

KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

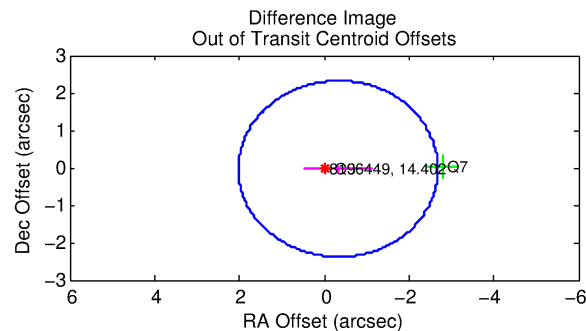
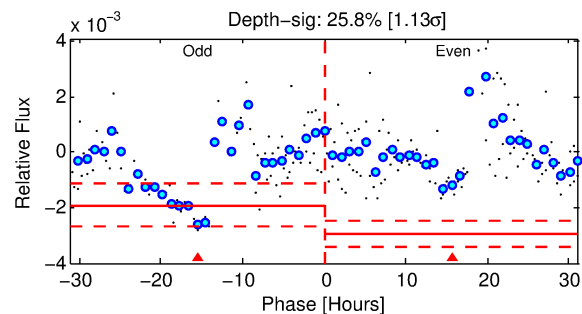
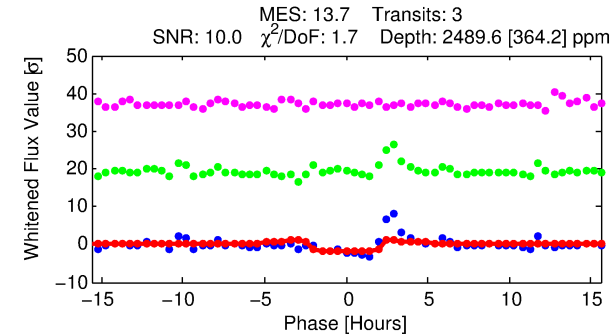
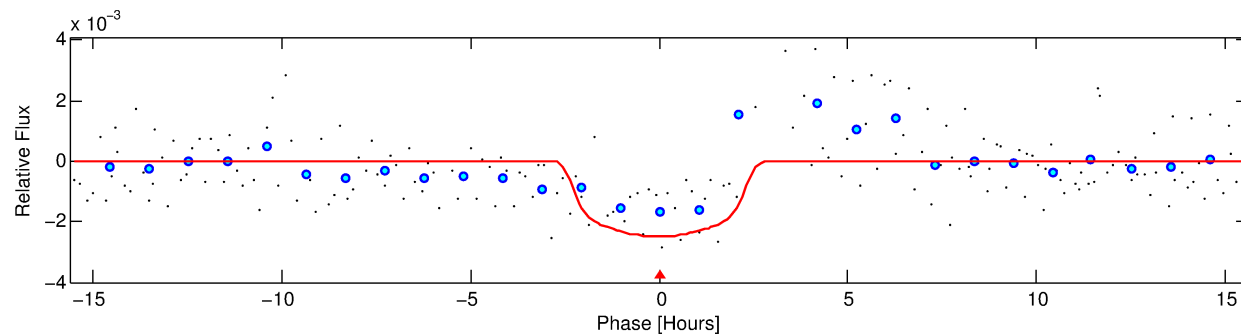
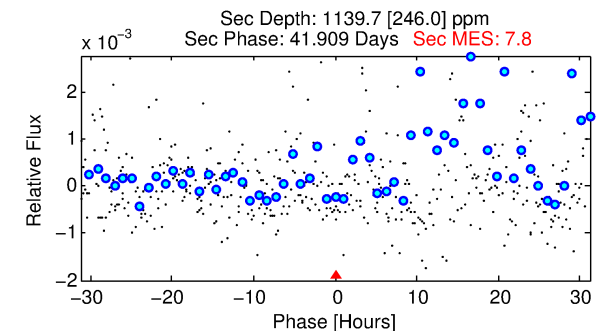
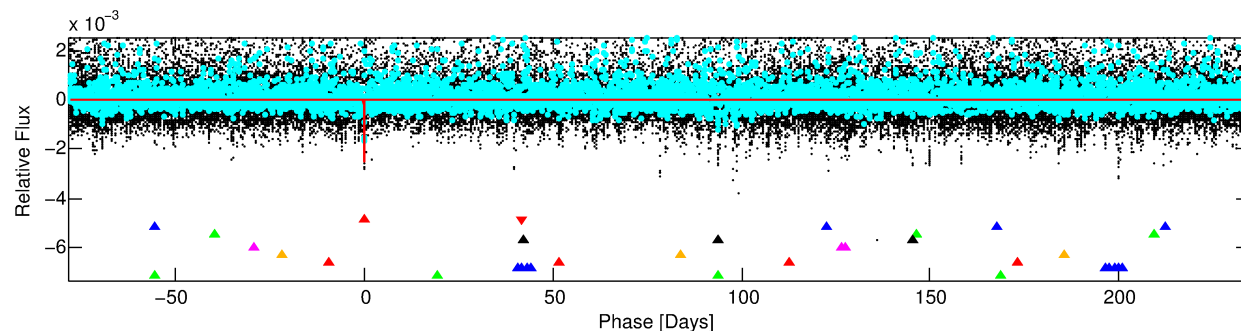
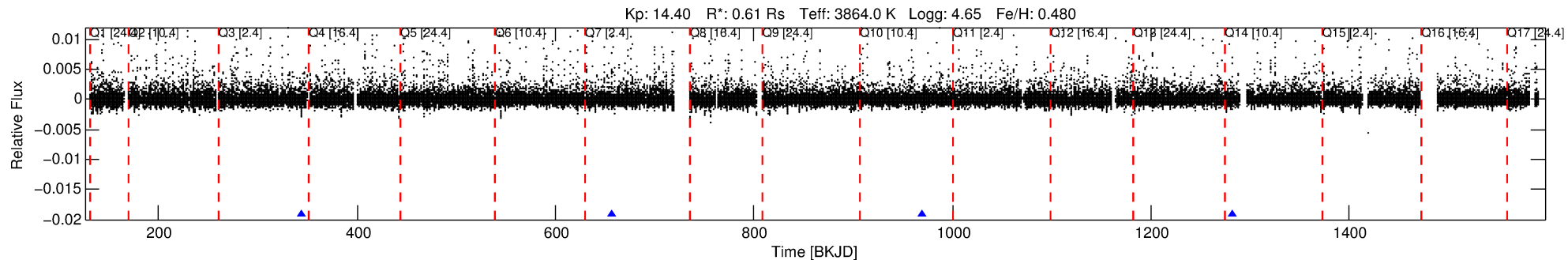
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-01

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 1 of 9 Period: 312.651 d



DV Fit Results:

Period = 312.65103 [0.00419] d
Epoch = 344.4864 [0.0076] BKJD
Rp/R* = 0.0499 [0.0145]
a/R* = 340.72 [289.98]
b = 0.74 [0.52]
Seff = 0.13 [0.02]
Teq = 152 [7] K
Rp = 3.32 [1.04] Re
a = 0.7649 [0.0688] AU
Ag = 33317.84 [21085.57] [1.58σ]
Teffp = 3180 [508] K [5.96σ]

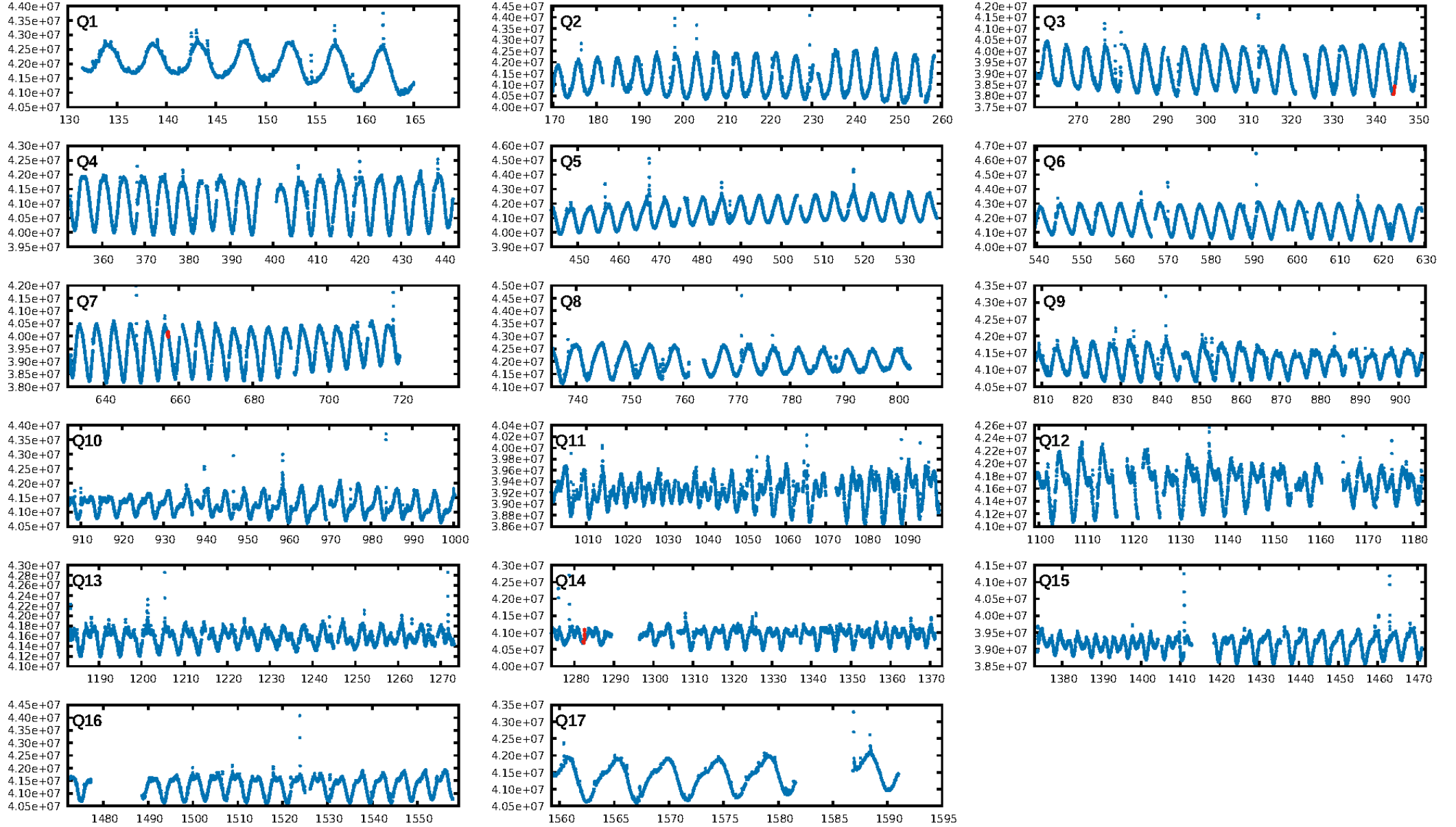
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [591.64σ]
LongPeriod-sig: 100.0% [106.16σ]
ModelChiSquare2-sig: 78.9%
ModelChiSquareGof-sig: 86.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.301
Centroid-sig: 50.6%
Centroid-so: 0.836 arcsec [1.89σ]
OotOffset-rm: 0.330 arcsec [0.42σ]
KicOffset-rm: 0.079 arcsec [0.11σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

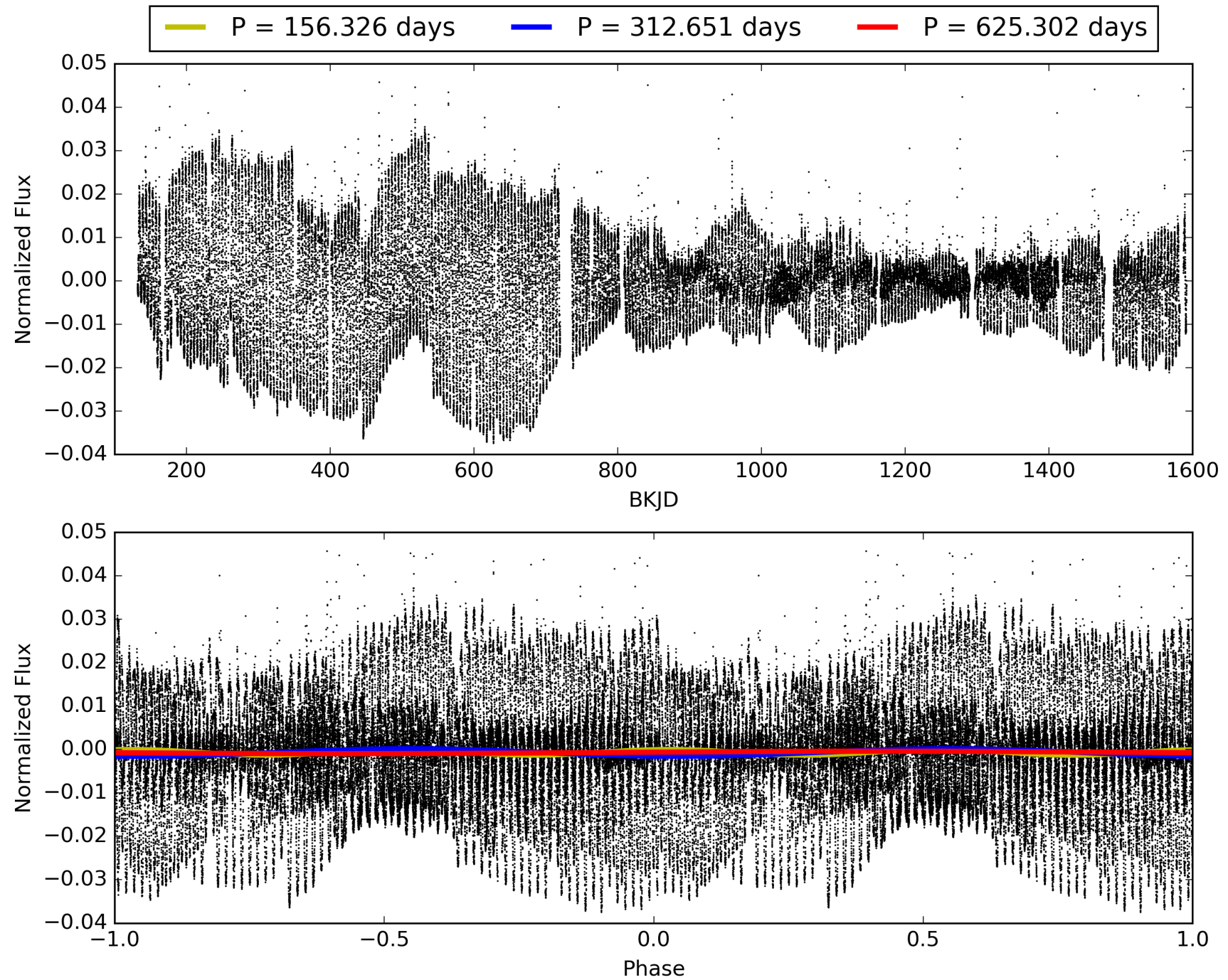
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008196449-01, PDC Light Curves

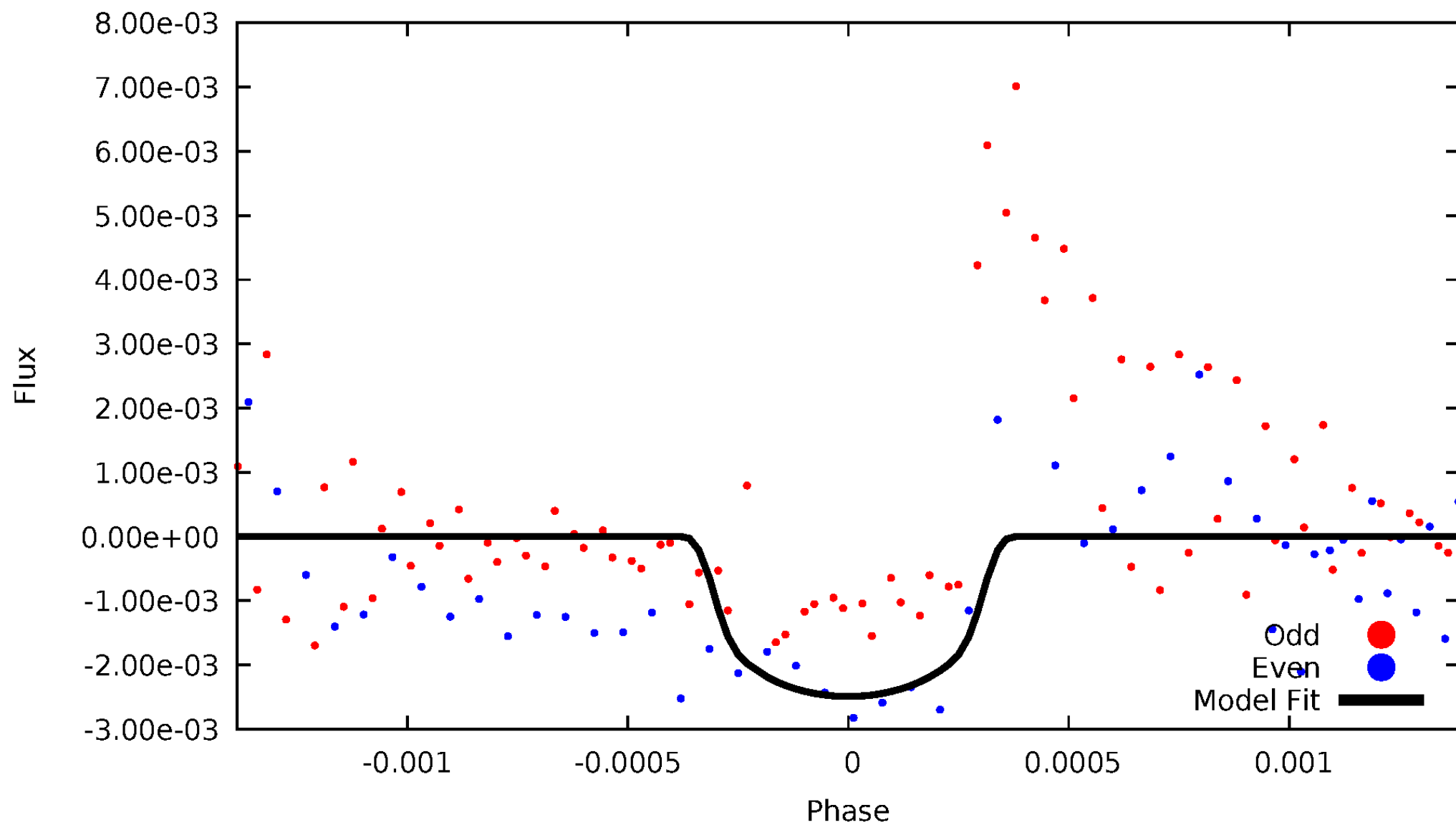


TCE 008196449-01



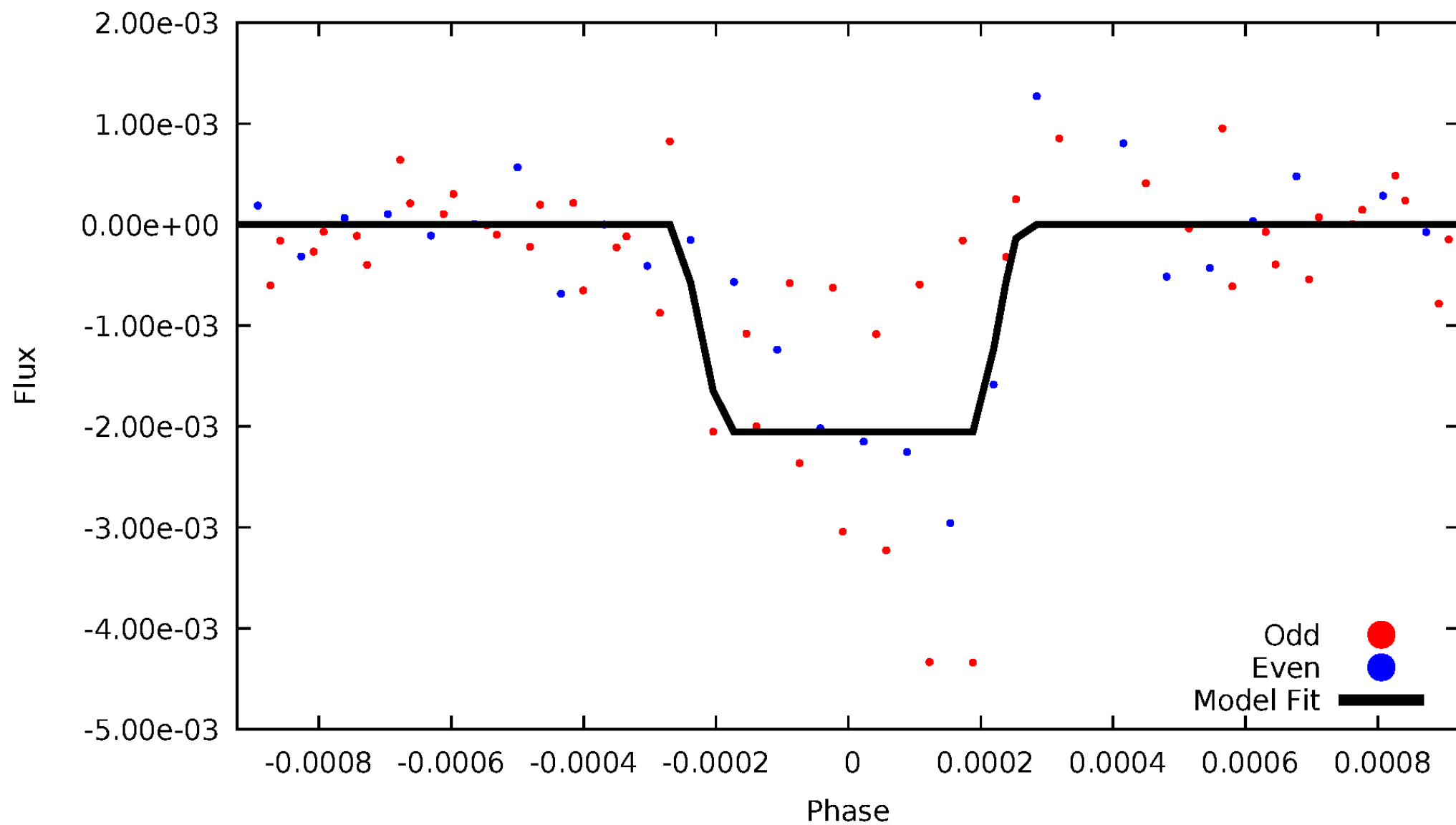
DV Odd/Even

TCE 008196449-01



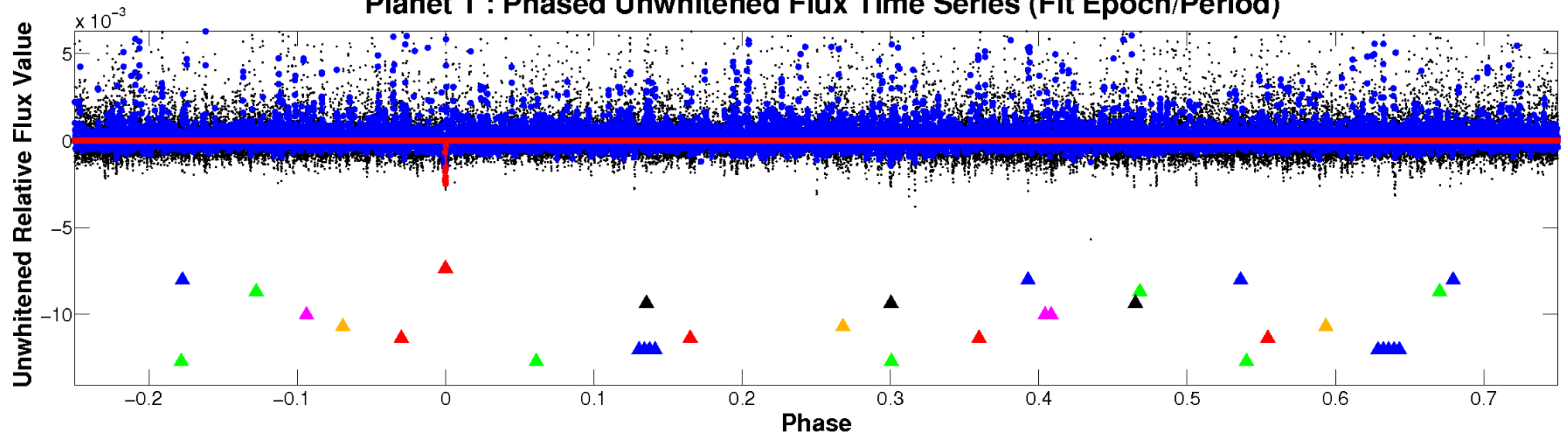
ALT Odd/Even

TCE 008196449-01

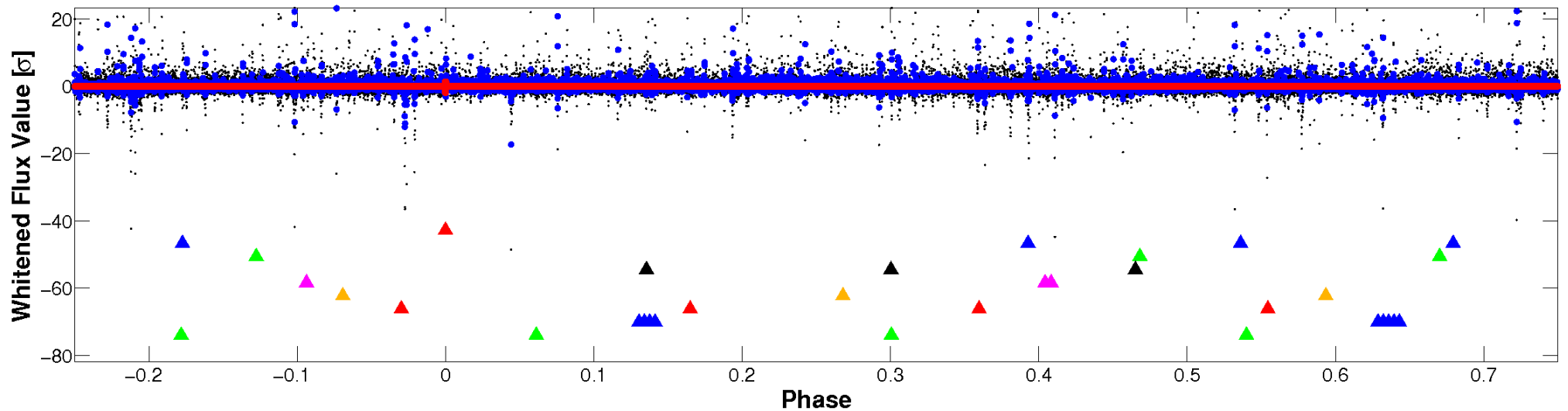


Non-Whitened Vs. Whitened Light Curve

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

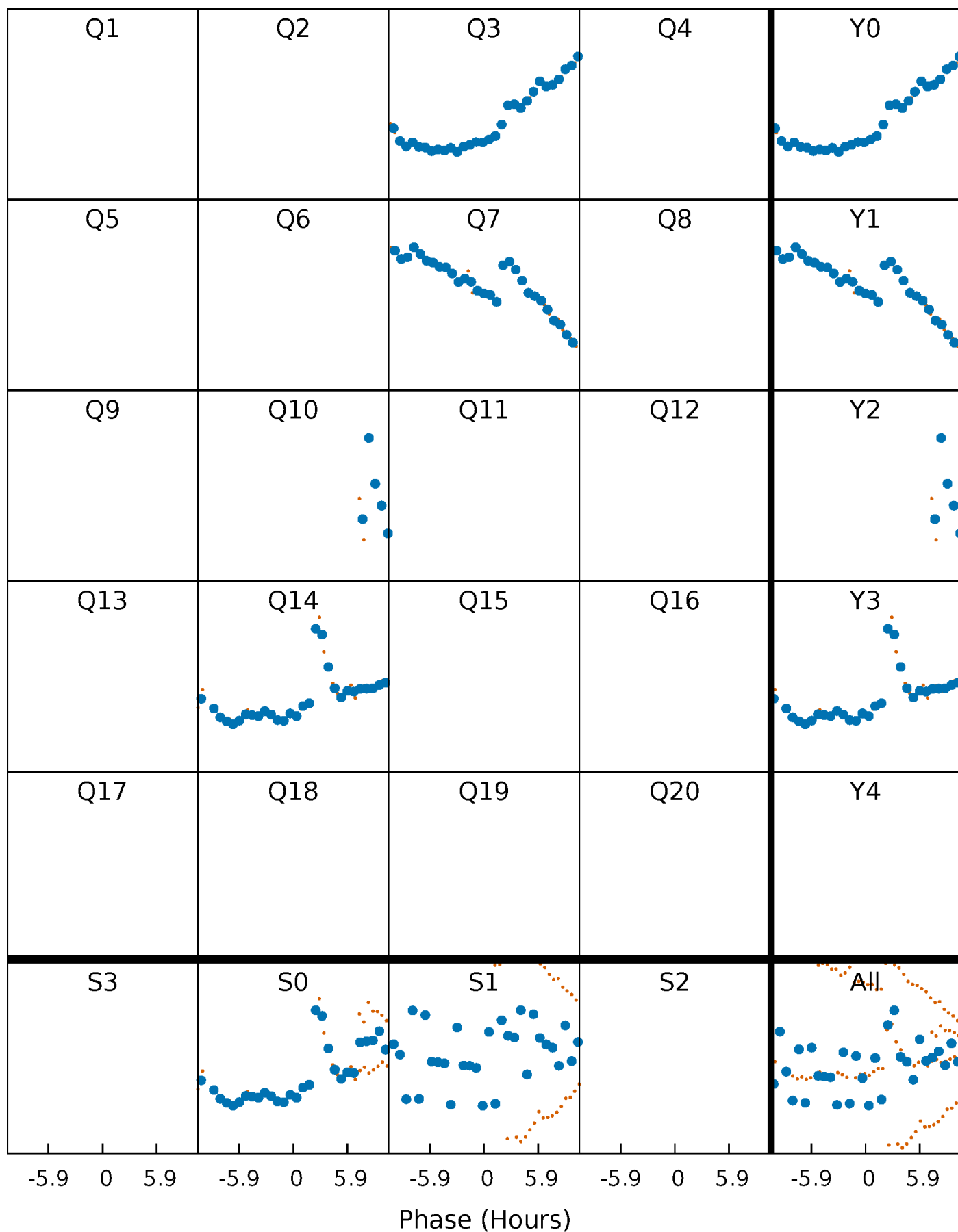


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



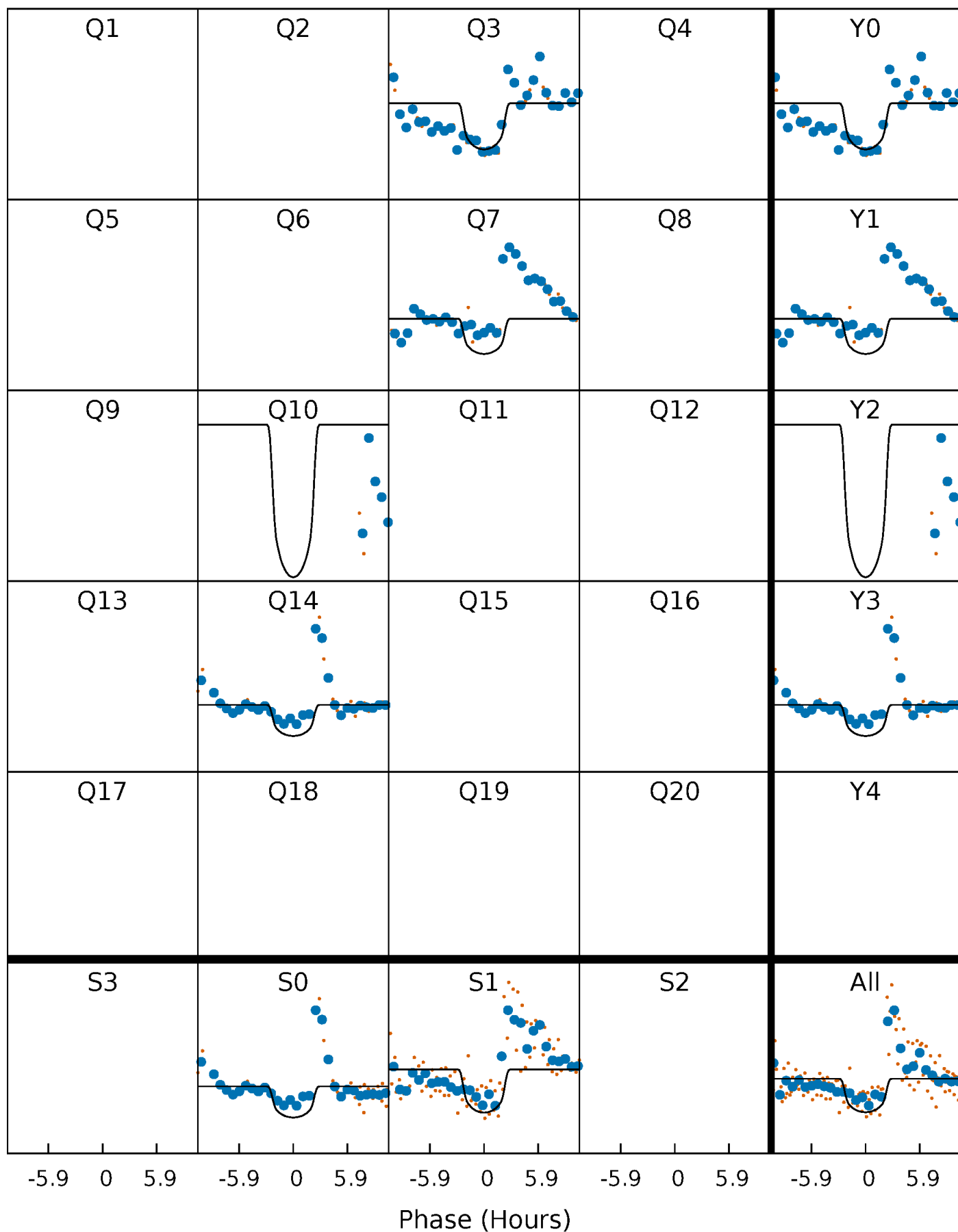
PDC Quarter-Phased Transit Curves

TCE 008196449-01 P=312.651031 Days $T_0=344.486357$ (BKJD)



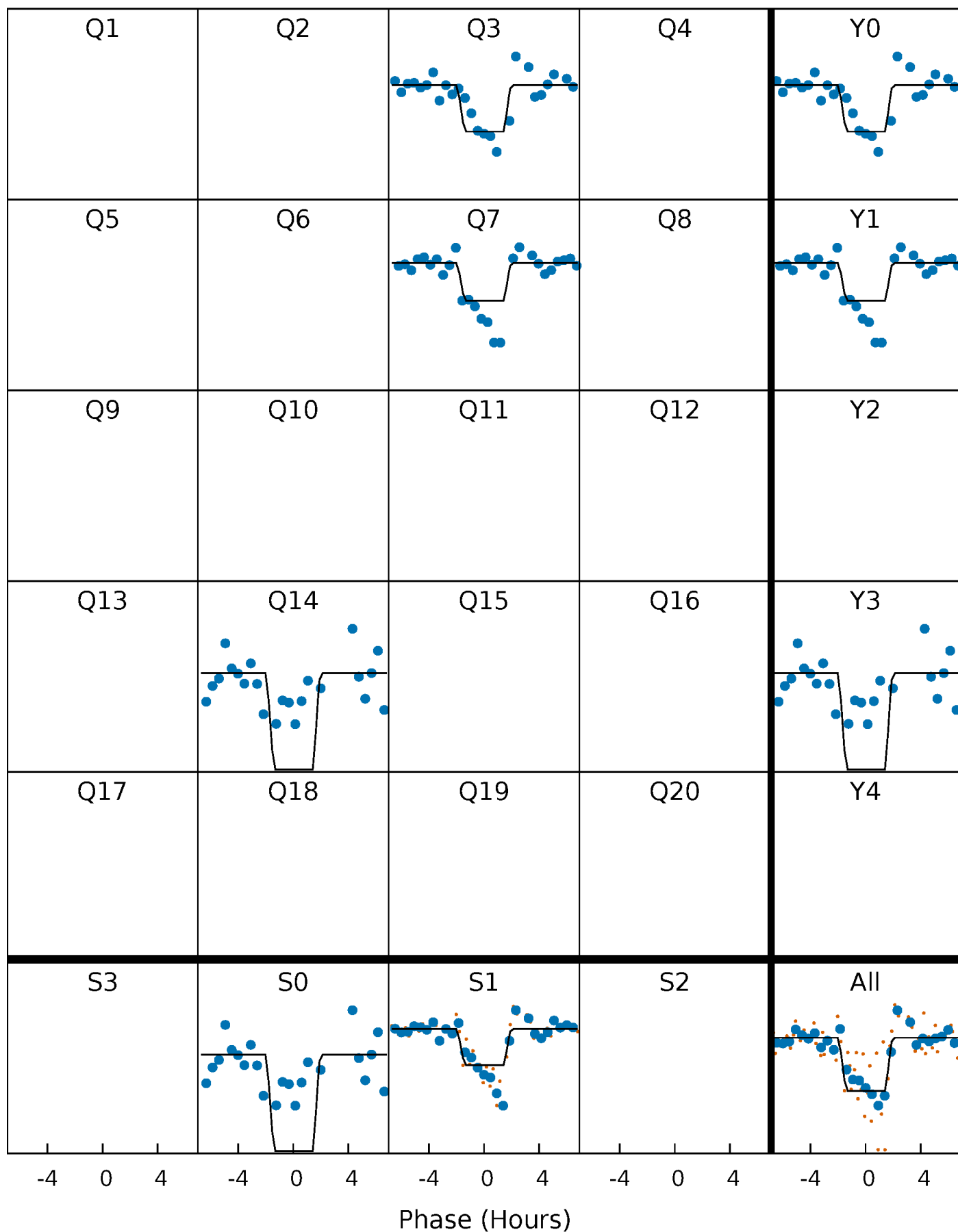
DV Quarter-Phased Transit Curves

TCE 008196449-01 P=312.651031 Days $T_0=344.486357$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

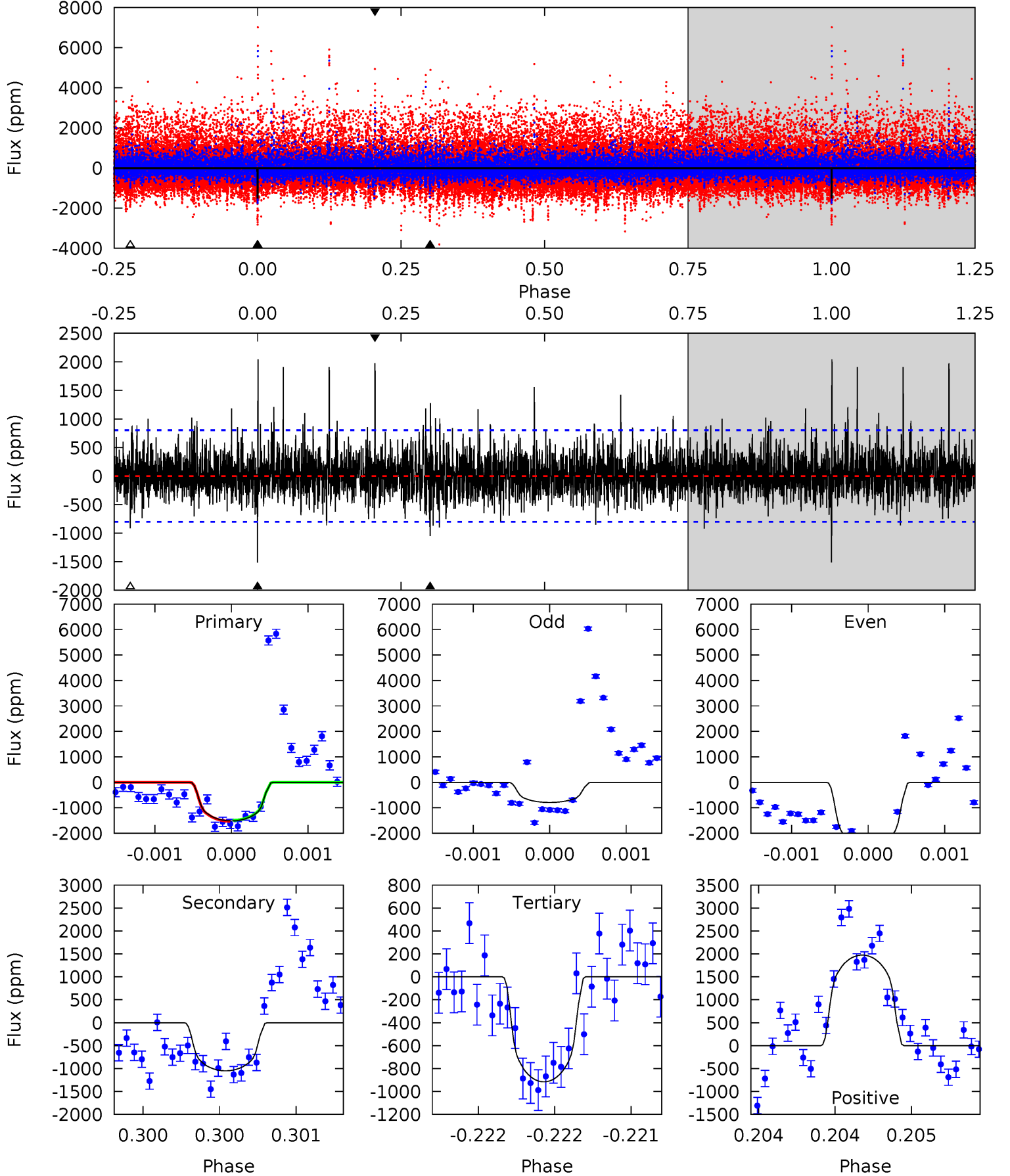
TCE 008196449-01 P=312.646568 Days $T_0=344.503220$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-01, P = 312.651031 Days, E = 31.835326 Days

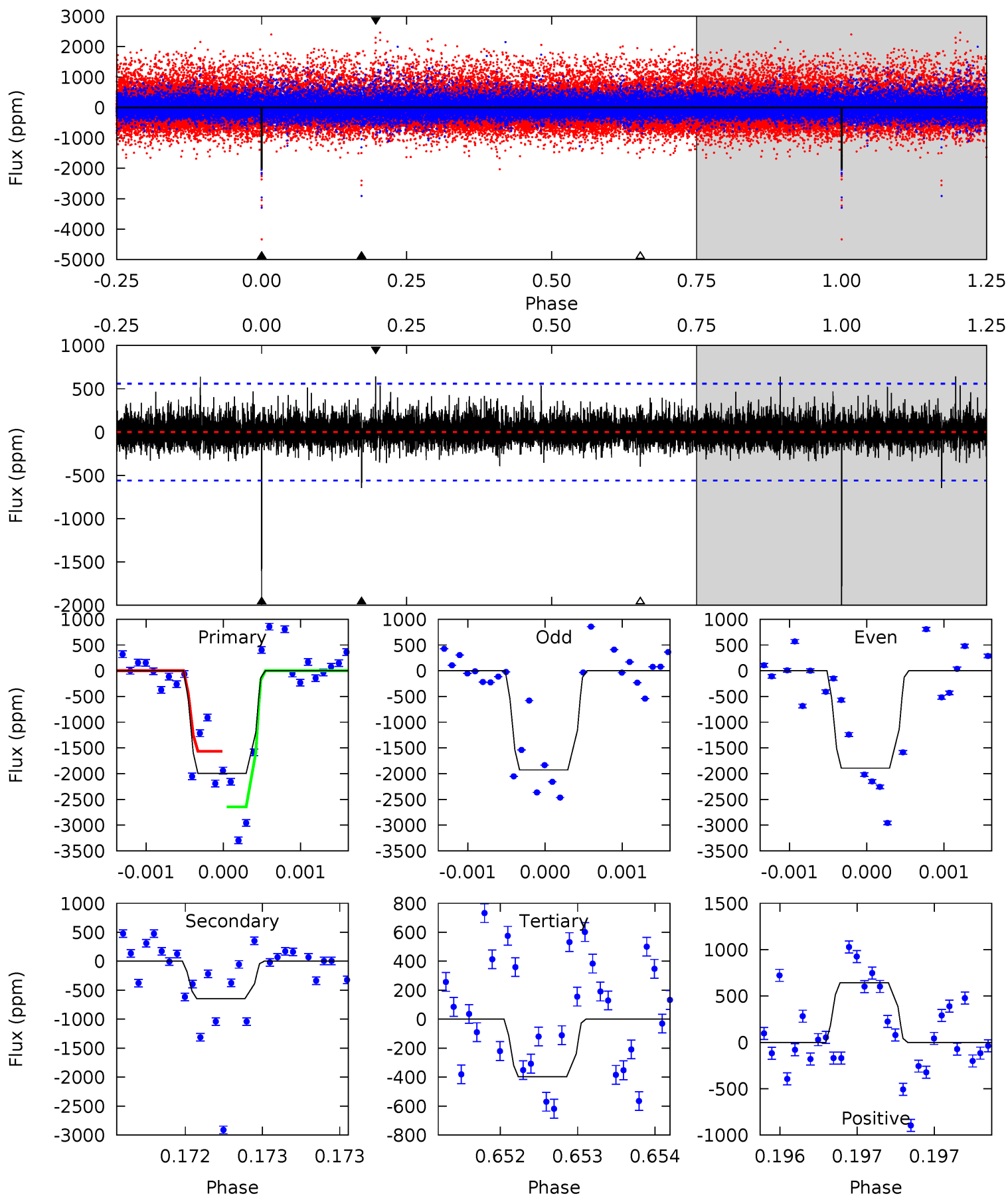
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.22	6.30	13.6	5.52	3.39	1.94	4.11	-3.17	0.92	-6.36	4.98	1.42	0.57	0.14



Alt Model-Shift Uniqueness Test

008196449-01, $P = 312.646568$ Days, $E = 31.856652$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	6.40	3.96	6.39	5.57	3.47	1.07	15.9	13.4	2.44	0.01	0.16	1.01	0.24	5.40



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1049 \pm 145	$3.23^{+0.92}_{-0.89}$	211^{+8}_{-9}	3362^{+387}_{-266}	32424^{+30474}_{-13179}
Alt.	-644 \pm 101	$2.97^{+0.96}_{-0.99}$	210^{+8}_{-9}	3203^{+438}_{-281}	23156^{+31689}_{-10081}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

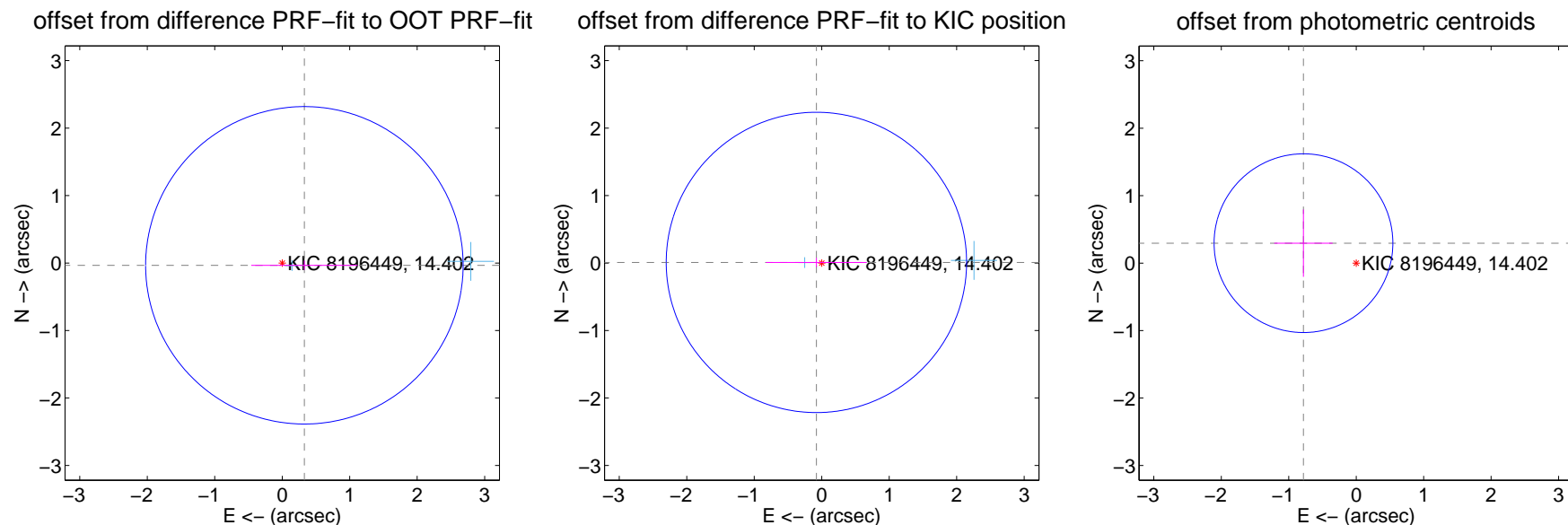
DV Centroid Data

Supplemental centroid analysis for 008196449-01. Kepler magnitude: 14.40. Transit SNR 10.05

There are 2 quarters with good PRF difference image offsets

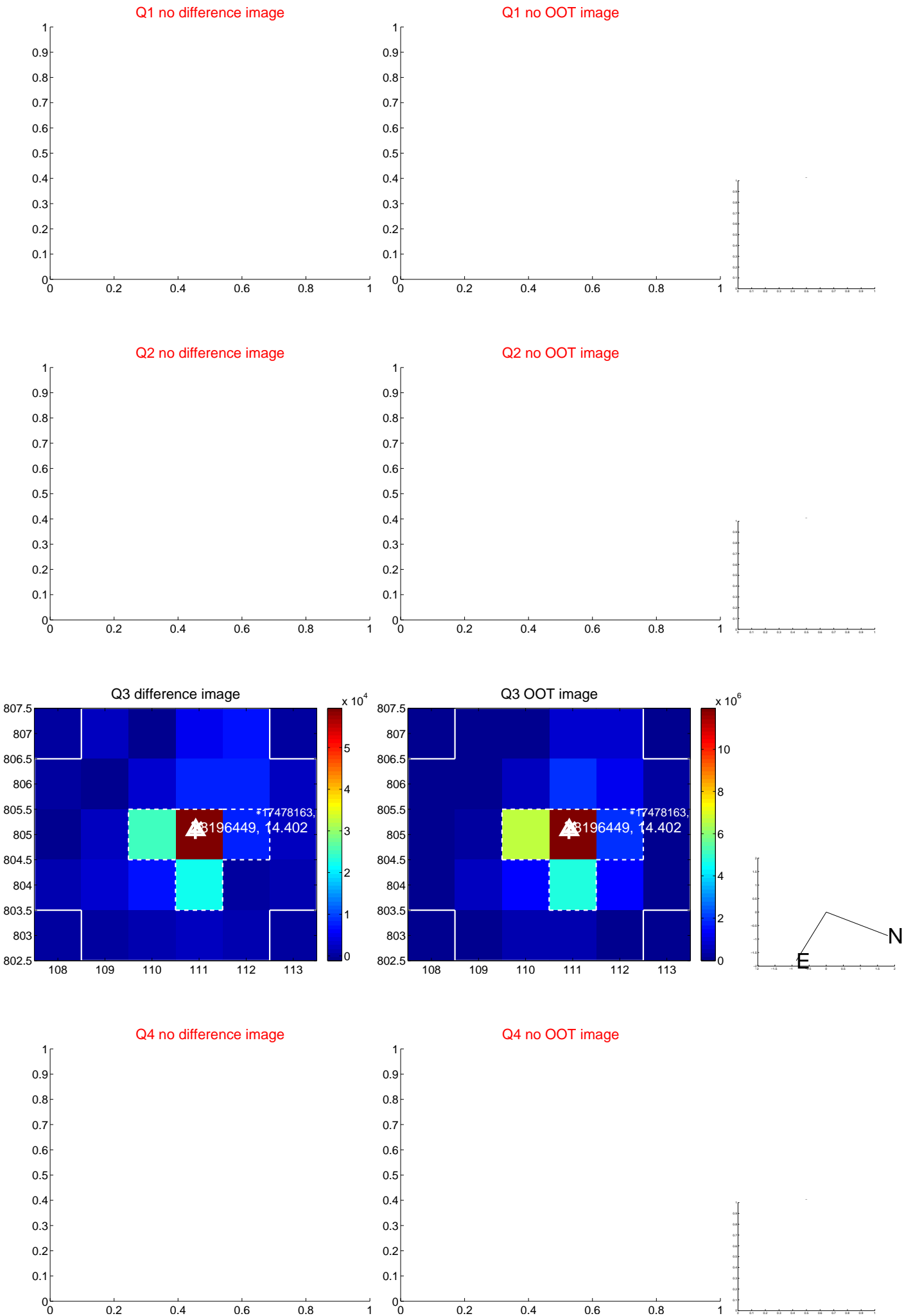
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.330 ± 0.784	0.42	-0.328 ± 0.788	-0.034 ± 0.069
PRF-fit source offset from KIC position	0.079 ± 0.742	0.11	0.079 ± 0.747	0.009 ± 0.067
photometric centroid source offset	0.84 ± 0.44	1.89	0.78 ± 0.43	0.30 ± 0.50



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

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



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

Q5 no difference image



Q5 no OOT image



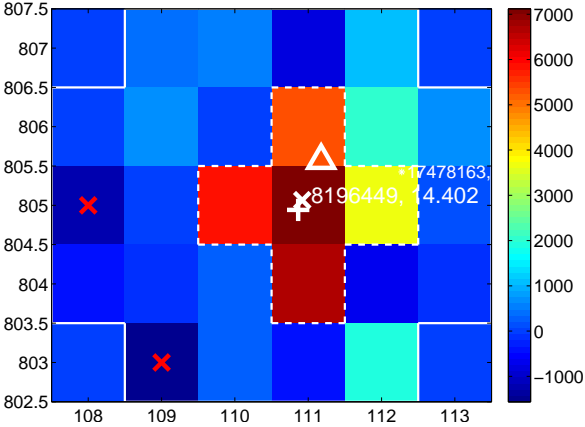
Q6 no difference image



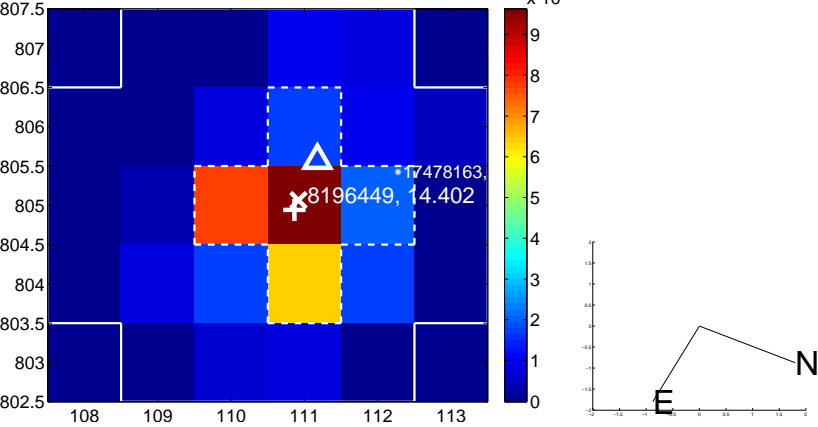
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image



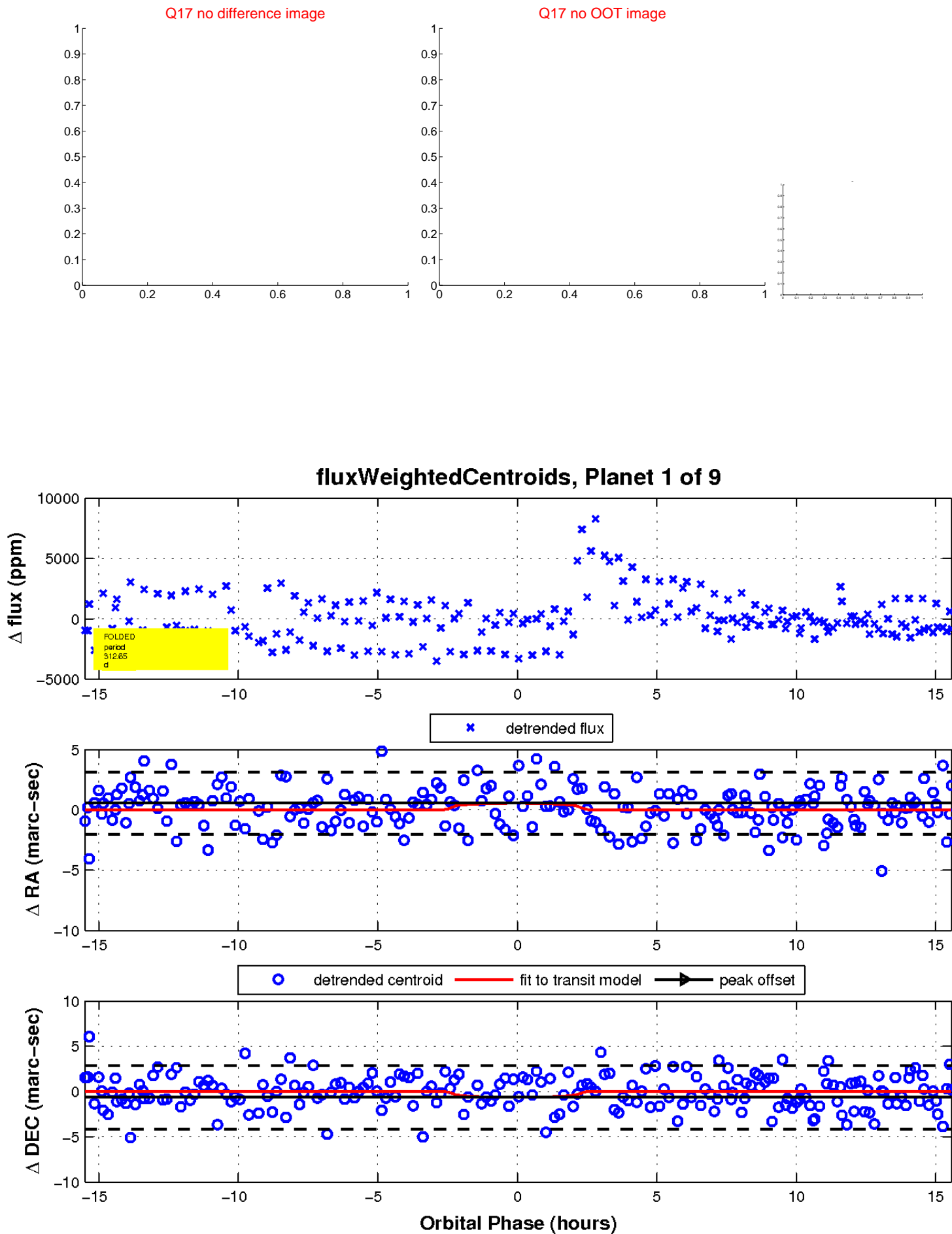
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

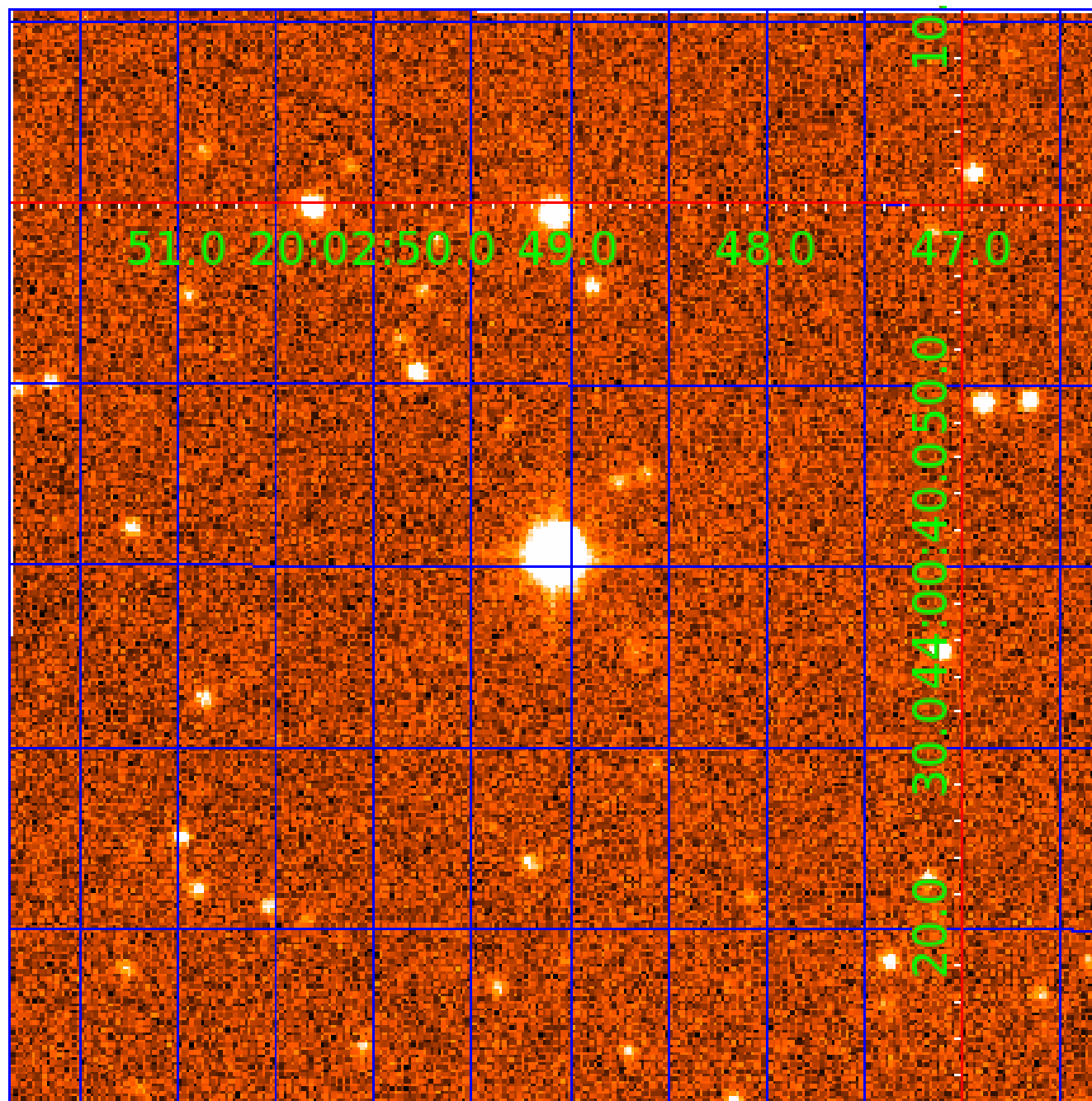


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
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008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

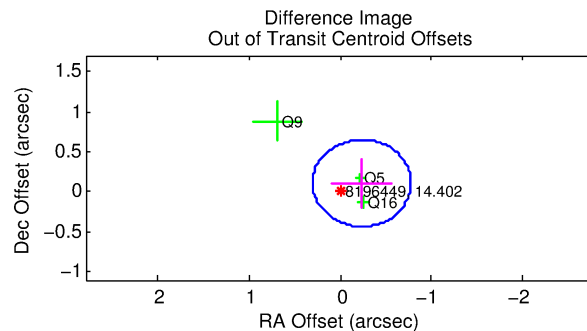
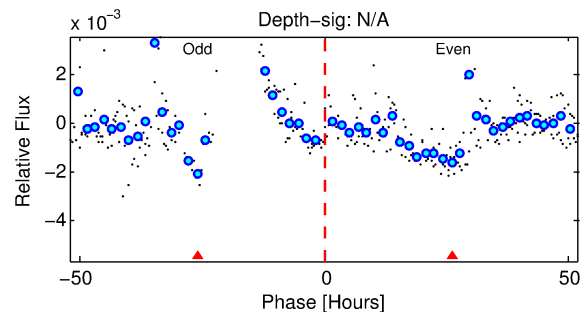
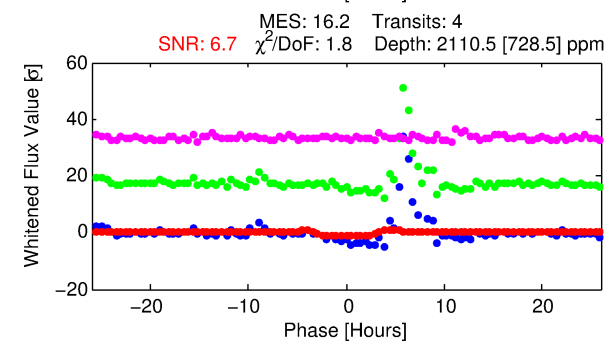
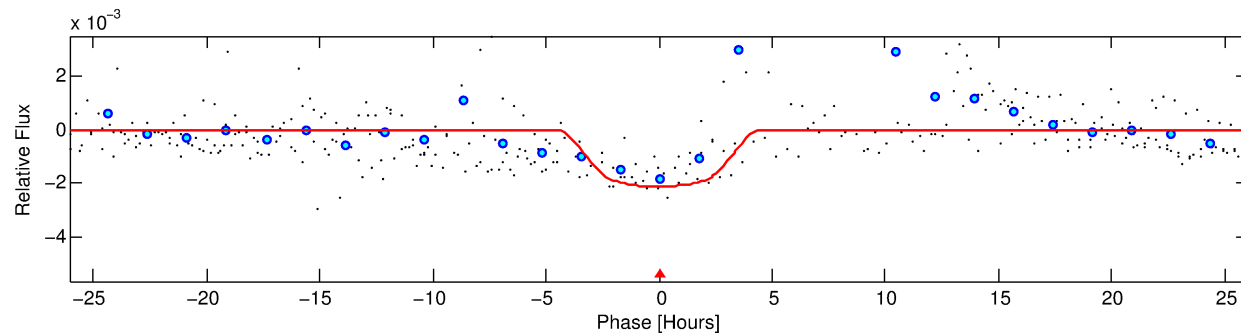
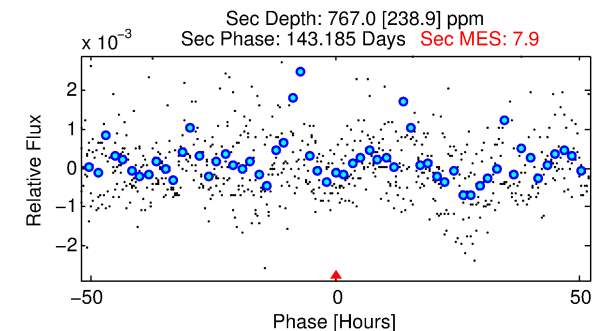
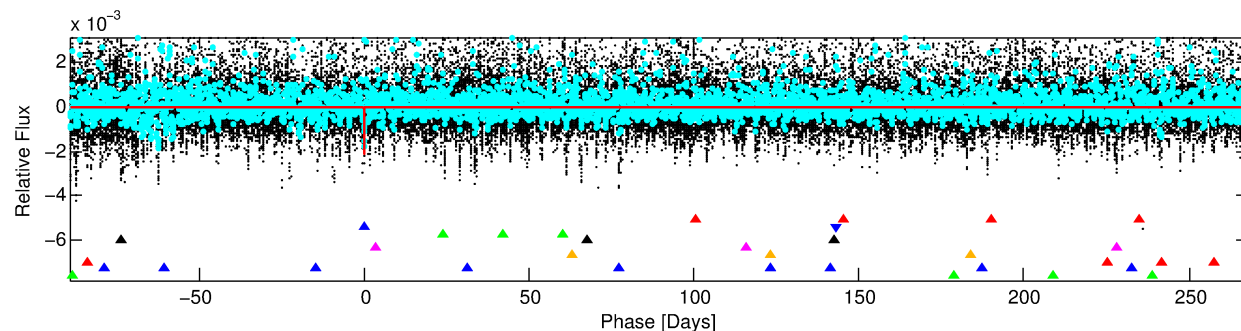
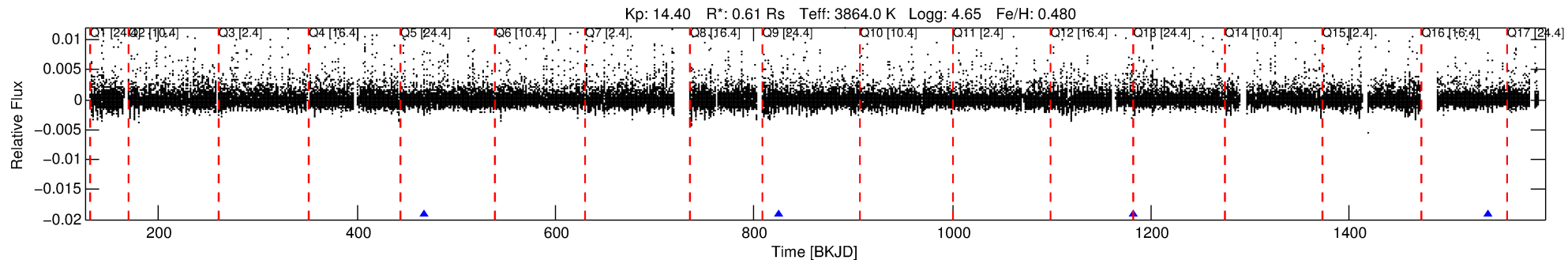
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-02

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 2 of 9 Period: 357.451 d



DV Fit Results:

Period = 357.45127 [0.01620] d
Epoch = 467.2989 [0.0314] BKJD
Rp/R* = 0.0526 [0.0118]
a/R* = 166.85 [67.74]
b = 0.91 [0.09]
Seff = 0.11 [0.02]
Teq = 146 [7] K
Rp = 3.50 [0.88] Re
a = 0.8364 [0.0753] AU
Ag = 24071.50 [13490.64] [1.78σ]
Teffp = 2804 [398] K [6.68σ]

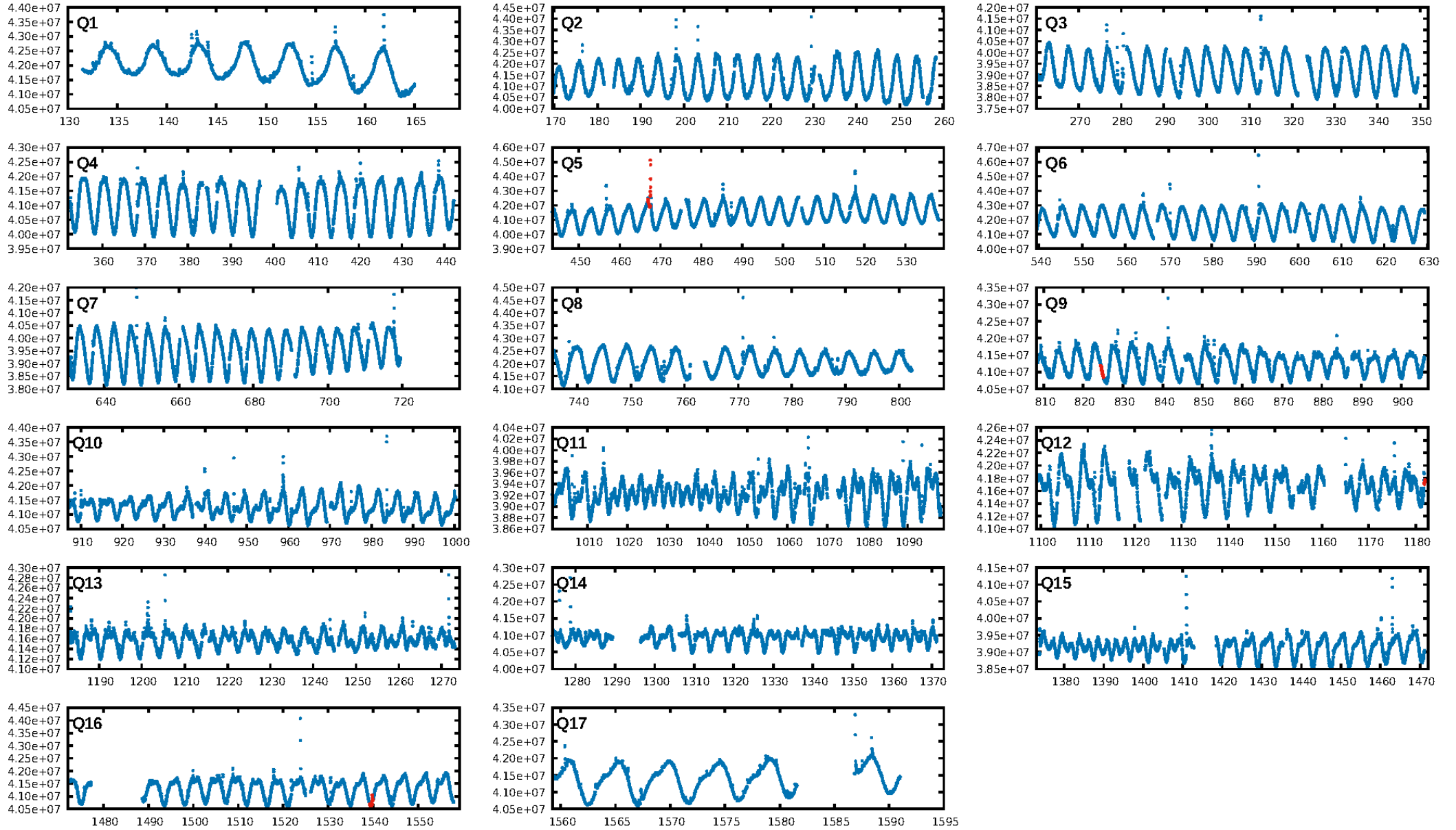
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [106.16σ]
LongPeriod-sig: 100.0% [26.21σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 91.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.531
Centroid-sig: 0.8%
Centroid-so: 1.282 arcsec [2.29σ]
OotOffset-rm: 0.259 arcsec [1.44σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-rm: 0.255 arcsec [0.77σ]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

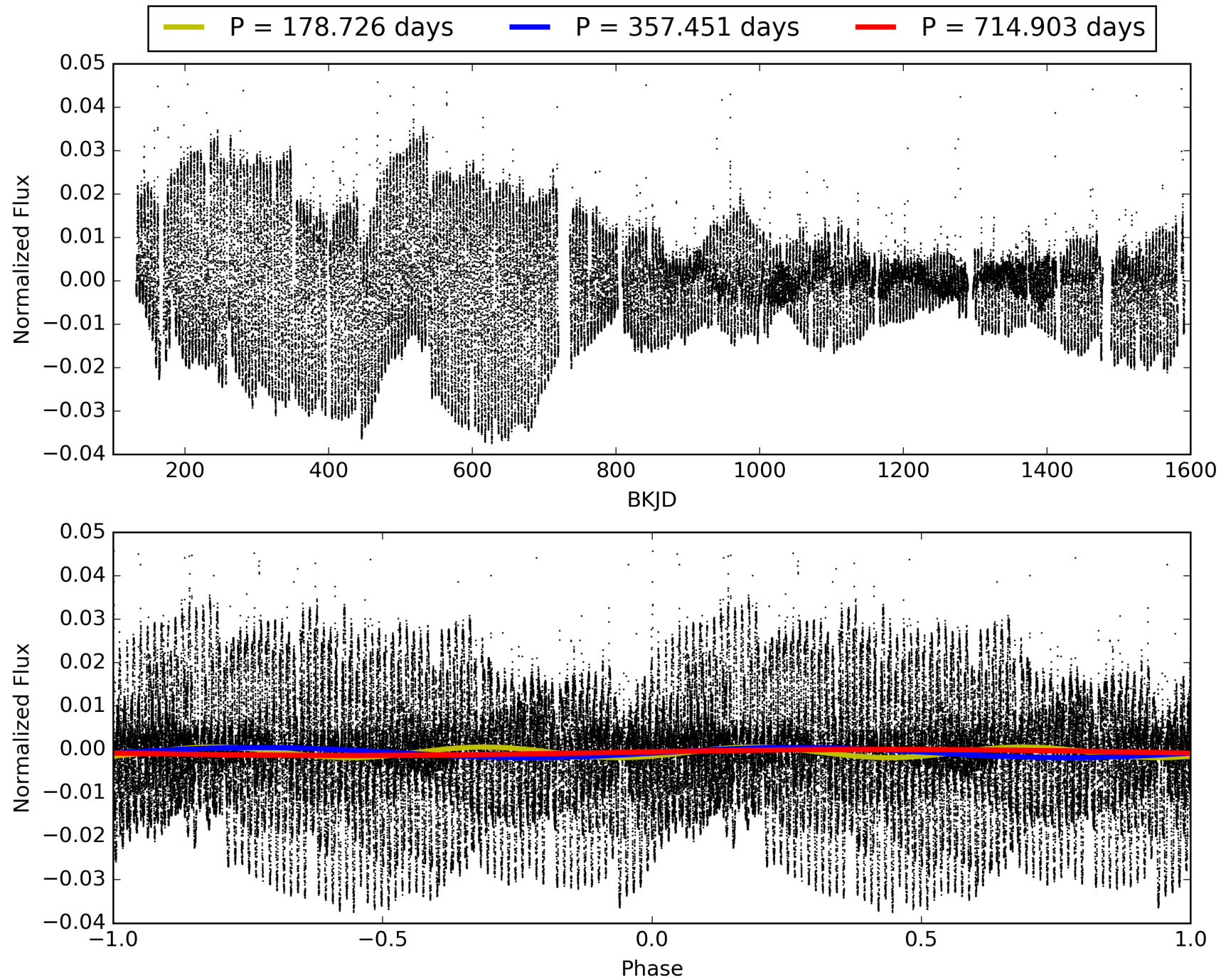
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008196449-02, PDC Light Curves

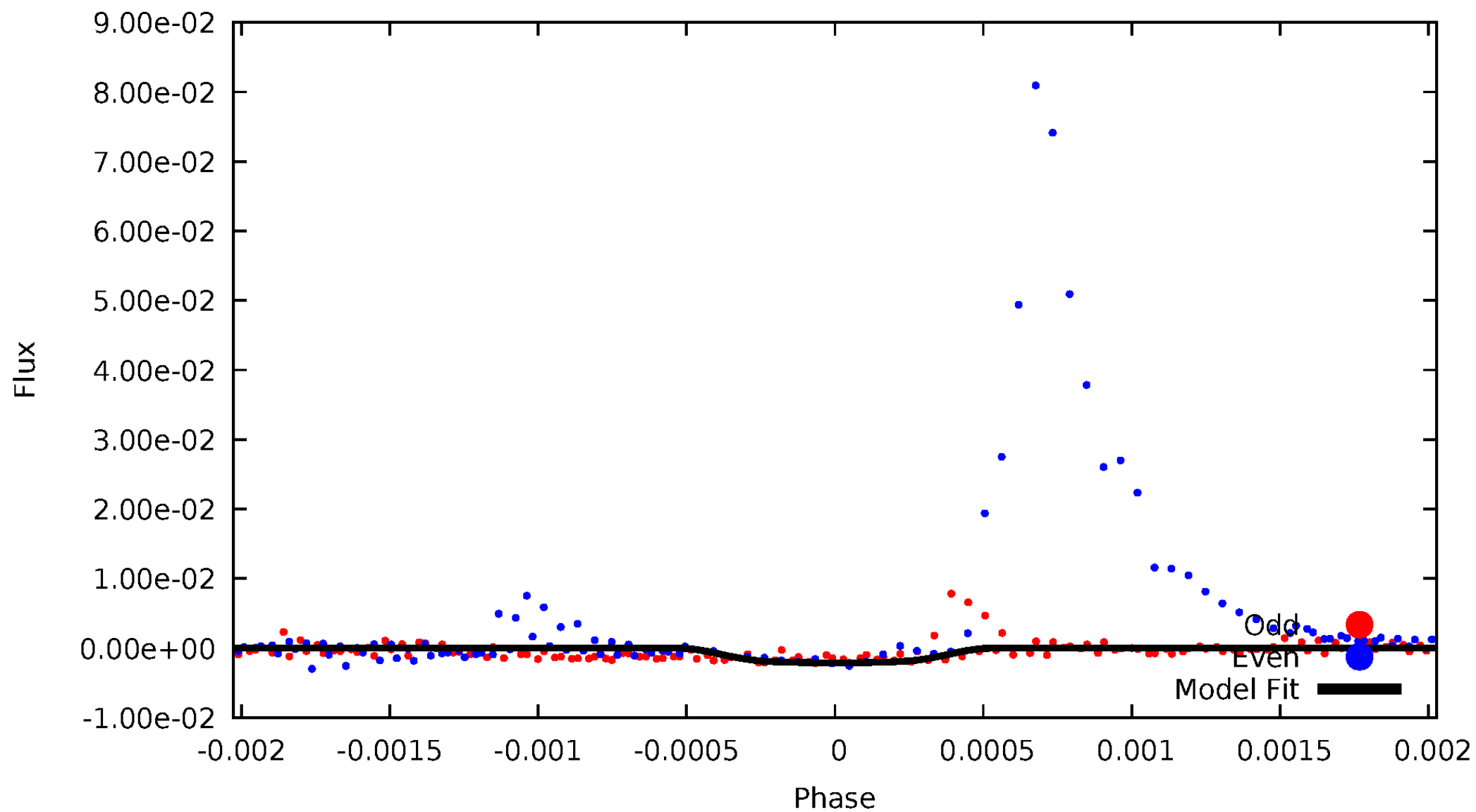


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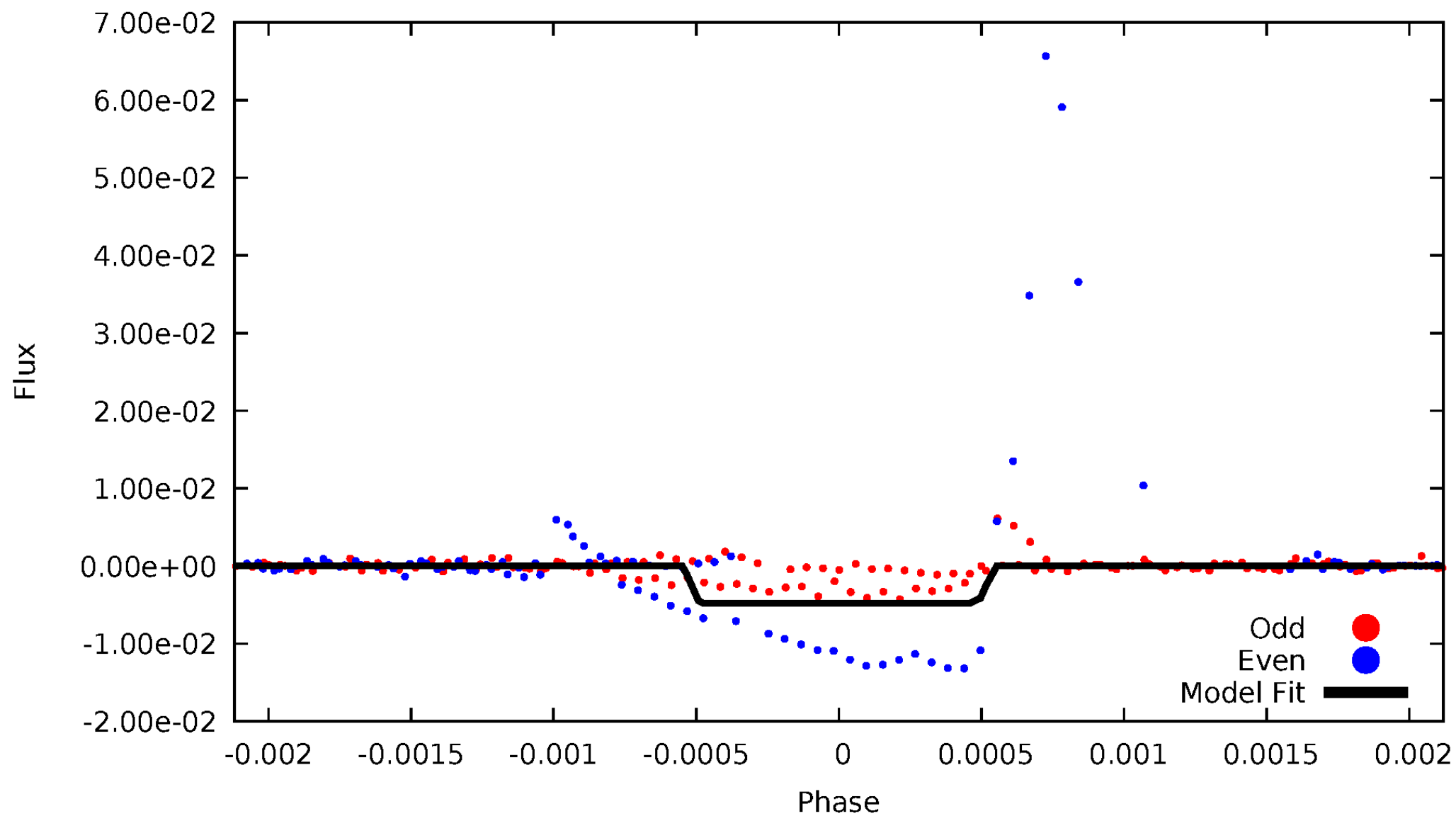
DV Odd/Even

TCE 008196449-02



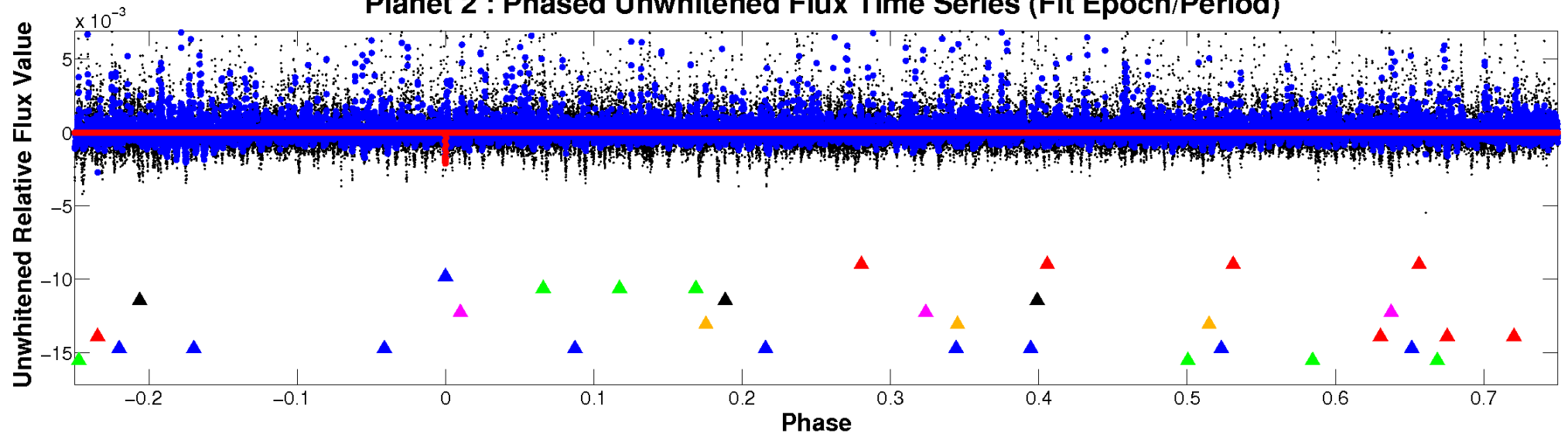
ALT Odd/Even

TCE 008196449-02

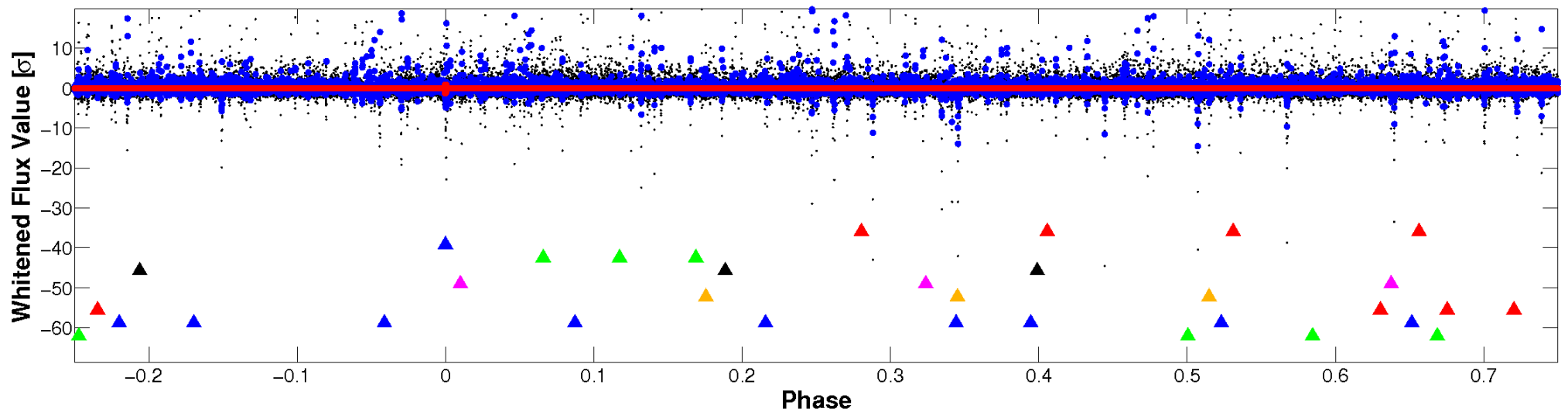


Non-Whitened Vs. Whitened Light Curve

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

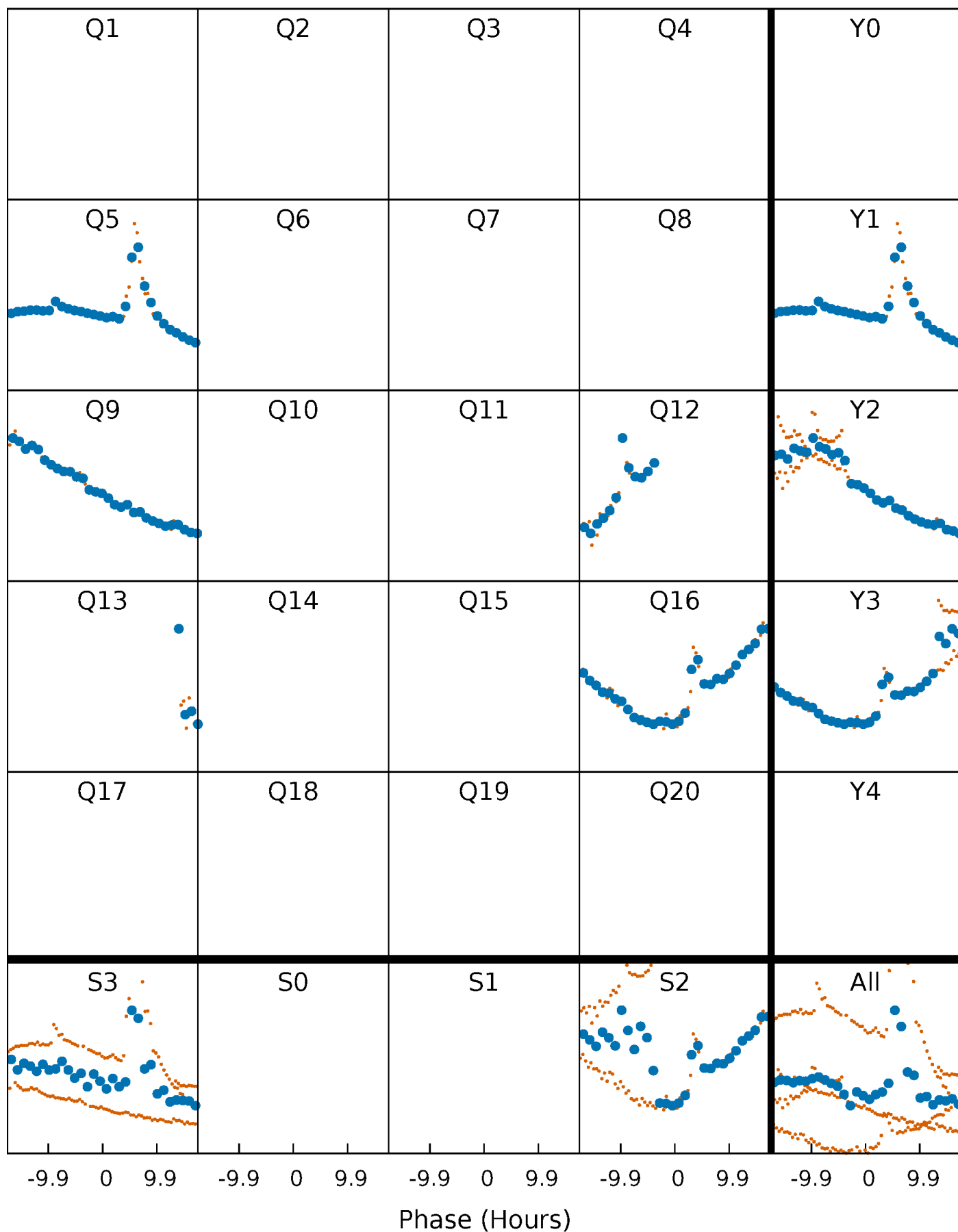


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



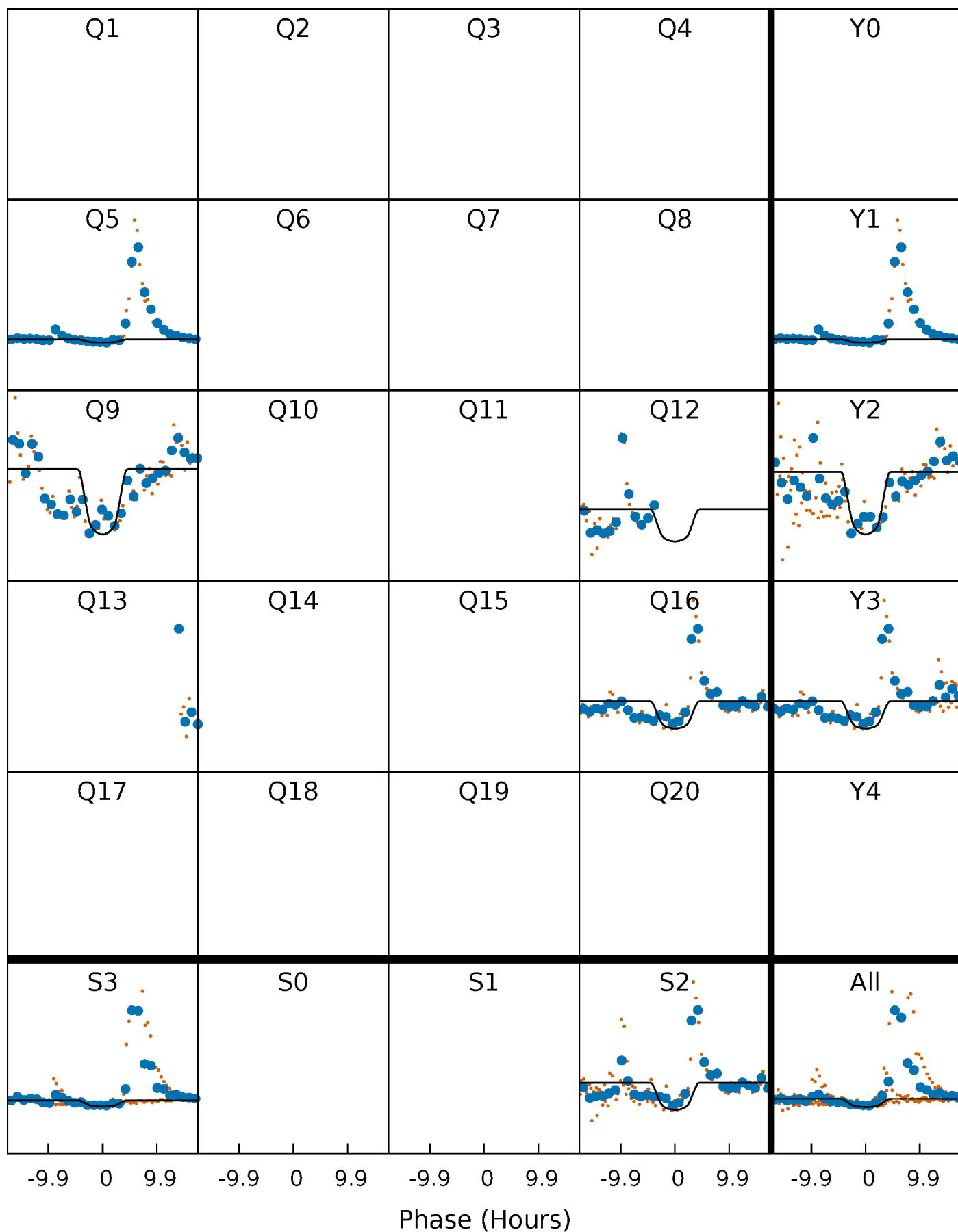
PDC Quarter-Phased Transit Curves

TCE 008196449-02 $P=357.451269$ Days $T_0=467.298886$ (BKJD)



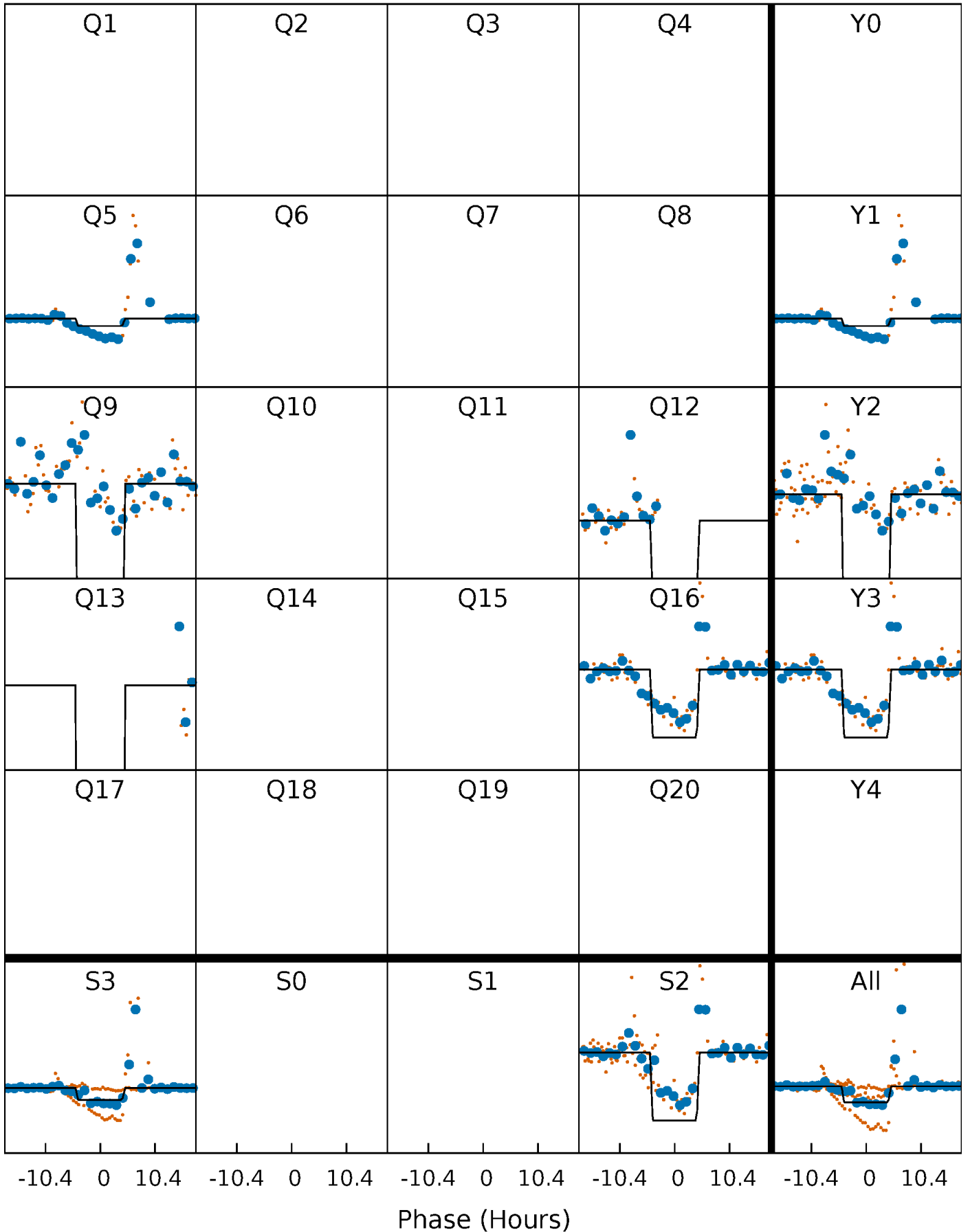
DV Quarter-Phased Transit Curves

TCE 008196449-02 $P=357.451269$ Days $T_0=467.298886$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

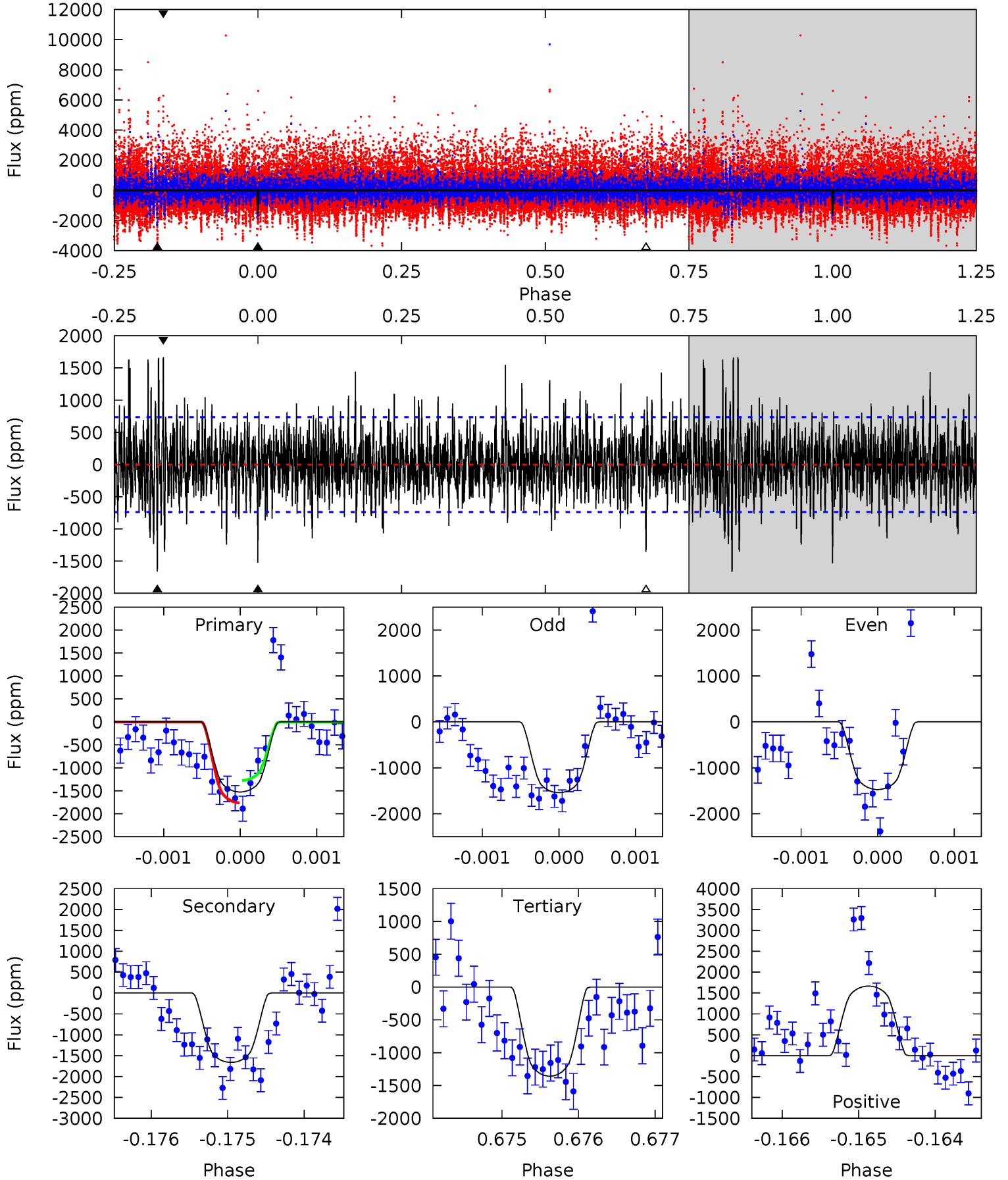
TCE 008196449-02 $P=357.437454$ Days $T_0=467.281503$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-02, P = 357.451269 Days, E = 109.847617 Days

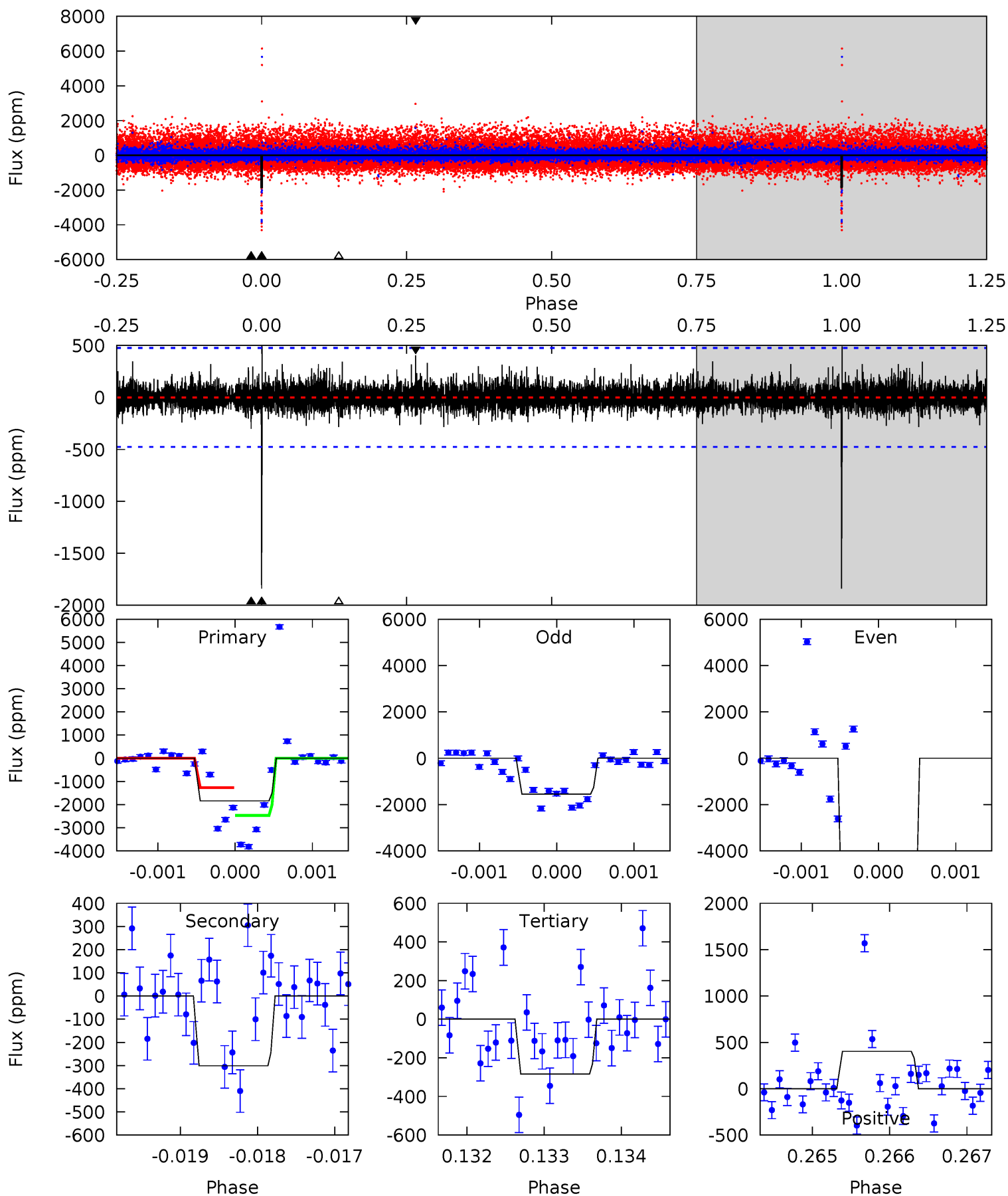
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	12.3	10.0	12.3	5.45	3.28	2.77	1.24	-1.03	2.25	-0.03	0.20	0.97	0.50	1.81



Alt Model-Shift Uniqueness Test

008196449-02, P = 357.437454 Days, E = 109.844049 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	3.44	3.24	4.60	5.44	3.28	0.83	17.8	16.4	0.20	-1.16	60.1	2.21	0.21	6.89



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1663 ± 135	$3.38^{+0.86}_{-0.70}$	202^{+7}_{-8}	3565^{+314}_{-274}	56194^{+35139}_{-20888}
Alt.	-301 ± 88	$4.52^{+0.84}_{-0.78}$	201^{+8}_{-8}	2563^{+188}_{-153}	5609^{+3515}_{-2087}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

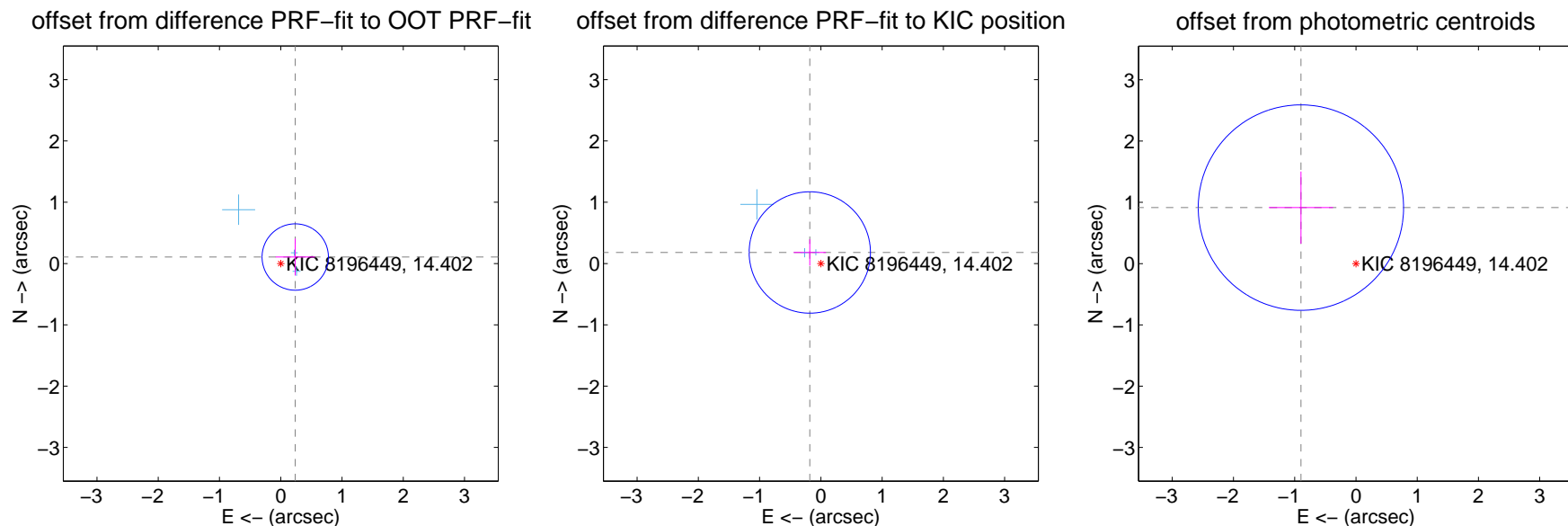
DV Centroid Data

Supplemental centroid analysis for 008196449-02. Kepler magnitude: 14.40. Transit SNR 6.75

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.259 ± 0.180	1.44	-0.236 ± 0.320	0.106 ± 0.302
PRF-fit source offset from KIC position	0.255 ± 0.330	0.77	0.181 ± 0.263	0.180 ± 0.214
photometric centroid source offset	1.28 ± 0.56	2.29	0.90 ± 0.53	0.91 ± 0.59

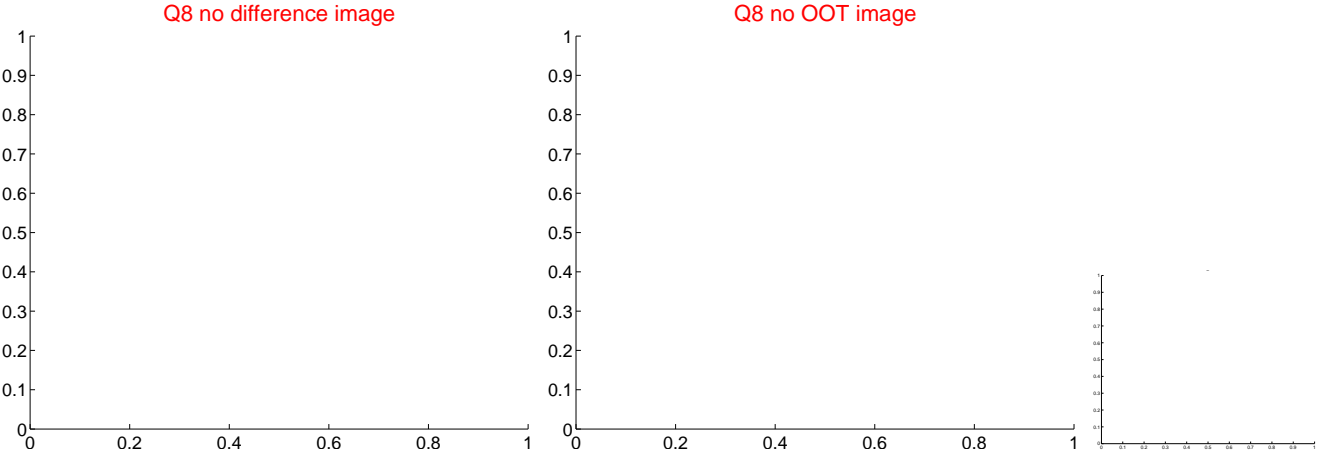
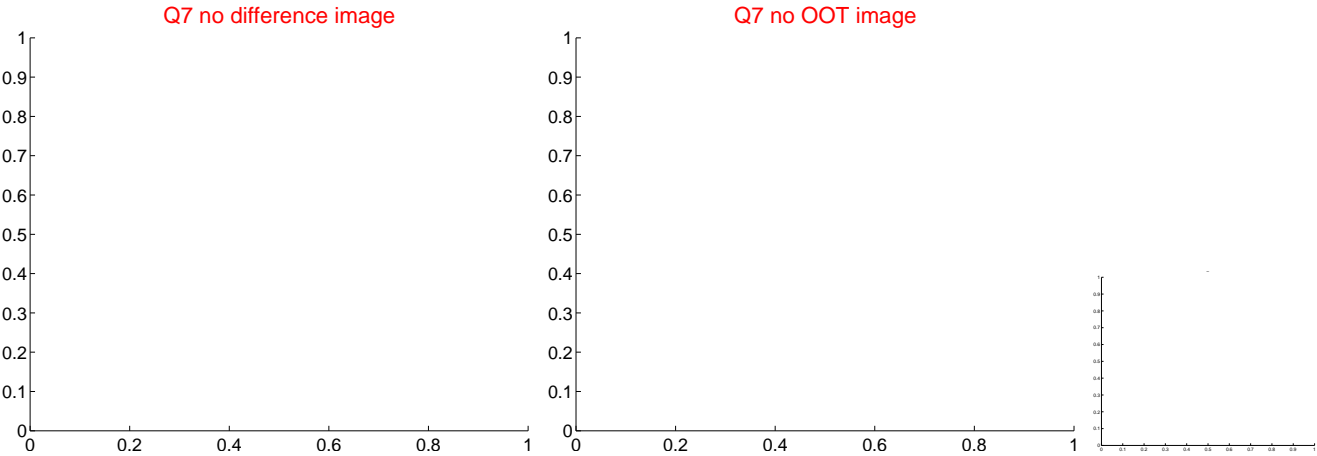
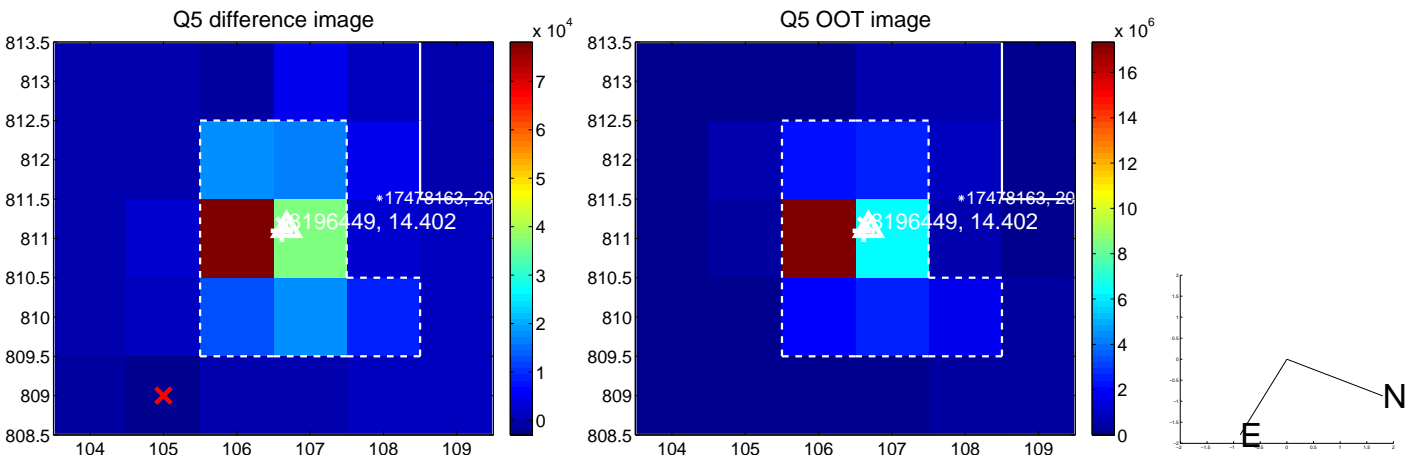


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

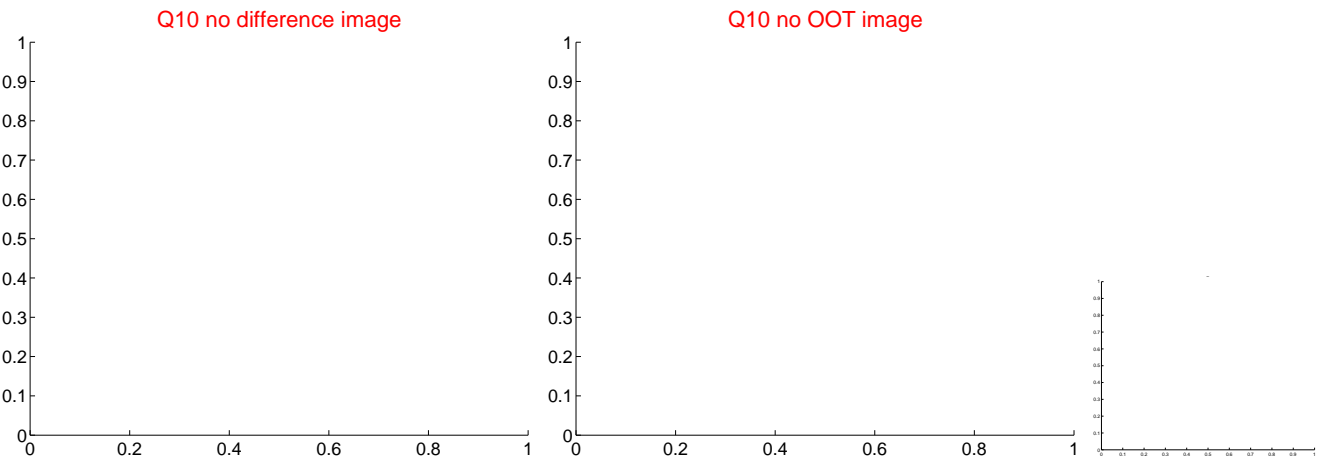
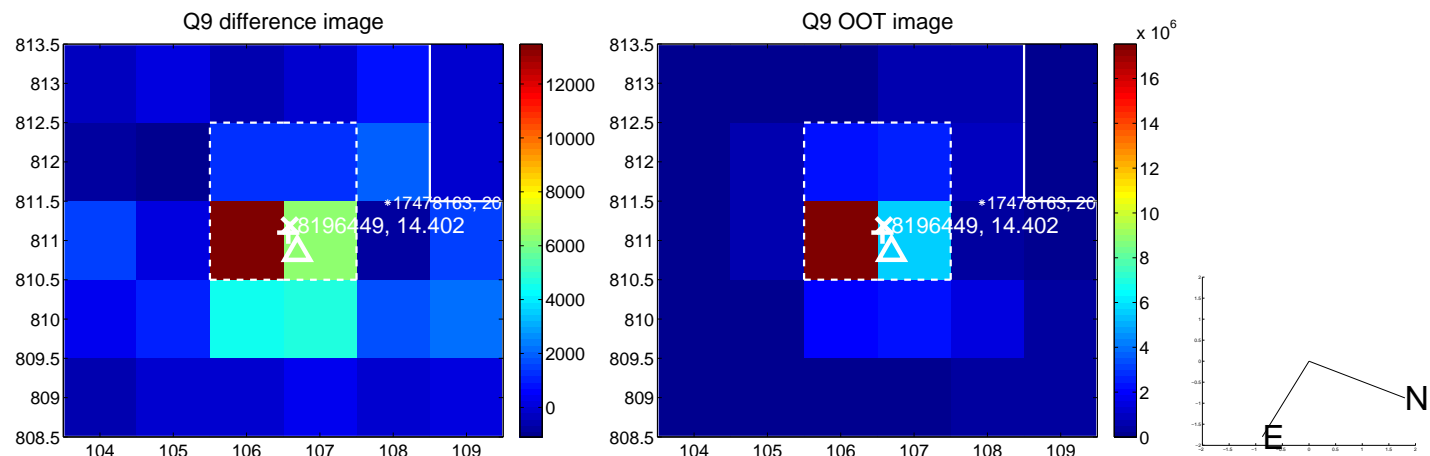
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



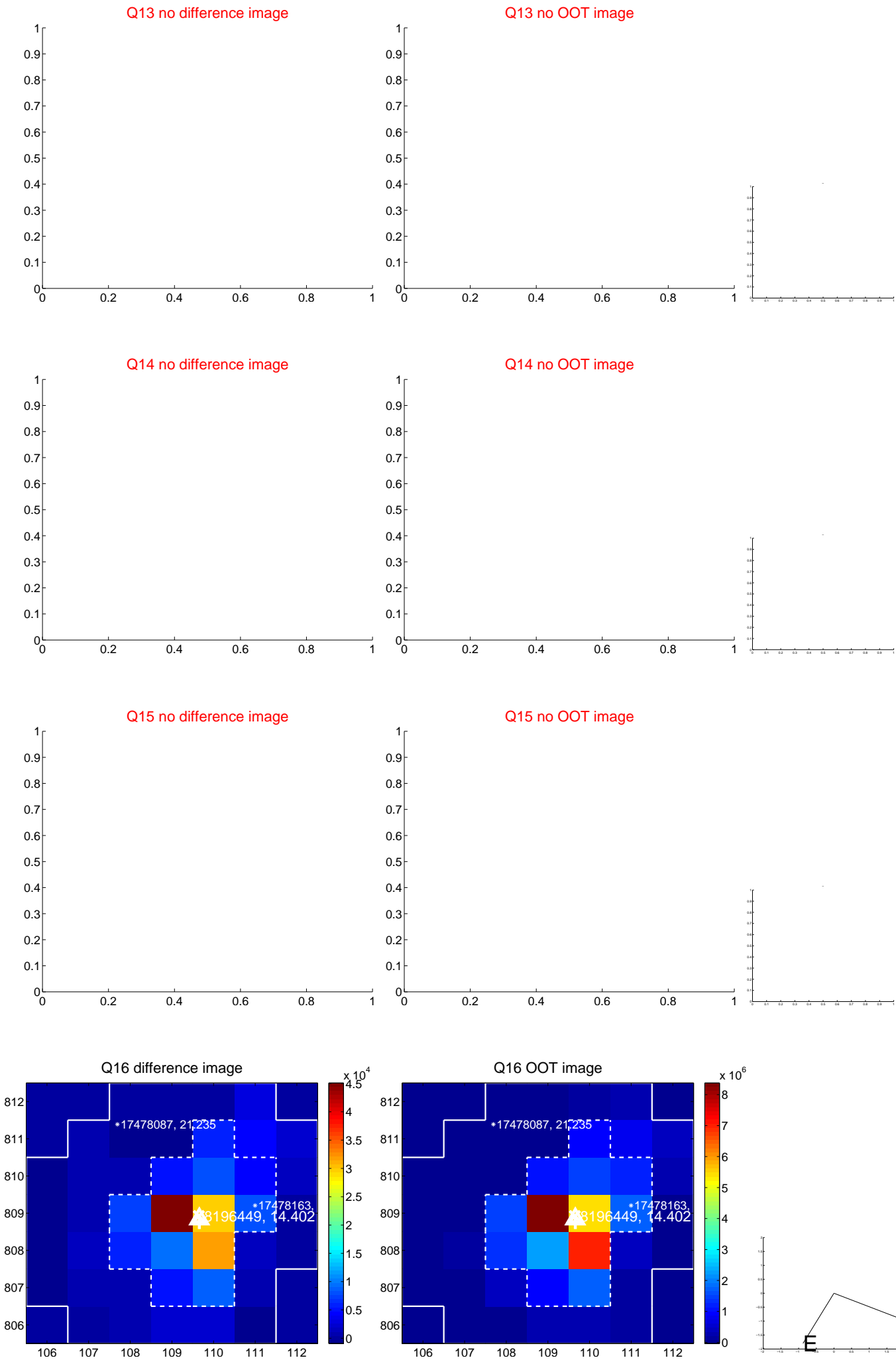
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



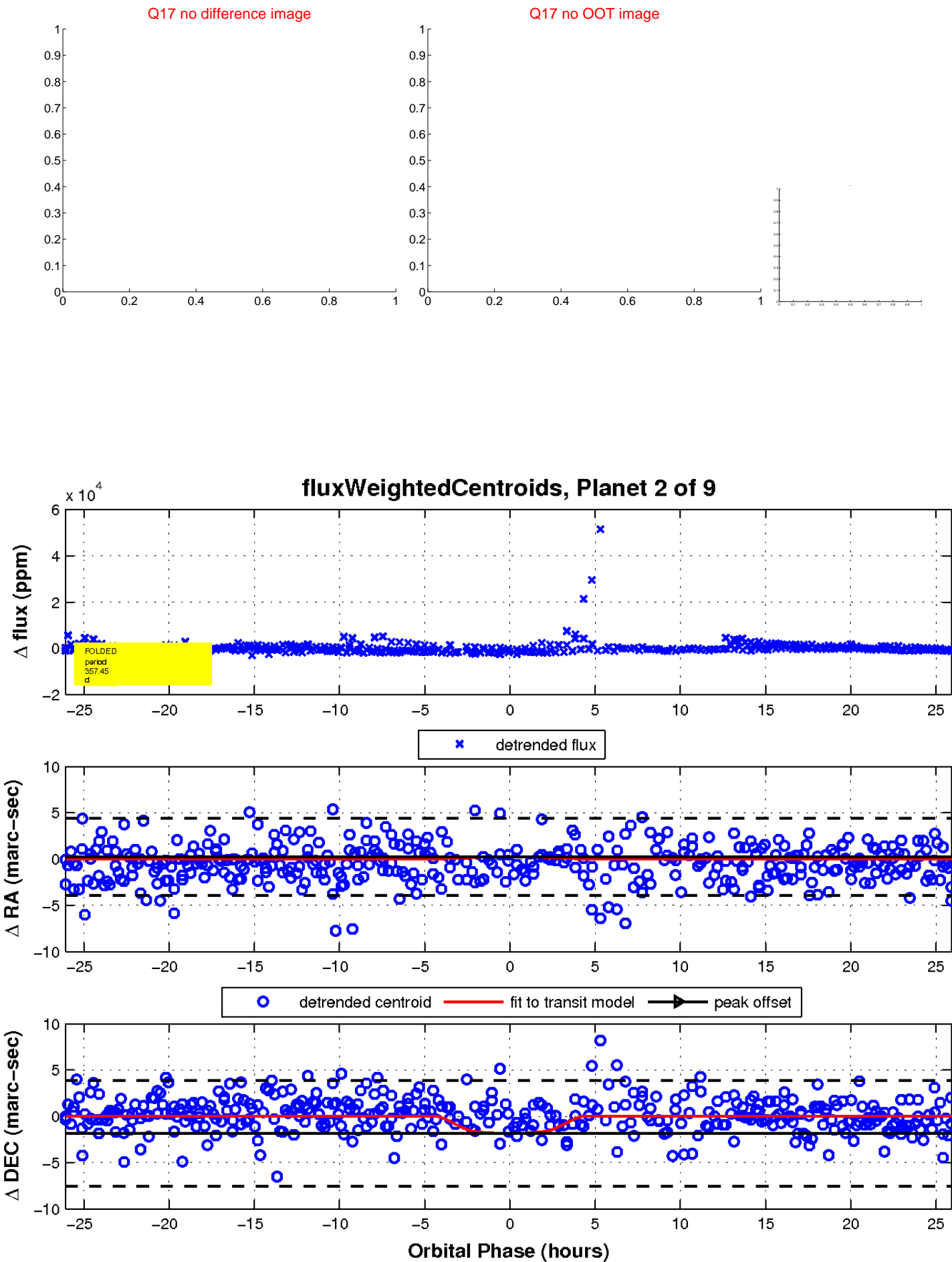
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

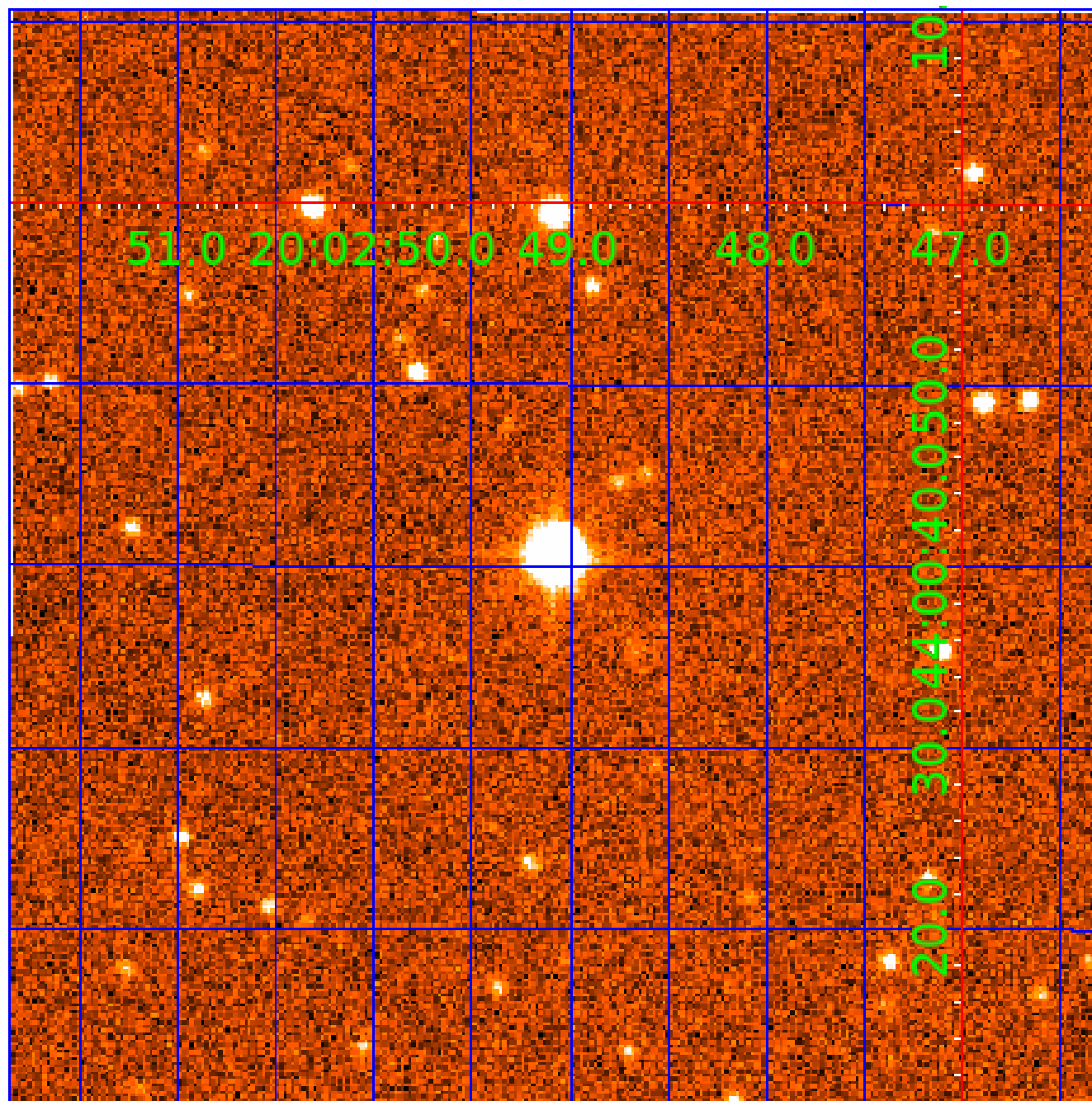


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

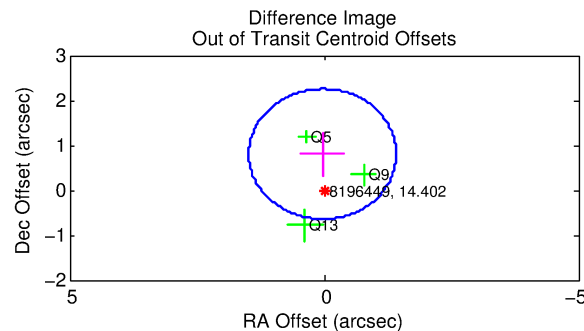
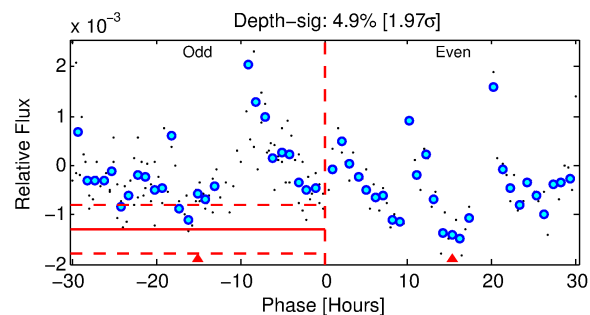
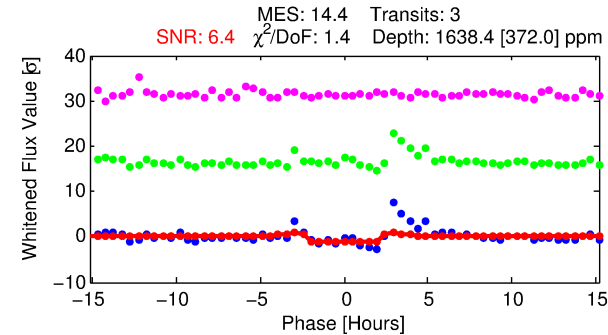
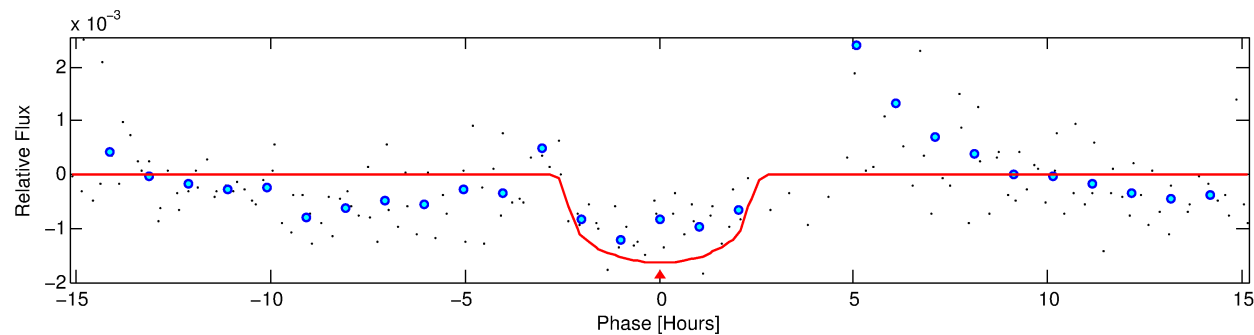
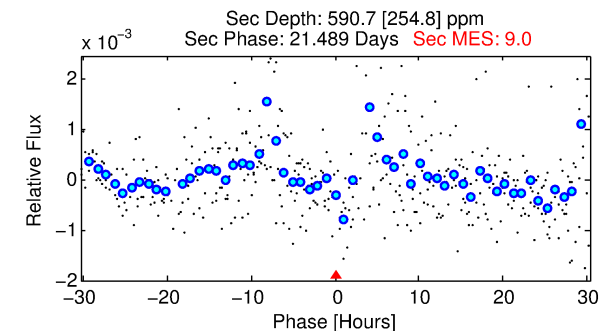
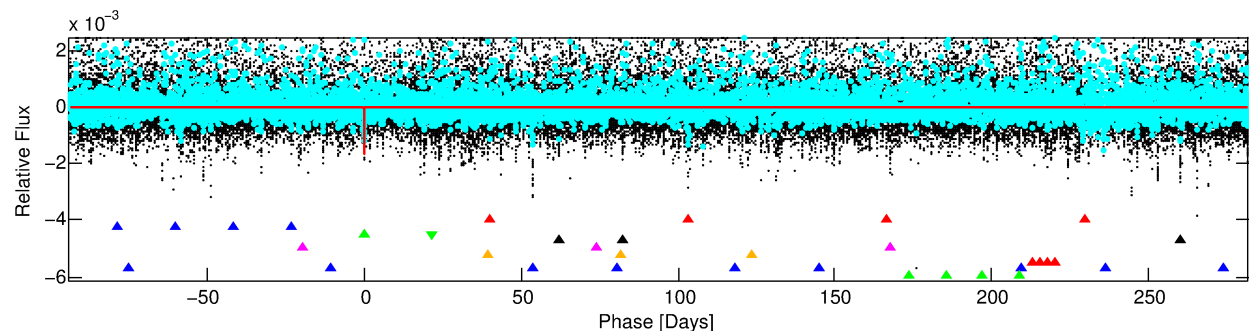
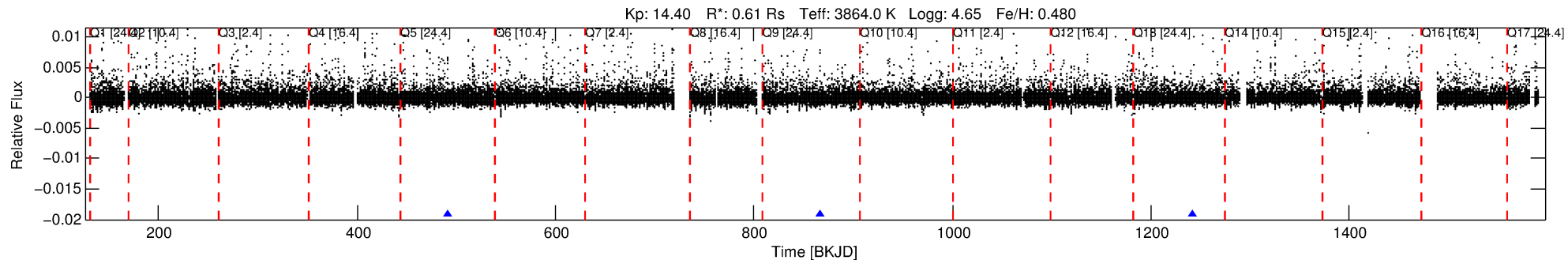
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-03

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 3 of 9 Period: 375.844 d



DV Fit Results:

Period = 375.84419 [0.00724] d
Epoch = 490.8624 [0.0092] BKJD
Rp/R* = 0.0381 [0.0405]
a/R* = 483.01 [1551.49]
b = 0.60 [3.57]
Seff = 0.10 [0.02]
Teq = 143 [7] K
Rp = 2.54 [2.71] Re
a = 0.8648 [0.0778] AU
Ag = 37705.37 [81815.79] [0.46σ]
Teff = 3084 [1675] K [1.76σ]

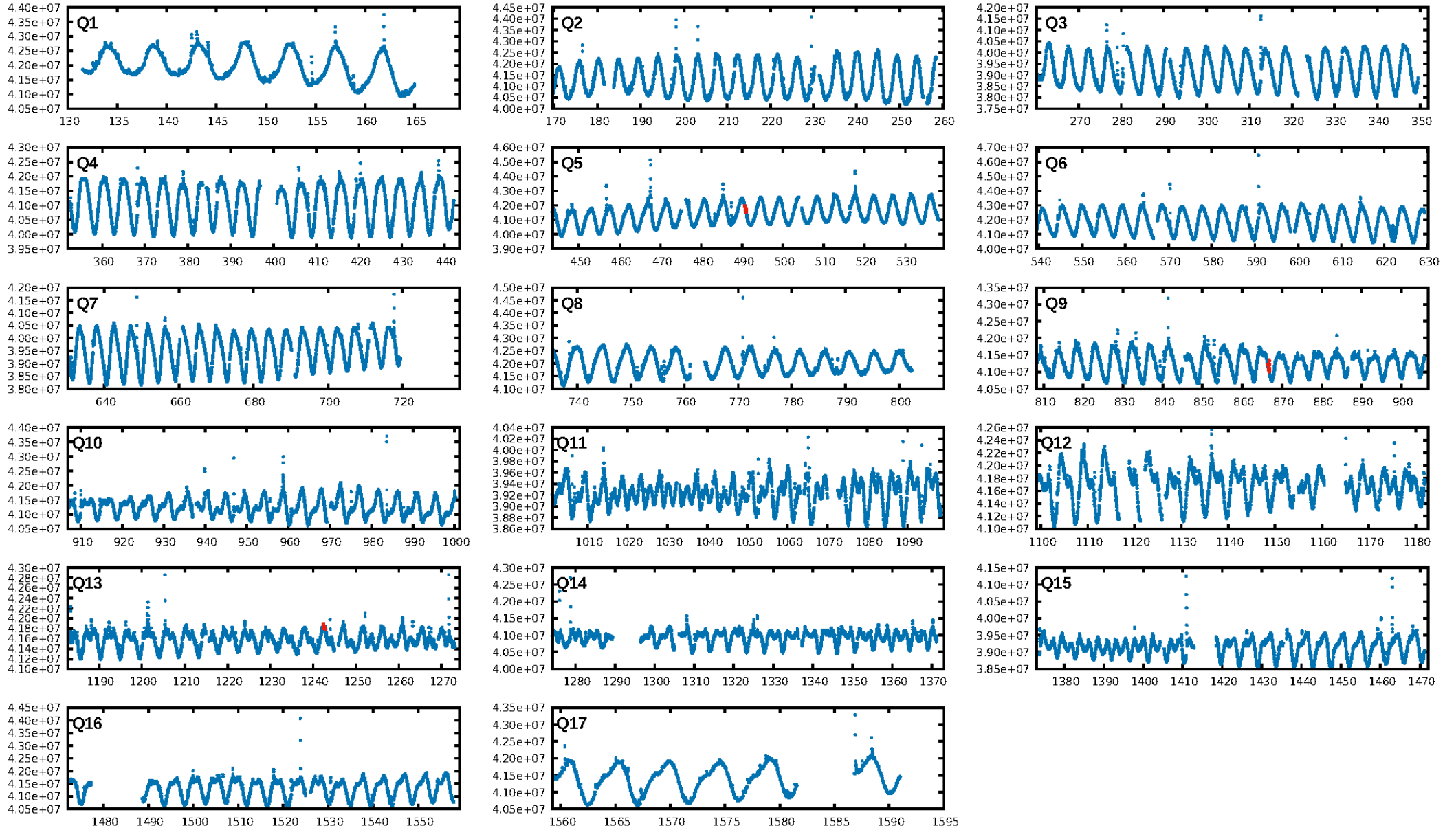
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.28σ]
LongPeriod-sig: 100.0% [21.49σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 66.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5367
Centroid-sig: 78.6%
Centroid-so: 0.835 arcsec [1.25σ]
OotOffset-rm: 0.804 arcsec [1.67σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.900 arcsec [2.01σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

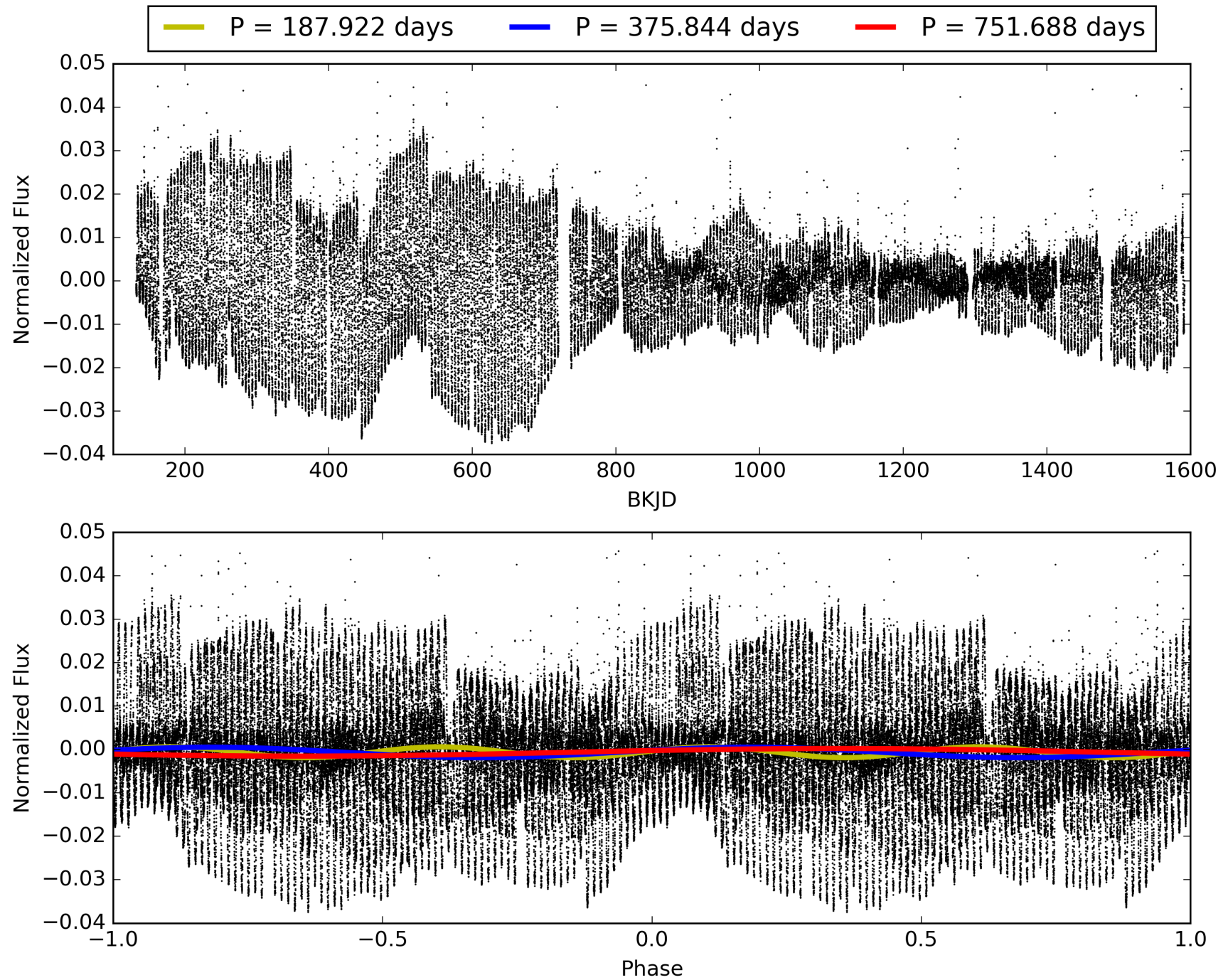
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:14:08 Z

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

TCE 008196449-03, PDC Light Curves

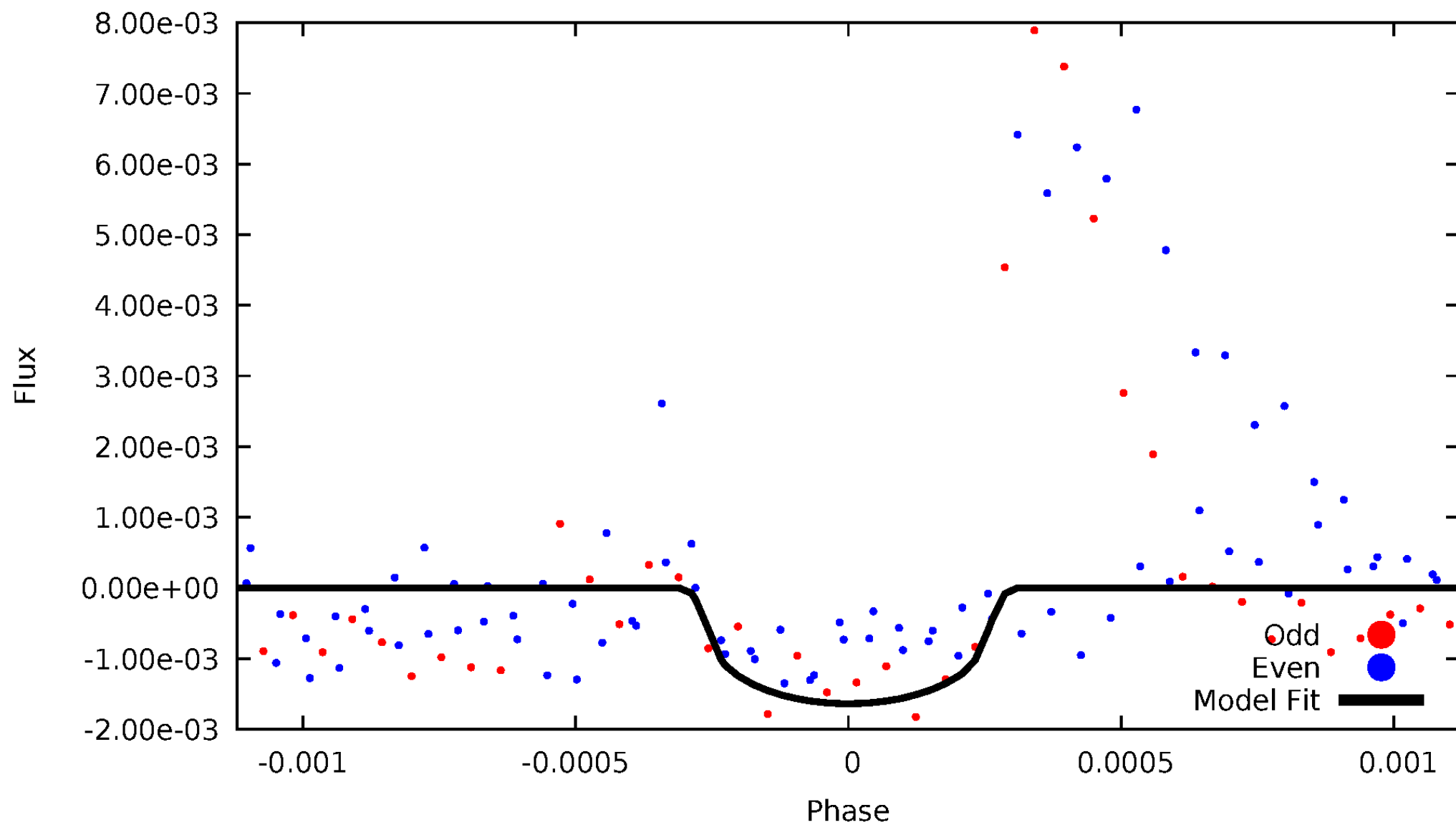


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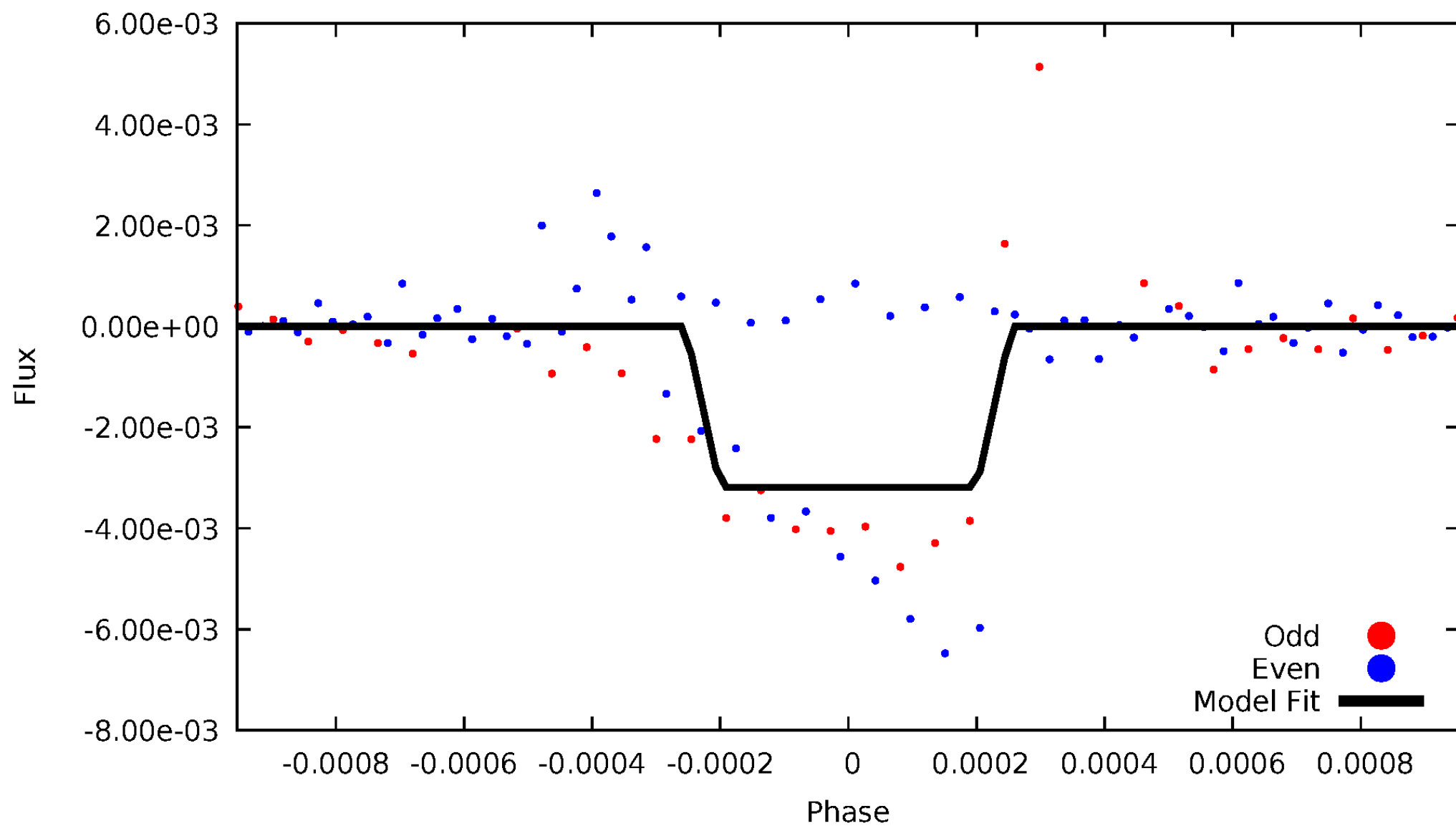
DV Odd/Even

TCE 008196449-03



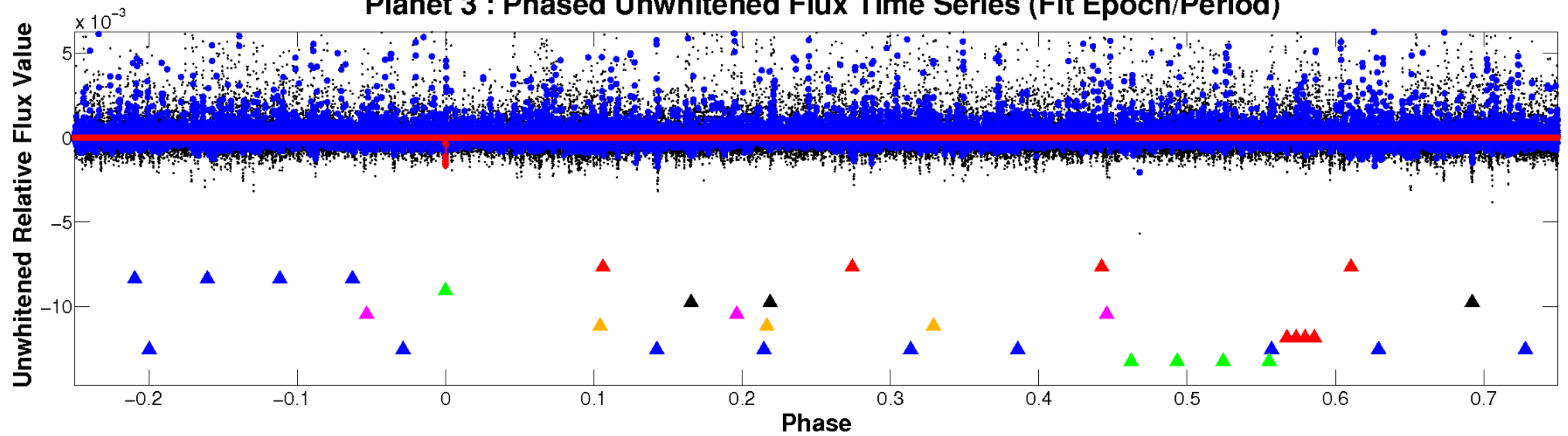
ALT Odd/Even

TCE 008196449-03

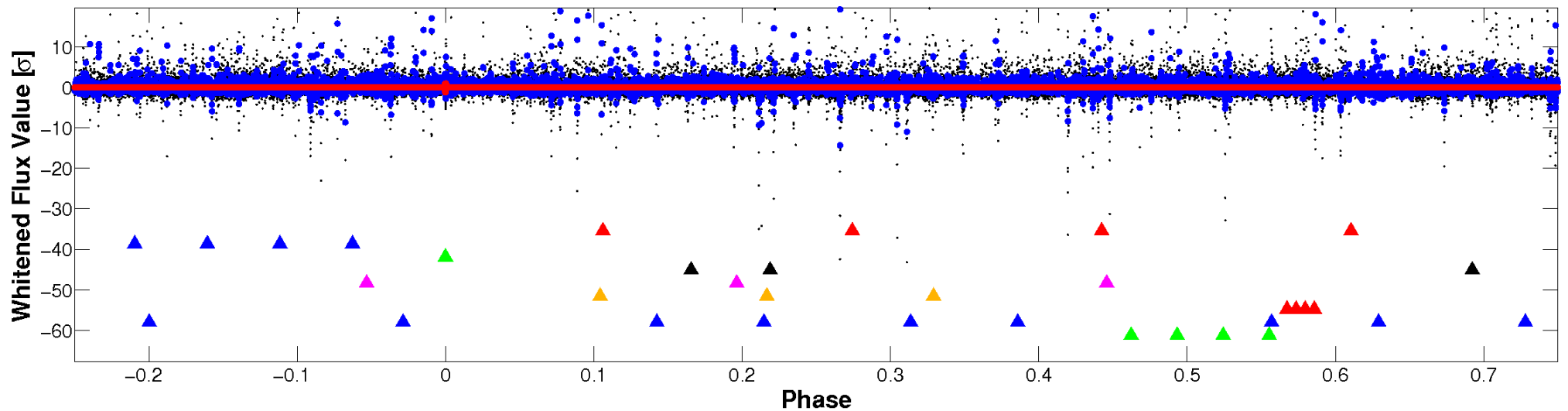


Non-Whitened Vs. Whitened Light Curve

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

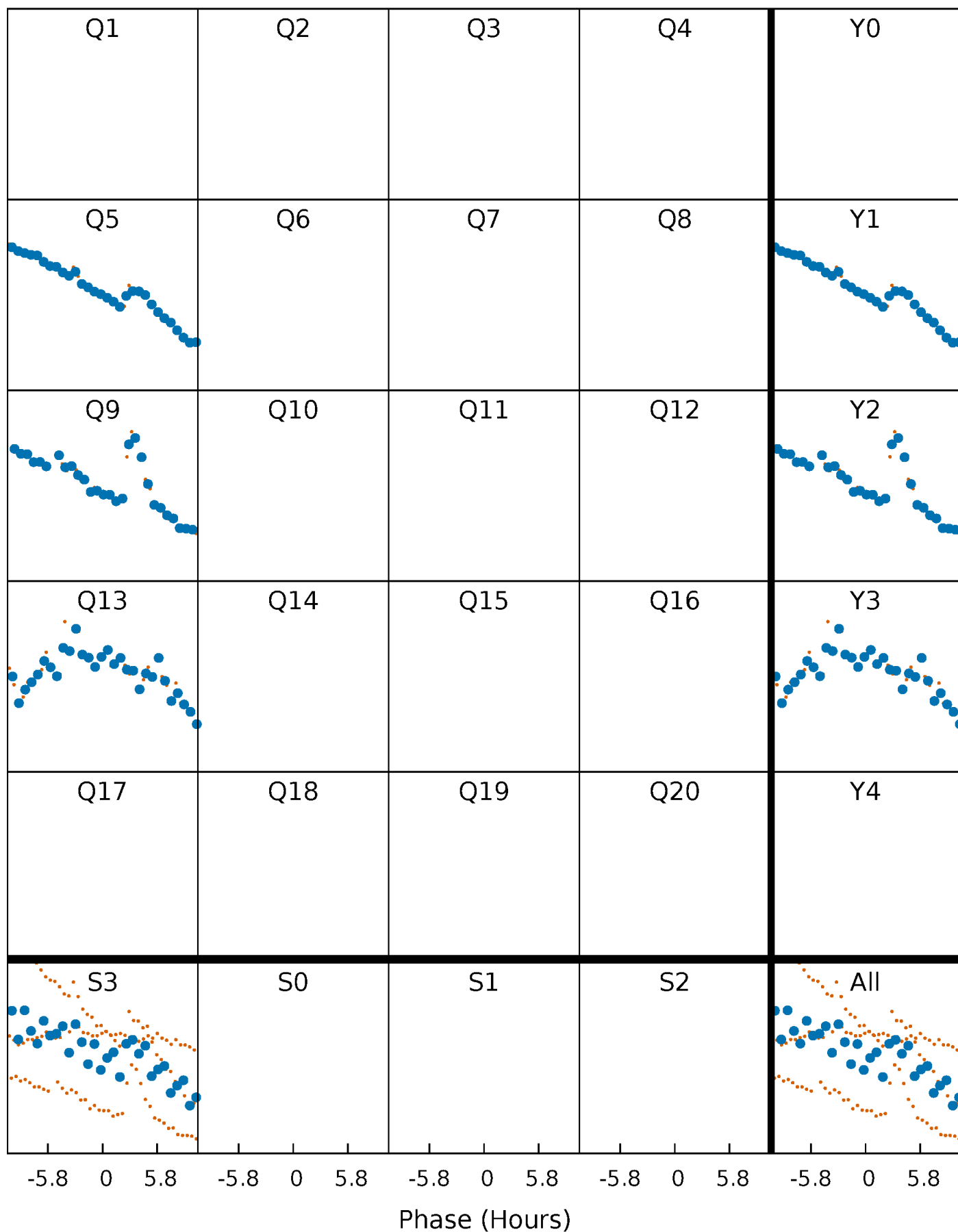


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 008196449-03 $P=375.844189$ Days $T_0=490.862434$ (BKJD)



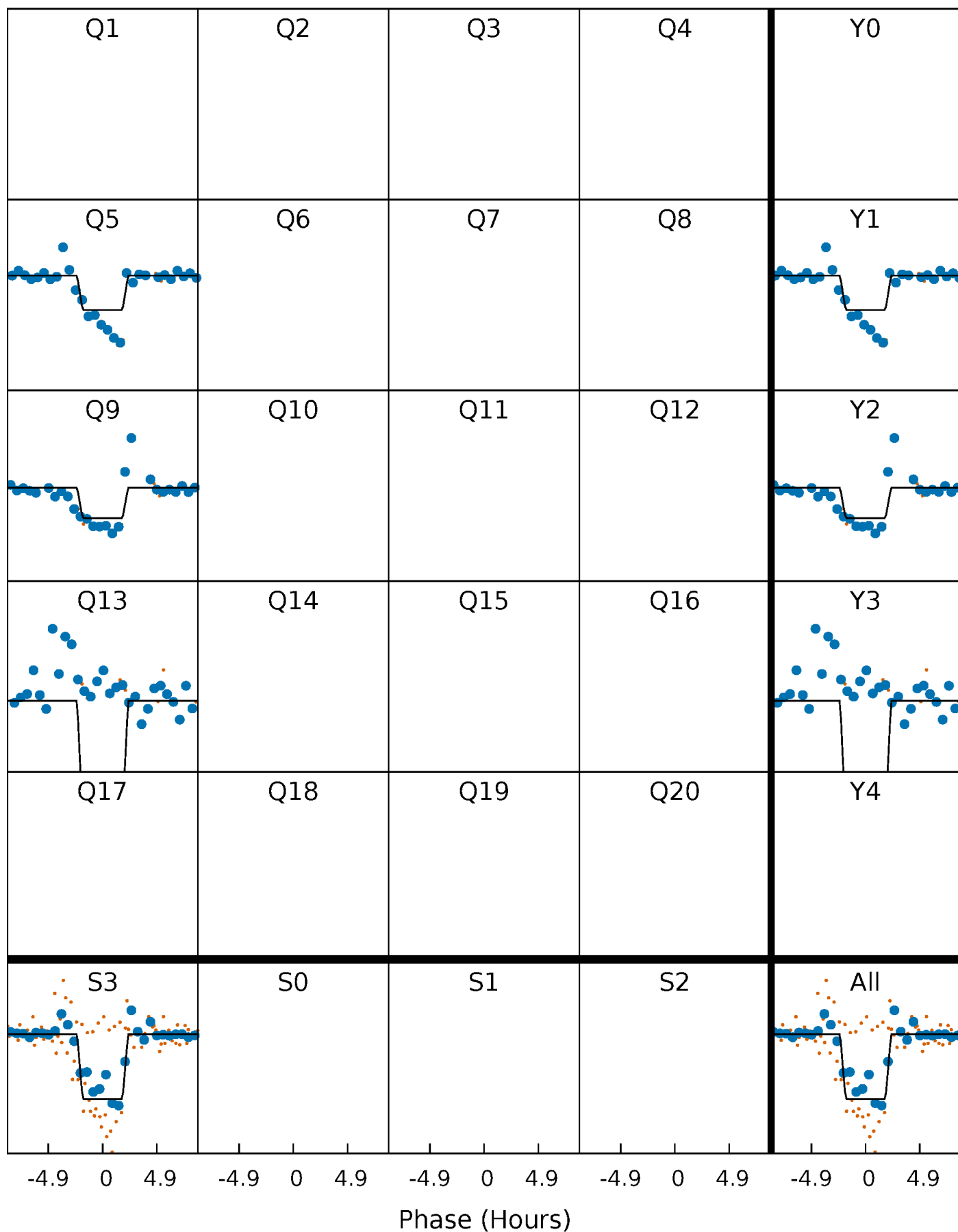
DV Quarter-Phased Transit Curves

TCE 008196449-03 $P=375.844189$ Days $T_0=490.862434$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

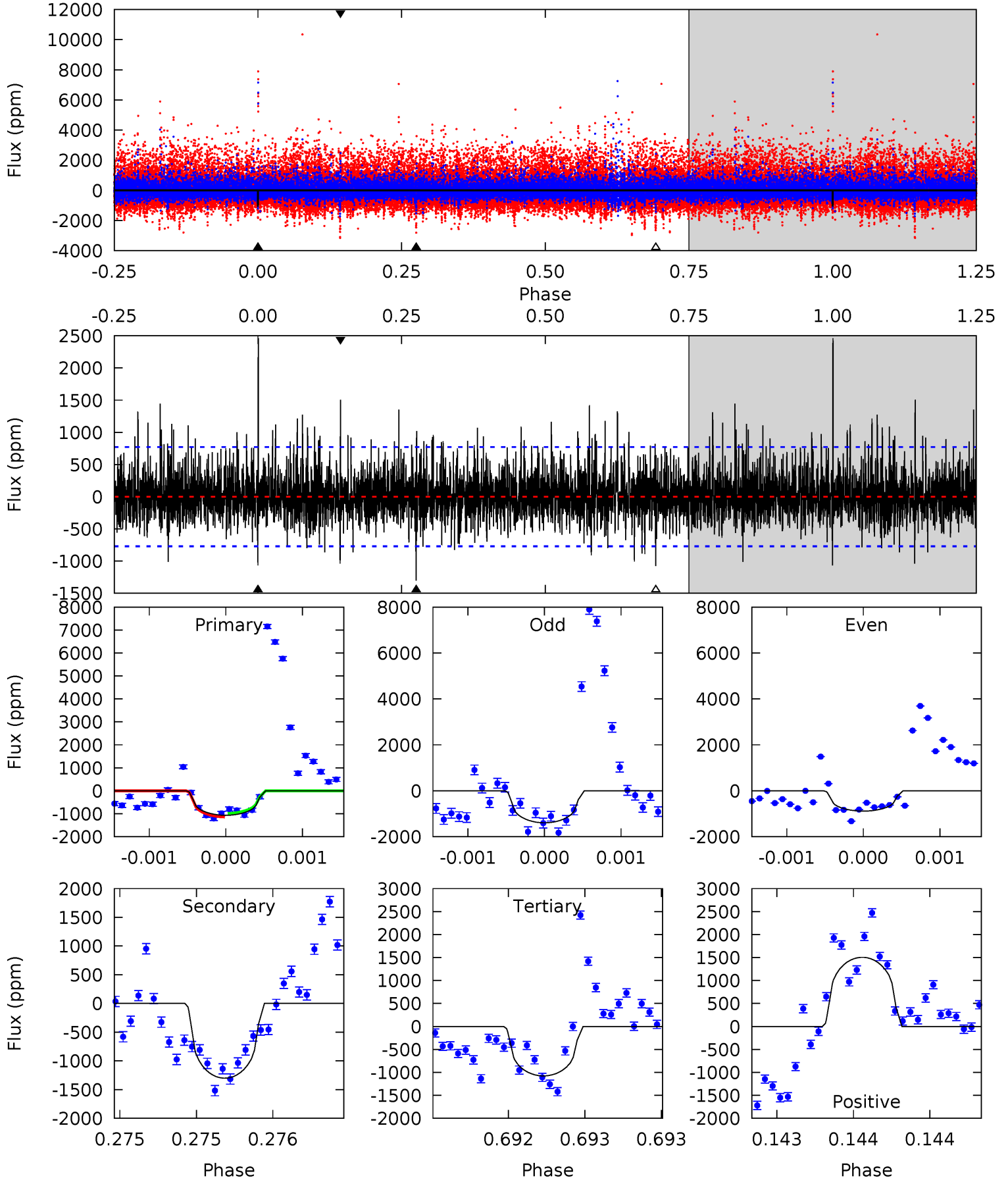
TCE 008196449-03 $P=375.841280$ Days $T_0=490.881411$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-03, P = 375.844189 Days, E = 115.018245 Days

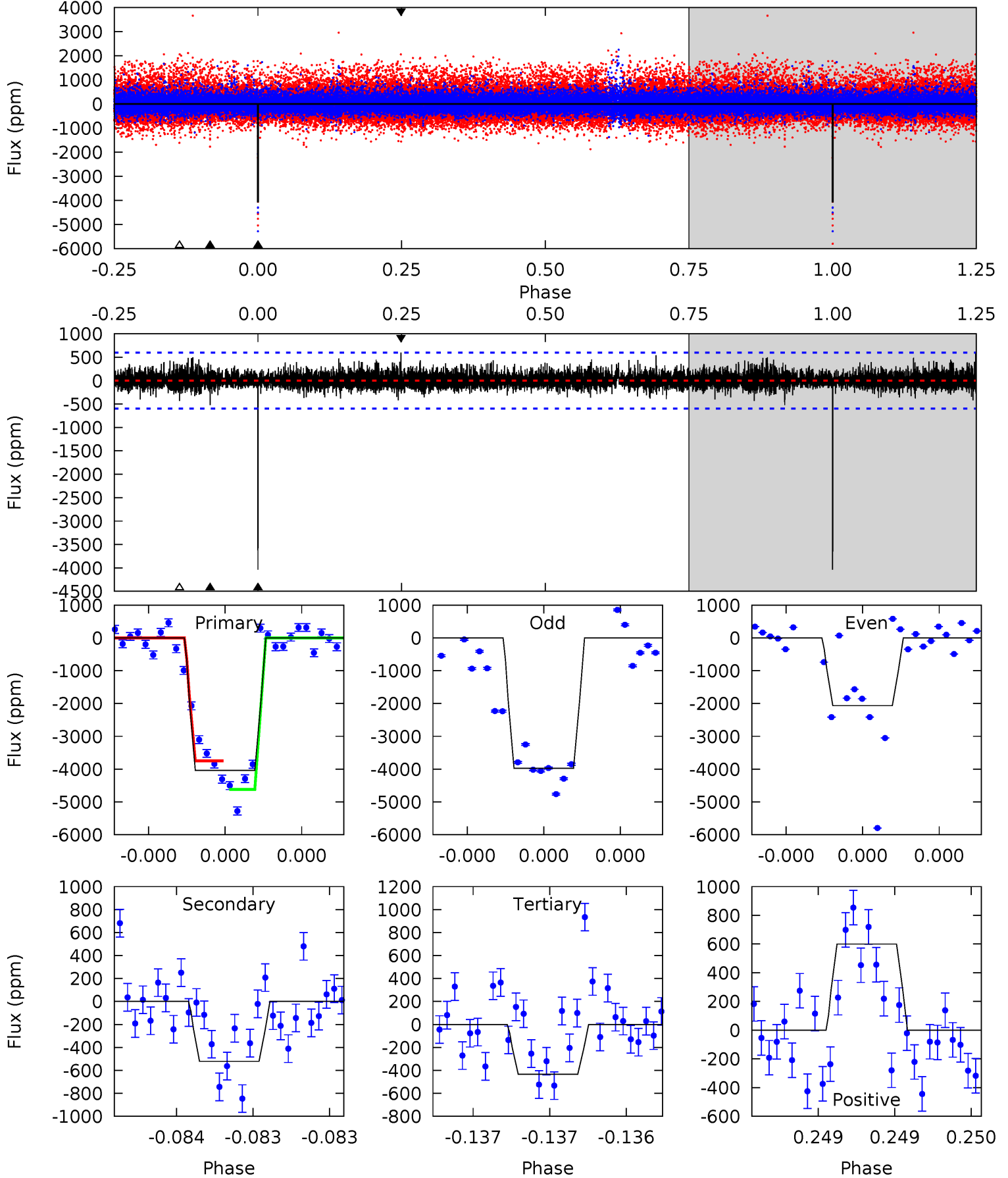
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.66	9.36	7.74	10.8	5.54	3.43	2.15	-0.08	-3.15	1.61	-1.46	1.43	1.14	0.65	0.57



Alt Model-Shift Uniqueness Test

008196449-03, P = 375.841280 Days, E = 115.040131 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.6	4.86	4.04	5.59	5.58	3.49	1.00	33.6	32.0	0.81	-0.73	9.87	0.70	0.13	3.89



Stellar Parameters For KIC 008196449

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1301 ± 139	$3.07^{+2.48}_{-1.92}$	198^{+8}_{-8}	3545^{+1578}_{-583}	$57996^{+361649}_{-40380}$
Alt.	-521 ± 107	$3.90^{+2.64}_{-2.33}$	198^{+7}_{-8}	2859^{+964}_{-358}	13898^{+74847}_{-9026}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

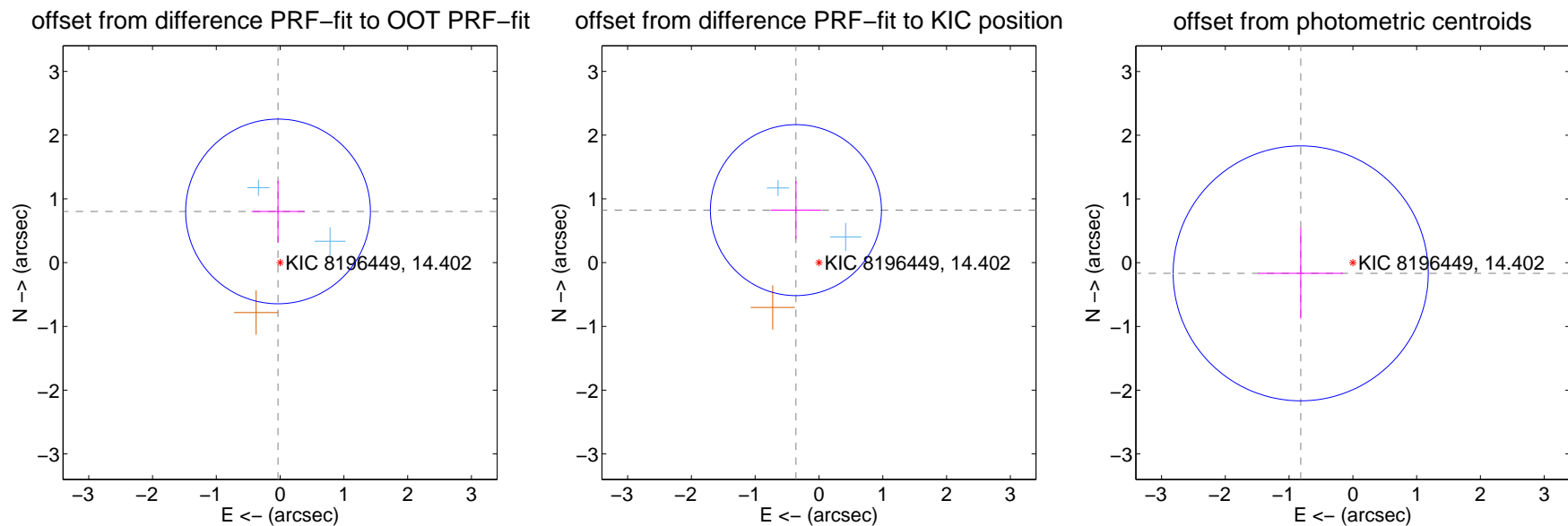
DV Centroid Data

Supplemental centroid analysis for 008196449-03. Kepler magnitude: 14.40. Transit SNR 6.38

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.804 ± 0.483	1.67	0.033 ± 0.414	0.803 ± 0.483
PRF-fit source offset from KIC position	0.900 ± 0.447	2.01	0.361 ± 0.399	0.824 ± 0.455
photometric centroid source offset	0.83 ± 0.67	1.25	0.82 ± 0.66	-0.17 ± 0.71

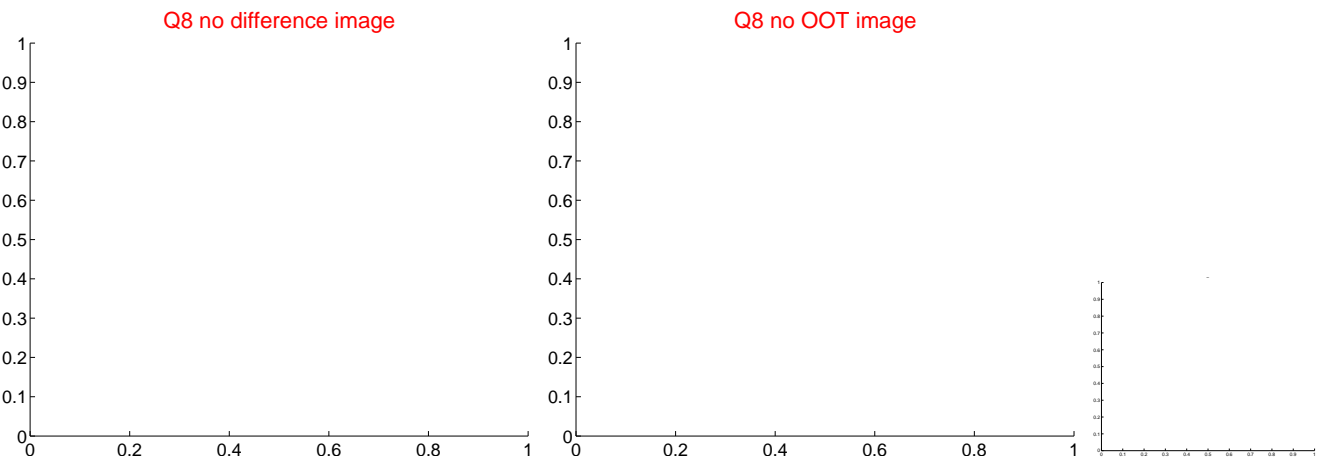
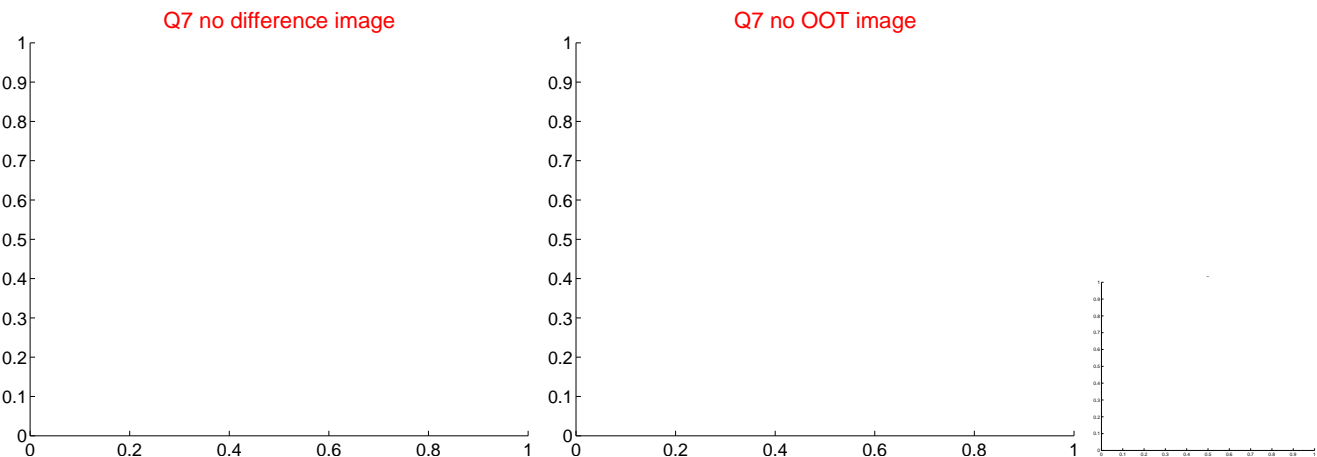
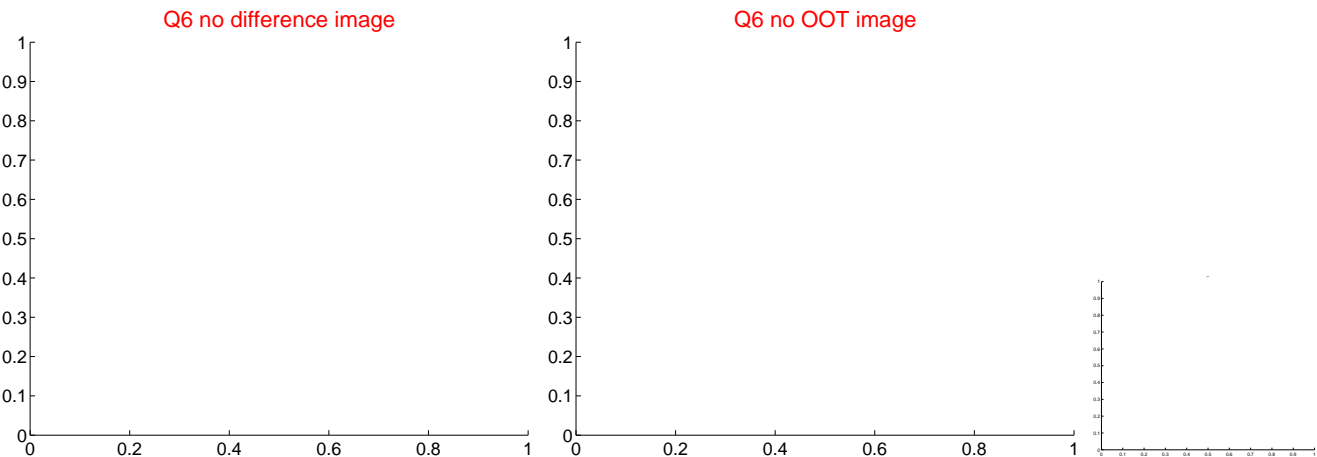
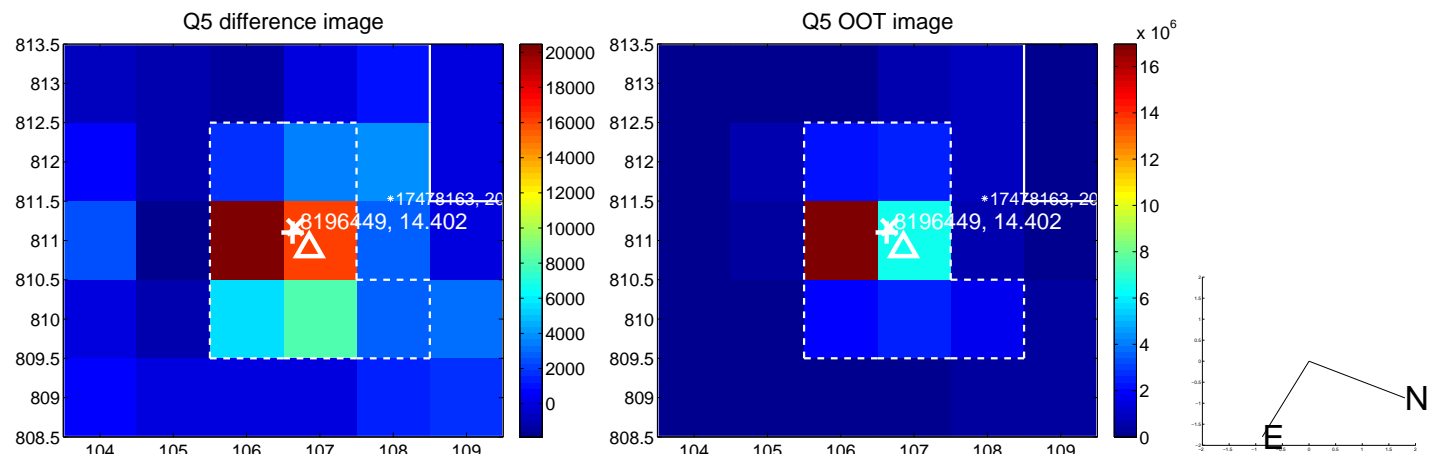


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

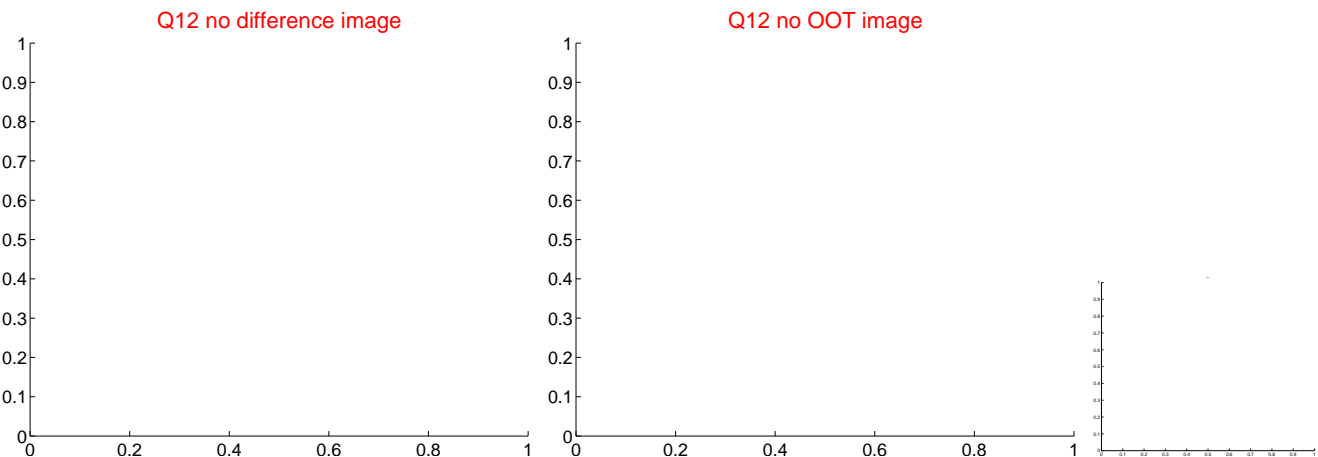
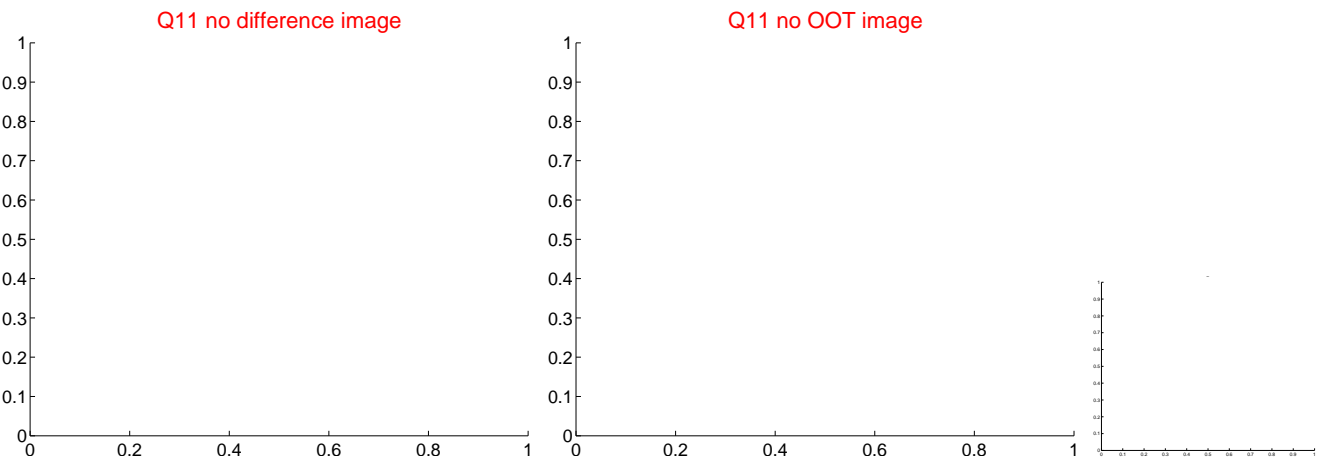
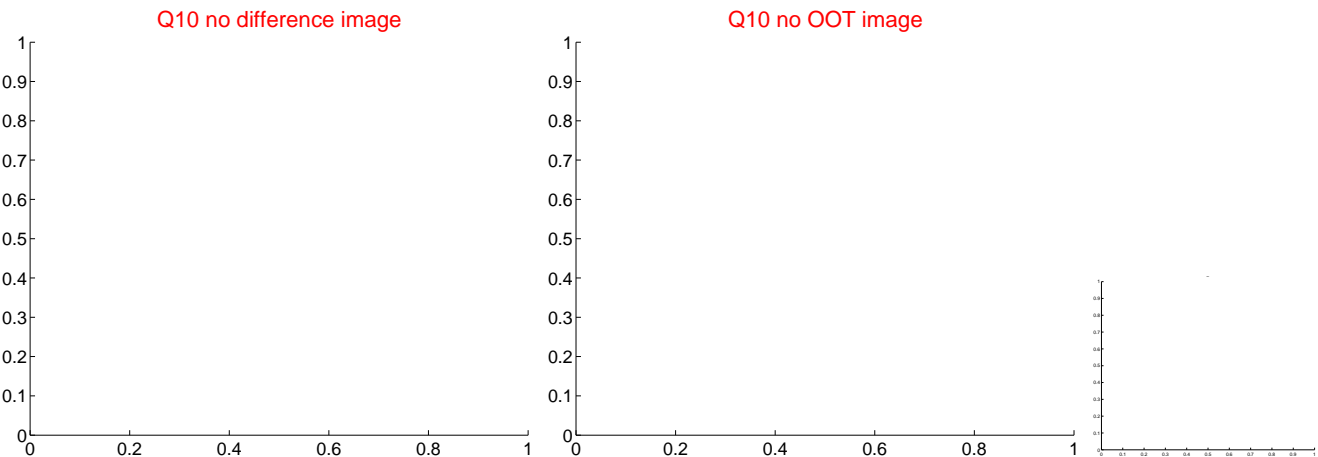
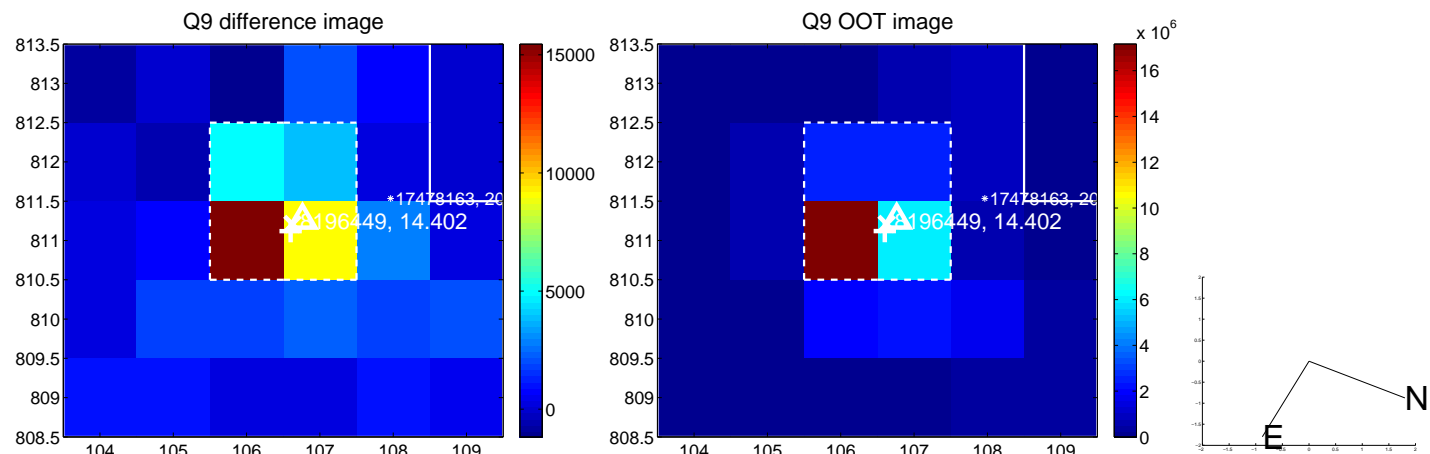
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



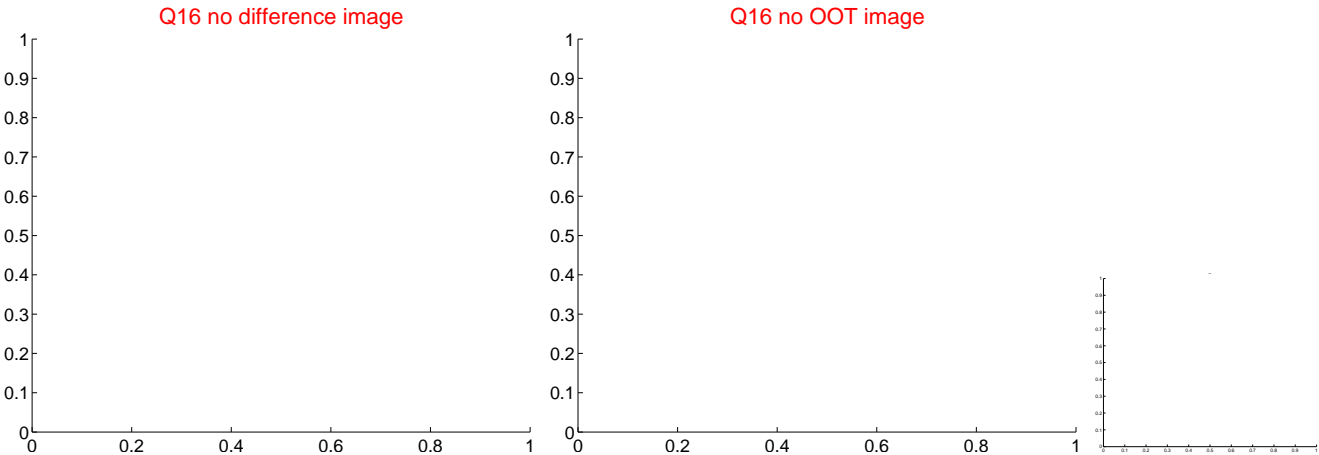
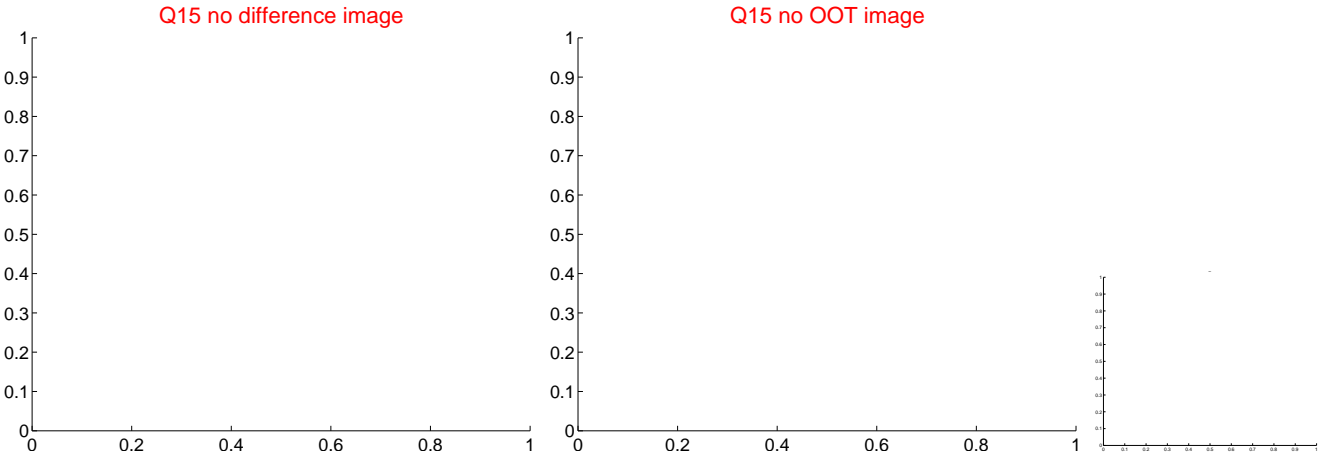
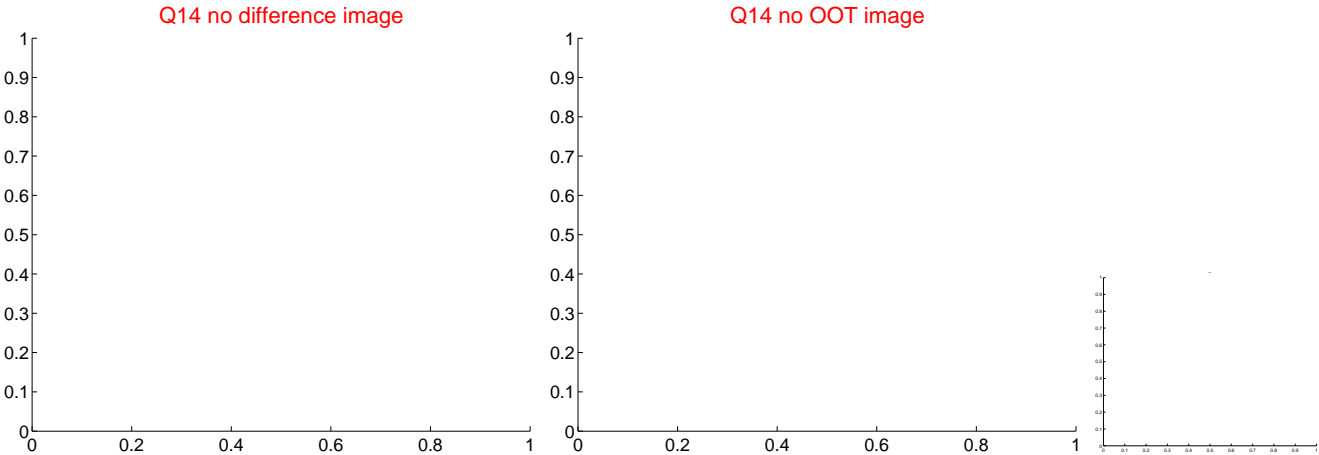
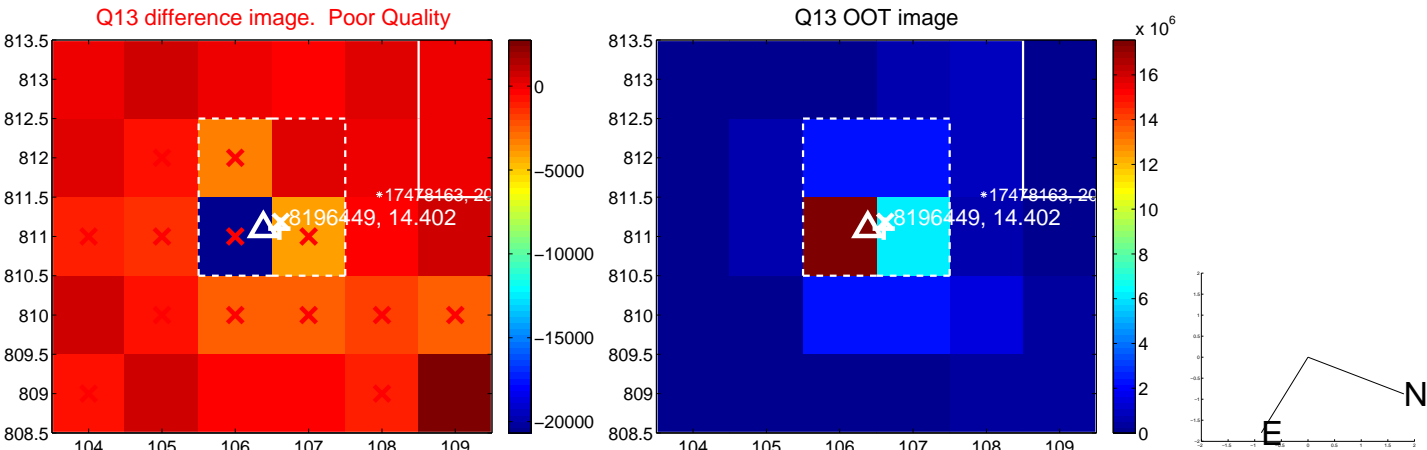
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



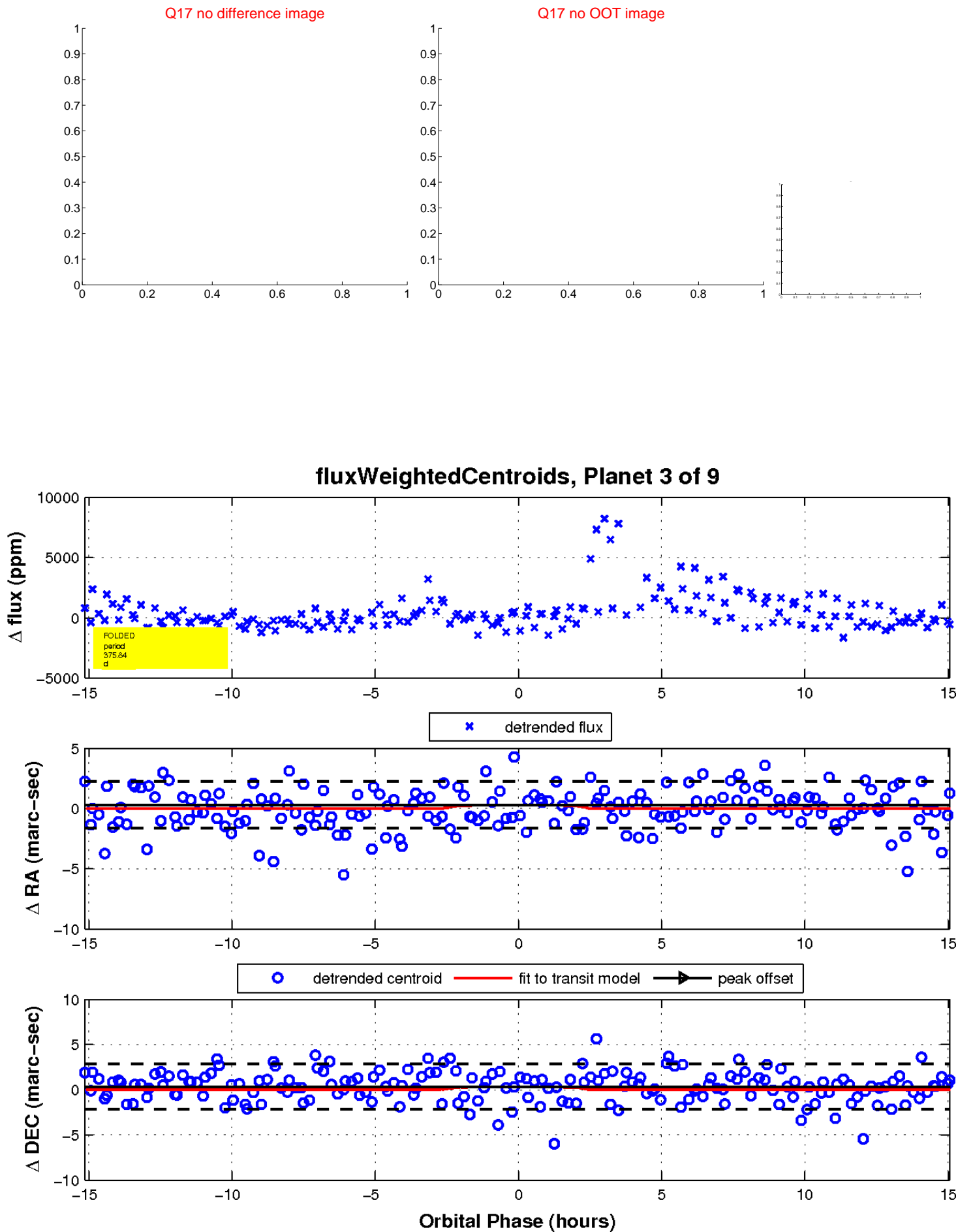
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

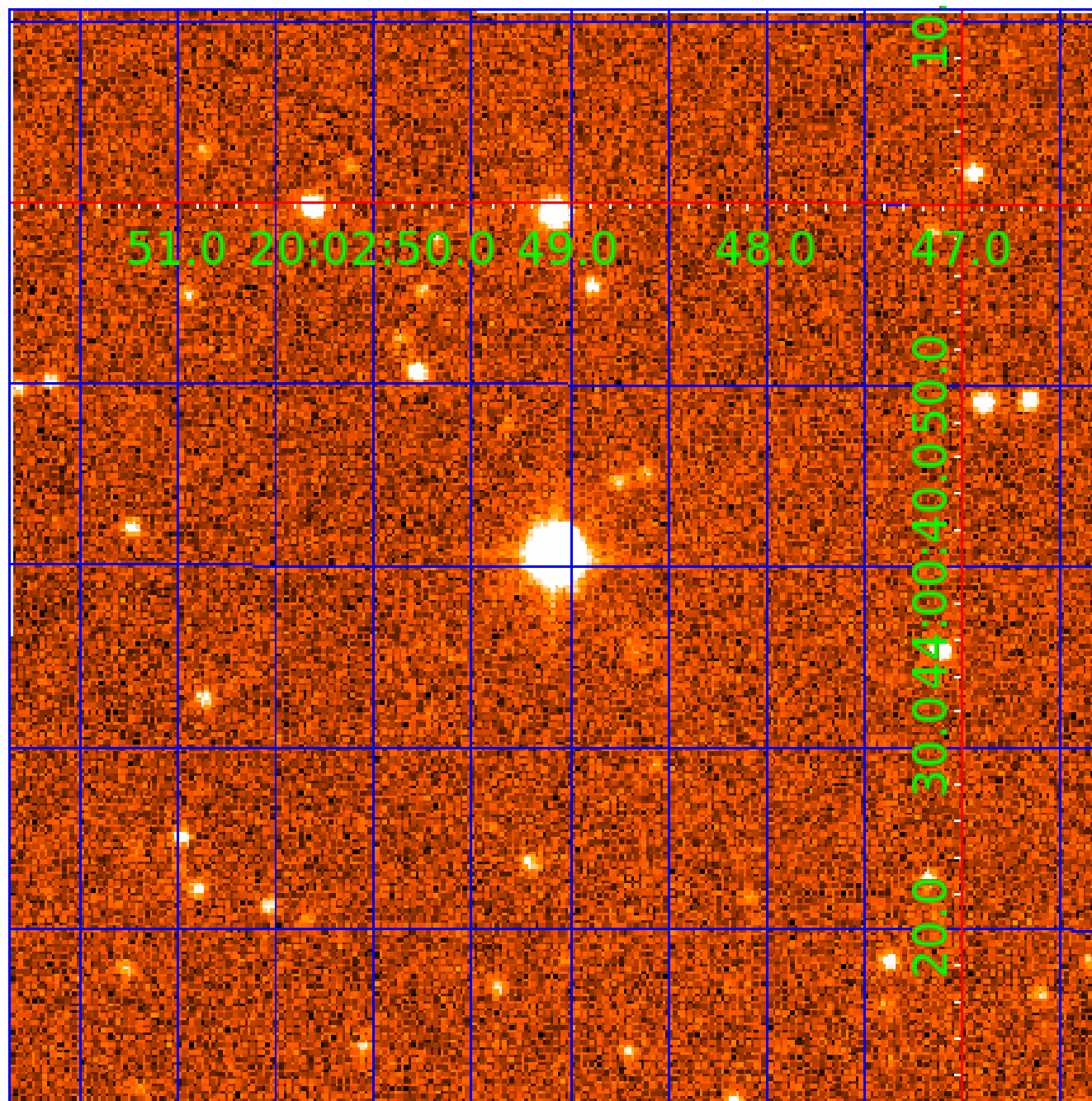


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

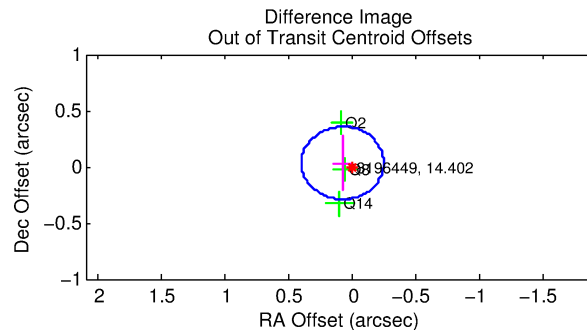
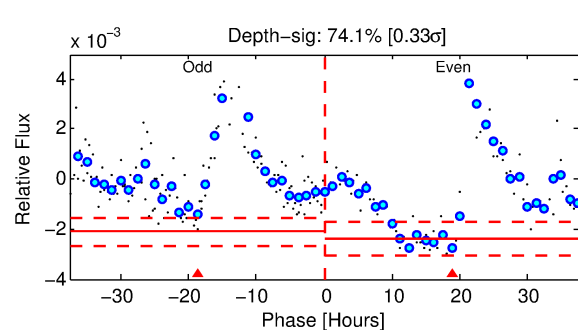
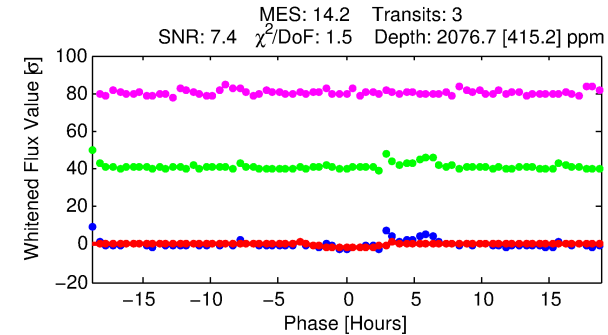
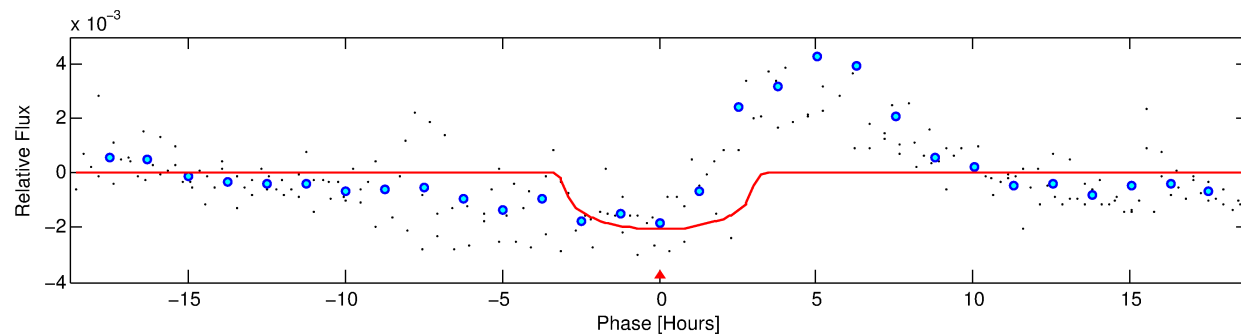
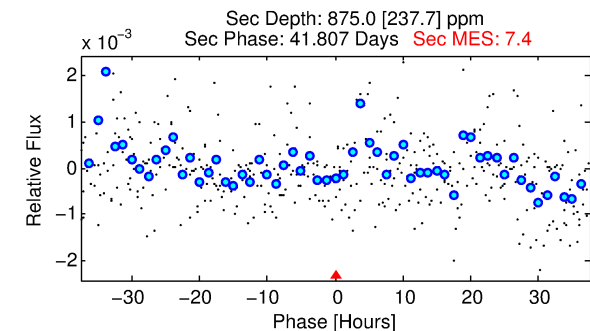
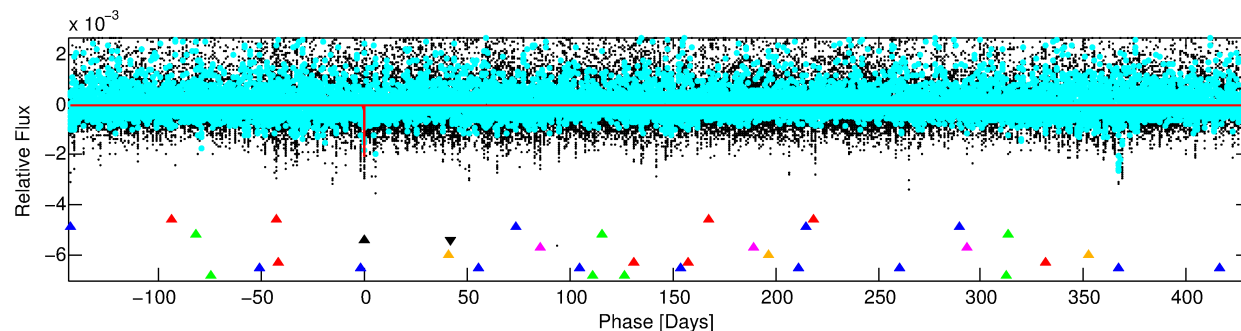
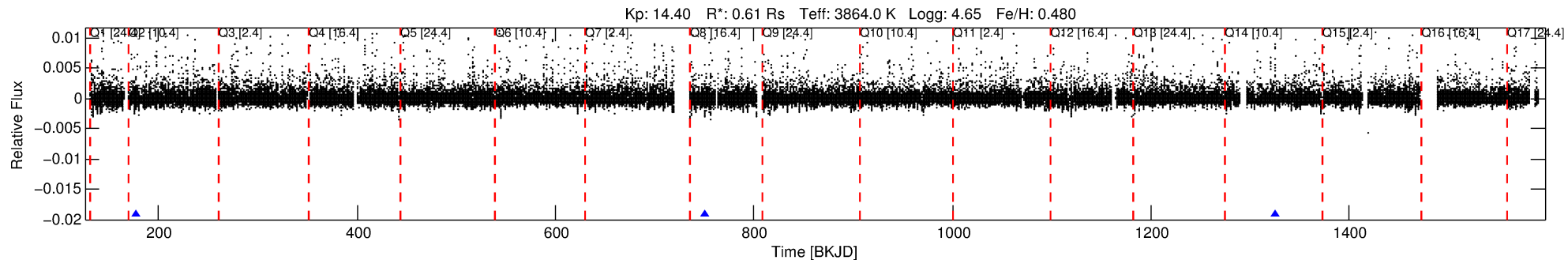
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-04

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 4 of 9 Period: 573.770 d



DV Fit Results:

Period = 573.77015 [0.00857] d
Epoch = 177.2726 [0.0138] BKJD
Rp/R* = 0.0399 [0.0428]
a/R* = 729.14 [2261.68]
b = 0.01 [235.39]
Seff = 0.06 [0.01]
Teq = 124 [6] K
Rp = 2.65 [2.86] Re
a = 1.1466 [0.1032] AU
Ag = 89938.96 [194917.73] [0.46σ]
Teff = 3329 [1805] K [1.78σ]

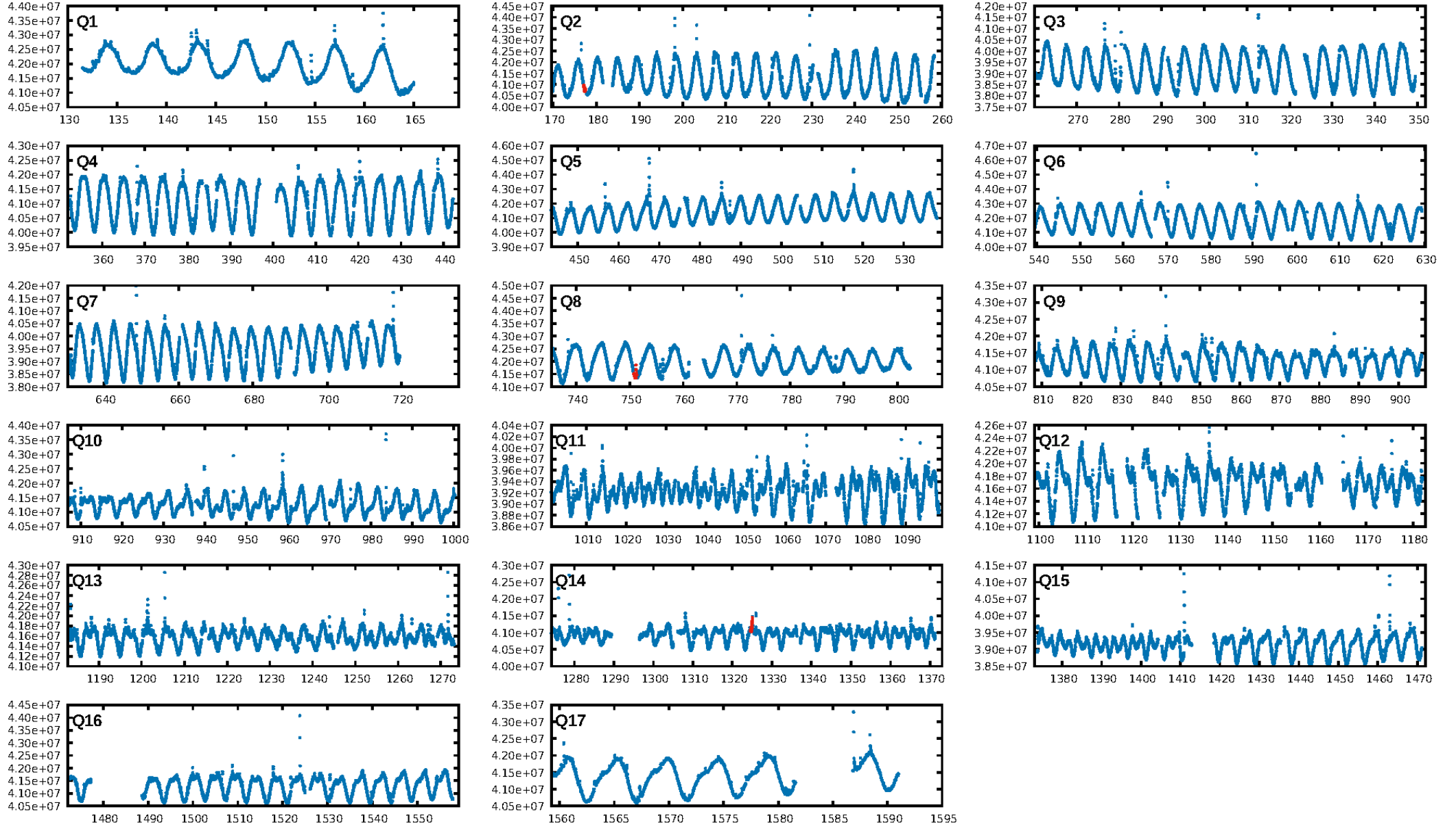
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [158.04σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 24.1%
ModelChiSquareGof-sig: 86.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.508
Centroid-sig: 62.2%
Centroid-so: 0.682 arcsec [1.41σ]
OotOffset-rm: 0.088 arcsec [0.82σ]
KicOffset-rm: 0.508 arcsec [3.61σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

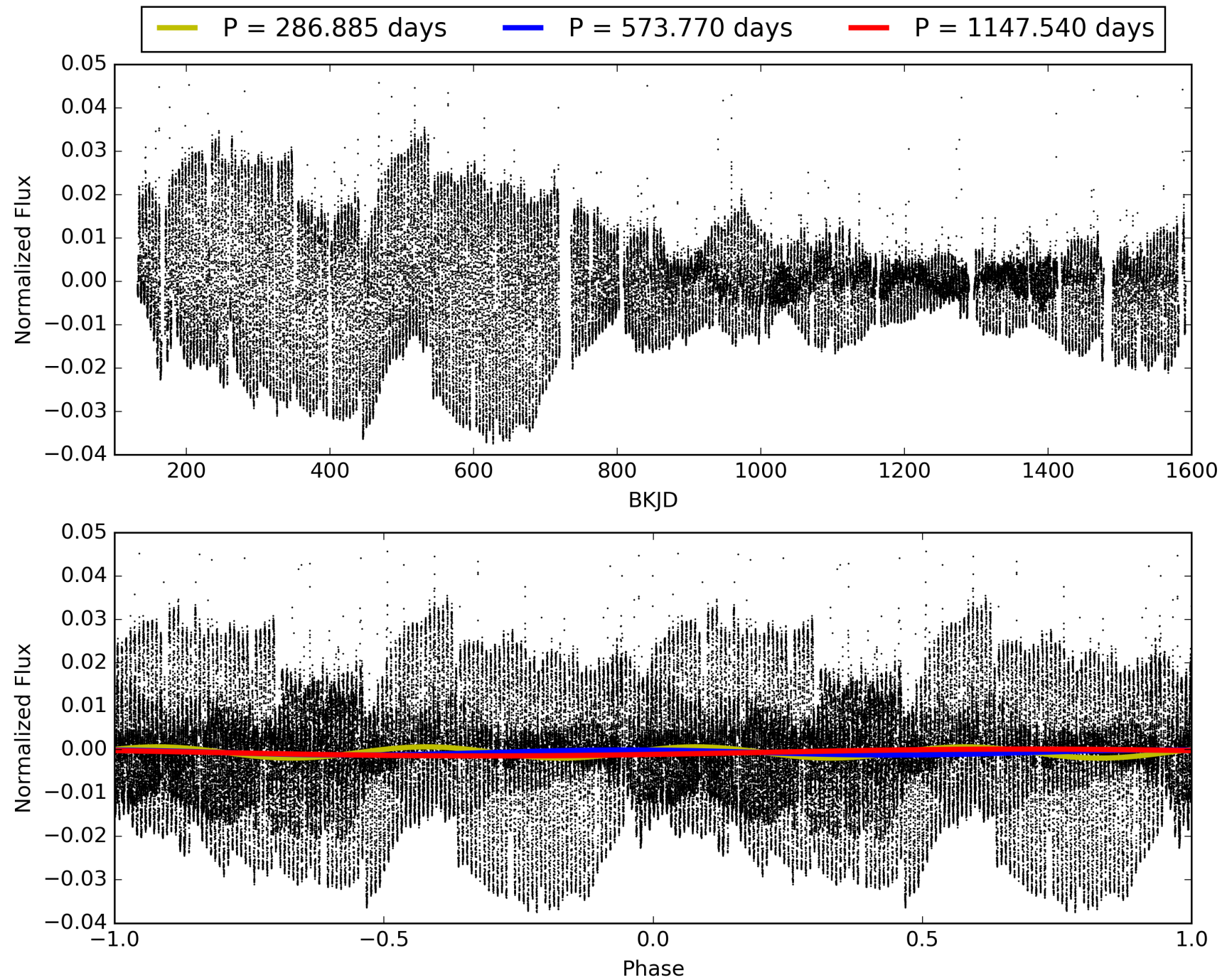
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:14:23 Z

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

TCE 008196449-04, PDC Light Curves

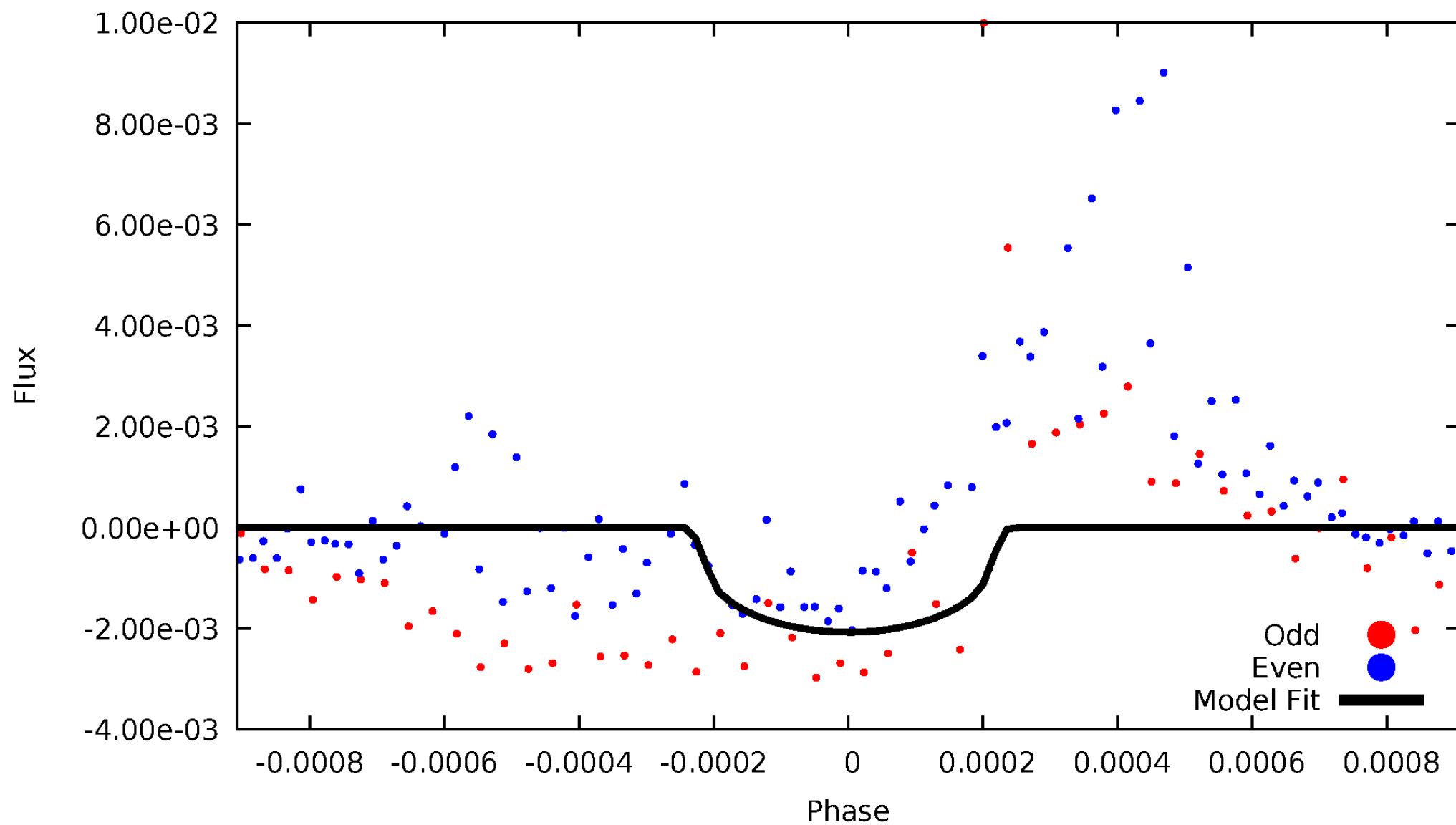


TCE 008196449-04



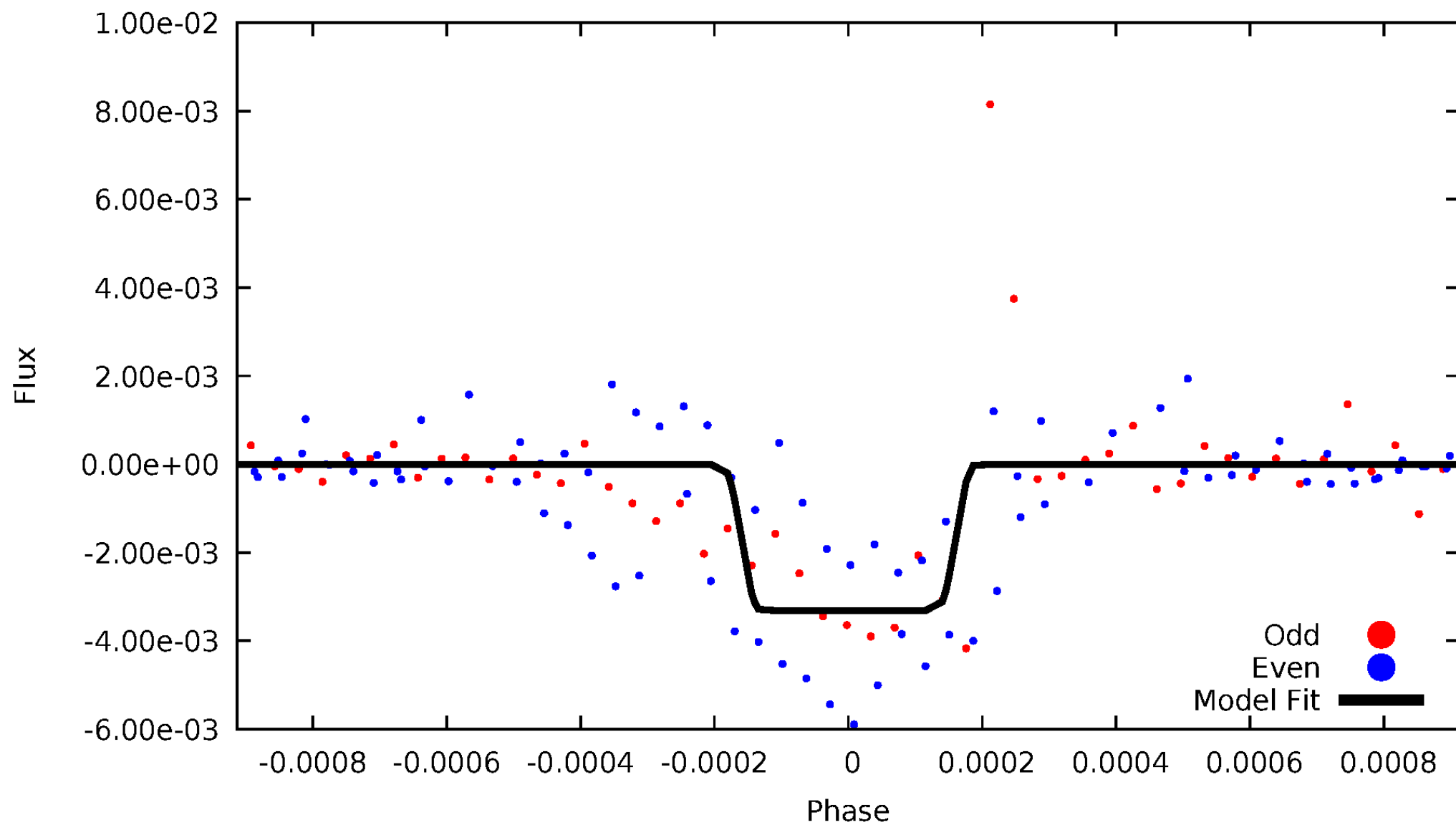
DV Odd/Even

TCE 008196449-04



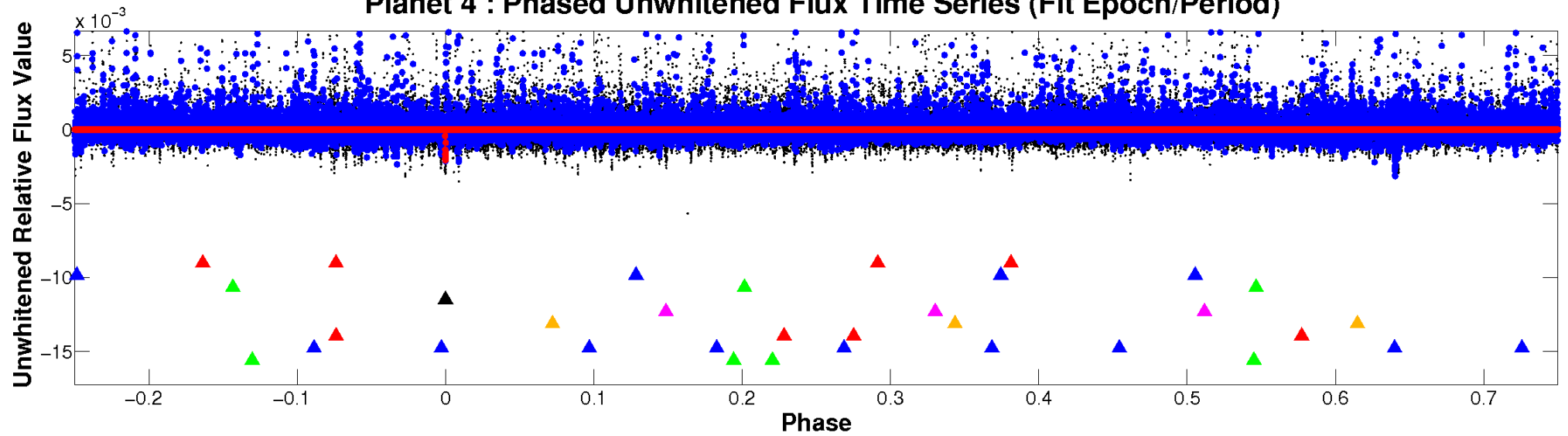
ALT Odd/Even

TCE 008196449-04

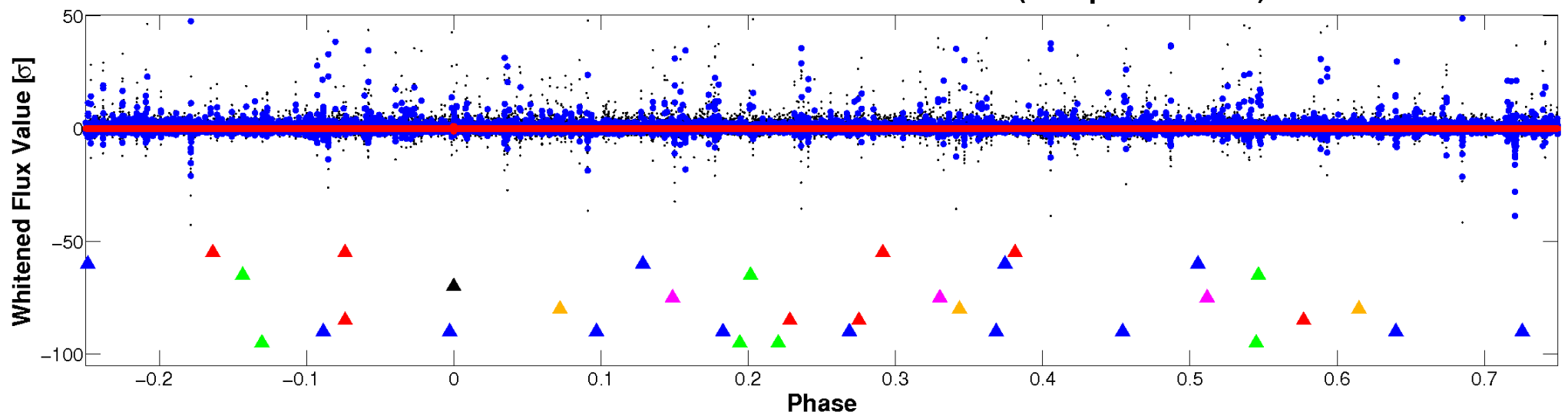


Non-Whitened Vs. Whitened Light Curve

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

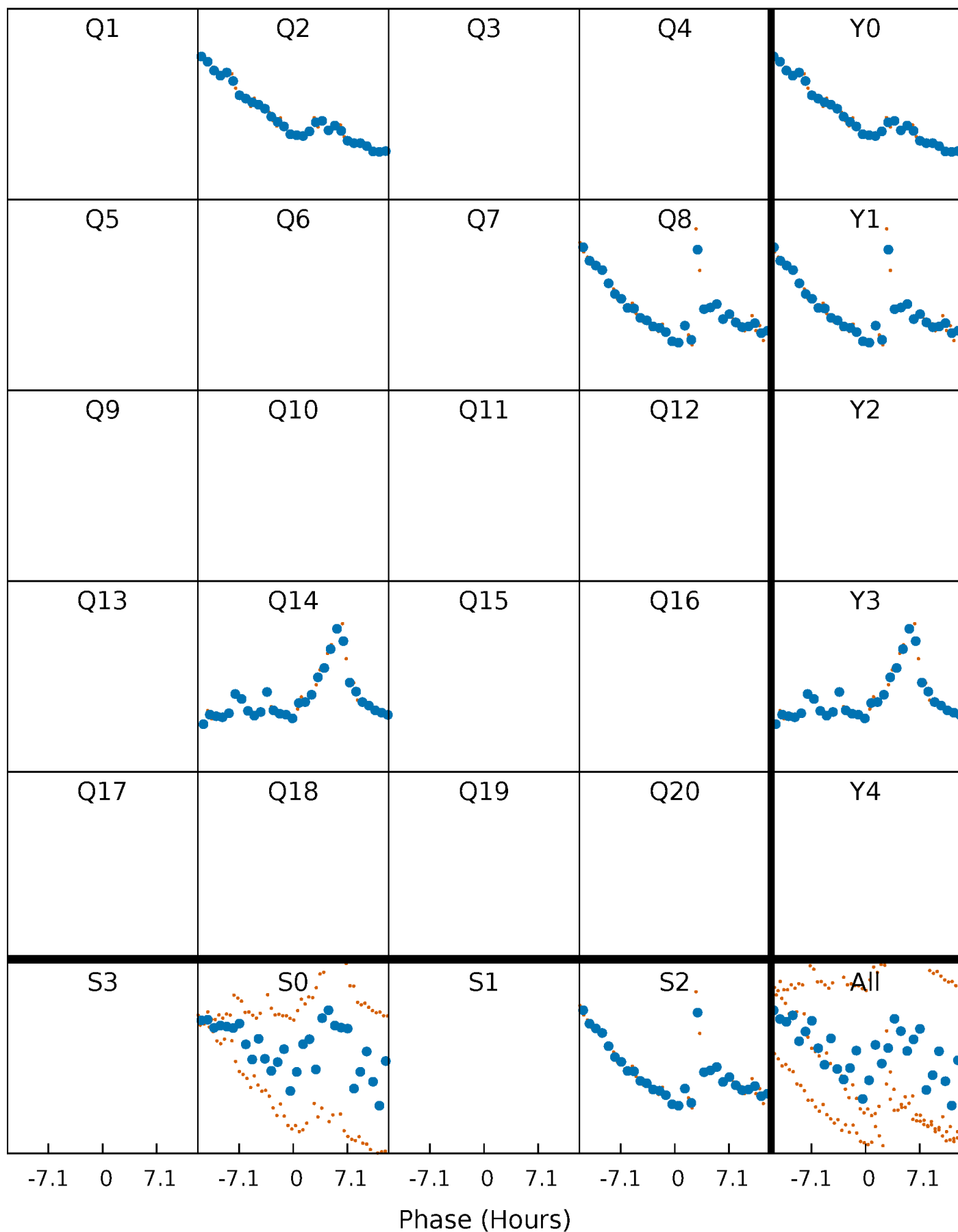


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



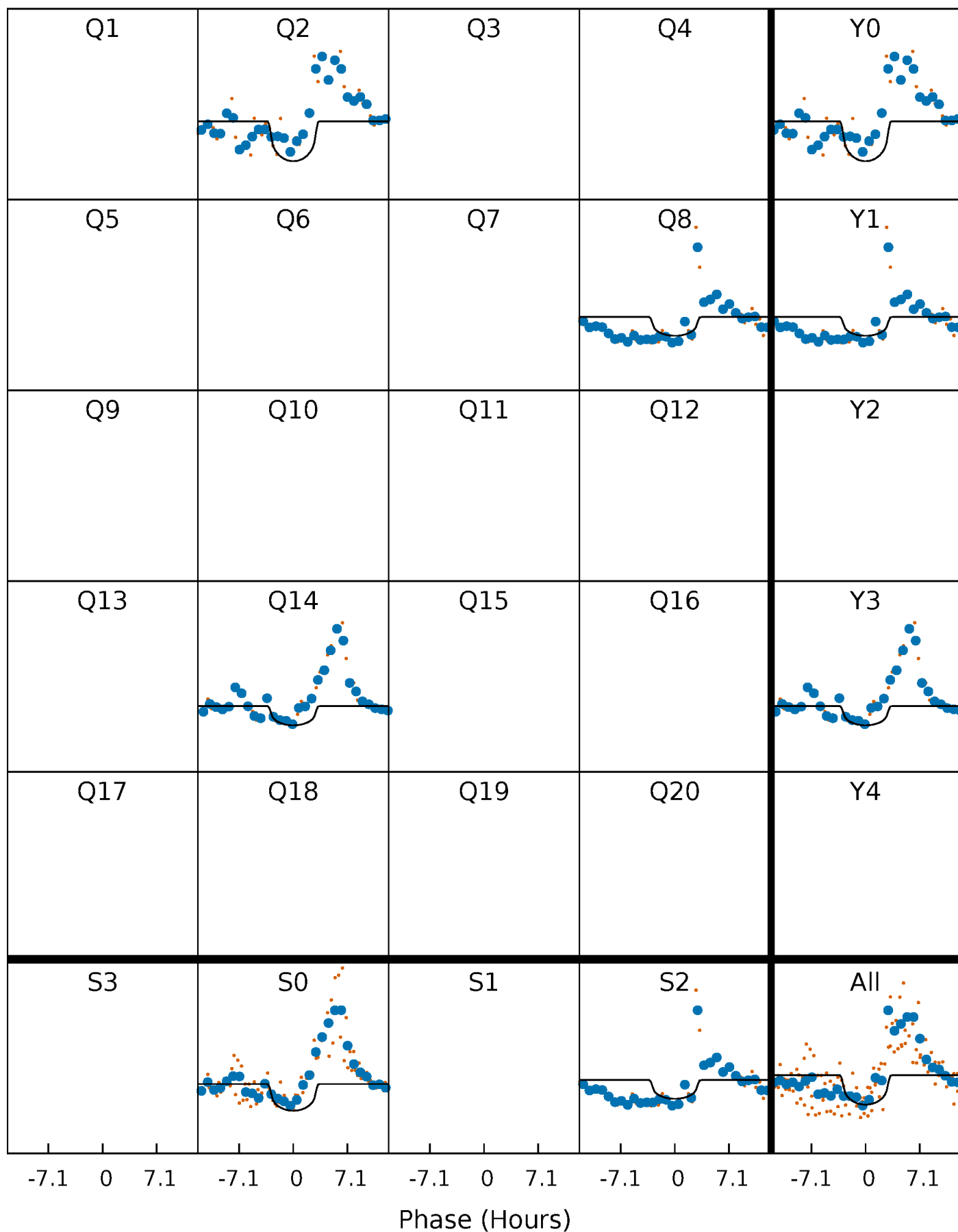
PDC Quarter-Phased Transit Curves

TCE 008196449-04 P=573.770145 Days $T_0=177.272635$ (BKJD)



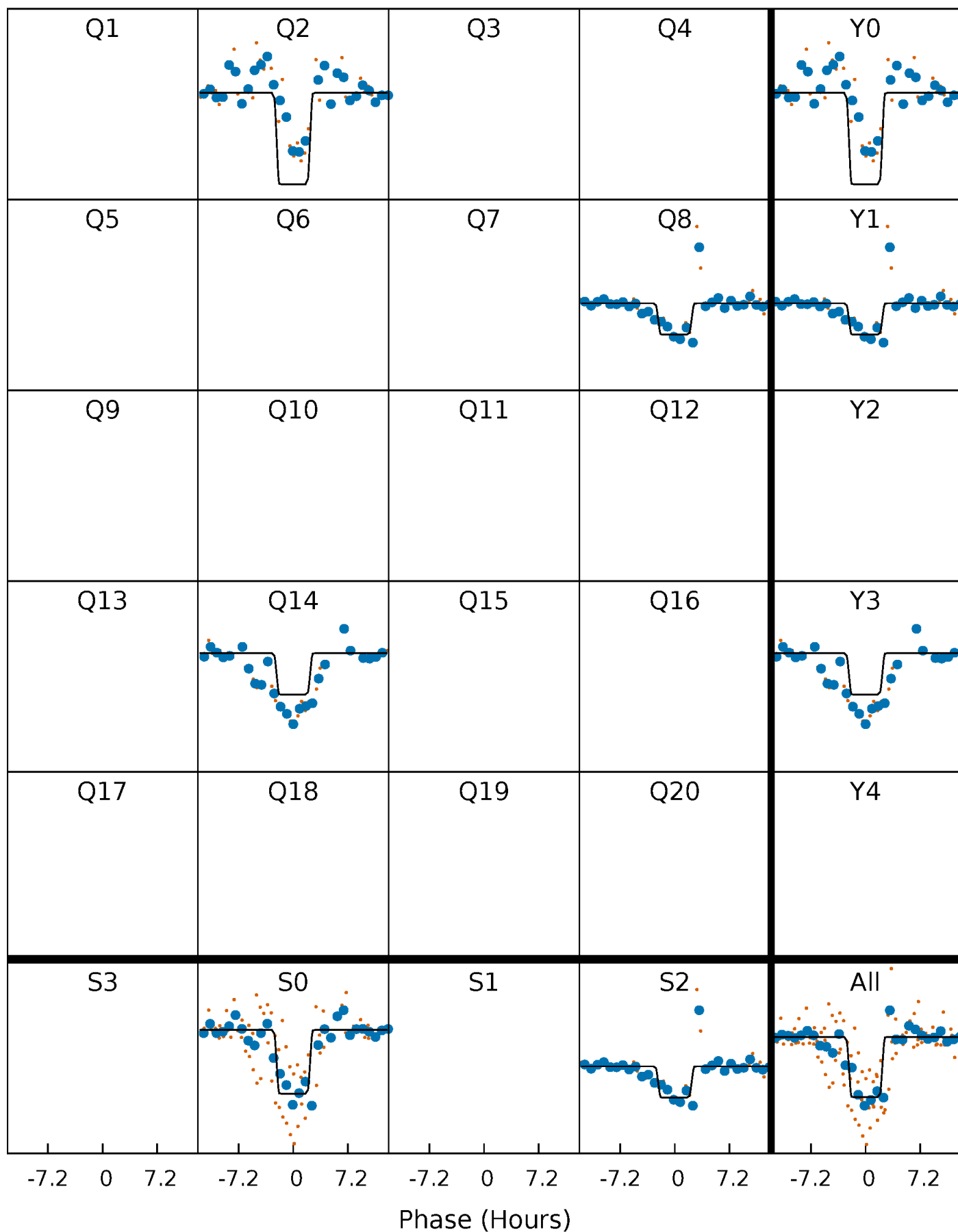
DV Quarter-Phased Transit Curves

TCE 008196449-04 $P=573.770145$ Days $T_0=177.272635$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

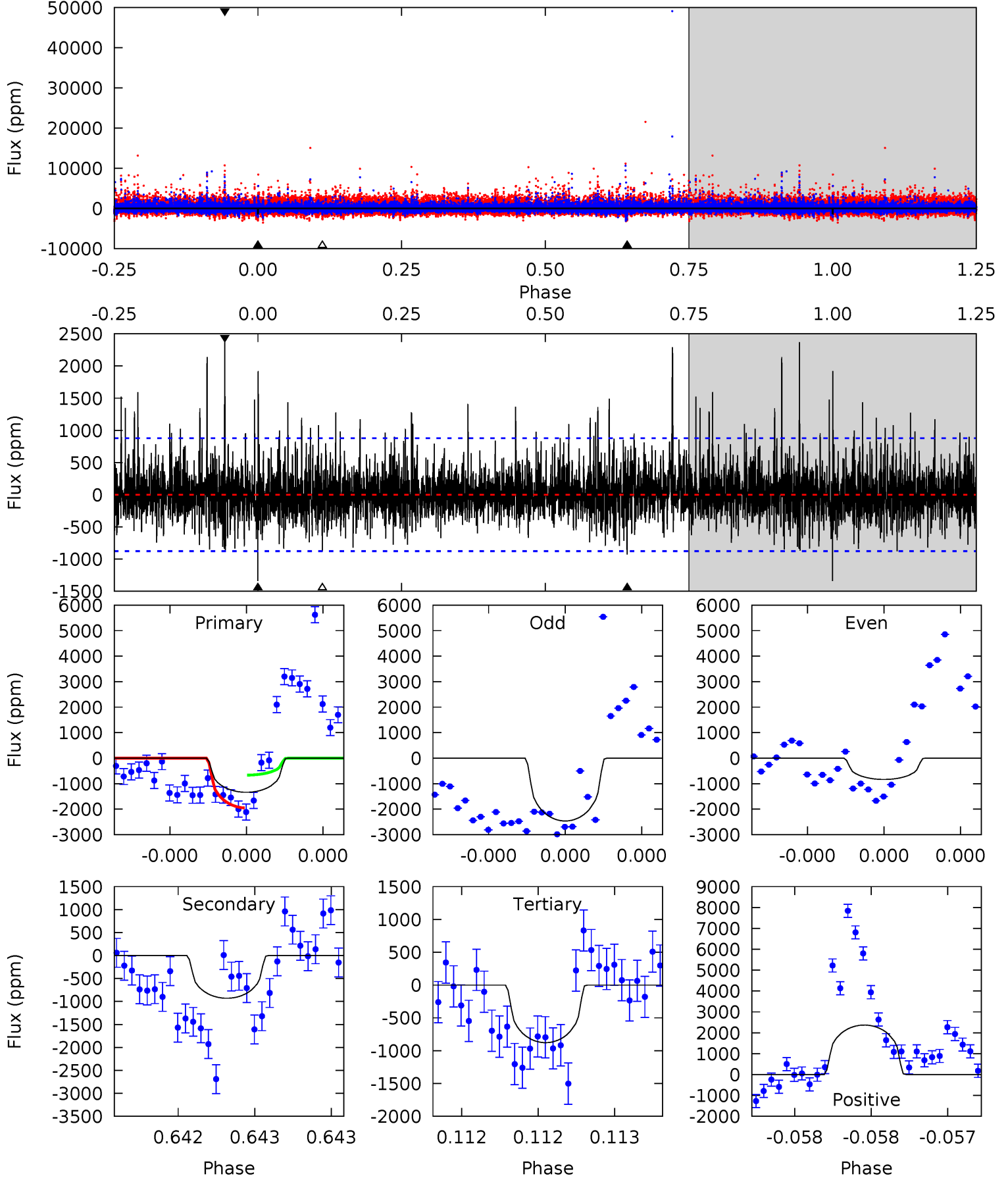
TCE 008196449-04 P=573.774365 Days $T_0=177.262553$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-04, P = 573.770145 Days, E = 177.272635 Days

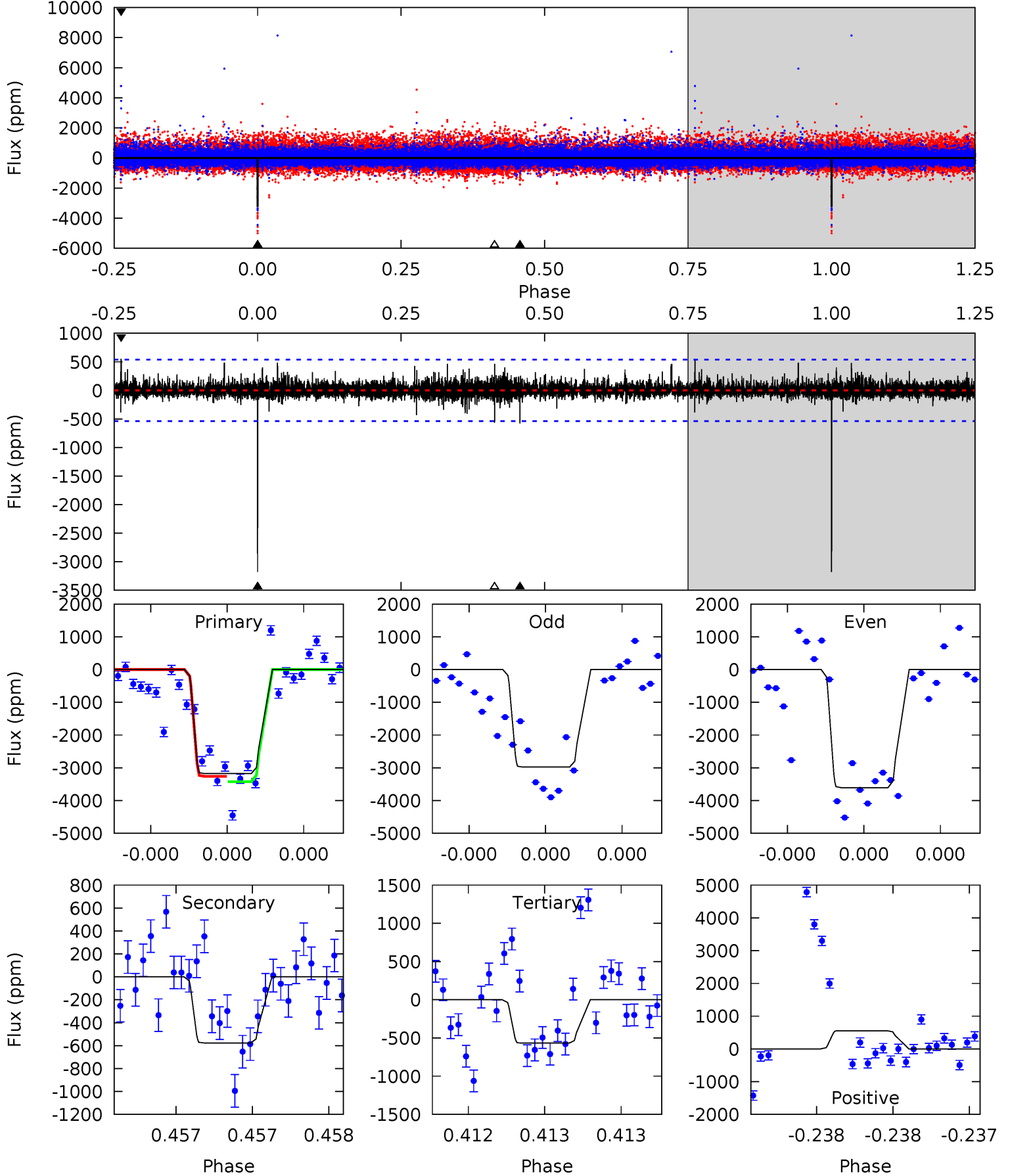
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.52	5.92	5.59	15.1	5.59	3.50	1.97	2.94	-6.57	0.33	-9.17	3.12	1.27	0.64	4.10



Alt Model-Shift Uniqueness Test

008196449-04, $P = 573.774365$ Days, $E = 177.262553$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	6.02	5.93	5.78	5.63	3.56	0.81	27.3	27.4	0.09	0.24	3.32	1.04	0.15	0.82



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-930 ± 157	$3.15^{+2.37}_{-1.95}$	172^{+7}_{-7}	3321^{+1328}_{-505}	$66235^{+388305}_{-44284}$
Alt.	-576 ± 96	$4.00^{+2.77}_{-2.38}$	172^{+7}_{-7}	2890^{+954}_{-378}	$25620^{+135753}_{-16851}$

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 $A_{obs} \gg 1.0$

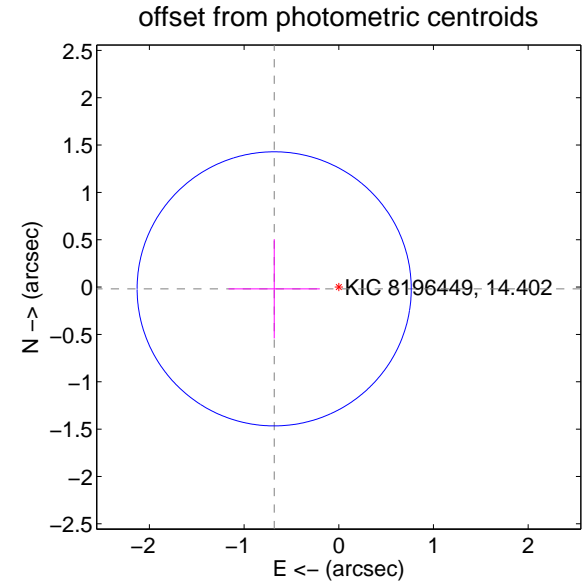
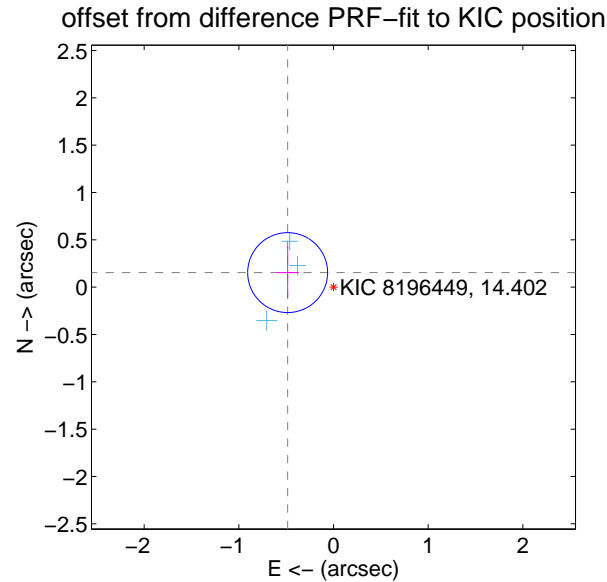
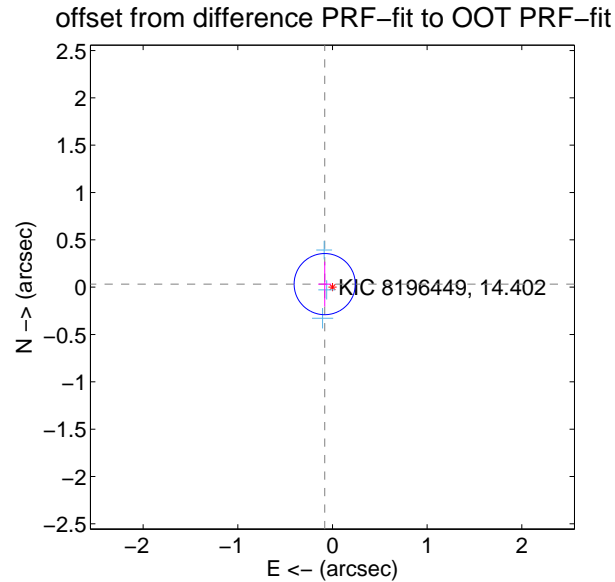
DV Centroid Data

Supplemental centroid analysis for 008196449-04. Kepler magnitude: 14.40. Transit SNR 7.42

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.088 ± 0.108	0.82	0.082 ± 0.068	0.032 ± 0.237
PRF-fit source offset from KIC position	0.508 ± 0.141	3.61	0.485 ± 0.119	0.154 ± 0.277
photometric centroid source offset	0.68 ± 0.48	1.41	0.68 ± 0.48	-0.02 ± 0.52



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.

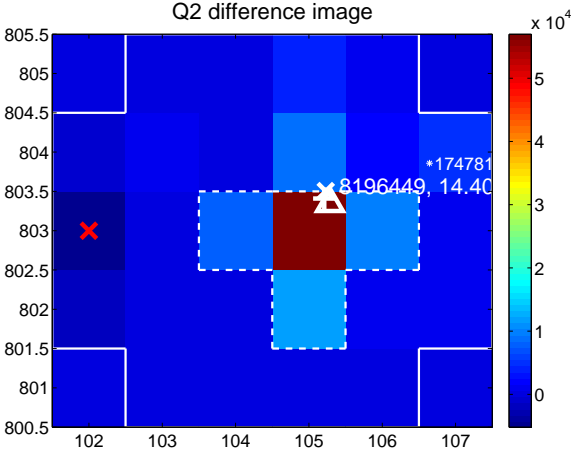
Q1 no difference image



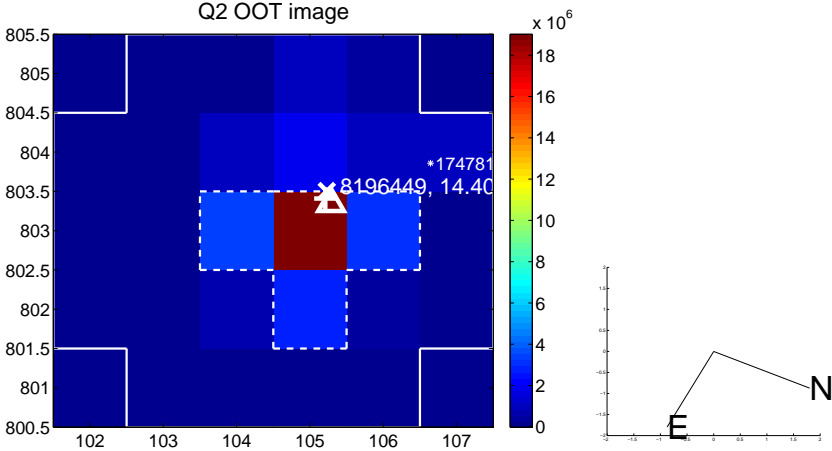
Q1 no OOT image



Q2 difference image



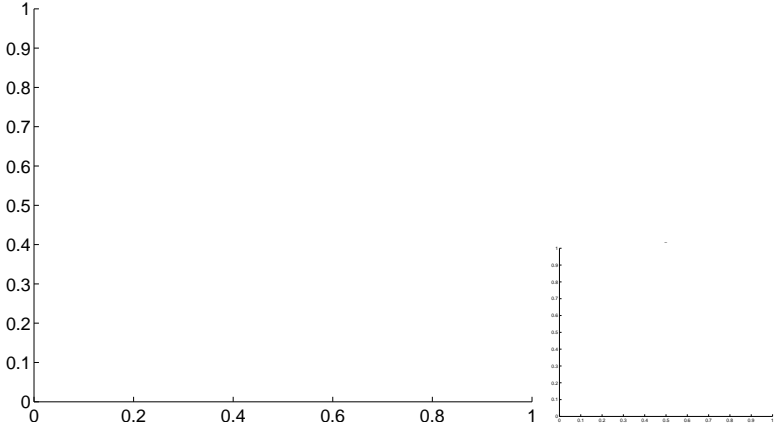
Q2 OOT image



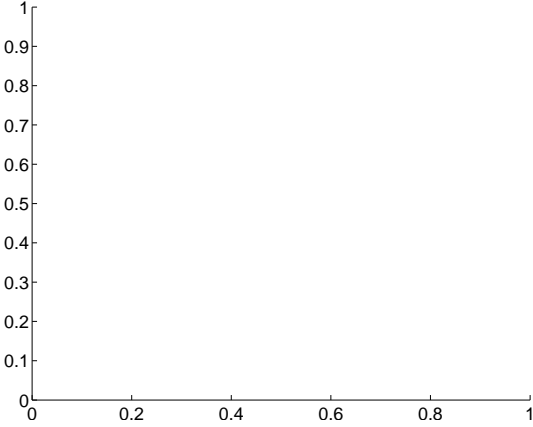
Q3 no difference image



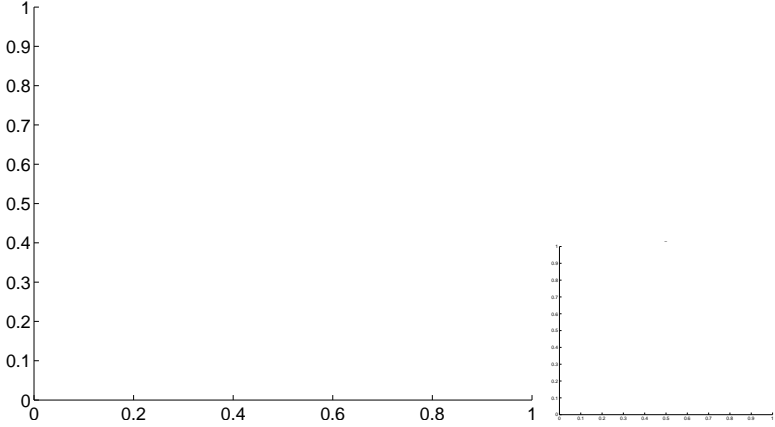
Q3 no OOT image



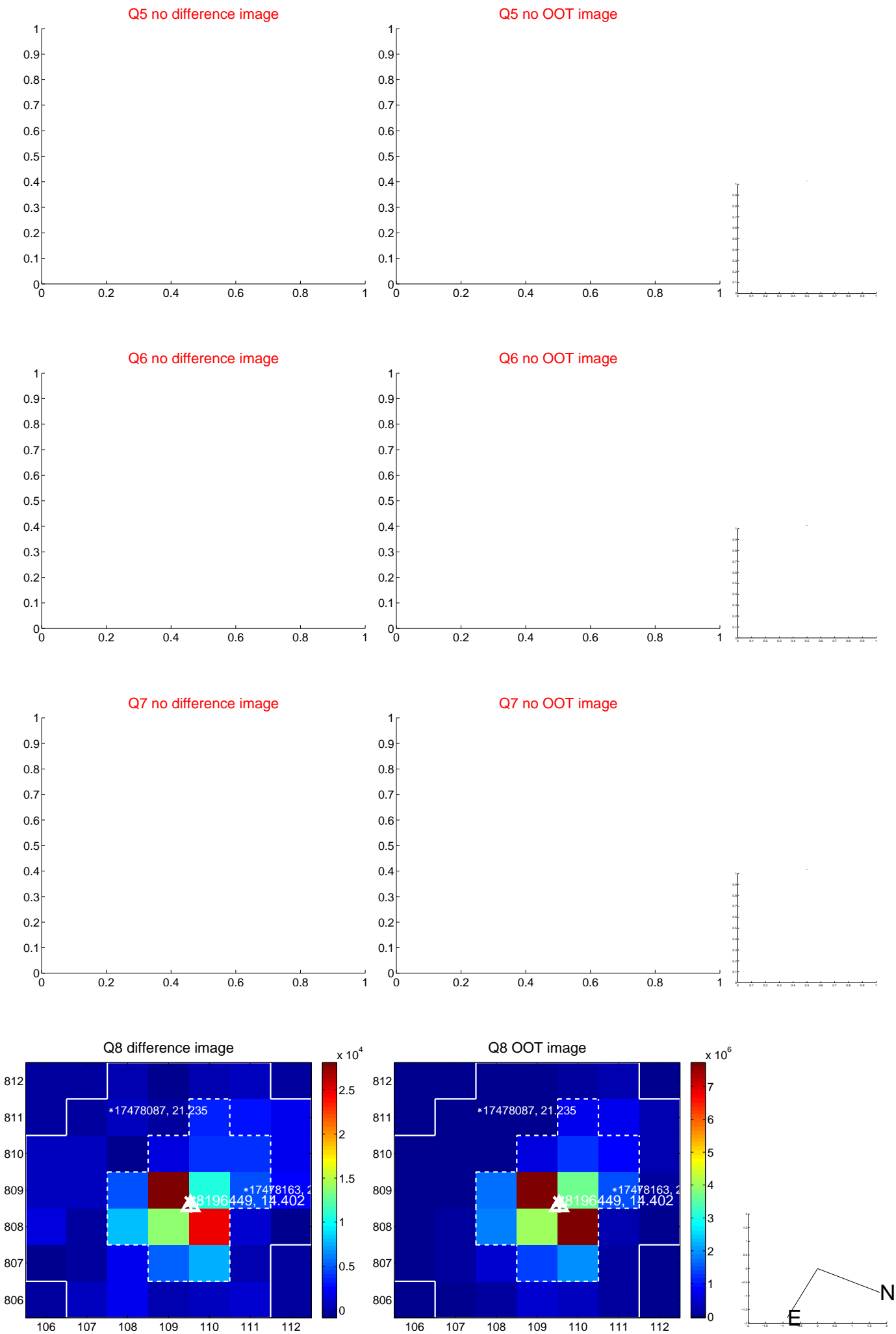
Q4 no difference image



Q4 no OOT image



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



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.

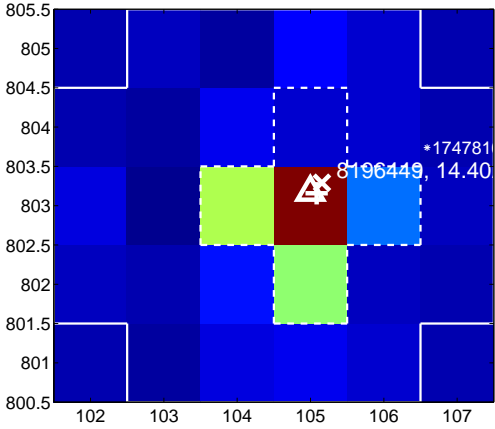
Q13 no difference image



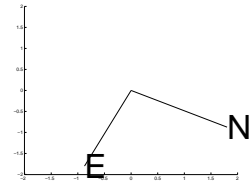
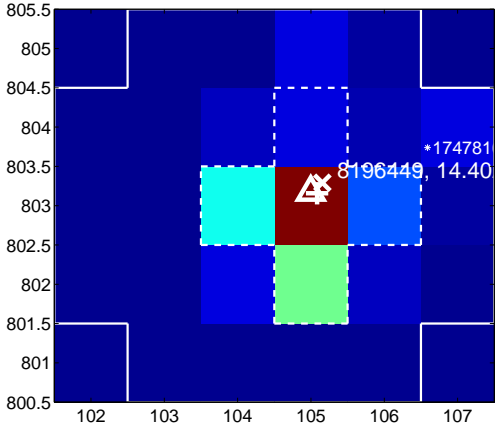
Q13 no OOT image



Q14 difference image



Q14 OOT image



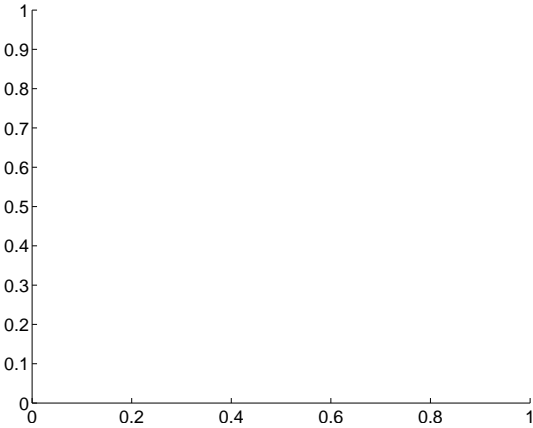
Q15 no difference image



Q15 no OOT image



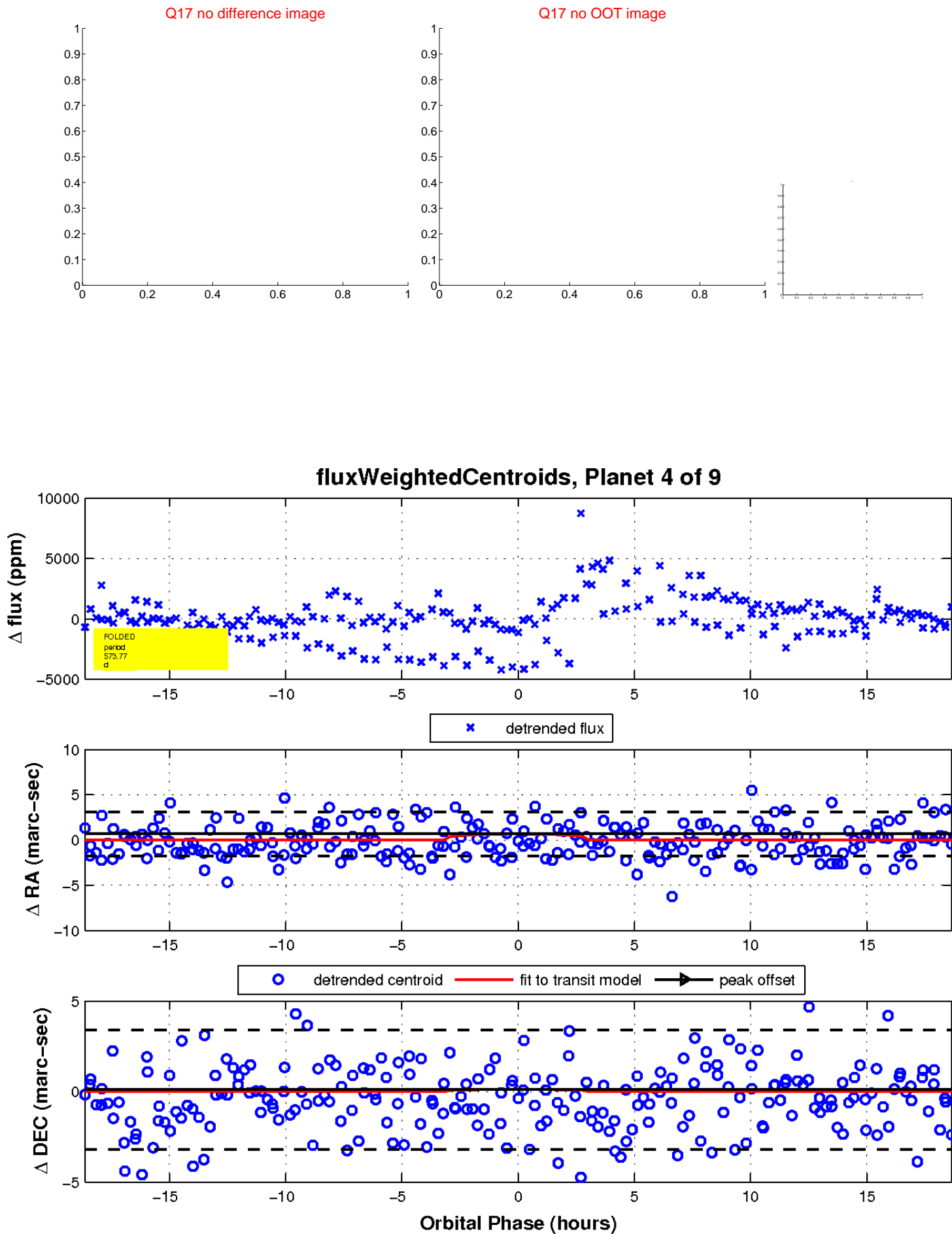
Q16 no difference image



Q16 no OOT image

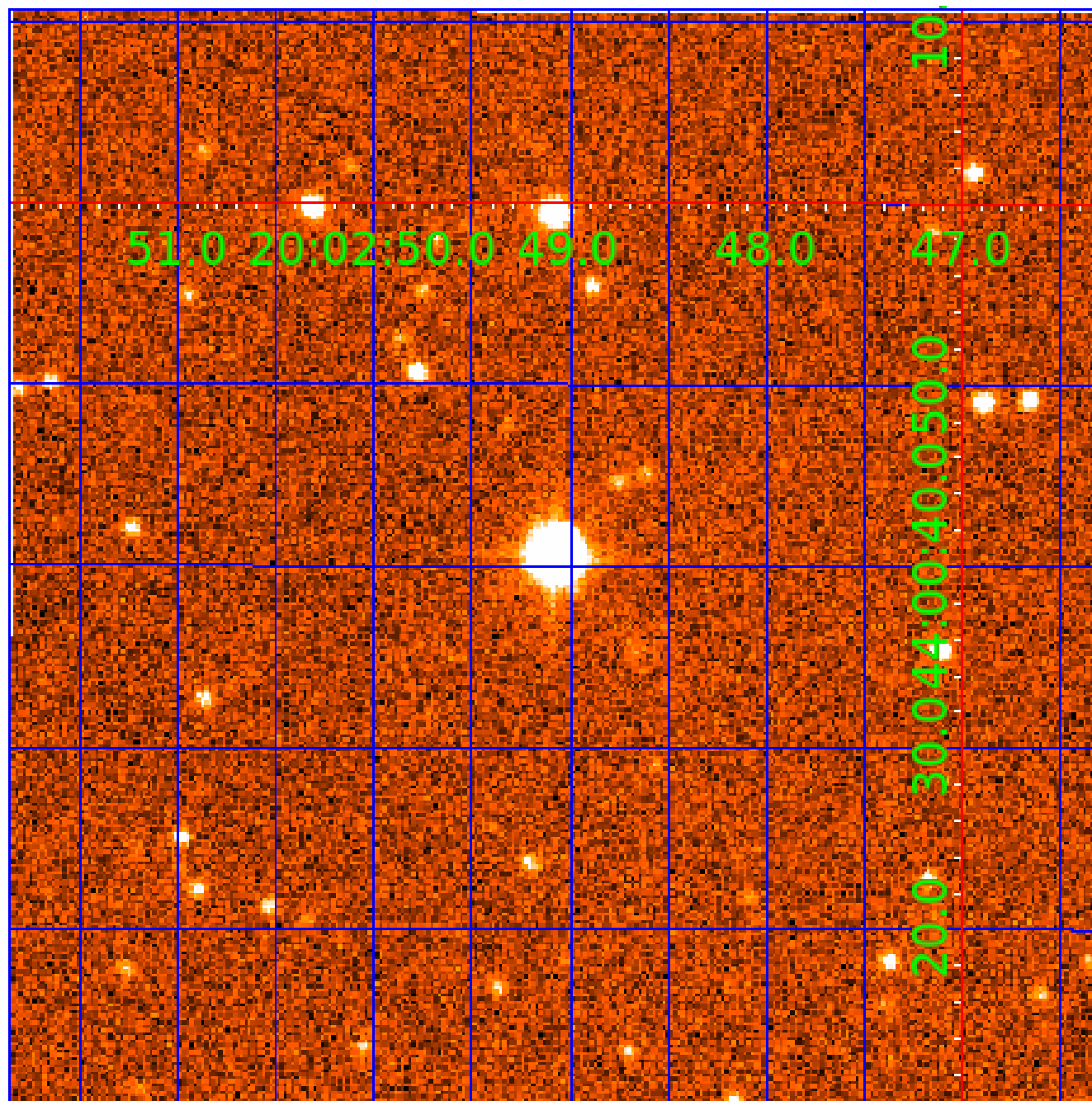


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

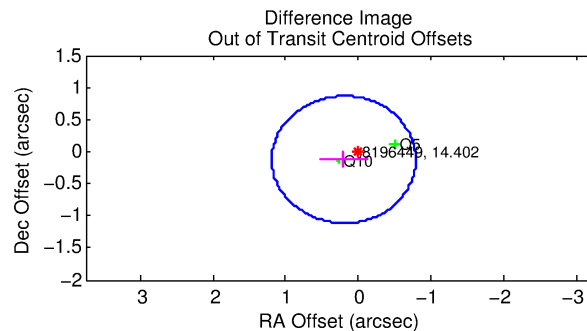
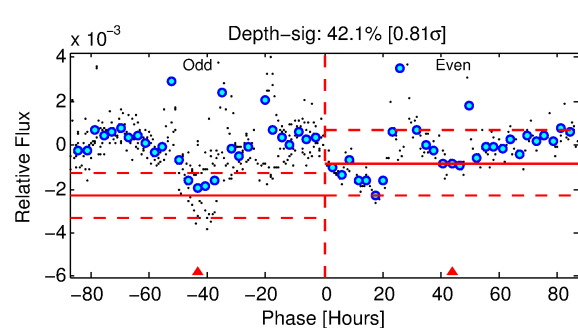
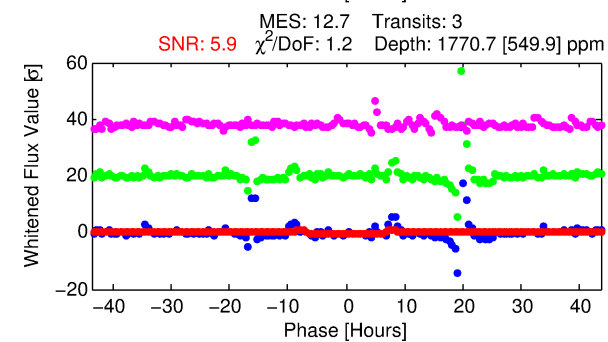
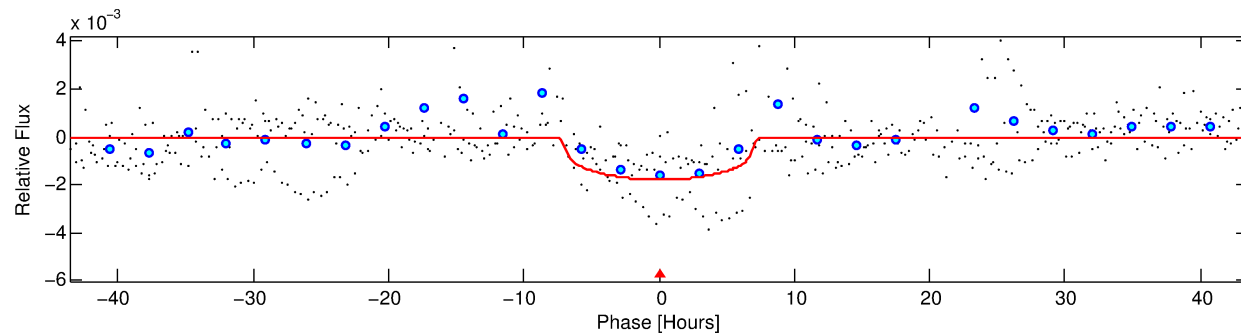
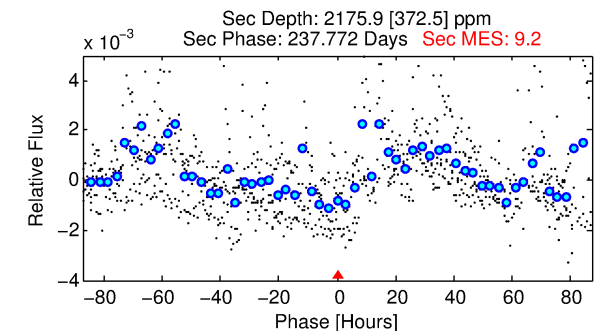
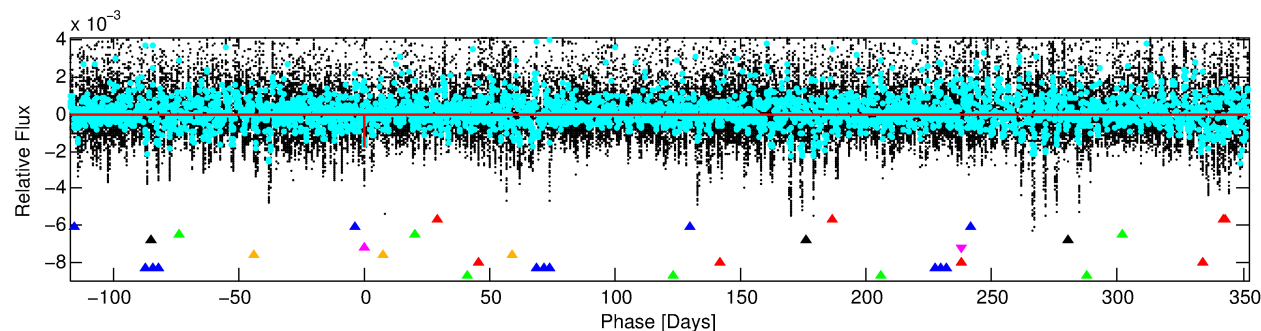
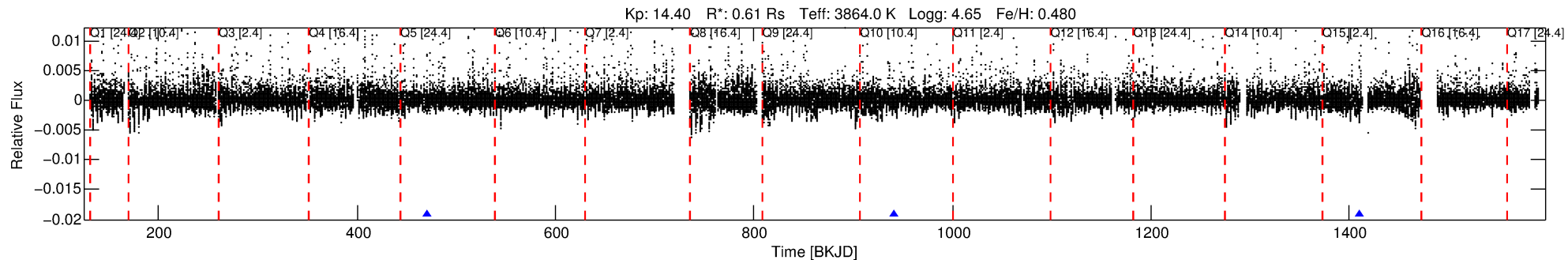
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-05

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 5 of 9 Period: 469.613 d



DV Fit Results:

Period = 469.61302 [0.01566] d
Epoch = 470.8872 [0.0195] BKJD
Rp/R* = 0.0373 [0.0232]
a/R* = 246.80 [438.18]
b = 0.28 [5.96]
Seff = 0.07 [0.01]
Teq = 133 [7] K
Rp = 2.48 [1.57] Re
a = 1.0033 [0.0903] AU
Ag = 195488.63 [246500.96] [0.79σ]
Teff = 4321 [1366] K [3.07σ]

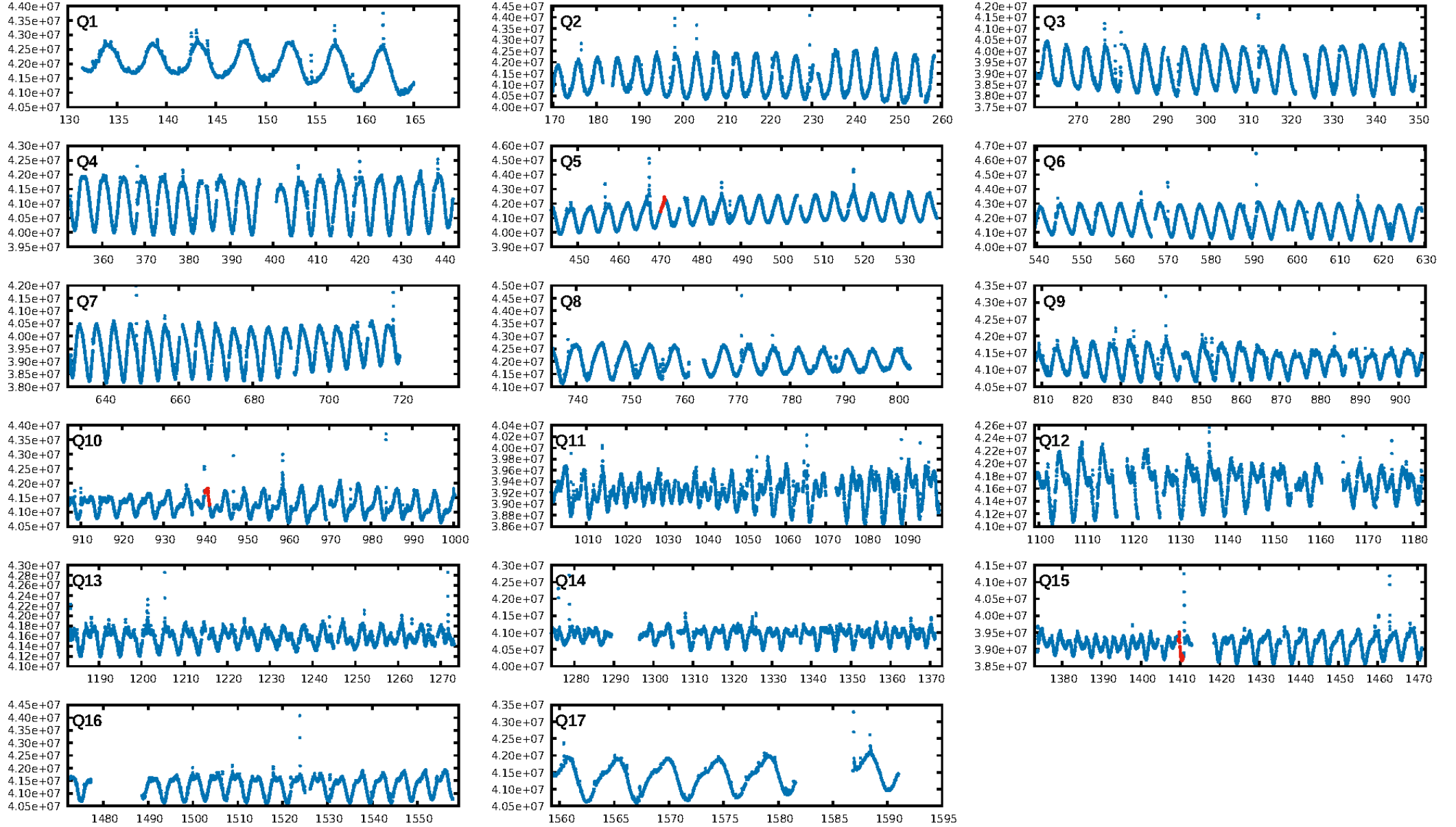
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.91σ]
LongPeriod-sig: 100.0% [158.04σ]
ModelChiSquare2-sig: 4.3%
ModelChiSquareGof-sig: 98.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.506
Centroid-sig: 38.5%
Centroid-so: 1.247 arcsec [2.73σ]
OotOffset-rm: 0.237 arcsec [0.72σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.725 arcsec [1.71σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

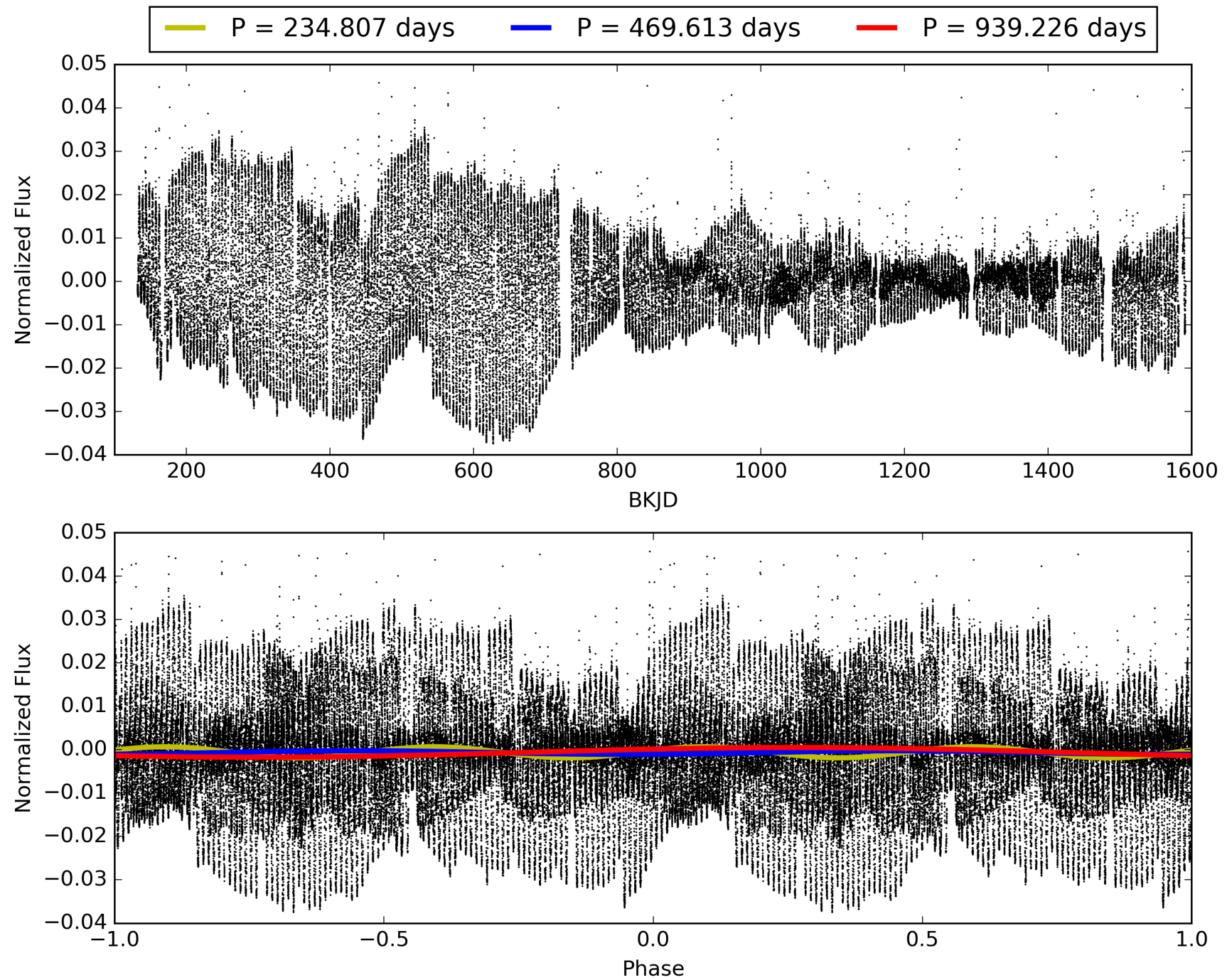
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:14:32 Z

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

TCE 008196449-05, PDC Light Curves

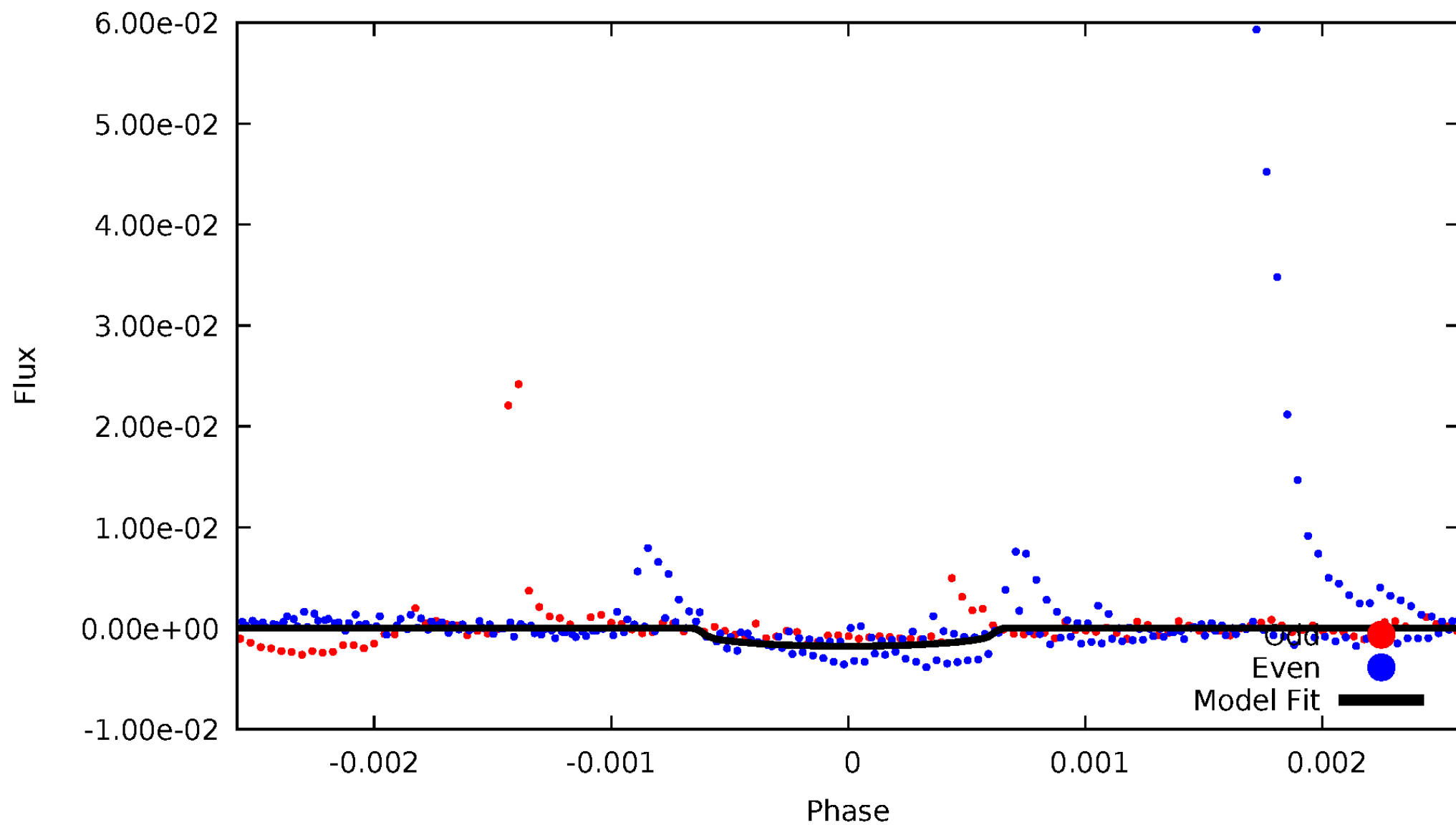


TCE 008196449-05



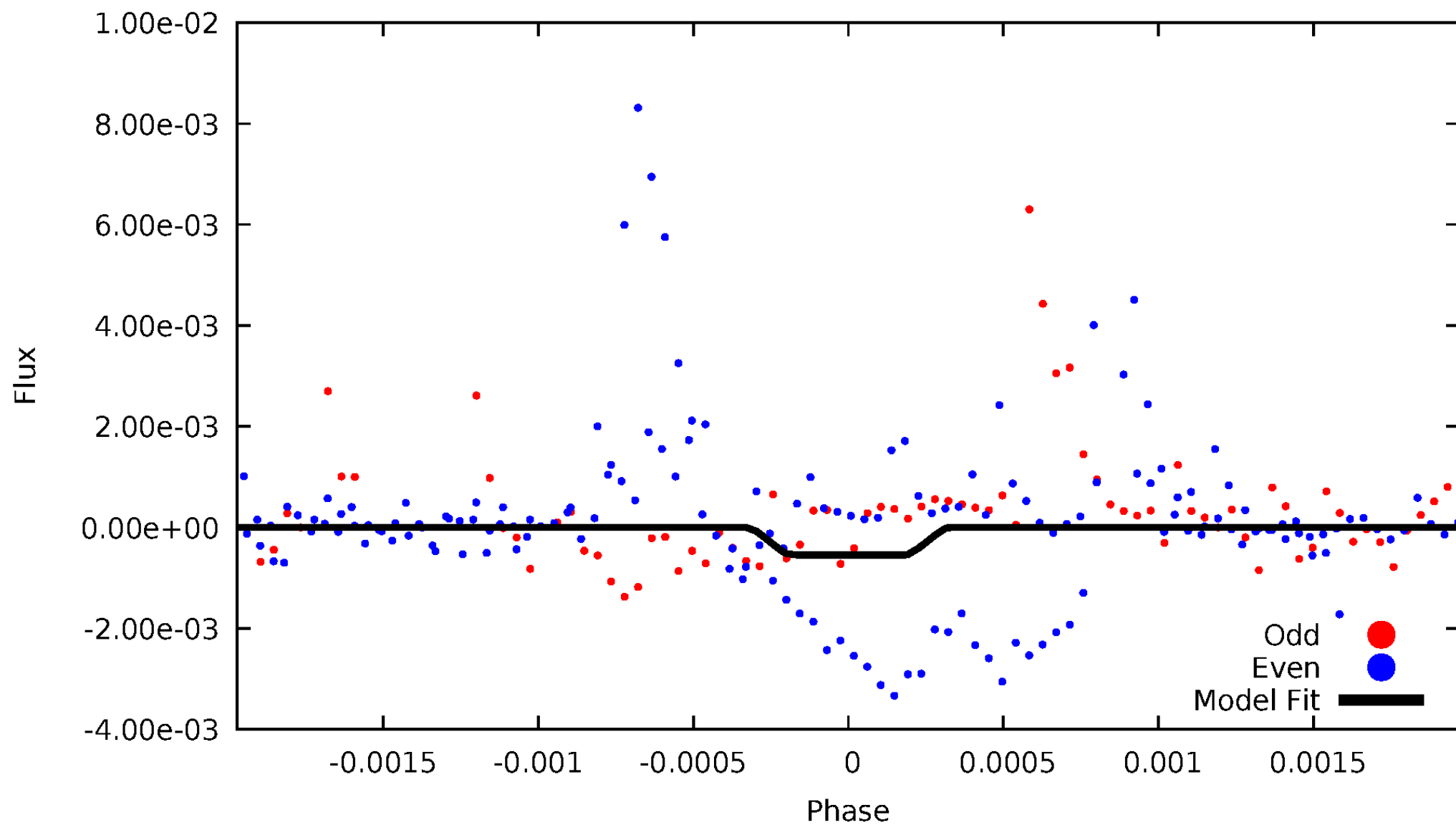
DV Odd/Even

TCE 008196449-05



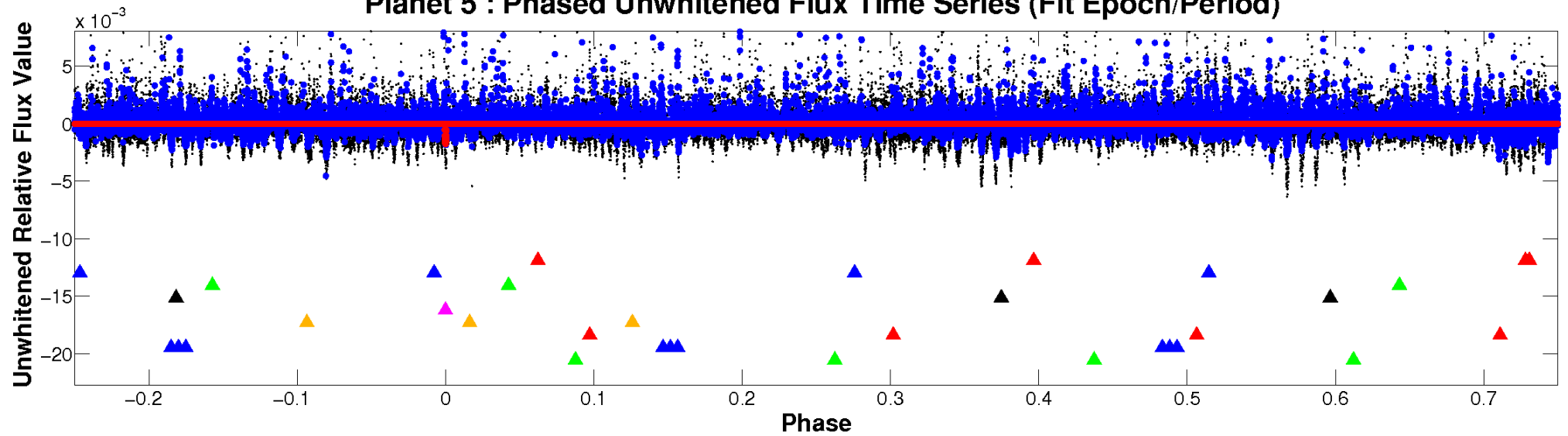
ALT Odd/Even

TCE 008196449-05

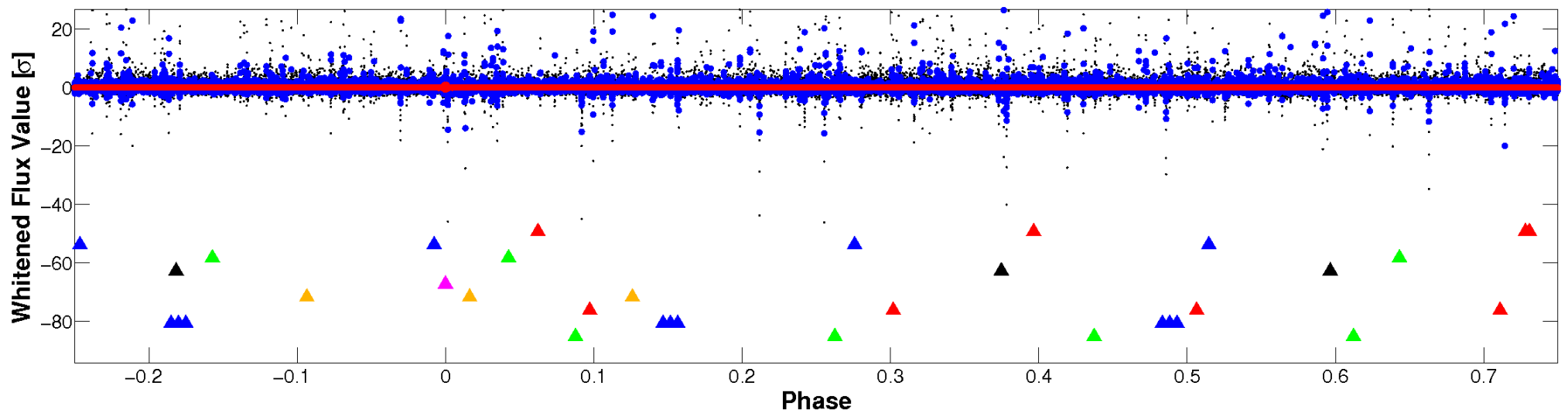


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

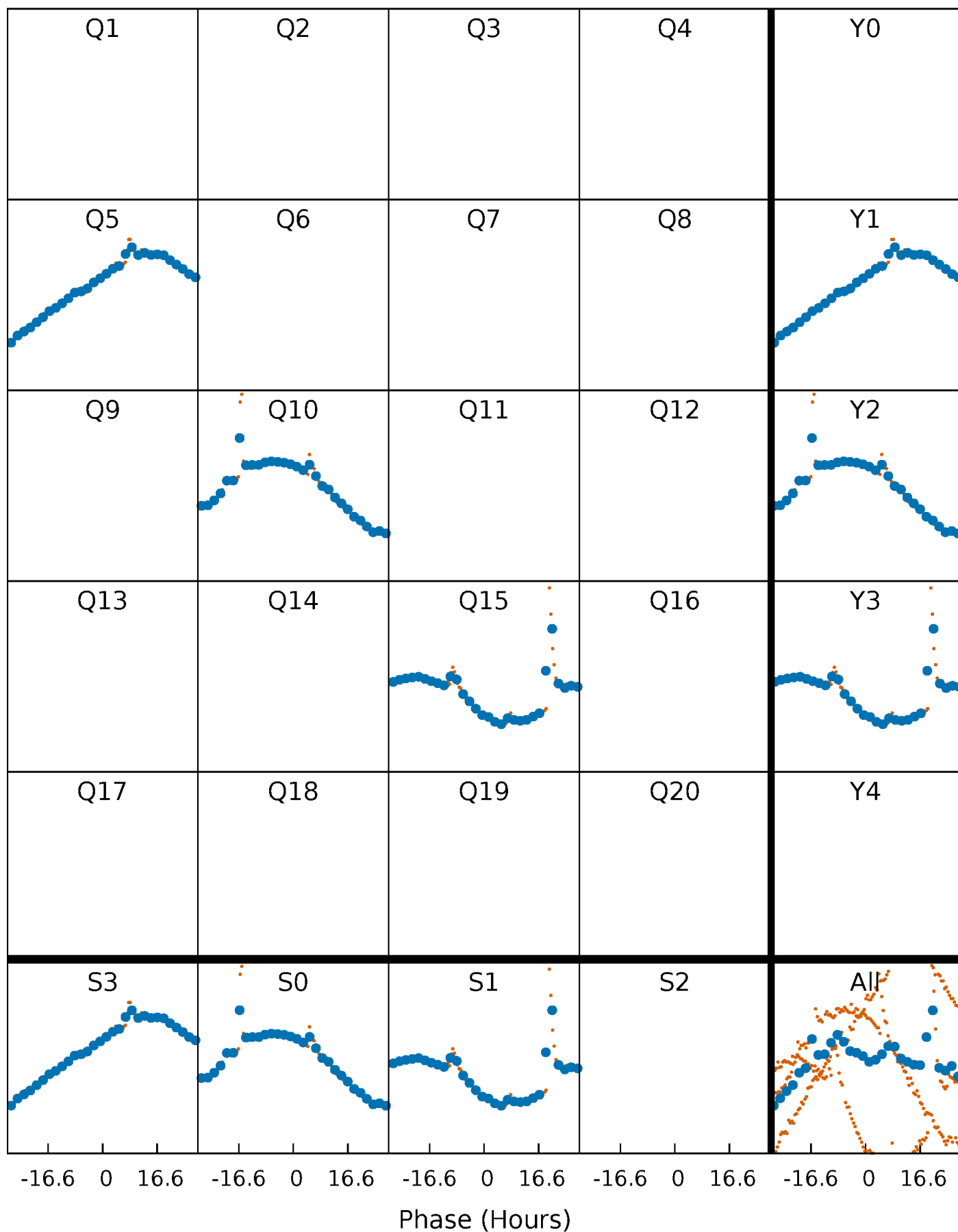


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



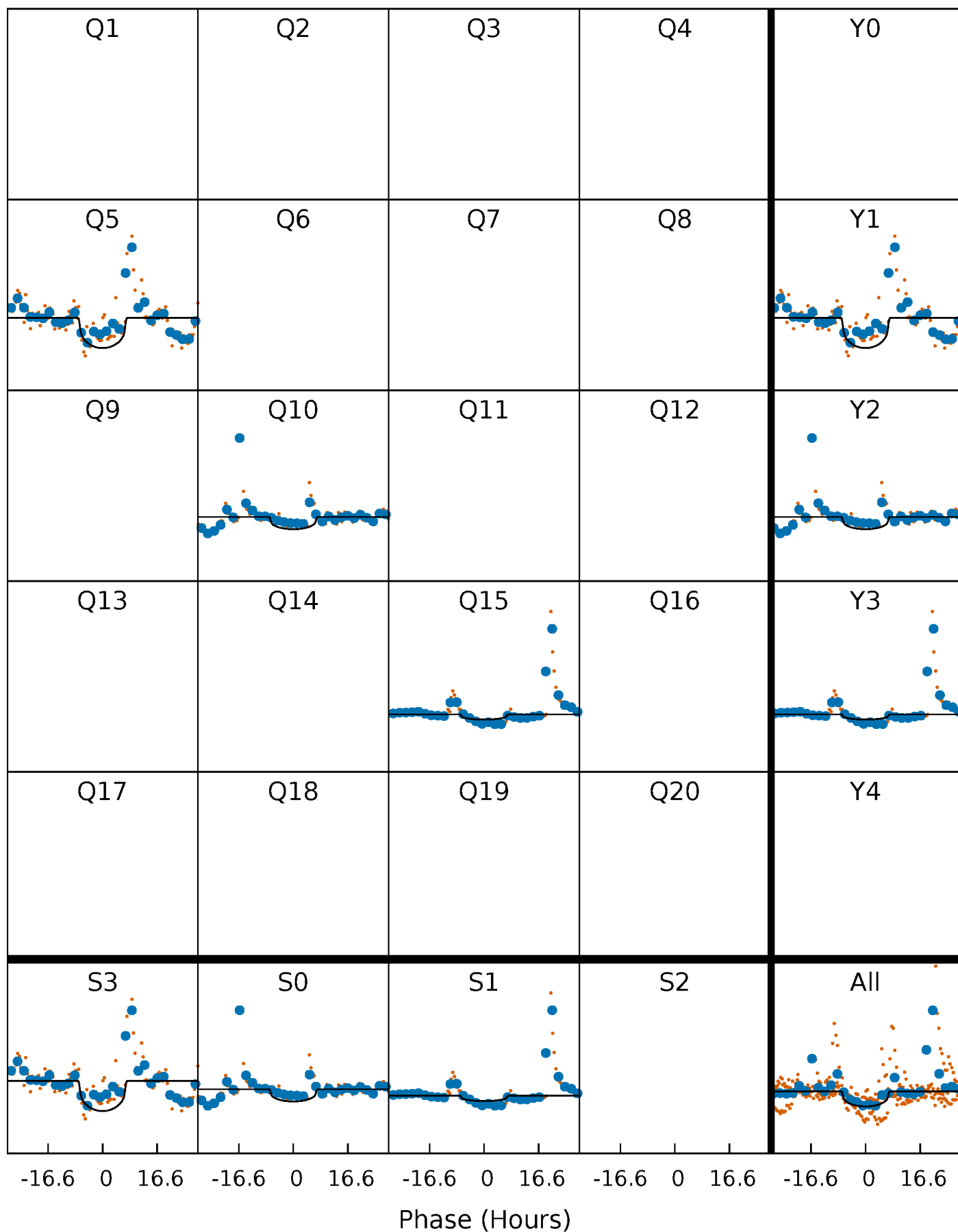
PDC Quarter-Phased Transit Curves

TCE 008196449-05 $P=469.613021$ Days $T_0=470.887223$ (BKJD)



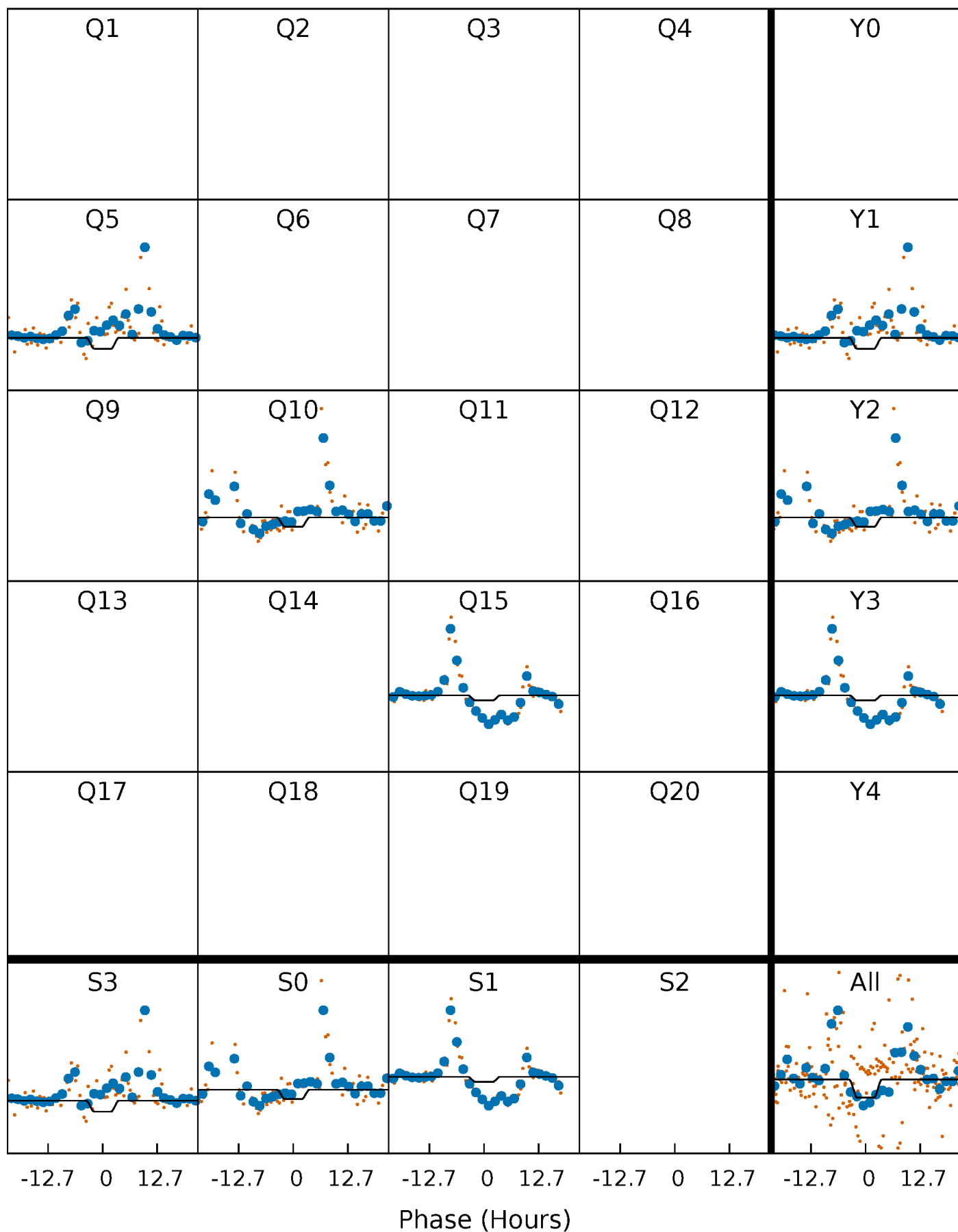
DV Quarter-Phased Transit Curves

TCE 008196449-05 $P=469.613021$ Days $T_0=470.887223$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

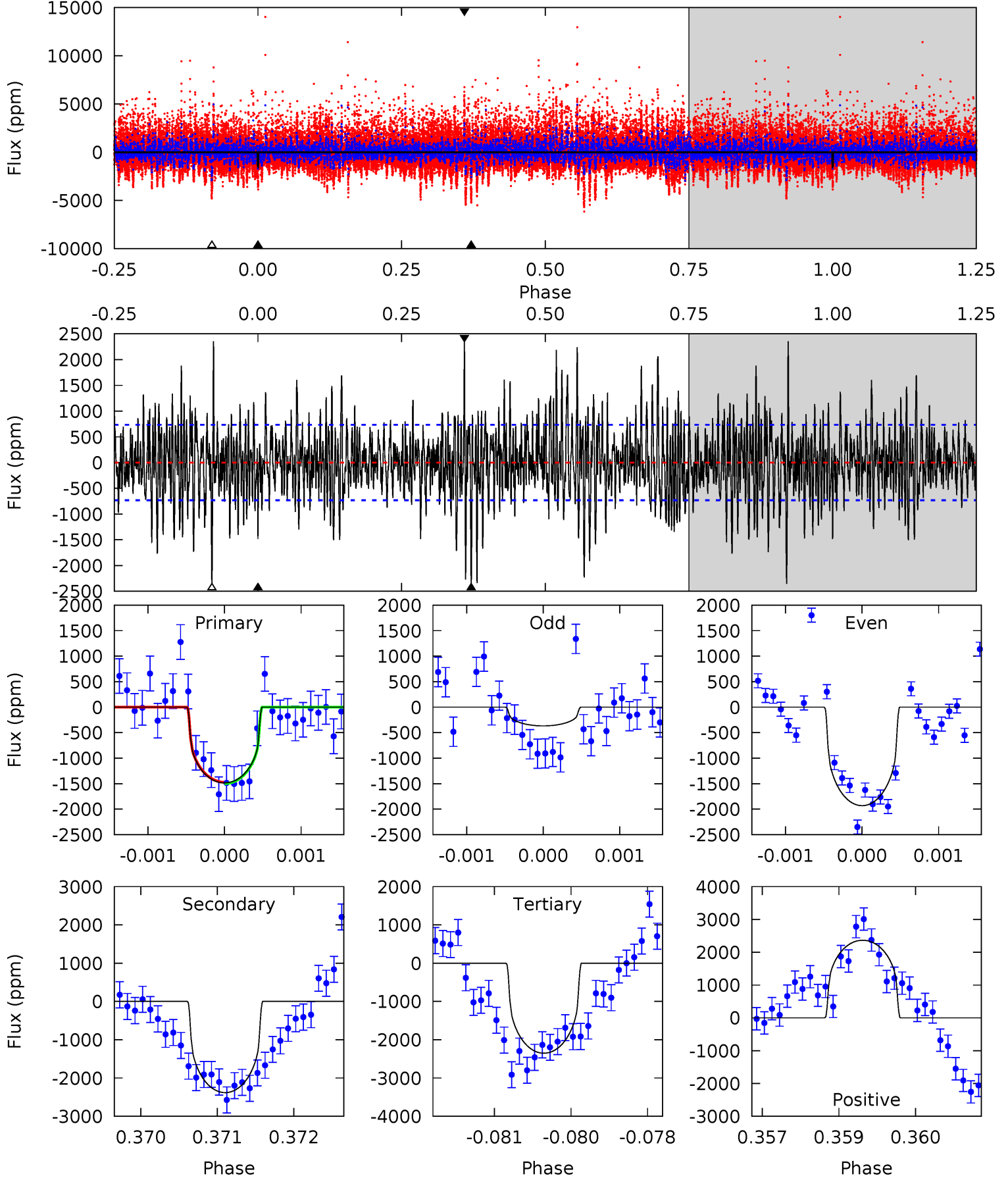
TCE 008196449-05 $P=469.604076$ Days $T_0=470.826797$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-05, P = 469.613021 Days, E = 1.274202 Days

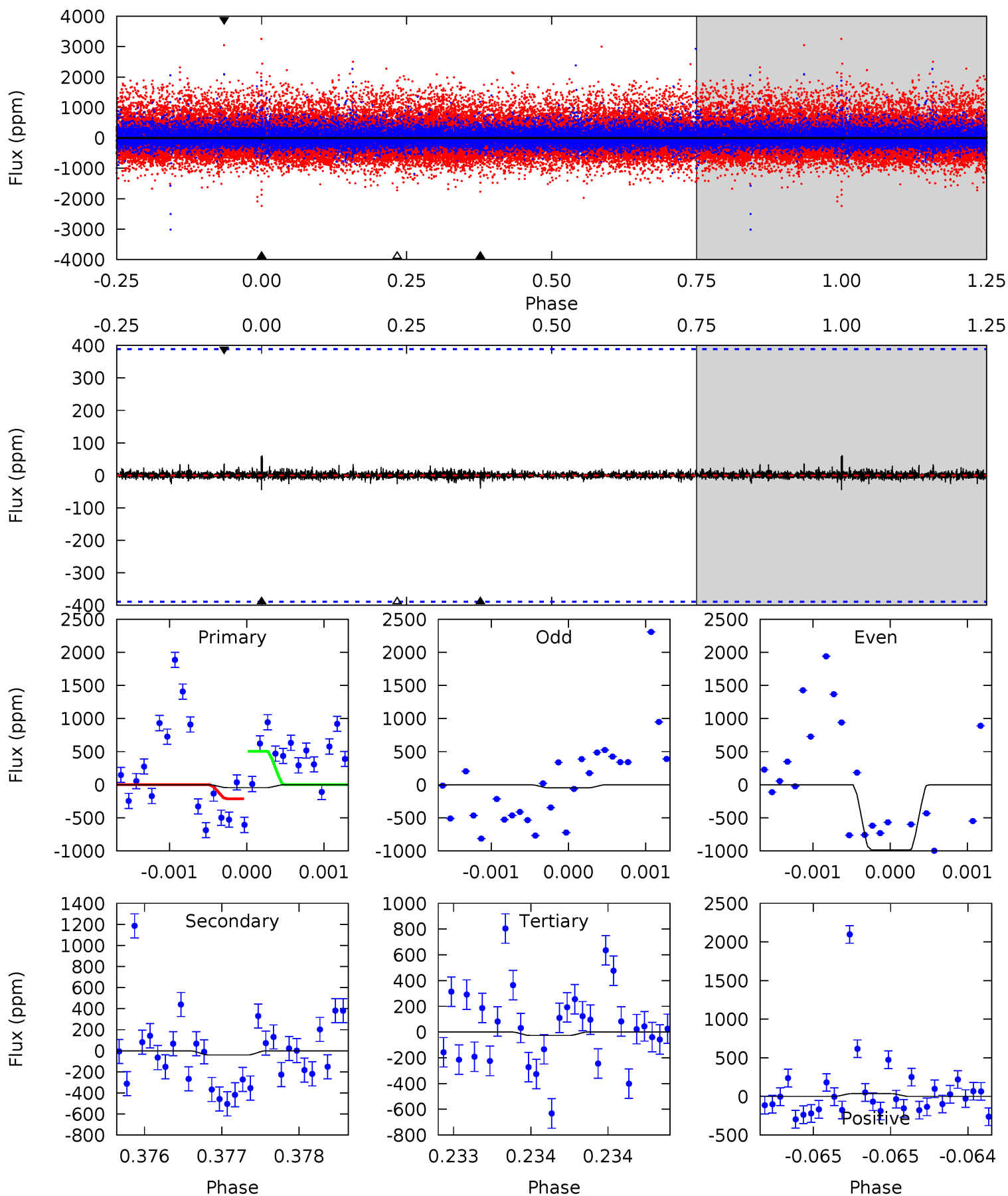
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	17.6	17.3	17.4	5.40	3.21	4.50	-6.39	-6.49	0.22	0.12	4.30	1.45	0.50	0.10



Alt Model-Shift Uniqueness Test

008196449-05, P = 469.604076 Days, E = 1.222721 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.63	0.57	0.38	0.51	5.52	3.39	0.09	0.26	0.12	0.19	0.05	6.67	-13.6	0.58	2.03



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2382 ± 136	$2.46^{+1.55}_{-1.28}$	183^{+7}_{-7}	4220^{+1578}_{-657}	$220183^{+758949}_{-139347}$
Alt.	-40 ± 71	$1.92^{+1.38}_{-1.10}$	184^{+7}_{-8}	2316^{+767}_{-4713}	3363^{+28149}_{-8117}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

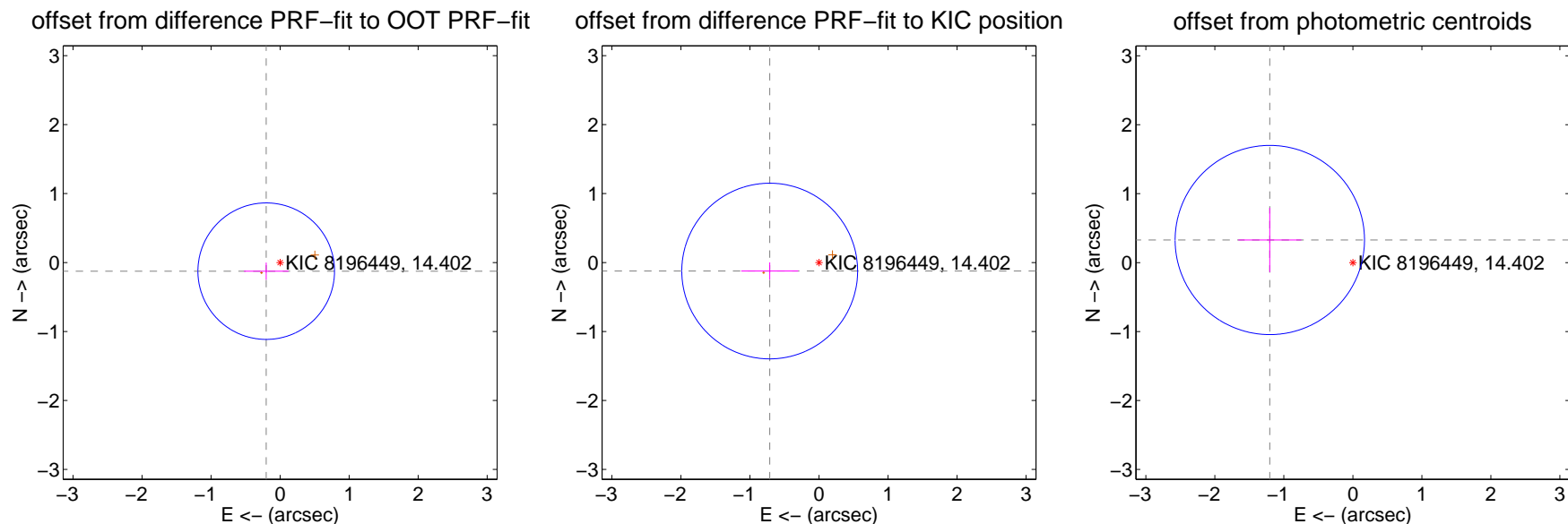
DV Centroid Data

Supplemental centroid analysis for 008196449-05. Kepler magnitude: 14.40. Transit SNR 5.87

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.237 ± 0.330	0.72	0.201 ± 0.322	-0.125 ± 0.124
PRF-fit source offset from KIC position	0.725 ± 0.425	1.71	0.714 ± 0.413	-0.123 ± 0.125
photometric centroid source offset	1.25 ± 0.46	2.73	1.20 ± 0.46	0.33 ± 0.47

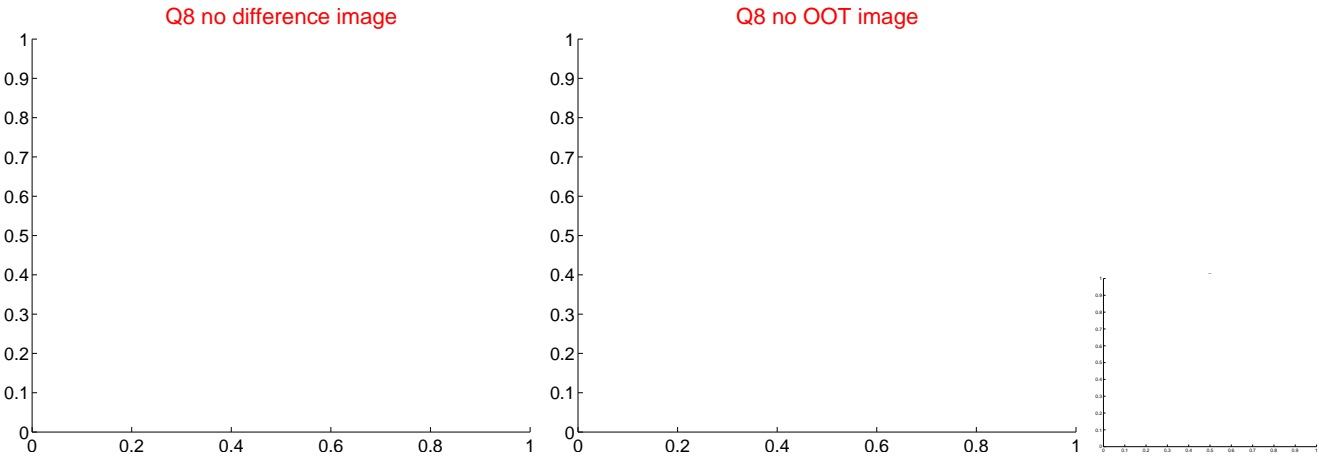
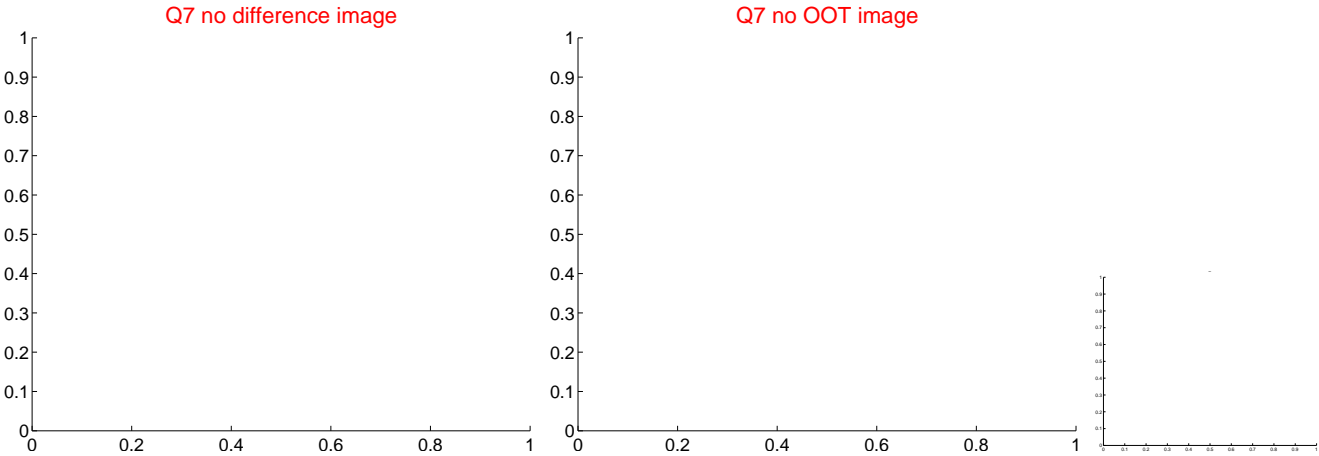
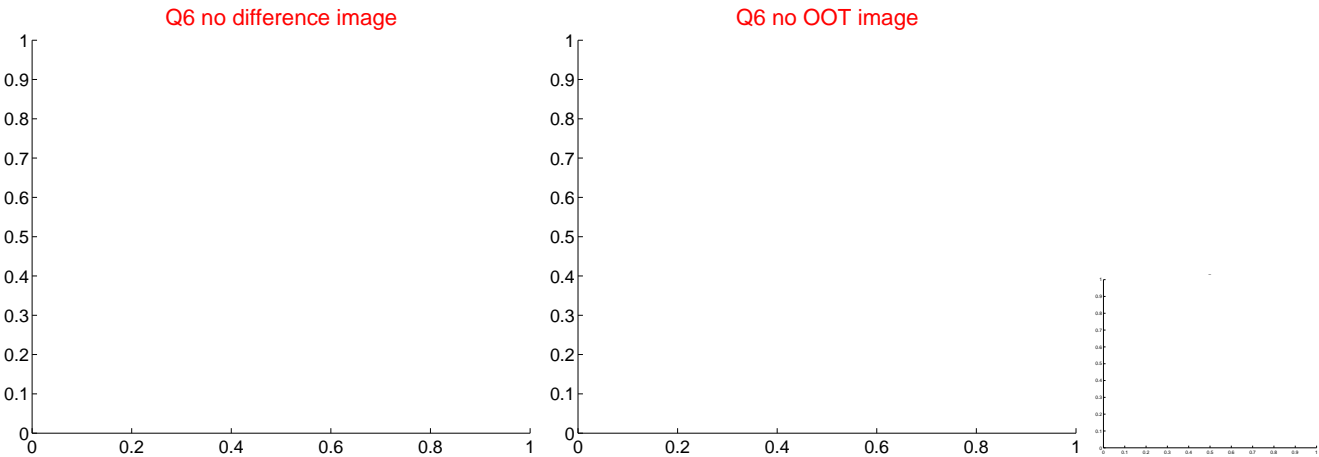
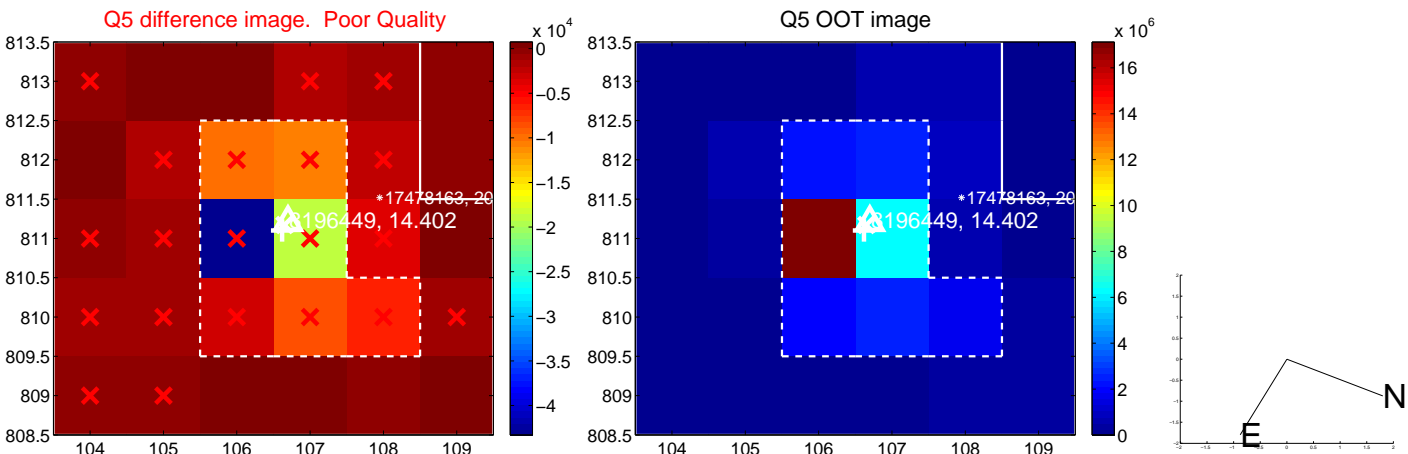


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

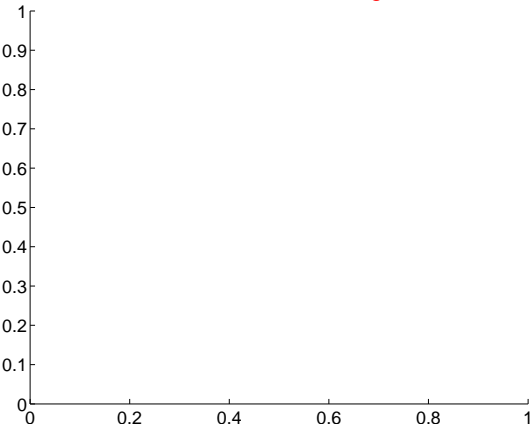


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

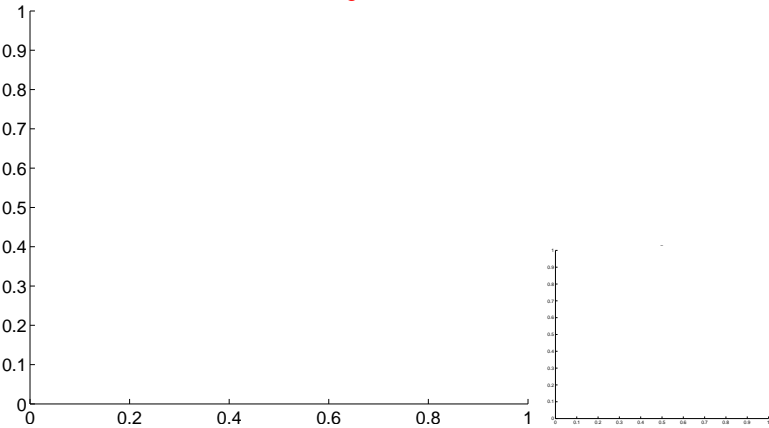


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

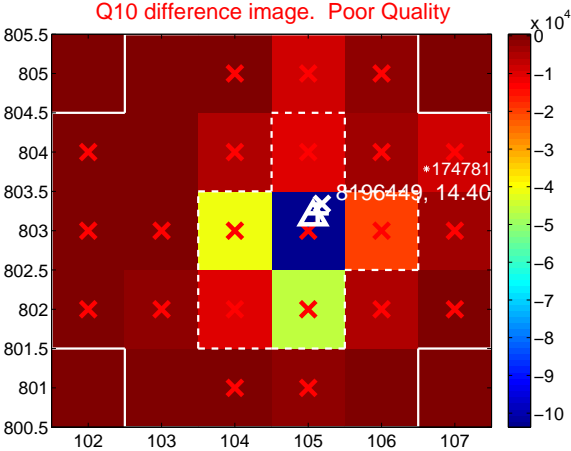
Q9 no difference image



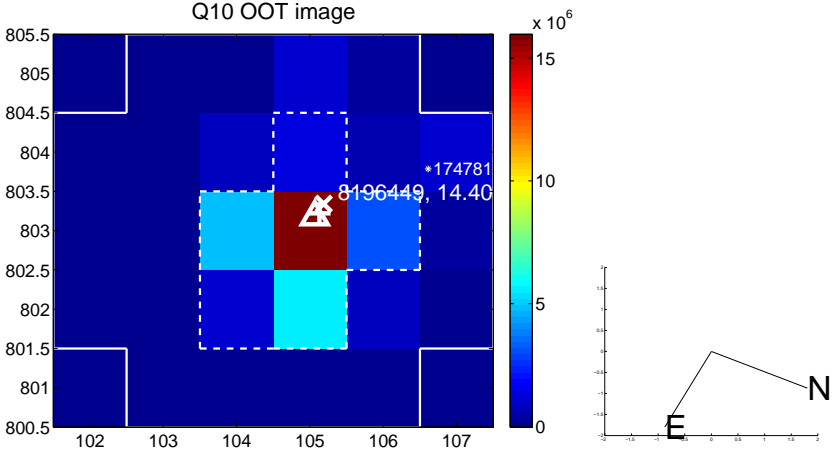
Q9 no OOT image



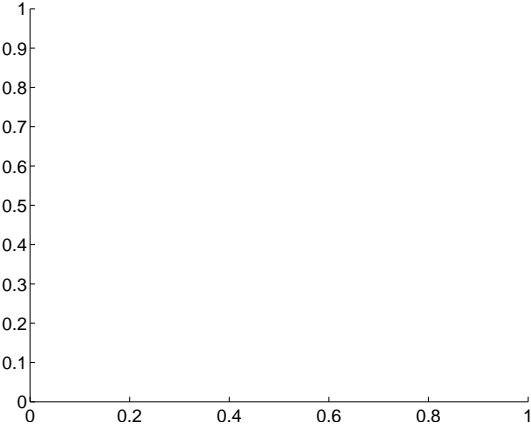
Q10 difference image. Poor Quality



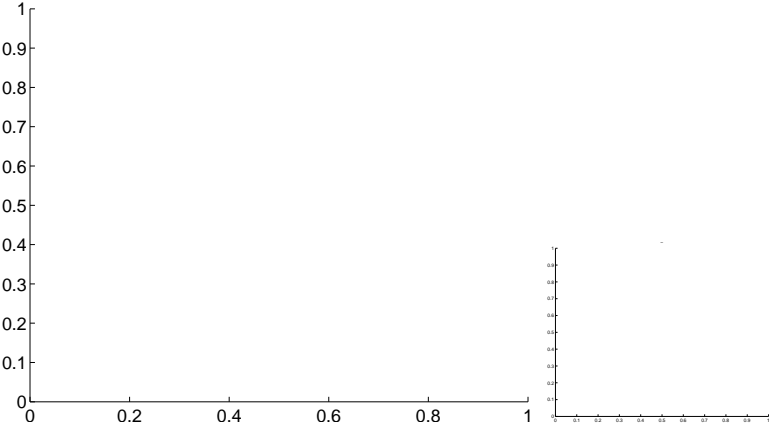
Q10 OOT image



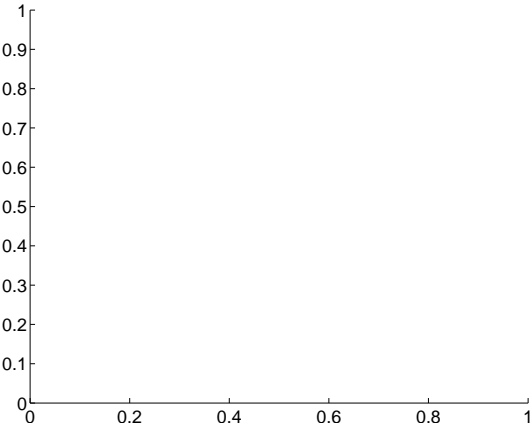
Q11 no difference image



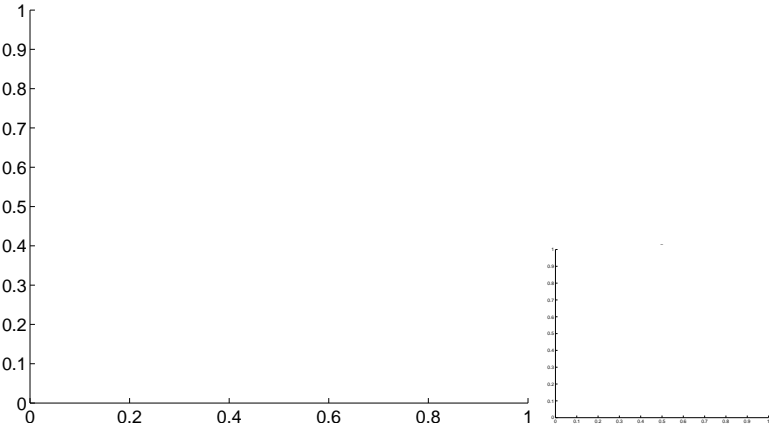
Q11 no OOT image



Q12 no difference image



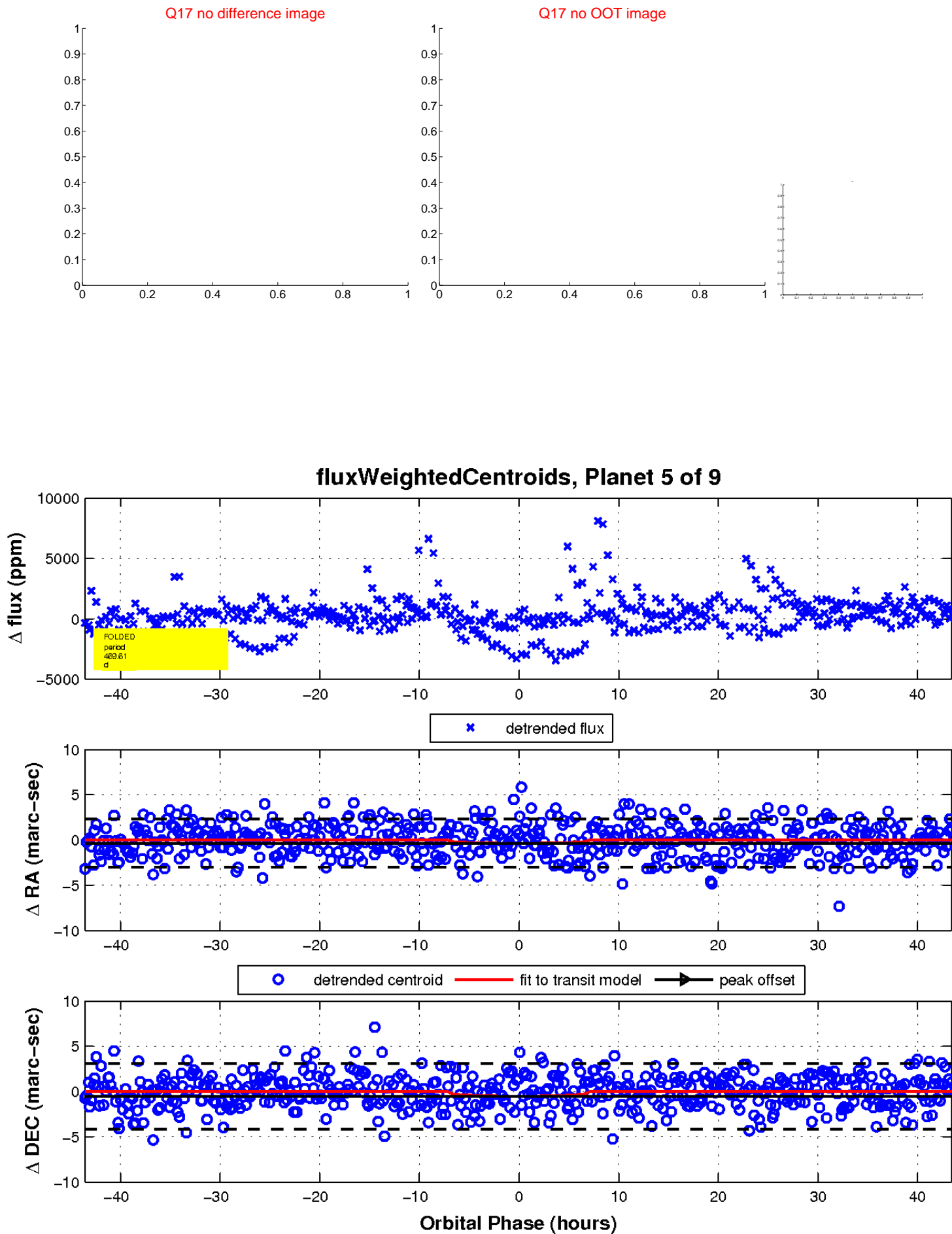
Q12 no OOT image



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

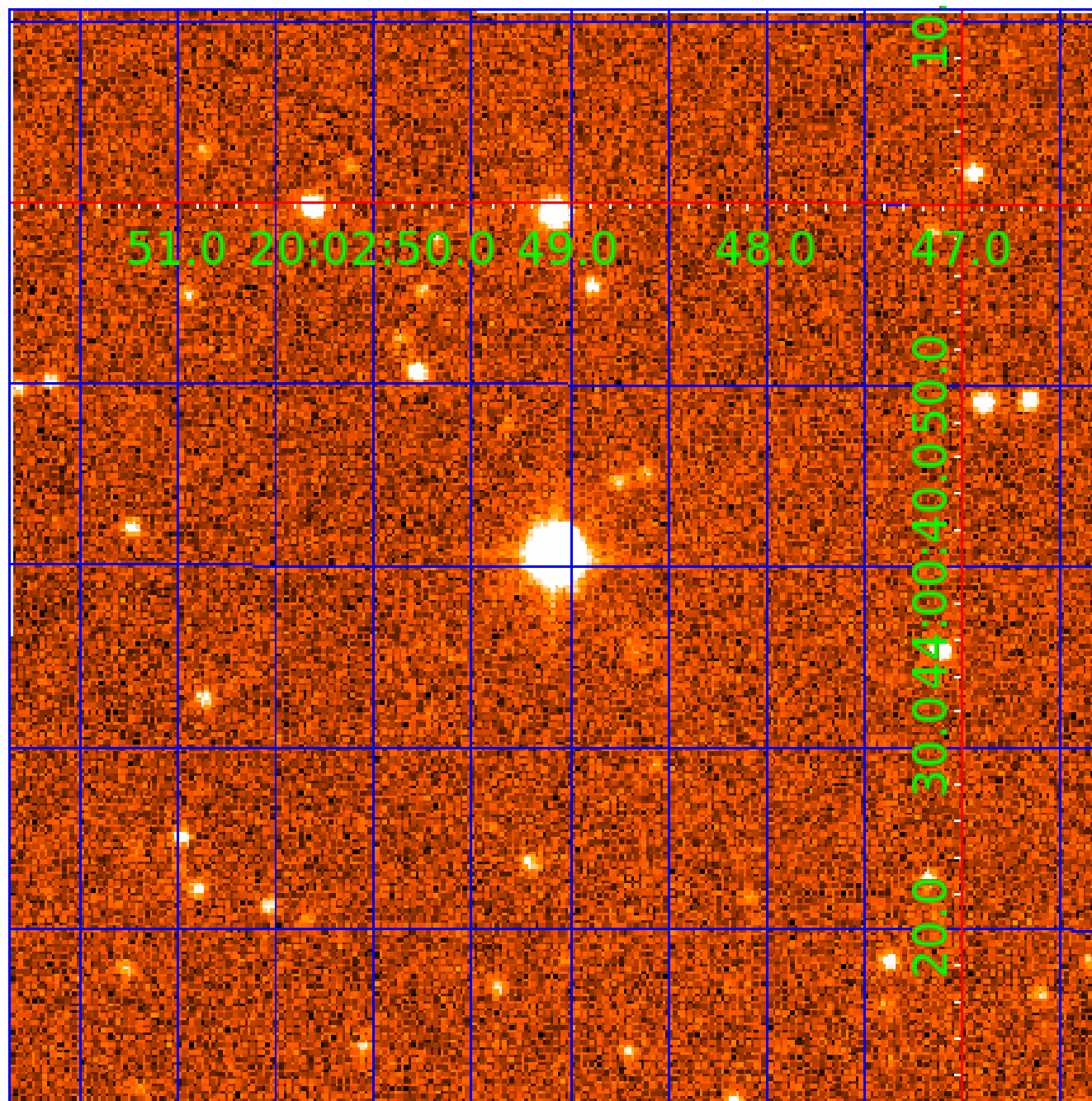


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

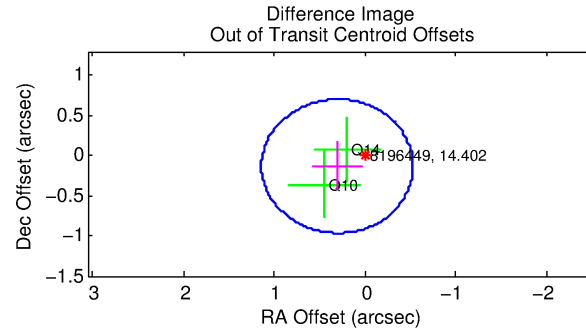
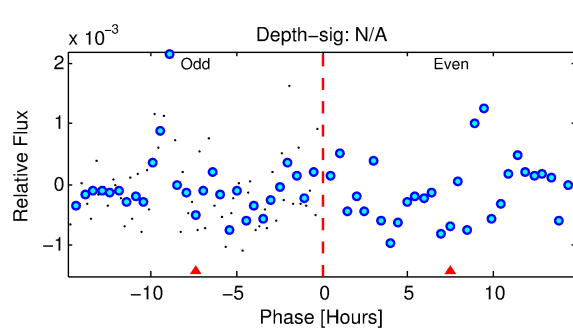
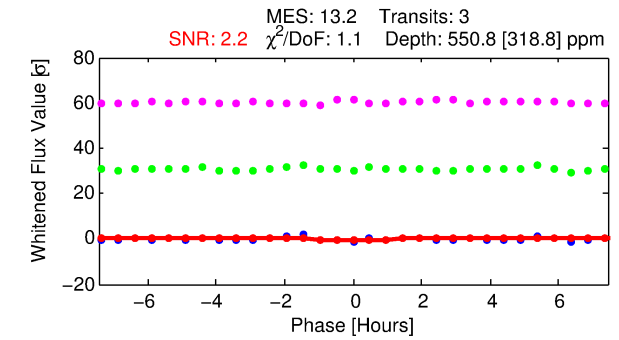
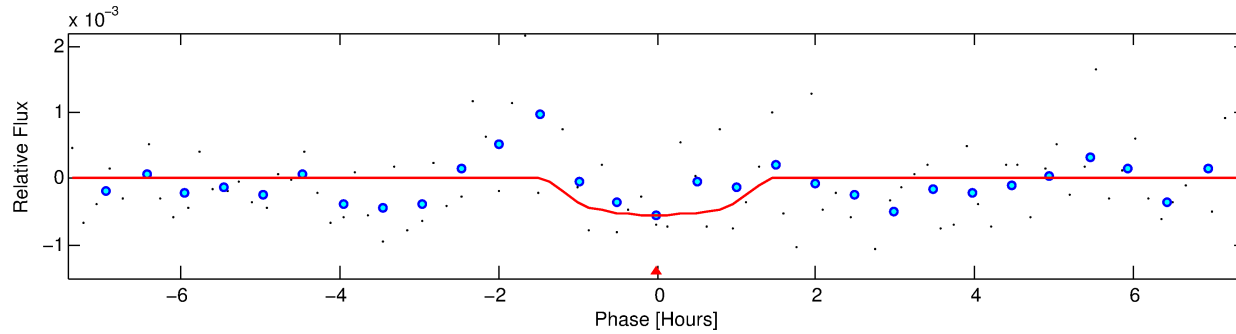
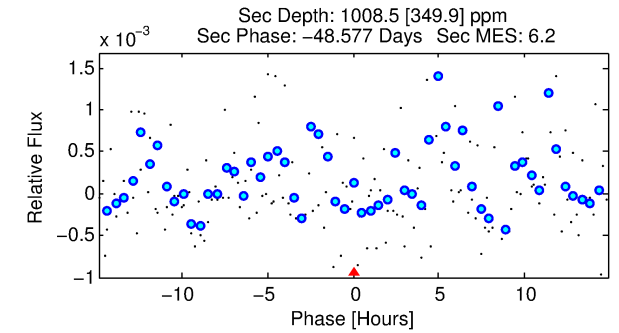
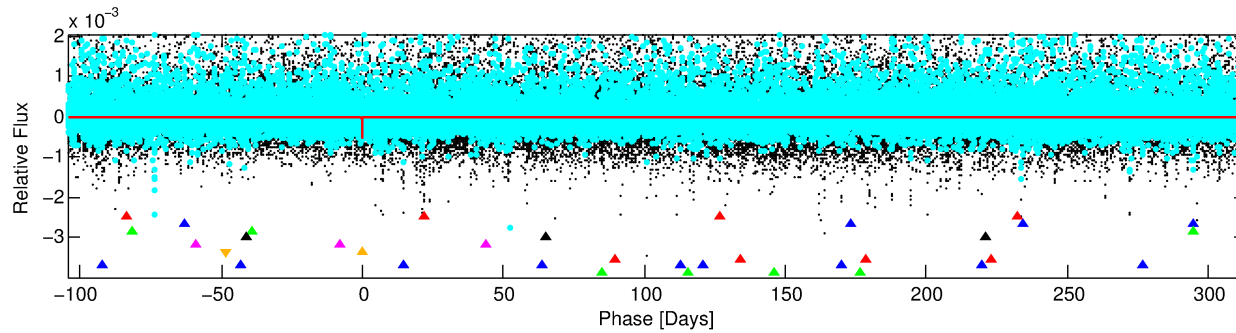
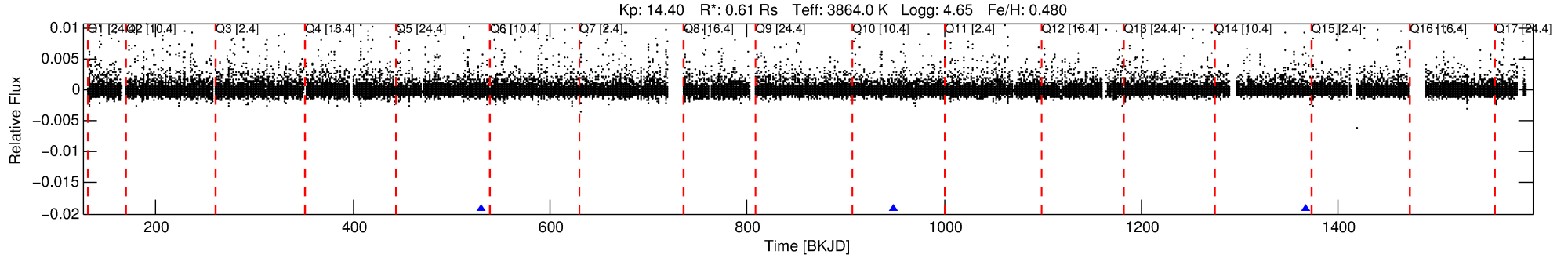
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-06

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 6 of 9 Period: 418.086 d



DV Fit Results:

Period = 418.08578 [0.01624] d
Epoch = 530.0581 [0.0198] BKJD
Rp/R* = 0.0213 [0.1180]
a/R* = 1202.35 [19499.62]
b = 0.42 [32.89]
Seff = 0.09 [0.02]
Teq = 138 [7] K
Rp = 1.41 [7.86] Re
a = 0.9285 [0.0836] AU
Ag = 238935.36 [2655159.08] [0.09σ]
Teffp = 4723 [13122] K [0.35σ]

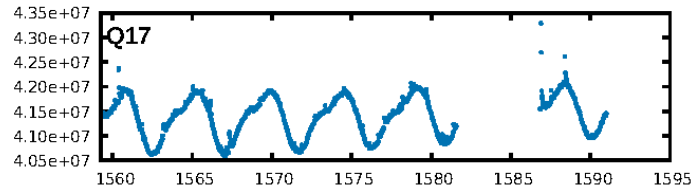
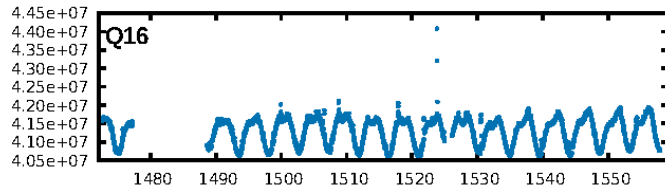
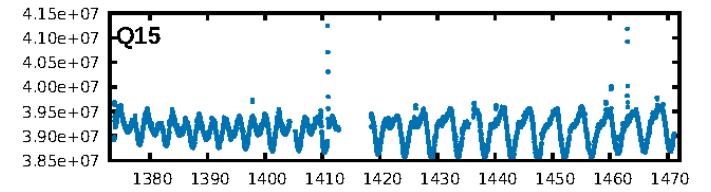
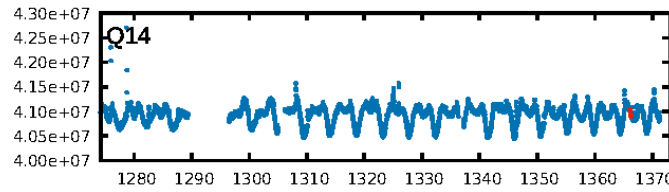
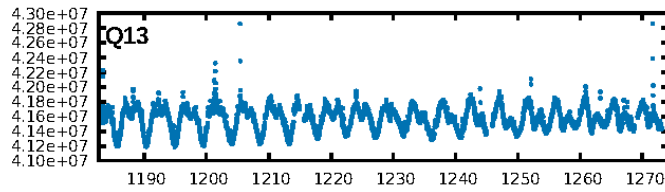
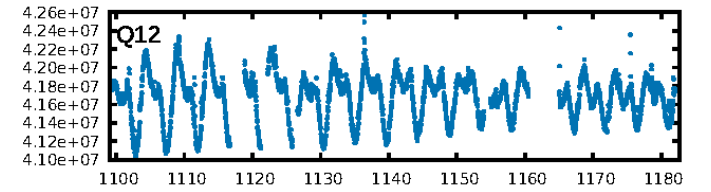
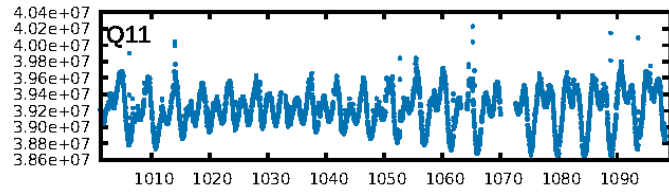
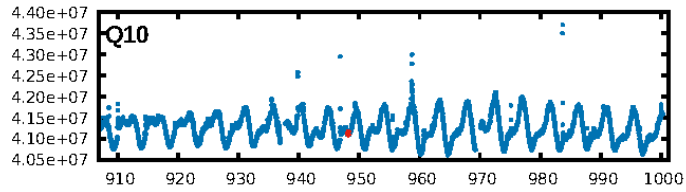
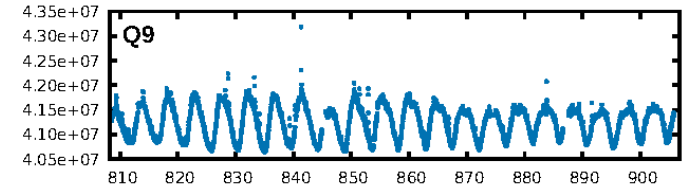
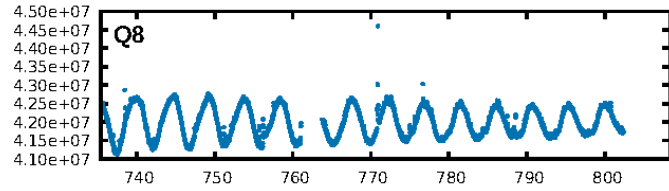
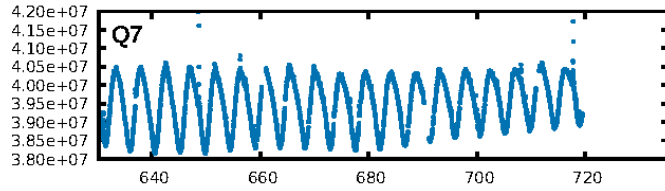
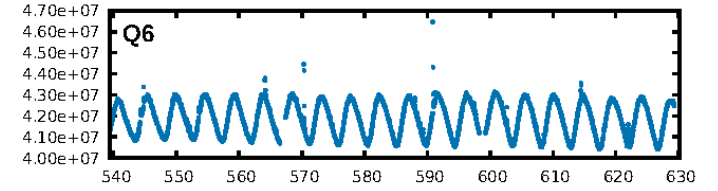
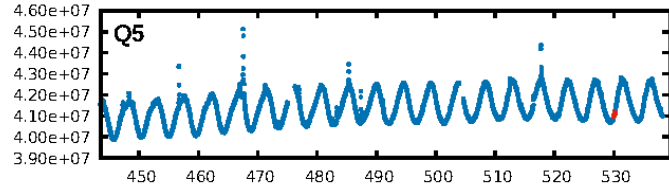
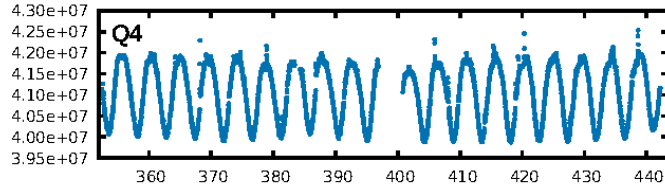
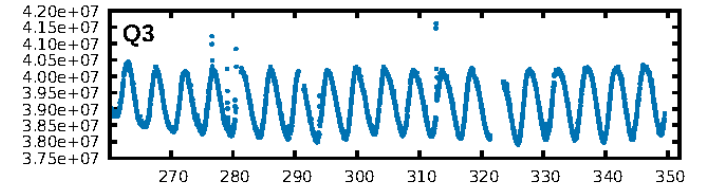
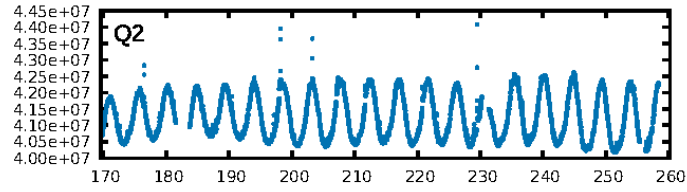
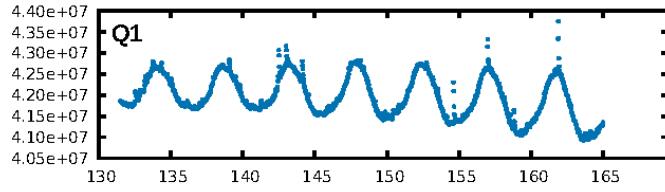
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [59.91σ]
LongPeriod-sig: 100.0% [83.91σ]
ModelChiSquare2-sig: 55.2%
ModelChiSquareGof-sig: 82.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5096
Centroid-sig: 17.3%
Centroid-so: 3.498 arcsec [1.35σ]
OotOffset-rm: 0.331 arcsec [1.19σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

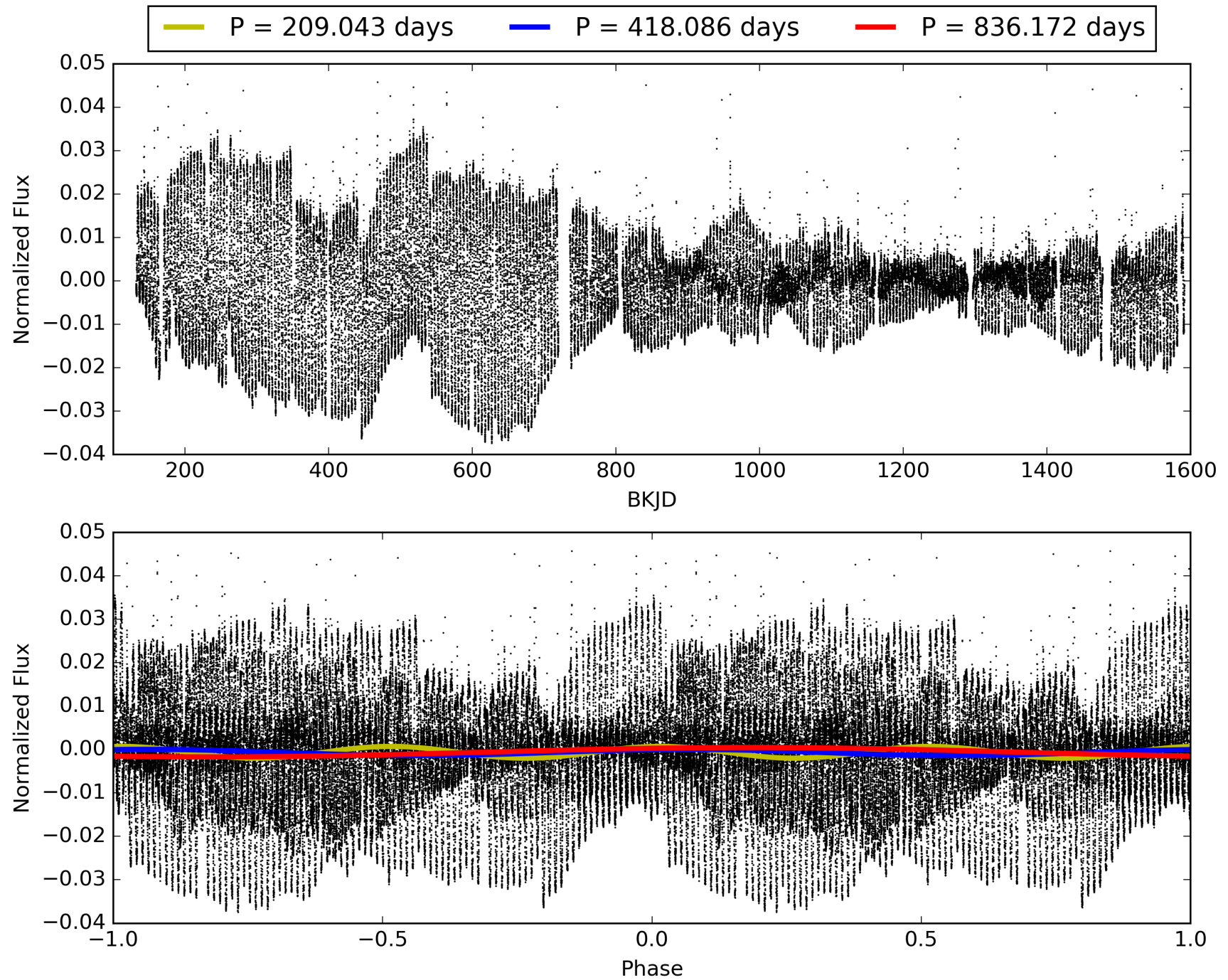
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:14:54 Z

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

TCE 008196449-06, PDC Light Curves

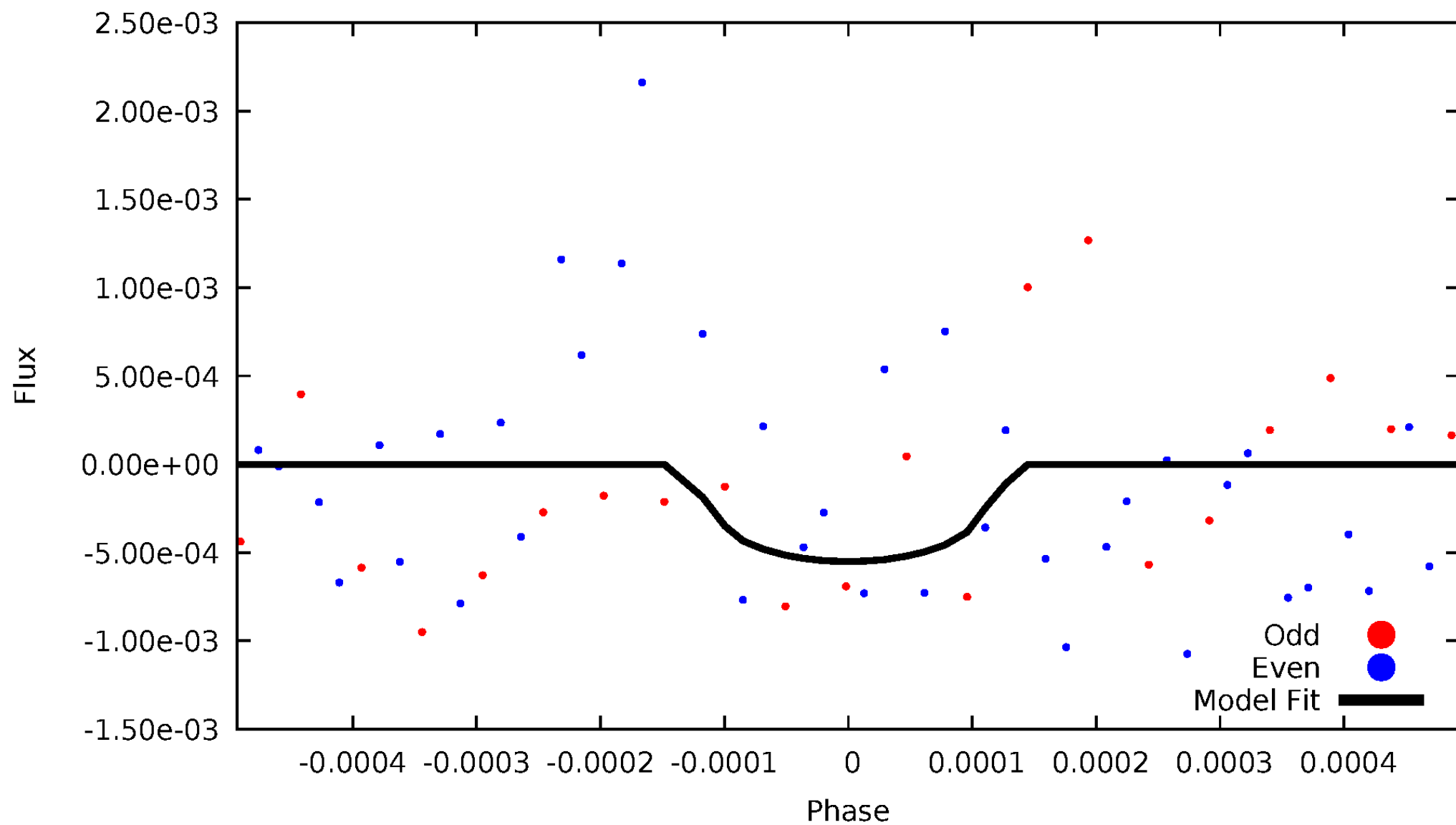


TCE 008196449-06



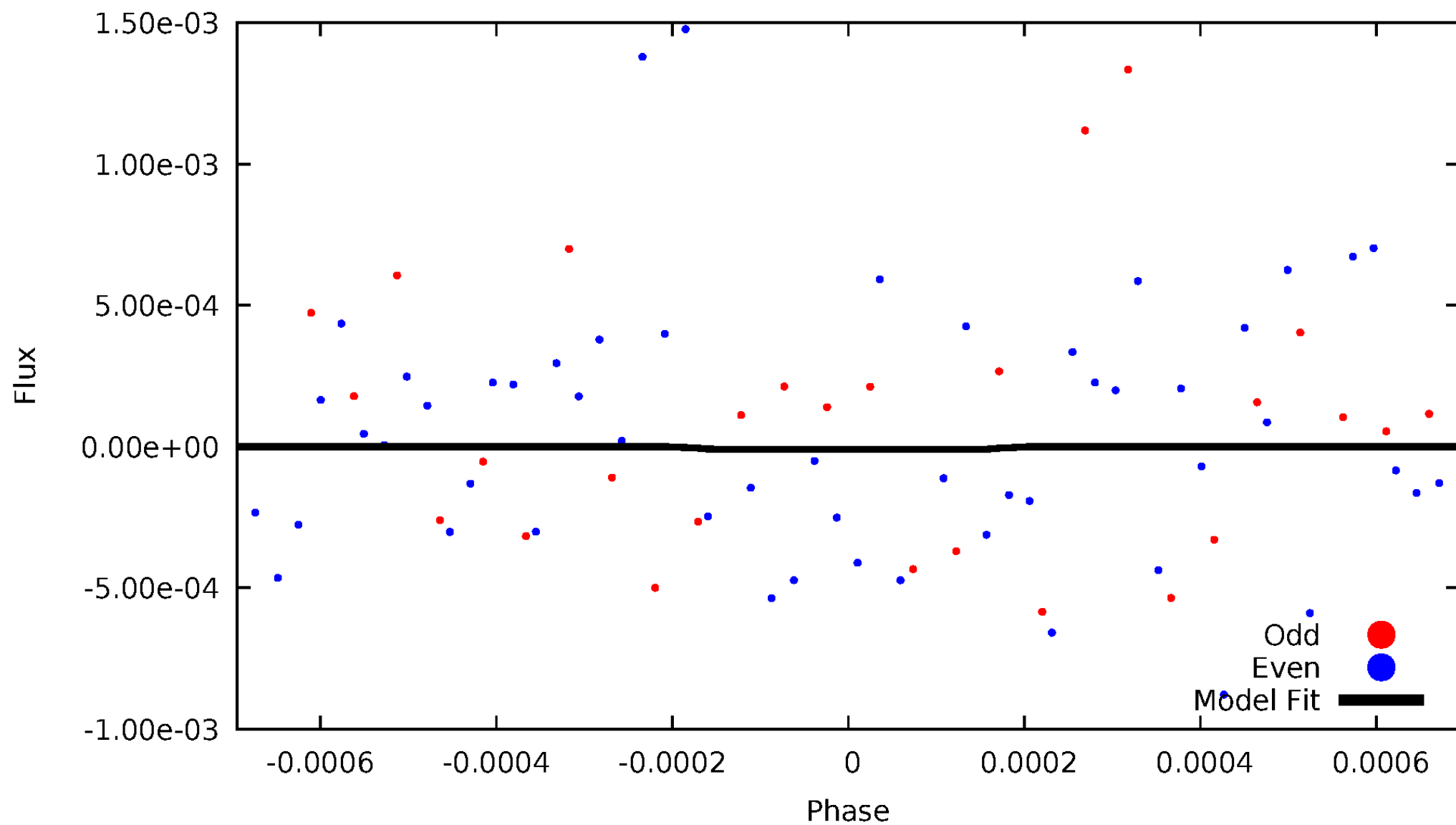
DV Odd/Even

TCE 008196449-06



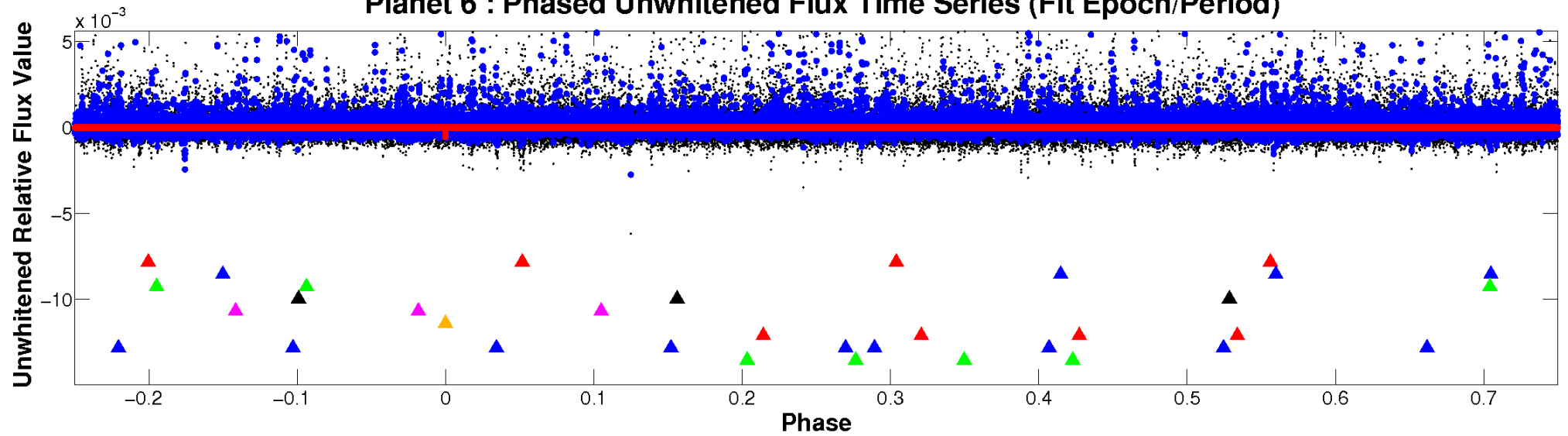
ALT Odd/Even

TCE 008196449-06

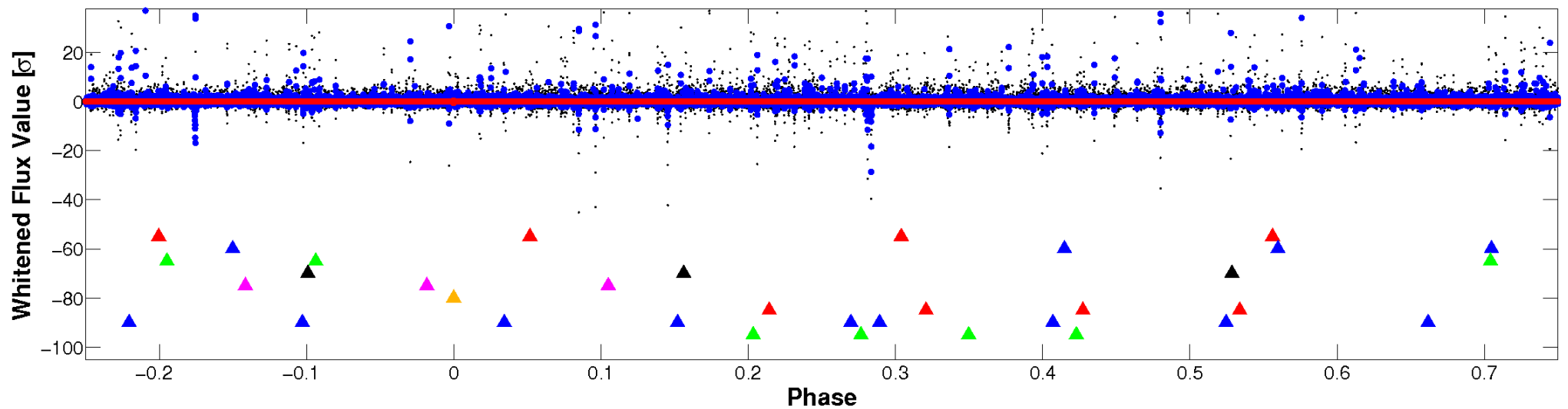


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

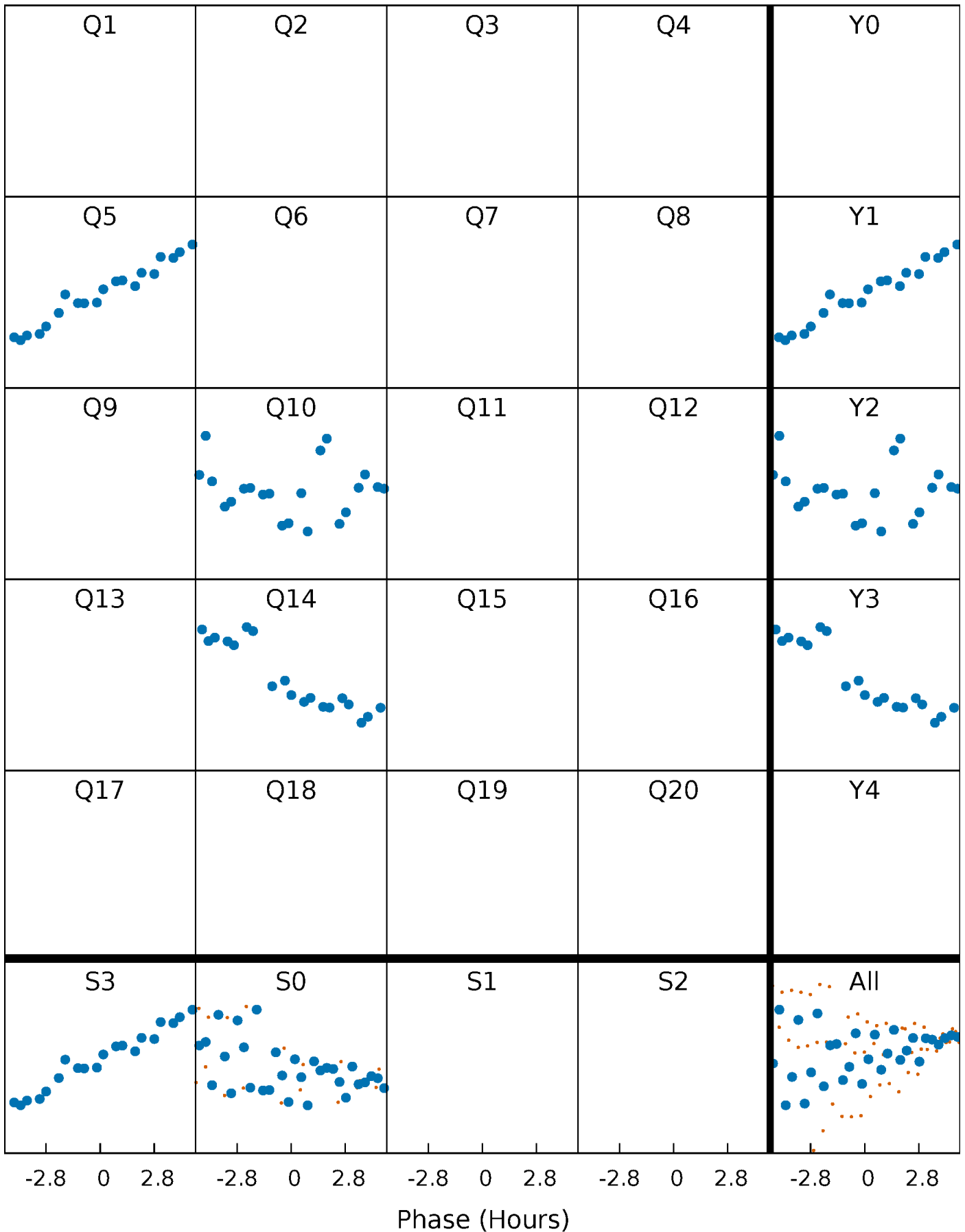


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



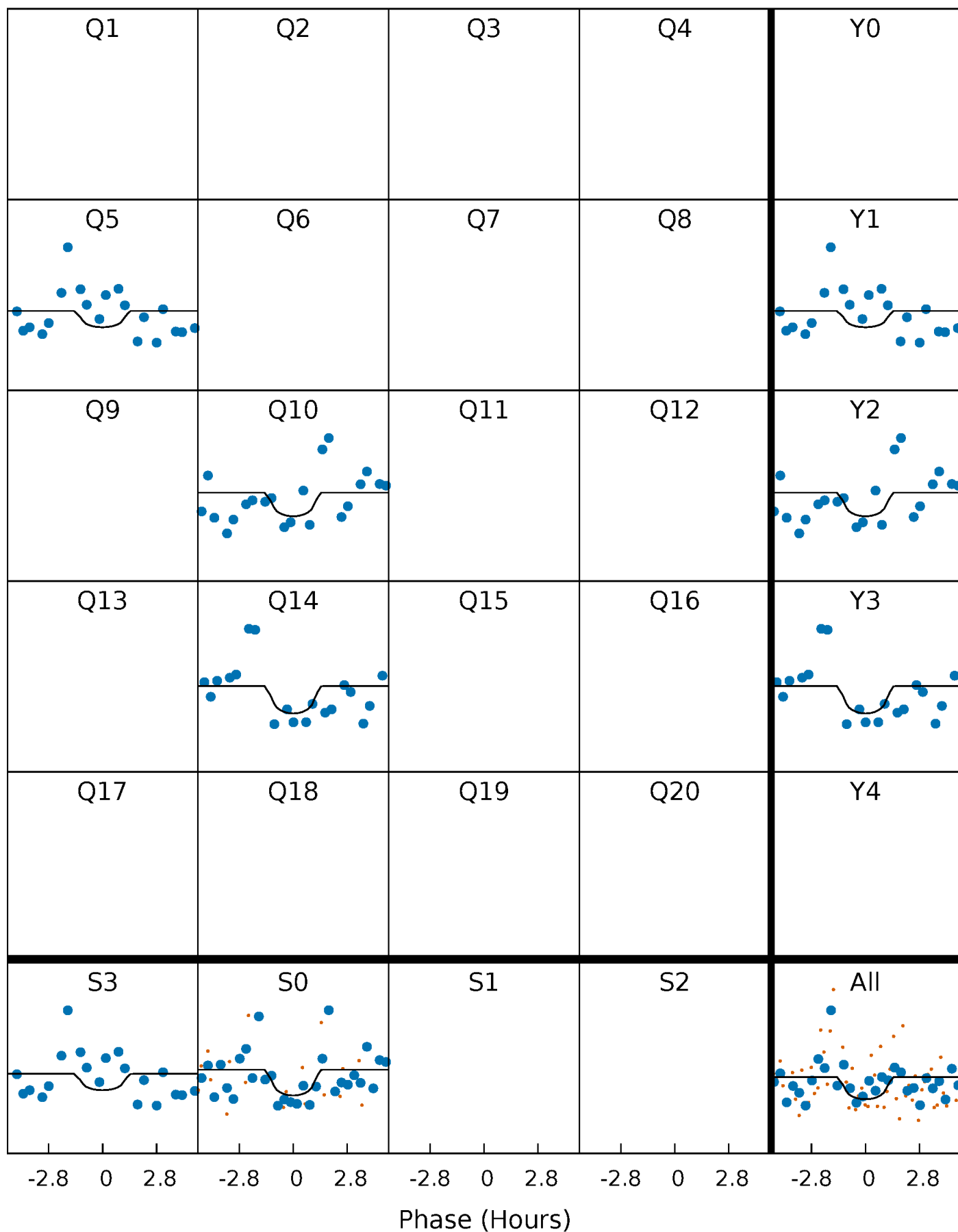
PDC Quarter-Phased Transit Curves

TCE 008196449-06 P=418.085782 Days $T_0=530.058095$ (BKJD)



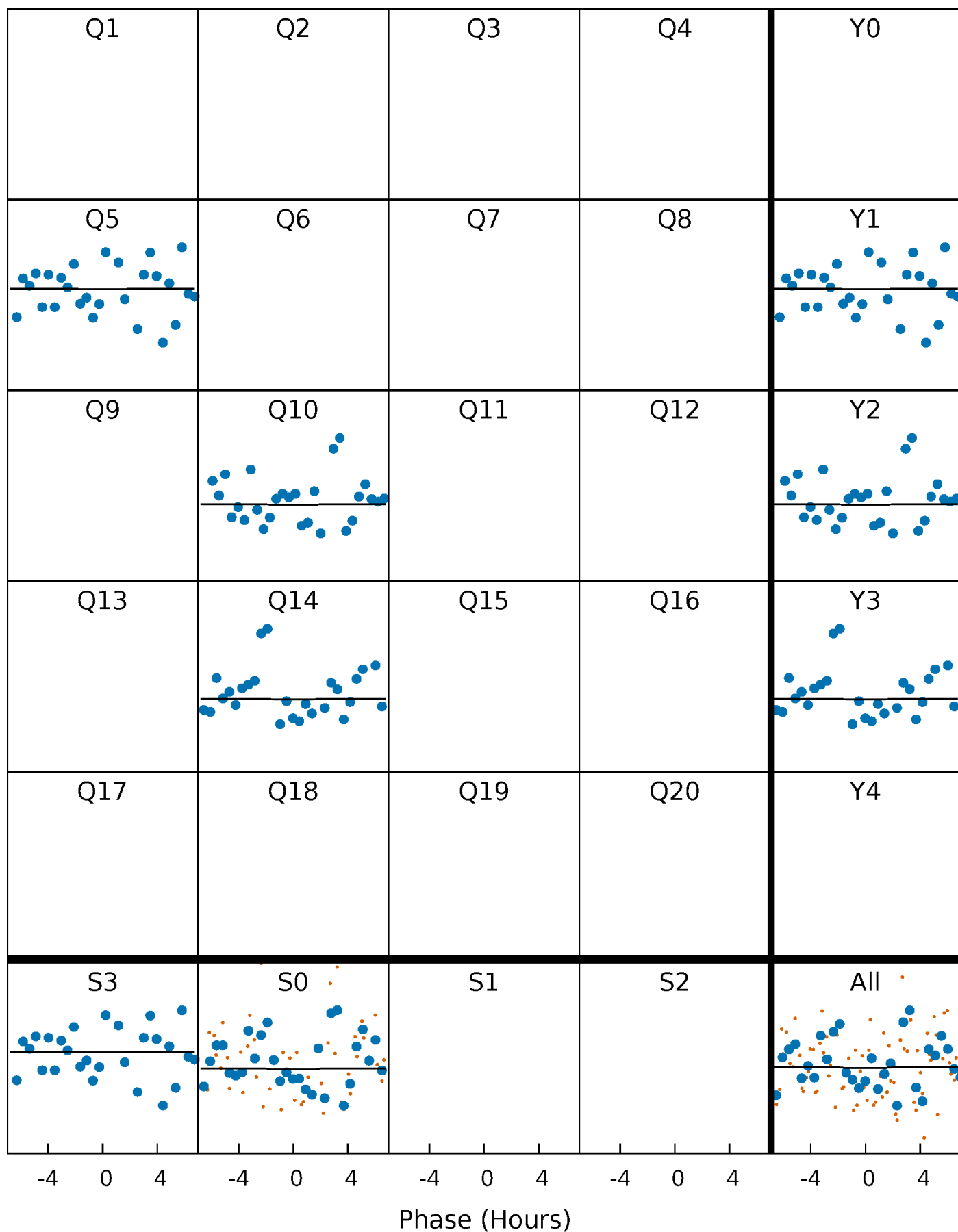
DV Quarter-Phased Transit Curves

TCE 008196449-06 P=418.085782 Days $T_0=530.058095$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

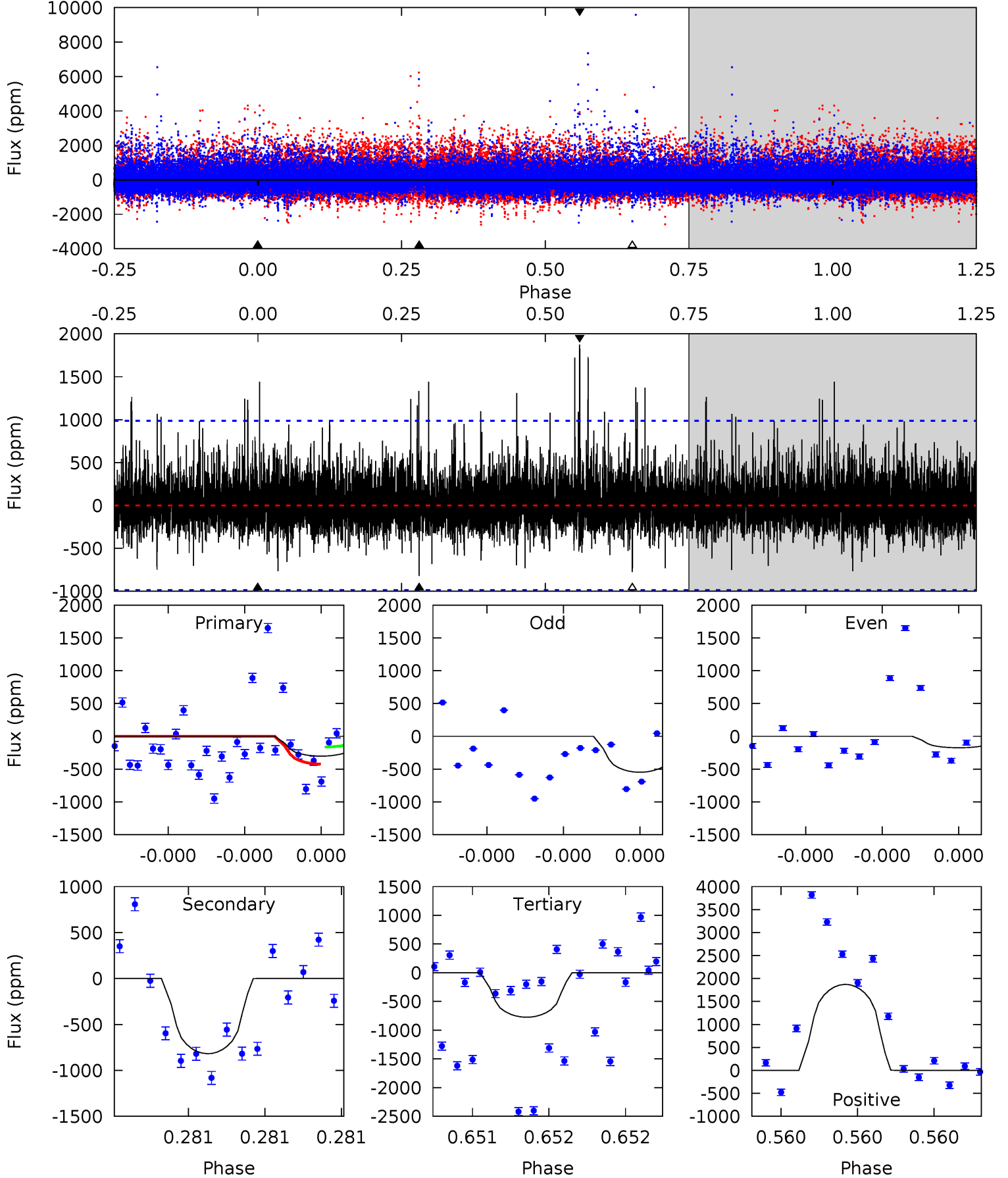
TCE 008196449-06 P=418.138750 Days $T_0=529.953111$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-06, P = 418.085782 Days, E = 111.972313 Days

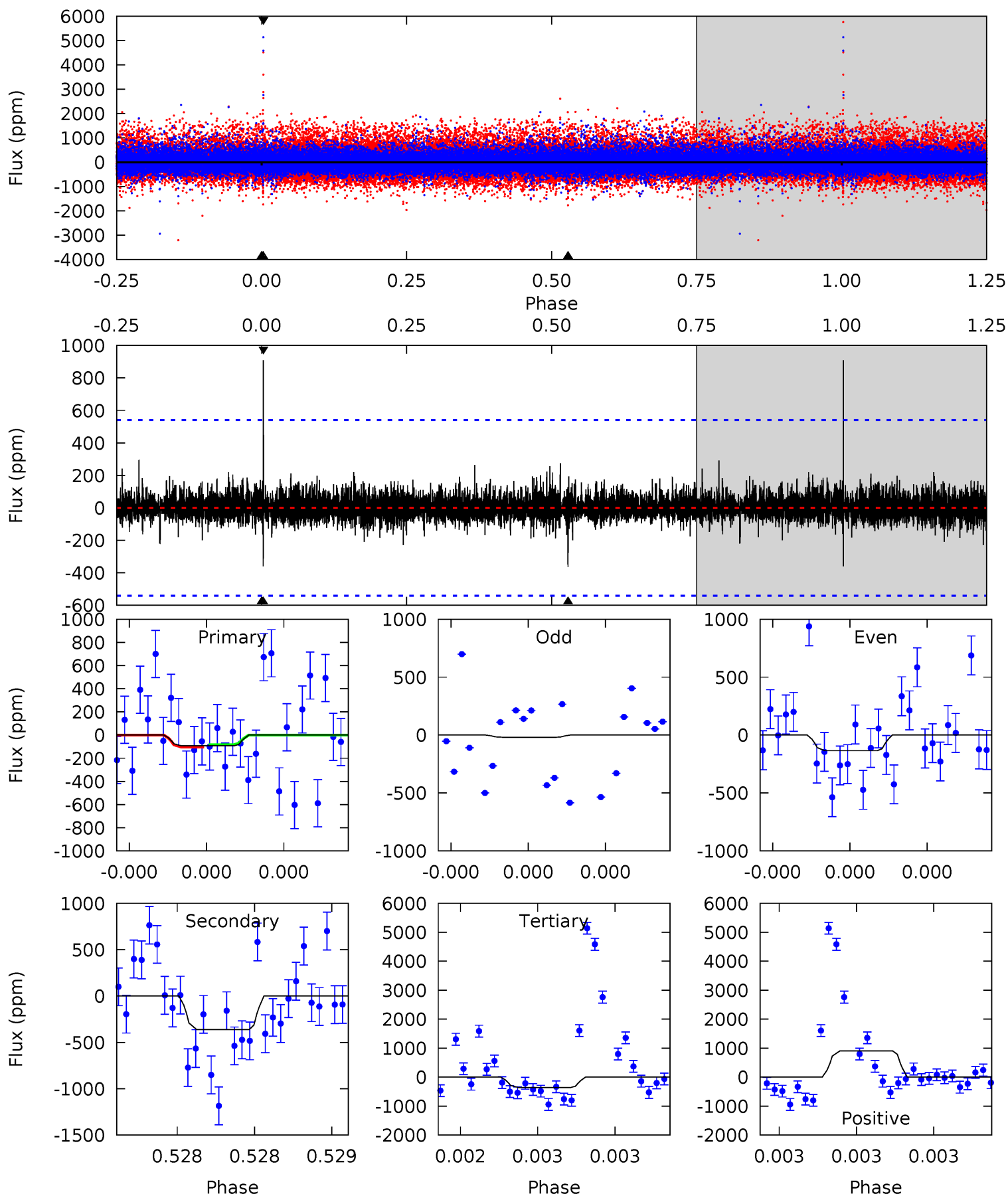
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.74	4.72	4.47	10.8	5.70	3.67	1.30	-2.73	-9.06	0.25	-6.08	0.66	0.55	0.70	0.76



Alt Model-Shift Uniqueness Test

008196449-06, P = 418.138750 Days, E = 111.814361 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.97	3.77	3.73	9.45	5.62	3.56	0.56	-2.76	-8.48	0.04	-5.68	0.55	4.98	0.71	0.11



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-819 ± 173	$5.41^{+5.77}_{-3.47}$	191^{+7}_{-8}	2782^{+1083}_{-472}	12444^{+91651}_{-9557}
Alt.	-363 ± 96	$5.24^{+5.72}_{-3.82}$	192^{+6}_{-9}	2552^{+1149}_{-402}	6553^{+77820}_{-5080}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

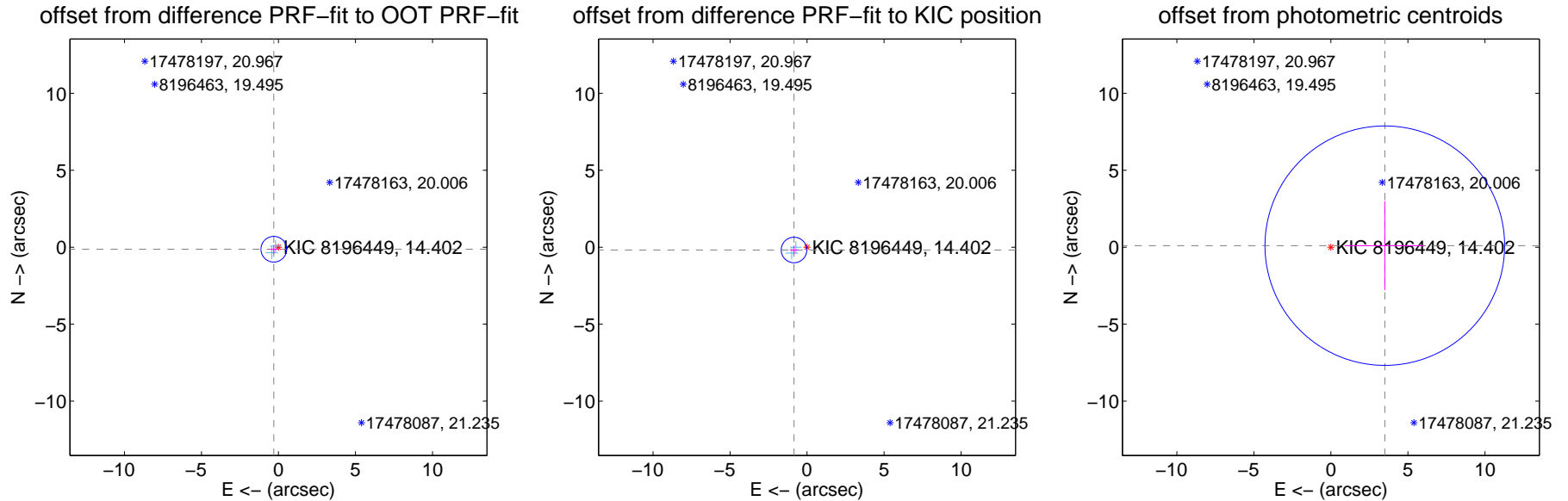
DV Centroid Data

Supplemental centroid analysis for 008196449-06. Kepler magnitude: 14.40. Transit SNR 2.21

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.331 ± 0.278	1.19	0.304 ± 0.276	-0.132 ± 0.291
PRF-fit source offset from KIC position	0.868 ± 0.276	3.14	0.849 ± 0.276	-0.180 ± 0.291
photometric centroid source offset	3.50 ± 2.59	1.35	-3.50 ± 2.59	0.10 ± 2.89

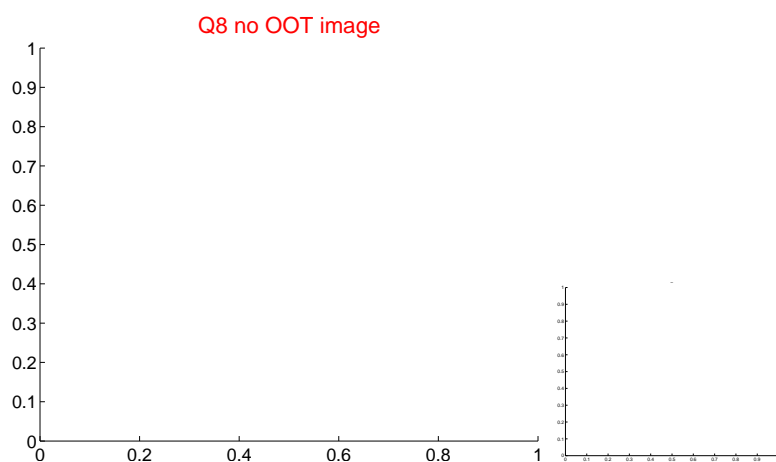
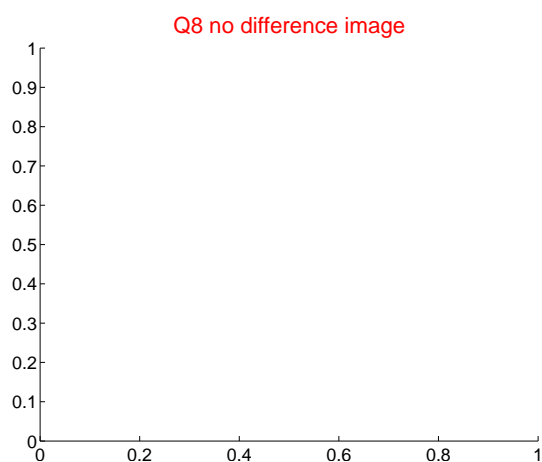
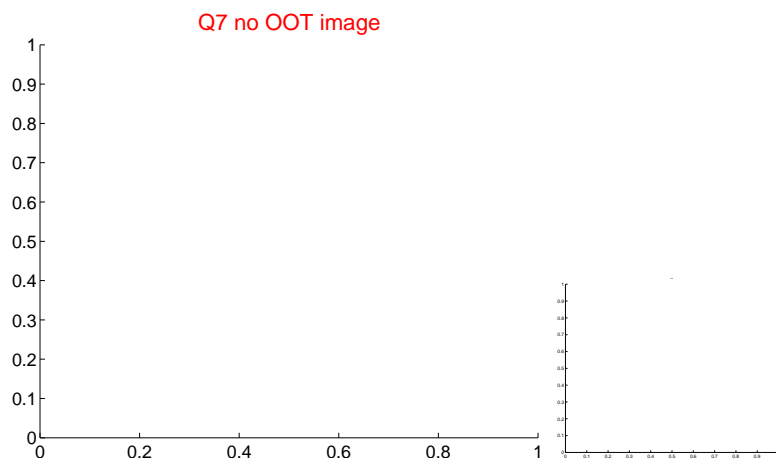
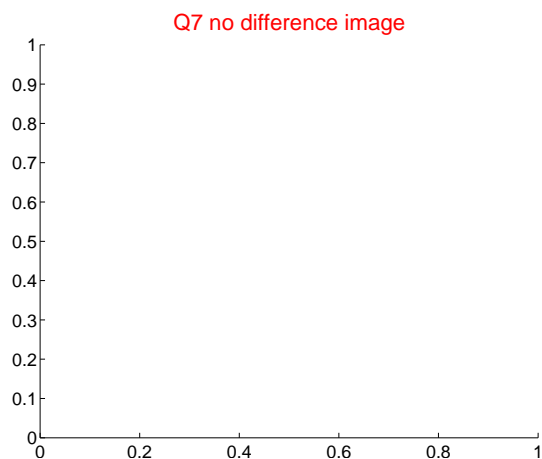
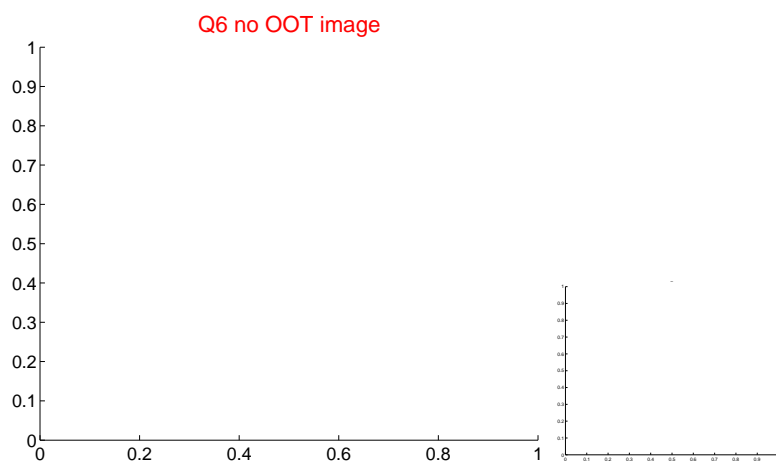
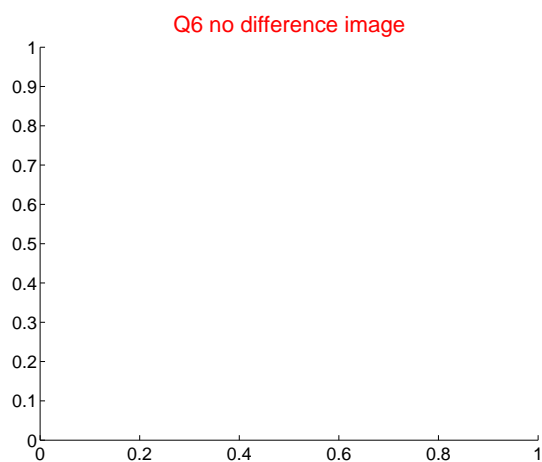
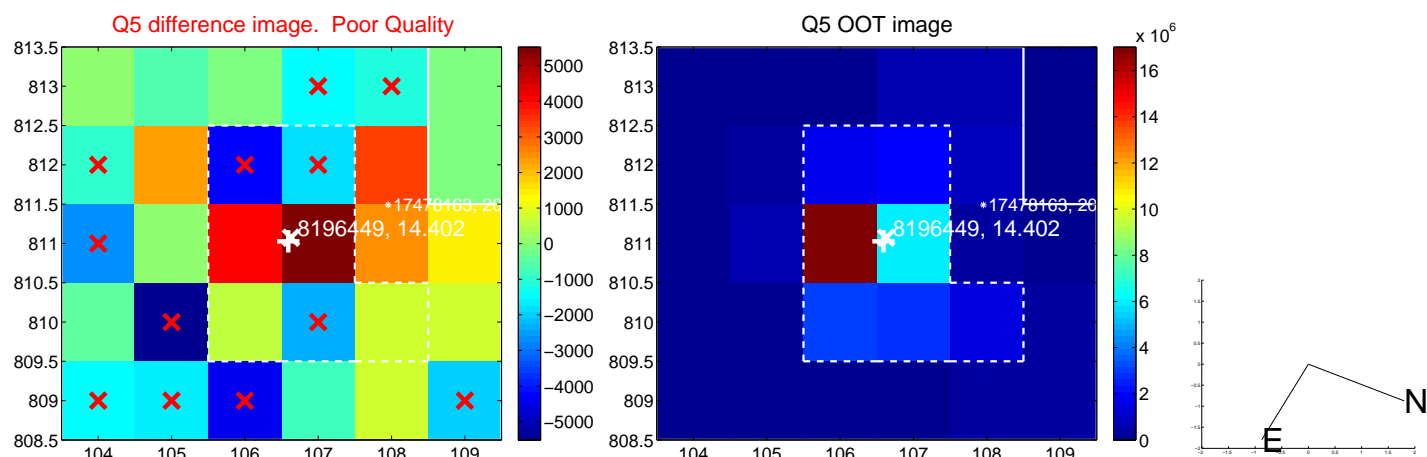


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

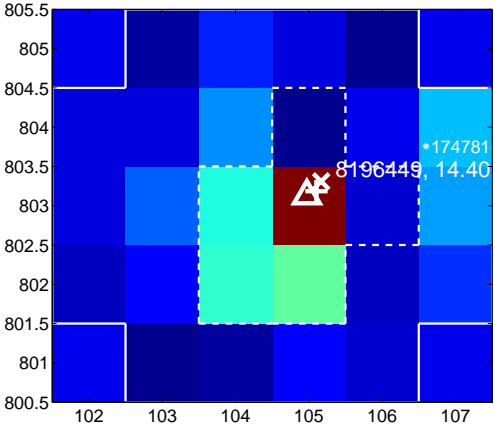
Q9 no difference image



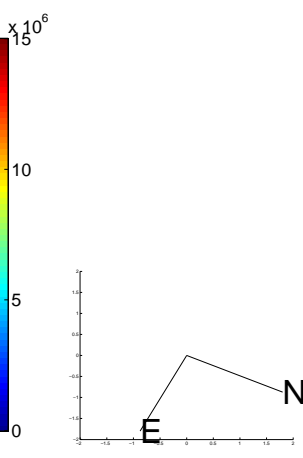
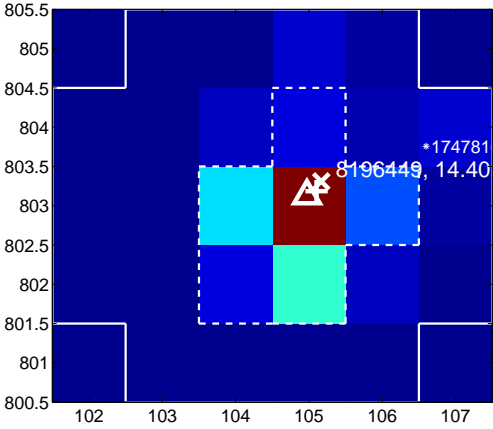
Q9 no OOT image



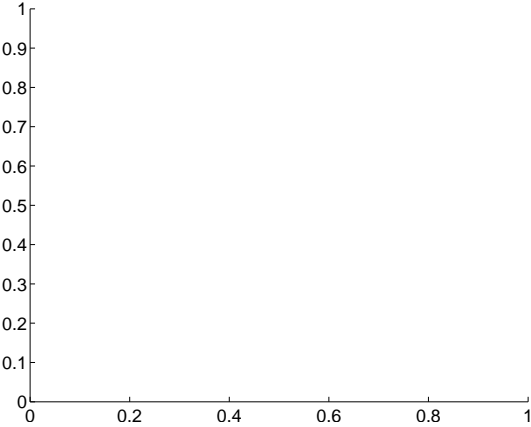
Q10 difference image



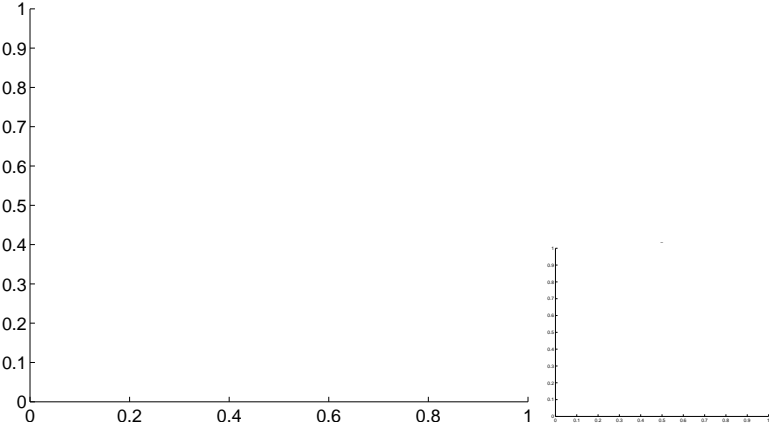
Q10 OOT image



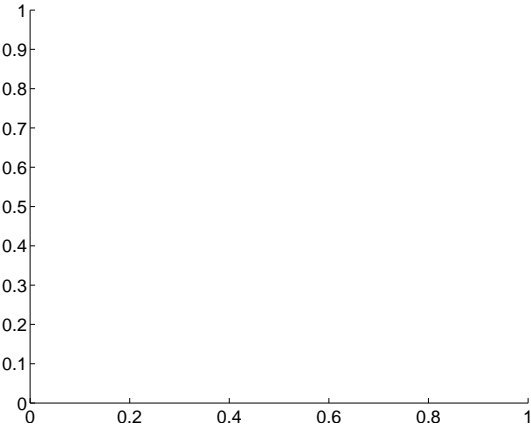
Q11 no difference image



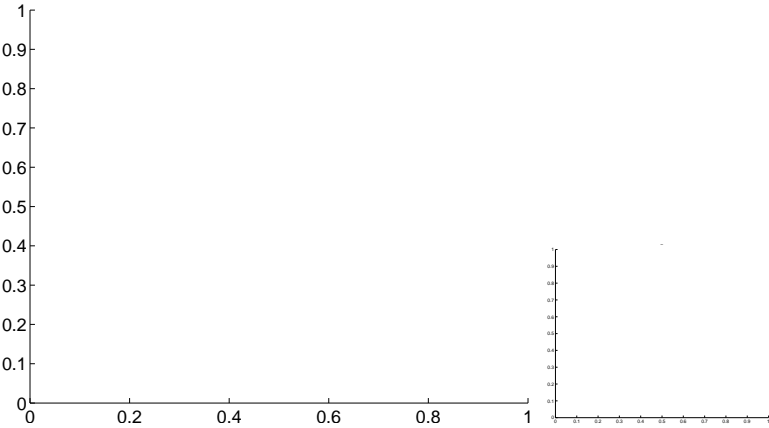
Q11 no OOT image



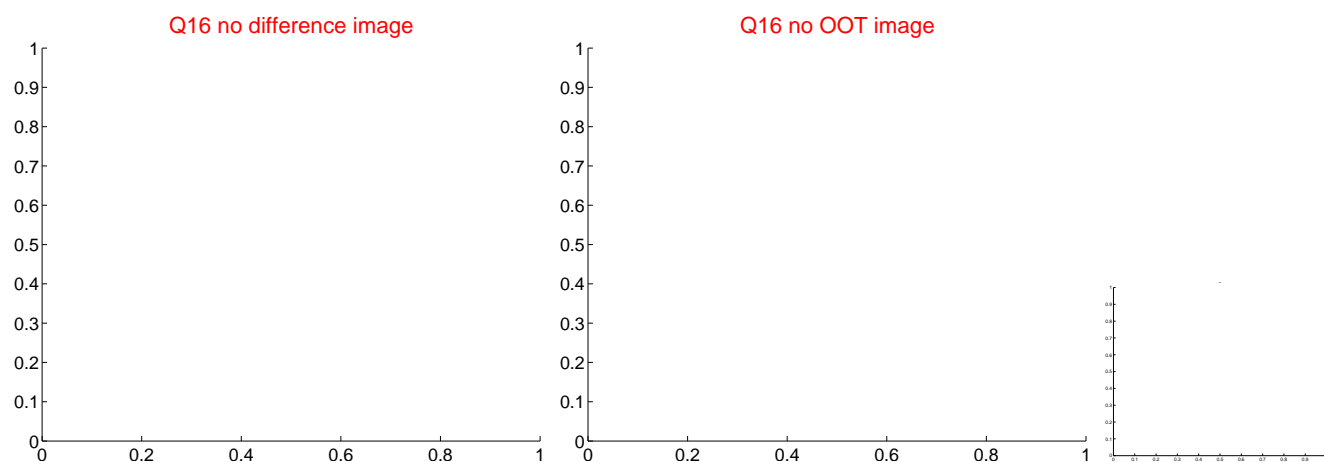
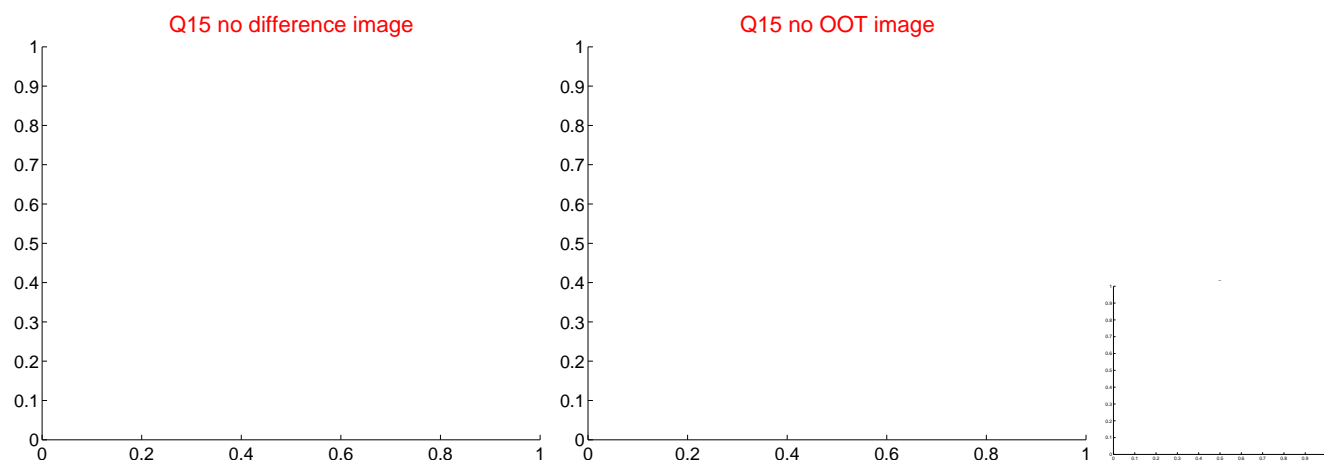
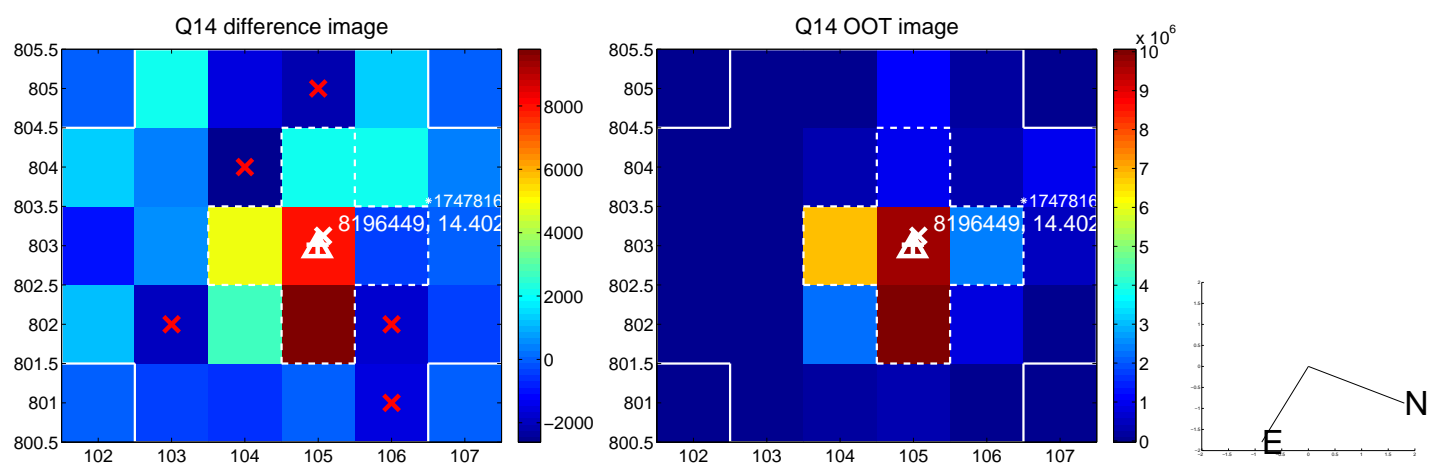
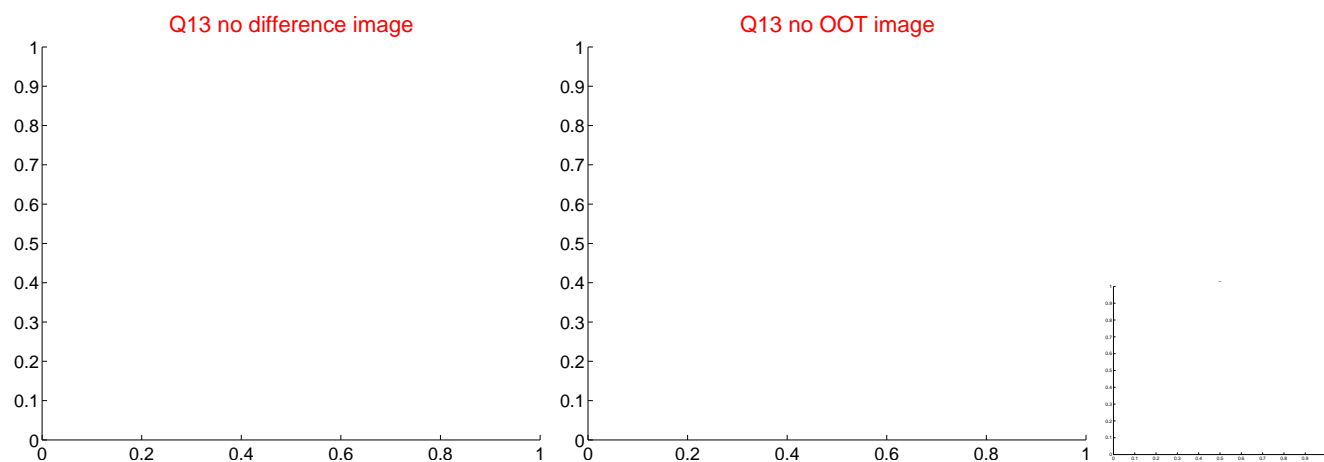
Q12 no difference image



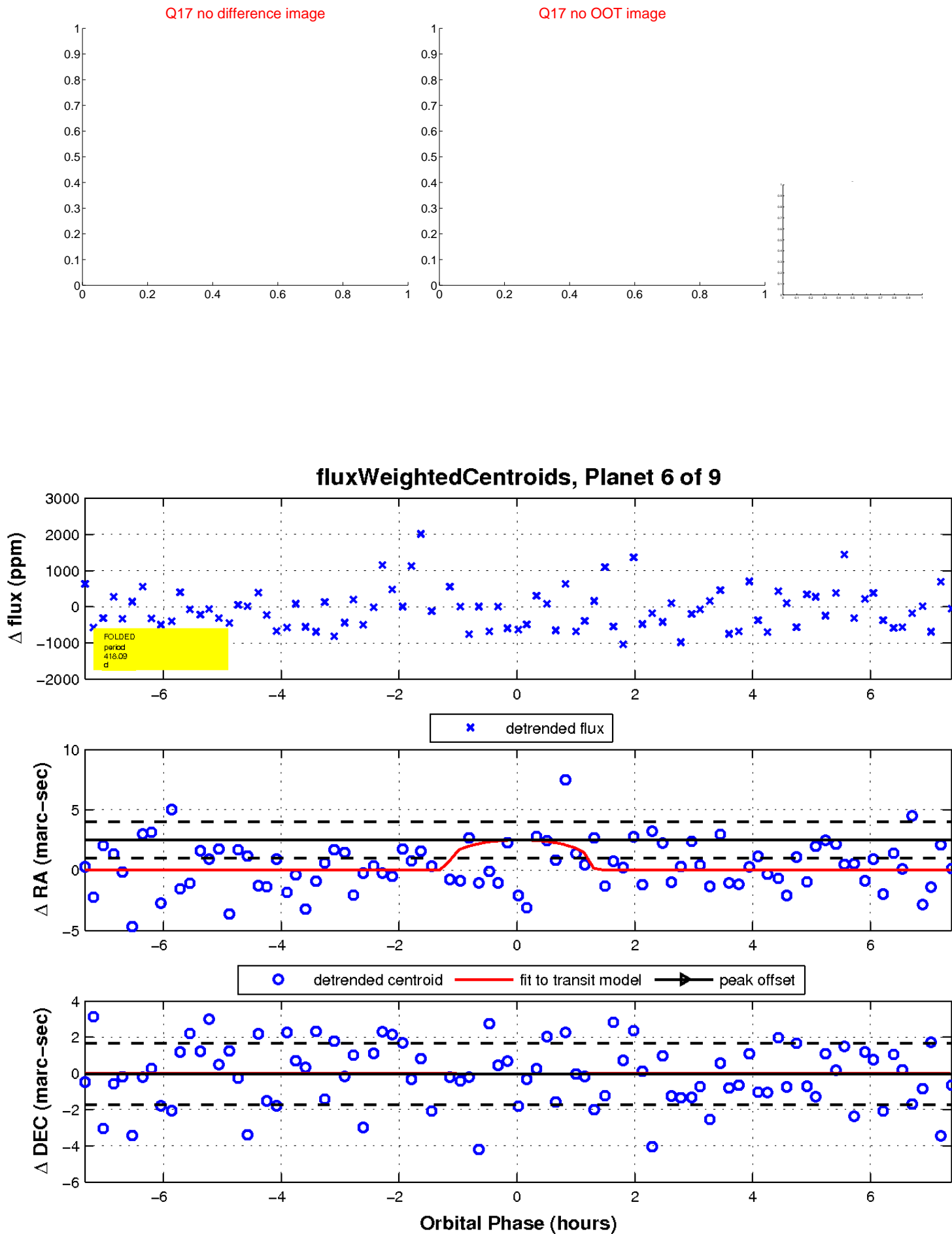
Q12 no OOT image



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

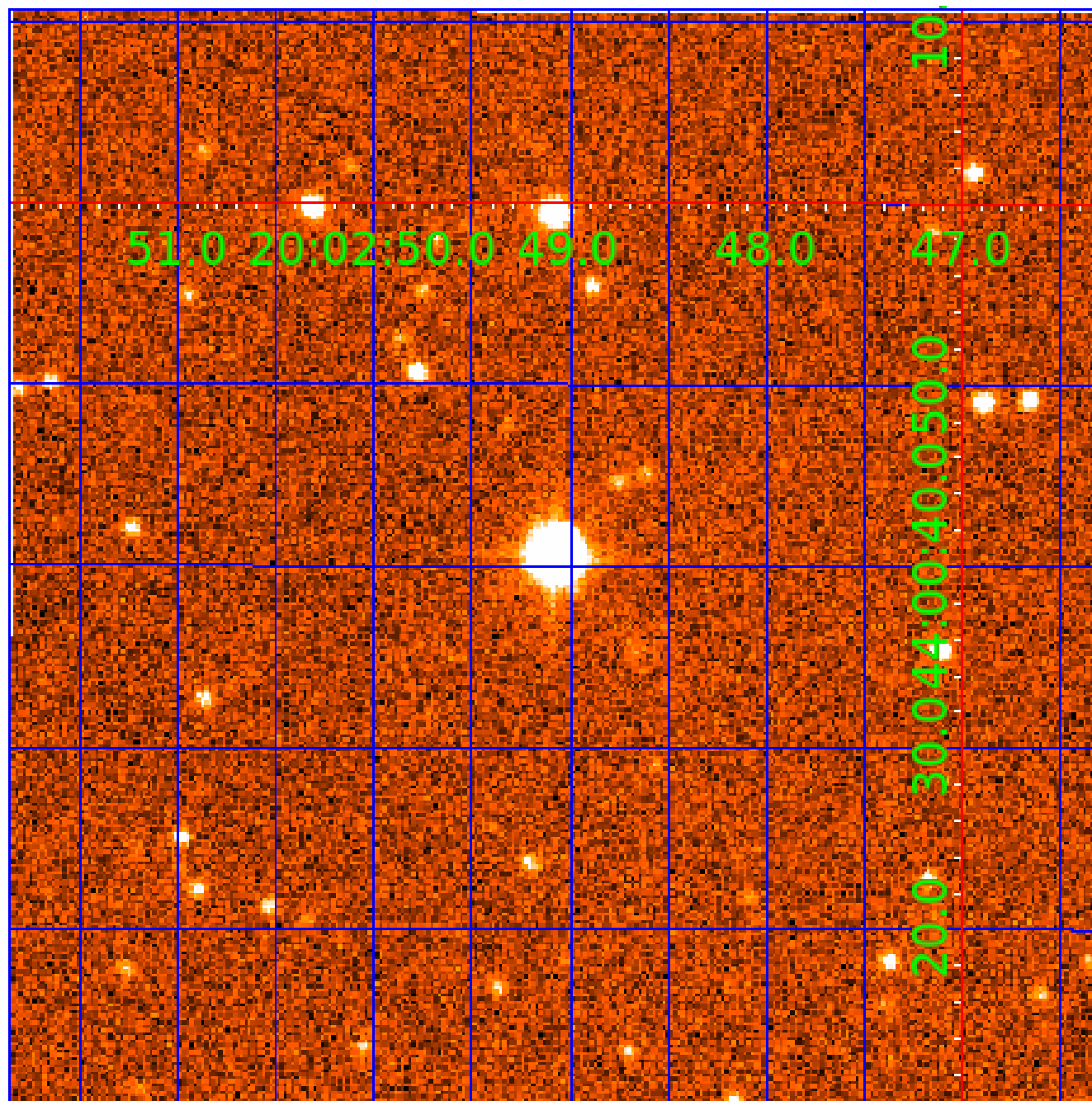


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

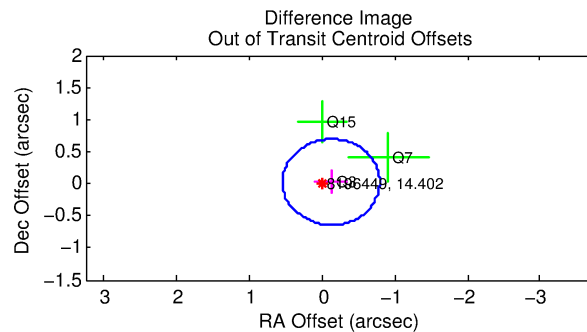
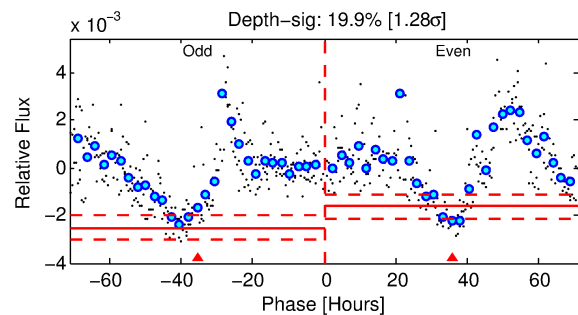
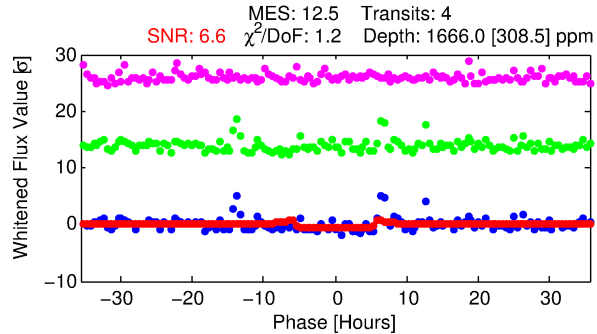
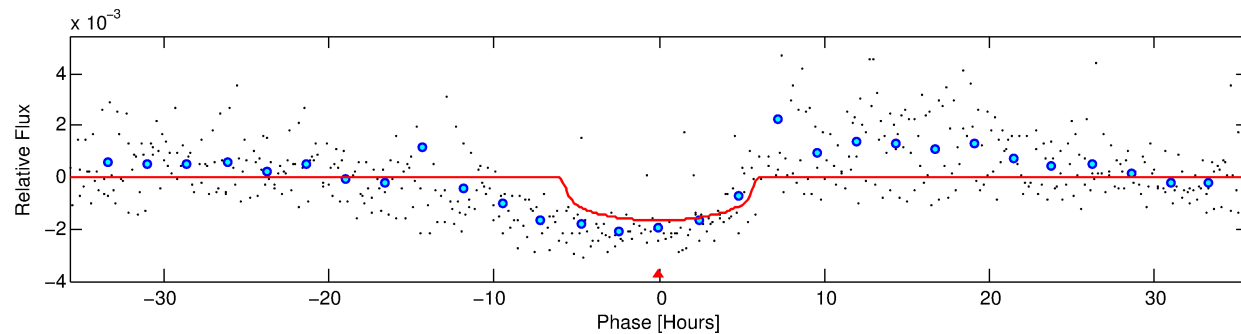
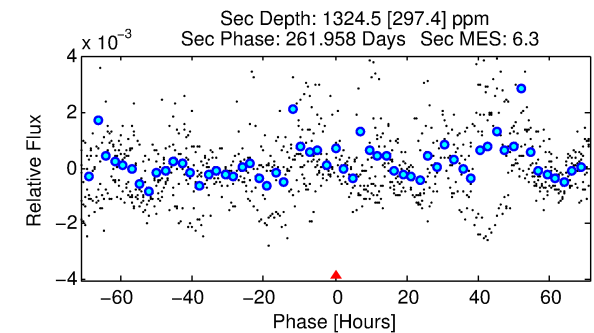
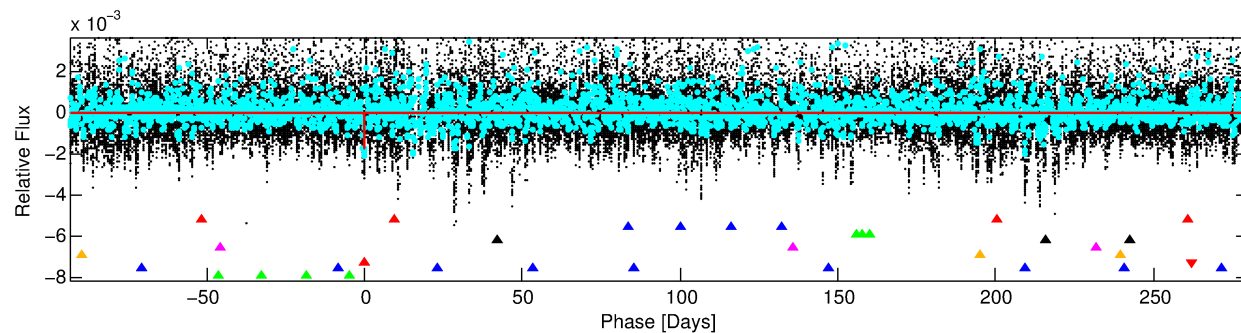
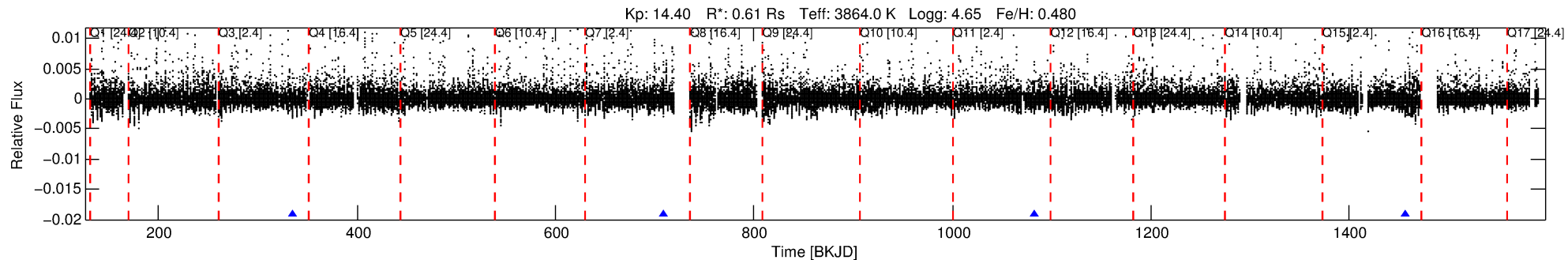
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-07

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 7 of 9 Period: 373.541 d



DV Fit Results:

Period = 373.54066 [0.00526] d
Epoch = 335.1809 [0.0113] BKJD
Rp/R* = 0.0371 [0.0154]
a/R* = 224.73 [273.24]
b = 0.45 [2.22]
Seff = 0.10 [0.02]
Teq = 143 [7] K
Rp = 2.47 [1.06] Re
a = 0.8613 [0.0775] AU
Ag = 88824.19 [77106.36] [1.15σ]
Teff = 3829 [835] K [4.41σ]

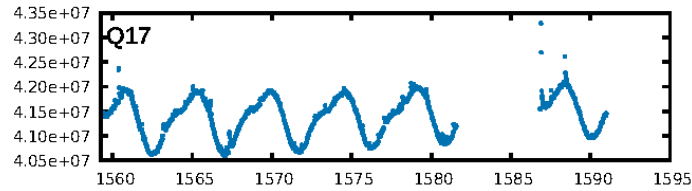
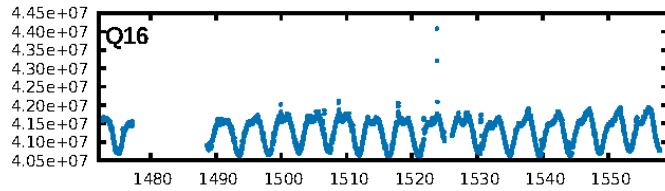
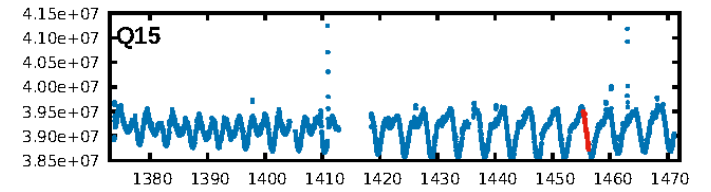
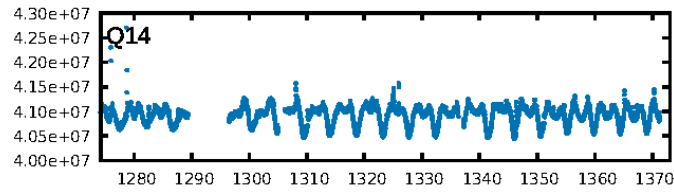
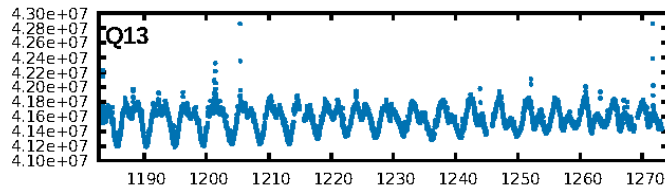
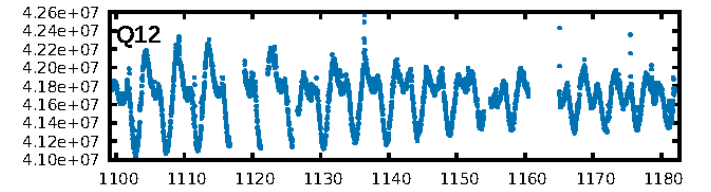
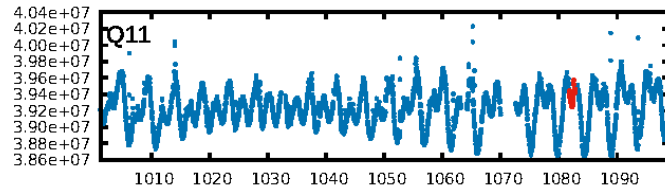
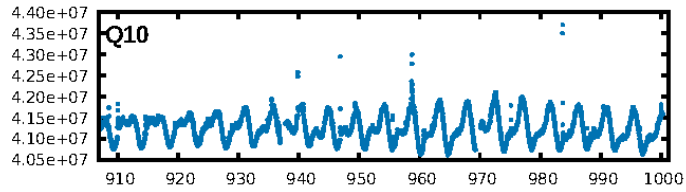
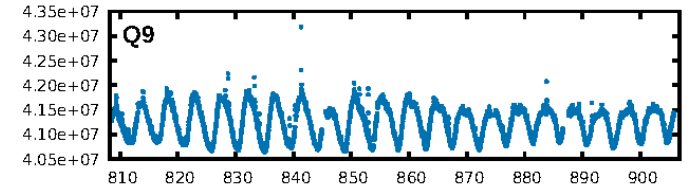
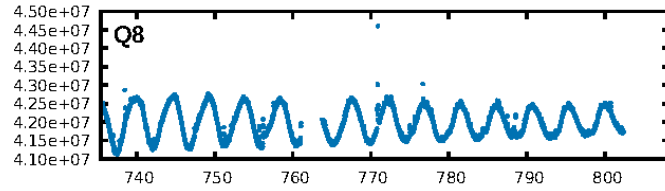
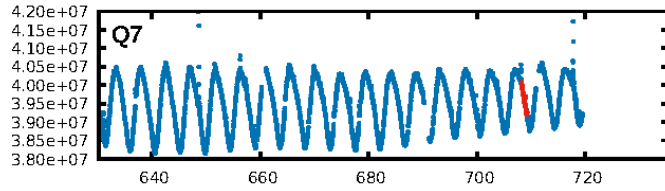
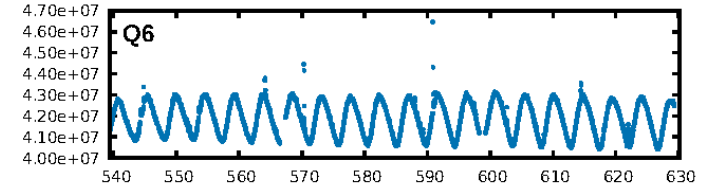
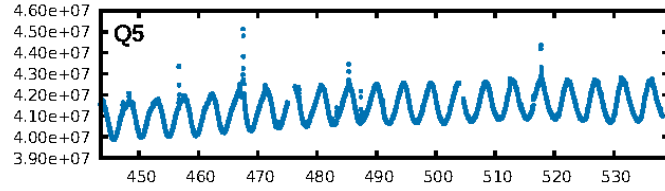
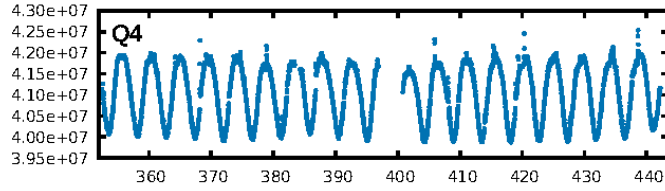
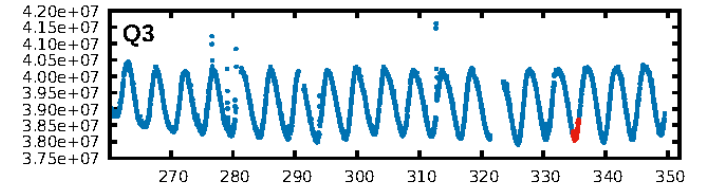
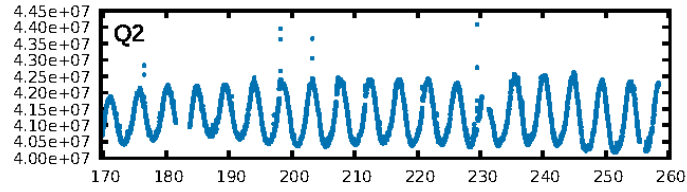
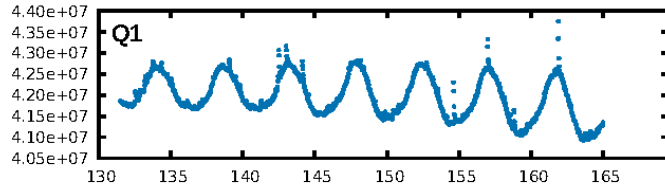
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [26.21σ]
LongPeriod-sig: 100.0% [4.28σ]
ModelChiSquare2-sig: 50.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2845
Centroid-sig: 17.9%
Centroid-so: 0.544 arcsec [1.25σ]
OotOffset-rm: 0.127 arcsec [0.57σ]
KicOffset-rm: 0.287 arcsec [1.29σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

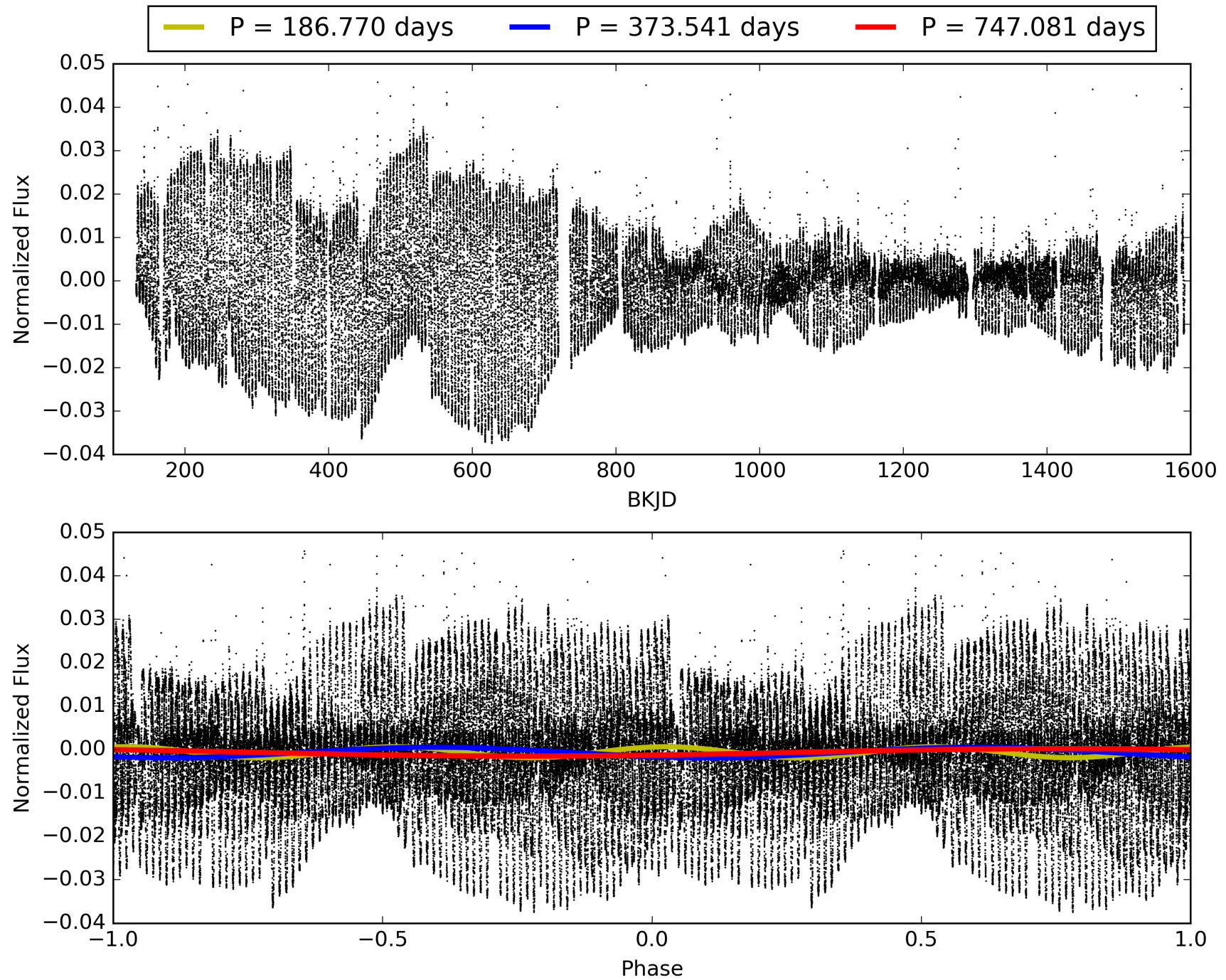
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:15:03 Z

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

TCE 008196449-07, PDC Light Curves

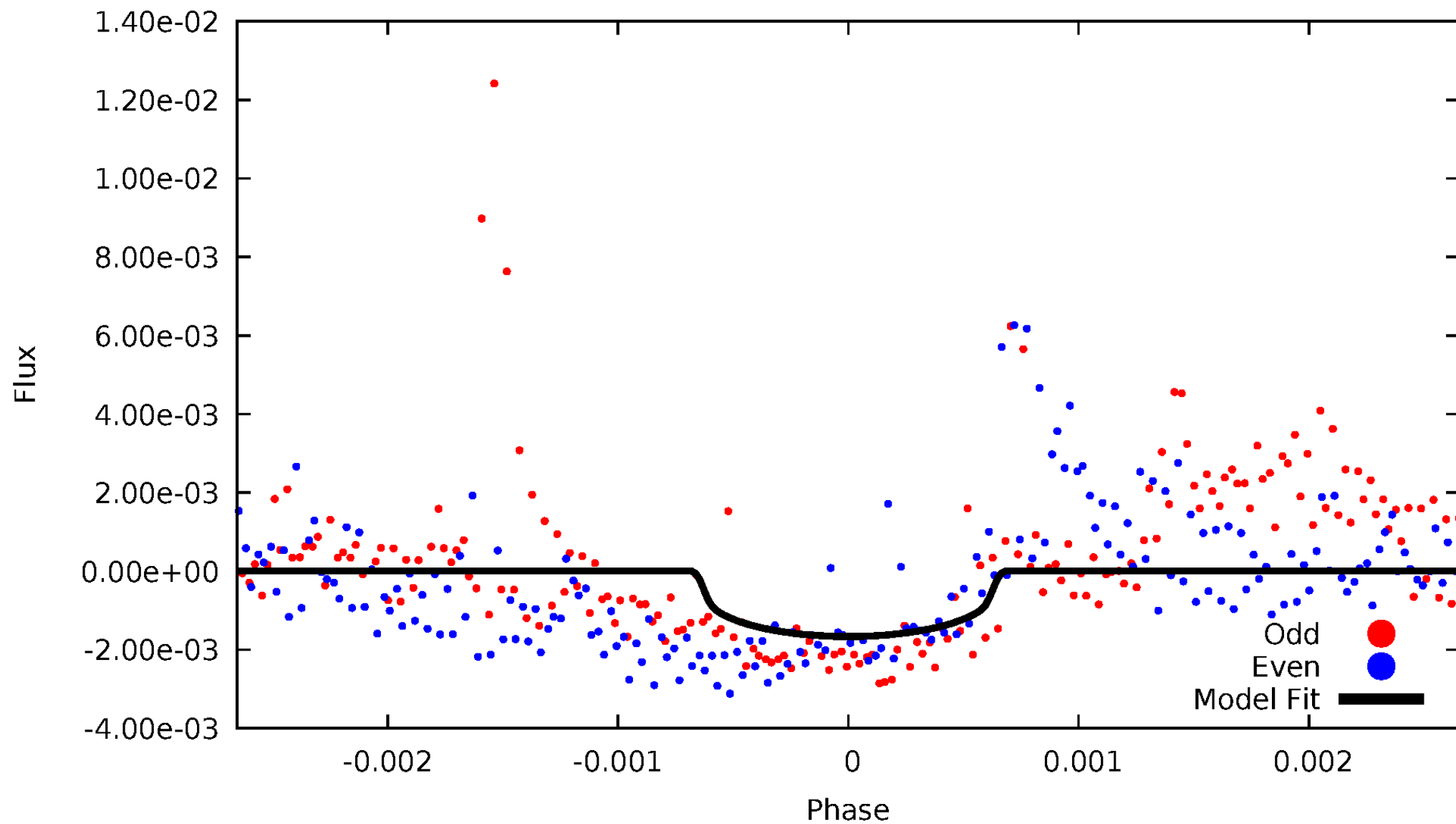


TCE 008196449-07



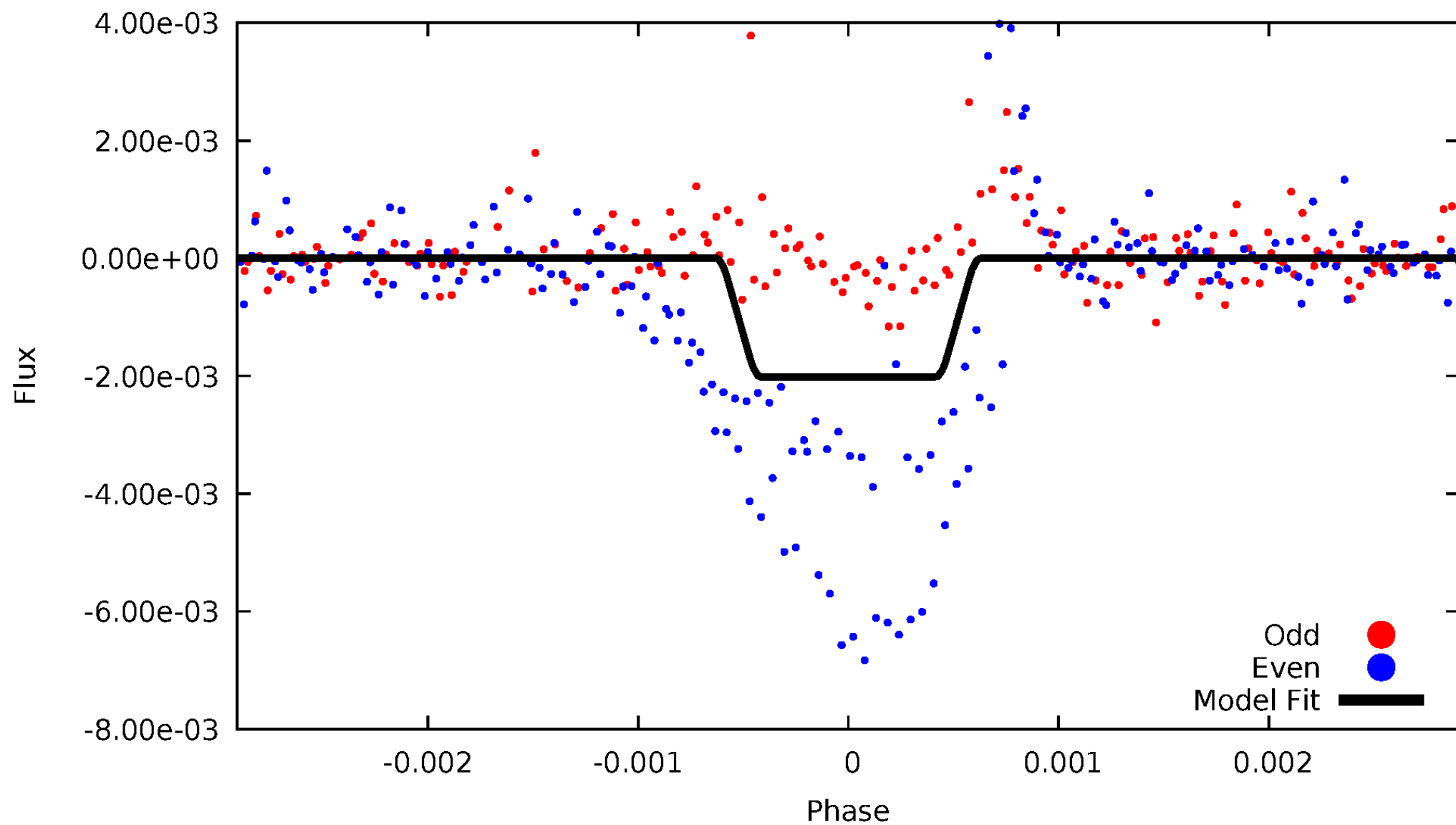
DV Odd/Even

TCE 008196449-07



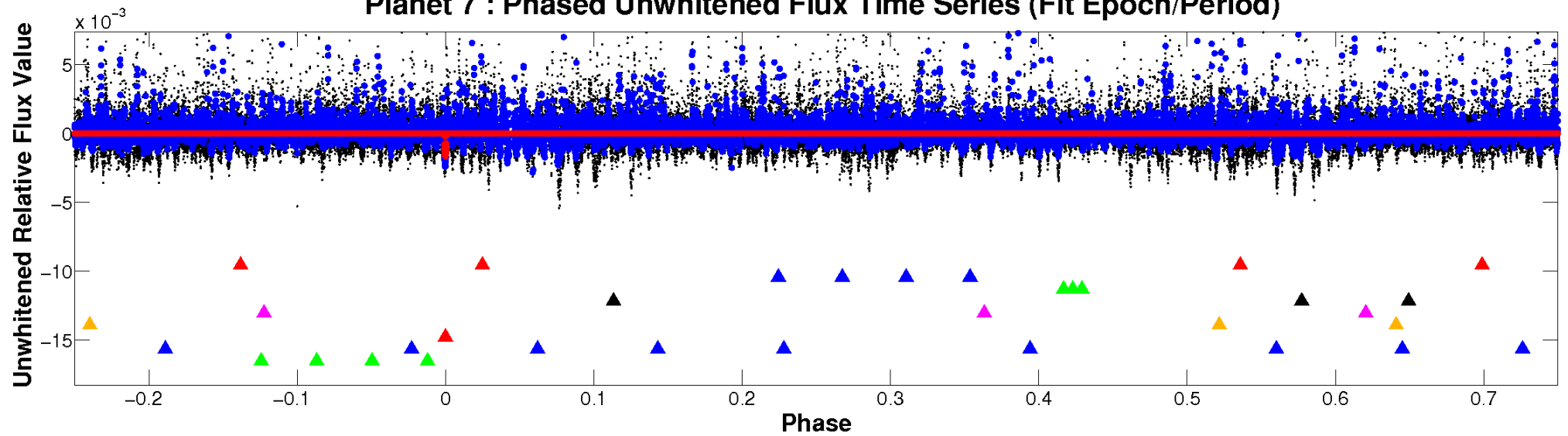
ALT Odd/Even

TCE 008196449-07

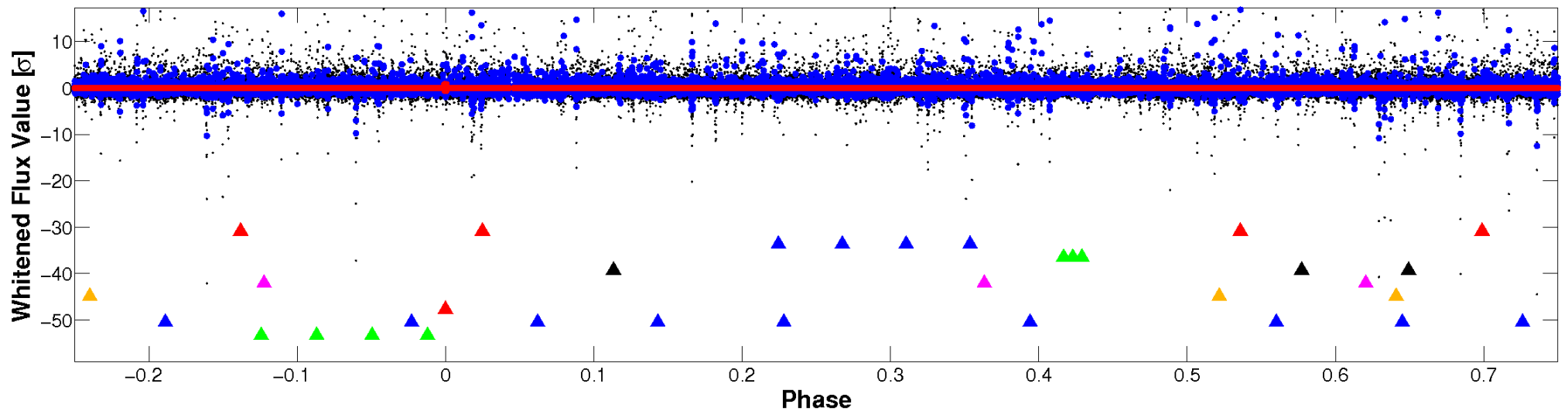


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

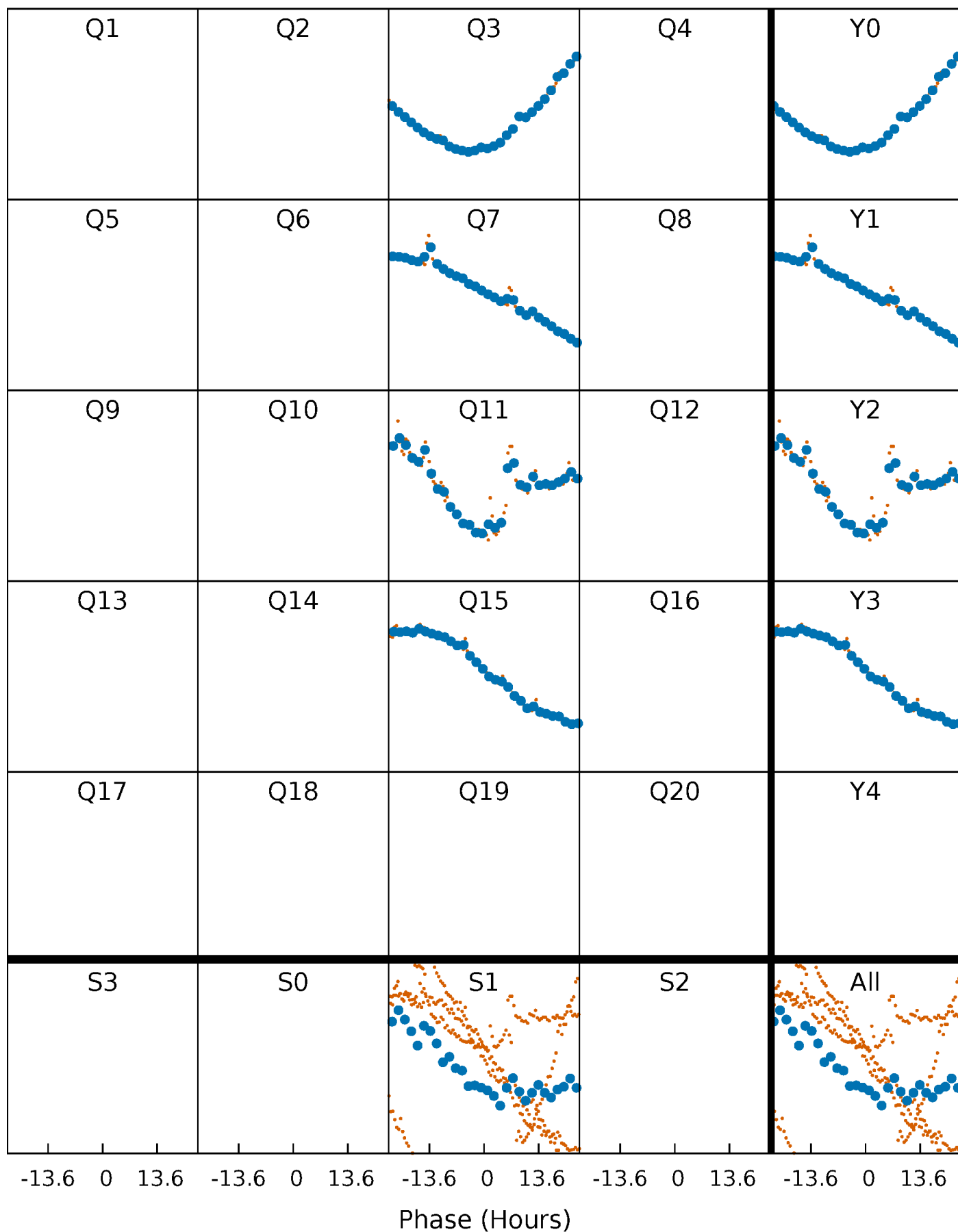


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



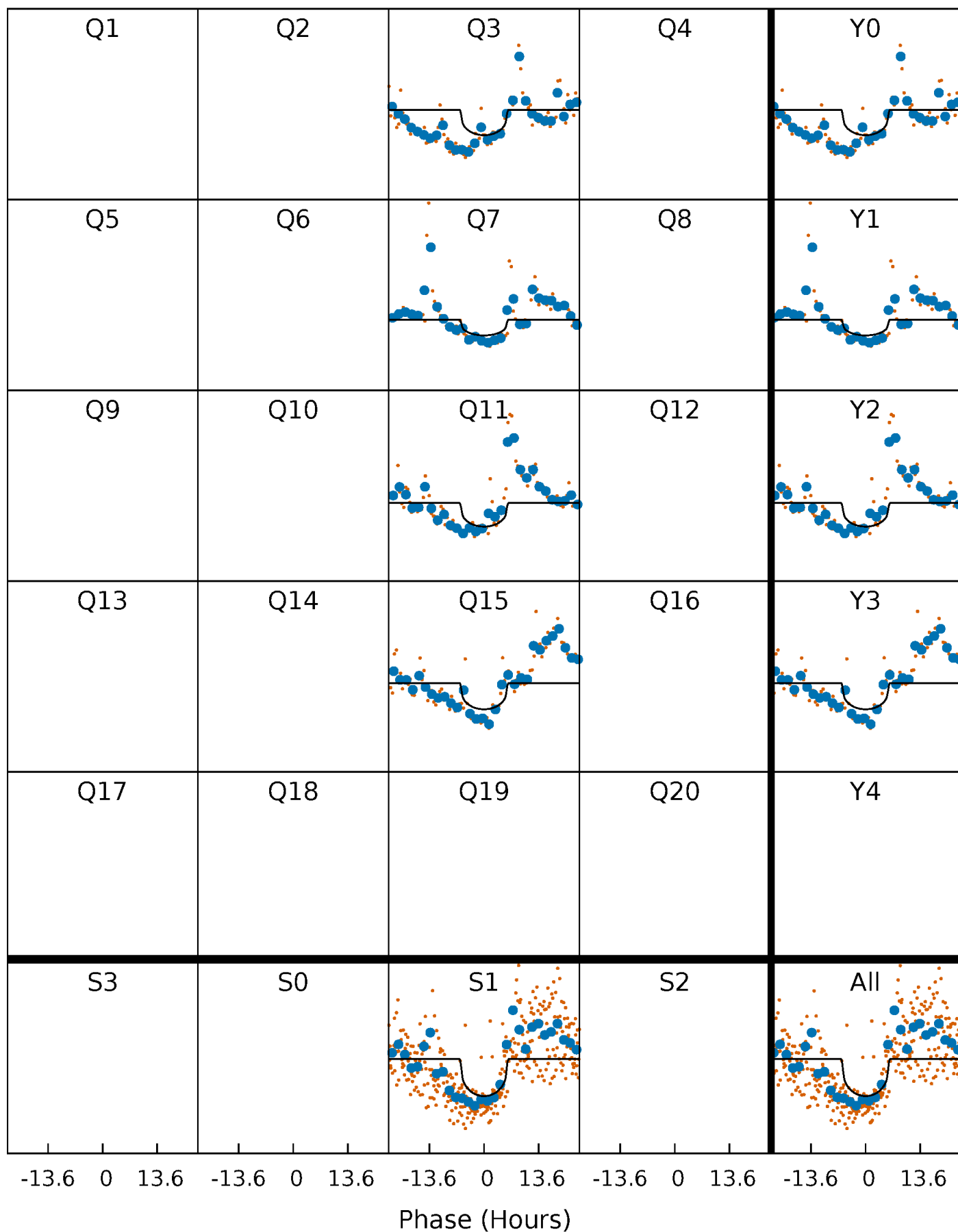
PDC Quarter-Phased Transit Curves

TCE 008196449-07 $P=373.540658$ Days $T_0=335.180945$ (BKJD)



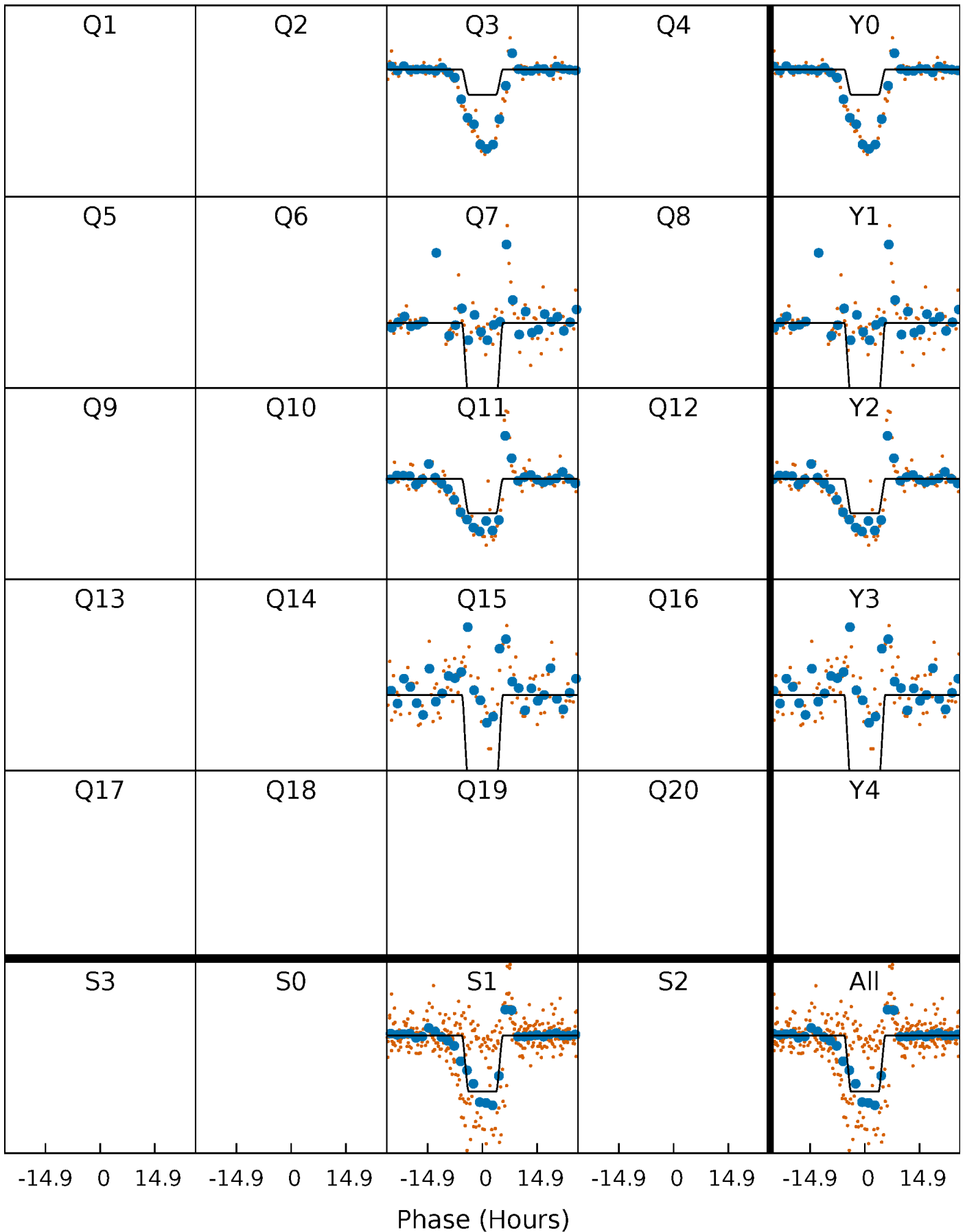
DV Quarter-Phased Transit Curves

TCE 008196449-07 $P=373.540658$ Days $T_0=335.180945$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

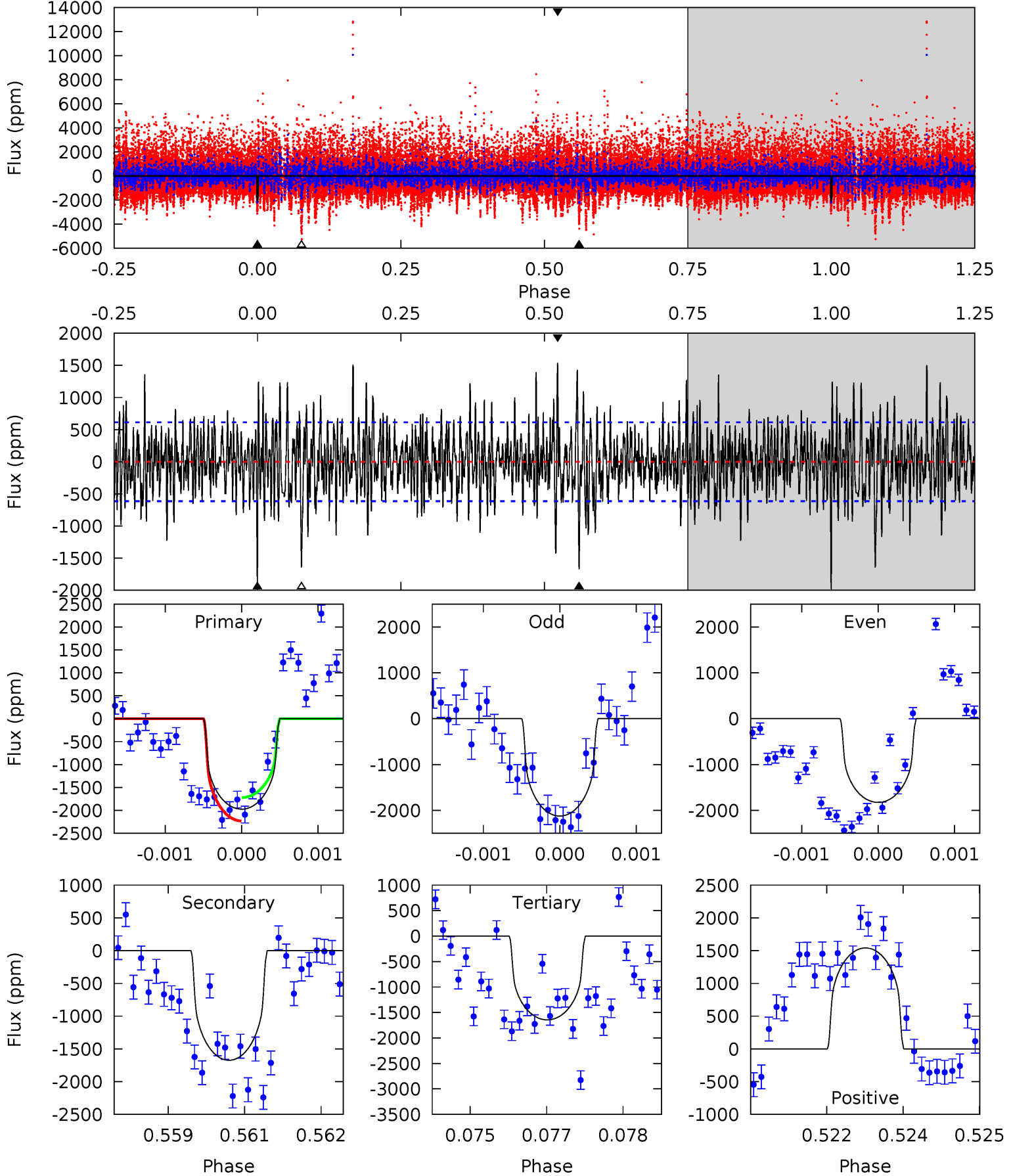
TCE 008196449-07 P=373.518666 Days $T_0=335.225562$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-07, P = 373.540658 Days, E = 335.180945 Days

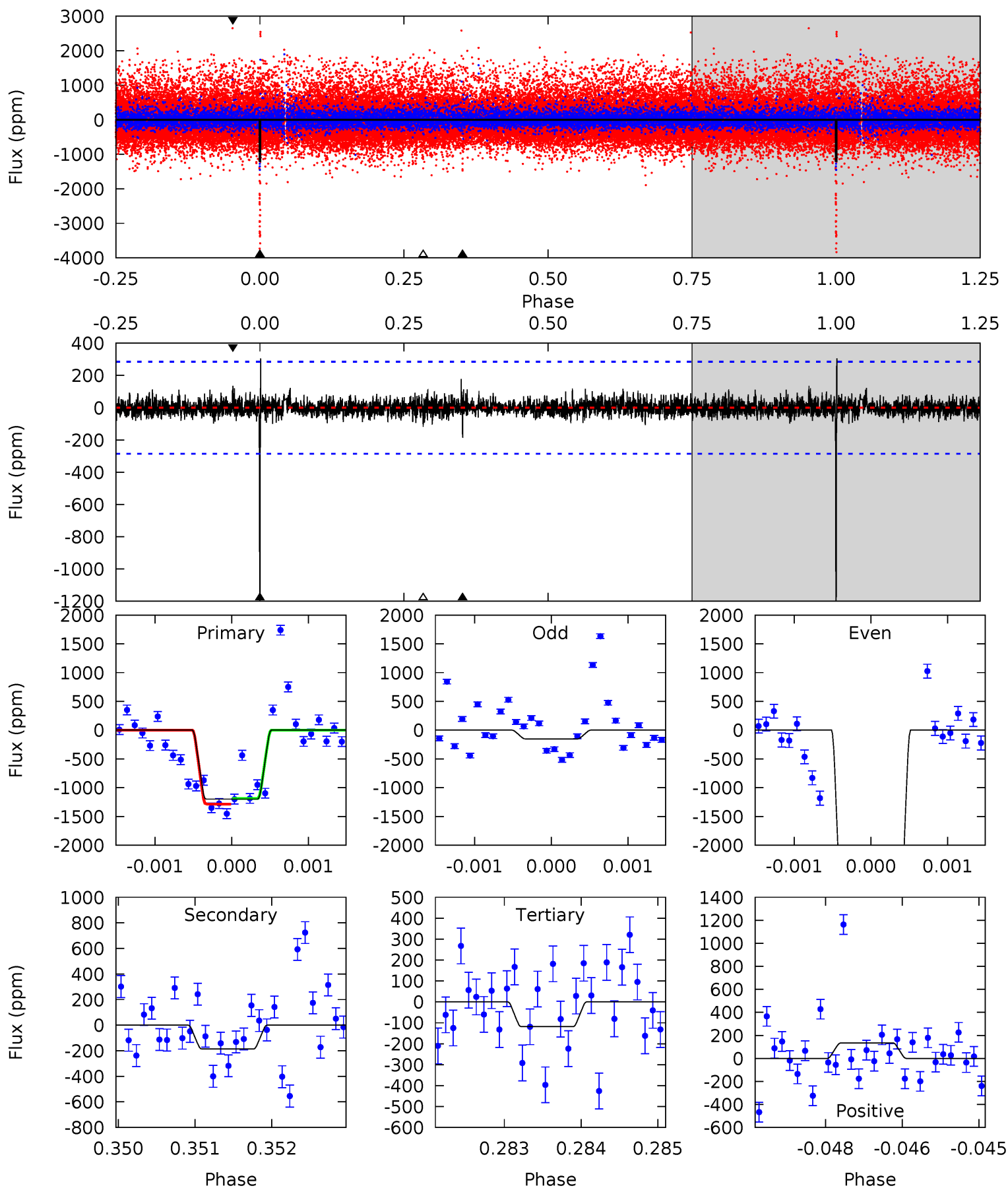
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	14.7	14.5	13.5	5.40	3.20	3.65	2.90	3.81	0.26	1.17	1.15	0.98	0.44	2.26



Alt Model-Shift Uniqueness Test

008196449-07, P = 373.518666 Days, E = 335.225562 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.8	3.53	2.24	2.56	5.42	3.23	0.58	20.5	20.2	1.29	0.97	44.2	1.38	0.20	0.92



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1673 ± 114	$2.34^{+1.12}_{-0.95}$	199^{+7}_{-8}	4030^{+987}_{-492}	$124464^{+232118}_{-67734}$
Alt.	-186 ± 53	$2.99^{+1.02}_{-1.07}$	199^{+7}_{-8}	2680^{+352}_{-225}	8314^{+12232}_{-4101}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

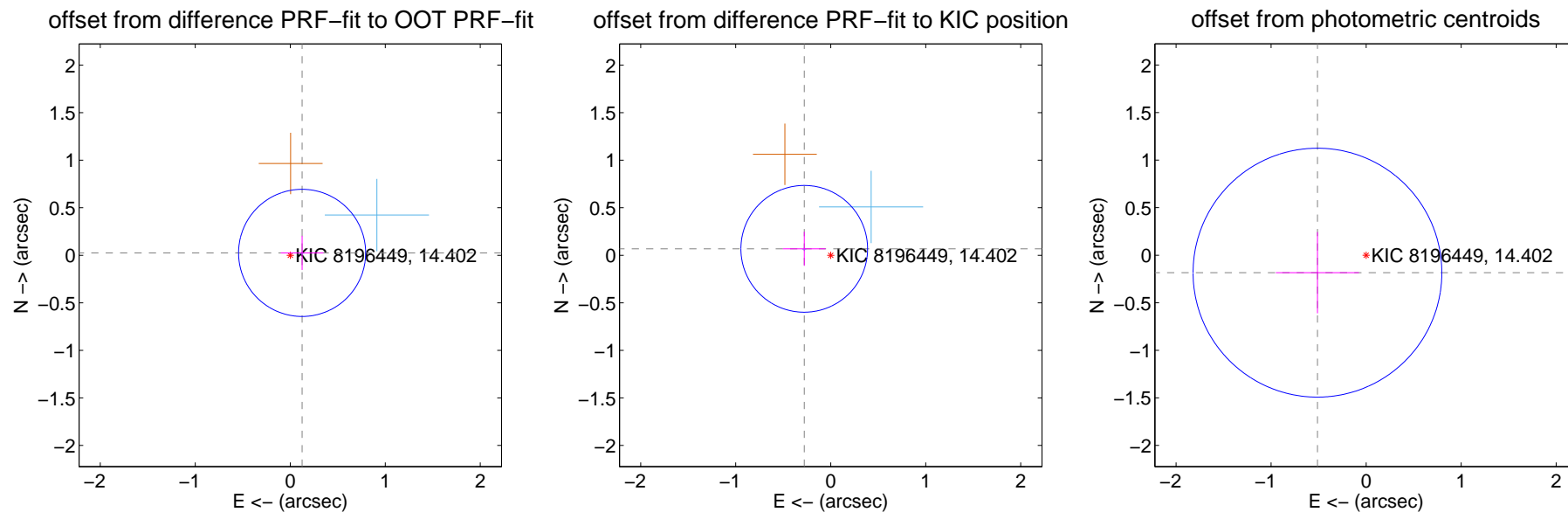
DV Centroid Data

Supplemental centroid analysis for 008196449-07. Kepler magnitude: 14.40. Transit SNR 6.65

There are 2 quarters with good PRF difference image offsets

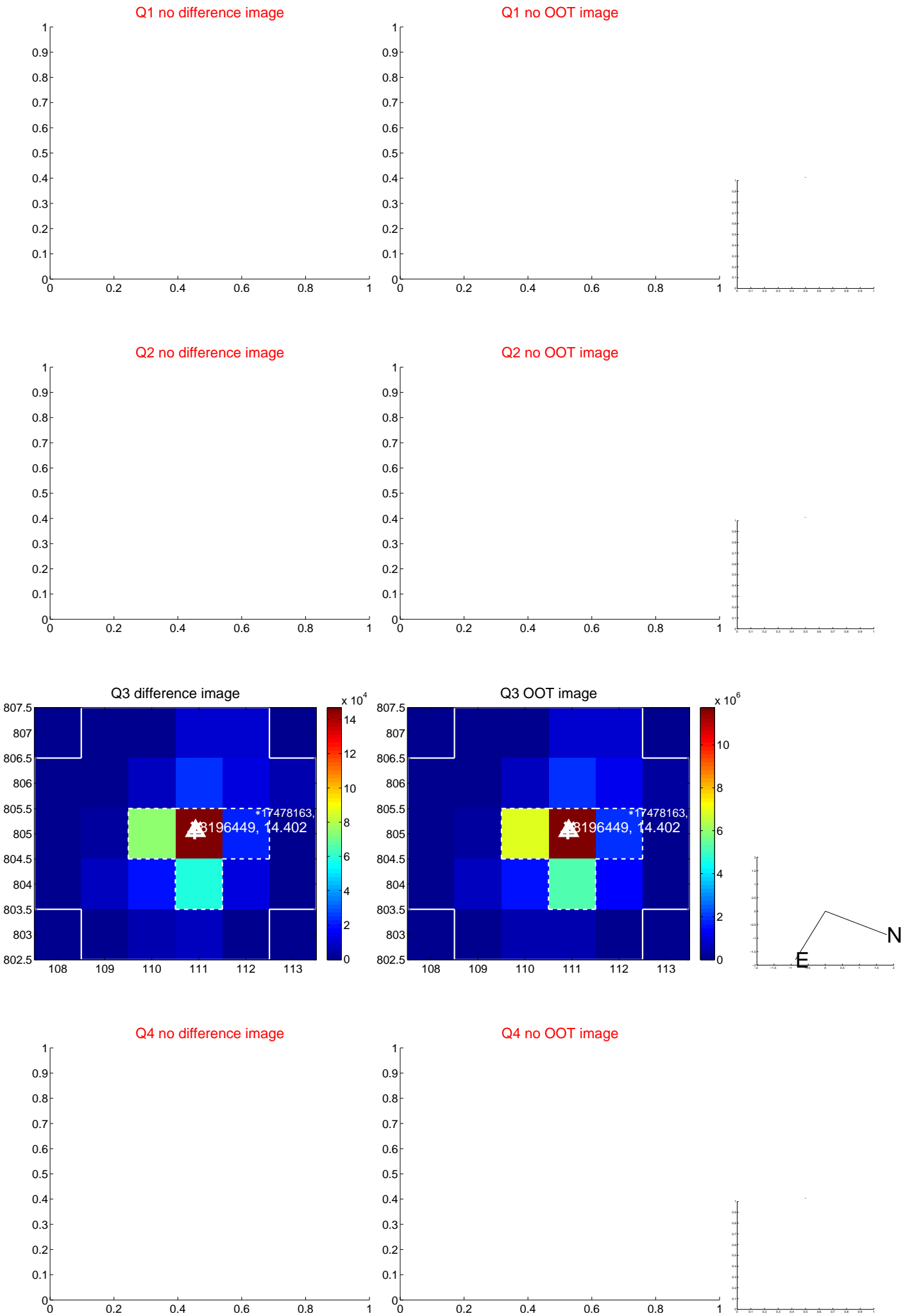
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.127 ± 0.223	0.57	-0.125 ± 0.225	0.025 ± 0.179
PRF-fit source offset from KIC position	0.287 ± 0.222	1.29	0.279 ± 0.225	0.068 ± 0.179
photometric centroid source offset	0.54 ± 0.44	1.25	0.51 ± 0.44	-0.18 ± 0.43



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

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



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

Q5 no difference image



Q5 no OOT image



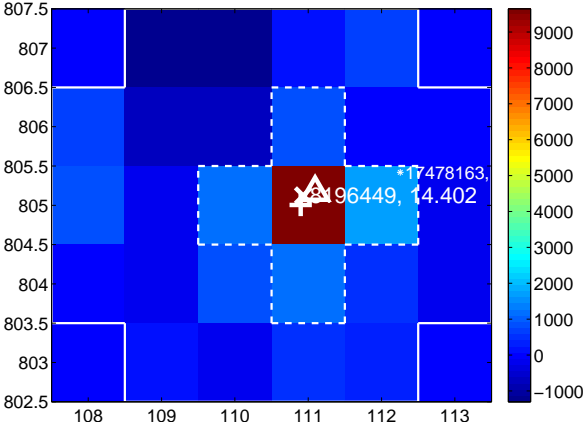
Q6 no difference image



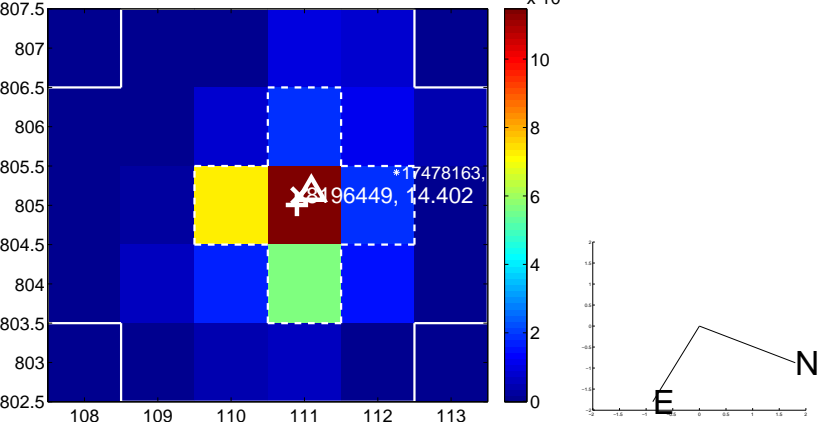
Q6 no OOT image



Q7 difference image



Q7 OOT image



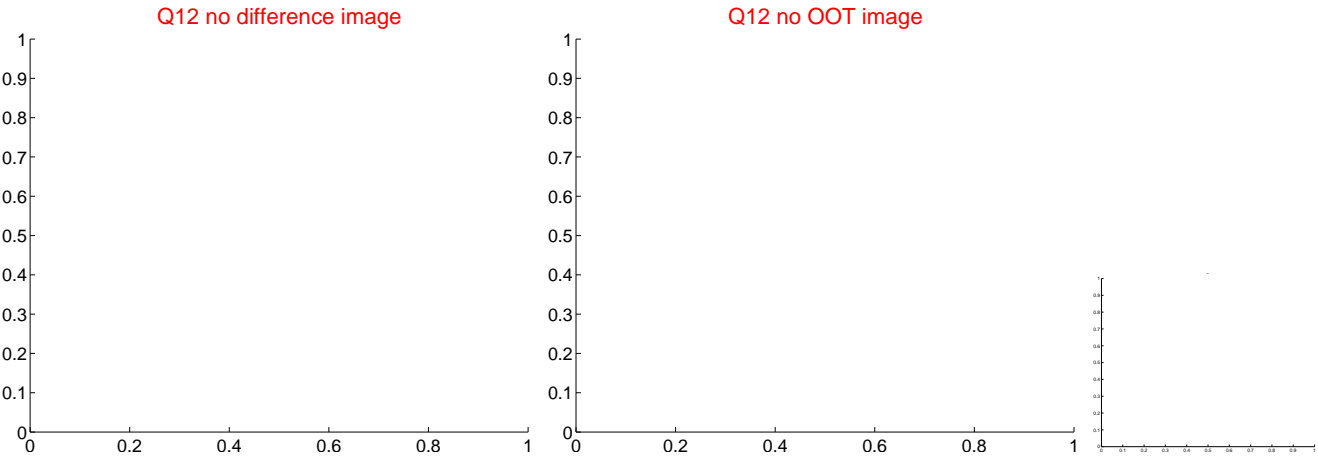
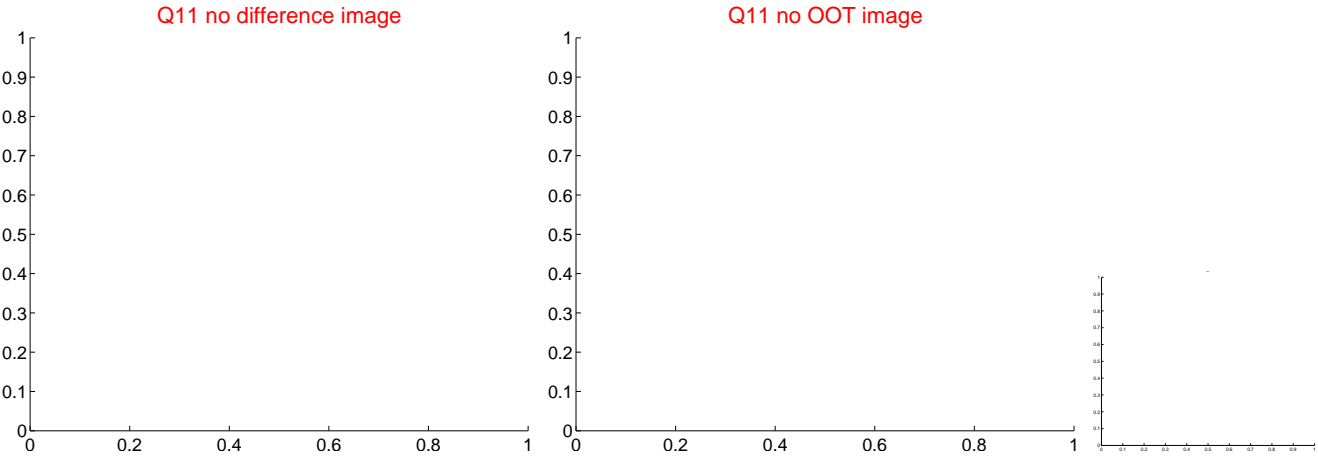
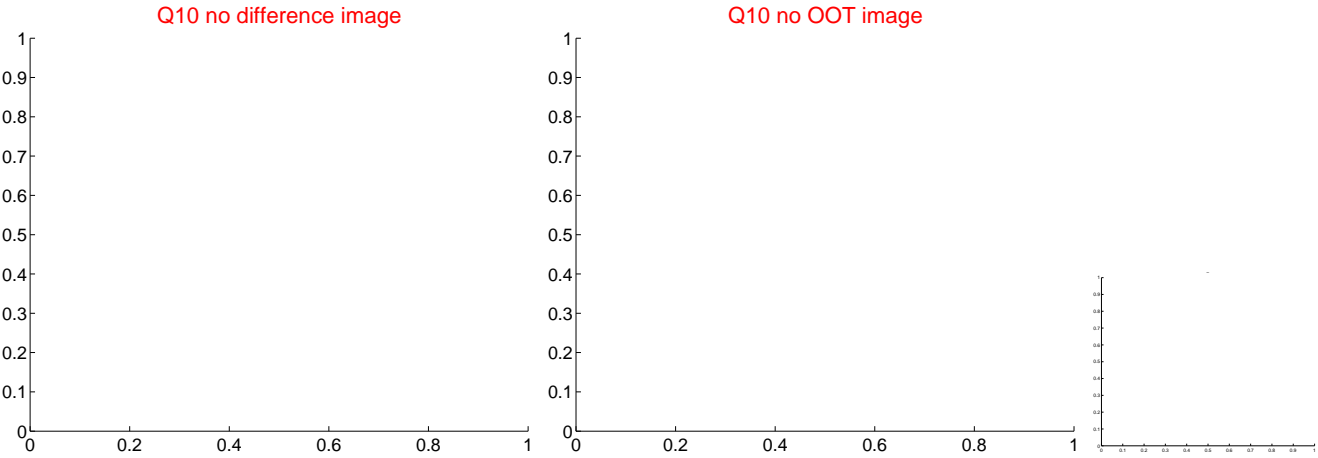
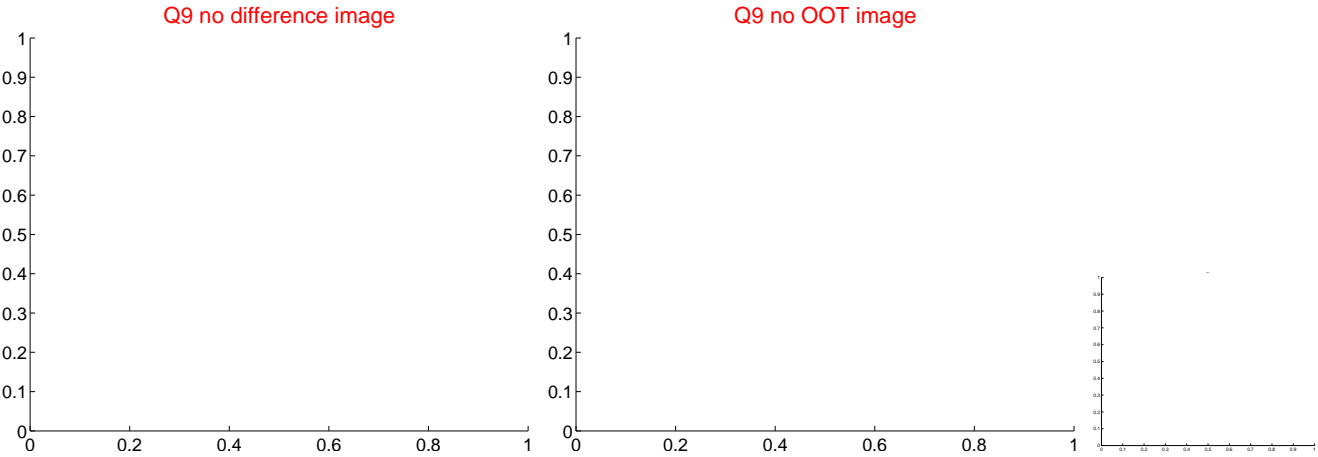
Q8 no difference image



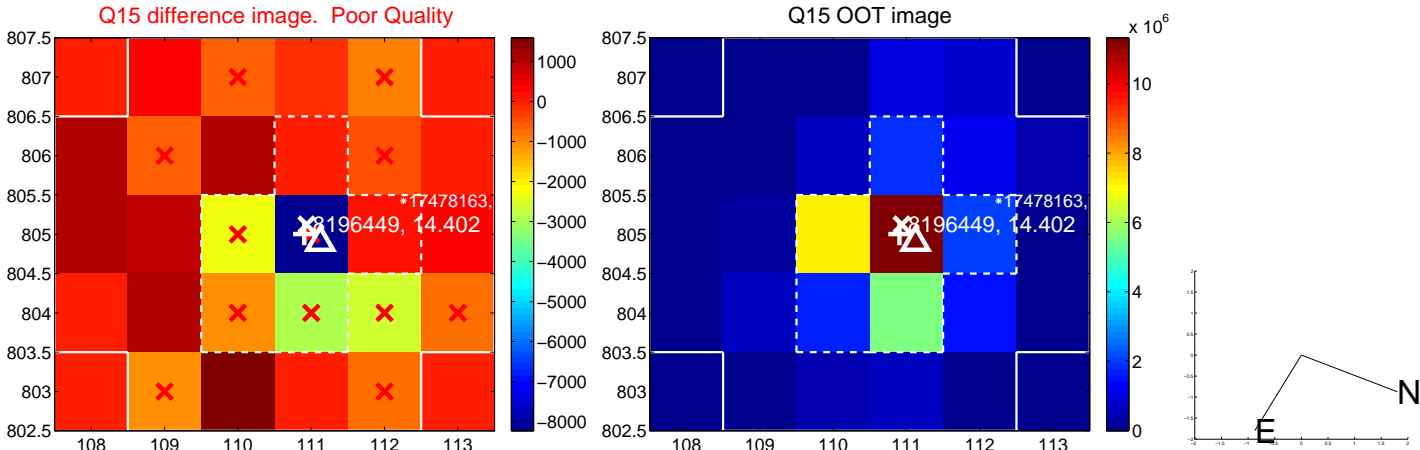
Q8 no OOT image



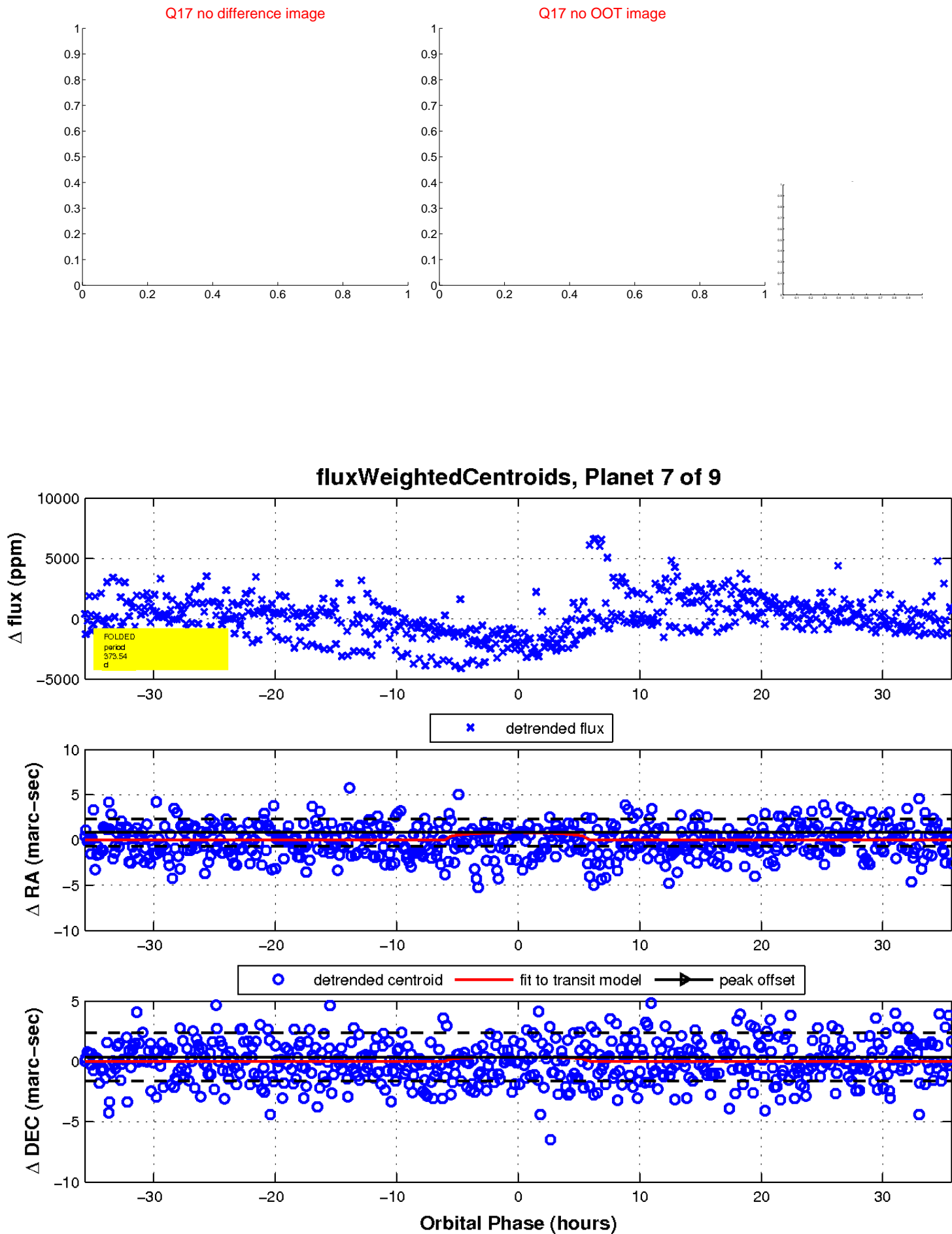
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

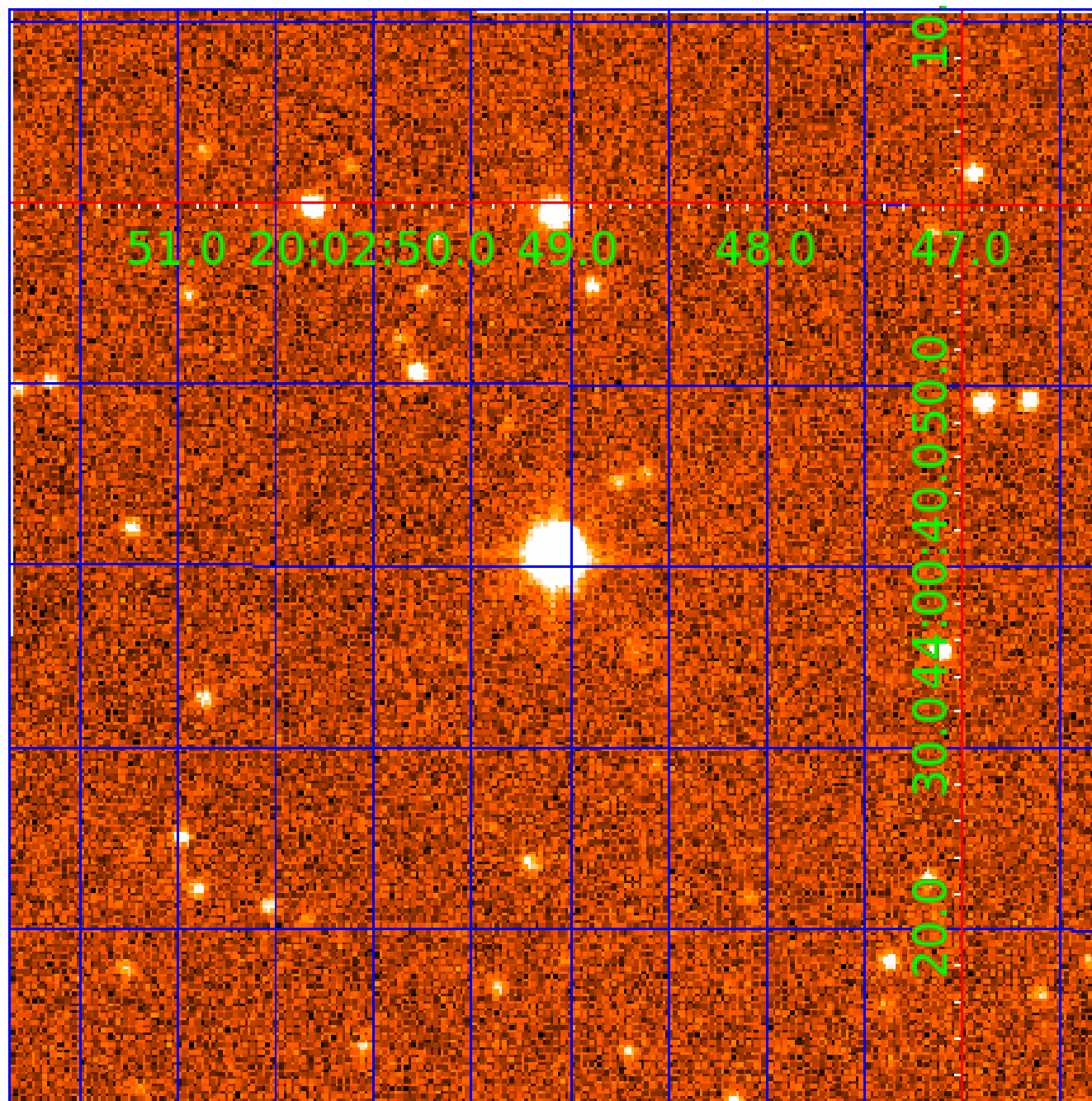


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008196449

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})
008196449-01	OBS	No	312.651031	344.486357	2489.6	5.200	13.7	10.0	0.61	3864	3.32	0.13
008196449-02	OBS	No	357.451269	467.298886	2110.5	8.691	16.2	6.7	0.61	3864	3.50	0.11
008196449-03	OBS	No	375.844189	490.862434	1638.4	5.053	14.4	6.4	0.61	3864	2.54	0.10
008196449-04	OBS	No	573.770145	177.272635	2076.7	6.251	14.2	7.4	0.61	3864	2.65	0.06
008196449-05	OBS	No	469.613021	470.887223	1770.7	14.530	12.7	5.9	0.61	3864	2.48	0.07
008196449-06	OBS	No	418.085782	530.058095	550.8	2.474	13.2	2.2	0.61	3864	1.42	0.09
008196449-07	OBS	No	373.540658	335.180945	1666.0	11.894	12.5	6.6	0.61	3864	2.47	0.10
008196449-08	OBS	No	155.762754	232.904936	1253.9	3.669	13.6	7.6	0.61	3864	2.06	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196449-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
008196449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
008196449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008196449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_KIC_POS
008196449-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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
008196449-06	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—CENT_FEW_DIFFS
008196449-07	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008196449-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

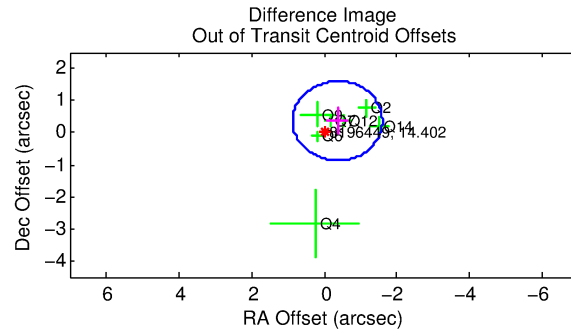
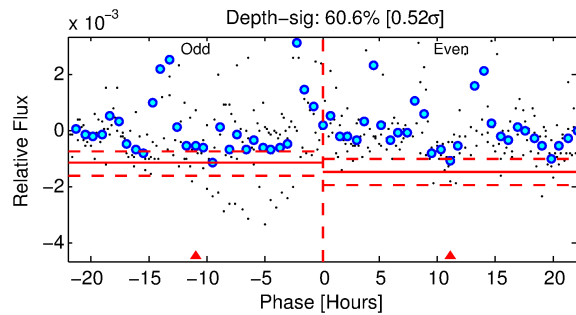
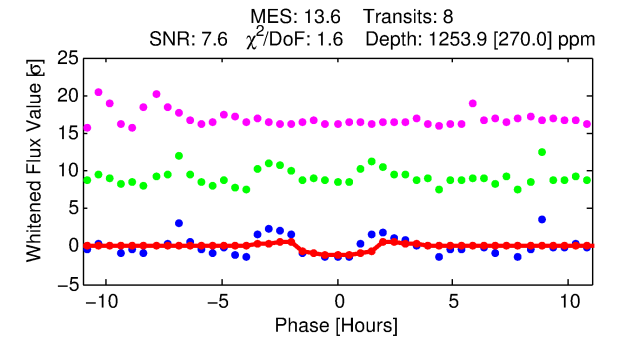
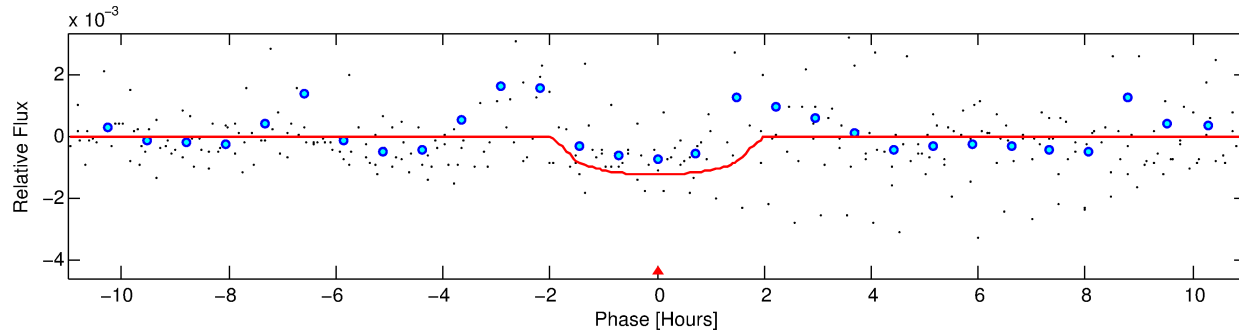
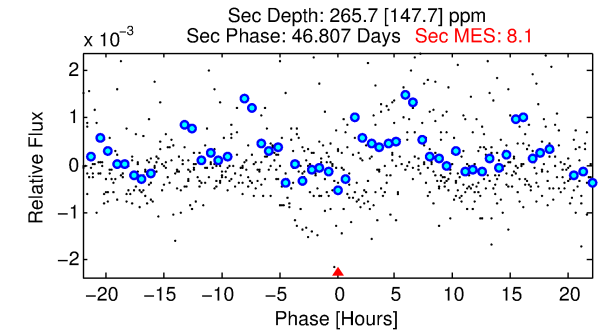
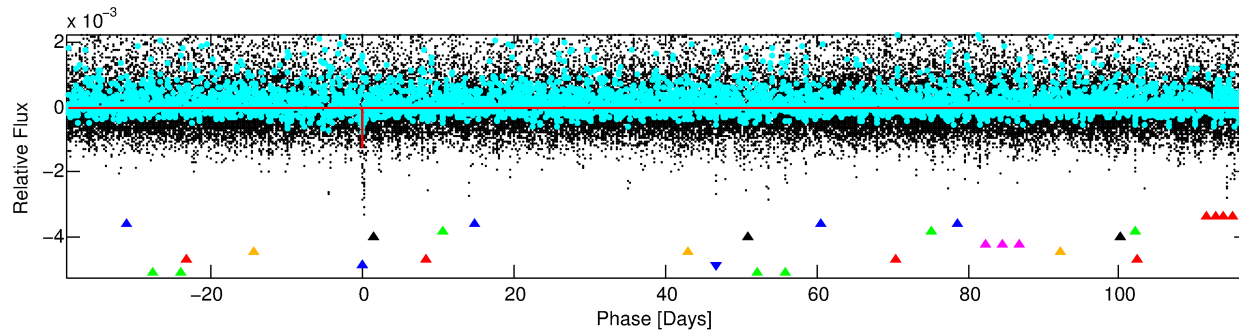
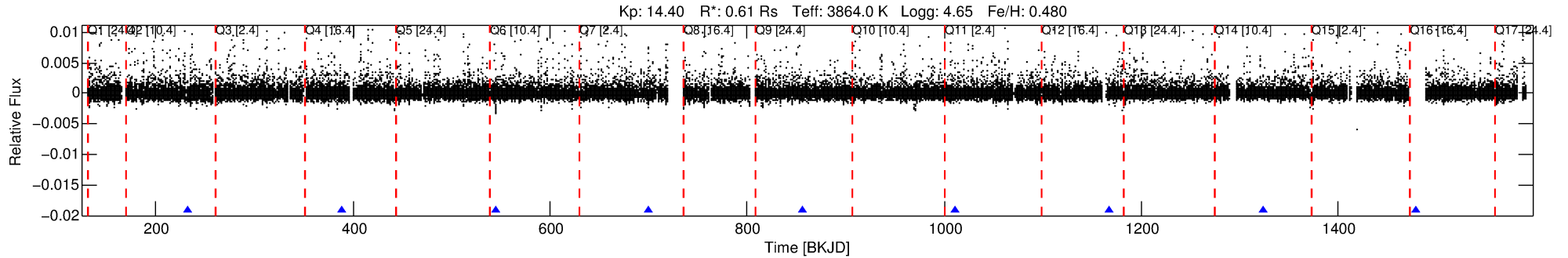
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008196449-08

No Significant Match Found

DV One-Page Summary

KIC: 8196449 Candidate: 8 of 9 Period: 155.763 d



DV Fit Results:

Period = 155.76275 [0.00248] d
Epoch = 232.9049 [0.0112] BKJD
Rp/R* = 0.0310 [0.0441]
a/R* = 334.20 [1372.66]
b = 0.03 [126.88]
Seff = 0.32 [0.06]
Teq = 192 [9] K
Rp = 2.06 [2.94] Re
a = 0.4807 [0.0433] AU
Ag = 7937.12 [23014.33] [0.34 σ]
Teff = 2802 [2032] K [1.28 σ]

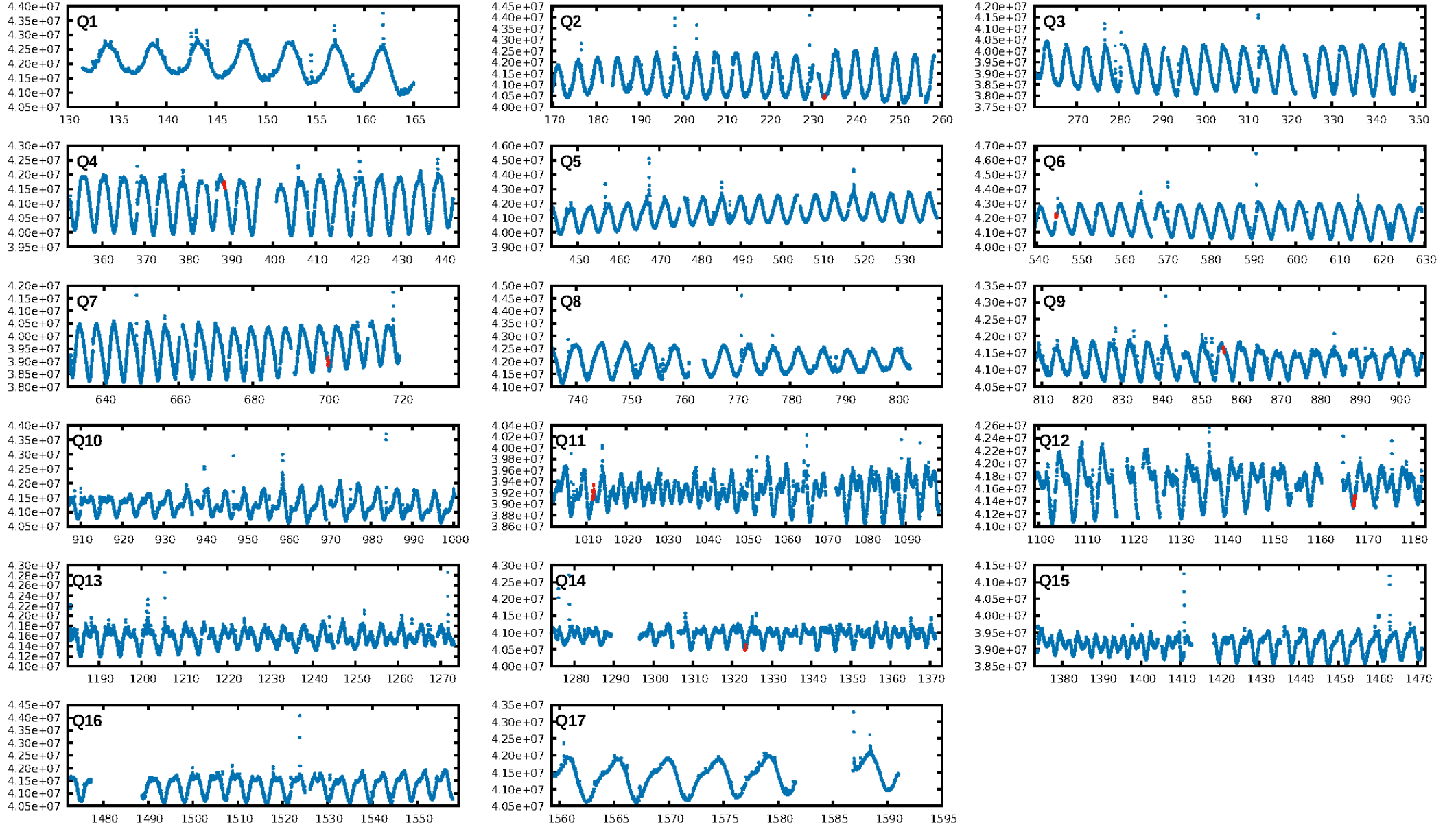
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [591.64 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 88.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.7982
Centroid-sig: 2.4%
Centroid-so: 1.237 arcsec [1.88 σ]
OotOffset-rm: 0.515 arcsec [1.25 σ]
KicOffset-rm: 0.350 arcsec [0.90 σ]
OotOffset-st: 3/1/2/1 [7]
KicOffset-st: 3/1/2/1 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 1.00 [8/8]

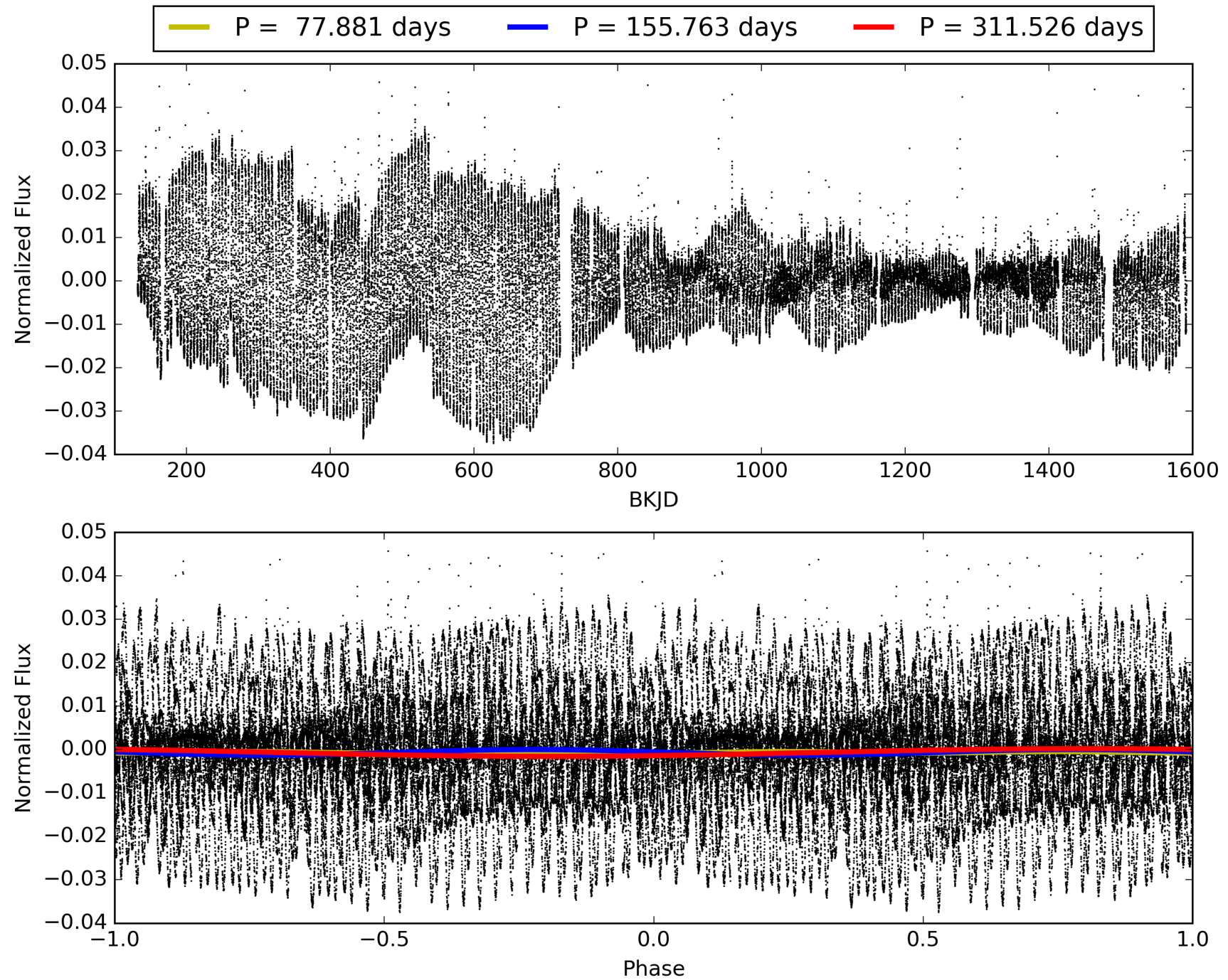
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:15:13 Z

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

TCE 008196449-08, PDC Light Curves

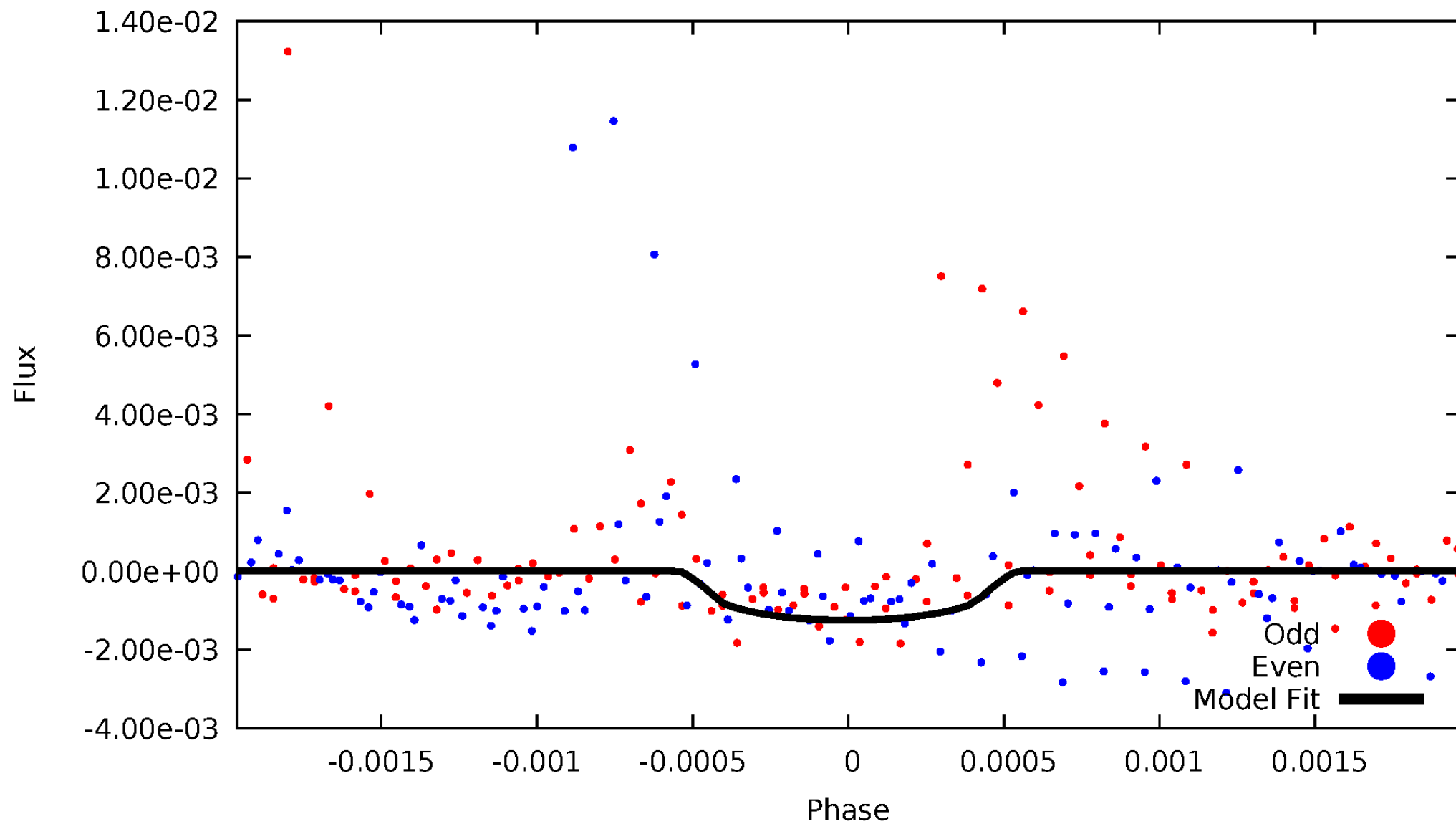


TCE 008196449-08



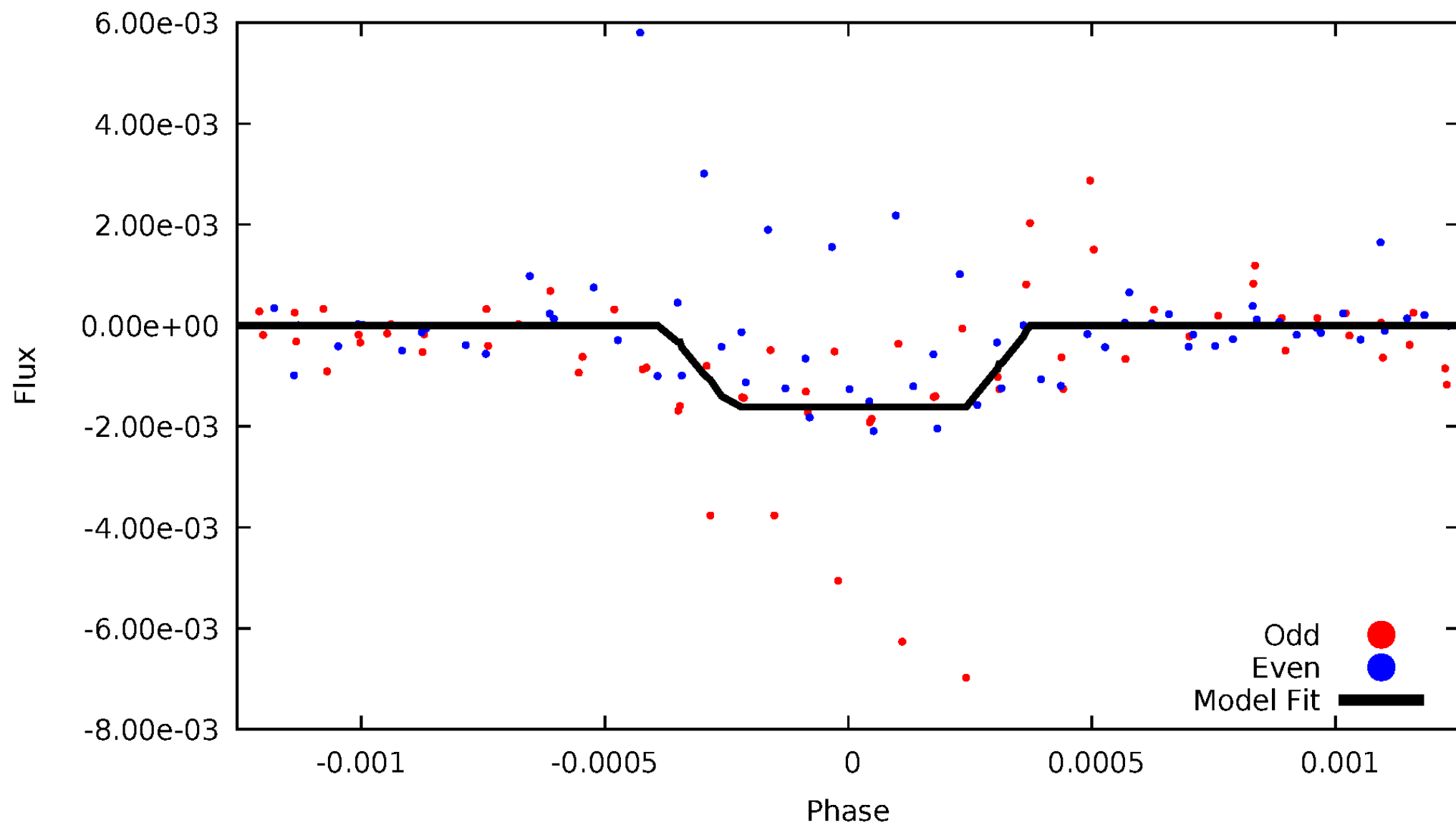
DV Odd/Even

TCE 008196449-08



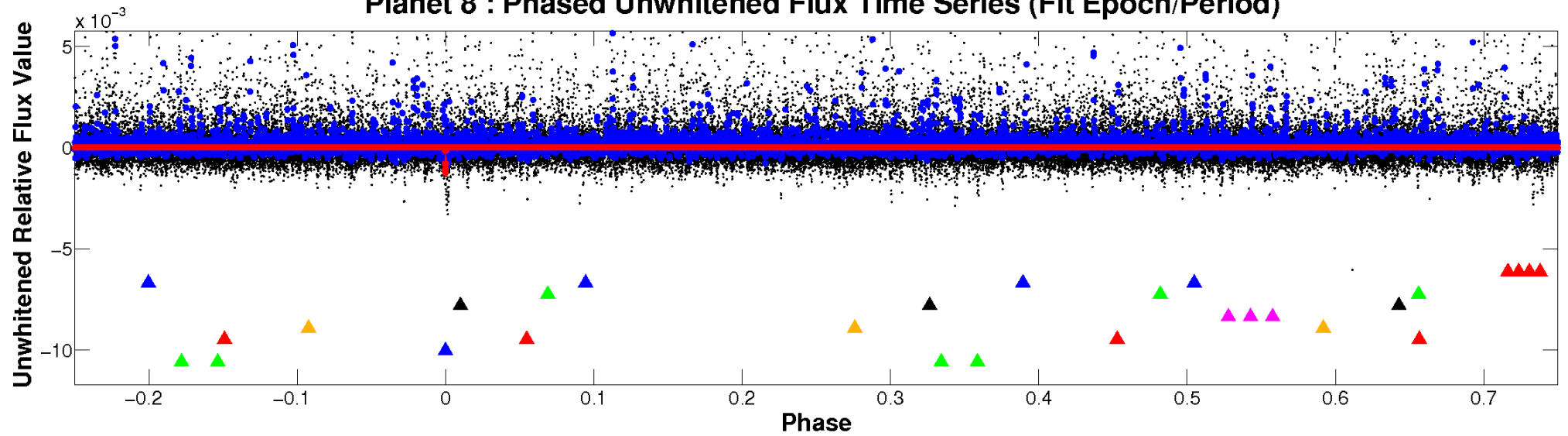
ALT Odd/Even

TCE 008196449-08

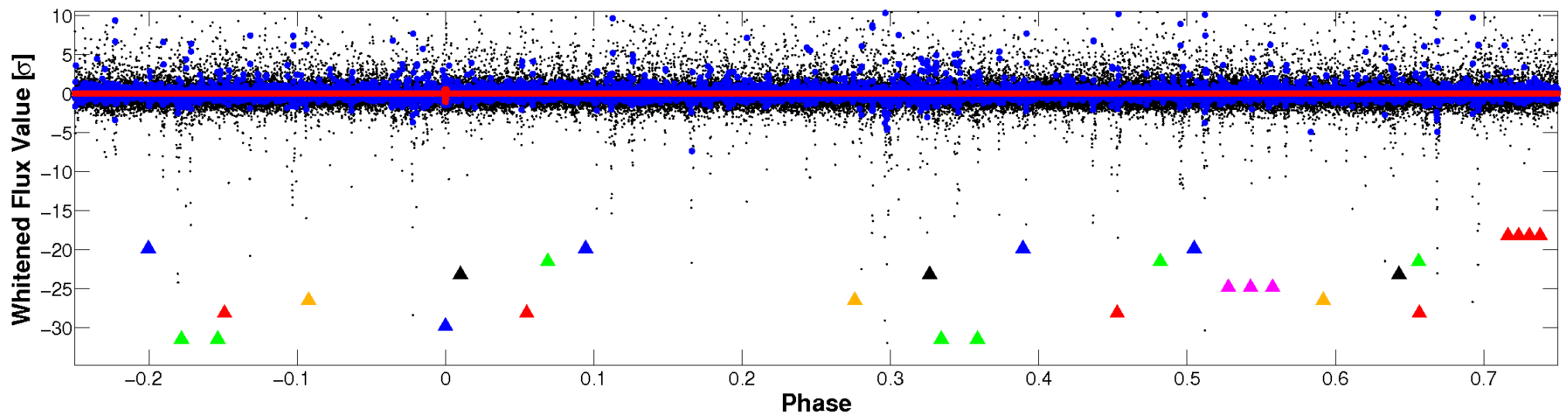


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

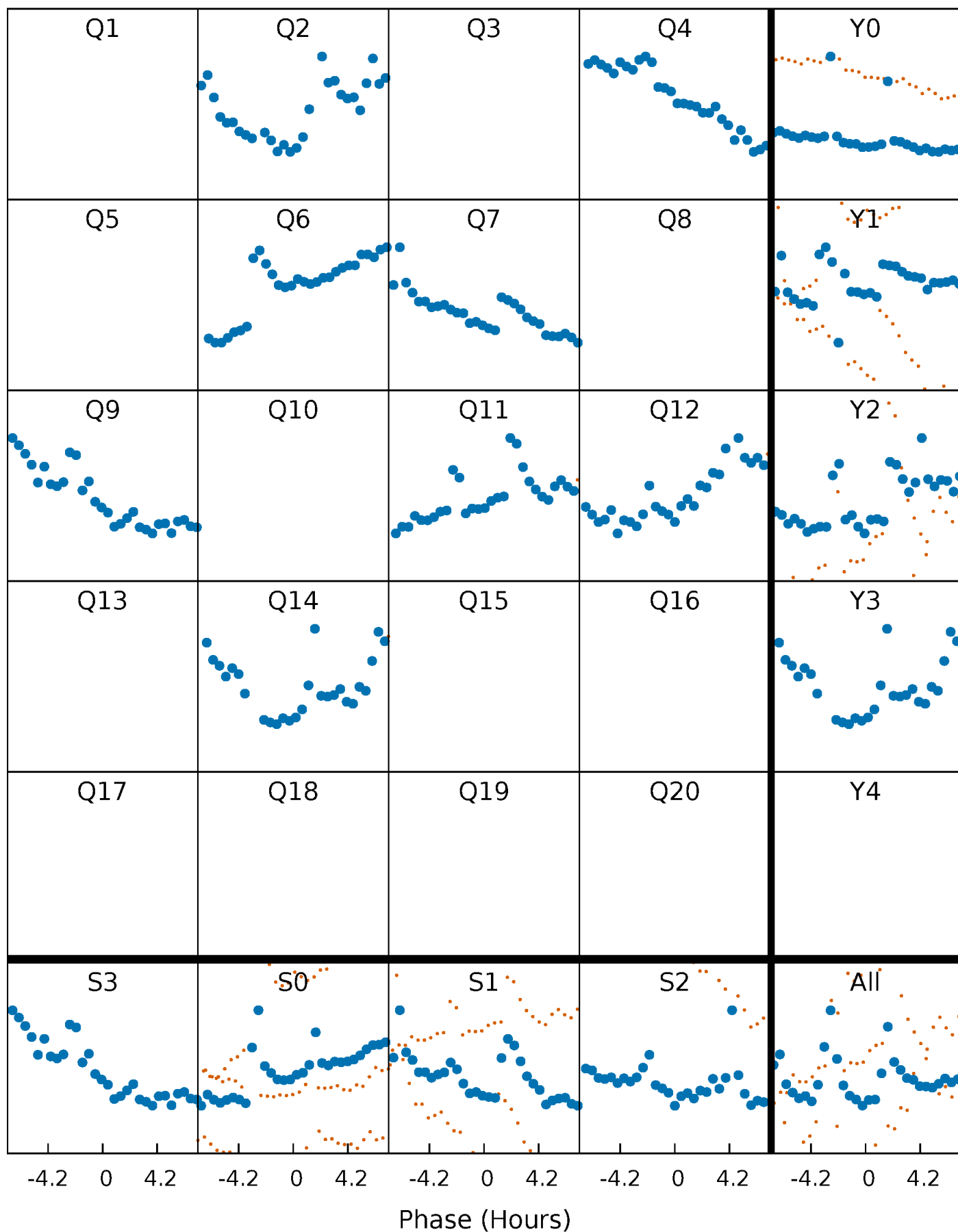


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



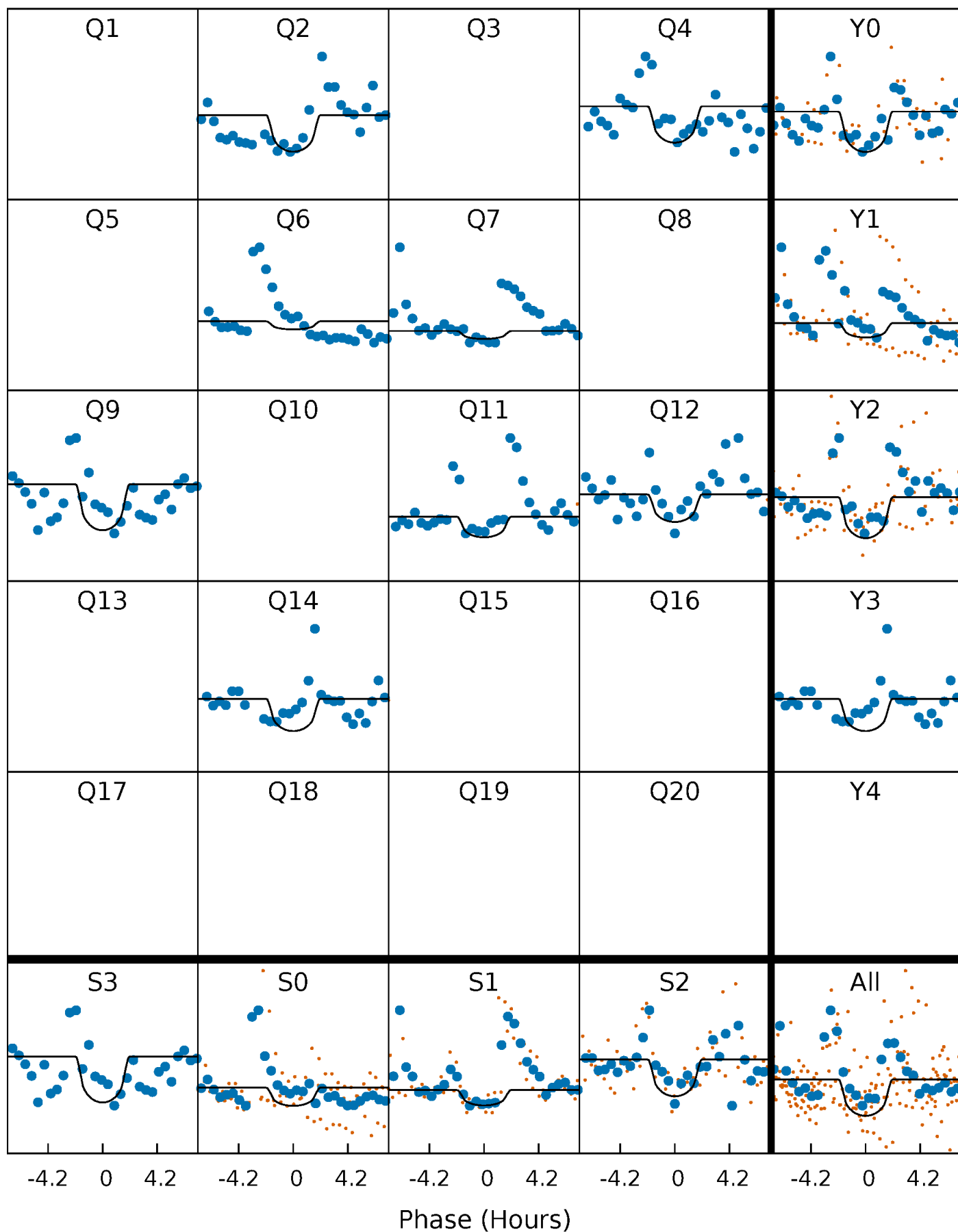
PDC Quarter-Phased Transit Curves

TCE 008196449-08 P=155.762754 Days $T_0=232.904936$ (BKJD)



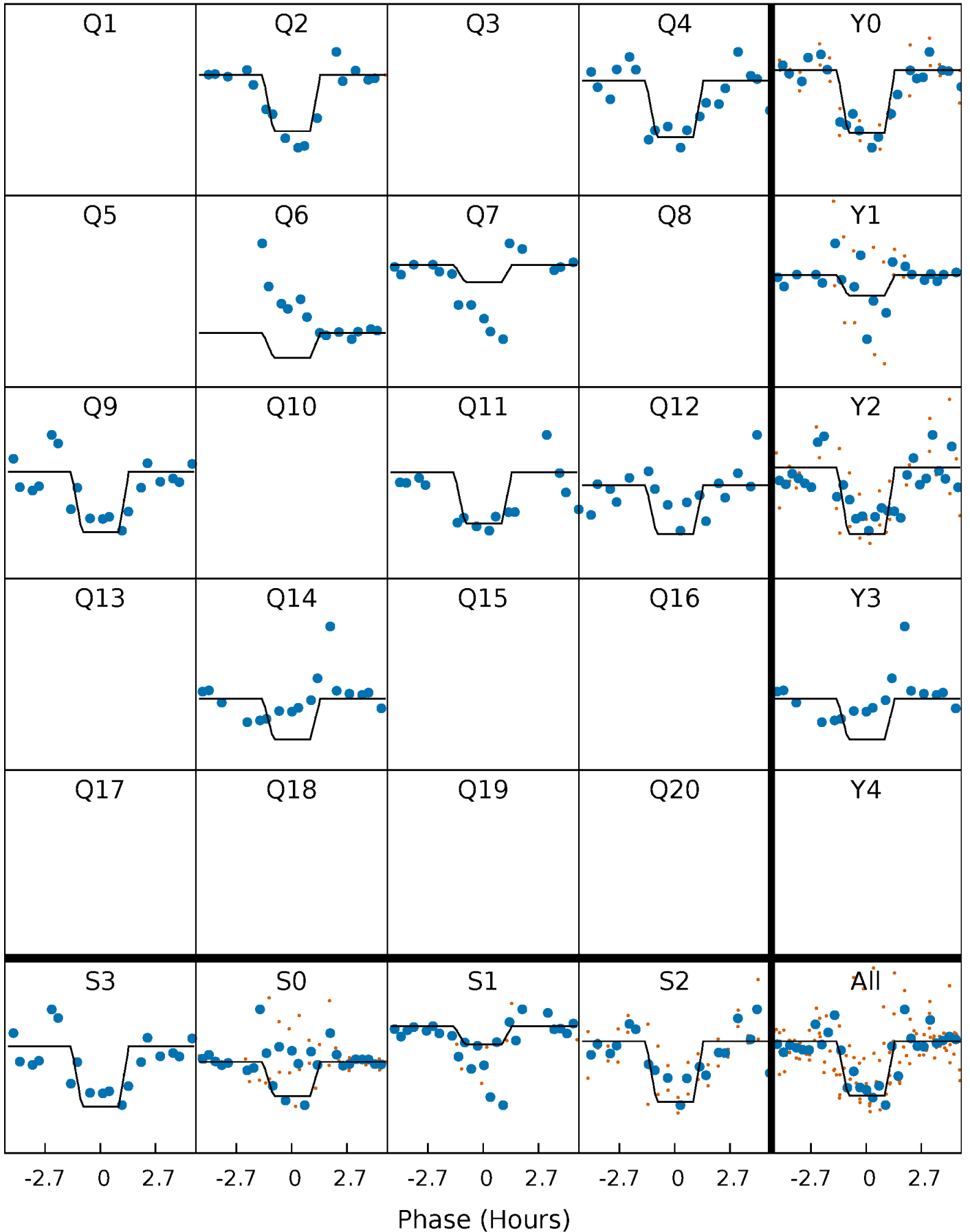
DV Quarter-Phased Transit Curves

TCE 008196449-08 P=155.762754 Days $T_0=232.904936$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

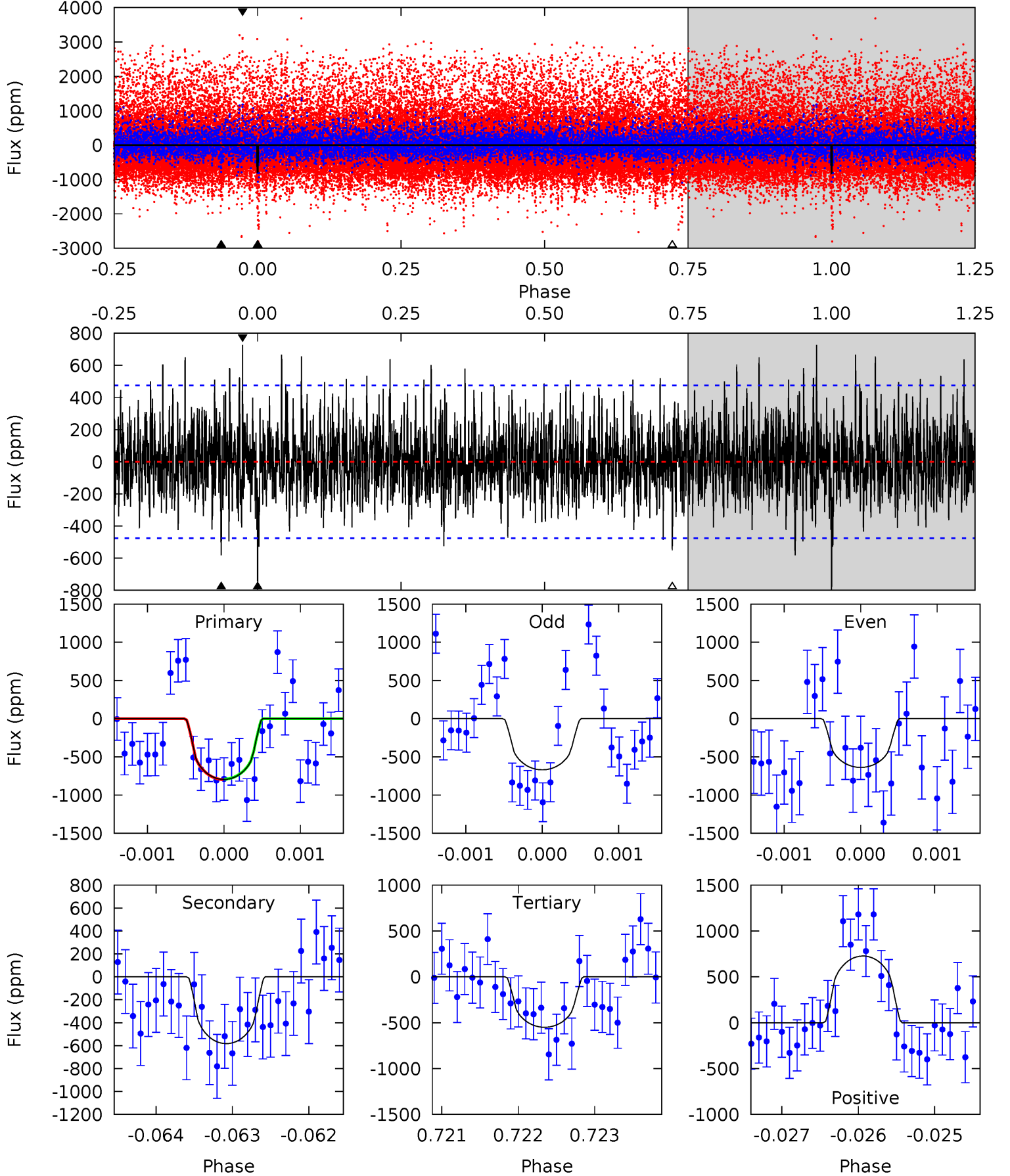
TCE 008196449-08 P=155.761252 Days $T_0=232.897933$ (BKJD)



DV Model-Shift Uniqueness Test

008196449-08, P = 155.762754 Days, E = 77.142182 Days

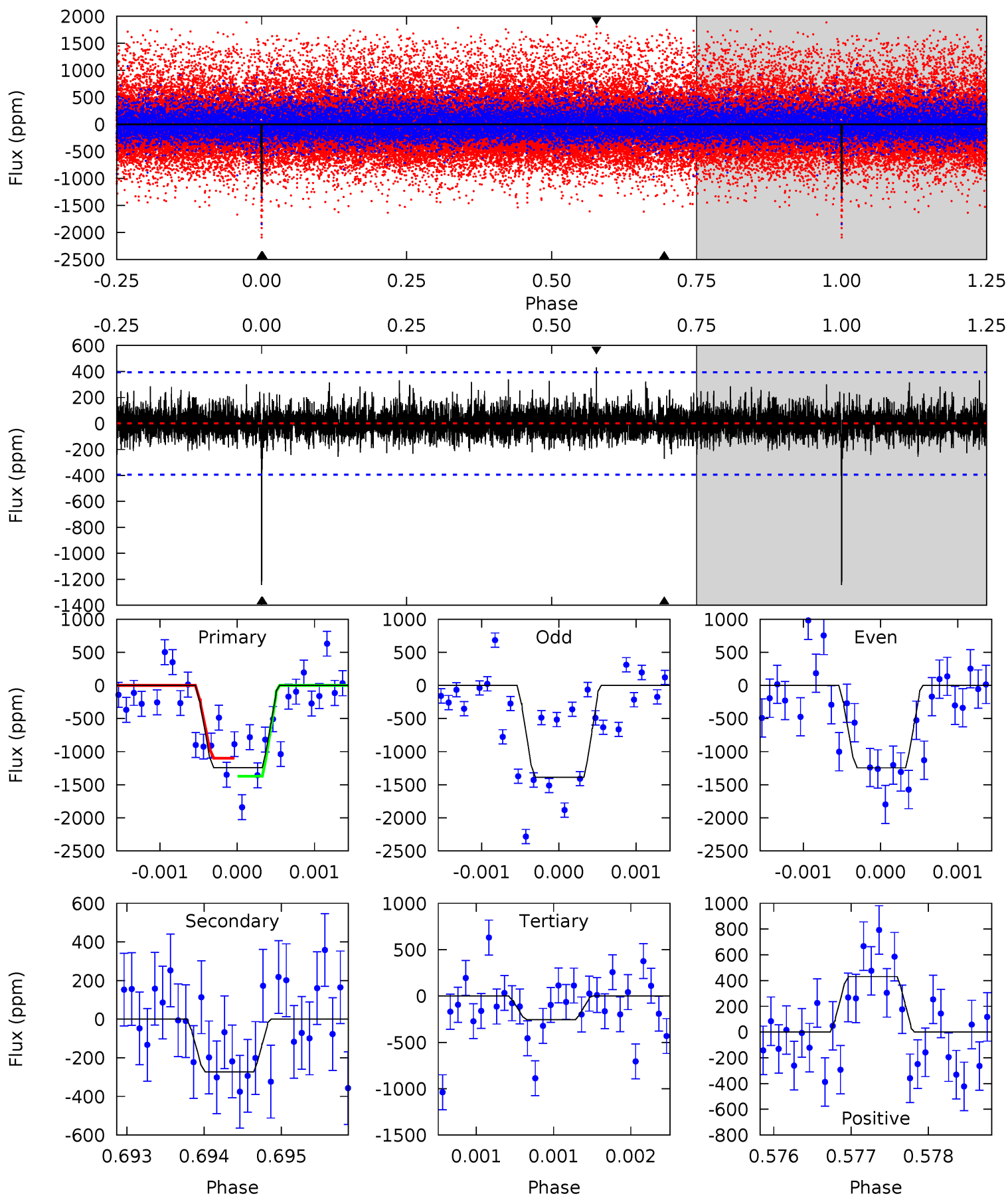
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.08	6.66	6.29	8.31	5.44	3.27	1.97	2.79	0.77	0.37	-1.65	0.18	0.63	0.48	0.04



Alt Model-Shift Uniqueness Test

008196449-08, P = 155.761252 Days, E = 77.136681 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	3.81	3.59	6.02	5.51	3.38	1.09	13.8	11.4	0.23	-2.21	1.02	0.98	0.26	0



Stellar Parameters For KIC 008196449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3864^{+120}_{-147}	$4.653^{+0.064}_{-0.020}$	$0.480^{+0.050}_{-0.300}$	$0.610^{+0.026}_{-0.069}$	$0.610^{+0.035}_{-0.060}$	$3.786^{+1.112}_{-0.311}$
	+3%/-4%	+1%/-0%	+10%/-62%	+4%/-11%	+6%/-10%	+29%/-8%
Source	KIC0	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 008196449-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-583 ± 87	$2.90^{+2.61}_{-1.91}$	266^{+9}_{-11}	3195^{+1390}_{-539}	8790^{+66310}_{-6456}
Alt.	-273 ± 72	$3.33^{+2.59}_{-2.06}$	266^{+10}_{-11}	2753^{+879}_{-392}	3113^{+19098}_{-2180}

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

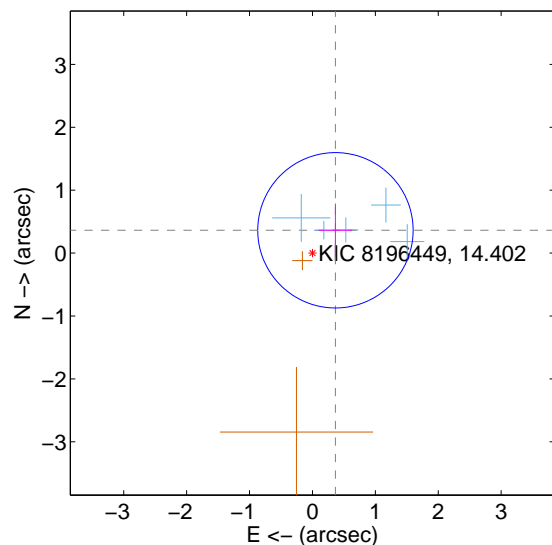
Supplemental centroid analysis for 008196449-08. Kepler magnitude: 14.40. Transit SNR 7.57

There are 5 quarters with good PRF difference image offsets

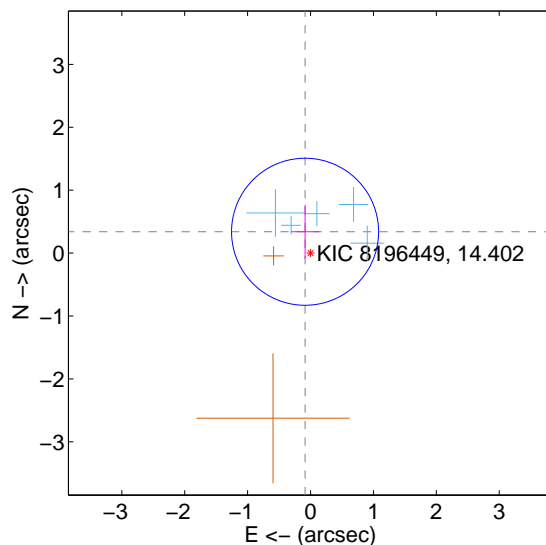
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.515 ± 0.412	1.25	-0.366 ± 0.267	0.363 ± 0.425
PRF-fit source offset from KIC position	0.350 ± 0.390	0.90	0.087 ± 0.221	0.339 ± 0.429
photometric centroid source offset	1.24 ± 0.66	1.88	0.85 ± 0.59	-0.90 ± 0.71

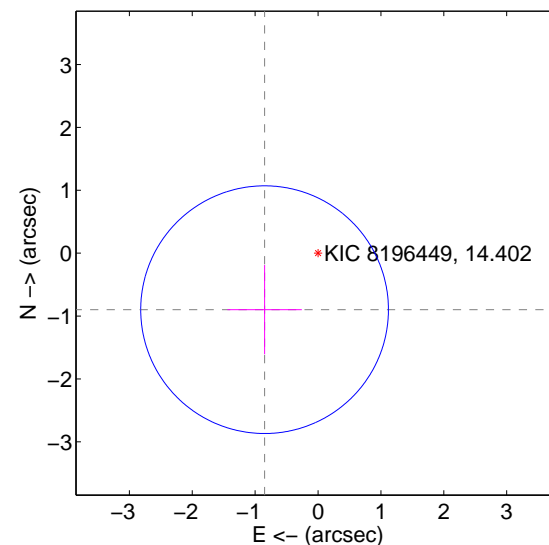
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

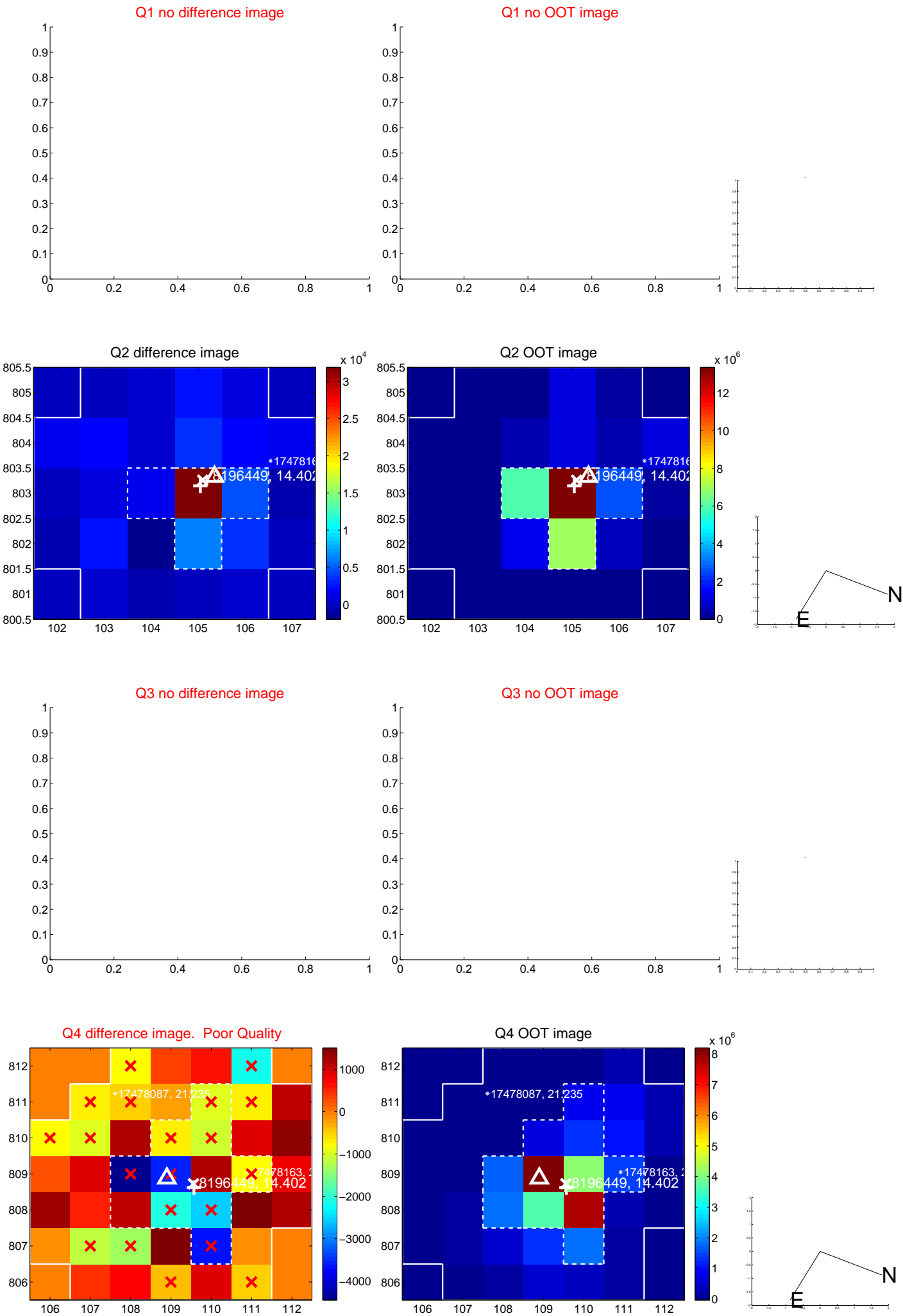


offset from photometric centroids



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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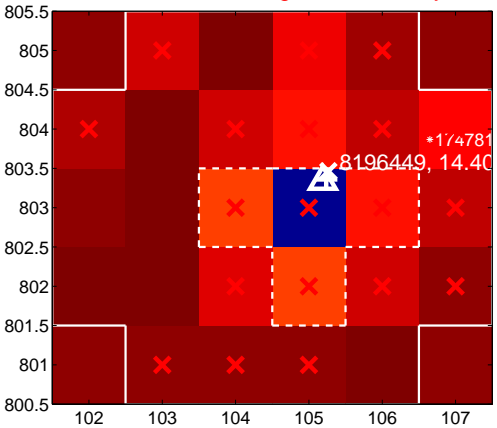
Q5 no difference image



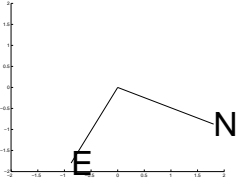
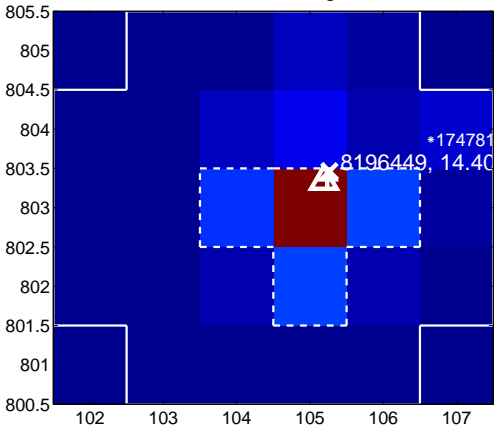
Q5 no OOT image



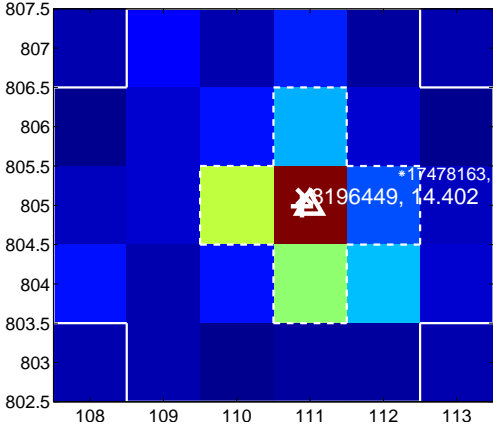
Q6 difference image. Poor Quality



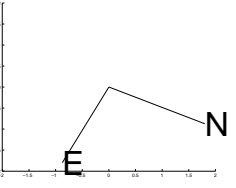
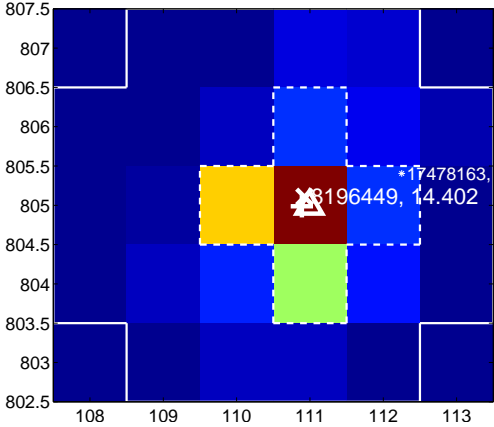
Q6 OOT image



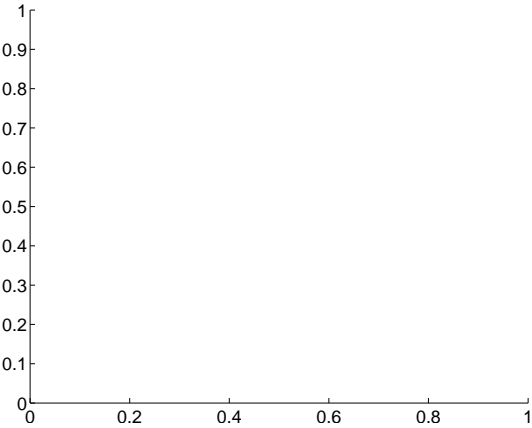
Q7 difference image



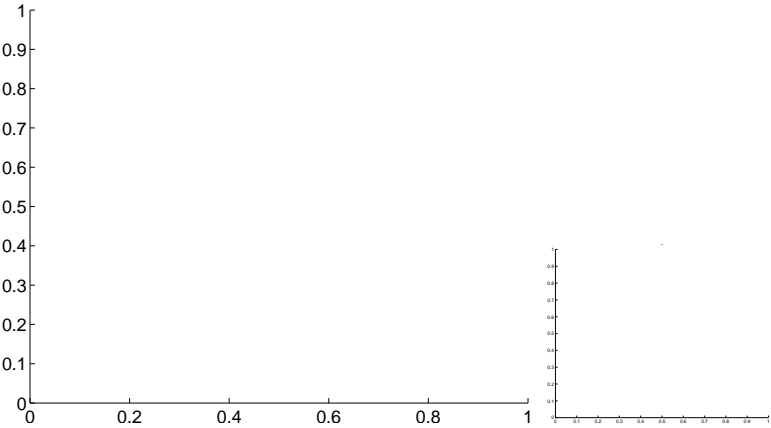
Q7 OOT image



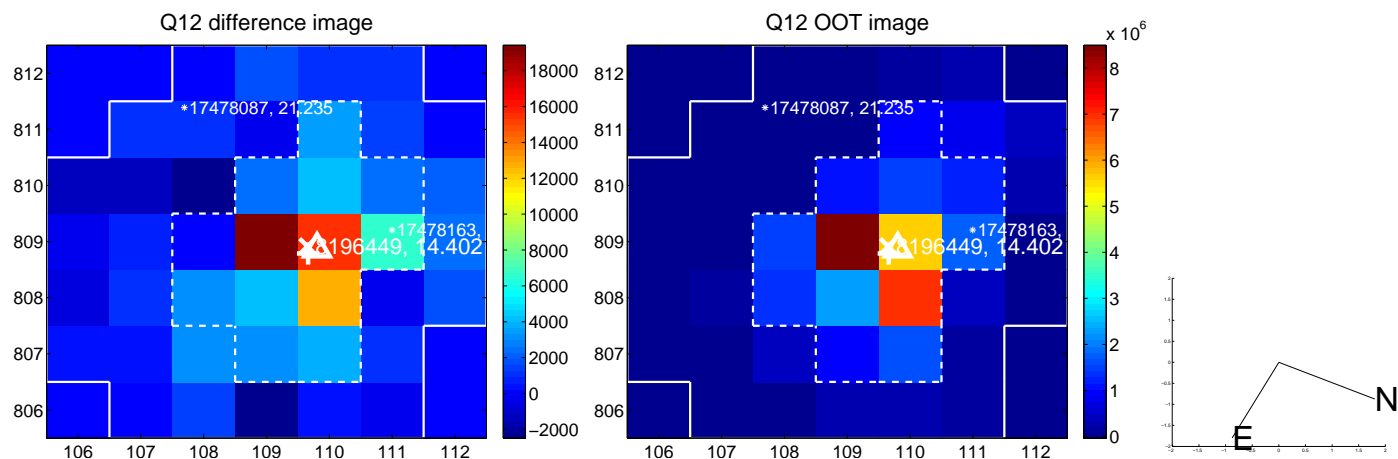
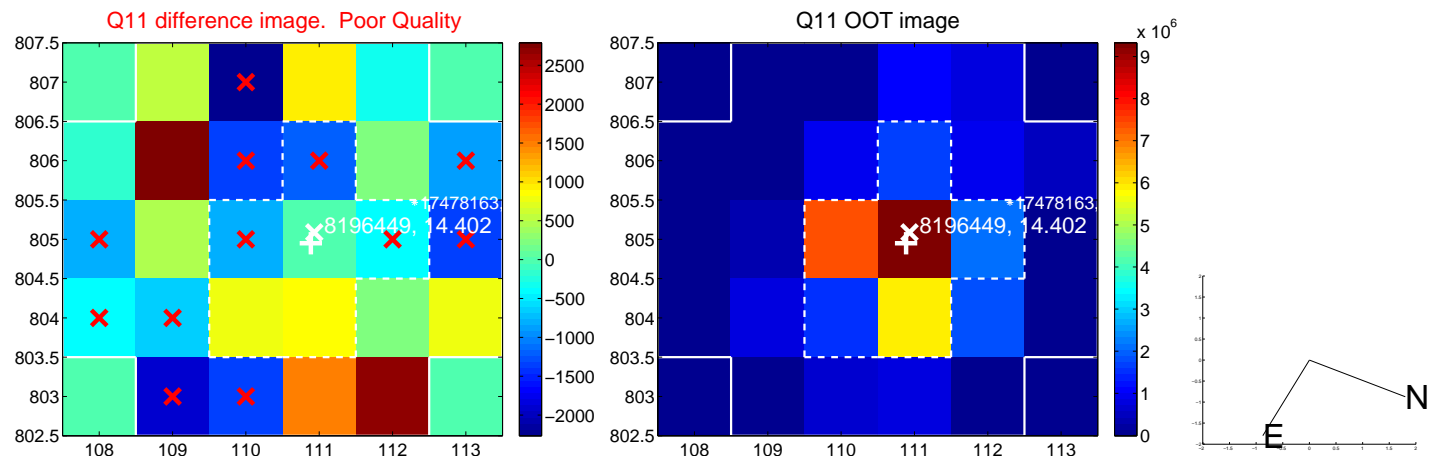
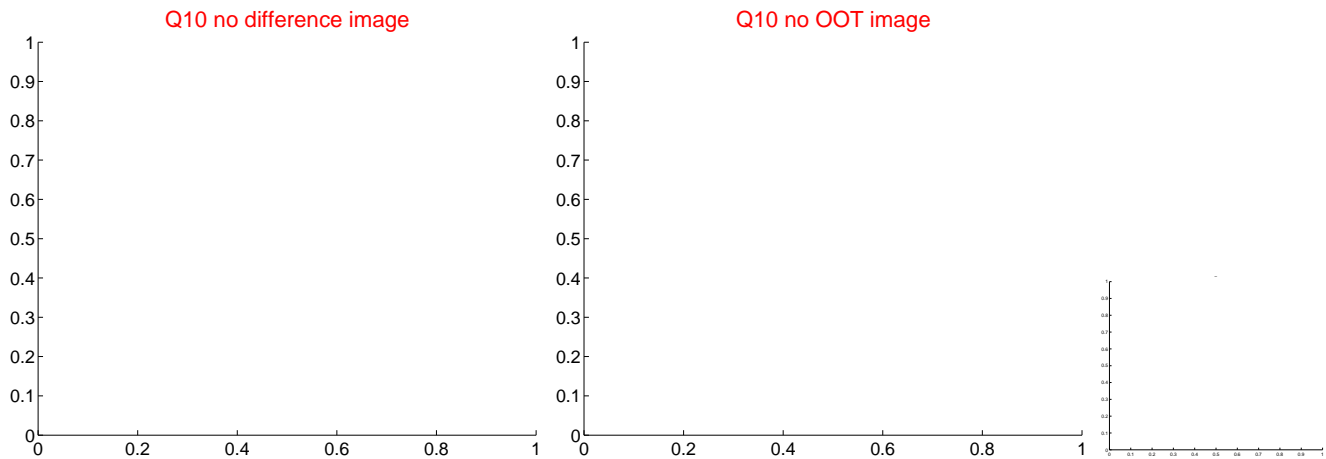
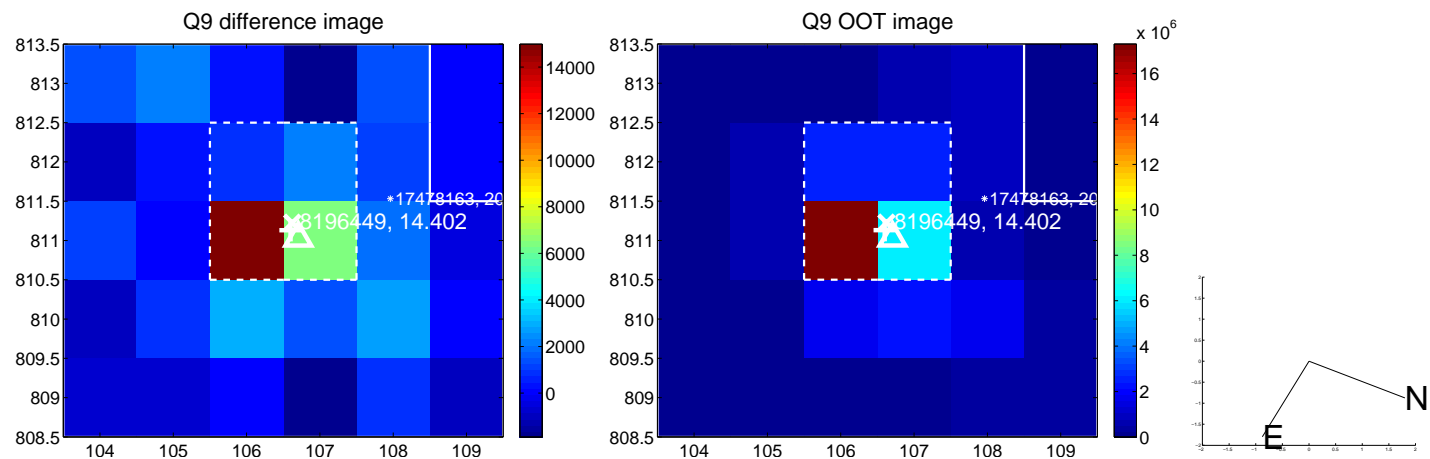
Q8 no difference image



Q8 no OOT image

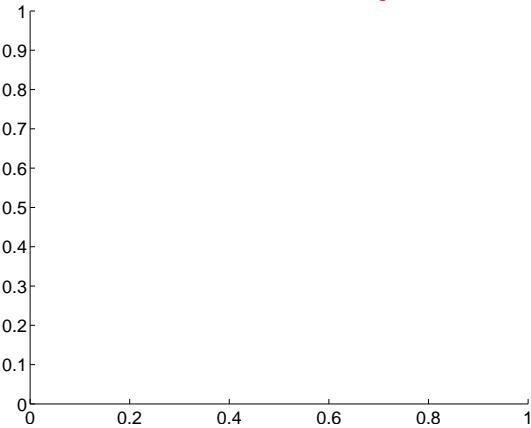


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

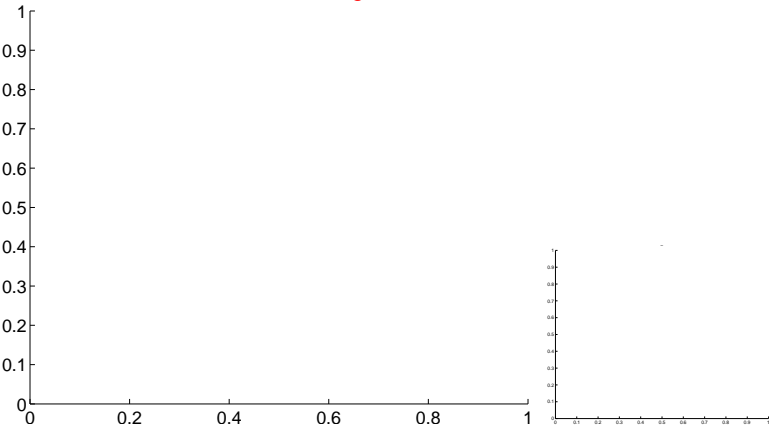


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

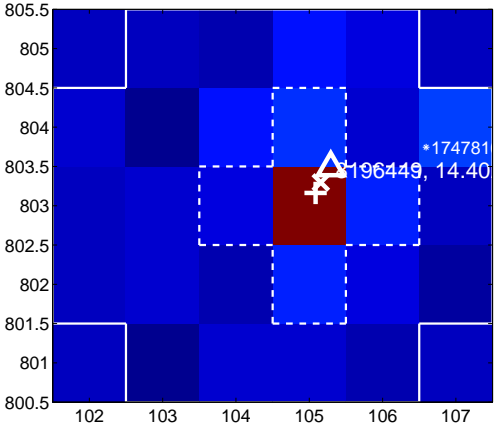
Q13 no difference image



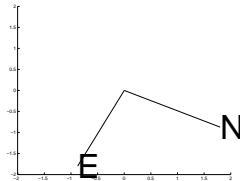
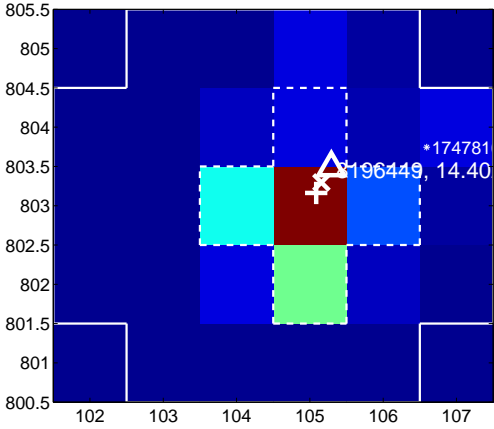
Q13 no OOT image



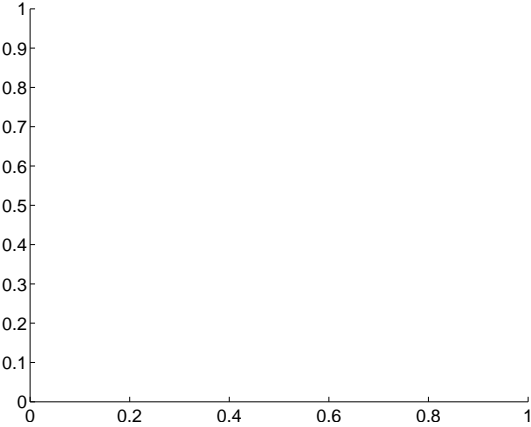
Q14 difference image



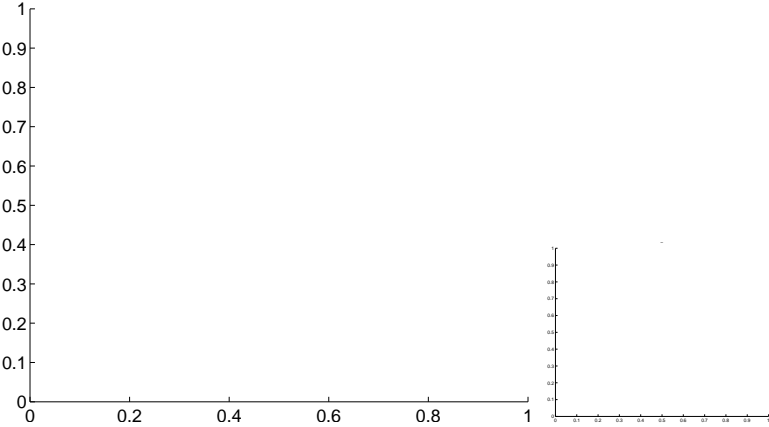
Q14 OOT image



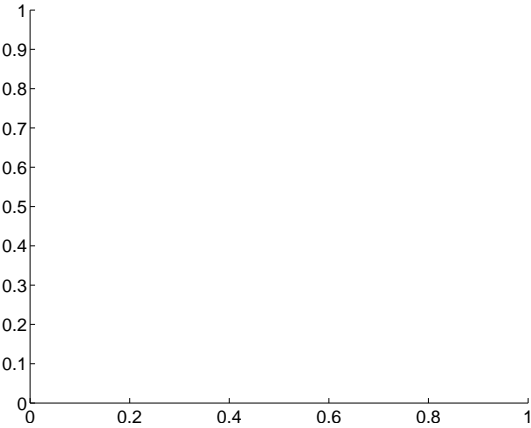
Q15 no difference image



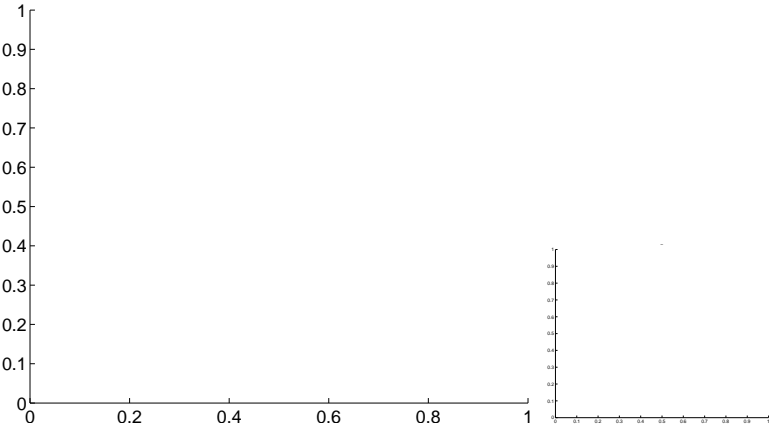
Q15 no OOT image



Q16 no difference image



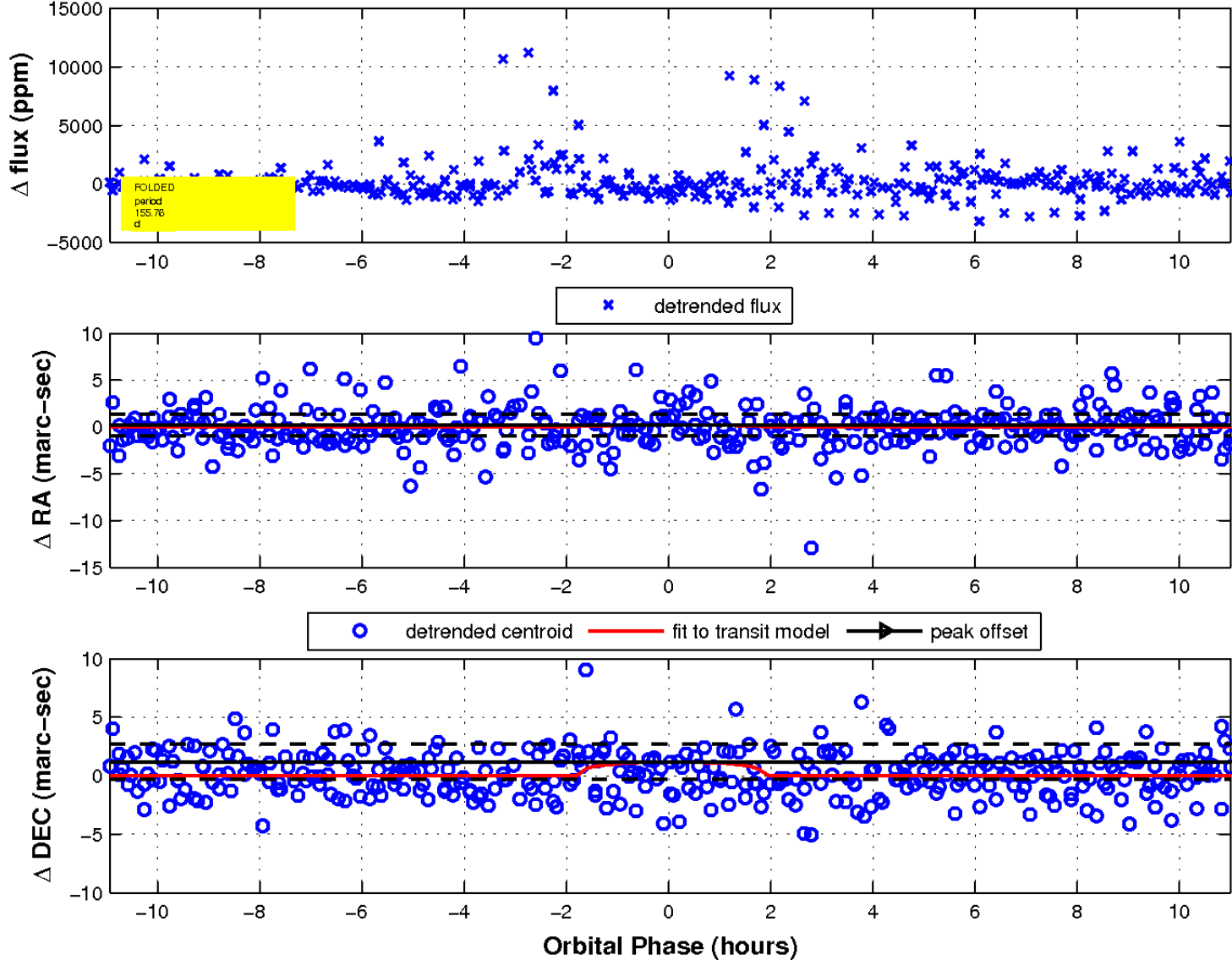
Q16 no OOT image



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



fluxWeightedCentroids, Planet 8 of 9



UKIRT Image

Declination

