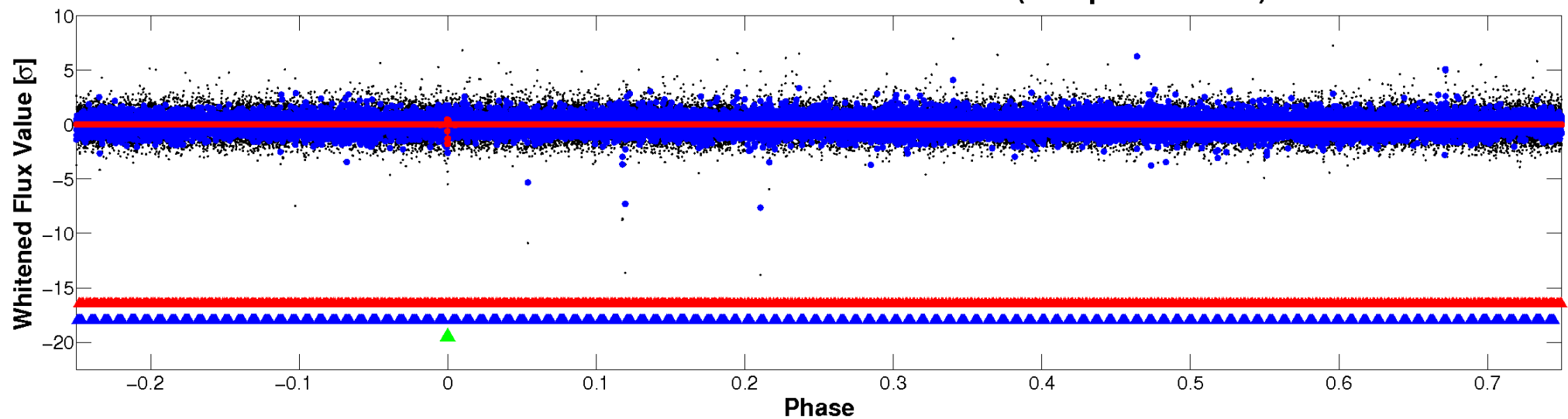


Non-Whitened Vs. Whitened Light Curve

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

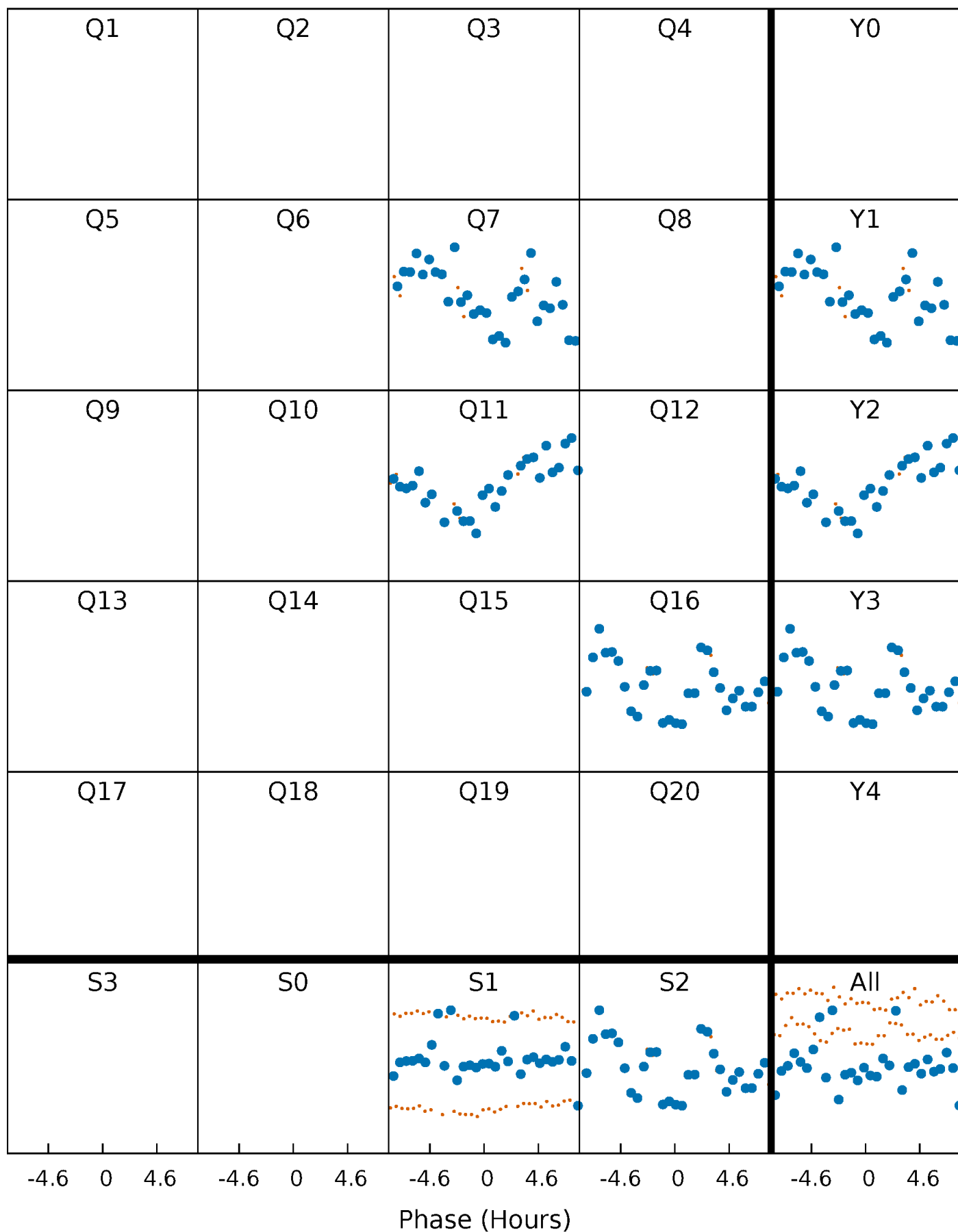


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



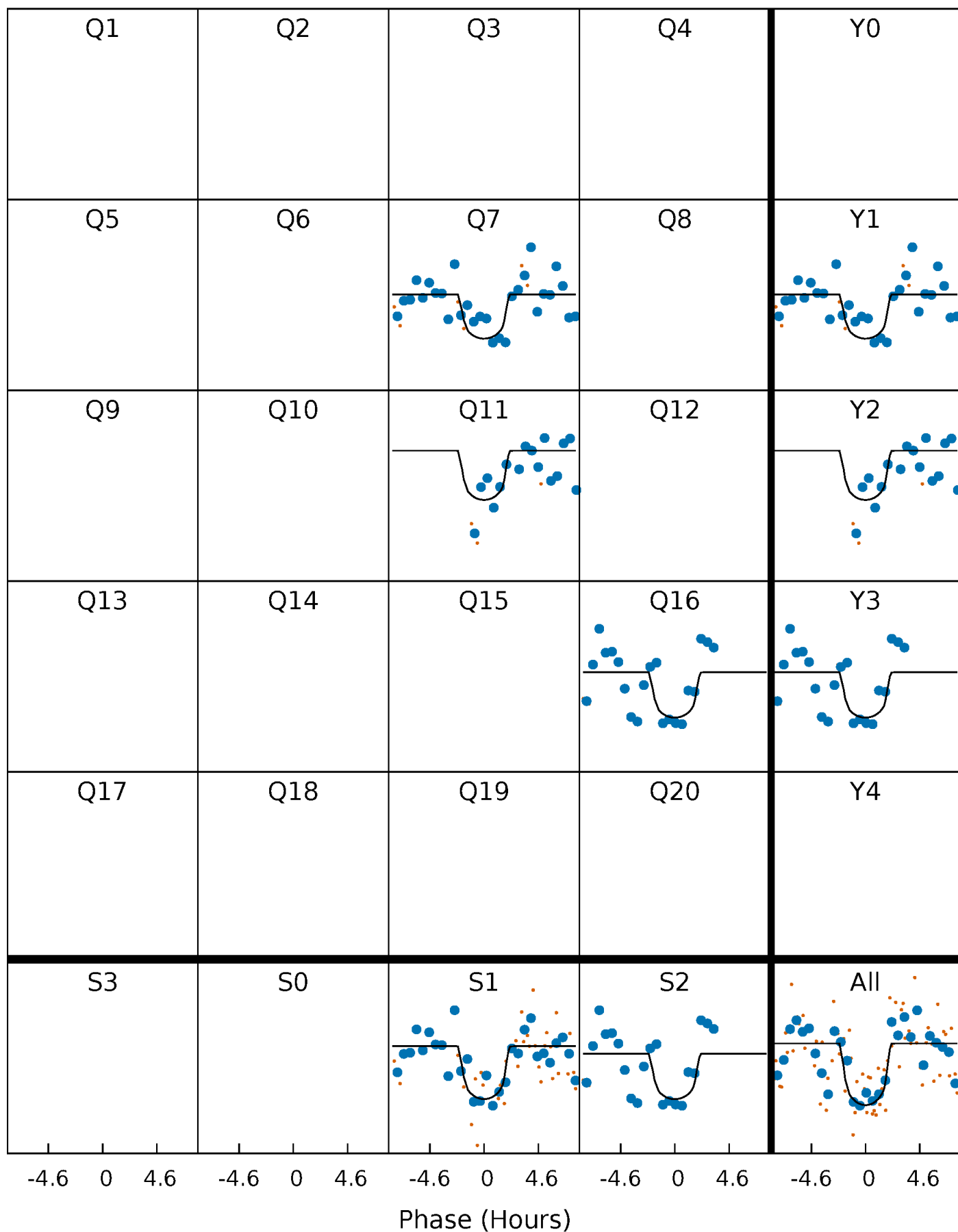
PDC Quarter-Phased Transit Curves

TCE 008616637-03 $P=417.306910$ Days $T_0=259.158752$ (BKJD)



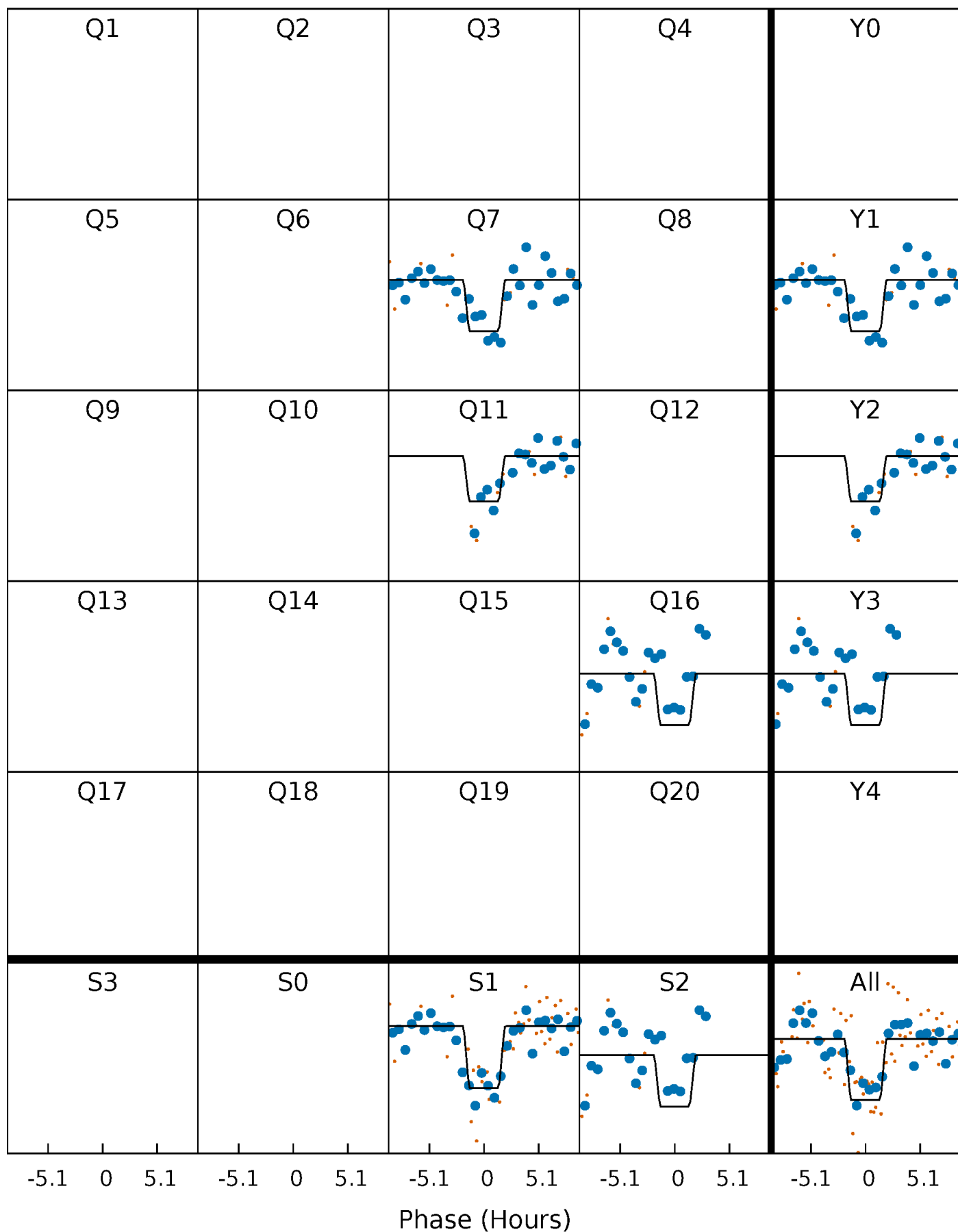
DV Quarter-Phased Transit Curves

TCE 008616637-03 $P=417.306910$ Days $T_0=259.158752$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

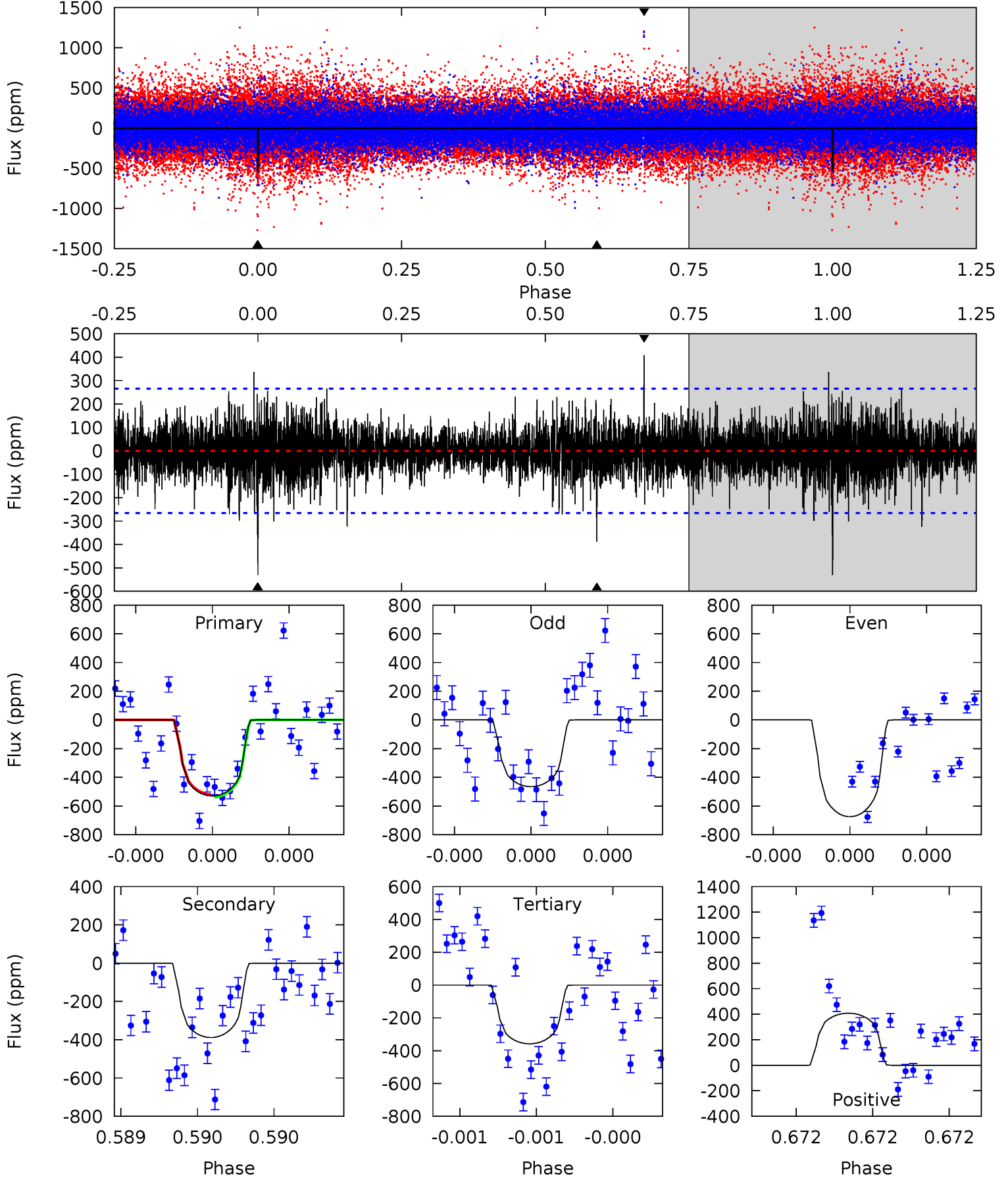
TCE 008616637-03 $P=417.300973$ Days $T_0=259.175517$ (BKJD)



DV Model-Shift Uniqueness Test

008616637-03, P = 417.306910 Days, E = 259.158752 Days

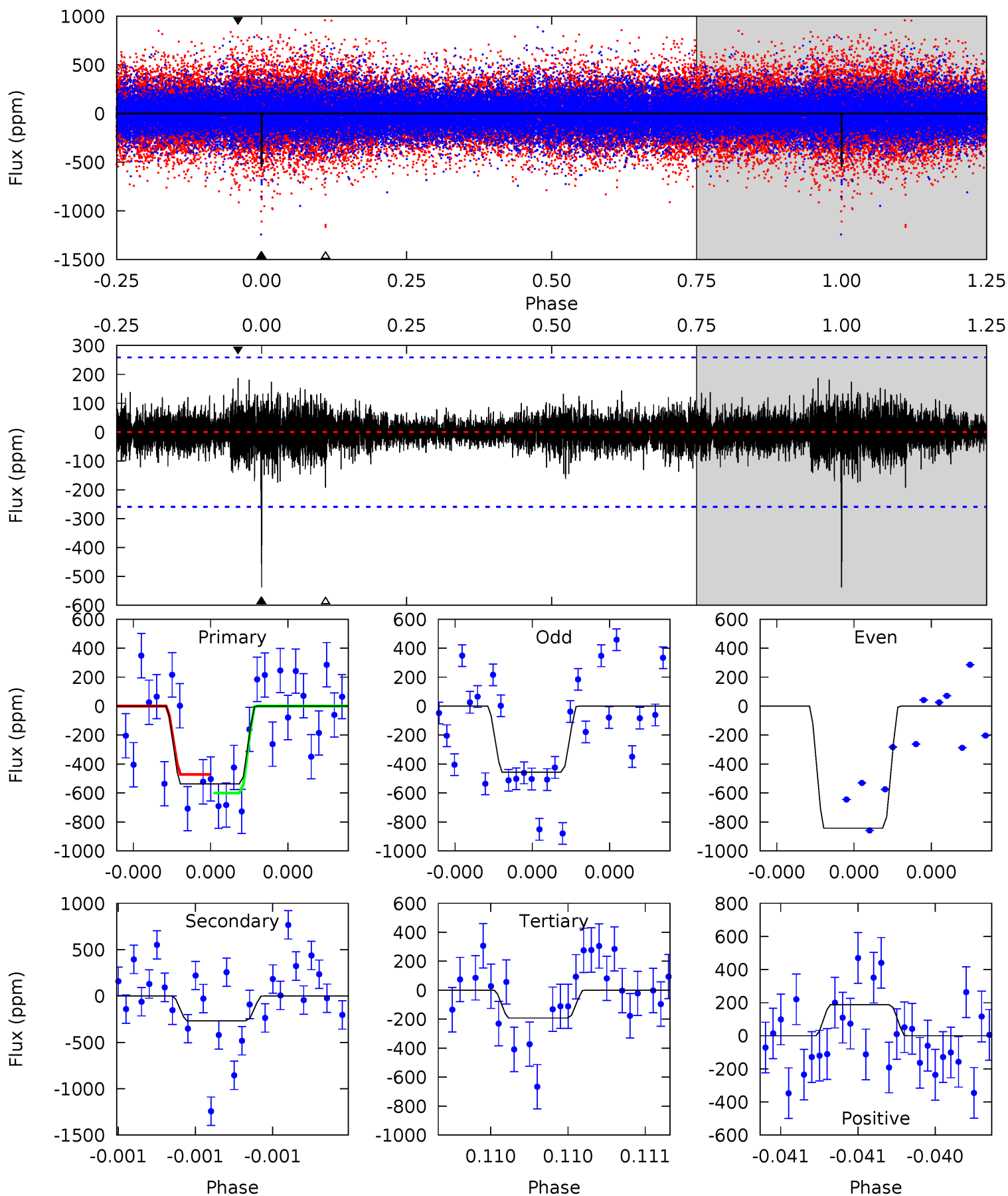
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	8.18	7.55	8.60	5.60	3.51	1.48	3.63	2.58	0.64	-0.41	2.04	1.14	0.43	0.18



Alt Model-Shift Uniqueness Test

008616637-03, P = 417.300973 Days, E = 259.175517 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	5.81	4.18	4.08	5.64	3.58	0.79	7.54	7.64	1.63	1.73	4.18	0.91	0.26	1.37



Stellar Parameters For KIC 008616637

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5103^{+101}_{-101}	$4.562^{+0.032}_{-0.052}$	$0.040^{+0.150}_{-0.150}$	$0.787^{+0.051}_{-0.039}$	$0.823^{+0.043}_{-0.047}$	$2.381^{+0.341}_{-0.389}$
	+2%/-2%	+1%/-1%	+375%/-375%	+6%/-5%	+5%/-6%	+14%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 008616637-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-388 ± 47	$3.49^{+2.87}_{-2.31}$	276^{+7}_{-6}	3864^{+2183}_{-671}	$17657^{+136872}_{-12276}$
Alt.	-267 ± 46	$3.59^{+3.03}_{-2.41}$	276^{+7}_{-7}	3618^{+1947}_{-641}	$12328^{+102420}_{-8964}$

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 $A_{obs} \gg 1.0$

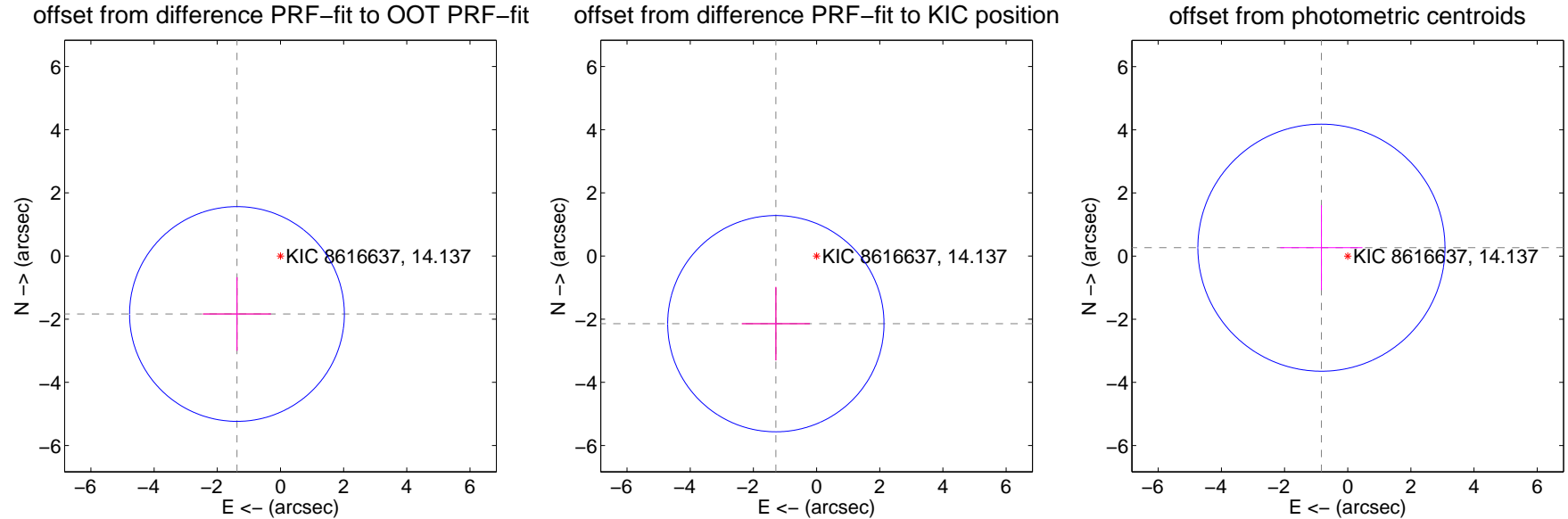
DV Centroid Data

Supplemental centroid analysis for 008616637-03. Kepler magnitude: 14.14. Transit SNR 7.45

There are 0 quarters with good PRF difference image offsets

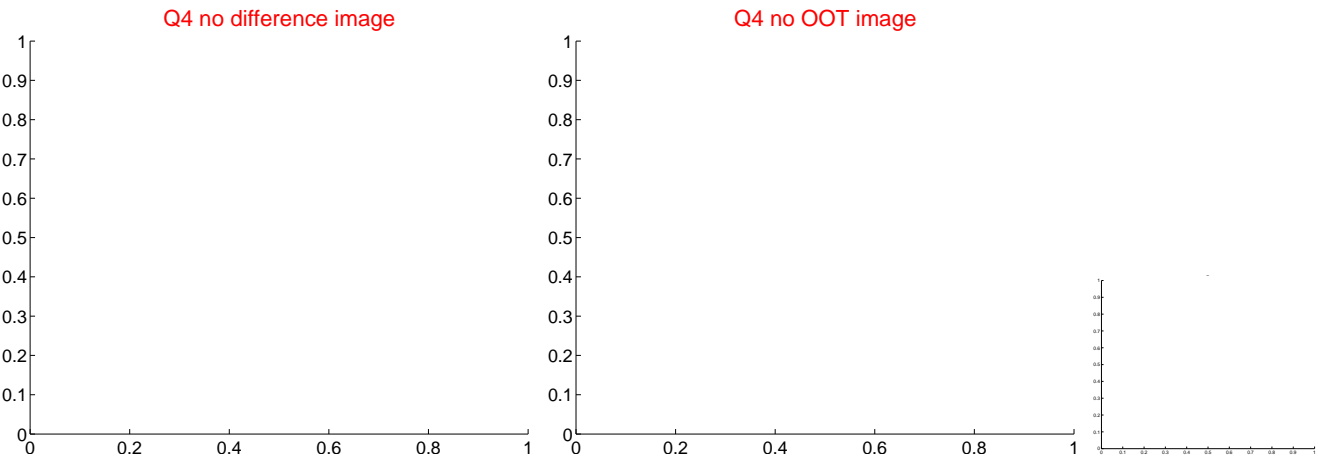
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.295 ± 1.133	2.03	1.377 ± 1.077	-1.836 ± 1.164
PRF-fit source offset from KIC position	2.501 ± 1.141	2.19	1.290 ± 1.077	-2.142 ± 1.164
photometric centroid source offset	0.87 ± 1.30	0.67	0.83 ± 1.30	0.27 ± 1.35



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.

Q5 no difference image



Q5 no OOT image



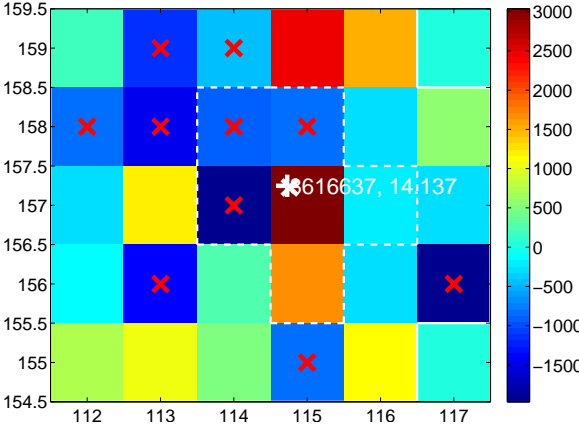
Q6 no difference image



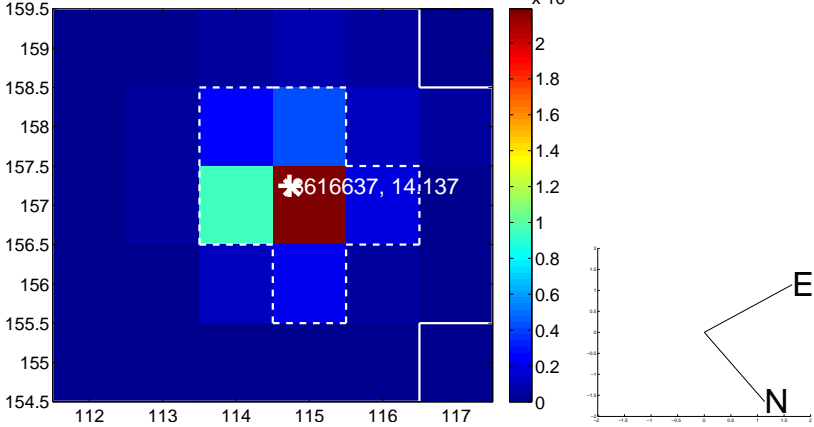
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



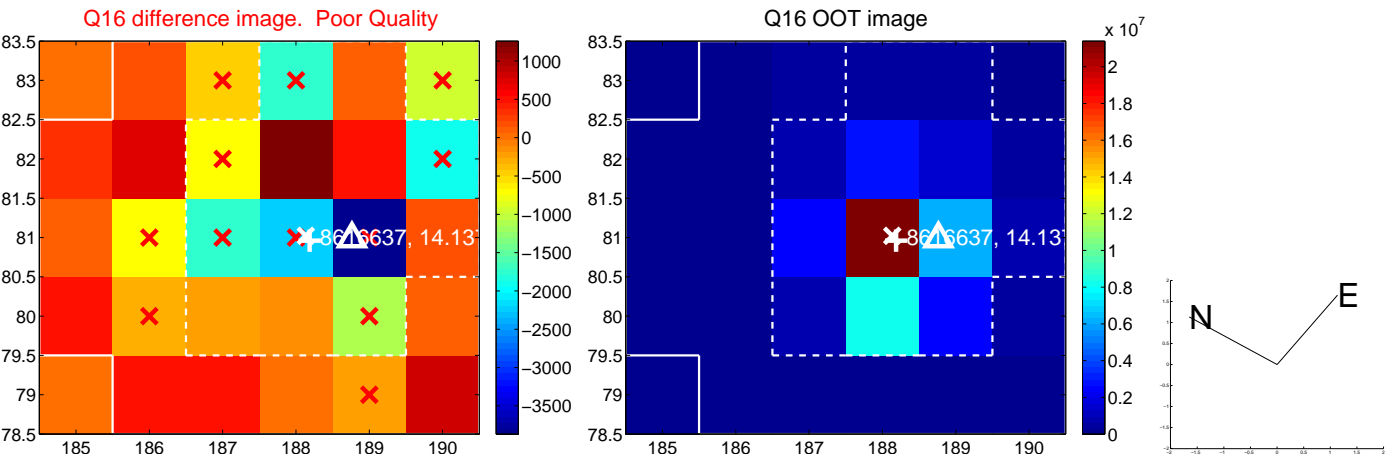
Q8 no OOT image



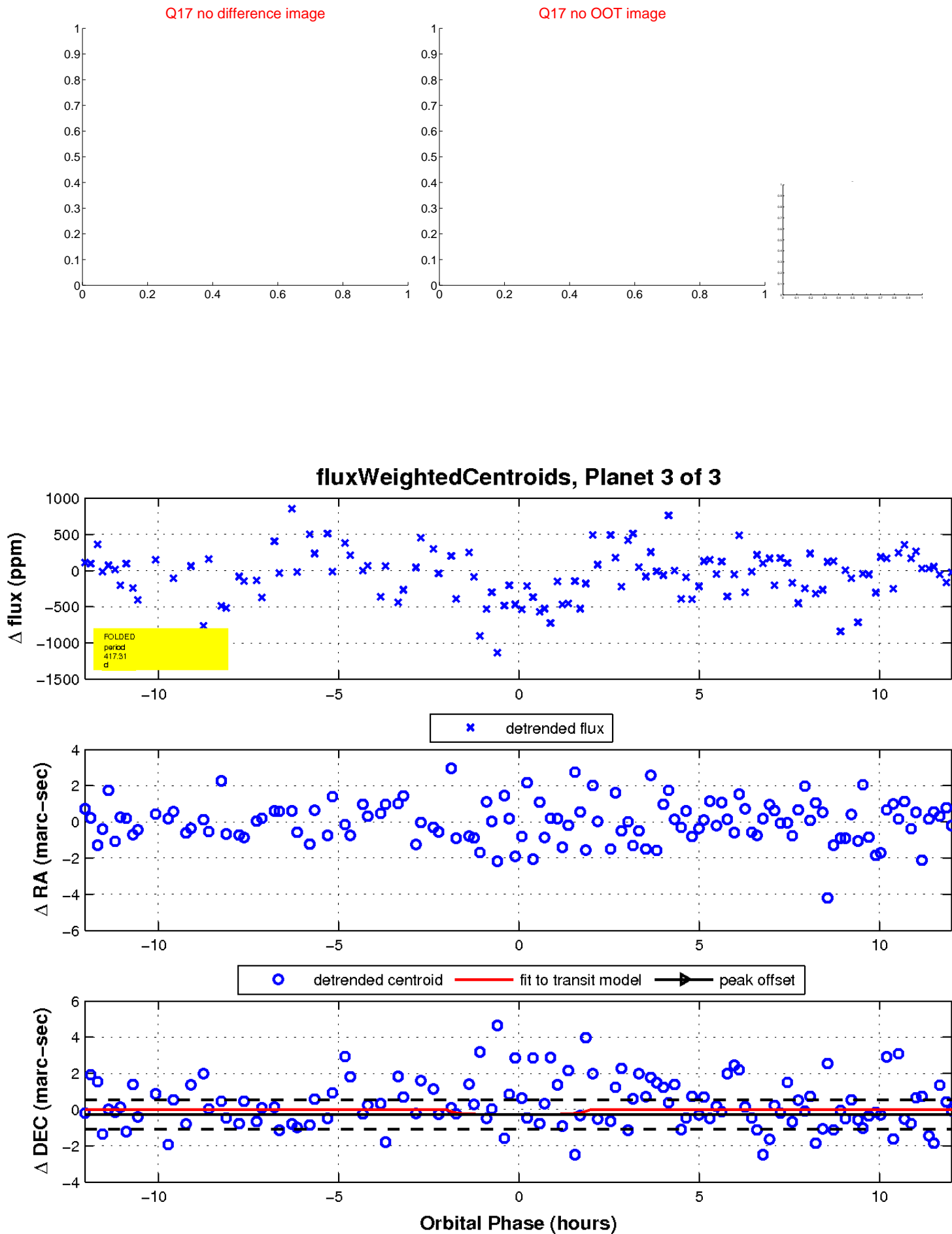
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

