

KIC 006462863

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})
006462863-01	OBS	0094.01	22.342968	132.741883	5649.3	6.713	703.0	701.5	1.33	6181	10.09	89.75
006462863-02	OBS	0094.03	54.320239	161.237072	1956.2	8.711	162.1	159.4	1.33	6181	6.21	27.46
006462863-03	OBS	0094.02	10.423682	138.008802	781.3	5.343	136.5	135.6	1.33	6181	3.99	248.06
006462863-04	OBS	0094.04	3.743164	131.620607	123.5	3.870	31.5	35.4	1.33	6181	1.75	971.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006462863-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006462863-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
006462863-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006462863-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

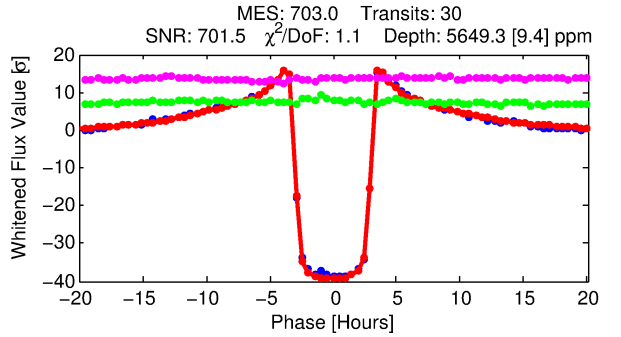
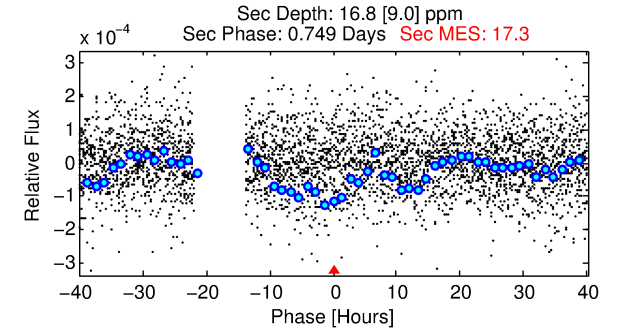
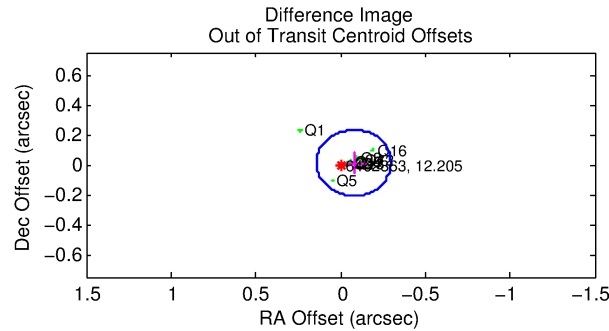
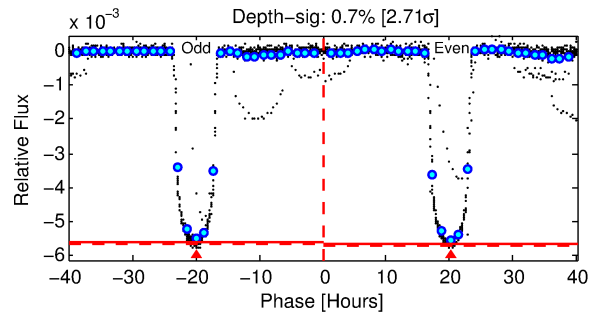
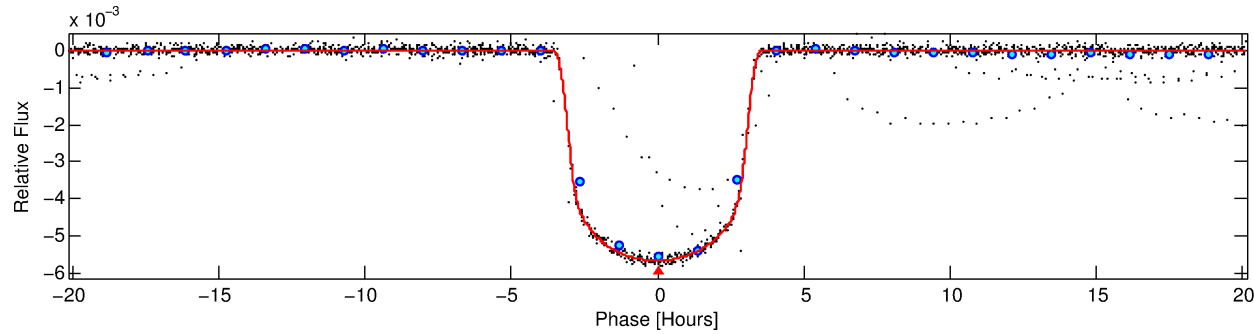
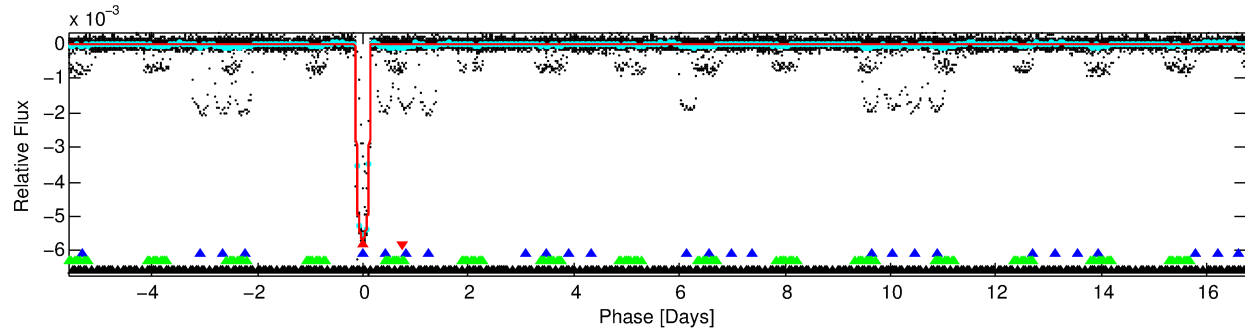
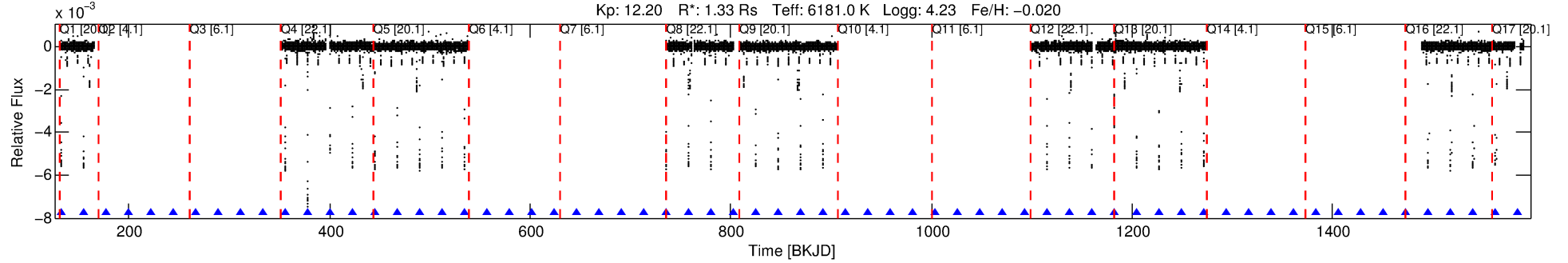
Ephemeris Match Information For 006462863-01

No Significant Match Found

DV One-Page Summary

KIC: 6462863 Candidate: 1 of 4 Period: 22.343 d
KOI: K00094.01 Name: Kepler-89d Corr: 0.998

Kp: 12.20 R*: 1.33 Rs Teff: 6181.0 K Logg: 4.23 Fe/H: -0.020



DV Fit Results:

Period = 22.34297 [0.00000] d
Epoch = 132.7419 [0.0002] BKJD
Rp/R* = 0.0695 [0.0003]
a/R* = 26.12 [0.45]
b = 0.30 [0.05]
Seff = 89.76 [23.85]
Teq = 785 [52] K
Rp = 10.09 [1.84] Re
a = 0.1607 [0.0263] AU
Ag = 2.34 [1.39] [0.97σ]
Teffp = 1501 [204] K [3.39σ]

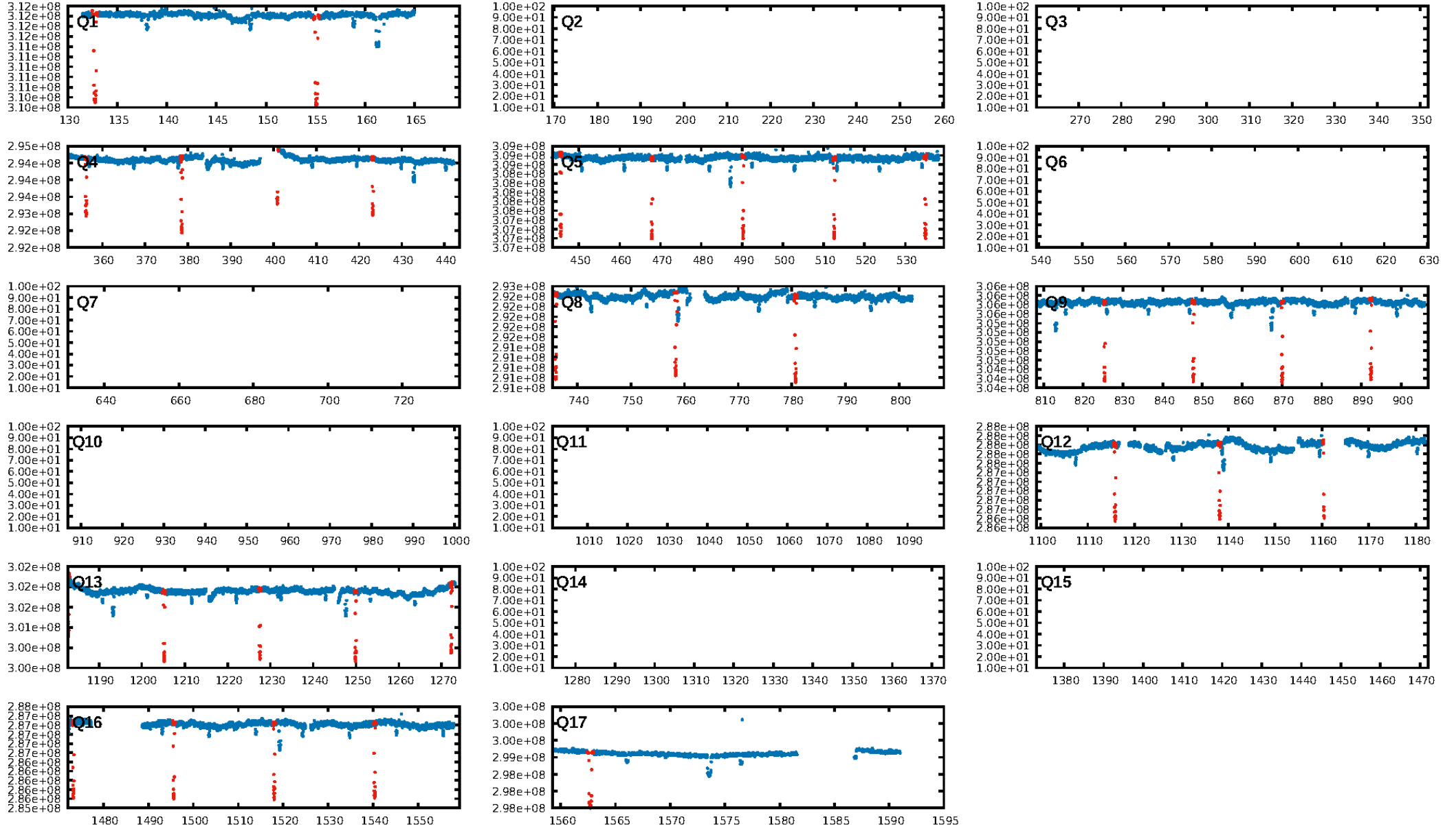
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.34σ]
LongPeriod-sig: 100.0% [69.79σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [27/27]
GhostDiagnostic-chr: 10.26
Centroid-sig: 0.0%
Centroid-so: 0.157 arcsec [12.01σ]
OotOffset-rm: 0.078 arcsec [1.07σ]
KicOffset-rm: 0.211 arcsec [2.78σ]
OotOffset-st: 0/0/4/5 [9]
KicOffset-st: 0/0/4/5 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 0.78 [7/9]

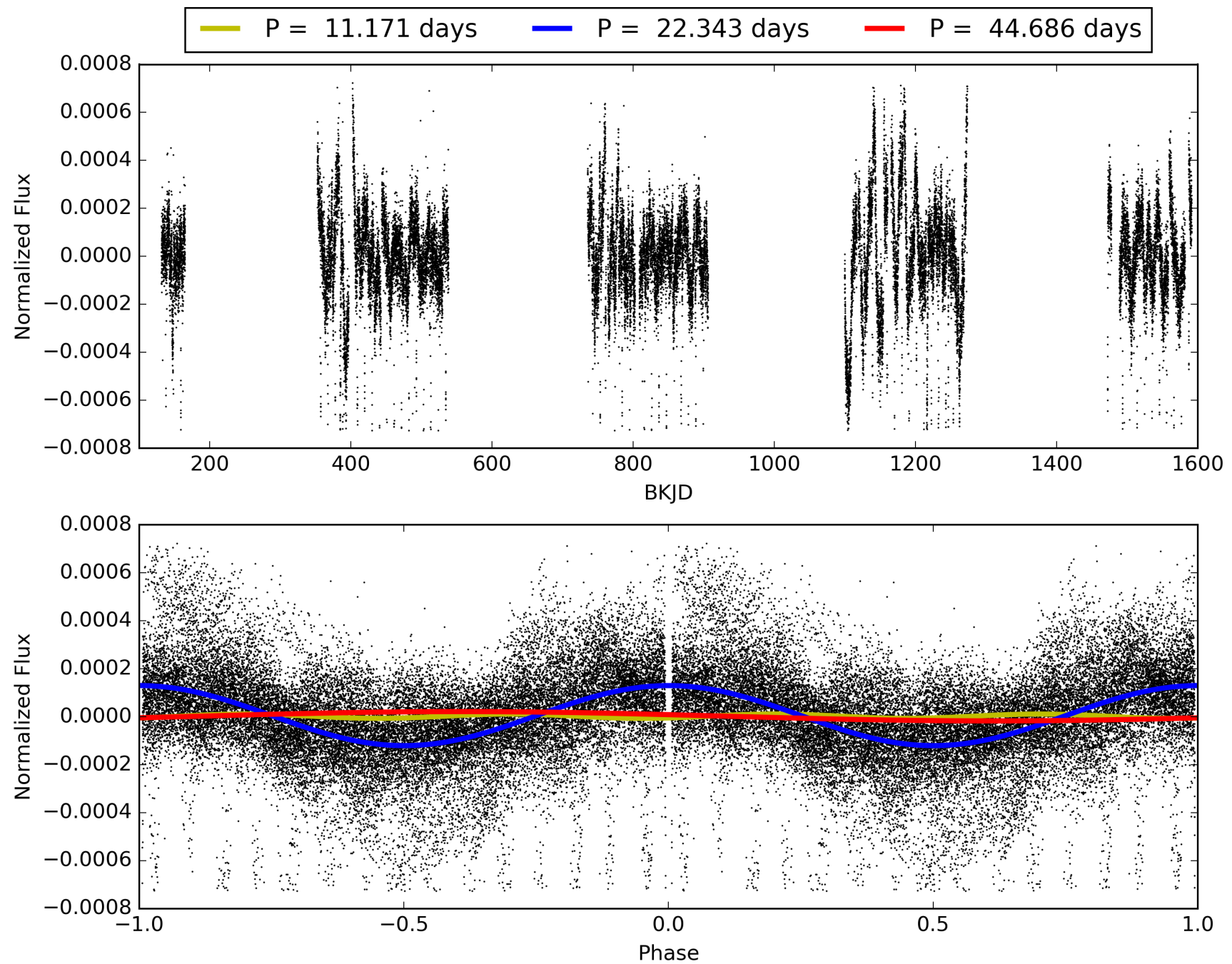
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006462863-01, PDC Light Curves

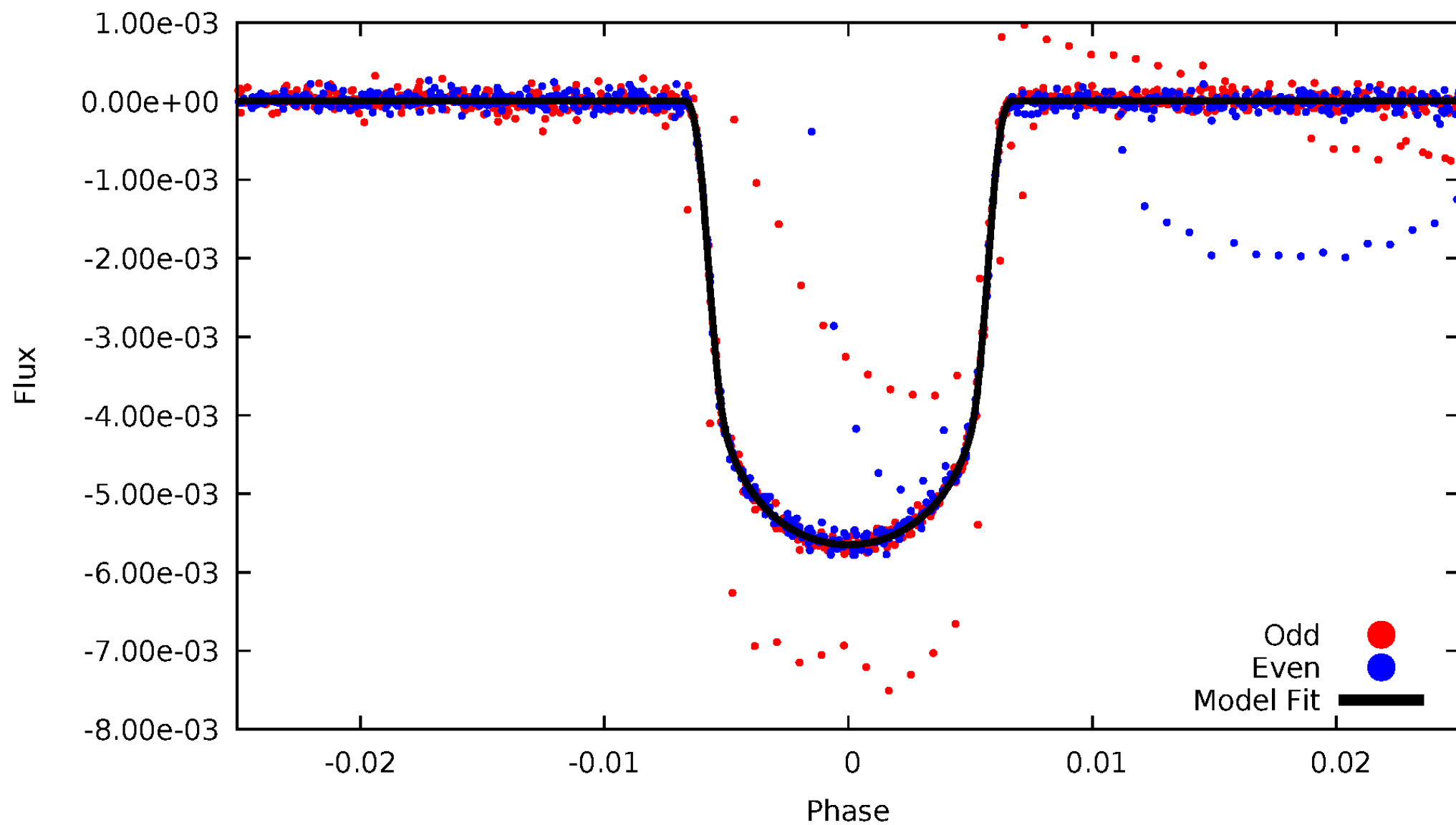


TCE 006462863-01



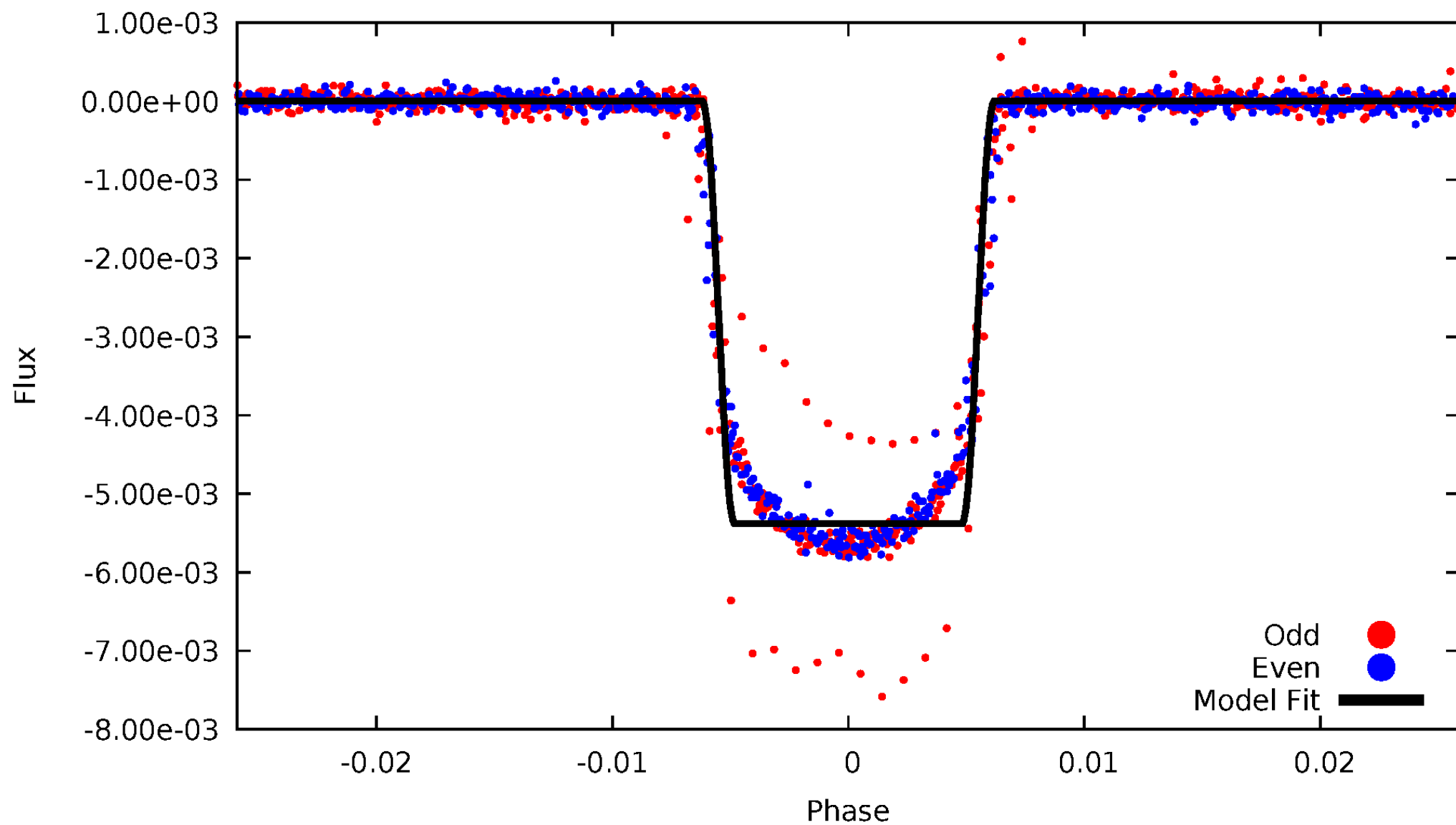
DV Odd/Even

TCE 006462863-01



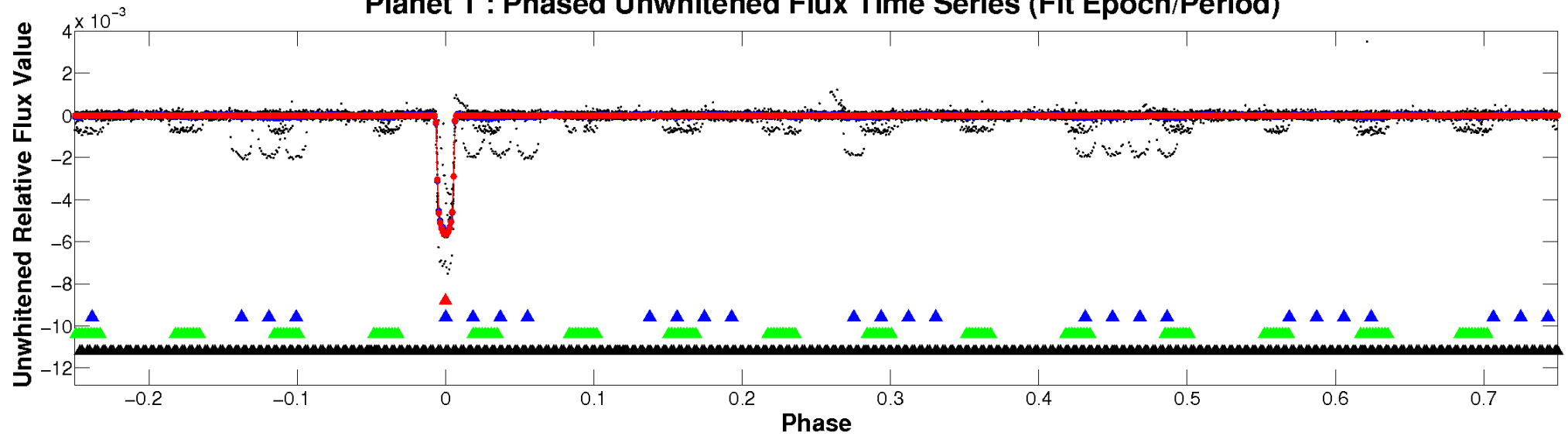
ALT Odd/Even

TCE 006462863-01

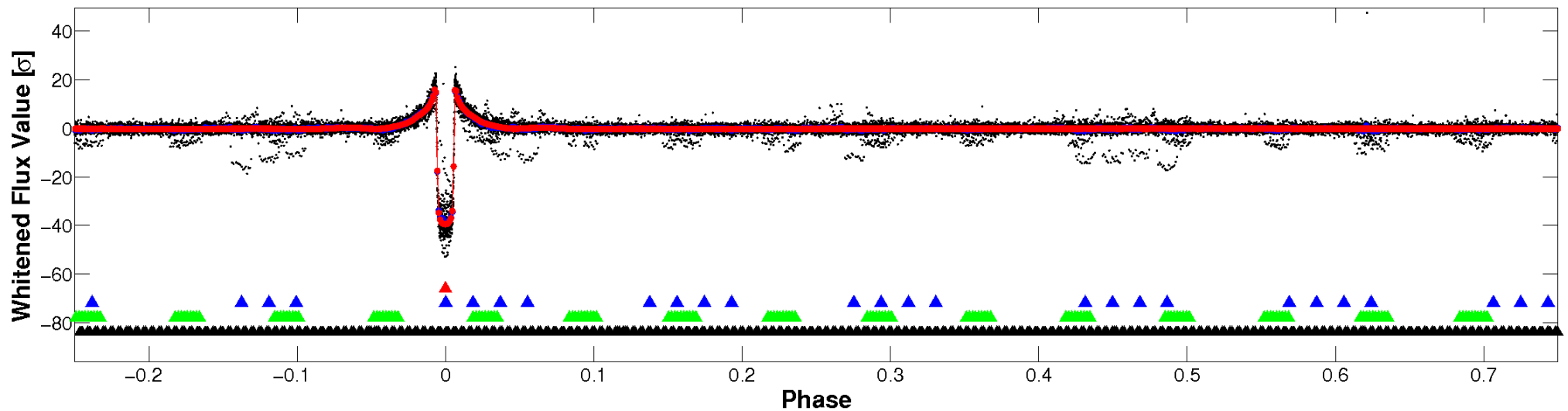


Non-Whitened Vs. Whitened Light Curve

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

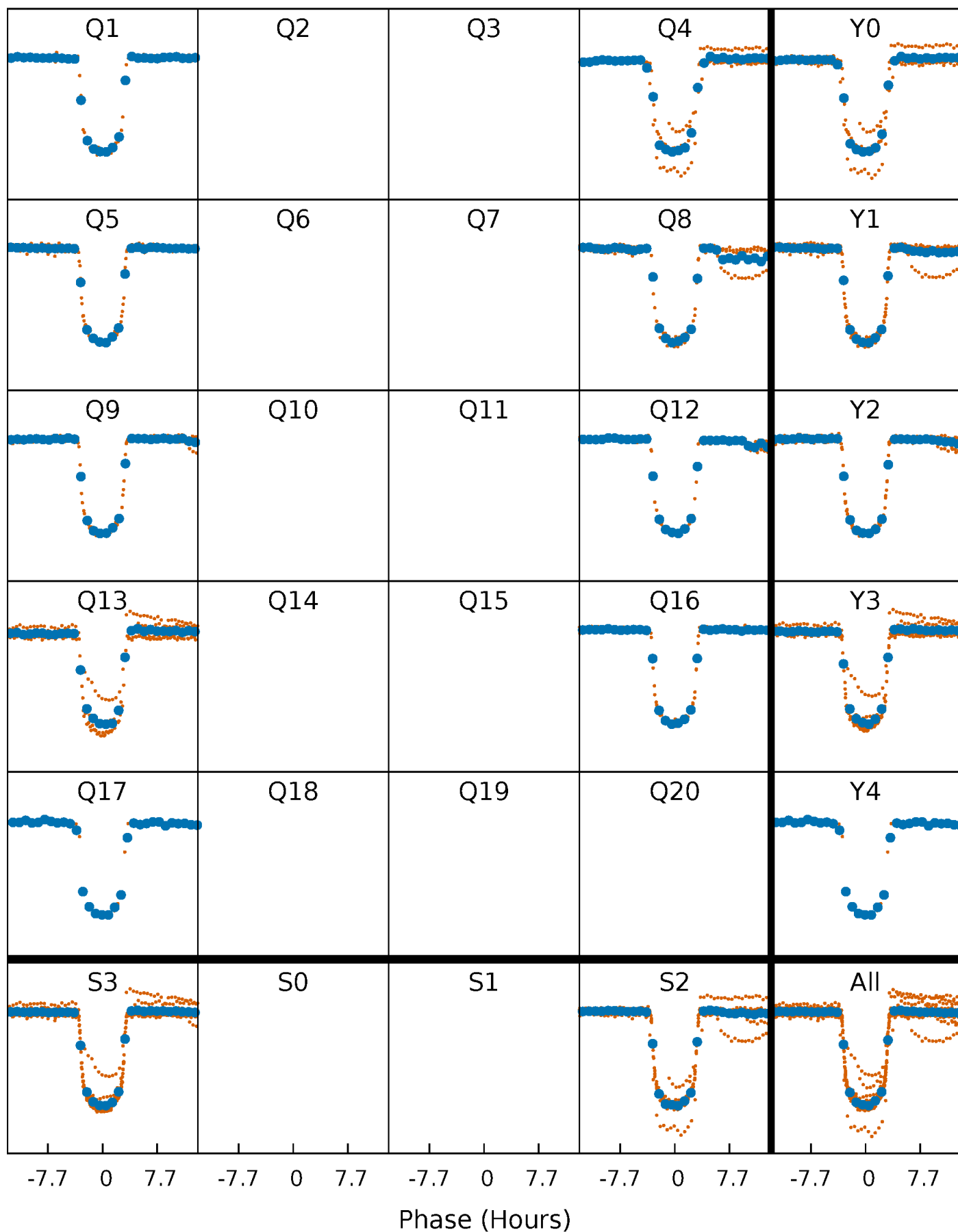


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



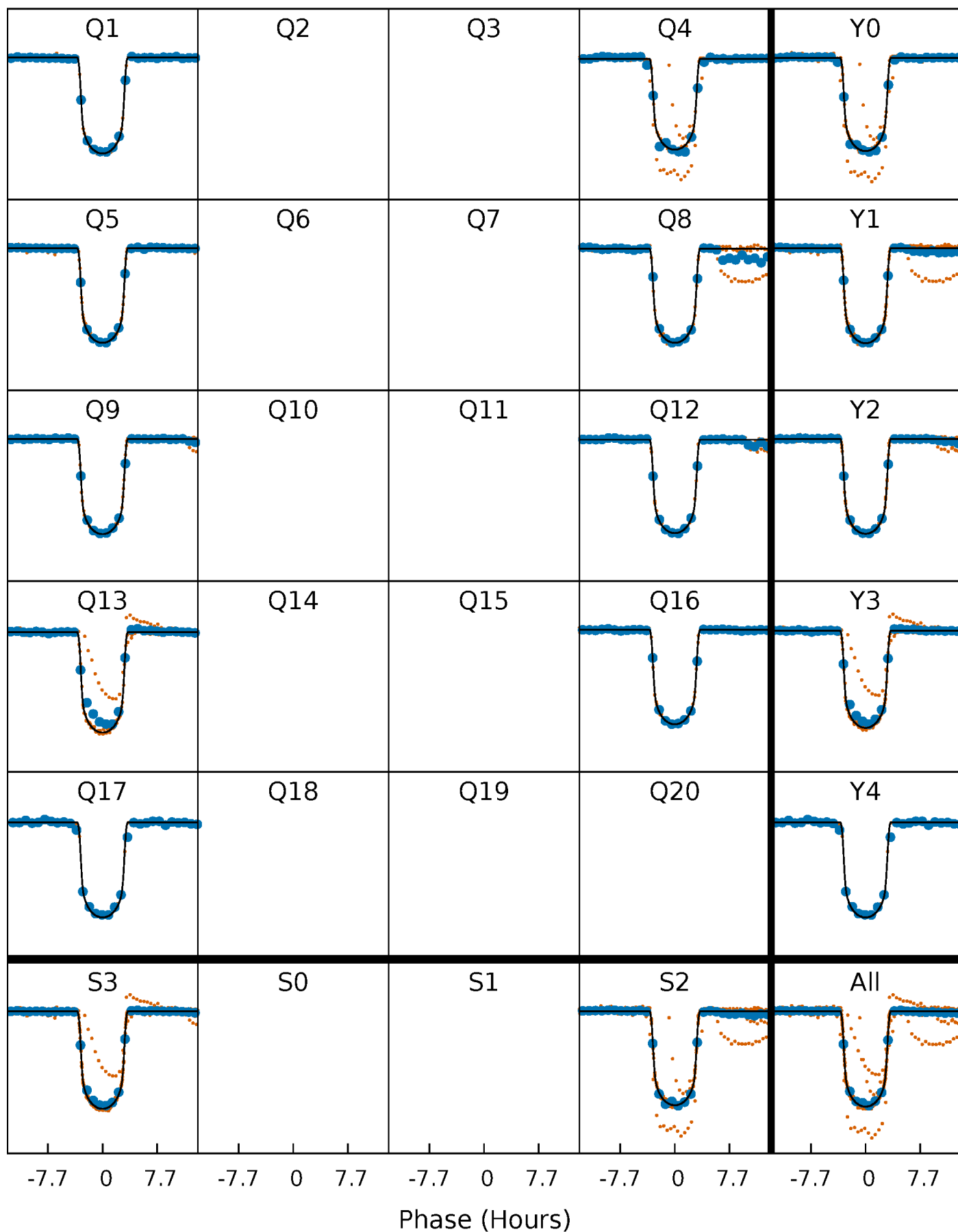
PDC Quarter-Phased Transit Curves

TCE 006462863-01 P= 22.342968 Days $T_0=132.741883$ (BKJD)



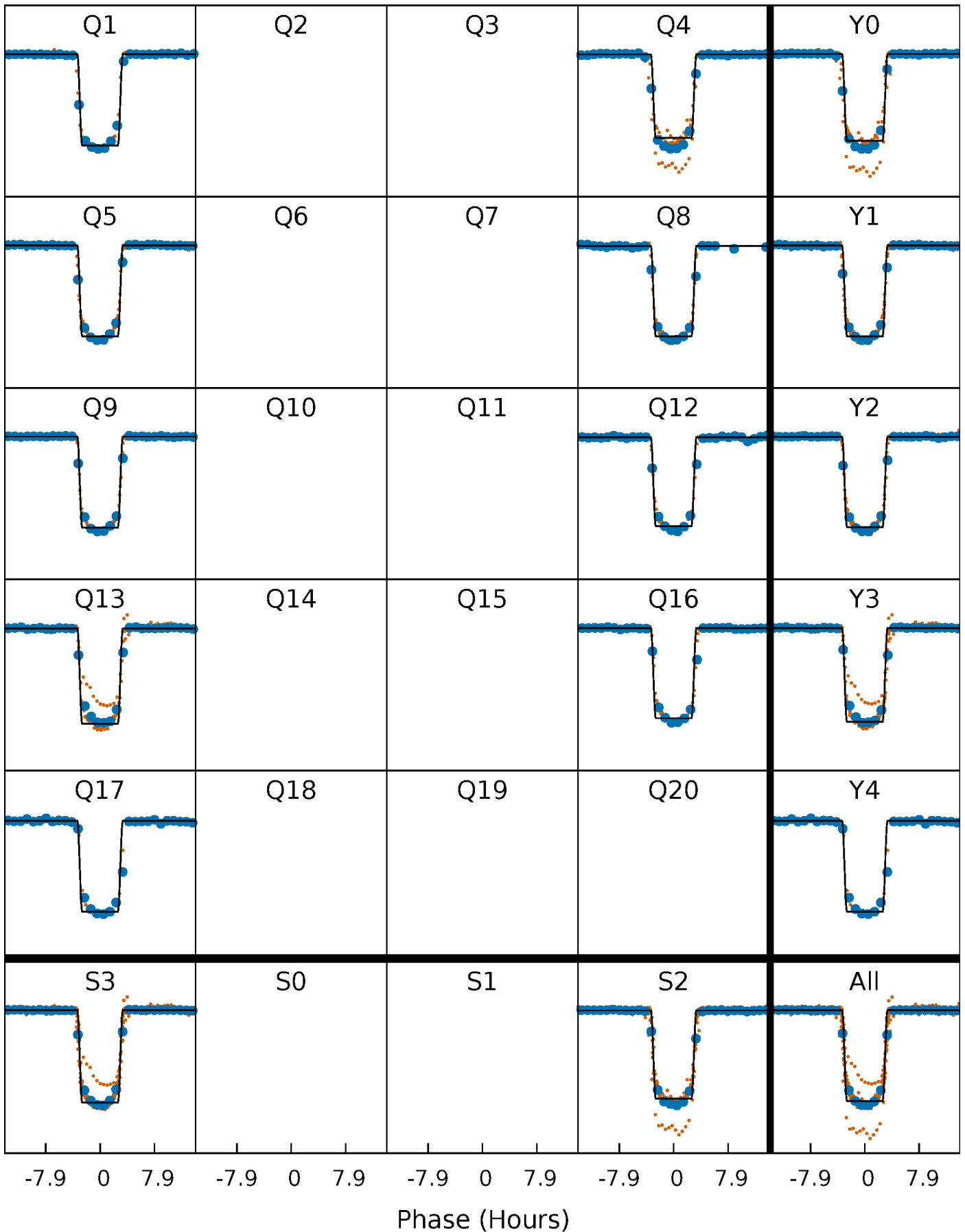
DV Quarter-Phased Transit Curves

TCE 006462863-01 P= 22.342968 Days $T_0=132.741883$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

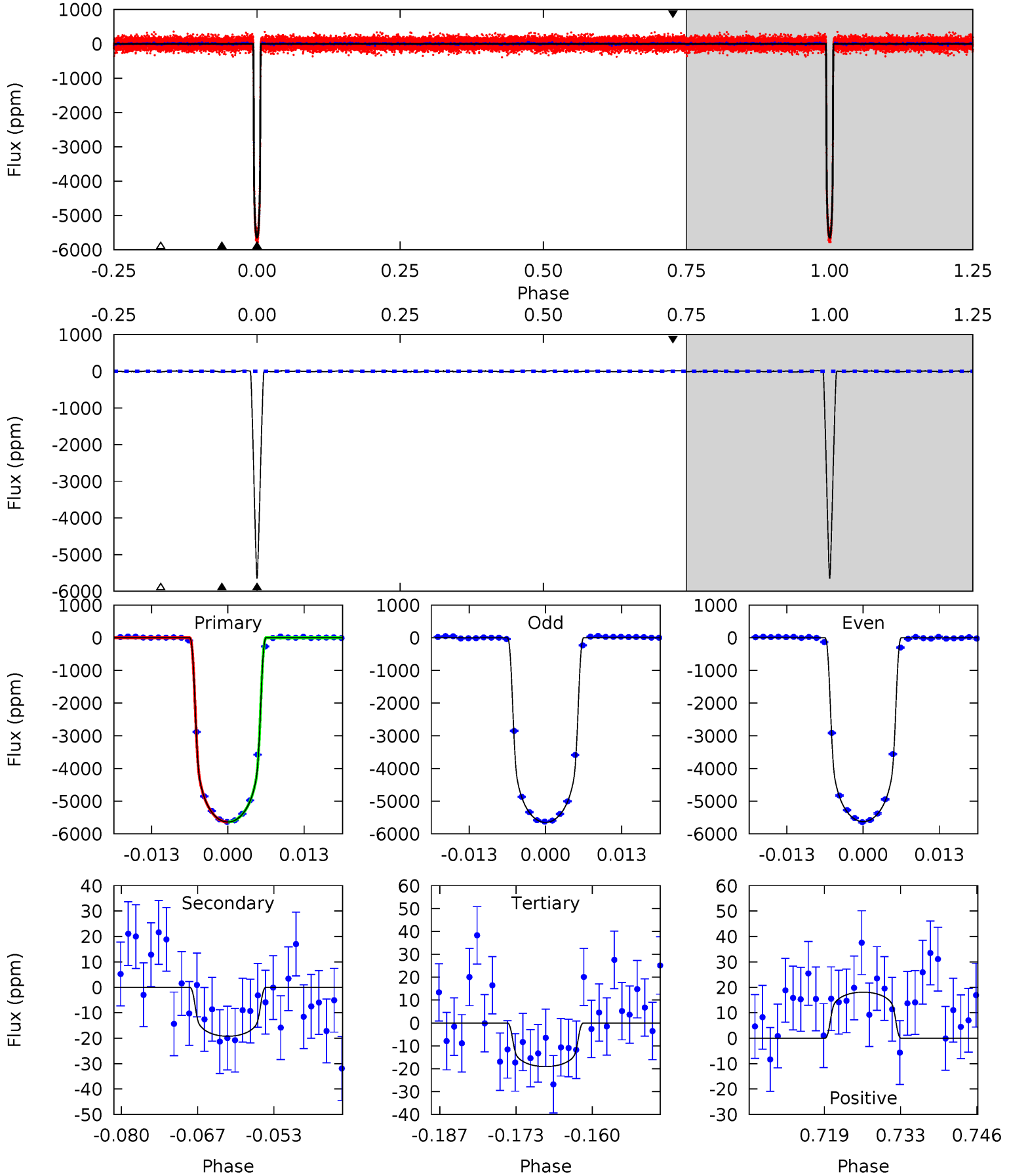
TCE 006462863-01 P= 22.342731 Days $T_0=132.749417$ (BKJD)



DV Model-Shift Uniqueness Test

006462863-01, P = 22.342968 Days, E = 110.398915 Days

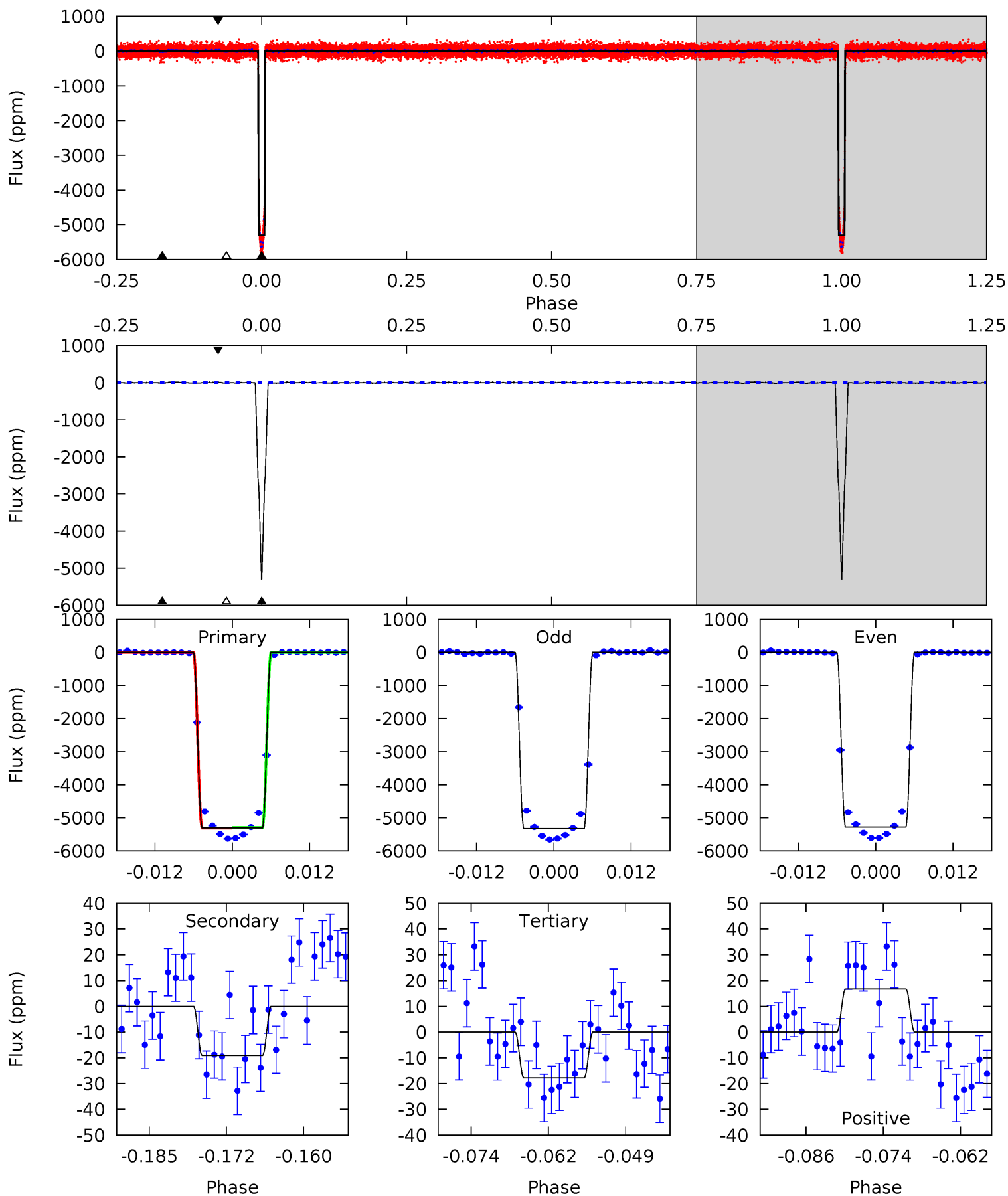
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1289	4.40	4.36	4.14	4.97	2.47	1.63	1285	1285	0.04	0.26	2.82	0.99	0.00	0.52



Alt Model-Shift Uniqueness Test

006462863-01, P = 22.342731 Days, E = 110.406686 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1125	4.04	3.78	3.53	4.99	2.50	1.31	1122	1122	0.26	0.51	4.63	1.00	0.00	1.65



Stellar Parameters For KIC 006462863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6181^{+111}_{-135}	$4.234^{+0.143}_{-0.117}$	$-0.020^{+0.150}_{-0.150}$	$1.331^{+0.243}_{-0.199}$	$1.106^{+0.116}_{-0.074}$	$0.661^{+0.419}_{-0.237}$
	+2%/-2%	+3%/-3%	+750%/-750%	+18%/-15%	+10%/-7%	+63%/-36%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006462863-01 / KOI 0094.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-19 ± 4	$9.99^{+1.01}_{-0.88}$	1089^{+56}_{-53}	2394^{+73}_{-82}	$2.694^{+0.932}_{-0.705}$
Alt.	-19 ± 5	$10.59^{+1.12}_{-0.94}$	1090^{+58}_{-54}	2359^{+75}_{-96}	$2.372^{+0.828}_{-0.678}$

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 $A_{obs} \gg 1.0$

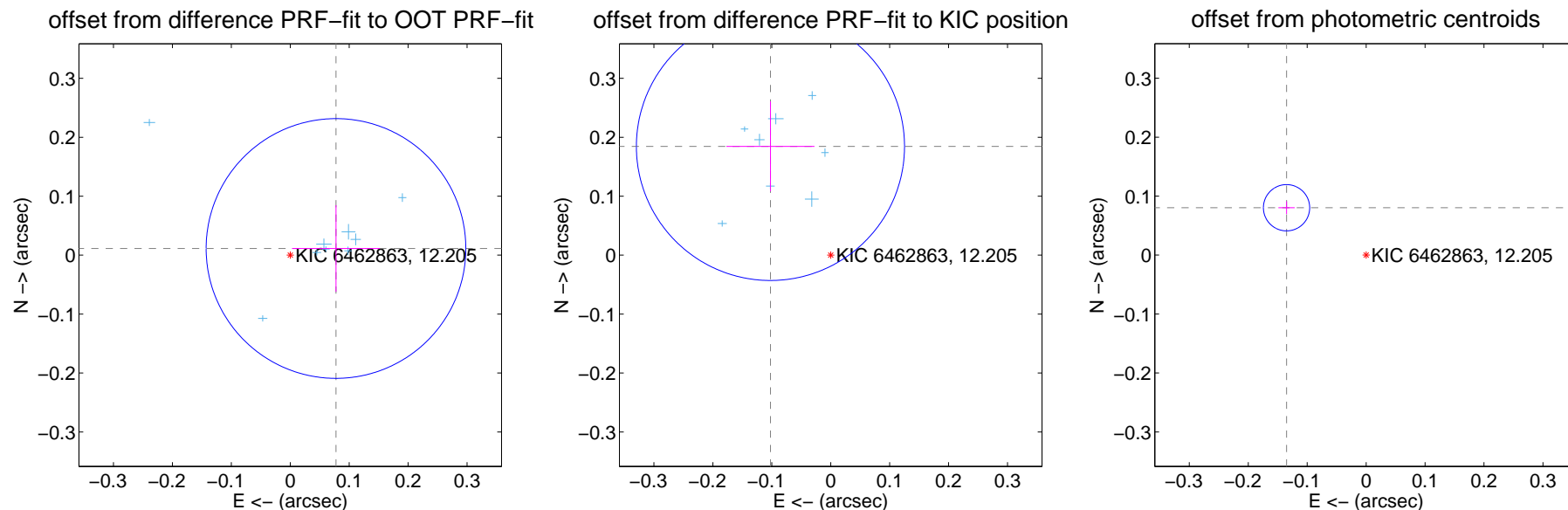
DV Centroid Data

Supplemental centroid analysis for 006462863-01. Kepler magnitude: 12.21. Transit SNR 701.51

There are 9 quarters with good PRF difference image offsets

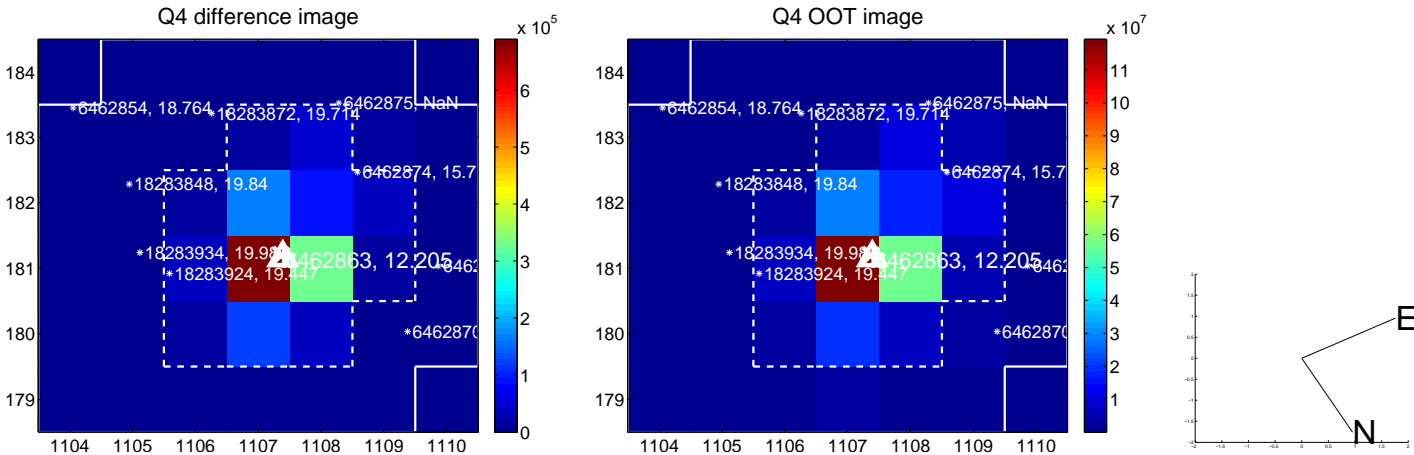
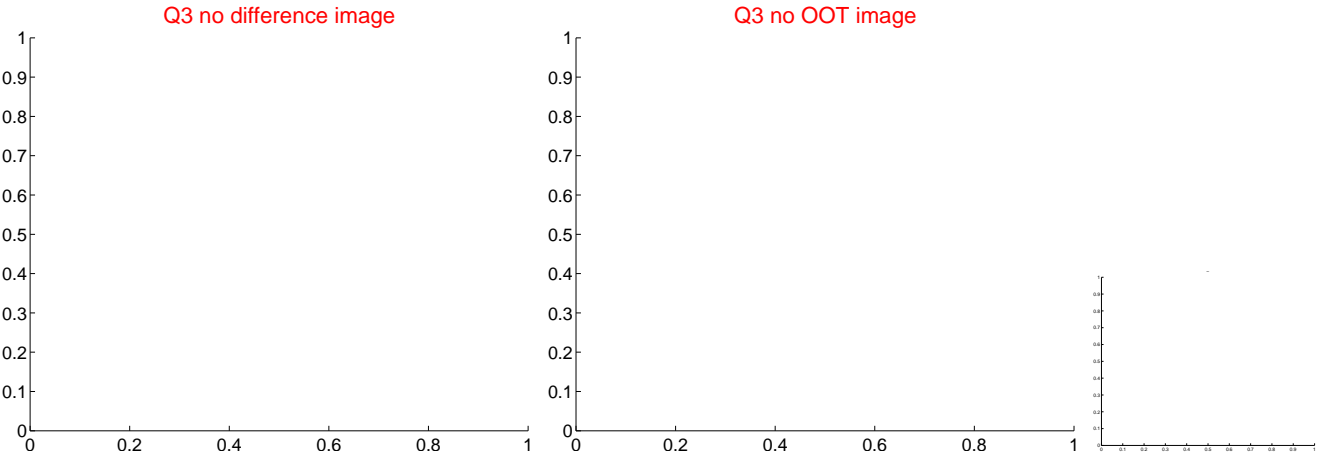
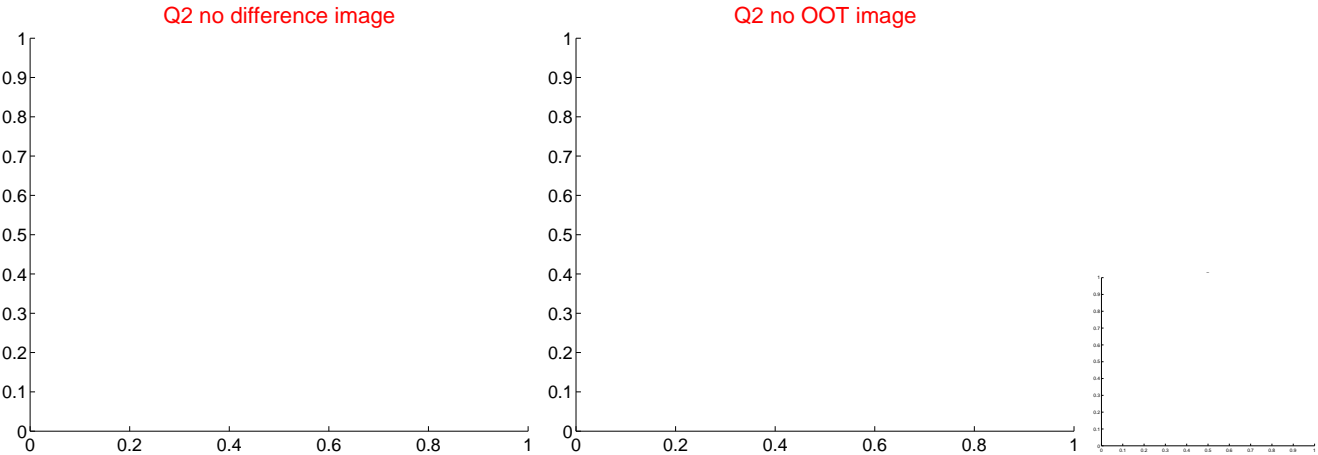
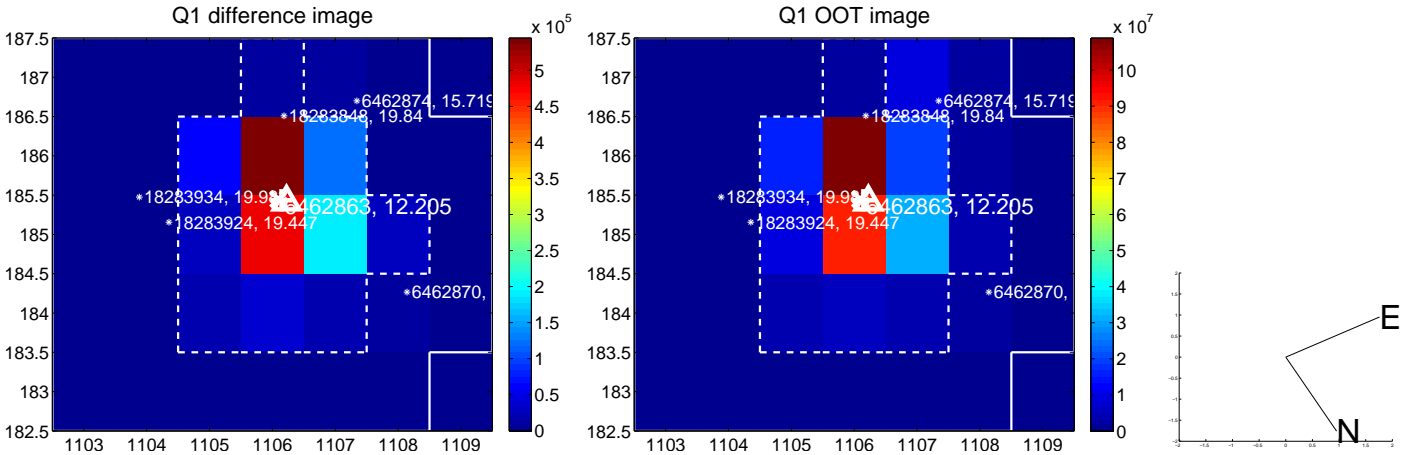
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.078 ± 0.073	1.07	-0.078 ± 0.075	0.011 ± 0.073
PRF-fit source offset from KIC position	0.211 ± 0.076	2.78	0.102 ± 0.075	0.185 ± 0.076
photometric centroid source offset	0.16 ± 0.01	12.01	0.14 ± 0.01	0.08 ± 0.01

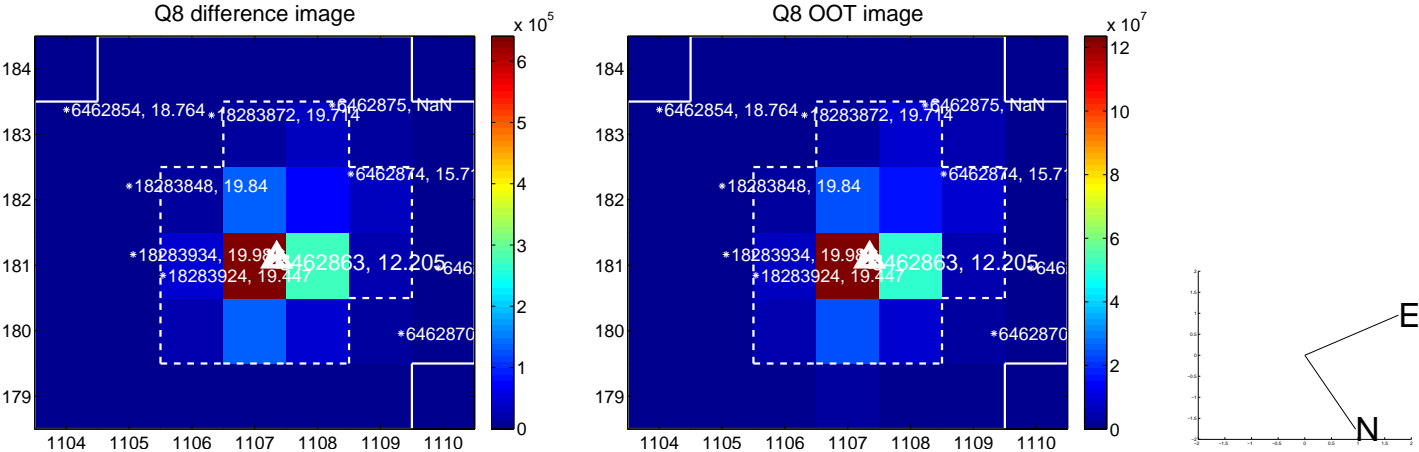
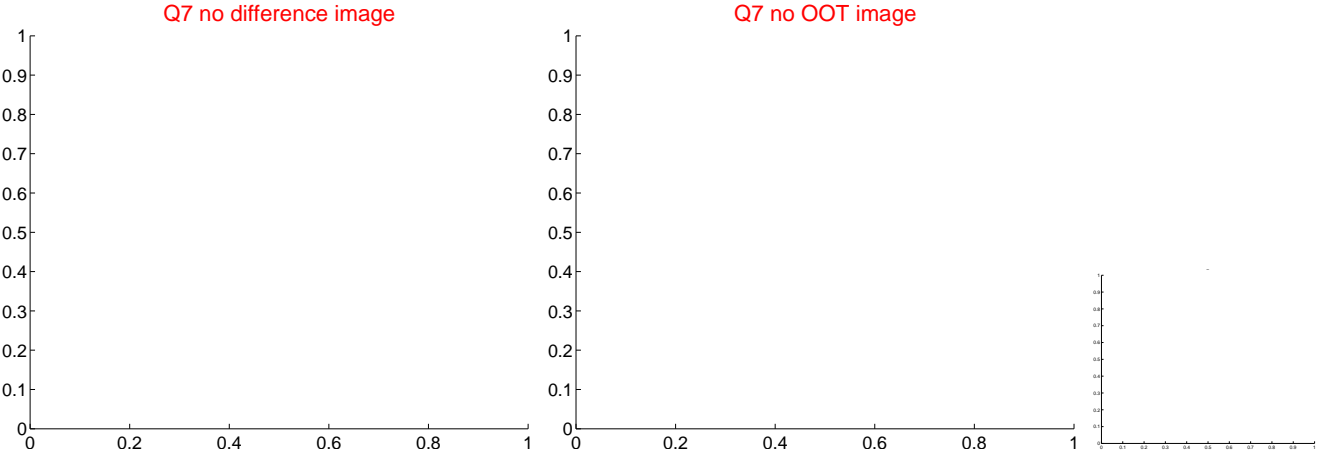
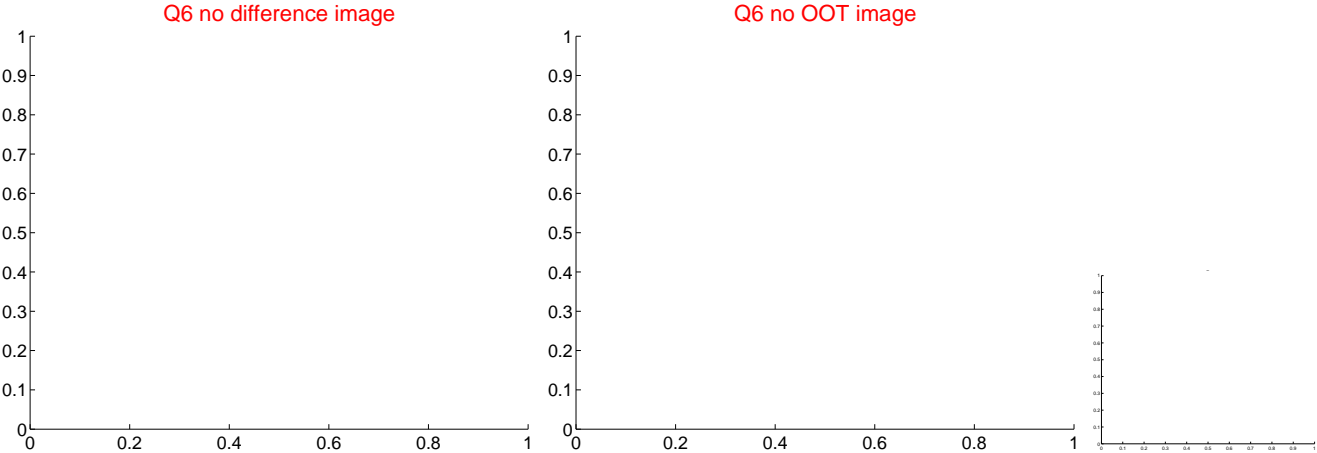
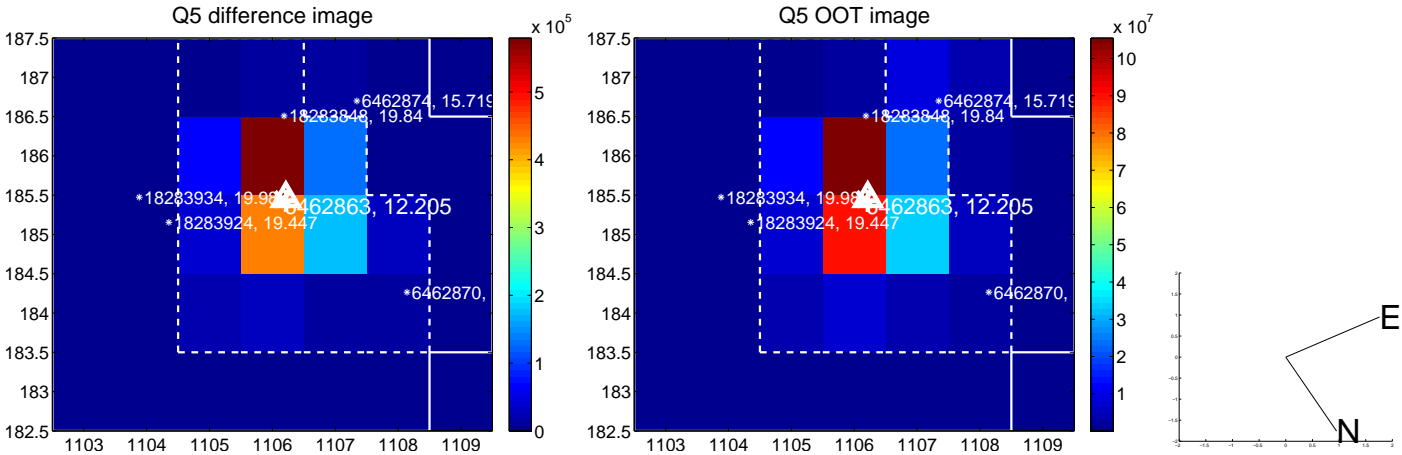


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

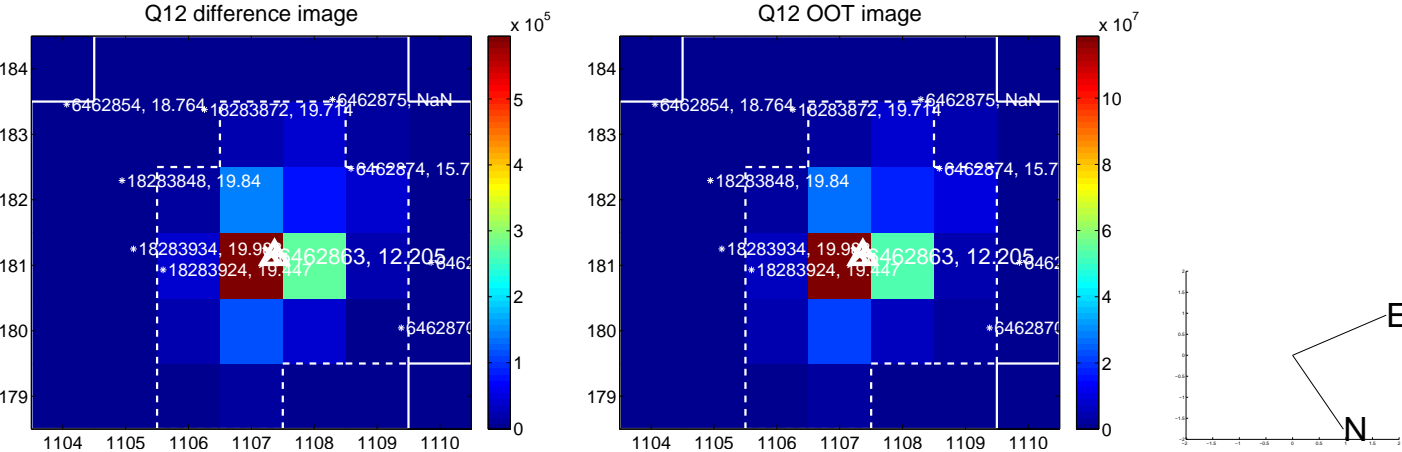
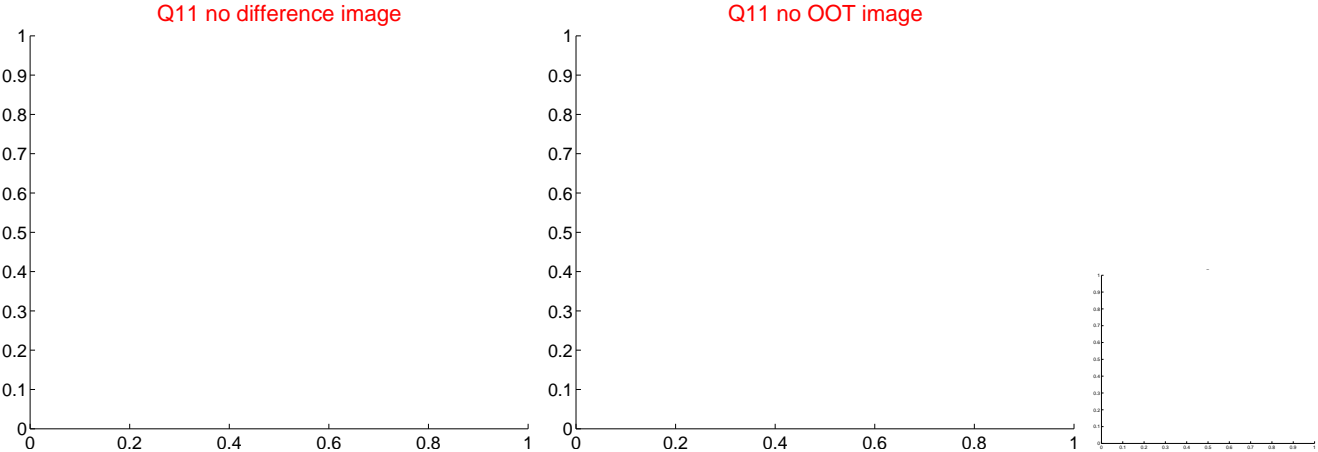
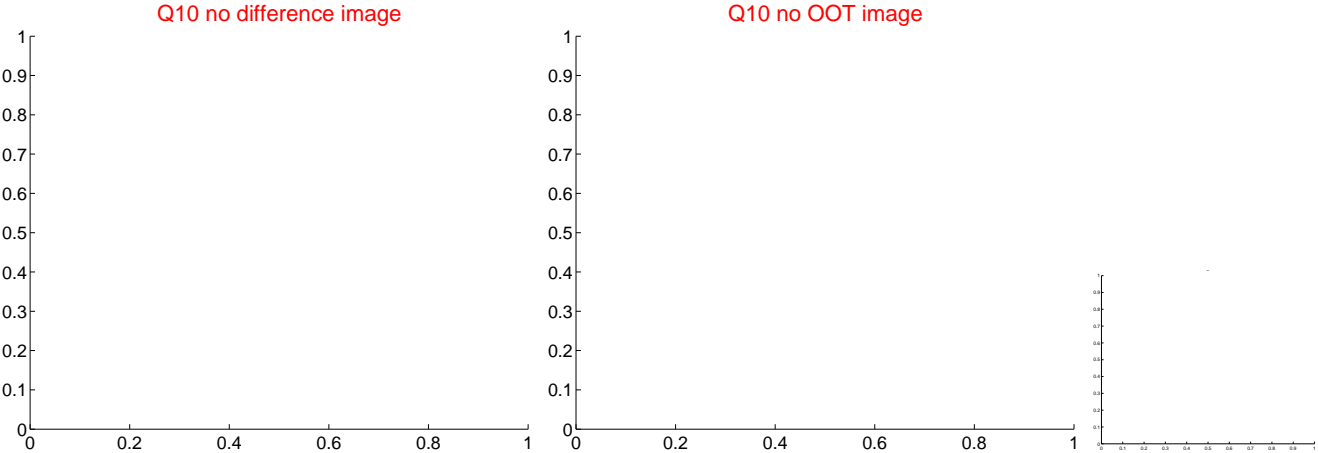
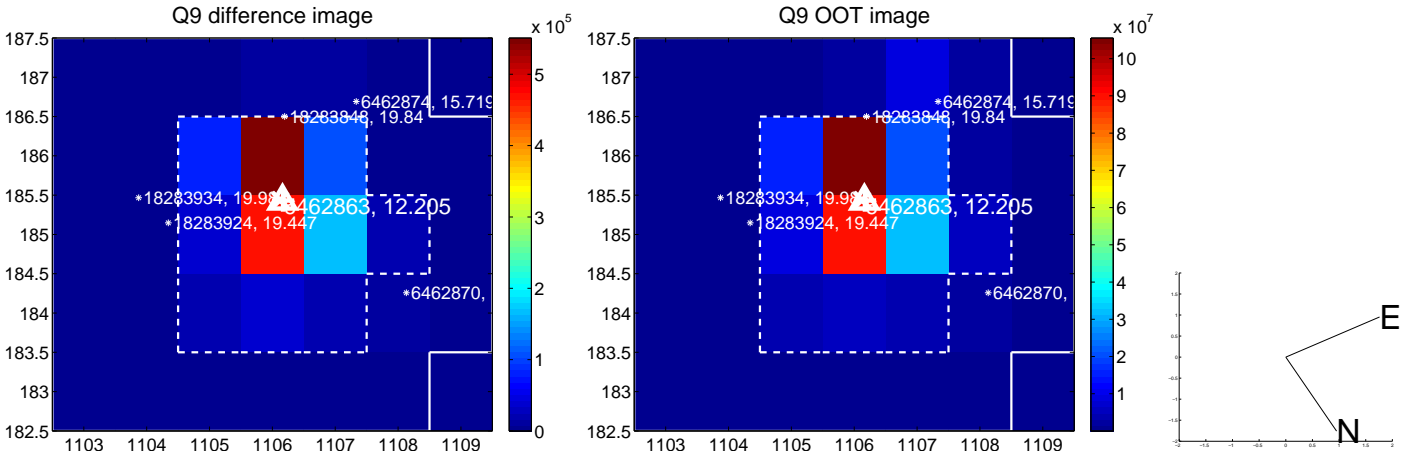
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



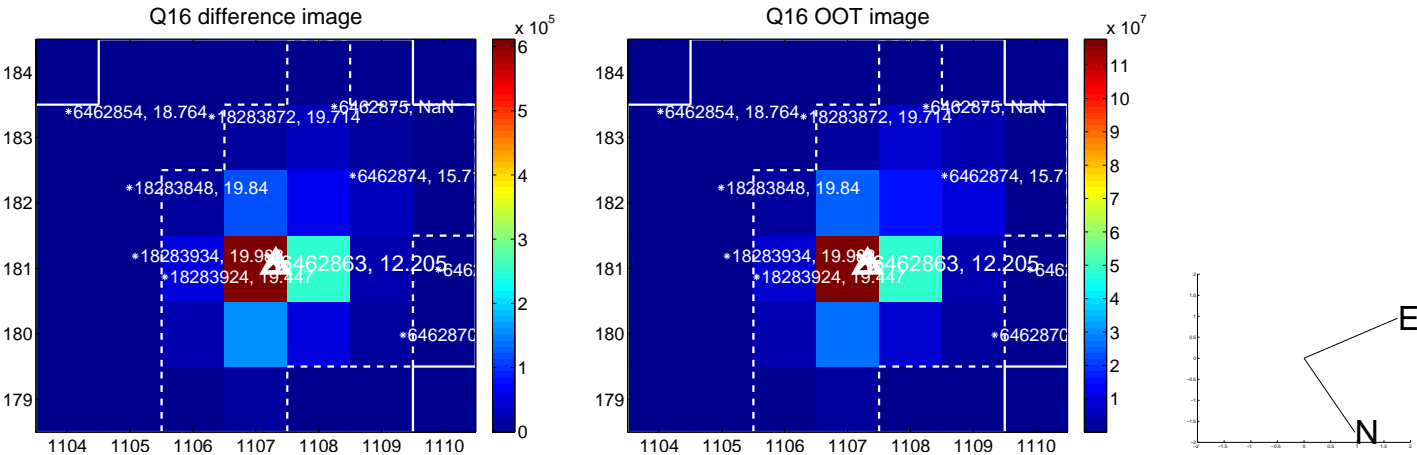
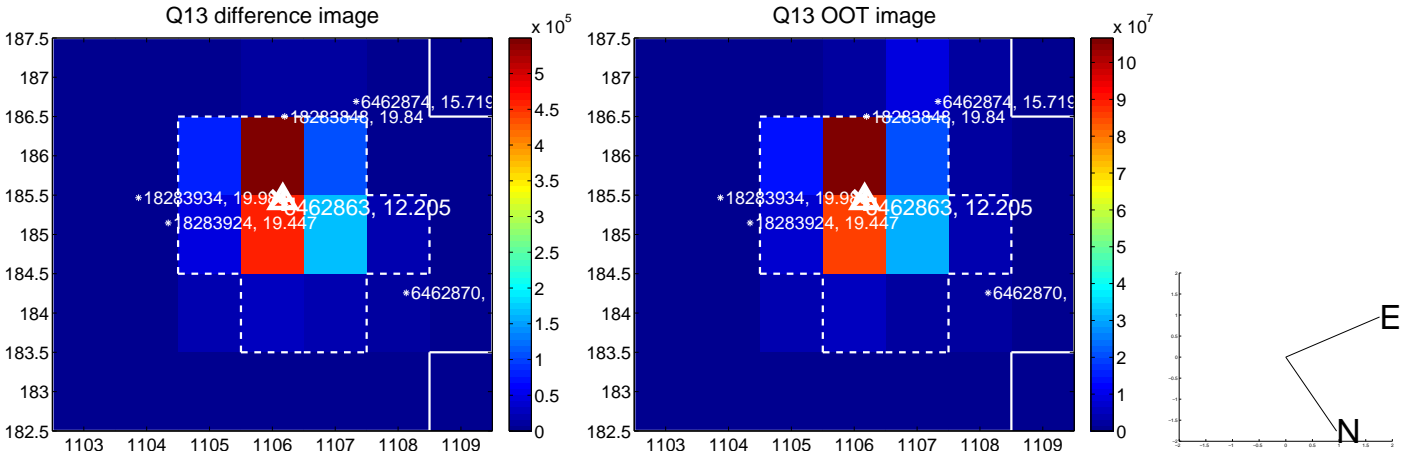
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



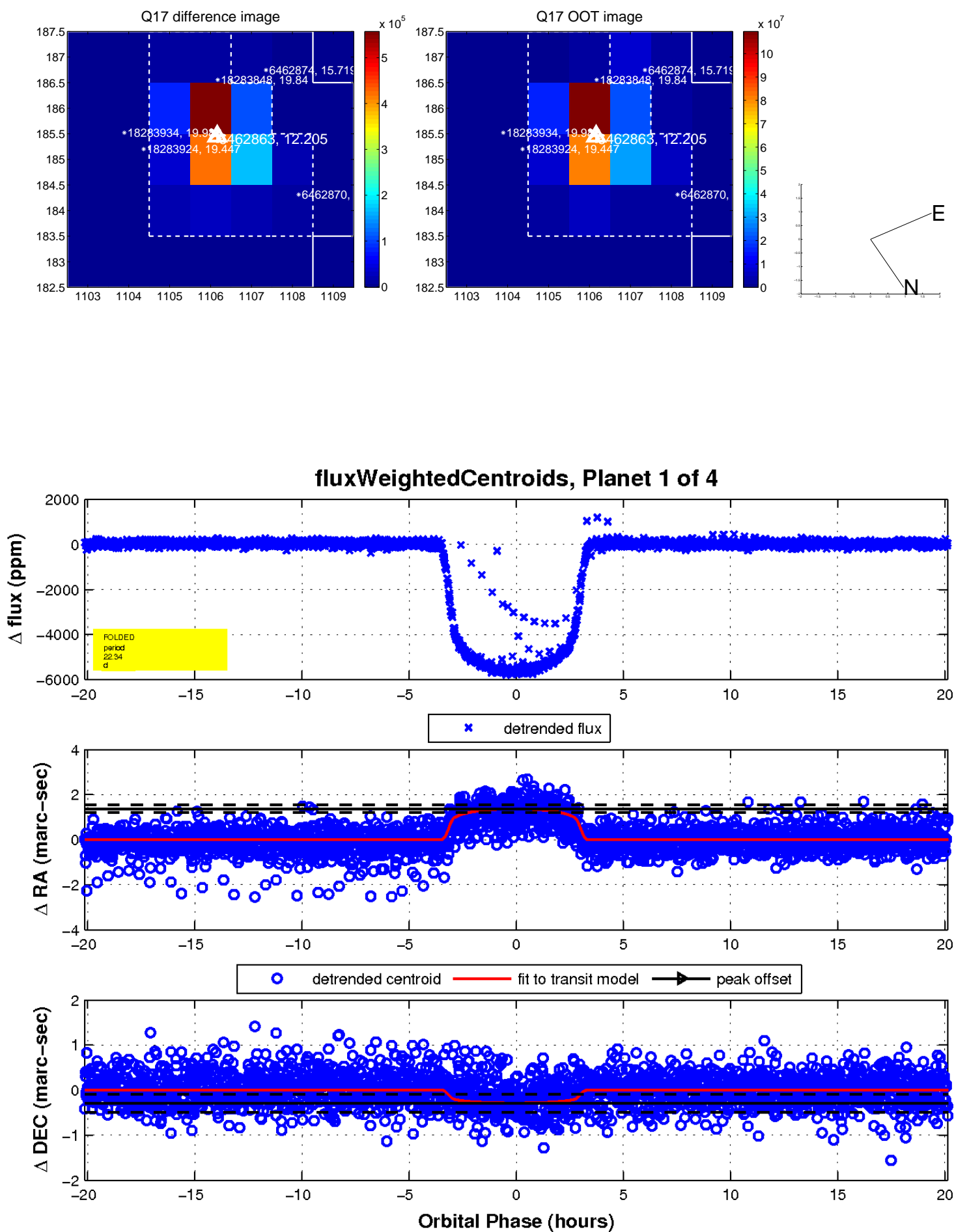
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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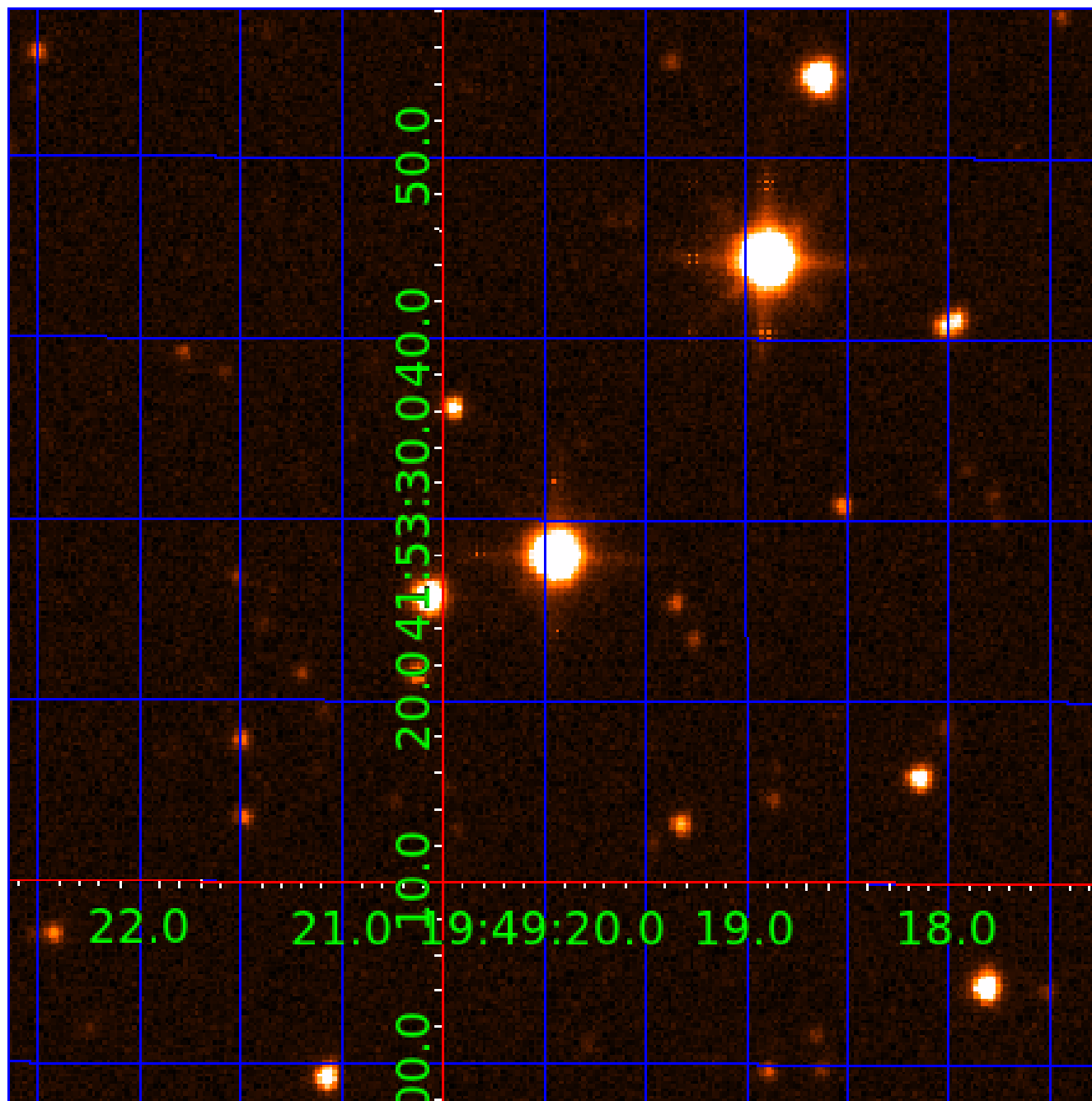


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006462863

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006462863-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006462863-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
006462863-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006462863-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

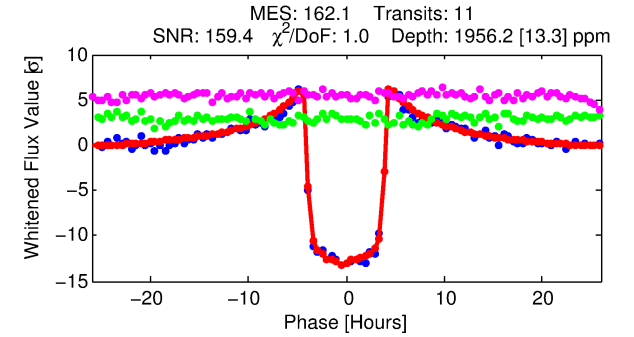
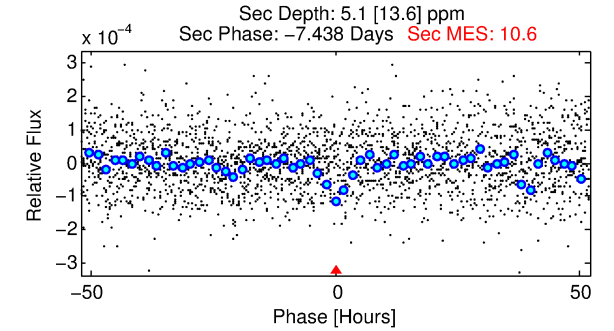
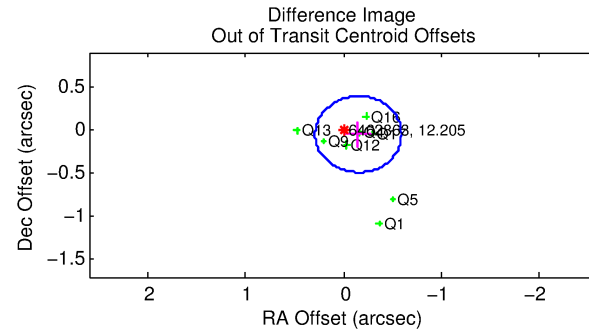
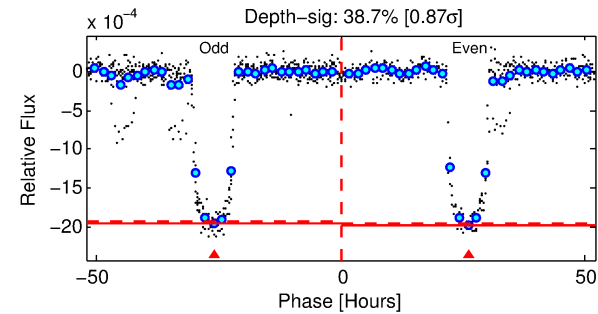
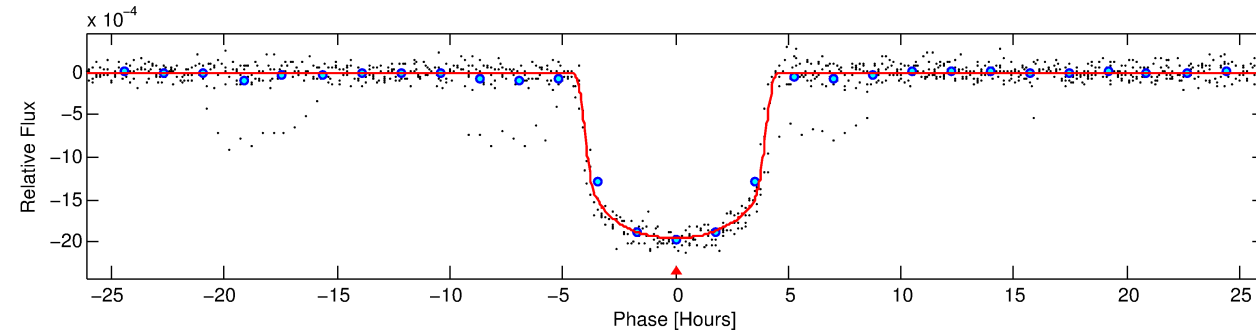
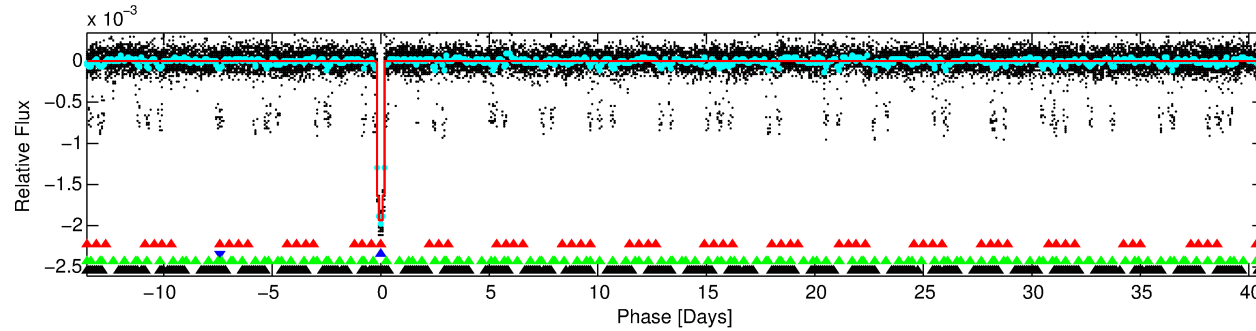
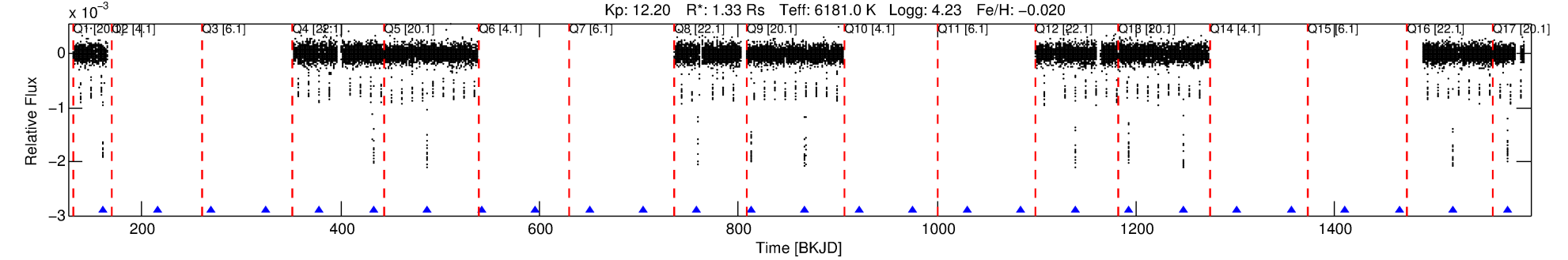
Ephemeris Match Information For 006462863-02

No Significant Match Found

DV One-Page Summary

KIC: 6462863 Candidate: 2 of 4 Period: 54.320 d
KOI: K00094.03 Name: Kepler-89e Corr: 0.985

Kp: 12.20 R*: 1.33 Rs Teff: 6181.0 K Logg: 4.23 Fe/H: -0.020



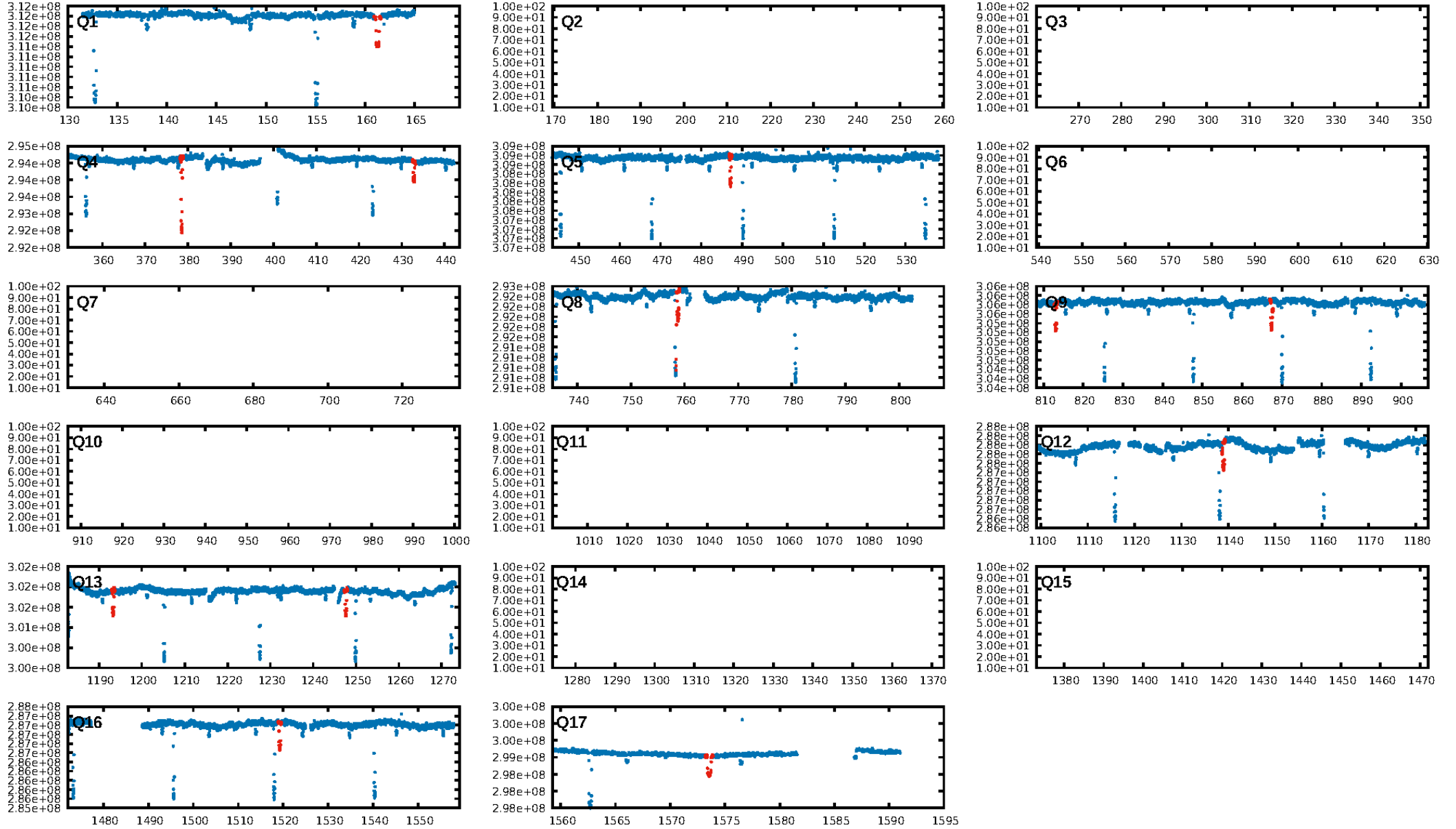
DV Fit Results:

Period = 54.32024 [0.00004] d
Epoch = 161.2371 [0.0007] BKJD
Rp/R* = 0.0427 [0.0005]
a/R* = 39.15 [2.09]
b = 0.64 [0.05]
Seff = 27.46 [7.30]
Teff = 584 [39] K
Rp = 6.20 [1.14] Re
a = 0.2905 [0.0476] AU
Ag = 6.19 [16.51] [0.31σ]
Teffp = 1424 [945] K [0.89σ]

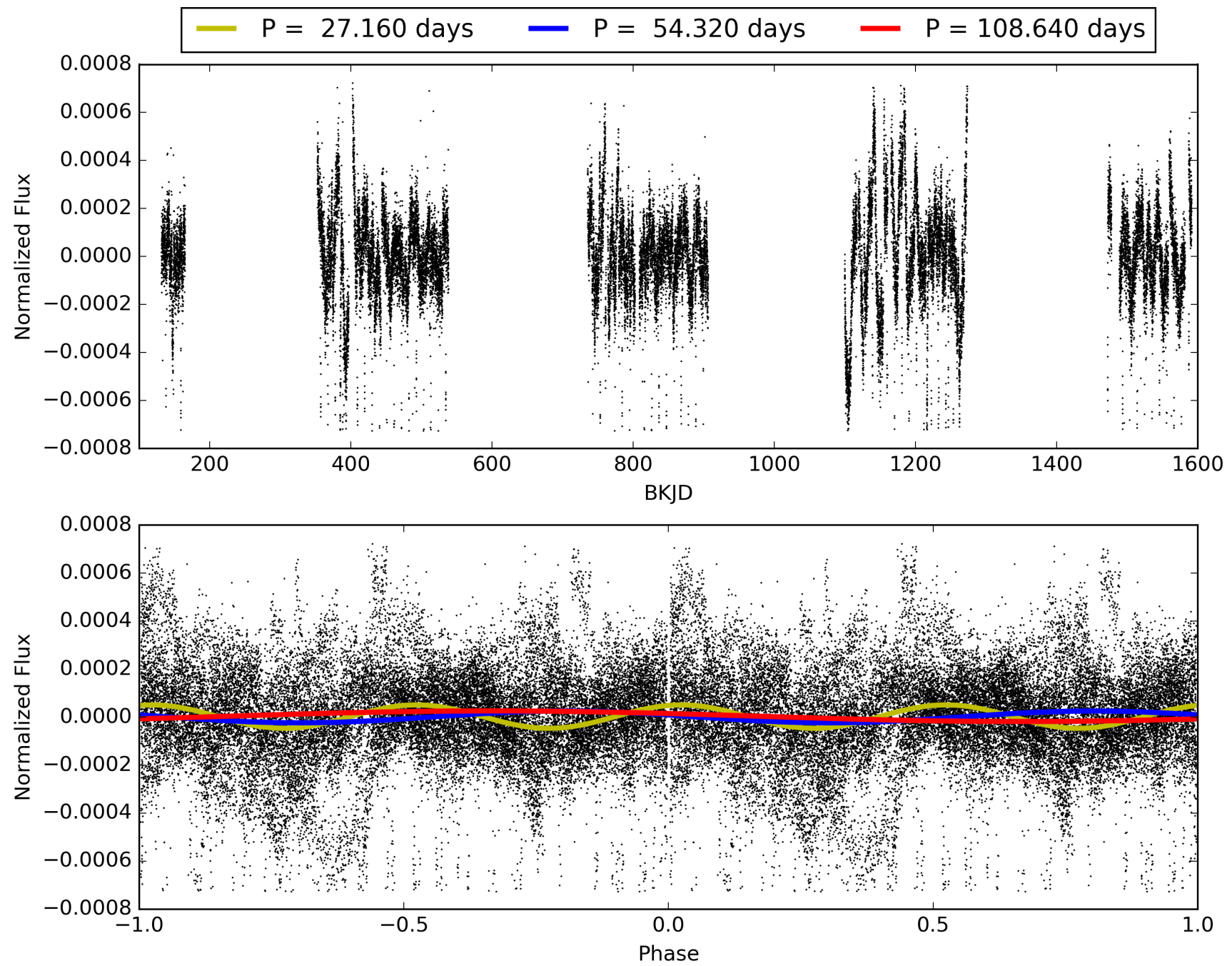
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.79σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 7.544
Centroid-sig: 0.2%
Centroid-so: 0.227 arcsec [3.81σ]
OotOffset-rm: 0.159 arcsec [1.08σ]
KicOffset-rm: 0.078 arcsec [0.44σ]
OotOffset-st: 0/0/3/5 [8]
KicOffset-st: 0/0/3/5 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 0.33 [3/9]

TCE 006462863-02, PDC Light Curves

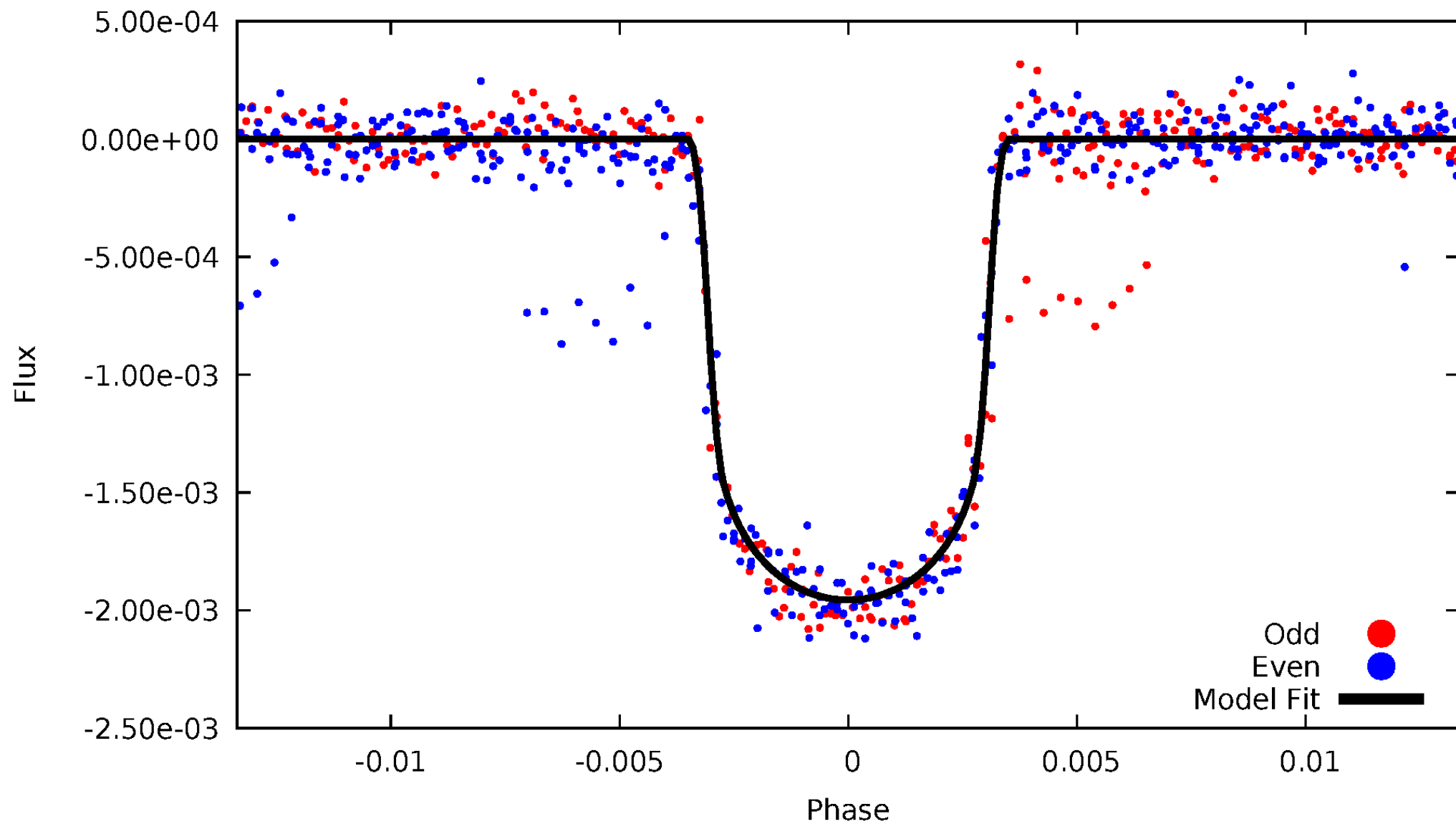


TCE 006462863-02



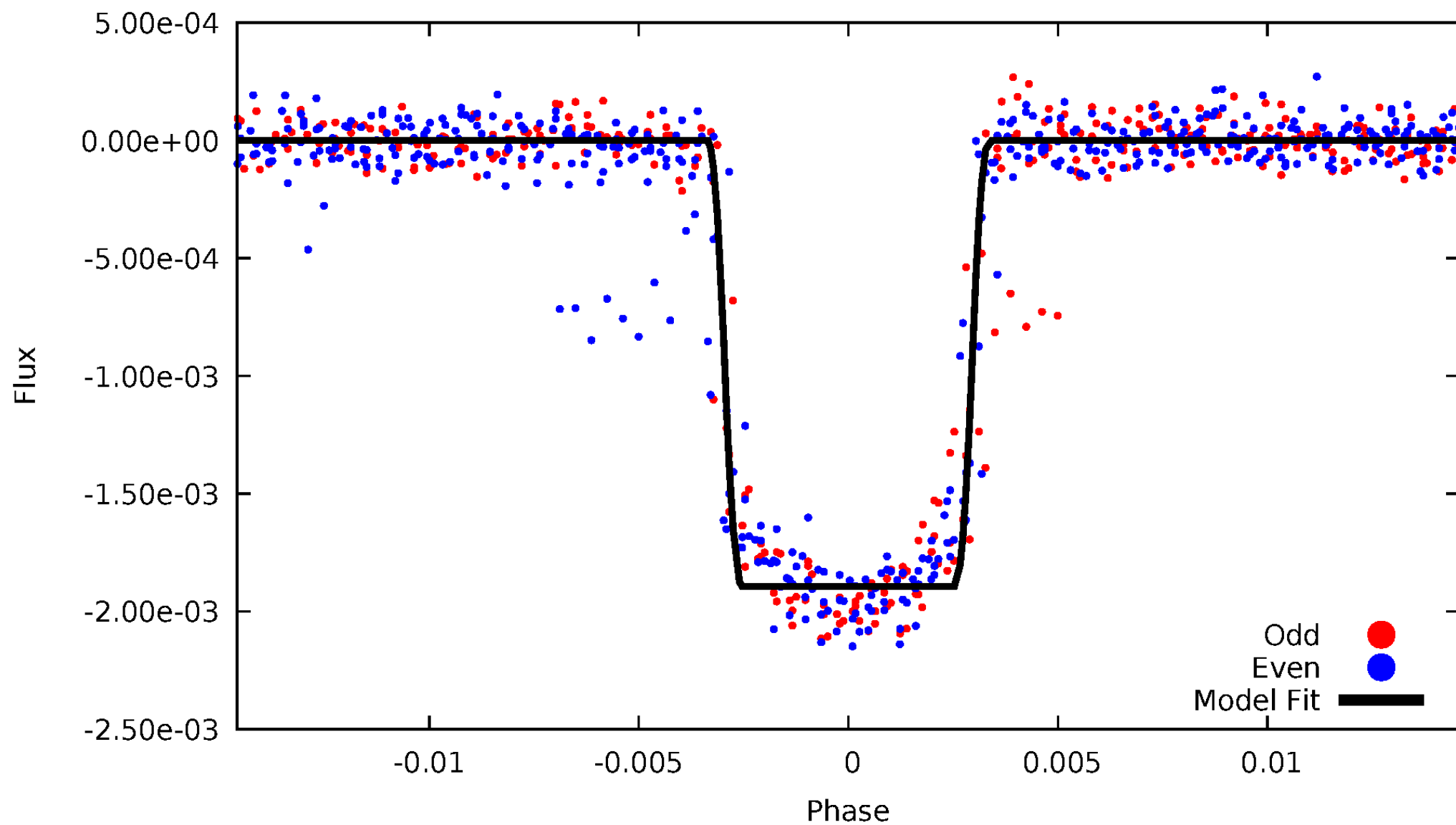
DV Odd/Even

TCE 006462863-02



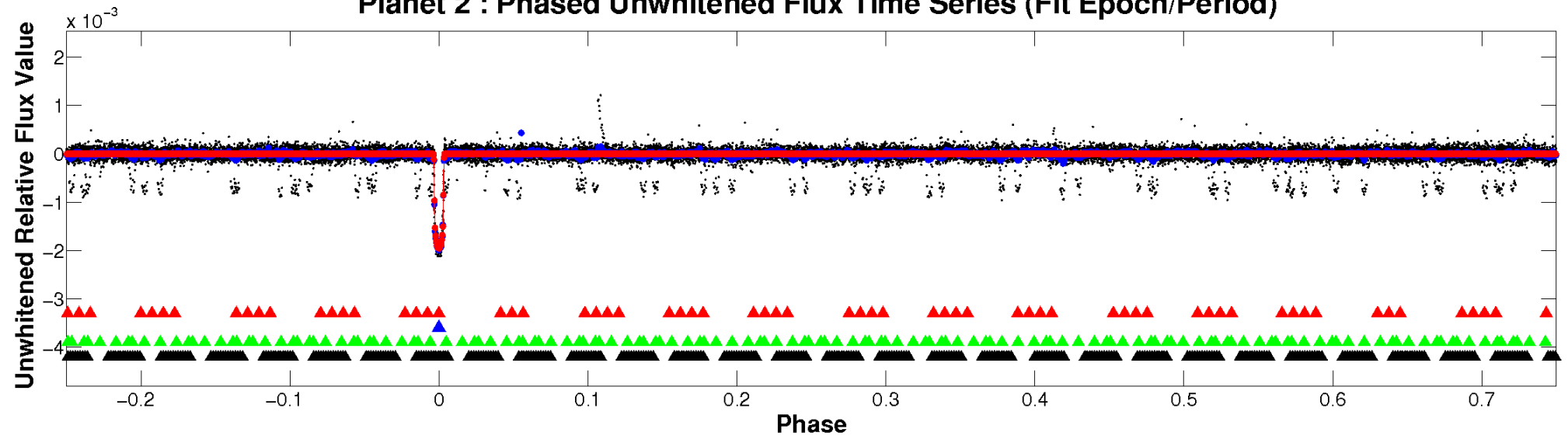
ALT Odd/Even

TCE 006462863-02

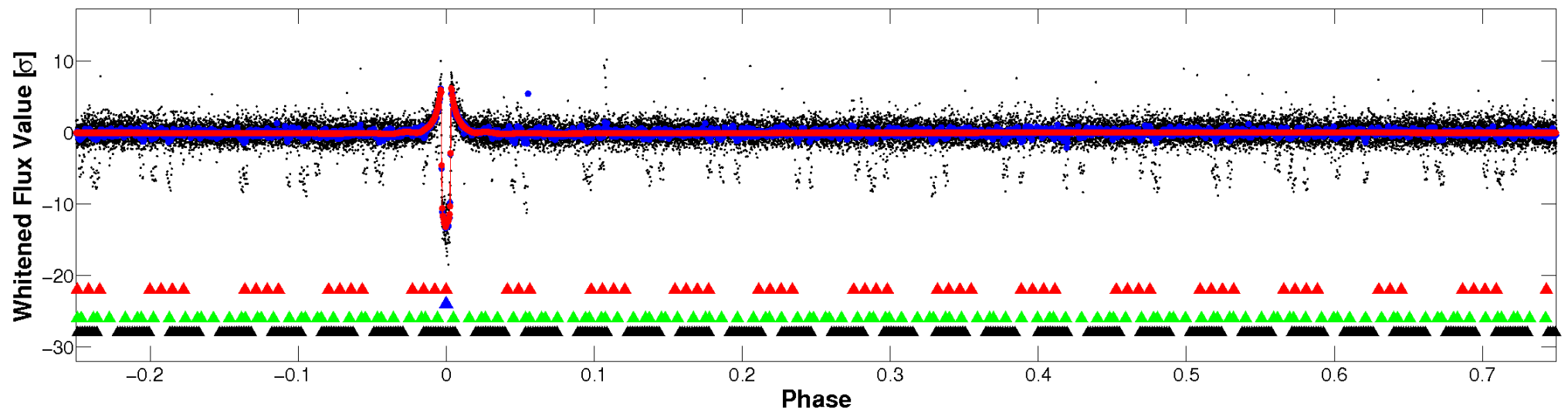


Non-Whitened Vs. Whitened Light Curve

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

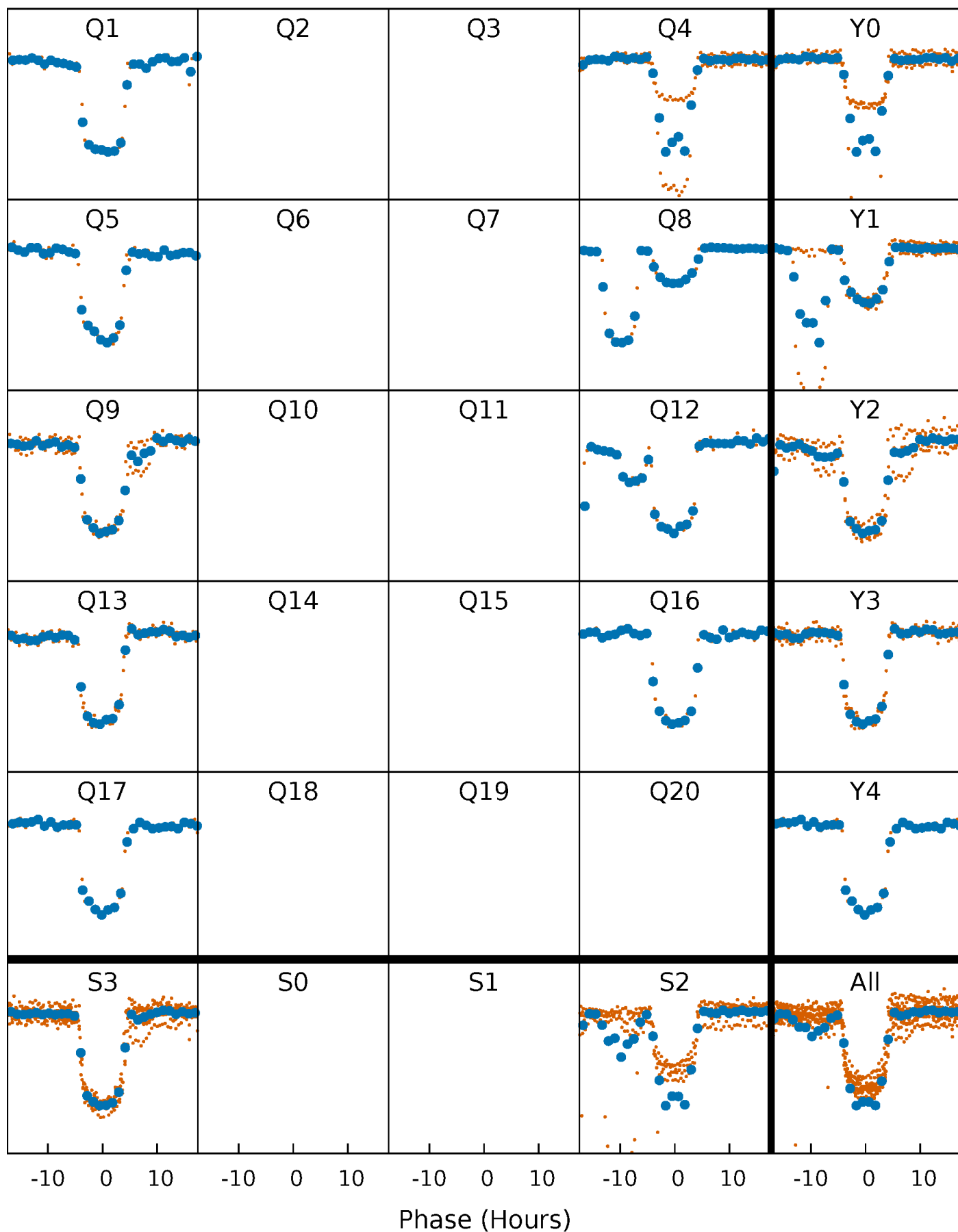


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



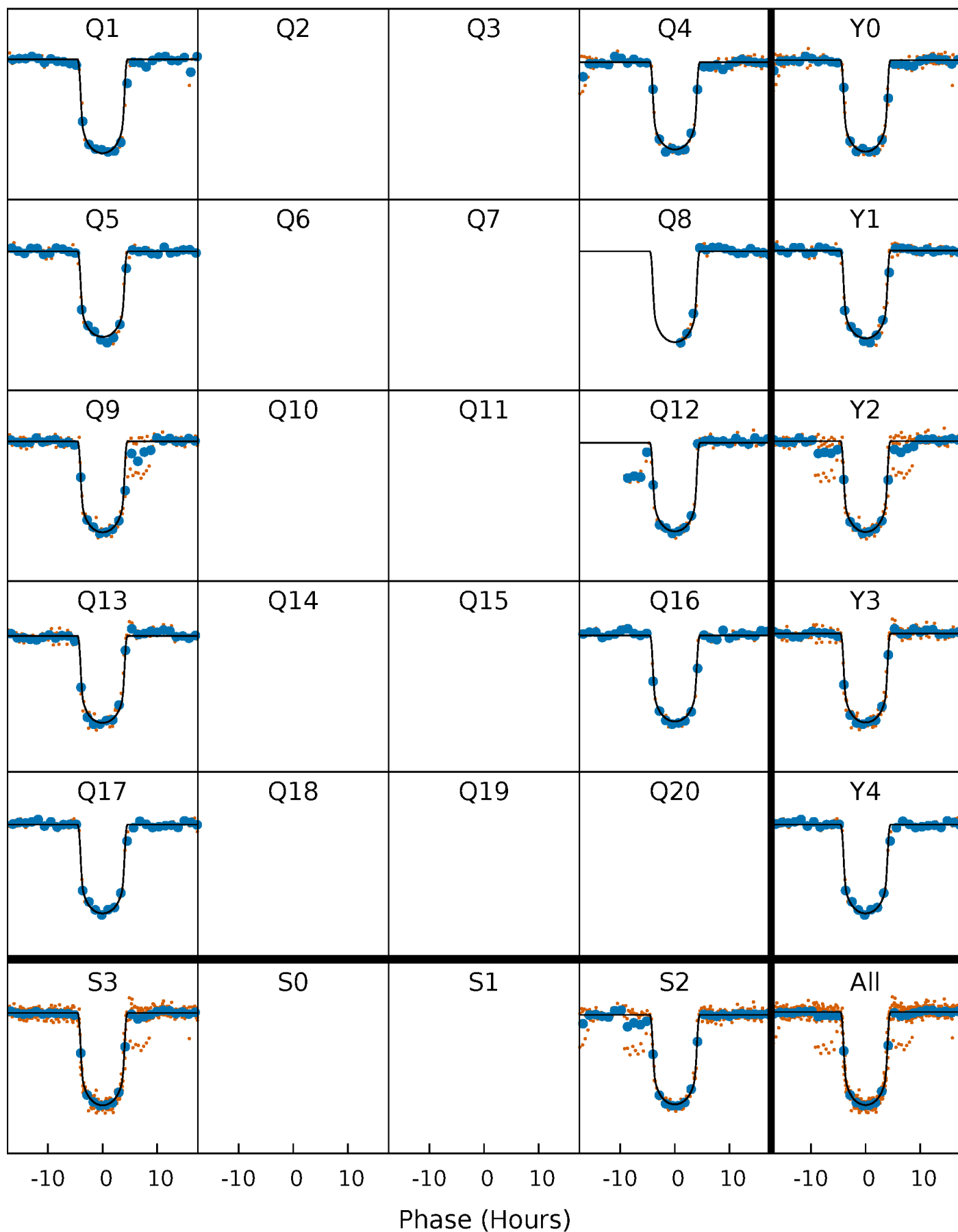
PDC Quarter-Phased Transit Curves

TCE 006462863-02 P= 54.320239 Days $T_0=161.237072$ (BKJD)



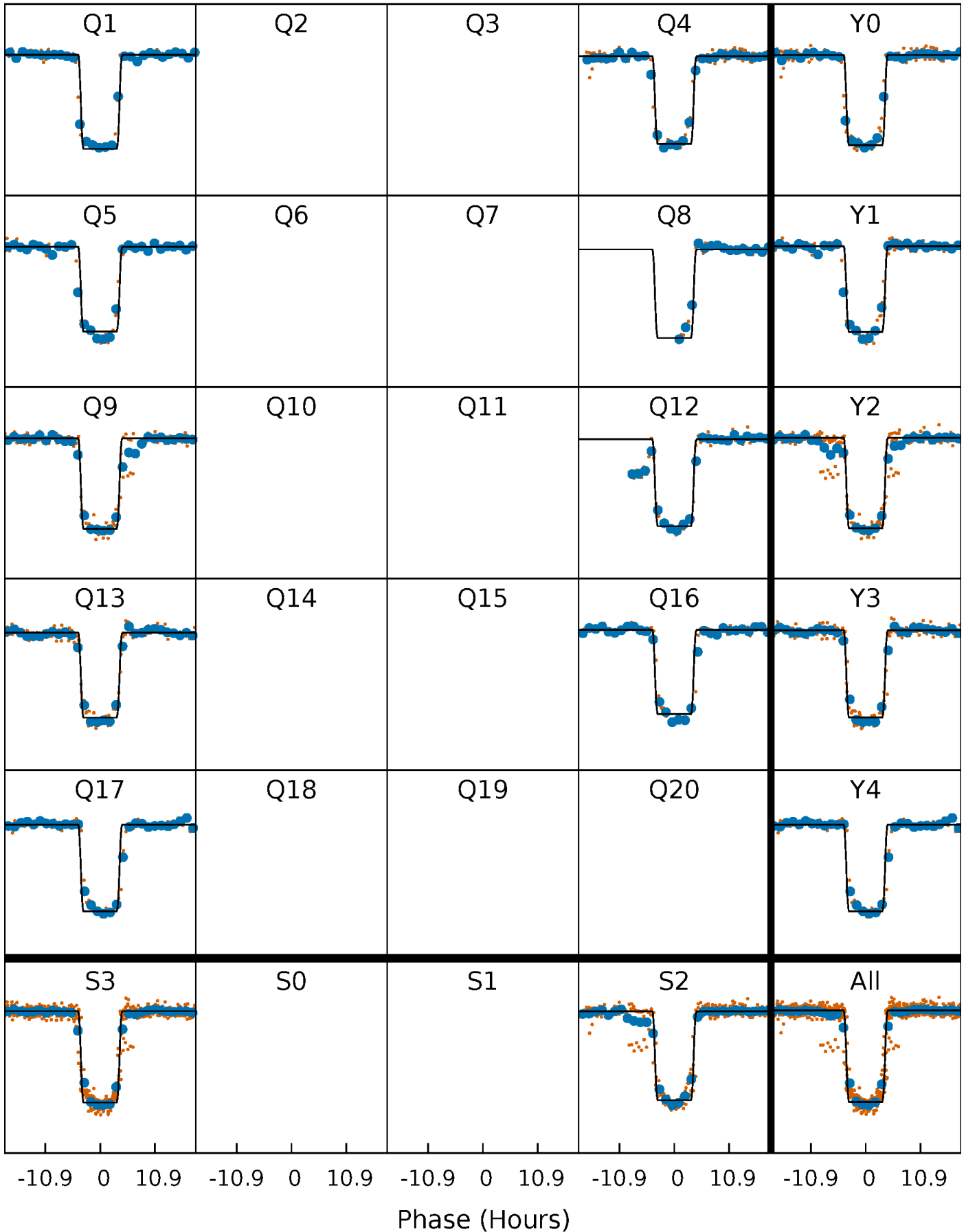
DV Quarter-Phased Transit Curves

TCE 006462863-02 P= 54.320239 Days $T_0=161.237072$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

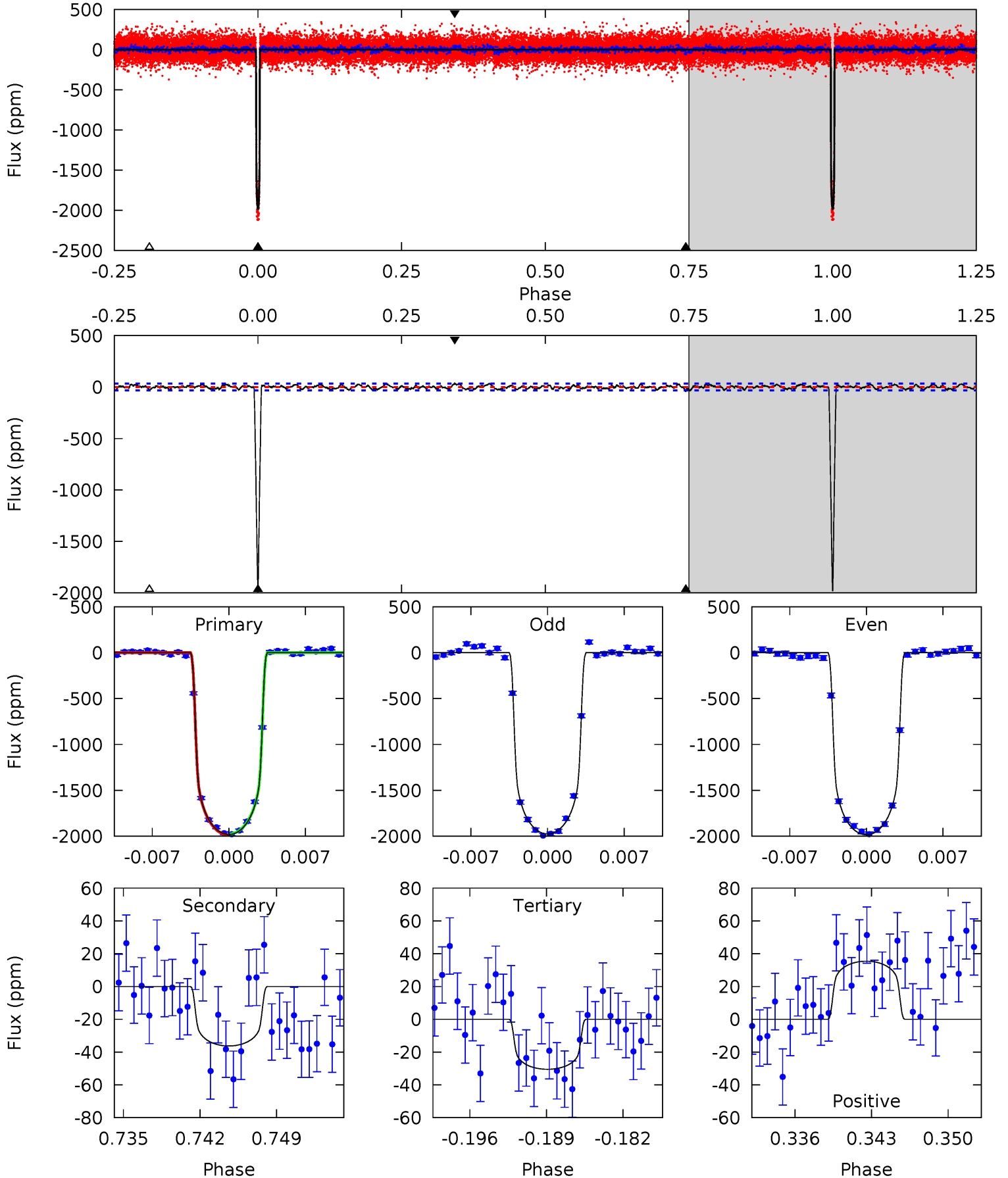
TCE 006462863-02 P= 54.318378 Days $T_0=161.262789$ (BKJD)



DV Model-Shift Uniqueness Test

006462863-02, P = 54.320239 Days, E = 106.916833 Days

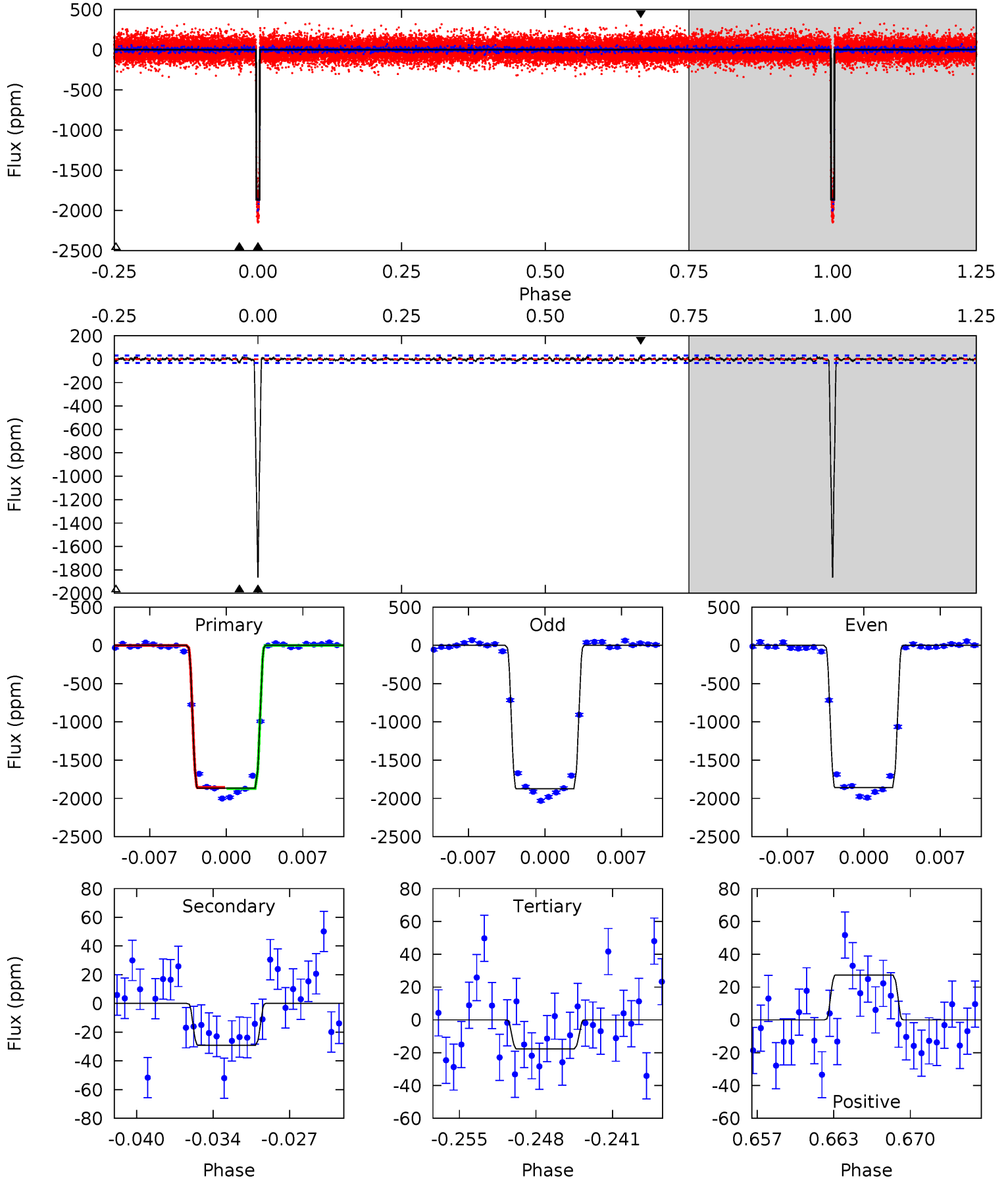
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
303.2	5.55	4.67	5.42	5.09	2.70	1.90	298.6	297.8	0.89	0.13	0.74	1.00	0.02	0.83



Alt Model-Shift Uniqueness Test

006462863-02, P = 54.318378 Days, E = 106.944411 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
296.6	4.63	2.82	4.34	5.10	2.71	1.01	293.8	292.3	1.81	0.29	1.16	1.00	0.01	1.14



Stellar Parameters For KIC 006462863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6181^{+111}_{-135}	$4.234^{+0.143}_{-0.117}$	$-0.020^{+0.150}_{-0.150}$	$1.331^{+0.243}_{-0.199}$	$1.106^{+0.116}_{-0.074}$	$0.661^{+0.419}_{-0.237}$
	+2%/-2%	+3%/-3%	+750%/-750%	+18%/-15%	+10%/-7%	+63%/-36%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006462863-02 / KOI 0094.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-36 ± 7	$6.17^{+0.65}_{-0.56}$	811^{+42}_{-41}	2986^{+80}_{-83}	44^{+12}_{-10}
Alt.	-29 ± 6	$6.31^{+0.59}_{-0.61}$	813^{+40}_{-41}	2890^{+83}_{-105}	35^{+10}_{-10}

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

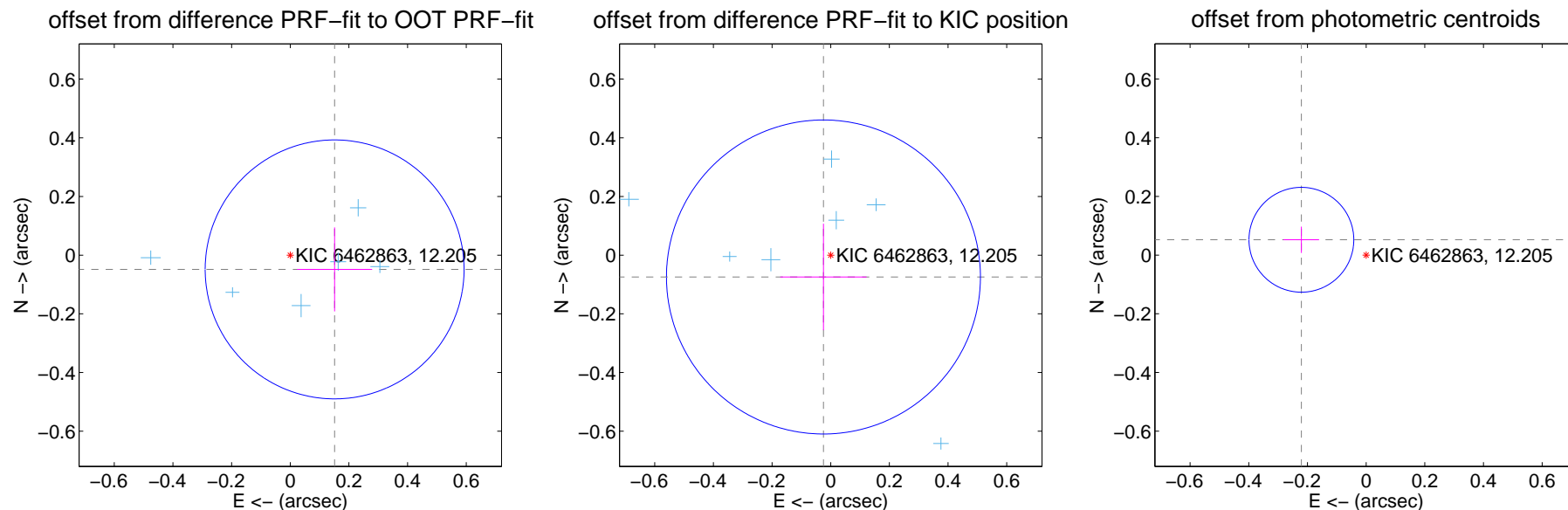
DV Centroid Data

Supplemental centroid analysis for 006462863-02. Kepler magnitude: 12.21. Transit SNR 159.42

There are 8 quarters with good PRF difference image offsets

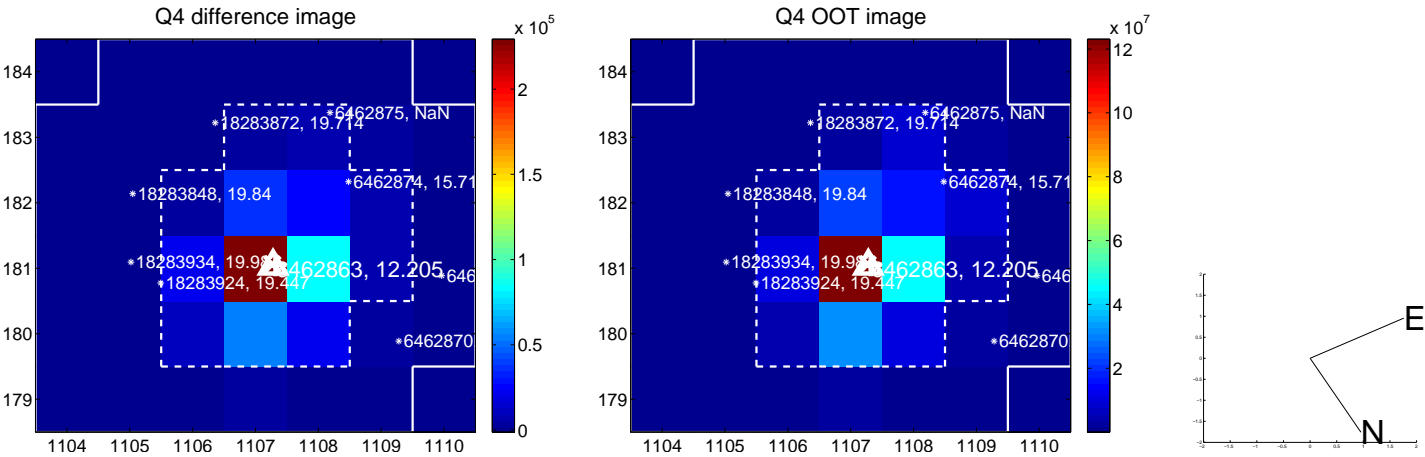
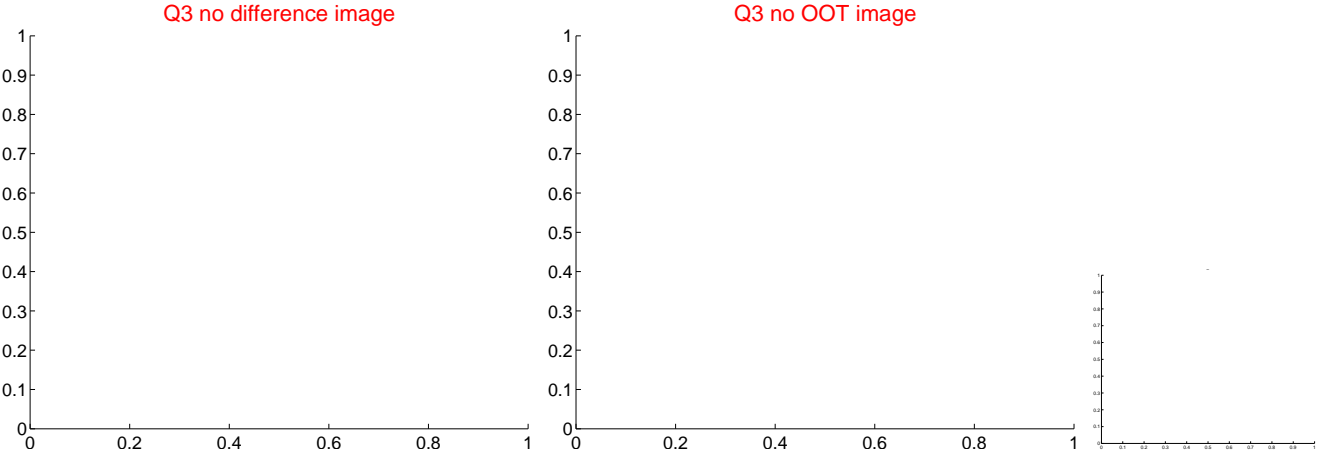
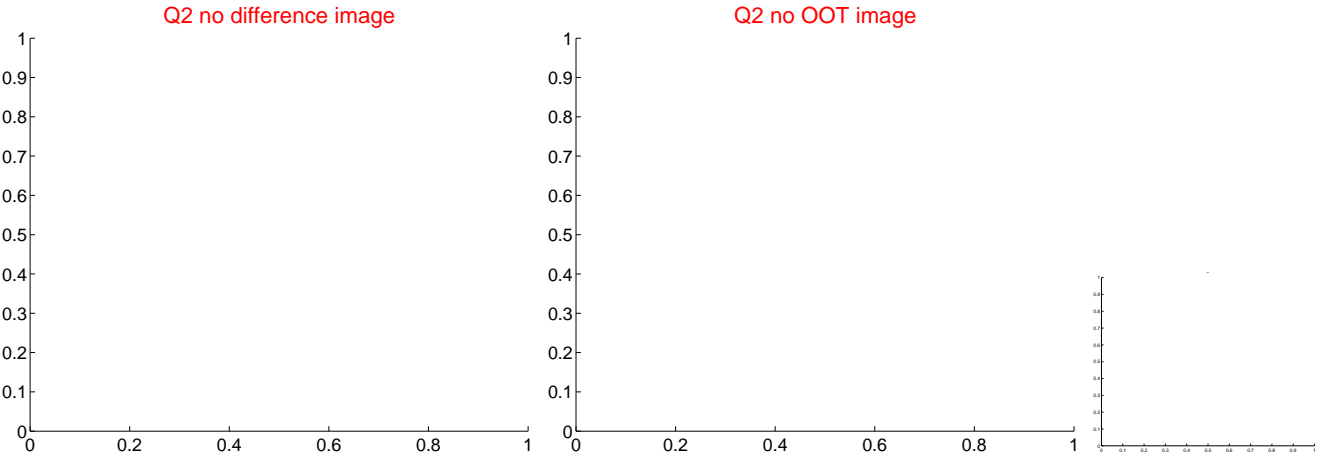
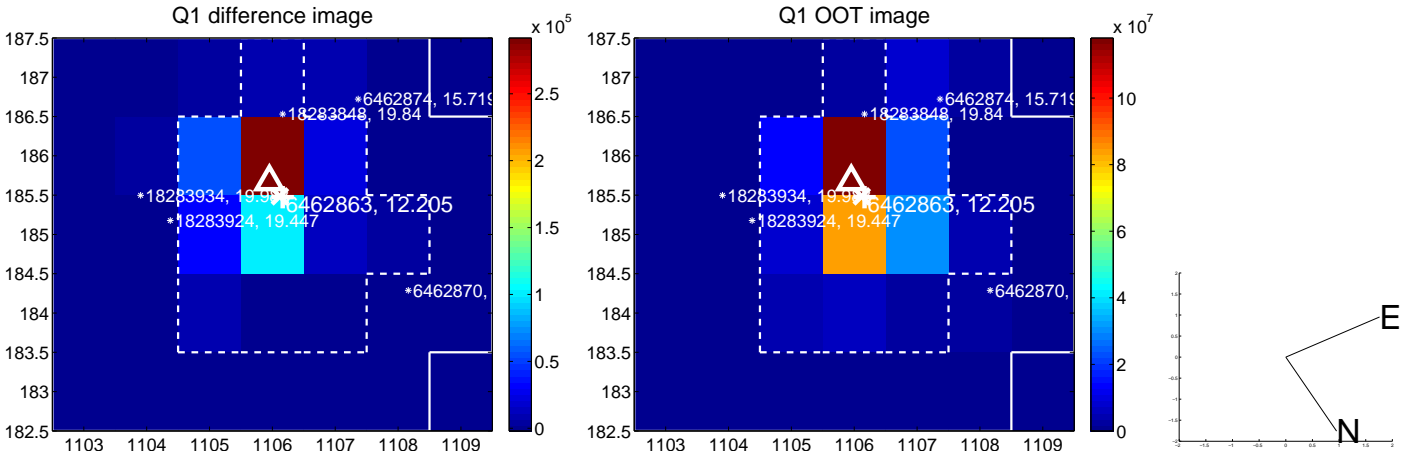
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.159 ± 0.147	1.08	-0.151 ± 0.128	-0.049 ± 0.143
PRF-fit source offset from KIC position	0.078 ± 0.178	0.44	0.025 ± 0.147	-0.074 ± 0.182
photometric centroid source offset	0.23 ± 0.06	3.81	0.22 ± 0.06	0.05 ± 0.04

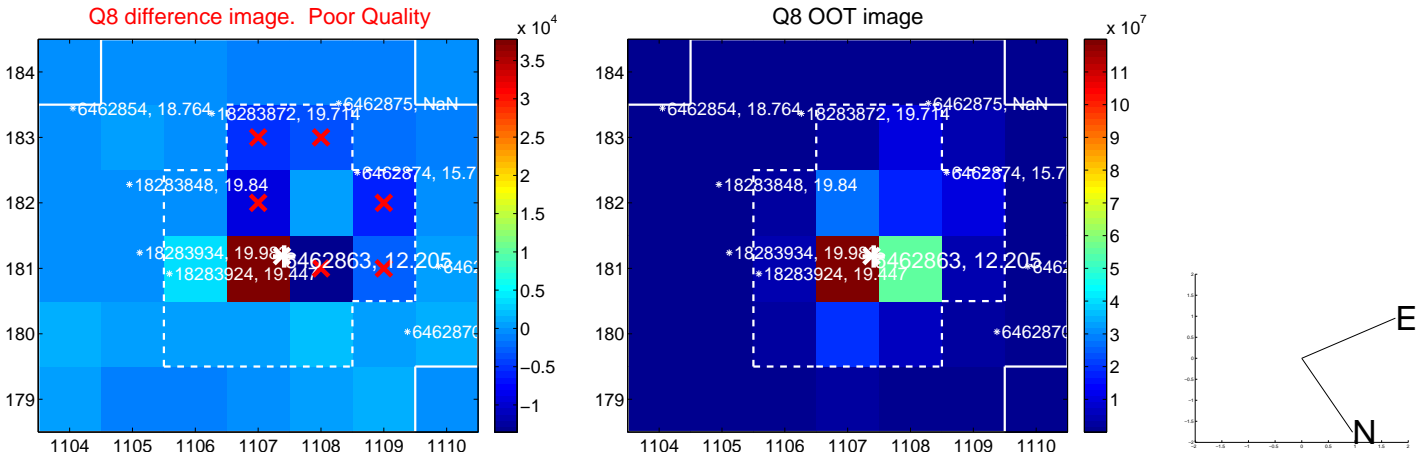
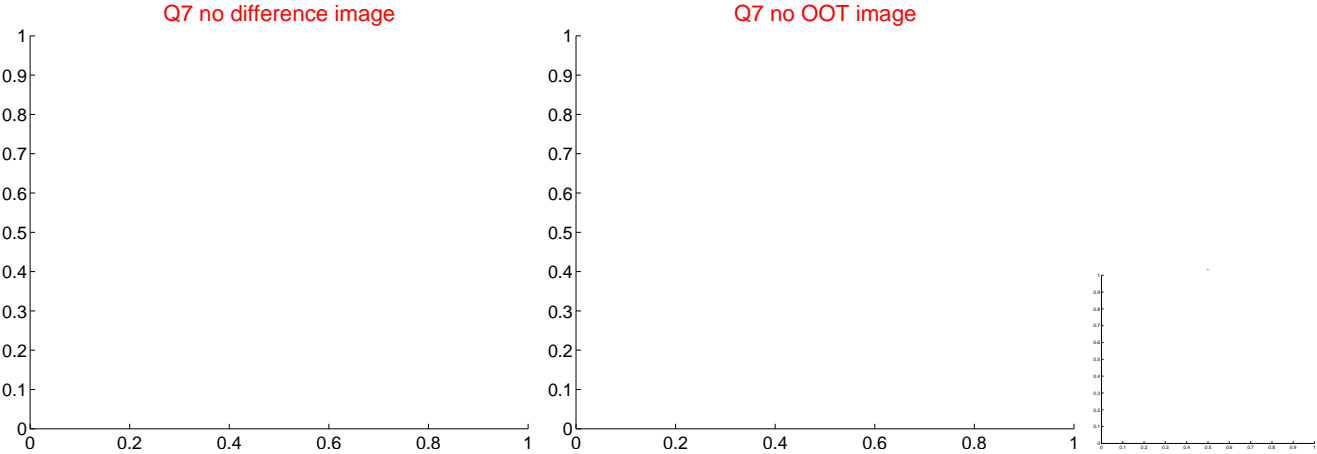
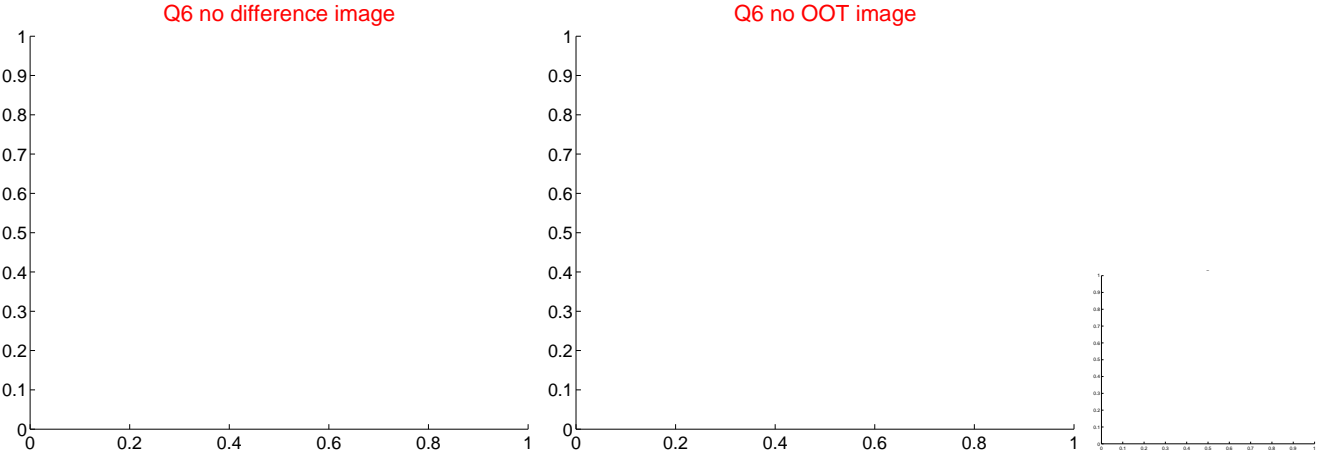
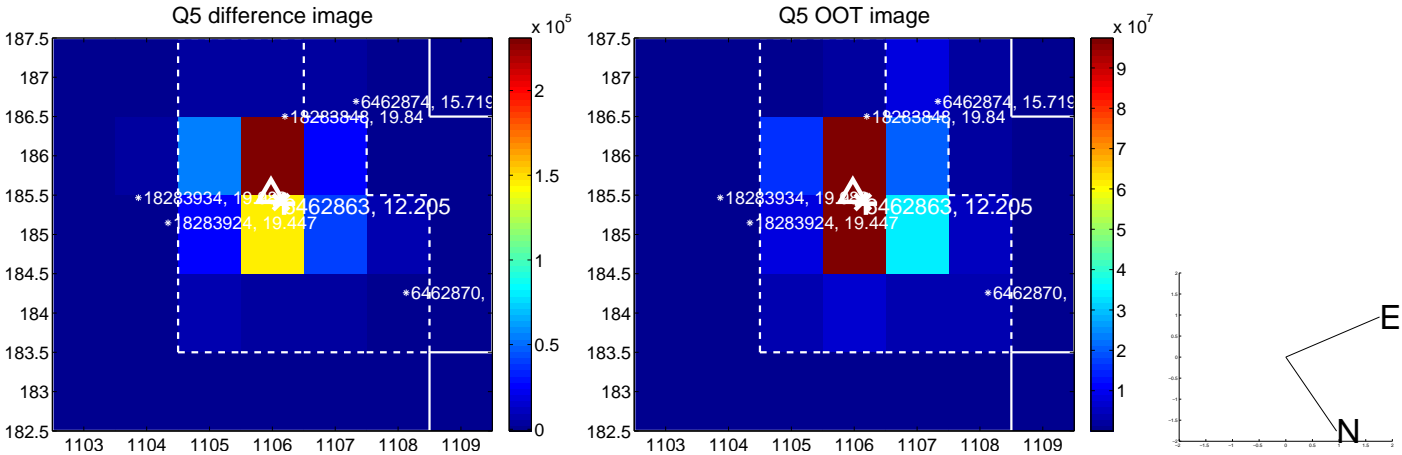


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

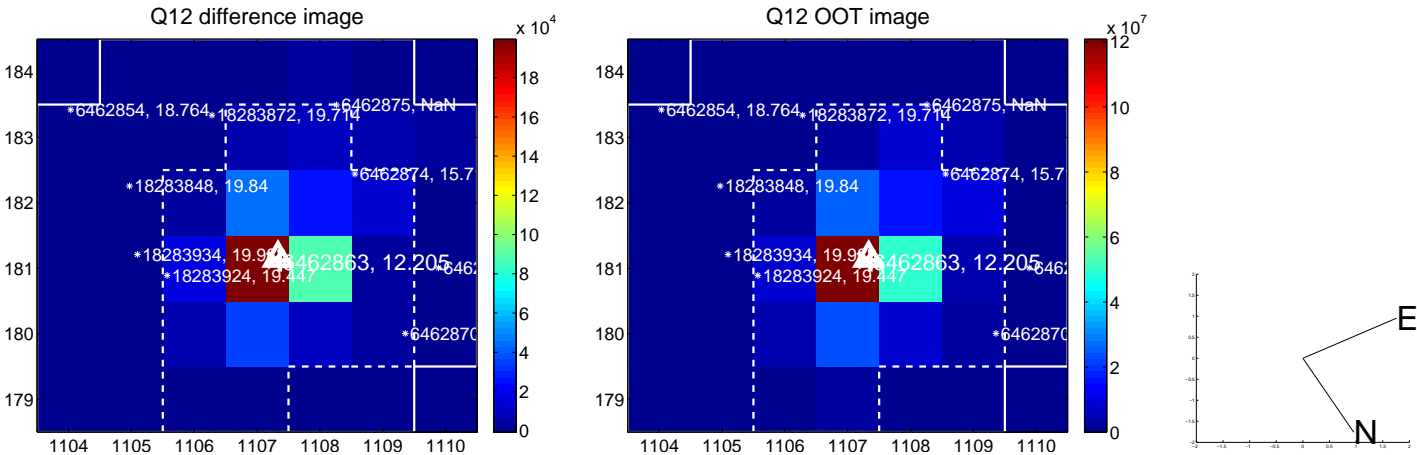
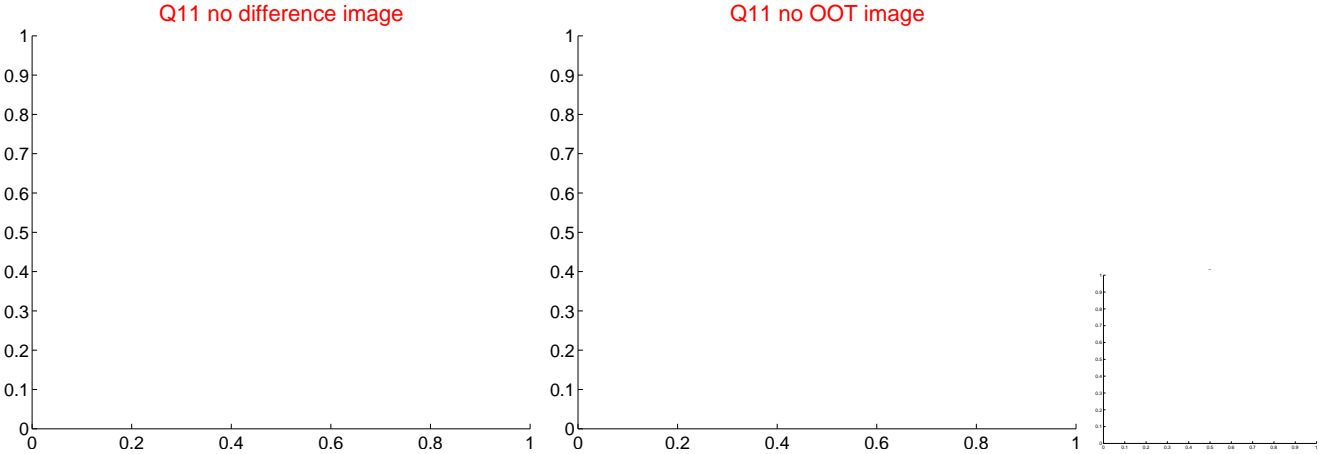
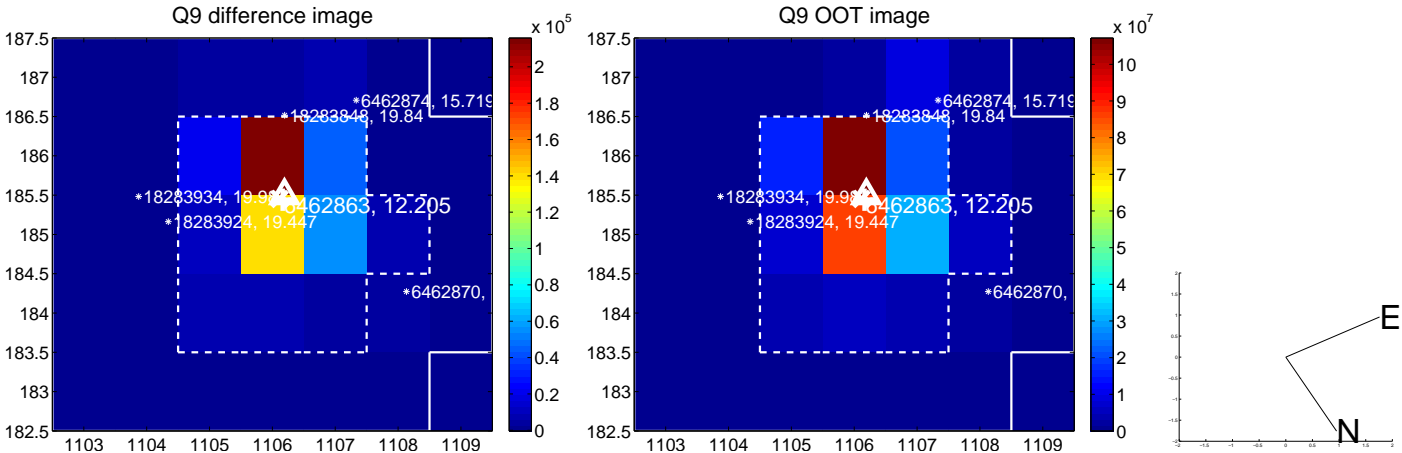
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



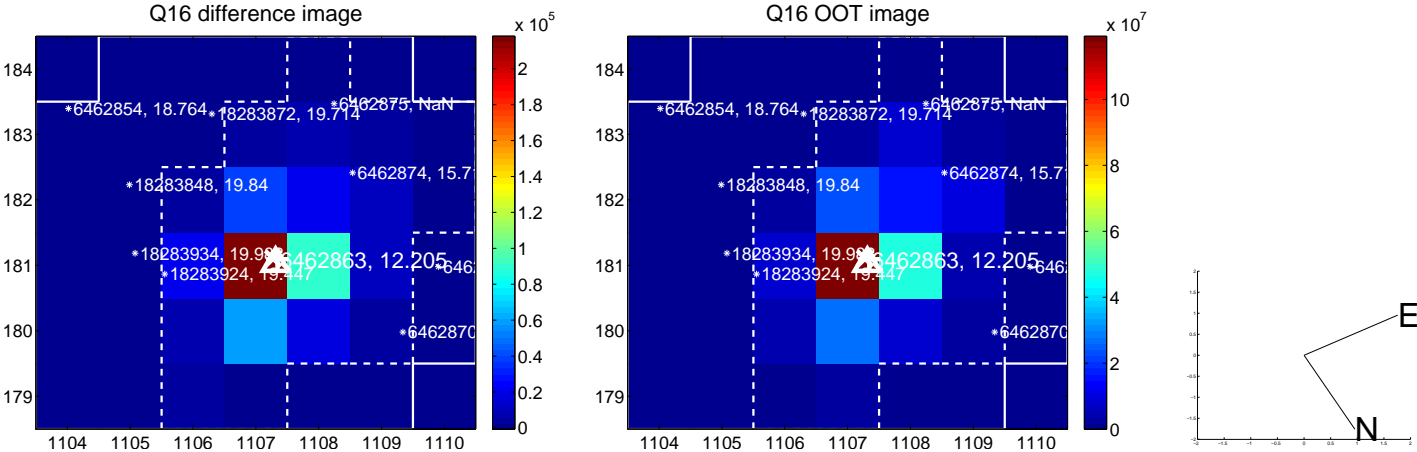
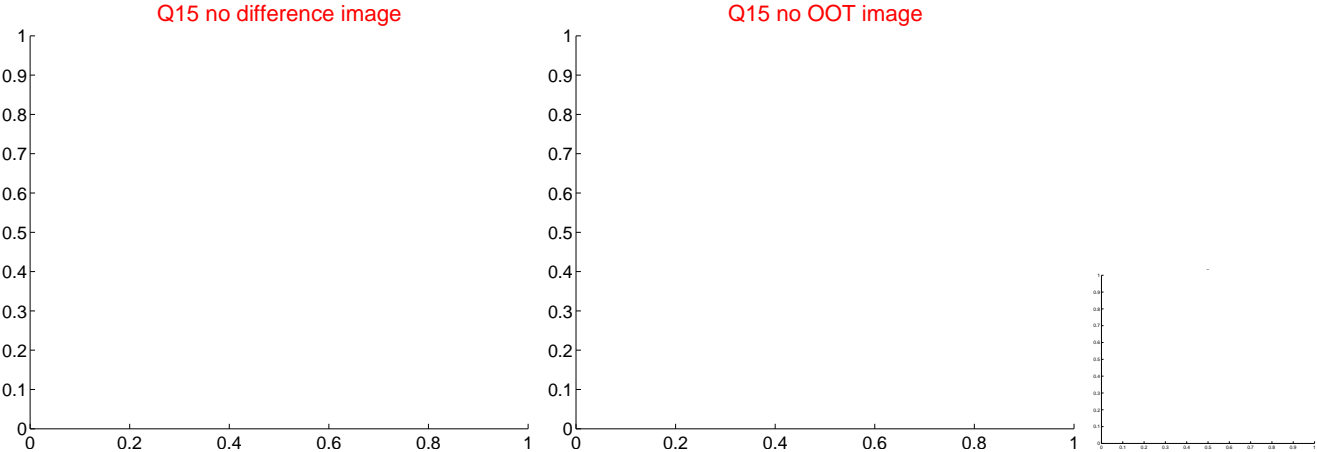
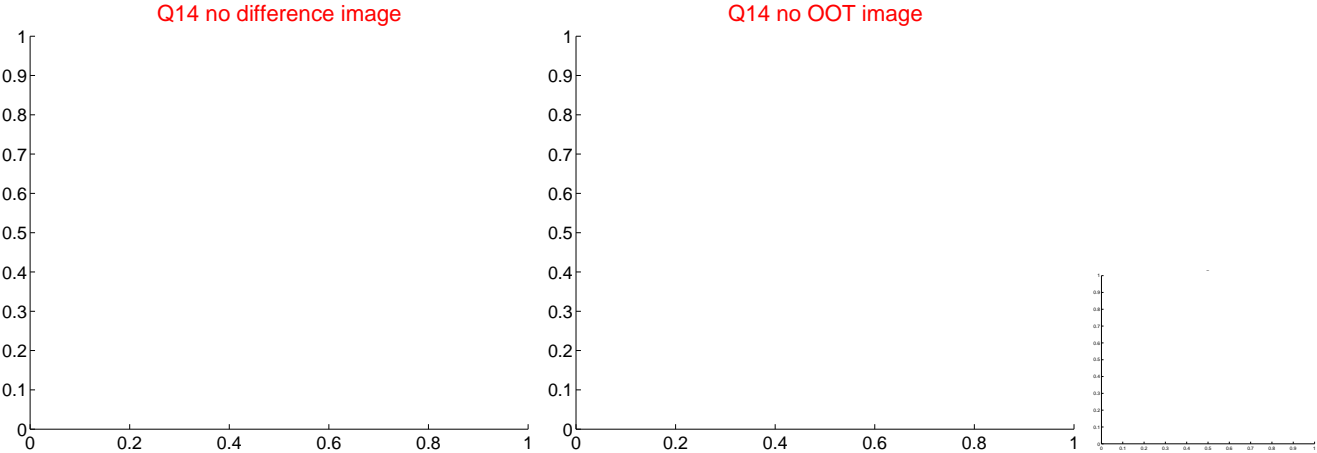
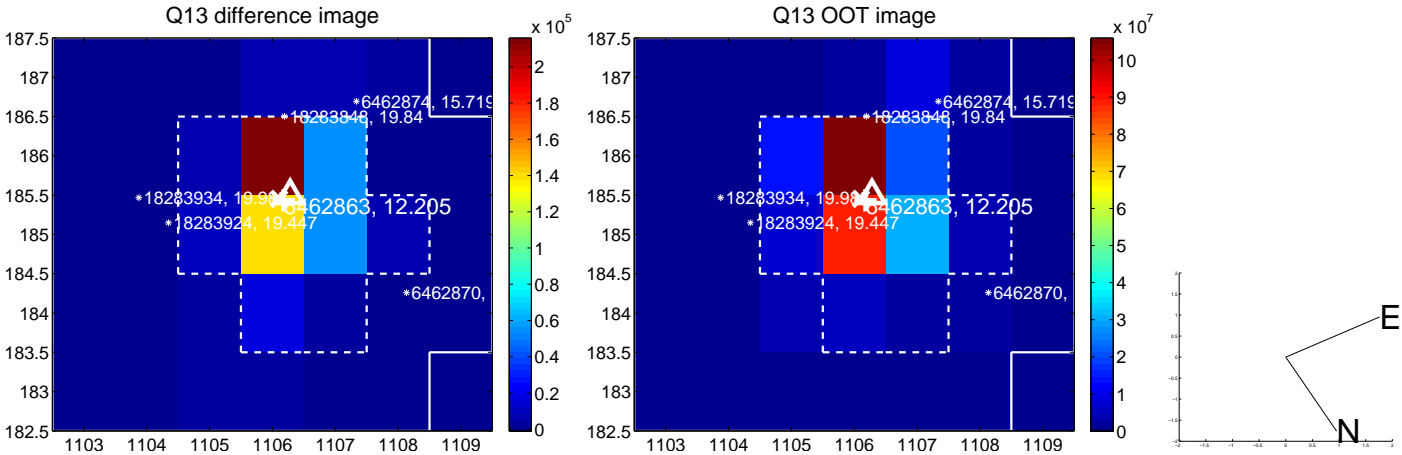
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



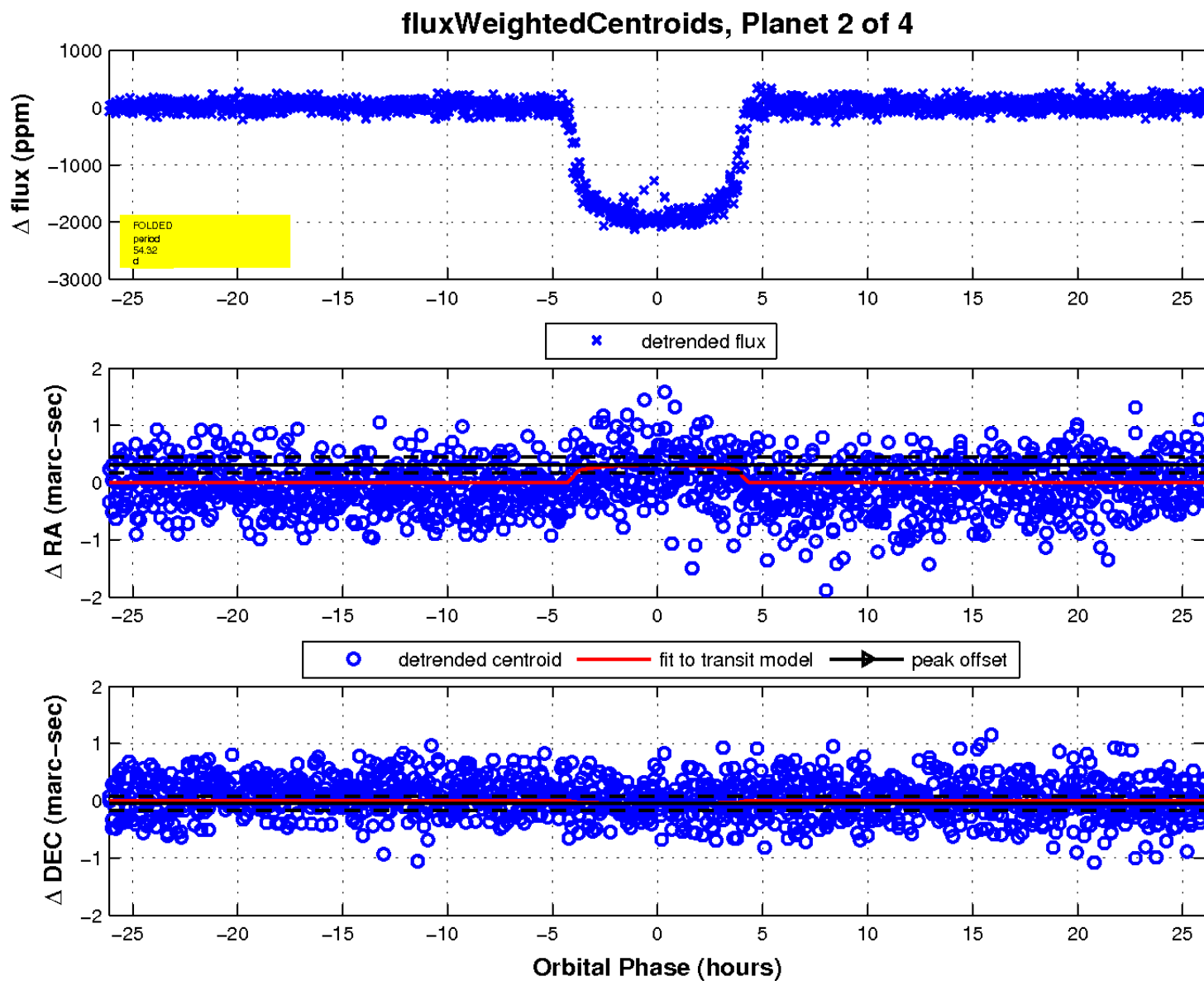
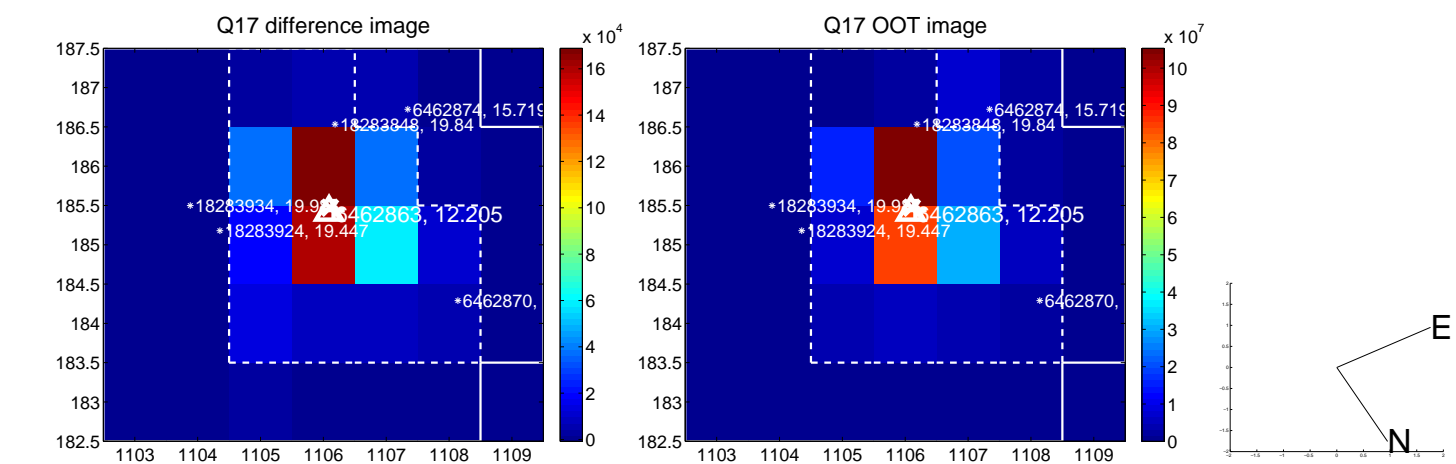
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

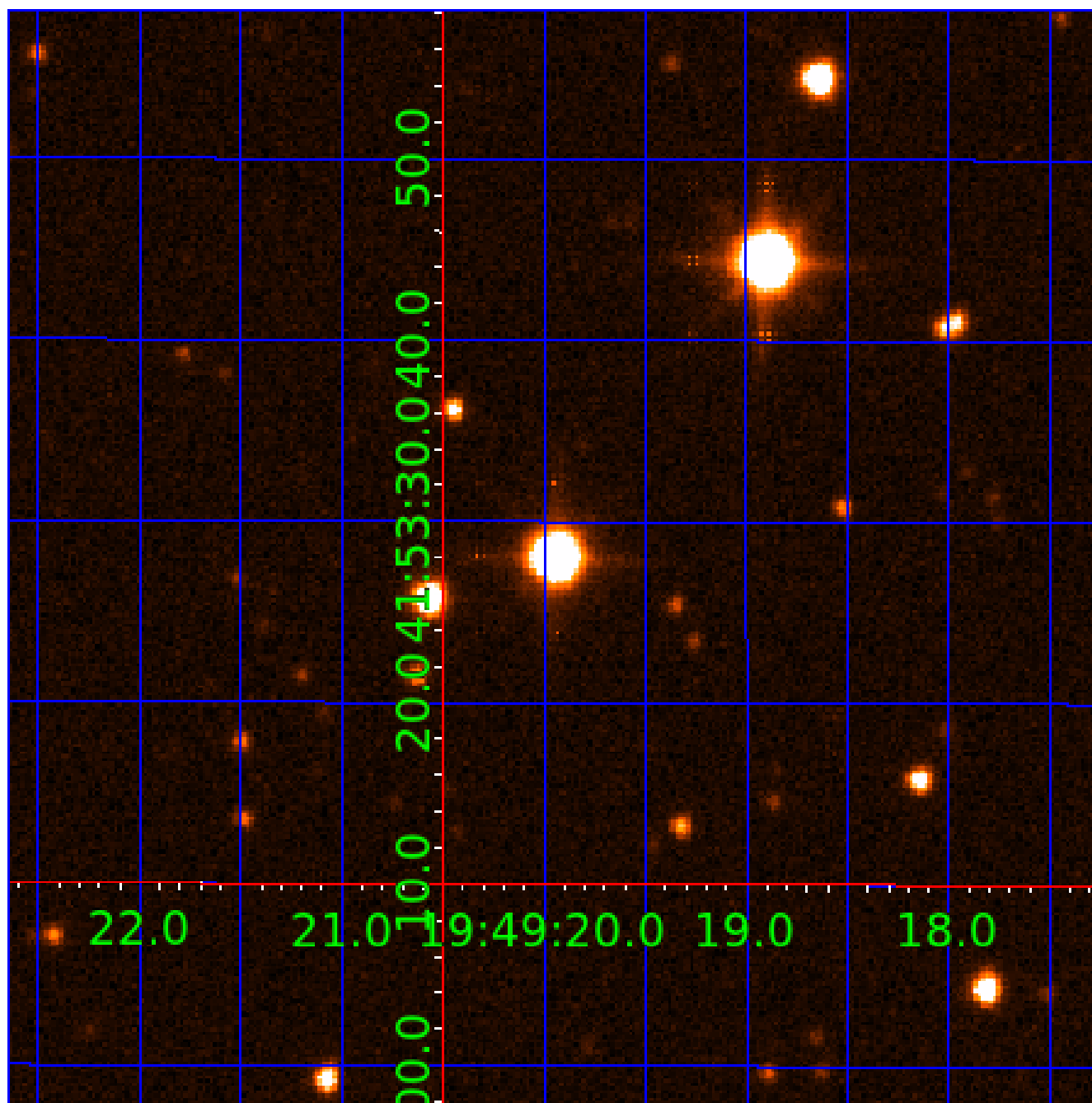


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006462863

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})
006462863-01	OBS	0094.01	22.342968	132.741883	5649.3	6.713	703.0	701.5	1.33	6181	10.09	89.75
006462863-02	OBS	0094.03	54.320239	161.237072	1956.2	8.711	162.1	159.4	1.33	6181	6.21	27.46
006462863-03	OBS	0094.02	10.423682	138.008802	781.3	5.343	136.5	135.6	1.33	6181	3.99	248.06
006462863-04	OBS	0094.04	3.743164	131.620607	123.5	3.870	31.5	35.4	1.33	6181	1.75	971.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006462863-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006462863-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
006462863-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006462863-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

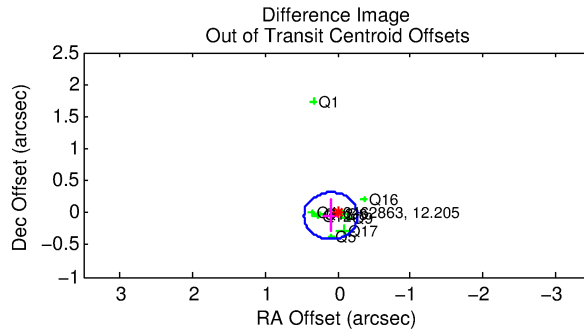
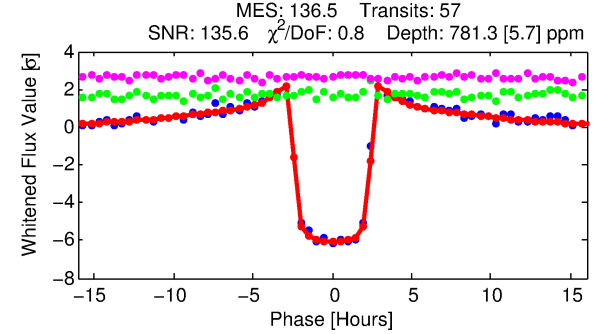
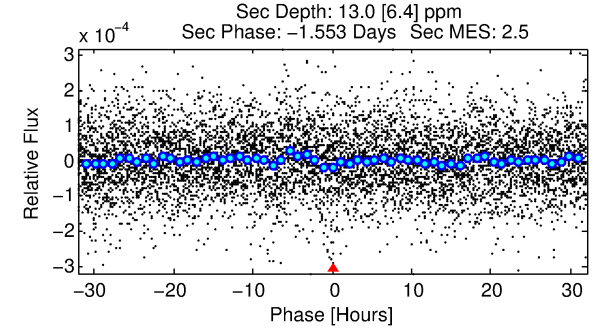
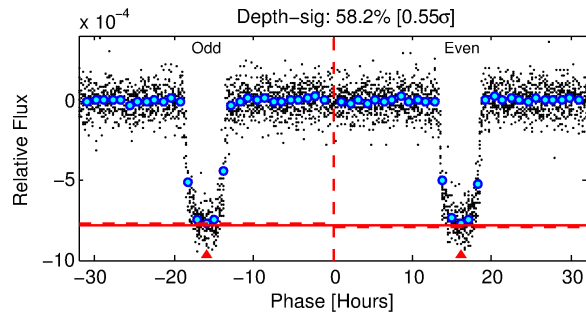
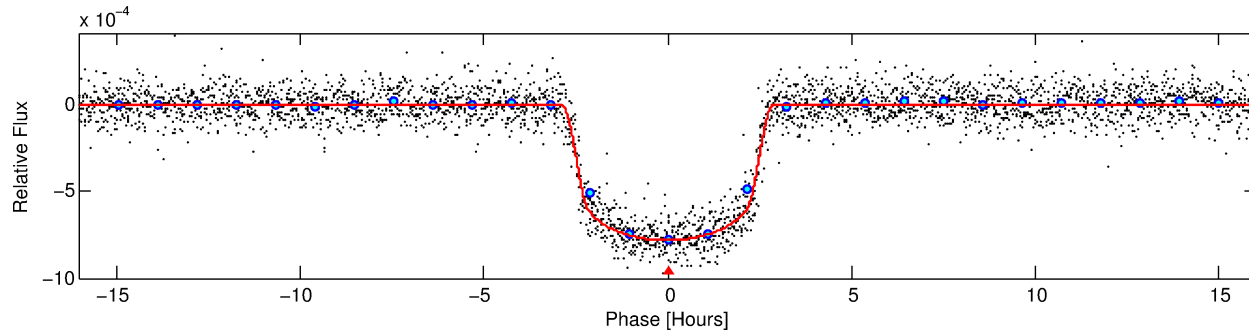
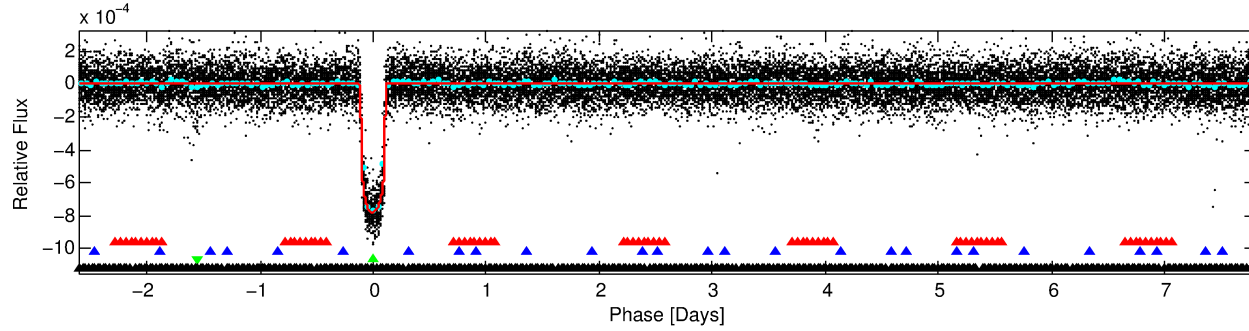
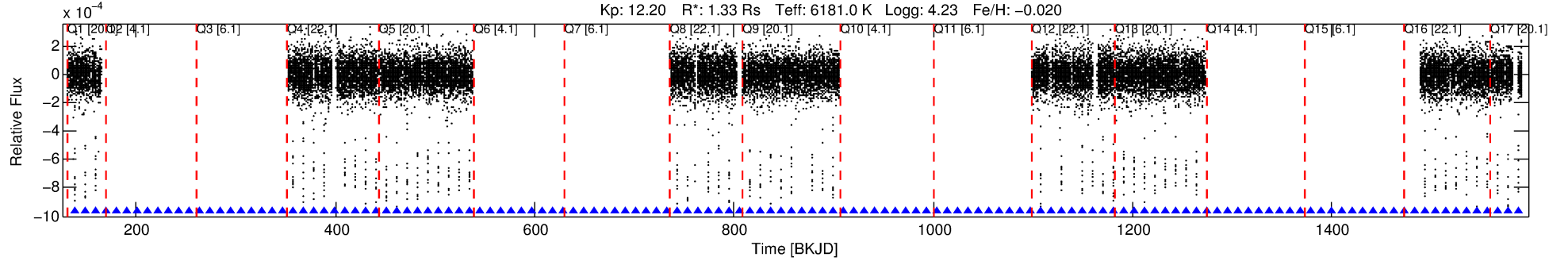
Ephemeris Match Information For 006462863-03

No Significant Match Found

DV One-Page Summary

KIC: 6462863 Candidate: 3 of 4 Period: 10.424 d
KOI: K00094.02 Name: Kepler-89c Corr: 0.989

Kp: 12.20 R*: 1.33 Rs Teff: 6181.0 K Logg: 4.23 Fe/H: -0.020



DV Fit Results:

Period = 10.42368 [0.00001] d
Epoch = 138.0088 [0.0006] BKJD
Rp/R* = 0.0274 [0.0009]
a/R* = 11.12 [1.81]
b = 0.71 [0.12]
Seff = 248.06 [65.93]
Teq = 1012 [67] K
Rp = 3.99 [0.74] Re
a = 0.0966 [0.0158] AU
Ag = 4.20 [2.33] [1.37σ]
Teffp = 2240 [282] K [4.24σ]

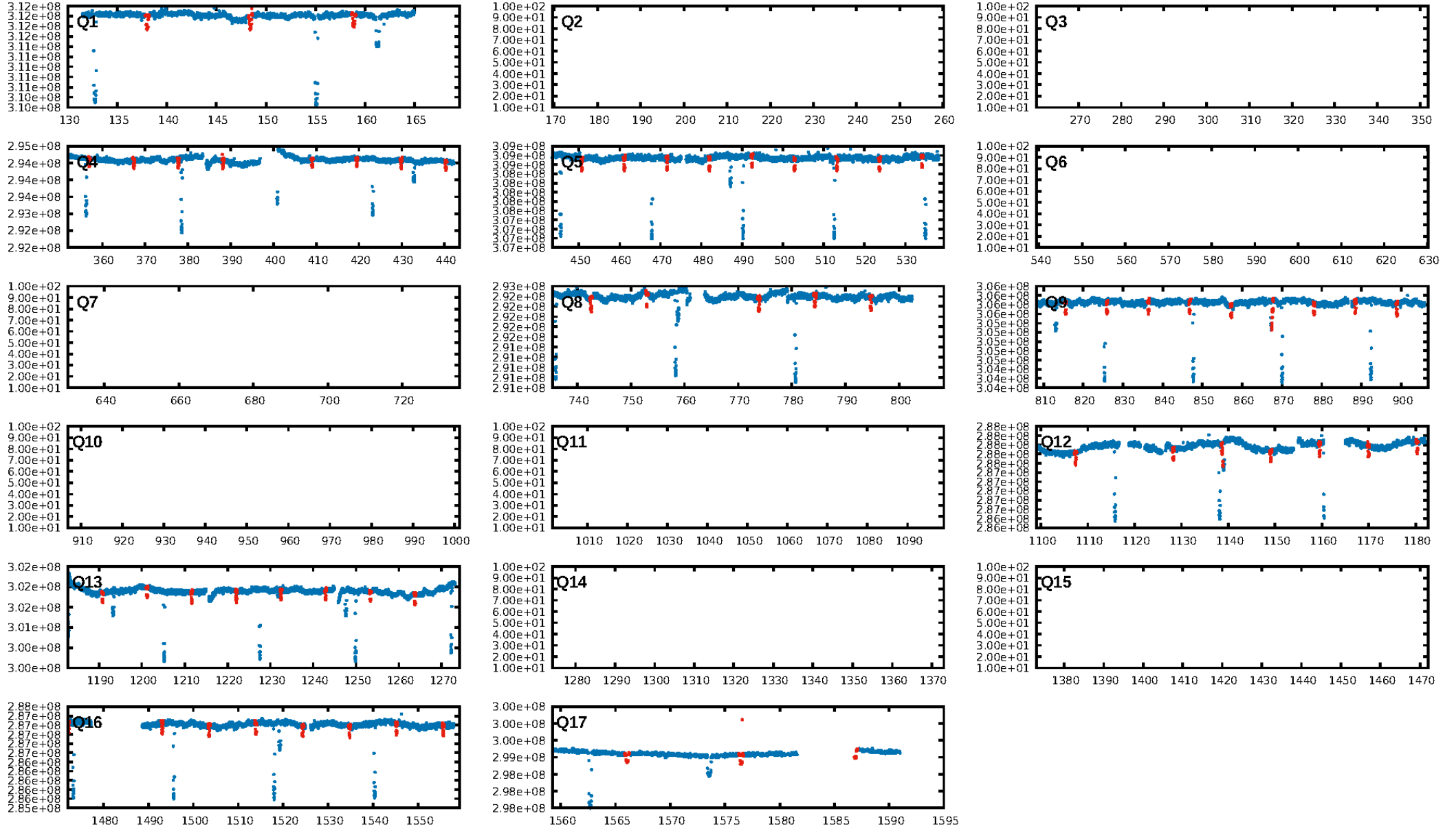
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.30σ]
LongPeriod-sig: 100.0% [33.34σ]
ModelChiSquare2-sig: 64.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [51/51]
GhostDiagnostic-chr: 7.424
Centroid-sig: 0.0%
Centroid-so: 0.276 arcsec [4.22σ]
OotOffset-rm: 0.109 arcsec [0.89σ]
KicOffset-rm: 0.271 arcsec [1.97σ]
OotOffset-st: 0/0/4/5 [9]
KicOffset-st: 0/0/4/5 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 1.00 [9/9]

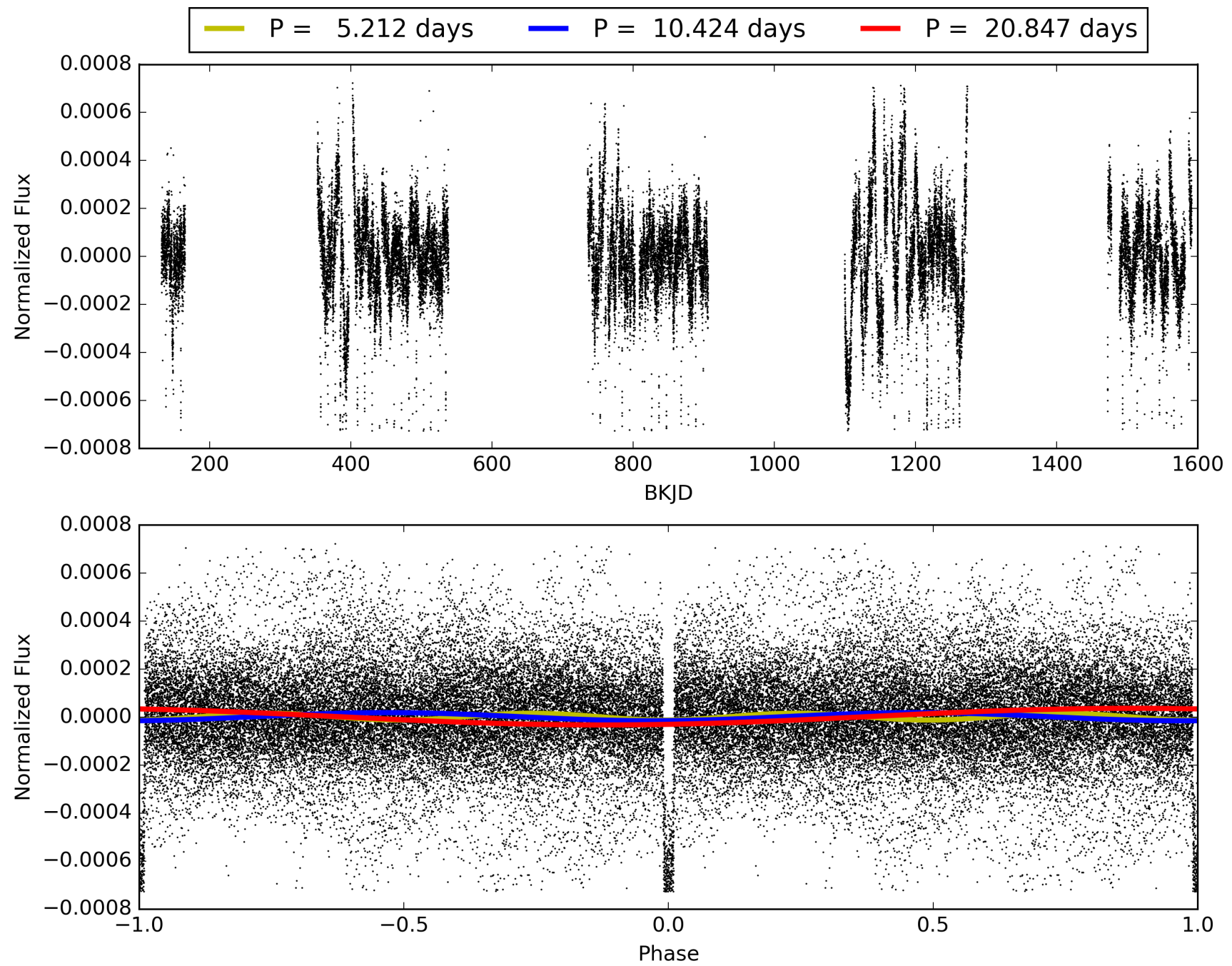
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:14:00 Z

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

TCE 006462863-03, PDC Light Curves

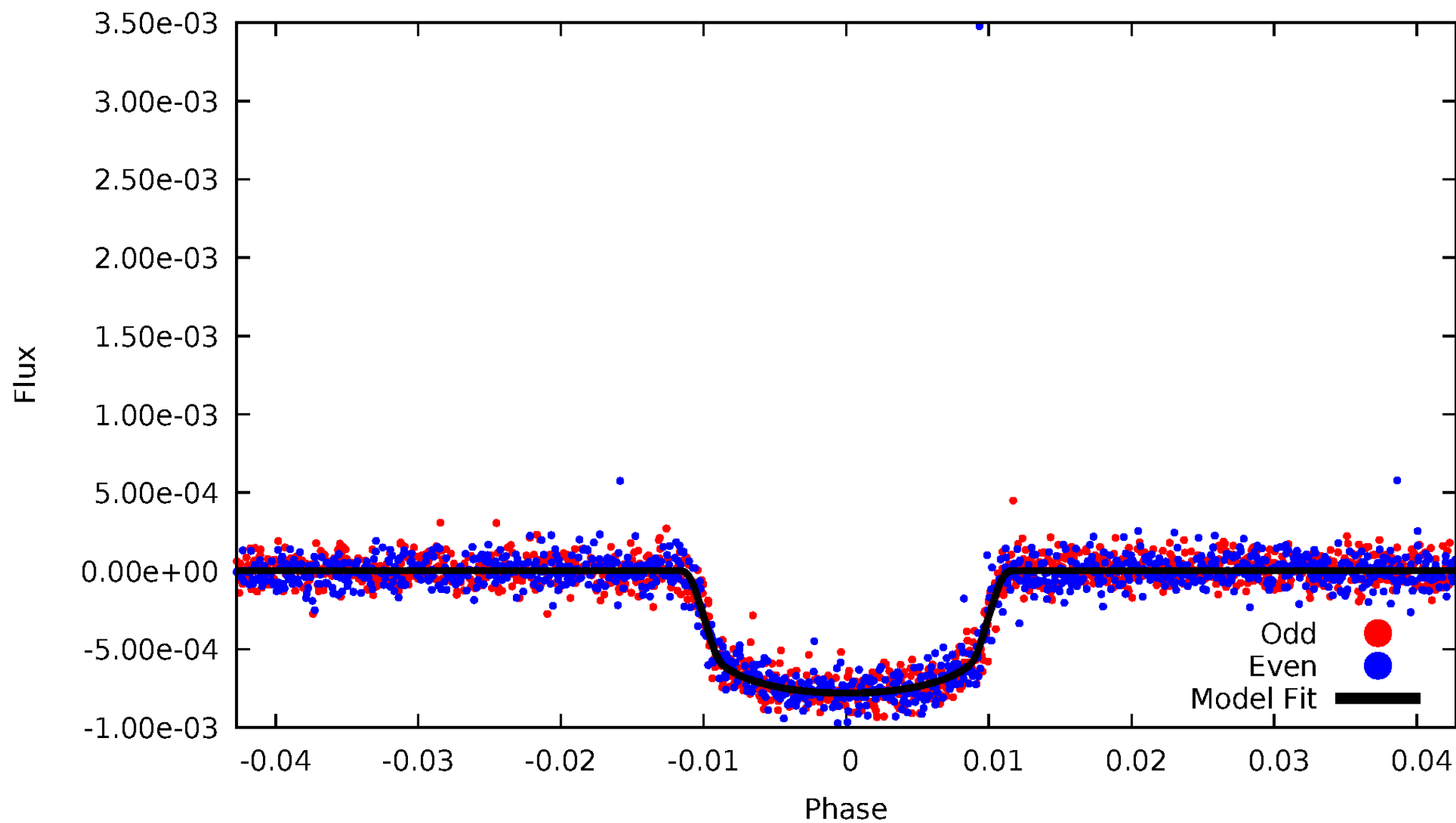


TCE 006462863-03



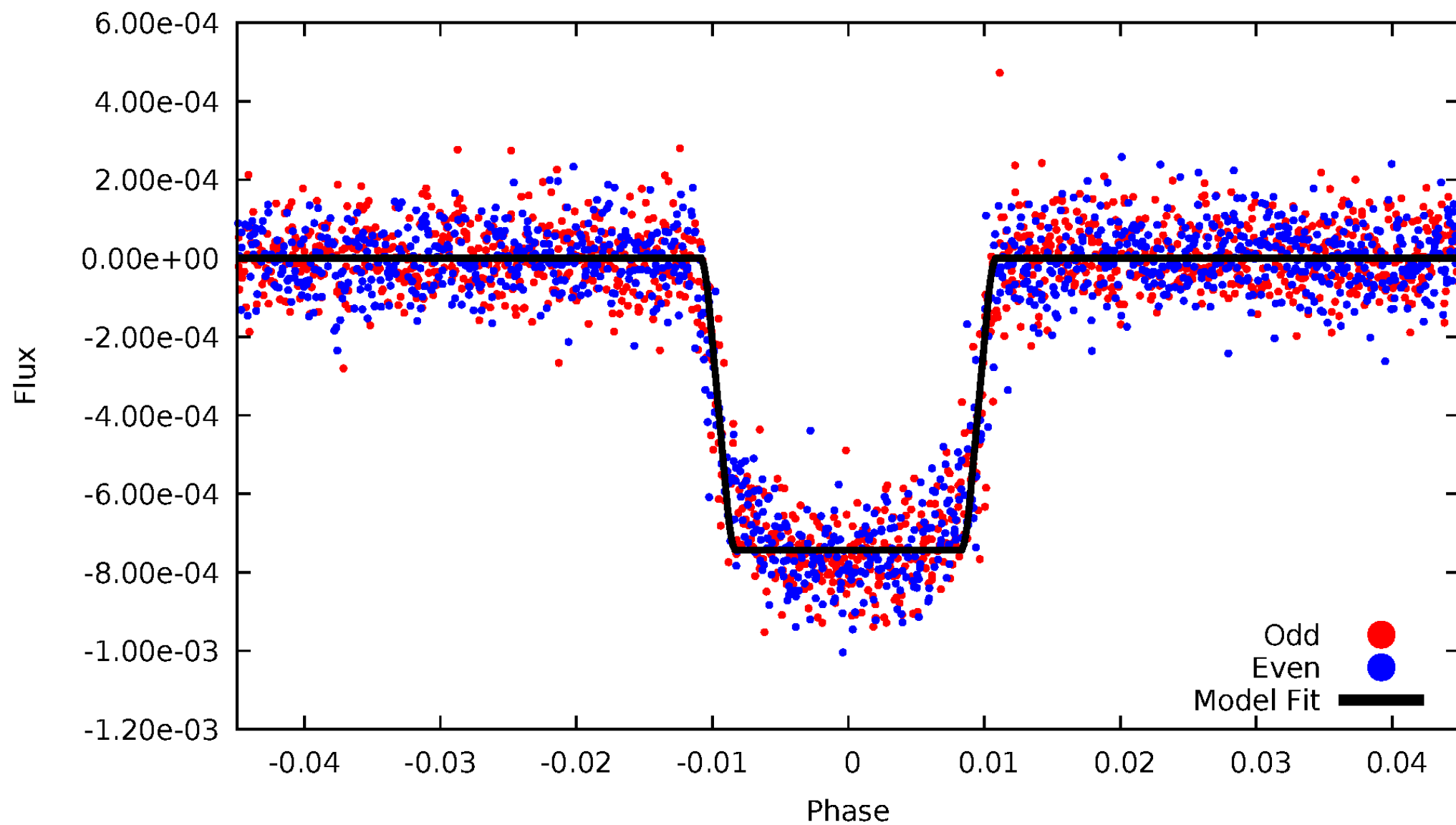
DV Odd/Even

TCE 006462863-03



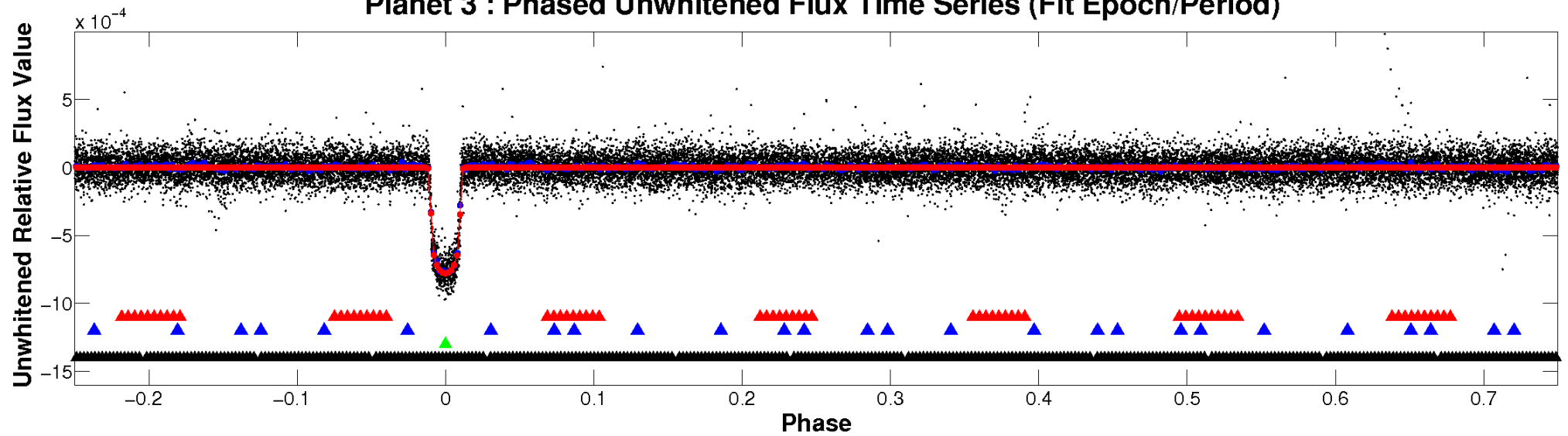
ALT Odd/Even

TCE 006462863-03

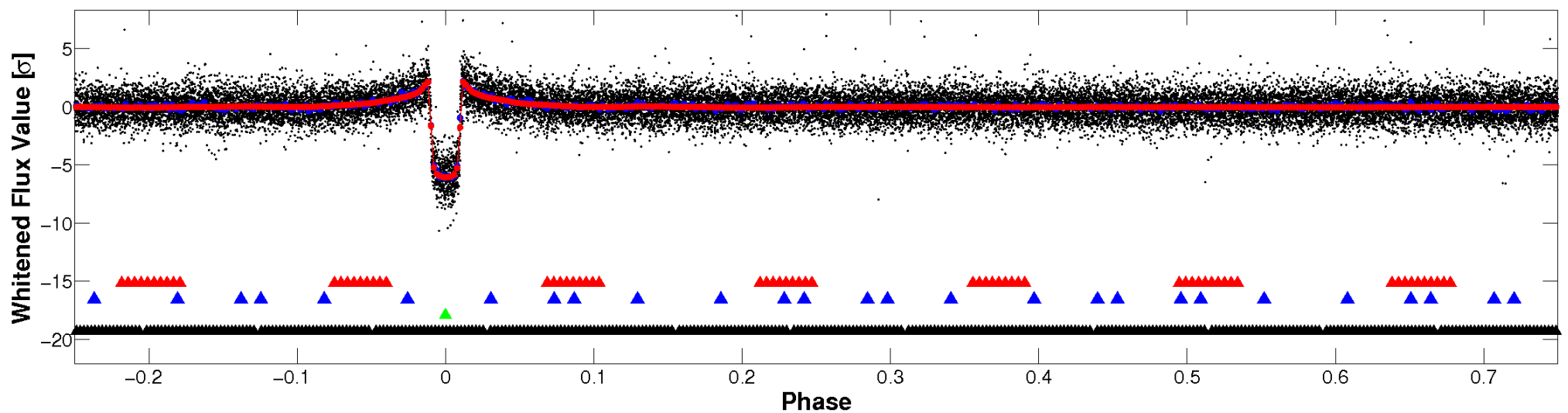


Non-Whitened Vs. Whitened Light Curve

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

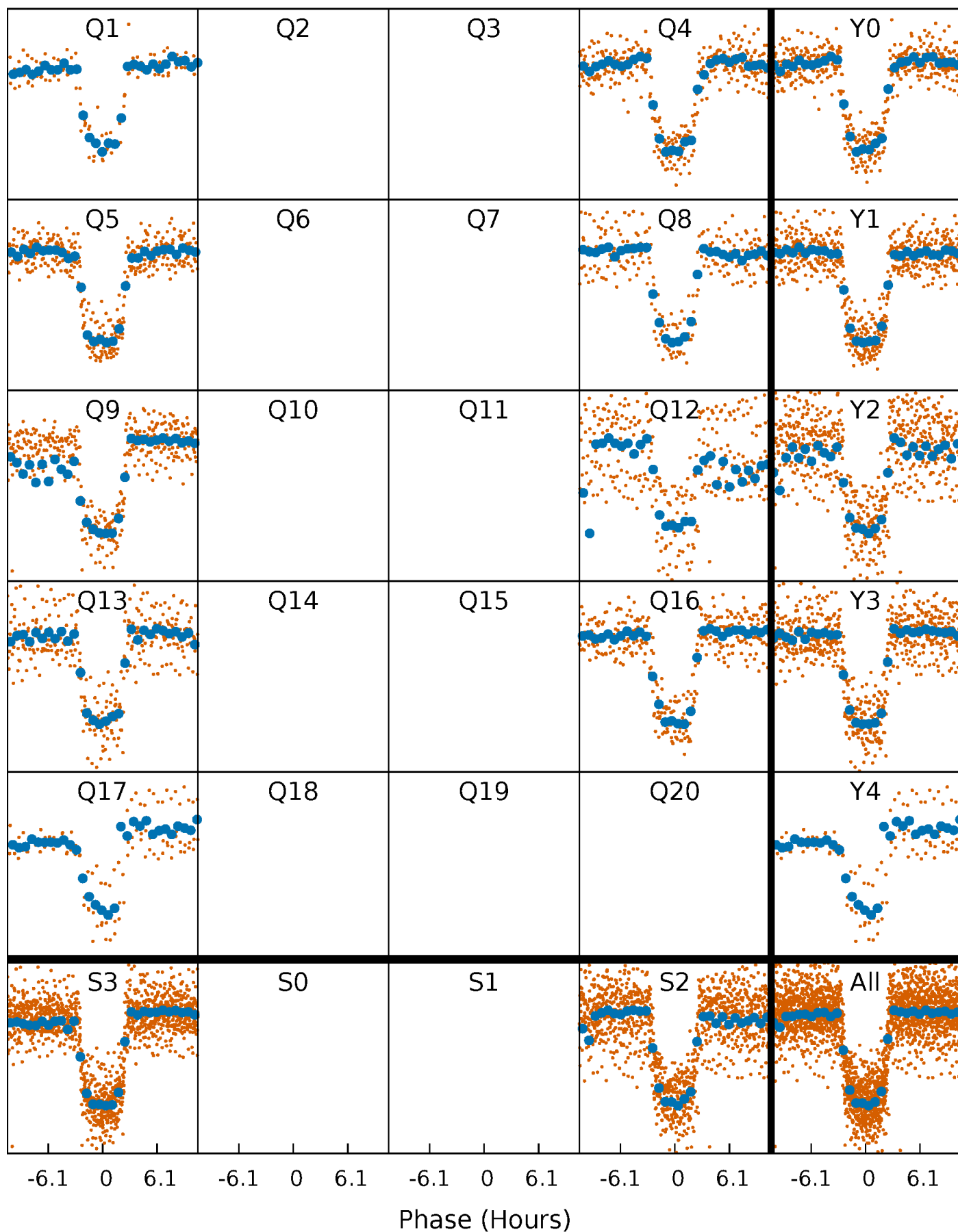


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



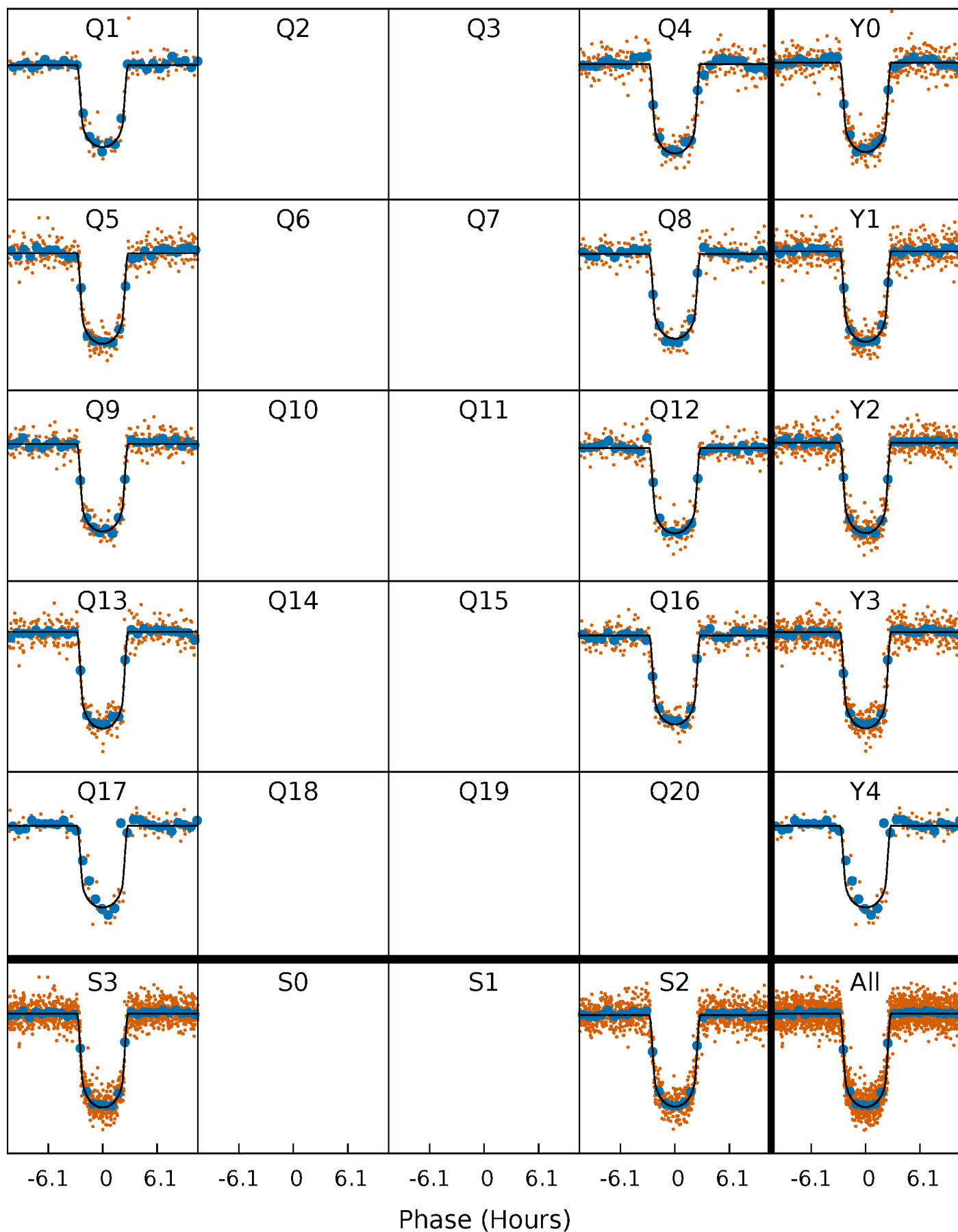
PDC Quarter-Phased Transit Curves

TCE 006462863-03 P= 10.423682 Days $T_0=138.008802$ (BKJD)



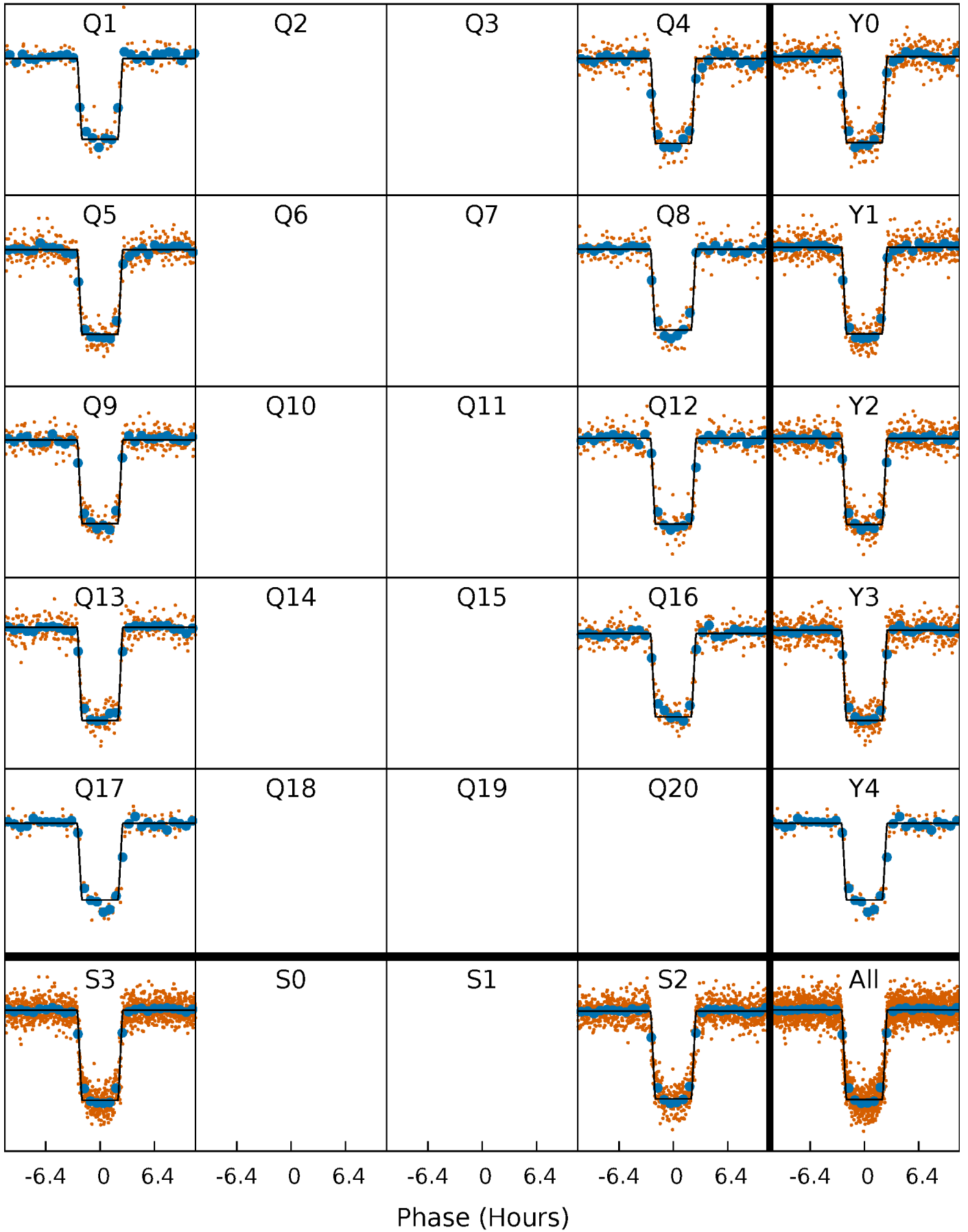
DV Quarter-Phased Transit Curves

TCE 006462863-03 P= 10.423682 Days $T_0=138.008802$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

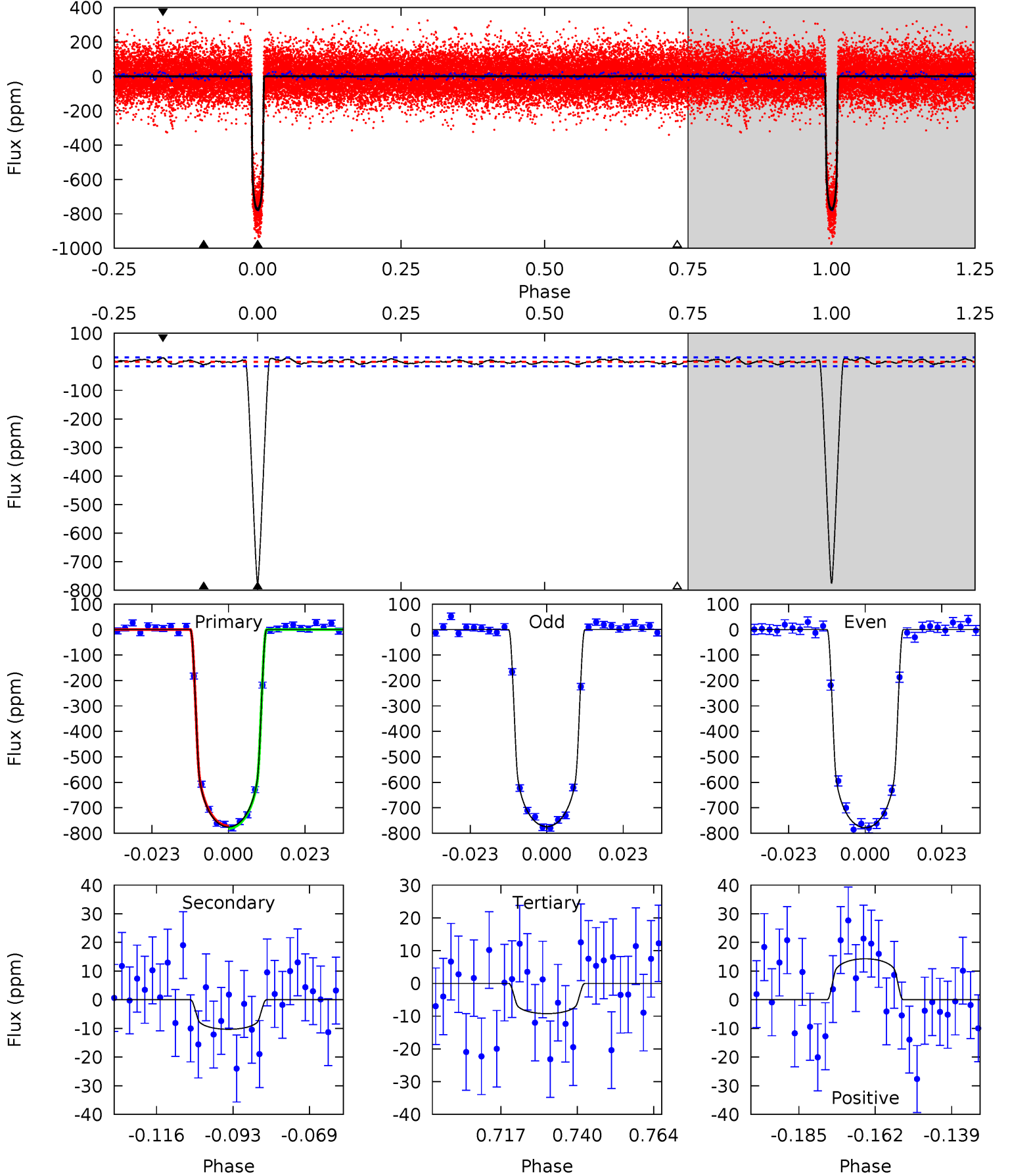
TCE 006462863-03 P= 10.423600 Days $T_0=138.014744$ (BKJD)



DV Model-Shift Uniqueness Test

006462863-03, P = 10.423682 Days, E = 127.585120 Days

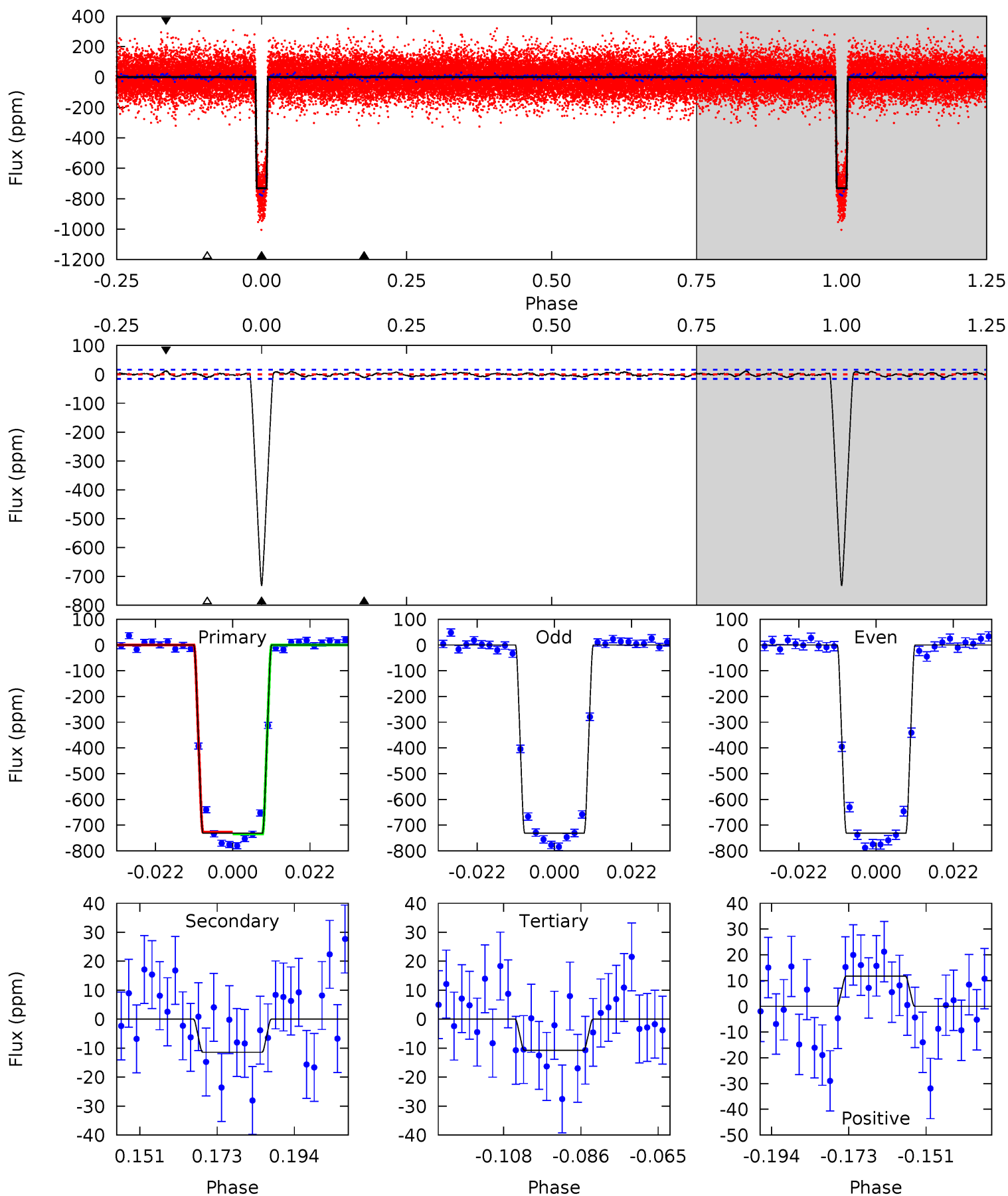
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
239.5	3.18	2.85	4.42	4.86	2.27	1.53	236.6	235.1	0.33	-1.23	0.68	1.00	0.02	1.36



Alt Model-Shift Uniqueness Test

006462863-03, P = 10.423600 Days, E = 127.591144 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
225.1	3.51	3.31	3.60	4.88	2.30	1.28	221.8	221.5	0.20	-0.09	0.09	1.00	0.02	1.03



Stellar Parameters For KIC 006462863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6181^{+111}_{-135}	$4.234^{+0.143}_{-0.117}$	$-0.020^{+0.150}_{-0.150}$	$1.331^{+0.243}_{-0.199}$	$1.106^{+0.116}_{-0.074}$	$0.661^{+0.419}_{-0.237}$
	+2%/-2%	+3%/-3%	+750%/-750%	+18%/-15%	+10%/-7%	+63%/-36%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006462863-03 / KOI 0094.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-10 ± 3	$3.98^{+0.39}_{-0.39}$	1411^{+68}_{-73}	2801^{+134}_{-153}	$3.359^{+1.357}_{-1.193}$
Alt.	-11 ± 3	$3.94^{+0.43}_{-0.37}$	1407^{+71}_{-67}	2849^{+130}_{-150}	$3.739^{+1.442}_{-1.260}$

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 $A_{obs} \gg 1.0$

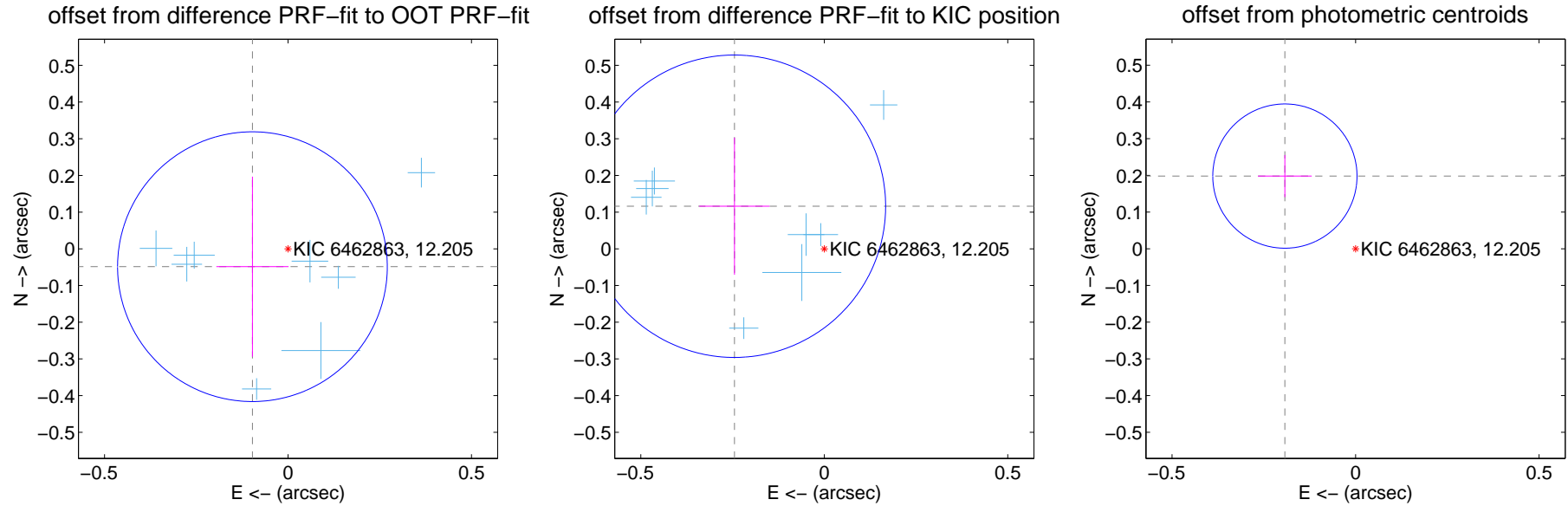
DV Centroid Data

Supplemental centroid analysis for 006462863-03. Kepler magnitude: 12.21. Transit SNR 135.62

There are 9 quarters with good PRF difference image offsets

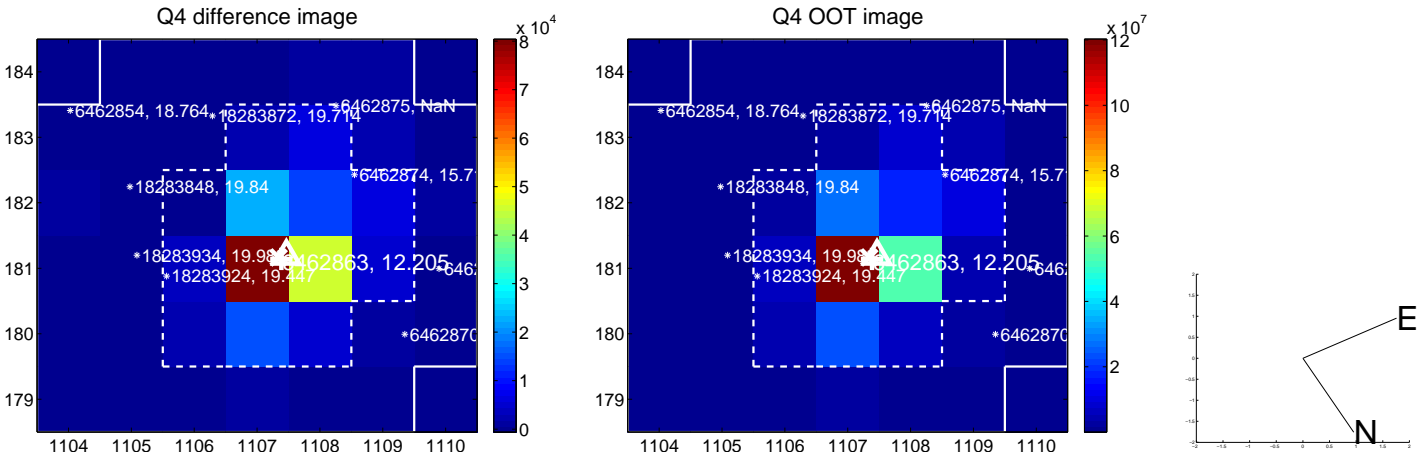
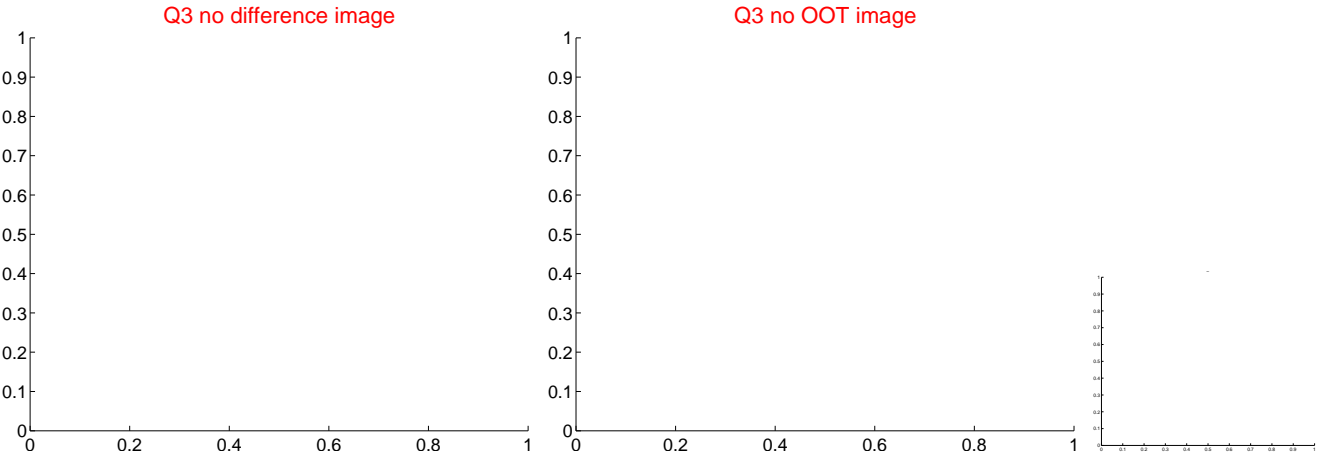
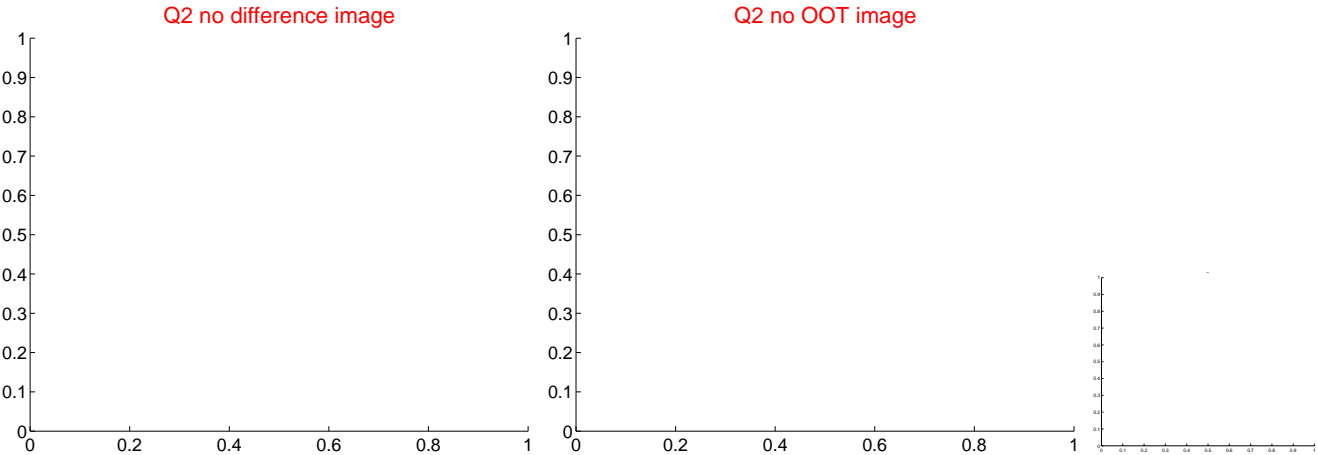
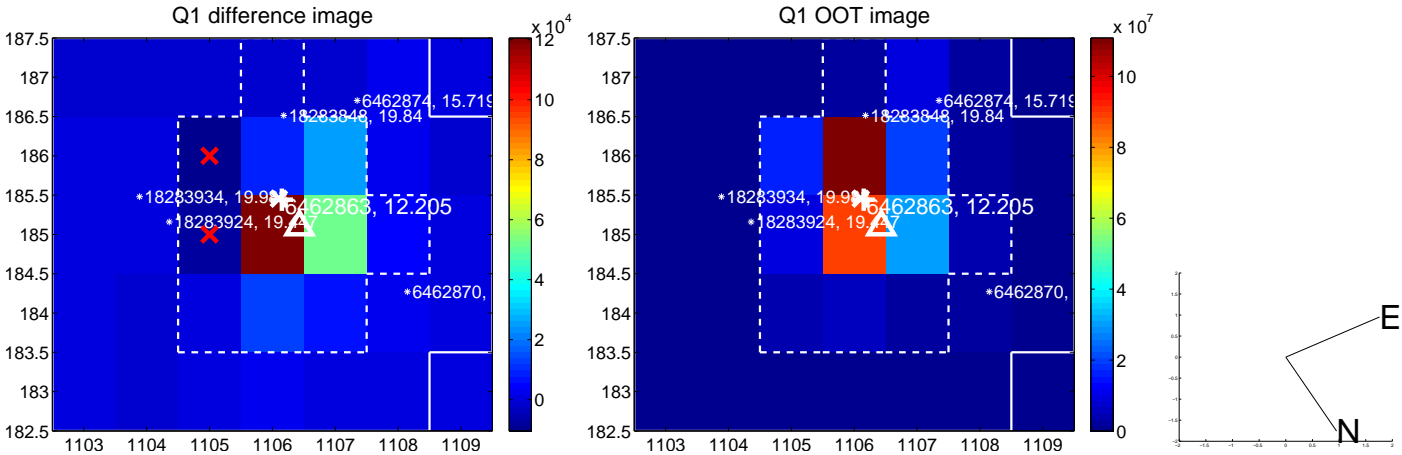
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.109 ± 0.122	0.89	0.097 ± 0.098	-0.049 ± 0.245
PRF-fit source offset from KIC position	0.271 ± 0.137	1.97	0.245 ± 0.096	0.116 ± 0.187
photometric centroid source offset	0.28 ± 0.07	4.22	0.19 ± 0.07	0.20 ± 0.06

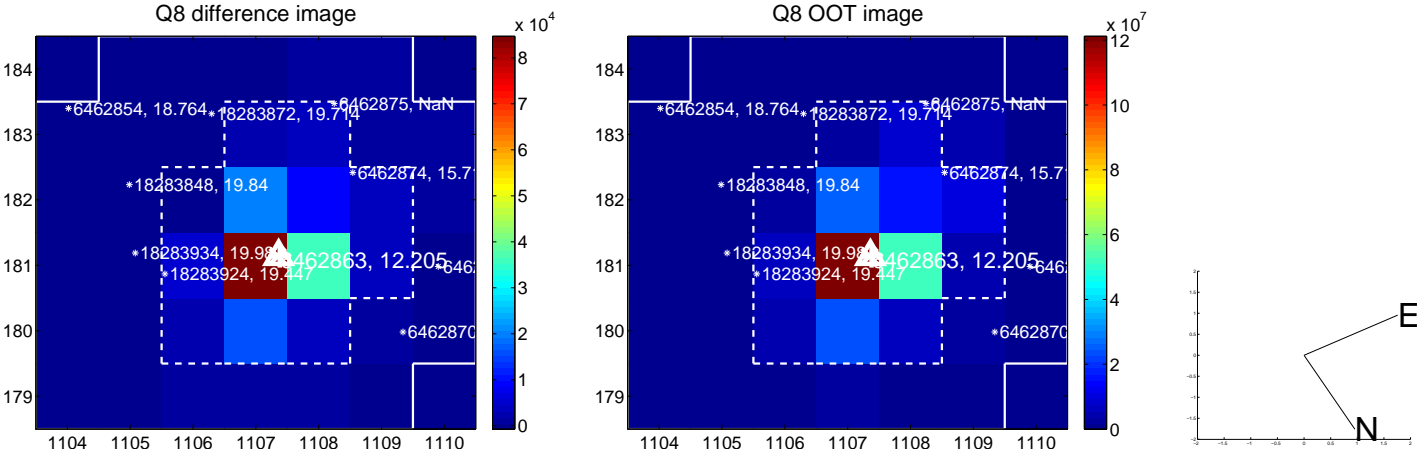
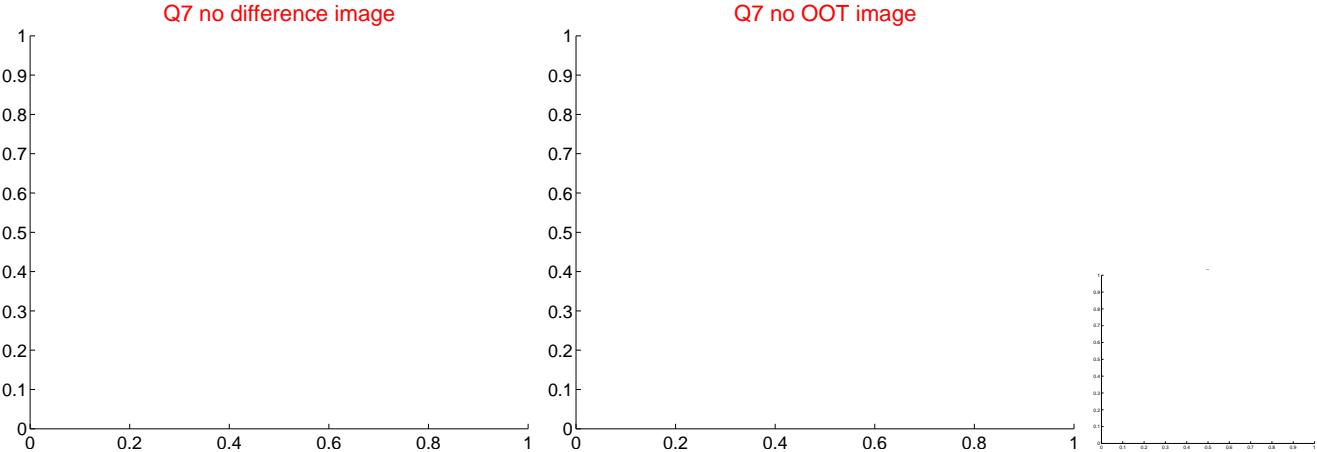
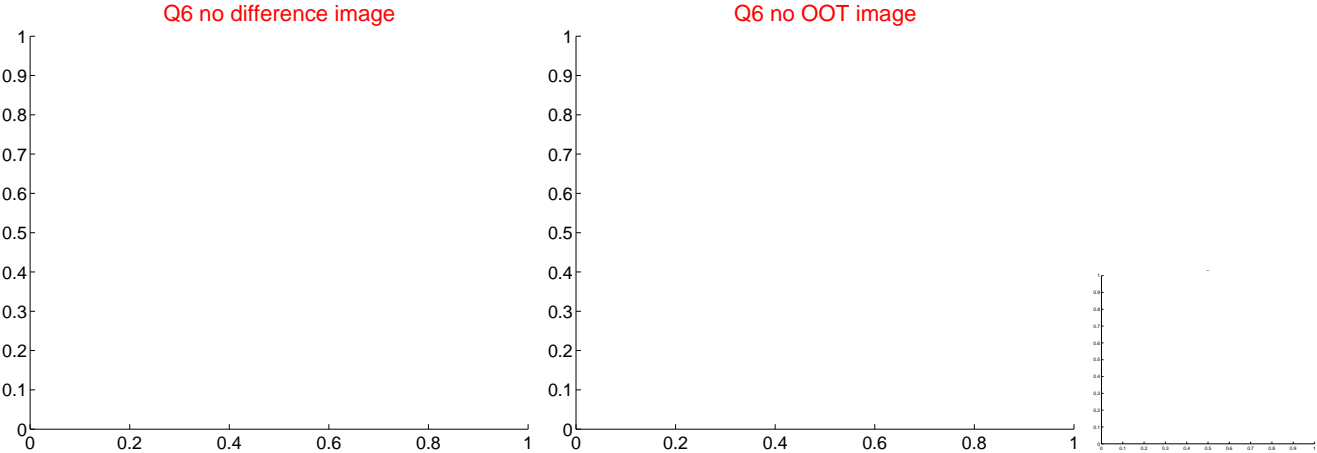
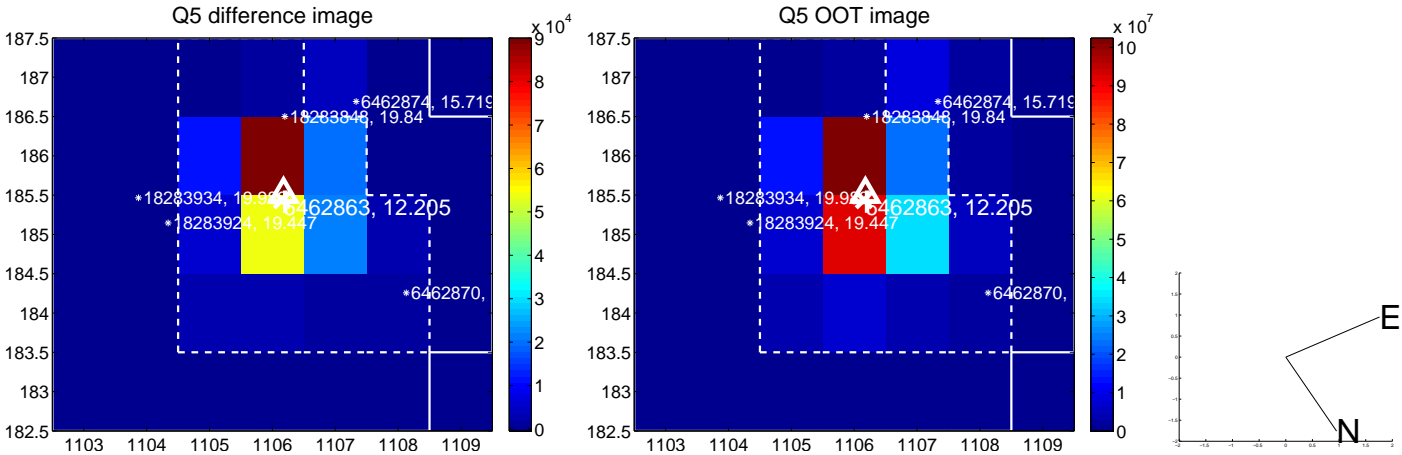


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

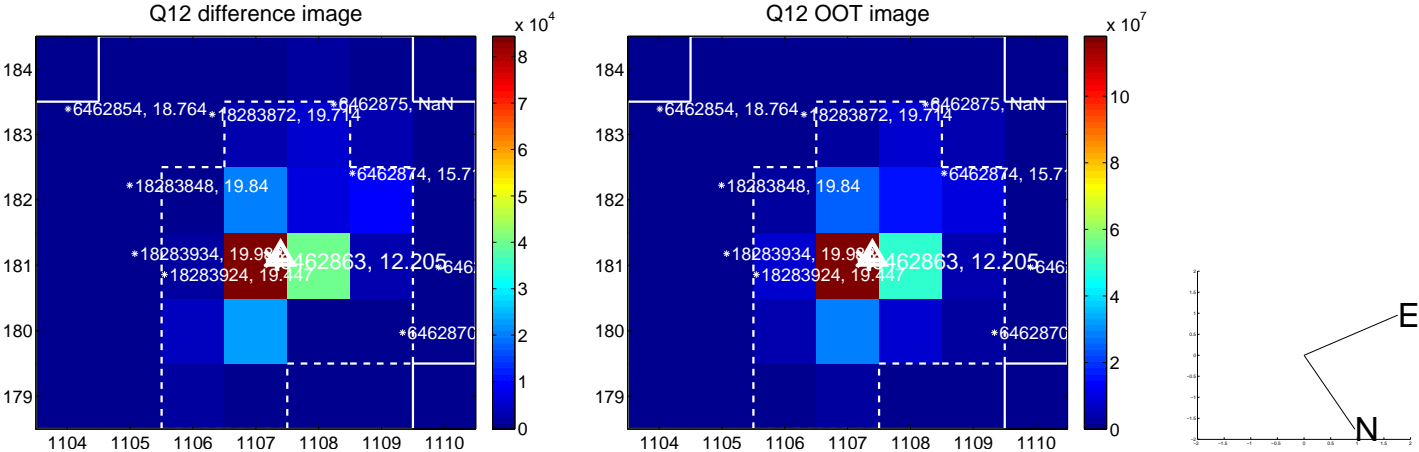
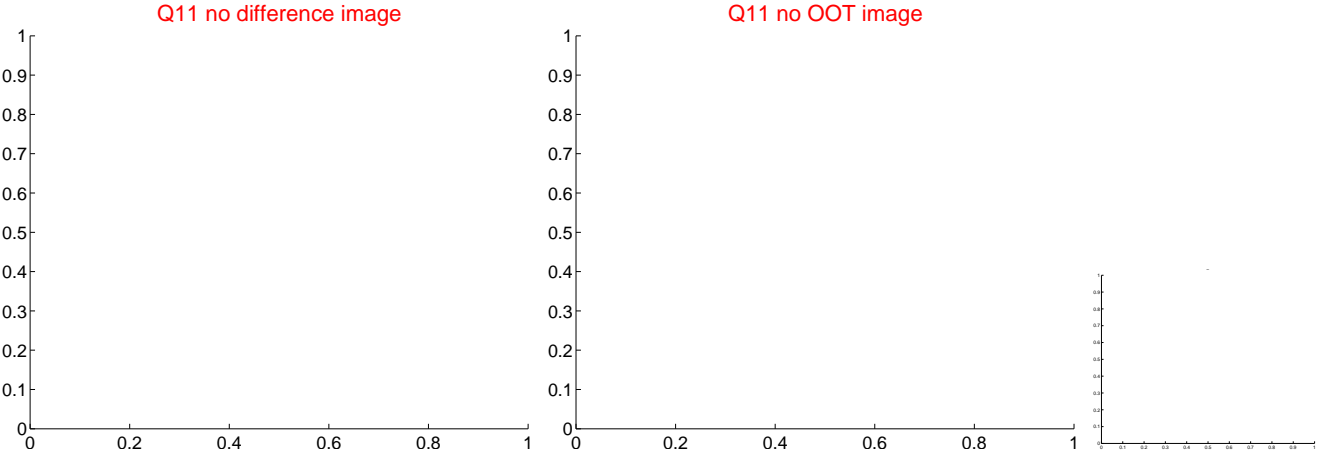
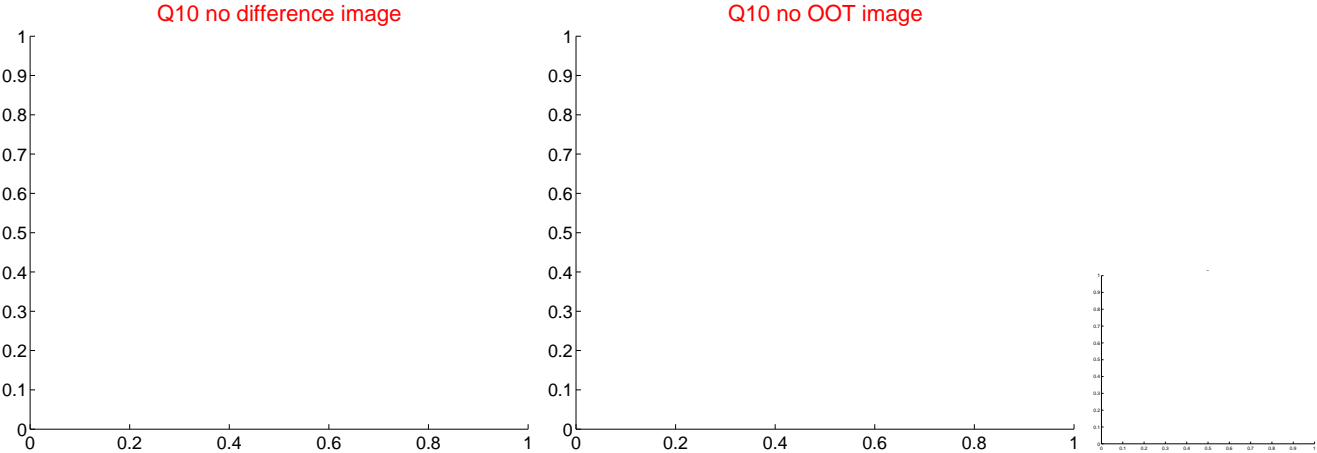
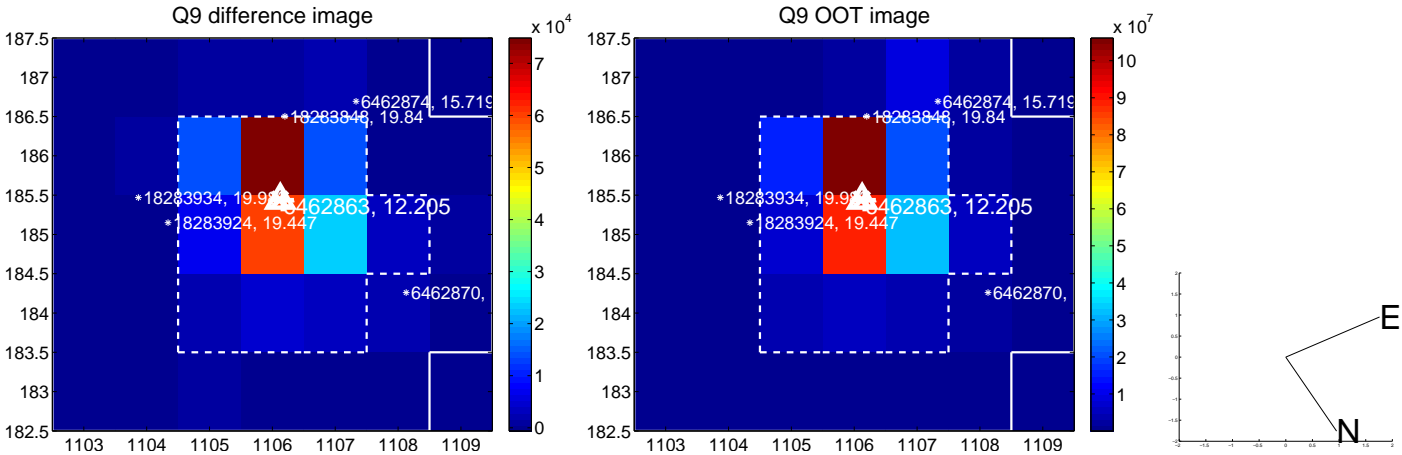
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



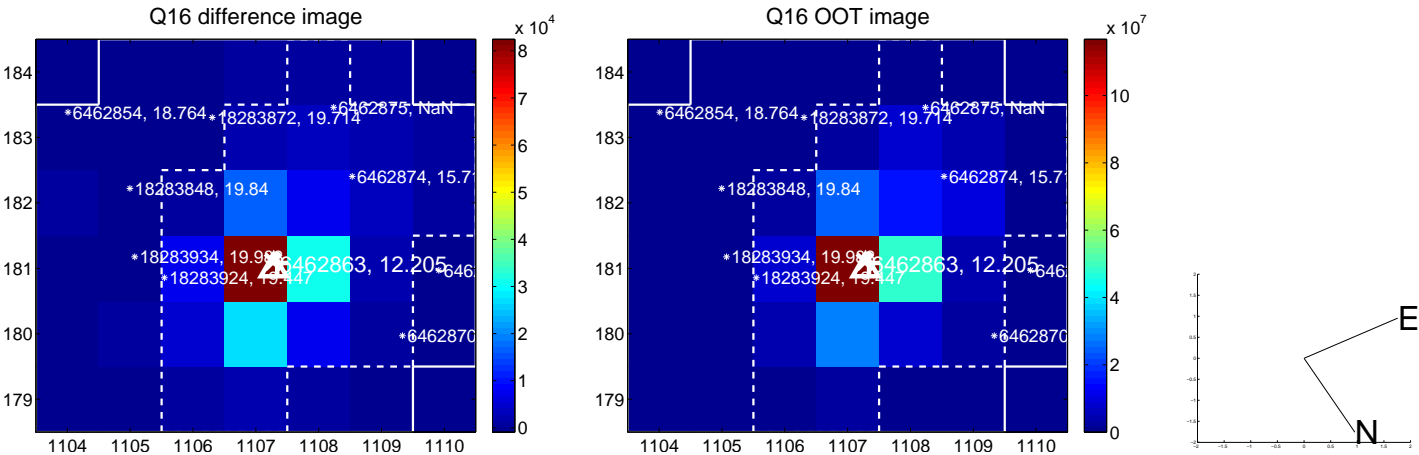
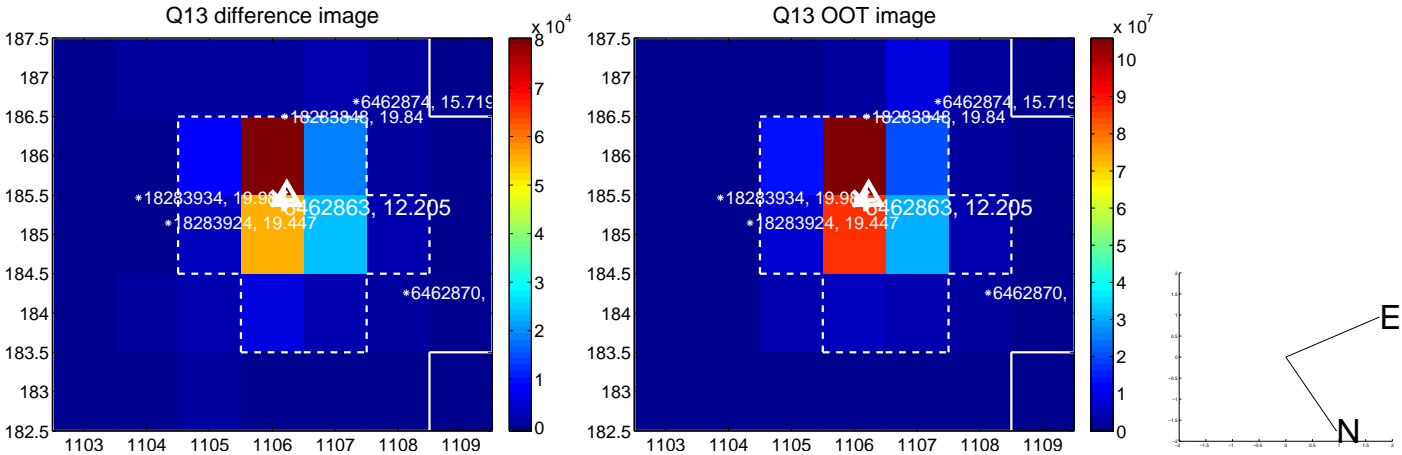
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



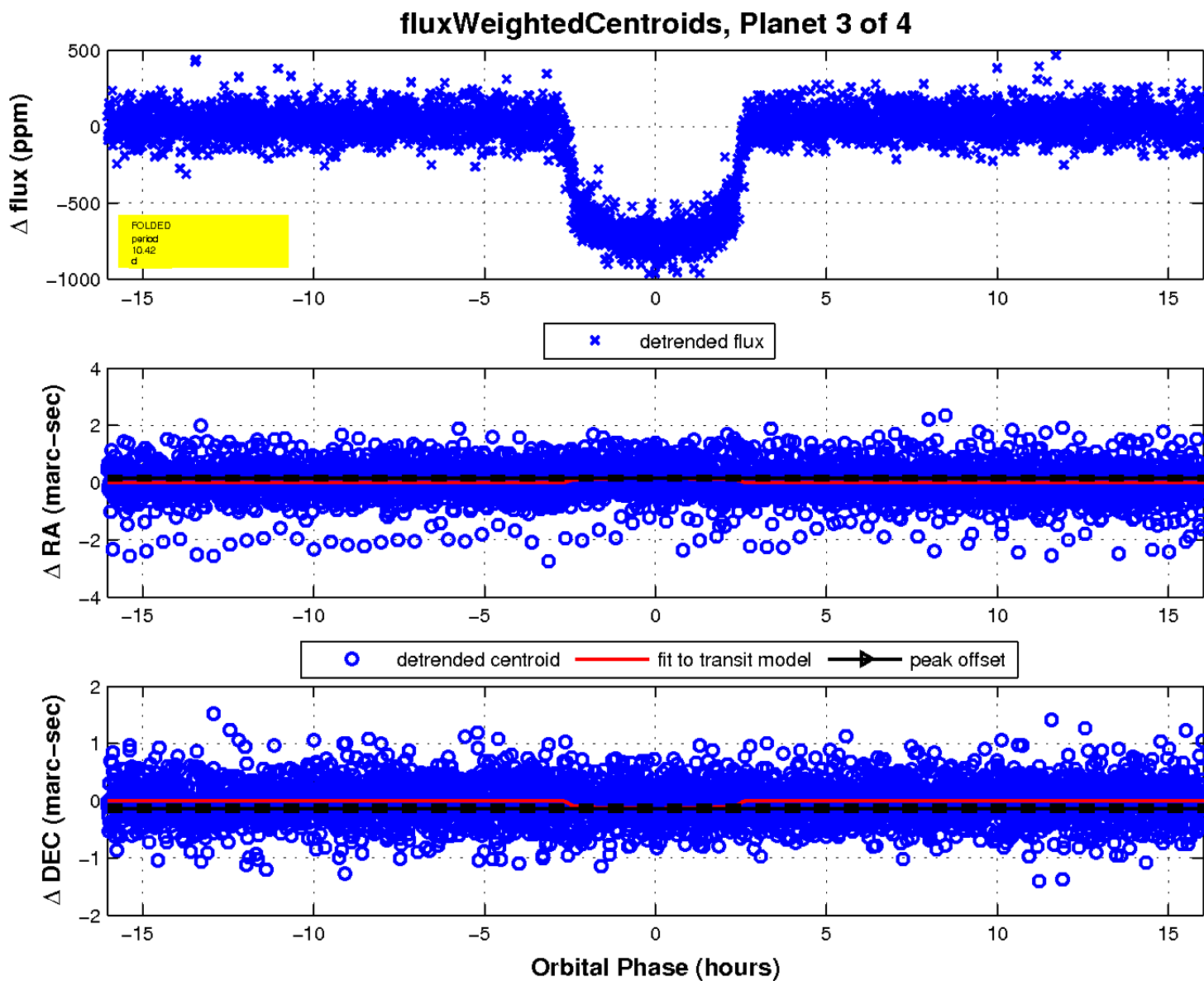
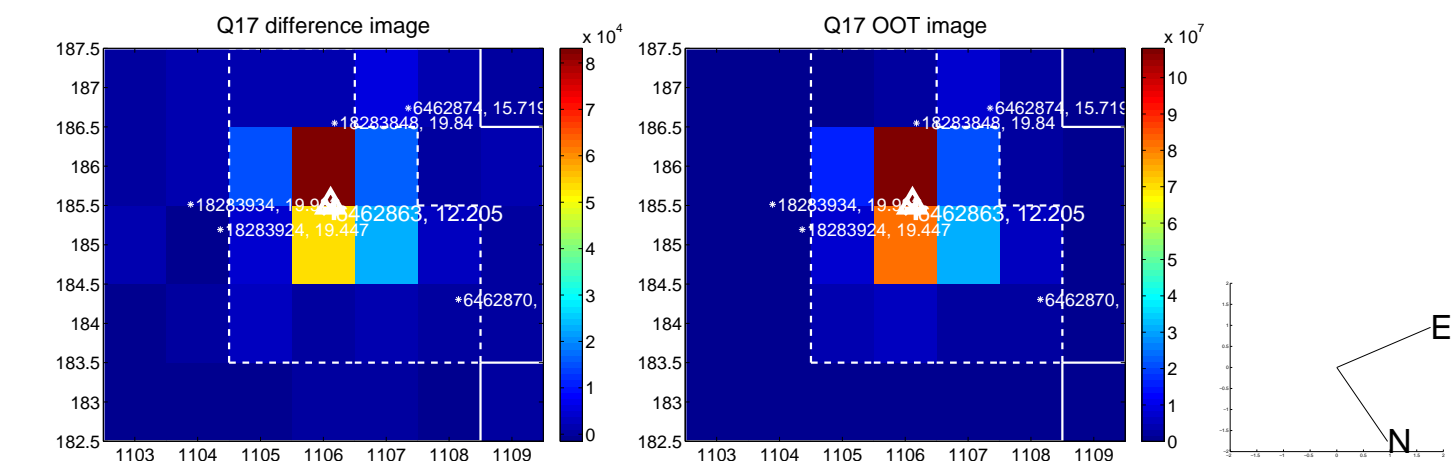
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

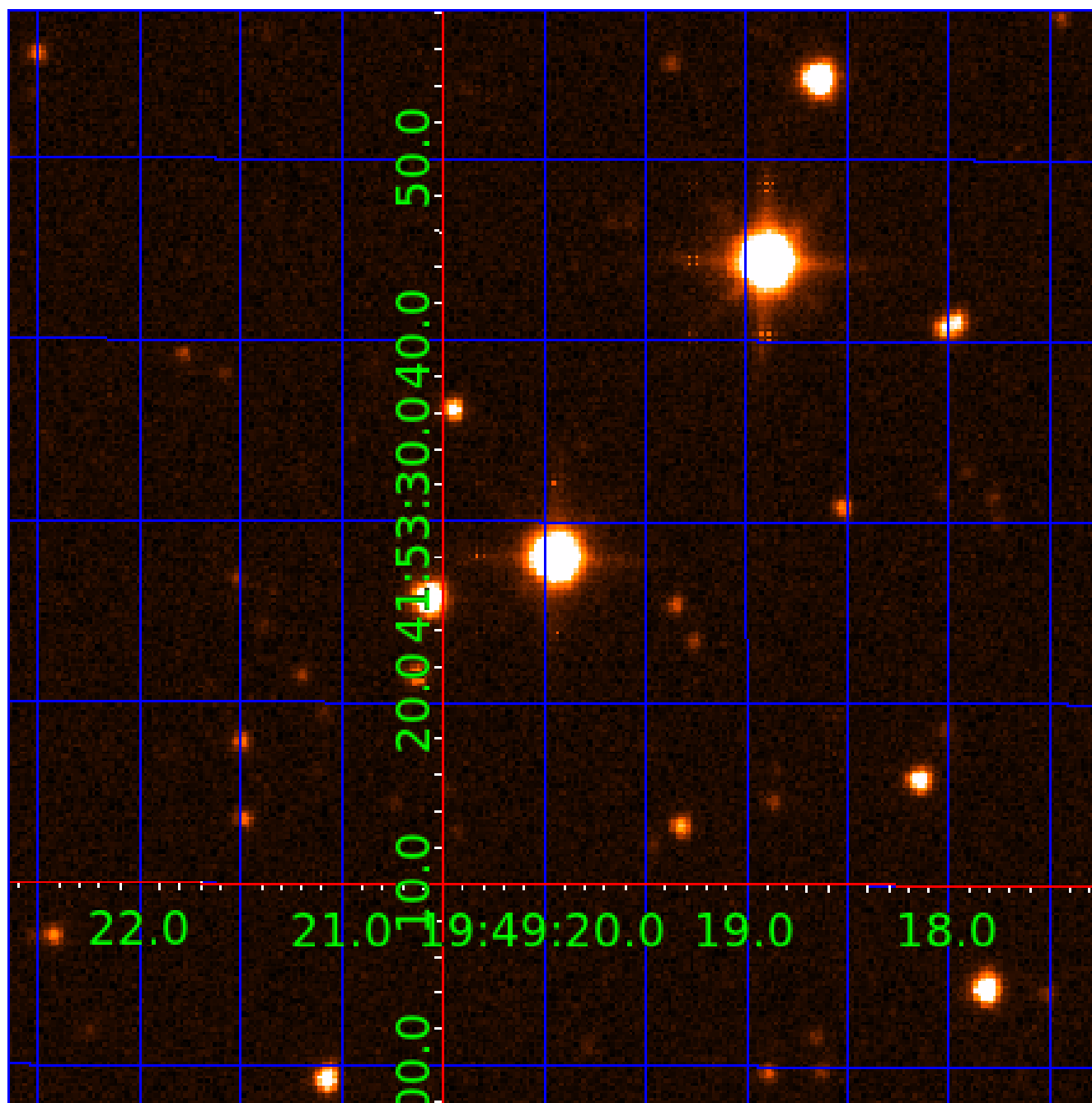


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006462863

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})
006462863-01	OBS	0094.01	22.342968	132.741883	5649.3	6.713	703.0	701.5	1.33	6181	10.09	89.75
006462863-02	OBS	0094.03	54.320239	161.237072	1956.2	8.711	162.1	159.4	1.33	6181	6.21	27.46
006462863-03	OBS	0094.02	10.423682	138.008802	781.3	5.343	136.5	135.6	1.33	6181	3.99	248.06
006462863-04	OBS	0094.04	3.743164	131.620607	123.5	3.870	31.5	35.4	1.33	6181	1.75	971.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006462863-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
006462863-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
006462863-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006462863-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

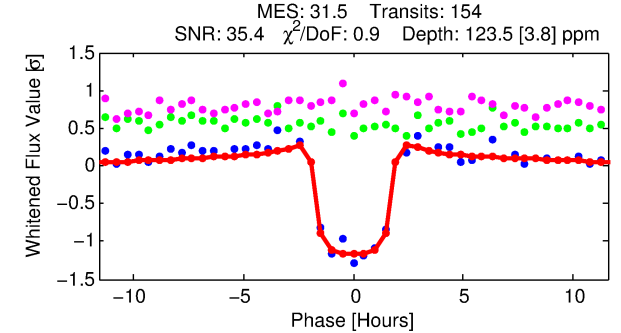
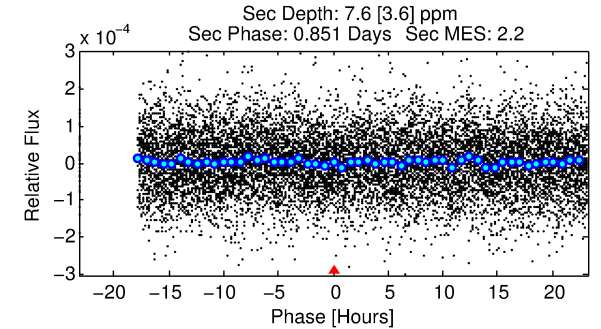
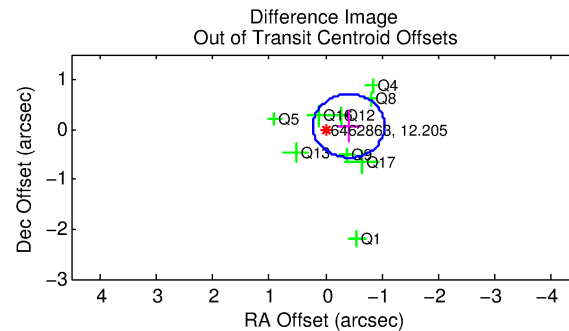
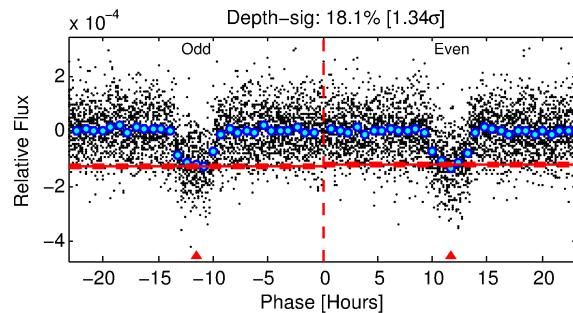
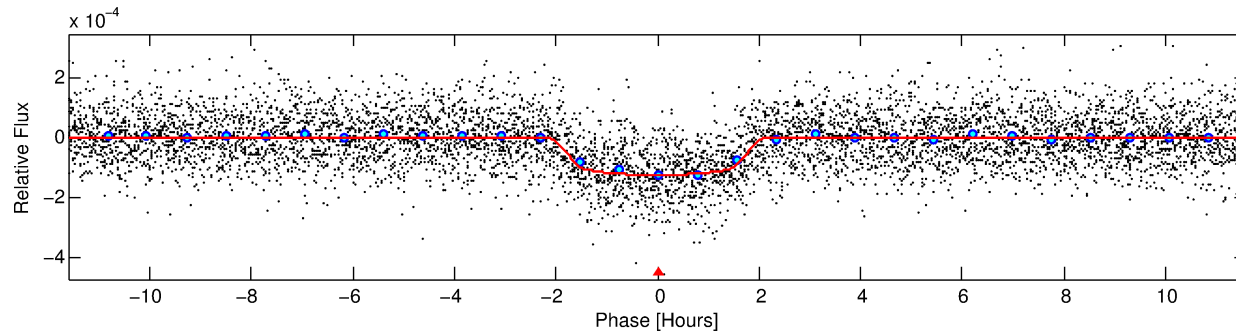
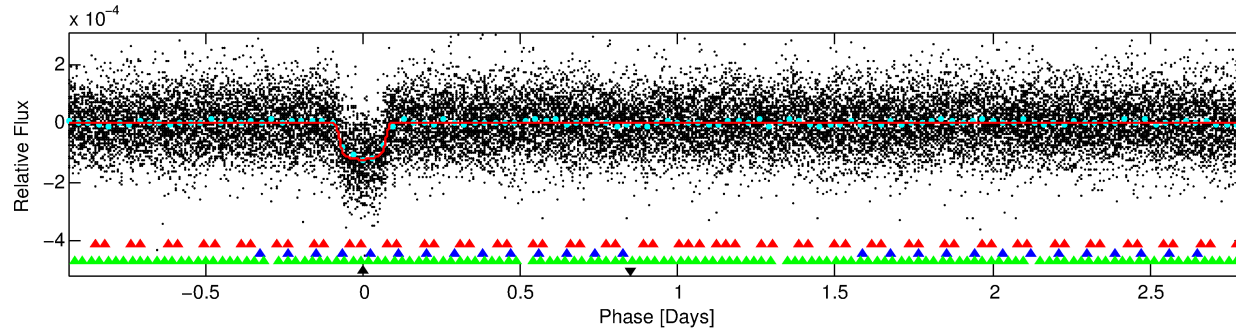
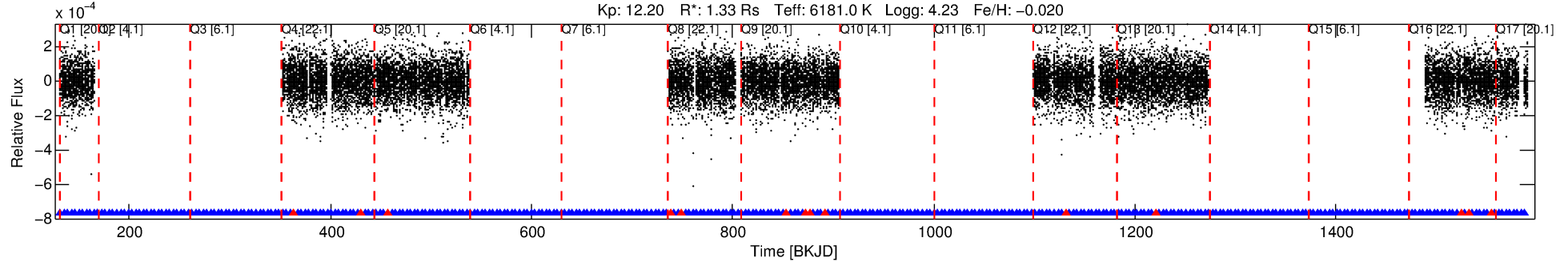
Ephemeris Match Information For 006462863-04

No Significant Match Found

DV One-Page Summary

KIC: 6462863 Candidate: 4 of 4 Period: 3.743 d
KOI: K00094.04 Name: Kepler-89b Corr: 0.982

Kp: 12.20 R*: 1.33 Rs Teff: 6181.0 K Logg: 4.23 Fe/H: -0.020



DV Fit Results:

Period = 3.74316 [0.00001] d
Epoch = 131.6206 [0.0014] BKJD
Rp/R* = 0.0121 [0.0012]
a/R* = 3.43 [1.72]
b = 0.91 [0.11]
Seff = 971.84 [258.28]
Teq = 1424 [95] K
Rp = 1.75 [0.37] Re
a = 0.0488 [0.0080] AU
Ag = 3.26 [1.88] [1.20σ]
Teffp = 2957 [390] K [3.82σ]

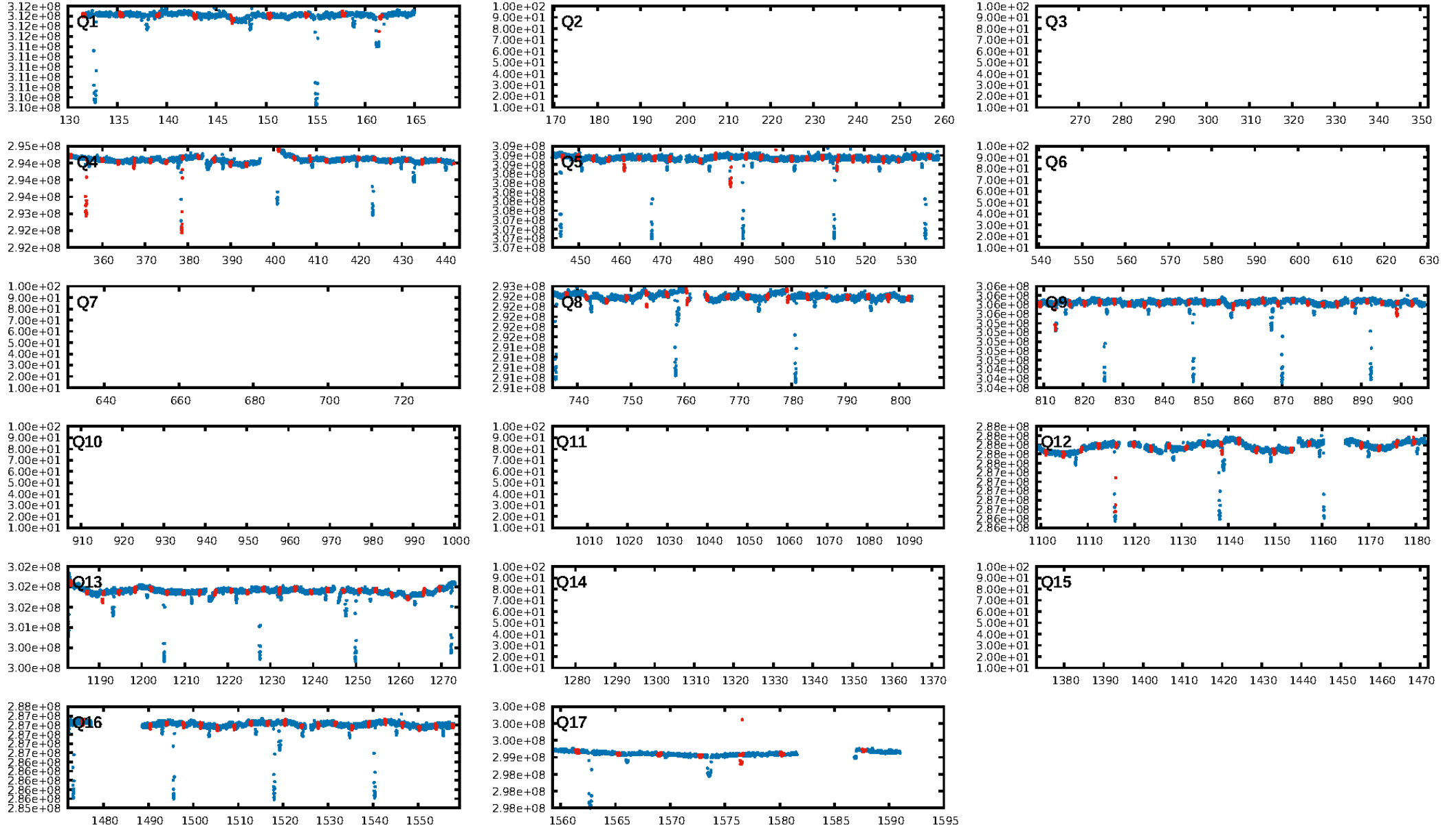
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [24.30σ]
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.52e-187
RollingBand-fgt: 0.90 [126/140]
GhostDiagnostic-chr: -129.6
Centroid-sig: 3.2%
Centroid-so: 0.236 arcsec [0.93σ]
OotOffset-rm: 0.414 arcsec [1.95σ]
KicOffset-rm: 0.336 arcsec [1.30σ]
OotOffset-st: 0/0/4/5 [9]
KicOffset-st: 0/0/4/5 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 1.00 [9/9]

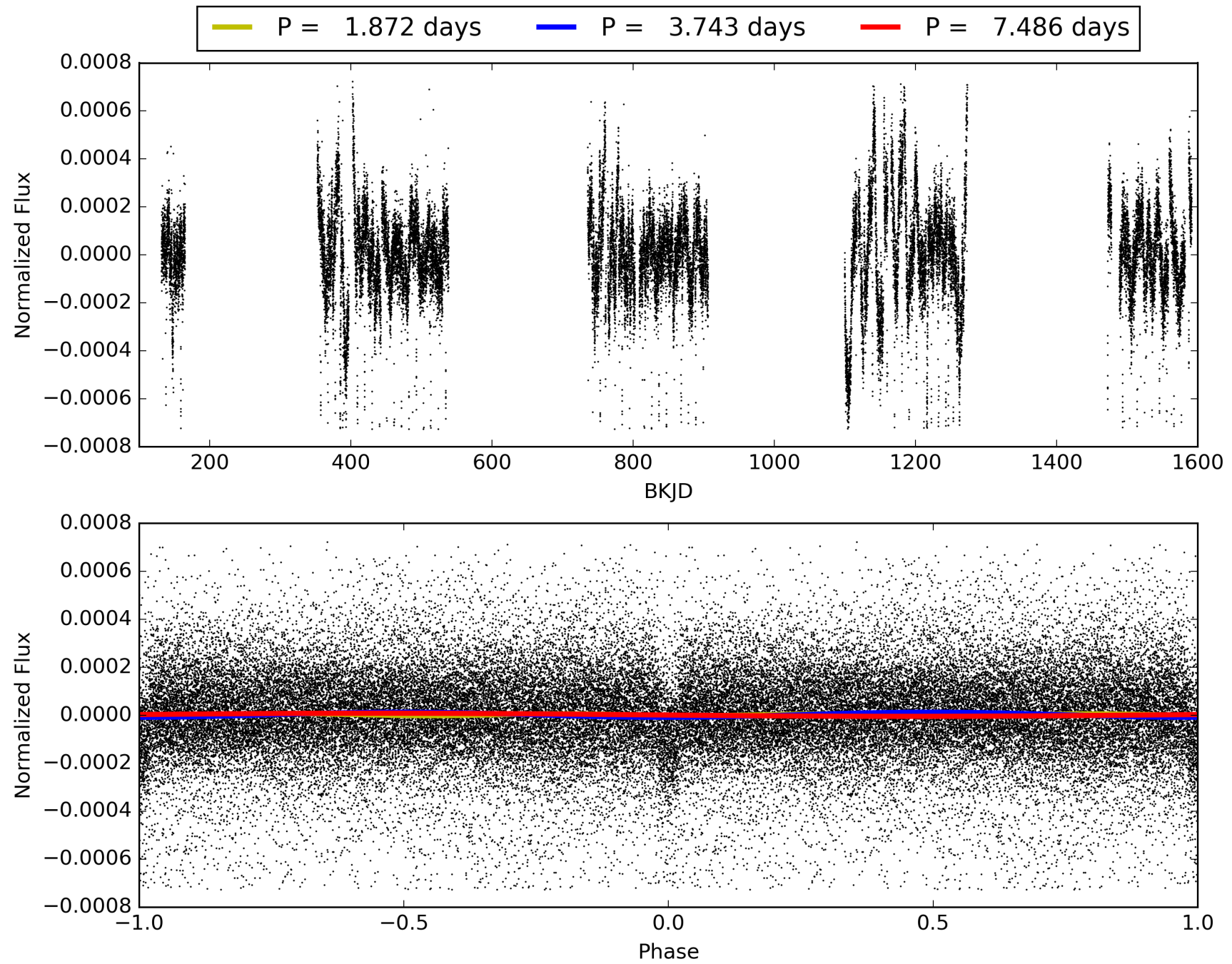
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:14:05 Z

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

TCE 006462863-04, PDC Light Curves

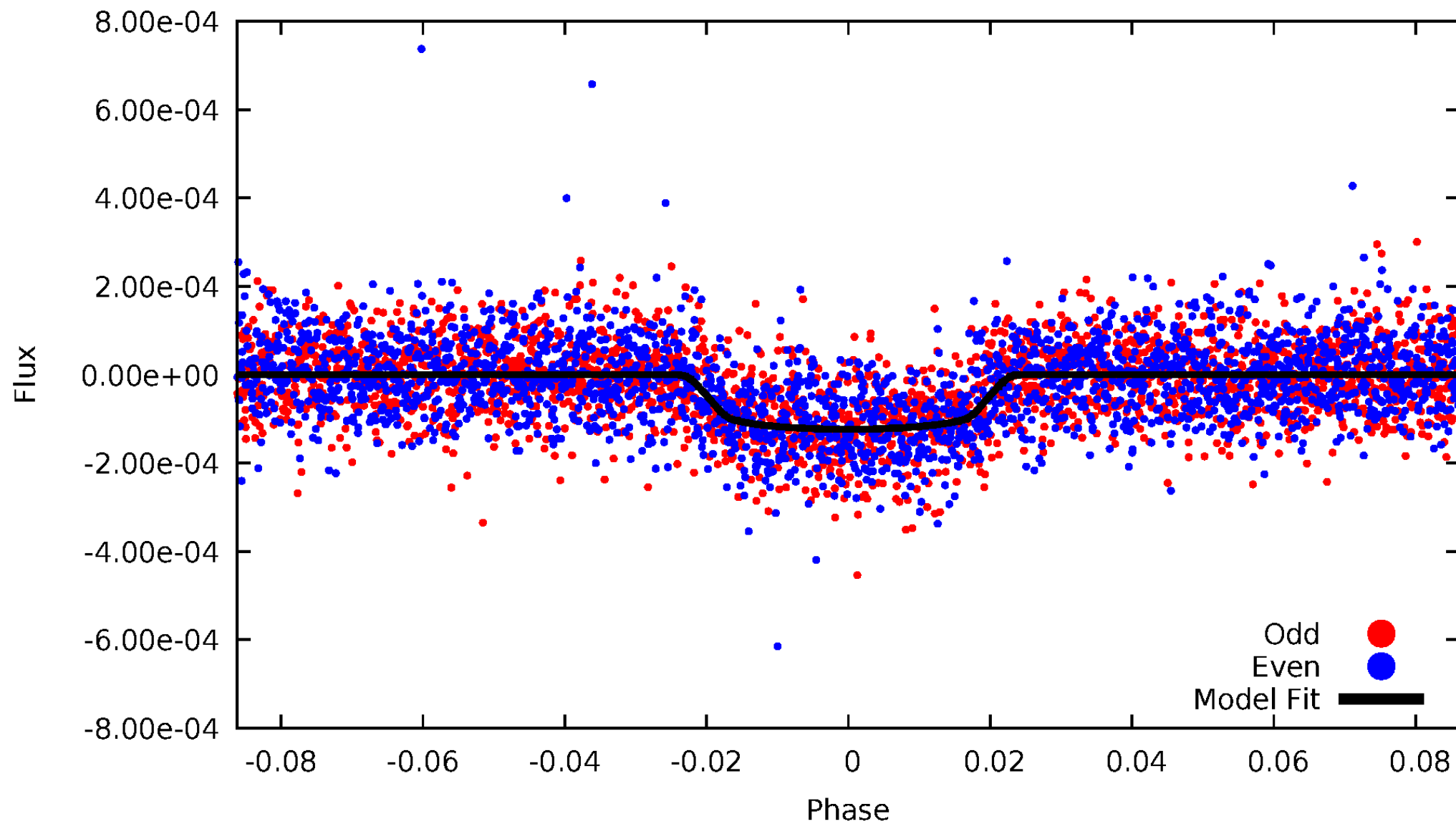


TCE 006462863-04



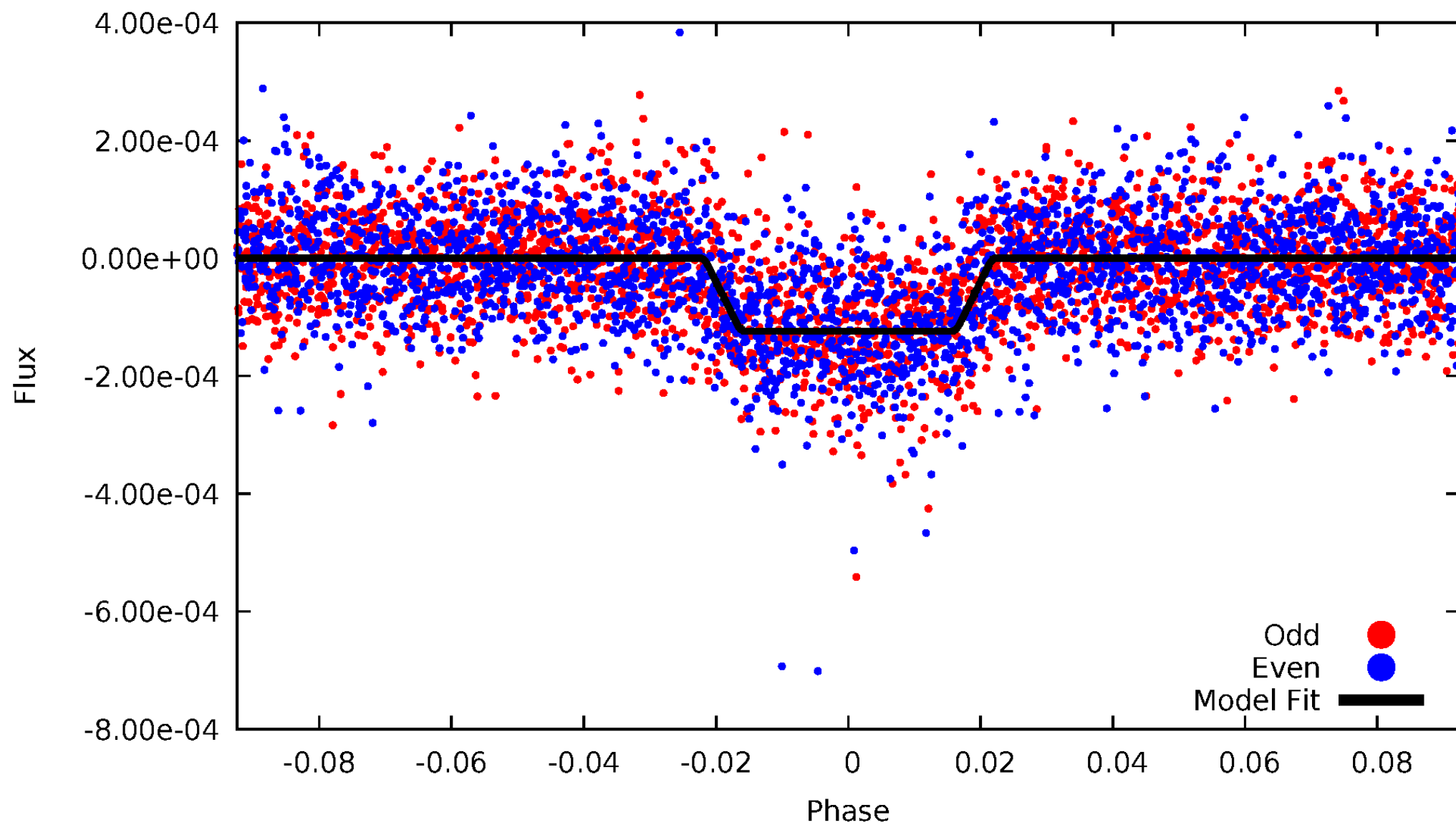
DV Odd/Even

TCE 006462863-04



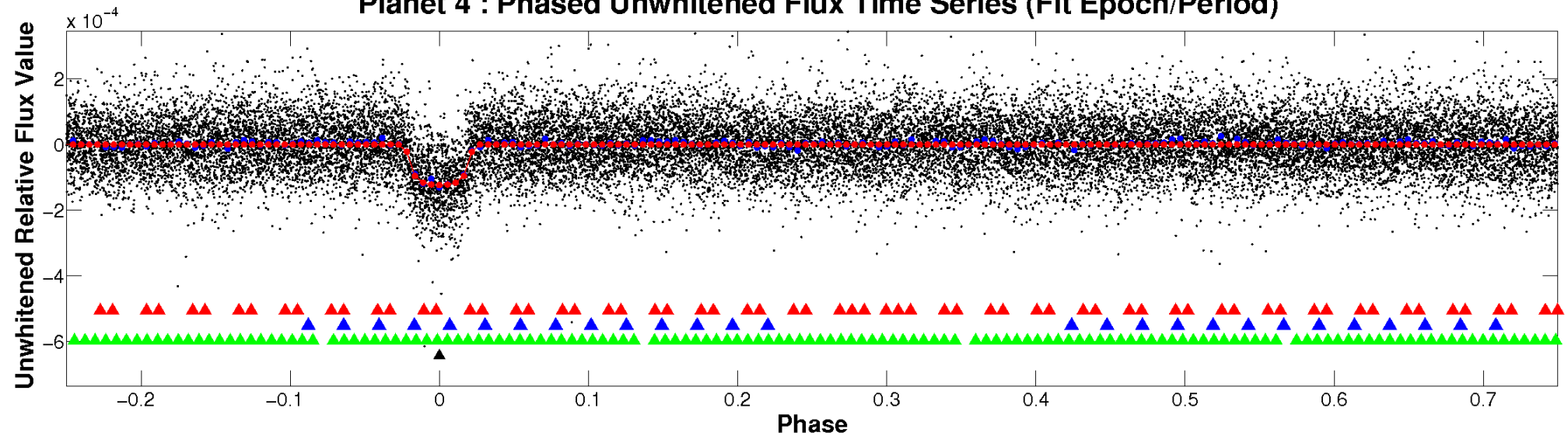
ALT Odd/Even

TCE 006462863-04

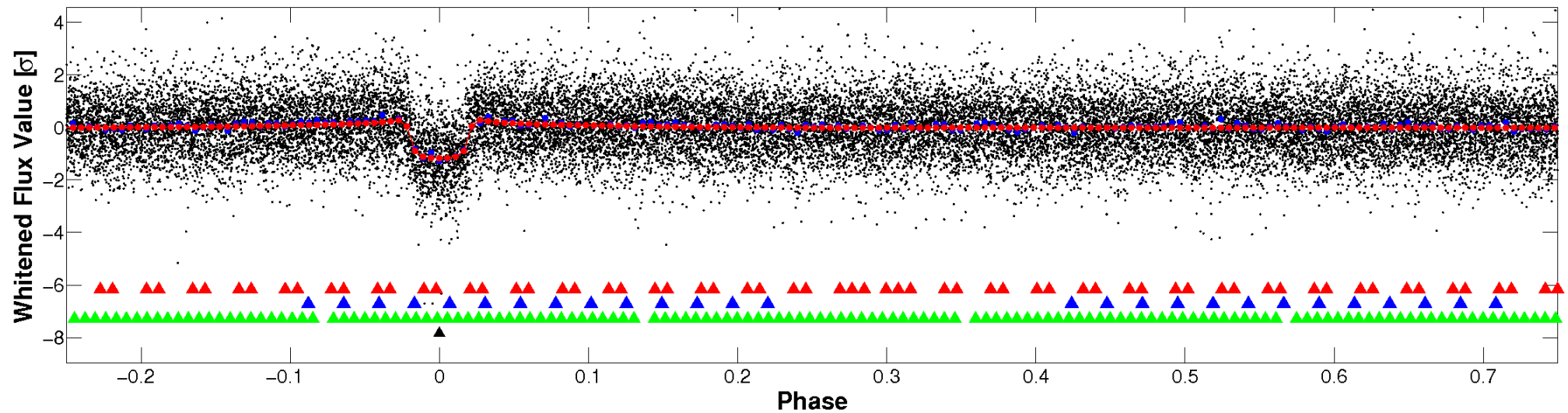


Non-Whitened Vs. Whitened Light Curve

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

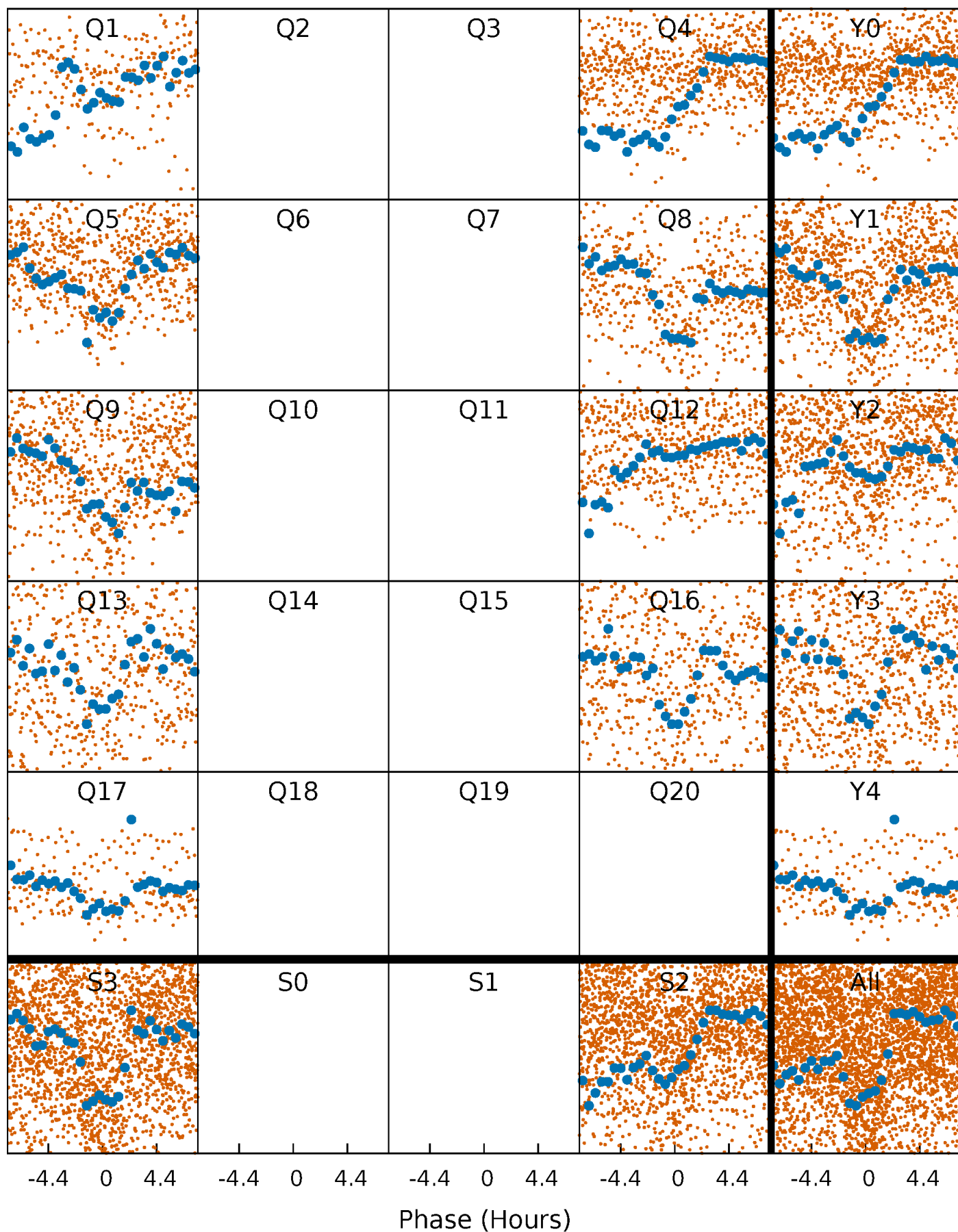


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



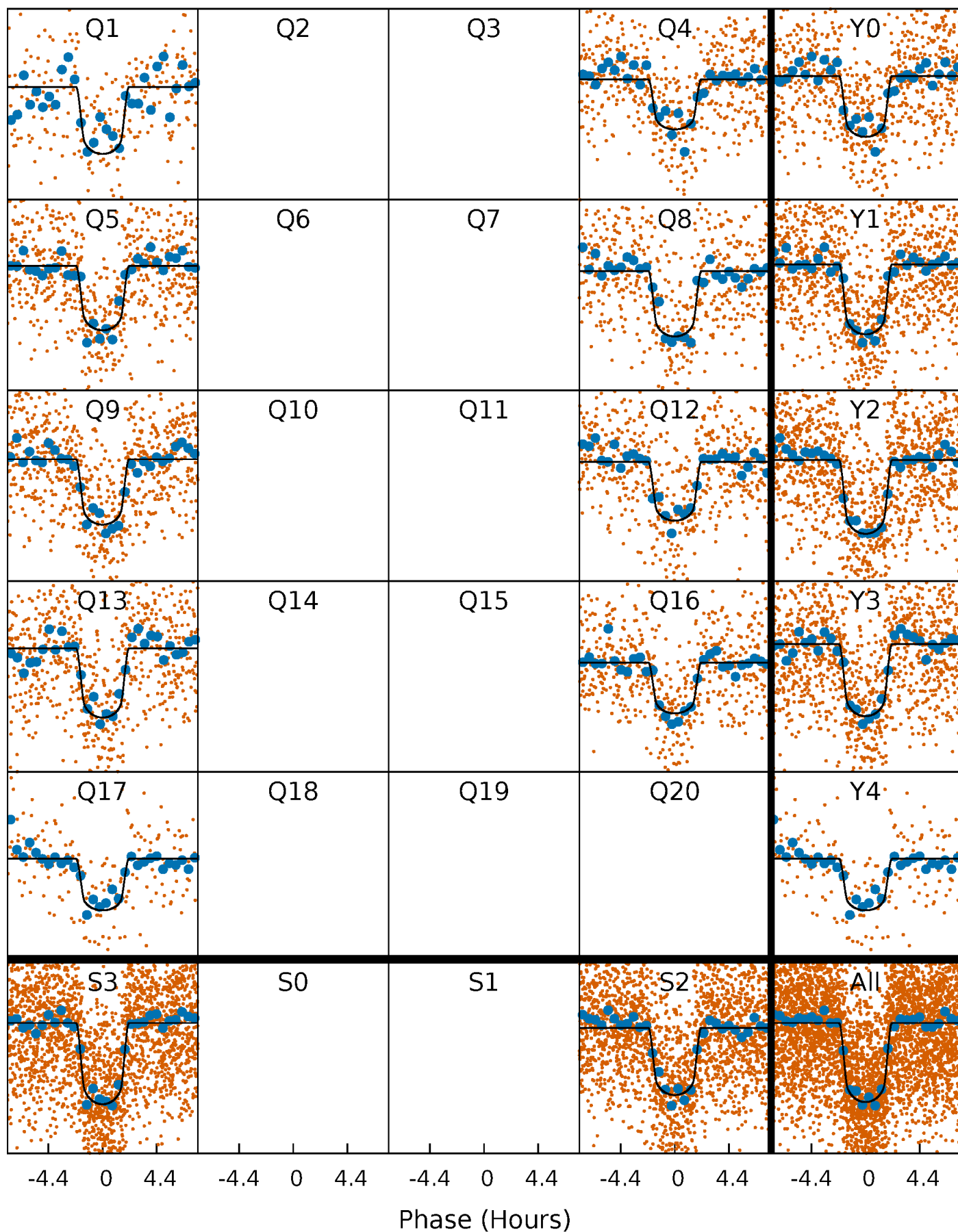
PDC Quarter-Phased Transit Curves

TCE 006462863-04 P= 3.743164 Days $T_0=131.620607$ (BKJD)



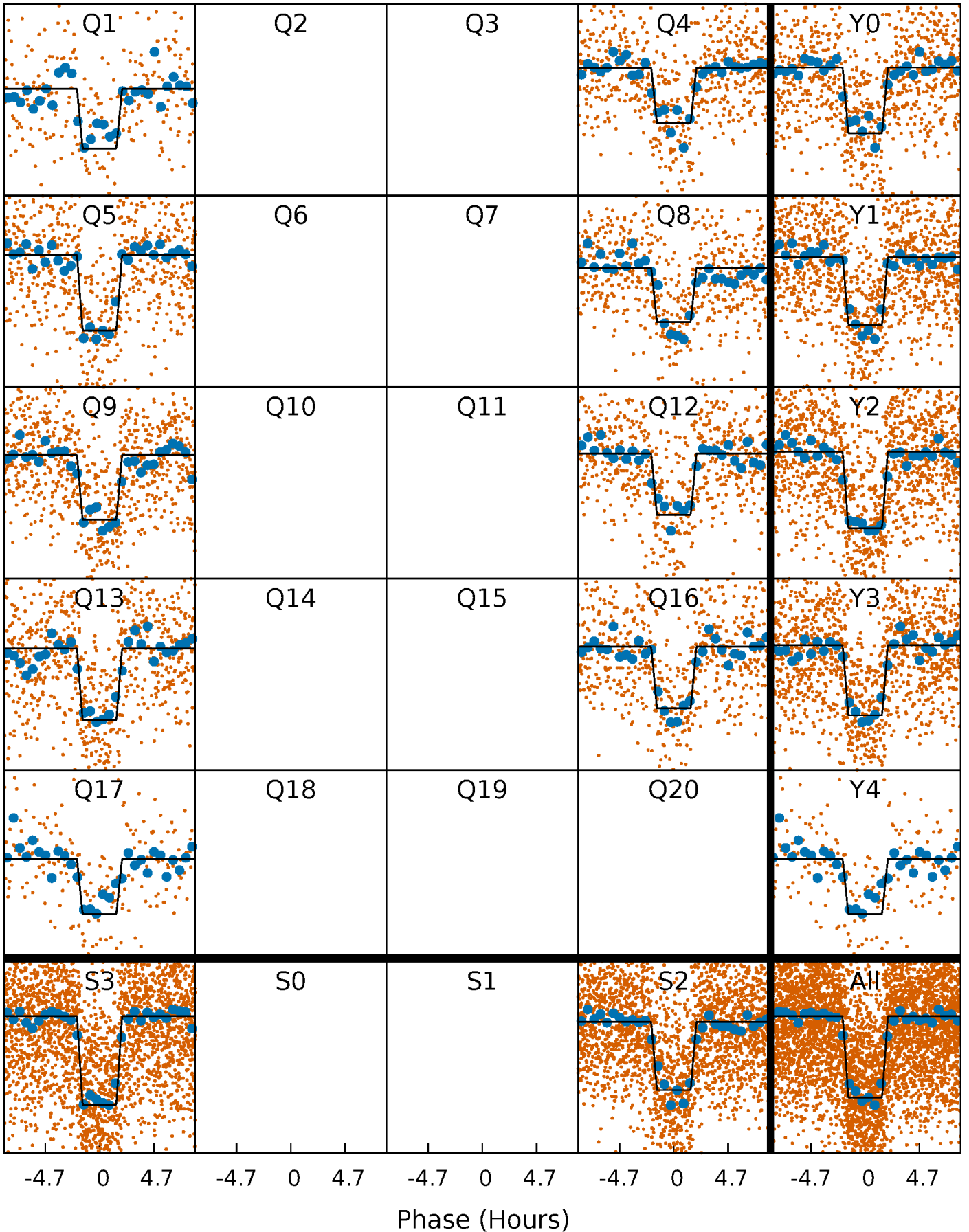
DV Quarter-Phased Transit Curves

TCE 006462863-04 P= 3.743164 Days $T_0=131.620607$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

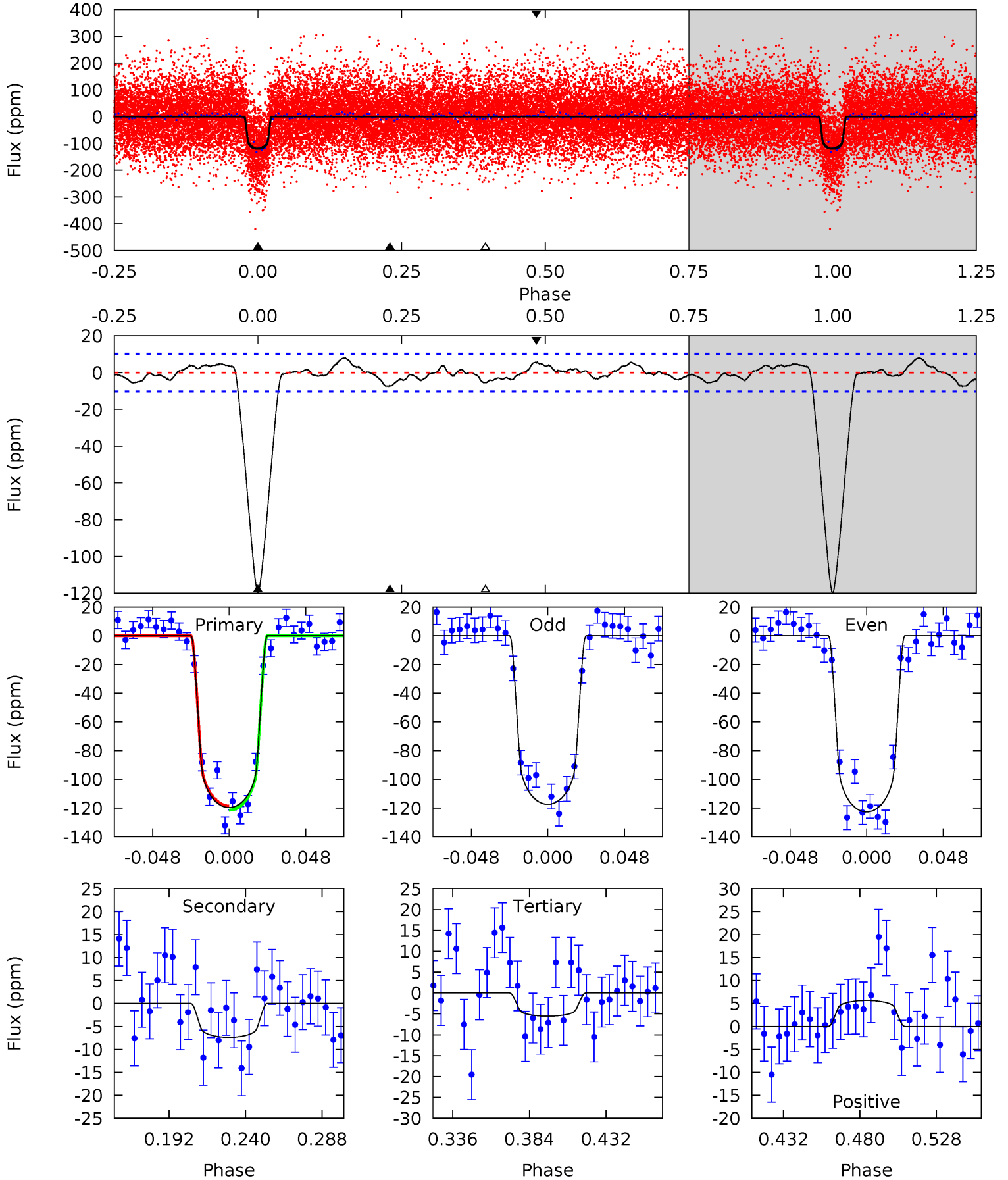
TCE 006462863-04 P= 3.743151 Days $T_0=131.623079$ (BKJD)



DV Model-Shift Uniqueness Test

006462863-04, P = 3.743164 Days, E = 127.877443 Days

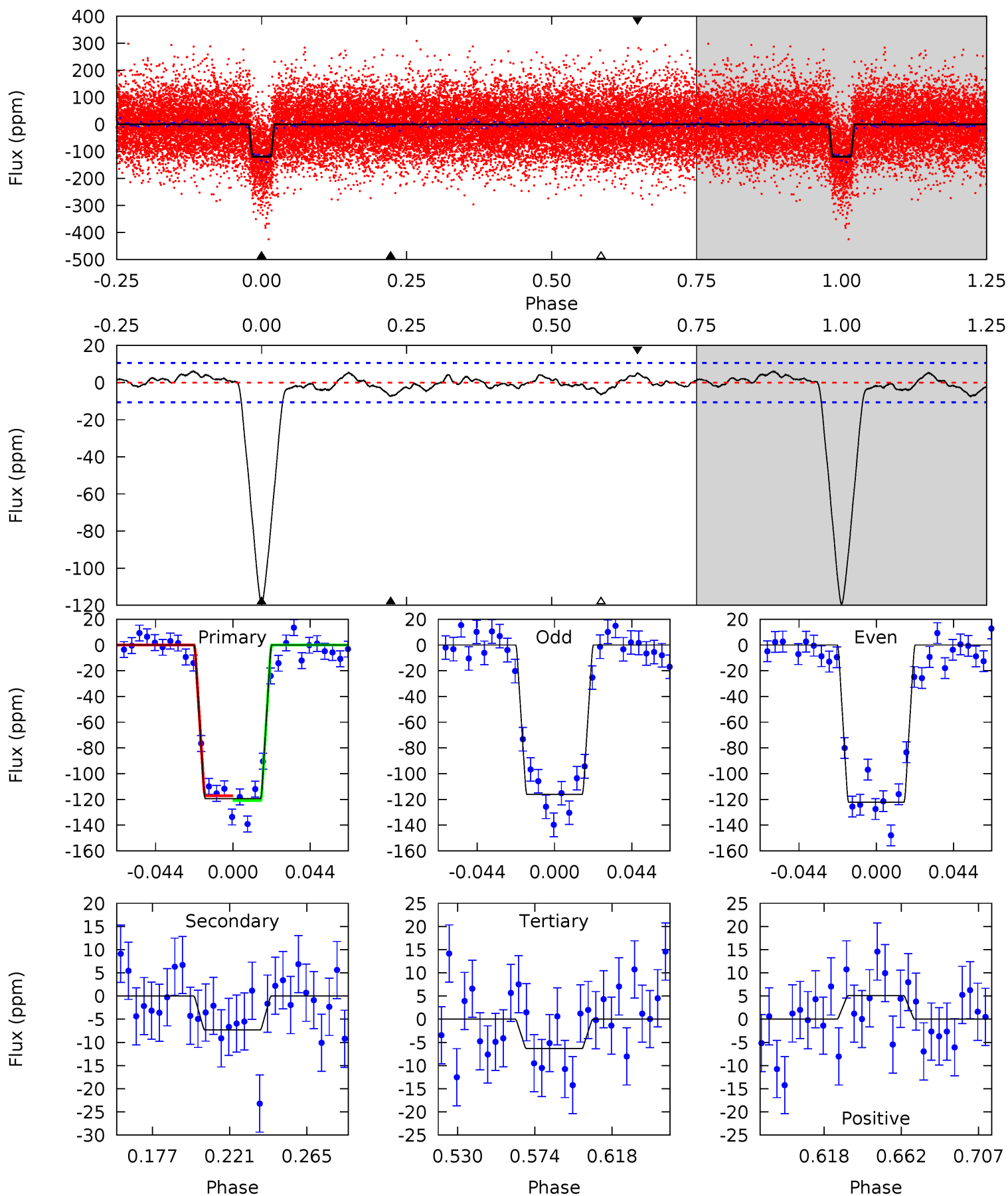
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.8	3.38	2.54	2.59	4.72	1.98	1.38	52.3	52.2	0.84	0.79	1.23	1.03	0.06	0.67



Alt Model-Shift Uniqueness Test

006462863-04, P = 3.743151 Days, E = 127.879928 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.2	3.25	2.83	2.25	4.73	2.01	1.13	50.4	50.9	0.43	1.00	1.35	1.04	0.05	0.82



Stellar Parameters For KIC 006462863

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6181^{+111}_{-135}	$4.234^{+0.143}_{-0.117}$	$-0.020^{+0.150}_{-0.150}$	$1.331^{+0.243}_{-0.199}$	$1.106^{+0.116}_{-0.074}$	$0.661^{+0.419}_{-0.237}$
	+2%/-2%	+3%/-3%	+750%/-750%	+18%/-15%	+10%/-7%	+63%/-36%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006462863-04 / KOI 0094.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7 ± 2	$1.74^{+0.25}_{-0.23}$	1983^{+95}_{-98}	3382^{+217}_{-210}	$3.133^{+1.617}_{-1.053}$
Alt.	-7 ± 2	$1.61^{+0.23}_{-0.22}$	1974^{+100}_{-92}	3474^{+219}_{-263}	$3.694^{+1.833}_{-1.399}$

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

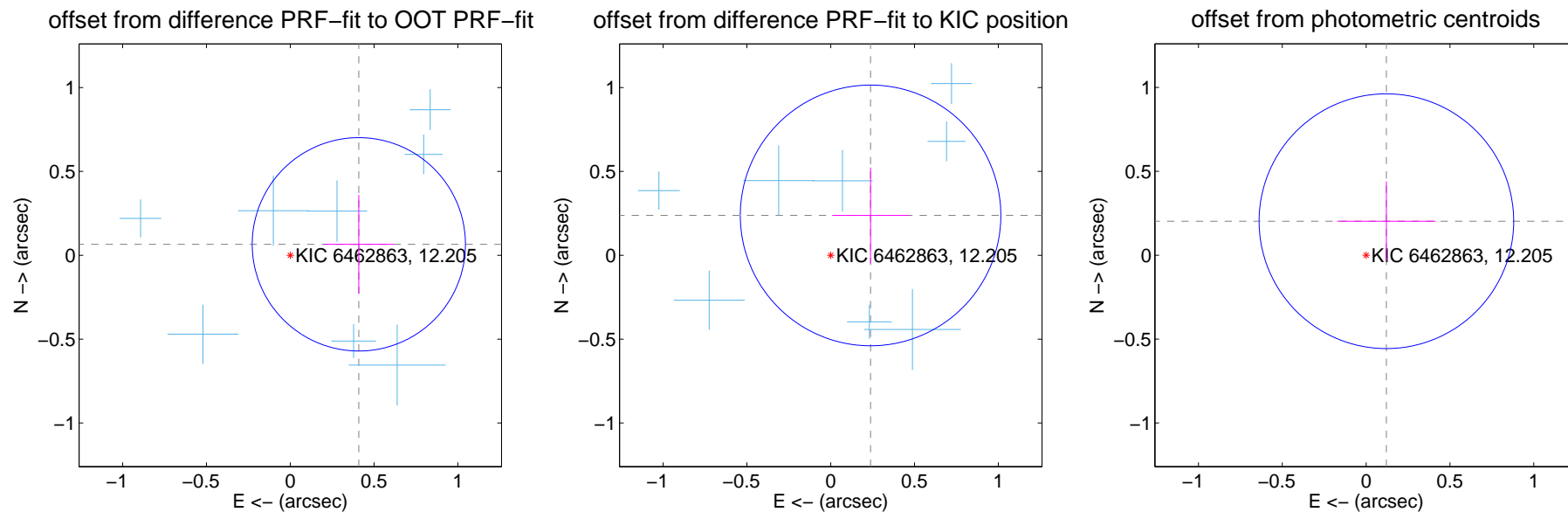
DV Centroid Data

Supplemental centroid analysis for 006462863-04. Kepler magnitude: 12.21. Transit SNR 35.39

There are 9 quarters with good PRF difference image offsets

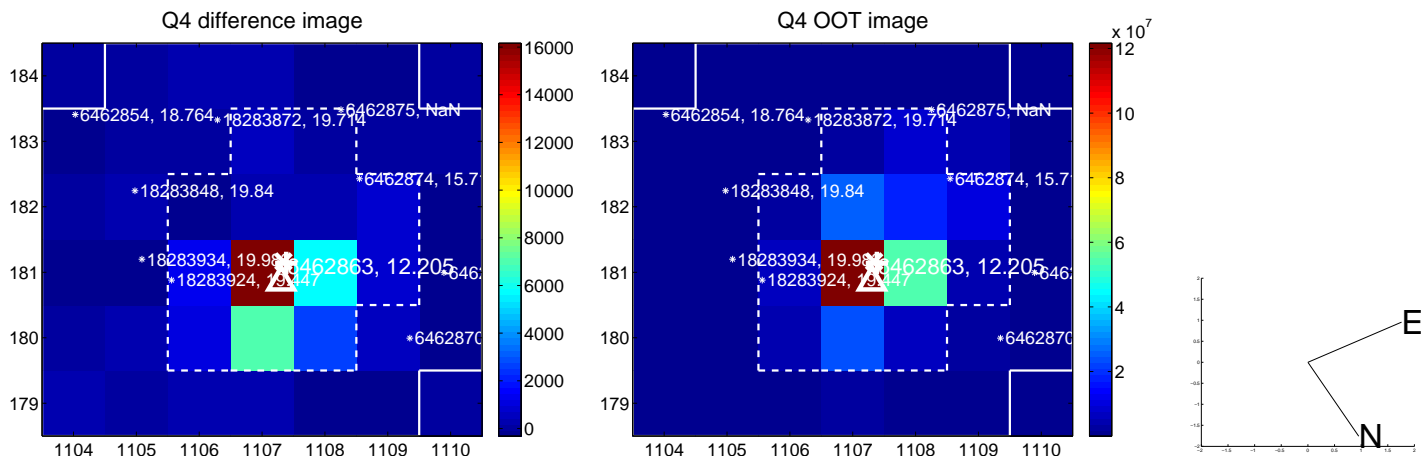
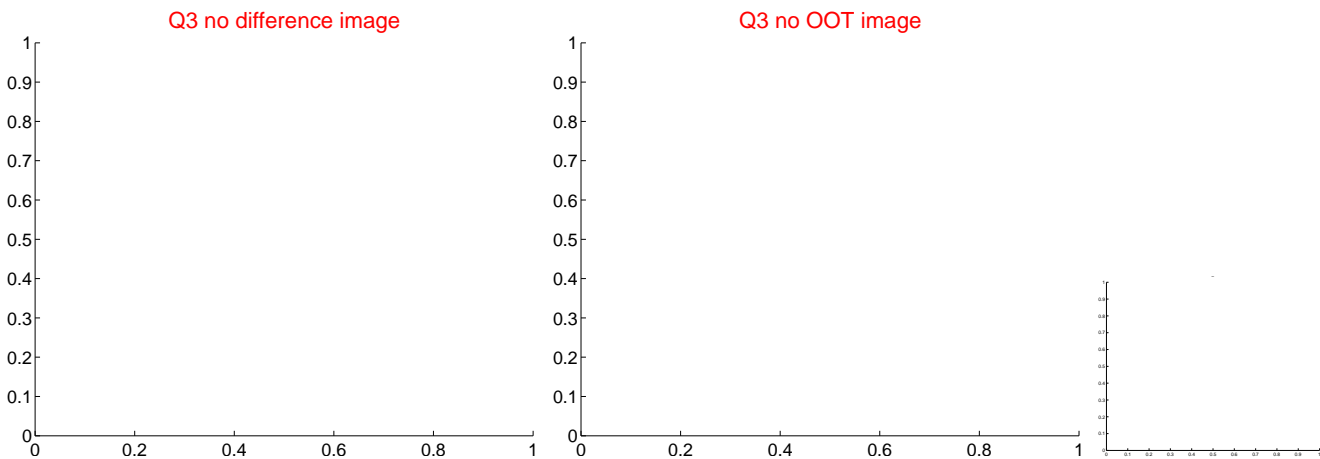
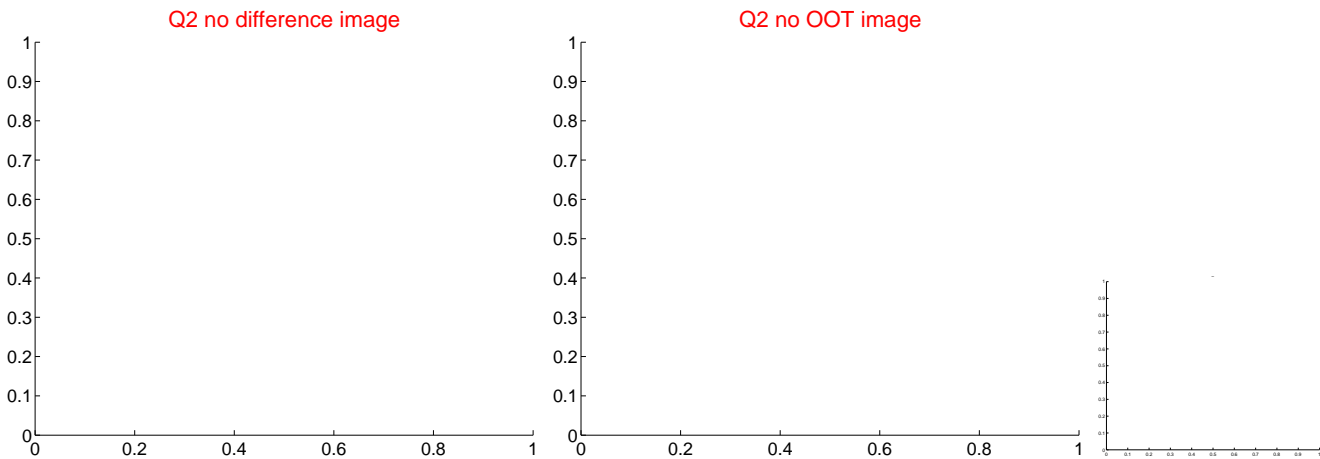
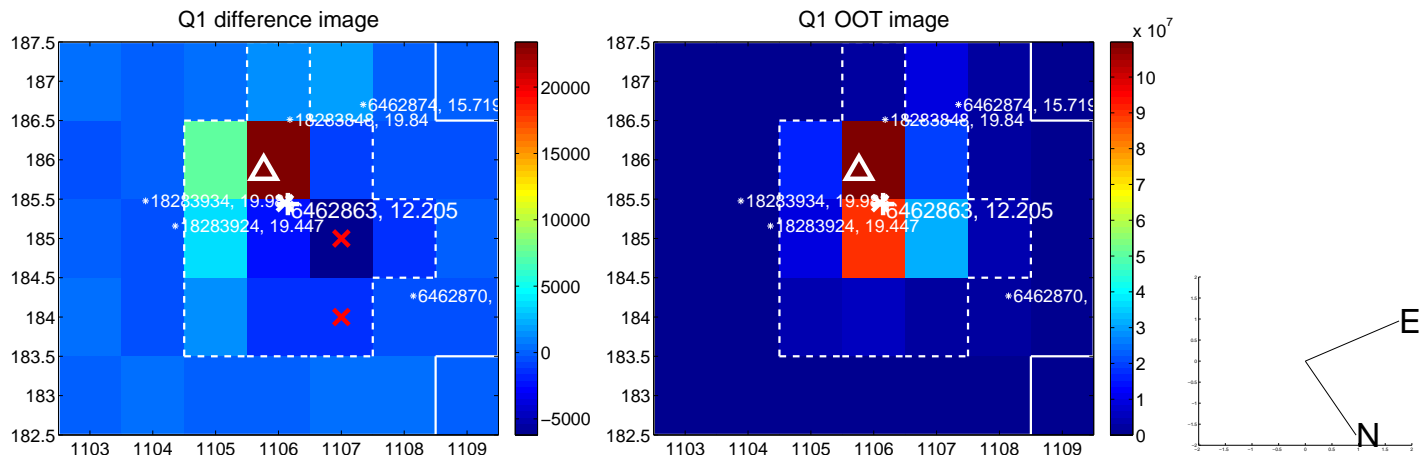
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.414 ± 0.212	1.95	-0.409 ± 0.209	0.065 ± 0.294
PRF-fit source offset from KIC position	0.336 ± 0.259	1.30	-0.238 ± 0.229	0.238 ± 0.286
photometric centroid source offset	0.24 ± 0.25	0.93	-0.12 ± 0.29	0.20 ± 0.24

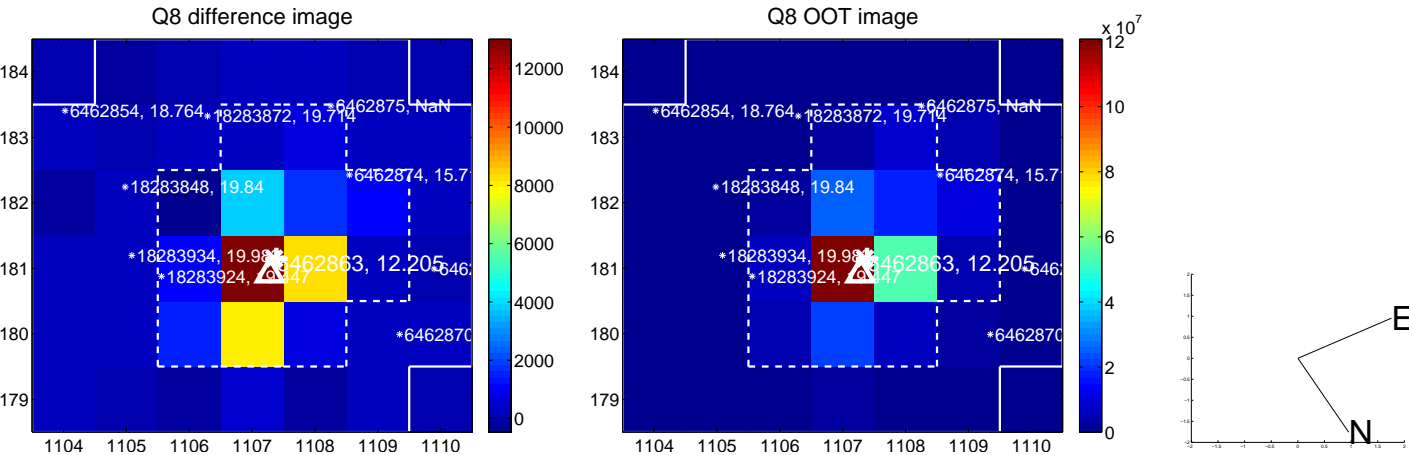
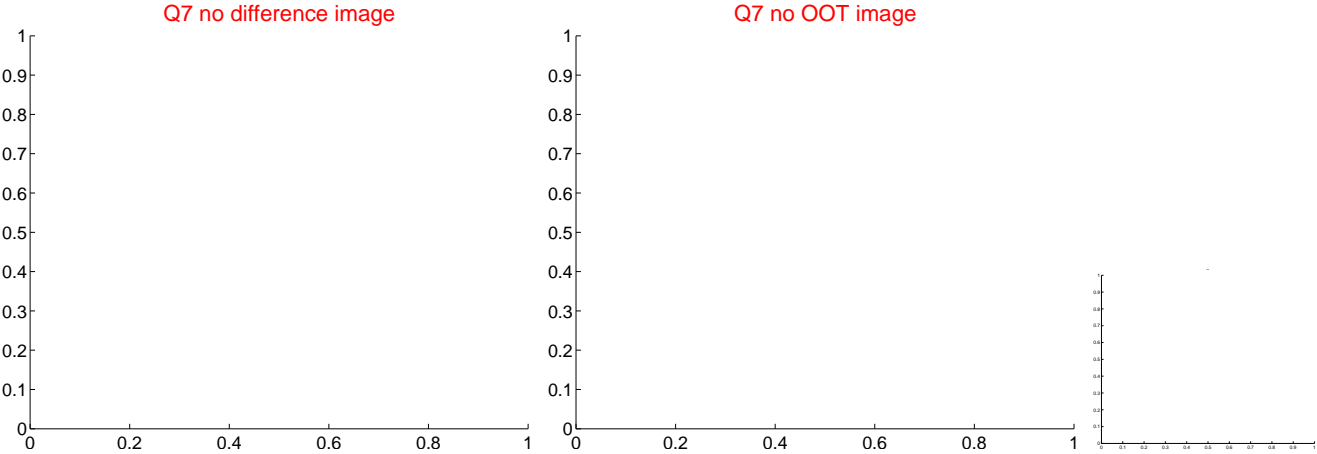
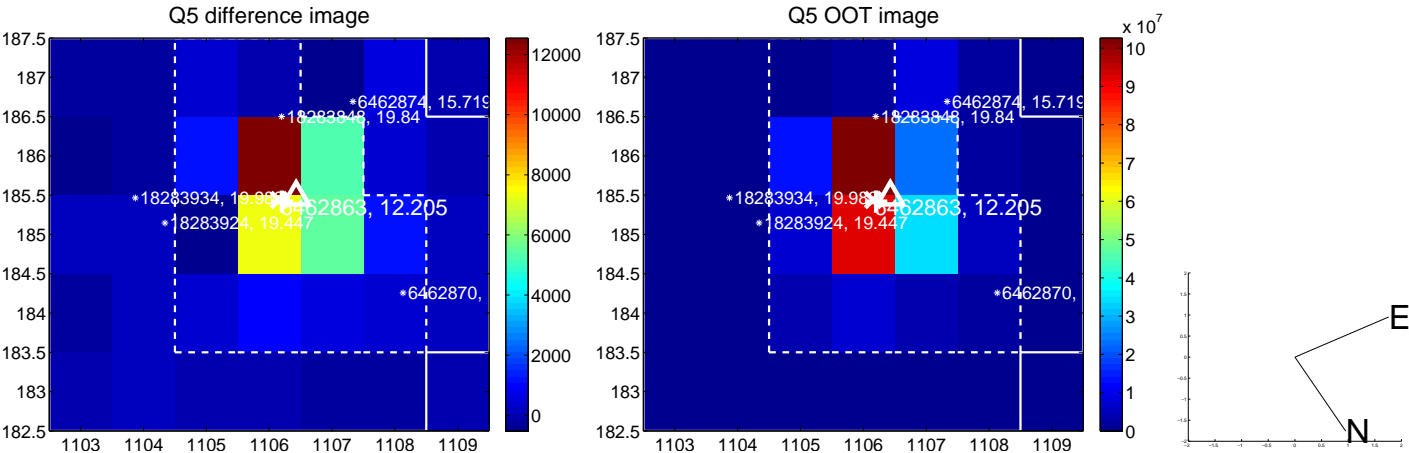


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

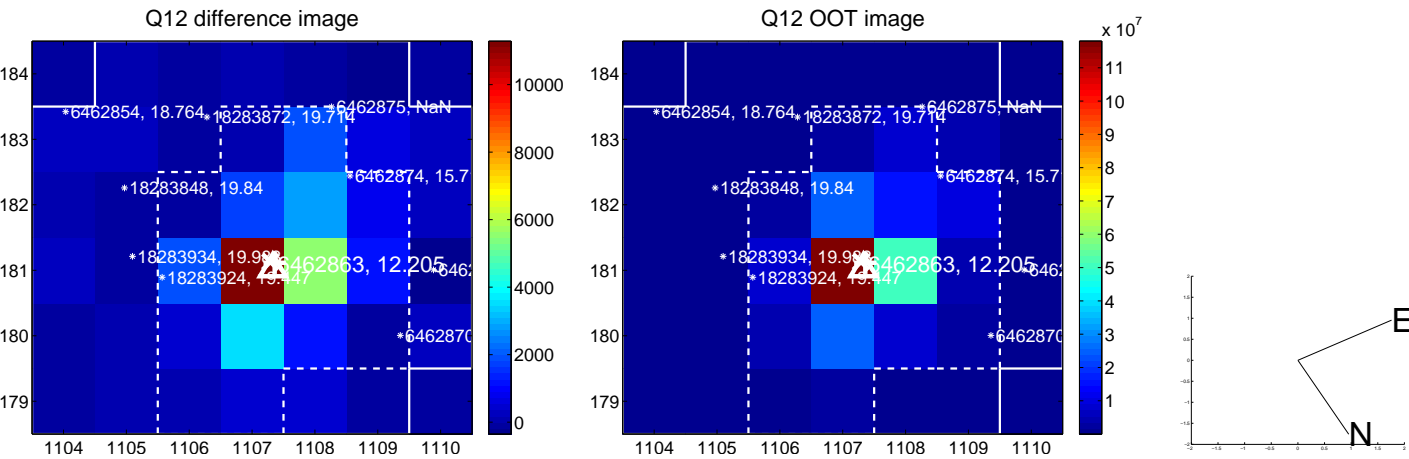
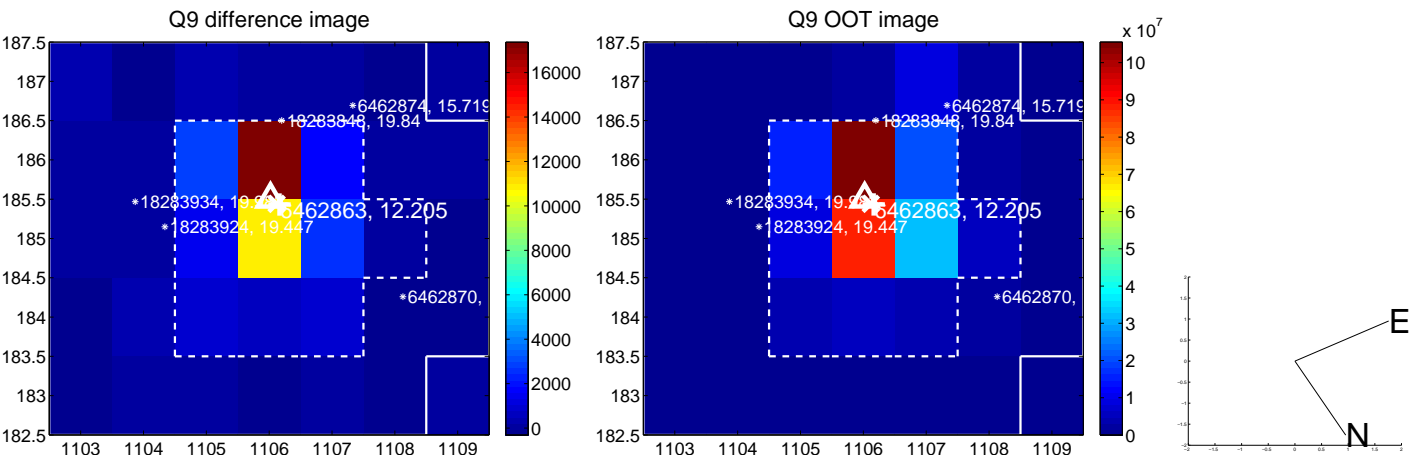
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



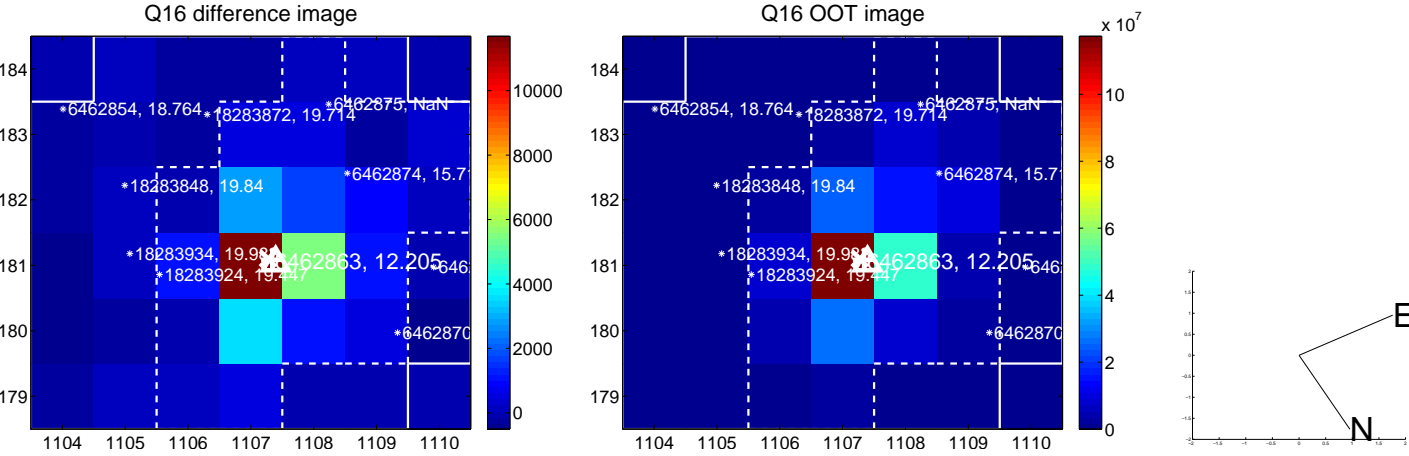
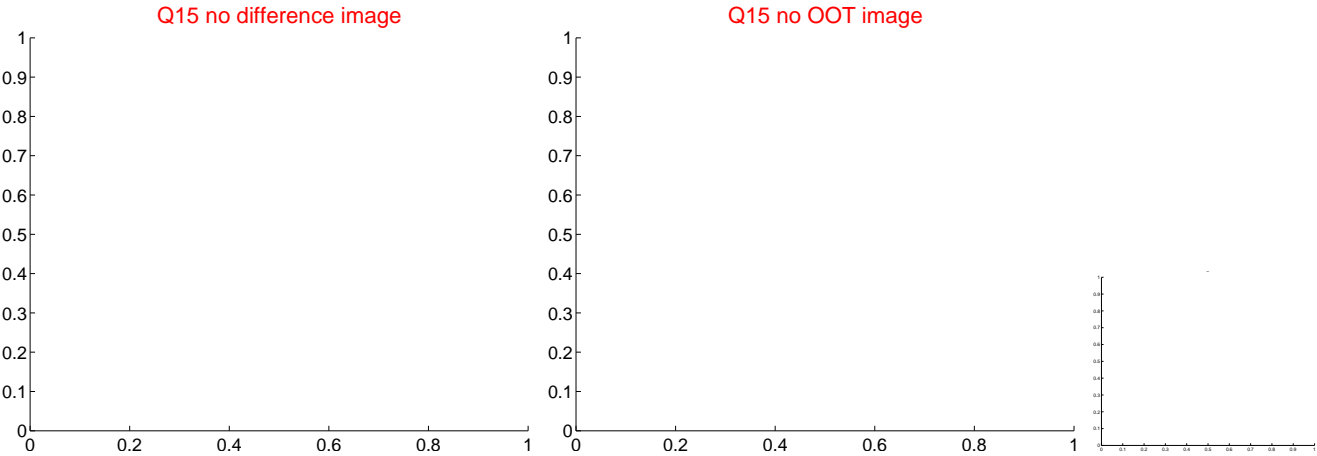
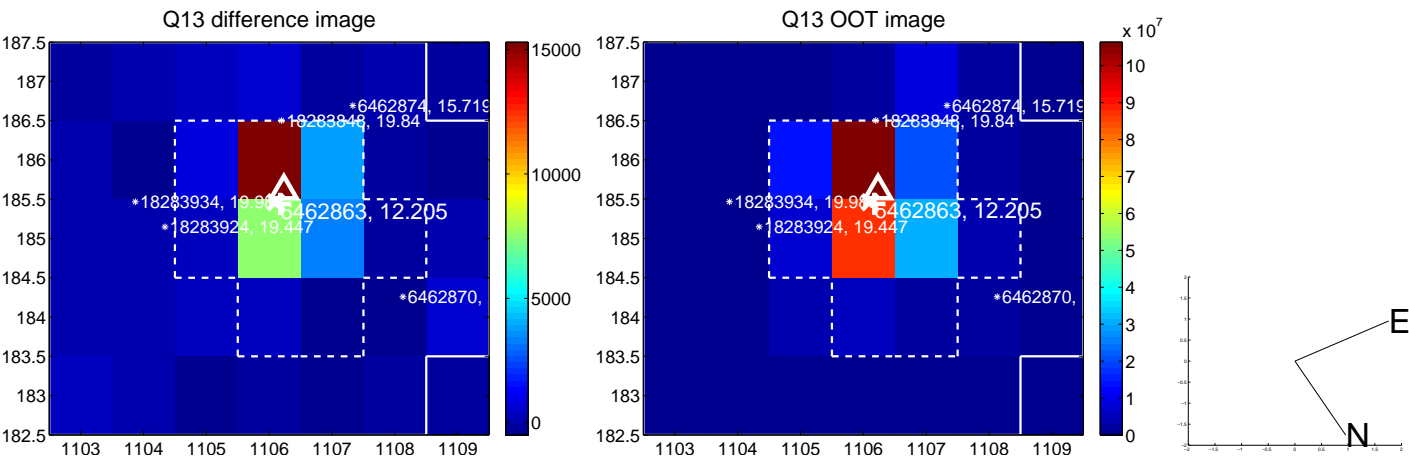
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



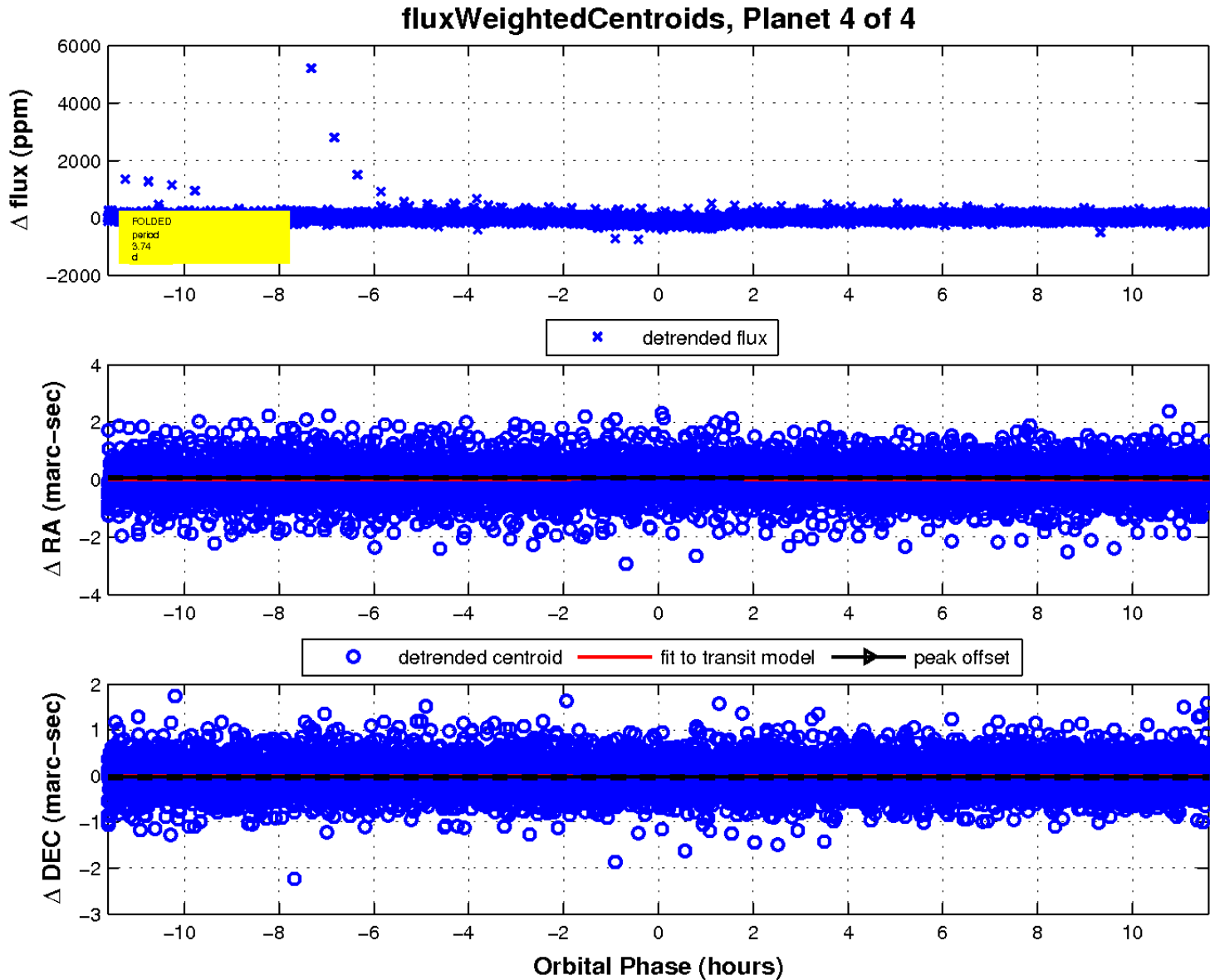
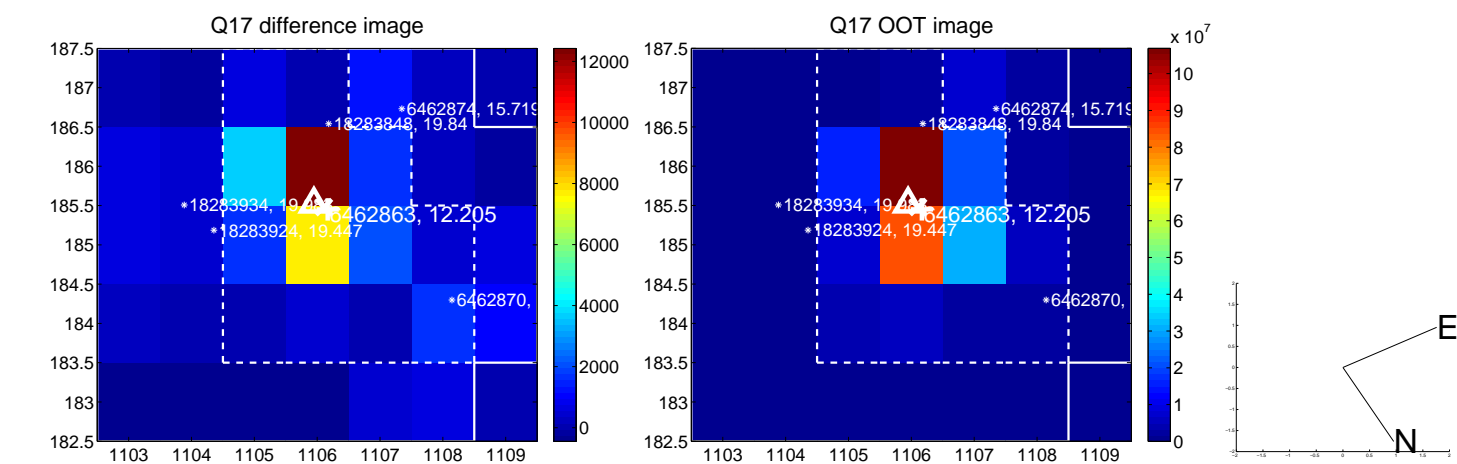
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

