

KIC 005020044

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})
005020044-01	OBS	3802.01	2.119105	132.590501	980.0	5.624	300.8	182.1	1.08	6292	6.43	1441.87
005020044-02	OBS	No	296.272861	370.341720	194.0	18.786	7.5	6.5	1.08	6292	1.83	1.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005020044-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—DEEP_V_SHAPED—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005020044-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQU_ALT—CENT_FEW_DIFFS

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 005020044-01

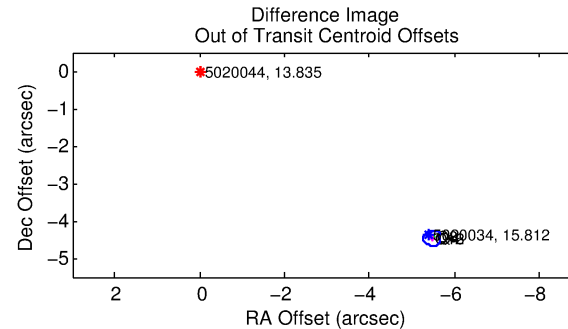
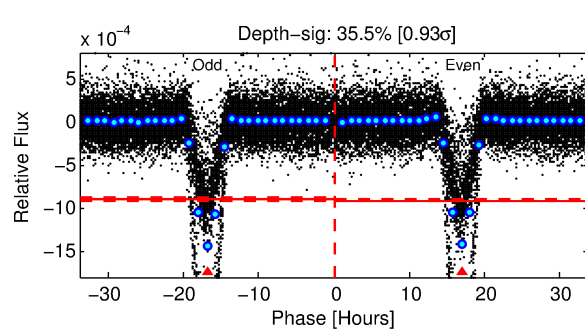
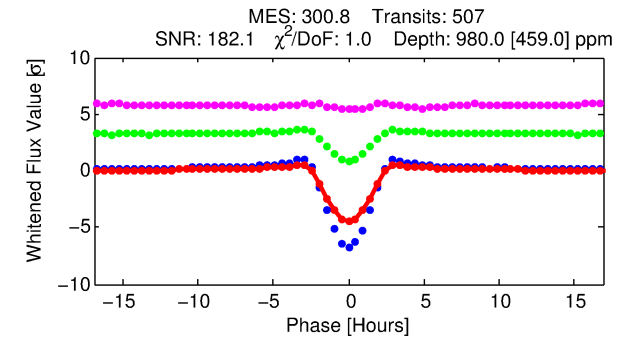
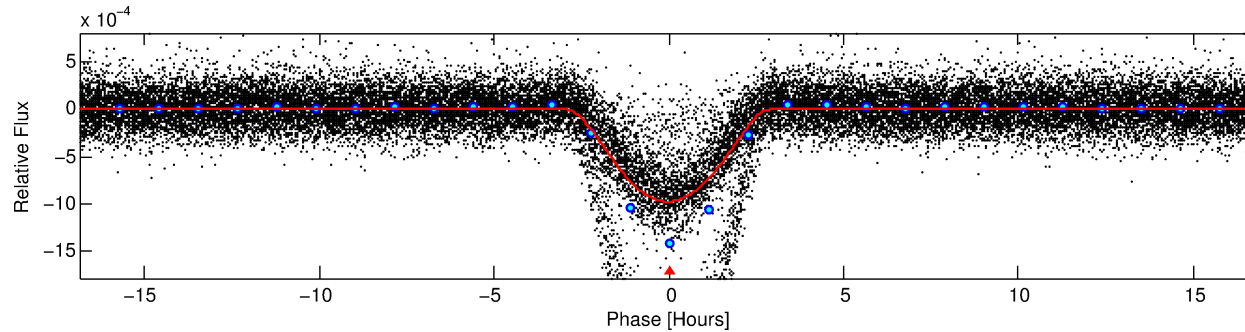
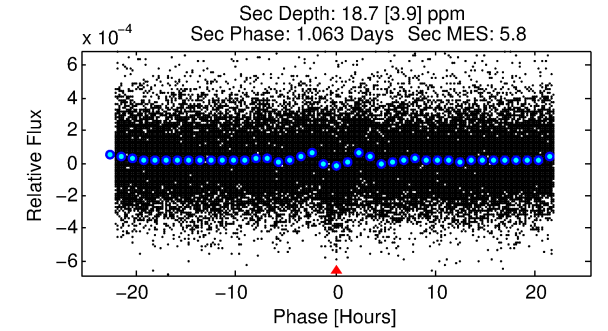
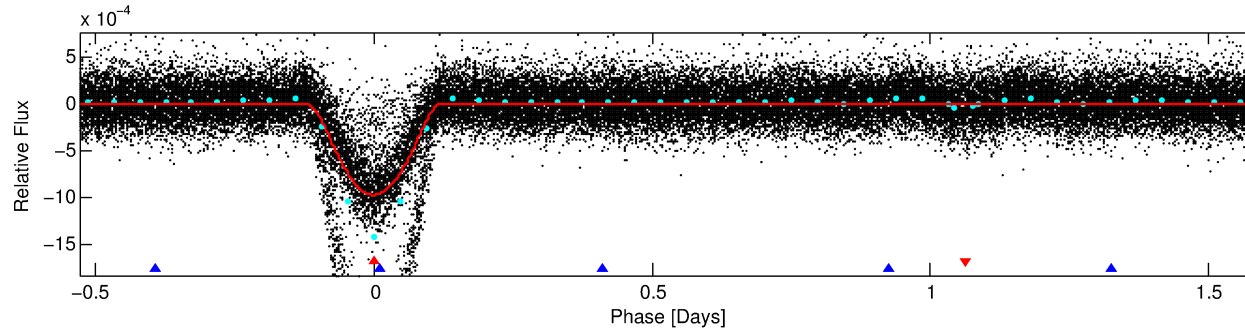
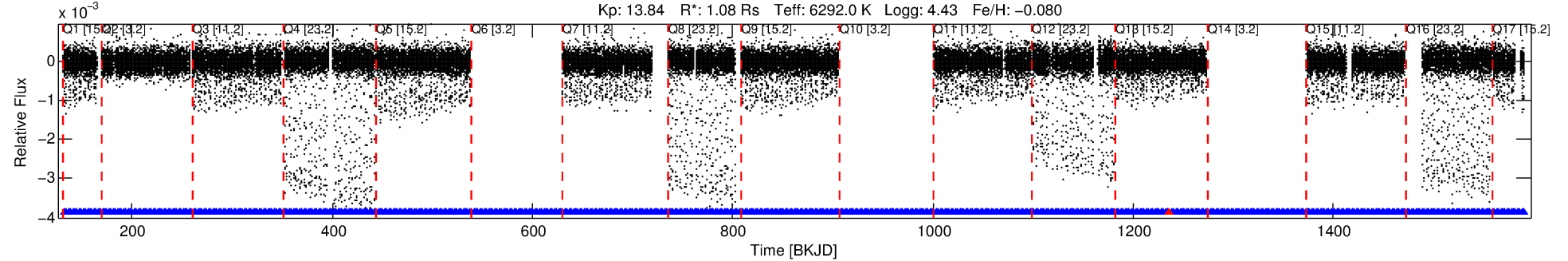
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005020044-01	5020044	3688.01	5020034	1:1	6.9	0	-1	15.81	13.83	135.73	Direct-PRF	0	0.29	0.06

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: 5020044 Candidate: 1 of 2 Period: 2.119 d
KOI: K03802.01 Corr: 0.845

Kp: 13.84 R*: 1.08 Rs Teff: 6292.0 K Logg: 4.43 Fe/H: -0.080



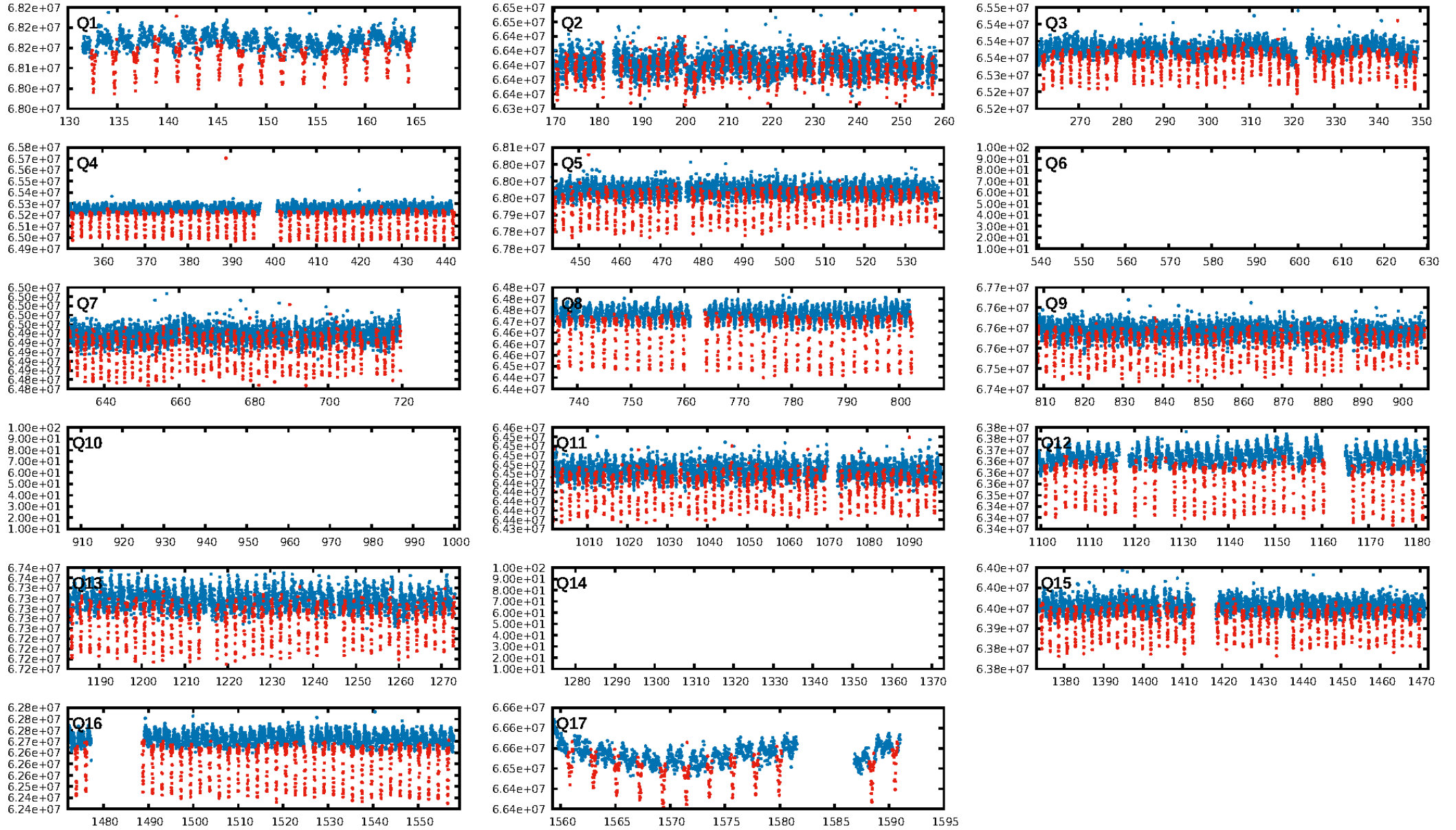
DV Fit Results:

Period = 2.11910 [0.00000] d
Epoch = 132.5905 [0.0005] BKJD
Rp/R* = 0.0547 [0.0098]
a/R* = 1.40 [0.02]
b = 1.00 [0.00]
Seff = 1441.87 [579.19]
Teff = 1571 [158] K
Rp = 6.43 [2.31] Re
a = 0.0336 [0.0088] AU
Ag = 0.28 [0.16] [-4.54σ]
Teffp = 1770 [191] K [0.80σ]

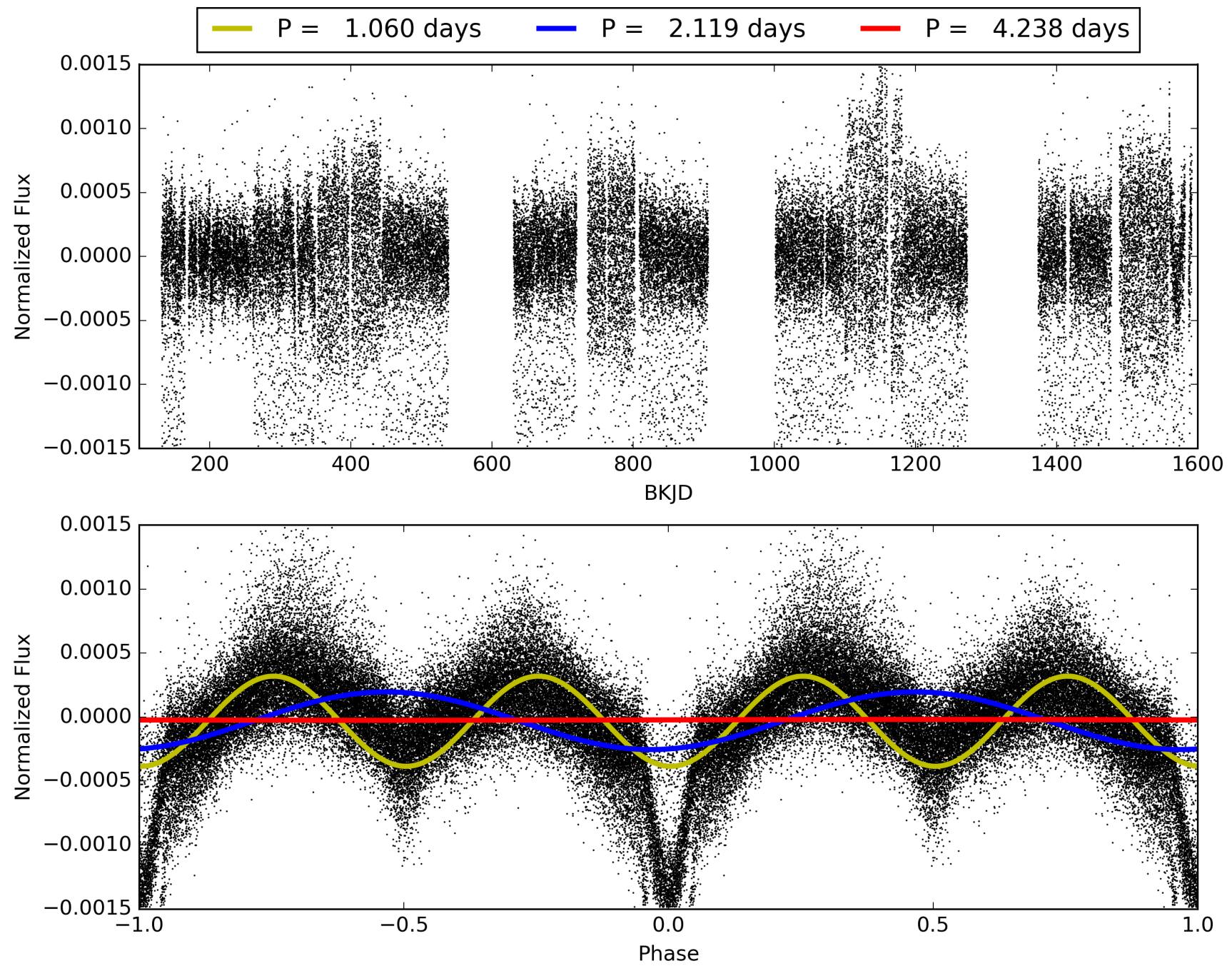
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [360.01σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [478/479]
GhostDiagnostic-chr: -0.4059
Centroid-sig: N/A
Centroid-so: 45.443 arcsec [462.13σ]
OotOffset-rm: 7.066 arcsec [102.46σ]
KicOffset-rm: 7.203 arcsec [106.51σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 005020044-01, PDC Light Curves

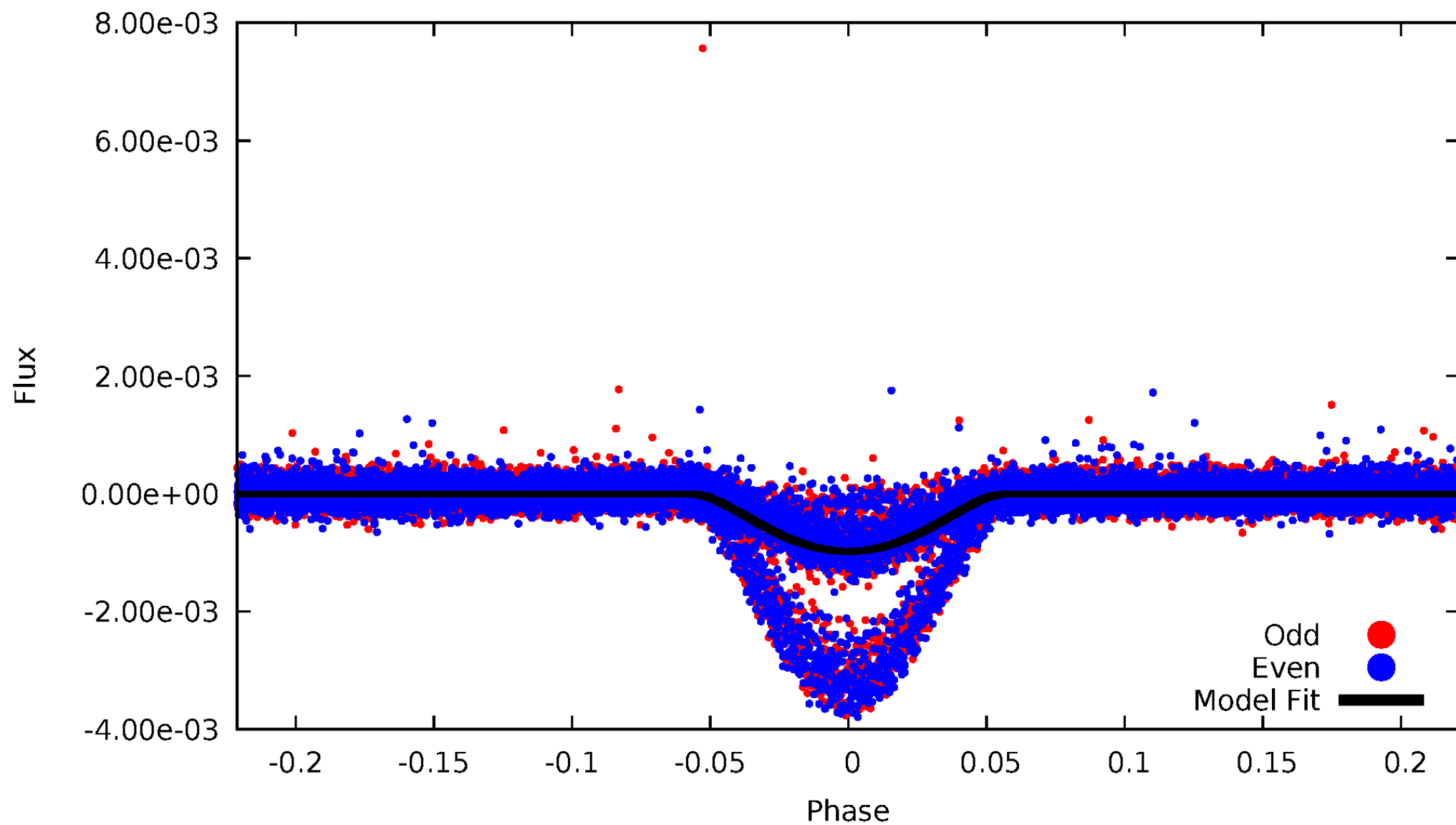


TCE 005020044-01



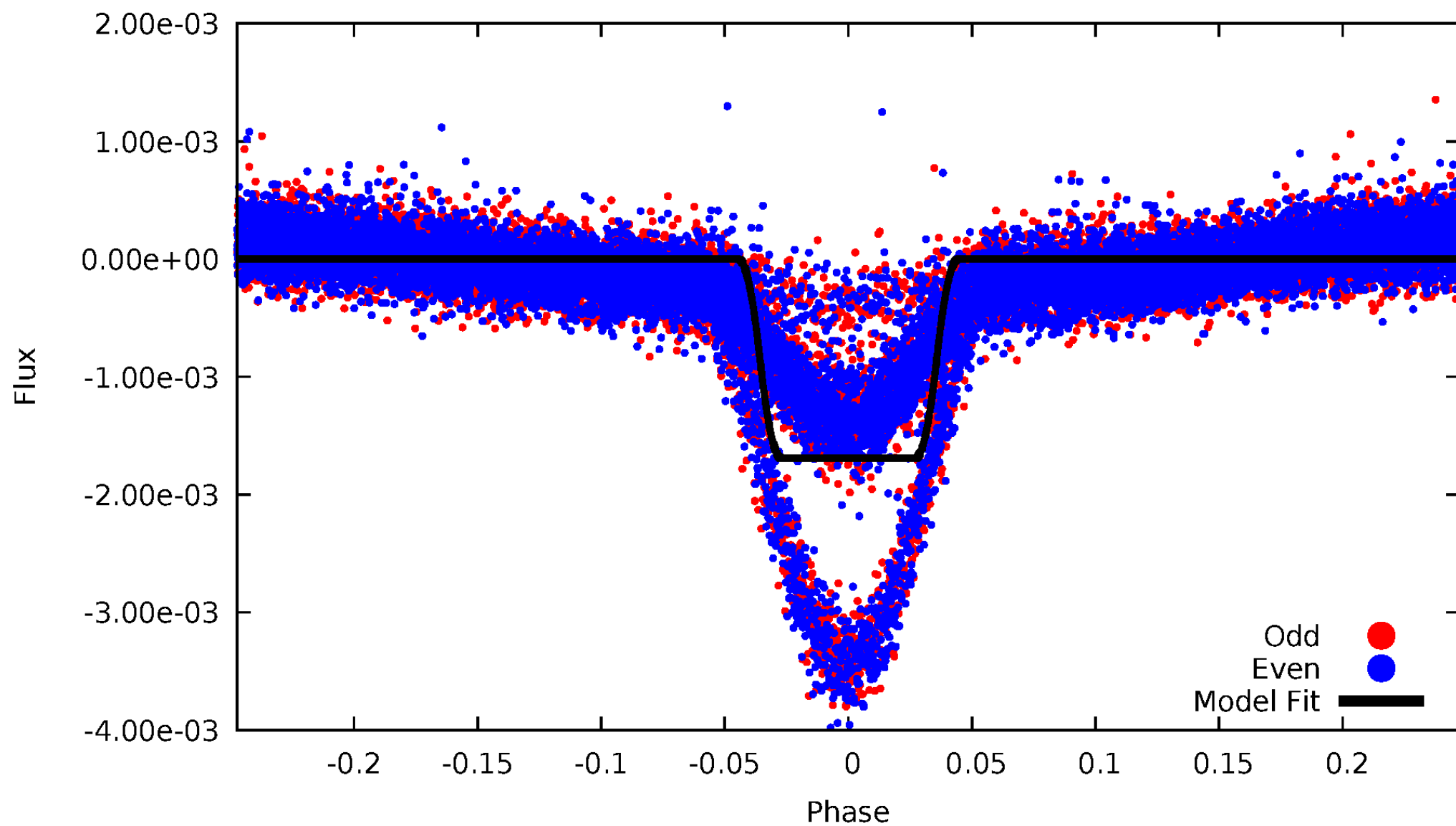
DV Odd/Even

TCE 005020044-01



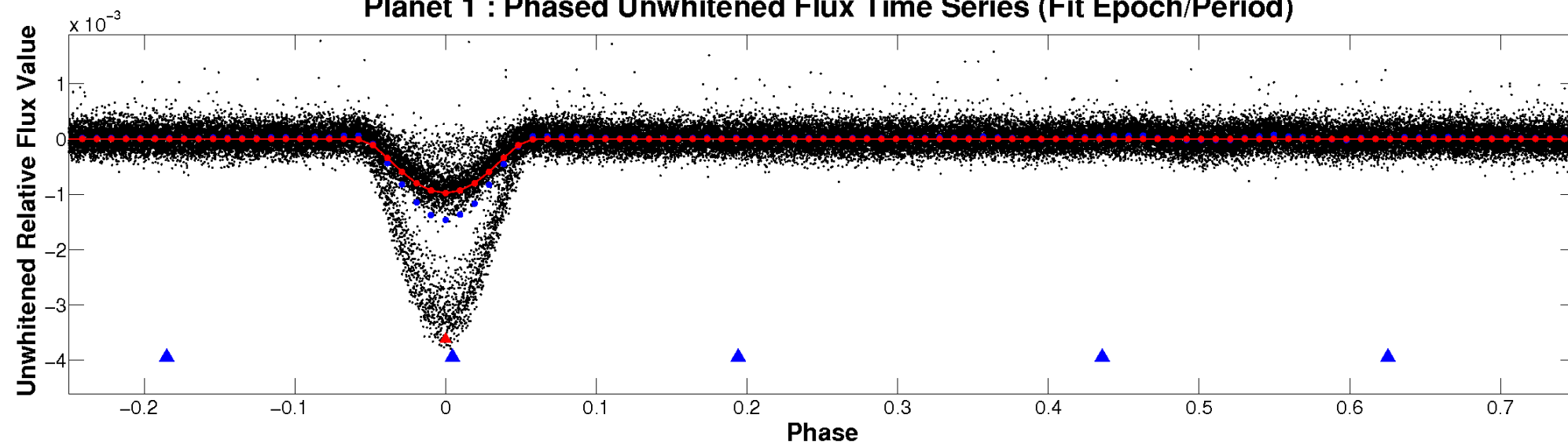
ALT Odd/Even

TCE 005020044-01

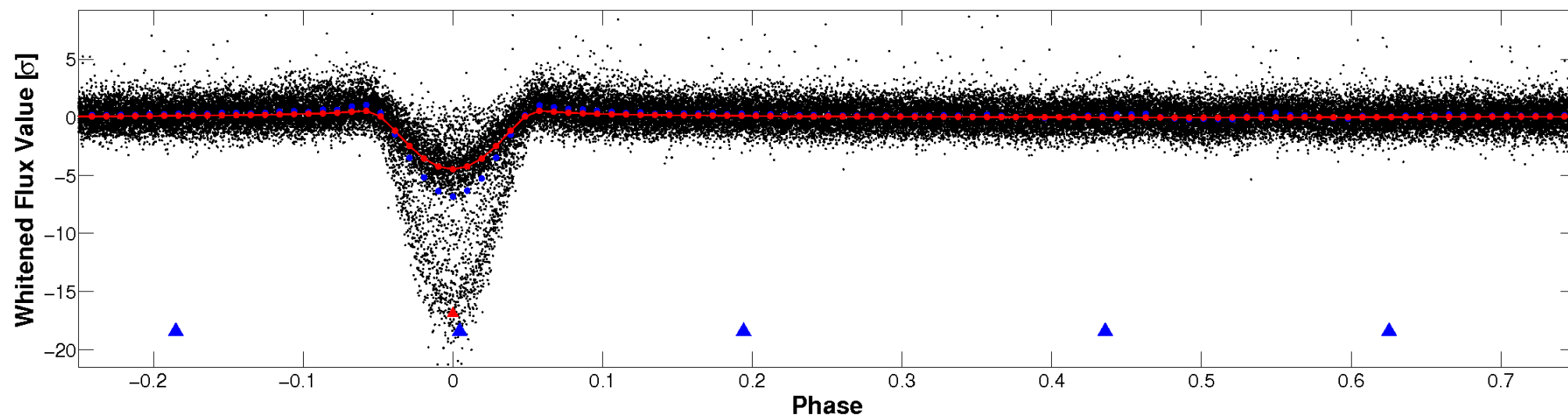


Non-Whitened Vs. Whitened Light Curve

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

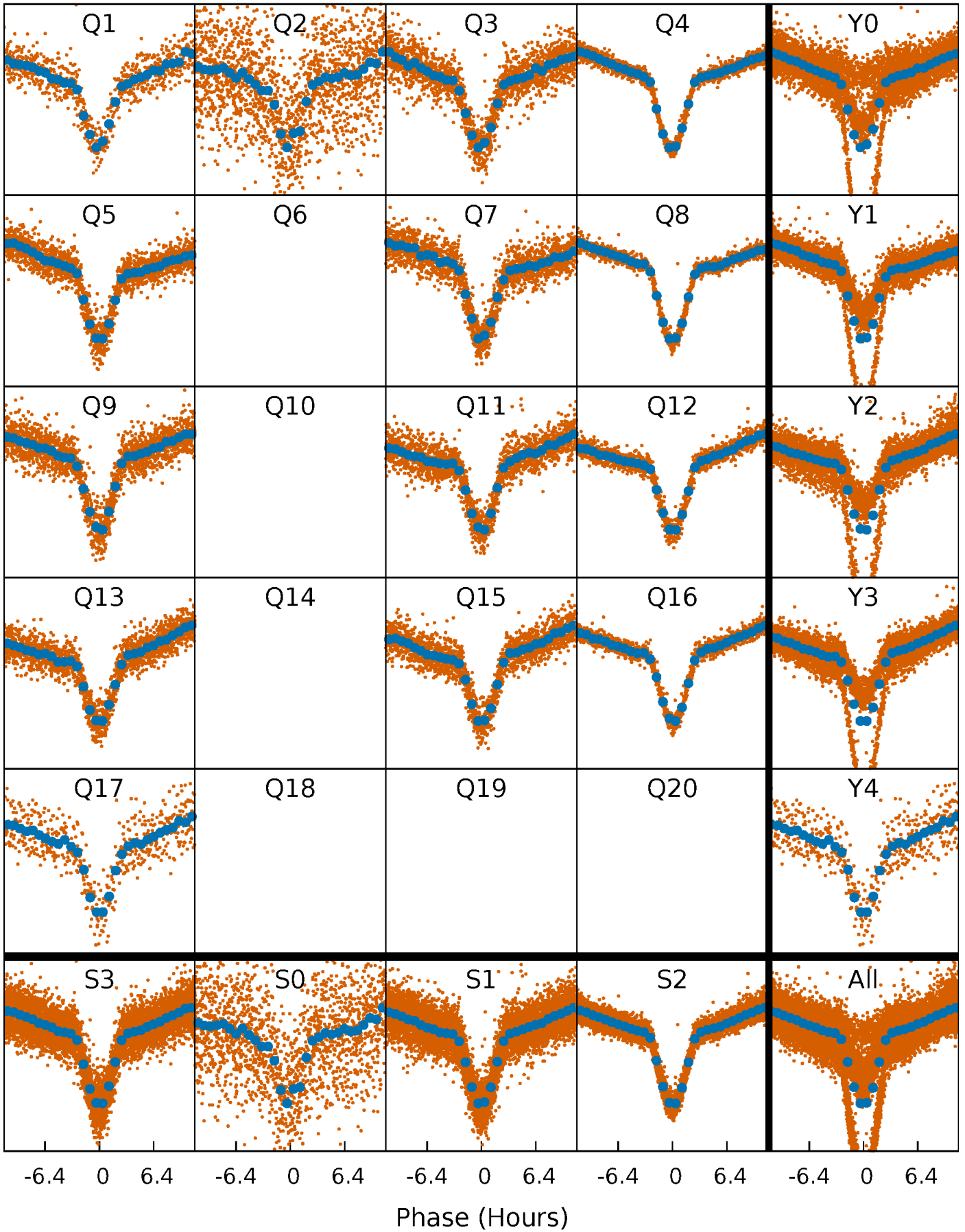


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



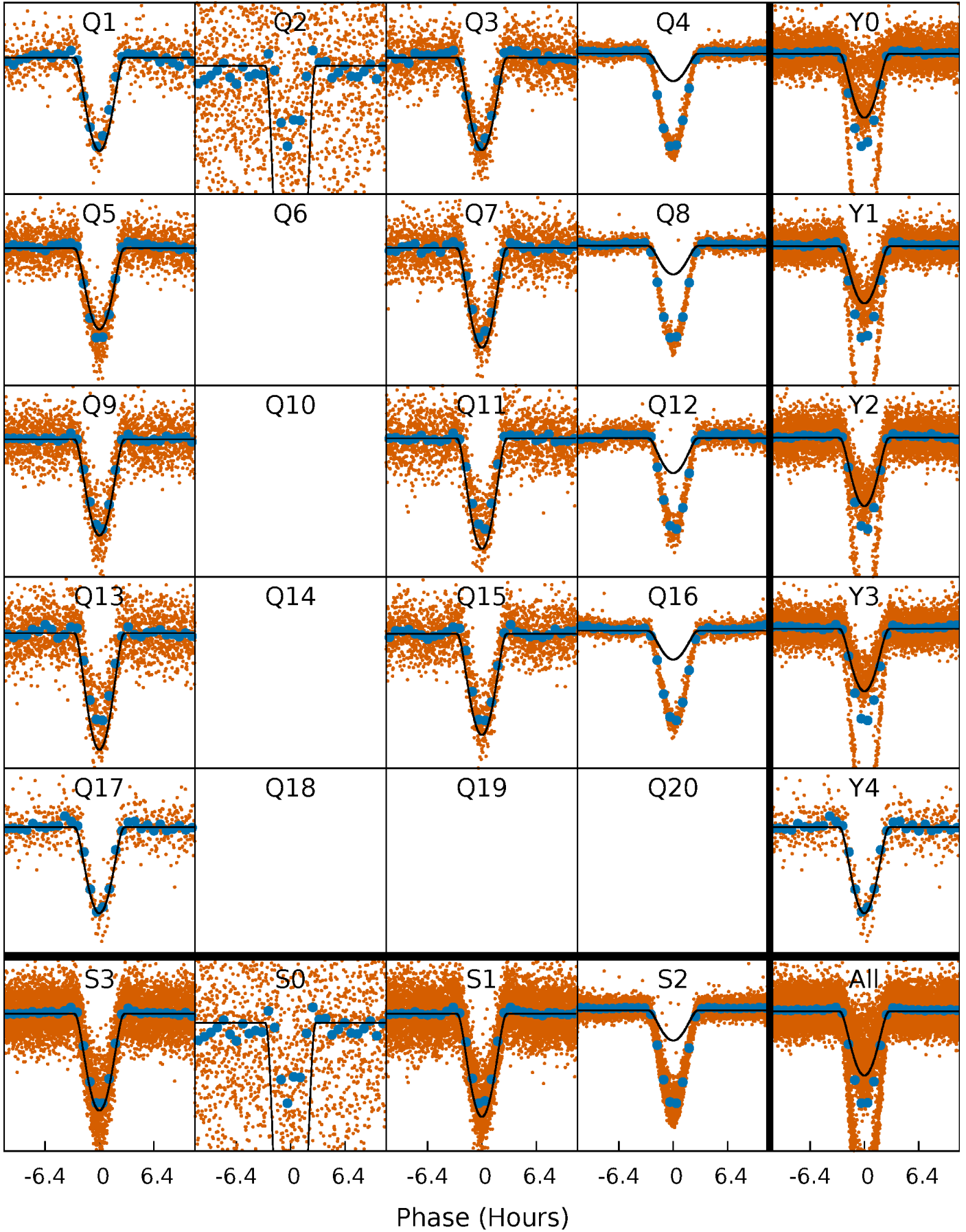
PDC Quarter-Phased Transit Curves

TCE 005020044-01 P= 2.119105 Days $T_0=132.590501$ (BKJD)



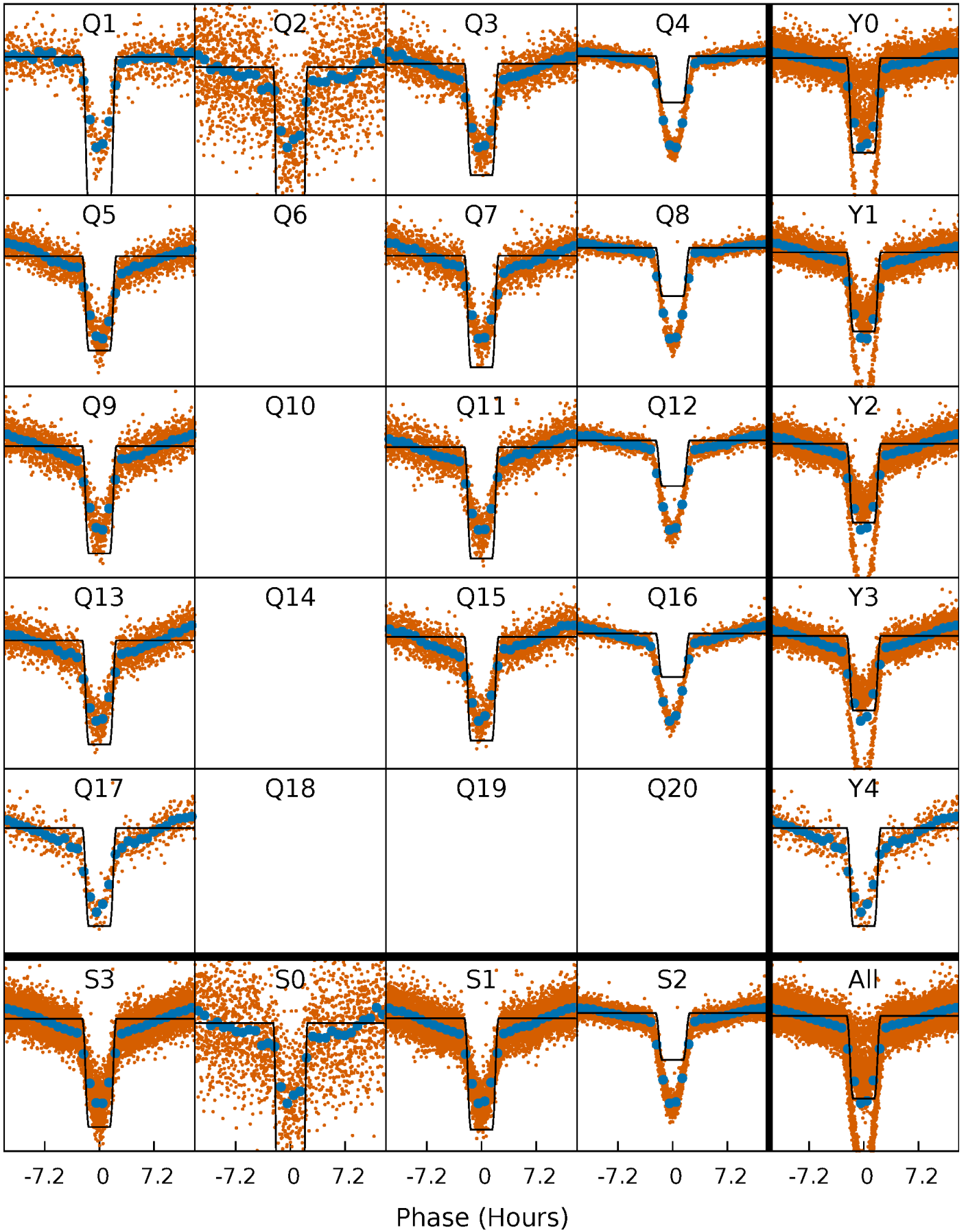
DV Quarter-Phased Transit Curves

TCE 005020044-01 P= 2.119105 Days $T_0=132.590501$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

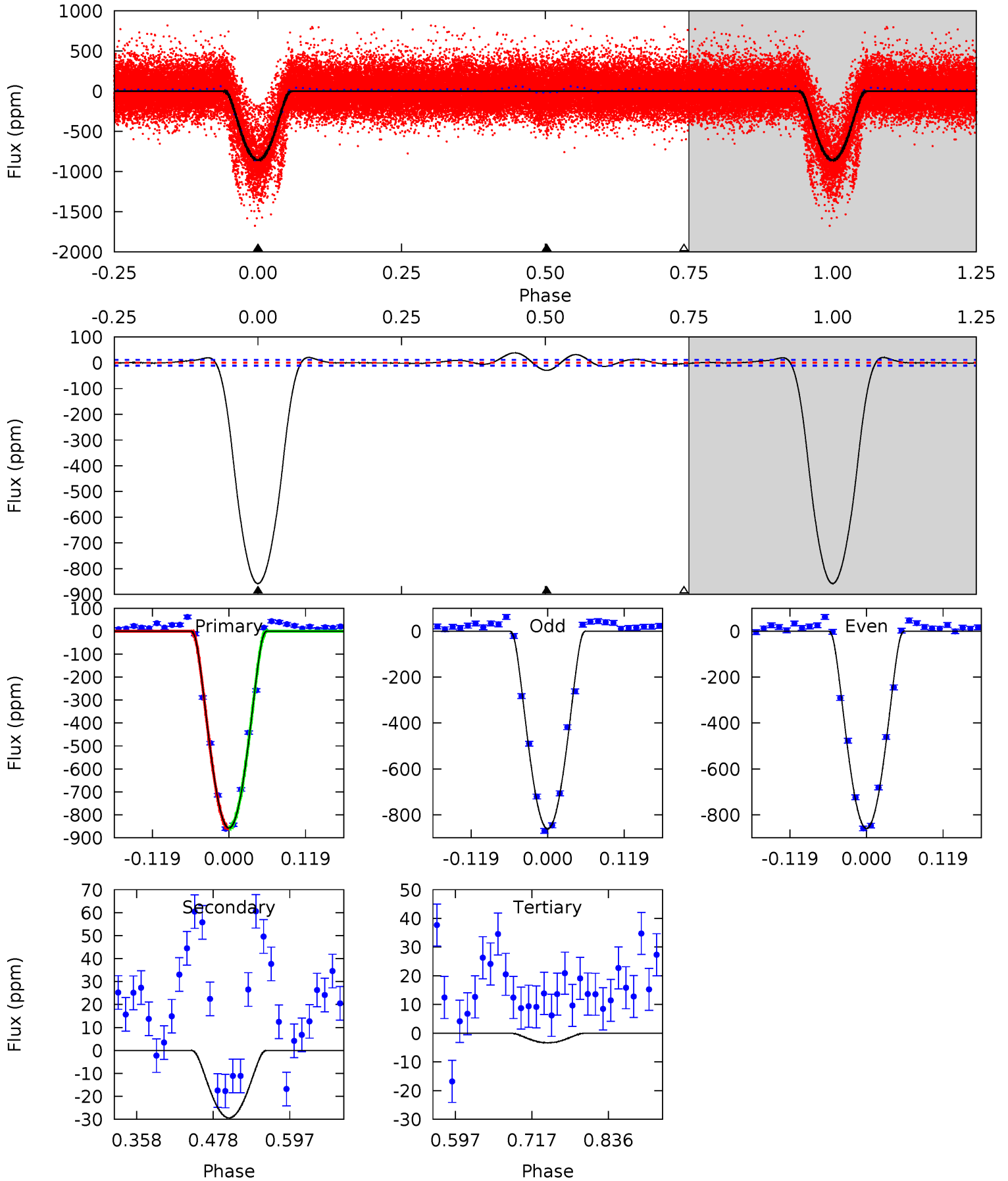
TCE 005020044-01 P= 2.119136 Days $T_0=132.580261$ (BKJD)



DV Model-Shift Uniqueness Test

005020044-01, P = 2.119105 Days, E = 130.471396 Days

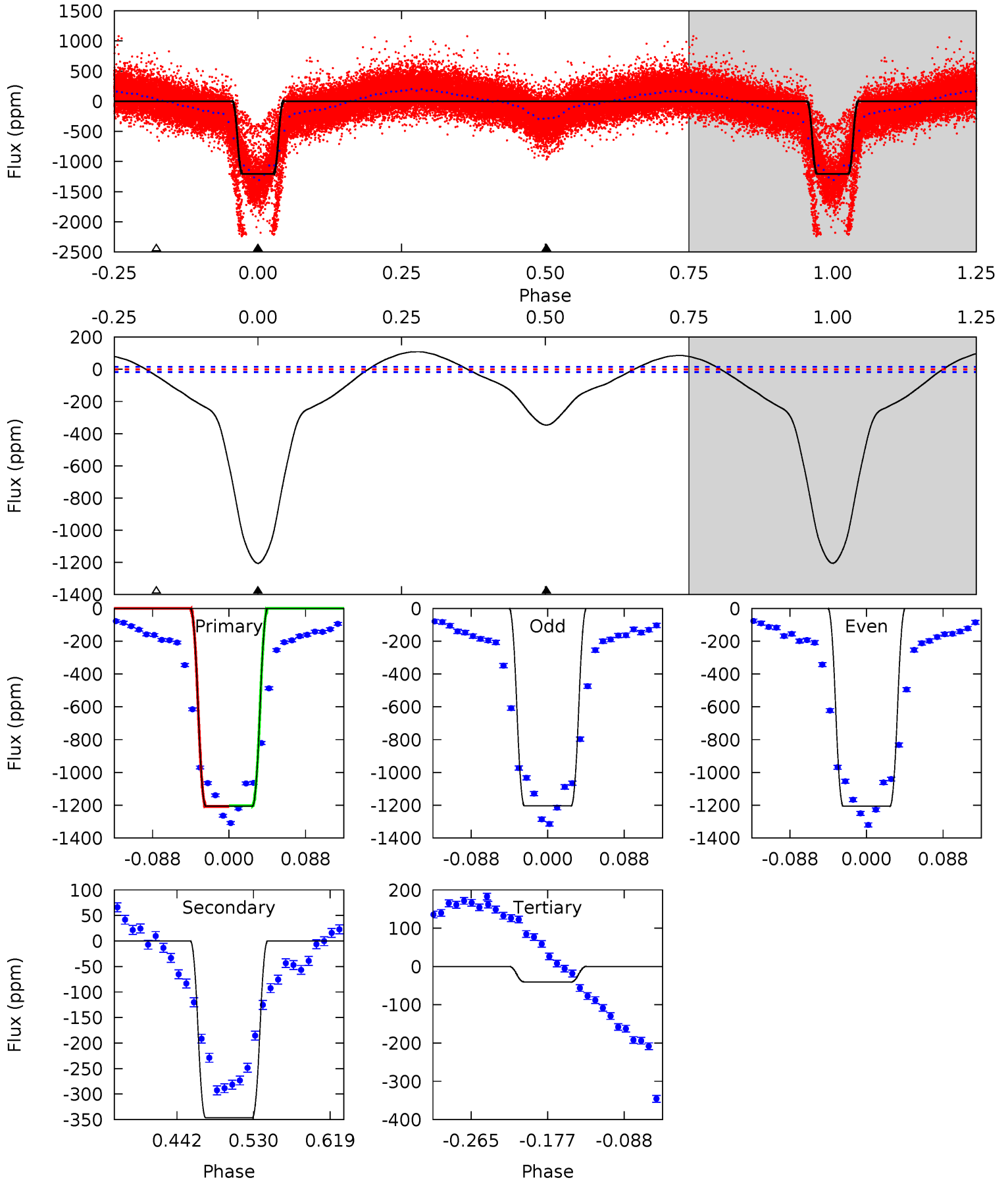
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
342.8	11.7	1.34	0	4.53	1.56	1.73	341.5	342.8	10.4	11.7	0.38	1.55	0.04	0



Alt Model-Shift Uniqueness Test

005020044-01, P = 2.119136 Days, E = 130.461125 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
343.3	98.7	11.5	0	4.59	1.70	28.1	331.8	343.3	87.1	98.7	0.28	1.28	0.08	0



Stellar Parameters For KIC 005020044

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6292^{+171}_{-202}	$4.426^{+0.052}_{-0.208}$	$-0.080^{+0.250}_{-0.300}$	$1.078^{+0.335}_{-0.134}$	$1.129^{+0.159}_{-0.145}$	$1.269^{+0.361}_{-0.674}$
	+3%/-3%	+1%/-5%	+312%/-375%	+31%/-12%	+14%/-13%	+28%/-53%
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 005020044-01 / KOI 3802.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-29 ± 3	$6.73^{+1.51}_{-1.38}$	2247^{+166}_{-107}	2288^{+352}_{-4403}	$0.389^{+0.225}_{-0.130}$
Alt.	-346 ± 4	$5.08^{+1.42}_{-1.29}$	2246^{+165}_{-107}	4397^{+554}_{-368}	$8.270^{+6.519}_{-3.245}$

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 $A_{obs} \gg 1.0$

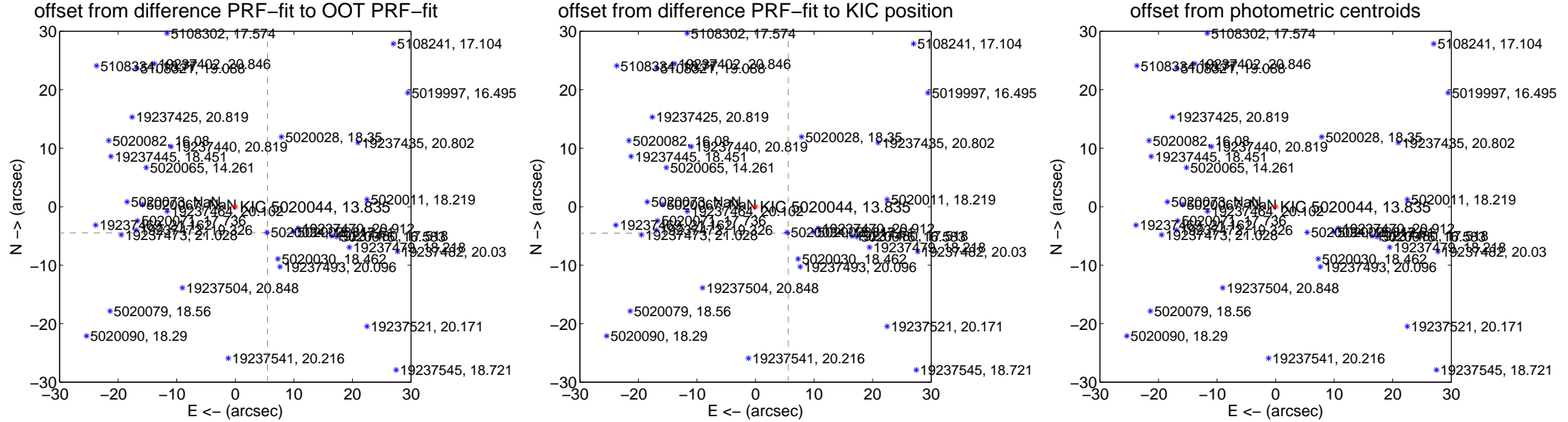
DV Centroid Data

Supplemental centroid analysis for 005020044-01. Kepler magnitude: 13.84. Transit SNR 182.07

There are 4 quarters with good PRF difference image offsets

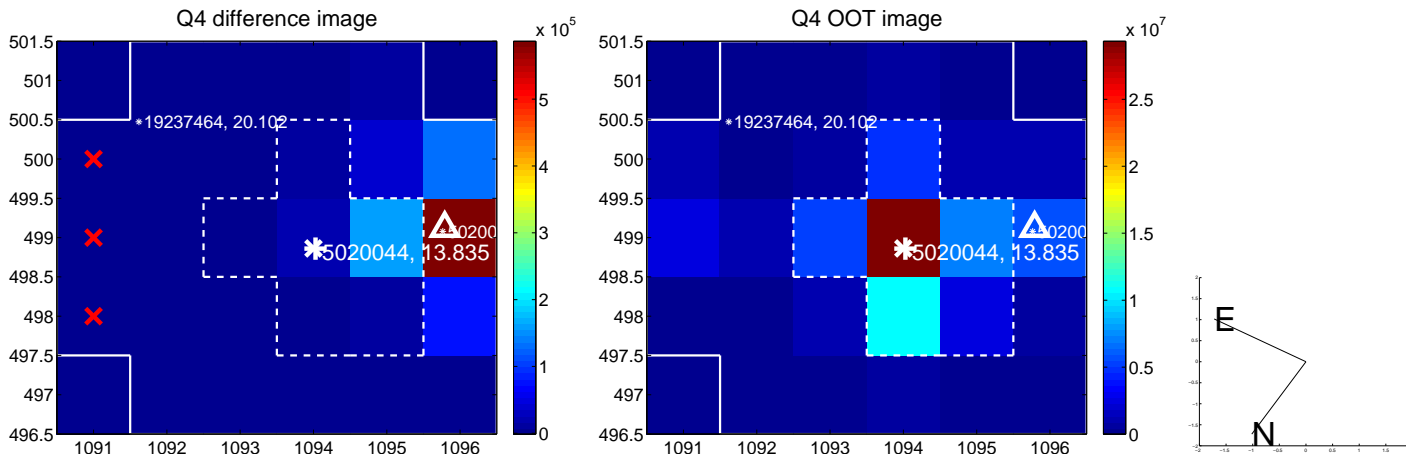
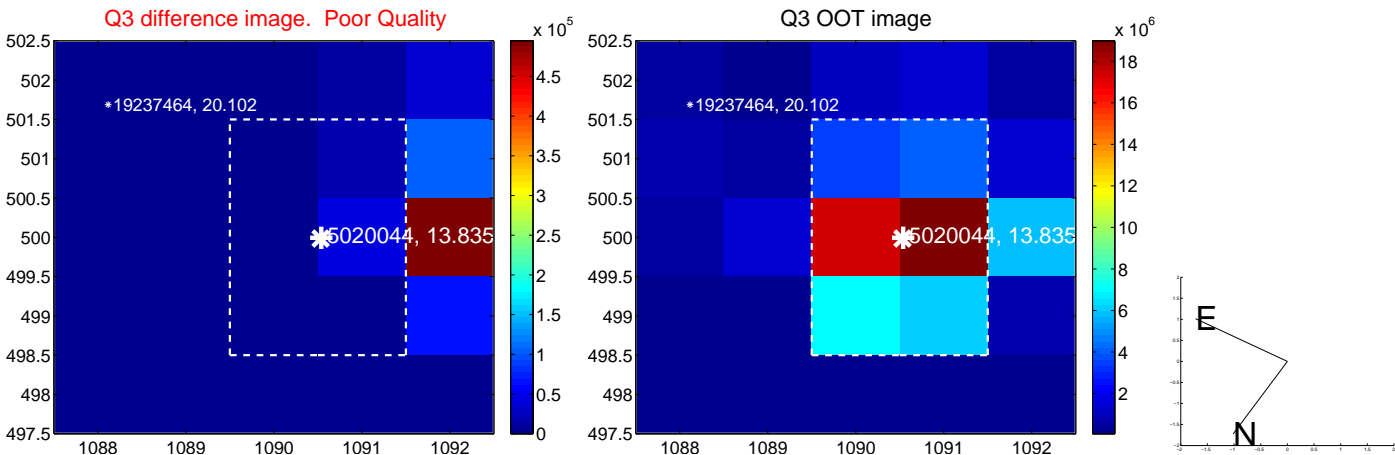
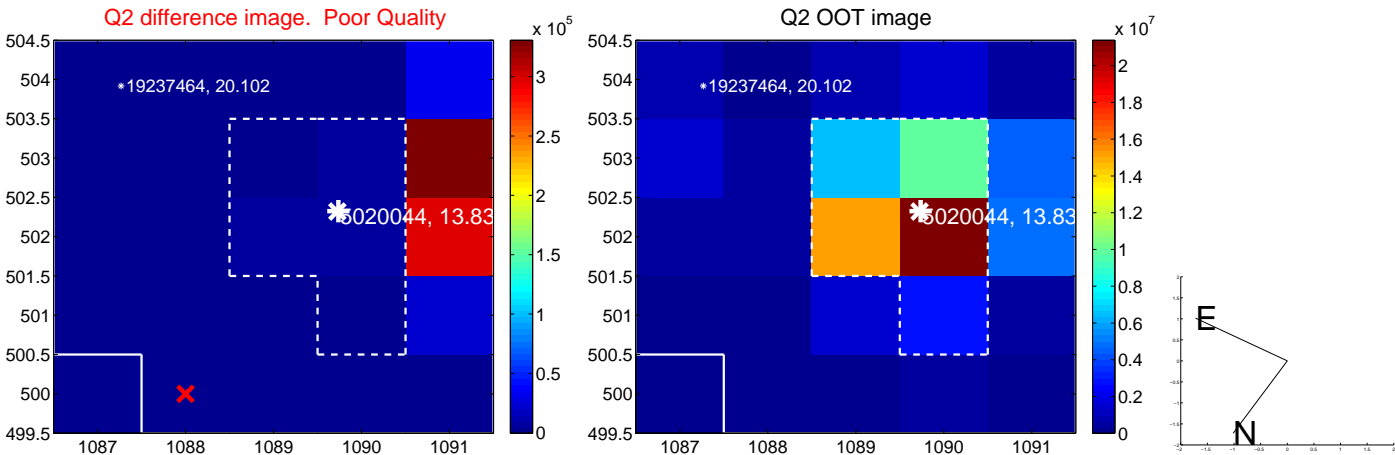
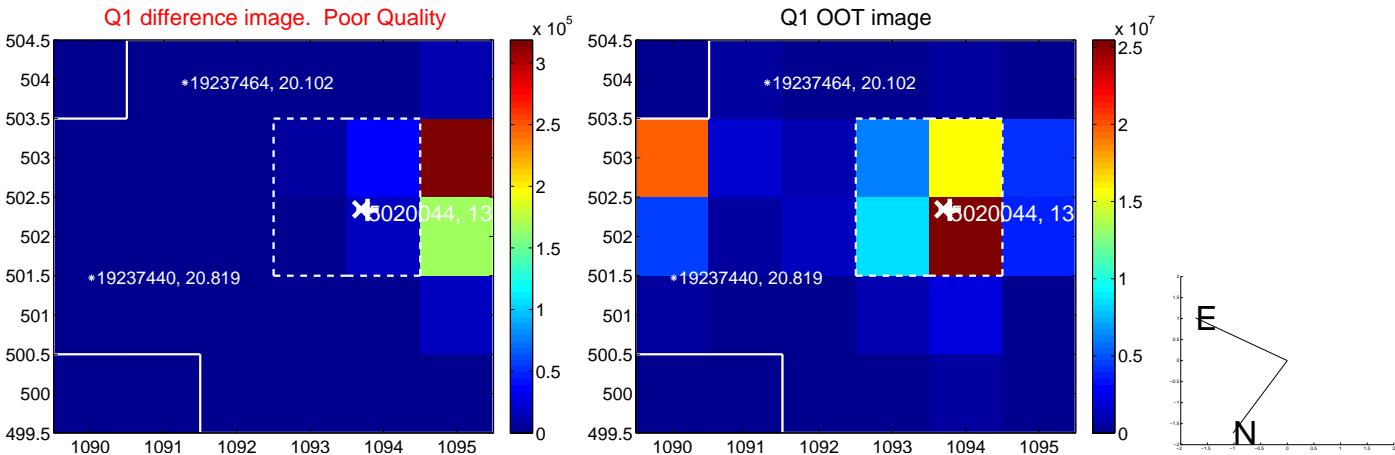
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.066 ± 0.069	102.46	-5.482 ± 0.070	-4.458 ± 0.067
PRF-fit source offset from KIC position	7.203 ± 0.068	106.51	-5.606 ± 0.067	-4.523 ± 0.068
photometric centroid source offset	45.45 ± 0.10	462.14	-33.52 ± 0.09	-30.69 ± 0.11

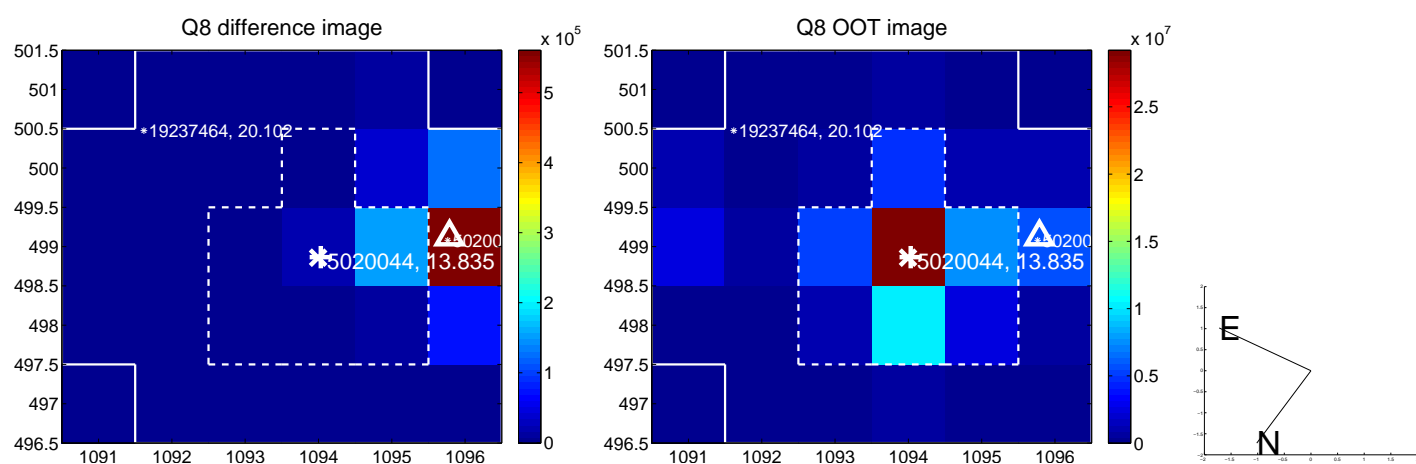
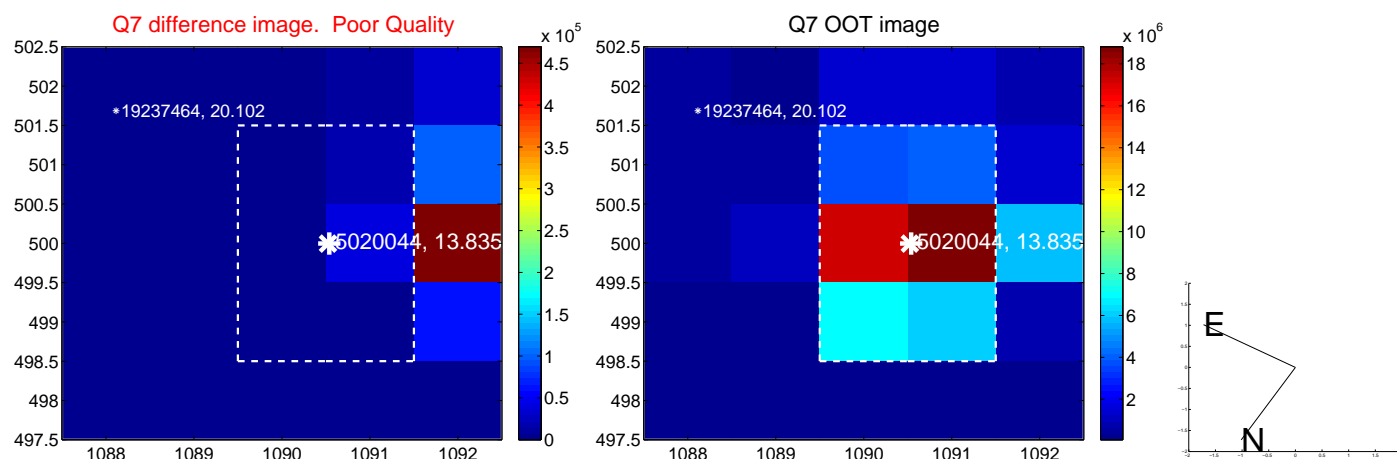
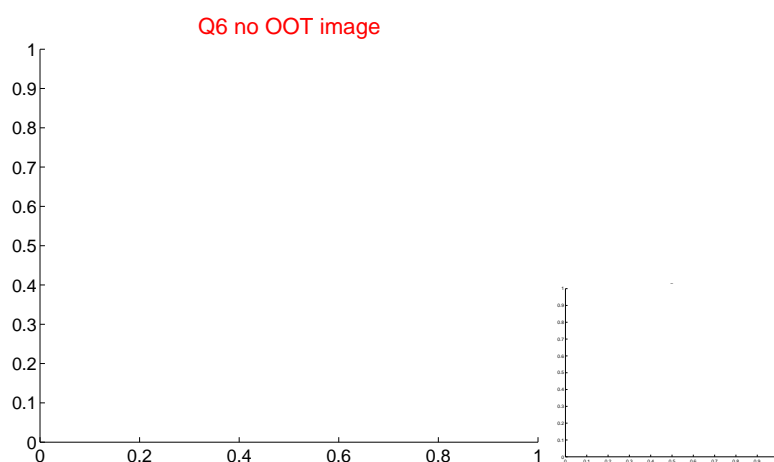
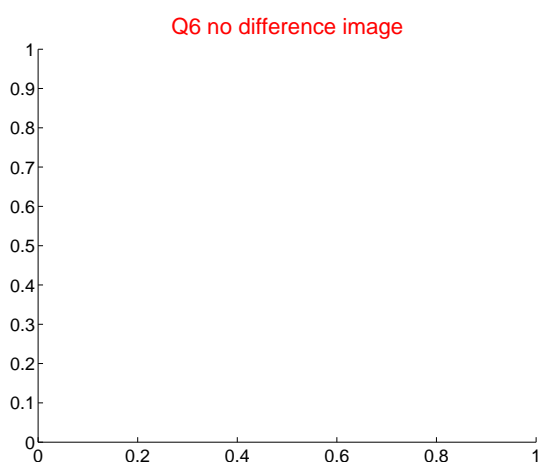
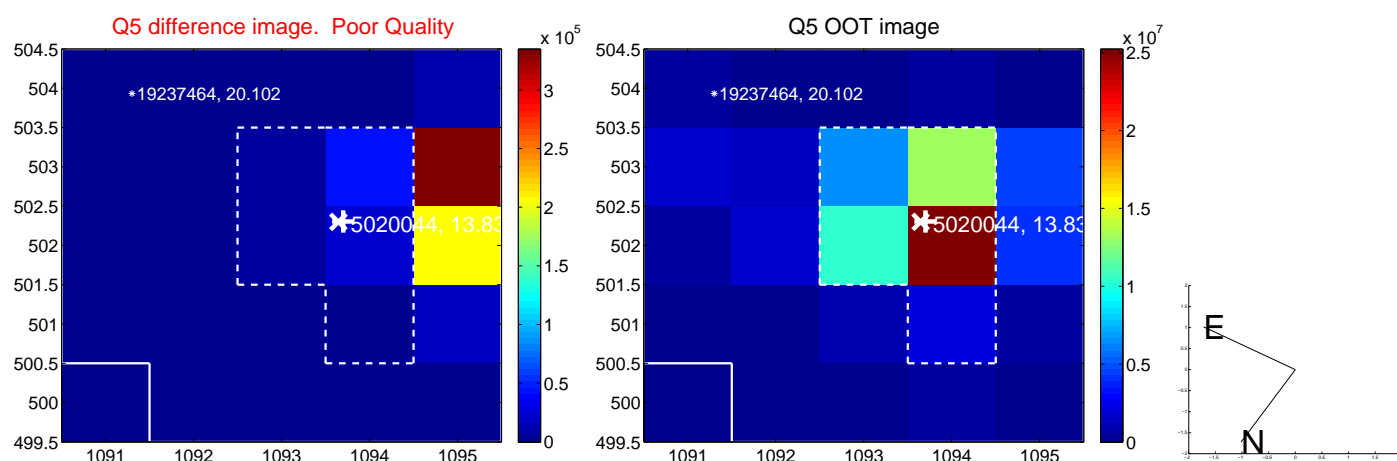


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

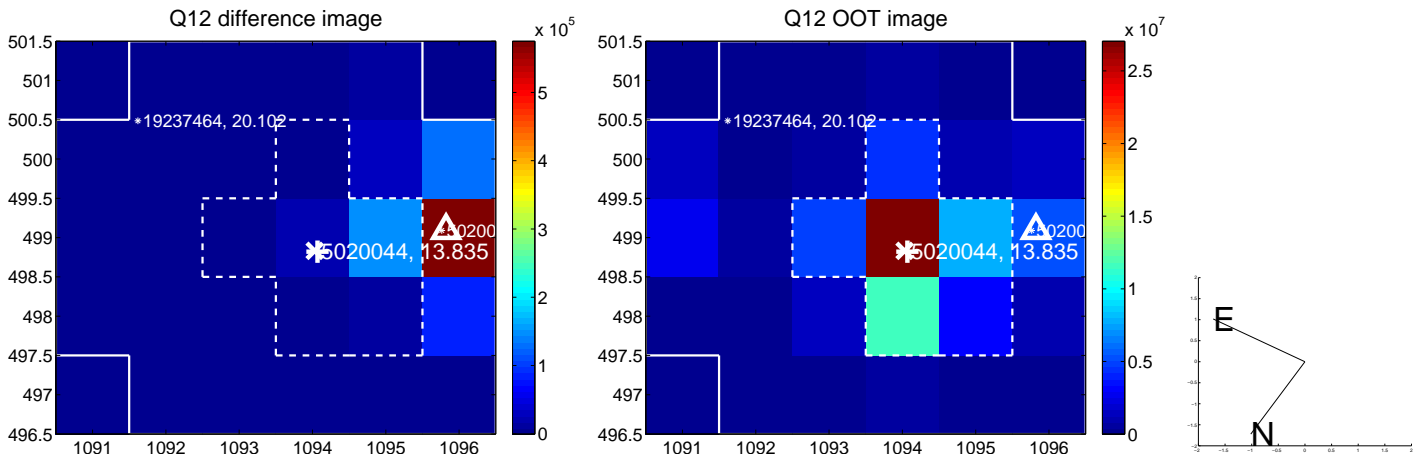
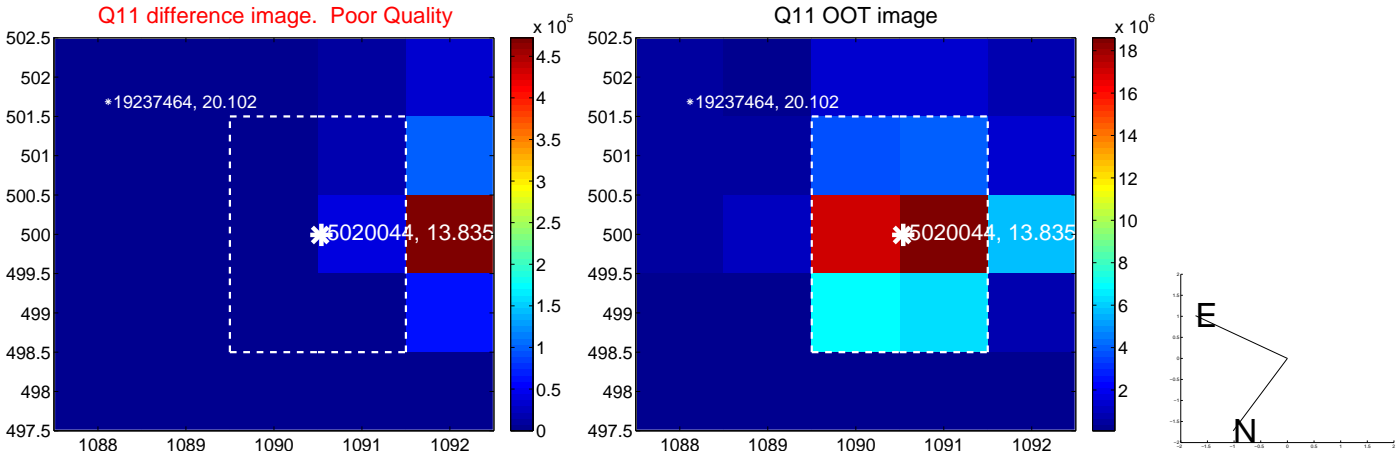
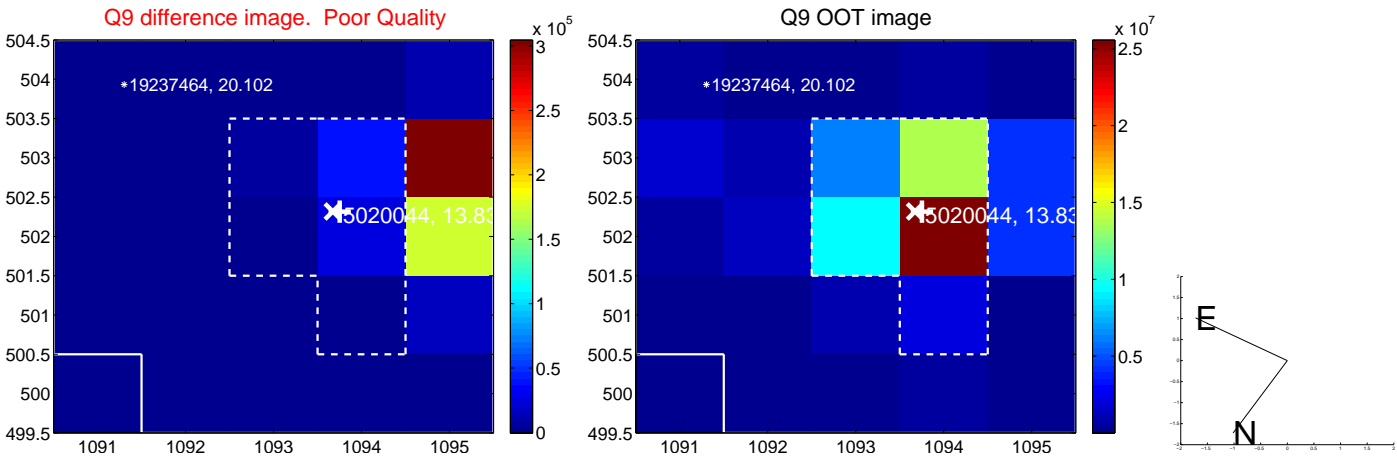
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



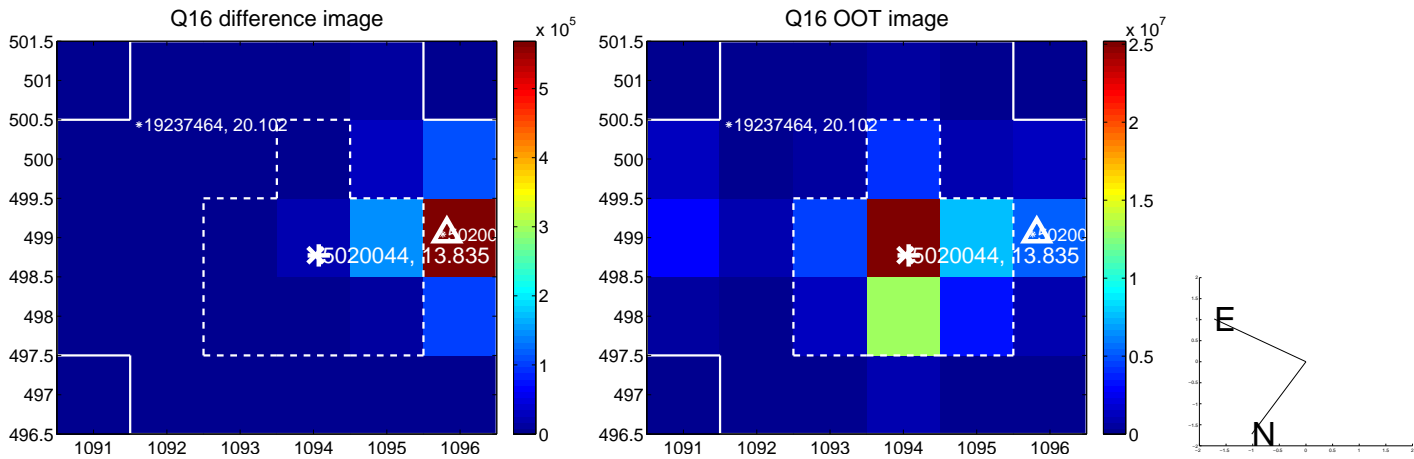
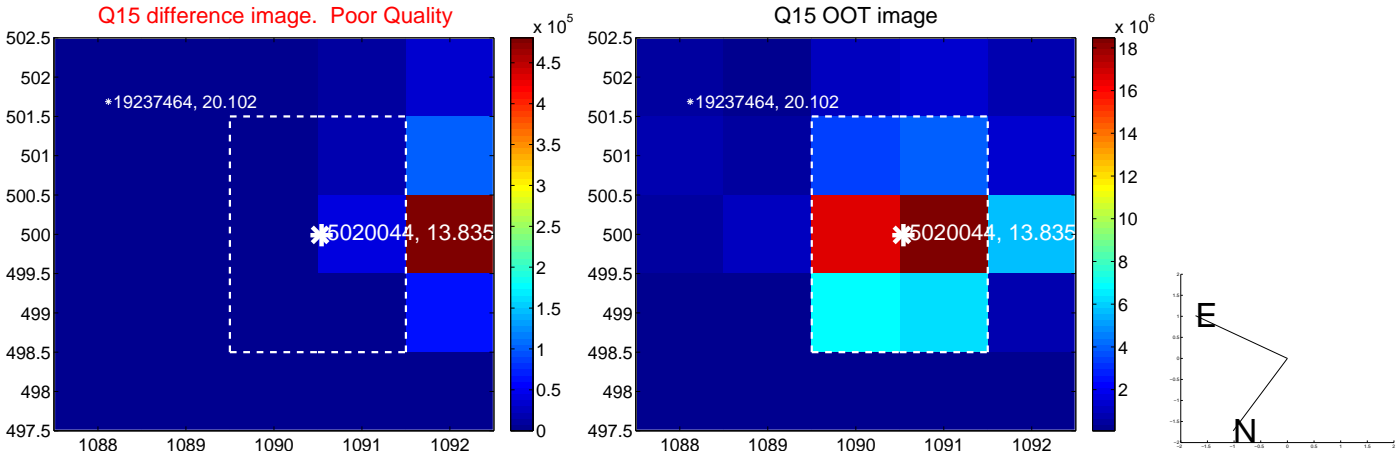
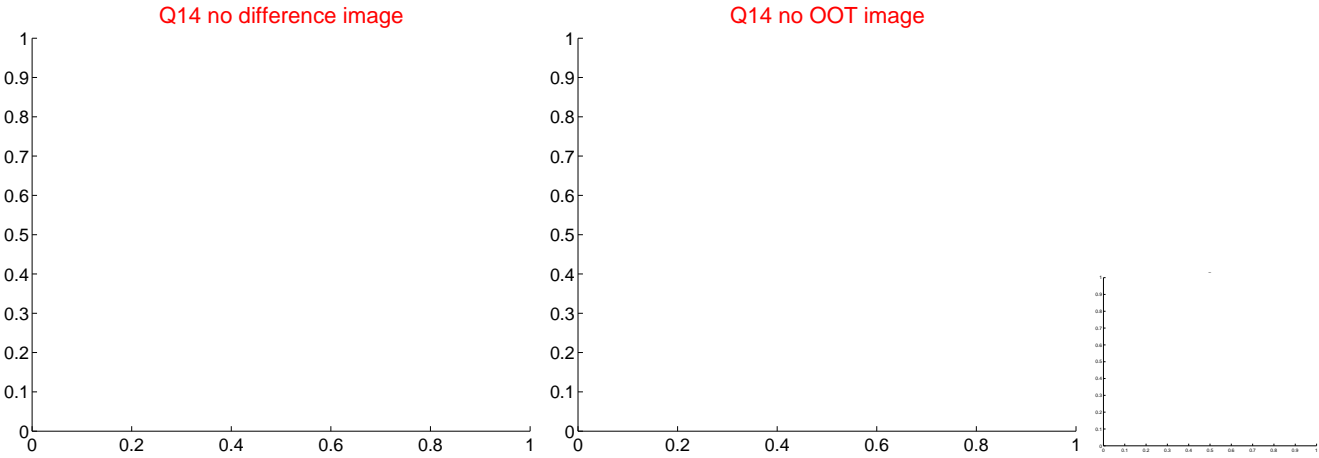
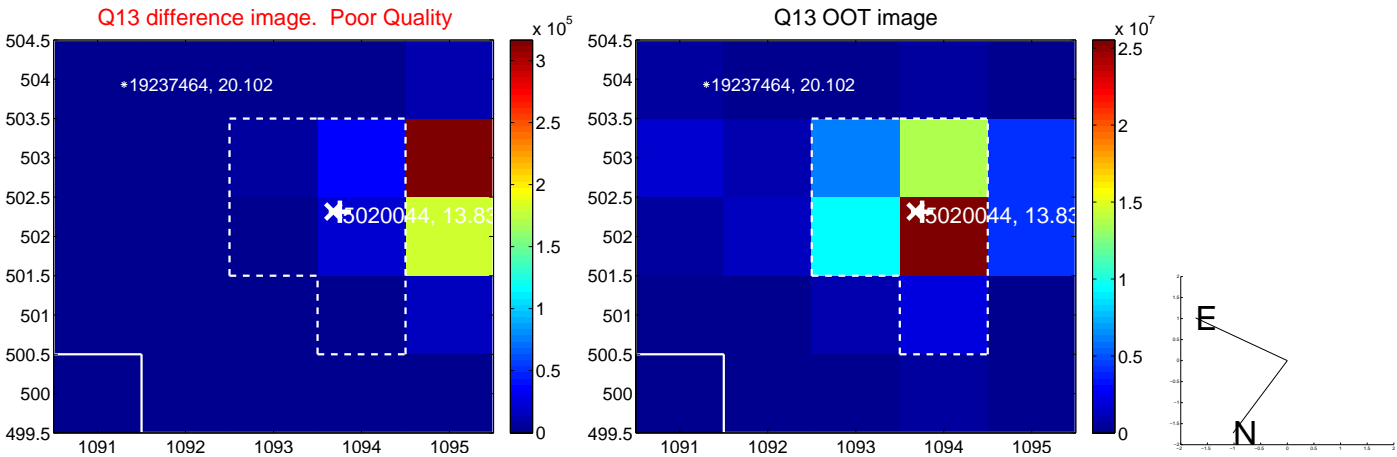
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



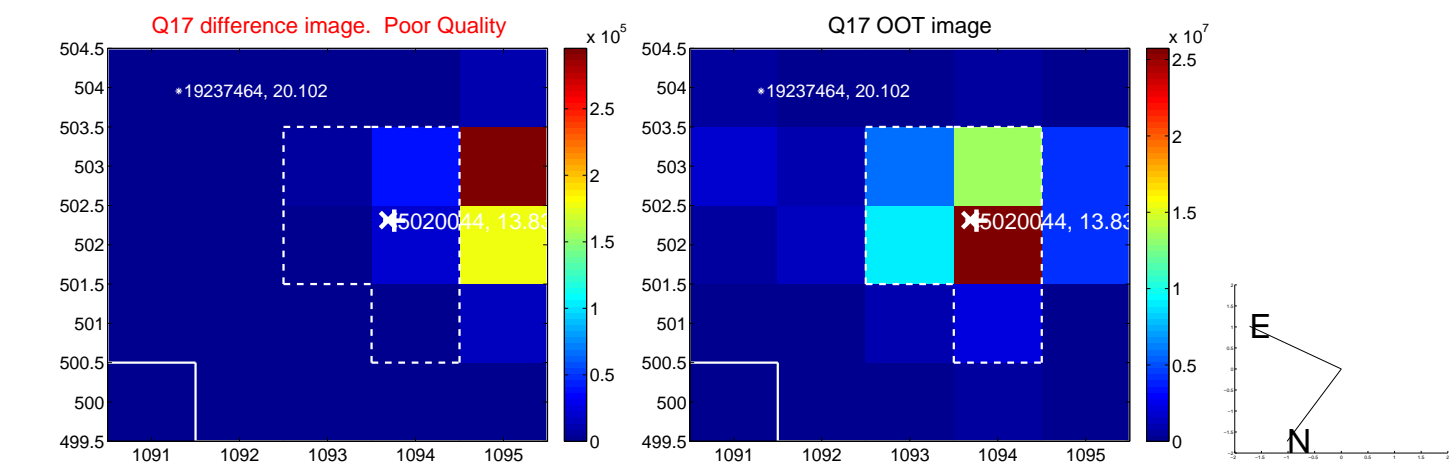
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



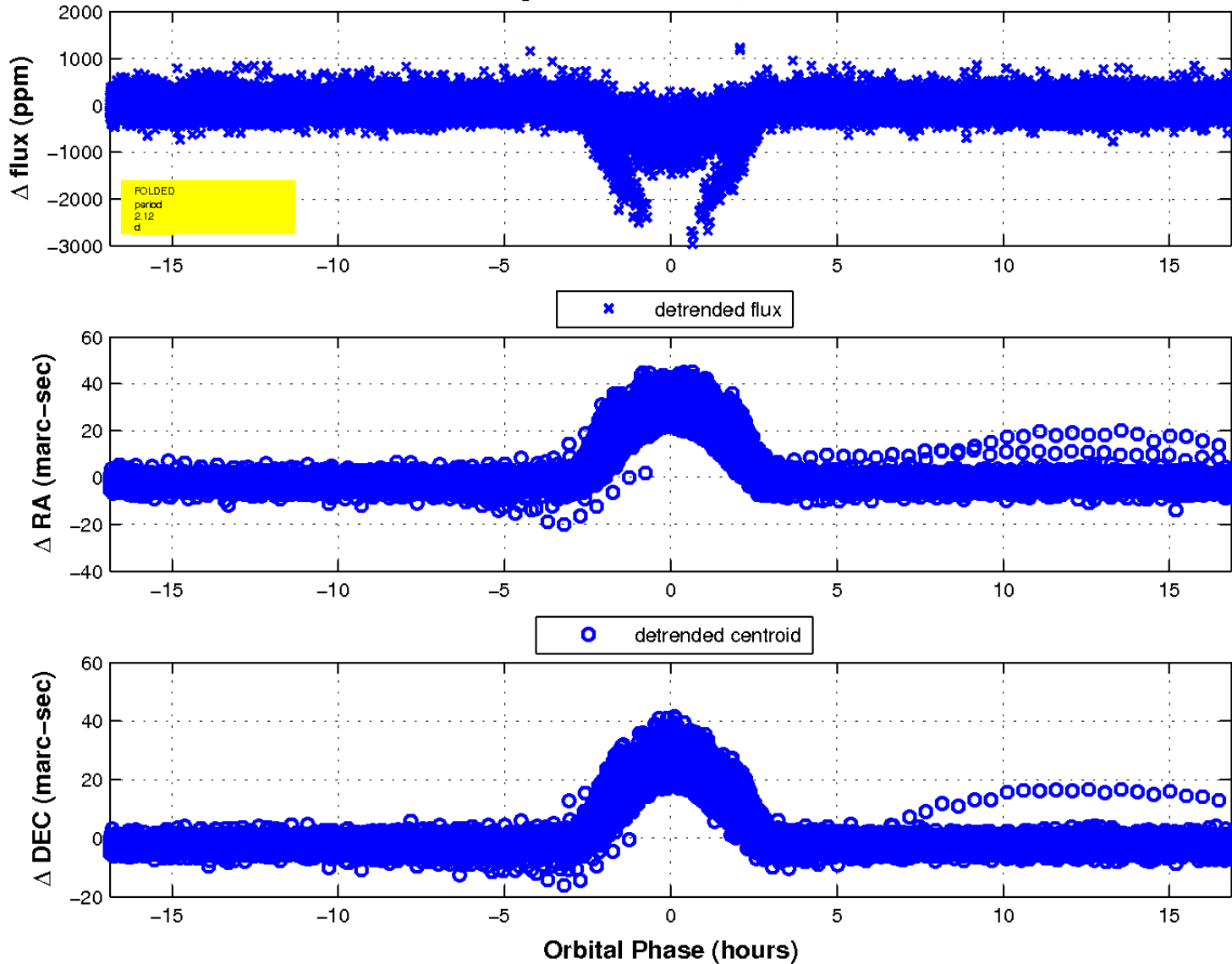
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



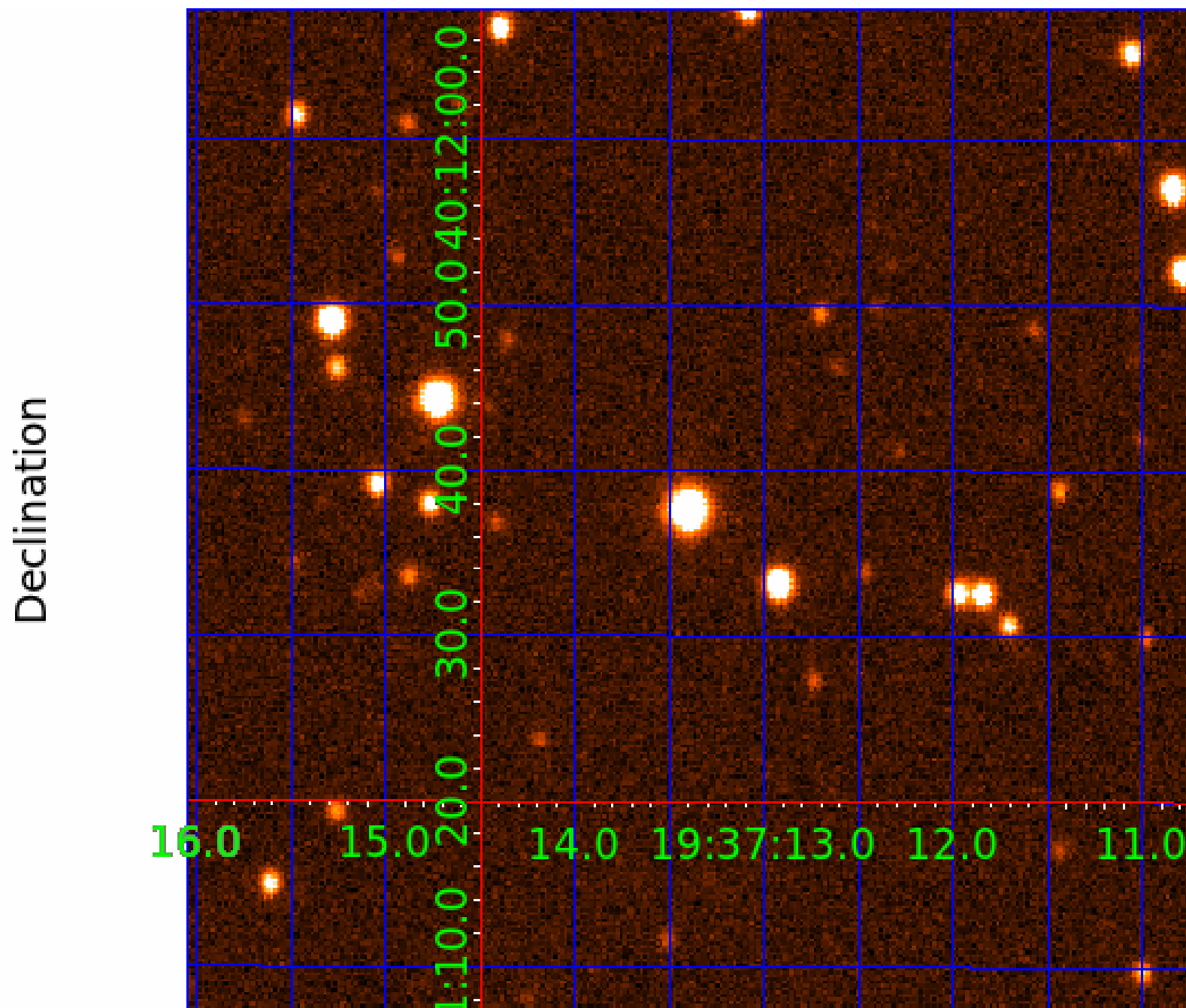
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 005020044

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})
005020044-01	OBS	3802.01	2.119105	132.590501	980.0	5.624	300.8	182.1	1.08	6292	6.43	1441.87
005020044-02	OBS	No	296.272861	370.341720	194.0	18.786	7.5	6.5	1.08	6292	1.83	1.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005020044-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—DEEP_V_SHAPED—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005020044-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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 005020044-02

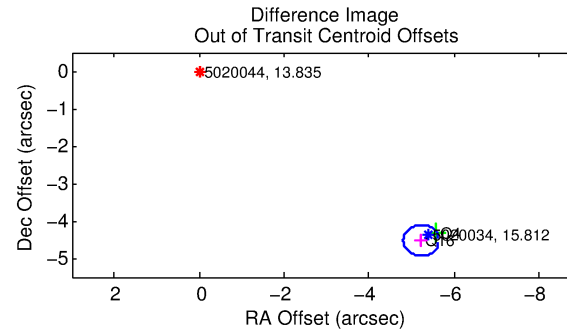
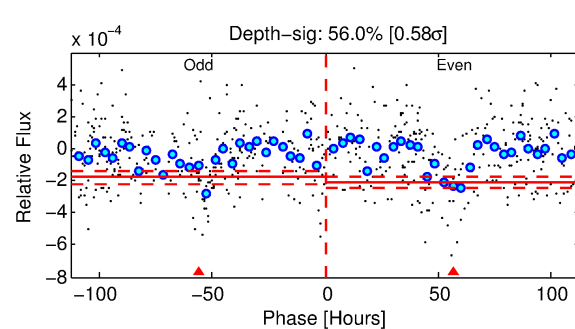
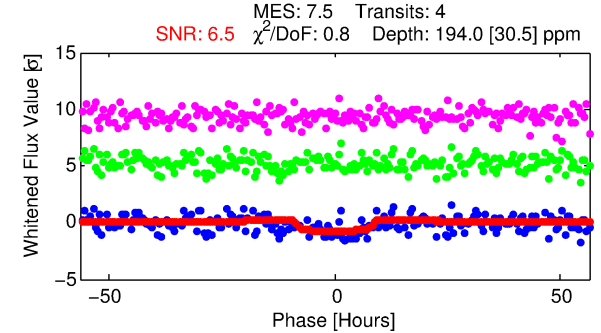
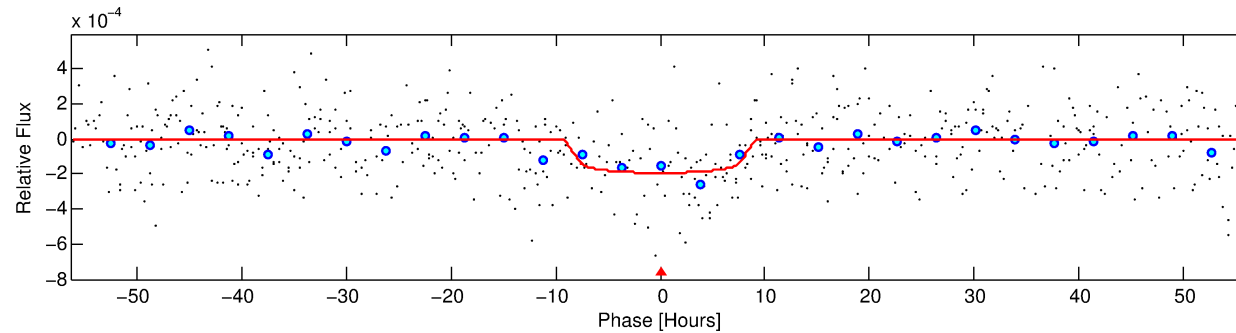
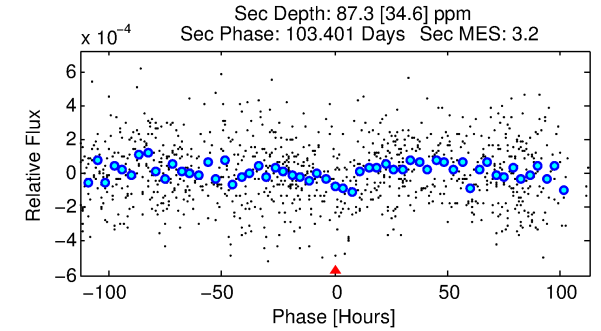
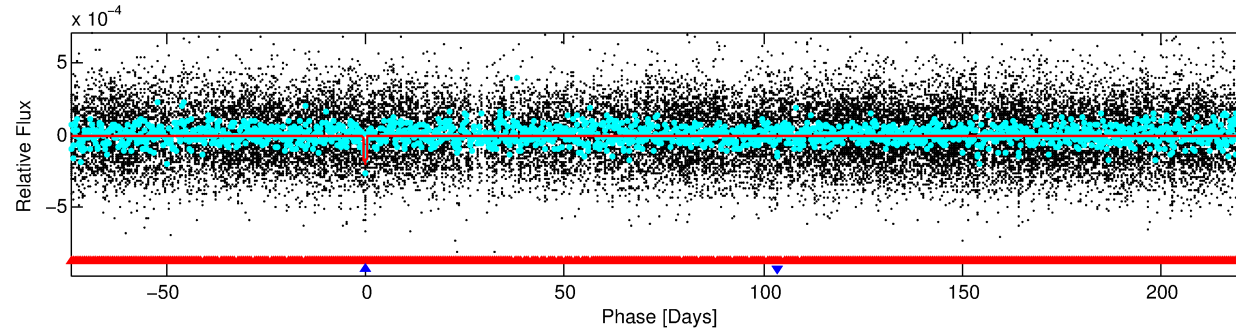
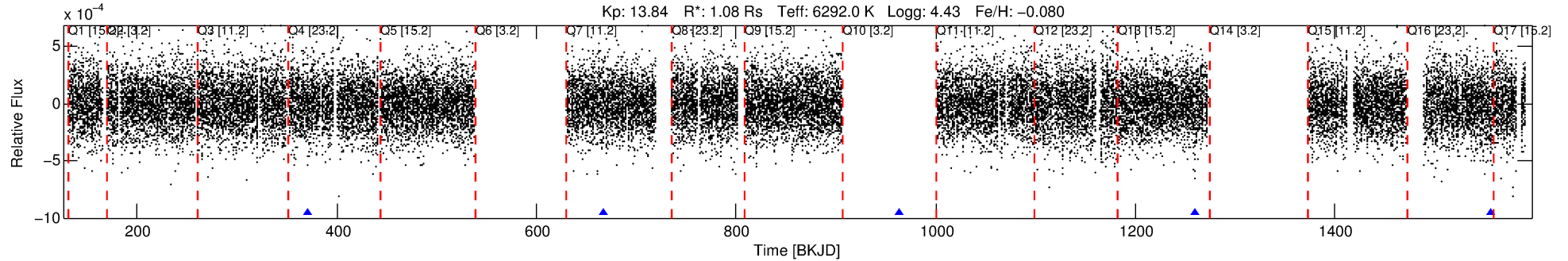
No Significant Match Found

DV One-Page Summary

KIC: 5020044 Candidate: 2 of 2 Period: 296.273 d

KOI: K03802 Corr: No Ephemeris Match

Kp: 13.84 R*: 1.08 Rs Teff: 6292.0 K Logg: 4.43 Fe/H: -0.080



DV Fit Results:

Period = 296.27286 [0.01564] d
Epoch = 370.3417 [0.0472] BKJD
Rp/R* = 0.0155 [0.0020]
a/R* = 47.37 [24.12]
b = 0.94 [0.07]
Seff = 1.99 [0.80]
Teq = 303 [30] K
Rp = 1.83 [0.61] Re
a = 0.9062 [0.2370] AU
Ag = 11785.49 [7127.06] [1.65σ]
Teffp = 4877 [594] K [7.69σ]

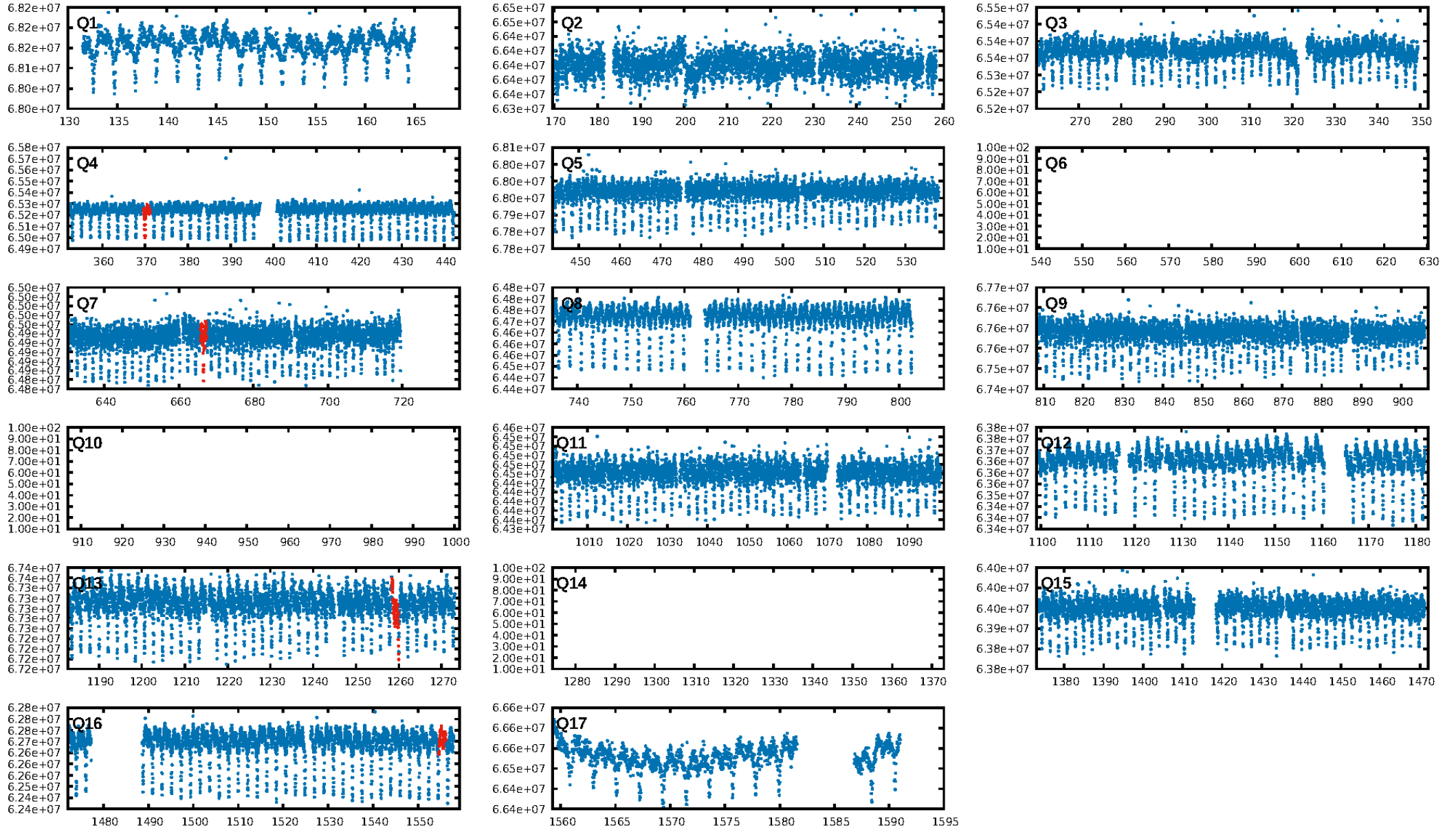
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [360.01σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 90.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.16e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.188
Centroid-sig: N/A
Centroid-so: 5.654 arcsec [1.30σ]
OotOffset-rm: 6.914 arcsec [49.38σ]
KicOffset-rm: 7.105 arcsec [50.77σ]
OotOffset-st: 0/0/2/0 [2]
KicOffset-st: 0/0/2/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/4]

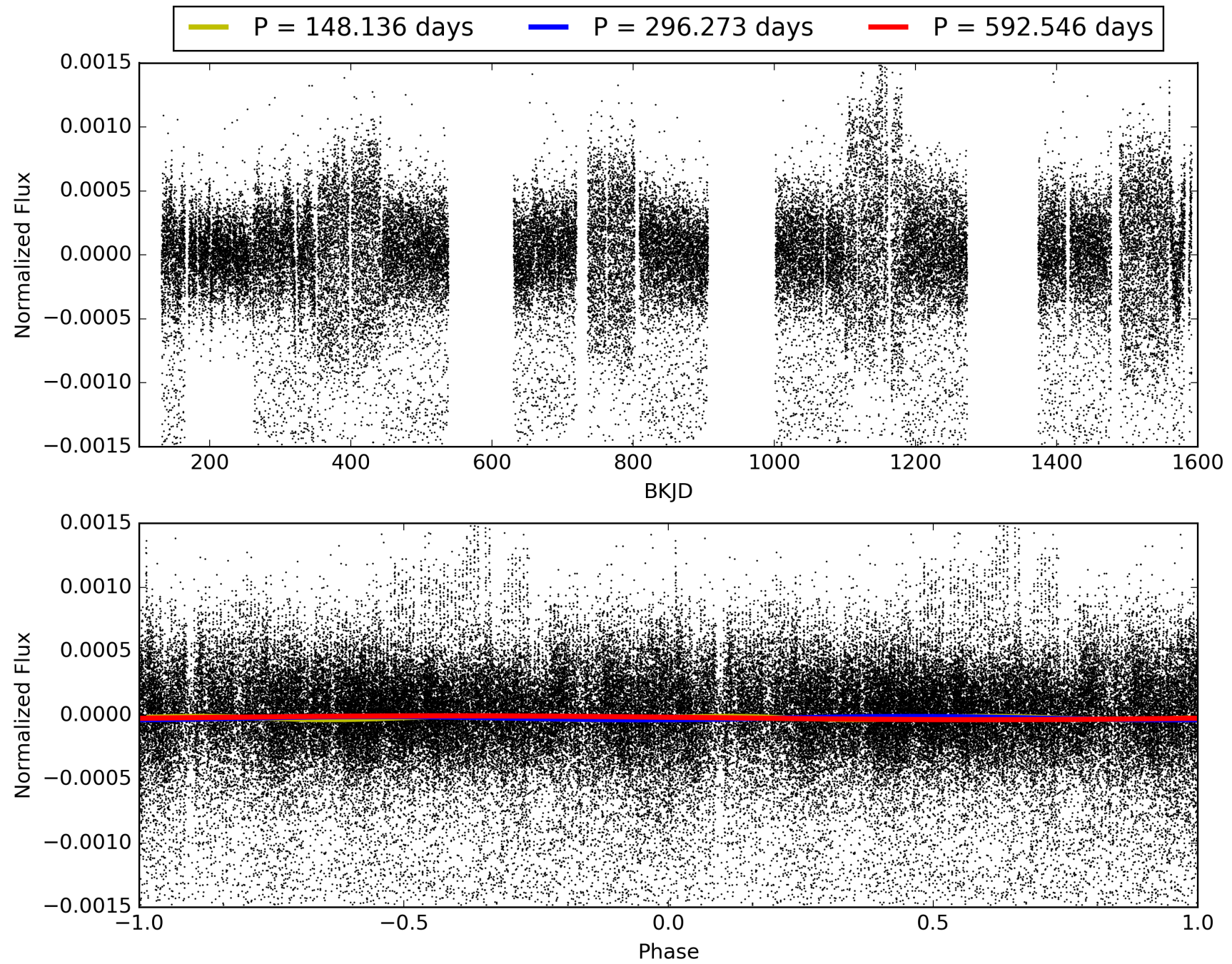
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:41:12 Z

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

TCE 005020044-02, PDC Light Curves

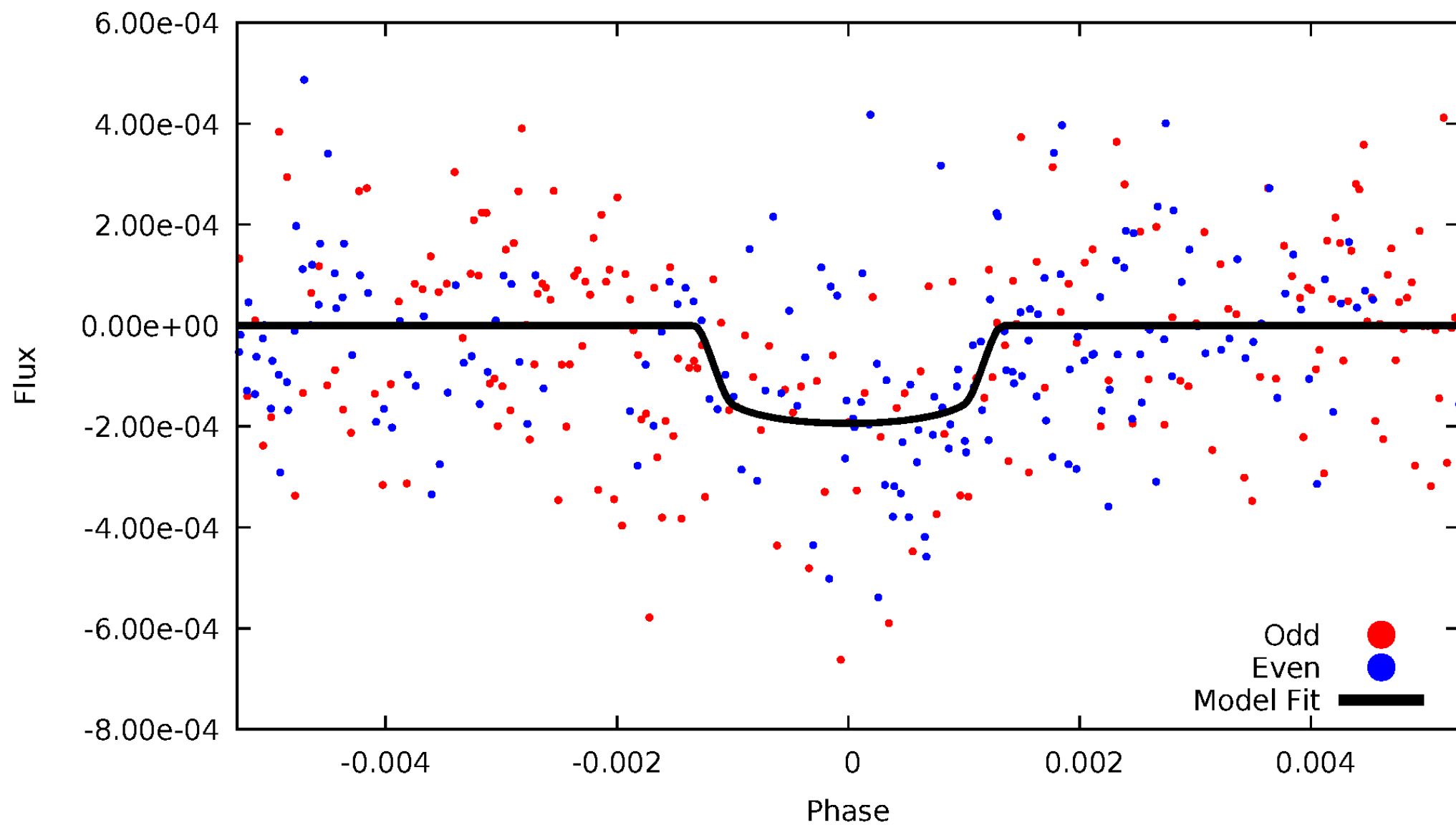


TCE 005020044-02



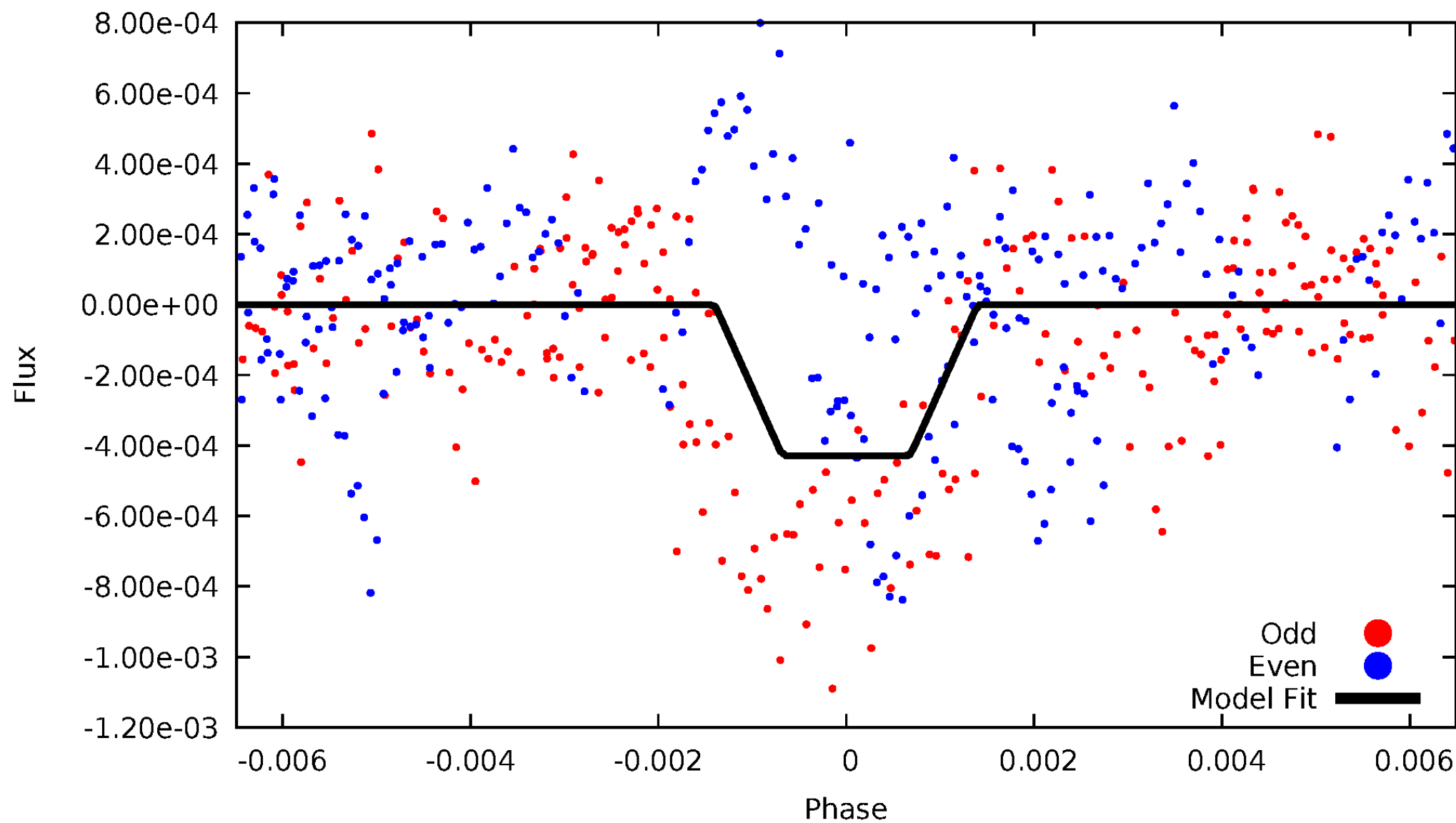
DV Odd/Even

TCE 005020044-02



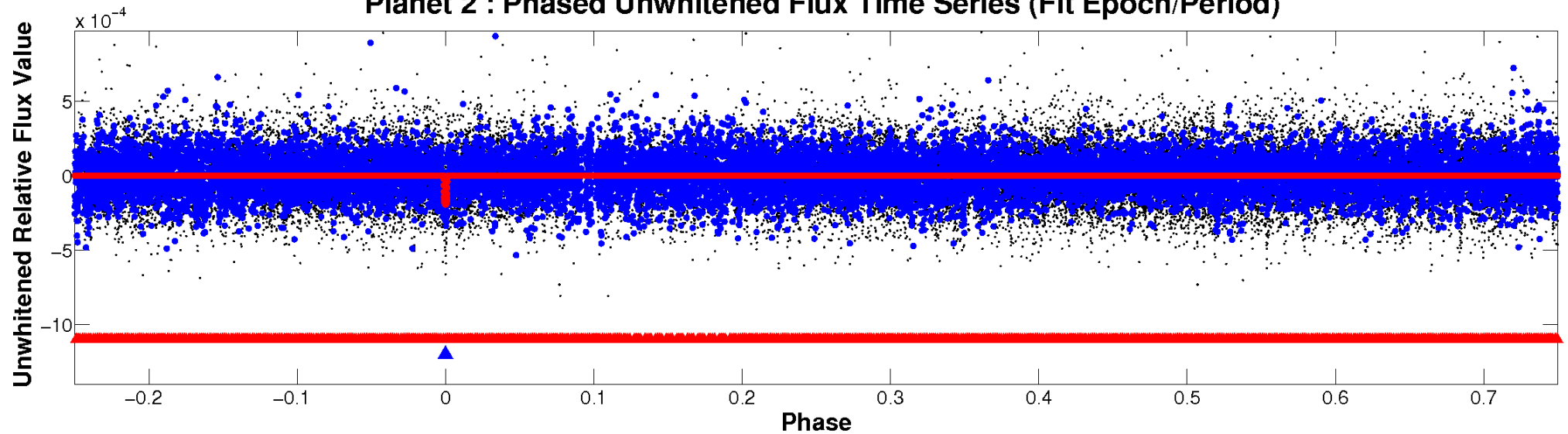
ALT Odd/Even

TCE 005020044-02

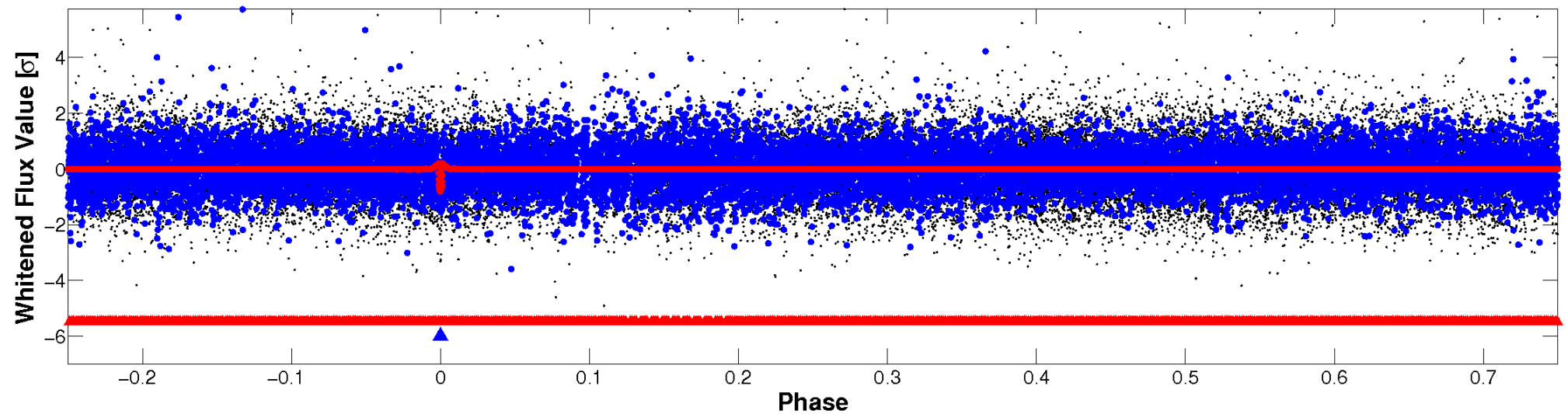


Non-Whitened Vs. Whitened Light Curve

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



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



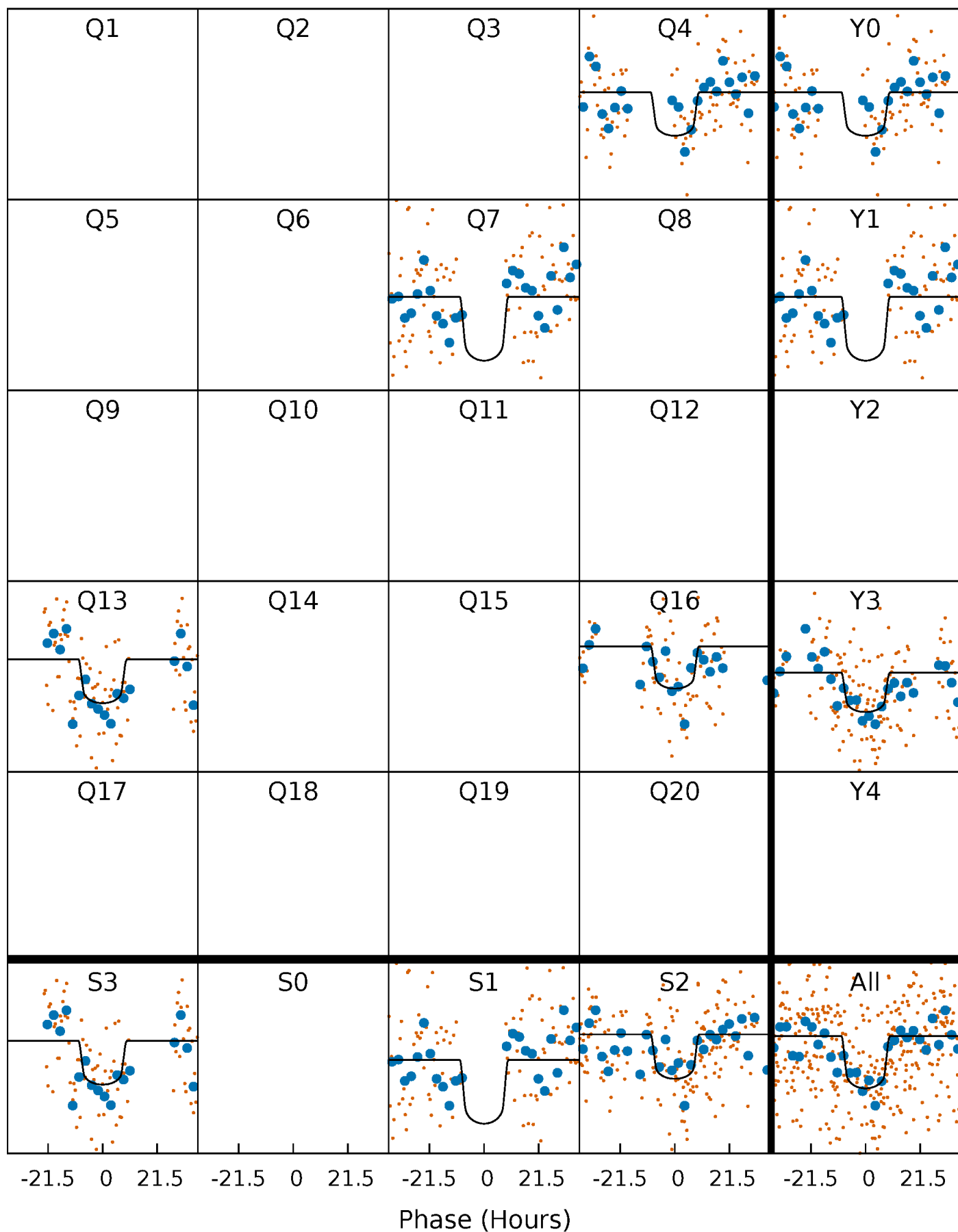
PDC Quarter-Phased Transit Curves

TCE 005020044-02 P=296.272861 Days $T_0=370.341720$ (BKJD)



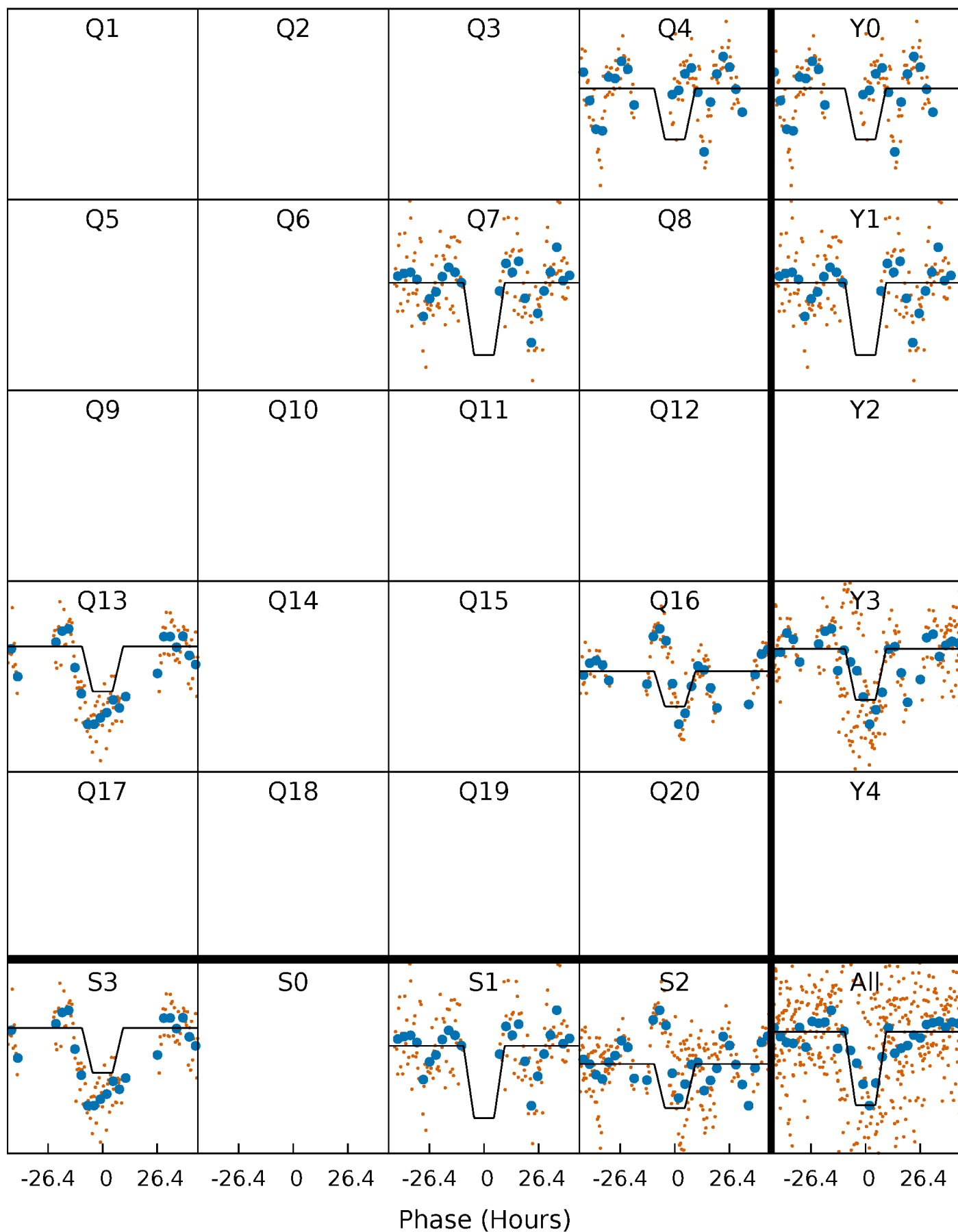
DV Quarter-Phased Transit Curves

TCE 005020044-02 $P=296.272861$ Days $T_0=370.341720$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

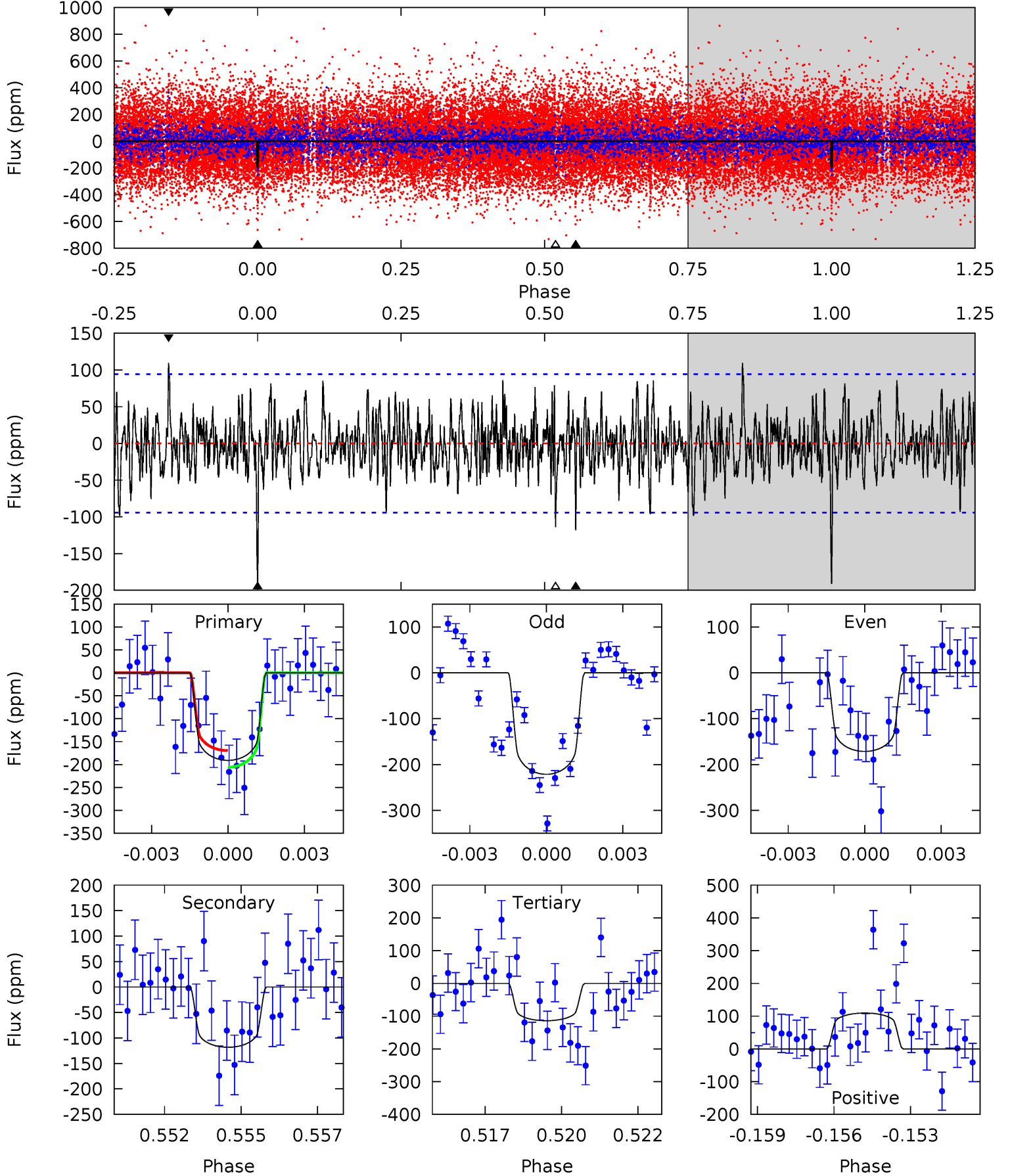
TCE 005020044-02 P=296.266186 Days $T_0=370.386448$ (BKJD)



DV Model-Shift Uniqueness Test

005020044-02, P = 296.272861 Days, E = 74.068859 Days

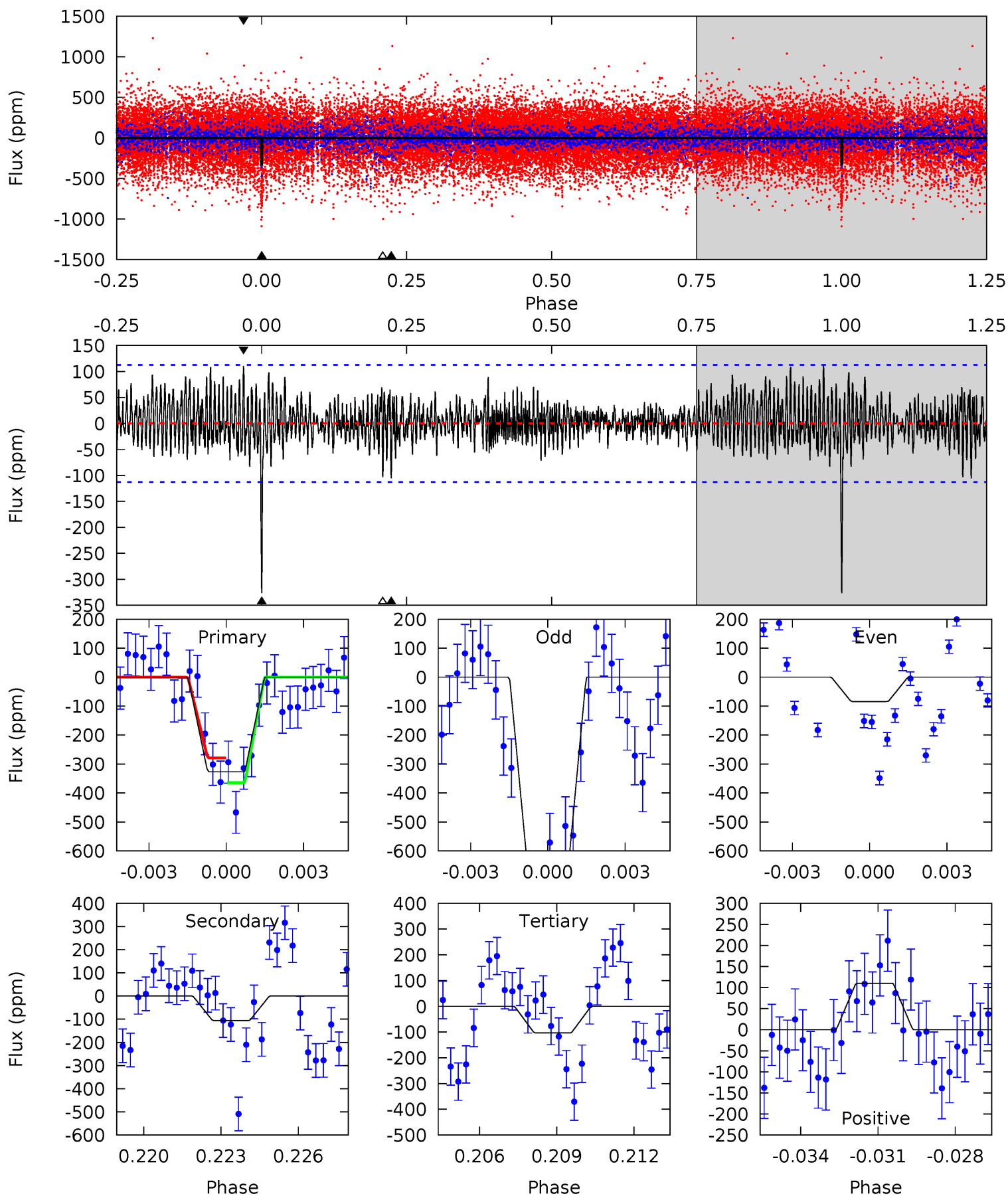
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.60	6.36	6.11	5.27	3.00	1.69	4.30	4.55	0.24	0.49	1.37	0.33	0.36	1.00



Alt Model-Shift Uniqueness Test

005020044-02, P = 296.266186 Days, E = 74.120262 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	4.94	4.81	5.16	5.26	2.99	1.39	10.4	10.1	0.13	-0.22	14.7	2.23	0.25	1.96



Stellar Parameters For KIC 005020044

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6292^{+171}_{-202}	$4.426^{+0.052}_{-0.208}$	$-0.080^{+0.250}_{-0.300}$	$1.078^{+0.335}_{-0.134}$	$1.129^{+0.159}_{-0.145}$	$1.269^{+0.361}_{-0.674}$
	+3%/-3%	+1%/-5%	+312%/-375%	+31%/-12%	+14%/-13%	+28%/-53%
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 005020044-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-118 ± 18	$1.91^{+0.38}_{-0.31}$	433^{+33}_{-23}	5310^{+401}_{-345}	14241^{+6065}_{-4413}
Alt.	-106 ± 21	$2.53^{+0.50}_{-0.31}$	434^{+32}_{-21}	4587^{+291}_{-274}	7109^{+2835}_{-2458}

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 $A_{\text{obs}} \gg 1.0$

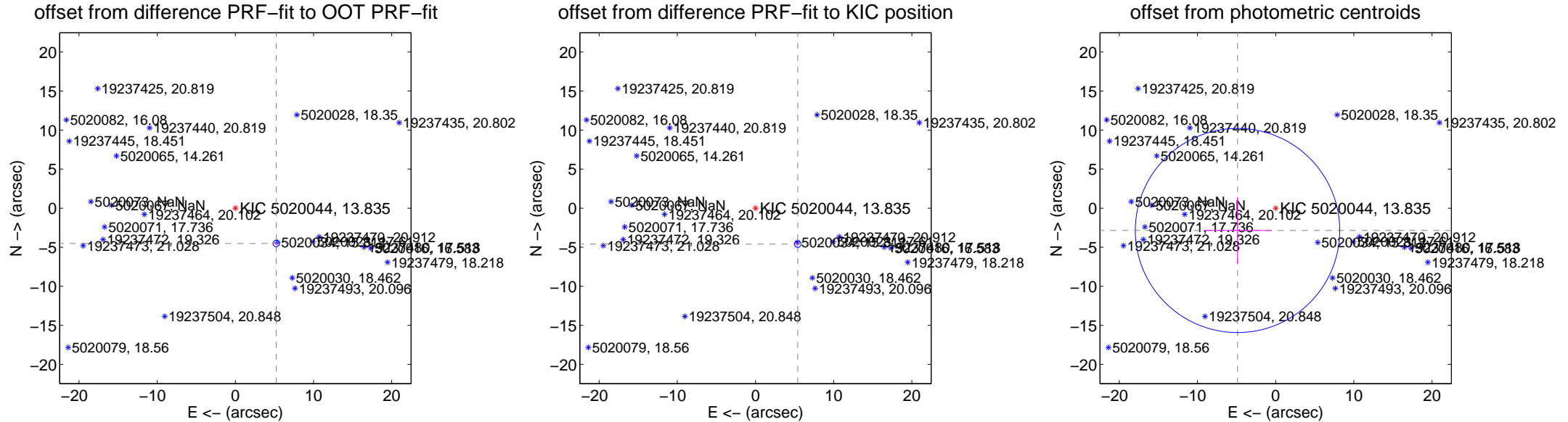
DV Centroid Data

Supplemental centroid analysis for 005020044-02. Kepler magnitude: 13.84. Transit SNR 6.48

There are 1 quarters with good PRF difference image offsets

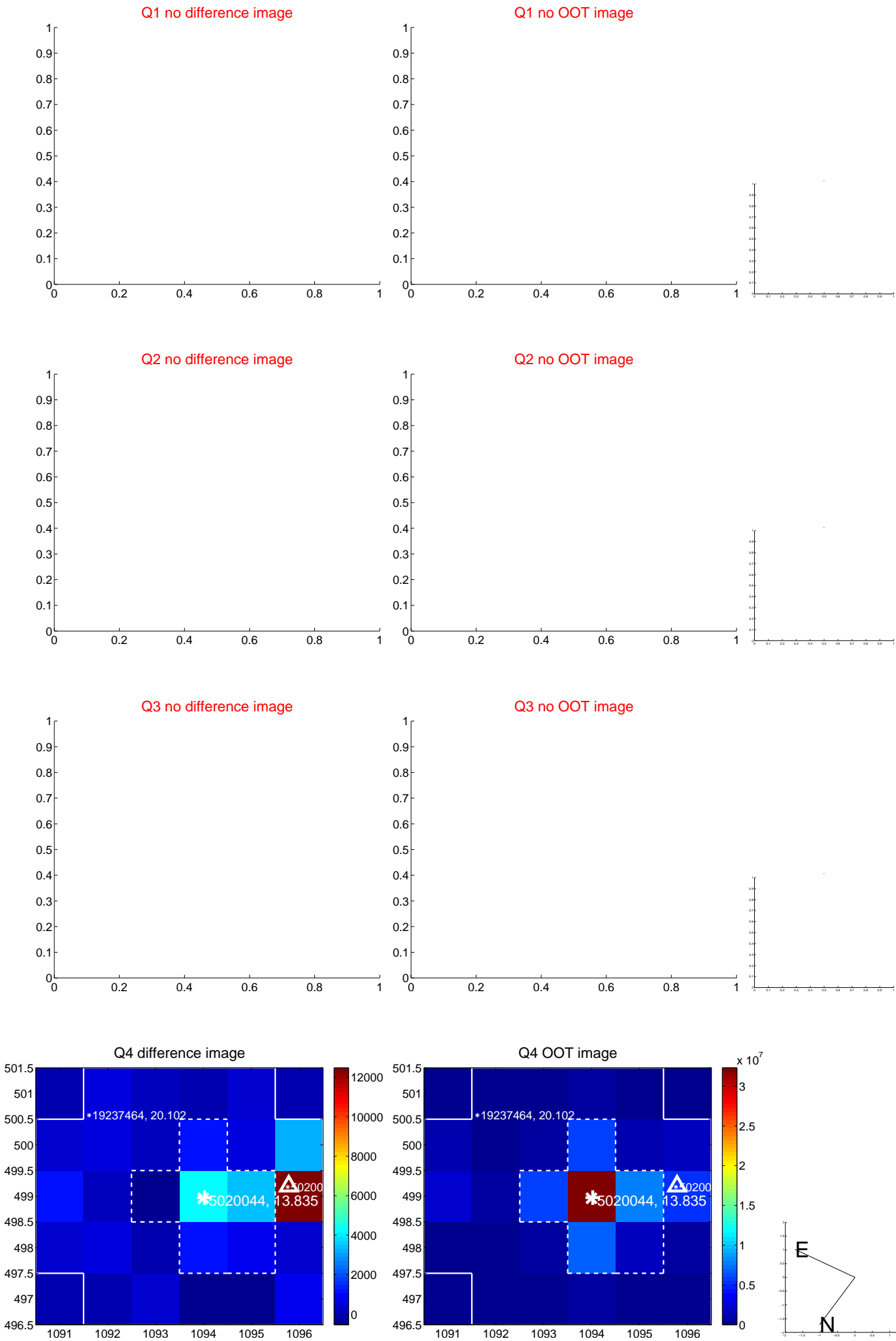
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.914 ± 0.140	49.38	-5.228 ± 0.137	-4.525 ± 0.145
PRF-fit source offset from KIC position	7.105 ± 0.140	50.77	-5.412 ± 0.137	-4.604 ± 0.145
photometric centroid source offset	5.65 ± 4.36	1.30	4.88 ± 4.38	-2.86 ± 4.29

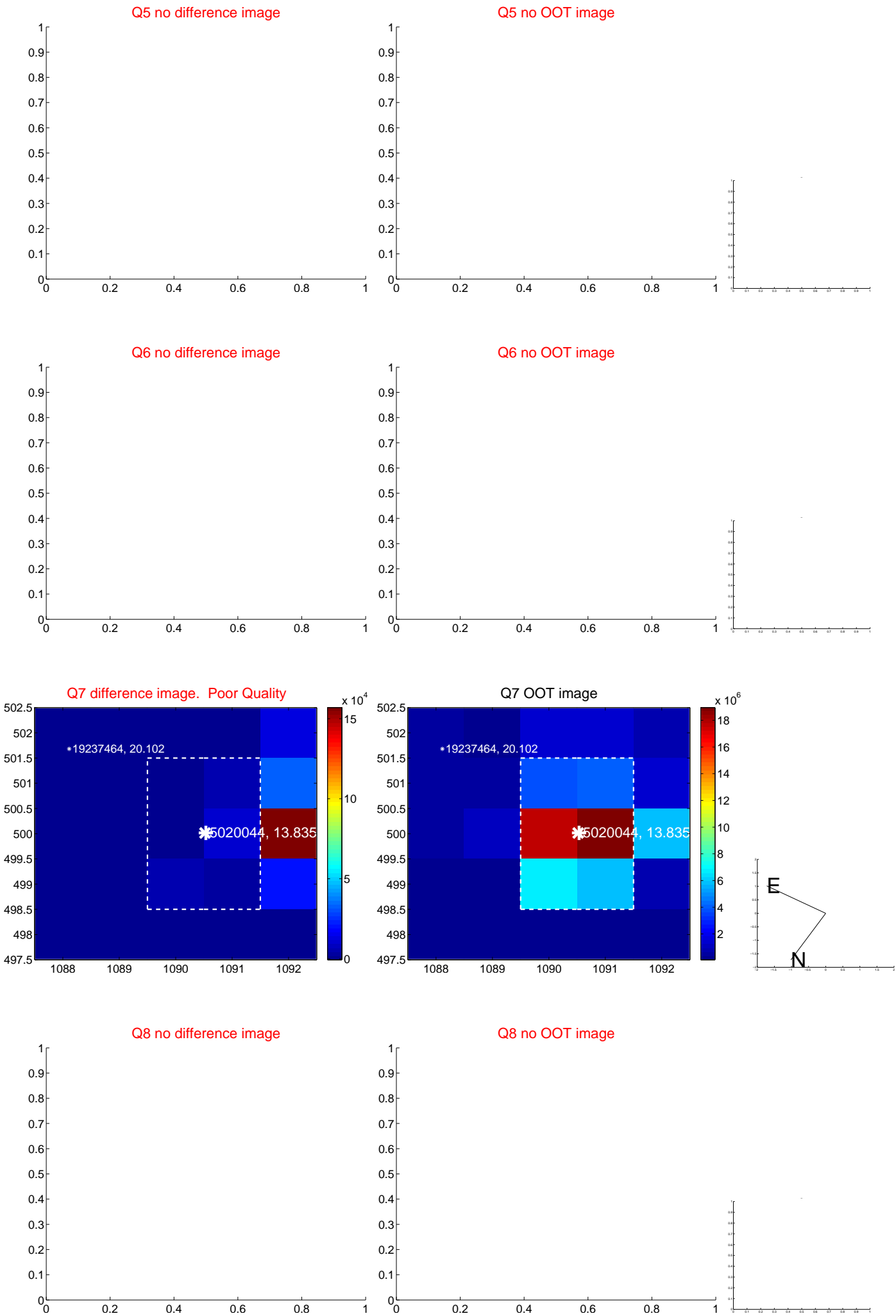


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



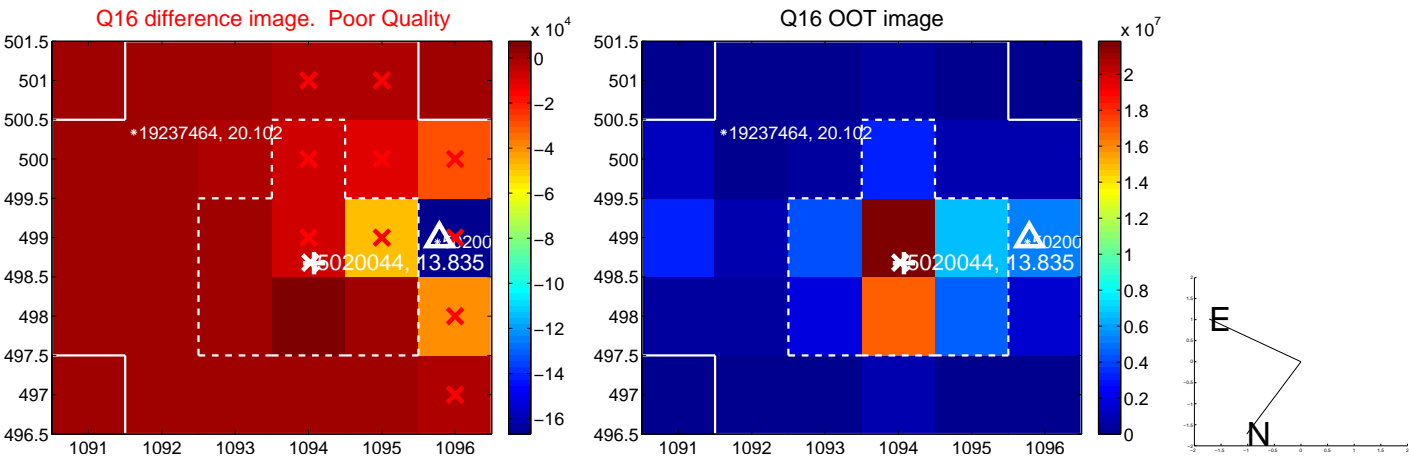
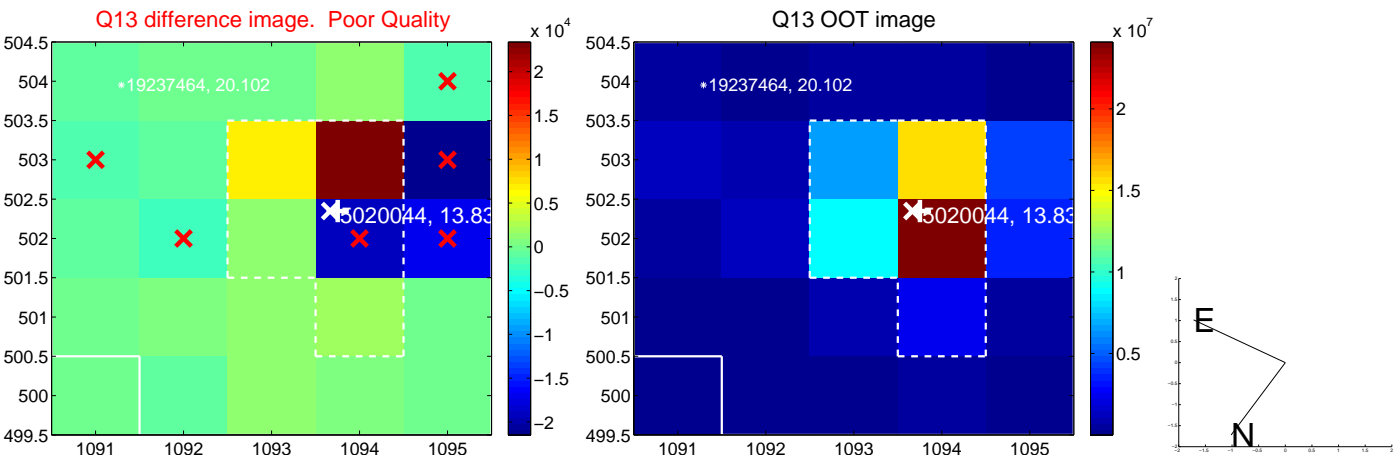
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



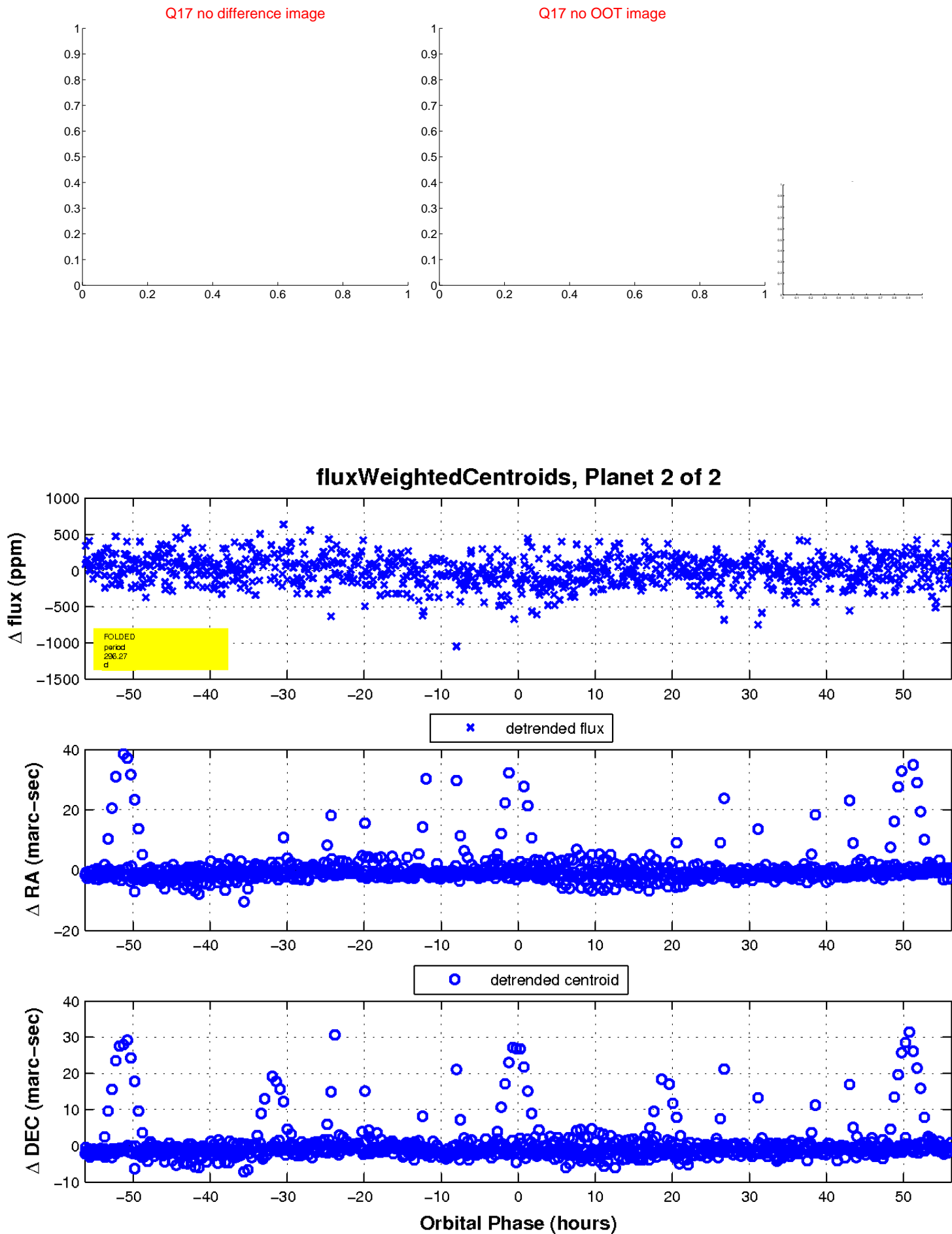
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UKIRT Image

