

KIC 004814290

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})
004814290-01	OBS	No	171.407876	165.299291	1689.5	6.765	12.1	7.7	0.76	4970	3.04	1.08
004814290-02	OBS	No	480.620409	439.458264	552.2	2.469	14.4	3.0	0.76	4970	2.00	0.27
004814290-03	OBS	No	84.891238	213.830828	668.7	3.533	12.6	5.6	0.76	4970	2.14	2.75
004814290-04	OBS	No	267.768695	263.947542	250.0	1.925	12.4	1.7	0.76	4970	1.43	0.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004814290-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004814290-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004814290-03	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
004814290-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

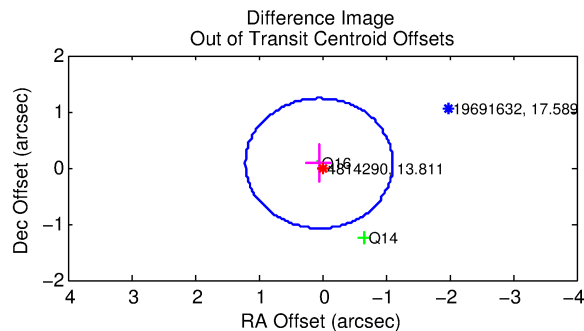
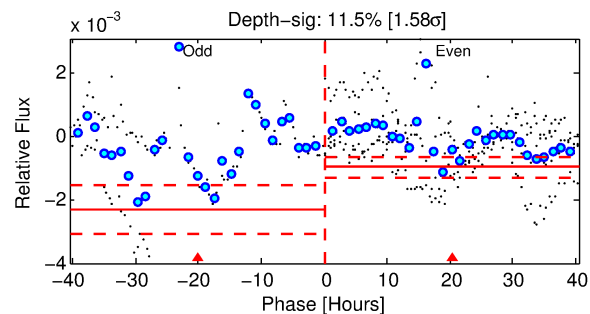
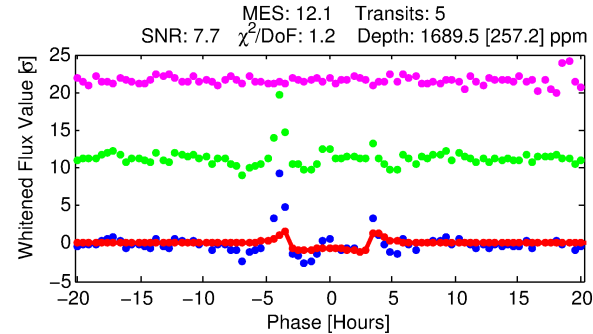
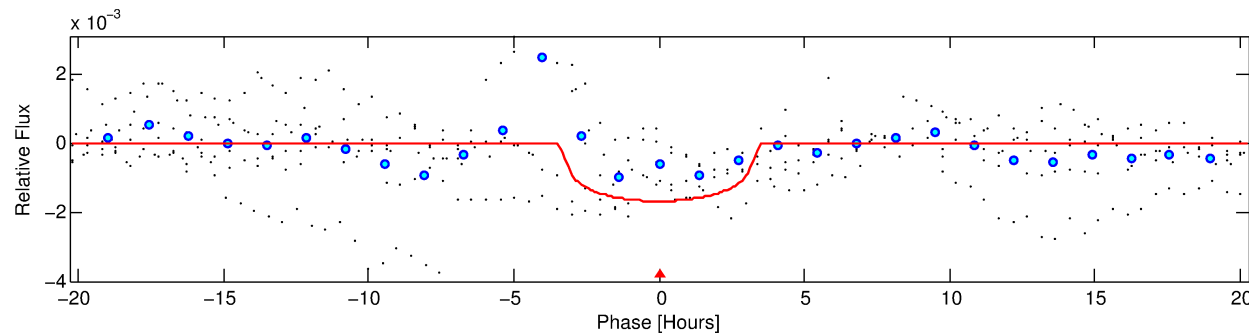
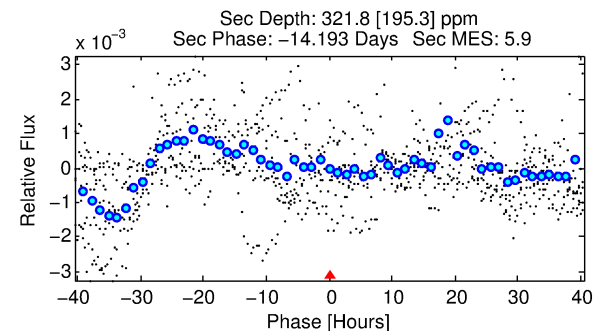
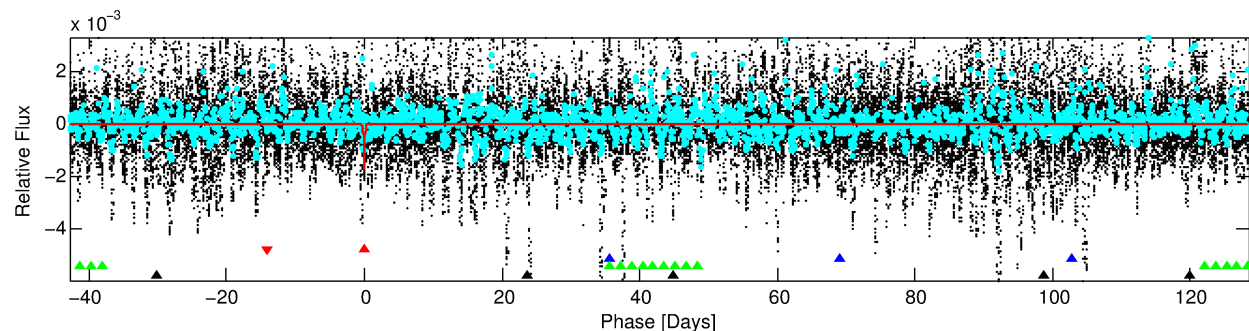
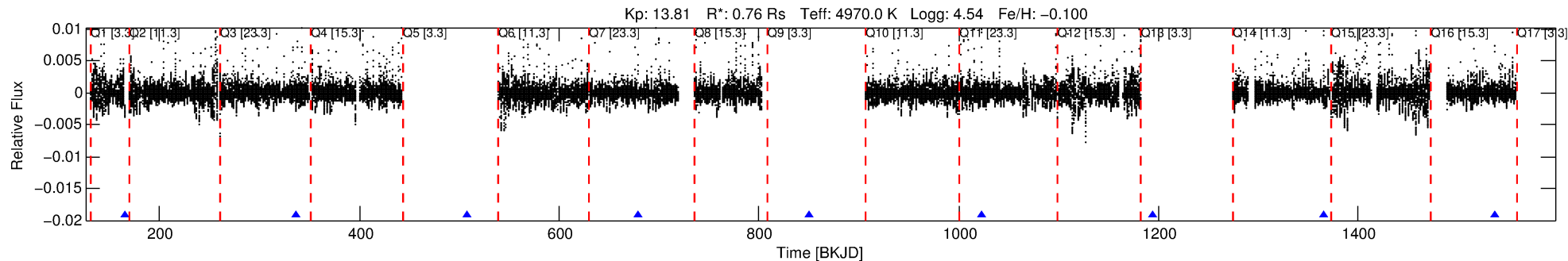
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004814290-01

No Significant Match Found

DV One-Page Summary

KIC: 4814290 Candidate: 1 of 4 Period: 171.408 d



DV Fit Results:

Period = 171.40788 [0.00131] d
Epoch = 165.2993 [0.0070] BKJD
Rp/R* = 0.0364 [0.0227]
a/R* = 200.61 [416.16]
b = 0.00 [505.75]
Seff = 1.08 [0.21]
Teq = 260 [13] K
Rp = 3.04 [1.92] Re
a = 0.5446 [0.0559] AU
Ag = 5694.54 [7933.31] [0.72σ]
Teff = 3488 [1212] K [2.66σ]

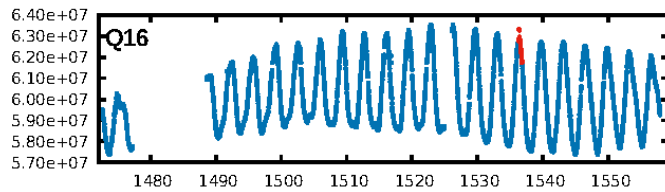
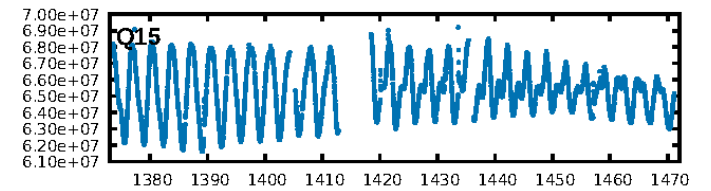
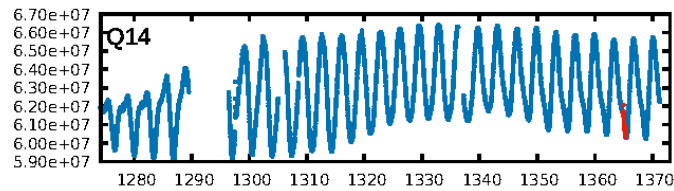
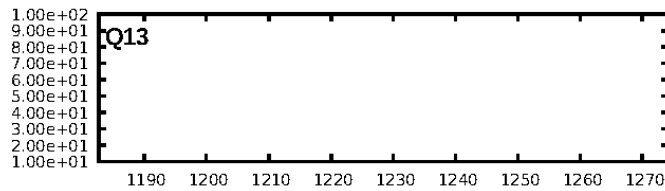
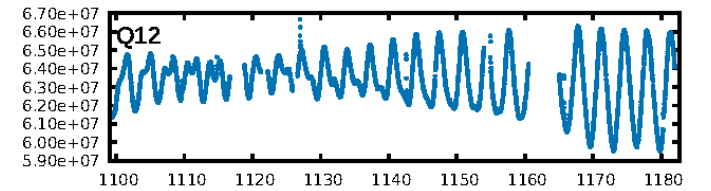
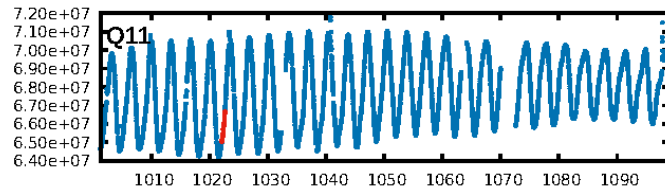
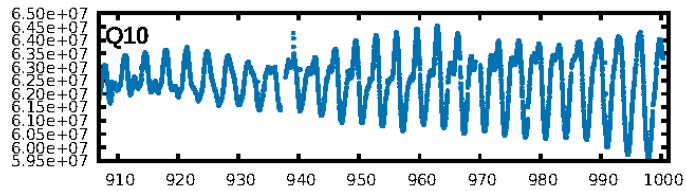
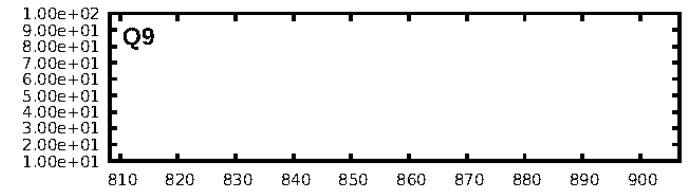
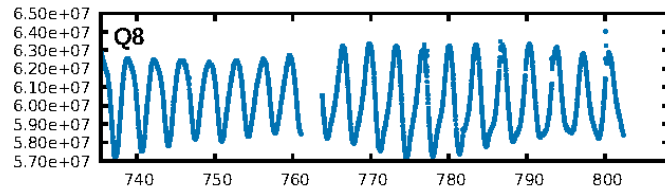
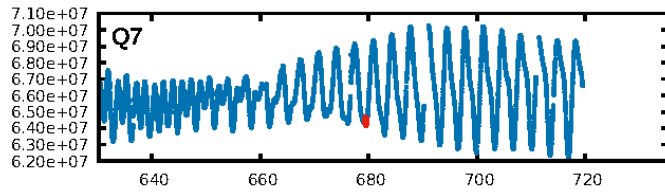
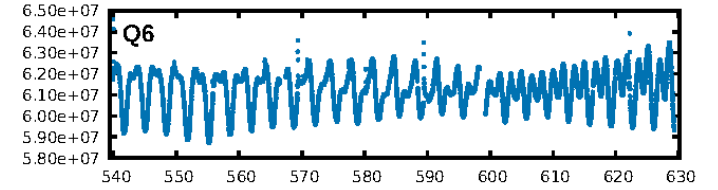
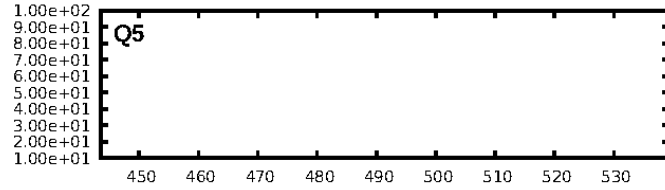
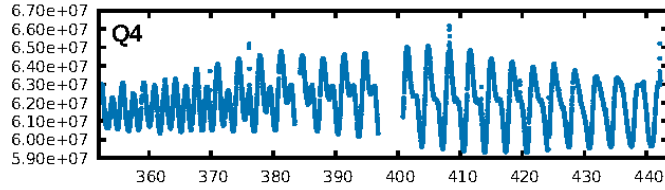
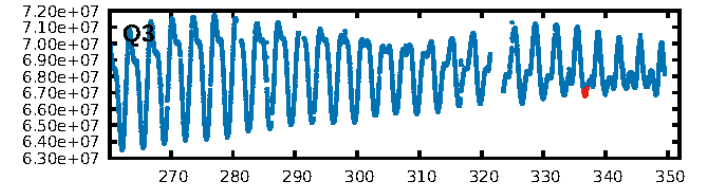
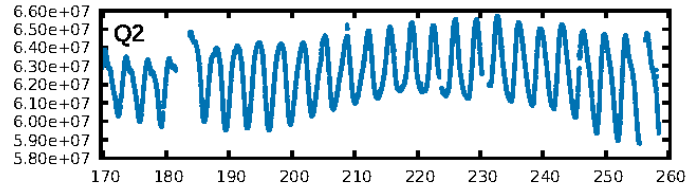
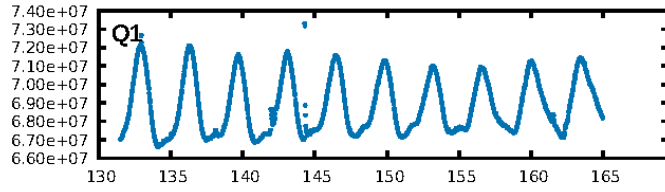
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [272.06σ]
LongPeriod-sig: 100.0% [328.78σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 51.2%
Bootstrap-pfa: 1.07e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 2.267
Centroid-sig: 0.0%
Centroid-so: 3.904 arcsec [1.48σ]
OotOffset-rm: 0.091 arcsec [0.24σ]
KicOffset-rm: 0.125 arcsec [1.59σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/3/1/0 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 1.00 [5/5]

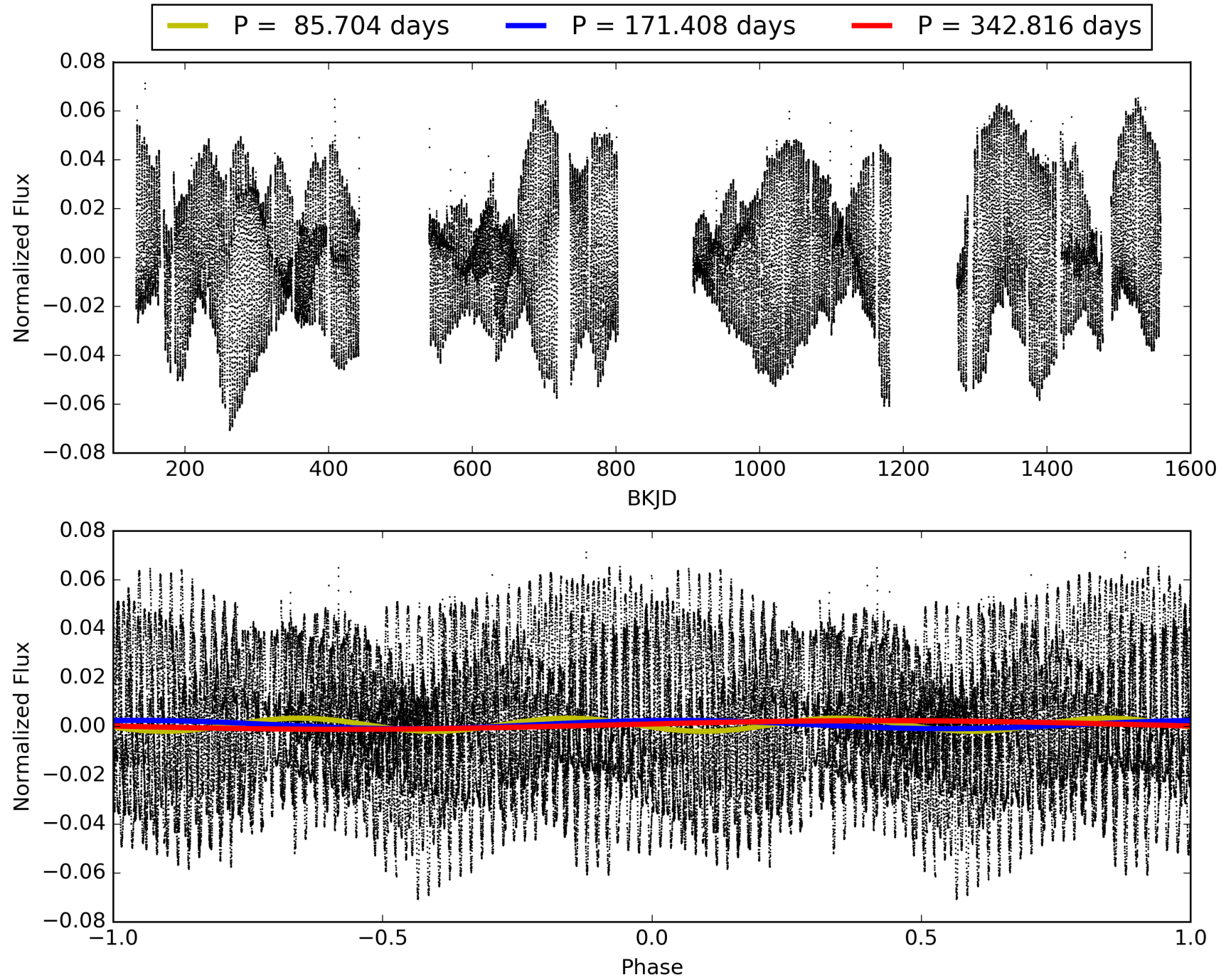
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:21:04 Z

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

TCE 004814290-01, PDC Light Curves

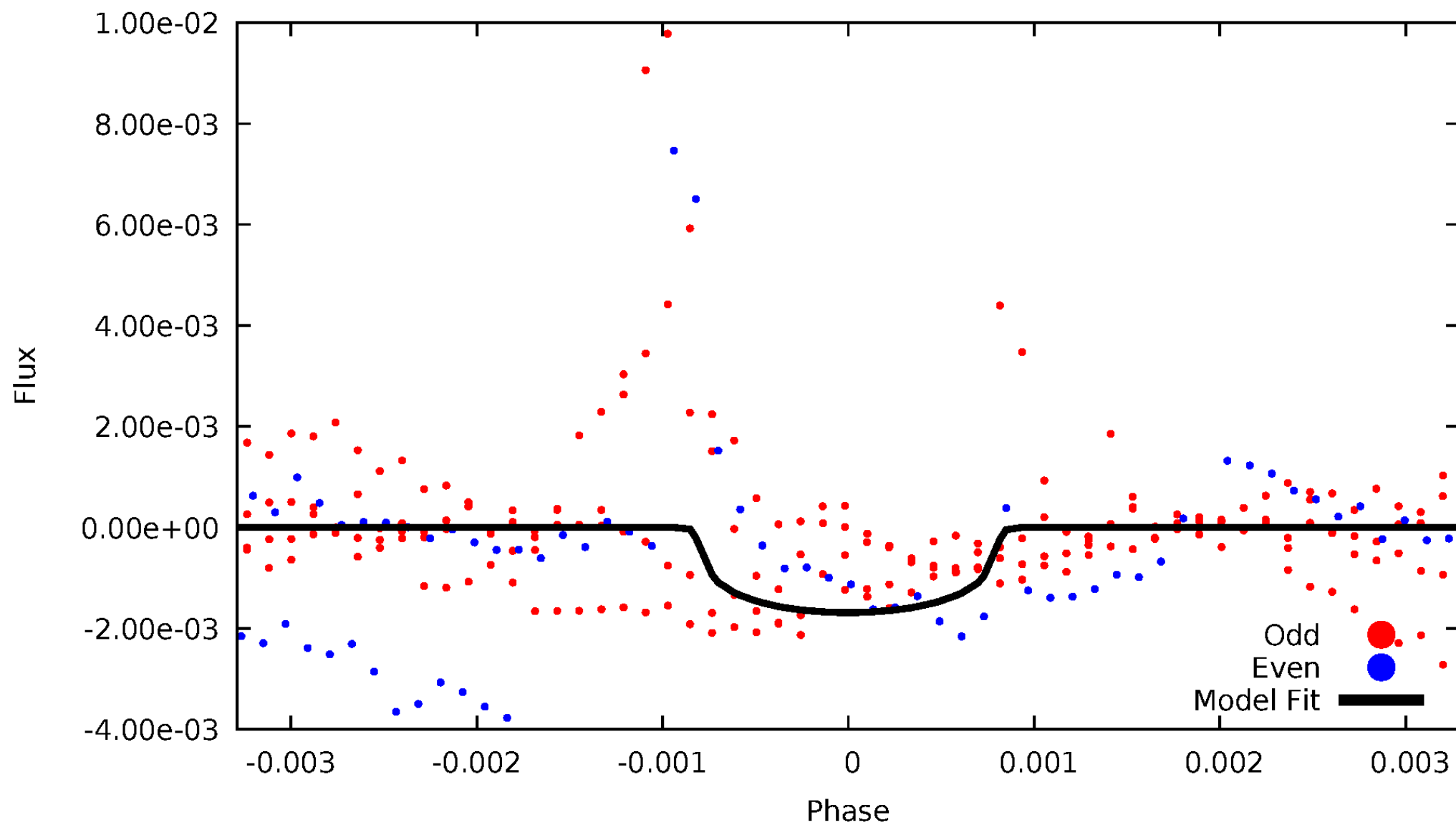


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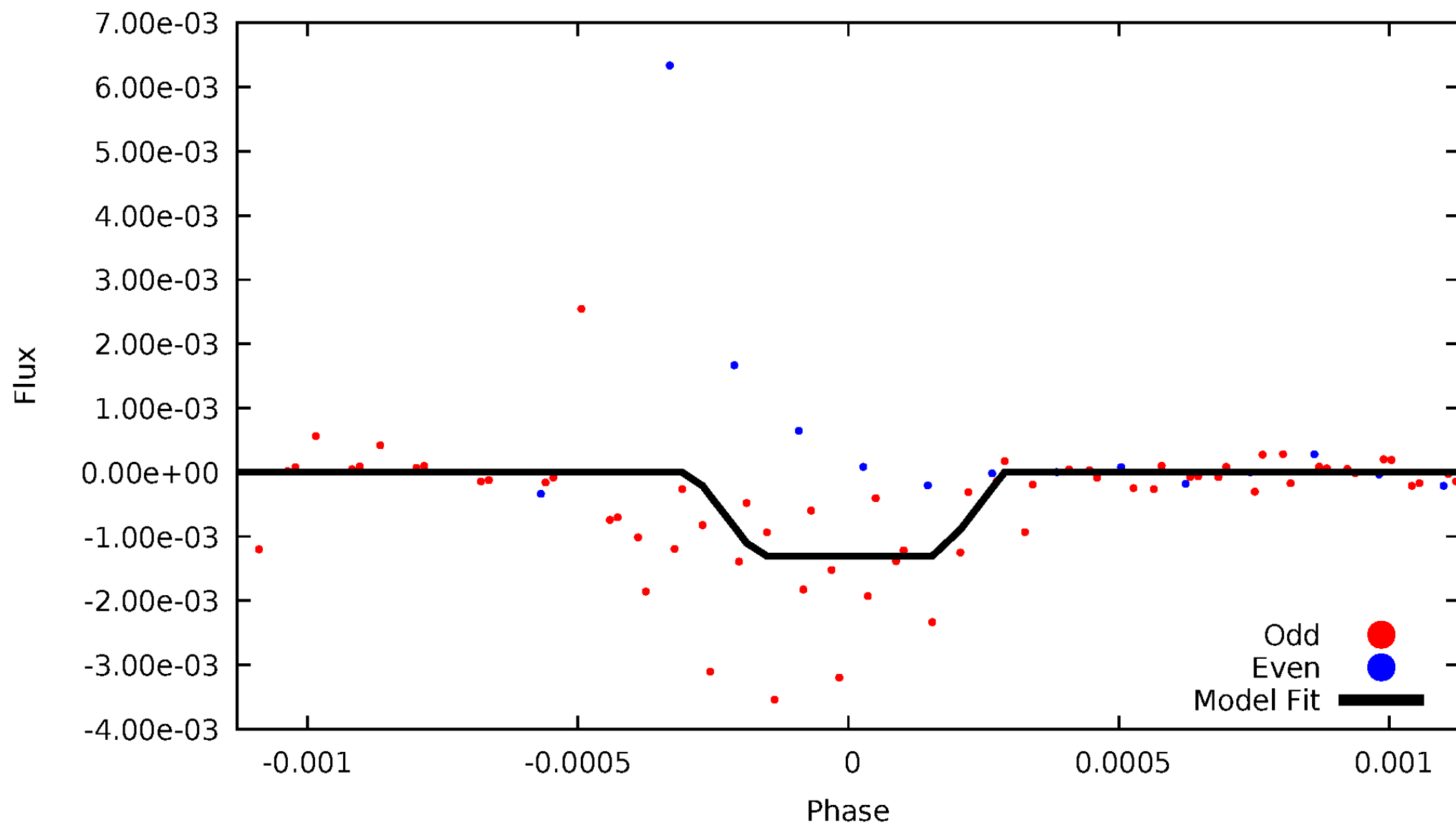
DV Odd/Even

TCE 004814290-01



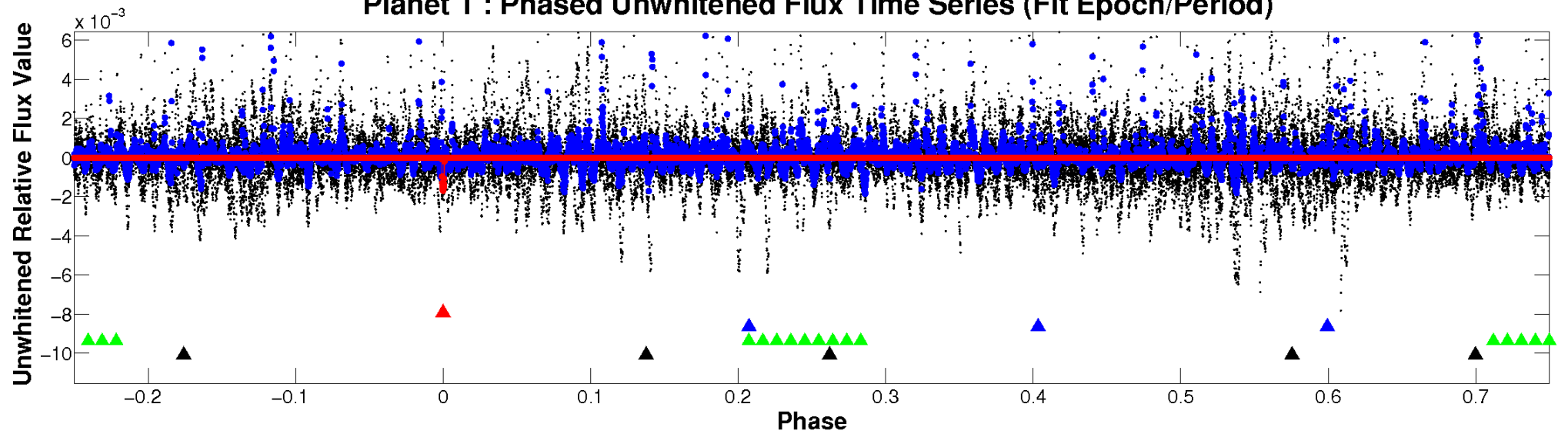
ALT Odd/Even

TCE 004814290-01

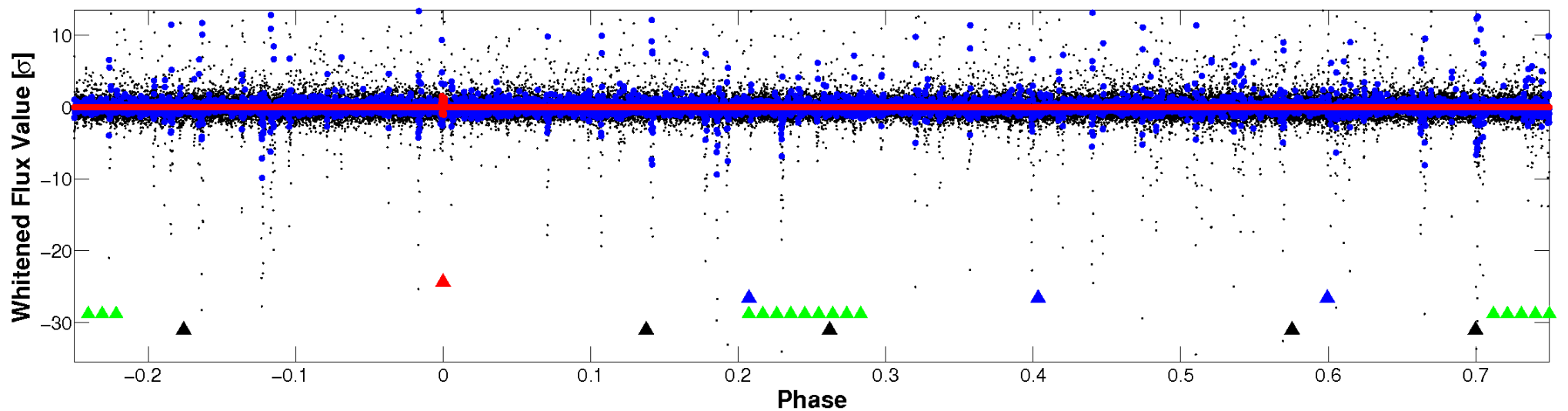


Non-Whitened Vs. Whitened Light Curve

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

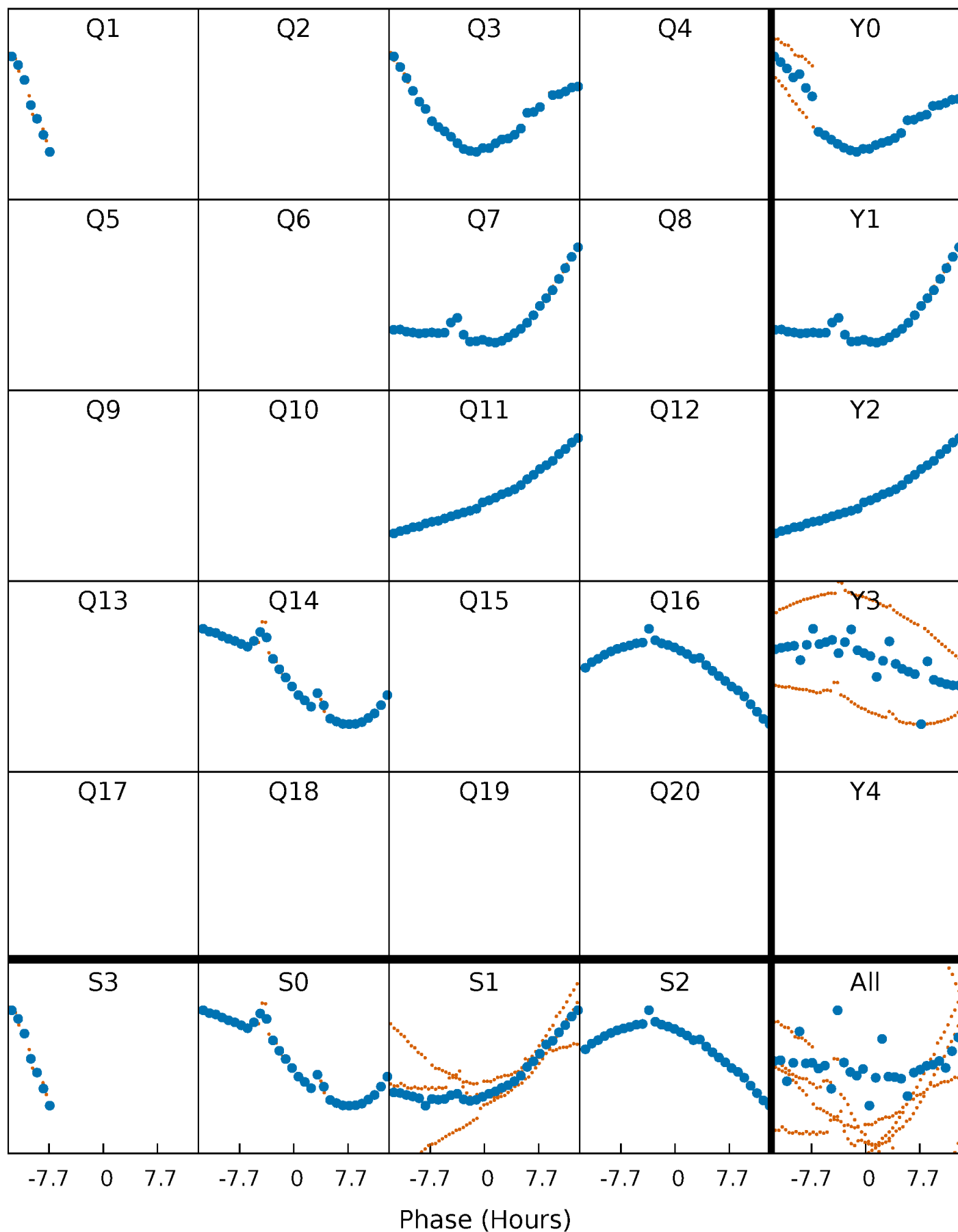


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



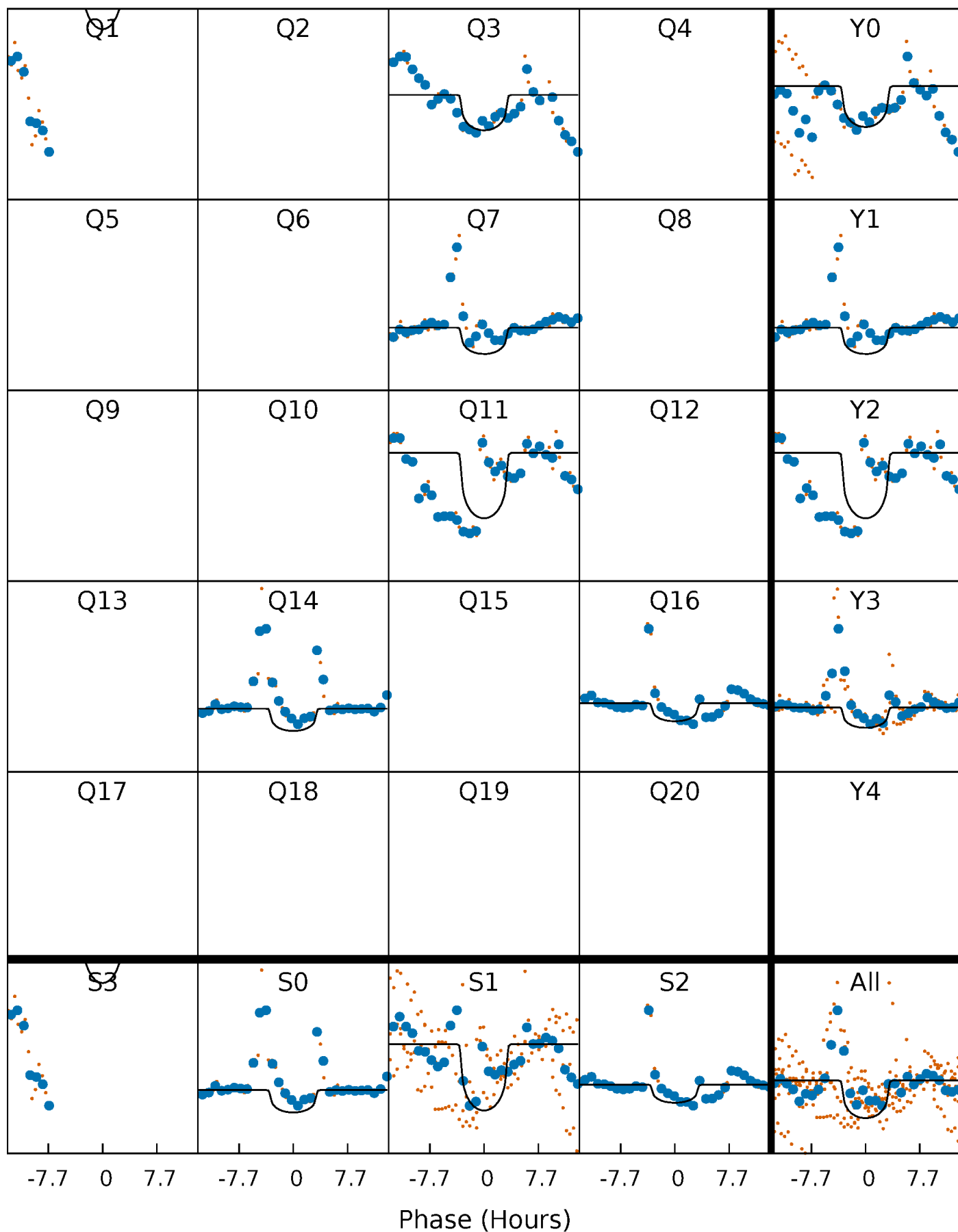
PDC Quarter-Phased Transit Curves

TCE 004814290-01 P=171.407876 Days $T_0=165.299291$ (BKJD)



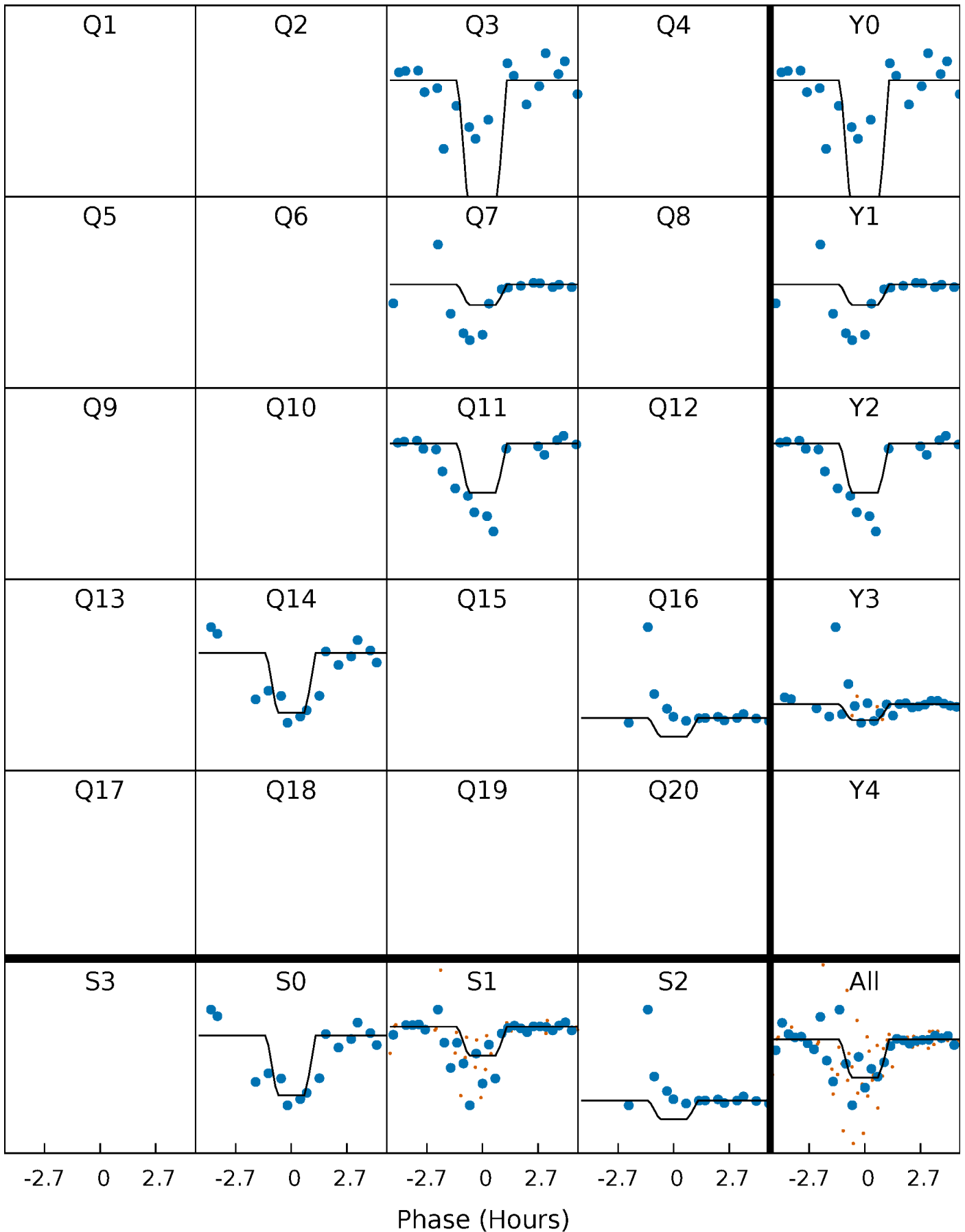
DV Quarter-Phased Transit Curves

TCE 004814290-01 P=171.407876 Days $T_0=165.299291$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

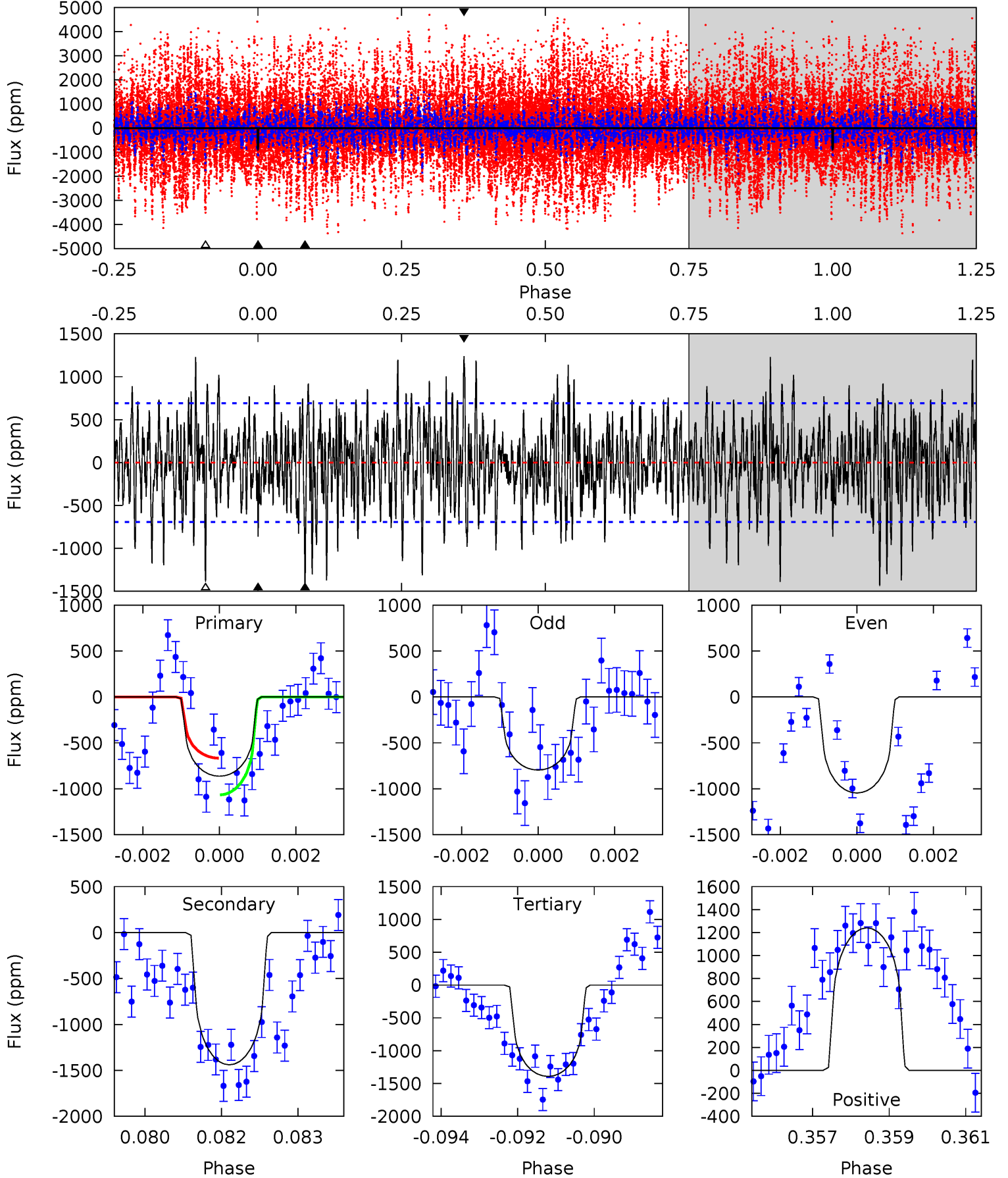
TCE 004814290-01 P=171.403385 Days $T_0=165.251204$ (BKJD)



DV Model-Shift Uniqueness Test

004814290-01, P = 171.407876 Days, E = 165.299291 Days

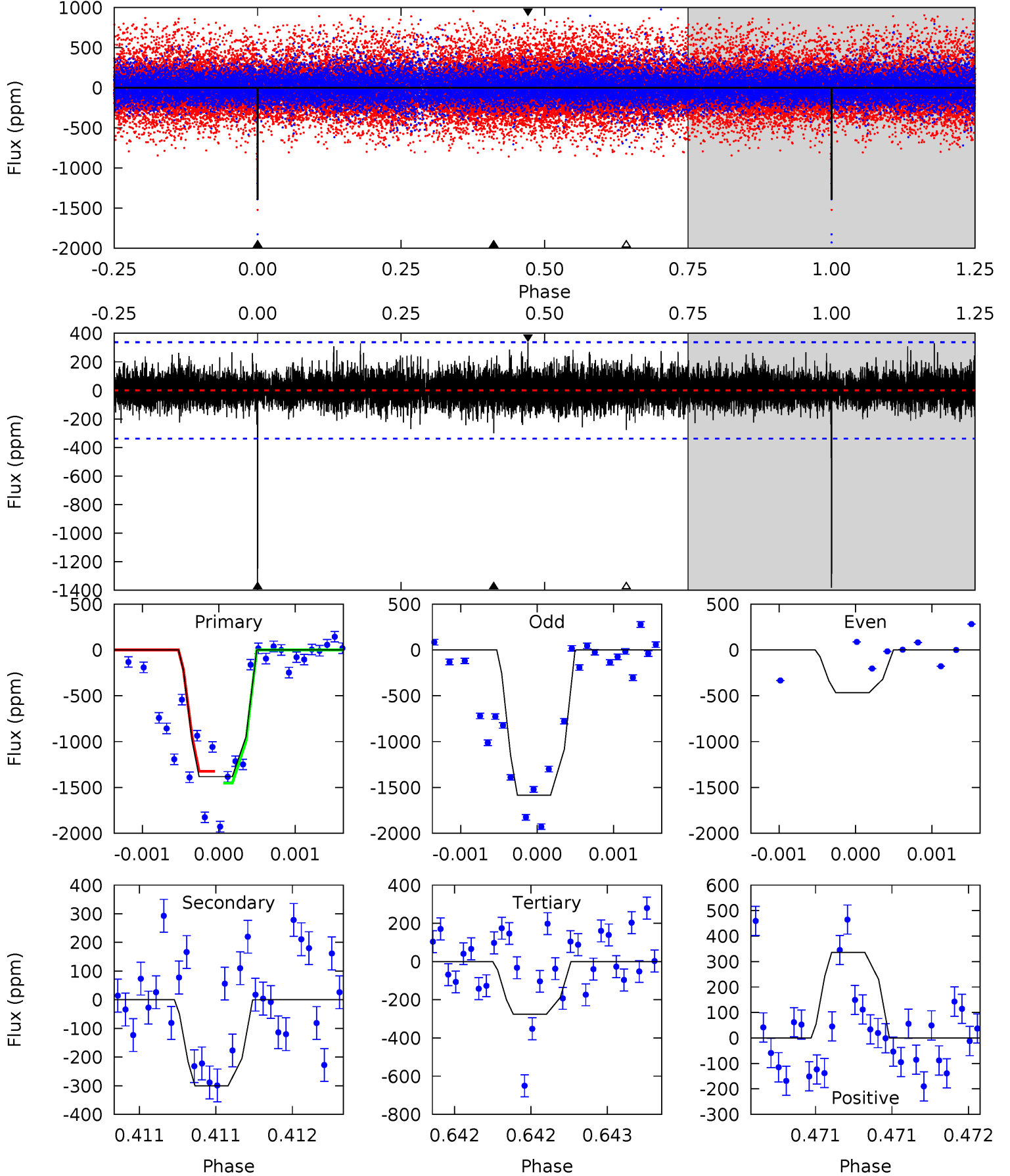
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.68	11.1	10.8	9.60	5.36	3.14	3.01	-4.09	-2.92	0.37	1.54	0.68	0.88	0.46	1.57



Alt Model-Shift Uniqueness Test

004814290-01, P = 171.403385 Days, E = 165.251204 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	4.93	4.53	5.52	5.55	3.44	1.17	18.2	17.2	0.40	-0.59	9.06	0.88	0.20	0



Stellar Parameters For KIC 004814290

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4970^{+151}_{-136}	$4.537^{+0.072}_{-0.090}$	$-0.100^{+0.300}_{-0.250}$	$0.764^{+0.087}_{-0.079}$	$0.735^{+0.100}_{-0.057}$	$2.317^{+0.746}_{-0.566}$
	+3%/-3%	+2%/-2%	+300%/-250%	+11%/-10%	+14%/-8%	+32%/-24%
Source	PHO1	KIC0	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 004814290-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1438 ± 129	$3.08^{+2.05}_{-1.48}$	364^{+16}_{-14}	4984^{+2005}_{-846}	24234^{+65318}_{-15059}
Alt.	-300 ± 61	$3.24^{+1.93}_{-1.70}$	364^{+15}_{-14}	3694^{+1209}_{-512}	4793^{+16035}_{-3020}

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 $A_{obs} \gg 1.0$

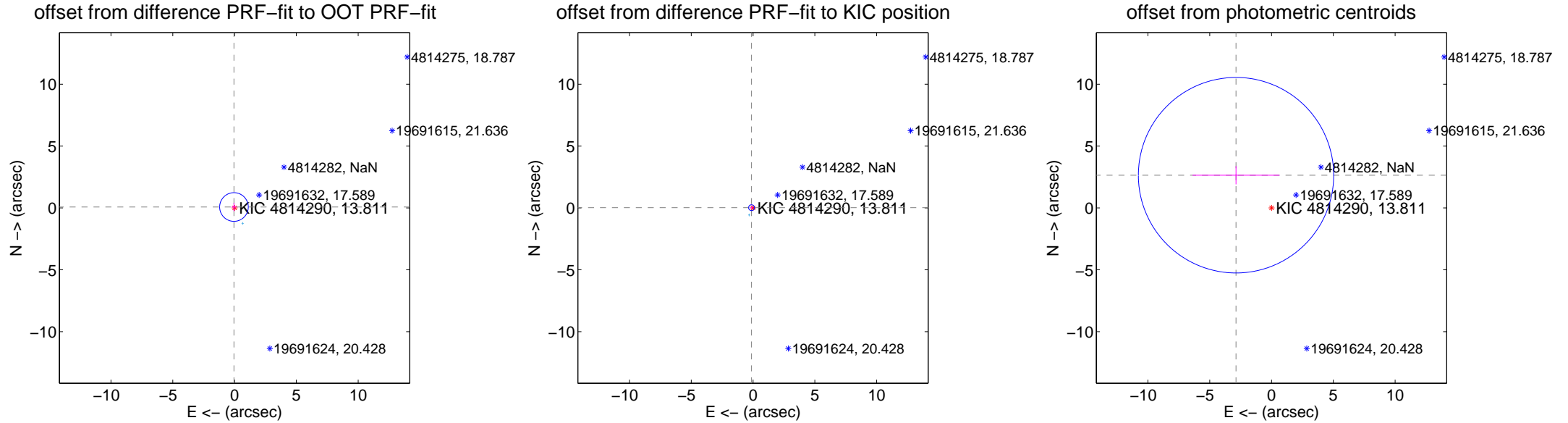
DV Centroid Data

Supplemental centroid analysis for 004814290-01. Kepler magnitude: 13.81. Transit SNR 7.67

There are 4 quarters with good PRF difference image offsets

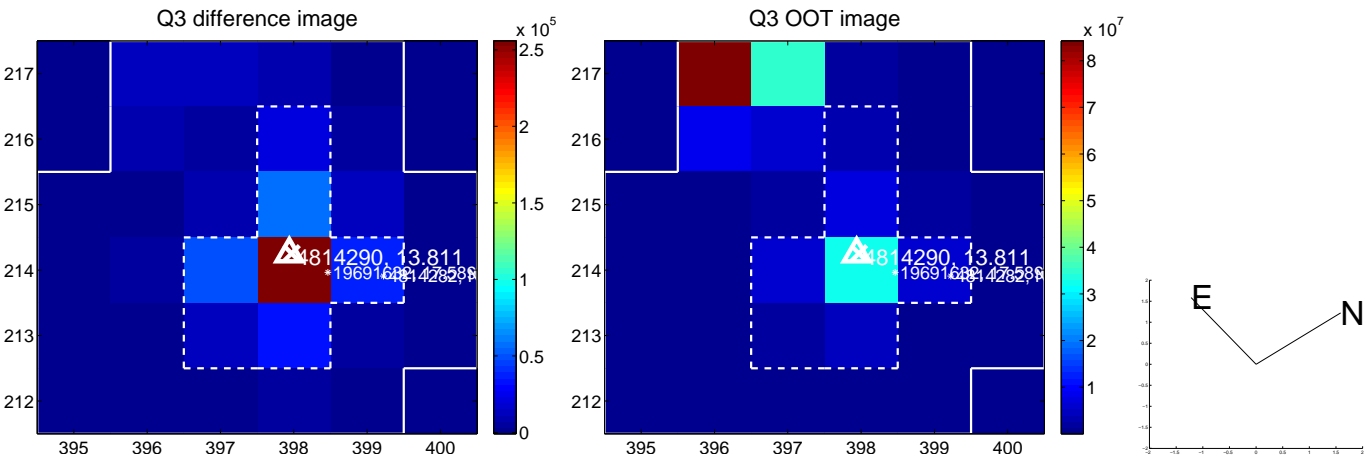
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.091 ± 0.386	0.24	0.050 ± 0.191	0.077 ± 0.343
PRF-fit source offset from KIC position	0.125 ± 0.079	1.59	0.123 ± 0.078	0.023 ± 0.093
photometric centroid source offset	3.90 ± 2.63	1.48	2.87 ± 3.51	2.65 ± 0.74

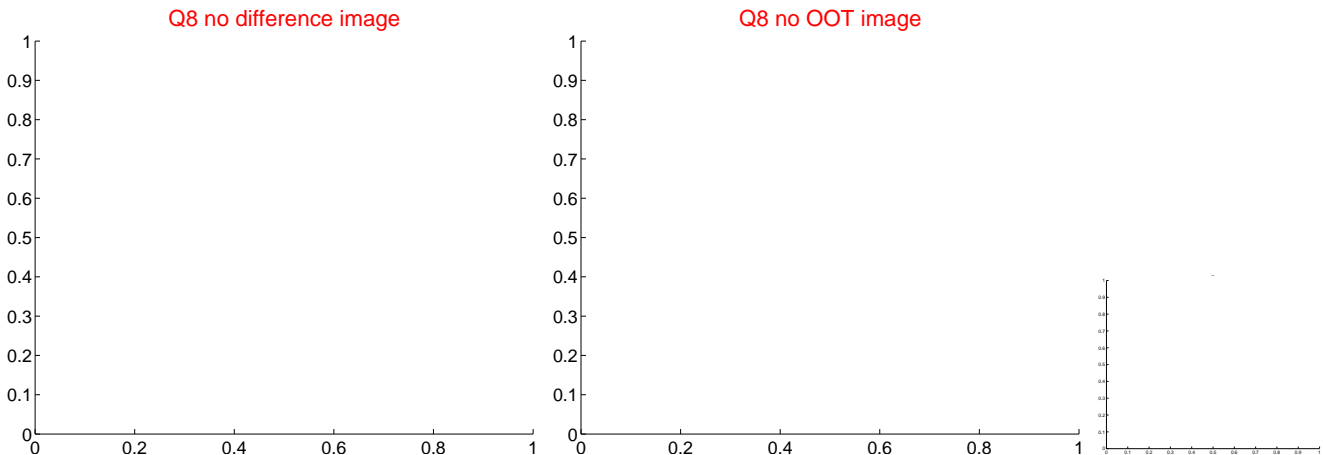
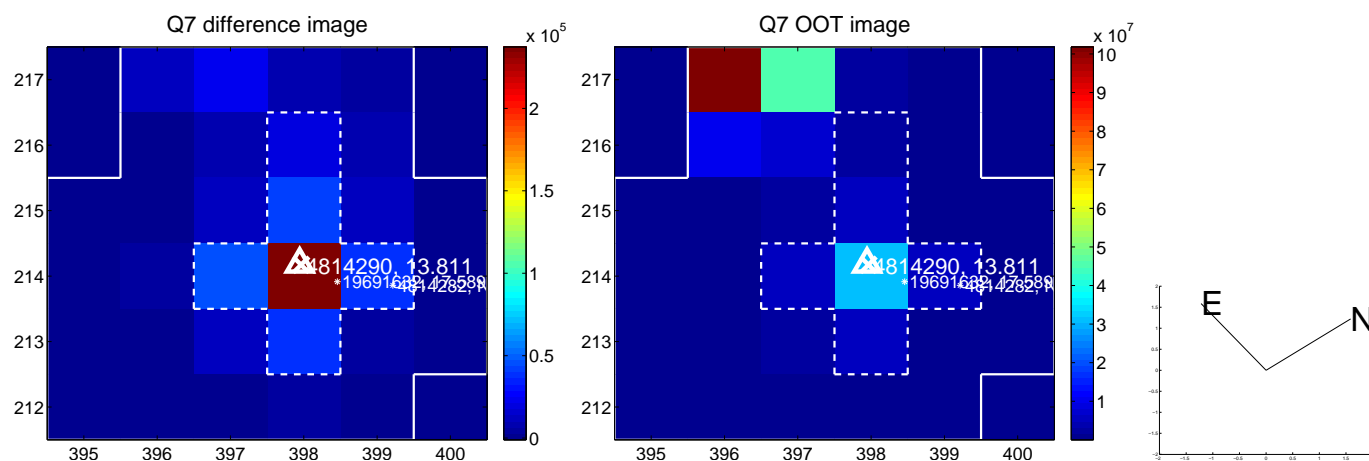
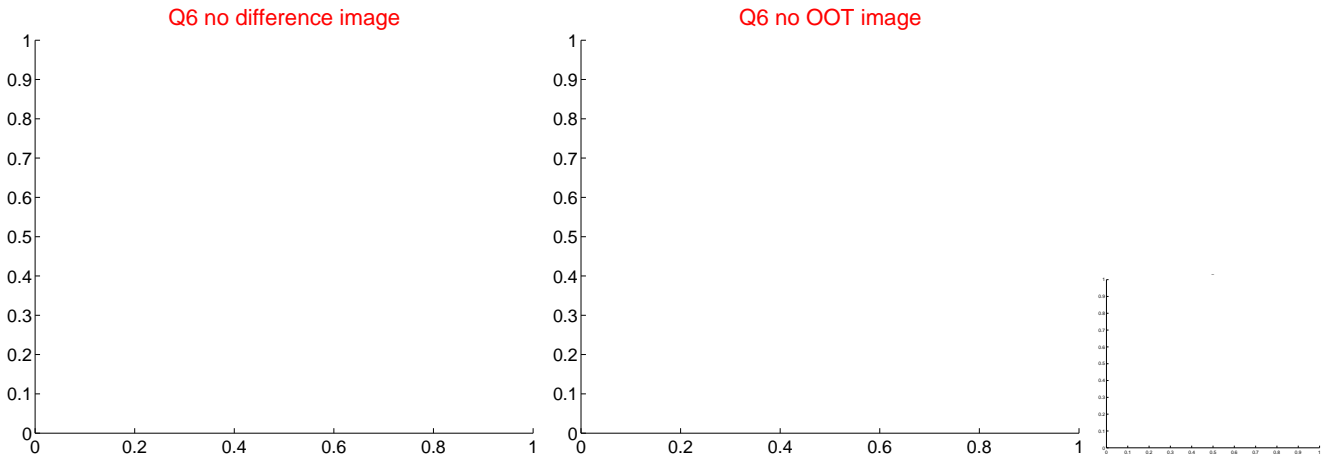
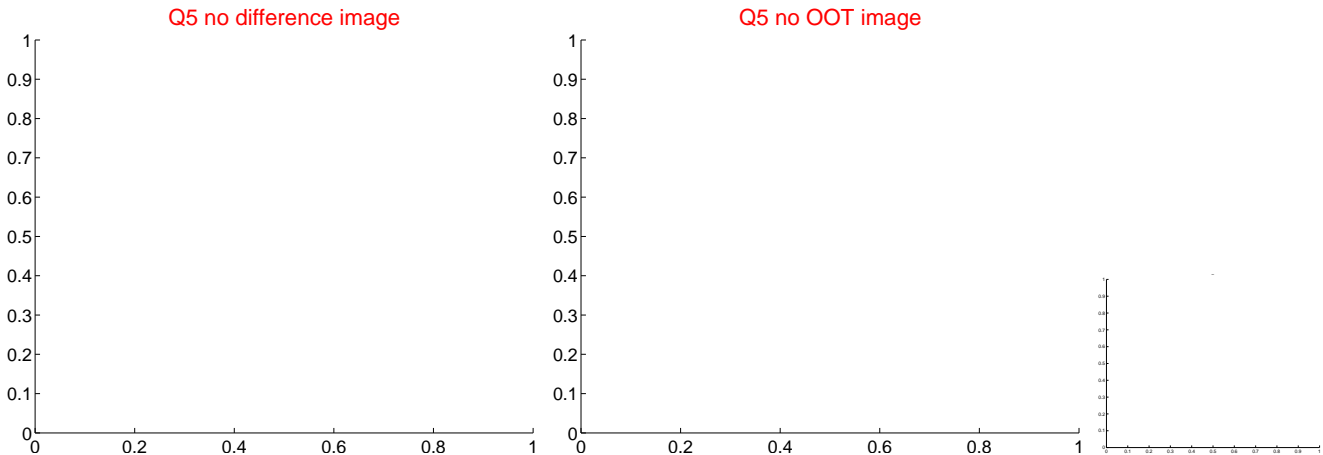


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

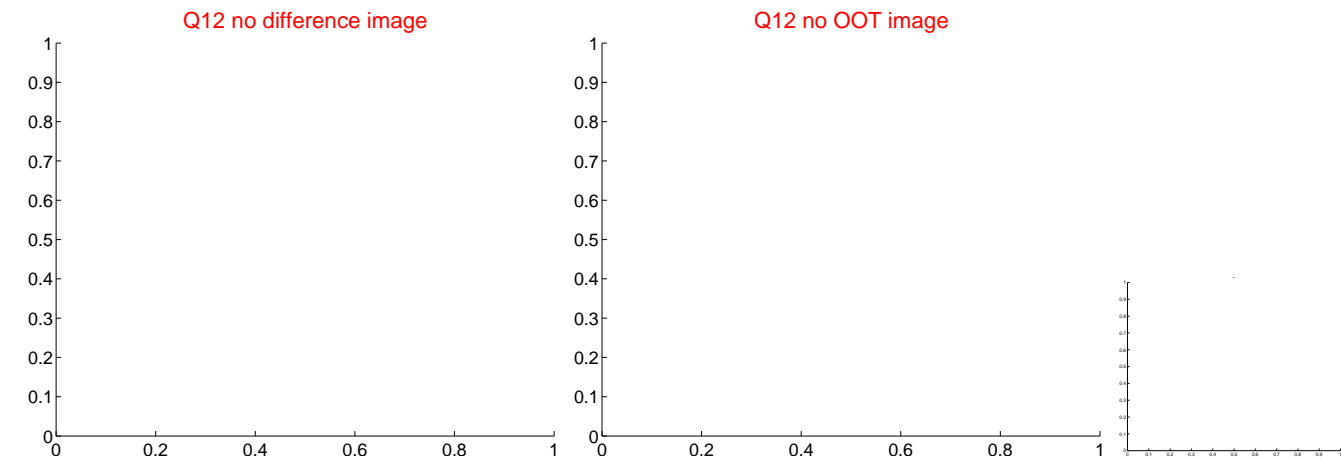
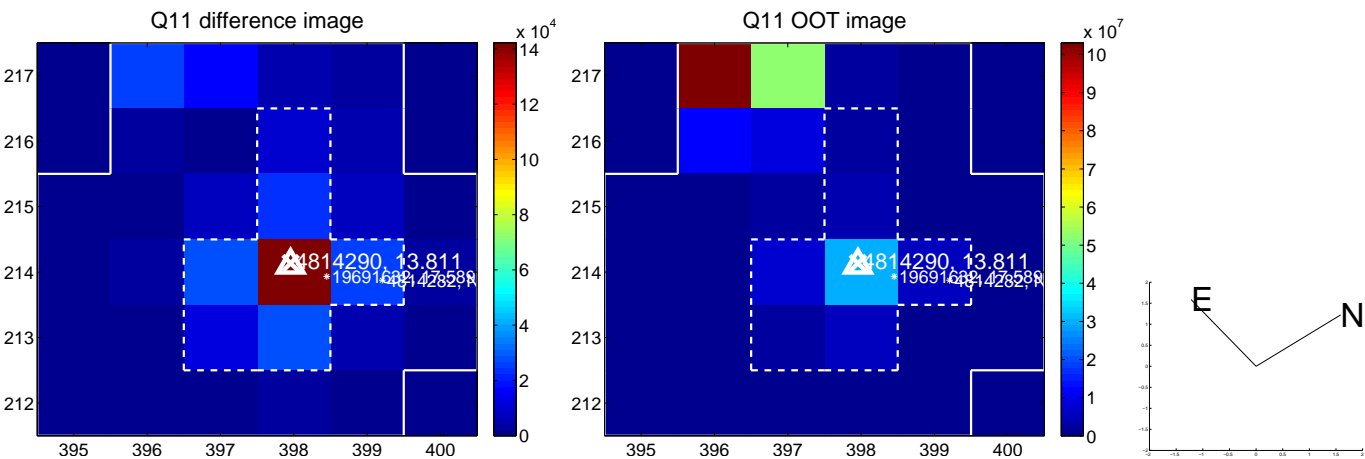
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



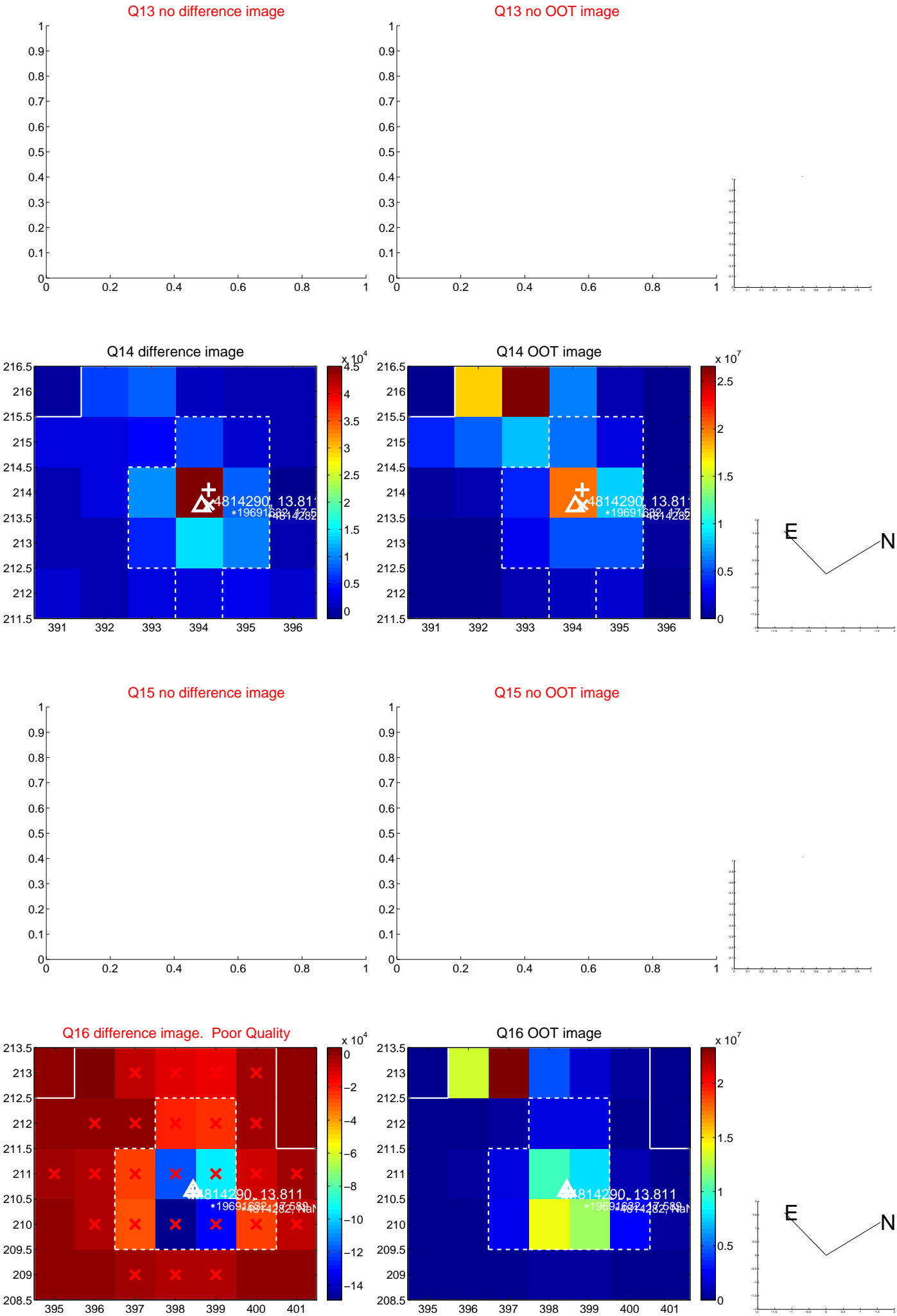
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



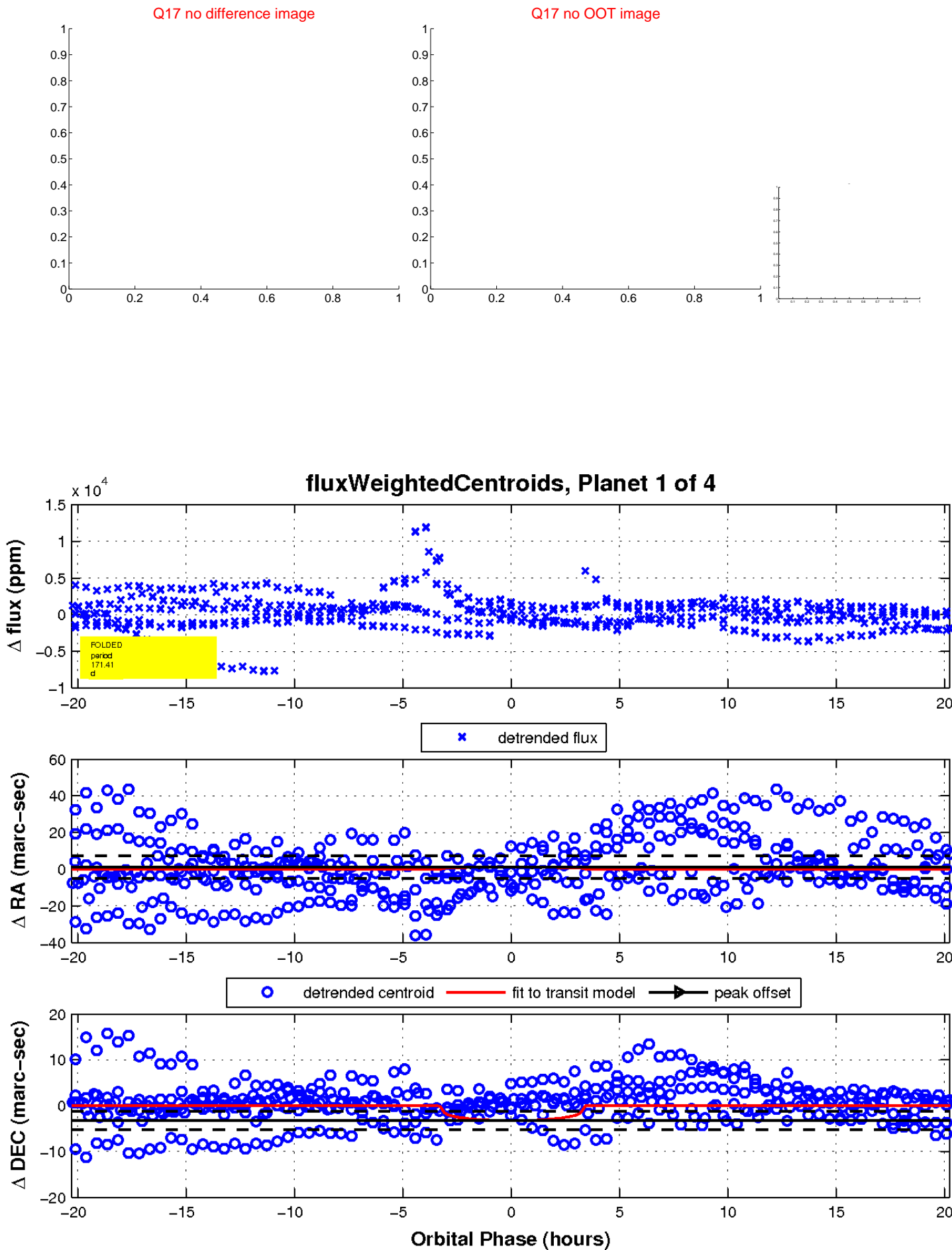
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



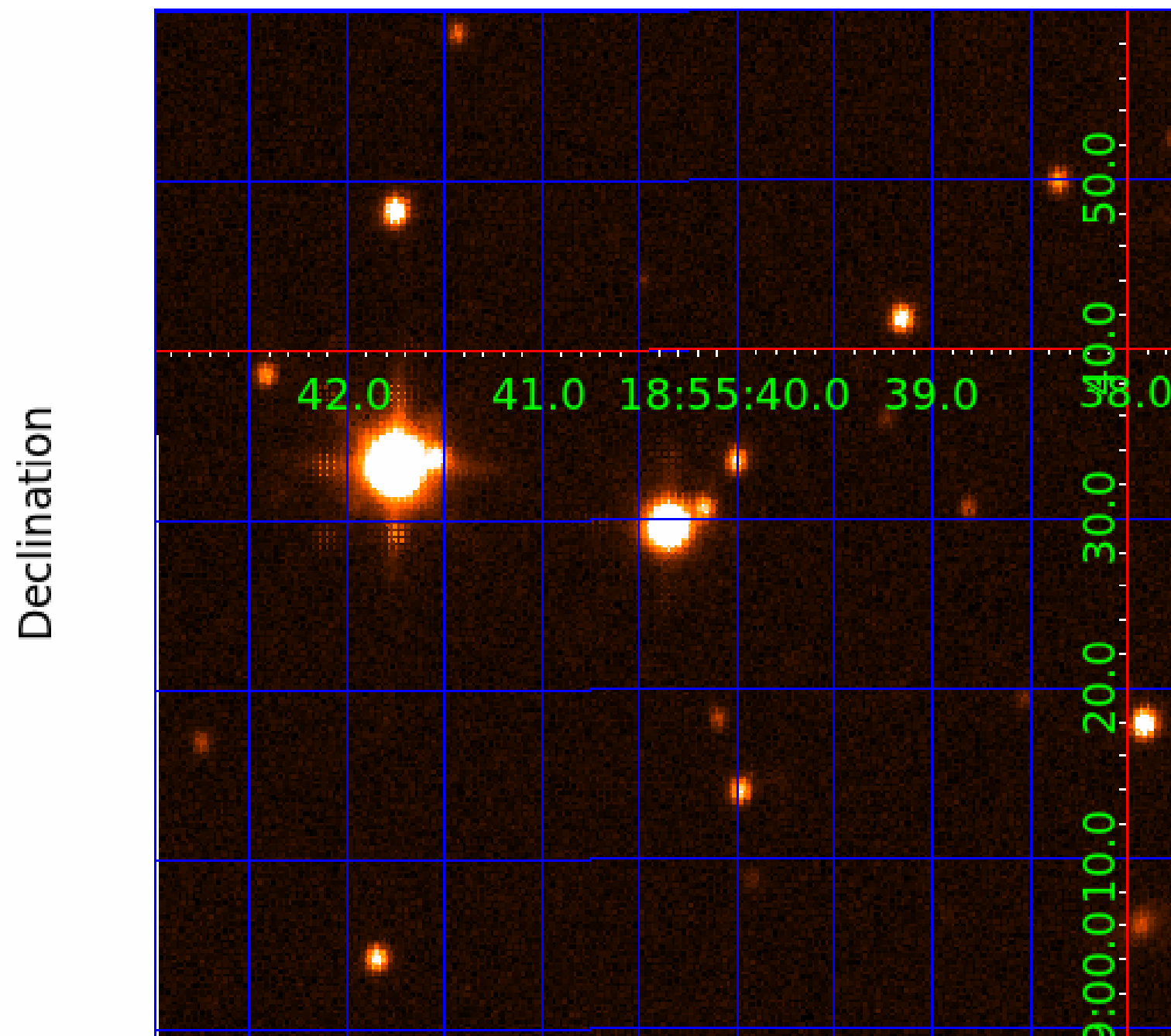
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004814290

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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004814290-04	OBS	No	267.768695	263.947542	250.0	1.925	12.4	1.7	0.76	4970	1.43	0.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004814290-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004814290-03	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
004814290-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

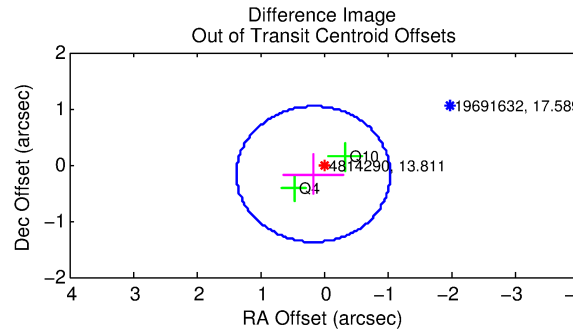
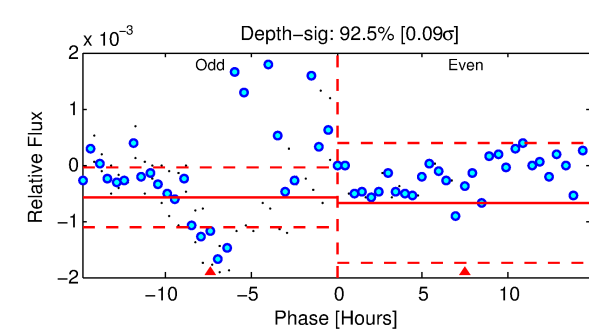
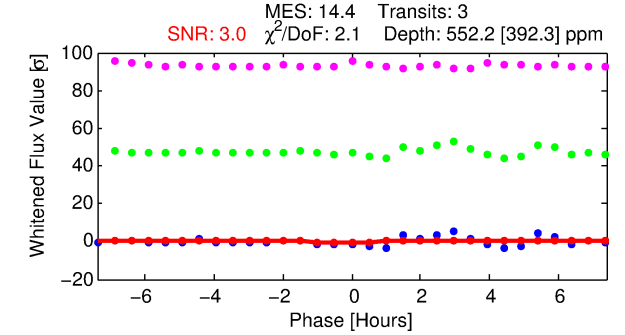
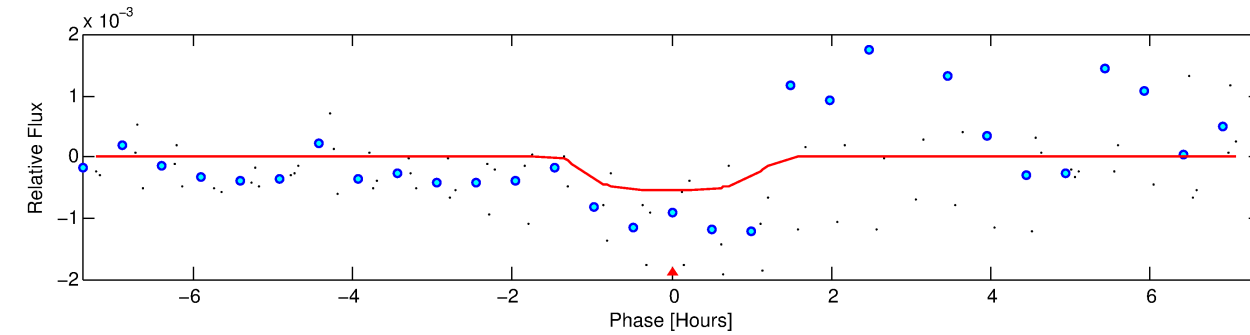
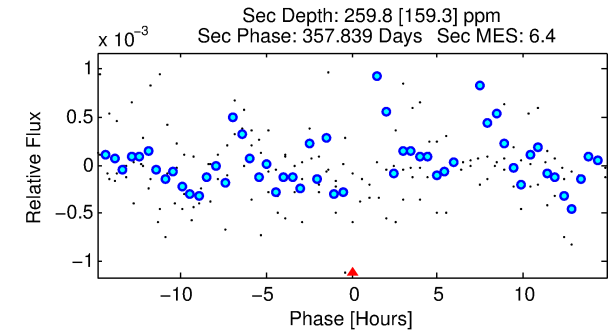
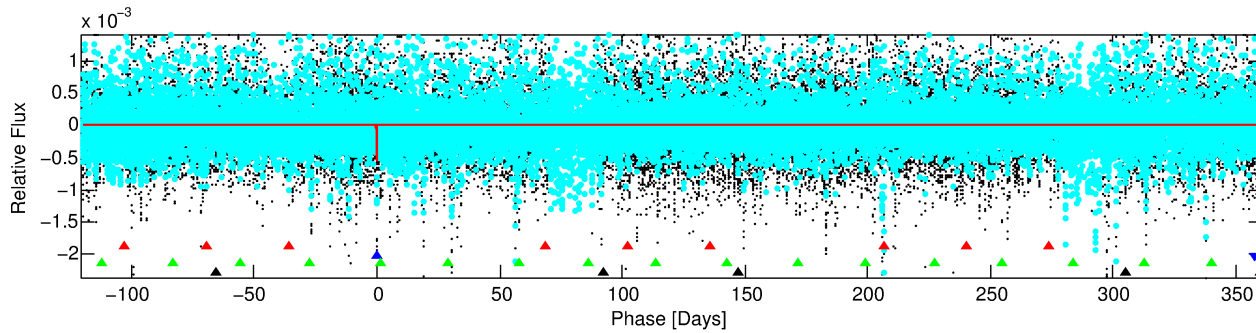
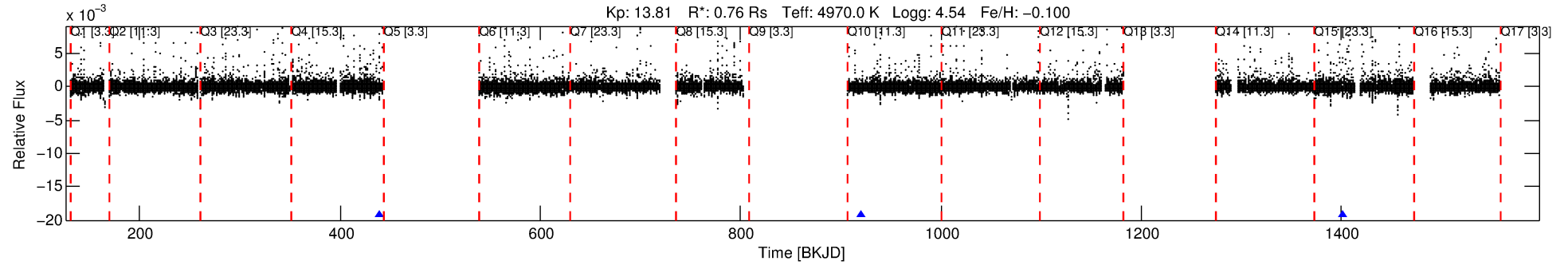
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004814290-02

No Significant Match Found

DV One-Page Summary

KIC: 4814290 Candidate: 2 of 4 Period: 480.620 d



DV Fit Results:

Period = 480.62041 [0.01608] d
Epoch = 439.4583 [0.0238] BKJD
Rp/R* = 0.0239 [0.1634]
a/R* = 982.11 [24086.75]
b = 0.78 [12.53]
Seff = 0.27 [0.05]
Teq = 184 [9] K
Rp = 2.00 [13.62] Re
a = 1.0830 [0.1112] AU
Ag = 42066.81 [574617.41] [0.07σ]
Teffp = 4078 [13925] K [0.28σ]

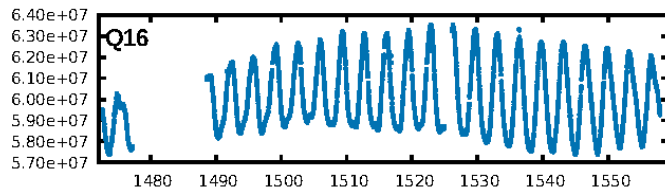
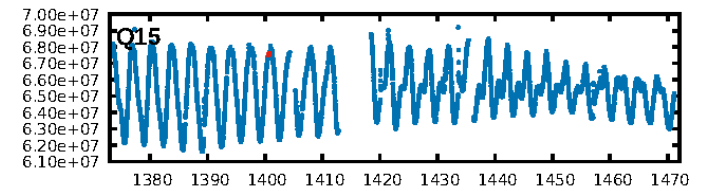
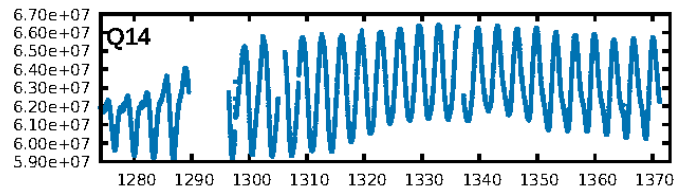
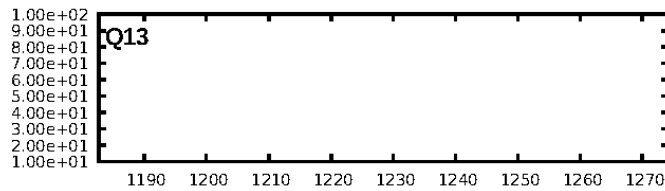
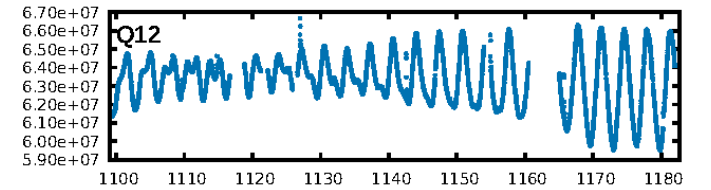
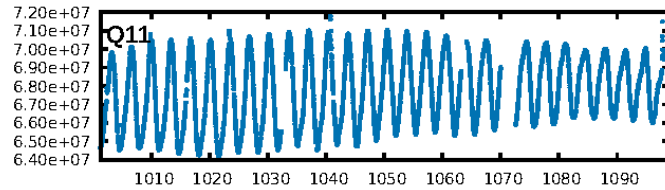
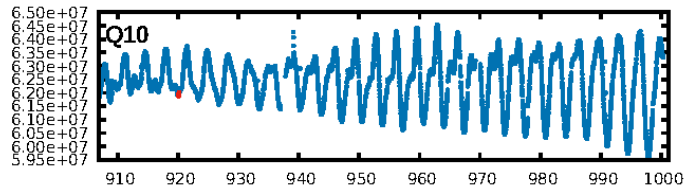
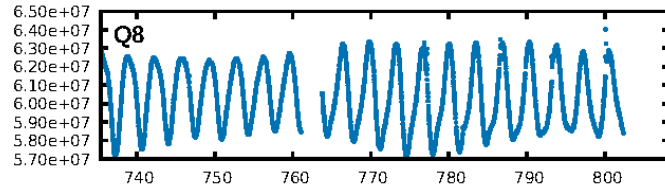
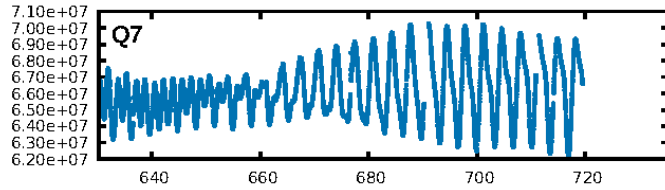
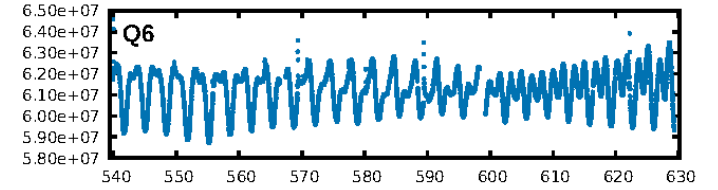
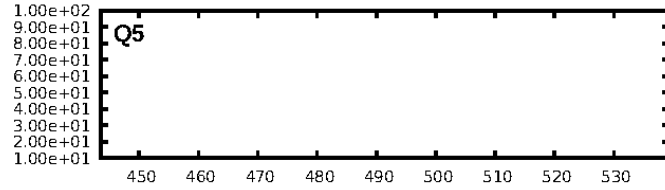
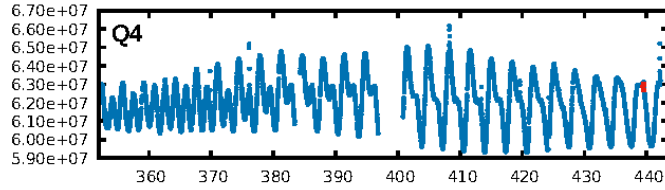
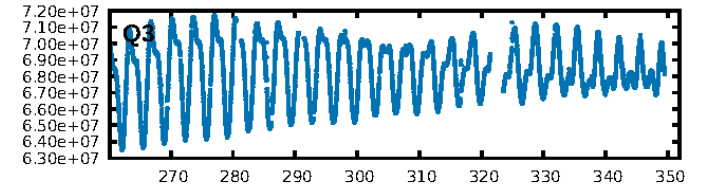
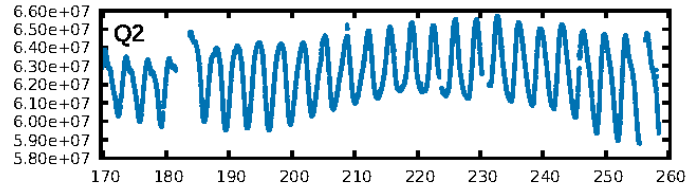
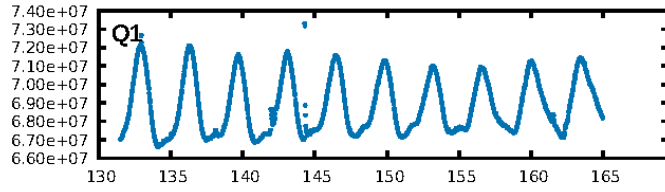
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1631.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 28.1%
Bootstrap-pfa: 8.54e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6466
Centroid-sig: 52.6%
Centroid-so: 3.893 arcsec [0.45σ]
OotOffset-rm: 0.235 arcsec [0.58σ]
KicOffset-rm: 0.346 arcsec [1.38σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

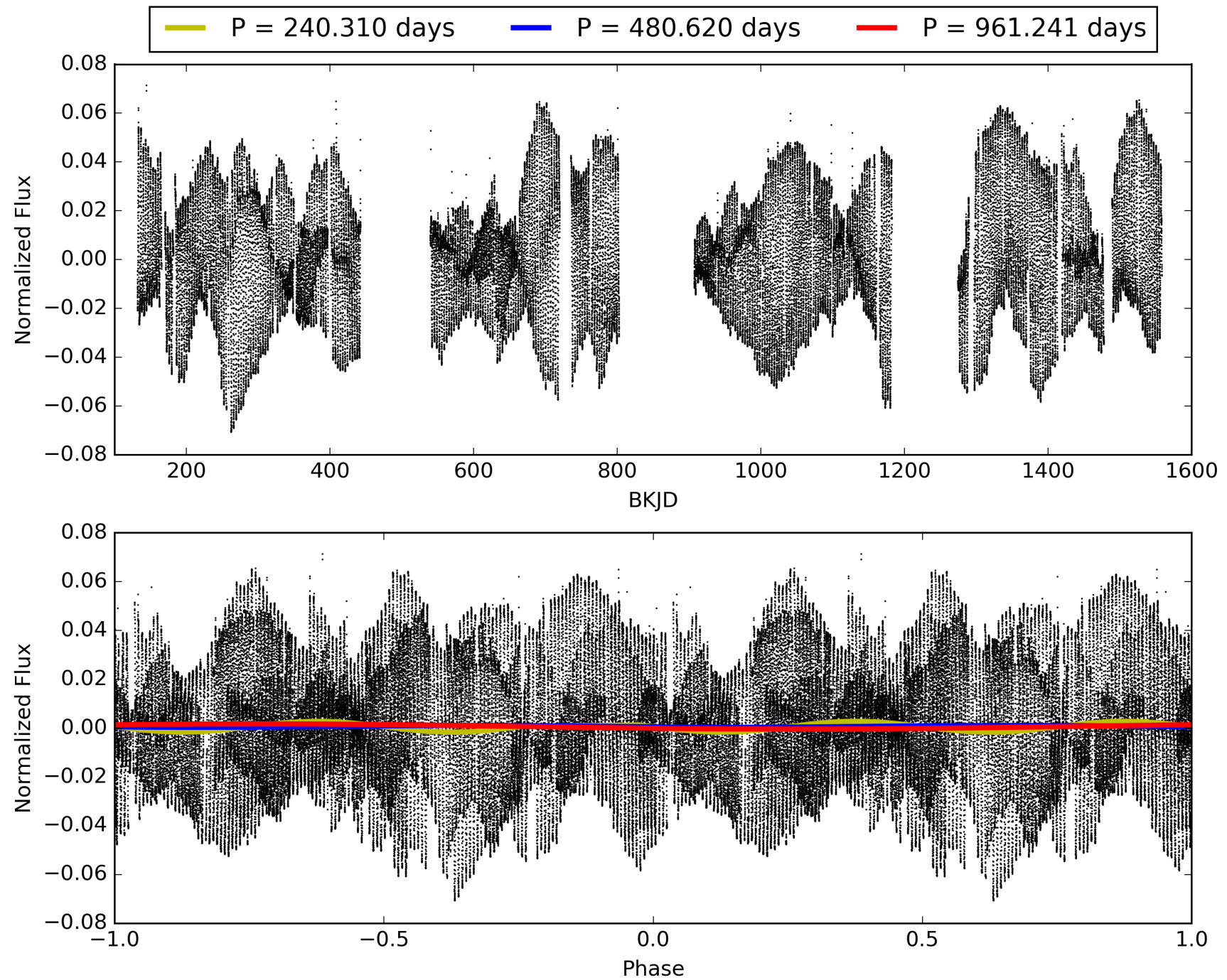
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:21:24 Z

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

TCE 004814290-02, PDC Light Curves

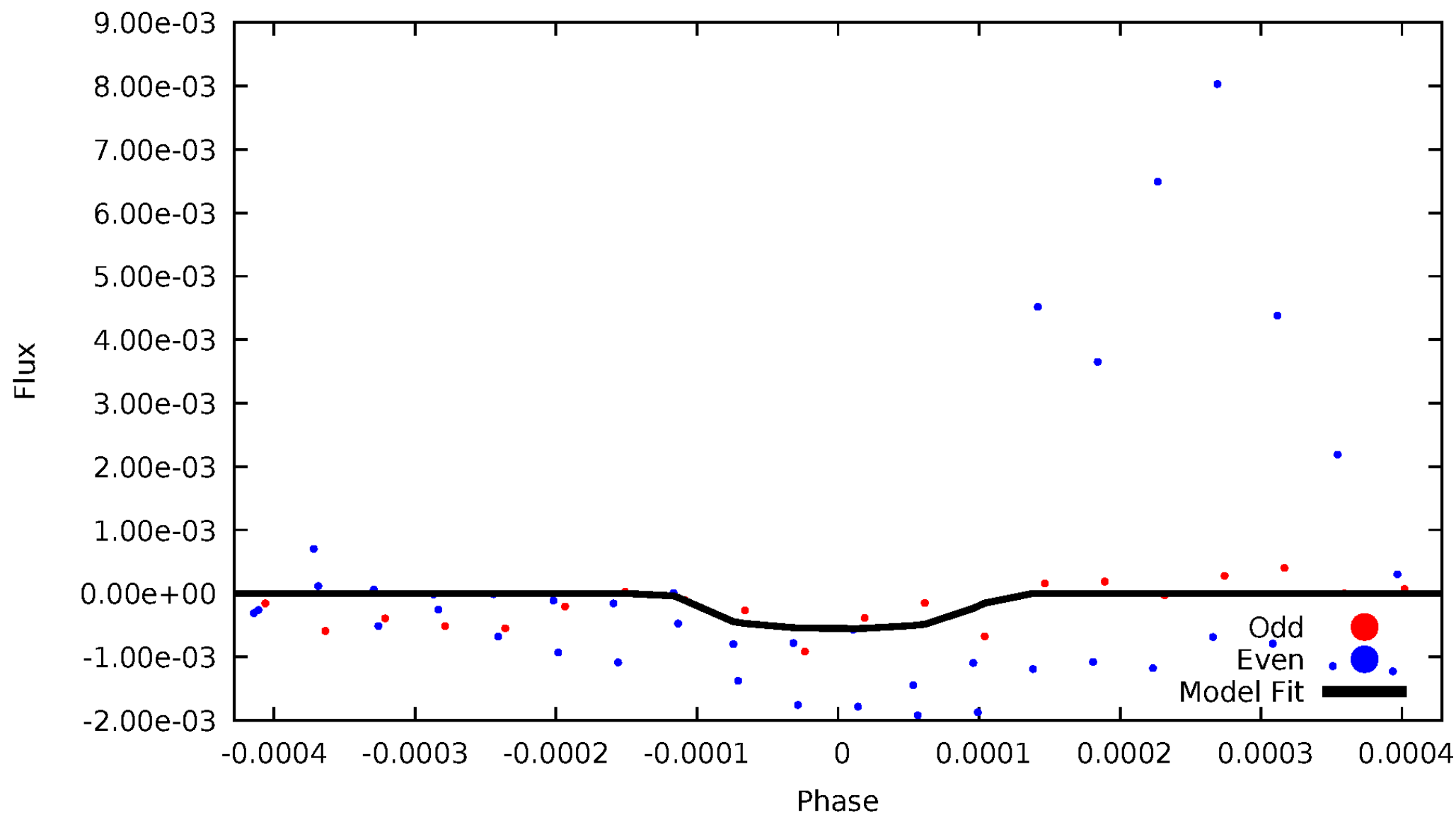


TCE 004814290-02



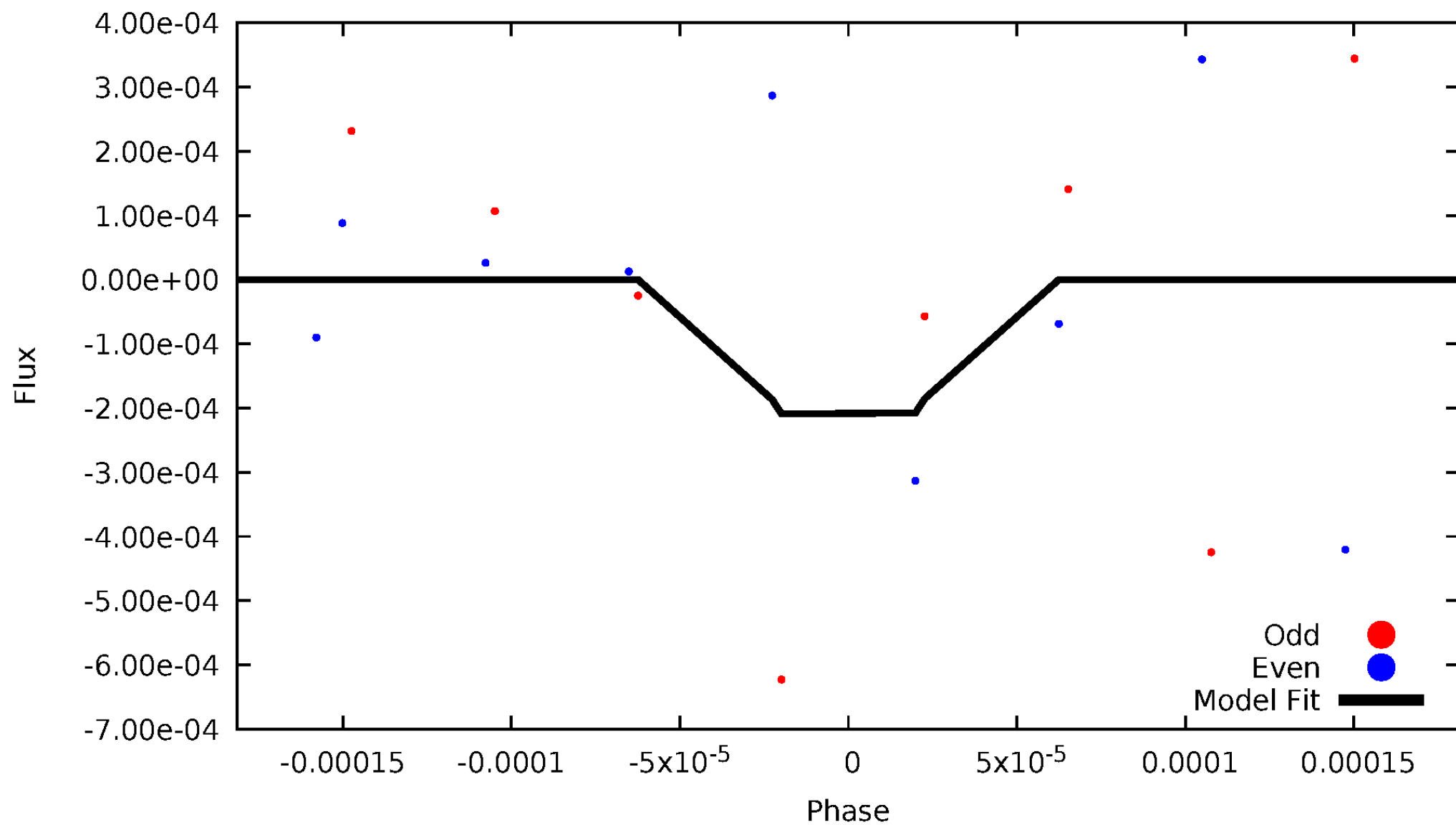
DV Odd/Even

TCE 004814290-02



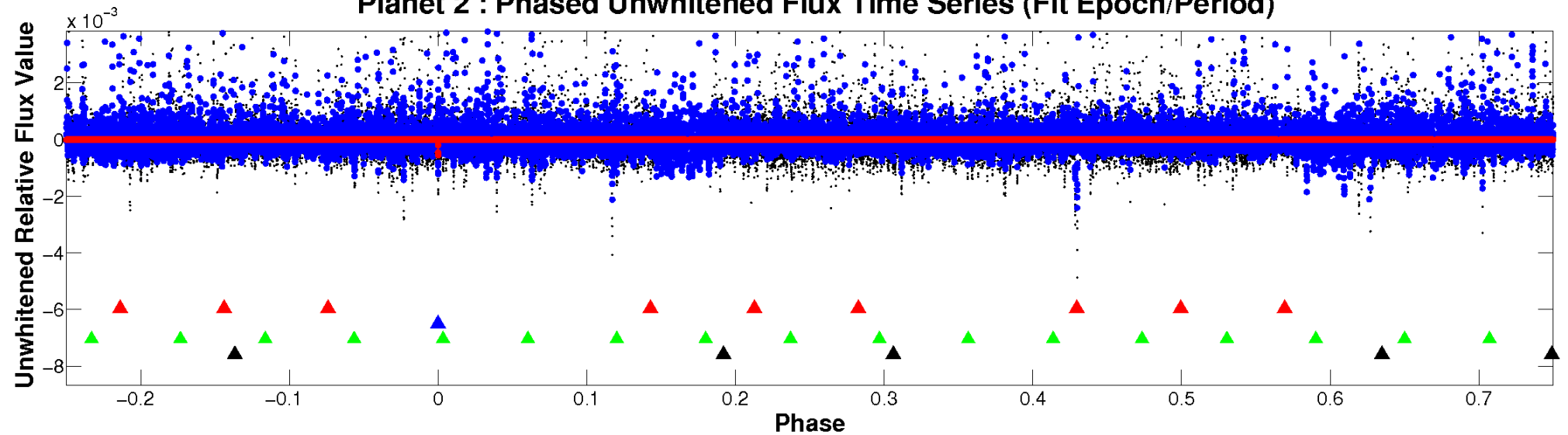
ALT Odd/Even

TCE 004814290-02

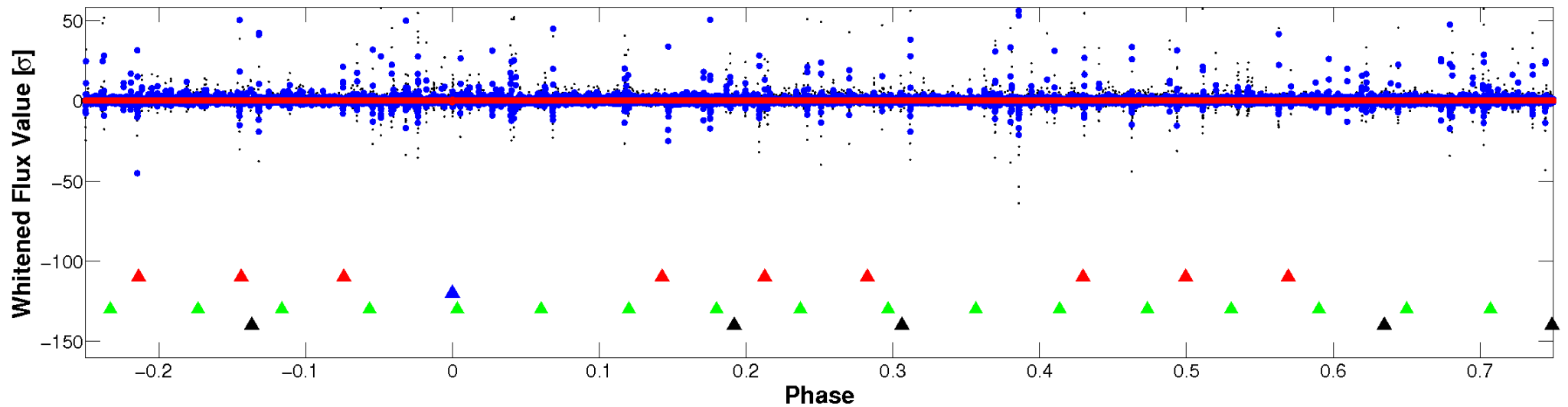


Non-Whitened Vs. Whitened Light Curve

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

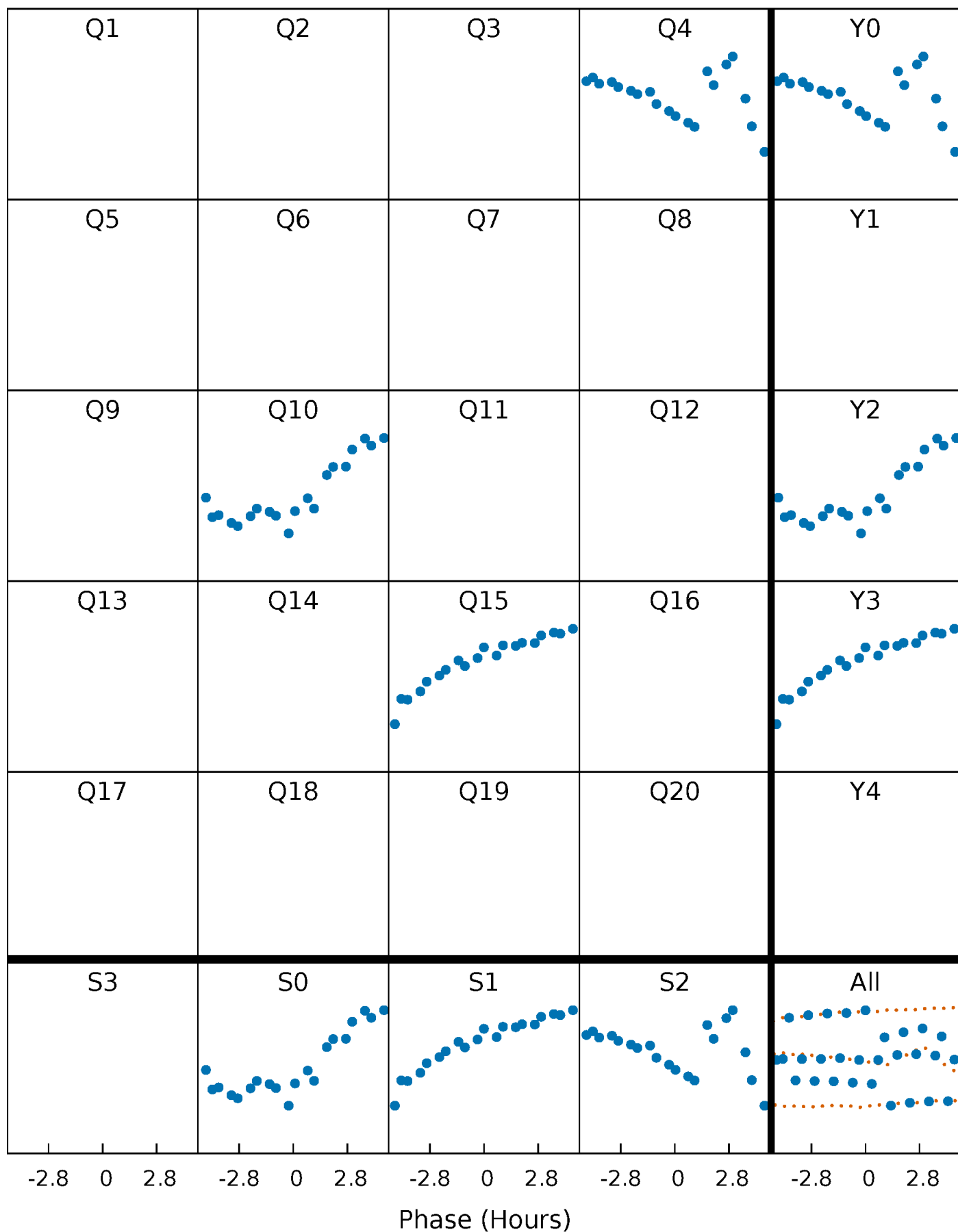


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



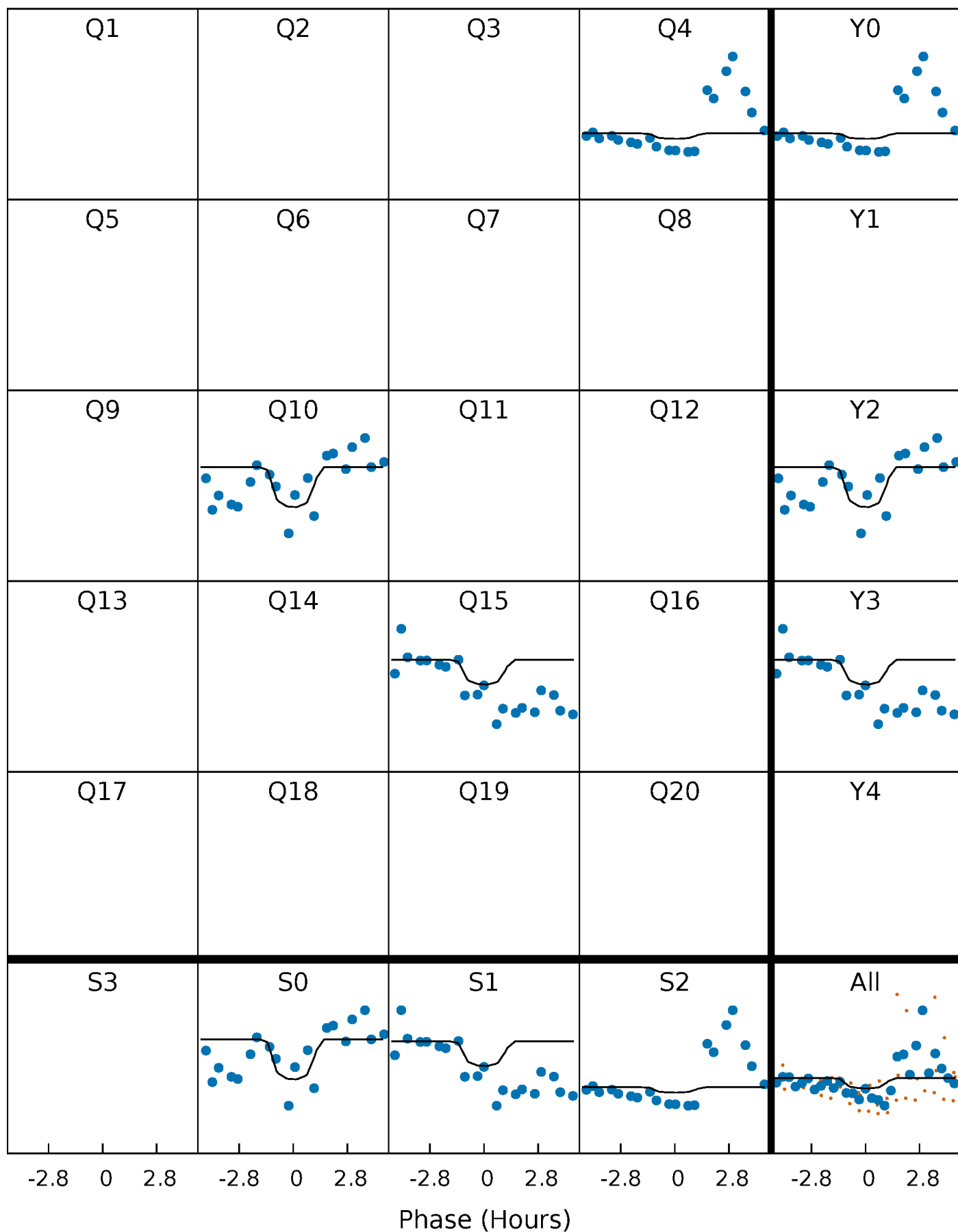
PDC Quarter-Phased Transit Curves

TCE 004814290-02 P=480.620409 Days $T_0=439.458264$ (BKJD)



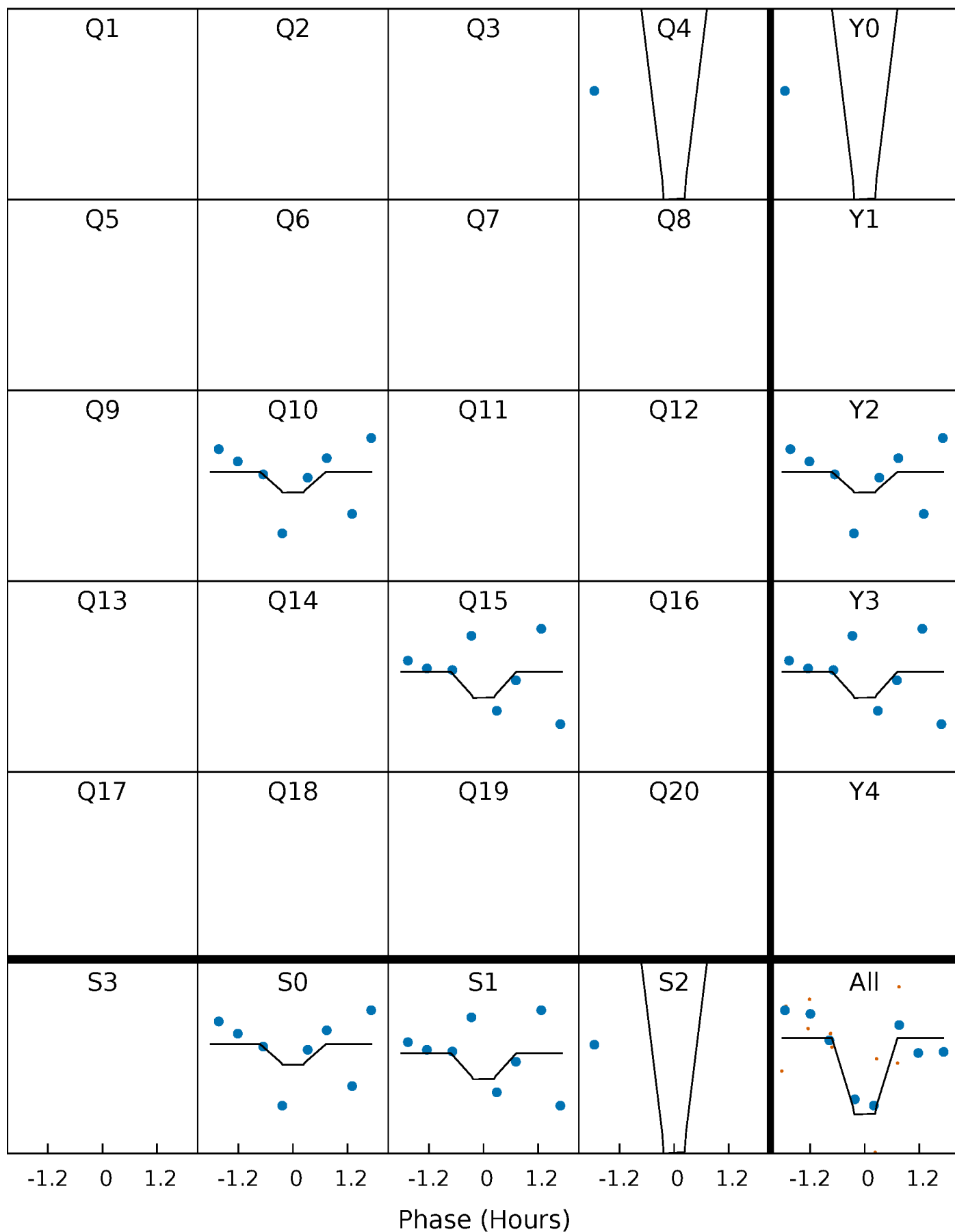
DV Quarter-Phased Transit Curves

TCE 004814290-02 $P=480.620409$ Days $T_0=439.458264$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

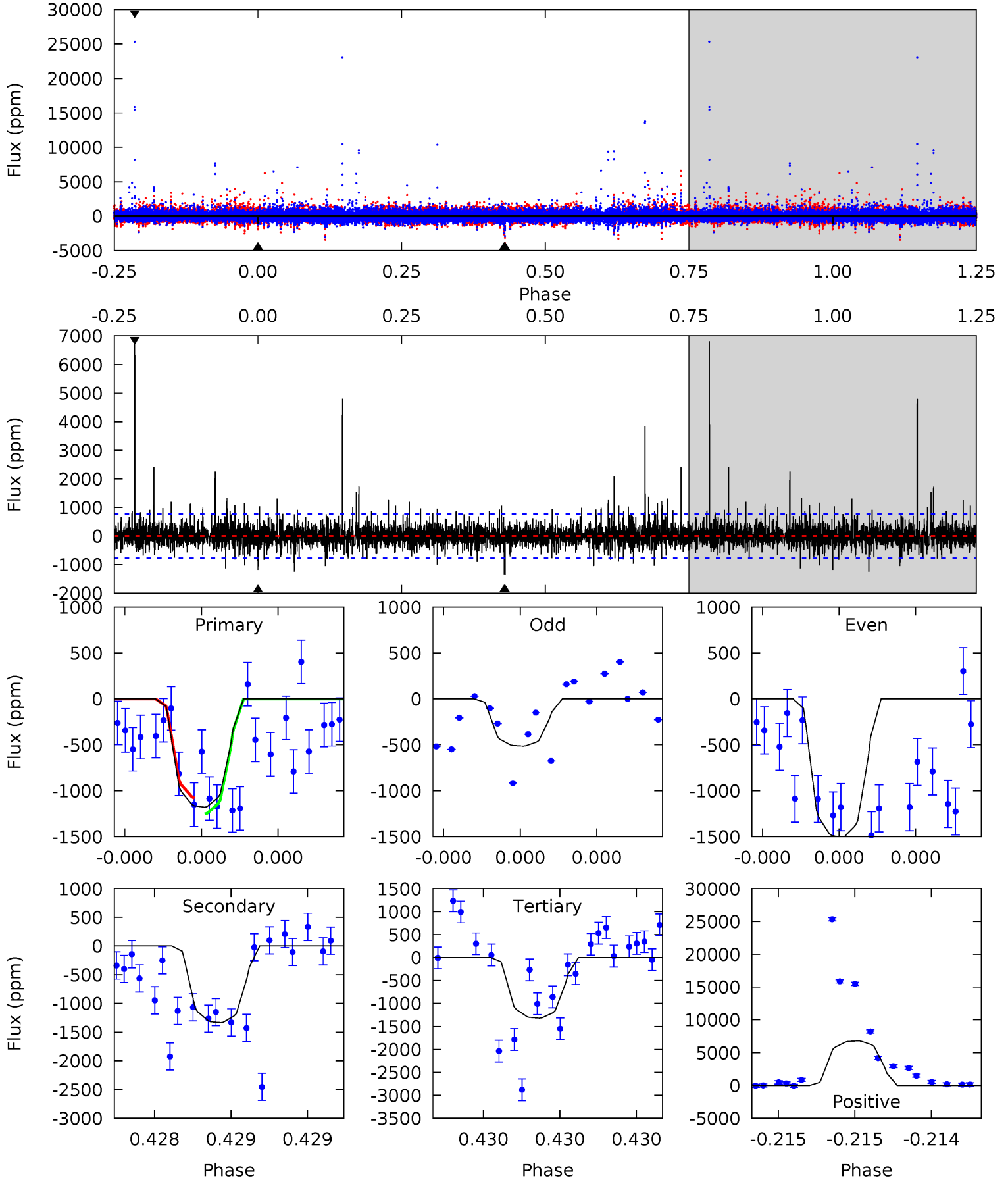
TCE 004814290-02 P=480.576898 Days $T_0=439.500043$ (BKJD)



DV Model-Shift Uniqueness Test

004814290-02, P = 480.620409 Days, E = 439.458264 Days

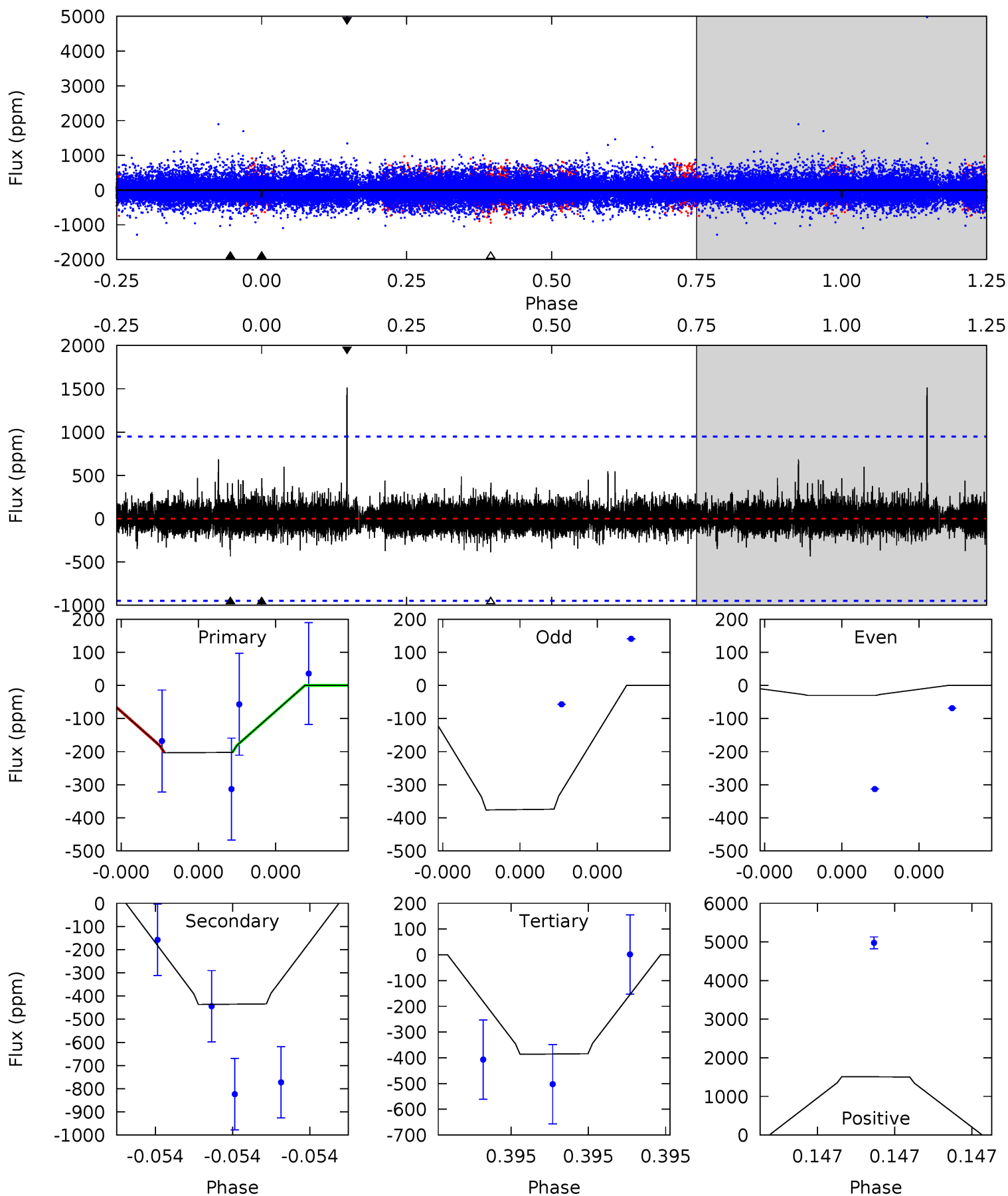
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	9.79	9.68	49.9	5.69	3.66	2.10	-1.03	-41.3	0.11	-40.1	2.44	1.13	0.84	0.63



Alt Model-Shift Uniqueness Test

004814290-02, P = 480.576898 Days, E = 439.500043 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.28	2.75	2.44	9.54	5.98	4.08	0.51	-1.15	-8.26	0.32	-6.79	1.02	1.00	0.78	0.00



Stellar Parameters For KIC 004814290

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4970^{+151}_{-136}	$4.537^{+0.072}_{-0.090}$	$-0.100^{+0.300}_{-0.250}$	$0.764^{+0.087}_{-0.079}$	$0.735^{+0.100}_{-0.057}$	$2.317^{+0.746}_{-0.566}$
	+3%/-3%	+2%/-2%	+300%/-250%	+11%/-10%	+14%/-8%	+32%/-24%
Source	PHO1	KIC0	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 004814290-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1335 ± 136	$10.10^{+10.79}_{-6.95}$	258^{+11}_{-10}	3259^{+1724}_{-597}	8397^{+81001}_{-6442}
Alt.	-437 ± 159	$9.59^{+10.43}_{-7.02}$	258^{+12}_{-10}	2806^{+1317}_{-482}	2855^{+31053}_{-2221}

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 $A_{obs} \gg 1.0$

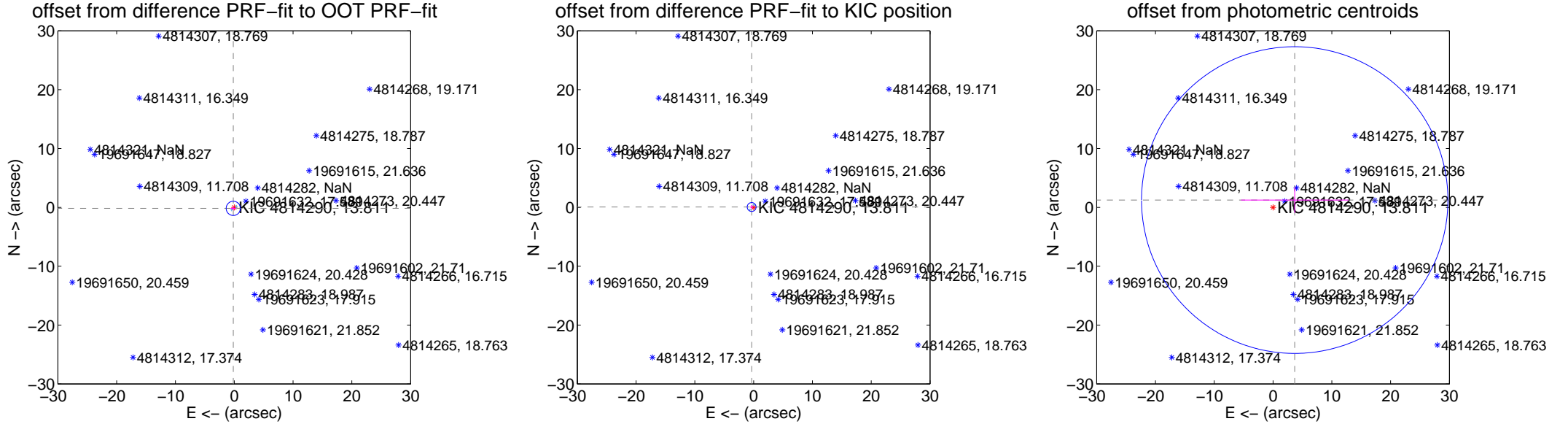
DV Centroid Data

Supplemental centroid analysis for 004814290-02. Kepler magnitude: 13.81. Transit SNR 3.00

There are 2 quarters with good PRF difference image offsets

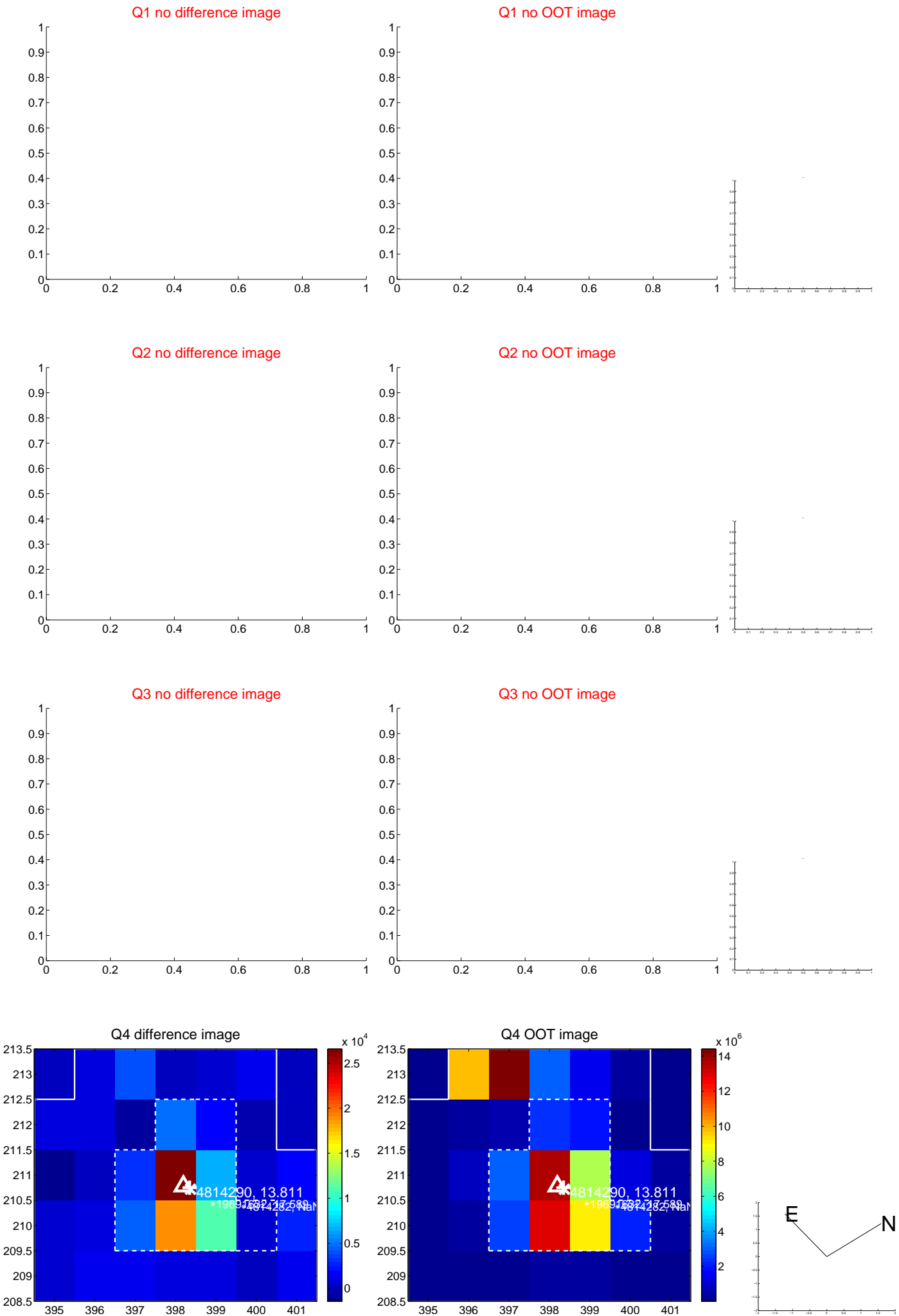
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.235 ± 0.403	0.58	0.163 ± 0.464	-0.169 ± 0.336
PRF-fit source offset from KIC position	0.346 ± 0.251	1.38	0.340 ± 0.247	0.064 ± 0.358
photometric centroid source offset	3.89 ± 8.69	0.45	-3.69 ± 9.14	1.24 ± 2.17



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.

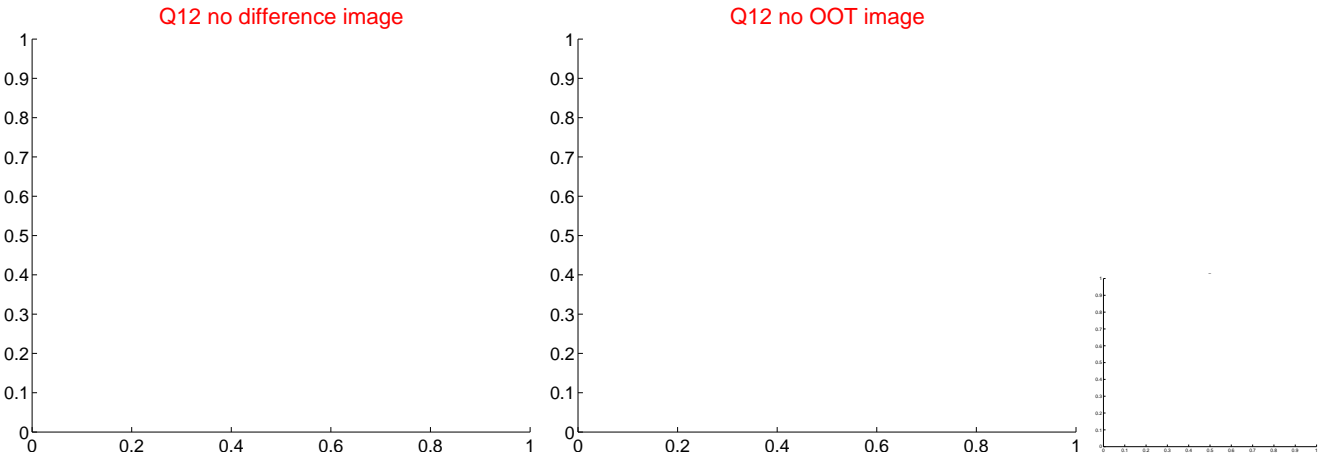
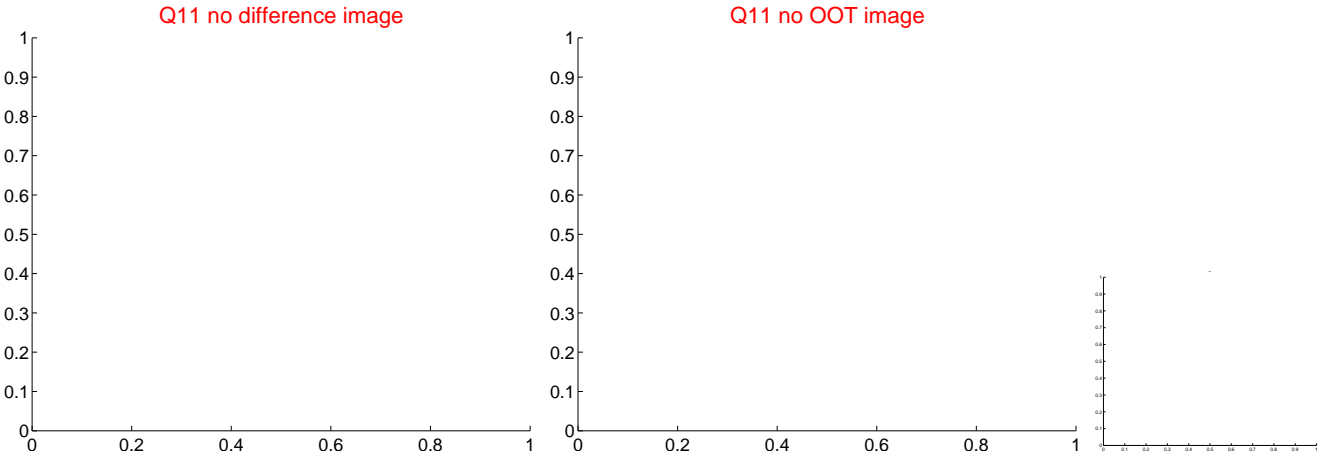
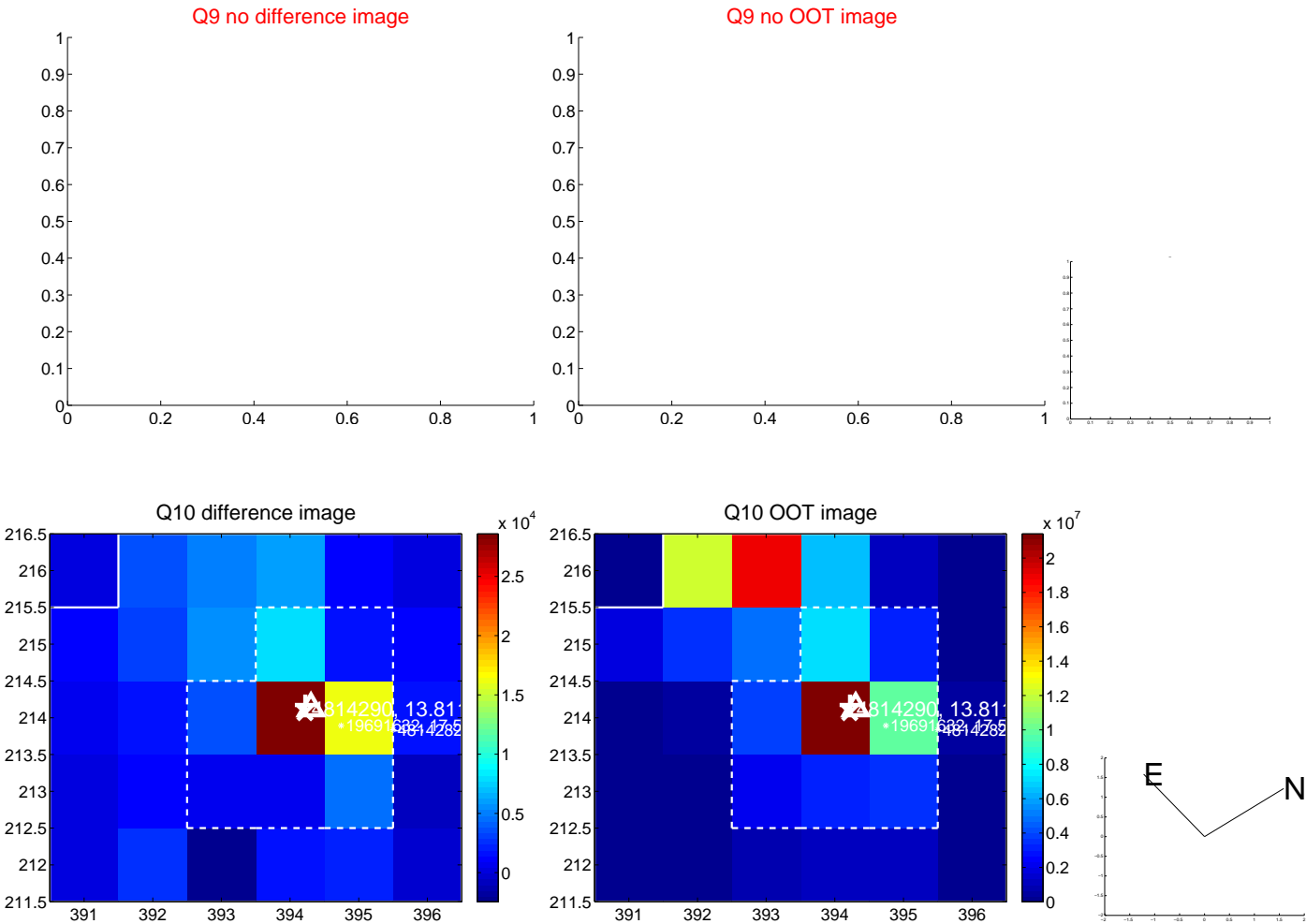
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



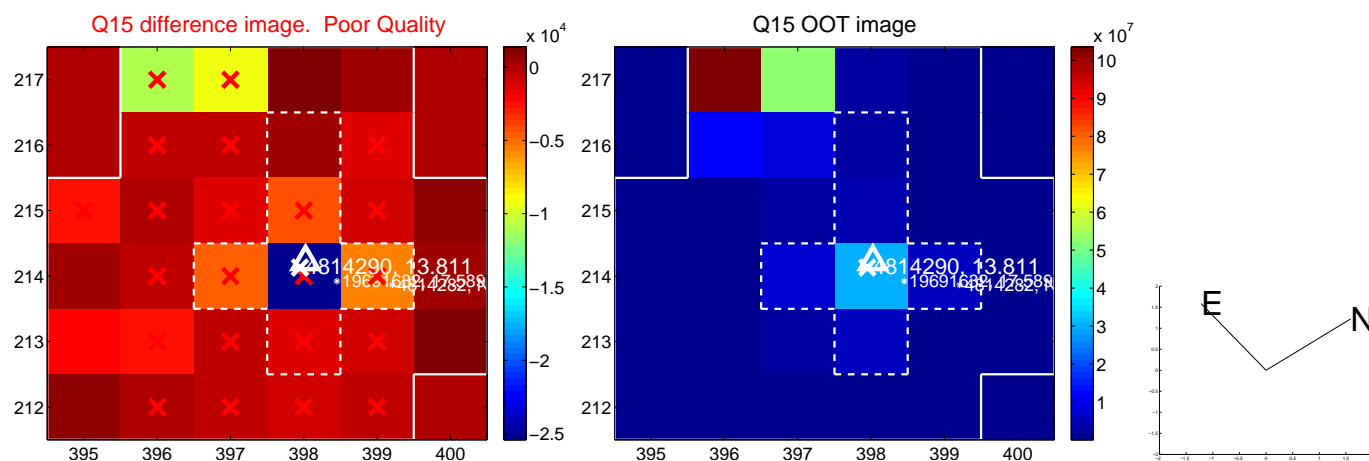
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



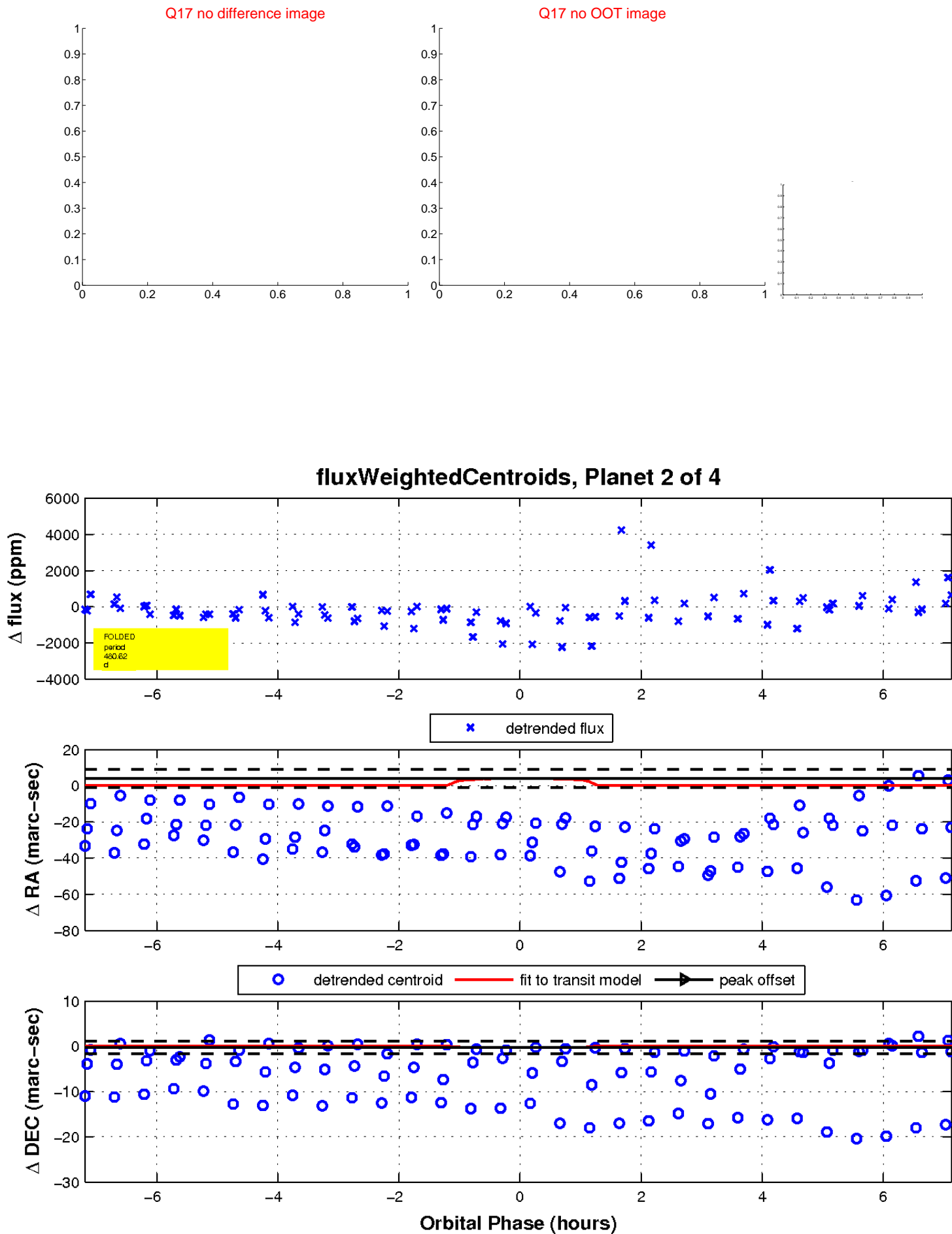
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



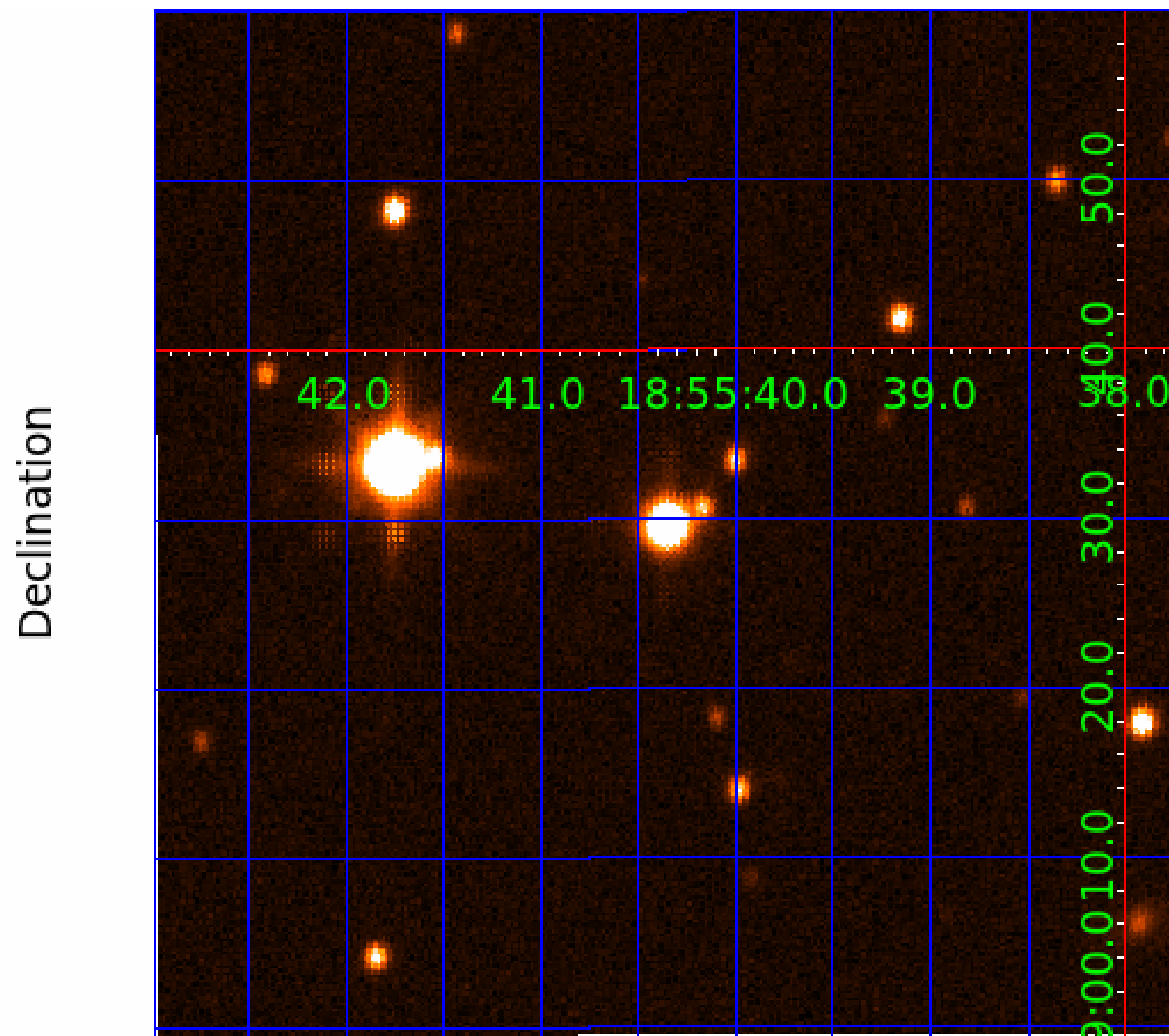
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 004814290

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})
004814290-01	OBS	No	171.407876	165.299291	1689.5	6.765	12.1	7.7	0.76	4970	3.04	1.08
004814290-02	OBS	No	480.620409	439.458264	552.2	2.469	14.4	3.0	0.76	4970	2.00	0.27
004814290-03	OBS	No	84.891238	213.830828	668.7	3.533	12.6	5.6	0.76	4970	2.14	2.75
004814290-04	OBS	No	267.768695	263.947542	250.0	1.925	12.4	1.7	0.76	4970	1.43	0.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004814290-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004814290-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004814290-03	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
004814290-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

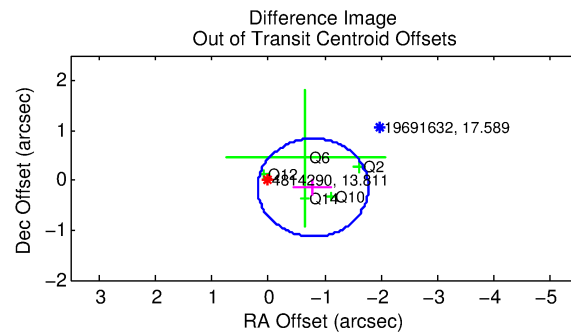
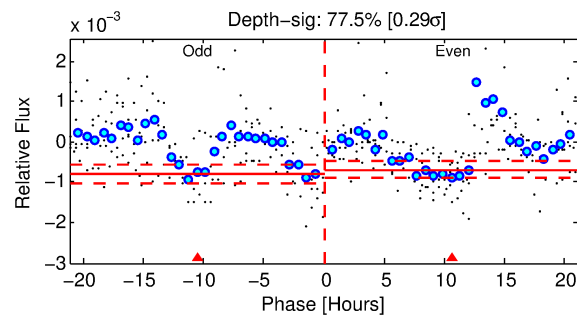
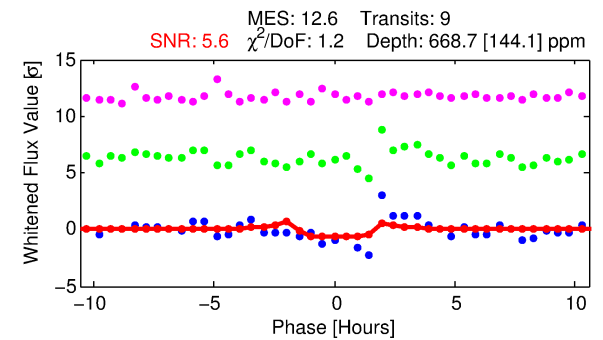
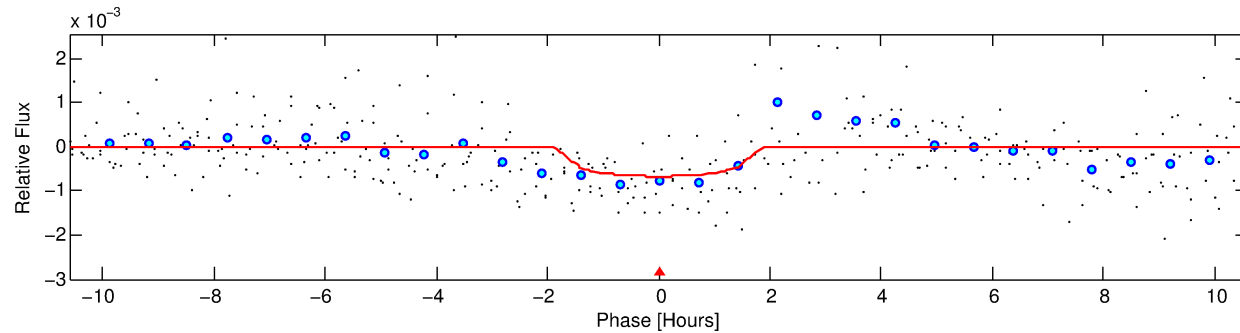
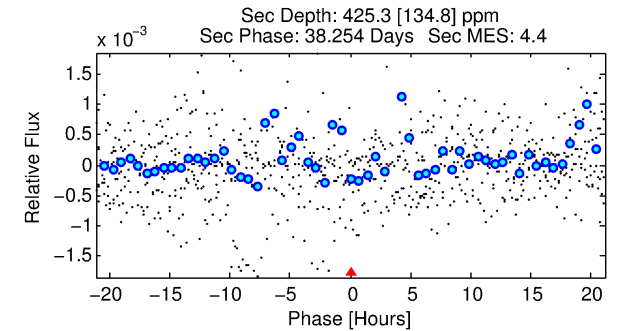
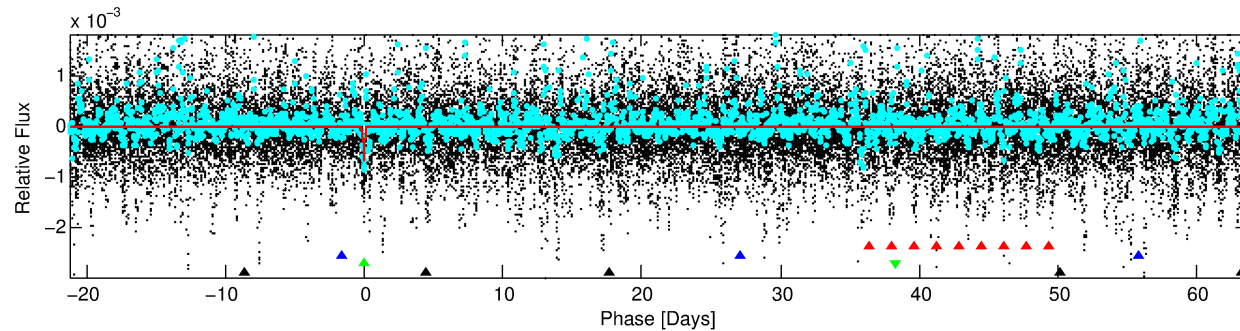
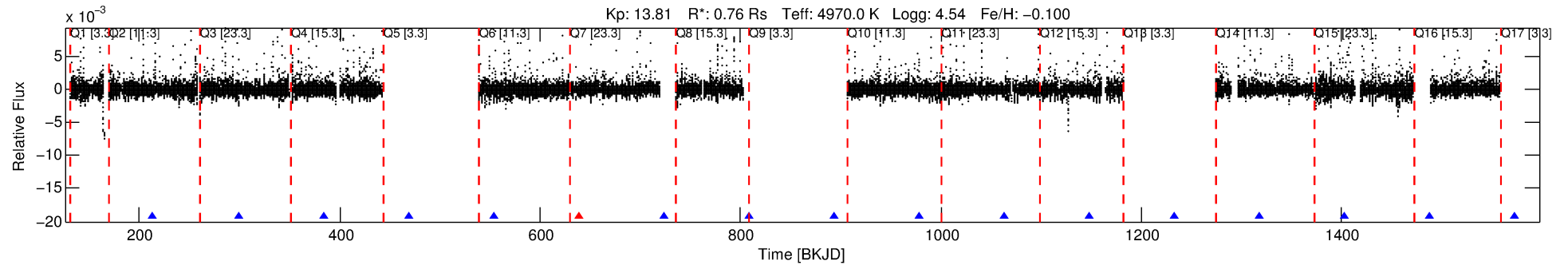
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004814290-03

No Significant Match Found

DV One-Page Summary

KIC: 4814290 Candidate: 3 of 4 Period: 84.891 d



DV Fit Results:

Period = 84.89124 [0.00089] d
Epoch = 213.8308 [0.0084] BKJD
Rp/R* = 0.0257 [0.0269]
a/R* = 130.74 [479.17]
b = 0.74 [2.31]
Seff = 2.75 [0.55]
Teq = 328 [16] K
Rp = 2.14 [2.26] Re
a = 0.3409 [0.0350] AU
Ag = 5925.93 [12596.66] [0.47σ]
Teffp = 4452 [2363] K [1.74σ]

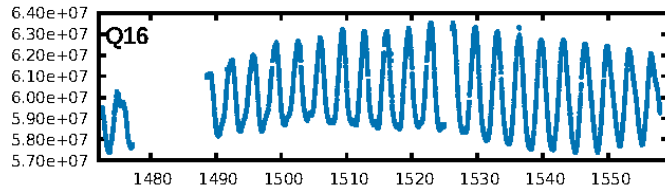
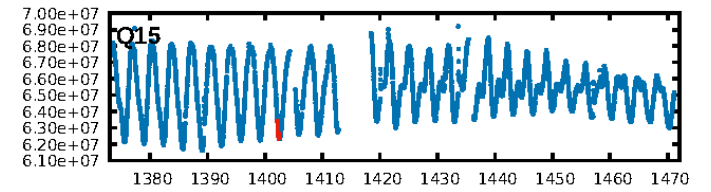
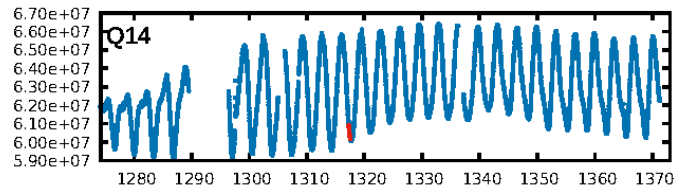
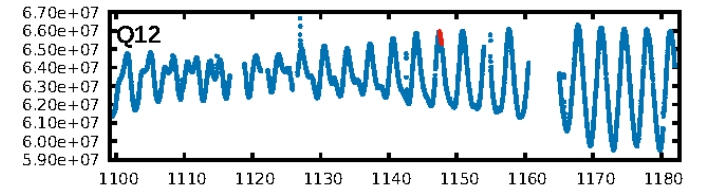
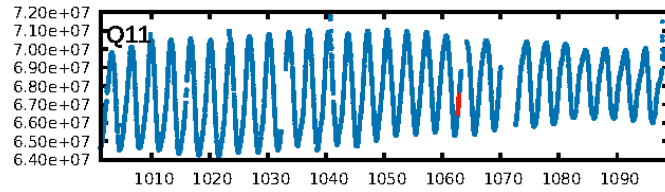
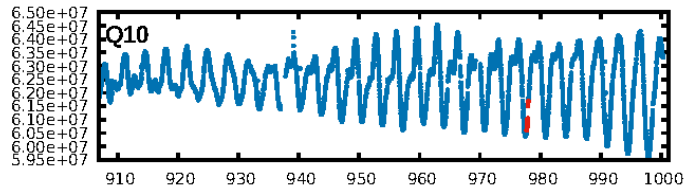
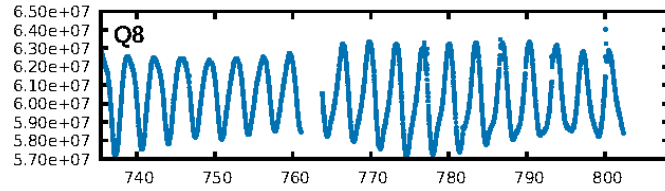
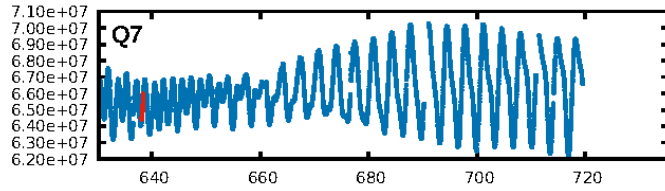
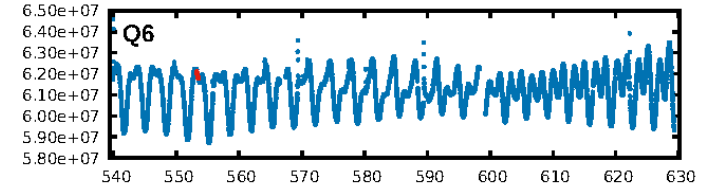
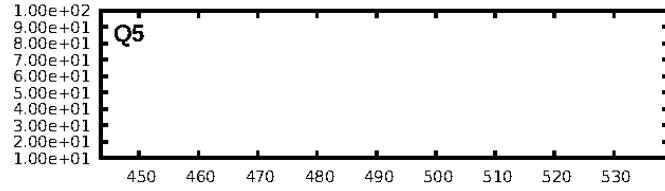
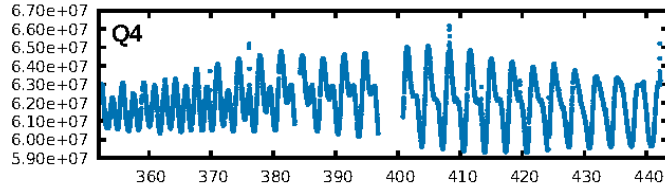
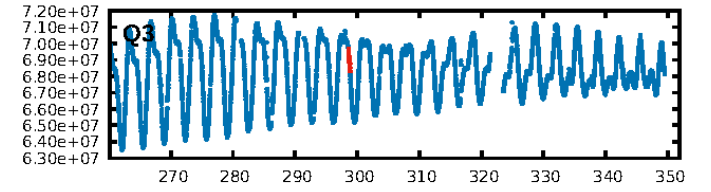
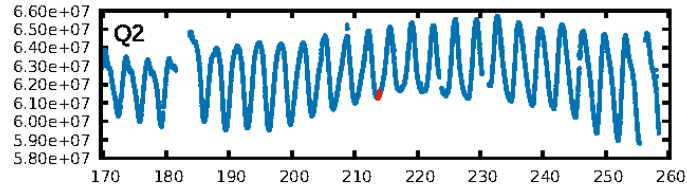
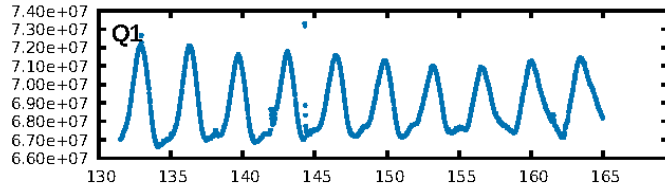
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [272.06σ]
ModelChiSquare2-sig: 2.3%
ModelChiSquareGof-sig: 97.9%
Bootstrap-pfa: 5.98e-13
RollingBand-fgt: 0.89 [8/9]
GhostDiagnostic-chr: -0.01926
Centroid-sig: 20.9%
Centroid-so: 8.302 arcsec [2.13σ]
OotOffset-rm: 0.807 arcsec [2.47σ]
OotOffset-st: 4/0/1/0 [5]
KicOffset-rm: 0.113 arcsec [0.65σ]
KicOffset-st: 4/4/1/0 [9]
DiffImageQuality-fgm: 0.67 [6/9]
DiffImageOverlap-fno: 1.00 [9/9]

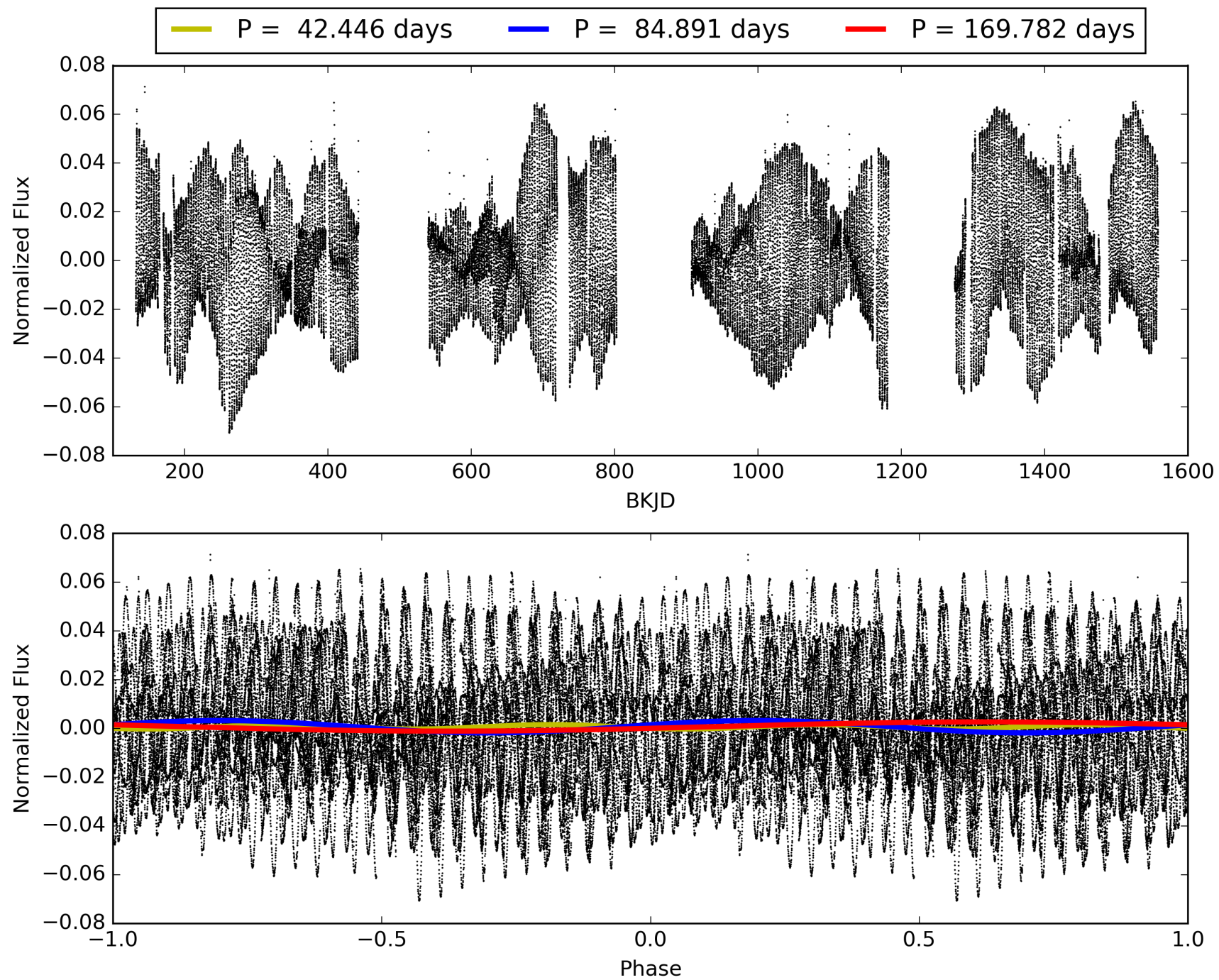
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:21:31 Z

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

TCE 004814290-03, PDC Light Curves

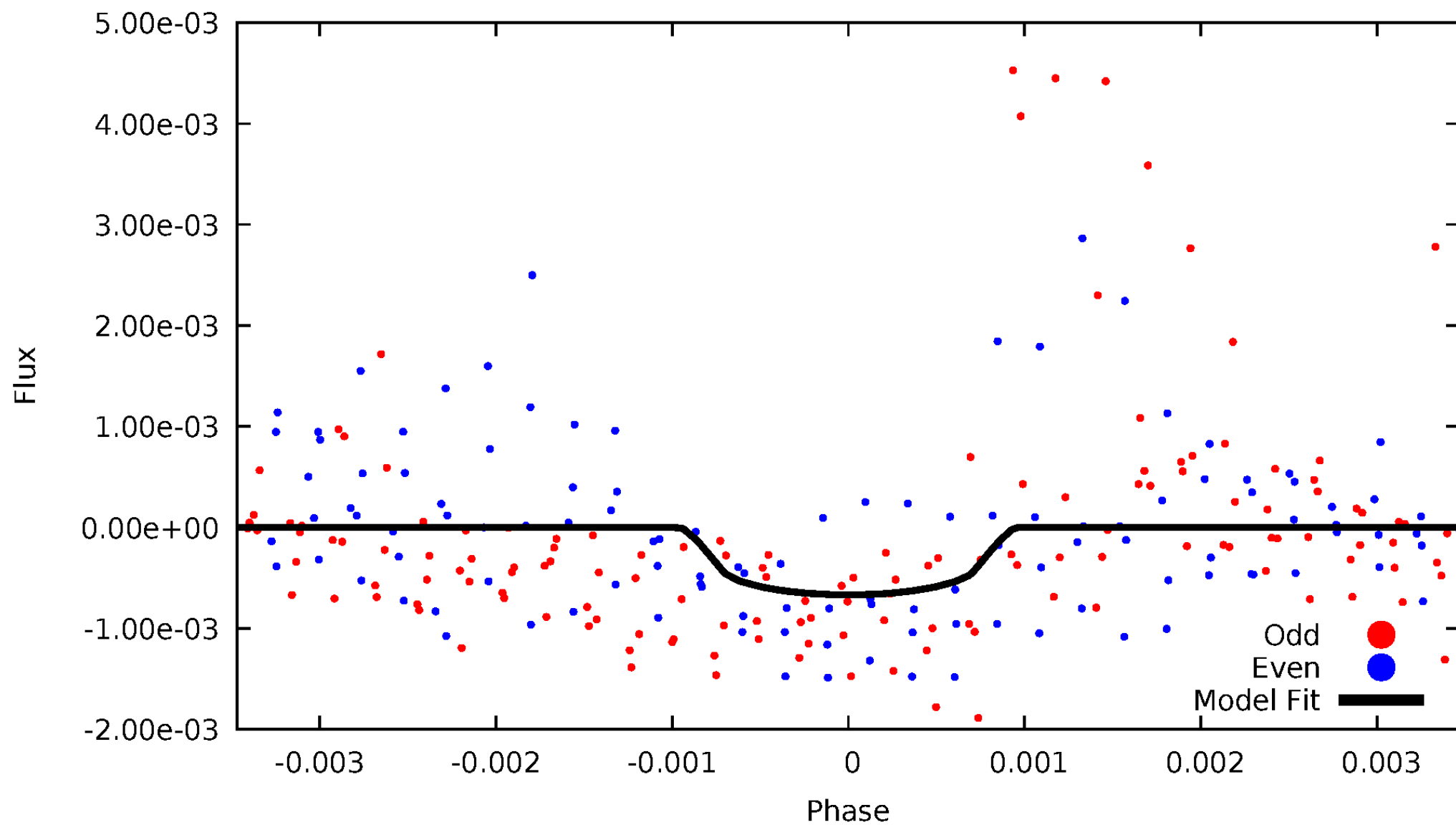


TCE 004814290-03



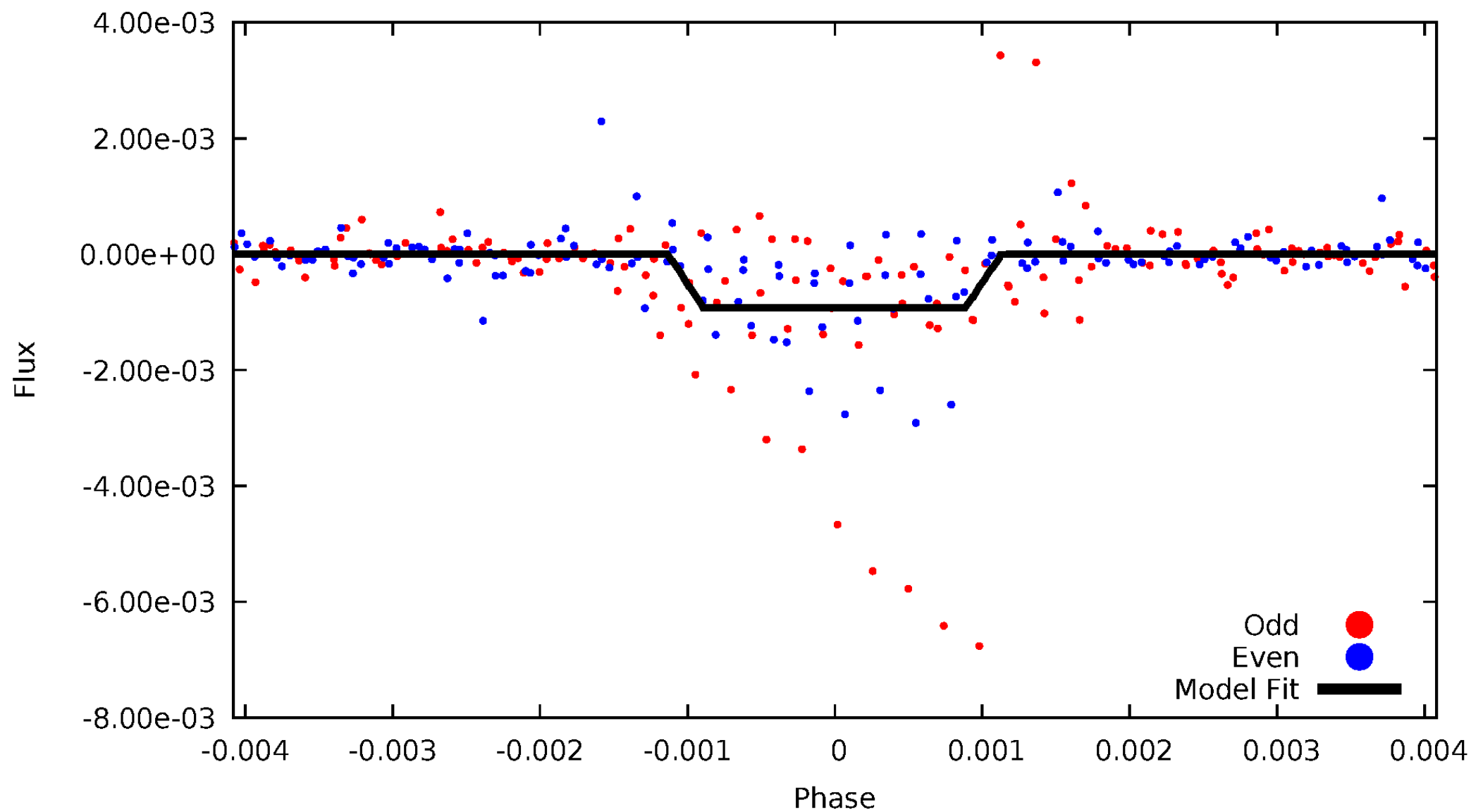
DV Odd/Even

TCE 004814290-03



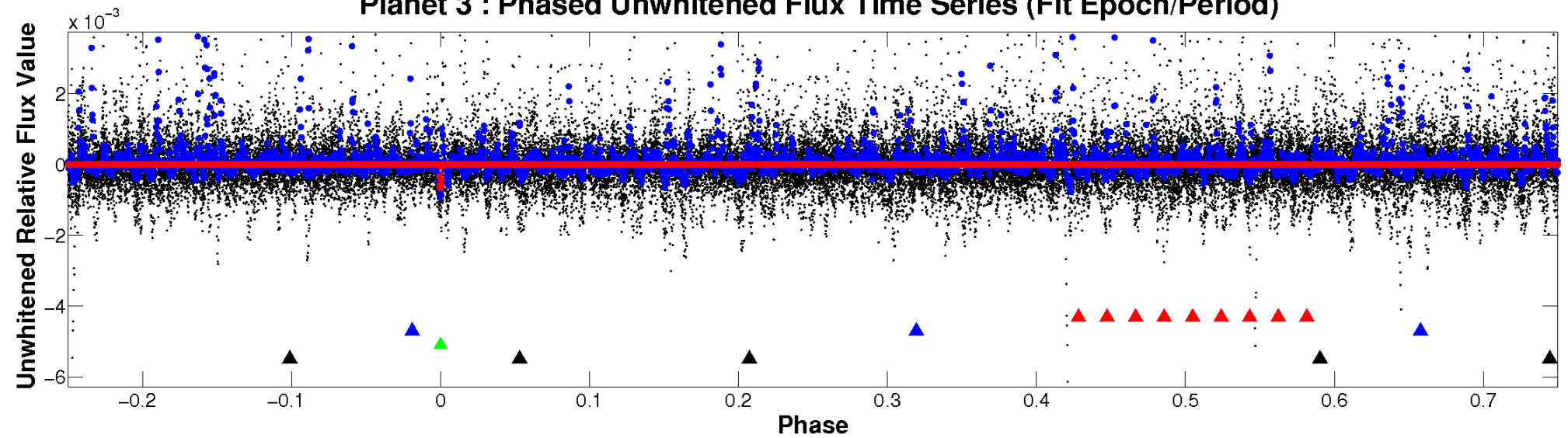
ALT Odd/Even

TCE 004814290-03

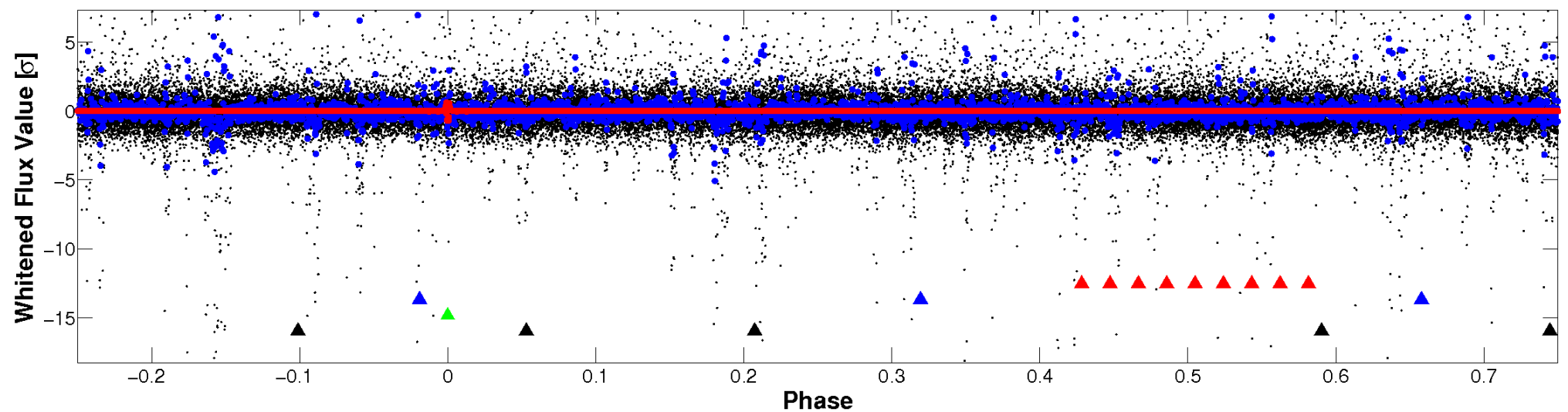


Non-Whitened Vs. Whitened Light Curve

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

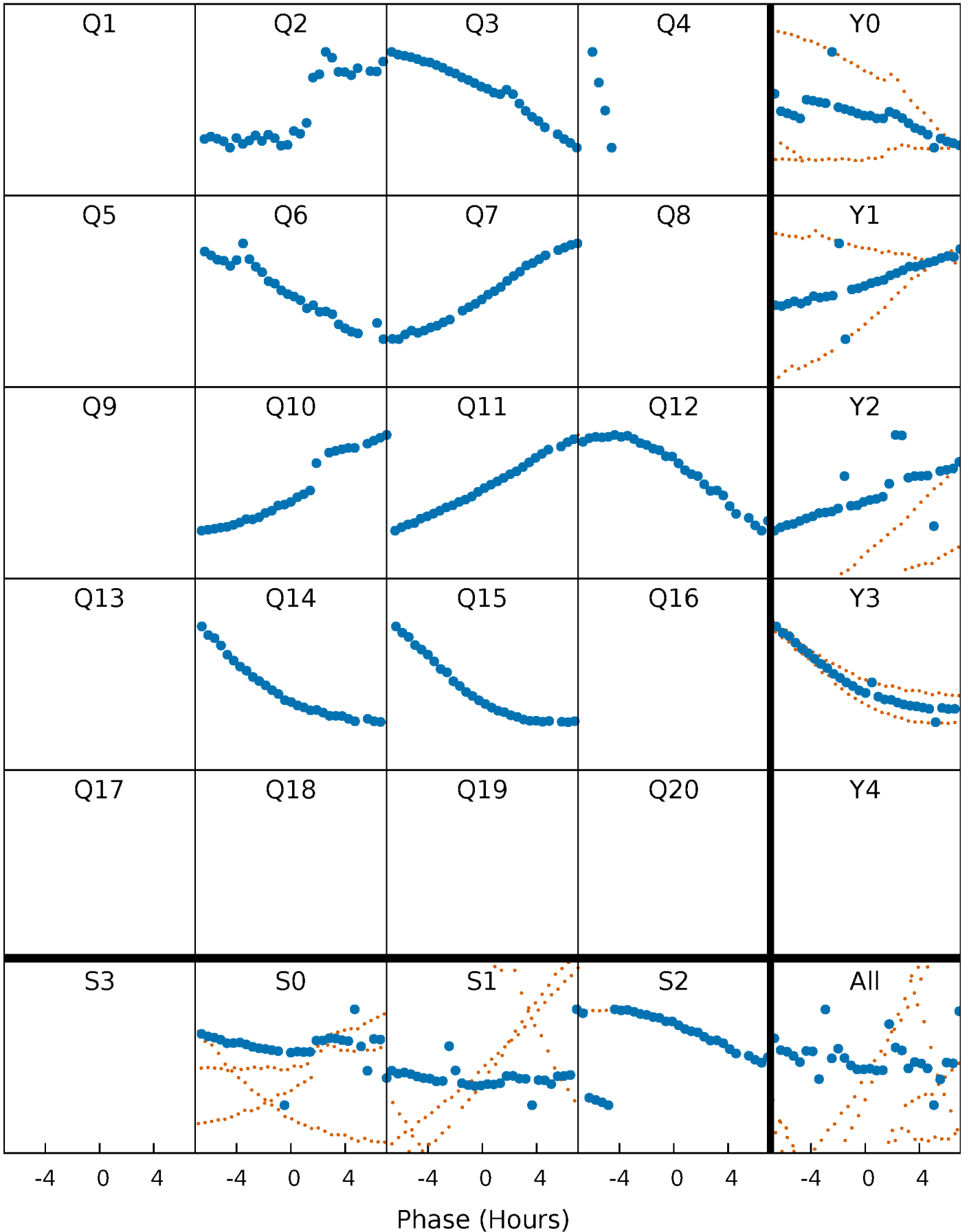


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



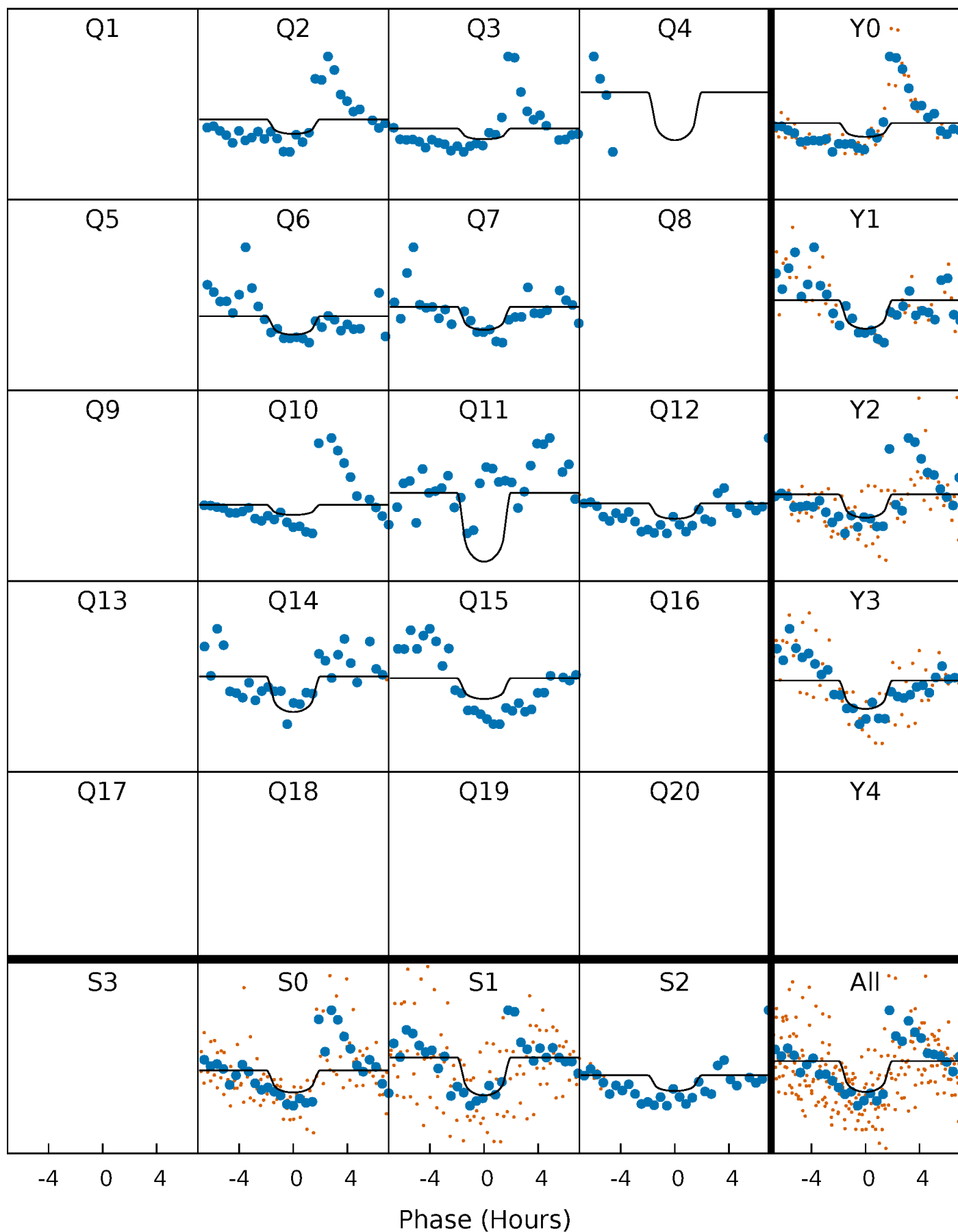
PDC Quarter-Phased Transit Curves

TCE 004814290-03 $P = 84.891238$ Days $T_0 = 213.830828$ (BKJD)



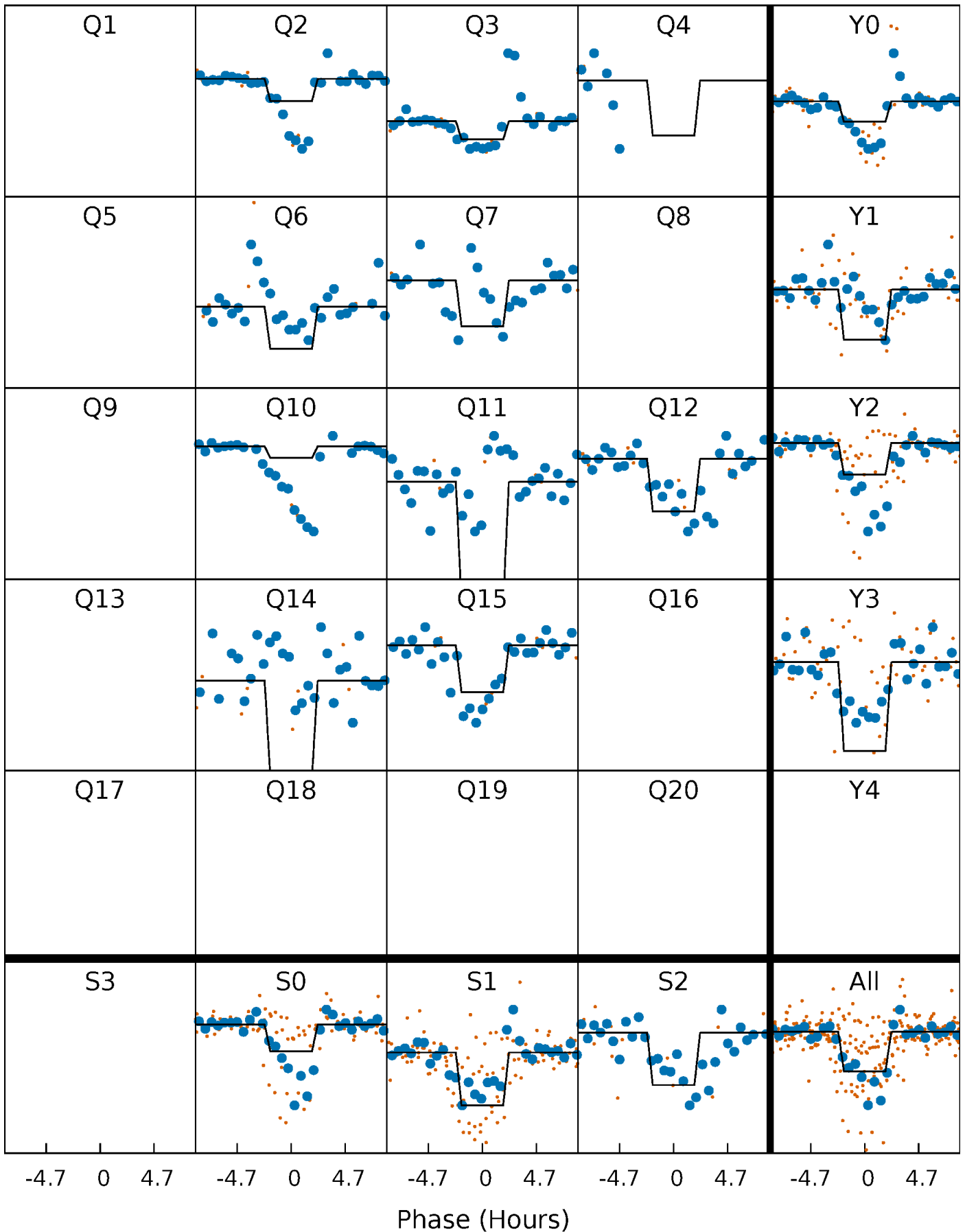
DV Quarter-Phased Transit Curves

TCE 004814290-03 P= 84.891238 Days $T_0=213.830828$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

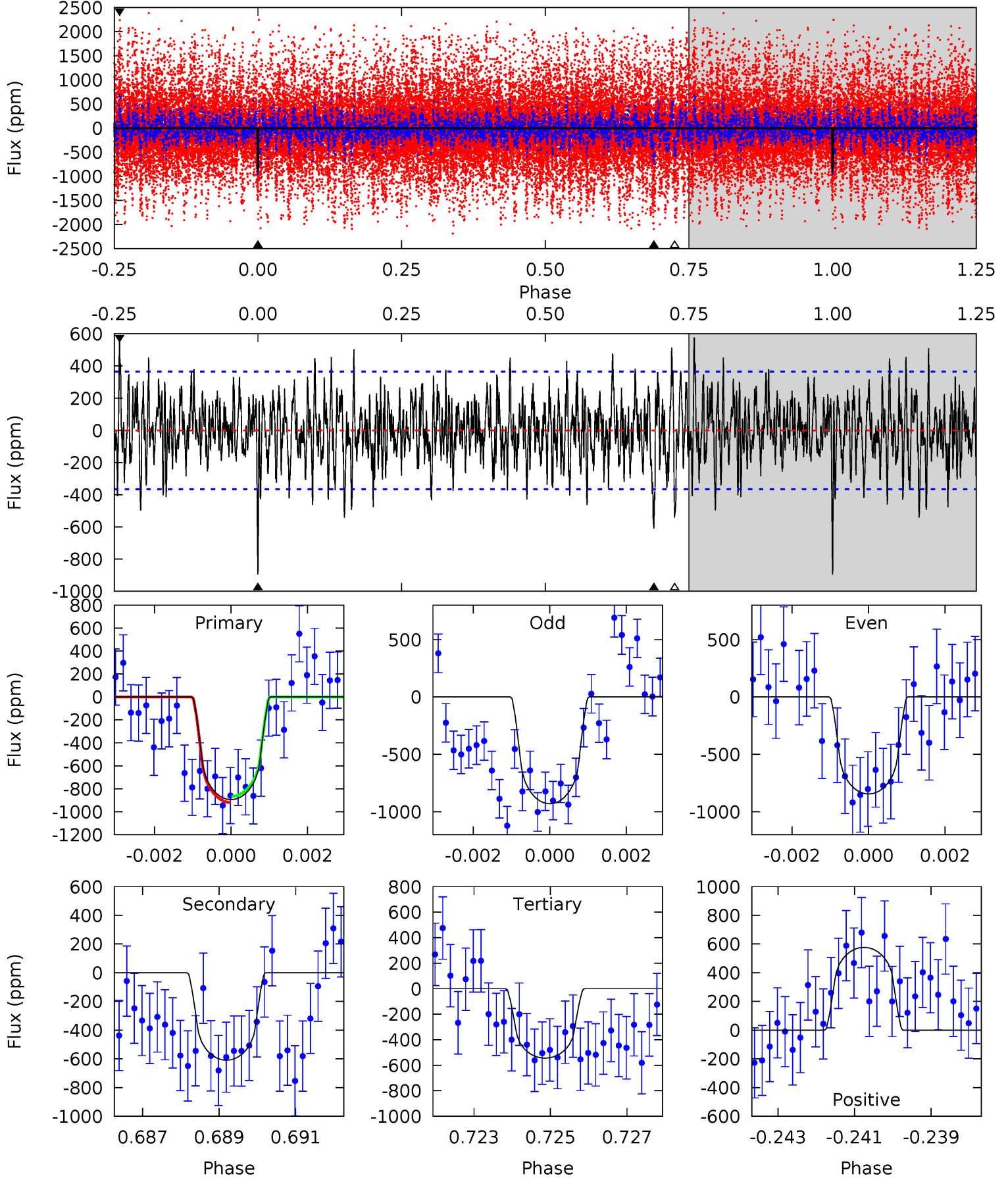
TCE 004814290-03 P= 84.890684 Days $T_0=213.815302$ (BKJD)



DV Model-Shift Uniqueness Test

004814290-03, P = 84.891238 Days, E = 128.939590 Days

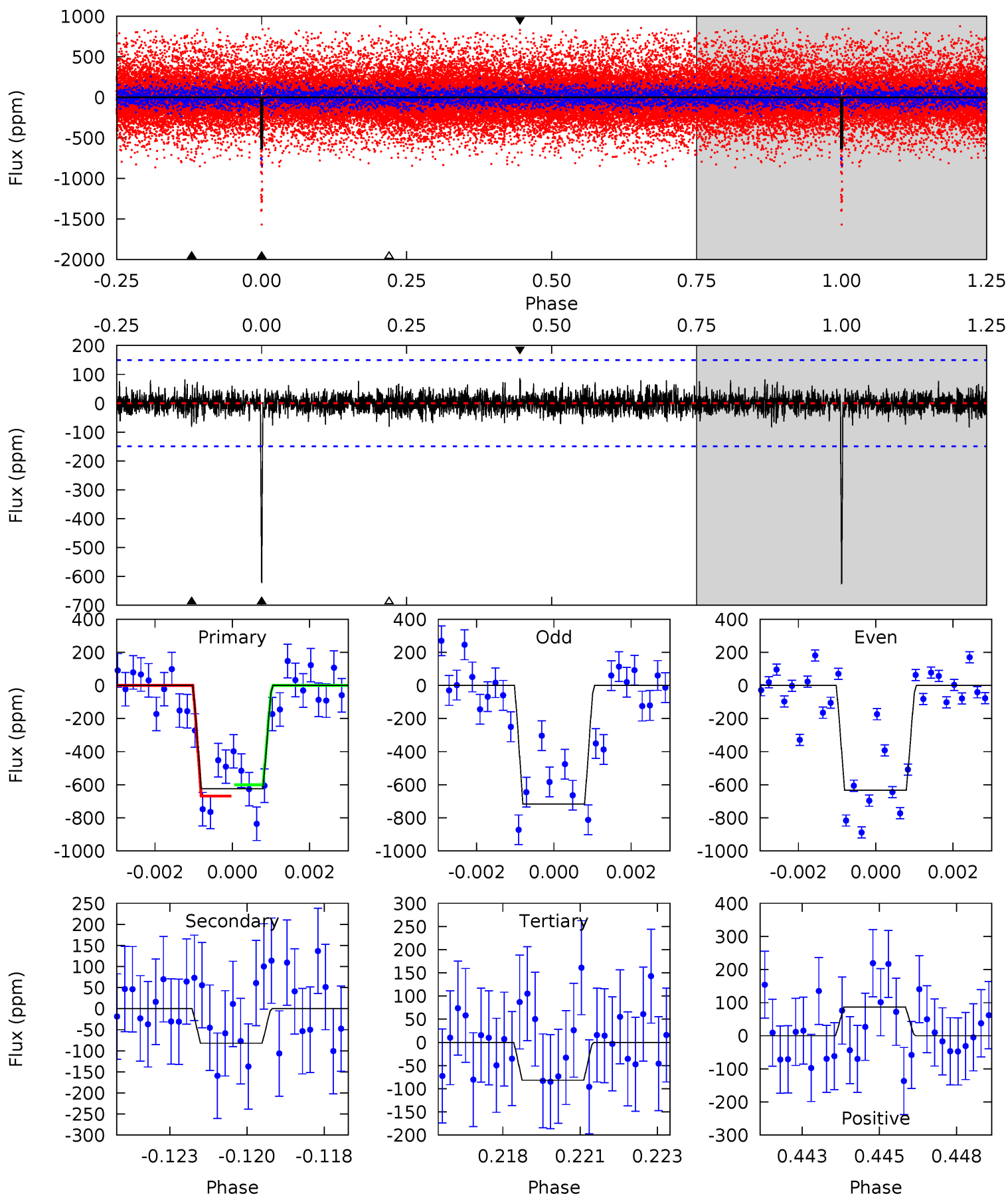
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	8.89	7.94	8.42	5.33	3.10	2.42	5.11	4.63	0.95	0.47	0.62	1.03	0.39	0.39



Alt Model-Shift Uniqueness Test

004814290-03, $P = 84.890684$ Days, $E = 128.924618$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	2.91	2.90	3.09	5.31	3.06	0.79	19.3	19.1	0.02	-0.17	1.50	1.47	0.12	1.18



Stellar Parameters For KIC 004814290

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4970^{+151}_{-136}	$4.537^{+0.072}_{-0.090}$	$-0.100^{+0.300}_{-0.250}$	$0.764^{+0.087}_{-0.079}$	$0.735^{+0.100}_{-0.057}$	$2.317^{+0.746}_{-0.566}$
	+3%/-3%	+2%/-2%	+300%/-250%	+11%/-10%	+14%/-8%	+32%/-24%
Source	PHO1	KIC0	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 004814290-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-609 ± 68	$2.65^{+2.17}_{-1.62}$	461^{+20}_{-19}	4523^{+2542}_{-872}	5642^{+31215}_{-3957}
Alt.	-82 ± 28	$3.00^{+2.15}_{-1.81}$	460^{+21}_{-18}	3059^{+1053}_{-433}	548^{+2913}_{-374}

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 $A_{obs} \gg 1.0$

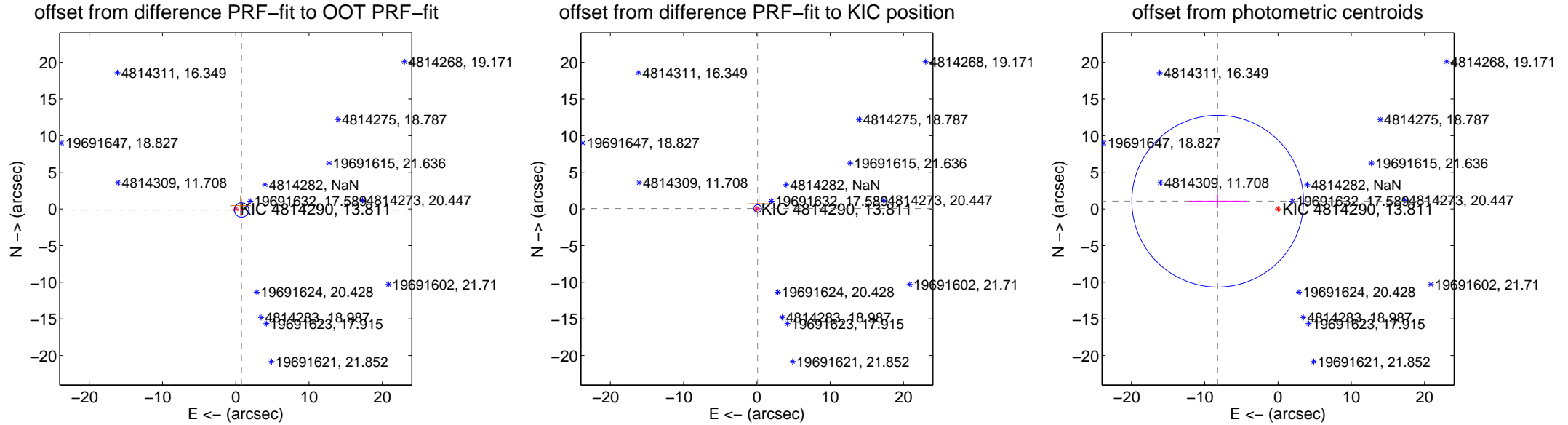
DV Centroid Data

Supplemental centroid analysis for 004814290-03. Kepler magnitude: 13.81. Transit SNR 5.60

There are 6 quarters with good PRF difference image offsets

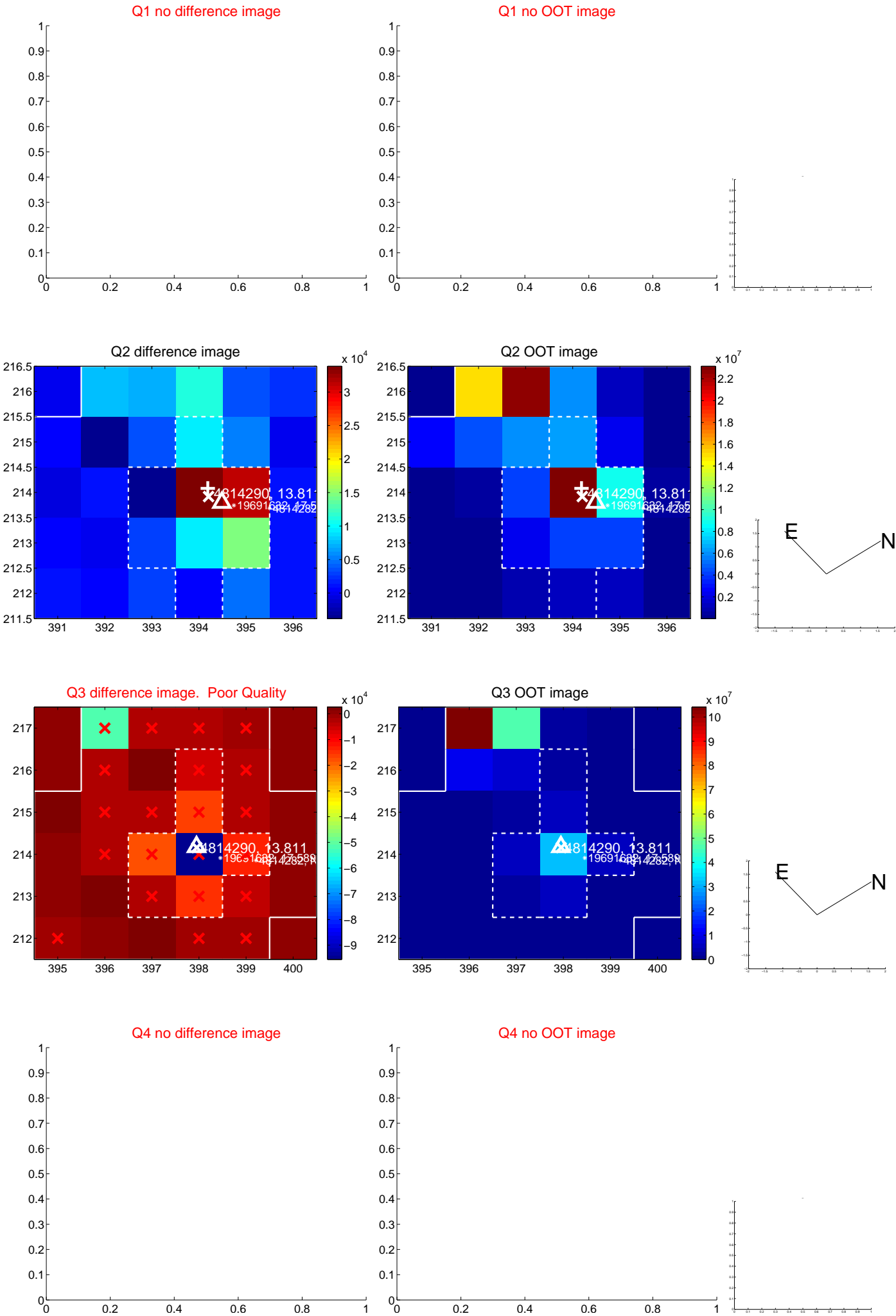
The direct PRF centroid is offset from the target star catalog position by about 0.69 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.807 ± 0.327	2.47	-0.794 ± 0.332	-0.149 ± 0.154
PRF-fit source offset from KIC position	0.113 ± 0.173	0.65	-0.101 ± 0.174	0.050 ± 0.170
photometric centroid source offset	8.30 ± 3.90	2.13	8.23 ± 3.93	1.06 ± 0.93

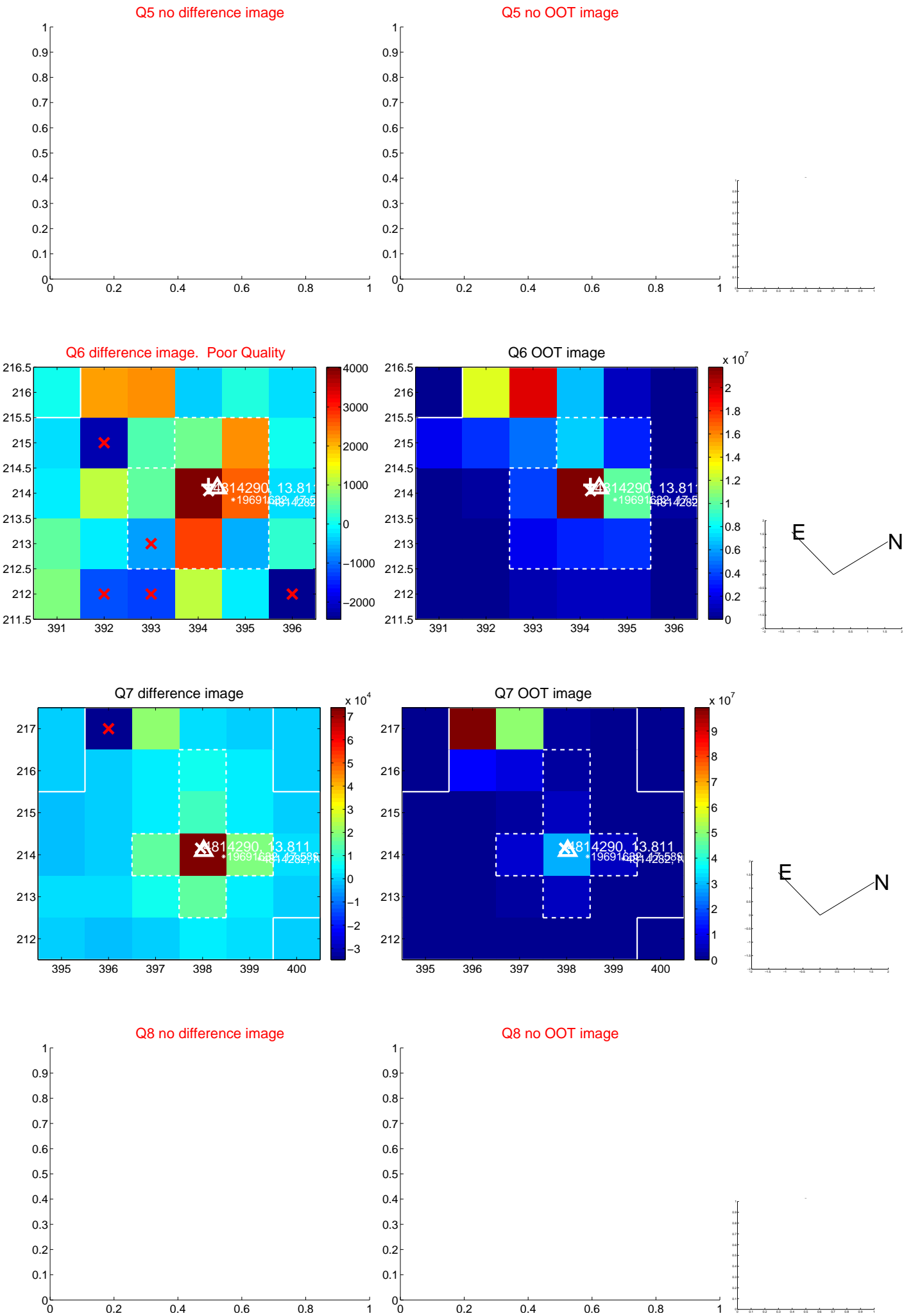


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

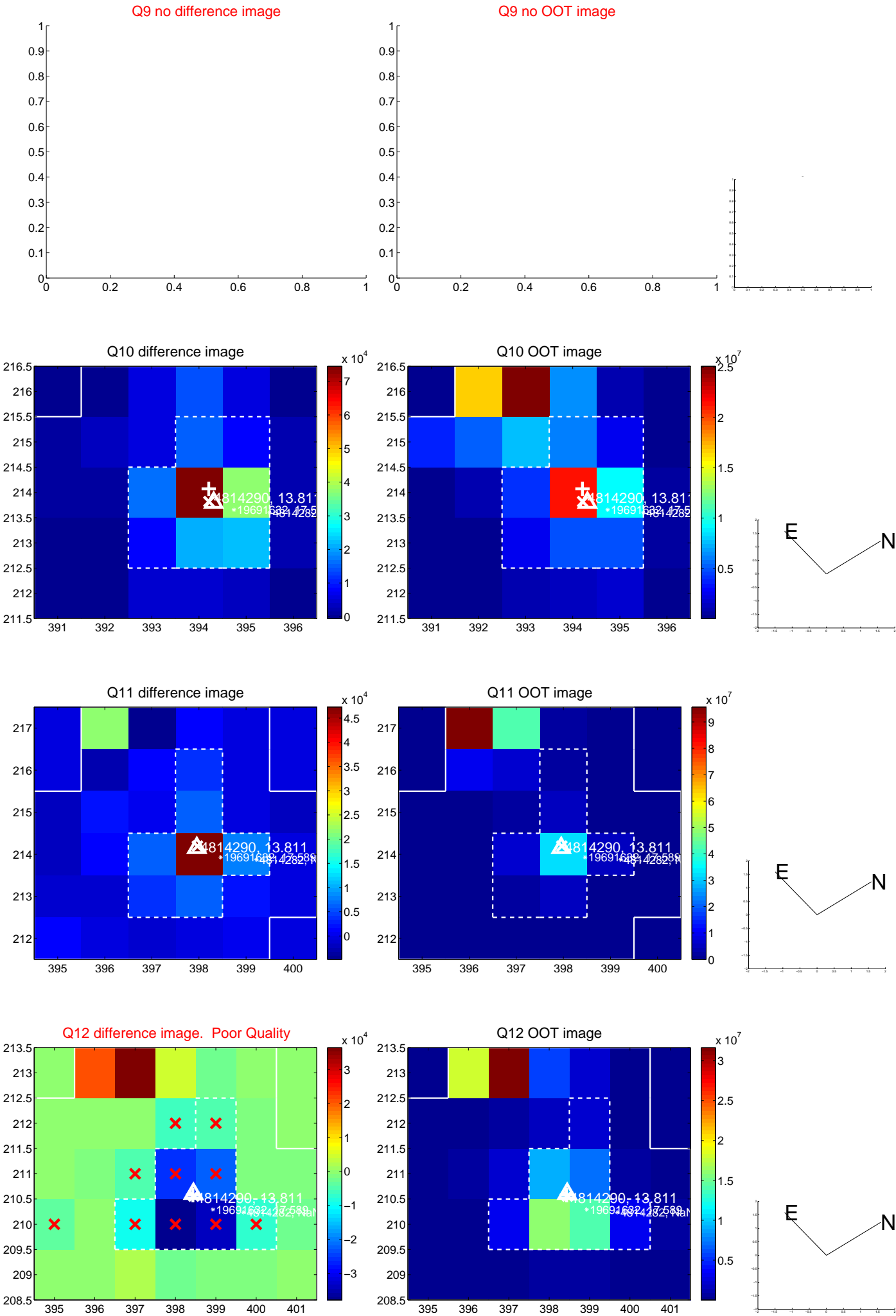
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

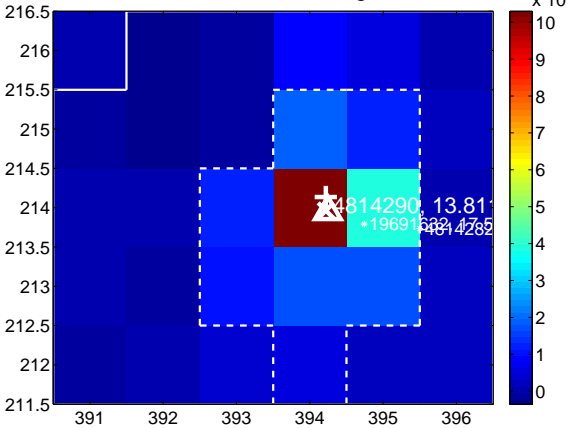
Q13 no difference image



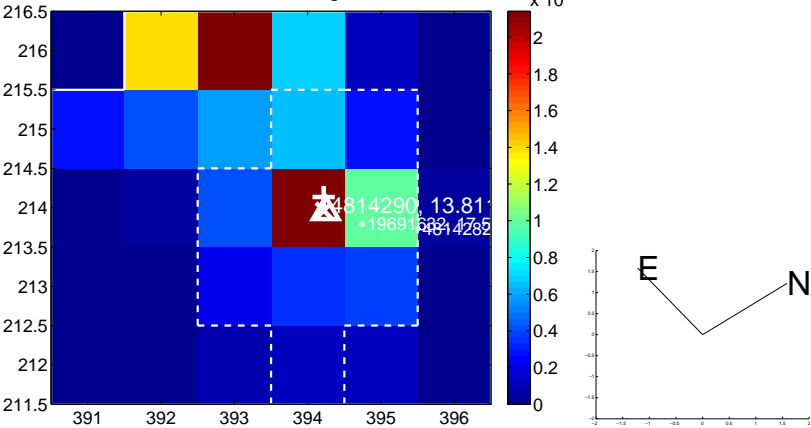
Q13 no OOT image



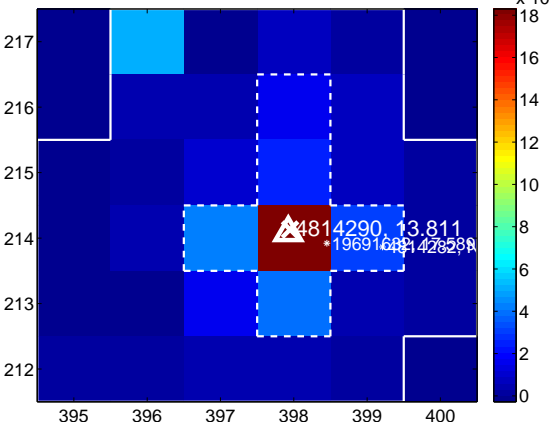
Q14 difference image



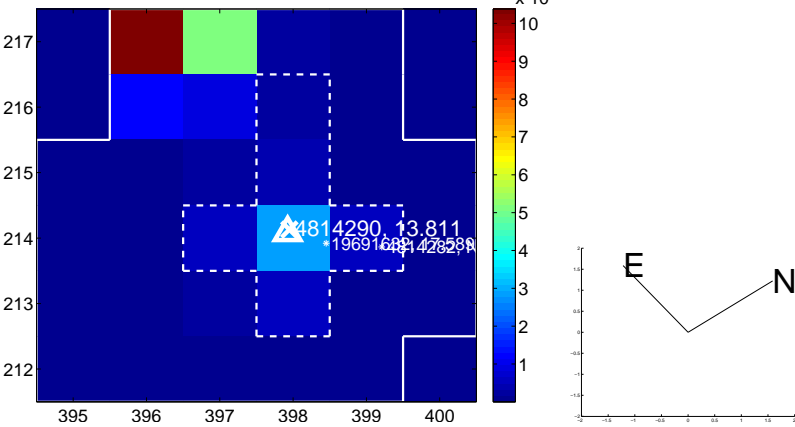
Q14 OOT image



Q15 difference image



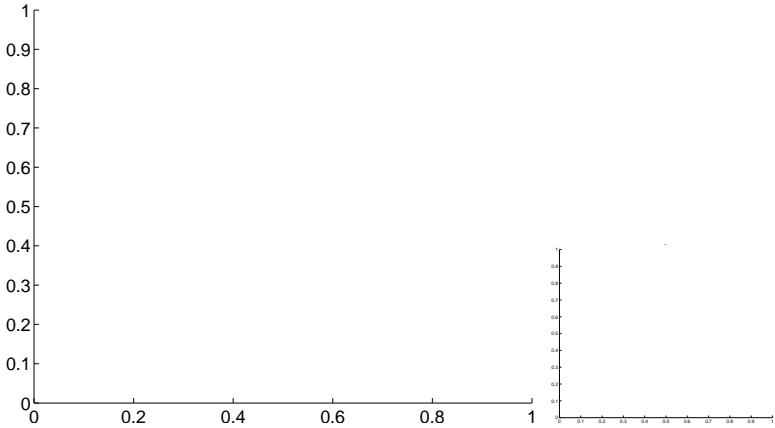
Q15 OOT image



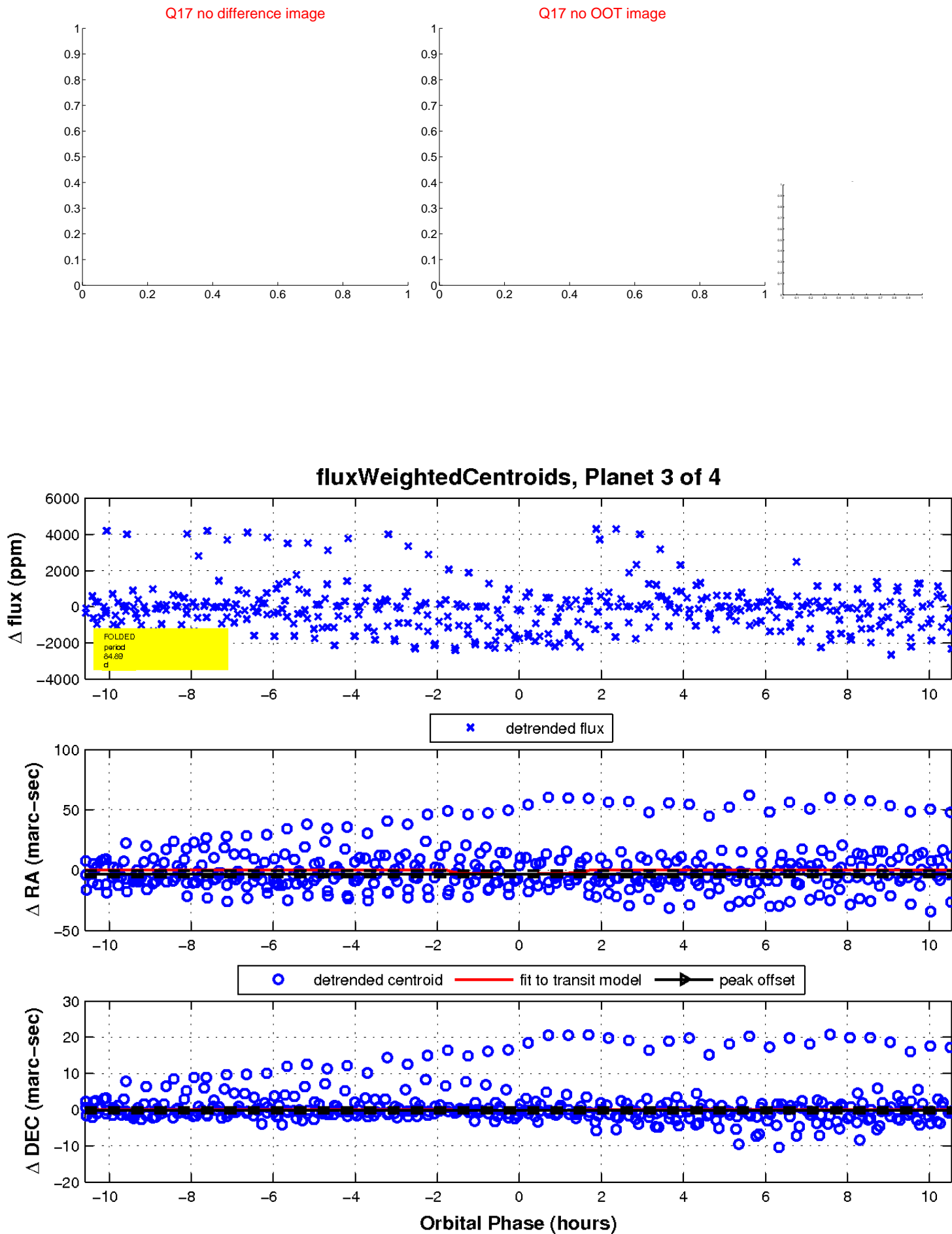
Q16 no difference image



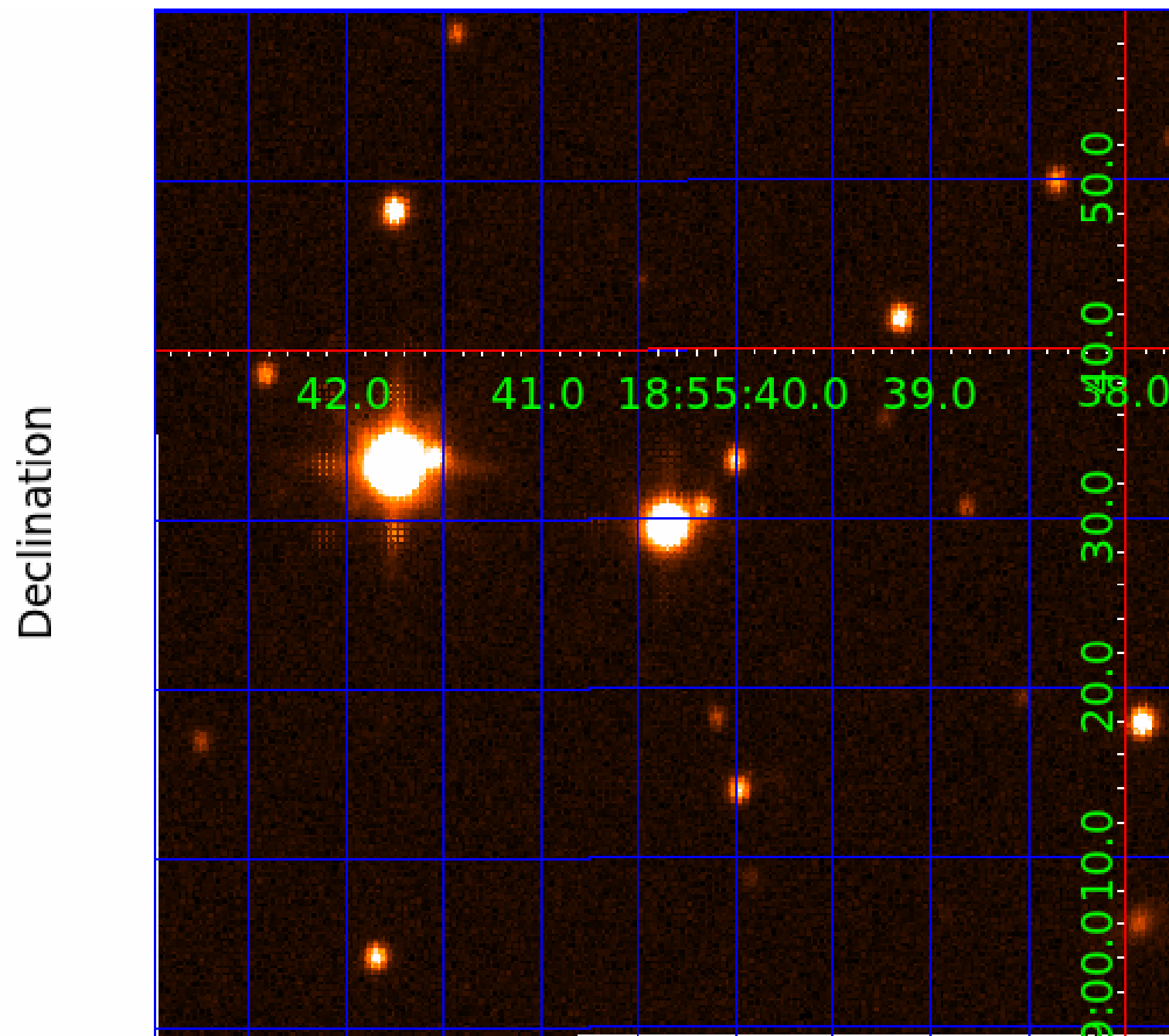
Q16 no OOT image



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



UKIRT Image



KIC 004814290

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})
004814290-01	OBS	No	171.407876	165.299291	1689.5	6.765	12.1	7.7	0.76	4970	3.04	1.08
004814290-02	OBS	No	480.620409	439.458264	552.2	2.469	14.4	3.0	0.76	4970	2.00	0.27
004814290-03	OBS	No	84.891238	213.830828	668.7	3.533	12.6	5.6	0.76	4970	2.14	2.75
004814290-04	OBS	No	267.768695	263.947542	250.0	1.925	12.4	1.7	0.76	4970	1.43	0.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004814290-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004814290-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004814290-03	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
004814290-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

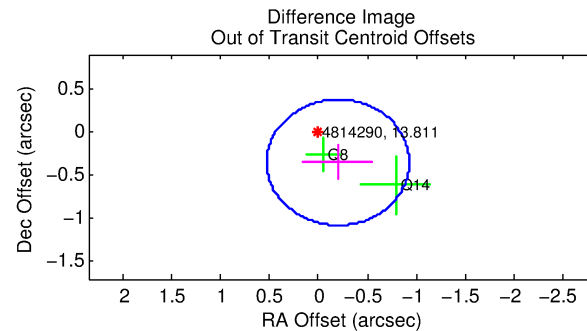
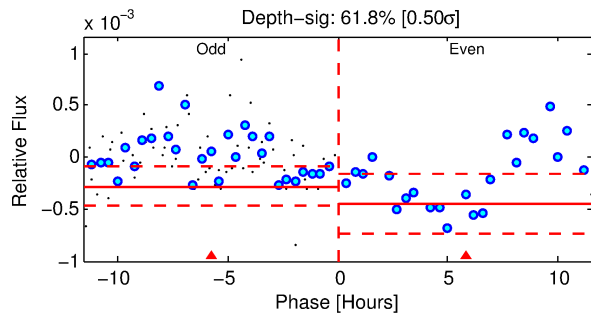
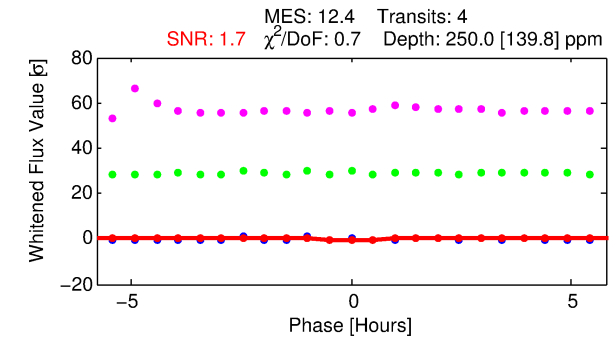
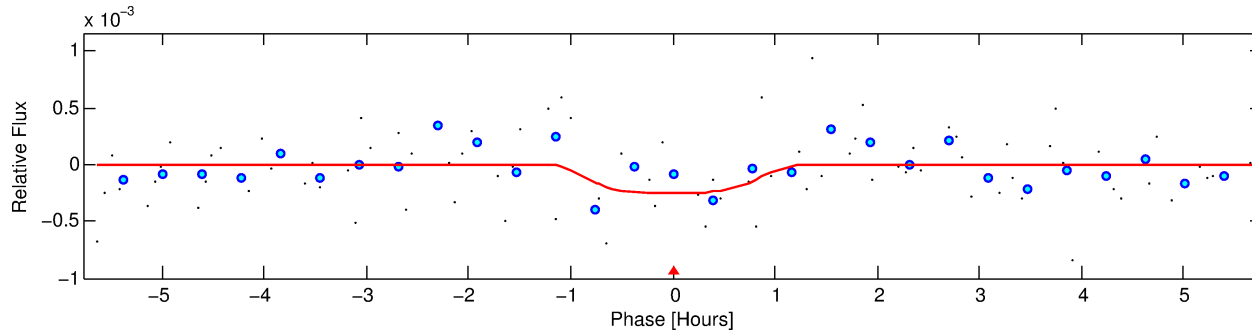
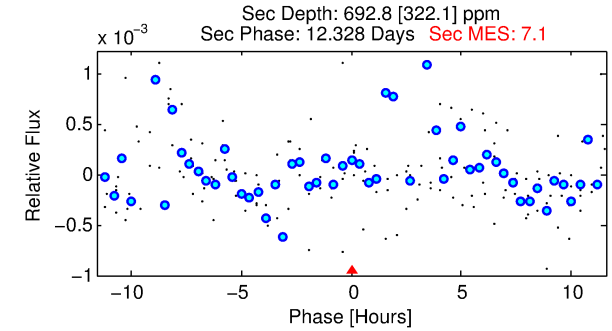
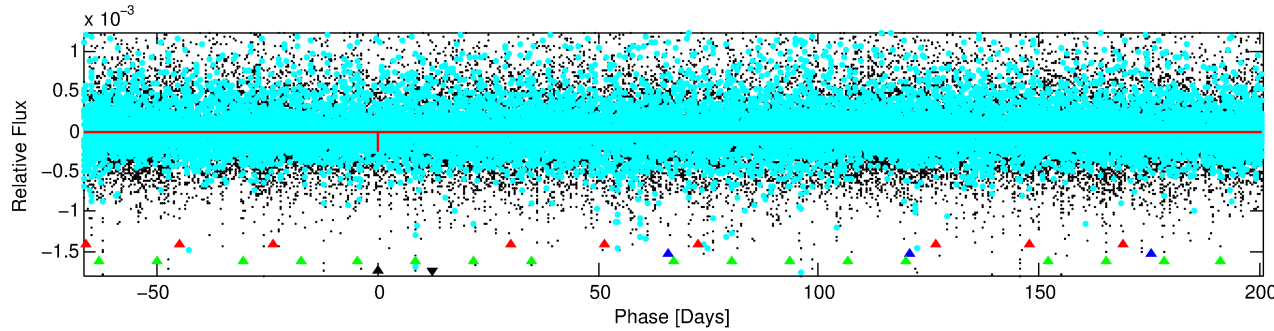
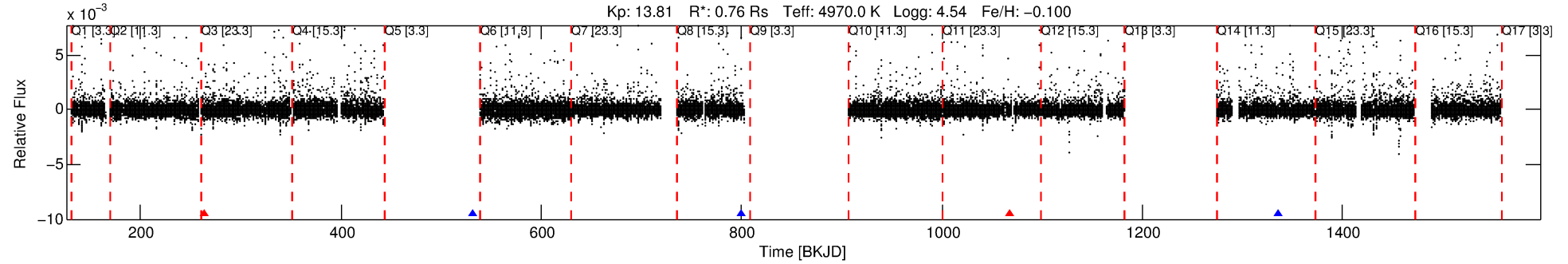
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004814290-04

No Significant Match Found

DV One-Page Summary

KIC: 4814290 Candidate: 4 of 4 Period: 267.769 d



DV Fit Results:

Period = 267.76870 [0.00685] d
Epoch = 263.9475 [0.0199] BKJD
Rp/R* = 0.0172 [0.0629]
a/R* = 558.19 [7741.99]
b = 0.87 [3.96]
Seff = 0.59 [0.12]
Teq = 224 [11] K
Rp = 1.43 [5.24] Re
a = 0.7333 [0.0753] AU
Ag = 100135.11 [735562.91] [0.14σ]
Teffp = 6155 [11303] K [0.52σ]

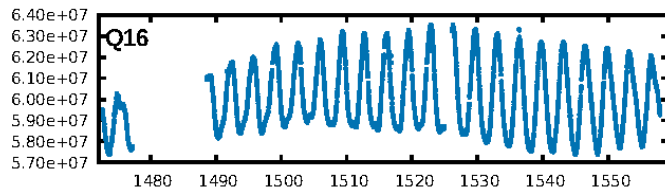
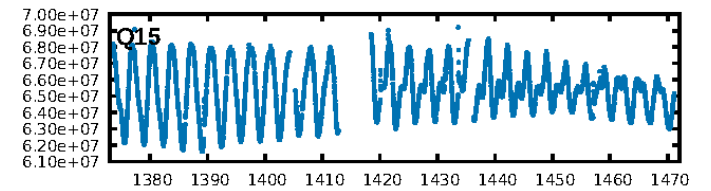
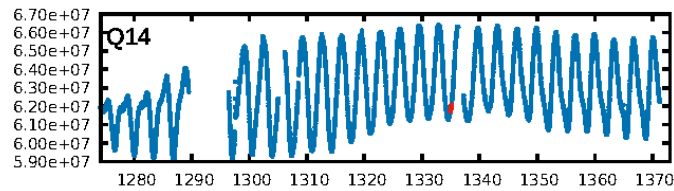
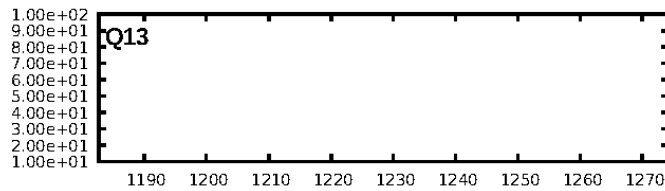
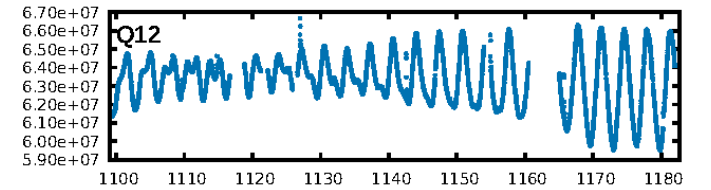
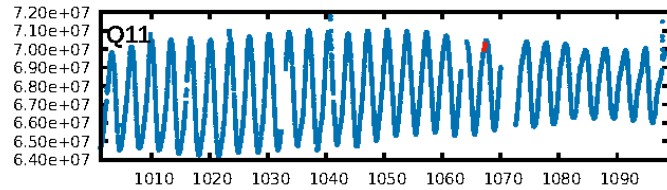
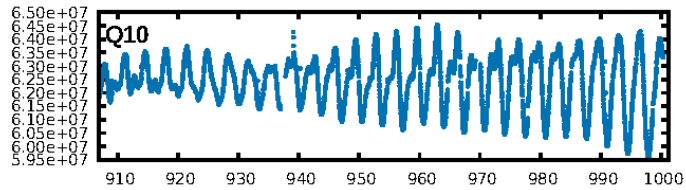
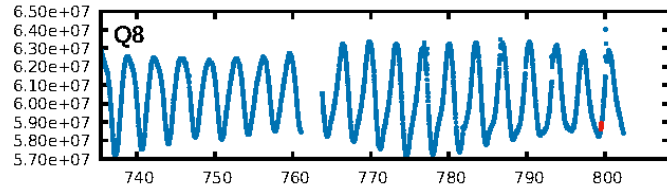
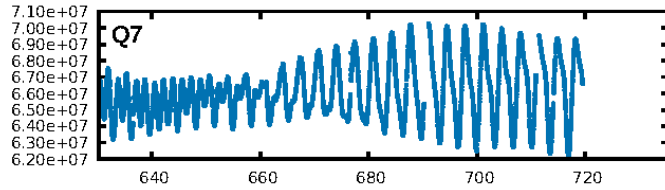
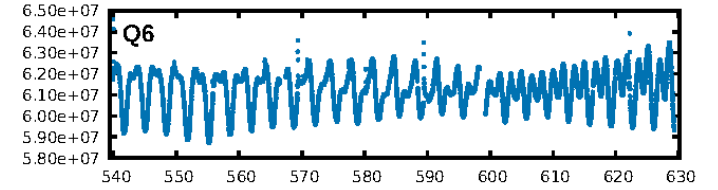
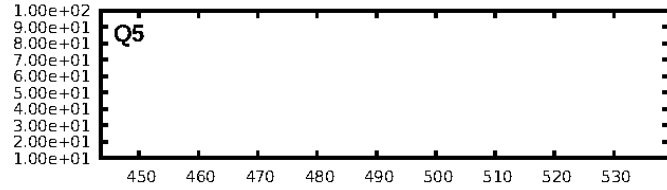
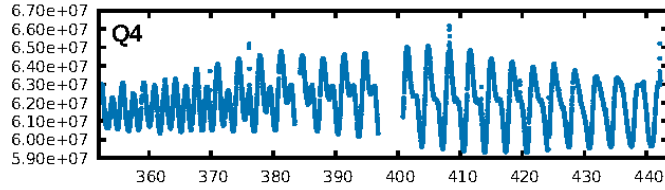
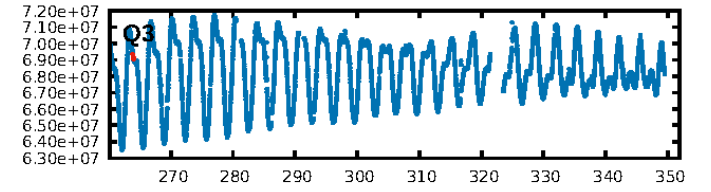
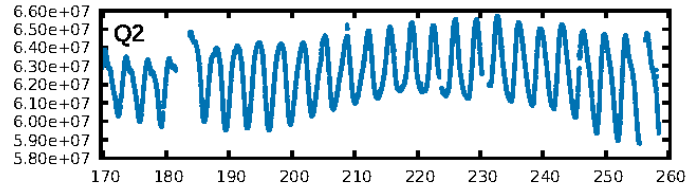
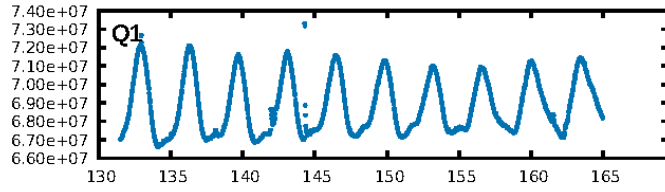
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [328.78σ]
LongPeriod-sig: 100.0% [1631.52σ]
ModelChiSquare2-sig: 84.0%
ModelChiSquareGof-sig: 96.6%
Bootstrap-pfa: 1.12e-09
RollingBand-fgt: 0.50 [2/4]
GhostDiagnostic-chr: -17.76
Centroid-sig: 2.8%
Centroid-so: 18.186 arcsec [0.83σ]
OotOffset-rm: 0.403 arcsec [1.66σ]
KicOffset-rm: 0.233 arcsec [1.44σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [4/4]

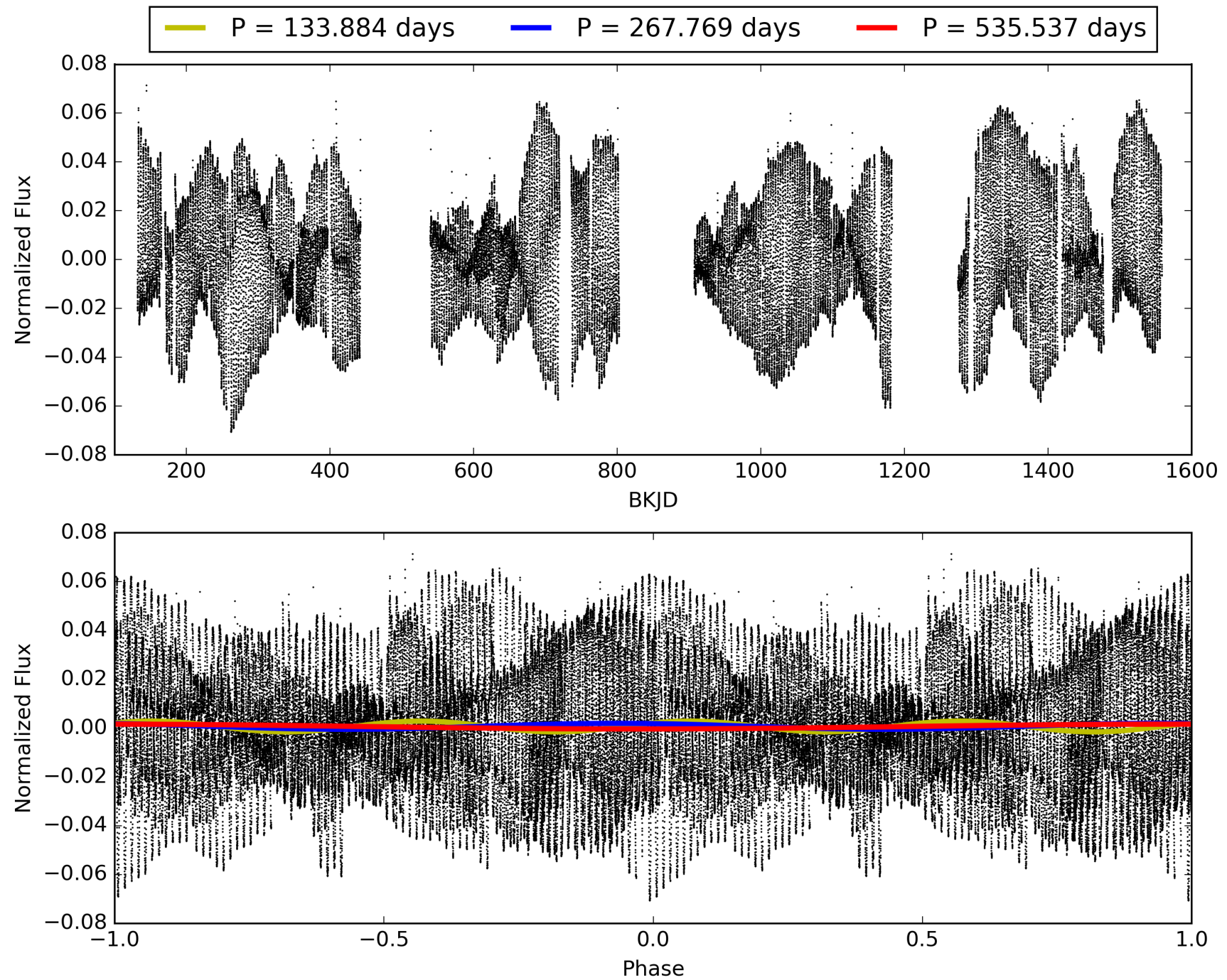
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:21:47 Z

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

TCE 004814290-04, PDC Light Curves

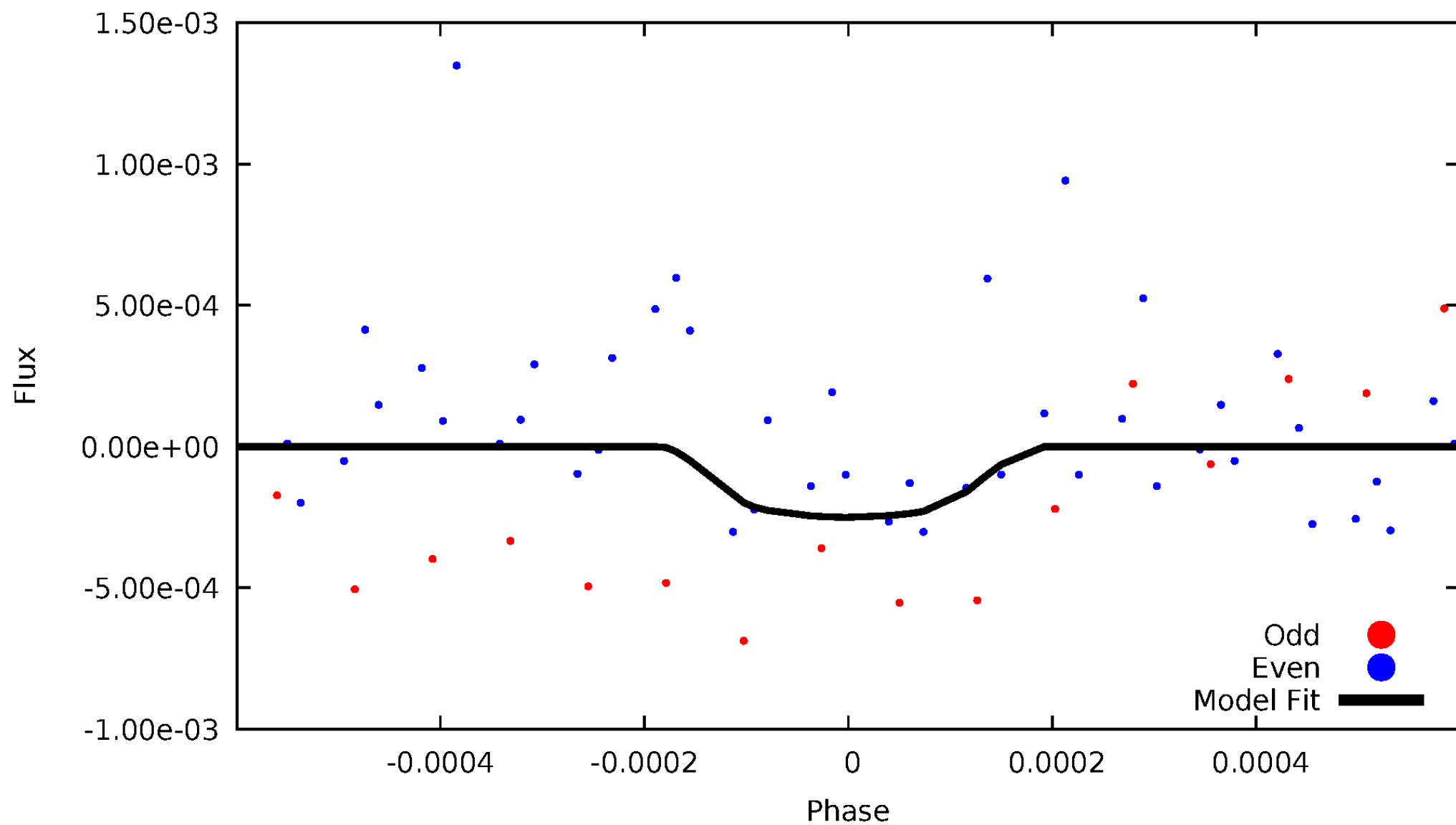


TCE 004814290-04



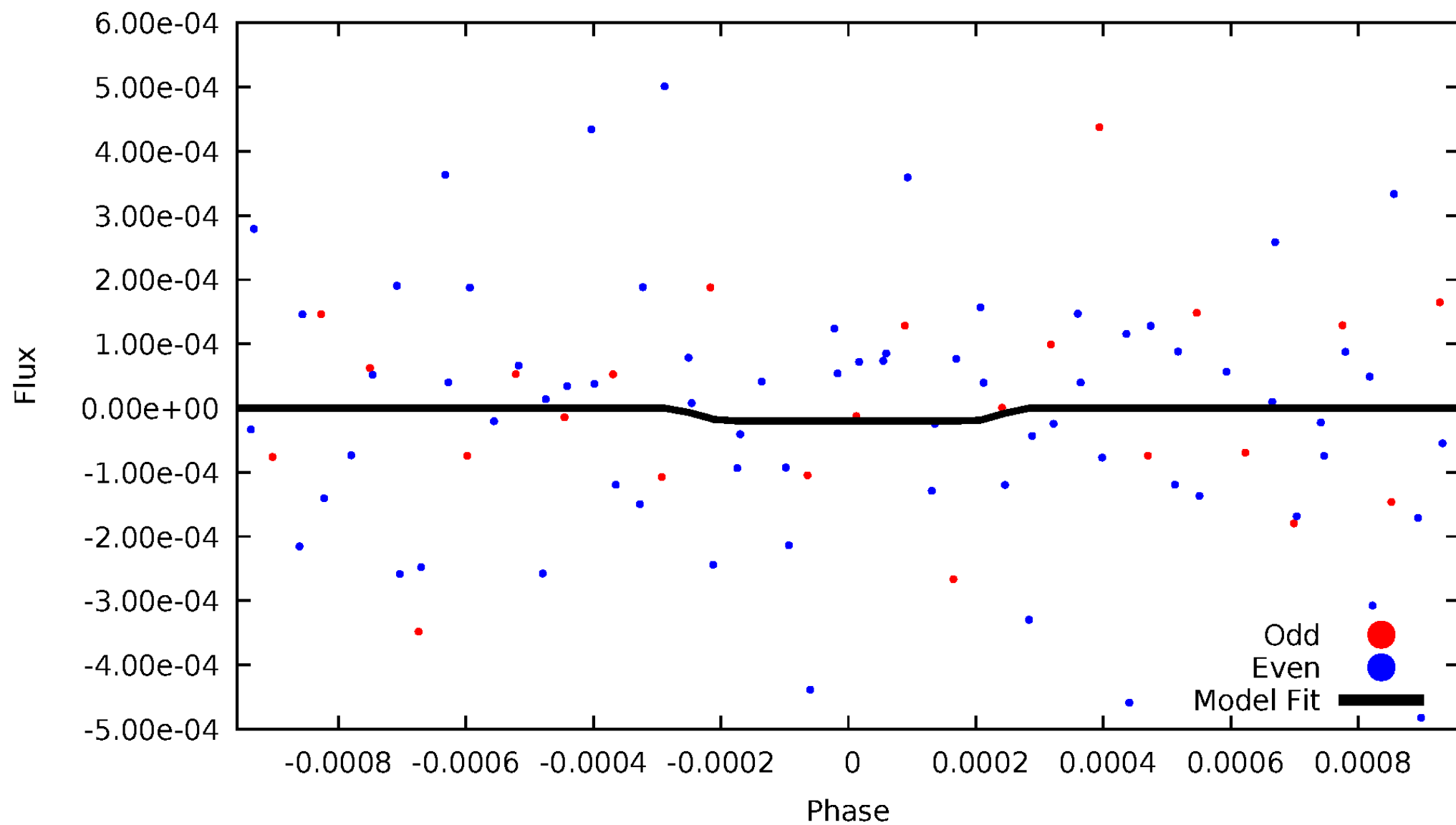
DV Odd/Even

TCE 004814290-04



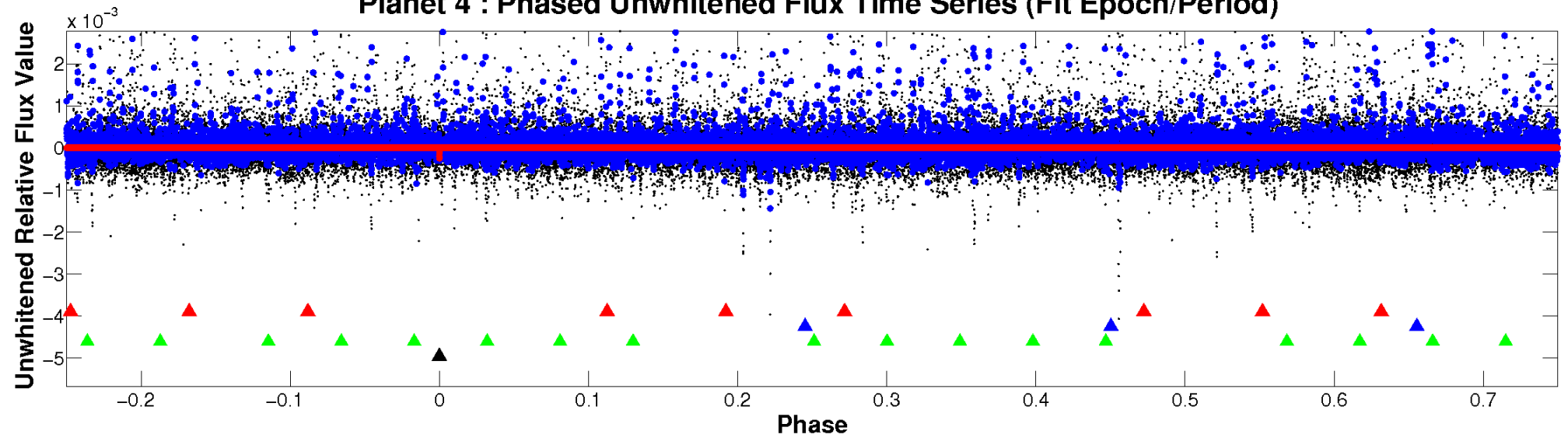
ALT Odd/Even

TCE 004814290-04

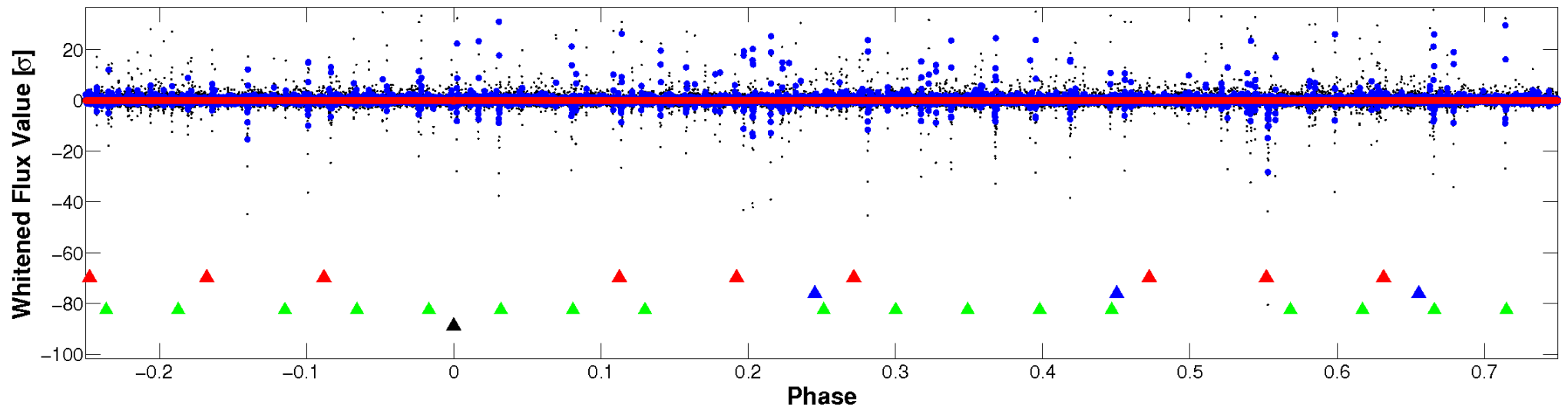


Non-Whitened Vs. Whitened Light Curve

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

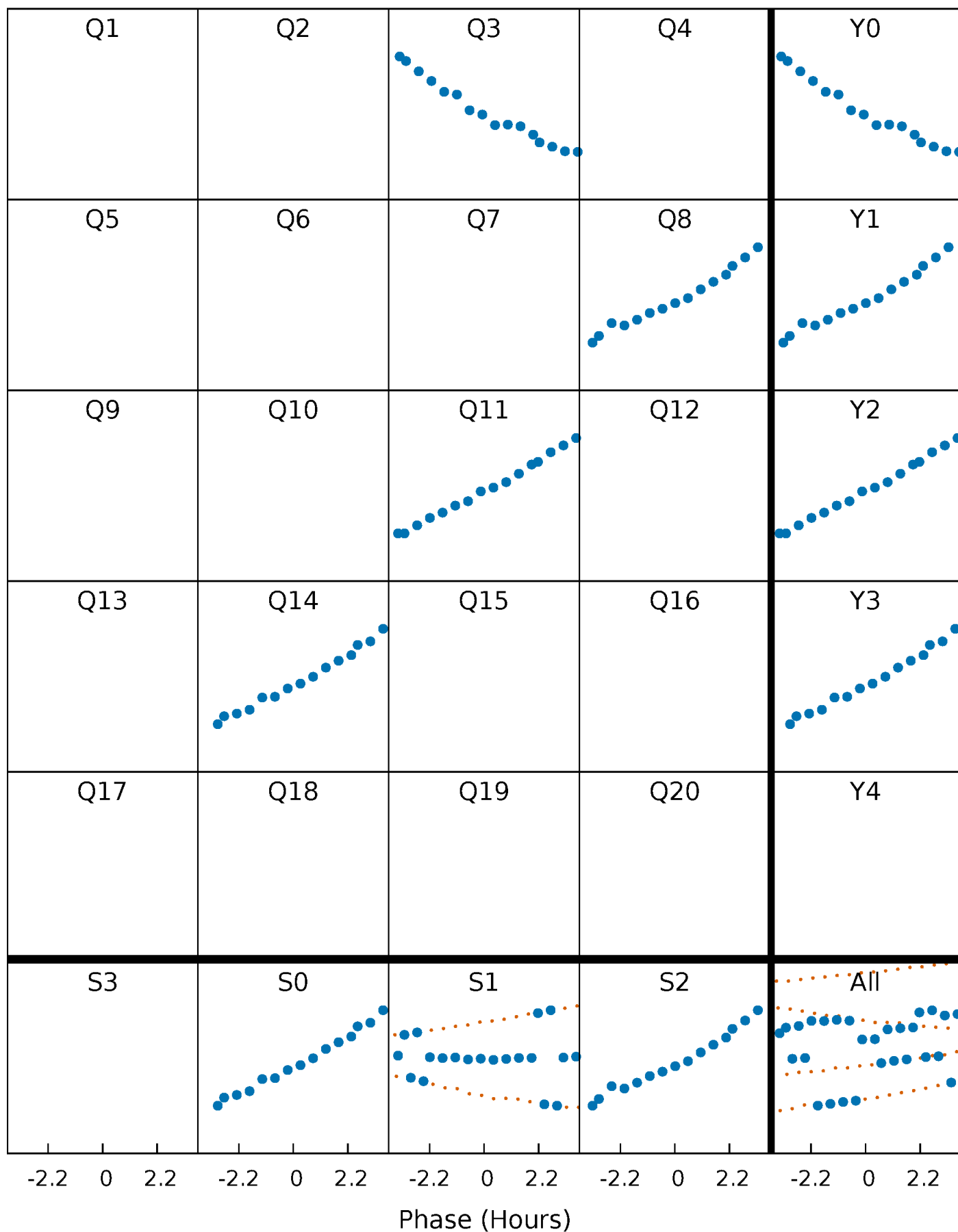


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



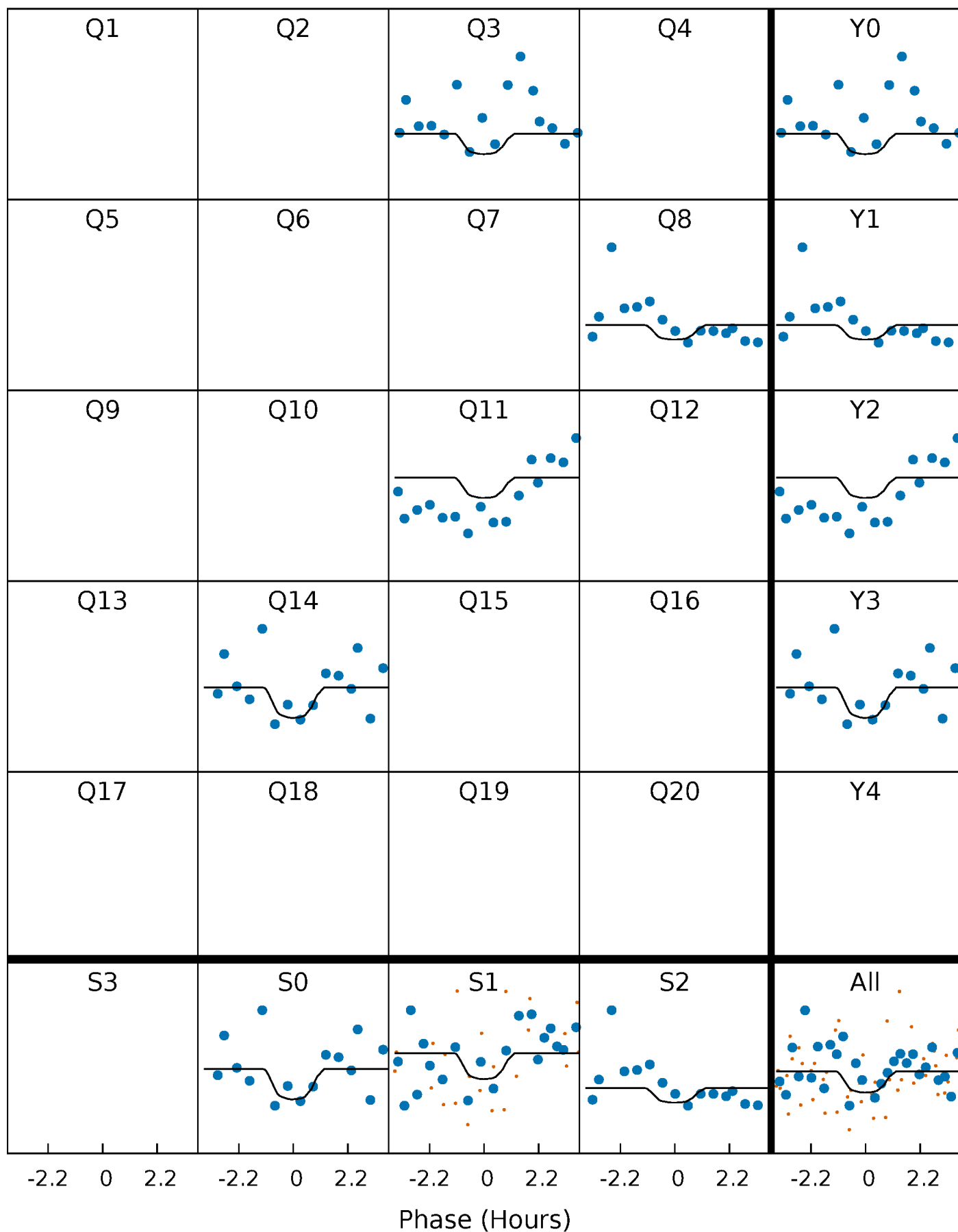
PDC Quarter-Phased Transit Curves

TCE 004814290-04 P=267.768695 Days $T_0=263.947542$ (BKJD)



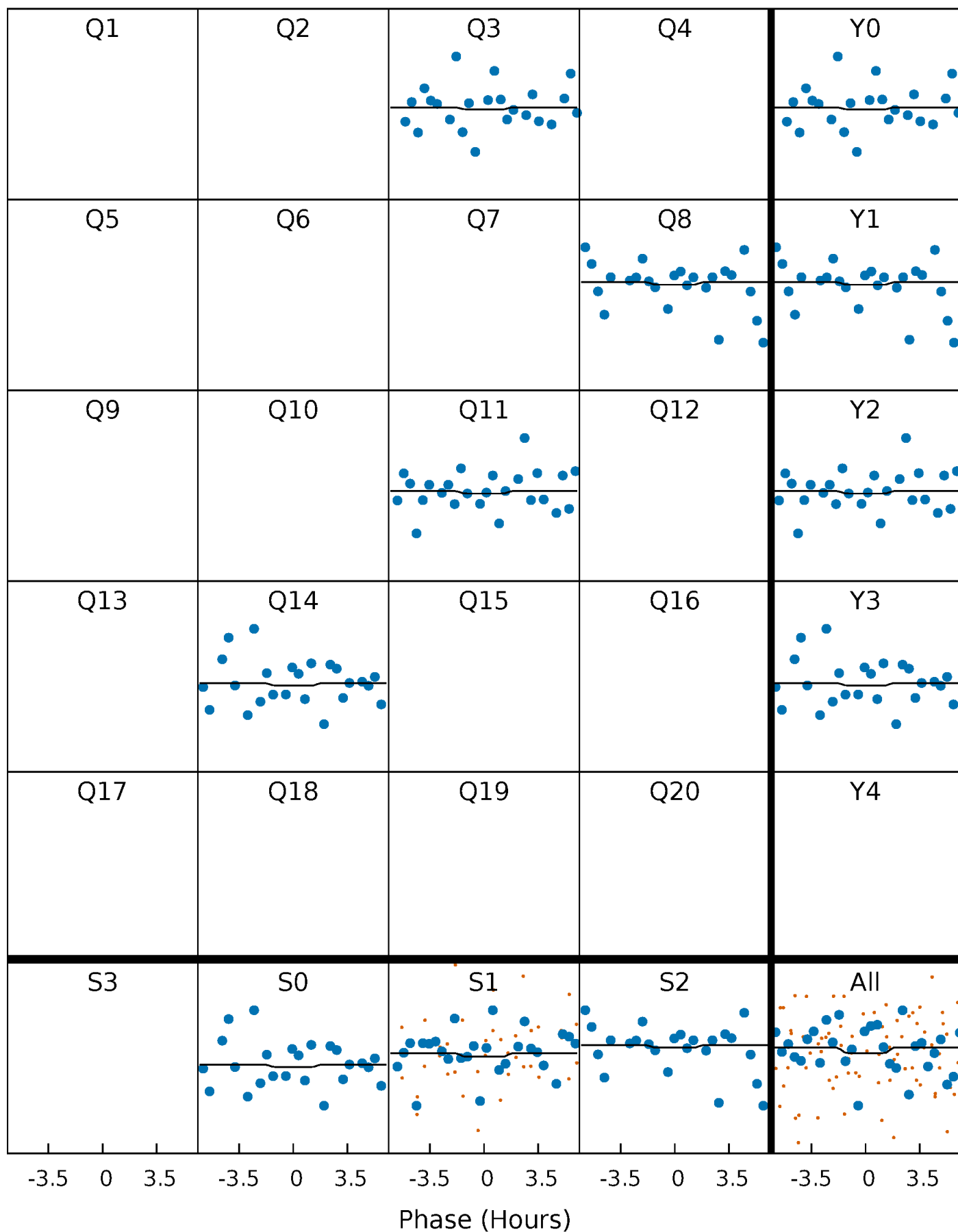
DV Quarter-Phased Transit Curves

TCE 004814290-04 P=267.768695 Days $T_0=263.947542$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

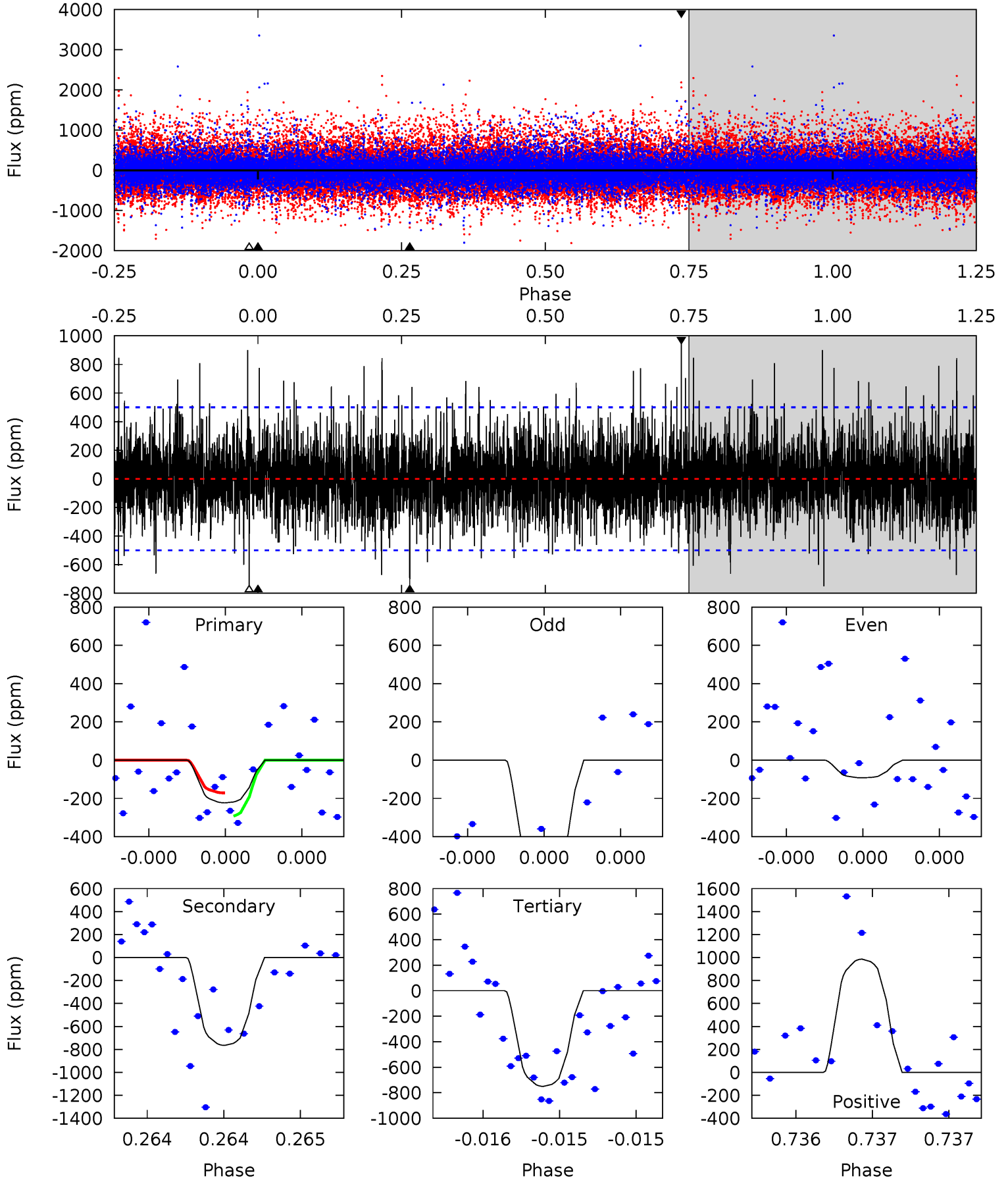
TCE 004814290-04 P=267.774993 Days $T_0=263.979629$ (BKJD)



DV Model-Shift Uniqueness Test

004814290-04, P = 267.768695 Days, E = 263.947542 Days

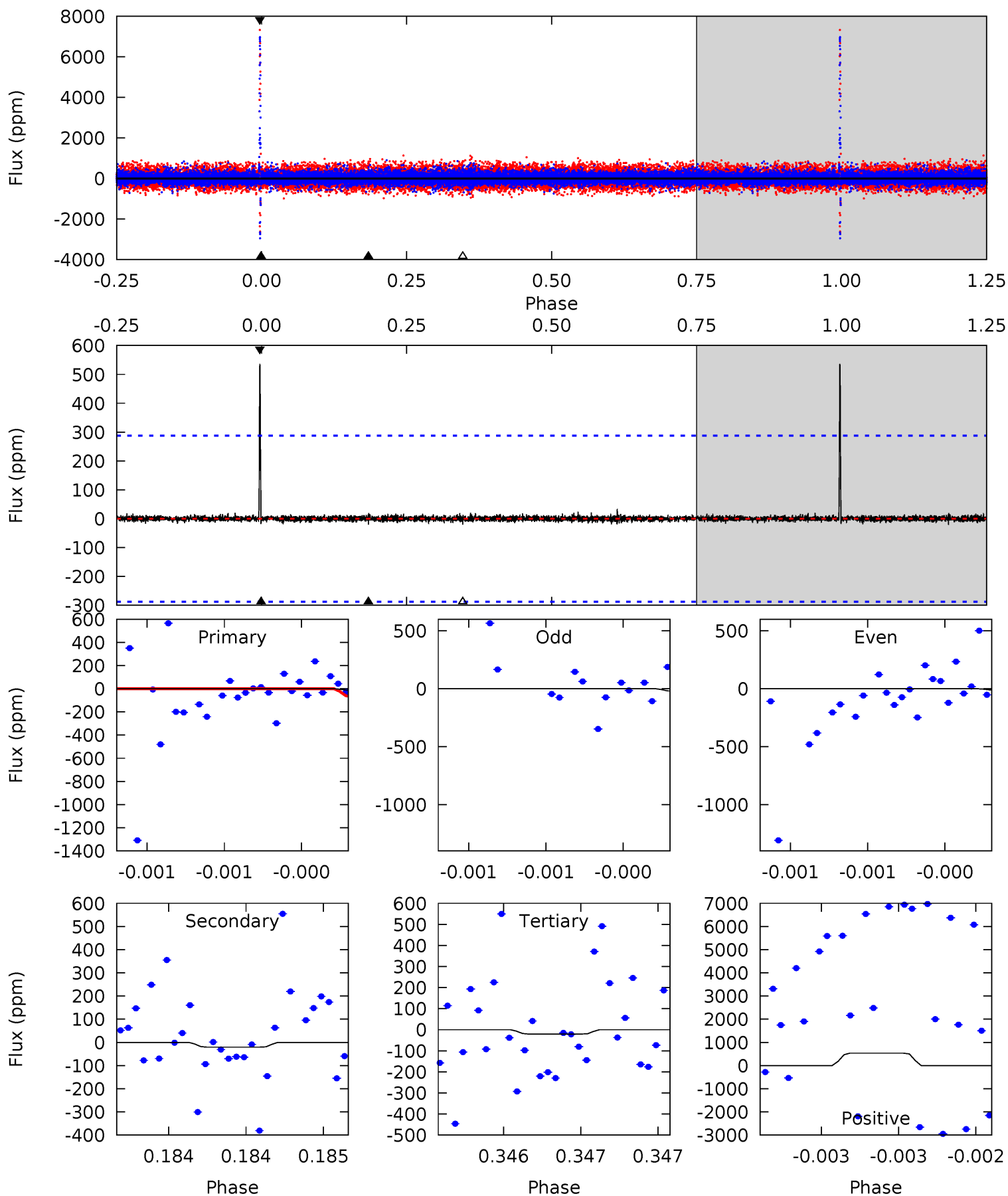
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.51	8.61	8.45	11.1	5.63	3.56	1.97	-5.94	-8.59	0.16	-2.49	1.70	1.33	0.56	0.68



Alt Model-Shift Uniqueness Test

004814290-04, P = 267.774993 Days, E = 263.979629 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.26	0.40	0.39	10.4	5.57	3.48	0.27	-0.13	-10.1	0.01	-10.00	0.08	0.70	0.96	0.28



Stellar Parameters For KIC 004814290

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4970^{+151}_{-136}	$4.537^{+0.072}_{-0.090}$	$-0.100^{+0.300}_{-0.250}$	$0.764^{+0.087}_{-0.079}$	$0.735^{+0.100}_{-0.057}$	$2.317^{+0.746}_{-0.566}$
	+3%/-3%	+2%/-2%	+300%/-250%	+11%/-10%	+14%/-8%	+32%/-24%
Source	PHO1	KIC0	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 004814290-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-765 ± 89	$4.22^{+4.10}_{-2.92}$	315^{+14}_{-13}	3958^{+2516}_{-782}	$12704^{+123298}_{-9504}$
Alt.	-21 ± 52	$3.81^{+4.25}_{-2.66}$	315^{+13}_{-13}	2265^{+926}_{-4791}	236^{+3311}_{-838}

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 $A_{obs} \gg 1.0$

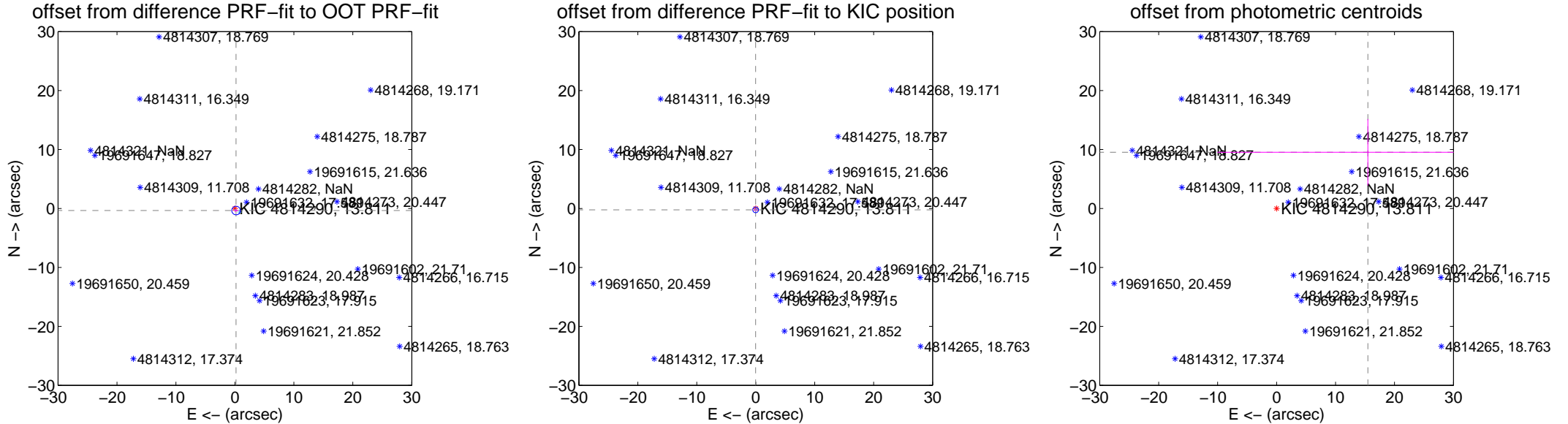
DV Centroid Data

Supplemental centroid analysis for 004814290-04. Kepler magnitude: 13.81. Transit SNR 1.70

There are 3 quarters with good PRF difference image offsets

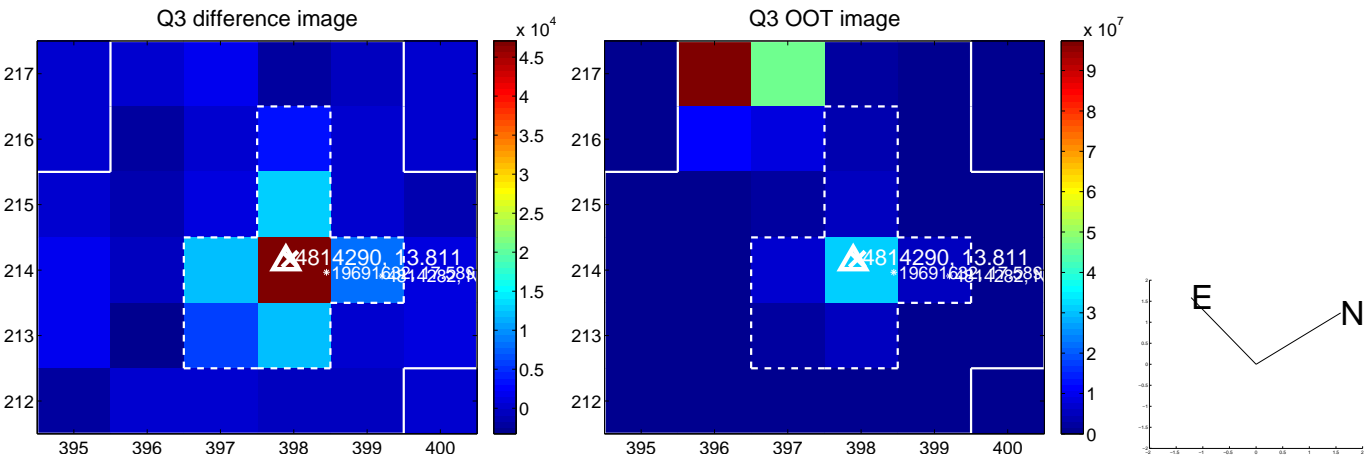
The direct PRF centroid is offset from the target star catalog position by about 0.84 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.403 ± 0.243	1.66	-0.198 ± 0.355	-0.351 ± 0.194
PRF-fit source offset from KIC position	0.233 ± 0.162	1.44	0.025 ± 0.172	-0.232 ± 0.161
photometric centroid source offset	18.19 ± 21.94	0.83	-15.49 ± 25.53	9.53 ± 5.64

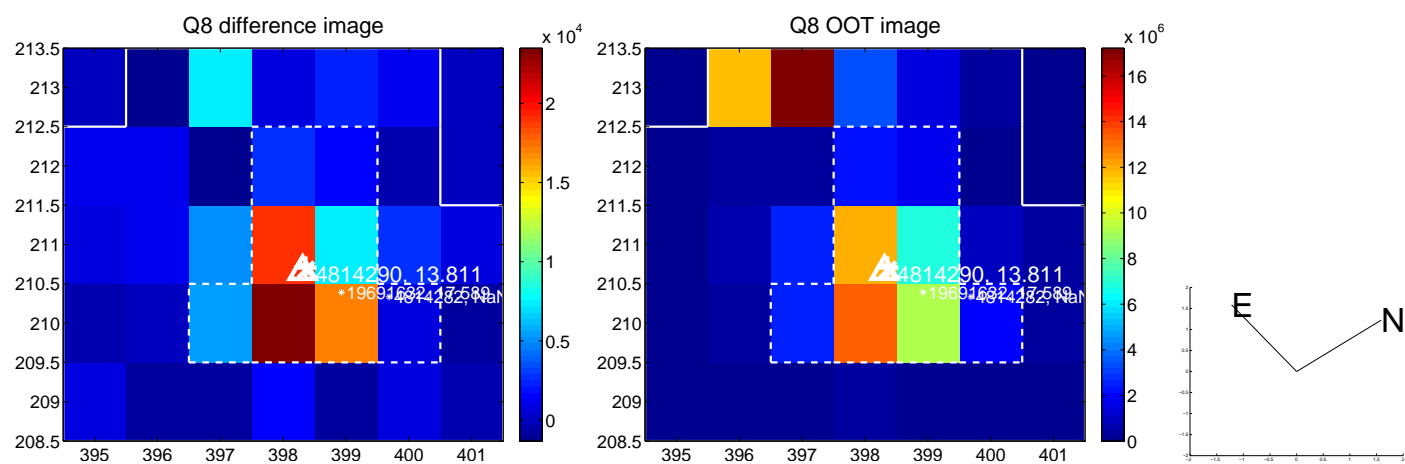


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

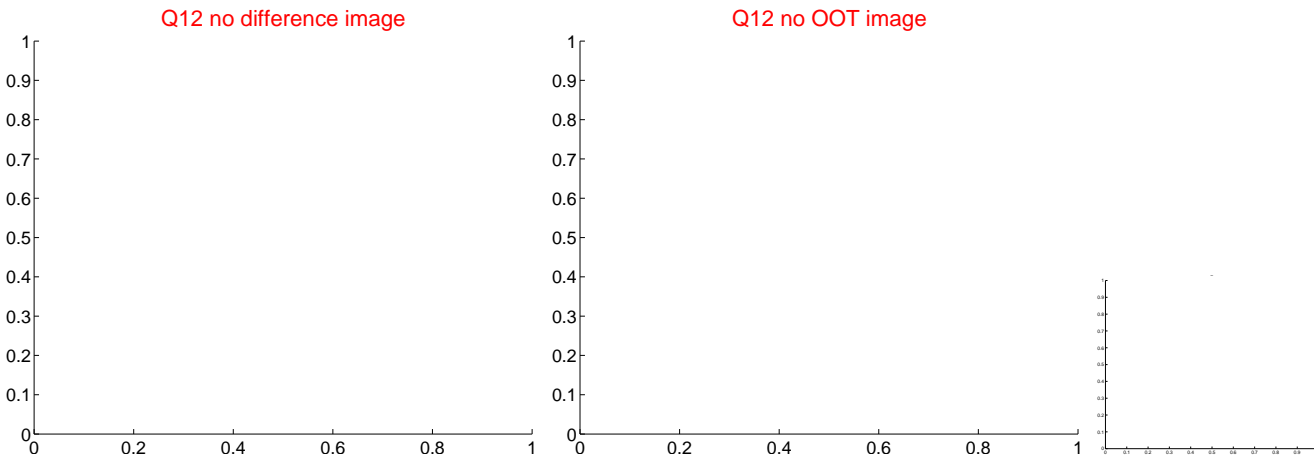
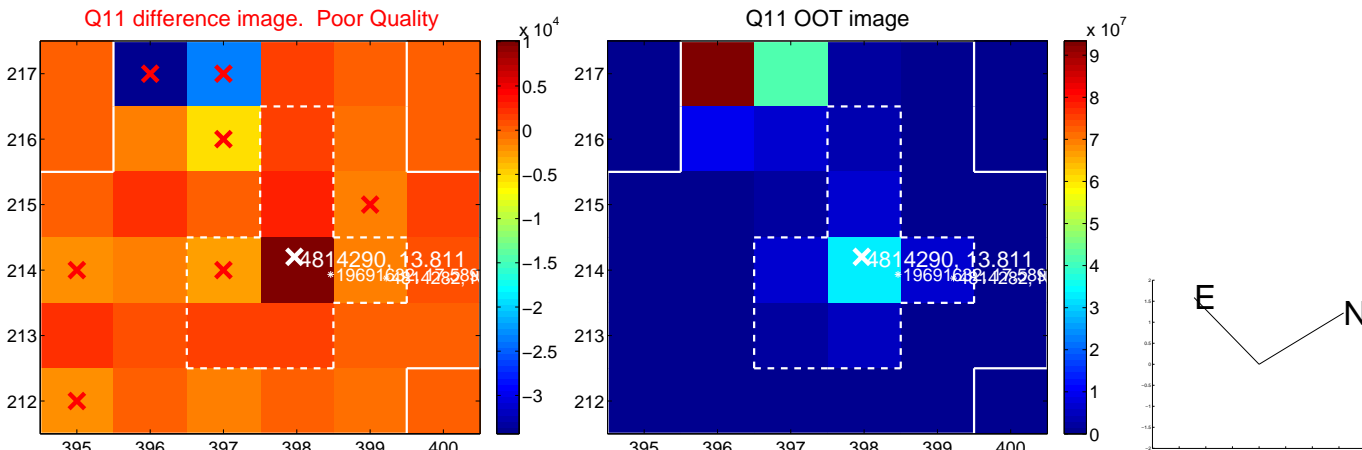
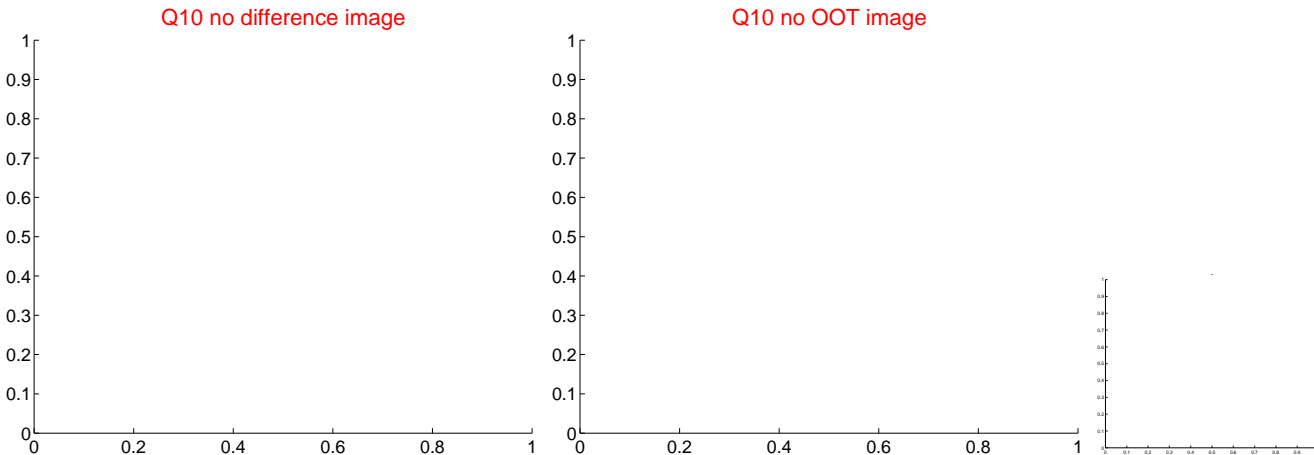
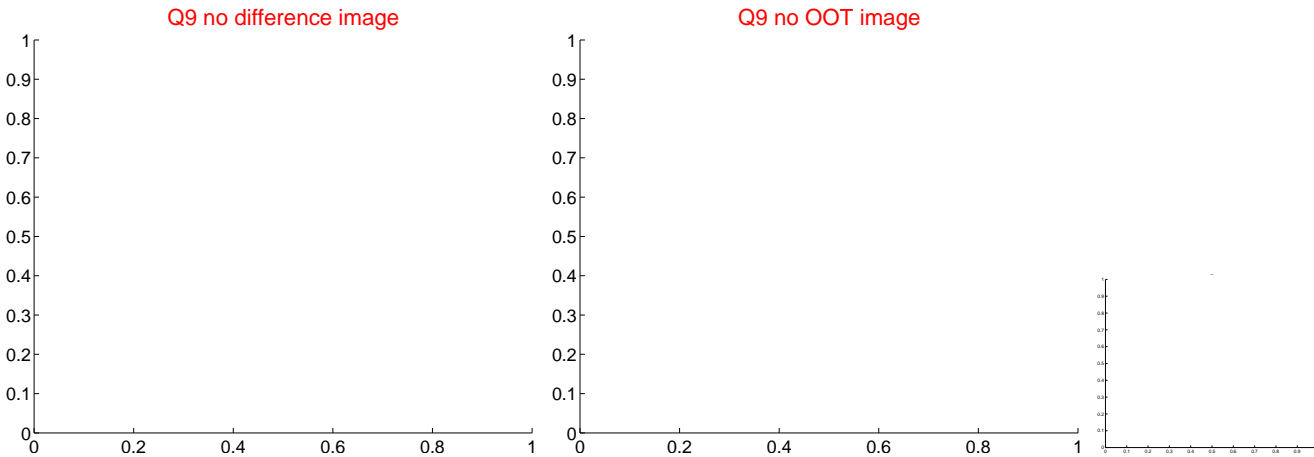
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



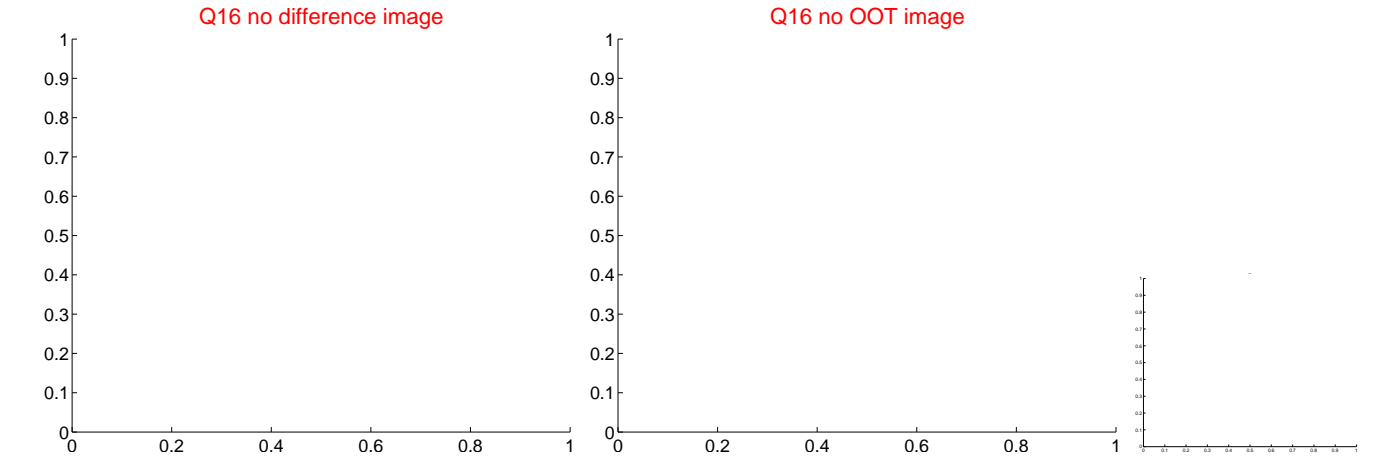
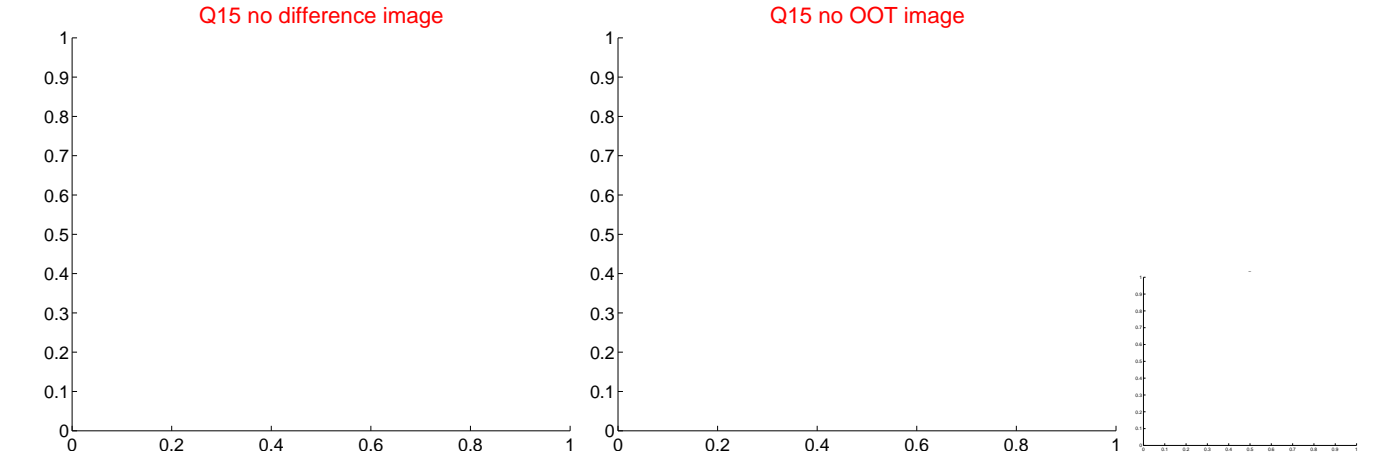
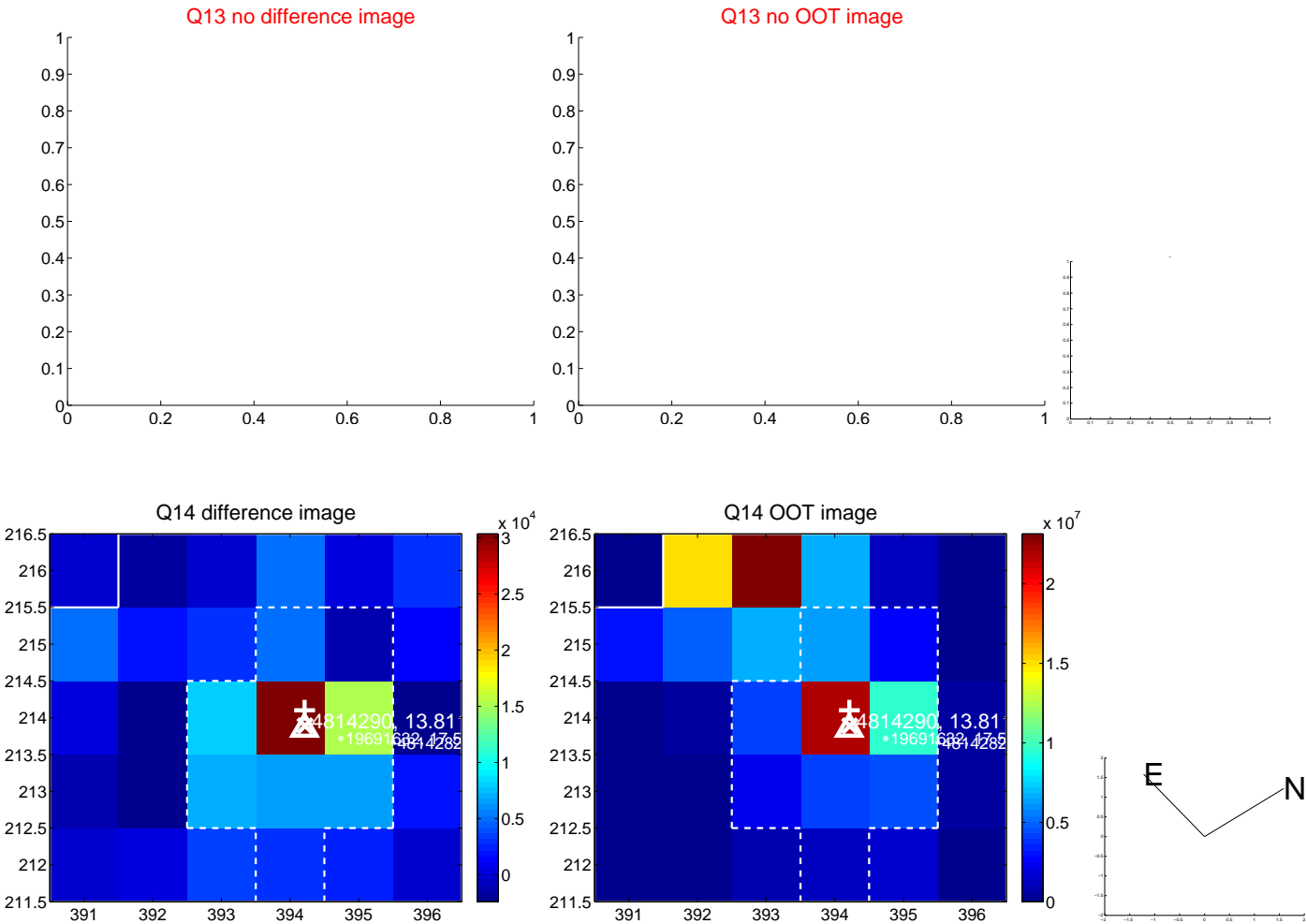
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



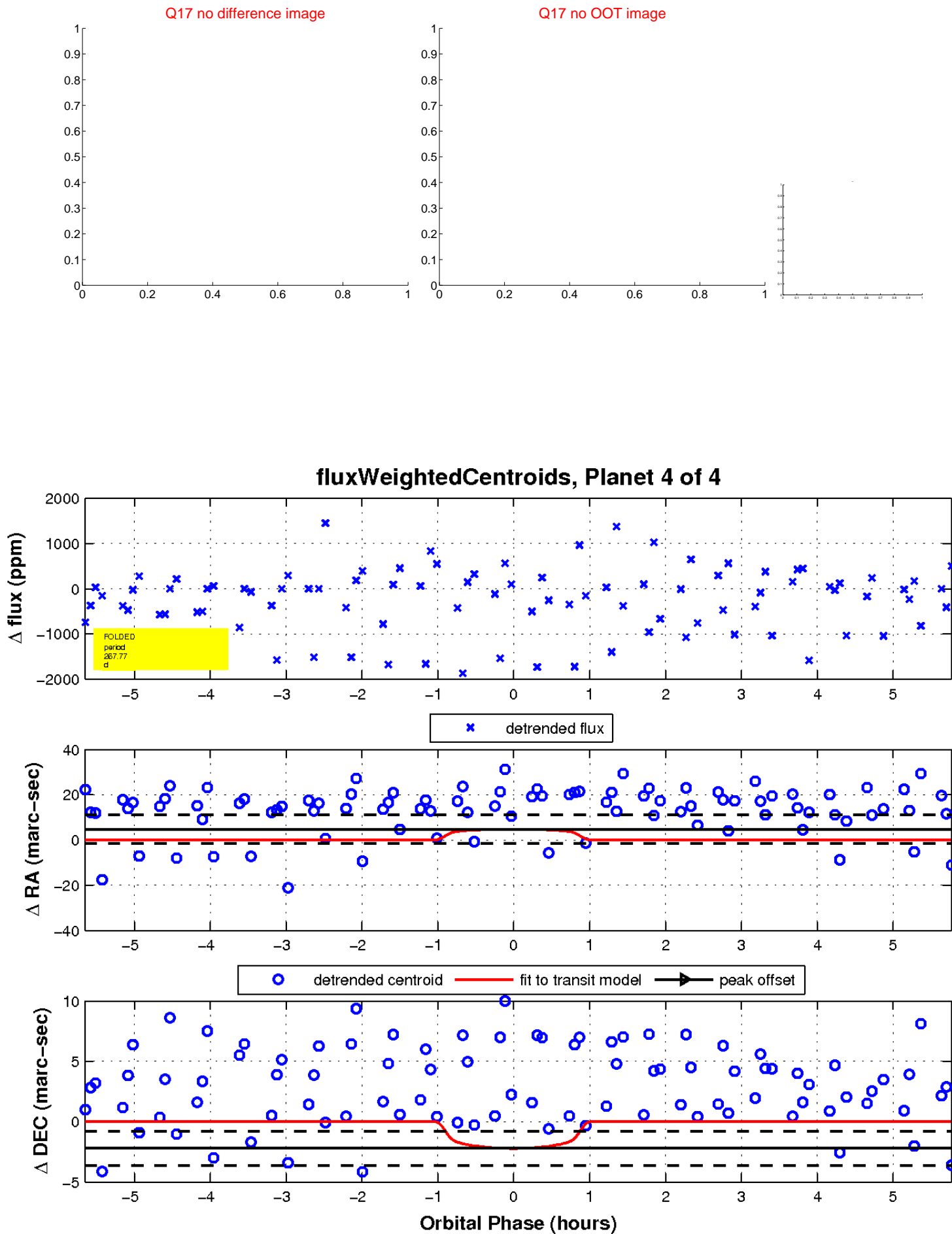
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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.



This astronomical image shows a field of stars against a dark background. A blue grid is overlaid on the image, with green text labels indicating coordinates. The labels include '42.0', '41.0', '18:55:40.0', '39.0', '38.0', '37.0', '36.0', '35.0', '34.0', '33.0', '32.0', '31.0', '30.0', '29.0', '28.0', '27.0', '26.0', '25.0', '24.0', '23.0', '22.0', '21.0', '20.0', '19.0', '18.0', '17.0', '16.0', '15.0', '14.0', '13.0', '12.0', '11.0', '10.0', '9.0', '8.0', '7.0', '6.0', '5.0', '4.0', '3.0', '2.0', '1.0', '0.0', and '3:00:00.0'. The grid lines are blue, and the coordinate labels are green. The stars are represented as bright, pixelated points of light.

Declination