

KIC 007904418

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})
007904418-02	OBS	No	632.672713	195.935062	424.5	18.992	8.3	20.0	85.38	3723	178.54	431.65
007904418-03	OBS	No	206.480610	333.442813	65.0	2.758	8.3	8.7	85.38	3723	94.02	1921.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007904418-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
007904418-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

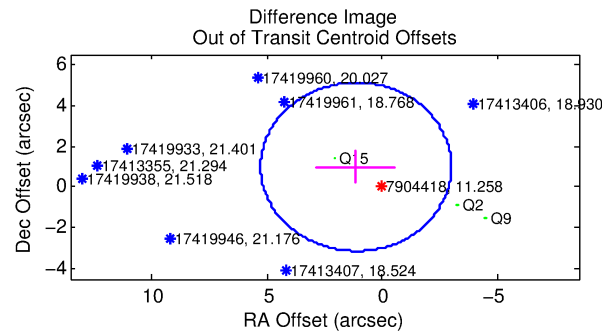
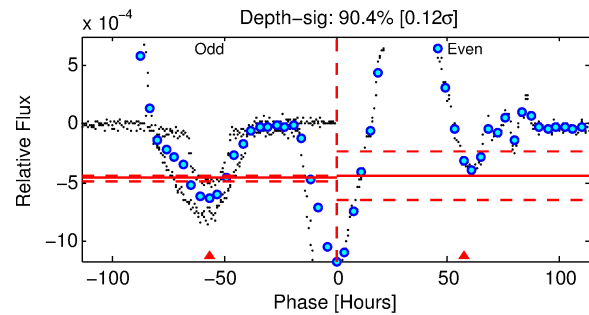
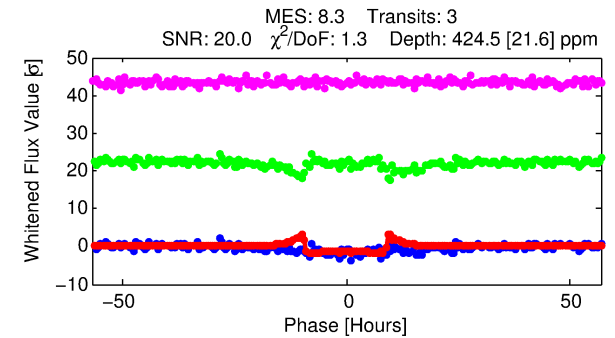
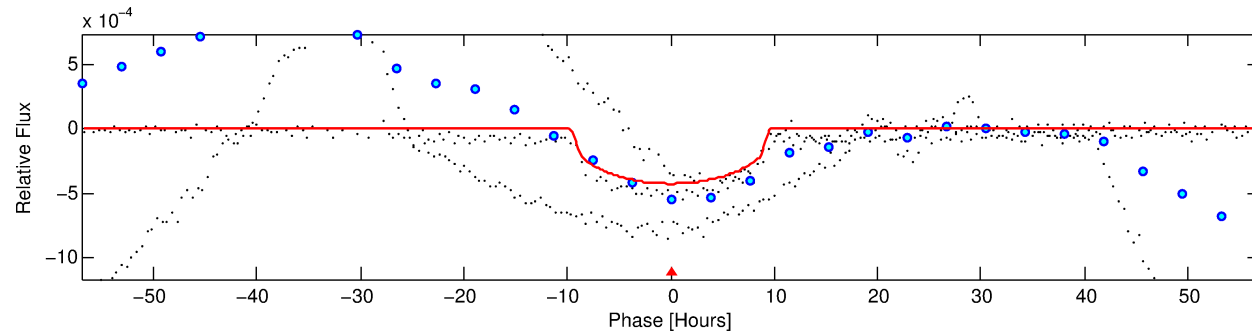
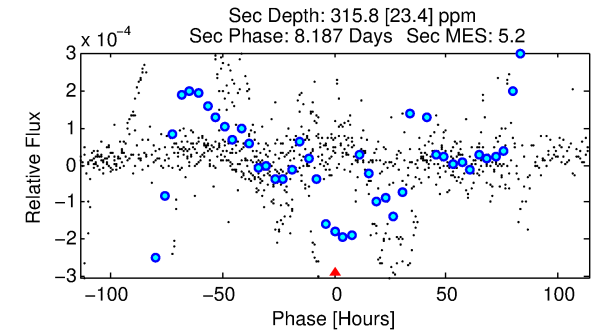
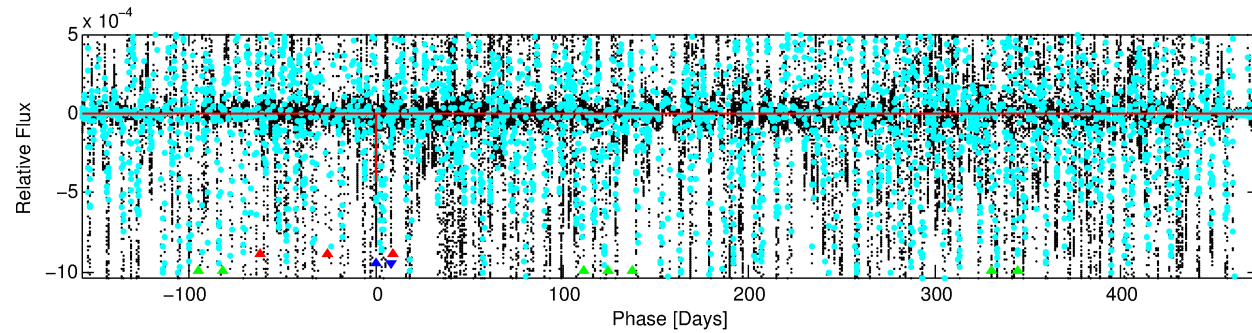
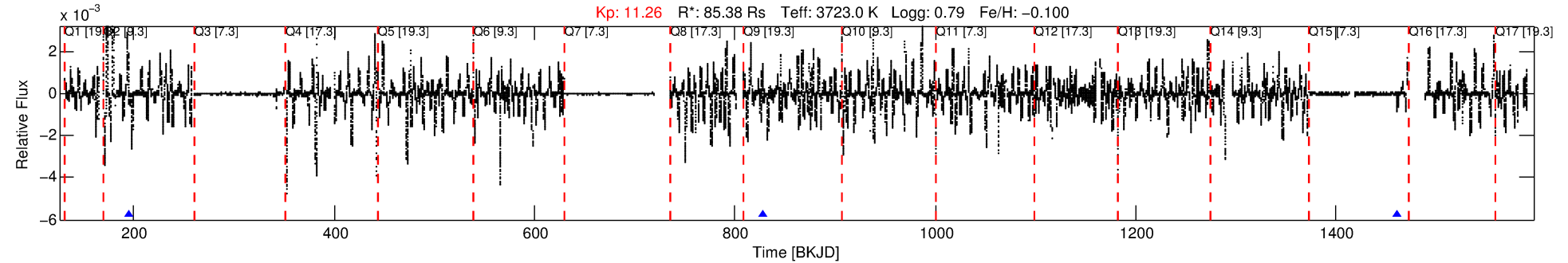
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007904418-02

No Significant Match Found

DV One-Page Summary

KIC: 7904418 Candidate: 2 of 3 Period: 632.673 d



DV Fit Results:

Period = 632.67271 [0.00302] d
Epoch = 195.9351 [0.0050] BKJD
Rp/R* = 0.0192 [0.0018]
a/R* = 211.49 [49.40]
b = 0.59 [0.26]
Seff = 431.65 [73.67]
Teq = 1162 [50] K
Rp = 178.54 [37.06] Re
a = 1.7050 [0.2141] AU
Ag = 15.84 [3.82] [3.89 σ]
Teffp = 3585 [205] K [11.47 σ]

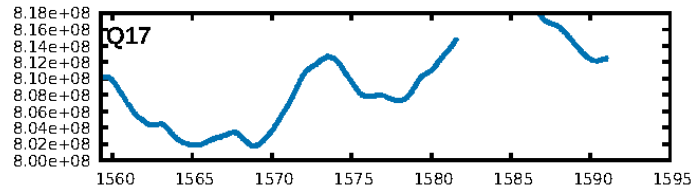
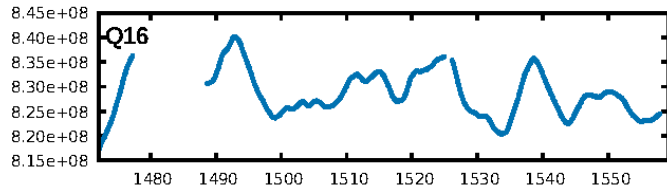
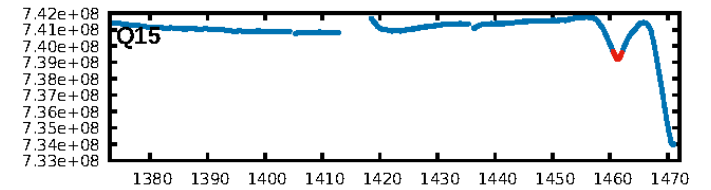
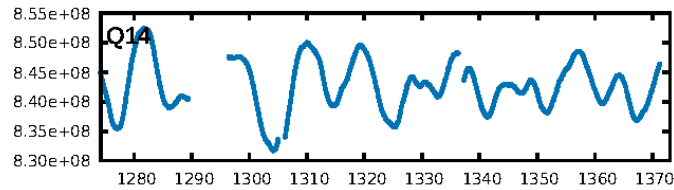
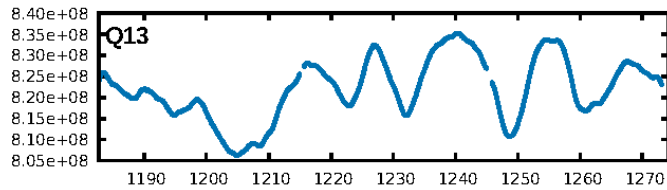
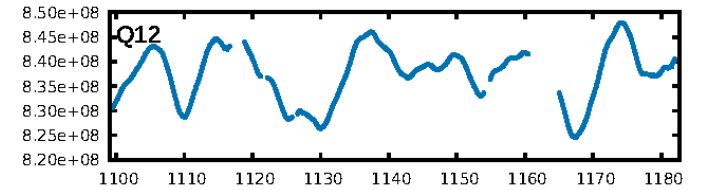
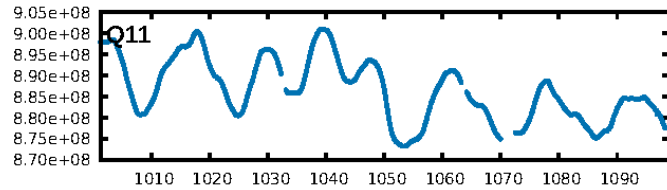
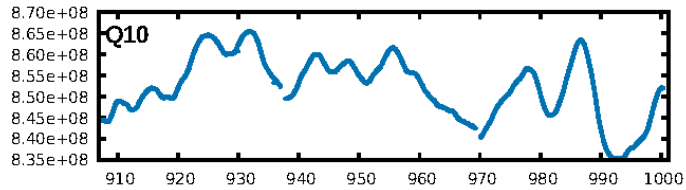
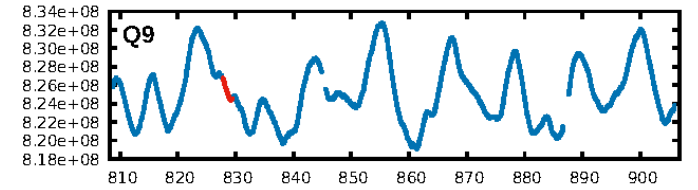
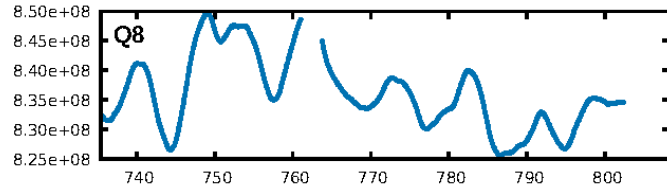
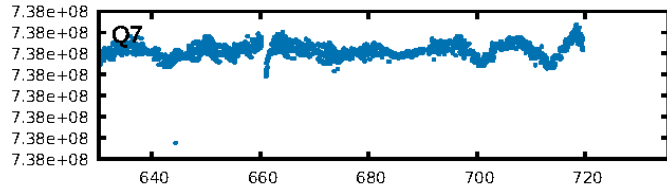
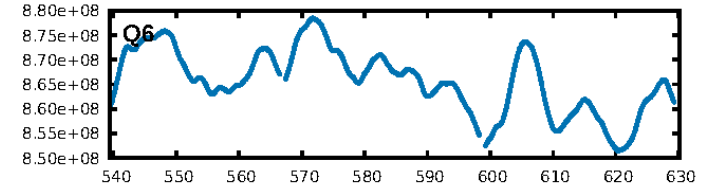
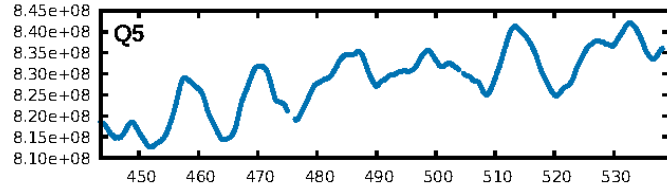
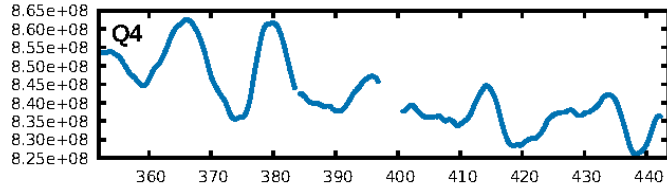
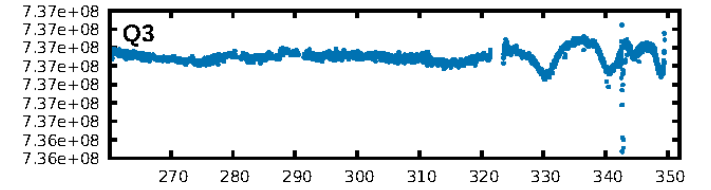
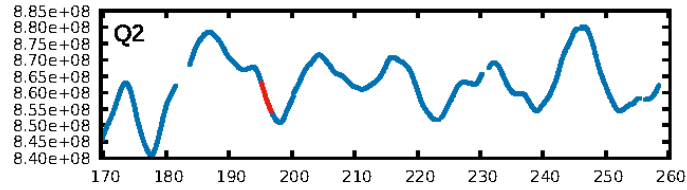
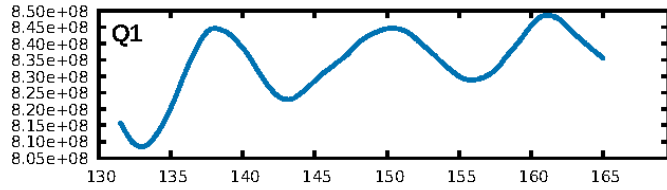
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [532.99 σ]
LongPeriod-sig: 100.0% [41.84 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 94.1%
Bootstrap-pfa: 1.97e-05
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.688
Centroid-sig: 42.4%
Centroid-so: 1.211 arcsec [0.64 σ]
OotOffset-rm: 1.512 arcsec [1.10 σ]
KicOffset-rm: 1.653 arcsec [1.02 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

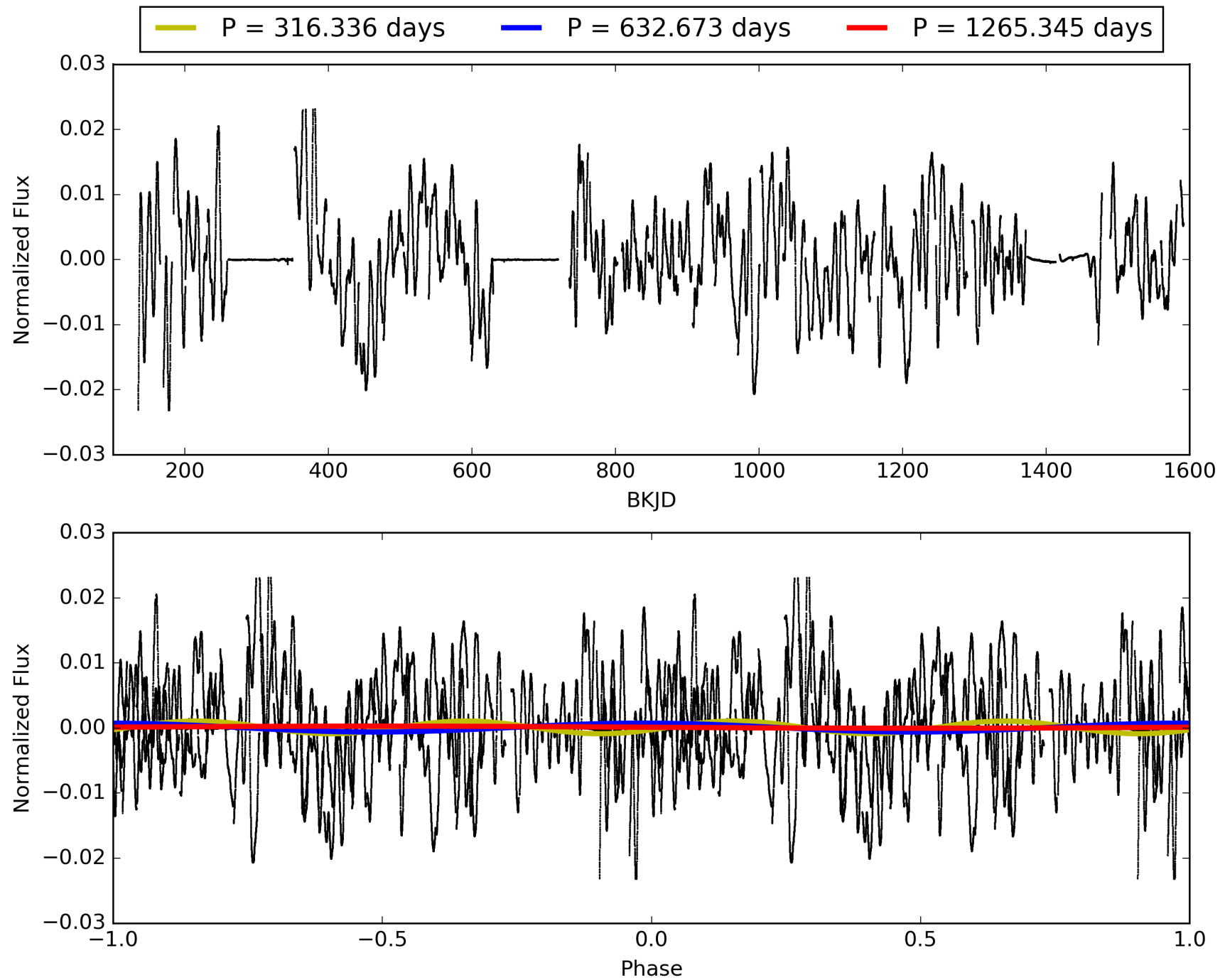
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:31:22 Z

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

TCE 007904418-02, PDC Light Curves

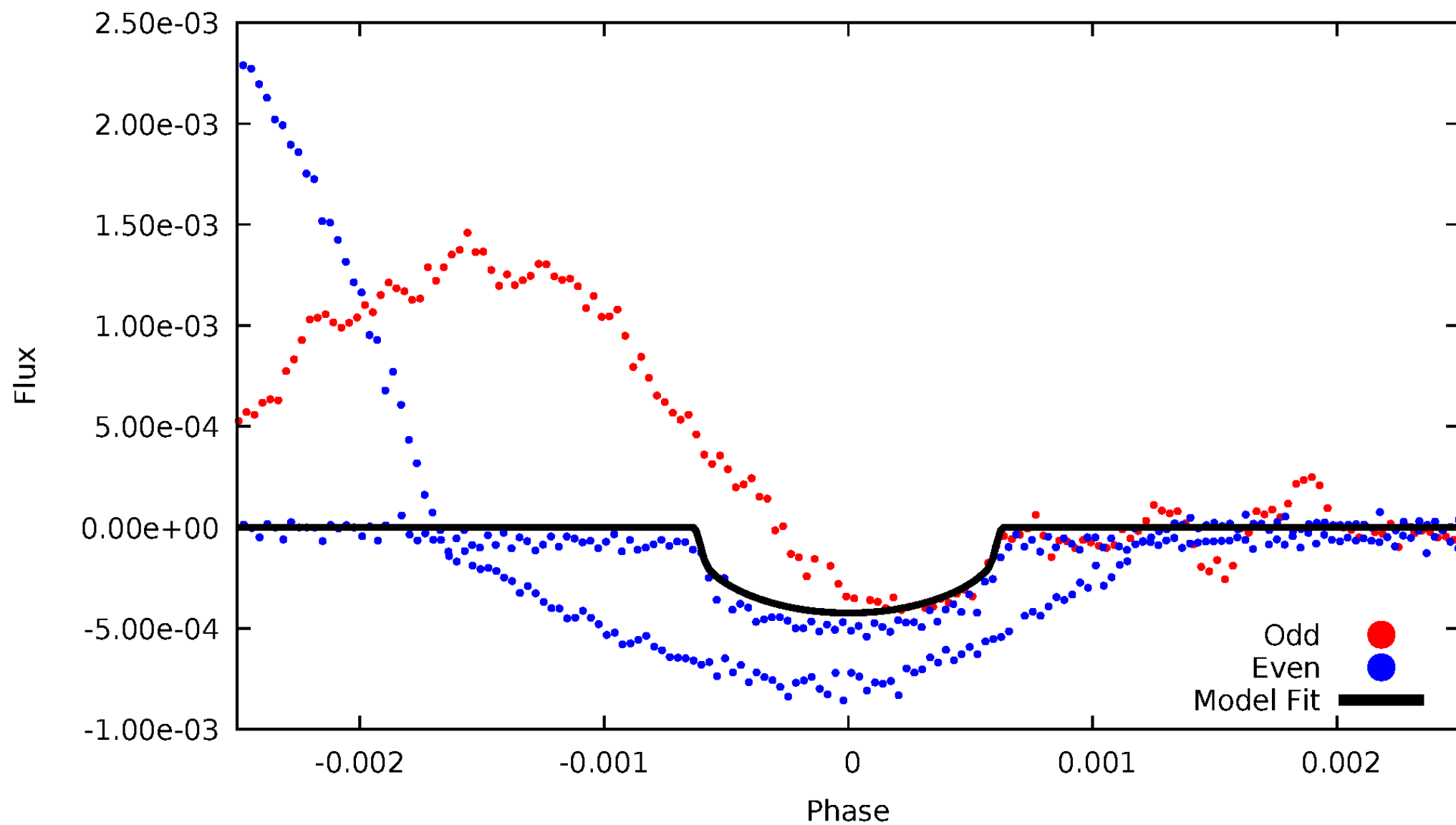


TCE 007904418-02



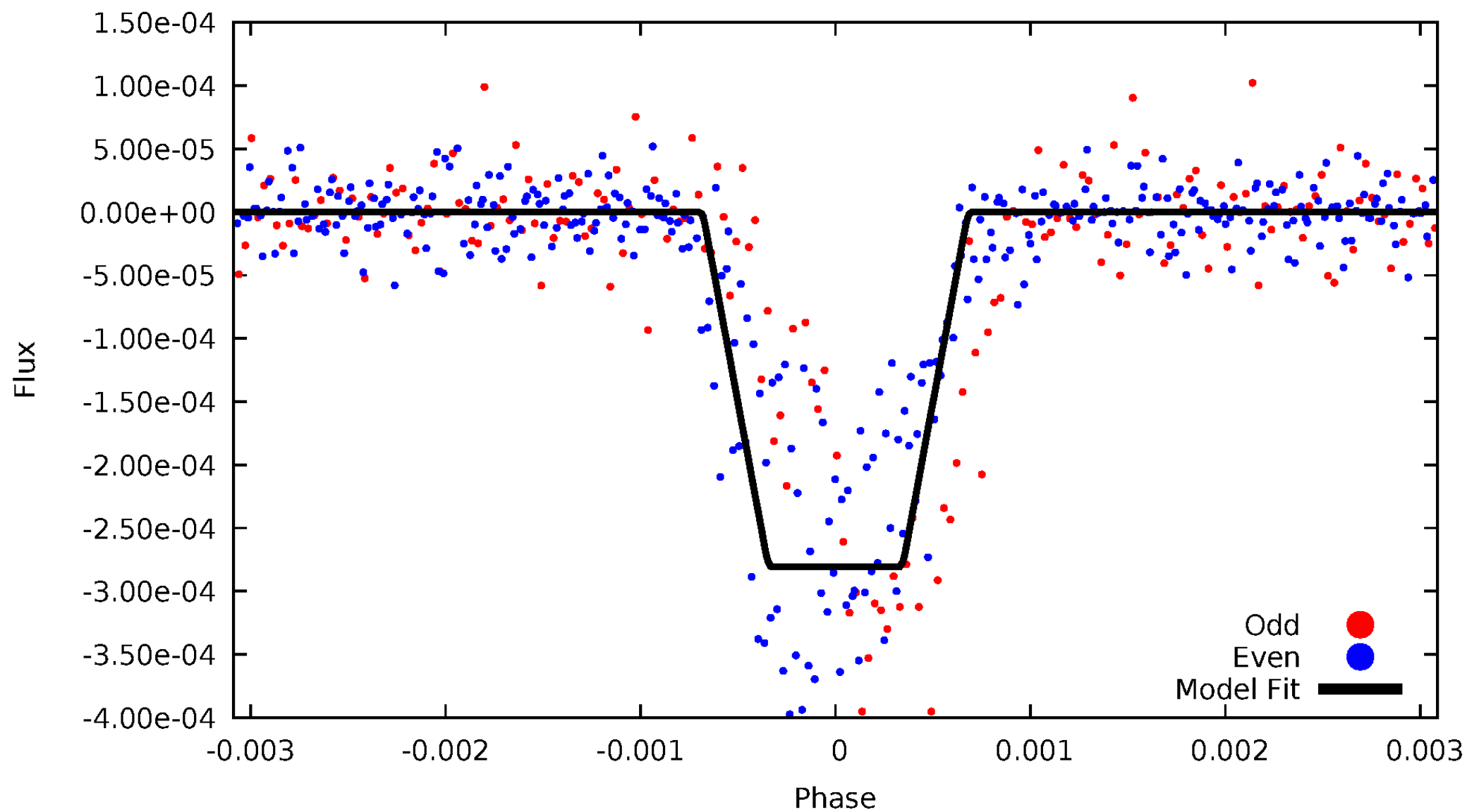
DV Odd/Even

TCE 007904418-02



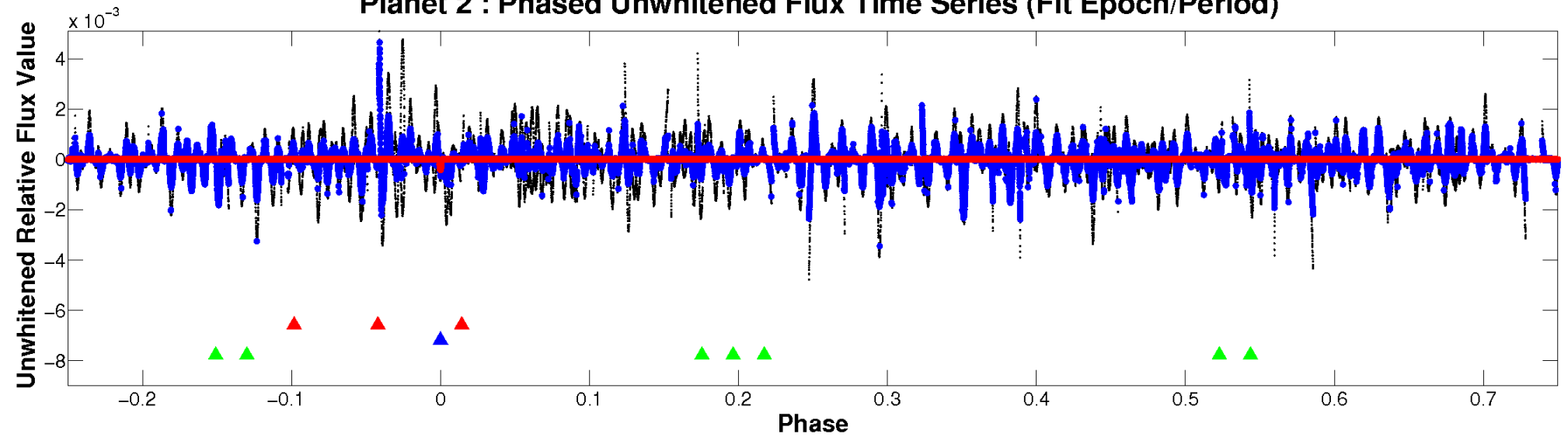
ALT Odd/Even

TCE 007904418-02

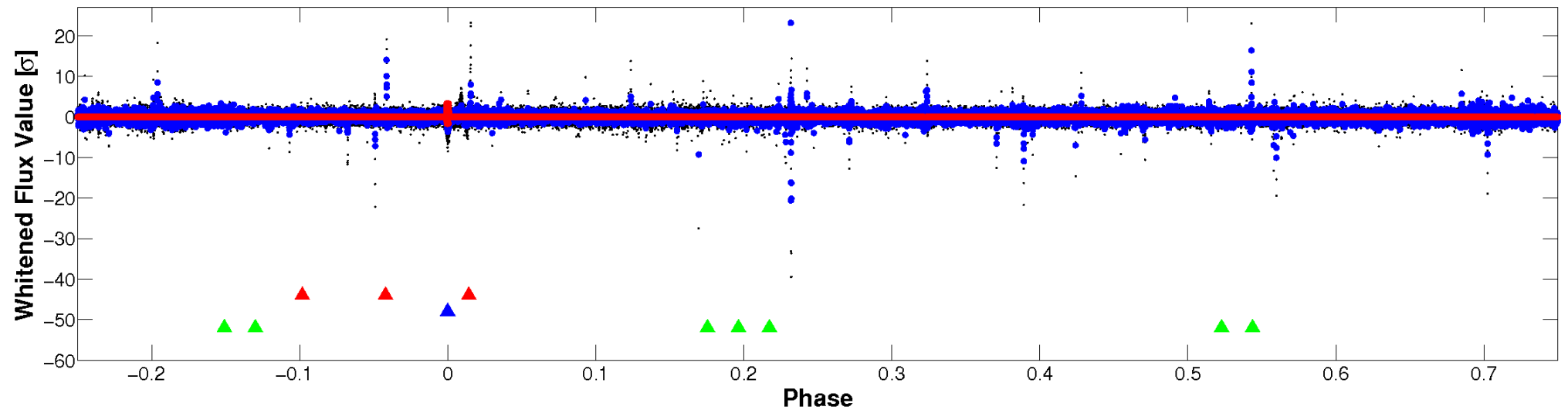


Non-Whitened Vs. Whitened Light Curve

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

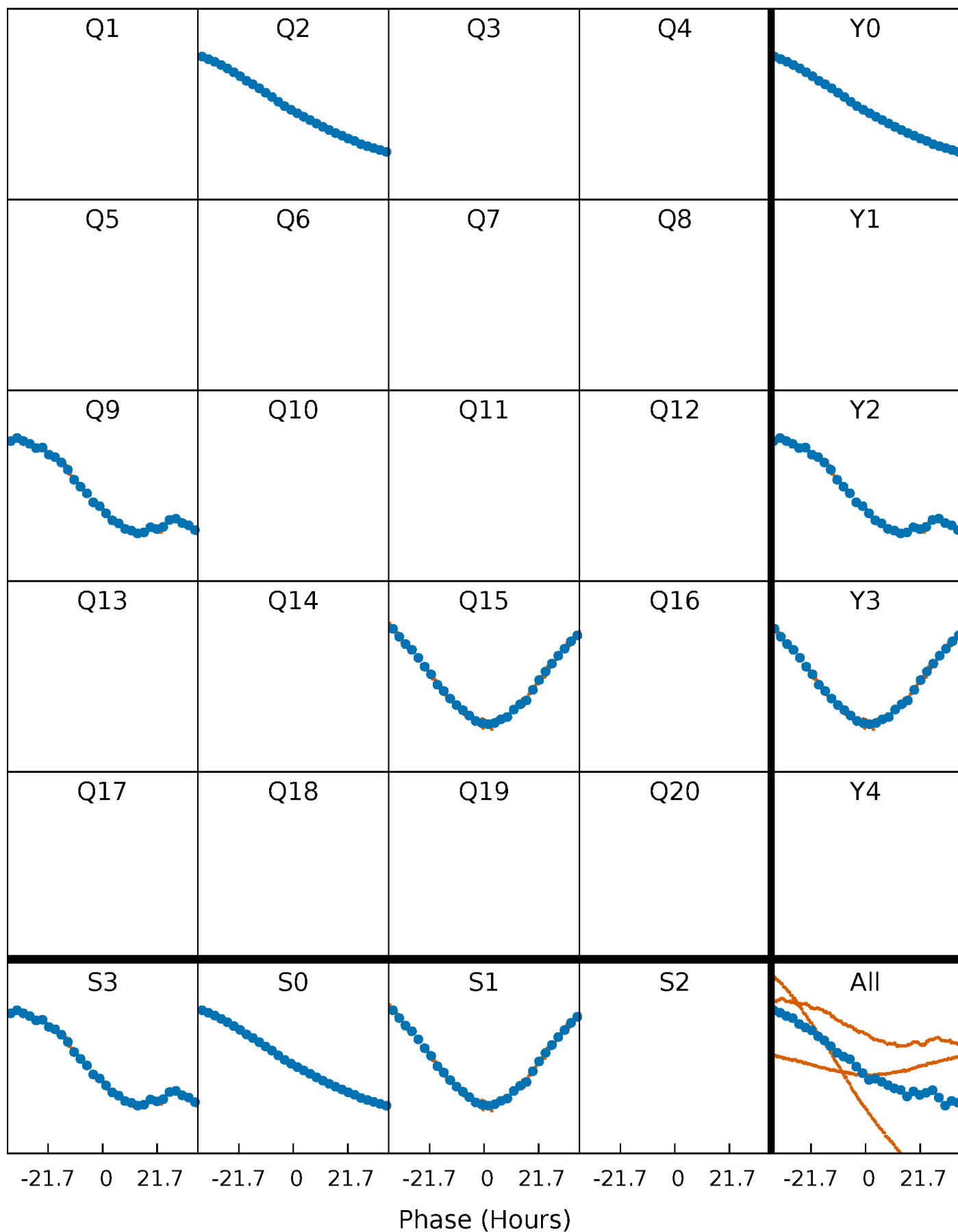


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



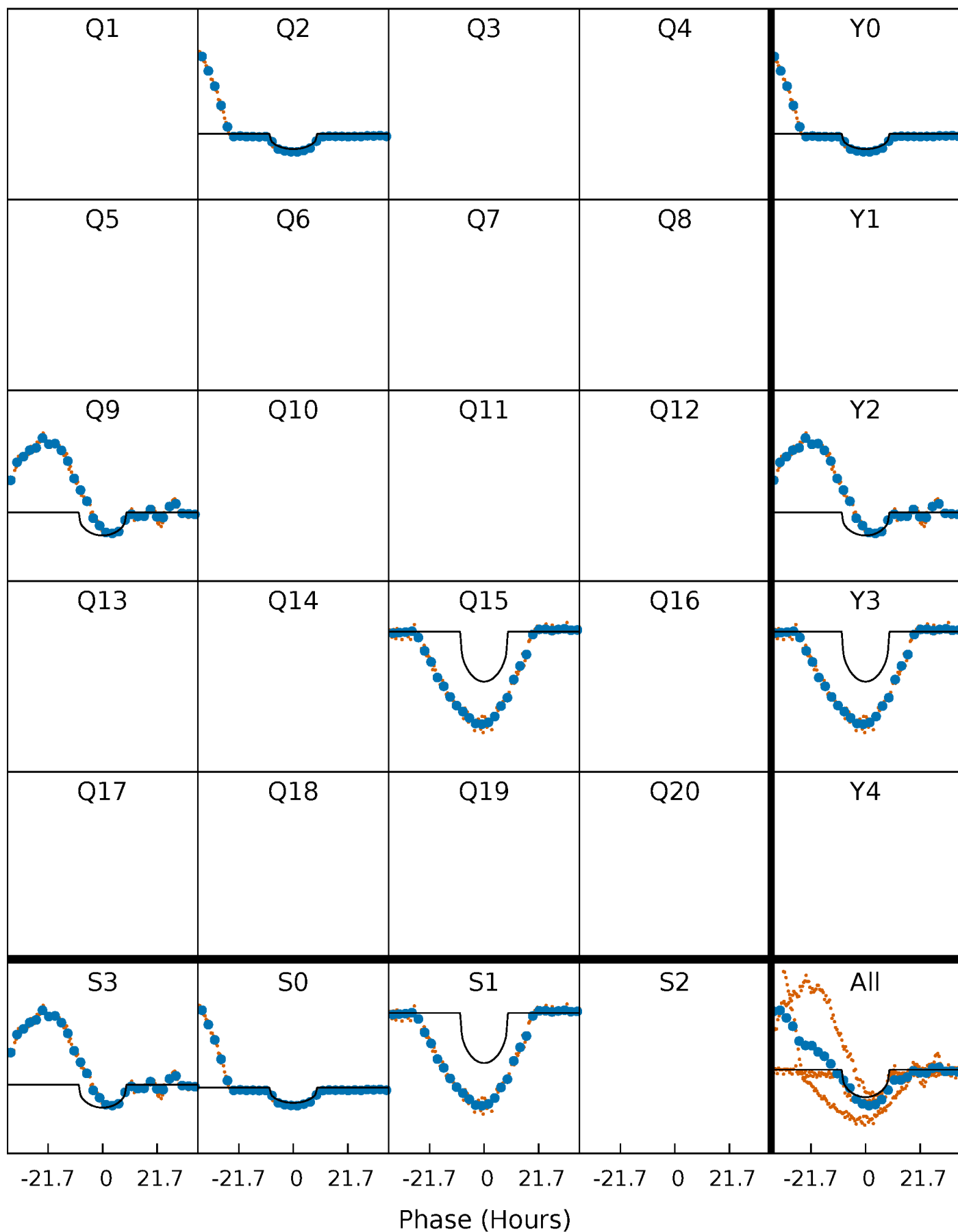
PDC Quarter-Phased Transit Curves

TCE 007904418-02 P=632.672713 Days $T_0=195.935062$ (BKJD)



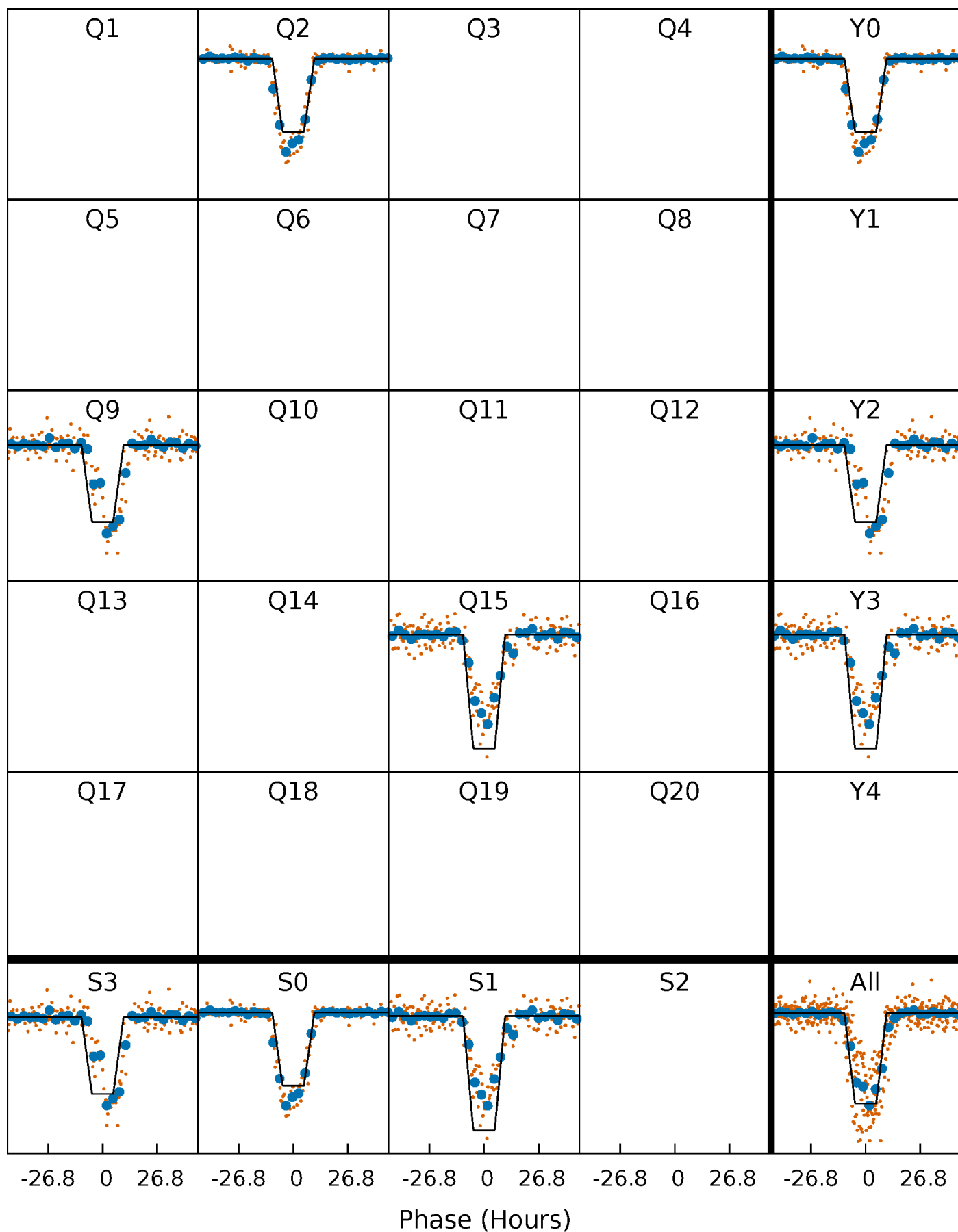
DV Quarter-Phased Transit Curves

TCE 007904418-02 P=632.672713 Days $T_0=195.935062$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

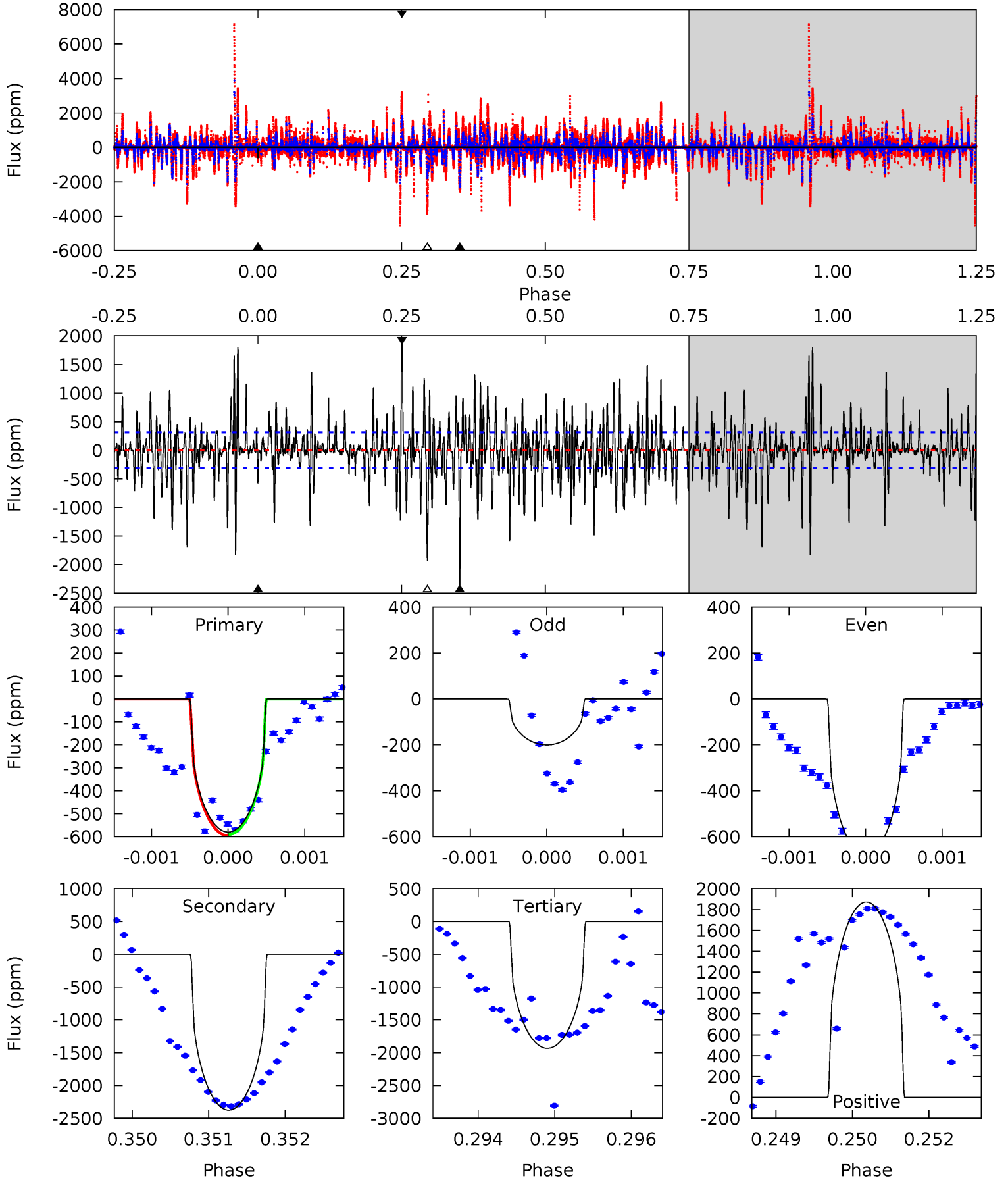
TCE 007904418-02 P=632.691129 Days $T_0=195.967597$ (BKJD)



DV Model-Shift Uniqueness Test

007904418-02, P = 632.672713 Days, E = 195.935062 Days

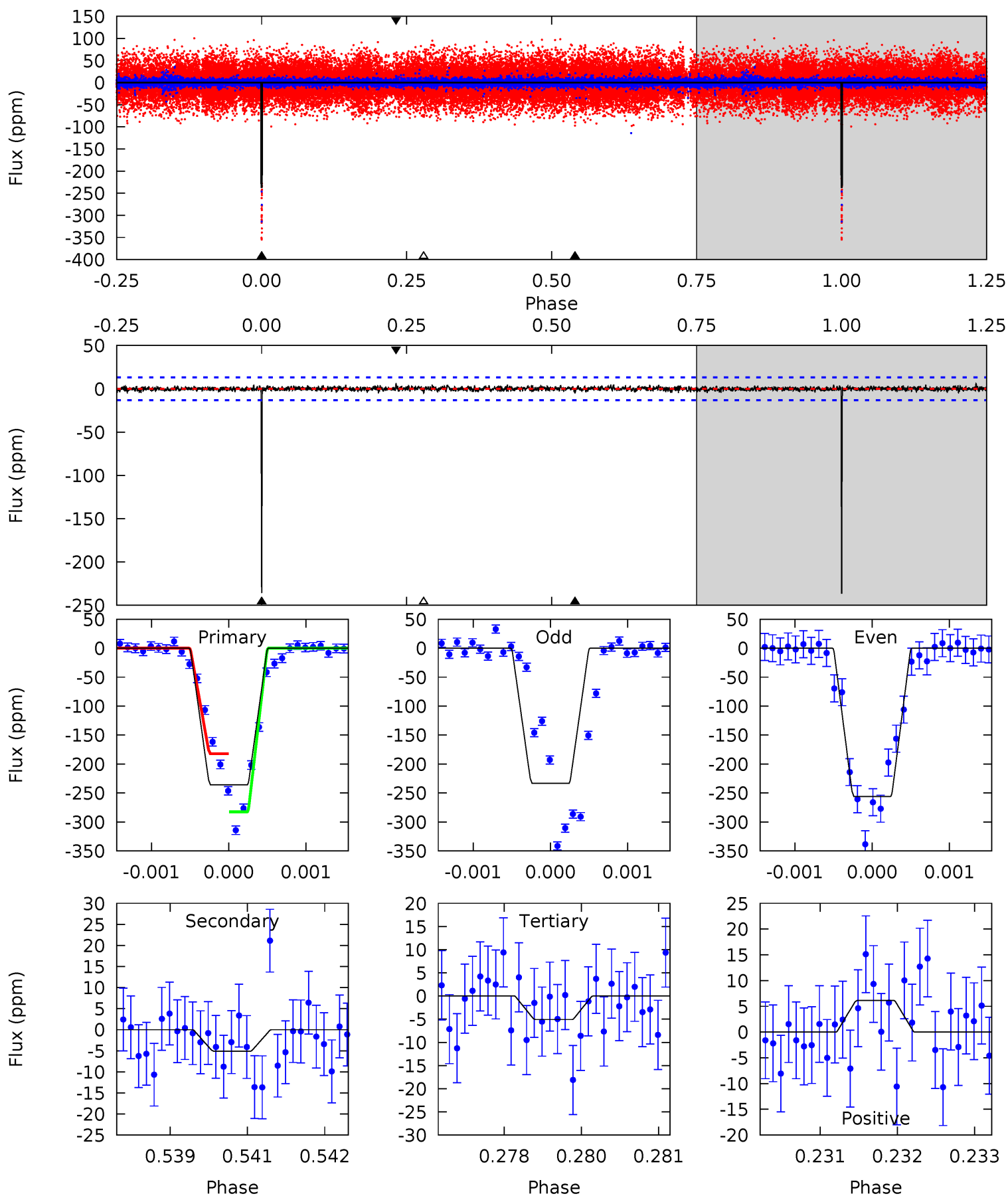
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.00	41.0	33.3	32.3	5.41	3.22	7.43	-23.3	-22.3	7.63	8.69	3.51	1.01	0.44	0.05



Alt Model-Shift Uniqueness Test

007904418-02, P = 632.691129 Days, E = 195.967597 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
96.6	2.09	2.08	2.51	5.40	3.20	0.53	94.5	94.1	0.01	-0.42	4.74	1.05	0.03	20.5



Stellar Parameters For KIC 007904418

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3723^{+83}_{-101}	$0.793^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$85.380^{+2.964}_{-15.806}$	$1.651^{+0.094}_{-0.534}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+4%/-4%	+200%/-250%	+3%/-19%	+6%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007904418-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2376 ± 58	$179.13^{+18.50}_{-18.86}$	1624^{+43}_{-47}	5346^{+266}_{-290}	120^{+28}_{-22}
Alt.	-5 ± 2	$156.01^{+18.79}_{-19.67}$	1624^{+40}_{-52}	1727^{+352}_{-3707}	$0.333^{+0.197}_{-0.180}$

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

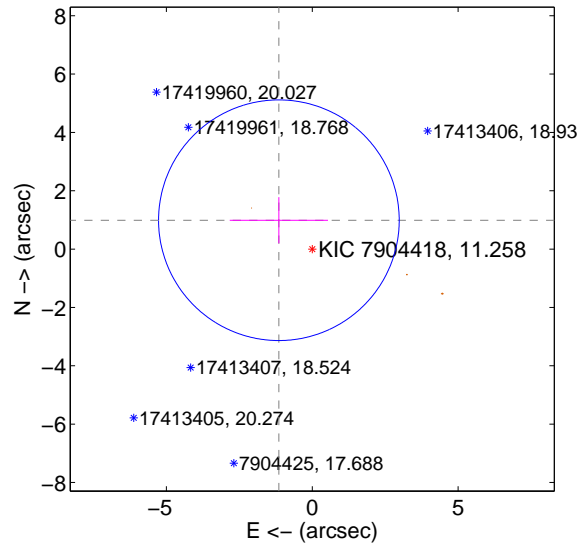
Supplemental centroid analysis for 007904418-02. **Kepler magnitude: 11.26.** Transit SNR 19.98

There are 0 quarters with good PRF difference image offsets

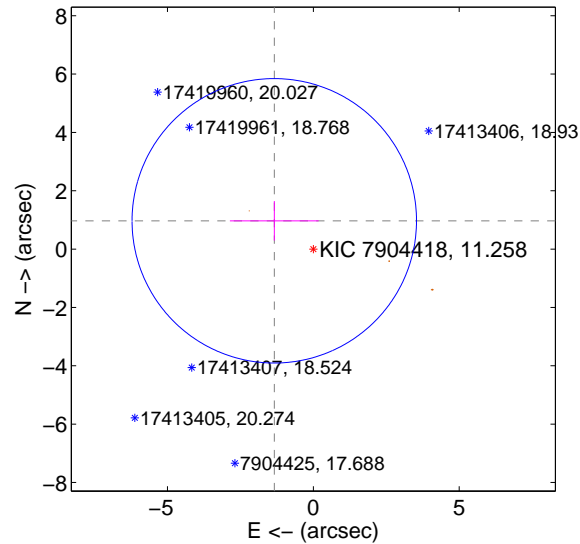
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.512 ± 1.375	1.10	1.143 ± 1.684	0.989 ± 0.793
PRF-fit source offset from KIC position	1.653 ± 1.625	1.02	1.338 ± 1.522	0.969 ± 0.676
photometric centroid source offset	1.21 ± 1.90	0.64	0.86 ± 2.19	-0.85 ± 1.55

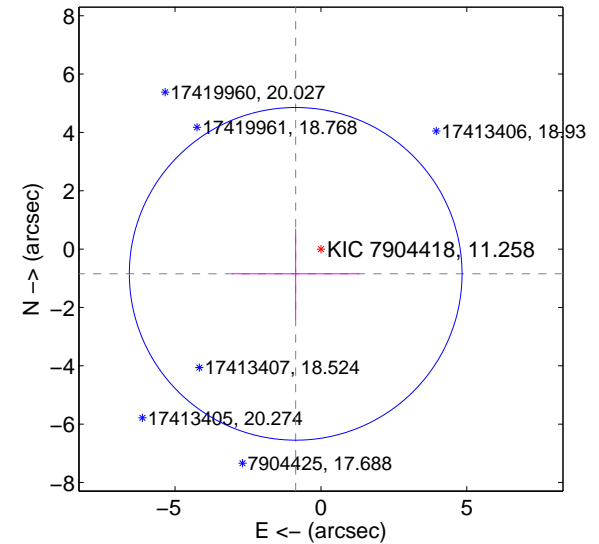
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

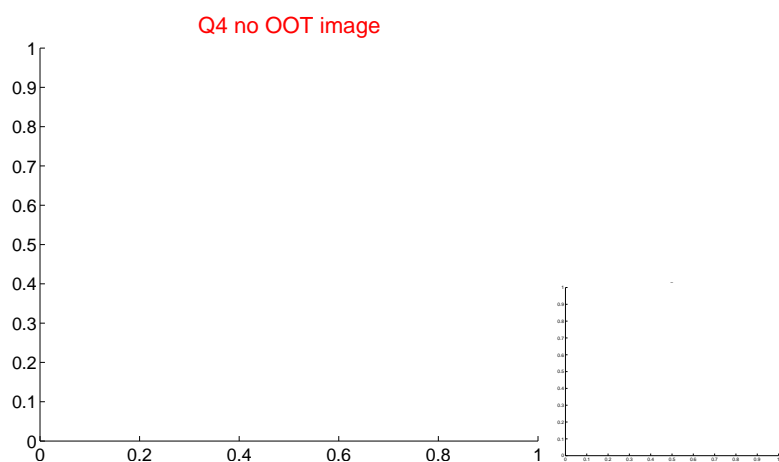
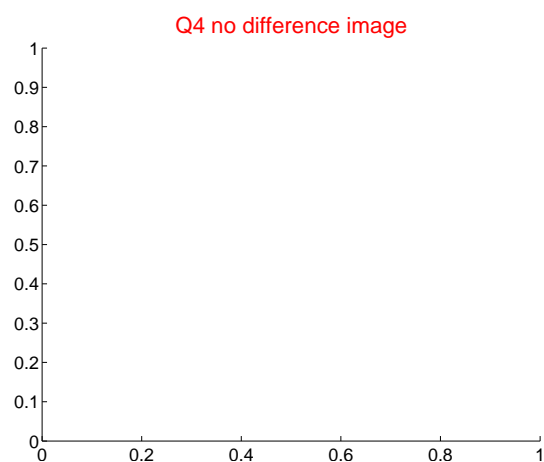
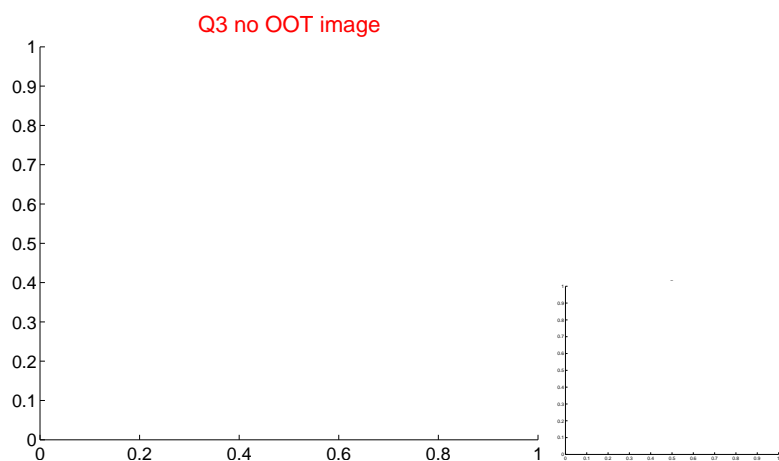
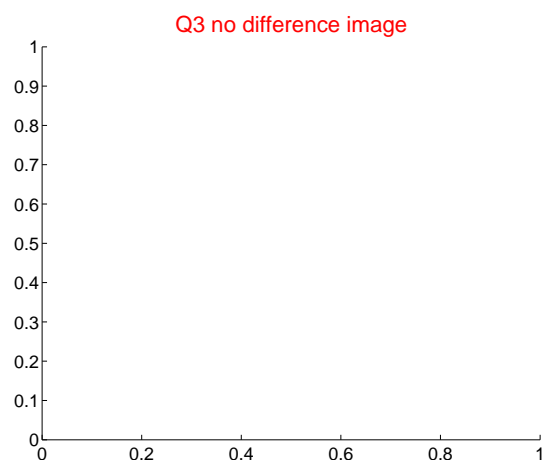
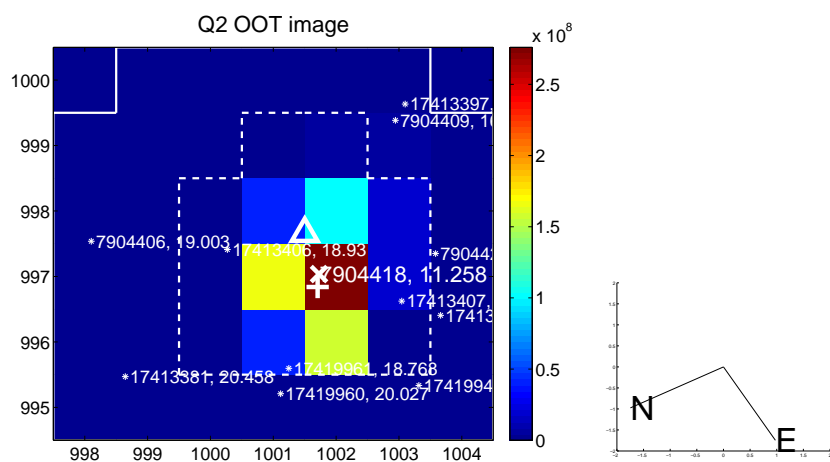
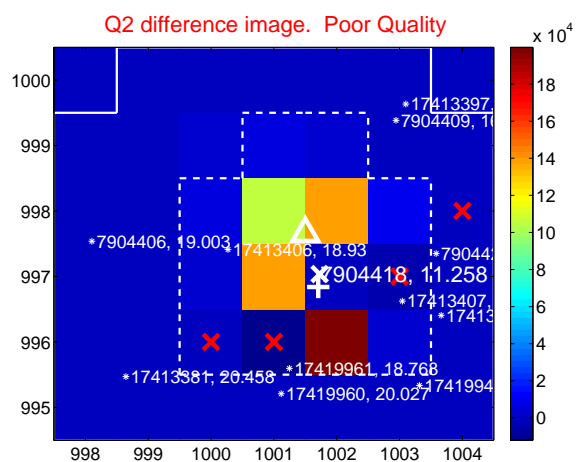
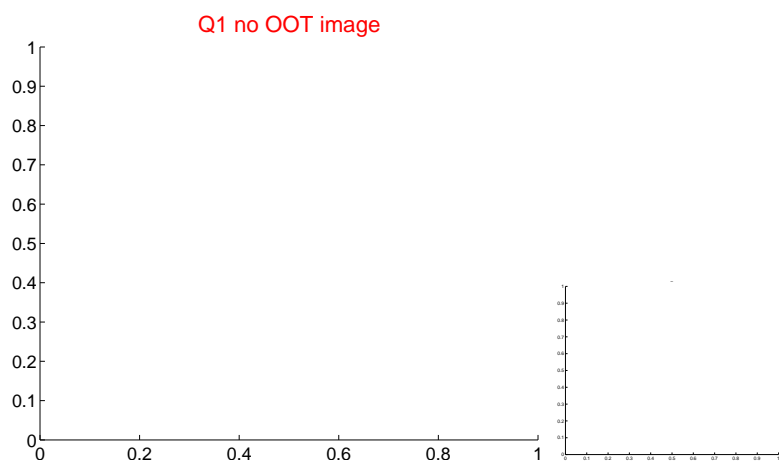
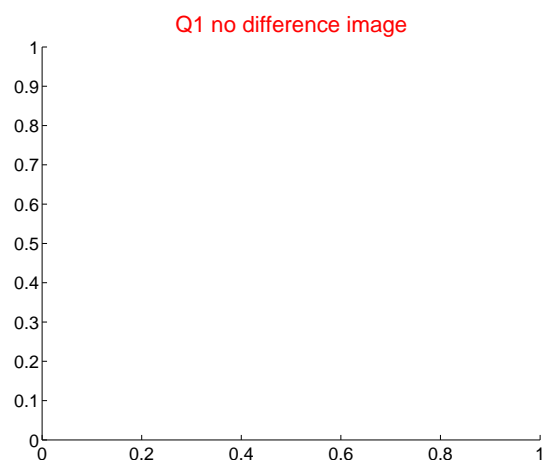


offset from photometric centroids



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

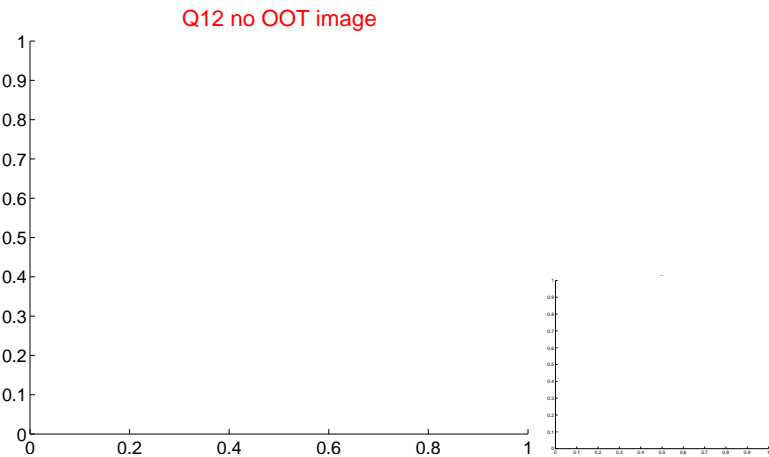
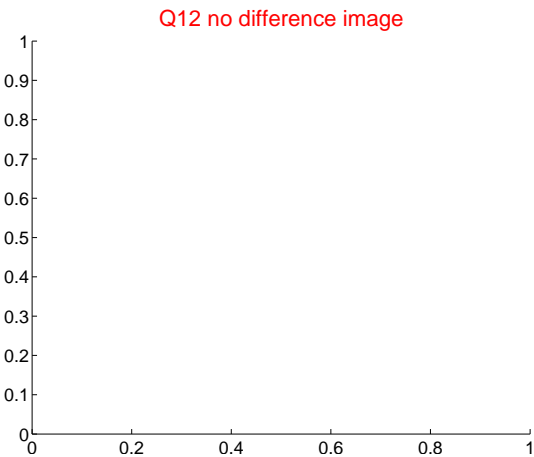
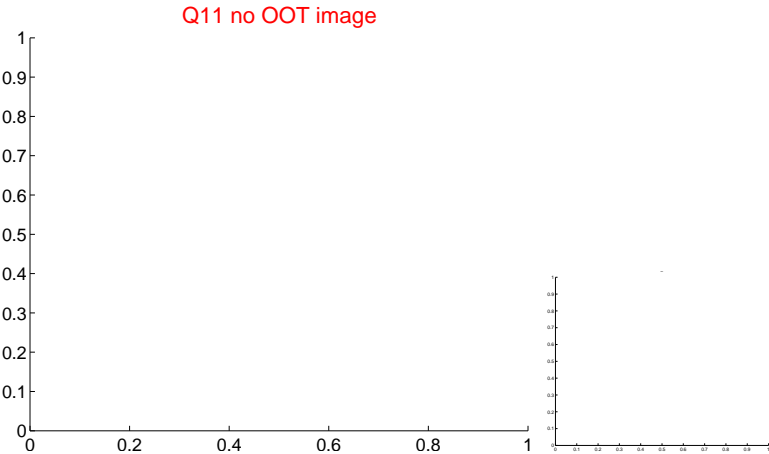
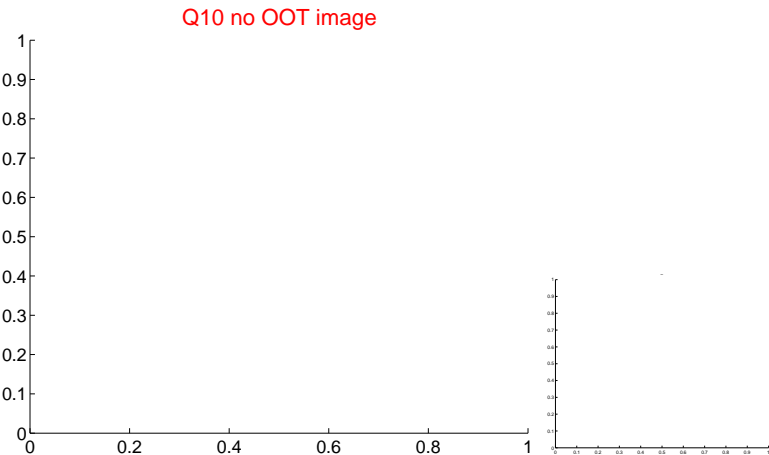
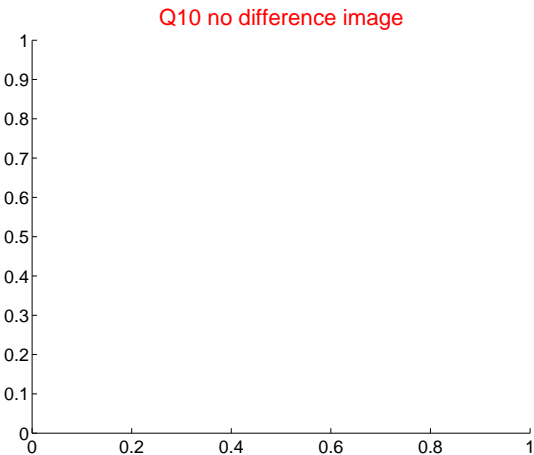
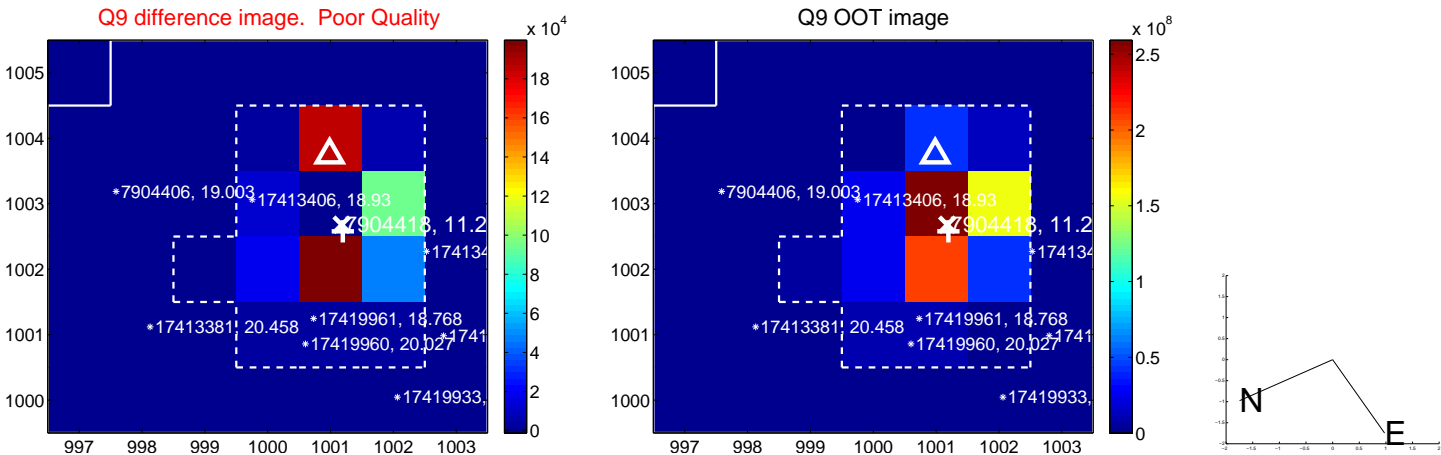
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



Q13 no OOT image



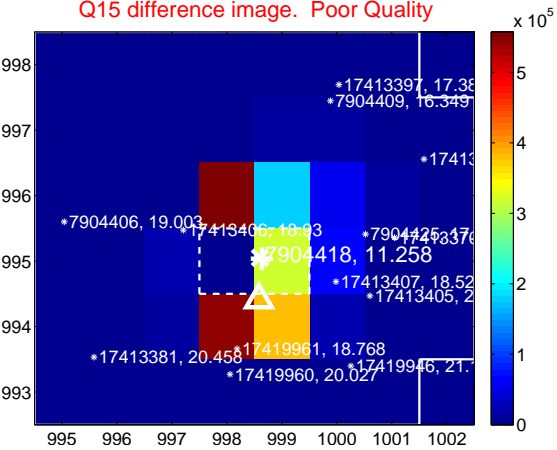
Q14 no difference image



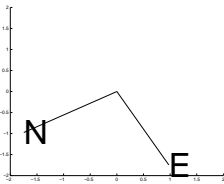
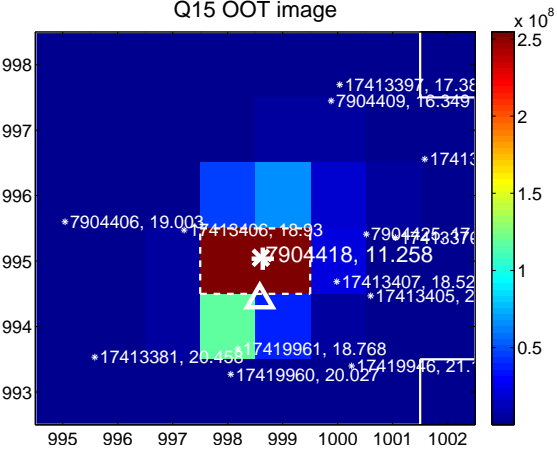
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



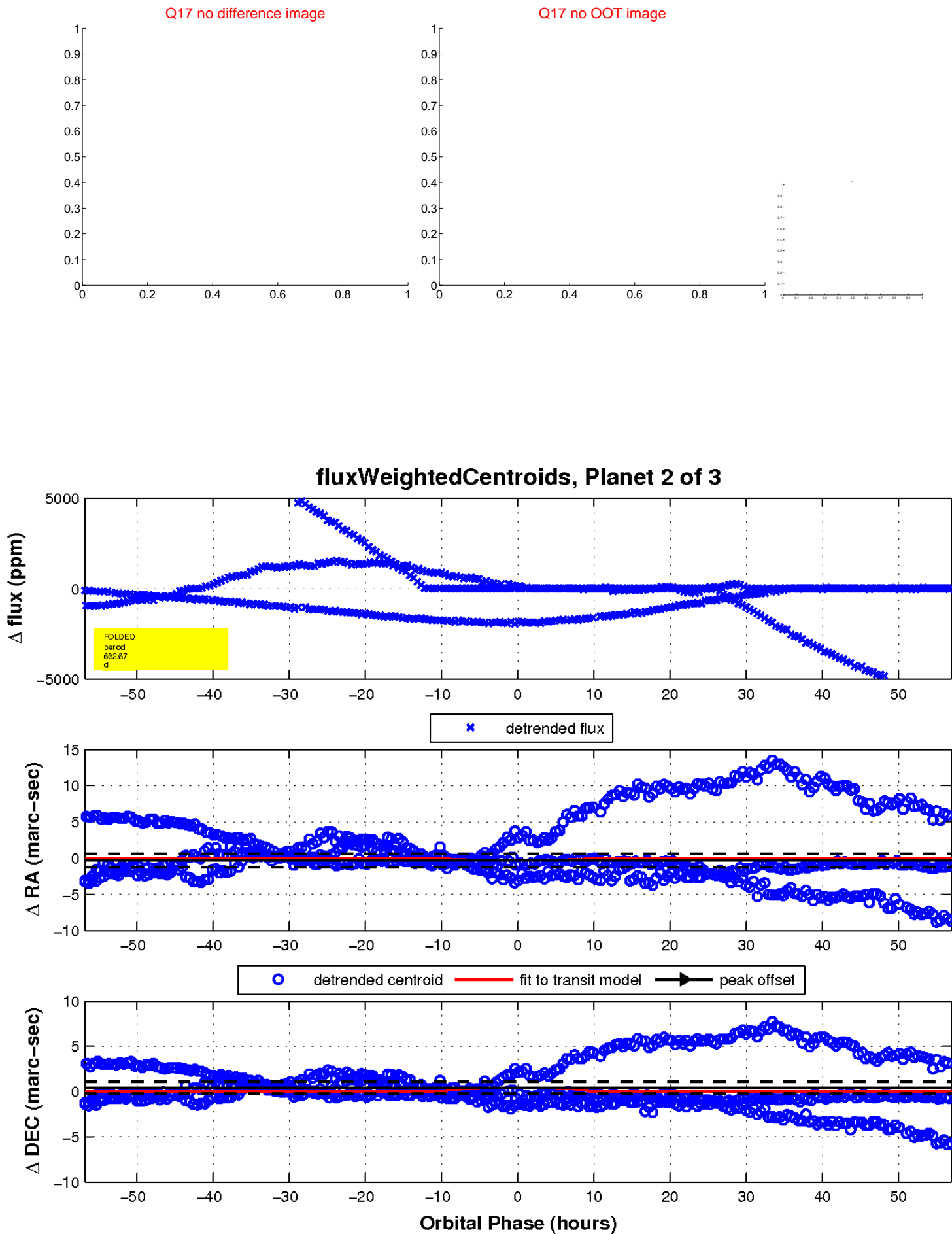
Q16 no difference image



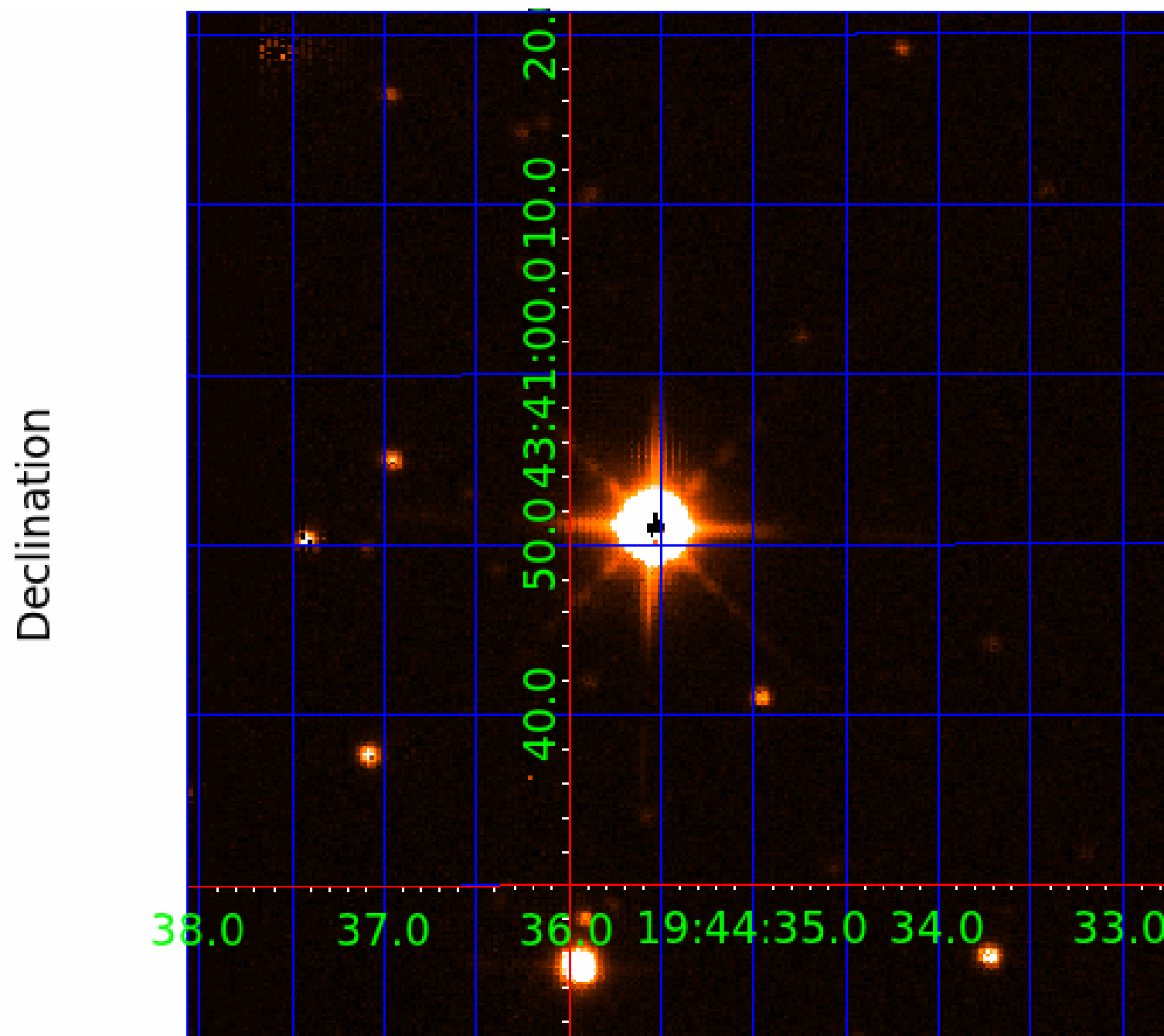
Q16 no OOT image



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



UKIRT Image



KIC 007904418

Q1-17 DR25 TCE Parameters

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Robovetter Results

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007904418-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

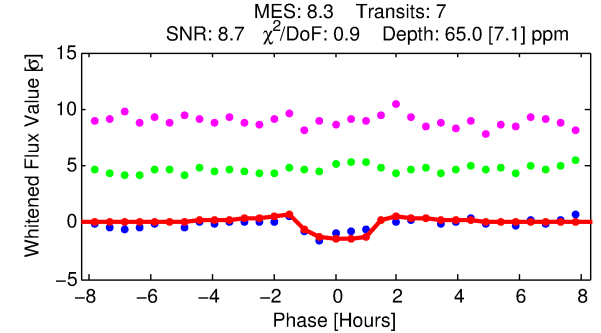
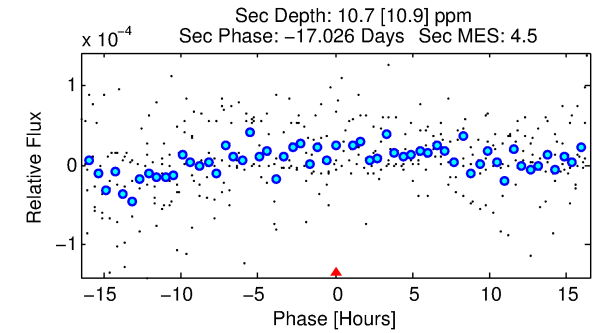
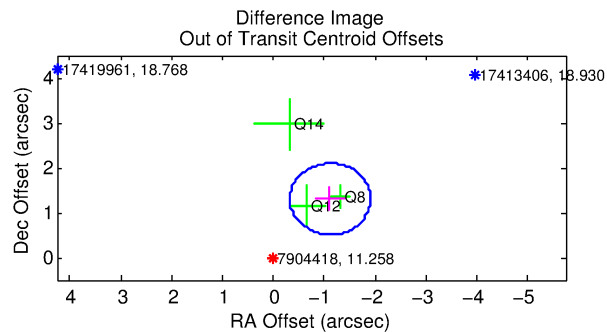
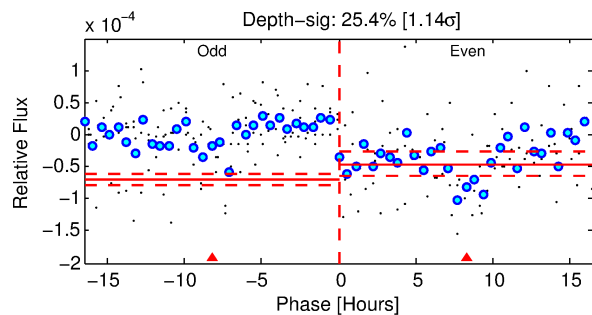
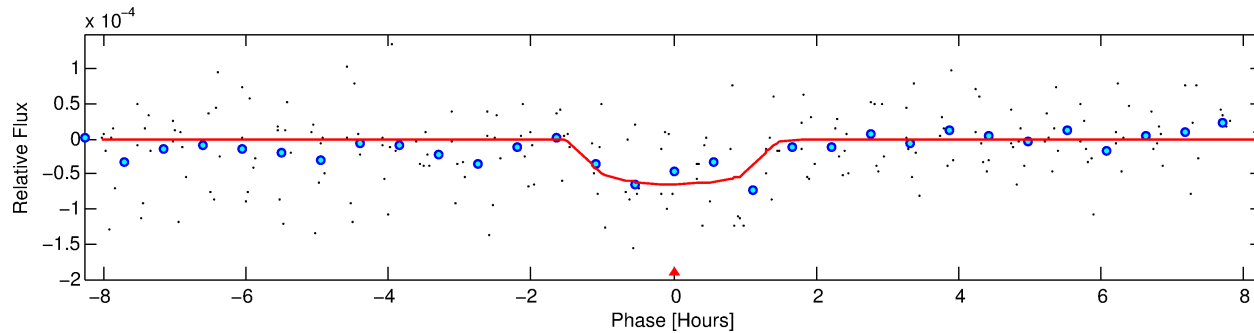
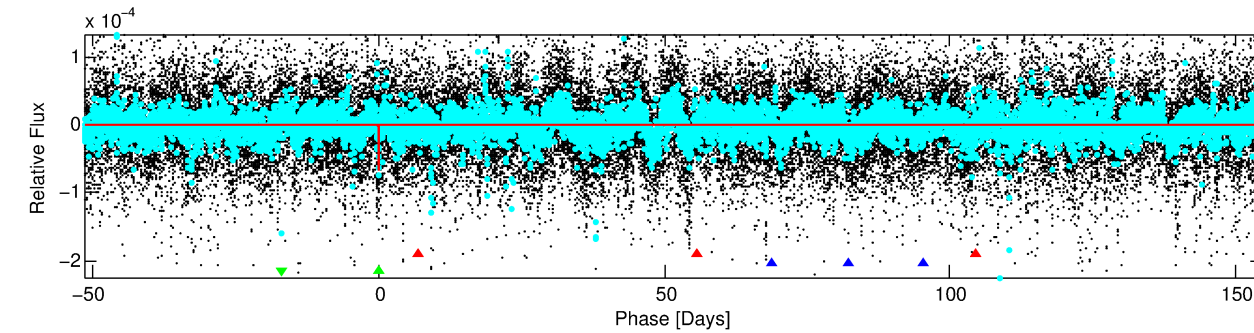
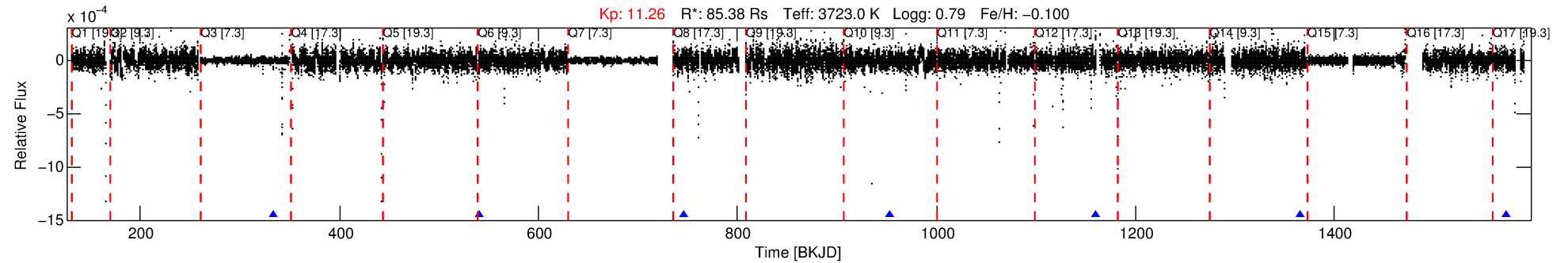
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007904418-03

No Significant Match Found

DV One-Page Summary

KIC: 7904418 Candidate: 3 of 3 Period: 206.481 d



DV Fit Results:

Period = 206.48061 [0.00197] d
Epoch = 333.4428 [0.0047] BKJD
Rp/R* = 0.0101 [0.0063]
a/R* = 214.01 [479.65]
b = 0.94 [0.29]
Seff = 1921.02 [327.86]
Teq = 1688 [72] K
Rp = 94.02 [60.89] Re
a = 0.8082 [0.1015] AU
Ag = 0.44 [0.70] [-0.81 σ]
Teffp = 2120 [854] K [0.50 σ]

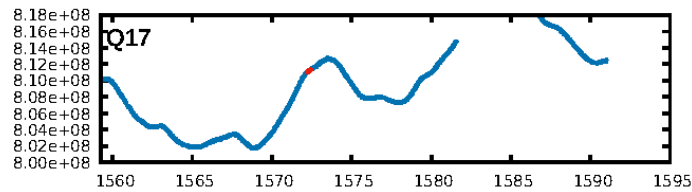
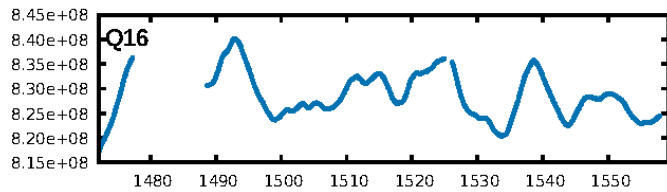
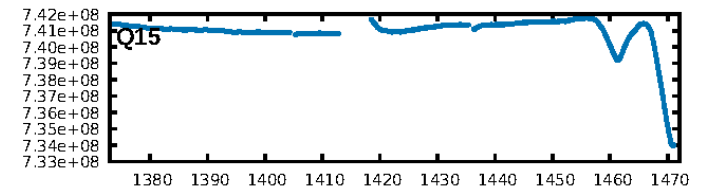
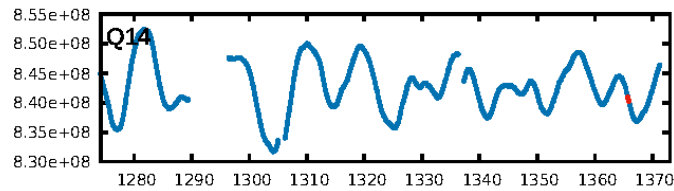
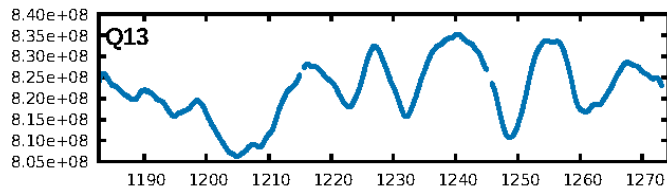
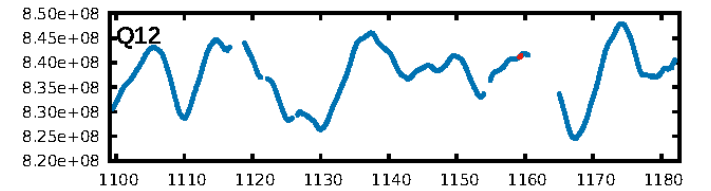
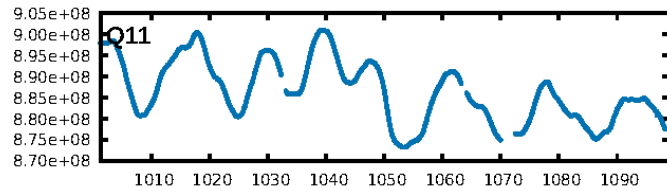
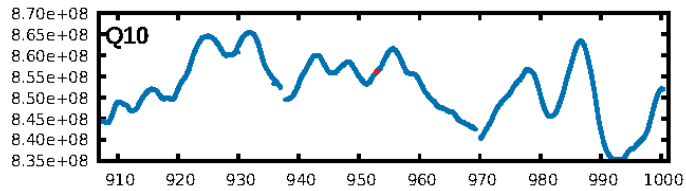
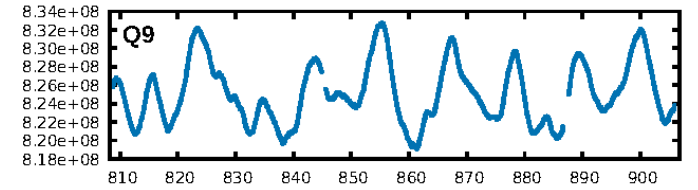
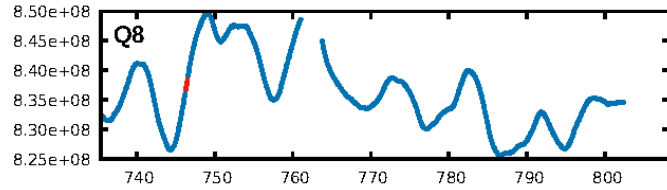
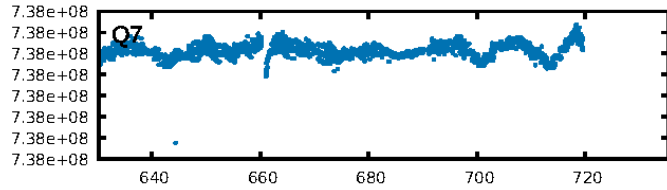
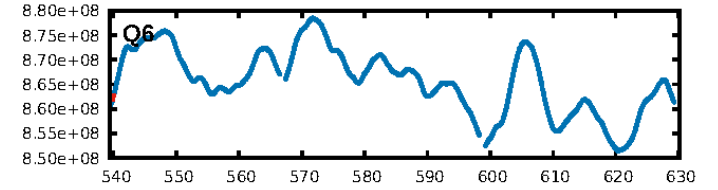
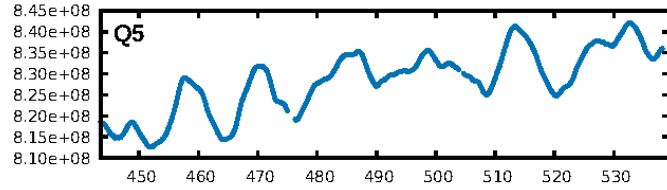
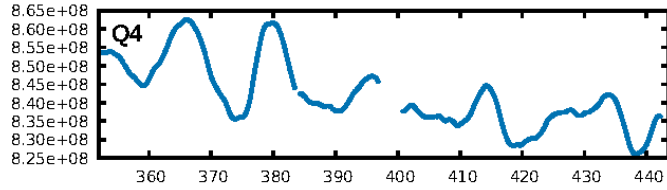
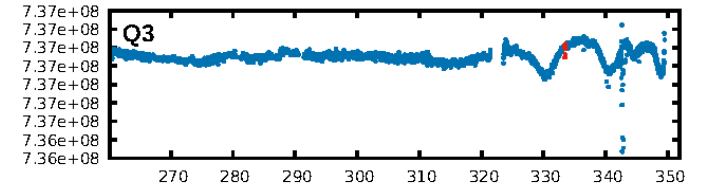
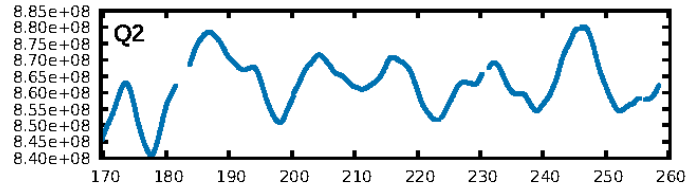
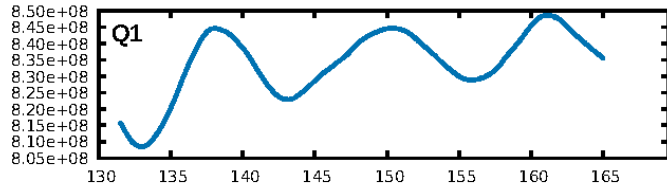
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [532.99 σ]
ModelChiSquare2-sig: 51.6%
ModelChiSquareGof-sig: 97.5%
Bootstrap-pfa: 5.12e-07
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.7211
Centroid-sig: 35.5%
Centroid-so: 4.610 arcsec [1.09 σ]
OotOffset-rm: 1.716 arcsec [6.49 σ]
KicOffset-rm: 1.881 arcsec [3.29 σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [6/6]

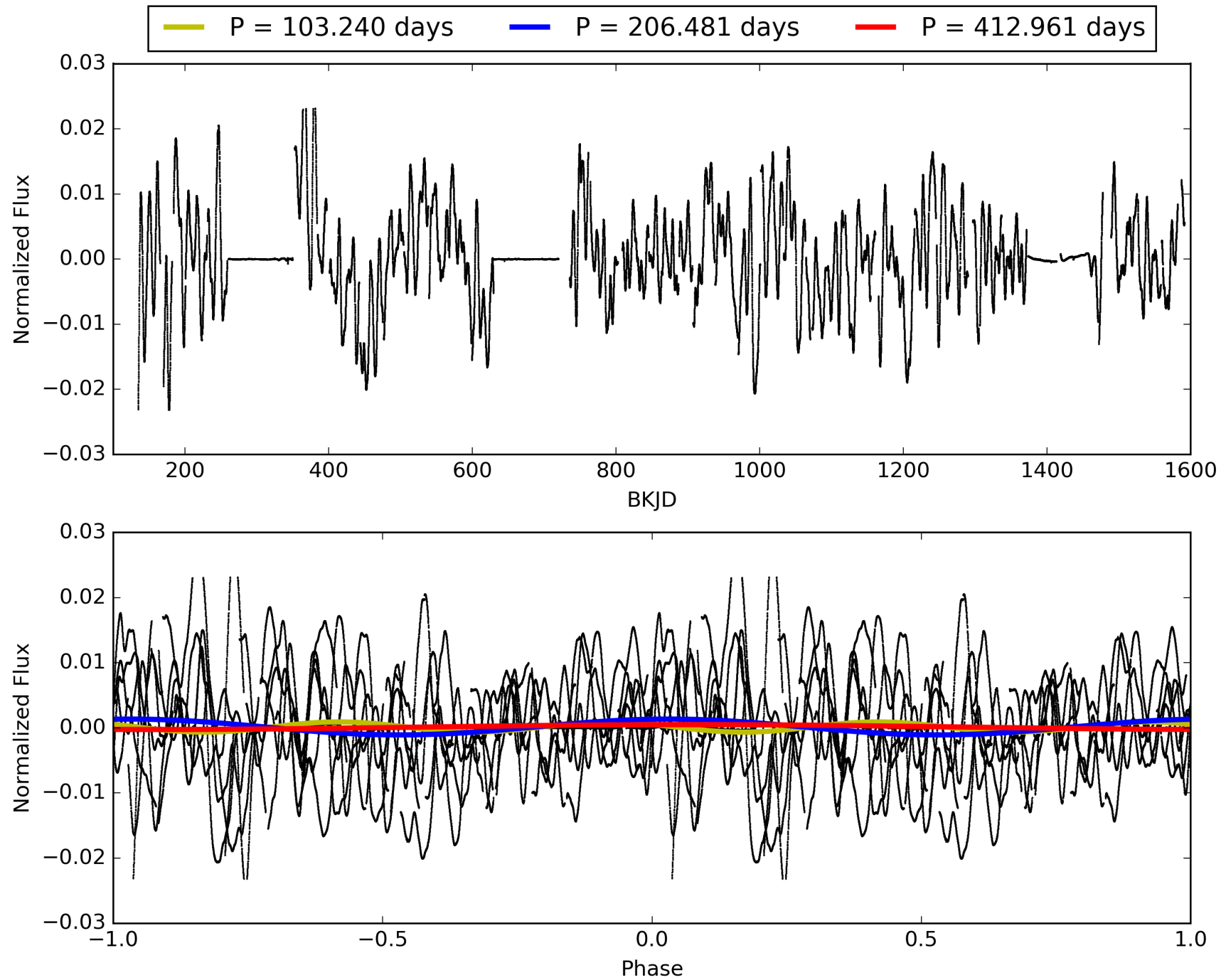
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:31:34 Z

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

TCE 007904418-03, PDC Light Curves

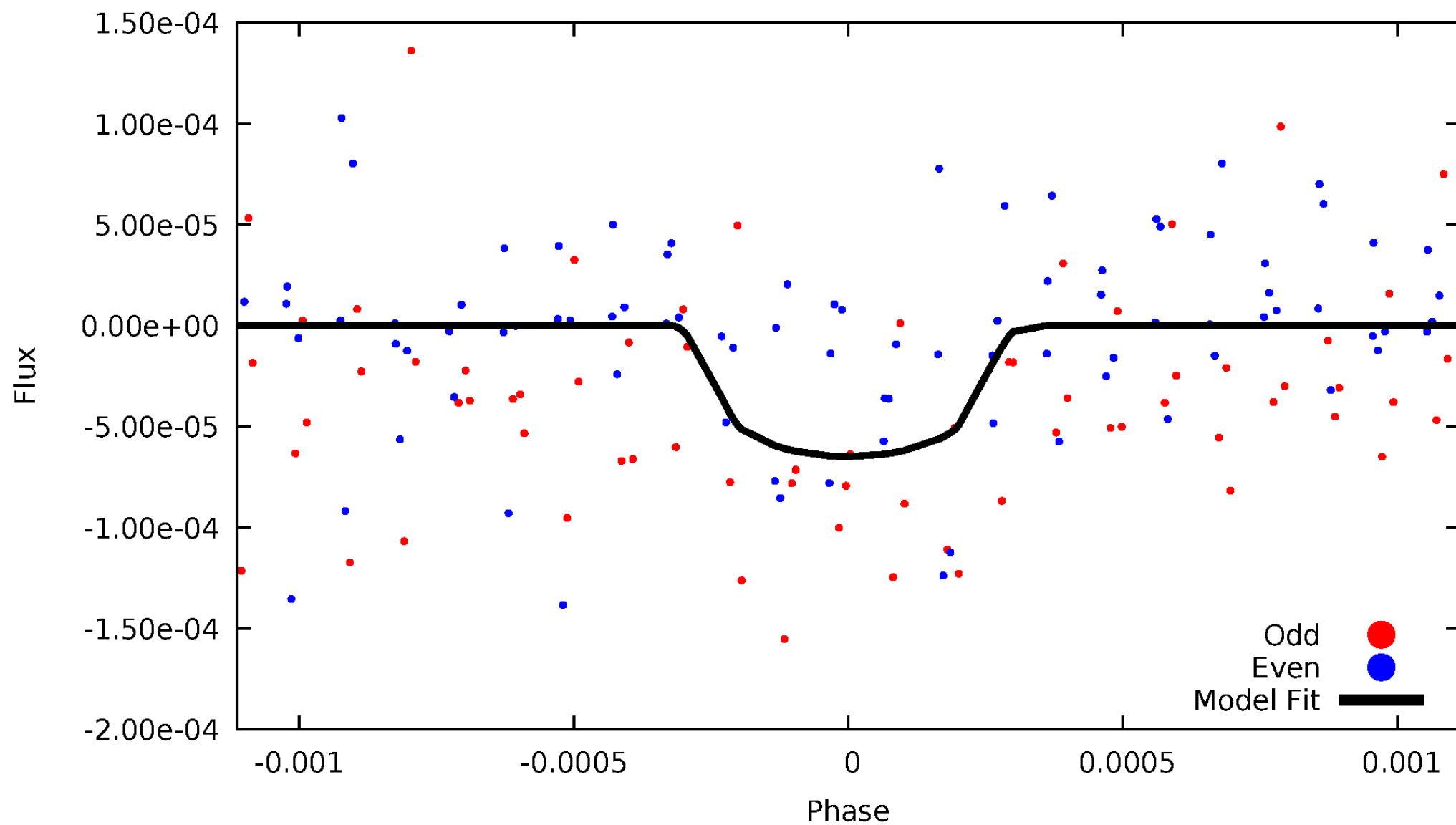


TCE 007904418-03



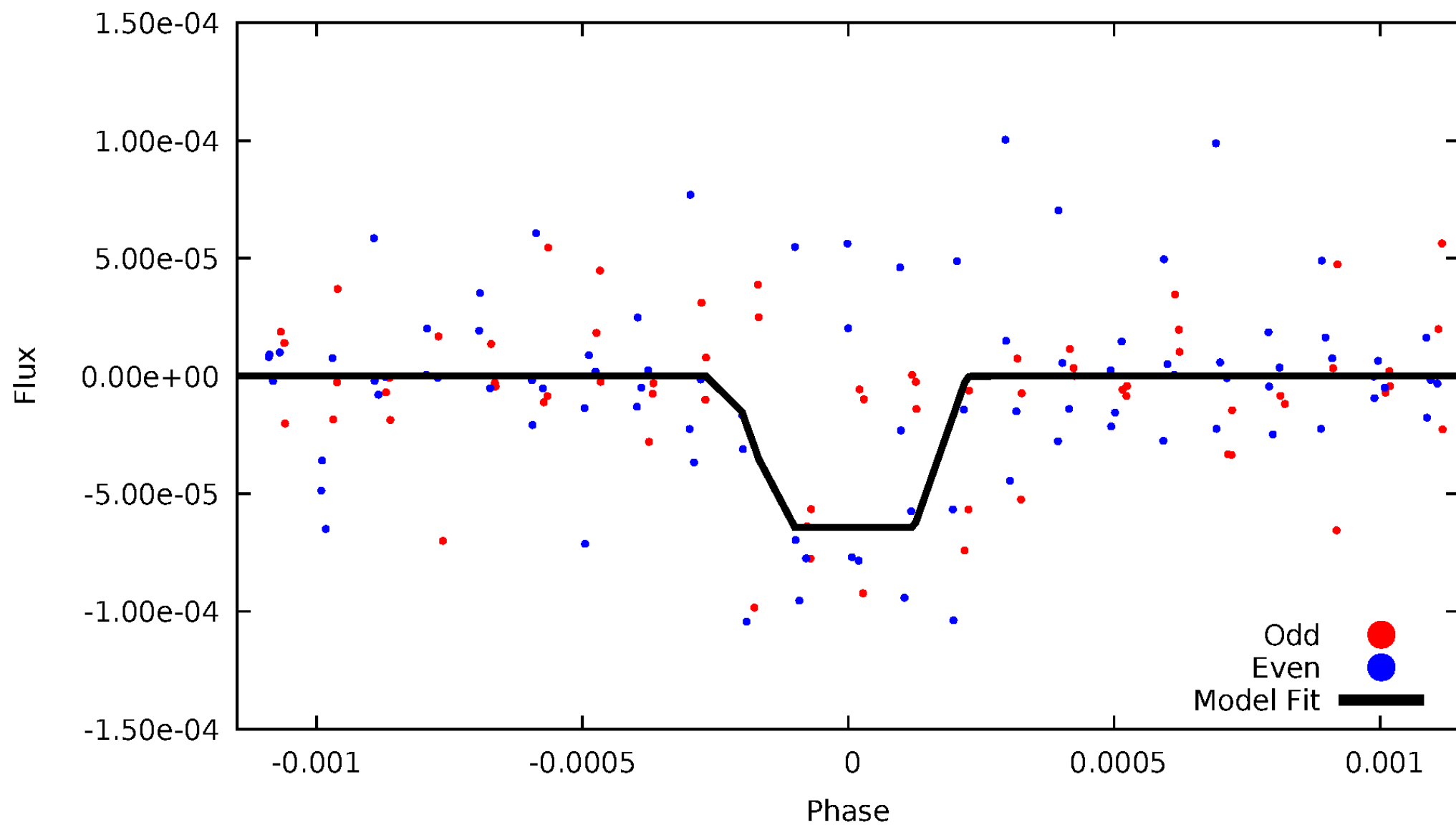
DV Odd/Even

TCE 007904418-03



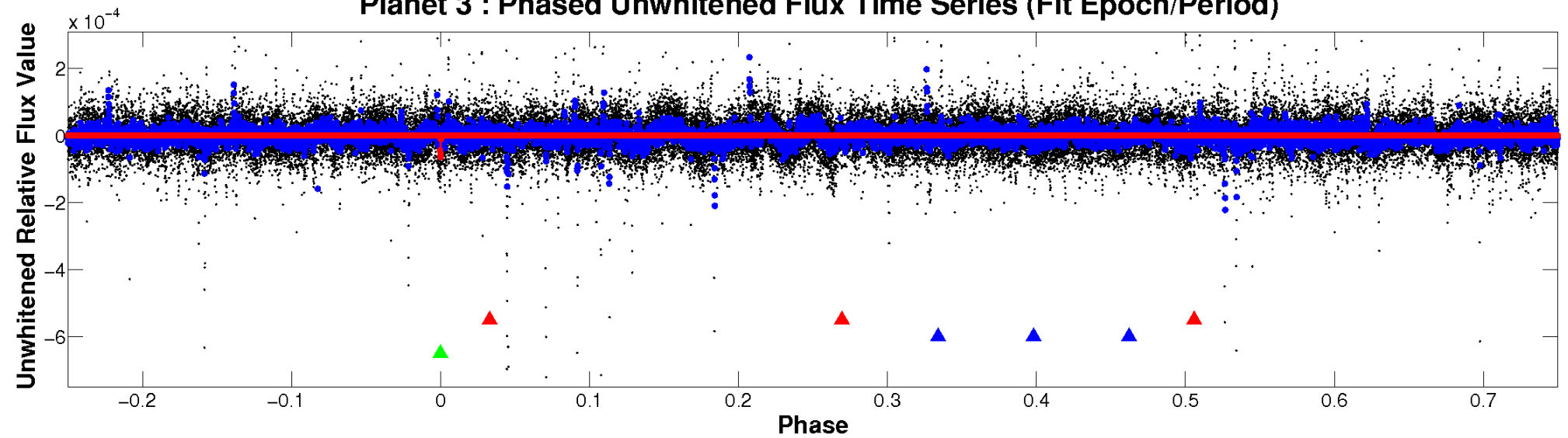
ALT Odd/Even

TCE 007904418-03

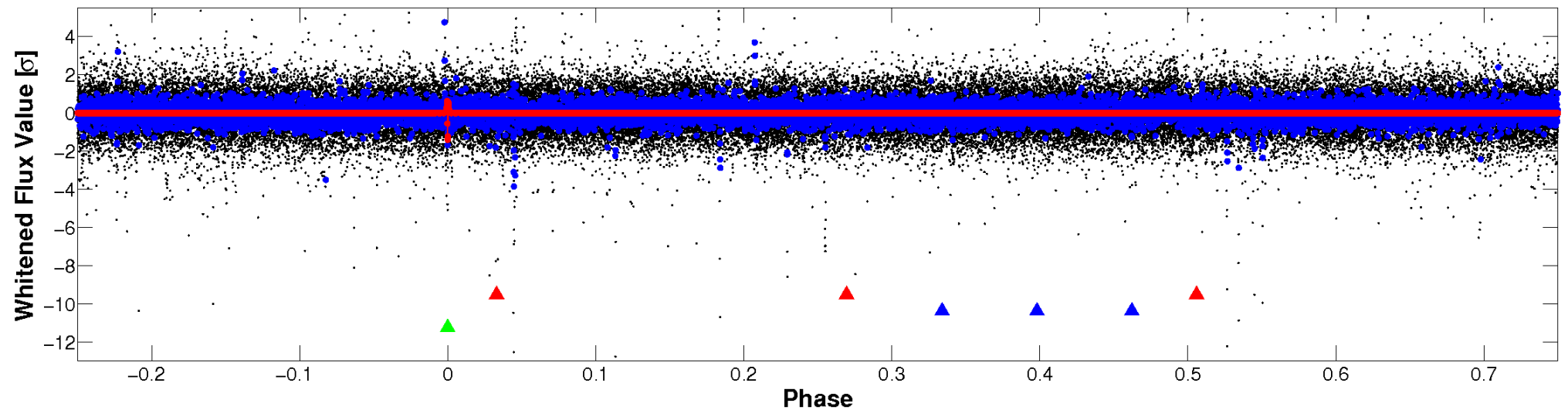


Non-Whitened Vs. Whitened Light Curve

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

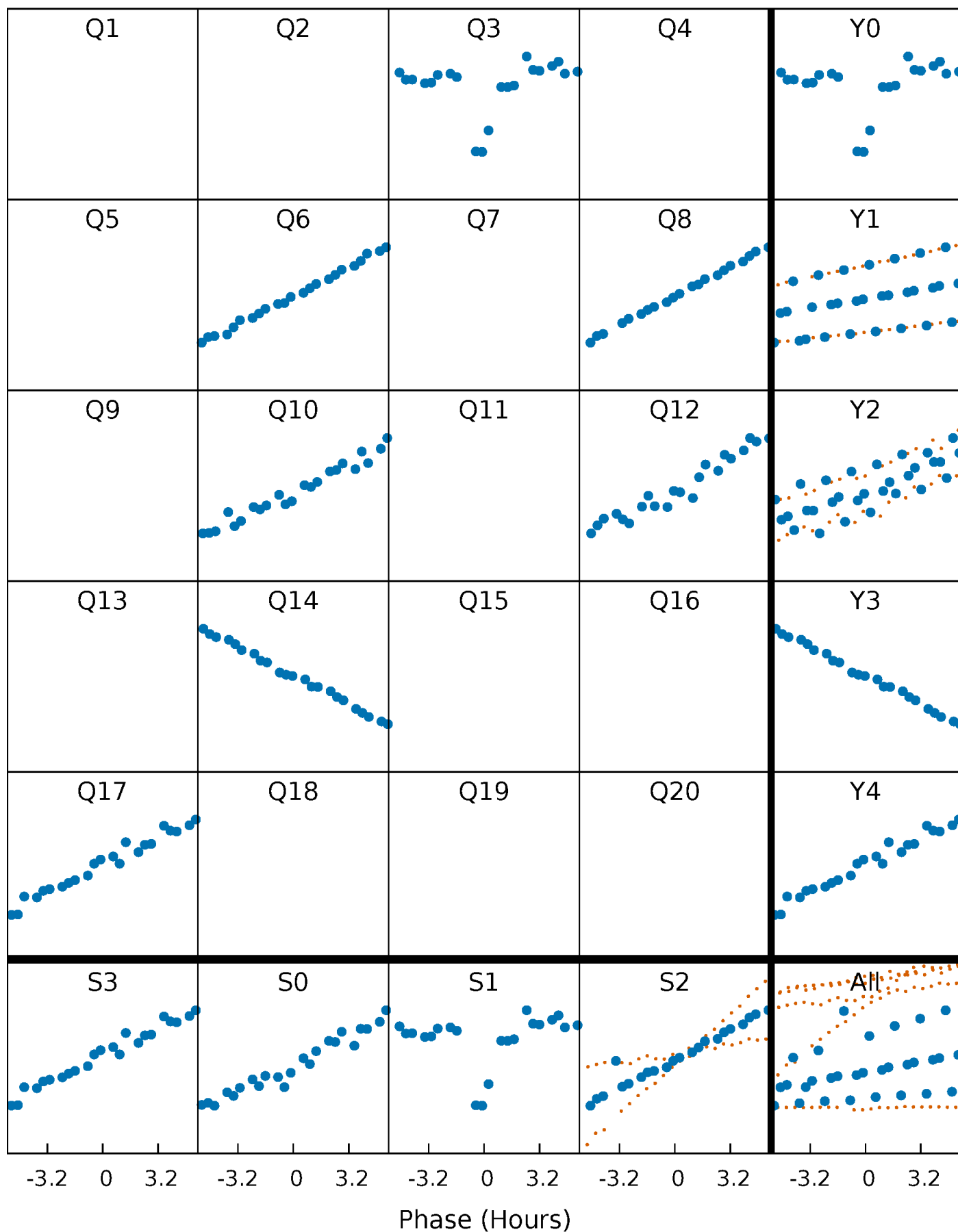


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



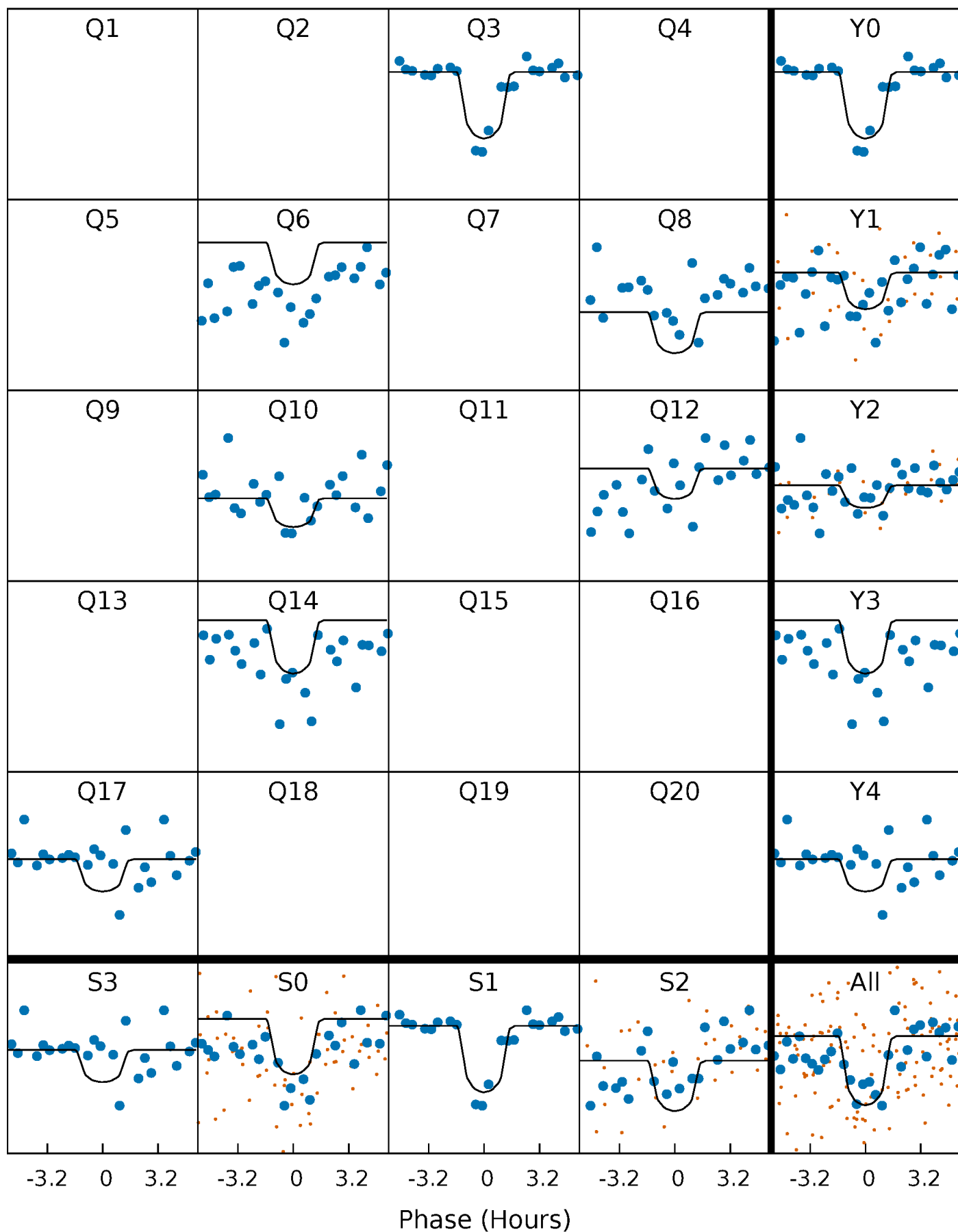
PDC Quarter-Phased Transit Curves

TCE 007904418-03 P=206.480610 Days $T_0=333.442813$ (BKJD)



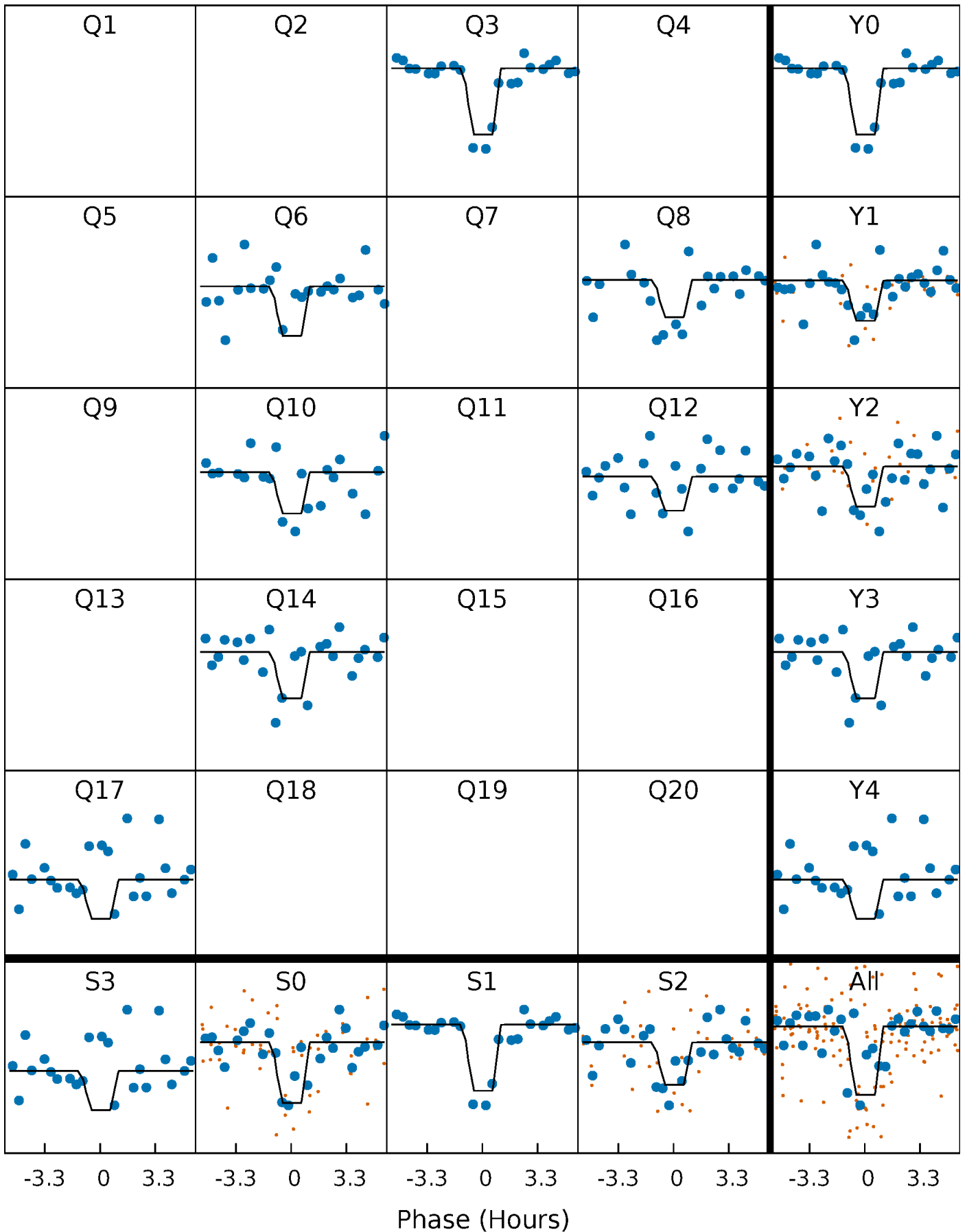
DV Quarter-Phased Transit Curves

TCE 007904418-03 P=206.480610 Days $T_0=333.442813$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

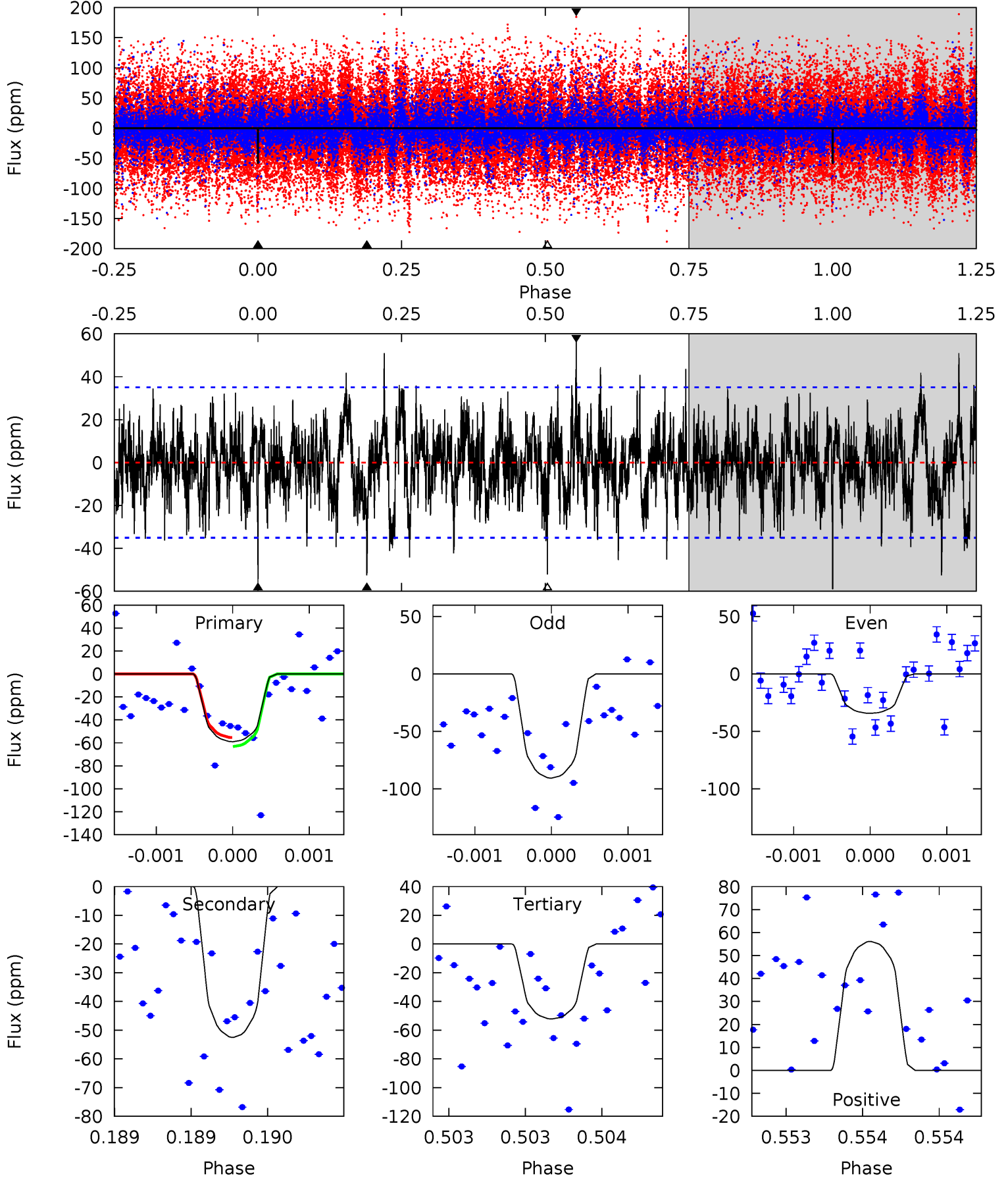
TCE 007904418-03 P=206.482097 Days $T_0=333.431732$ (BKJD)



DV Model-Shift Uniqueness Test

007904418-03, P = 206.480610 Days, E = 126.962203 Days

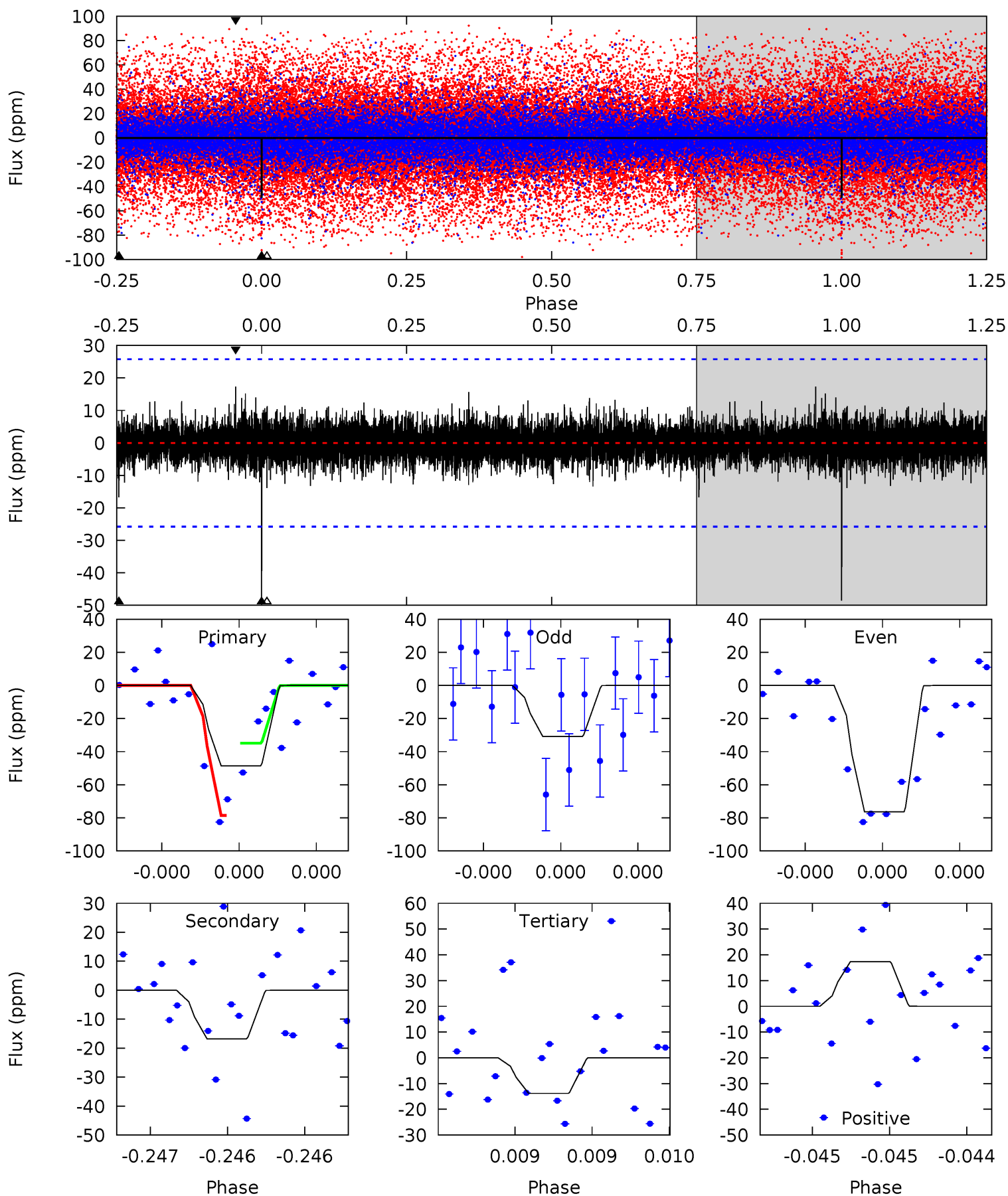
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.31	8.29	8.23	8.86	5.54	3.42	2.09	1.07	0.45	0.06	-0.57	4.42	0.98	0.49	0.62



Alt Model-Shift Uniqueness Test

007904418-03, P = 206.482097 Days, E = 126.949635 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	3.64	3.01	3.77	5.60	3.52	0.77	7.54	6.78	0.63	-0.13	4.95	1.00	0.26	0



Stellar Parameters For KIC 007904418

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3723^{+83}_{-101}	$0.793^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$85.380^{+2.964}_{-15.806}$	$1.651^{+0.094}_{-0.534}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+4%/-4%	+200%/-250%	+3%/-19%	+6%/-32%	+25%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007904418-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-53 ± 6	$98.37^{+55.44}_{-49.44}$	2356^{+64}_{-68}	3225^{+920}_{-533}	$1.950^{+5.735}_{-1.183}$
Alt.	-17 ± 5	$80.74^{+57.13}_{-46.87}$	2361^{+61}_{-74}	2770^{+1093}_{-4588}	$0.889^{+4.436}_{-0.601}$

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 $A_{obs} \gg 1.0$

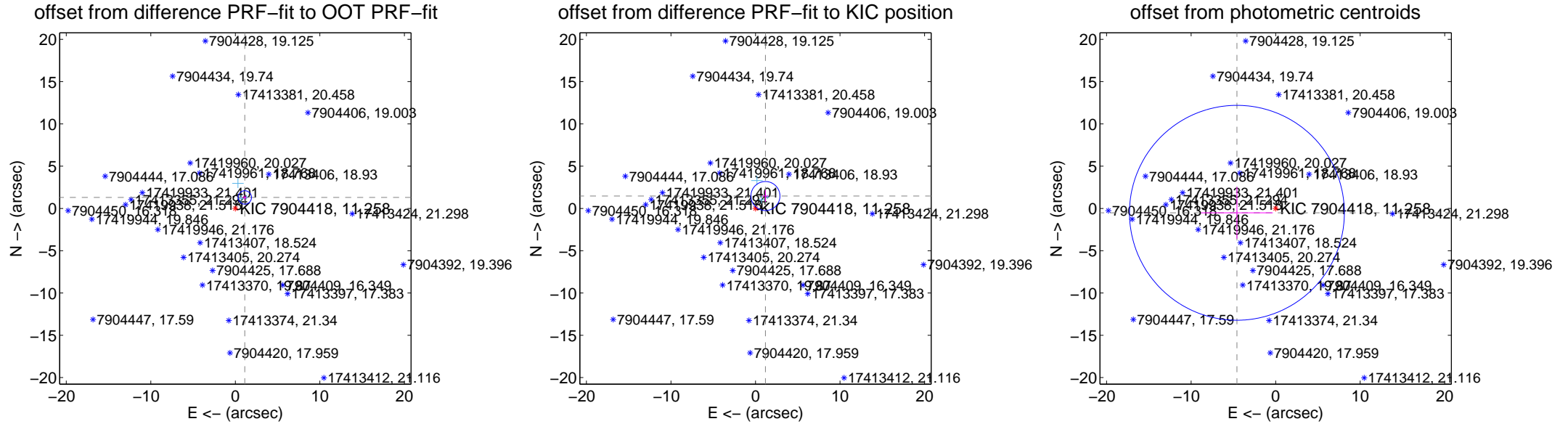
DV Centroid Data

Supplemental centroid analysis for 007904418-03. **Kepler magnitude: 11.26.** Transit SNR 8.71

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.716 ± 0.265	6.49	-1.117 ± 0.271	1.302 ± 0.260
PRF-fit source offset from KIC position	1.881 ± 0.572	3.29	-1.175 ± 0.337	1.469 ± 0.681
photometric centroid source offset	4.61 ± 4.24	1.09	4.58 ± 4.25	-0.51 ± 3.07



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

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

Q1 no difference image



Q1 no OOT image



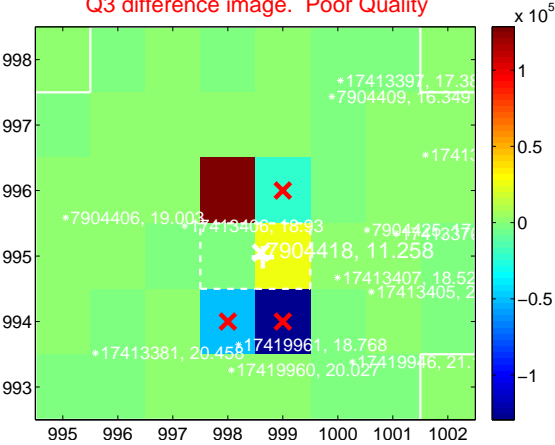
Q2 no difference image



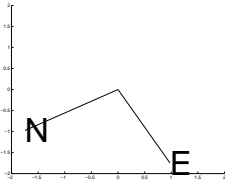
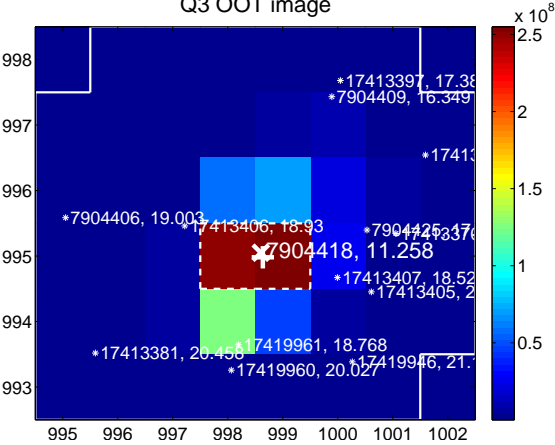
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

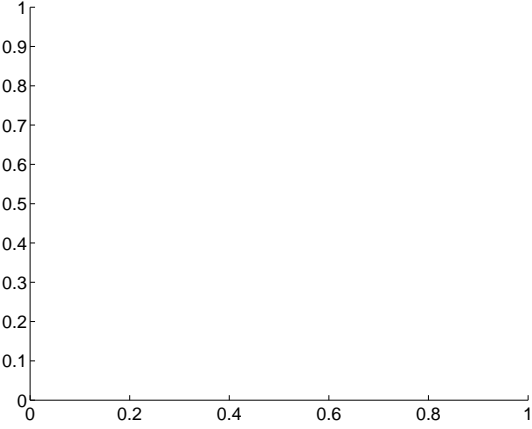
Q5 no difference image



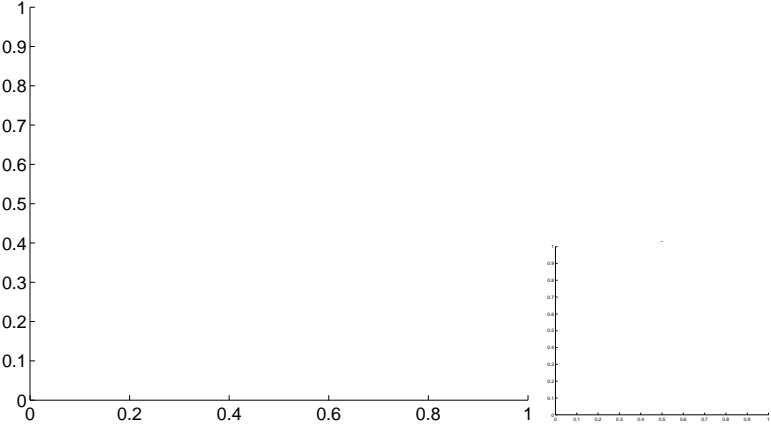
Q5 no OOT image



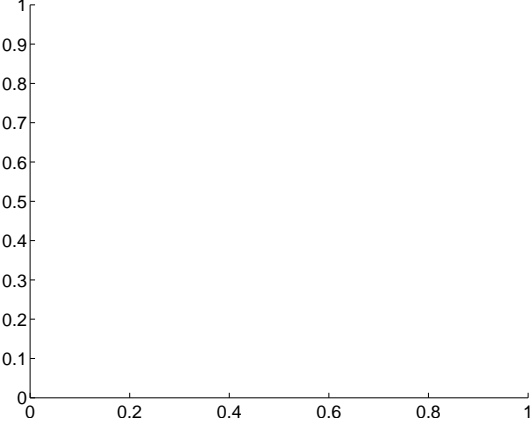
Q6 no difference image



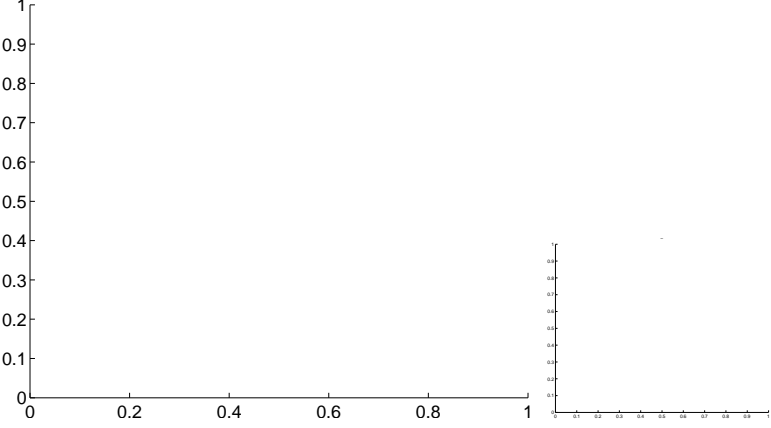
Q6 no OOT image



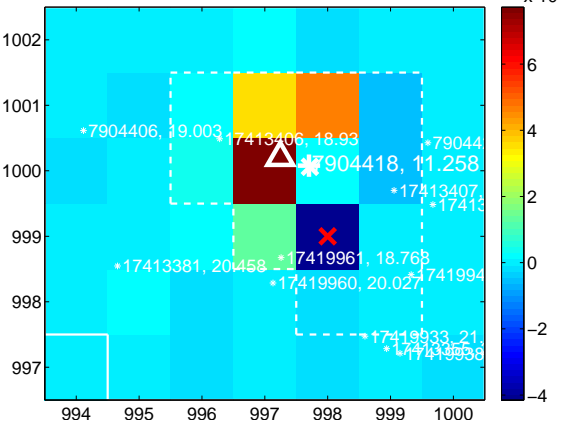
Q7 no difference image



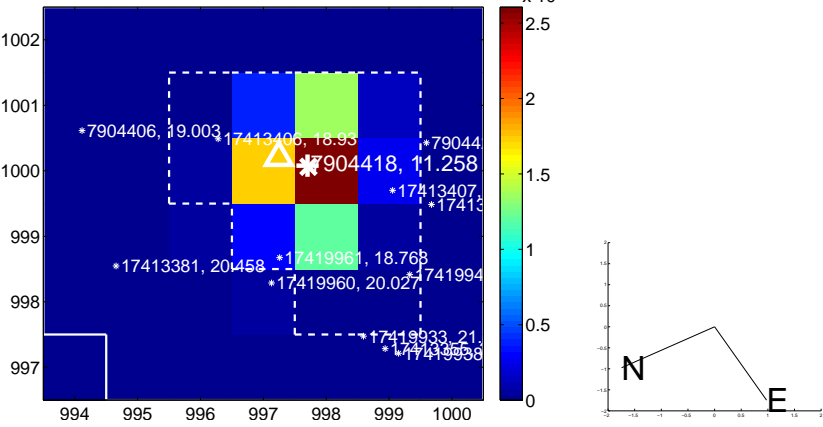
Q7 no OOT image



Q8 difference image



Q8 OOT image



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

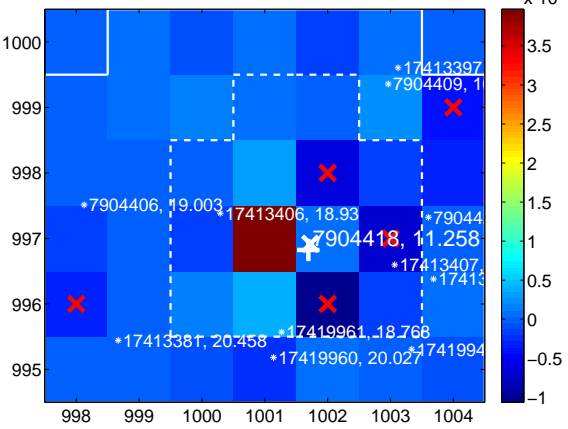
Q9 no difference image



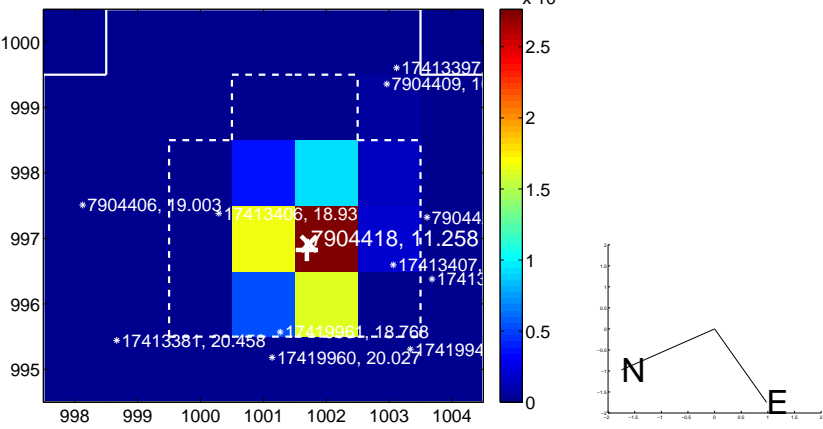
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



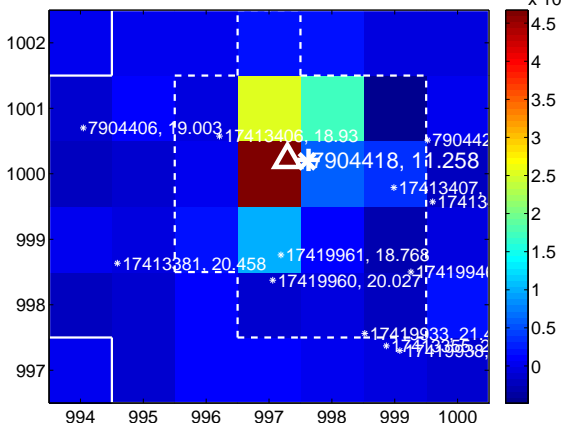
Q11 no difference image



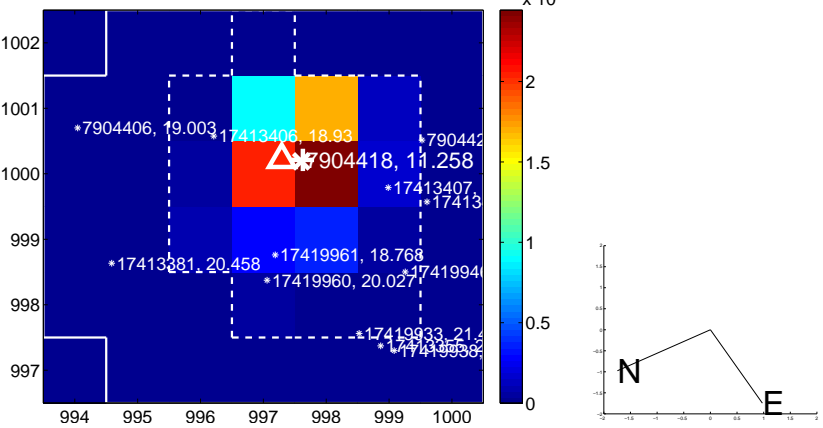
Q11 no OOT image



Q12 difference image



Q12 OOT image



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

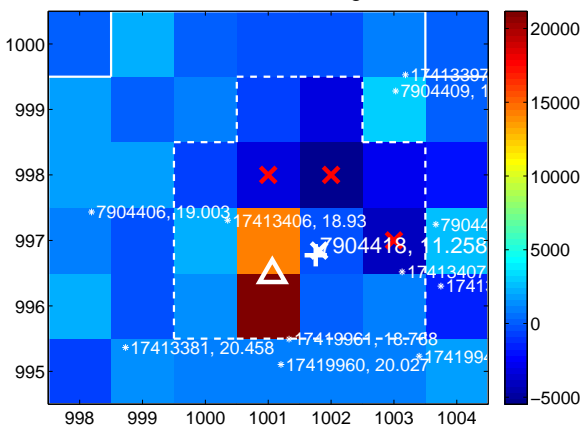
Q13 no difference image



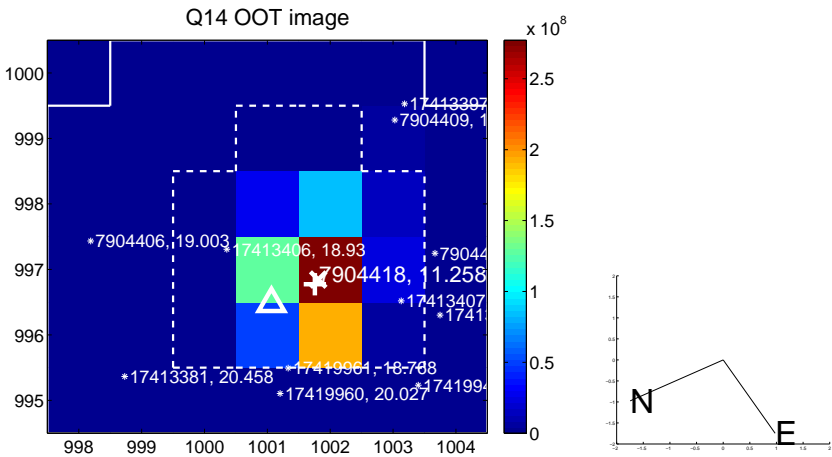
Q13 no OOT image



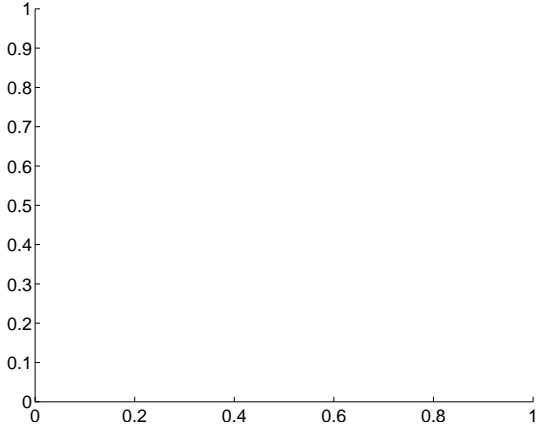
Q14 difference image



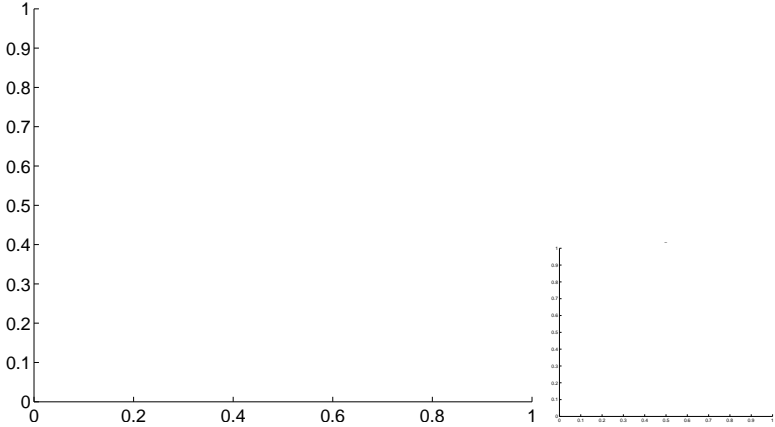
Q14 OOT image



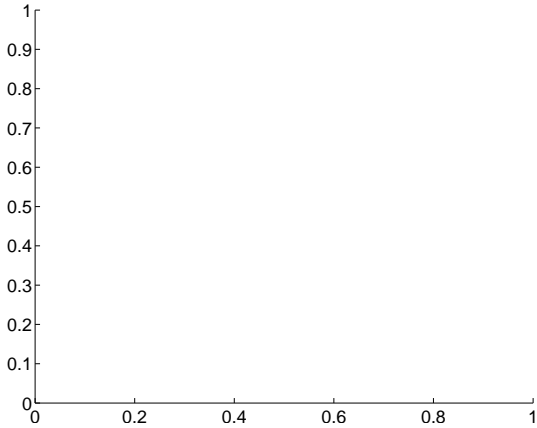
Q15 no difference image



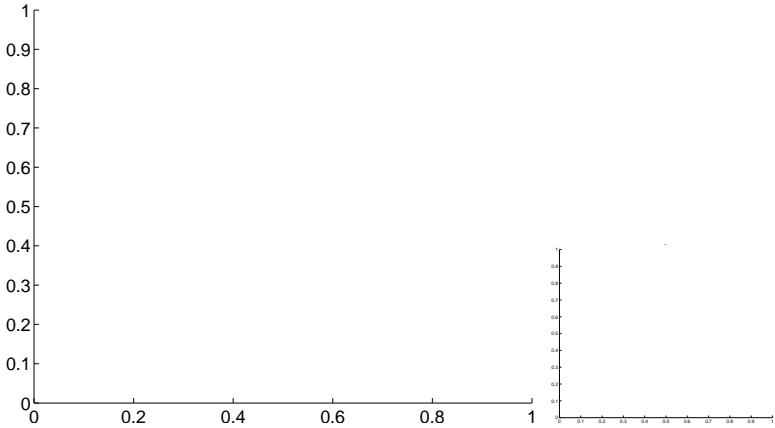
Q15 no OOT image



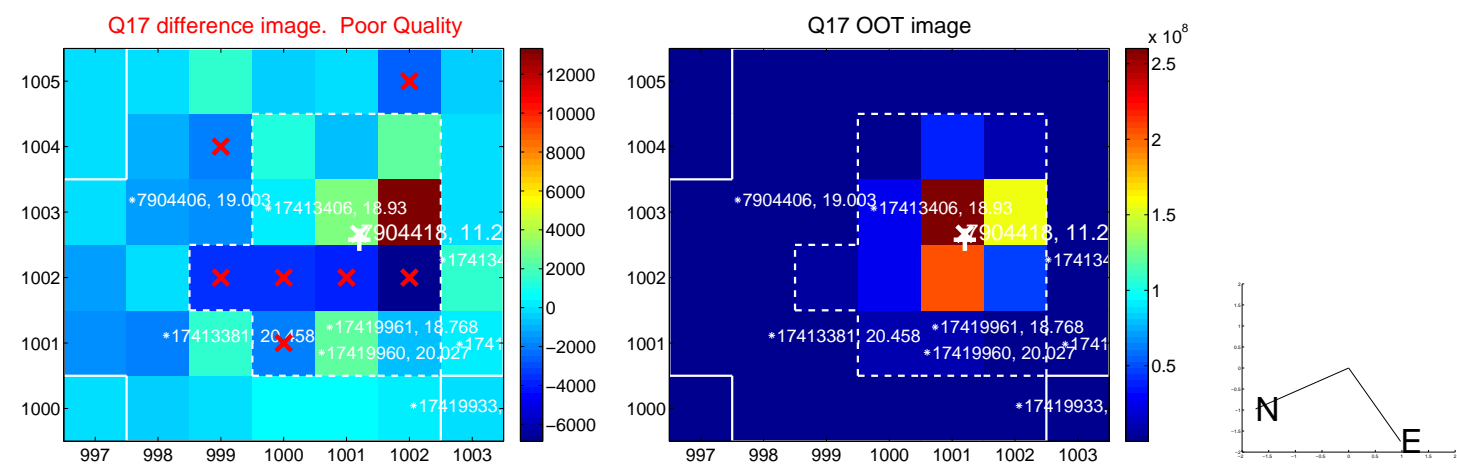
Q16 no difference image



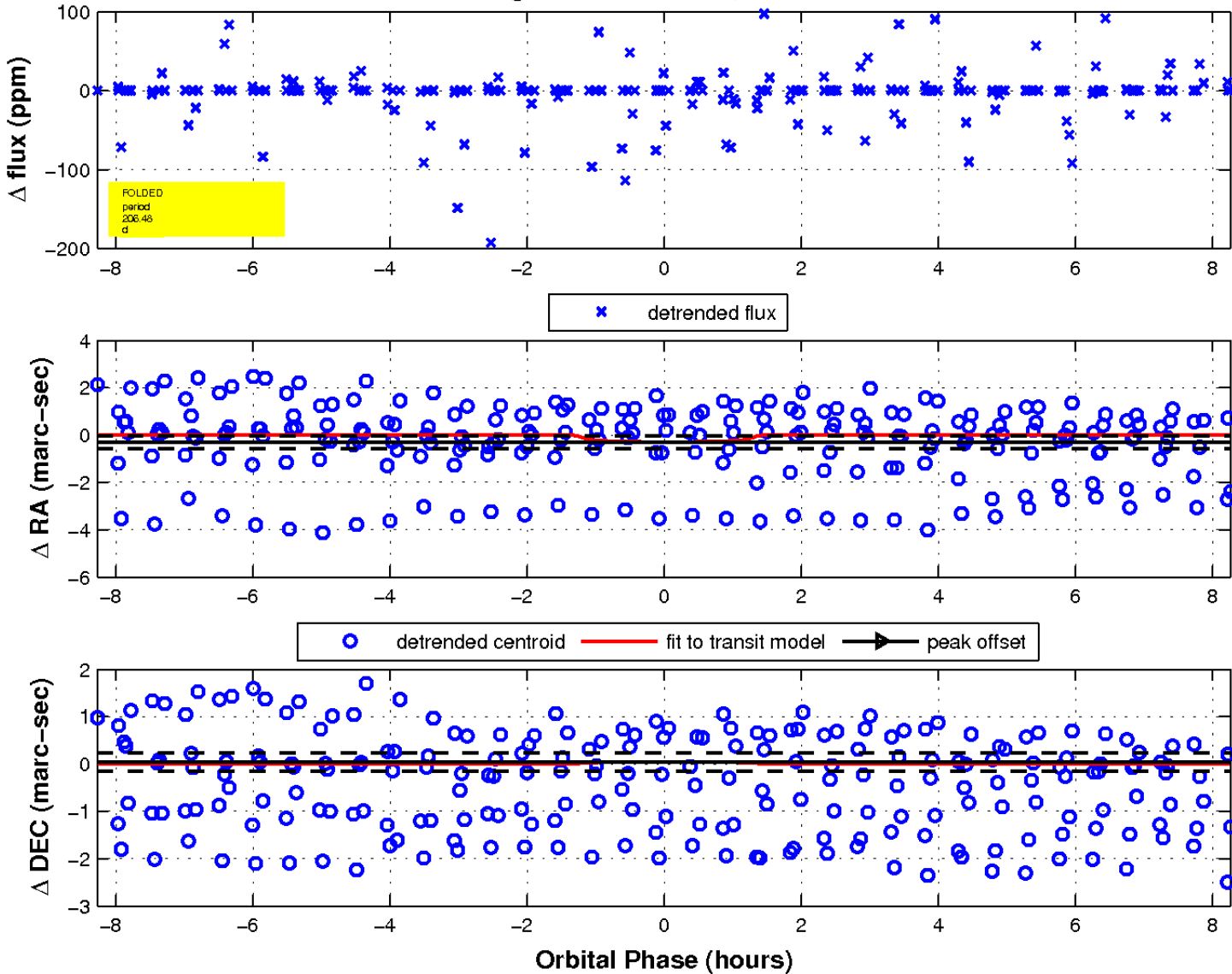
Q16 no OOT image



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

