

KIC 005078025

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})
005078025-01	OBS	4211.01	0.696295	131.874542	83.4	2.104	9.9	12.3	0.87	5904	0.94	3562.61
005078025-02	OBS	4211.02	0.696300	131.525152	72.3	2.331	10.3	11.9	0.87	5904	0.87	3562.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005078025-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005078025-02	OBS	FP	0.00	1	0	1	1	SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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.

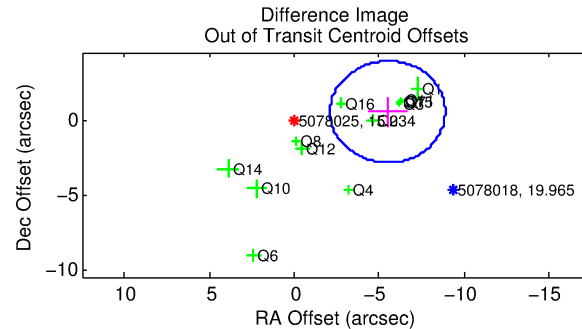
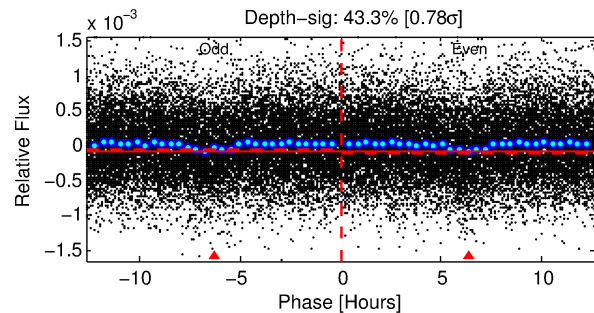
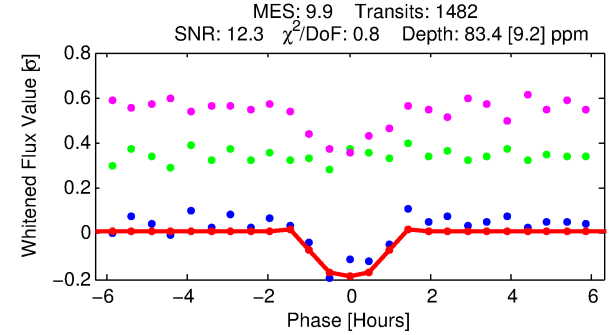
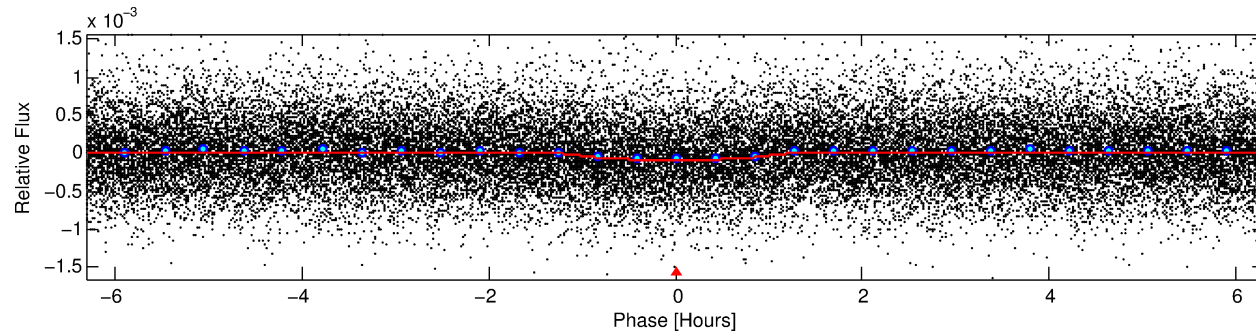
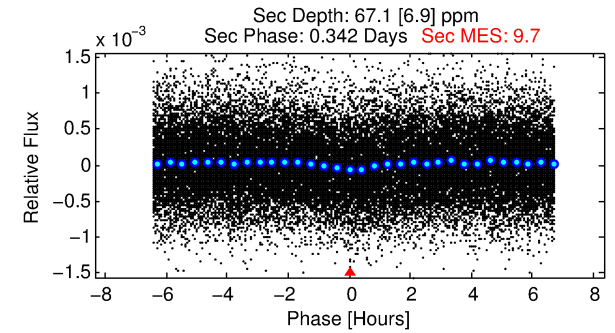
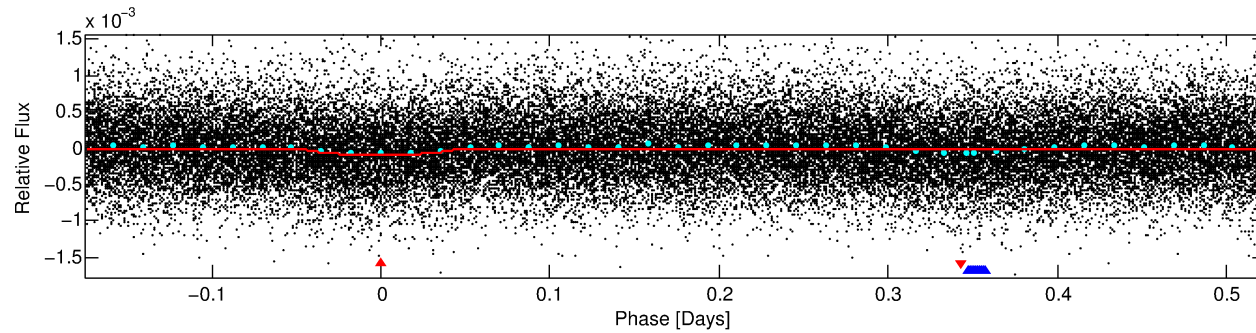
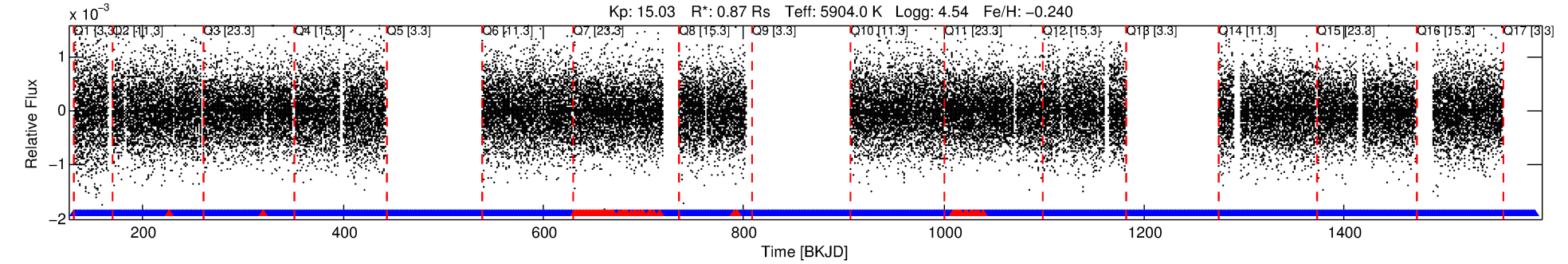
Ephemeris Match Information For 005078025-01

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
005078025-01	5078025	005077994-sec	5077994	1:1	34.3	8	-4	12.67	15.04	2736.10	Direct-PRF	0	1.13	0.39

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: 5078025 Candidate: 1 of 2 Period: 0.696 d
KOI: K04211.01 Corr: 0.918



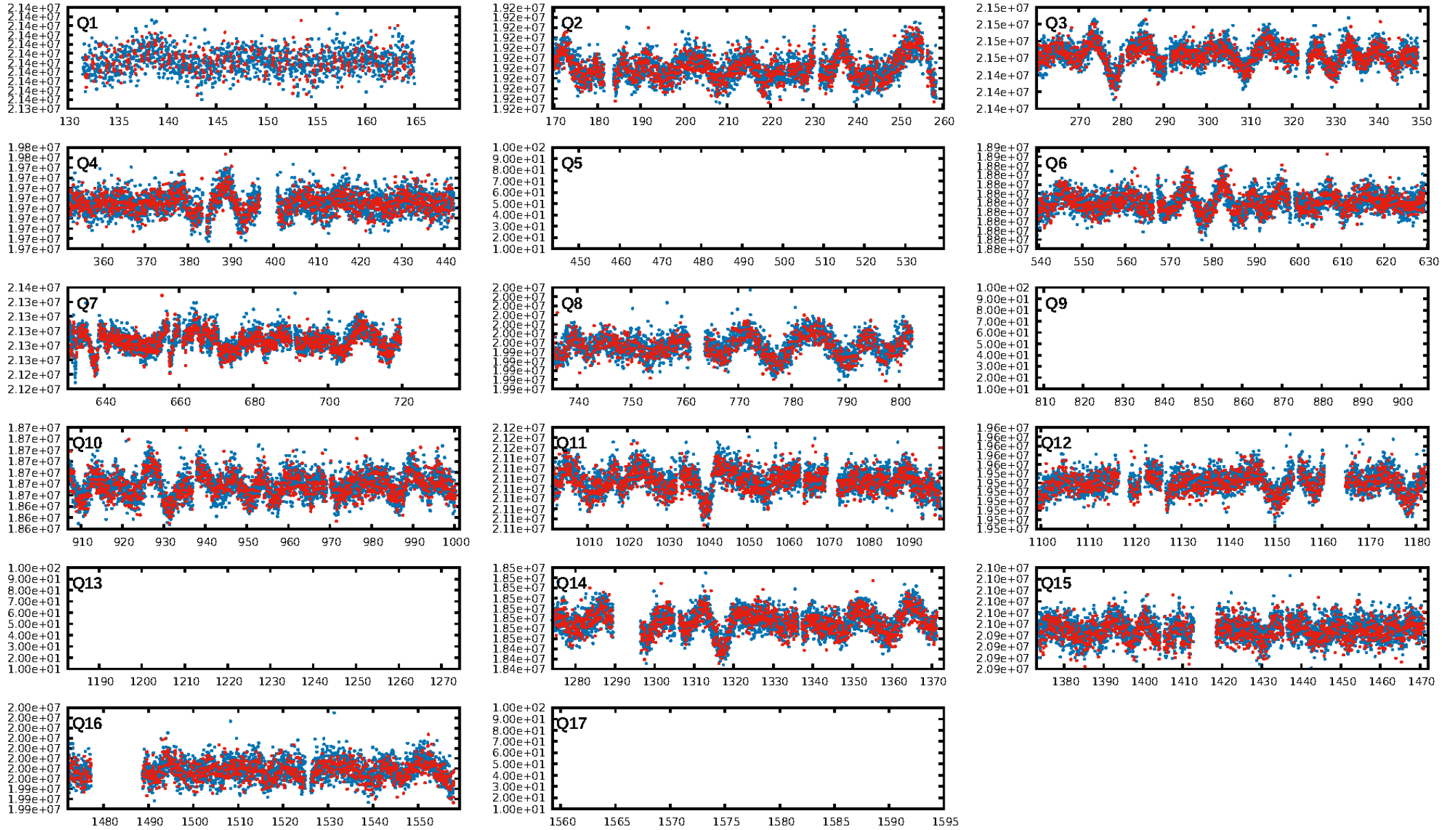
DV Fit Results:

Period = 0.69629 [0.00001] d
Epoch = 131.8745 [0.0022] BKJD
Rp/R* = 0.0099 [0.0063]
a/R* = 1.50 [2.68]
b = 0.90 [0.71]
Seff = 3562.61 [1488.95]
Teff = 1970 [206] K
Rp = 0.93 [0.66] Re
a = 0.0152 [0.0041] AU
Ag = 9.71 [12.96] [0.67σ]
Teffp = 5376 [1720] K [1.97σ]

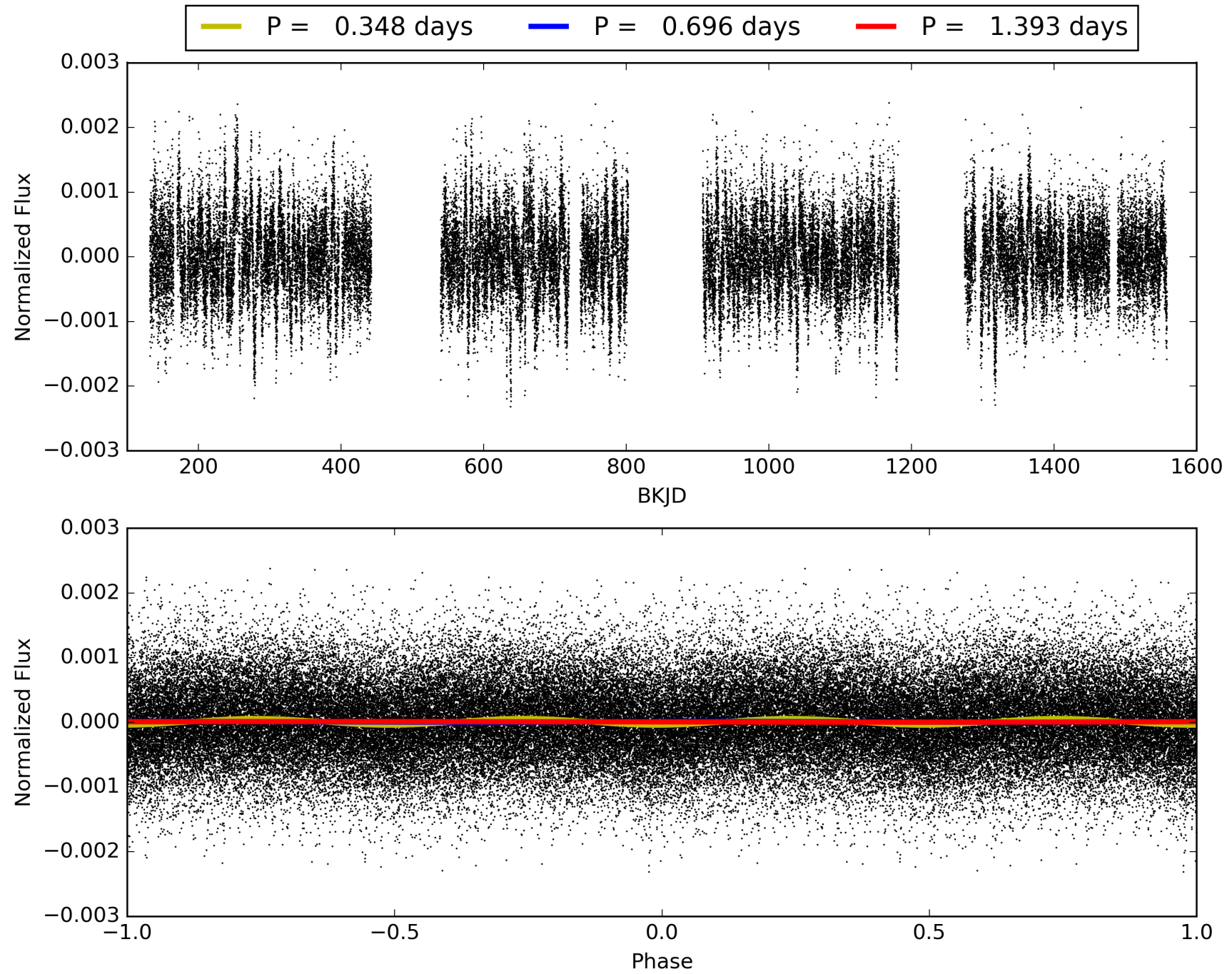
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.41e-27
RollingBand-fgt: 0.94 [1351/1434]
GhostDiagnostic-chr: 0.1321
Centroid-sig: 0.0%
Centroid-so: 3.332 arcsec [3.04σ]
OotOffset-rm: 5.546 arcsec [4.90σ]
KicOffset-rm: 5.589 arcsec [4.94σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 0.38 [5/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 005078025-01, PDC Light Curves

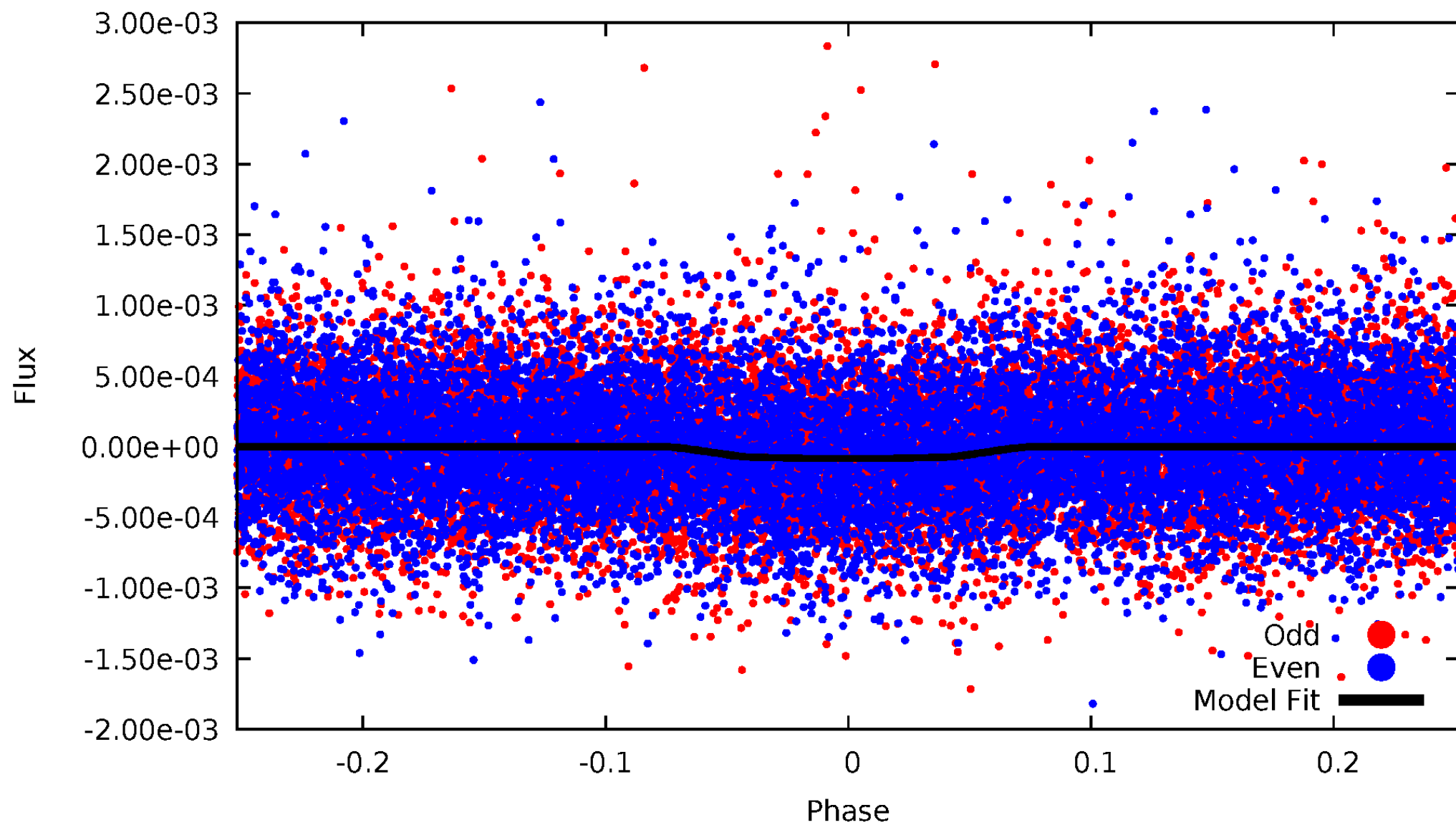


TCE 005078025-01



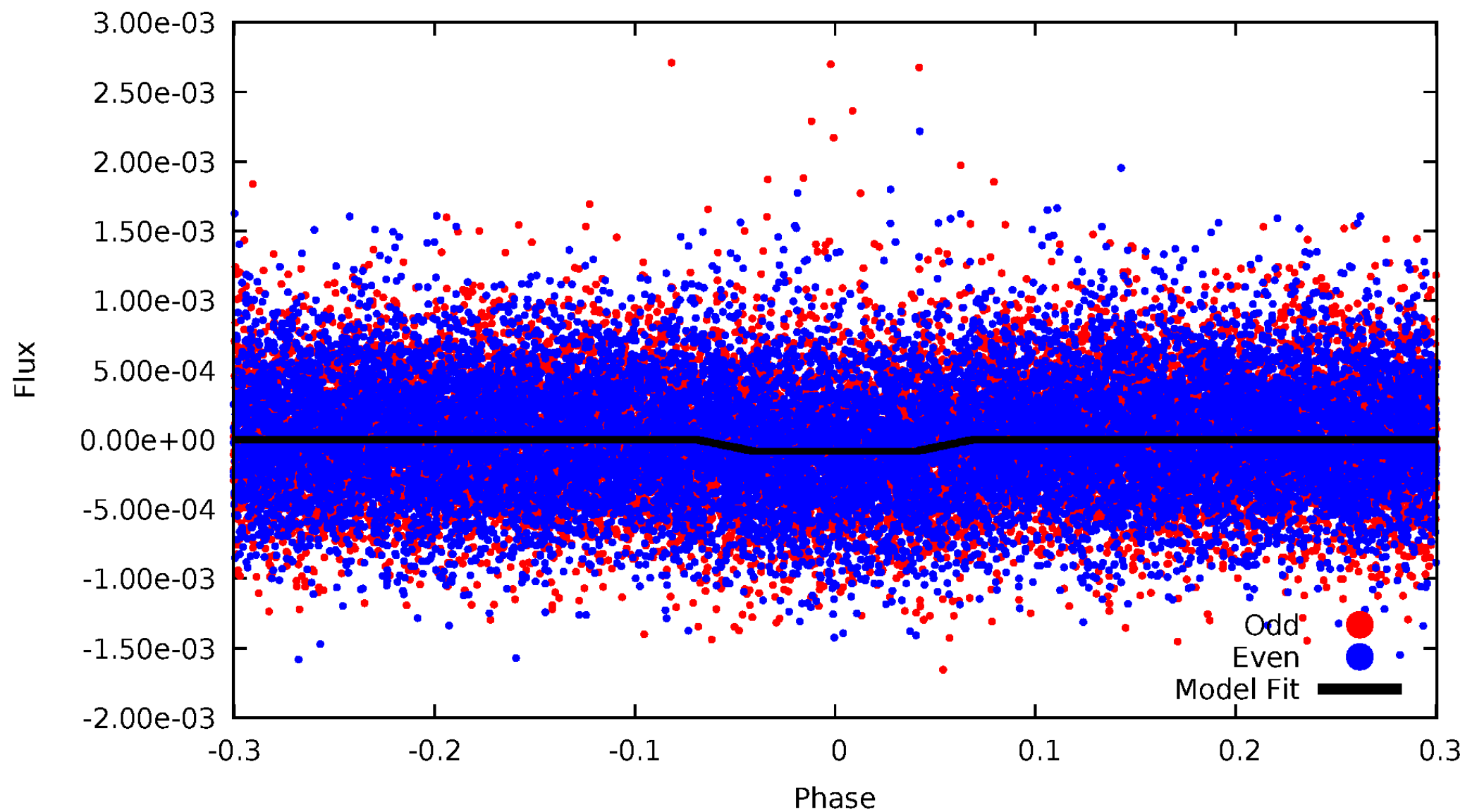
DV Odd/Even

TCE 005078025-01



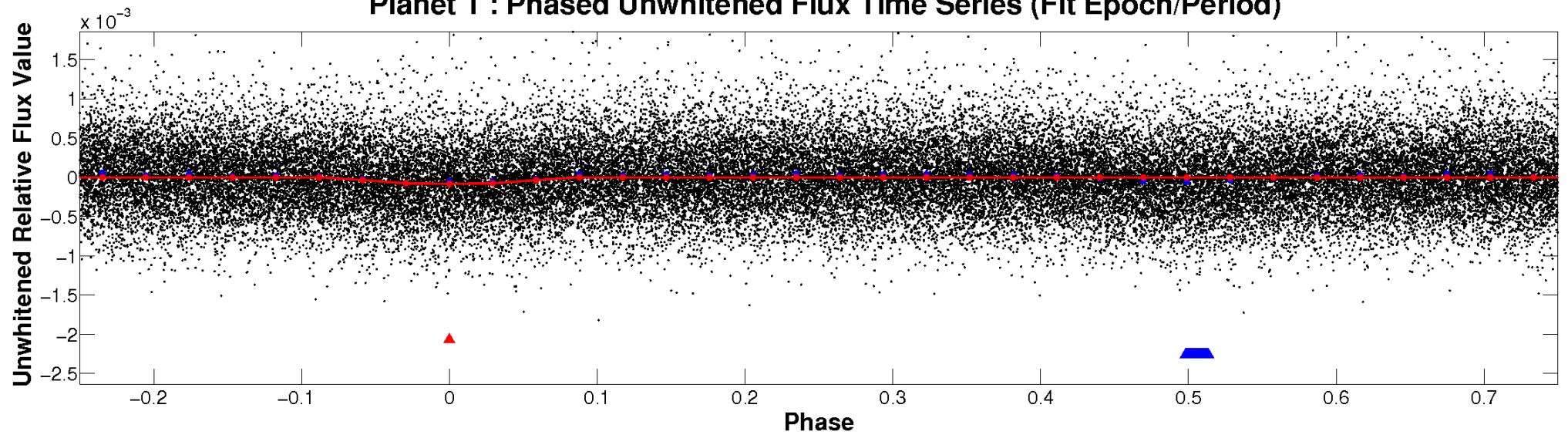
ALT Odd/Even

TCE 005078025-01

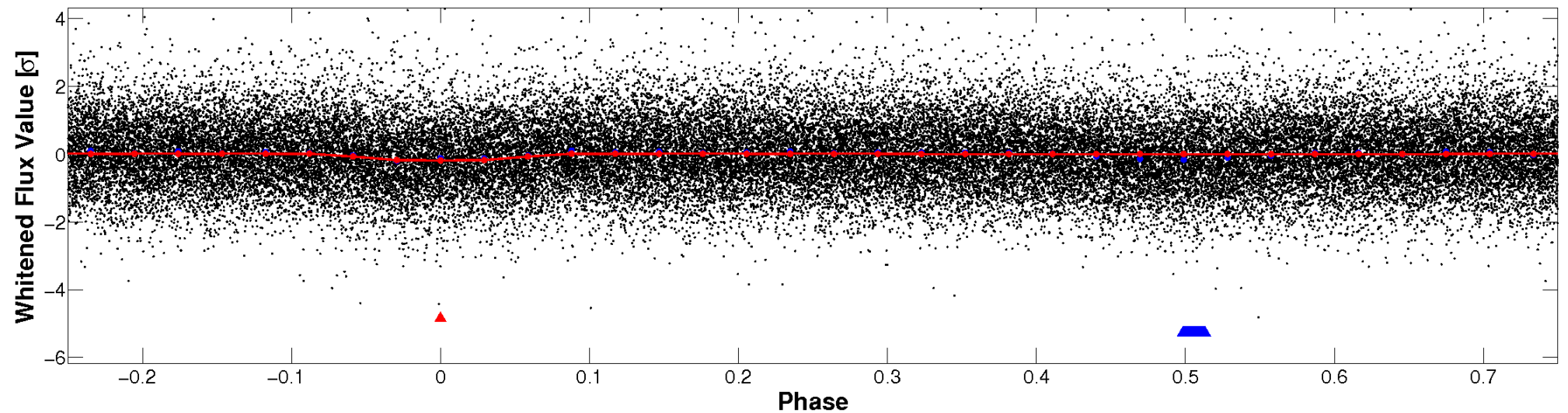


Non-Whitened Vs. Whitened Light Curve

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

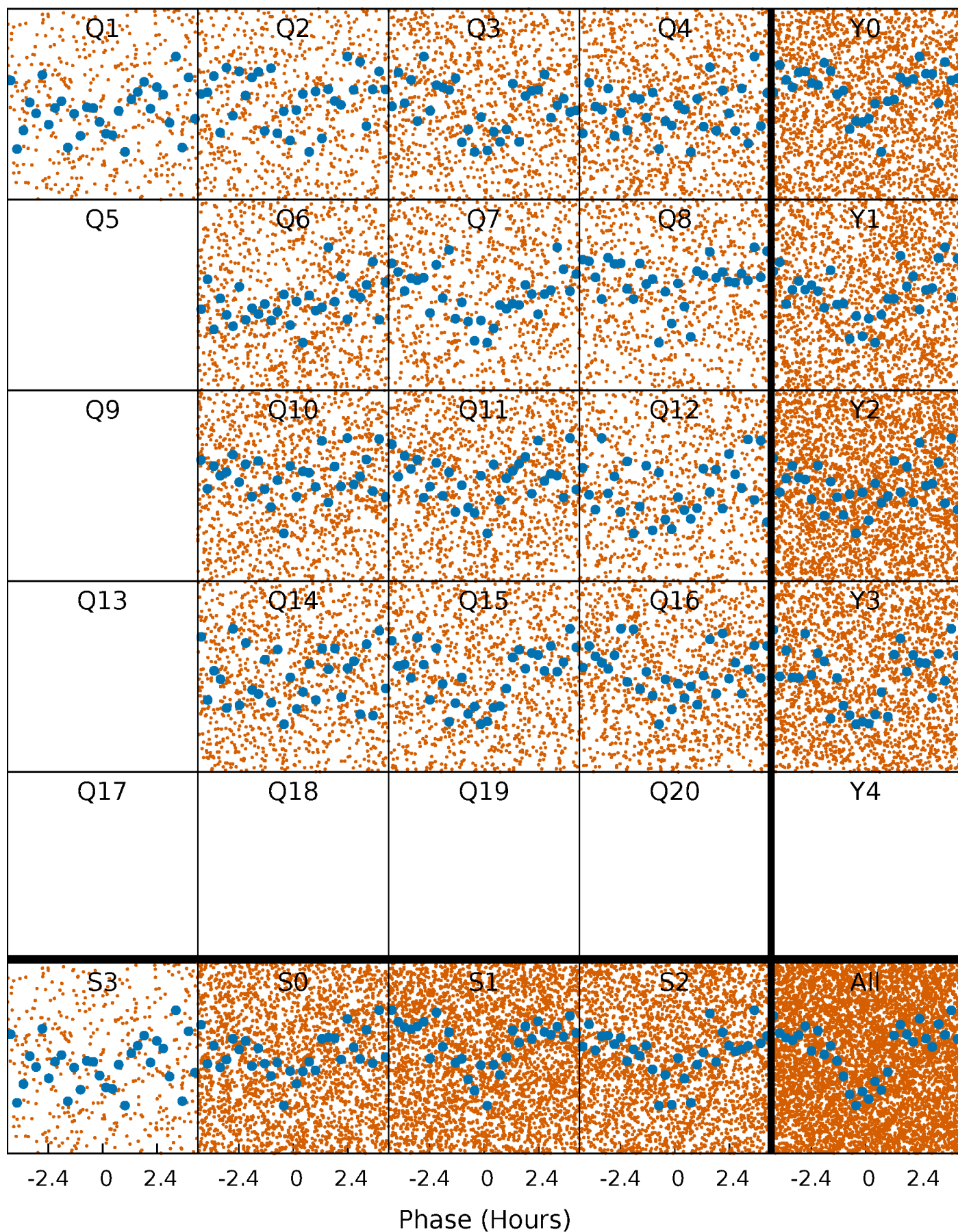


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



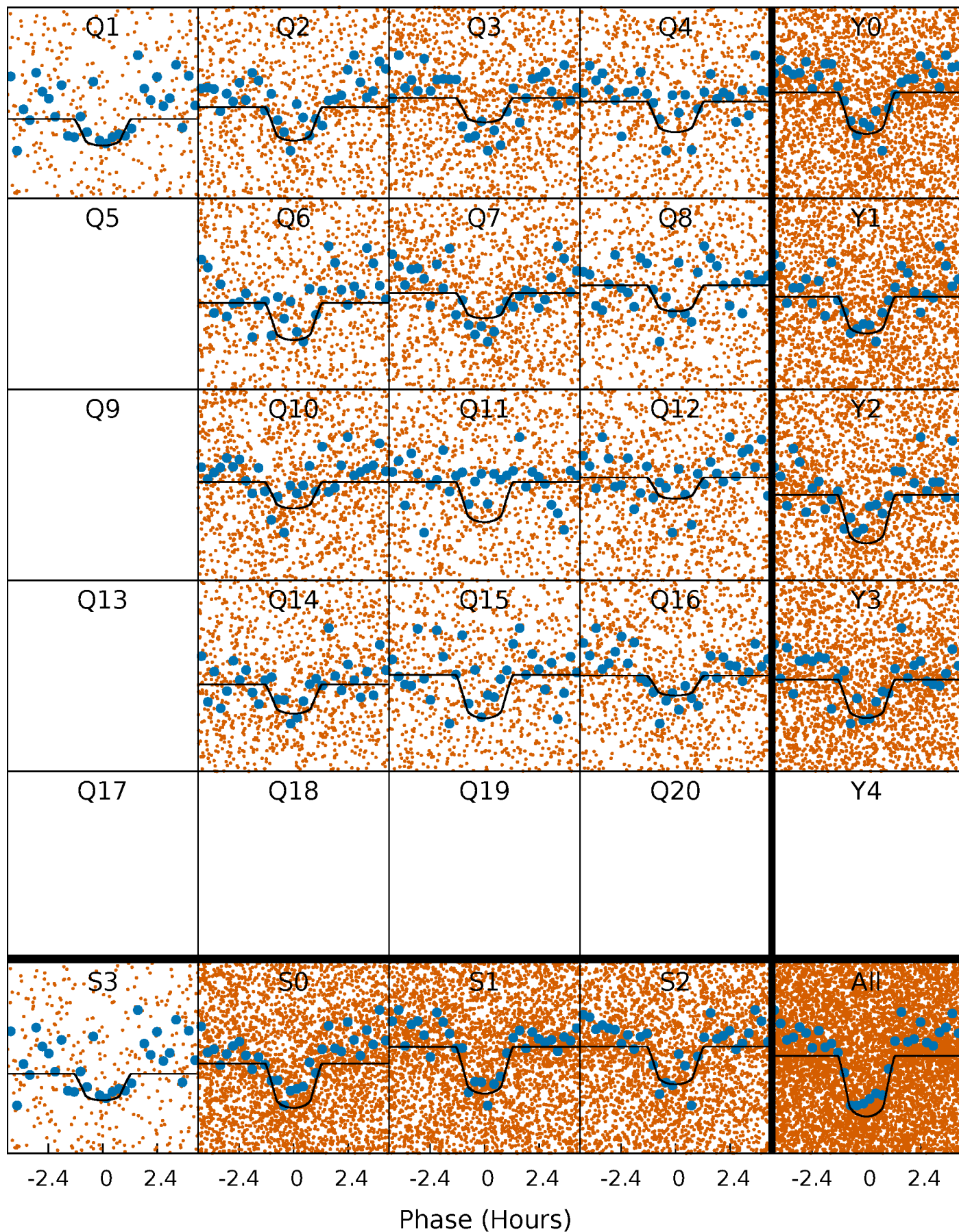
PDC Quarter-Phased Transit Curves

TCE 005078025-01 P= 0.696295 Days $T_0=131.874542$ (BKJD)



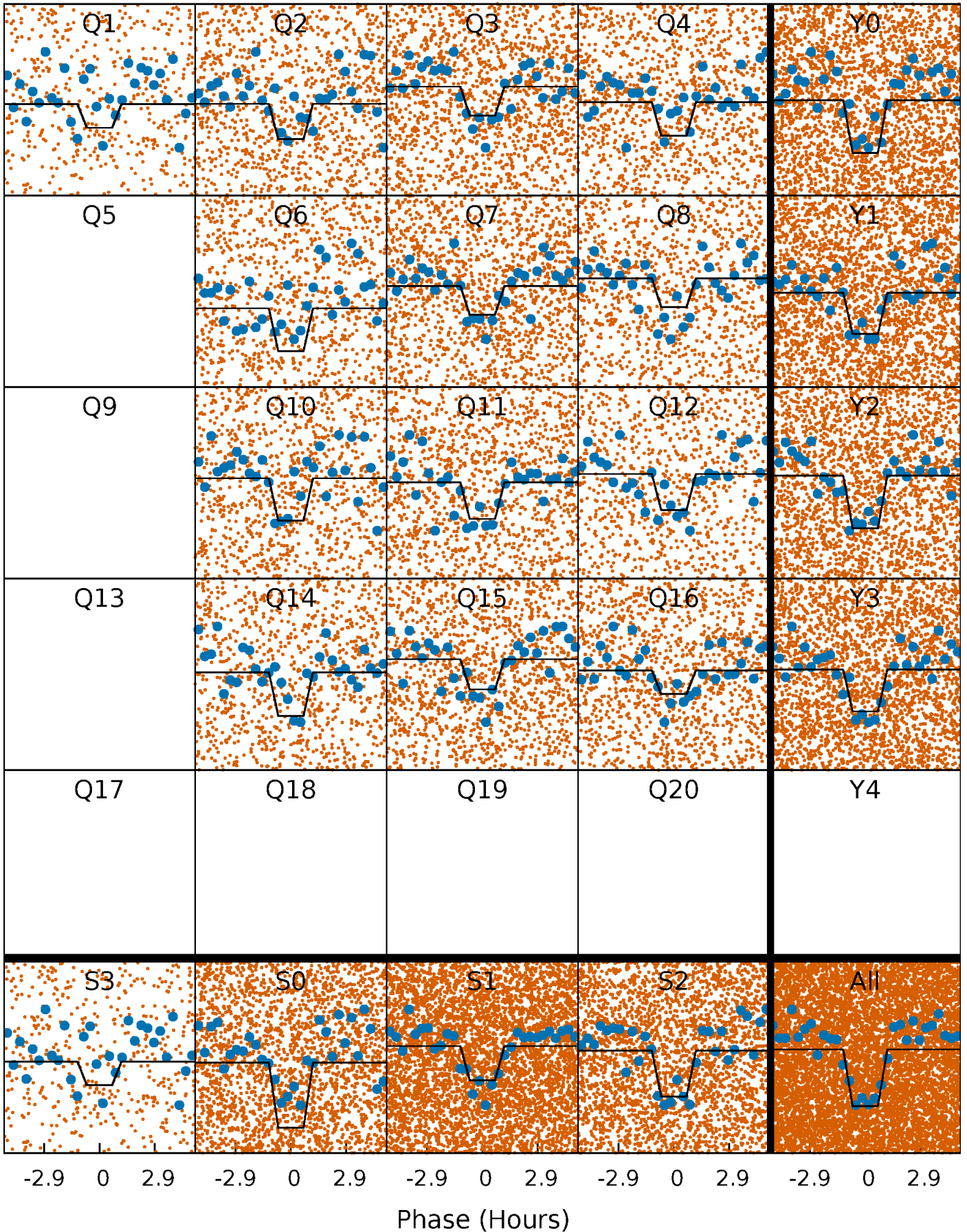
DV Quarter-Phased Transit Curves

TCE 005078025-01 P= 0.696295 Days $T_0=131.874542$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

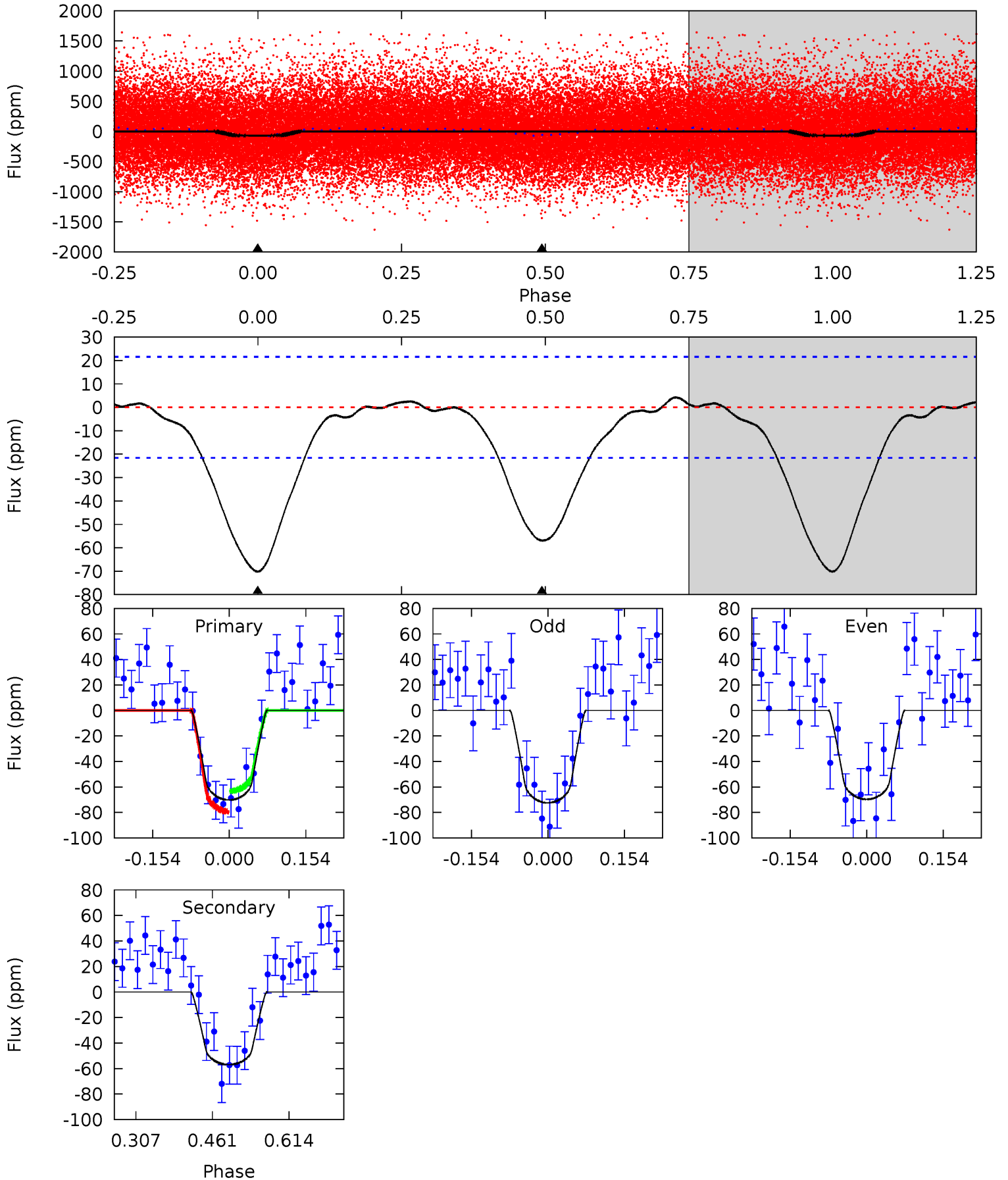
TCE 005078025-01 P= 0.696288 Days $T_0=131.878099$ (BKJD)



DV Model-Shift Uniqueness Test

005078025-01, P = 0.696295 Days, E = 131.178247 Days

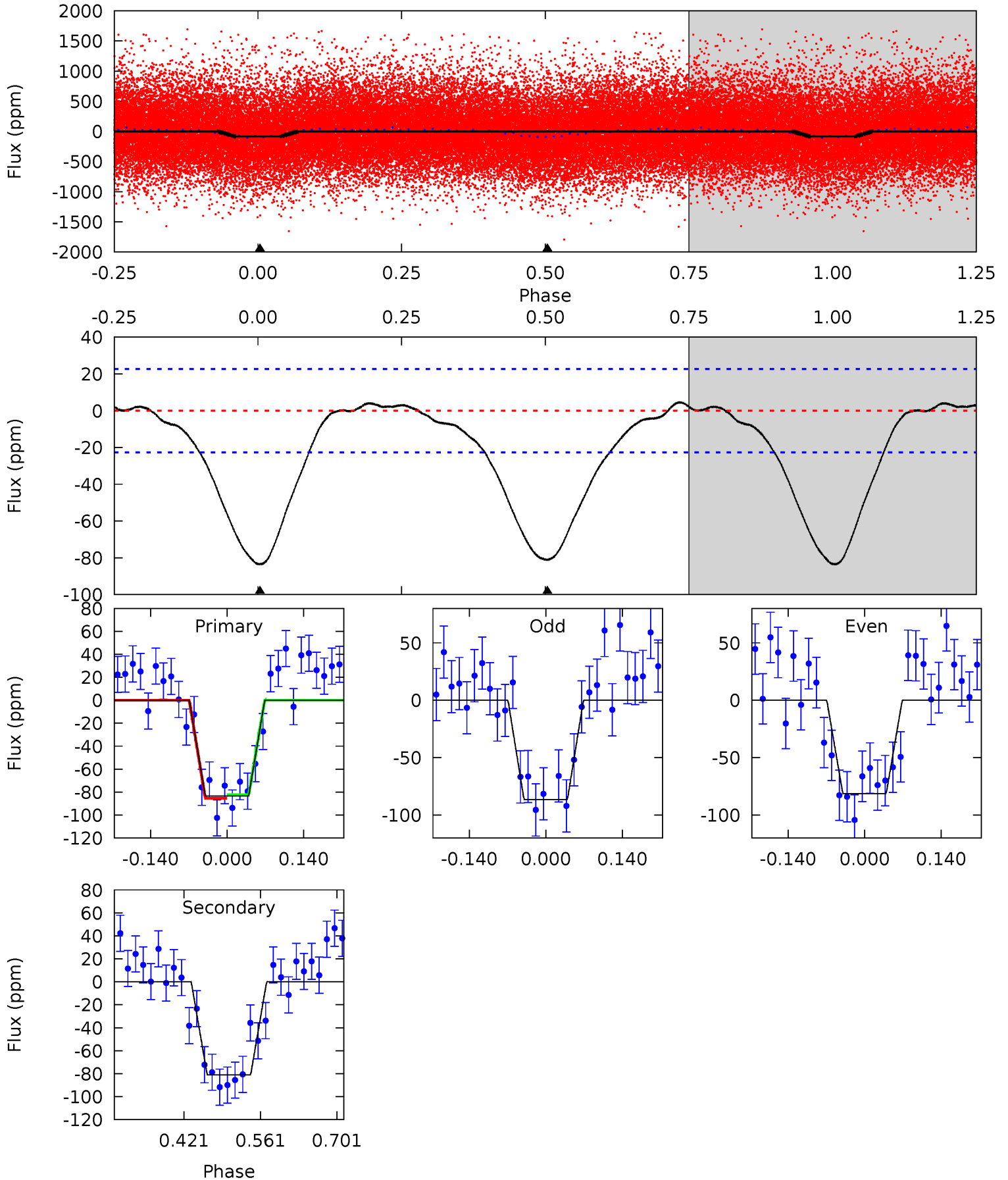
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	11.8	0	0	4.47	1.43	0.42	14.5	14.5	11.8	11.8	0.29	0.86	0.06	1.67



Alt Model-Shift Uniqueness Test

005078025-01, P = 0.696288 Days, E = 131.181811 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	16.1	0	0	4.49	1.47	0.86	16.5	16.5	16.1	16.1	0.52	0.88	0.05	0.29



Stellar Parameters For KIC 005078025

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5904^{+160}_{-178}	$4.543^{+0.039}_{-0.221}$	$-0.240^{+0.300}_{-0.300}$	$0.867^{+0.276}_{-0.069}$	$0.958^{+0.107}_{-0.119}$	$2.073^{+0.435}_{-1.110}$
	+3%/-3%	+1%/-5%	+125%/-125%	+32%/-8%	+11%/-12%	+21%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005078025-01 / KOI 4211.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-57 ± 5	$1.05^{+0.64}_{-0.55}$	2828^{+195}_{-133}	5054^{+2351}_{-943}	$6.658^{+20.772}_{-4.224}$
Alt.	-81 ± 5	$0.99^{+0.61}_{-0.55}$	2816^{+220}_{-126}	5617^{+3128}_{-1054}	10^{+41}_{-6}

T_{max} = Theoretical Maximum Planetary Temperature

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

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

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

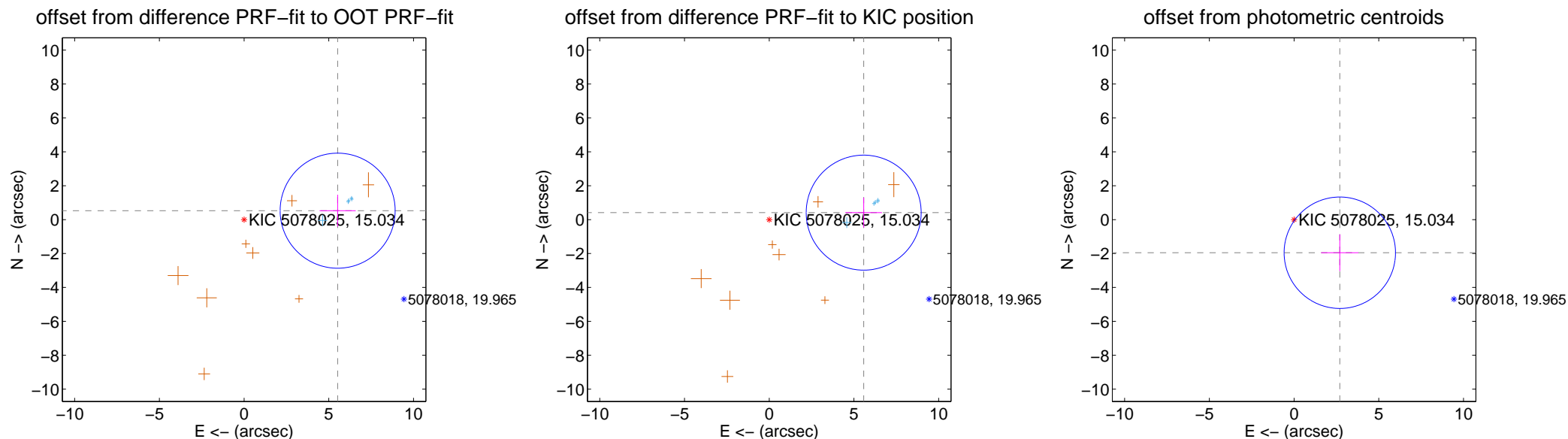
DV Centroid Data

Supplemental centroid analysis for 005078025-01. Kepler magnitude: 15.03. Transit SNR 12.34

There are 5 quarters with good PRF difference image offsets

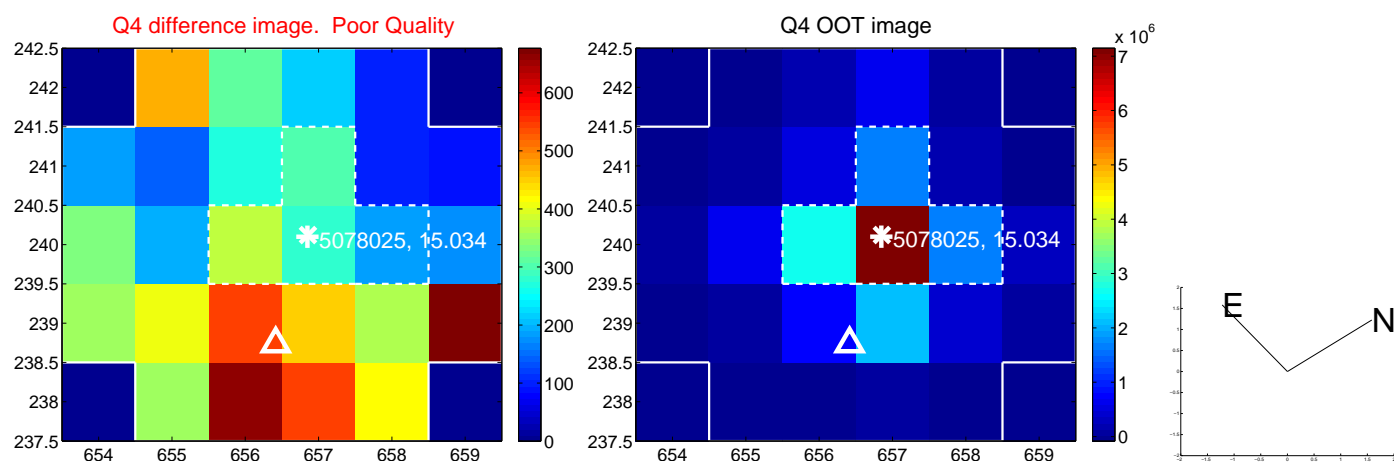
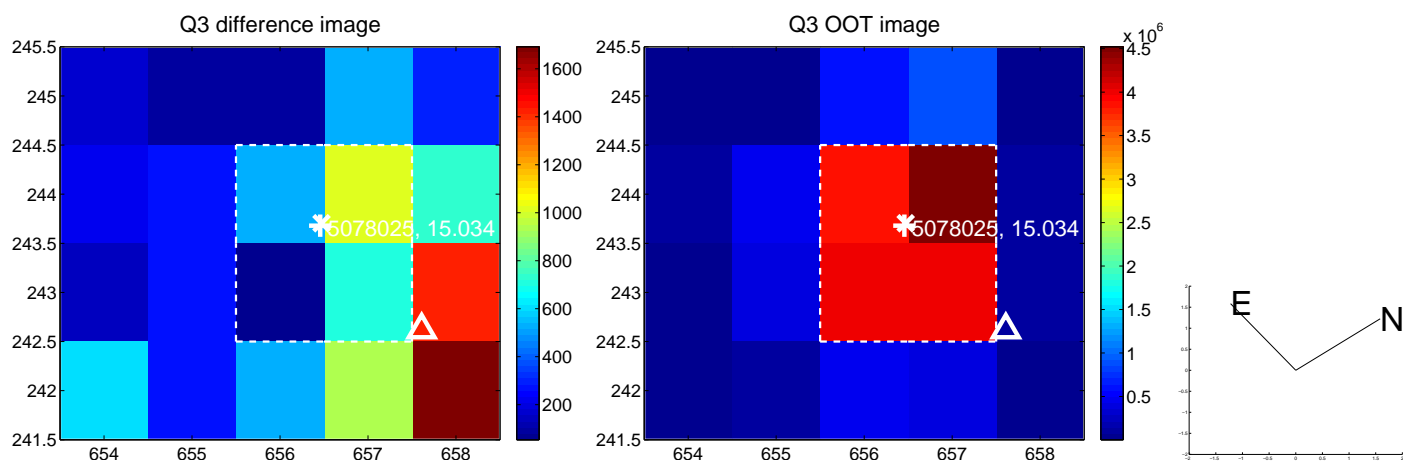
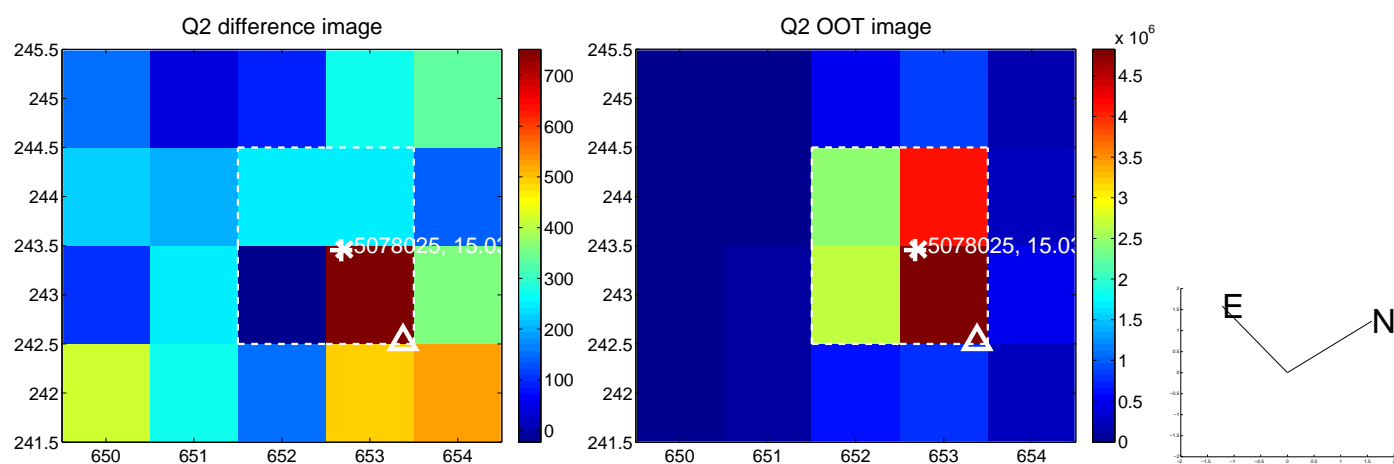
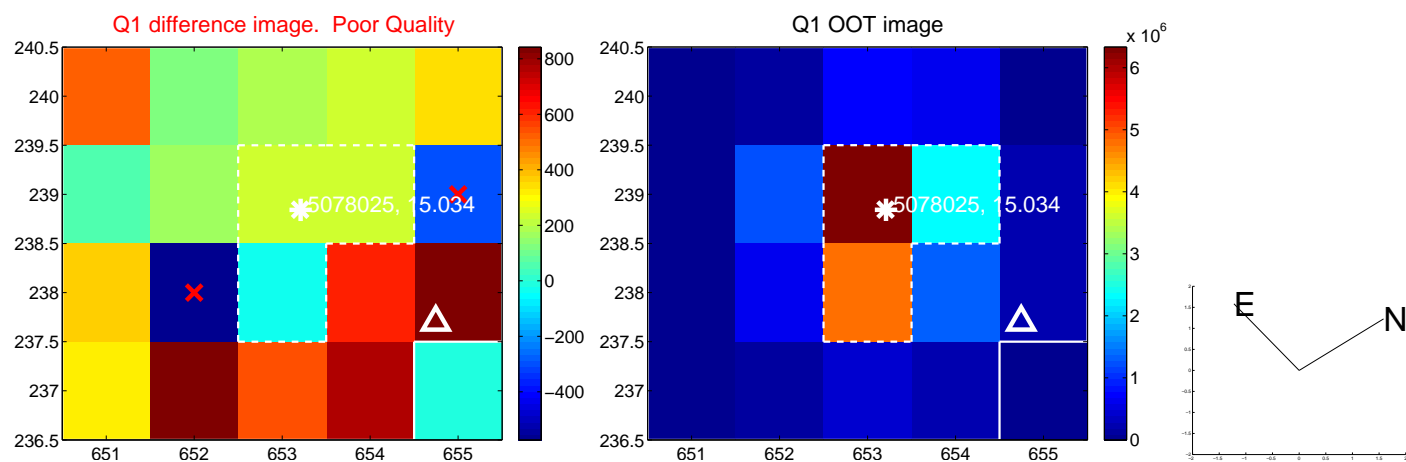
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.546 ± 1.131	4.90	-5.520 ± 1.065	0.527 ± 0.942
PRF-fit source offset from KIC position	5.589 ± 1.131	4.94	-5.574 ± 1.078	0.412 ± 0.884
photometric centroid source offset	3.33 ± 1.10	3.04	-2.70 ± 1.10	-1.95 ± 1.08

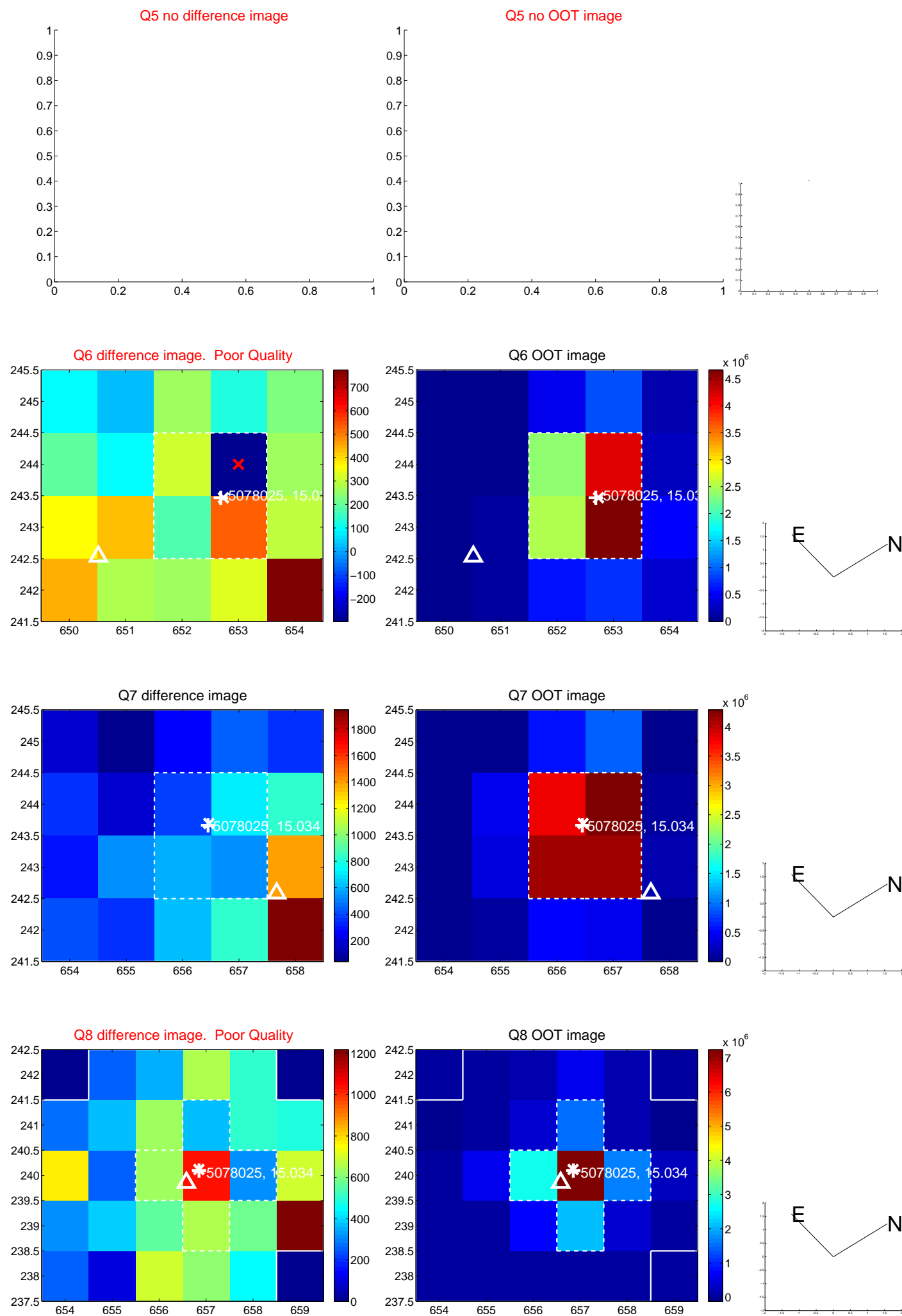


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

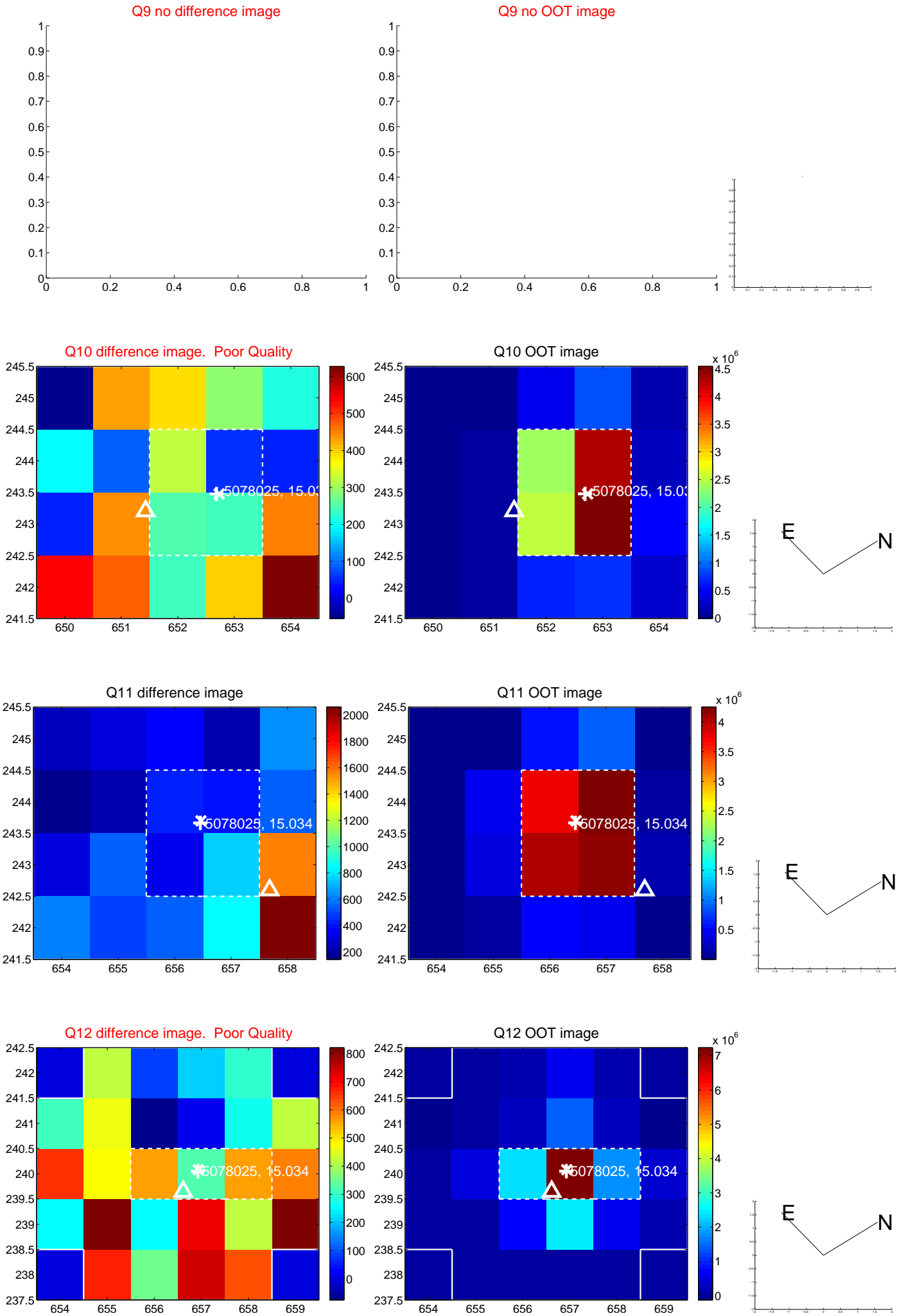
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



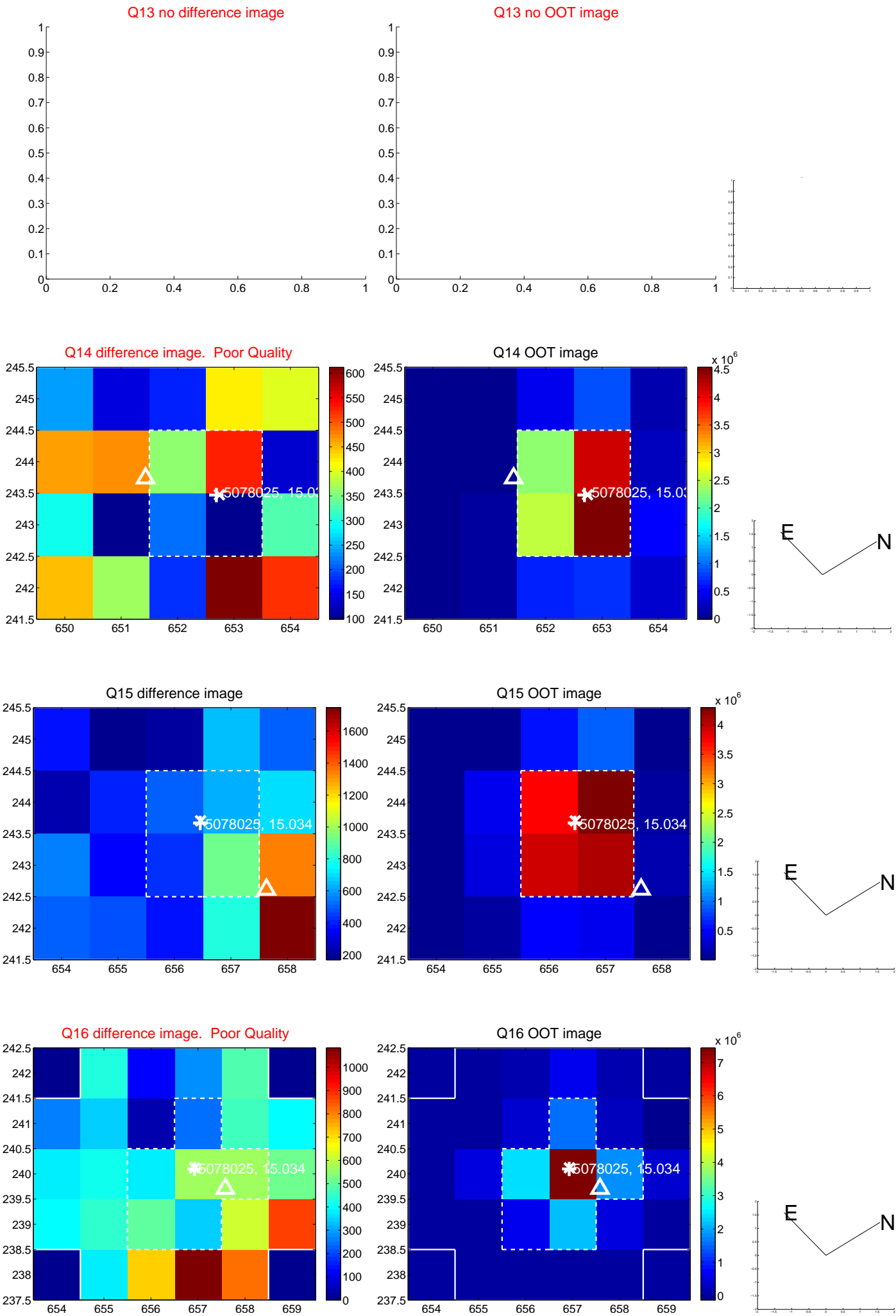
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



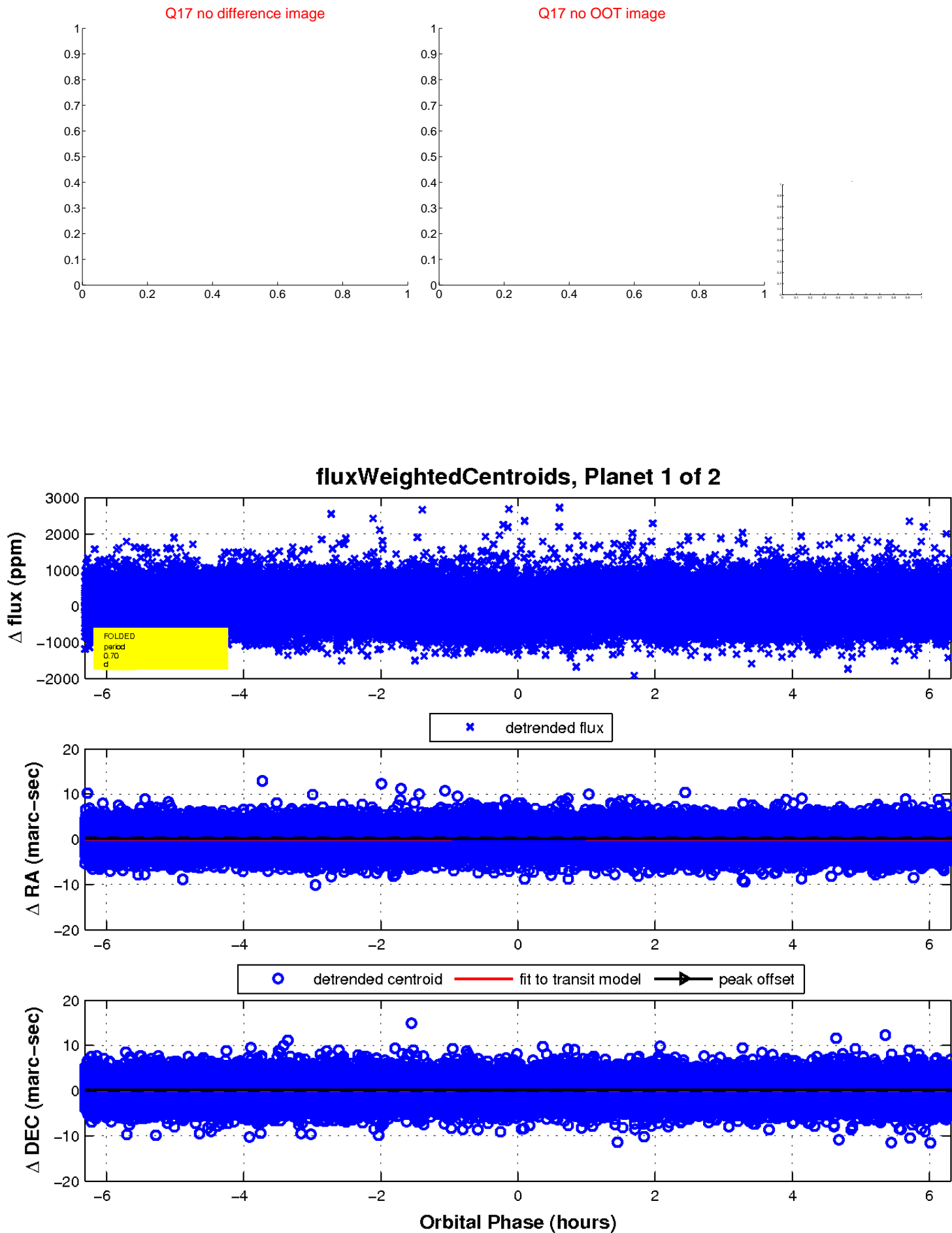
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

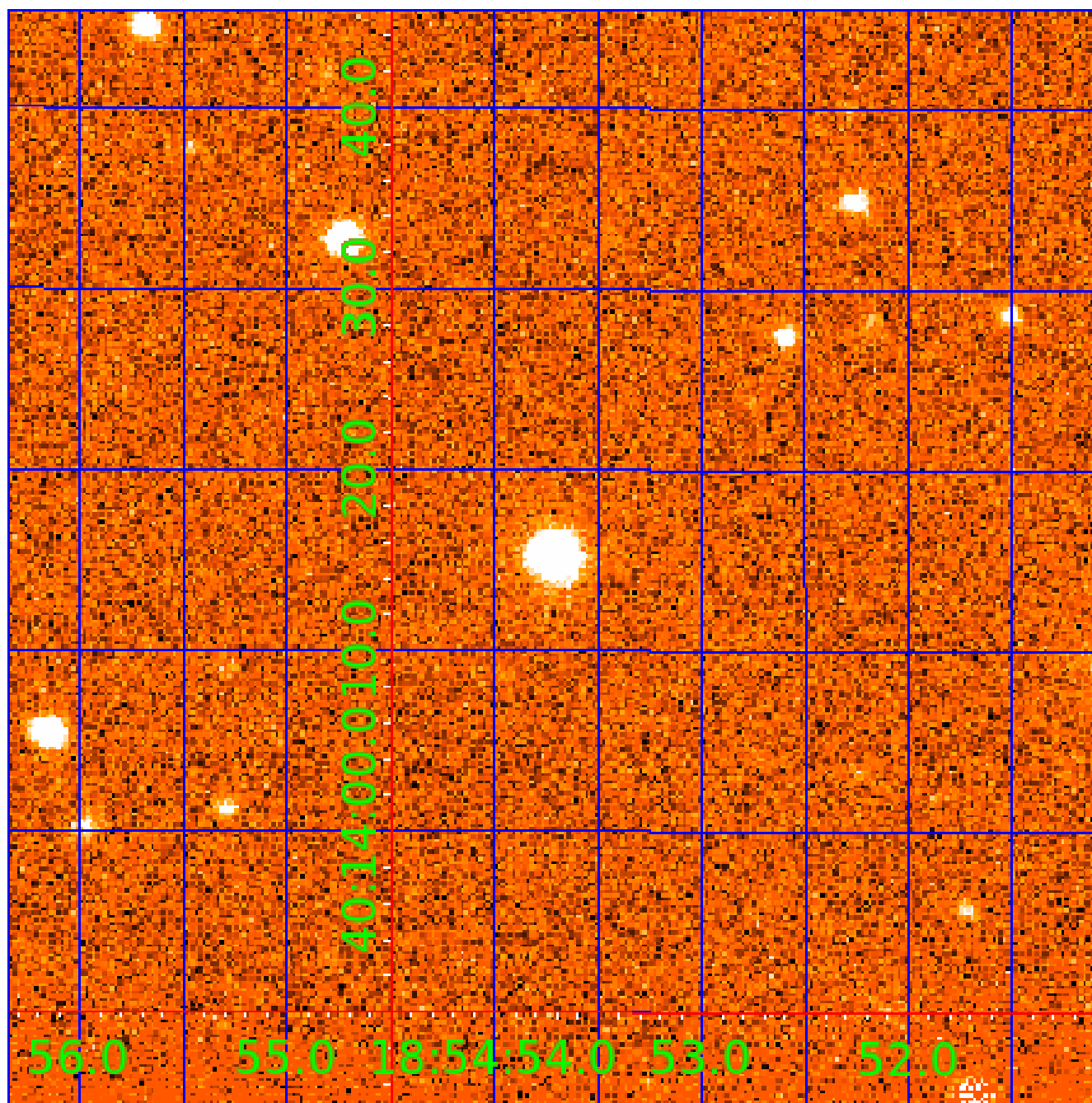


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005078025

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})
005078025-01	OBS	4211.01	0.696295	131.874542	83.4	2.104	9.9	12.3	0.87	5904	0.94	3562.61
005078025-02	OBS	4211.02	0.696300	131.525152	72.3	2.331	10.3	11.9	0.87	5904	0.87	3562.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005078025-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005078025-02	OBS	FP	0.00	1	0	1	1	SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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 005078025-02

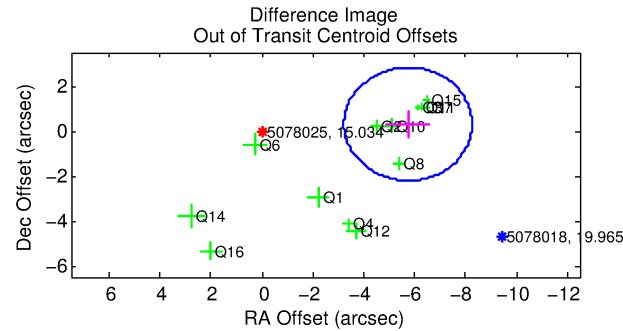
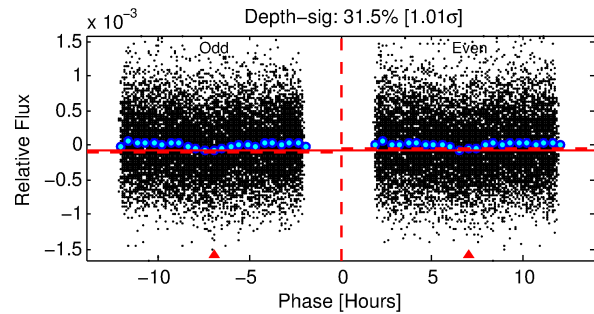
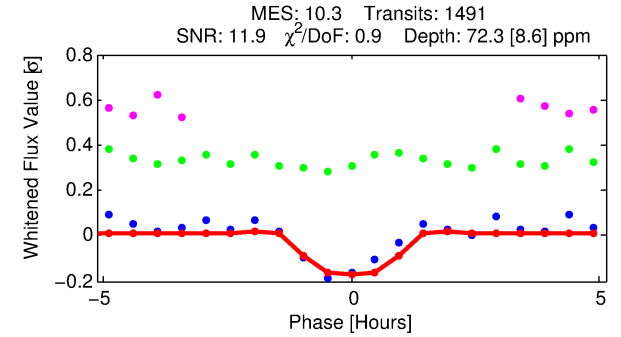
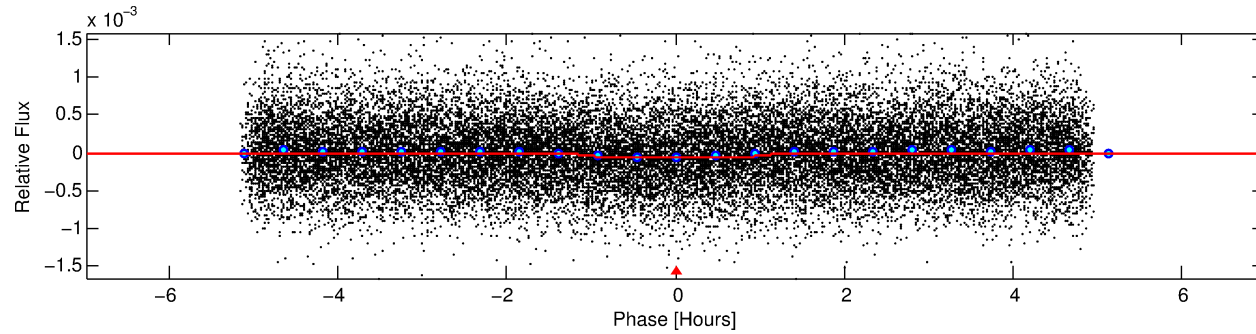
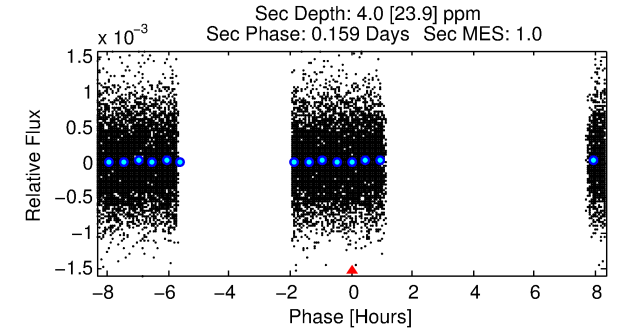
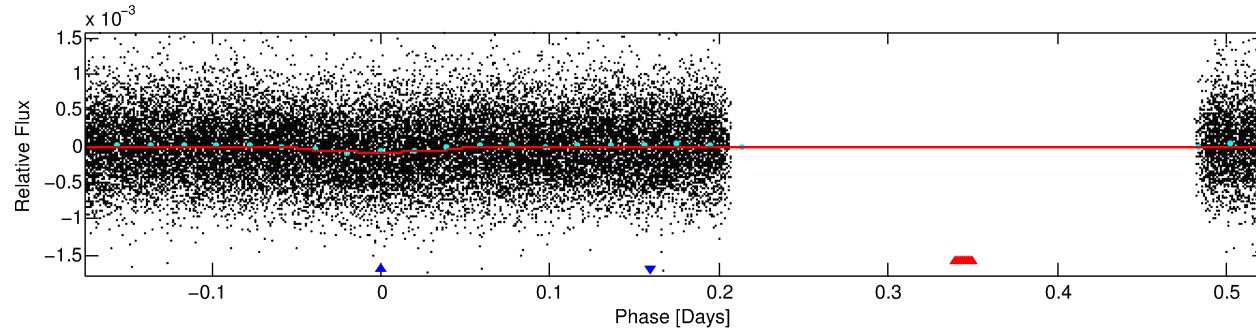
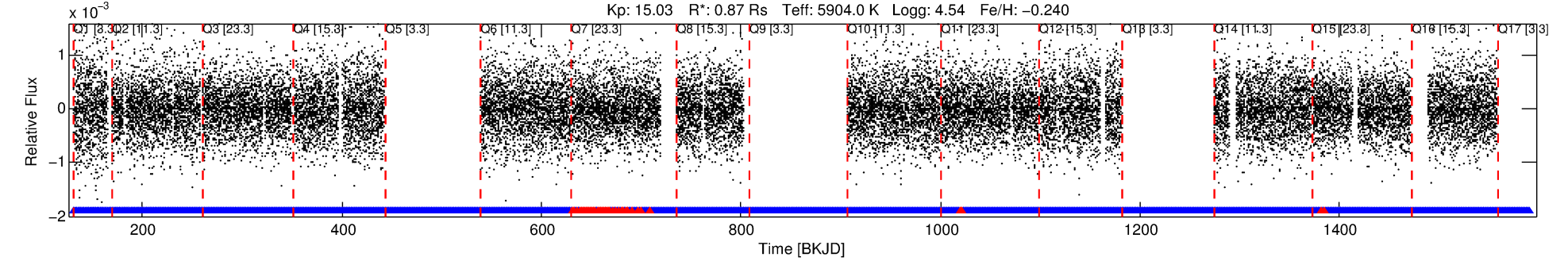
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005078025-02	5078025	005077994-pri	5077994	1:1	34.3	8	-4	12.67	15.04	3226.40	Direct-PRF	0	1.89	0.48

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: 5078025 Candidate: 2 of 2 Period: 0.696 d

KOI: K04211.02 Corr: 0.938



DV Fit Results:

Period = 0.69630 [0.00001] d
Epoch = 131.5252 [0.0026] BKJD
Rp/R* = 0.0092 [0.0063]
a/R* = 1.40 [2.40]
b = 0.90 [0.75]
Seff = 3562.58 [1488.94]
Teff = 1970 [206] K
Rp = 0.87 [0.66] Re
a = 0.0152 [0.0041] AU
Ag = 0.67 [4.08] [-0.08σ]
Teffp = 2752 [4202] K [0.19σ]

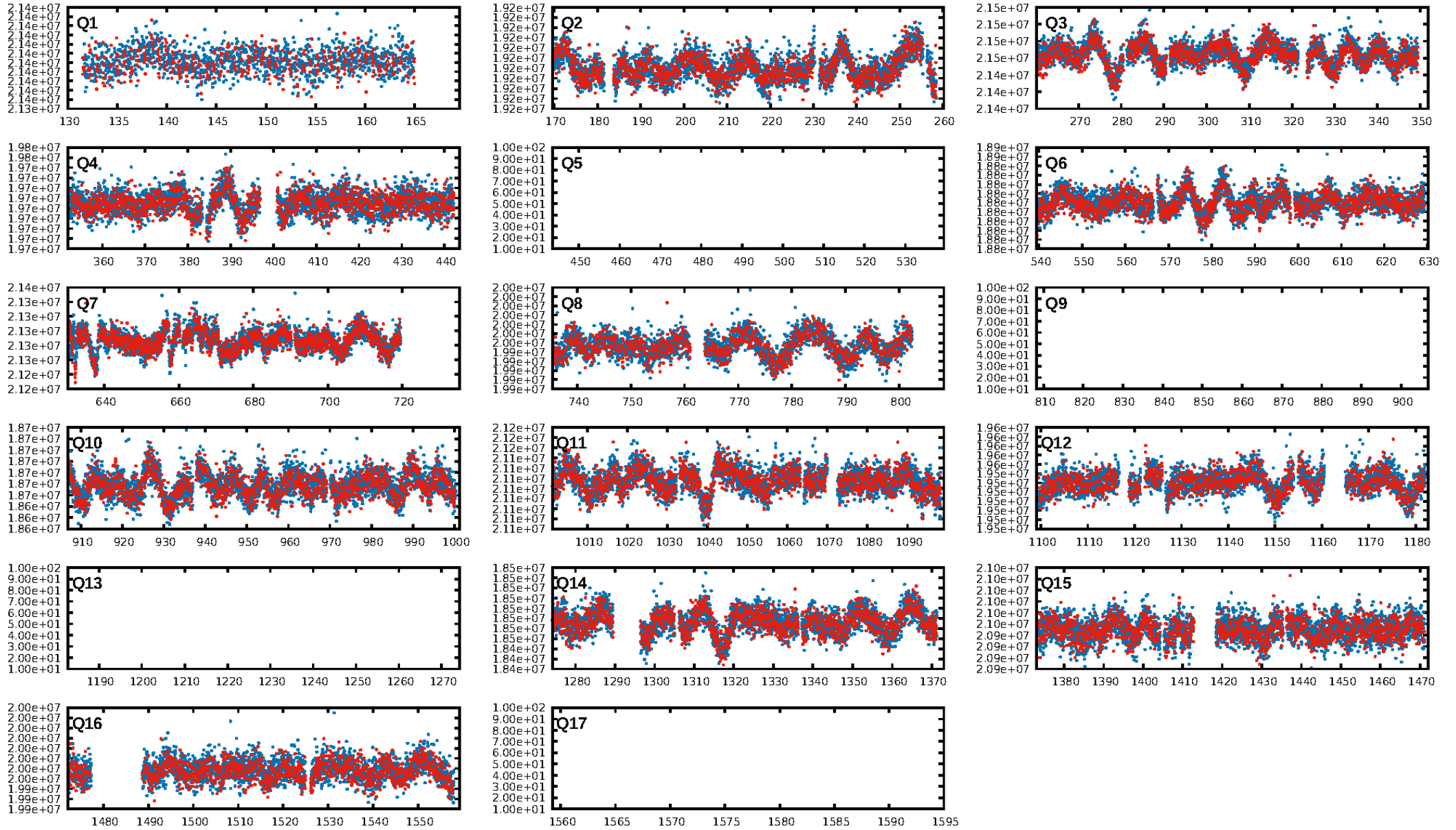
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.38e-31
RollingBand-fgt: 0.96 [1390/1442]
GhostDiagnostic-chr: 0.5246
Centroid-sig: 0.6%
Centroid-so: 2.234 arcsec [1.87σ]
OotOffset-rm: 5.752 arcsec [6.85σ]
KicOffset-rm: 5.785 arcsec [6.64σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 0.38 [5/13]
DiffImageOverlap-fno: 1.00 [13/13]

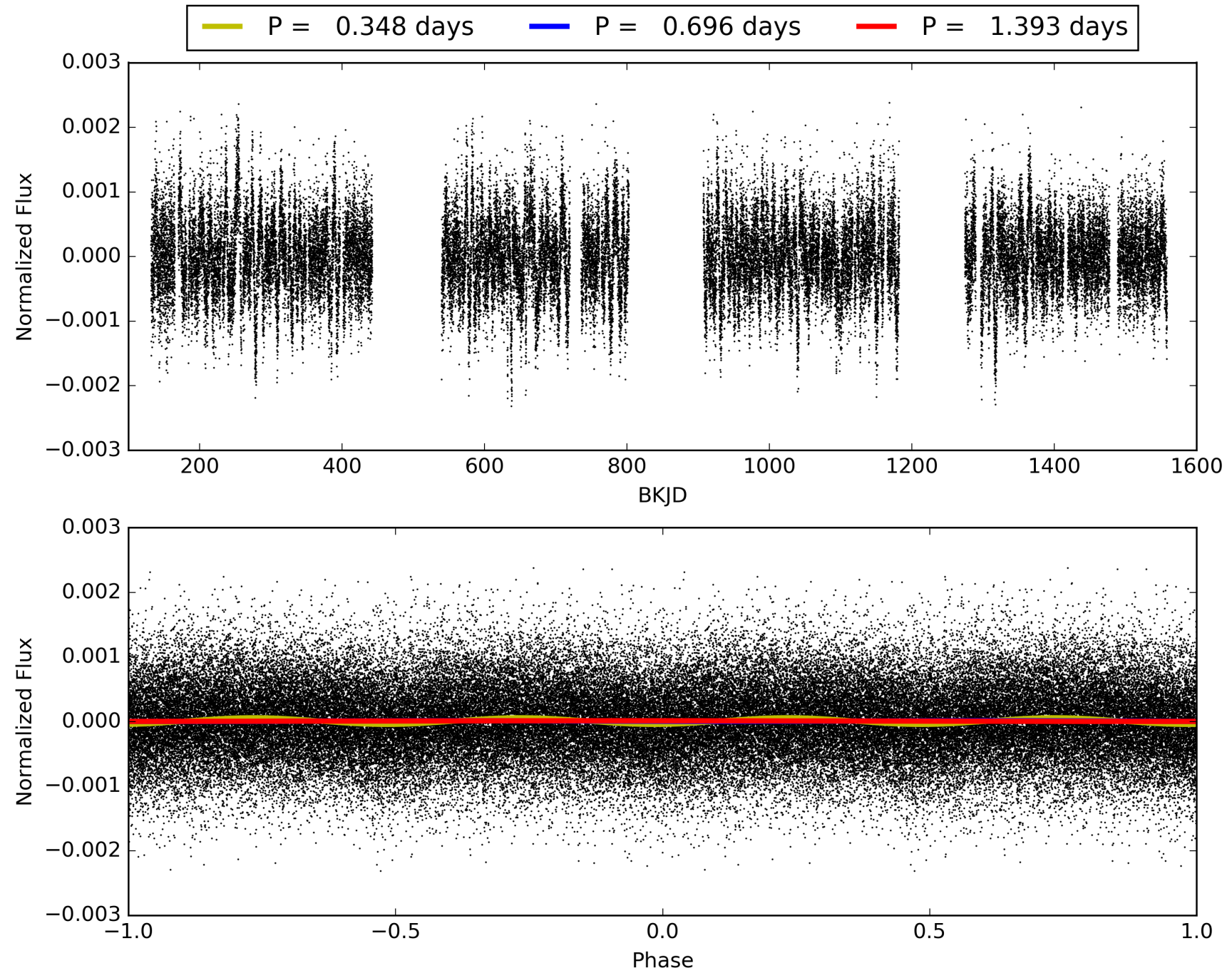
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:20:54 Z

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

TCE 005078025-02, PDC Light Curves

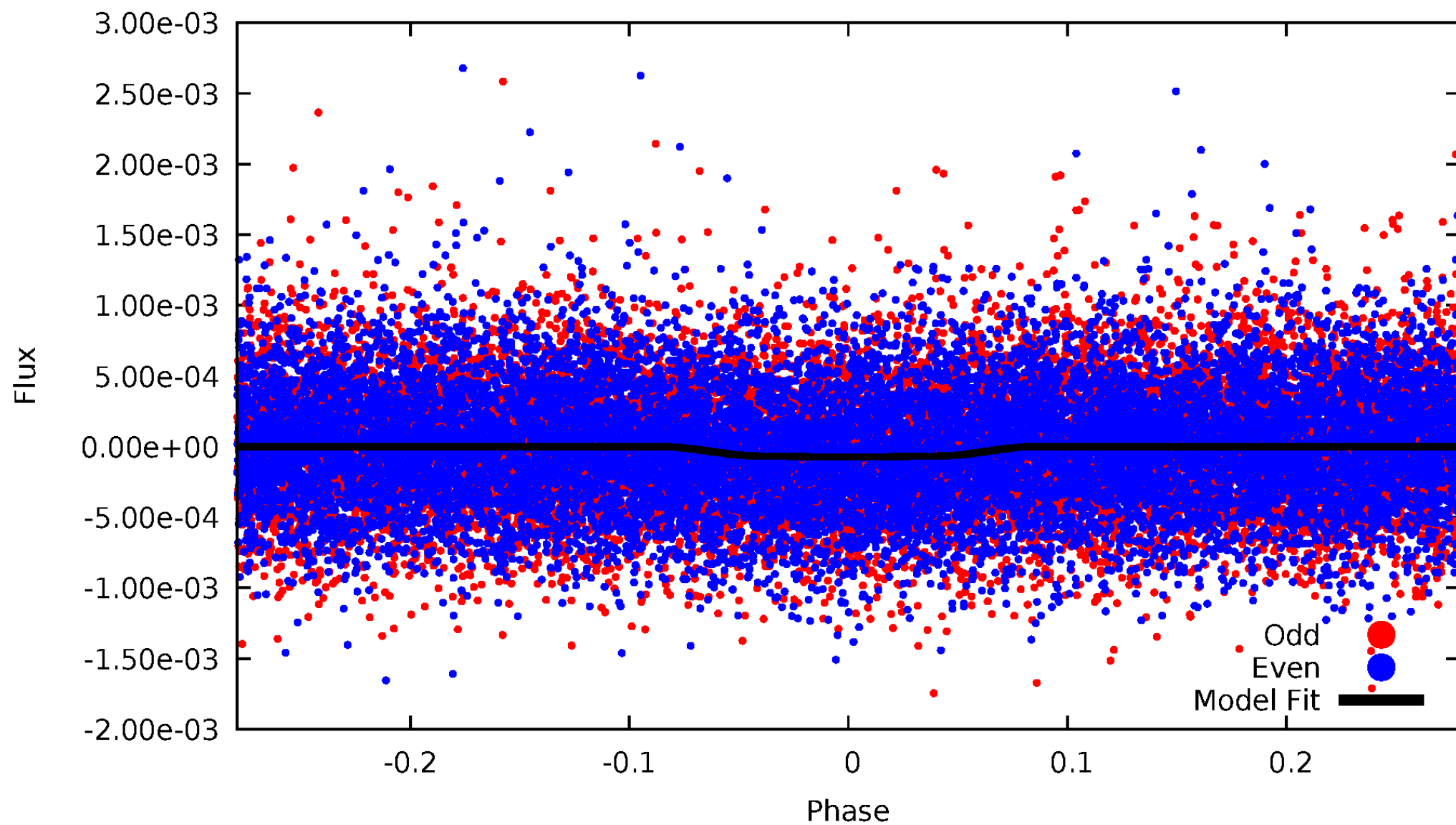


TCE 005078025-02



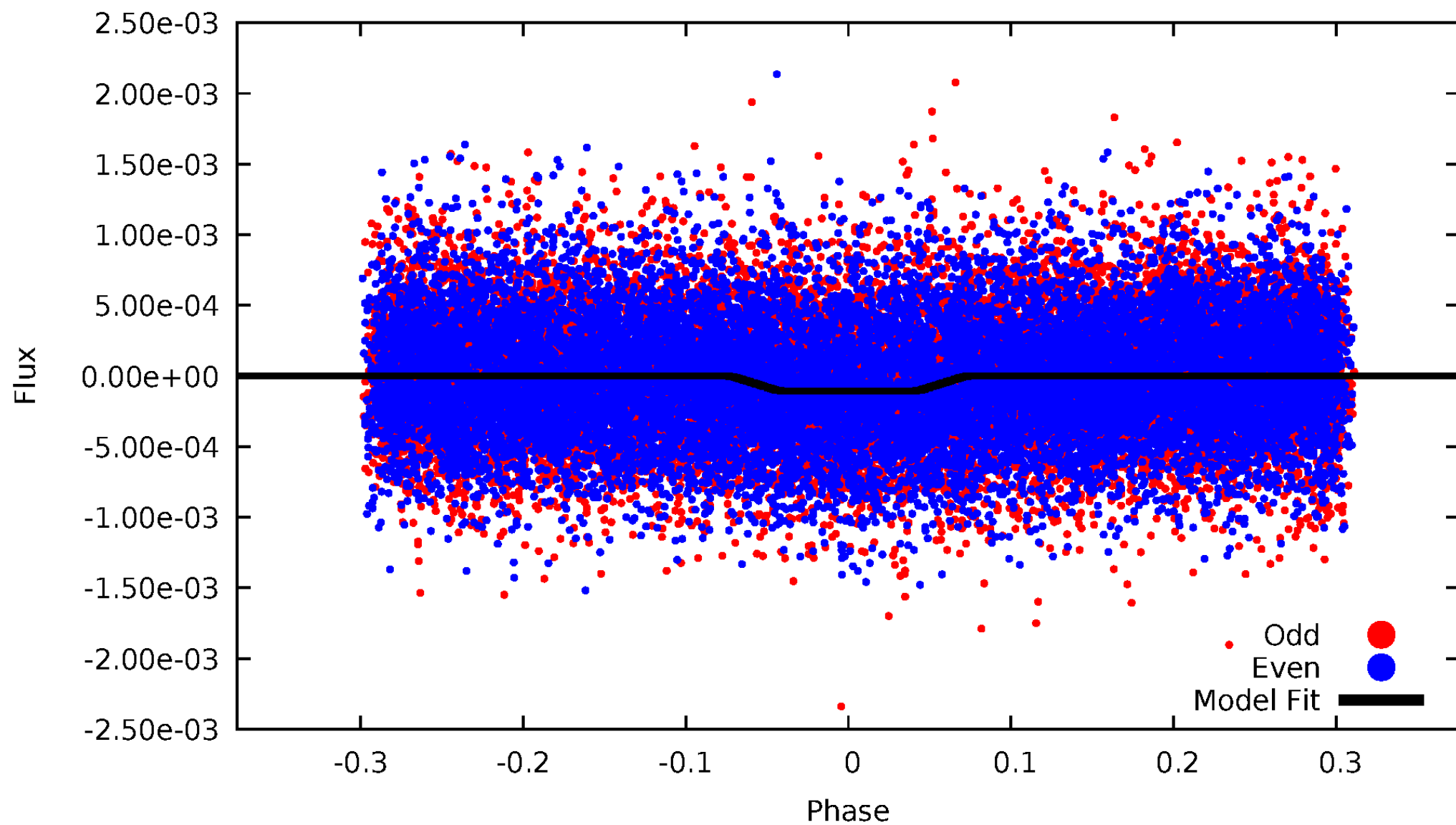
DV Odd/Even

TCE 005078025-02



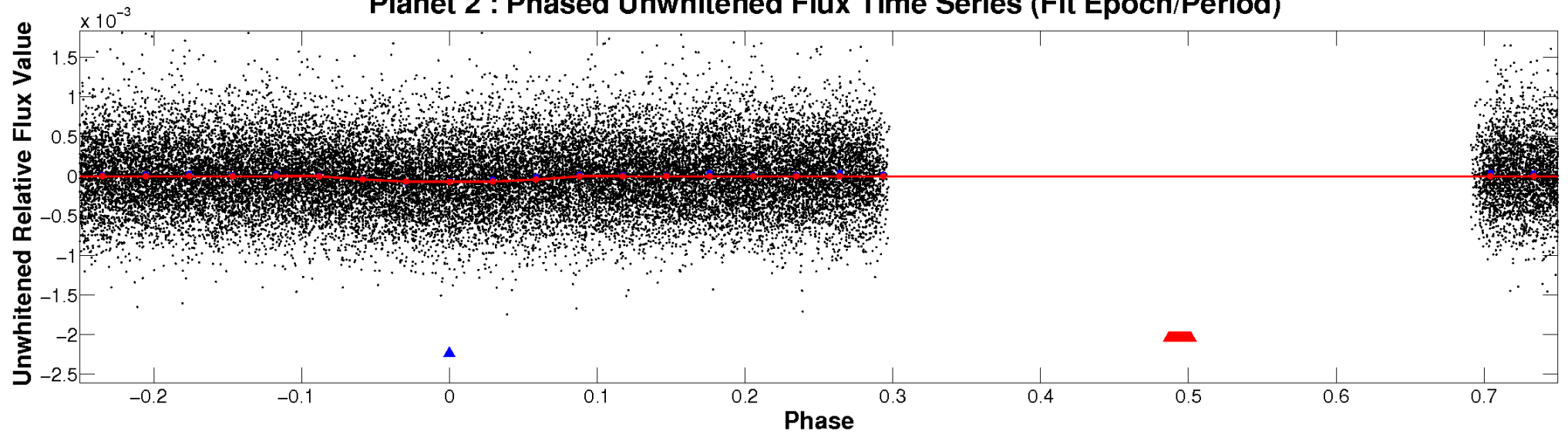
ALT Odd/Even

TCE 005078025-02

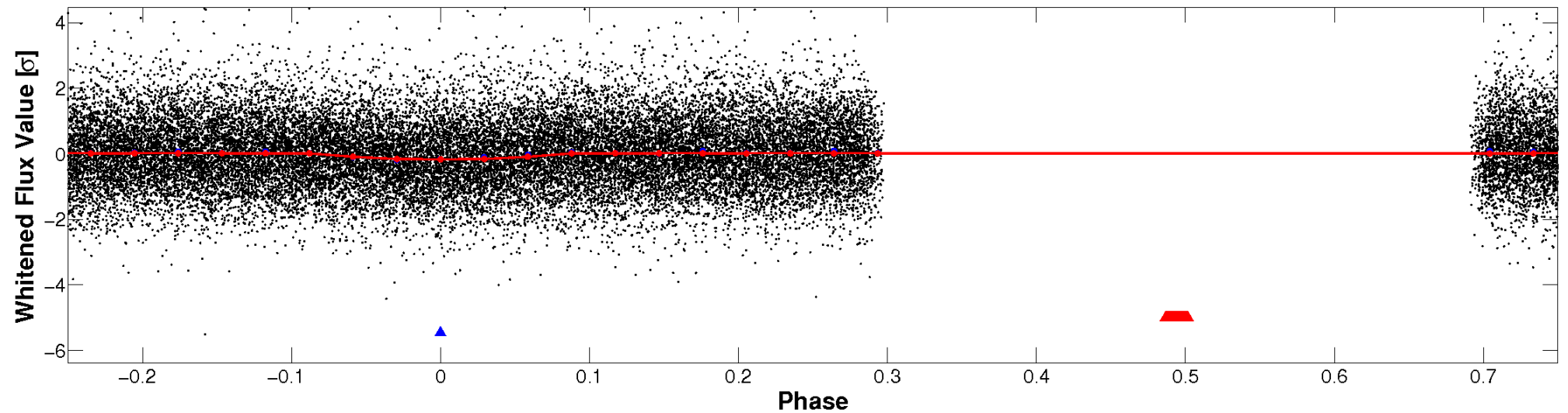


Non-Whitened Vs. Whitened Light Curve

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

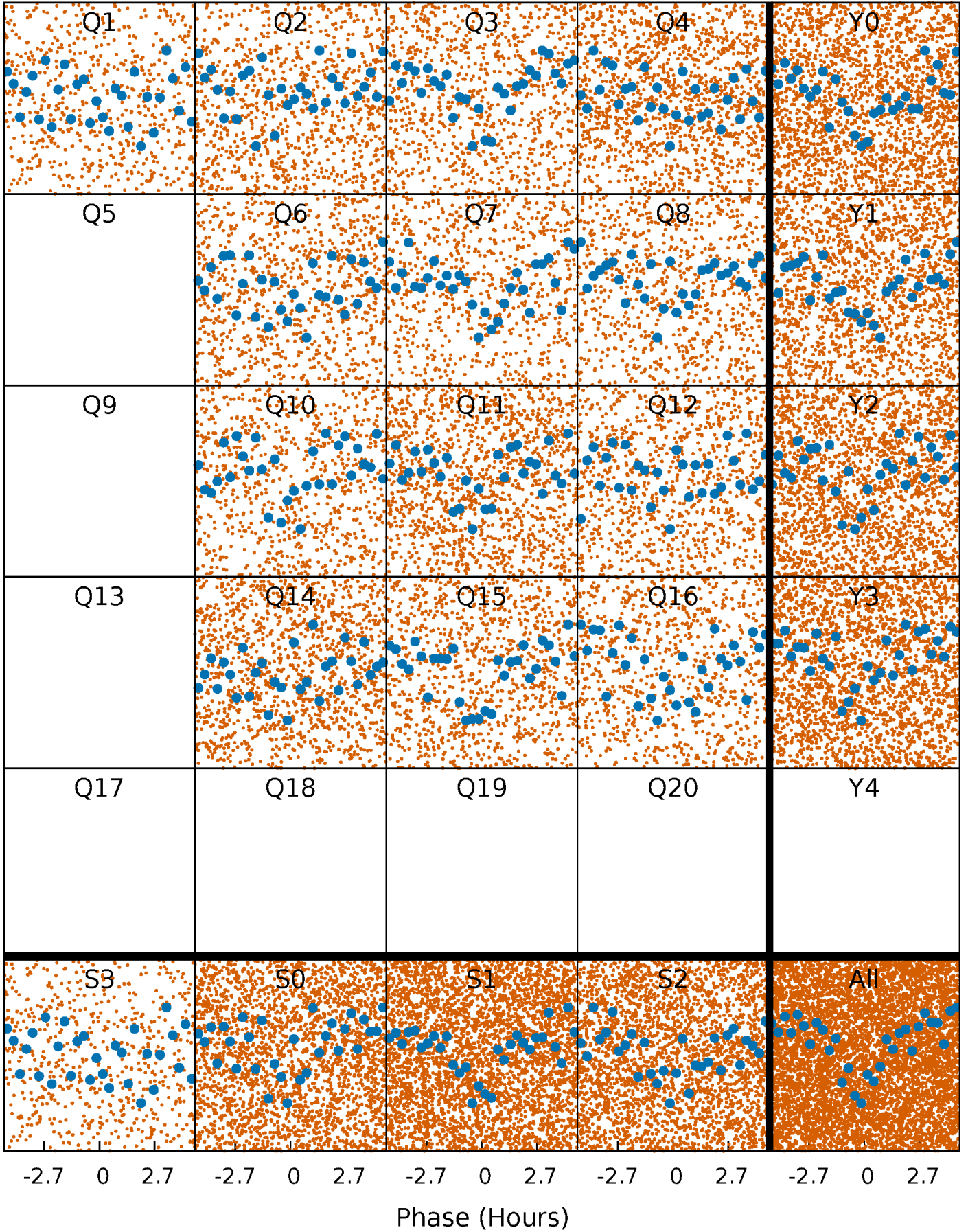


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



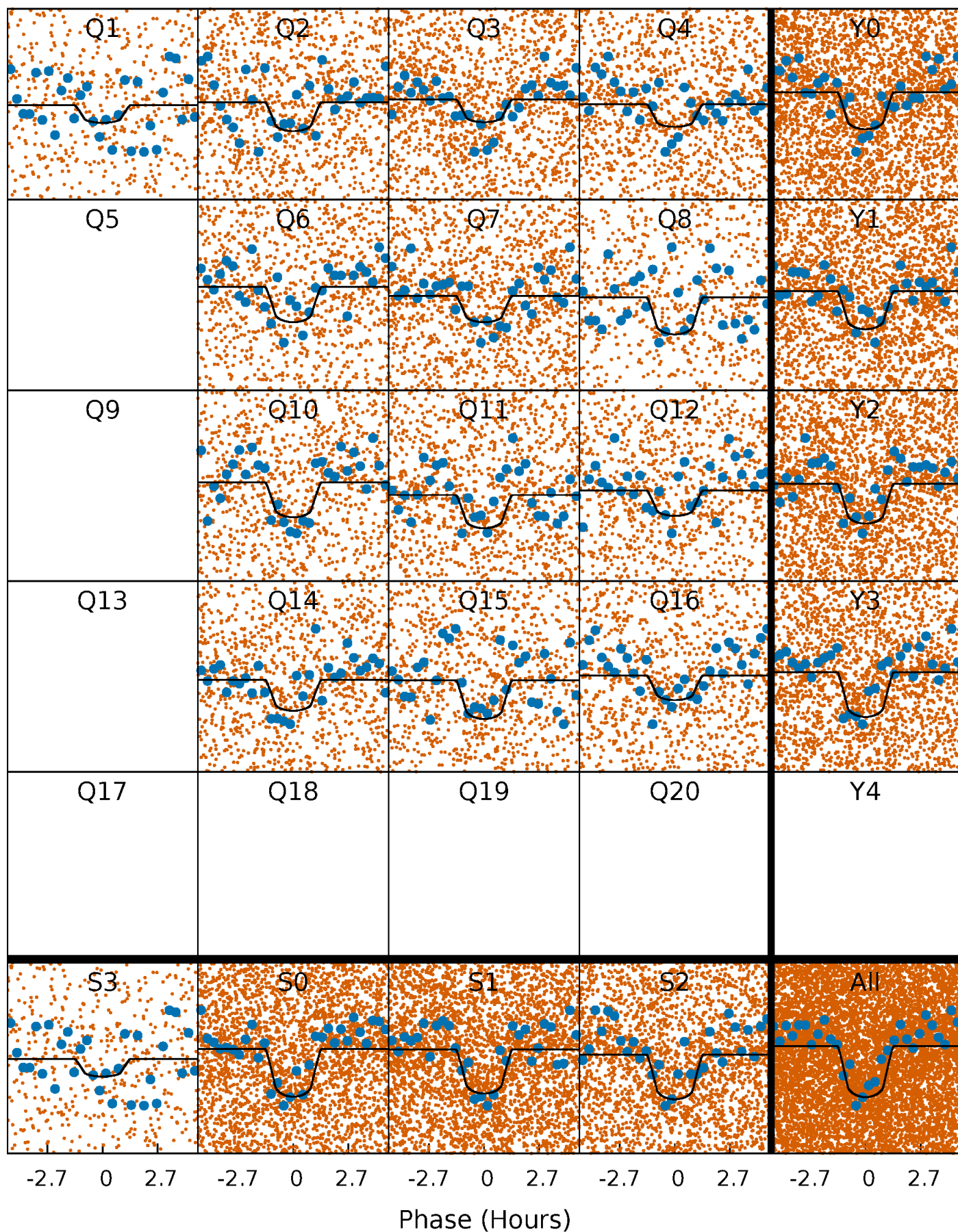
PDC Quarter-Phased Transit Curves

TCE 005078025-02 P= 0.696300 Days $T_0=131.525152$ (BKJD)



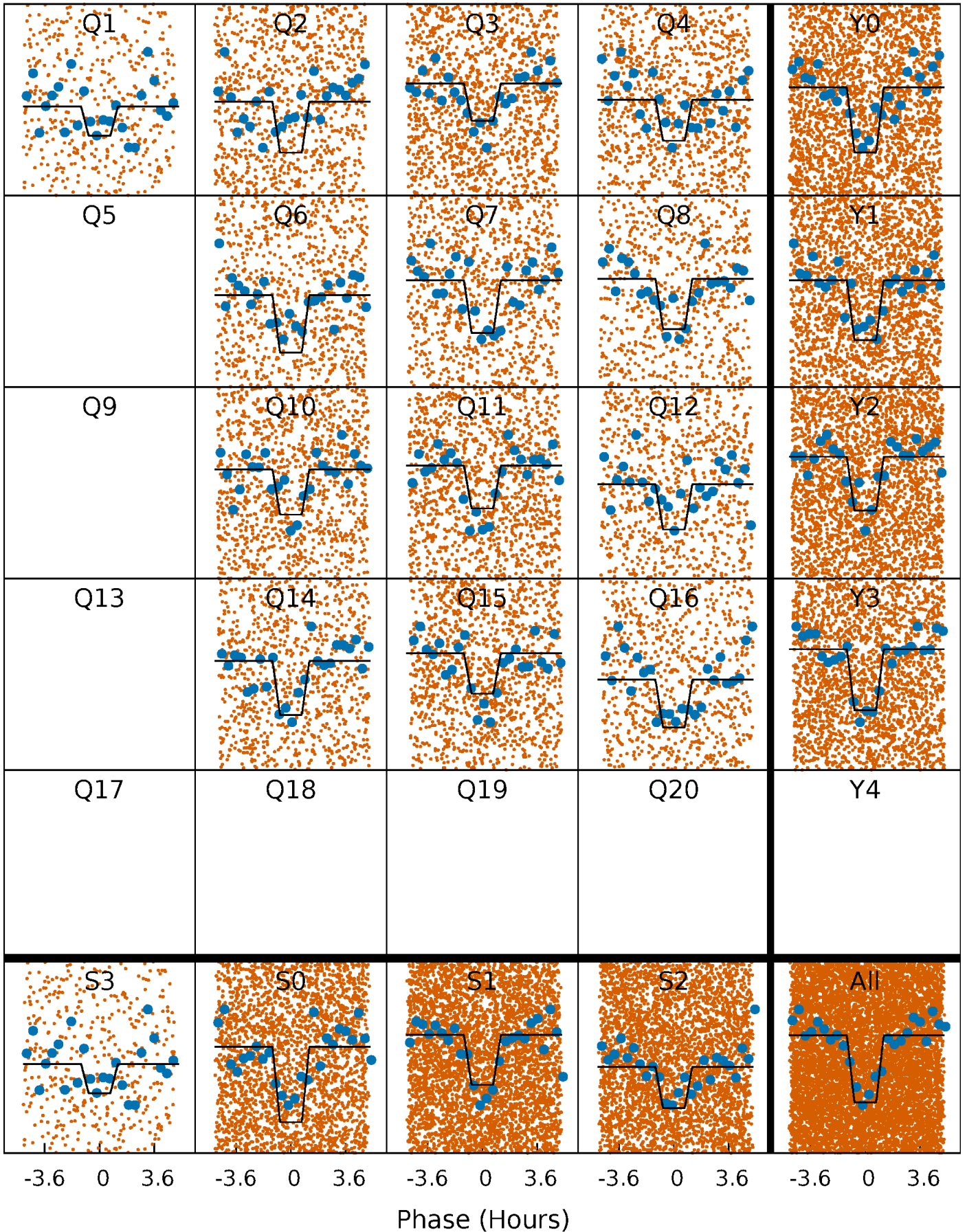
DV Quarter-Phased Transit Curves

TCE 005078025-02 P= 0.696300 Days $T_0=131.525152$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

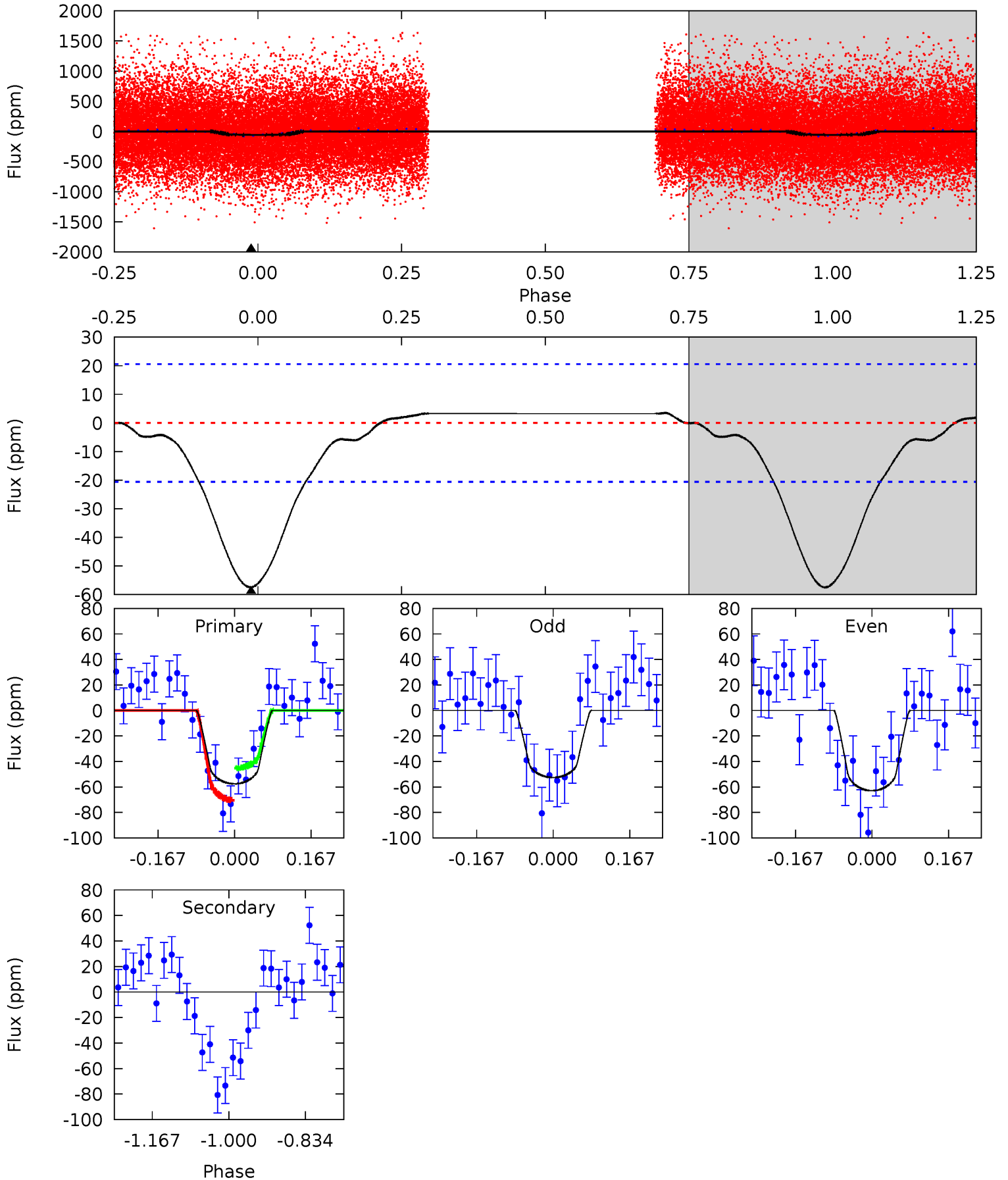
TCE 005078025-02 P= 0.696289 Days $T_0=131.528406$ (BKJD)



DV Model-Shift Uniqueness Test

005078025-02, P = 0.696300 Days, E = 130.828852 Days

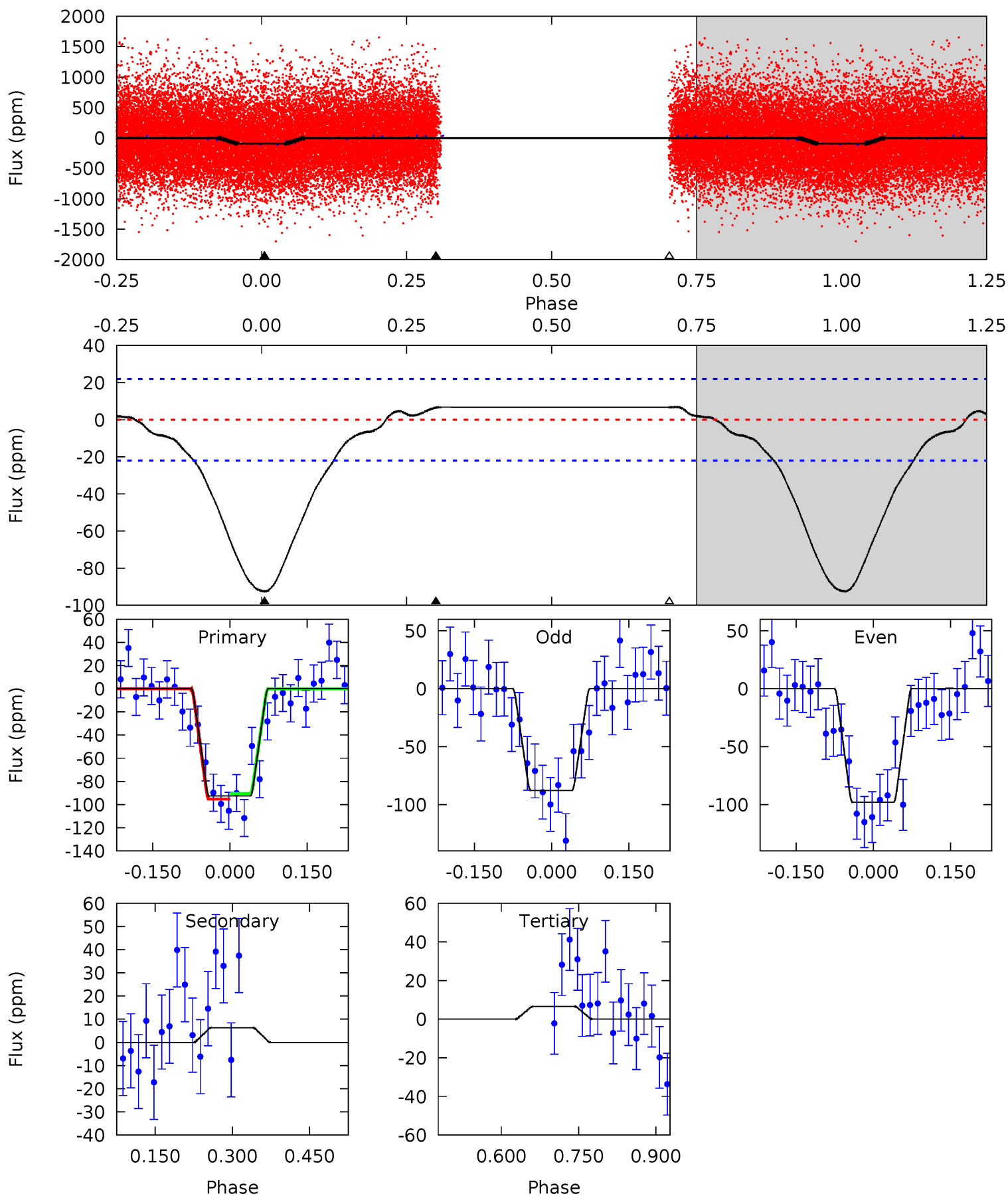
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	0	0	0	4.46	1.38	0.67	12.5	12.5	0	0	1.12	1.02	0.06	2.75



Alt Model-Shift Uniqueness Test

005078025-02, P = 0.696289 Days, E = 130.832117 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	-1.29	-1.35	0	4.48	1.44	1.17	20.2	18.8	0.06	-1.29	1.03	0.99	0.07	0.50



Stellar Parameters For KIC 005078025

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5904^{+160}_{-178}	$4.543^{+0.039}_{-0.221}$	$-0.240^{+0.300}_{-0.300}$	$0.867^{+0.276}_{-0.069}$	$0.958^{+0.107}_{-0.119}$	$2.073^{+0.435}_{-1.110}$
	+3%/-3%	+1%/-5%	+125%/-125%	+32%/-8%	+11%/-12%	+21%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005078025-02 / KOI 4211.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 5	$1.04^{+0.60}_{-0.57}$	2821^{+249}_{-129}	-3045^{+6153}_{-613}	$-0.016^{+0.736}_{-0.809}$
Alt.	6 ± 5	$1.04^{+0.63}_{-0.53}$	2828^{+208}_{-142}	-3542^{+456}_{-839}	$-0.602^{+0.533}_{-2.106}$

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 $A_{obs} \gg 1.0$

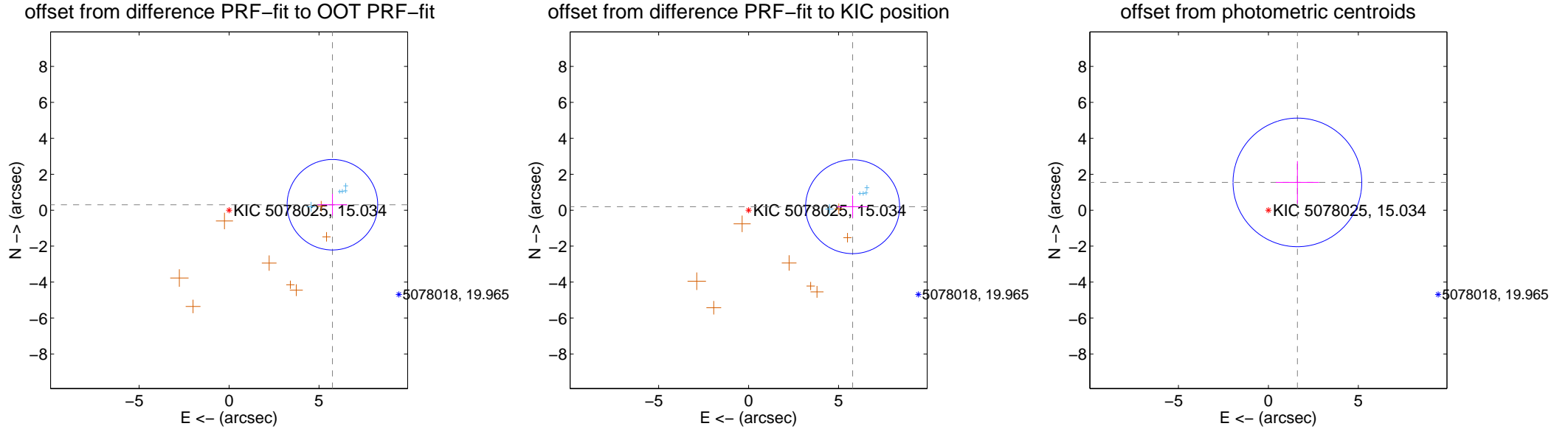
DV Centroid Data

Supplemental centroid analysis for 005078025-02. Kepler magnitude: 15.03. Transit SNR 11.93

There are 5 quarters with good PRF difference image offsets

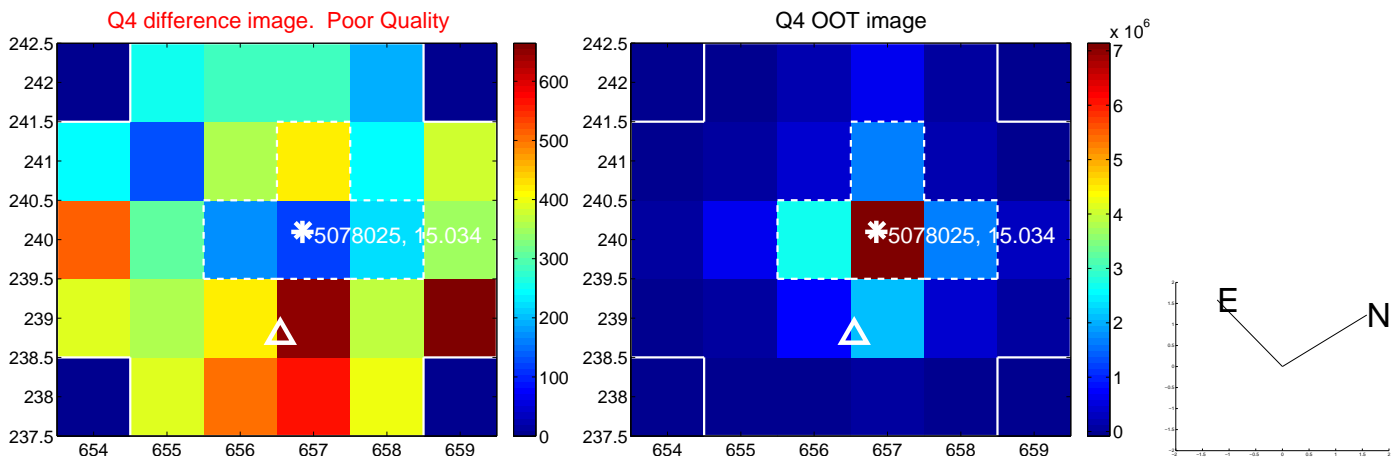
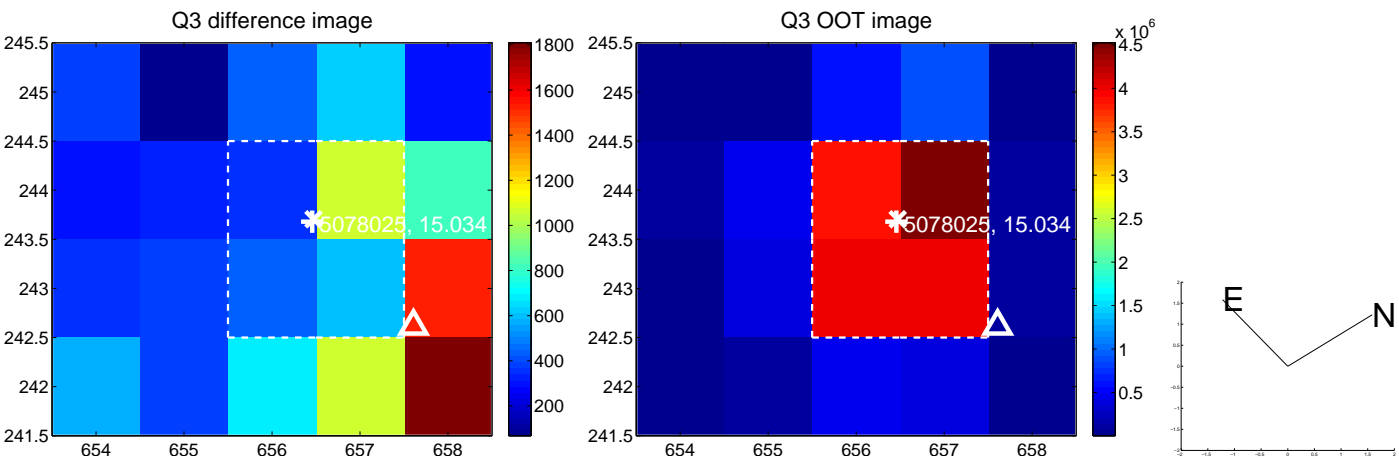
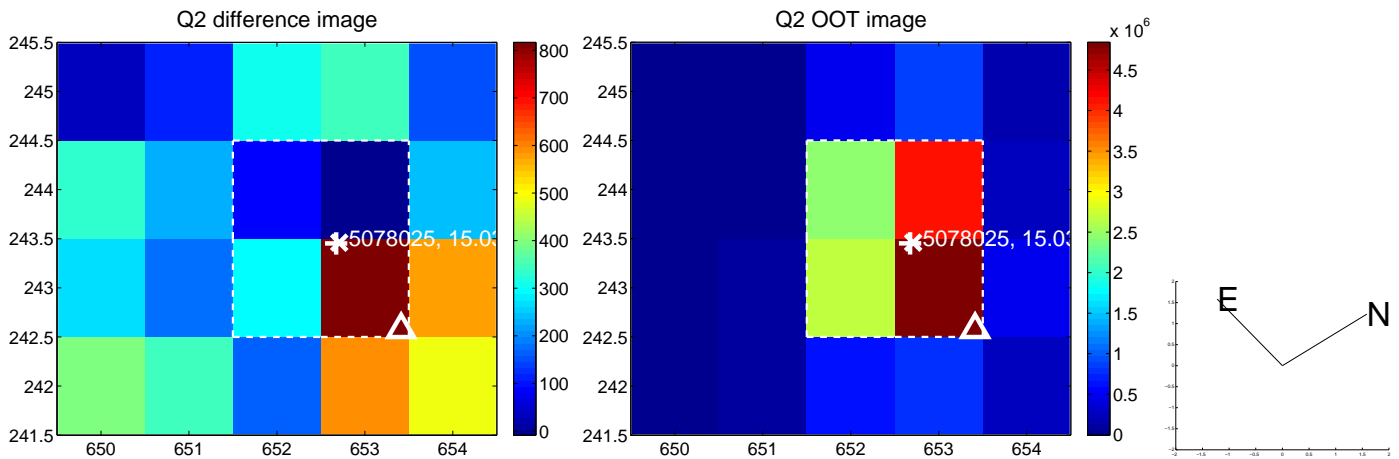
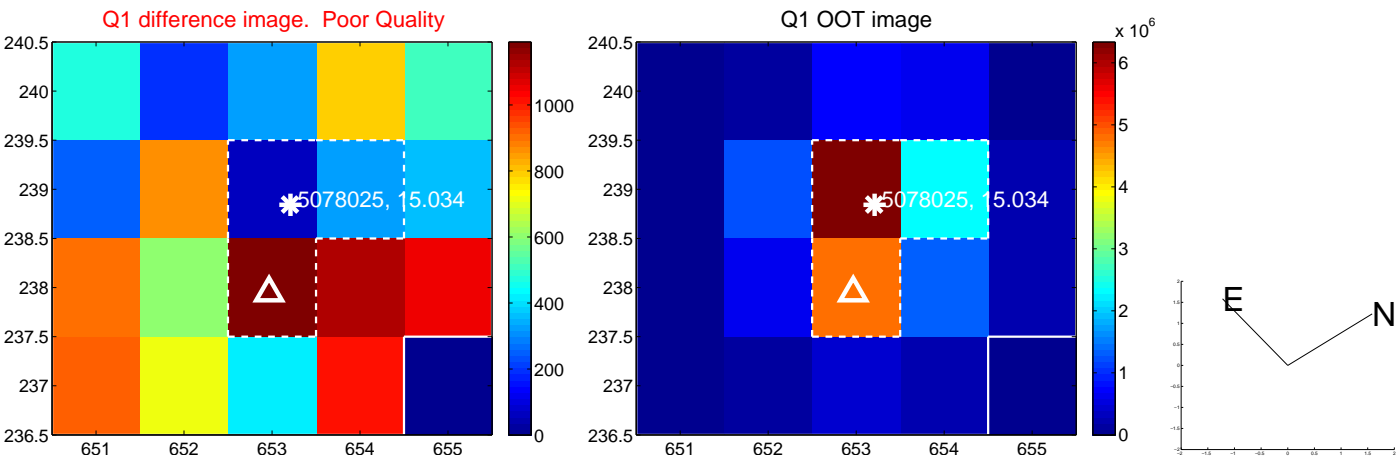
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.752 ± 0.839	6.85	-5.744 ± 0.819	0.304 ± 0.607
PRF-fit source offset from KIC position	5.785 ± 0.871	6.64	-5.781 ± 0.856	0.195 ± 0.620
photometric centroid source offset	2.23 ± 1.19	1.87	-1.61 ± 1.20	1.55 ± 1.18

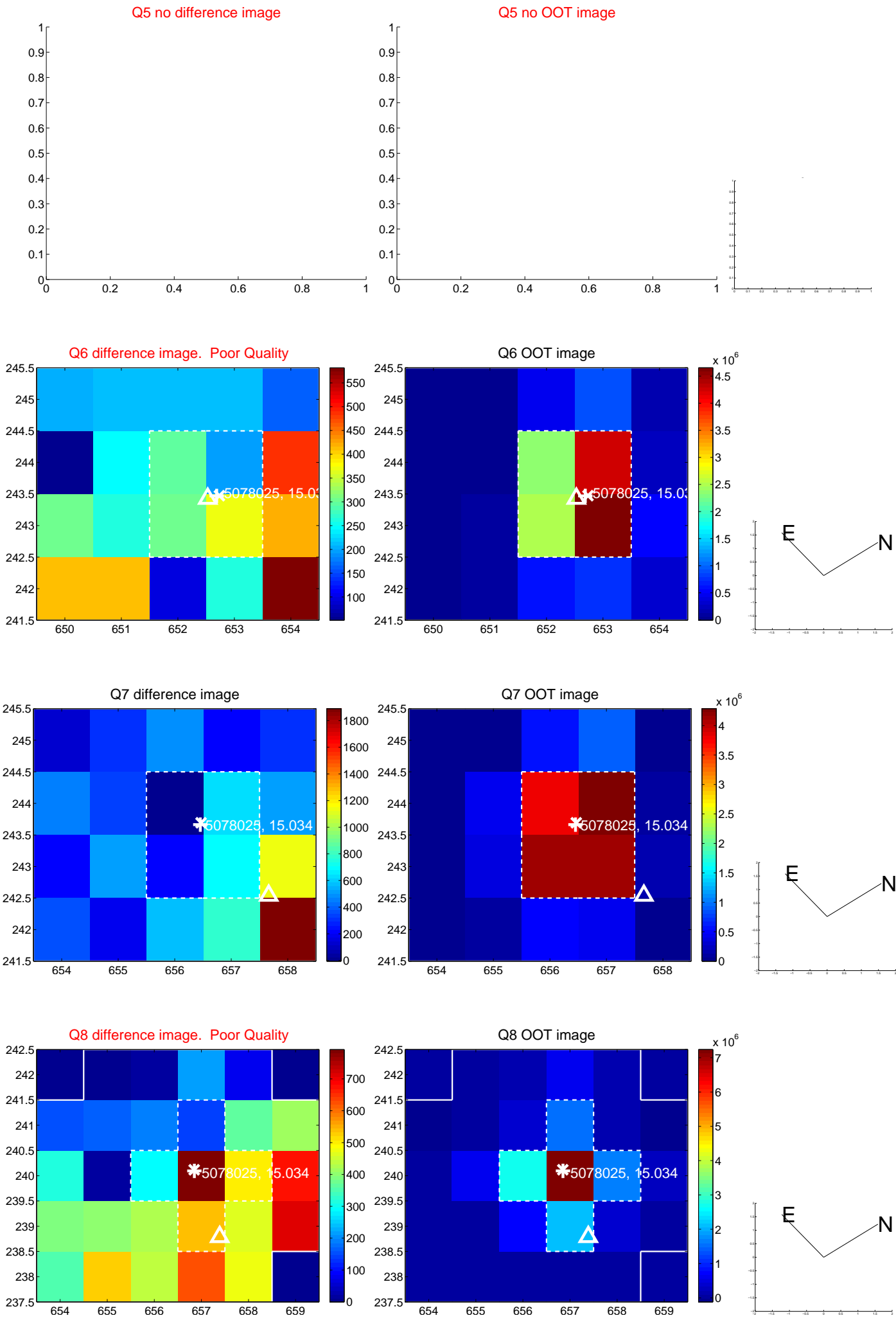


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

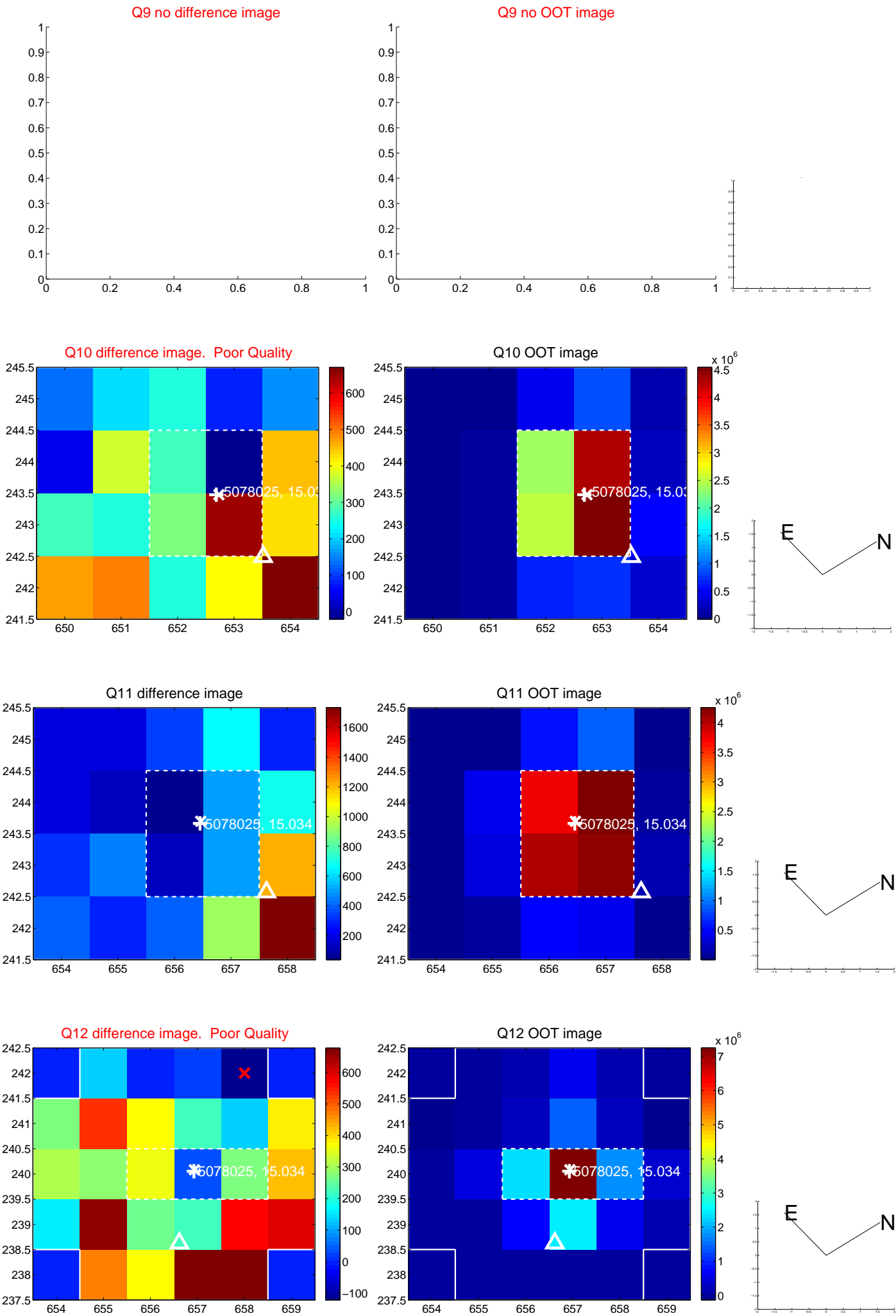
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



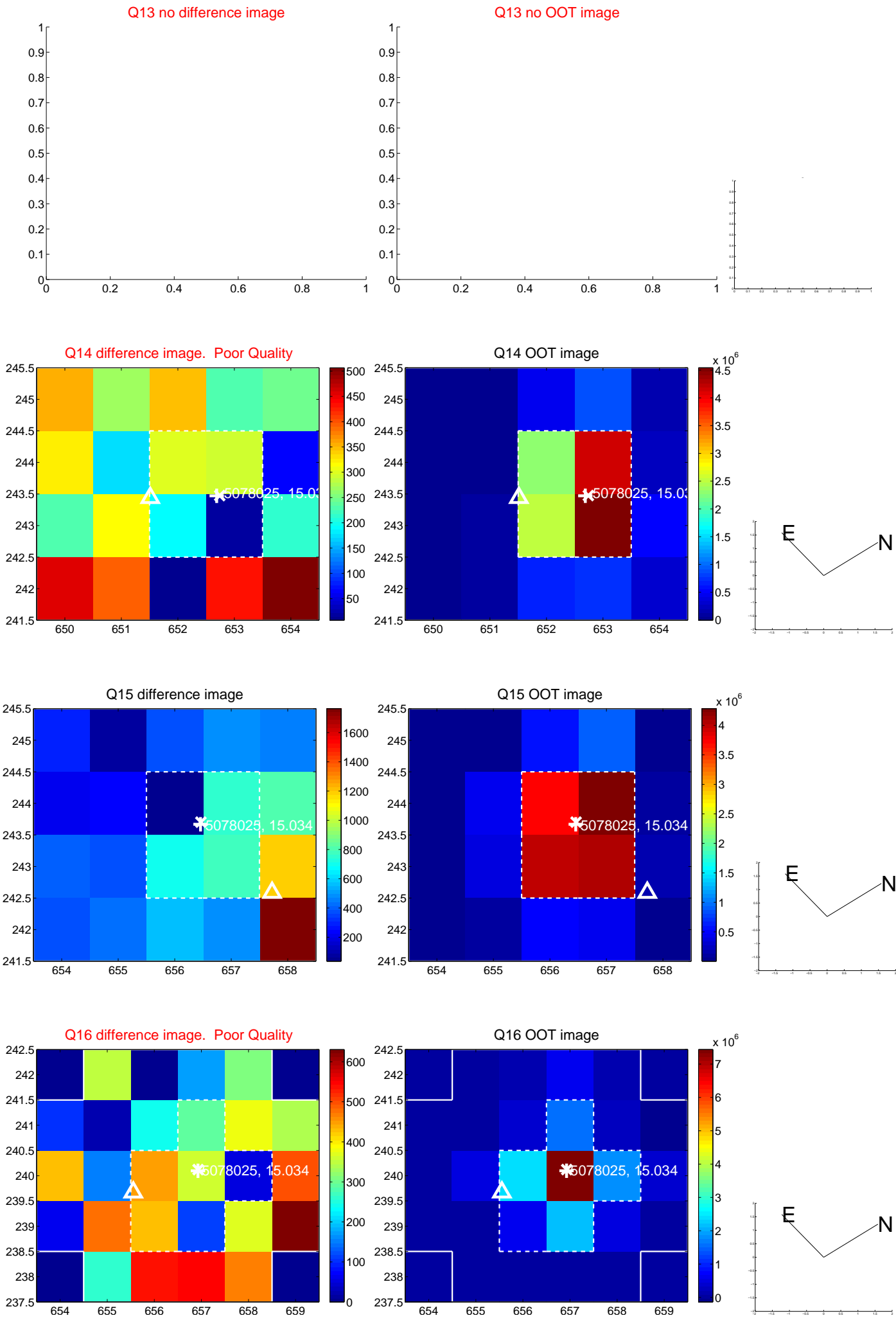
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



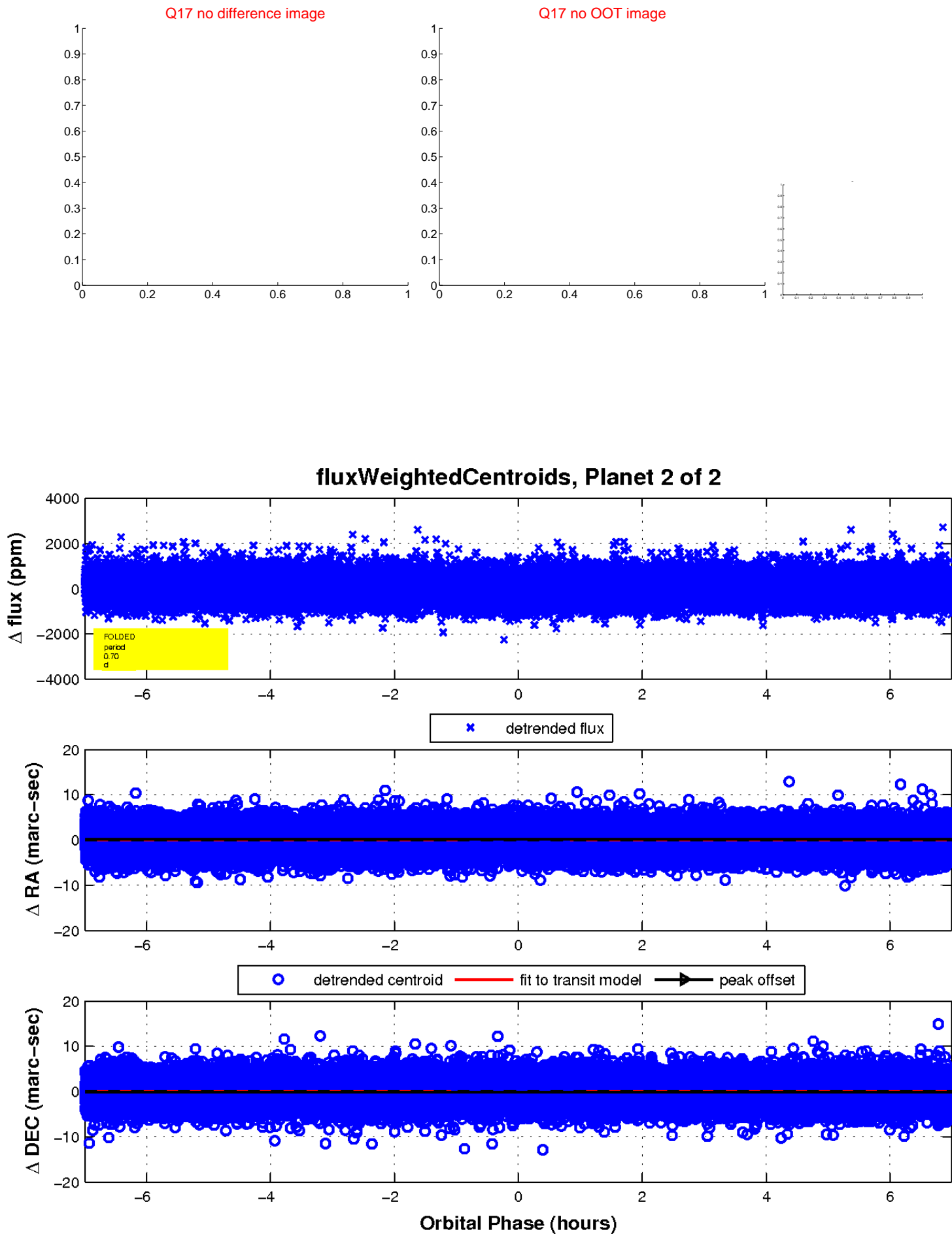
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

