

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

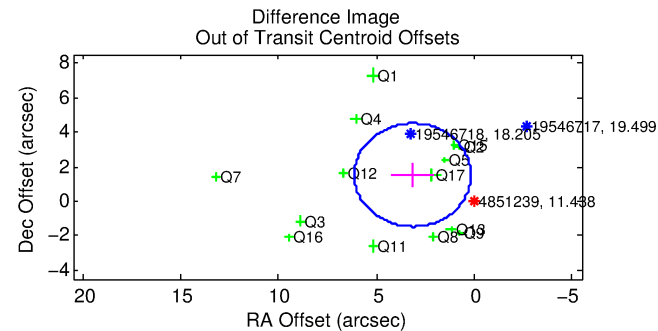
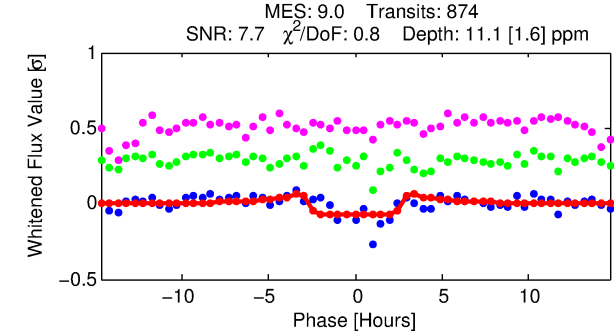
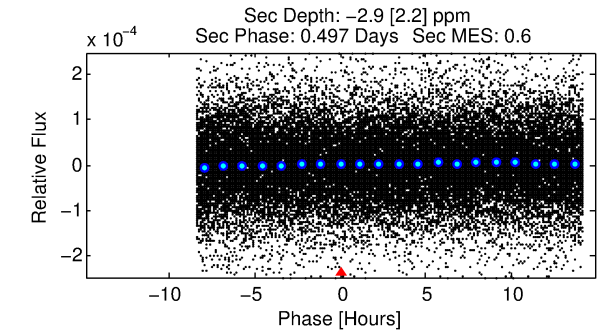
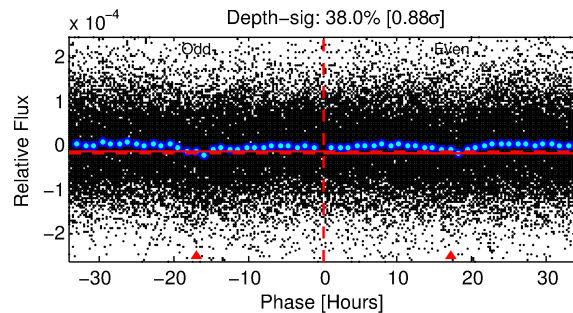
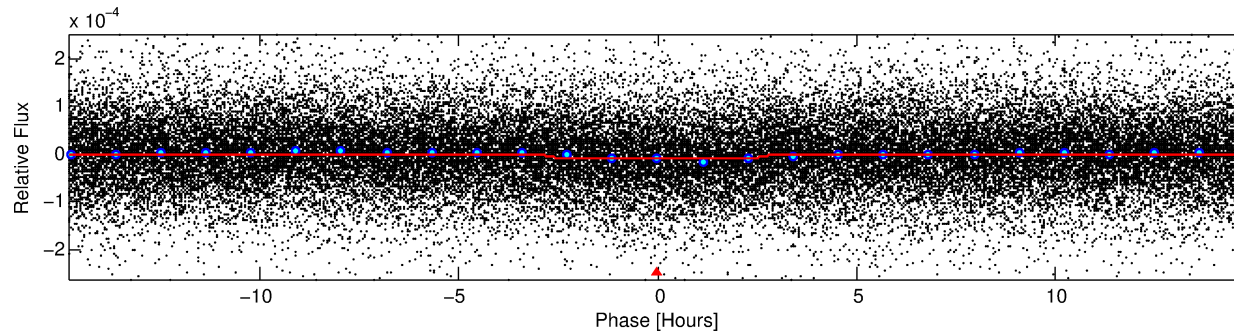
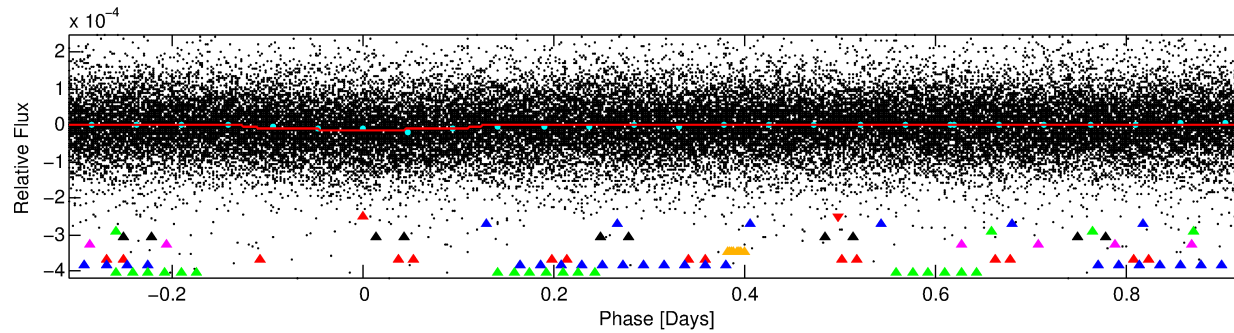
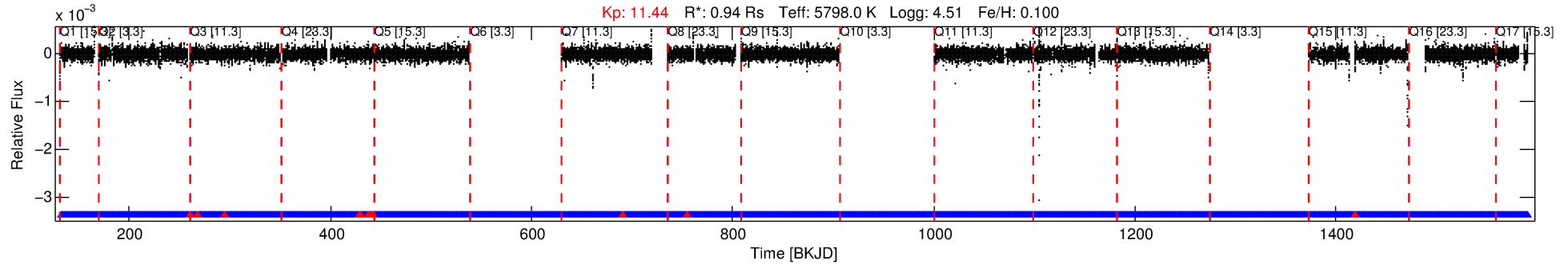
Ephemeris Match Information For 004851239-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
004851239-01	4851239	004851217-pri	4851217	1:2	77.6	-19	6	11.11	11.44	18000.00	Direct-PRF	0	0.43	2.98

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 4851239 Candidate: 1 of 9 Period: 1.235 d
KOI: K04851.01 Corr: 0.854



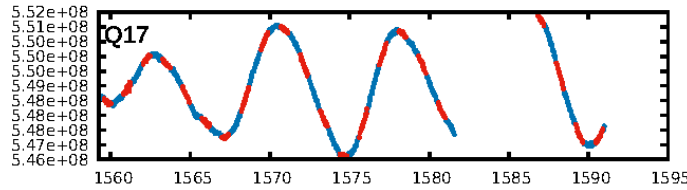
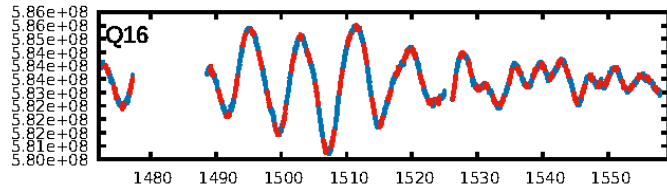
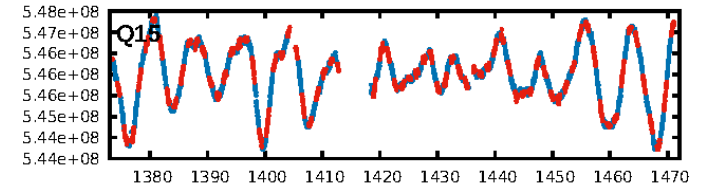
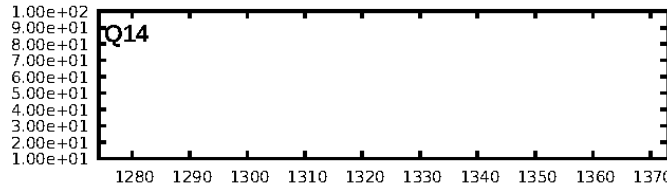
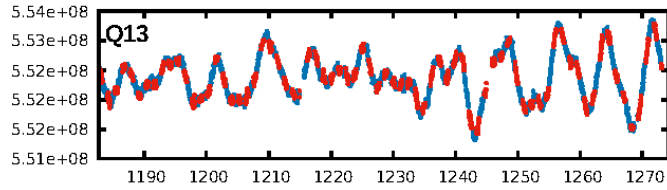
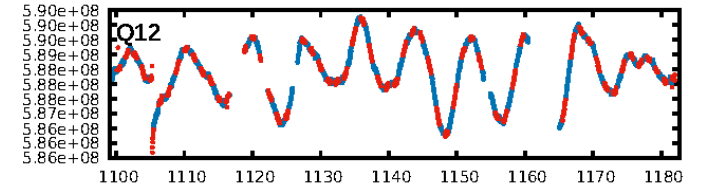
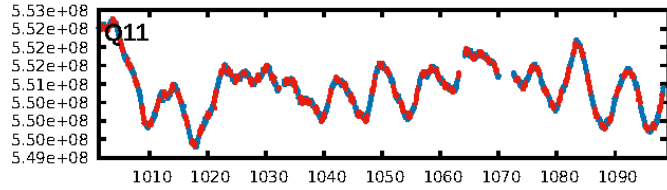
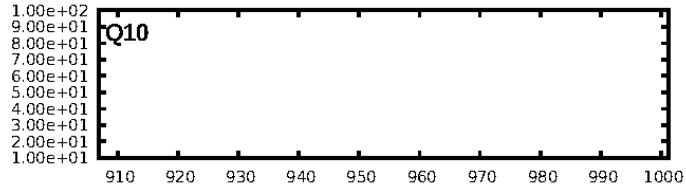
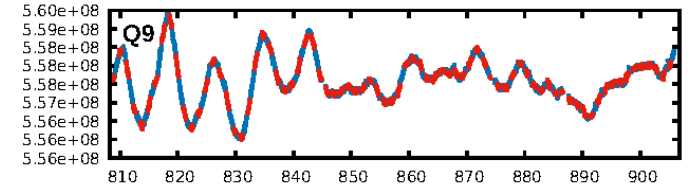
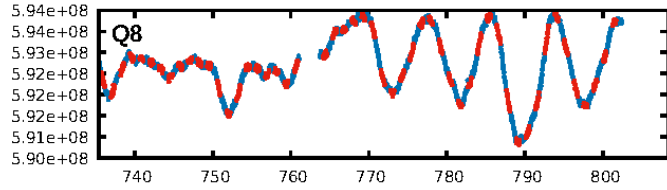
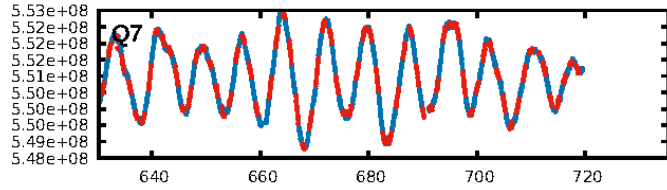
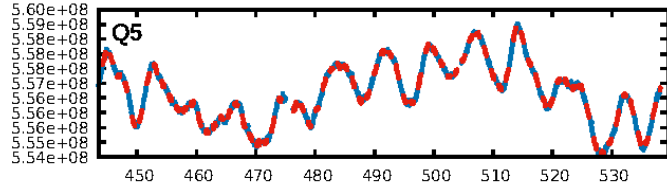
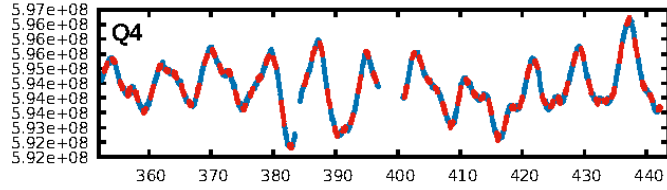
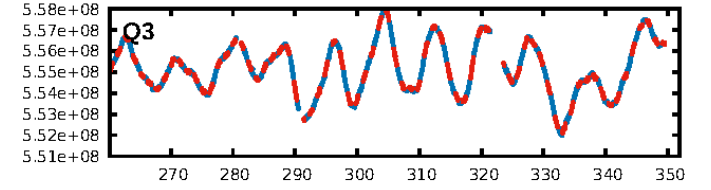
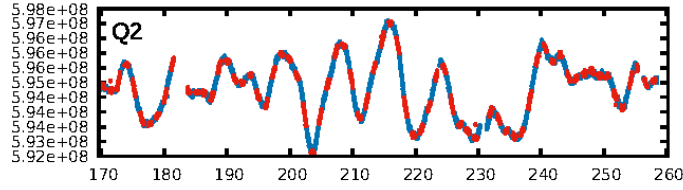
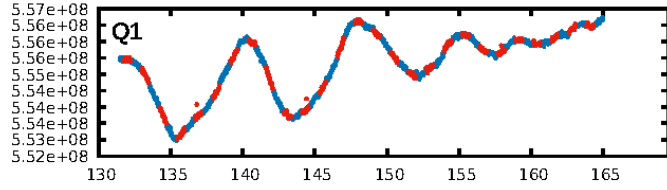
DV Fit Results:

Period = 1.23514 [0.00002] d
Epoch = 131.9726 [0.0041] BKJD
Rp/R* = 0.0036 [0.0010]
a/R* = 1.19 [0.48]
b = 0.90 [0.29]
Seff = 1722.32 [323.43]
Teq = 1643 [77] K
Rp = 0.37 [0.12] Re
a = 0.0228 [0.0026] AU
Ag = N/A
Teffp = N/A

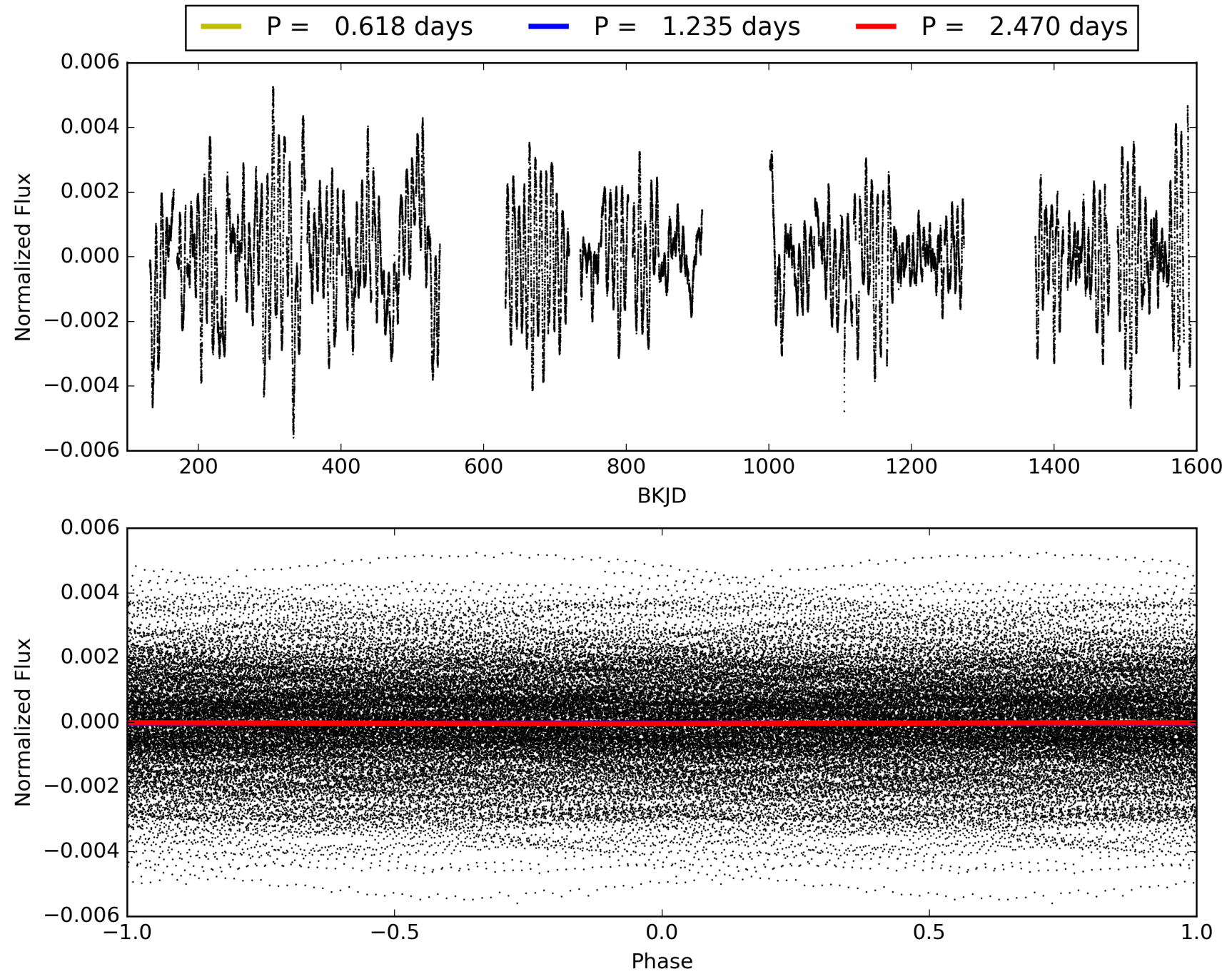
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [132.05 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.84e-17
RollingBand-fgt: 0.98 [812/825]
GhostDiagnostic-chr: 0.2247
Centroid-sig: 0.0%
Centroid-so: 3.601 arcsec [3.61 σ]
OotOffset-rm: 3.505 arcsec [3.52 σ]
KicOffset-rm: 3.392 arcsec [3.42 σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.36 [5/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004851239-01, PDC Light Curves

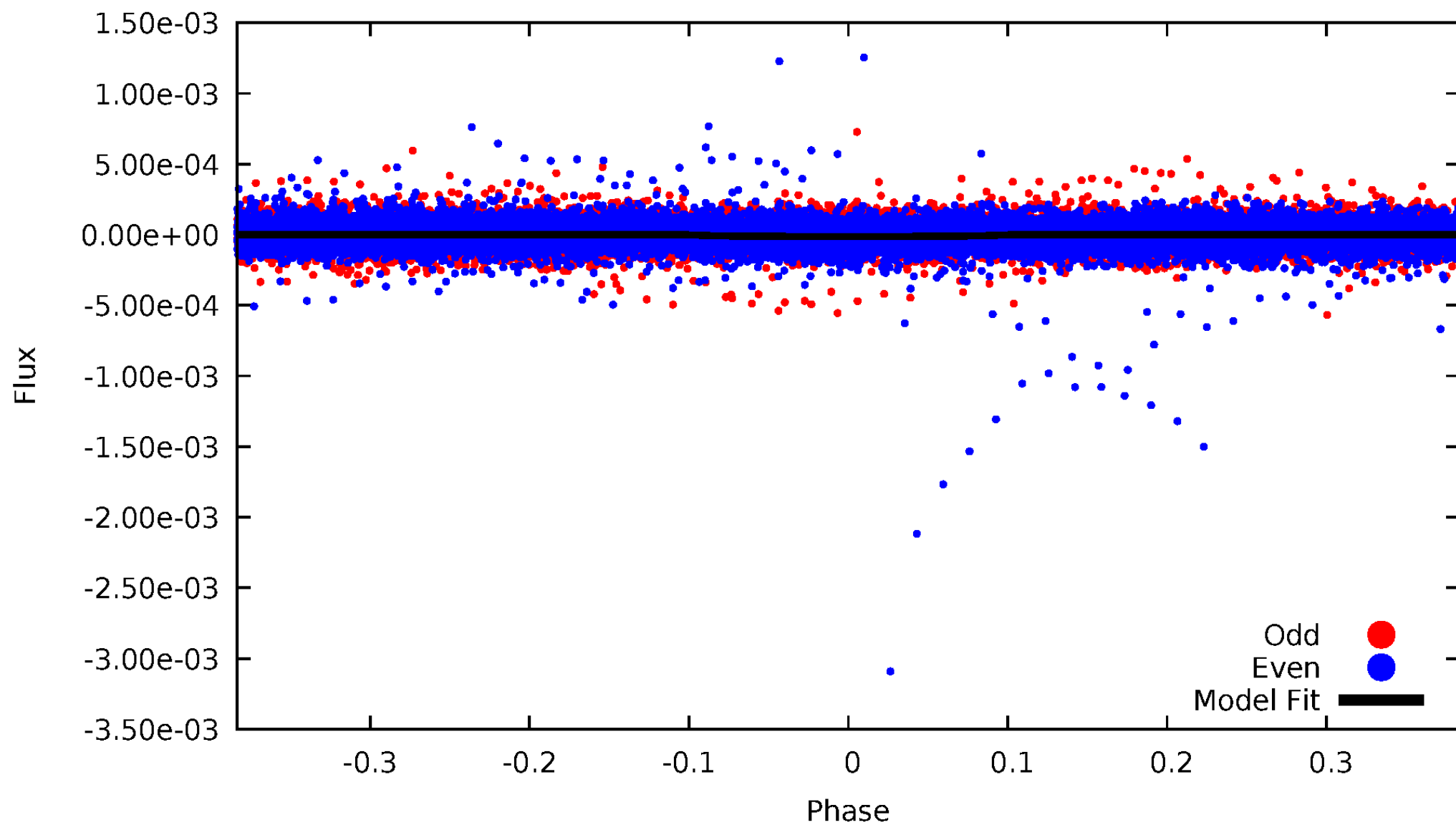


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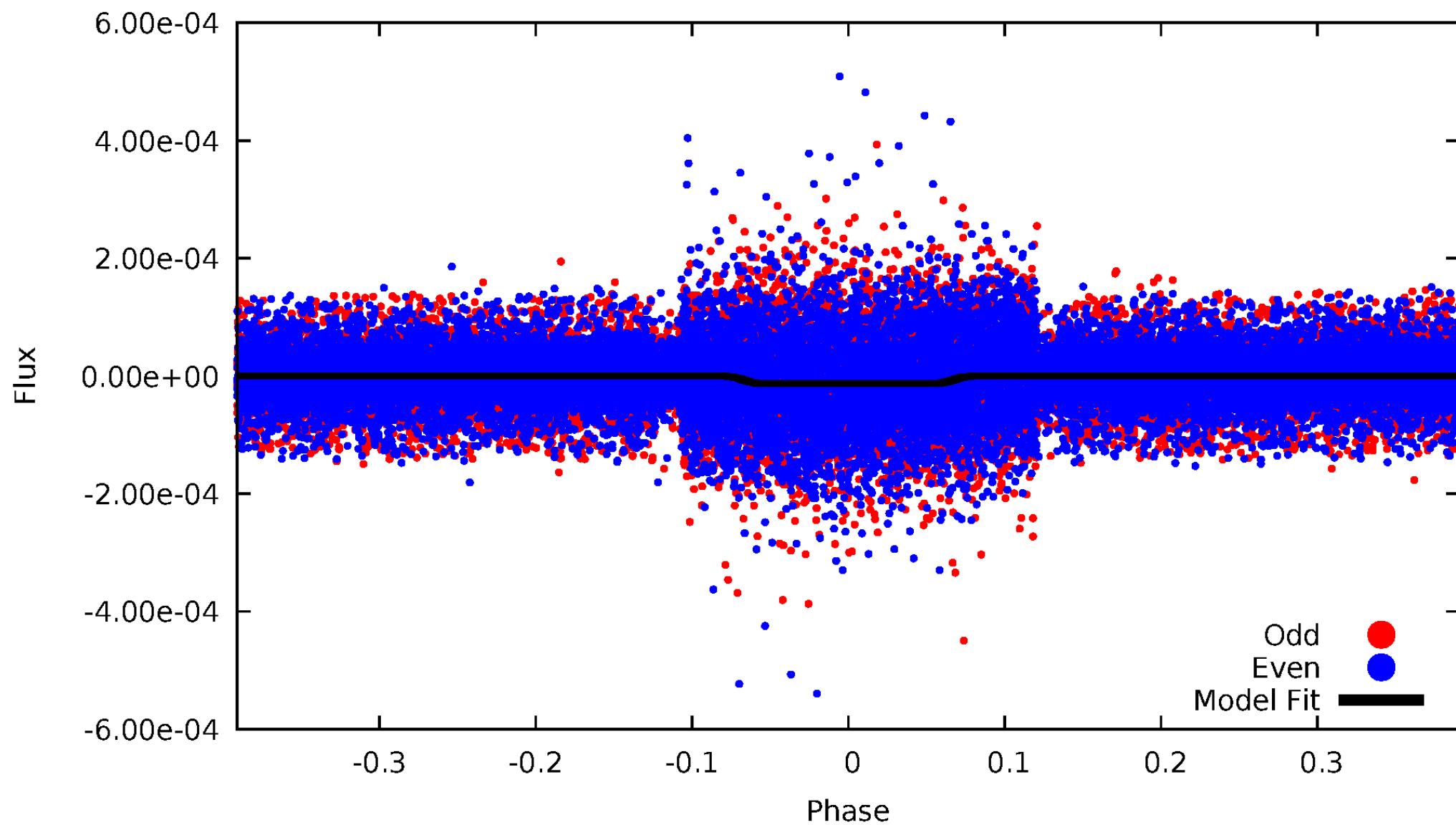
DV Odd/Even

TCE 004851239-01



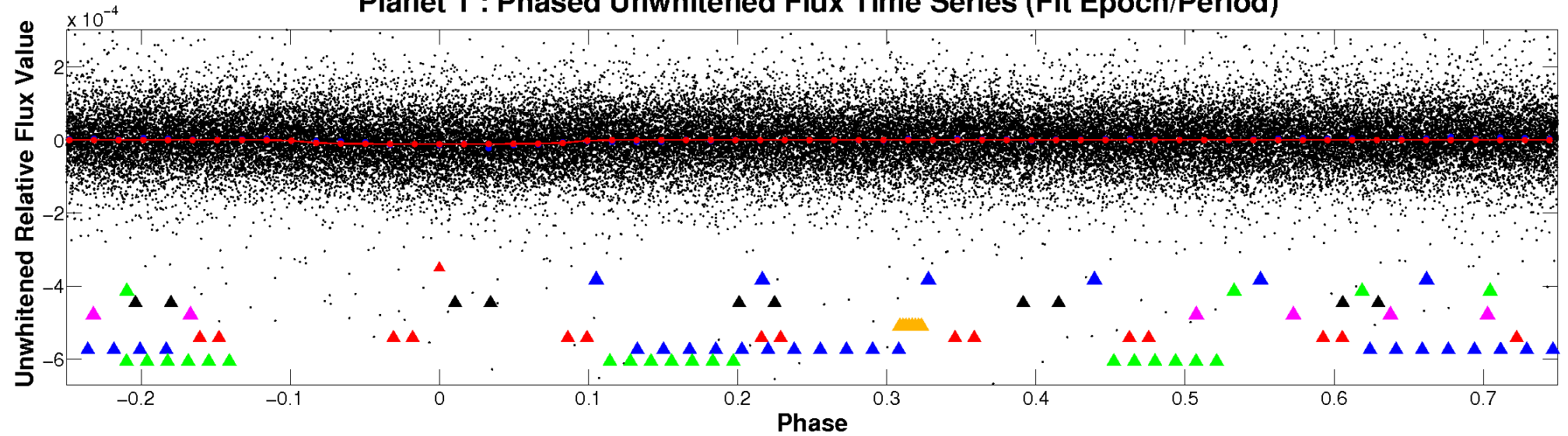
ALT Odd/Even

TCE 004851239-01

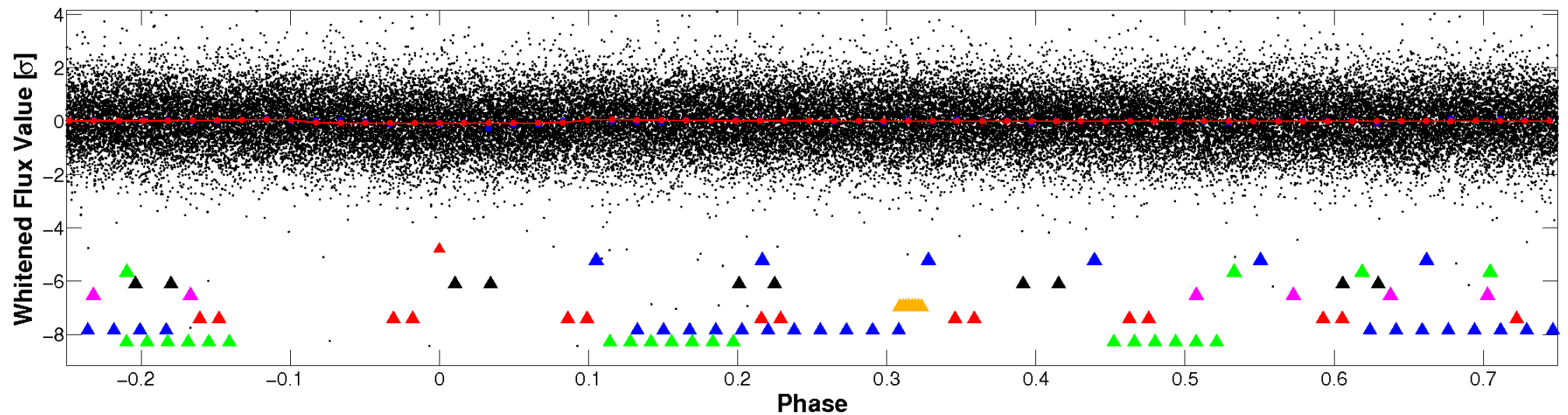


Non-Whitened Vs. Whitened Light Curve

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

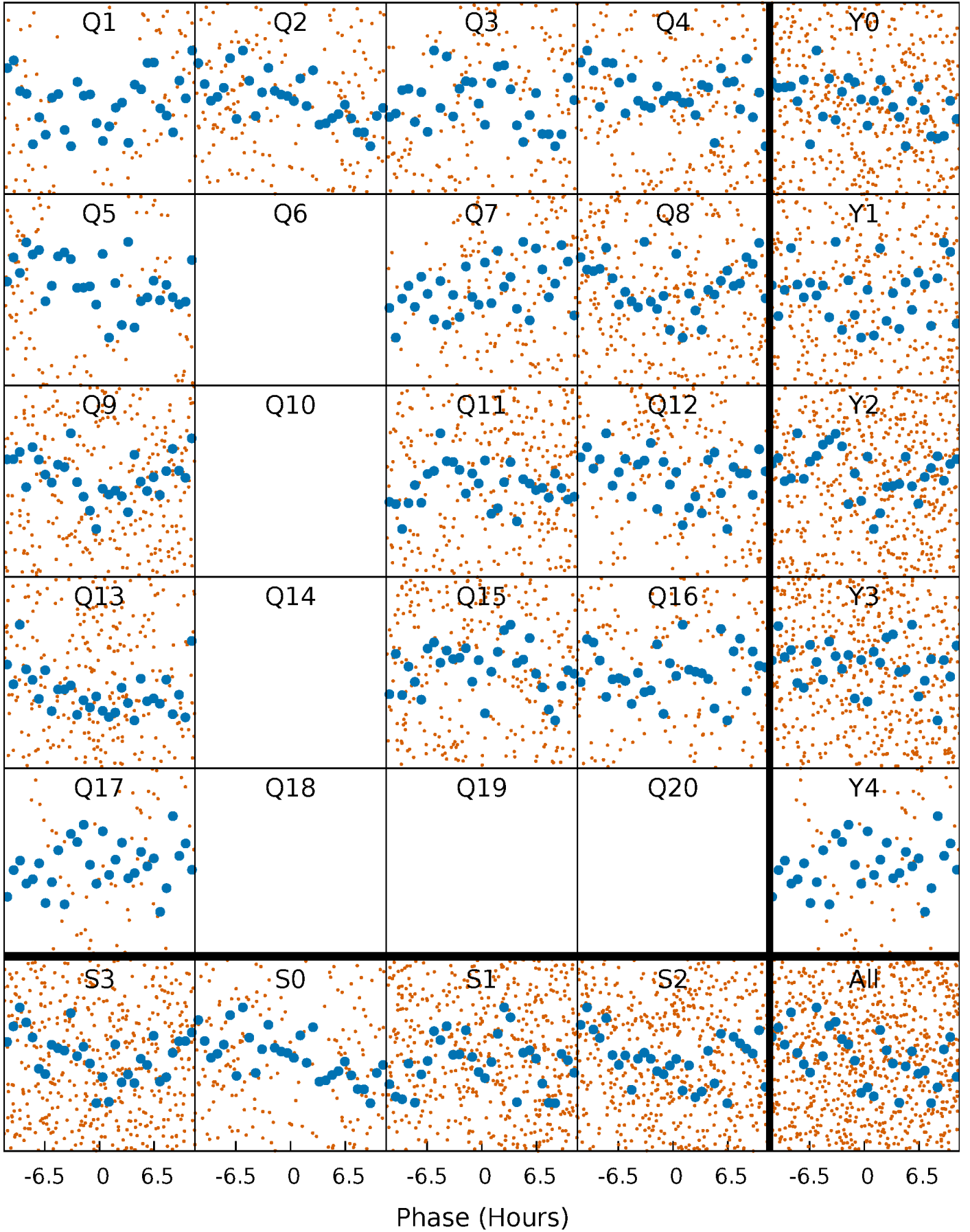


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



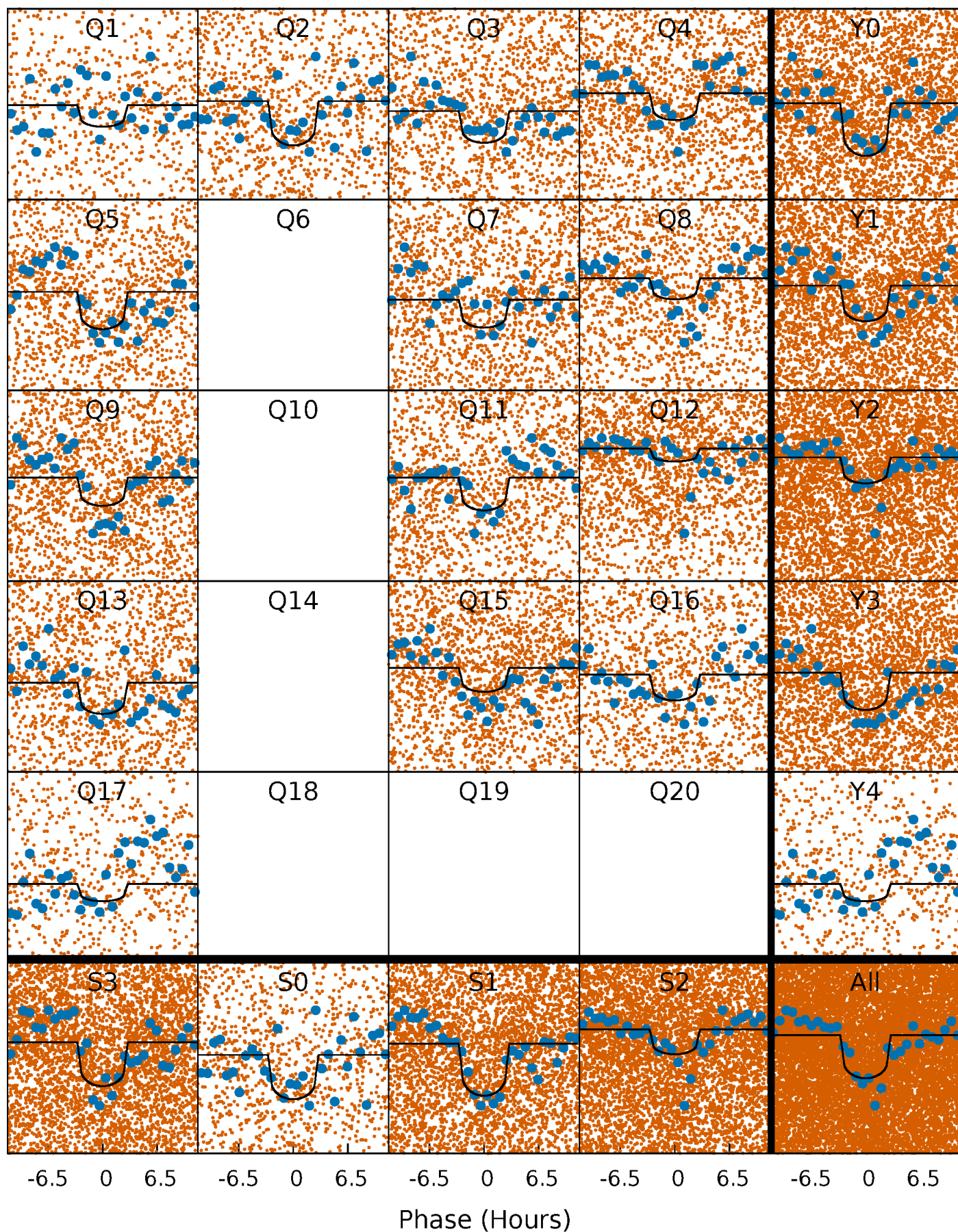
PDC Quarter-Phased Transit Curves

TCE 004851239-01 P= 1.235137 Days $T_0=131.972626$ (BKJD)



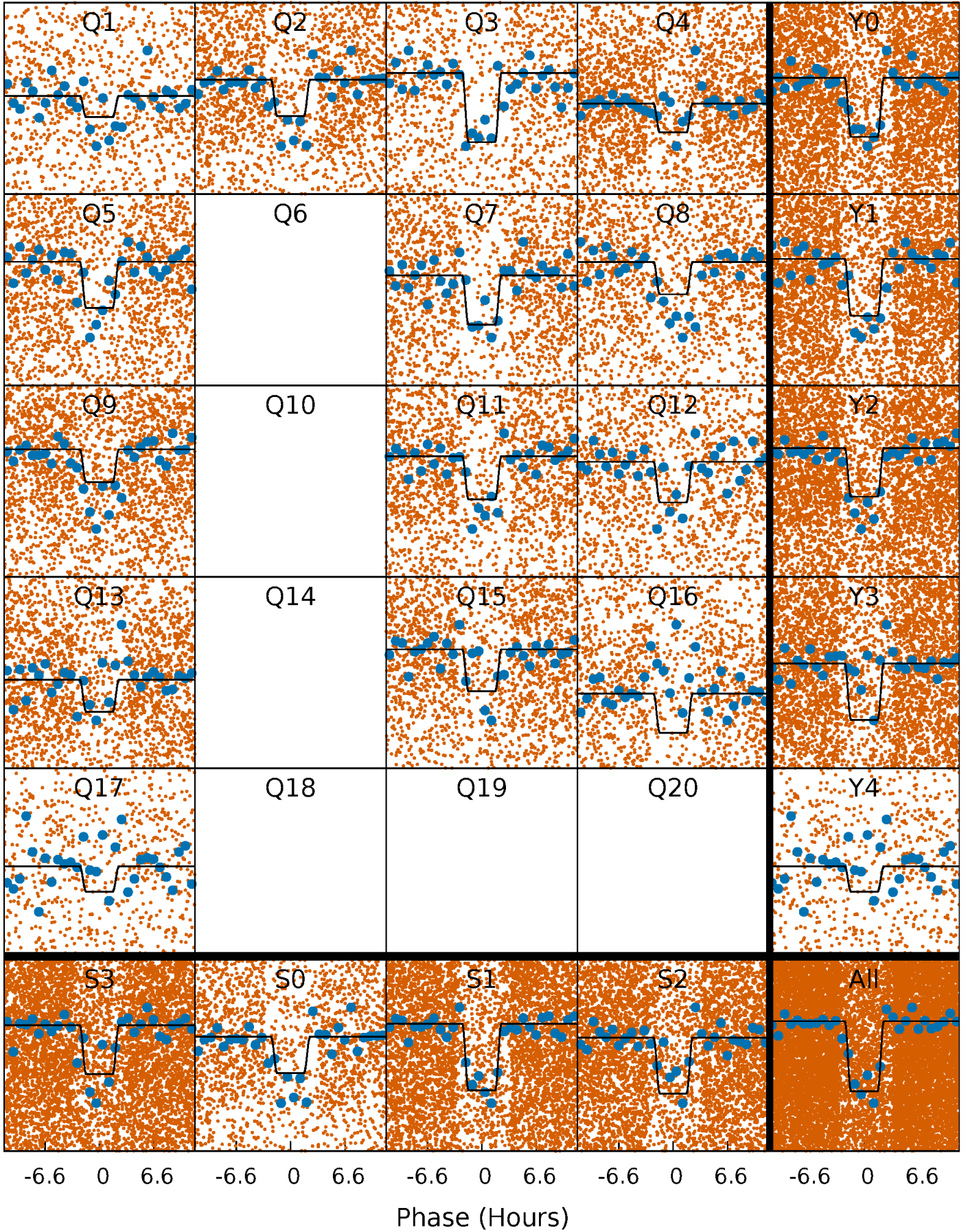
DV Quarter-Phased Transit Curves

TCE 004851239-01 P= 1.235137 Days $T_0=131.972626$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

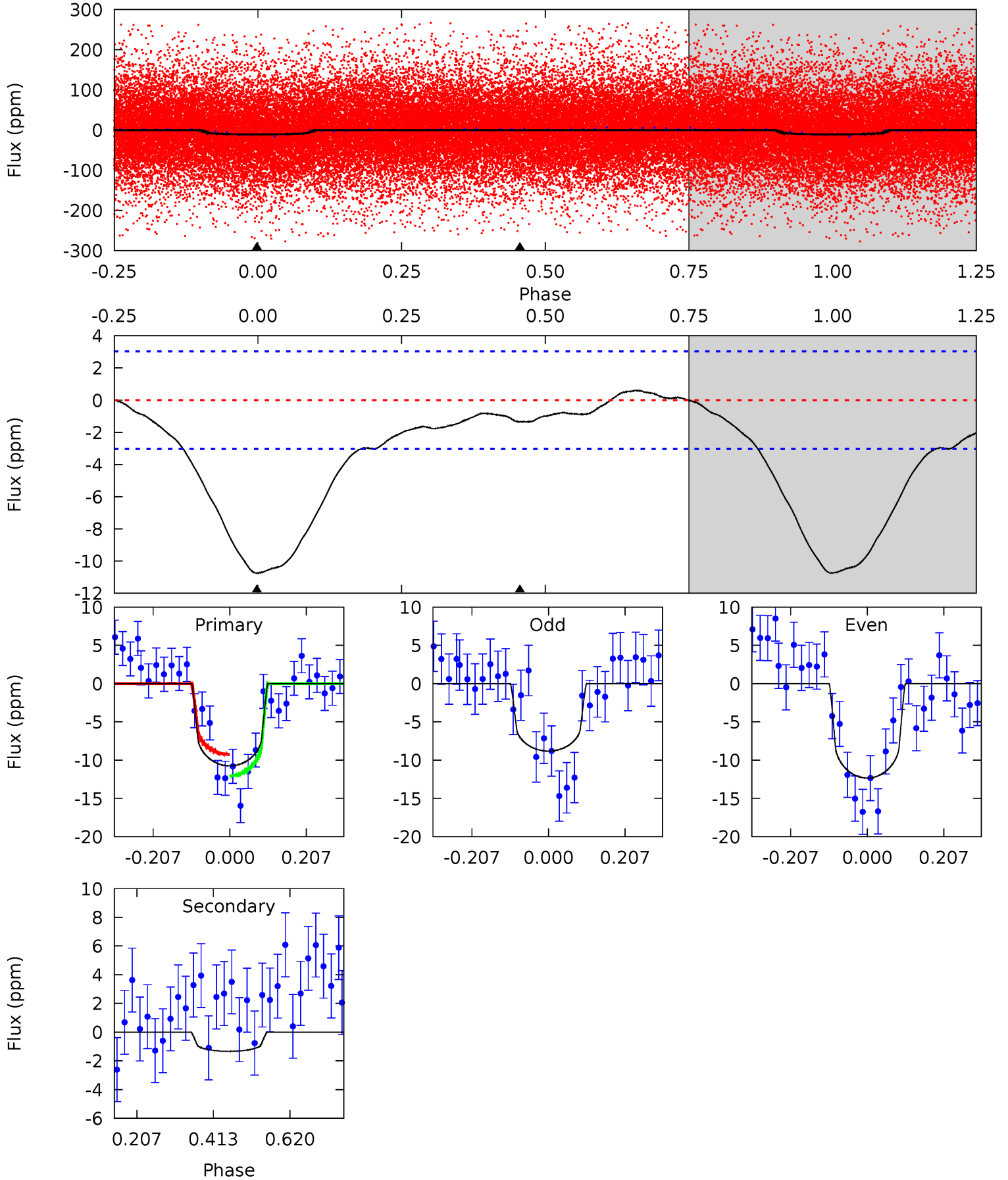
TCE 004851239-01 P= 1.235132 Days $T_0=131.973672$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-01, P = 1.235137 Days, E = 130.737489 Days

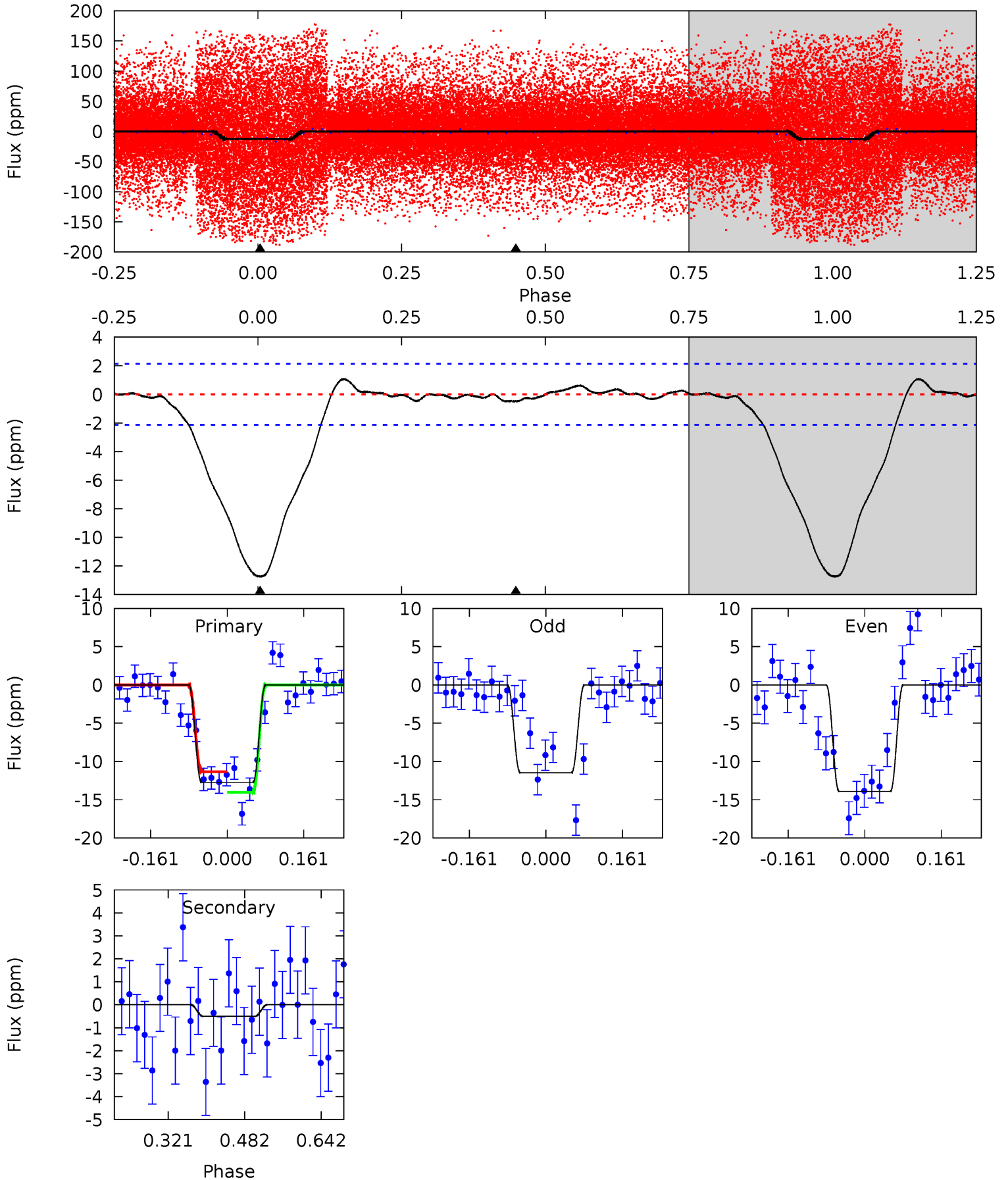
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	1.94	0	0	4.41	1.26	1.70	15.6	15.6	1.94	1.94	2.58	1.23	0.05	2.04



Alt Model-Shift Uniqueness Test

004851239-01, P = 1.235132 Days, E = 130.738540 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.7	1.05	0	0	4.46	1.40	0.43	26.7	26.7	1.05	1.05	2.52	0.94	0.08	2.82



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-01 / KOI 4851.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1 ± 1	$0.38^{+0.12}_{-0.11}$	2322^{+80}_{-48}	3590^{+570}_{-574}	$2.531^{+3.081}_{-1.533}$
Alt.	-1 ± 0	$0.38^{+0.11}_{-0.11}$	2321^{+77}_{-49}	2951^{+614}_{-5591}	$0.887^{+1.556}_{-0.827}$

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 $A_{obs} \gg 1.0$

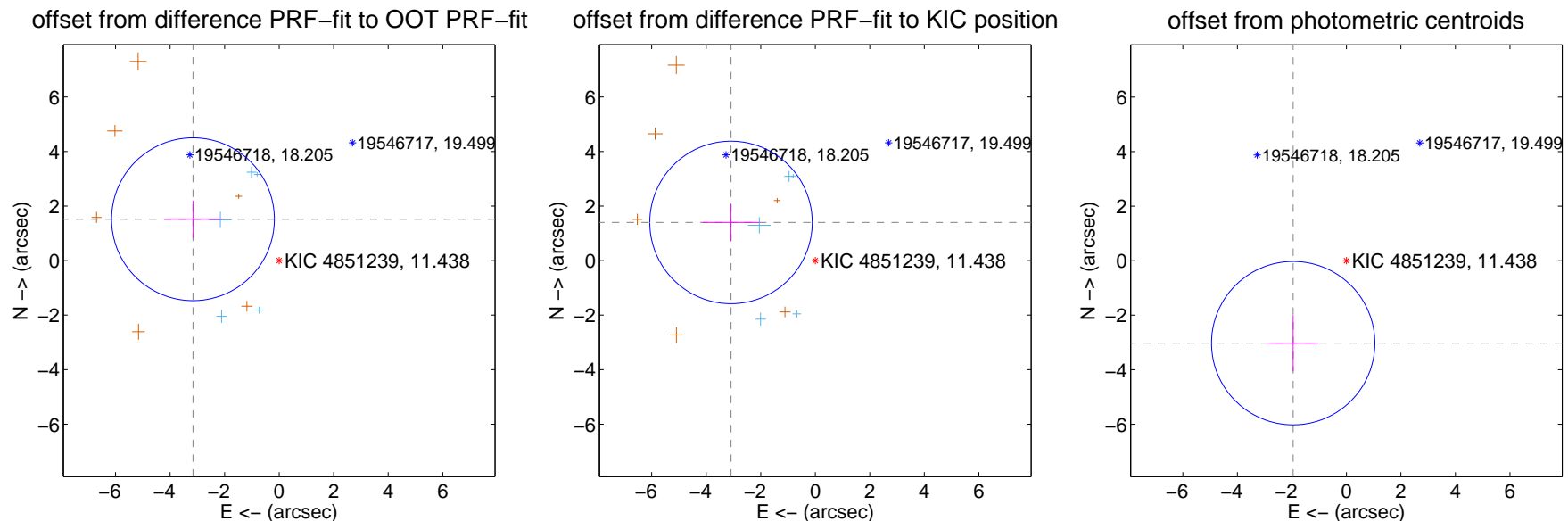
DV Centroid Data

Supplemental centroid analysis for 004851239-01. **Kepler magnitude: 11.44.** Transit SNR 7.72

There are 5 quarters with good PRF difference image offsets

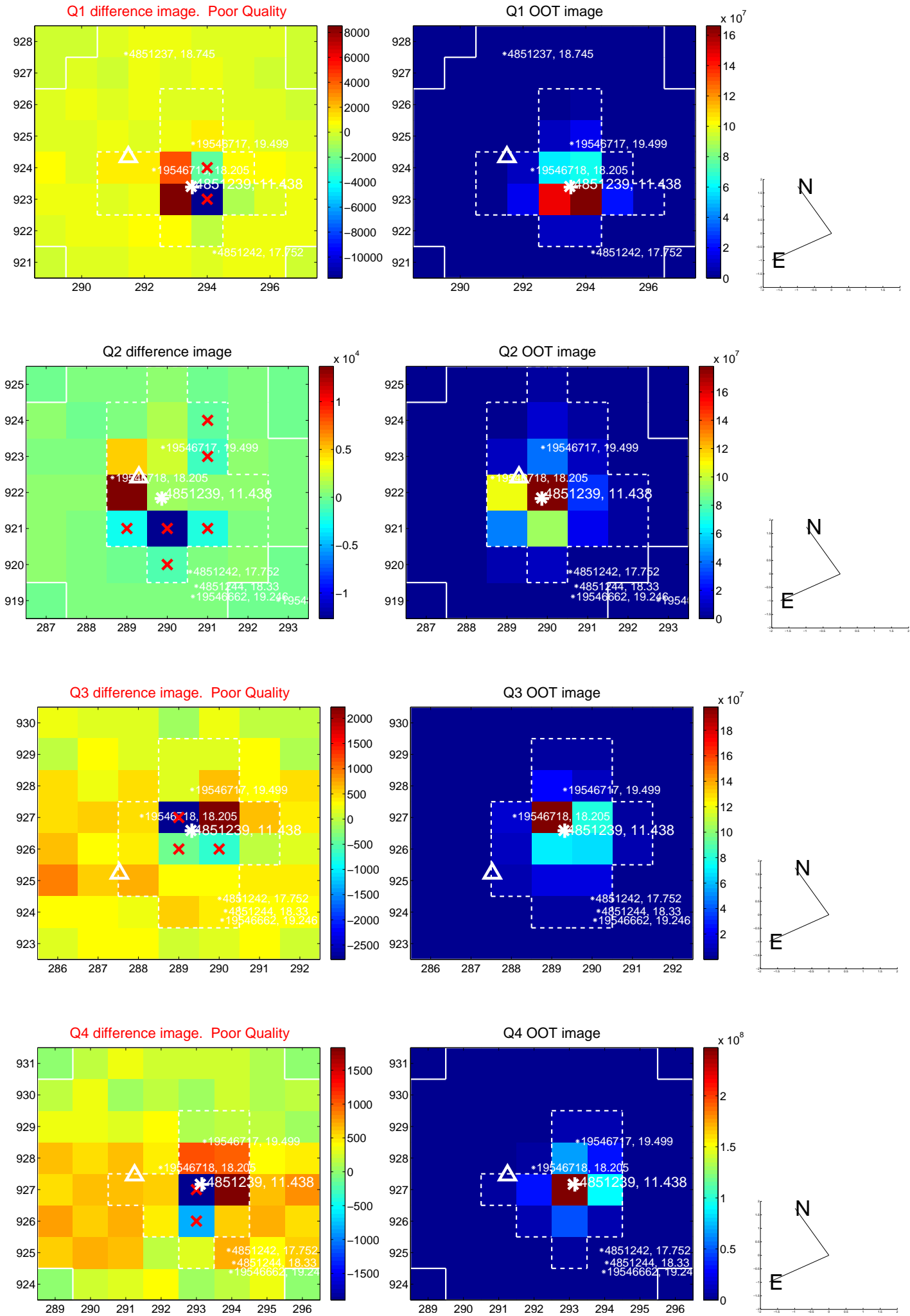
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.505 ± 0.995	3.52	3.160 ± 1.053	1.516 ± 0.686
PRF-fit source offset from KIC position	3.392 ± 0.993	3.42	3.090 ± 1.044	1.399 ± 0.688
photometric centroid source offset	3.60 ± 1.00	3.61	1.95 ± 0.93	-3.03 ± 1.03

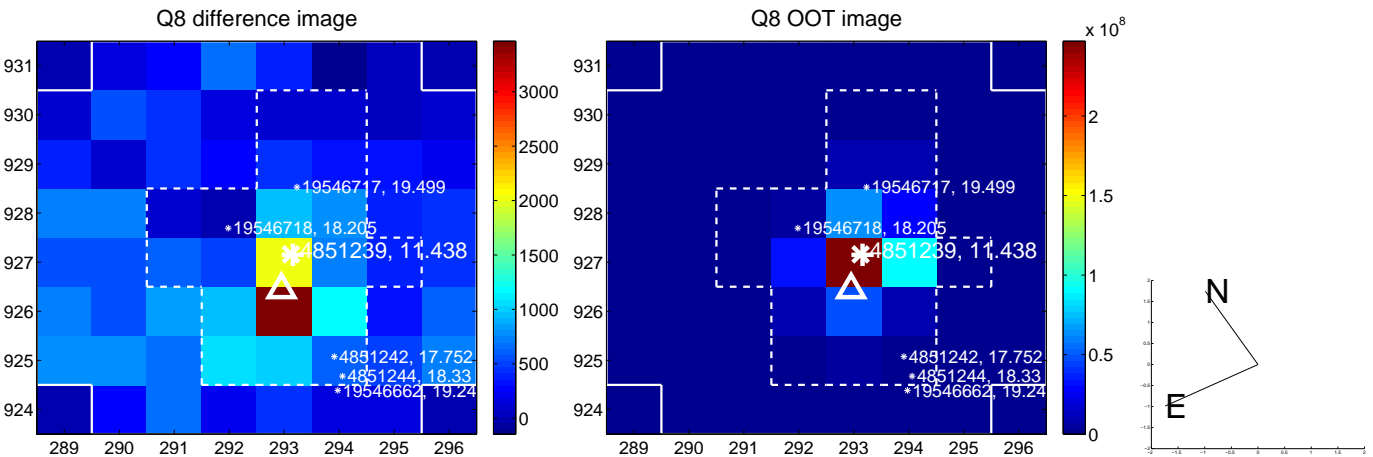
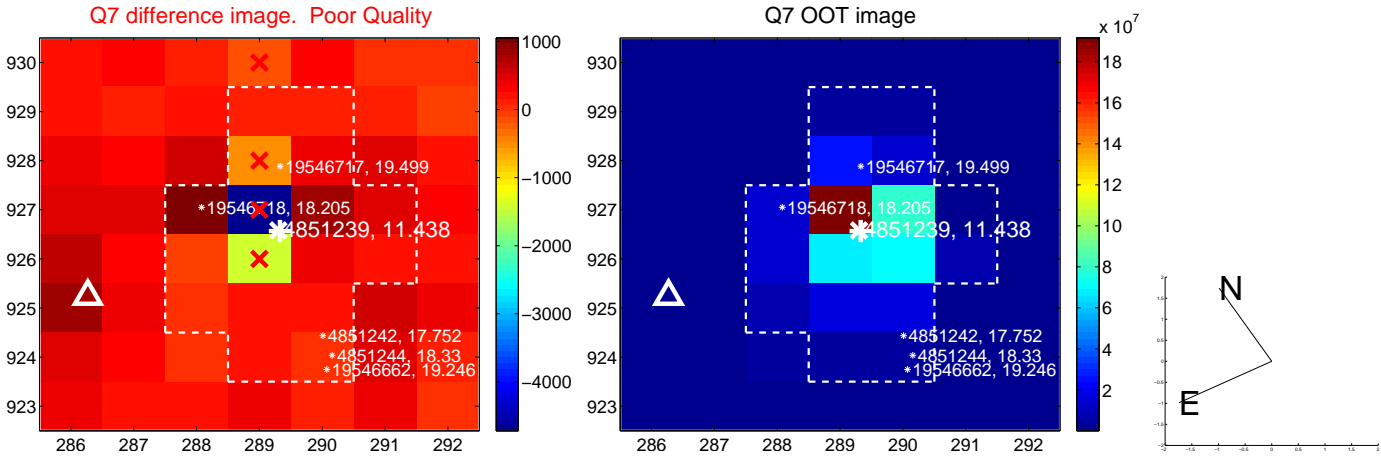
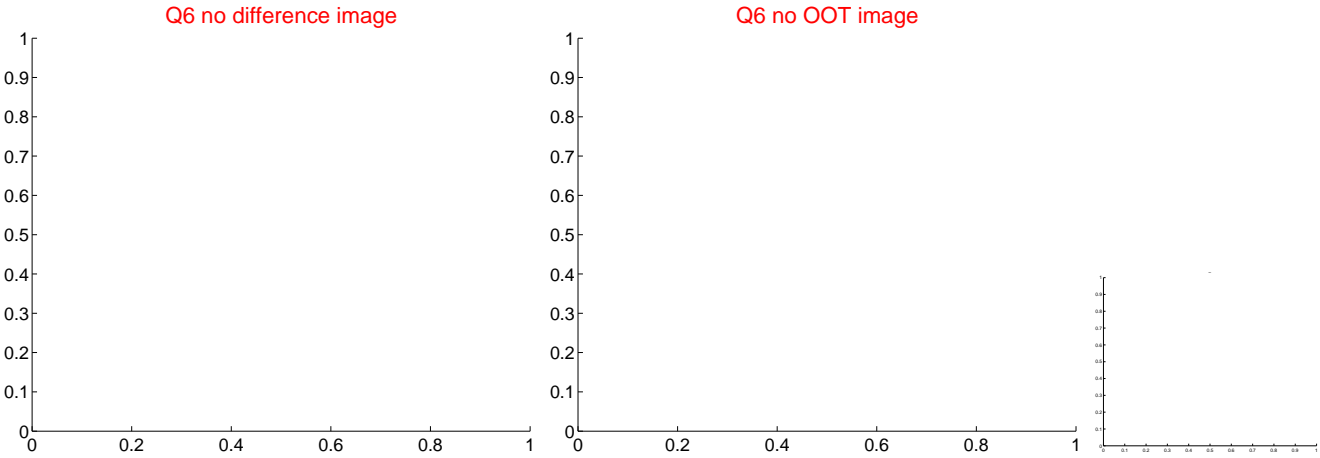
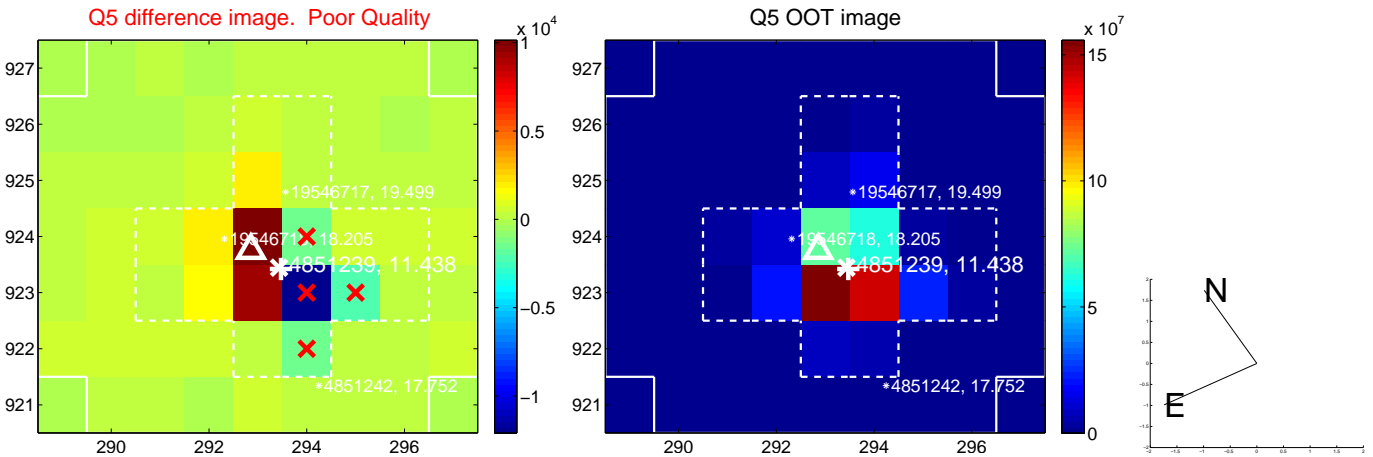


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

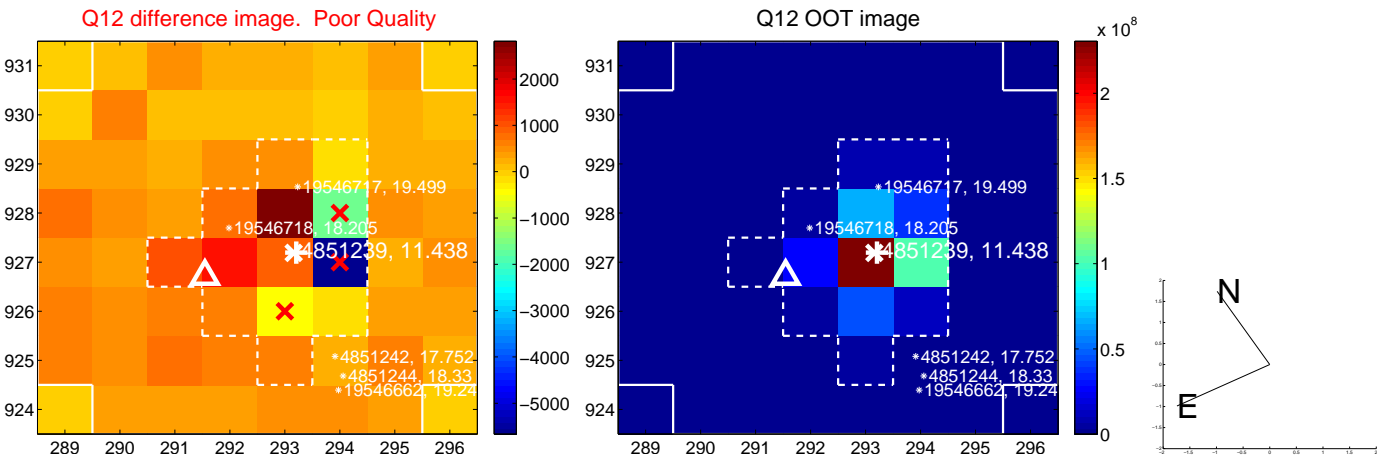
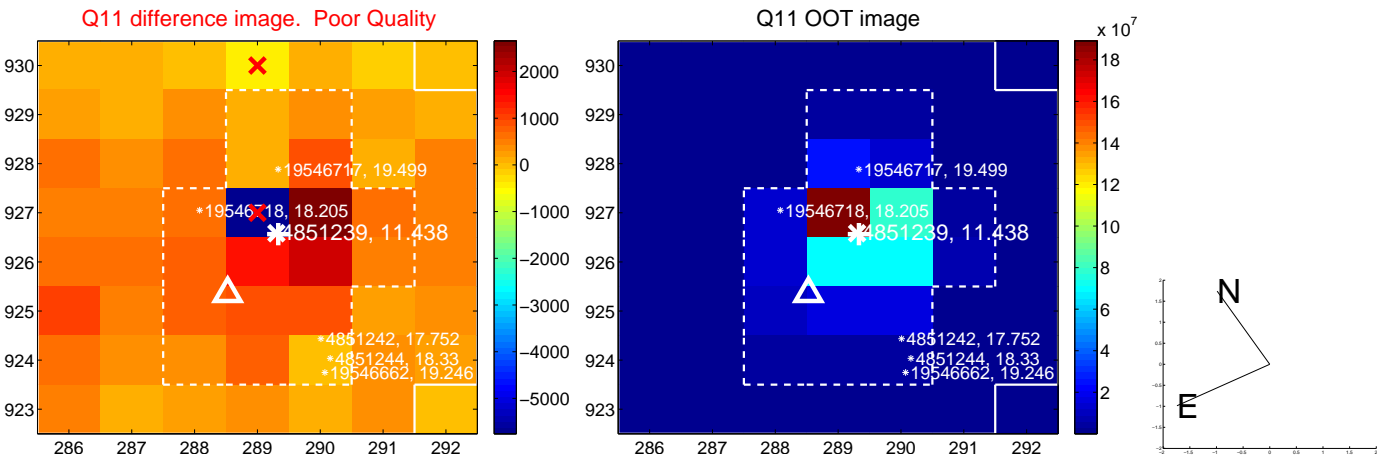
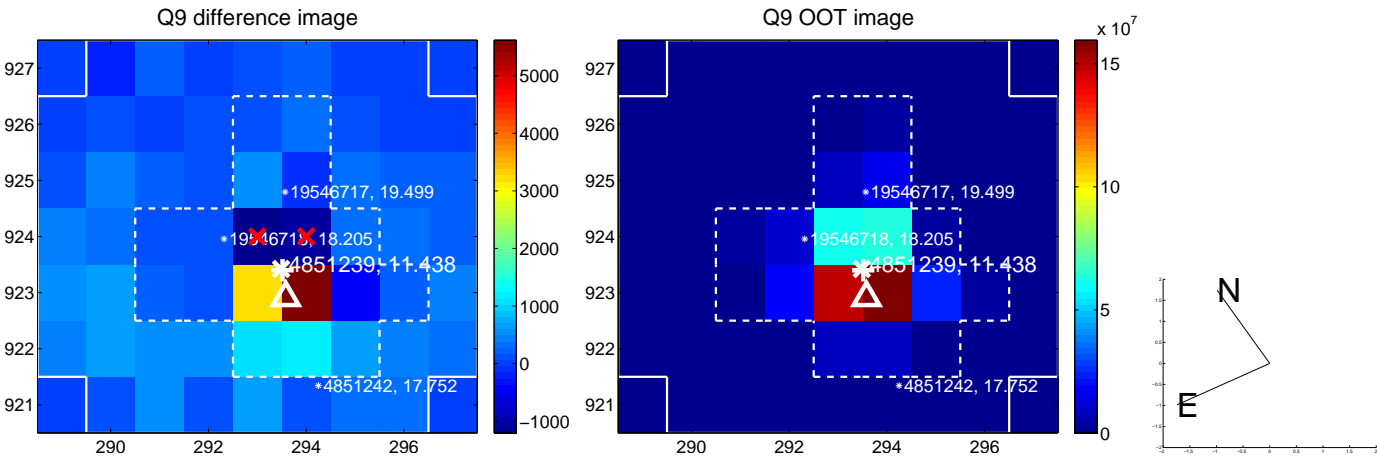
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



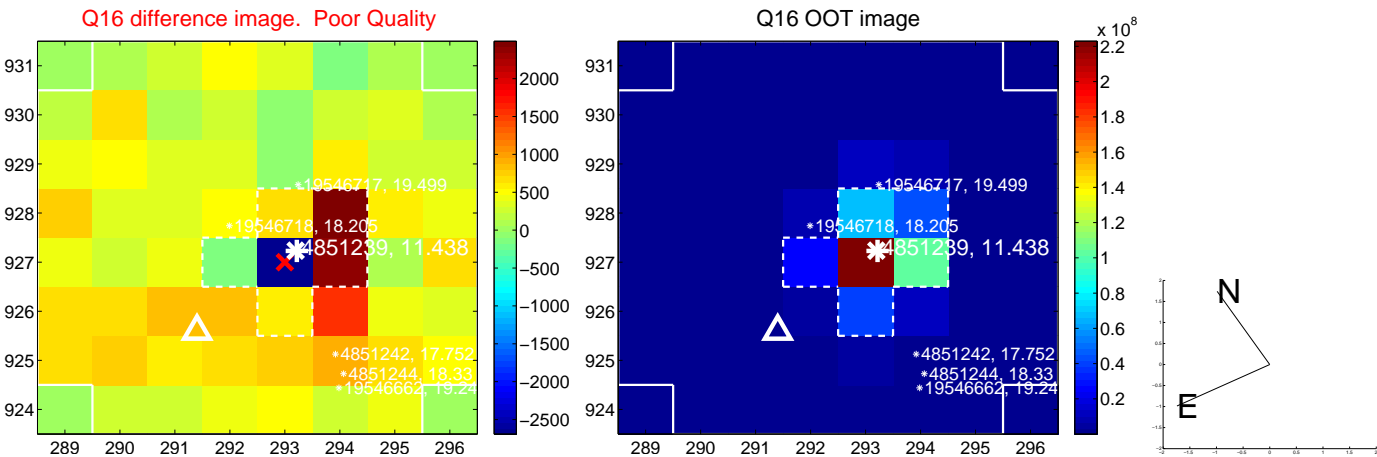
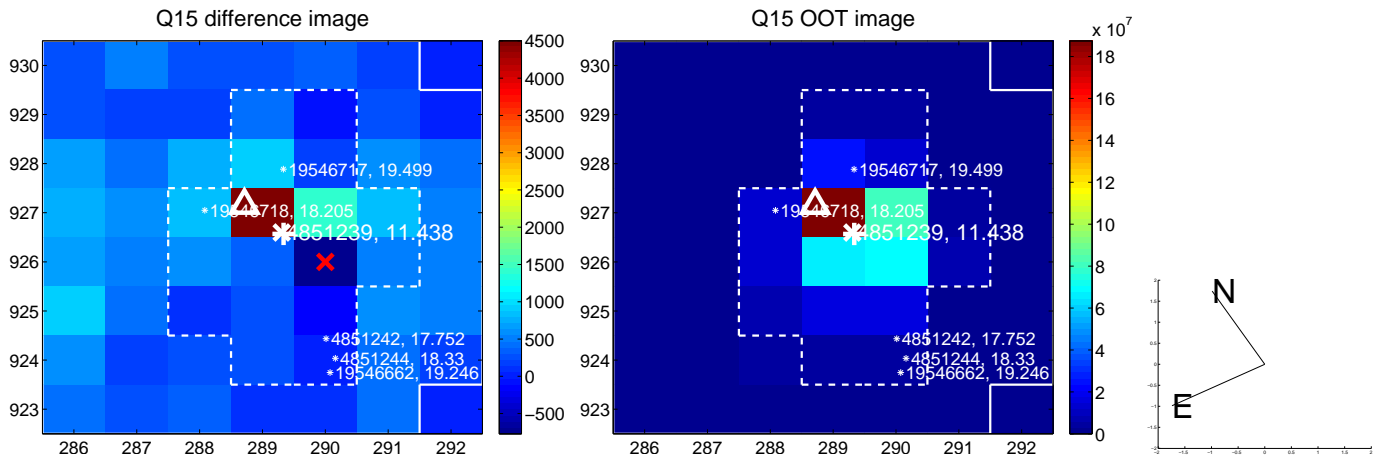
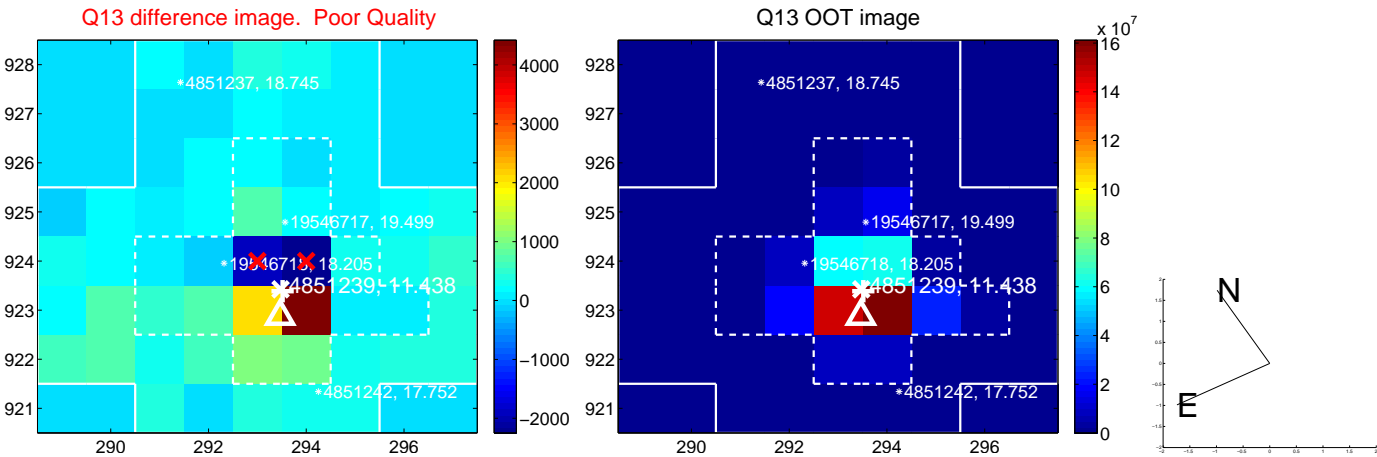
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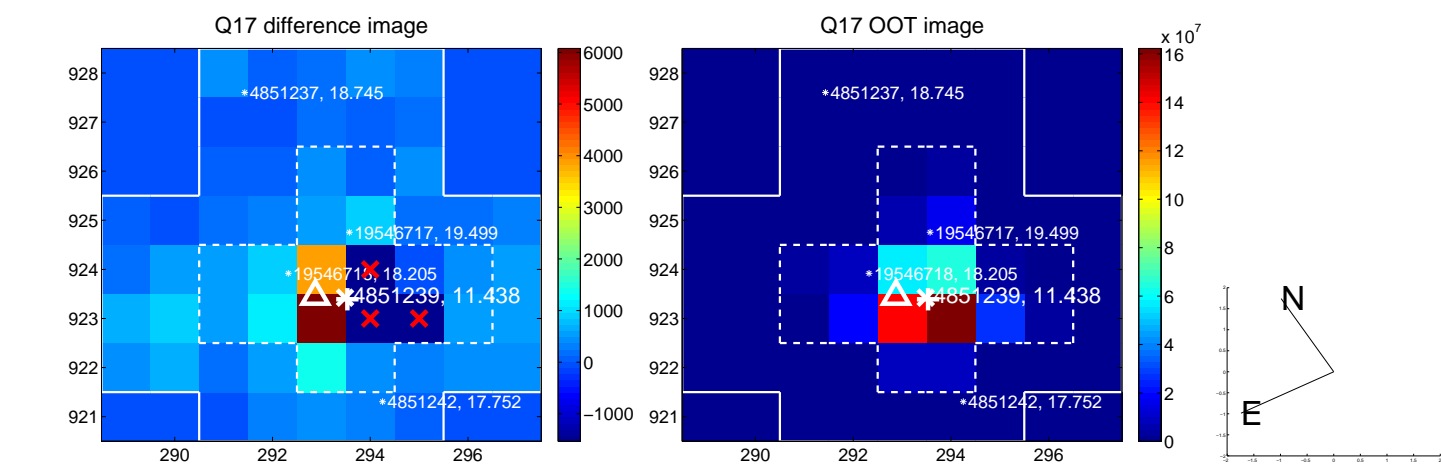
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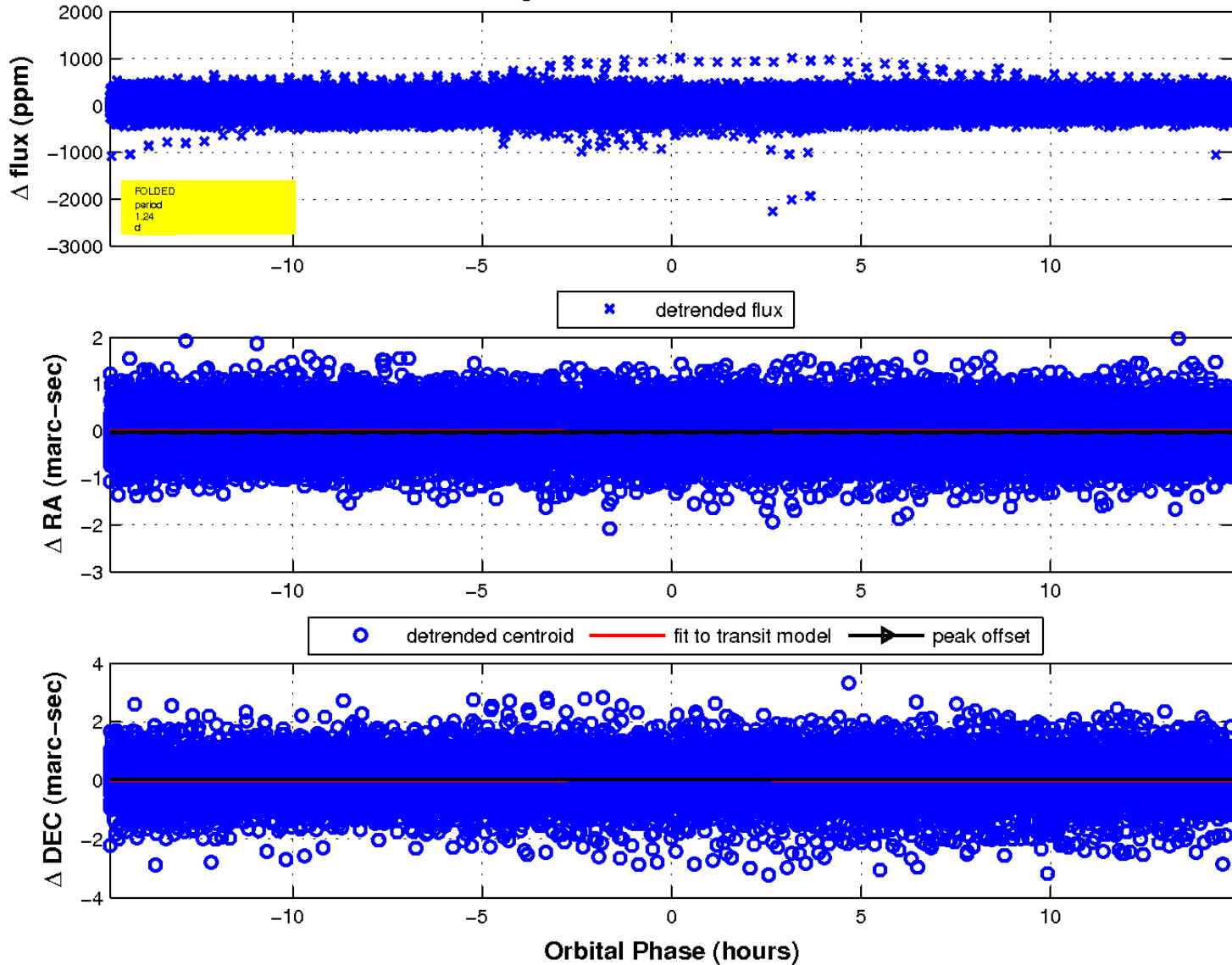
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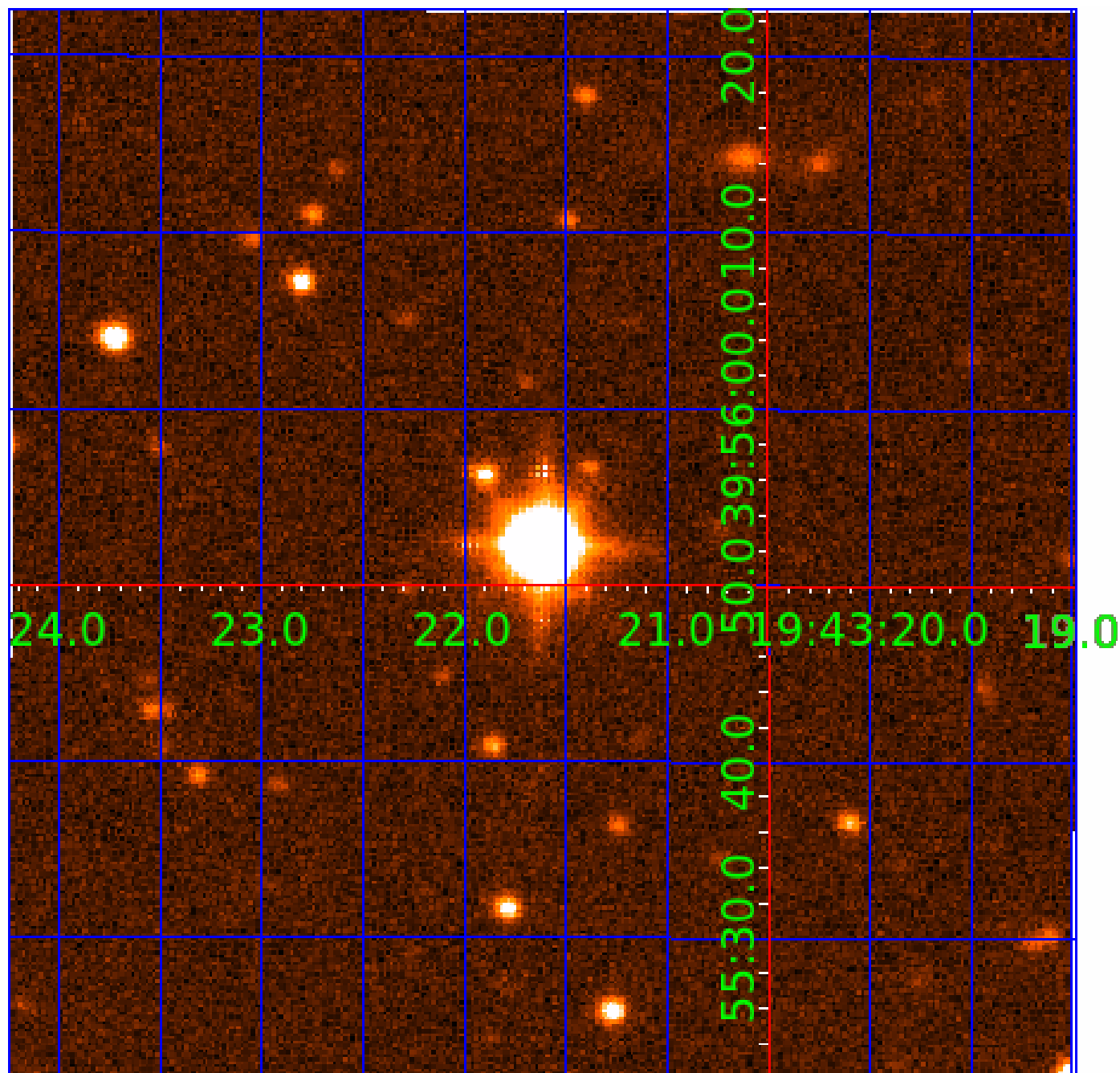


fluxWeightedCentroids, Planet 1 of 9



UKIRT Image

Declination



KIC 004851239

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-03

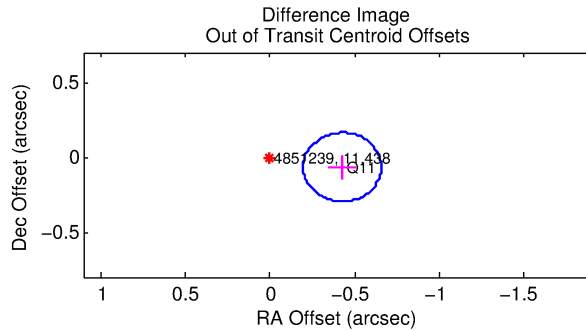
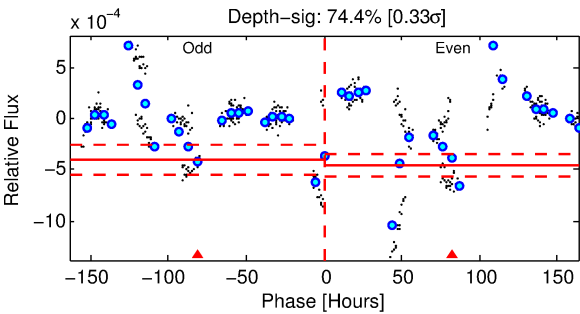
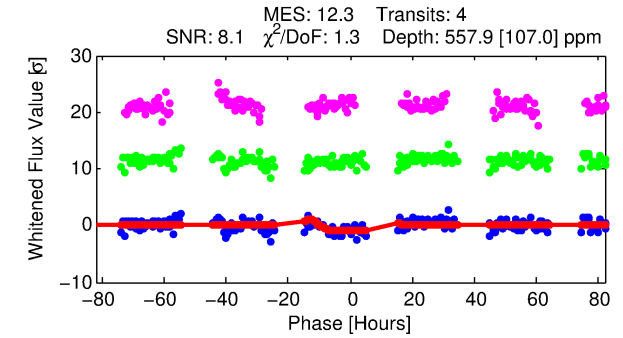
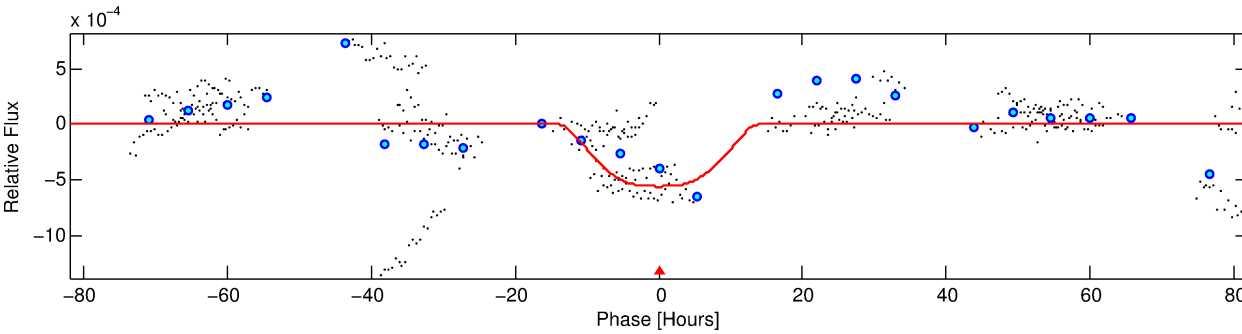
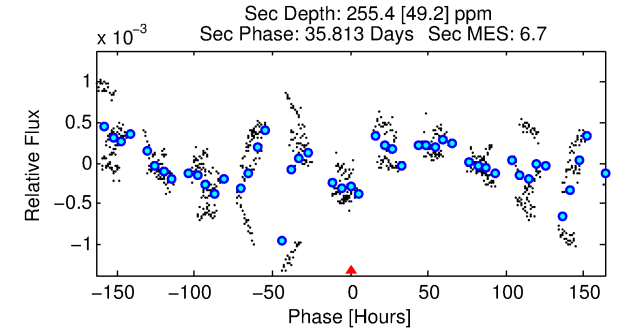
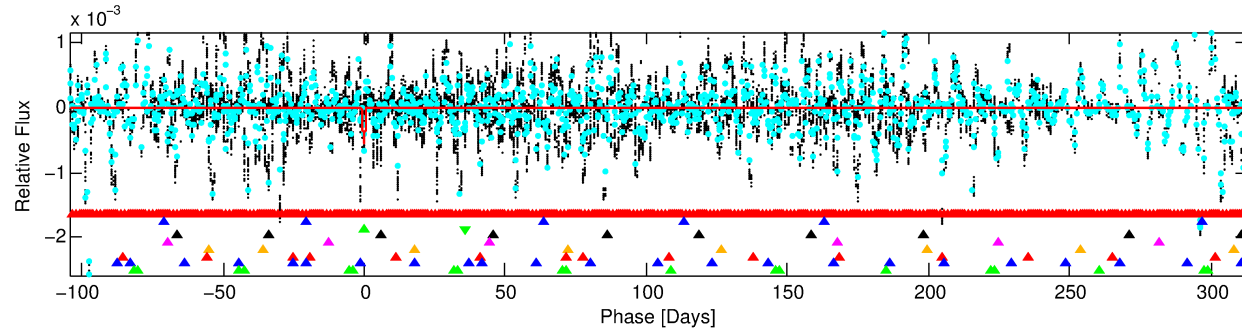
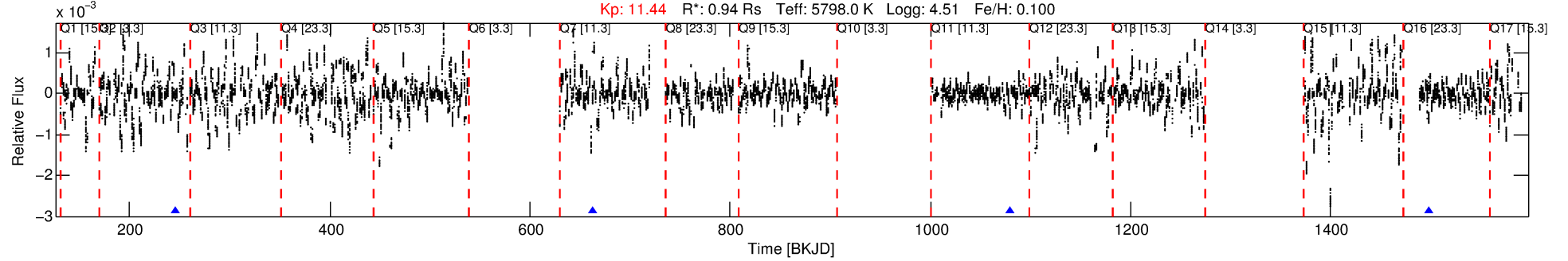
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 3 of 9 Period: 417.370 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 417.37024 [0.03023] d
Epoch = 245.3464 [0.0530] BKJD
Rp/R* = 0.0288 [0.0027]
a/R* = 40.71 [3.80]
b = 0.97 [0.01]
Seff = 0.73 [0.14]
Teq = 236 [11] K
Rp = 2.96 [0.47] Re
a = 1.1069 [0.1279] AU
Ag = 19682.56 [6362.83] [3.09σ]
Teffp = 4319 [298] K [13.68σ]

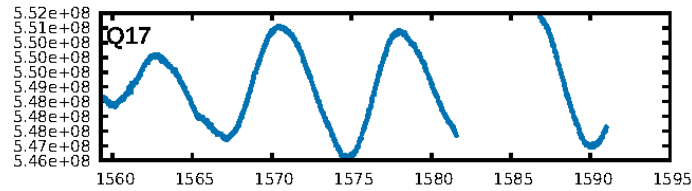
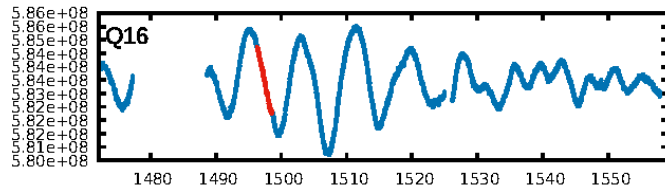
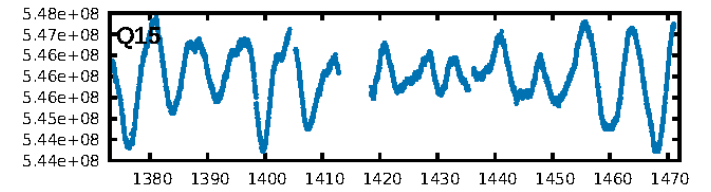
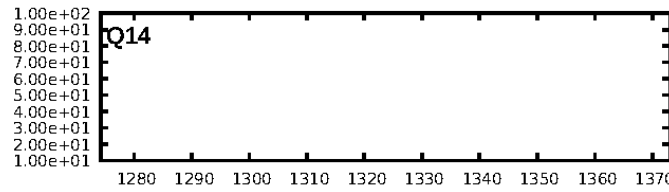
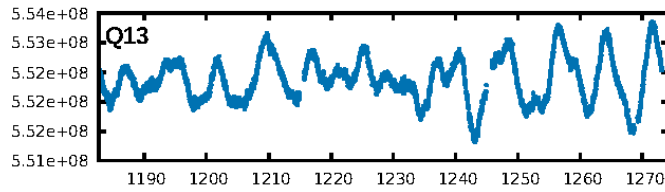
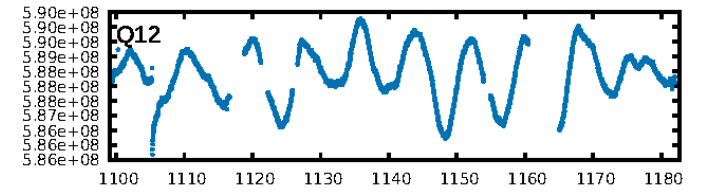
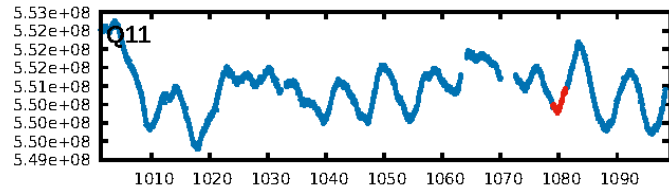
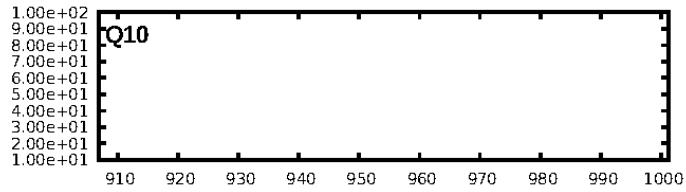
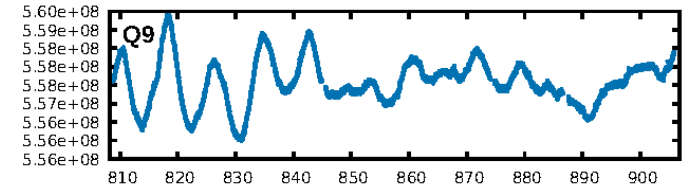
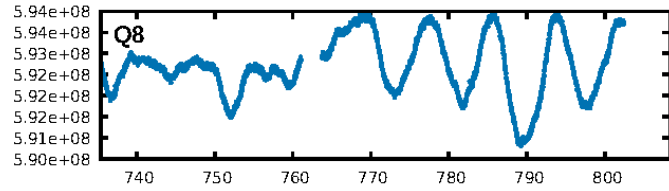
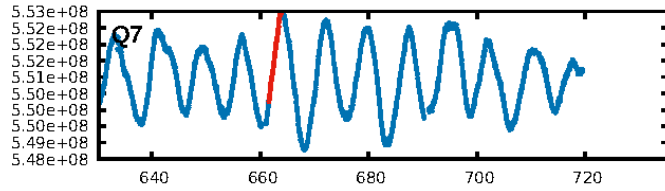
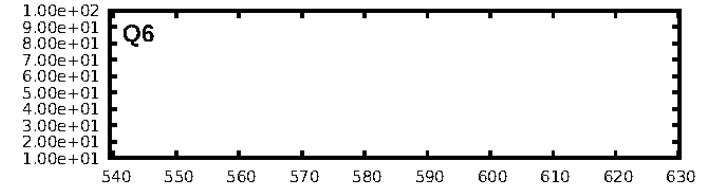
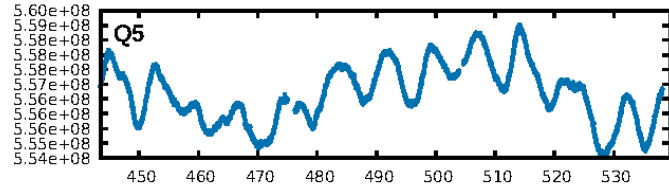
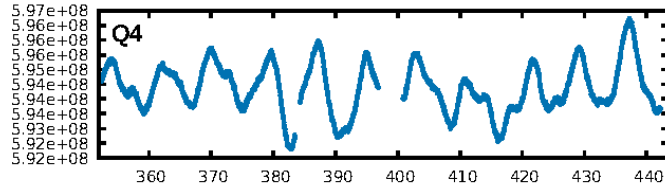
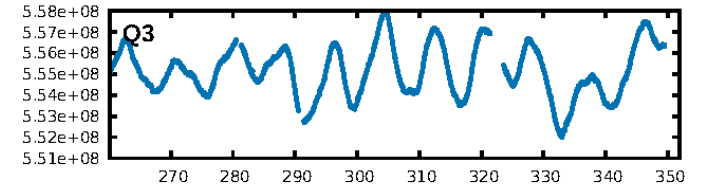
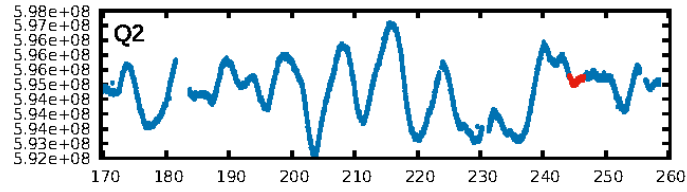
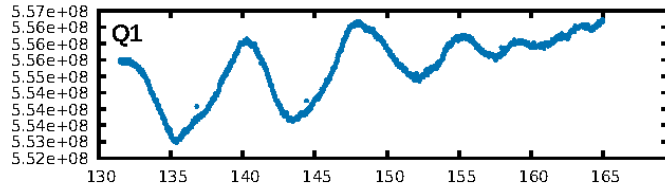
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [151.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.52e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.236
Centroid-sig: 0.0%
Centroid-so: 1.235 arcsec [2.42σ]
OotOffset-rm: 0.432 arcsec [5.64σ]
KicOffset-rm: 0.506 arcsec [6.61σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/1]

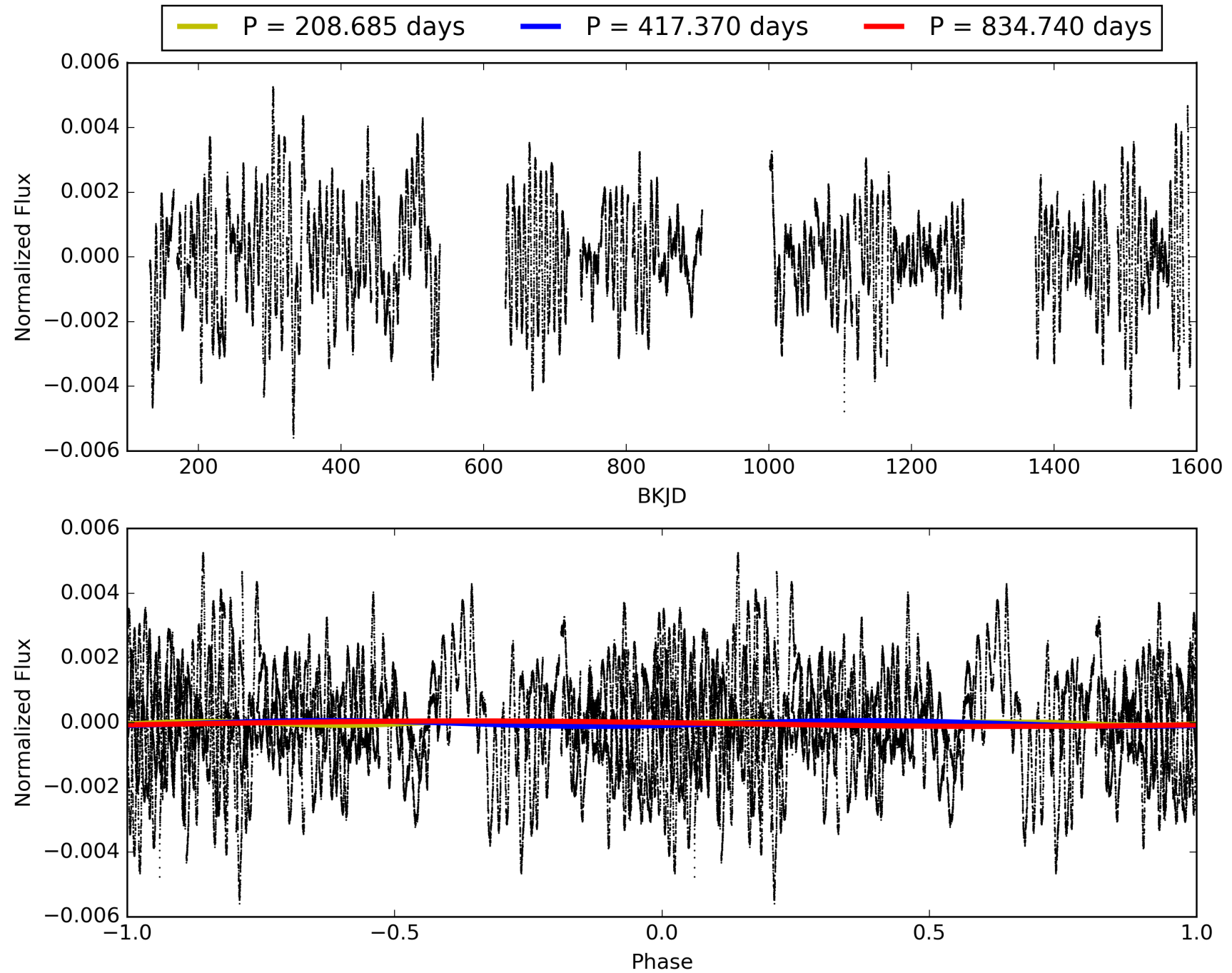
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:17 Z

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

TCE 004851239-03, PDC Light Curves

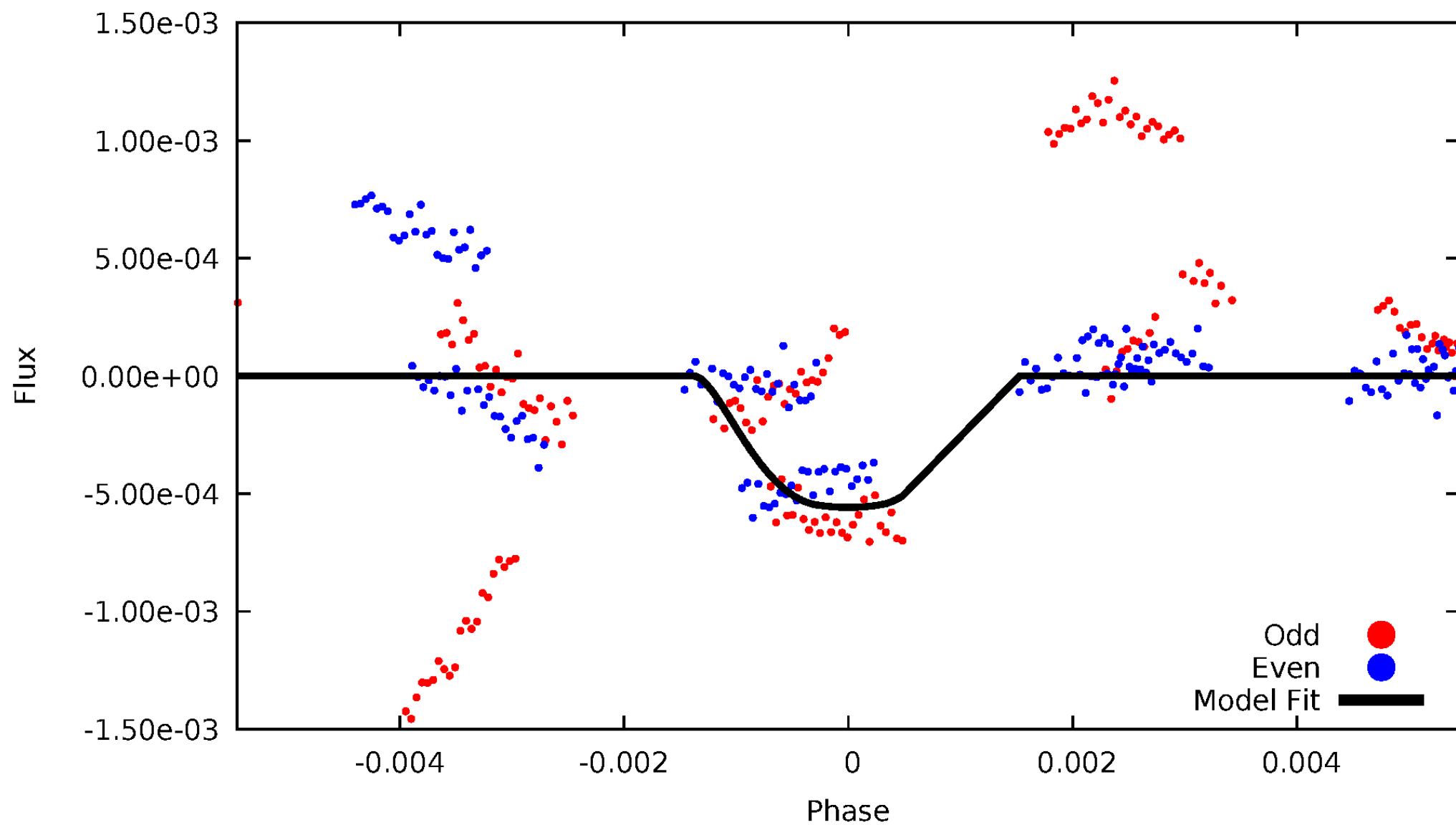


TCE 004851239-03



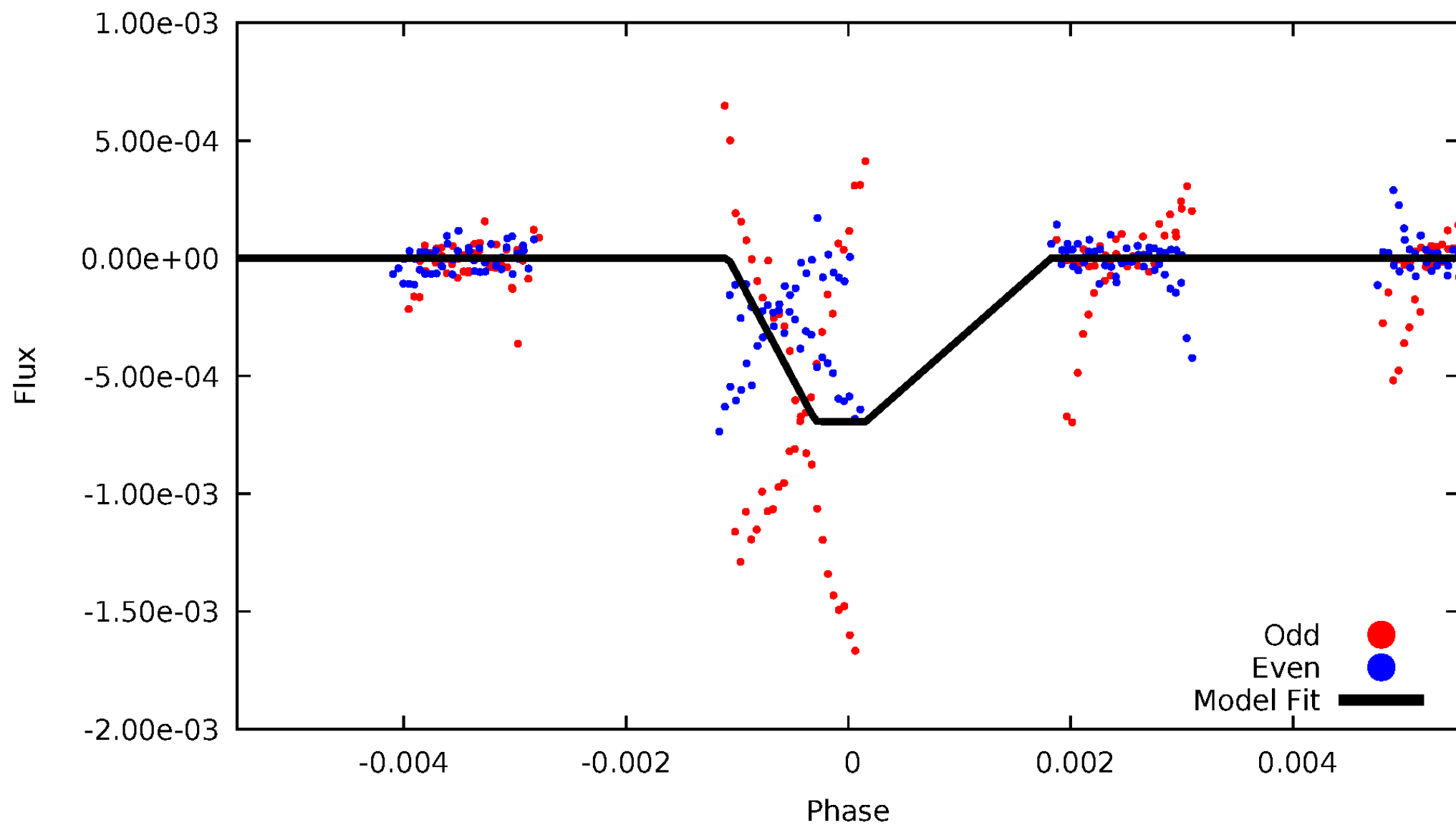
DV Odd/Even

TCE 004851239-03



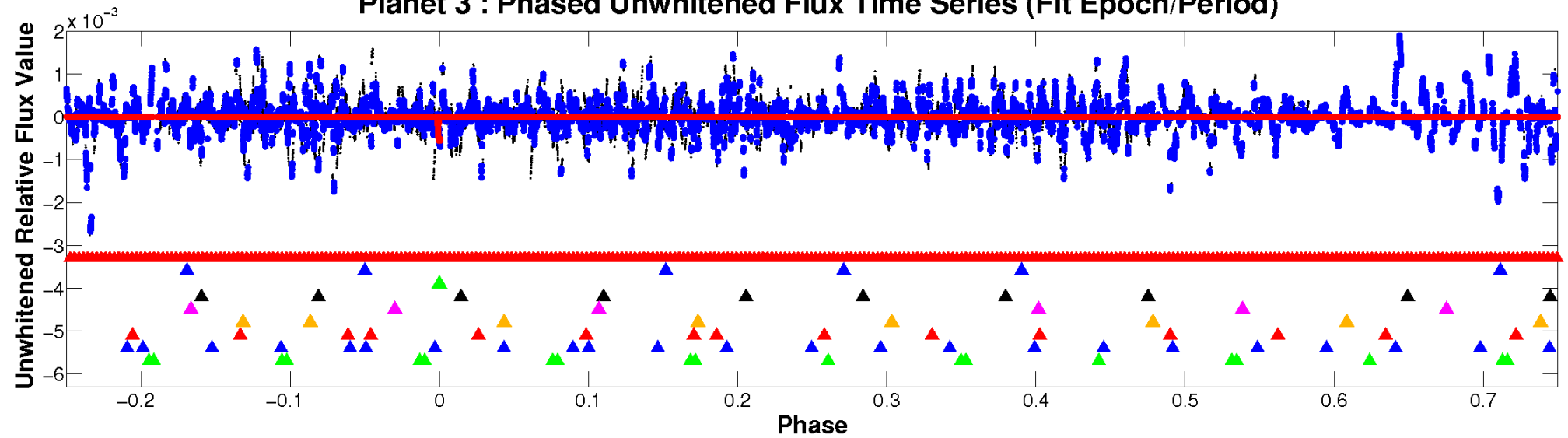
ALT Odd/Even

TCE 004851239-03

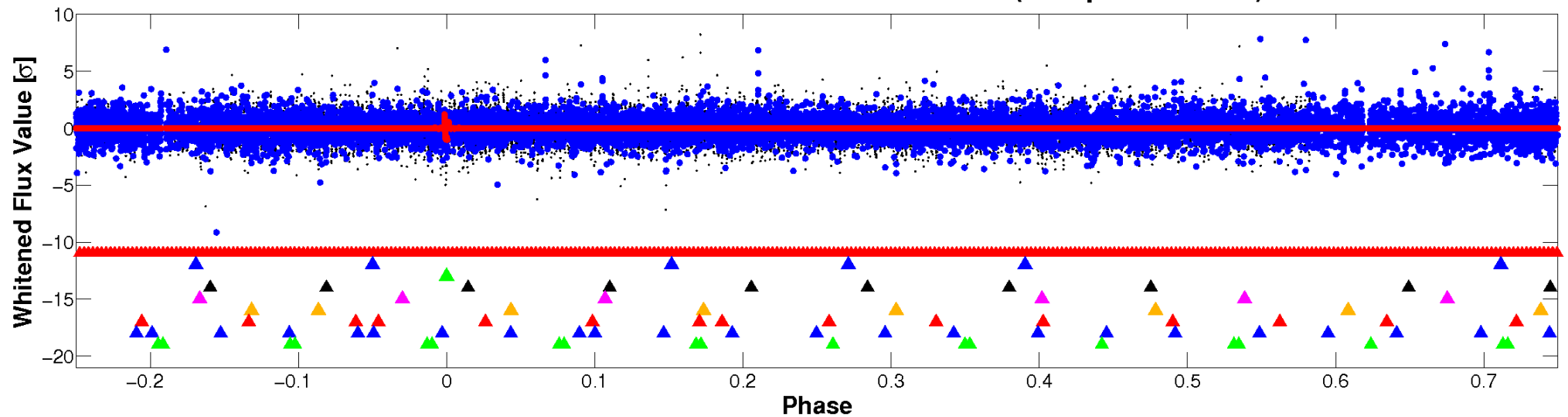


Non-Whitened Vs. Whitened Light Curve

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



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



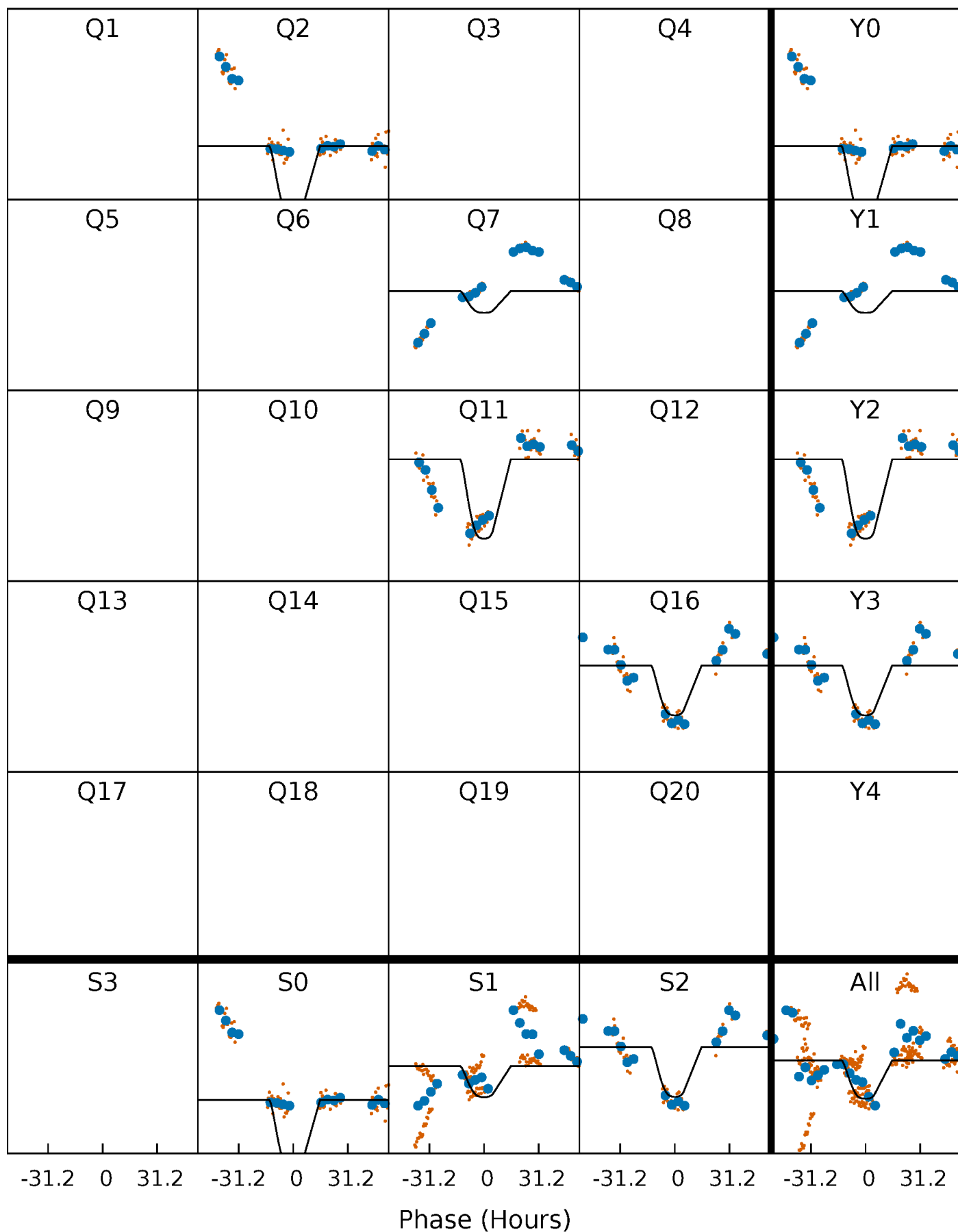
PDC Quarter-Phased Transit Curves

TCE 004851239-03 P=417.370236 Days $T_0=245.346401$ (BKJD)



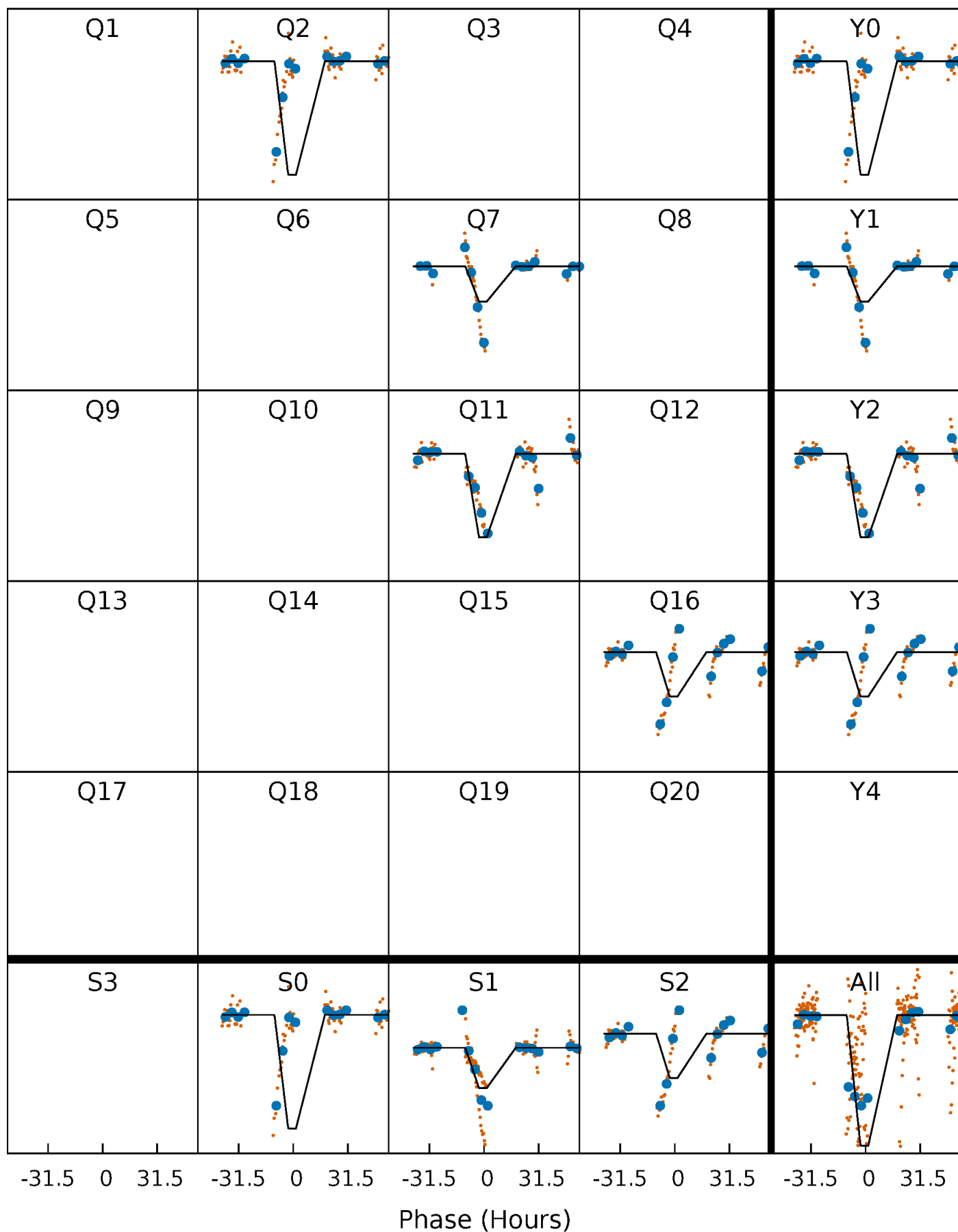
DV Quarter-Phased Transit Curves

TCE 004851239-03 $P=417.370236$ Days $T_0=245.346401$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

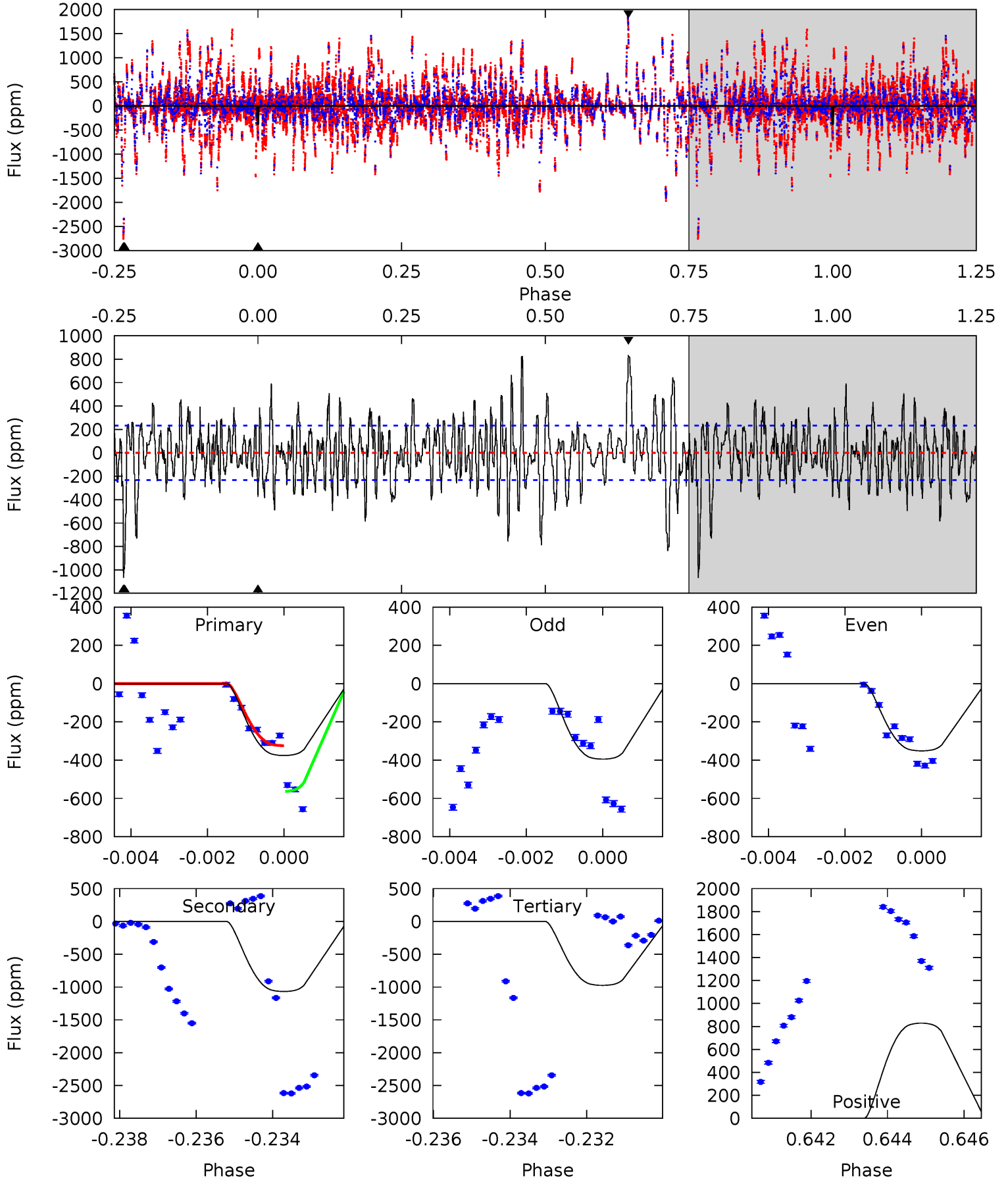
TCE 004851239-03 P=417.457631 Days $T_0=245.221099$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-03, P = 417.370236 Days, E = 245.346401 Days

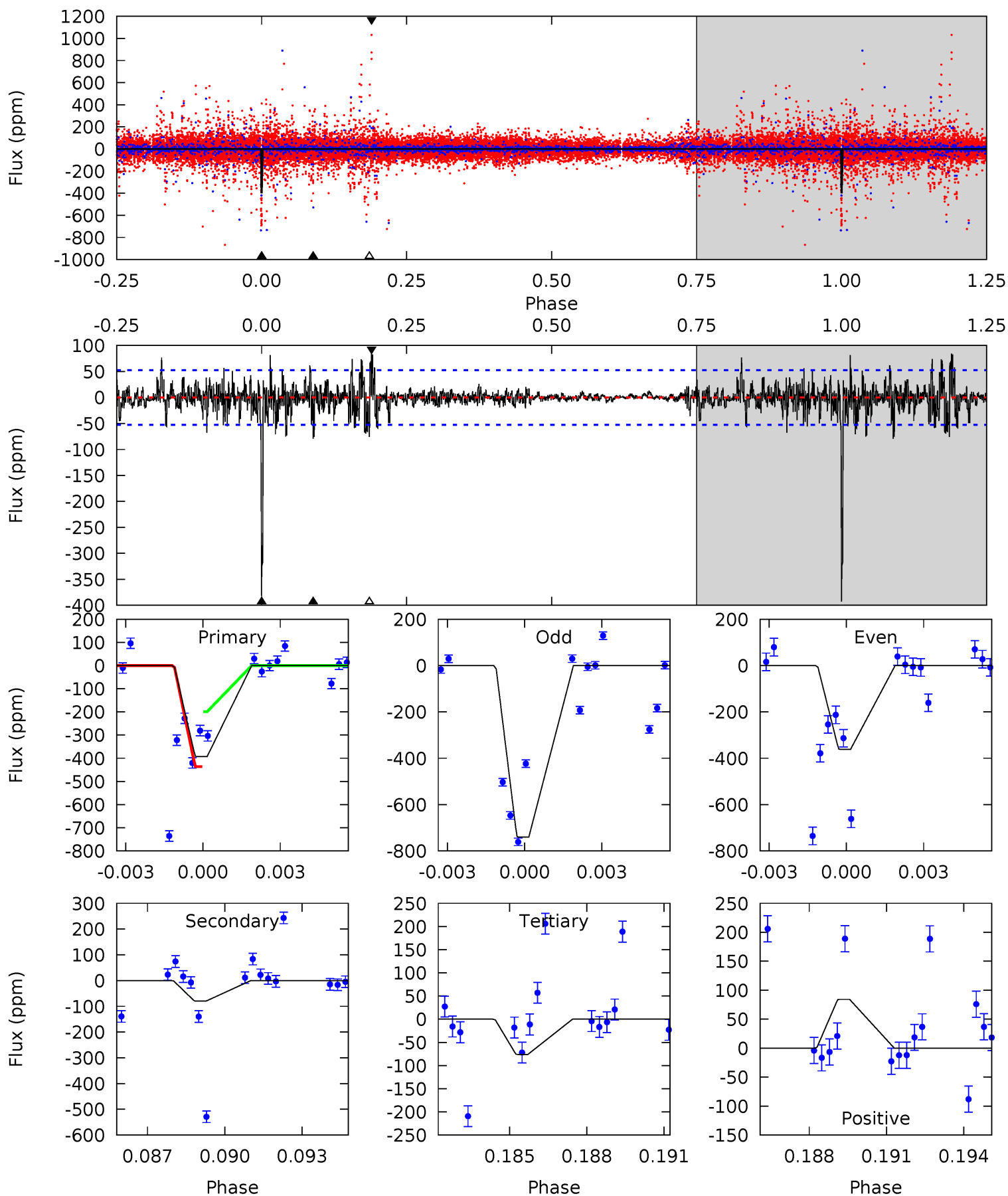
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.61	24.5	22.3	19.0	5.34	3.11	5.25	-13.7	-10.4	2.13	5.47	0.49	1.10	0.44	1.99



Alt Model-Shift Uniqueness Test

004851239-03, P = 417.457631 Days, E = 245.221099 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.2	7.91	7.58	8.39	5.26	2.98	1.47	31.6	30.8	0.33	-0.47	18.7	1.16	0.18	6.00



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1068 ± 44	$3.05^{+0.34}_{-0.32}$	334^{+10}_{-8}	6148^{+346}_{-278}	76200^{+19093}_{-14270}
Alt.	-79 ± 10	$2.78^{+0.31}_{-0.31}$	333^{+10}_{-7}	3754^{+166}_{-144}	6858^{+1996}_{-1590}

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 $A_{obs} \gg 1.0$

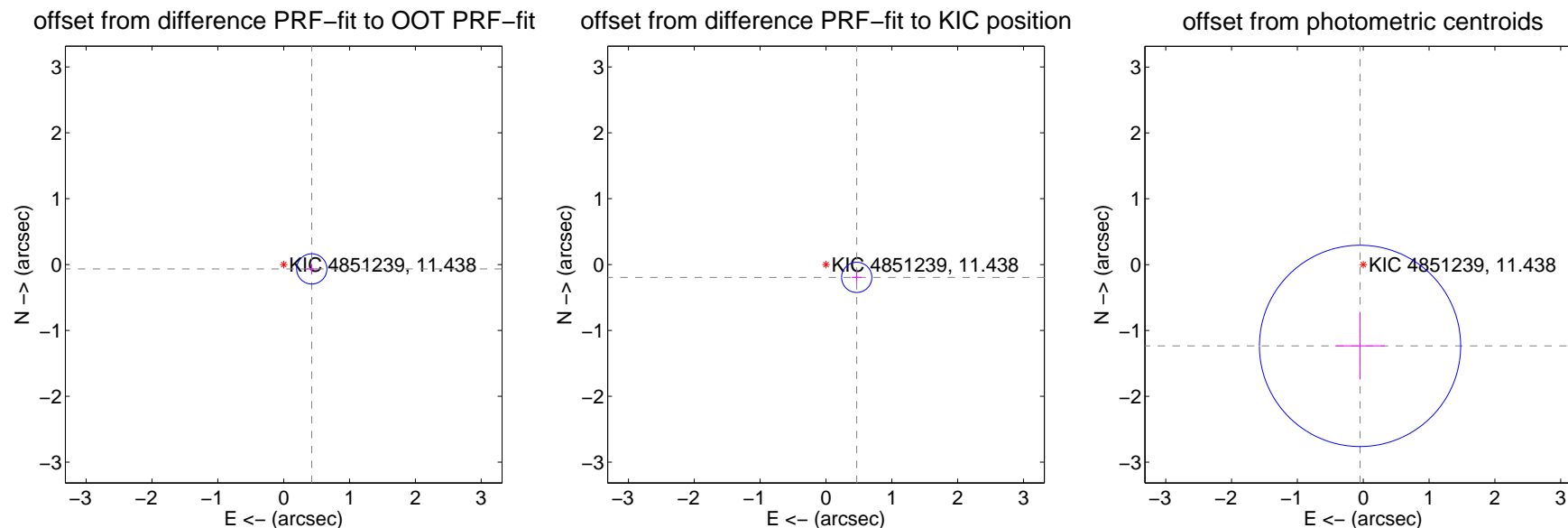
DV Centroid Data

Supplemental centroid analysis for 004851239-03. **Kepler magnitude: 11.44.** Transit SNR 8.11

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.432 ± 0.077	5.64	-0.427 ± 0.077	-0.066 ± 0.076
PRF-fit source offset from KIC position	0.506 ± 0.077	6.61	-0.467 ± 0.077	-0.195 ± 0.076
photometric centroid source offset	1.24 ± 0.51	2.42	0.05 ± 0.38	-1.23 ± 0.51



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



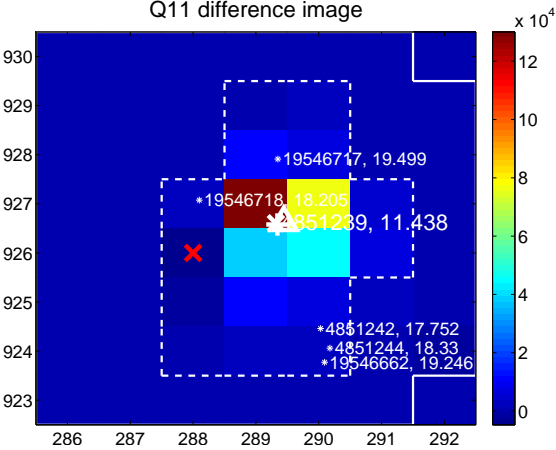
Q10 no difference image



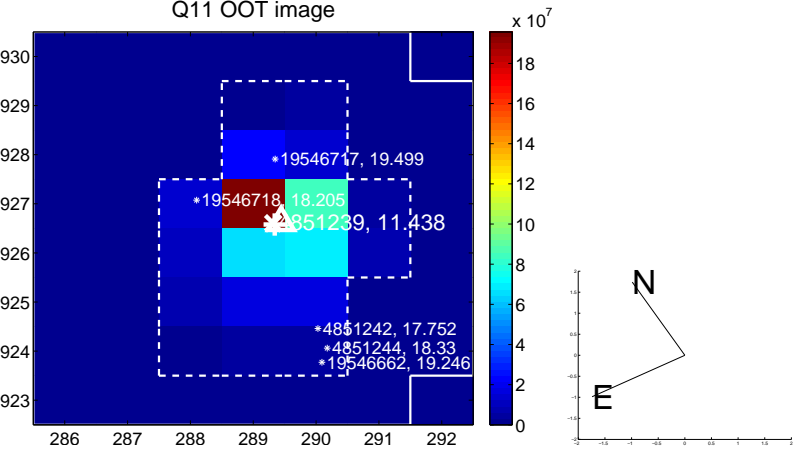
Q10 no OOT image



Q11 difference image



Q11 OOT image



Q12 no difference image



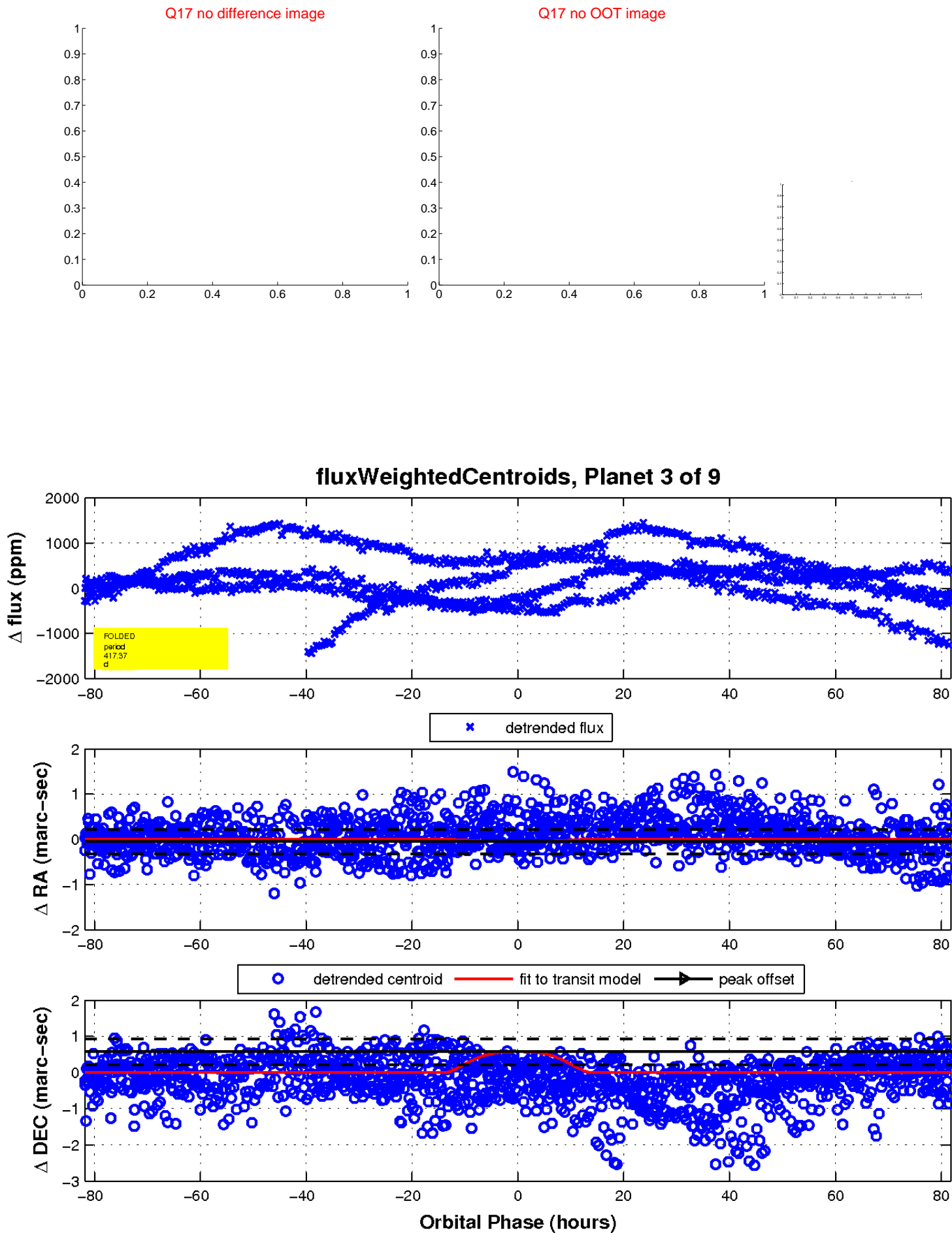
Q12 no OOT image



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

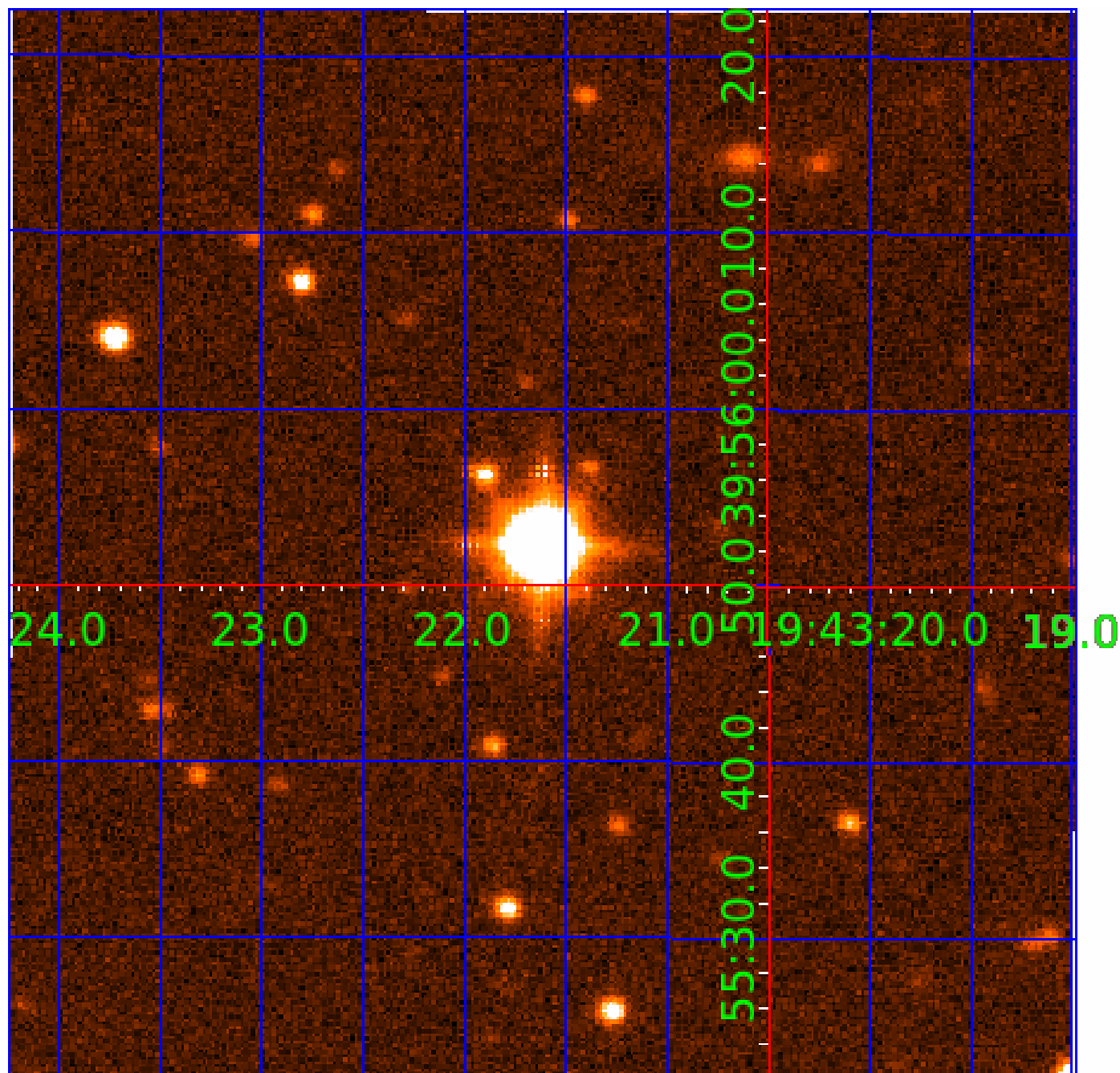


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-04

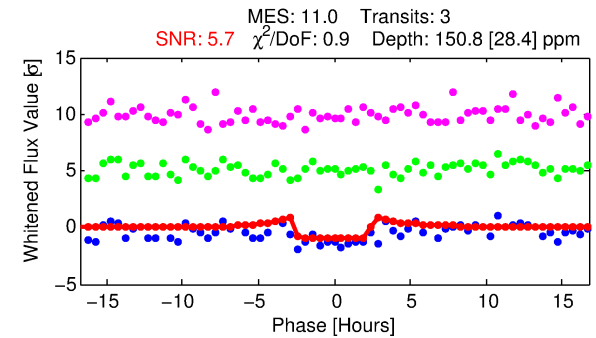
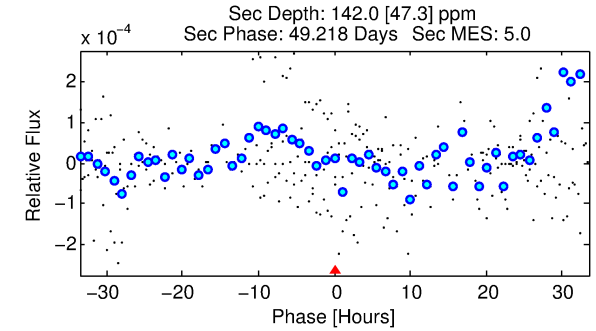
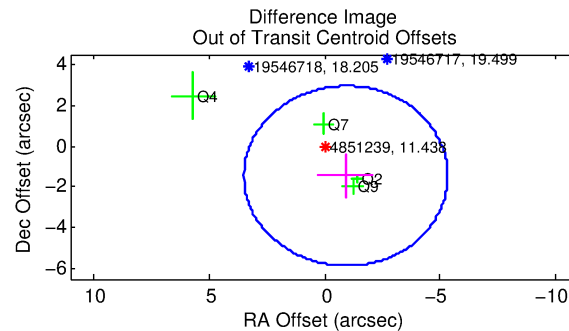
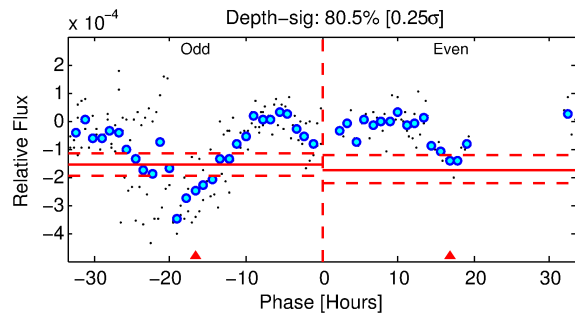
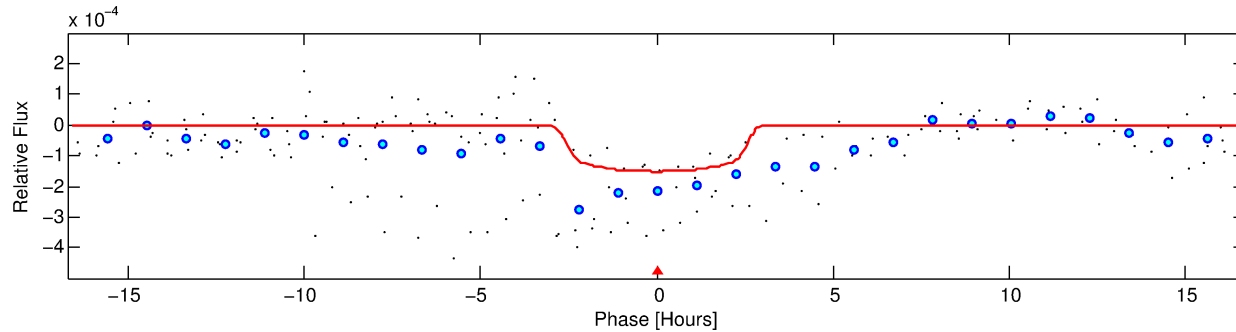
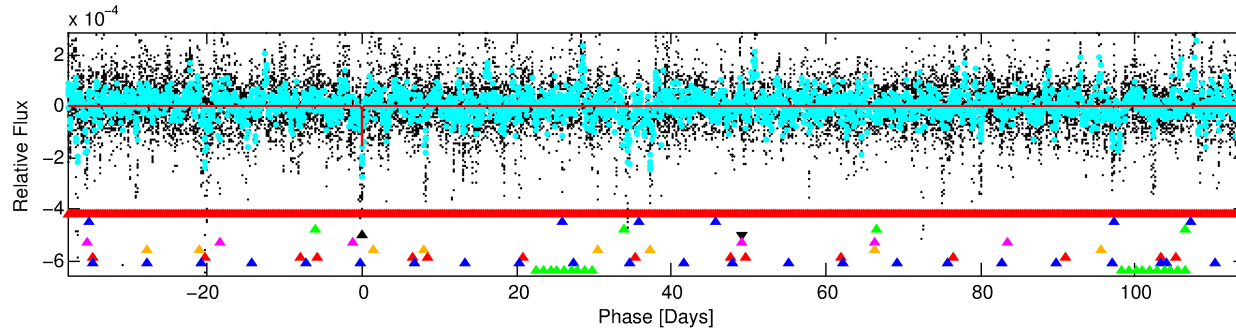
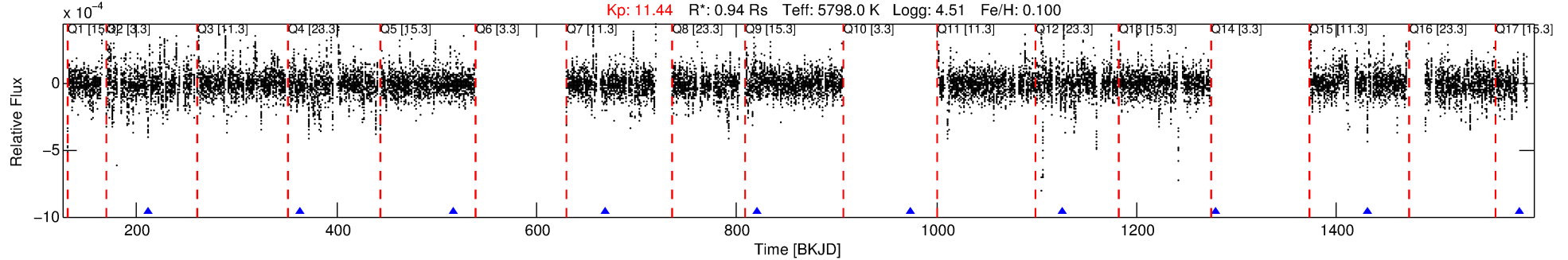
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 4 of 9 Period: 152.422 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 152.42177 [0.00268] d
Epoch = 211.5049 [0.0090] BKJD
Rp/R* = 0.0133 [0.0041]
a/R* = 99.58 [131.27]
b = 0.89 [0.30]
Seff = 2.80 [0.53]
Teq = 330 [15] K
Rp = 1.37 [0.46] Re
a = 0.5655 [0.0654] AU
Ag = 13370.92 [9658.25] [1.38σ]
Teffp = 5486 [963] K [5.35σ]

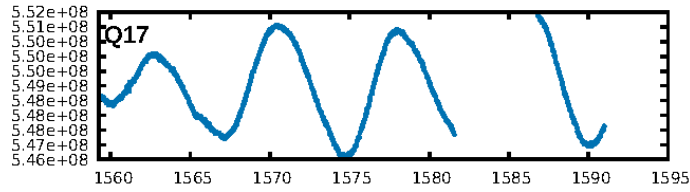
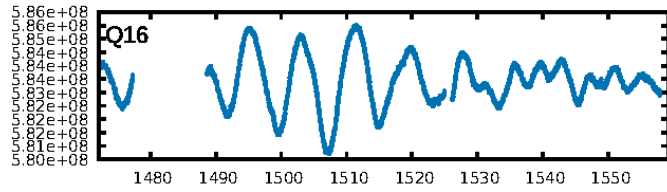
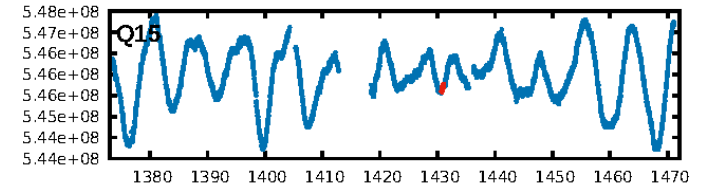
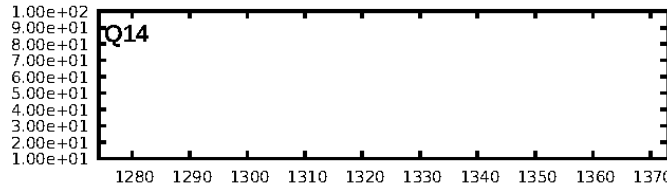
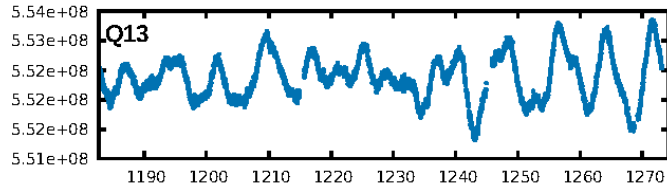
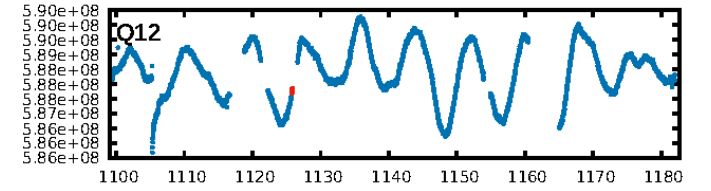
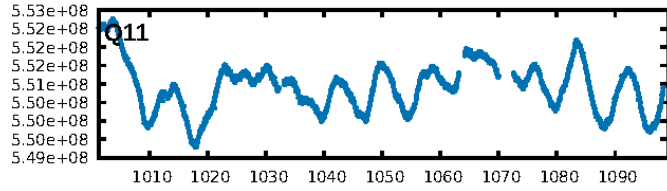
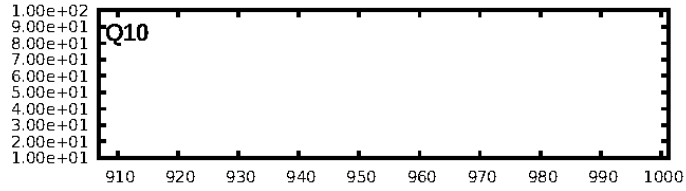
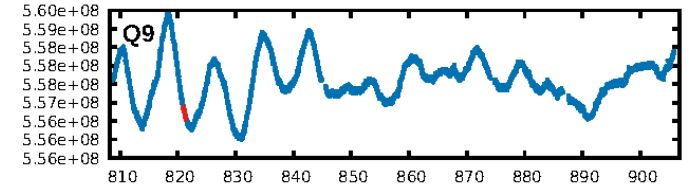
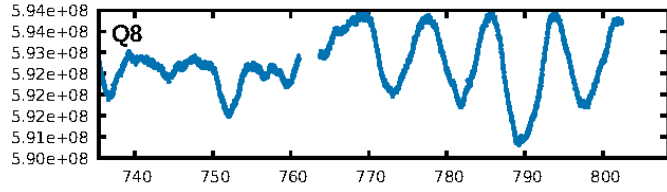
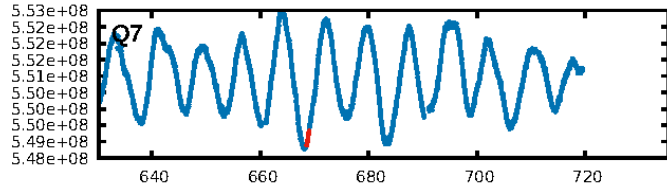
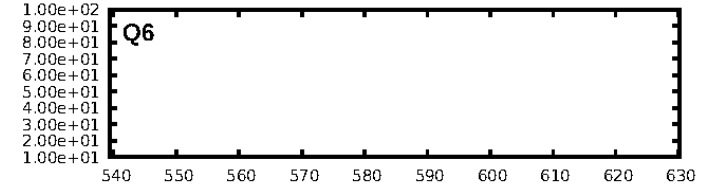
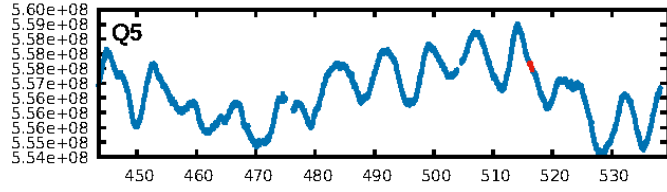
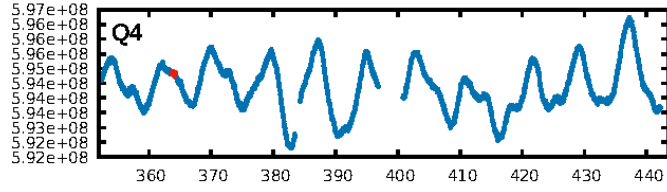
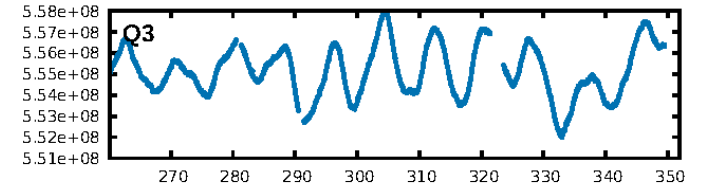
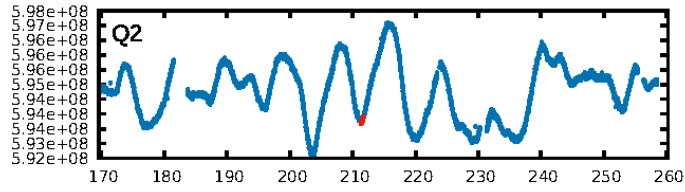
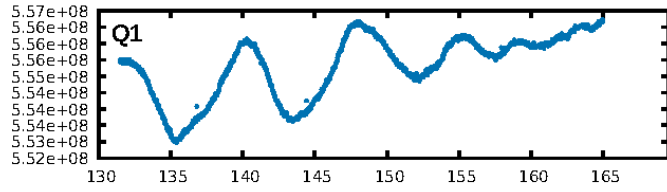
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [178.22σ]
LongPeriod-sig: 100.0% [123.13σ]
ModelChiSquare2-sig: 72.1%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 1.60e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.5625
Centroid-sig: 10.3%
Centroid-so: 1.335 arcsec [1.50σ]
OotOffset-rm: 1.720 arcsec [1.17σ]
KicOffset-rm: 1.798 arcsec [1.19σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/6]

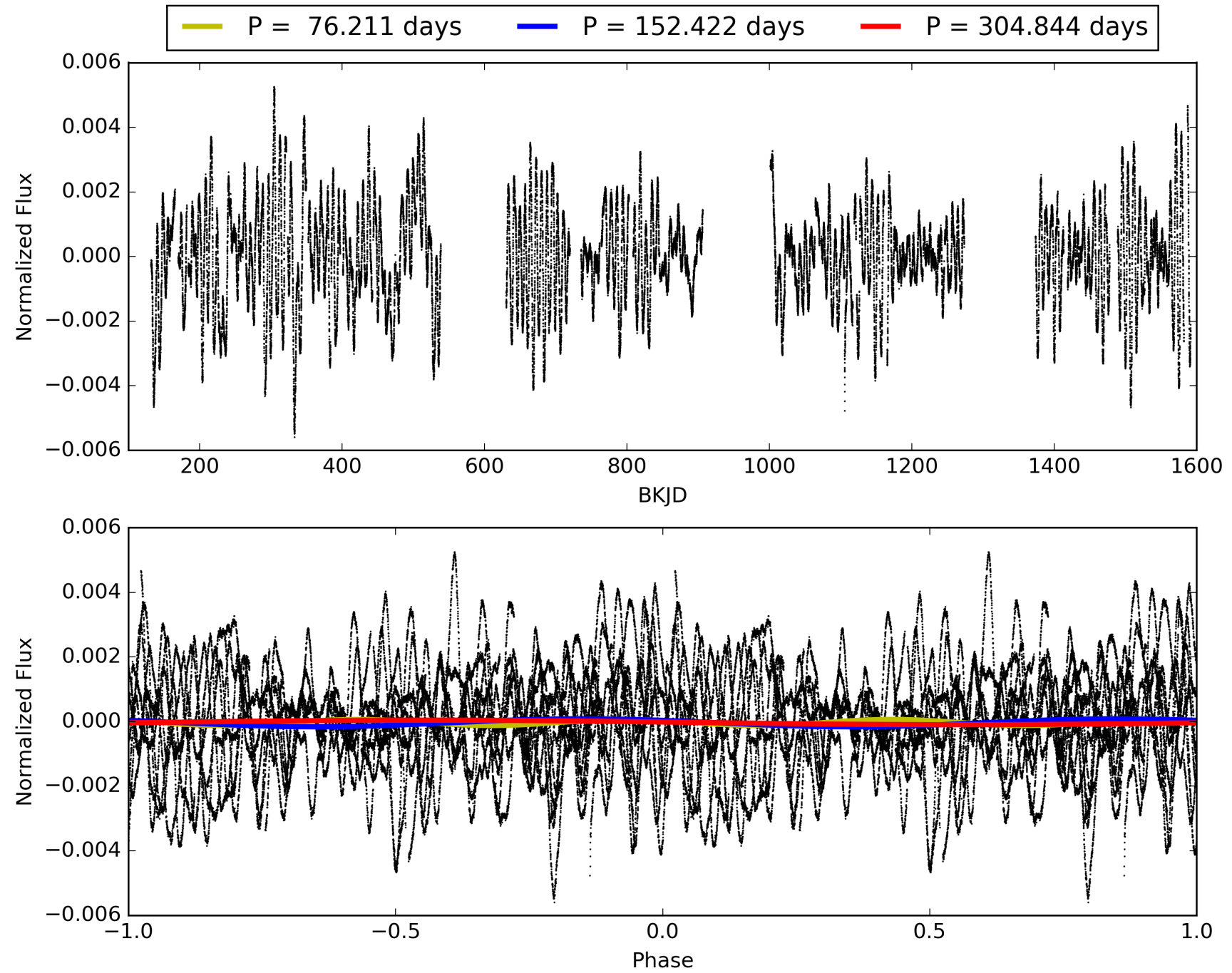
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:22 Z

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

TCE 004851239-04, PDC Light Curves

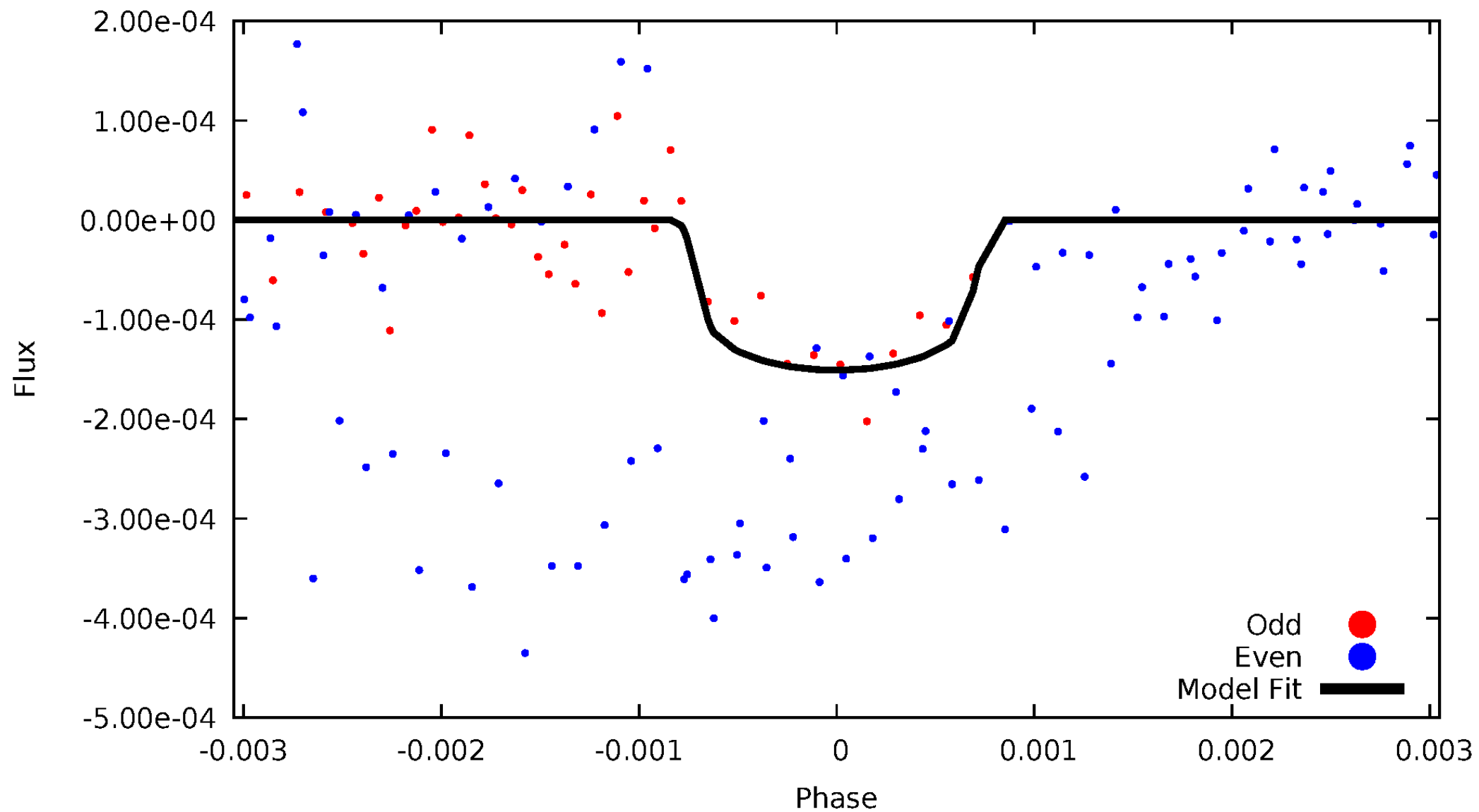


TCE 004851239-04



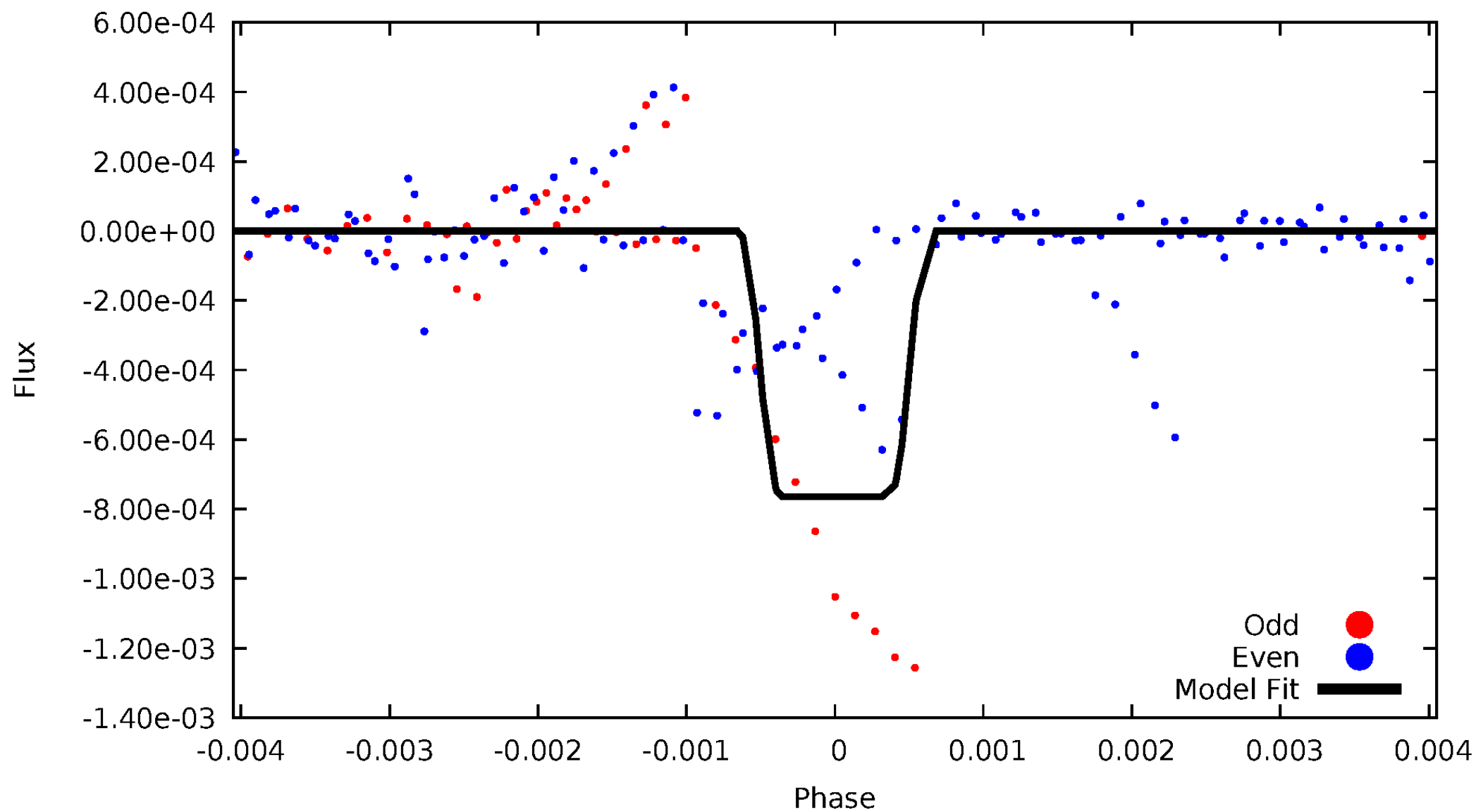
DV Odd/Even

TCE 004851239-04



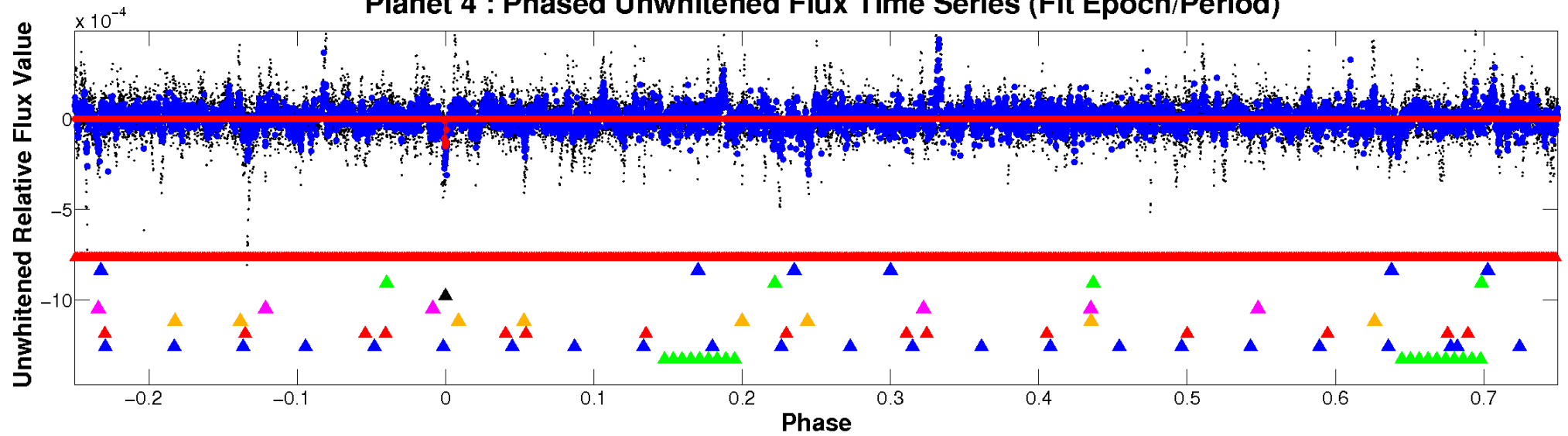
ALT Odd/Even

TCE 004851239-04

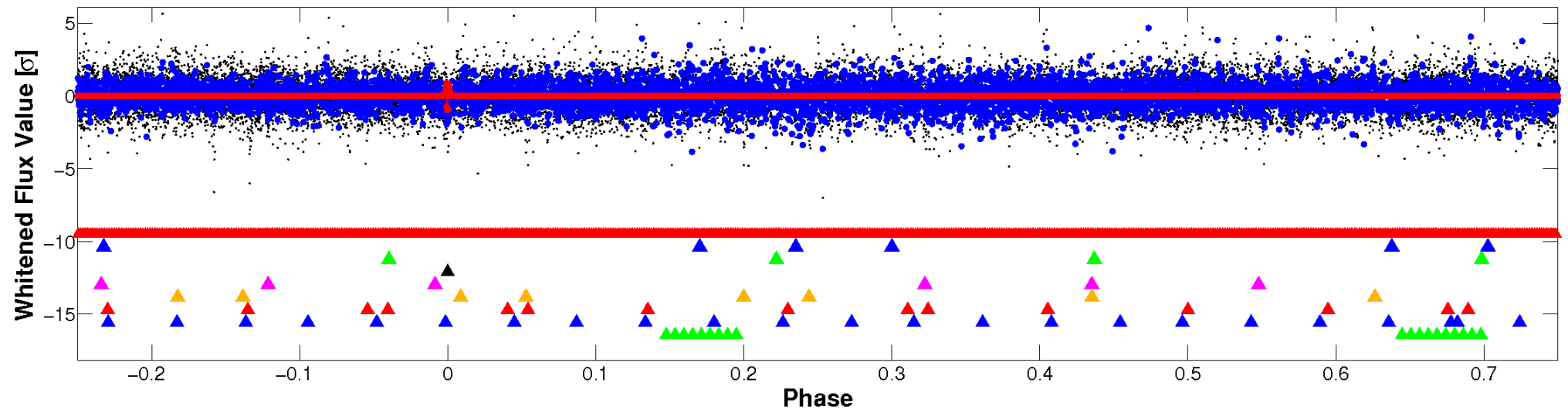


Non-Whitened Vs. Whitened Light Curve

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

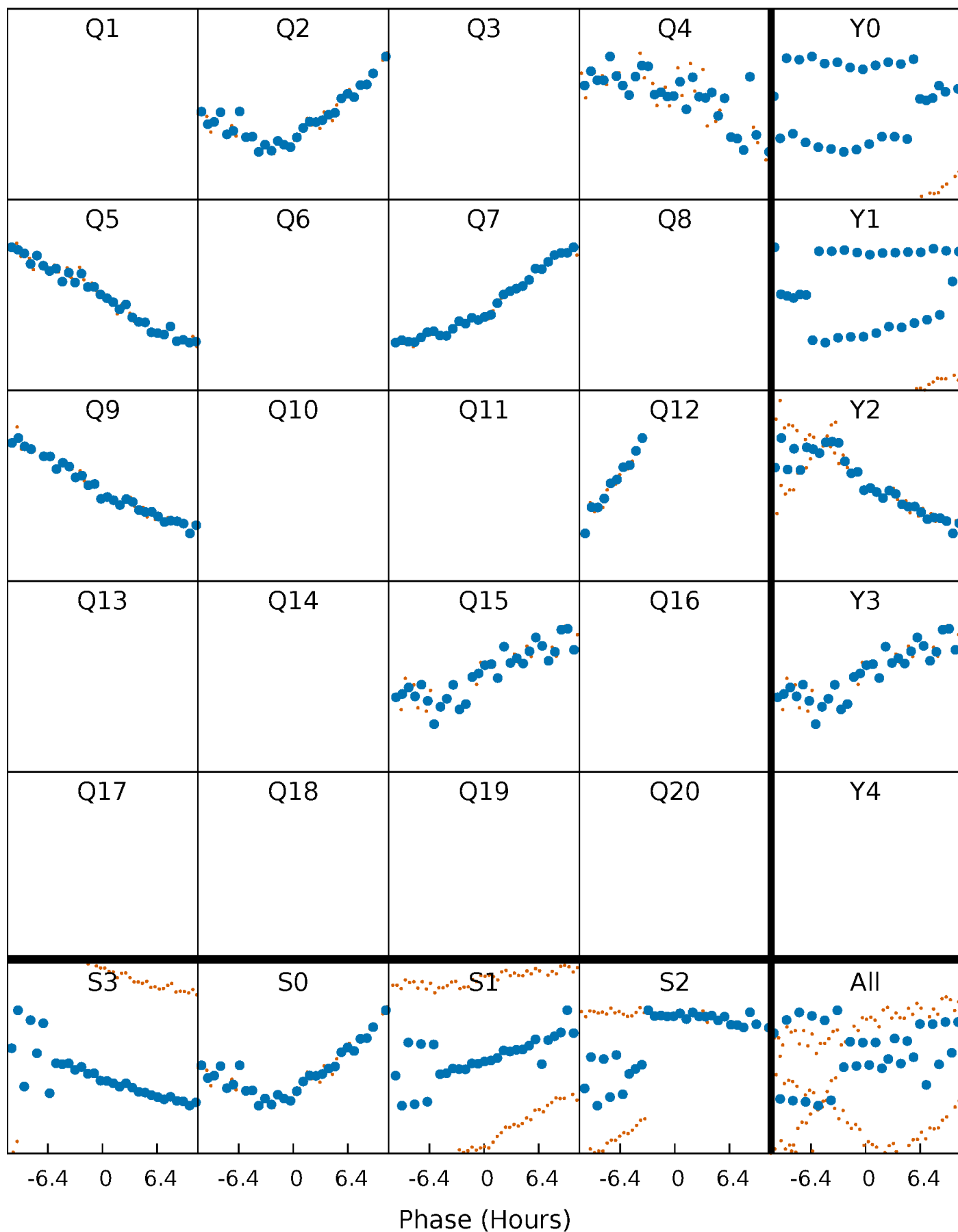


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



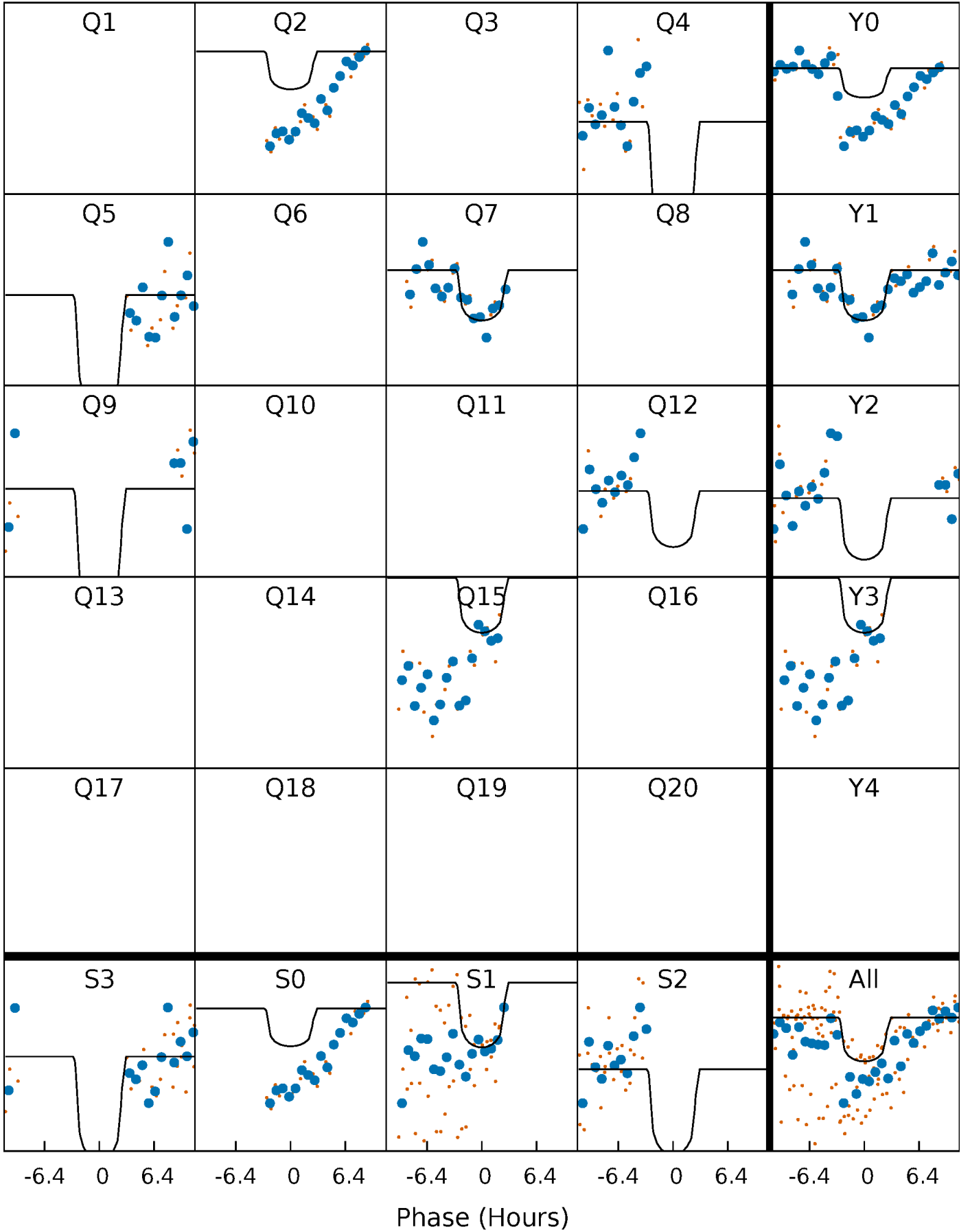
PDC Quarter-Phased Transit Curves

TCE 004851239-04 $P=152.421774$ Days $T_0=211.504916$ (BKJD)



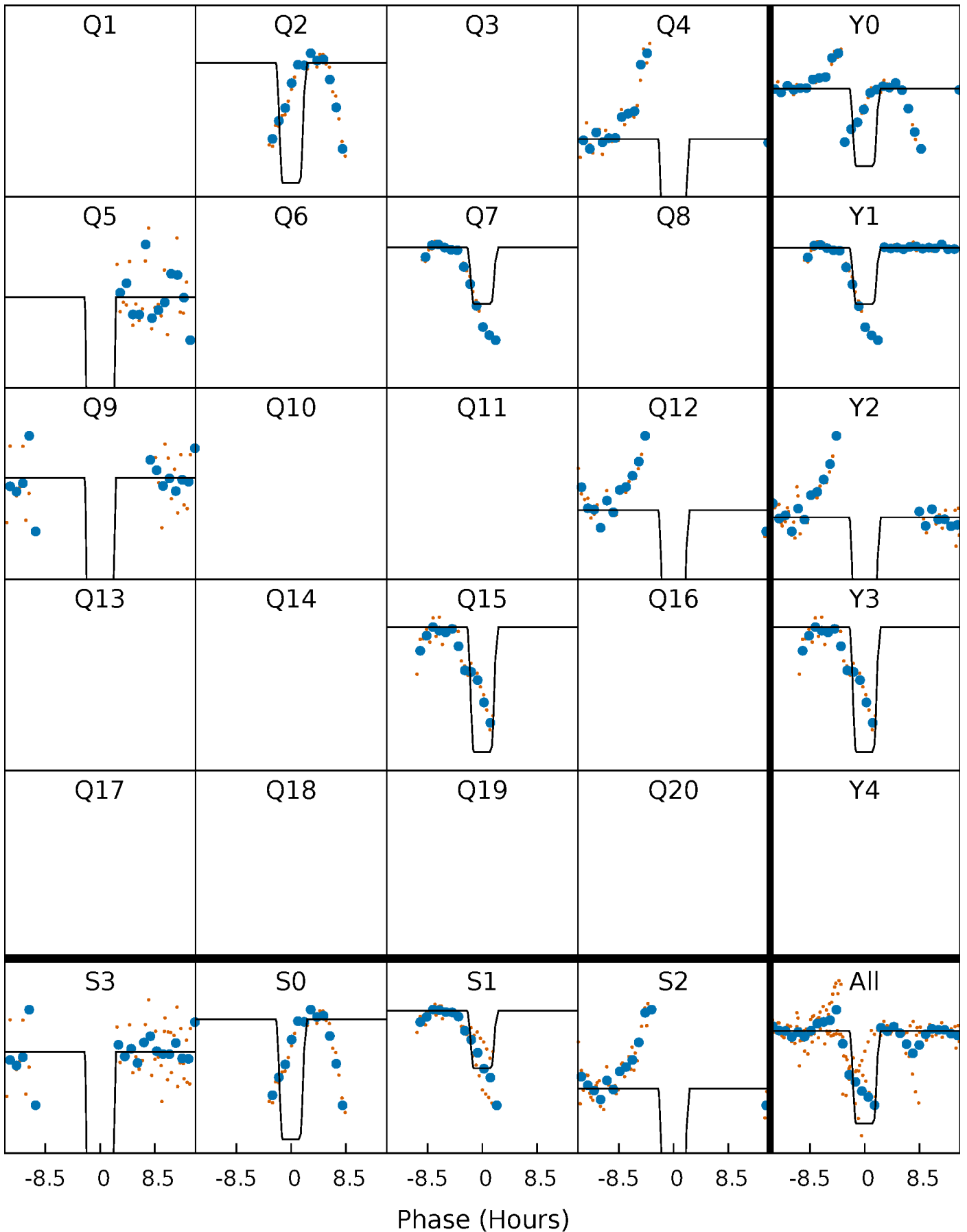
DV Quarter-Phased Transit Curves

TCE 004851239-04 $P=152.421774$ Days $T_0=211.504916$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

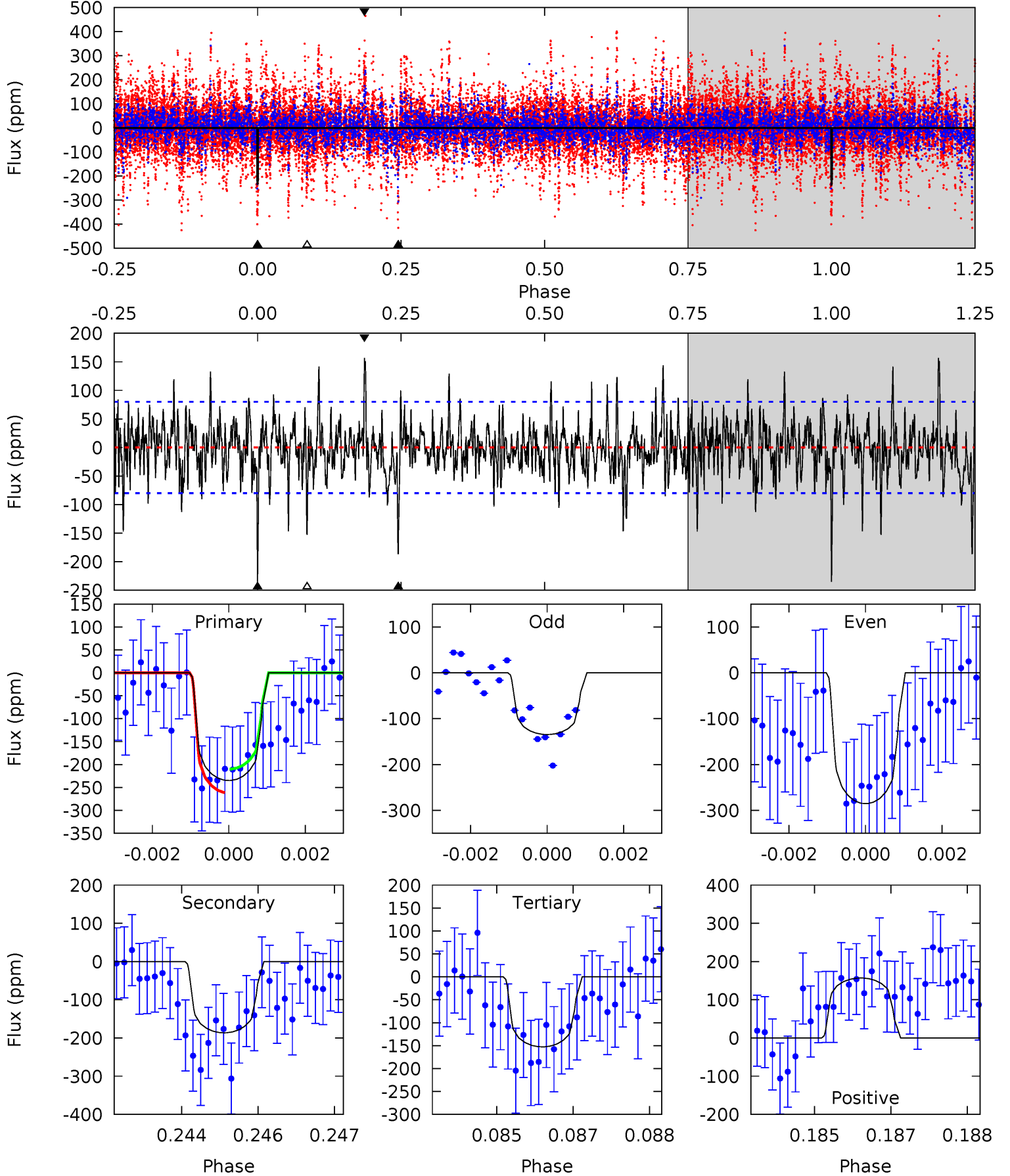
TCE 004851239-04 P=152.420735 Days $T_0=211.531037$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-04, $P = 152.421774$ Days, $E = 59.083142$ Days

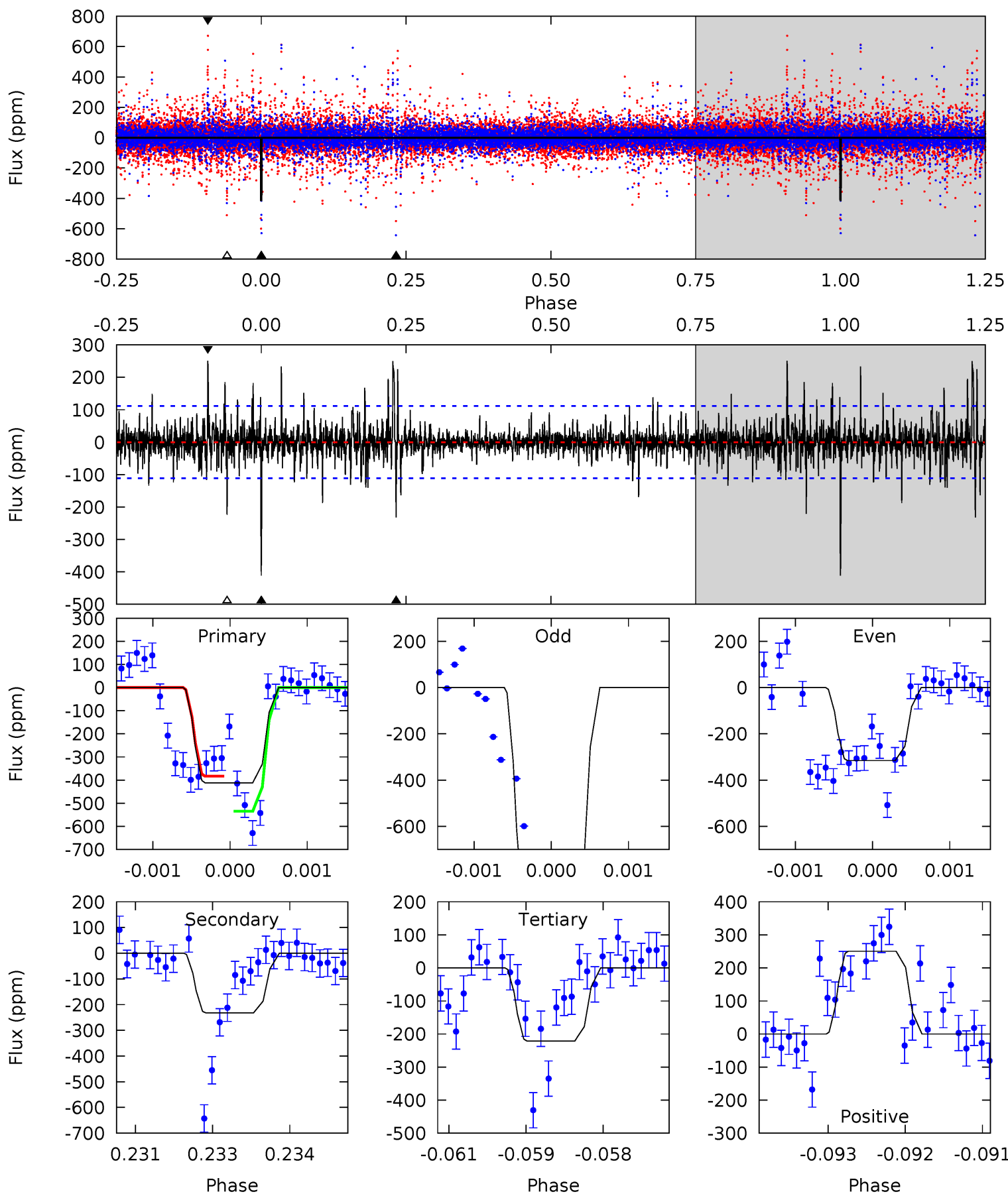
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	12.5	10.2	10.5	5.36	3.15	2.55	5.50	5.22	2.26	1.98	4.35	1.07	0.40	1.73



Alt Model-Shift Uniqueness Test

004851239-04, P = 152.420735 Days, E = 59.110302 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	11.3	10.8	12.2	5.44	3.27	1.62	9.29	7.86	0.54	-0.90	14.7	1.24	0.38	3.30



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-187 ± 15	$1.39^{+0.46}_{-0.38}$	466^{+15}_{-11}	5891^{+1096}_{-724}	17046^{+15459}_{-7569}
Alt.	-232 ± 20	$2.95^{+0.47}_{-0.48}$	466^{+15}_{-10}	4472^{+321}_{-242}	4659^{+1981}_{-1316}

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 $A_{obs} \gg 1.0$

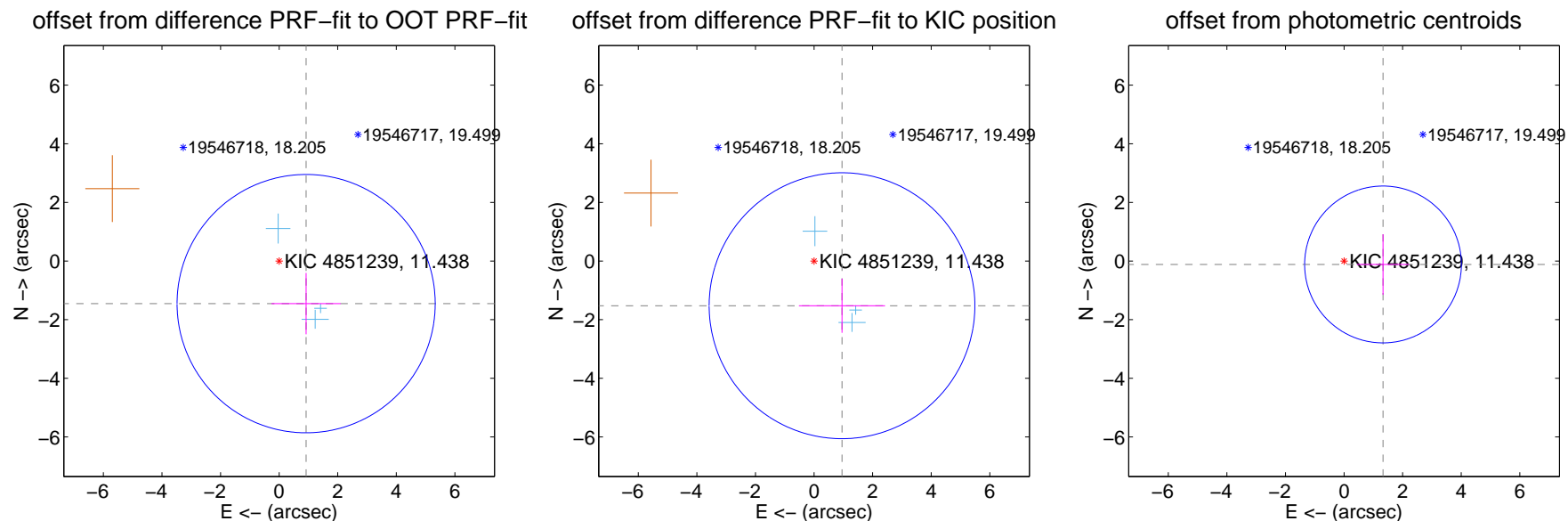
DV Centroid Data

Supplemental centroid analysis for 004851239-04. **Kepler magnitude: 11.44.** Transit SNR 5.73

There are 3 quarters with good PRF difference image offsets

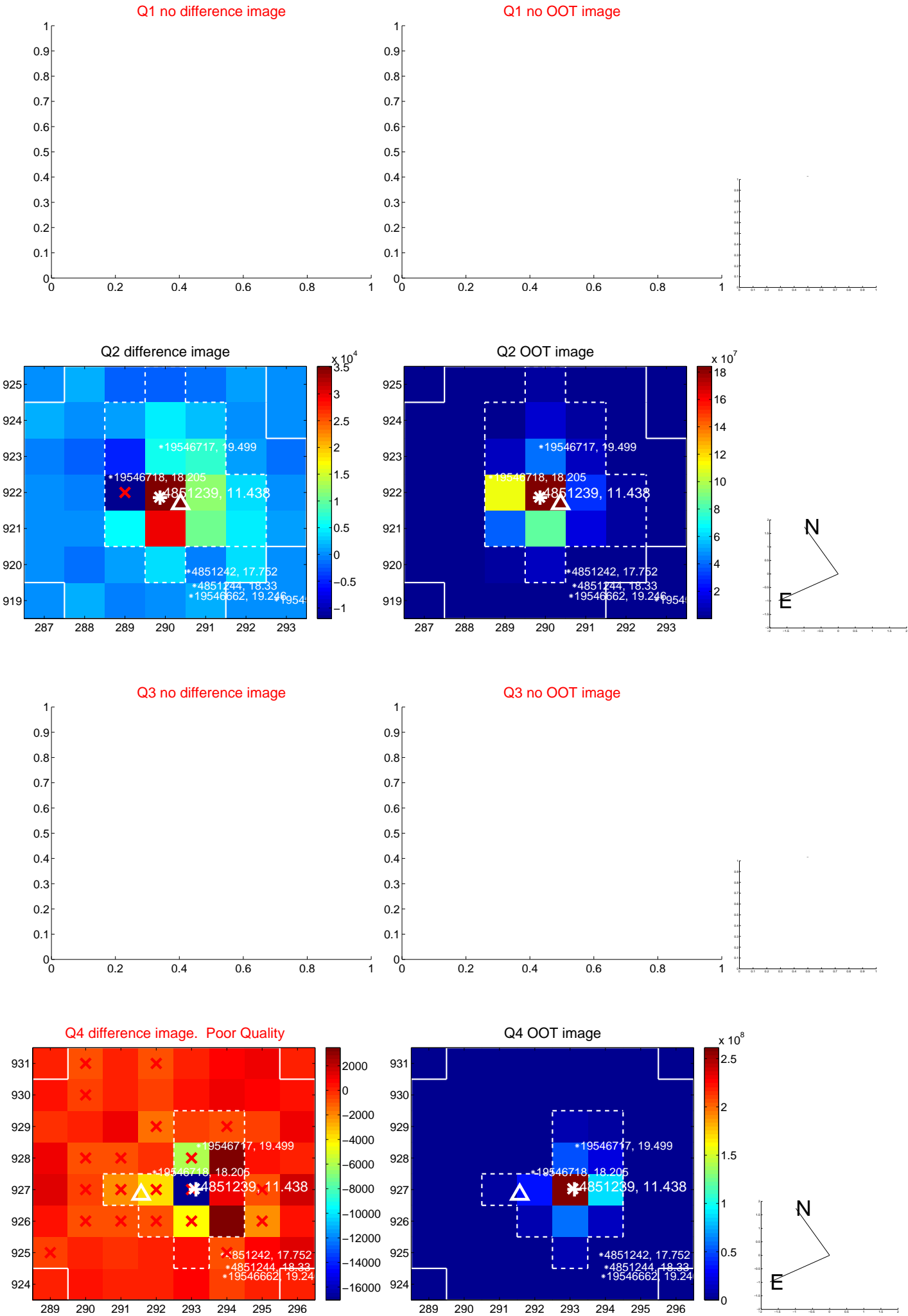
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.720 ± 1.468	1.17	-0.921 ± 1.180	-1.453 ± 1.048
PRF-fit source offset from KIC position	1.798 ± 1.511	1.19	-0.954 ± 1.470	-1.524 ± 0.924
photometric centroid source offset	1.34 ± 0.89	1.50	-1.33 ± 0.89	-0.12 ± 1.03

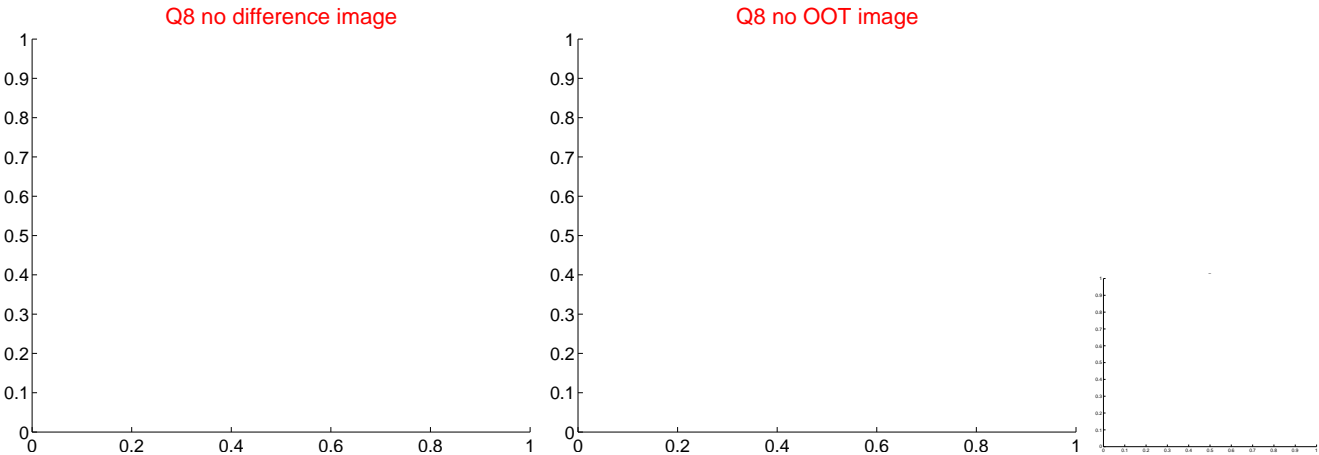
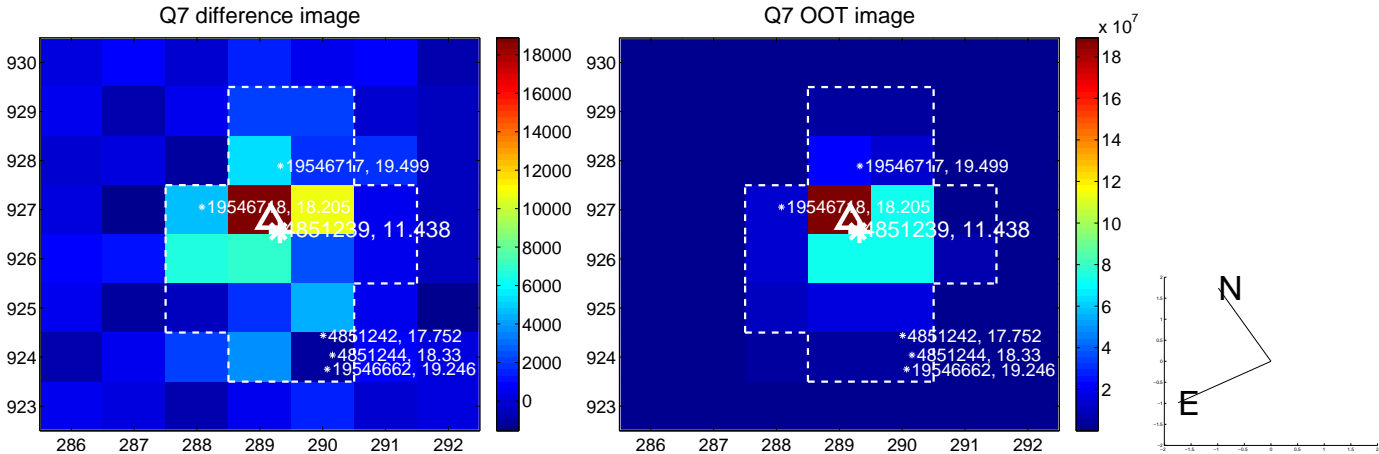
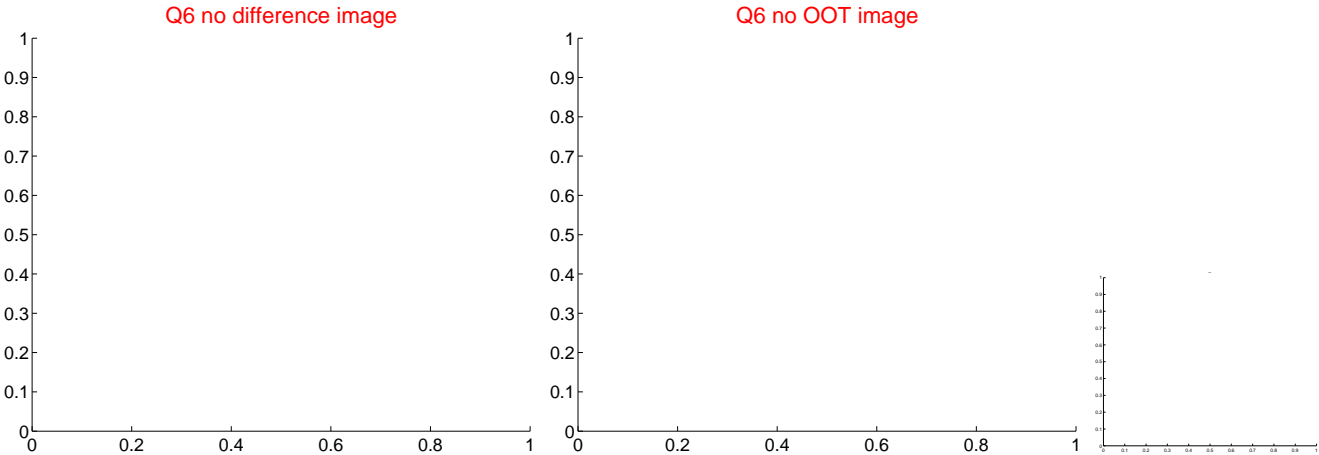
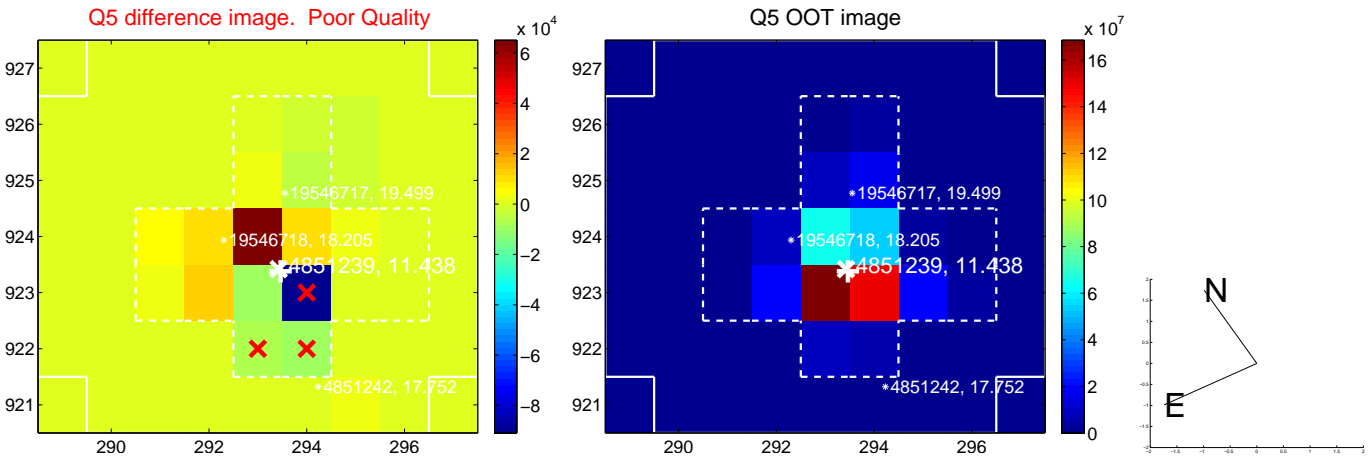


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

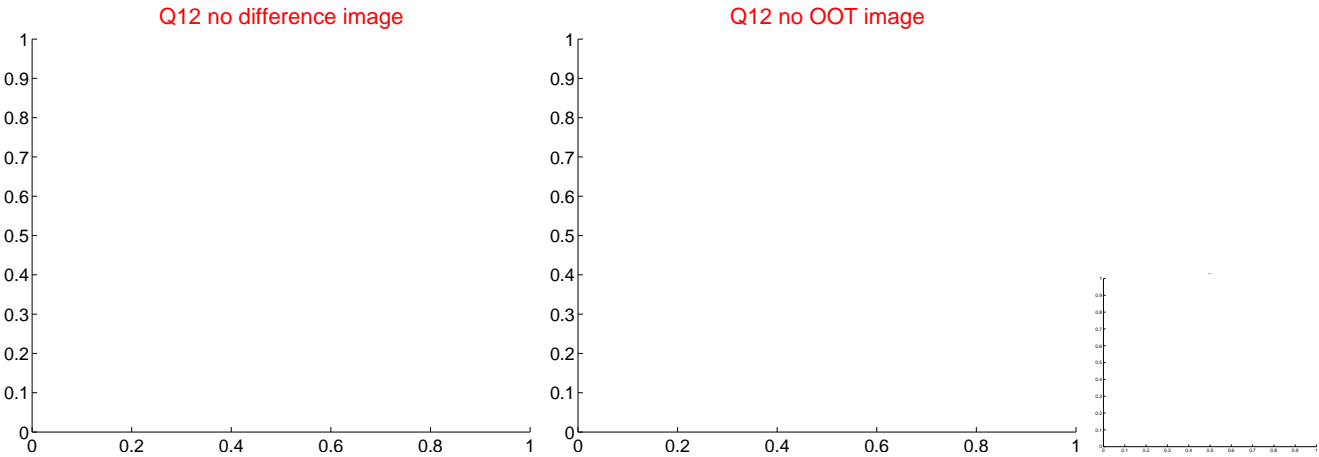
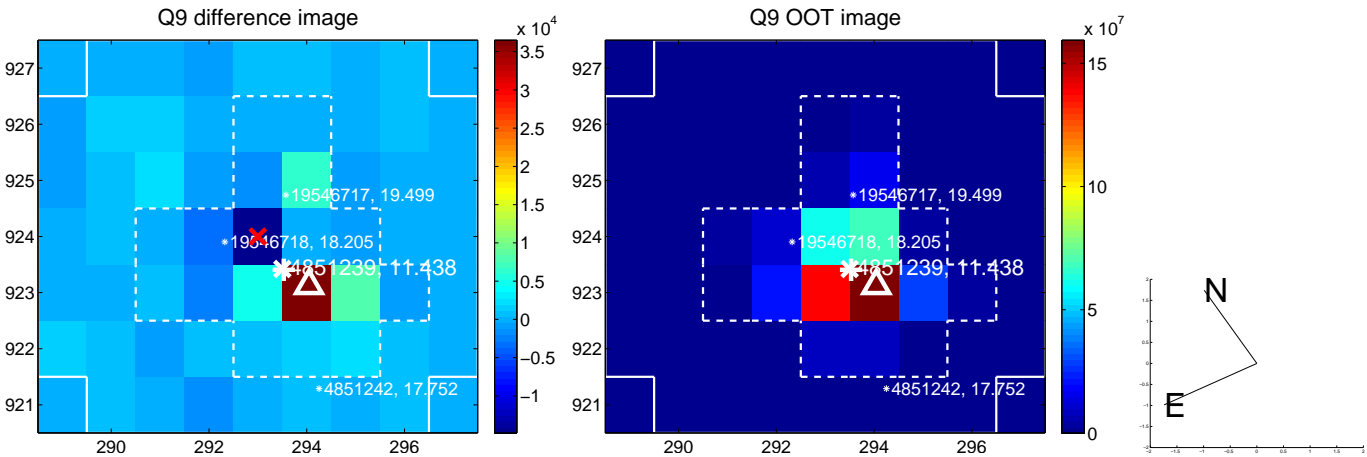
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



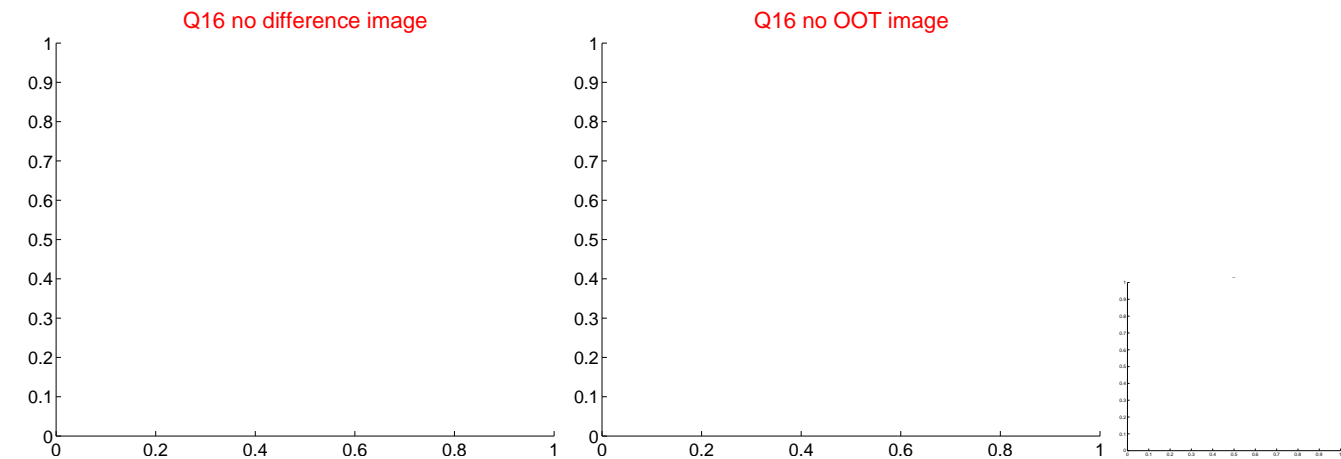
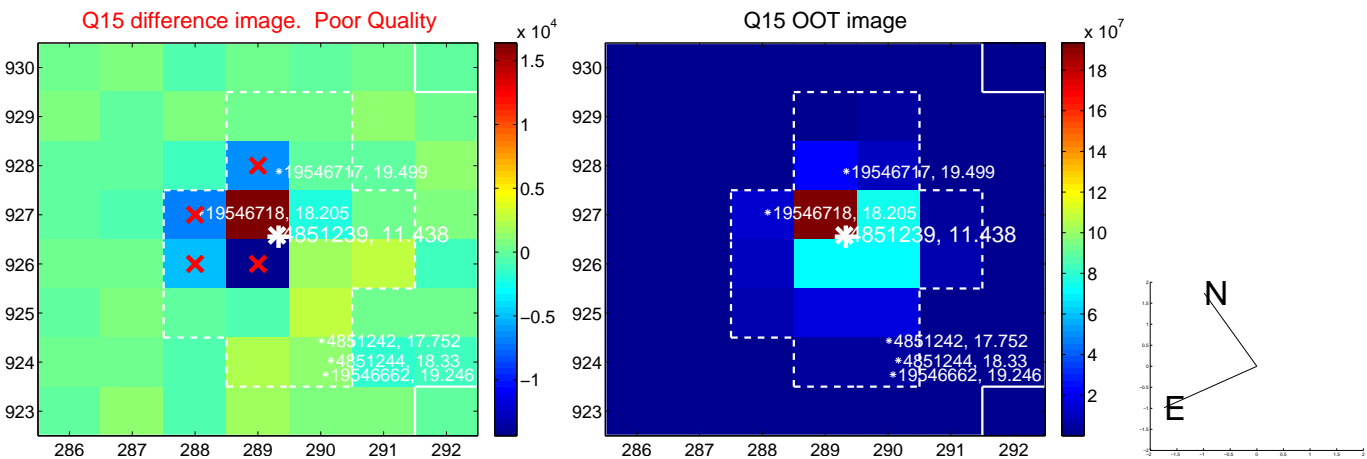
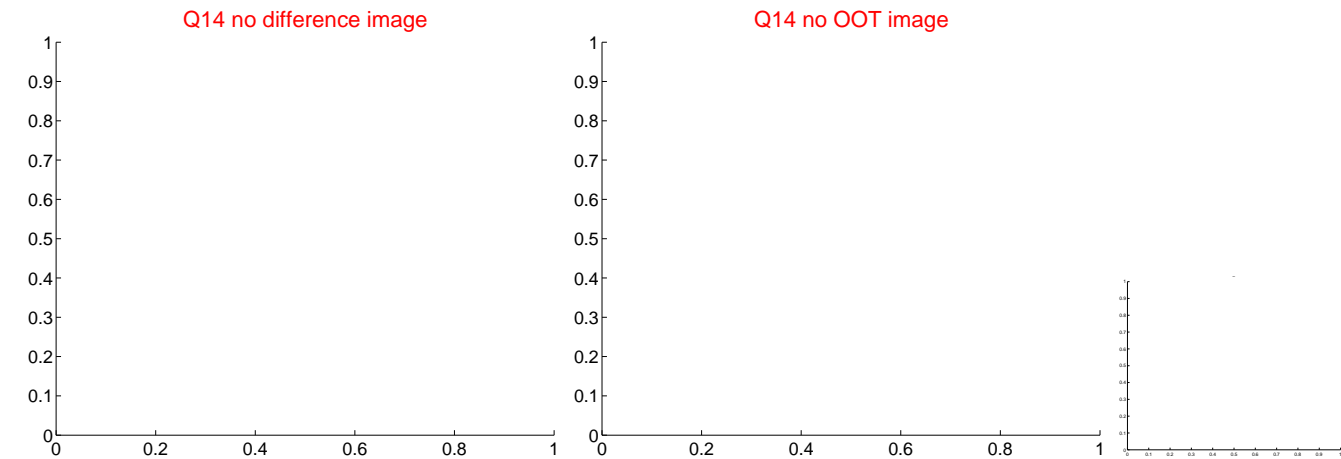
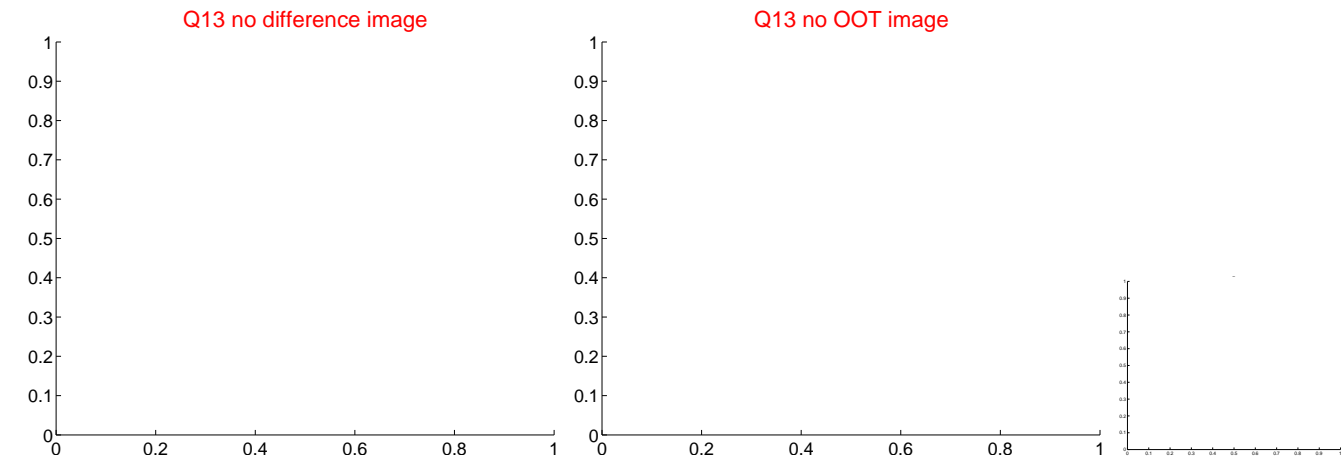
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



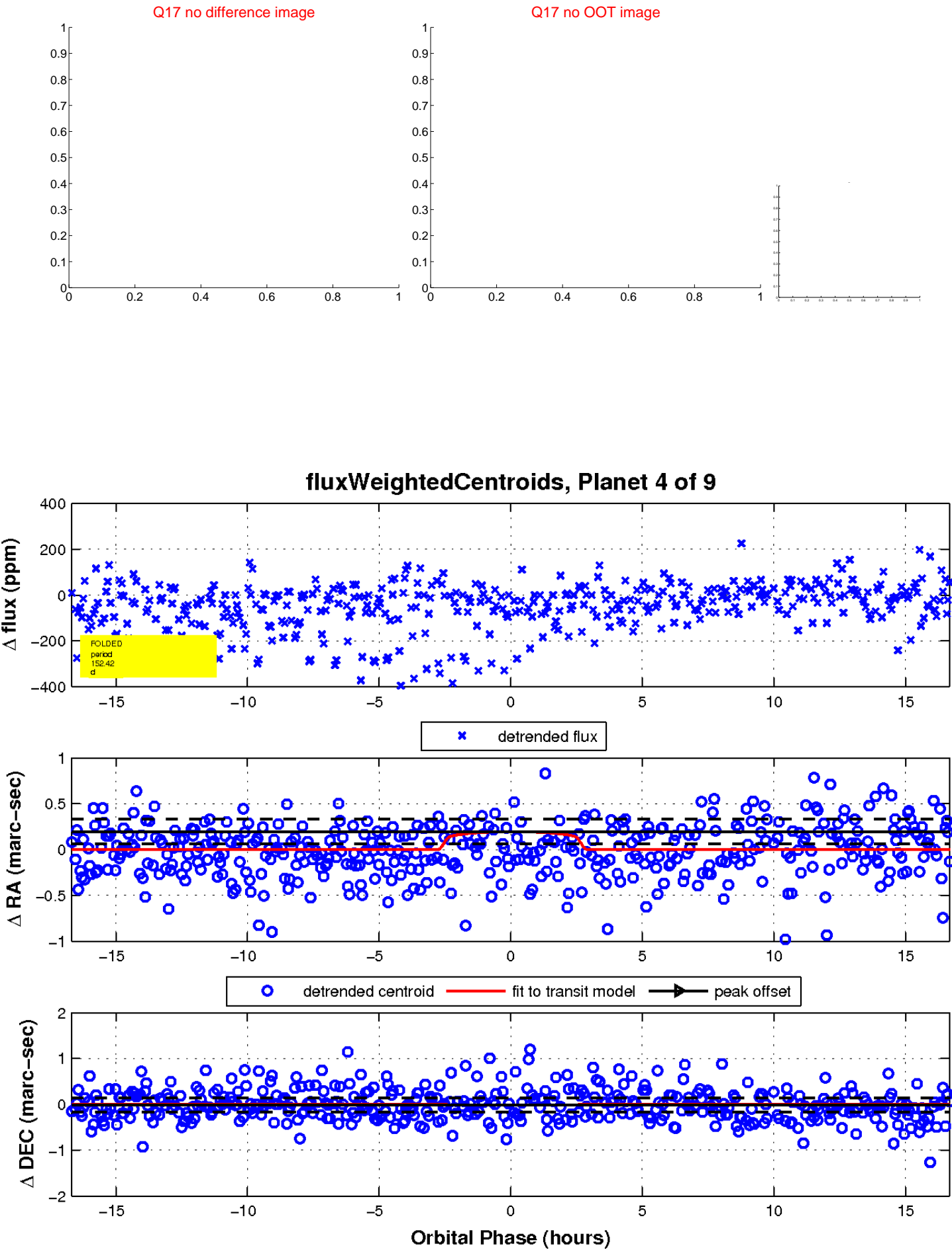
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

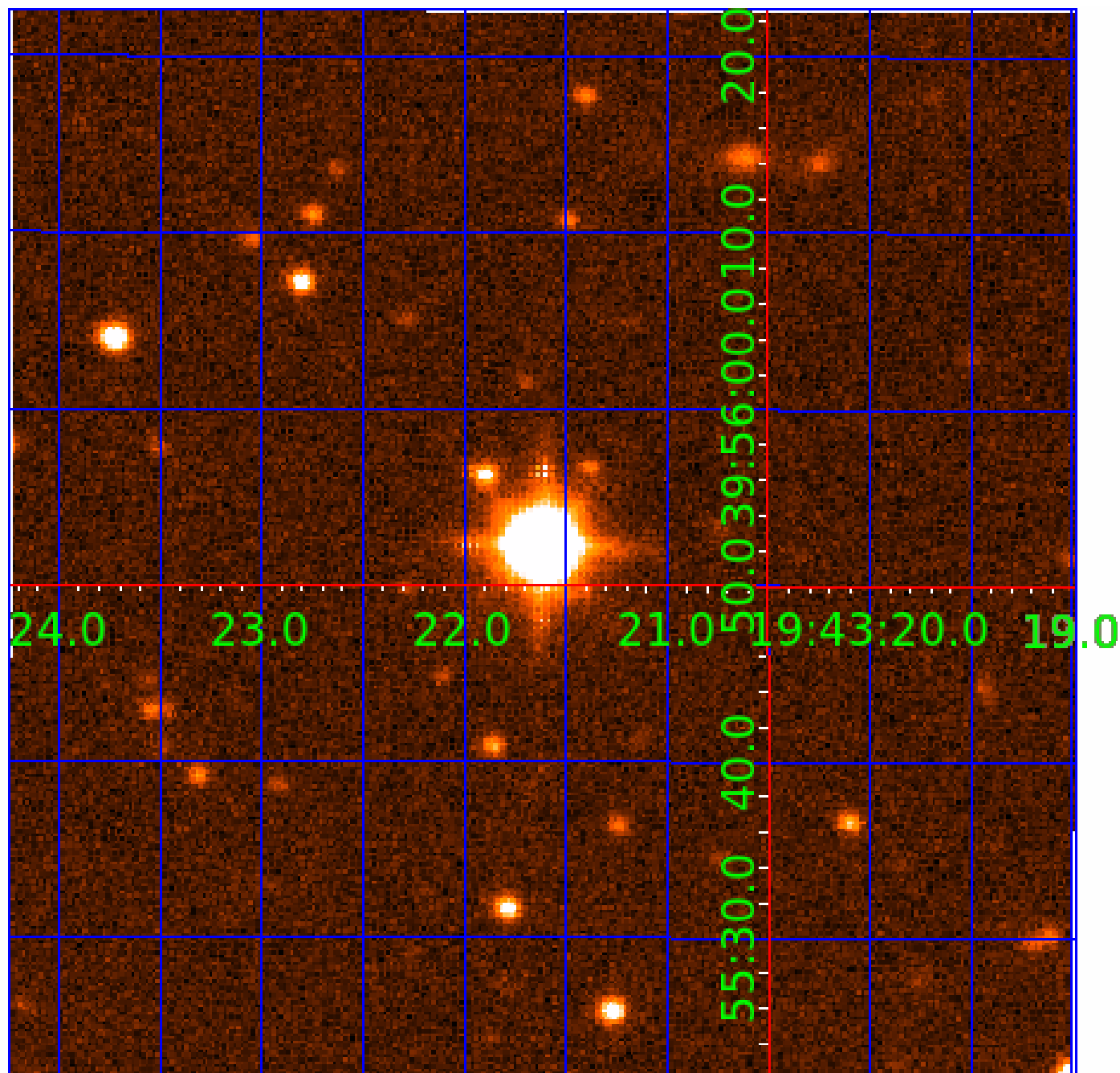


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-05

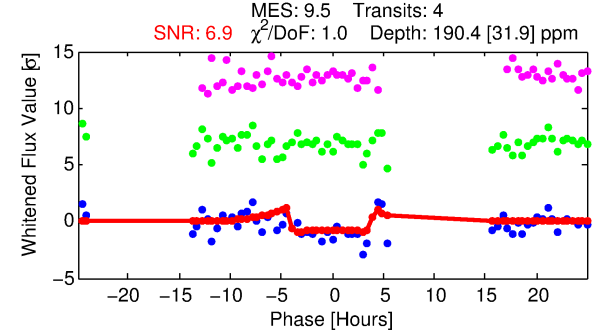
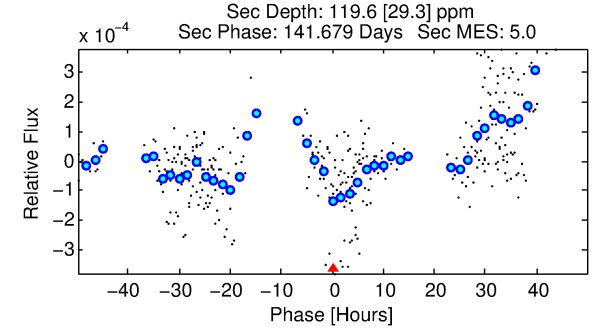
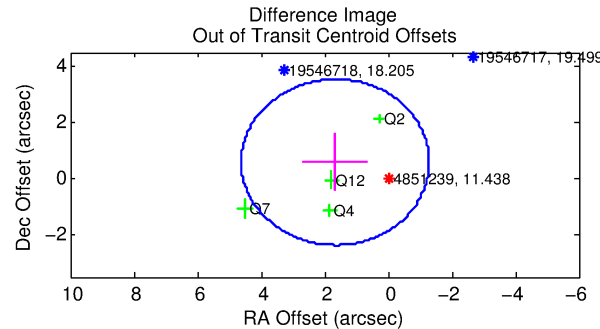
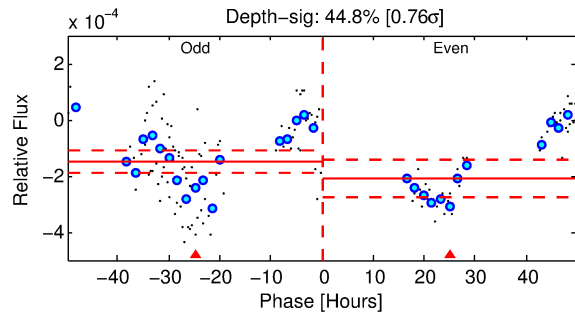
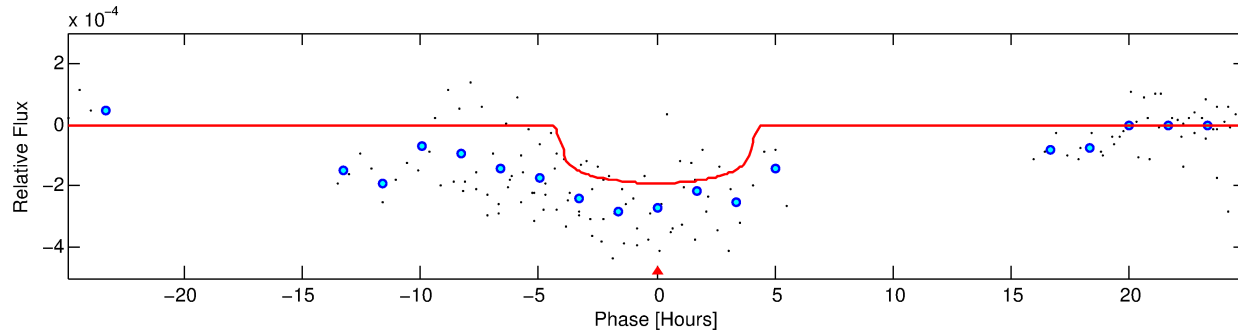
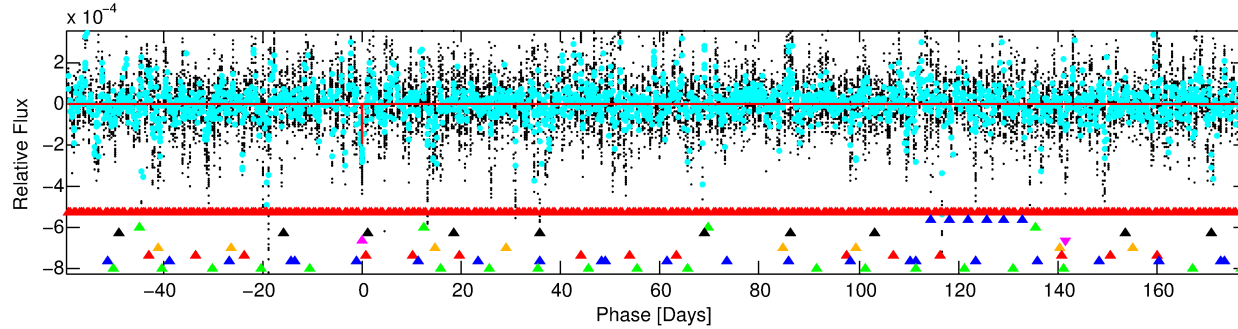
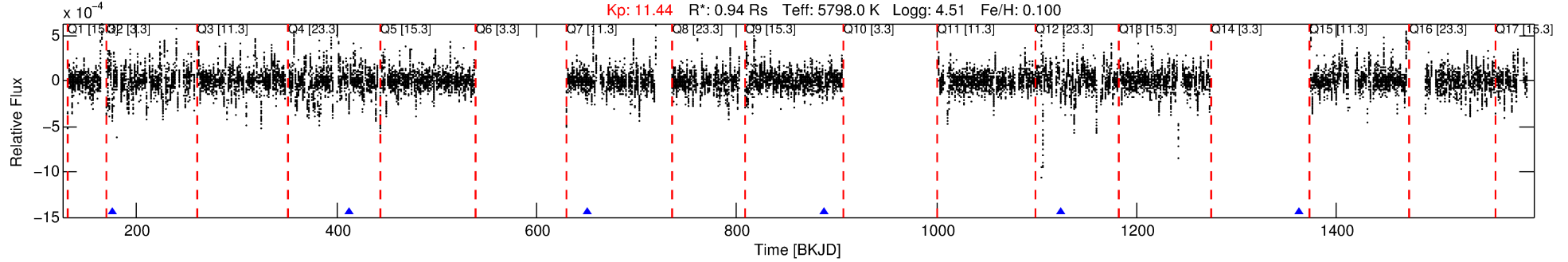
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 5 of 9 Period: 237.227 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 237.22668 [0.00505] d
Epoch = 175.8294 [0.0084] BKJD
Rp/R* = 0.0131 [0.0140]
a/R* = 181.28 [842.37]
b = 0.58 [5.37]
Seff = 1.55 [0.29]
Teff = 285 [13] K
Rp = 1.34 [1.45] Re
a = 0.7595 [0.0878] AU
Ag = 20984.55 [45248.67] [0.46σ]
Teffp = 5298 [2847] K [1.76σ]

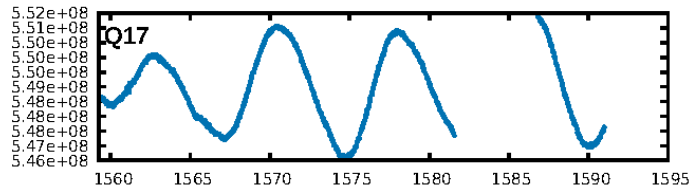
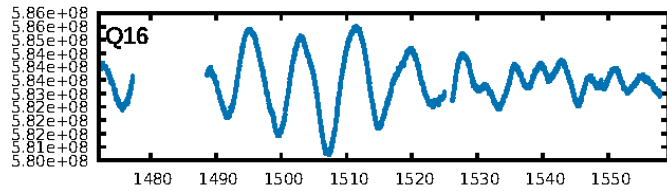
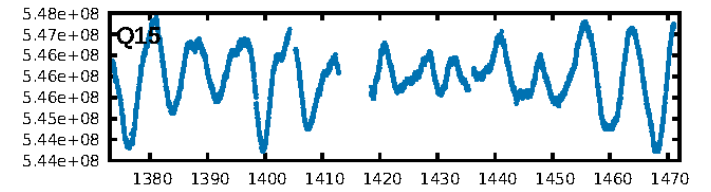
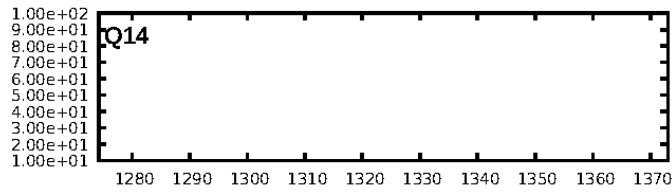
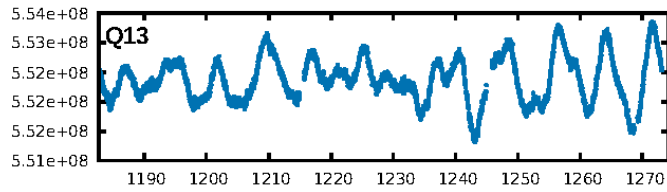
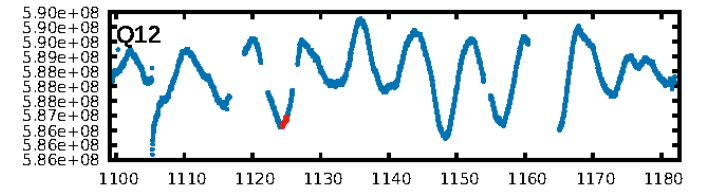
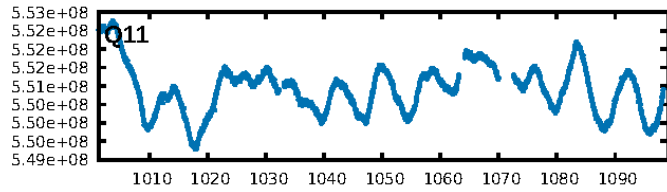
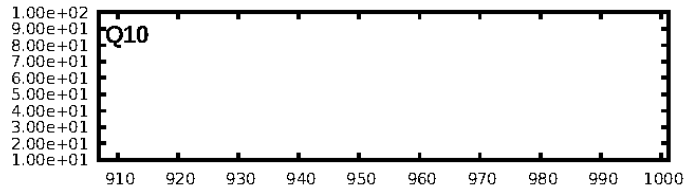
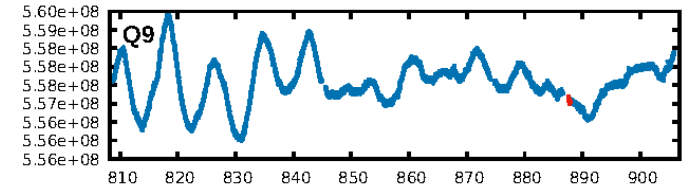
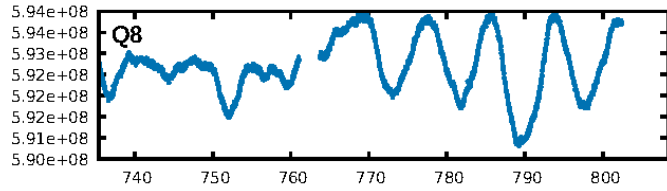
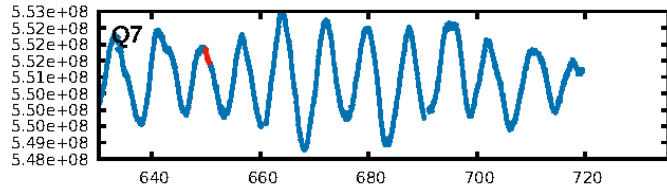
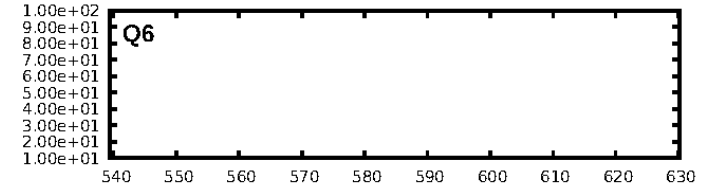
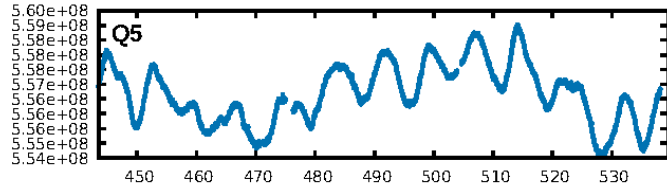
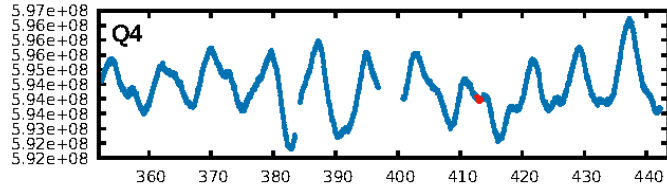
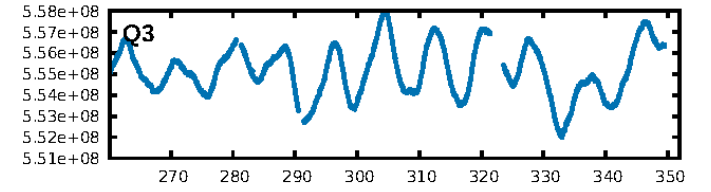
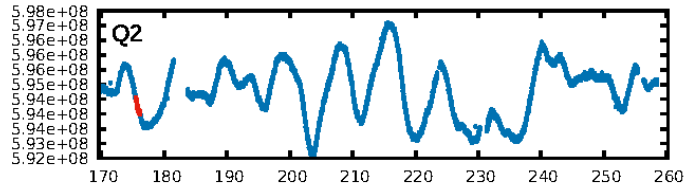
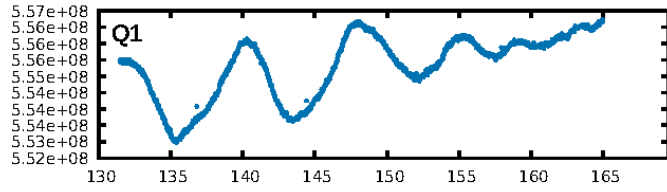
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.80σ]
LongPeriod-sig: 100.0% [151.62σ]
ModelChiSquare2-sig: 87.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.46e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.7279
Centroid-sig: 13.0%
Centroid-so: 1.073 arcsec [1.21σ]
OotOffset-rm: 1.767 arcsec [1.79σ]
KicOffset-rm: 1.652 arcsec [1.71σ]
OotOffset-st: 1/1/2/0 [4]
KicOffset-st: 1/1/2/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

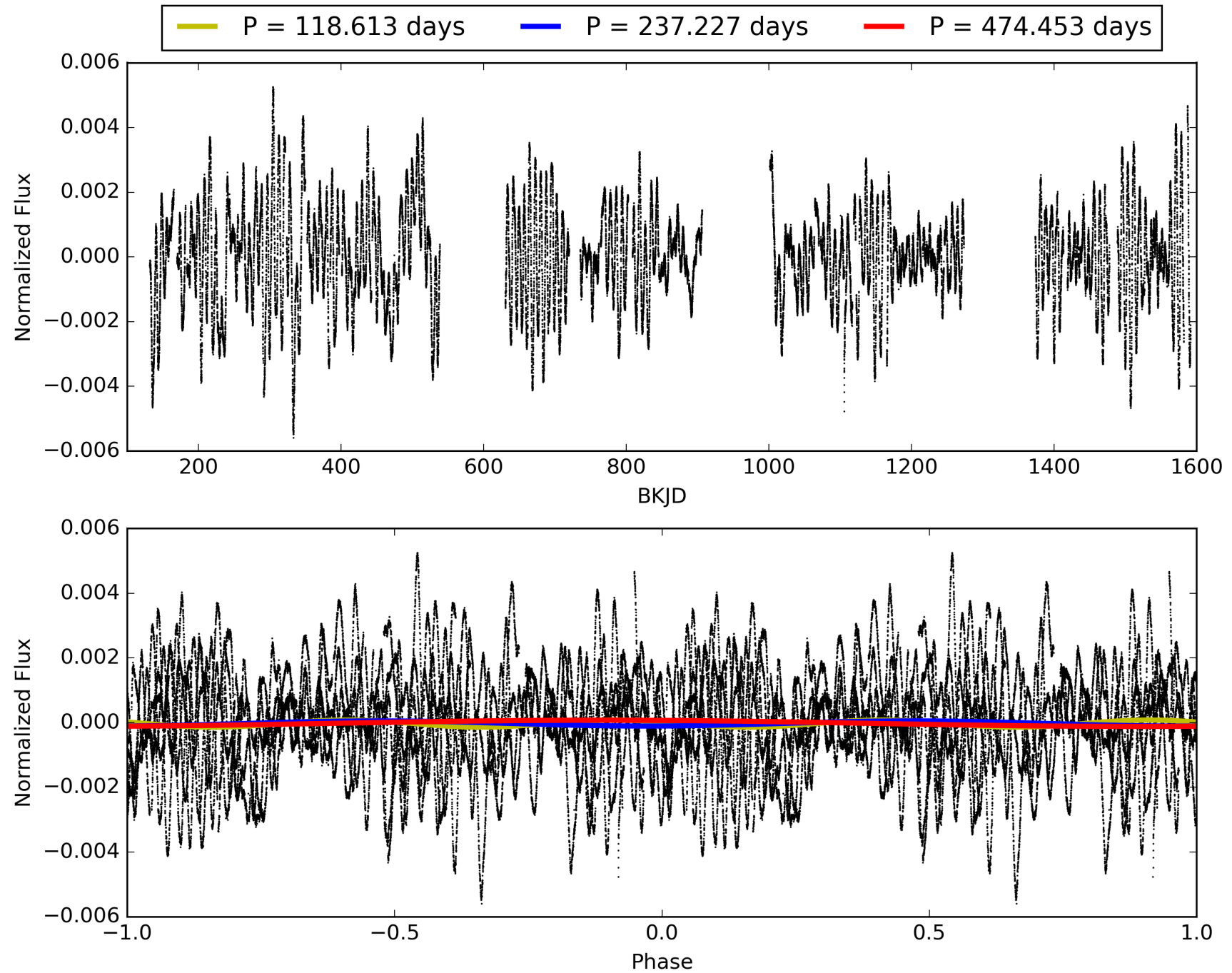
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:27 Z

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

TCE 004851239-05, PDC Light Curves

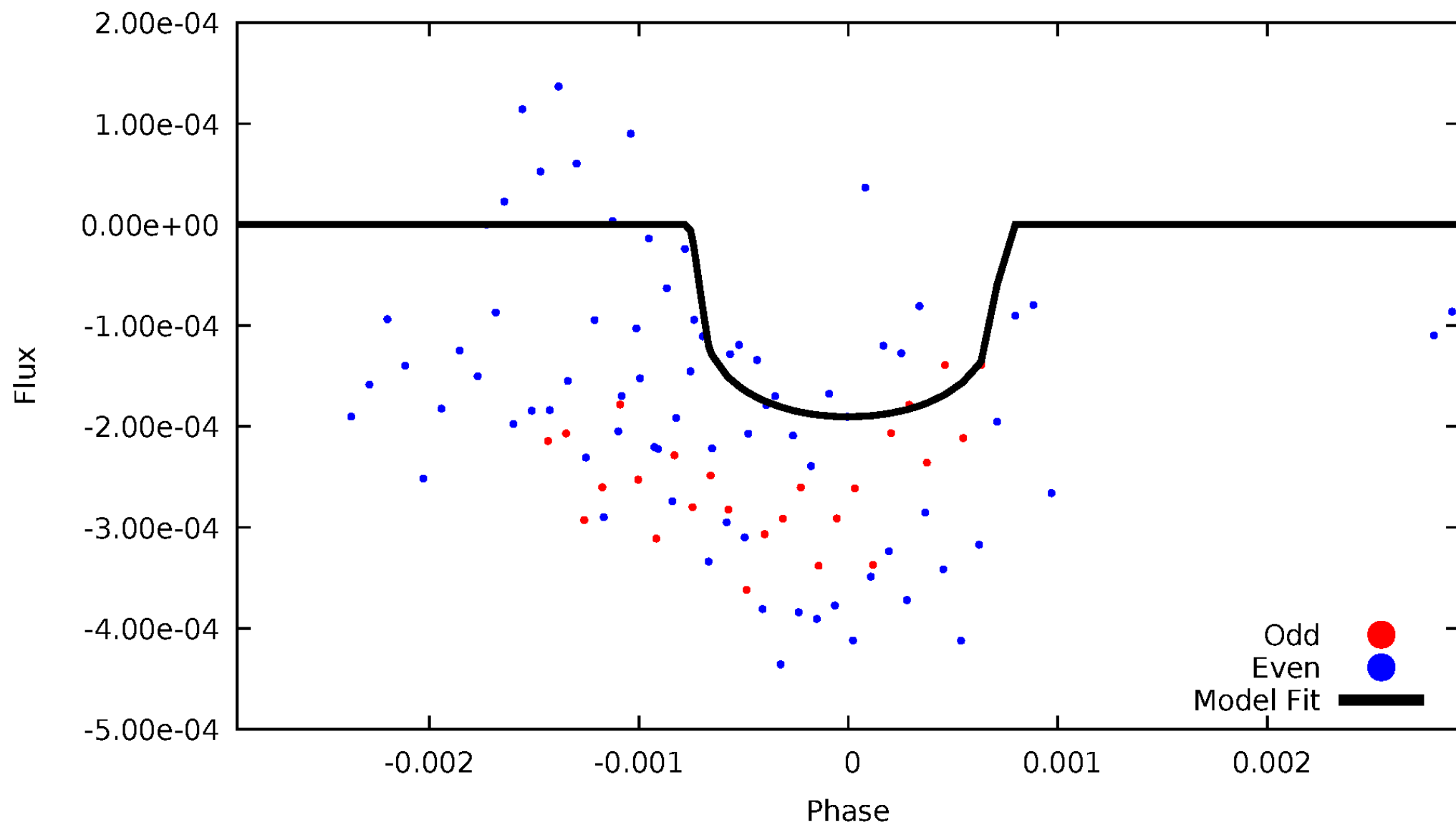


TCE 004851239-05



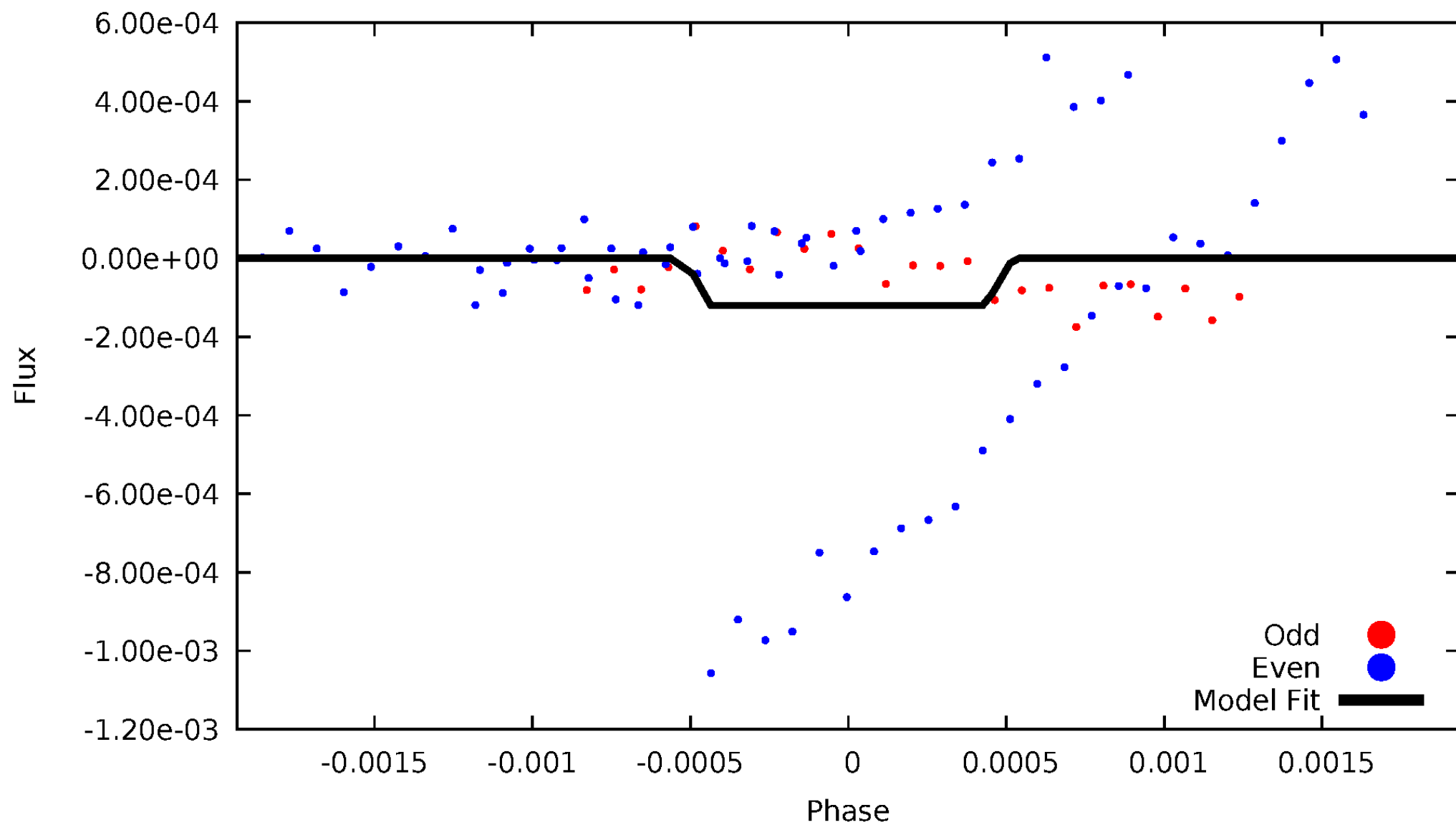
DV Odd/Even

TCE 004851239-05



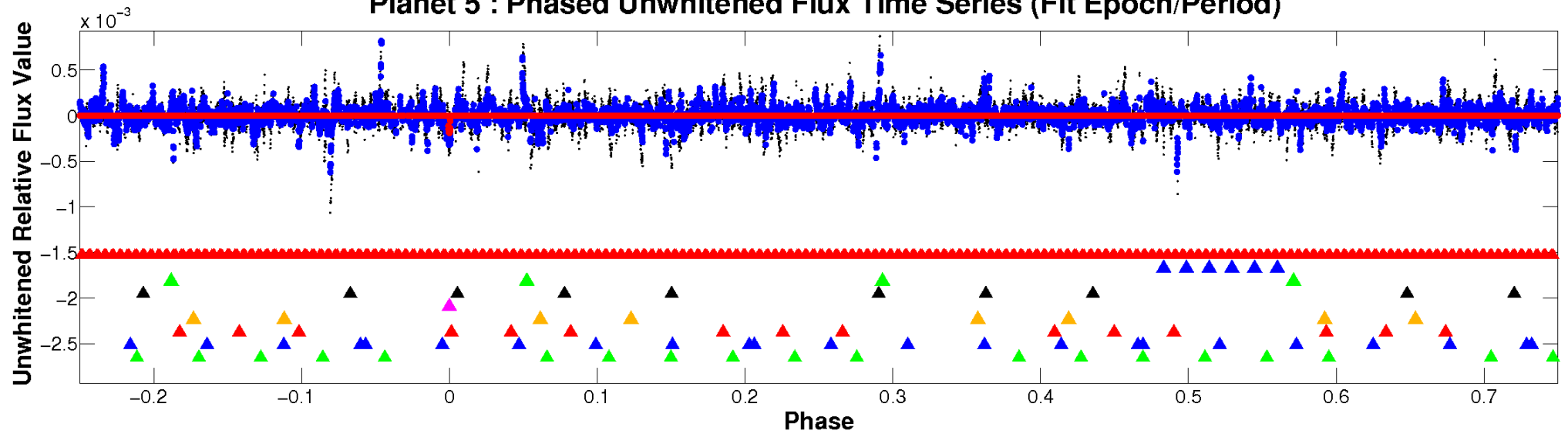
ALT Odd/Even

TCE 004851239-05

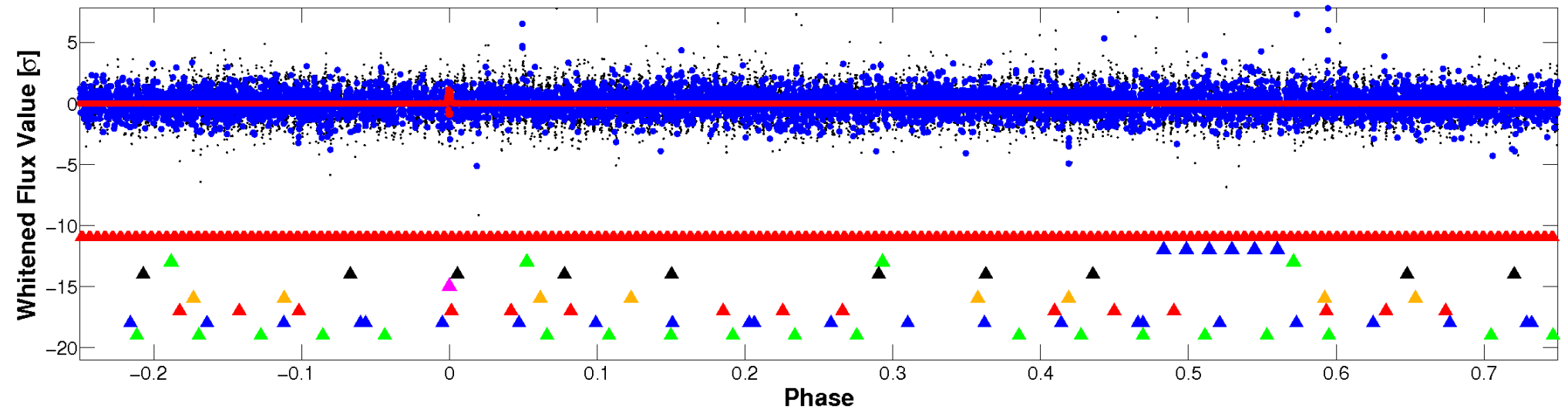


Non-Whitened Vs. Whitened Light Curve

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

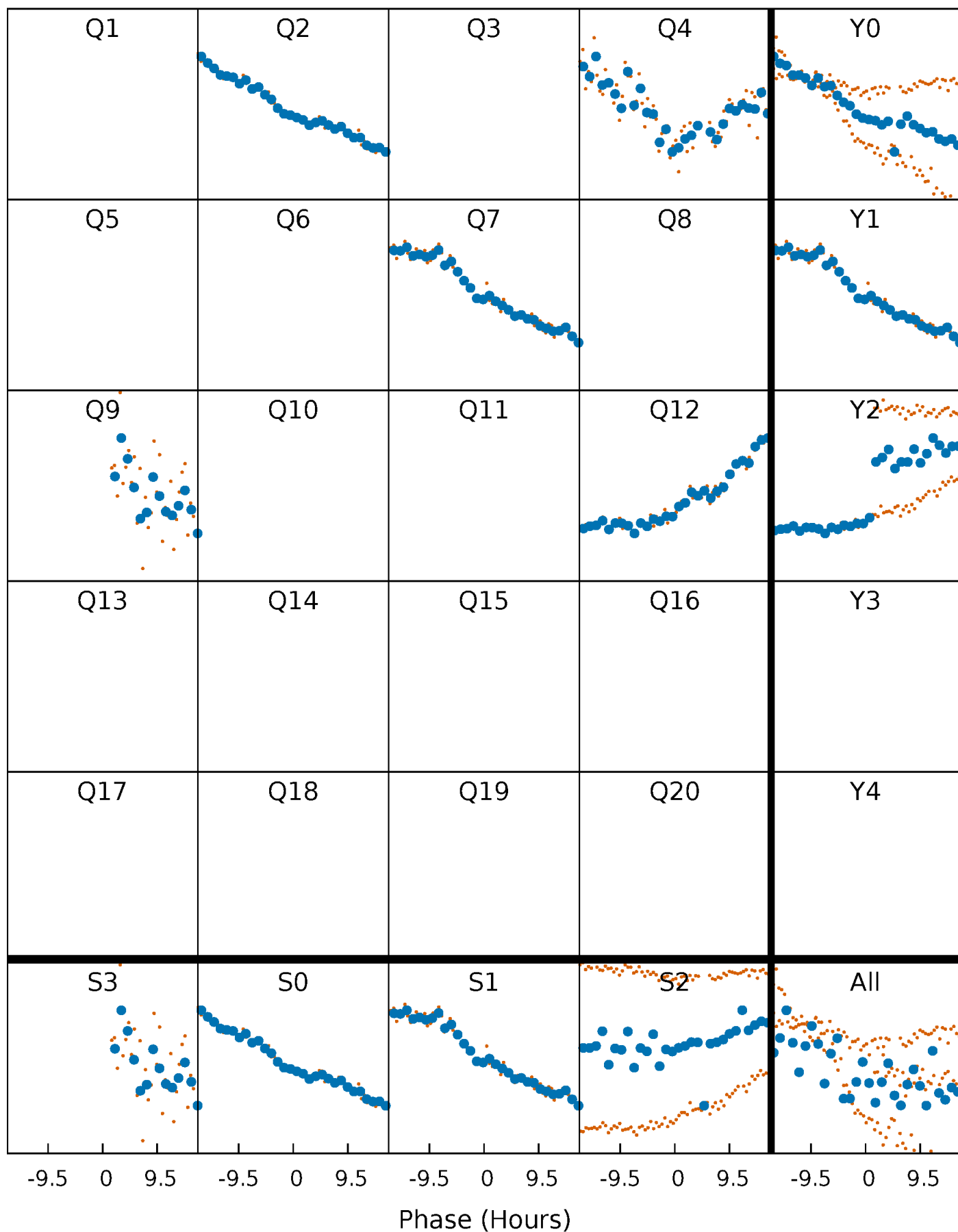


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



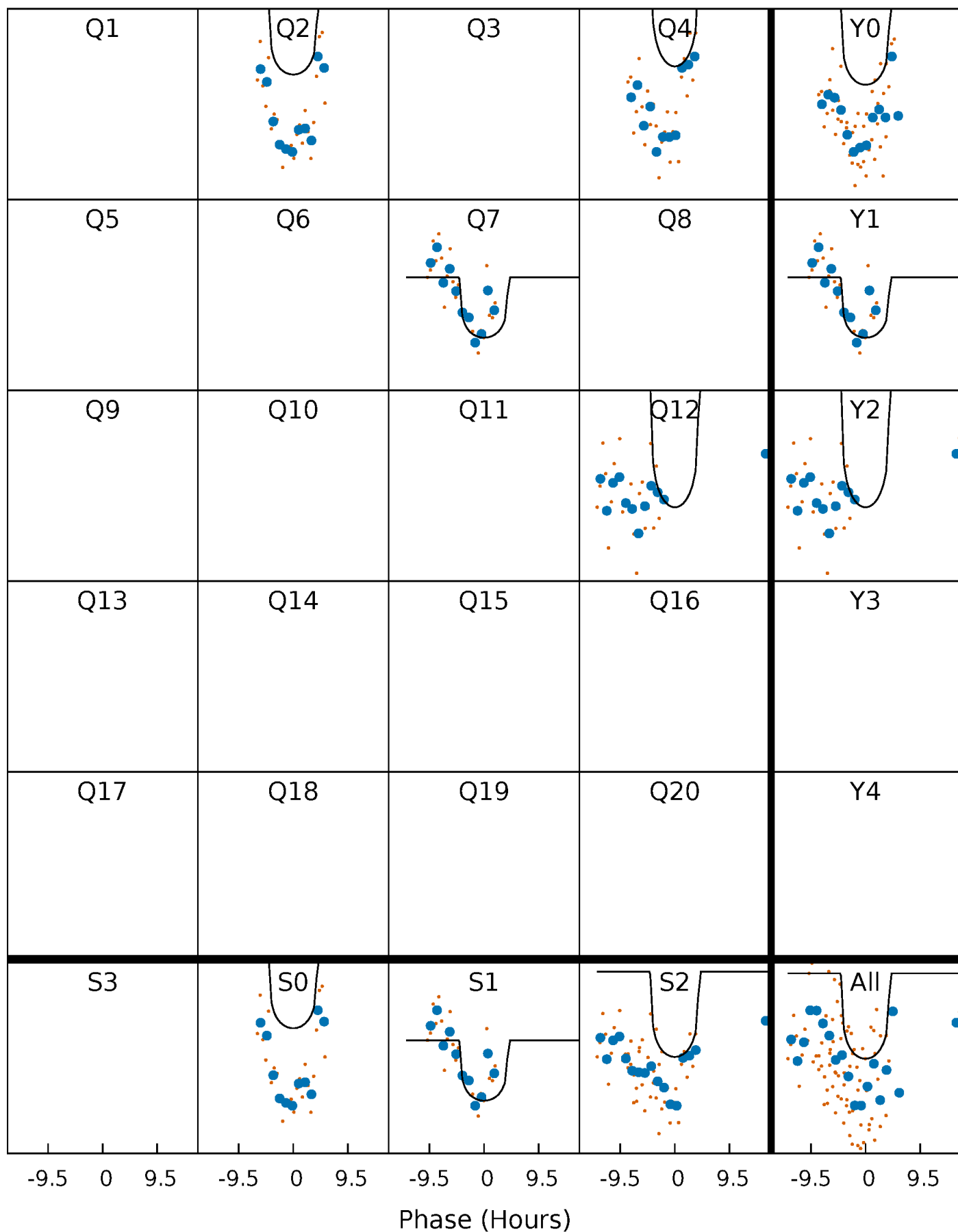
PDC Quarter-Phased Transit Curves

TCE 004851239-05 $P=237.226683$ Days $T_0=175.829389$ (BKJD)



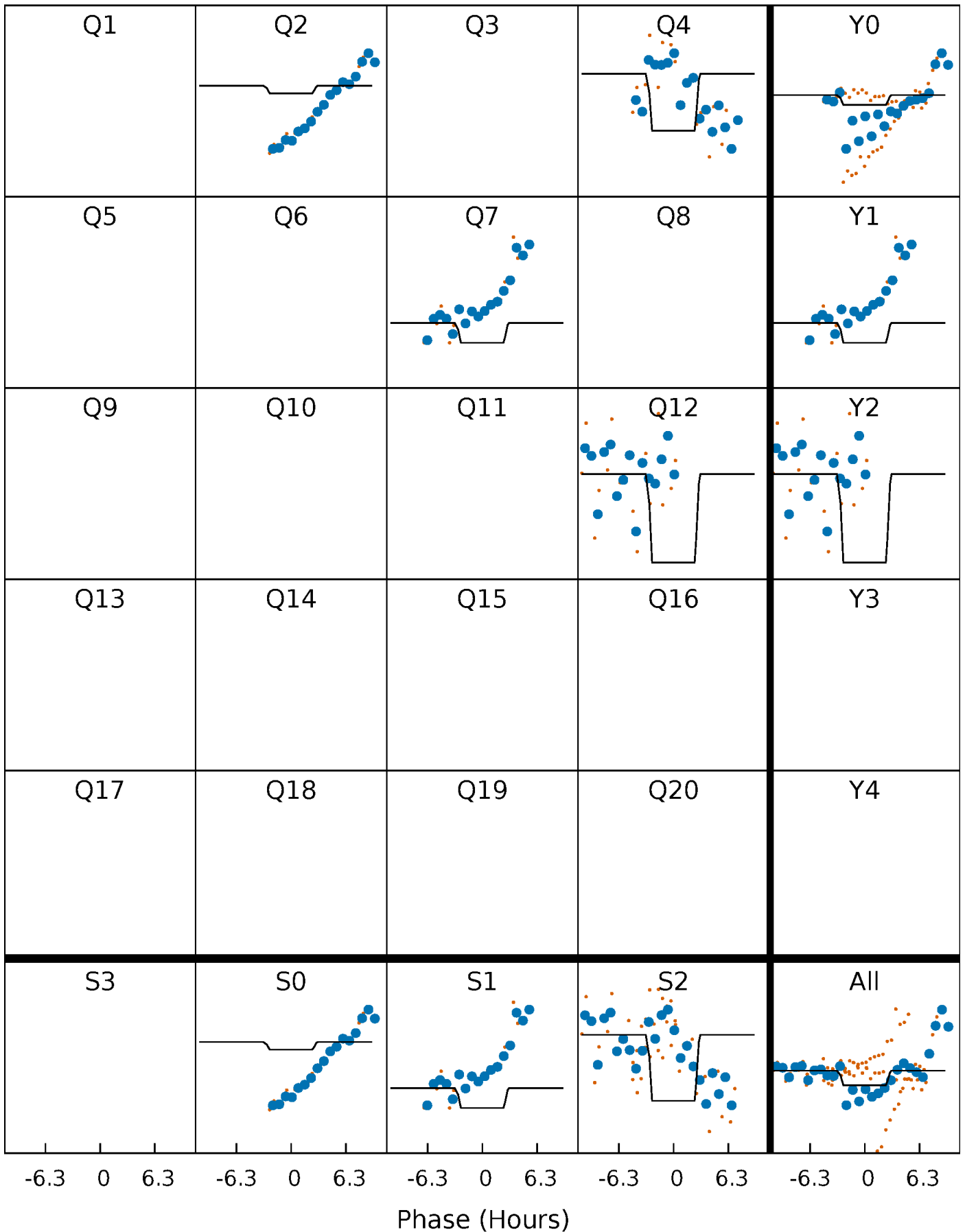
DV Quarter-Phased Transit Curves

TCE 004851239-05 $P=237.226683$ Days $T_0=175.829389$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

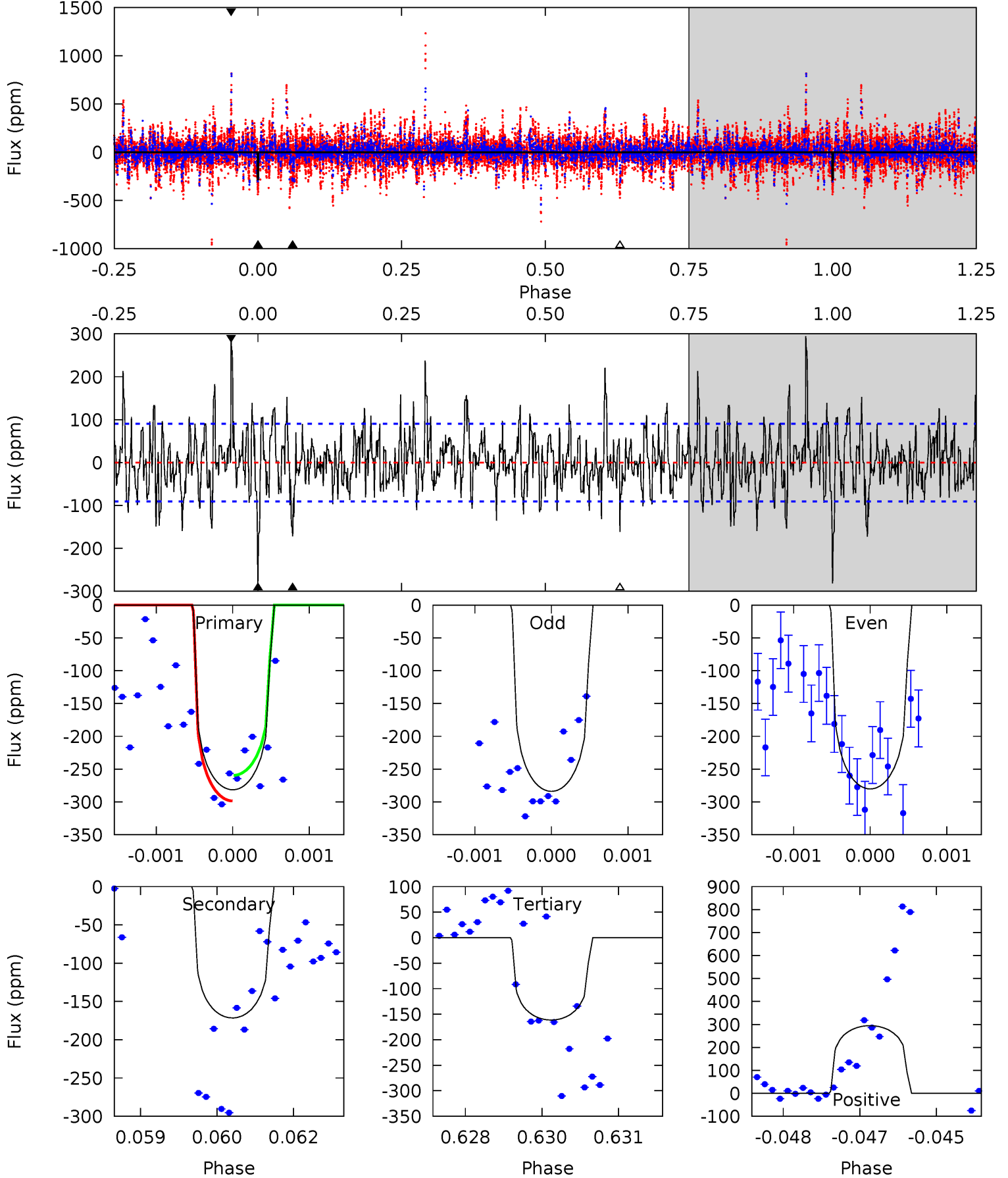
TCE 004851239-05 $P=237.240443$ Days $T_0=175.672194$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-05, P = 237.226683 Days, E = 175.829389 Days

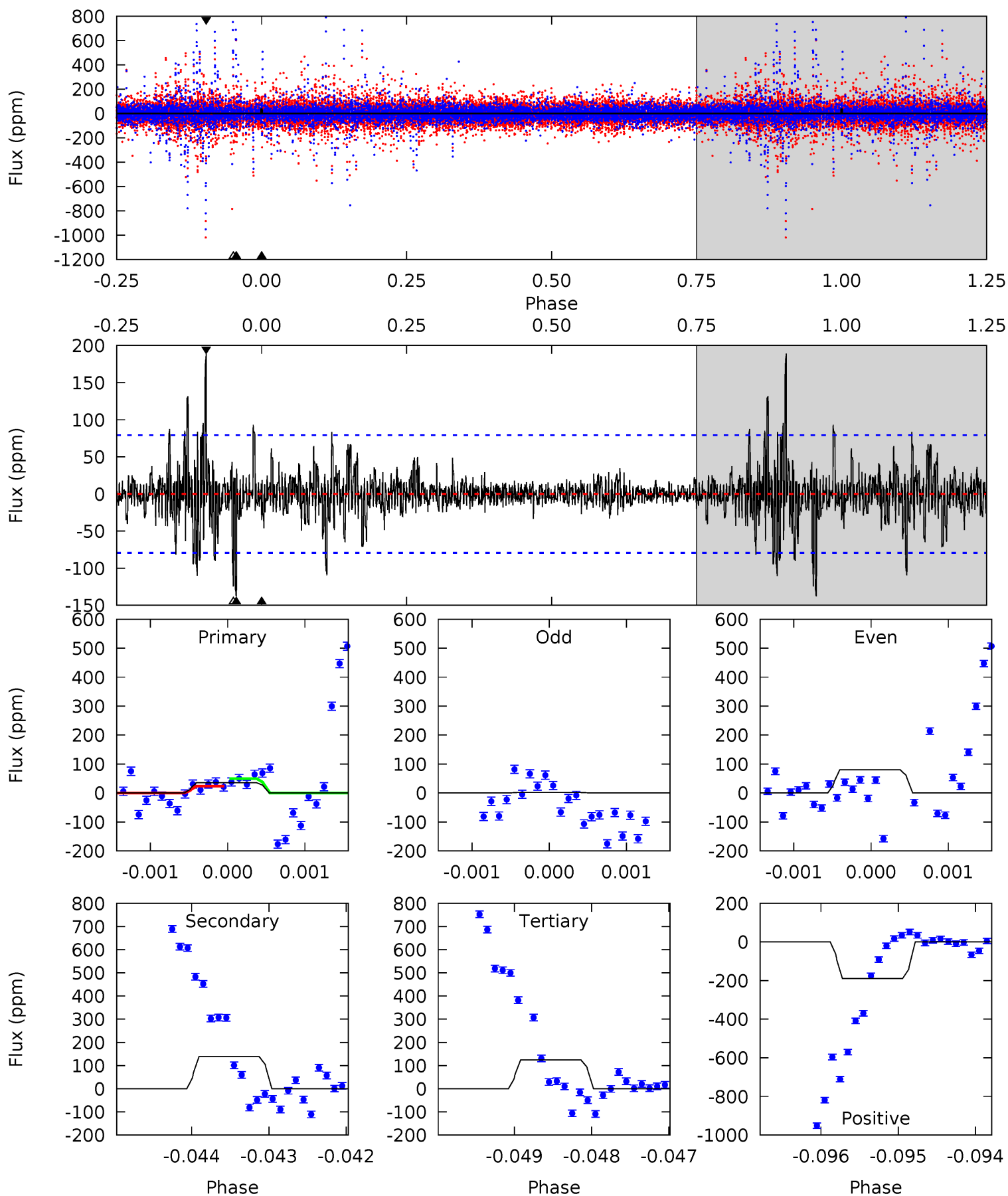
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	10.2	9.59	17.5	5.38	3.18	3.24	7.14	-0.78	0.60	-7.31	0.10	1.03	0.51	1.14



Alt Model-Shift Uniqueness Test

004851239-05, P = 237.240443 Days, E = 175.672194 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.43	9.50	8.56	13.0	5.45	3.29	1.32	-6.13	-10.6	0.94	-3.51	2.69	-30.7	0.58	0



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-172 ± 17	$1.58^{+1.46}_{-1.01}$	402^{+14}_{-9}	5387^{+4533}_{-1224}	$21151^{+147913}_{-15538}$
Alt.	-138 ± 15	$1.59^{+1.26}_{-1.06}$	403^{+13}_{-9}	5196^{+4290}_{-1075}	$17166^{+143481}_{-11679}$

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

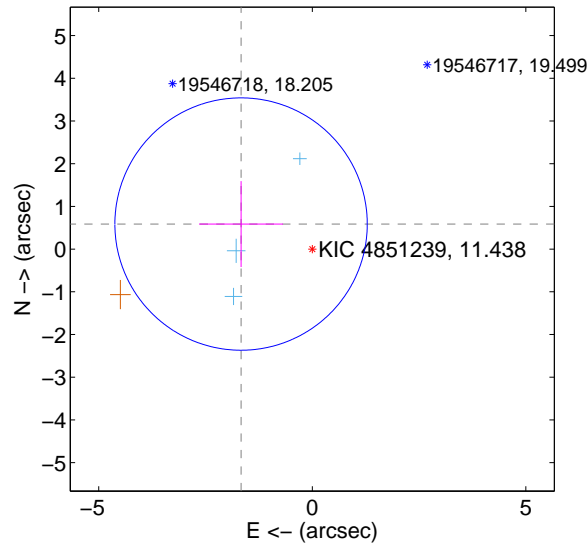
Supplemental centroid analysis for 004851239-05. **Kepler magnitude: 11.44.** Transit SNR 6.88

There are 3 quarters with good PRF difference image offsets

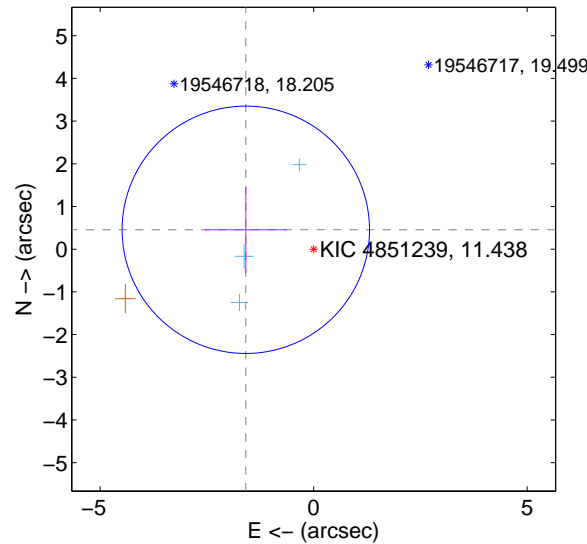
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.767 ± 0.985	1.79	1.667 ± 0.982	0.586 ± 1.006
PRF-fit source offset from KIC position	1.652 ± 0.965	1.71	1.589 ± 0.962	0.454 ± 1.004
photometric centroid source offset	1.07 ± 0.89	1.21	-0.95 ± 0.87	0.49 ± 0.95

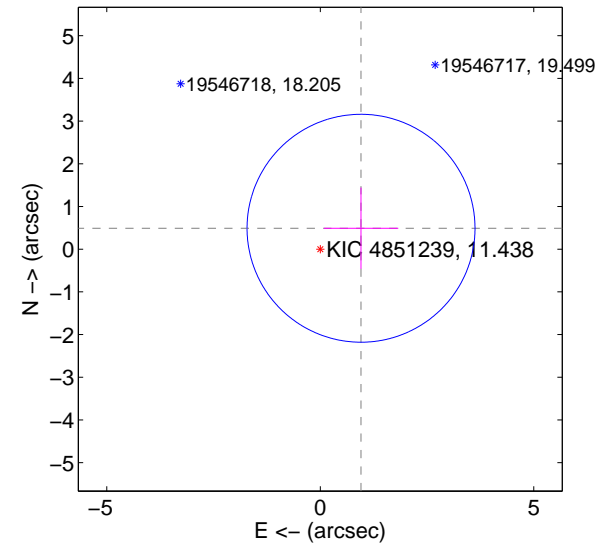
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



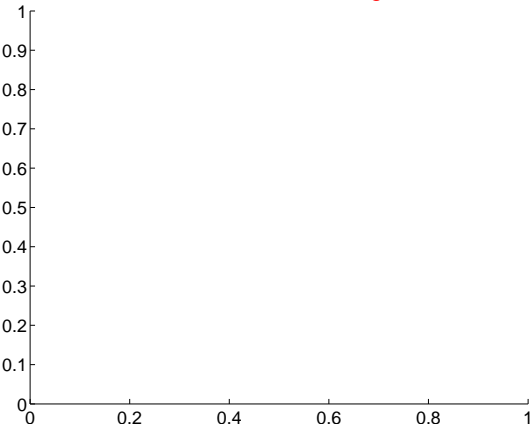
offset from photometric centroids



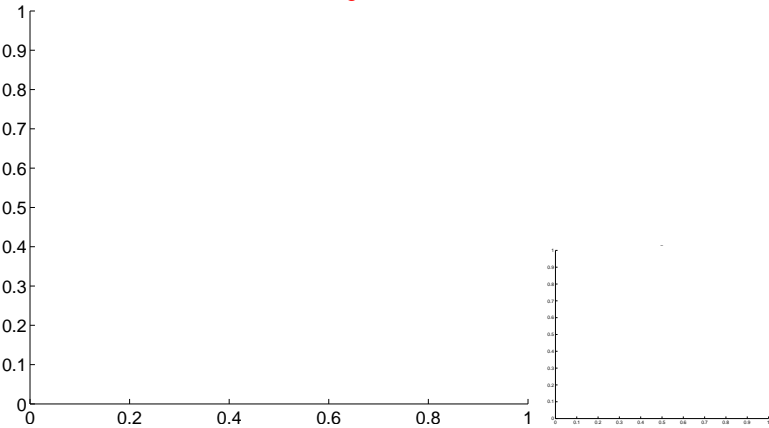
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

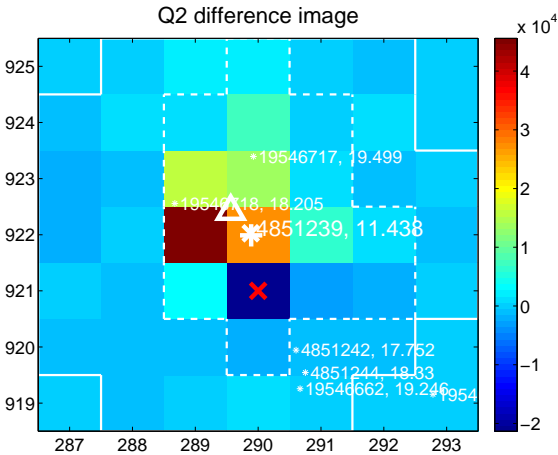
Q1 no difference image



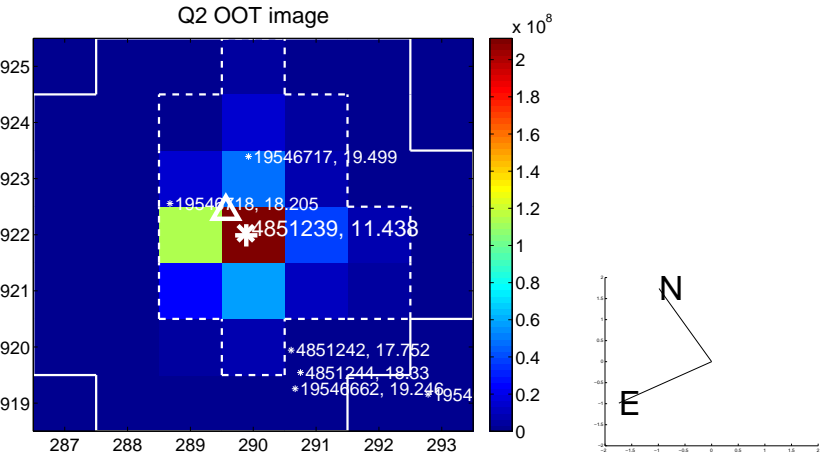
Q1 no OOT image



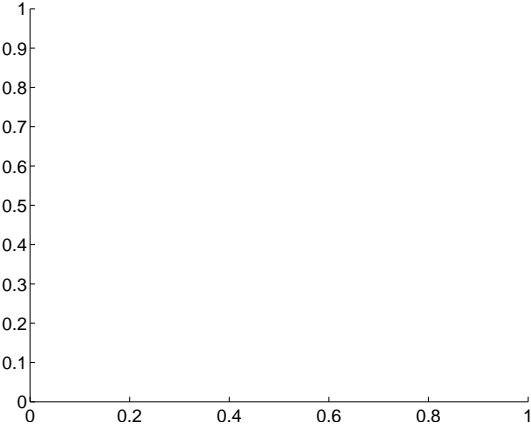
Q2 difference image



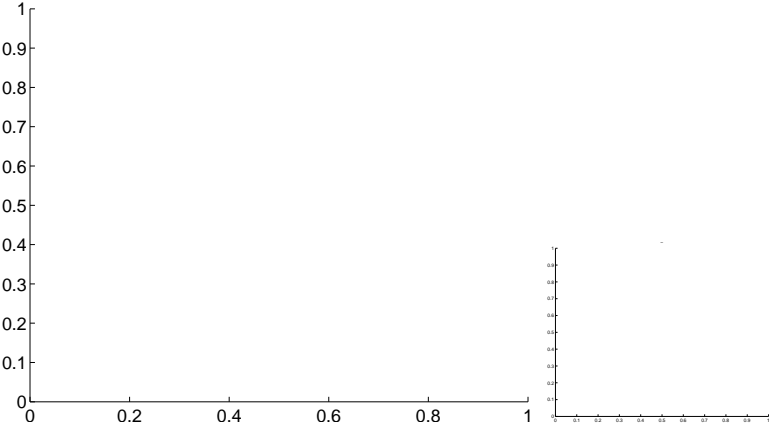
Q2 OOT image



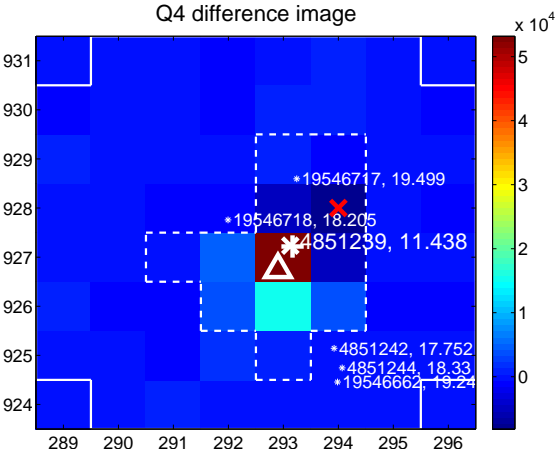
Q3 no difference image



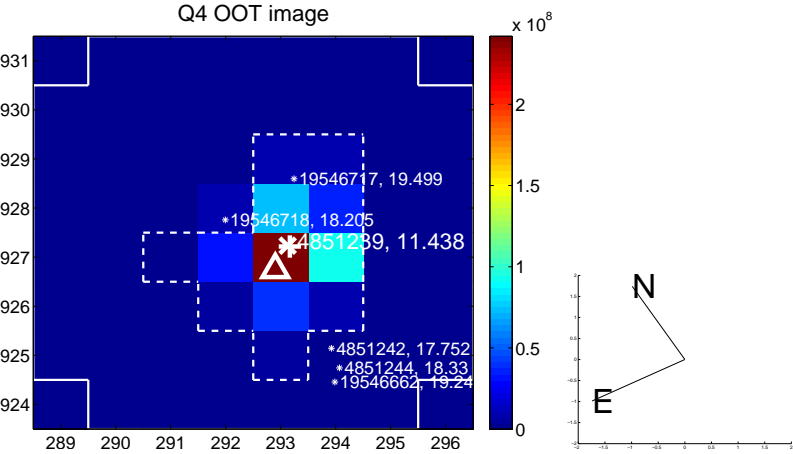
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

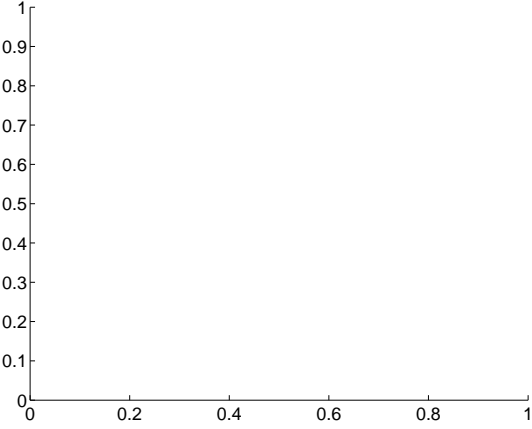
Q5 no difference image



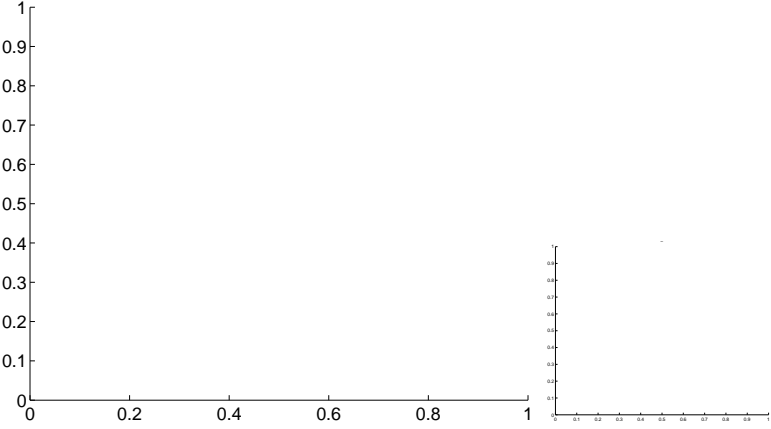
Q5 no OOT image



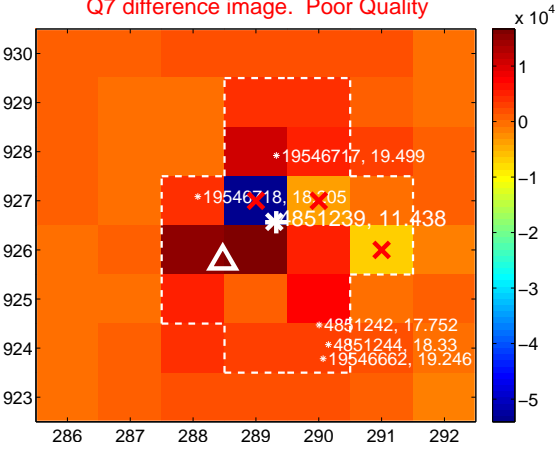
Q6 no difference image



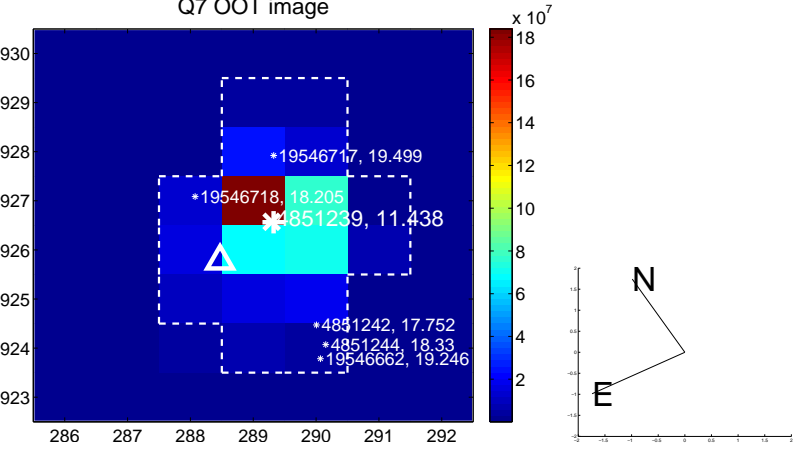
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



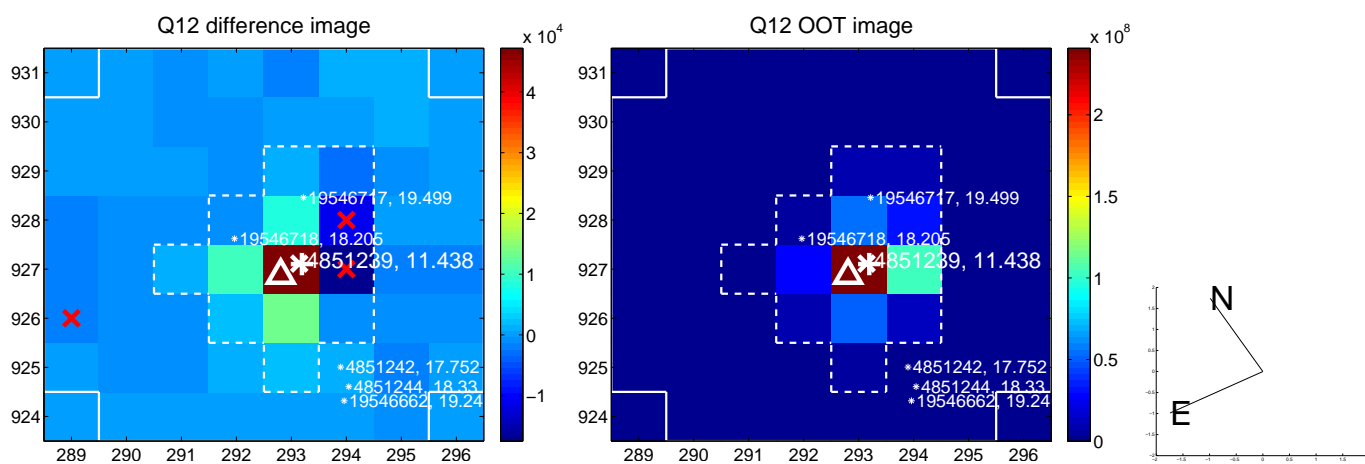
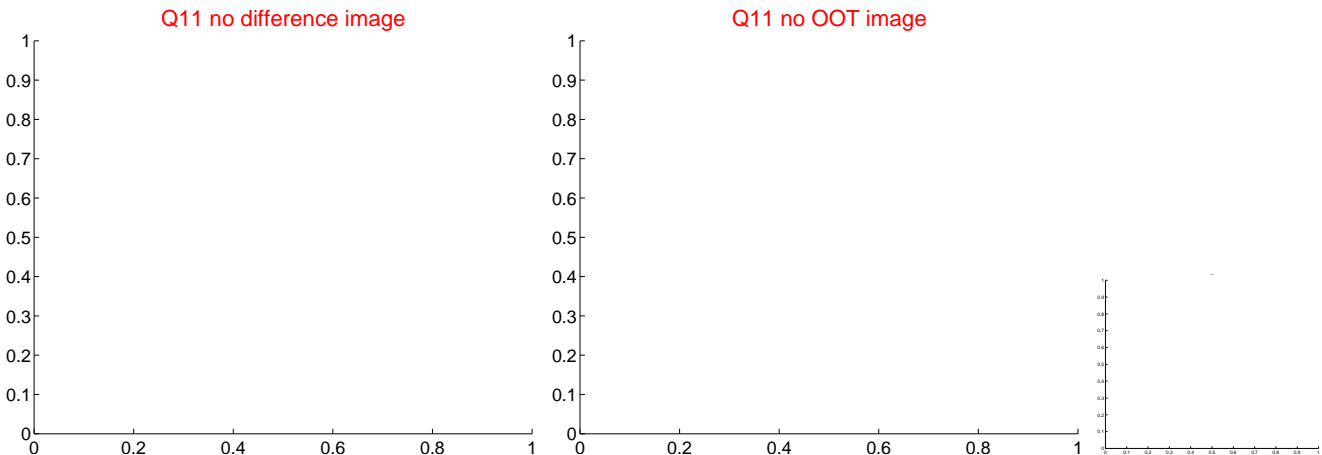
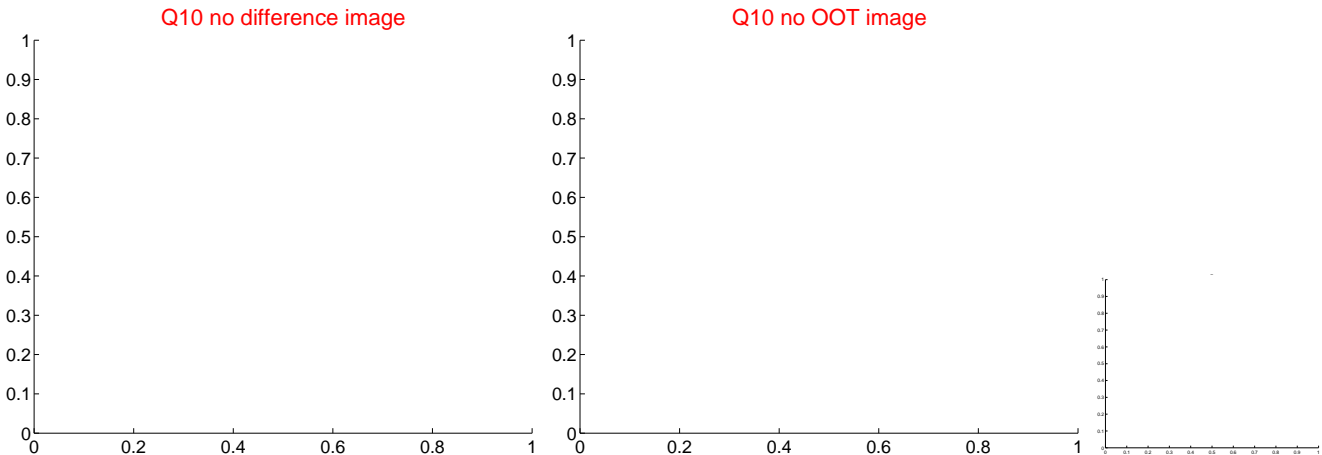
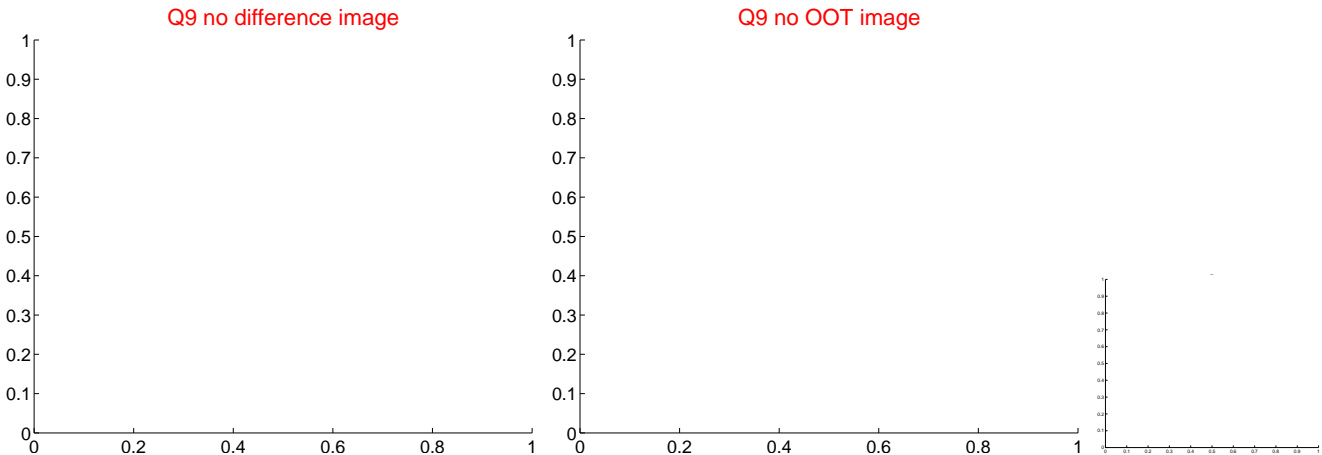
Q8 no difference image



Q8 no OOT image



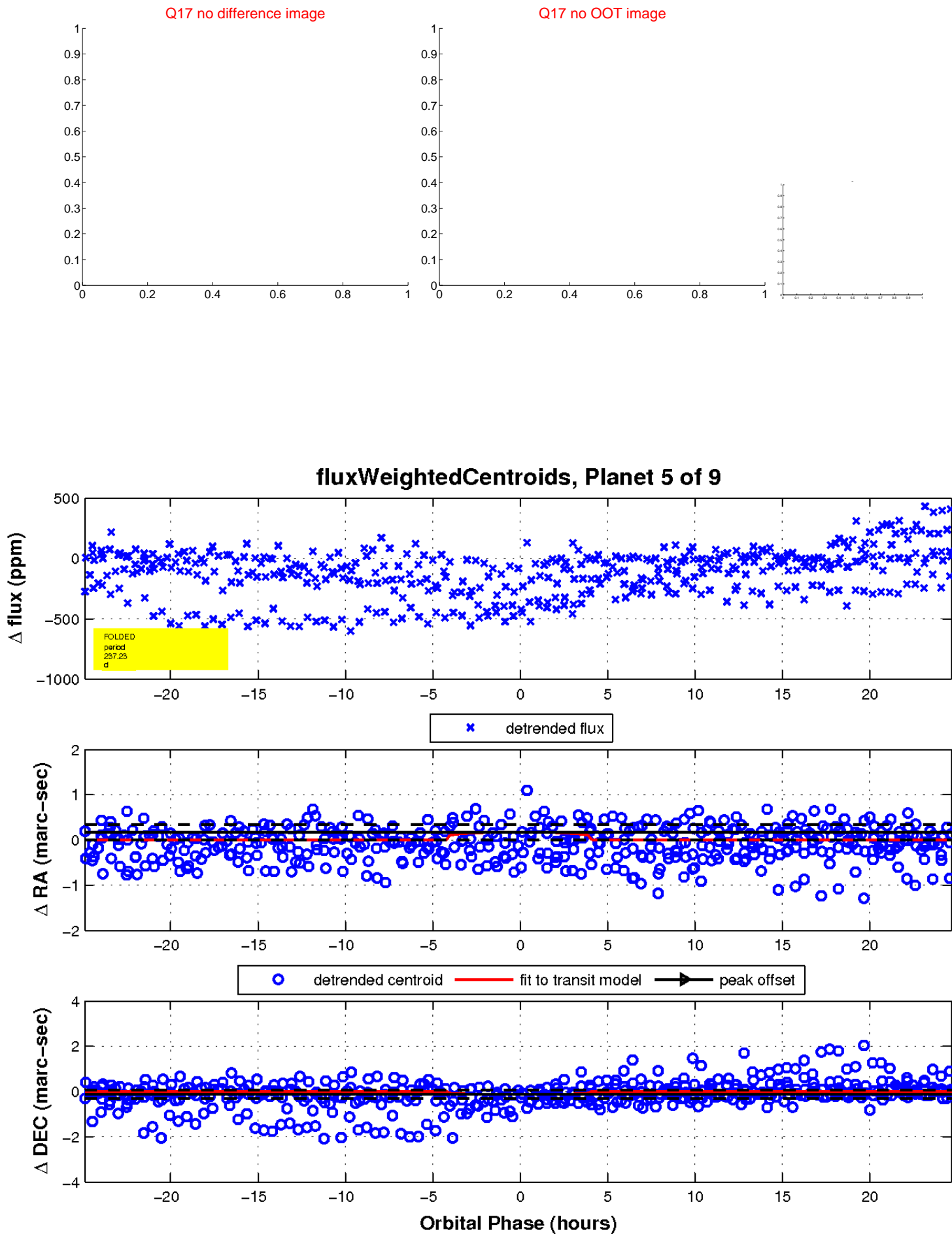
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

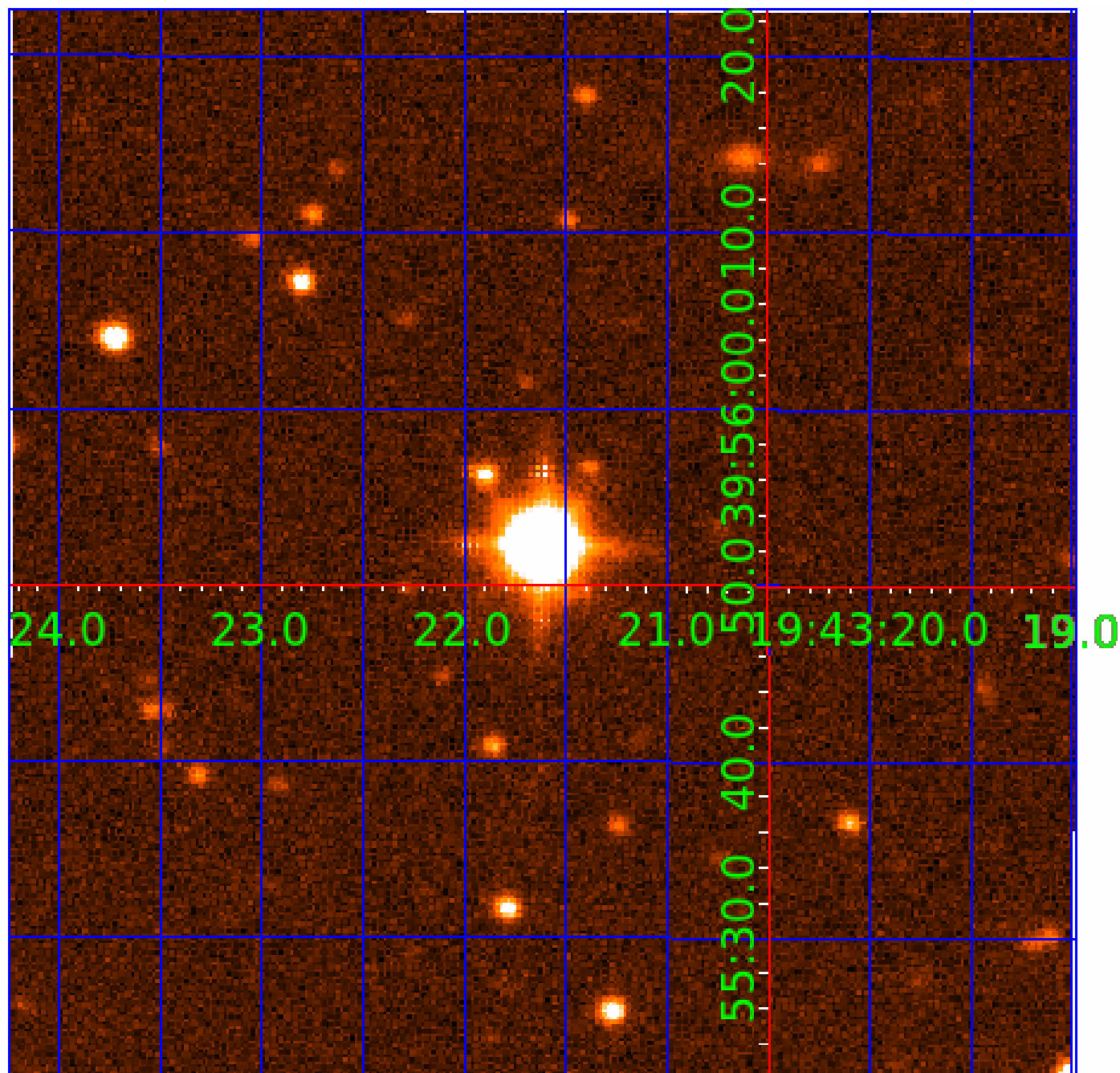


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-06

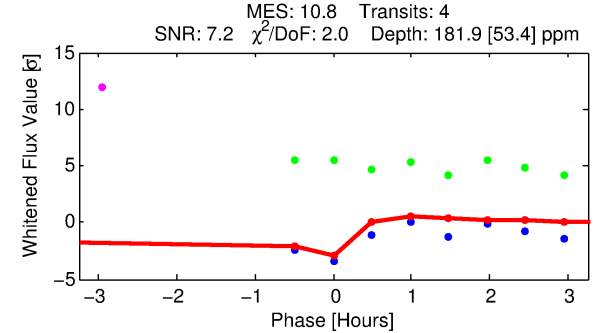
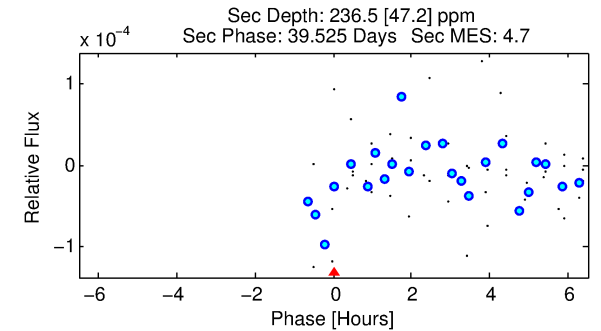
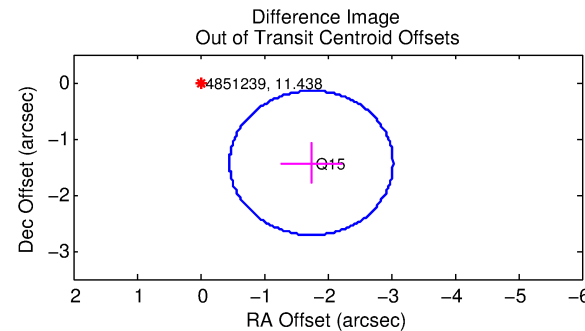
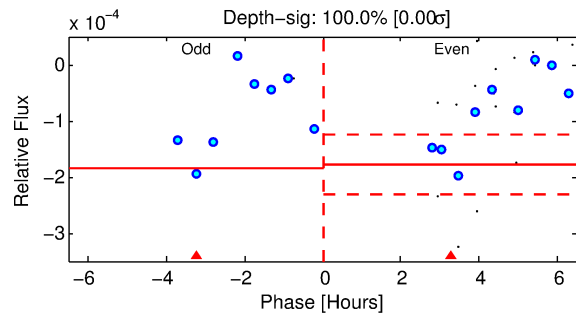
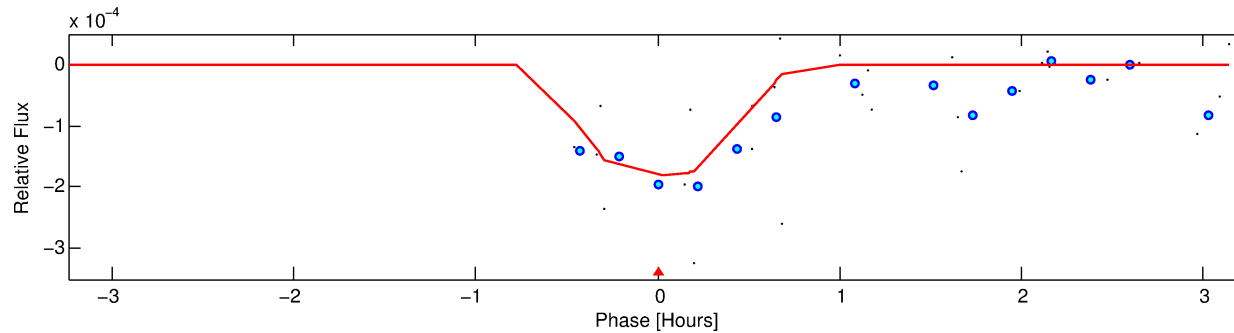
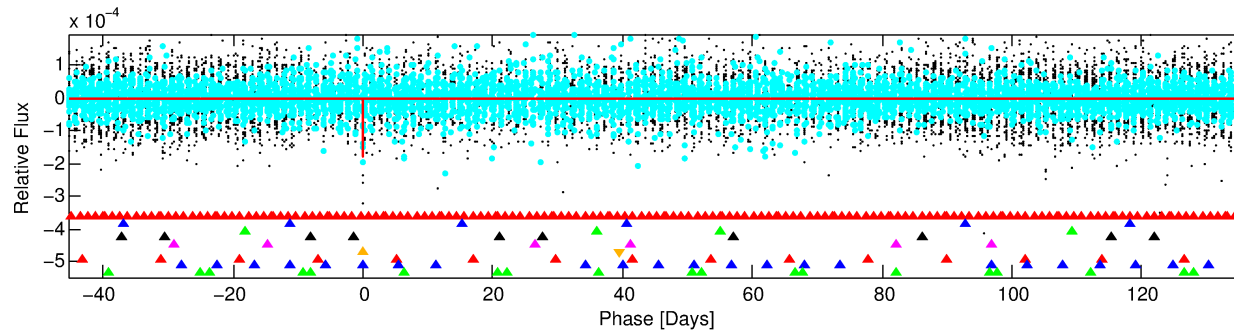
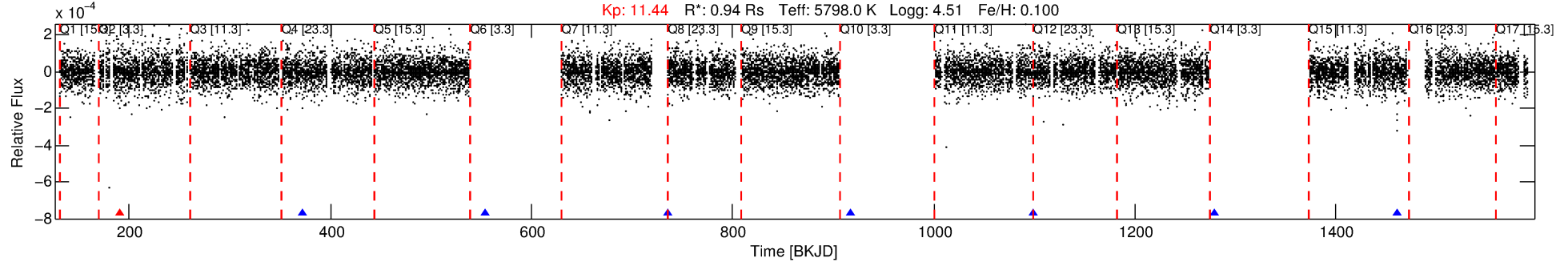
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 6 of 9 Period: 181.563 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 181.56257 [0.00141] d
Epoch = 190.4233 [0.0057] BKJD
Rp/R* = 0.0147 [0.0488]
a/R* = 621.47 [9683.75]
b = 0.89 [3.68]
Seff = 2.22 [0.42]
Teq = 311 [15] K
Rp = 1.51 [5.01] Re
a = 0.6355 [0.0734] AU
Ag = 23012.54 [152693.12] [0.15σ]
Teffp = 5927 [9829] K [0.57σ]

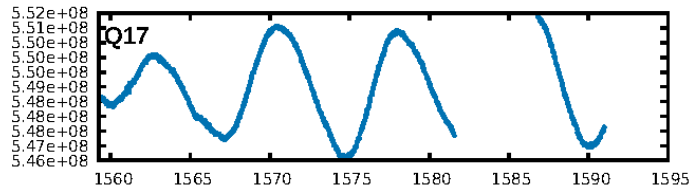
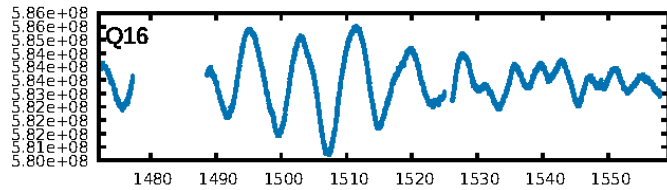
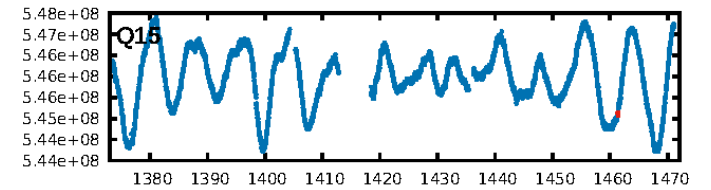
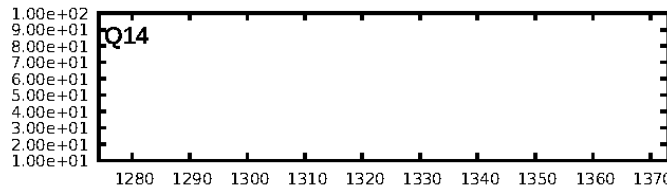
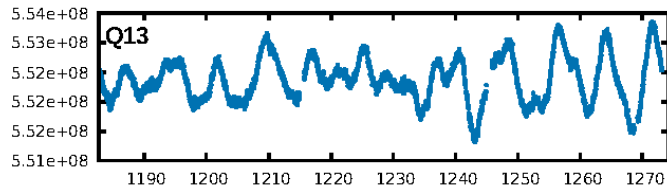
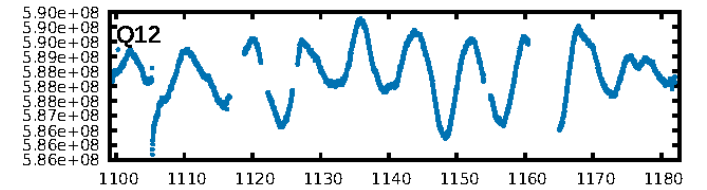
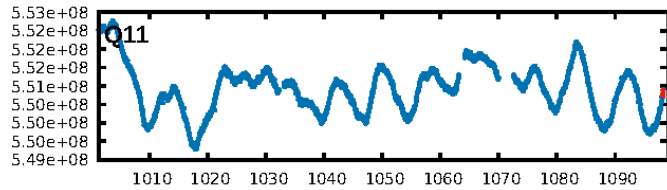
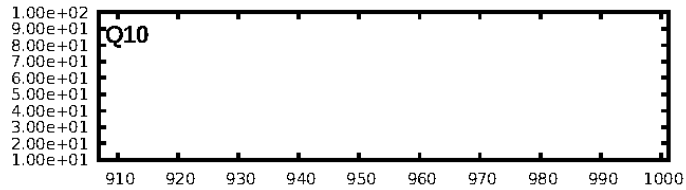
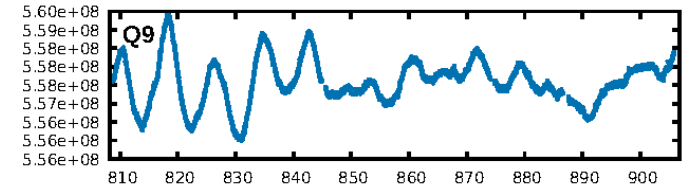
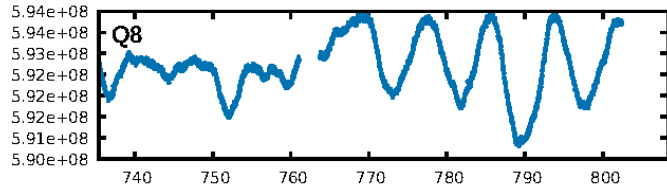
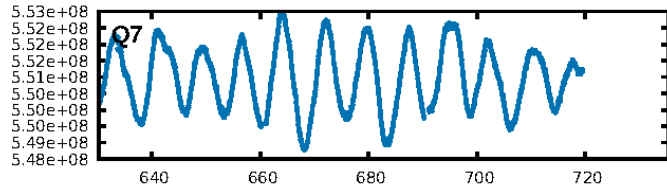
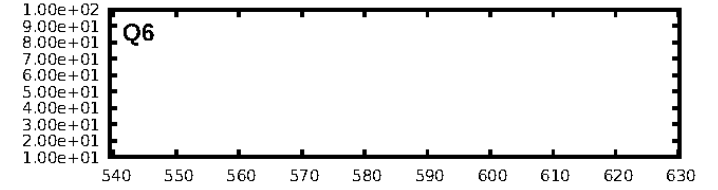
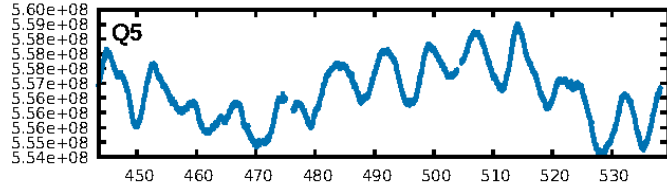
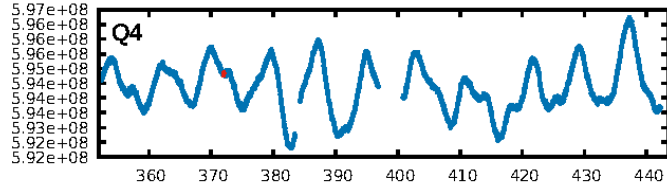
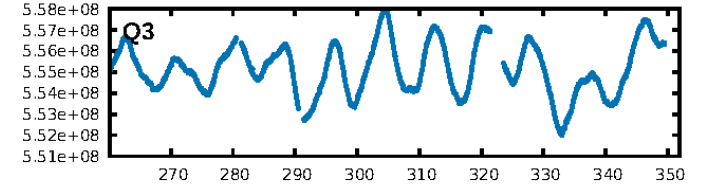
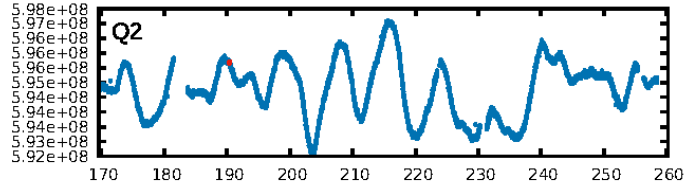
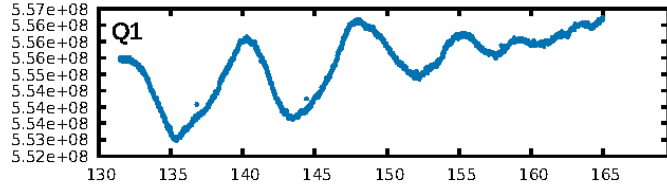
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [123.13σ]
LongPeriod-sig: 100.0% [57.94σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 13.4%
Bootstrap-pfa: 1.63e-12
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: 0.3115
Centroid-sig: 81.1%
Centroid-so: 0.741 arcsec [0.41σ]
OotOffset-rm: 2.260 arcsec [5.28σ]
KicOffset-rm: 2.386 arcsec [5.66σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

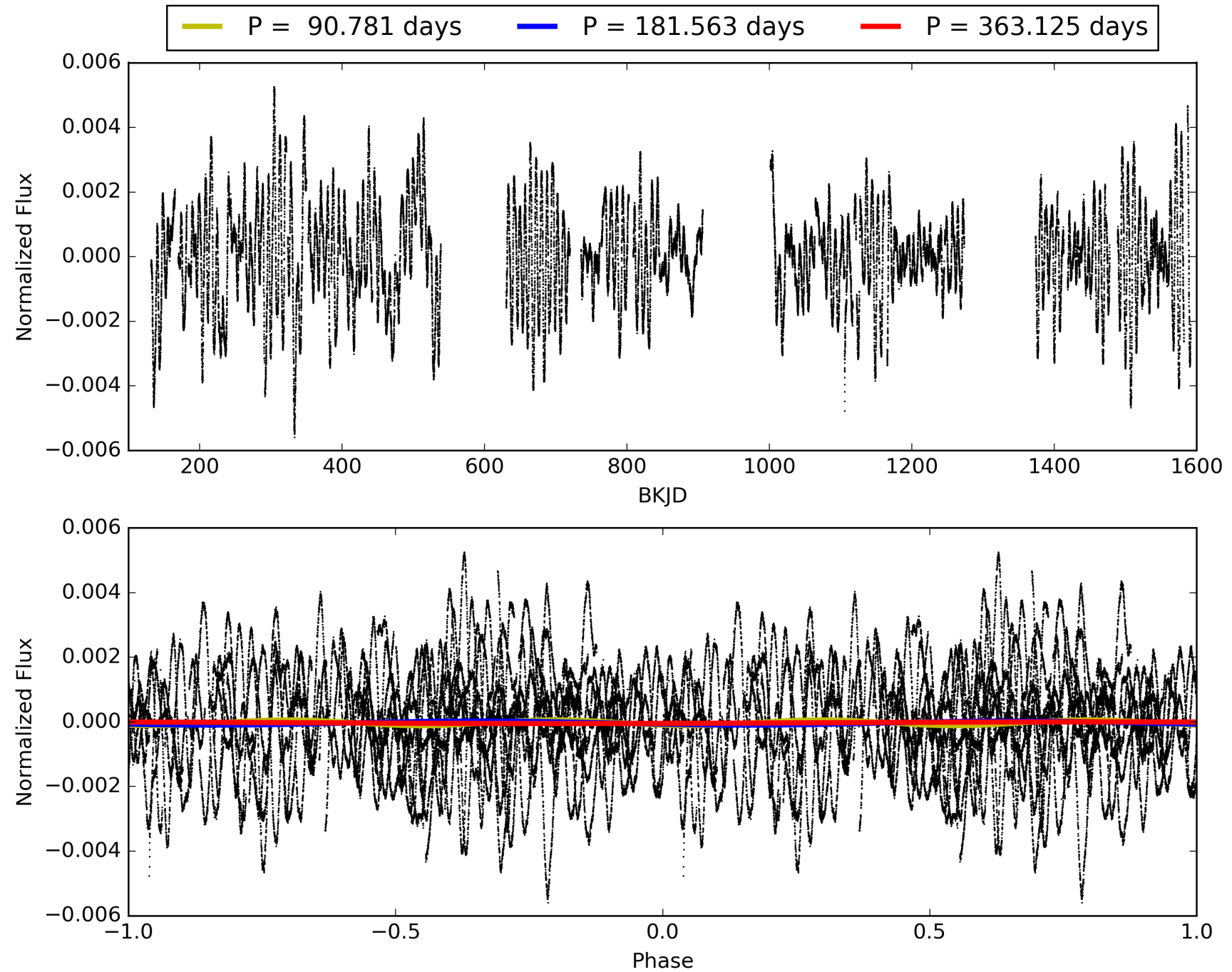
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:36 Z

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

TCE 004851239-06, PDC Light Curves

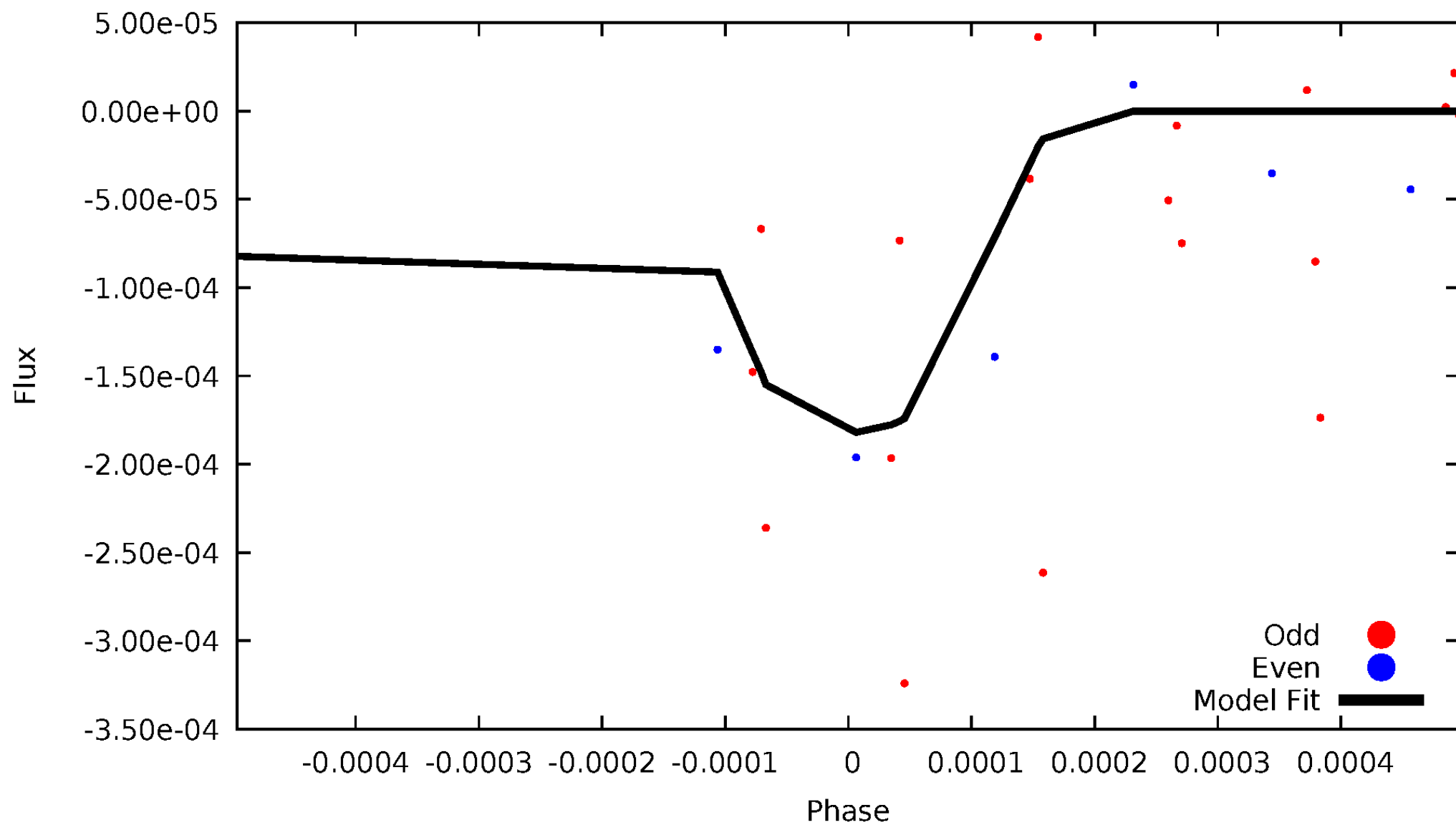


TCE 004851239-06



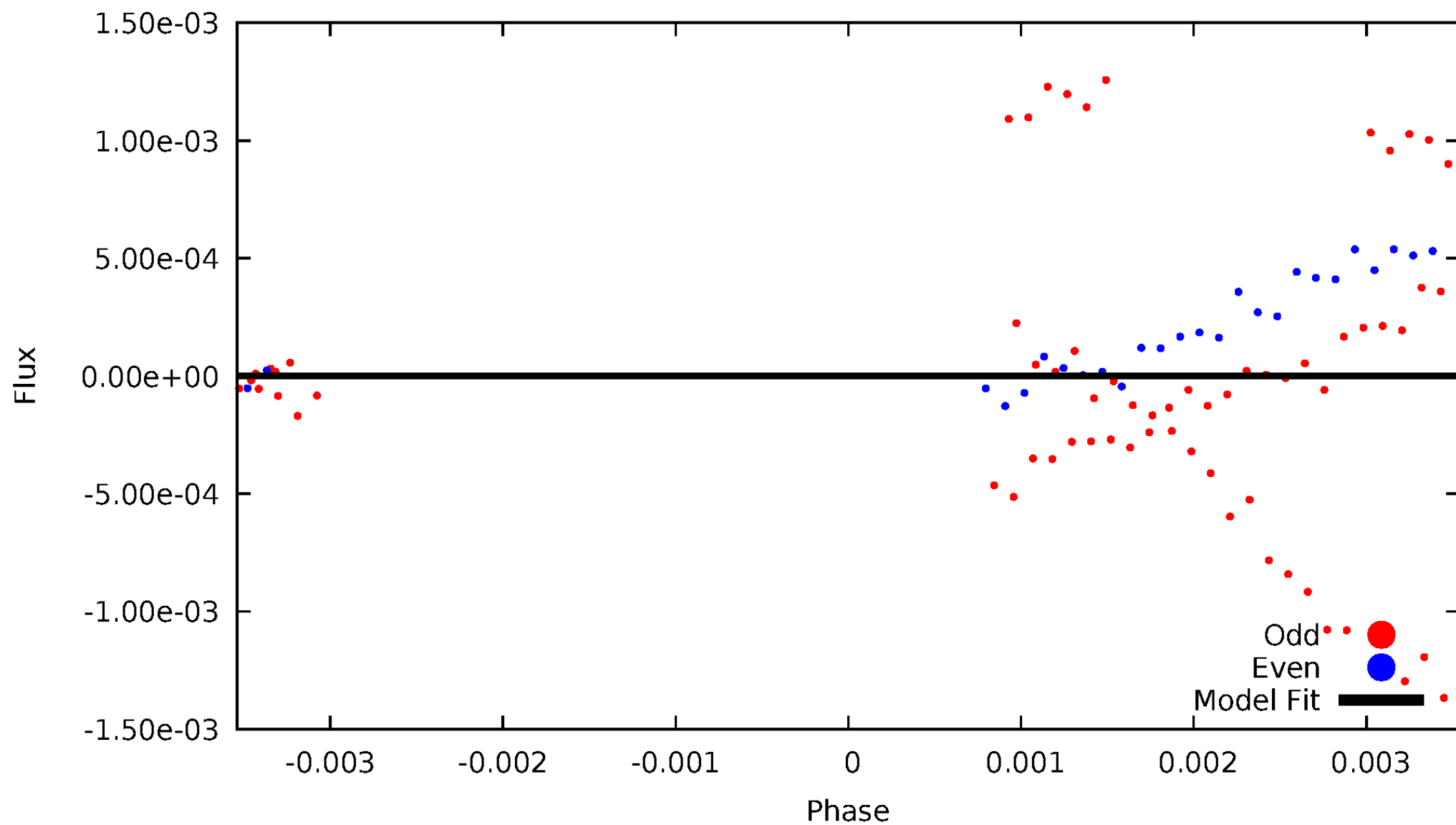
DV Odd/Even

TCE 004851239-06



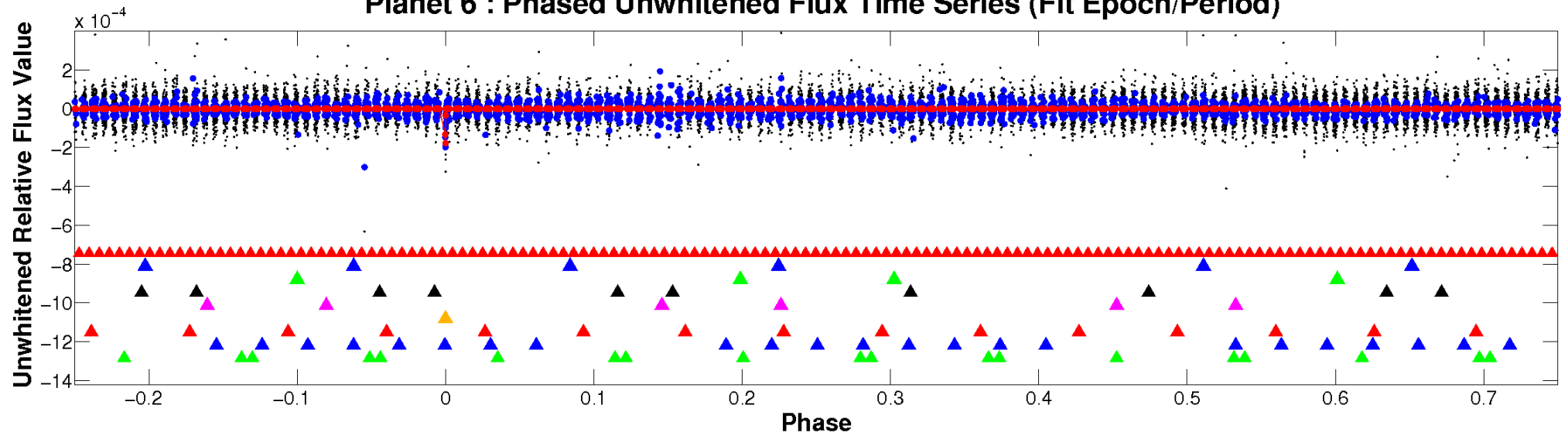
ALT Odd/Even

TCE 004851239-06

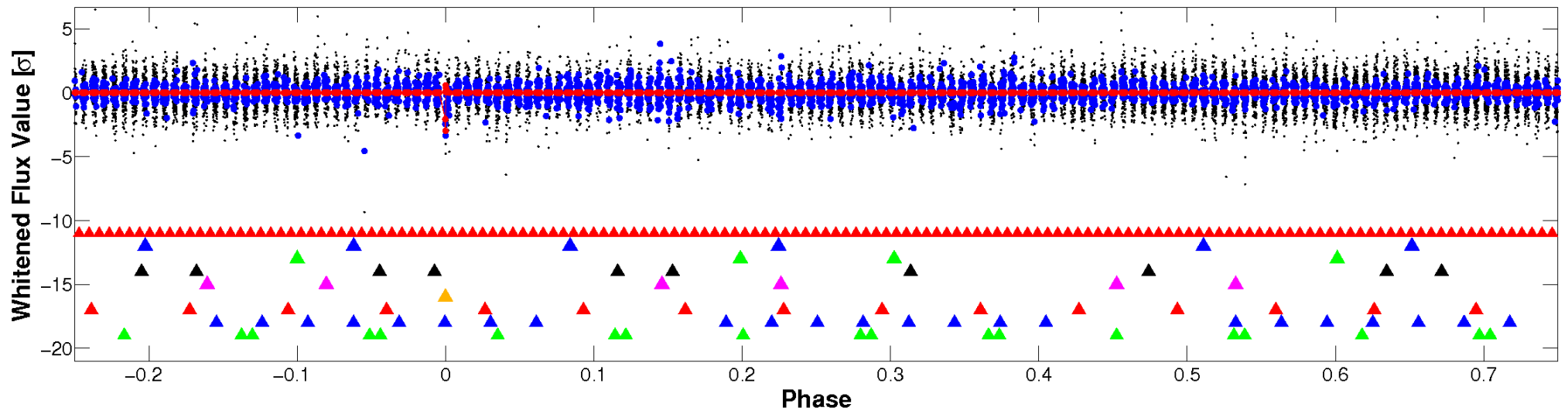


Non-Whitened Vs. Whitened Light Curve

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

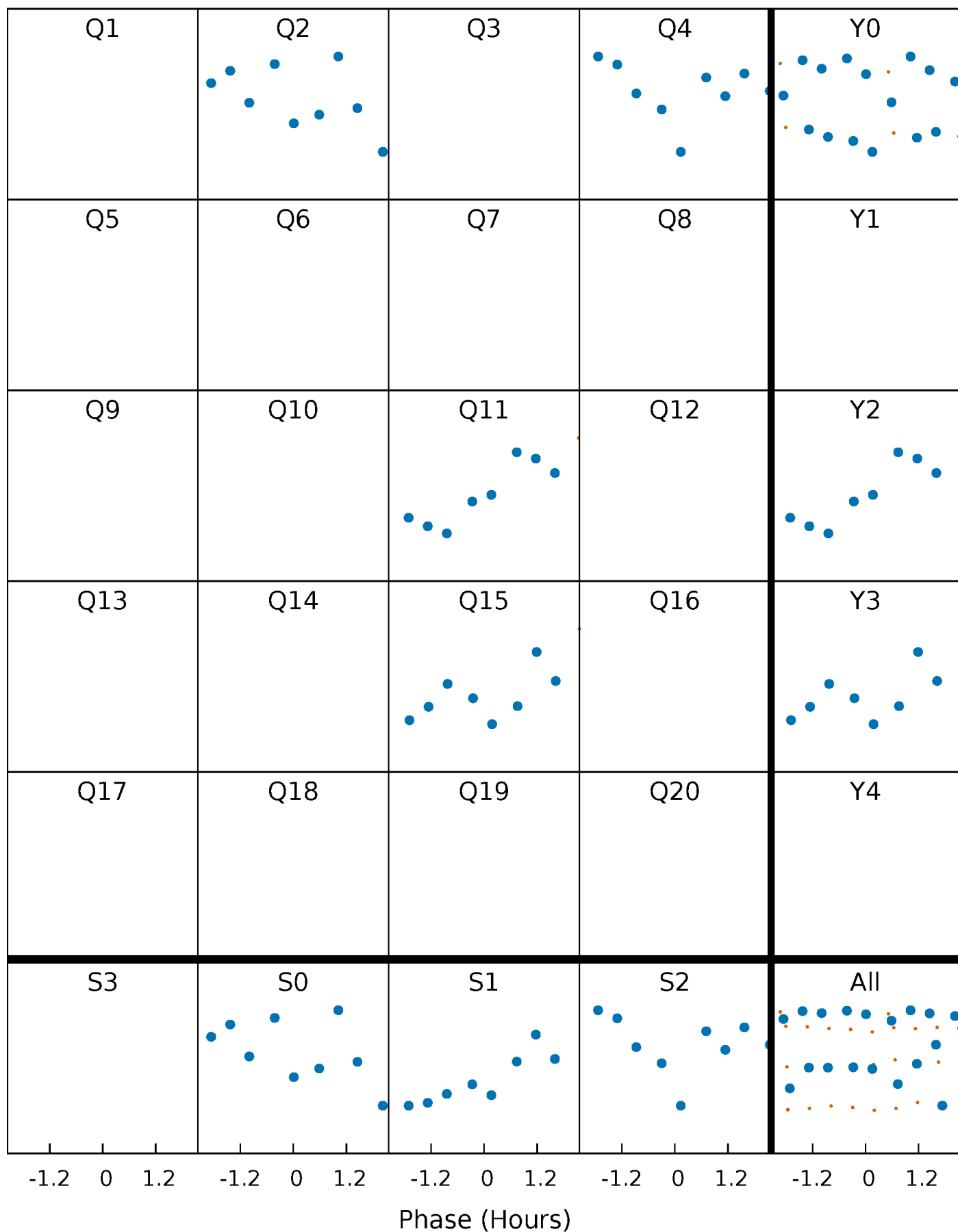


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



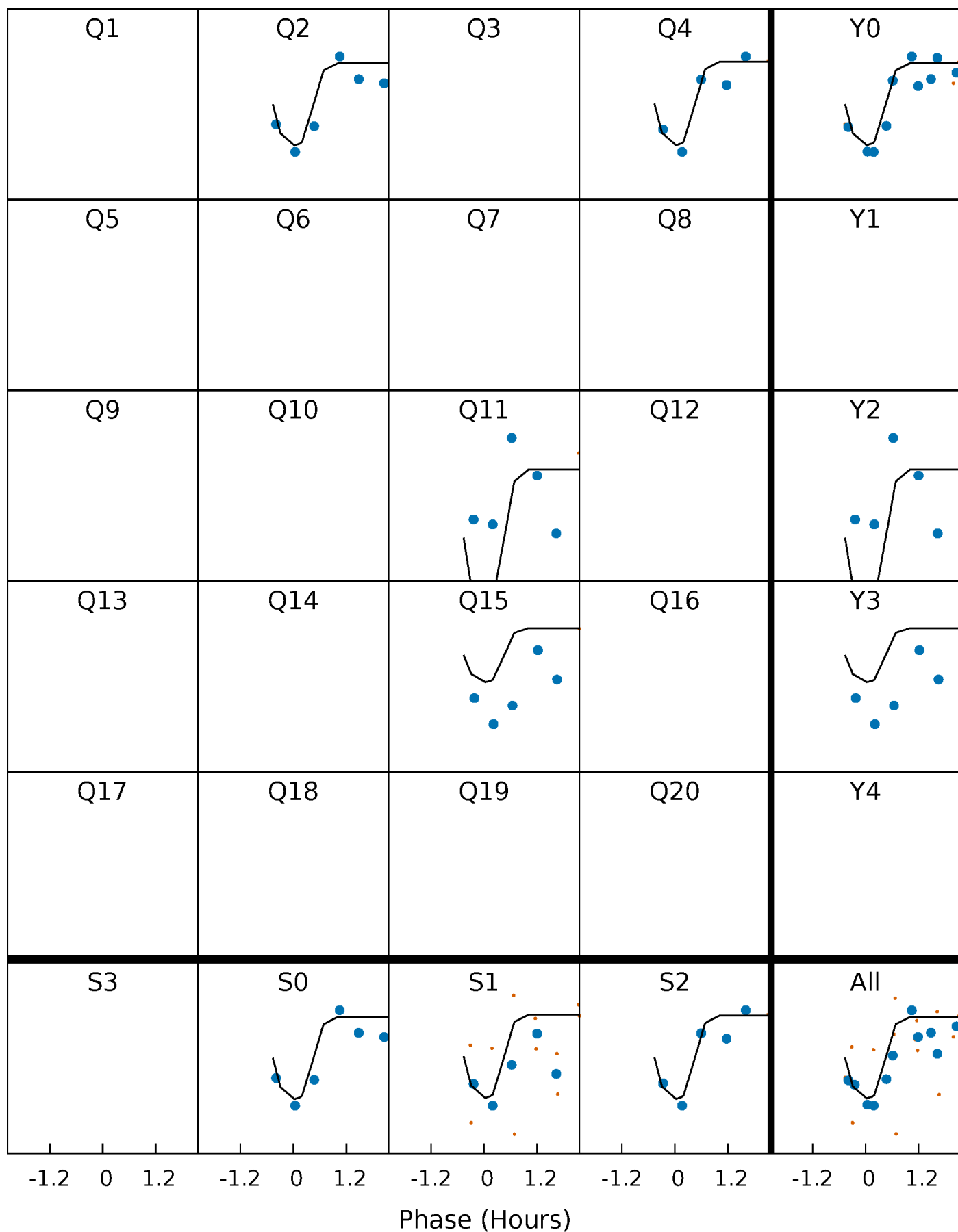
PDC Quarter-Phased Transit Curves

TCE 004851239-06 P=181.562565 Days $T_0=190.423335$ (BKJD)



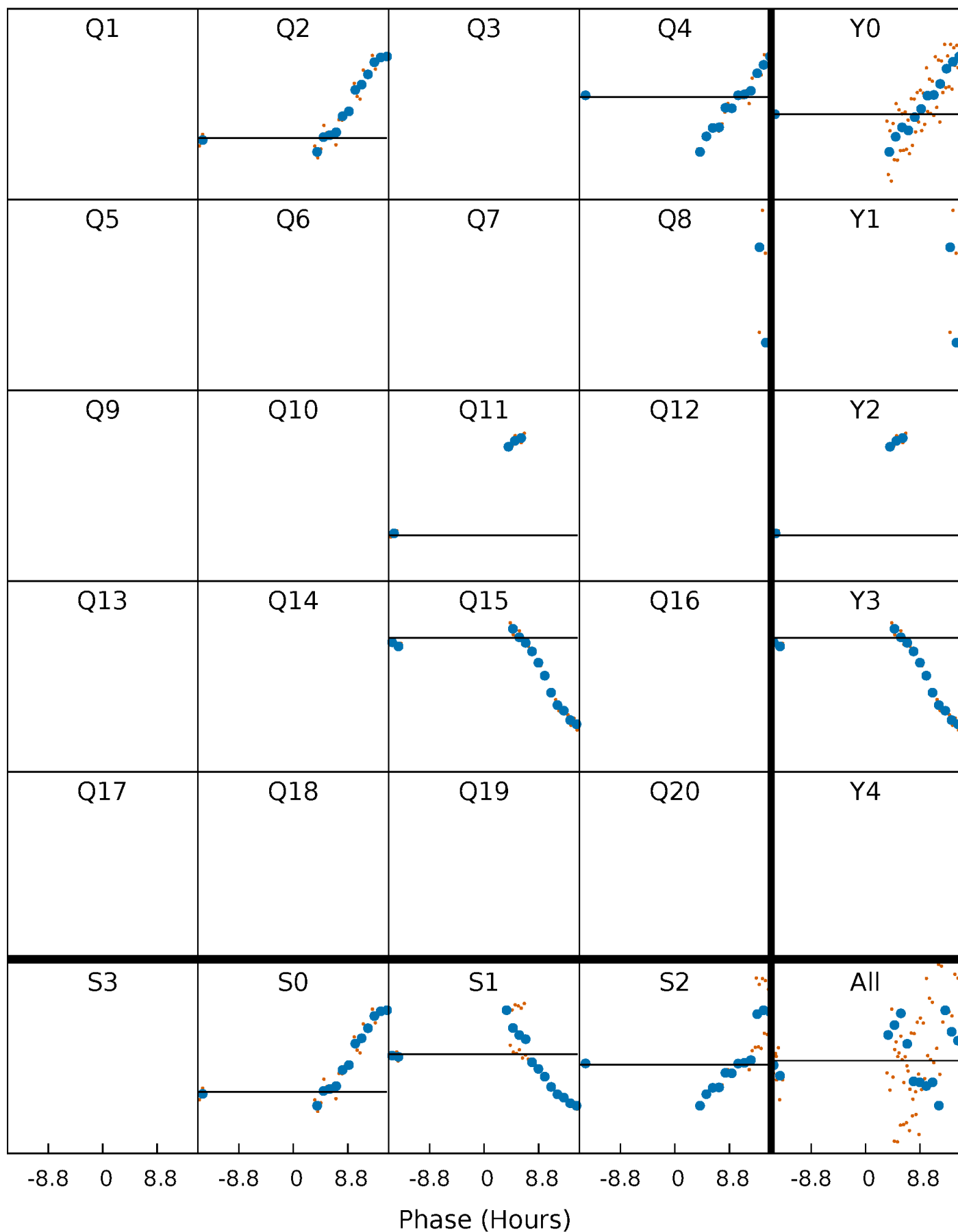
DV Quarter-Phased Transit Curves

TCE 004851239-06 P=181.562565 Days $T_0=190.423335$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

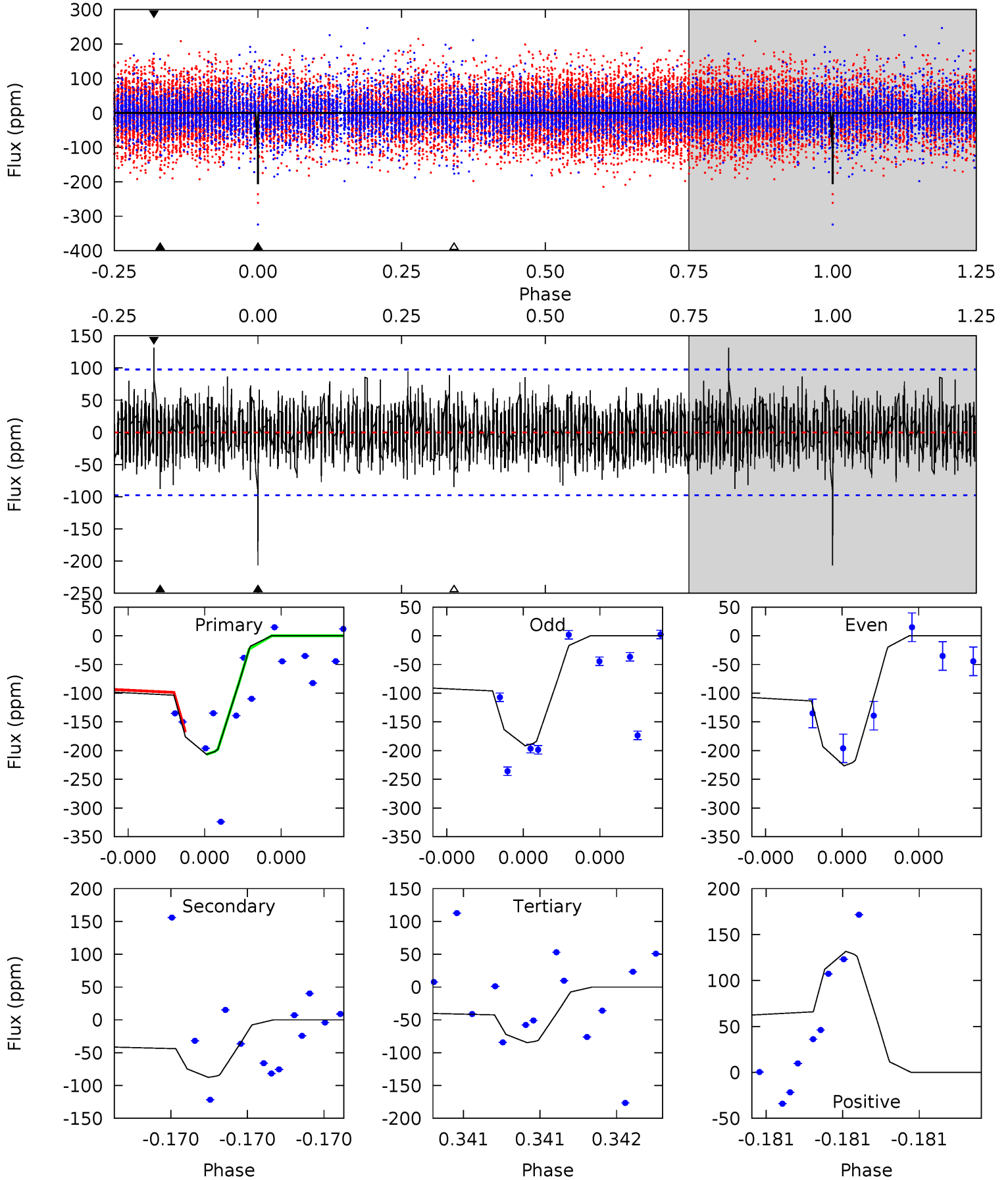
TCE 004851239-06 P=181.558992 Days $T_0=190.259483$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-06, P = 181.562565 Days, E = 8.860770 Days

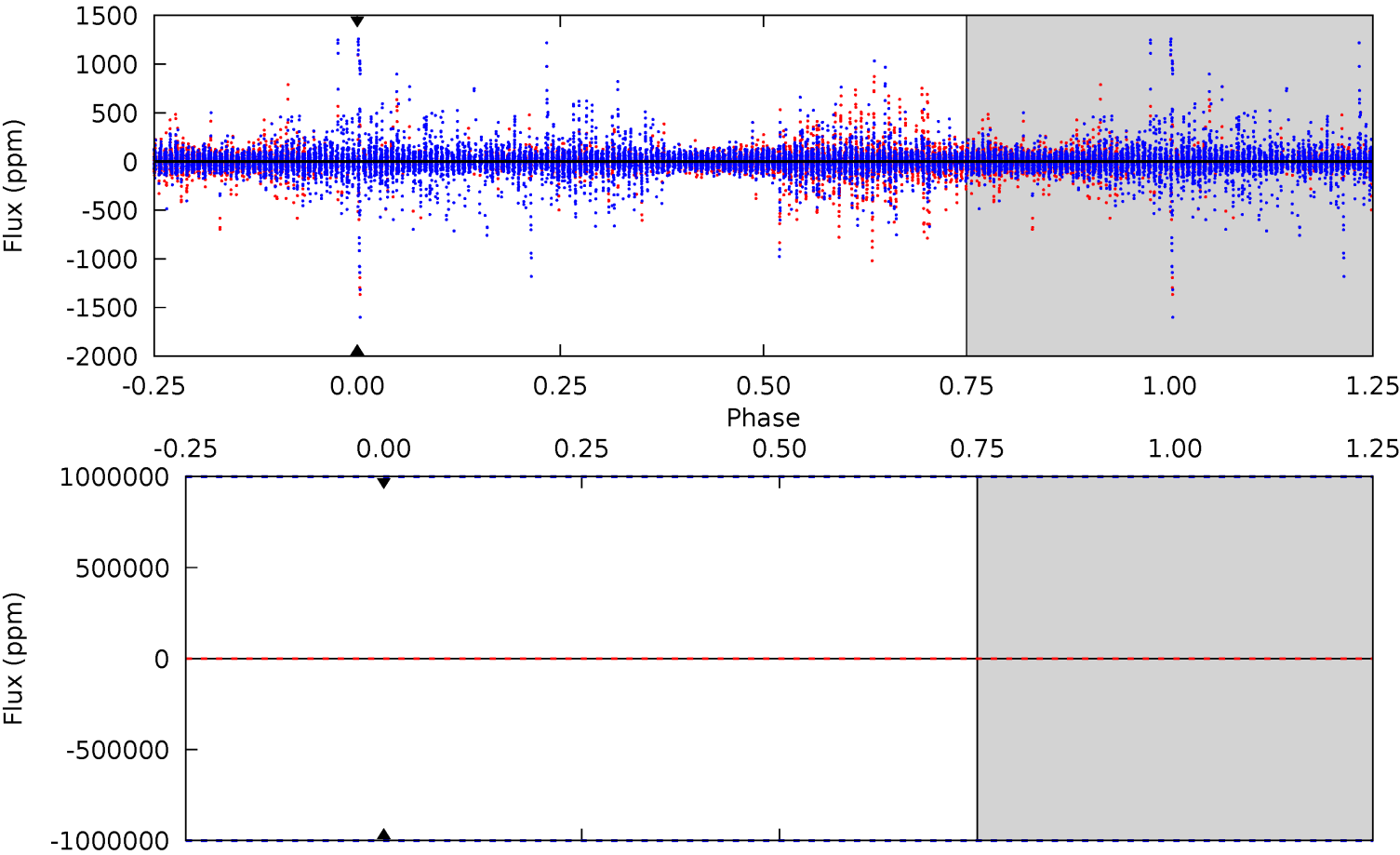
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	5.10	4.93	7.66	5.68	3.65	1.34	7.09	4.36	0.17	-2.56	0.80	0.97	0.39	1.04



Alt Model-Shift Uniqueness Test

004851239-06, P = 181.558992 Days, E = 8.700491 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	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-88 ± 17	$3.89^{+4.25}_{-2.73}$	440^{+14}_{-10}	3429^{+2012}_{-658}	1249^{+13353}_{-959}
Alt.	0 ± 1000000	$5.70^{+4.44}_{-3.80}$	441^{+15}_{-10}	-5192^{+38388}_{-25208}	$-12027.802^{+1320937.246}_{-1126112.649}$

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

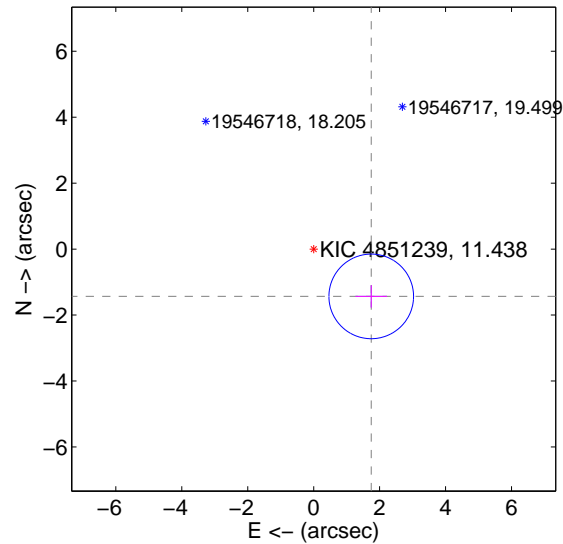
Supplemental centroid analysis for 004851239-06. **Kepler magnitude: 11.44.** Transit SNR 7.22

There are 1 quarters with good PRF difference image offsets

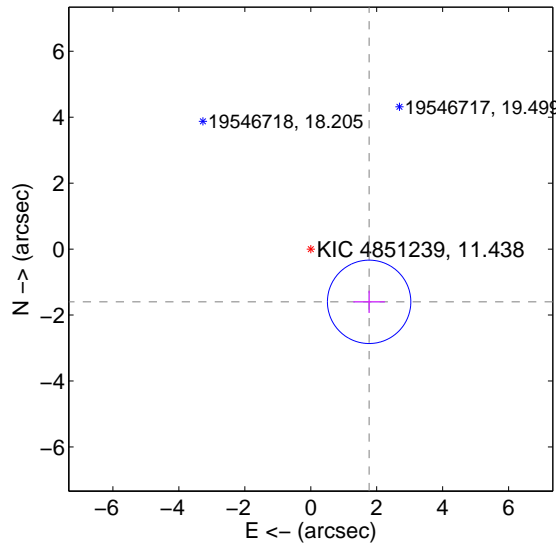
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.260 ± 0.428	5.28	-1.746 ± 0.479	-1.435 ± 0.338
PRF-fit source offset from KIC position	2.386 ± 0.421	5.66	-1.770 ± 0.479	-1.600 ± 0.338
photometric centroid source offset	0.74 ± 1.79	0.41	0.63 ± 1.76	-0.39 ± 1.89

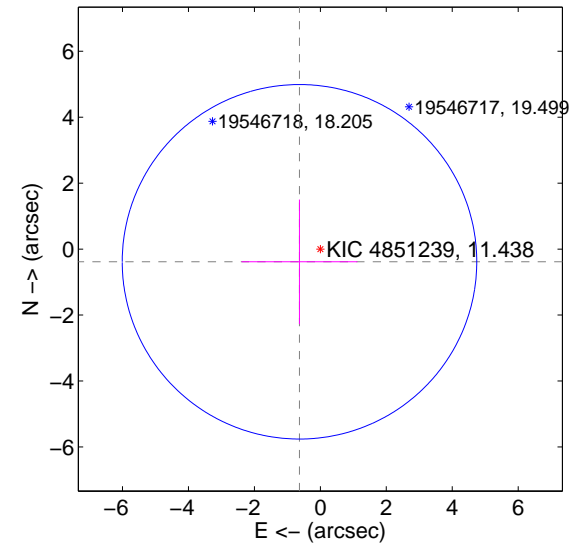
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

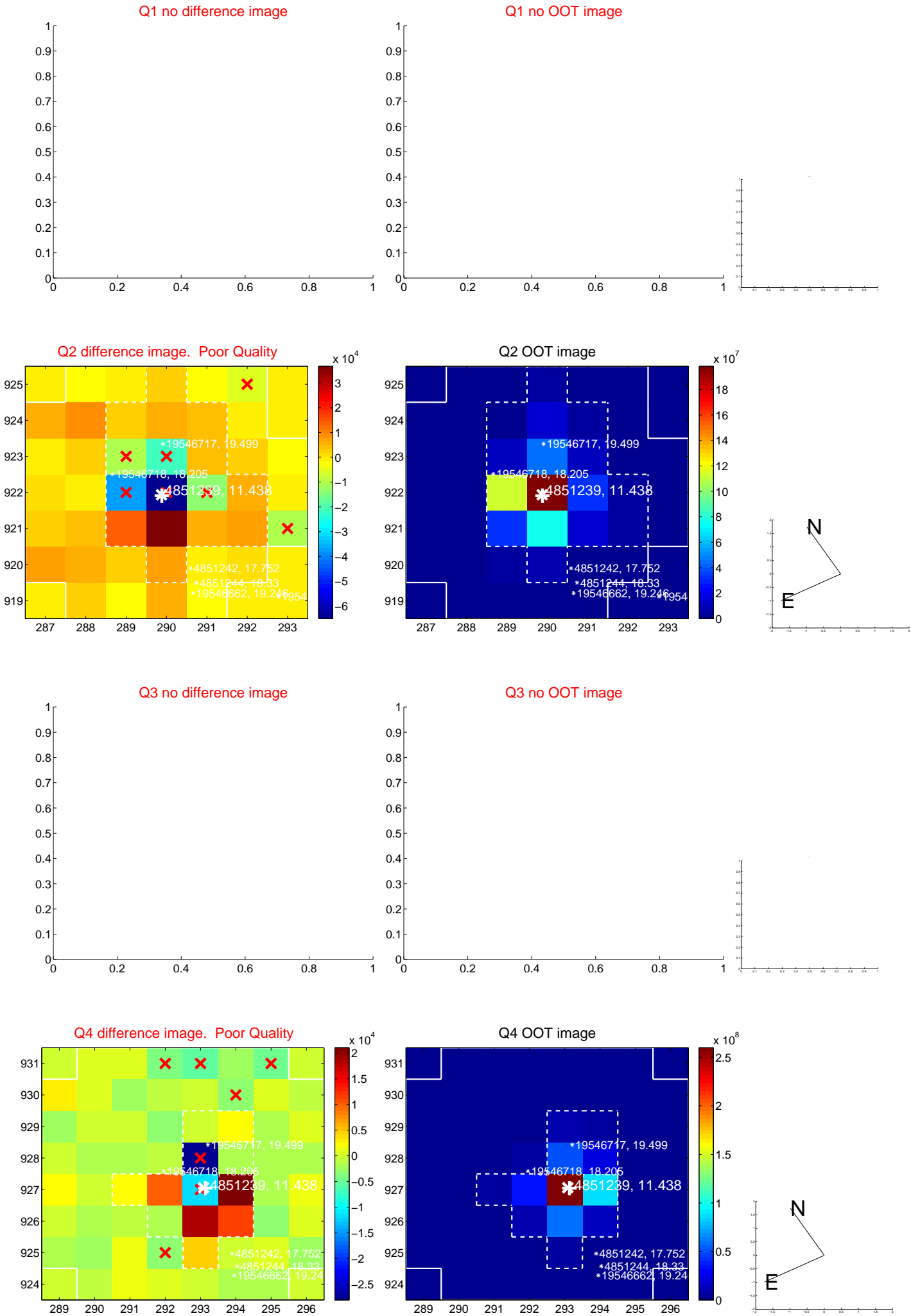


offset from photometric centroids



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.



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.

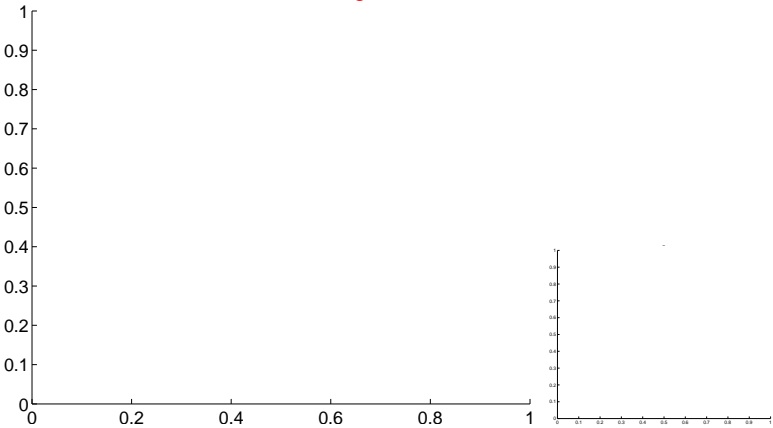


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



Q13 no OOT image



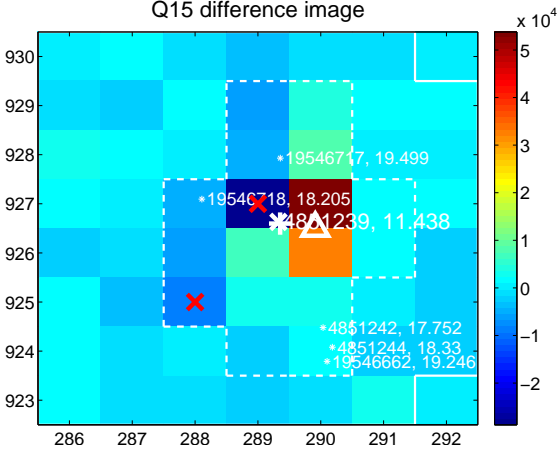
Q14 no difference image



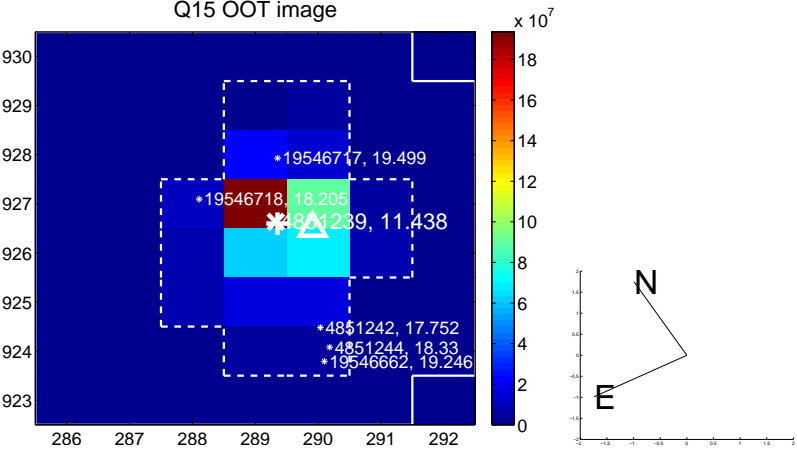
Q14 no OOT image



Q15 difference image



Q15 OOT image



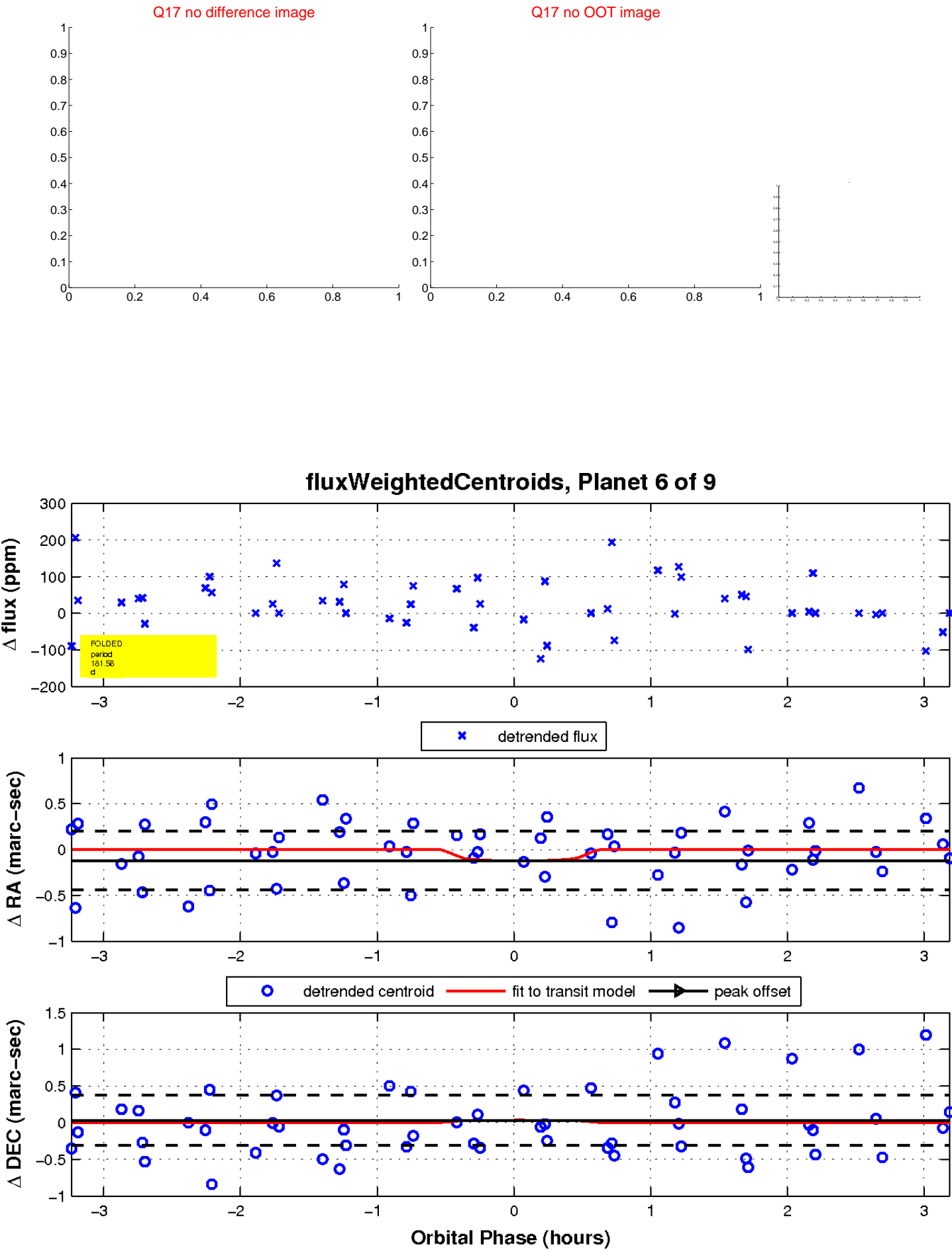
Q16 no difference image



Q16 no OOT image

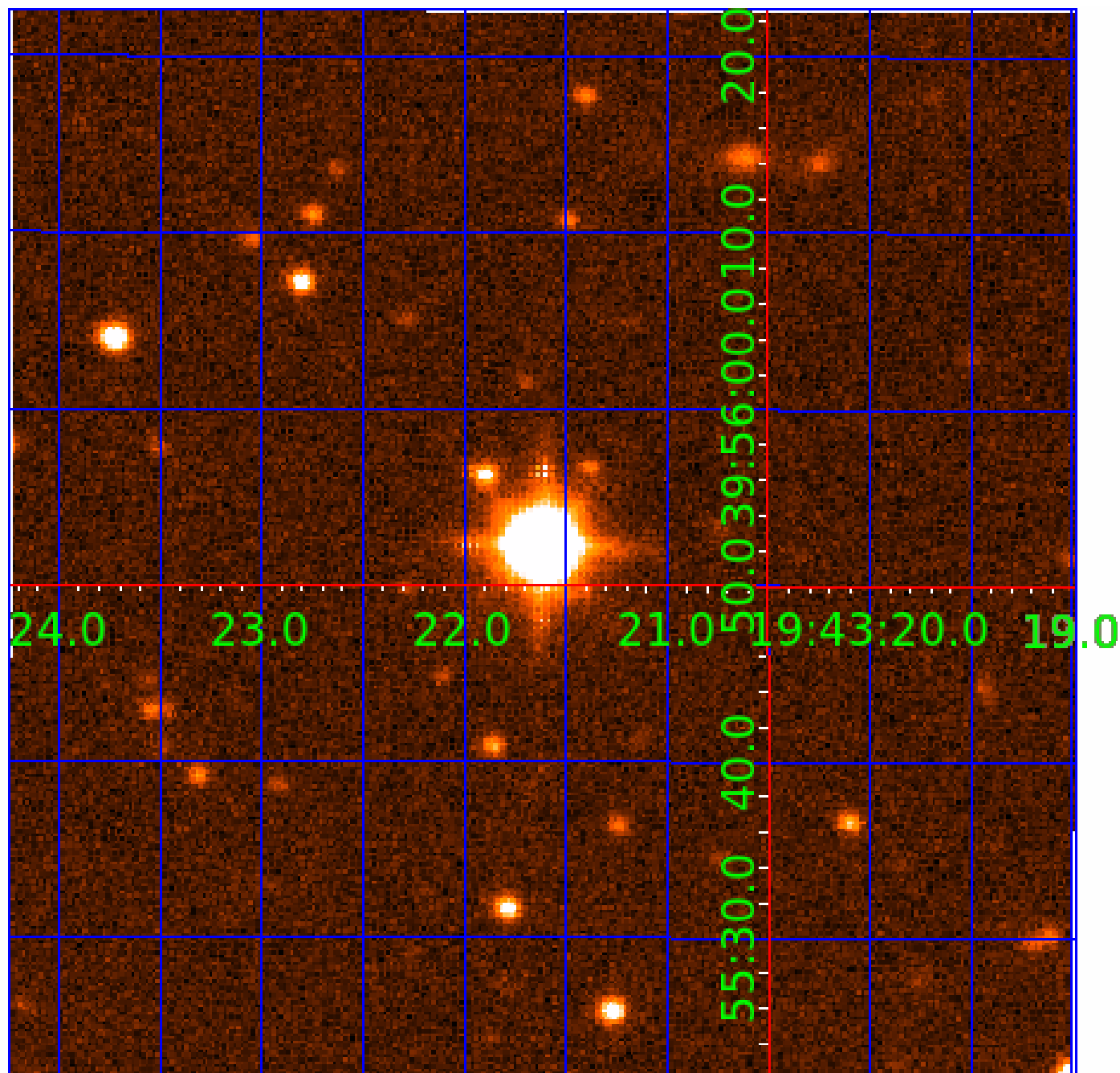


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-07

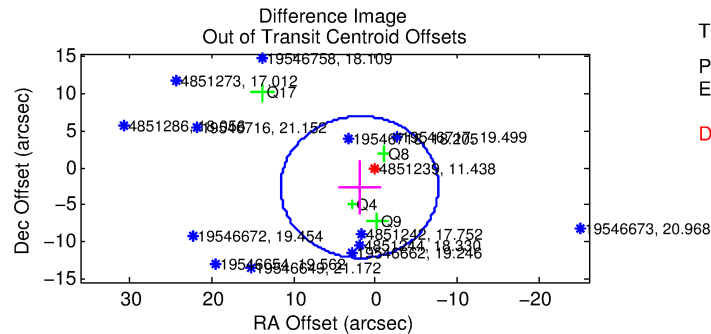
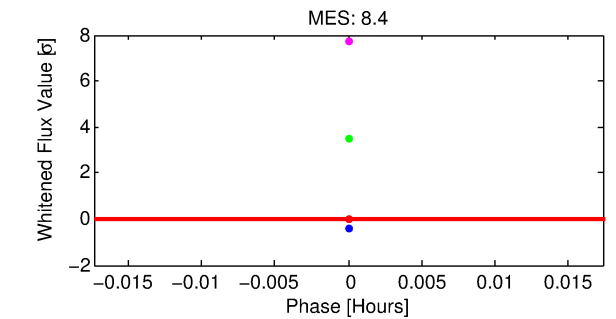
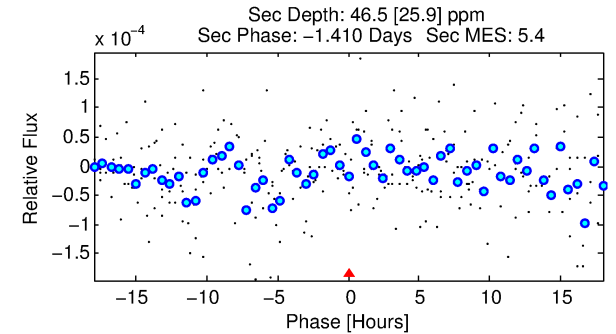
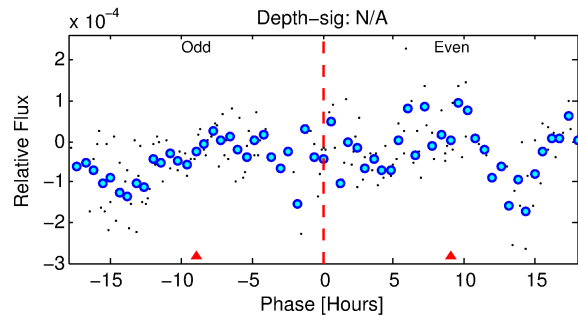
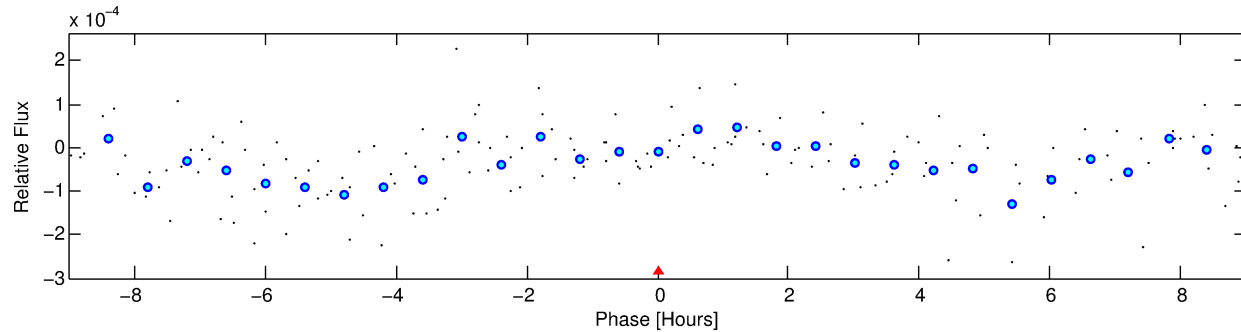
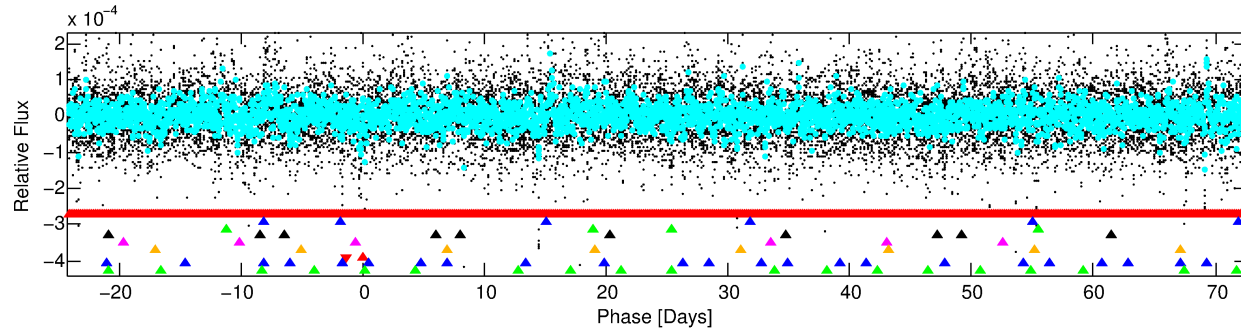
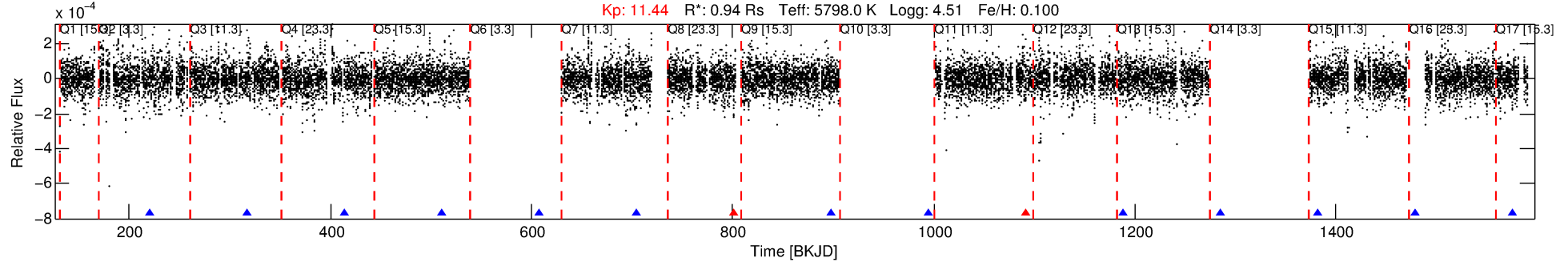
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 7 of 9 Period: 96.806 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



TPS TCE Results:

Period = 96.80584 d

Epoch = 219.7738 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [100.49σ]

LongPeriod-sig: 100.0% [178.22σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: 2.05e-11

RollingBand-fgt: 0.60 [3/5]

GhostDiagnostic-chr: 0.4802

Centroid-sig: 16.6%

Centroid-so: 3.551 arcsec [1.23σ]

OotOffset-rm: 3.265 arcsec [1.02σ]

KicOffset-rm: 3.339 arcsec [1.03σ]

OotOffset-st: 0/0/2/2 [4]

KicOffset-st: 0/0/2/2 [4]

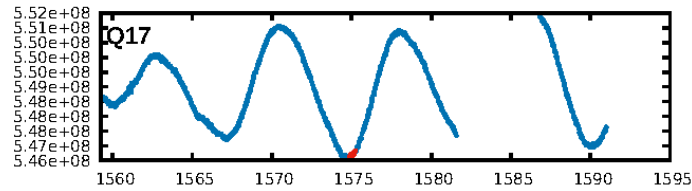
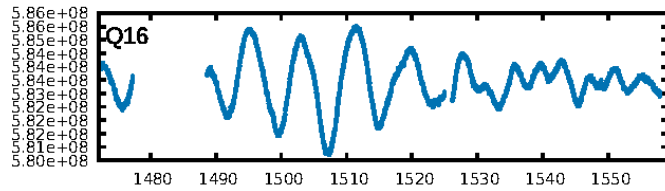
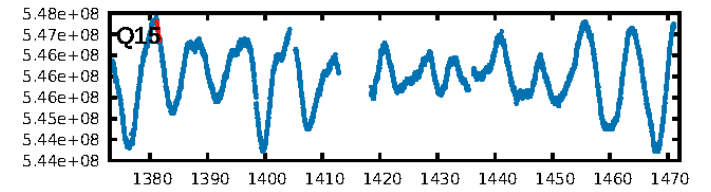
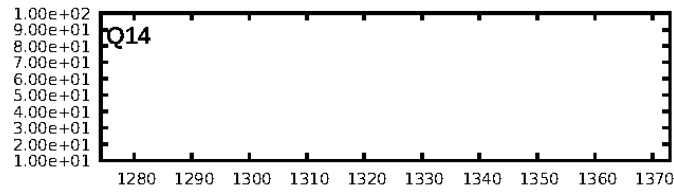
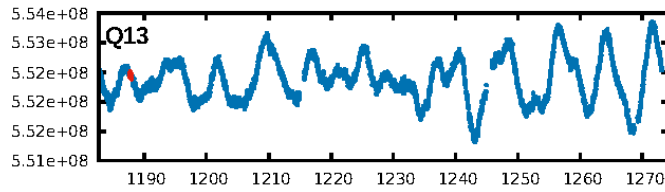
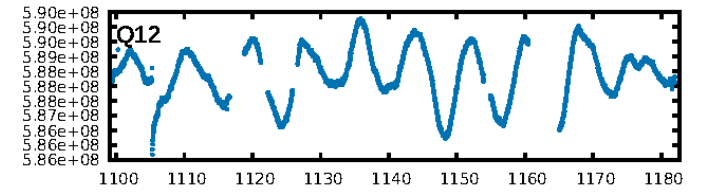
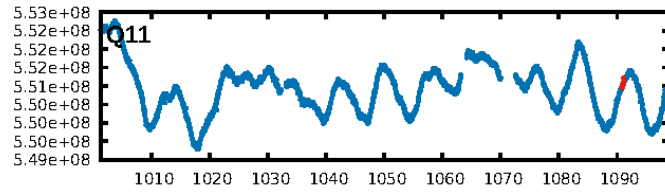
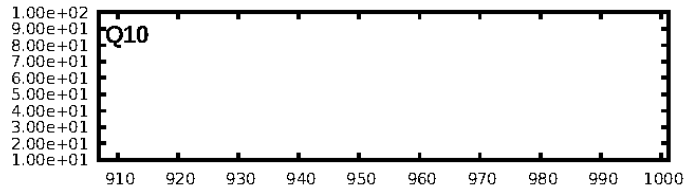
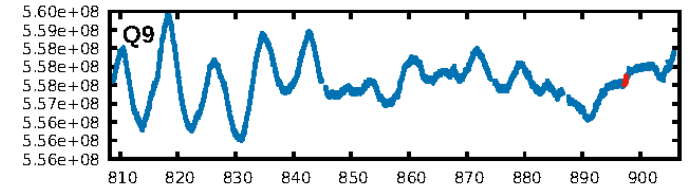
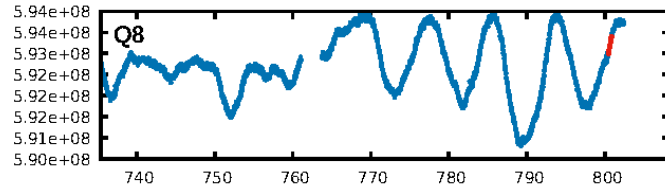
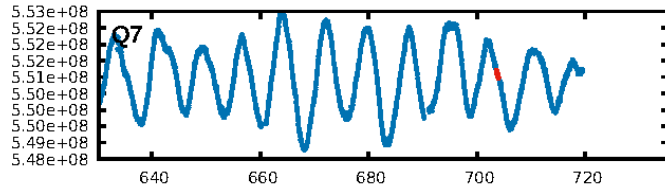
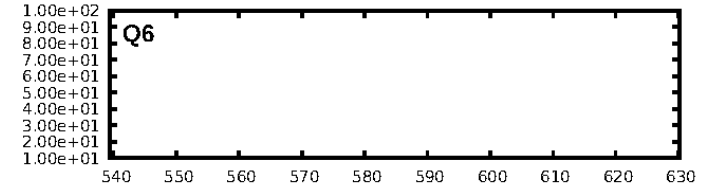
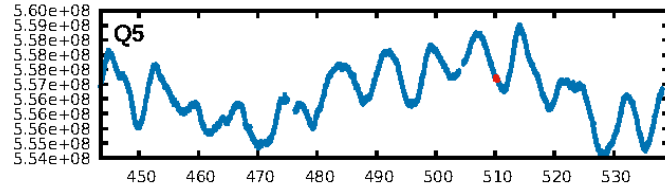
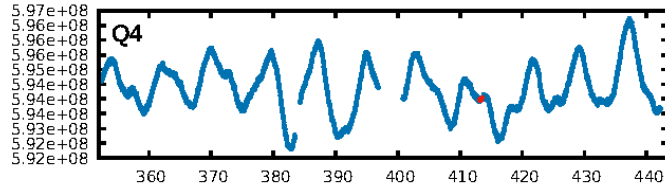
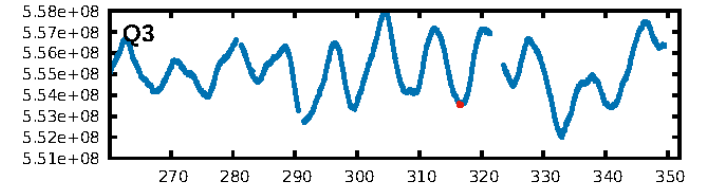
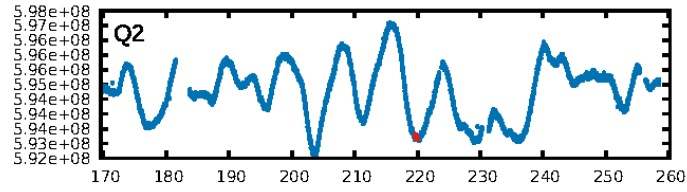
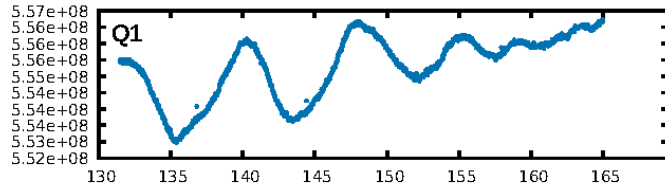
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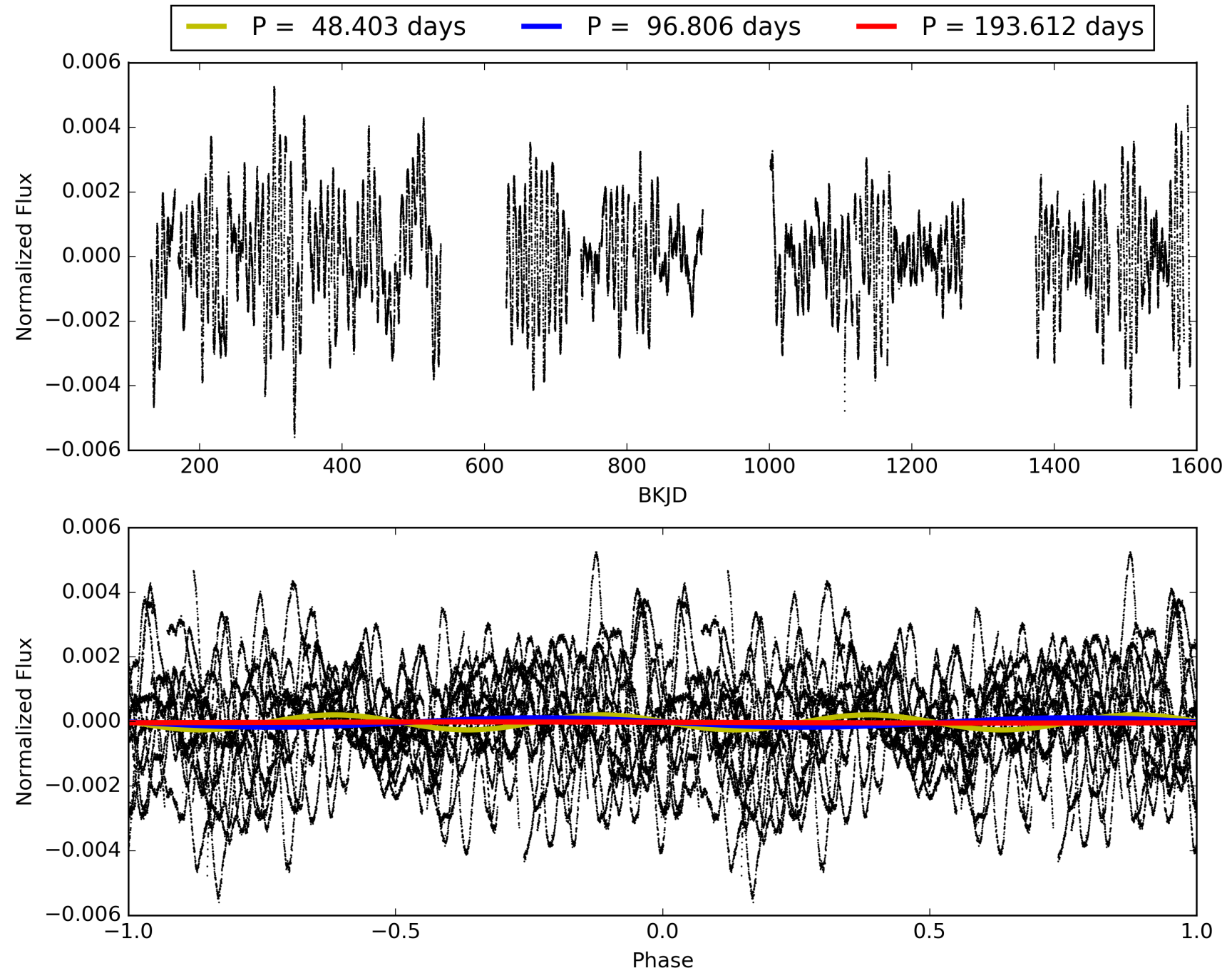
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:41 Z

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

TCE 004851239-07, PDC Light Curves

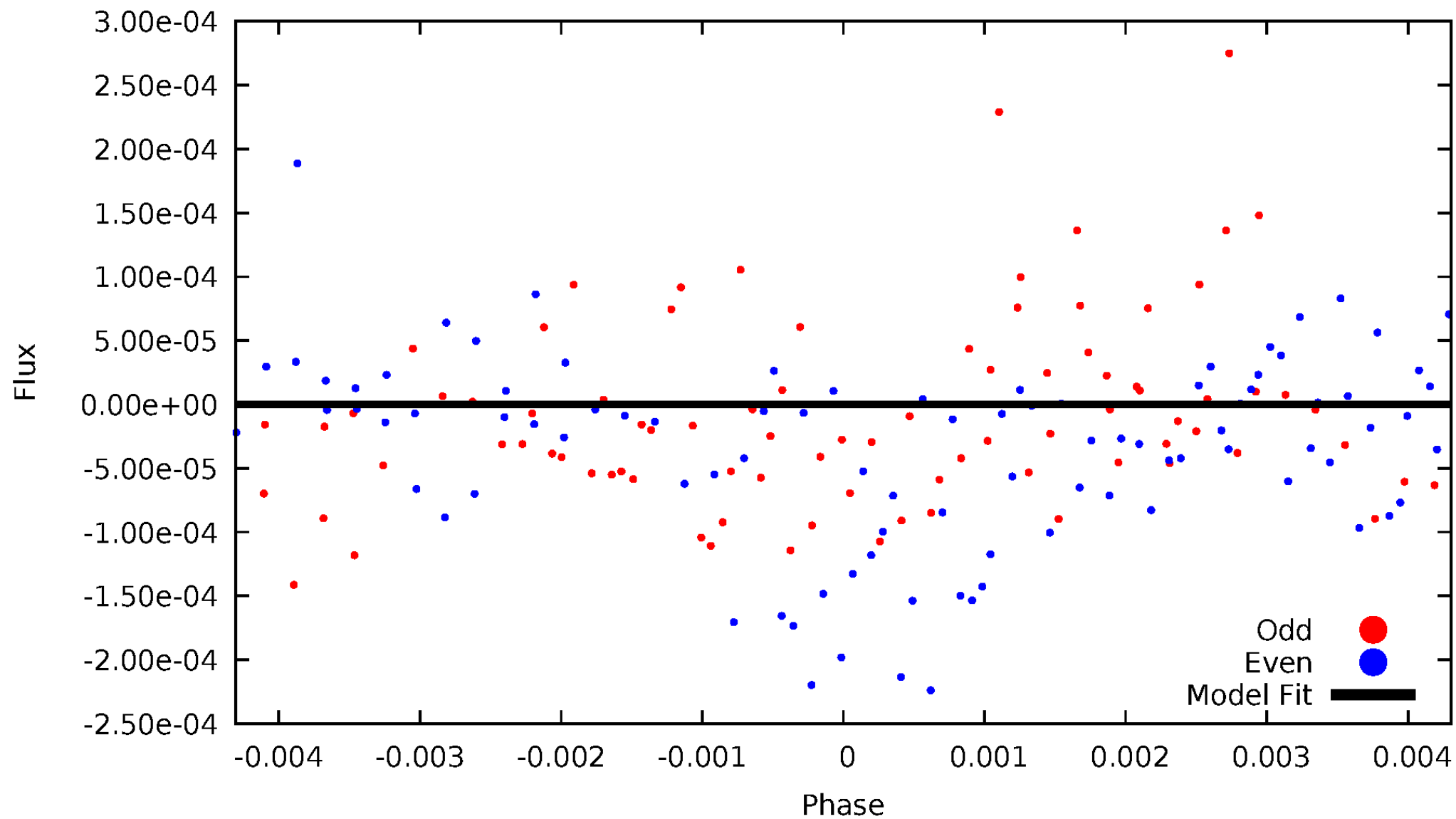


TCE 004851239-07



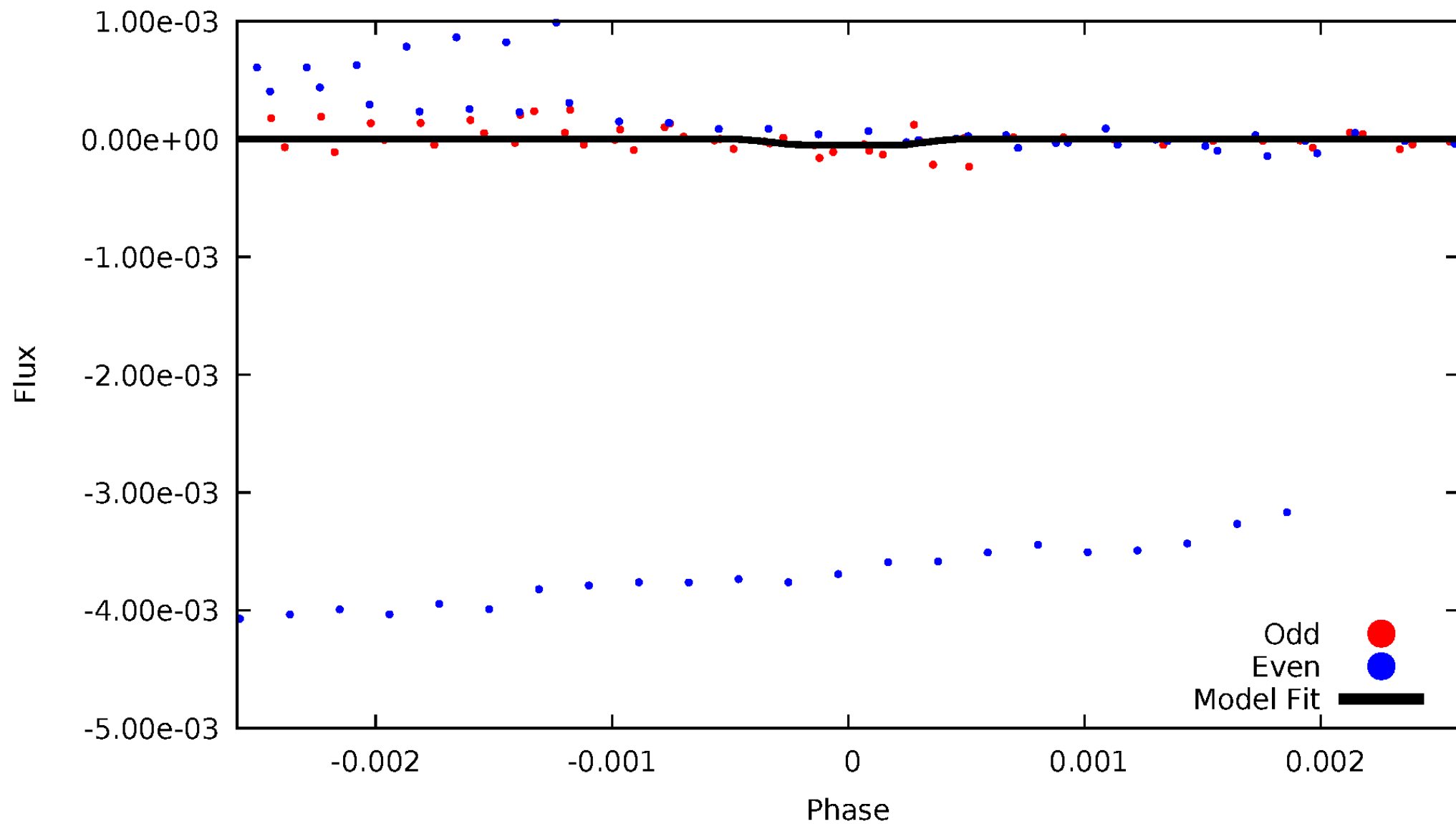
DV Odd/Even

TCE 004851239-07

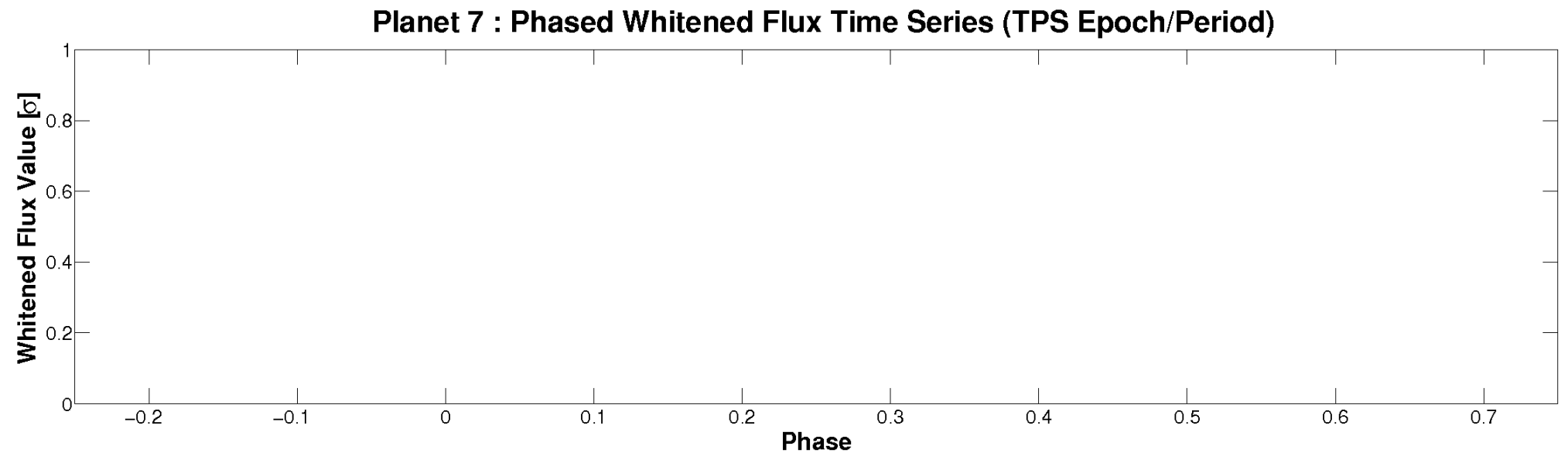
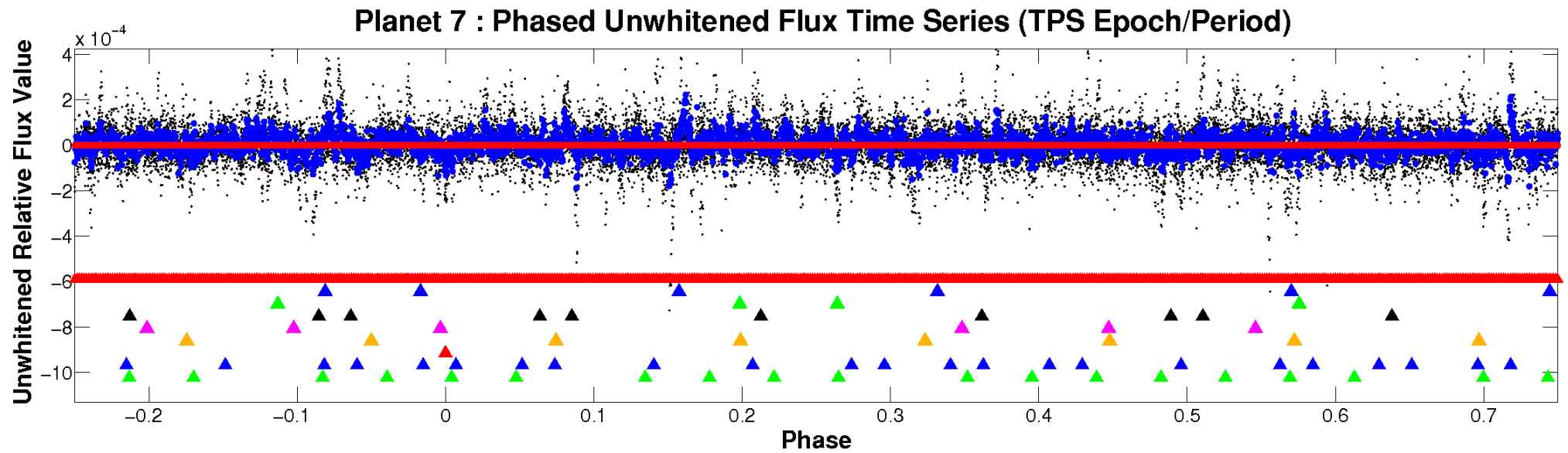


ALT Odd/Even

TCE 004851239-07

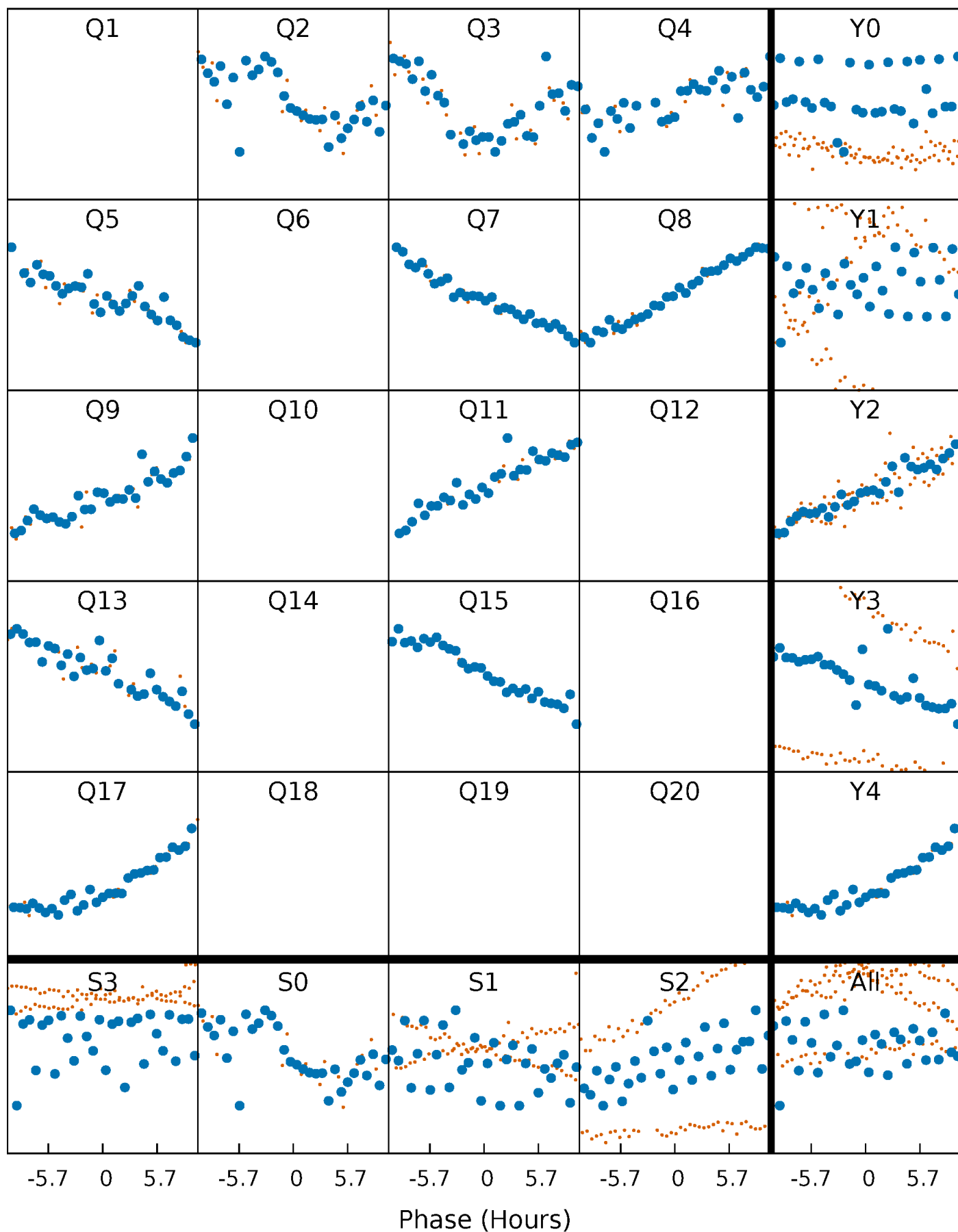


Non-Whitened Vs. Whitened Light Curve



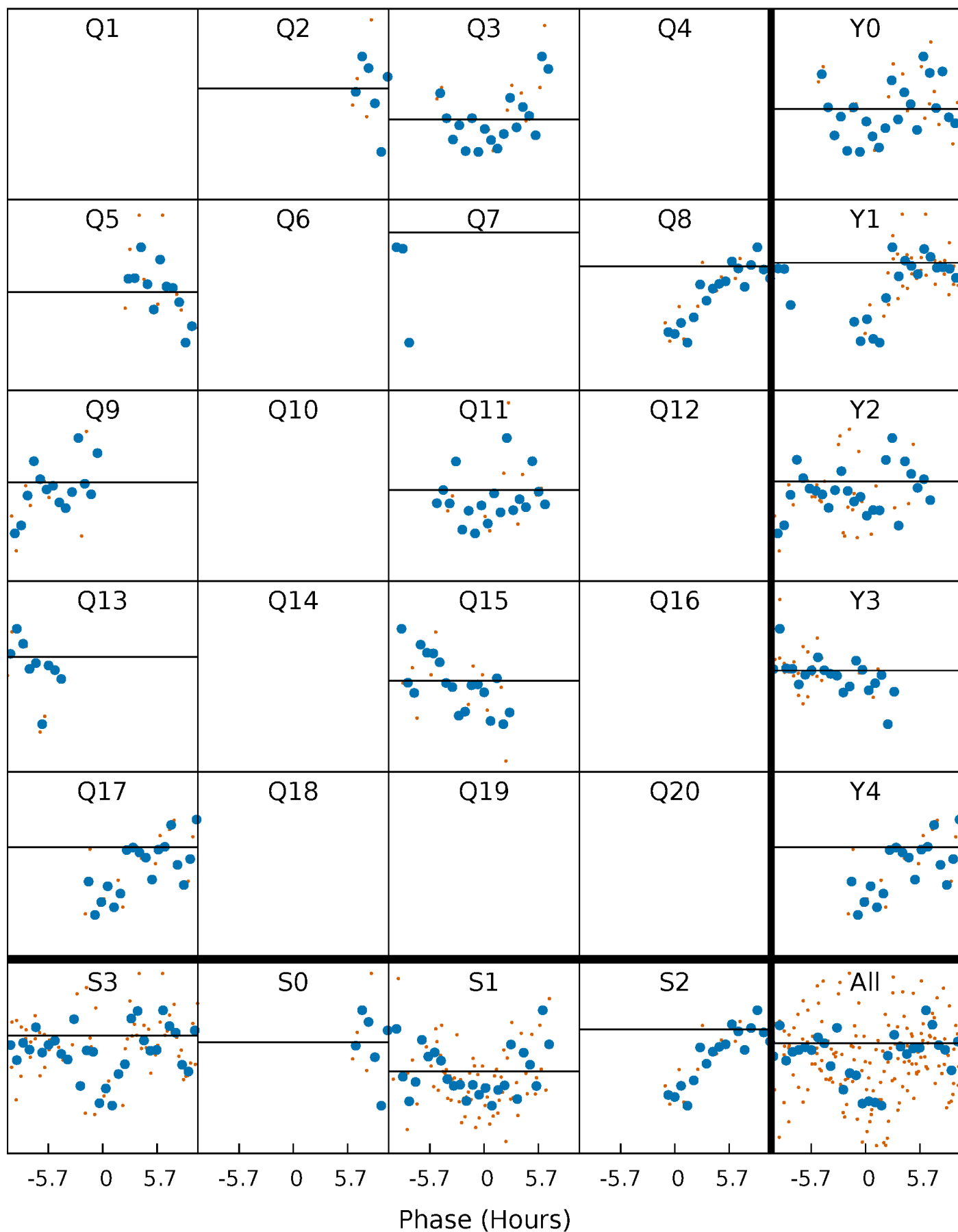
PDC Quarter-Phased Transit Curves

TCE 004851239-07 $P = 96.805841$ Days $T_0 = 219.773756$ (BKJD)



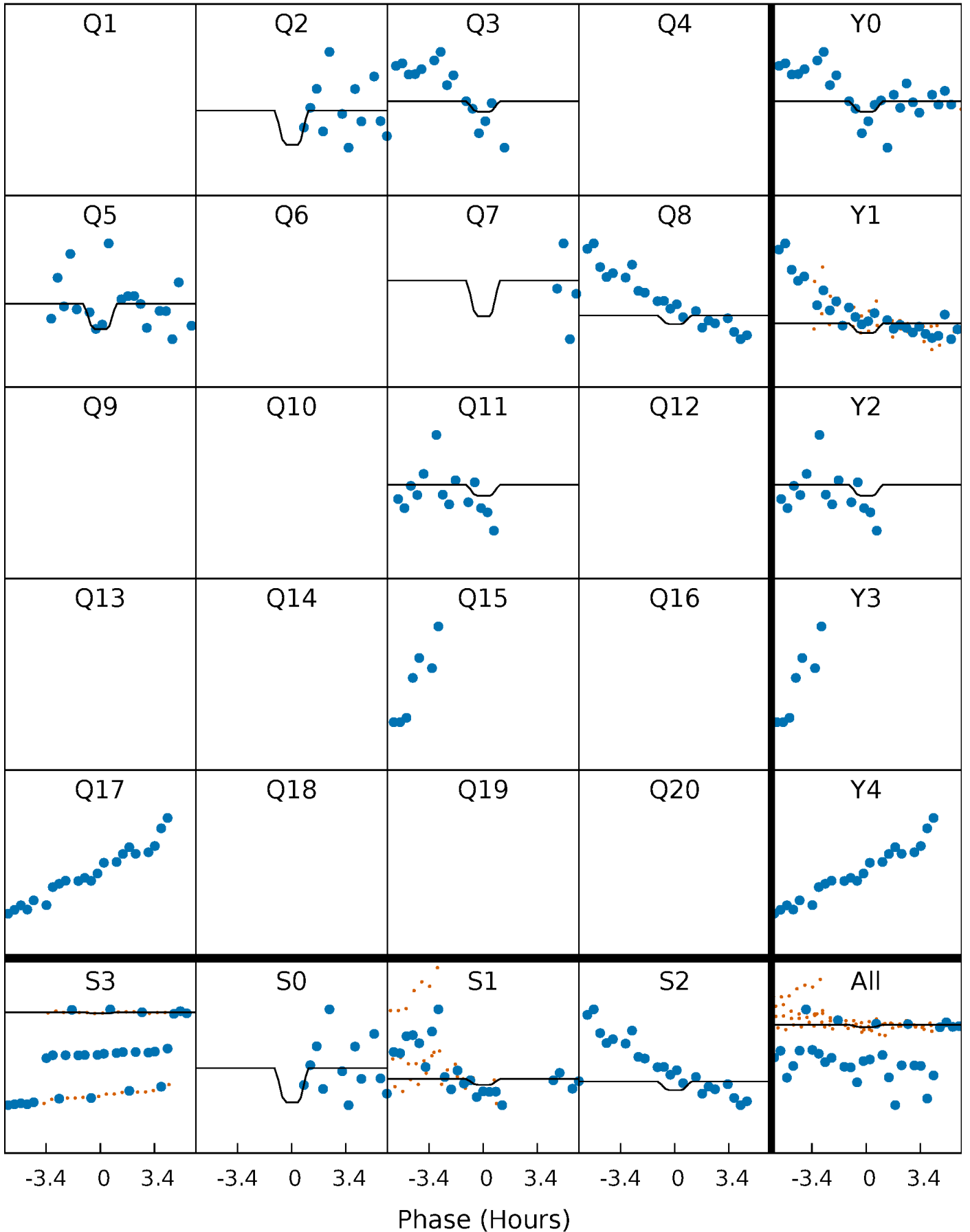
DV Quarter-Phased Transit Curves

TCE 004851239-07 $P = 96.805841$ Days $T_0 = 219.773756$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

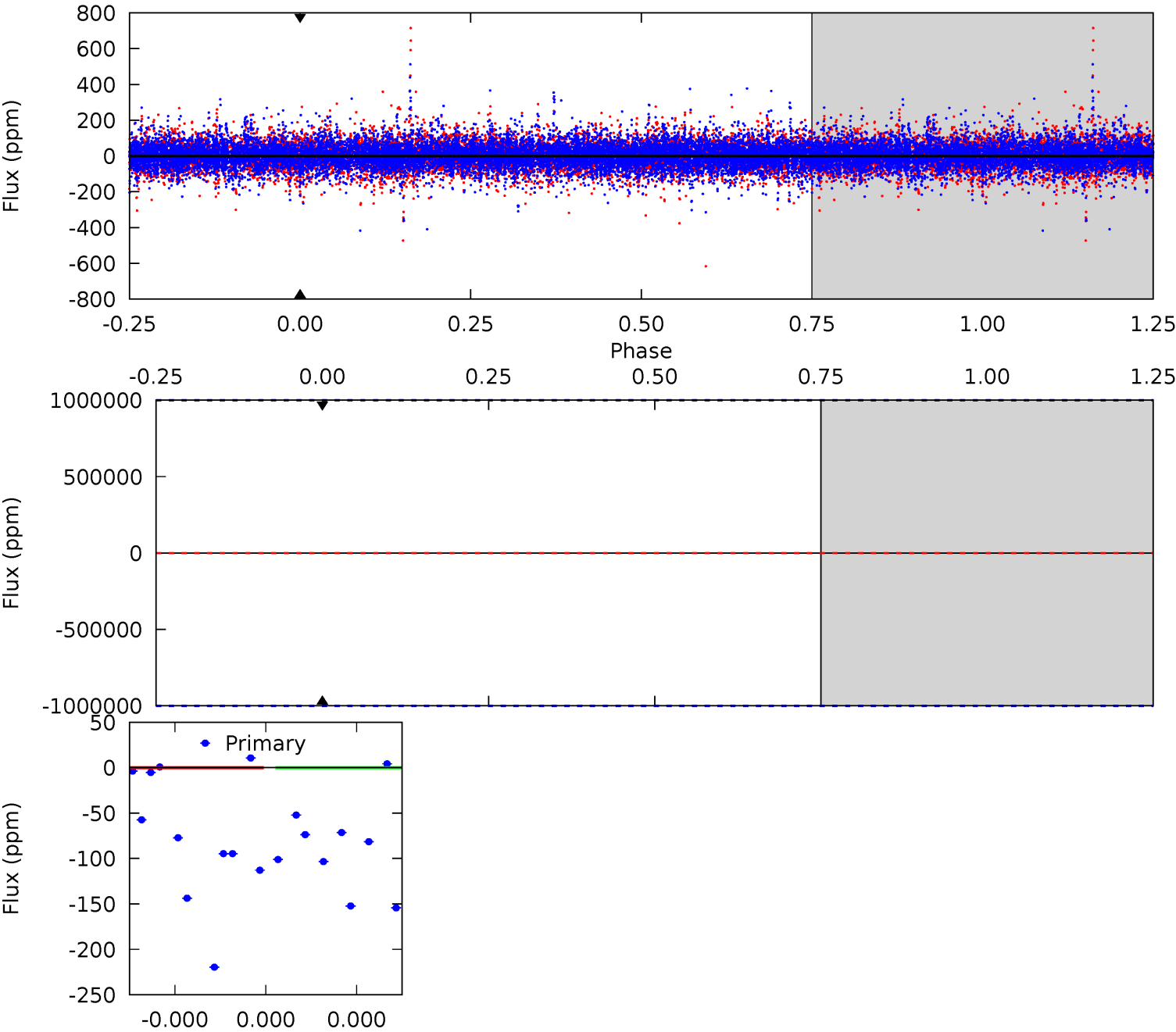
TCE 004851239-07 P= 96.805841 Days $T_0=220.009314$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-07, P = 96.805841 Days, E = 122.967915 Days

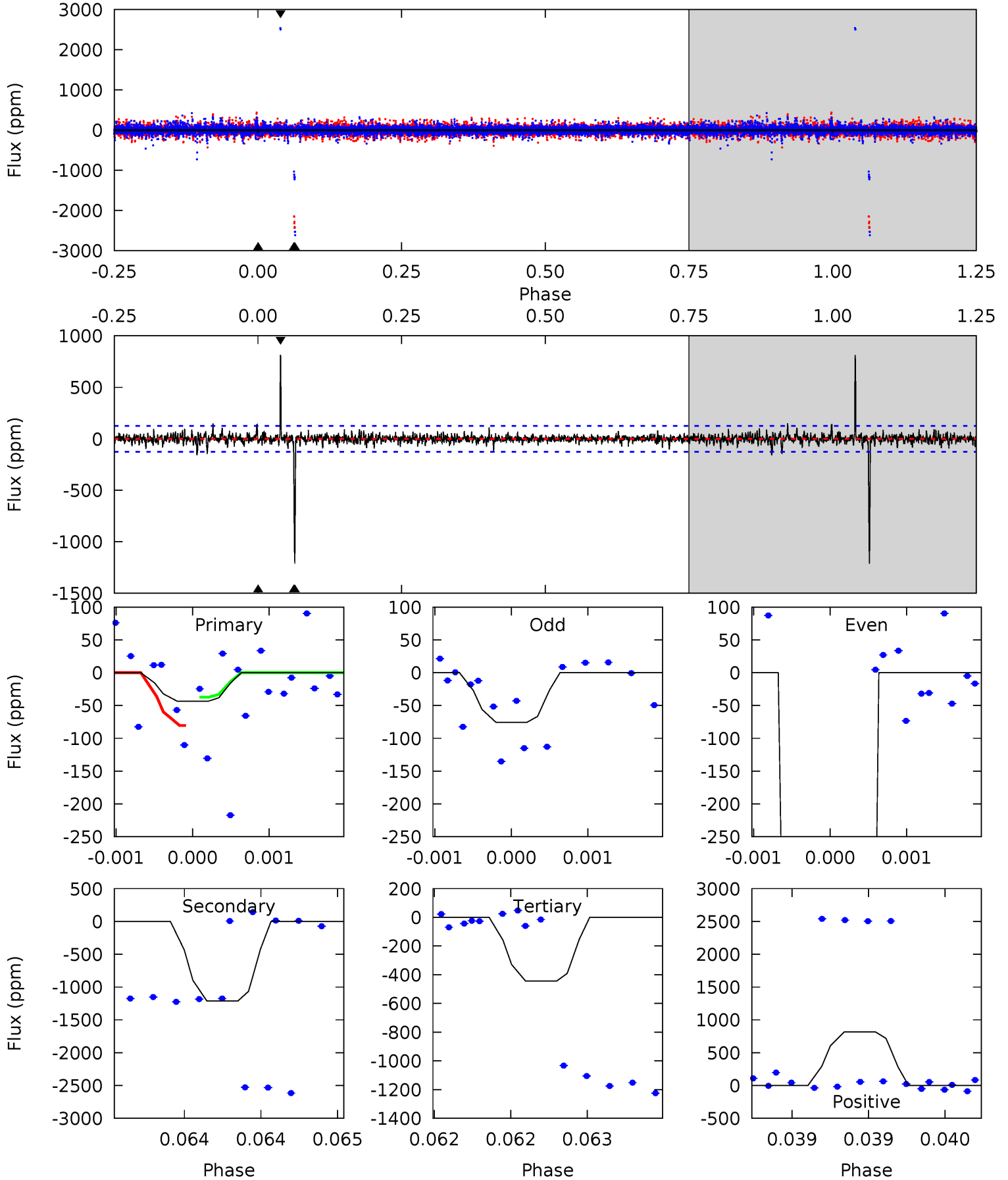
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004851239-07, P = 96.805841 Days, E = 123.203473 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.90	53.1	19.4	35.8	5.51	3.38	1.53	-17.5	-33.9	33.6	17.3	10.2	7.88	0.40	0



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$7.47^{+7.59}_{-5.04}$	542^{+17}_{-12}	5170^{+17250}_{-25974}	$4647^{+296402}_{-277395}$
Alt.	-1210 ± 23	$7.58^{+7.57}_{-5.25}$	543^{+18}_{-12}	4291^{+3198}_{-921}	2021^{+20014}_{-1520}

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 $A_{obs} \gg 1.0$

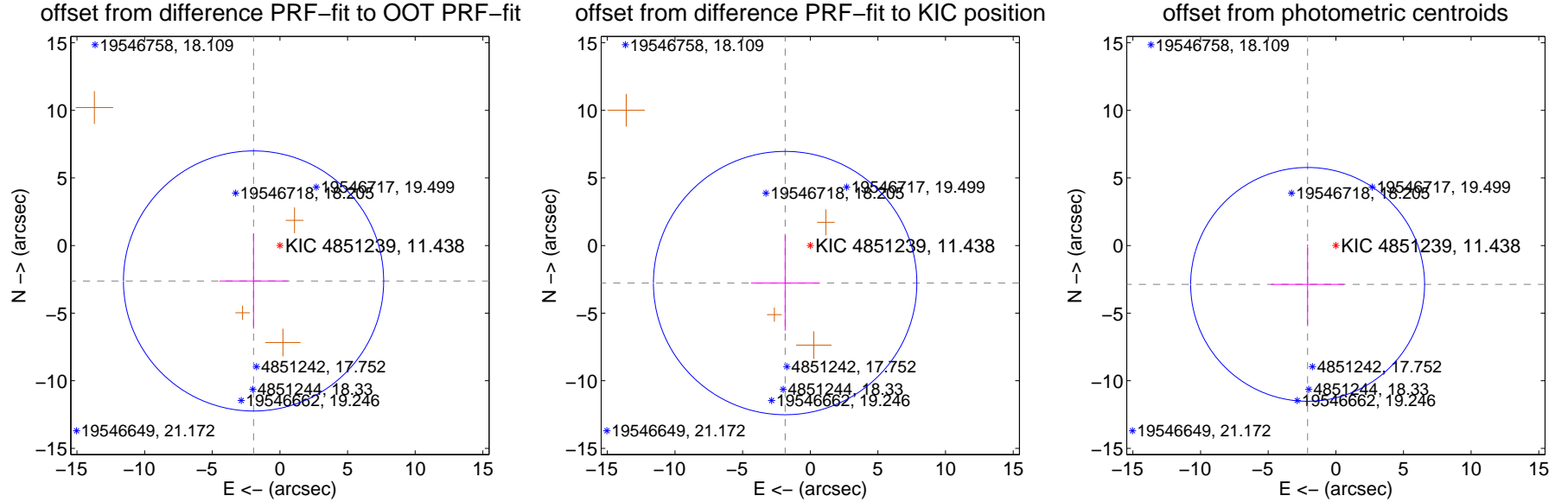
DV Centroid Data

Supplemental centroid analysis for 004851239-07. **Kepler magnitude: 11.44.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

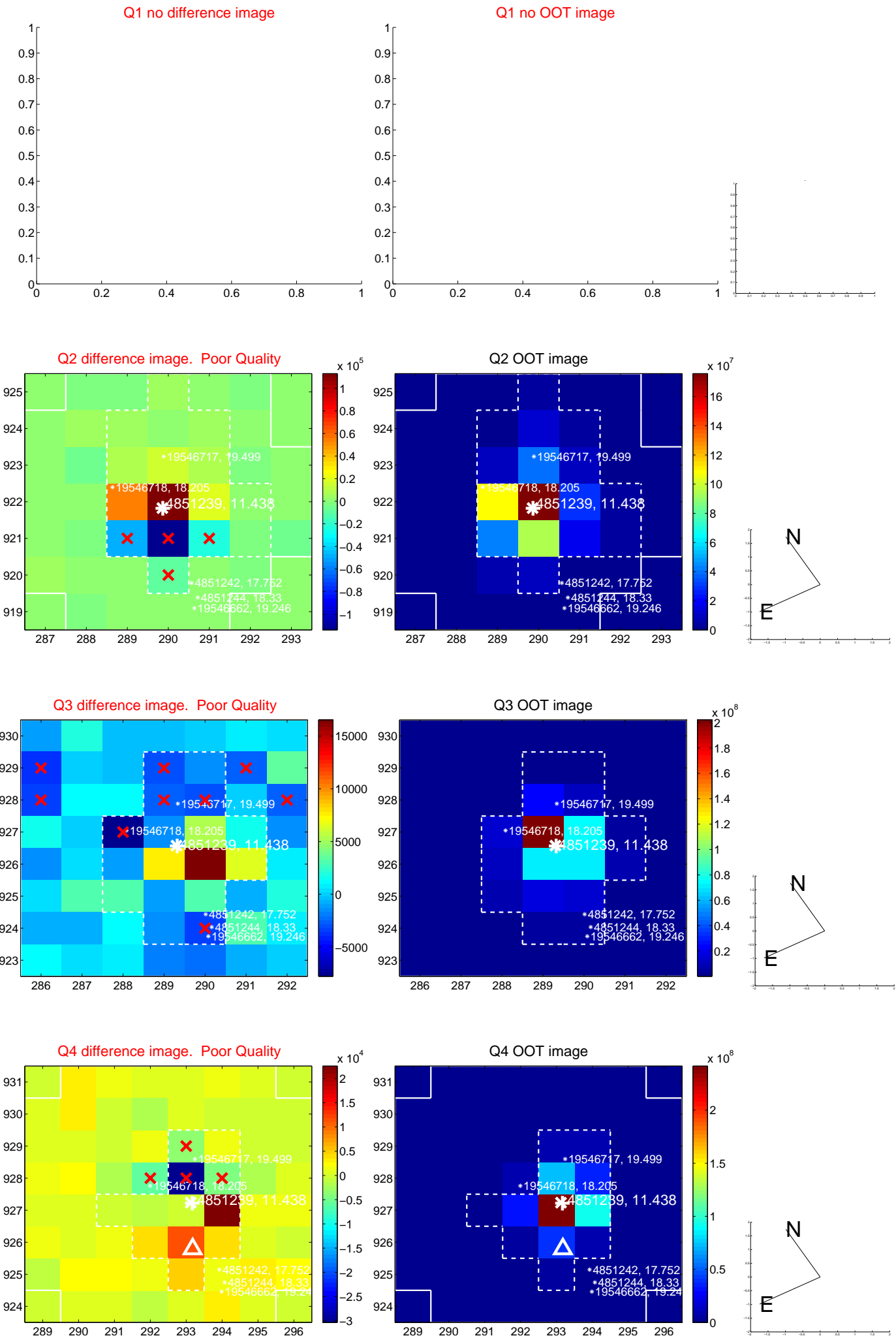
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.265 ± 3.205	1.02	1.949 ± 2.526	-2.620 ± 3.526
PRF-fit source offset from KIC position	3.339 ± 3.245	1.03	1.857 ± 2.518	-2.775 ± 3.522
photometric centroid source offset	3.55 ± 2.88	1.23	2.09 ± 2.71	-2.87 ± 2.97

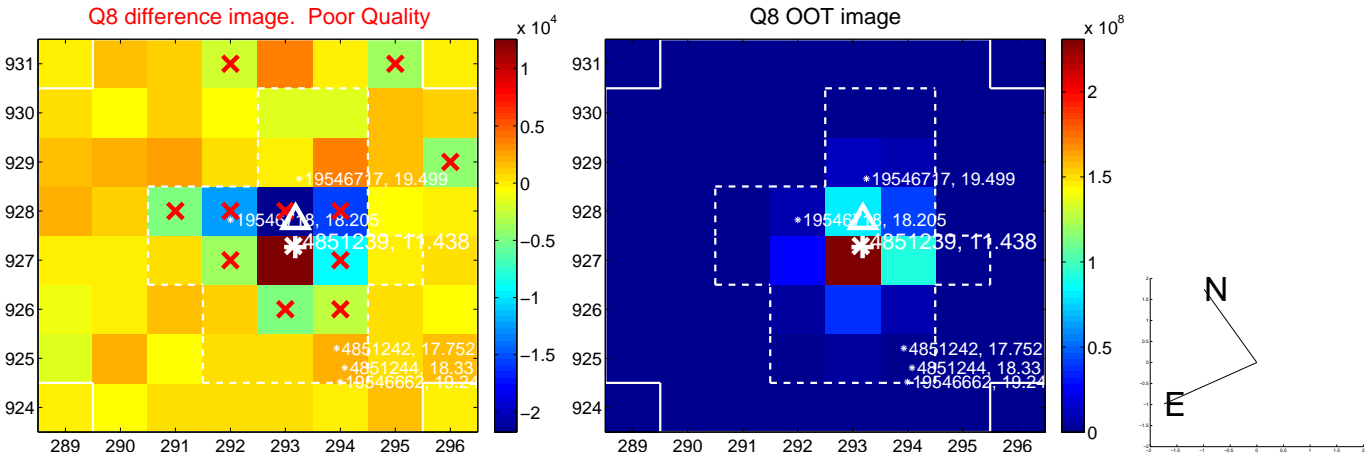
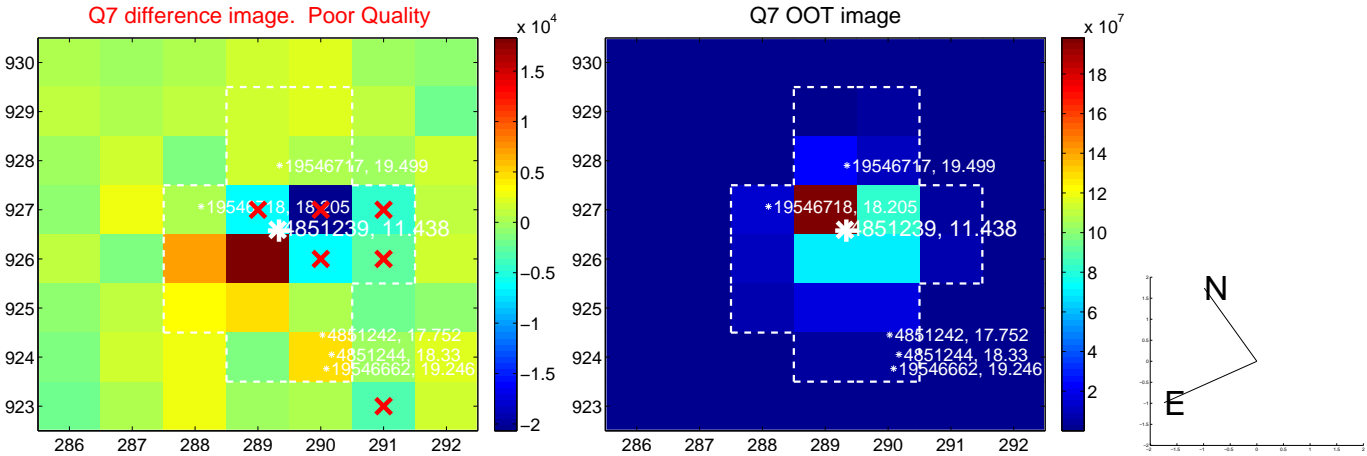
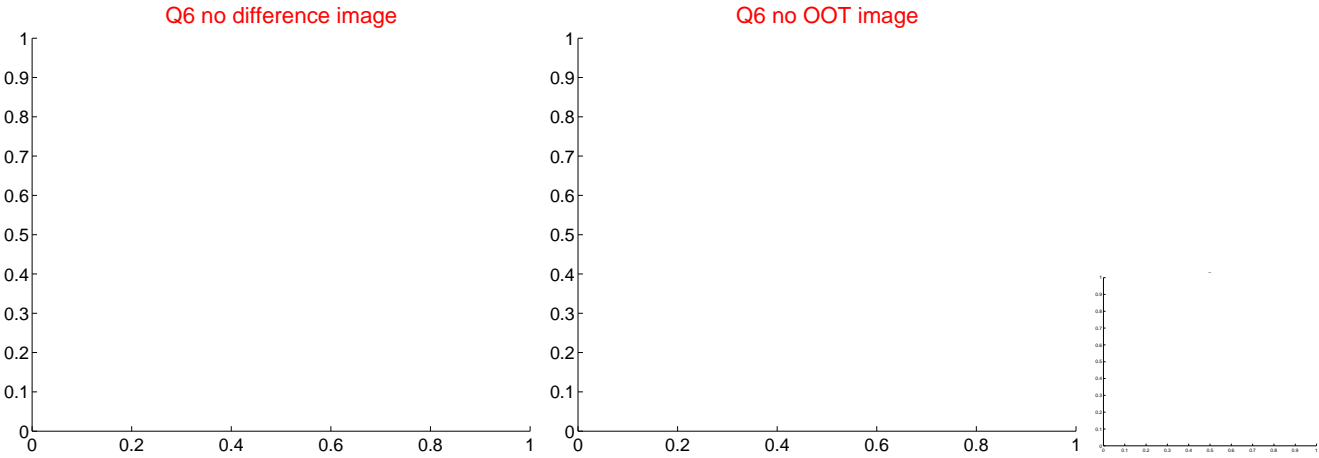
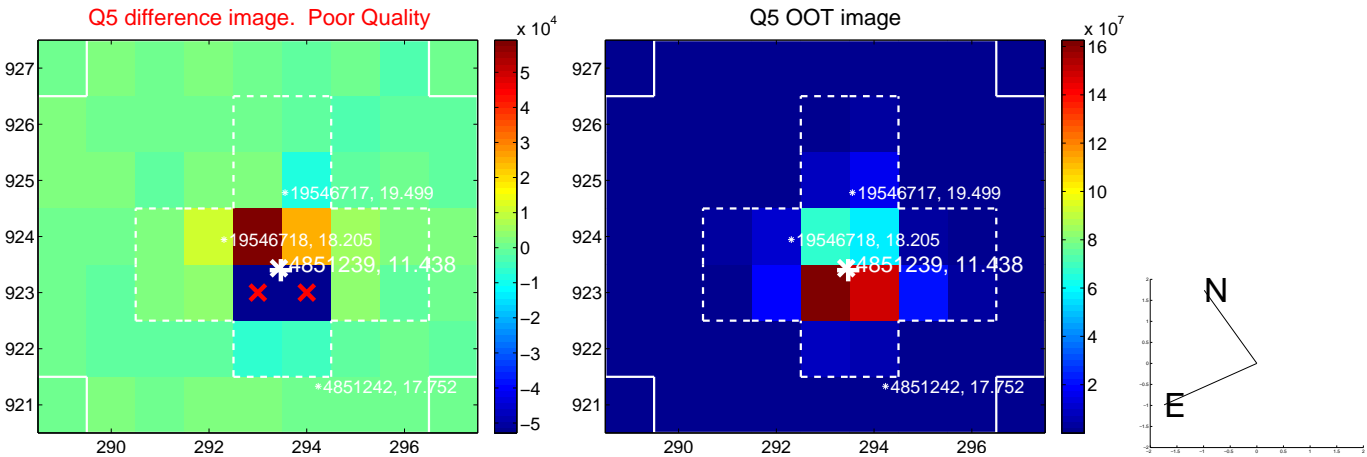


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

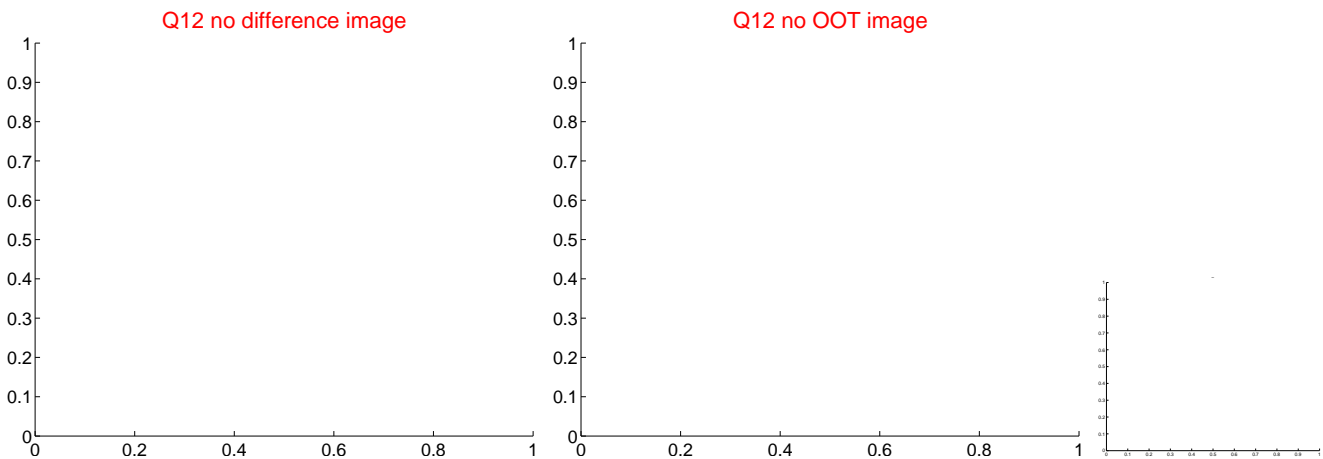
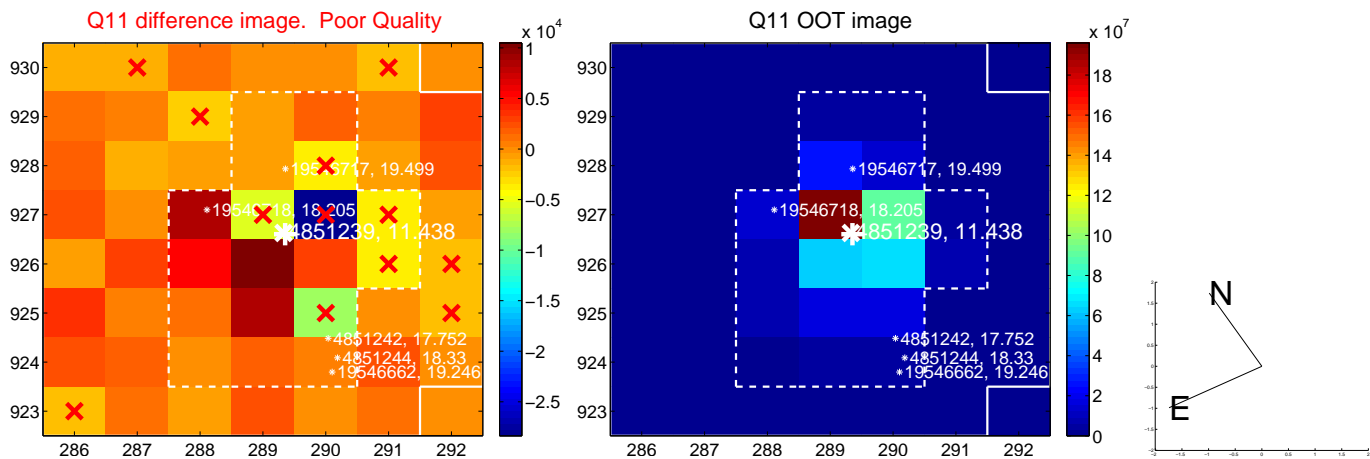
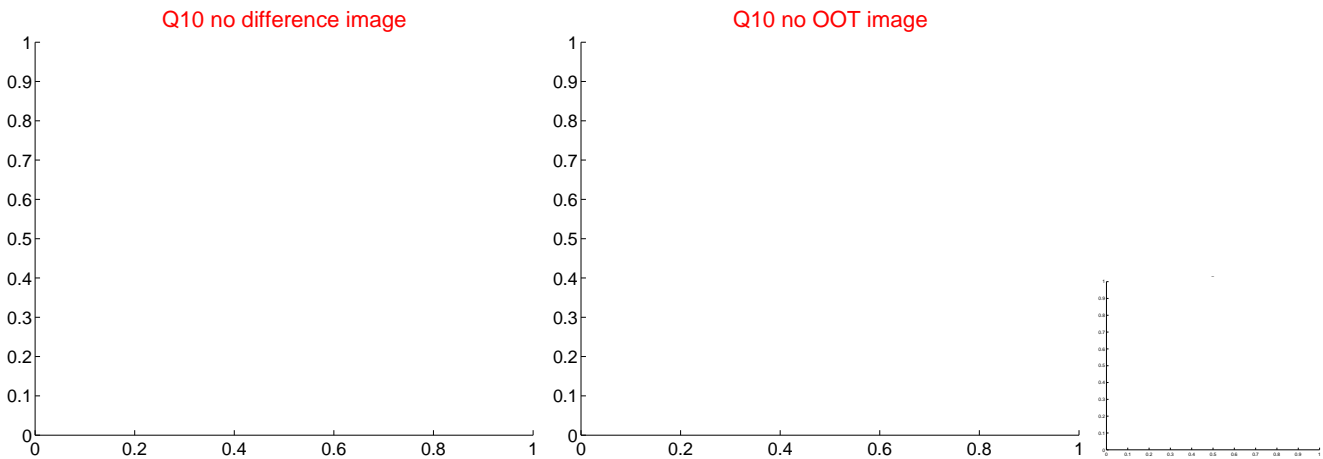
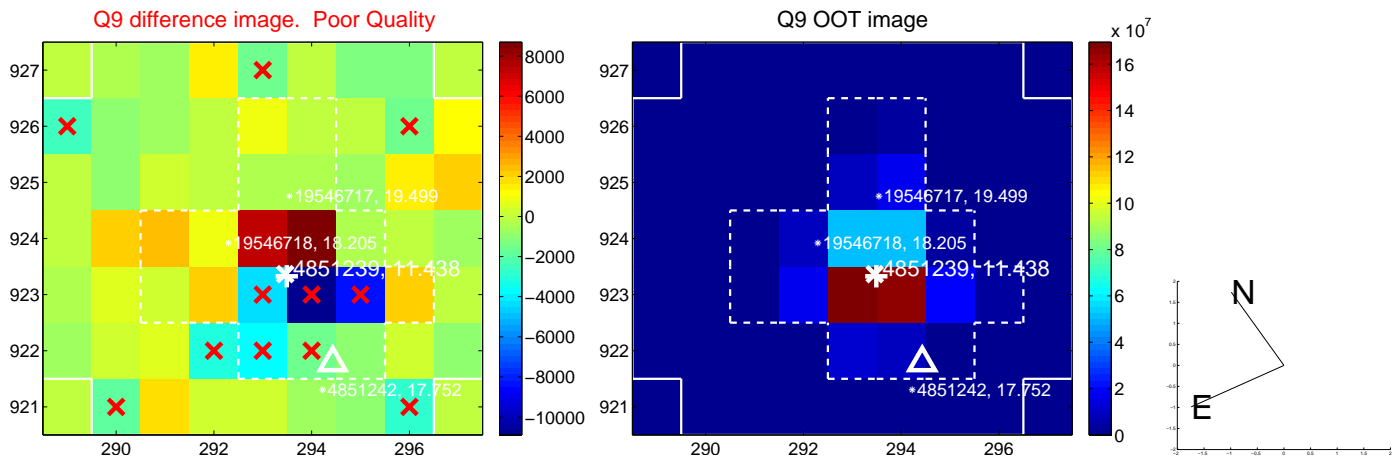
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

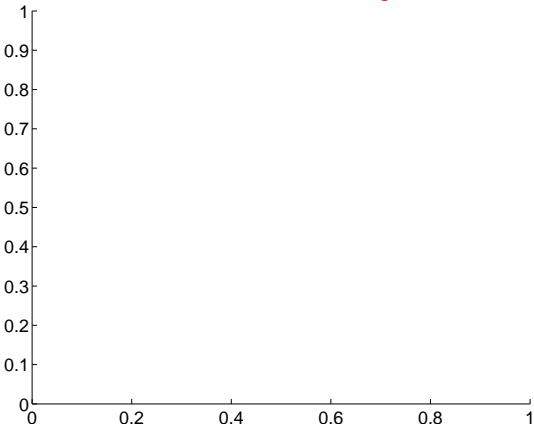


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

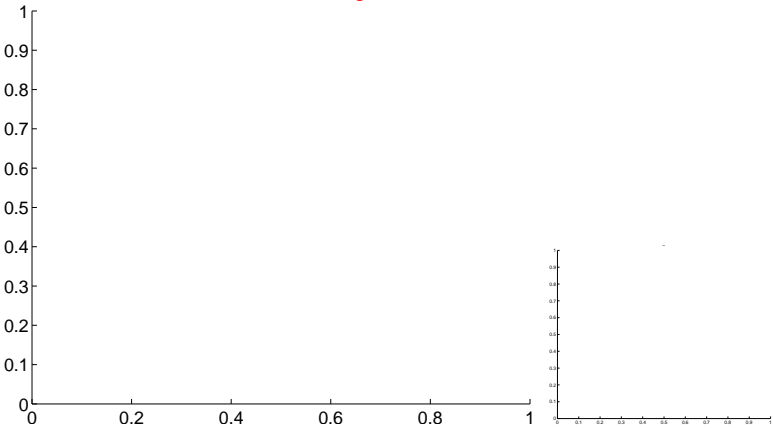


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



Q13 no OOT image



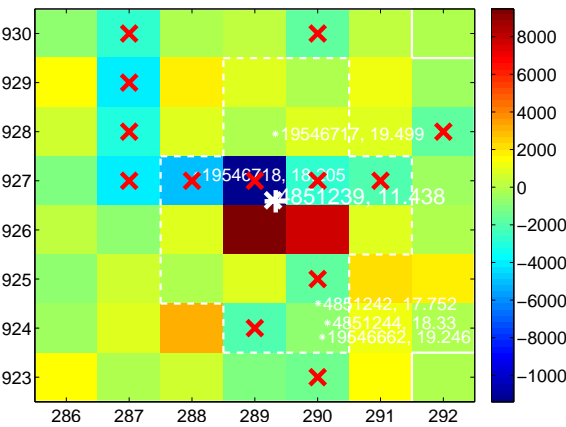
Q14 no difference image



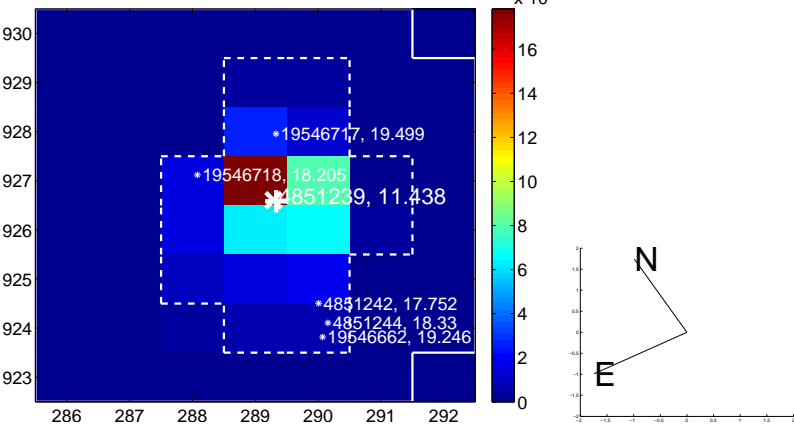
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



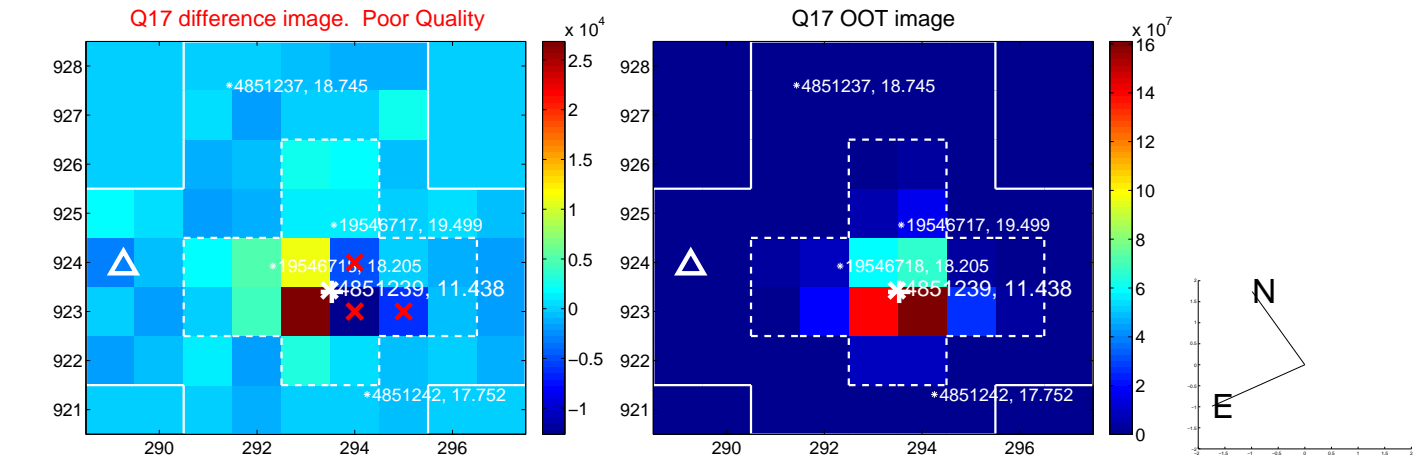
Q16 no difference image



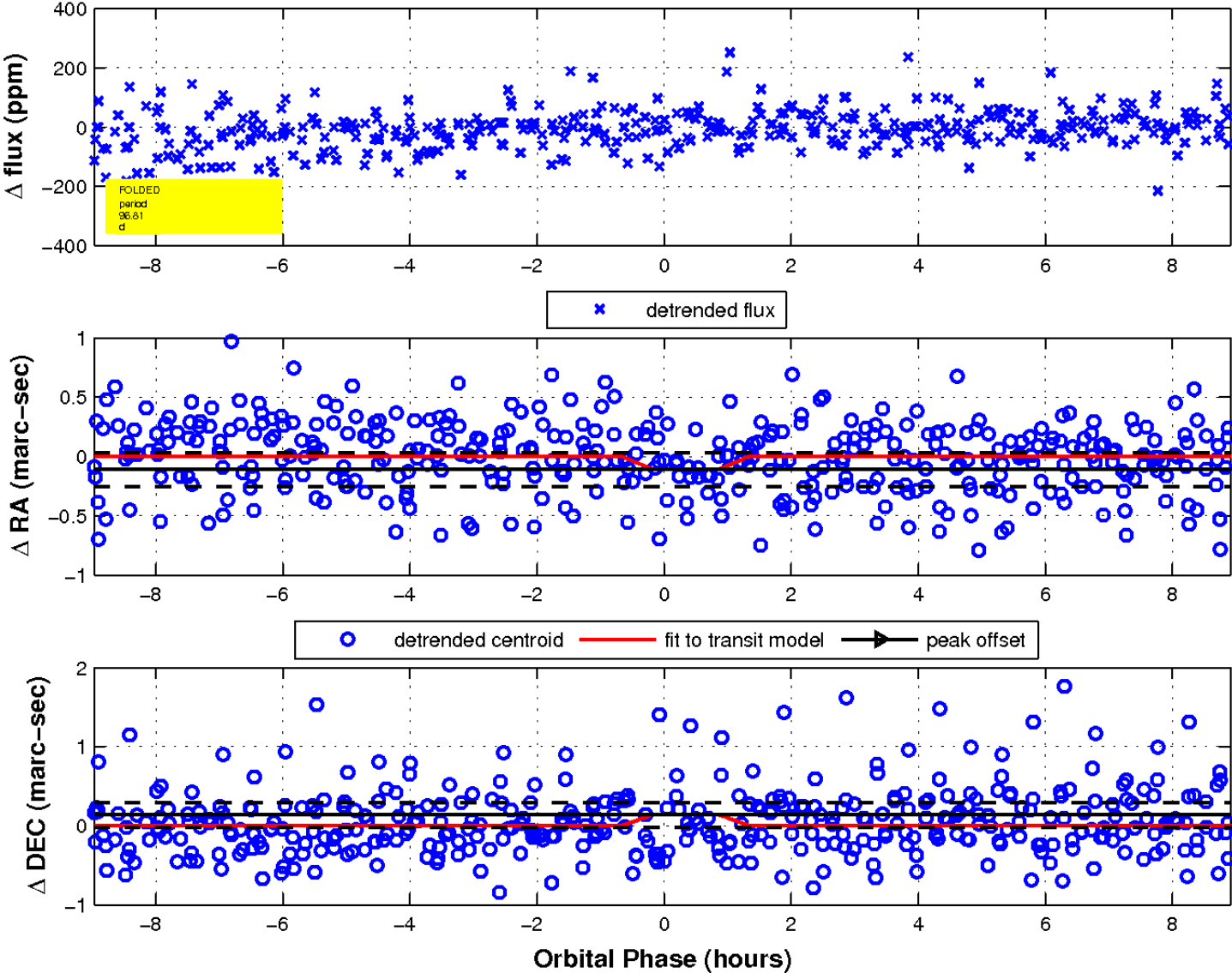
Q16 no OOT image



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

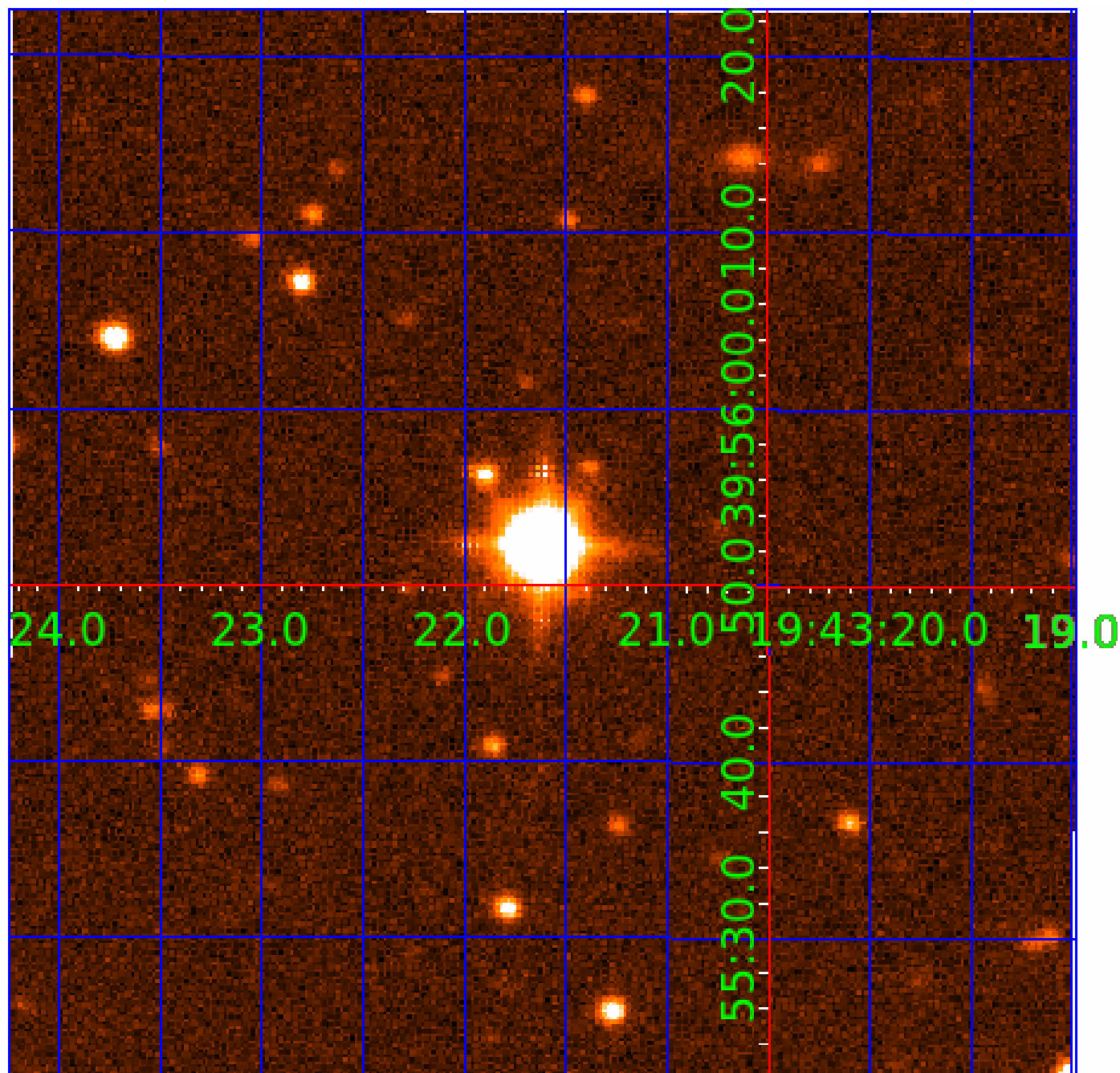


fluxWeightedCentroids, Planet 7 of 9



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-08

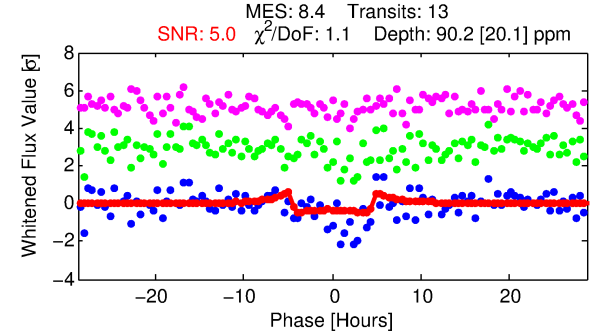
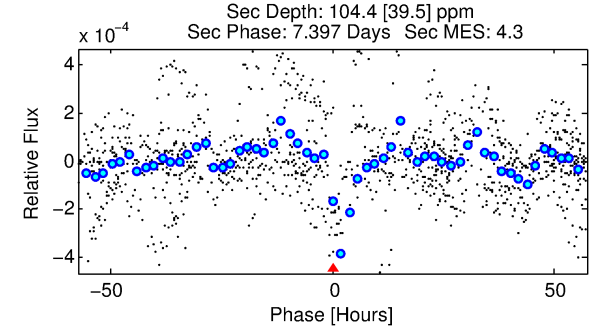
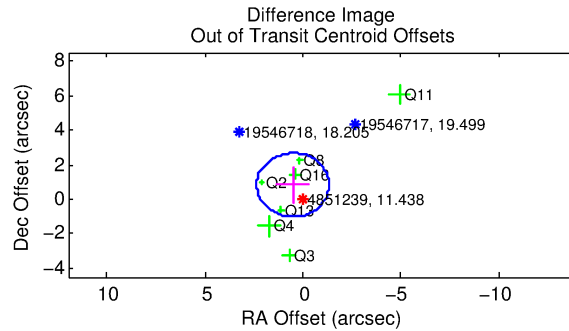
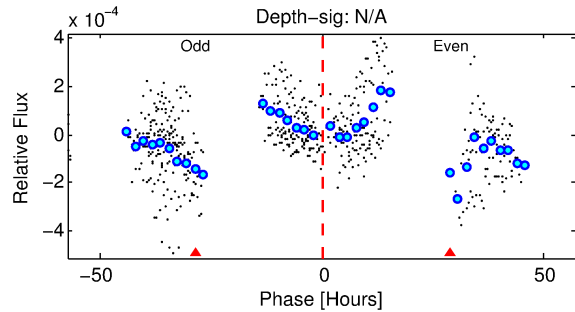
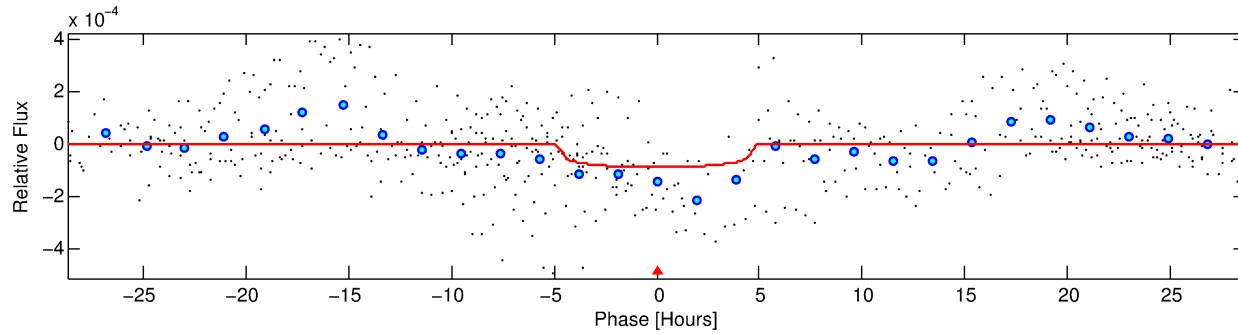
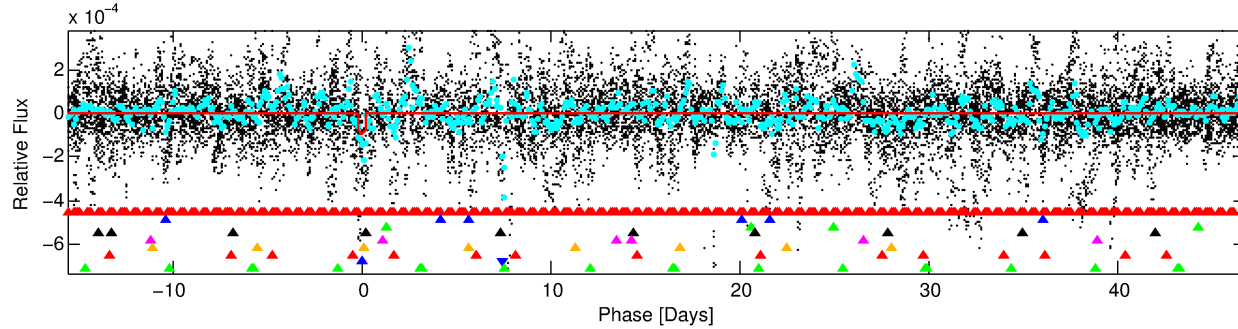
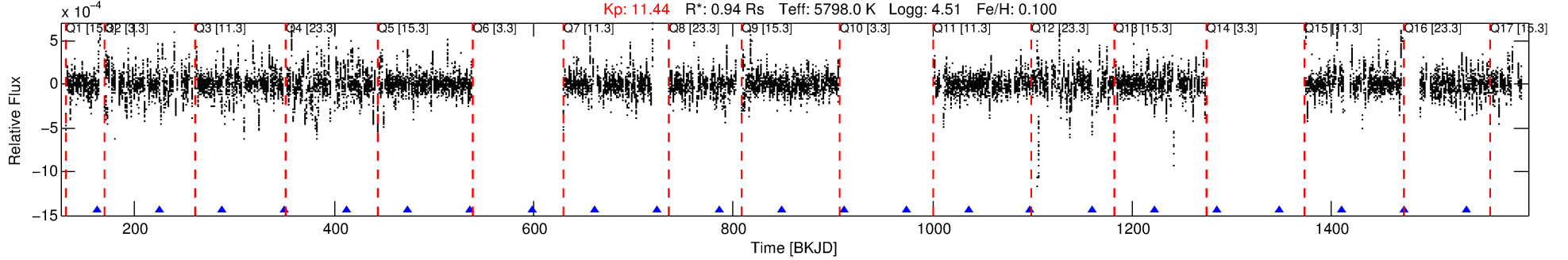
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 8 of 9 Period: 62.385 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 62.38524 [0.00101] d
Epoch = 162.3867 [0.0127] BKJD
Rp/R* = 0.0097 [0.0039]
a/R* = 30.08 [51.32]
b = 0.81 [0.73]
Seff = 9.22 [1.73]
Teq = 444 [21] K
Rp = 1.00 [0.42] Re
a = 0.3118 [0.0360] AU
Ag = 5616.05 [5065.81] [1.11σ]
Teff = 5948 [1318] K [4.18σ]

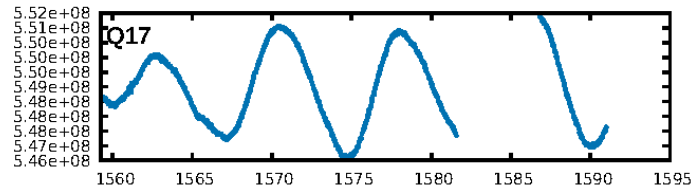
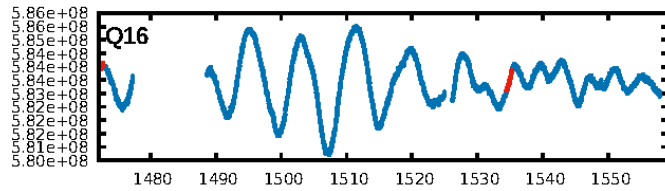
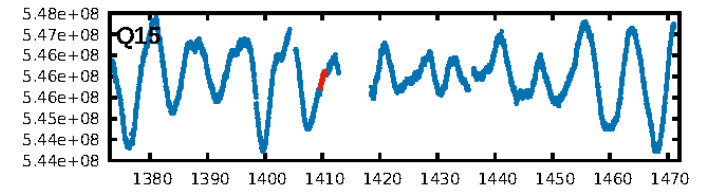
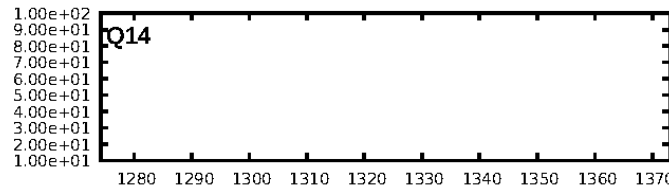
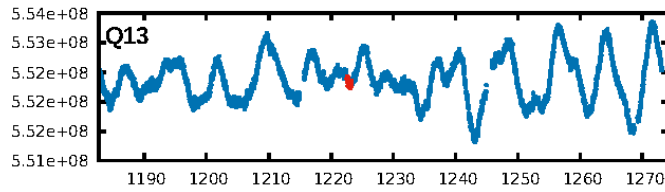
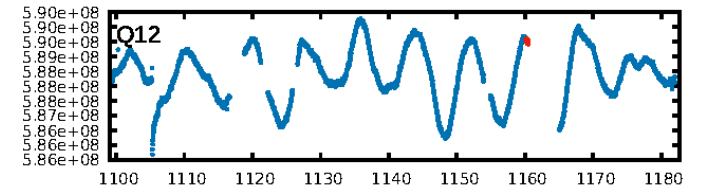
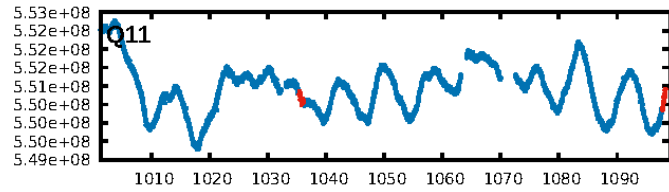
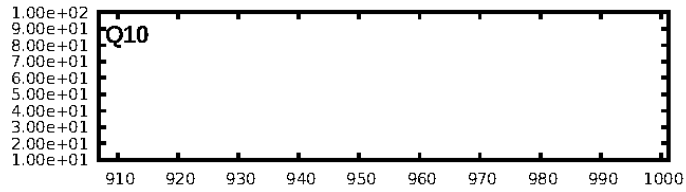
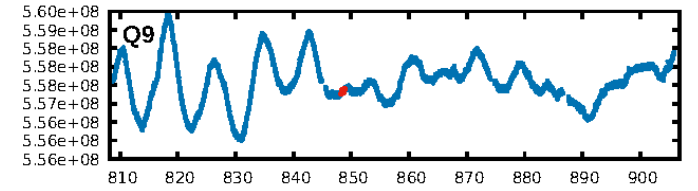
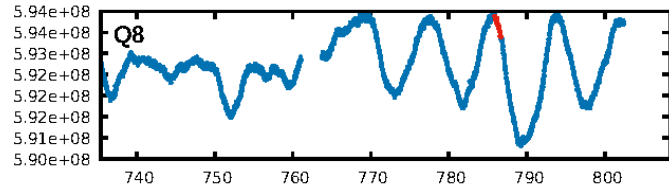
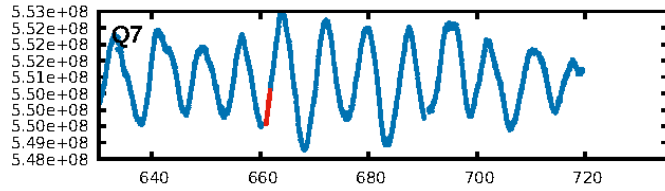
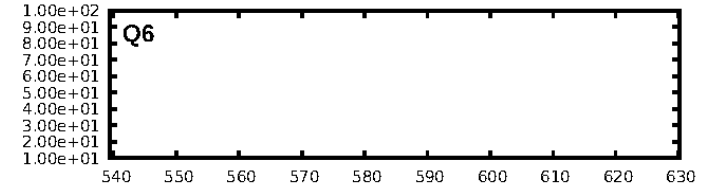
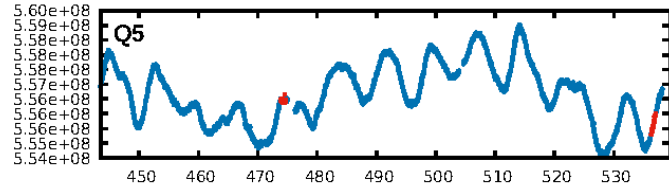
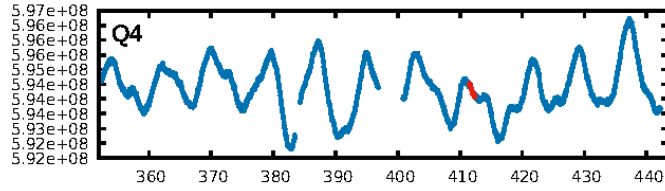
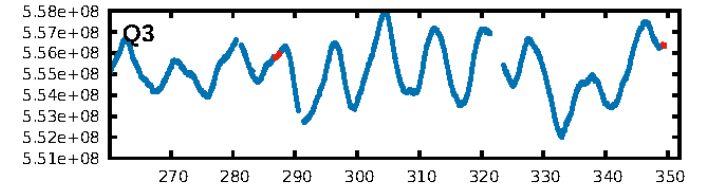
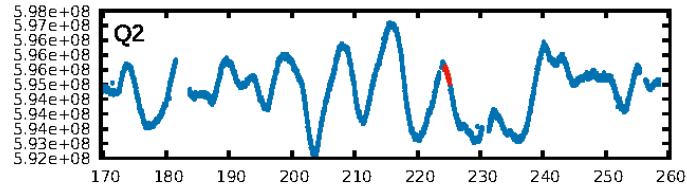
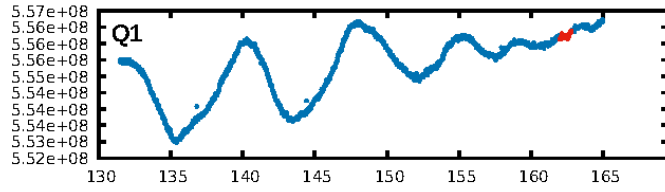
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [132.05σ]
LongPeriod-sig: 100.0% [33.56σ]
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.53e-11
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 0.08282
Centroid-sig: 2.1%
Centroid-so: 1.582 arcsec [1.89σ]
OotOffset-rm: 0.974 arcsec [1.58σ]
KicOffset-rm: 0.877 arcsec [1.62σ]
OotOffset-st: 1/2/3/1 [7]
KicOffset-st: 1/2/3/1 [7]
DiffImageQuality-fgm: 0.43 [3/7]
DiffImageOverlap-fno: 0.00 [0/10]

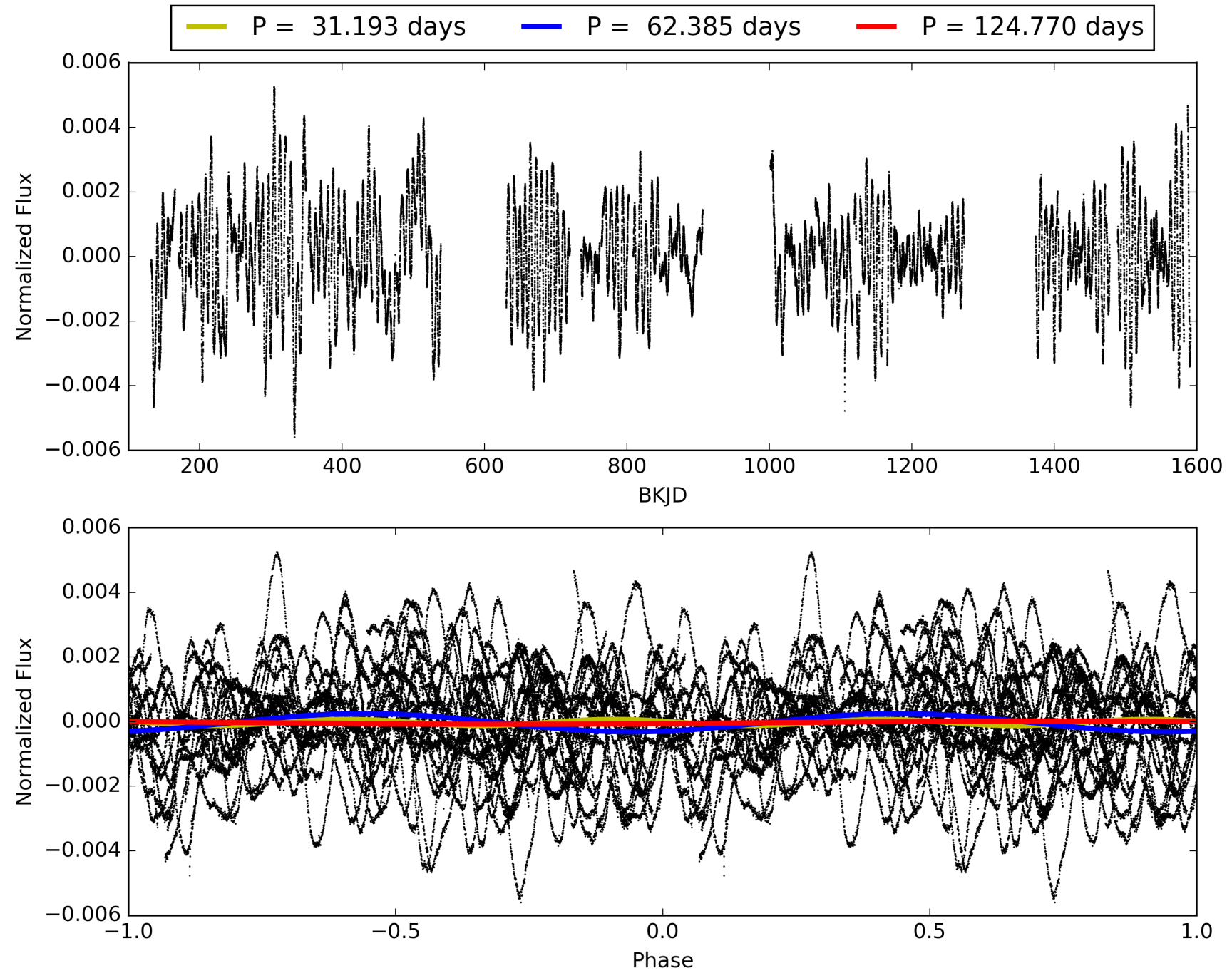
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:46 Z

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

TCE 004851239-08, PDC Light Curves

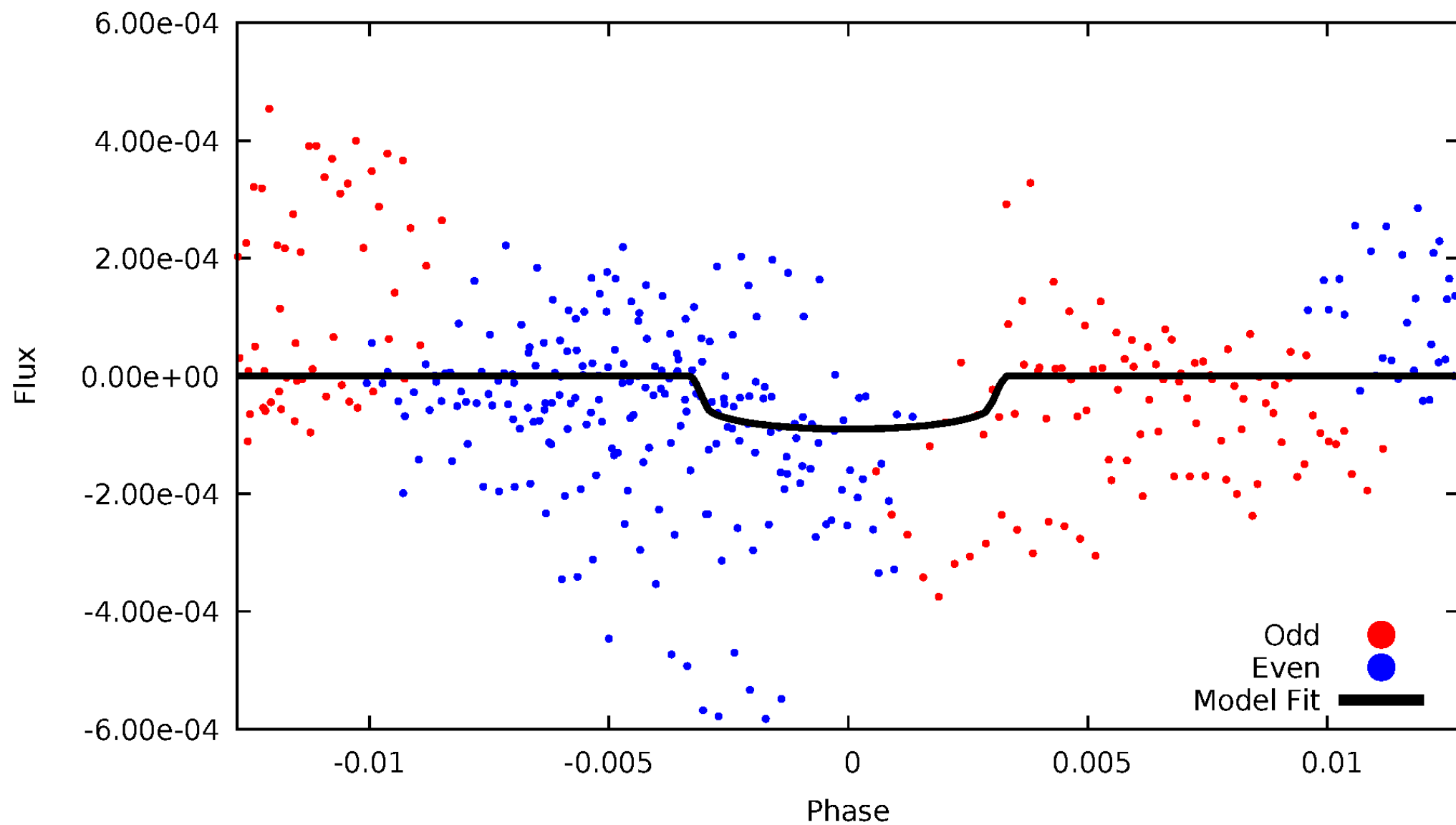


TCE 004851239-08



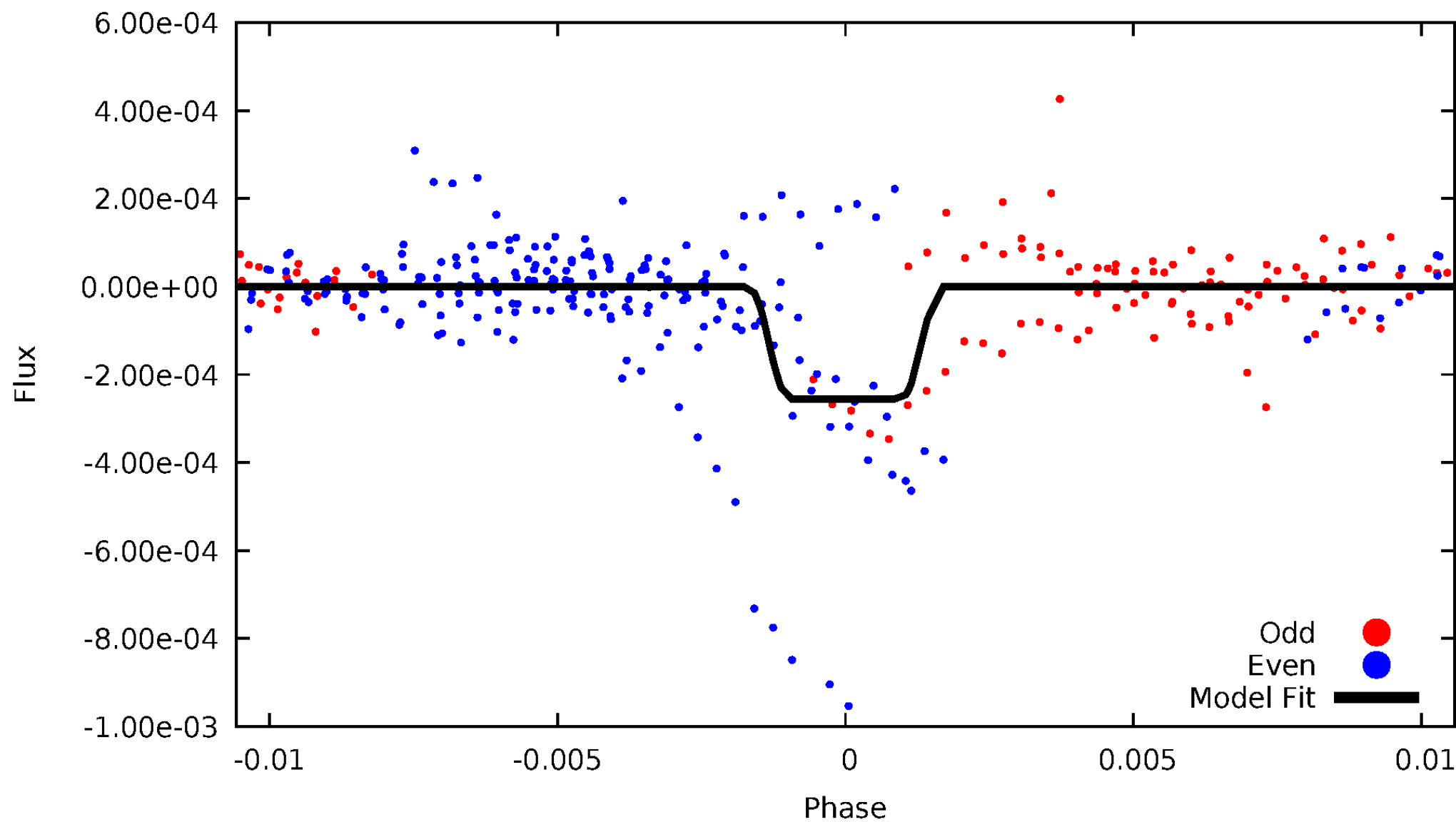
DV Odd/Even

TCE 004851239-08



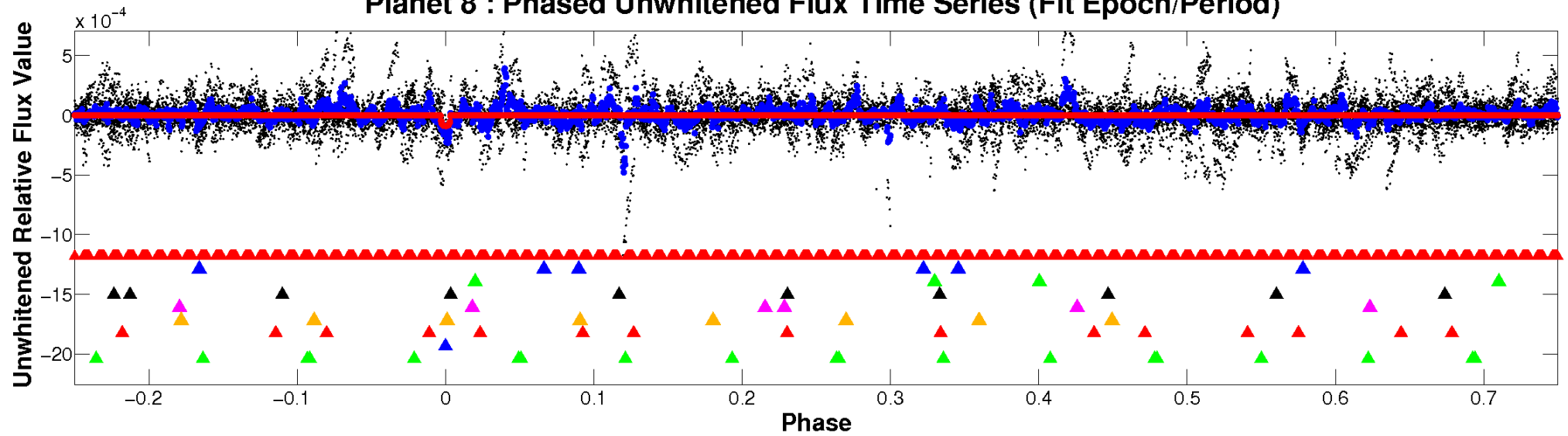
ALT Odd/Even

TCE 004851239-08

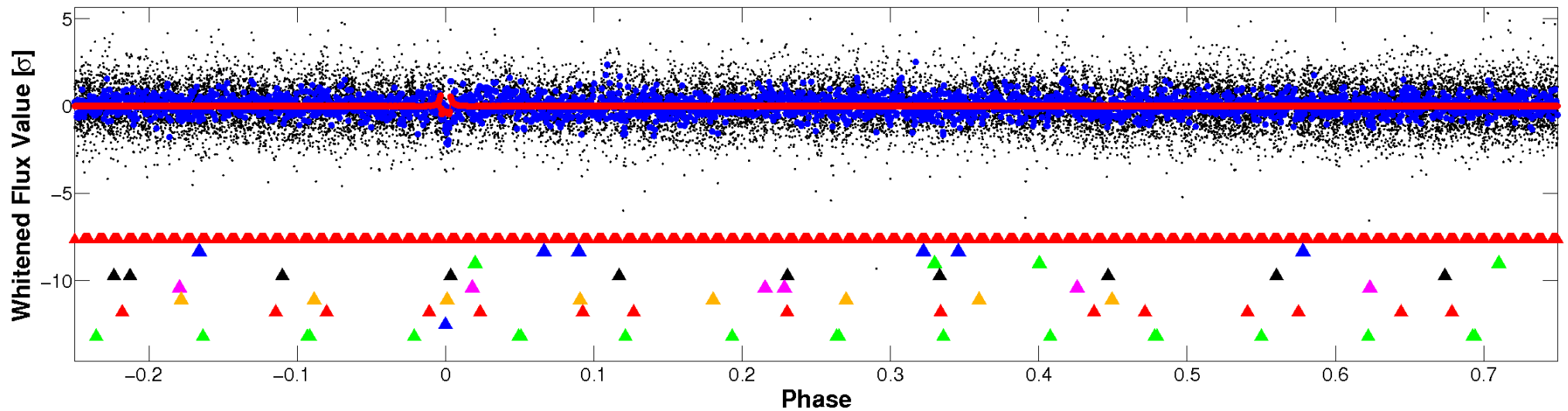


Non-Whitened Vs. Whitened Light Curve

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

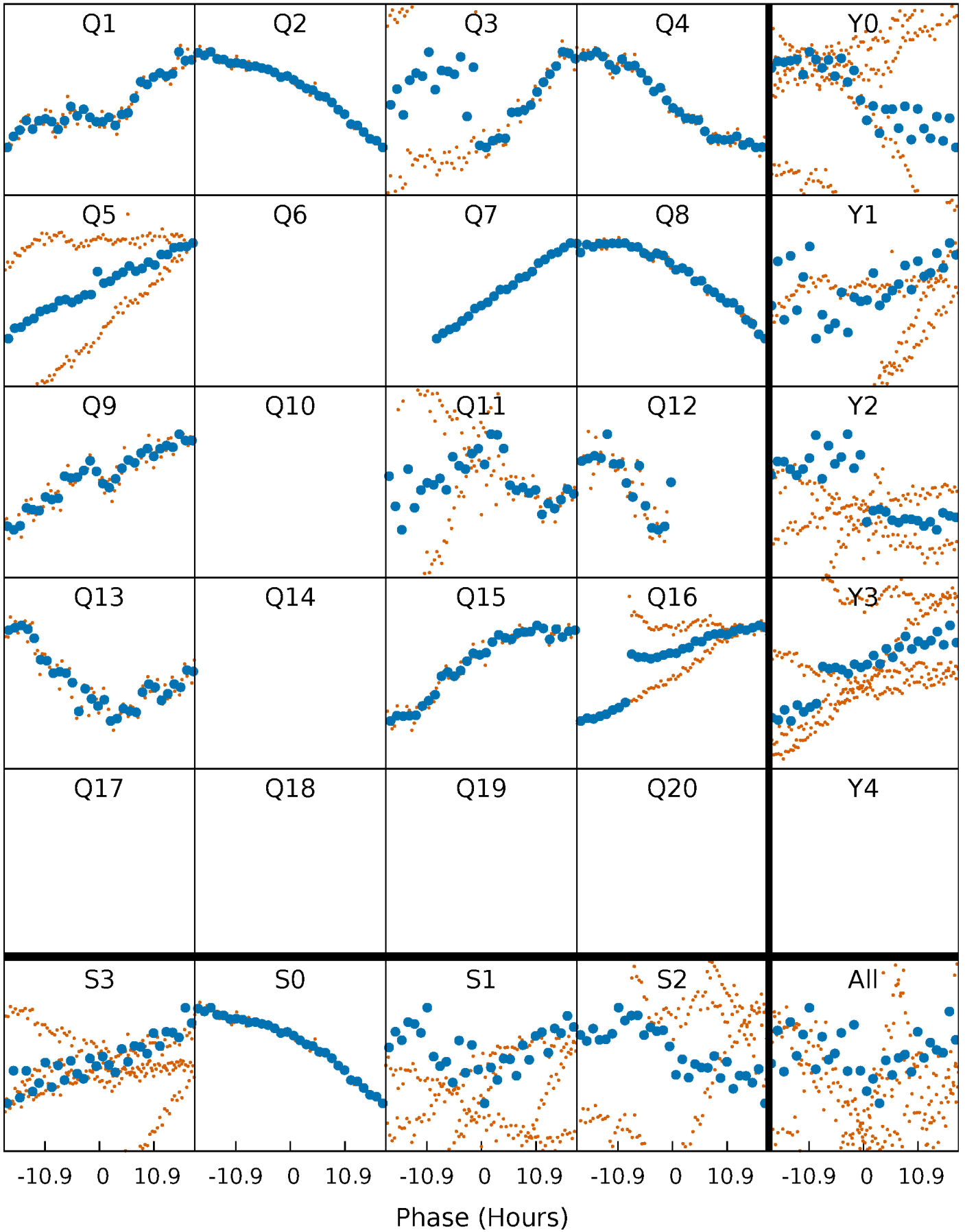


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



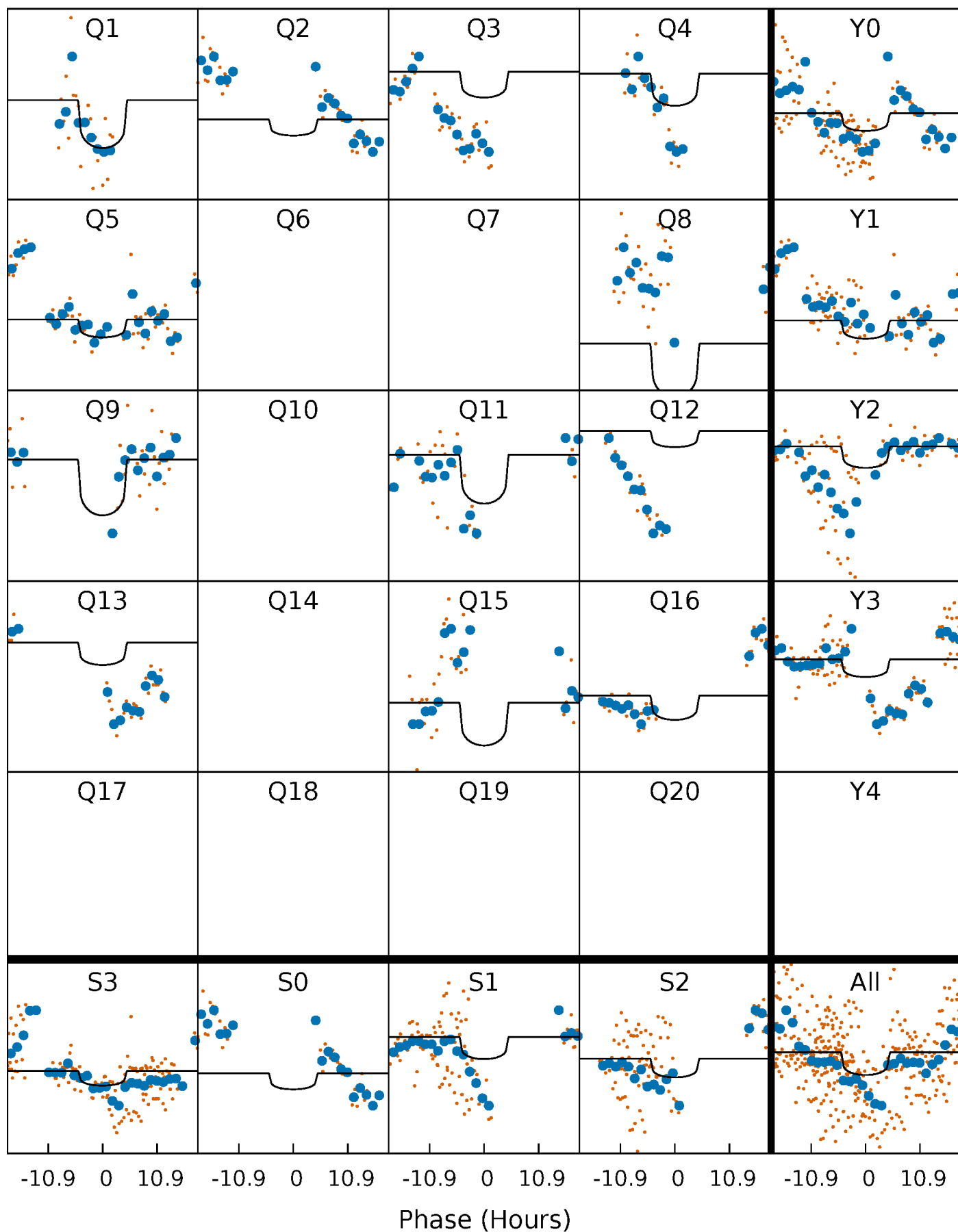
PDC Quarter-Phased Transit Curves

TCE 004851239-08 P= 62.385237 Days $T_0=162.386665$ (BKJD)



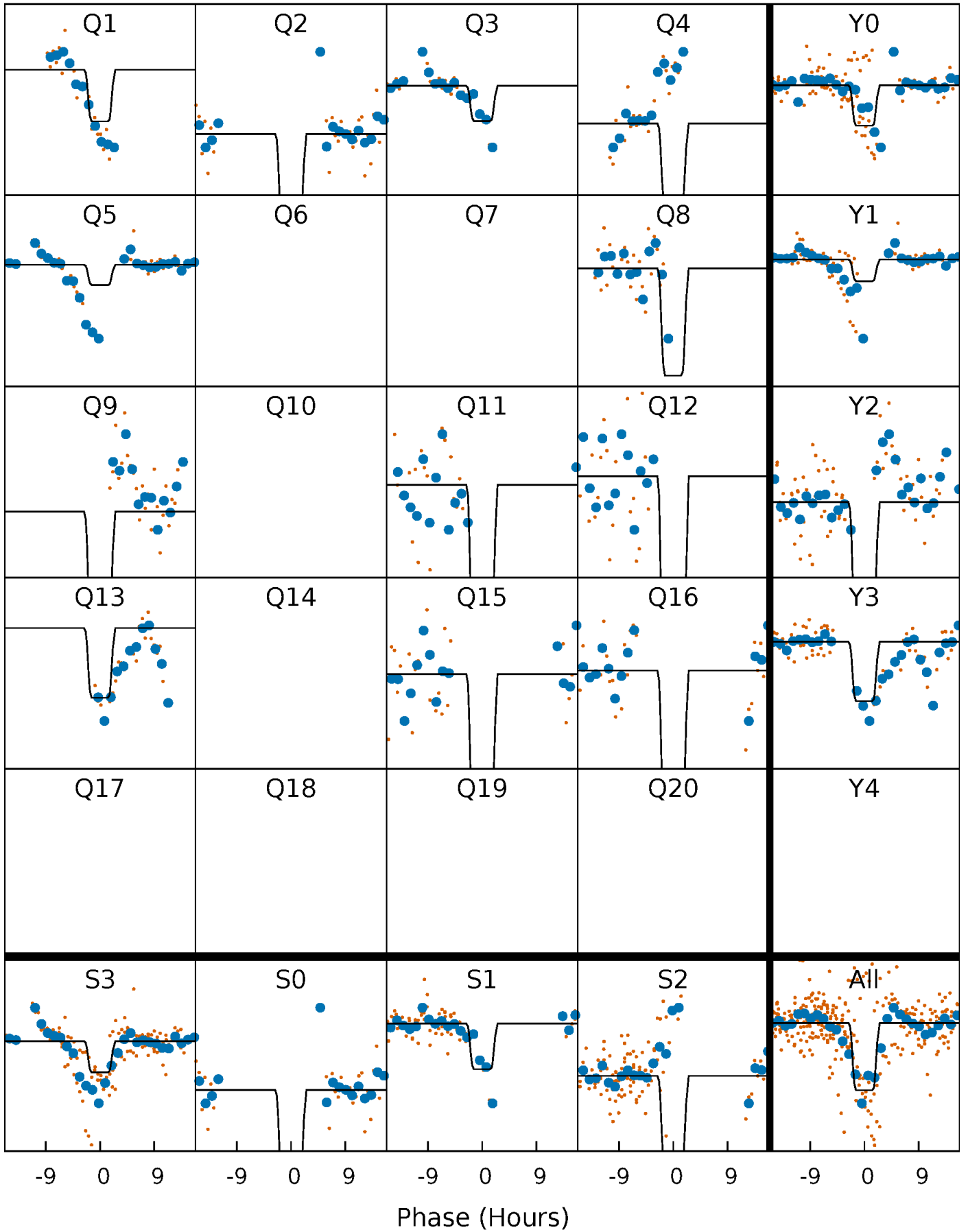
DV Quarter-Phased Transit Curves

TCE 004851239-08 P= 62.385237 Days $T_0=162.386665$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

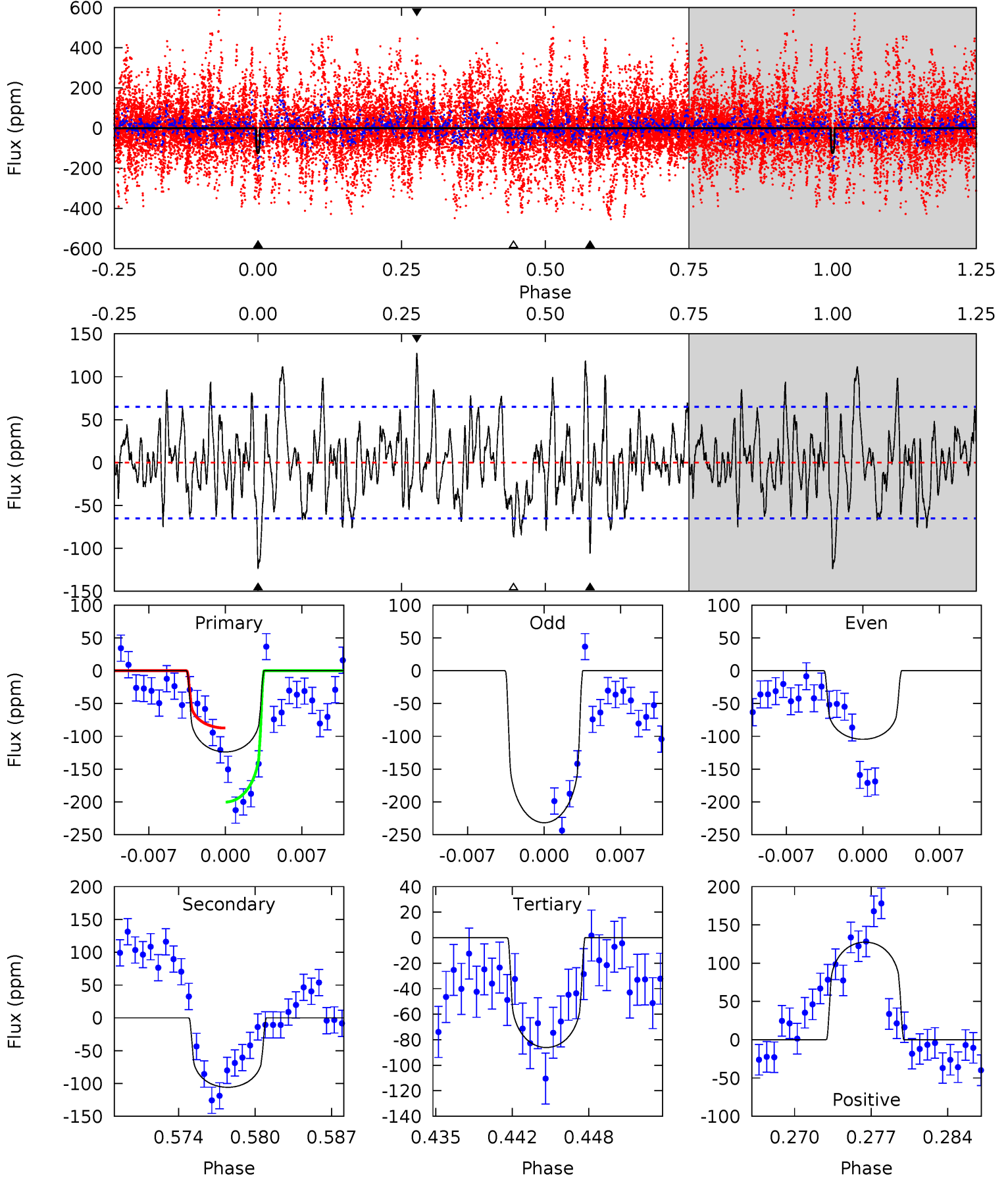
TCE 004851239-08 $P = 62.390724$ Days $T_0 = 162.364266$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-08, P = 62.385237 Days, E = 100.001428 Days

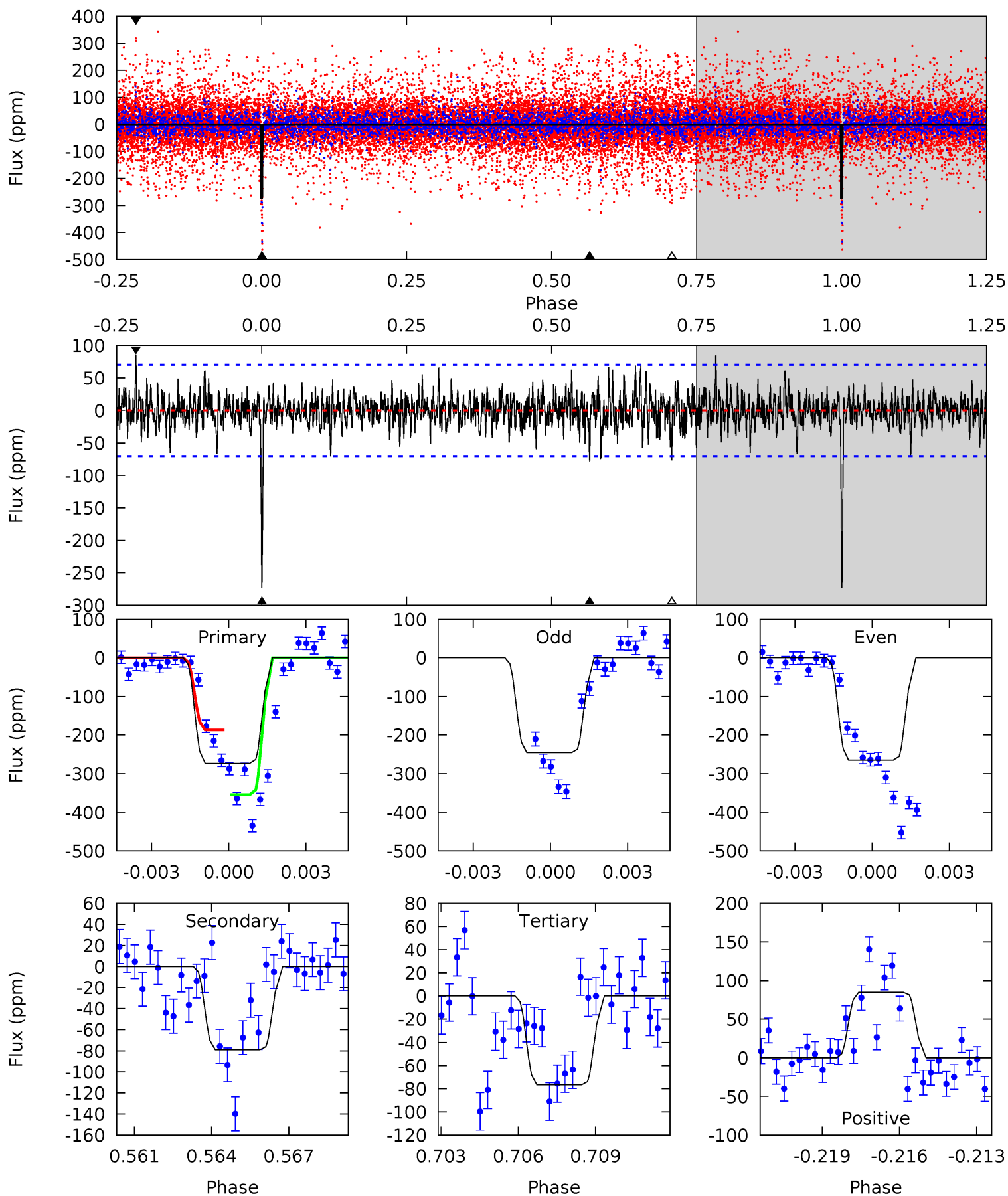
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.72	8.31	6.76	10.0	5.11	2.72	2.81	2.96	-0.29	1.55	-1.70	3.82	1.24	0.51	4.08



Alt Model-Shift Uniqueness Test

004851239-08, P = 62.390724 Days, E = 99.973542 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	5.90	5.73	6.32	5.25	2.97	1.45	14.7	14.1	0.17	-0.43	0.54	0.97	0.24	0



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-106 ± 13	$1.03^{+0.43}_{-0.40}$	628^{+20}_{-14}	5935^{+1892}_{-869}	5229^{+8723}_{-2648}
Alt.	-79 ± 13	$1.67^{+0.43}_{-0.38}$	628^{+19}_{-13}	4509^{+526}_{-392}	1477^{+1036}_{-571}

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 $A_{obs} \gg 1.0$

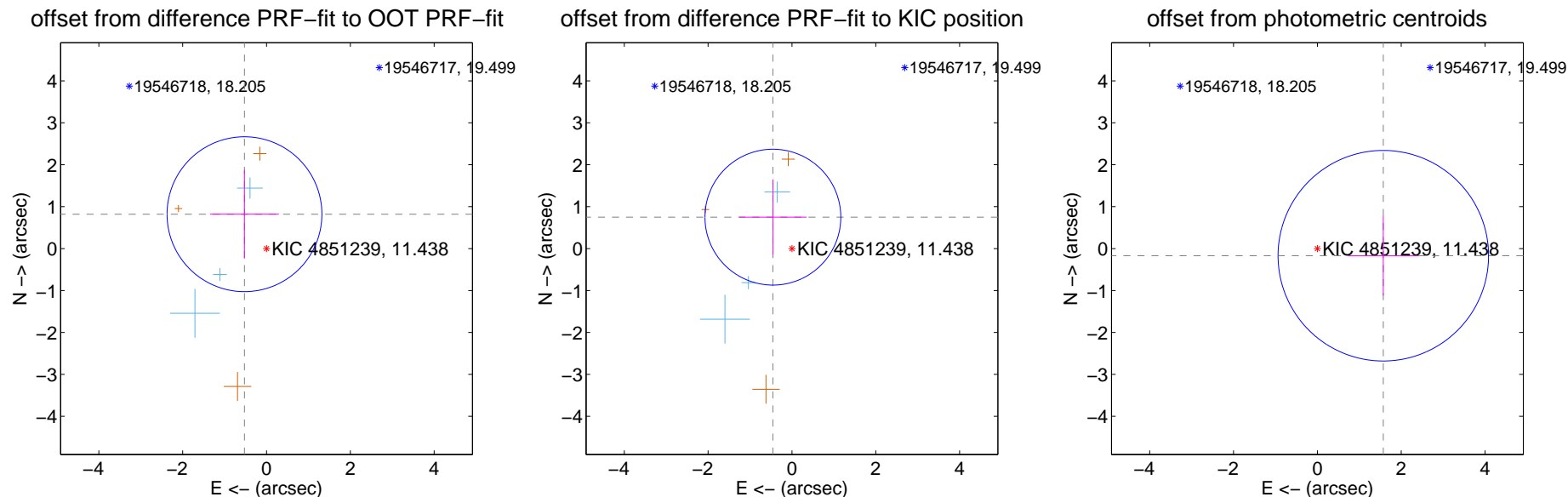
DV Centroid Data

Supplemental centroid analysis for 004851239-08. **Kepler magnitude: 11.44.** Transit SNR 5.04

There are 3 quarters with good PRF difference image offsets

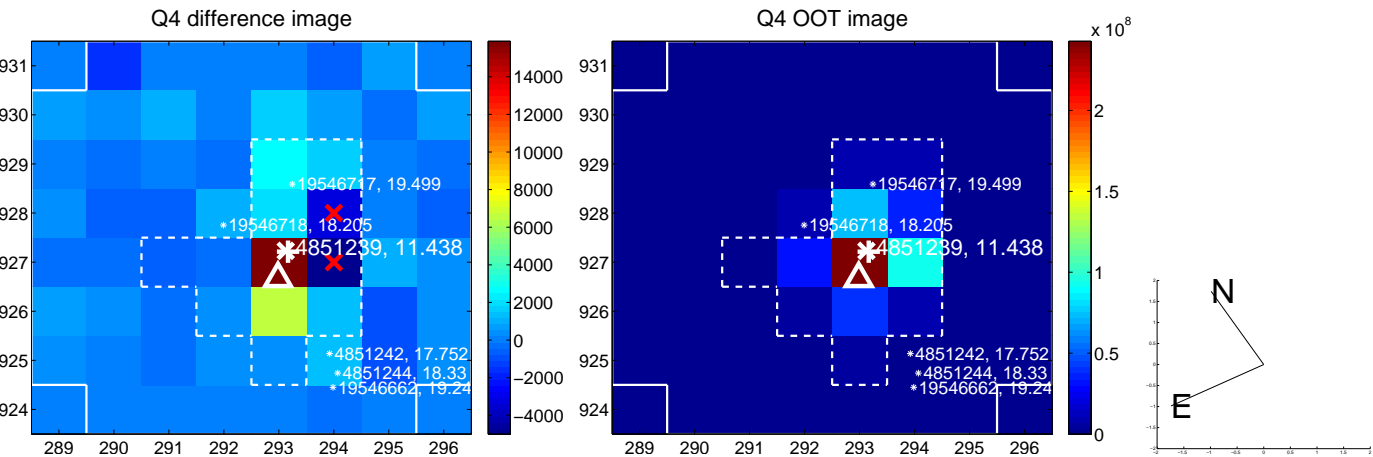
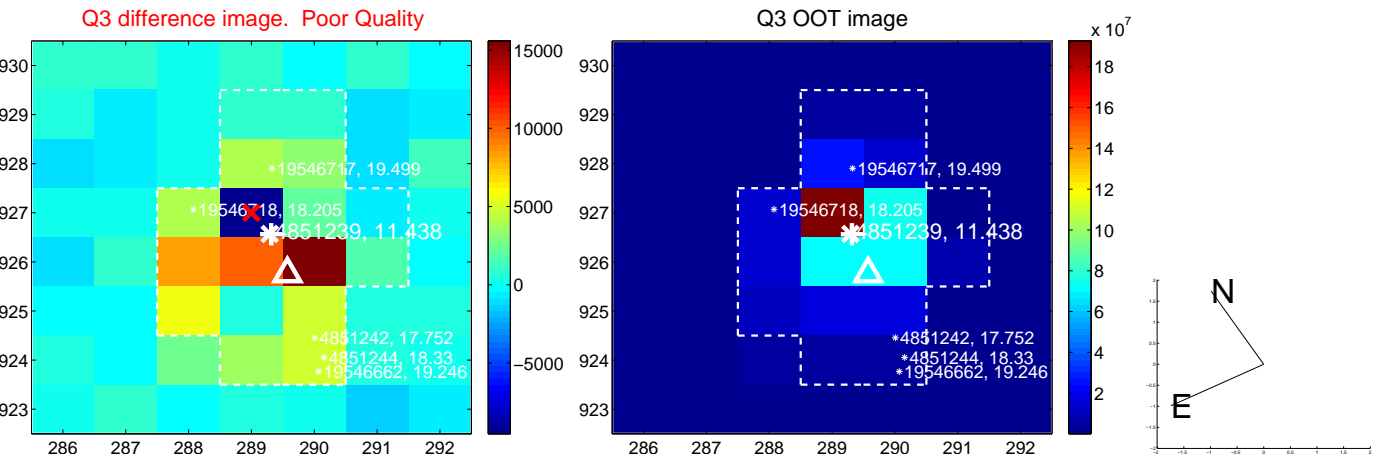
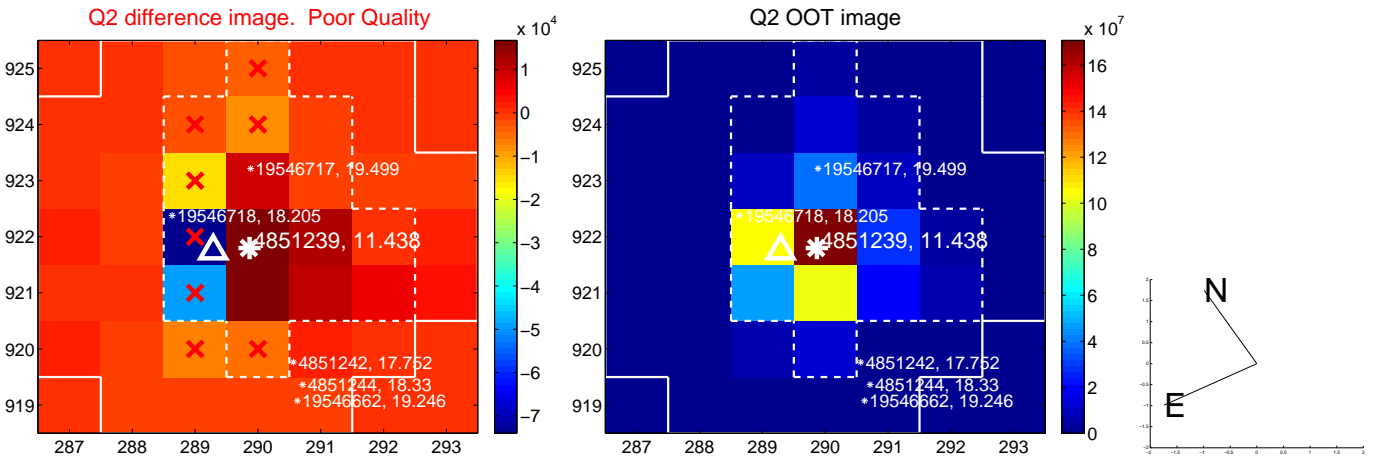
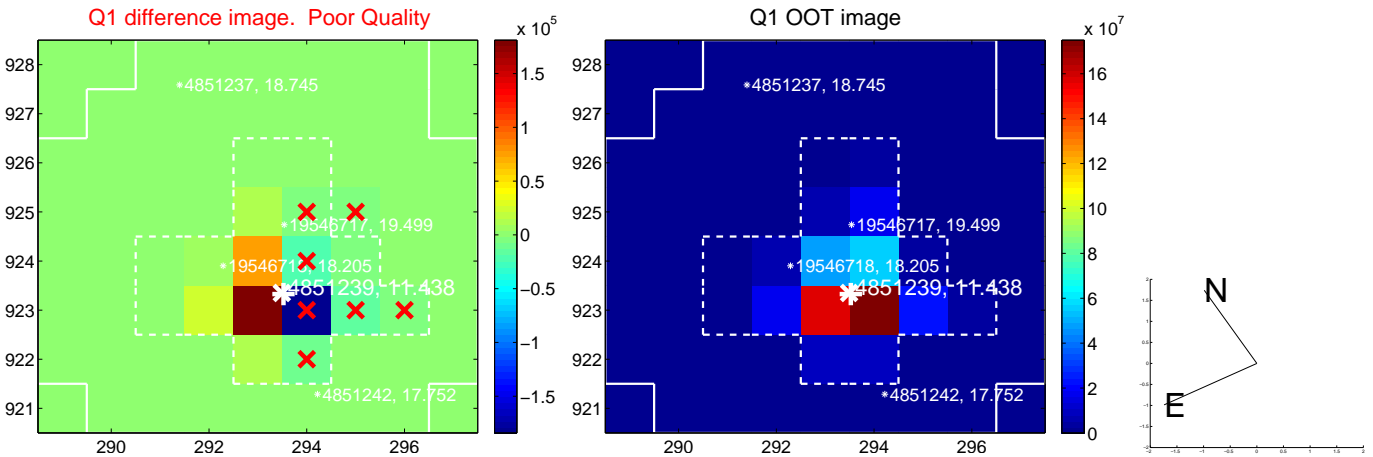
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.974 ± 0.616	1.58	0.526 ± 0.821	0.820 ± 1.054
PRF-fit source offset from KIC position	0.877 ± 0.540	1.62	0.455 ± 0.803	0.749 ± 0.901
photometric centroid source offset	1.58 ± 0.84	1.89	-1.57 ± 0.84	-0.17 ± 0.95

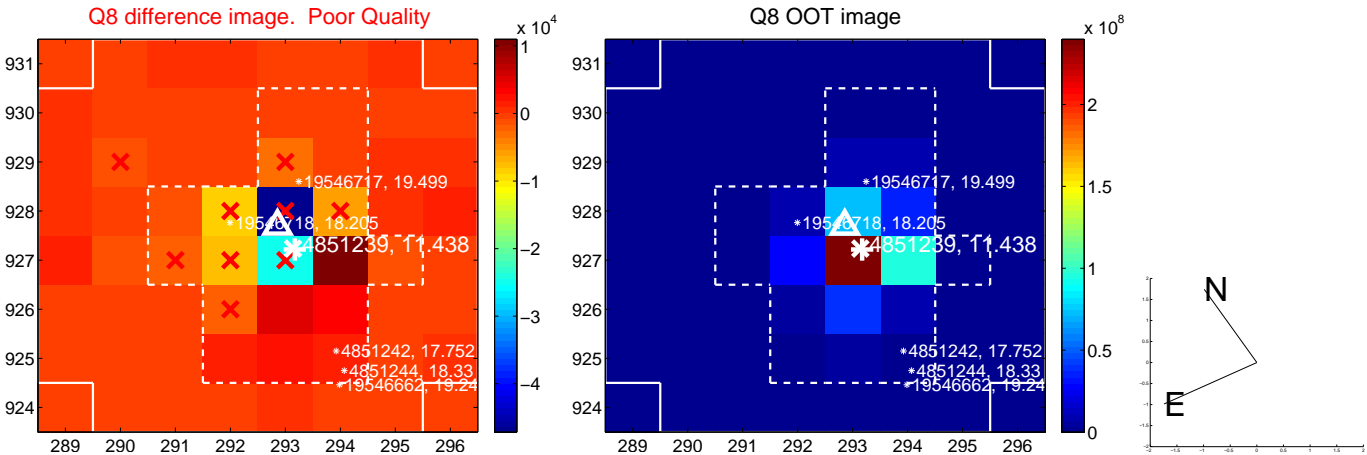
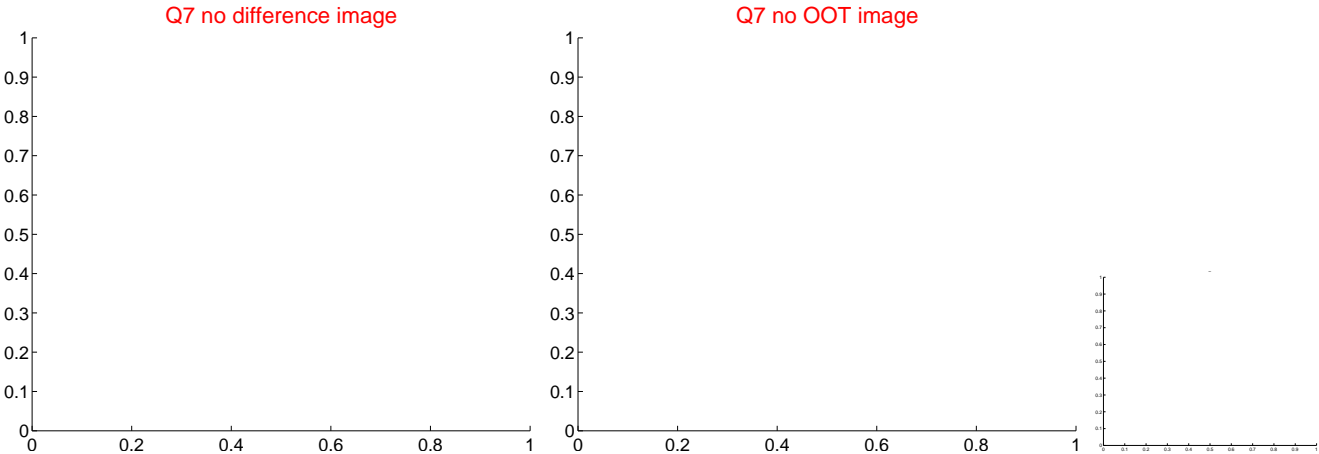
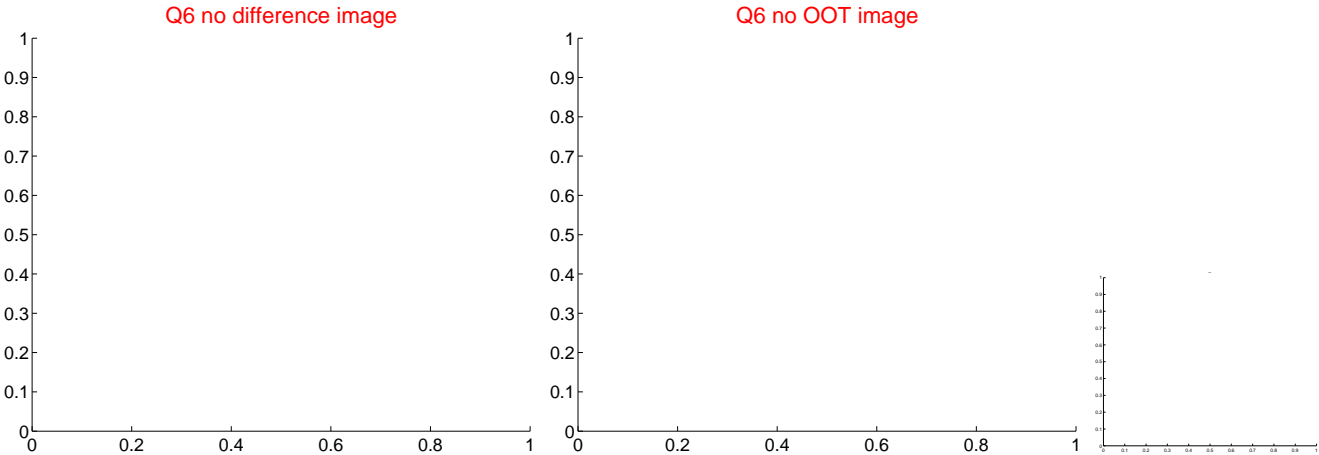
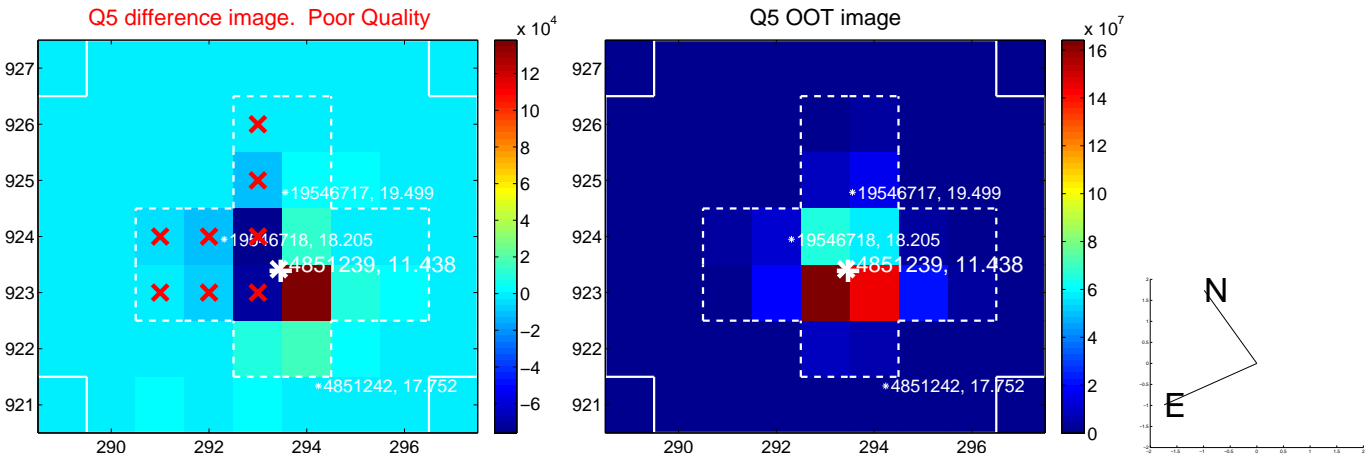


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

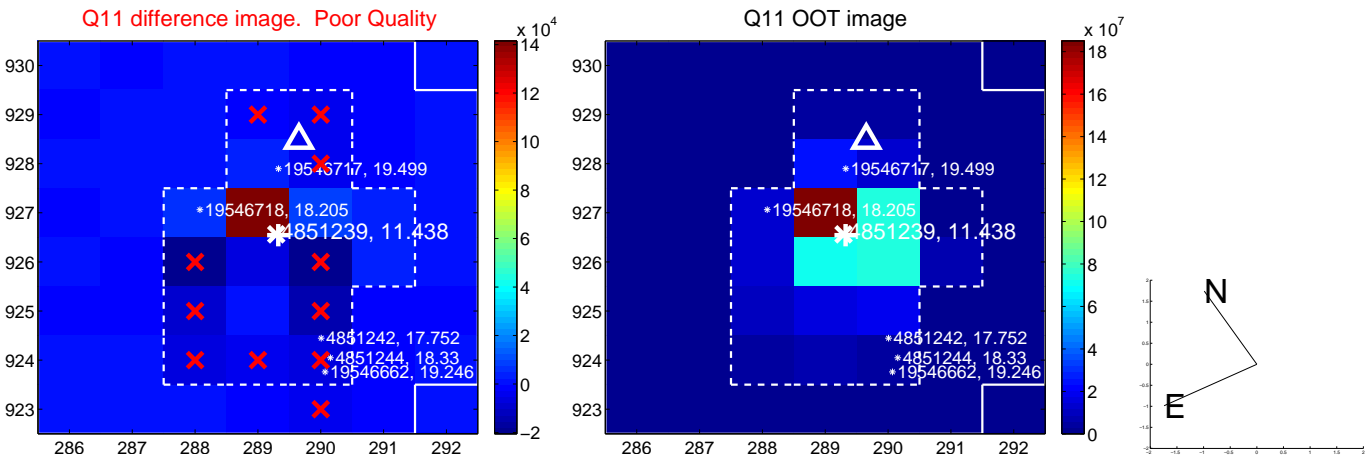
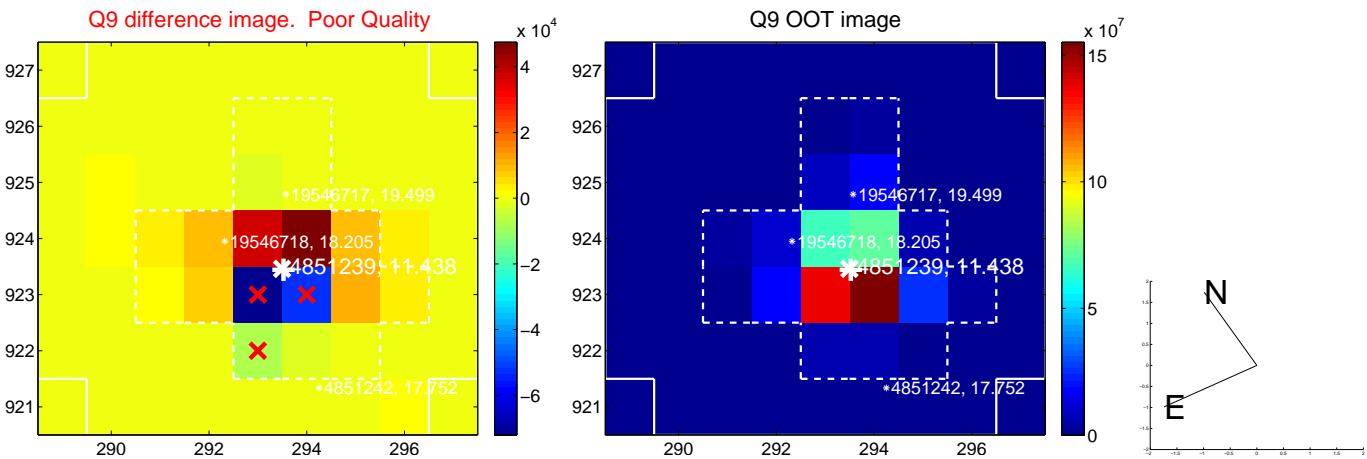
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



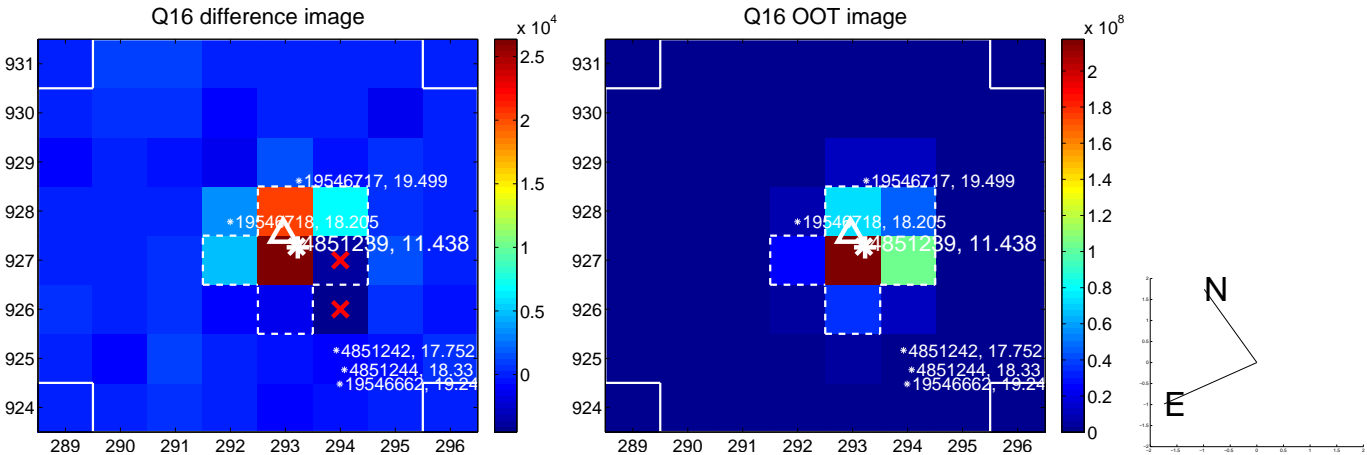
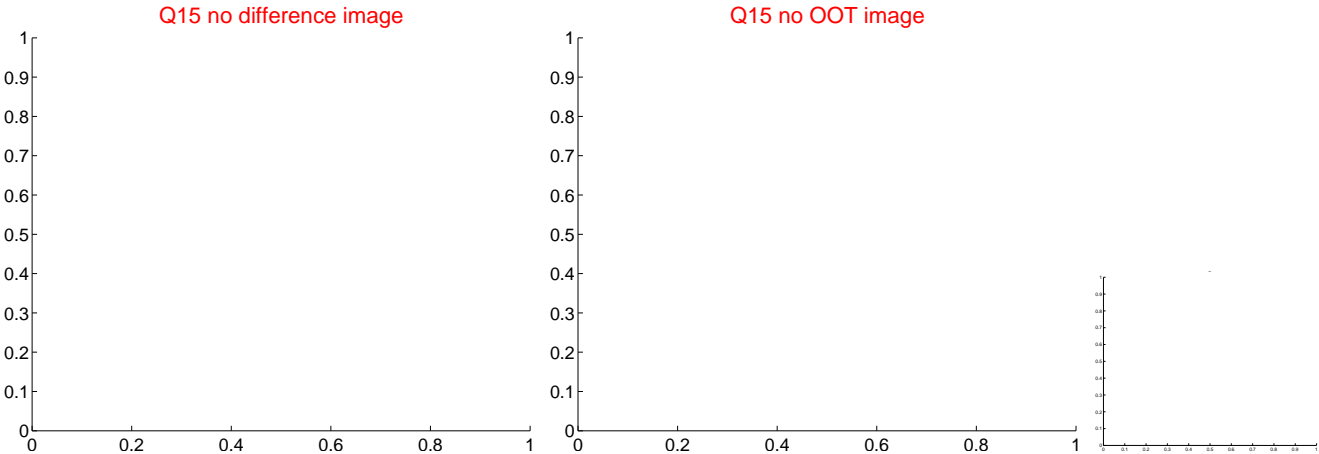
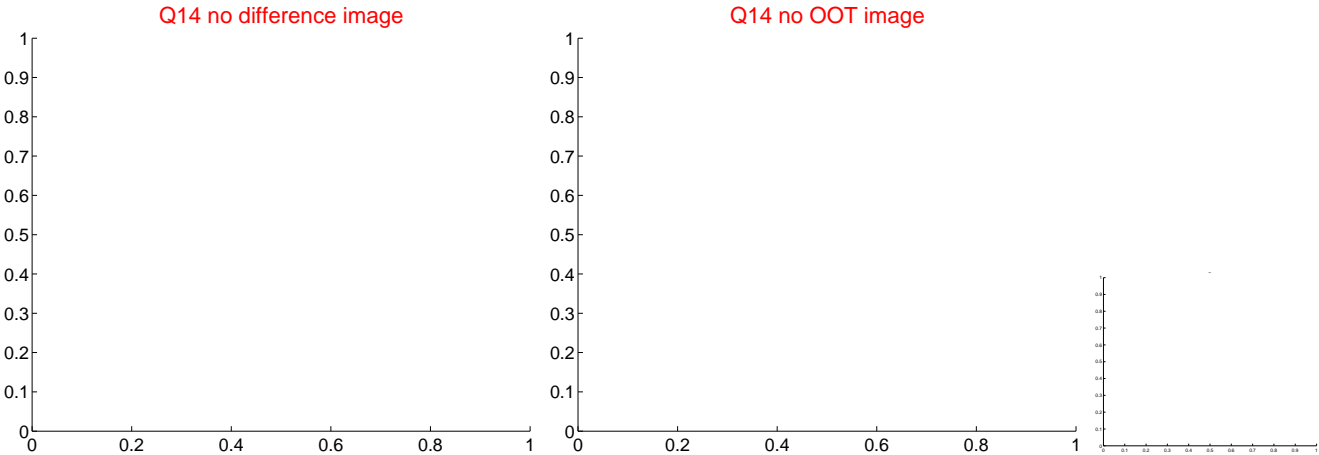
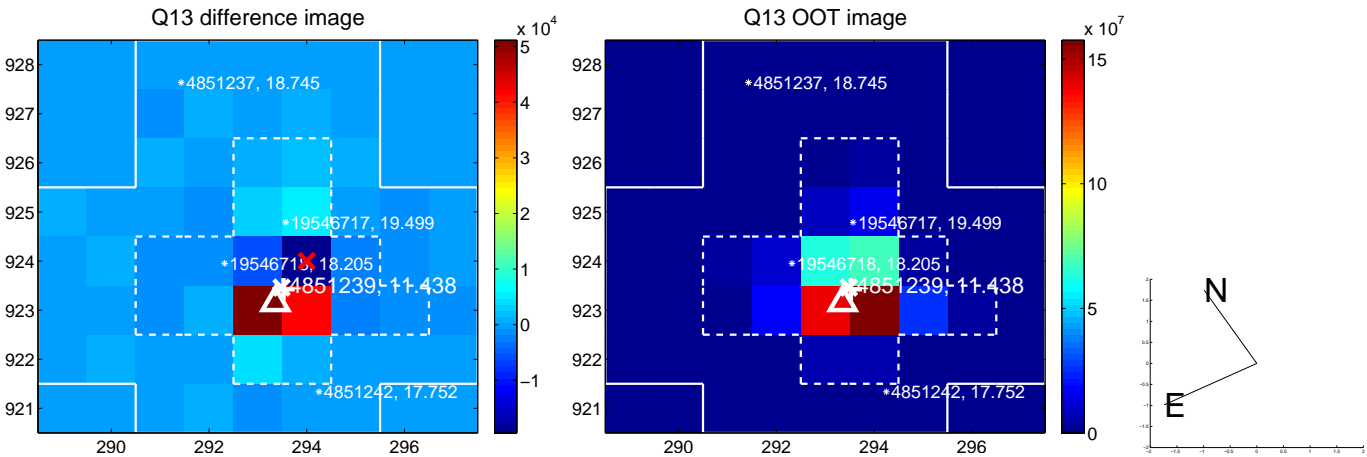
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



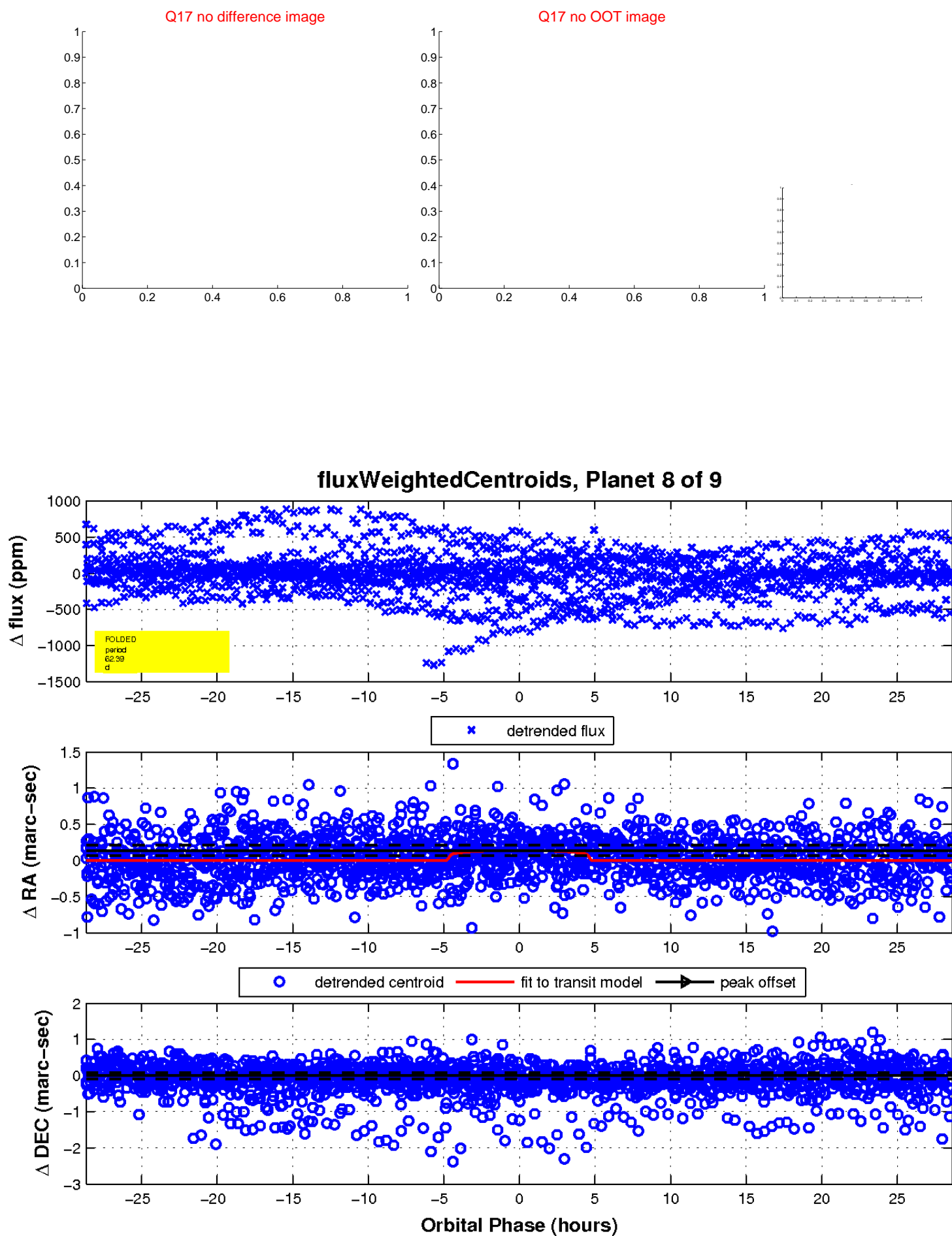
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

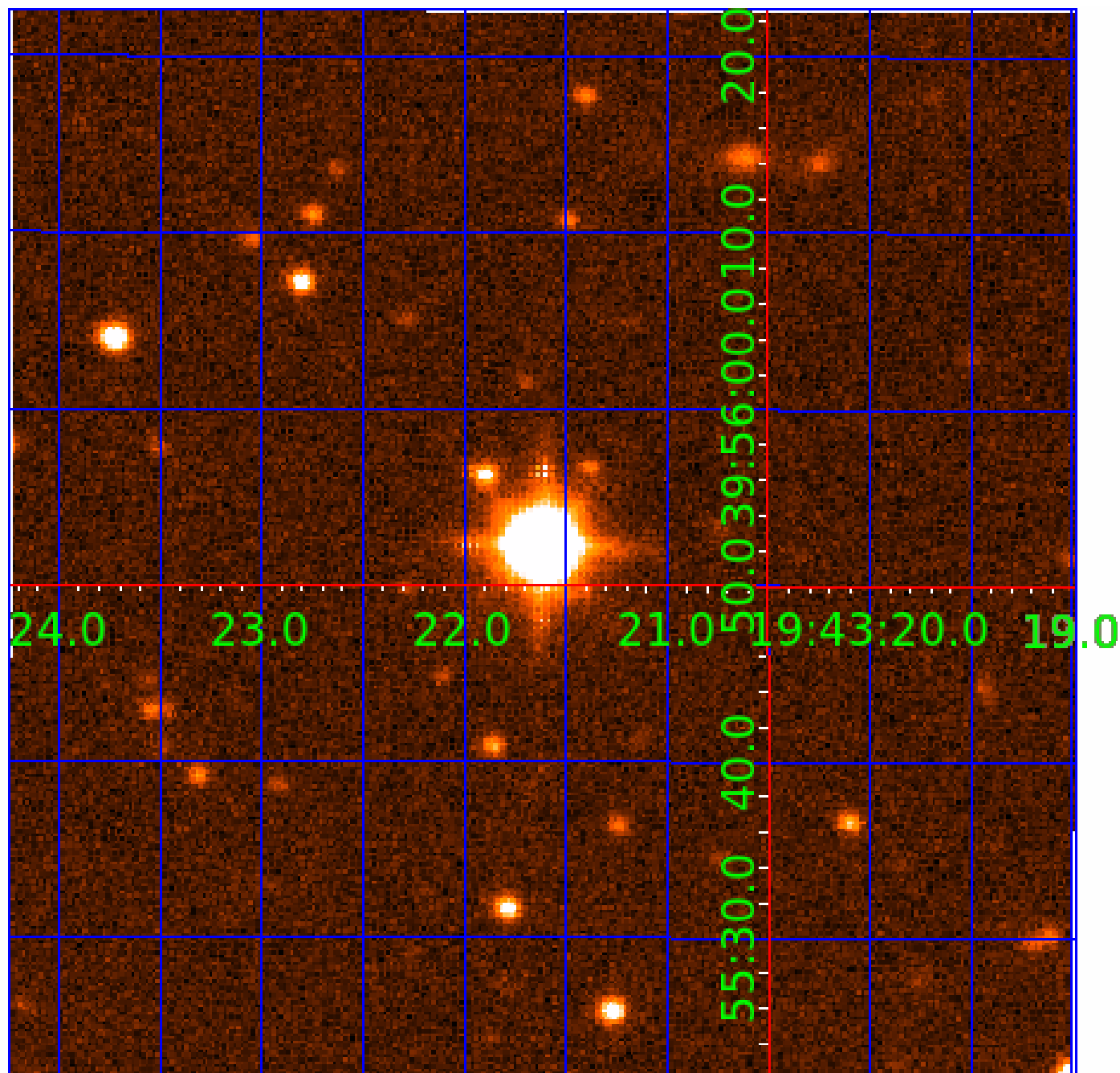


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004851239

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})
004851239-01	OBS	4851.01	1.235137	131.972626	11.1	5.681	9.0	7.7	0.94	5798	0.37	1722.32
004851239-03	OBS	No	417.370236	245.346401	557.9	27.279	12.3	8.1	0.94	5798	2.96	0.73
004851239-04	OBS	No	152.421774	211.504916	150.8	5.576	11.0	5.7	0.94	5798	1.37	2.80
004851239-05	OBS	No	237.226682	175.829389	190.4	8.303	9.5	6.9	0.94	5798	1.34	1.55
004851239-06	OBS	No	181.562565	190.423335	181.9	1.081	10.8	7.2	0.94	5798	1.51	2.22
004851239-07	OBS	No	96.805841	219.773756	109.4	5.000	8.4	-1.0	0.94	5798	0.97	5.13
004851239-08	OBS	No	62.385237	162.386665	90.2	9.552	8.4	5.0	0.94	5798	1.00	9.22
004851239-09	OBS	No	75.760742	165.462552	22.5	0.513	7.7	0.8	0.94	5798	0.47	7.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004851239-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
004851239-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
004851239-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
004851239-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
004851239-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED
004851239-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004851239-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
004851239-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 004851239-09

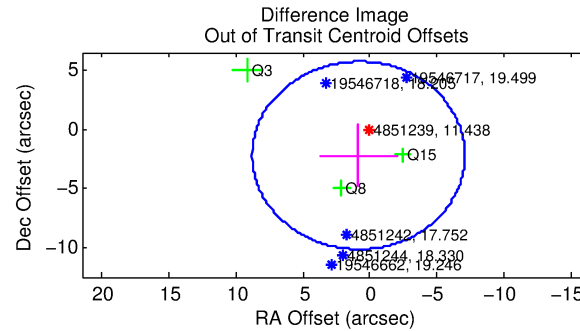
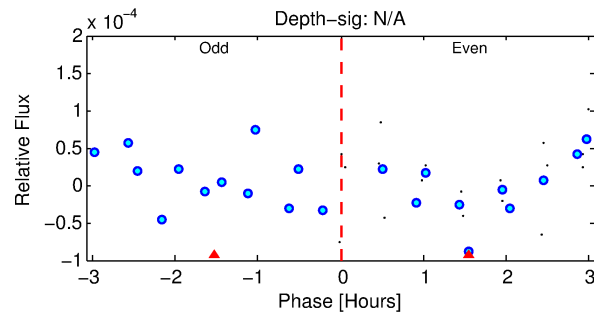
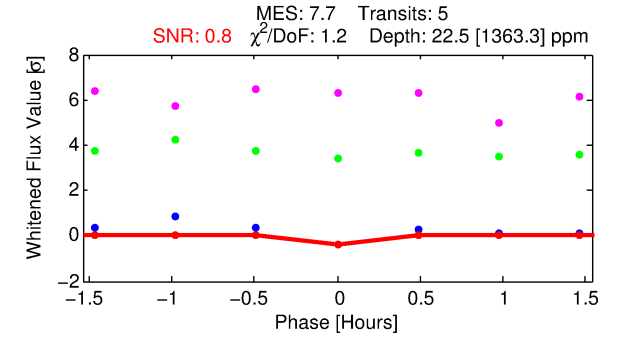
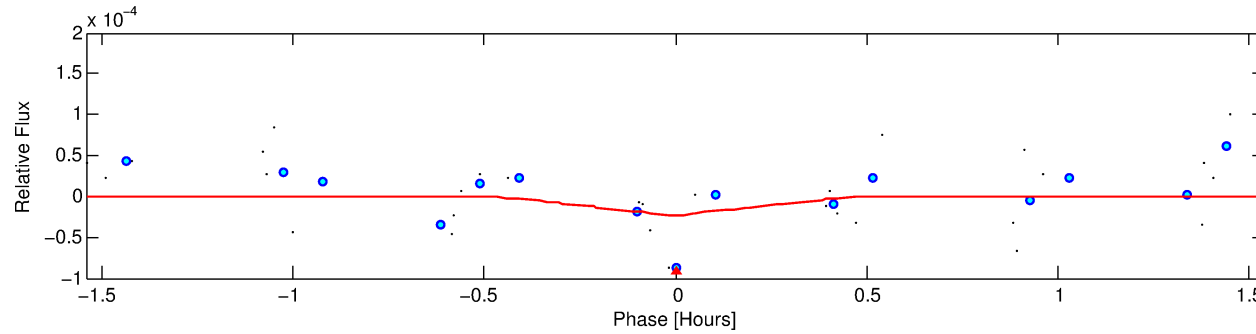
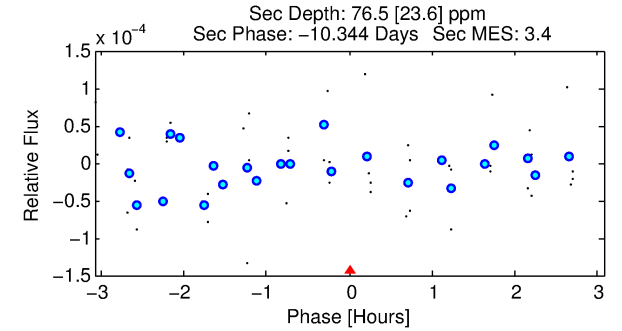
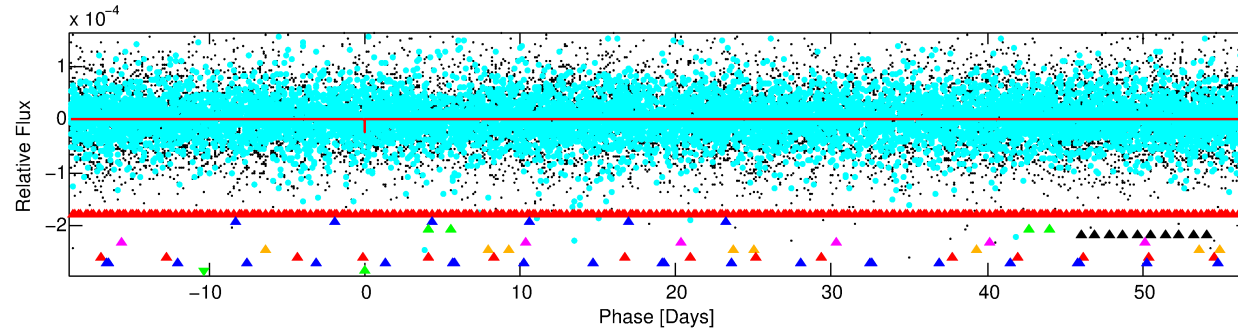
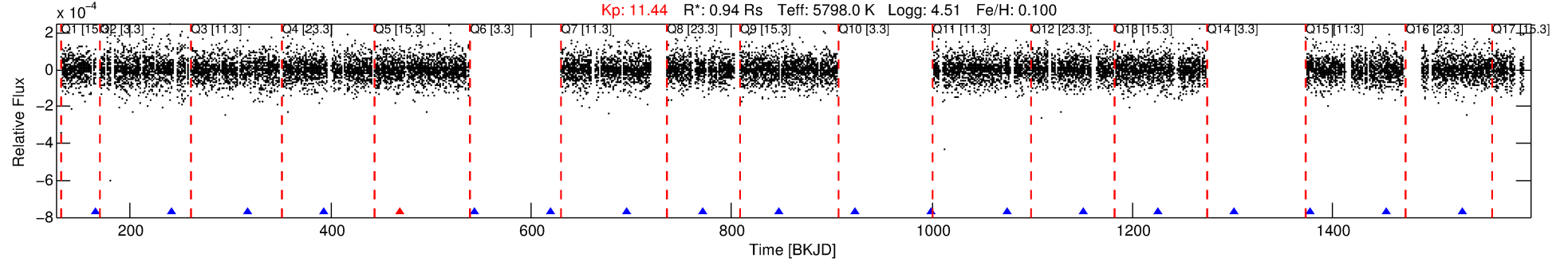
No Significant Match Found

DV One-Page Summary

KIC: 4851239 Candidate: 9 of 9 Period: 75.761 d

KOI: K04851 Corr: No Ephemeris Match

Kp: 11.44 R*: 0.94 Rs Teff: 5798.0 K Logg: 4.51 Fe/H: 0.100



DV Fit Results:

Period = 75.76074 [0.00453] d
Epoch = 165.4626 [0.0709] BKJD
Rp/R* = 0.0046 [3.0450]
a/R* = 1082.45 [3061662.75]
b = 0.29 [8962.59]
Seff = 7.12 [1.34]
Teq = 417 [20] K
Rp = 0.47 [312.67] Re
a = 0.3549 [0.0410] AU
Ag = 23931.89 [31807148.33] [0.00σ]
Teffp = 8010 [2661444] K [0.00σ]

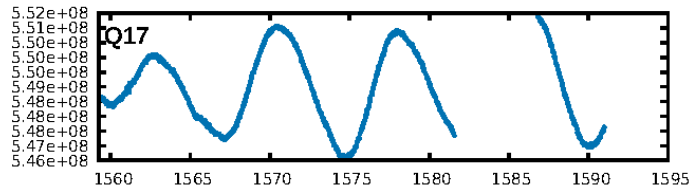
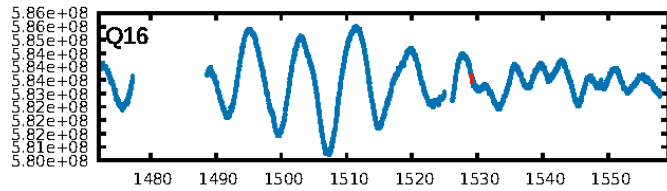
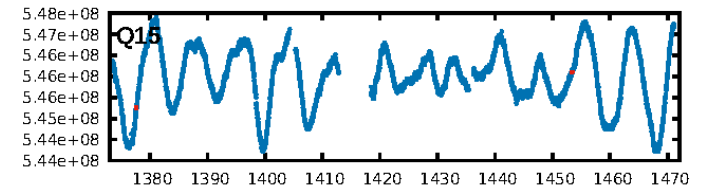
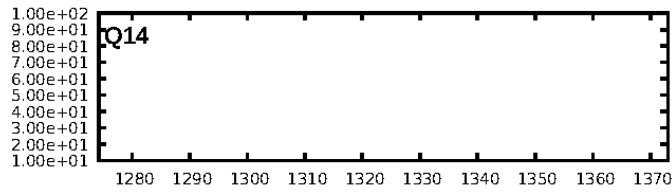
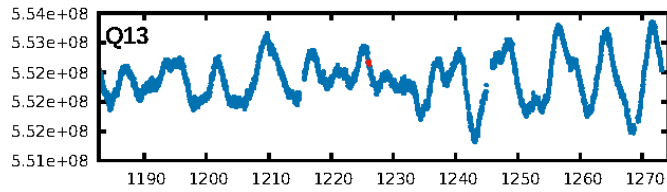
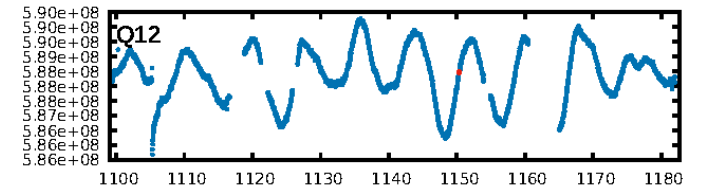
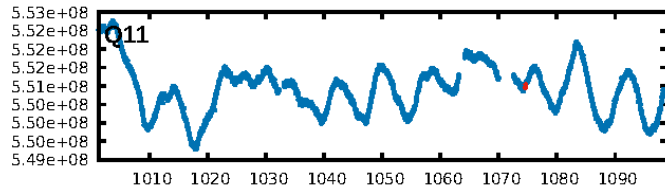
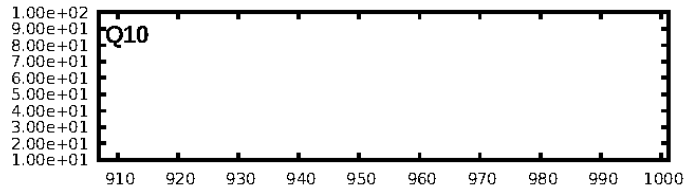
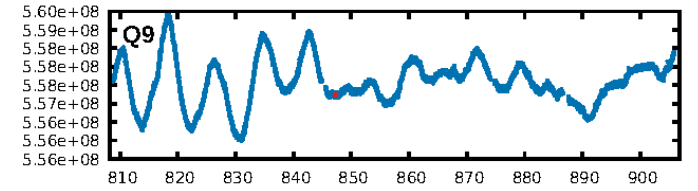
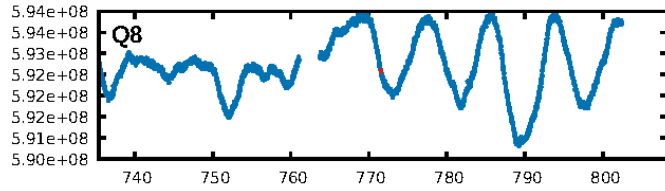
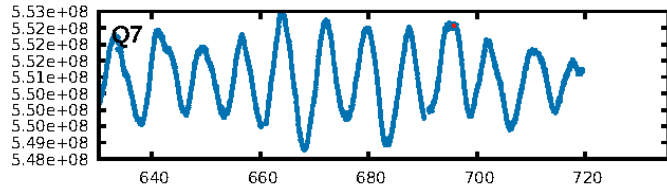
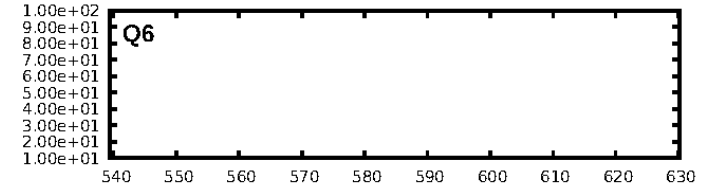
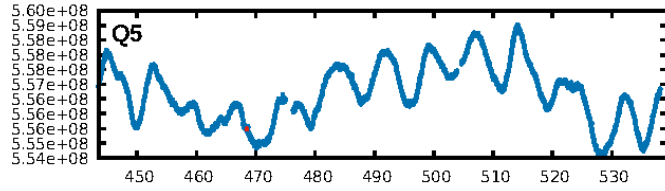
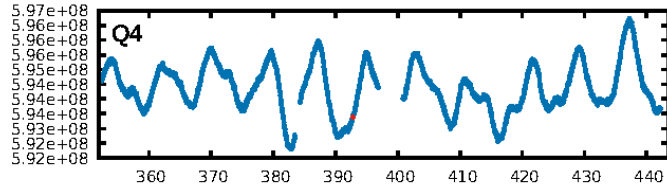
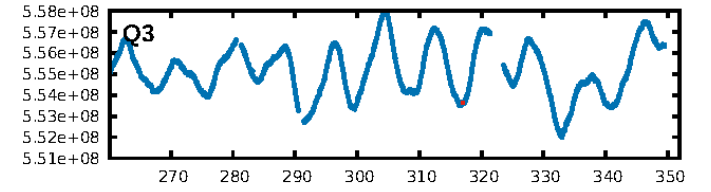
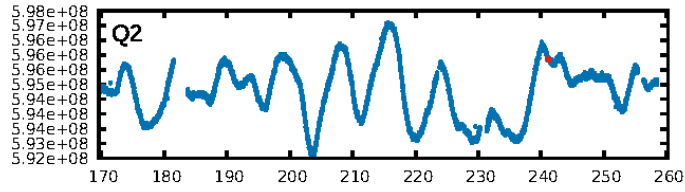
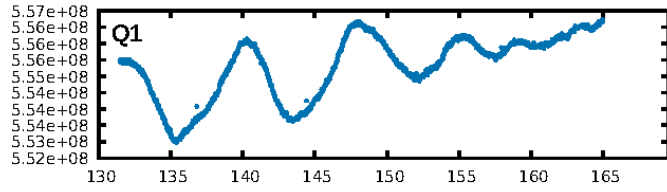
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.56σ]
LongPeriod-sig: 100.0% [100.49σ]
ModelChiSquare2-sig: 57.3%
ModelChiSquareGof-sig: 90.2%
Bootstrap-pfa: 2.45e-10
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: 0.767
Centroid-sig: 62.5%
Centroid-so: 5.111 arcsec [0.44σ]
OotOffset-rm: 2.375 arcsec [0.90σ]
KicOffset-rm: 2.469 arcsec [0.93σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.71 [5/7]

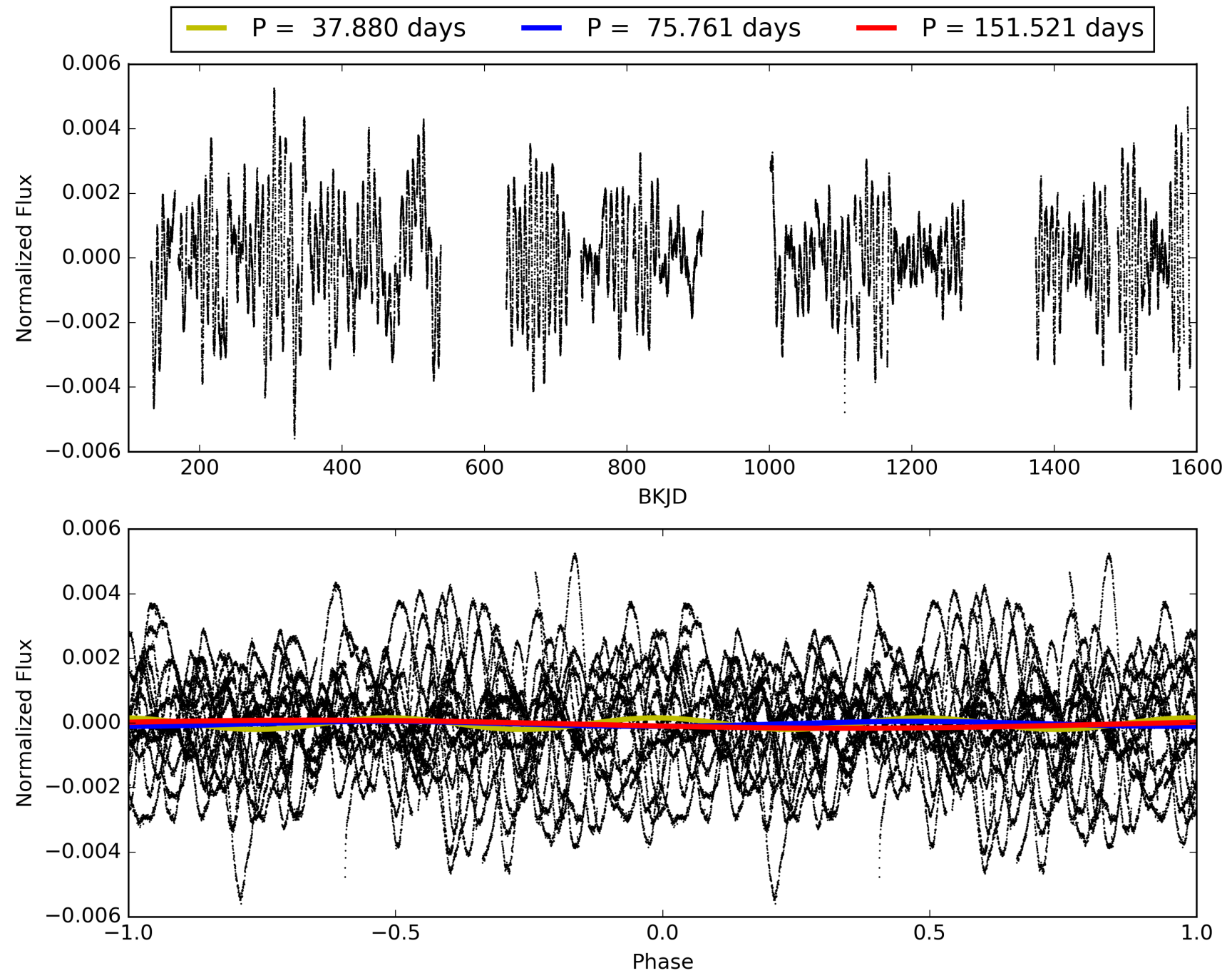
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:33:55 Z

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

TCE 004851239-09, PDC Light Curves

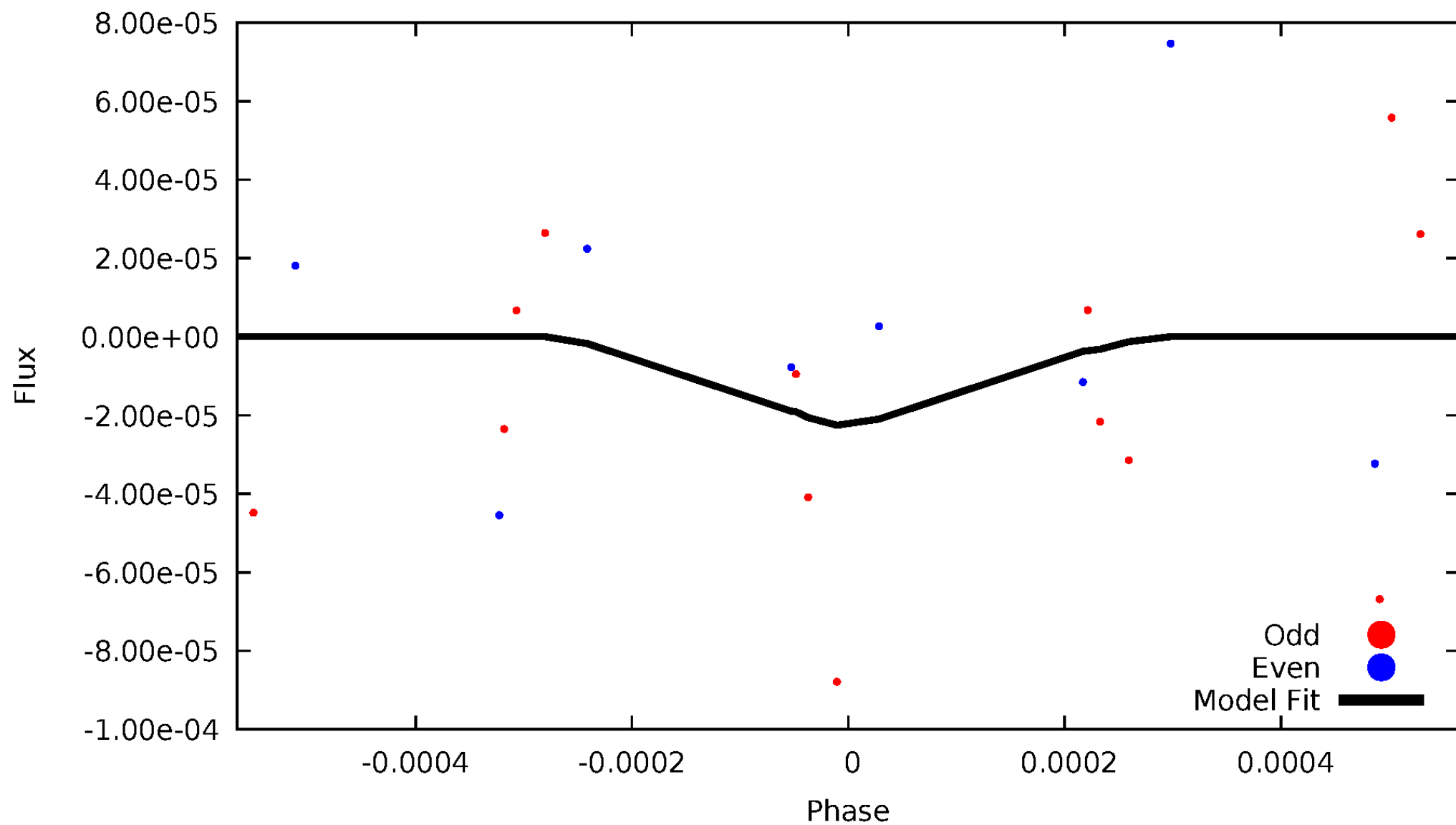


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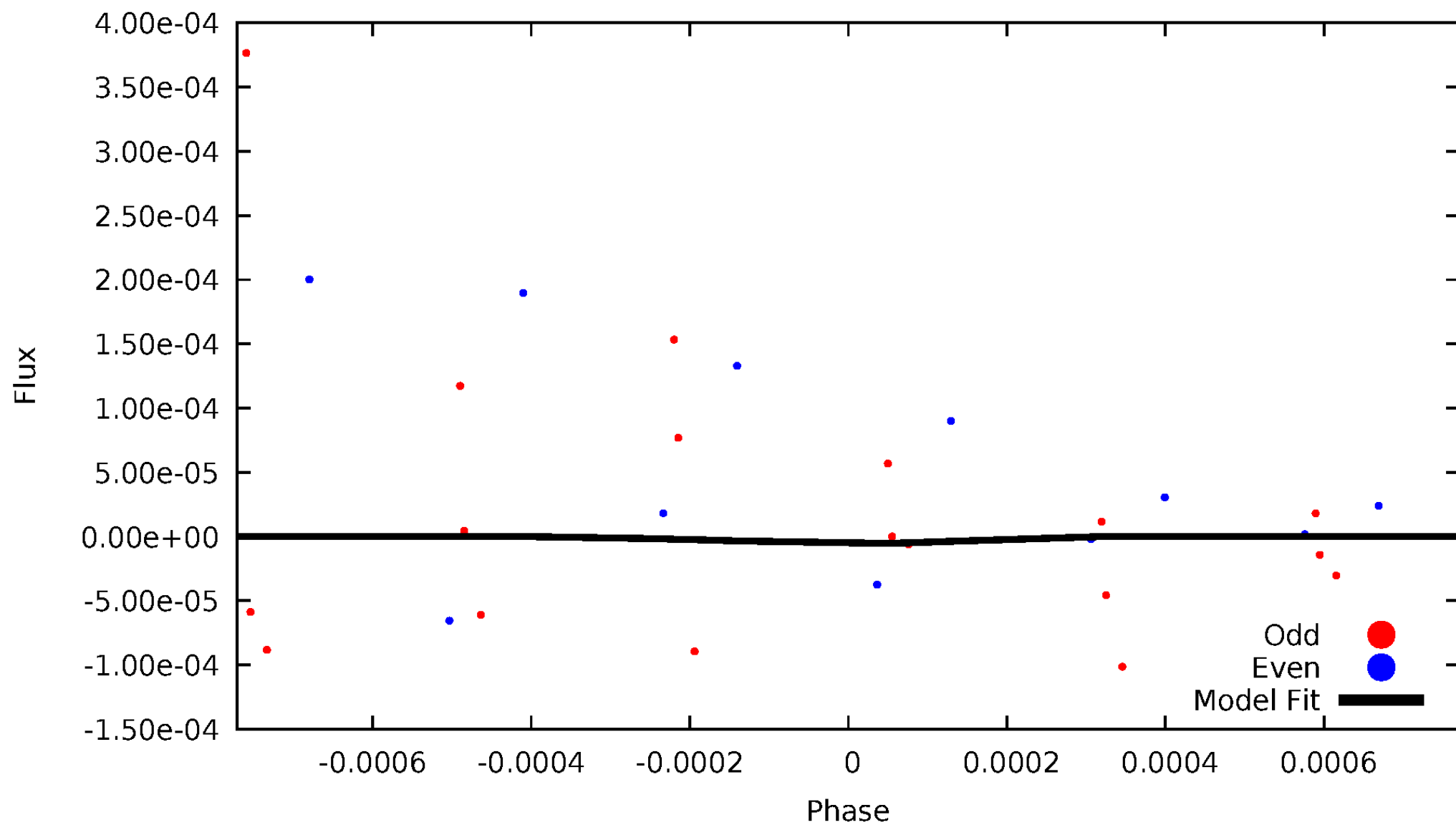
DV Odd/Even

TCE 004851239-09



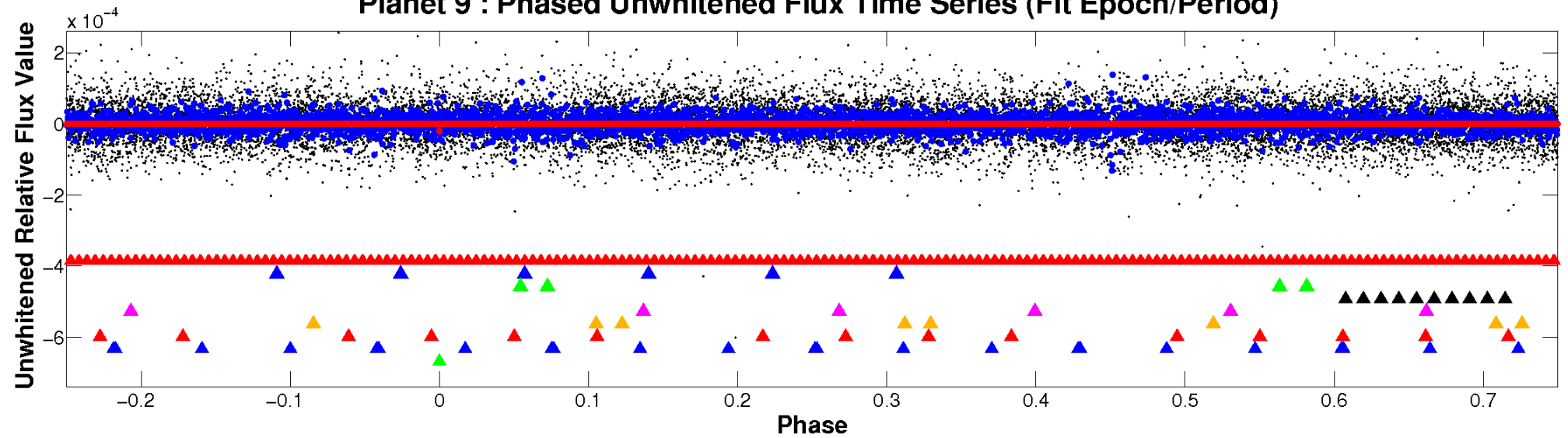
ALT Odd/Even

TCE 004851239-09

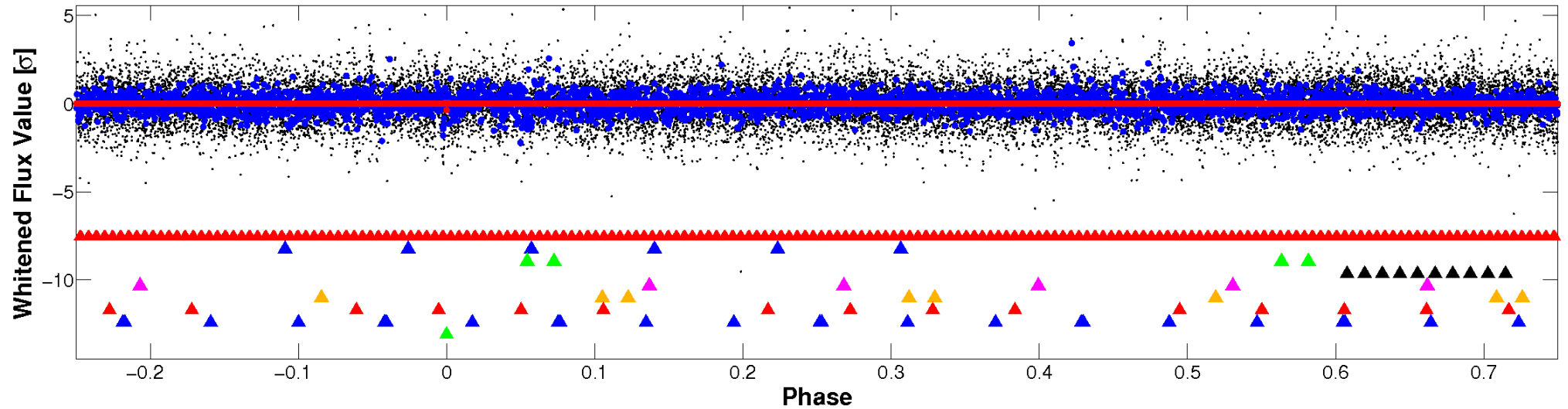


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

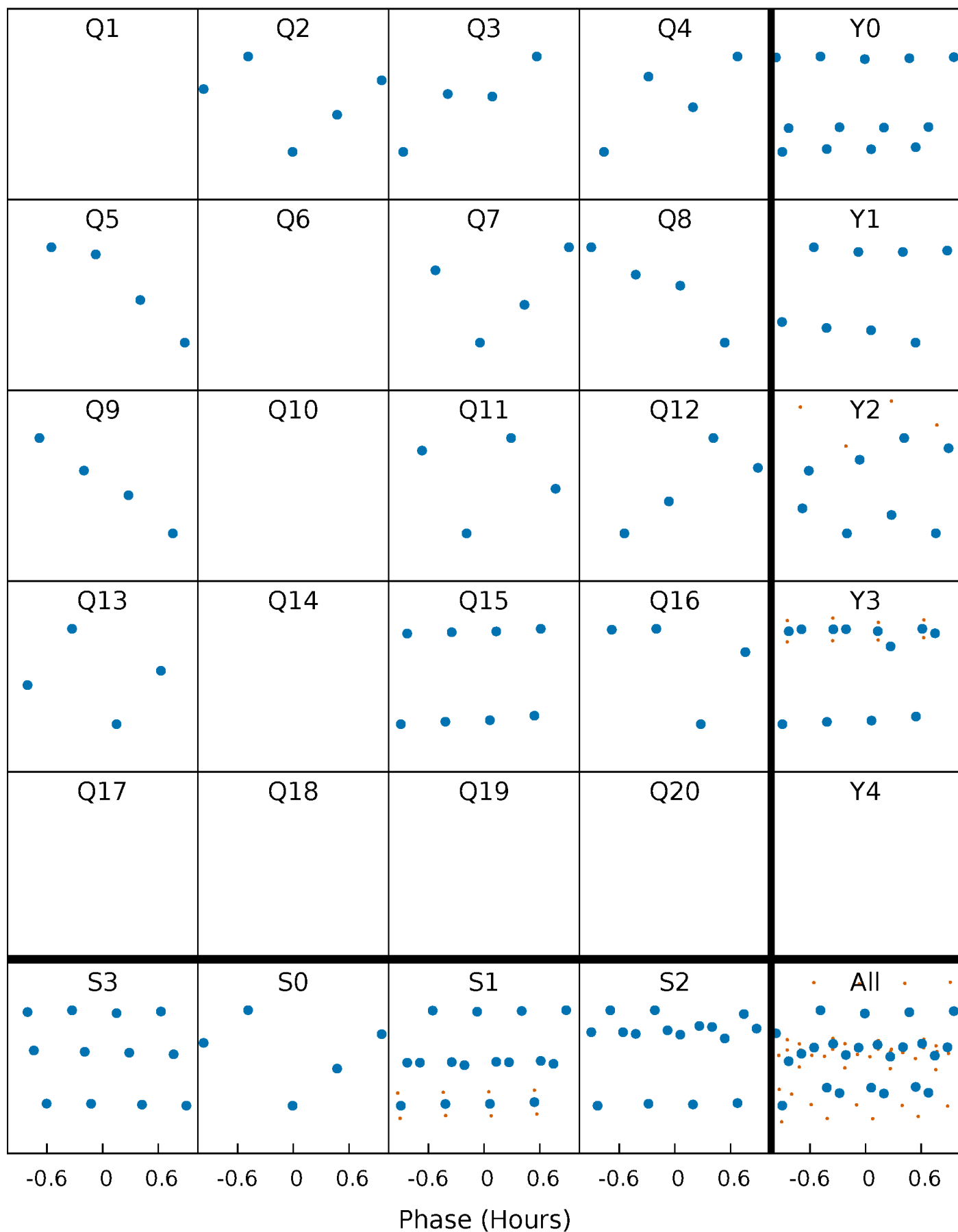


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



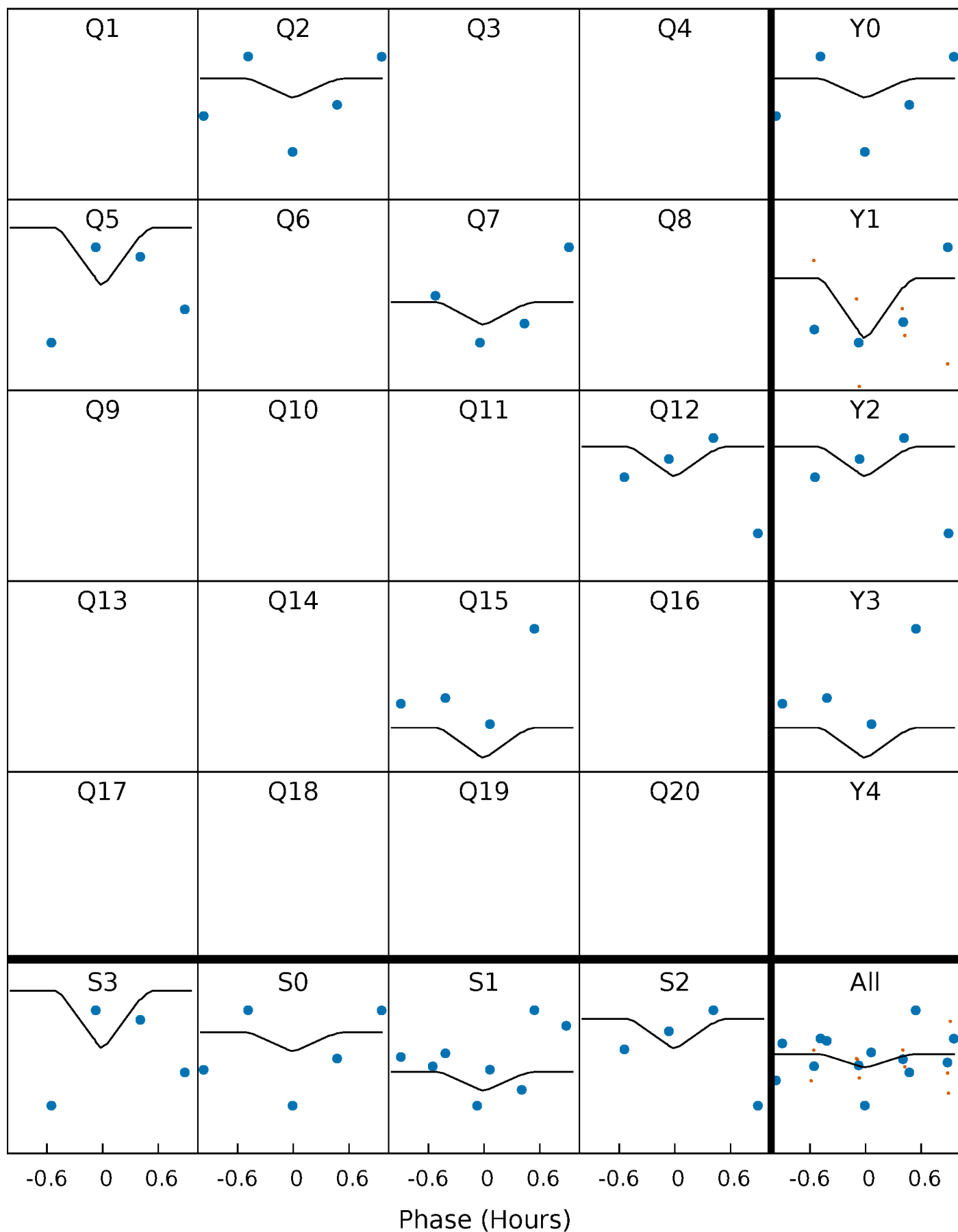
PDC Quarter-Phased Transit Curves

TCE 004851239-09 P= 75.760742 Days $T_0=165.462552$ (BKJD)



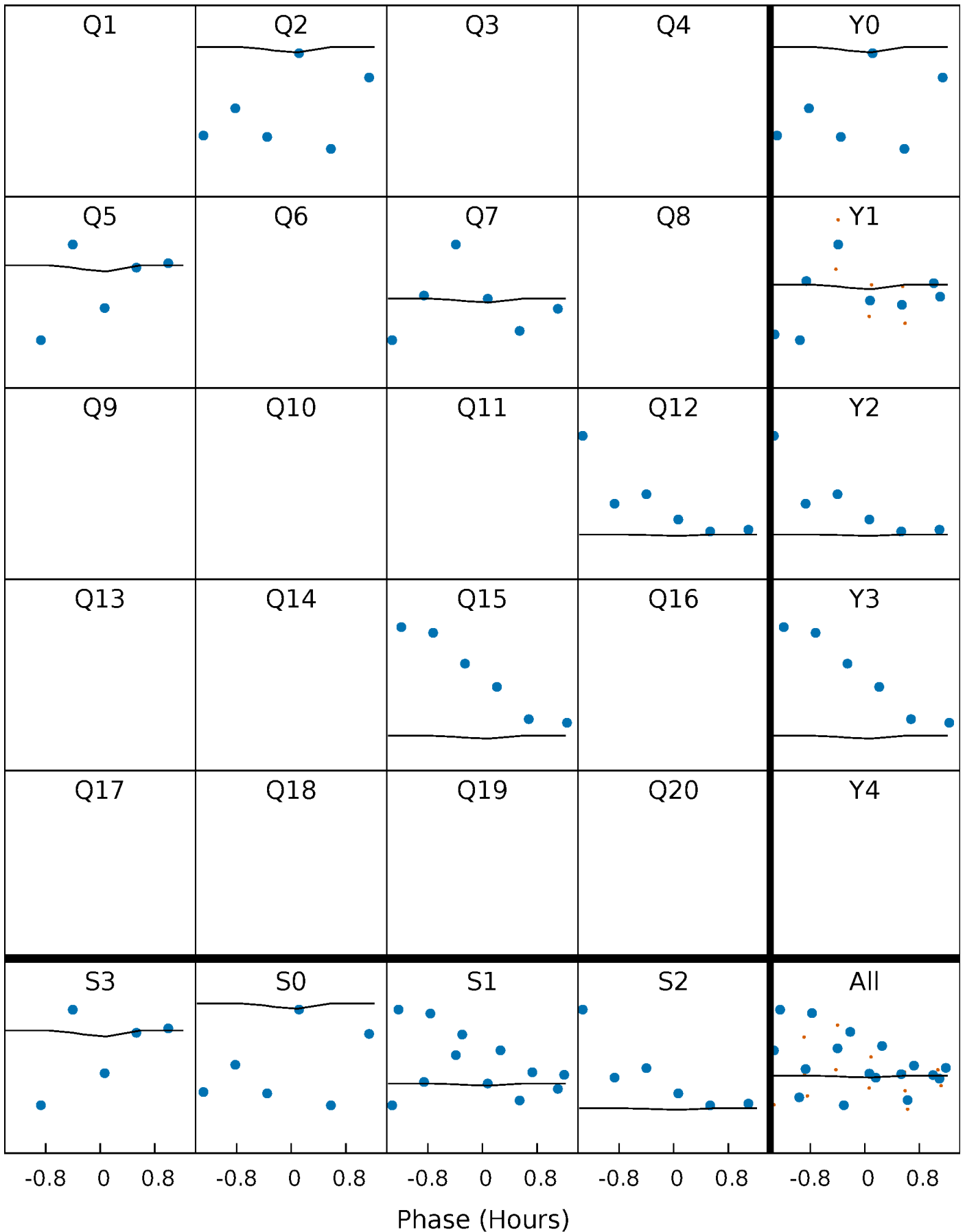
DV Quarter-Phased Transit Curves

TCE 004851239-09 $P = 75.760742$ Days $T_0 = 165.462552$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

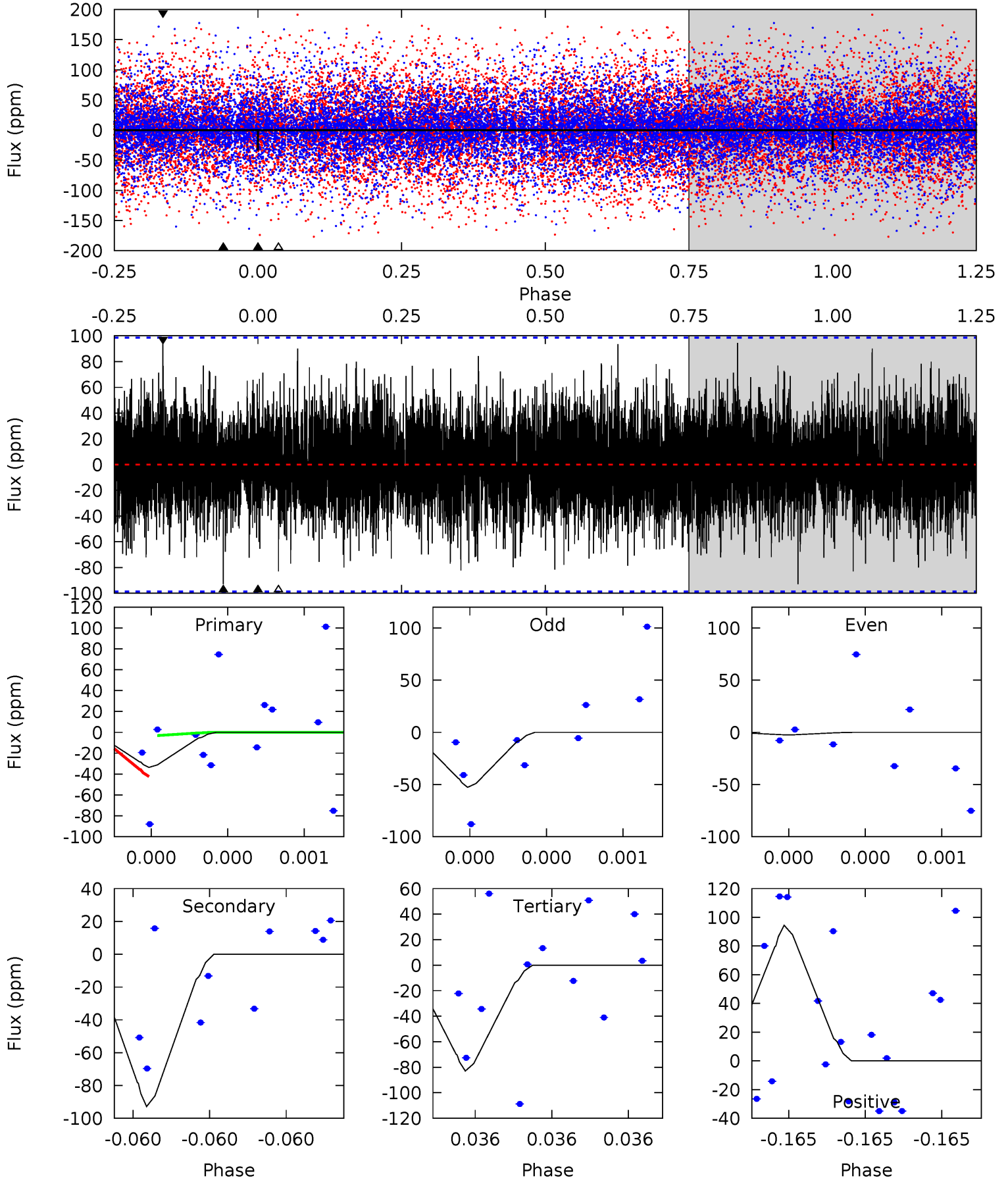
TCE 004851239-09 $P = 75.760667$ Days $T_0 = 165.435650$ (BKJD)



DV Model-Shift Uniqueness Test

004851239-09, P = 75.760742 Days, E = 89.701810 Days

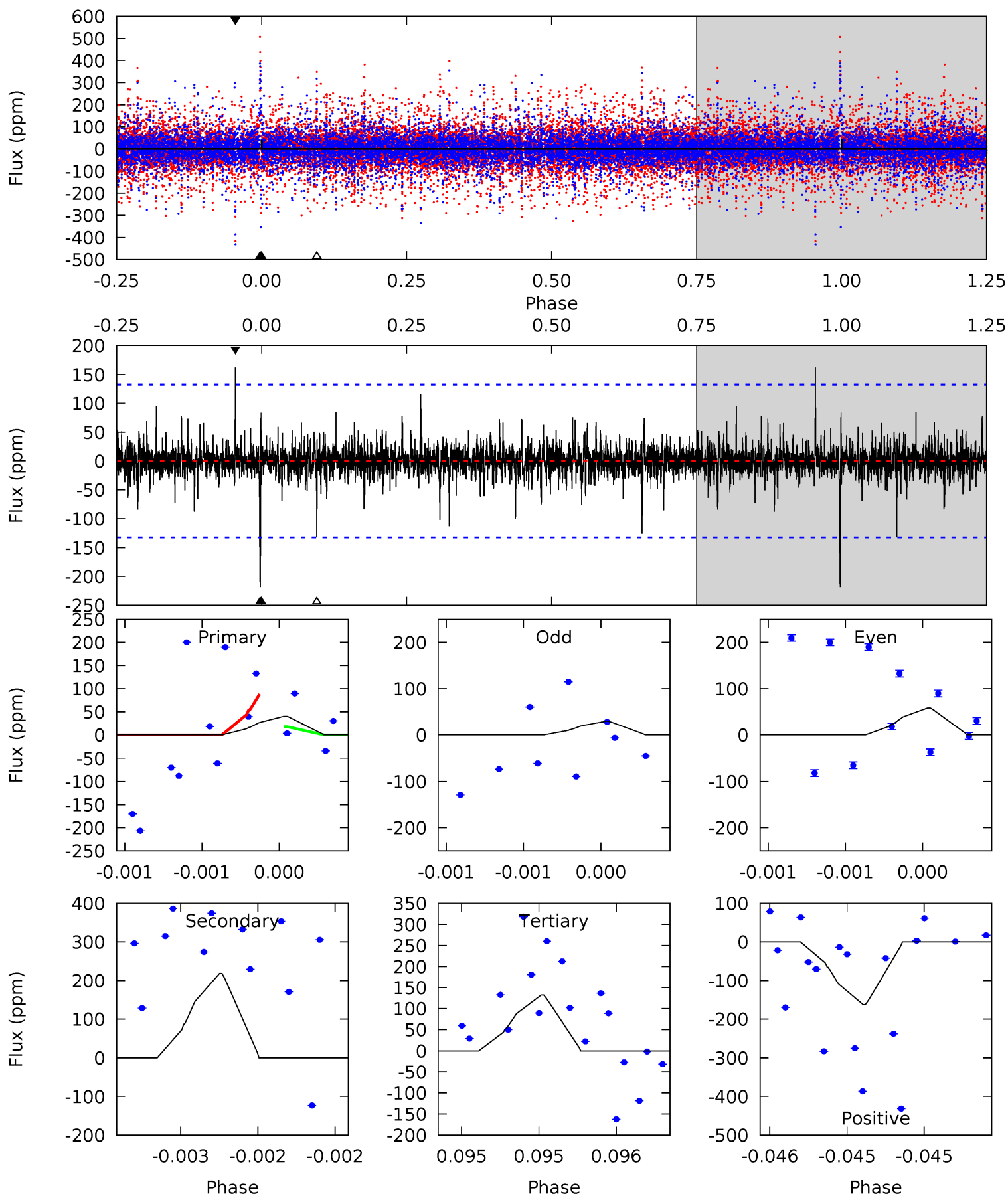
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.92	5.30	4.74	5.40	5.63	3.57	1.33	-2.82	-3.48	0.57	-0.10	1.45	2.66	0.50	1.09



Alt Model-Shift Uniqueness Test

004851239-09, P = 75.760667 Days, E = 89.674983 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.71	9.17	5.56	6.81	5.56	3.45	0.83	-3.84	-5.10	3.61	2.36	0.54	1.62	0.43	1.48



Stellar Parameters For KIC 004851239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5798^{+69}_{-86}	$4.507^{+0.018}_{-0.102}$	$0.100^{+0.150}_{-0.150}$	$0.941^{+0.120}_{-0.043}$	$1.038^{+0.050}_{-0.068}$	$1.753^{+0.169}_{-0.541}$
	+1%/-1%	+0%/-2%	+150%/-150%	+13%/-5%	+5%/-7%	+10%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004851239-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-93 ± 18	$227.23^{+222.71}_{-160.11}$	590^{+18}_{-13}	-1473^{+3187}_{-51}	$0.121^{+1.233}_{-0.092}$
Alt.	-218 ± 24	$220.06^{+227.85}_{-157.65}$	590^{+19}_{-14}	1195^{+728}_{-2696}	$0.309^{+3.795}_{-0.238}$

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 $A_{obs} \gg 1.0$

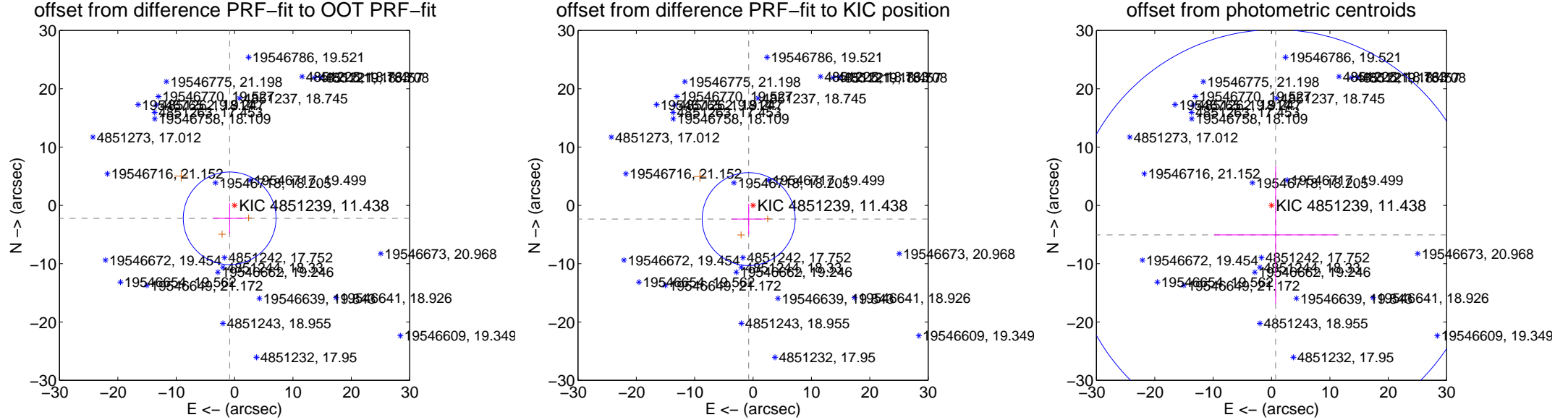
DV Centroid Data

Supplemental centroid analysis for 004851239-09. **Kepler magnitude: 11.44.** Transit SNR 0.84

There are 0 quarters with good PRF difference image offsets

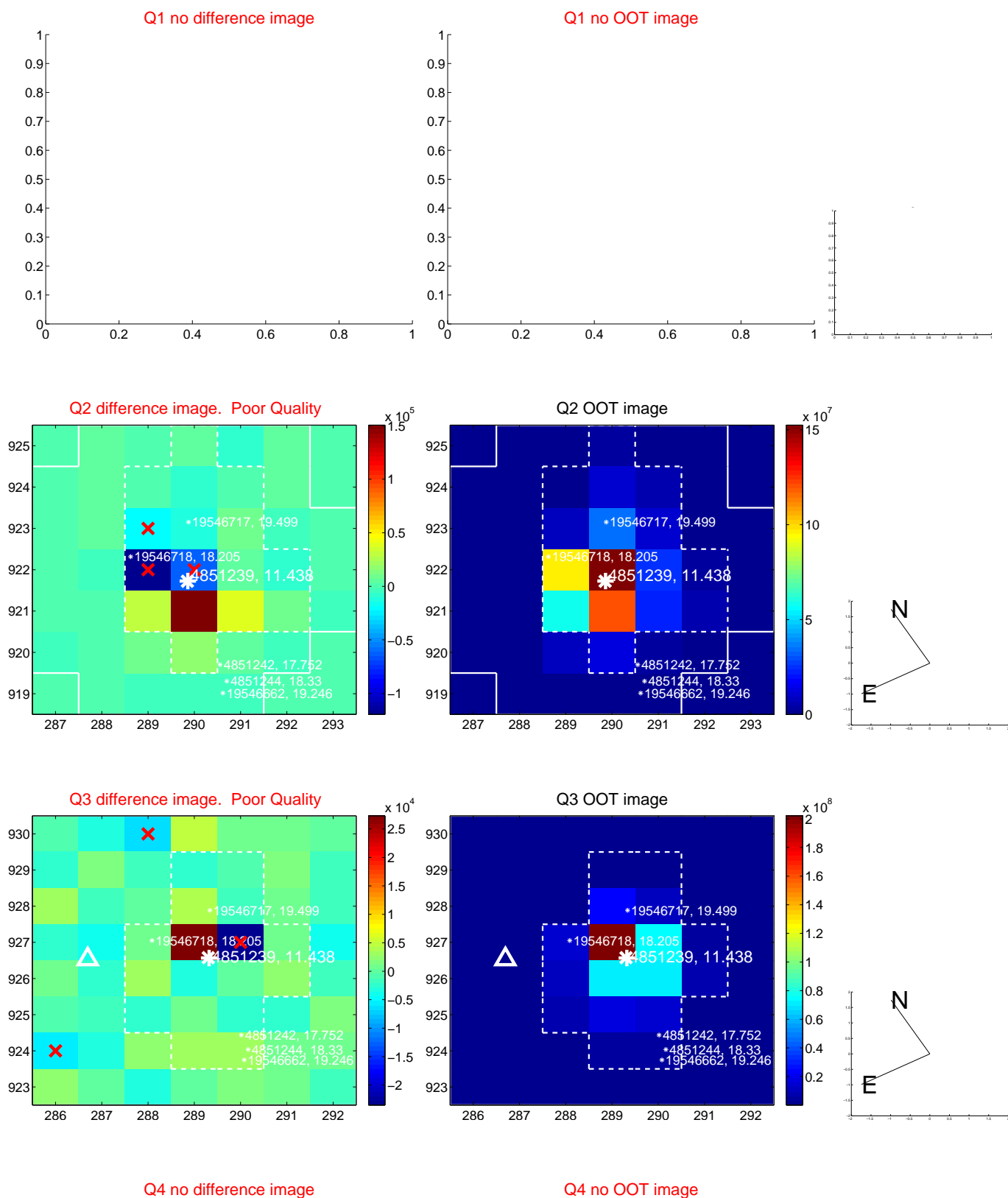
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.375 ± 2.648	0.90	0.842 ± 2.915	-2.220 ± 2.608
PRF-fit source offset from KIC position	2.469 ± 2.655	0.93	0.751 ± 2.931	-2.353 ± 2.625
photometric centroid source offset	5.11 ± 11.73	0.44	-0.70 ± 10.55	-5.06 ± 11.75

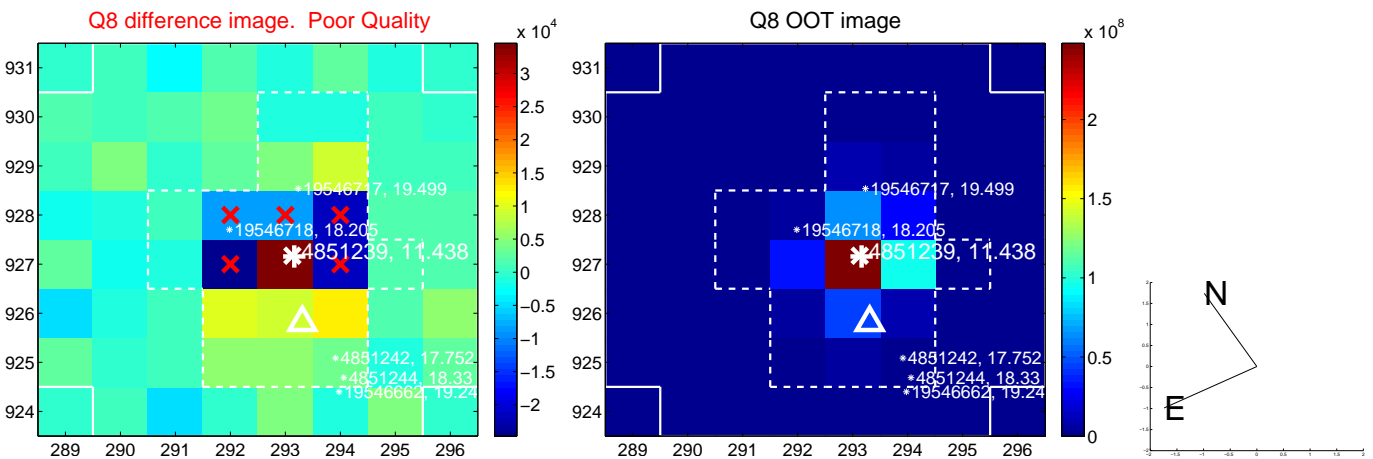
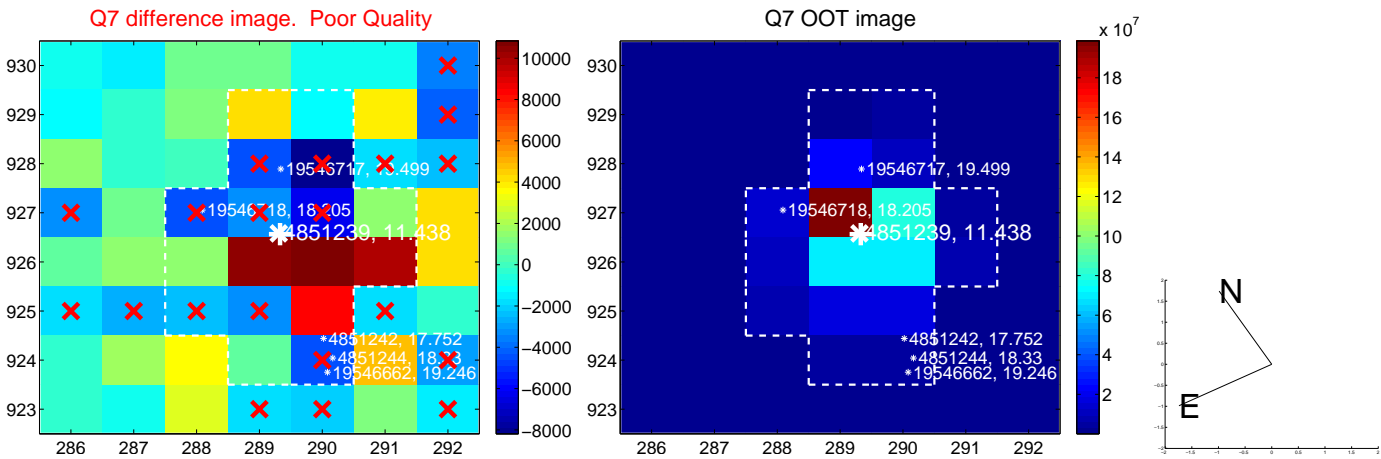
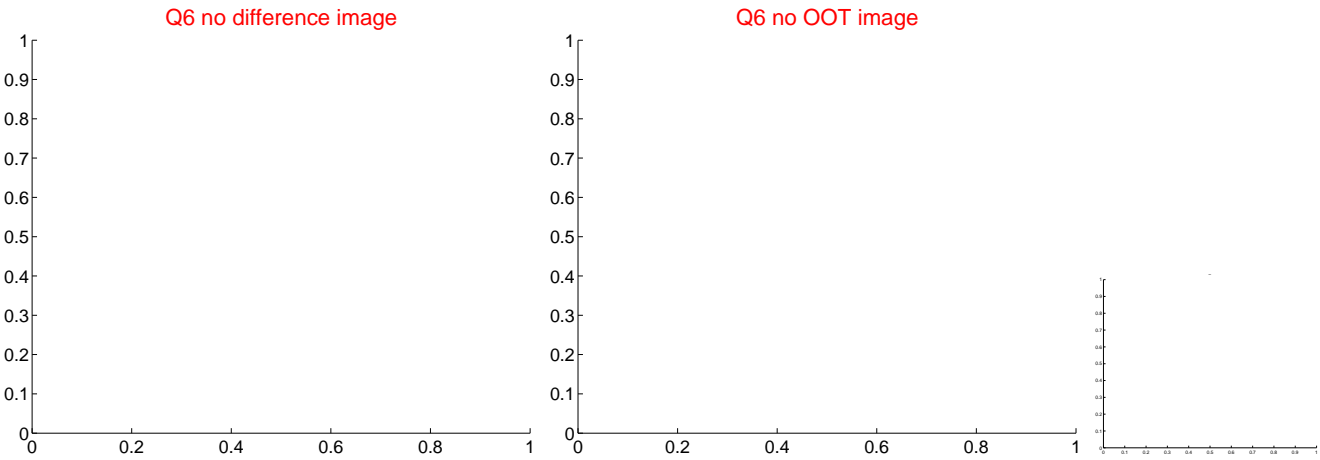
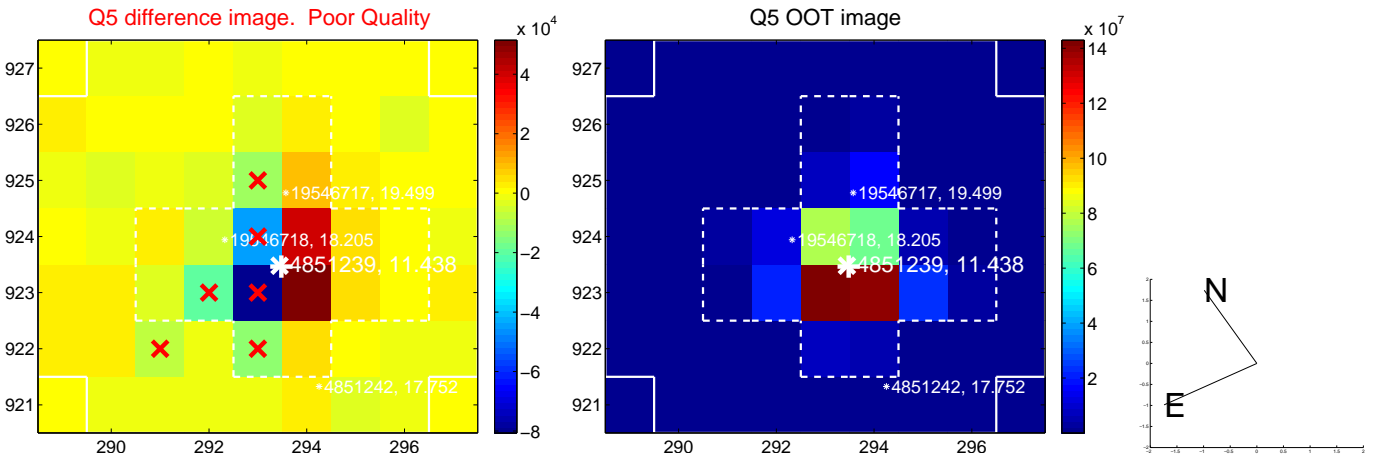


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

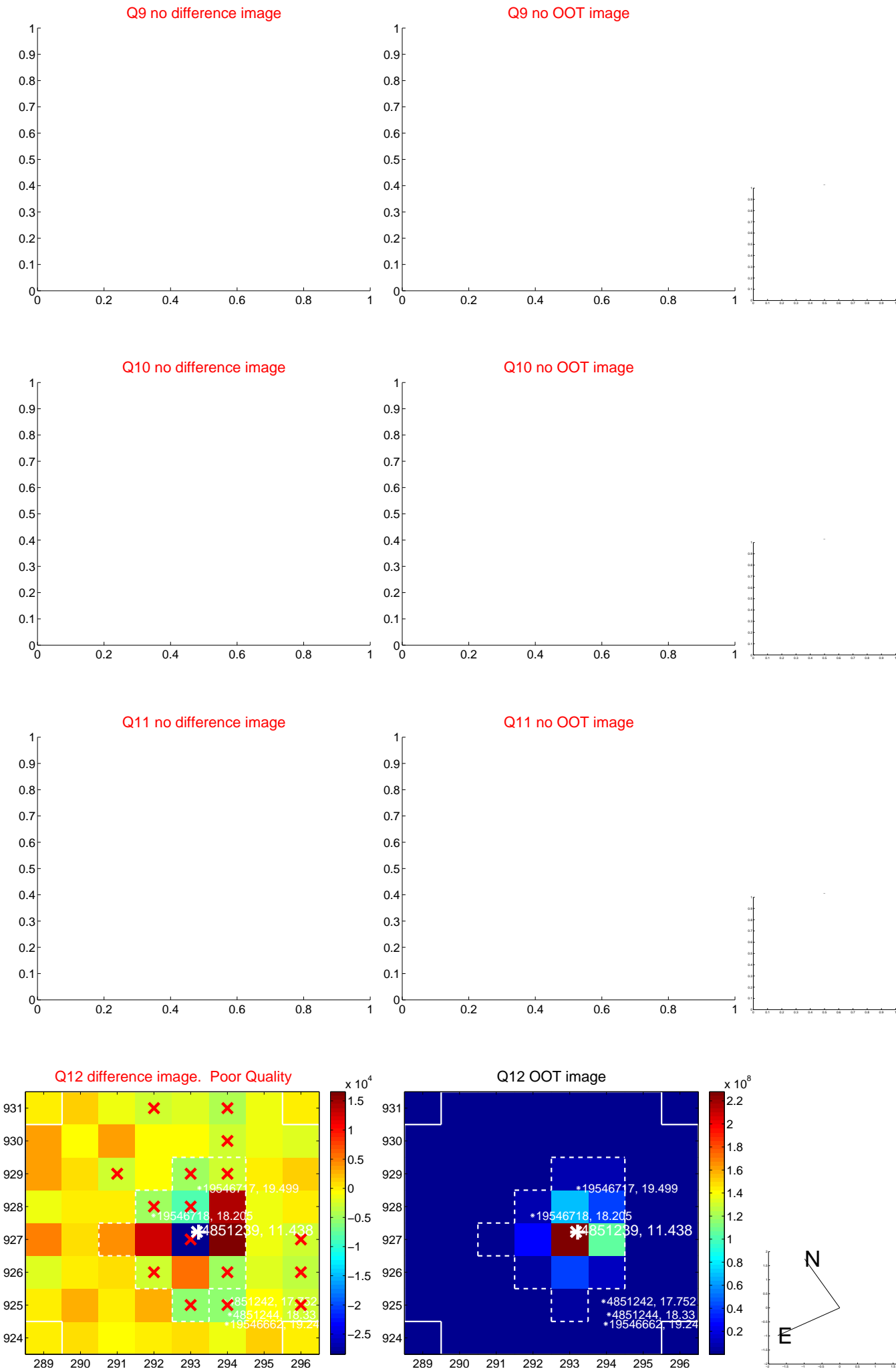
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



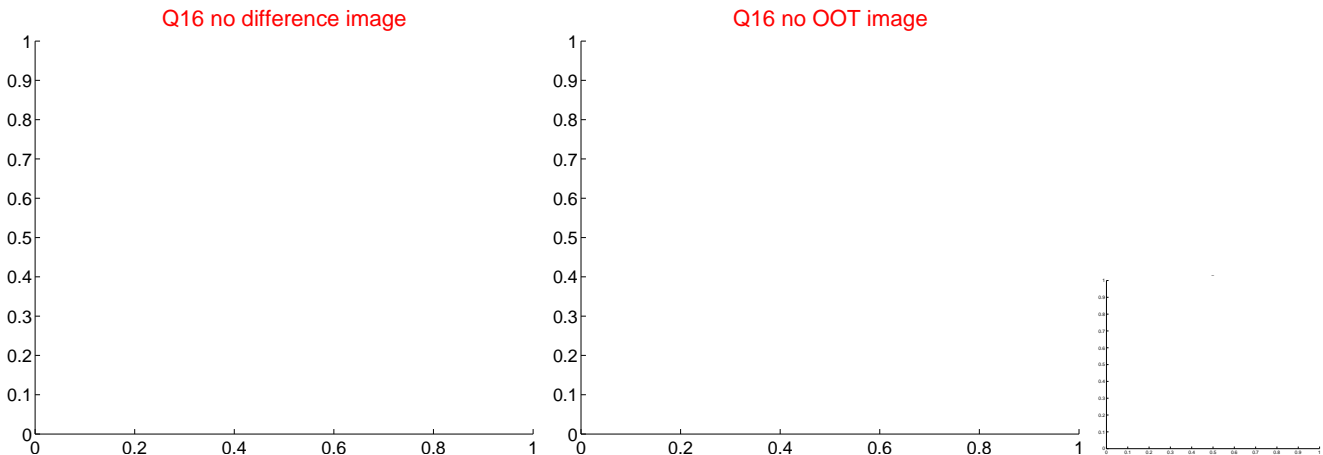
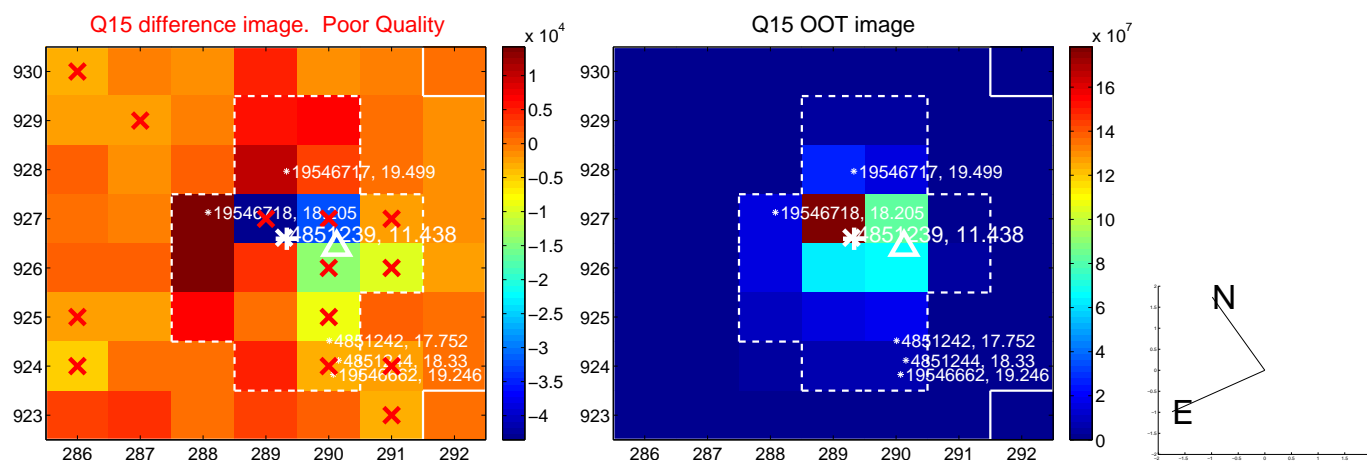
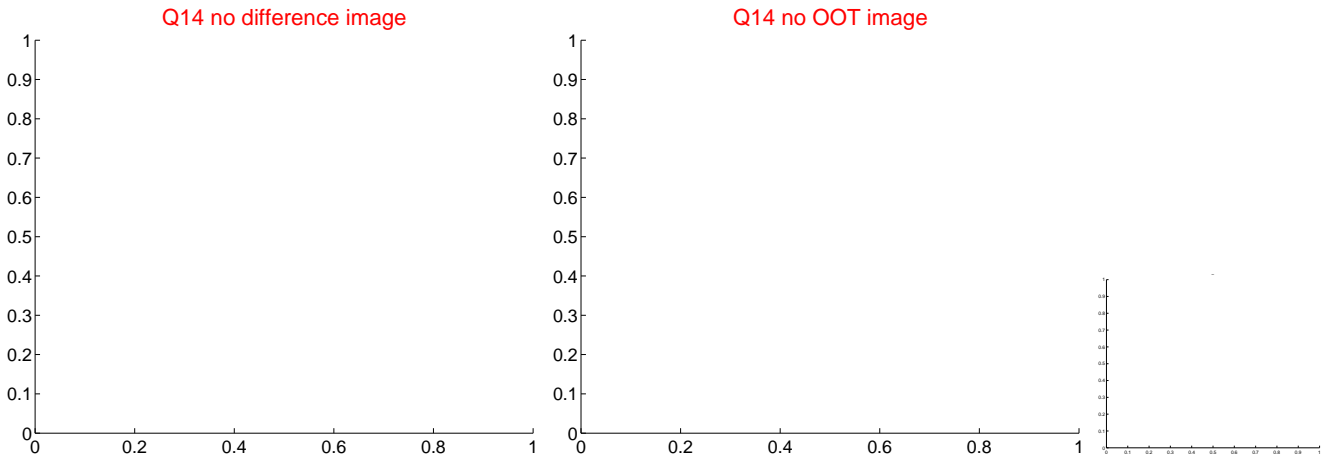
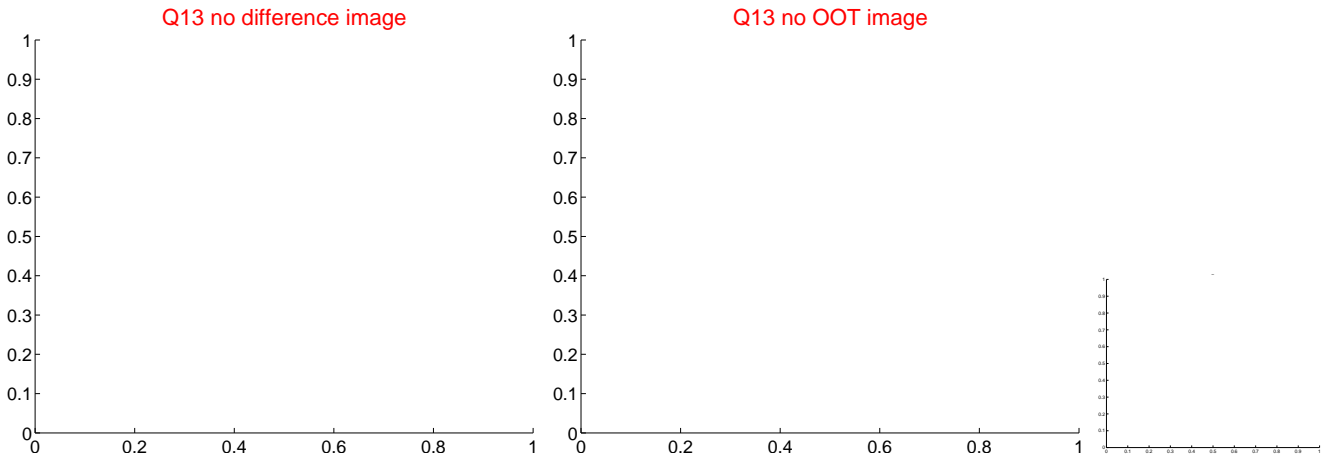
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



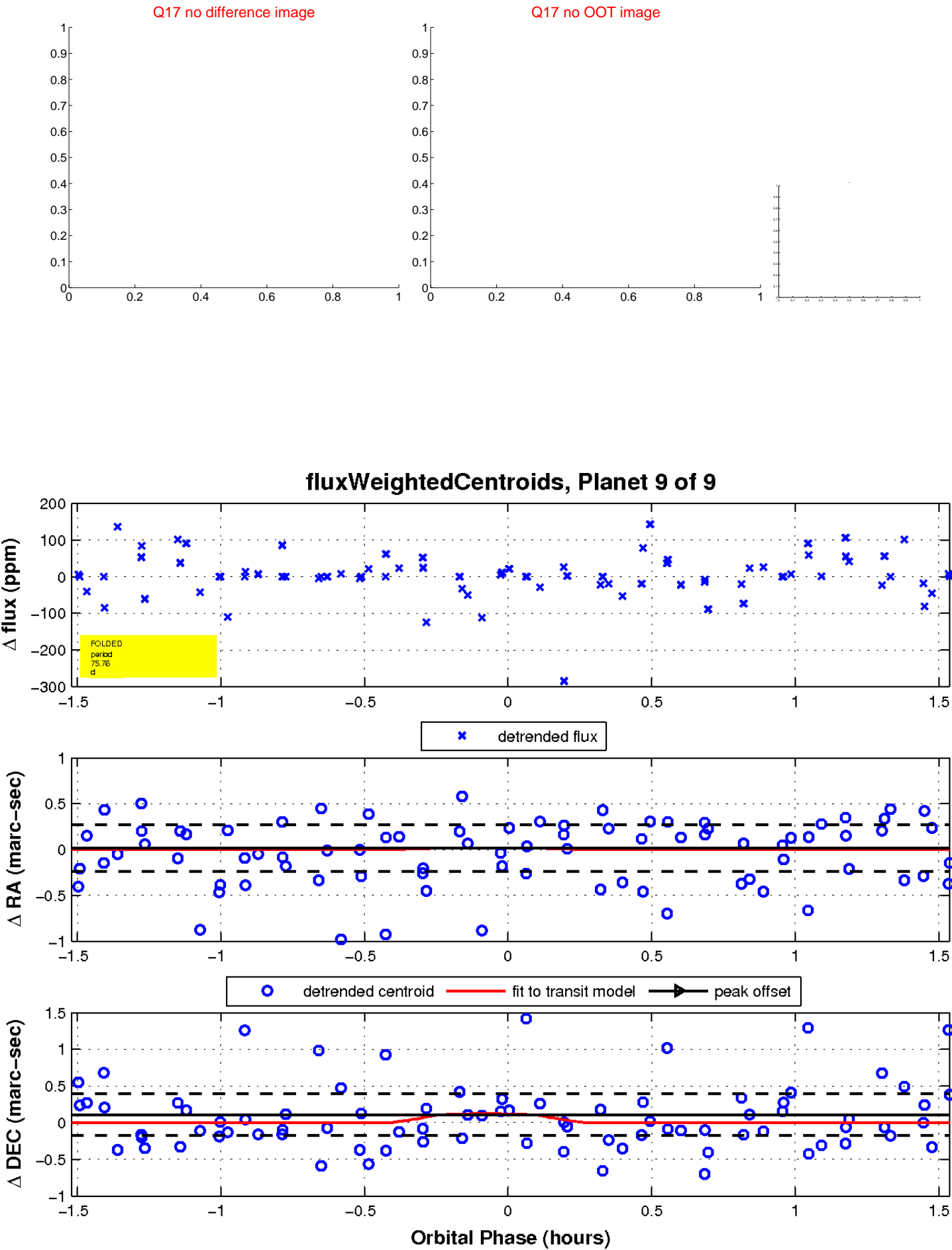
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

