

KIC 008231370

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})
008231370-01	OBS	No	0.873171	132.218468	52.4	3.045	10.7	9.3	1.79	7006	1.50	16726.01
008231370-02	OBS	No	0.873120	131.796051	14.4	4.688	11.9	2.5	1.79	7006	0.69	16727.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008231370-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008231370-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

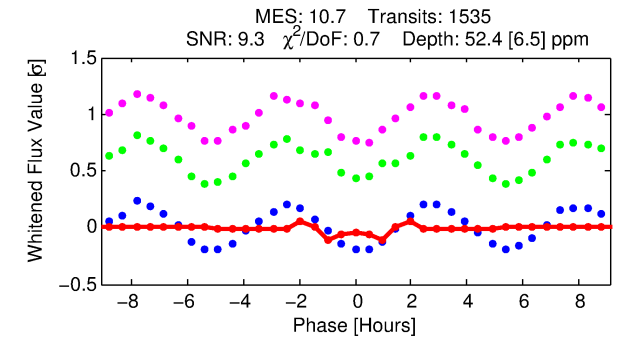
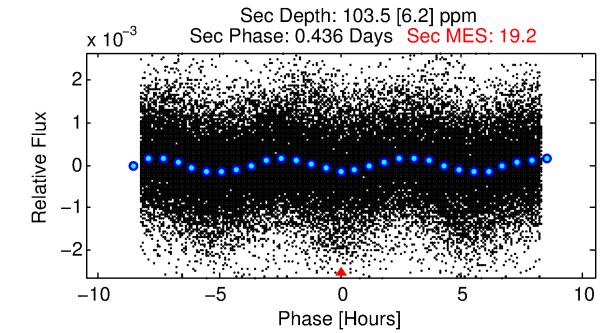
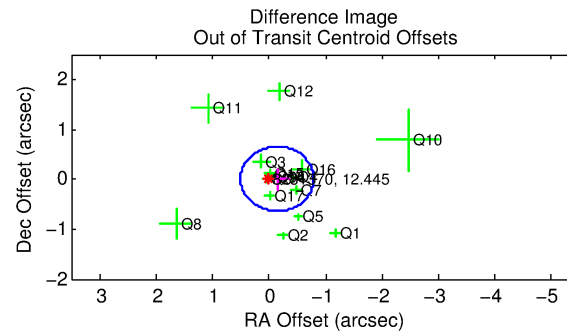
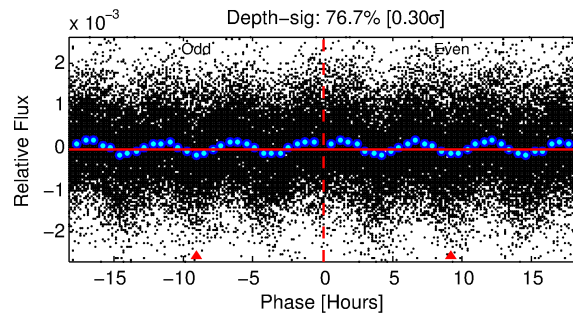
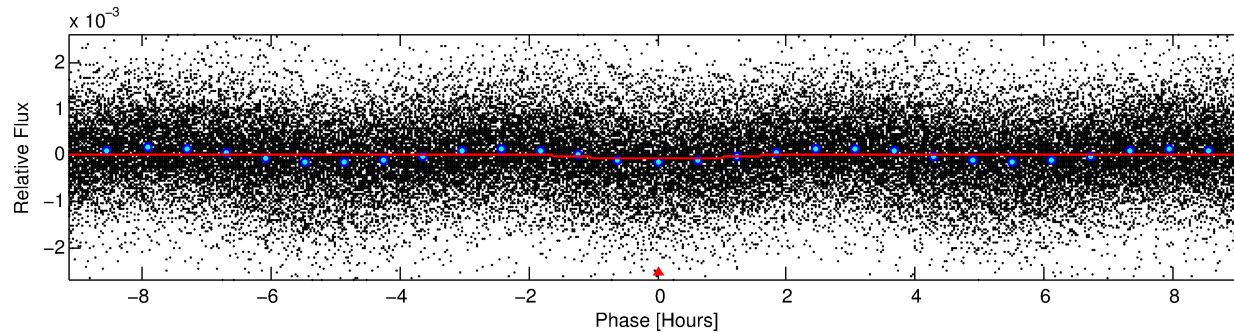
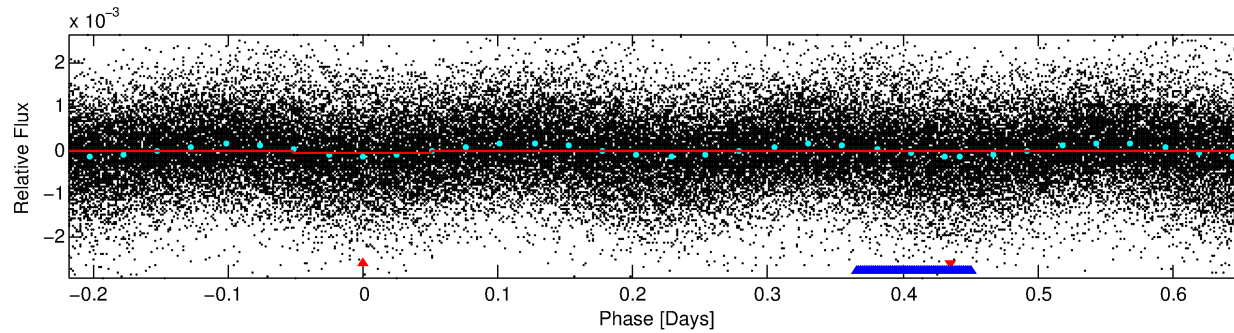
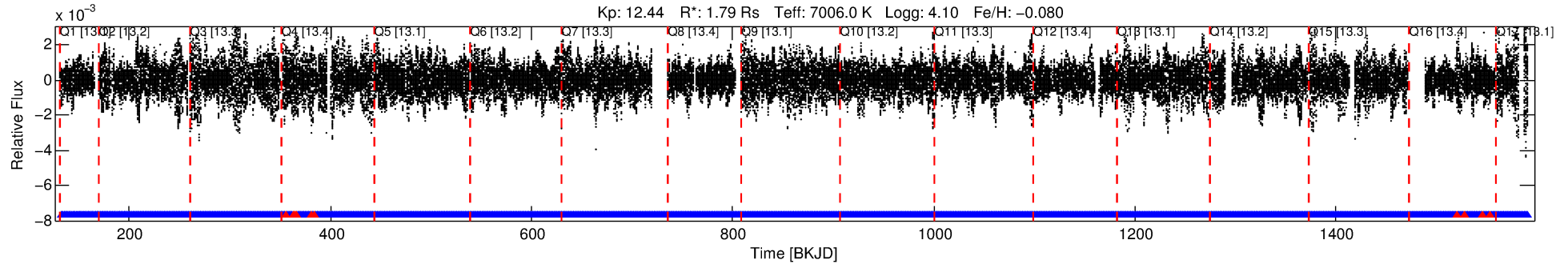
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008231370-01

No Significant Match Found

DV One-Page Summary

KIC: 8231370 Candidate: 1 of 2 Period: 0.873 d



DV Fit Results:

Period = 0.87317 [0.00001] d
Epoch = 132.2185 [0.0013] BKJD
Rp/R* = 0.0077 [0.0013]
a/R* = 1.37 [0.58]
b = 0.90 [0.19]
Seff = 16726.01 [3571.82]
Teq = 2900 [155] K
Rp = 1.50 [0.35] Re
a = 0.0203 [0.0029] AU
Ag = 10.40 [4.08] [2.30 σ]
Teffp = 8052 [676] K [7.43 σ]

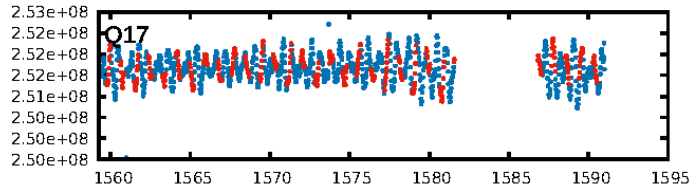
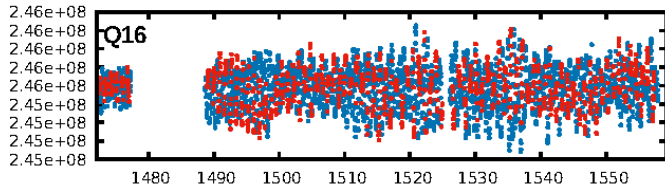
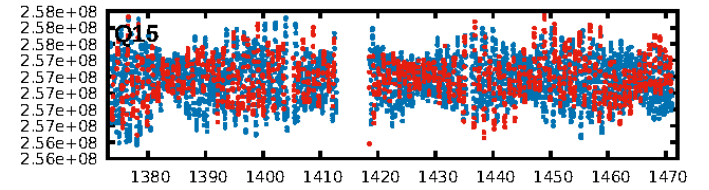
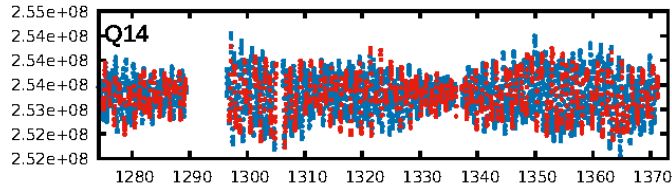
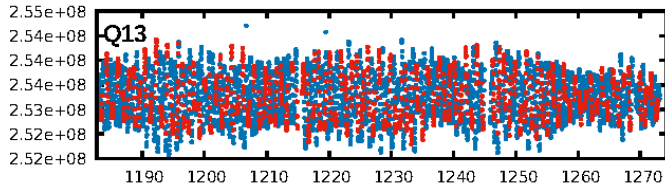
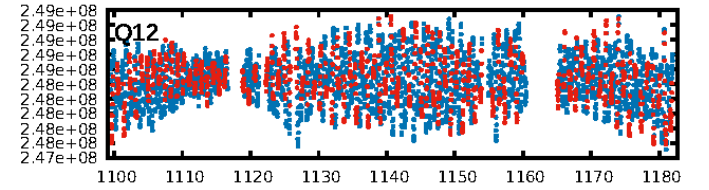
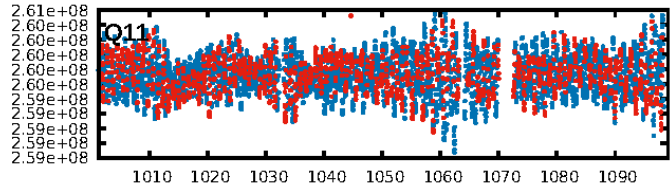
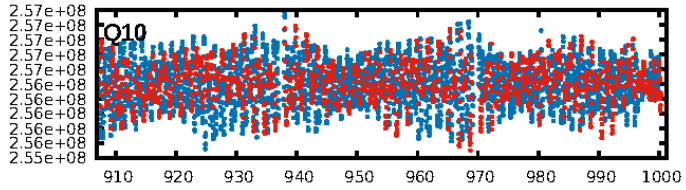
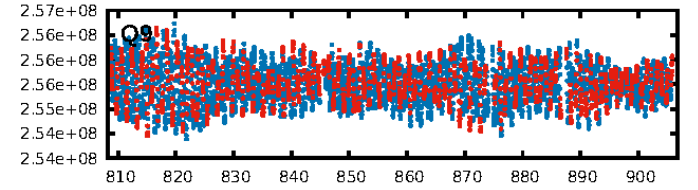
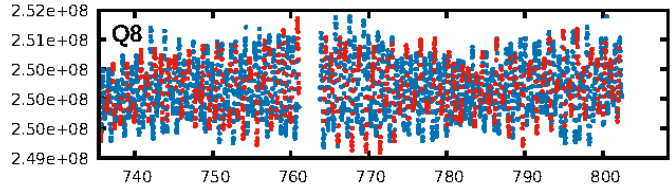
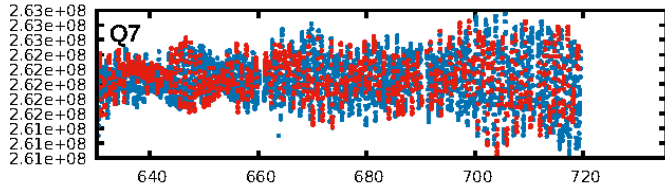
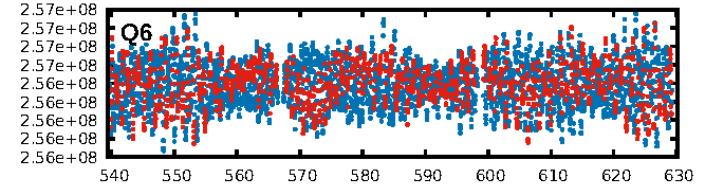
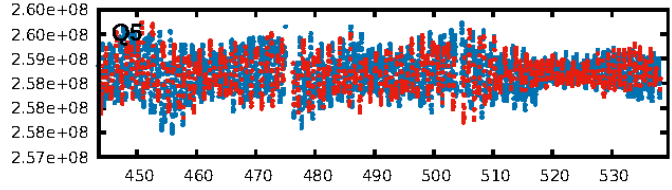
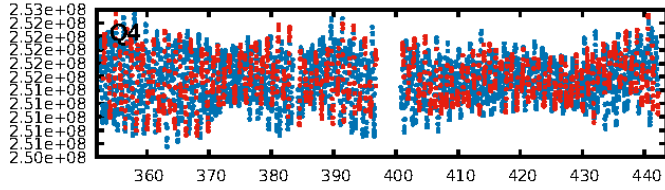
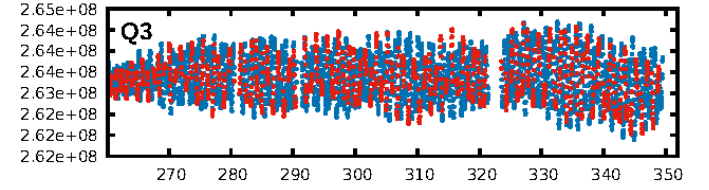
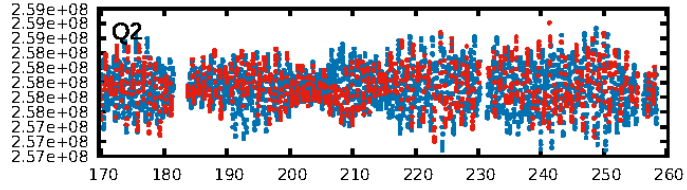
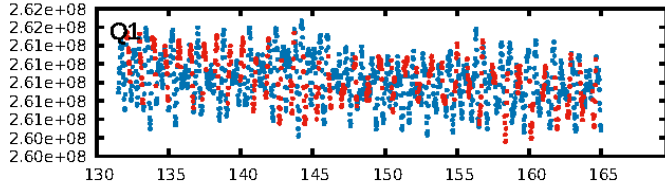
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1456/1467]
GhostDiagnostic-chr: 1.664
Centroid-sig: 0.7%
Centroid-so: 0.468 arcsec [1.63 σ]
OotOffset-rm: 0.142 arcsec [0.66 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.339 arcsec [1.55 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 0.53 [9/17]

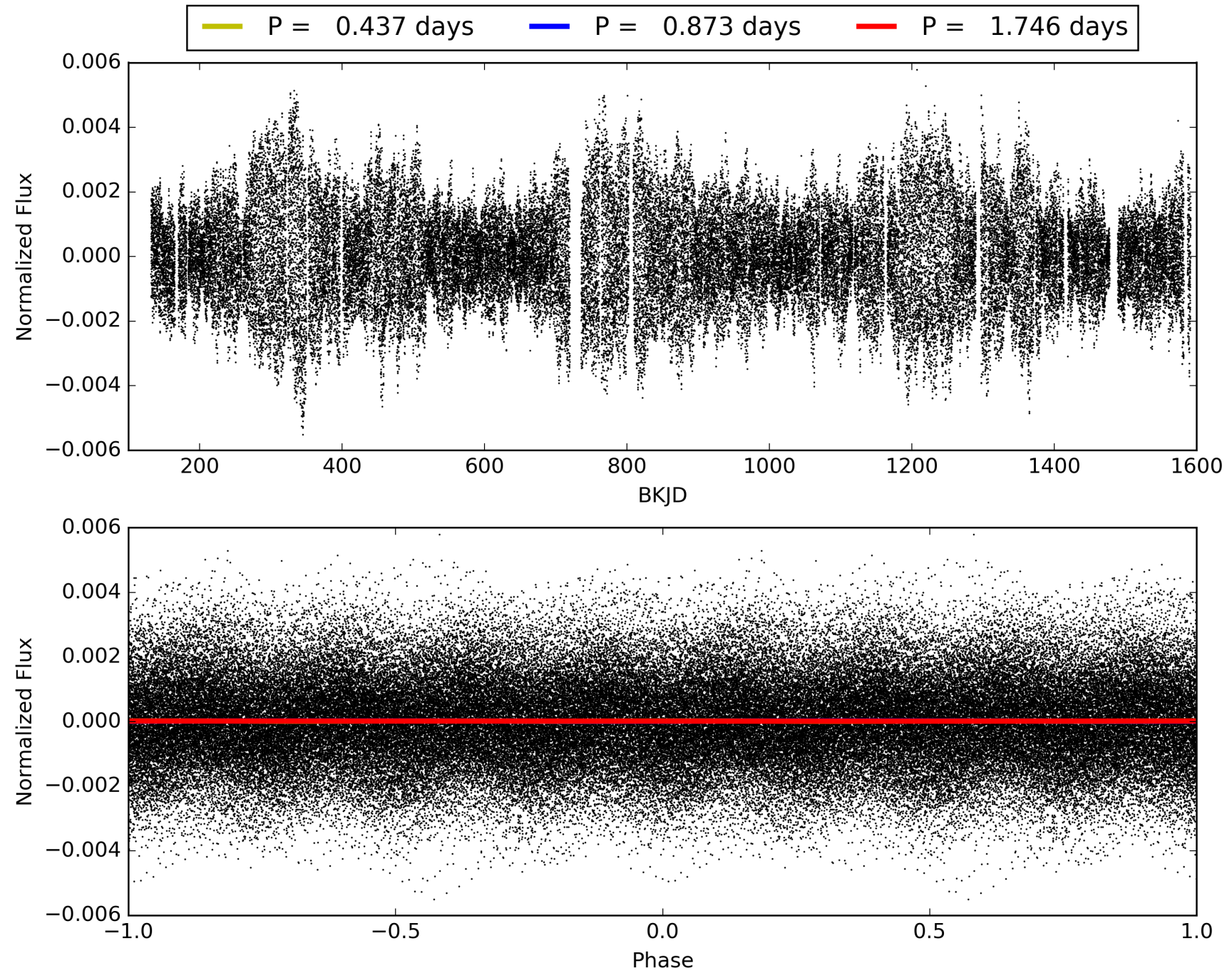
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:36:39 Z

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

TCE 008231370-01, PDC Light Curves

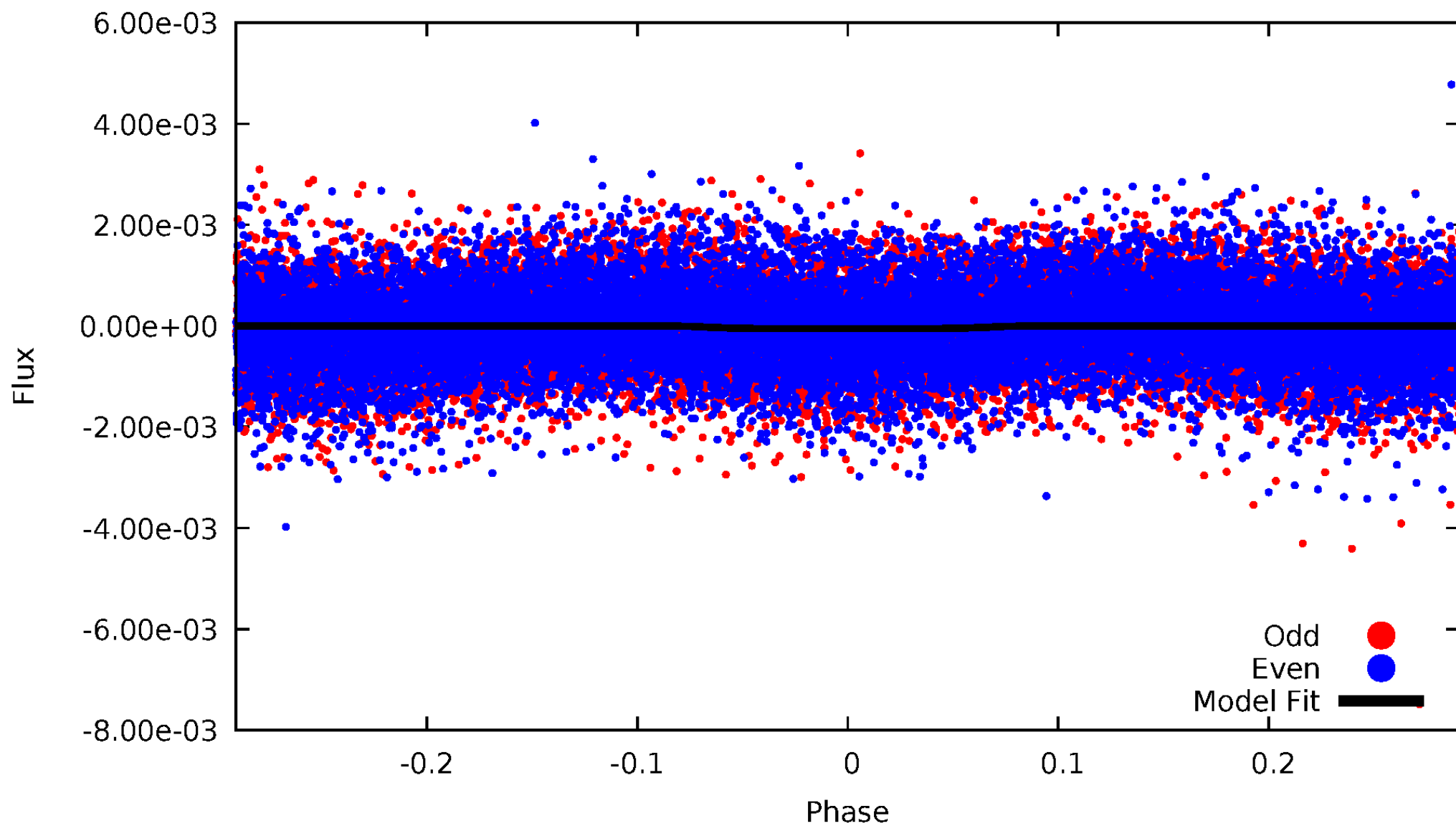


TCE 008231370-01



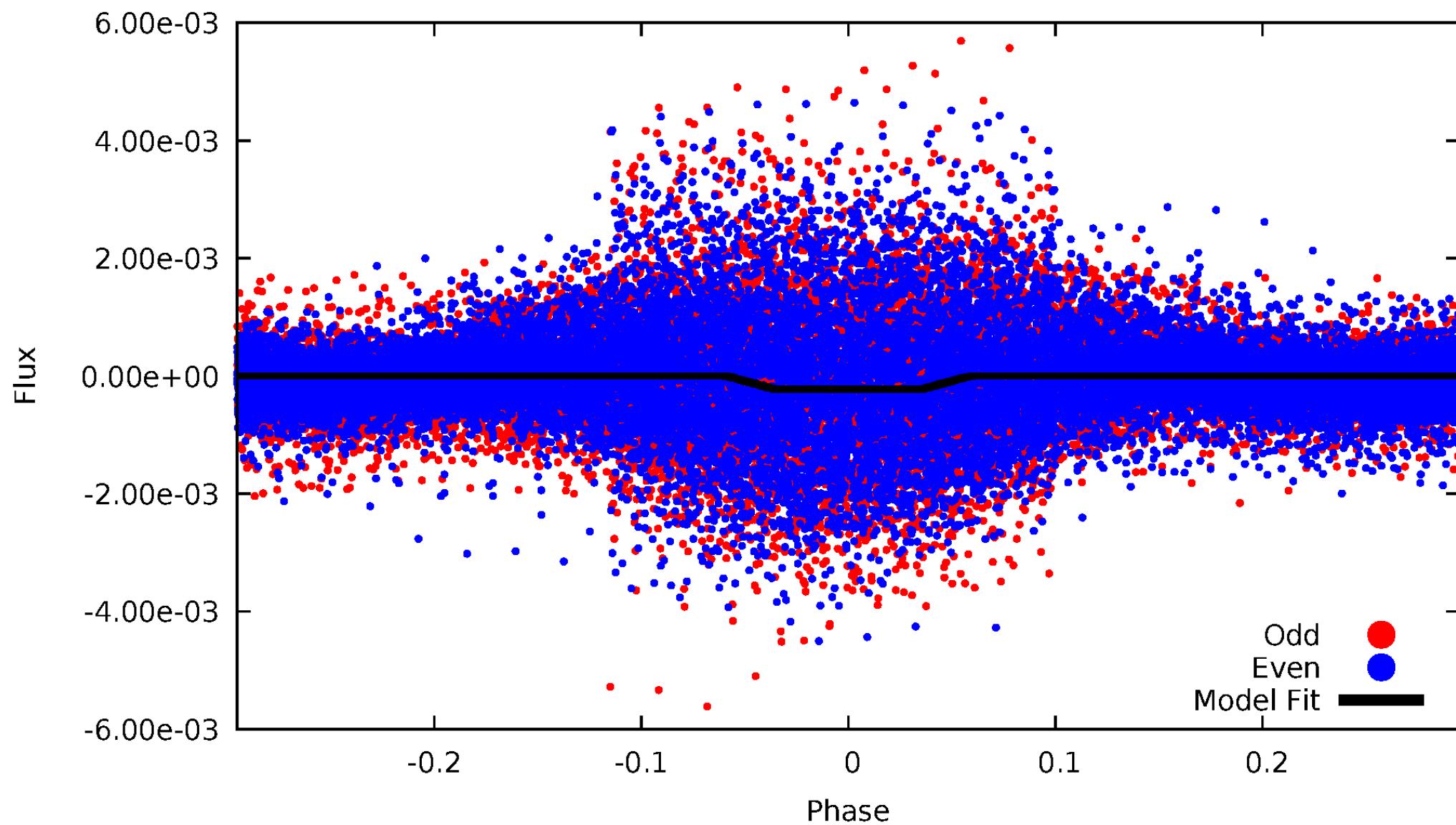
DV Odd/Even

TCE 008231370-01



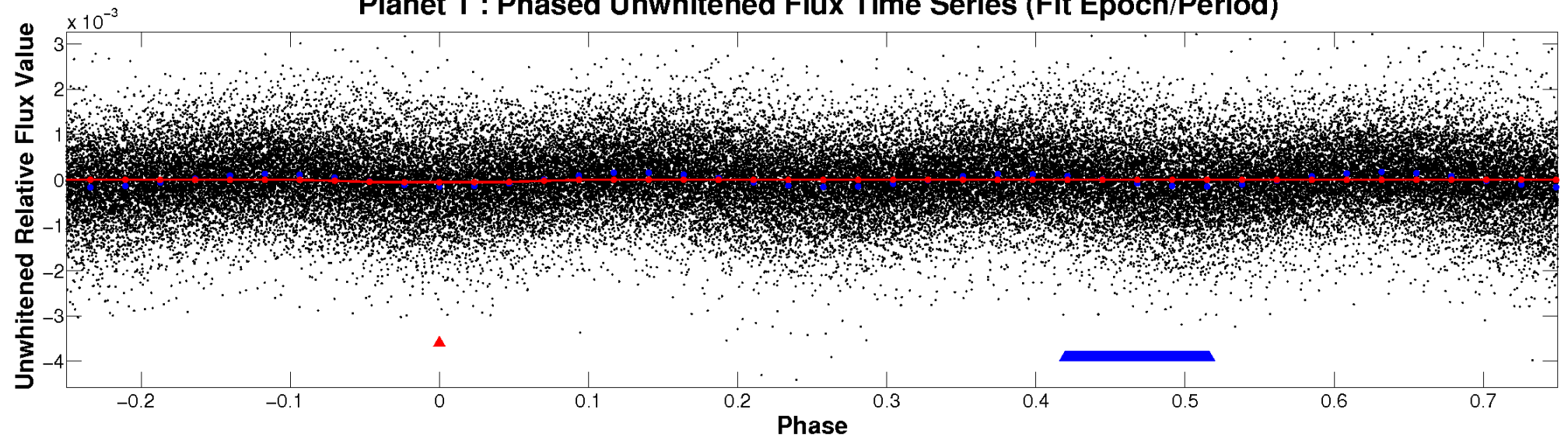
ALT Odd/Even

TCE 008231370-01

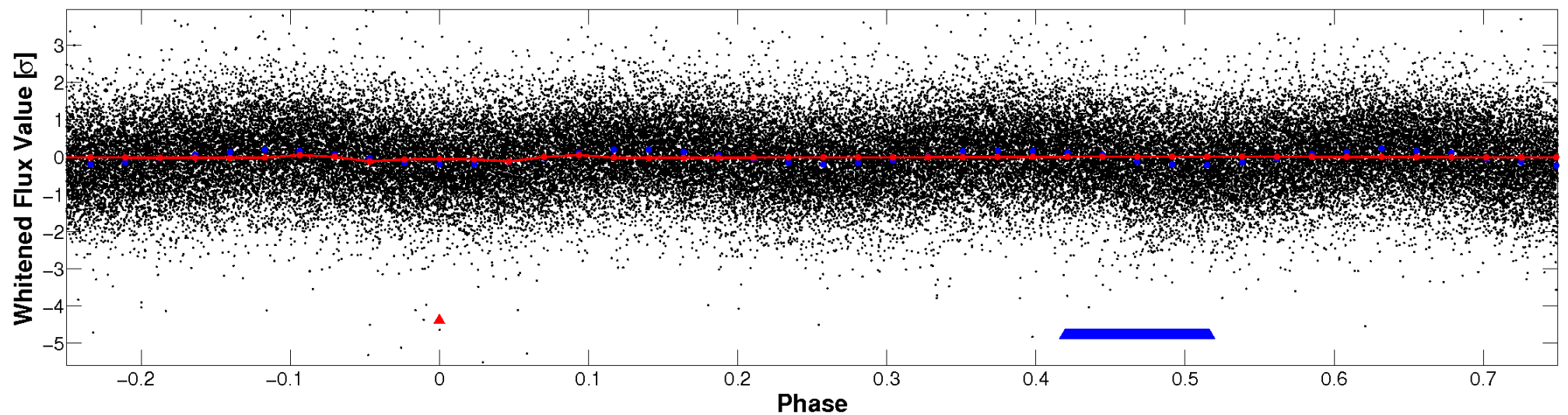


Non-Whitened Vs. Whitened Light Curve

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

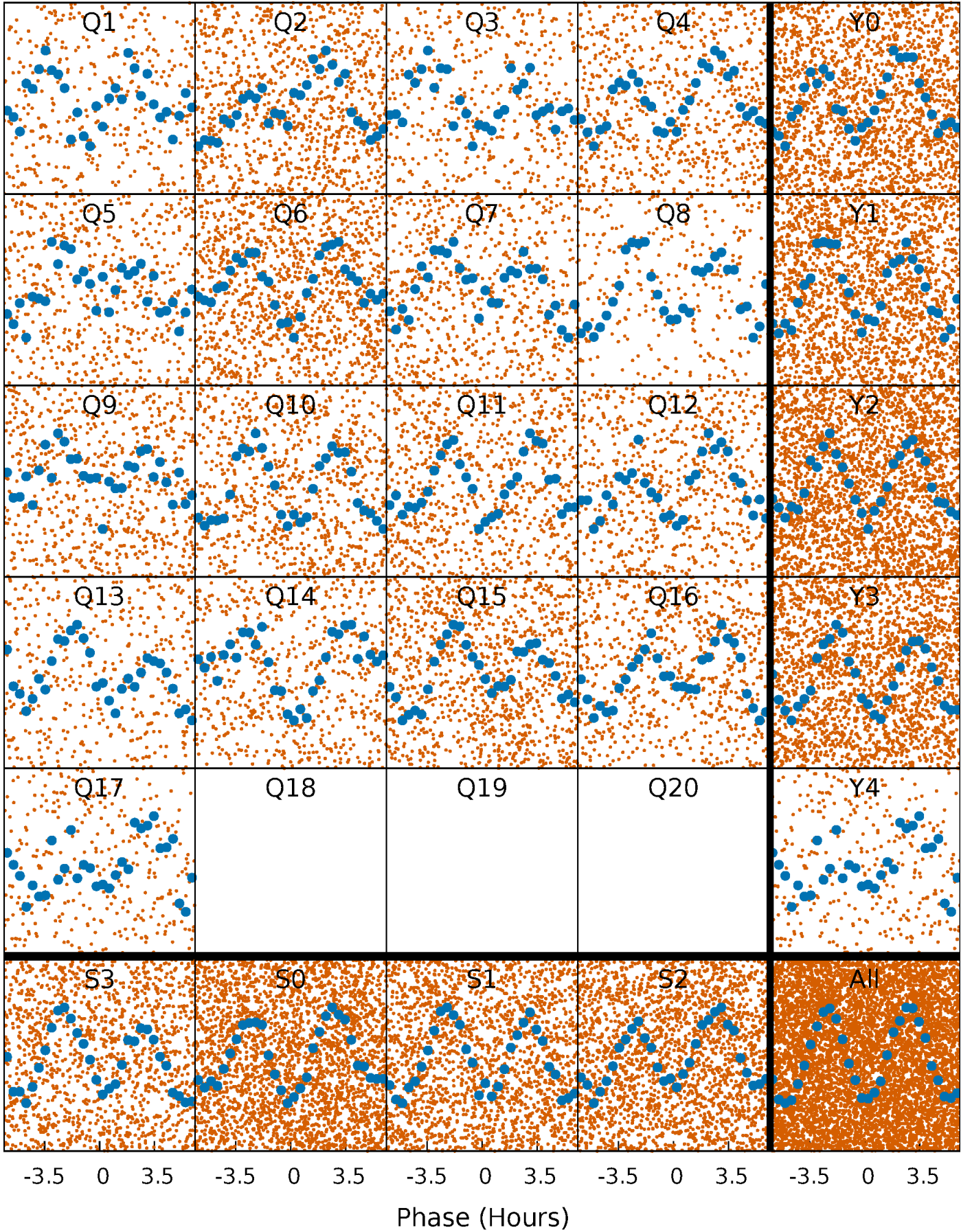


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



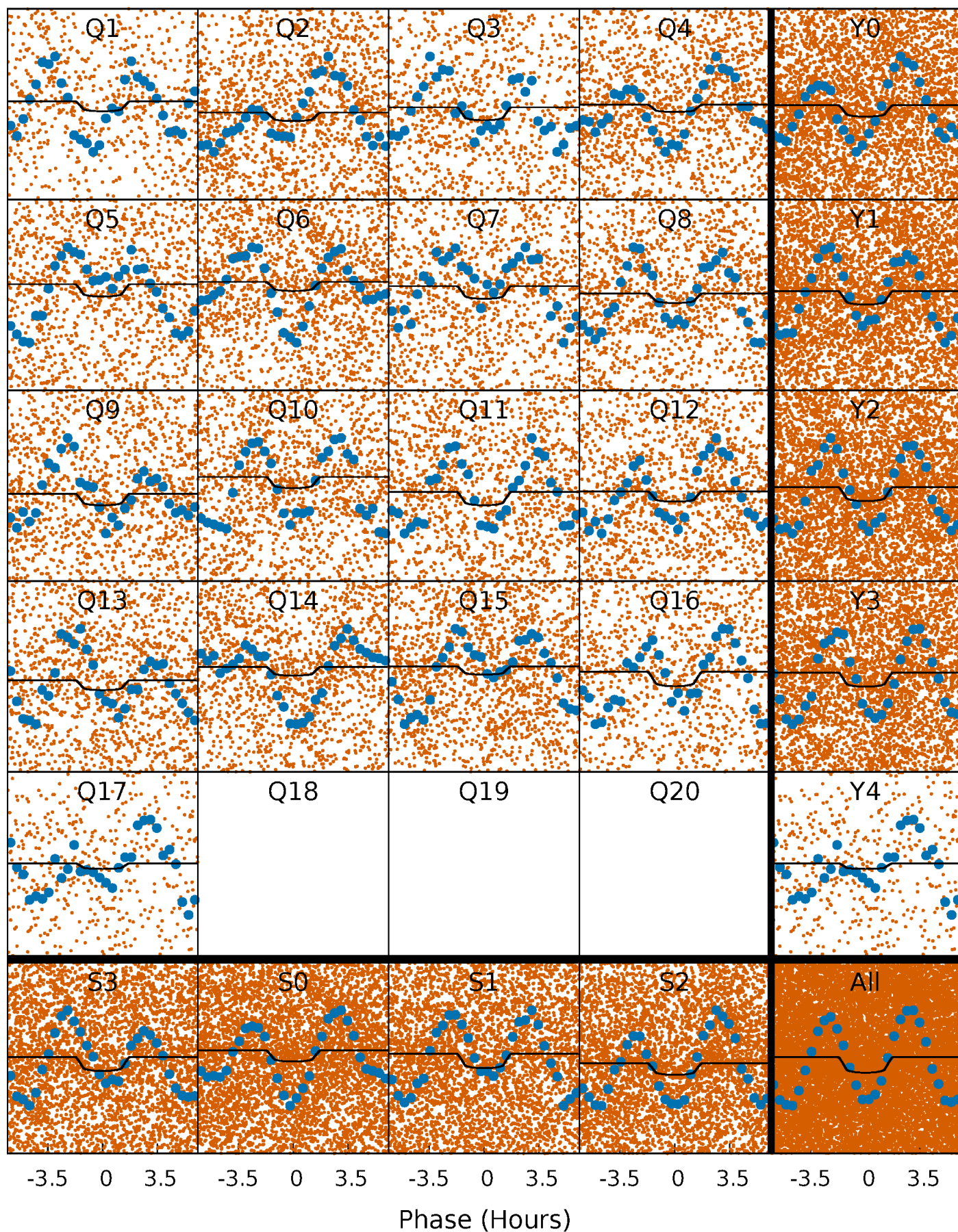
PDC Quarter-Phased Transit Curves

TCE 008231370-01 P= 0.873171 Days $T_0=132.218468$ (BKJD)



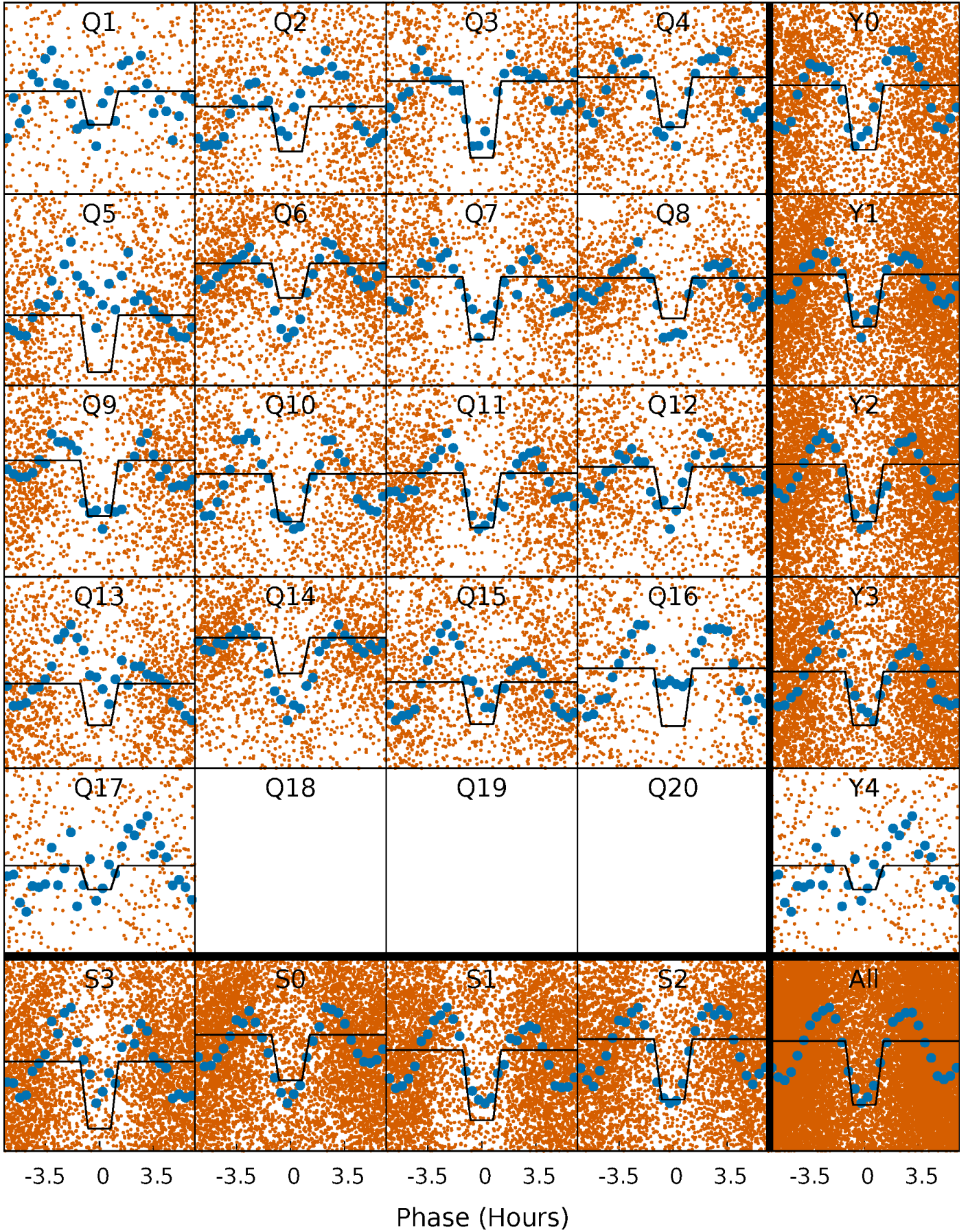
DV Quarter-Phased Transit Curves

TCE 008231370-01 P= 0.873171 Days $T_0=132.218468$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

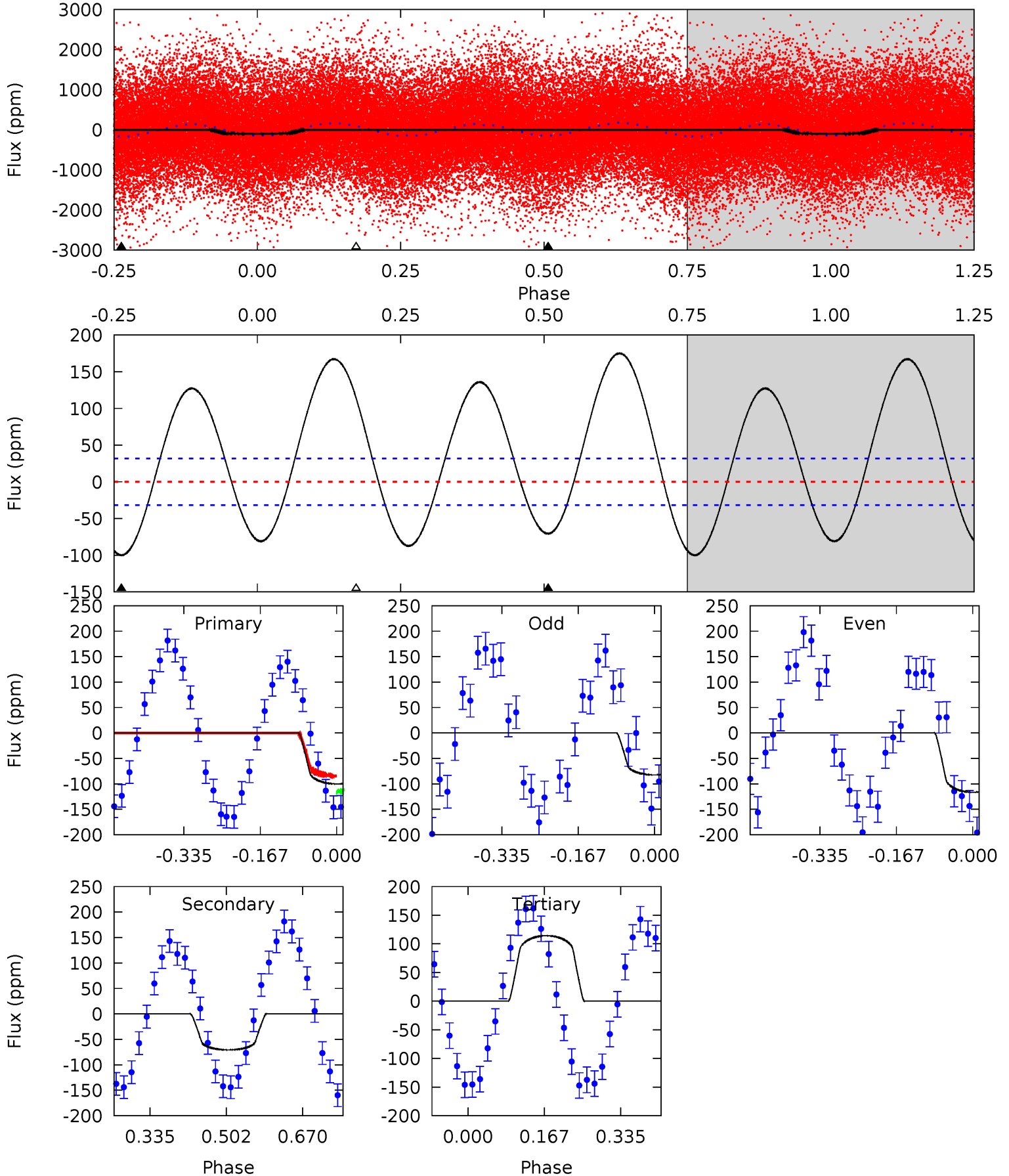
TCE 008231370-01 P= 0.873188 Days $T_0=132.213797$ (BKJD)



DV Model-Shift Uniqueness Test

008231370-01, P = 0.873171 Days, E = 131.345297 Days

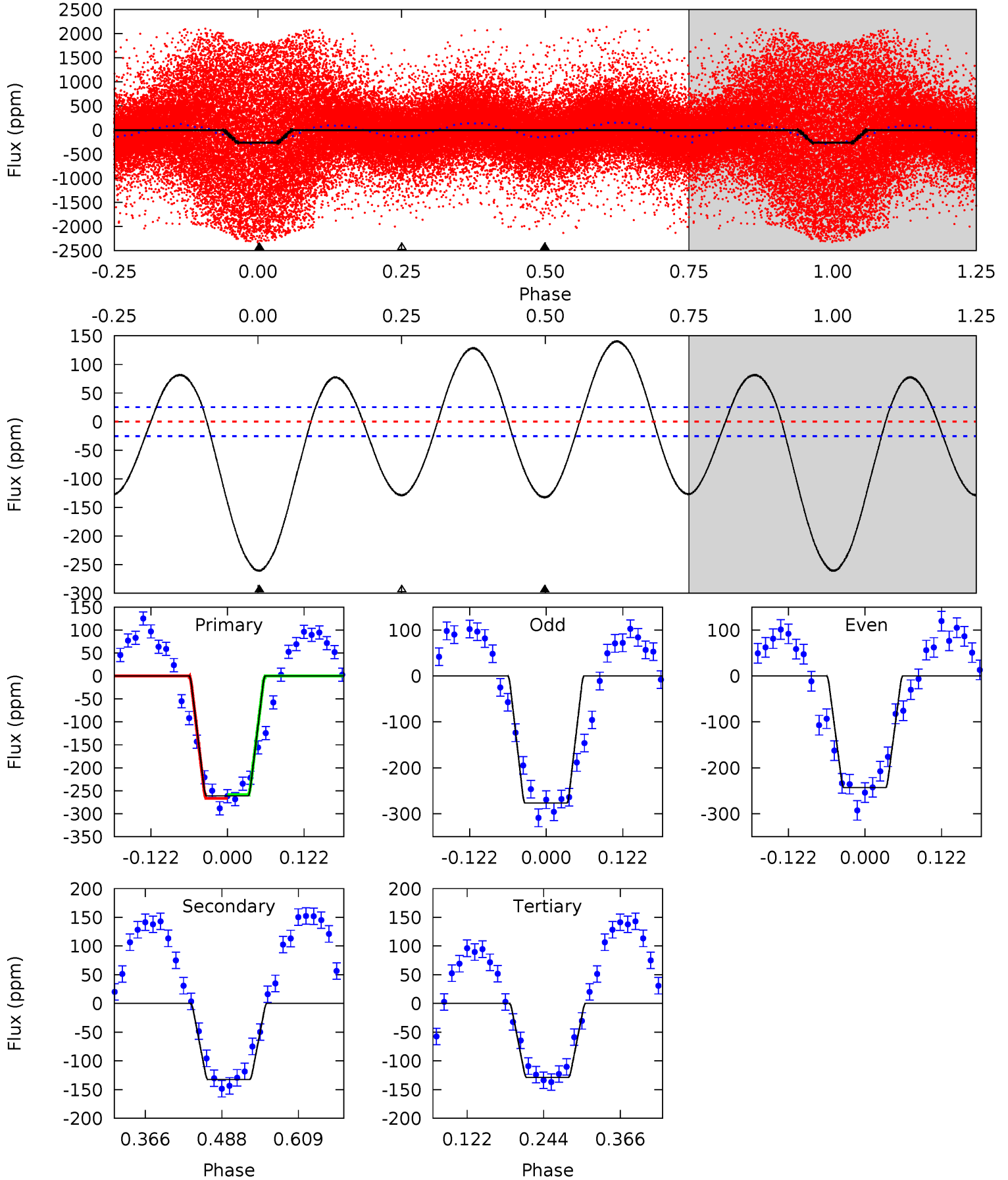
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	9.91	-16.0	0	4.46	1.38	11.6	30.0	14.0	25.9	9.91	2.36	1.23	0.64	2.13



Alt Model-Shift Uniqueness Test

008231370-01, P = 0.873188 Days, E = 131.340609 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.6	23.6	23.0	0	4.52	1.55	15.3	23.6	46.6	0.64	23.6	3.02	0.76	0.35	0.72



Stellar Parameters For KIC 008231370

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7006^{+73}_{-83}	$4.099^{+0.115}_{-0.115}$	$-0.080^{+0.150}_{-0.150}$	$1.787^{+0.296}_{-0.267}$	$1.466^{+0.108}_{-0.108}$	$0.361^{+0.196}_{-0.128}$
	+1%/-1%	+3%/-3%	+188%/-188%	+17%/-15%	+7%/-7%	+54%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 008231370-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-71 ± 7	$1.51^{+0.28}_{-0.28}$	4058^{+190}_{-181}	7243^{+959}_{-610}	$6.922^{+3.839}_{-1.928}$
Alt.	-132 ± 6	$2.95^{+0.38}_{-0.33}$	4056^{+180}_{-176}	5928^{+293}_{-260}	$3.445^{+0.931}_{-0.730}$

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 $A_{obs} \gg 1.0$

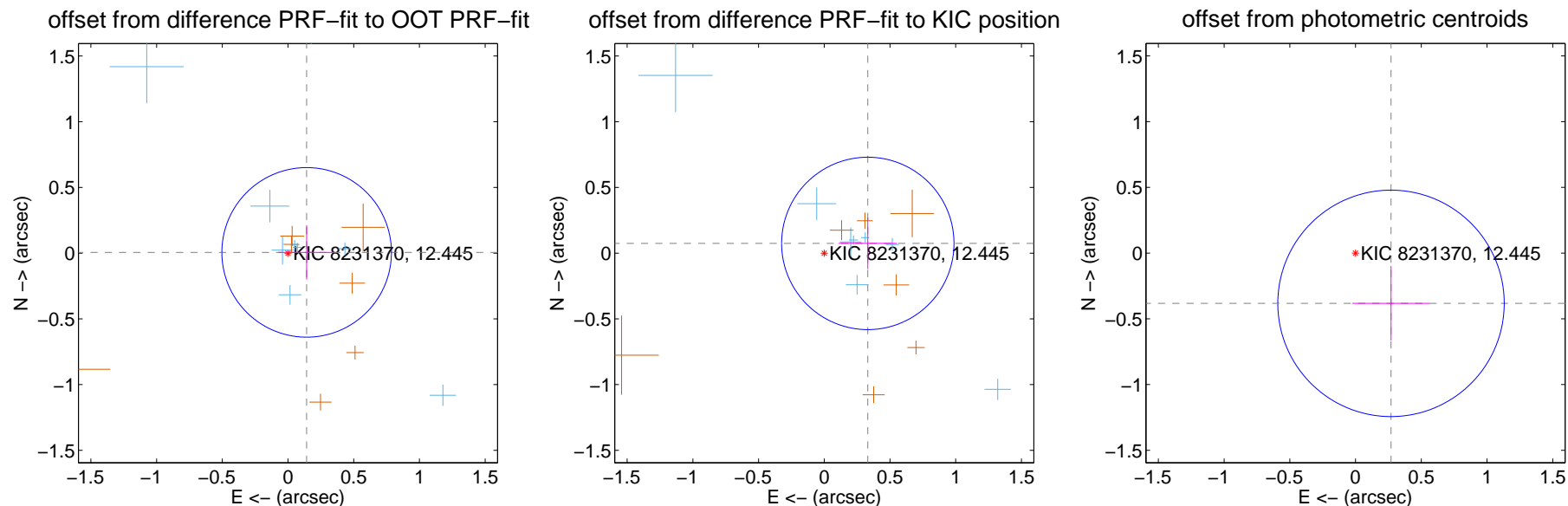
DV Centroid Data

Supplemental centroid analysis for 008231370-01. Kepler magnitude: 12.45. Transit SNR 9.33

There are 9 quarters with good PRF difference image offsets

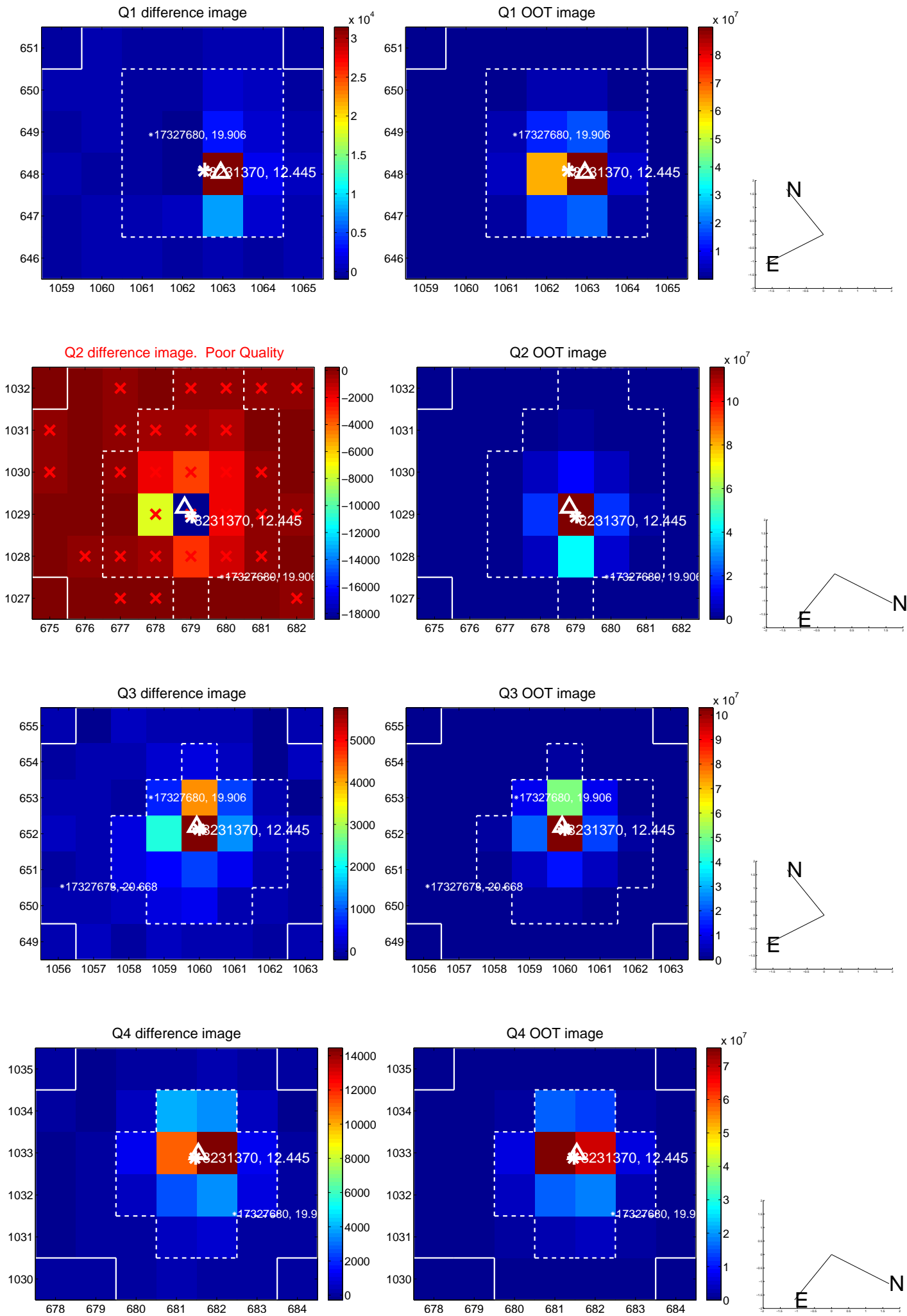
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.142 ± 0.215	0.66	-0.142 ± 0.215	0.006 ± 0.206
PRF-fit source offset from KIC position	0.339 ± 0.219	1.55	-0.331 ± 0.221	0.074 ± 0.196
photometric centroid source offset	0.47 ± 0.29	1.63	-0.27 ± 0.29	-0.38 ± 0.28

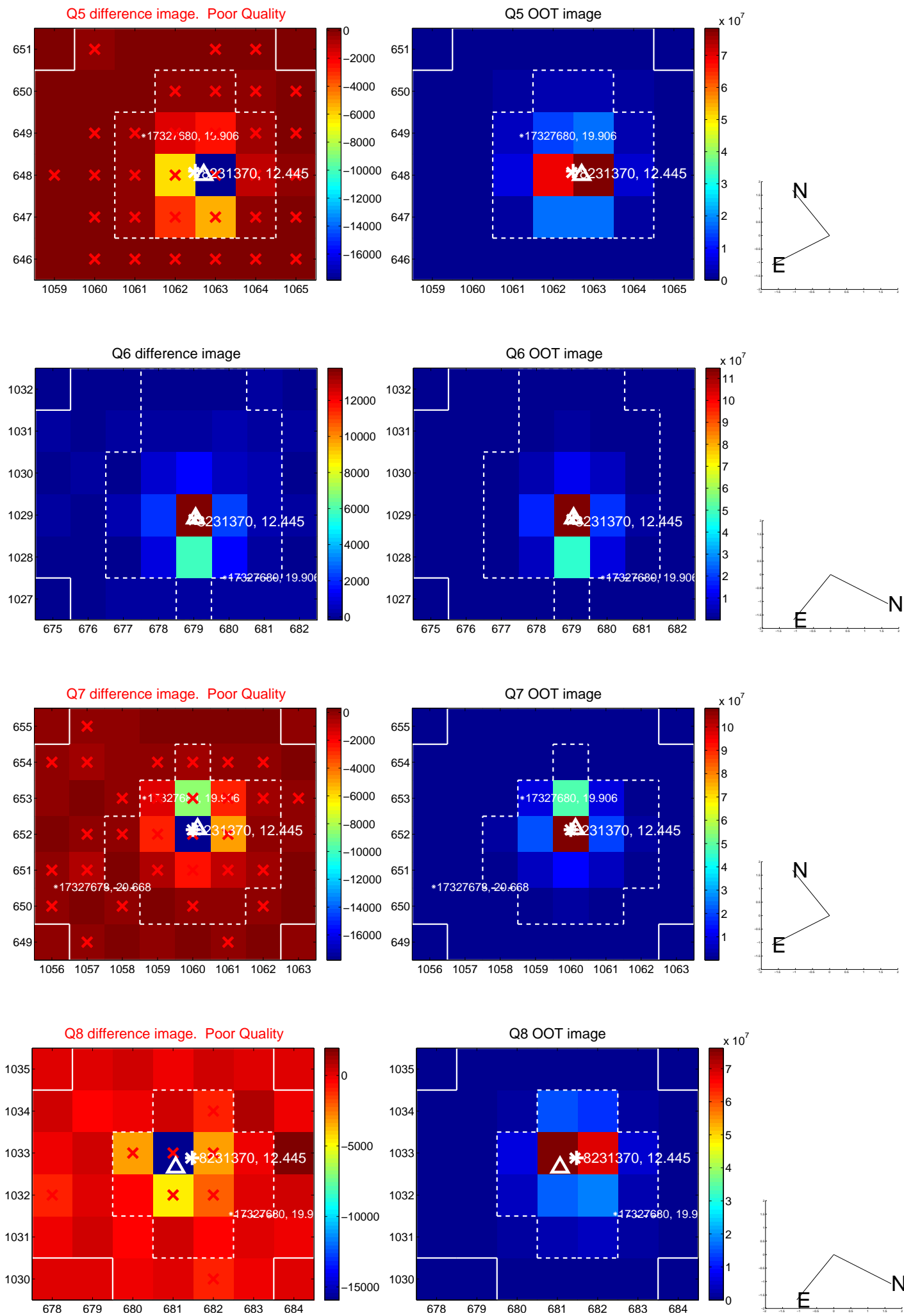


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

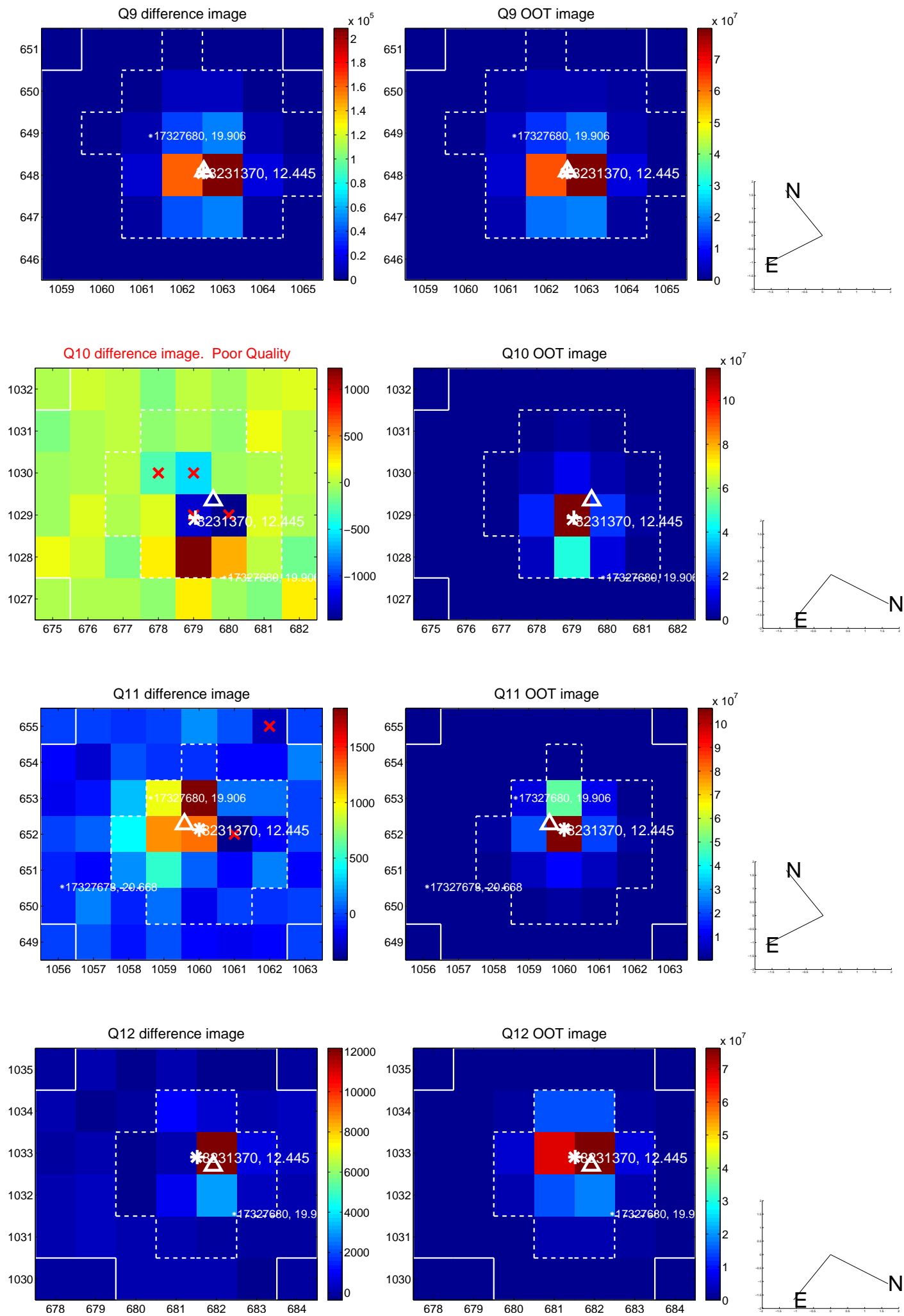
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



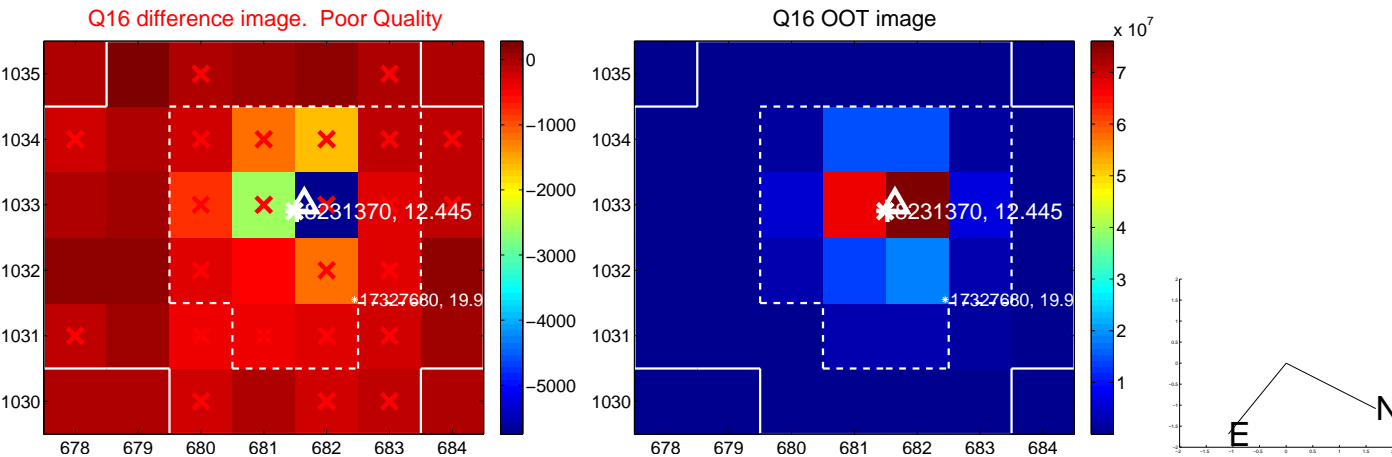
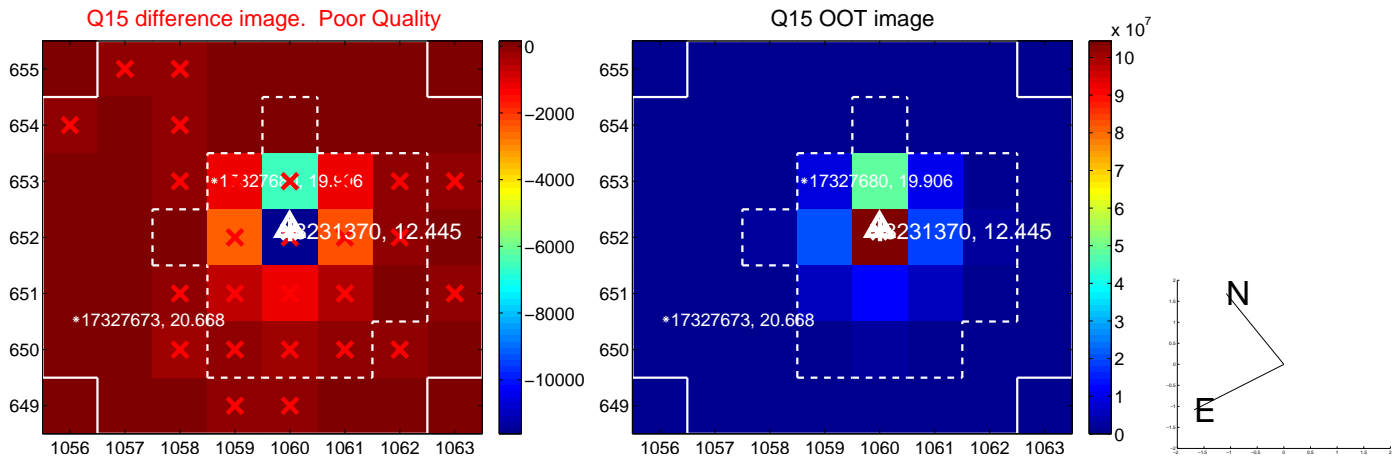
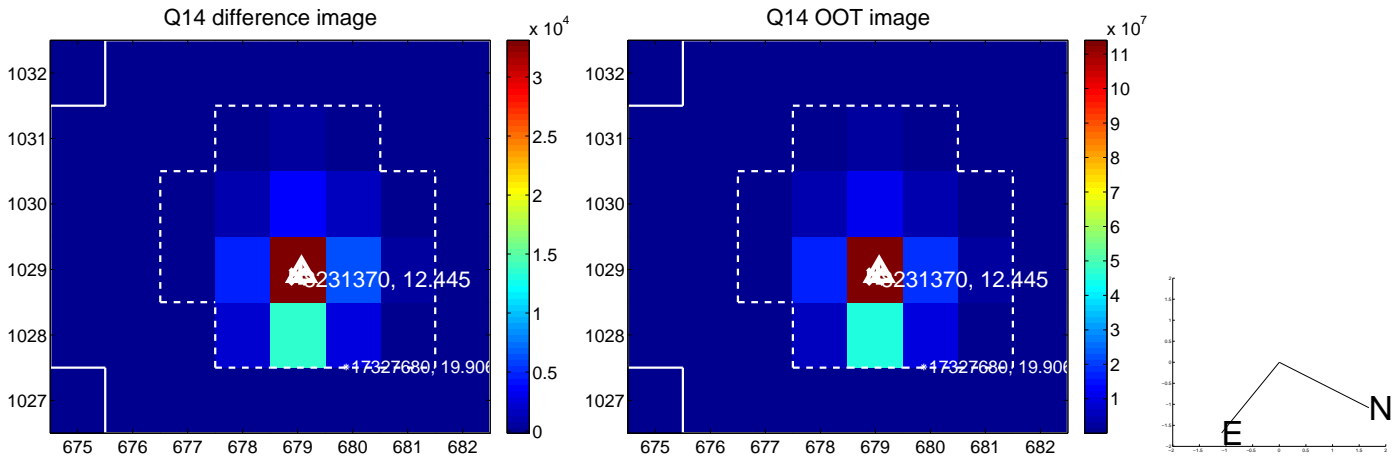
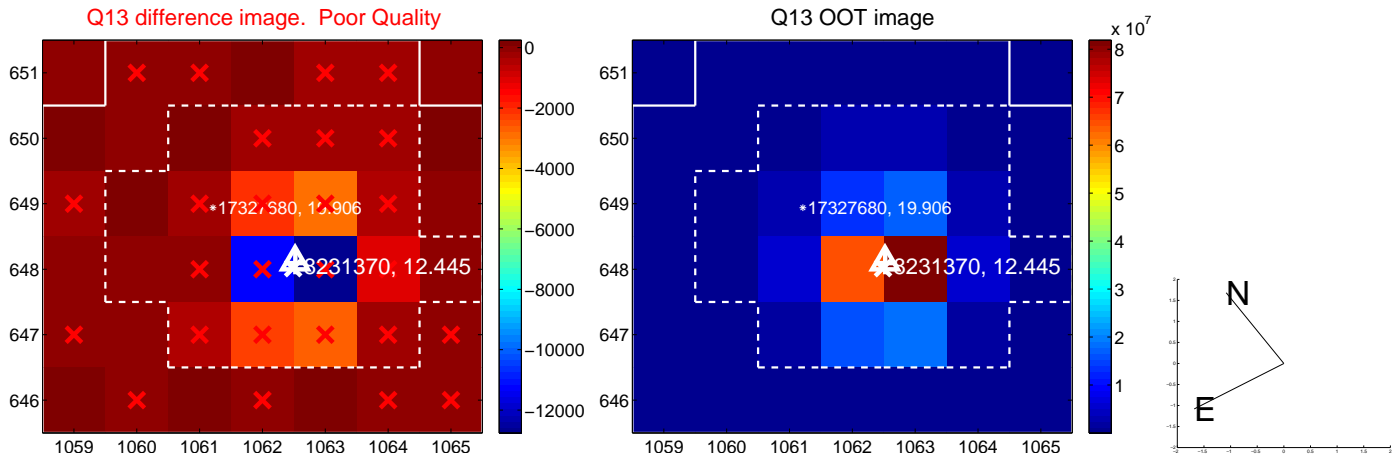
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



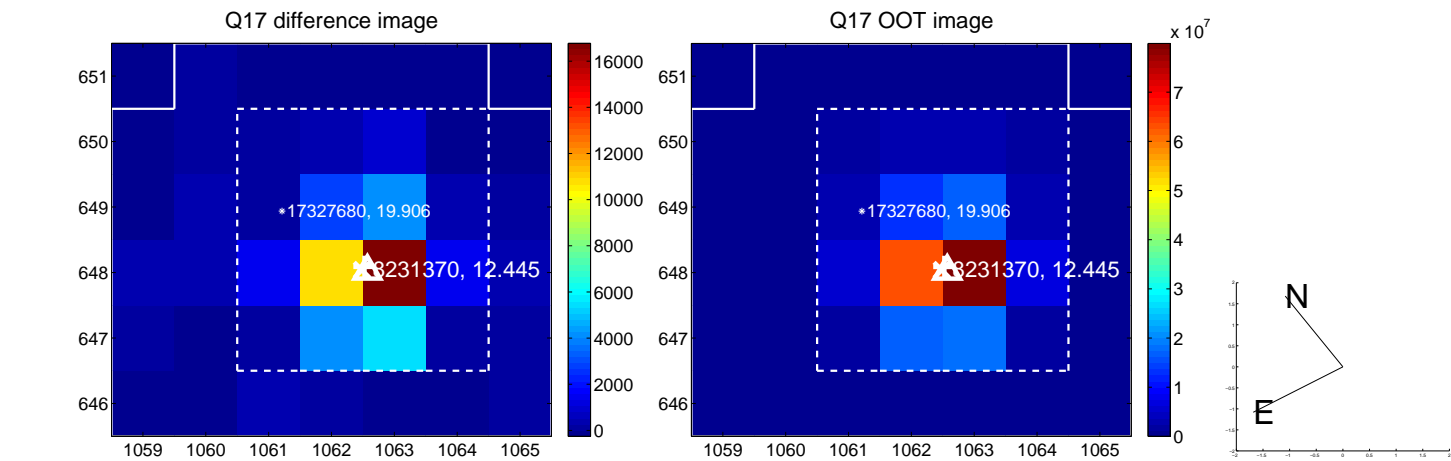
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



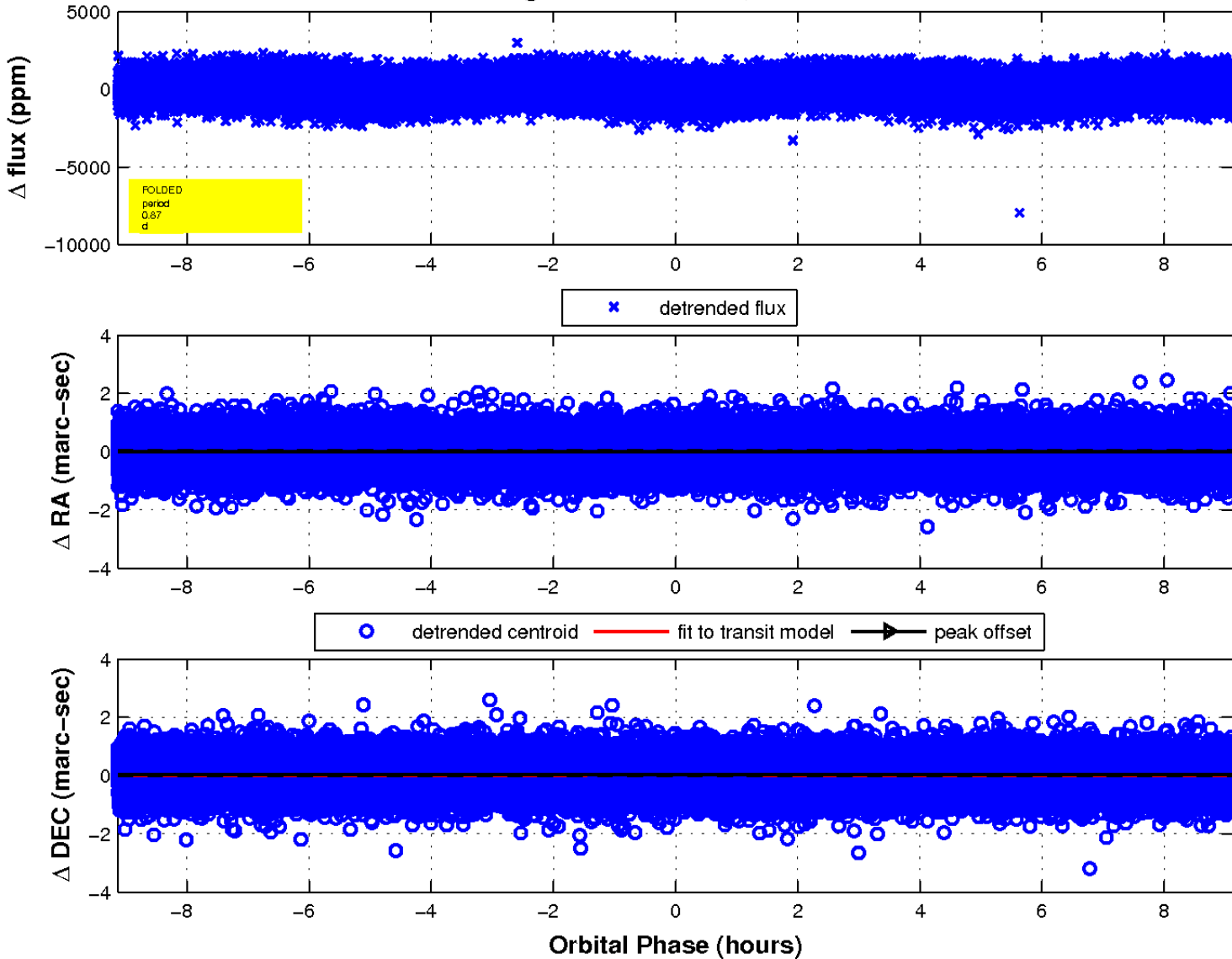
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

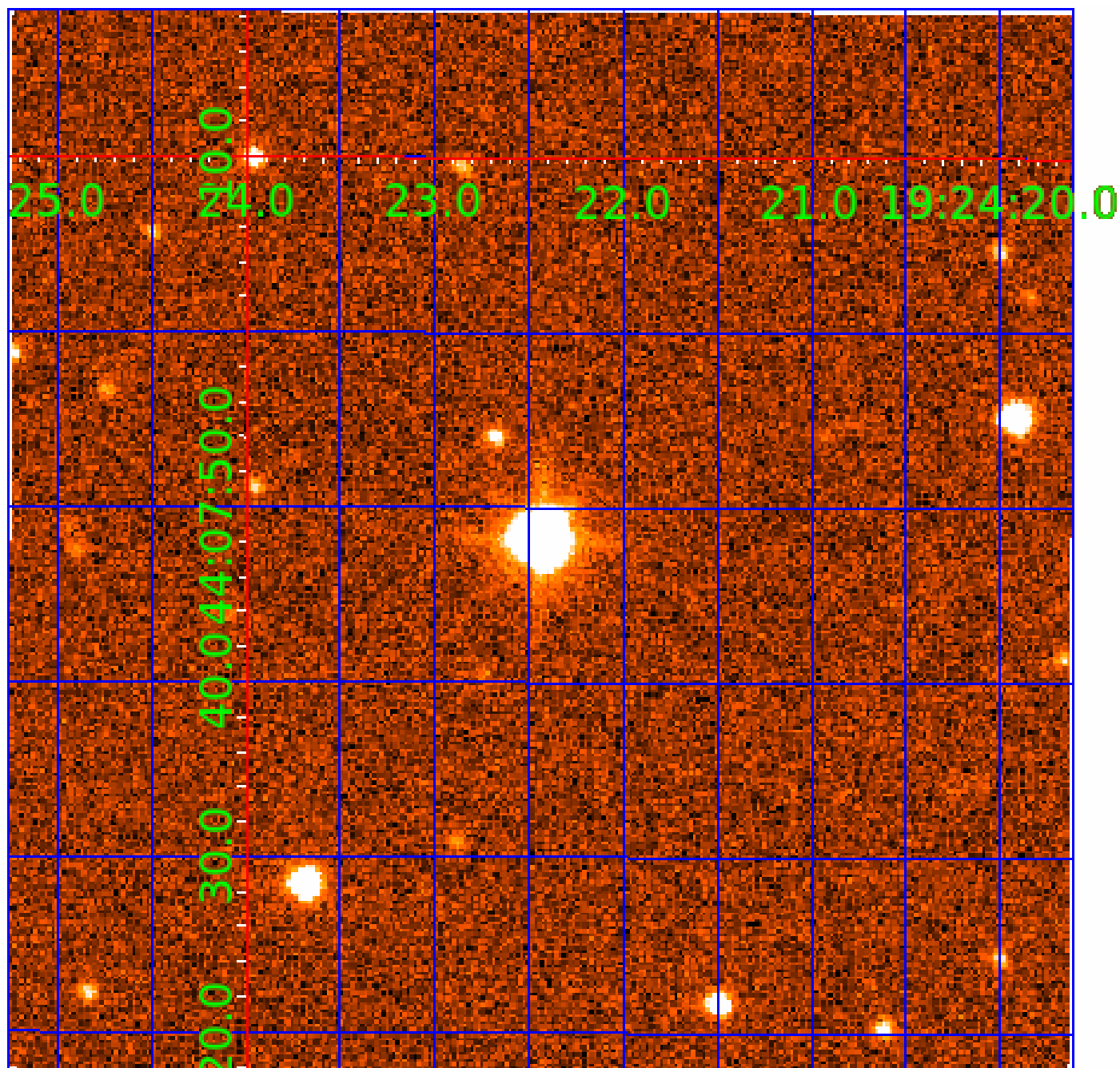


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008231370

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})
008231370-01	OBS	No	0.873171	132.218468	52.4	3.045	10.7	9.3	1.79	7006	1.50	16726.01
008231370-02	OBS	No	0.873120	131.796051	14.4	4.688	11.9	2.5	1.79	7006	0.69	16727.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008231370-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008231370-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

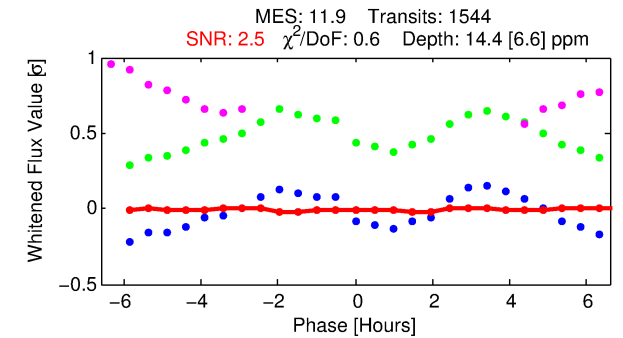
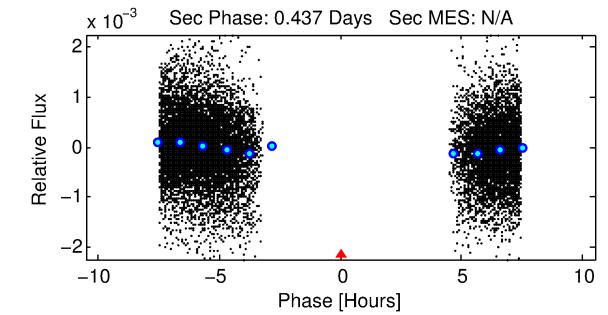
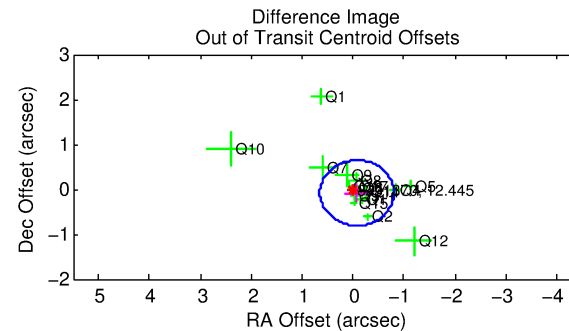
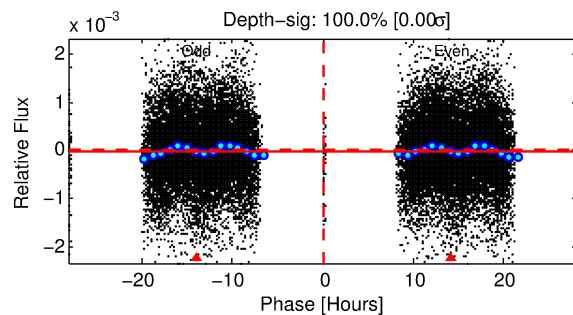
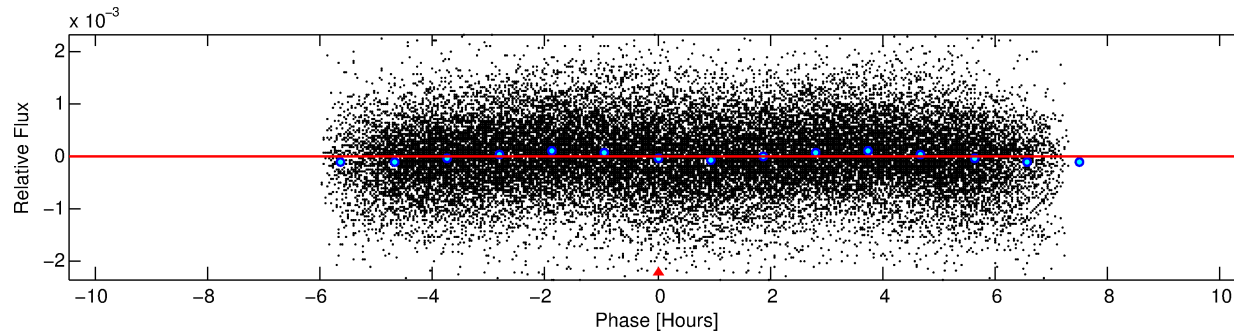
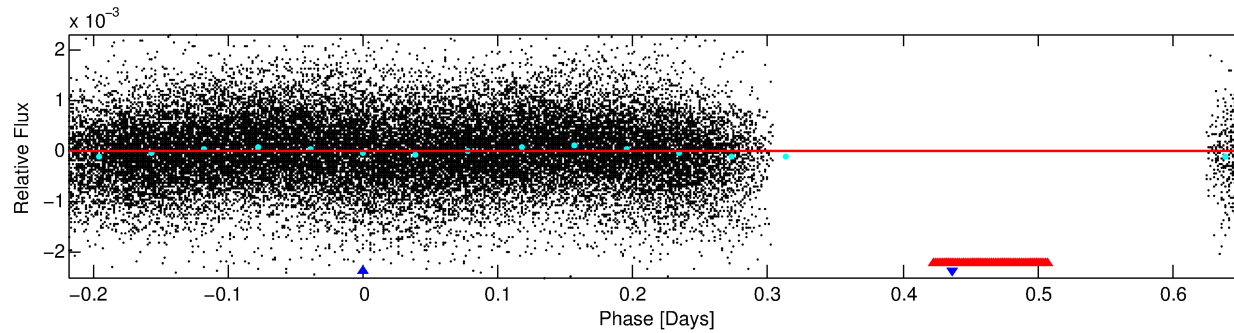
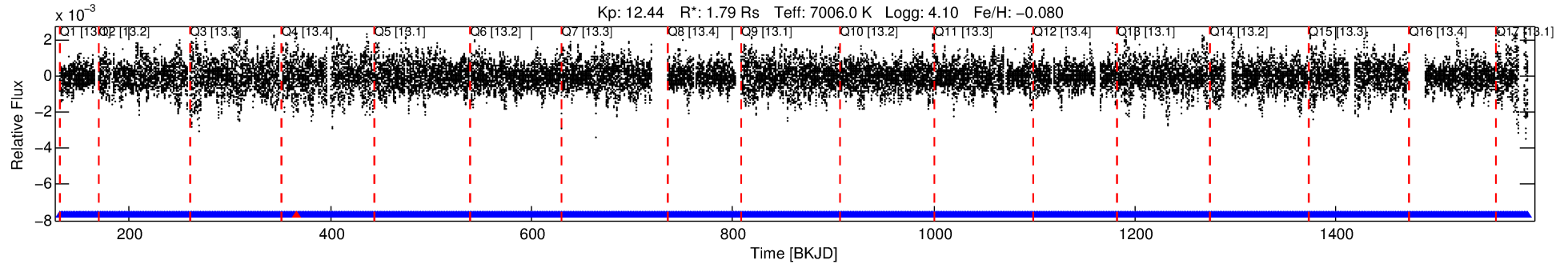
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008231370-02

No Significant Match Found

DV One-Page Summary

KIC: 8231370 Candidate: 2 of 2 Period: 0.873 d



DV Fit Results:

Period = 0.87312 [0.00004] d
Epoch = 131.7961 [0.0057] BKJD
Rp/R* = 0.0035 [0.0057]
a/R* = 1.55 [8.58]
b = 0.10 [94.46]
Seff = 16727.30 [3572.10]
Teq = 2900 [155] K
Rp = 0.69 [1.11] Re
a = 0.0203 [0.0029] AU

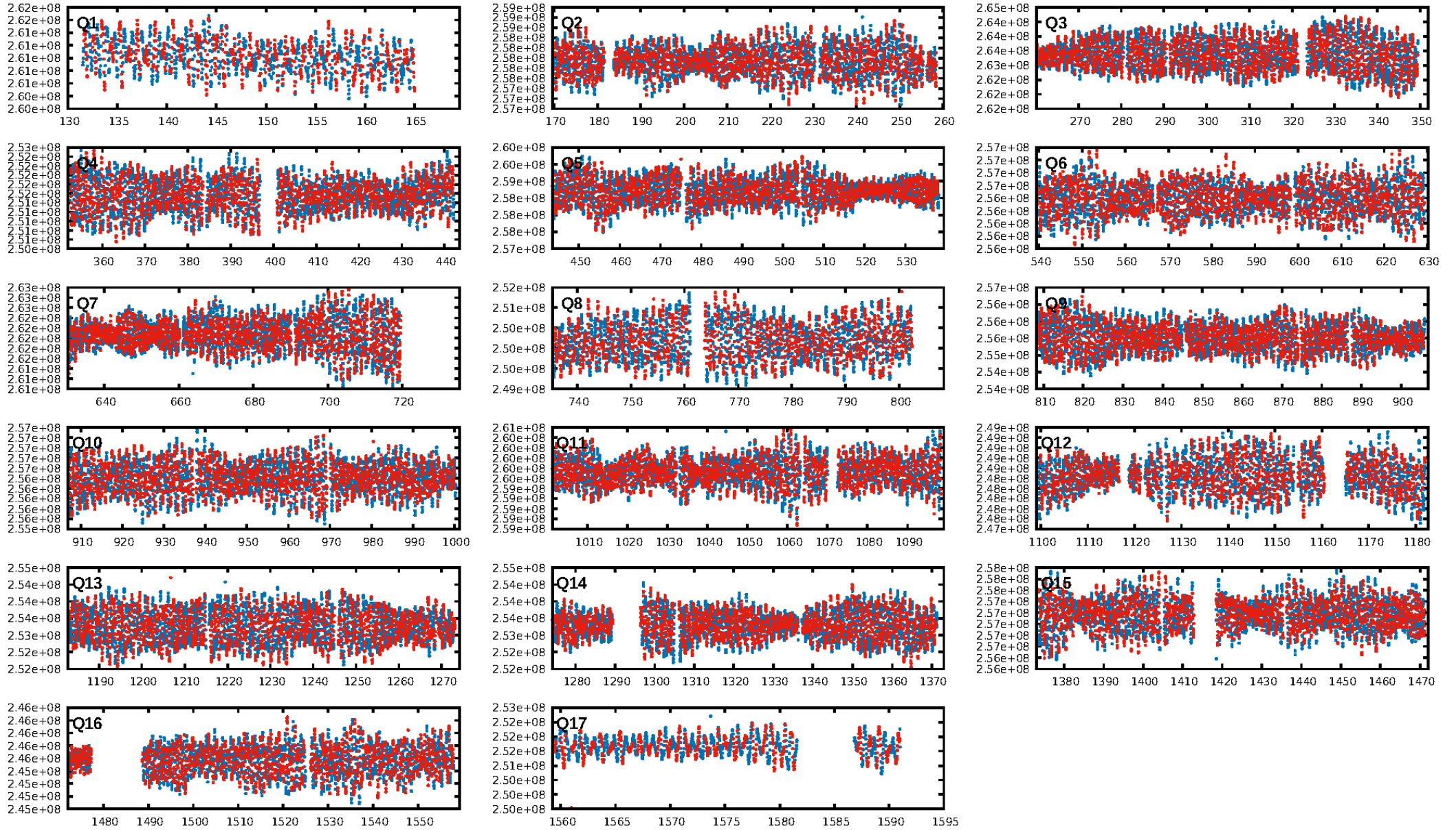
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1473/1474]
GhostDiagnostic-chr: -0.6075
Centroid-sig: 57.6%
Centroid-so: 0.514 arcsec [0.61σ]
OotOffset-rm: 0.115 arcsec [0.47σ]
KicOffset-rm: 0.274 arcsec [1.29σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.44 [7/16]
DiffImageOverlap-fno: 0.00 [0/17]

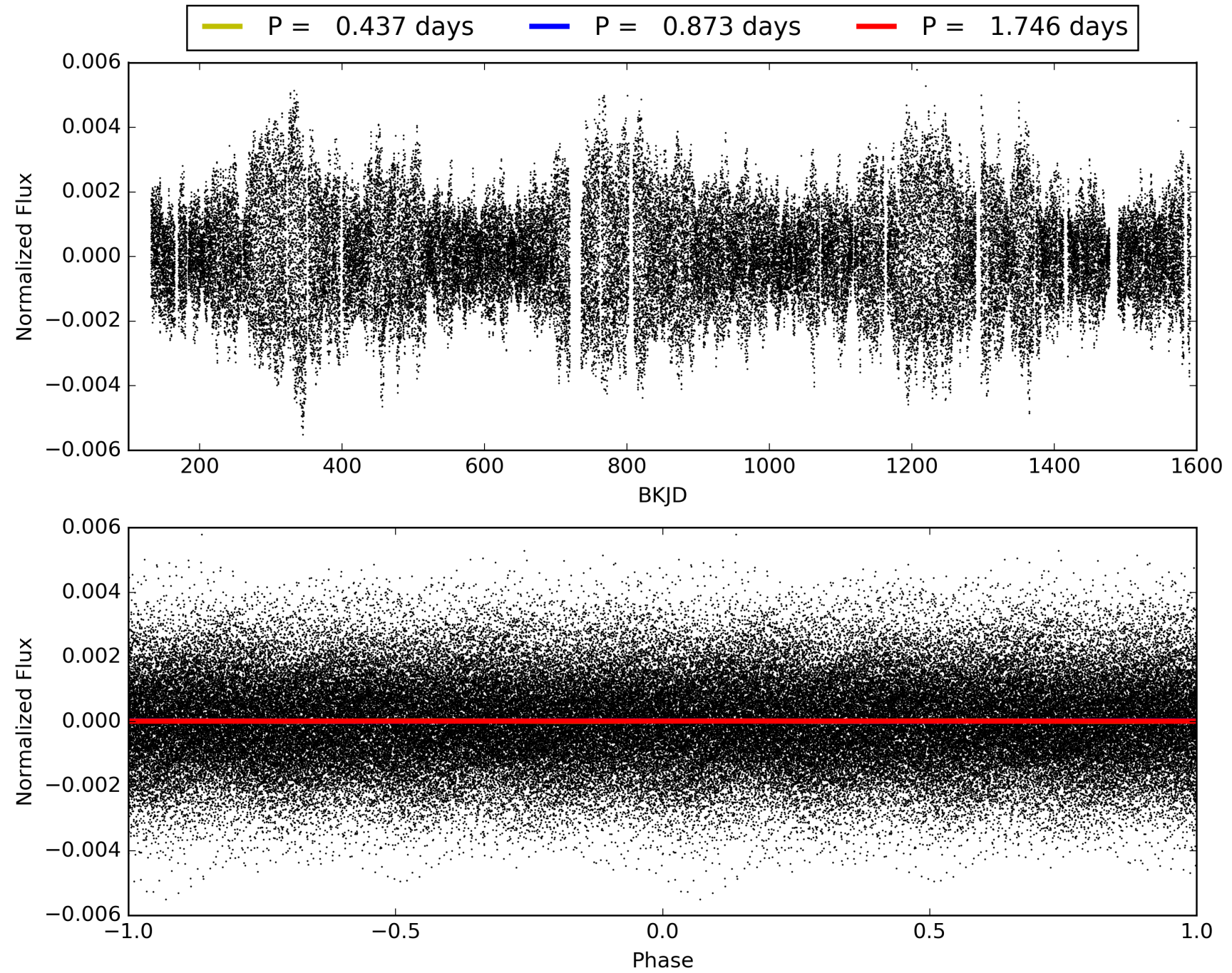
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:36:52 Z

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

TCE 008231370-02, PDC Light Curves

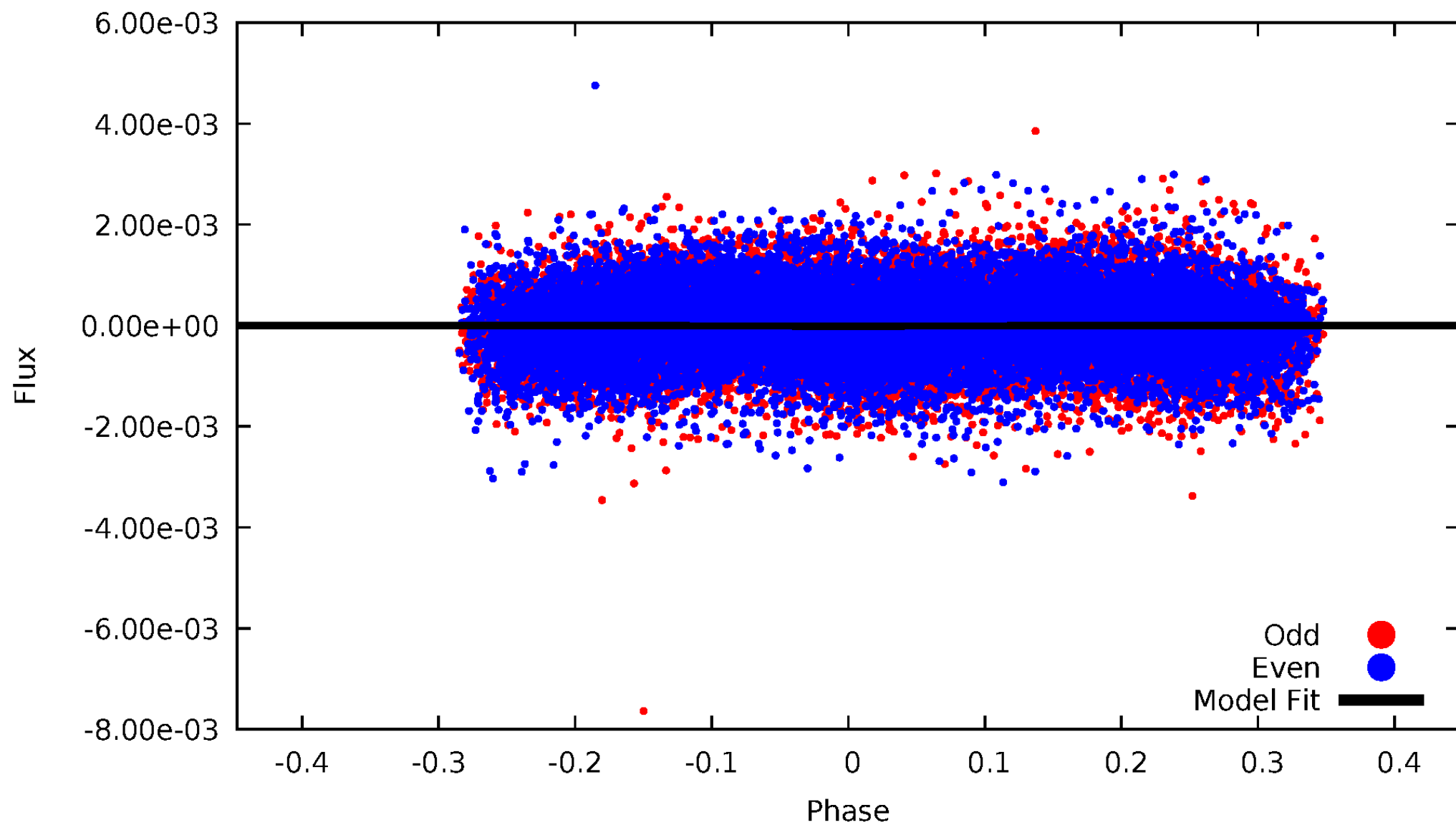


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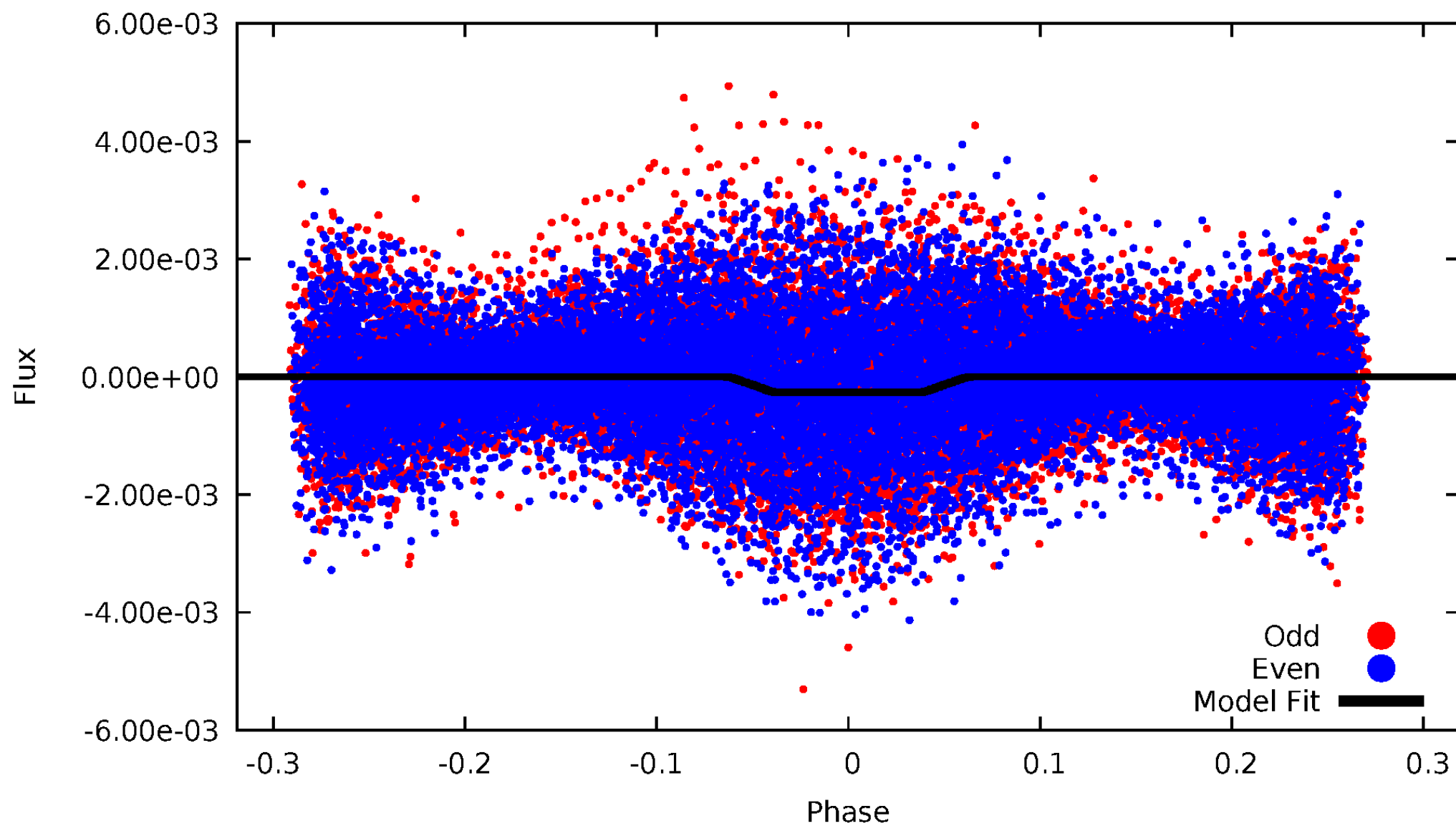
DV Odd/Even

TCE 008231370-02



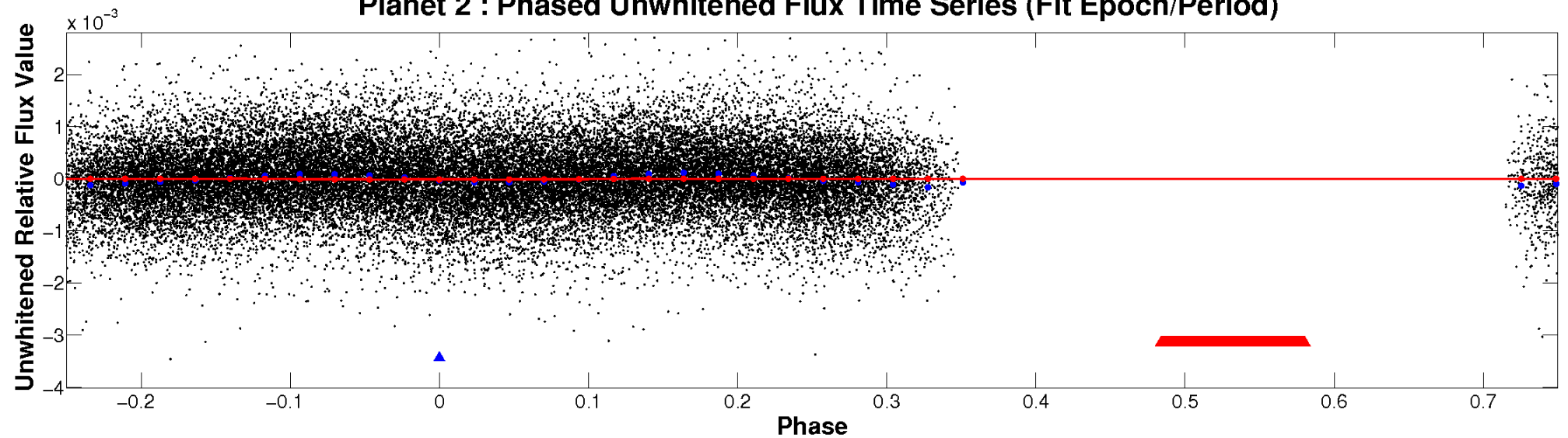
ALT Odd/Even

TCE 008231370-02

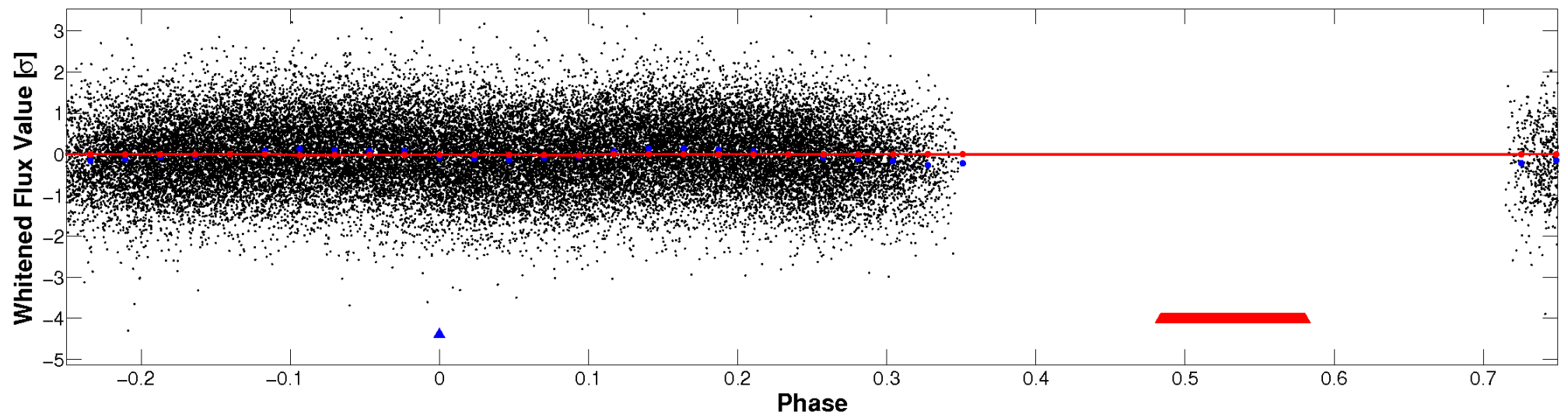


Non-Whitened Vs. Whitened Light Curve

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

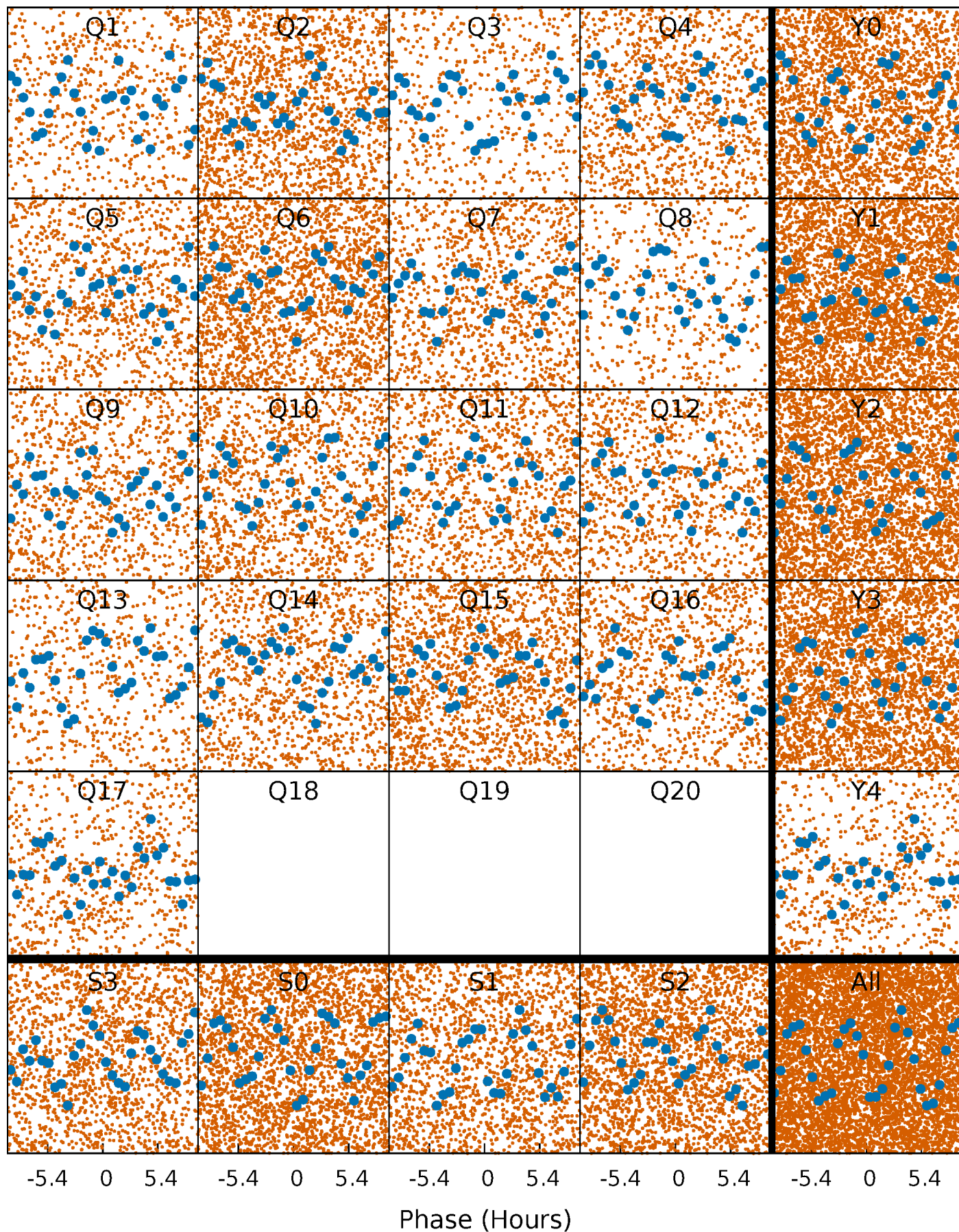


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



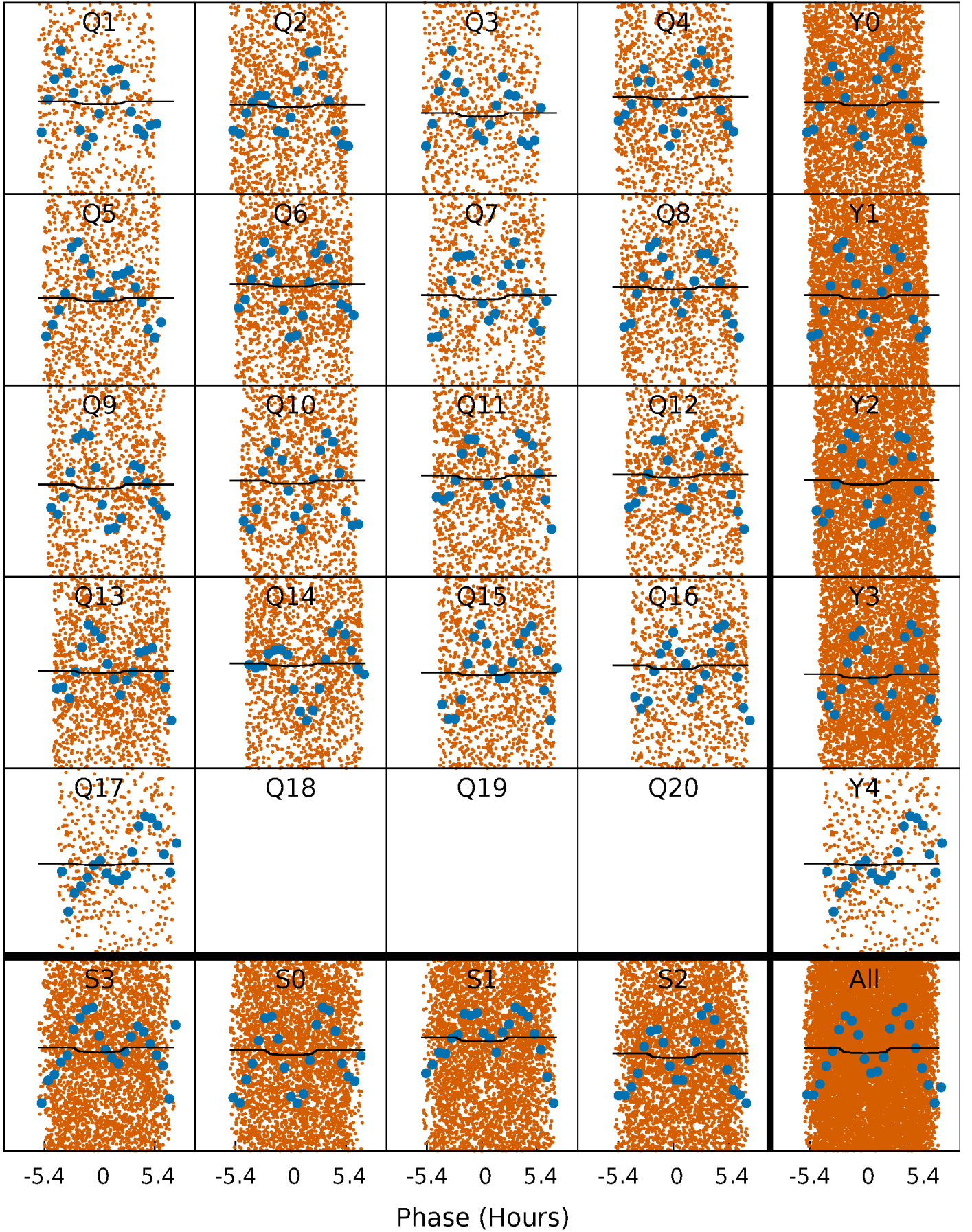
PDC Quarter-Phased Transit Curves

TCE 008231370-02 P= 0.873120 Days $T_0=131.796051$ (BKJD)



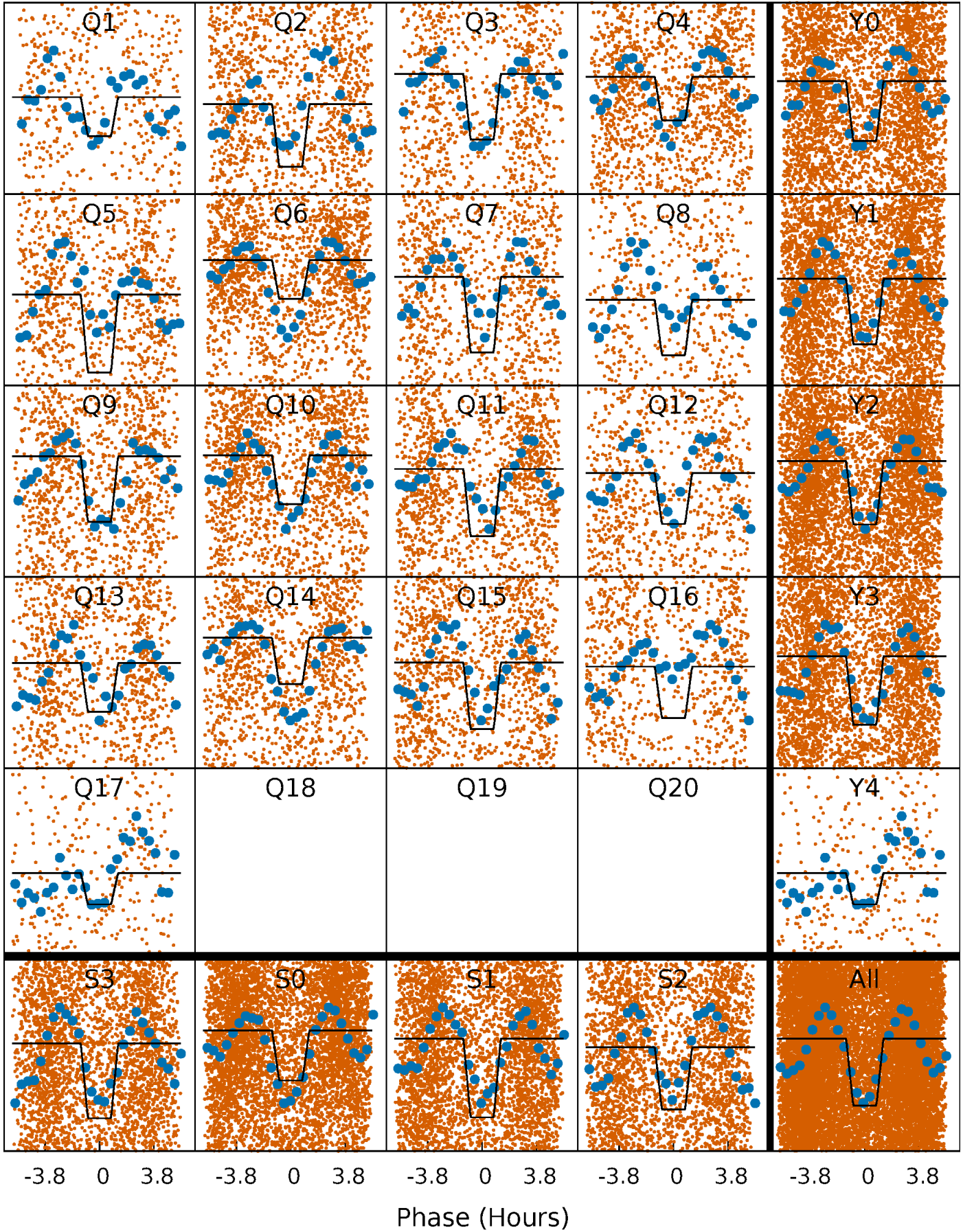
DV Quarter-Phased Transit Curves

TCE 008231370-02 P= 0.873120 Days $T_0=131.796051$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

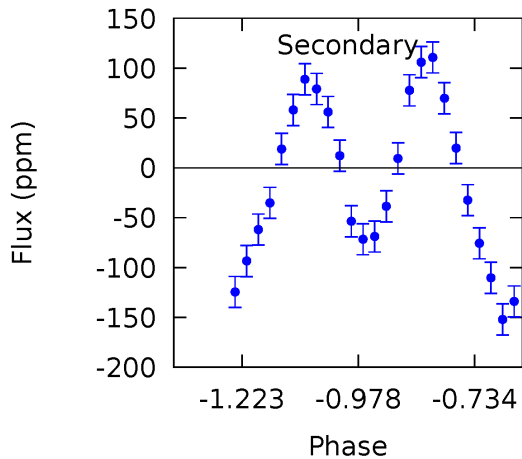
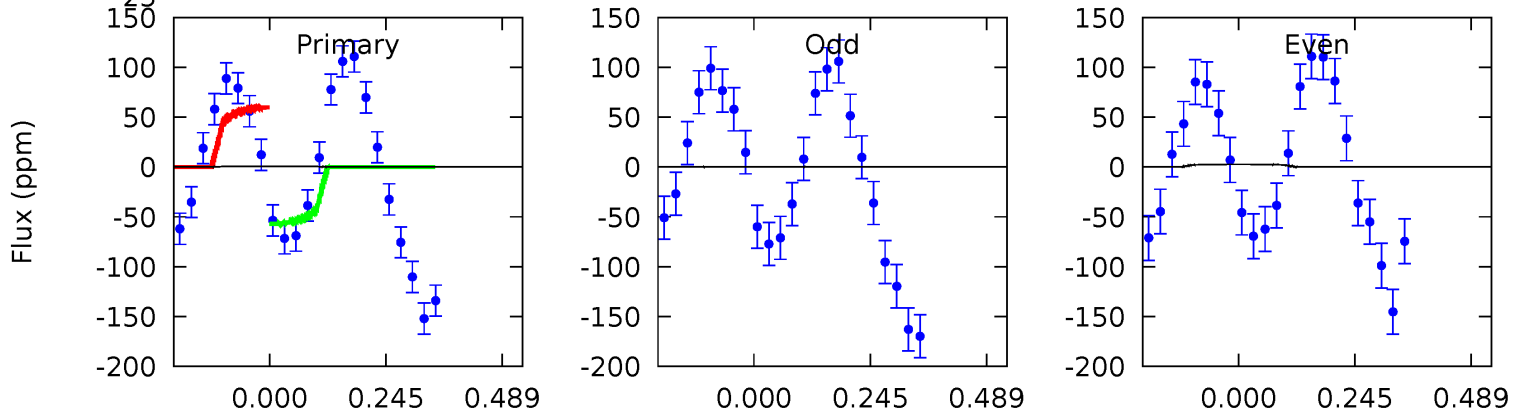
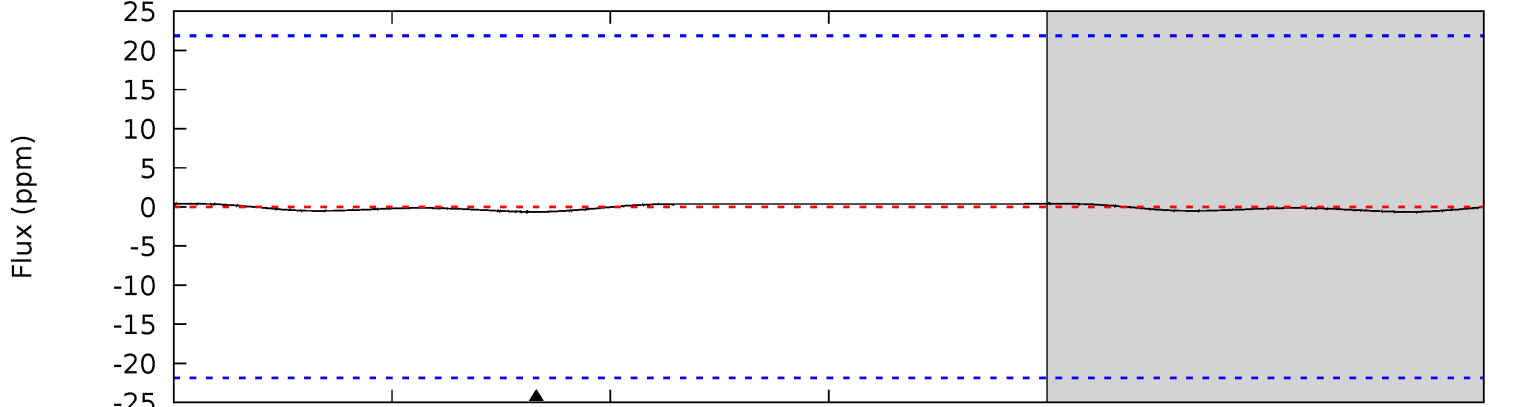
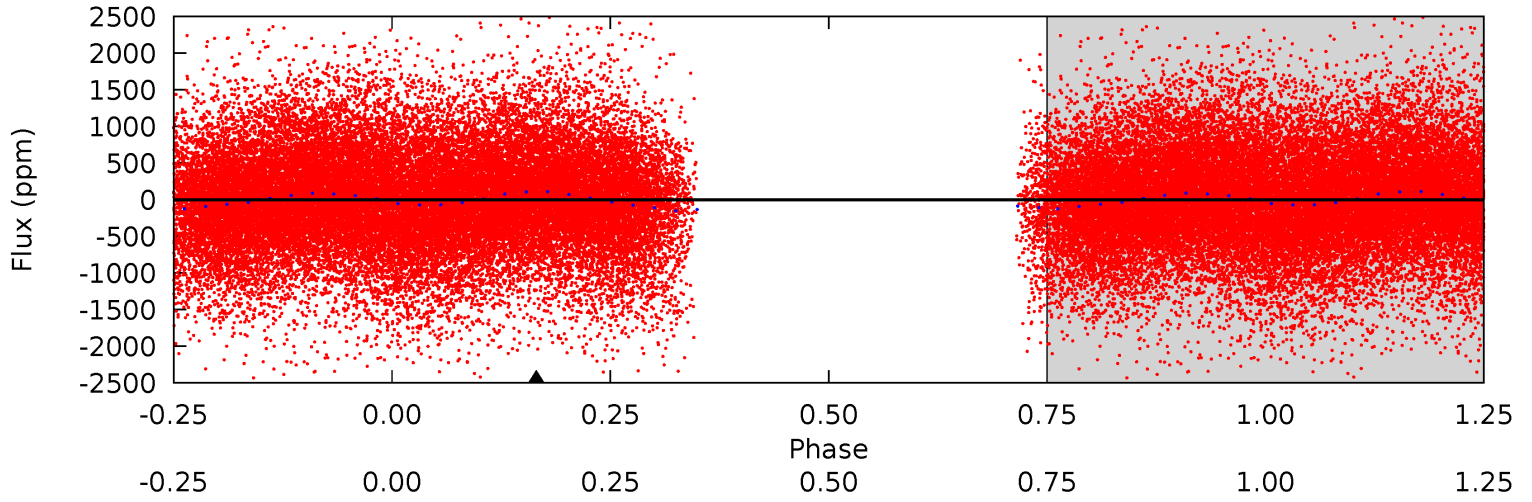
TCE 008231370-02 P= 0.873183 Days $T_0=131.780944$ (BKJD)



DV Model-Shift Uniqueness Test

008231370-02, P = 0.873120 Days, E = 130.922931 Days

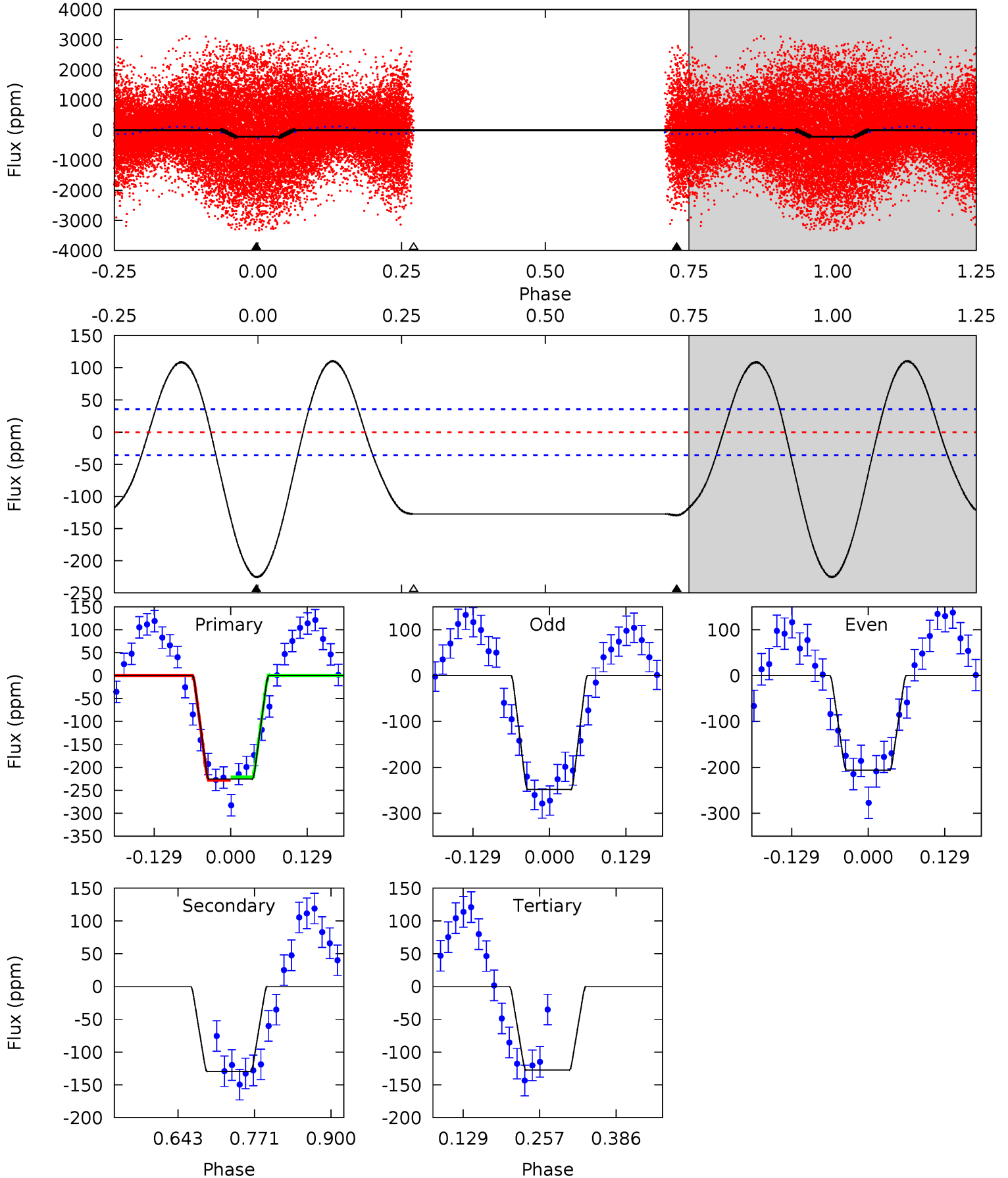
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.13	0	0	0	4.37	1.16	0.07	0.13	0.13	0	0	0.24	-0.03	0.38	0.25



Alt Model-Shift Uniqueness Test

008231370-02, P = 0.873183 Days, E = 130.907761 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.5	16.4	16.1	0	4.51	1.52	10.9	12.4	28.5	0.26	16.4	2.66	0.93	0.33	0.54



Stellar Parameters For KIC 008231370

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7006^{+73}_{-83}	$4.099^{+0.115}_{-0.115}$	$-0.080^{+0.150}_{-0.150}$	$1.787^{+0.296}_{-0.267}$	$1.466^{+0.108}_{-0.108}$	$0.361^{+0.196}_{-0.128}$
	+1%/-1%	+3%/-3%	+188%/-188%	+17%/-15%	+7%/-7%	+54%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 008231370-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 5	$1.05^{+0.99}_{-0.71}$	4049^{+180}_{-148}	-3665^{+8505}_{-1583}	$0.039^{+1.534}_{-1.417}$
Alt.	-129 ± 8	$3.18^{+1.11}_{-1.07}$	4062^{+180}_{-166}	5720^{+1383}_{-819}	$2.901^{+3.710}_{-1.314}$

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

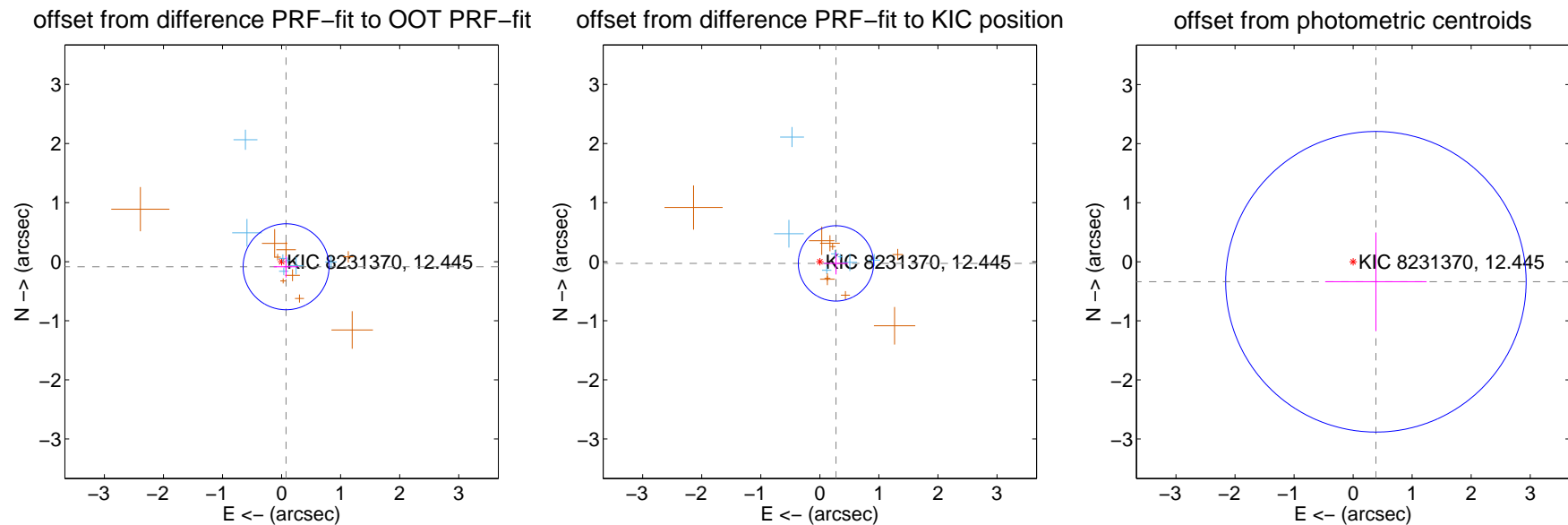
DV Centroid Data

Supplemental centroid analysis for 008231370-02. Kepler magnitude: 12.45. Transit SNR 2.48

There are 7 quarters with good PRF difference image offsets

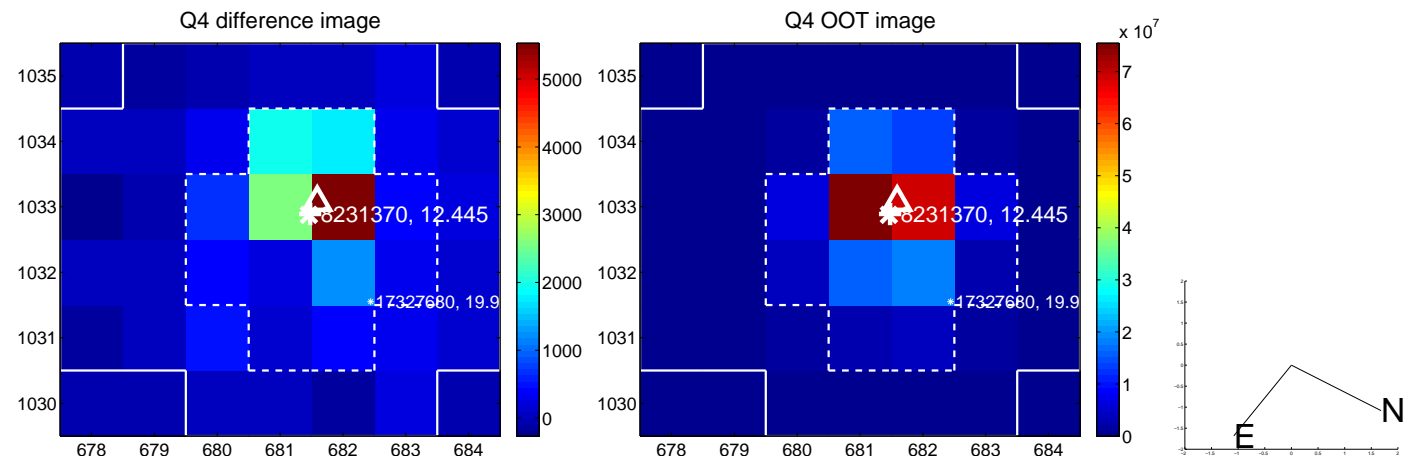
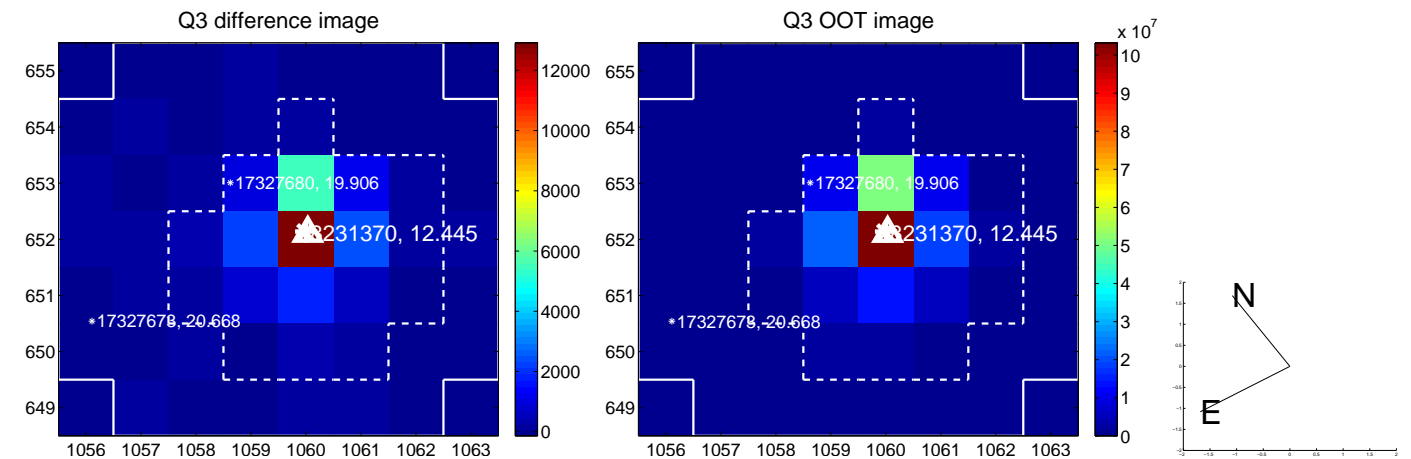
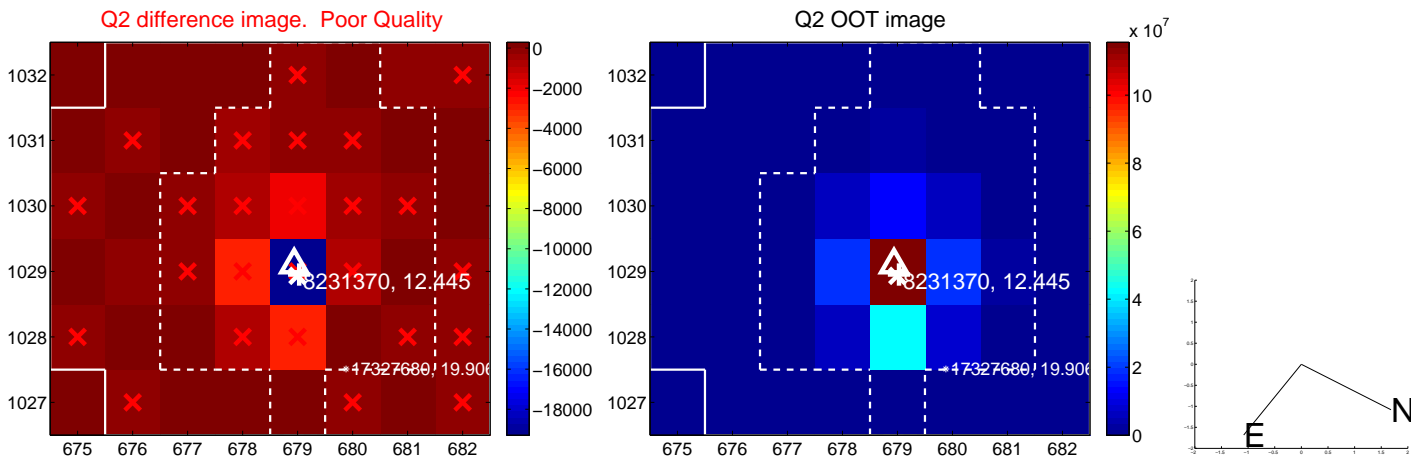
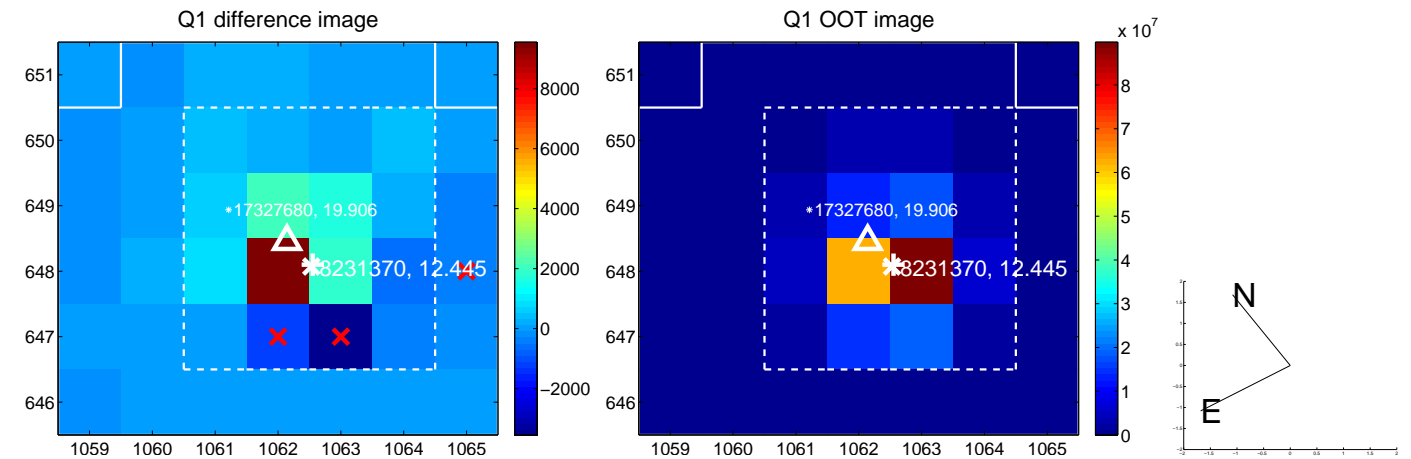
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.115 ± 0.243	0.47	-0.076 ± 0.209	-0.086 ± 0.182
PRF-fit source offset from KIC position	0.274 ± 0.213	1.29	-0.273 ± 0.203	-0.029 ± 0.188
photometric centroid source offset	0.51 ± 0.85	0.61	-0.39 ± 0.86	-0.34 ± 0.83

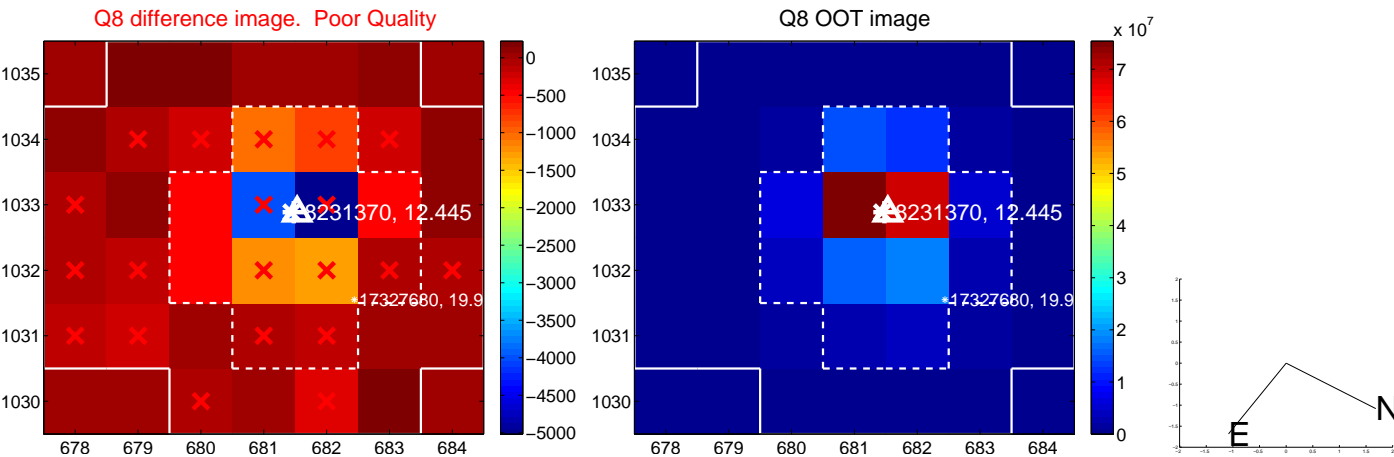
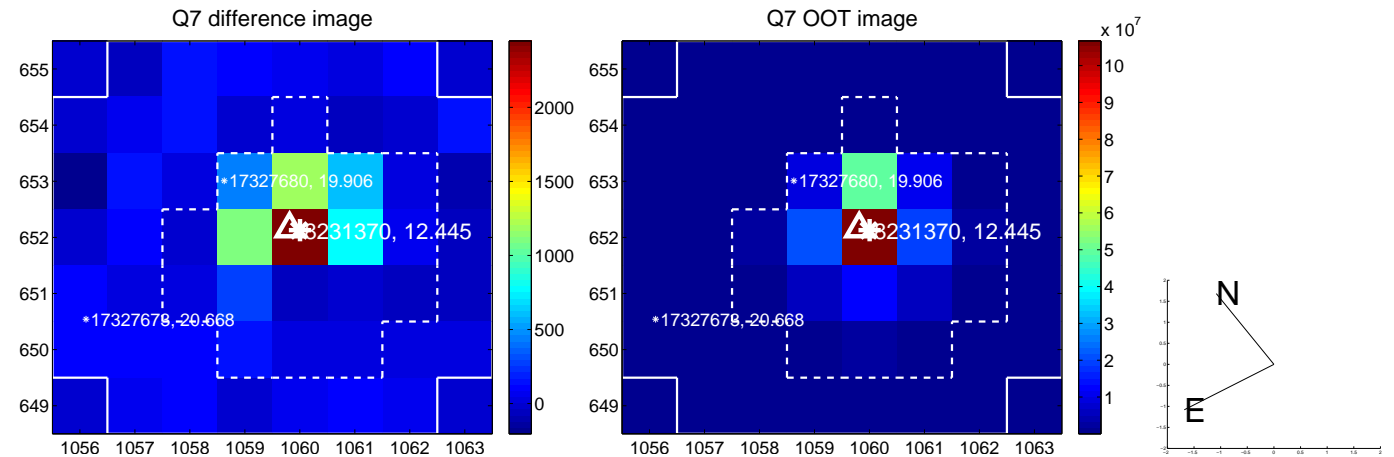
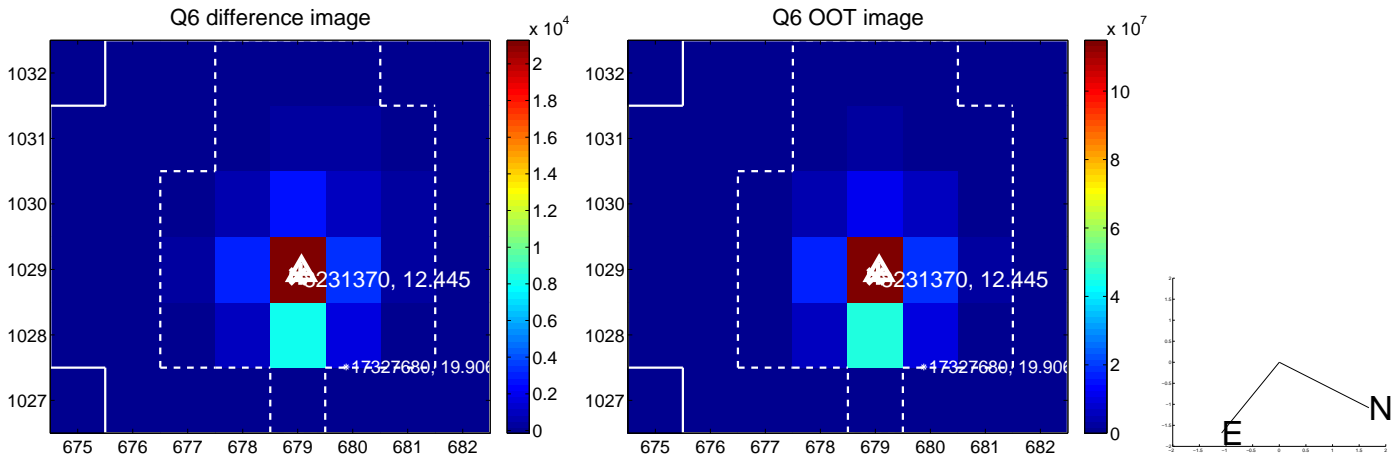
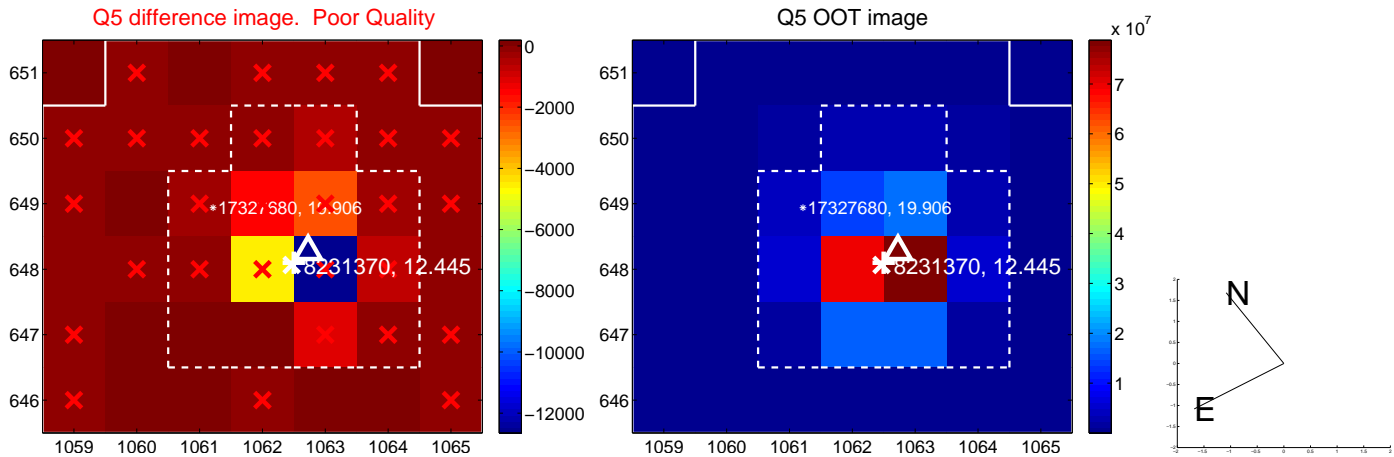


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

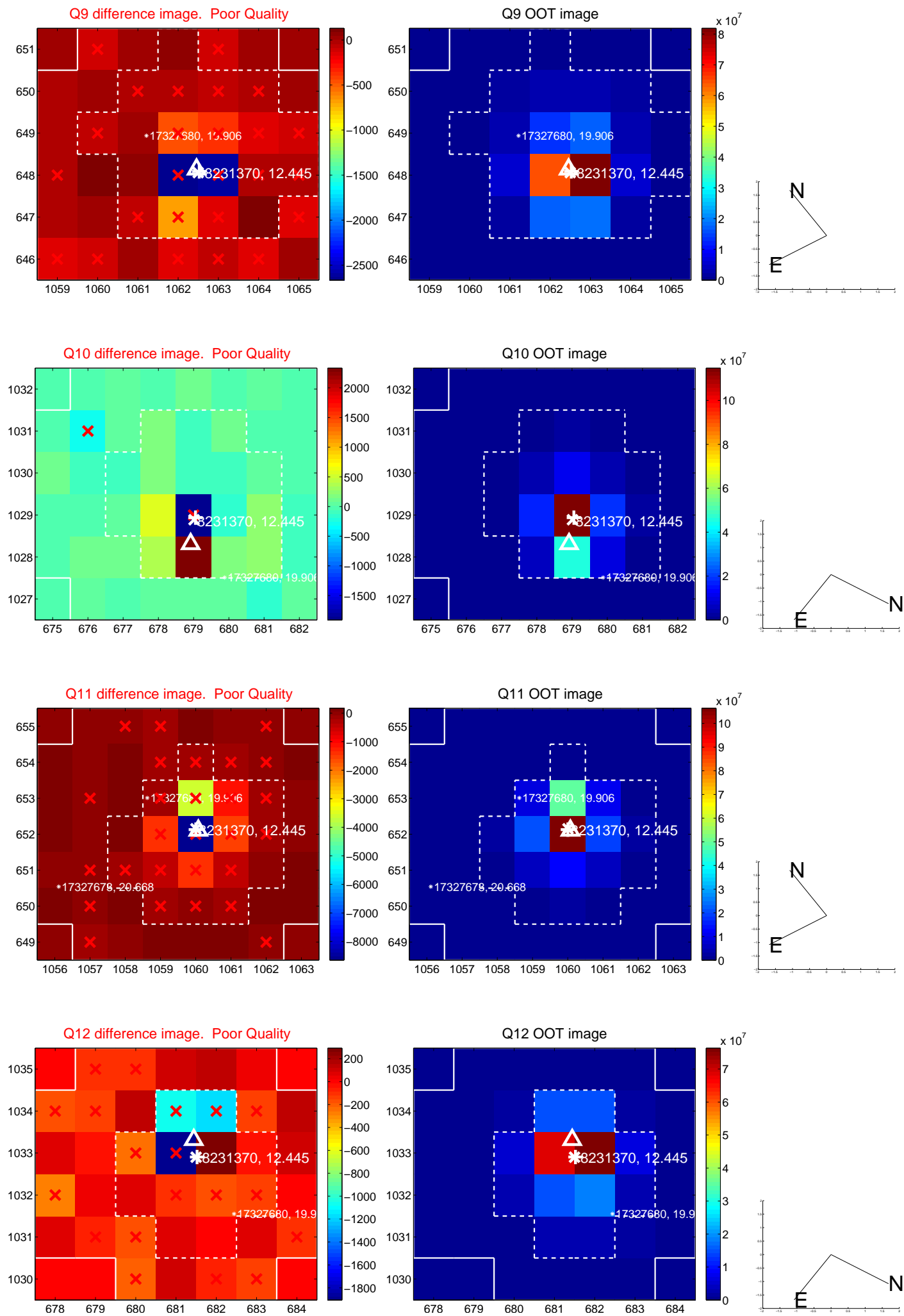
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



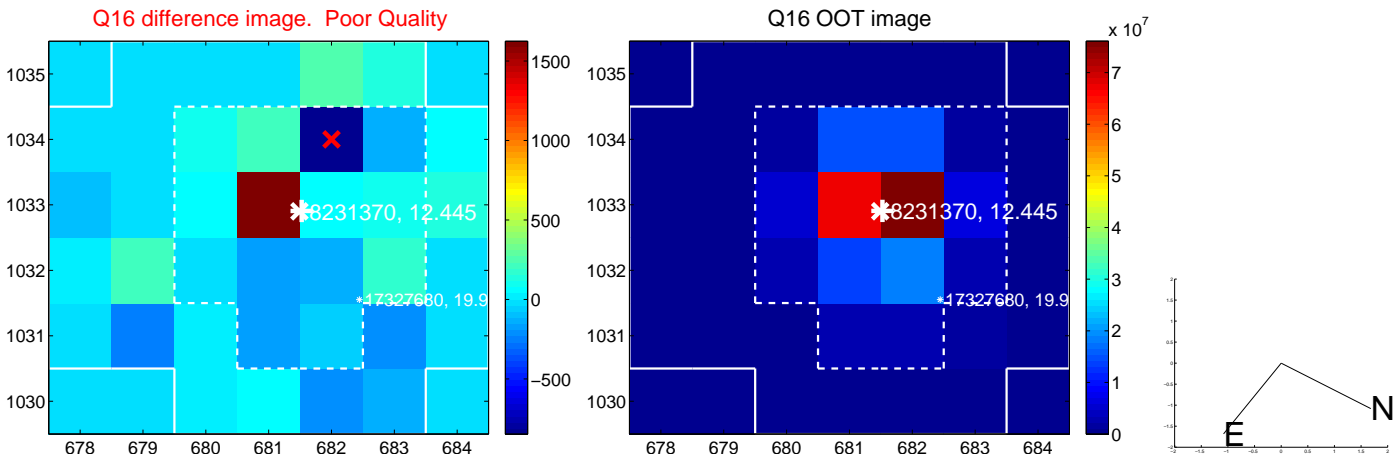
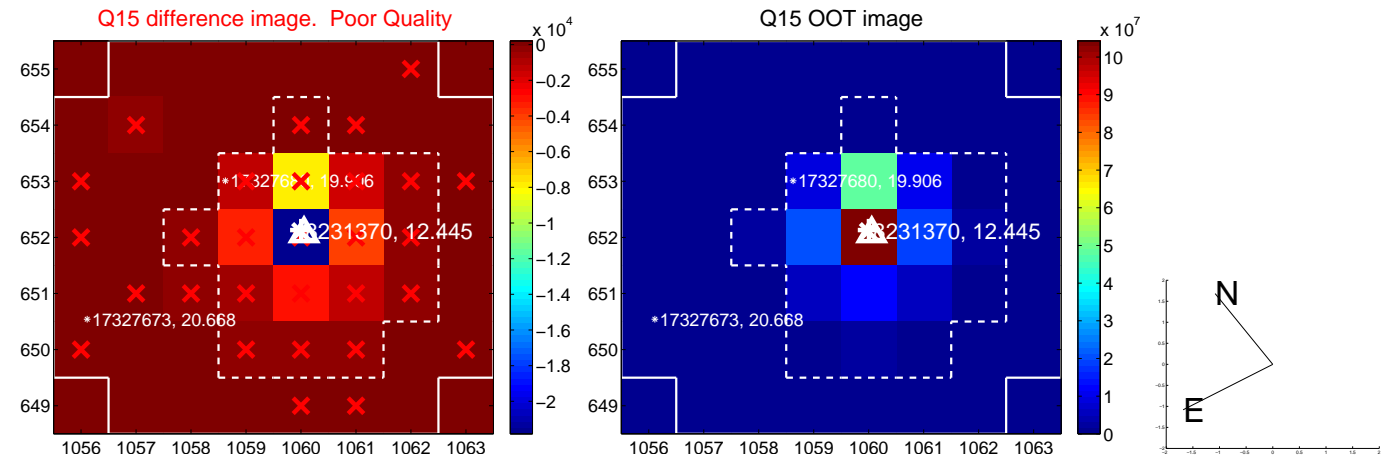
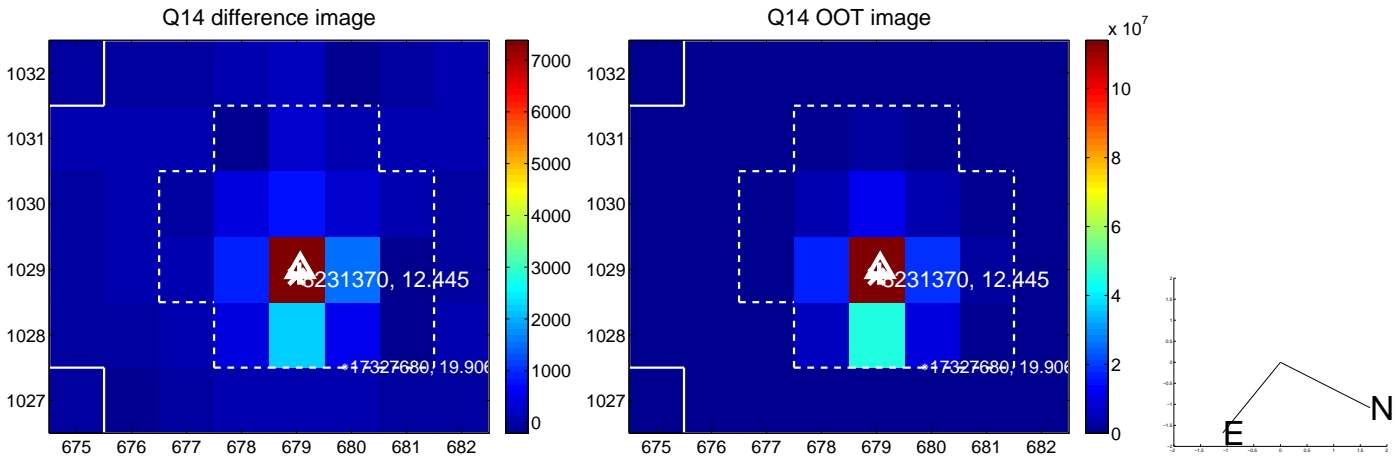
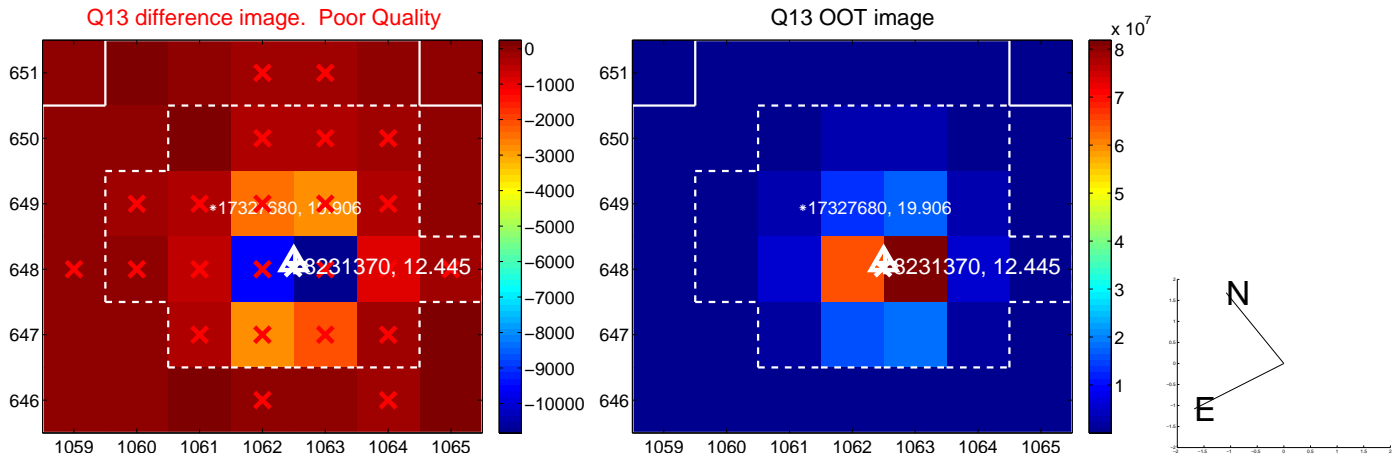
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



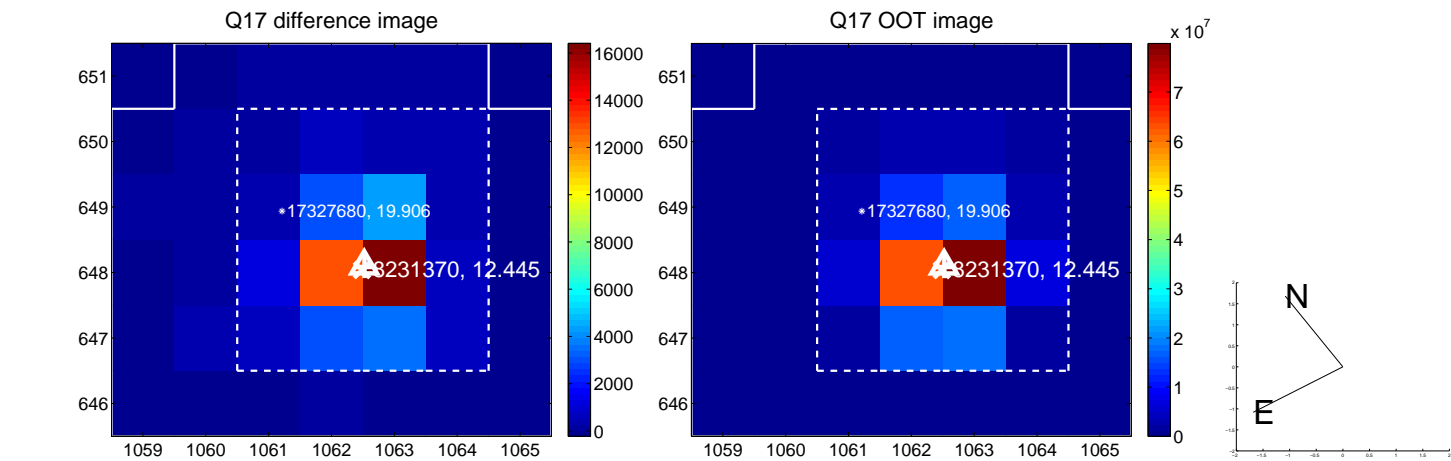
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



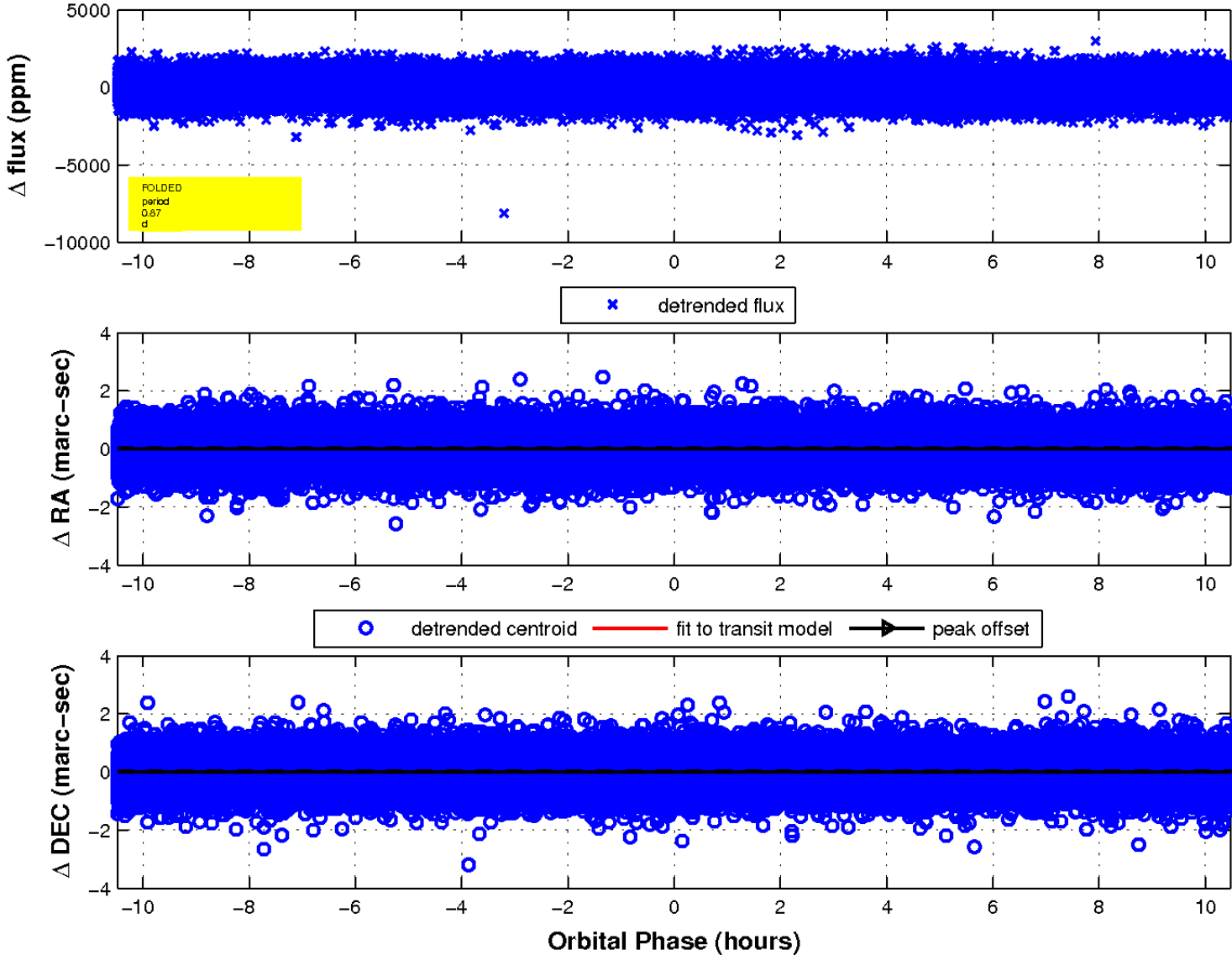
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

