

KIC 009845323

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})
009845323-01	OBS	No	260.159027	260.572999	30.6	20.297	12.3	9.2	34.41	4136	21.35	321.64
009845323-02	OBS	No	314.768386	142.177481	12.5	11.576	12.1	4.3	34.41	4136	15.24	249.48
009845323-03	OBS	No	79.756882	159.760301	22.7	2.124	11.0	8.6	34.41	4136	20.62	1555.96
009845323-04	OBS	No	69.044924	169.668441	19.5	8.937	9.5	8.8	34.41	4136	19.04	1885.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009845323-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED—HALO_GHOST
009845323-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-04	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED—HALO_GHOST

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

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

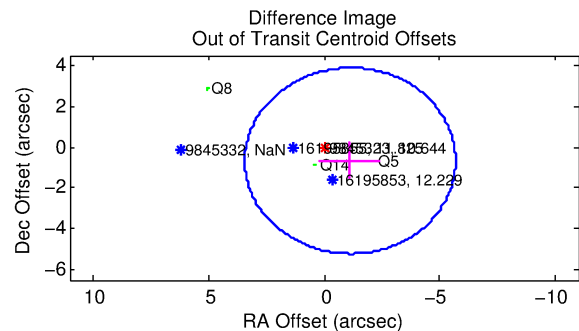
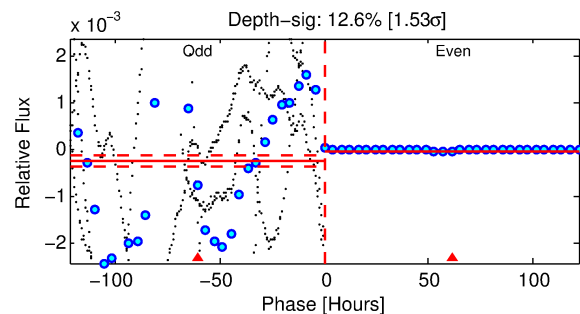
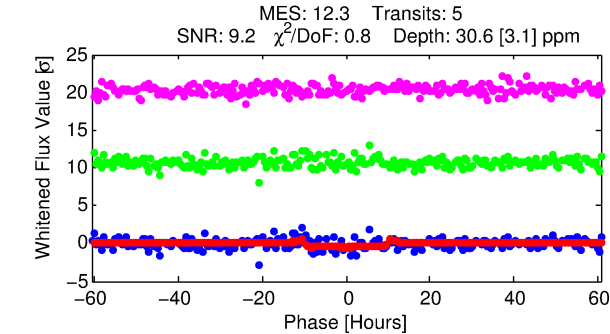
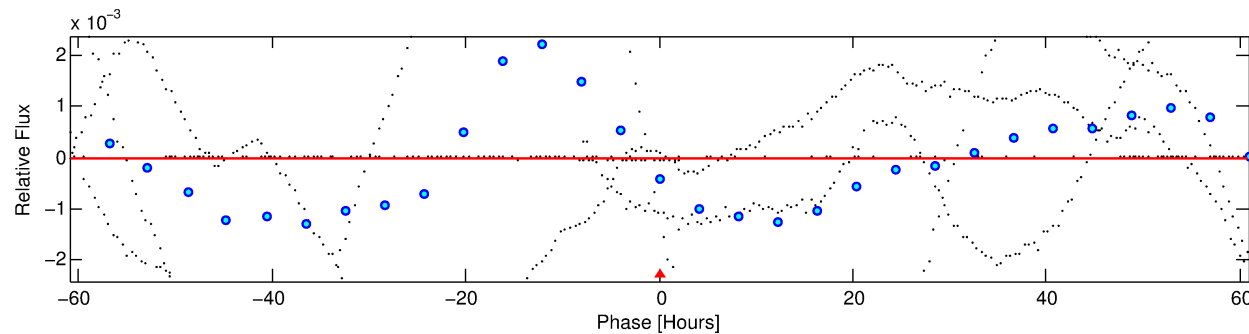
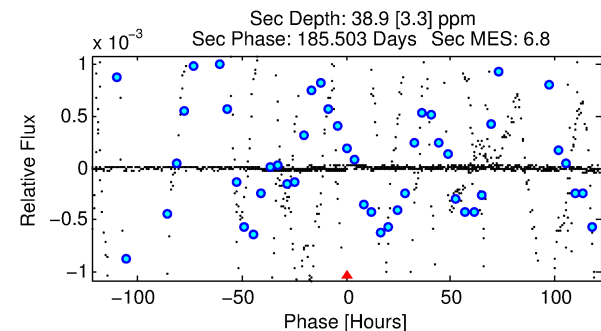
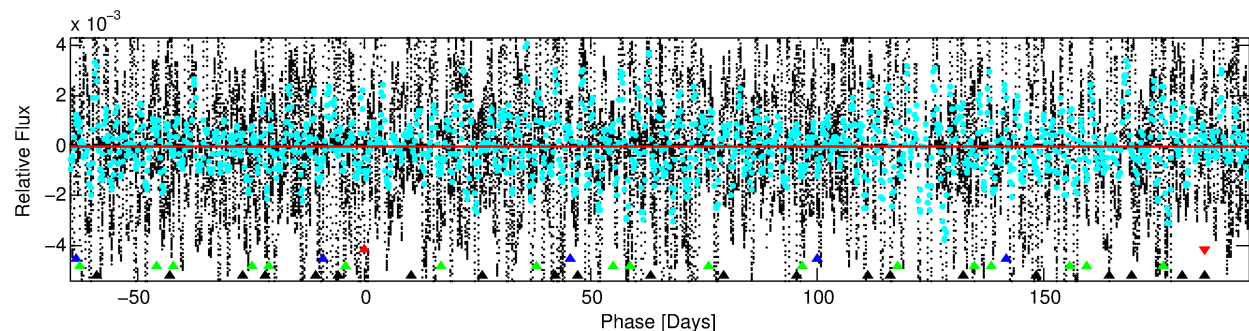
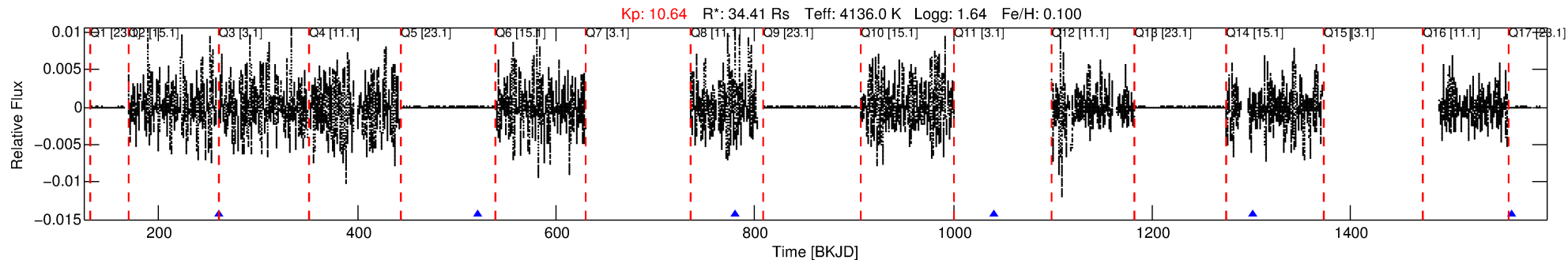
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009845323-01

No Significant Match Found

DV One-Page Summary

KIC: 9845323 Candidate: 1 of 4 Period: 260.159 d



DV Fit Results:

Period = 260.15903 [0.00315] d
Epoch = 260.5730 [0.0088] BKJD
Rp/R* = 0.0057 [0.0009]
a/R* = 61.42 [30.05]
b = 0.79 [0.23]
Seff = 321.64 [58.67]
Teq = 1080 [49] K
Rp = 21.35 [5.76] Re
a = 0.9825 [0.1416] AU
Ag = 45.32 [16.84] [2.63σ]
Teff = 4332 [385] K [8.37σ]

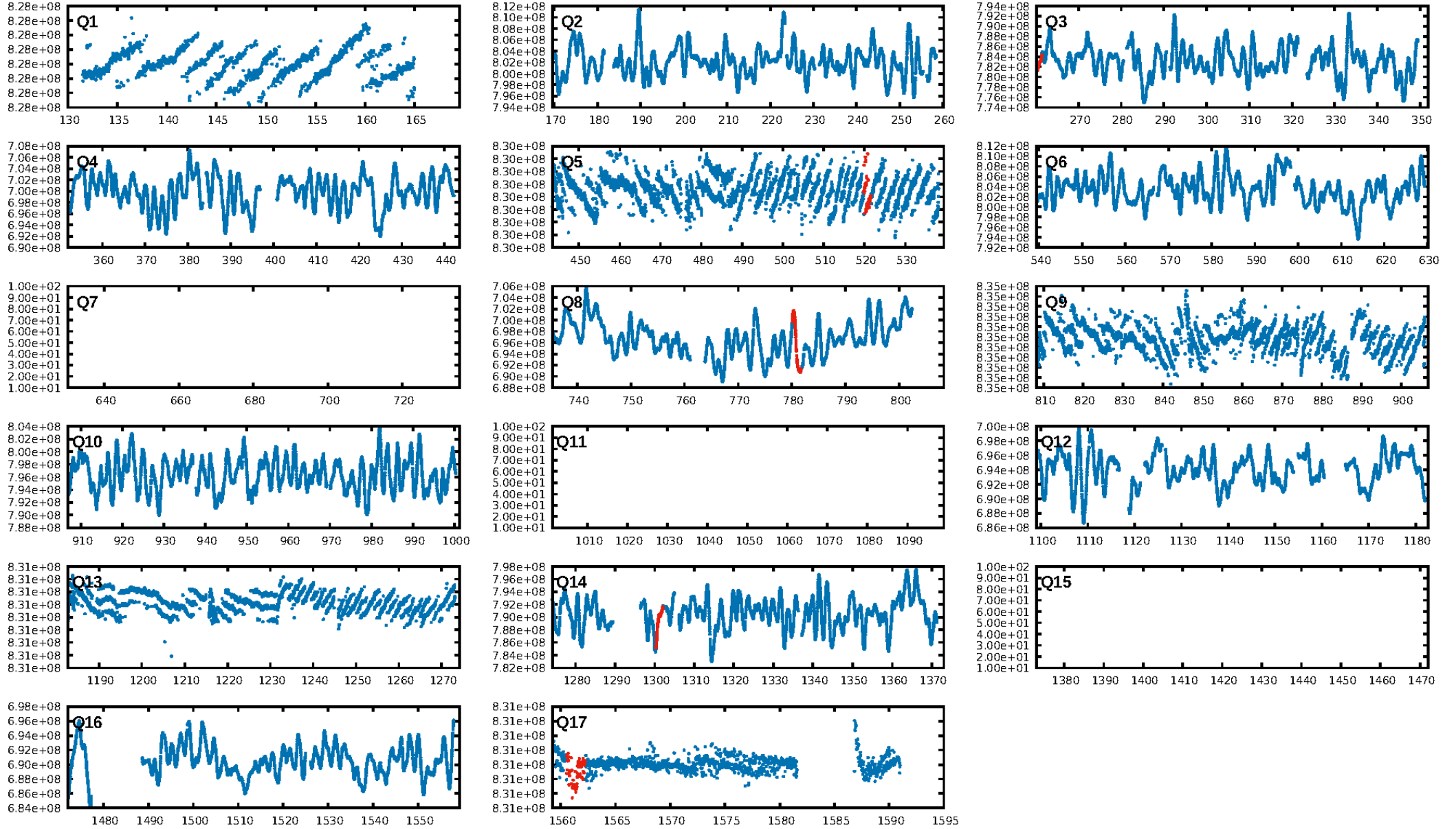
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [212.15σ]
LongPeriod-sig: 100.0% [56.09σ]
ModelChiSquare2-sig: 67.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.65e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1615
Centroid-sig: 18.2%
Centroid-so: 6.657 arcsec [1.06σ]
OotOffset-rm: 1.309 arcsec [0.86σ]
KicOffset-rm: 2.257 arcsec [0.84σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

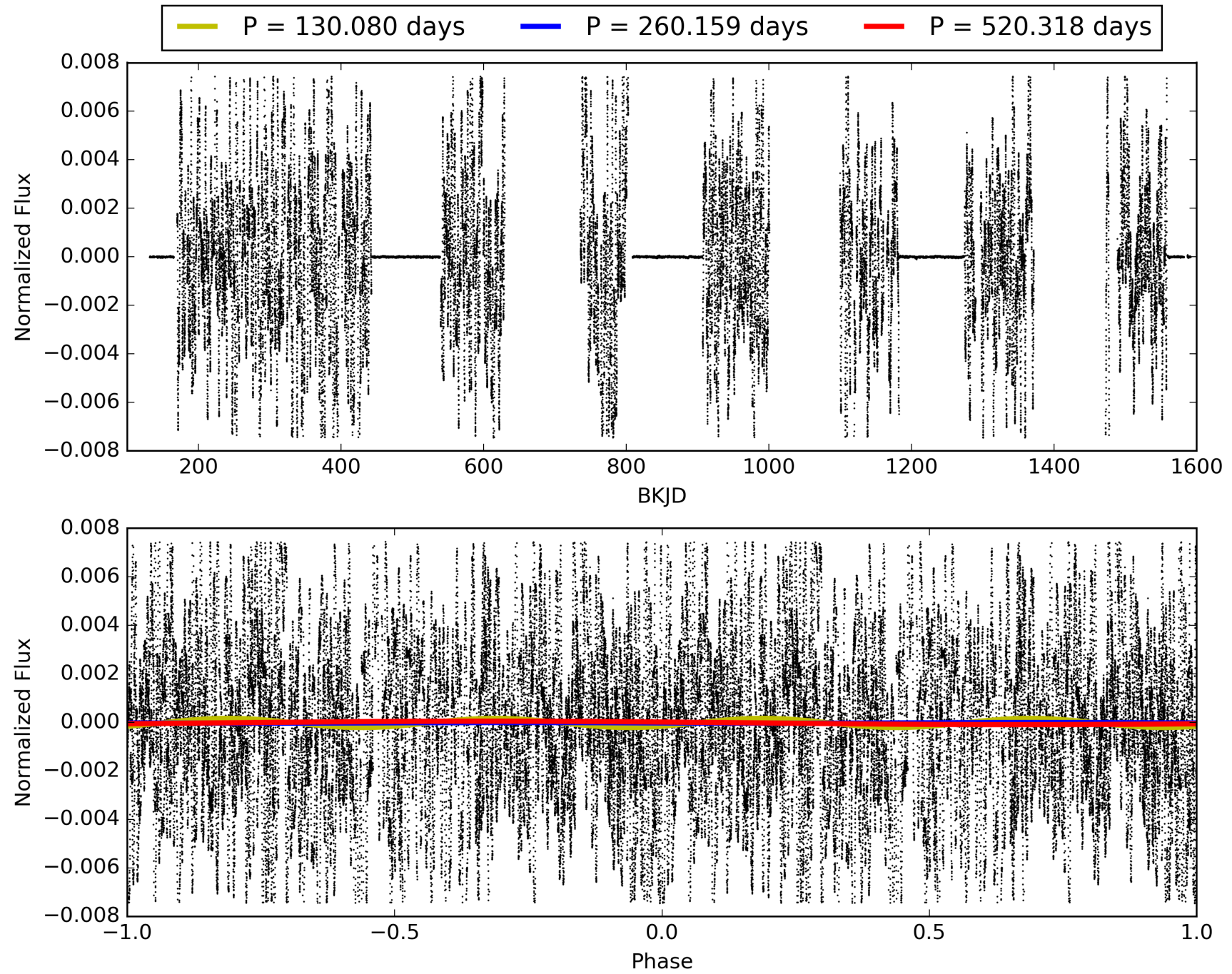
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:21:26 Z

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

TCE 009845323-01, PDC Light Curves

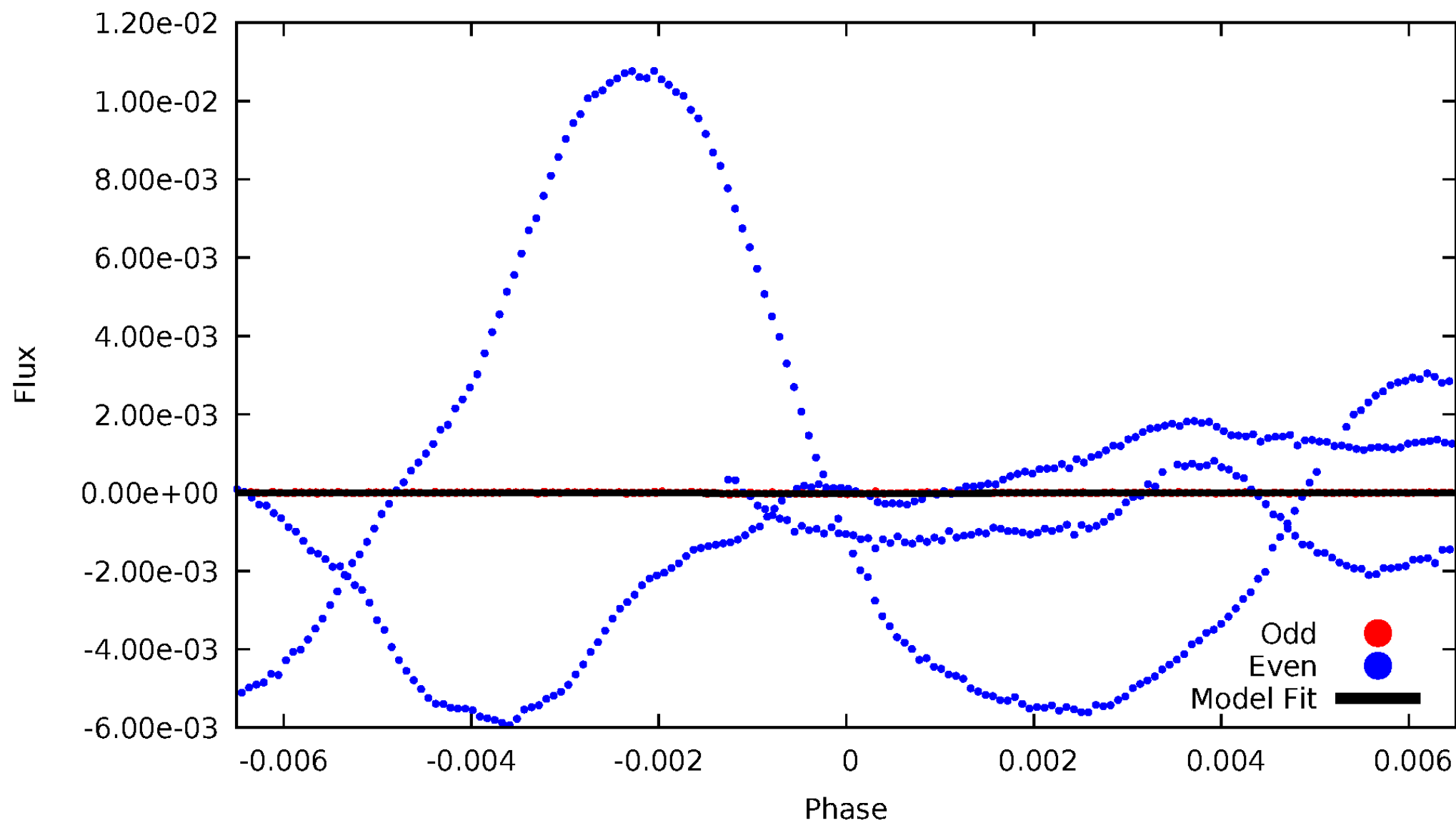


TCE 009845323-01



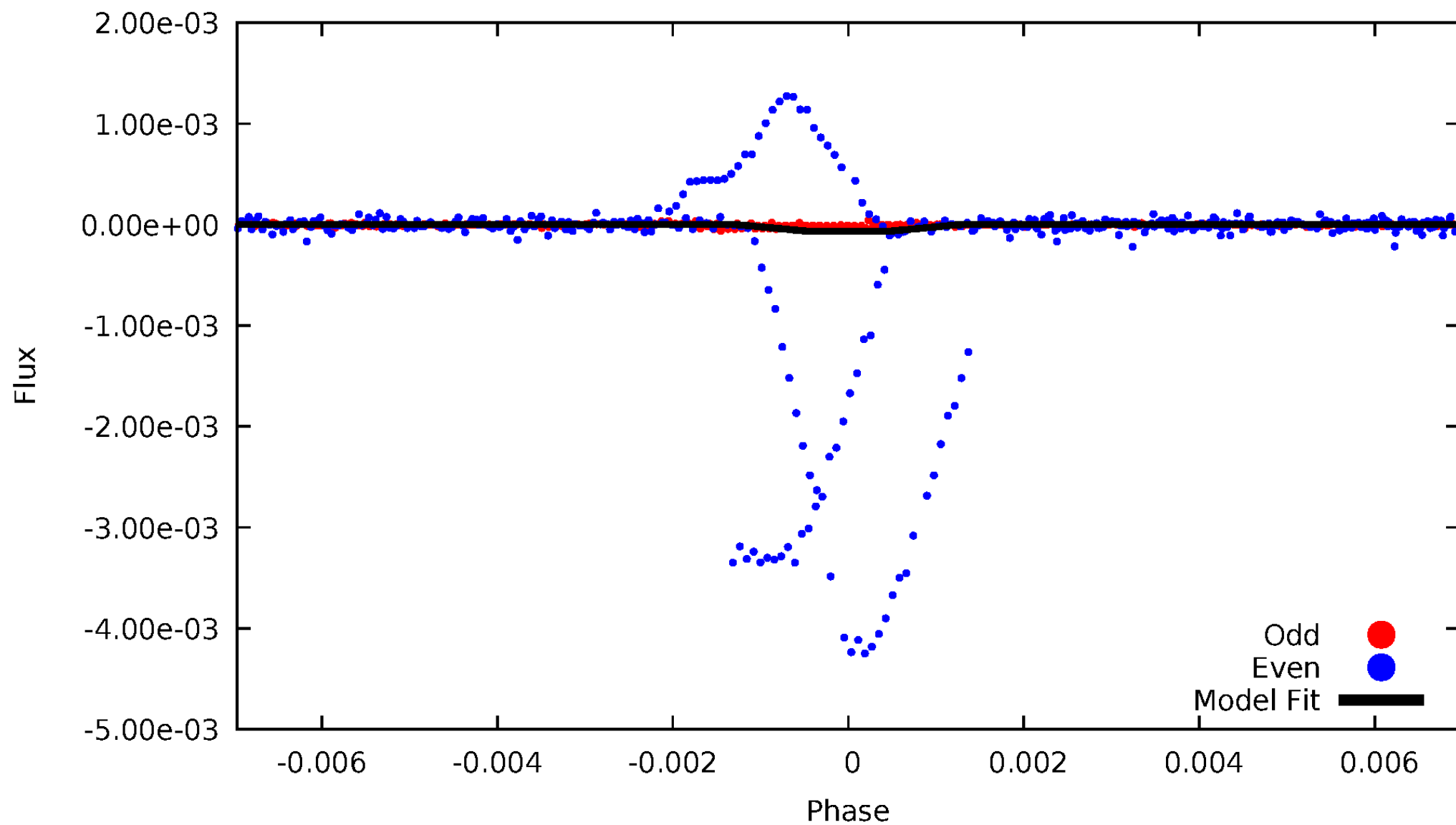
DV Odd/Even

TCE 009845323-01



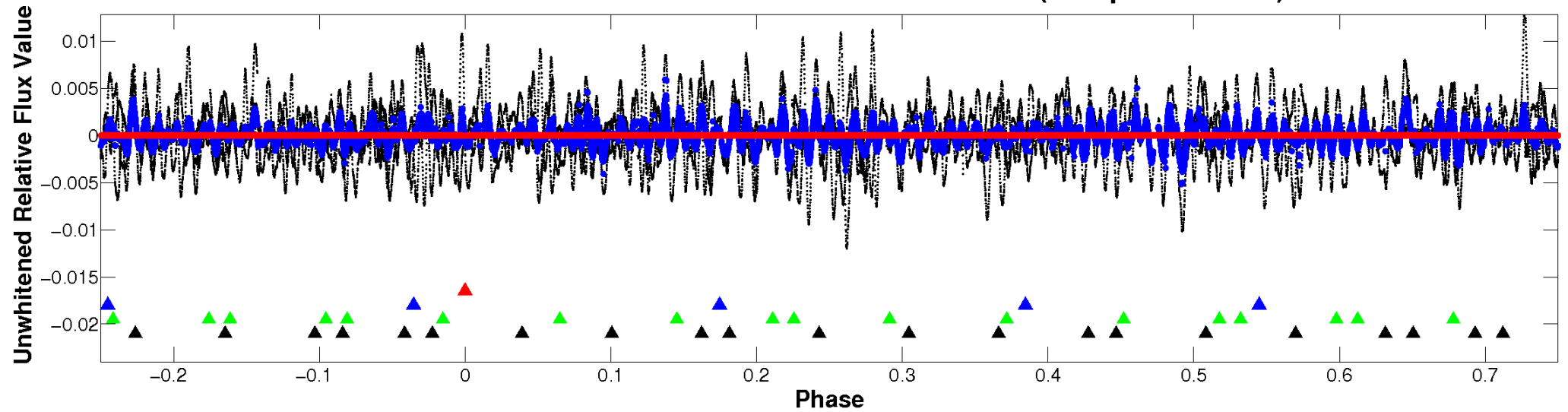
ALT Odd/Even

TCE 009845323-01

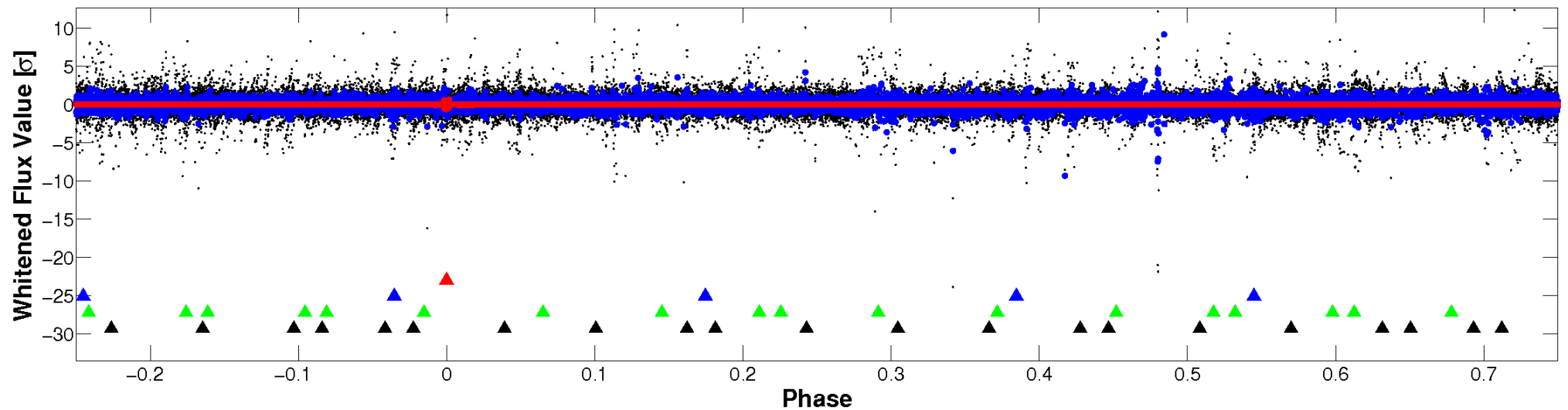


Non-Whitened Vs. Whitened Light Curve

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

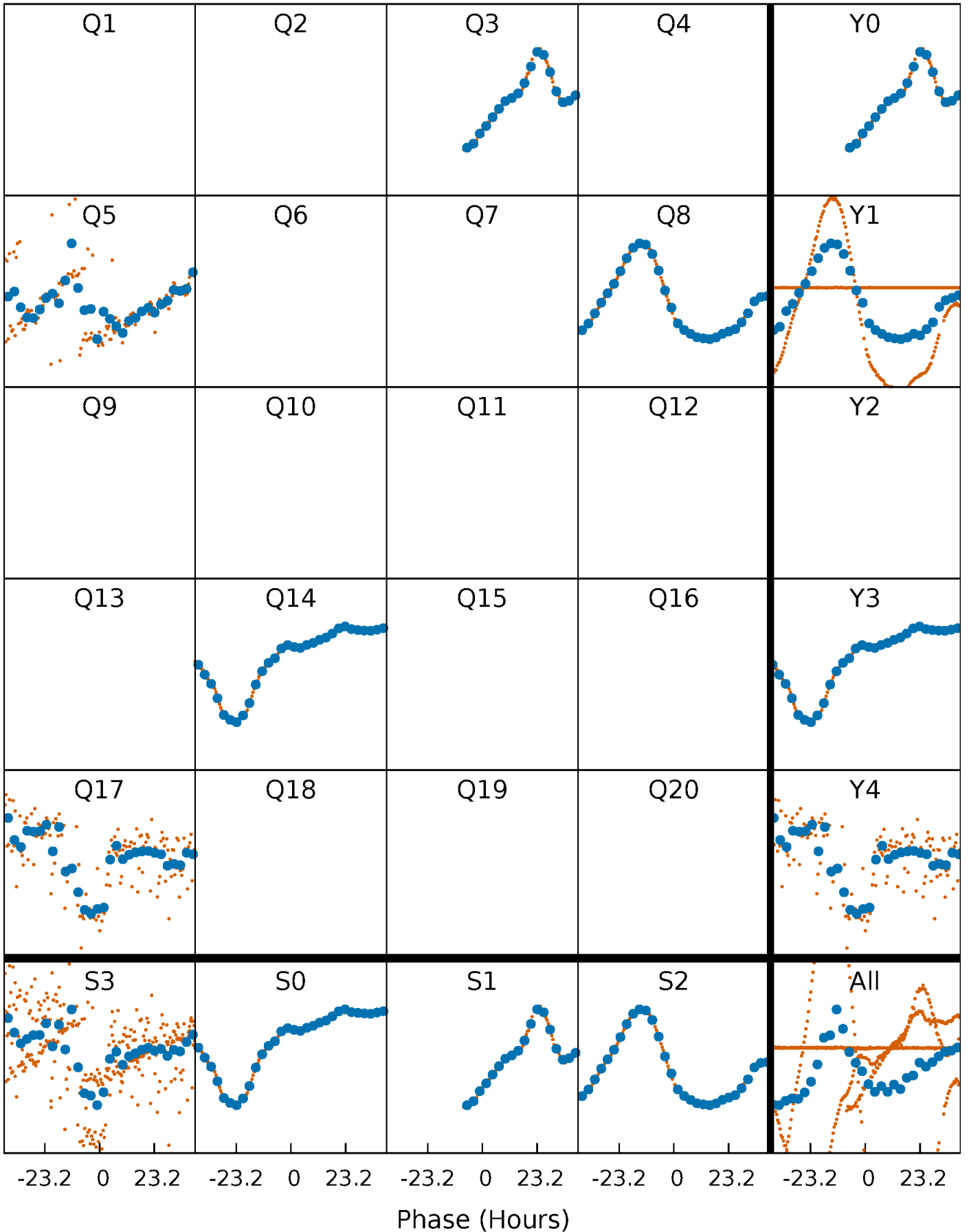


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



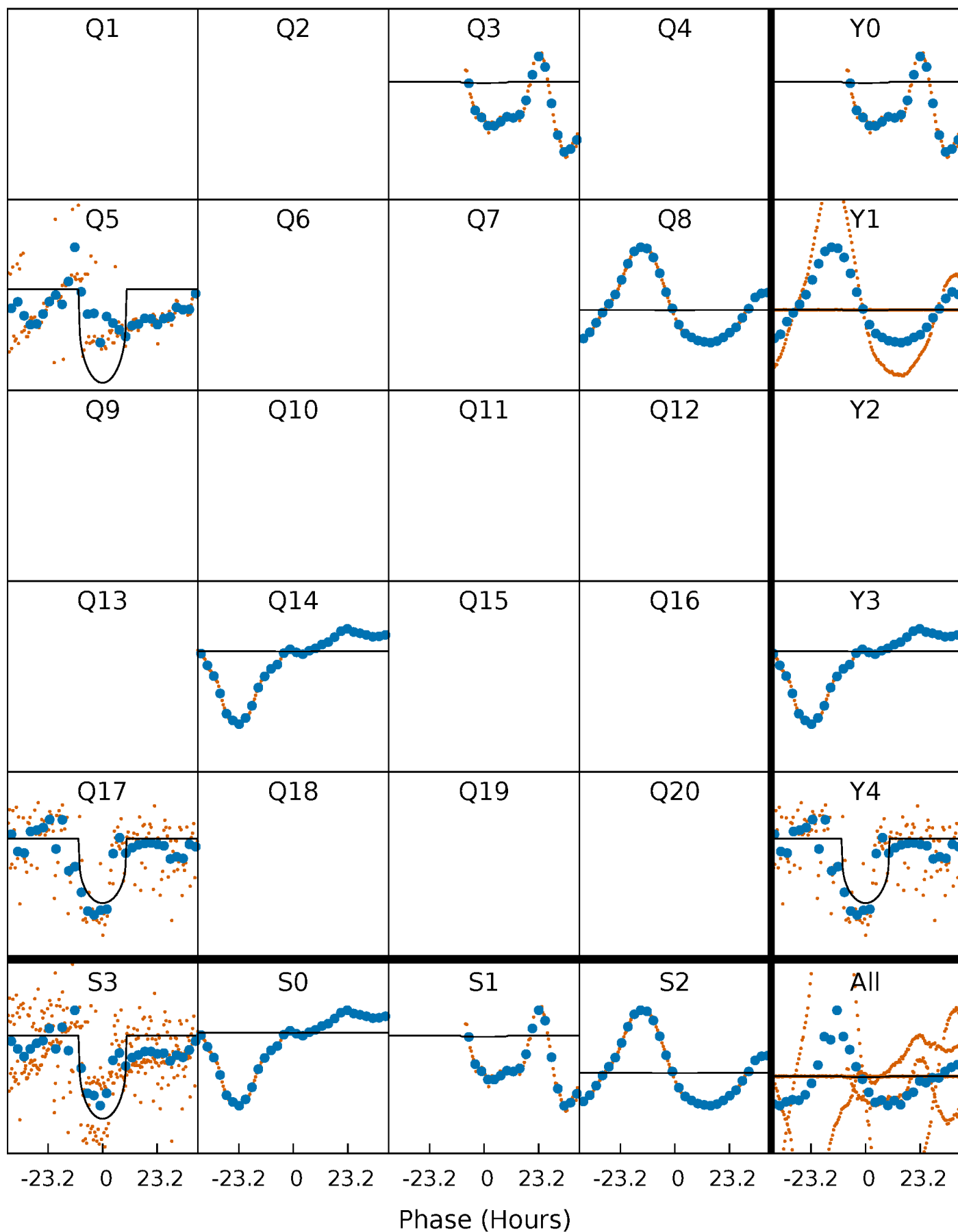
PDC Quarter-Phased Transit Curves

TCE 009845323-01 P=260.159027 Days $T_0=260.572999$ (BKJD)



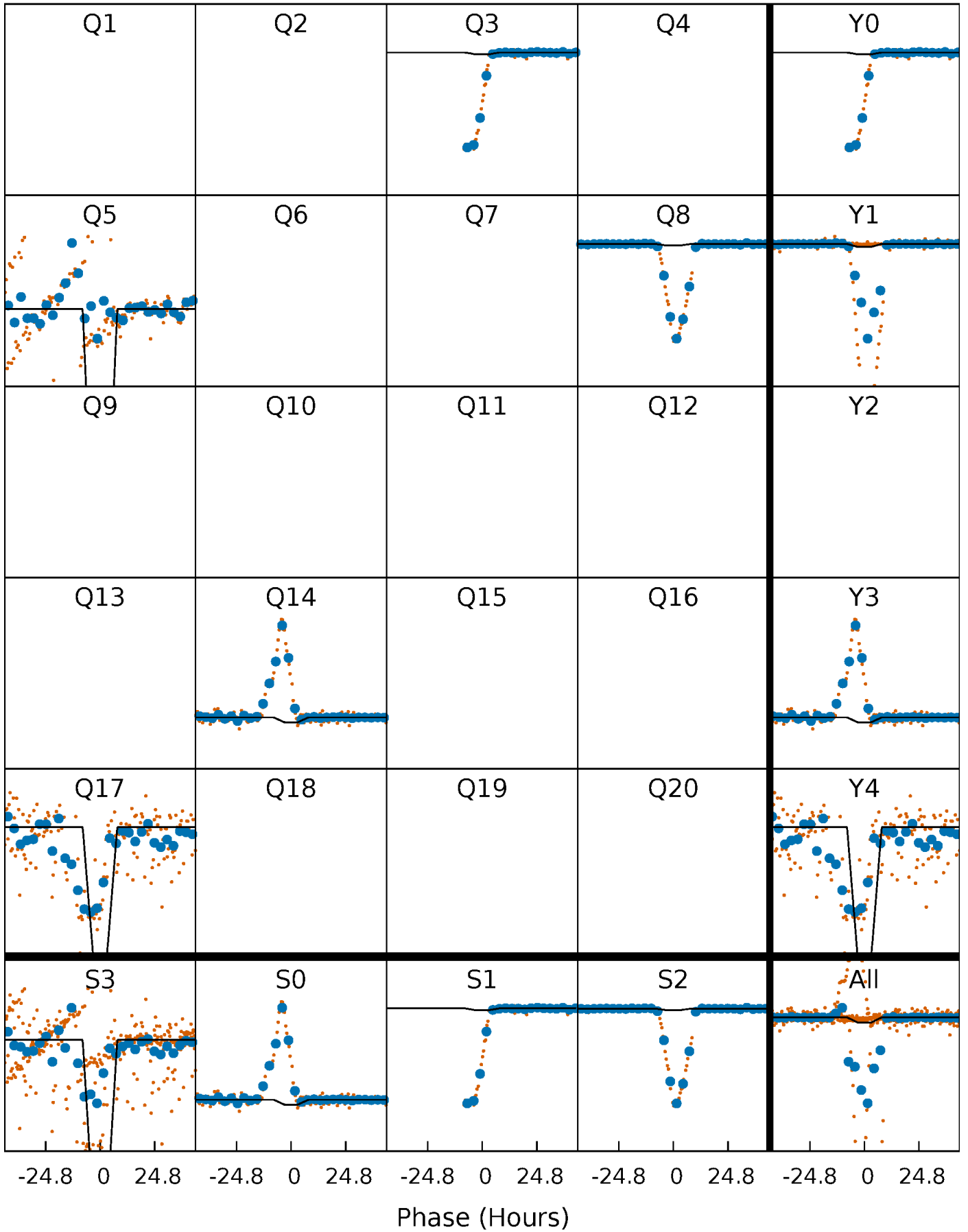
DV Quarter-Phased Transit Curves

TCE 009845323-01 $P=260.159027$ Days $T_0=260.572999$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

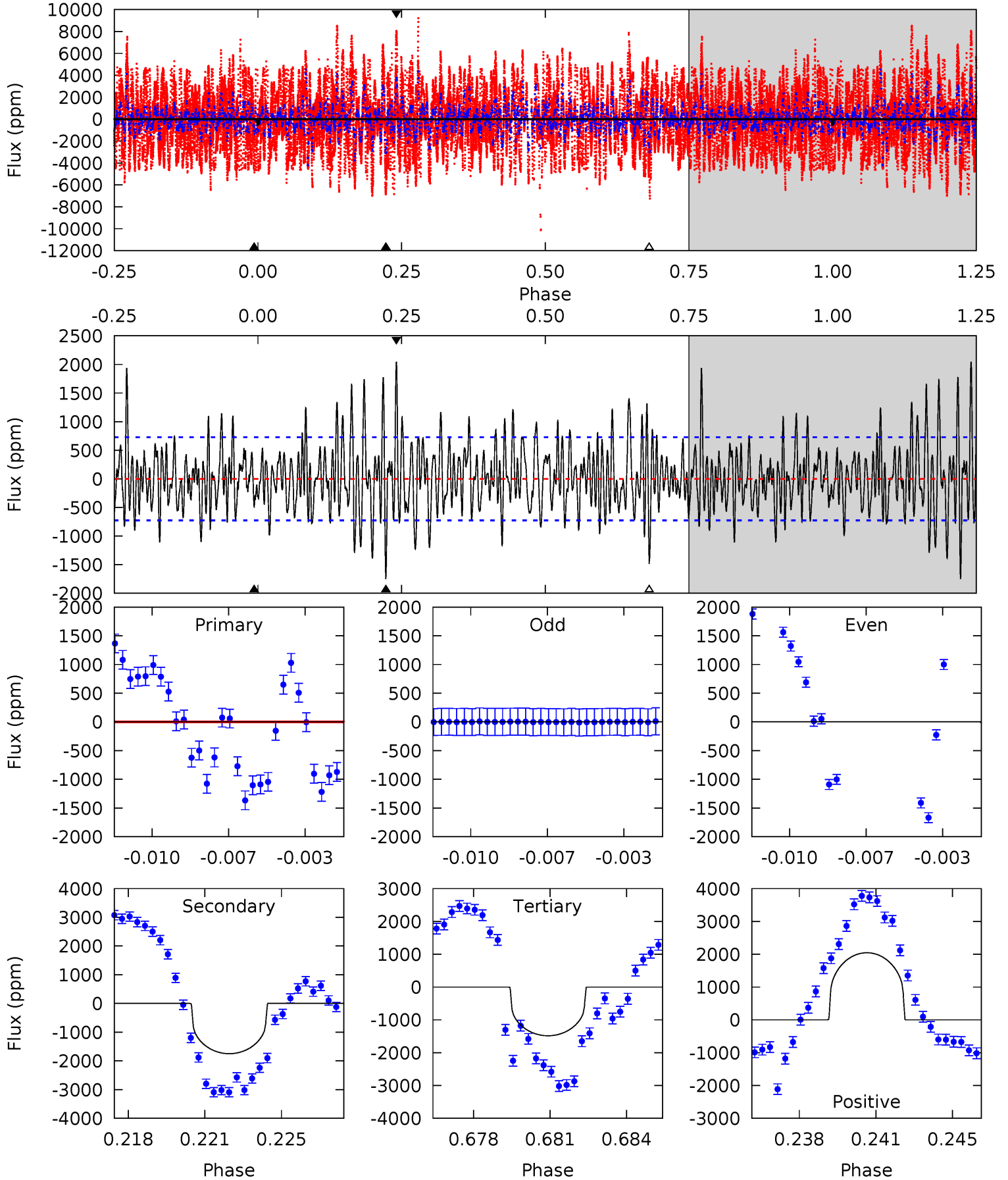
TCE 009845323-01 P=260.166897 Days $T_0=260.587541$ (BKJD)



DV Model-Shift Uniqueness Test

009845323-01, P = 260.159027 Days, E = 0.413972 Days

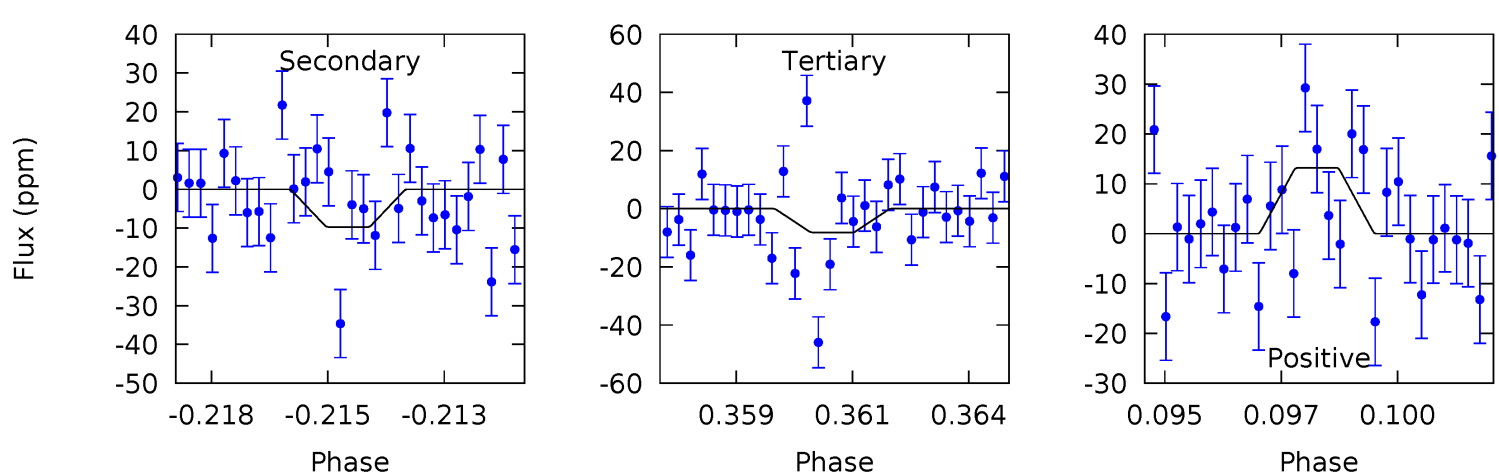
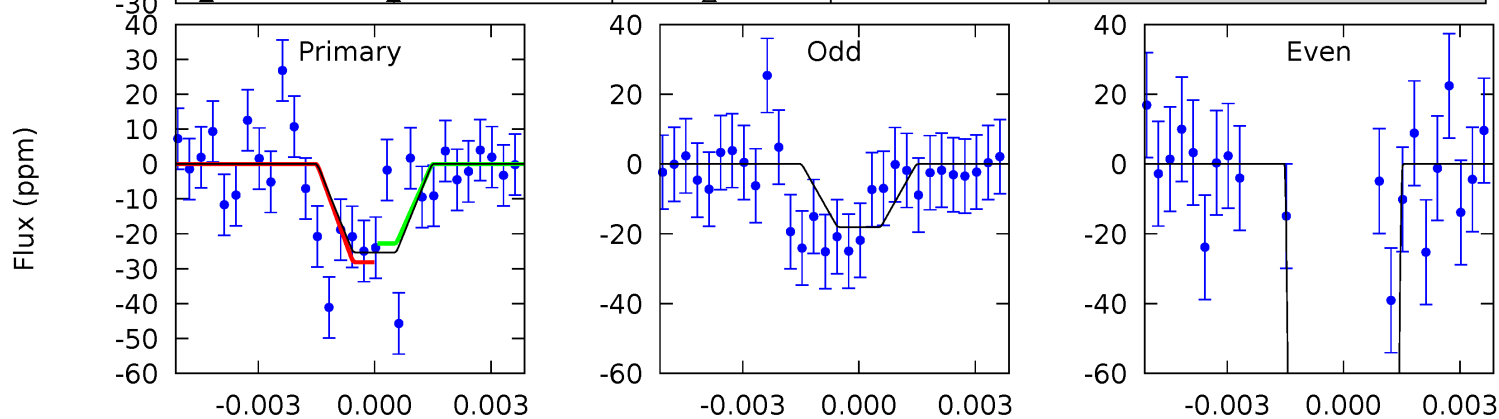
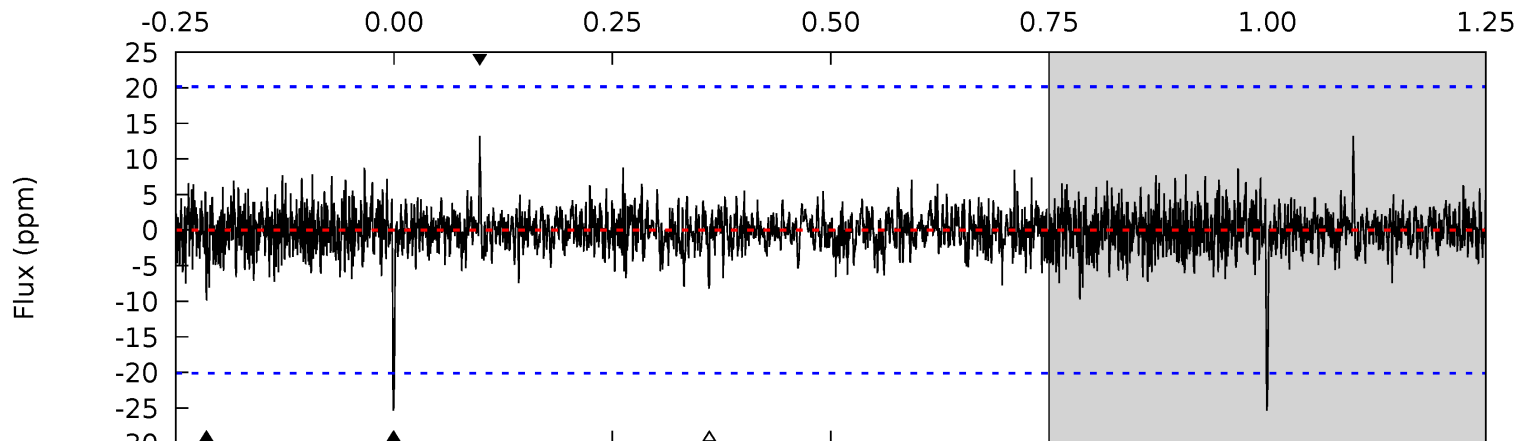
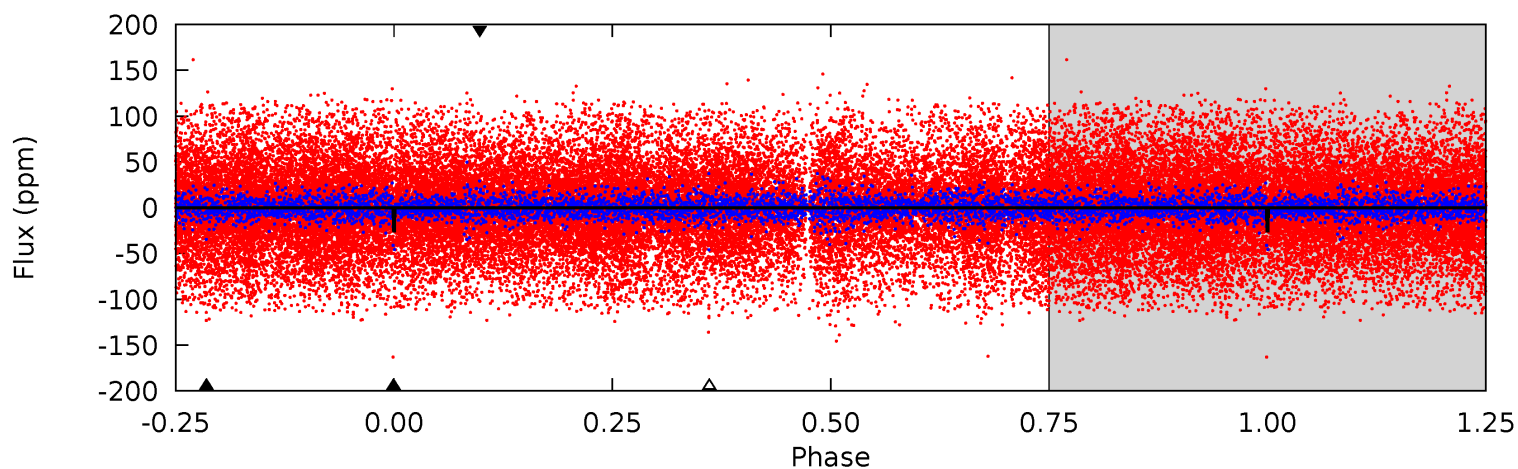
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.61	12.6	10.7	14.7	5.23	2.94	3.63	-7.08	-11.1	1.91	-2.13	2.03	8.48	0.54	3.79



Alt Model-Shift Uniqueness Test

009845323-01, P = 260.166897 Days, E = 0.420644 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.65	2.55	2.14	3.47	5.28	3.02	0.62	4.50	3.18	0.41	-0.91	164.7	29.8	0.34	0.70



Stellar Parameters For KIC 009845323

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4136^{+83}_{-108}	$1.636^{+0.030}_{-0.030}$	$0.100^{+0.200}_{-0.200}$	$34.412^{+7.345}_{-7.345}$	$1.867^{+1.372}_{-0.686}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+200%/-200%	+21%/-21%	+73%/-37%	+30%/-10%
Source	PHO1	AST9	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009845323-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1750 ± 139	$21.53^{+5.32}_{-4.38}$	1510^{+59}_{-60}	12006^{+2607}_{-1449}	2028^{+954}_{-605}
Alt.	-10 ± 4	$30.43^{+6.69}_{-5.14}$	1513^{+51}_{-52}	3024^{+199}_{-236}	$5.665^{+2.944}_{-2.338}$

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 $A_{obs} \gg 1.0$

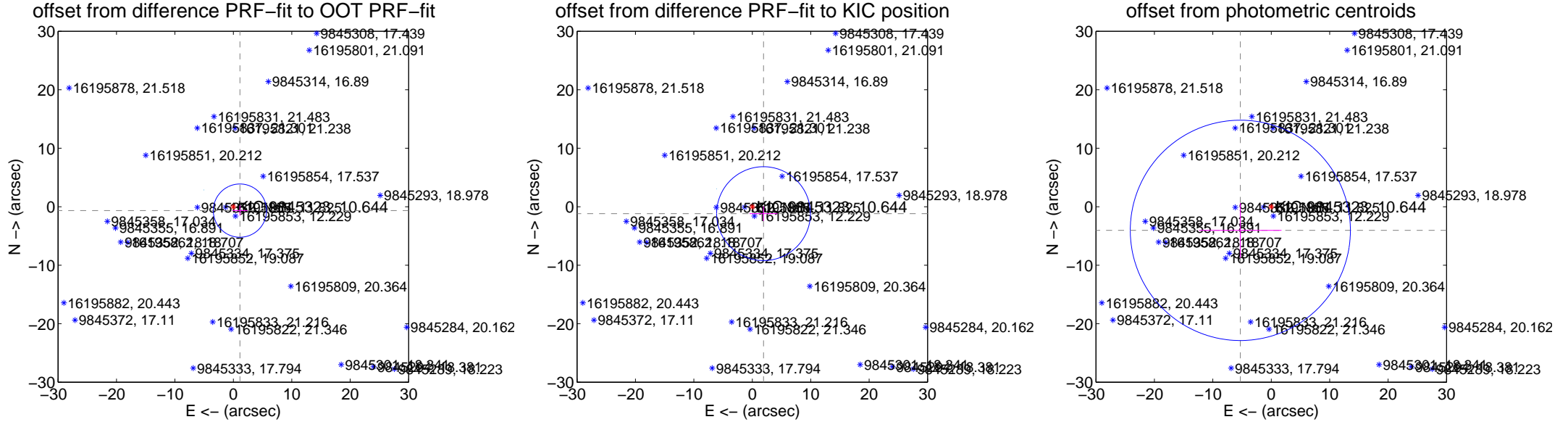
DV Centroid Data

Supplemental centroid analysis for 009845323-01. **Kepler magnitude: 10.64.** Transit SNR 9.18

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.309 ± 1.518	0.86	-1.127 ± 1.300	-0.666 ± 0.878
PRF-fit source offset from KIC position	2.257 ± 2.675	0.84	-1.923 ± 2.400	-1.183 ± 1.267
photometric centroid source offset	6.66 ± 6.28	1.06	5.29 ± 7.04	-4.04 ± 4.68



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.

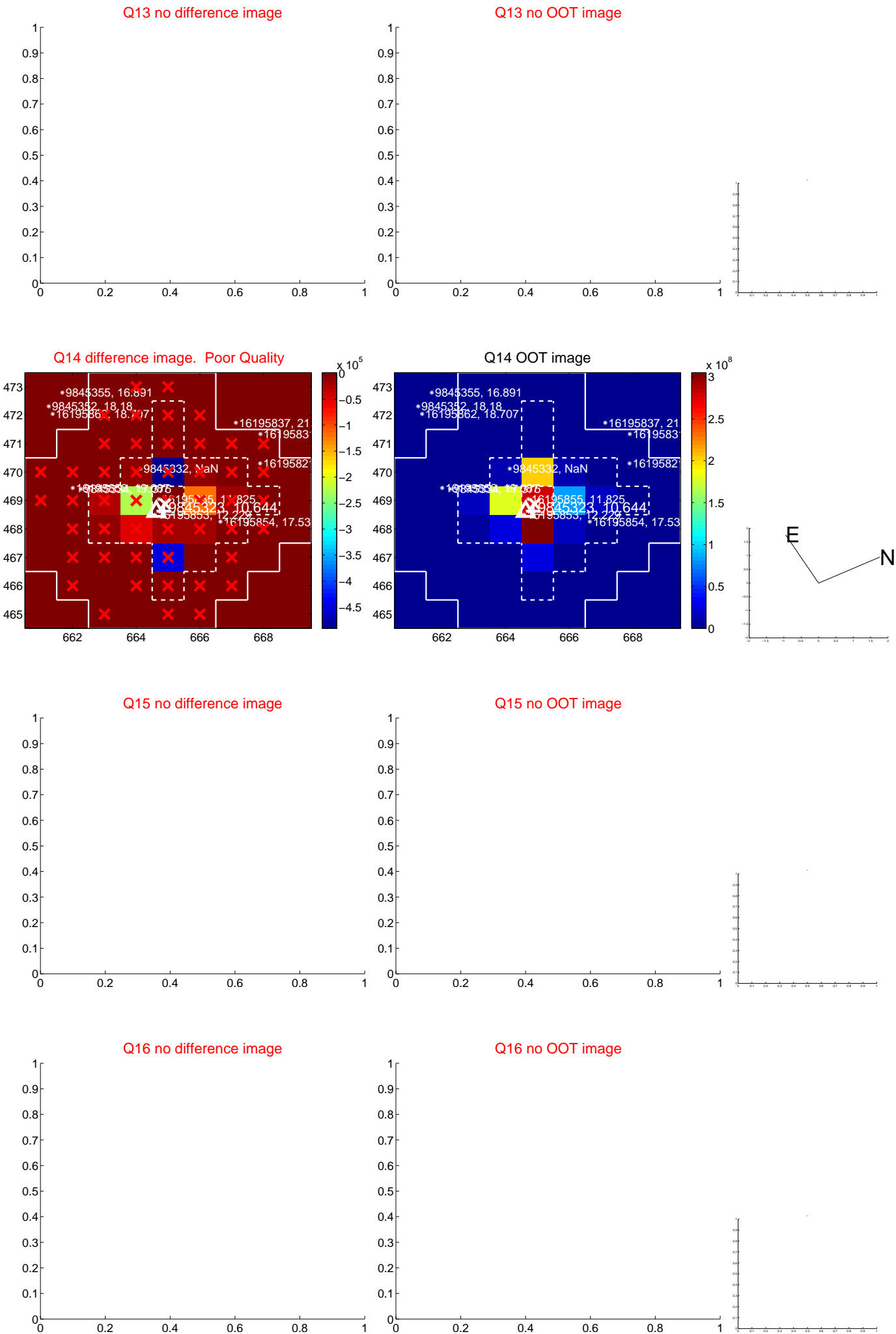
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



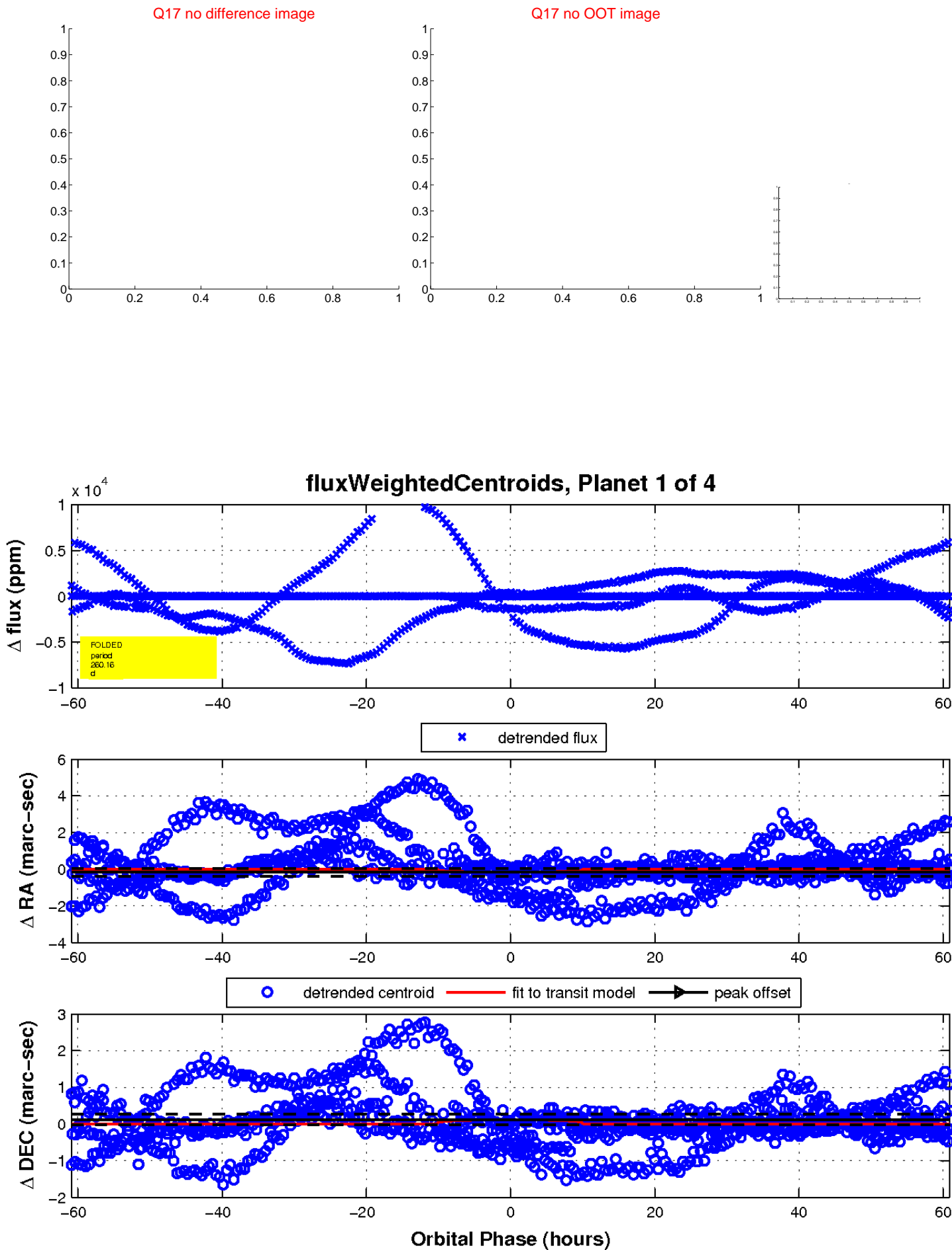
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



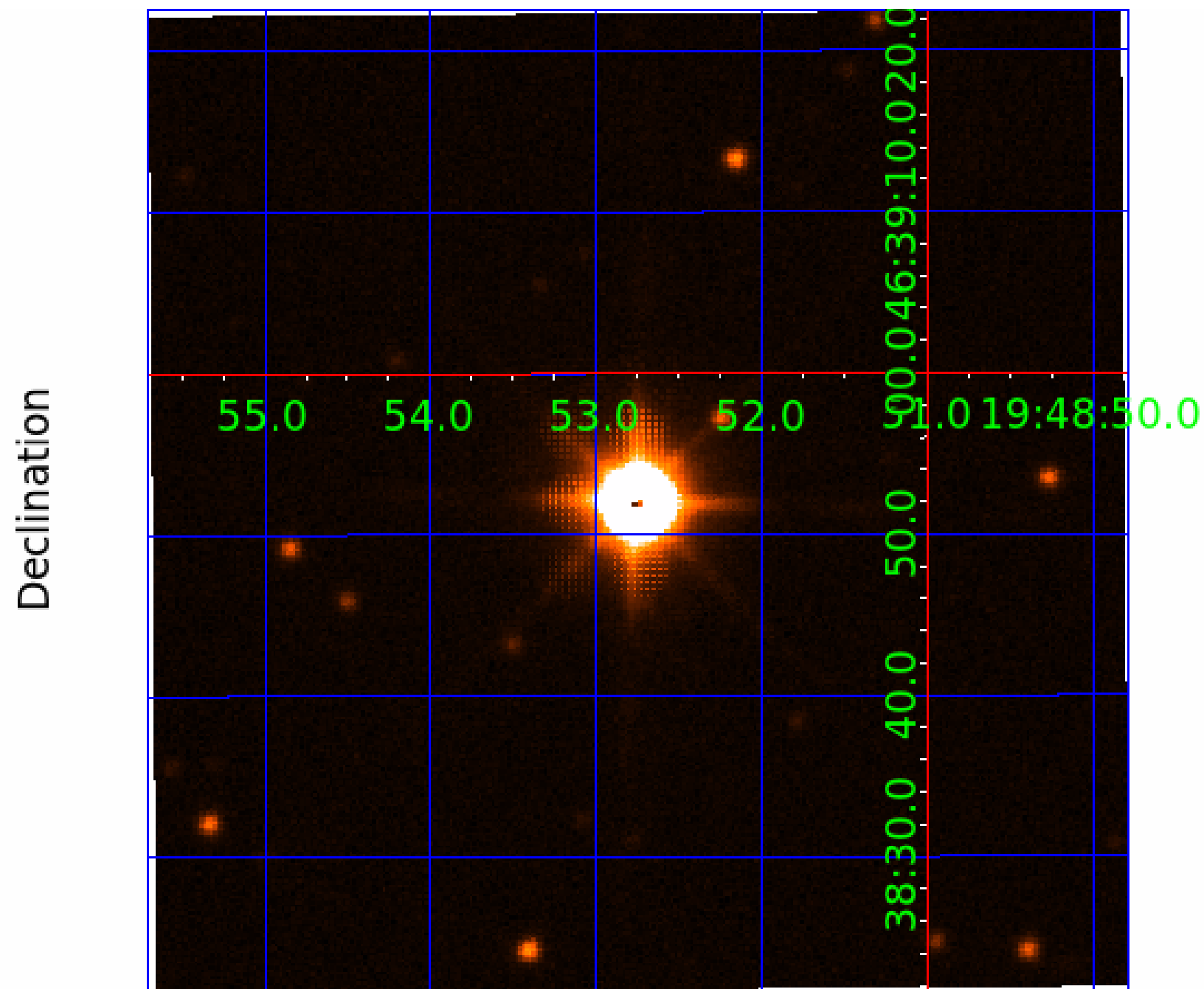
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009845323

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})
009845323-01	OBS	No	260.159027	260.572999	30.6	20.297	12.3	9.2	34.41	4136	21.35	321.64
009845323-02	OBS	No	314.768386	142.177481	12.5	11.576	12.1	4.3	34.41	4136	15.24	249.48
009845323-03	OBS	No	79.756882	159.760301	22.7	2.124	11.0	8.6	34.41	4136	20.62	1555.96
009845323-04	OBS	No	69.044924	169.668441	19.5	8.937	9.5	8.8	34.41	4136	19.04	1885.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009845323-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED—HALO_GHOST
009845323-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-04	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED—HALO_GHOST

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

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

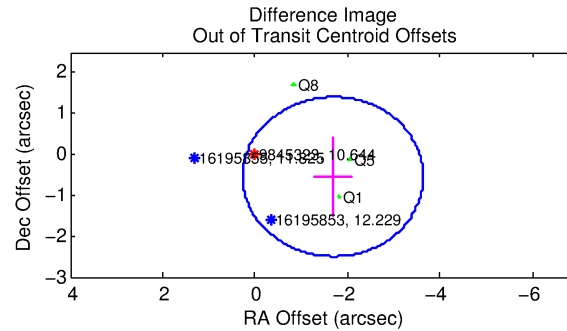
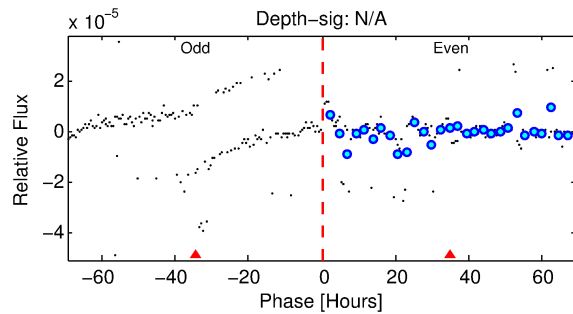
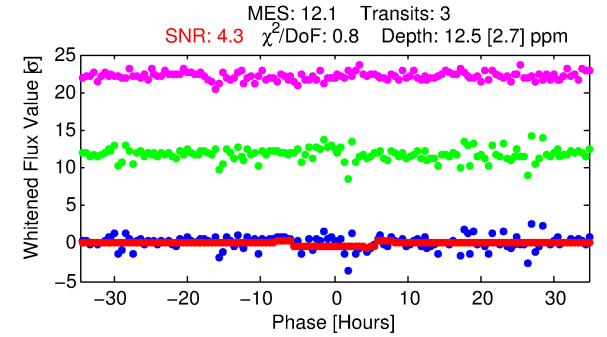
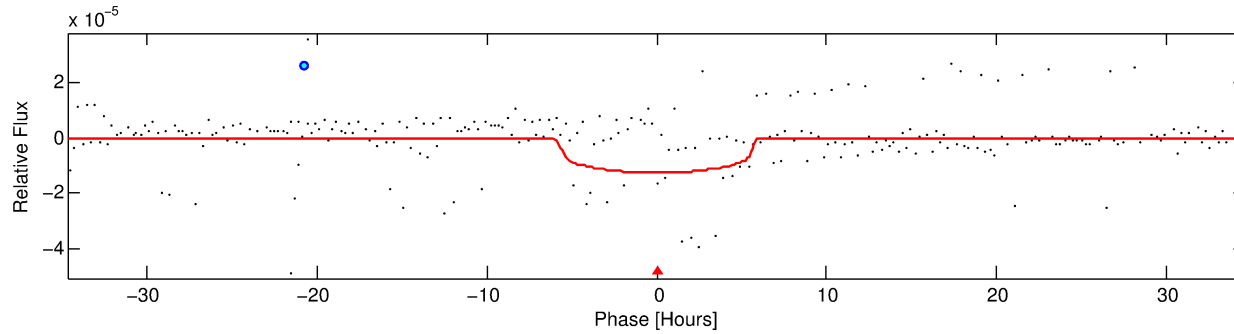
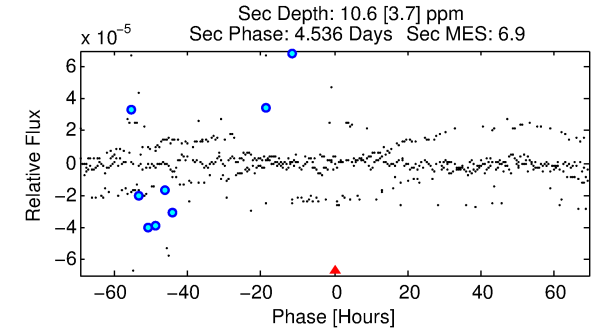
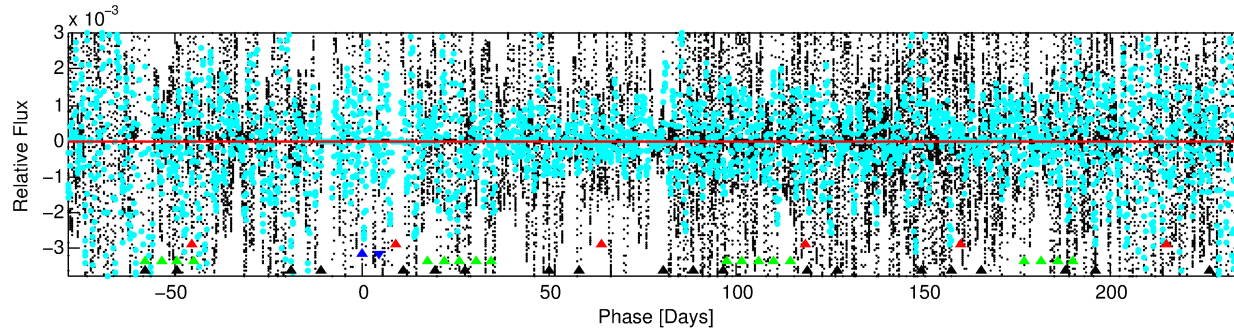
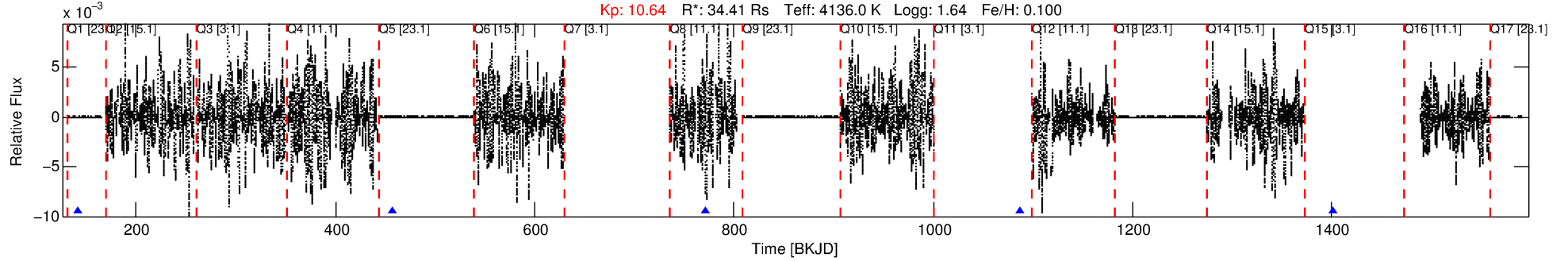
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009845323-02

No Significant Match Found

DV One-Page Summary

KIC: 9845323 Candidate: 2 of 4 Period: 314.768 d



DV Fit Results:

Period = 314.76839 [0.01999] d
Epoch = 142.1775 [0.0181] BKJD
Rp/R* = 0.0041 [0.0016]
a/R* = 93.12 [128.30]
b = 0.90 [0.30]
Seff = 249.48 [45.51]
Teq = 1013 [46] K
Rp = 15.24 [6.96] Re
a = 1.1156 [0.1608] AU
Ag = 31.22 [27.91] [1.08σ]
Teffp = 3704 [822] K [3.27σ]

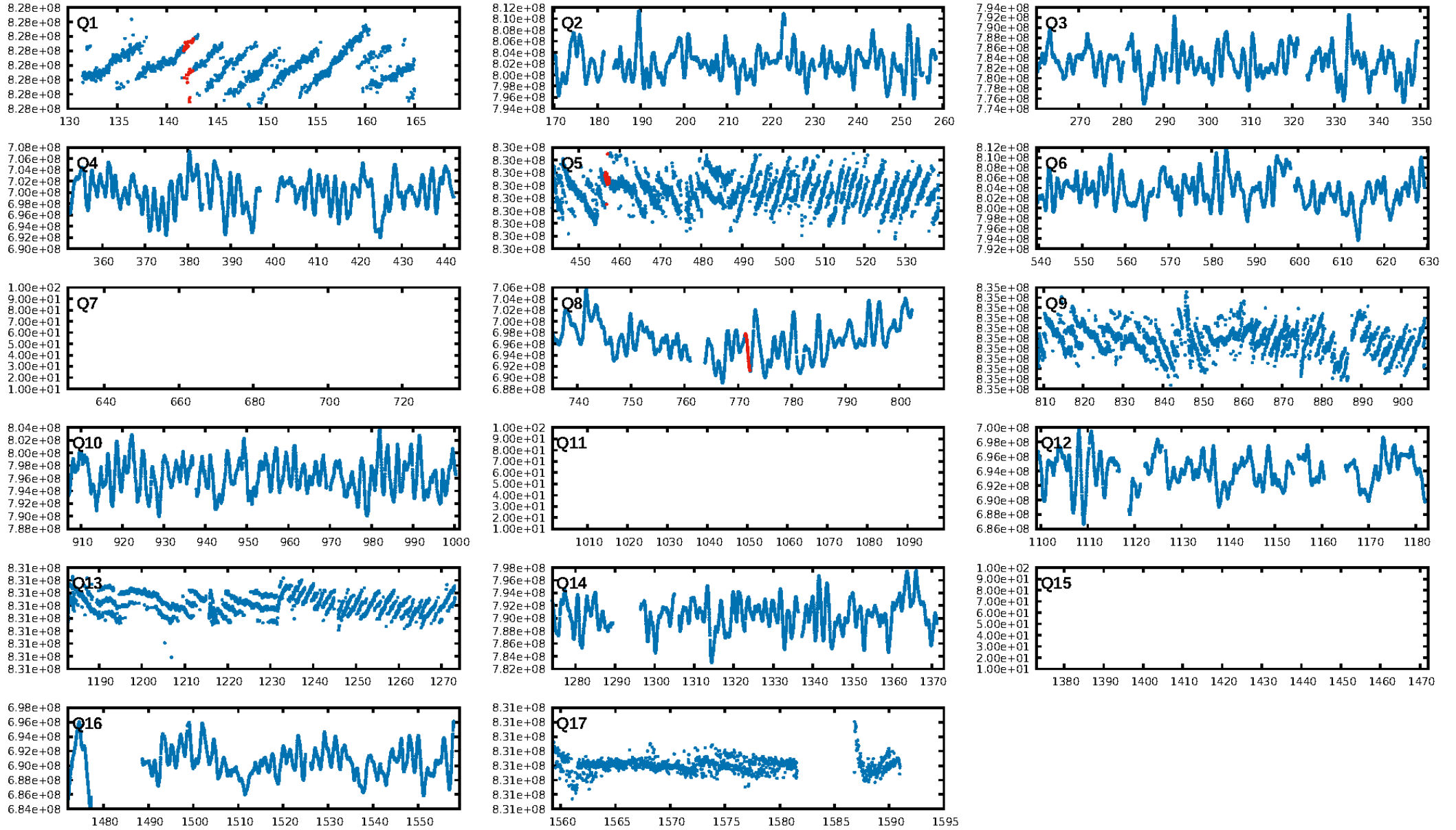
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.09σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 15.4%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 1.40e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.9198
Centroid-sig: 1.3%
Centroid-so: 35.845 arcsec [1.76σ]
OotOffset-rm: 1.767 arcsec [2.72σ]
KicOffset-rm: 2.300 arcsec [2.16σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

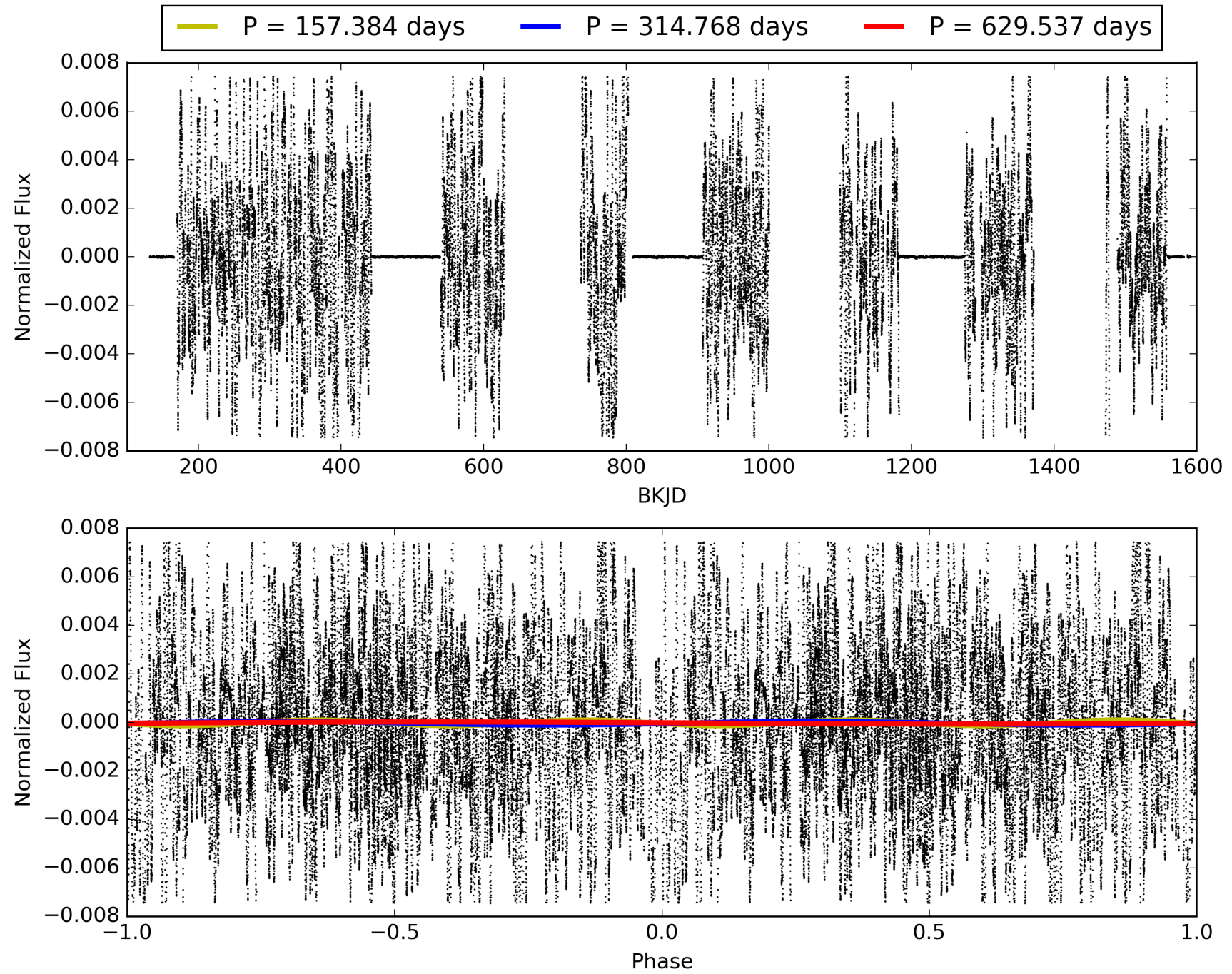
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:21:33 Z

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

TCE 009845323-02, PDC Light Curves

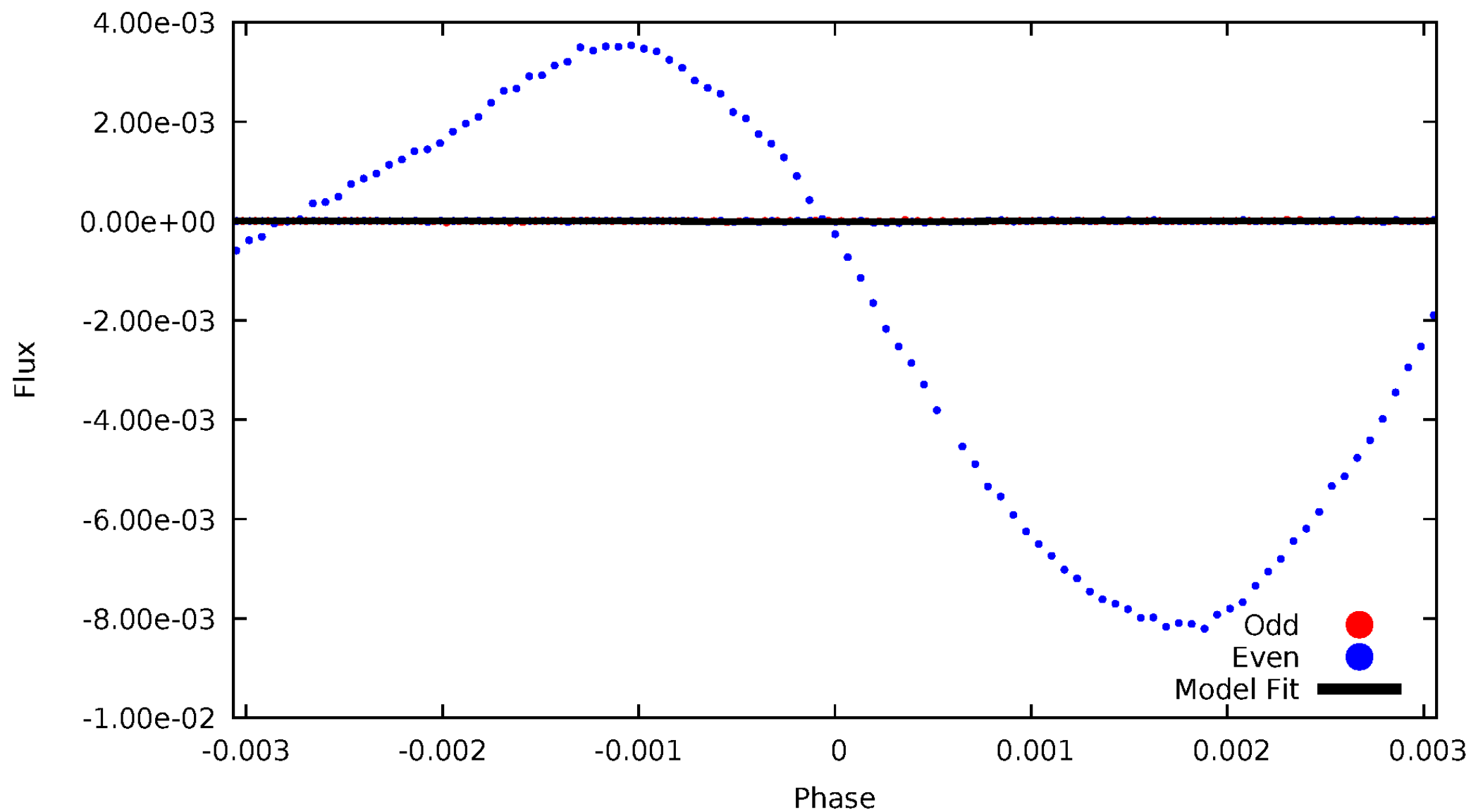


TCE 009845323-02



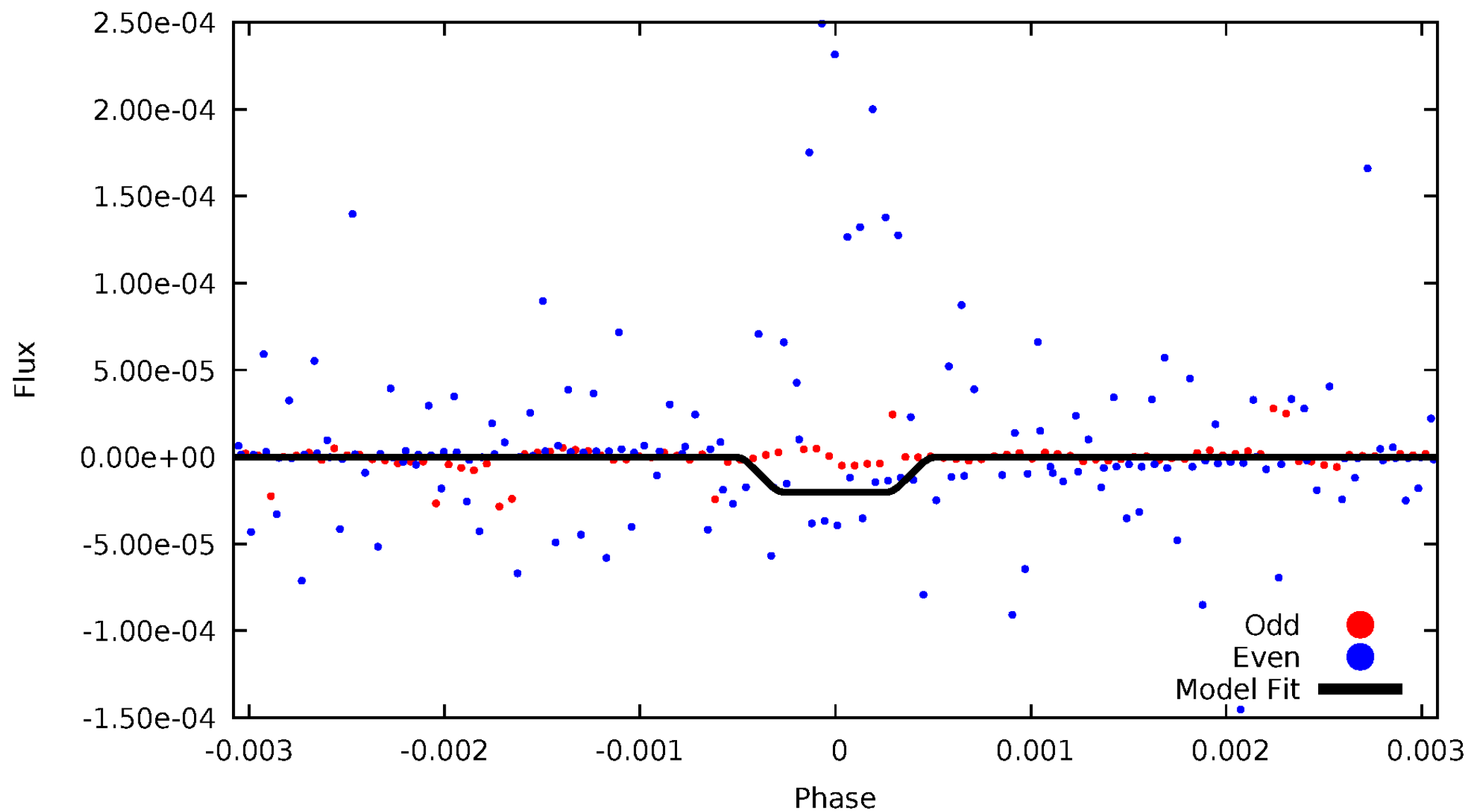
DV Odd/Even

TCE 009845323-02



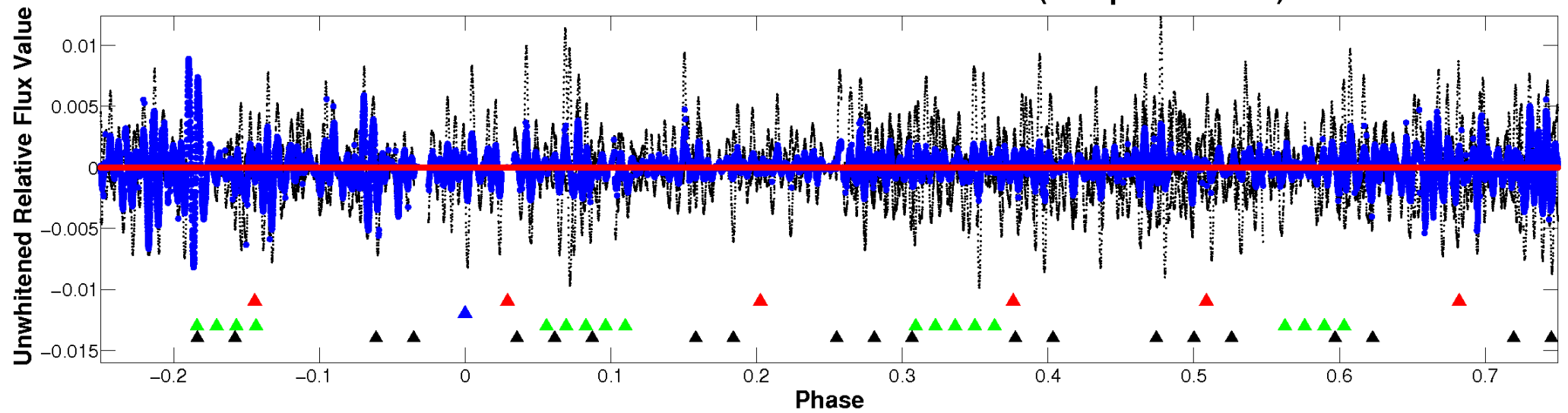
ALT Odd/Even

TCE 009845323-02

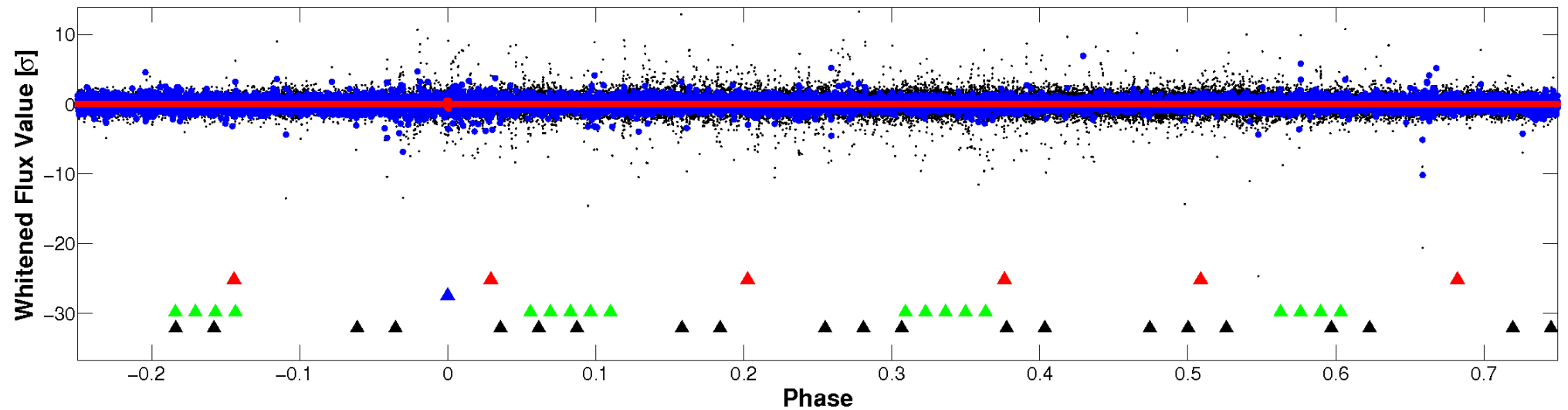


Non-Whitened Vs. Whitened Light Curve

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

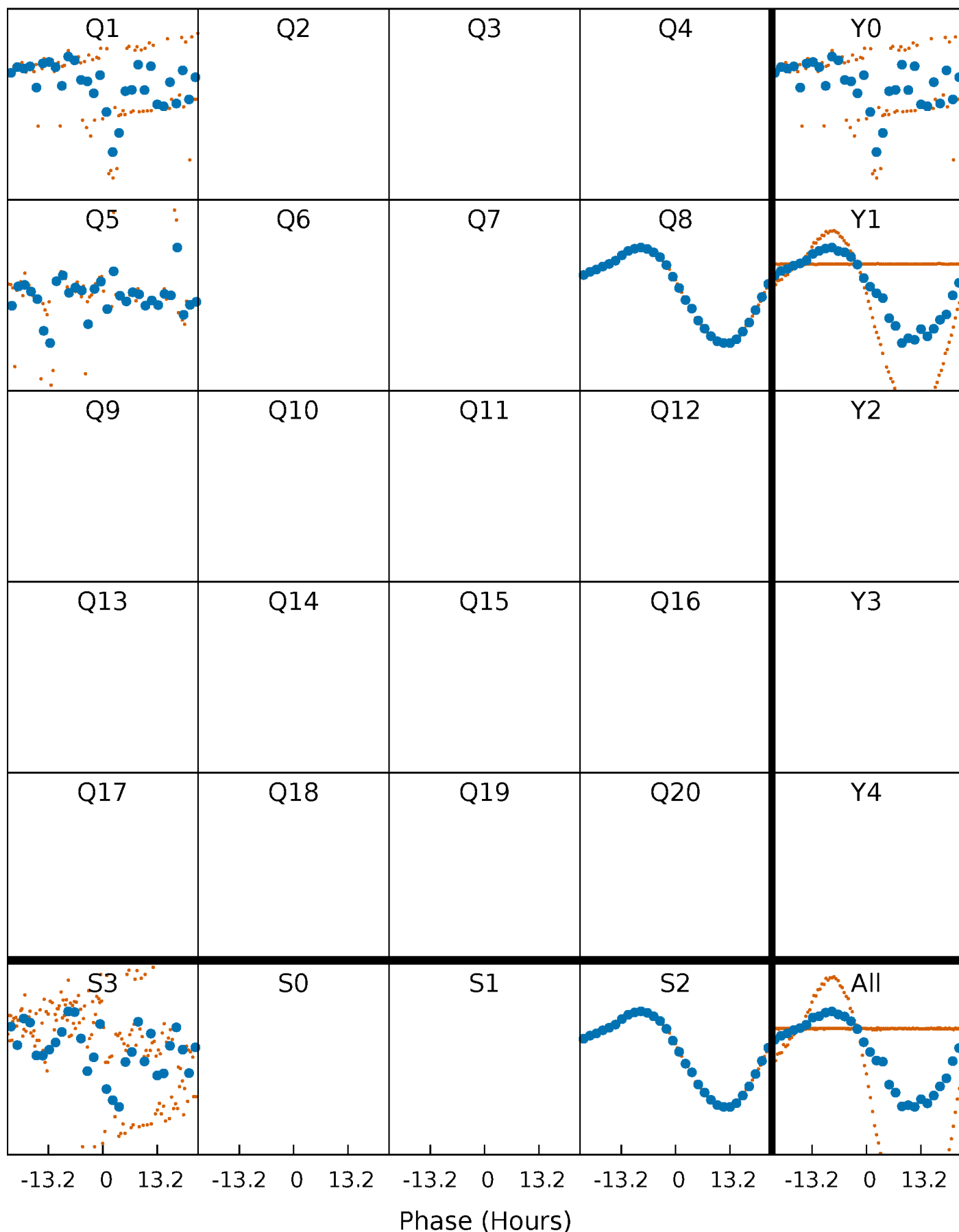


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



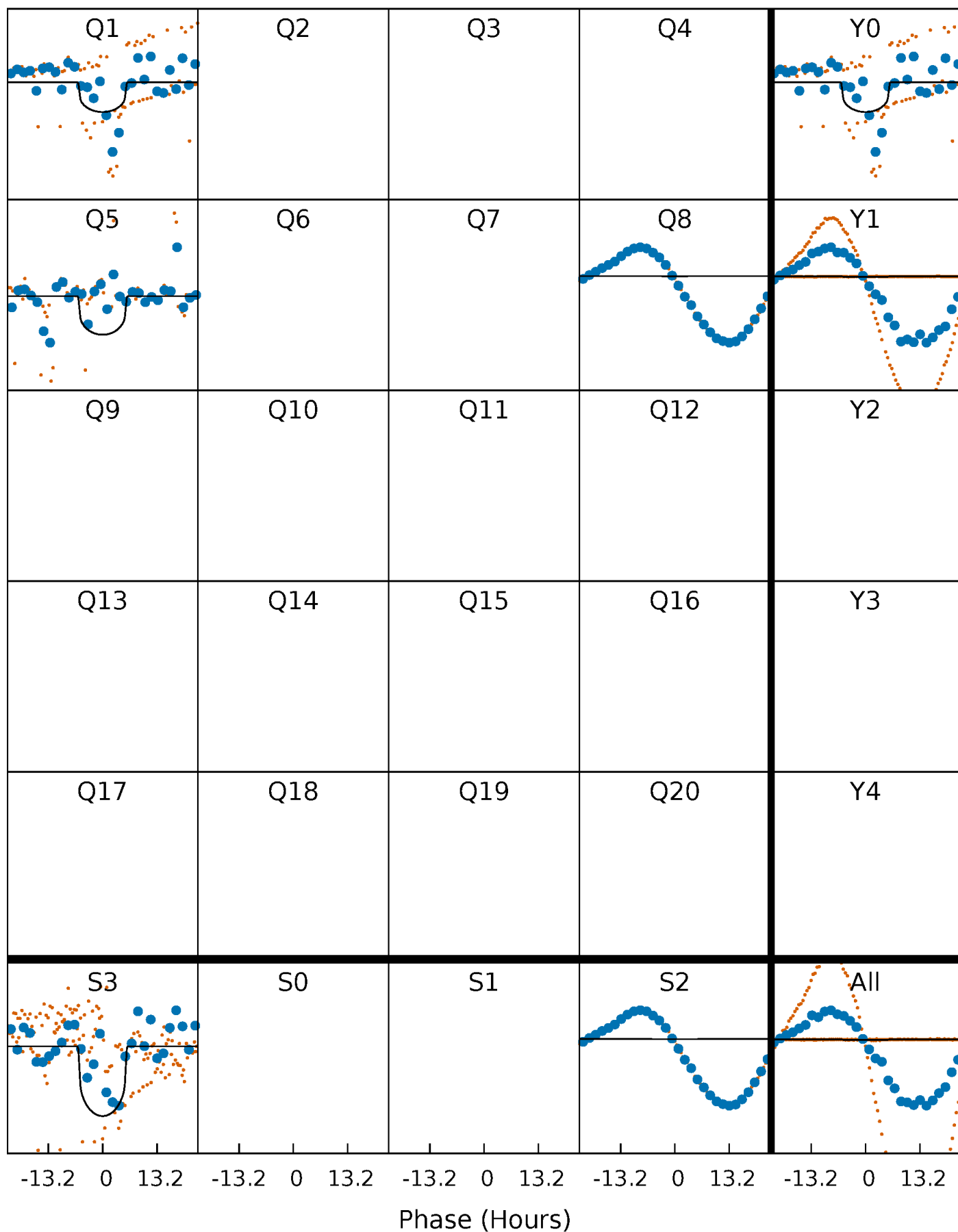
PDC Quarter-Phased Transit Curves

TCE 009845323-02 P=314.768387 Days $T_0=142.177481$ (BKJD)



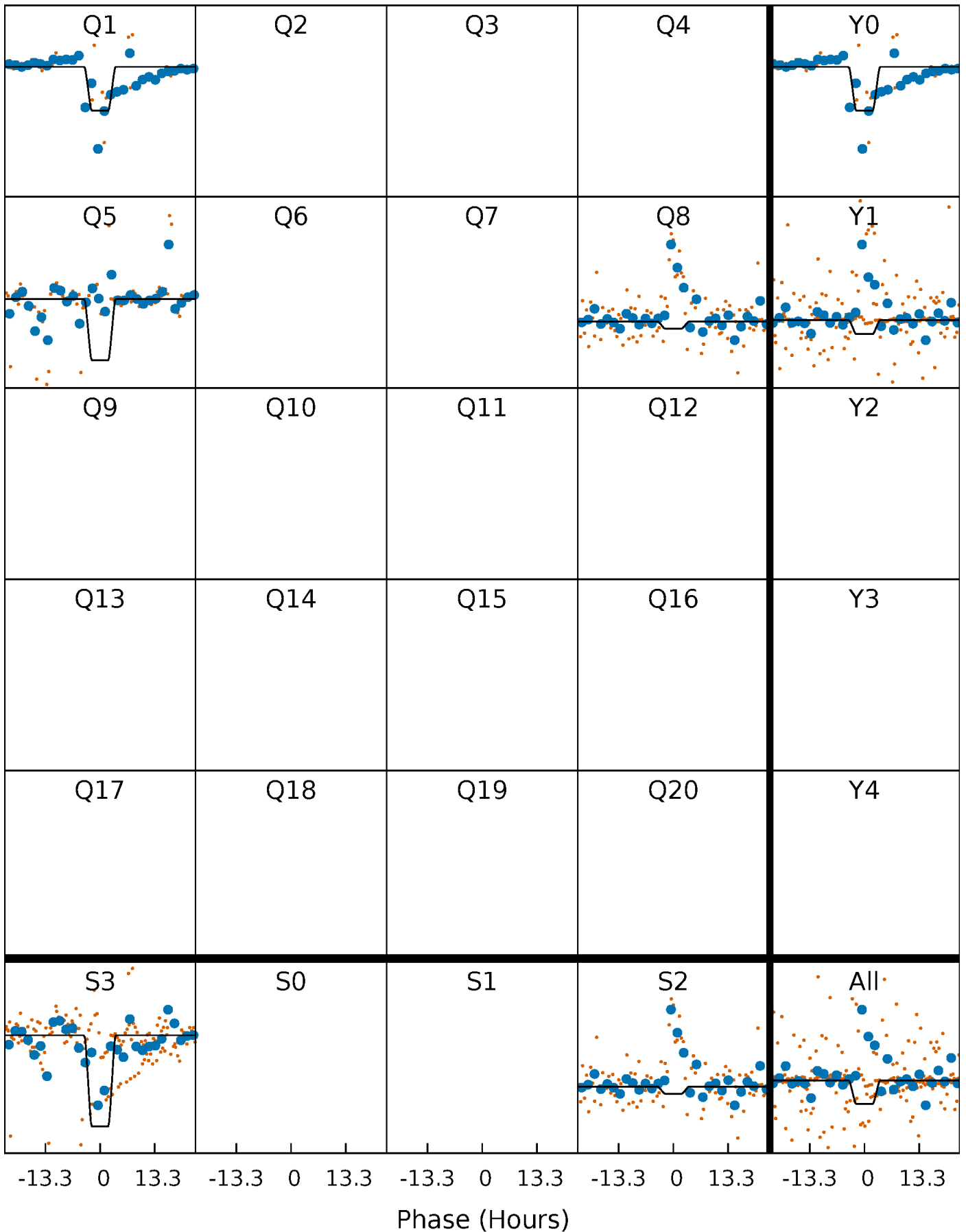
DV Quarter-Phased Transit Curves

TCE 009845323-02 P=314.768387 Days $T_0=142.177481$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

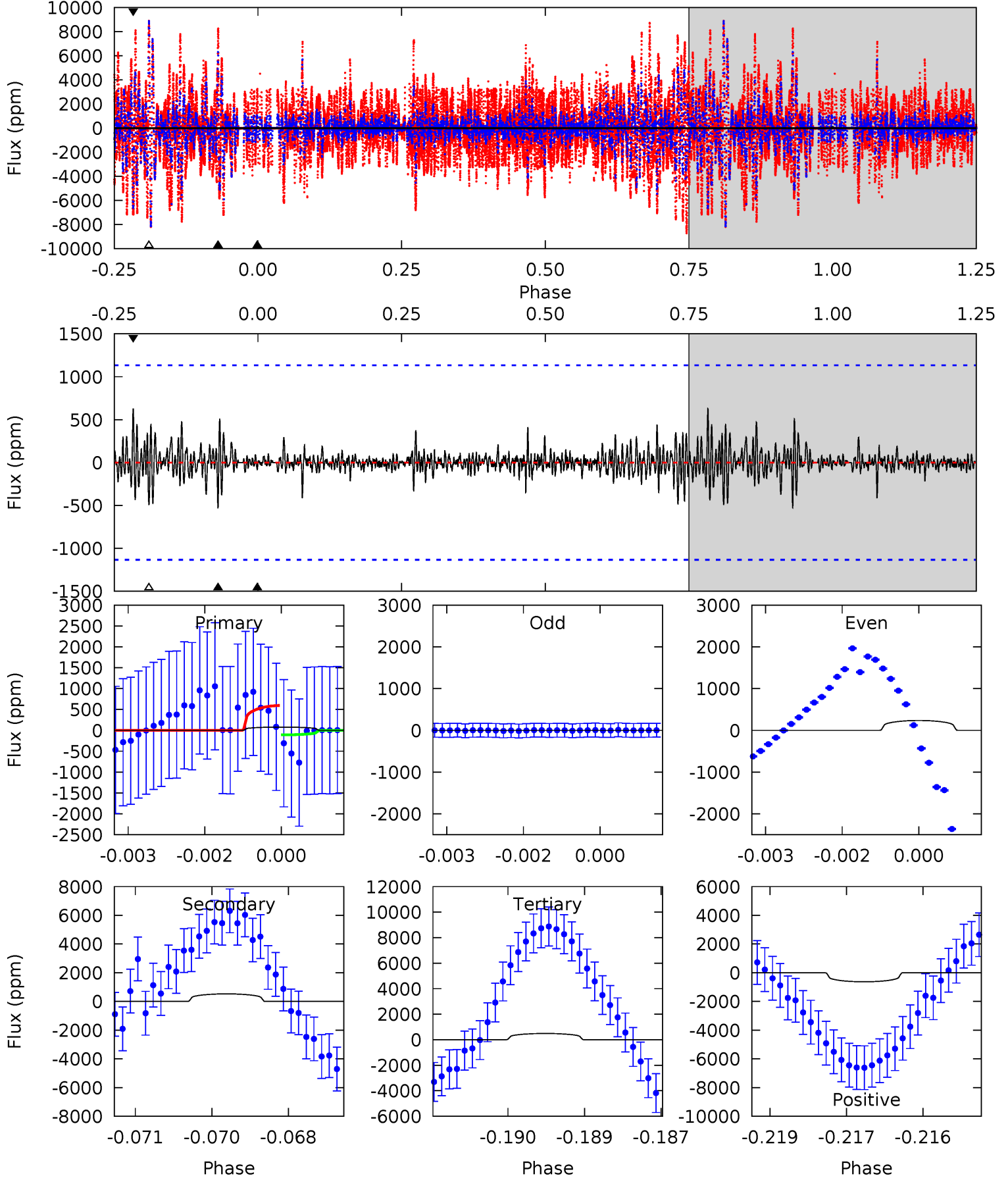
TCE 009845323-02 $P=314.688235$ Days $T_0=142.277835$ (BKJD)



DV Model-Shift Uniqueness Test

009845323-02, P = 314.768387 Days, E = 142.177481 Days

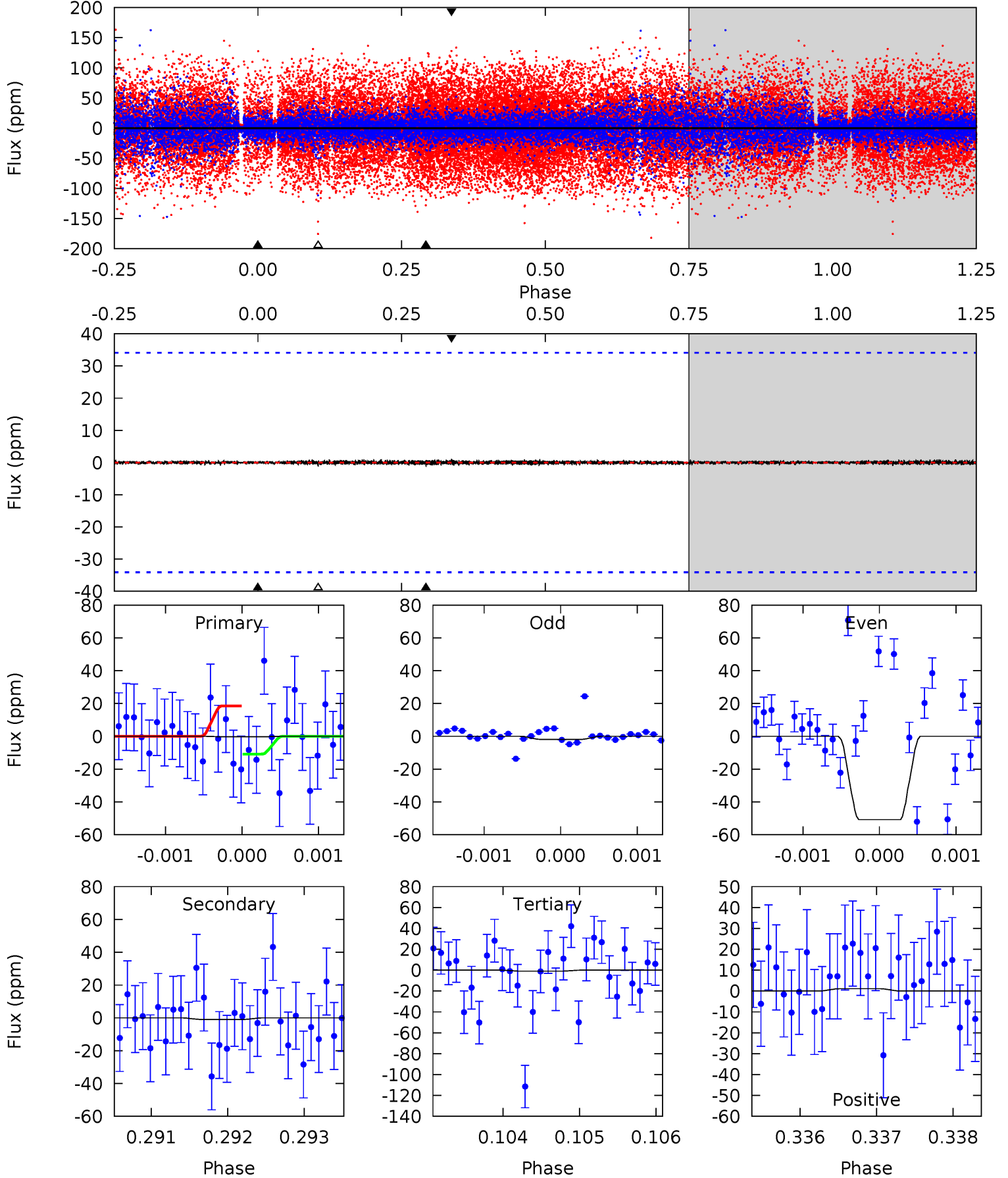
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.37	2.50	2.32	2.98	5.37	3.16	0.49	-1.95	-2.62	0.18	-0.48	0.44	12.5	0.54	1.13



Alt Model-Shift Uniqueness Test

009845323-02, P = 314.688235 Days, E = 142.277835 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.04	0.16	0.16	0.18	5.46	3.30	0.04	-0.12	-0.14	0.00	-0.02	4.26	20.2	0.53	0.60



Stellar Parameters For KIC 009845323

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4136^{+83}_{-108}	$1.636^{+0.030}_{-0.030}$	$0.100^{+0.200}_{-0.200}$	$34.412^{+7.345}_{-7.345}$	$1.867^{+1.372}_{-0.686}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+200%/-200%	+21%/-21%	+73%/-37%	+30%/-10%
Source	PHO1	AST9	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009845323-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-528 ± 211	$15.45^{+7.02}_{-6.51}$	1417^{+53}_{-57}	9735^{+5353}_{-2330}	1469^{+2784}_{-814}
Alt.	-1 ± 6	$16.71^{+7.63}_{-5.82}$	1417^{+54}_{-54}	2588^{+980}_{-5969}	$2.463^{+18.667}_{-17.335}$

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 $A_{obs} \gg 1.0$

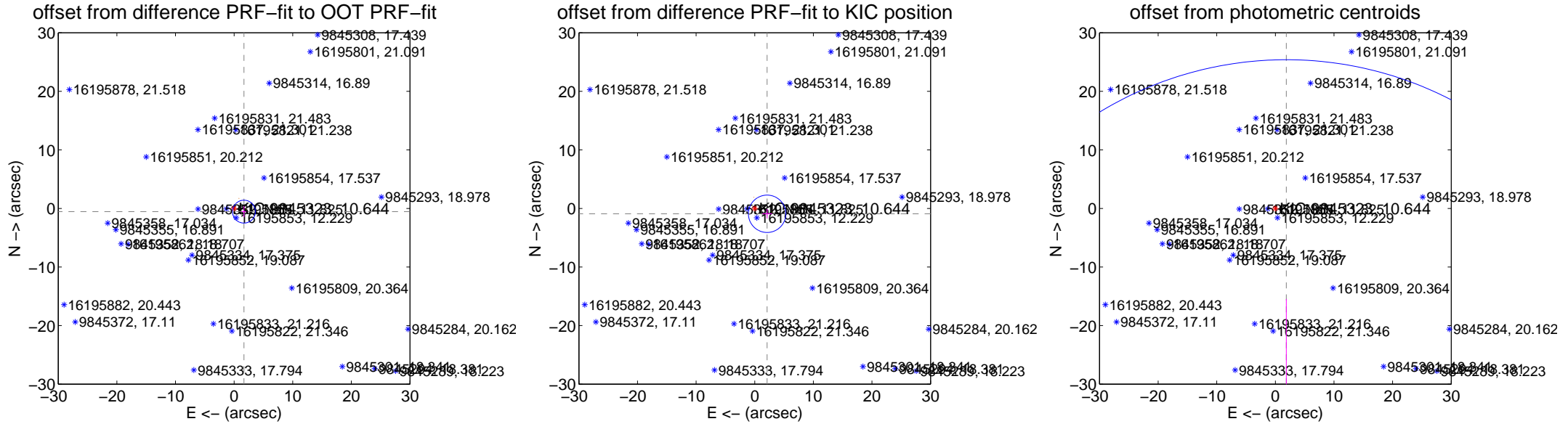
DV Centroid Data

Supplemental centroid analysis for 009845323-02. **Kepler magnitude: 10.64.** Transit SNR 4.34

There are 1 quarters with good PRF difference image offsets

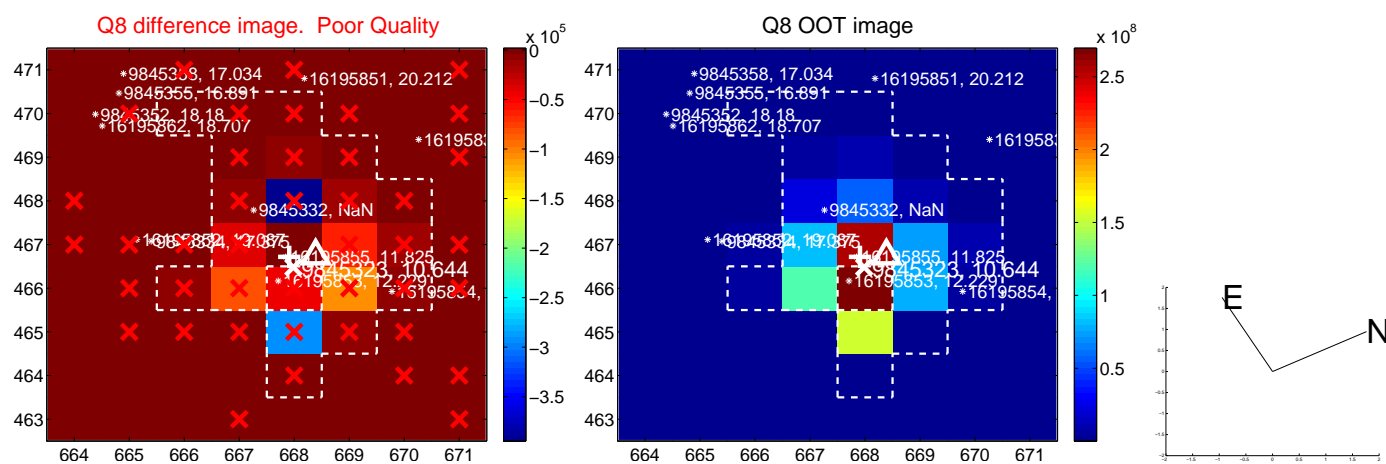
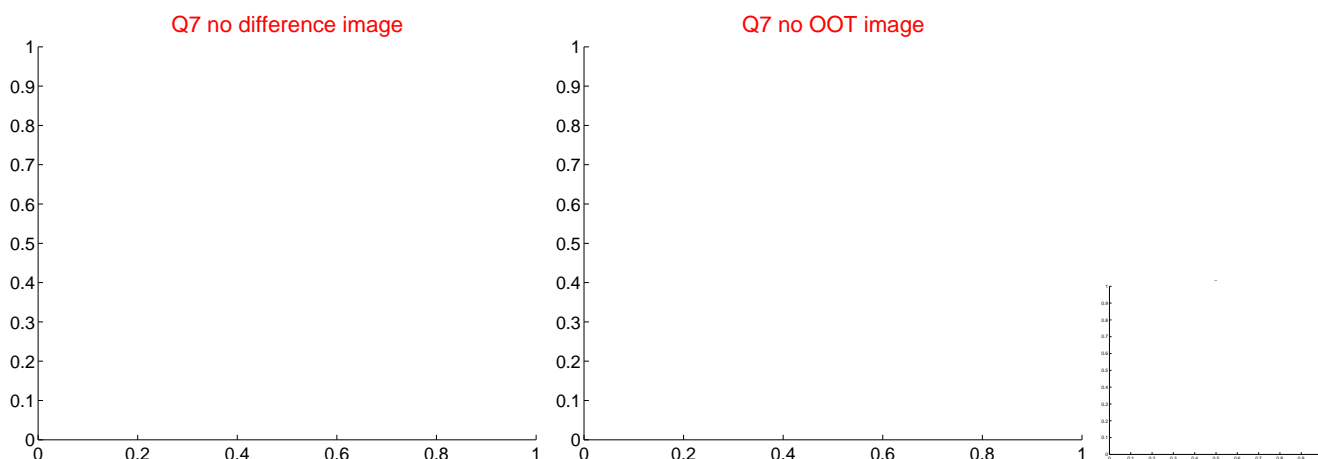
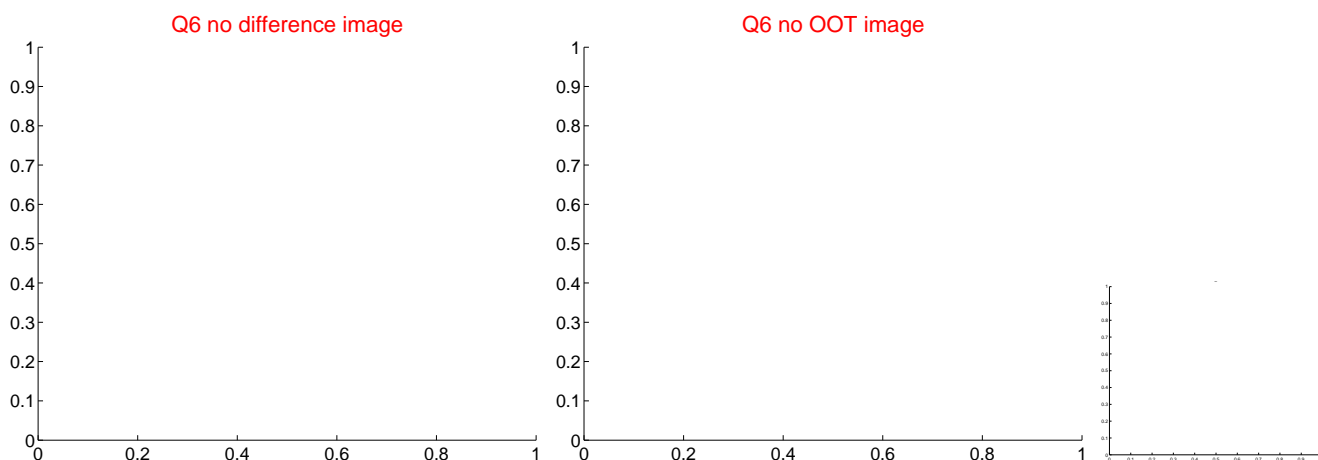
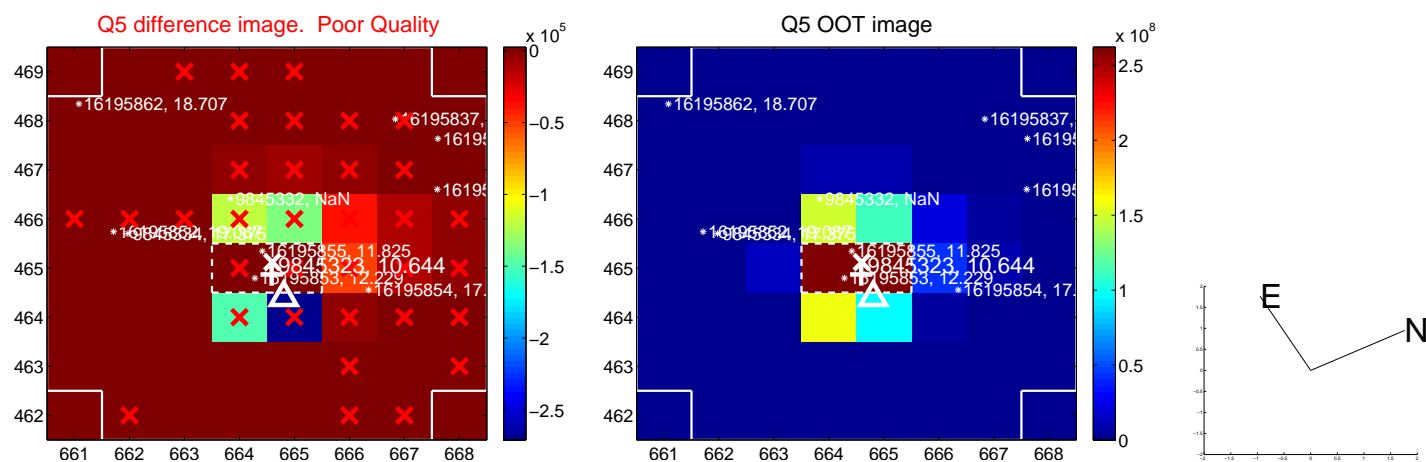
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.767 ± 0.651	2.72	-1.681 ± 0.390	-0.546 ± 0.945
PRF-fit source offset from KIC position	2.300 ± 1.064	2.16	-2.111 ± 0.818	-0.913 ± 0.809
photometric centroid source offset	35.85 ± 20.40	1.76	-1.87 ± 39.14	-35.80 ± 20.32



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.



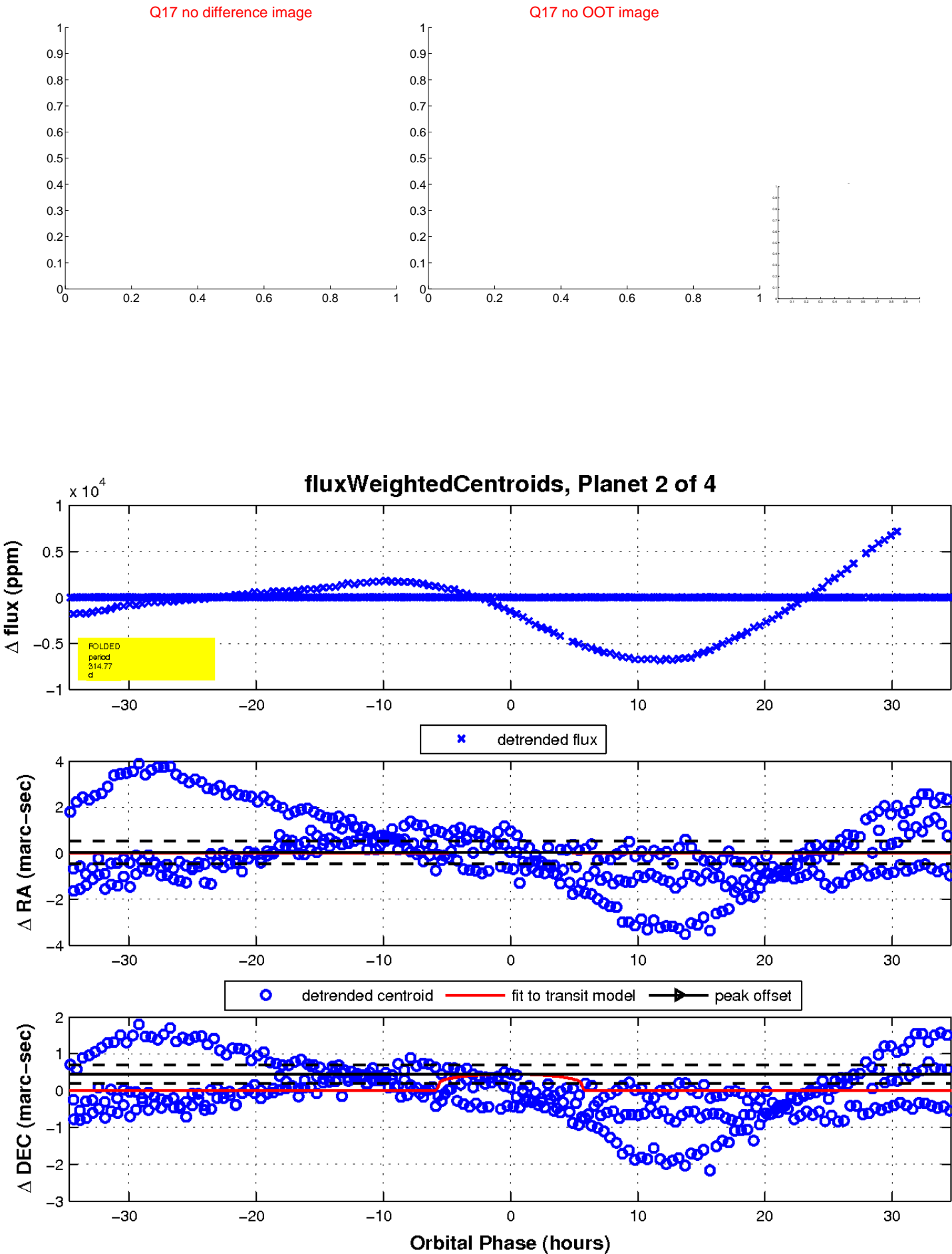
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



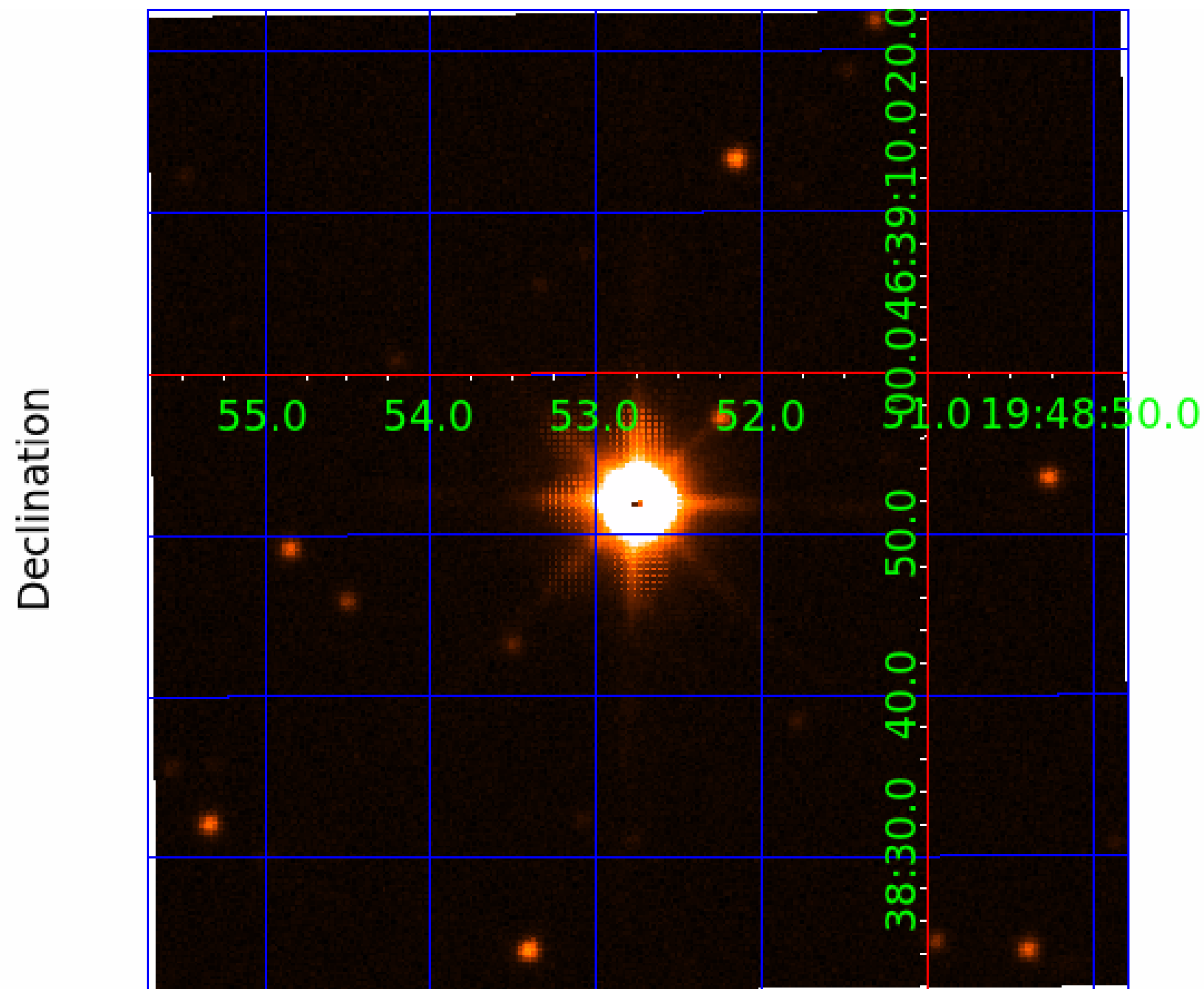
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009845323

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})
009845323-01	OBS	No	260.159027	260.572999	30.6	20.297	12.3	9.2	34.41	4136	21.35	321.64
009845323-02	OBS	No	314.768386	142.177481	12.5	11.576	12.1	4.3	34.41	4136	15.24	249.48
009845323-03	OBS	No	79.756882	159.760301	22.7	2.124	11.0	8.6	34.41	4136	20.62	1555.96
009845323-04	OBS	No	69.044924	169.668441	19.5	8.937	9.5	8.8	34.41	4136	19.04	1885.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009845323-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED—HALO_GHOST
009845323-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-04	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED—HALO_GHOST

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

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

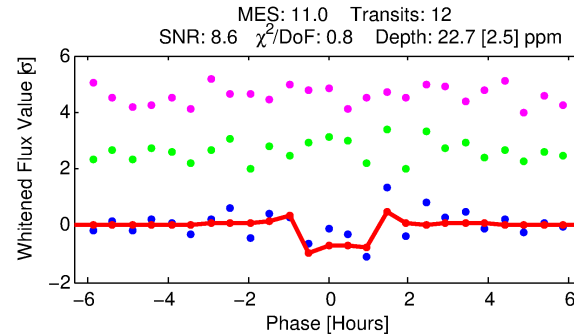
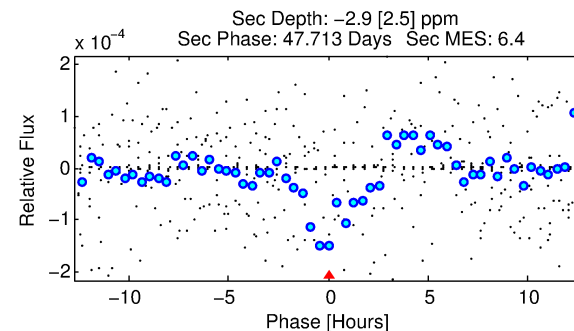
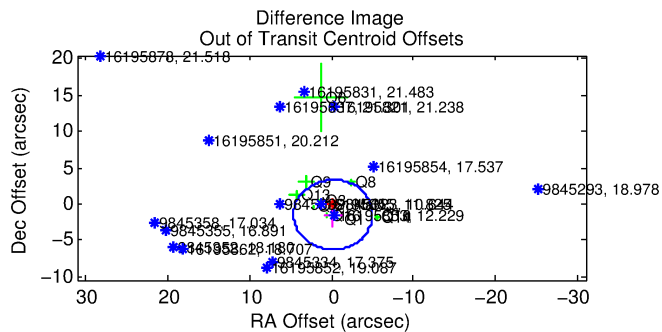
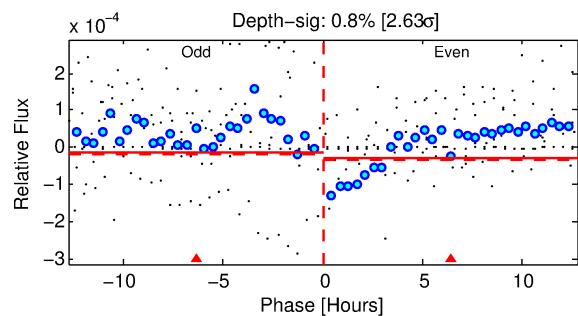
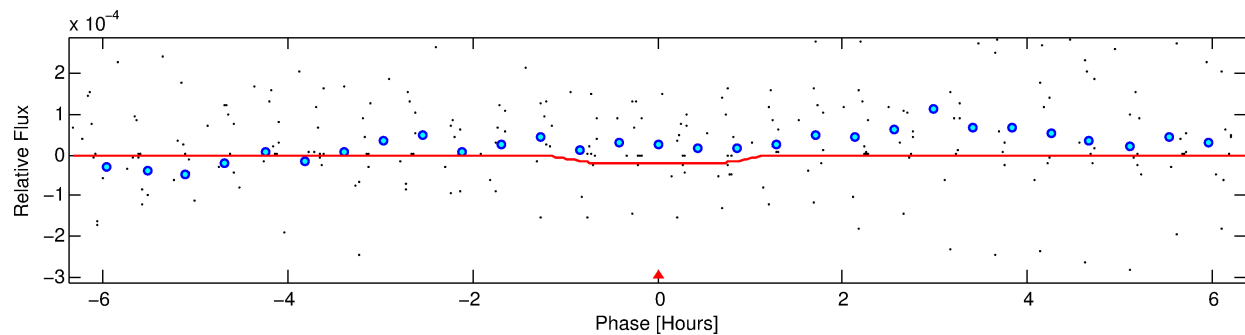
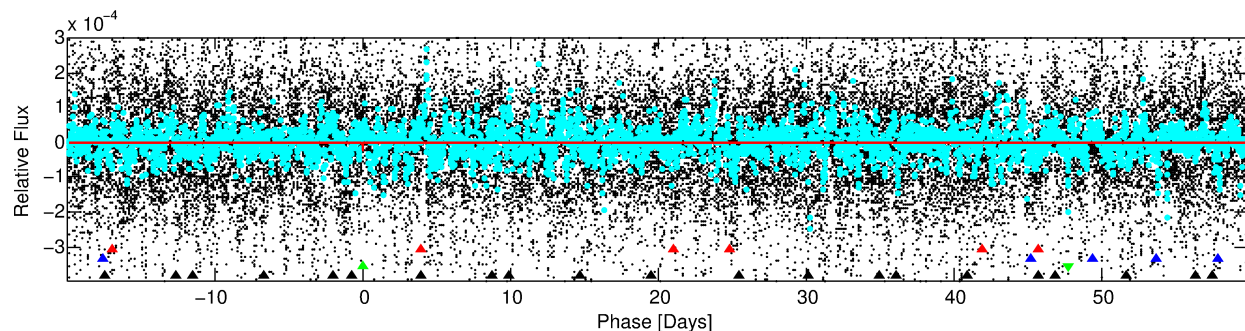
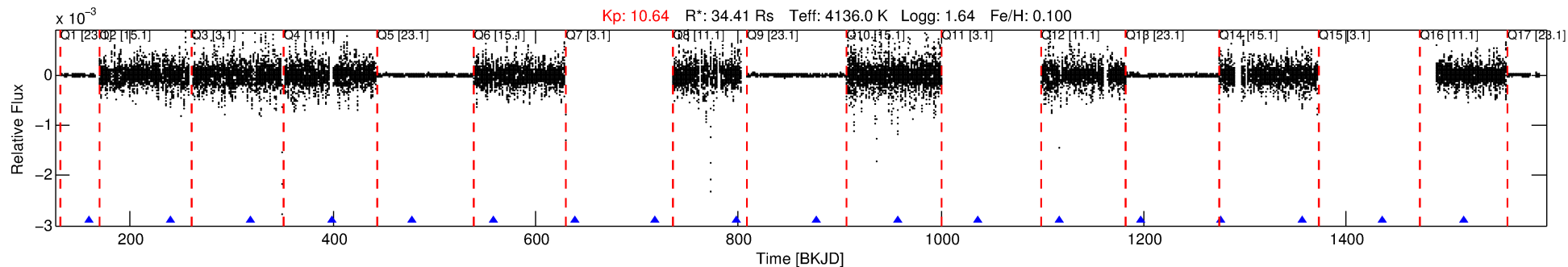
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009845323-03

No Significant Match Found

DV One-Page Summary

KIC: 9845323 Candidate: 3 of 4 Period: 79.757 d



DV Fit Results:

Period = 79.75688 [0.00040] d
Epoch = 159.7603 [0.0044] BKJD
Rp/R* = 0.0055 [0.0015]
a/R* = 128.56 [120.24]
b = 0.90 [0.20]
Seff = 1555.96 [283.84]
Teq = 1601 [73] K
Rp = 20.62 [7.13] Re
a = 0.4467 [0.0644] AU
Ag = N/A
Teffp = N/A

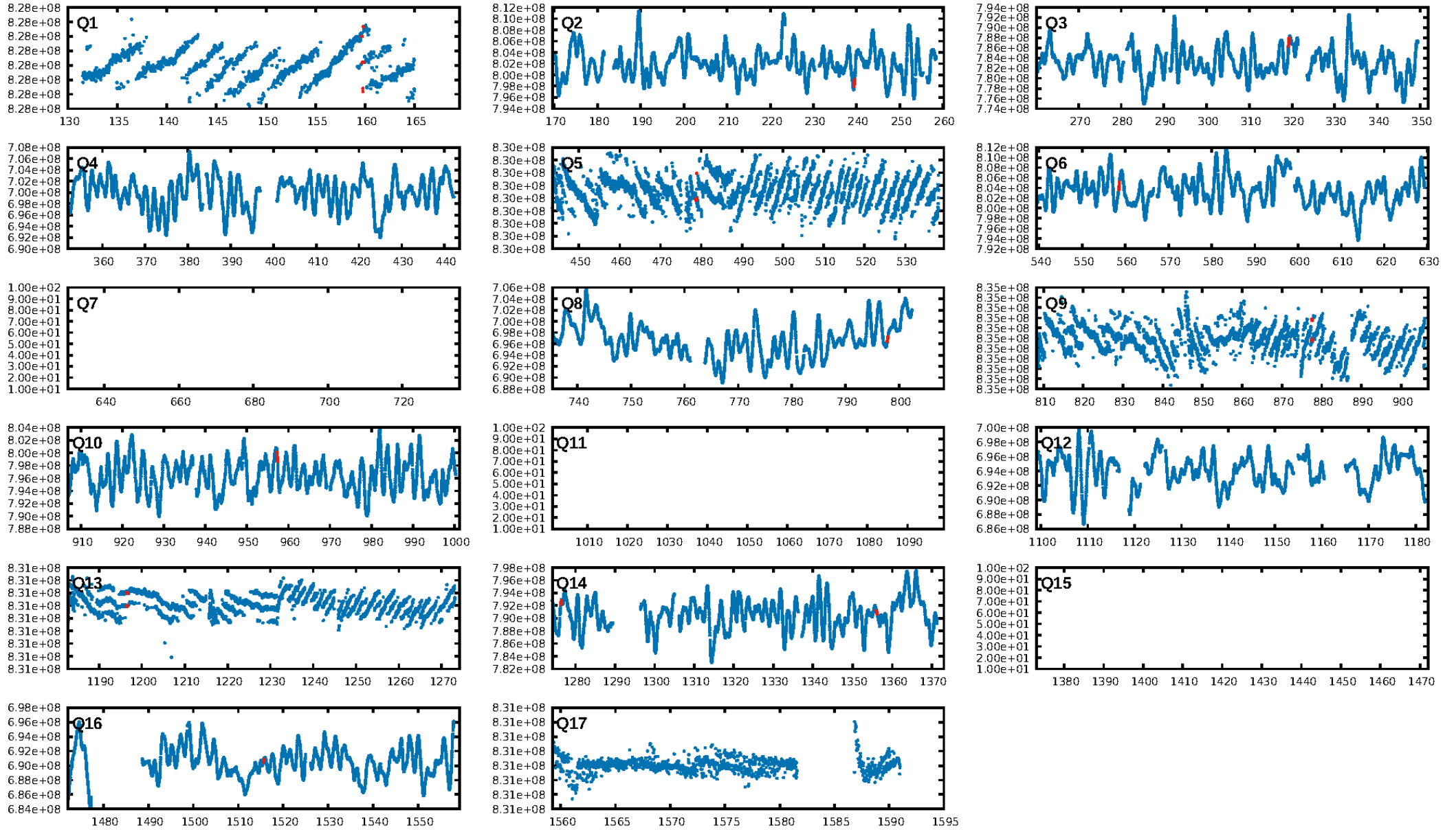
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.99 σ]
LongPeriod-sig: 100.0% [212.15 σ]
ModelChiSquare2-sig: 13.5%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 4.53e-09
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 0.3817
Centroid-sig: 31.2%
Centroid-so: 5.100 arcsec [0.92 σ]
OotOffset-rm: 1.511 arcsec [0.94 σ]
KicOffset-rm: 2.494 arcsec [1.45 σ]
OotOffset-st: 4/1/2/3 [10]
KicOffset-st: 4/1/2/3 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 1.00 [11/11]

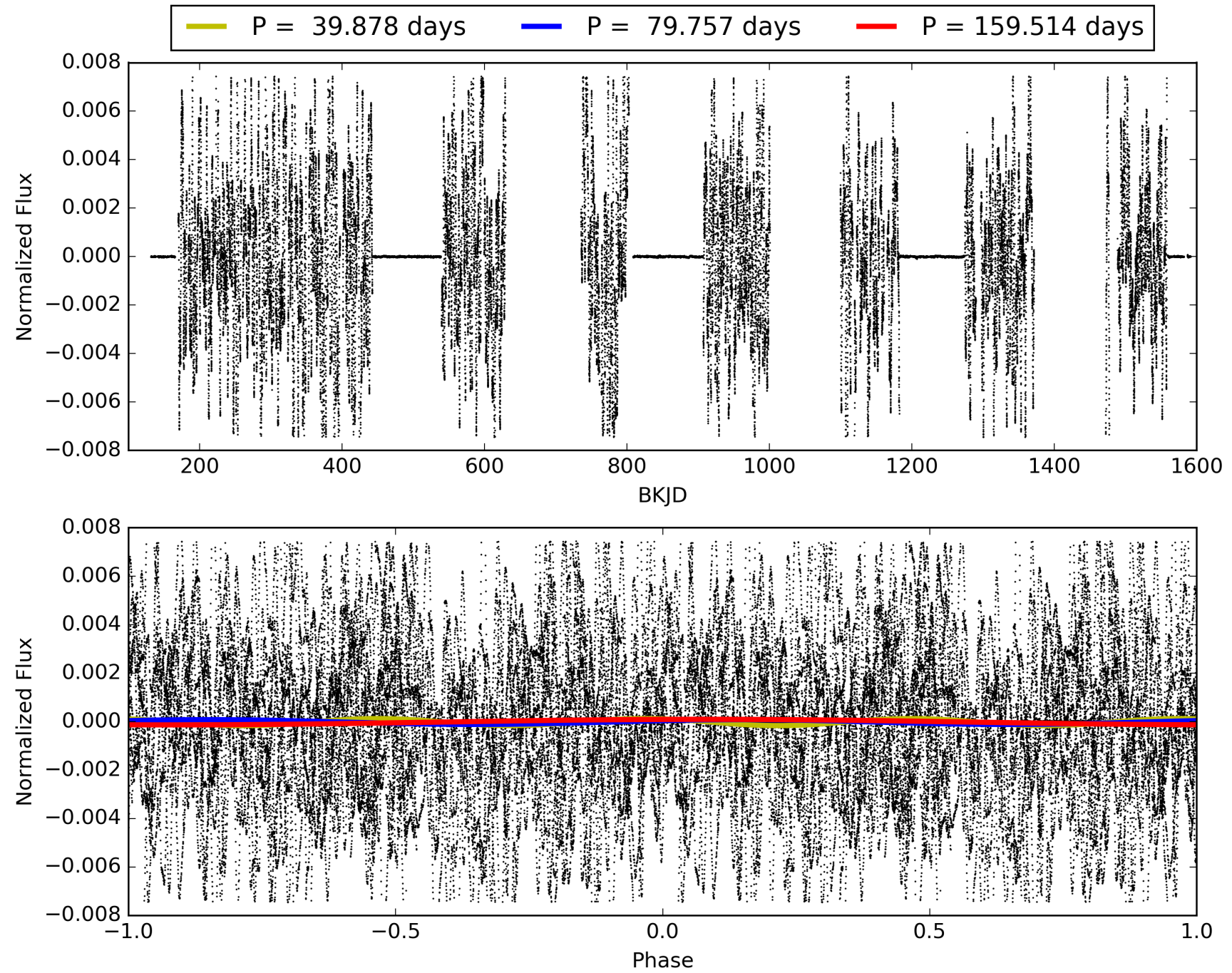
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:21:40 Z

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

TCE 009845323-03, PDC Light Curves

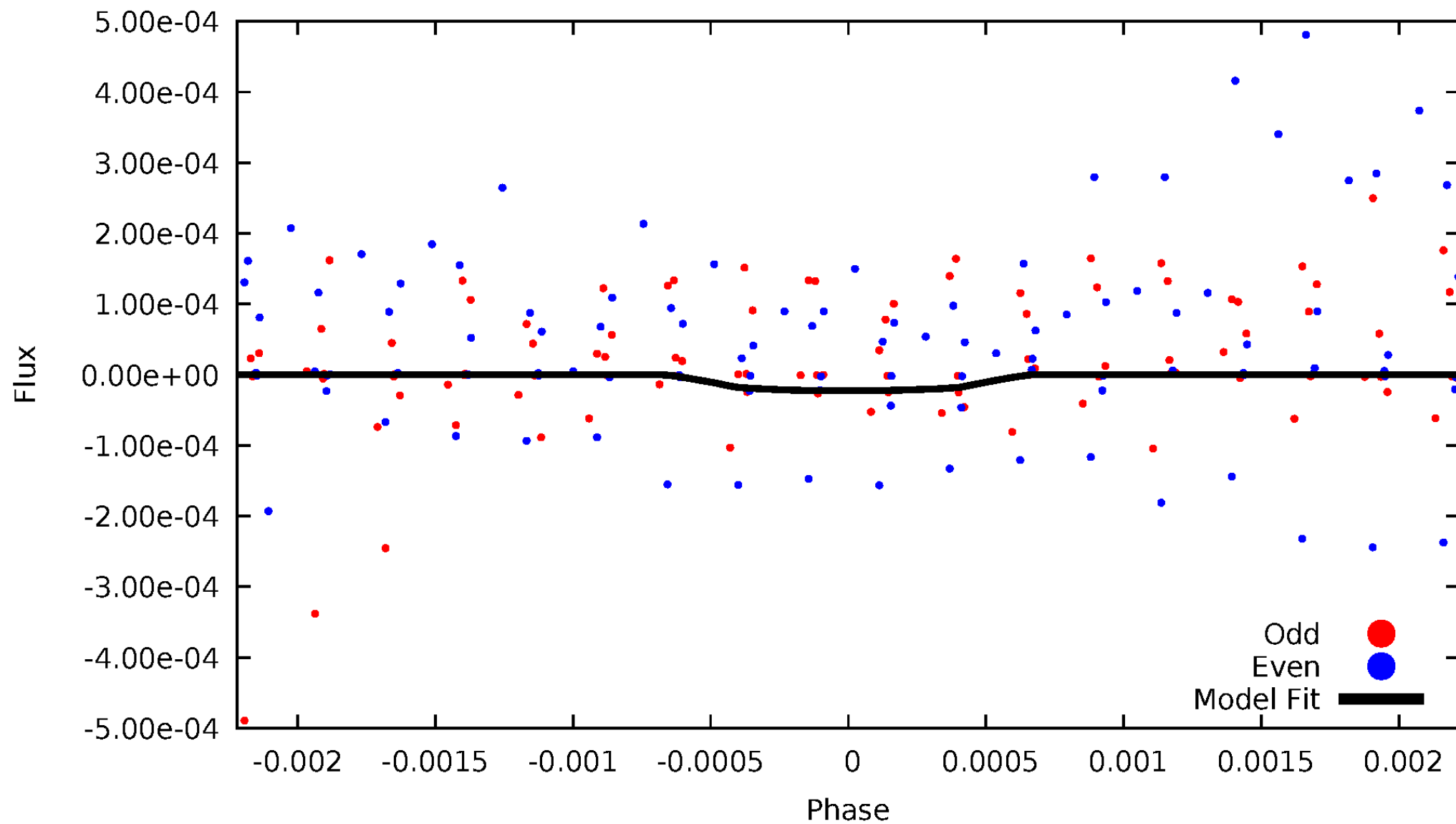


TCE 009845323-03



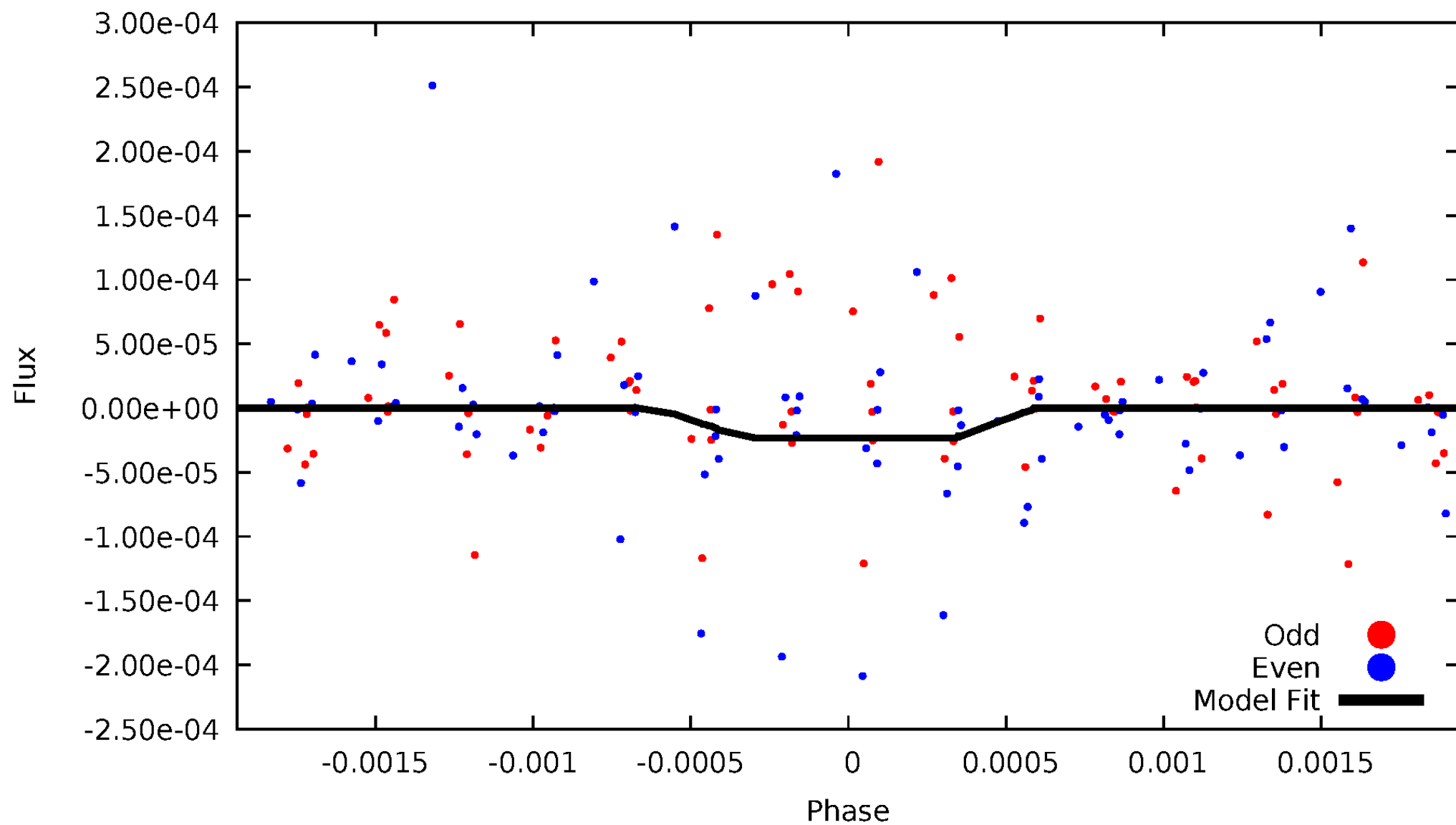
DV Odd/Even

TCE 009845323-03



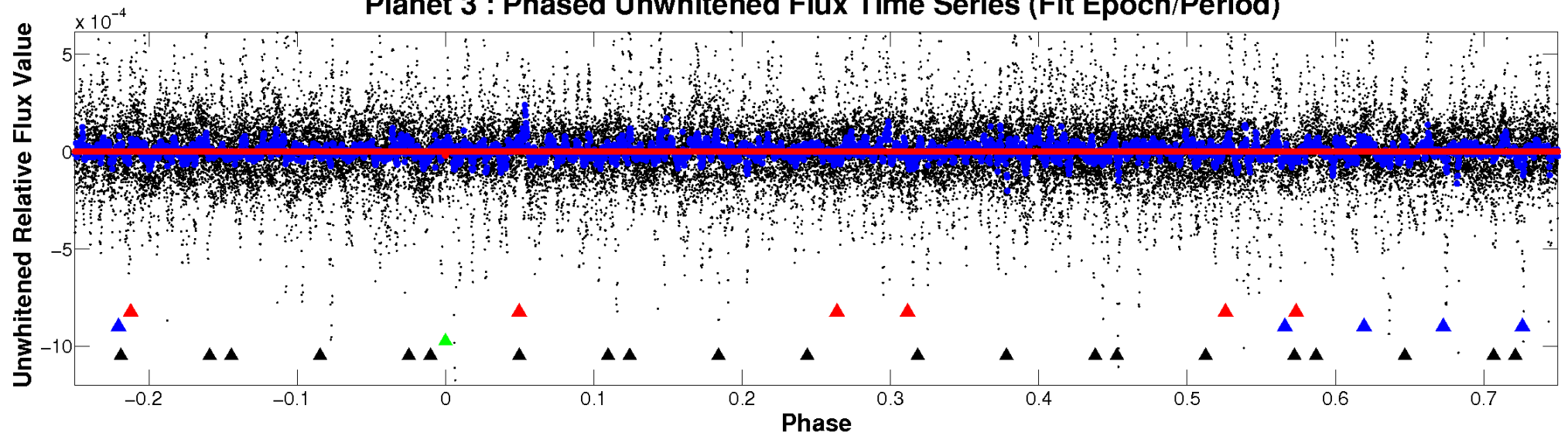
ALT Odd/Even

TCE 009845323-03

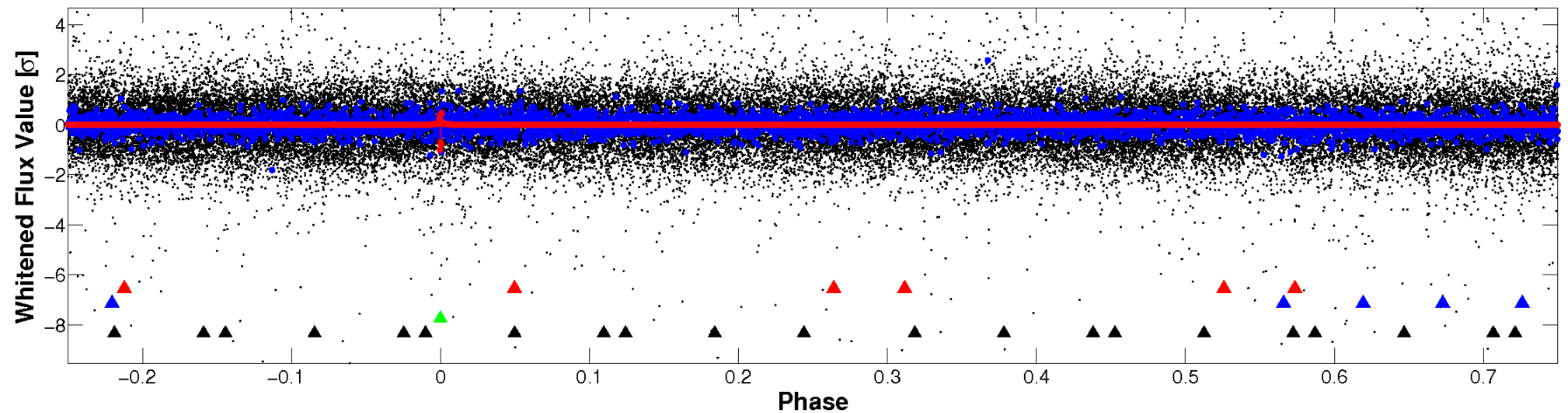


Non-Whitened Vs. Whitened Light Curve

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

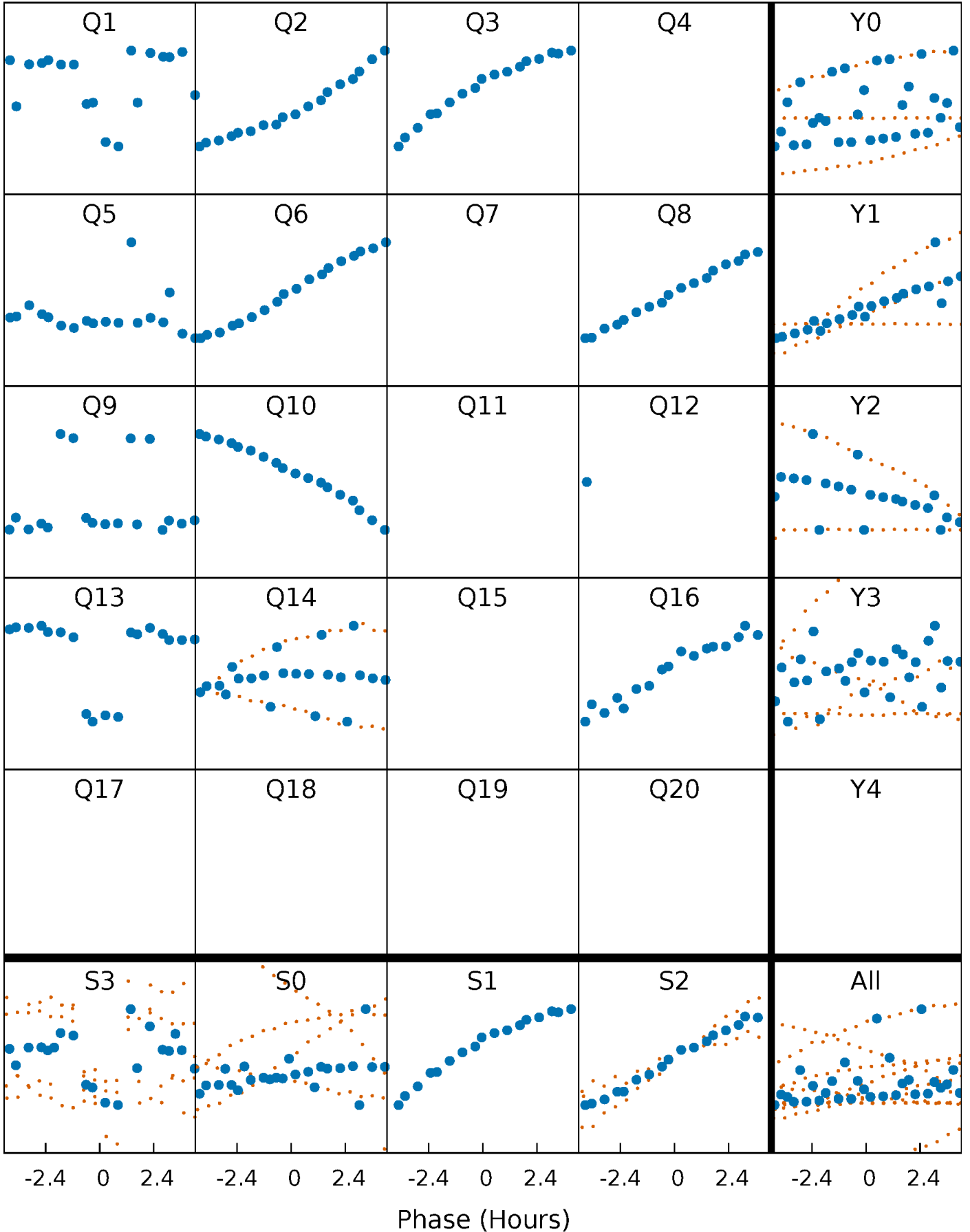


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



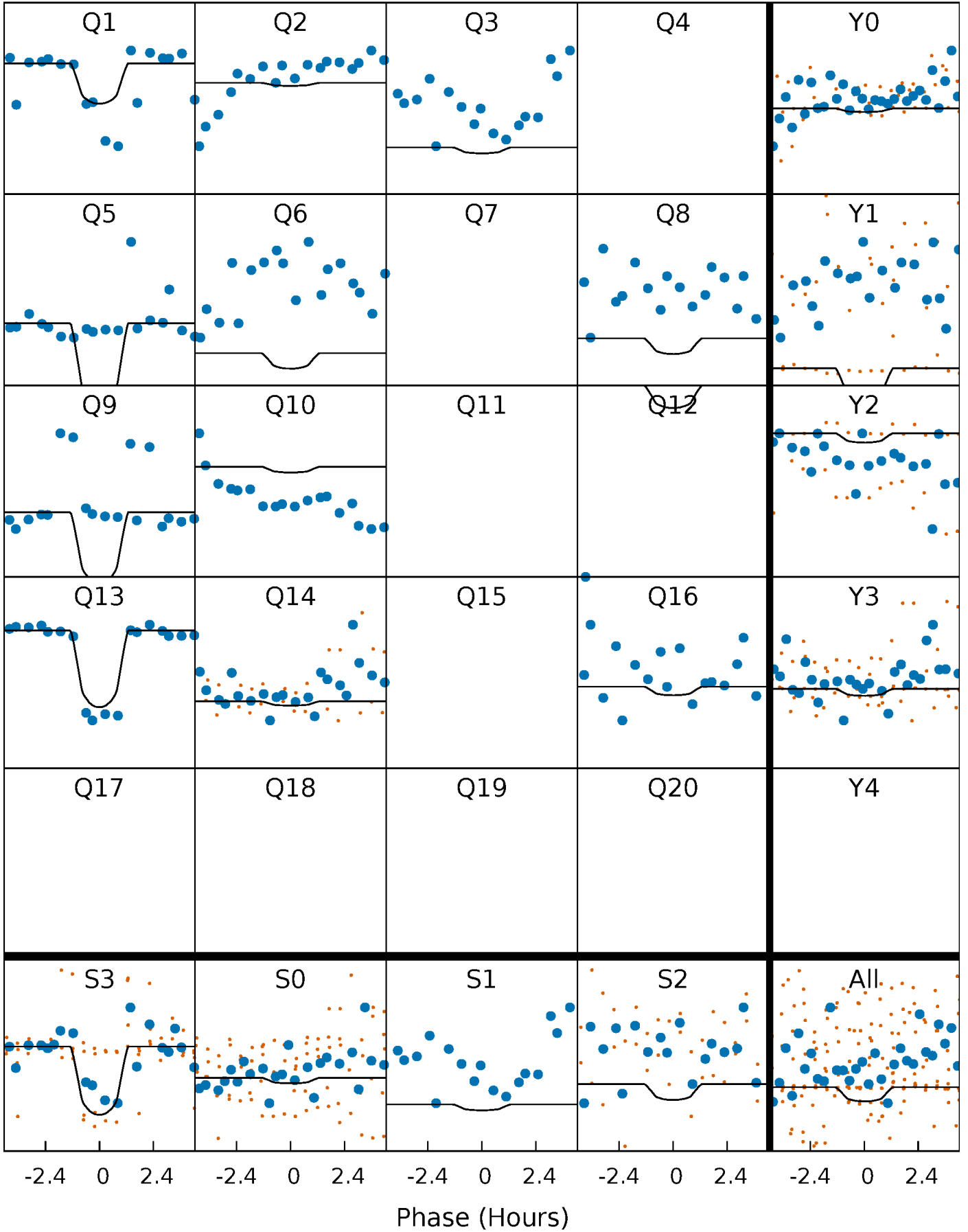
PDC Quarter-Phased Transit Curves

TCE 009845323-03 P= 79.756882 Days $T_0=159.760301$ (BKJD)



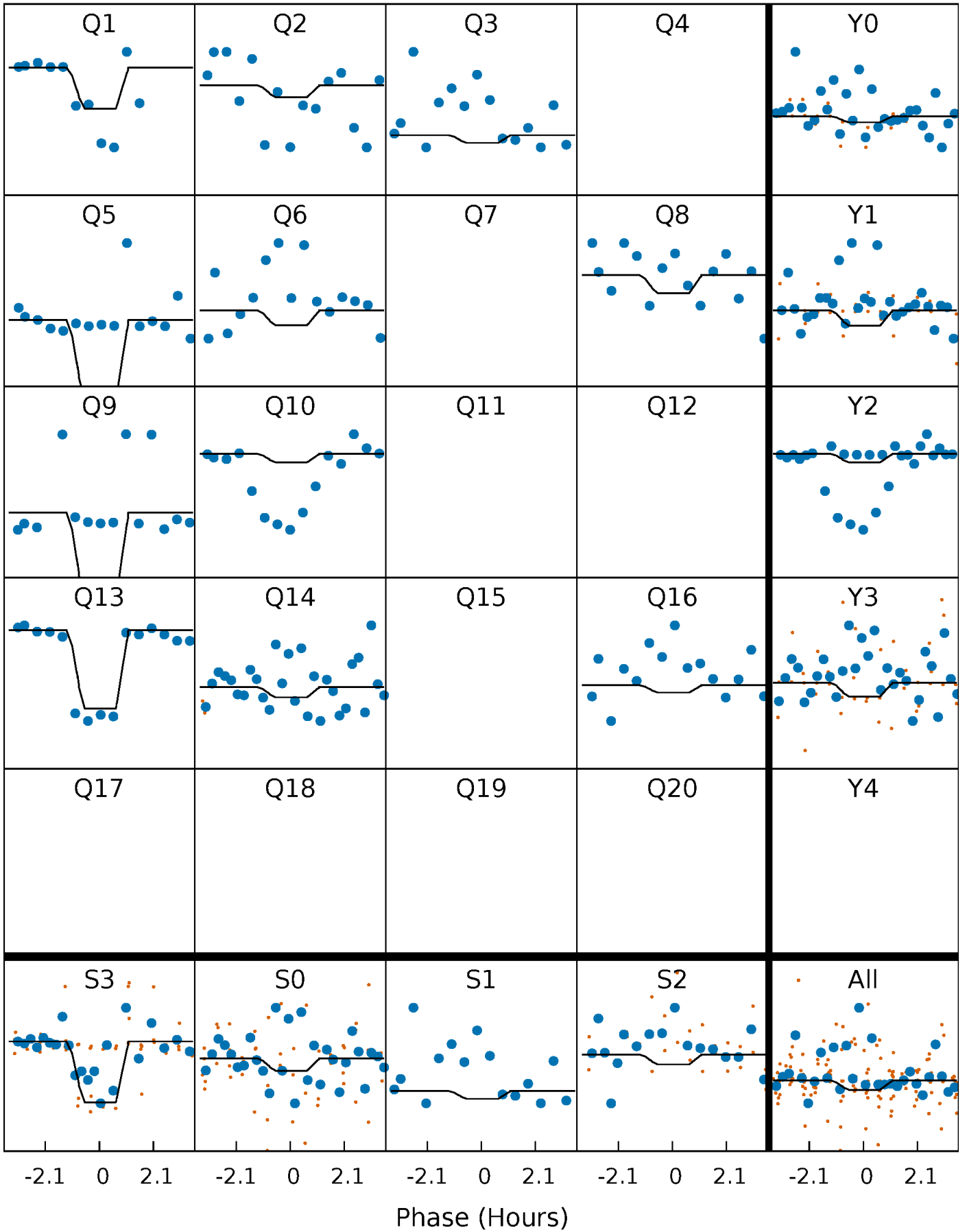
DV Quarter-Phased Transit Curves

TCE 009845323-03 P= 79.756882 Days $T_0=159.760301$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

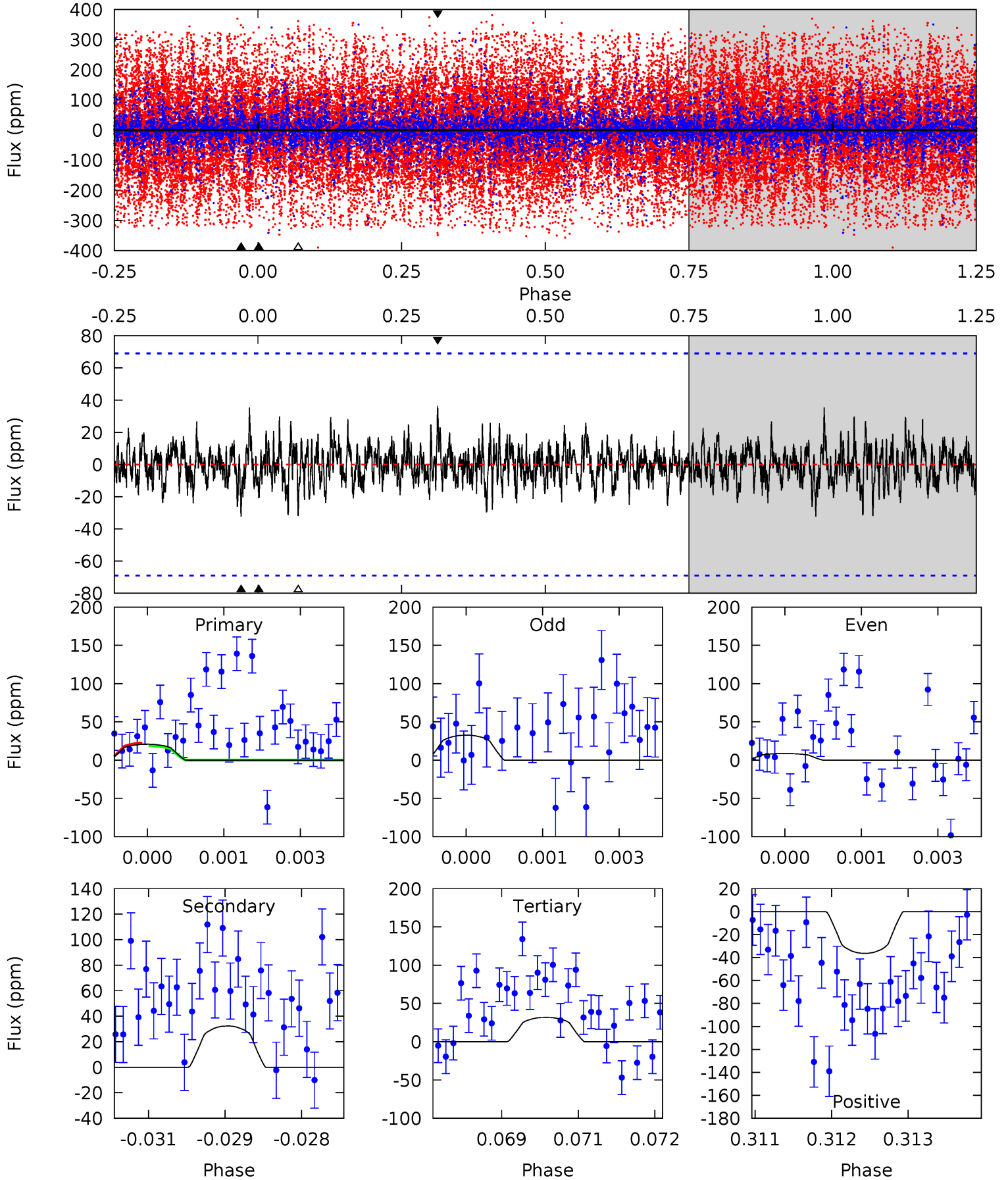
TCE 009845323-03 P= 79.756912 Days $T_0=159.765305$ (BKJD)



DV Model-Shift Uniqueness Test

009845323-03, P = 79.756882 Days, E = 80.003419 Days

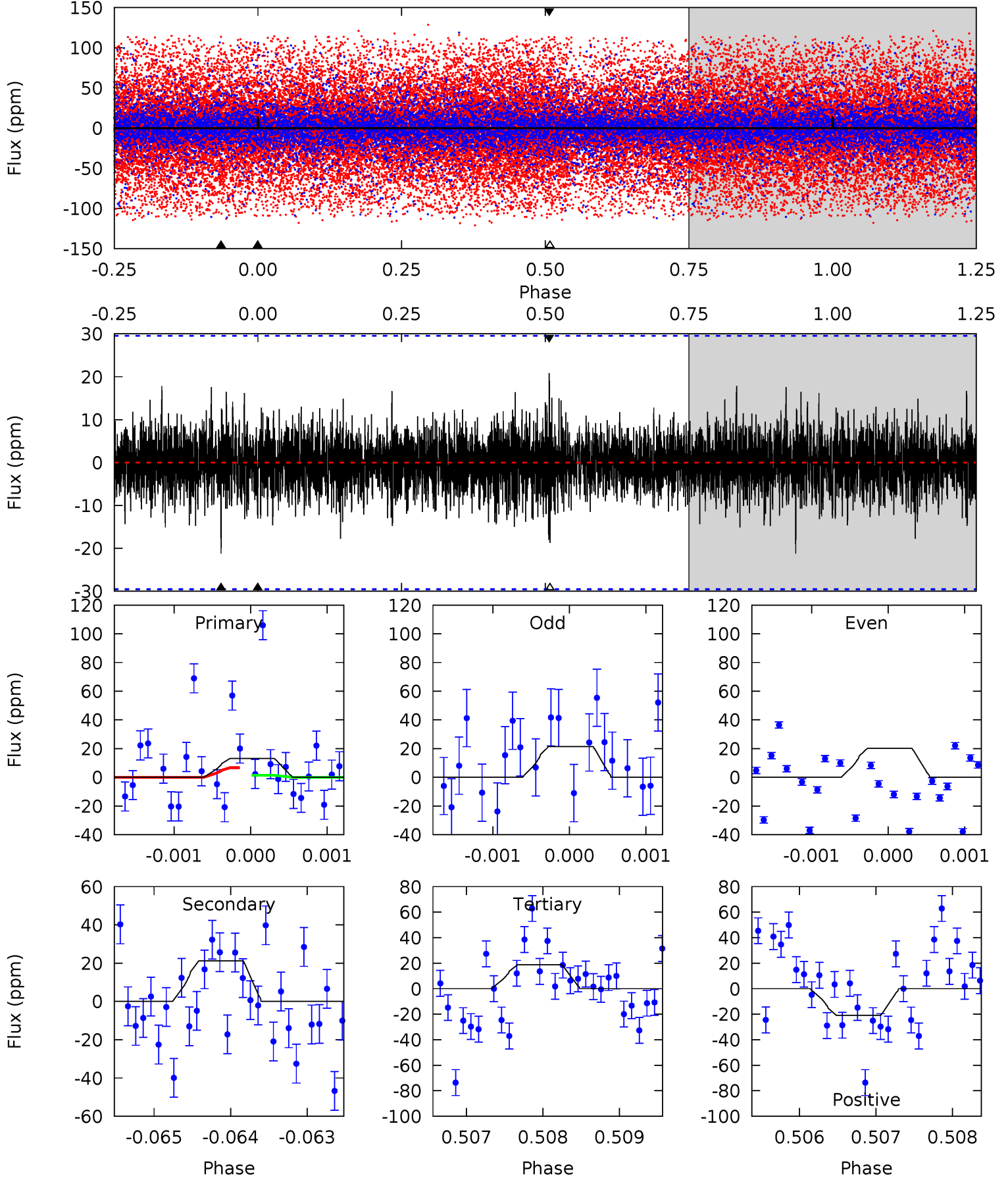
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.63	2.53	2.49	2.85	5.40	3.21	0.74	-0.87	-1.22	0.04	-0.32	0.94	0.94	0.53	0.14



Alt Model-Shift Uniqueness Test

009845323-03, P = 79.756912 Days, E = 80.008393 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.40	3.90	3.44	3.84	5.44	3.27	0.87	-1.04	-1.43	0.47	0.07	0.12	-1.02	0.50	0



Stellar Parameters For KIC 009845323

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4136^{+83}_{-108}	$1.636^{+0.030}_{-0.030}$	$0.100^{+0.200}_{-0.200}$	$34.412^{+7.345}_{-7.345}$	$1.867^{+1.372}_{-0.686}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+200%/-200%	+21%/-21%	+73%/-37%	+30%/-10%
Source	PHO1	AST9	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009845323-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-32 ± 13	$20.74^{+6.88}_{-6.30}$	2240^{+85}_{-85}	4108^{+723}_{-466}	$7.822^{+9.525}_{-3.811}$
Alt.	-21 ± 5	$18.36^{+7.30}_{-5.94}$	2239^{+88}_{-81}	4013^{+614}_{-441}	$6.809^{+7.478}_{-3.166}$

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 $A_{obs} \gg 1.0$

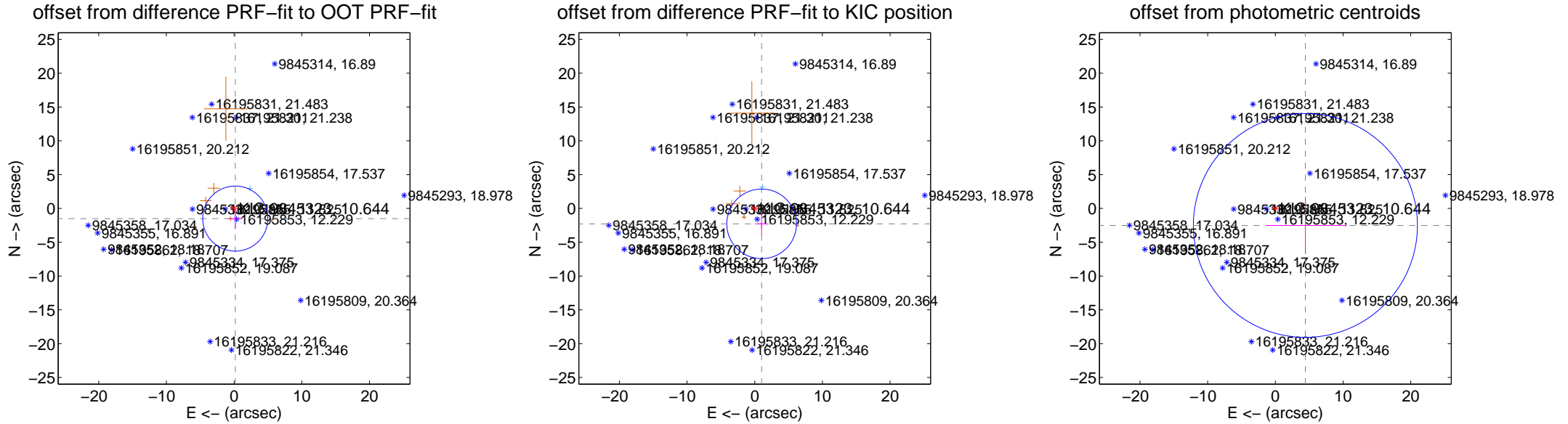
DV Centroid Data

Supplemental centroid analysis for 009845323-03. **Kepler magnitude: 10.64.** Transit SNR 8.60

There are 3 quarters with good PRF difference image offsets

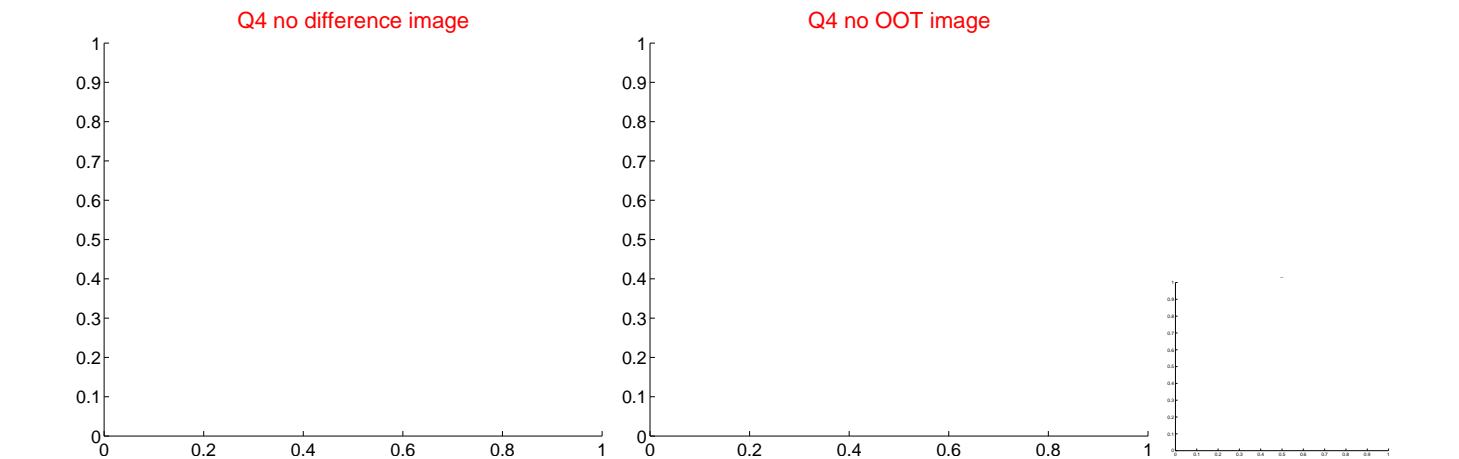
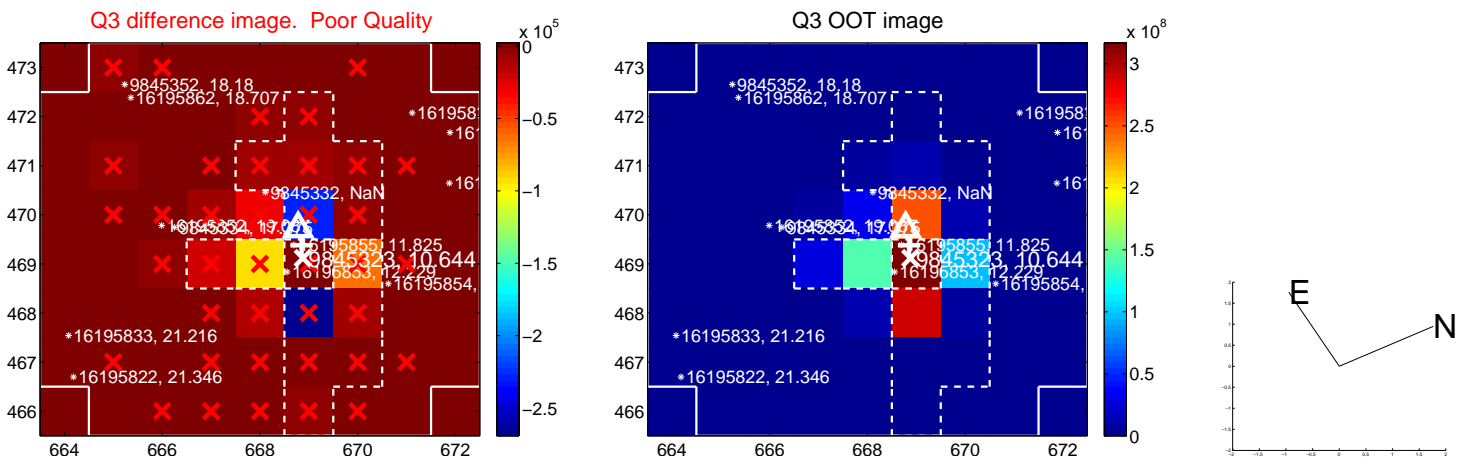
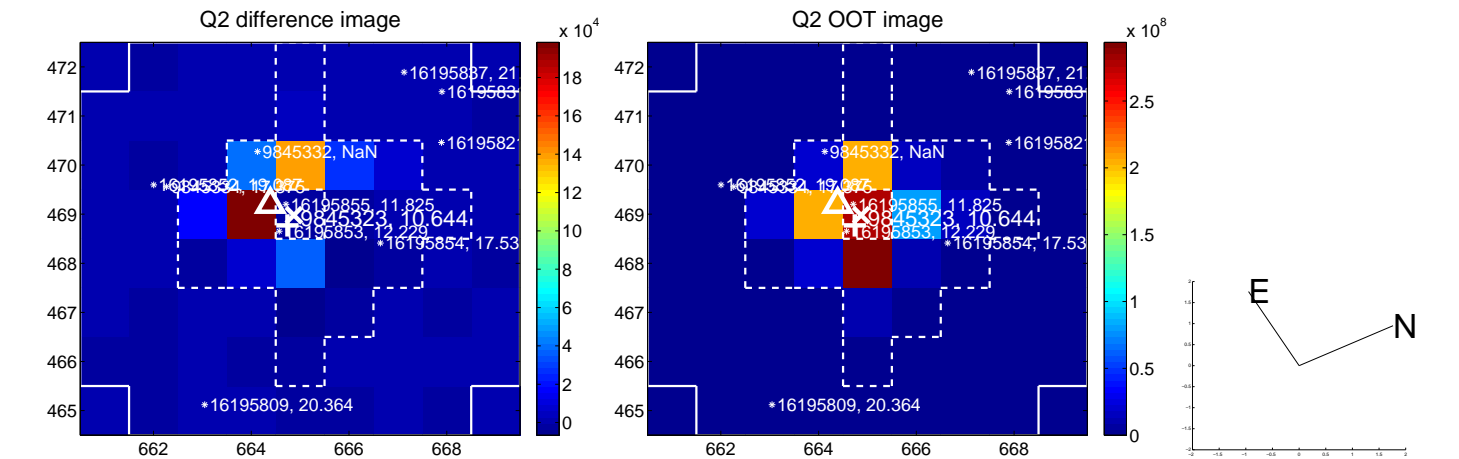
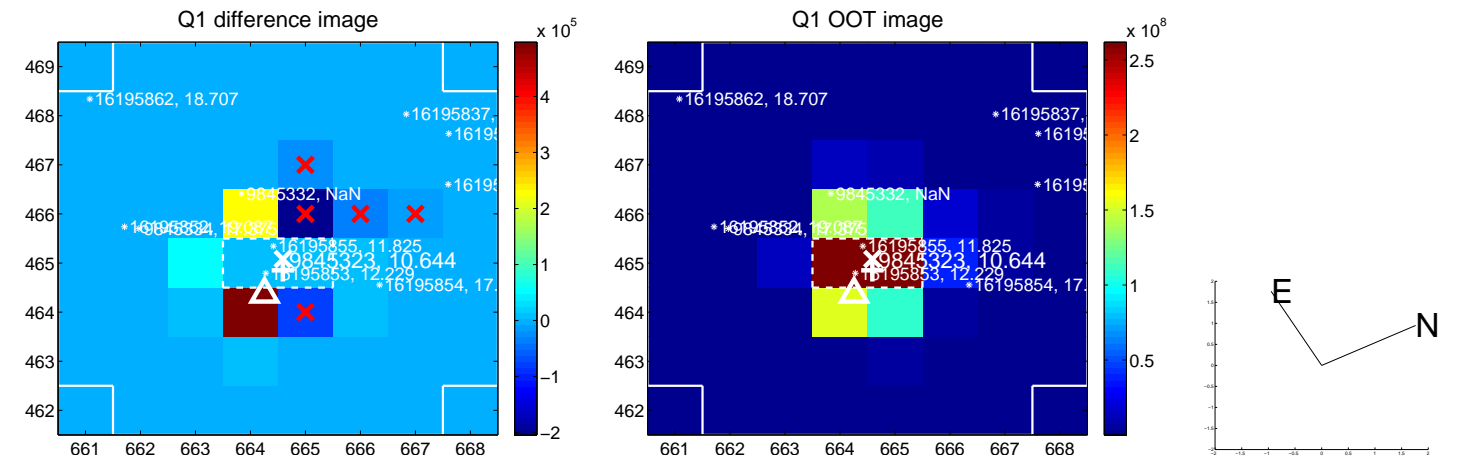
The direct PRF centroid is offset from the target star catalog position by about 1.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.511 ± 1.604	0.94	-0.173 ± 1.020	-1.501 ± 1.558
PRF-fit source offset from KIC position	2.494 ± 1.716	1.45	-1.017 ± 0.977	-2.277 ± 1.674
photometric centroid source offset	5.10 ± 5.52	0.92	-4.44 ± 5.88	-2.51 ± 4.20

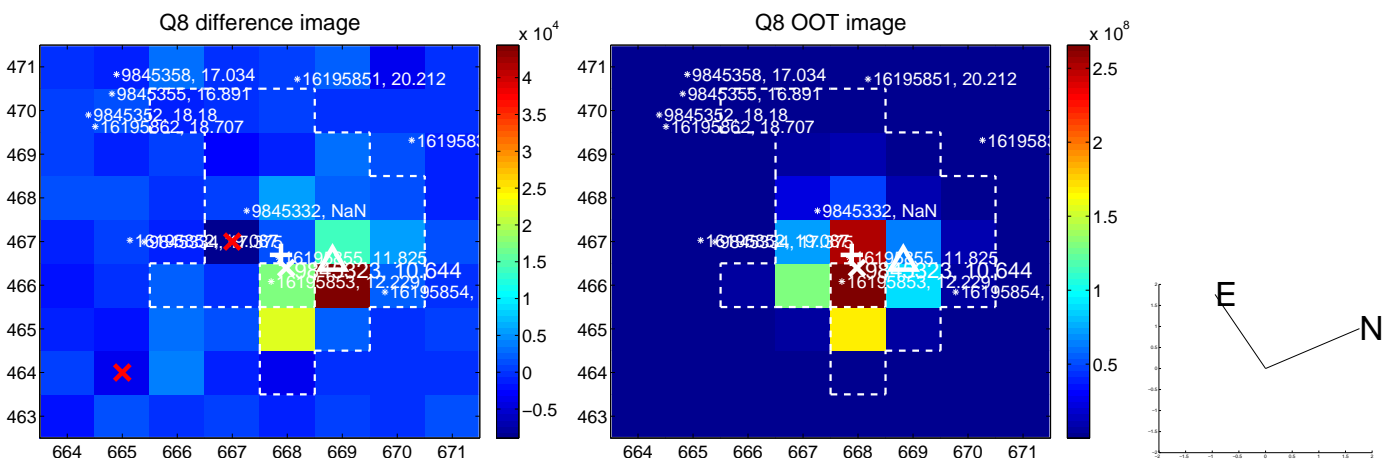
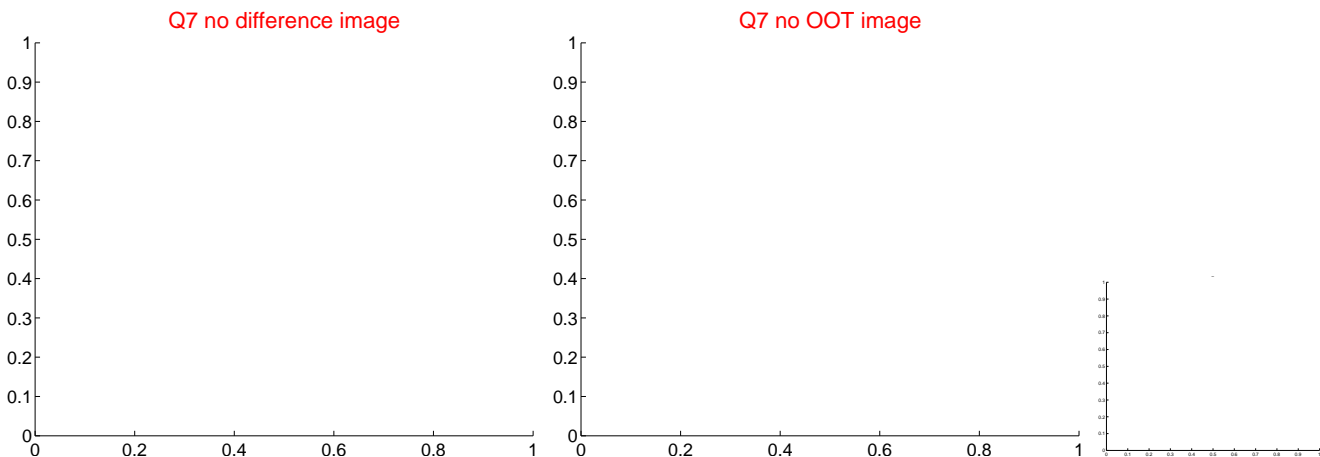
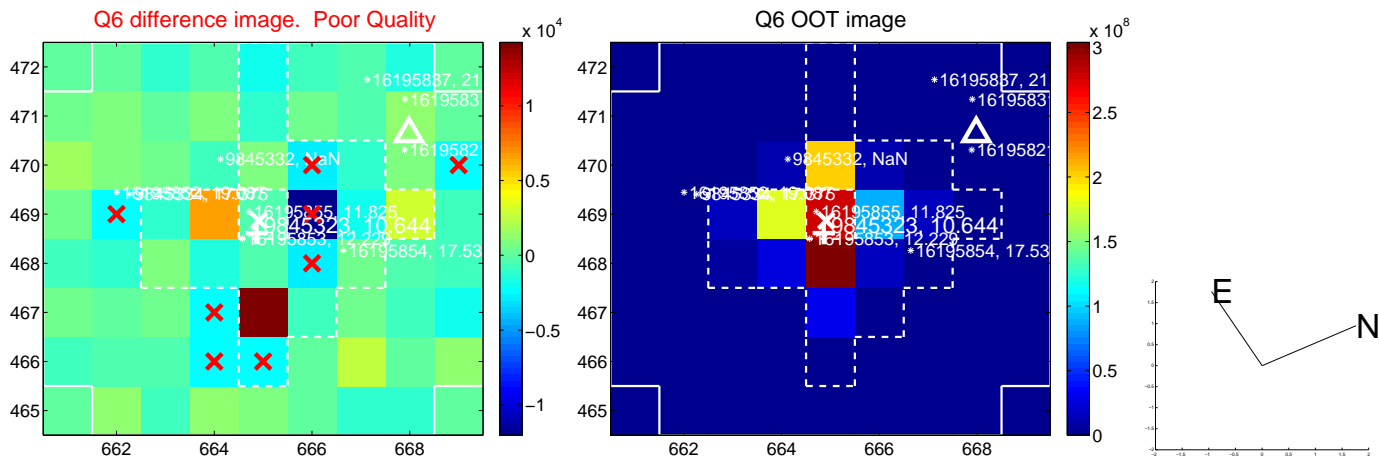
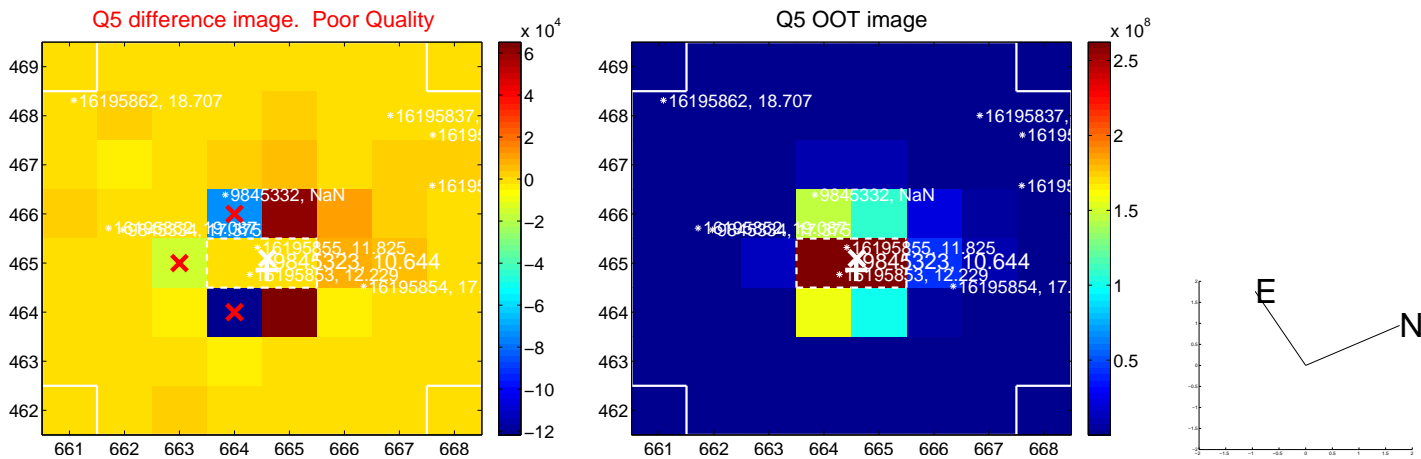


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

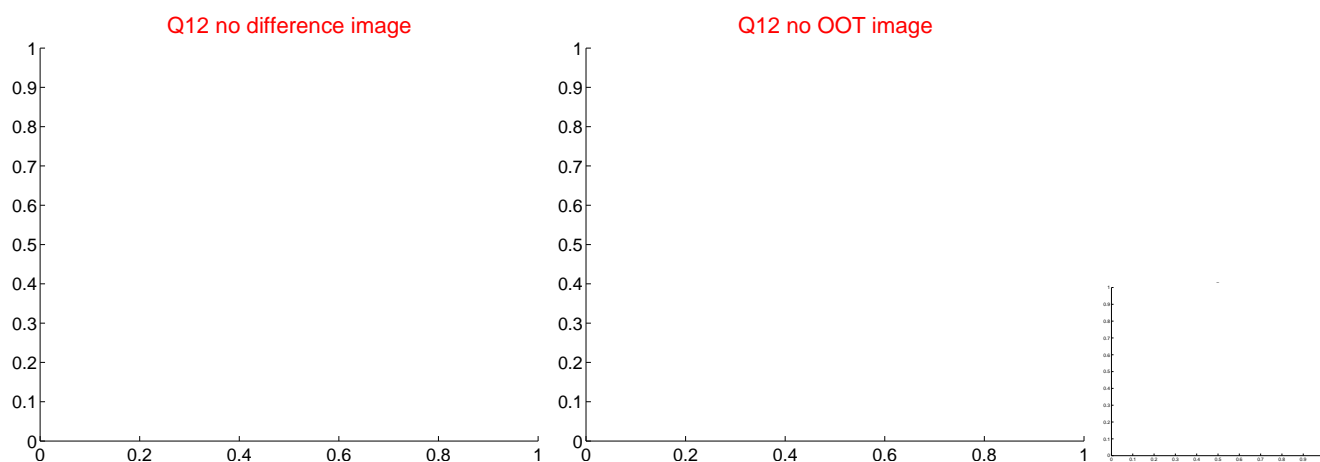
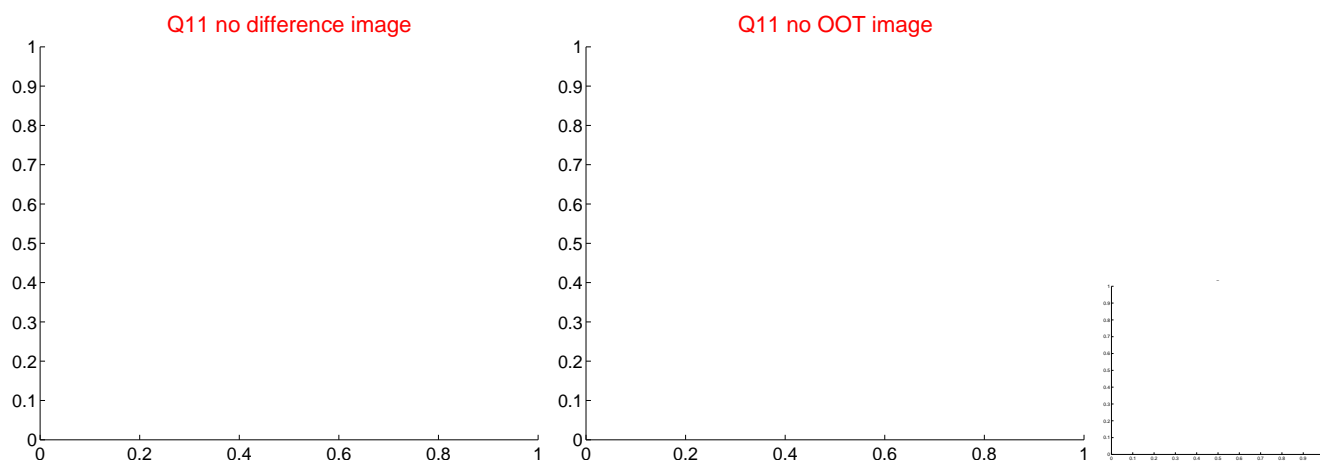
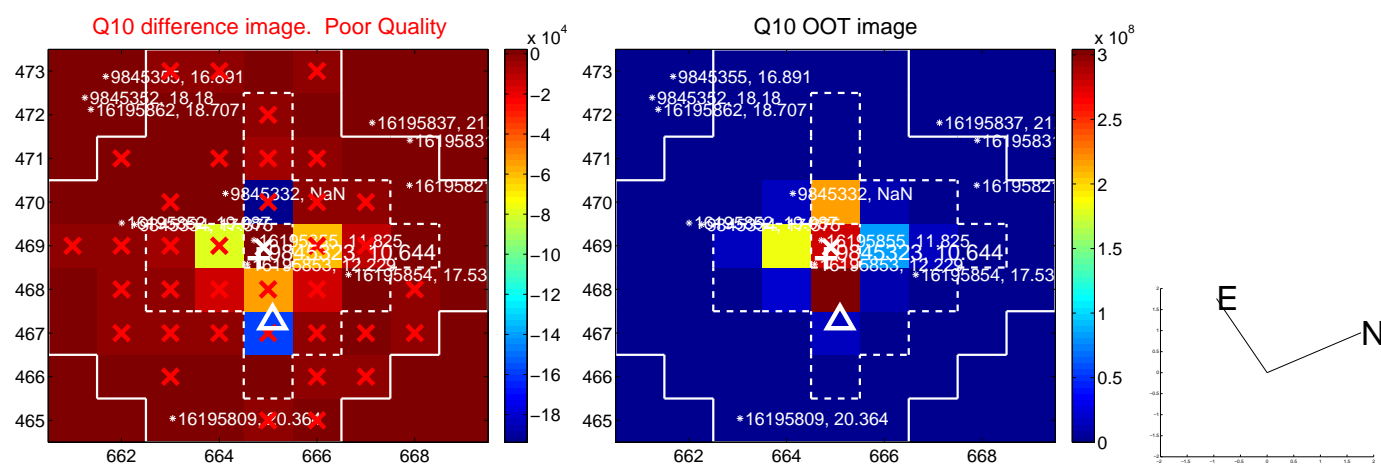
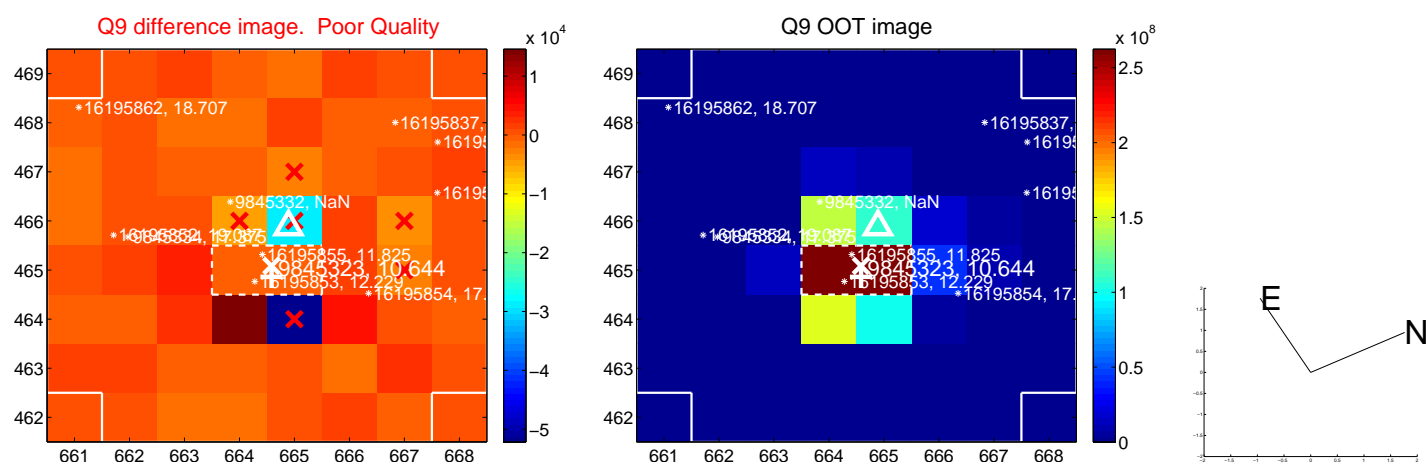
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



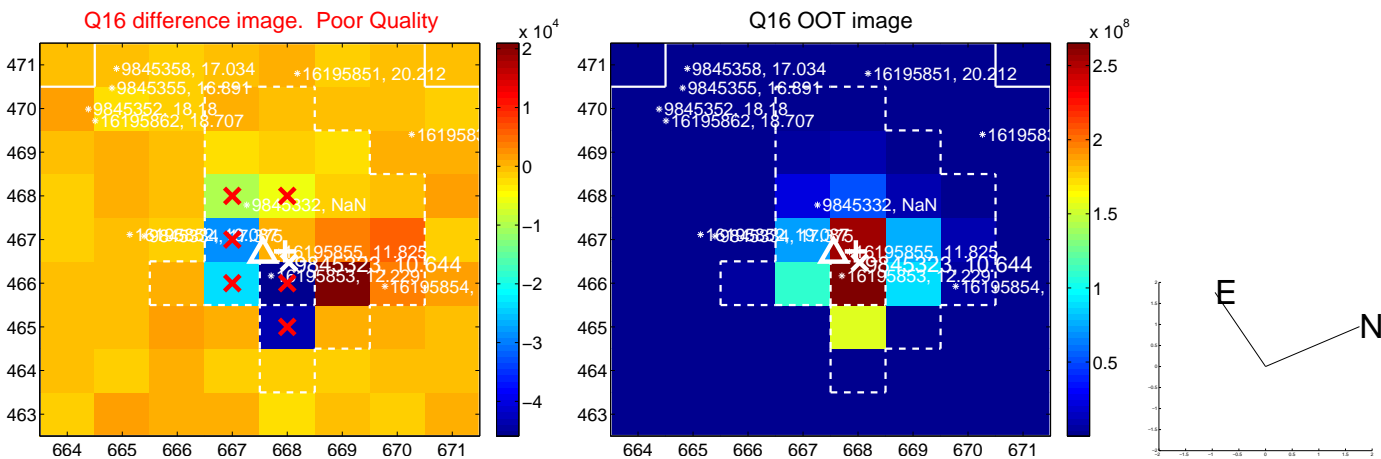
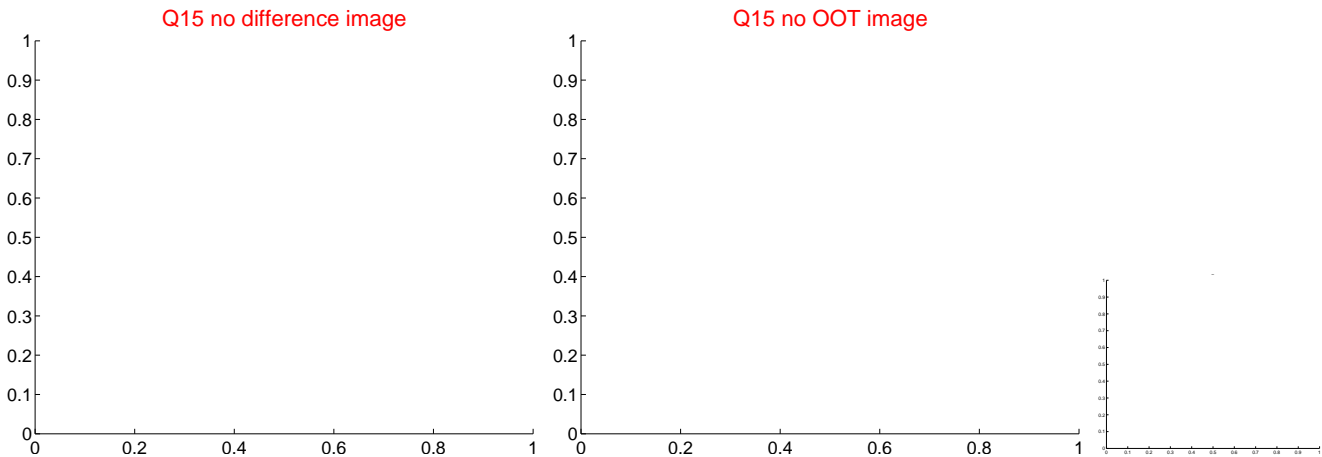
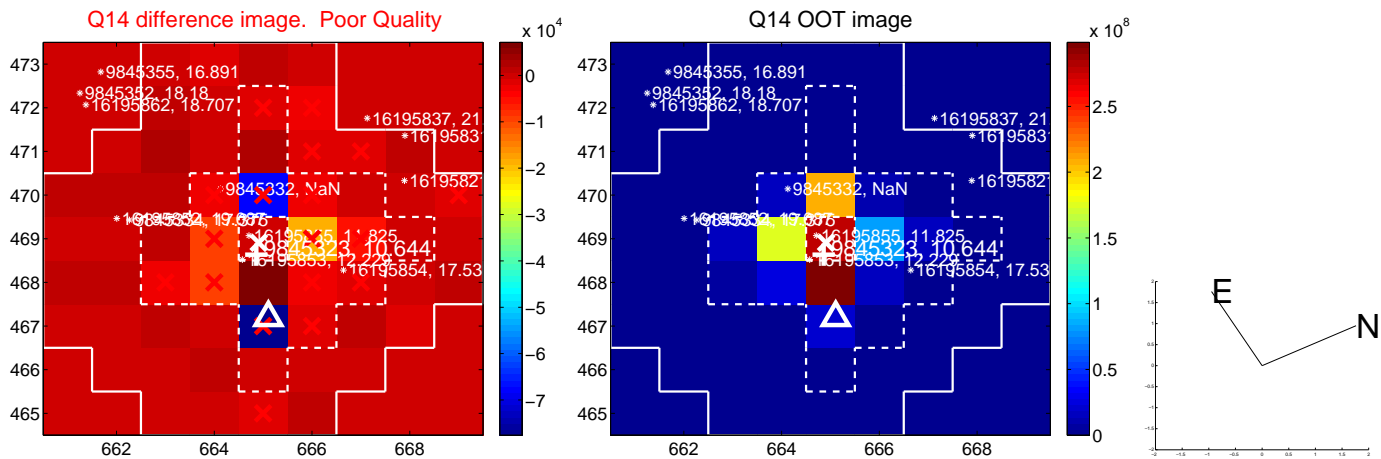
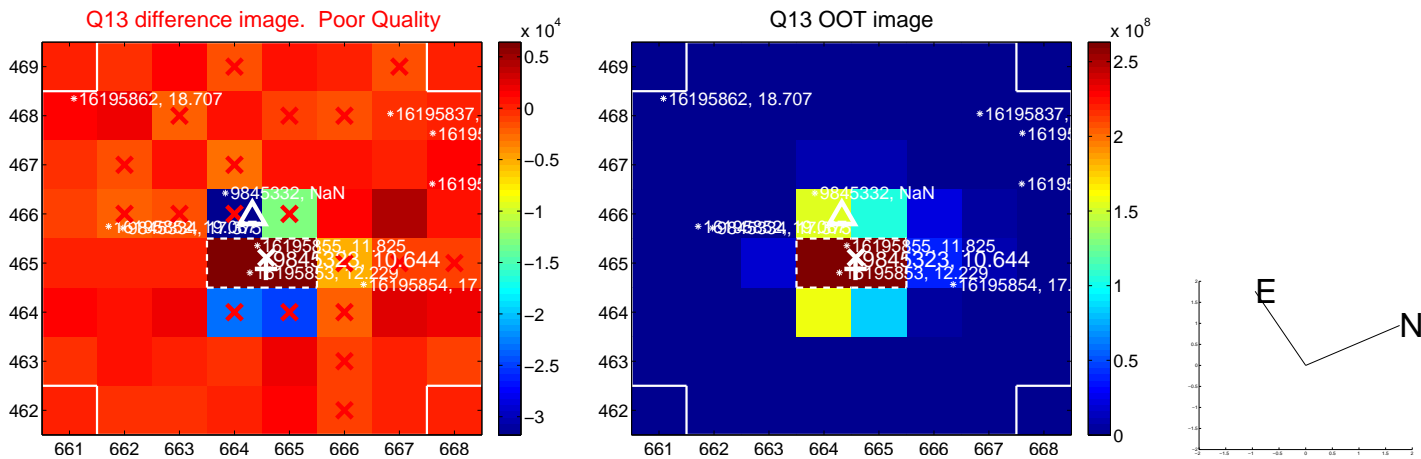
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



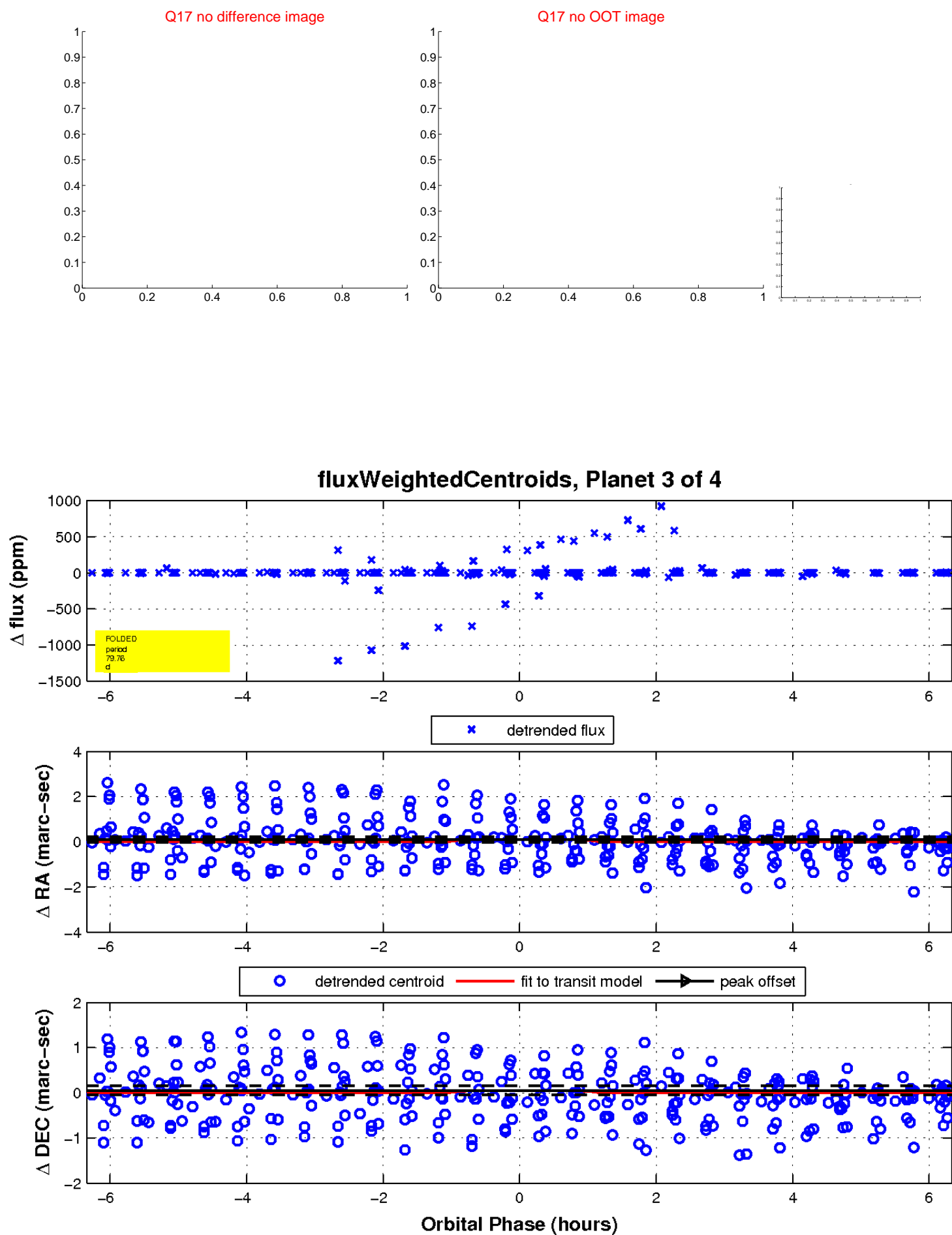
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



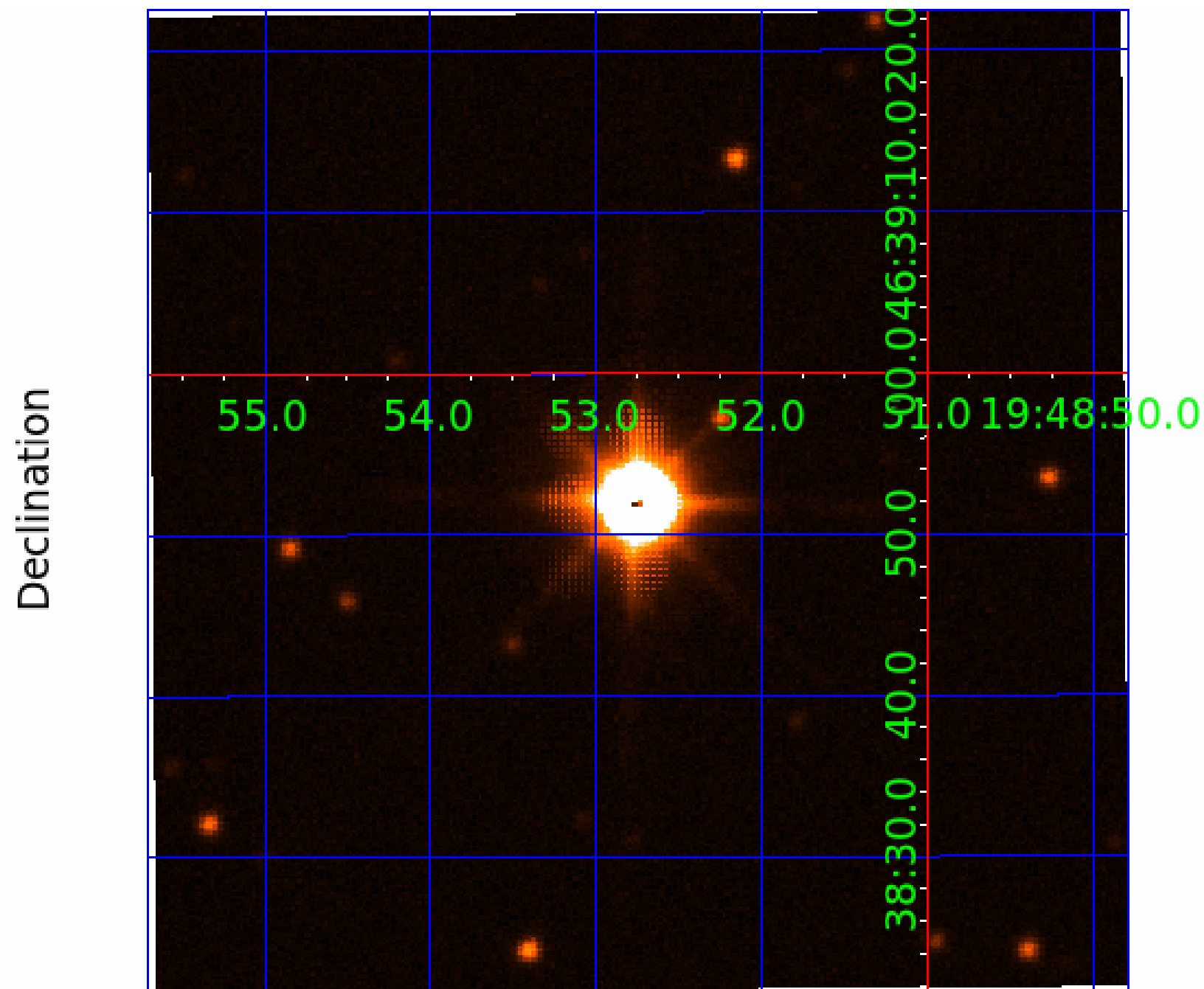
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009845323

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})
009845323-01	OBS	No	260.159027	260.572999	30.6	20.297	12.3	9.2	34.41	4136	21.35	321.64
009845323-02	OBS	No	314.768386	142.177481	12.5	11.576	12.1	4.3	34.41	4136	15.24	249.48
009845323-03	OBS	No	79.756882	159.760301	22.7	2.124	11.0	8.6	34.41	4136	20.62	1555.96
009845323-04	OBS	No	69.044924	169.668441	19.5	8.937	9.5	8.8	34.41	4136	19.04	1885.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009845323-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED—HALO_GHOST
009845323-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009845323-04	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED—HALO_GHOST

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

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

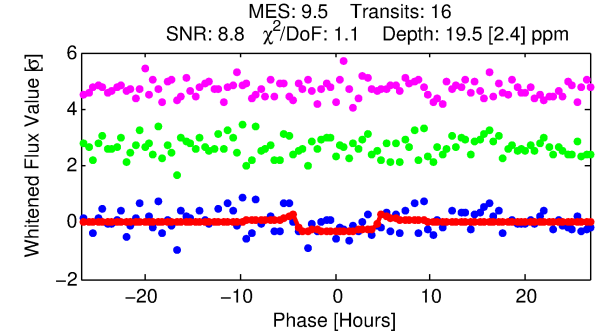
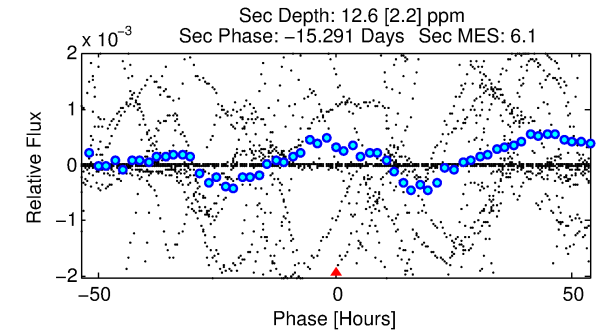
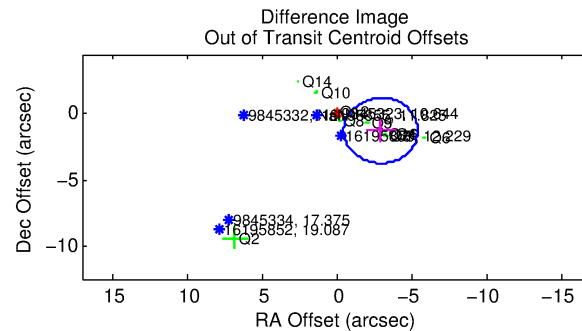
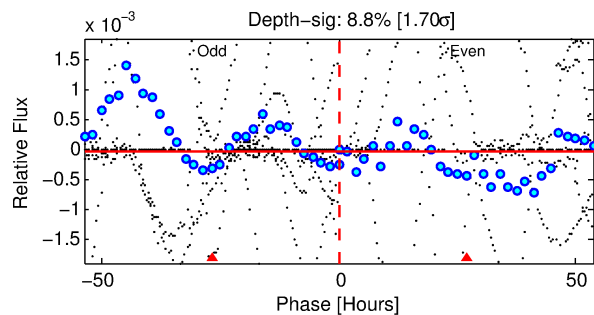
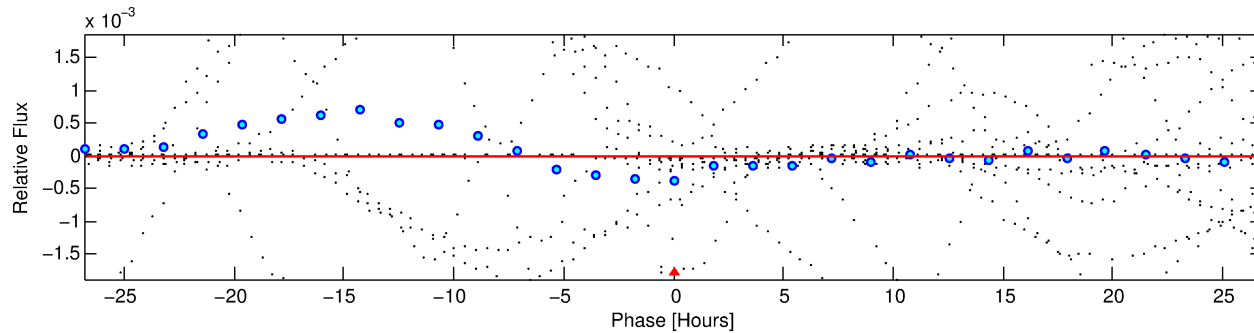
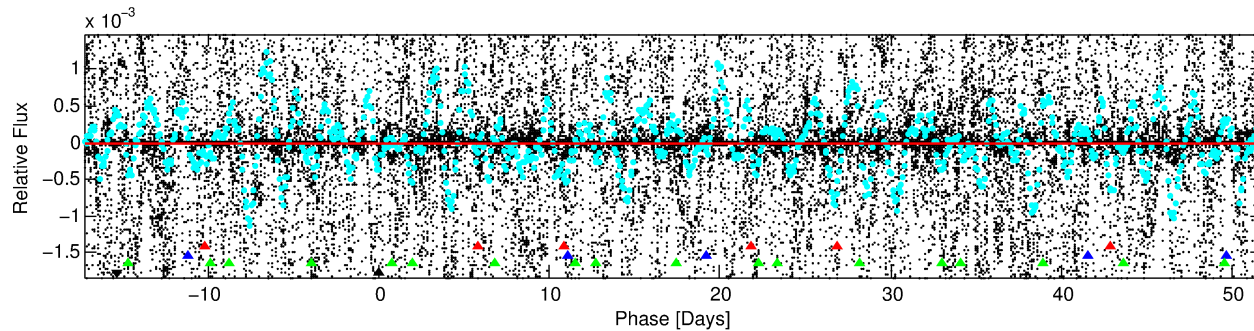
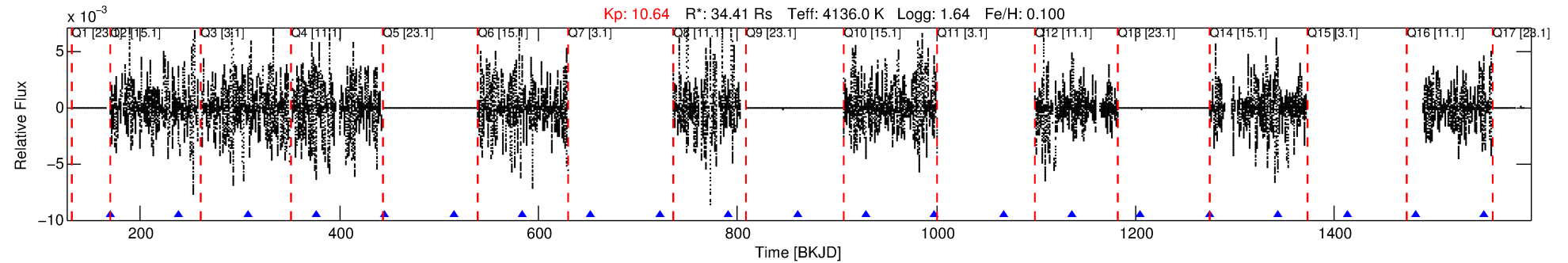
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009845323-04

No Significant Match Found

DV One-Page Summary

KIC: 9845323 Candidate: 4 of 4 Period: 69.045 d



DV Fit Results:

Period = 69.04492 [0.00133] d
Epoch = 169.6684 [0.0125] BKJD
Rp/R* = 0.0051 [0.0017]
a/R* = 26.46 [28.88]
b = 0.90 [0.24]
Seff = 1885.88 [344.03]
Teff = 1680 [77] K
Rp = 19.04 [7.49] Re
a = 0.4057 [0.0585] AU
Ag = 3.14 [2.20] [0.97 σ]
Teffp = 3459 [599] K [2.94 σ]

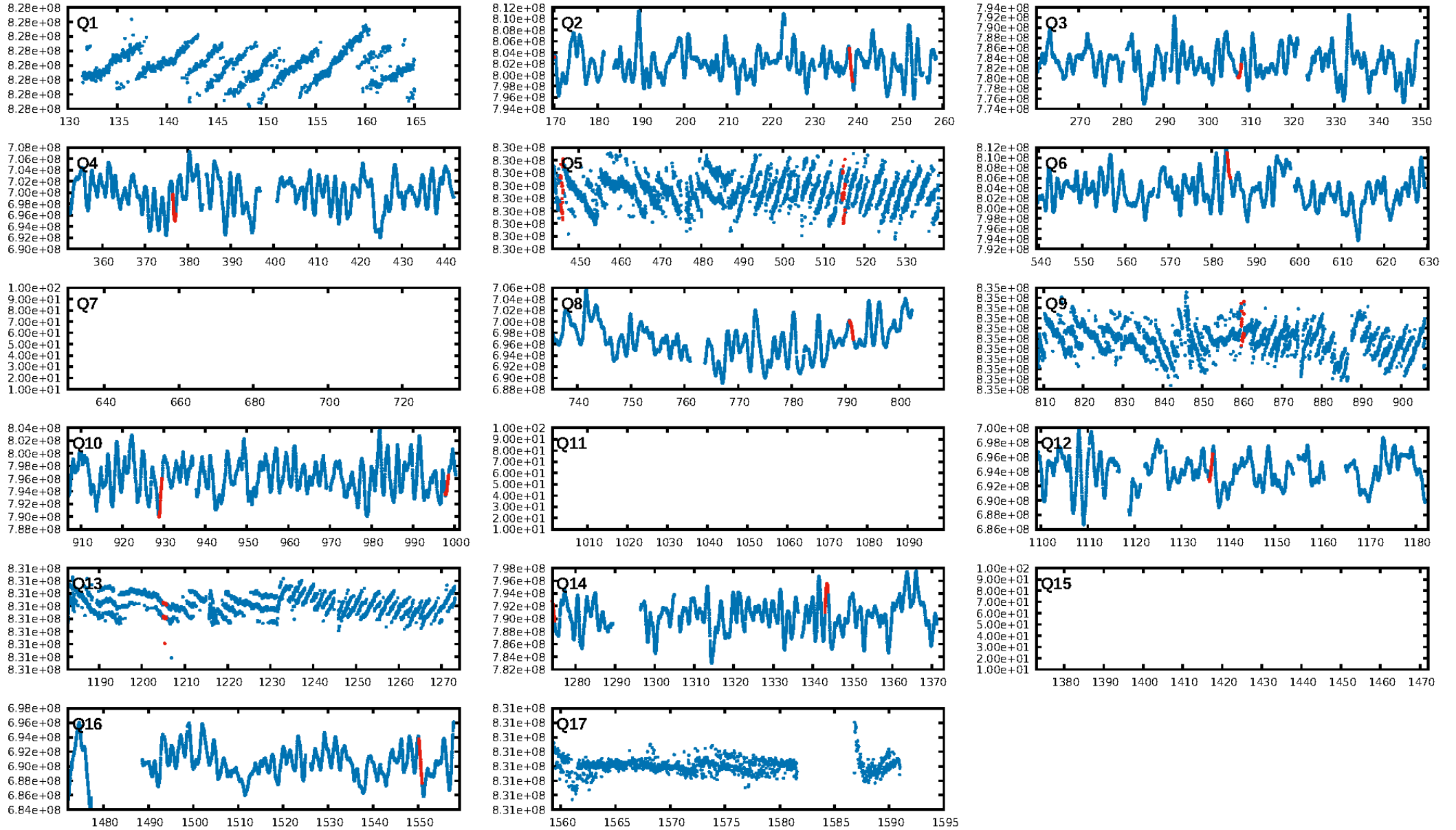
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [27.99 σ]
ModelChiSquare2-sig: 54.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.22e-07
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: -0.01051
Centroid-sig: 74.0%
Centroid-so: 2.191 arcsec [0.47 σ]
OotOffset-rm: 3.213 arcsec [3.90 σ]
KicOffset-rm: 2.591 arcsec [3.06 σ]
OotOffset-st: 4/1/4/2 [11]
KicOffset-st: 4/1/4/2 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 1.00 [11/11]

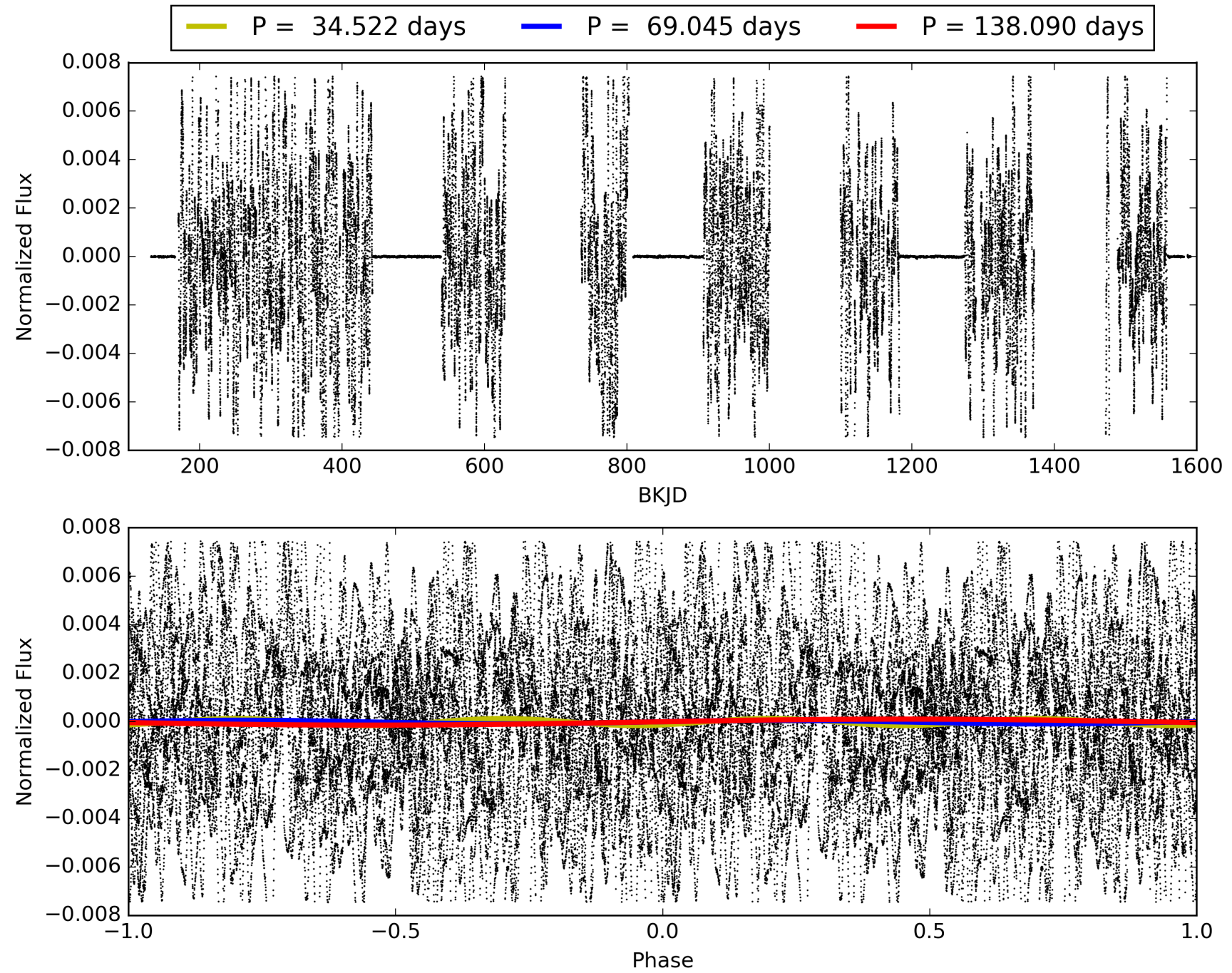
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:21:46 Z

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

TCE 009845323-04, PDC Light Curves

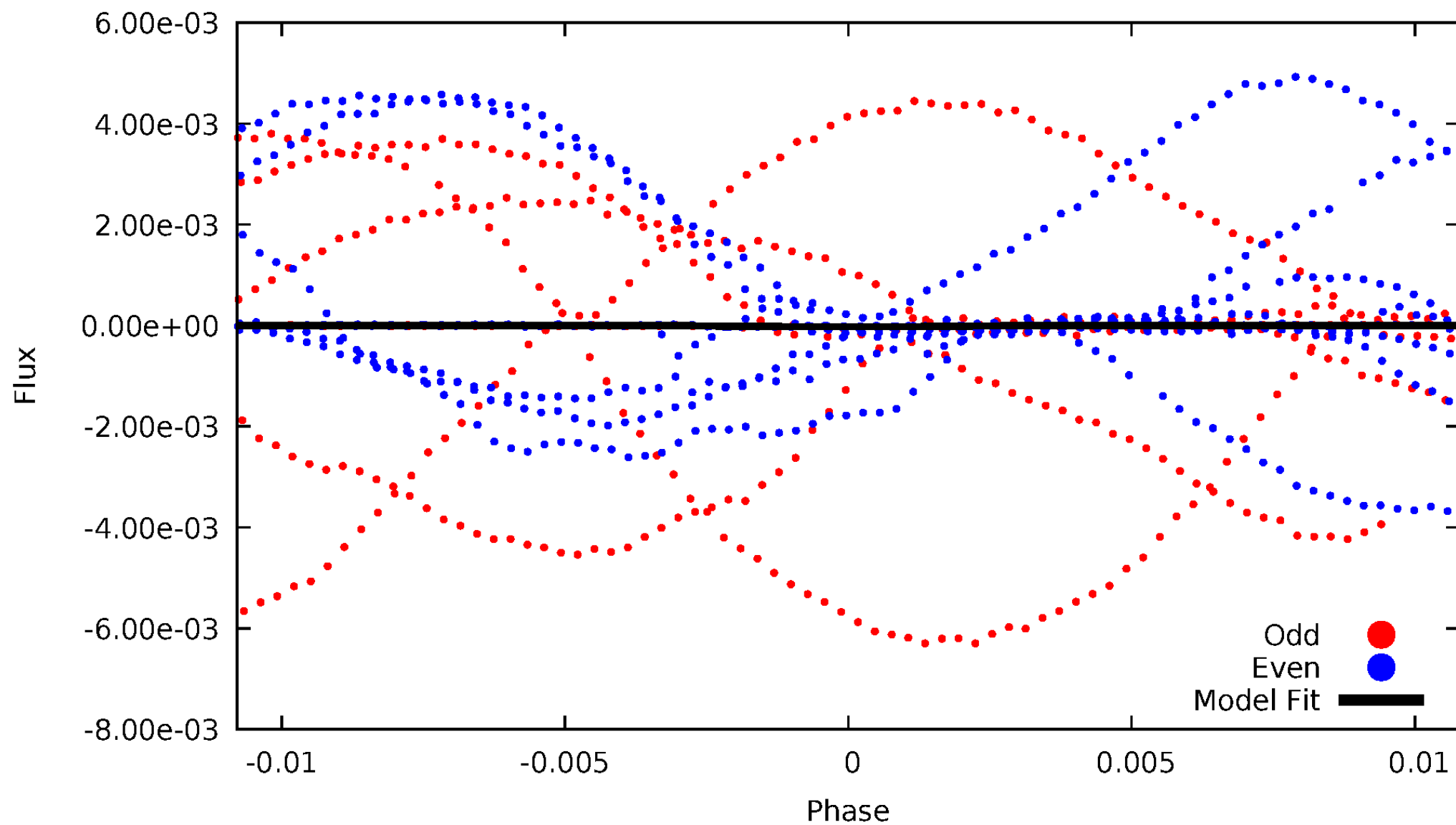


TCE 009845323-04



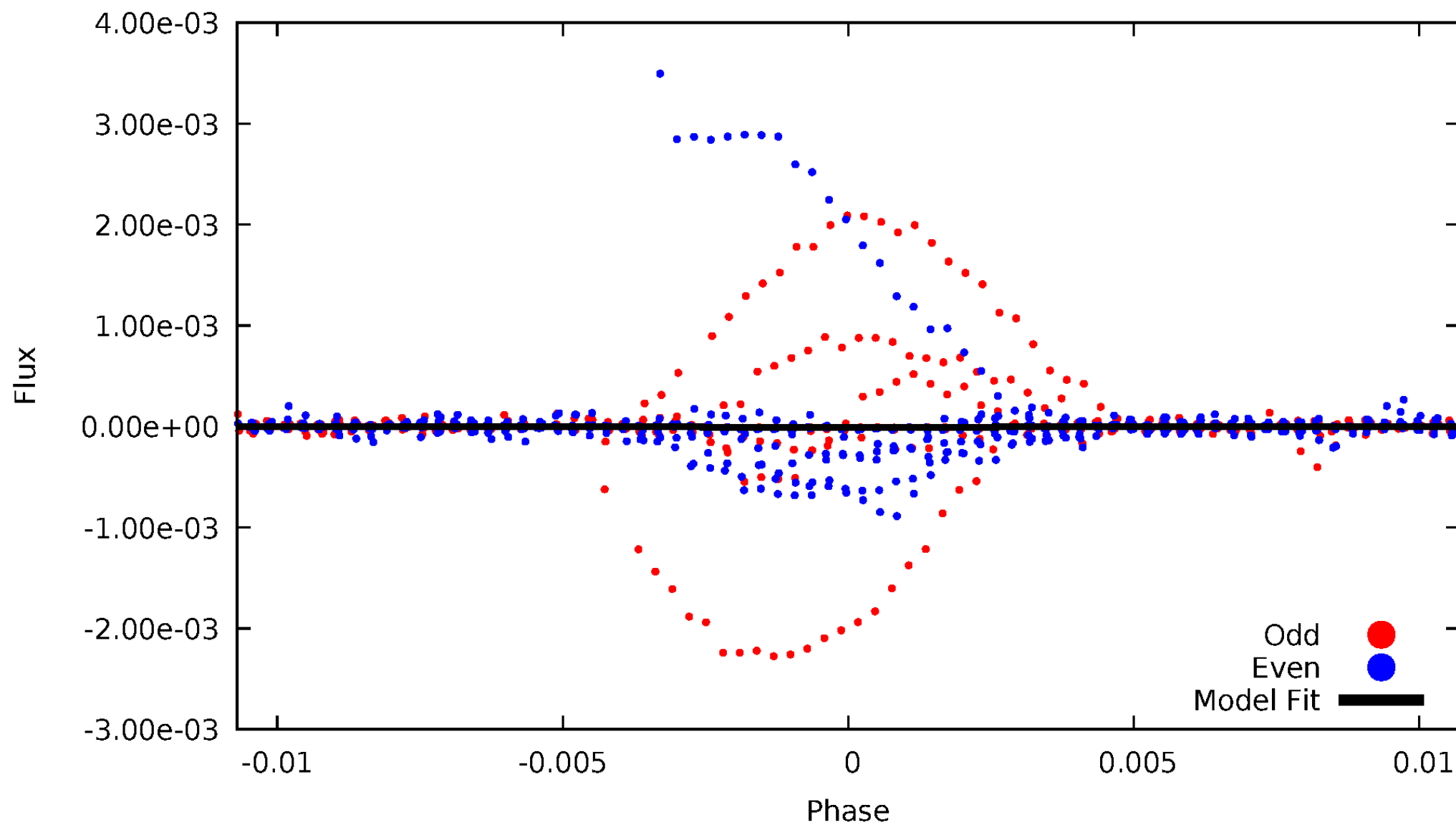
DV Odd/Even

TCE 009845323-04



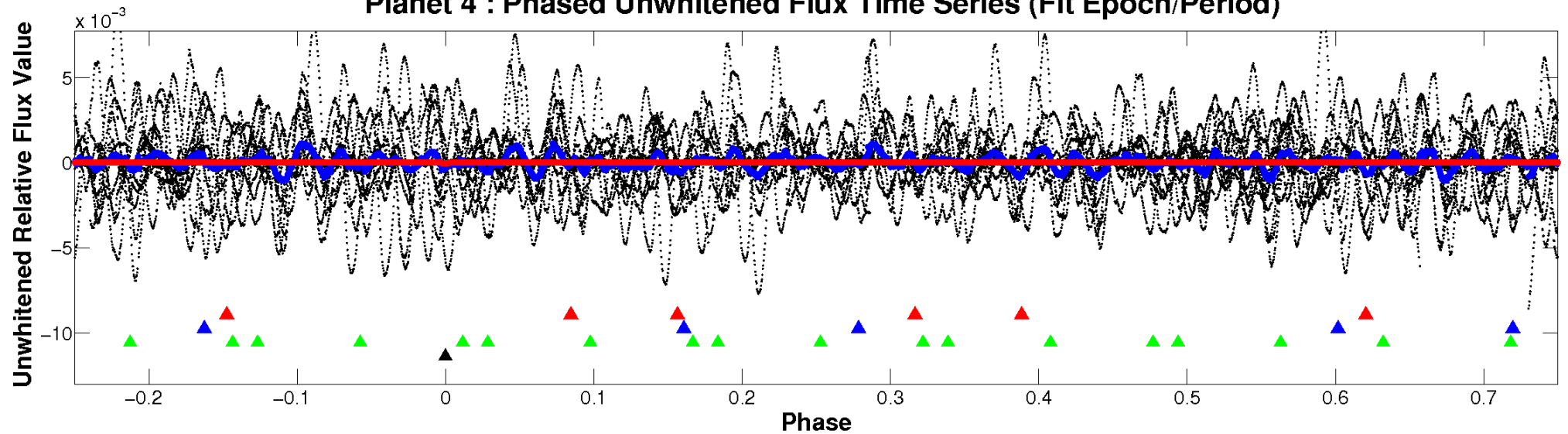
ALT Odd/Even

TCE 009845323-04

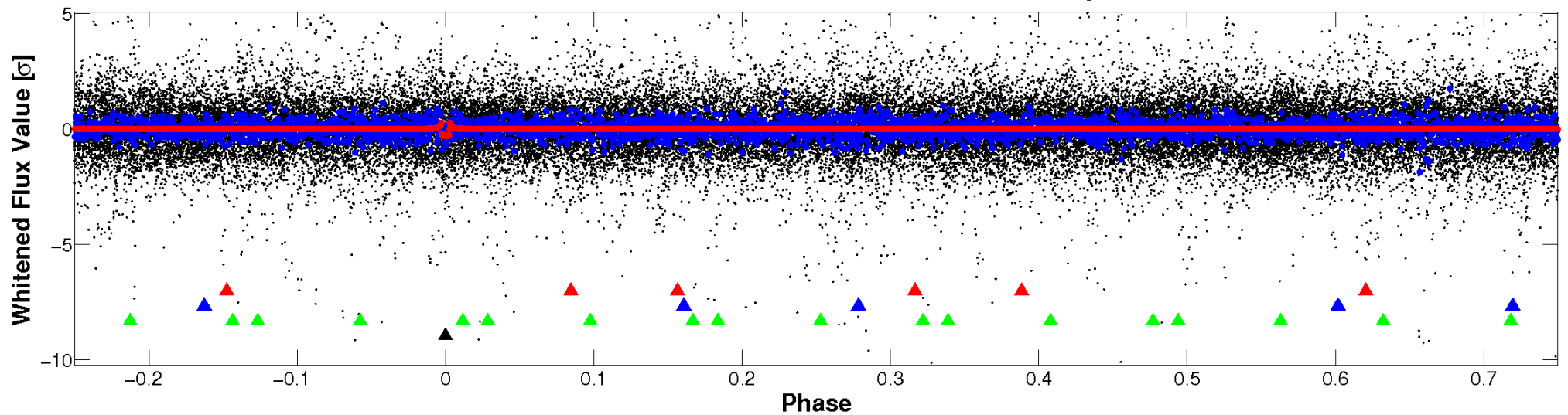


Non-Whitened Vs. Whitened Light Curve

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

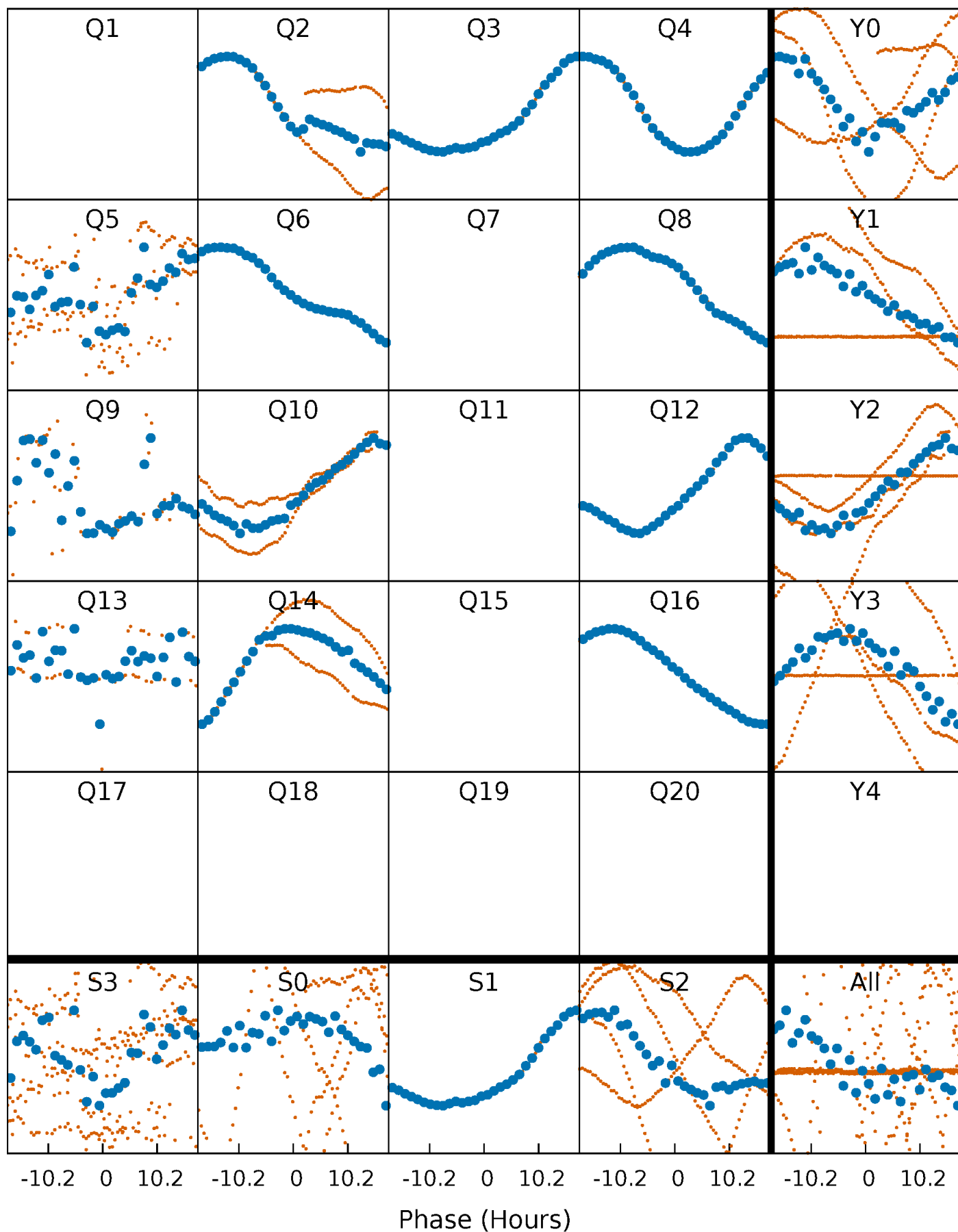


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



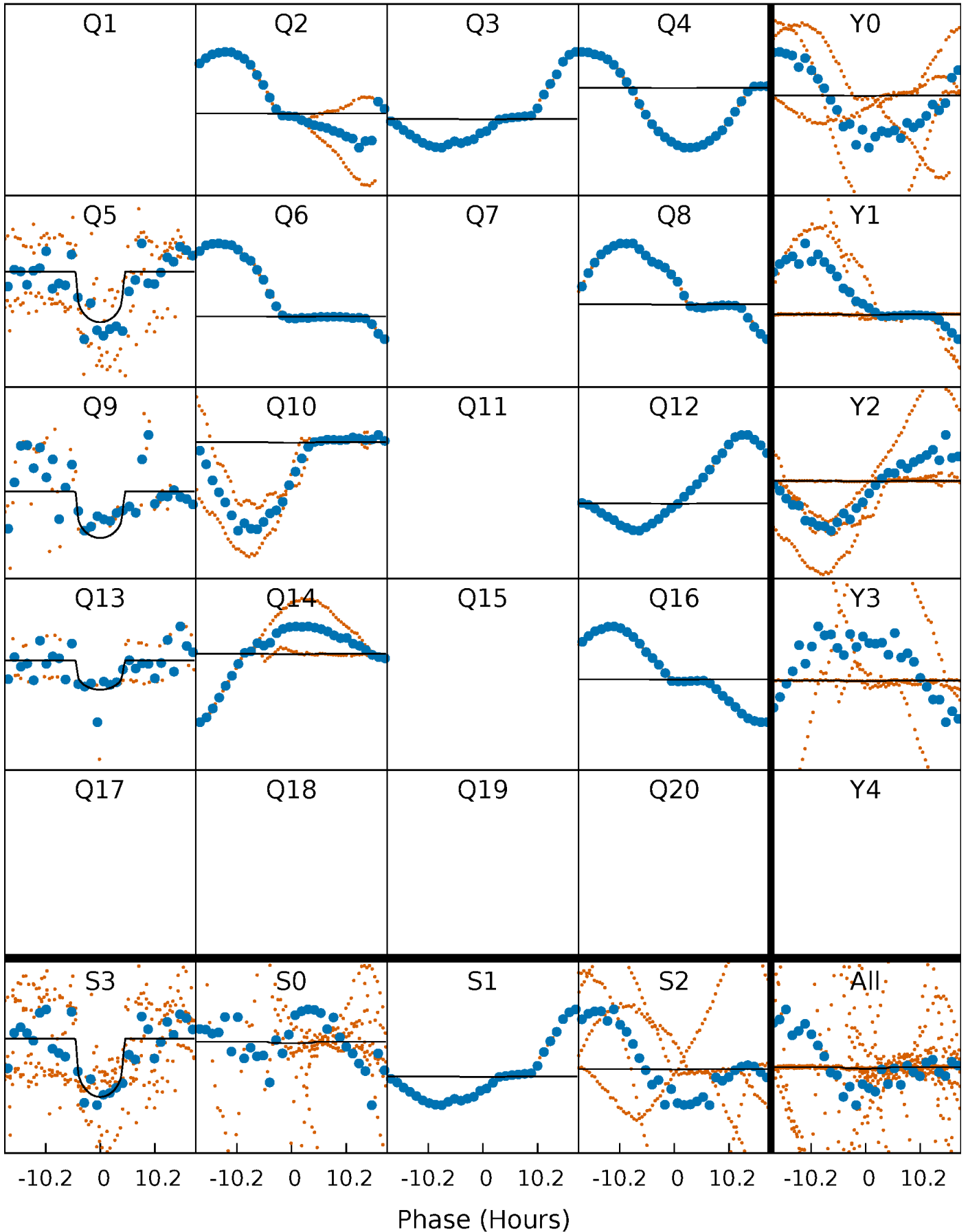
PDC Quarter-Phased Transit Curves

TCE 009845323-04 P= 69.044924 Days $T_0=169.668441$ (BKJD)



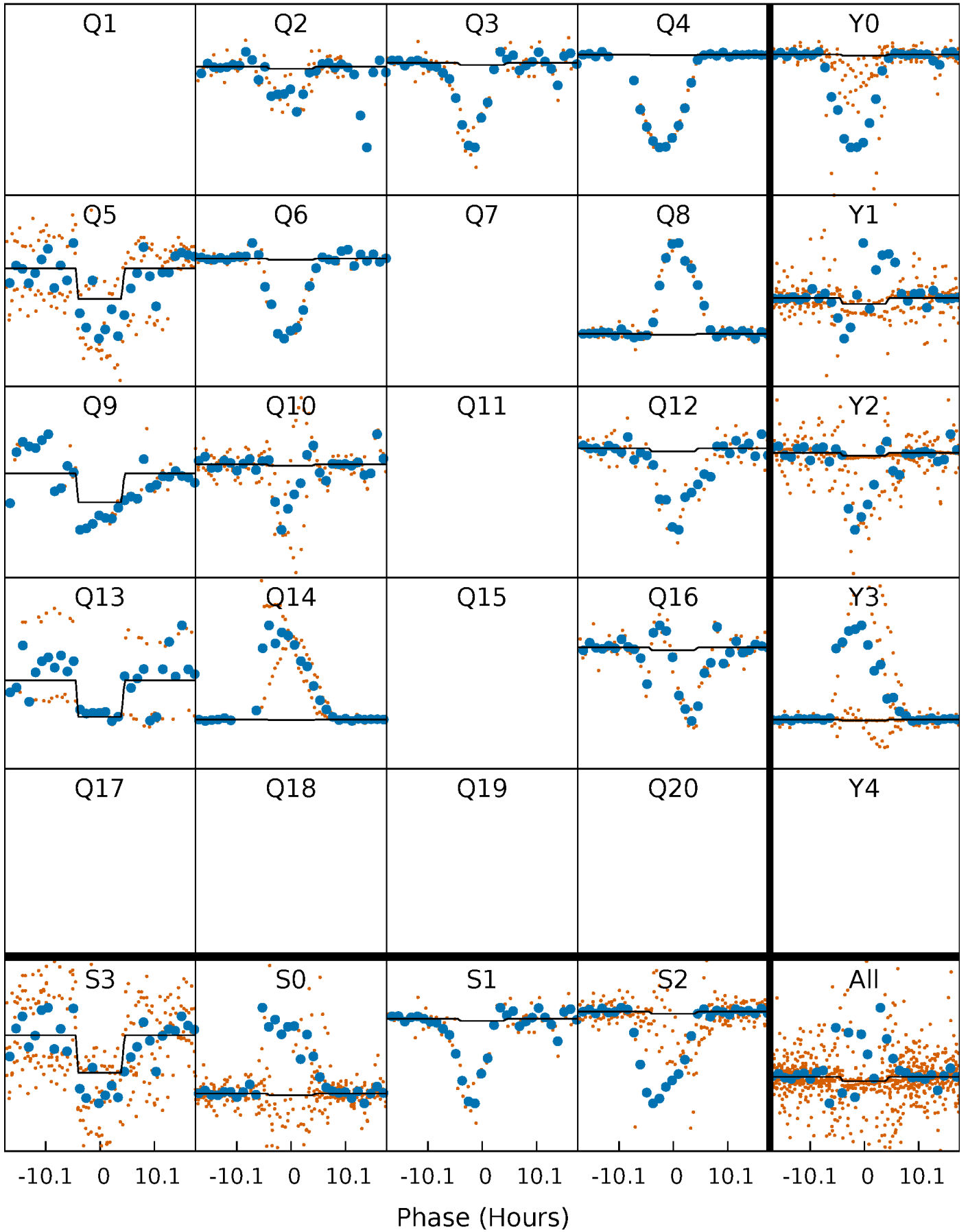
DV Quarter-Phased Transit Curves

TCE 009845323-04 P= 69.044924 Days $T_0=169.668441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

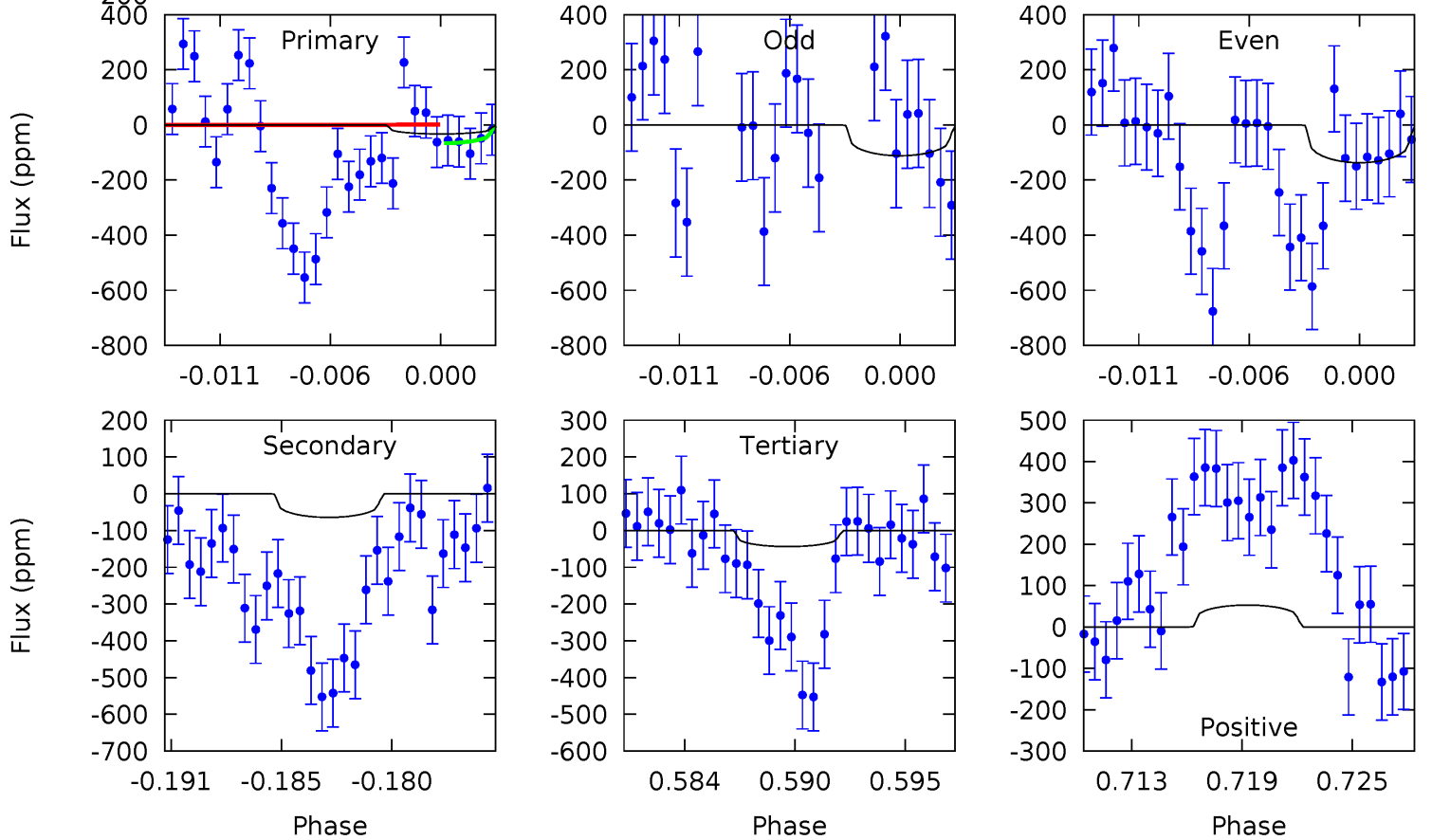
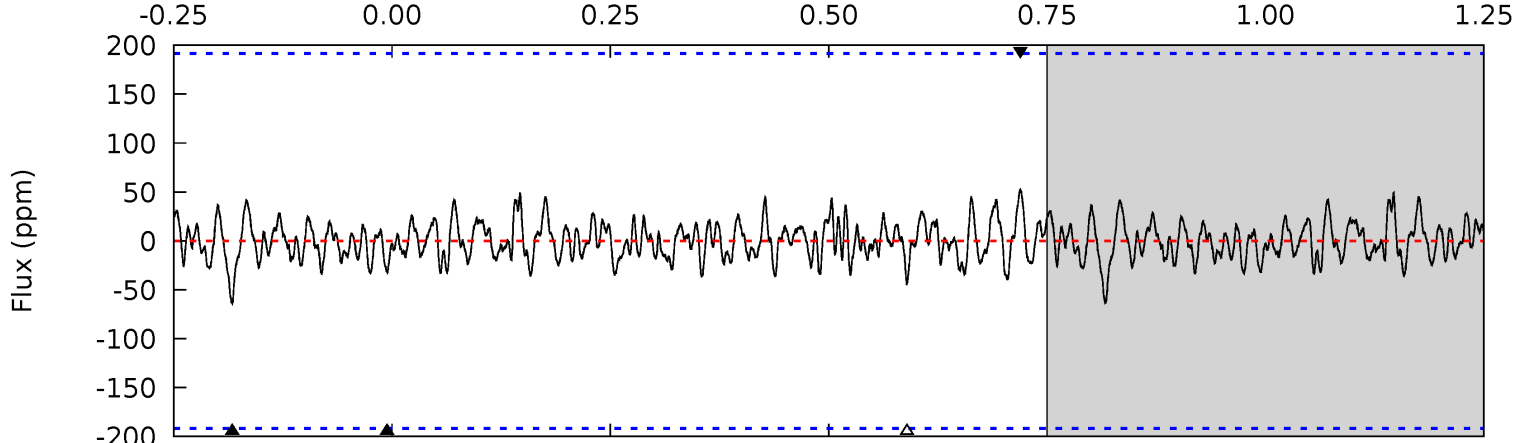
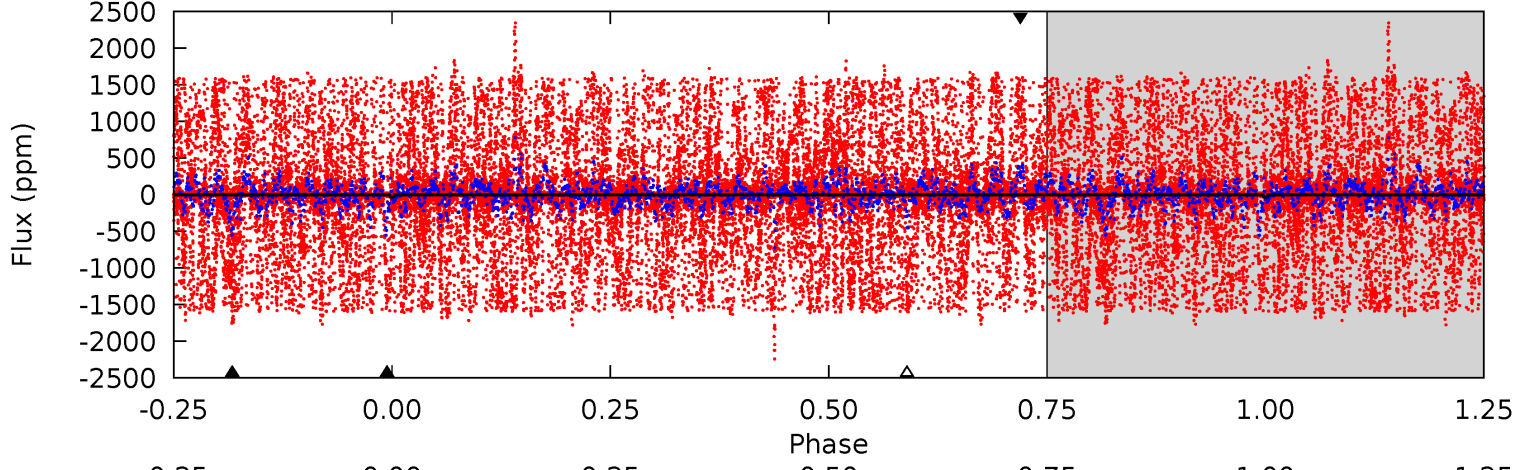
TCE 009845323-04 P= 69.044931 Days $T_0=169.668418$ (BKJD)



DV Model-Shift Uniqueness Test

009845323-04, P = 69.044924 Days, E = 100.623517 Days

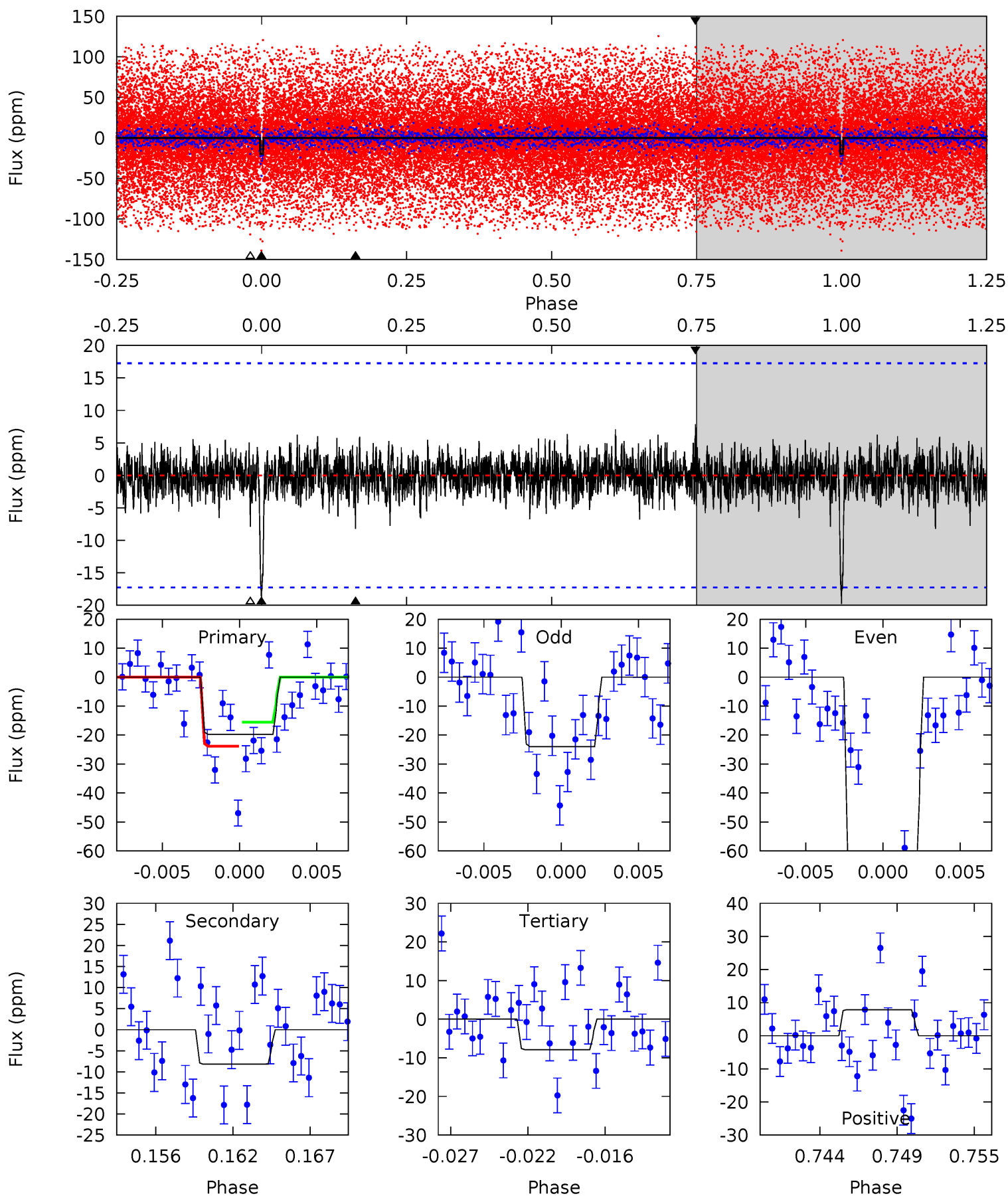
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.88	1.72	1.17	1.42	5.14	2.77	0.47	-0.29	-0.54	0.55	0.30	0.27	13.6	0.45	0



Alt Model-Shift Uniqueness Test

009845323-04, P = 69.044931 Days, E = 100.623487 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.89	2.44	2.35	2.35	5.14	2.78	0.60	3.54	3.54	0.09	0.09	6.75	-2.54	0.28	0



Stellar Parameters For KIC 009845323

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4136^{+83}_{-108}	$1.636^{+0.030}_{-0.030}$	$0.100^{+0.200}_{-0.200}$	$34.412^{+7.345}_{-7.345}$	$1.867^{+1.372}_{-0.686}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+200%/-200%	+21%/-21%	+73%/-37%	+30%/-10%
Source	PHO1	AST9	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009845323-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-64 ± 37	$19.01^{+7.04}_{-7.02}$	2347^{+87}_{-88}	4873^{+1118}_{-946}	15^{+24}_{-10}
Alt.	-8 ± 3	$12.90^{+6.48}_{-6.54}$	2350^{+90}_{-90}	3853^{+1163}_{-618}	$4.469^{+13.549}_{-2.731}$

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 $A_{obs} \gg 1.0$

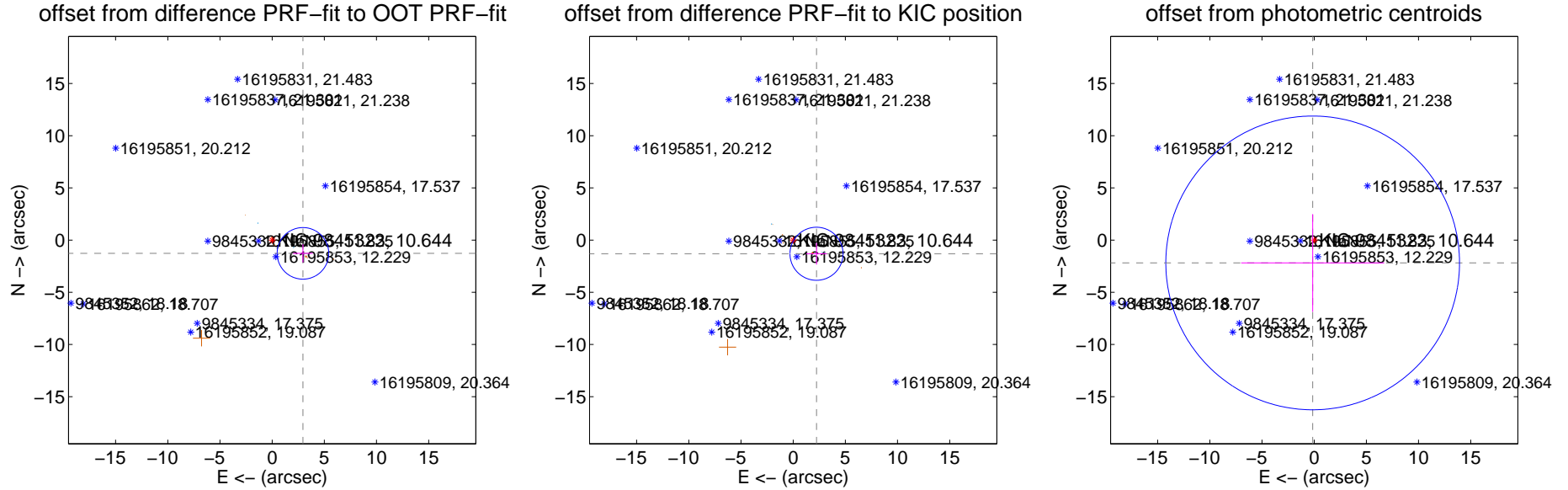
DV Centroid Data

Supplemental centroid analysis for 009845323-04. **Kepler magnitude: 10.64.** Transit SNR 8.85

There are 3 quarters with good PRF difference image offsets

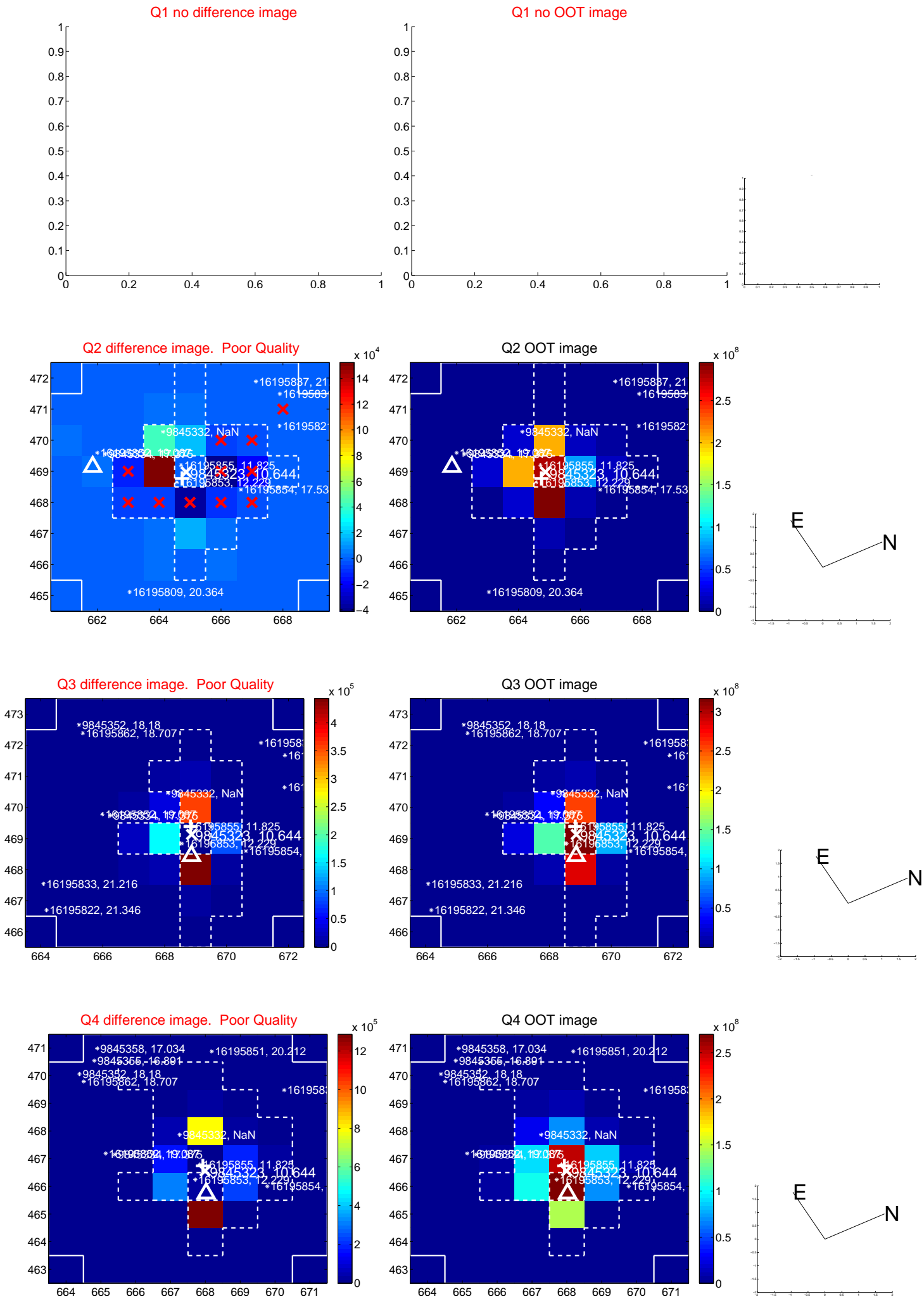
The direct PRF centroid is offset from the target star catalog position by about 1.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.213 ± 0.824	3.90	-2.951 ± 0.946	-1.271 ± 0.870
PRF-fit source offset from KIC position	2.591 ± 0.847	3.06	-2.236 ± 0.980	-1.310 ± 1.040
photometric centroid source offset	2.19 ± 4.69	0.47	0.15 ± 6.85	-2.19 ± 4.68

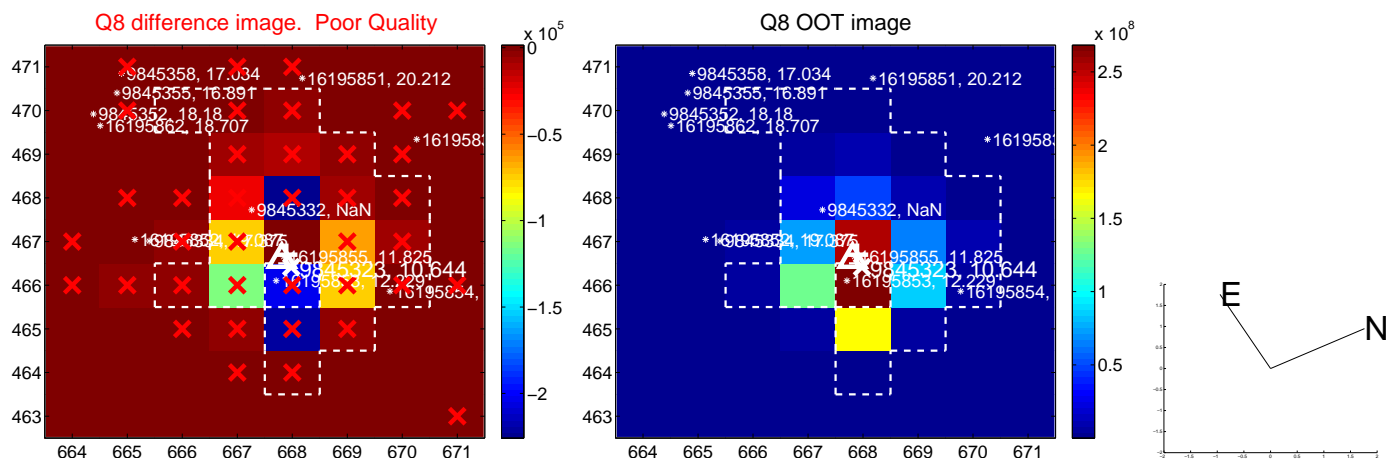
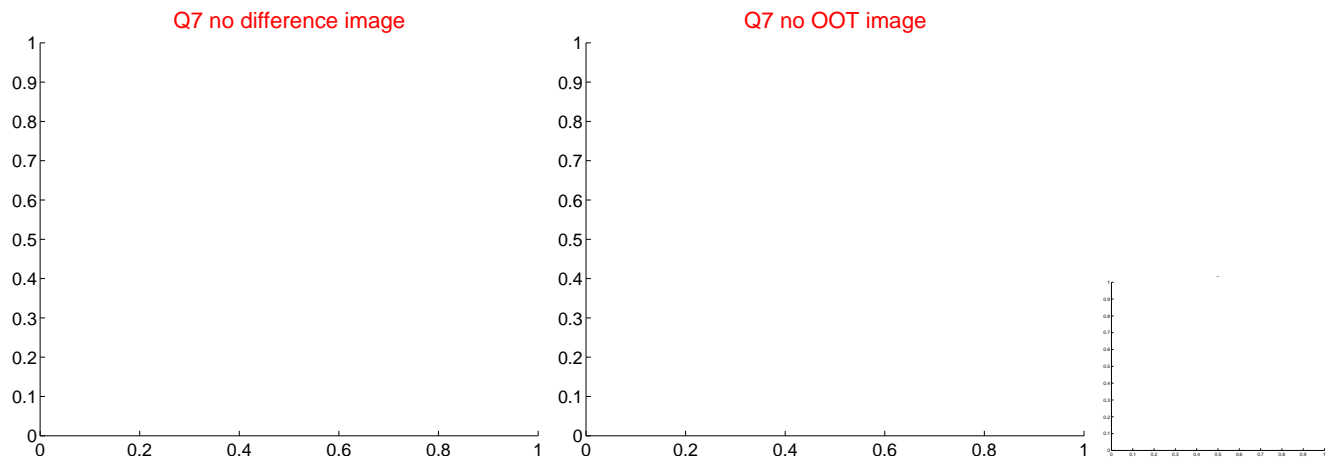
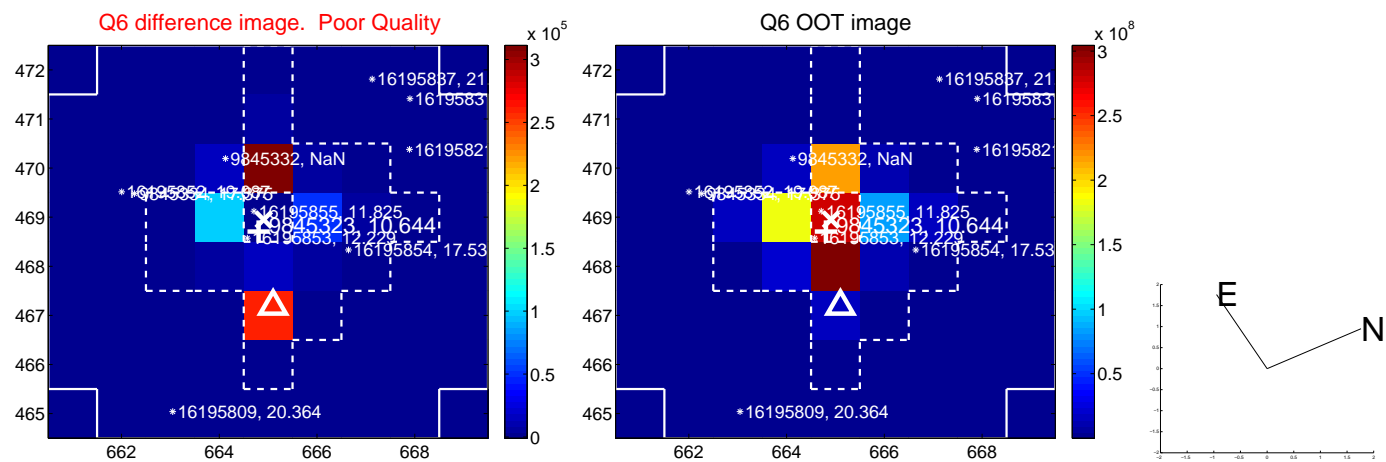
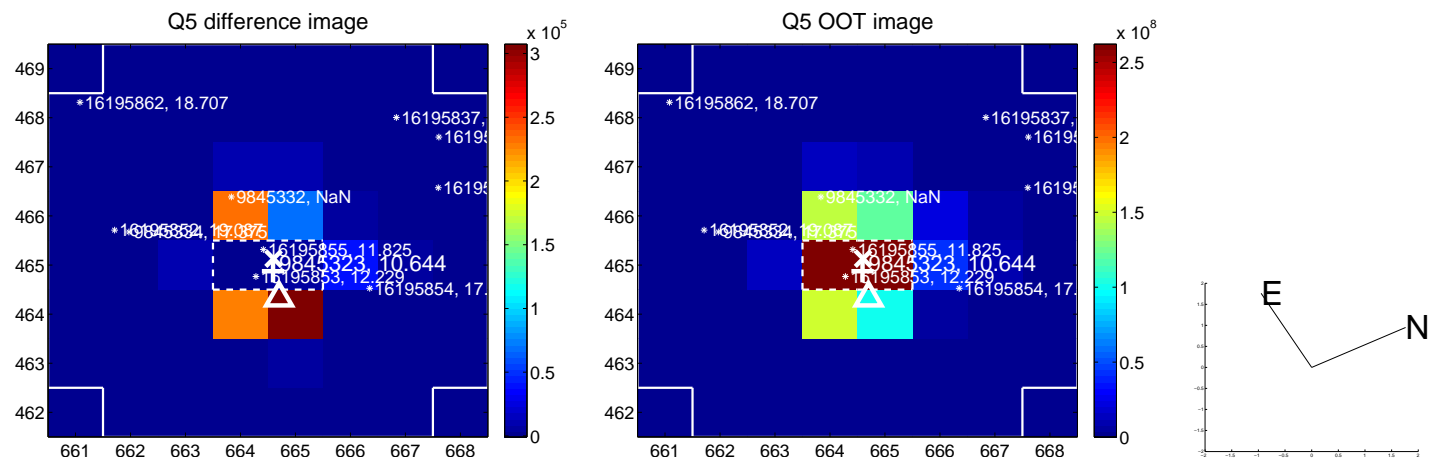


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

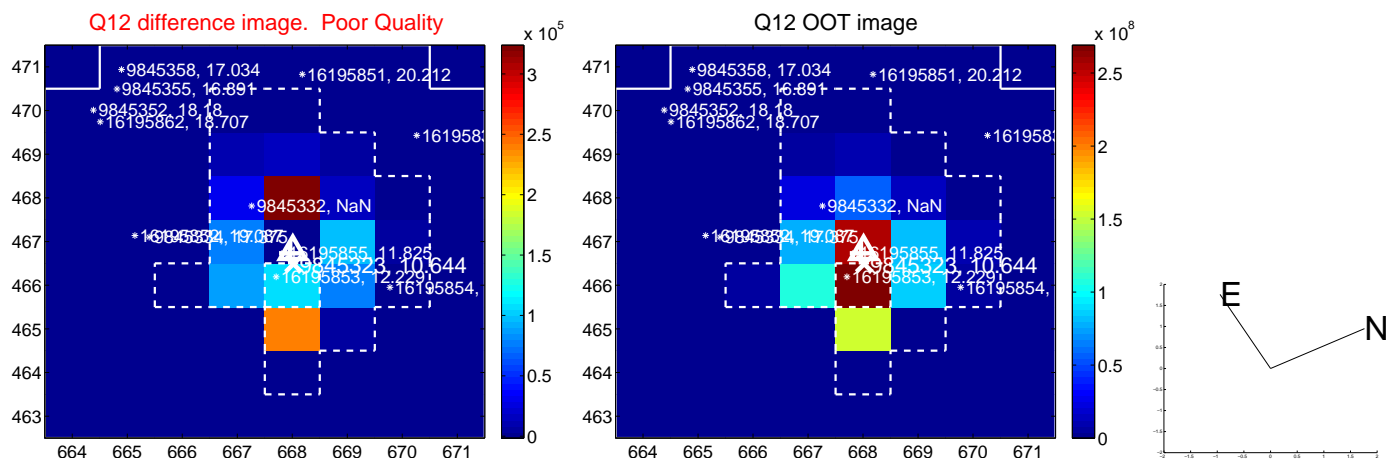
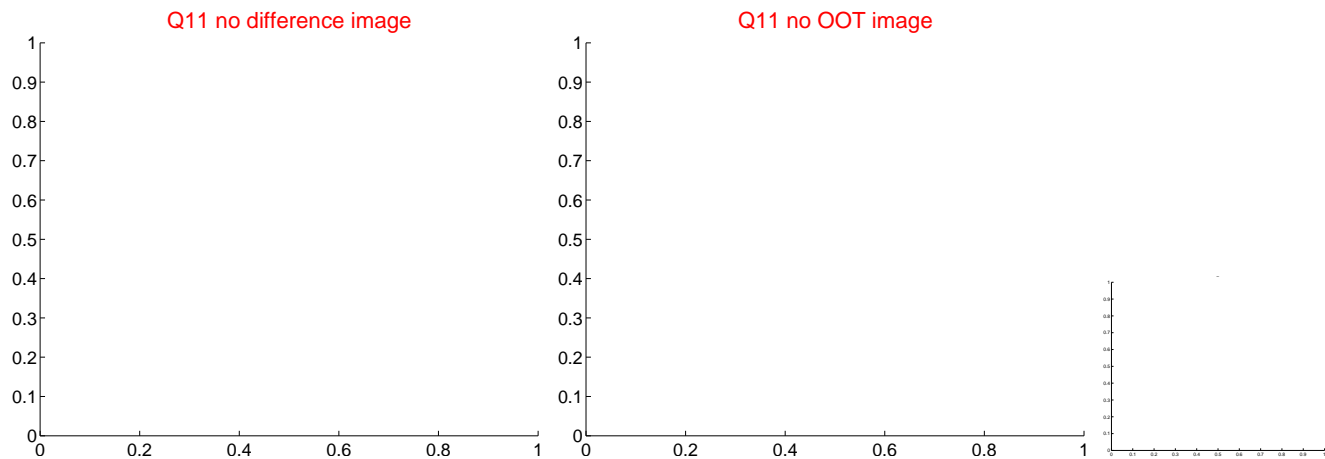
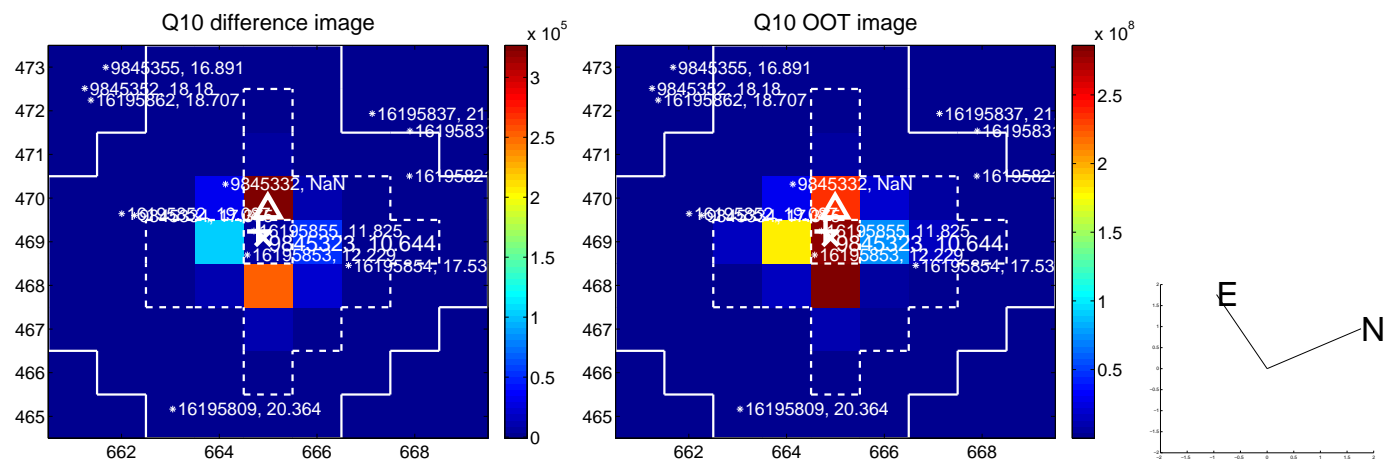
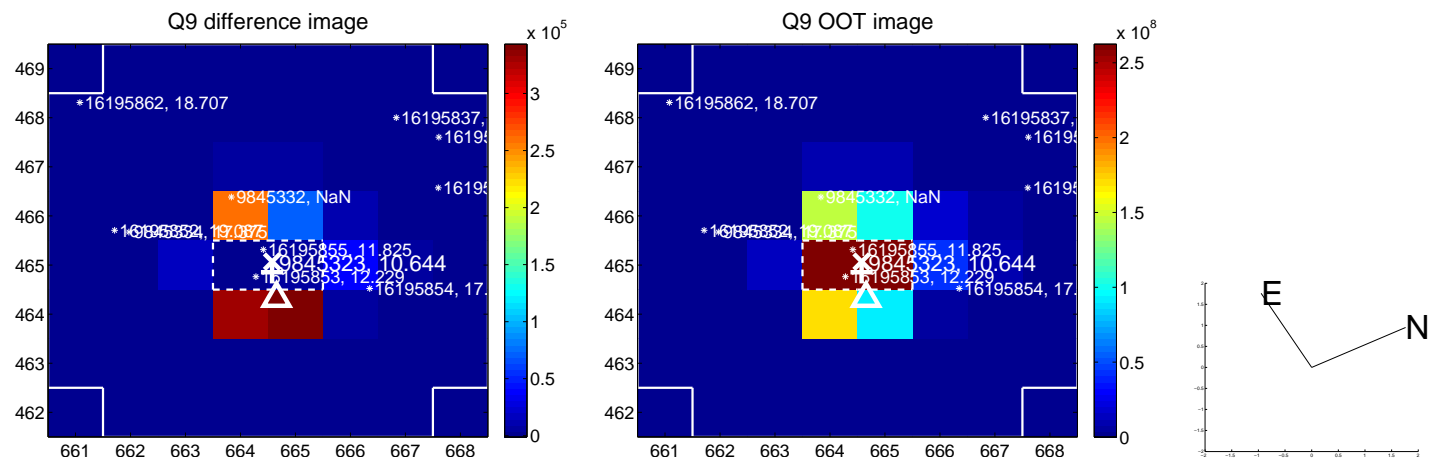
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



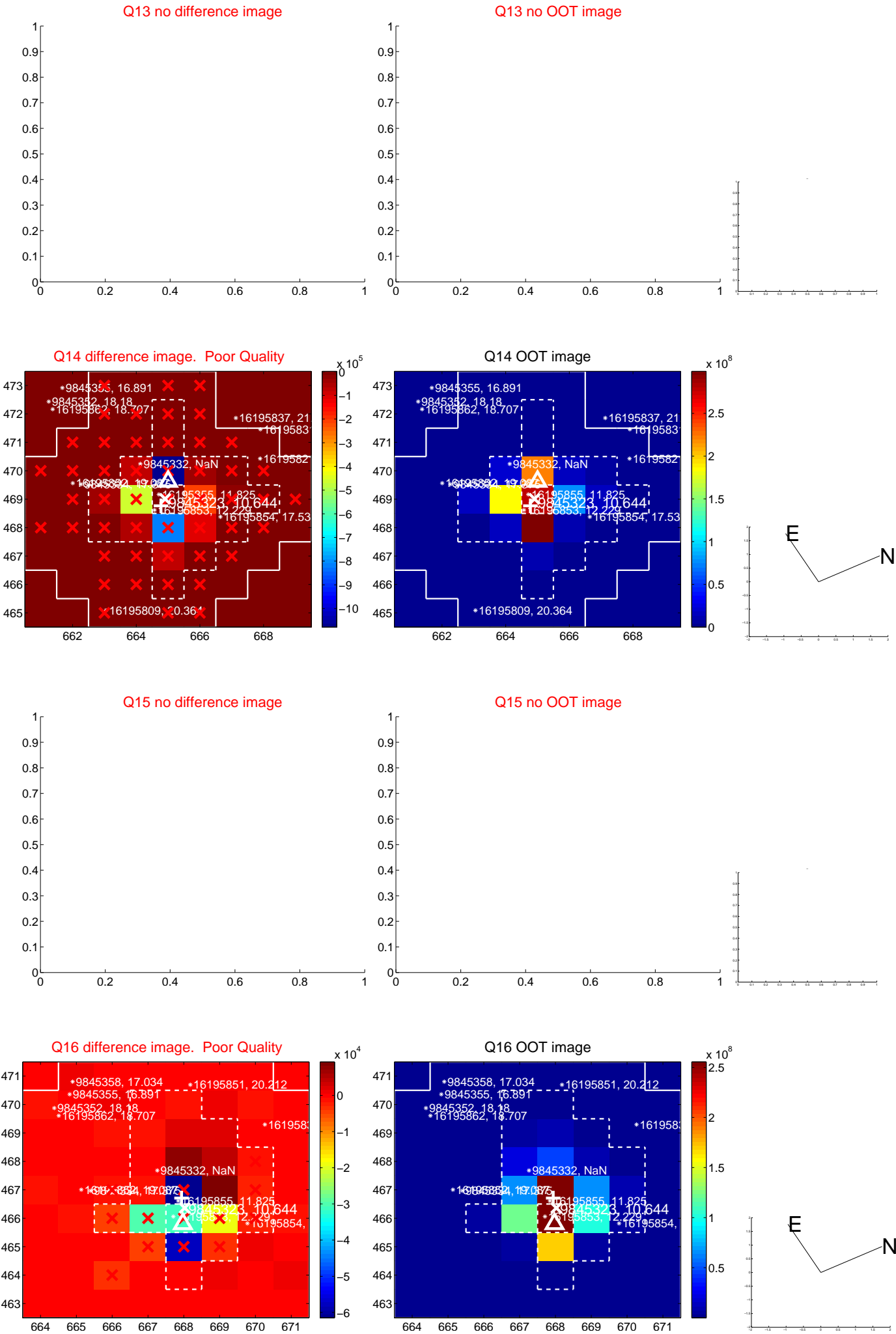
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



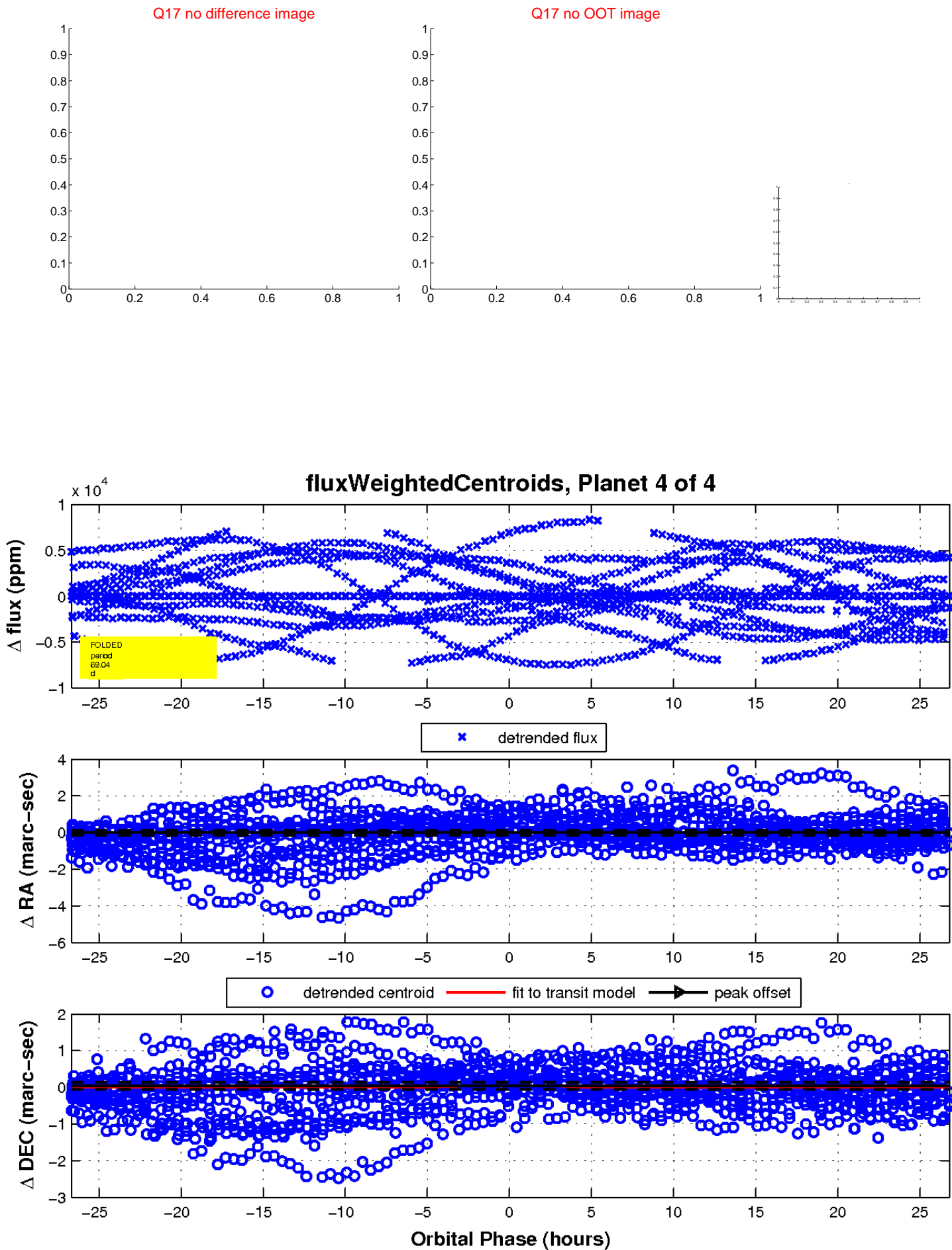
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

