

KIC 006445116

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})
006445116-01	OBS	No	1.516573	132.909701	37.8	3.479	8.7	7.0	3.04	7115	2.23	23741.12
006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

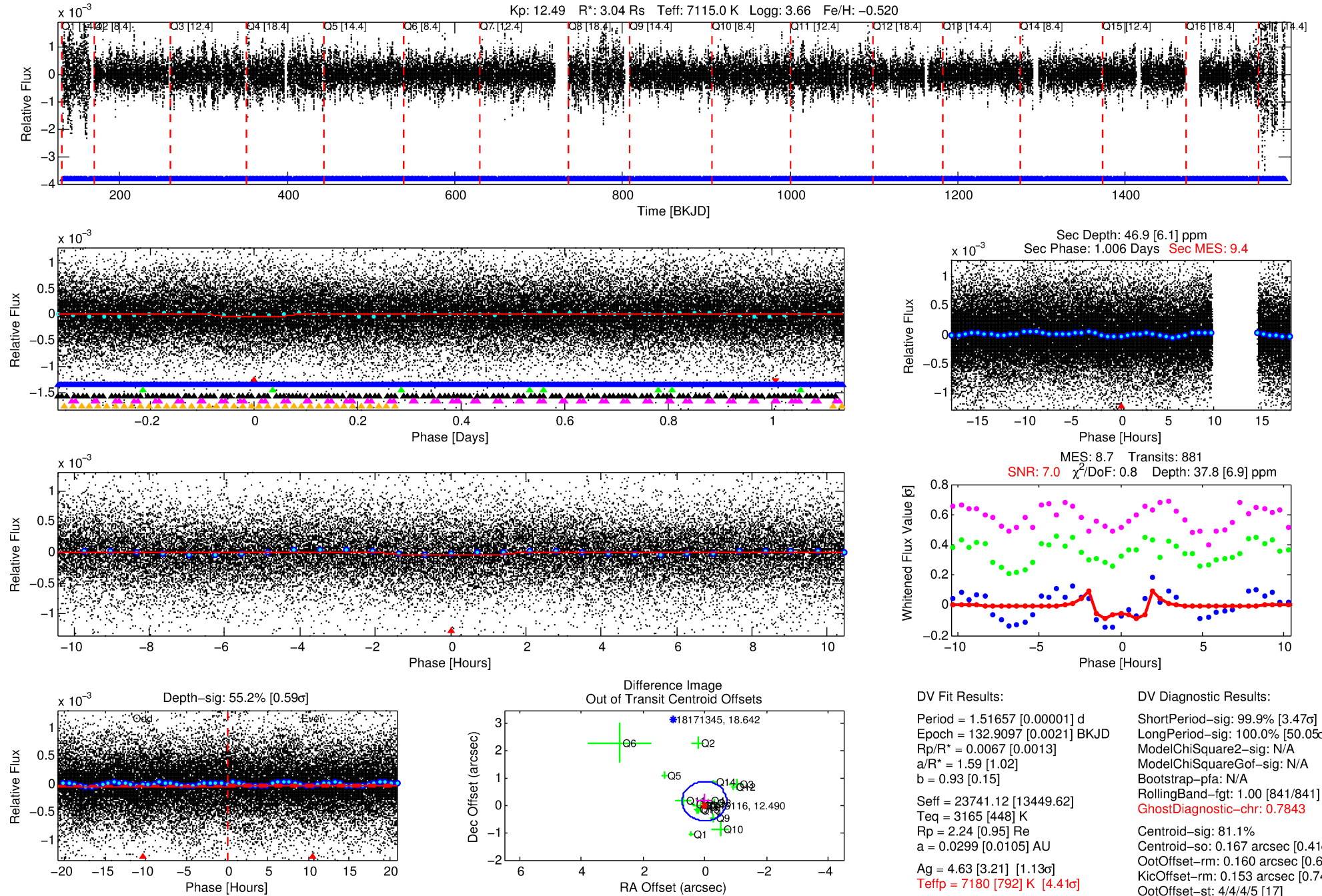
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-01

No Significant Match Found

DV One-Page Summary

KIC: 6445116 Candidate: 1 of 6 Period: 1.517 d



DV Fit Results:

Period = 1.51657 [0.00001] d
Epoch = 132.9097 [0.0021] BKJD
Rp/R* = 0.0067 [0.0013]
a/R* = 1.59 [1.02]
b = 0.93 [0.15]
Seff = 23741.12 [13449.62]
Teq = 3165 [448] K
Rp = 2.24 [0.95] Re
a = 0.0299 [0.0105] AU
Ag = 4.63 [3.21] [1.13σ]
Teffp = 7180 [792] K [4.41σ]

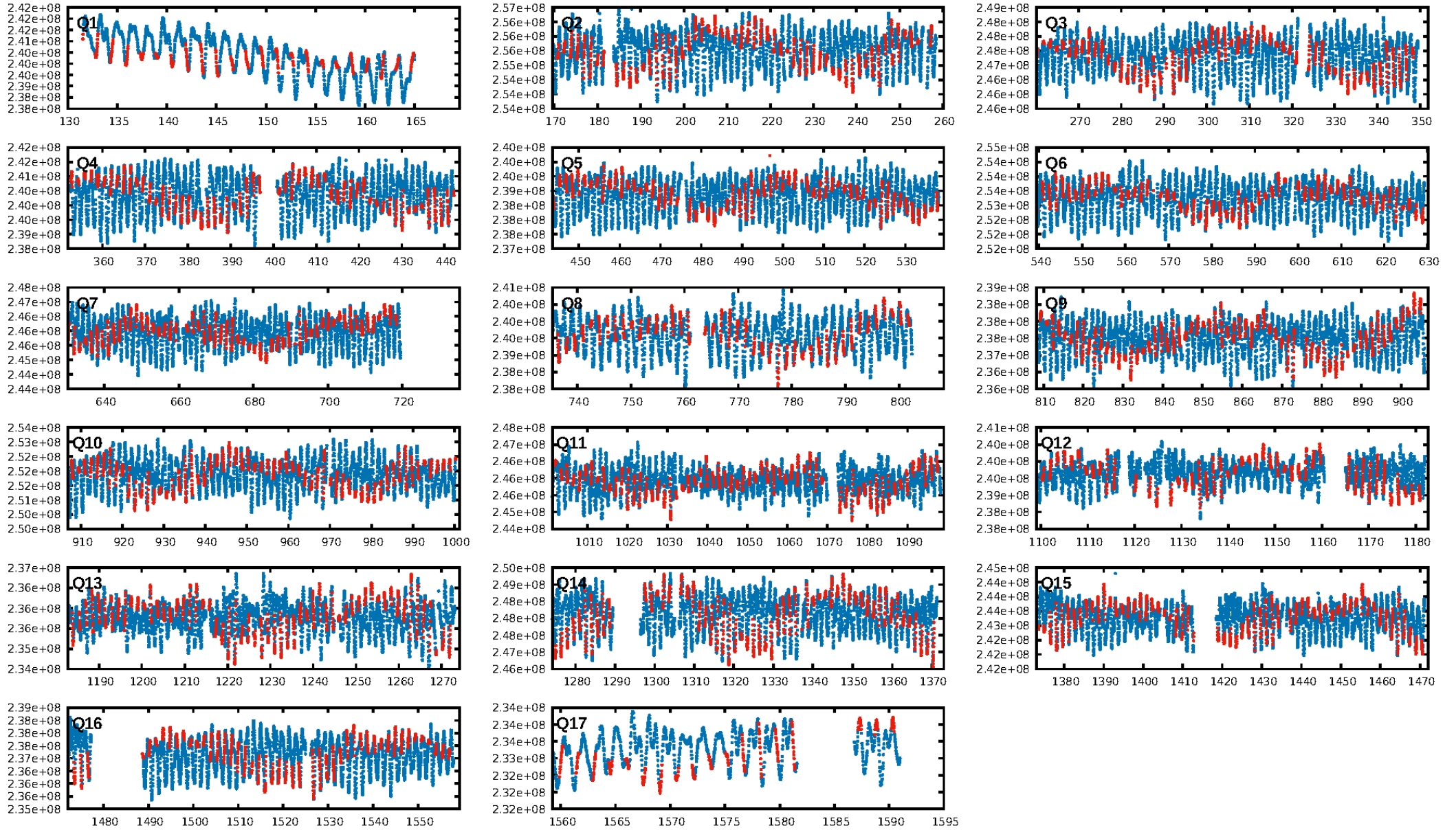
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.47σ]
LongPeriod-sig: 100.0% [50.05σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [841/841]
GhostDiagnostic-chr: 0.7843
Centroid-sig: 81.1%
Centroid-so: 0.167 arcsec [0.41σ]
OotOffset-rm: 0.160 arcsec [0.66σ]
KicOffset-rm: 0.153 arcsec [0.74σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 0.00 [0/17]

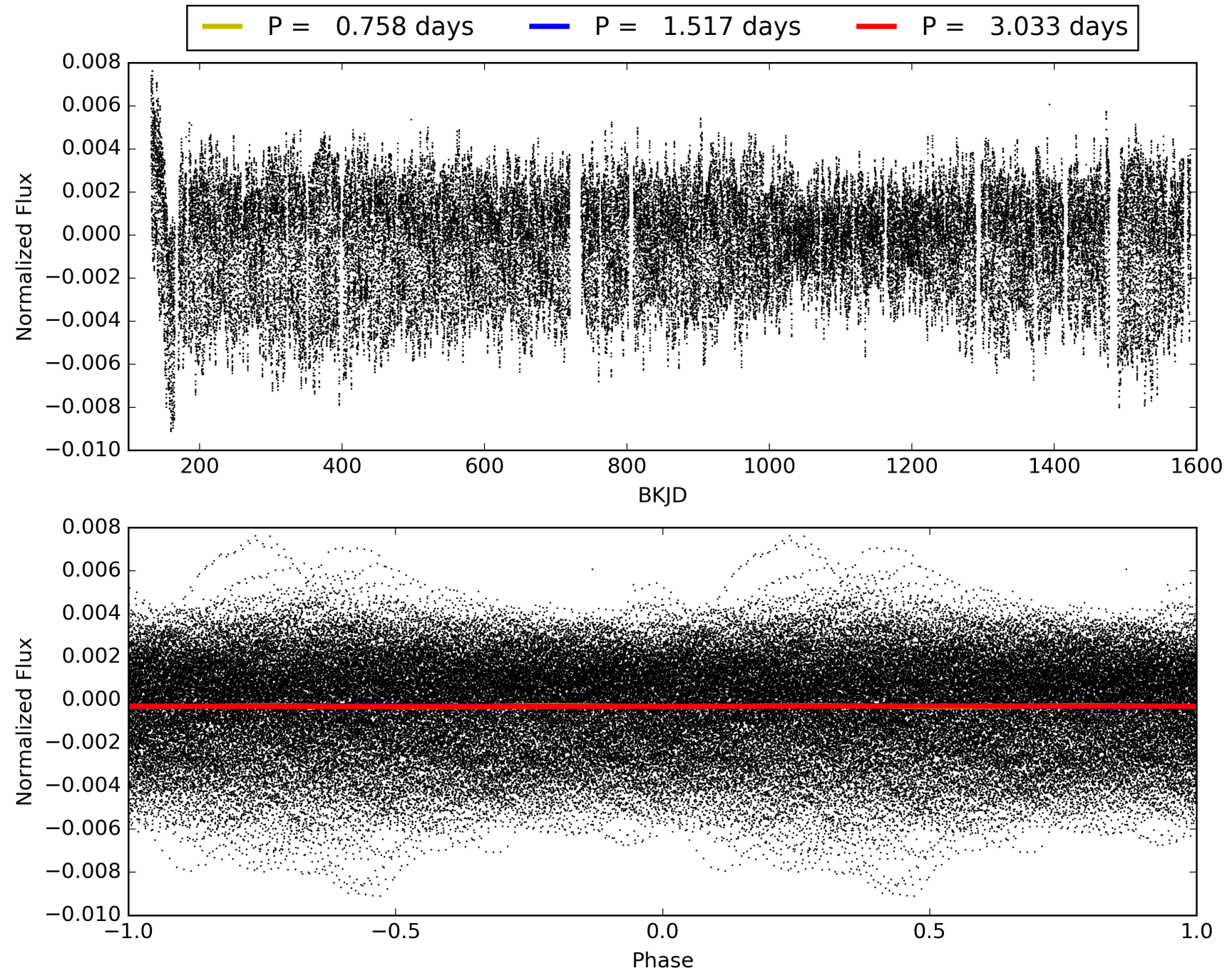
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:51:57 Z

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

TCE 006445116-01, PDC Light Curves

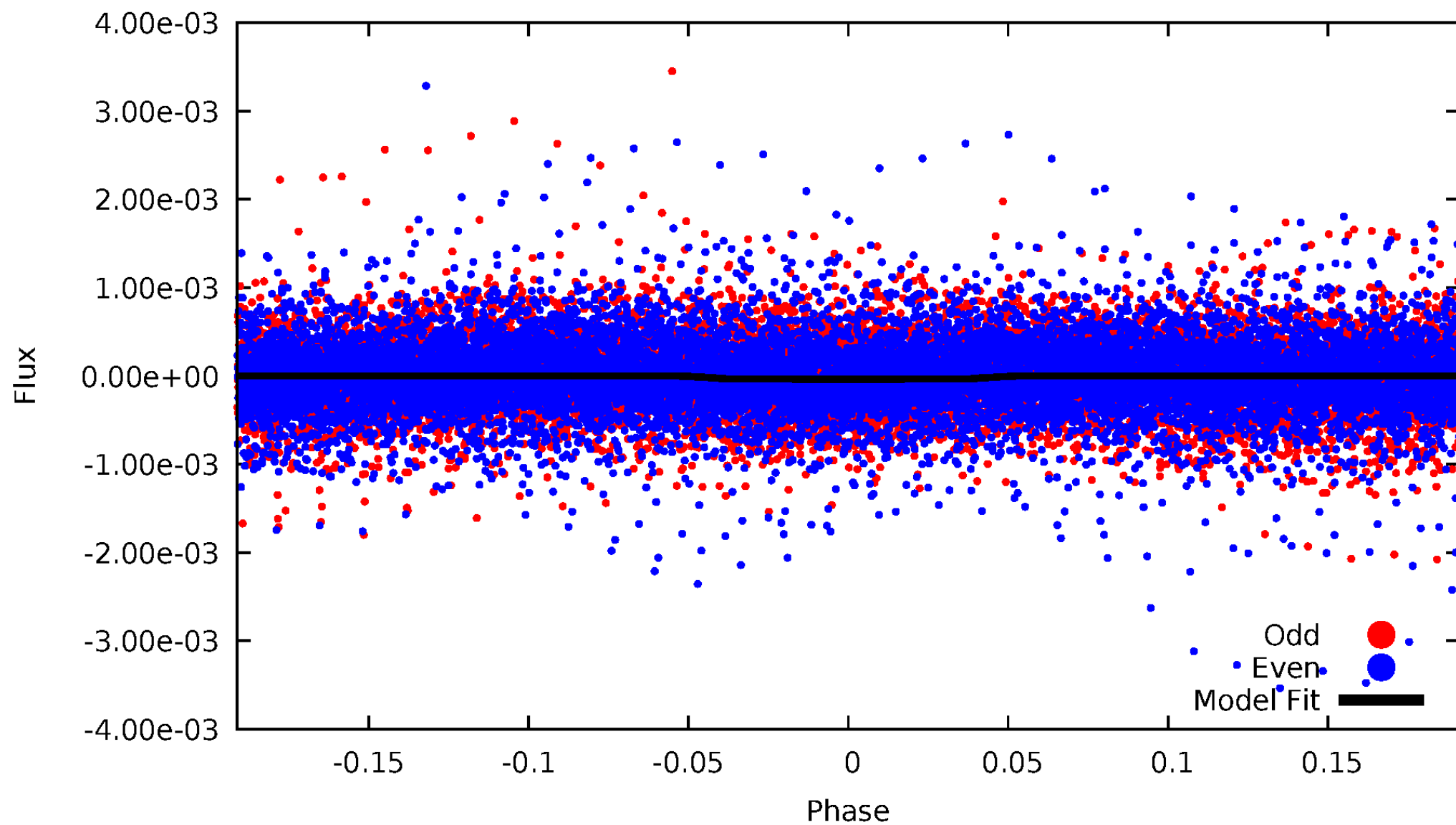


TCE 006445116-01



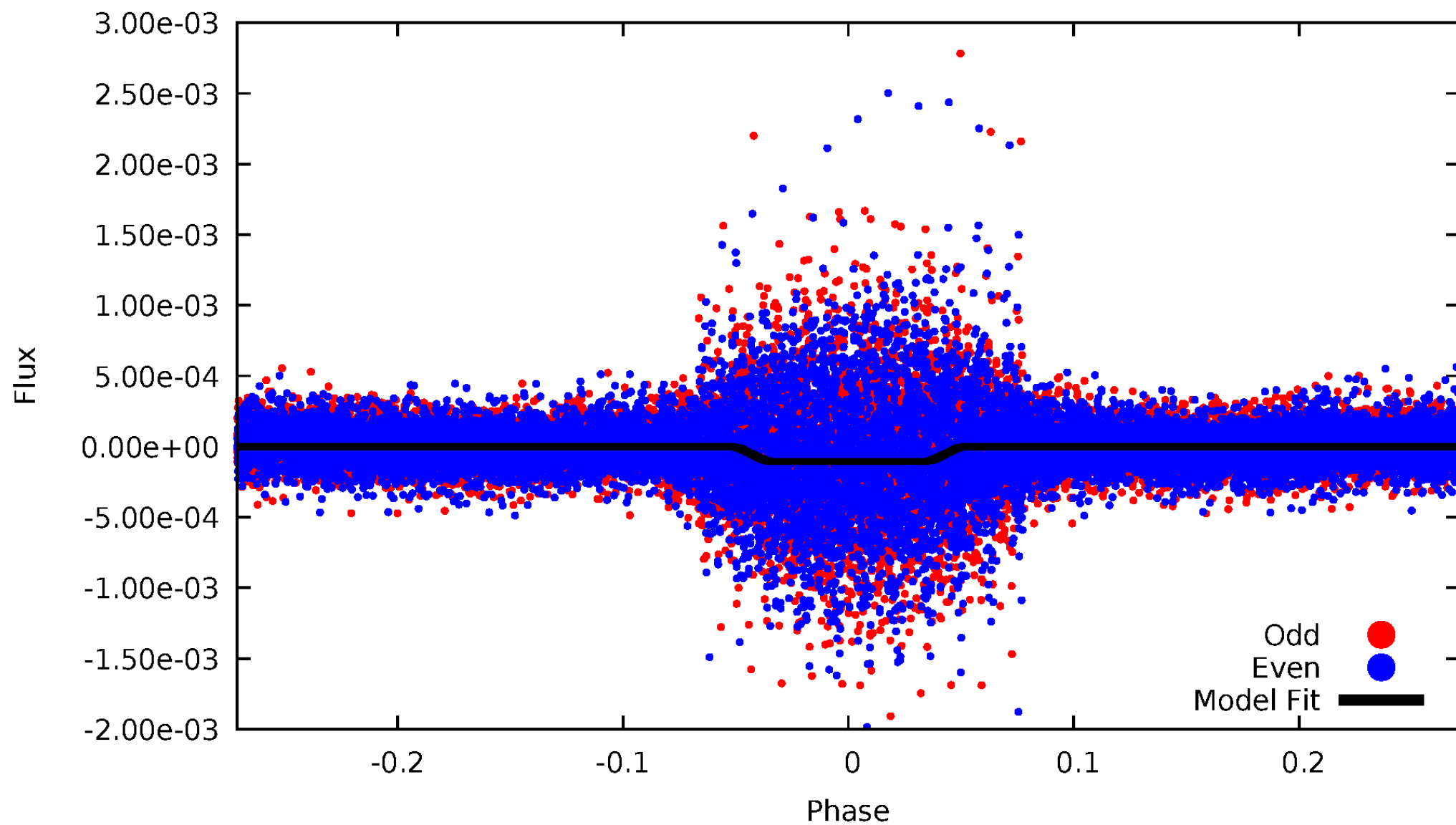
DV Odd/Even

TCE 006445116-01



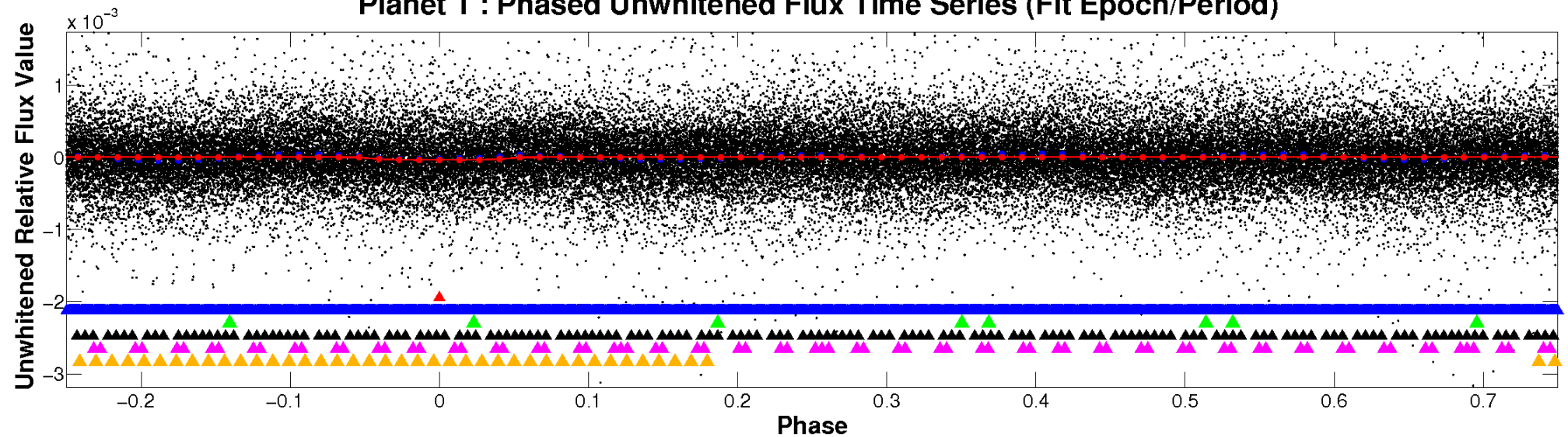
ALT Odd/Even

TCE 006445116-01

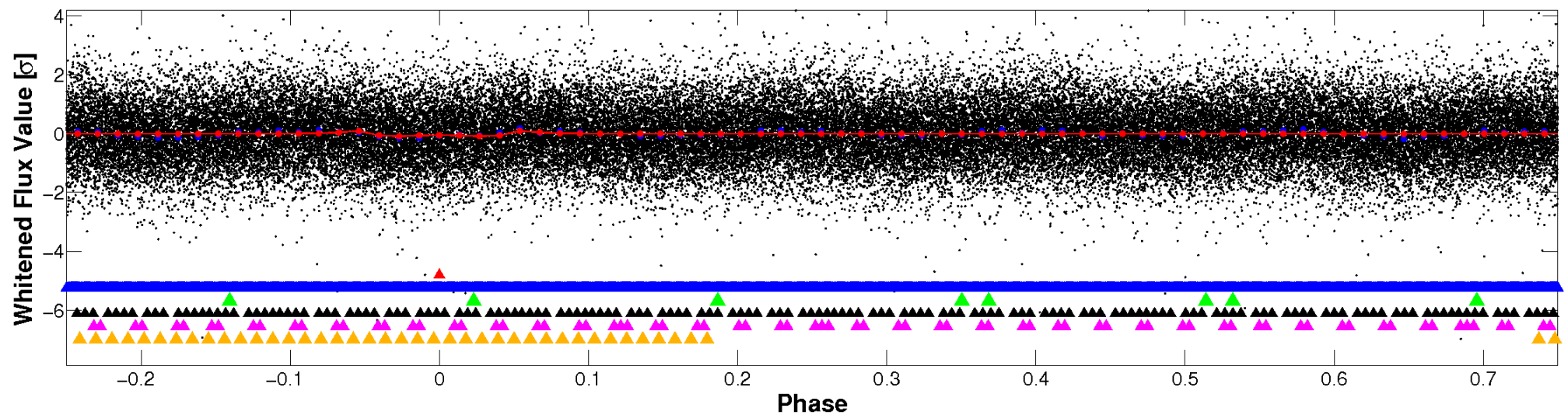


Non-Whitened Vs. Whitened Light Curve

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

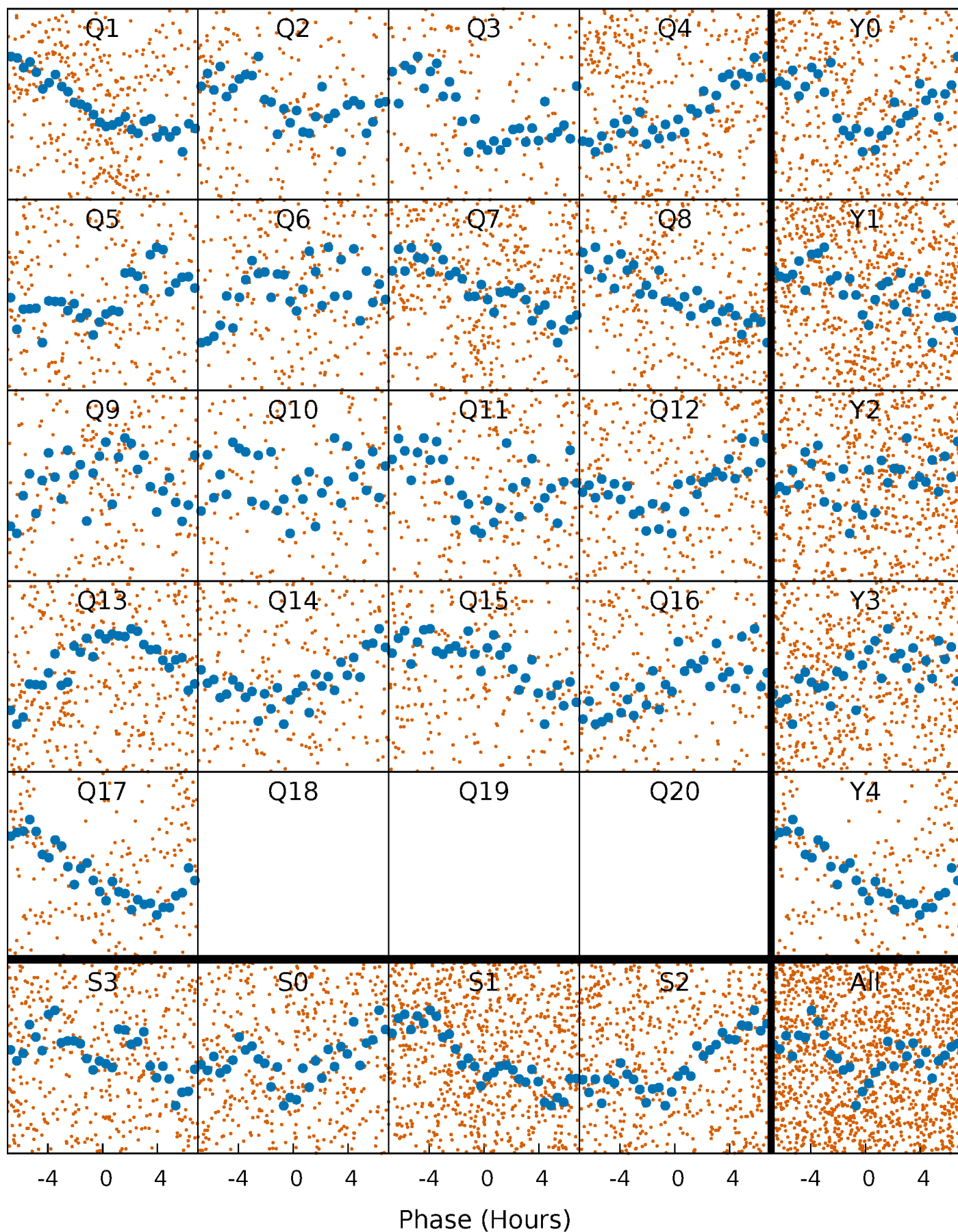


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



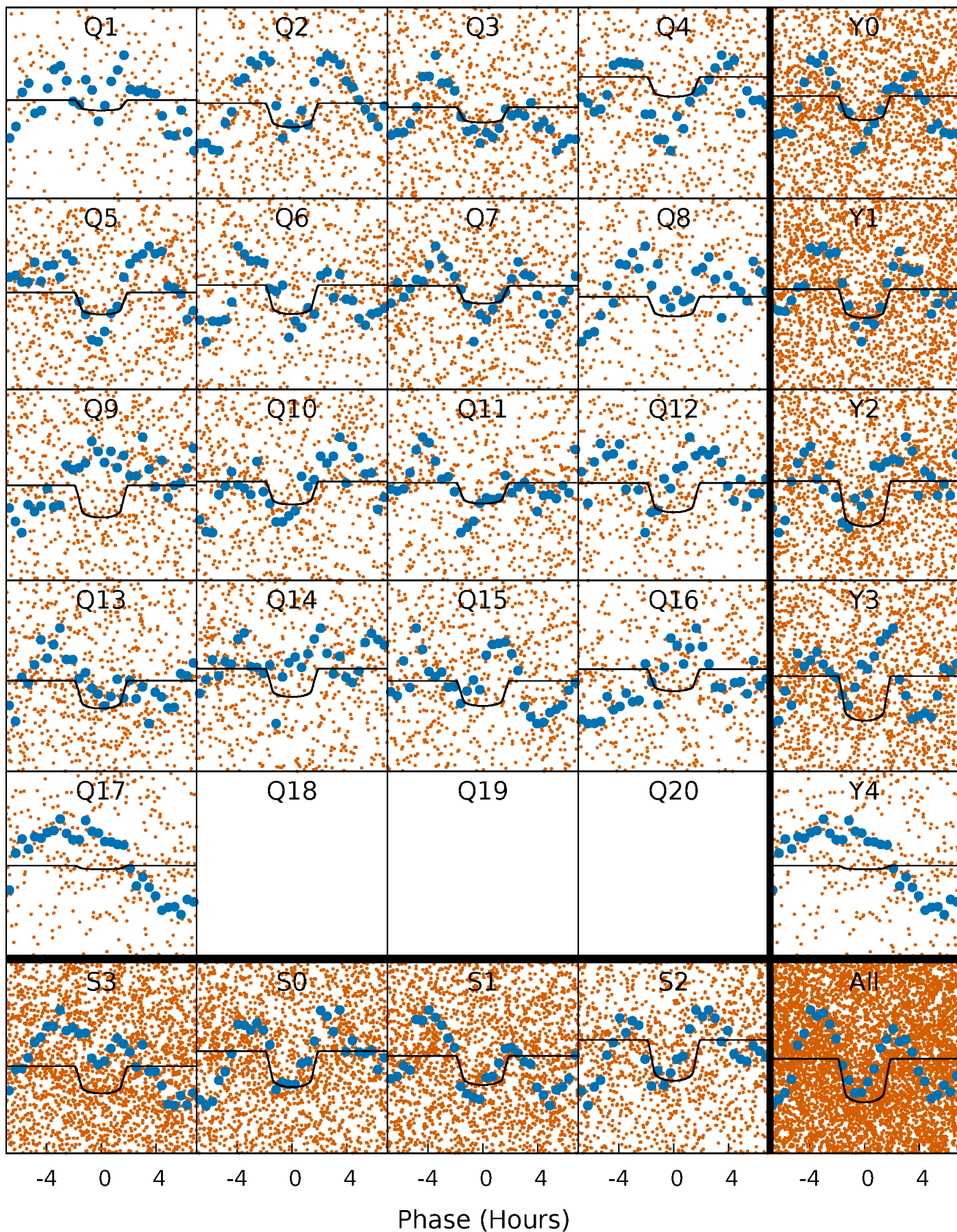
PDC Quarter-Phased Transit Curves

TCE 006445116-01 P= 1.516573 Days $T_0=132.909702$ (BKJD)



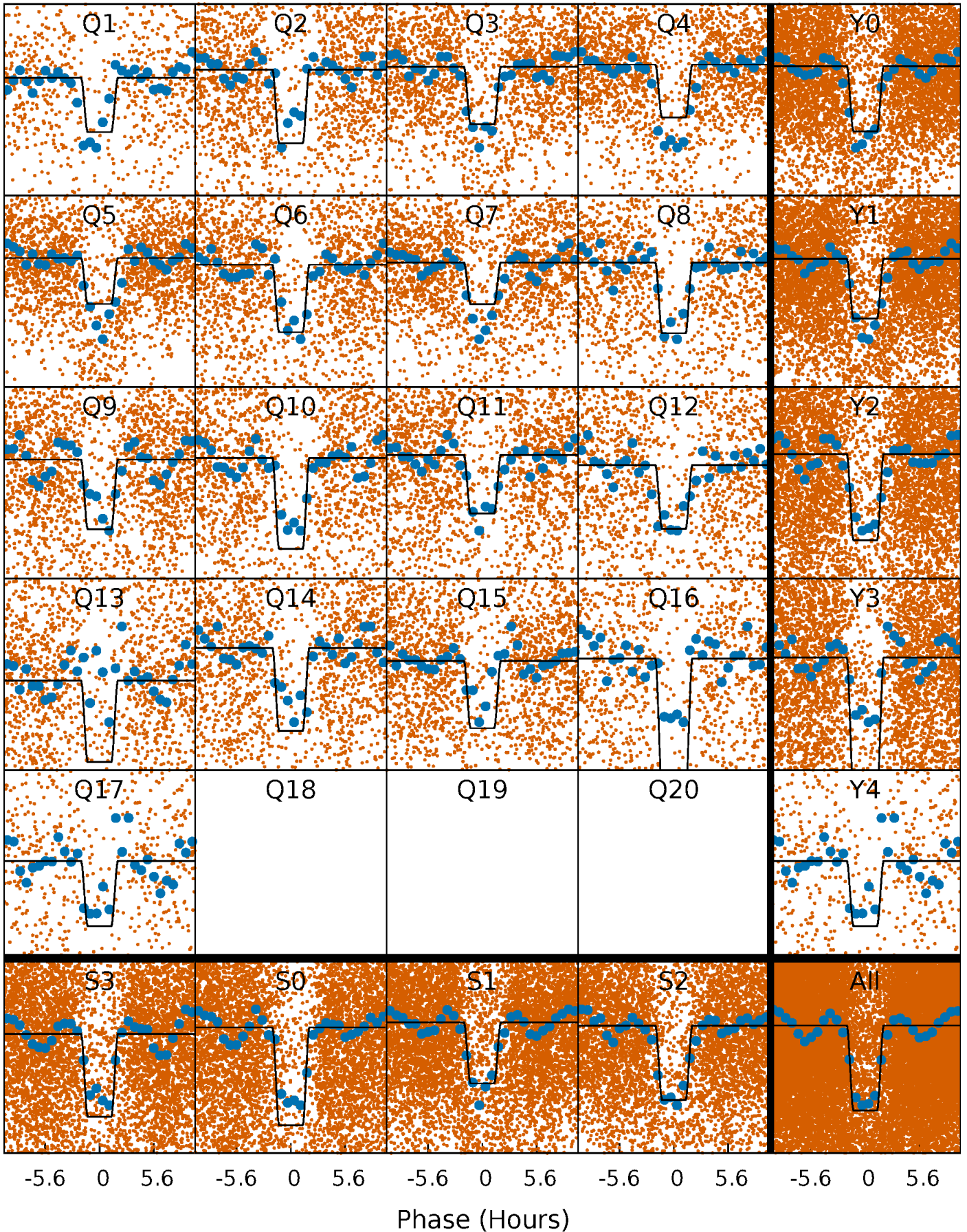
DV Quarter-Phased Transit Curves

TCE 006445116-01 P= 1.516573 Days $T_0=132.909702$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

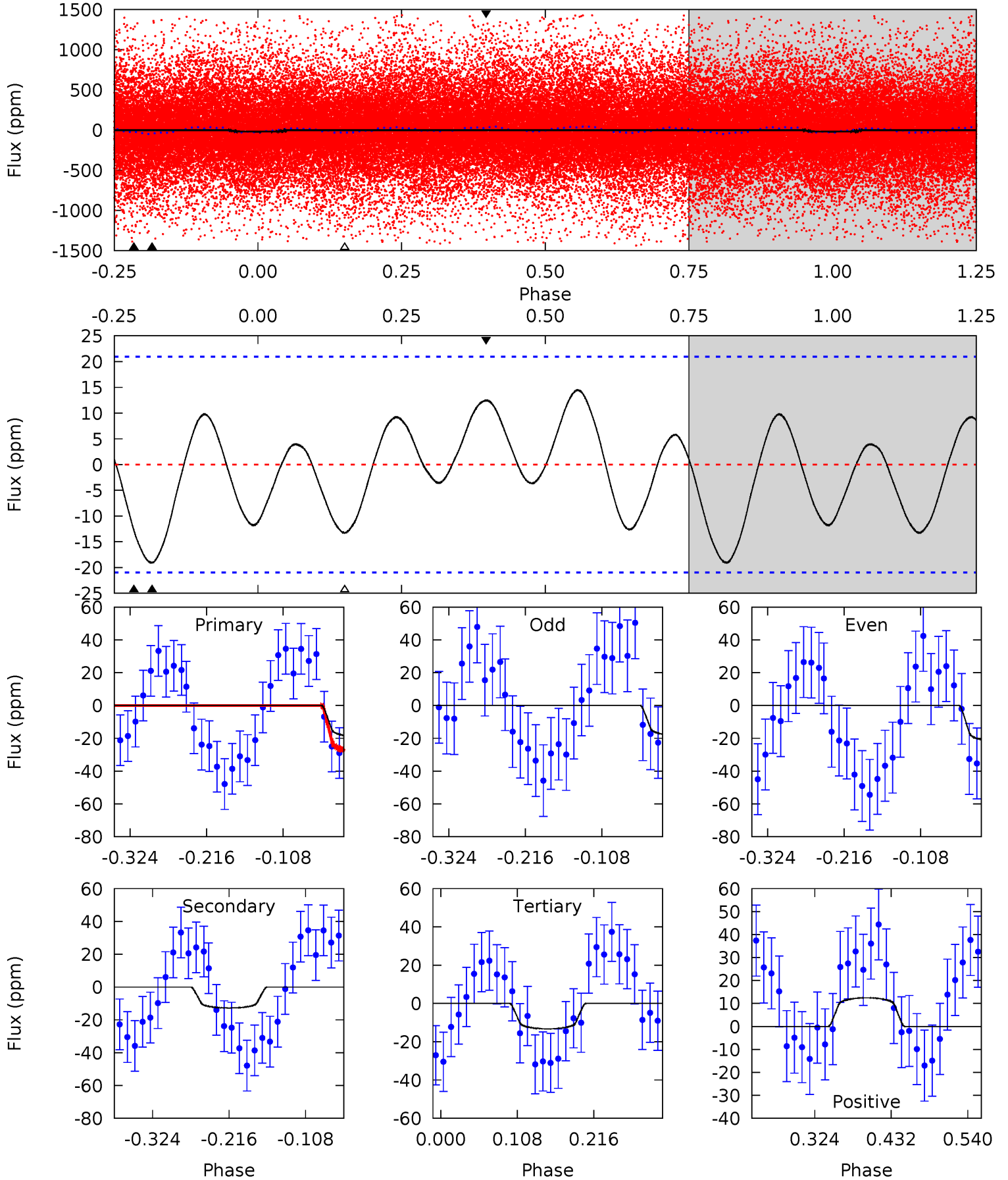
TCE 006445116-01 P= 1.516505 Days $T_0=132.914434$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-01, P = 1.516573 Days, E = 131.393129 Days

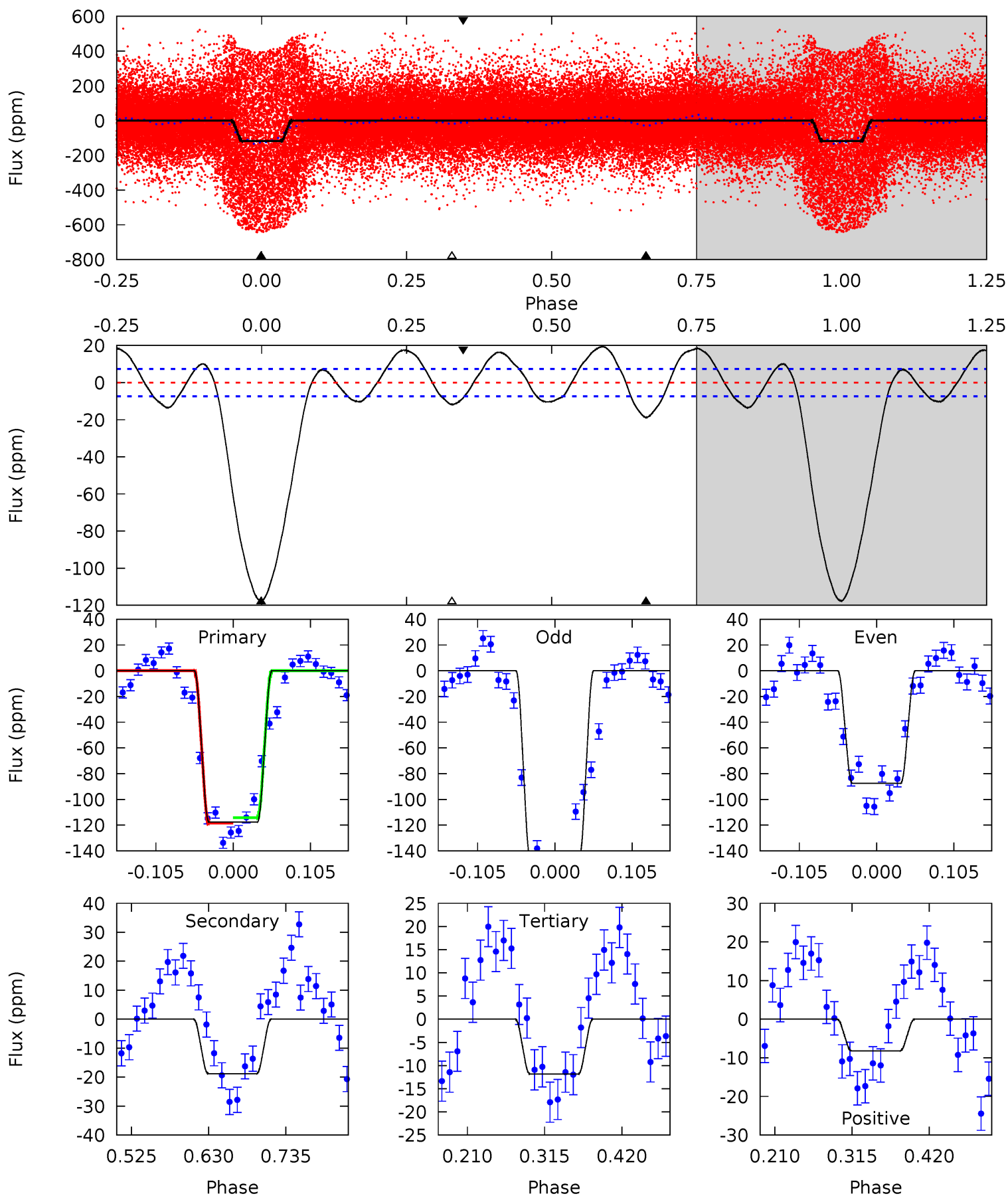
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.14	2.77	2.88	2.70	4.55	1.61	1.64	1.26	1.43	-0.11	0.06	0.39	0.46	0.43	1.84



Alt Model-Shift Uniqueness Test

006445116-01, P = 1.516505 Days, E = 131.397929 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.7	11.6	7.30	-5.06	4.55	1.62	5.73	65.4	77.7	4.31	16.7	18.1	0.81	0.14	1.27



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-13 ± 5	$2.11^{+0.50}_{-0.55}$	4329^{+227}_{-361}	4942^{+814}_{-722}	$1.461^{+1.355}_{-0.706}$
Alt.	-19 ± 2	$3.28^{+0.63}_{-0.72}$	4341^{+249}_{-421}	4336^{+387}_{-345}	$0.895^{+0.483}_{-0.277}$

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

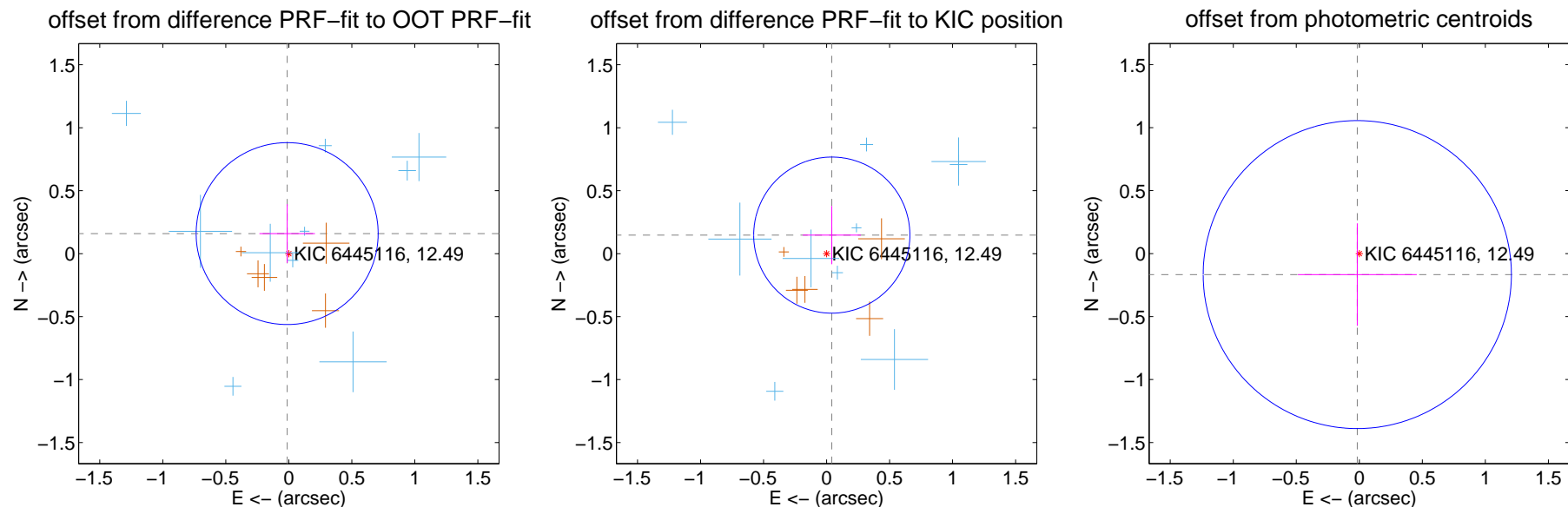
DV Centroid Data

Supplemental centroid analysis for 006445116-01. Kepler magnitude: 12.49. Transit SNR 7.02

There are 11 quarters with good PRF difference image offsets

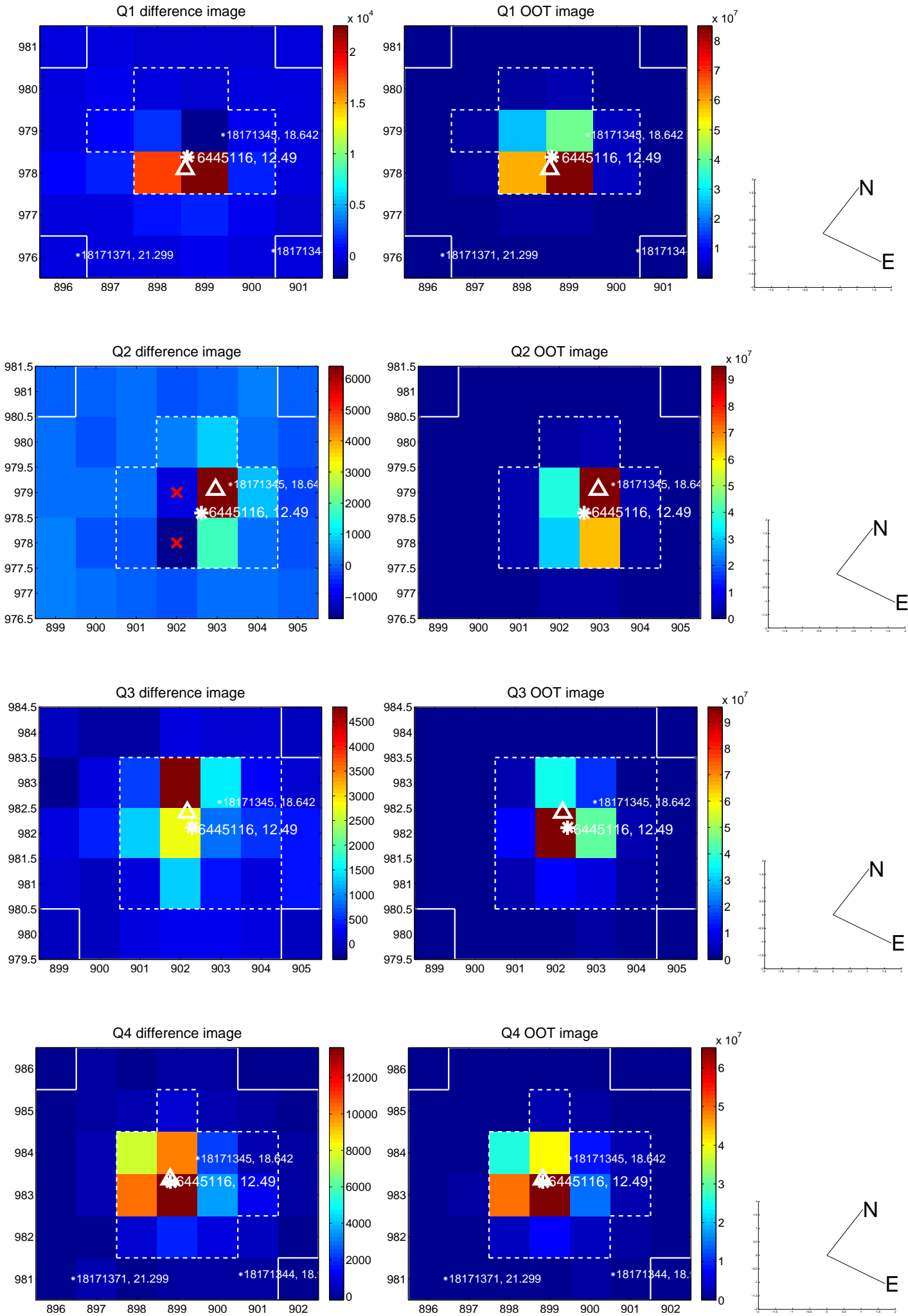
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.160 ± 0.241	0.66	0.013 ± 0.220	0.159 ± 0.233
PRF-fit source offset from KIC position	0.153 ± 0.207	0.74	-0.041 ± 0.230	0.147 ± 0.231
photometric centroid source offset	0.17 ± 0.41	0.41	0.02 ± 0.47	-0.17 ± 0.41

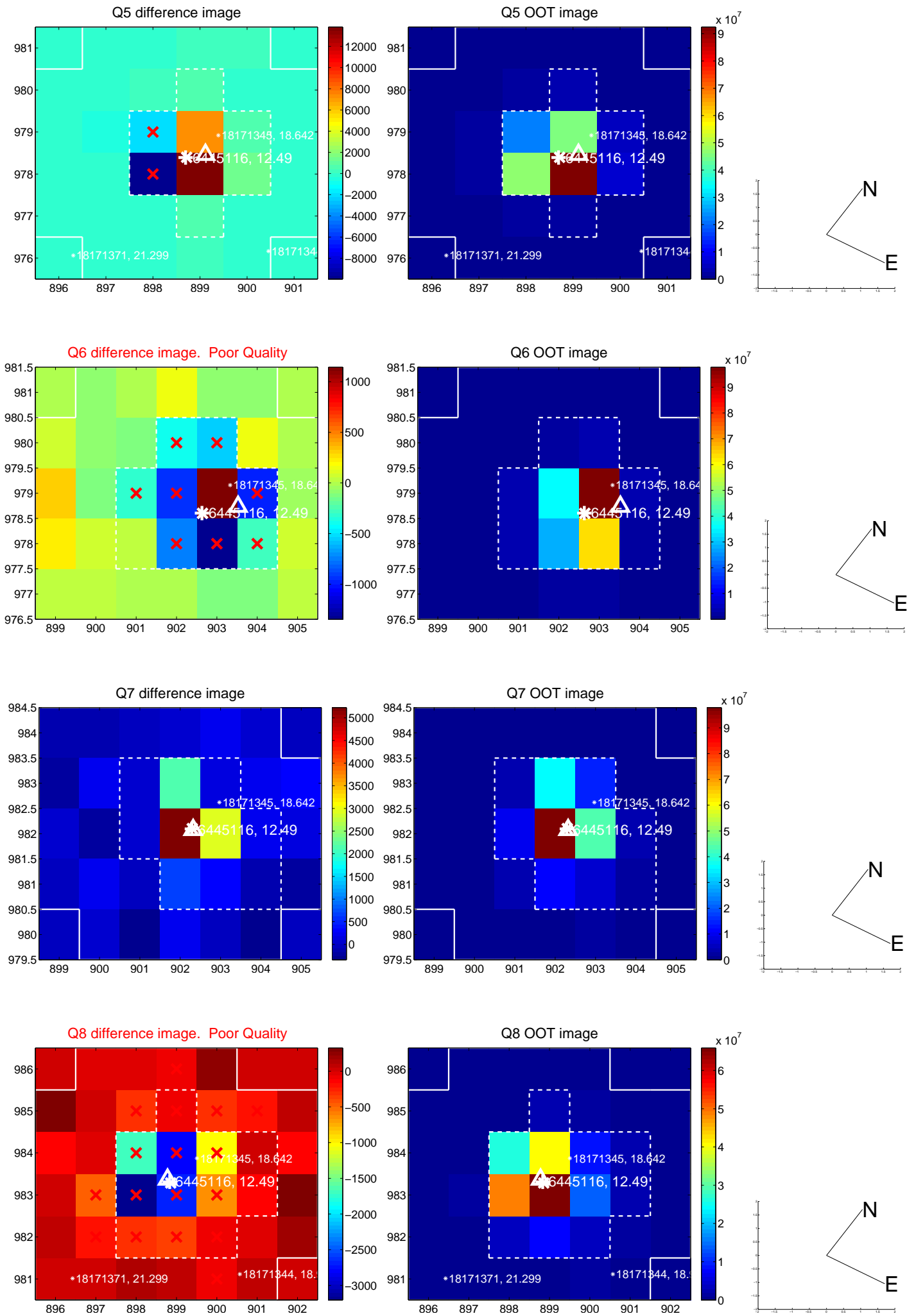


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

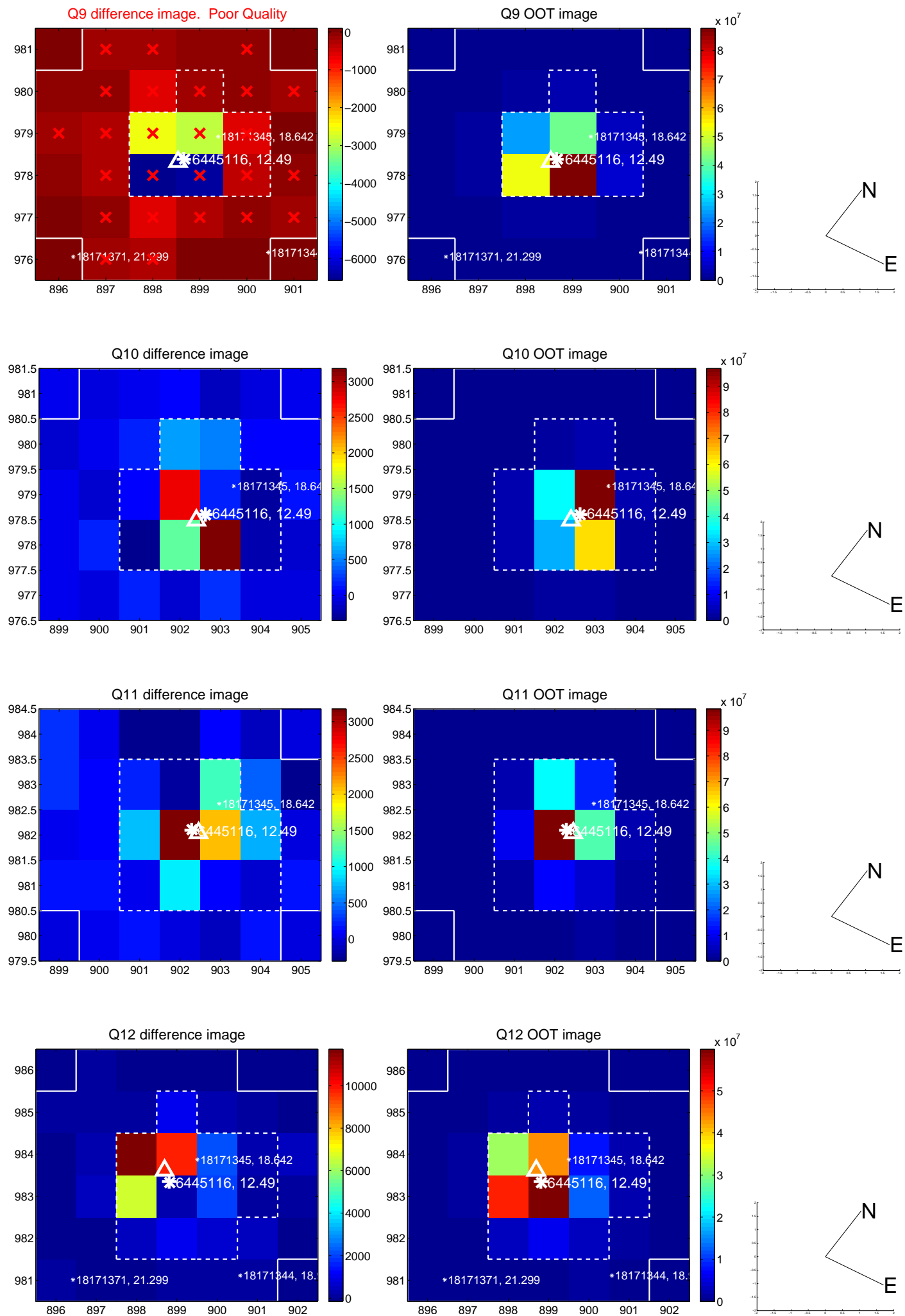
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



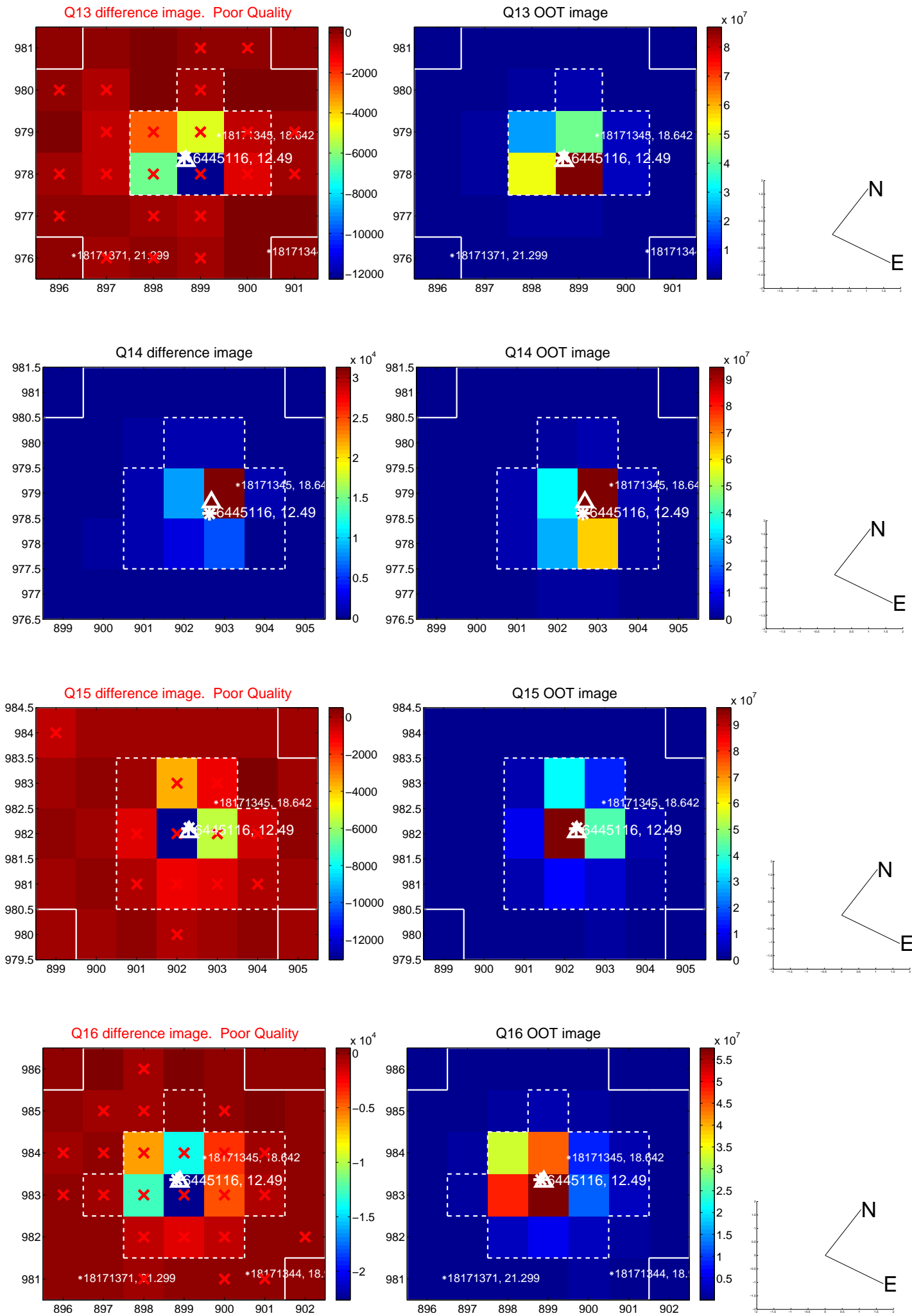
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



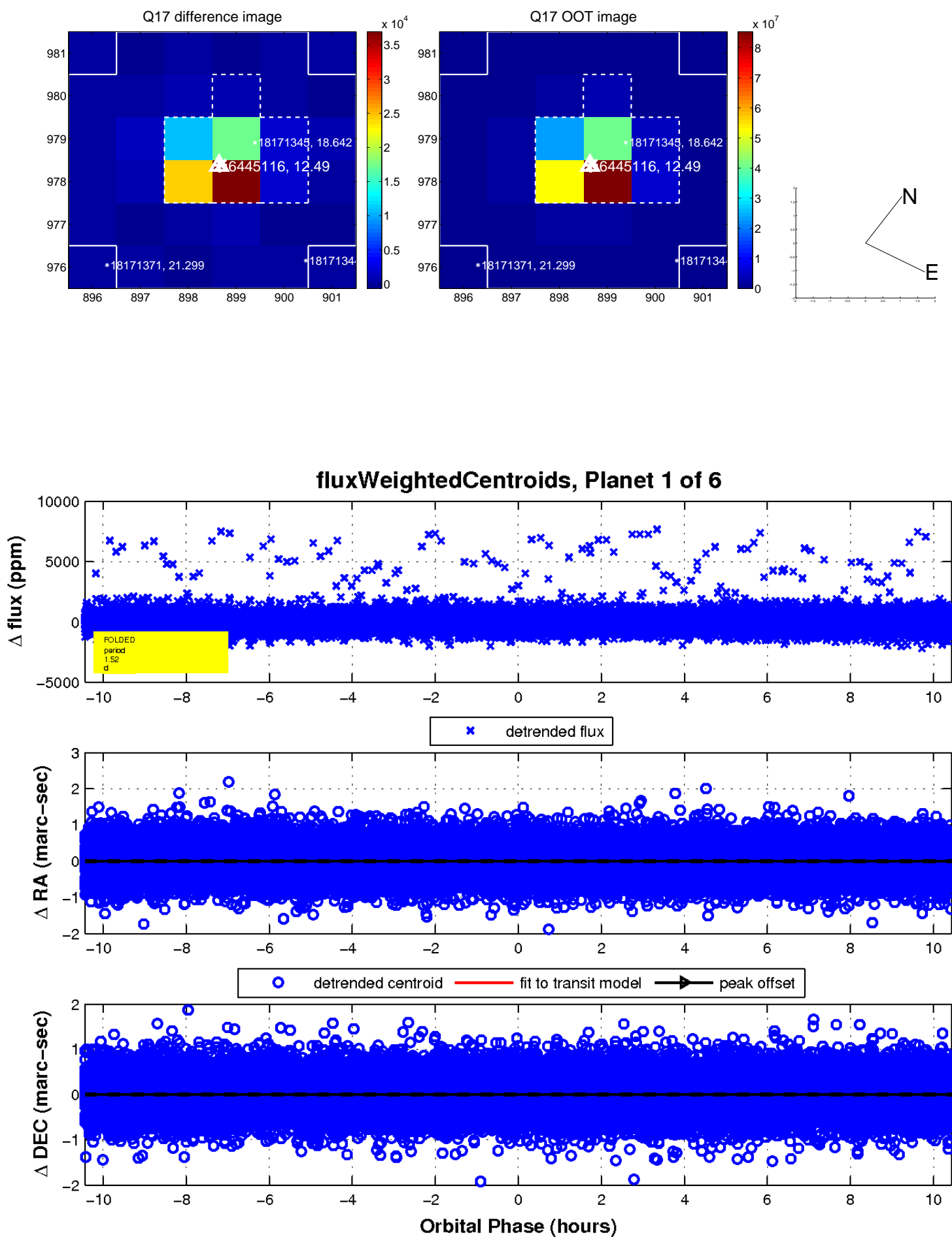
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

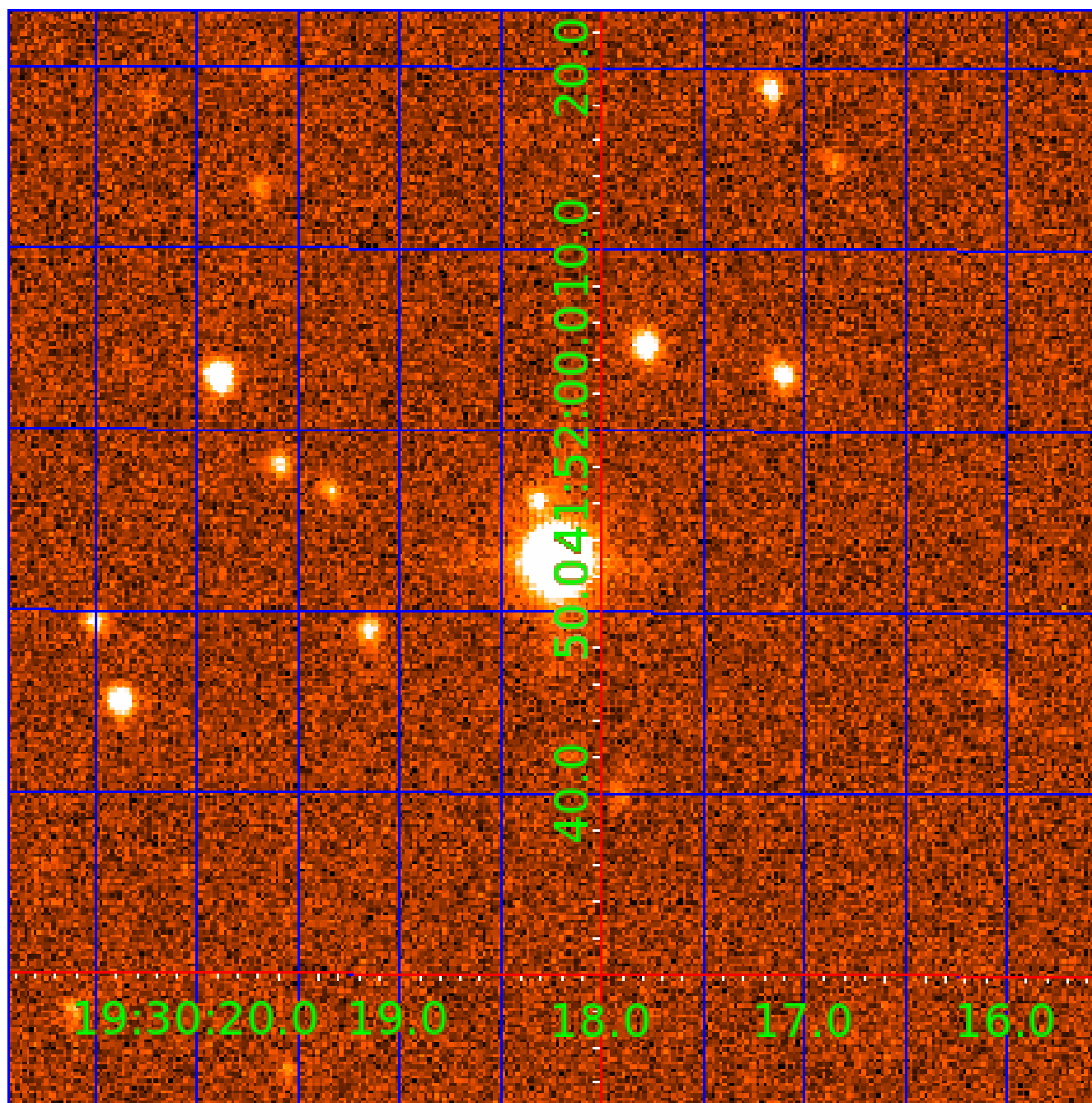


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006445116

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})
006445116-01	OBS	No	1.516573	132.909701	37.8	3.479	8.7	7.0	3.04	7115	2.23	23741.12
006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

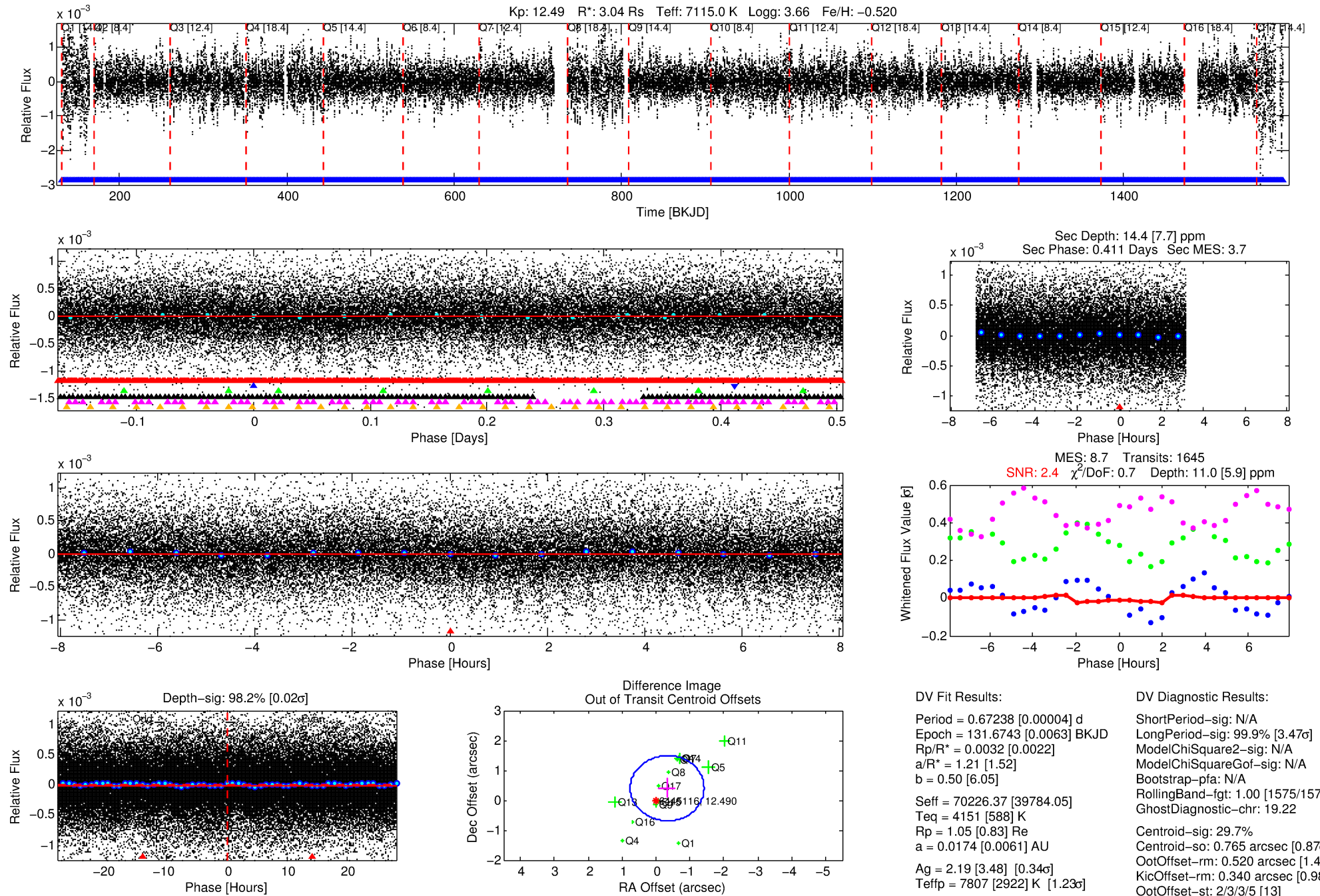
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-02

No Significant Match Found

DV One-Page Summary

KIC: 6445116 Candidate: 2 of 6 Period: 0.672 d



DV Fit Results:

Period = 0.67238 [0.00004] d
Epoch = 131.6743 [0.0063] BKJD
Rp/R* = 0.0032 [0.0022]
a/R* = 1.21 [1.52]
b = 0.50 [6.05]
Seff = 70226.37 [39784.05]
Teff = 4151 [588] K
Rp = 1.05 [0.83] Re
a = 0.0174 [0.0061] AU
Ag = 2.19 [3.48] [0.34 σ]
Teffp = 7807 [2922] K [1.23 σ]

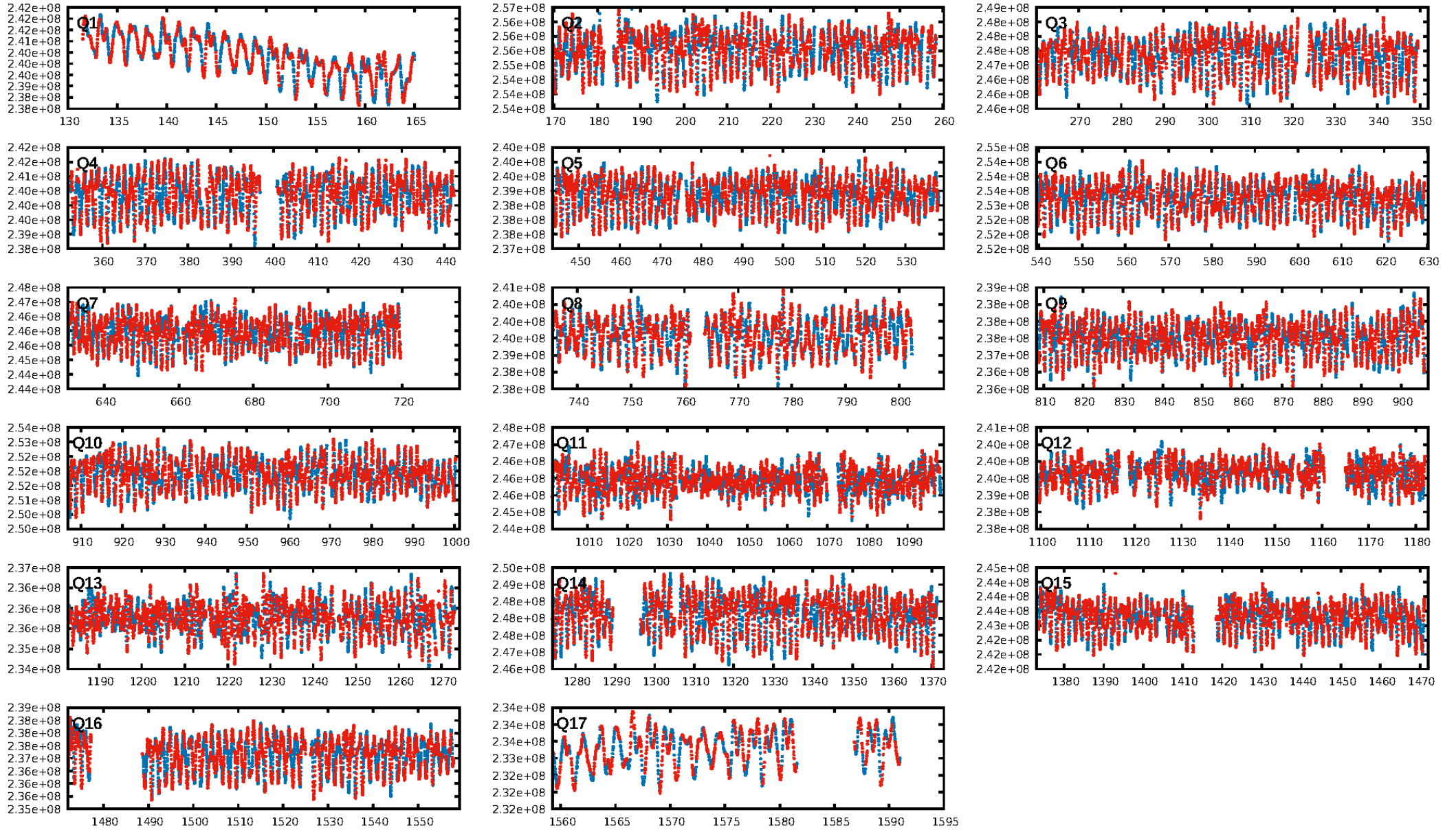
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.9% [3.47 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1575/1575]
GhostDiagnostic-chr: 19.22
Centroid-sig: 29.7%
Centroid-so: 0.765 arcsec [0.87 σ]
OotOffset-rm: 0.520 arcsec [1.43 σ]
KicOffset-rm: 0.340 arcsec [0.98 σ]
OotOffset-st: 2/3/3/5 [13]
KicOffset-st: 2/3/3/5 [13]
DiffImageQuality-fgm: 0.54 [7/13]
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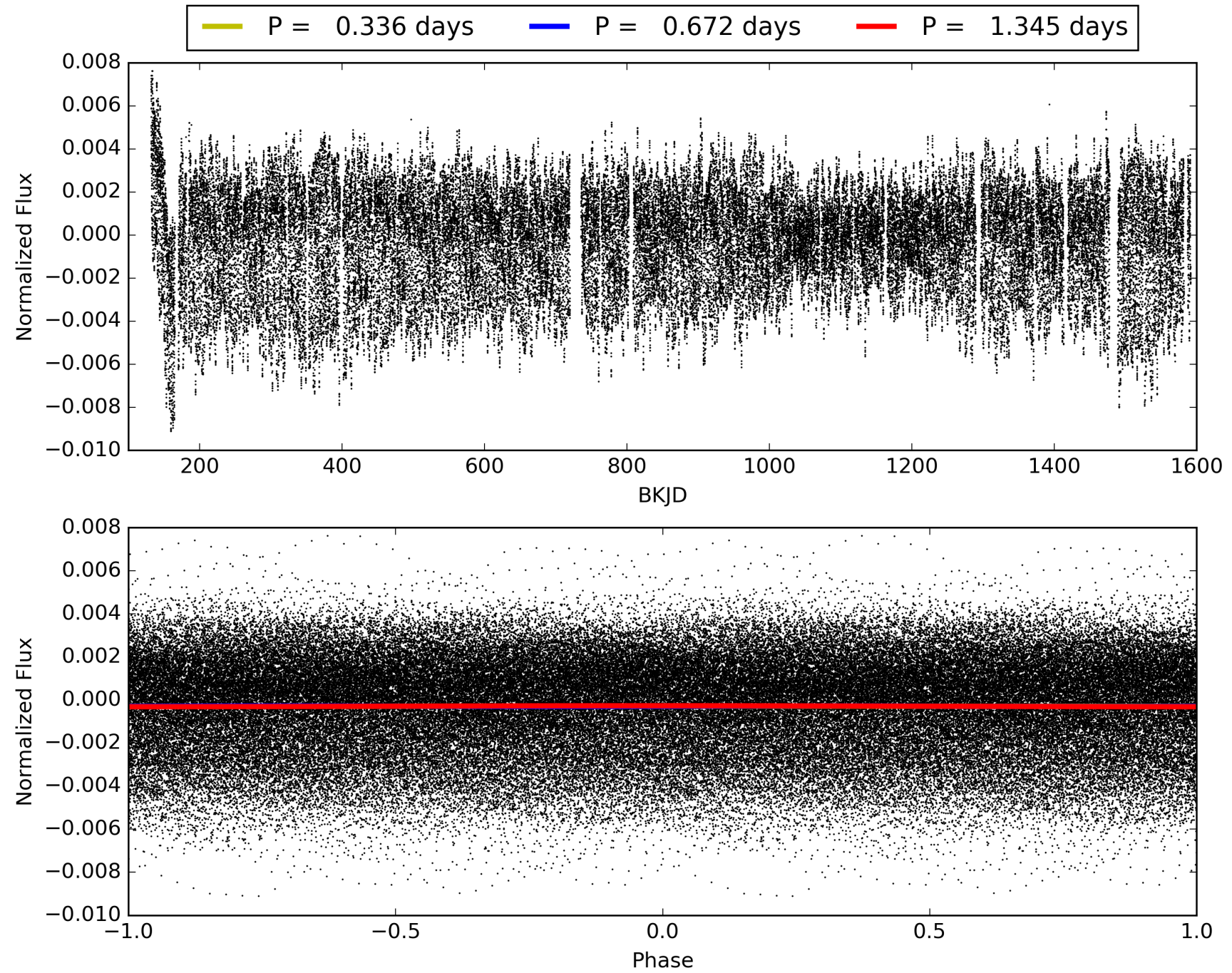
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:52:10 Z

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

TCE 006445116-02, PDC Light Curves

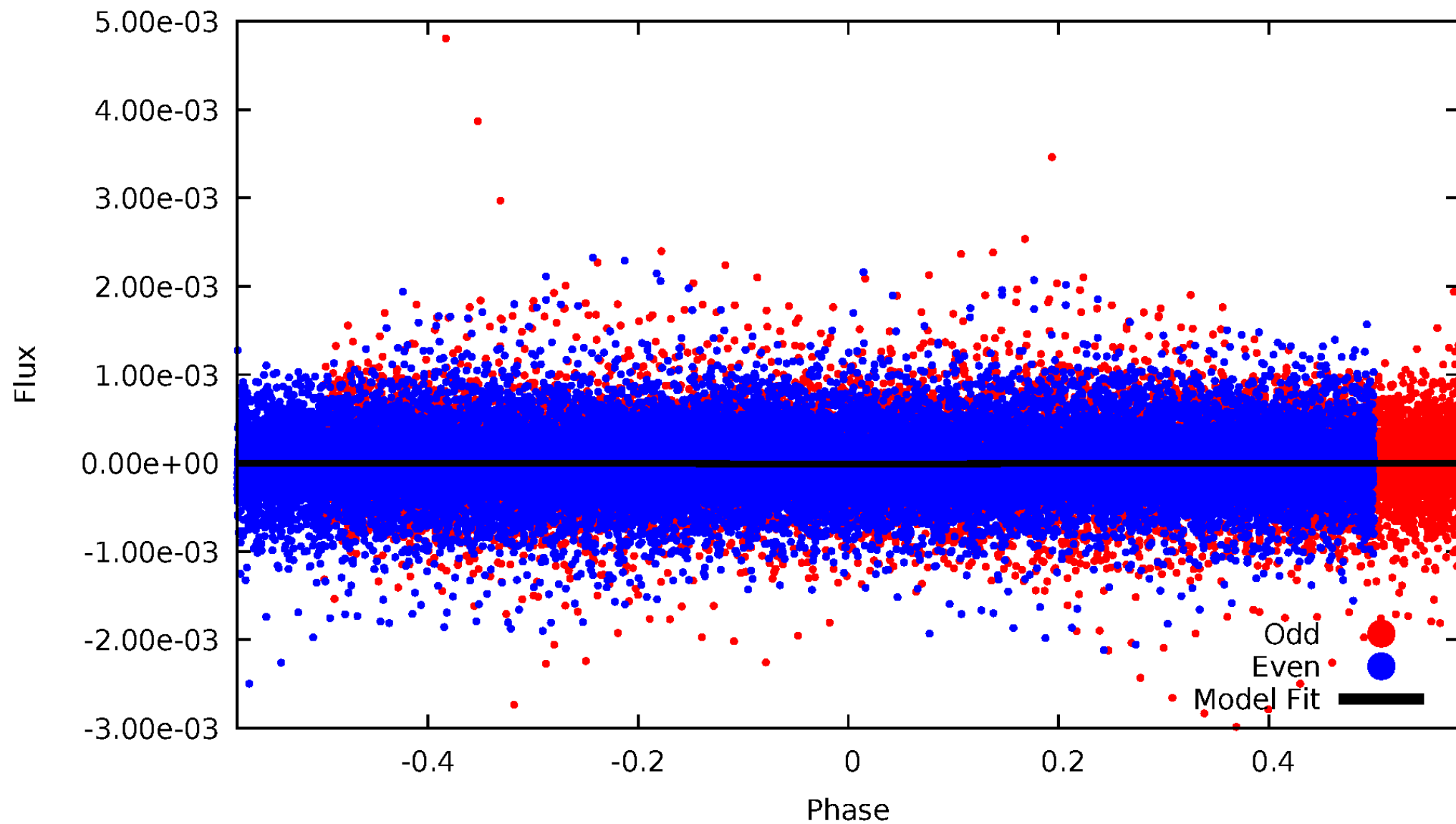


TCE 006445116-02



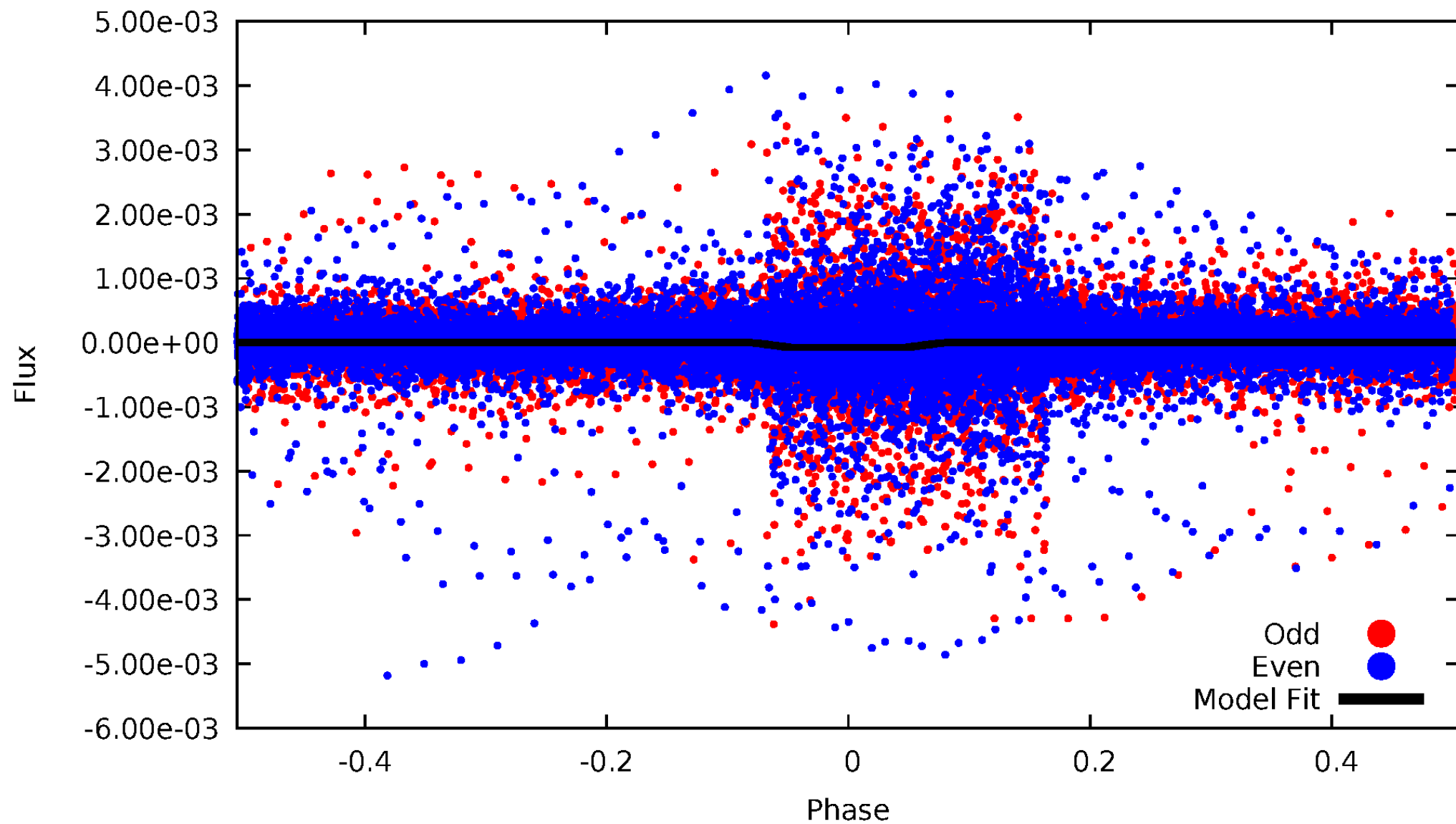
DV Odd/Even

TCE 006445116-02



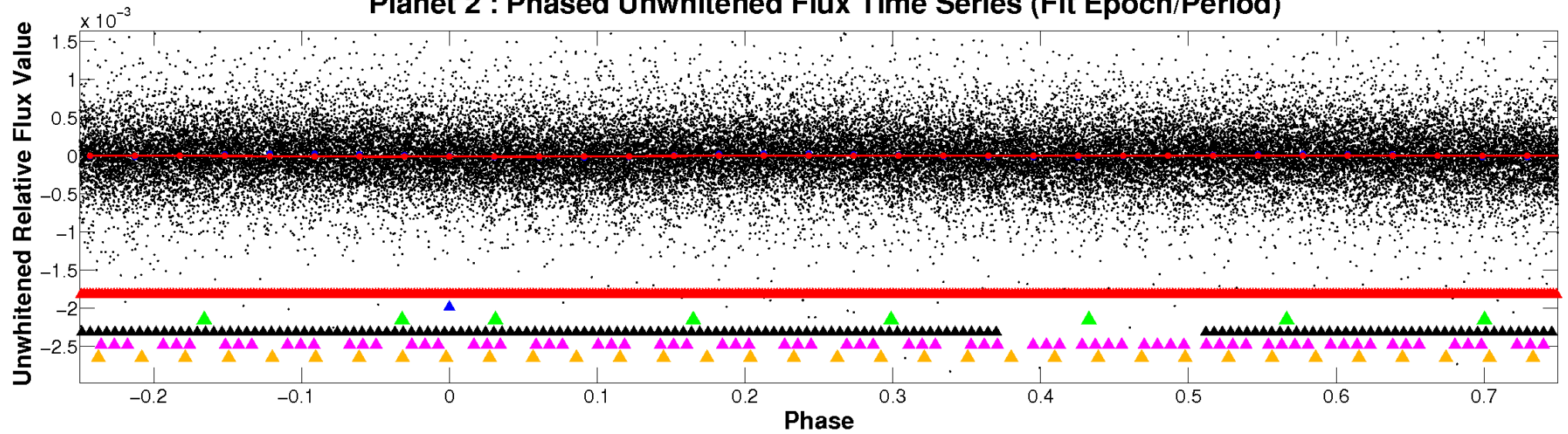
ALT Odd/Even

TCE 006445116-02

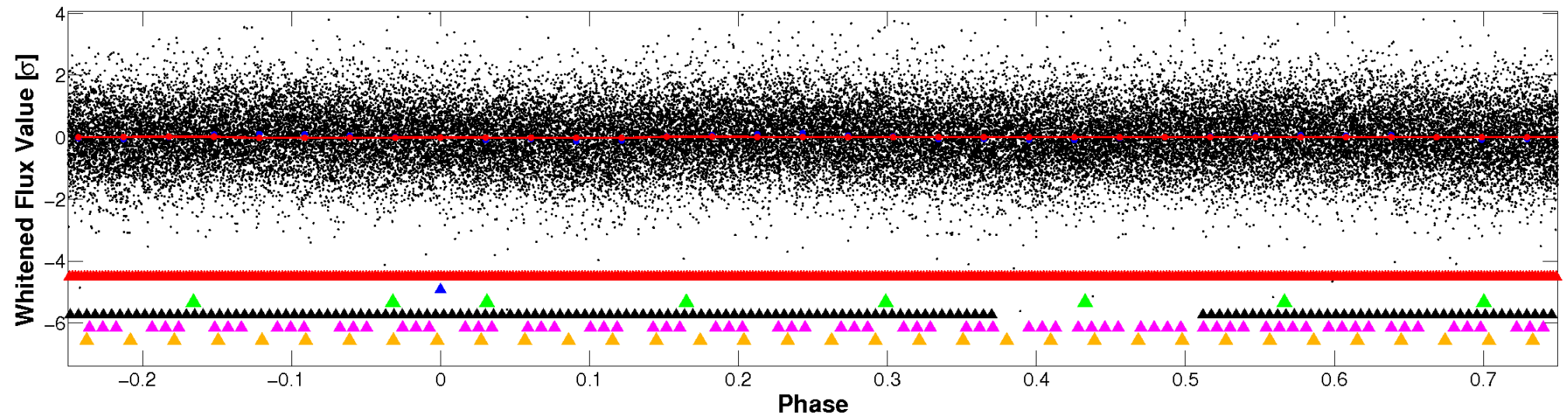


Non-Whitened Vs. Whitened Light Curve

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

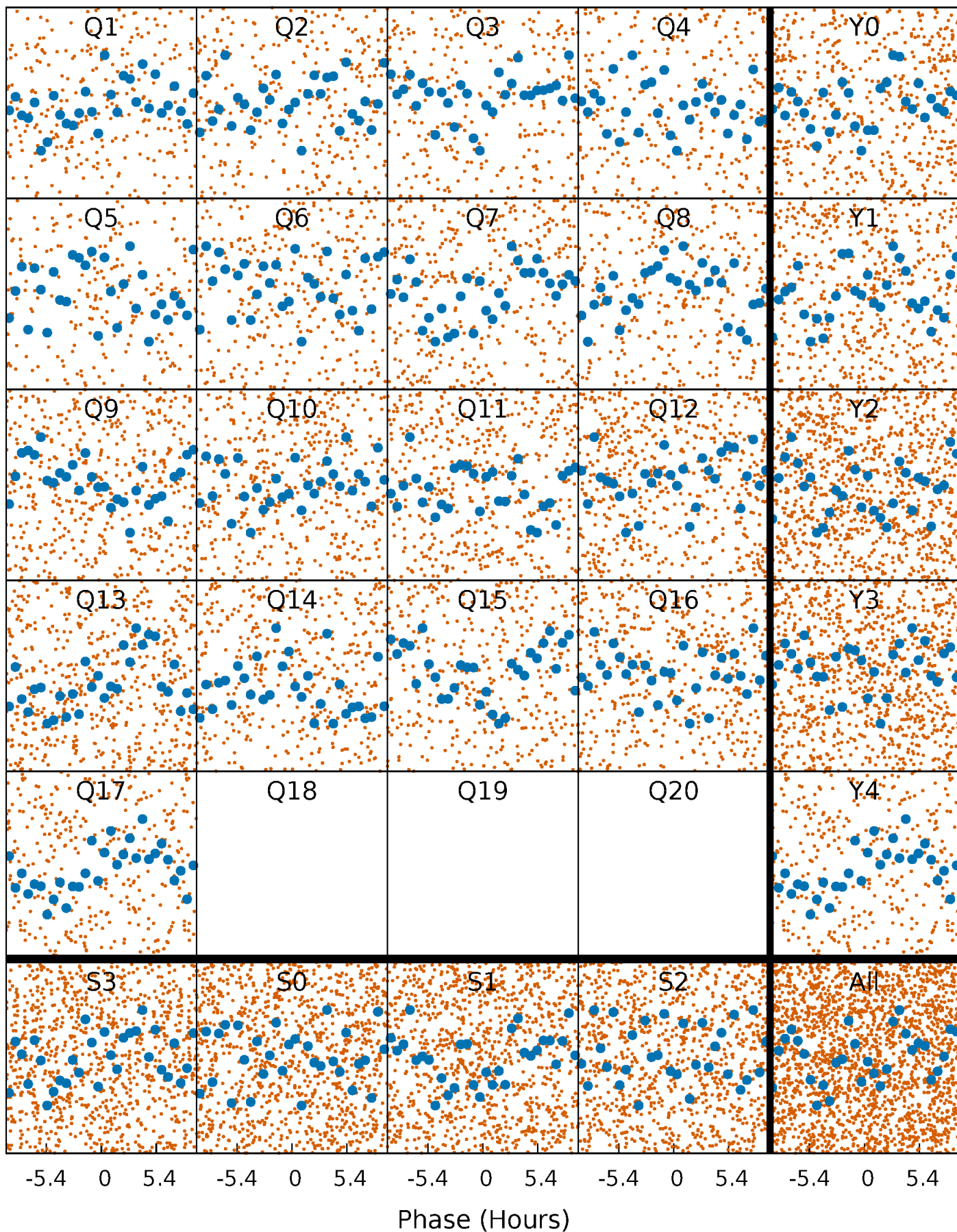


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



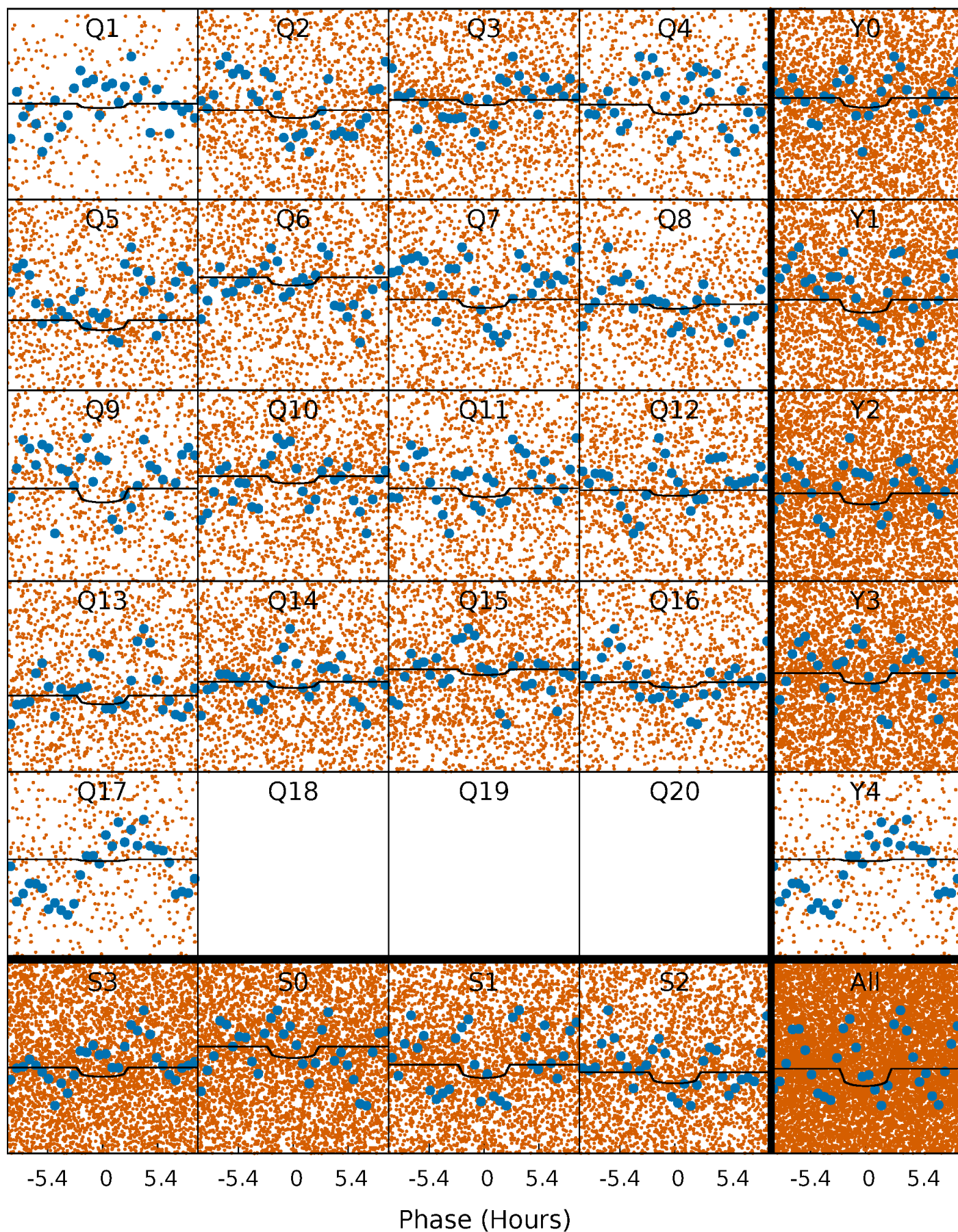
PDC Quarter-Phased Transit Curves

TCE 006445116-02 P= 0.672379 Days $T_0=131.674315$ (BKJD)



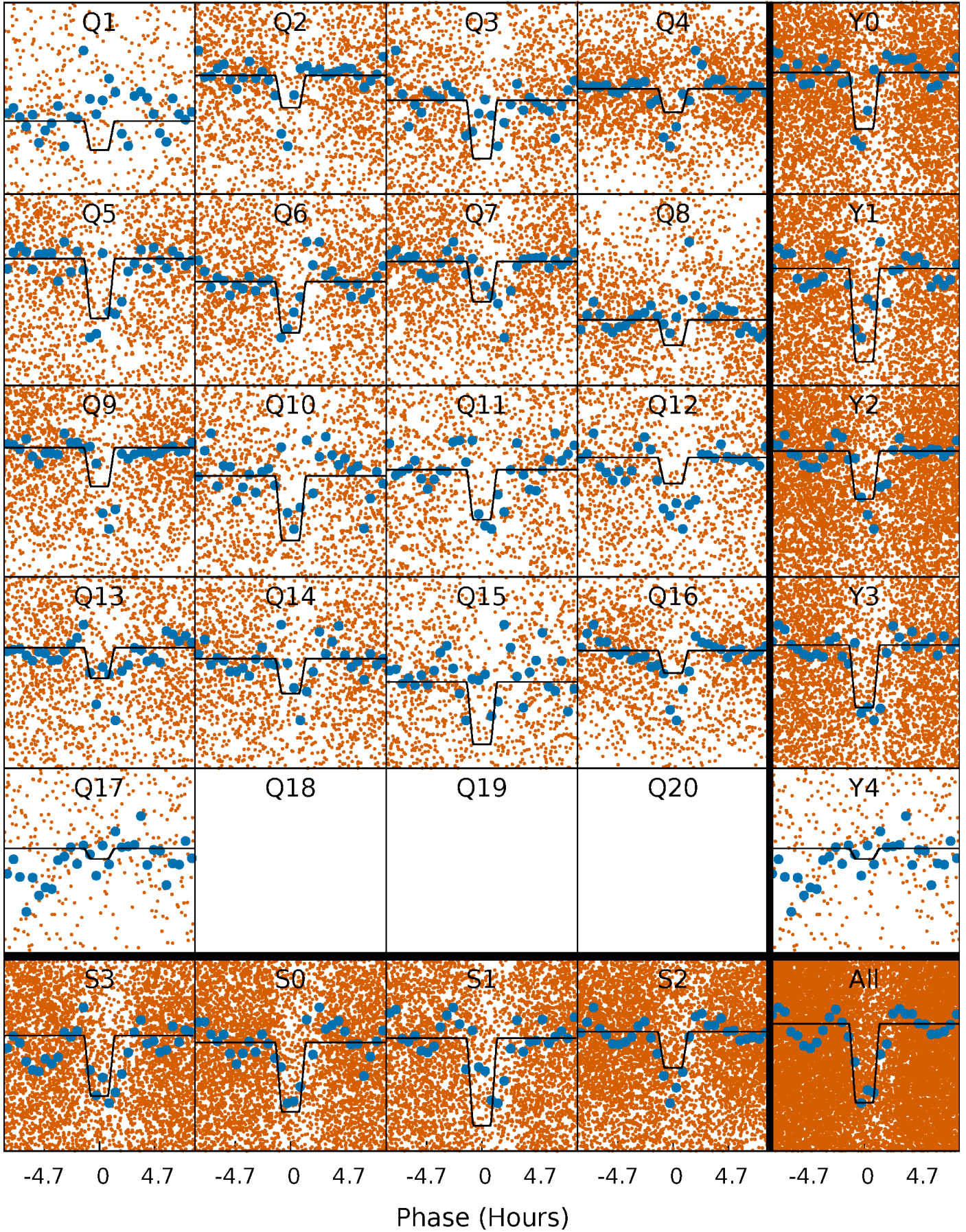
DV Quarter-Phased Transit Curves

TCE 006445116-02 P= 0.672379 Days $T_0=131.674315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

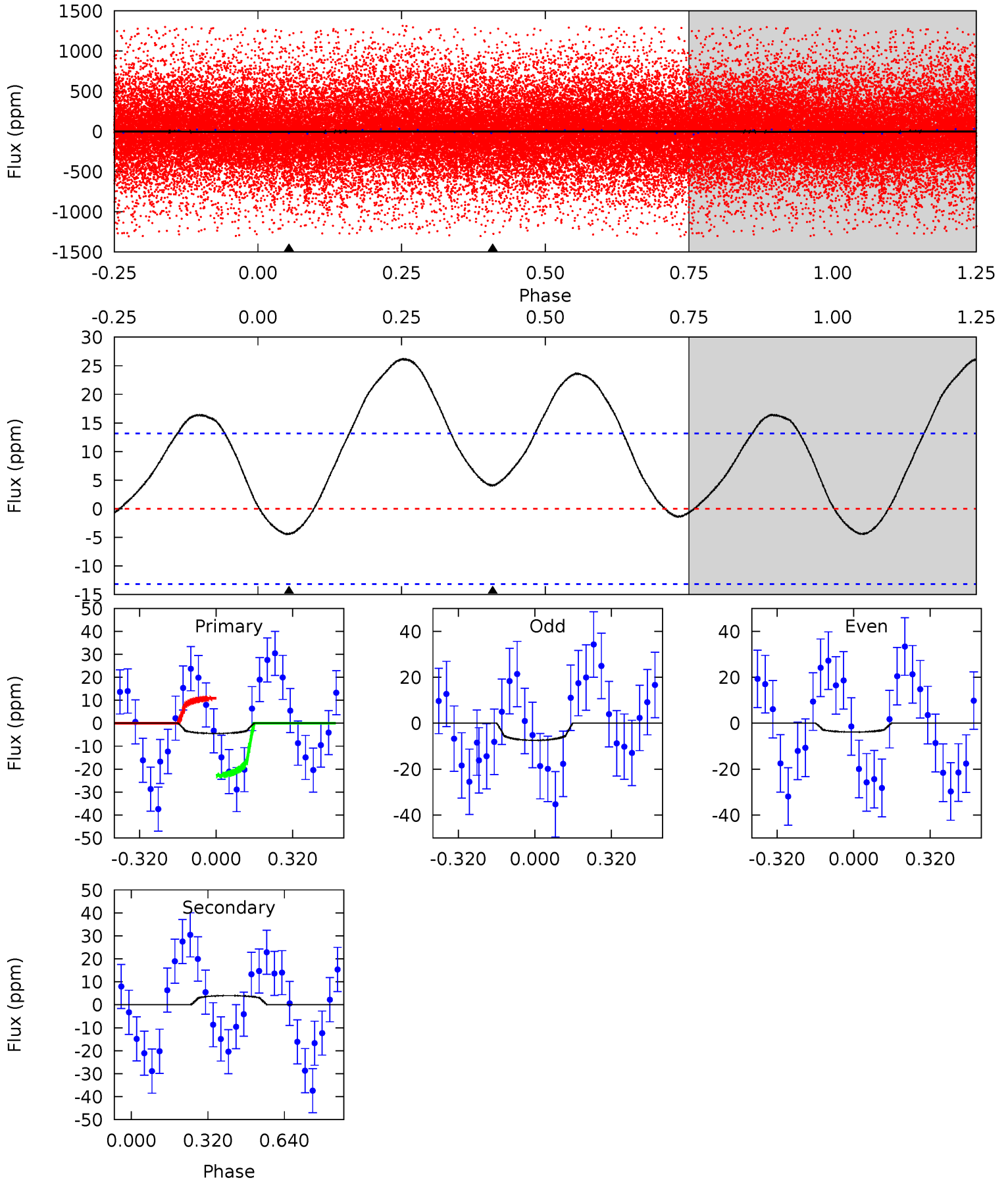
TCE 006445116-02 P= 0.672410 Days $T_0=131.663640$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-02, P = 0.672379 Days, E = 131.001936 Days

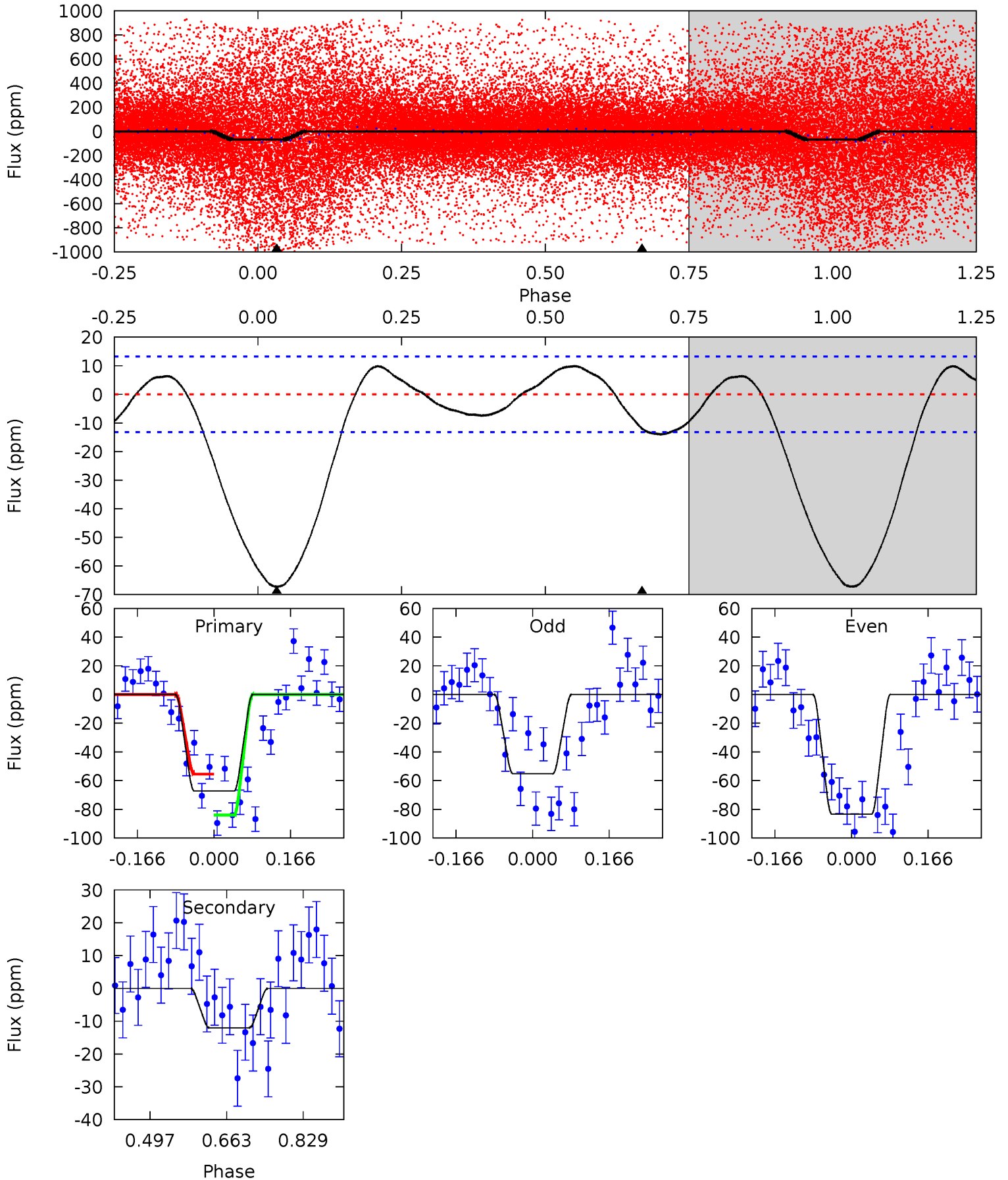
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.47	-1.31	0	0	4.31	0.99	0.44	1.47	1.47	-1.31	-1.31	0.60	0.22	0.85	1.93



Alt Model-Shift Uniqueness Test

006445116-02, P = 0.672410 Days, E = 130.991230 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	4.06	0	0	4.46	1.39	1.84	22.7	22.7	4.06	4.06	4.87	0.99	0.13	4.75



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	4 ± 3	$1.03^{+0.73}_{-0.60}$	5676^{+346}_{-499}	-5821^{+881}_{-3134}	$-0.490^{+0.409}_{-2.609}$
Alt.	-12 ± 3	$2.67^{+0.90}_{-0.78}$	5664^{+333}_{-467}	-3143^{+7557}_{-1053}	$0.270^{+0.285}_{-0.119}$

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

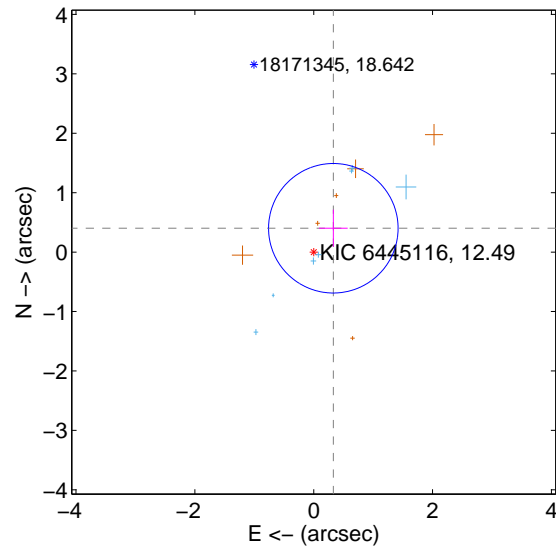
Supplemental centroid analysis for 006445116-02. Kepler magnitude: 12.49. Transit SNR 2.44

There are 7 quarters with good PRF difference image offsets

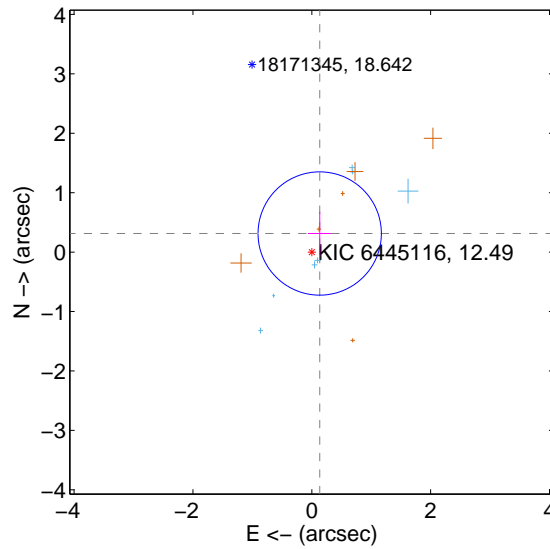
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.520 ± 0.363	1.43	-0.330 ± 0.241	0.401 ± 0.313
PRF-fit source offset from KIC position	0.340 ± 0.346	0.98	-0.133 ± 0.197	0.313 ± 0.366
photometric centroid source offset	0.77 ± 0.88	0.87	0.62 ± 0.92	0.45 ± 0.78

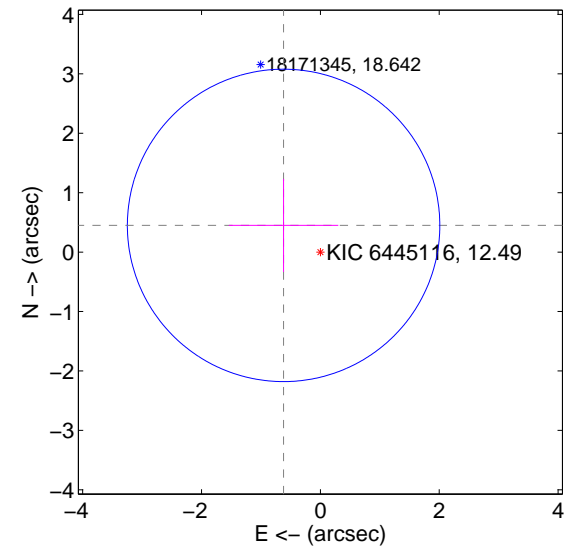
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

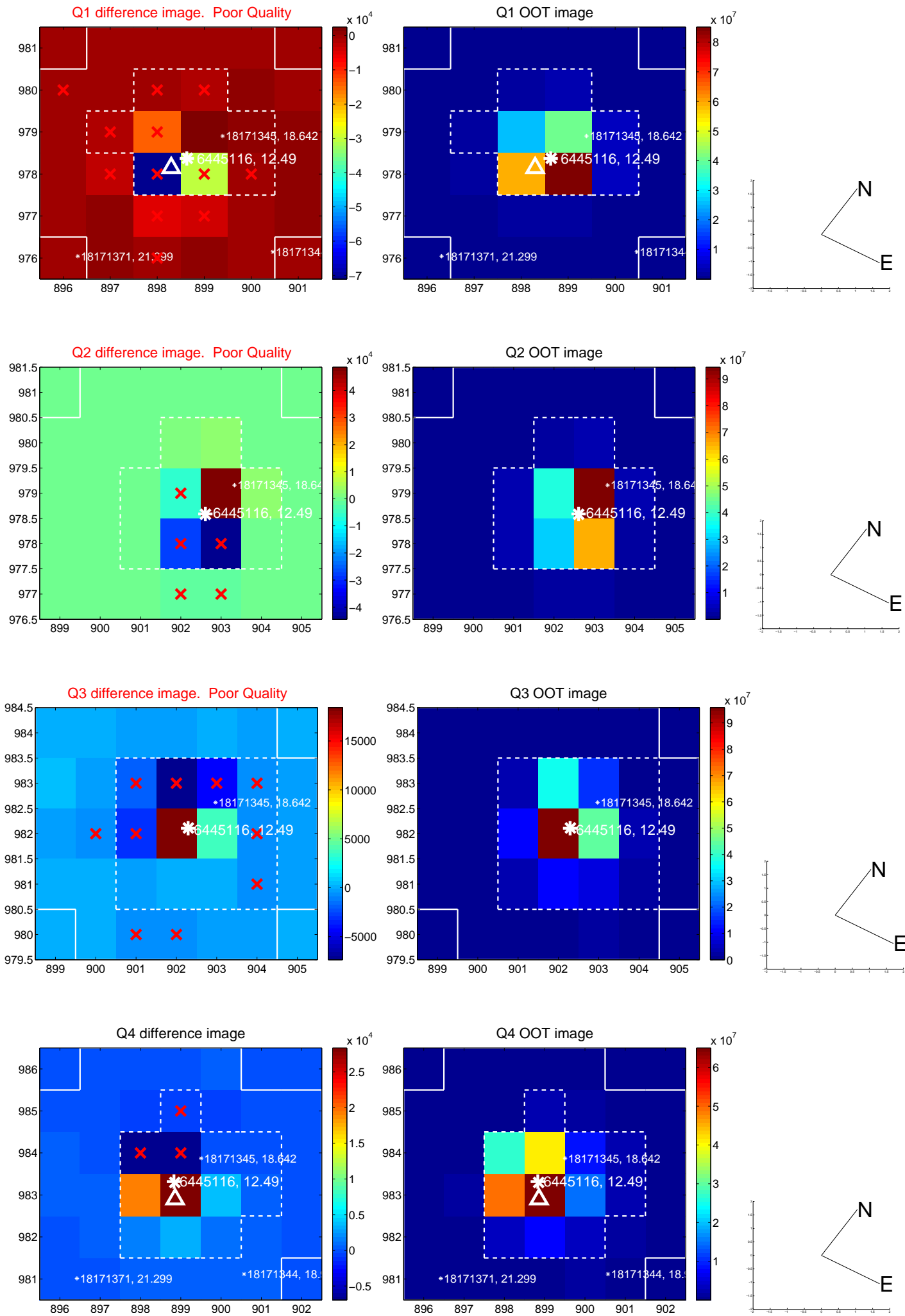


offset from photometric centroids

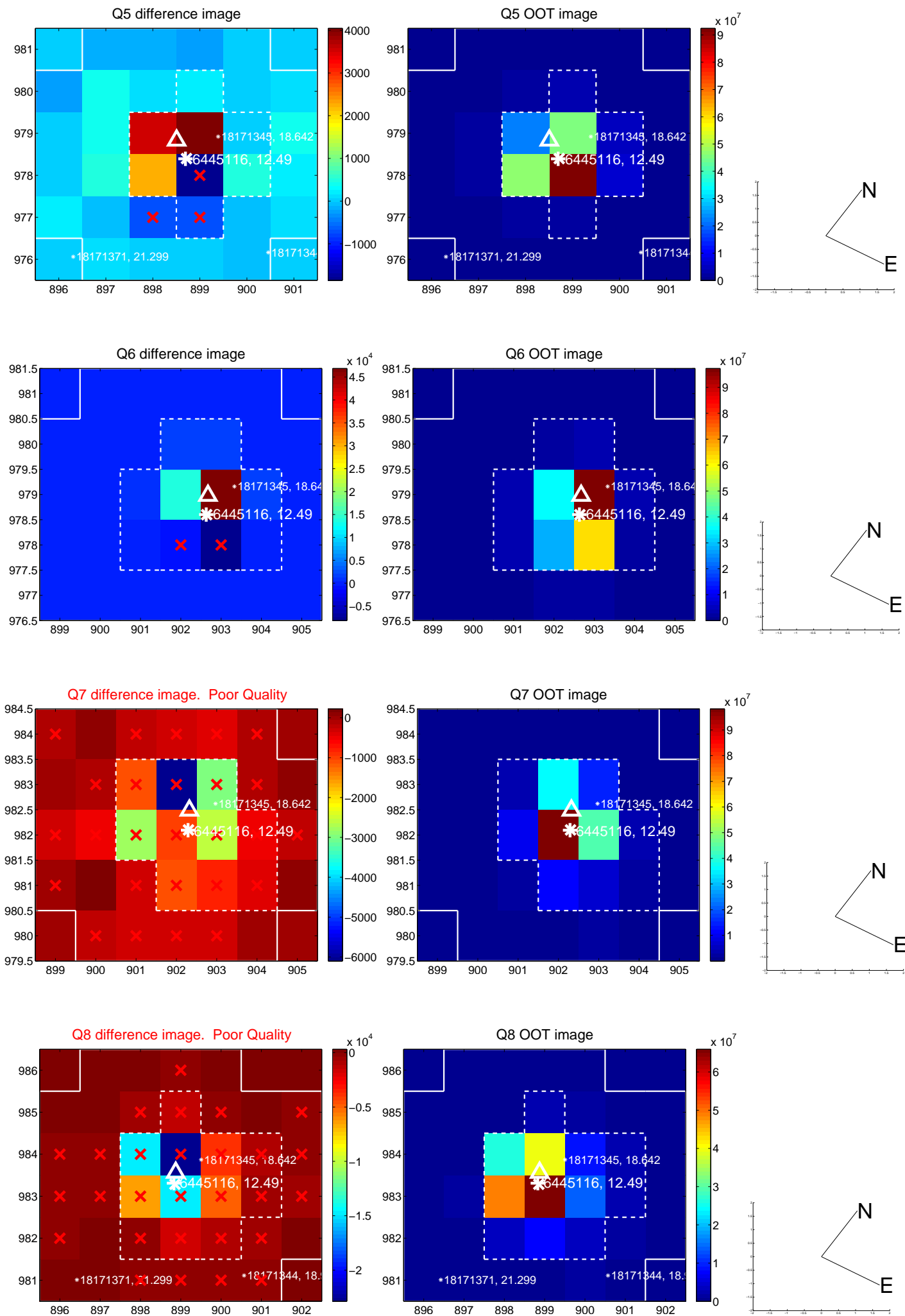


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

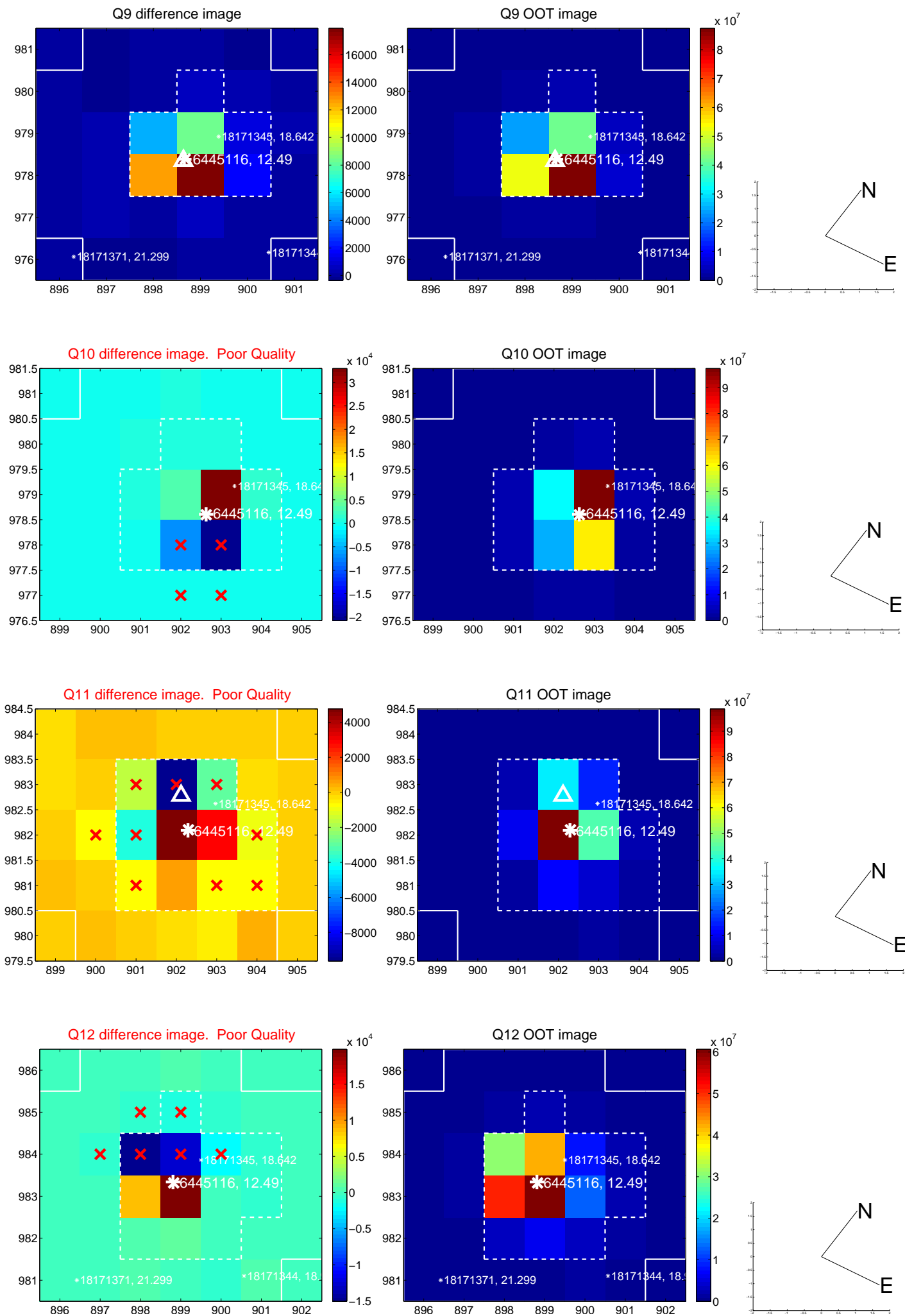
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



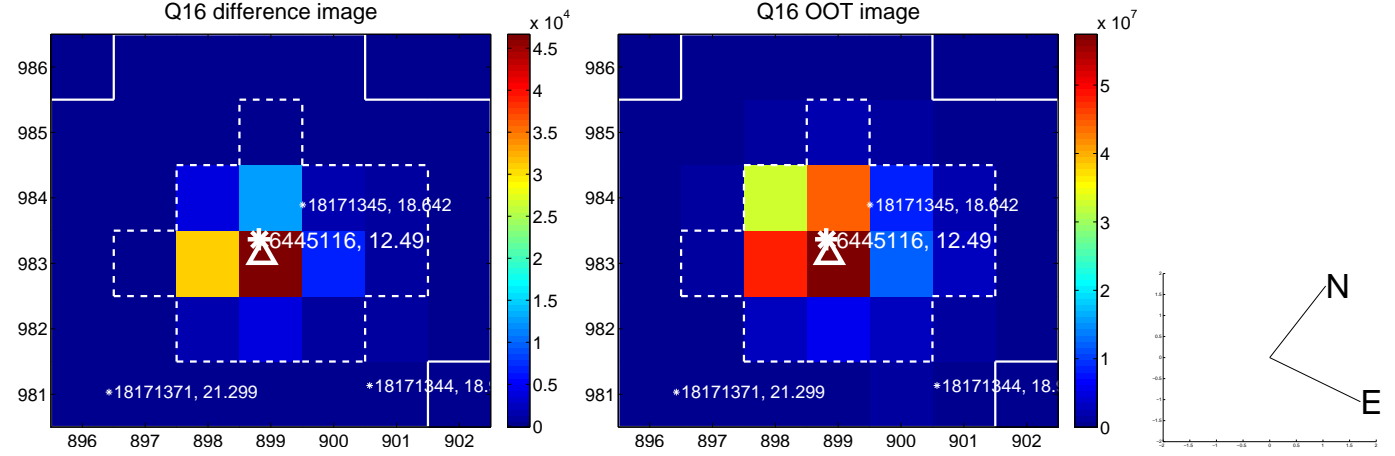
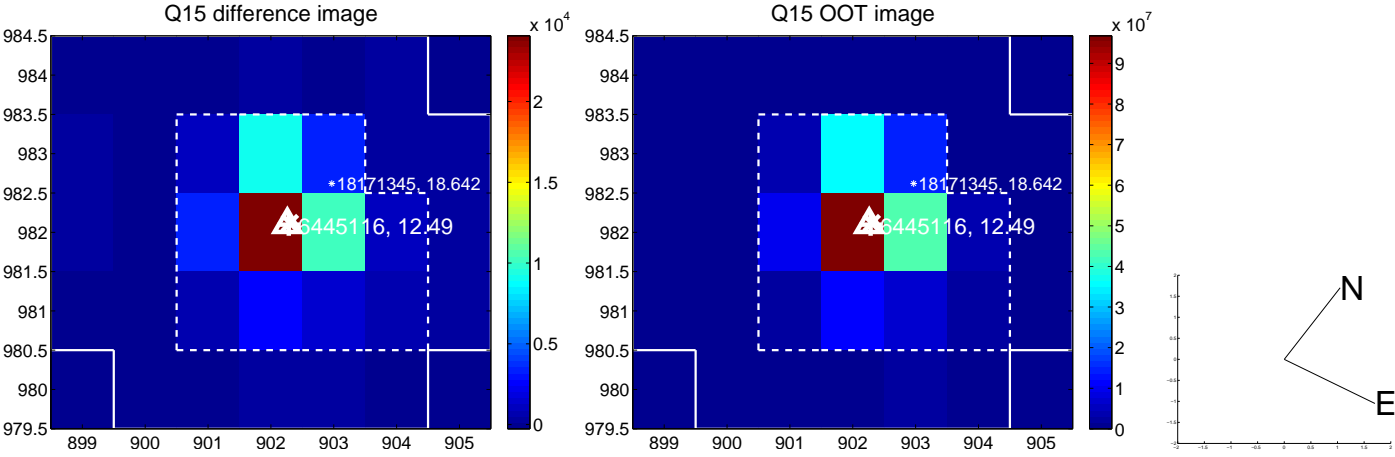
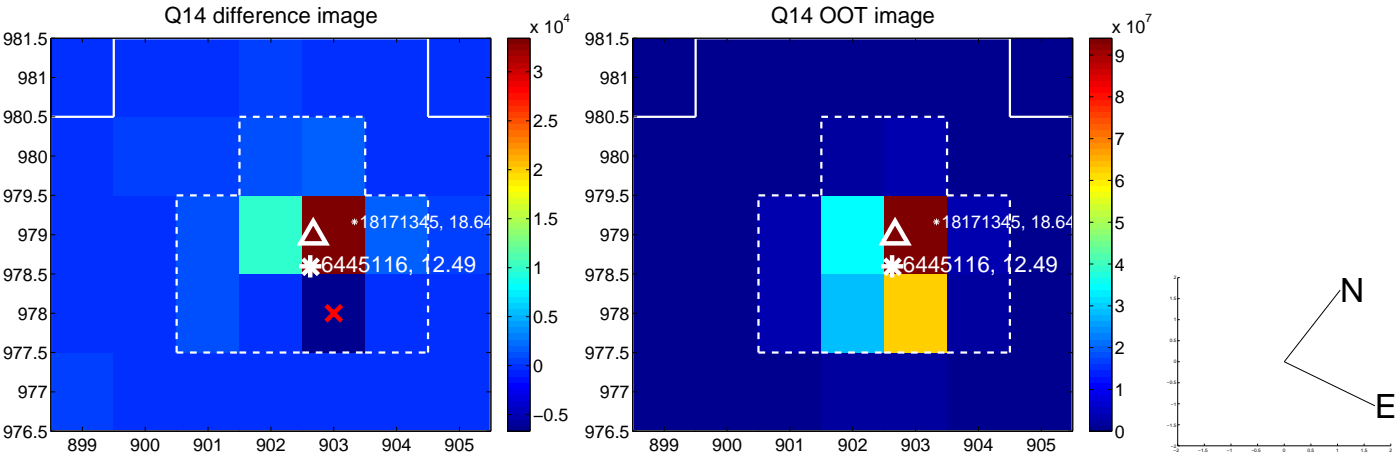
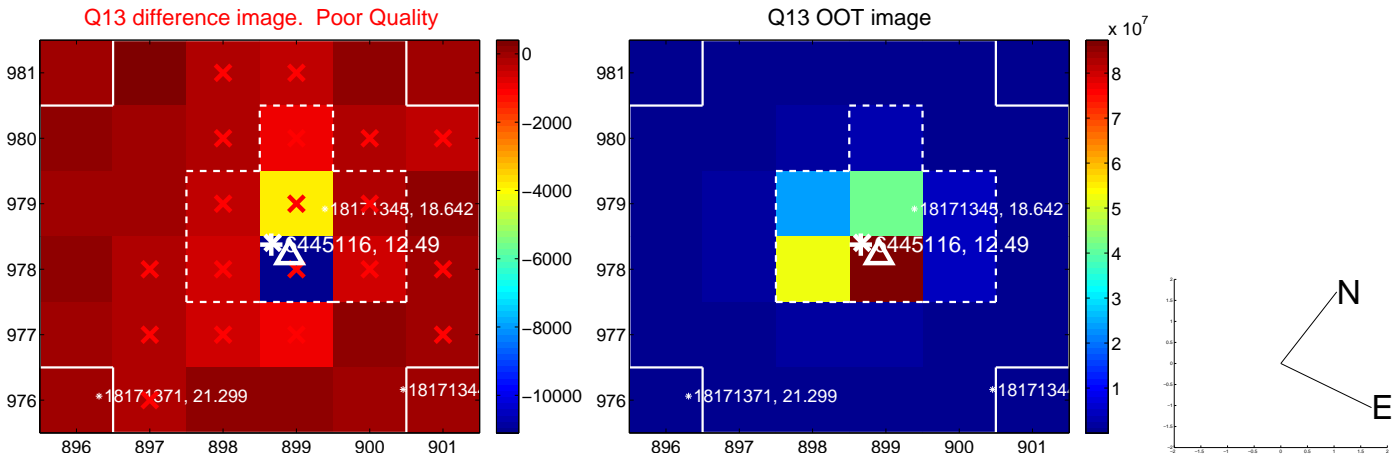
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



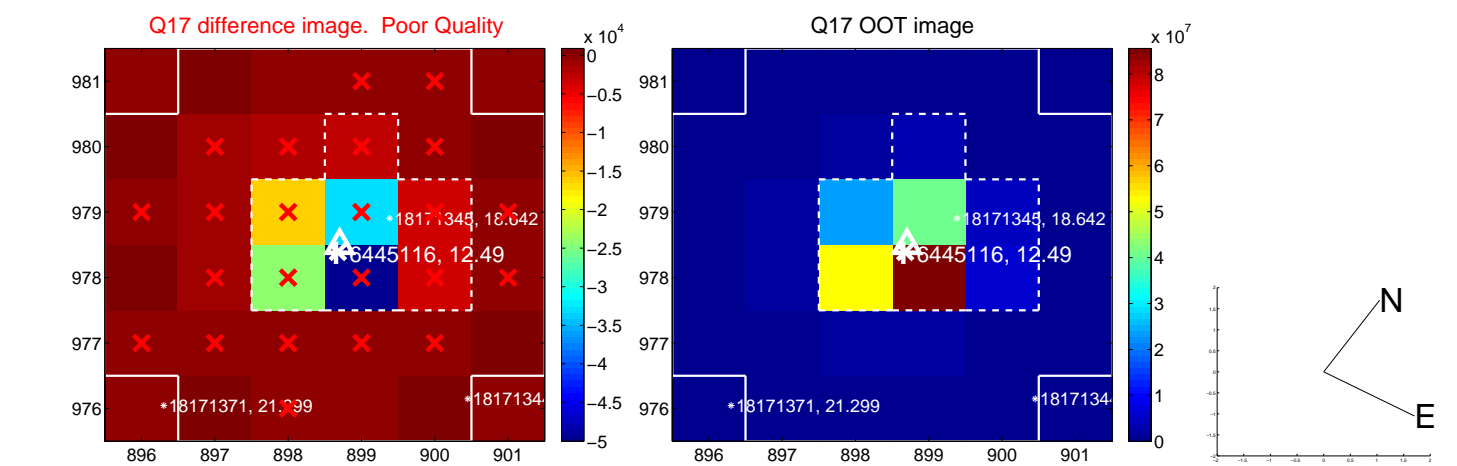
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



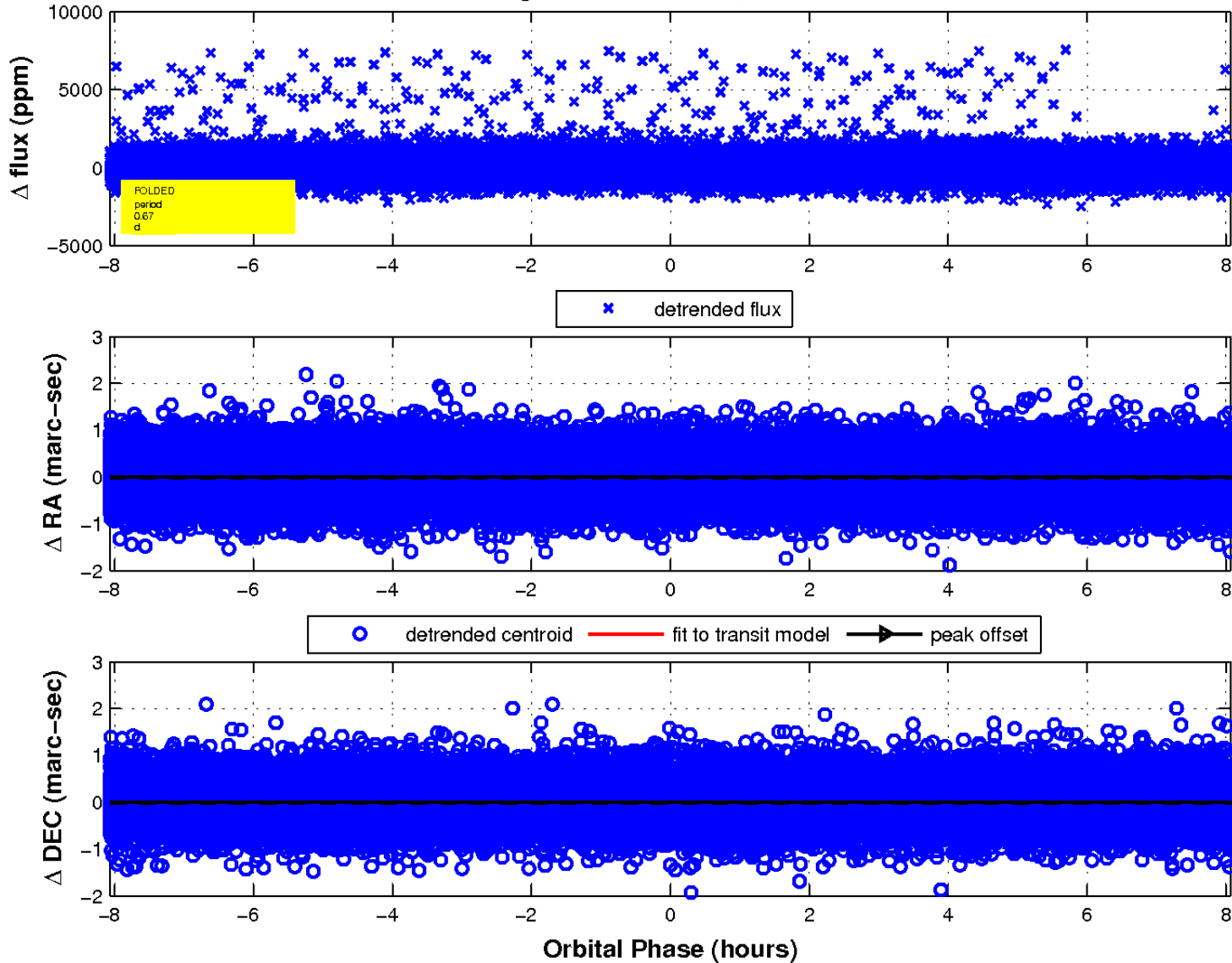
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

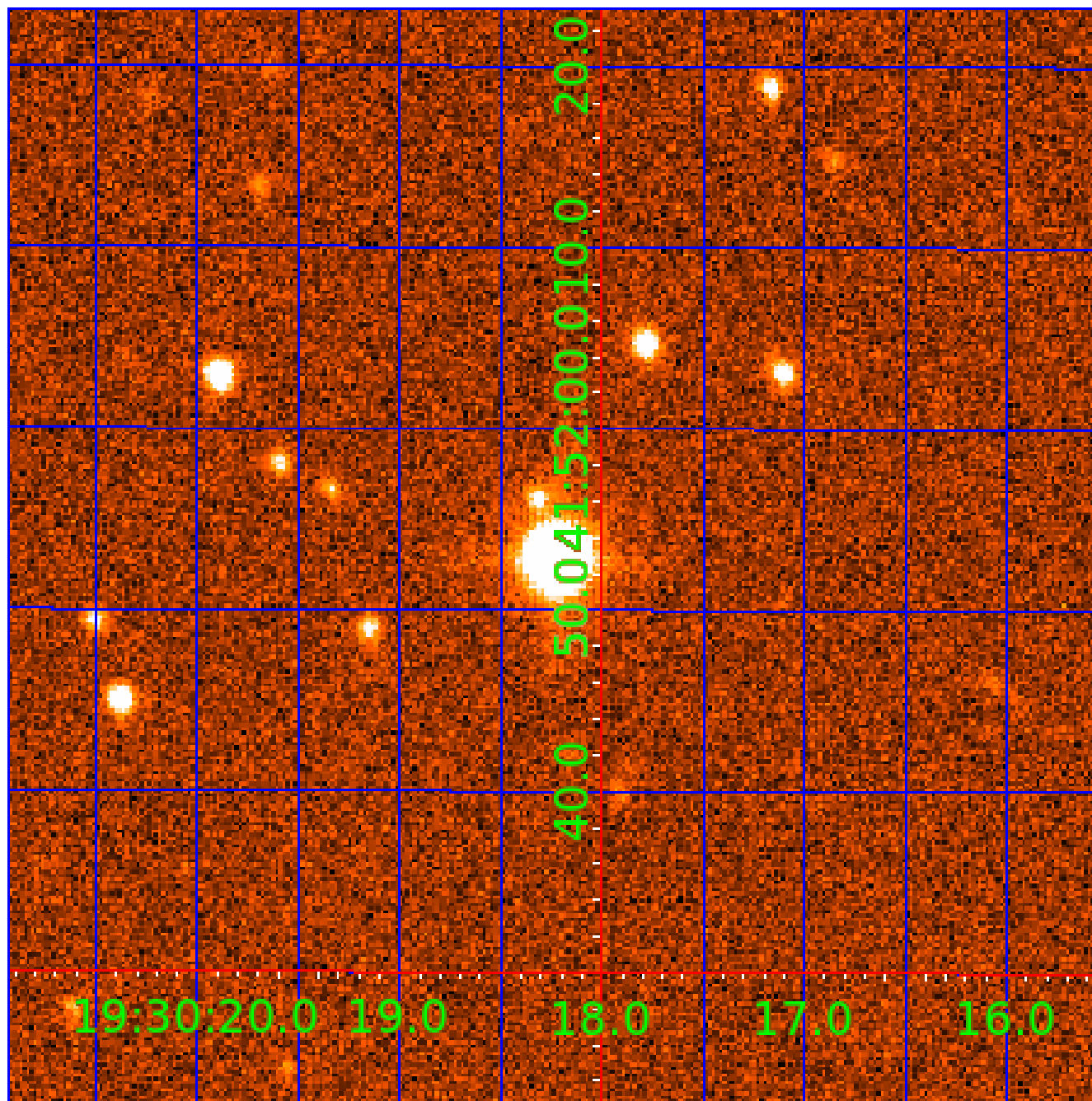


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



KIC 006445116

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})
006445116-01	OBS	No	1.516573	132.909701	37.8	3.479	8.7	7.0	3.04	7115	2.23	23741.12
006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

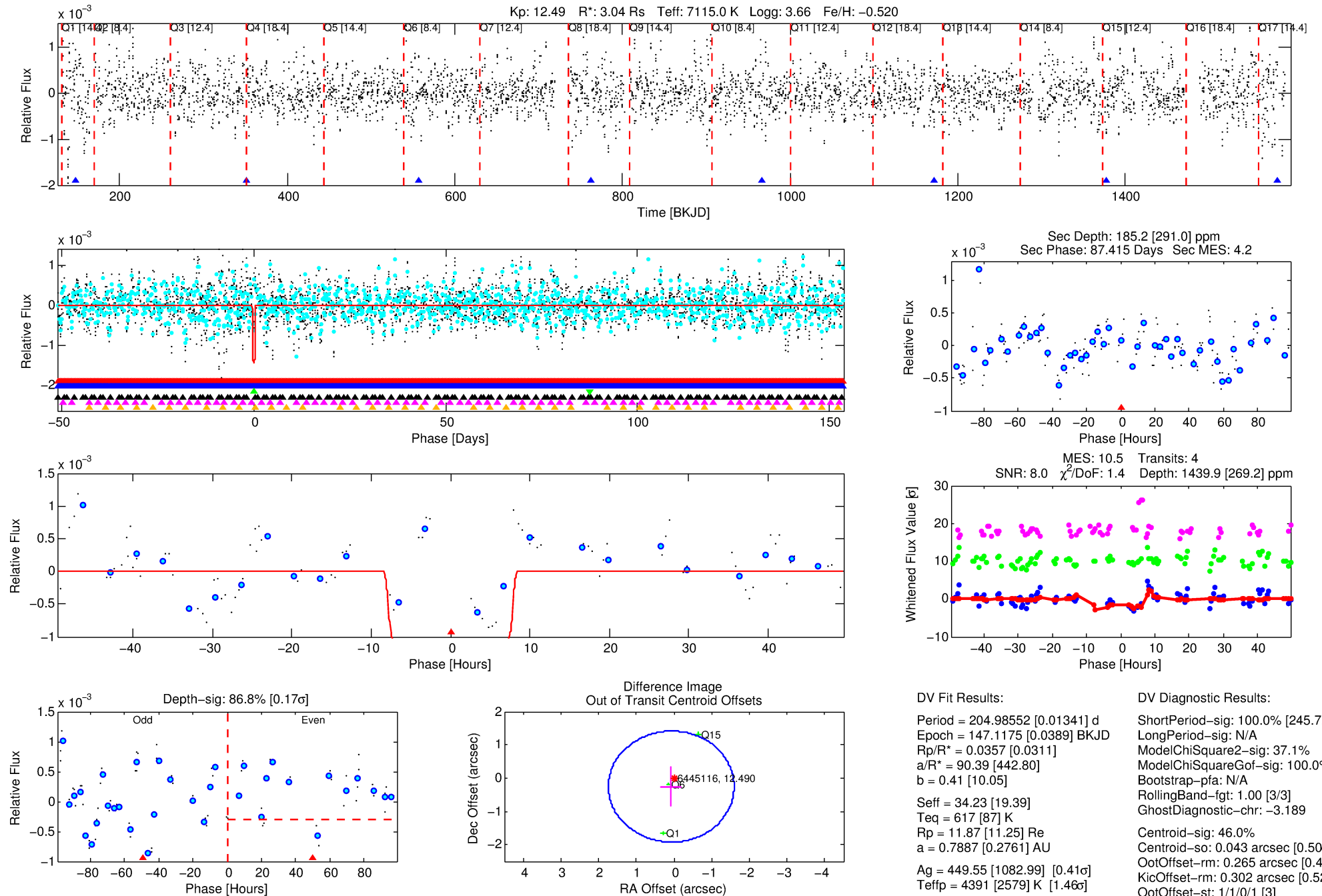
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-03

No Significant Match Found

DV One-Page Summary

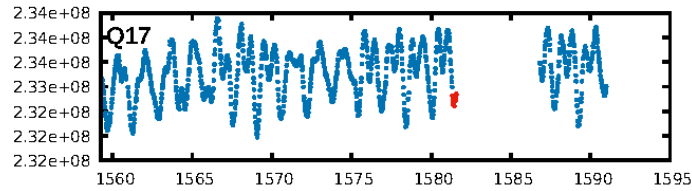
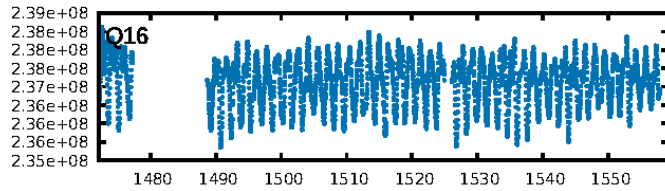
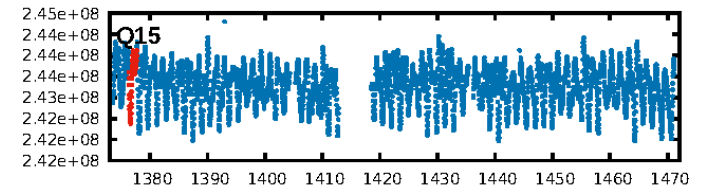
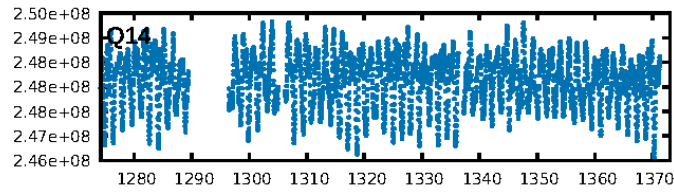
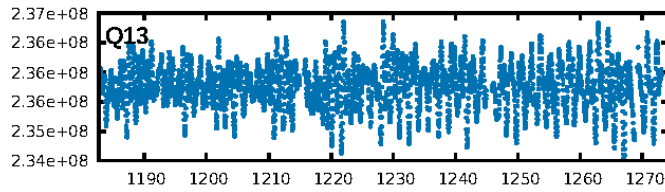
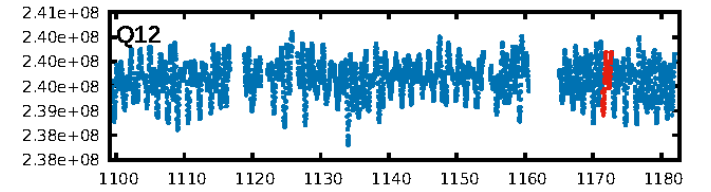
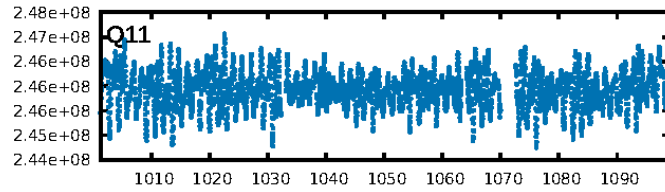
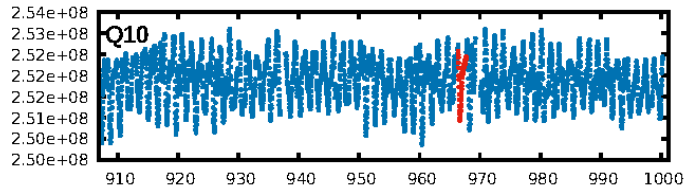
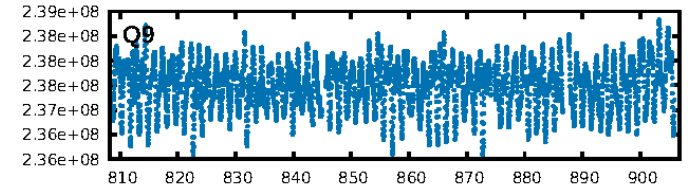
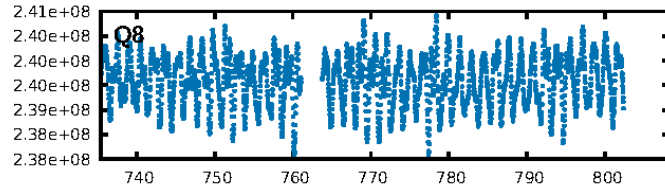
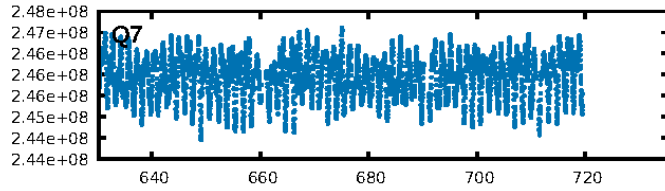
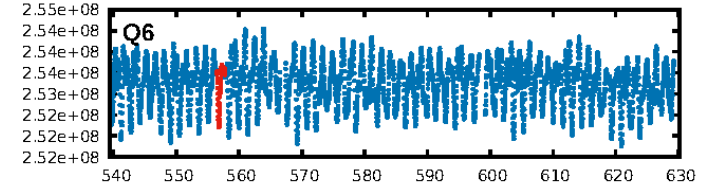
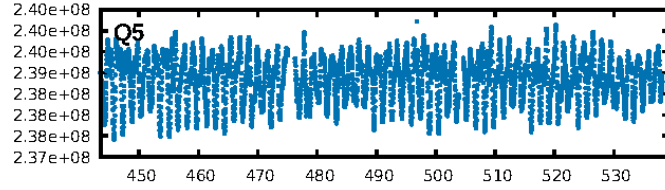
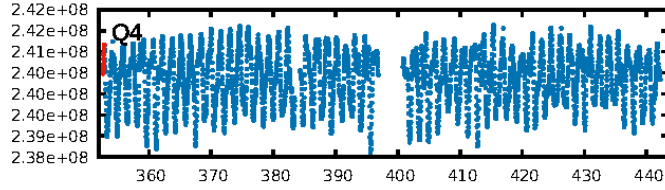
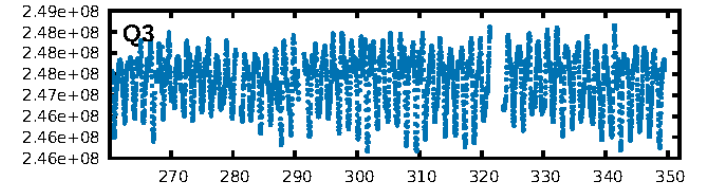
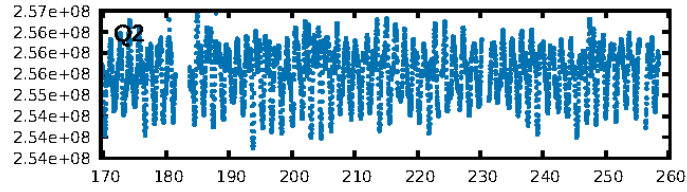
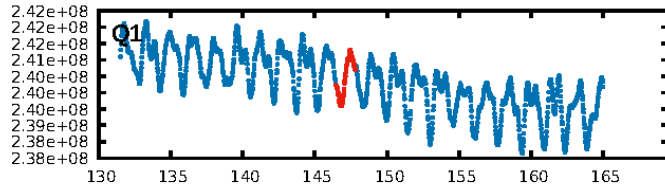
KIC: 6445116 Candidate: 3 of 6 Period: 204.986 d



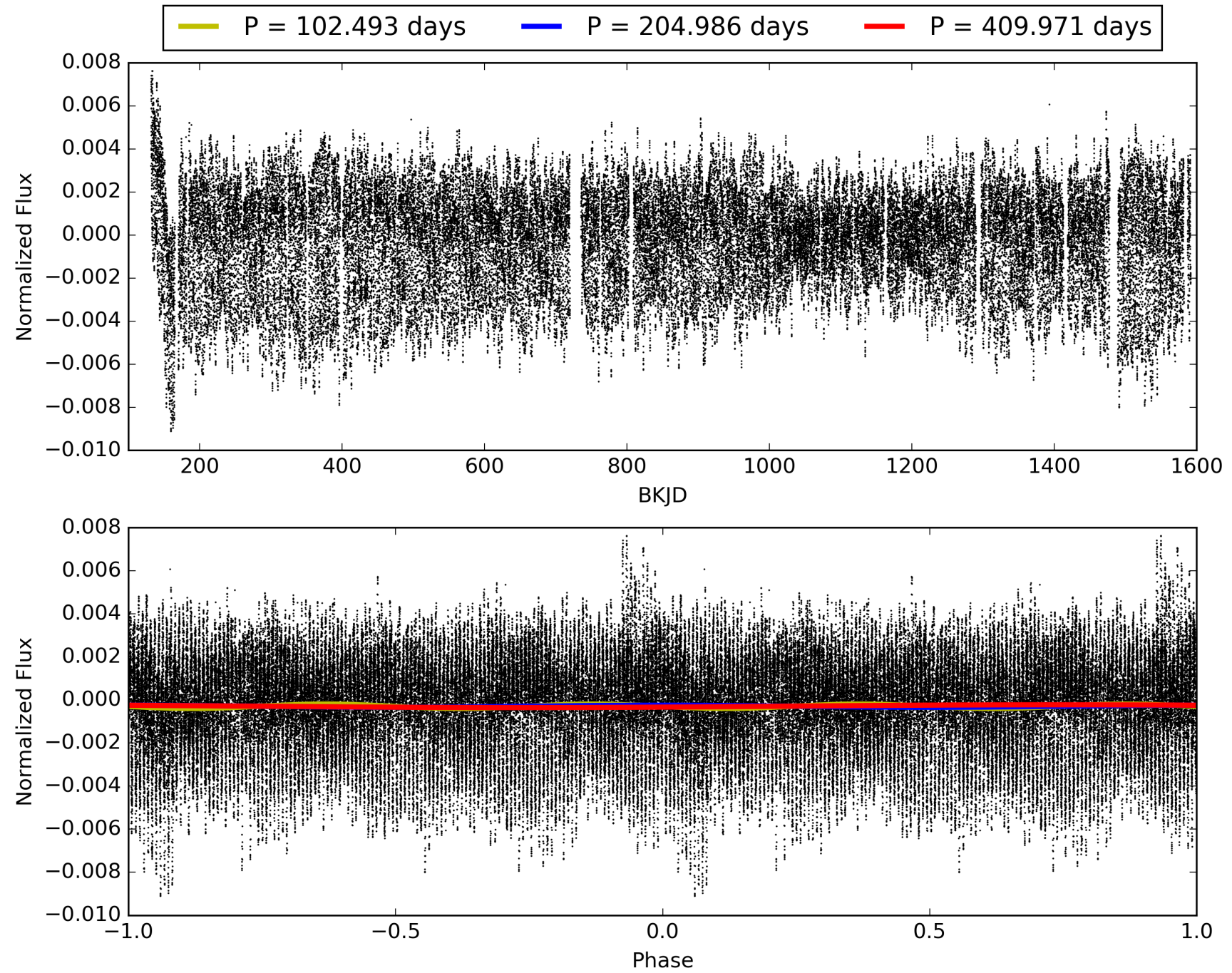
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:52:19 Z

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

TCE 006445116-03, PDC Light Curves

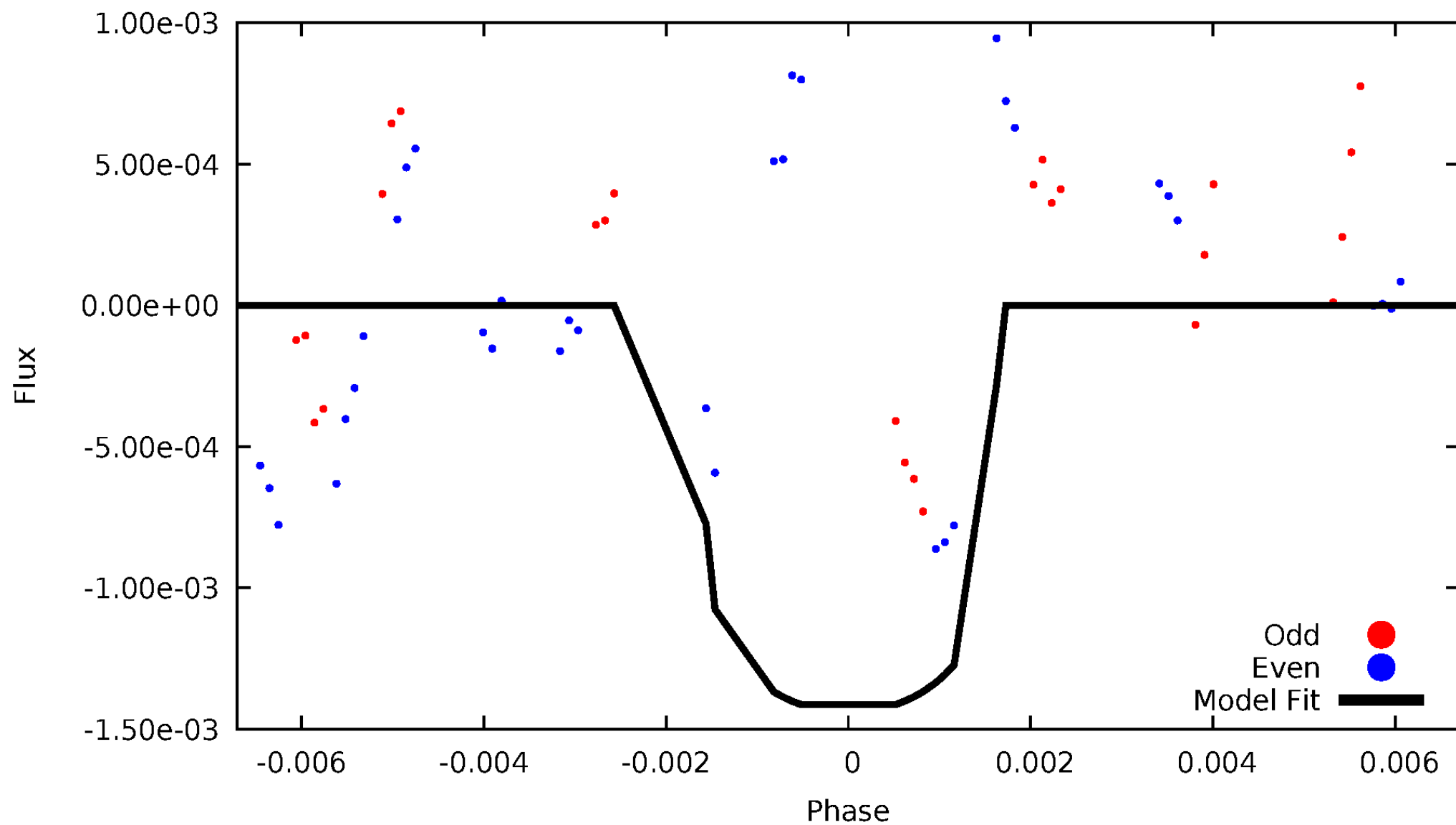


TCE 006445116-03



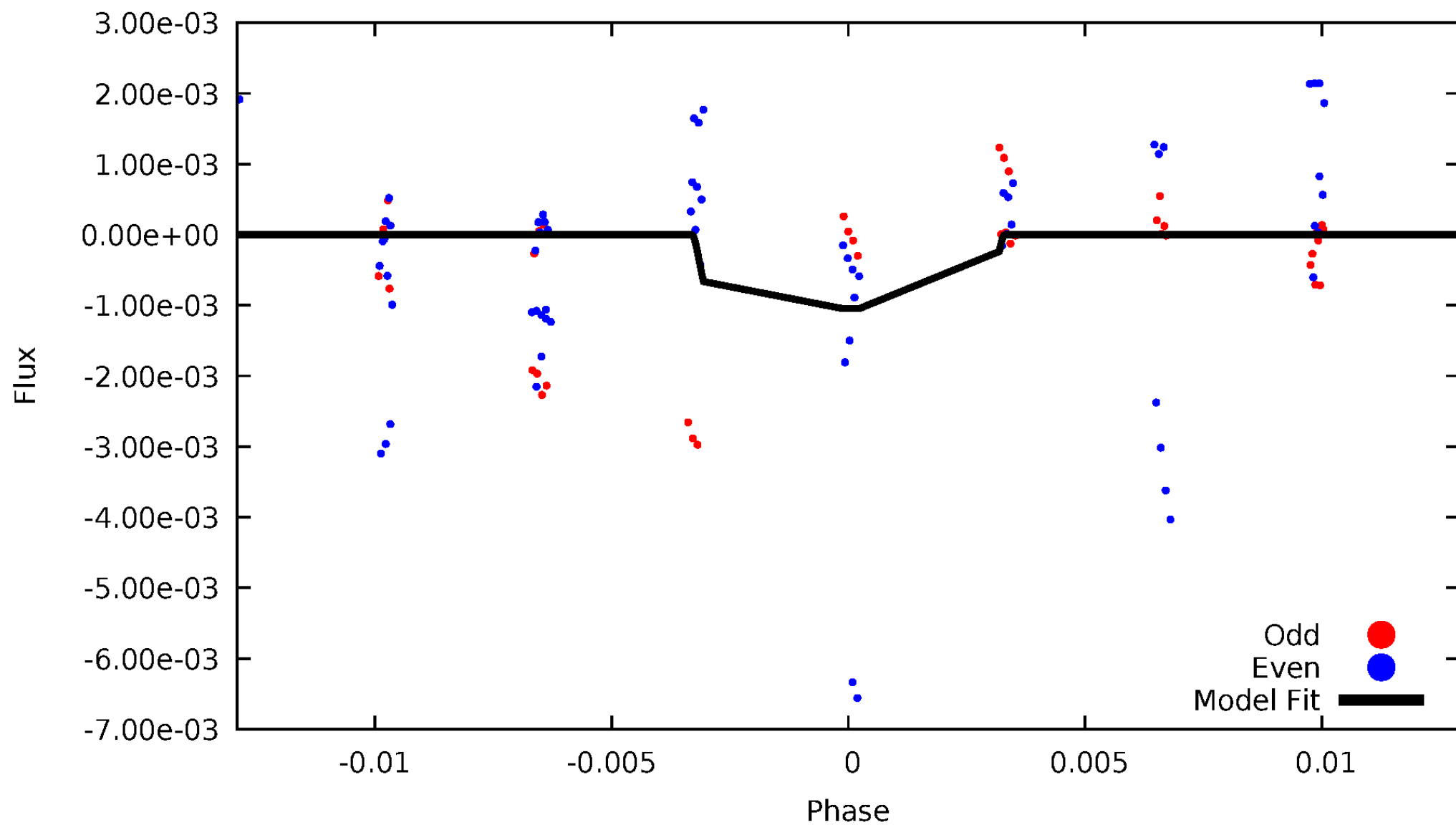
DV Odd/Even

TCE 006445116-03



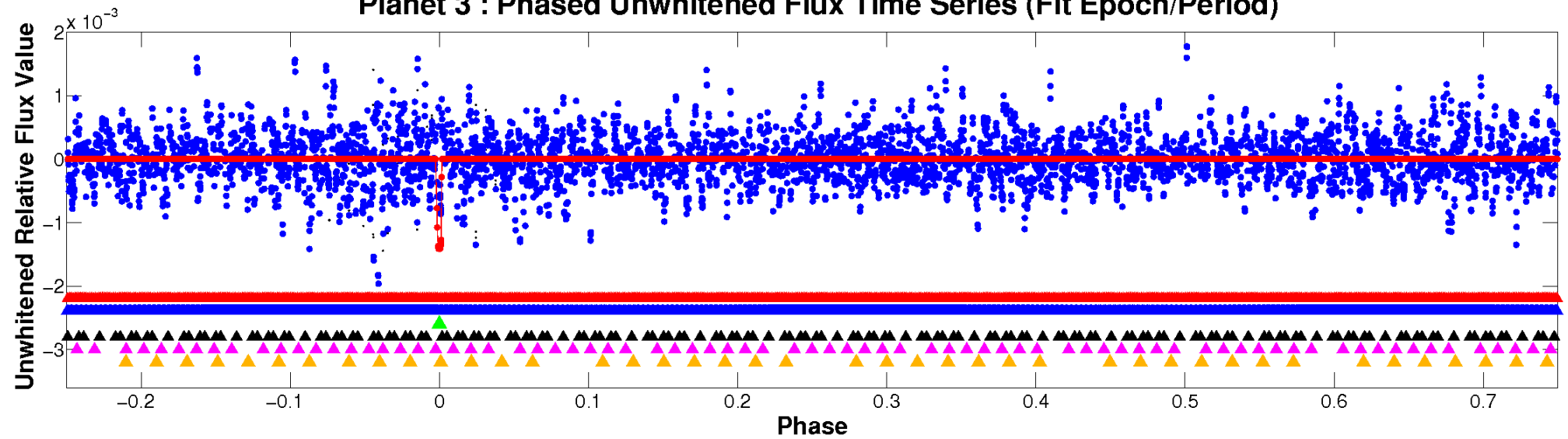
ALT Odd/Even

TCE 006445116-03

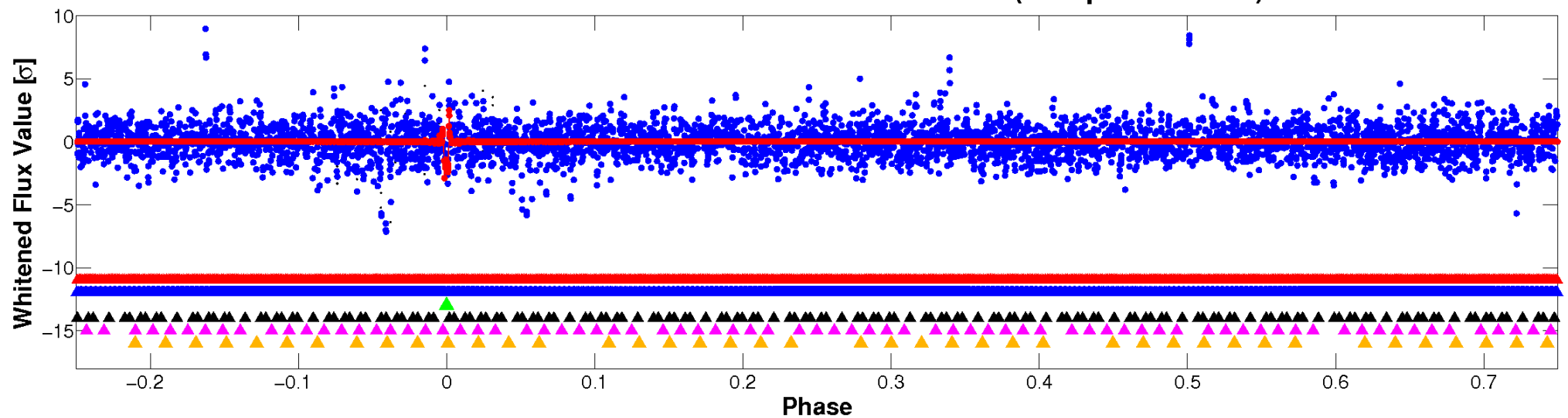


Non-Whitened Vs. Whitened Light Curve

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

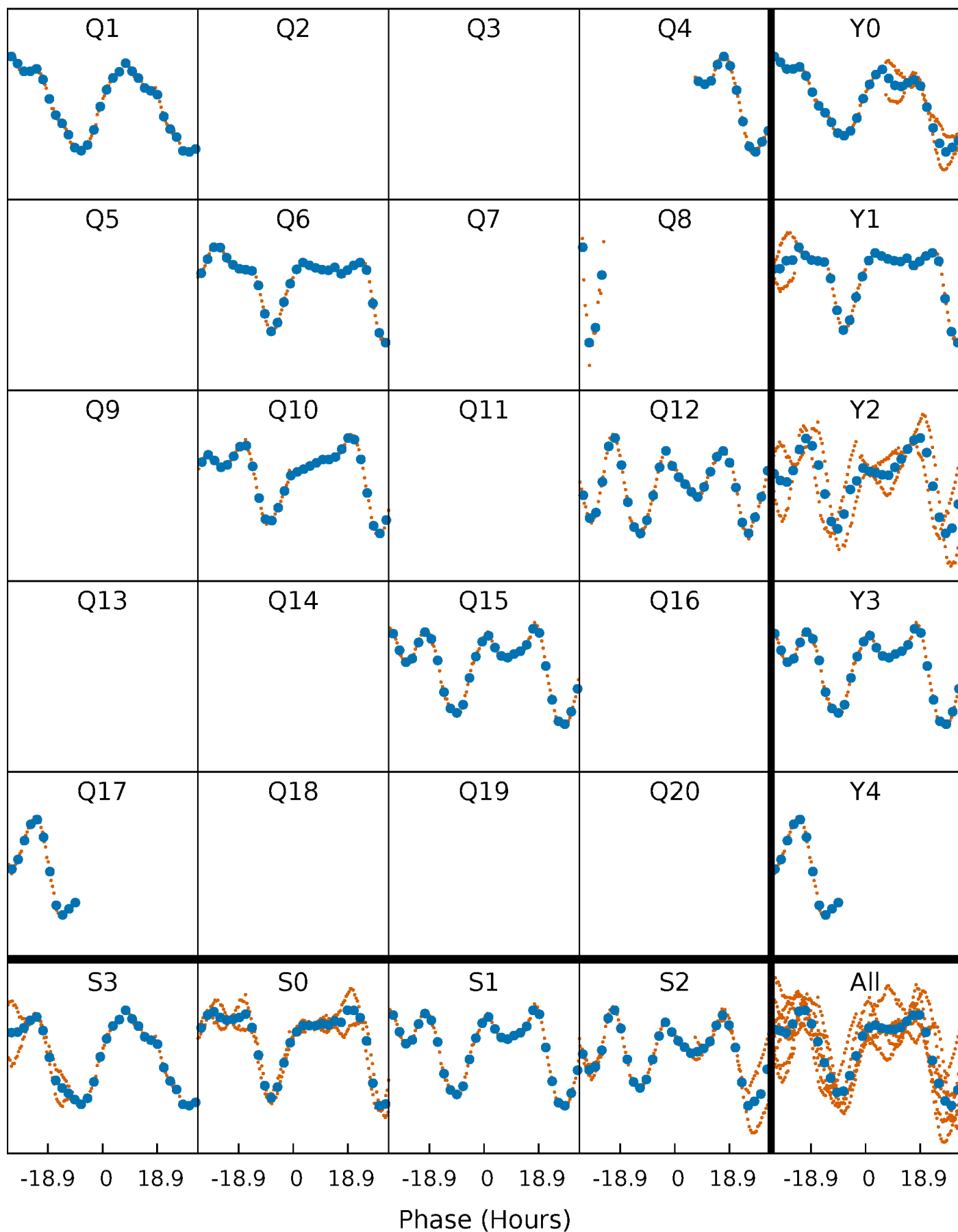


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



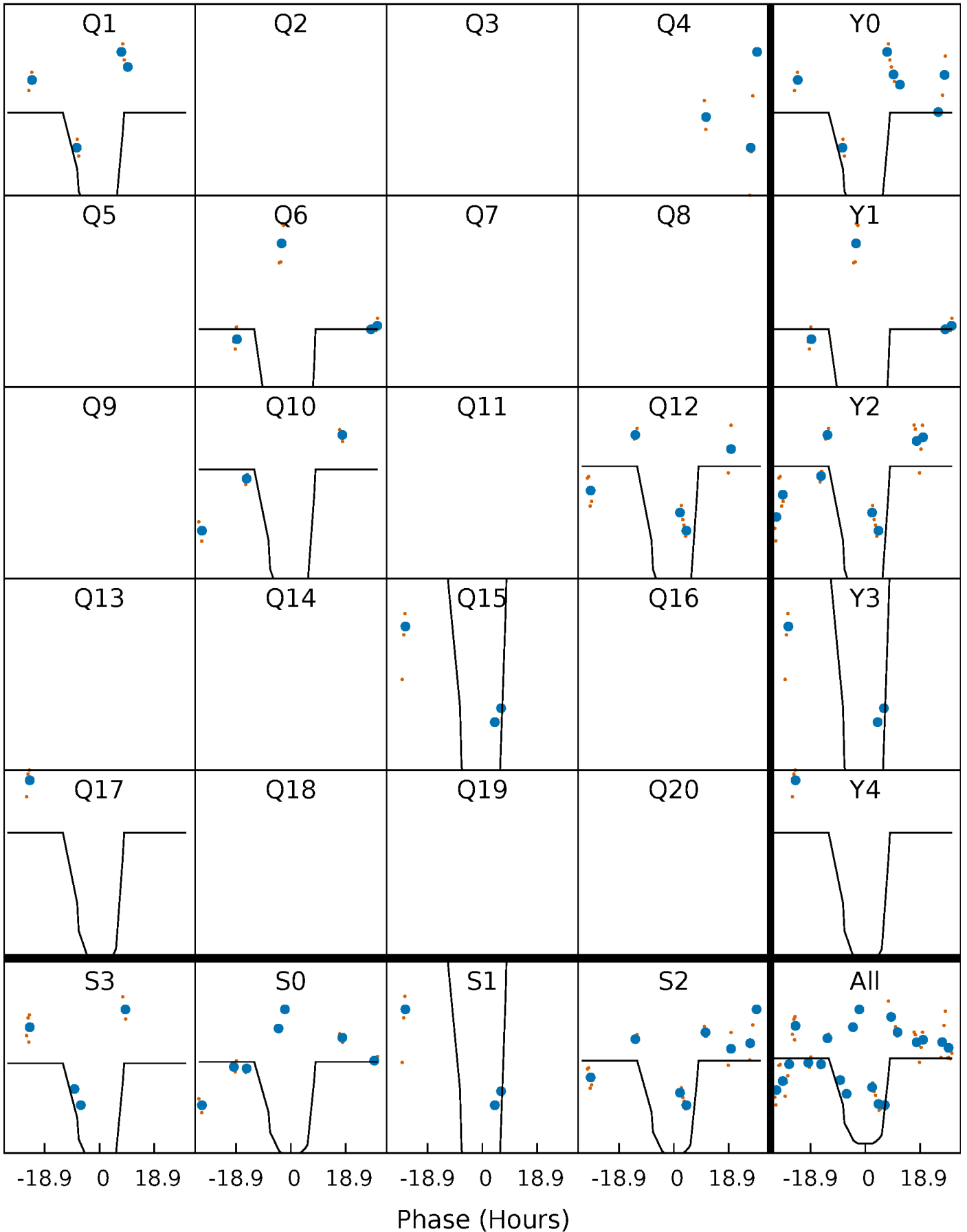
PDC Quarter-Phased Transit Curves

TCE 006445116-03 $P=204.985524$ Days $T_0=147.117532$ (BKJD)



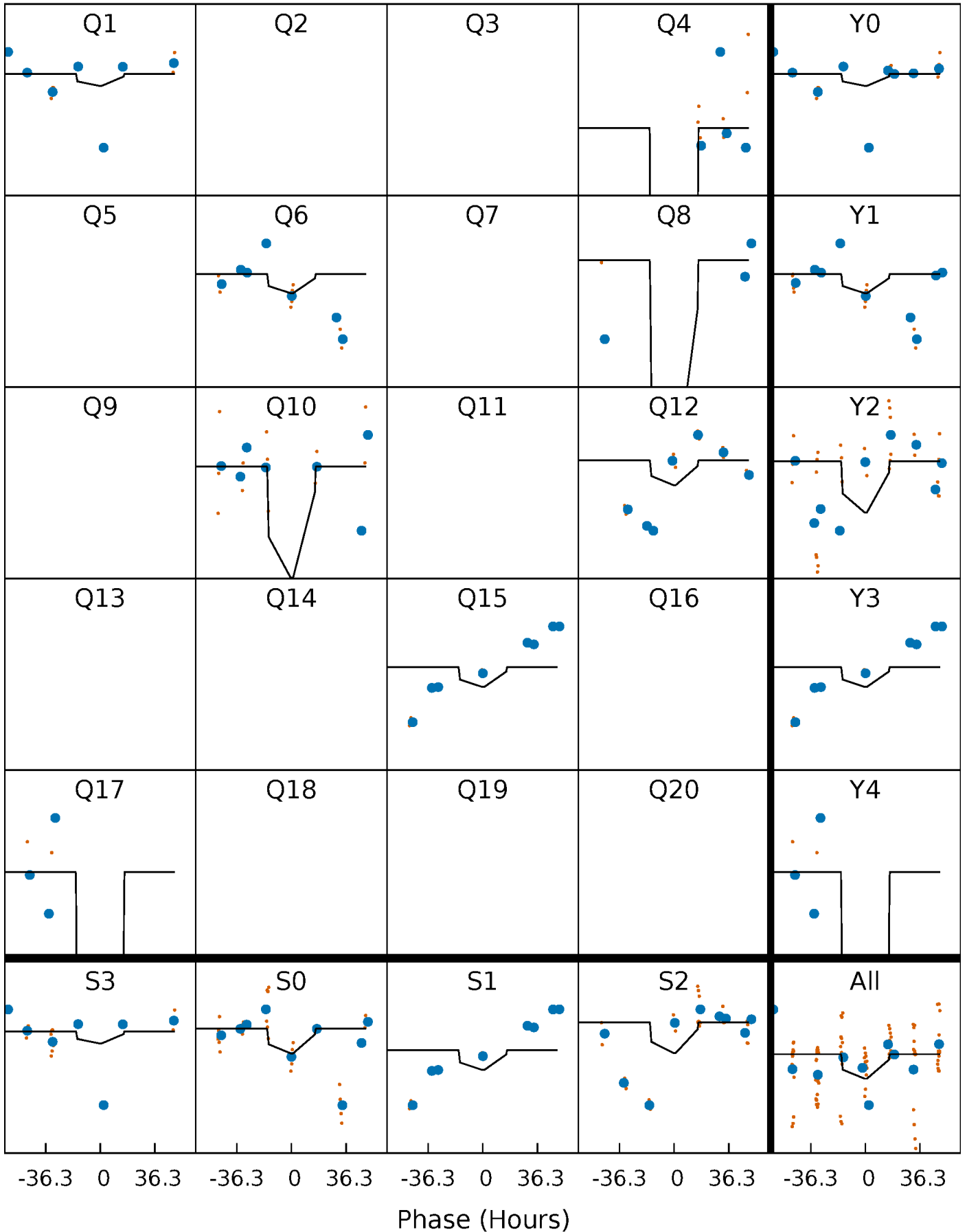
DV Quarter-Phased Transit Curves

TCE 006445116-03 P=204.985524 Days $T_0=147.117532$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

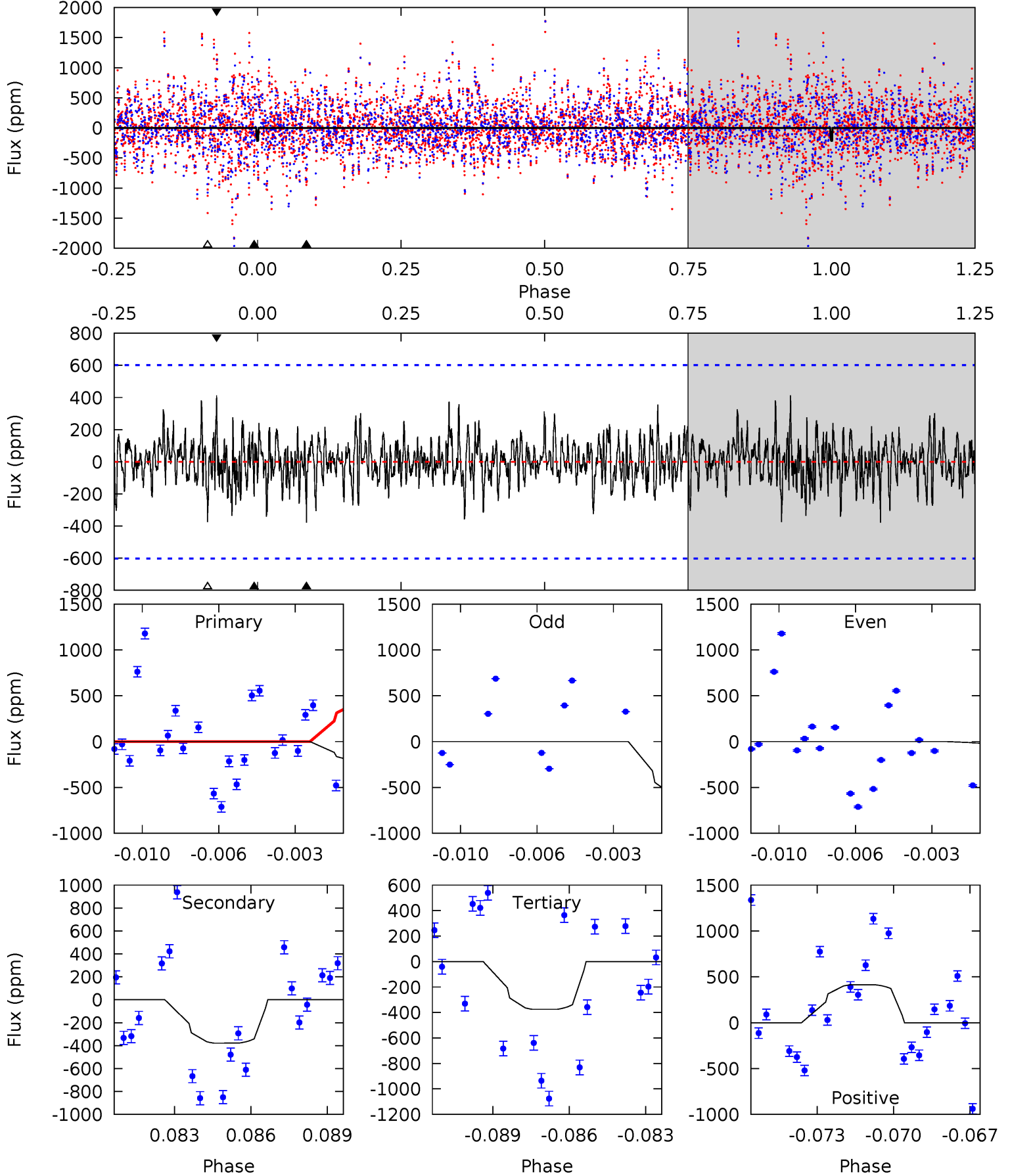
TCE 006445116-03 P=205.078560 Days $T_0=146.779053$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-03, P = 204.985524 Days, E = 147.117532 Days

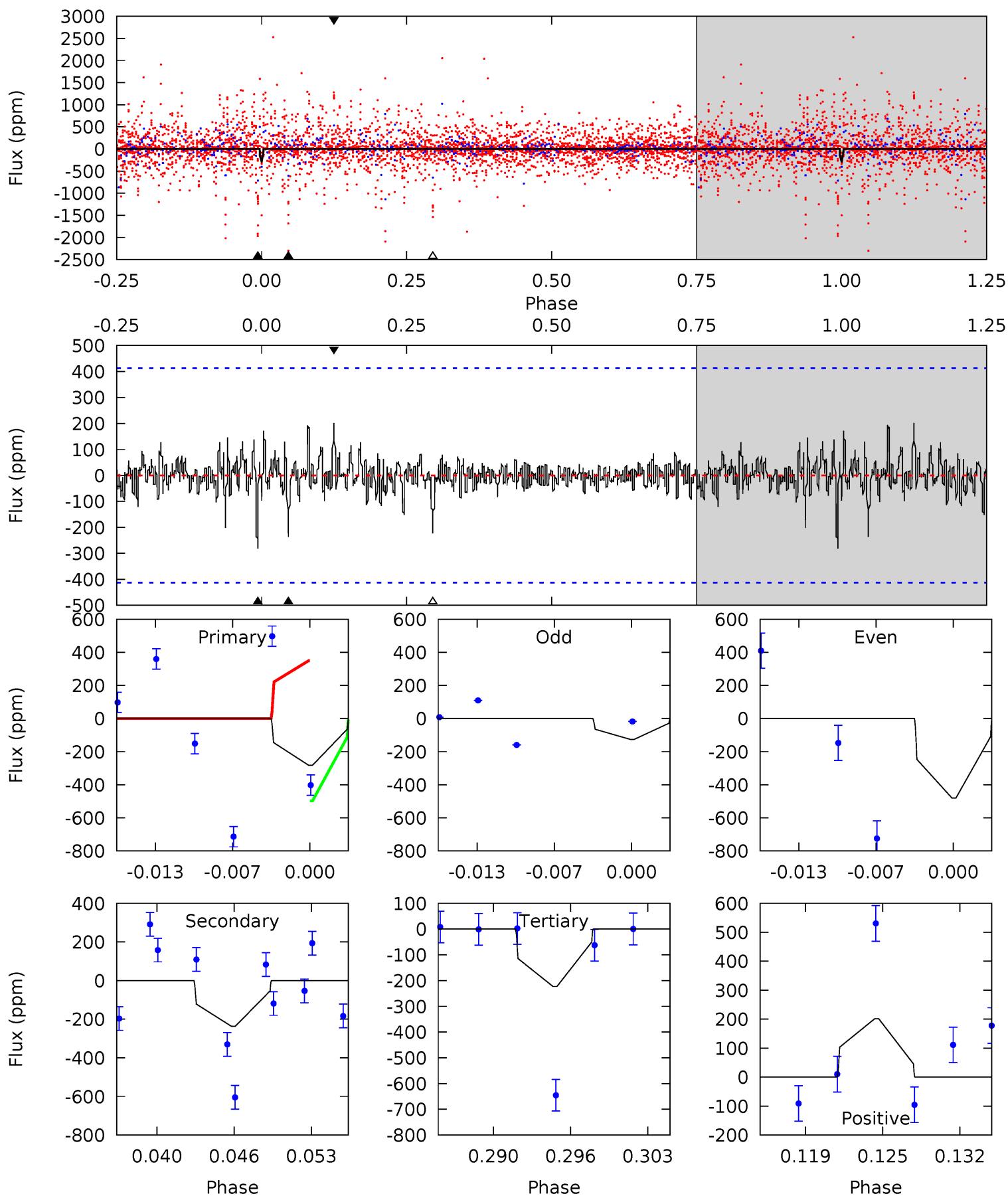
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.87	3.29	3.27	3.60	5.24	2.95	0.99	-1.40	-1.73	0.03	-0.30	2.37	0.60	0.52	1.13



Alt Model-Shift Uniqueness Test

006445116-03, P = 205.078560 Days, E = 146.779053 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.49	2.93	2.76	2.49	5.11	2.72	0.53	0.73	1.00	0.17	0.43	1.57	2.18	0.42	0.92



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-378 ± 115	$12.67^{+10.34}_{-7.77}$	843^{+46}_{-71}	4982^{+2968}_{-1074}	792^{+4302}_{-567}
Alt.	-237 ± 81	$11.49^{+8.56}_{-7.33}$	841^{+49}_{-81}	4632^{+2614}_{-893}	586^{+3506}_{-402}

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

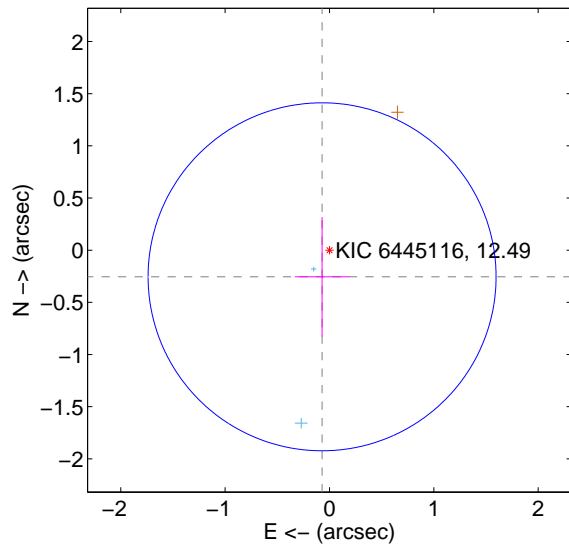
Supplemental centroid analysis for 006445116-03. Kepler magnitude: 12.49. Transit SNR 8.03

There are 2 quarters with good PRF difference image offsets

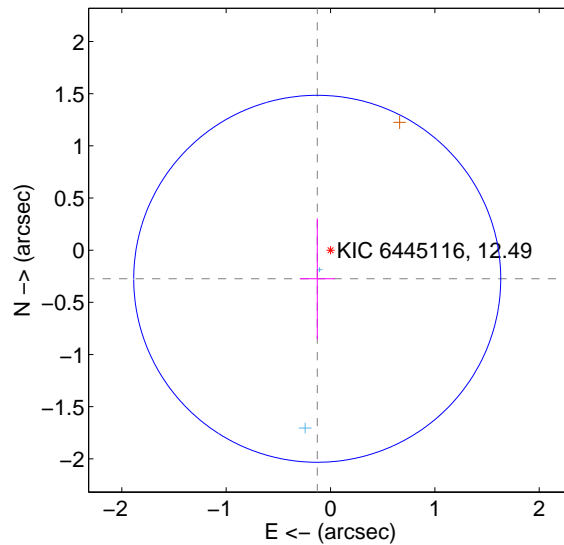
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.265 ± 0.556	0.48	0.071 ± 0.261	-0.255 ± 0.572
PRF-fit source offset from KIC position	0.302 ± 0.586	0.52	0.127 ± 0.167	-0.274 ± 0.579
photometric centroid source offset	0.04 ± 0.09	0.50	-0.04 ± 0.09	0.01 ± 0.07

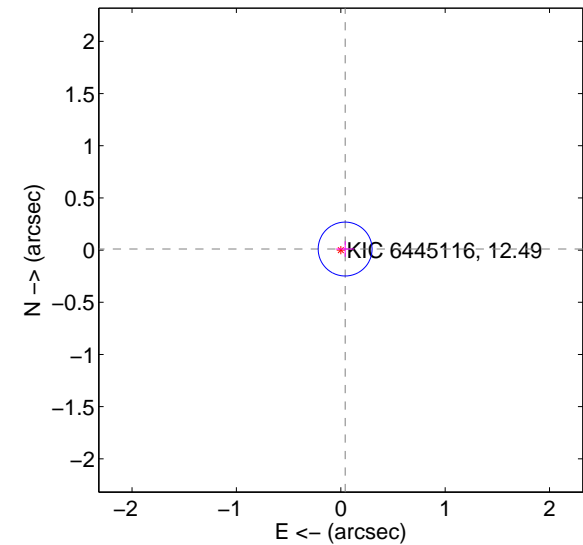
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

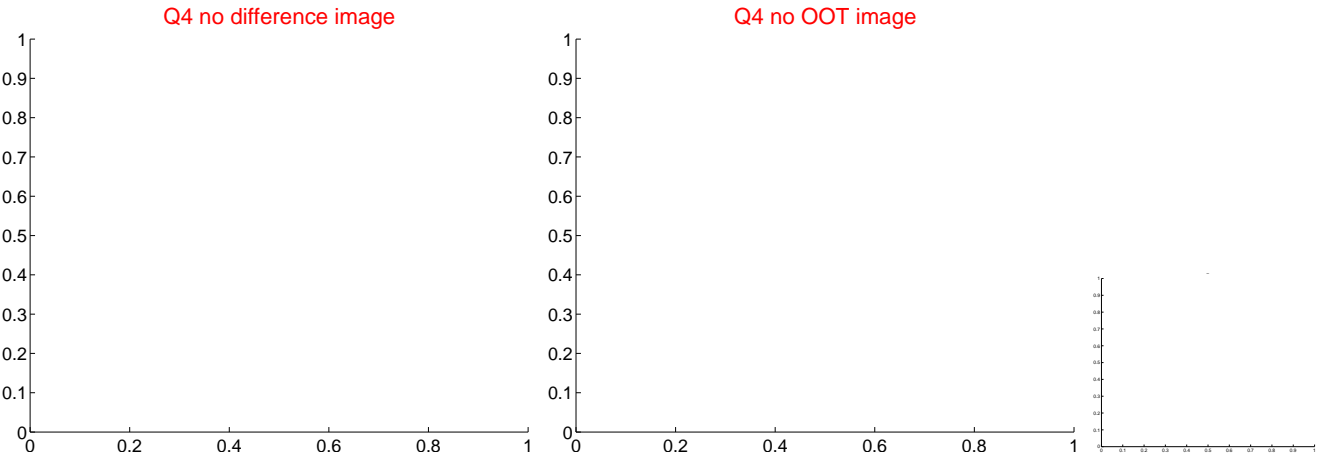
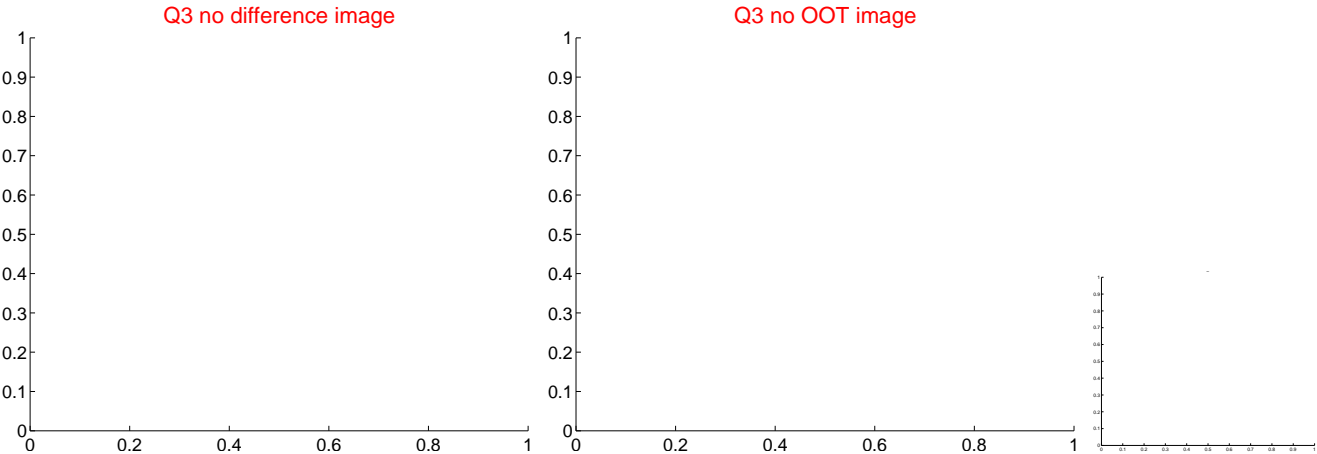
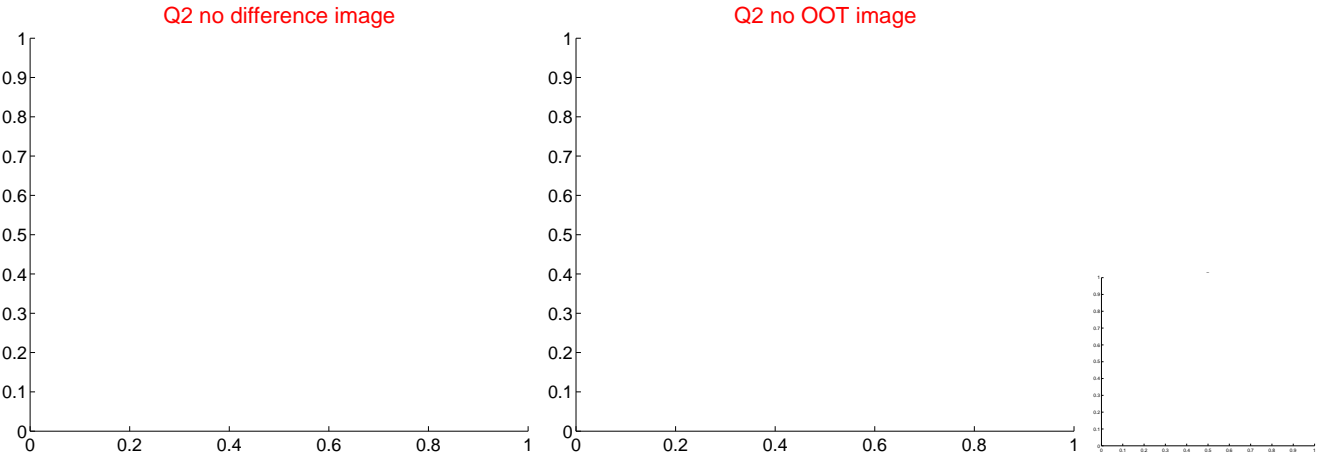
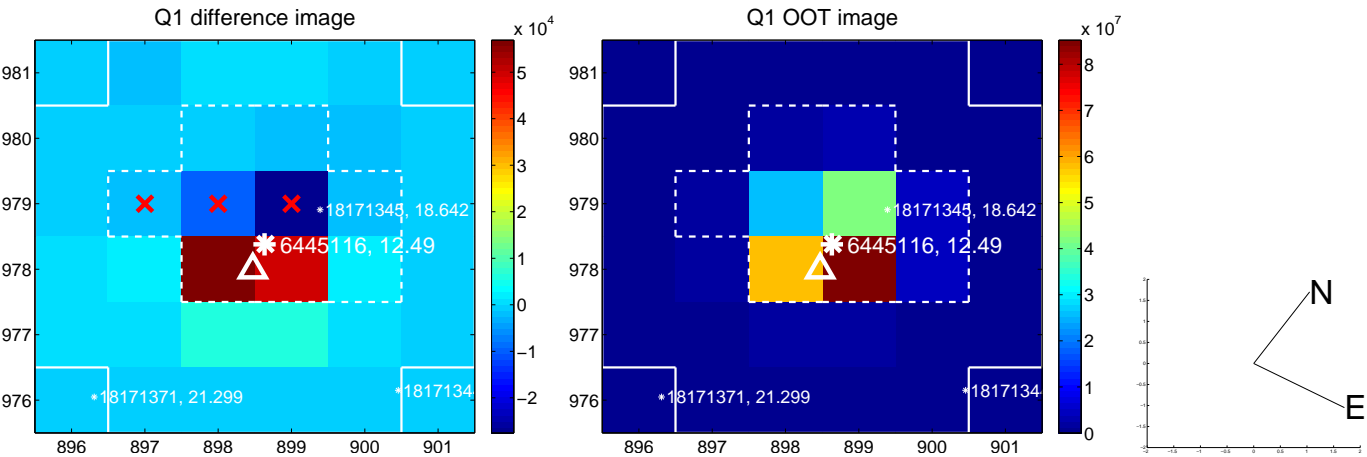


offset from photometric centroids

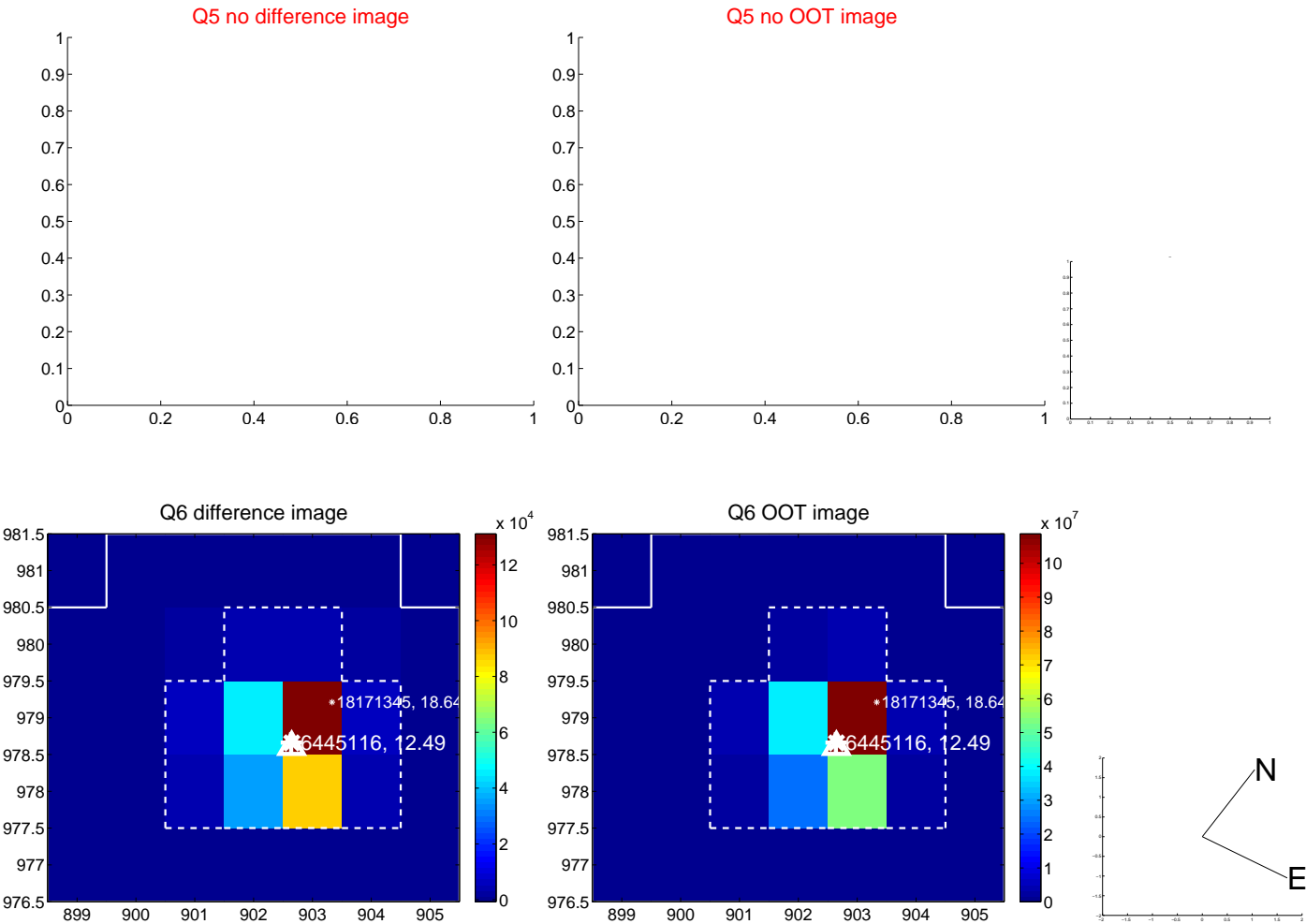


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



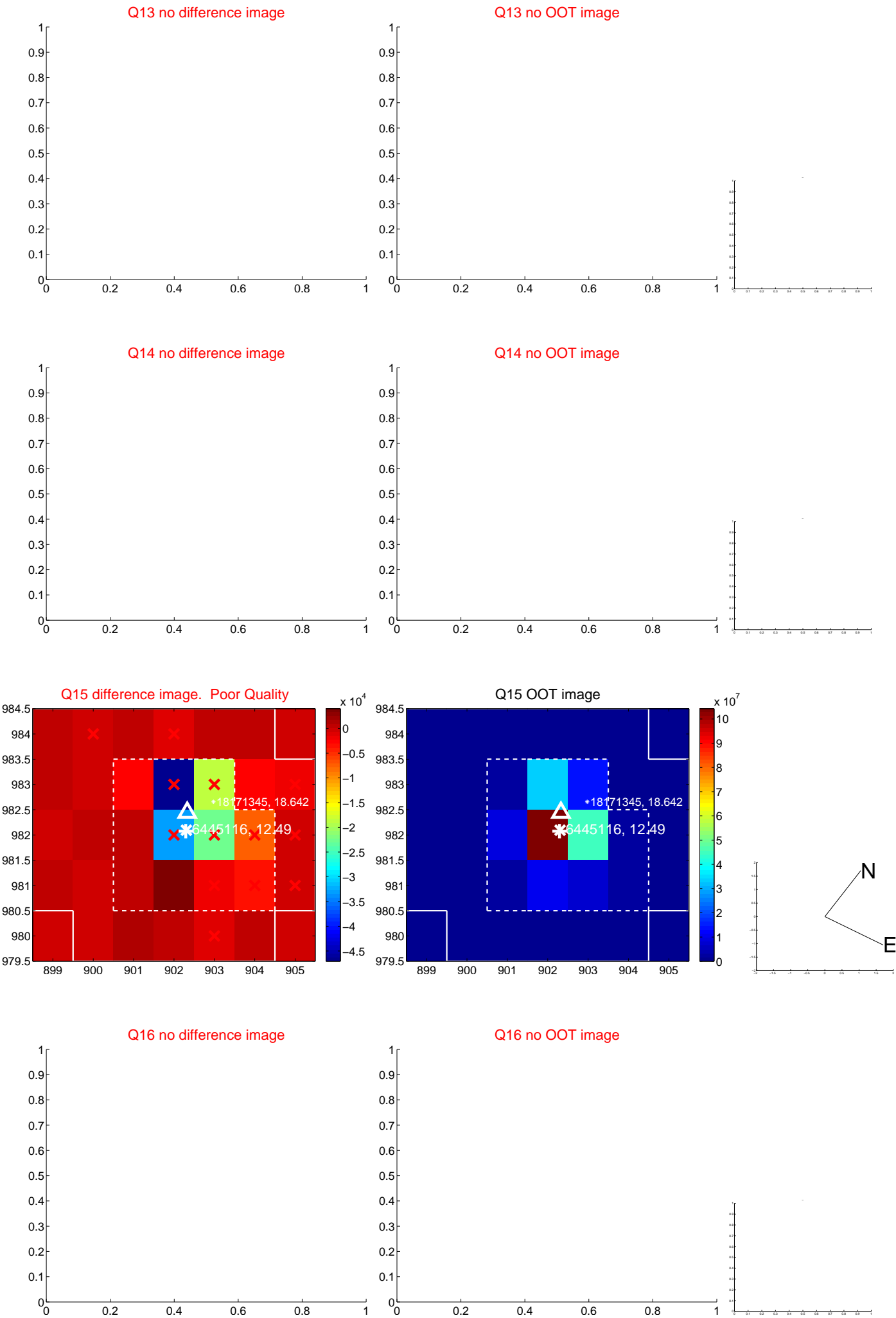
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



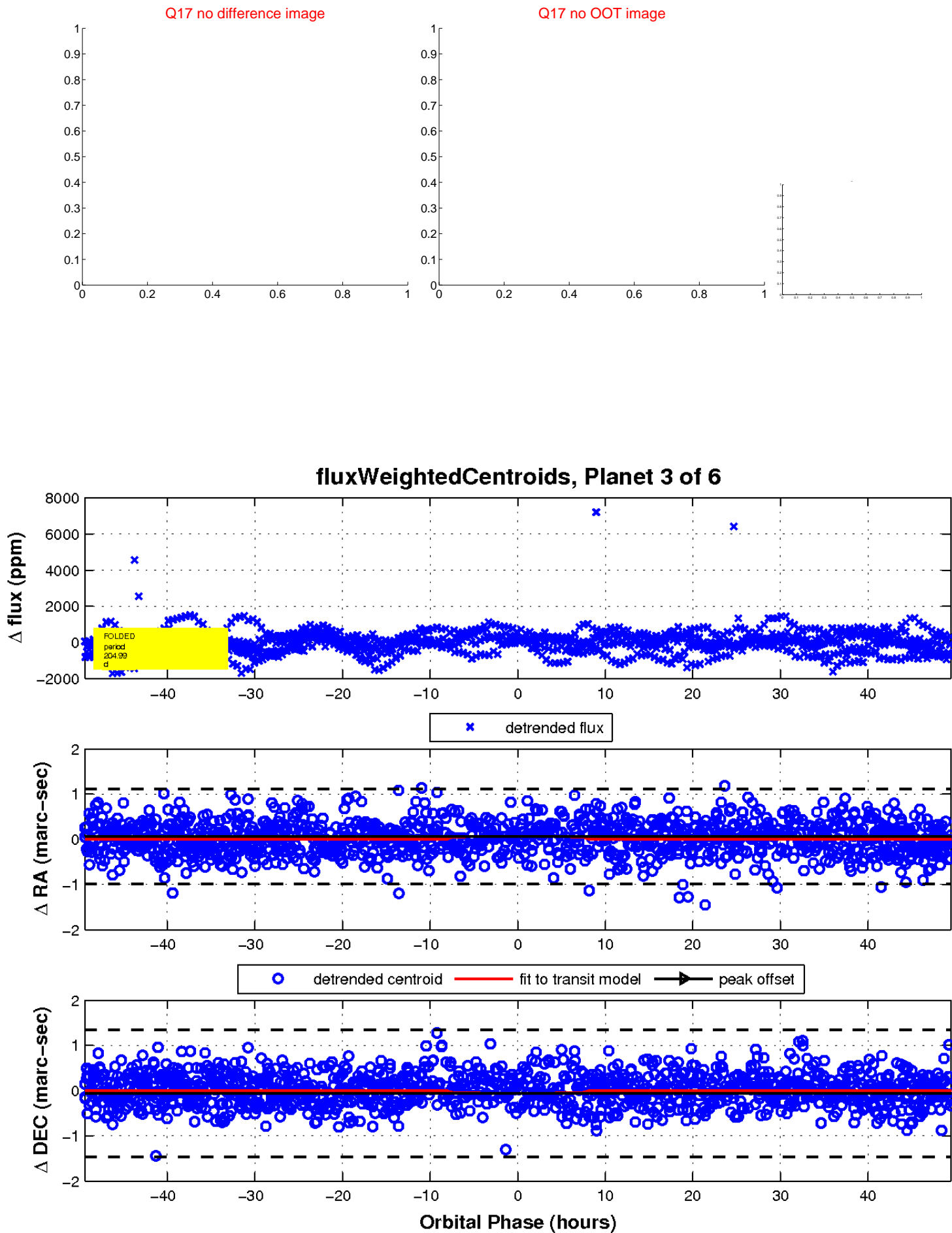
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

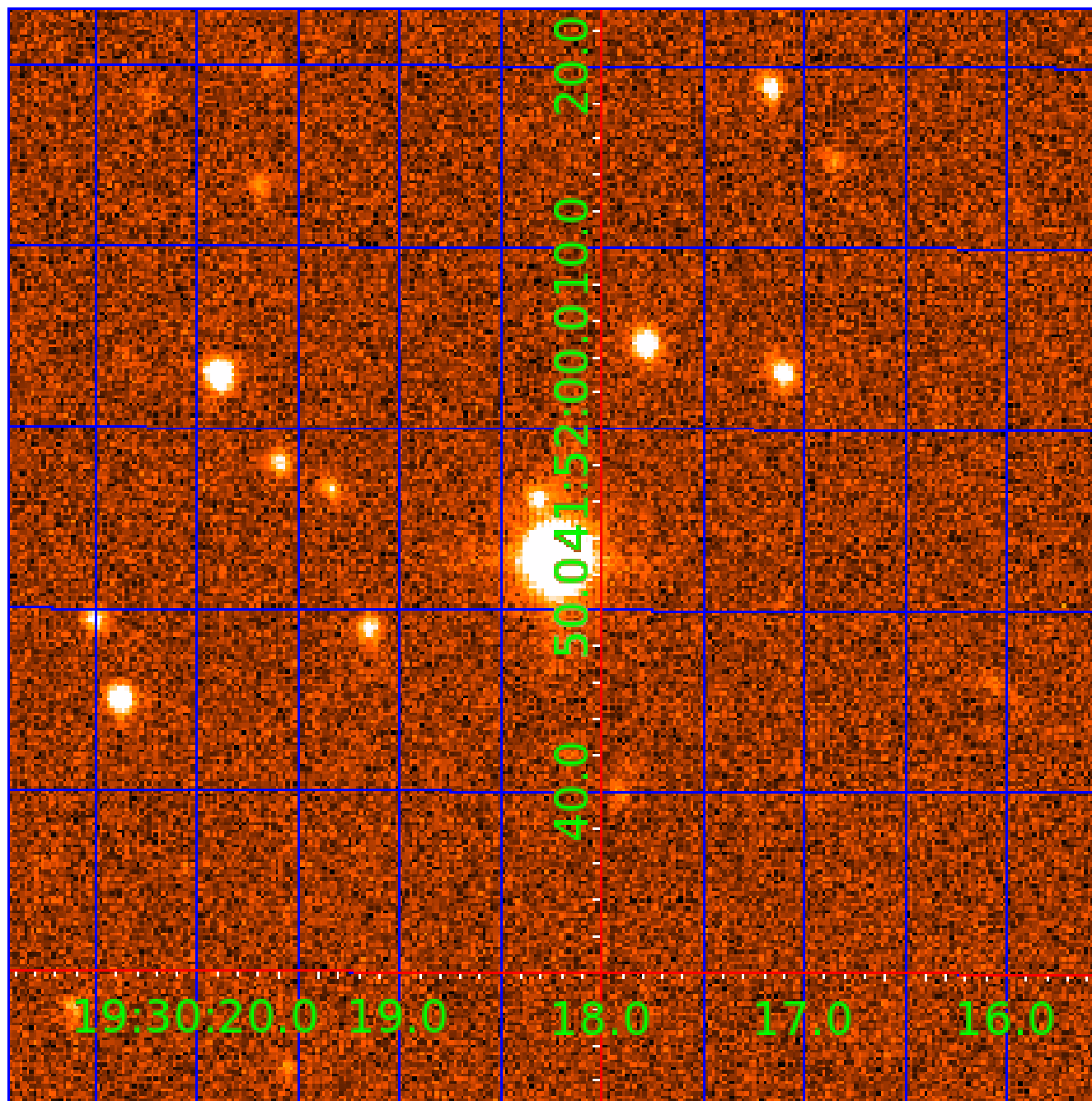


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006445116

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})
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006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

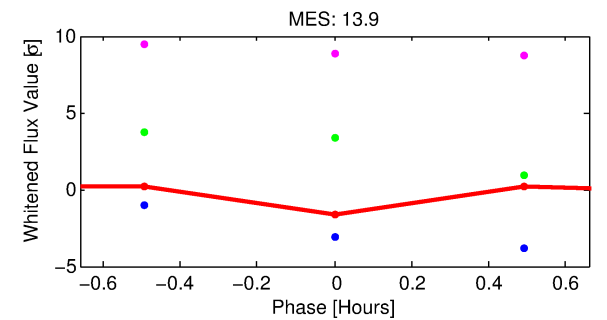
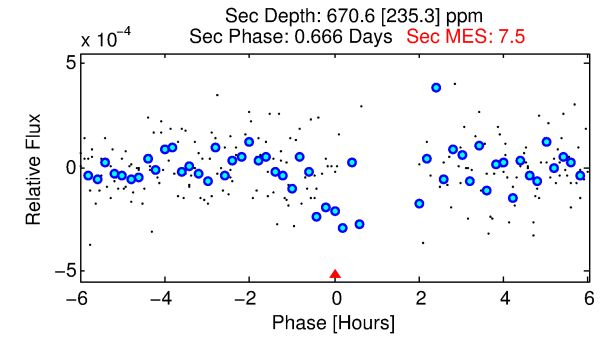
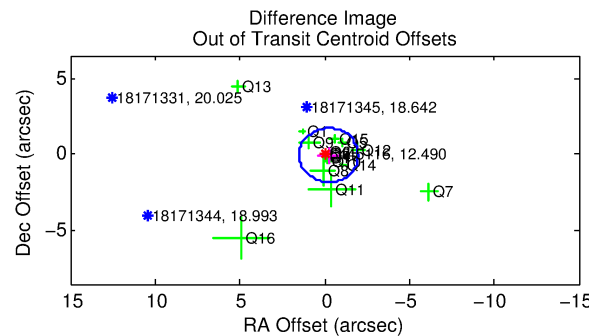
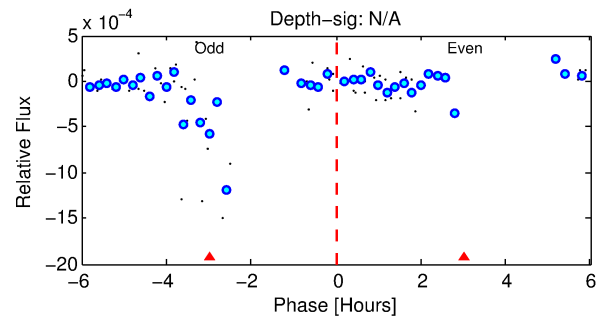
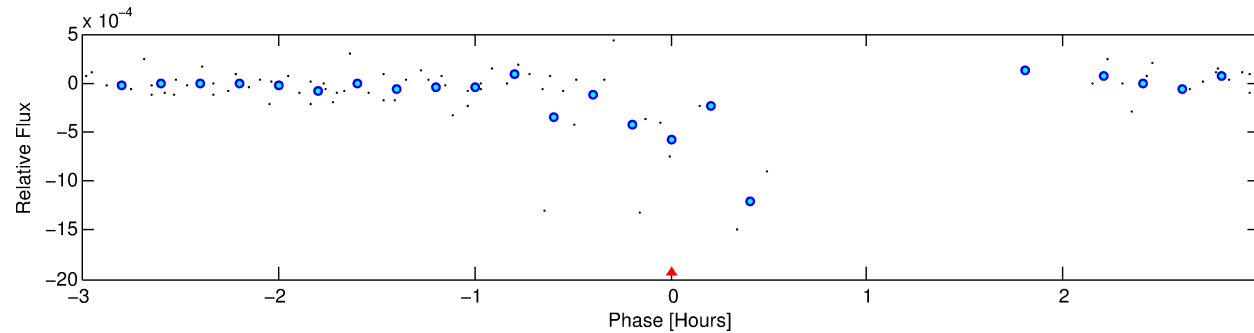
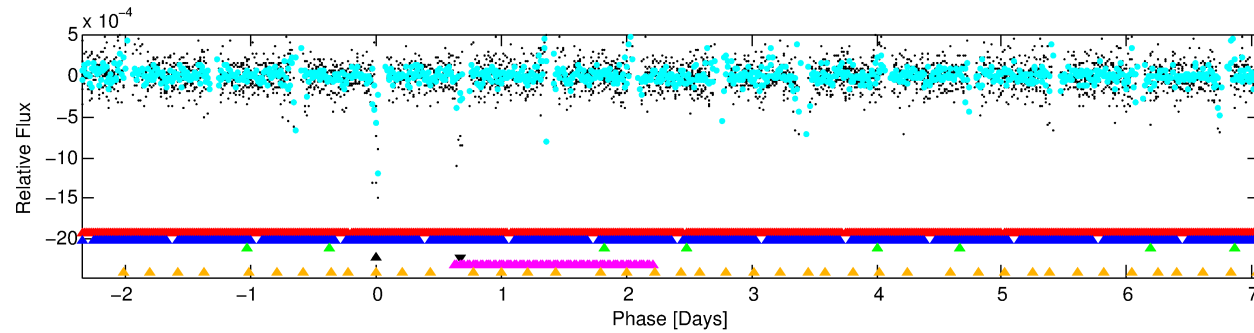
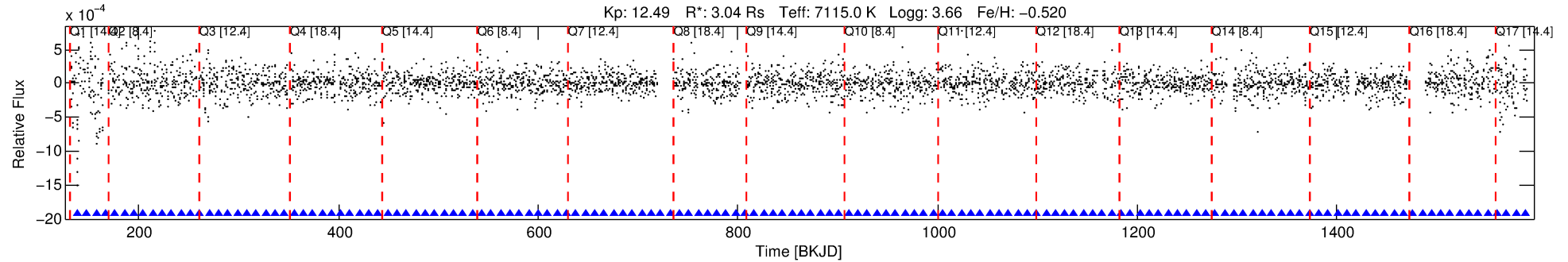
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-04

No Significant Match Found

DV One-Page Summary

KIC: 6445116 Candidate: 4 of 6 Period: 9.417 d



TPS TCE Results:

Period = 9.41705 d
Epoch = 138.7422 BKJD

DV fit results are unavailable

DV Diagnostic Results:

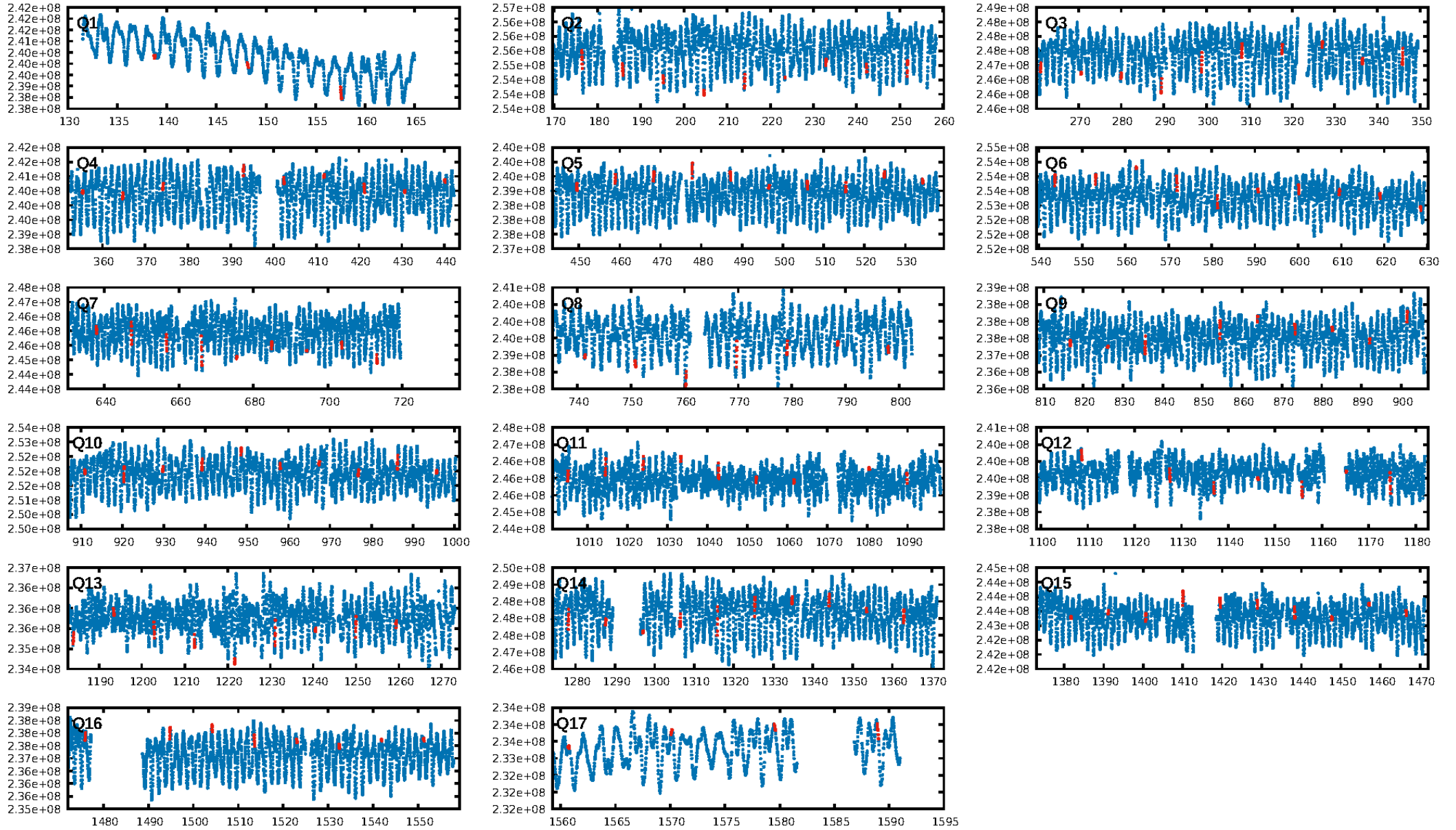
ShortPeriod-sig: 100.0% [50.05σ]
LongPeriod-sig: 100.0% [102.01σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 2.817

Centroid-sig: 1.8%
Centroid-so: 0.051 arcsec [3.58σ]
OotOffset-rm: 0.233 arcsec [0.40σ]
KicOffset-rm: 0.284 arcsec [0.46σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/16]

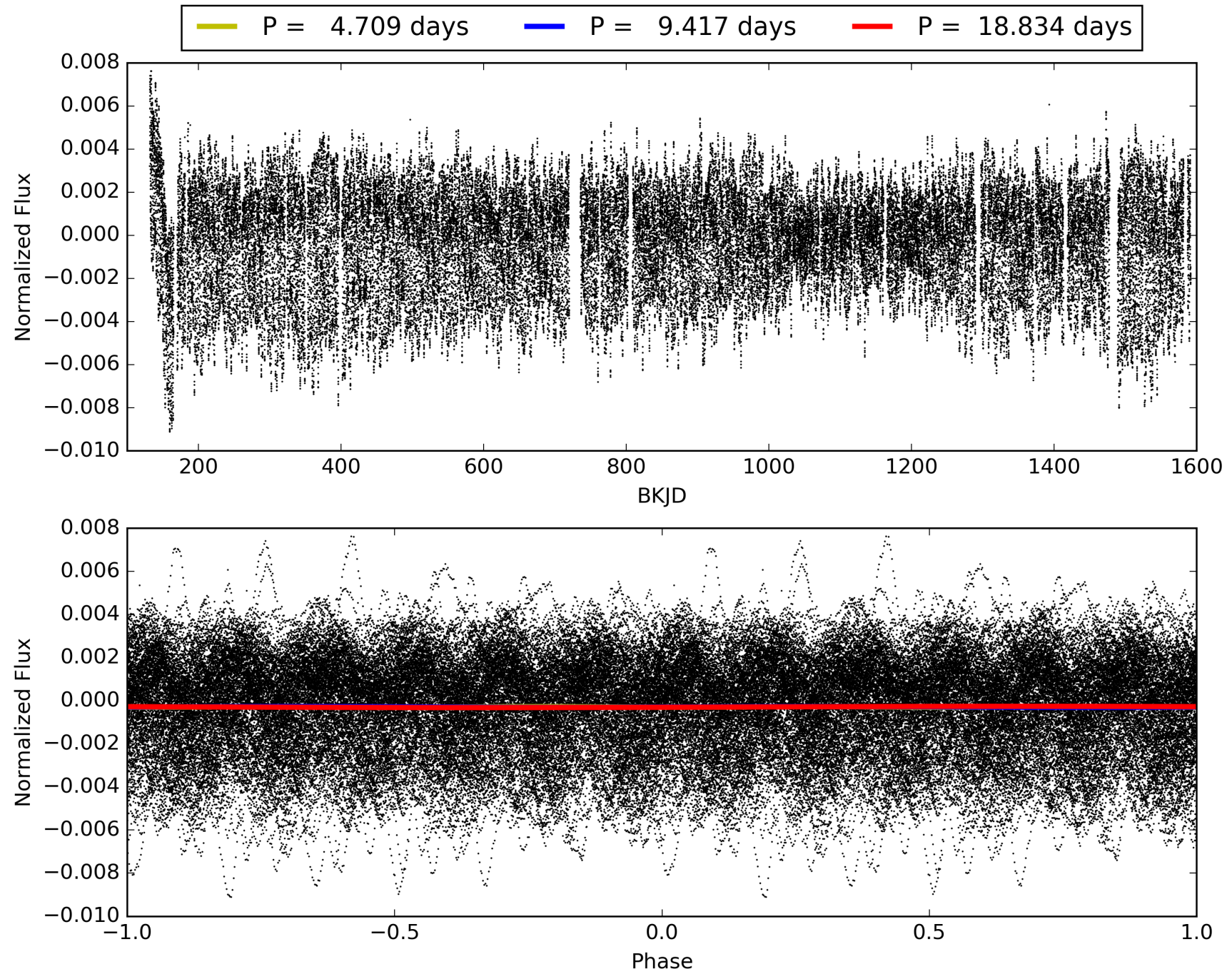
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:52:22 Z

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

TCE 006445116-04, PDC Light Curves

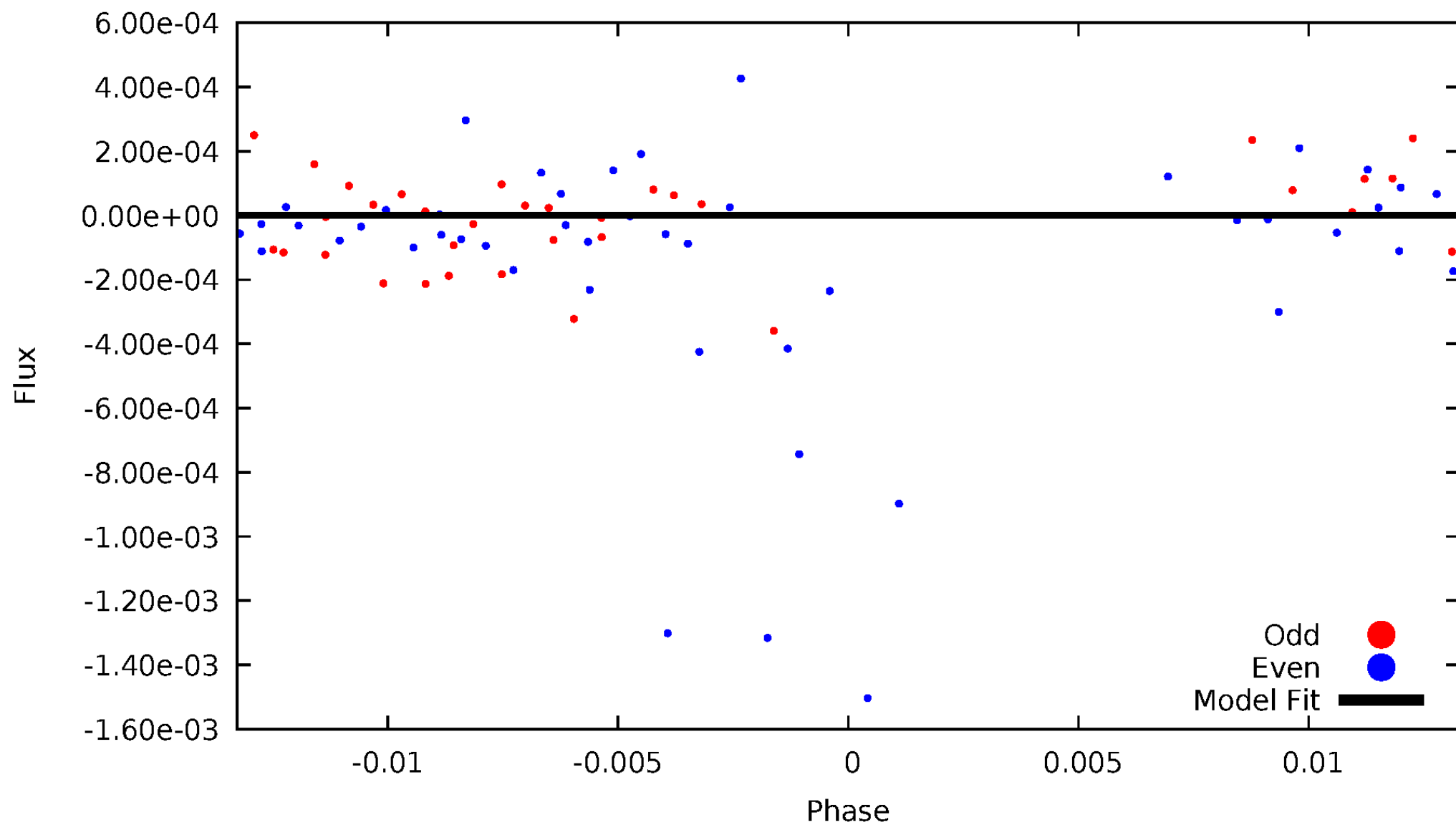


TCE 006445116-04



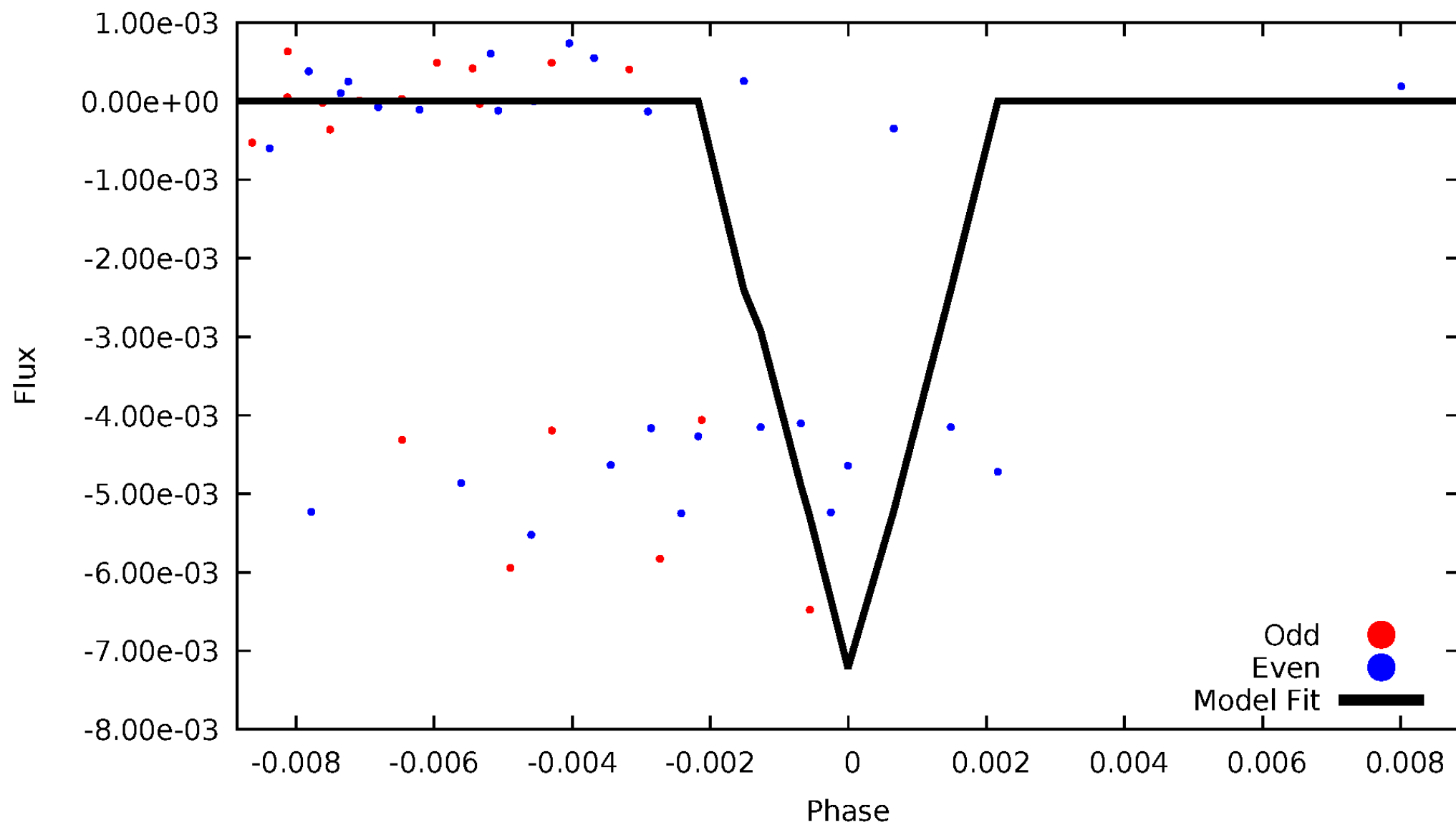
DV Odd/Even

TCE 006445116-04



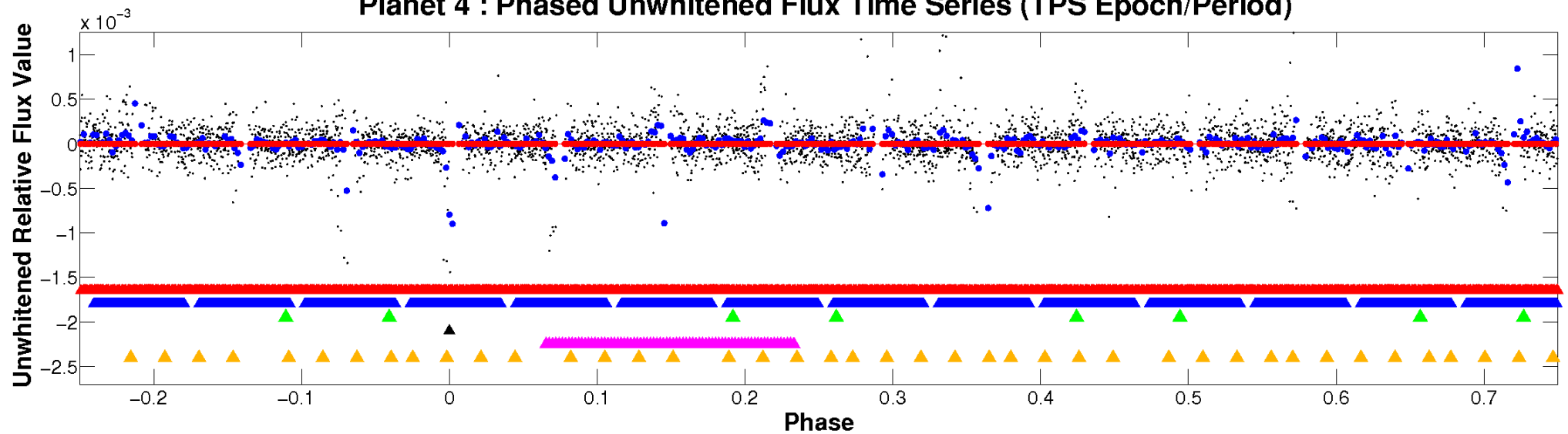
ALT Odd/Even

TCE 006445116-04

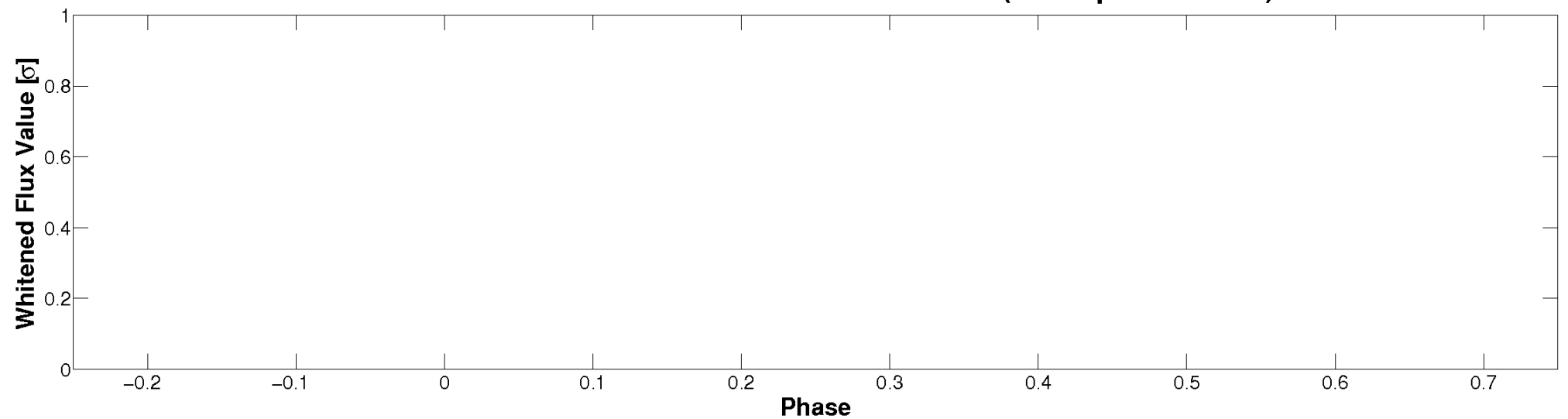


Non-Whitened Vs. Whitened Light Curve

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

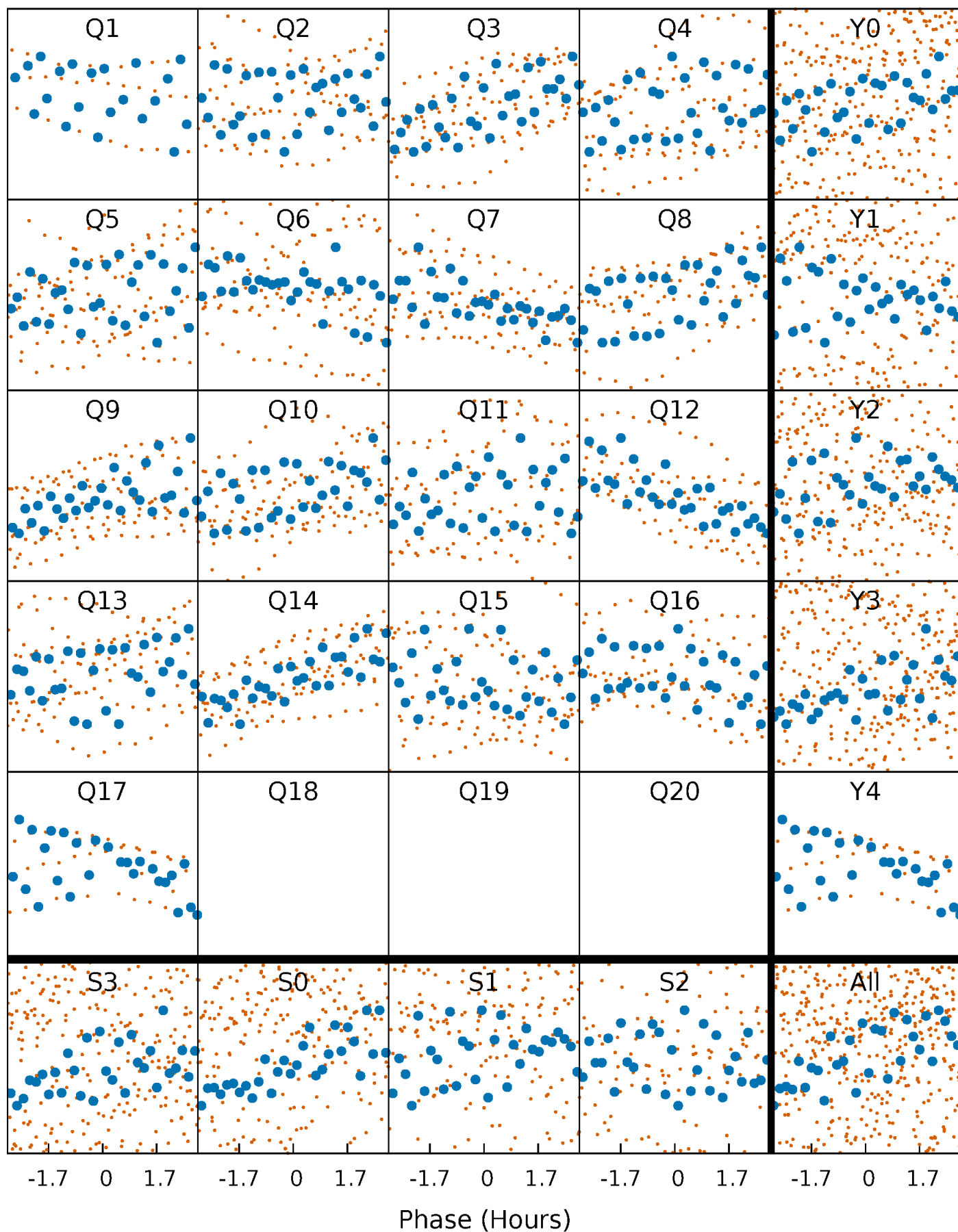


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



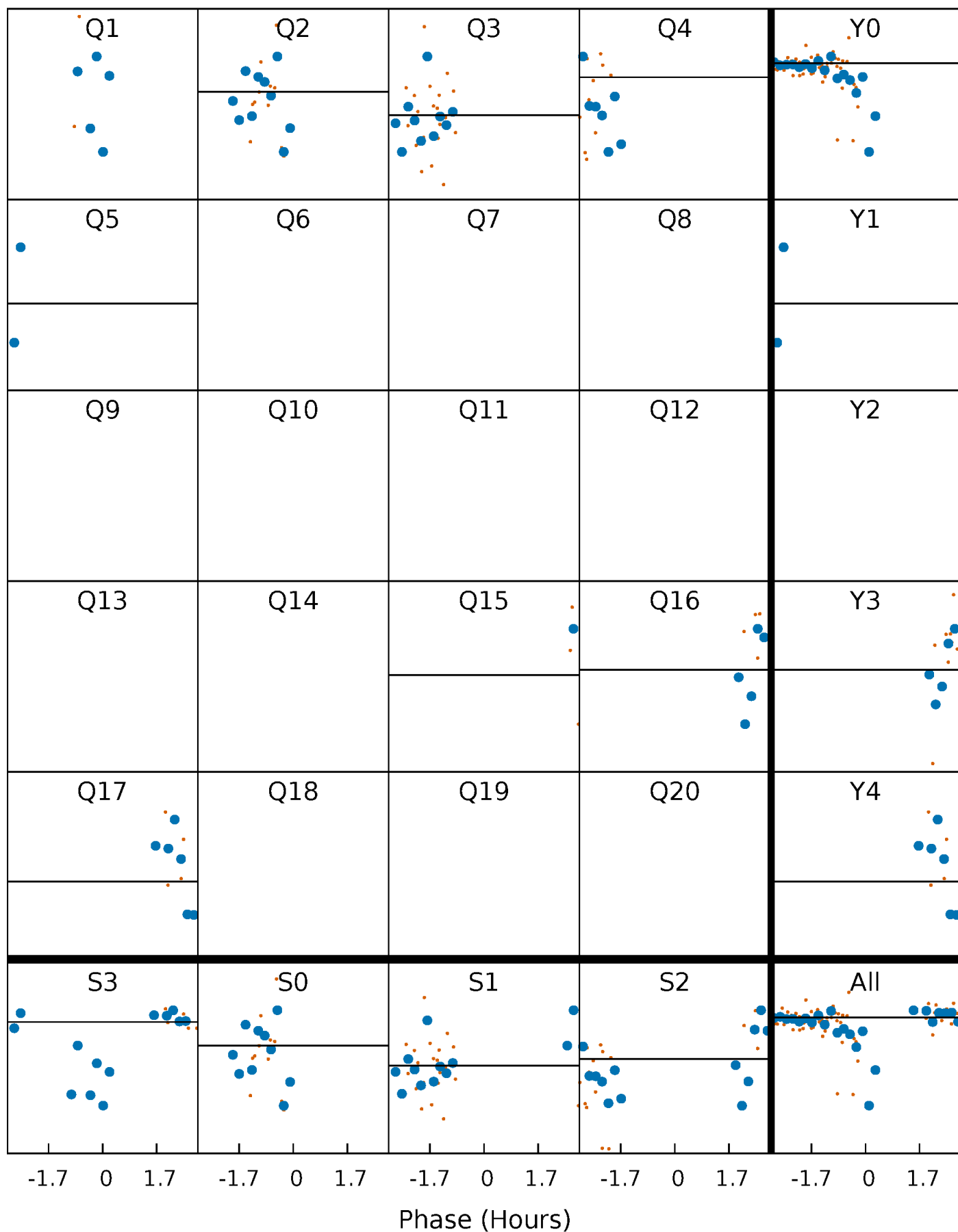
PDC Quarter-Phased Transit Curves

TCE 006445116-04 P= 9.417049 Days $T_0=138.742245$ (BKJD)



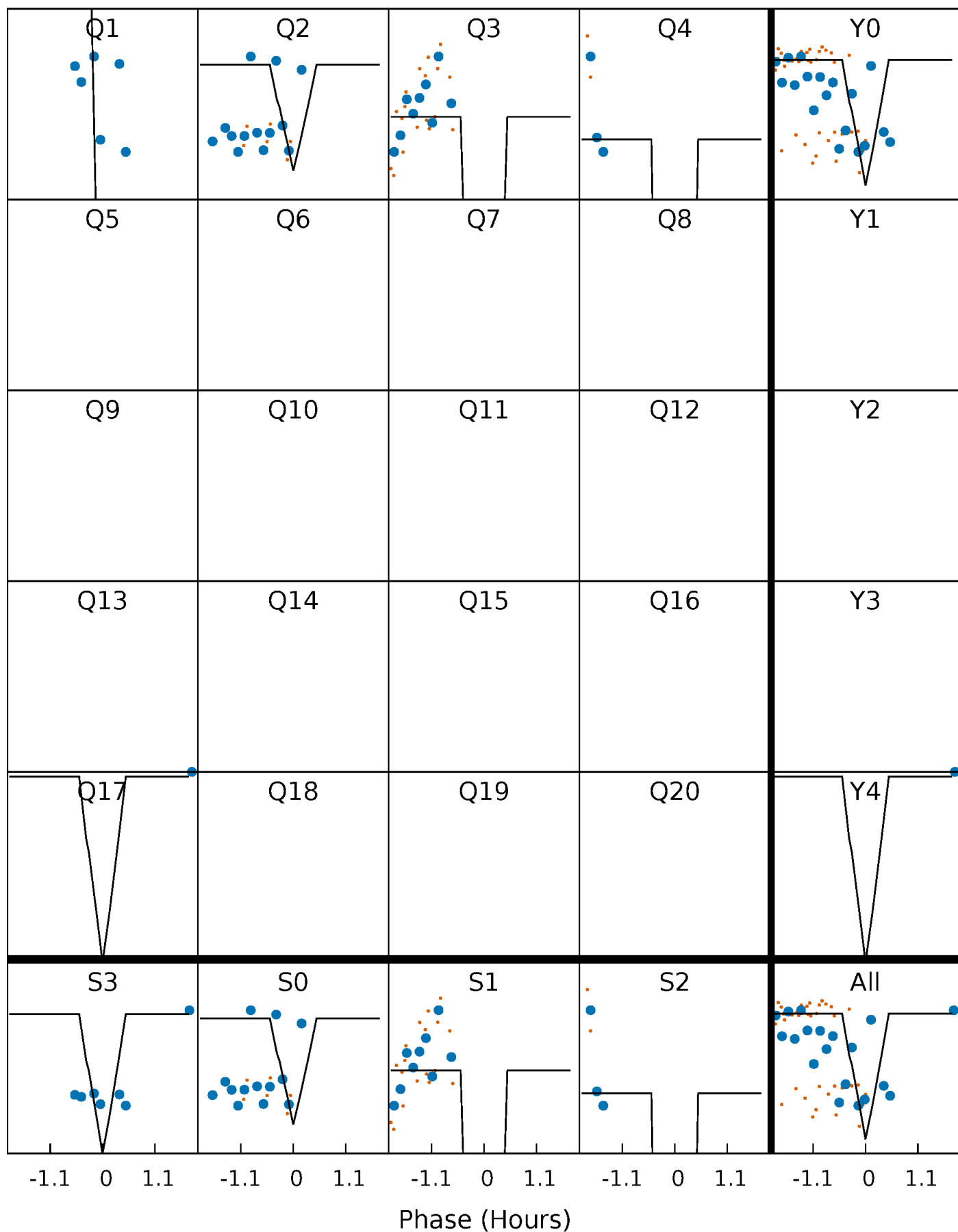
DV Quarter-Phased Transit Curves

TCE 006445116-04 P= 9.417049 Days $T_0=138.742245$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

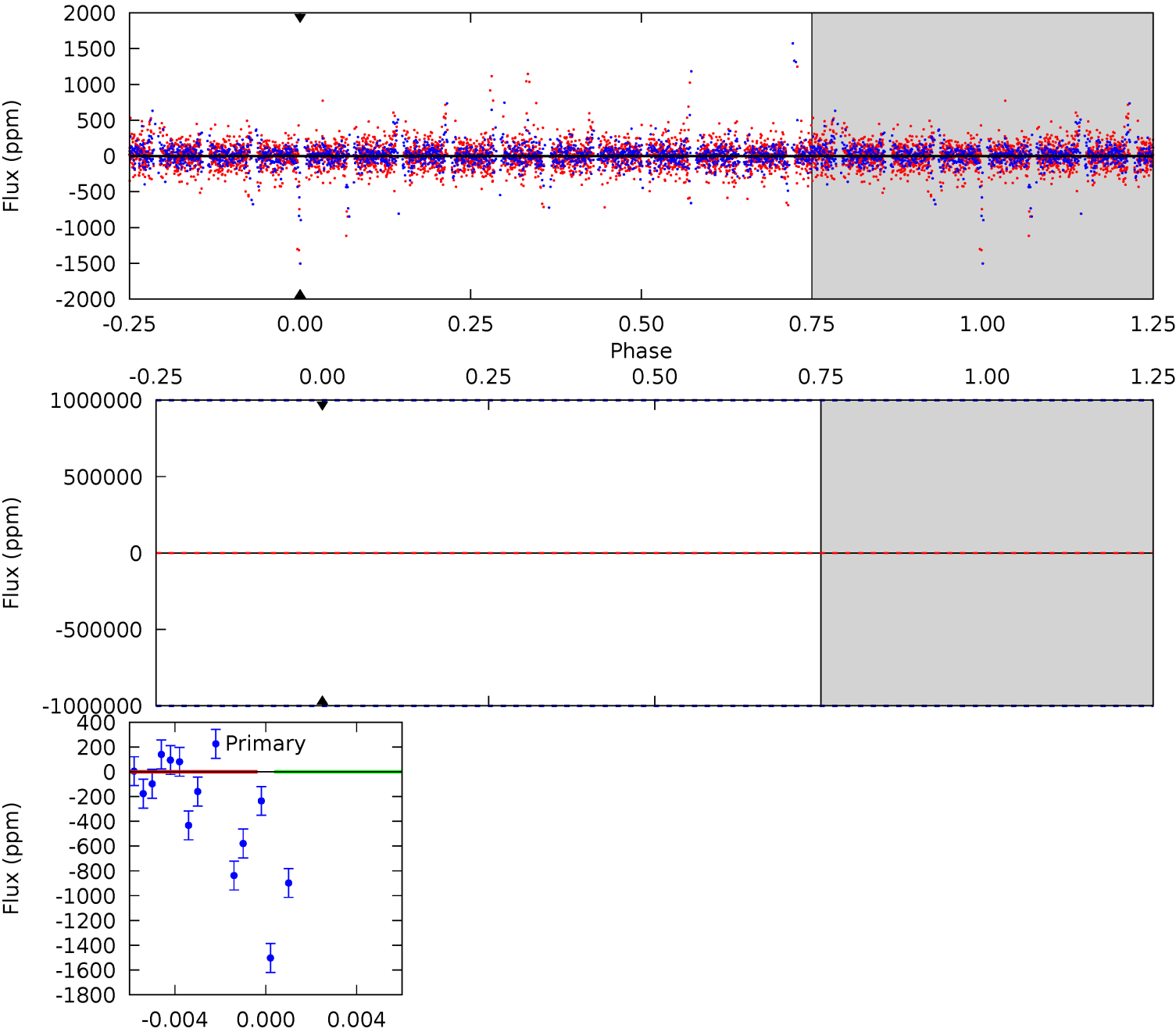
TCE 006445116-04 P= 9.417049 Days $T_0=138.732222$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-04, P = 9.417049 Days, E = 129.325196 Days

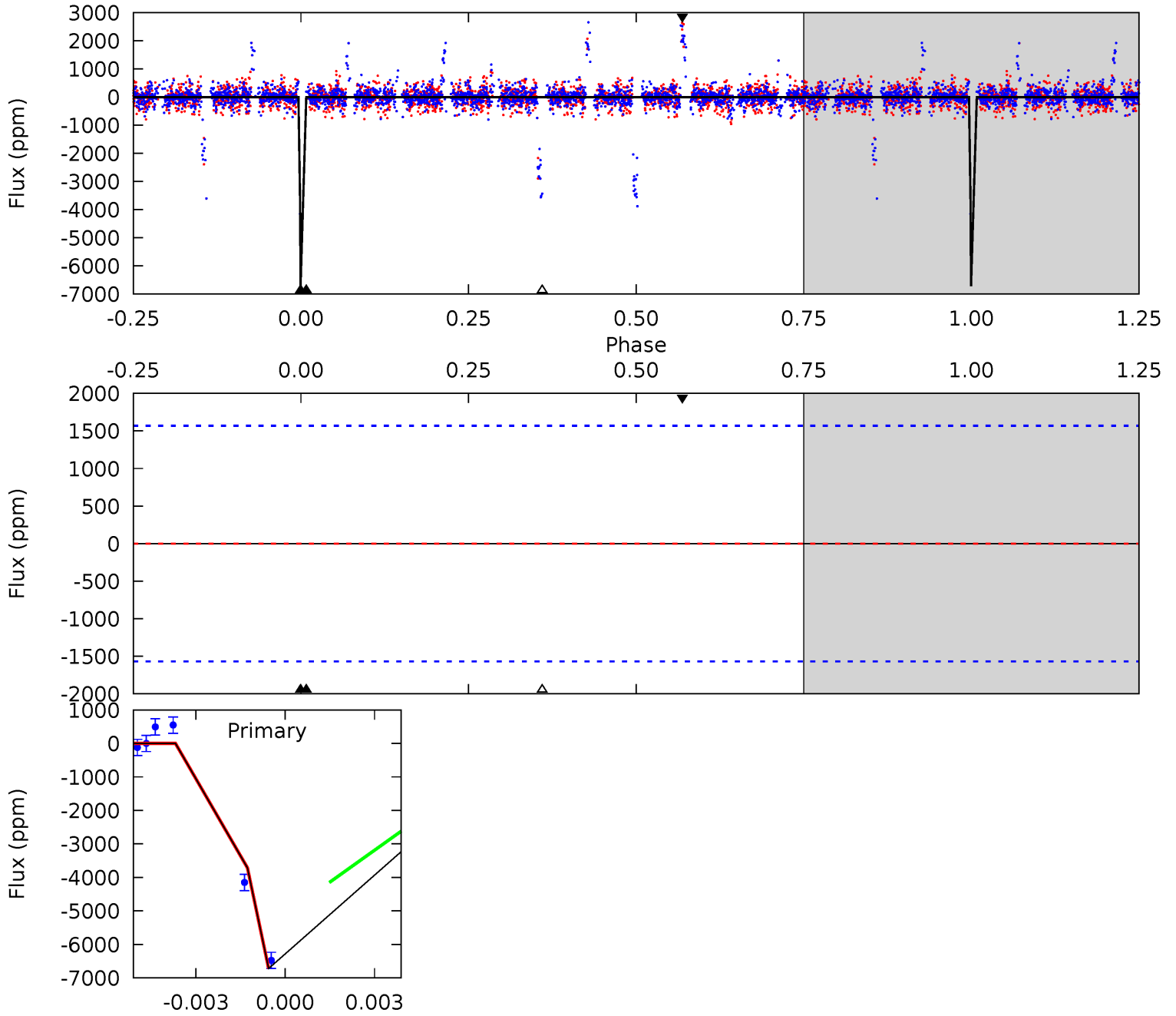
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

006445116-04, P = 9.417049 Days, E = 129.315173 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	5.25	2.97	0	0	0	0	0	0	1.00	0	0



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$24.43^{+24.06}_{-17.09}$	2362^{+128}_{-230}	3279^{+31440}_{-35981}	$1.960^{+1840.930}_{-1768.814}$
Alt.	-0 ± 299	$33.89^{+27.46}_{-21.21}$	2350^{+141}_{-207}	-2649^{+6167}_{-939}	$0.030^{+2.375}_{-1.993}$

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 $A_{obs} \gg 1.0$

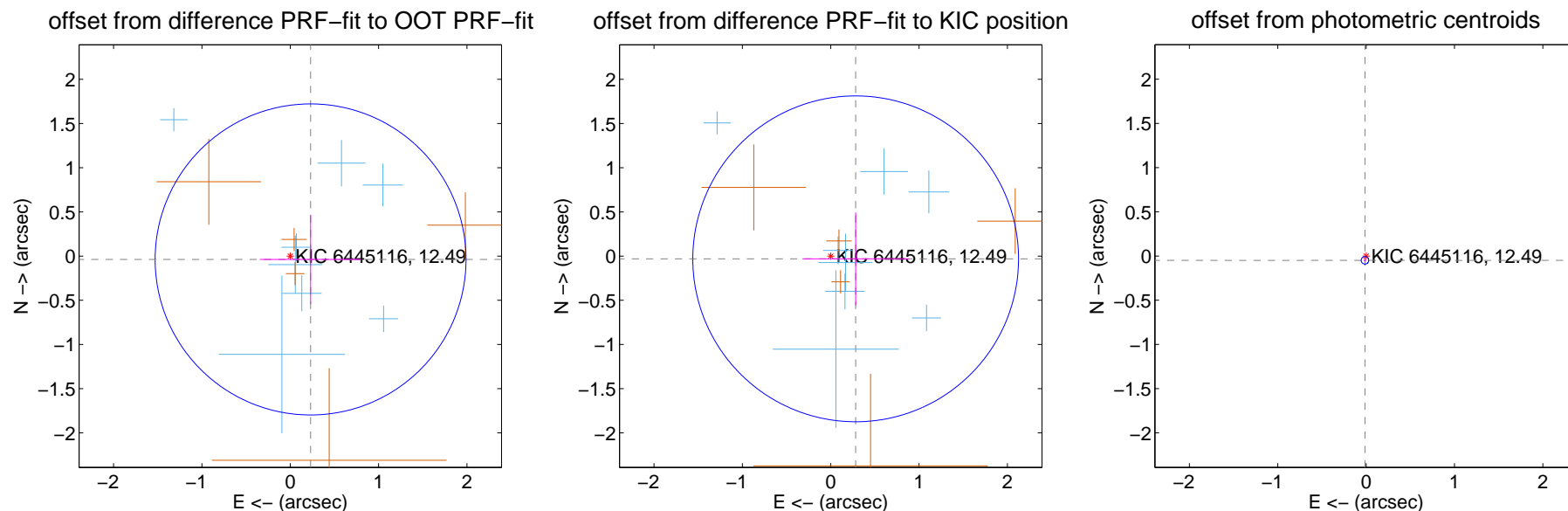
DV Centroid Data

Supplemental centroid analysis for 006445116-04. Kepler magnitude: 12.49. Transit SNR -1.00

There are 8 quarters with good PRF difference image offsets

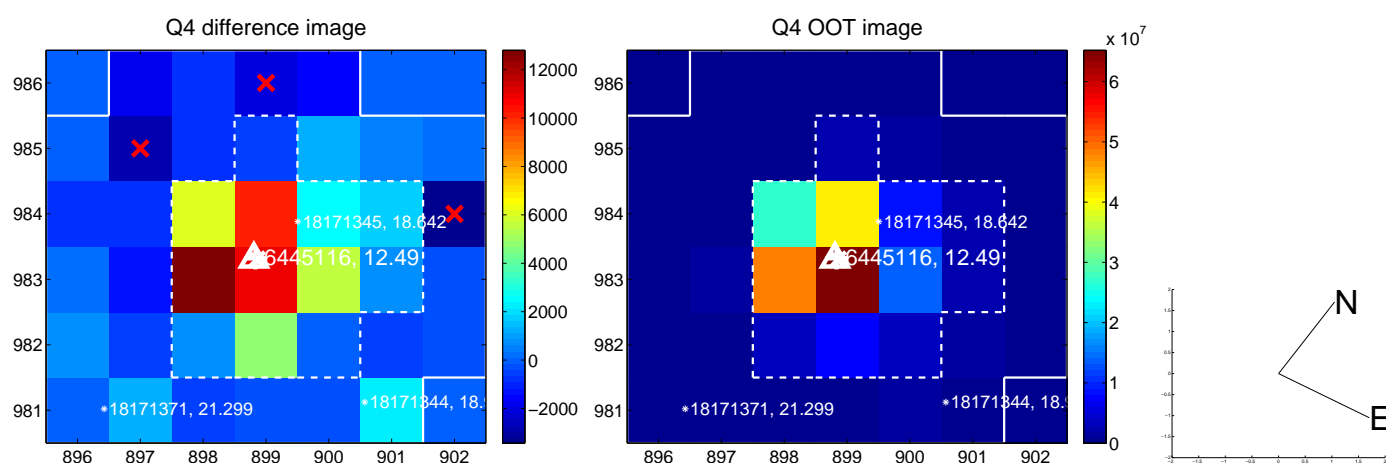
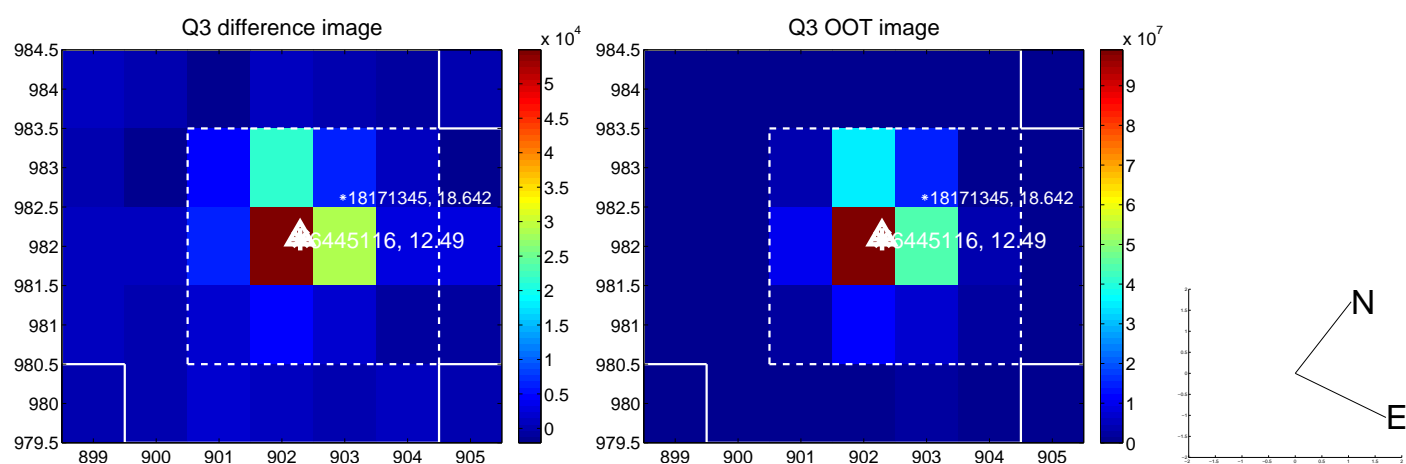
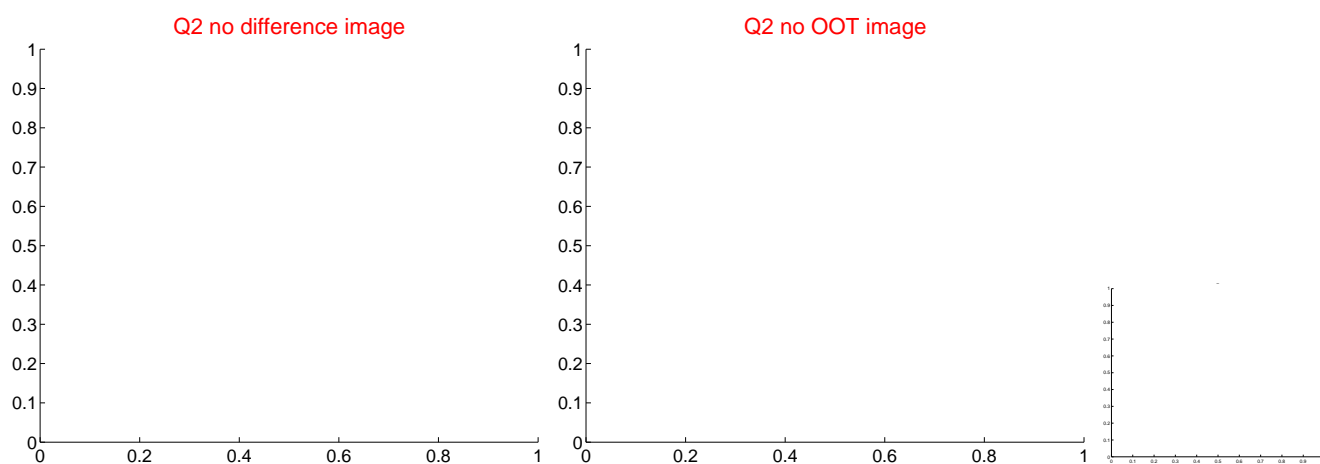
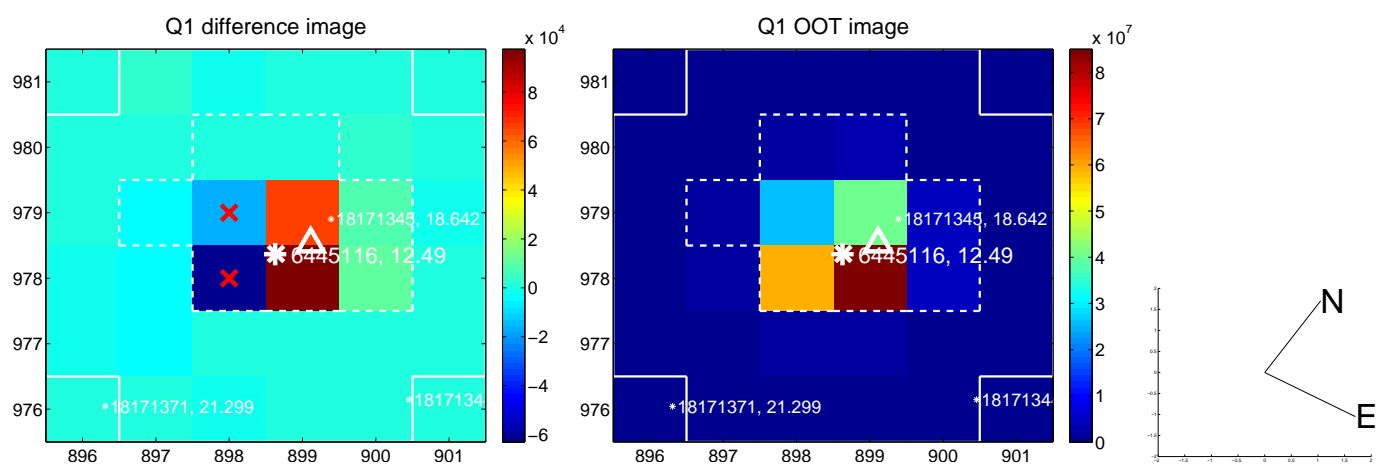
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.233 ± 0.587	0.40	-0.230 ± 0.575	-0.038 ± 0.504
PRF-fit source offset from KIC position	0.284 ± 0.615	0.46	-0.282 ± 0.602	-0.031 ± 0.525
photometric centroid source offset	0.05 ± 0.01	3.58	0.01 ± 0.02	-0.05 ± 0.01

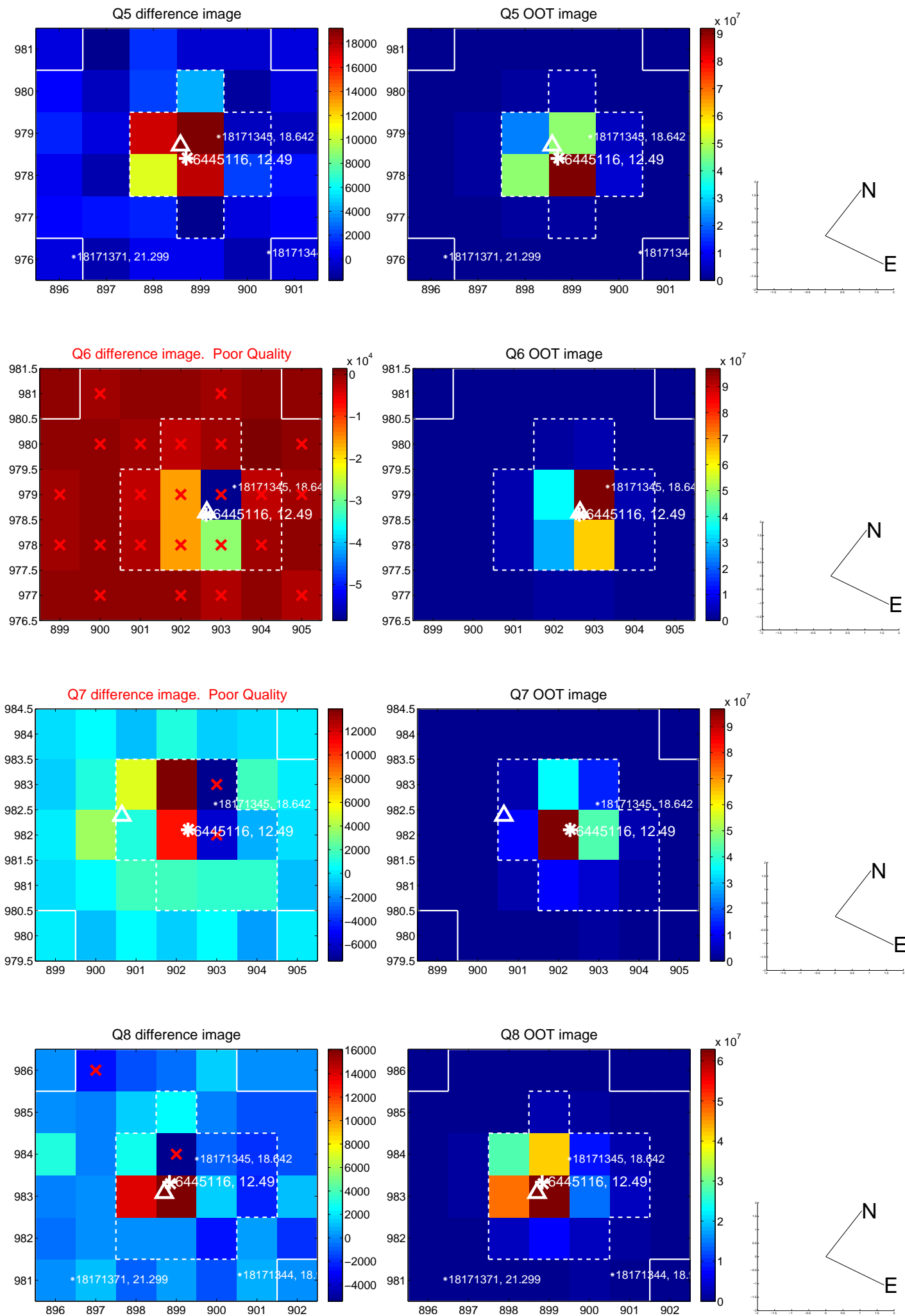


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

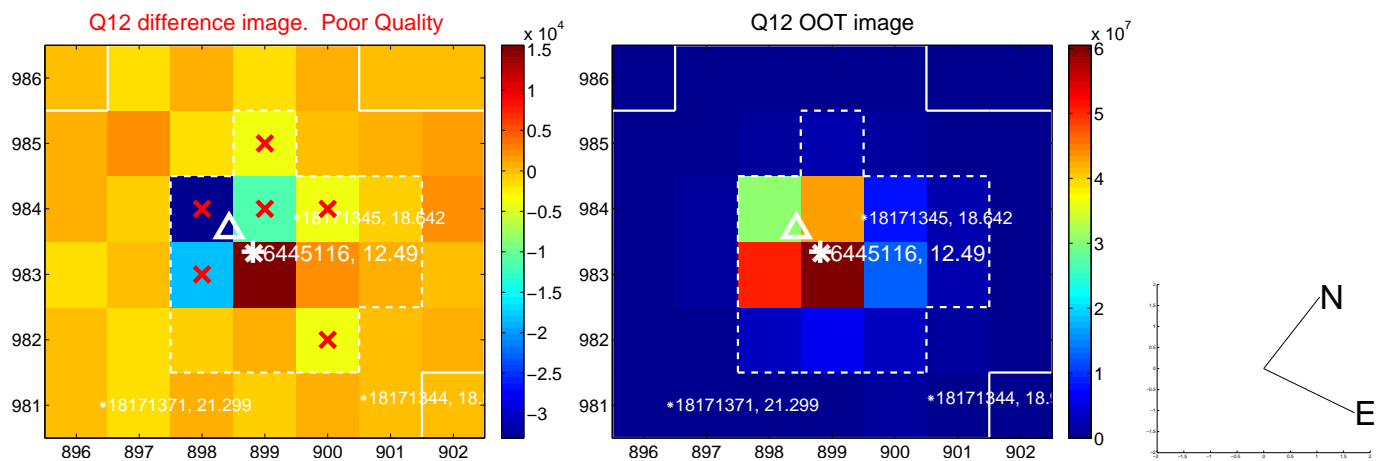
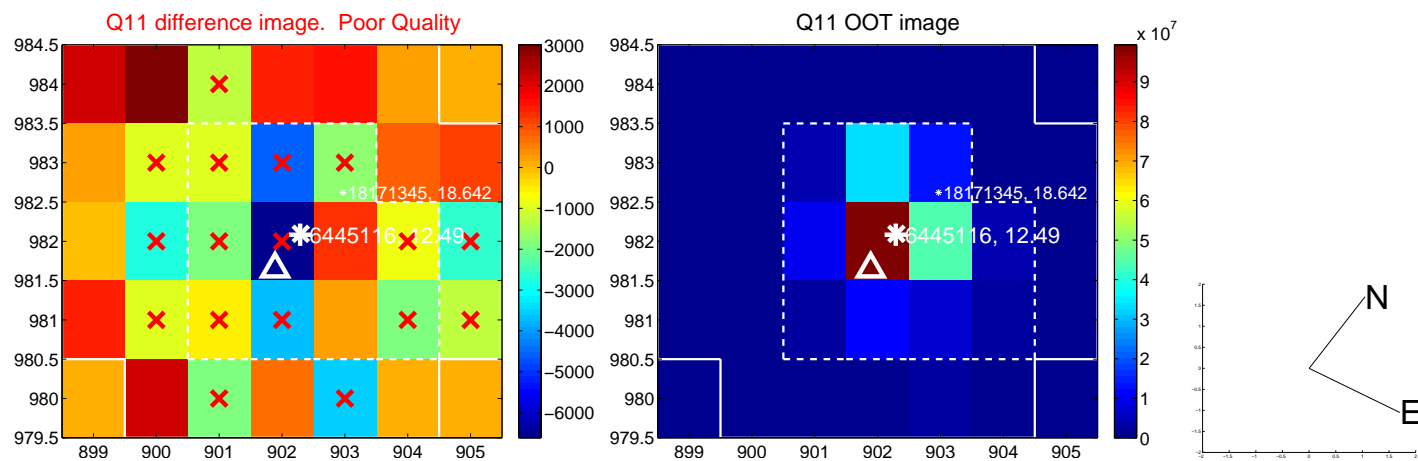
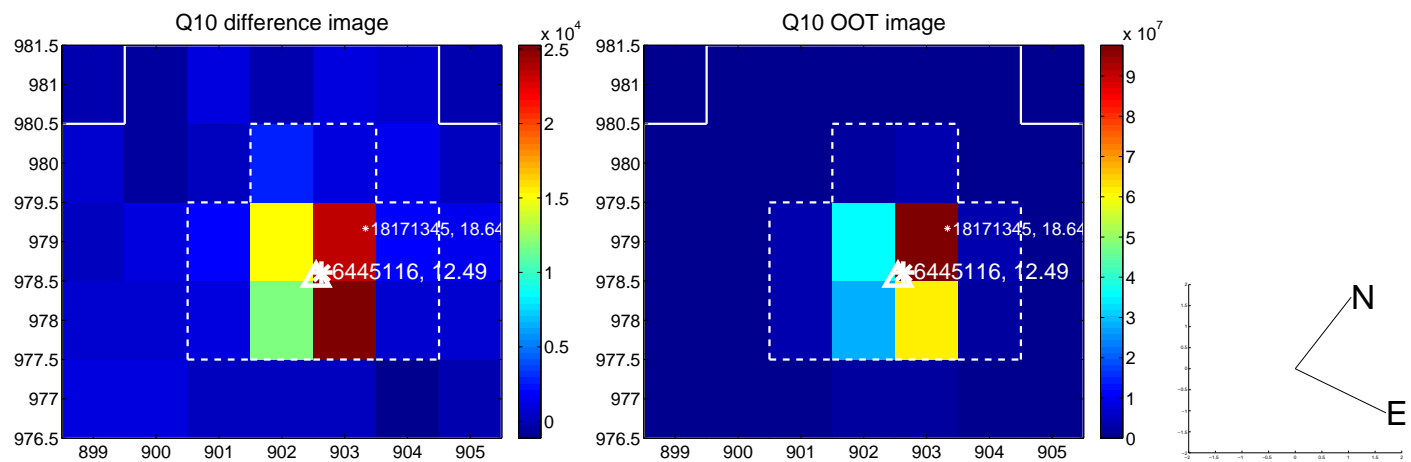
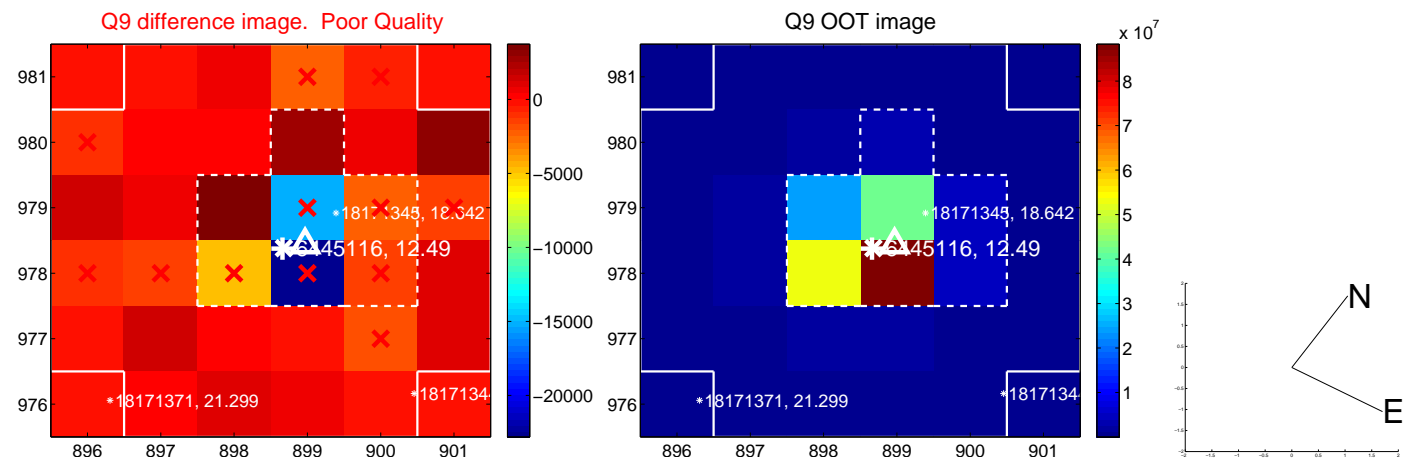
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



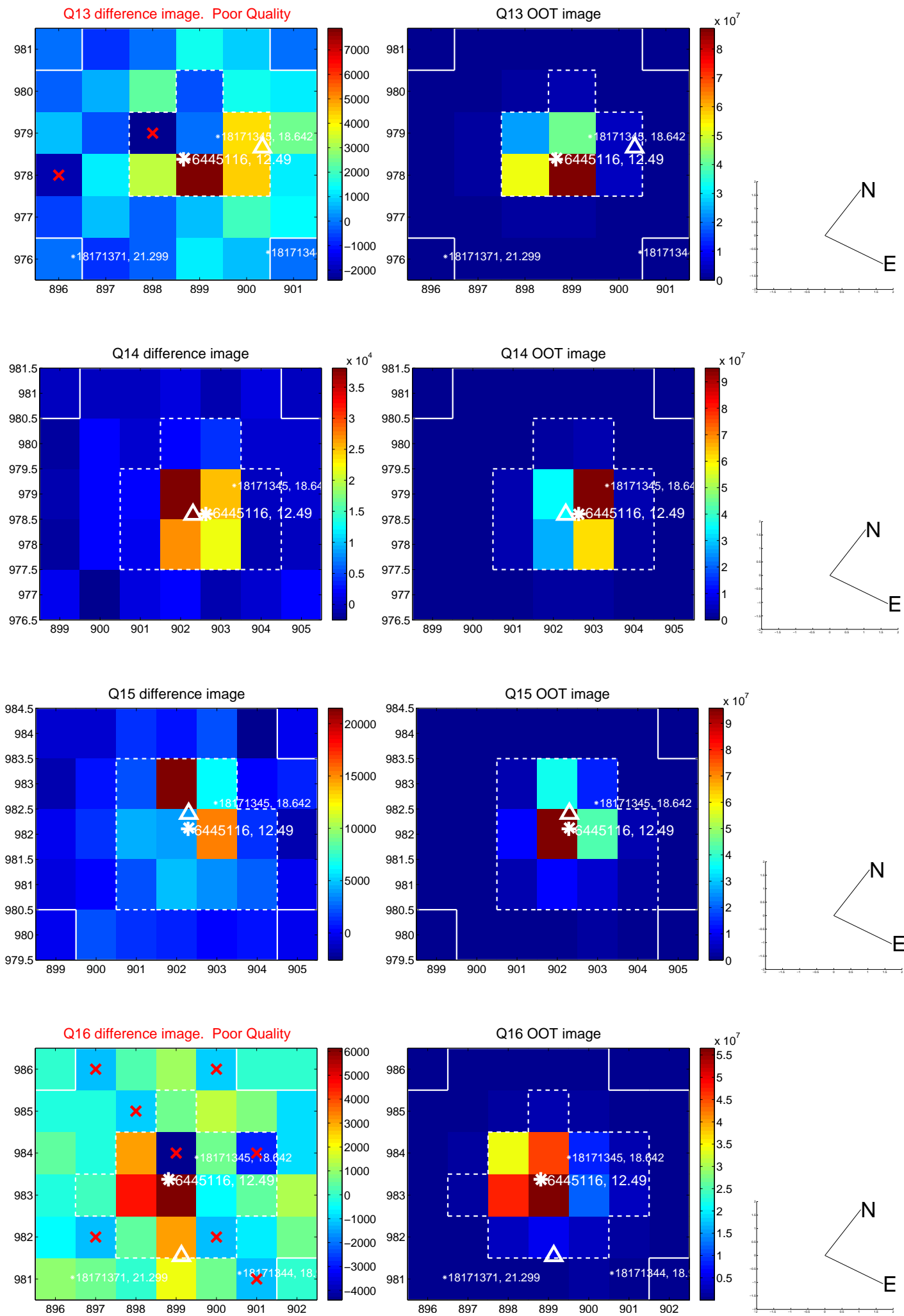
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



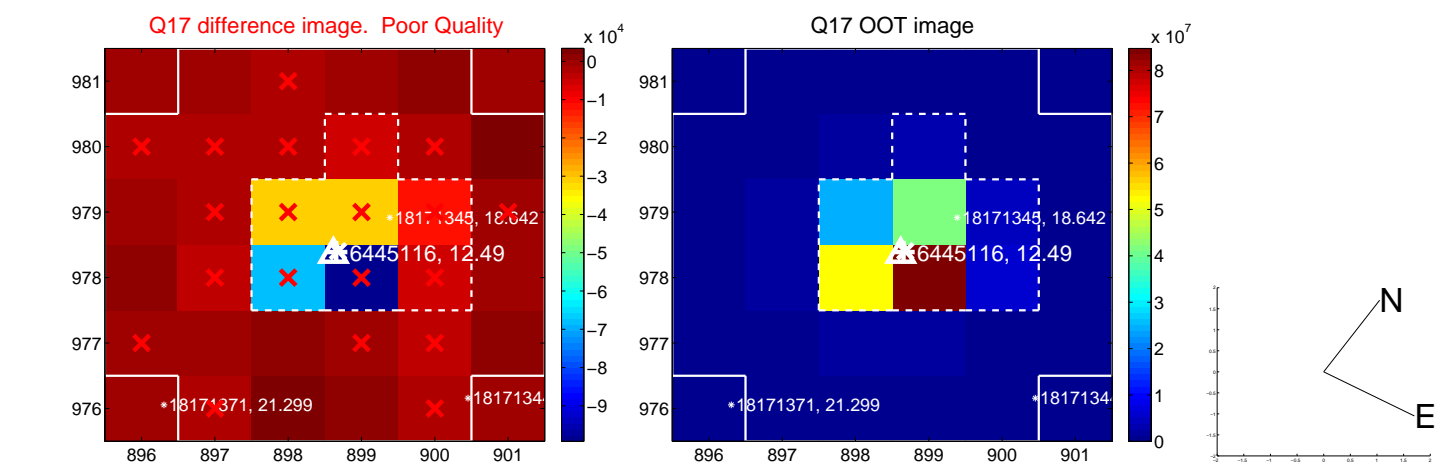
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



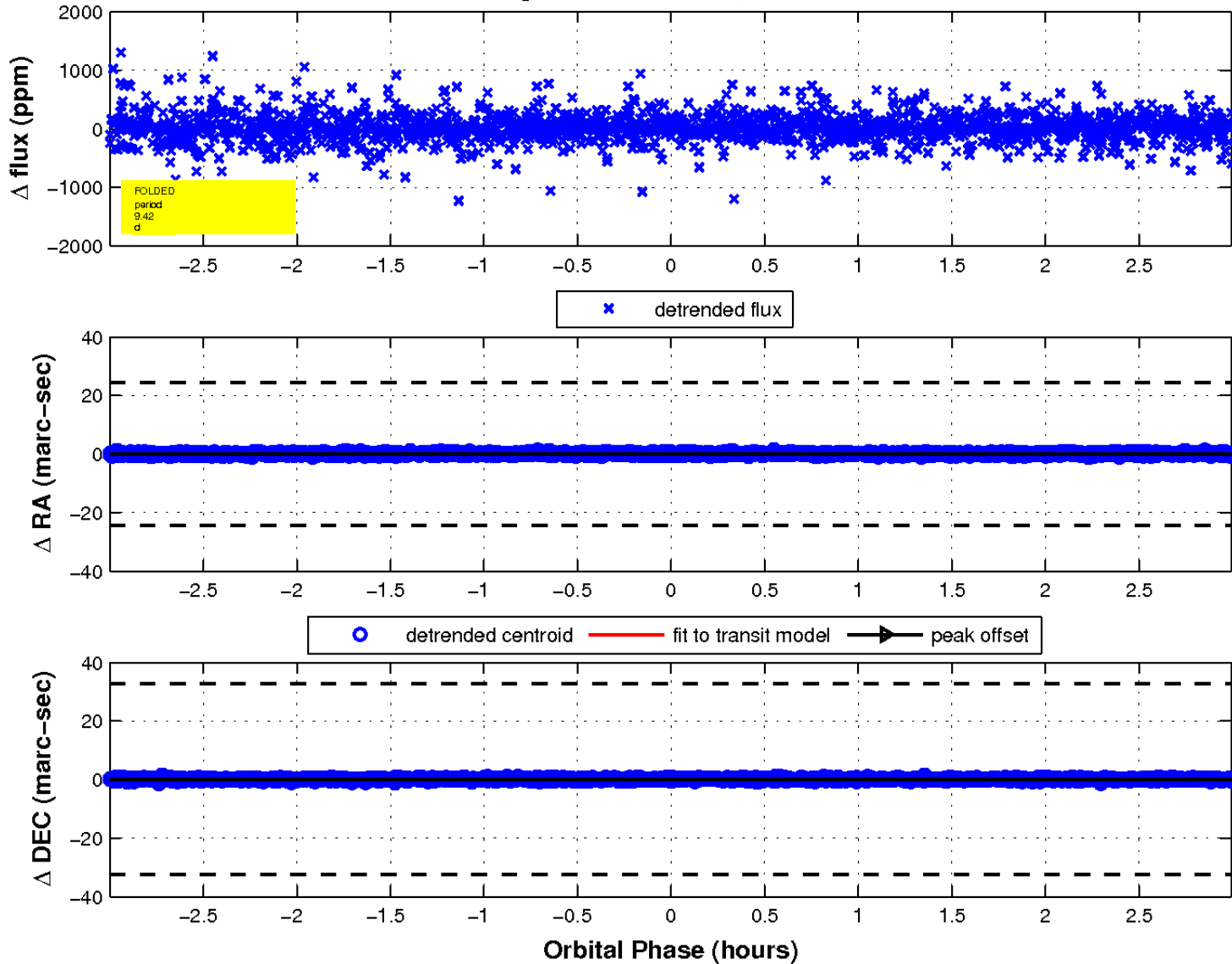
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

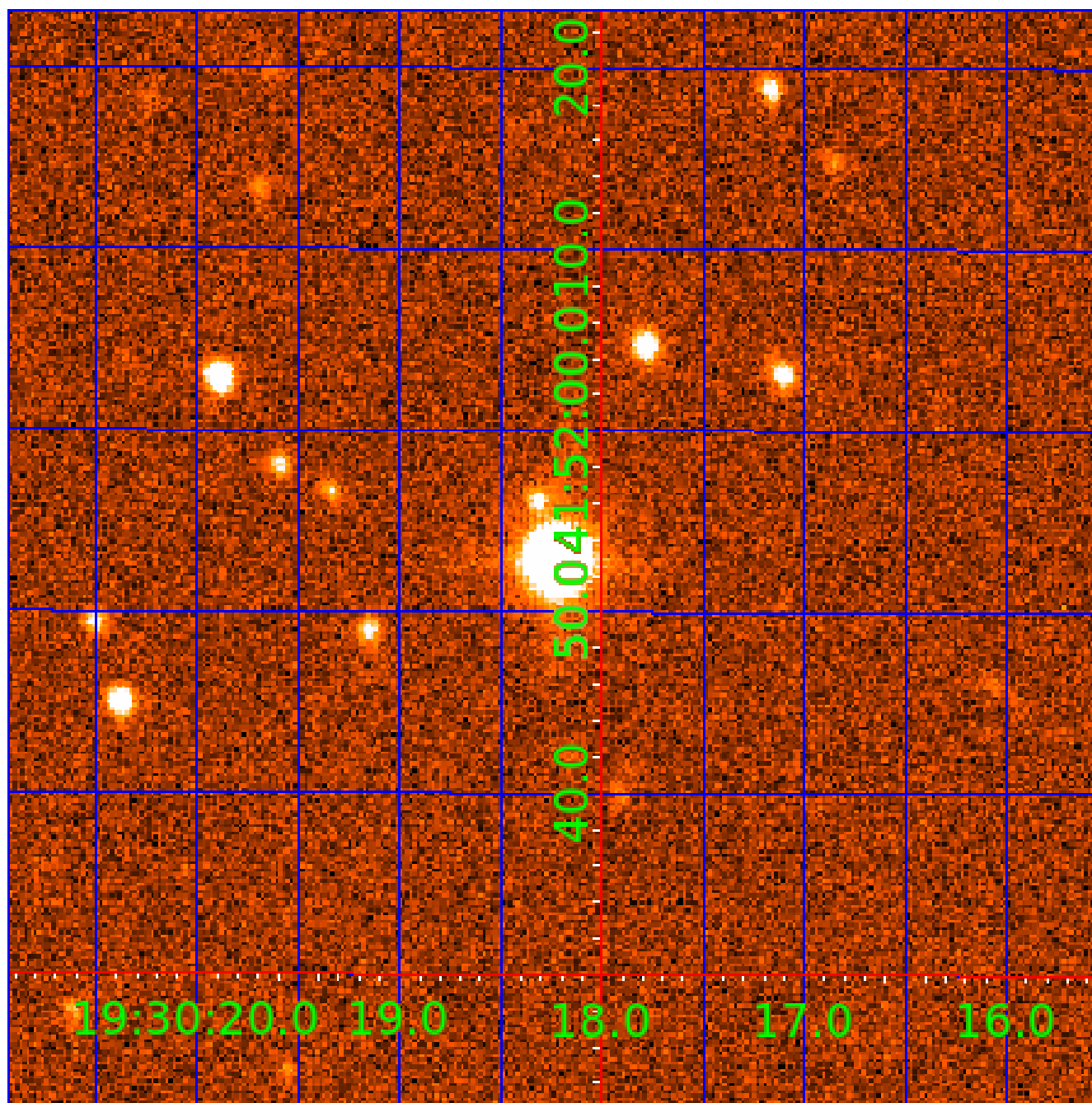


fluxWeightedCentroids, Planet 4 of 6



UKIRT Image

Declination



KIC 006445116

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})
006445116-01	OBS	No	1.516573	132.909701	37.8	3.479	8.7	7.0	3.04	7115	2.23	23741.12
006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

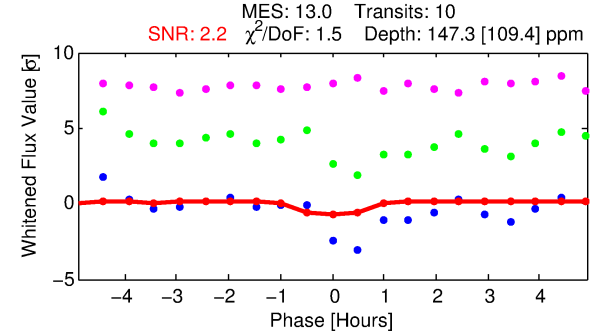
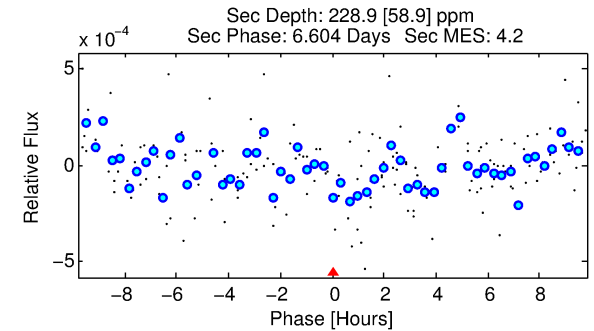
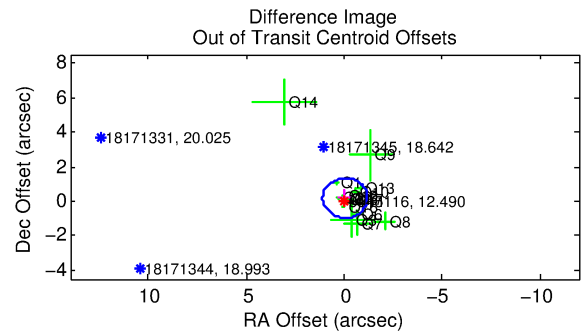
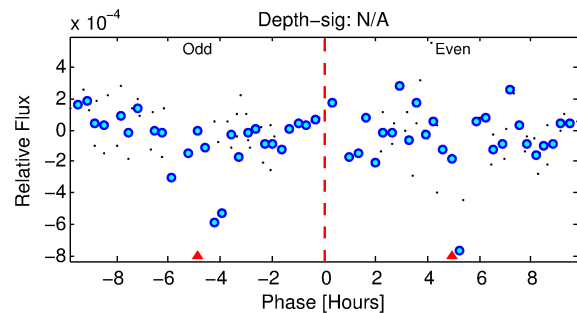
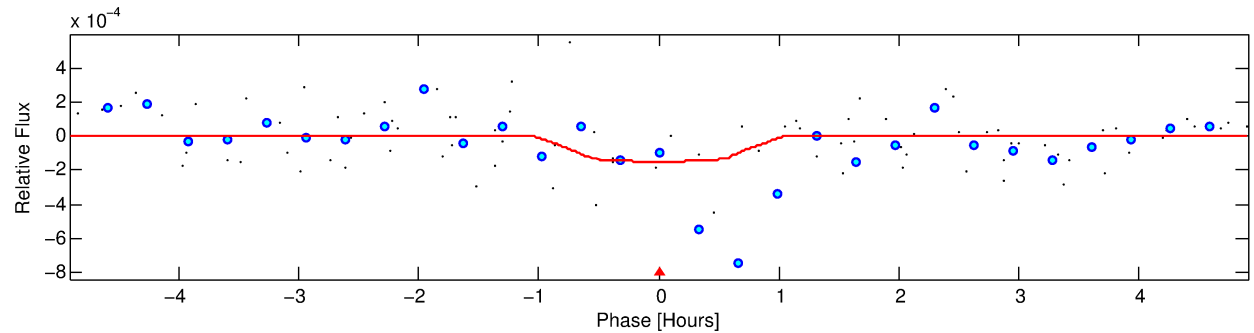
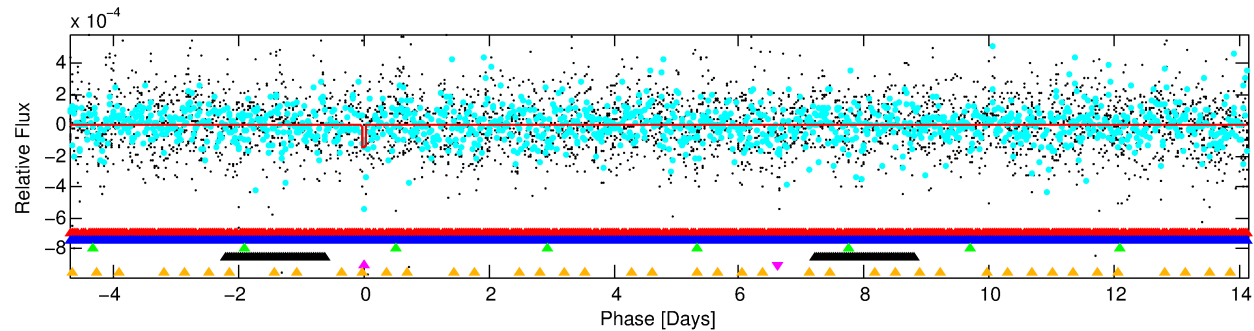
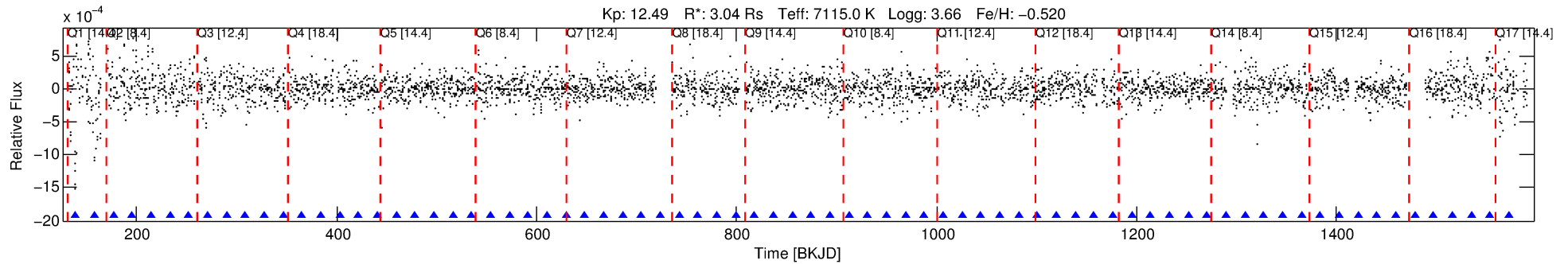
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-05

No Significant Match Found

DV One-Page Summary

KIC: 6445116 Candidate: 5 of 6 Period: 18.855 d



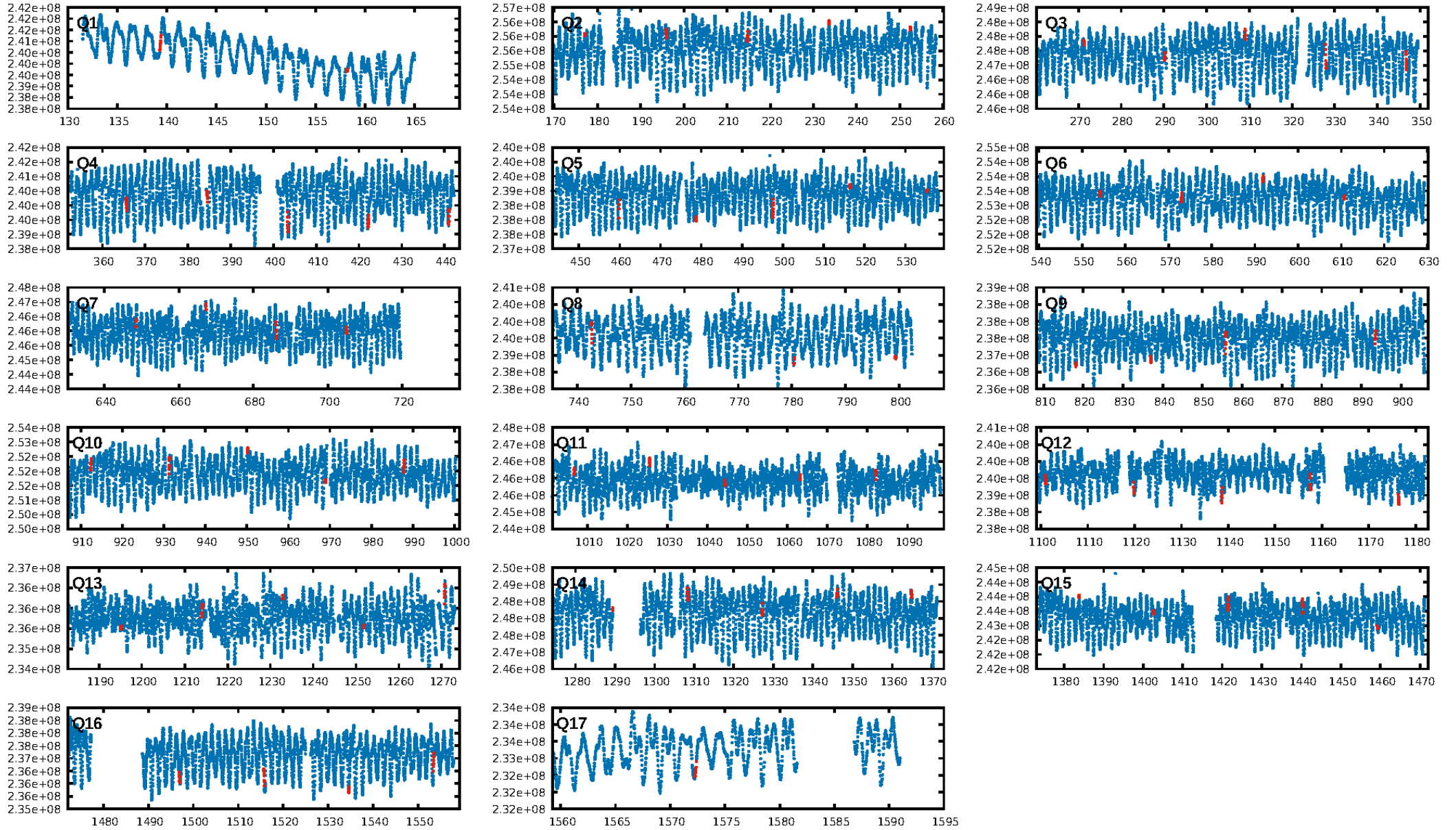
DV Fit Results:

Period = 18.85487 [0.00039] d
Epoch = 139.3583 [0.0203] BKJD
Rp/R* = 0.0116 [0.1085]
a/R* = 76.27 [4281.99]
b = 0.52 [78.48]
Seff = 824.30 [466.98]
Teq = 1366 [194] K
Rp = 3.85 [36.08] Re
a = 0.1607 [0.0563] AU
Ag = 219.12 [4102.37] [0.05]
Teffp = 8128 [38026] K [0.18]

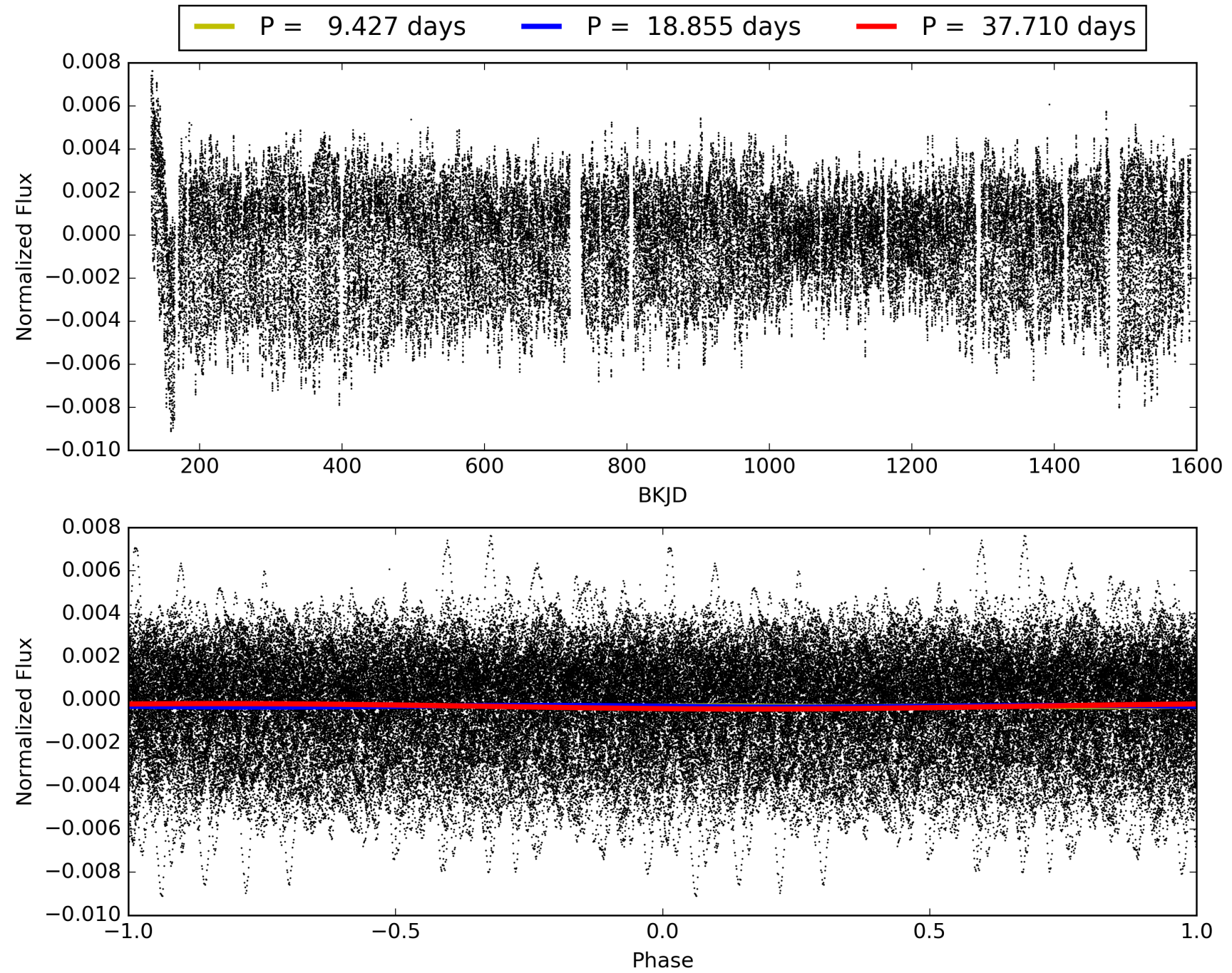
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [102.01]
LongPeriod-sig: 100.0% [149.63]
ModelChiSquare2-sig: 3.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.8855
Centroid-sig: 0.8%
Centroid-so: 0.956 arcsec [1.77]
OotOffset-rm: 0.181 arcsec [0.47]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.191 arcsec [0.60]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.44 [7/16]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 006445116-05, PDC Light Curves

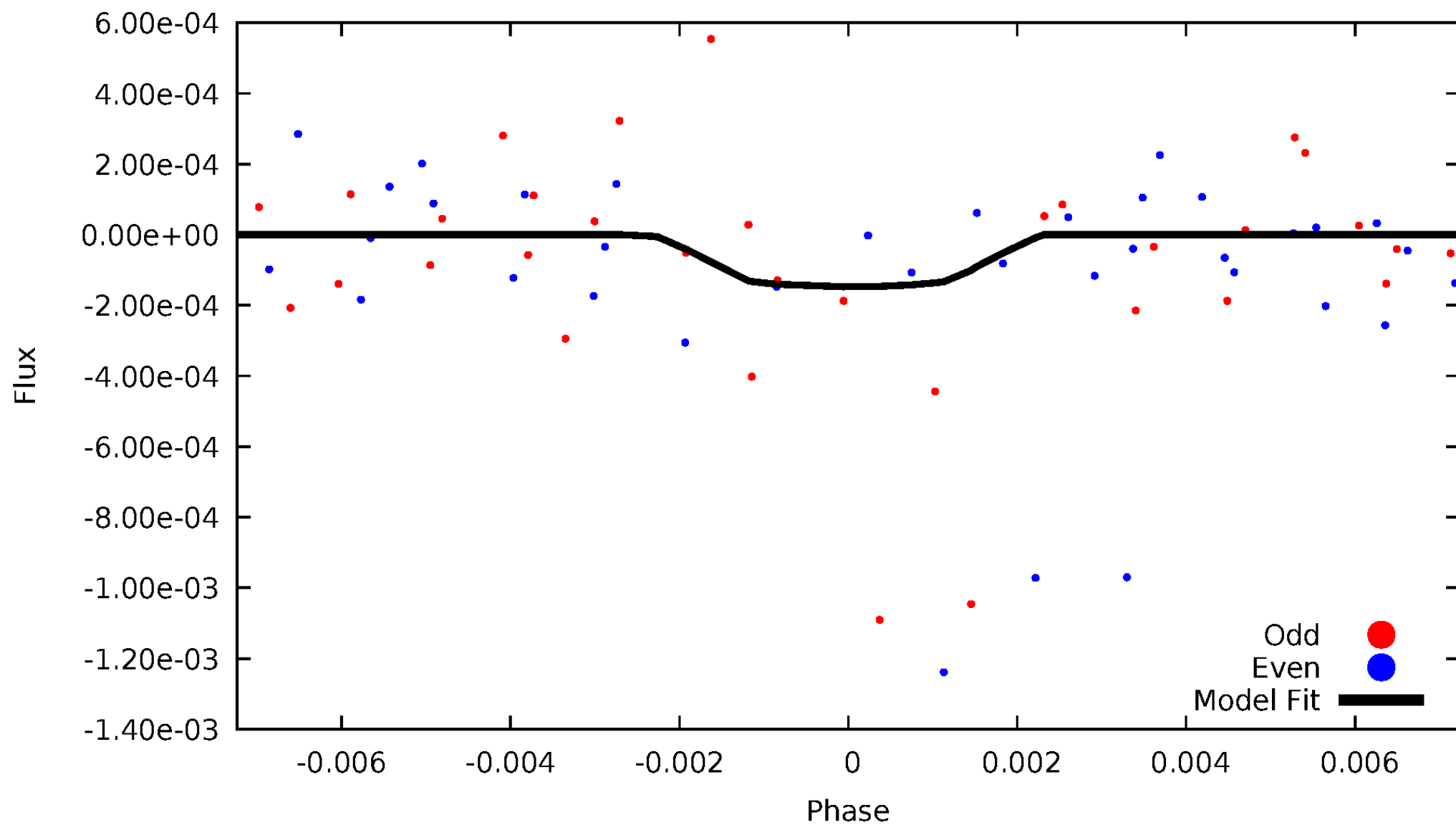


TCE 006445116-05



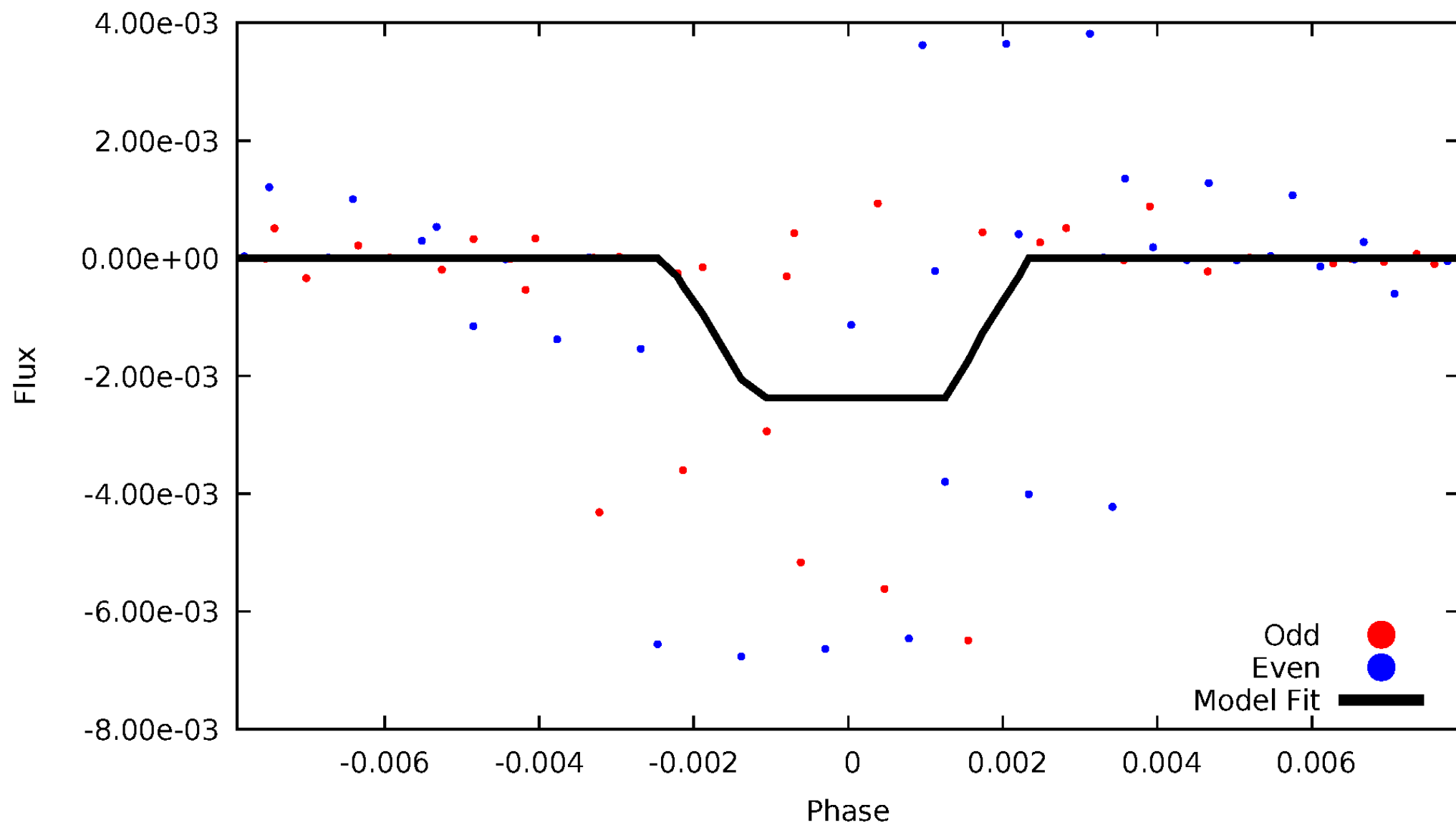
DV Odd/Even

TCE 006445116-05



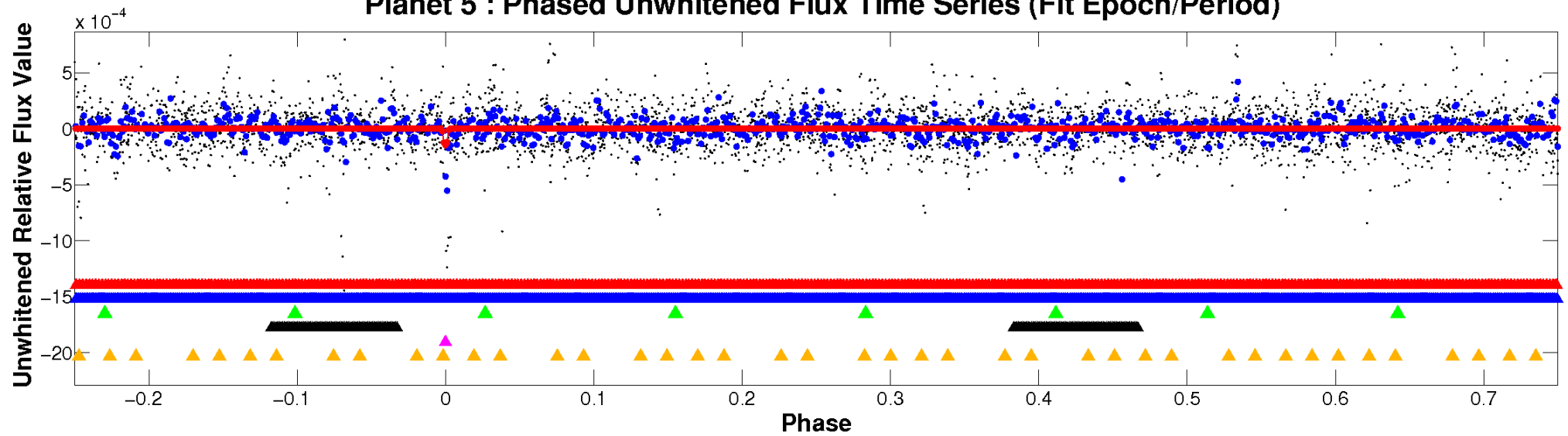
ALT Odd/Even

TCE 006445116-05

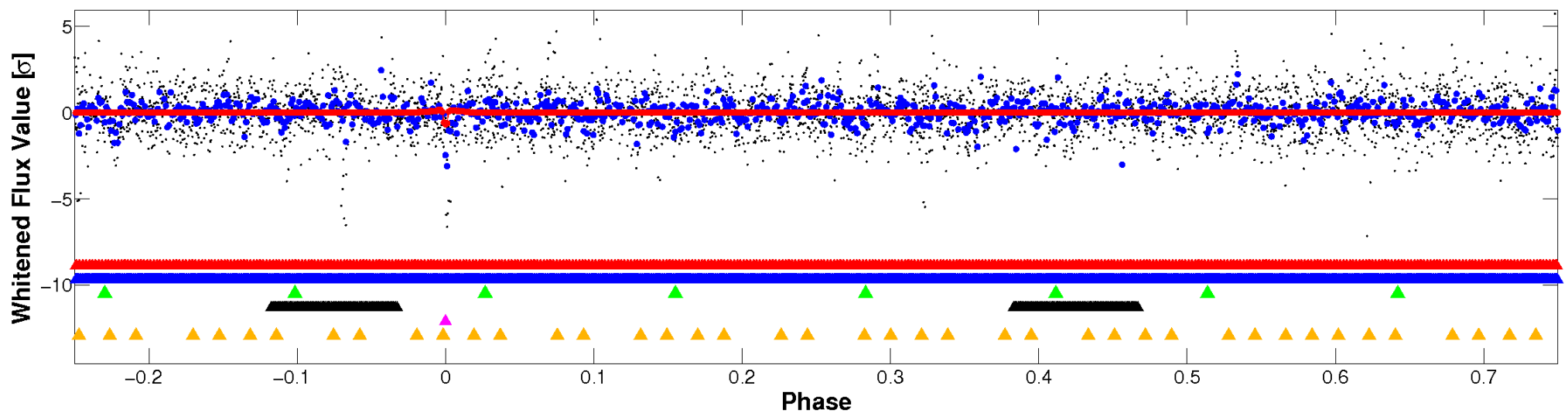


Non-Whitened Vs. Whitened Light Curve

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

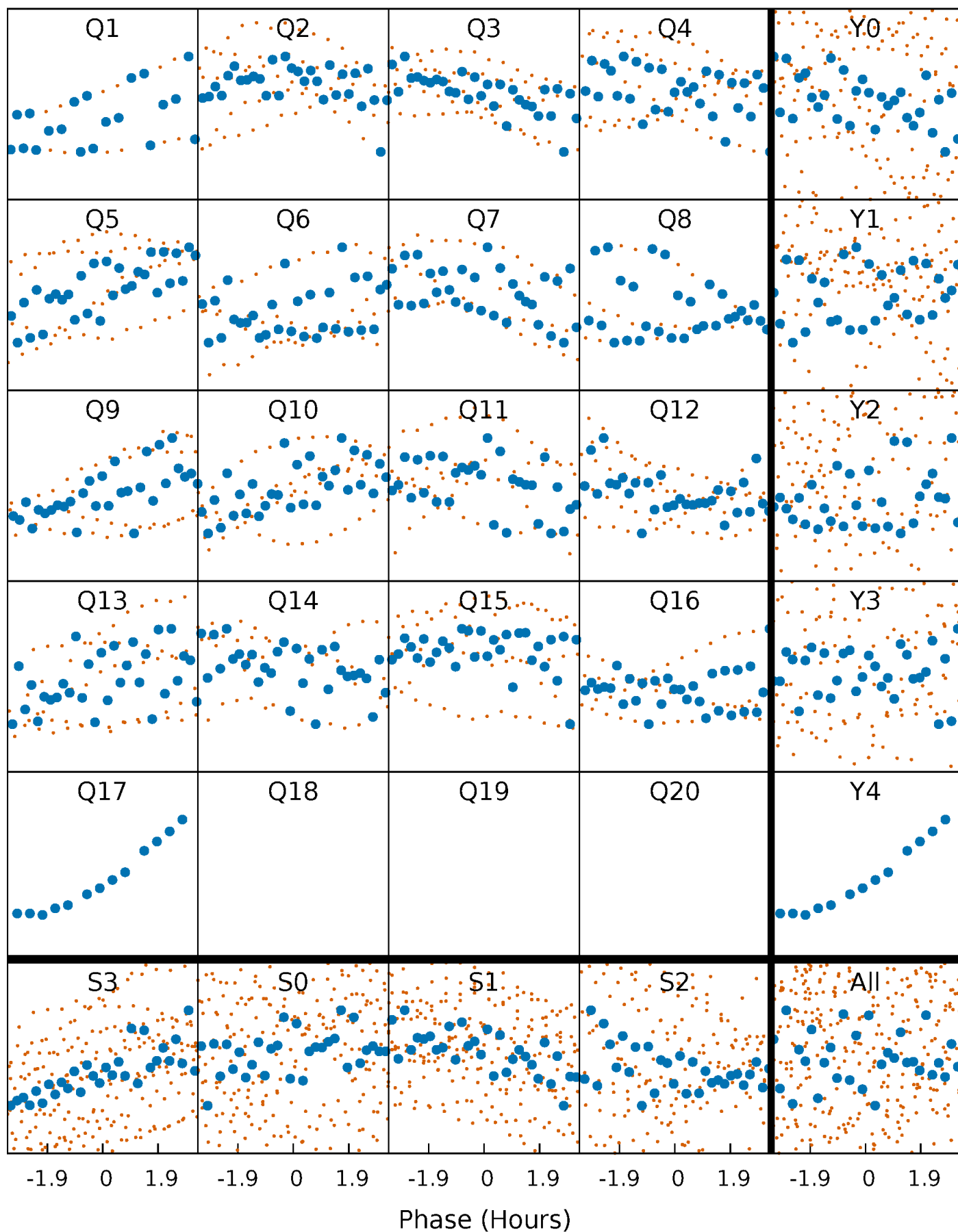


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



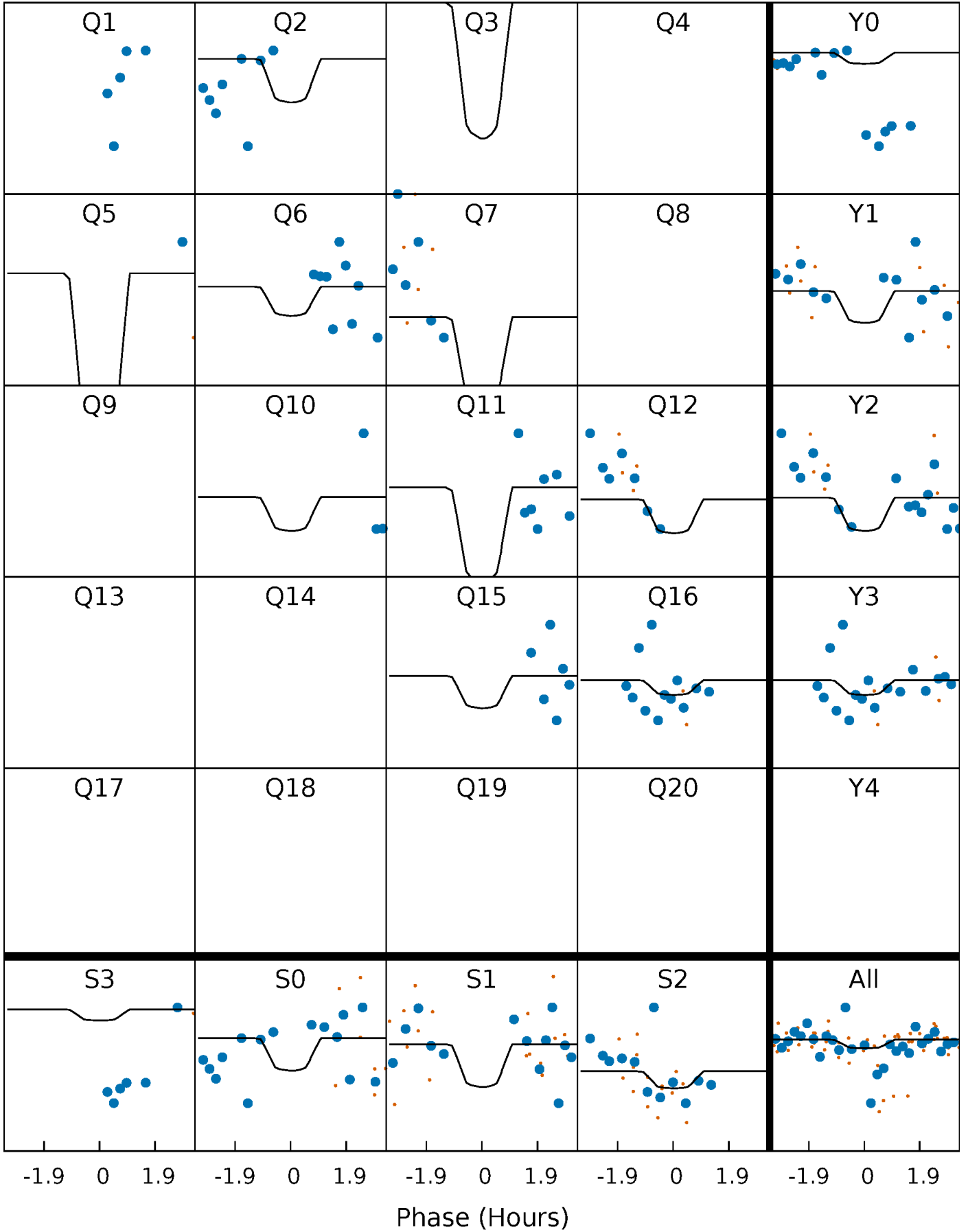
PDC Quarter-Phased Transit Curves

TCE 006445116-05 P= 18.854871 Days $T_0=139.358320$ (BKJD)



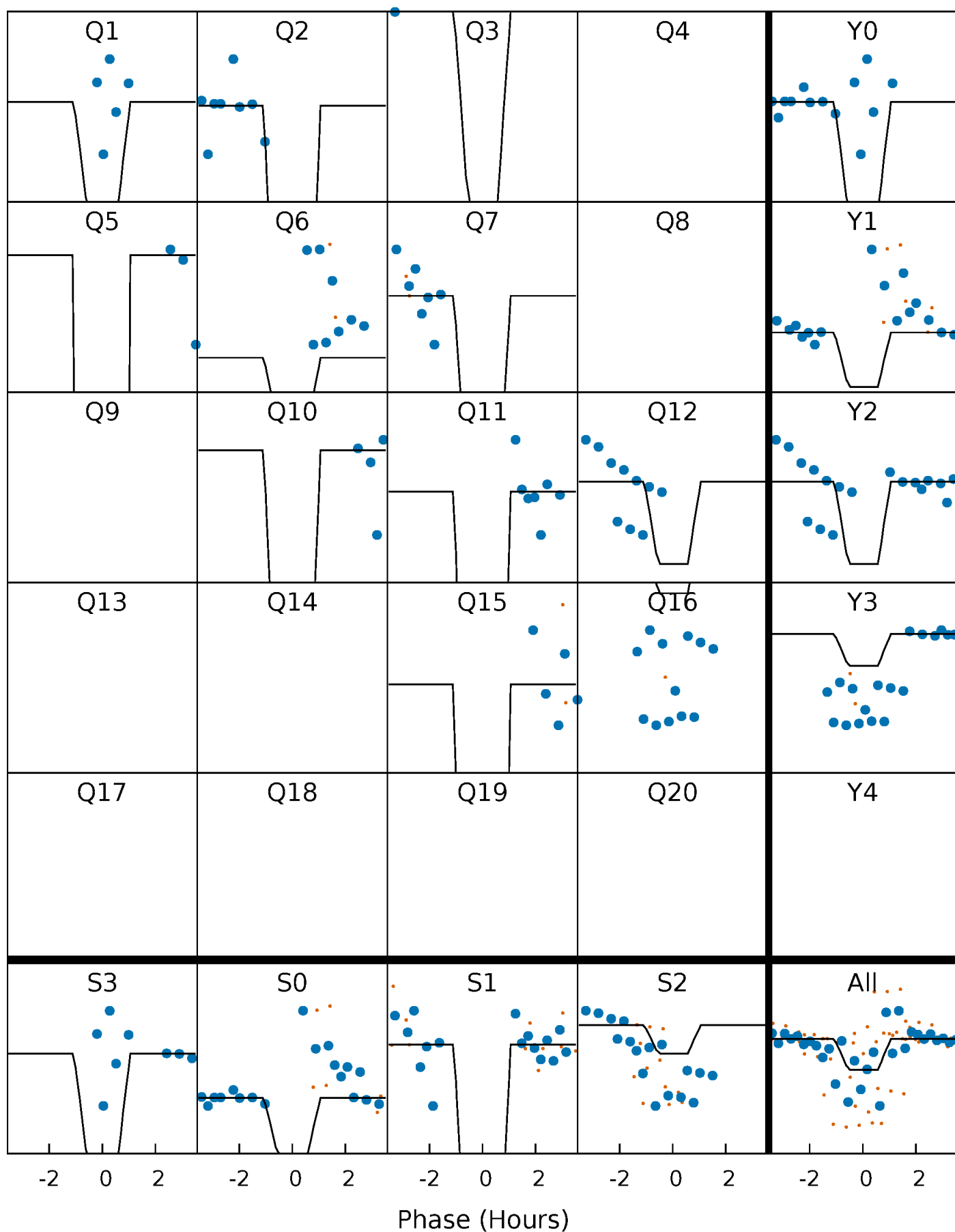
DV Quarter-Phased Transit Curves

TCE 006445116-05 $P = 18.854871$ Days $T_0 = 139.358320$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

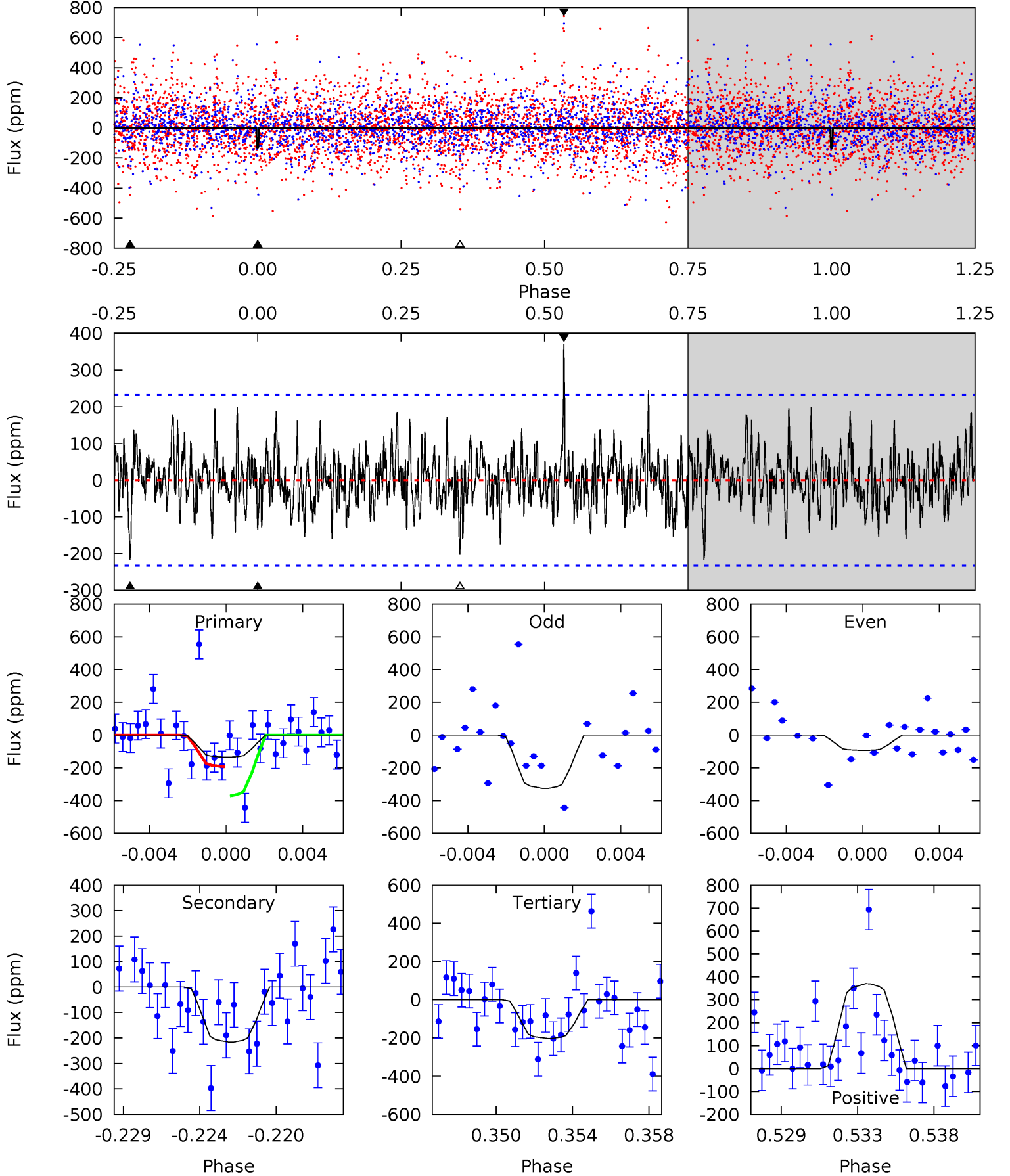
TCE 006445116-05 P= 18.854452 Days $T_0=139.378945$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-05, P = 18.854871 Days, E = 120.503449 Days

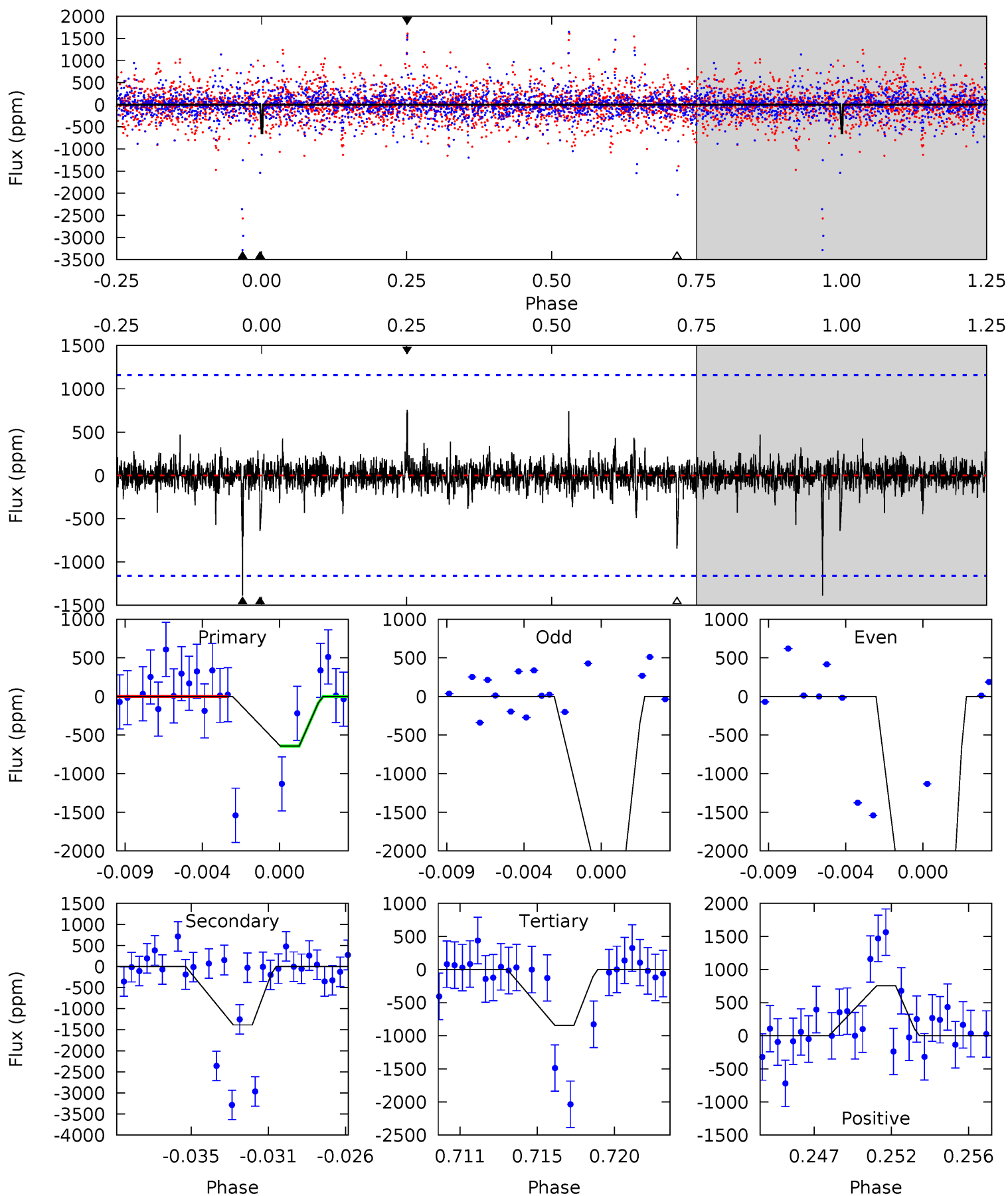
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.02	4.82	4.51	8.23	5.18	2.84	1.42	-1.49	-5.21	0.31	-3.41	2.66	3.47	0.63	2.00



Alt Model-Shift Uniqueness Test

006445116-05, P = 18.854452 Days, E = 120.524493 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.87	6.19	3.77	3.37	5.18	2.85	0.49	-0.91	-0.51	2.42	2.82	6.27	2.79	0.35	0



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-217 ± 45	$23.01^{+24.84}_{-16.19}$	1874^{+106}_{-159}	3518^{+2236}_{-730}	$5.485^{+53.910}_{-4.165}$
Alt.	-1386 ± 224	$29.99^{+29.16}_{-19.98}$	1883^{+98}_{-174}	4590^{+2984}_{-1019}	23^{+174}_{-17}

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 $A_{obs} \gg 1.0$

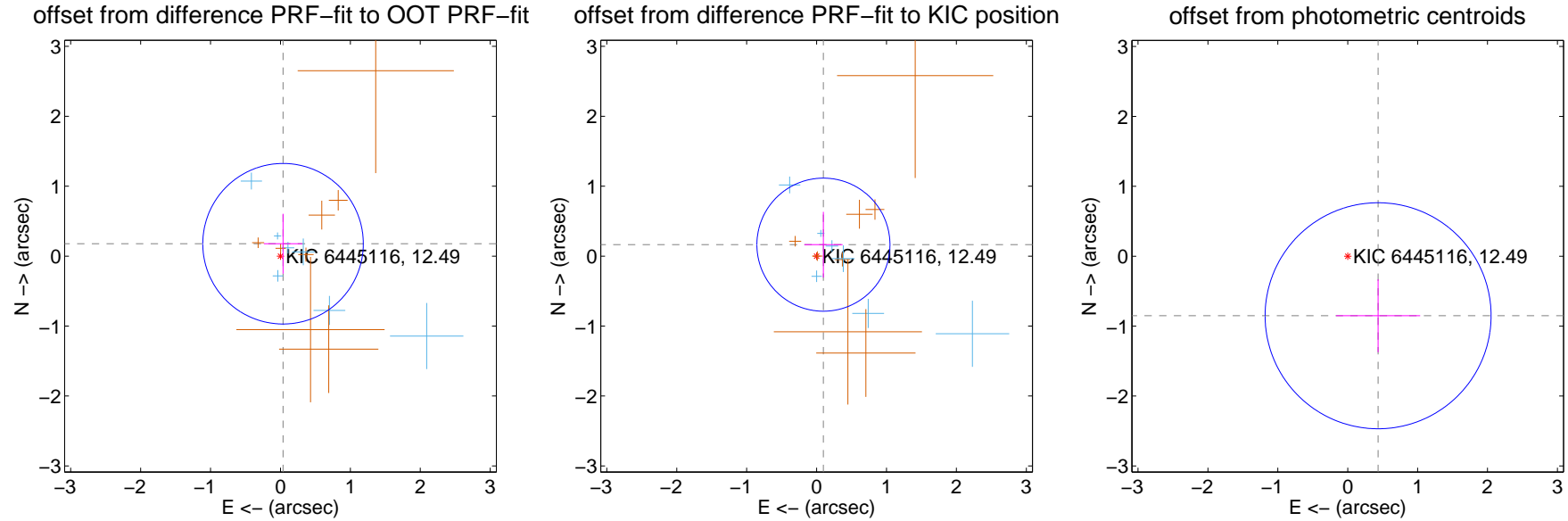
DV Centroid Data

Supplemental centroid analysis for 006445116-05. Kepler magnitude: 12.49. Transit SNR 2.22

There are 7 quarters with good PRF difference image offsets

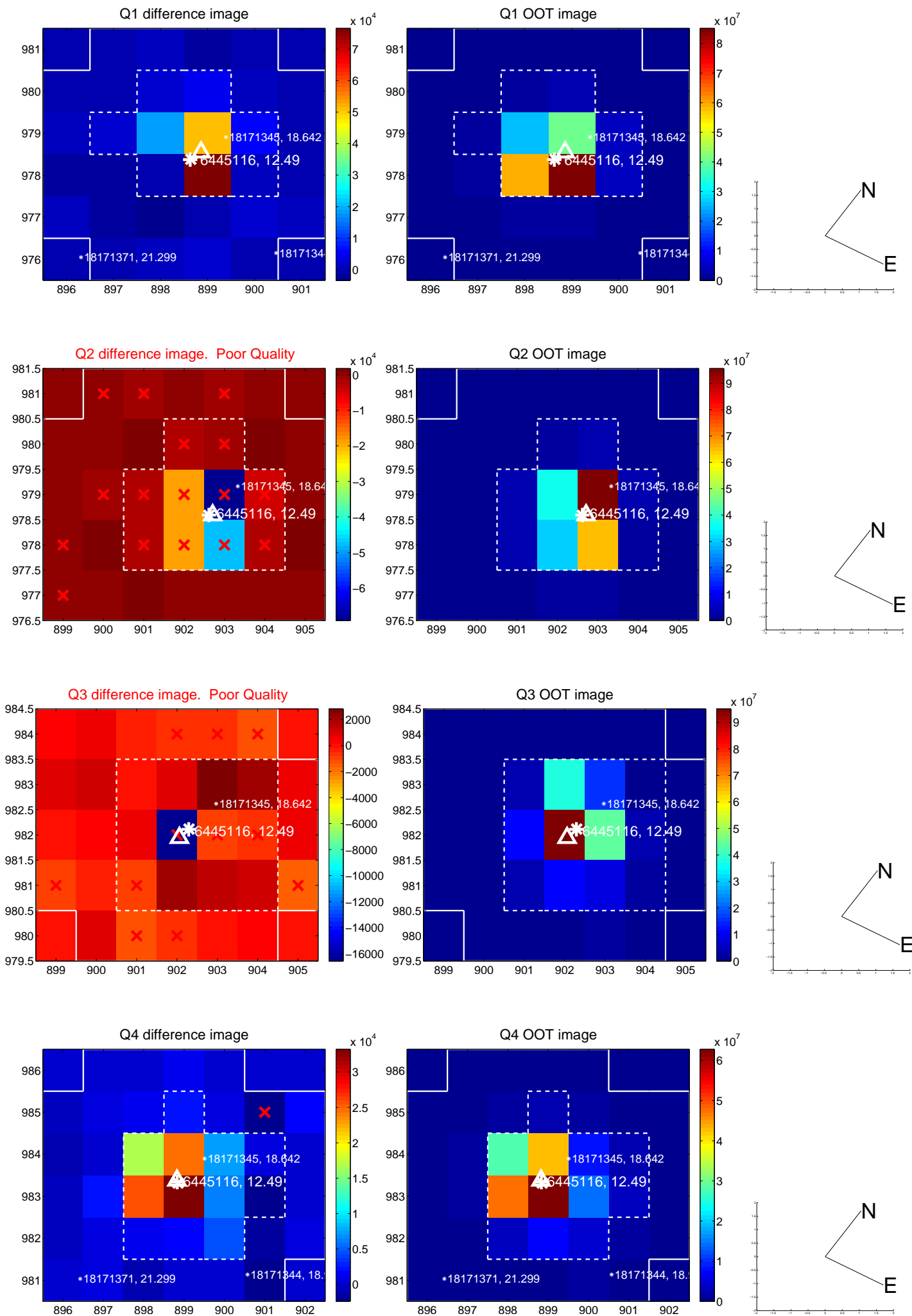
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.181 ± 0.383	0.47	-0.037 ± 0.274	0.177 ± 0.428
PRF-fit source offset from KIC position	0.191 ± 0.317	0.60	-0.098 ± 0.274	0.164 ± 0.470
photometric centroid source offset	0.96 ± 0.54	1.77	-0.43 ± 0.60	-0.85 ± 0.52

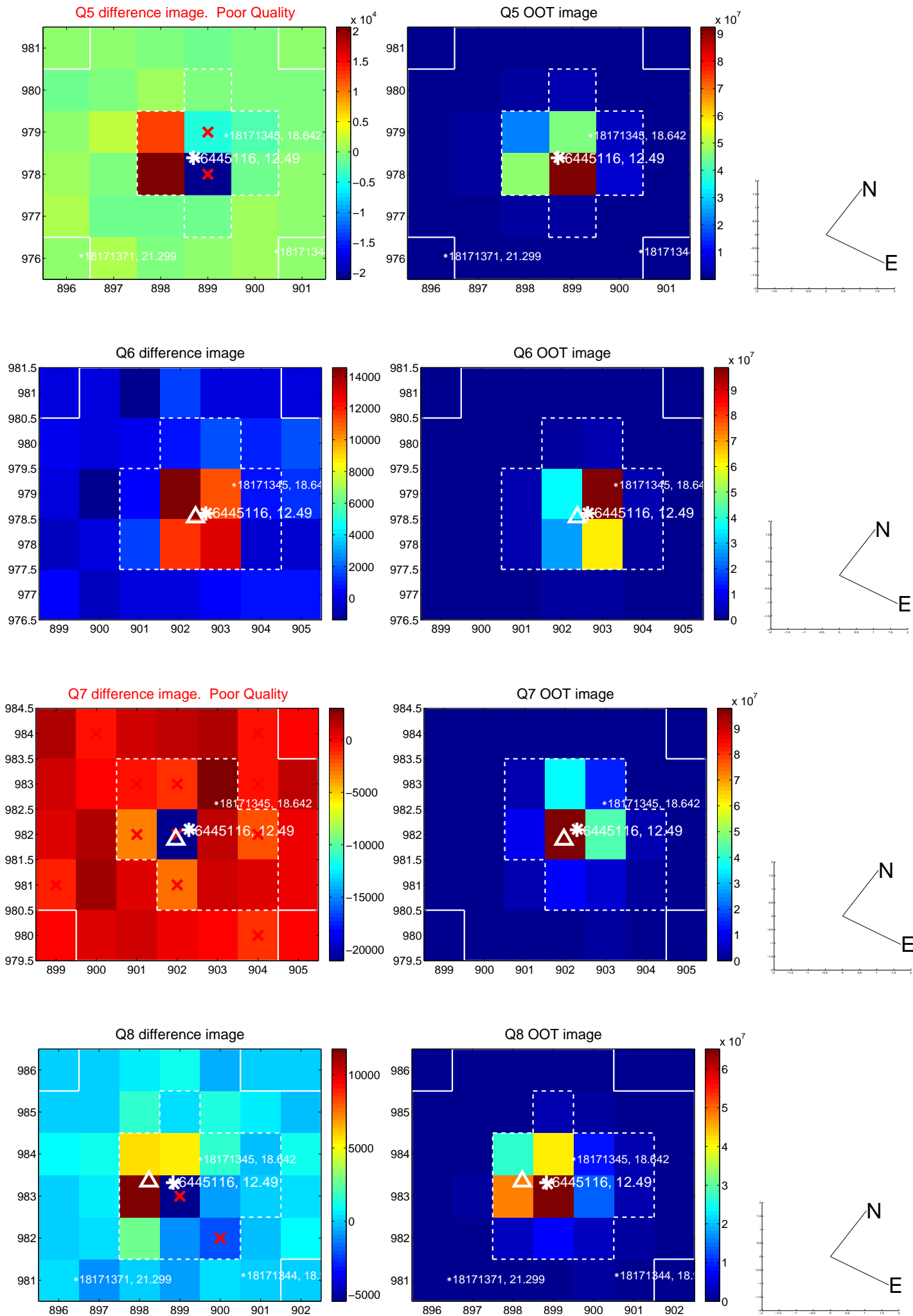


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

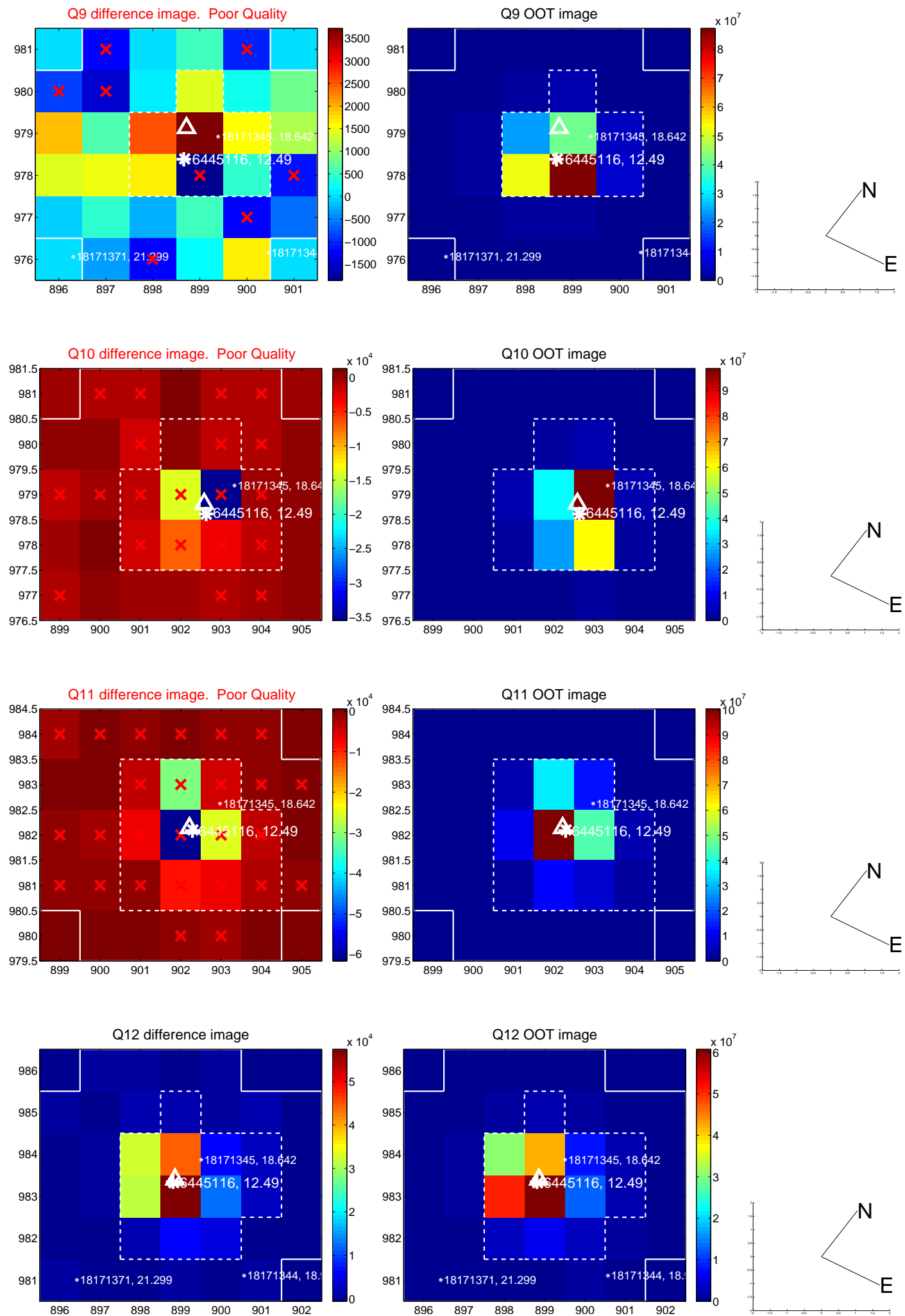
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



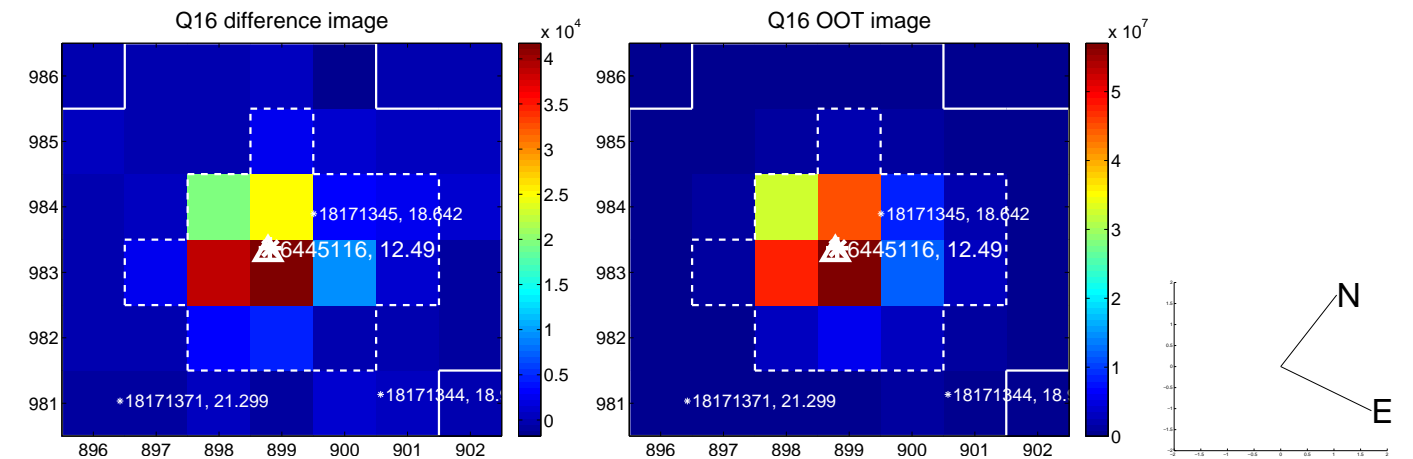
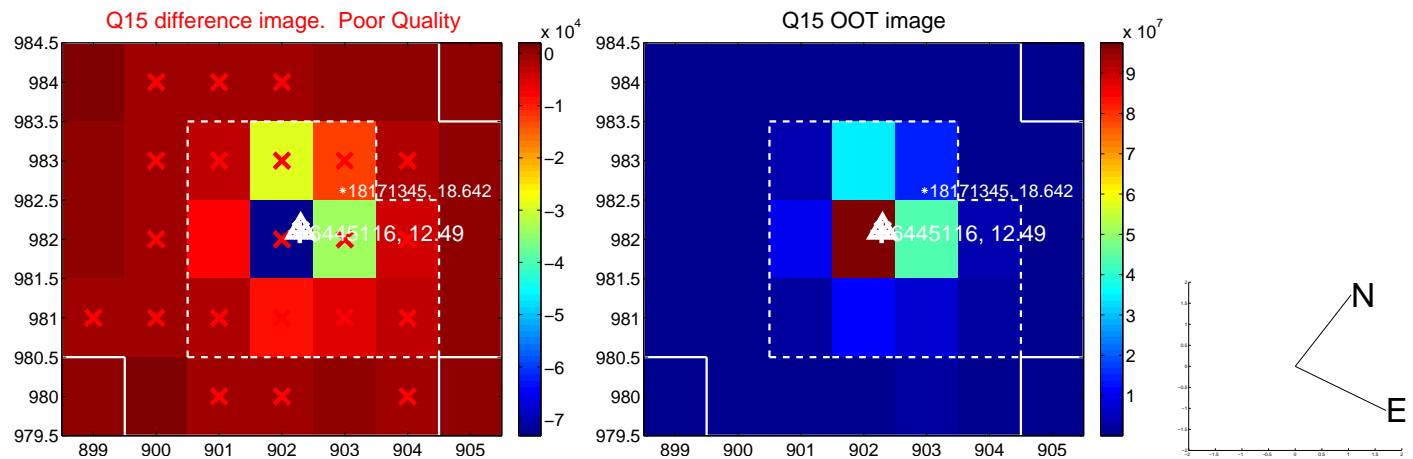
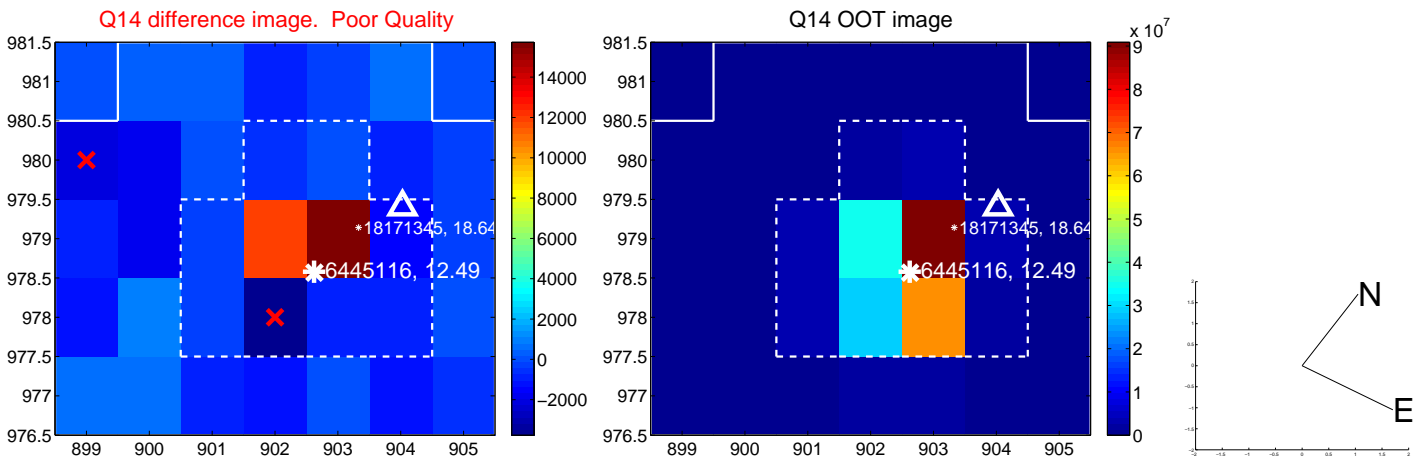
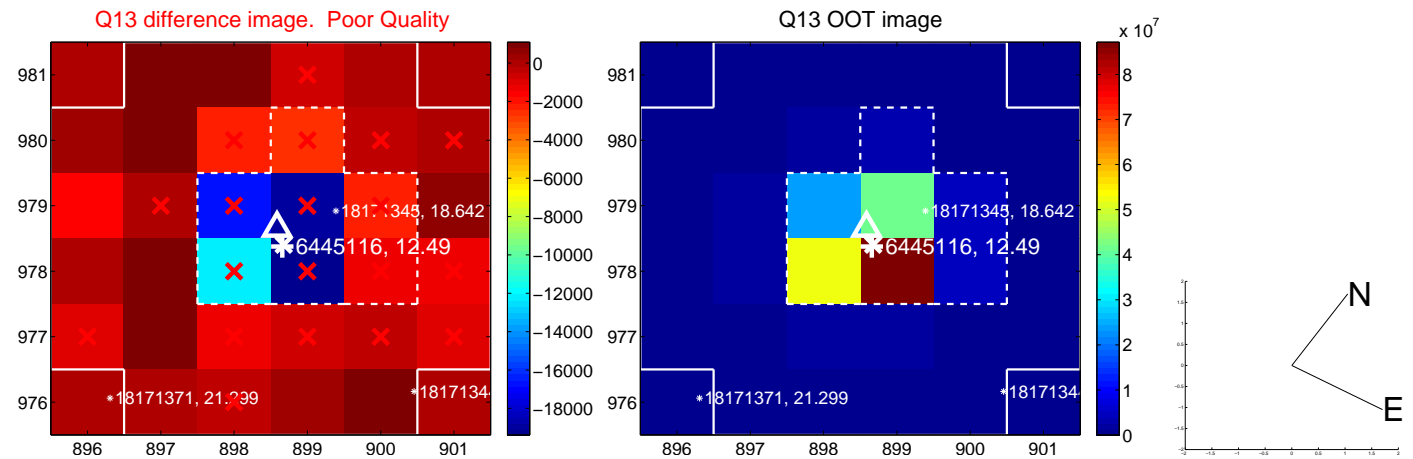
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



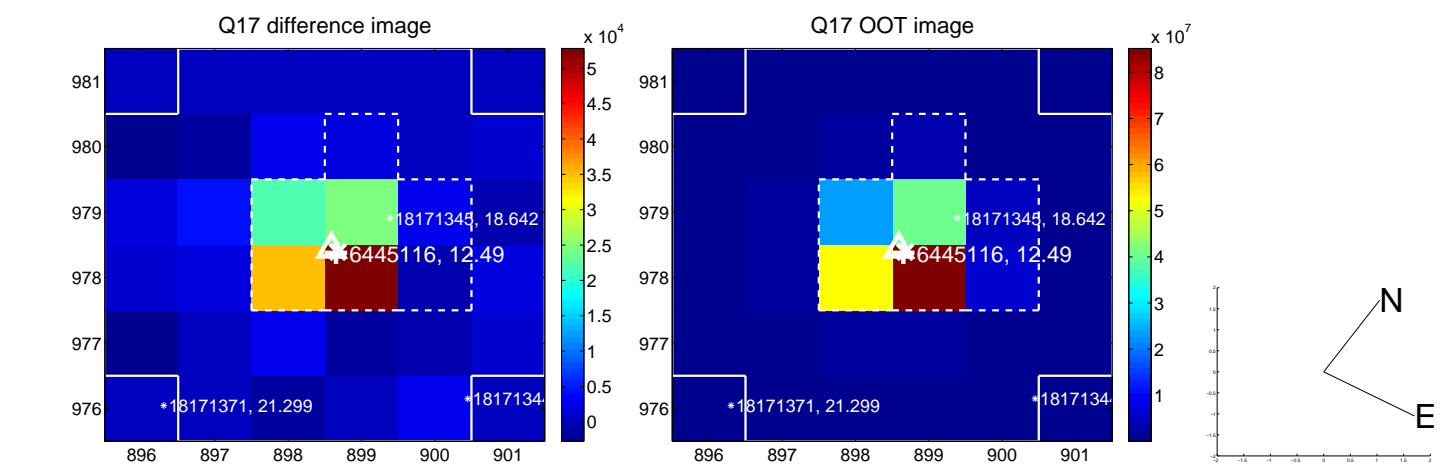
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



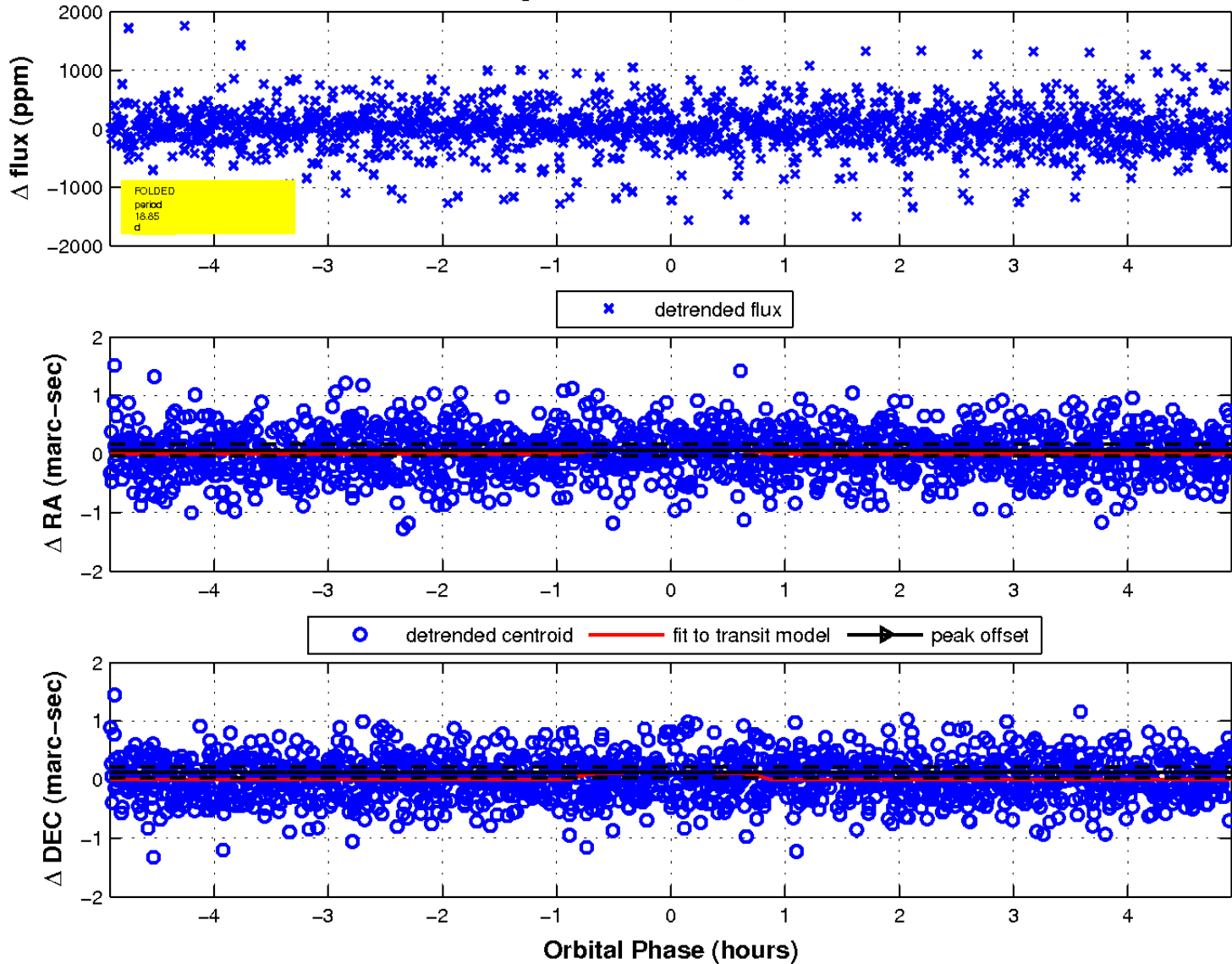
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

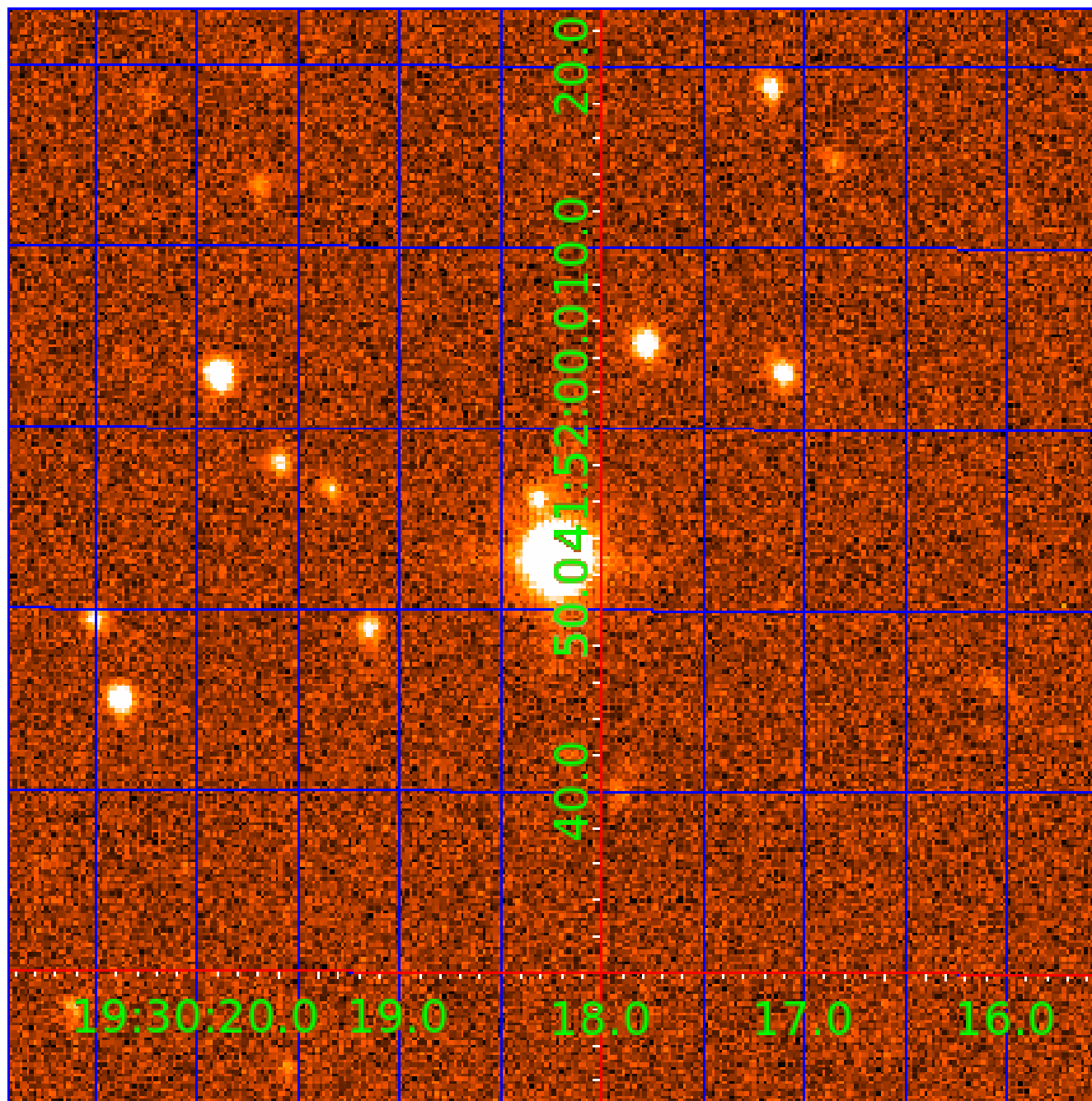


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 006445116

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})
006445116-01	OBS	No	1.516573	132.909701	37.8	3.479	8.7	7.0	3.04	7115	2.23	23741.12
006445116-02	OBS	No	0.672379	131.674315	11.0	4.692	8.7	2.4	3.04	7115	1.05	70226.37
006445116-03	OBS	No	204.985524	147.117532	1439.9	16.498	10.5	8.0	3.04	7115	11.87	34.23
006445116-04	OBS	No	9.417049	138.742246	701.3	1.500	13.9	-1.0	3.04	7115	8.19	2080.17
006445116-05	OBS	No	18.854871	139.358320	147.3	1.637	13.0	2.2	3.04	7115	3.85	824.30
006445116-06	OBS	No	34.864811	134.698618	694.2	1.978	10.9	11.2	3.04	7115	8.44	363.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006445116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006445116-02	OBS	FP	0.00	1	0	0	0	LPP_DV
006445116-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—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_FEW_DIFFS
006445116-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—NO_FITS—CENT_NOFITS
006445116-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
006445116-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV

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

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

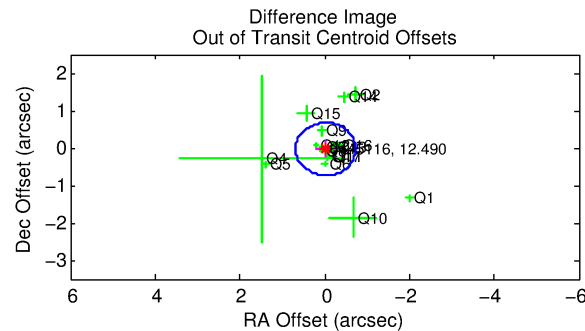
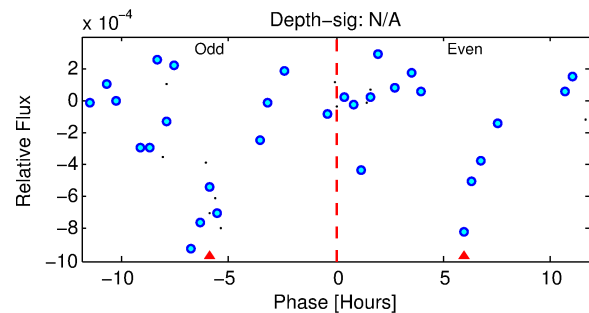
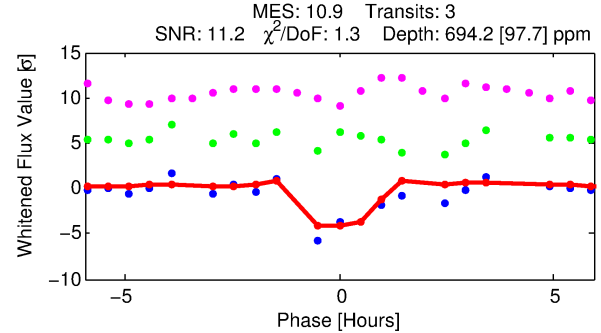
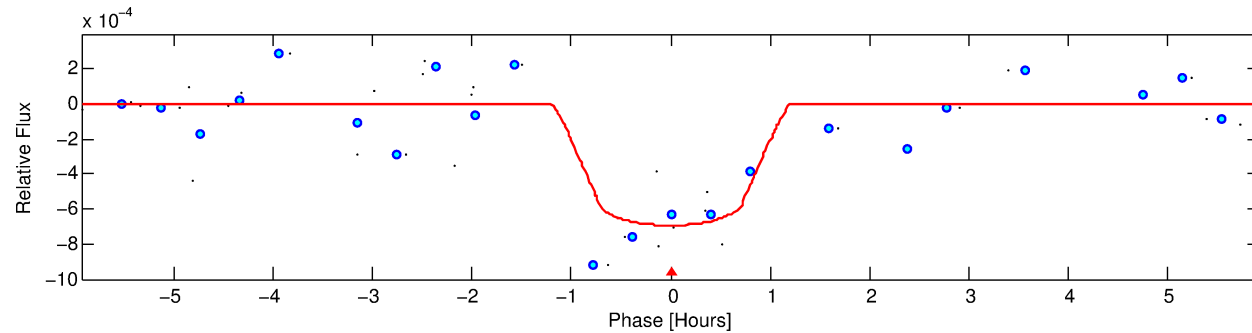
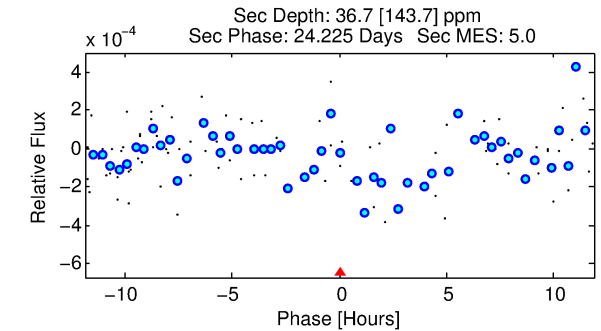
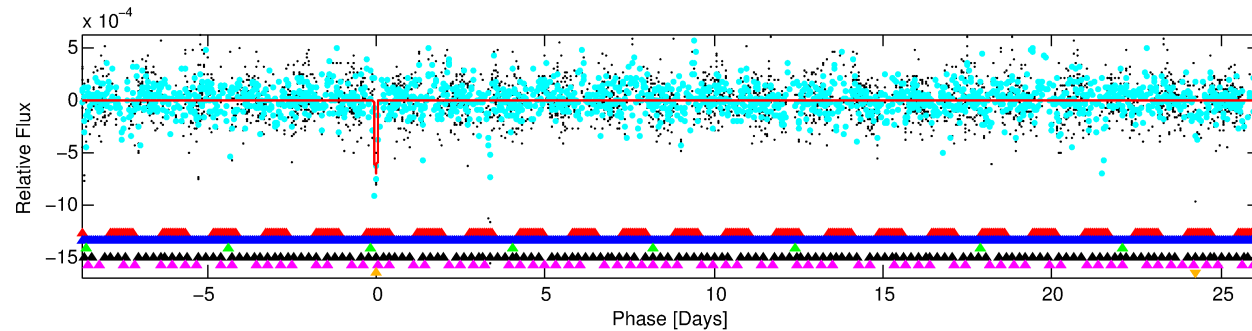
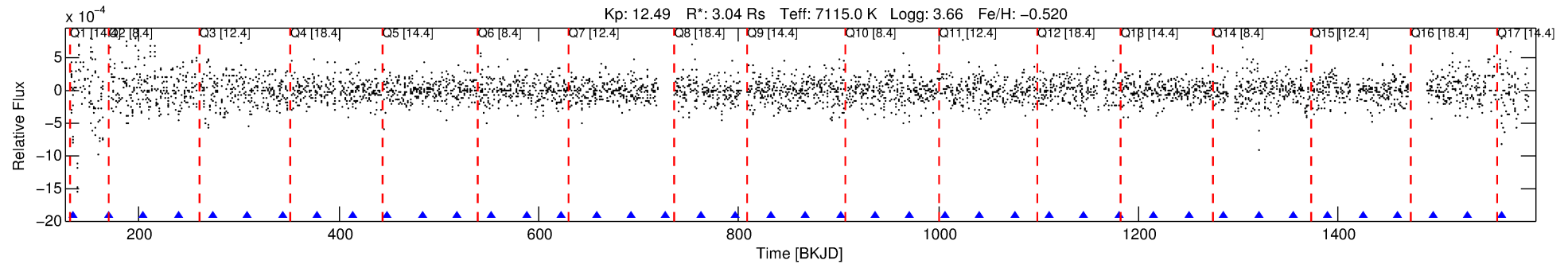
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006445116-06

No Significant Match Found

DV One-Page Summary

KIC: 6445116 Candidate: 6 of 6 Period: 34.865 d



DV Fit Results:

Period = 34.86481 [0.00039] d
Epoch = 134.6986 [0.0127] BKJD
Rp/R* = 0.0254 [0.1220]
a/R* = 112.48 [3176.28]
b = 0.59 [31.25]
Seff = 363.19 [205.75]
Teq = 1113 [158] K
Rp = 8.44 [40.66] Re
a = 0.2421 [0.0847] AU
Ag = 16.60 [172.39] [0.09] σ
Teffp = 3474 [9009] K [0.26] σ

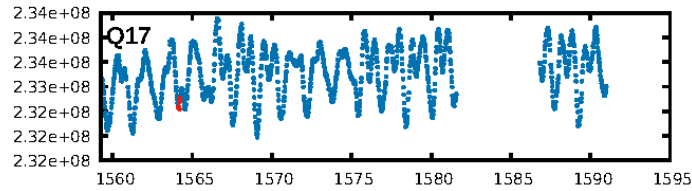
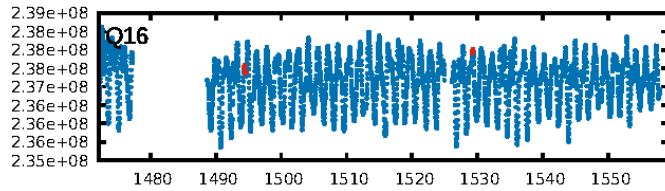
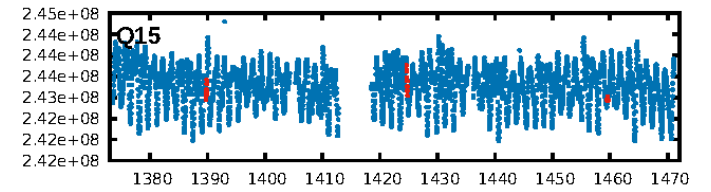
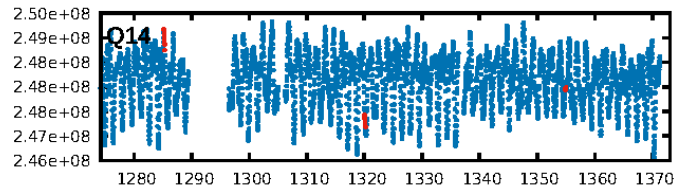
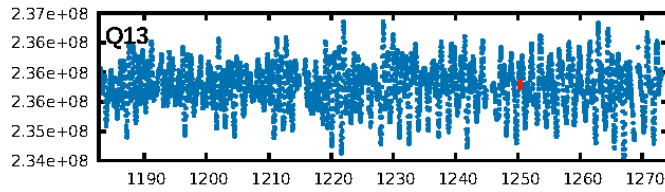
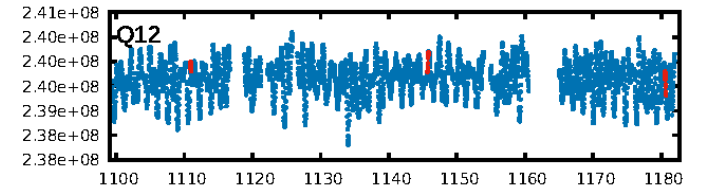
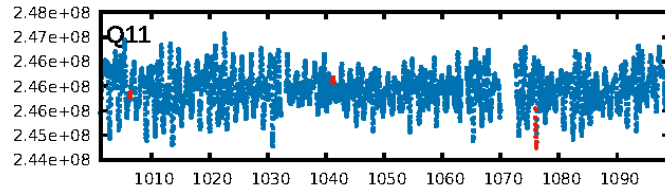
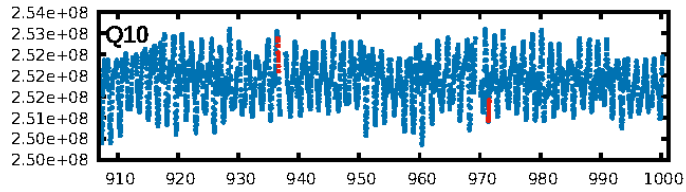
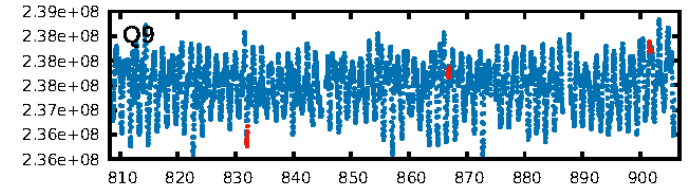
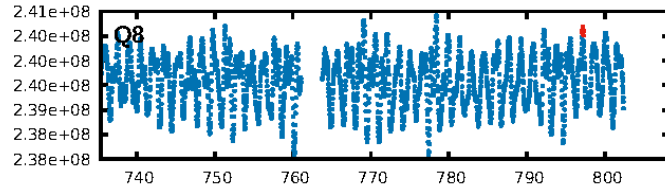
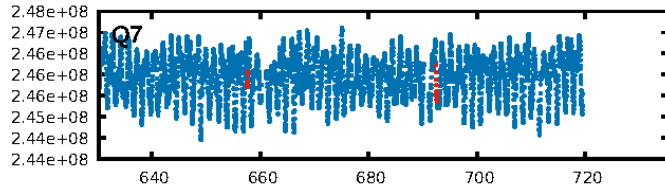
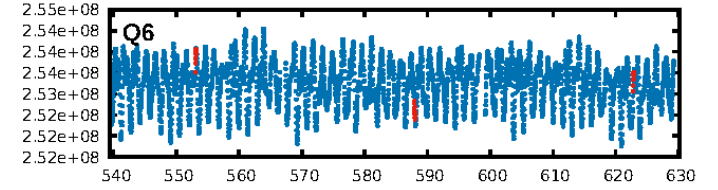
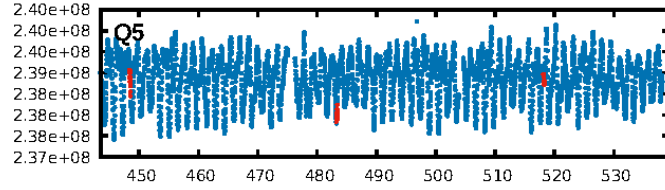
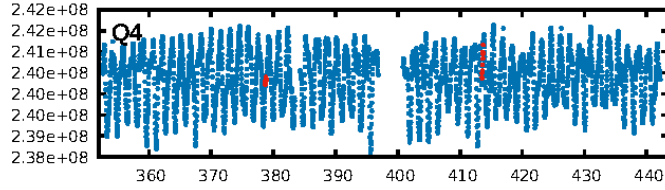
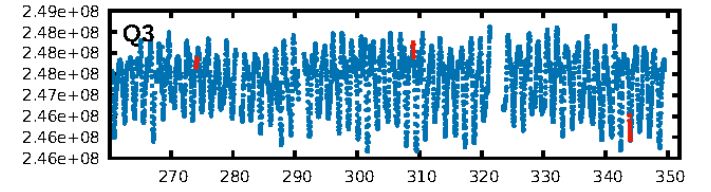
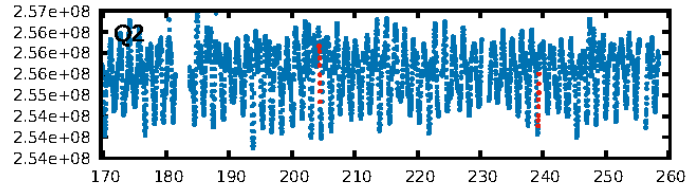
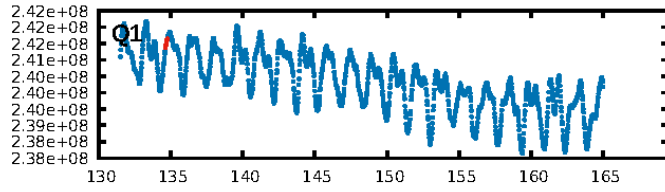
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [149.63] σ
LongPeriod-sig: 100.0% [245.72] σ
ModelChiSquare2-sig: 57.5%
ModelChiSquareGof-sig: 90.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1/1]
GhostDiagnostic-chr: 0.3341
Centroid-sig: 0.8%
Centroid-so: 0.340 arcsec [2.12] σ
OotOffset-rm: 0.036 arcsec [0.15] σ
OotOffset-st: 4/3/4/5 [16]
KicOffset-rm: 0.097 arcsec [0.43] σ
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/17]

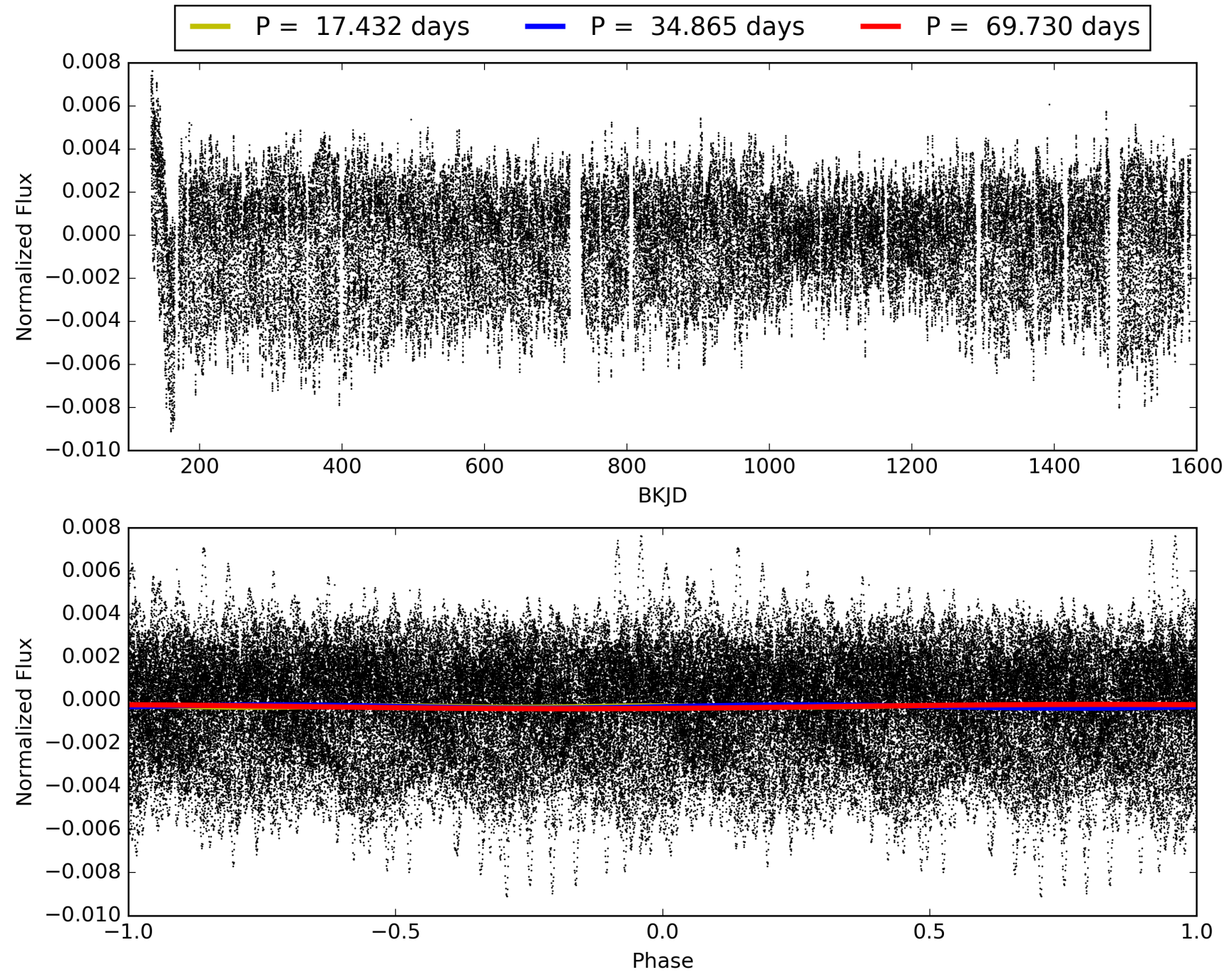
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:52:28 Z

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

TCE 006445116-06, PDC Light Curves

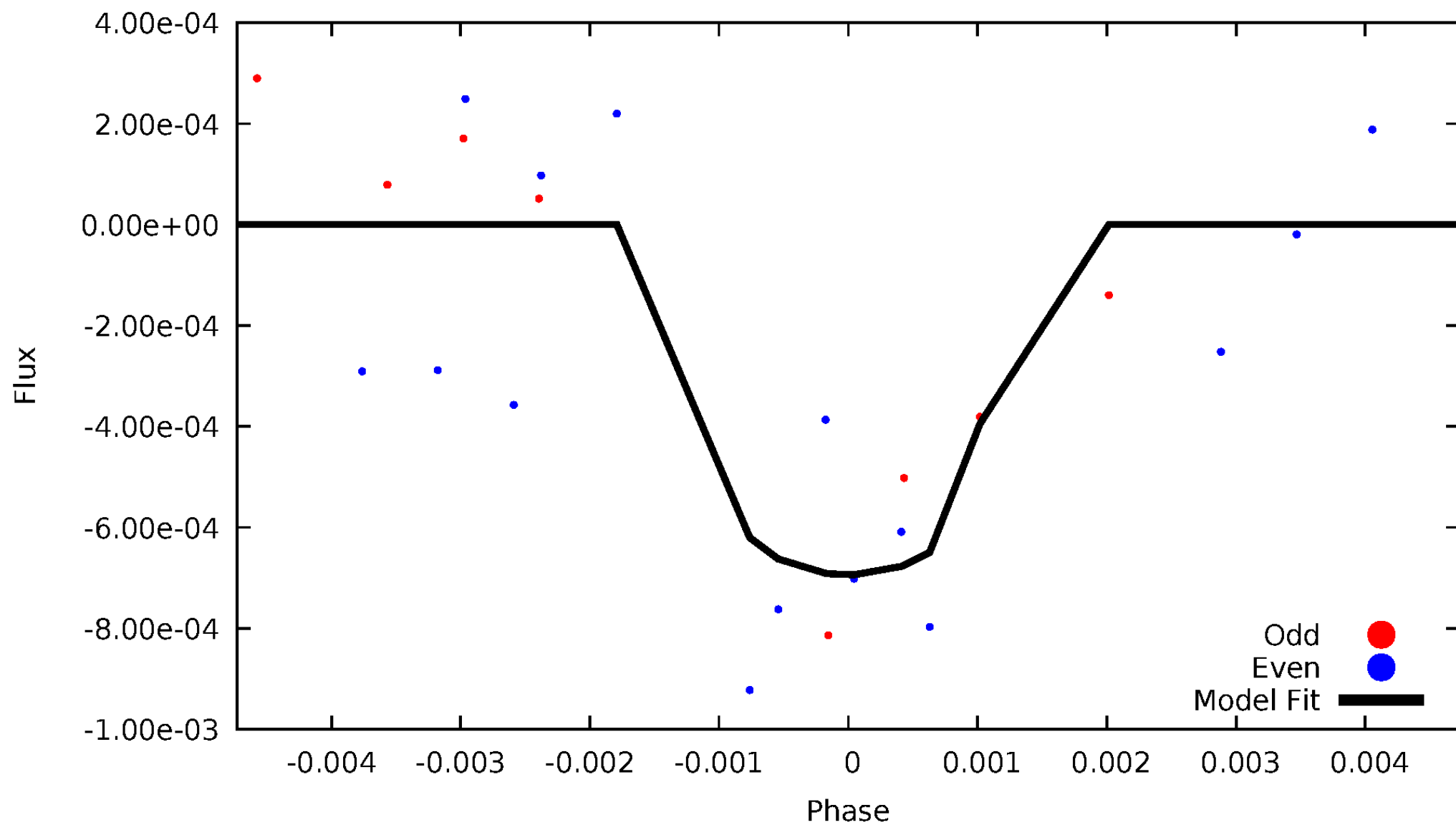


TCE 006445116-06



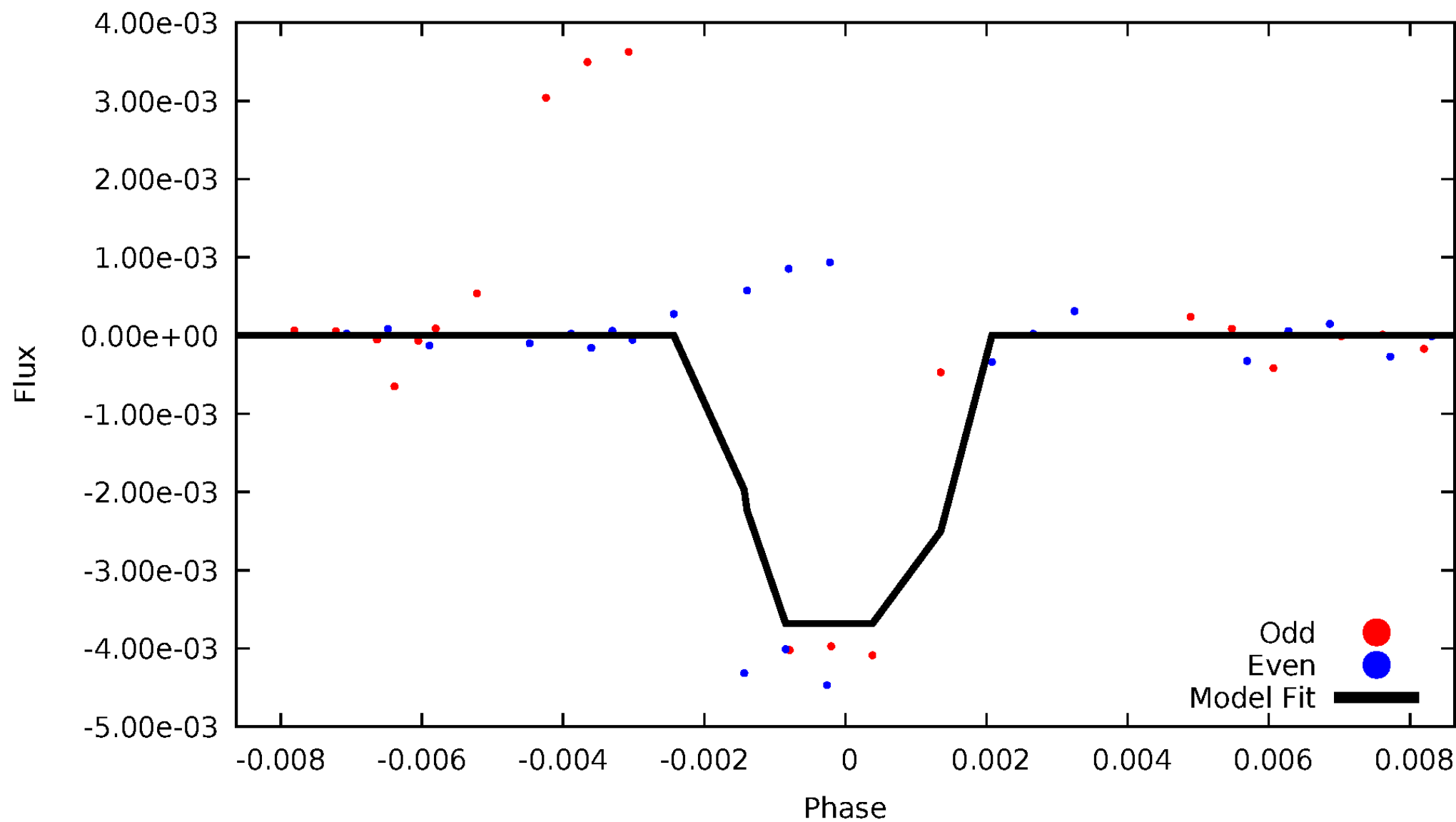
DV Odd/Even

TCE 006445116-06



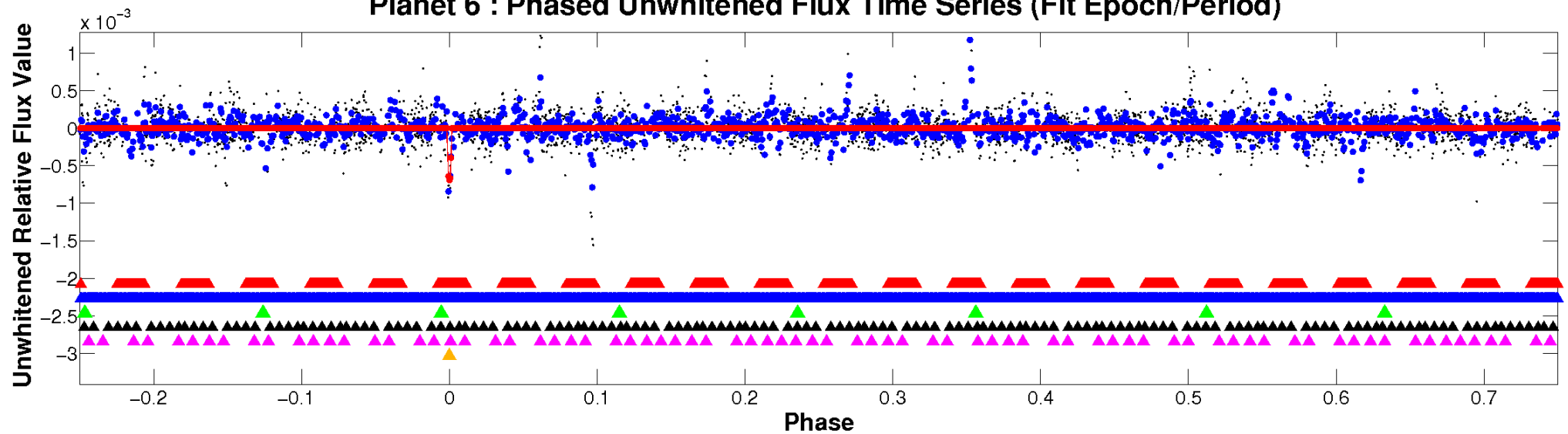
ALT Odd/Even

TCE 006445116-06

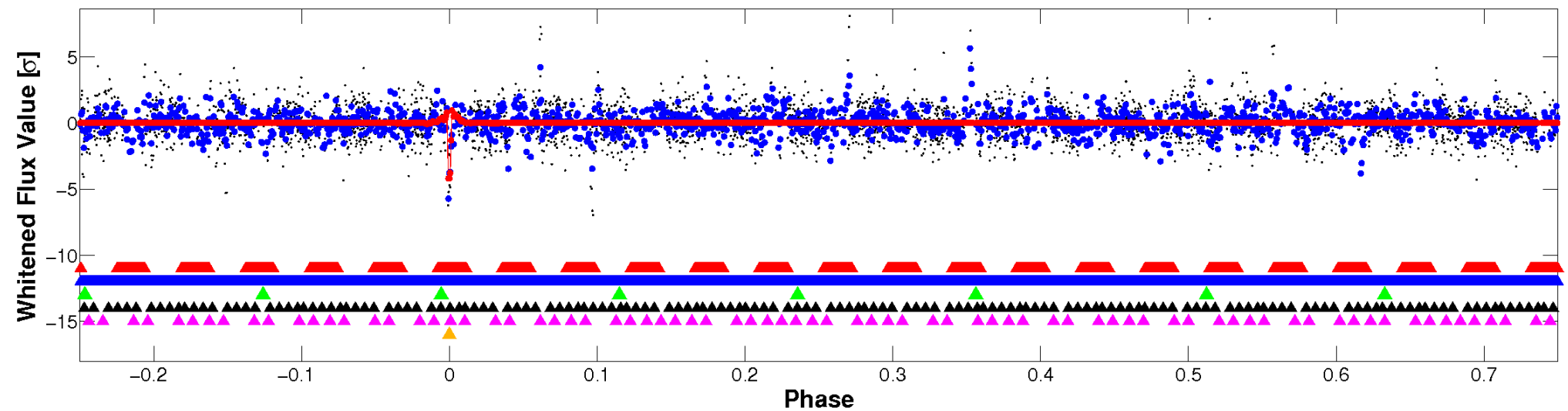


Non-Whitened Vs. Whitened Light Curve

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

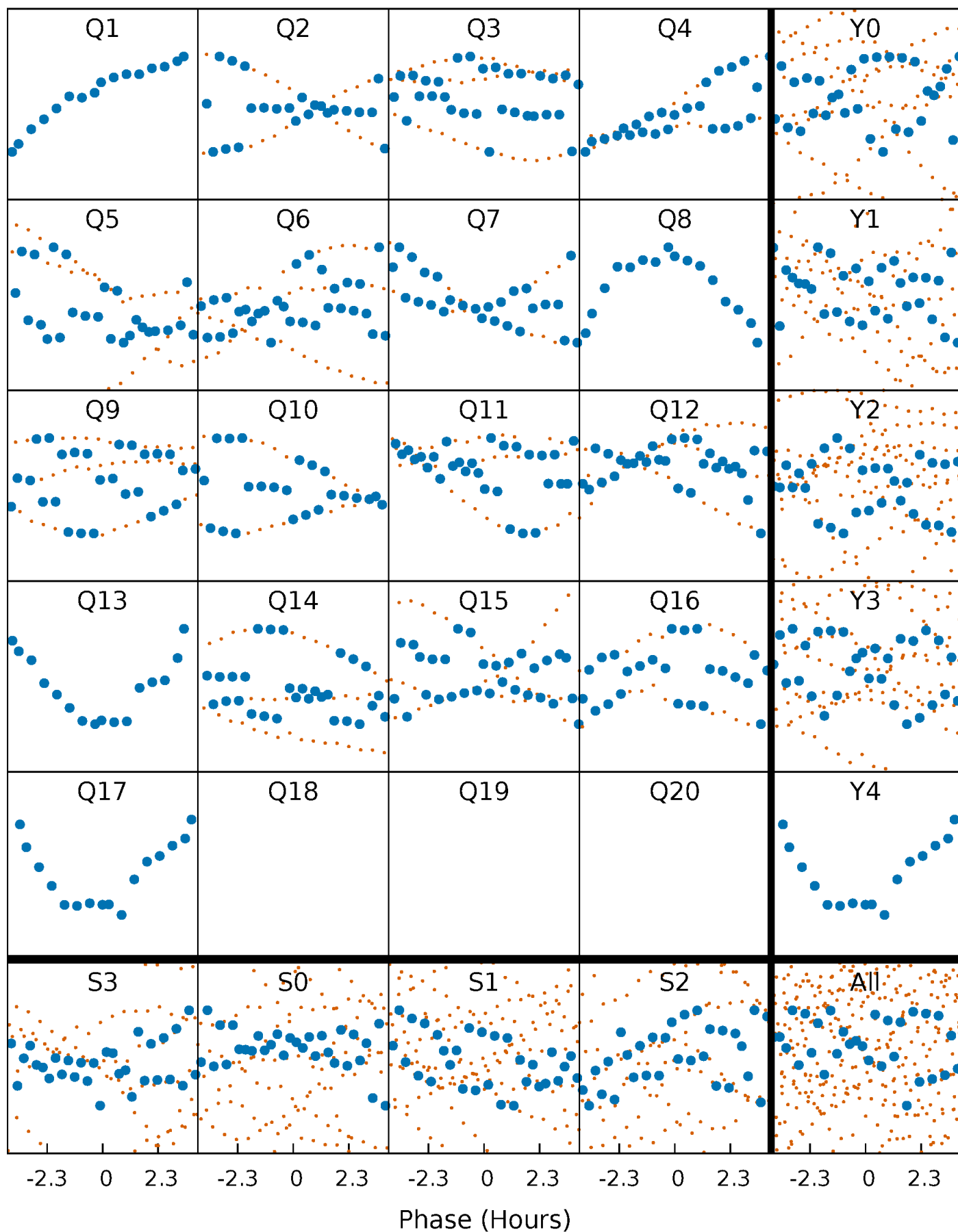


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



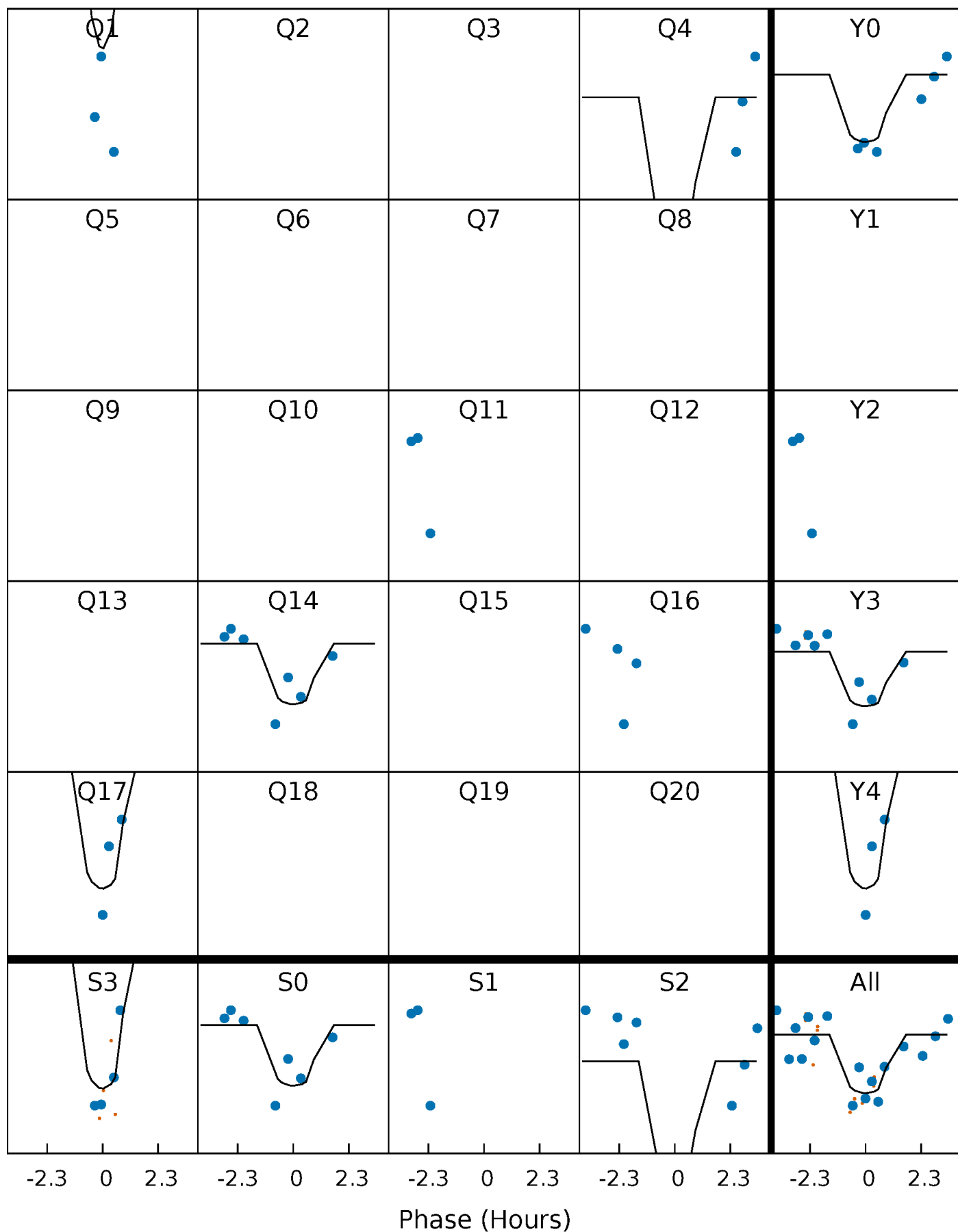
PDC Quarter-Phased Transit Curves

TCE 006445116-06 P= 34.864811 Days $T_0=134.698618$ (BKJD)



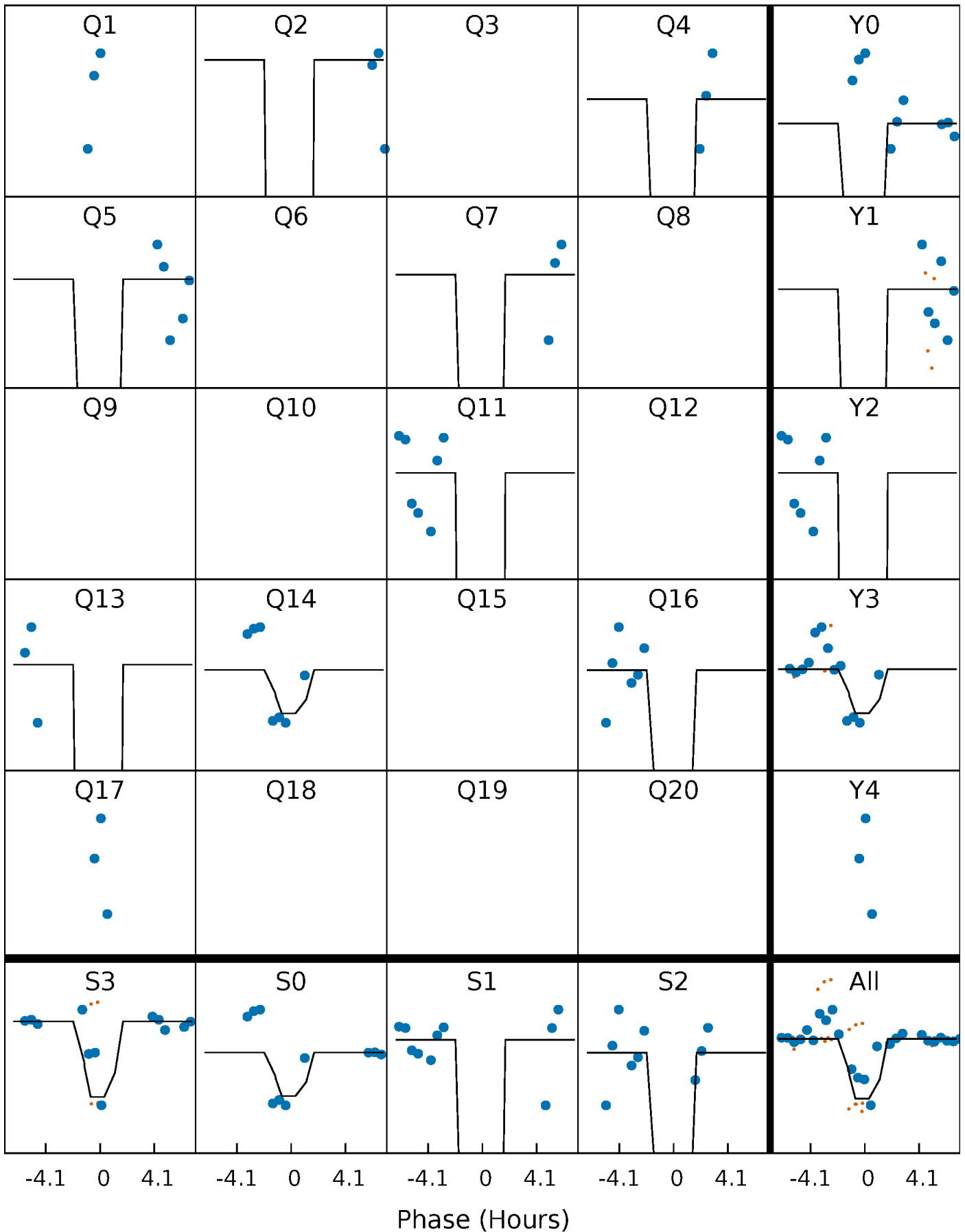
DV Quarter-Phased Transit Curves

TCE 006445116-06 P= 34.864811 Days $T_0=134.698618$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

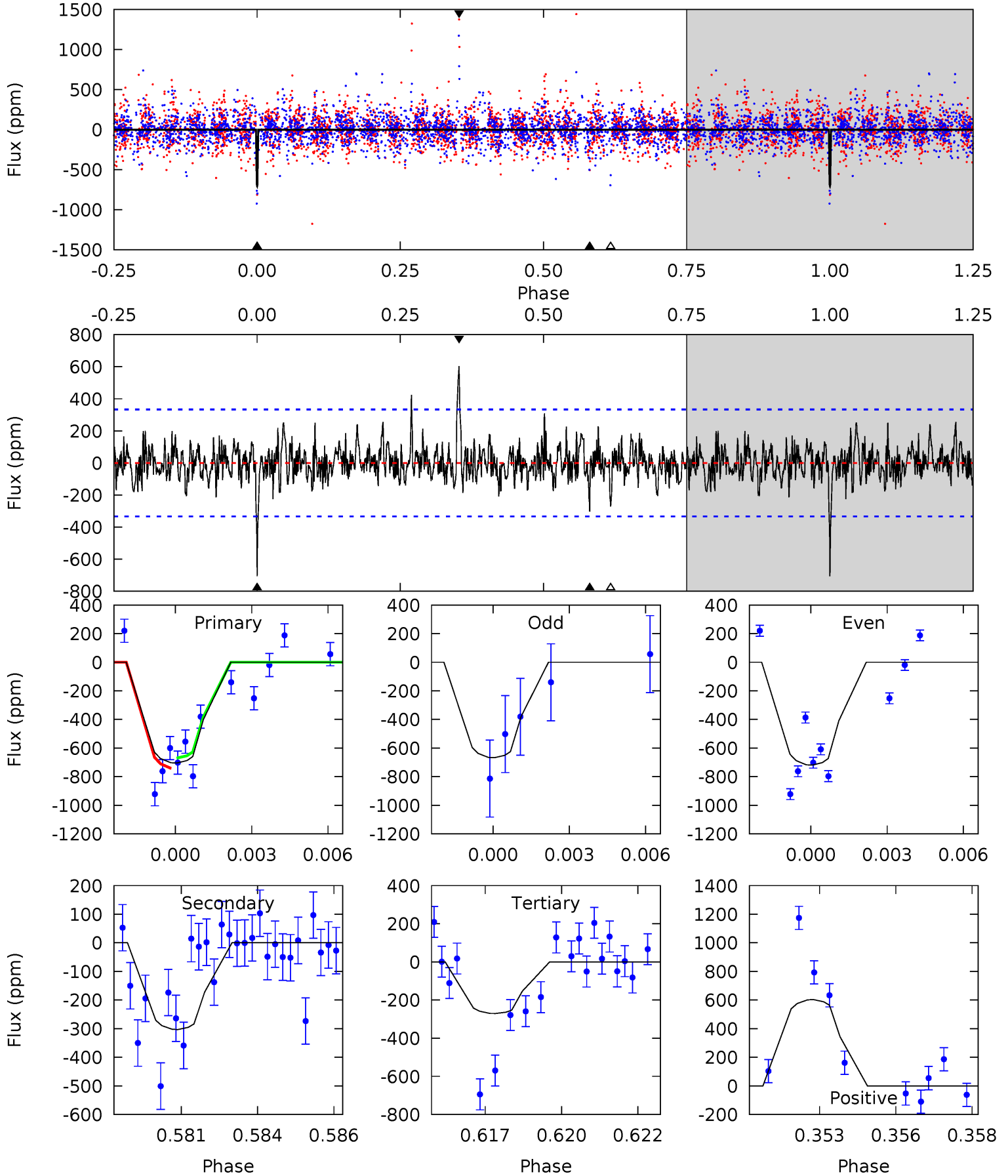
TCE 006445116-06 P= 34.864628 Days $T_0=134.728242$ (BKJD)



DV Model-Shift Uniqueness Test

006445116-06, P = 34.864811 Days, E = 99.833807 Days

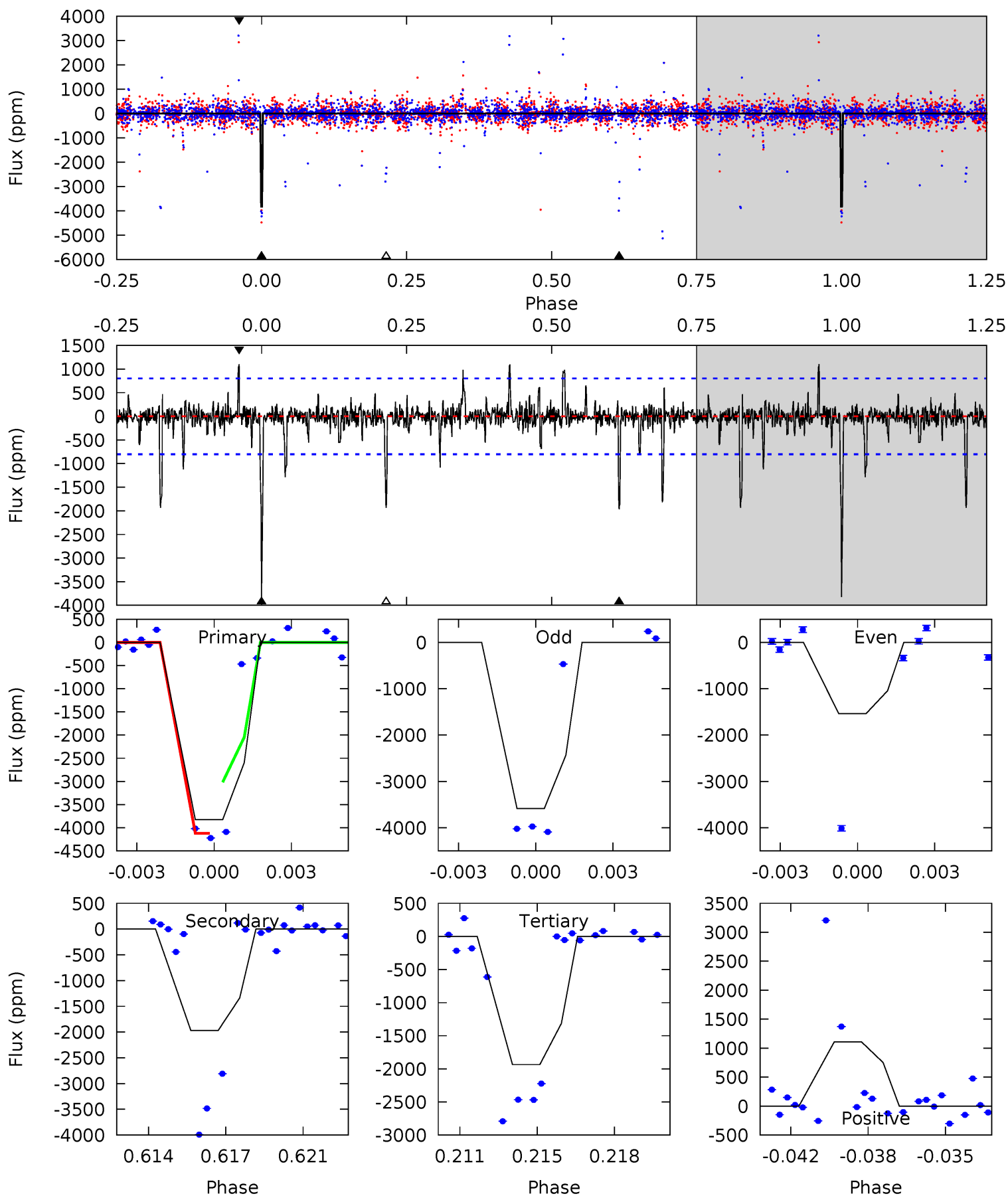
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	4.78	4.27	9.52	5.27	2.99	1.28	6.86	1.61	0.51	-4.74	0.38	1.05	0.46	0.55



Alt Model-Shift Uniqueness Test

006445116-06, P = 34.864628 Days, E = 99.863614 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	12.8	12.6	7.20	5.23	2.92	1.30	12.3	17.7	0.22	5.61	4.93	0.65	0.22	3.47



Stellar Parameters For KIC 006445116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7115^{+192}_{-235}	$3.663^{+0.320}_{-0.080}$	$-0.520^{+0.300}_{-0.250}$	$3.045^{+0.380}_{-1.139}$	$1.555^{+0.241}_{-0.295}$	$0.078^{+0.182}_{-0.020}$
	+3%/-3%	+9%/-2%	+58%/-48%	+12%/-37%	+15%/-19%	+234%/-26%
Source	PHO1	FLK73	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 006445116-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-303 ± 63	$30.22^{+30.06}_{-20.62}$	1517^{+91}_{-141}	3455^{+1849}_{-657}	11^{+100}_{-8}
Alt.	-1969 ± 154	$35.28^{+31.56}_{-24.13}$	1523^{+88}_{-128}	4546^{+3490}_{-917}	49^{+469}_{-35}

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 $A_{obs} \gg 1.0$

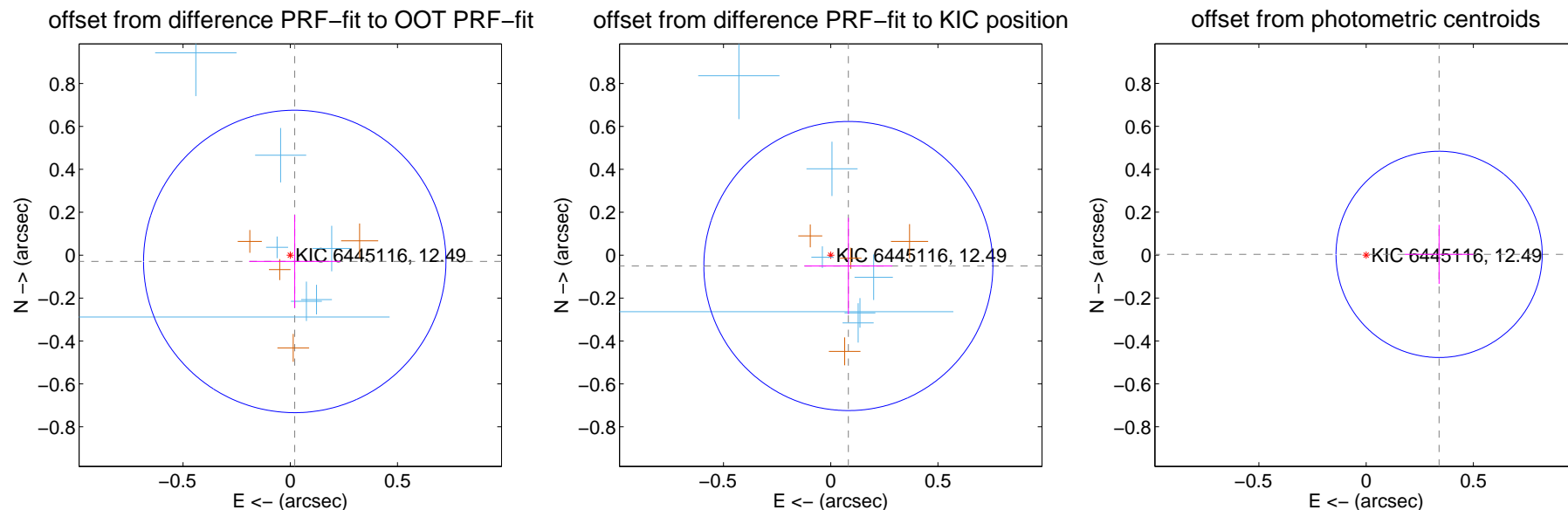
DV Centroid Data

Supplemental centroid analysis for 006445116-06. Kepler magnitude: 12.49. Transit SNR 11.16

There are 8 quarters with good PRF difference image offsets

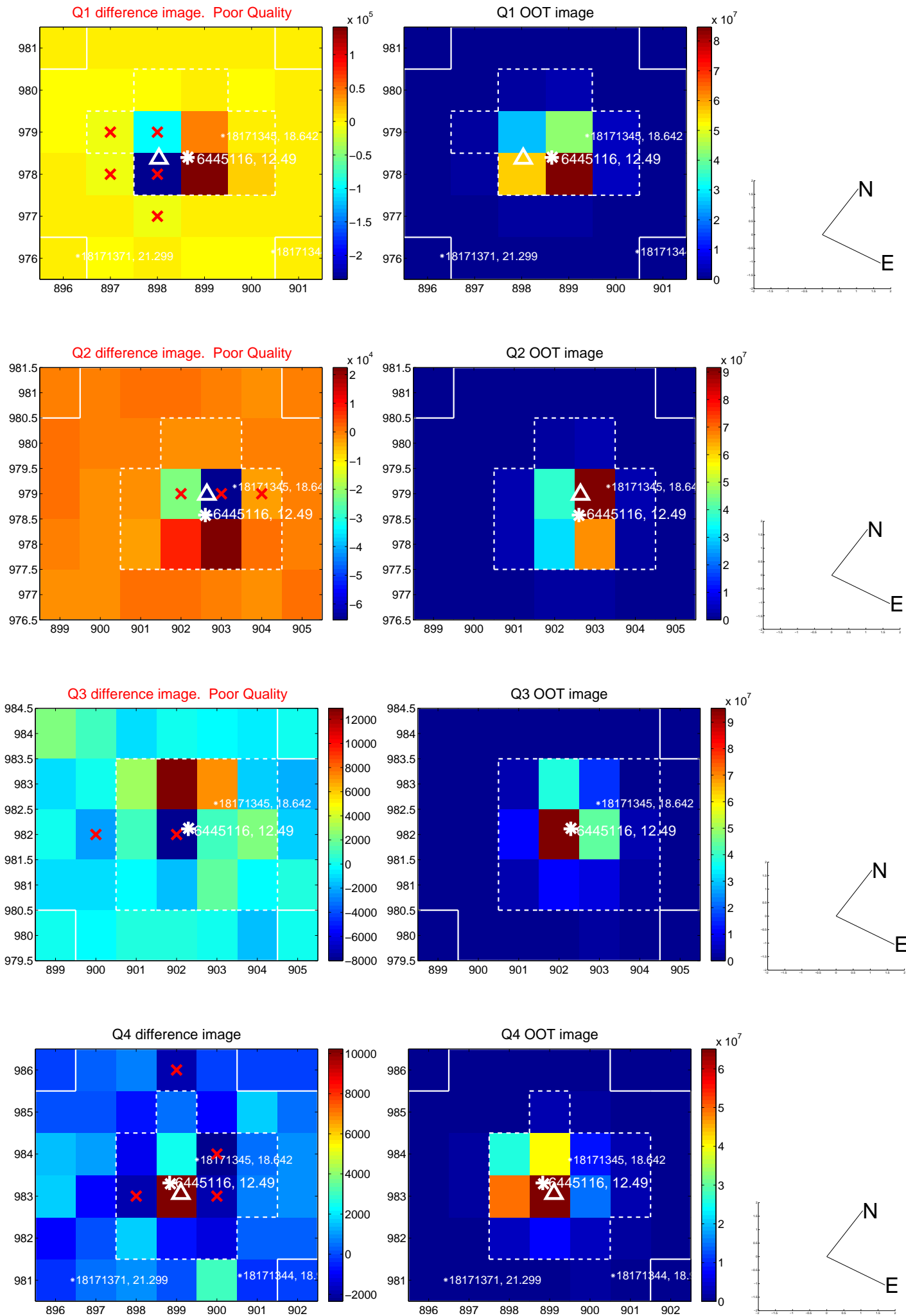
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.036 ± 0.235	0.15	-0.021 ± 0.213	-0.029 ± 0.217
PRF-fit source offset from KIC position	0.097 ± 0.225	0.43	-0.082 ± 0.204	-0.051 ± 0.224
photometric centroid source offset	0.34 ± 0.16	2.12	-0.34 ± 0.16	0.00 ± 0.14

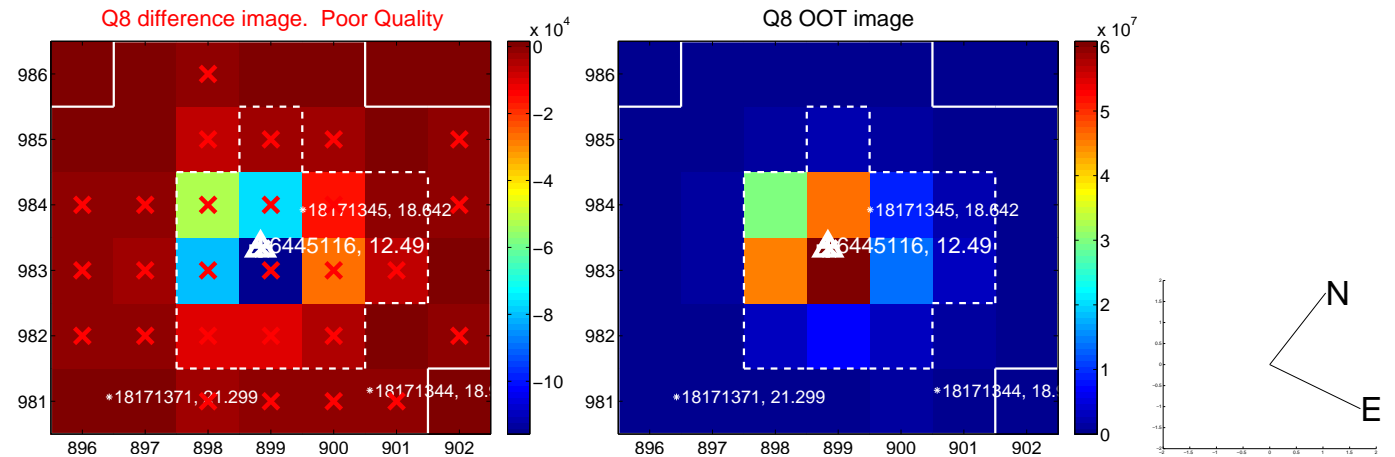
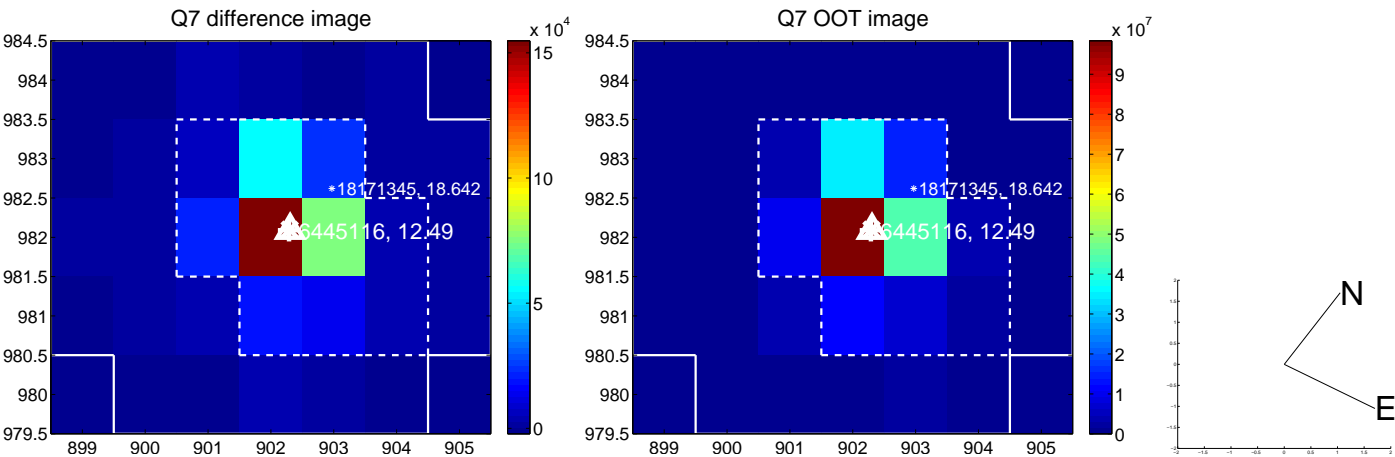
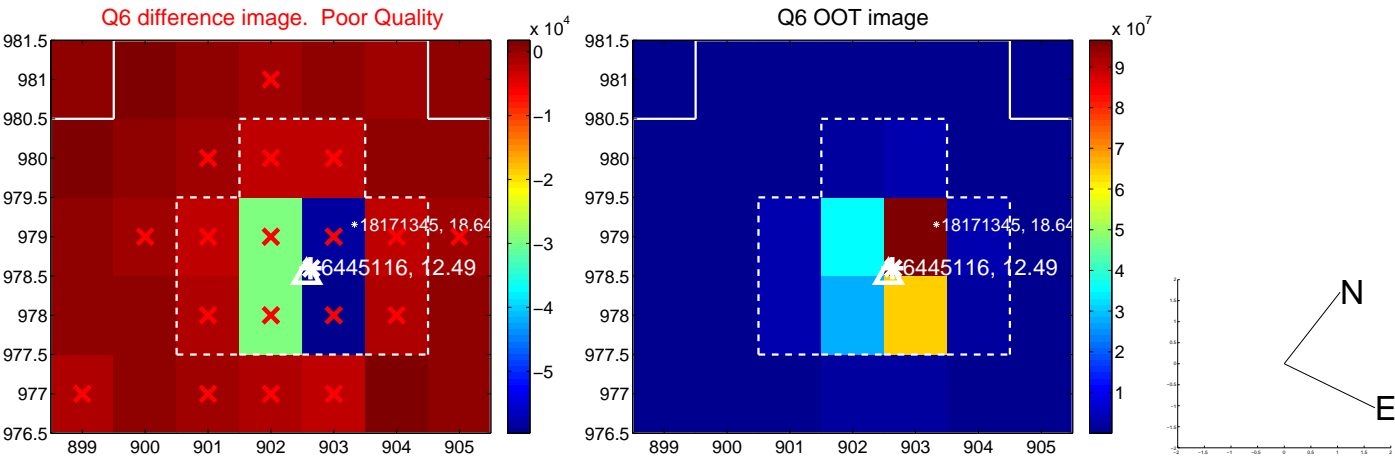
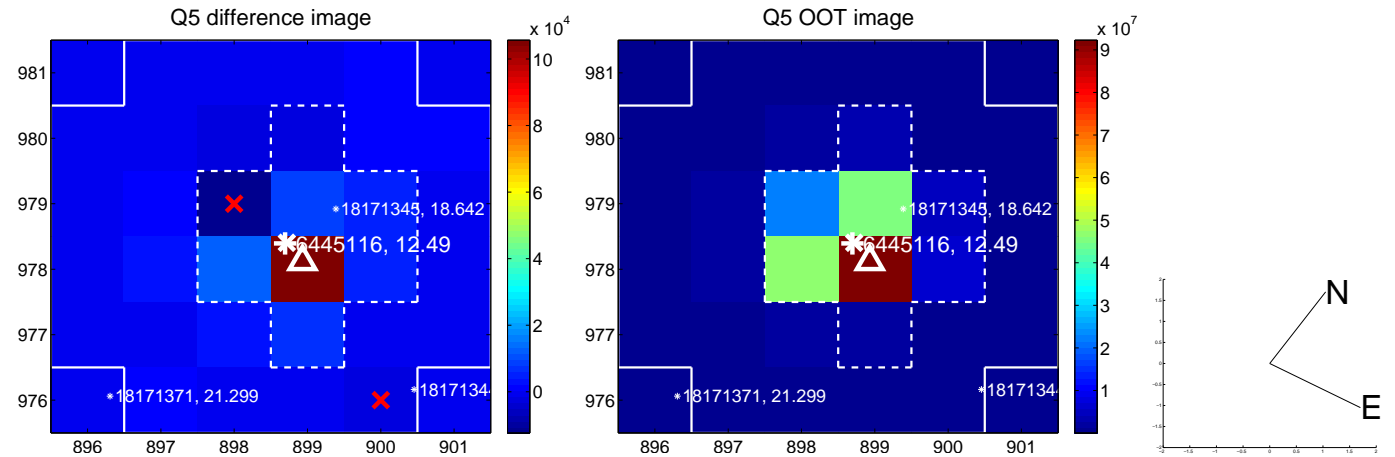


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

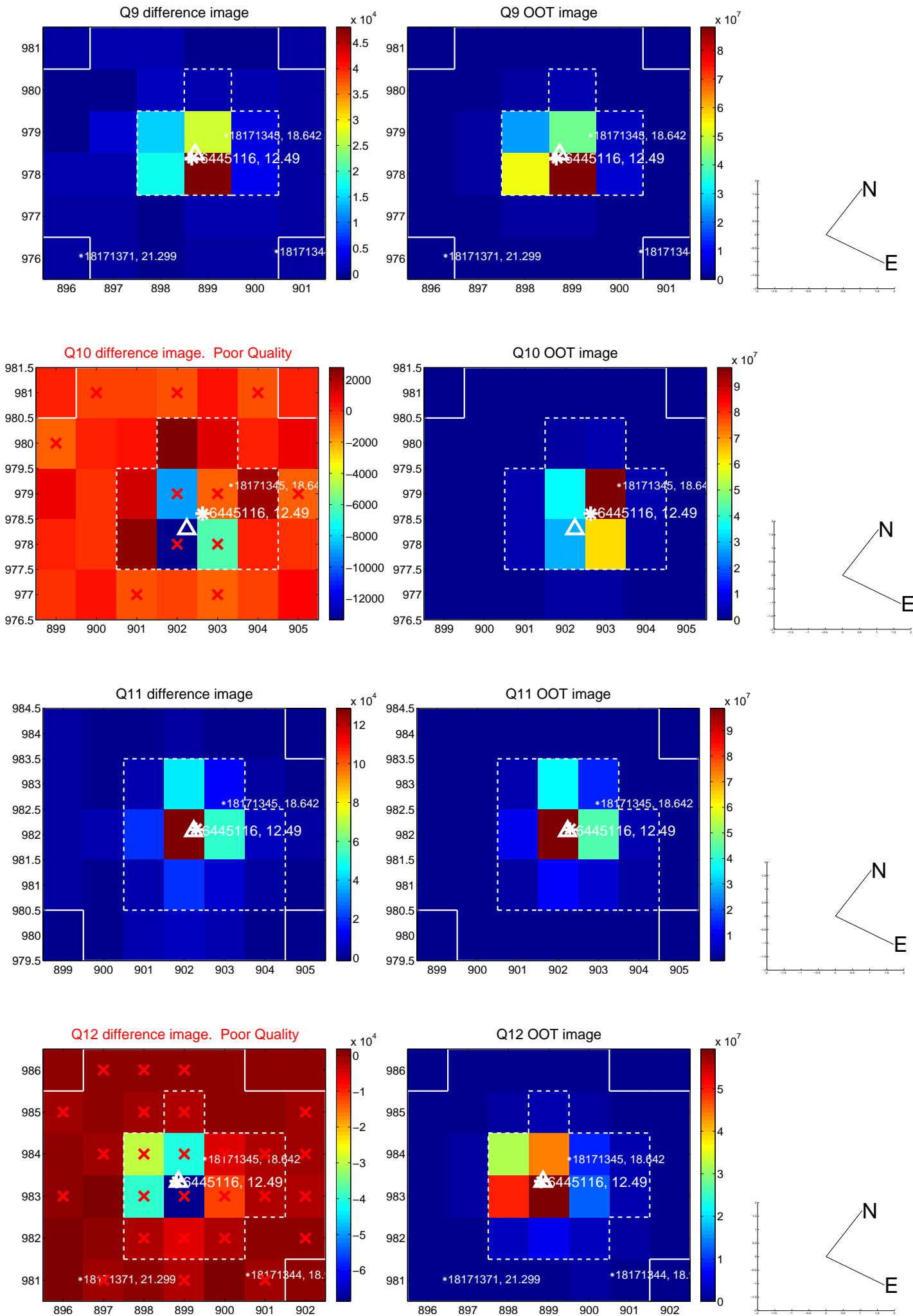
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



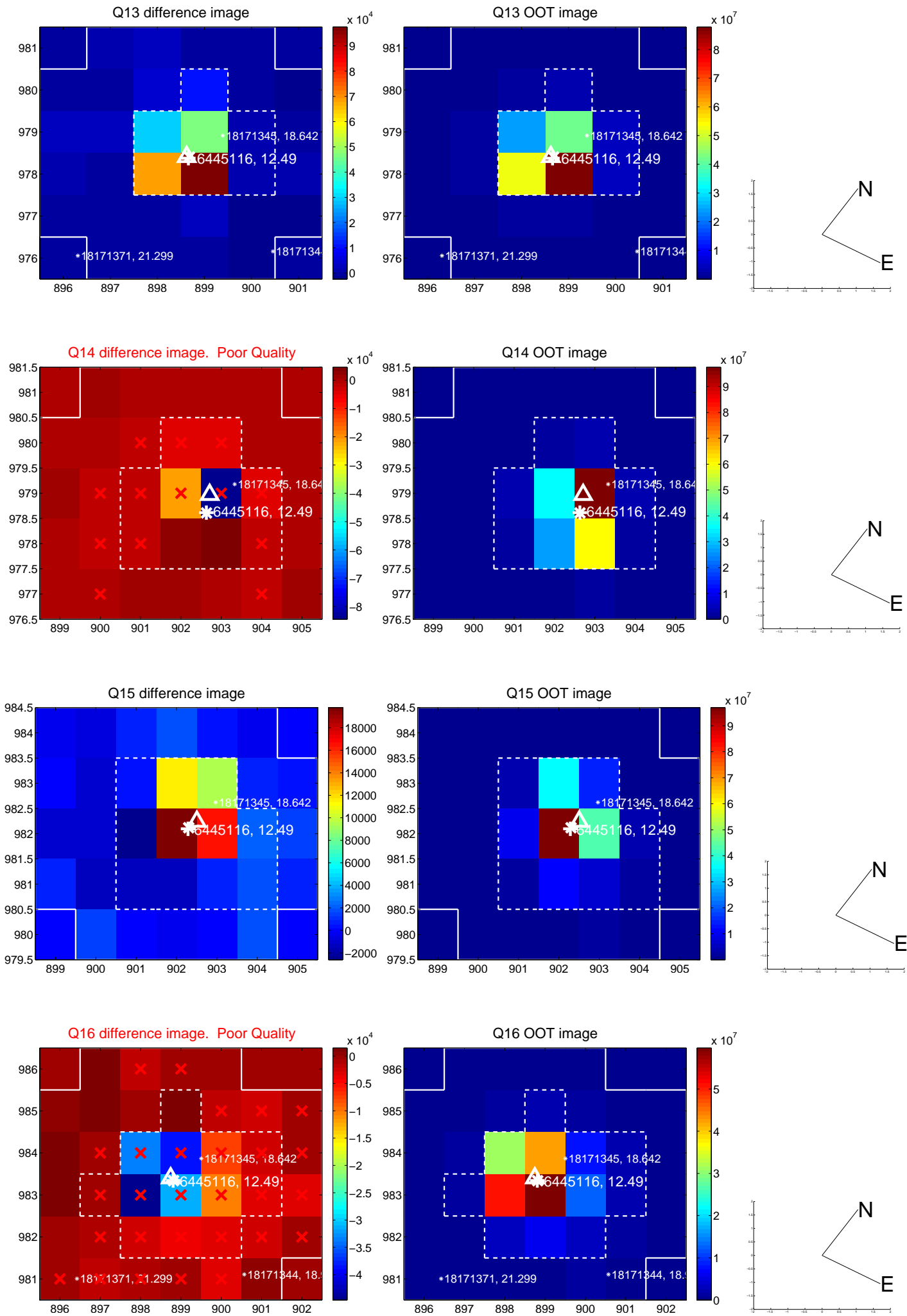
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



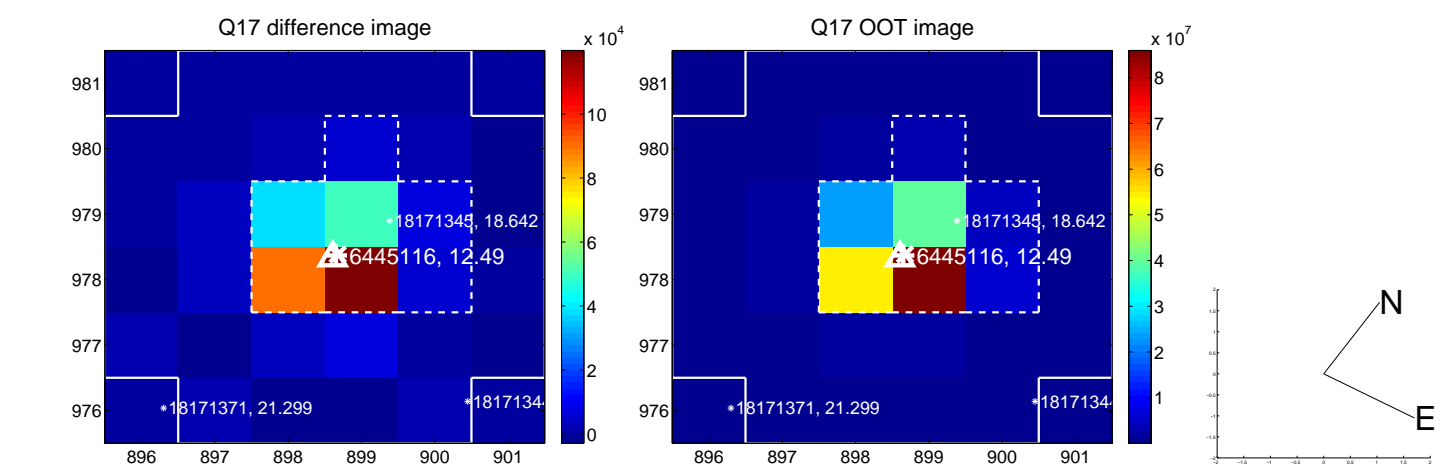
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



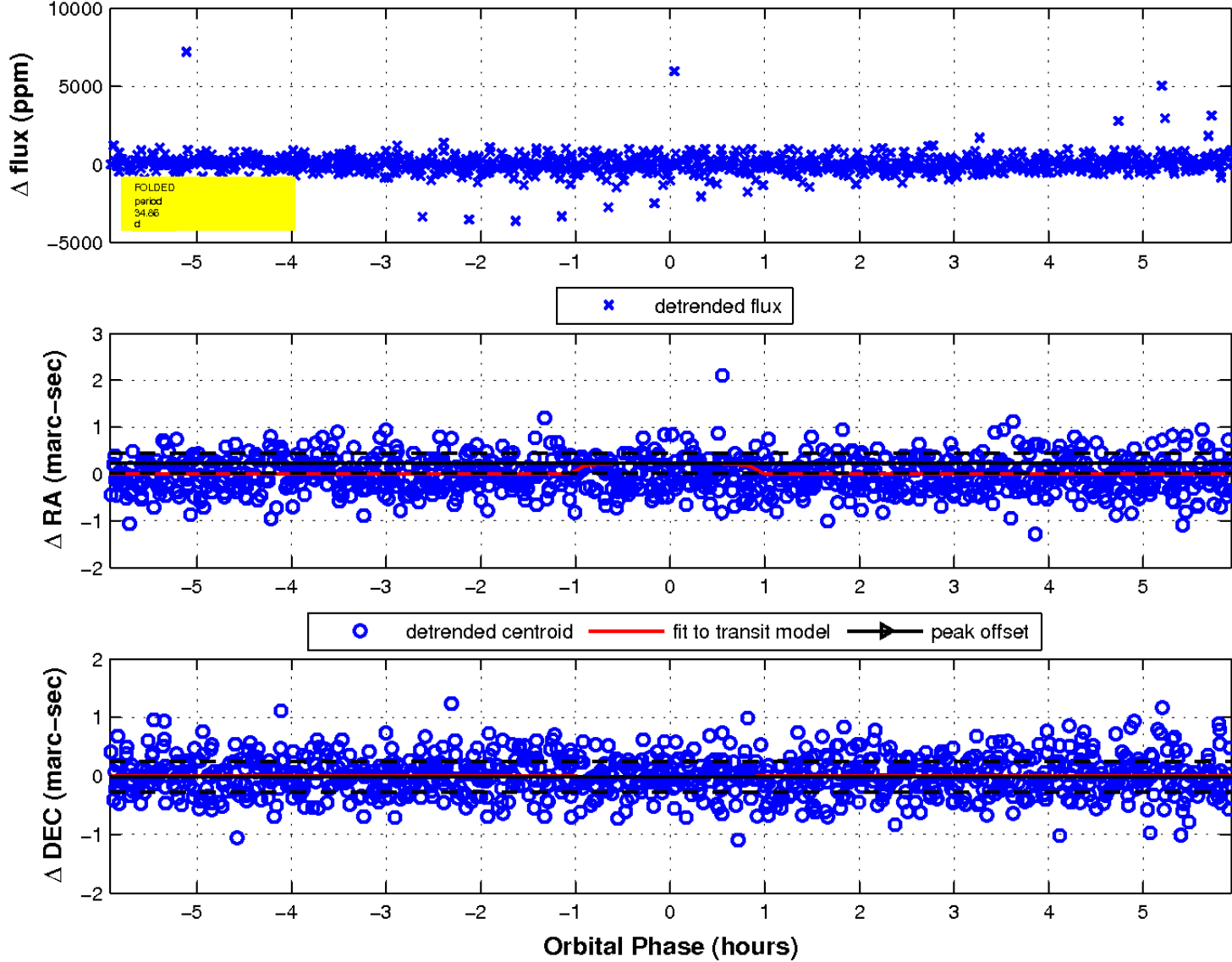
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

