

KIC 008044016

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})
008044016-01	OBS	No	0.779555	131.715135	20.4	4.029	12.9	9.7	1.19	6614	0.59	8041.18
008044016-02	OBS	No	233.035164	148.642565	163.3	9.831	7.9	5.1	1.19	6614	1.70	4.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008044016-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH
008044016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQU_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQU_ALT—MOD_POS_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.

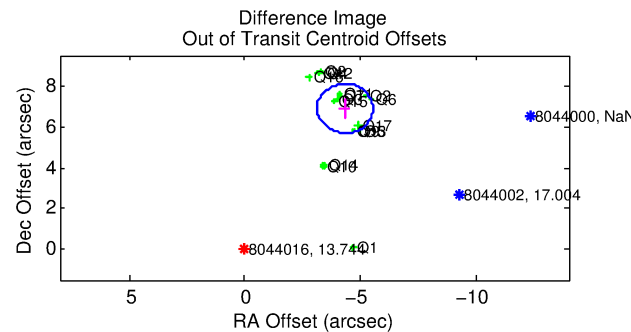
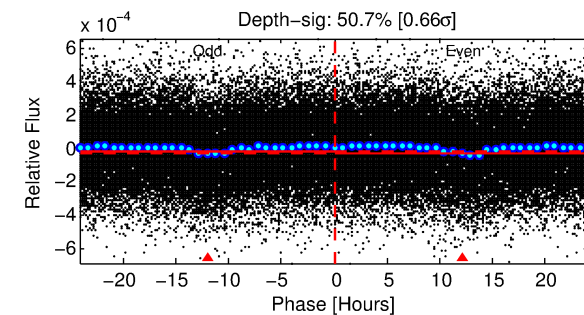
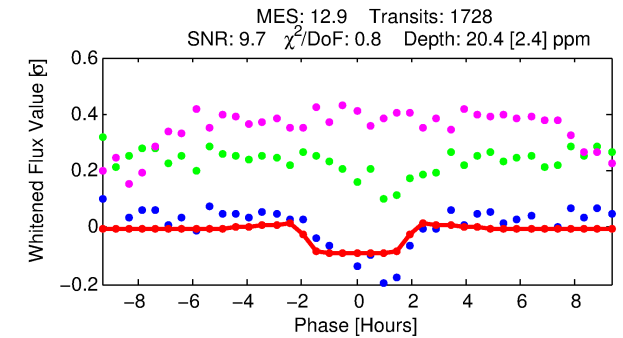
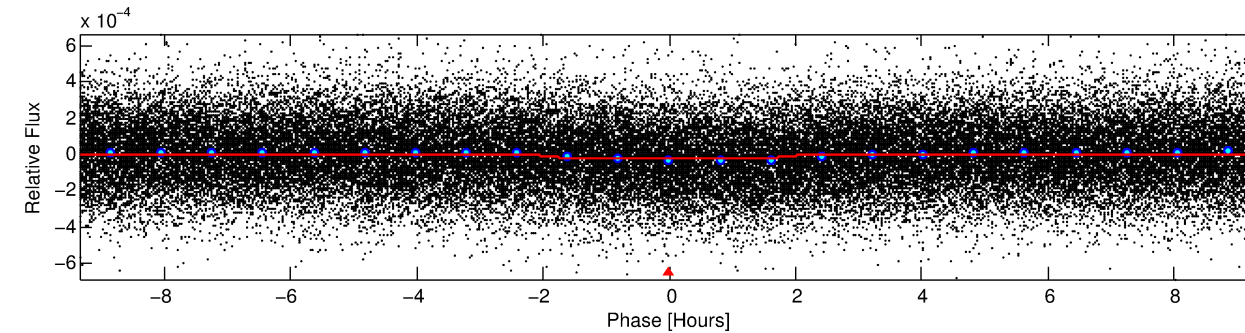
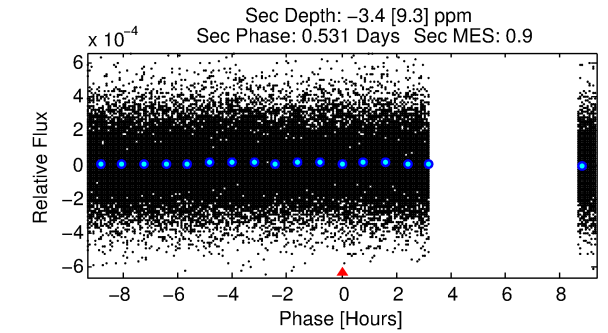
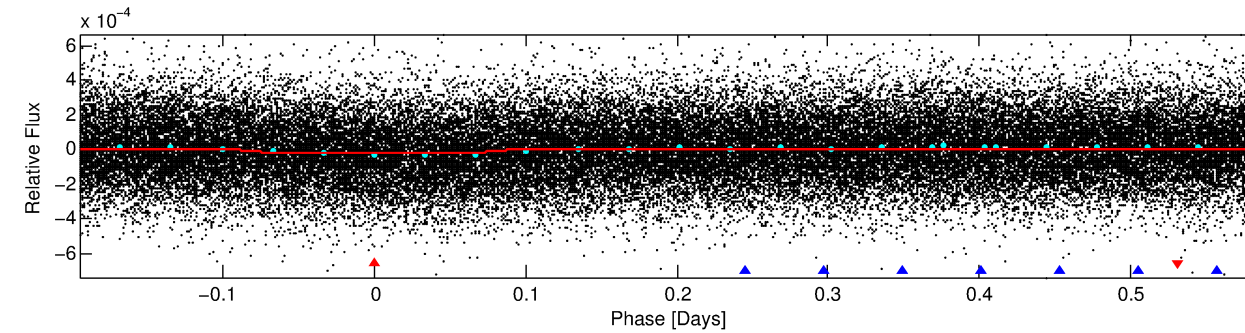
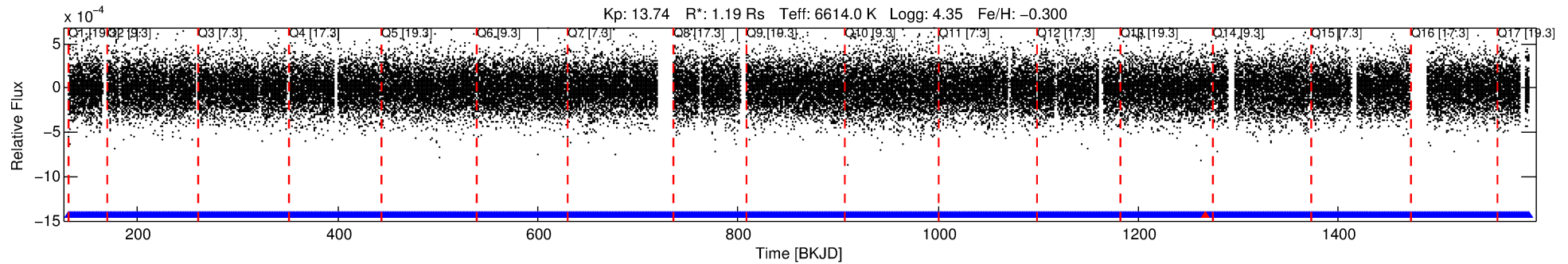
Ephemeris Match Information For 008044016-01

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
008044016-01	8044016	4812.01	8043721	1:1	252.7	-63	1	15.70	13.74	4.25	Col-Anomaly	1	2.33	0.04

Notes: P₁:P₂ 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. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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: 8044016 Candidate: 1 of 2 Period: 0.780 d



DV Fit Results:

Period = 0.77956 [0.00001] d
Epoch = 131.7151 [0.0039] BKJD
Rp/R* = 0.0046 [0.0020]
a/R* = 1.26 [1.16]
b = 0.80 [1.13]
Seff = 8041.18 [3155.01]
Teq = 2415 [237] K
Rp = 0.59 [0.32] Re
a = 0.0174 [0.0046] AU
Ag = N/A
Teffp = N/A

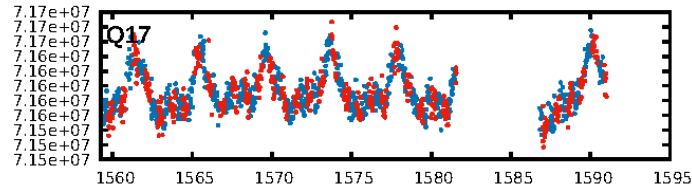
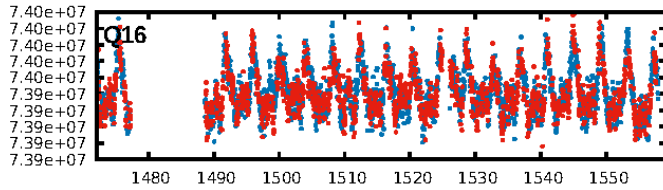
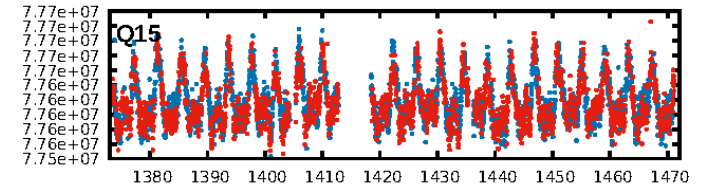
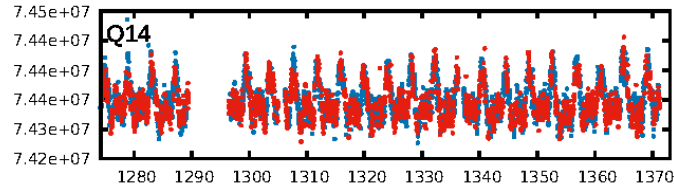
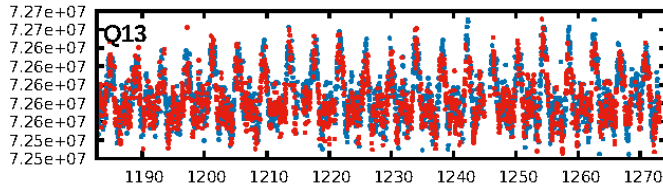
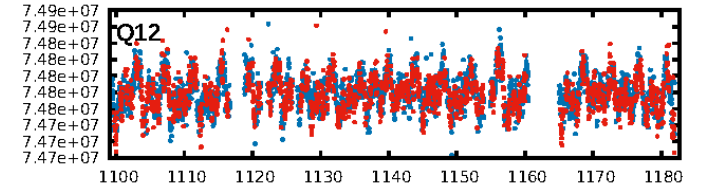
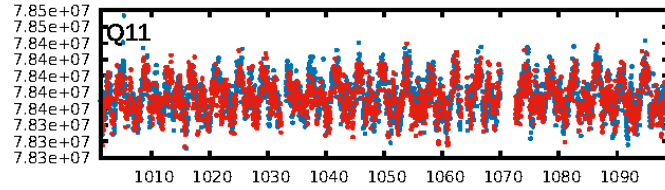
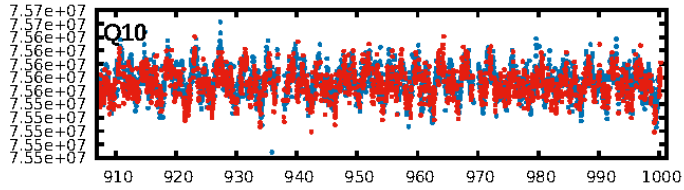
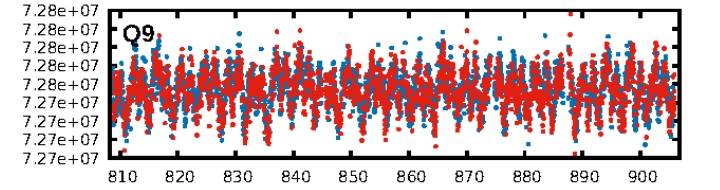
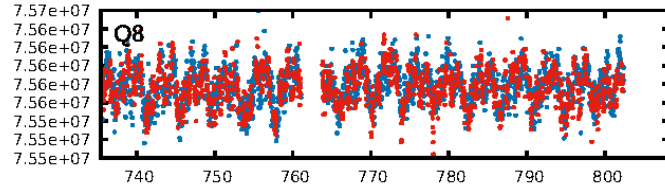
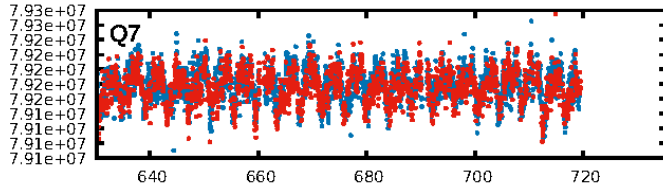
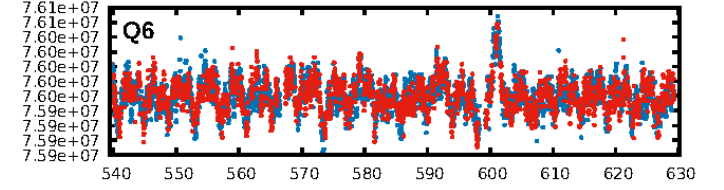
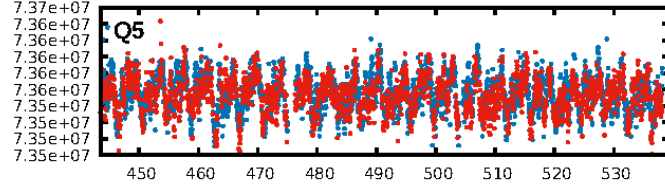
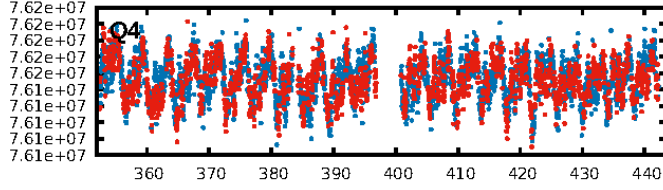
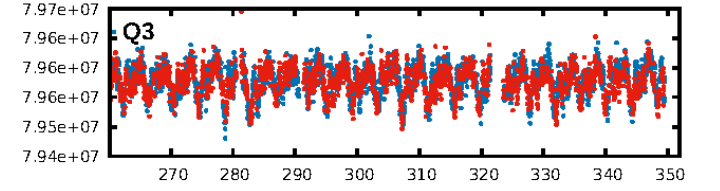
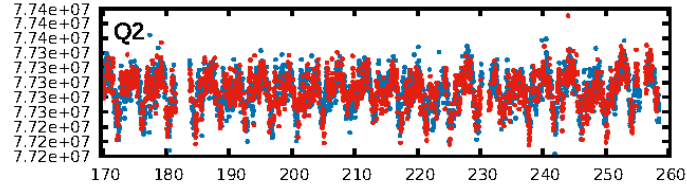
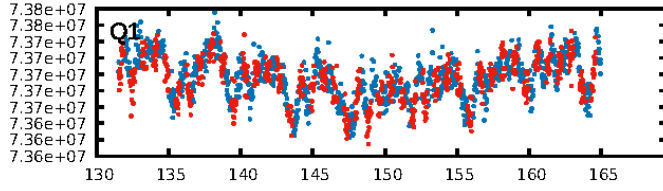
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [524.63σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.50e-27
RollingBand-fgt: 1.00 [1650/1651]
GhostDiagnostic-chr: -2.418
Centroid-sig: 0.0%
Centroid-so: 6.820 arcsec [8.32σ]
OotOffset-rm: 8.140 arcsec [20.24σ]
KicOffset-rm: 8.109 arcsec [18.94σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

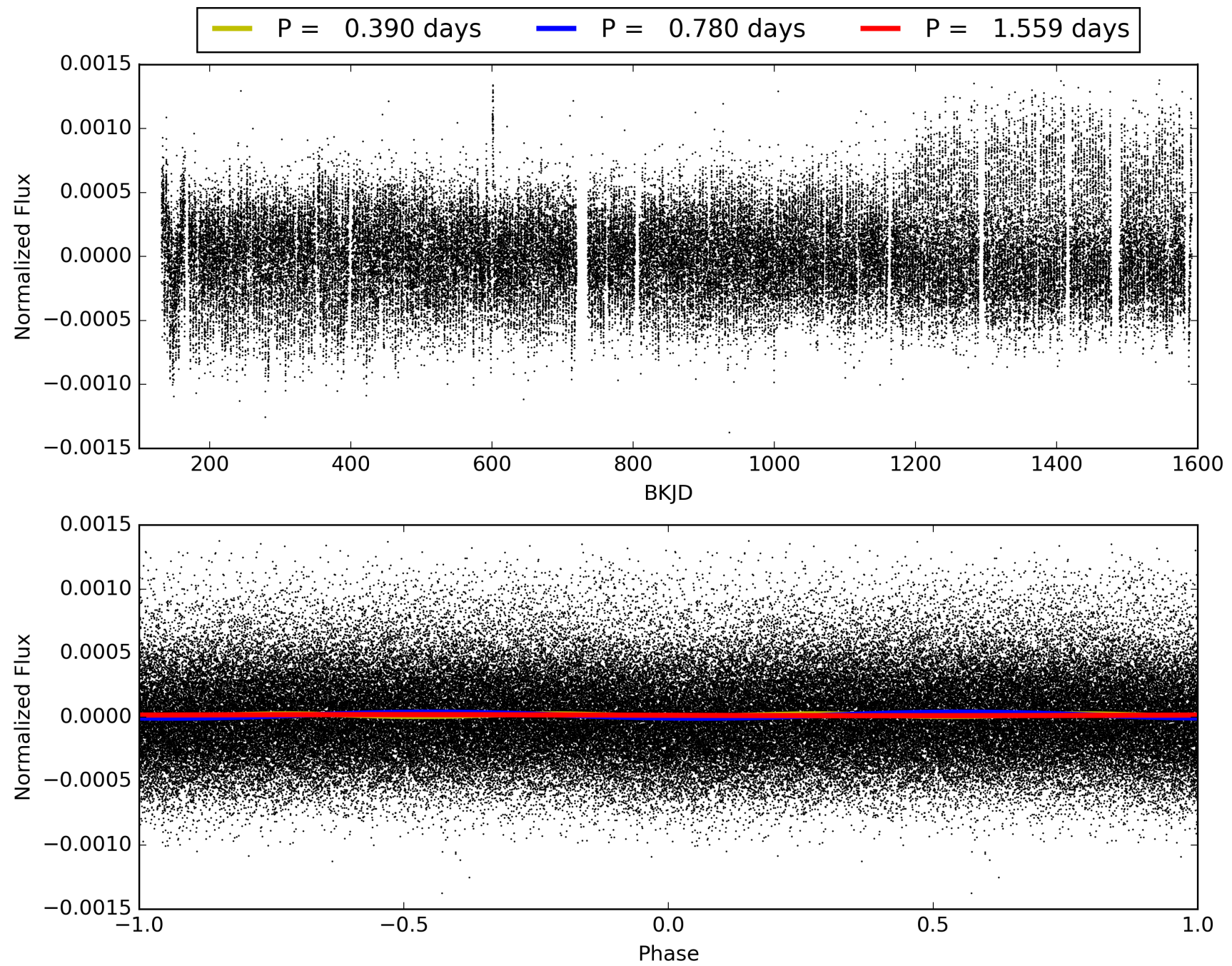
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008044016-01, PDC Light Curves

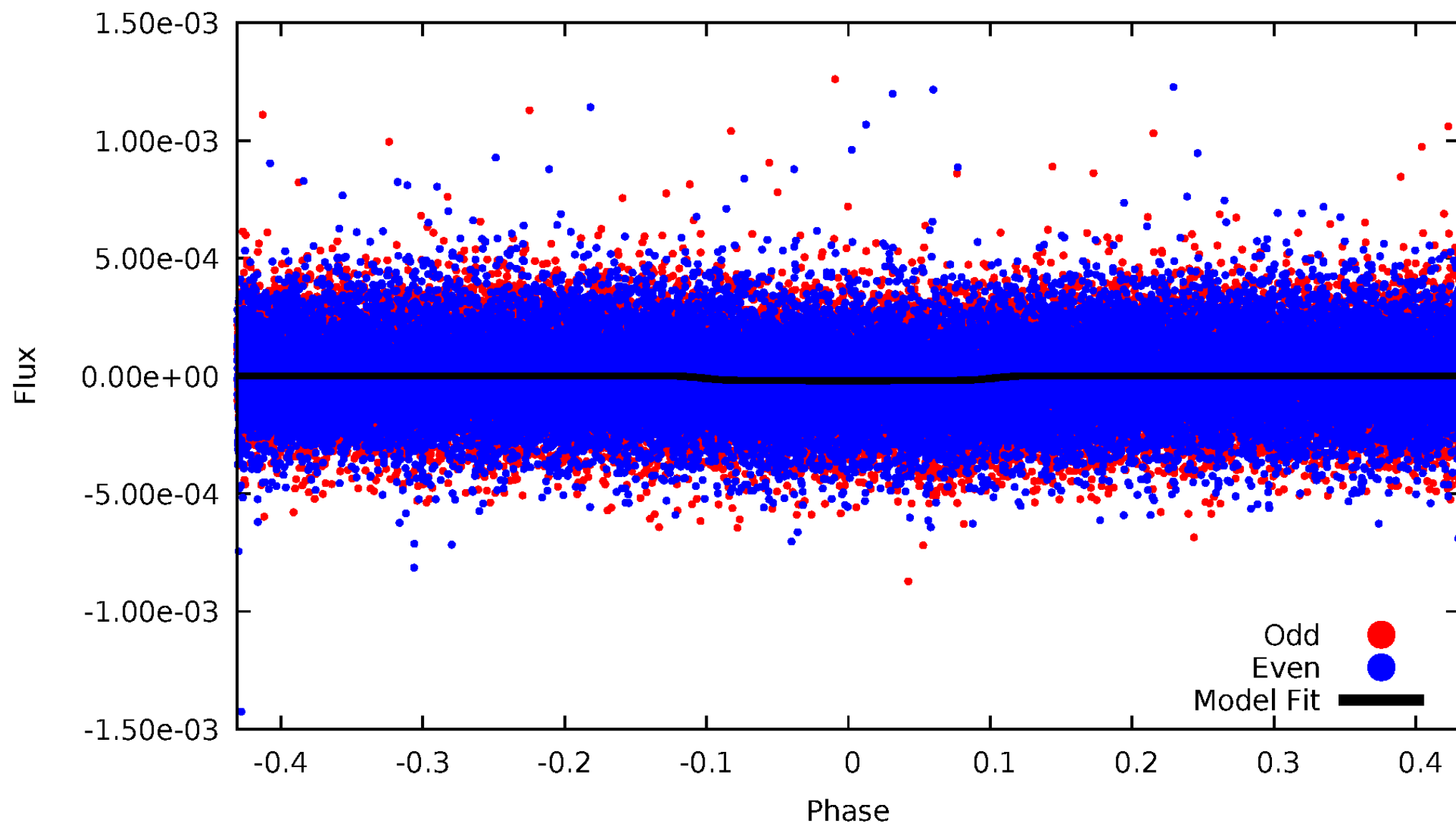


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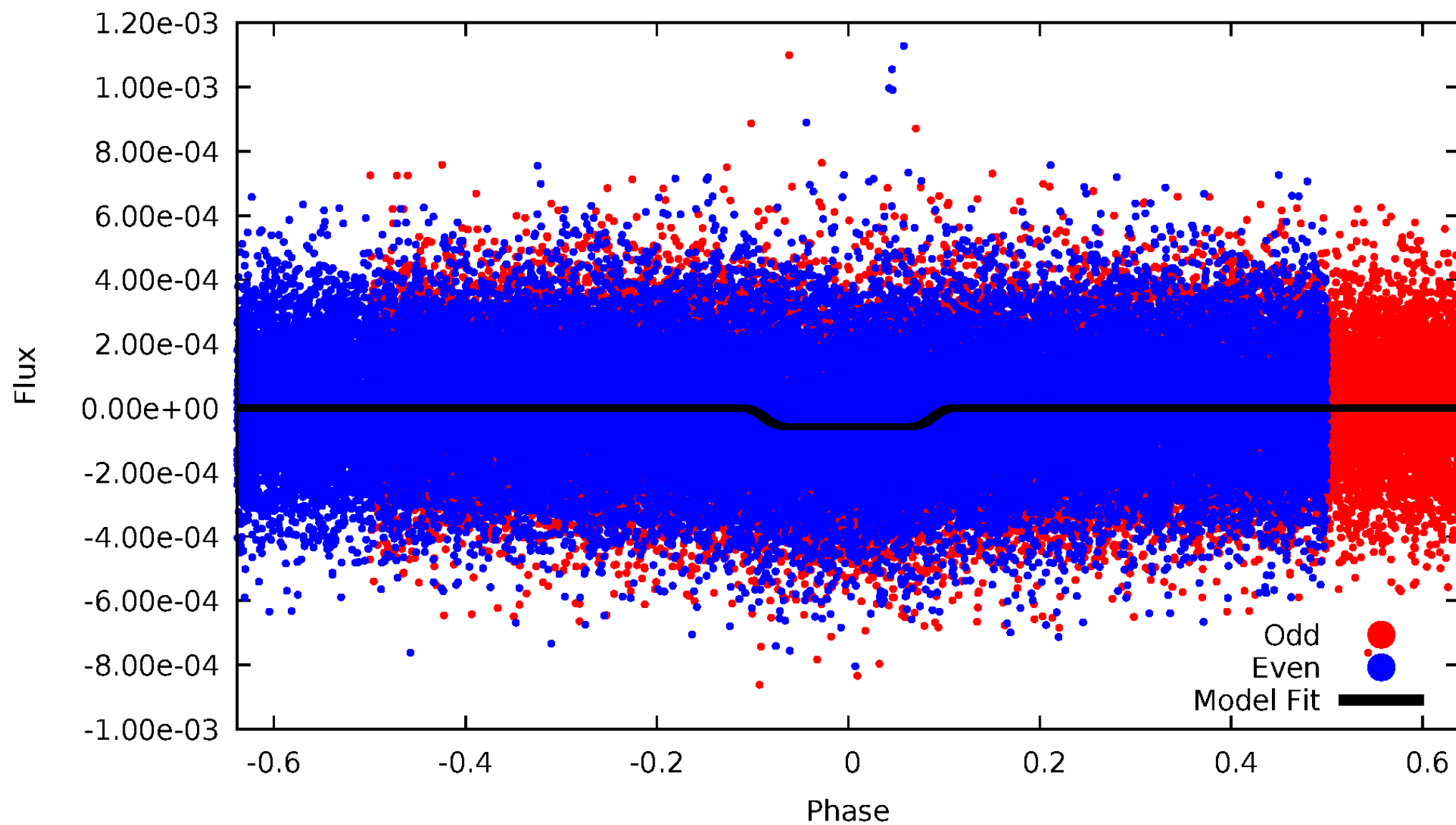
DV Odd/Even

TCE 008044016-01

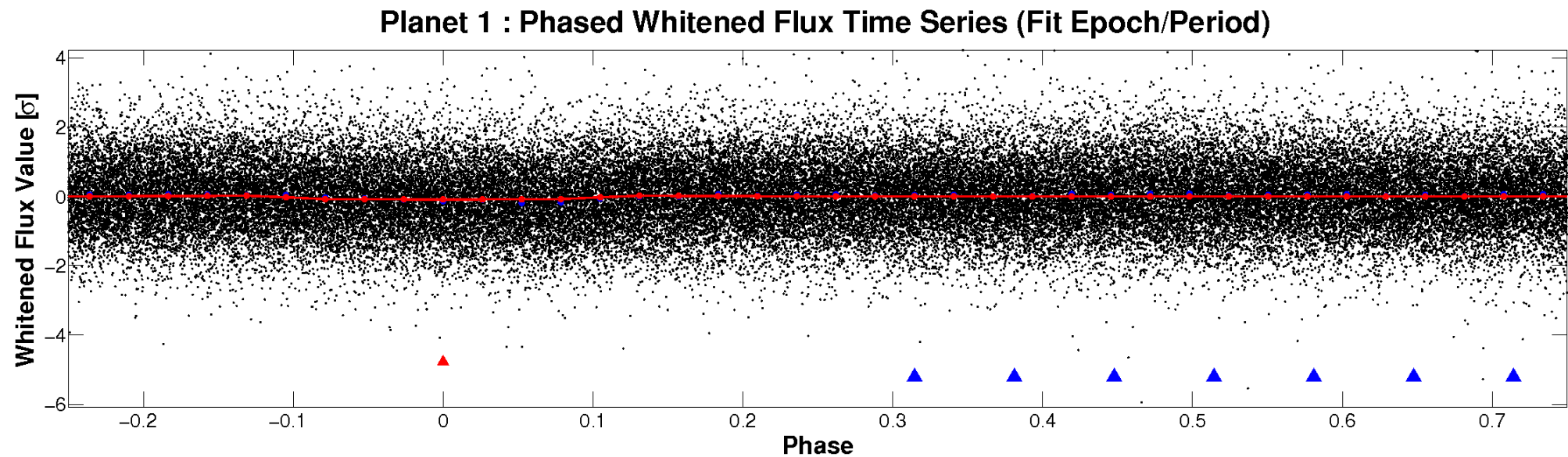
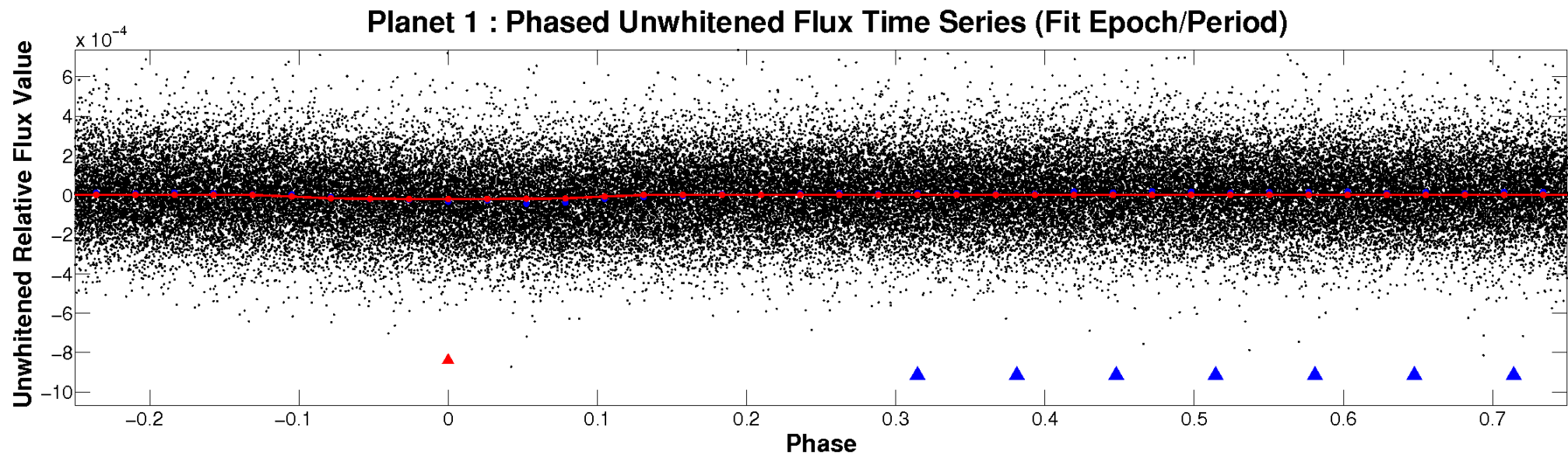


ALT Odd/Even

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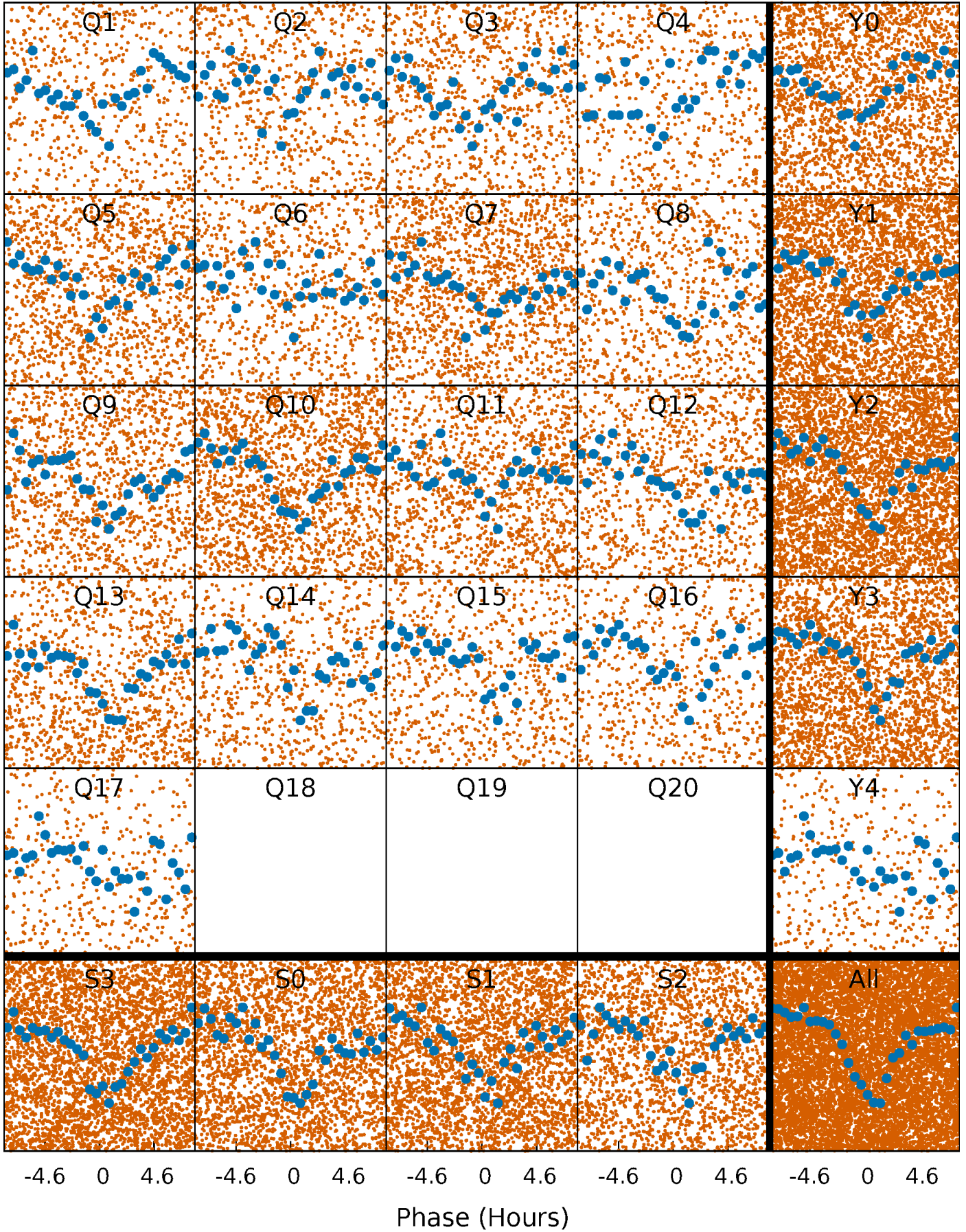


Non-Whitened Vs. Whitened Light Curve



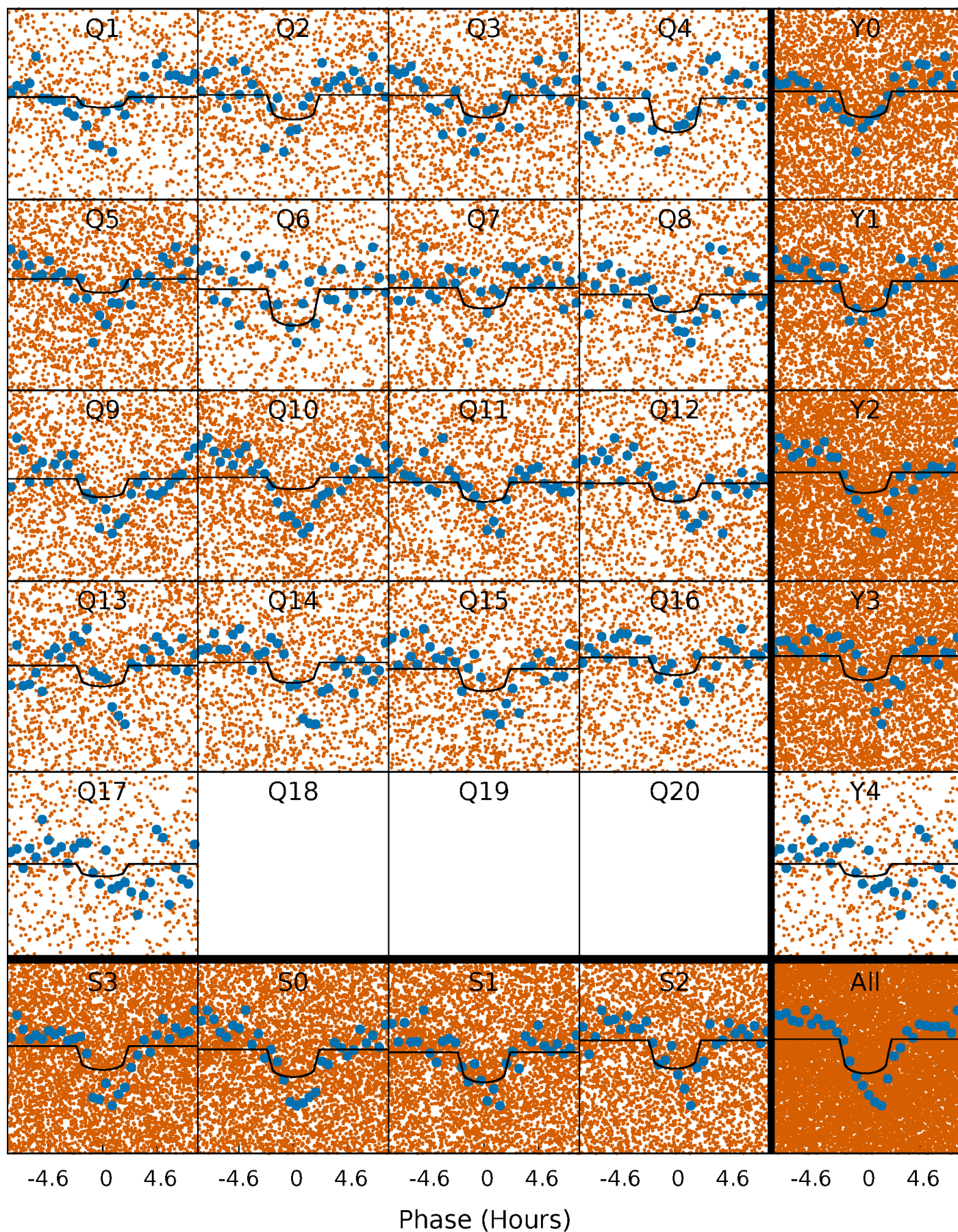
PDC Quarter-Phased Transit Curves

TCE 008044016-01 P= 0.779555 Days $T_0=131.715135$ (BKJD)



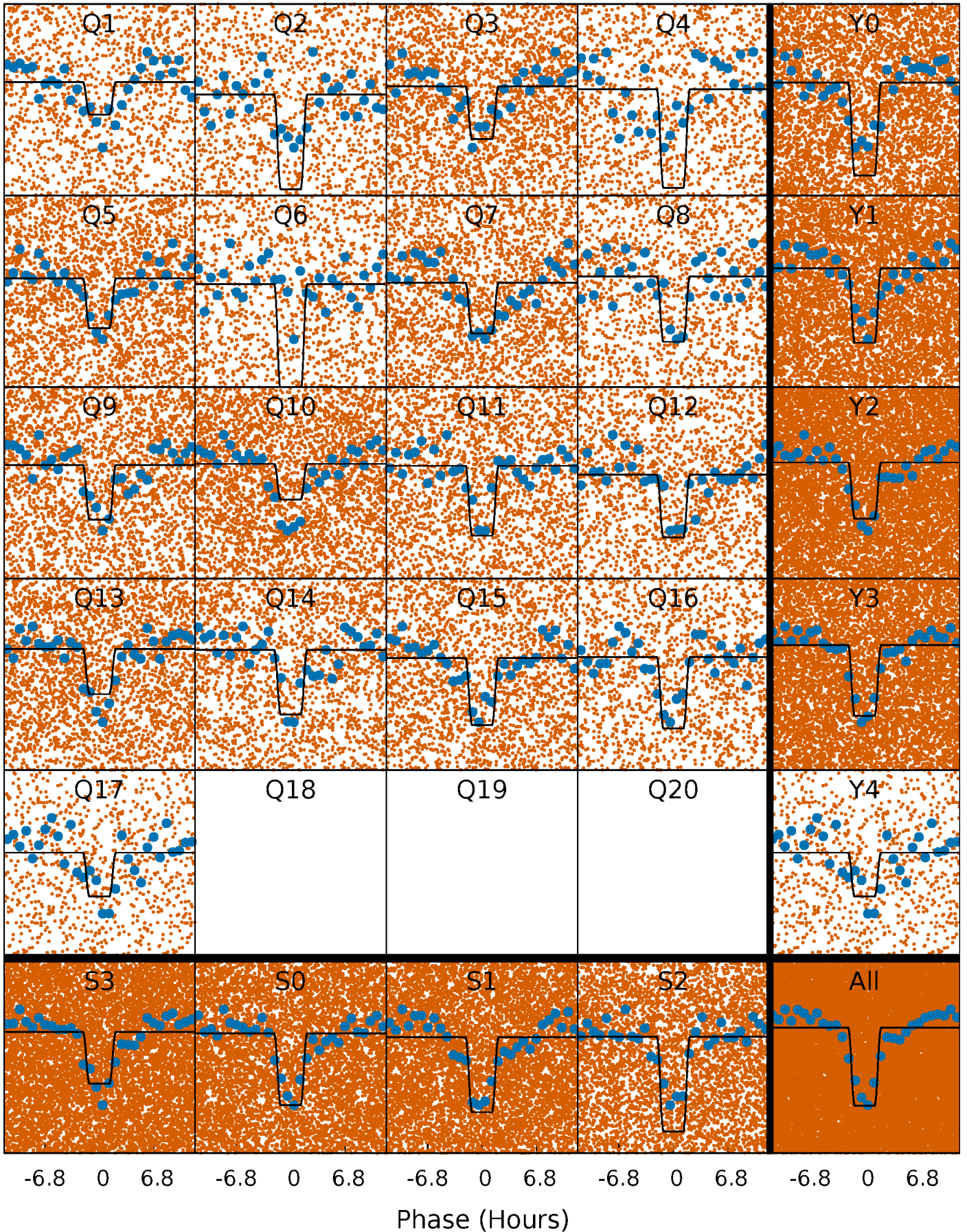
DV Quarter-Phased Transit Curves

TCE 008044016-01 P= 0.779555 Days $T_0=131.715135$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

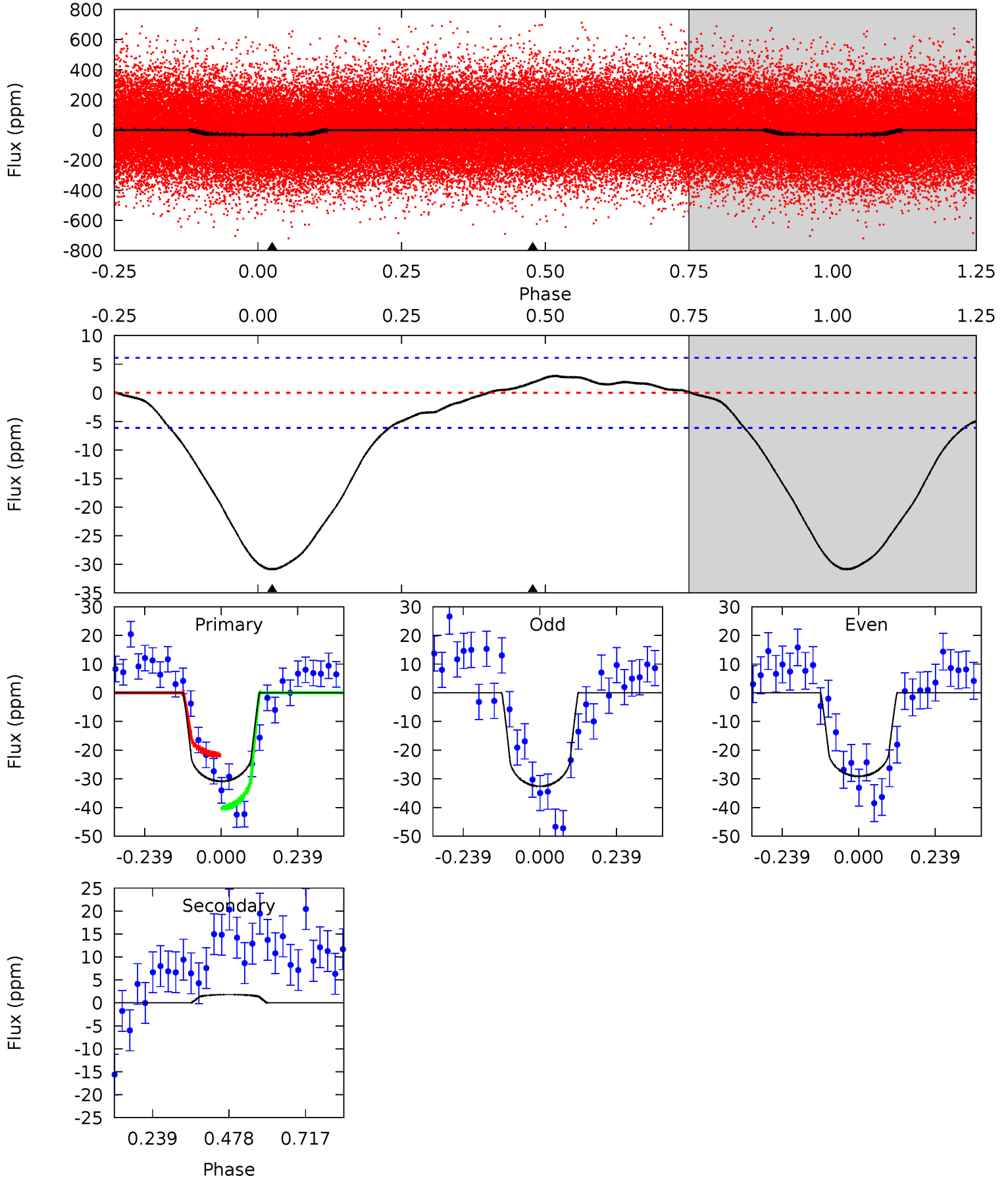
TCE 008044016-01 P= 0.779613 Days $T_0=131.683317$ (BKJD)



DV Model-Shift Uniqueness Test

008044016-01, P = 0.779555 Days, E = 130.935580 Days

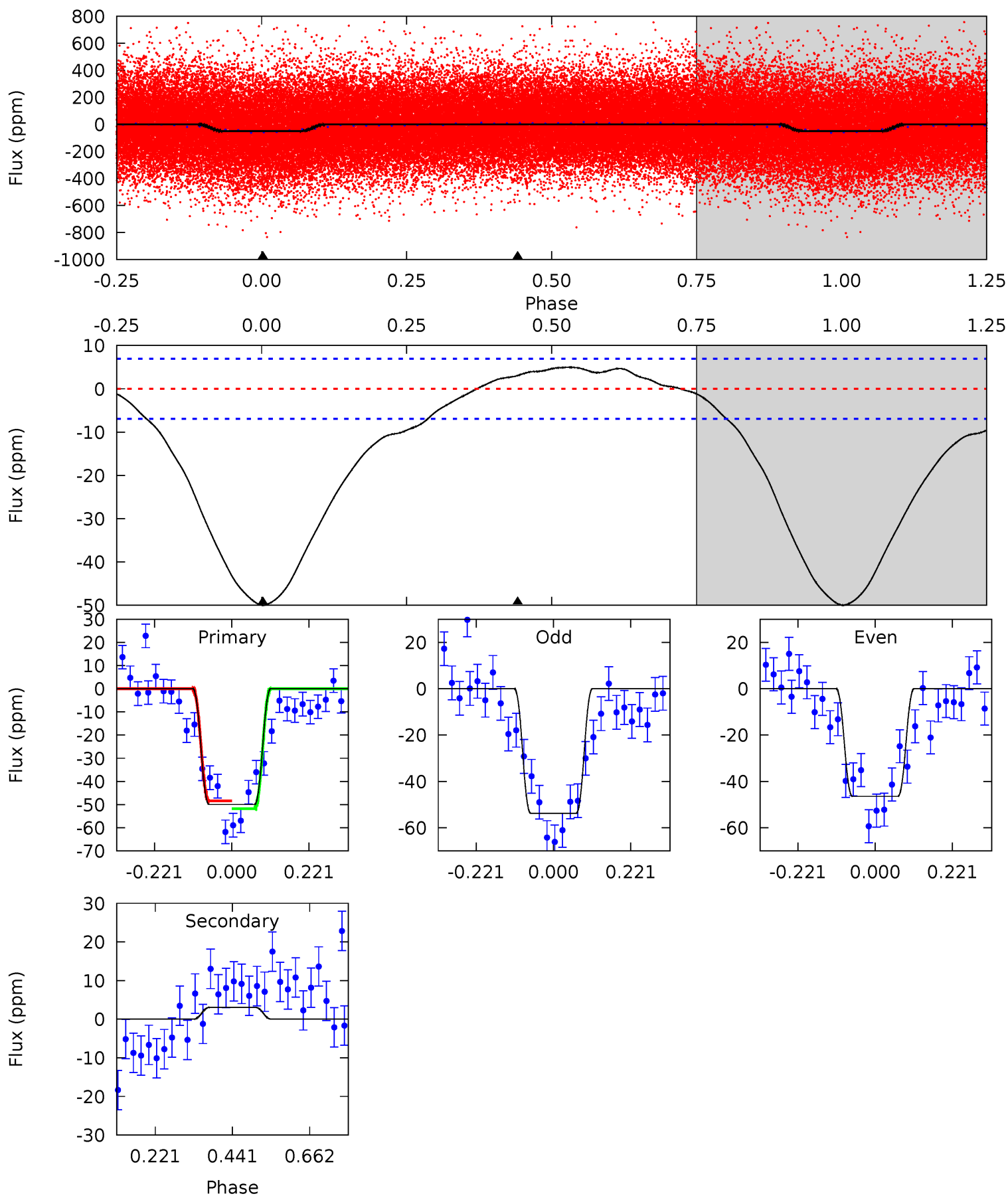
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	-1.29	0	0	4.38	1.18	0.80	22.1	22.1	-1.29	-1.29	1.25	1.06	0.09	6.59



Alt Model-Shift Uniqueness Test

008044016-01, P = 0.779613 Days, E = 130.903704 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.7	-1.94	0	0	4.40	1.22	1.04	31.7	31.7	-1.94	-1.94	2.31	1.00	0.09	1.08



Stellar Parameters For KIC 008044016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6614^{+158}_{-218}	$4.348^{+0.084}_{-0.196}$	$-0.300^{+0.250}_{-0.300}$	$1.190^{+0.383}_{-0.164}$	$1.156^{+0.173}_{-0.156}$	$0.967^{+0.354}_{-0.501}$
	+2%/-3%	+2%/-5%	+83%/-100%	+32%/-14%	+15%/-13%	+37%/-52%
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 008044016-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	2 ± 1	$0.63^{+0.29}_{-0.27}$	3408^{+259}_{-164}	-4092^{+552}_{-950}	$-0.700^{+0.579}_{-1.790}$
Alt.	3 ± 2	$1.02^{+0.31}_{-0.27}$	3417^{+252}_{-184}	-3903^{+283}_{-410}	$-0.449^{+0.249}_{-0.545}$

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 $A_{obs} \gg 1.0$

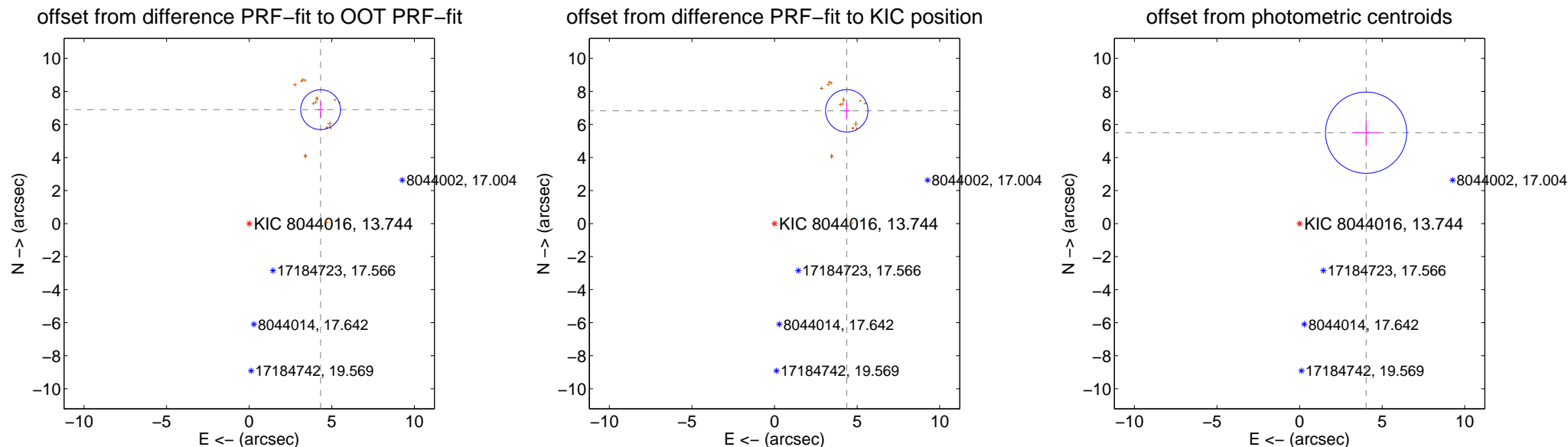
DV Centroid Data

Supplemental centroid analysis for 008044016-01. Kepler magnitude: 13.74. Transit SNR 9.70

There are 0 quarters with good PRF difference image offsets

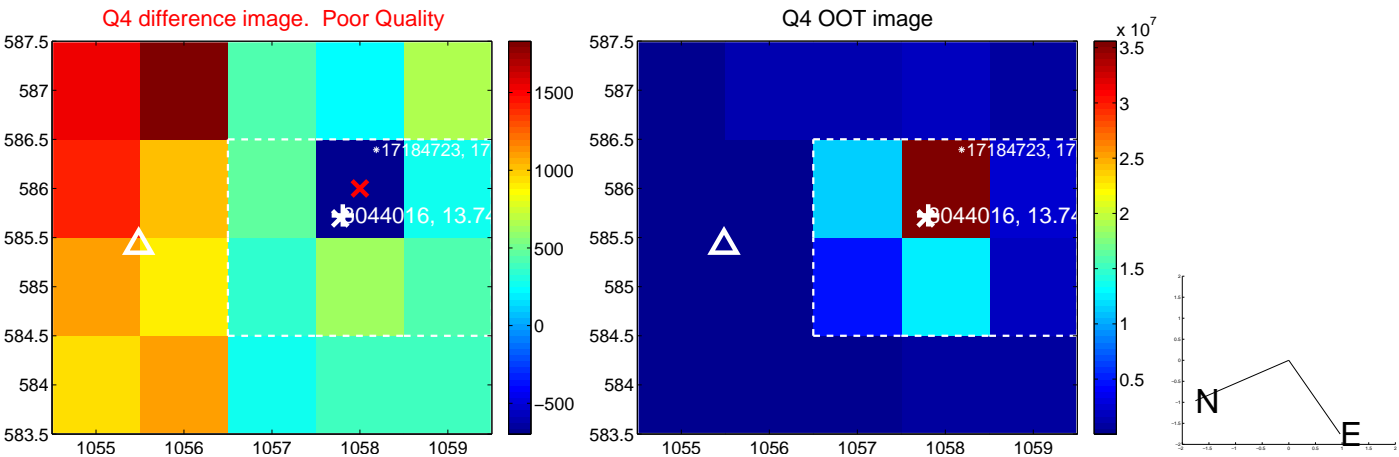
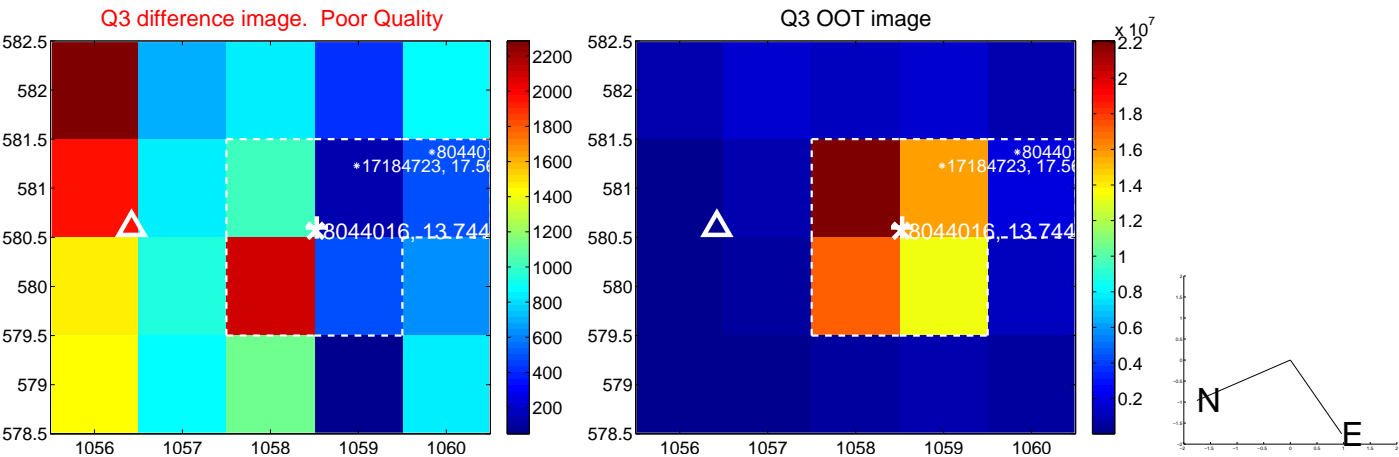
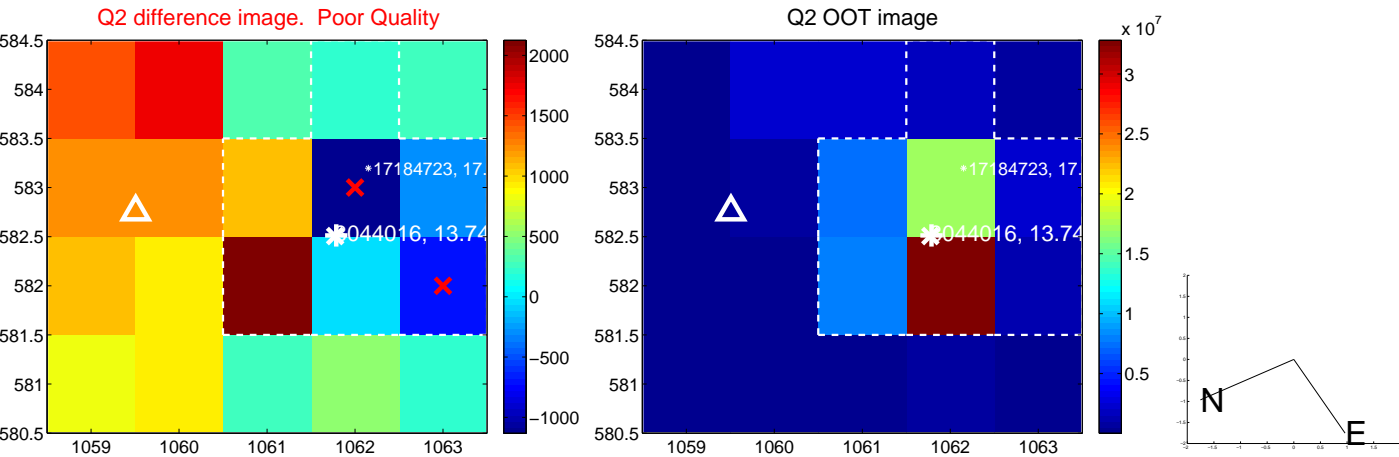
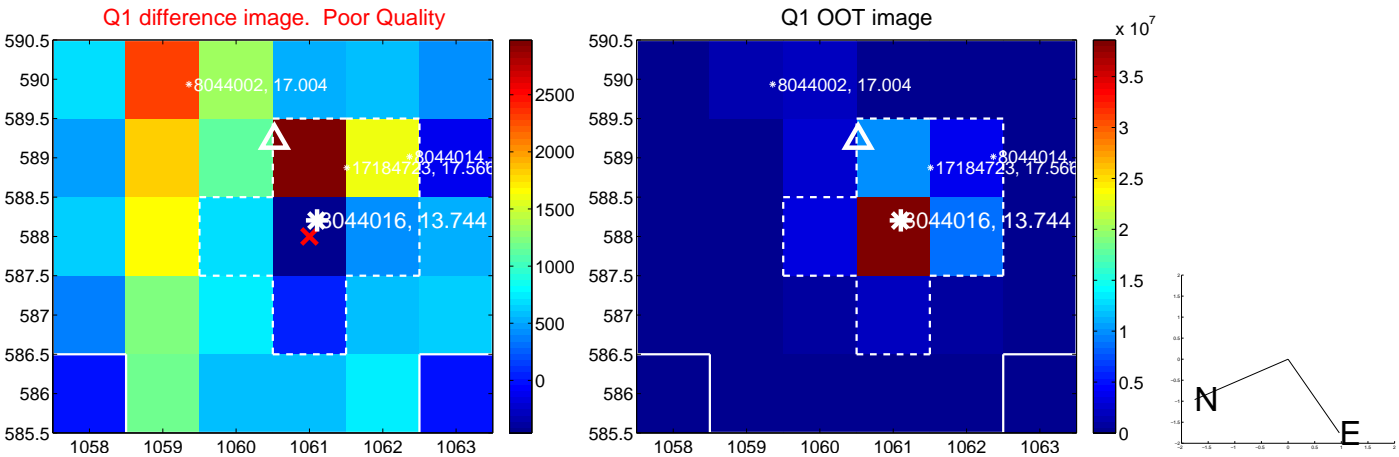
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.140 \pm 0.402	20.24	-4.324 \pm 0.201	6.897 \pm 0.484
PRF-fit source offset from KIC position	8.109 \pm 0.428	18.94	-4.374 \pm 0.199	6.829 \pm 0.509
photometric centroid source offset	6.82 \pm 0.82	8.32	-4.03 \pm 0.82	5.50 \pm 0.82

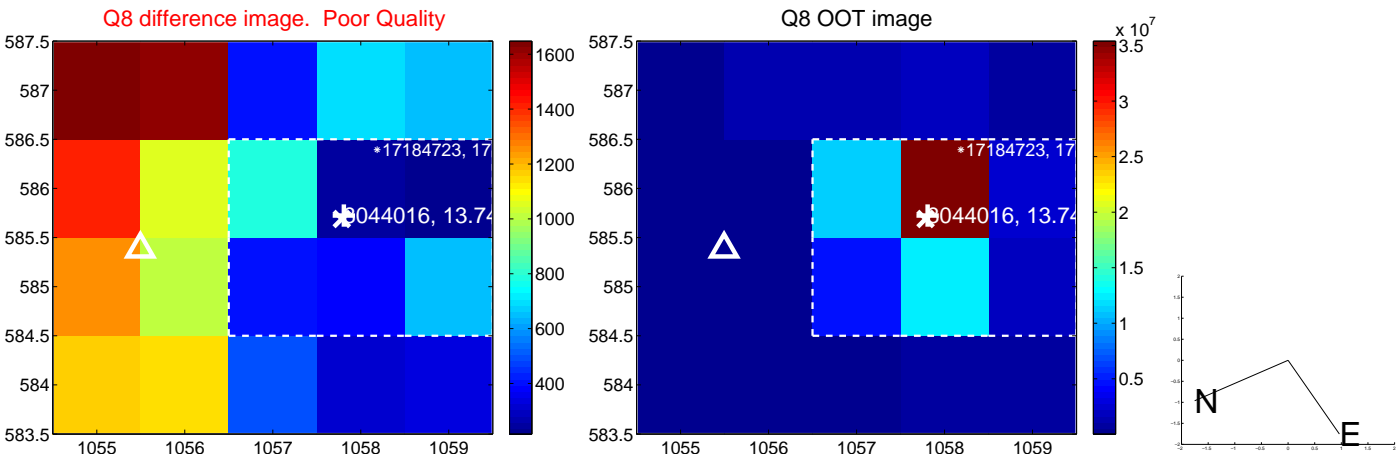
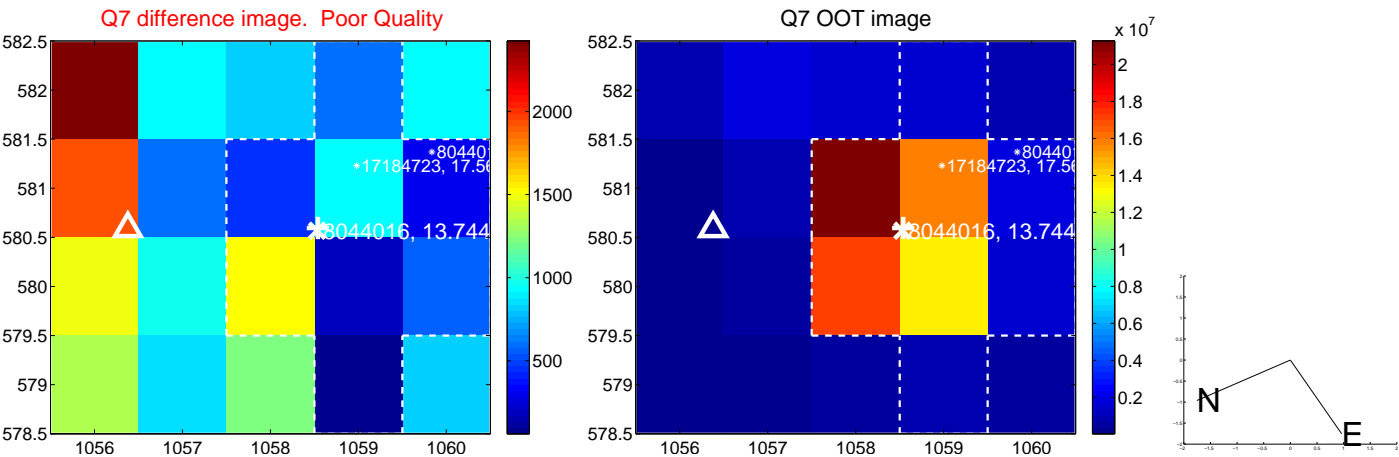
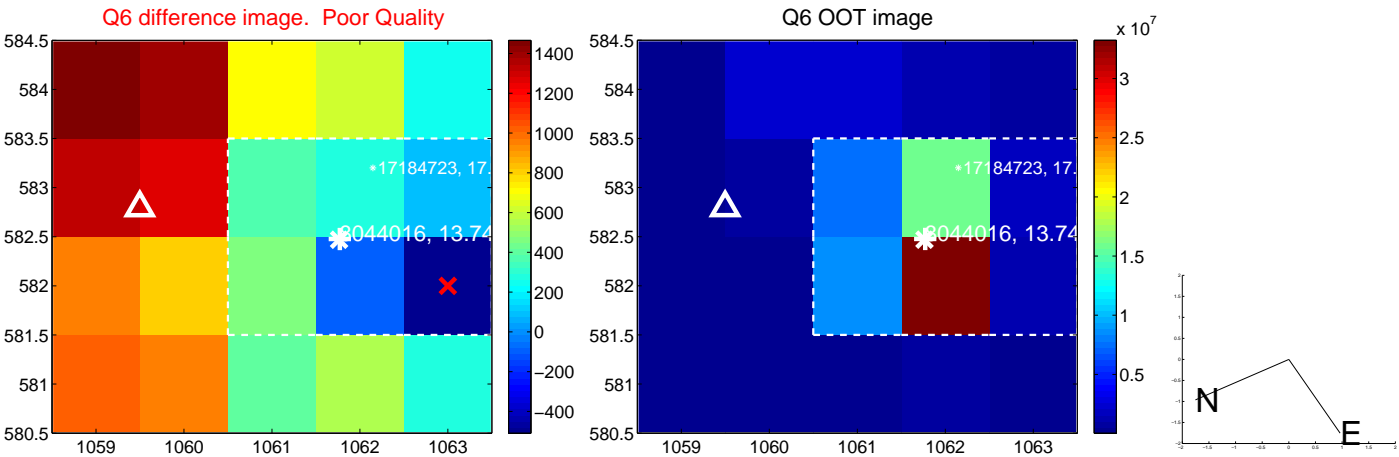
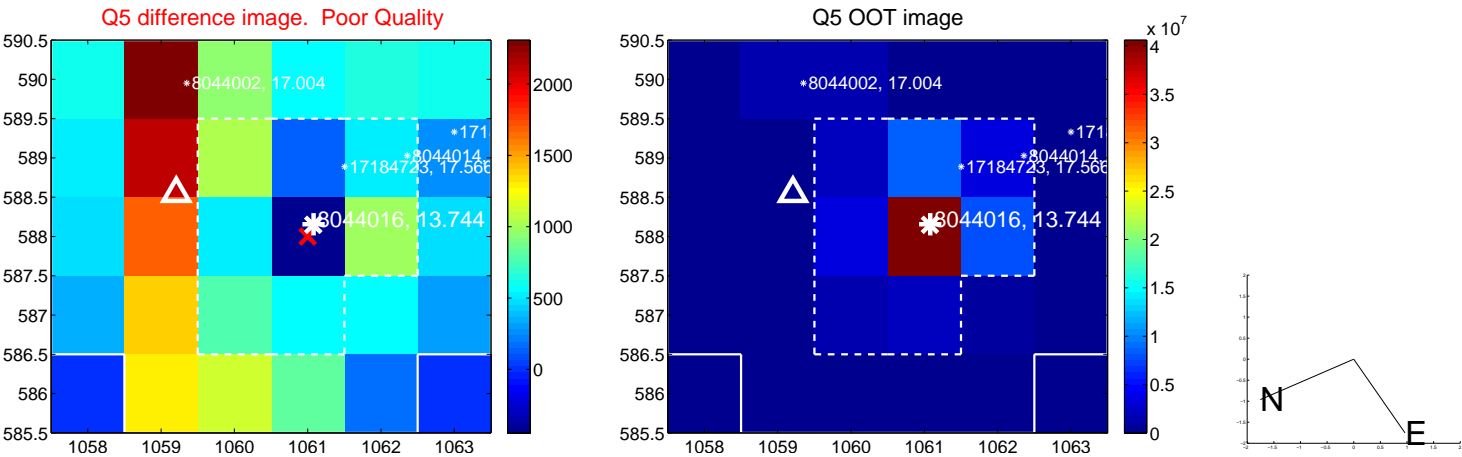


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

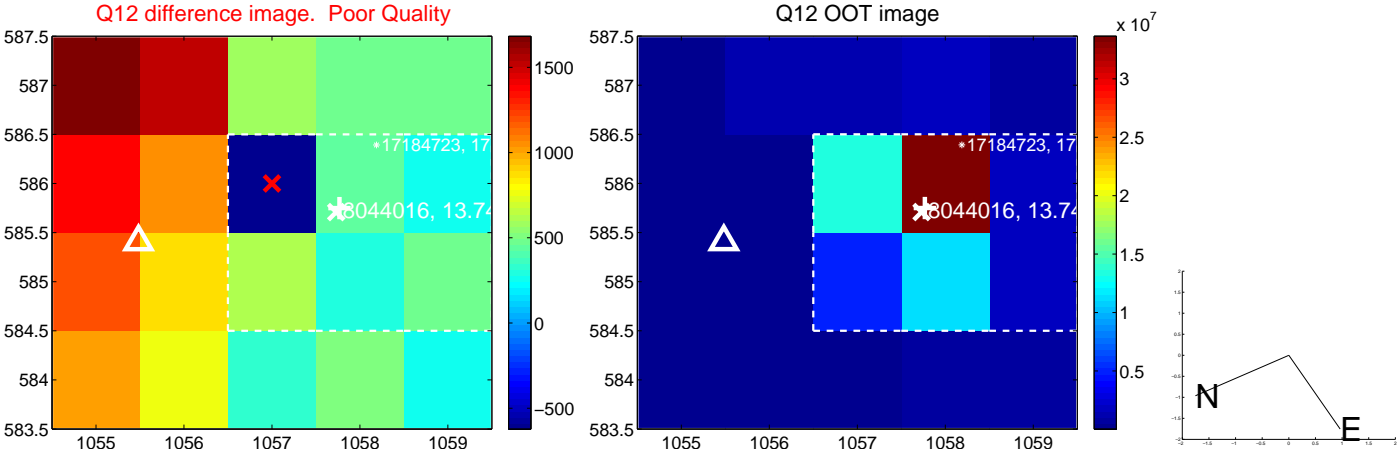
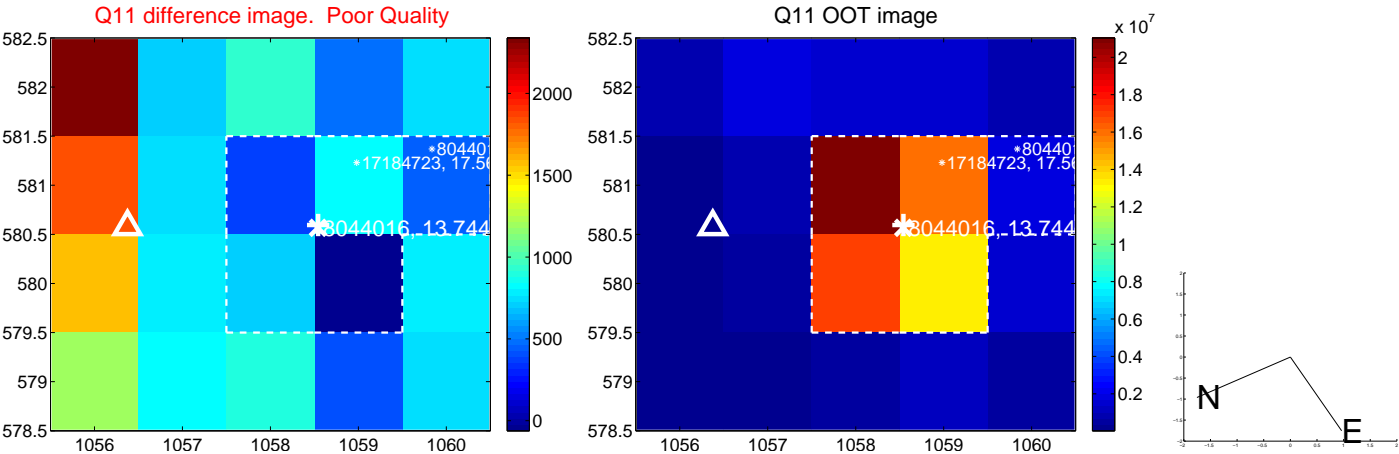
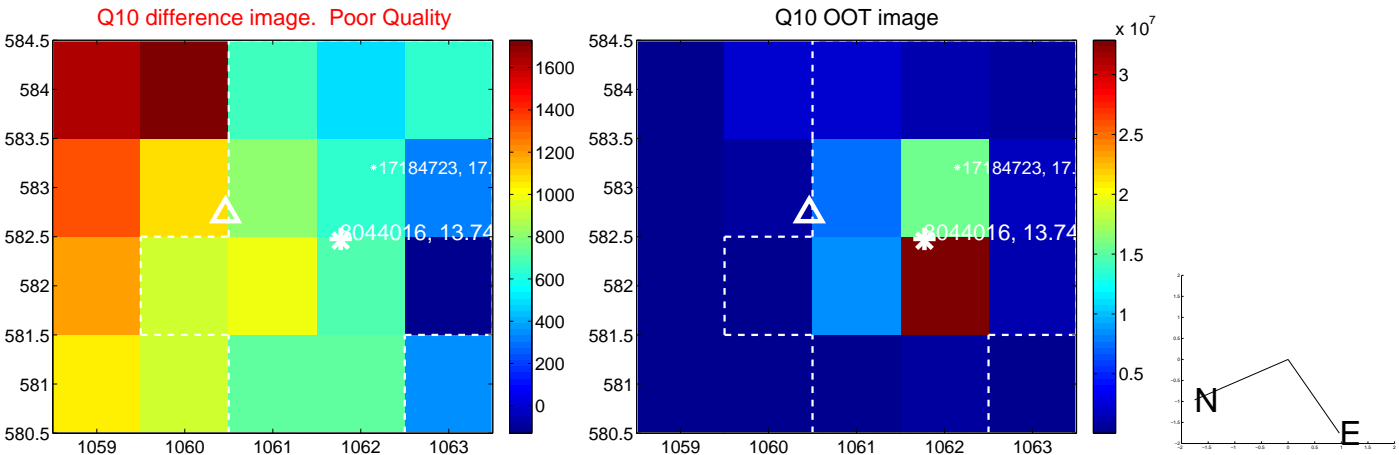
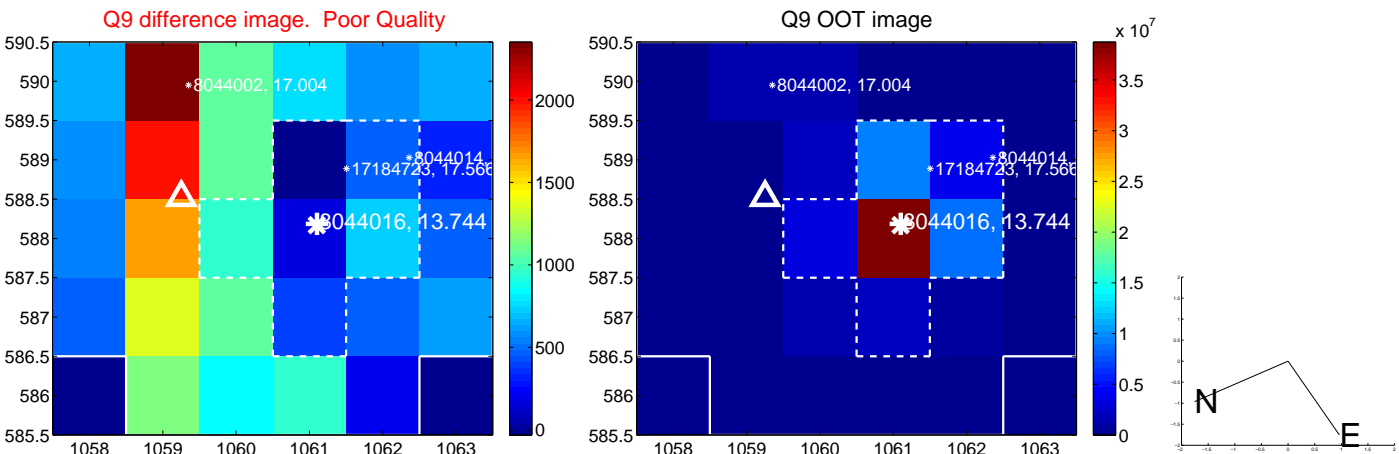
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



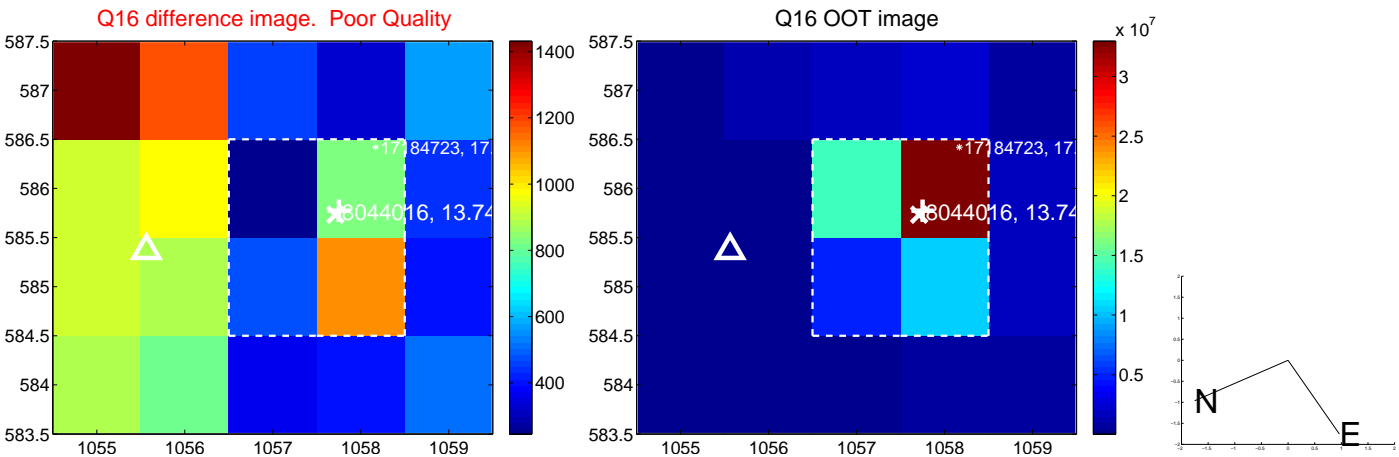
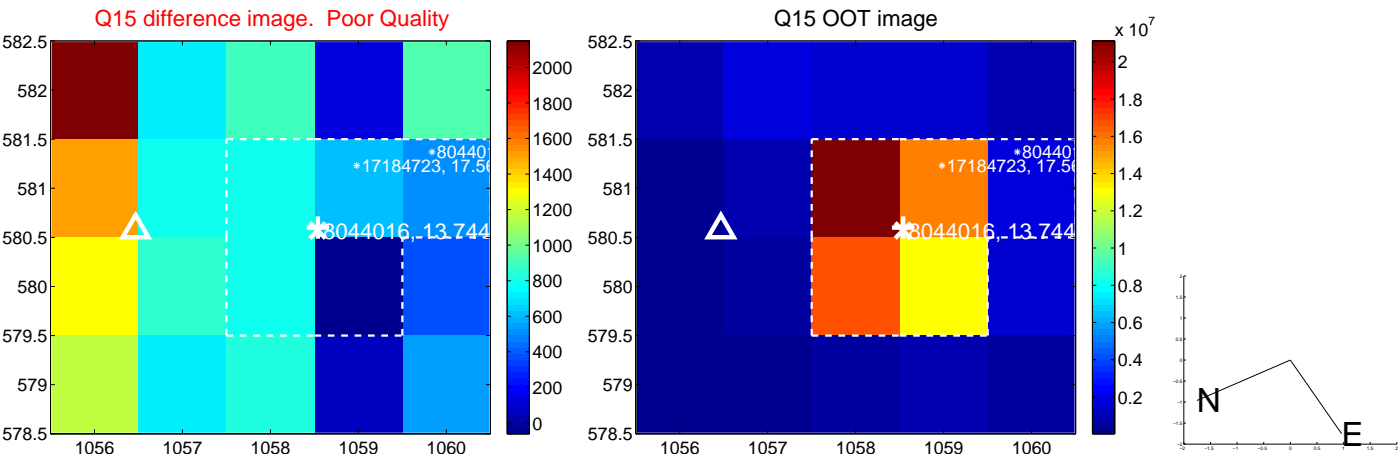
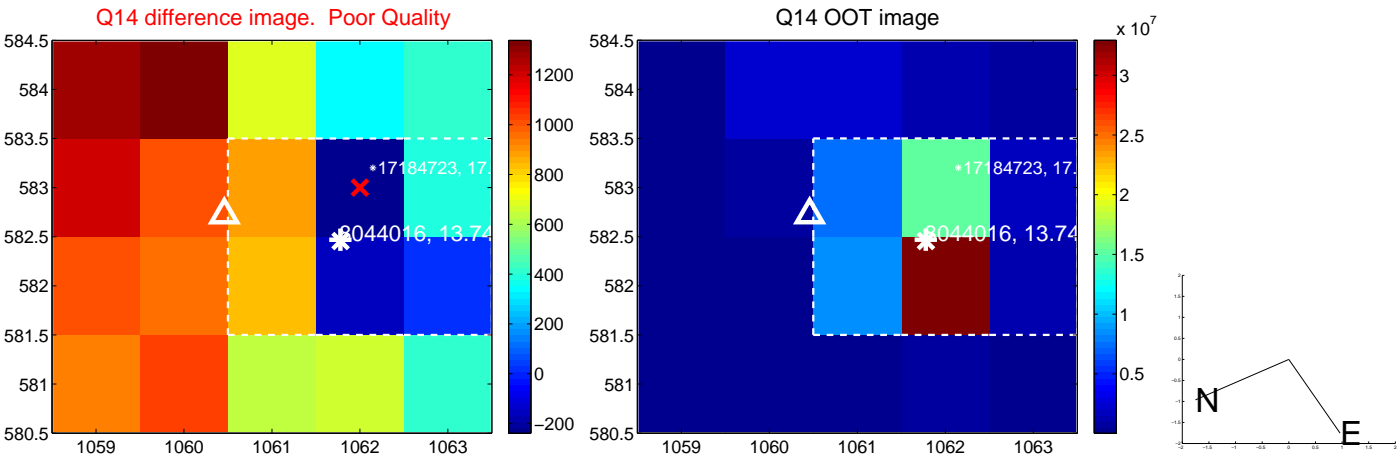
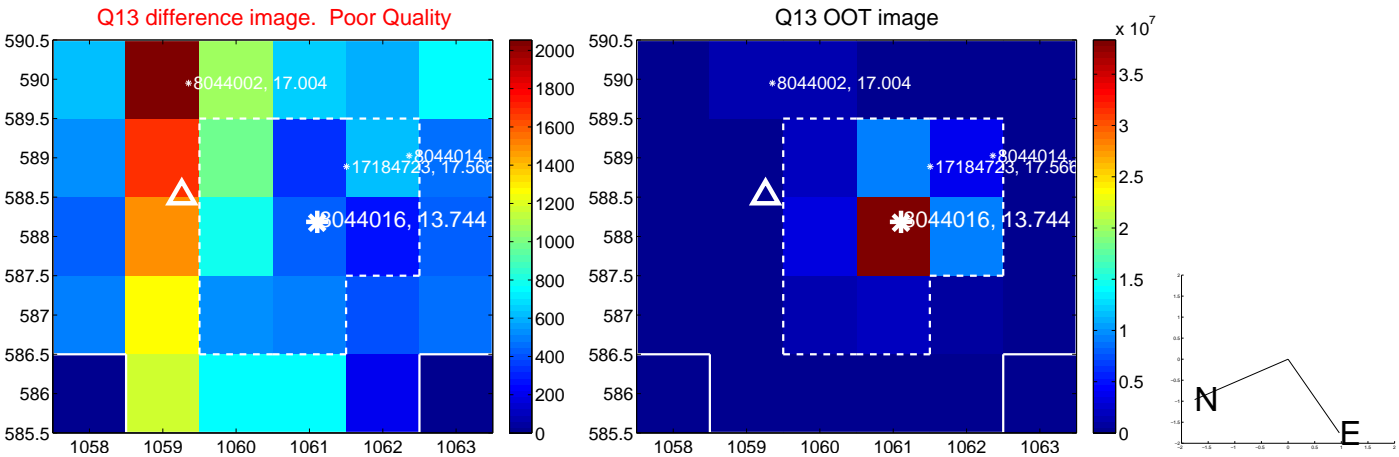
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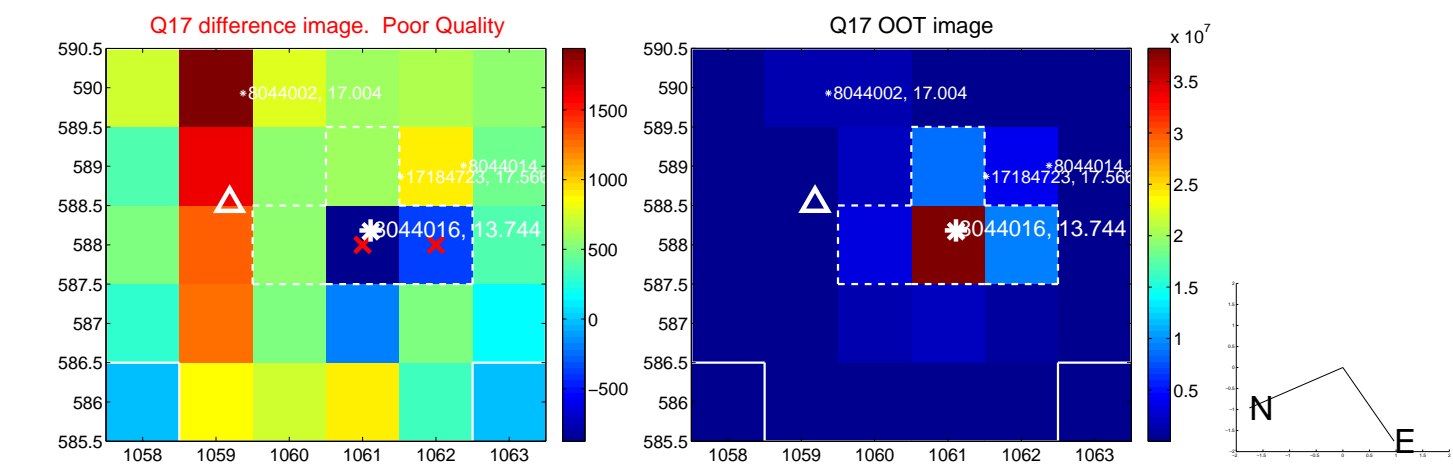
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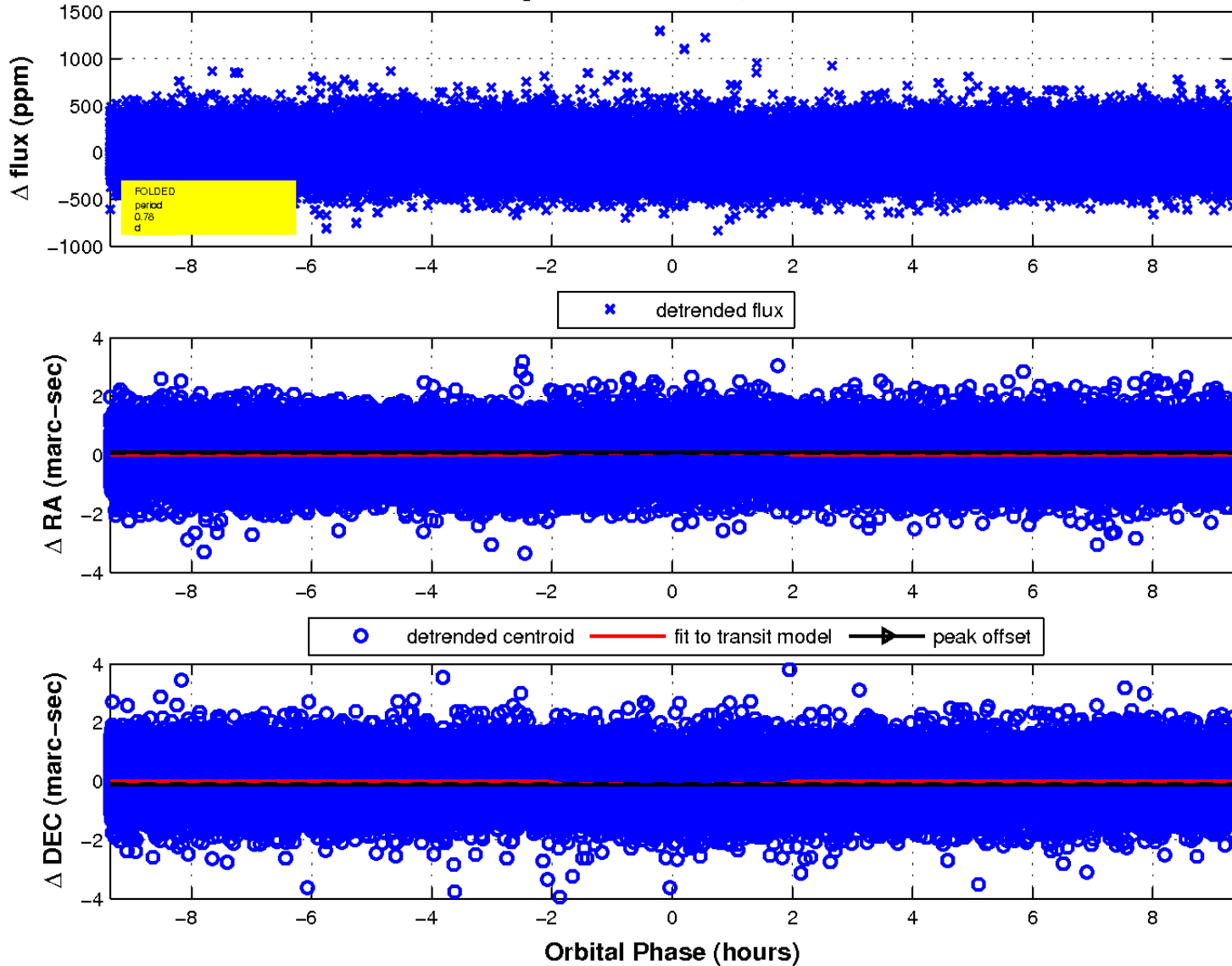
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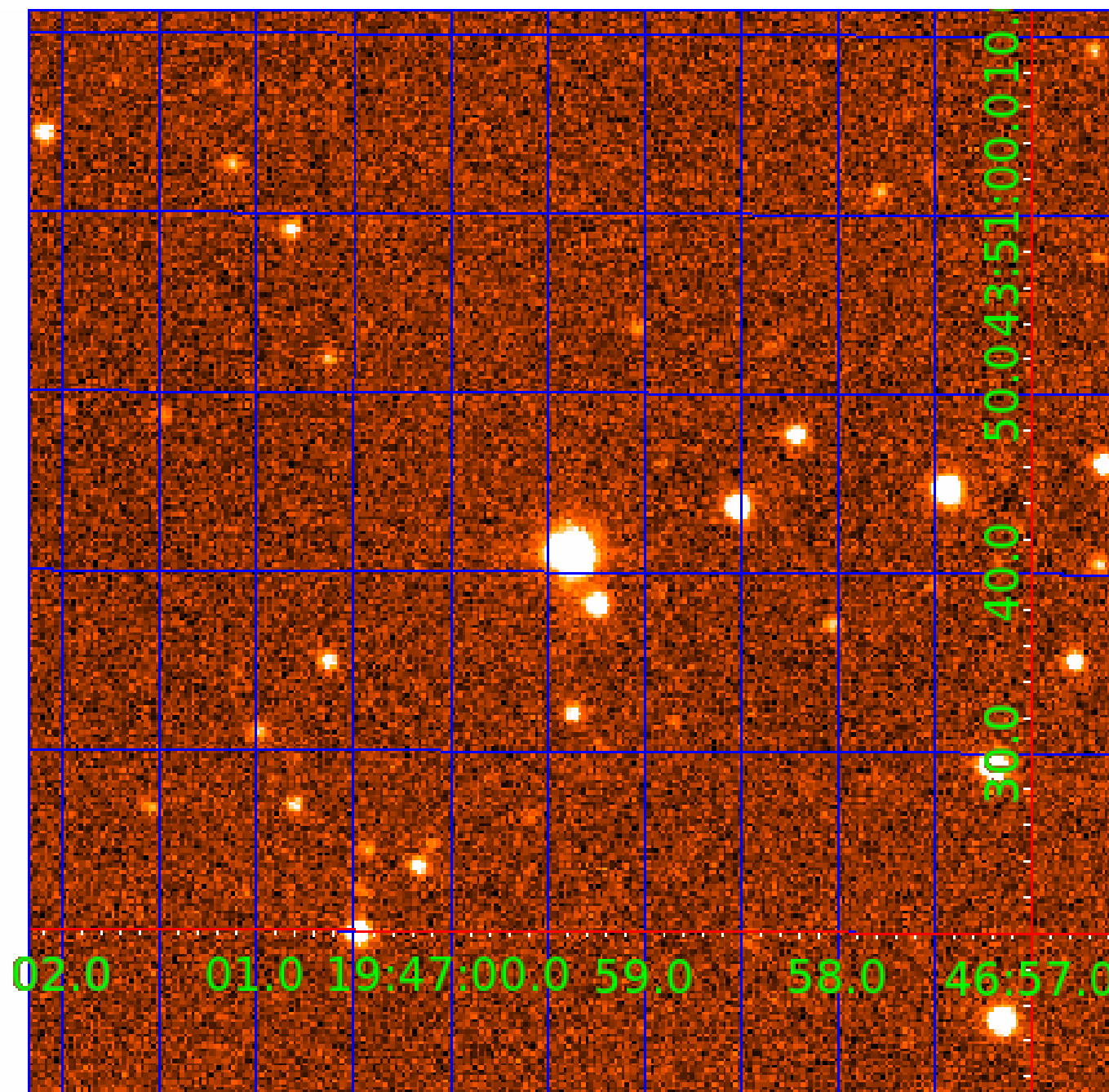


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008044016

Q1-17 DR25 TCE Parameters

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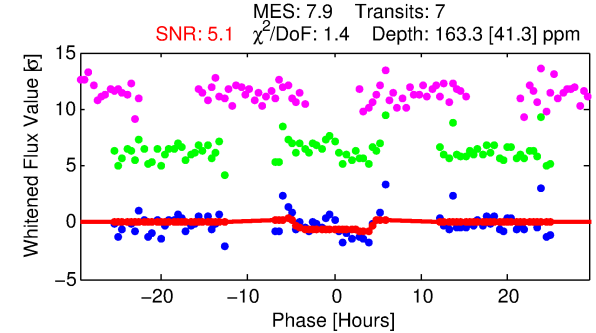
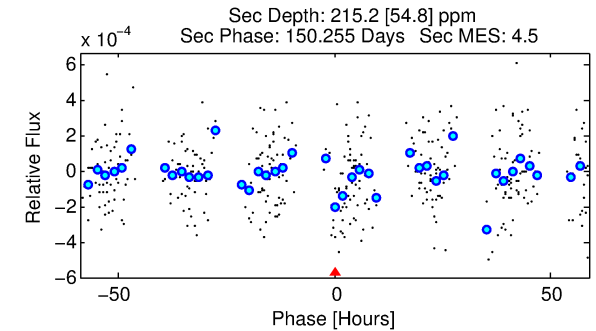
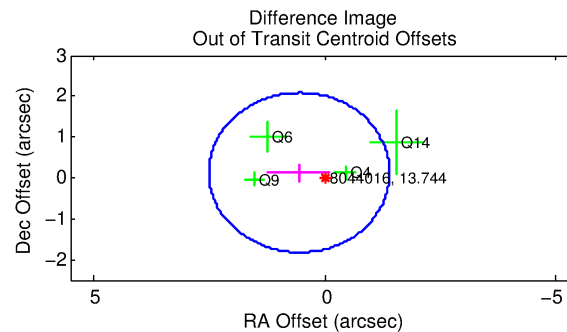
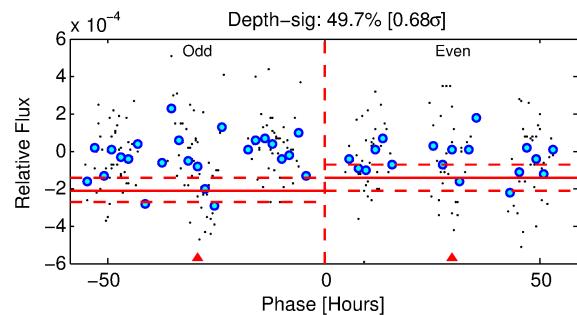
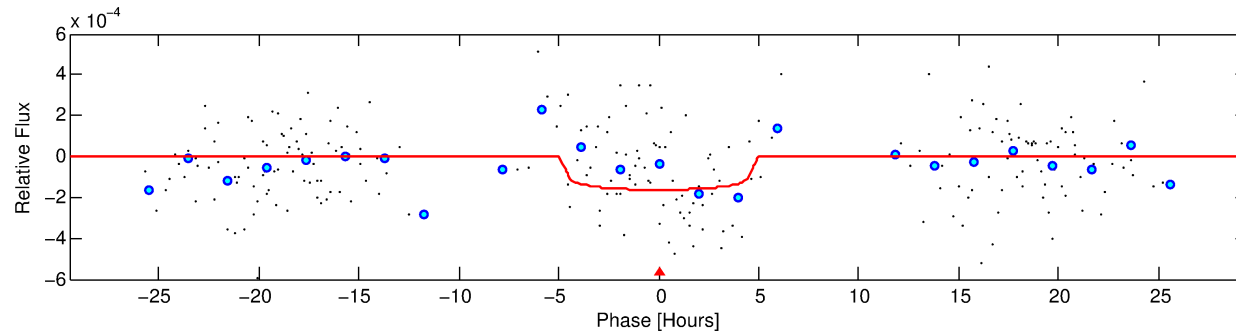
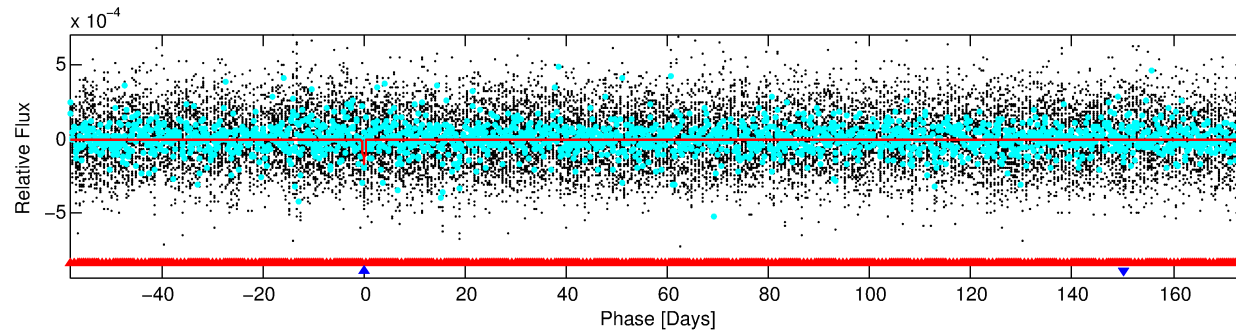
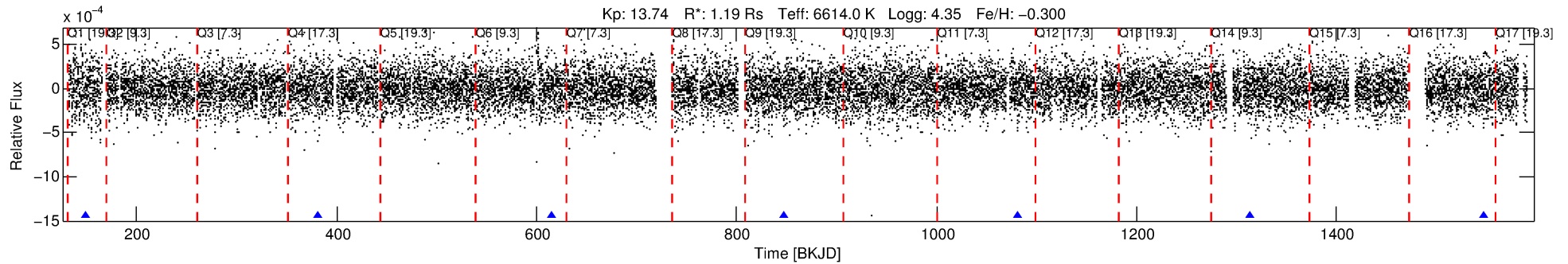
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008044016-02

No Significant Match Found

DV One-Page Summary

KIC: 8044016 Candidate: 2 of 2 Period: 233.035 d



DV Fit Results:

Period = 233.03516 [0.02335] d
Epoch = 148.6426 [0.0830] BKJD
Rp/R* = 0.0131 [0.0089]
a/R* = 104.16 [401.71]
b = 0.83 [1.43]
Seff = 4.02 [1.58]
Teff = 361 [35] K
Rp = 1.70 [1.28] Re
a = 0.7769 [0.2036] AU
Ag = 24640.71 [35294.41] [0.70 σ]
Teffp = 6995 [2431] K [2.73 σ]

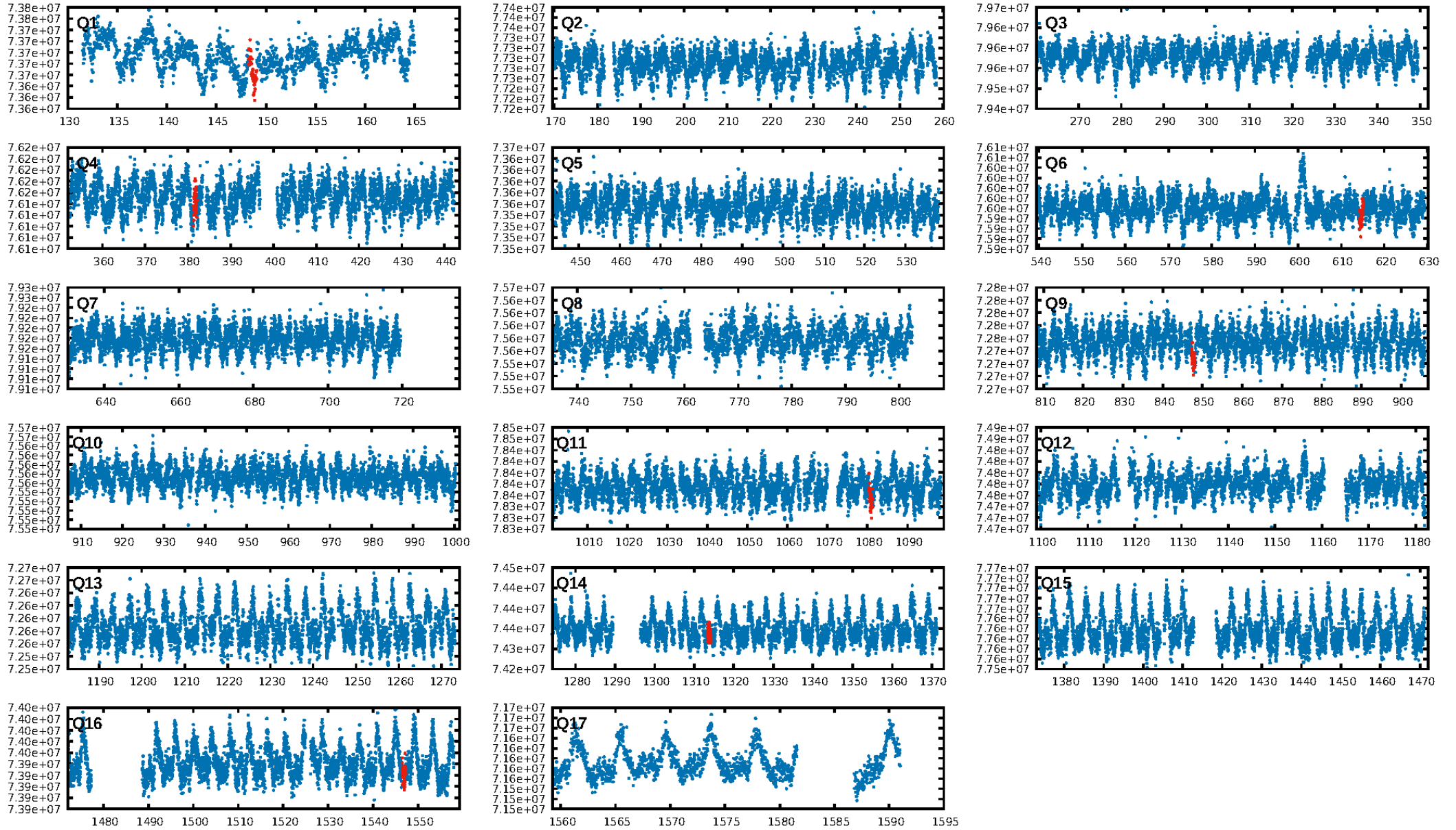
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [524.63 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.78e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.535
Centroid-sig: 3.0%
Centroid-so: 1.881 arcsec [1.71 σ]
OotOffset-rm: 0.562 arcsec [0.86 σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-rm: 0.517 arcsec [0.77 σ]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/6]

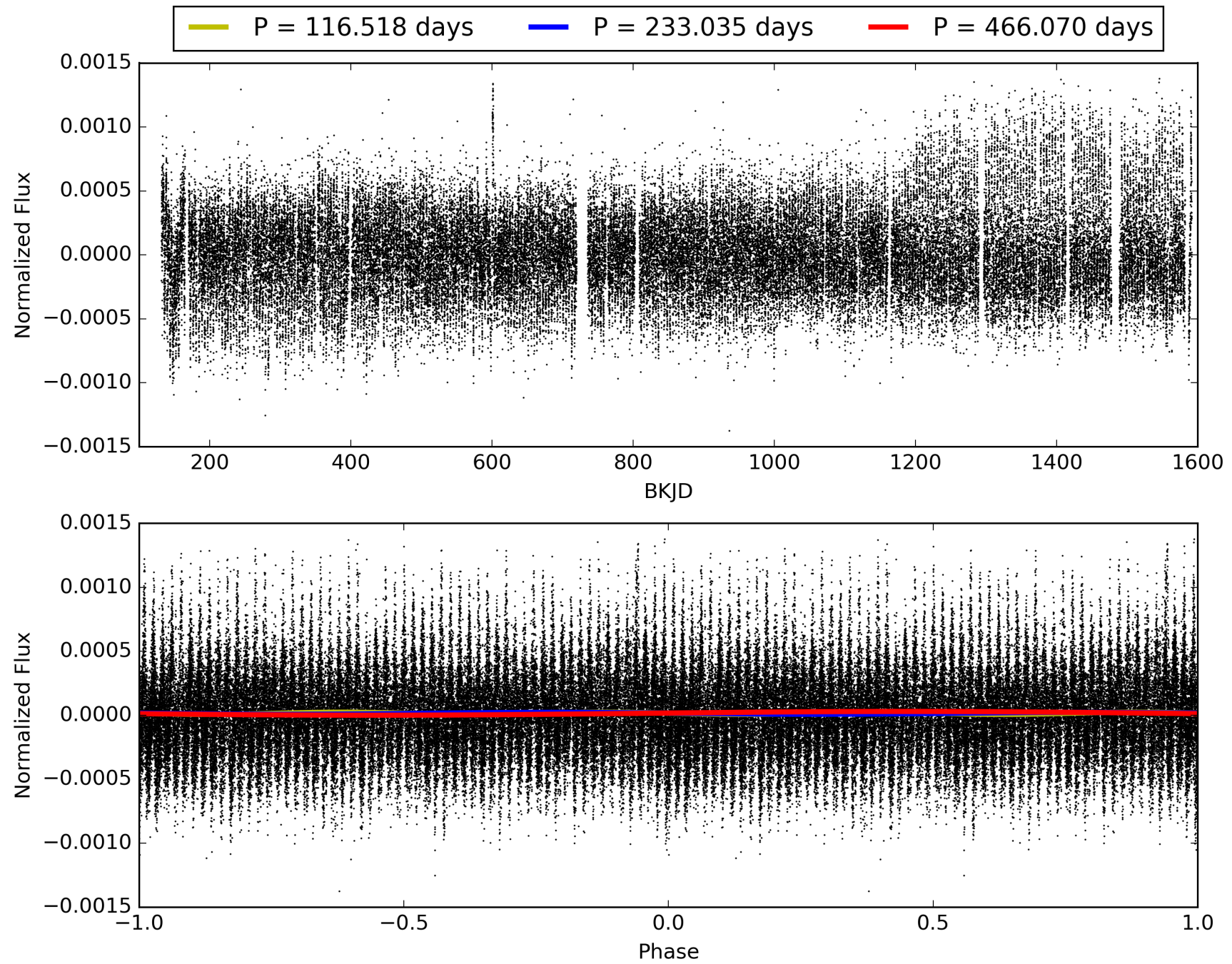
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:02:46 Z

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

TCE 008044016-02, PDC Light Curves

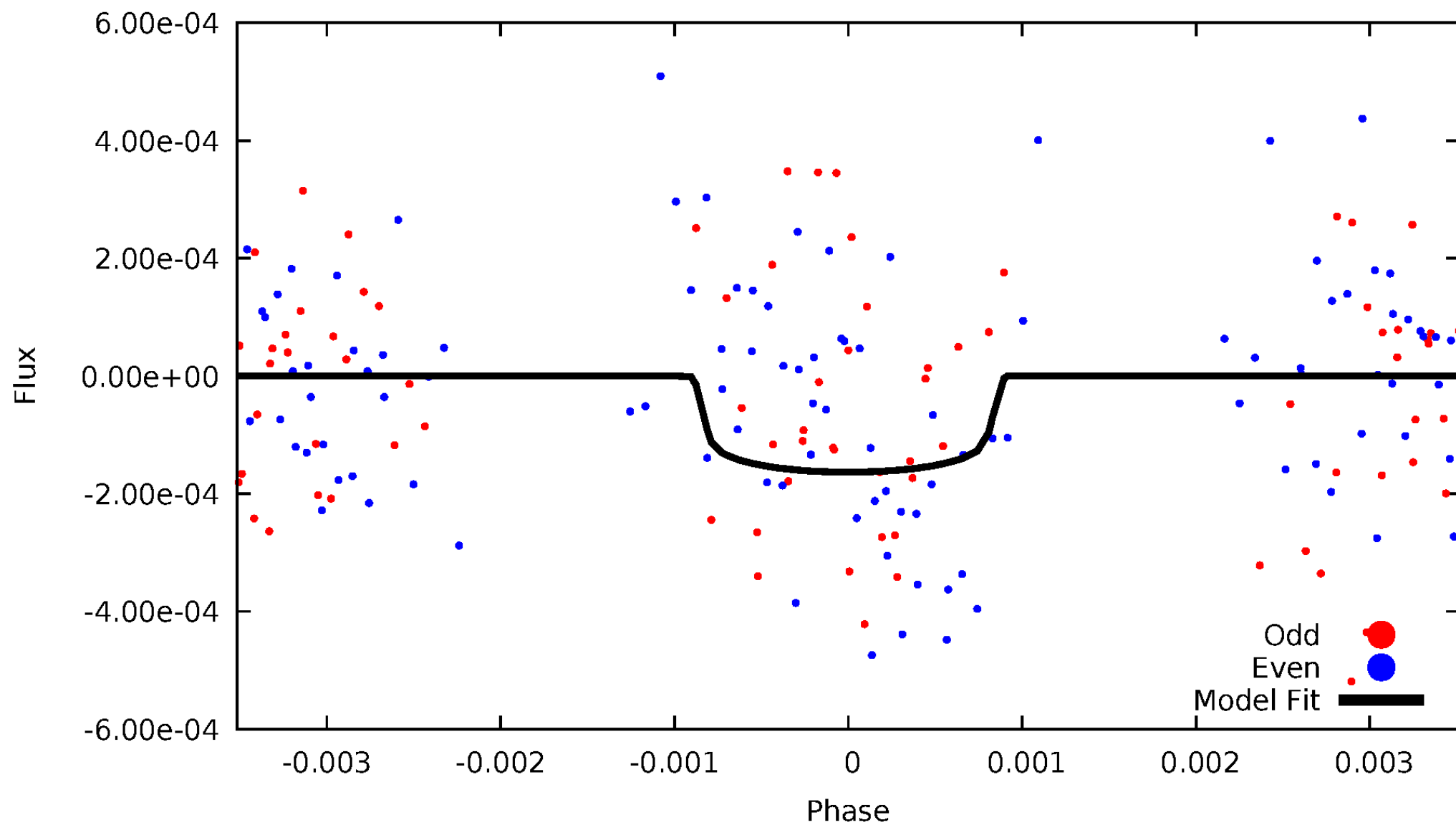


TCE 008044016-02



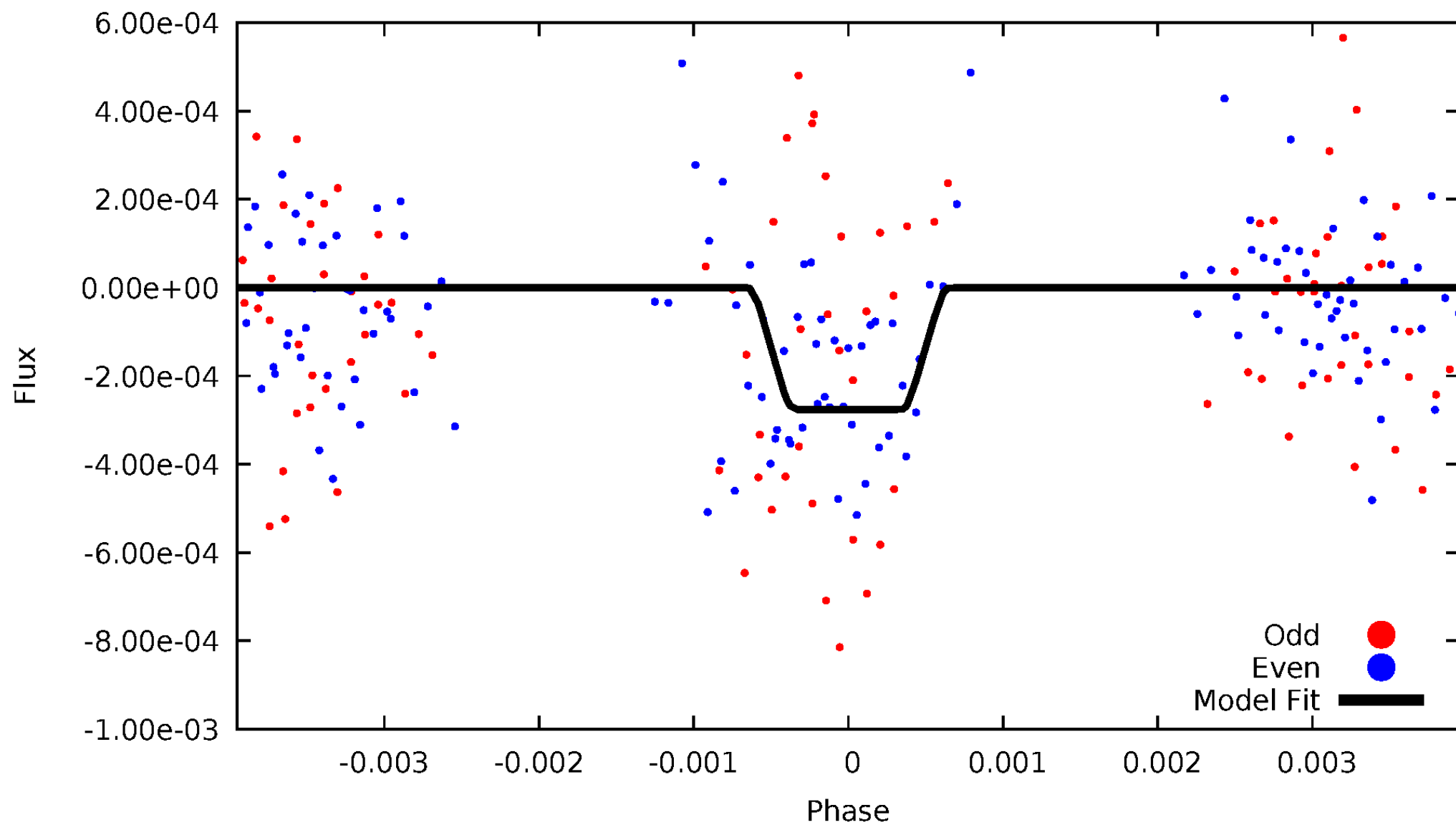
DV Odd/Even

TCE 008044016-02



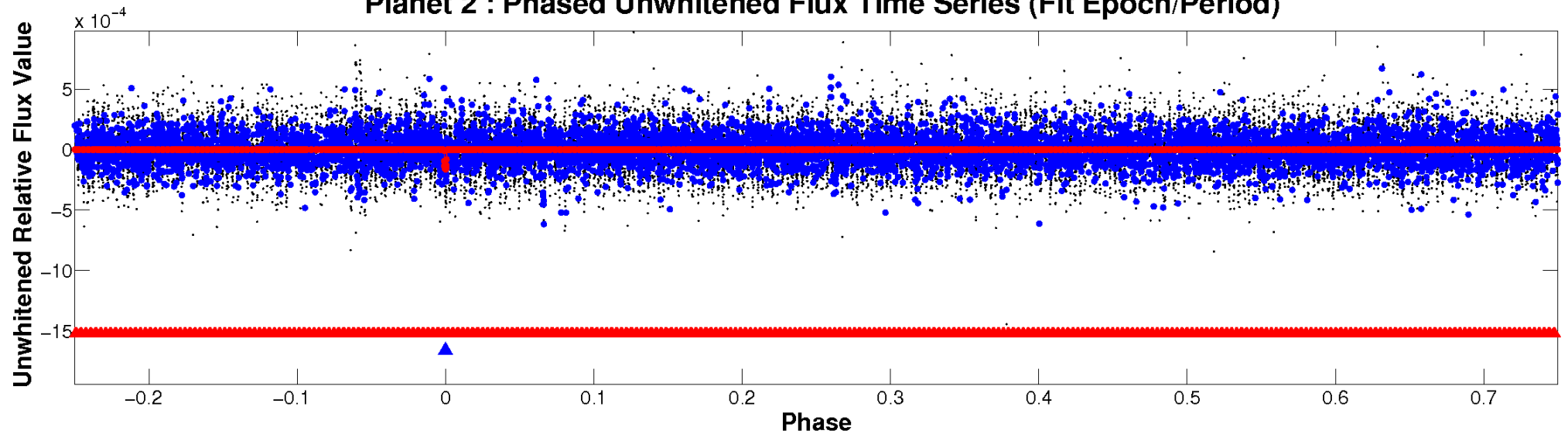
ALT Odd/Even

TCE 008044016-02

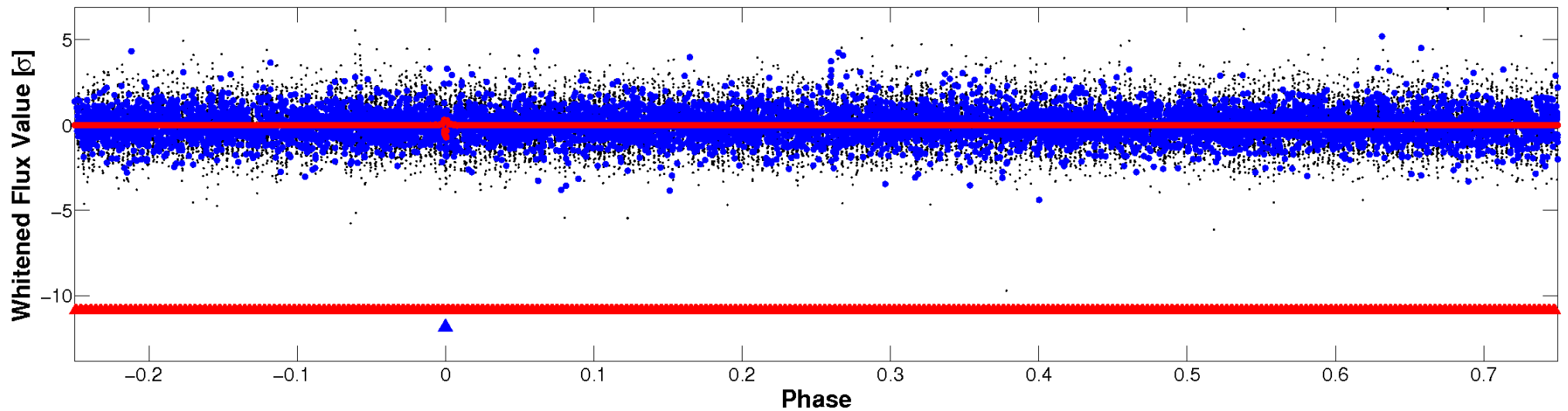


Non-Whitened Vs. Whitened Light Curve

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

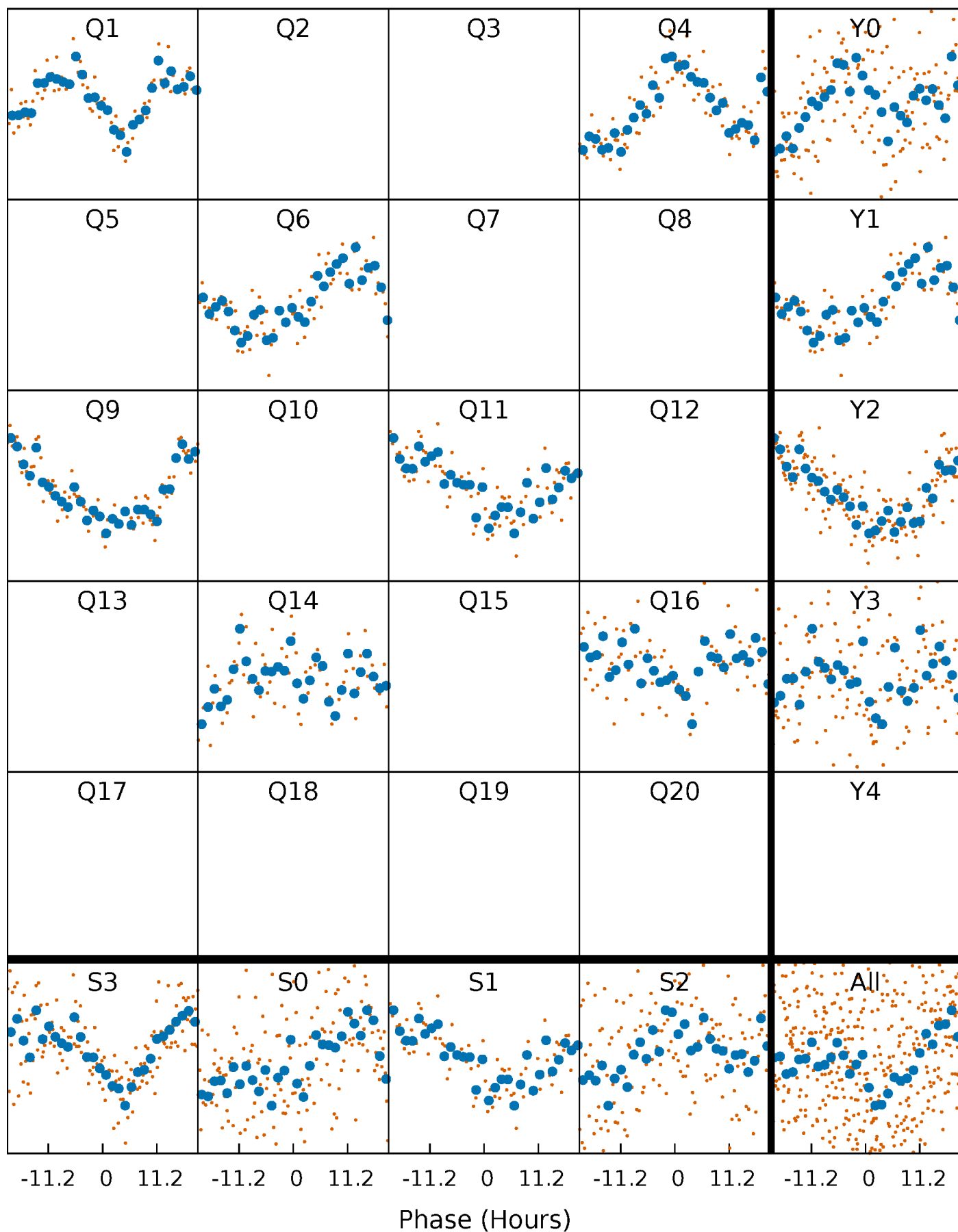


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



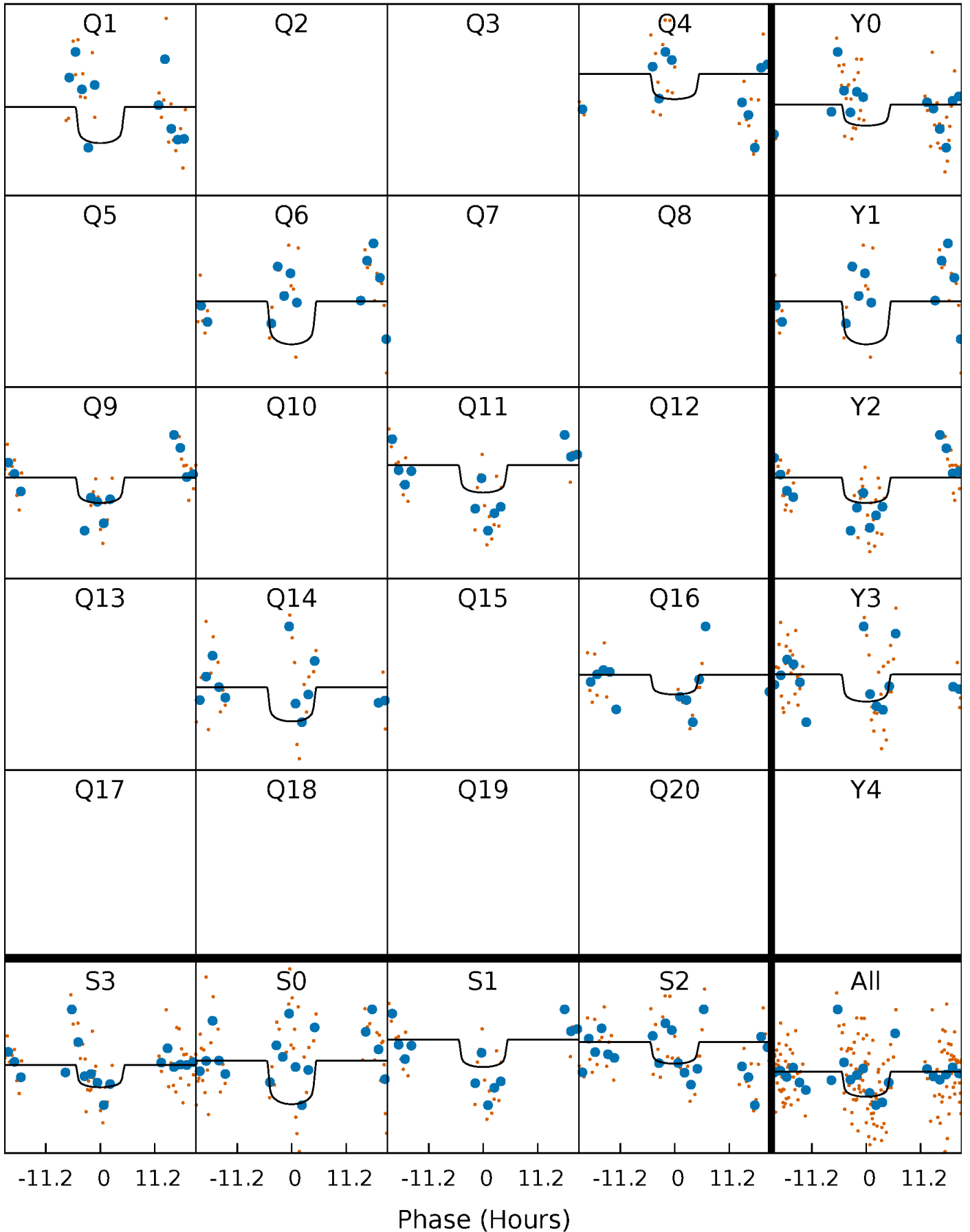
PDC Quarter-Phased Transit Curves

TCE 008044016-02 P=233.035164 Days $T_0=148.642565$ (BKJD)



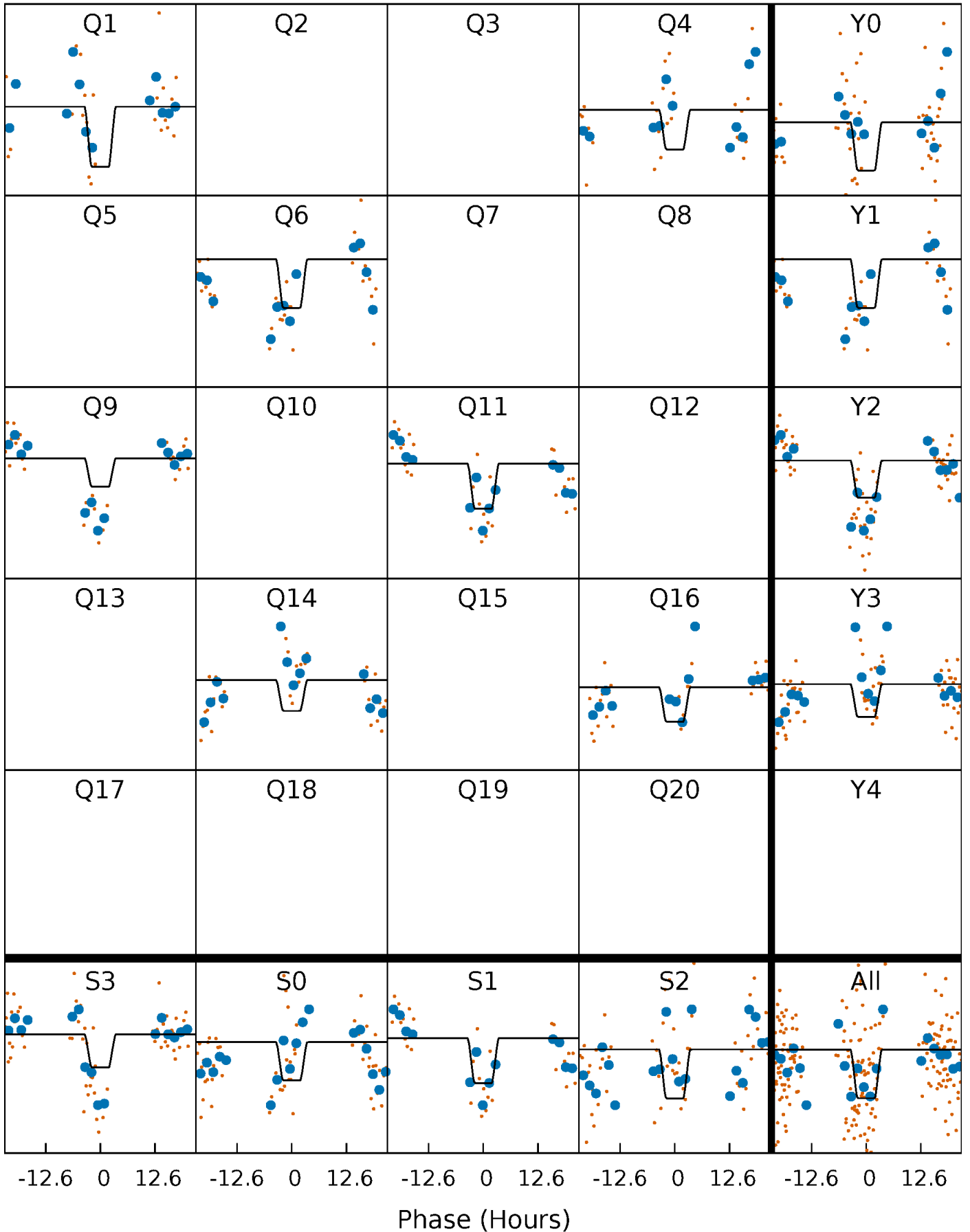
DV Quarter-Phased Transit Curves

TCE 008044016-02 P=233.035164 Days $T_0=148.642565$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

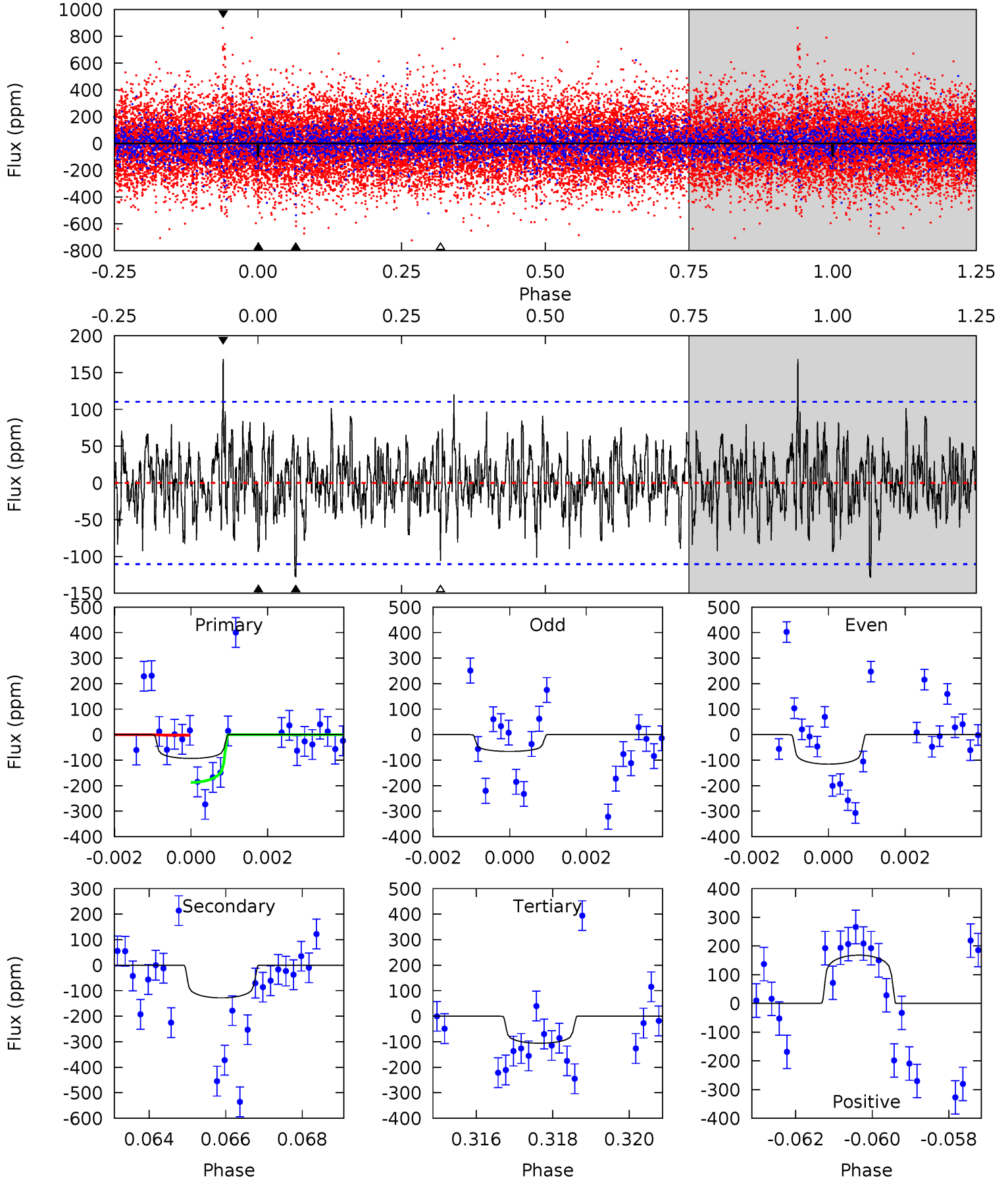
TCE 008044016-02 P=233.047156 Days $T_0=148.641404$ (BKJD)



DV Model-Shift Uniqueness Test

008044016-02, P = 233.035164 Days, E = 148.642565 Days

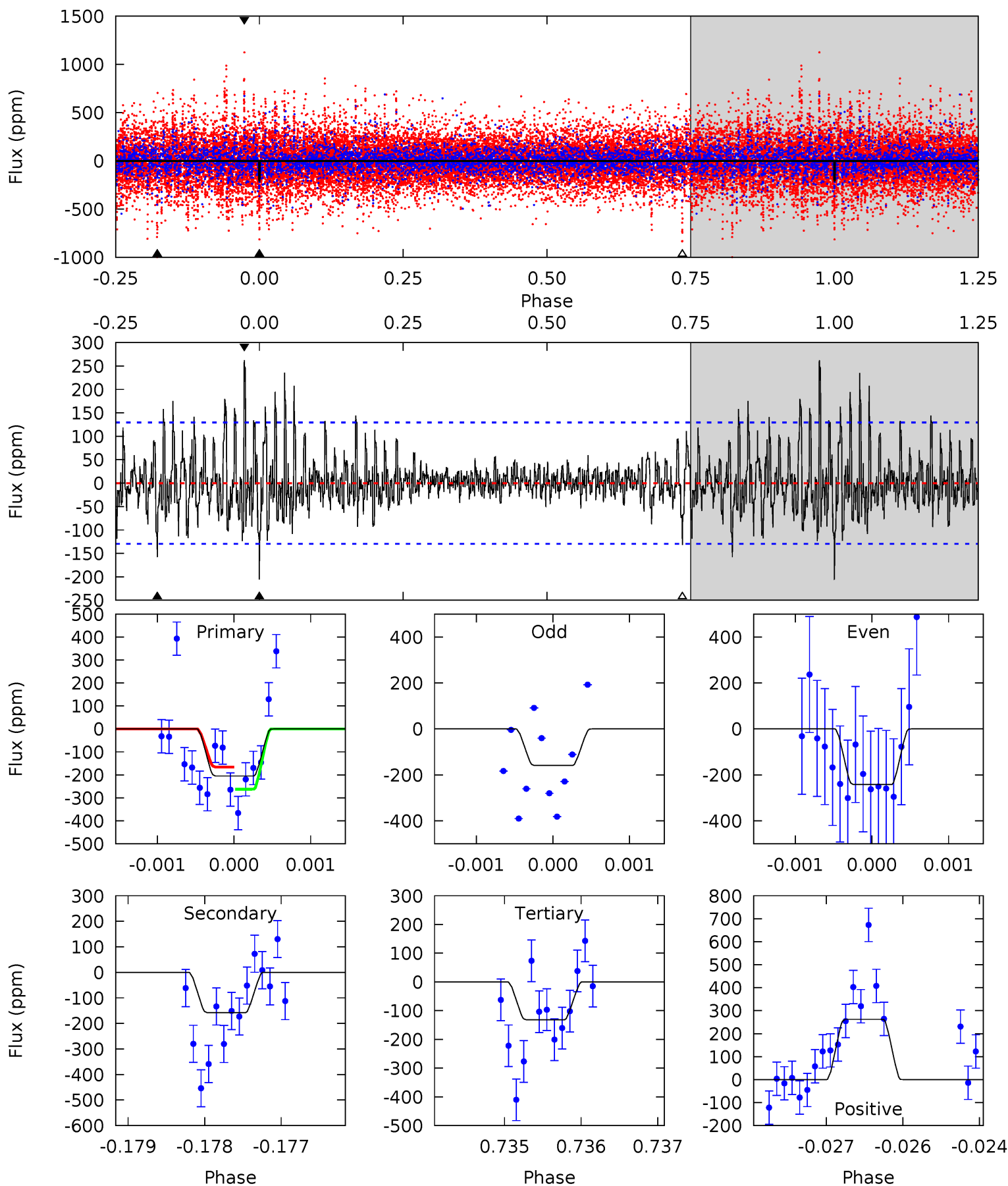
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.52	6.20	5.12	8.14	5.34	3.11	1.62	-0.61	-3.62	1.08	-1.94	1.20	9.60	0.57	4.48



Alt Model-Shift Uniqueness Test

008044016-02, P = 233.047156 Days, E = 148.641404 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.55	6.57	5.49	10.9	5.40	3.21	1.86	3.06	-2.37	1.09	-4.34	1.71	0.82	0.56	1.98



Stellar Parameters For KIC 008044016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6614^{+158}_{-218}	$4.348^{+0.084}_{-0.196}$	$-0.300^{+0.250}_{-0.300}$	$1.190^{+0.383}_{-0.164}$	$1.156^{+0.173}_{-0.156}$	$0.967^{+0.354}_{-0.501}$
	+2%/-3%	+2%/-5%	+83%/-100%	+32%/-14%	+15%/-13%	+37%/-52%
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 008044016-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-128 ± 21	$1.87^{+1.20}_{-1.02}$	511^{+38}_{-27}	5941^{+3469}_{-1186}	11913^{+45002}_{-7483}
Alt.	-158 ± 24	$2.35^{+1.23}_{-1.24}$	511^{+37}_{-28}	5627^{+2605}_{-912}	9652^{+29775}_{-5586}

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

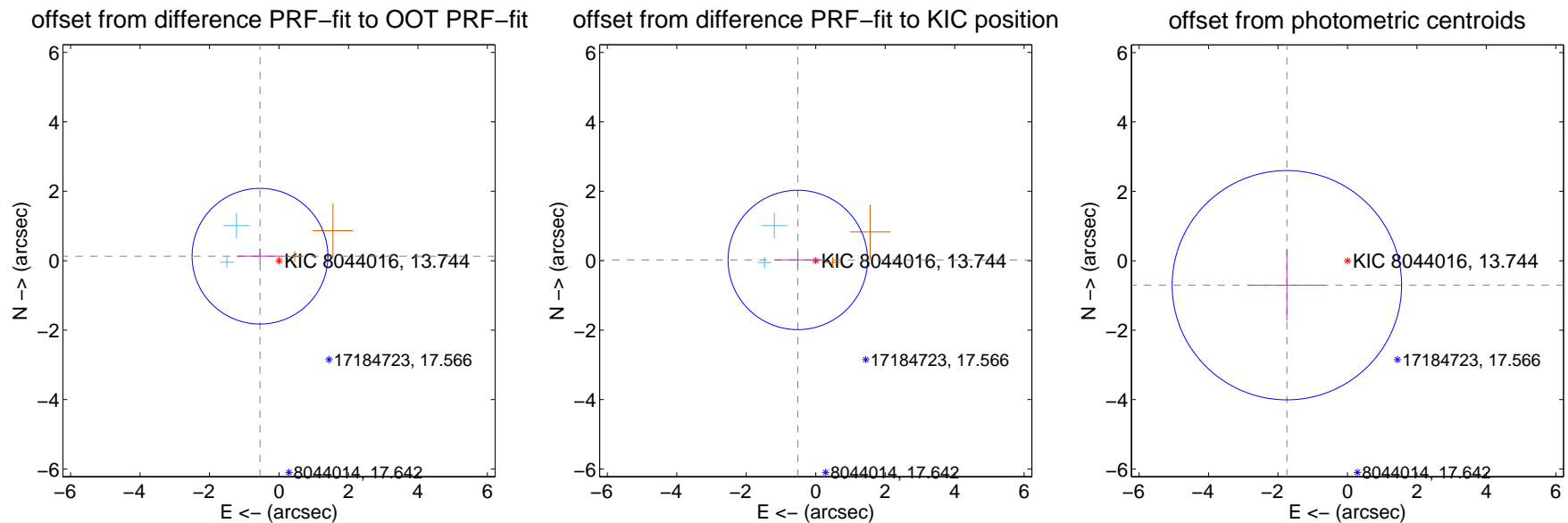
DV Centroid Data

Supplemental centroid analysis for 008044016-02. Kepler magnitude: 13.74. Transit SNR 5.14

There are 2 quarters with good PRF difference image offsets

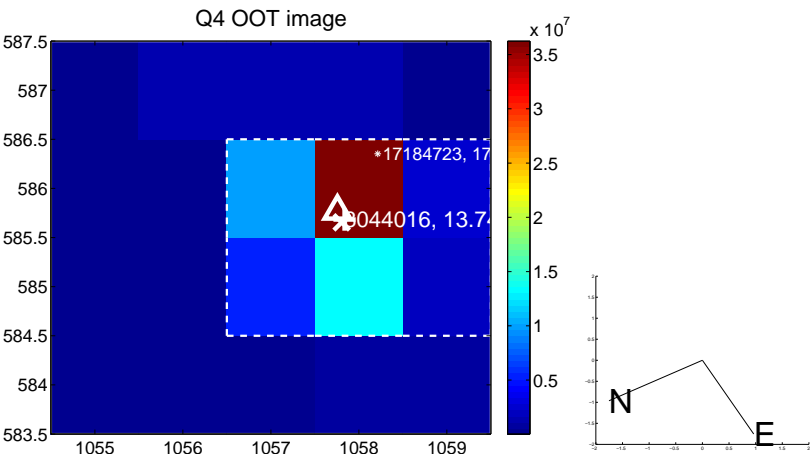
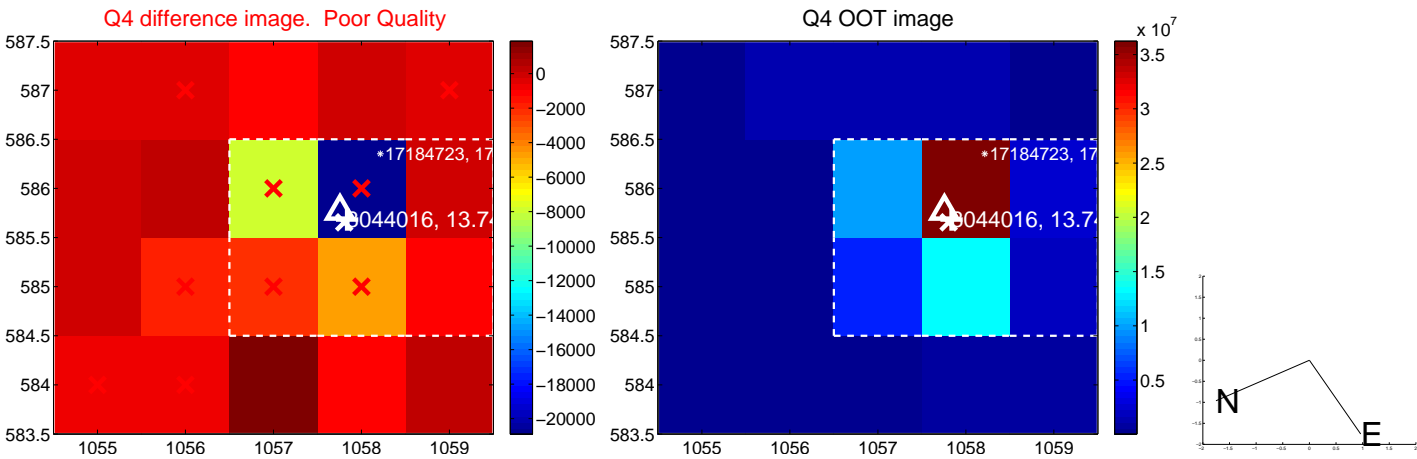
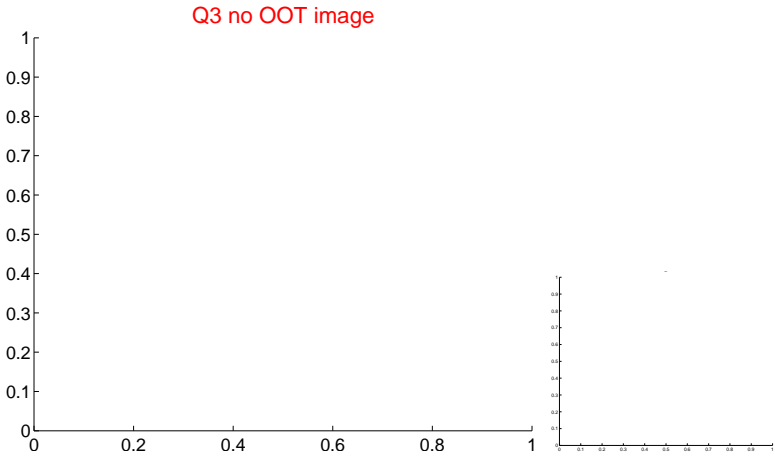
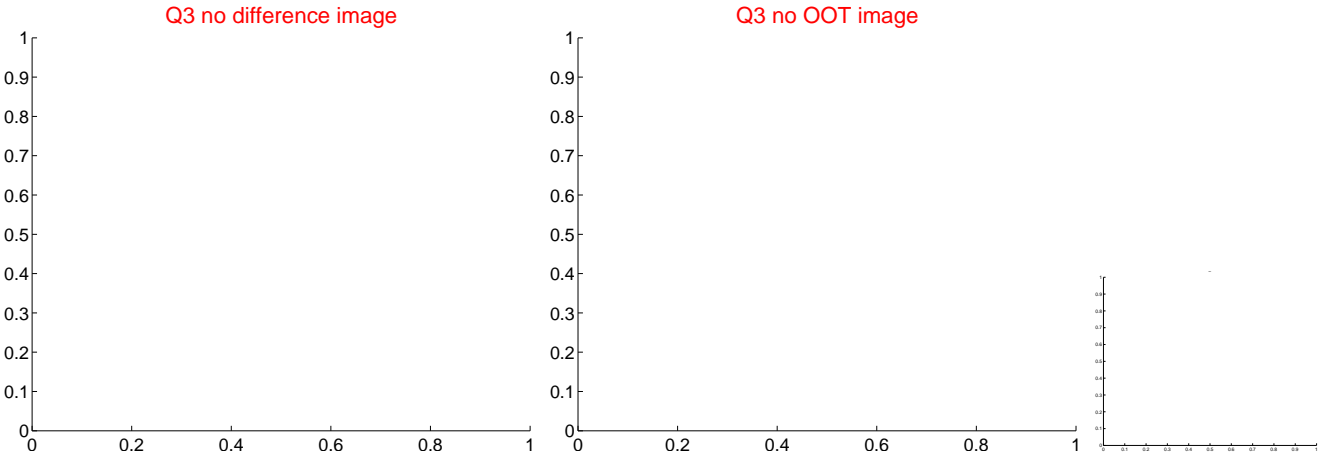
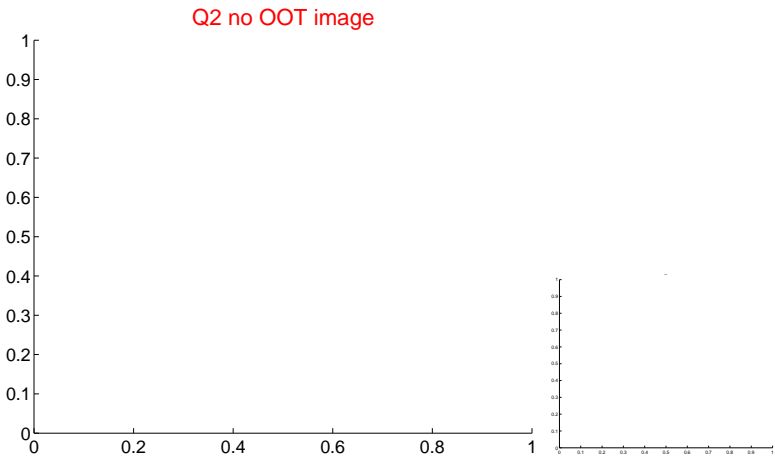
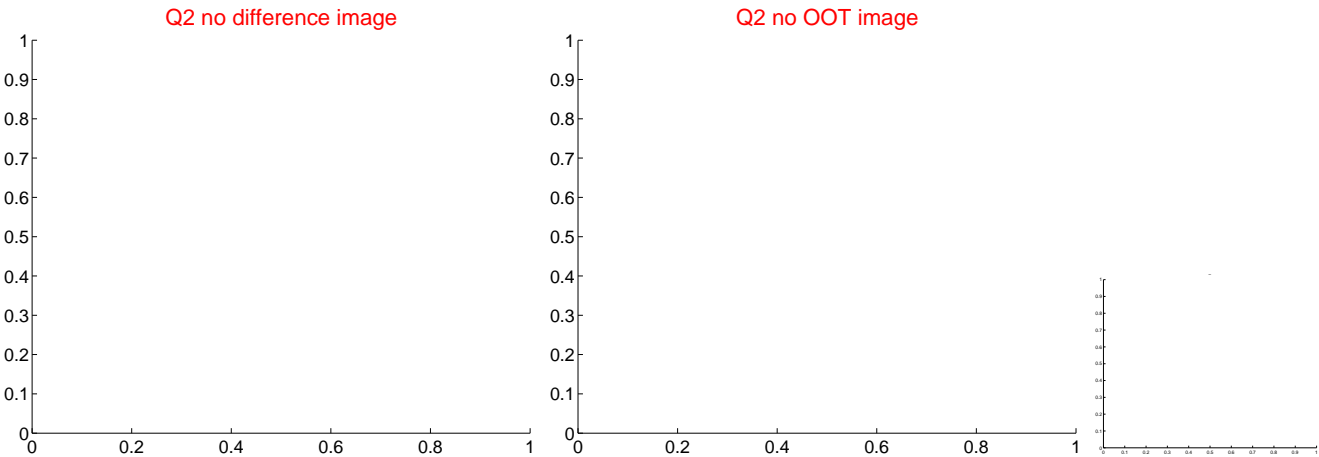
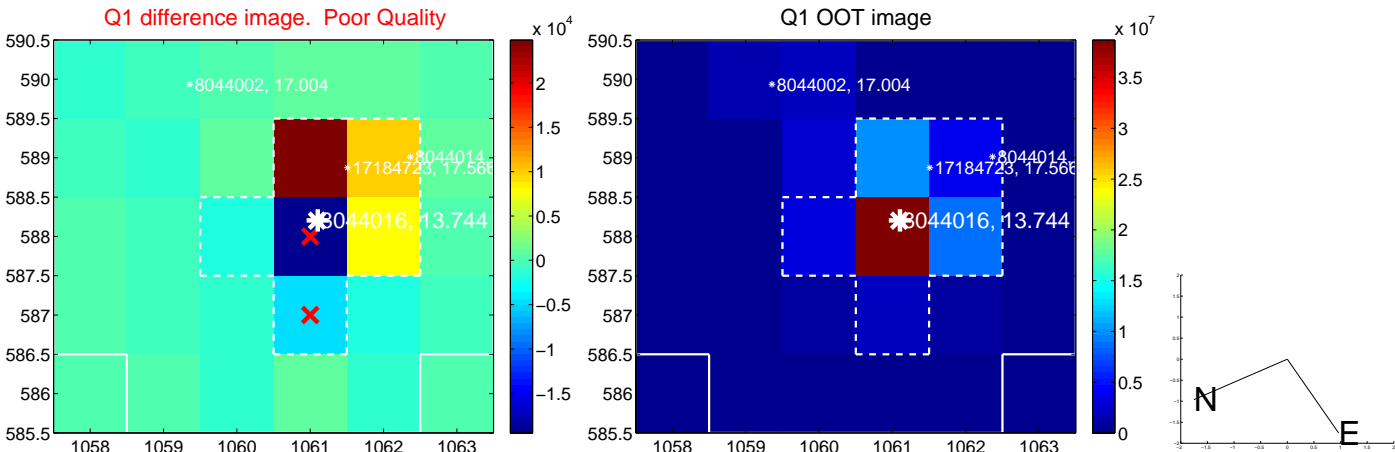
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.562 ± 0.651	0.86	0.547 ± 0.668	0.129 ± 0.204
PRF-fit source offset from KIC position	0.517 ± 0.669	0.77	0.517 ± 0.669	0.021 ± 0.225
photometric centroid source offset	1.88 ± 1.10	1.71	1.74 ± 1.11	-0.70 ± 1.02



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

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



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

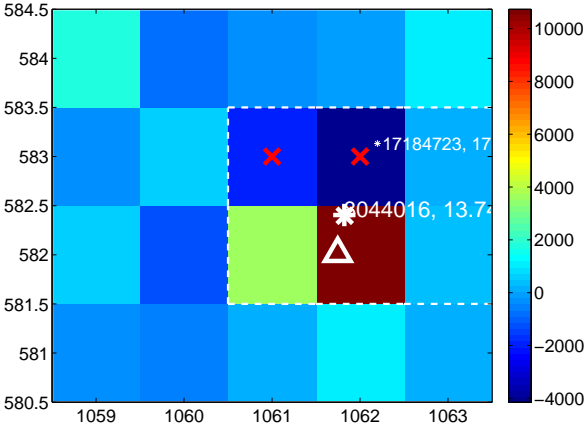
Q5 no difference image



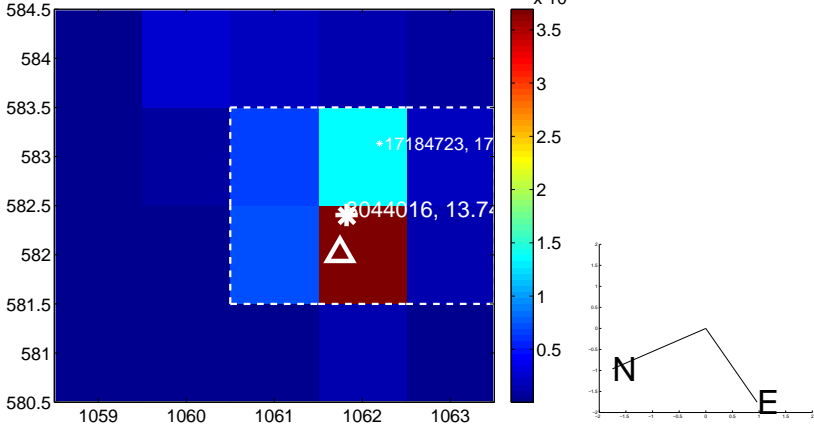
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



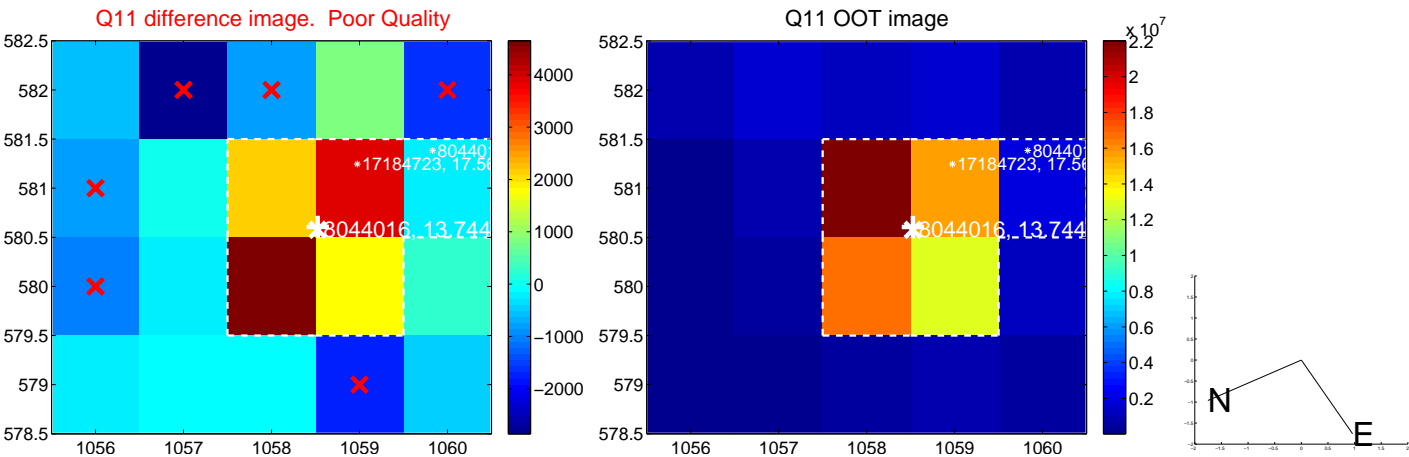
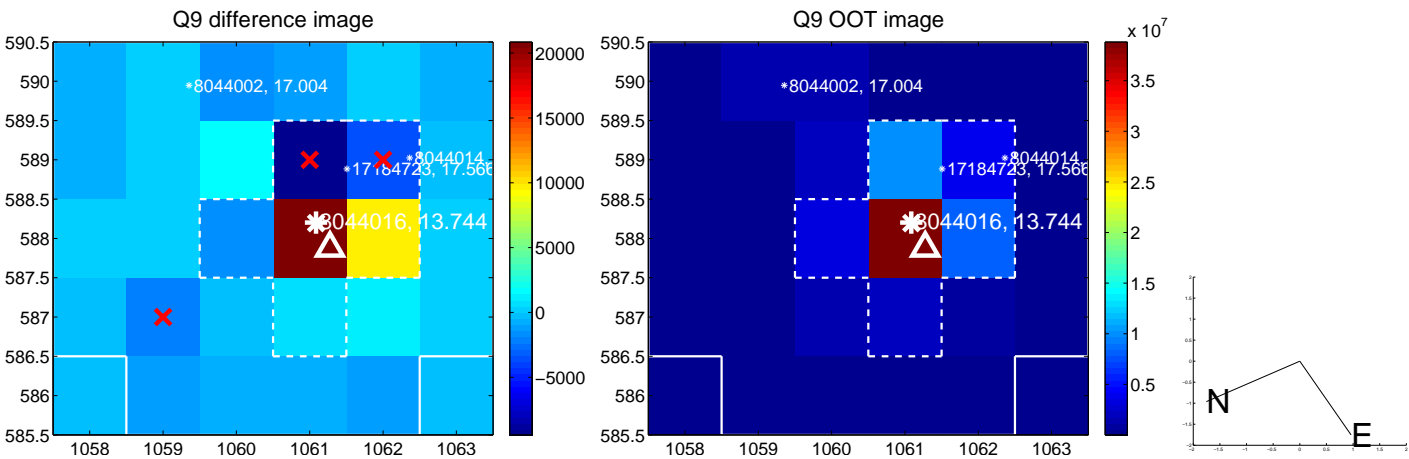
Q8 no difference image



Q8 no OOT image



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



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

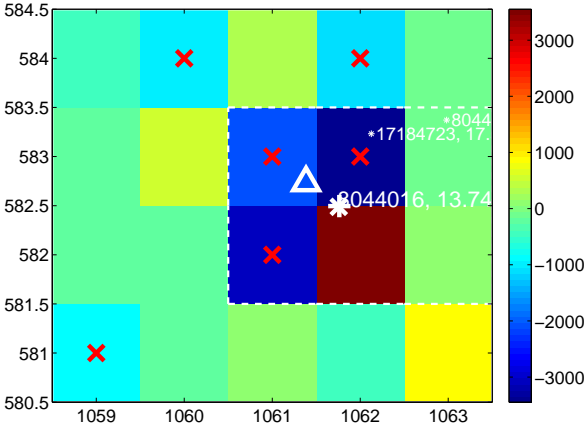
Q13 no difference image



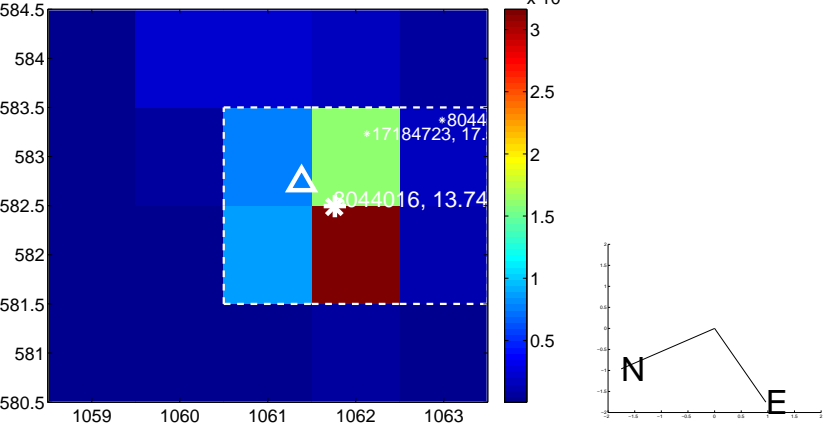
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



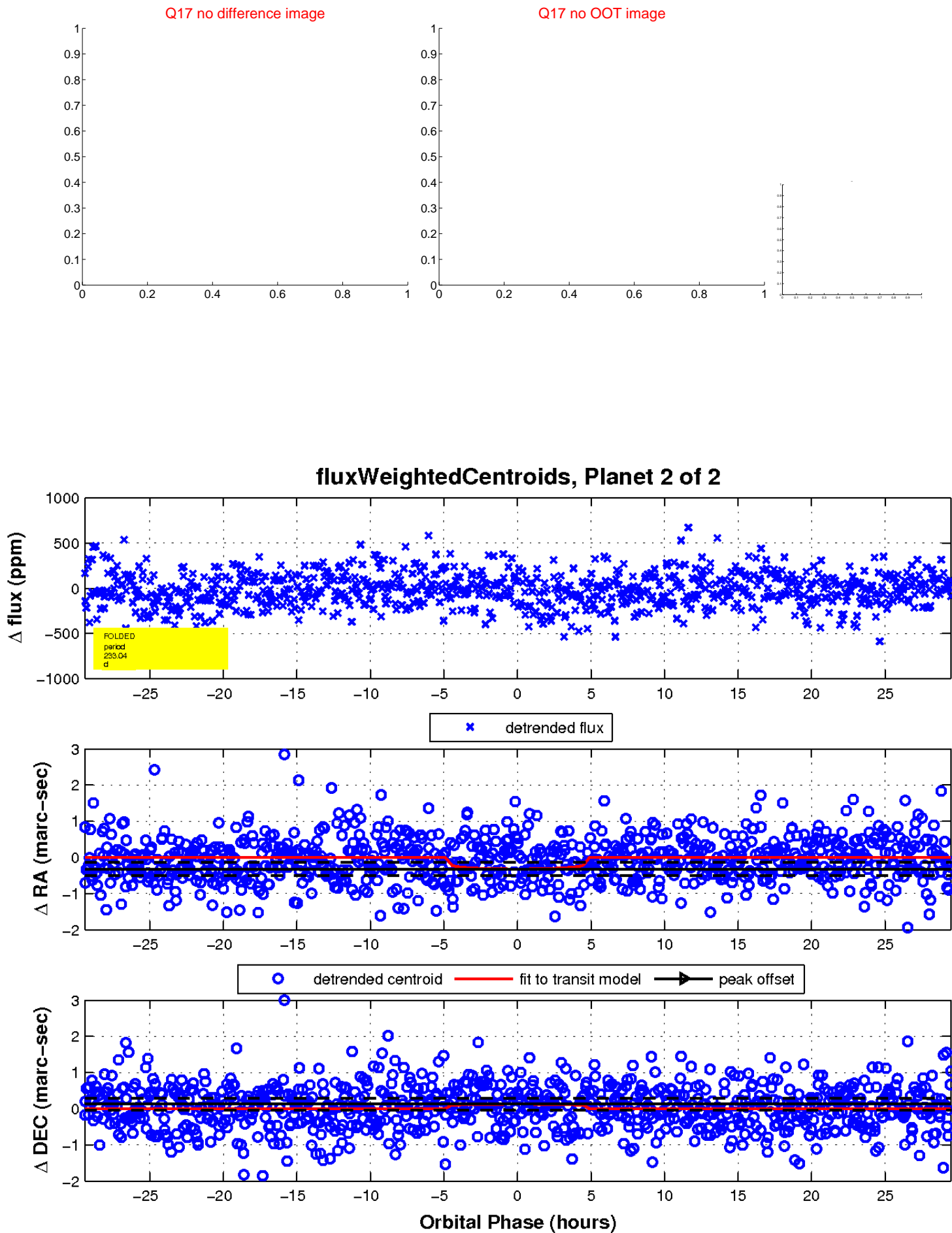
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

