

KIC 006224148

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})
006224148-01	OBS	No	0.797015	132.001370	53.7	1.117	7.9	9.6	1.09	6232	0.94	5101.91
006224148-02	OBS	No	0.797034	131.585514	54.6	1.164	9.5	10.2	1.09	6232	0.95	5101.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006224148-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
006224148-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

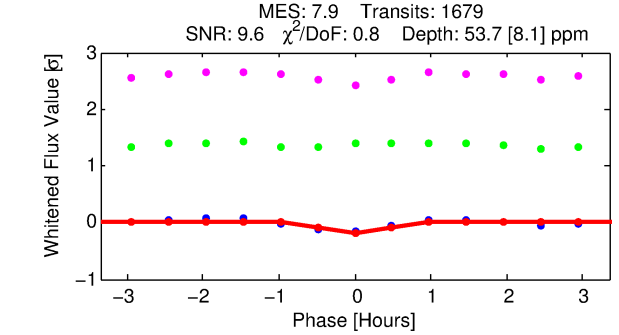
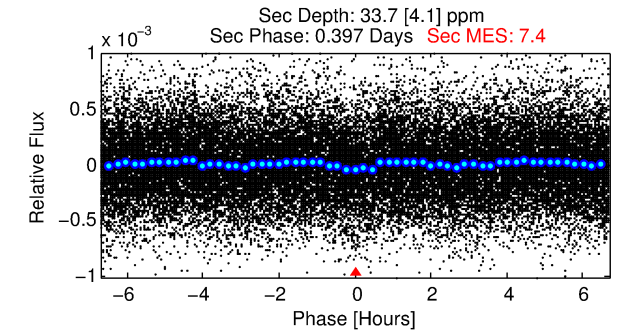
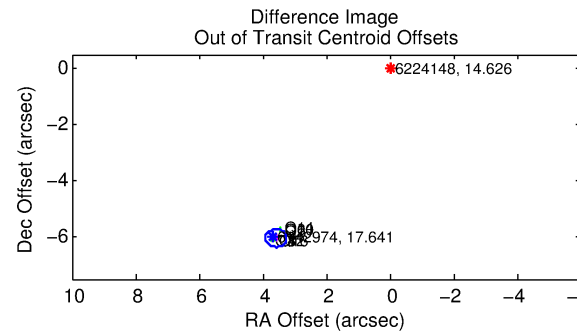
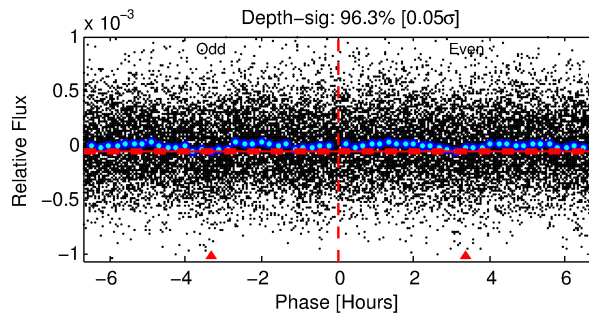
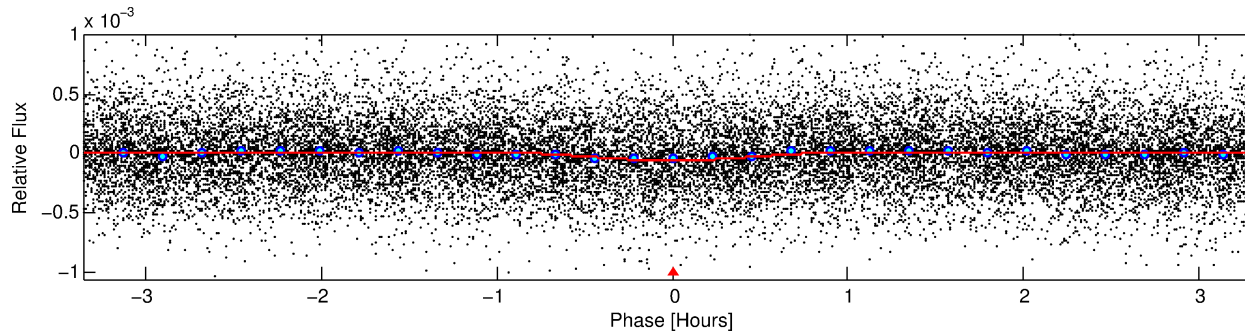
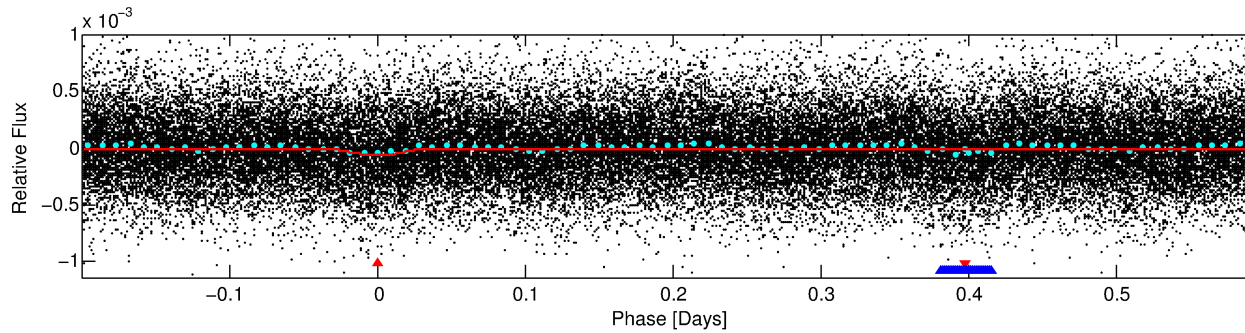
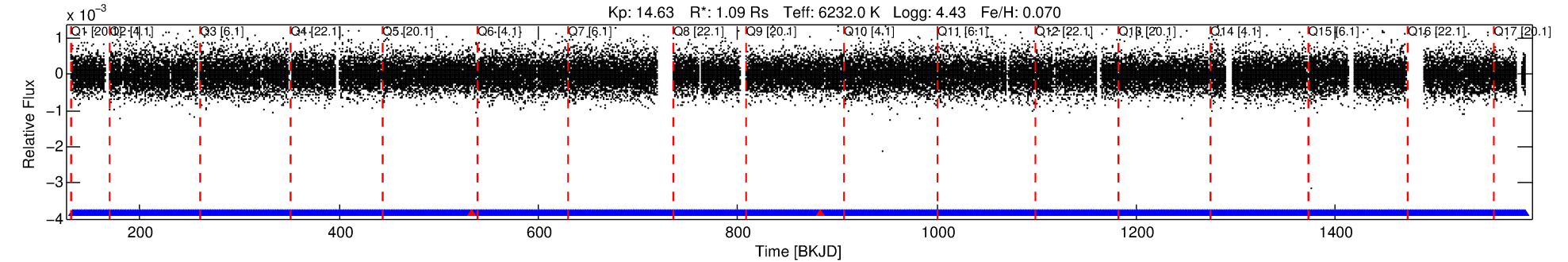
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006224148-01

No Significant Match Found

DV One-Page Summary

KIC: 6224148 Candidate: 1 of 2 Period: 0.797 d



DV Fit Results:

Period = 0.79702 [0.00001] d
Epoch = 132.0014 [0.0020] BKJD
Rp/R* = 0.0079 [0.0028]
a/R* = 2.69 [4.18]
b = 0.90 [0.41]
Seff = 5101.91 [2350.03]
Teq = 2155 [248] K
Rp = 0.94 [0.47] Re
a = 0.0177 [0.0053] AU
Ag = 6.57 [5.45] [1.02 σ]
Teffp = 5335 [963] K [3.20 σ]

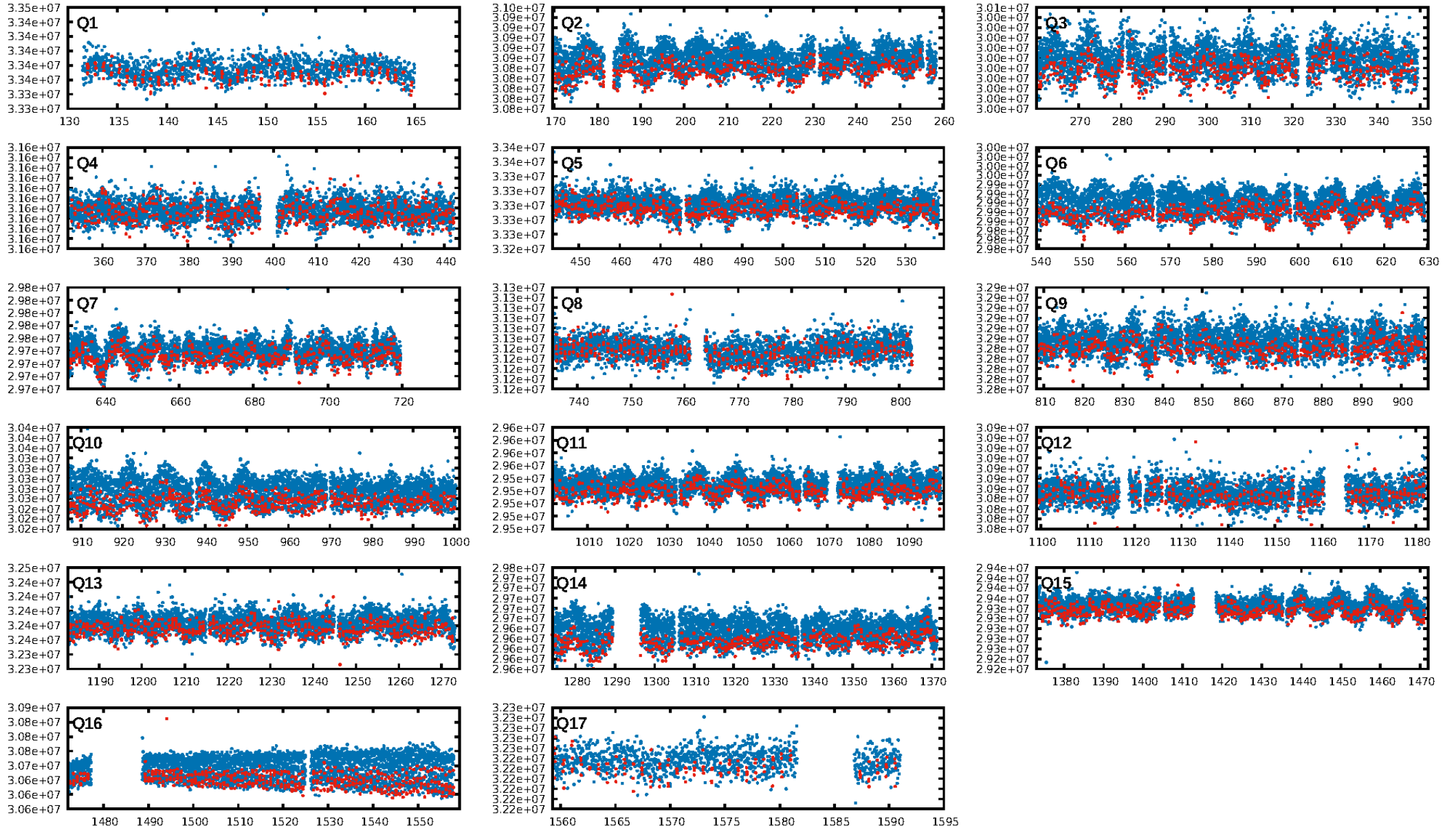
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.92e-18
RollingBand-fgt: 1.00 [1602/1604]
GhostDiagnostic-chr: -0.9499
Centroid-sig: 0.0%
Centroid-so: 6.712 arcsec [4.97 σ]
OotOffset-rm: 7.033 arcsec [65.70 σ]
KicOffset-rm: 6.957 arcsec [86.73 σ]
OotOffset-st: 4/0/4/0 [8]
KicOffset-st: 4/0/4/0 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [17/17]

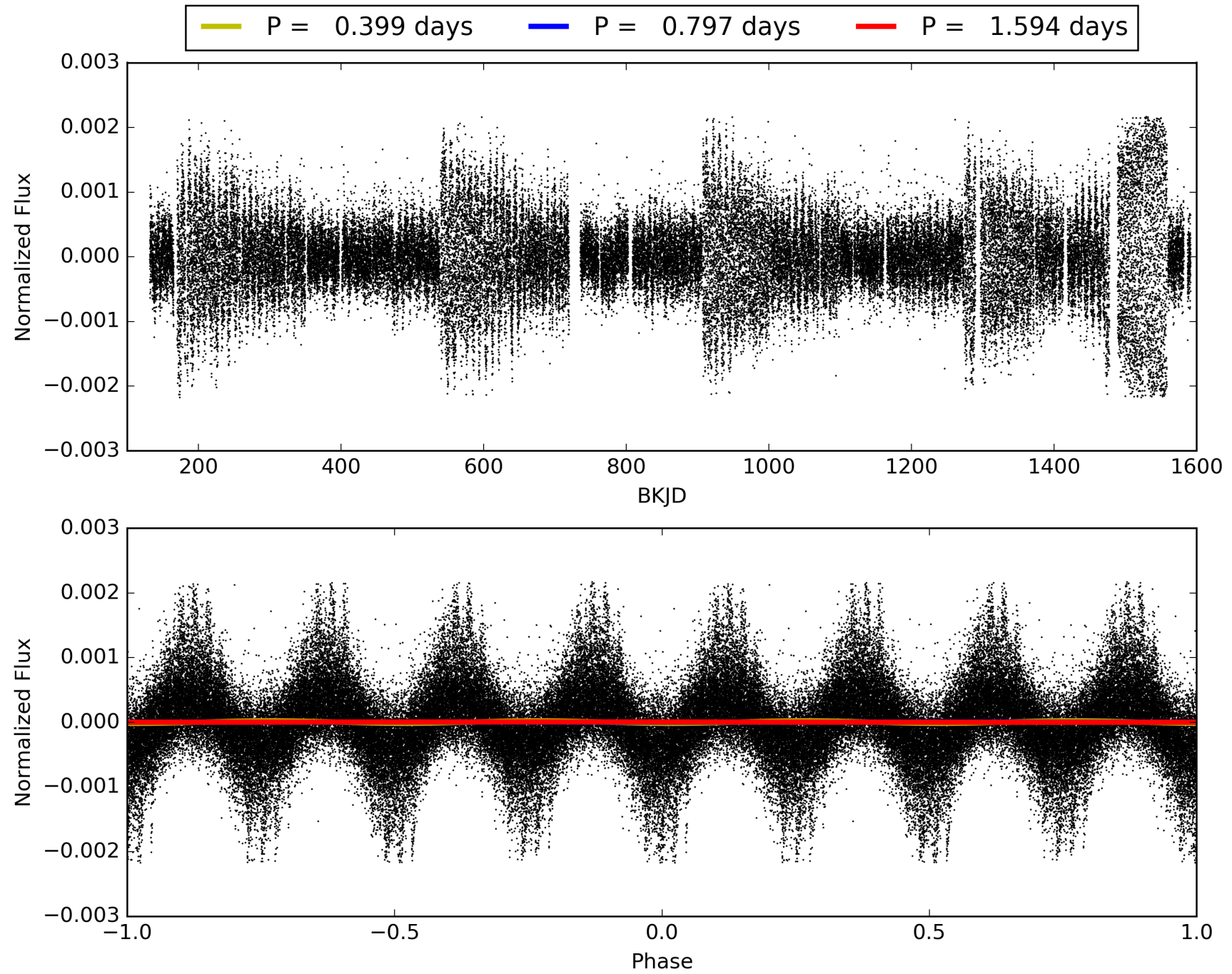
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:21:10 Z

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

TCE 006224148-01, PDC Light Curves

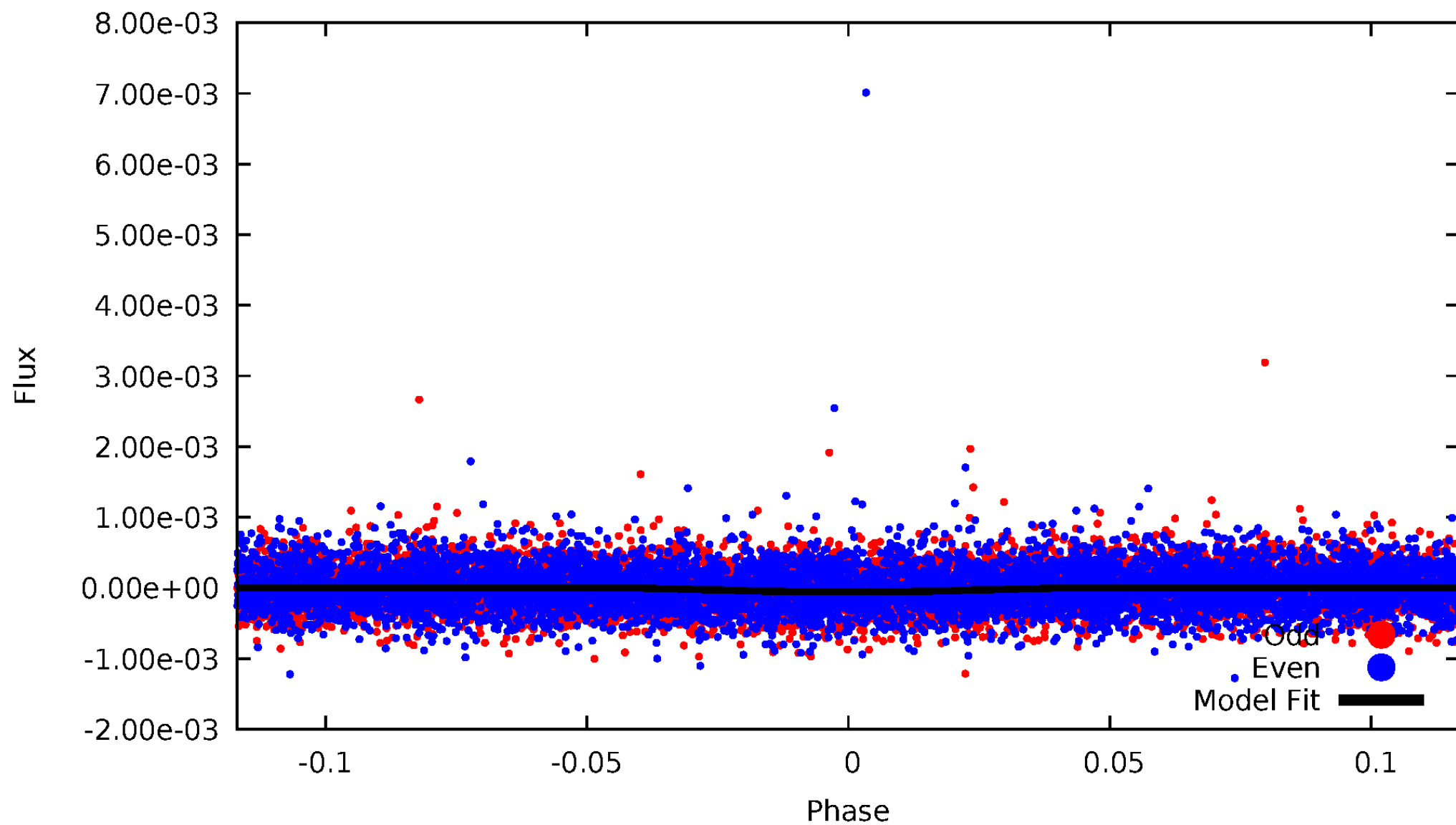


TCE 006224148-01



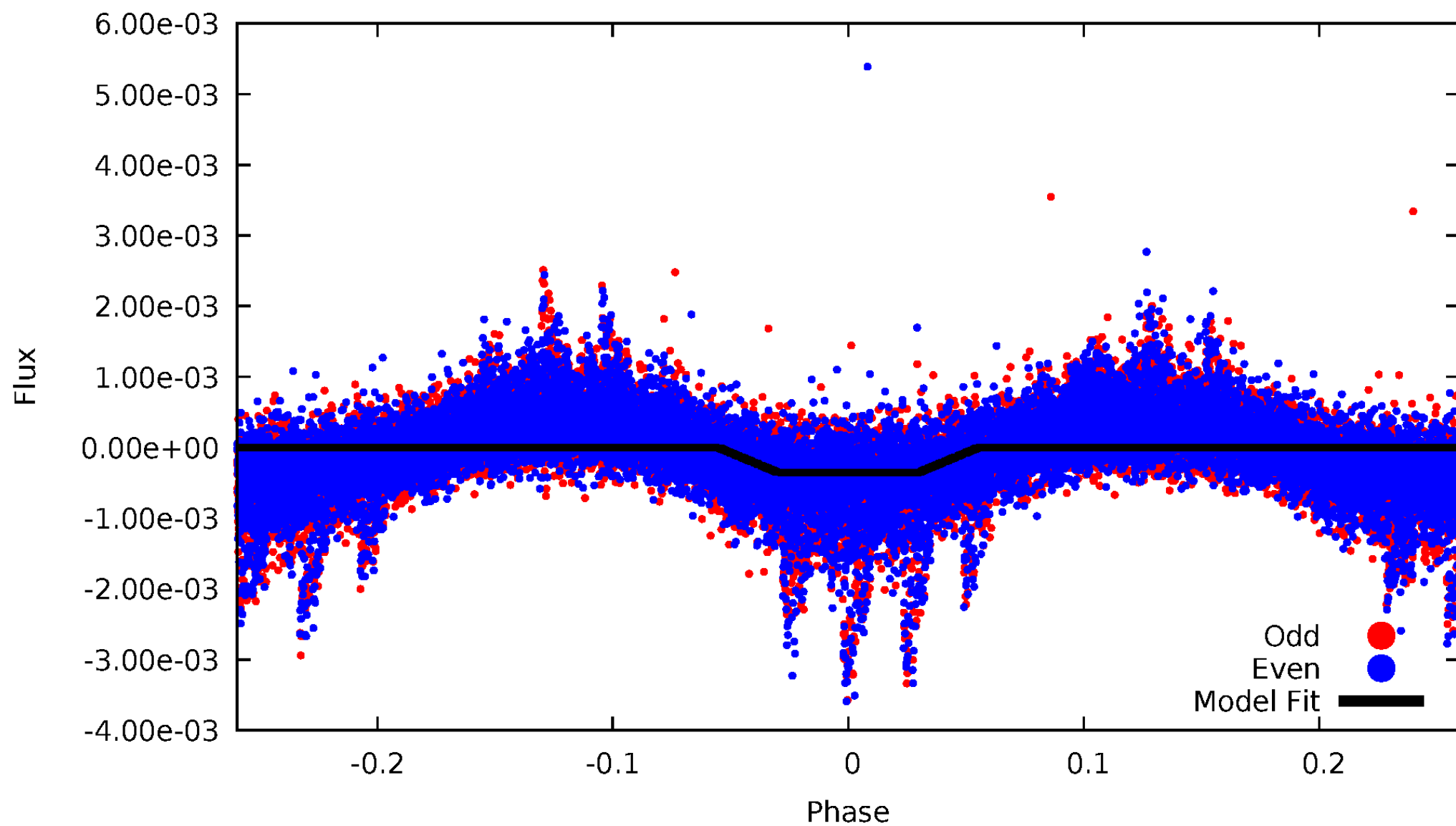
DV Odd/Even

TCE 006224148-01



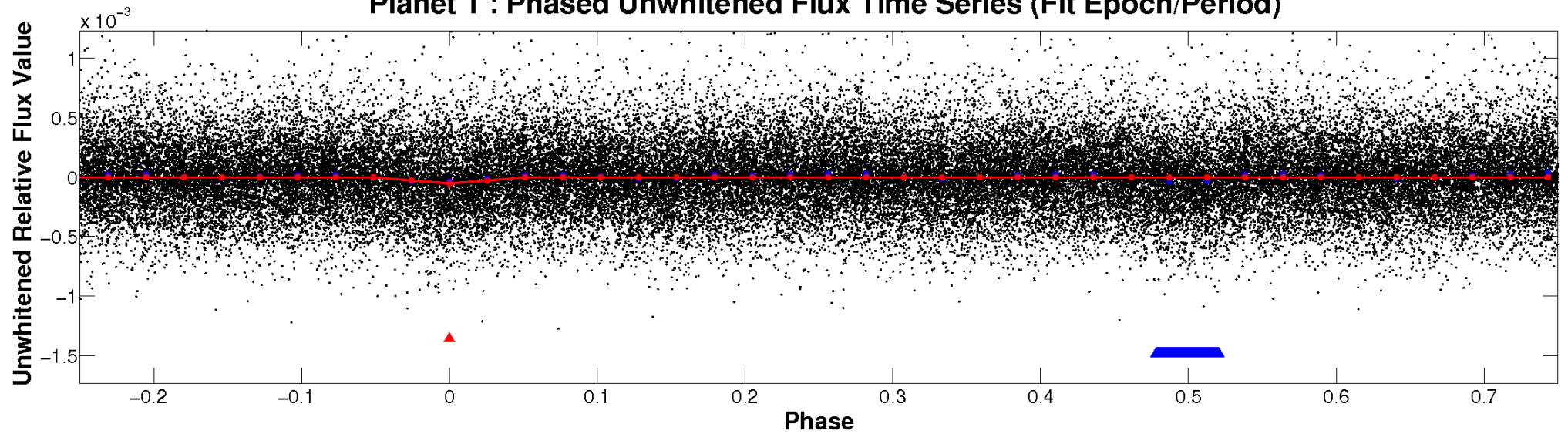
ALT Odd/Even

TCE 006224148-01

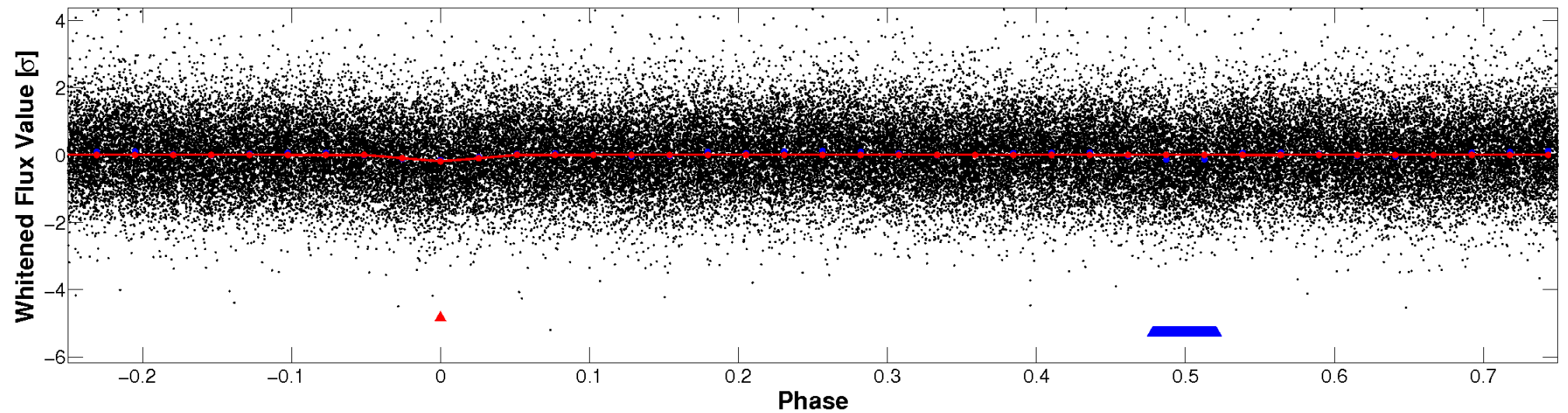


Non-Whitened Vs. Whitened Light Curve

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

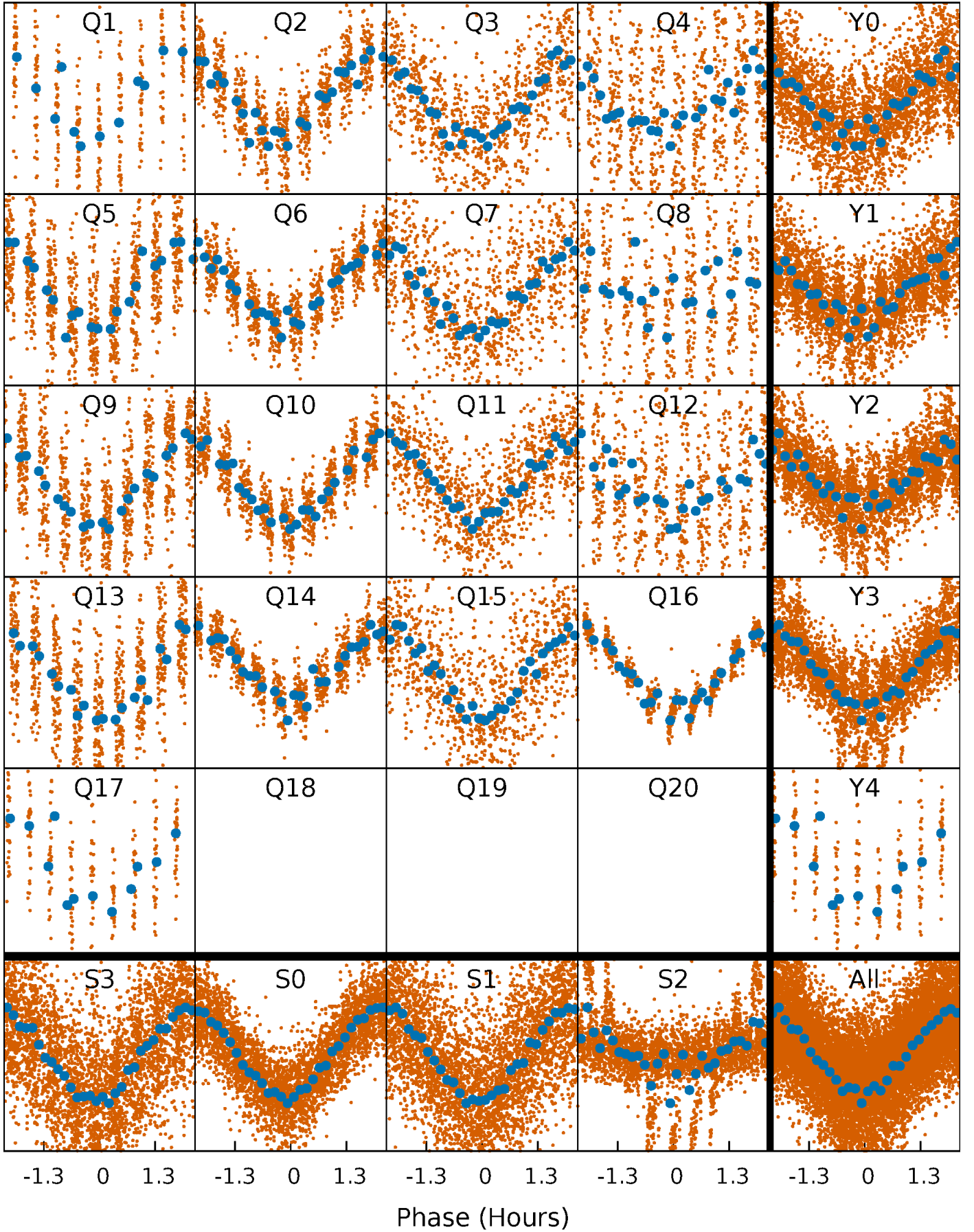


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



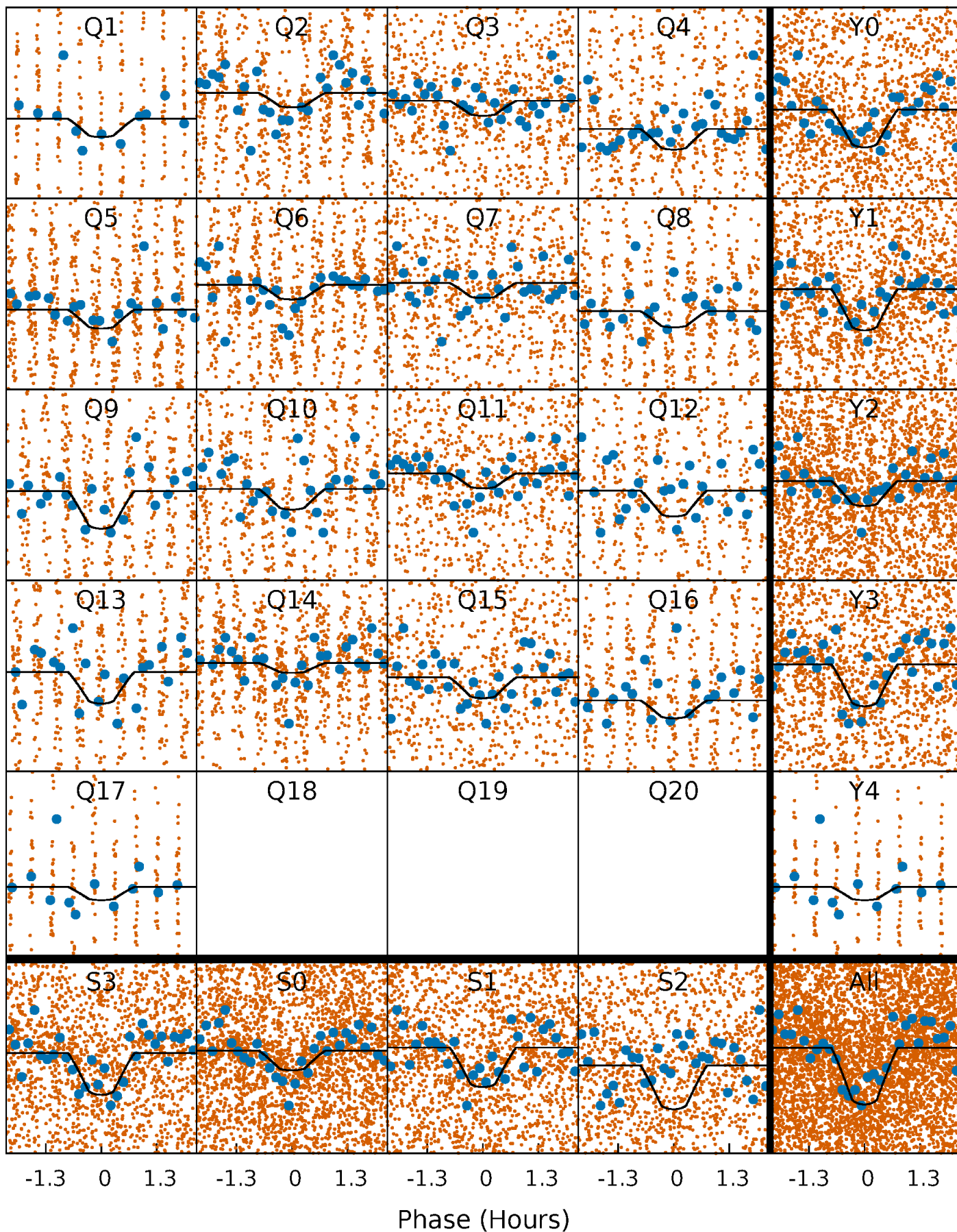
PDC Quarter-Phased Transit Curves

TCE 006224148-01 P= 0.797015 Days $T_0=132.001370$ (BKJD)



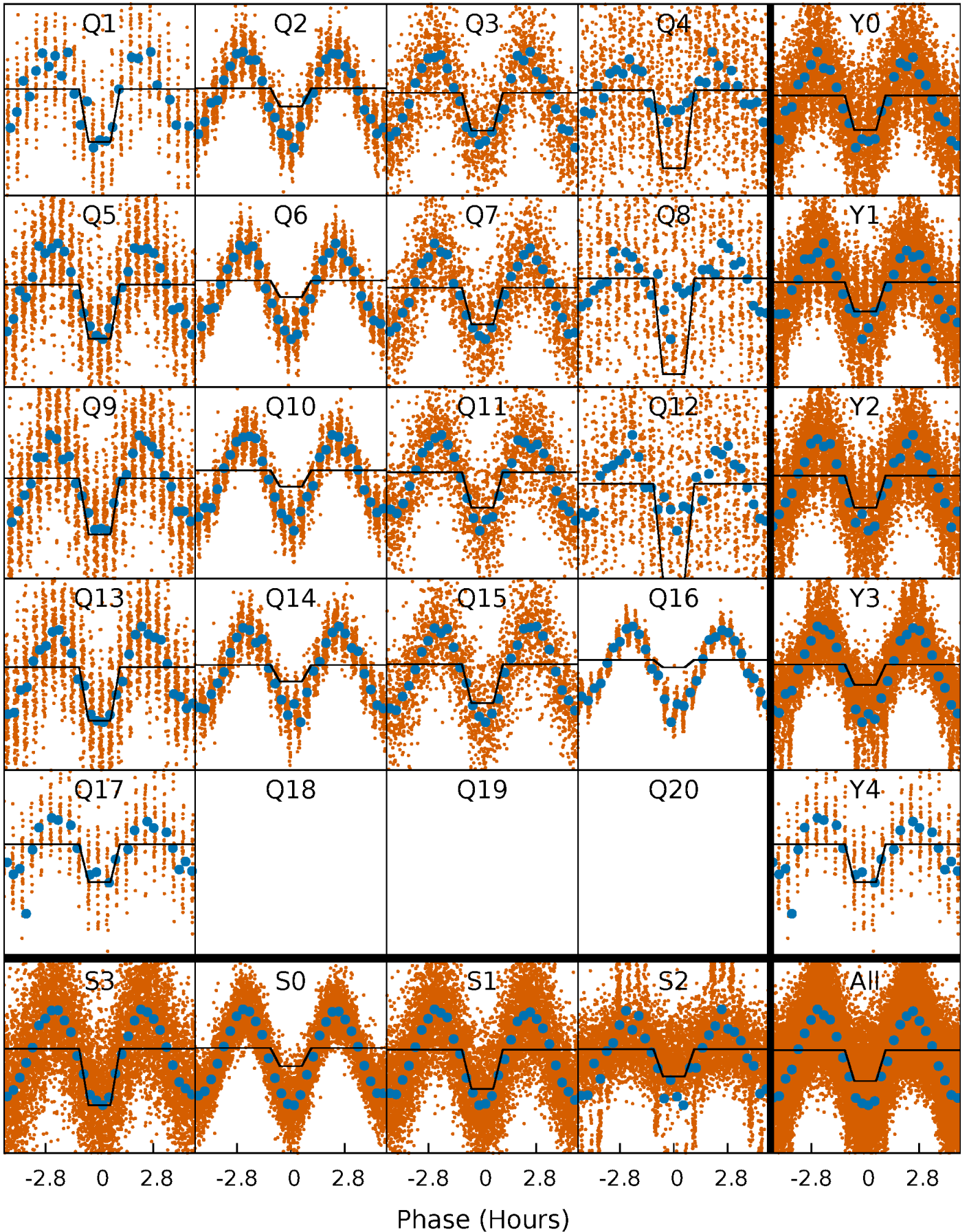
DV Quarter-Phased Transit Curves

TCE 006224148-01 P= 0.797015 Days $T_0=132.001370$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

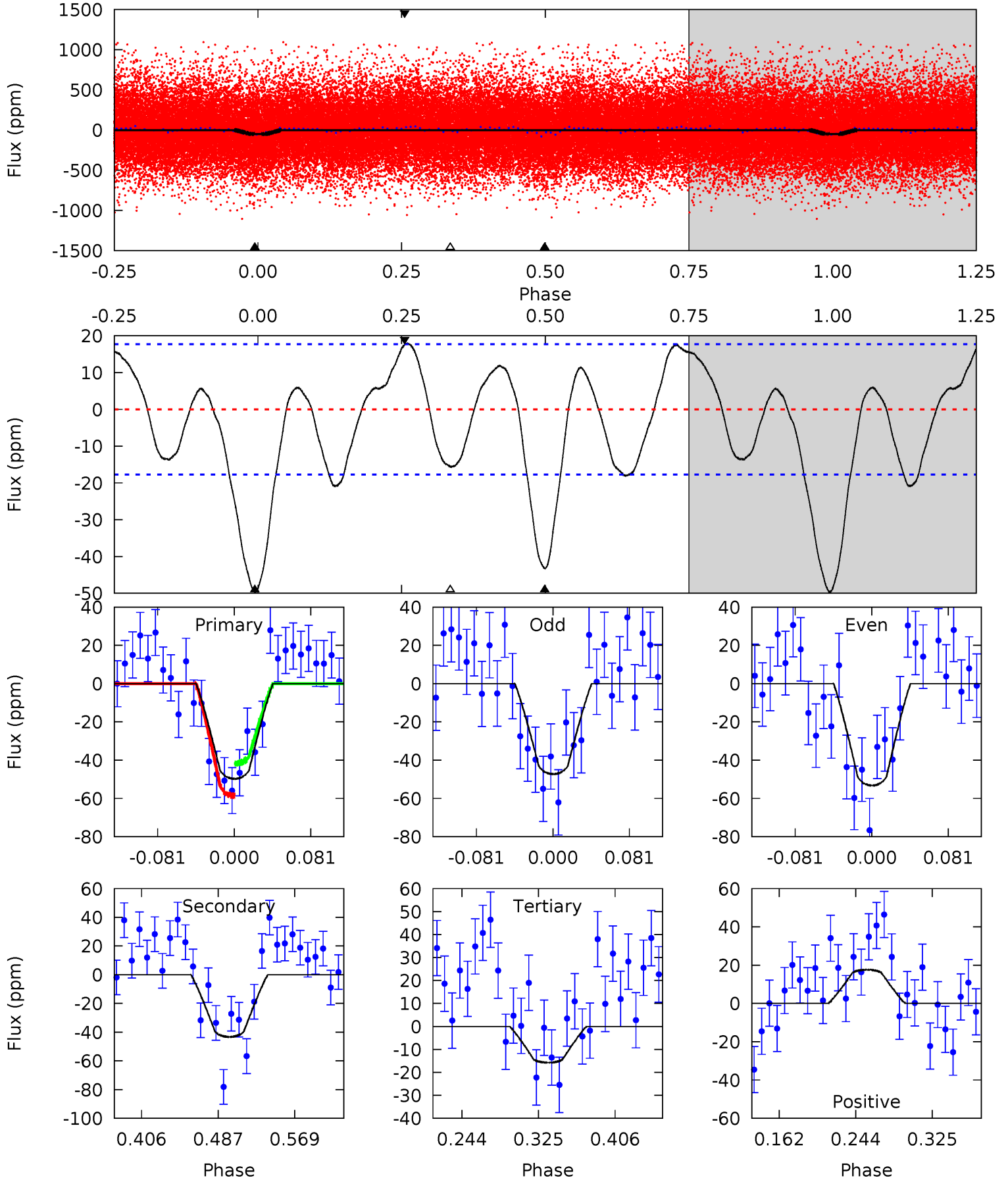
TCE 006224148-01 P= 0.797017 Days $T_0=131.994530$ (BKJD)



DV Model-Shift Uniqueness Test

006224148-01, P = 0.797015 Days, E = 131.204355 Days

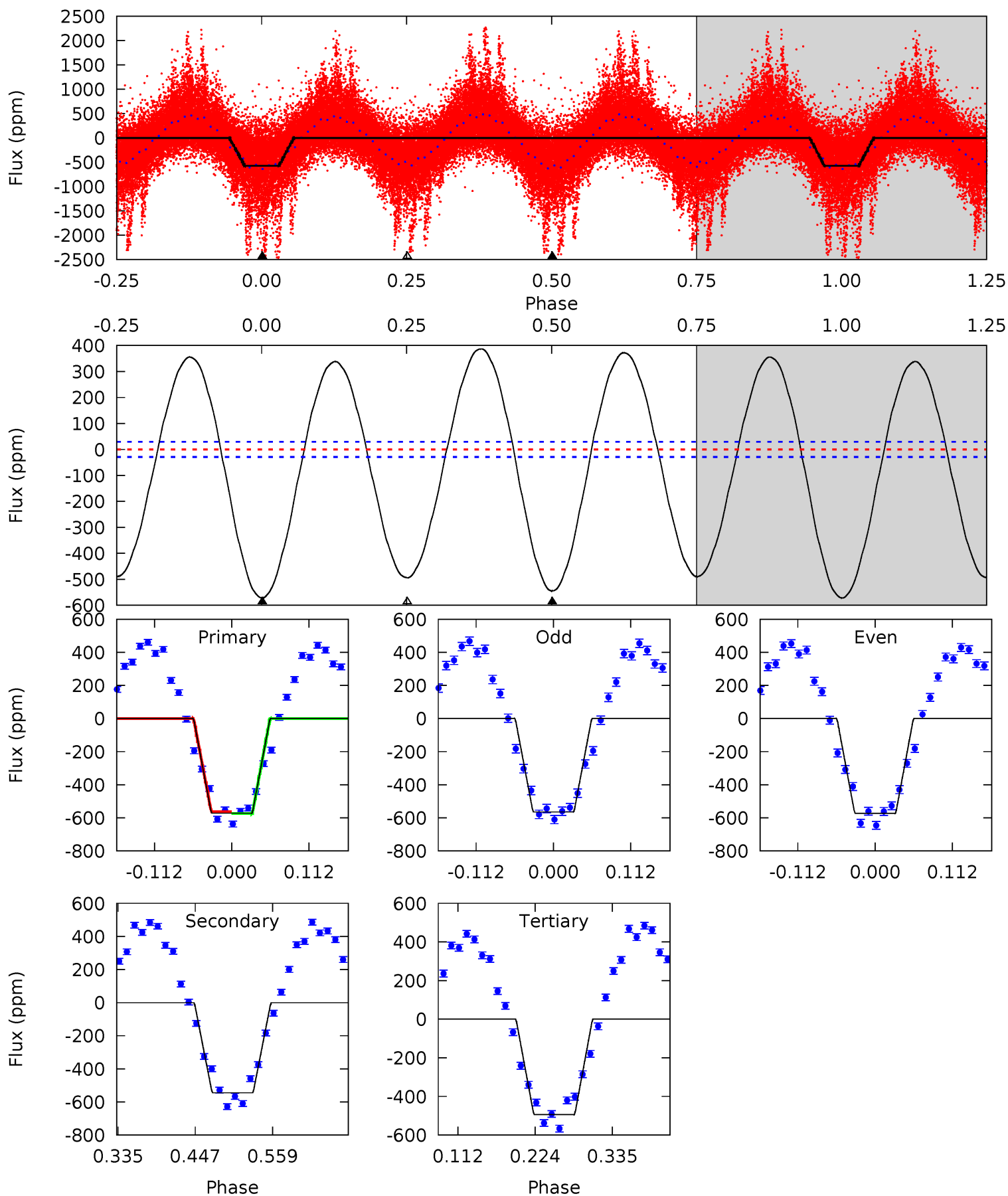
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	11.3	4.10	4.58	4.61	1.74	2.93	8.82	8.34	7.16	6.68	0.78	0.91	0.27	2.19



Alt Model-Shift Uniqueness Test

006224148-01, P = 0.797017 Days, E = 131.197513 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
89.6	85.3	77.4	0	4.54	1.59	48.9	12.2	89.6	7.92	85.3	0.74	1.32	0.40	0.81



Stellar Parameters For KIC 006224148

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6232^{+173}_{-239}	$4.432^{+0.056}_{-0.238}$	$0.070^{+0.250}_{-0.300}$	$1.090^{+0.384}_{-0.128}$	$1.174^{+0.158}_{-0.173}$	$1.276^{+0.317}_{-0.759}$
	+3%/-4%	+1%/-5%	+357%/-429%	+35%/-12%	+13%/-15%	+25%/-59%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006224148-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-43 ± 4	$0.99^{+0.38}_{-0.34}$	3070^{+240}_{-157}	5622^{+1395}_{-748}	$7.512^{+9.754}_{-3.537}$
Alt.	-545 ± 6	$2.38^{+0.50}_{-0.45}$	3083^{+232}_{-165}	6905^{+716}_{-542}	16^{+8}_{-5}

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

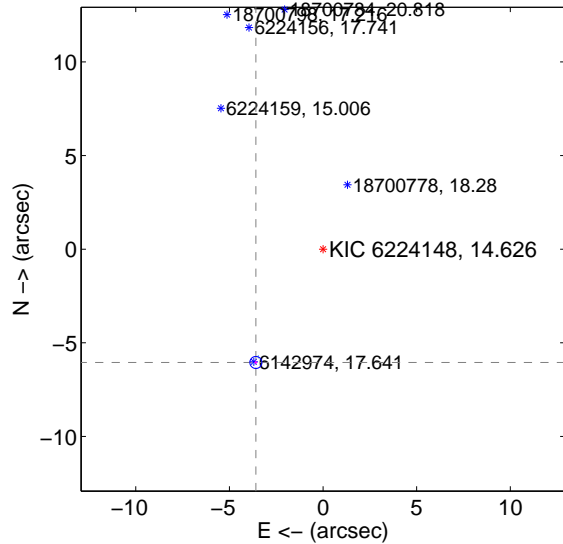
Supplemental centroid analysis for 006224148-01. Kepler magnitude: 14.63. Transit SNR 9.56

There are 8 quarters with good PRF difference image offsets

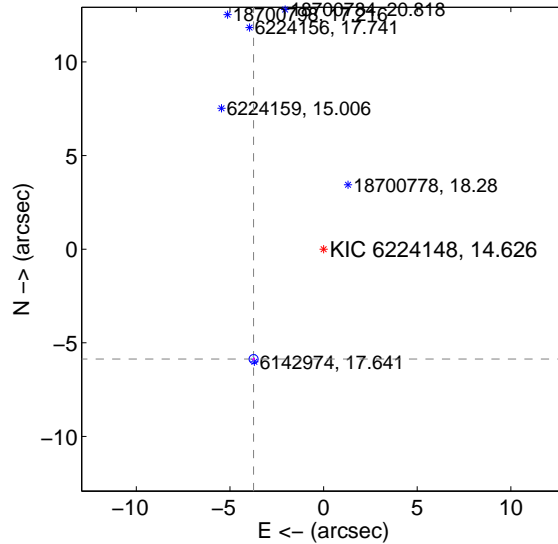
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.033 \pm 0.107	65.70	3.587 \pm 0.082	-6.049 \pm 0.097
PRF-fit source offset from KIC position	6.957 \pm 0.080	86.73	3.737 \pm 0.071	-5.869 \pm 0.079
photometric centroid source offset	6.71 \pm 1.35	4.97	5.86 \pm 1.26	-3.27 \pm 1.61

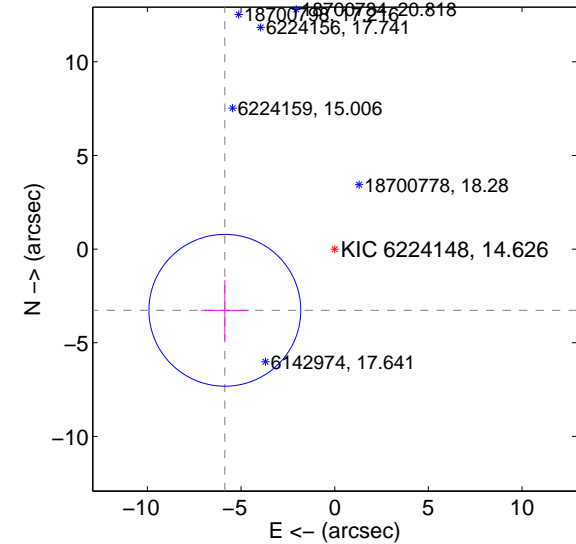
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

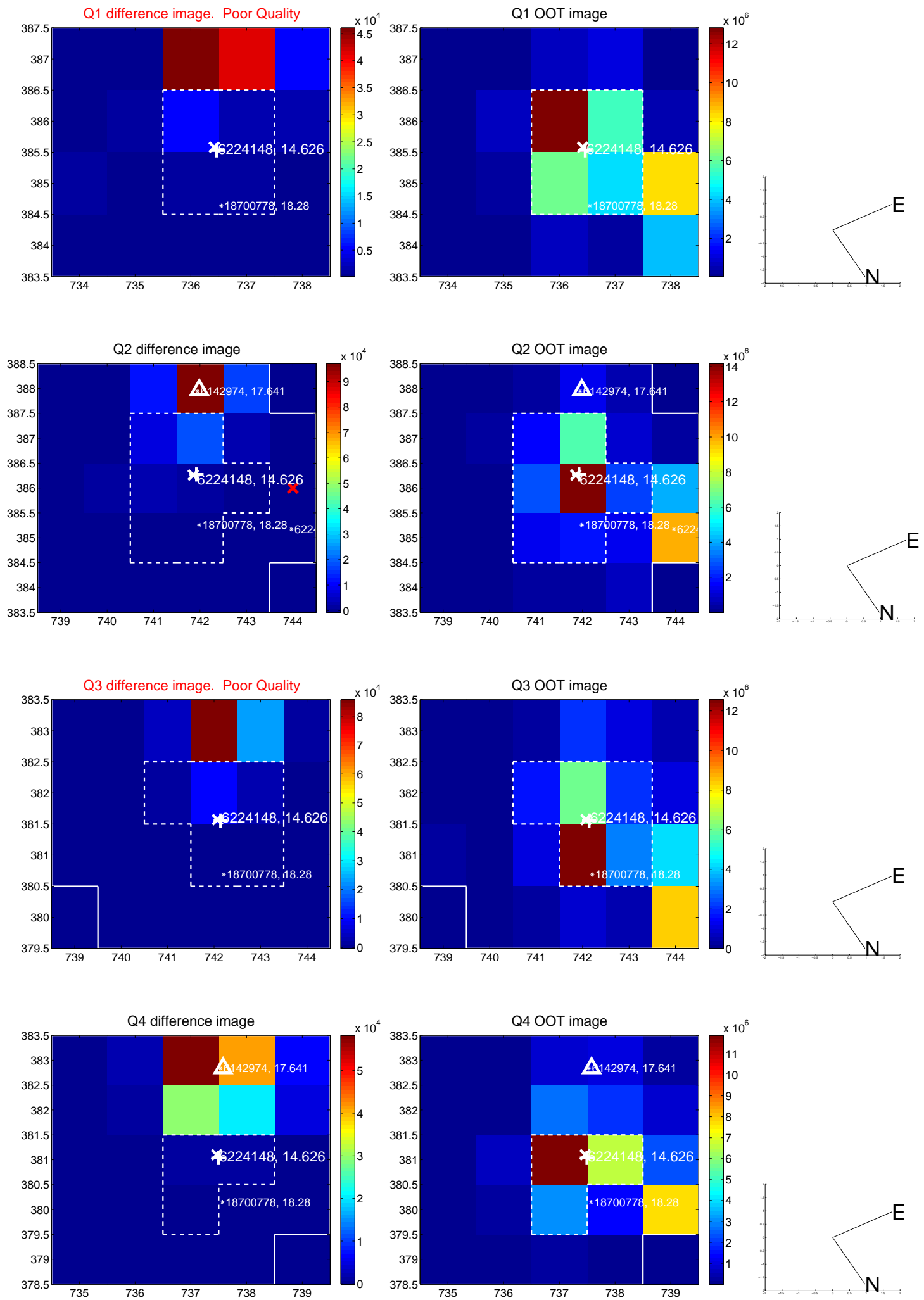


offset from photometric centroids

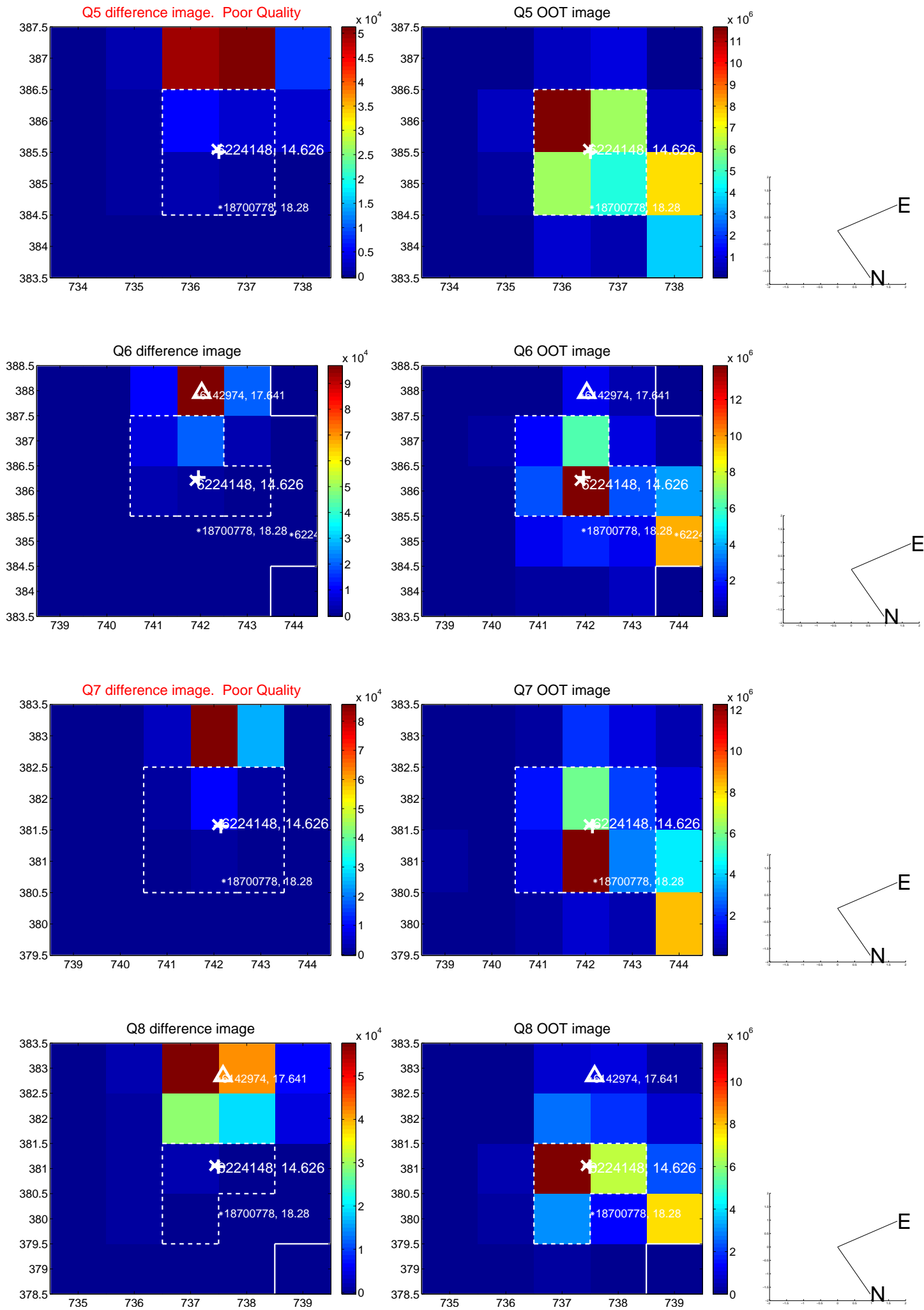


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

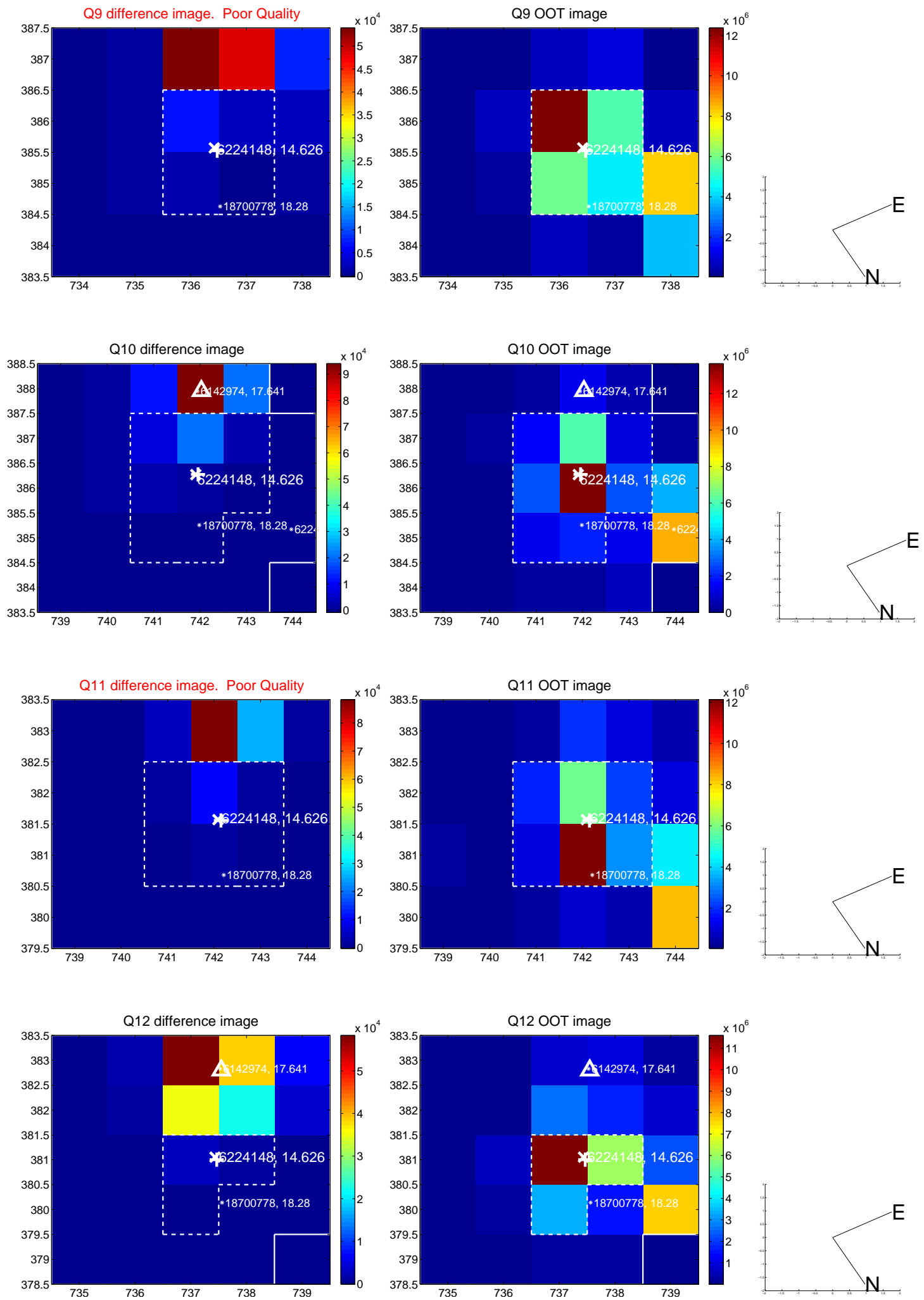
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



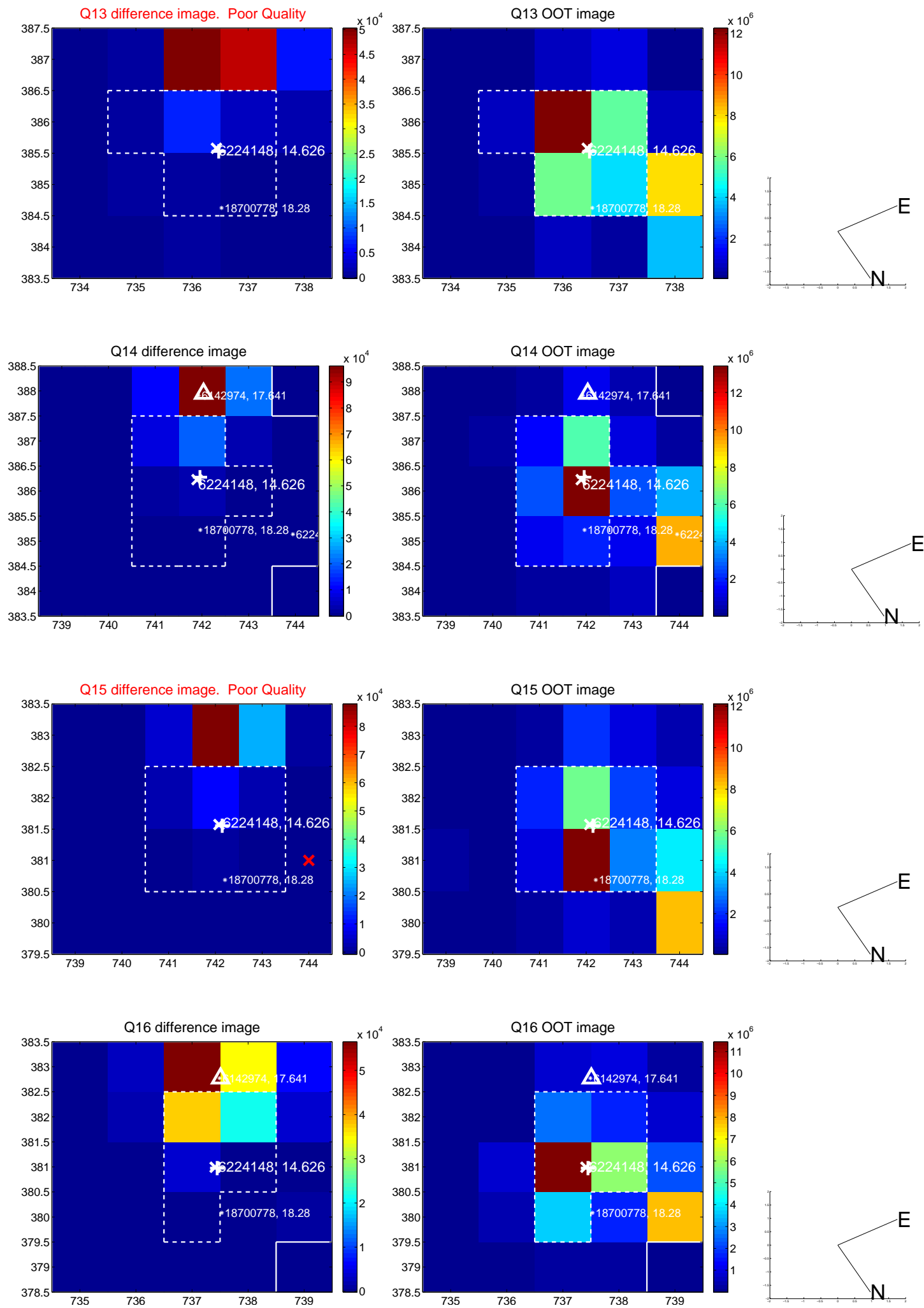
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



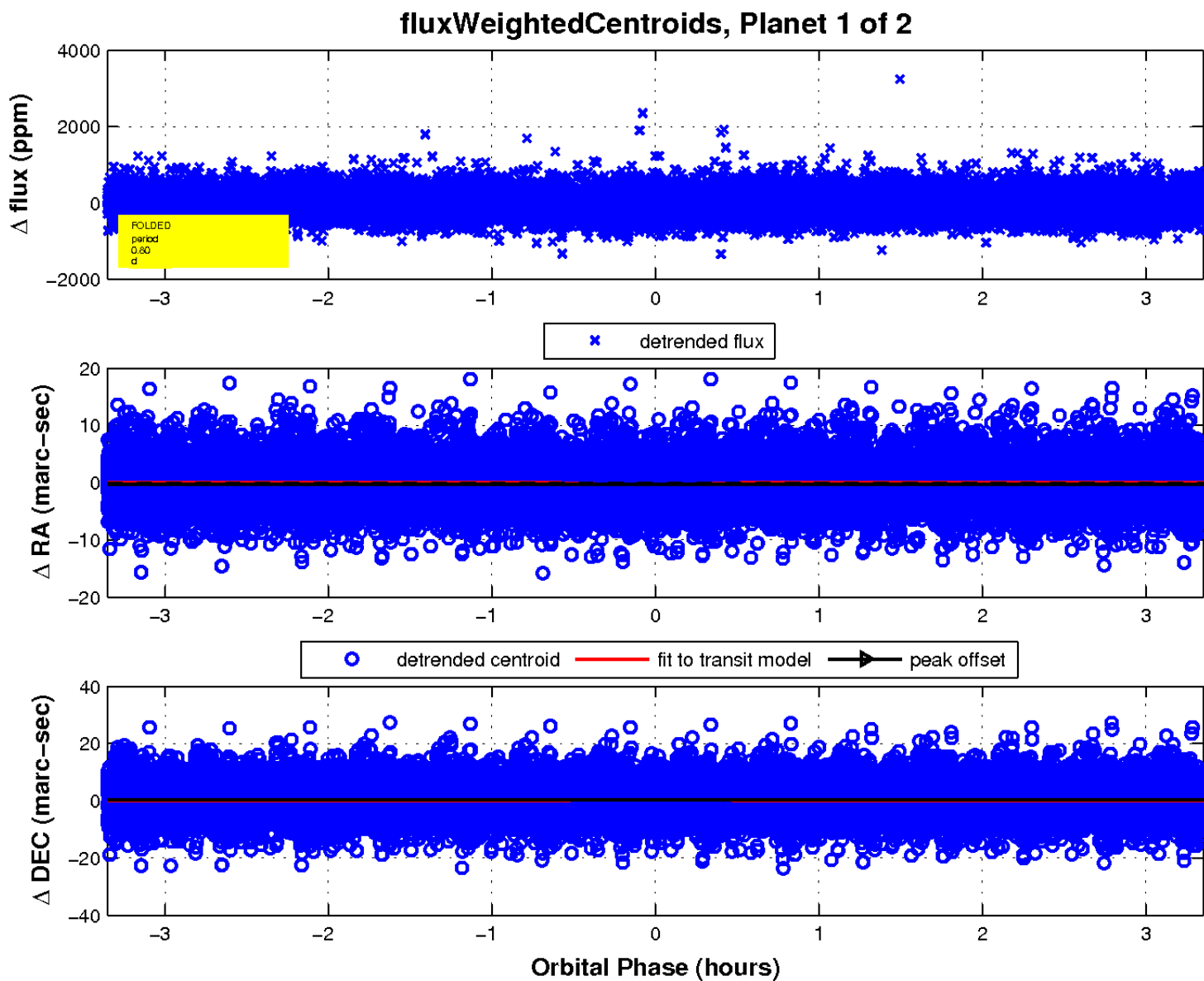
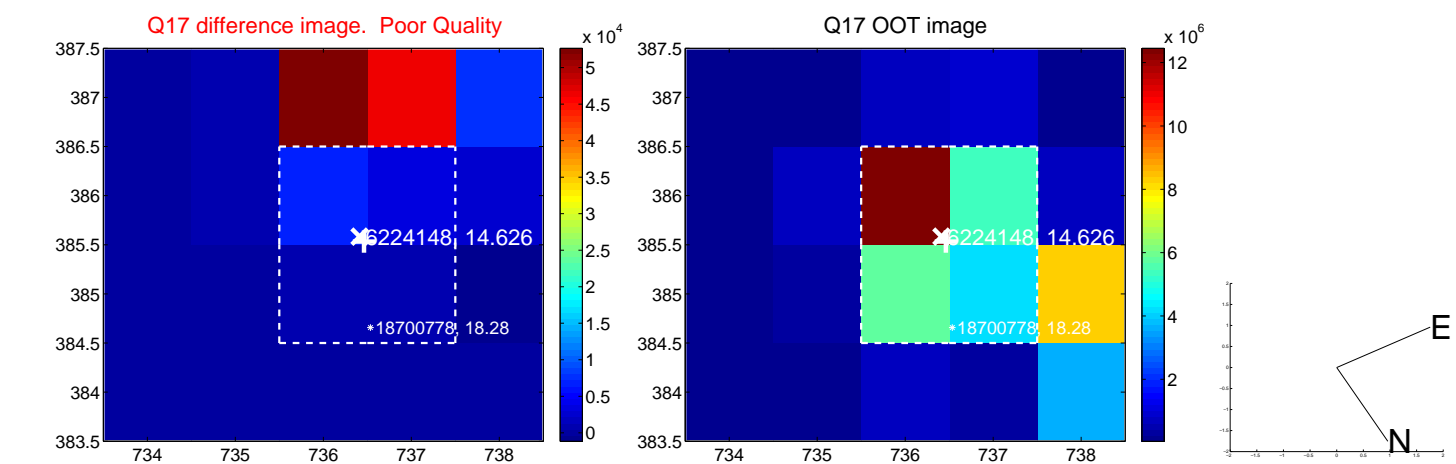
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

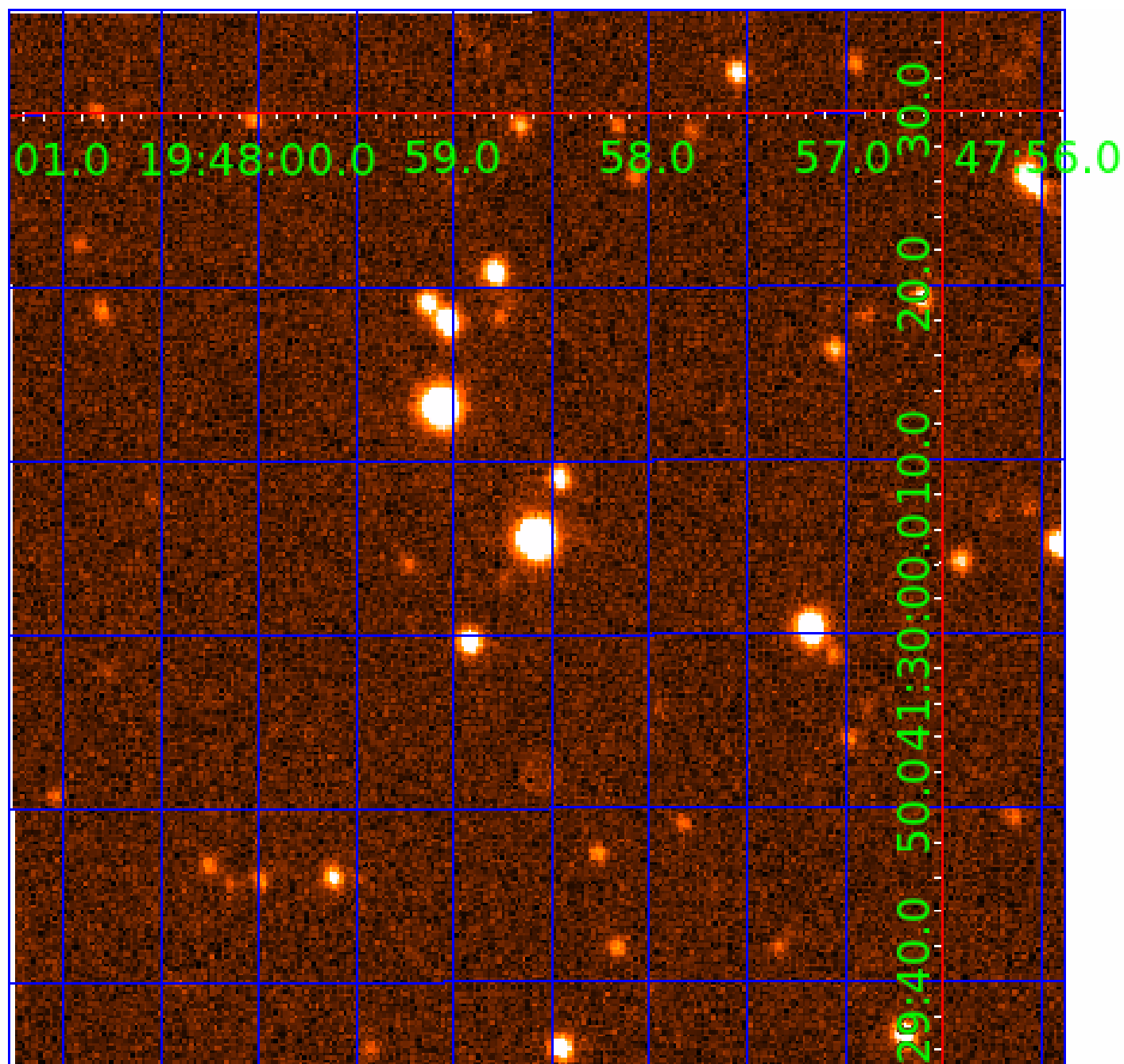


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006224148

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})
006224148-01	OBS	No	0.797015	132.001370	53.7	1.117	7.9	9.6	1.09	6232	0.94	5101.91
006224148-02	OBS	No	0.797034	131.585514	54.6	1.164	9.5	10.2	1.09	6232	0.95	5101.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006224148-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
006224148-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

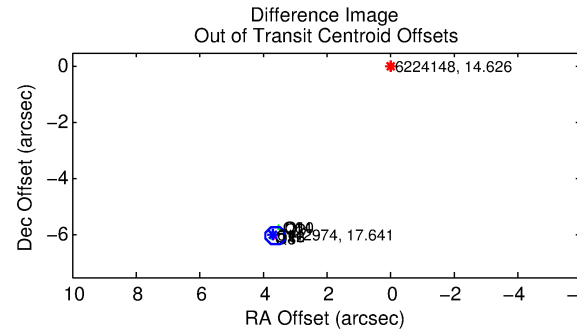
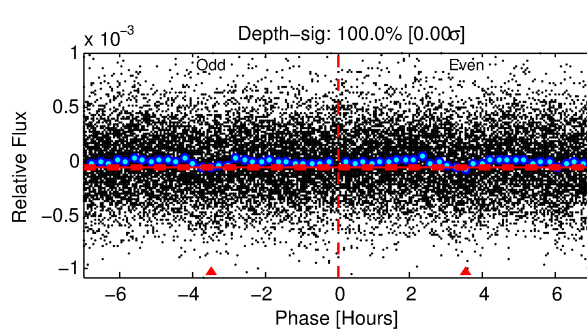
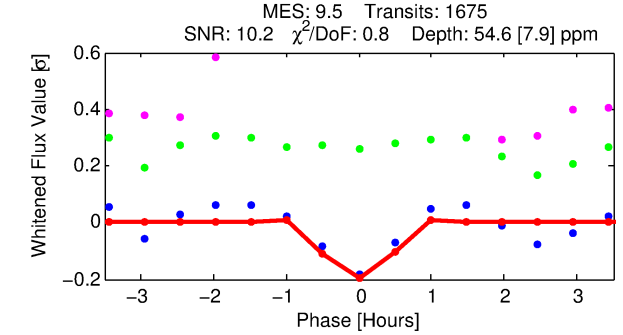
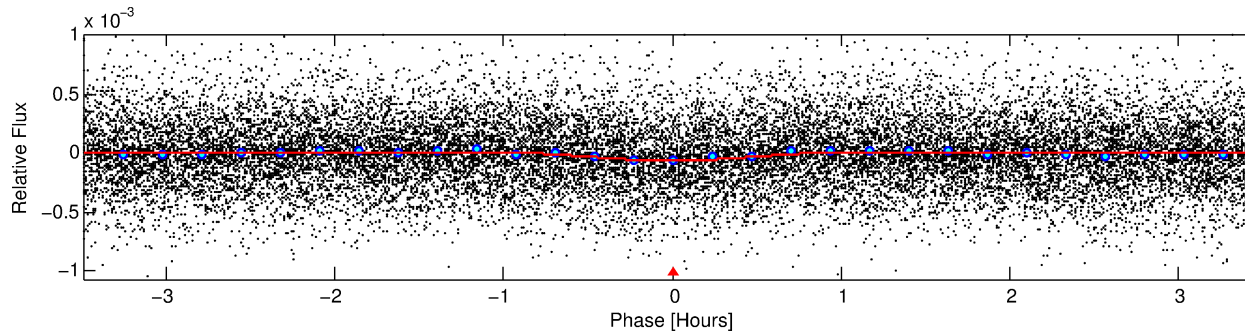
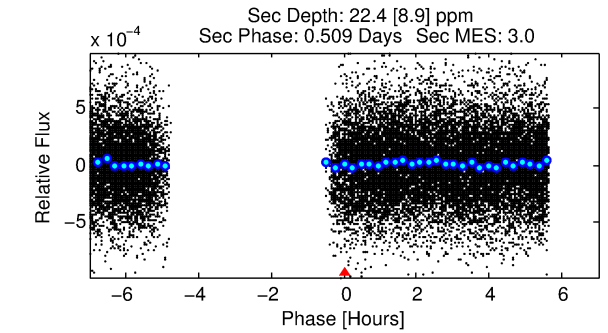
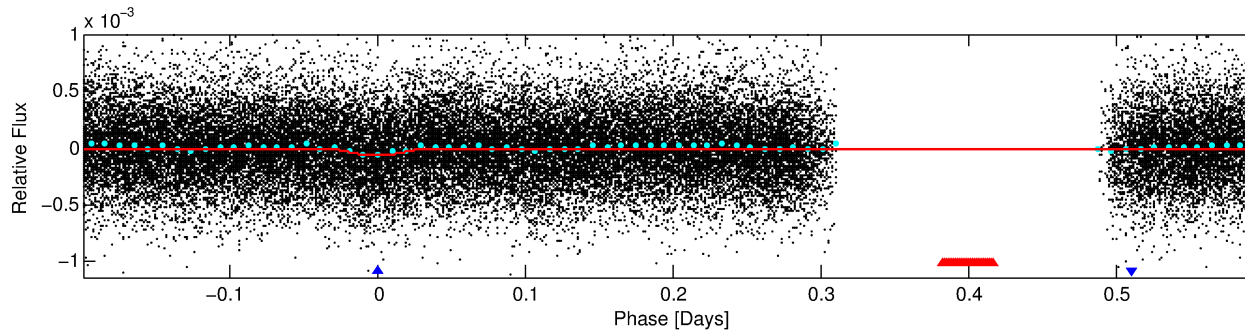
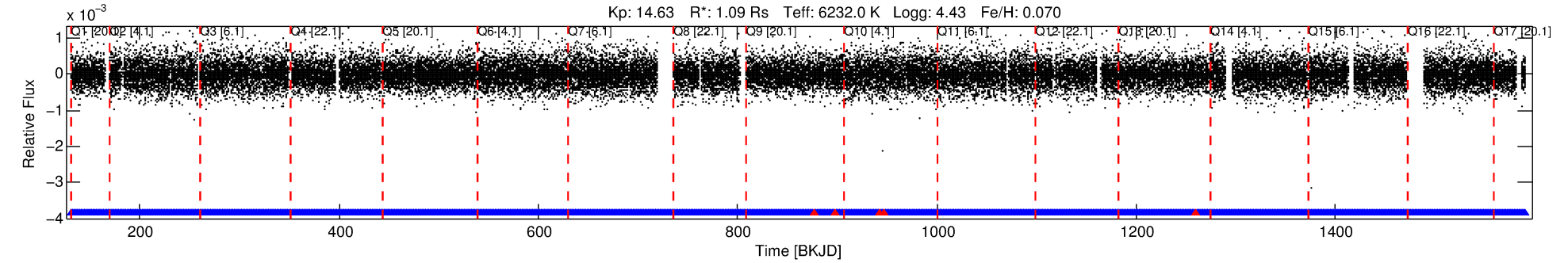
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006224148-02

No Significant Match Found

DV One-Page Summary

KIC: 6224148 Candidate: 2 of 2 Period: 0.797 d



DV Fit Results:

Period = 0.79703 [0.00001] d
Epoch = 131.5855 [0.0019] BKJD
Rp/R* = 0.0080 [0.0032]
a/R* = 2.55 [4.50]
b = 0.90 [0.45]
Seff = 5101.75 [2349.96]
Teq = 2155 [248] K
Rp = 0.95 [0.51] Re
a = 0.0177 [0.0053] AU
Ag = 4.28 [4.23] [0.77σ]
Teffp = 4791 [1080] K [2.38σ]

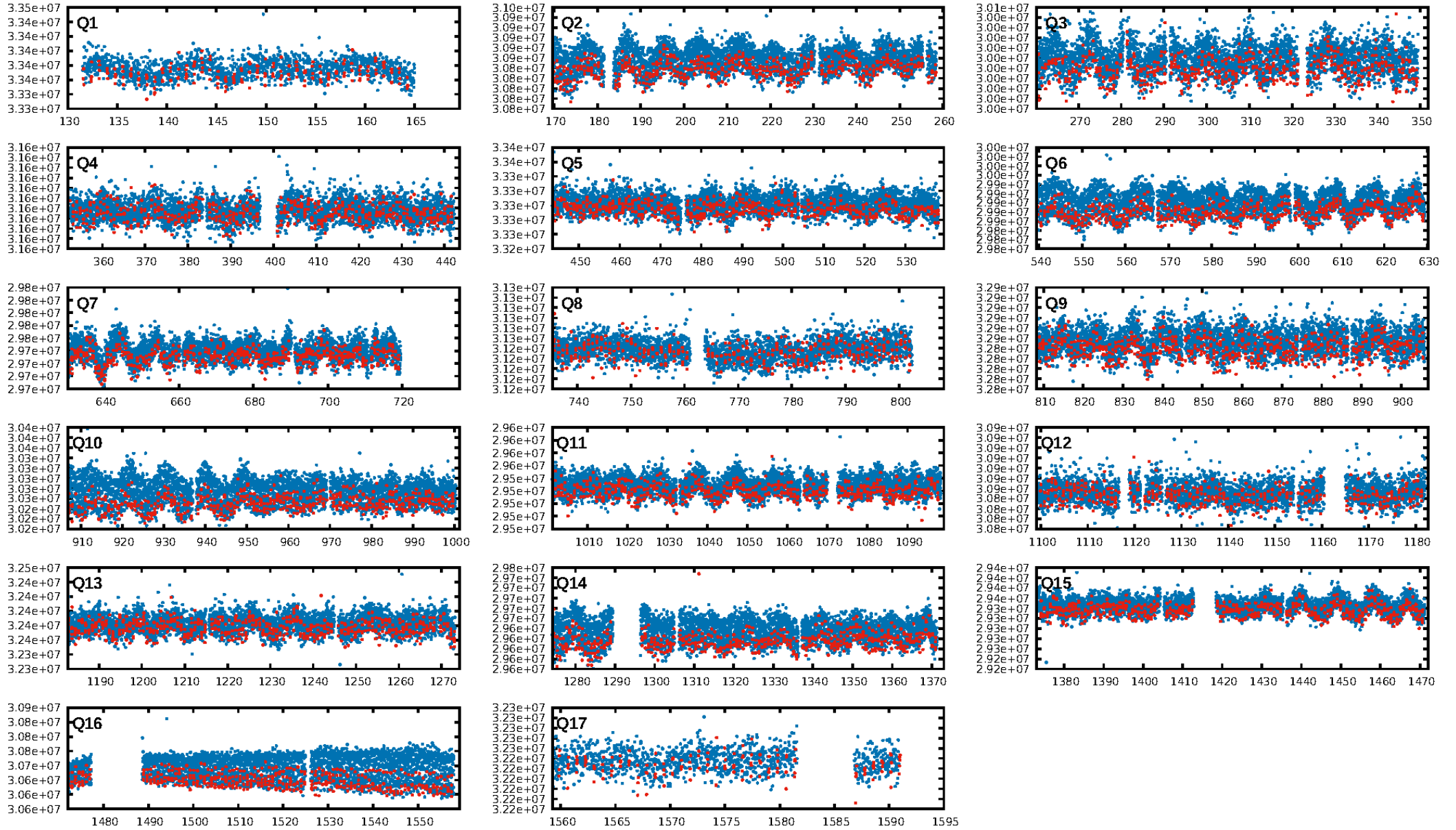
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.94e-23
RollingBand-fgt: 1.00 [1594/1599]
GhostDiagnostic-chr: -0.996
Centroid-sig: 0.0%
Centroid-so: 5.736 arcsec [4.67σ]
OotOffset-rm: 7.034 arcsec [68.10σ]
KicOffset-rm: 6.982 arcsec [96.58σ]
OotOffset-st: 4/0/4/0 [8]
KicOffset-st: 4/0/4/0 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [17/17]

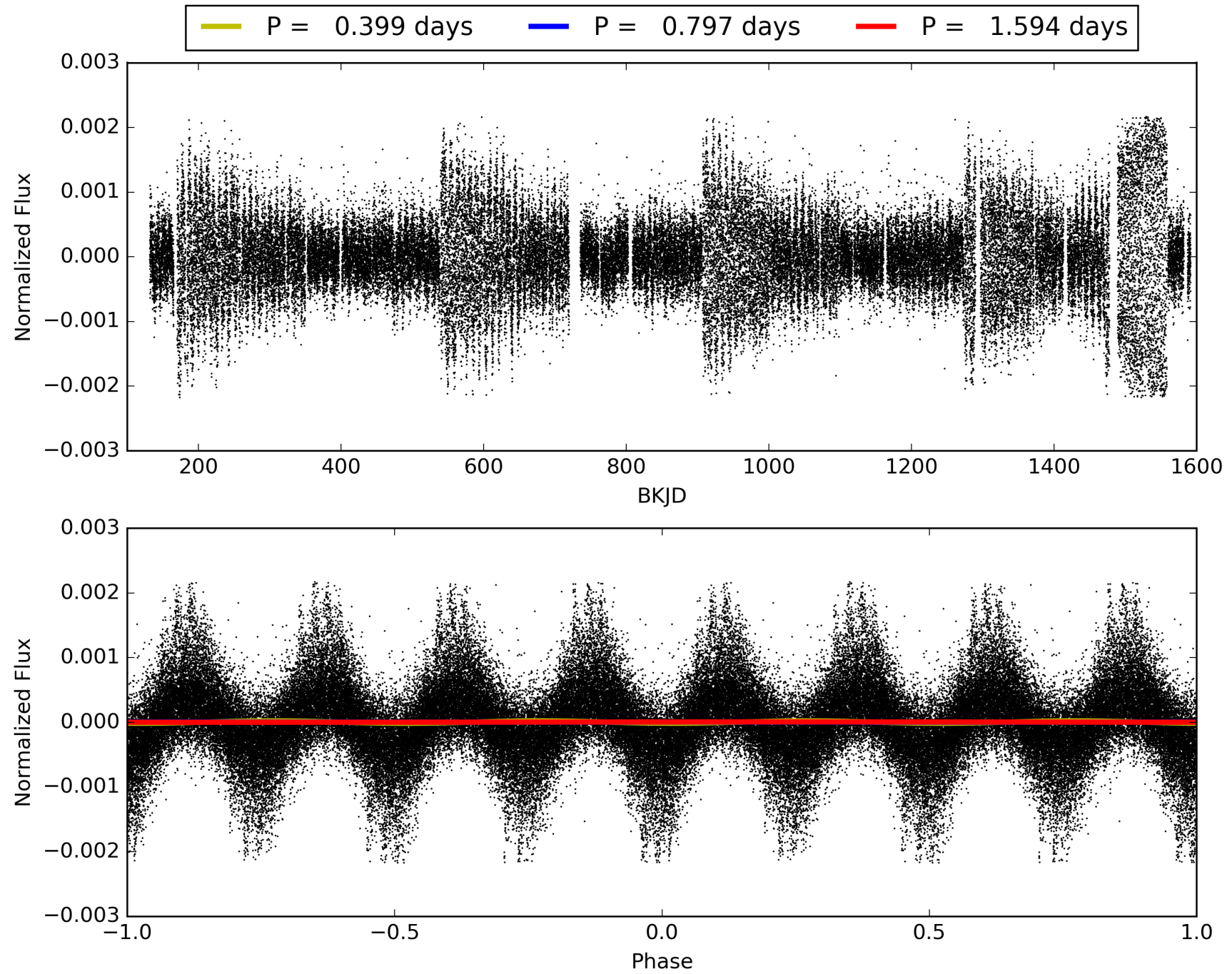
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:21:19 Z

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

TCE 006224148-02, PDC Light Curves

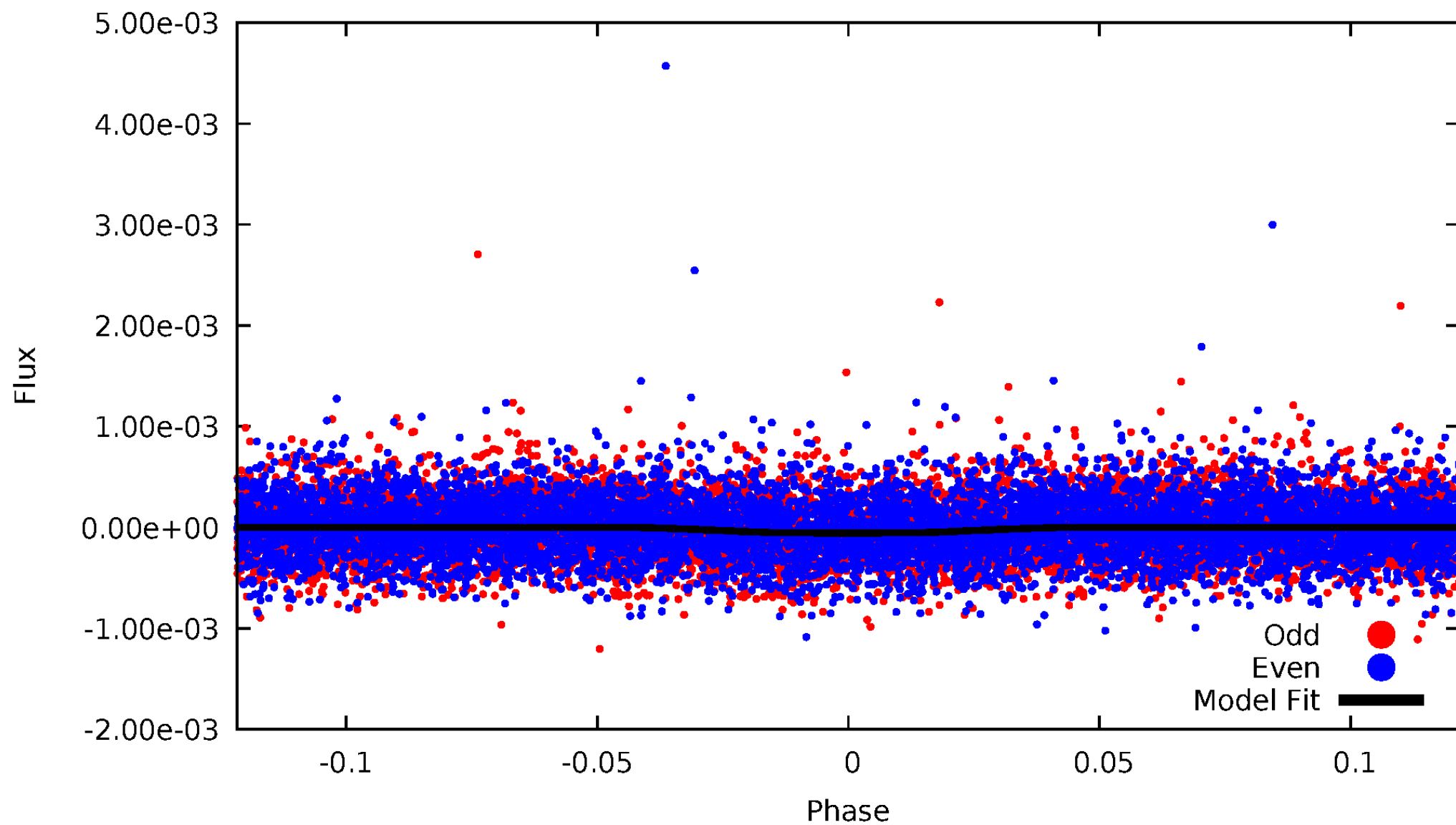


TCE 006224148-02



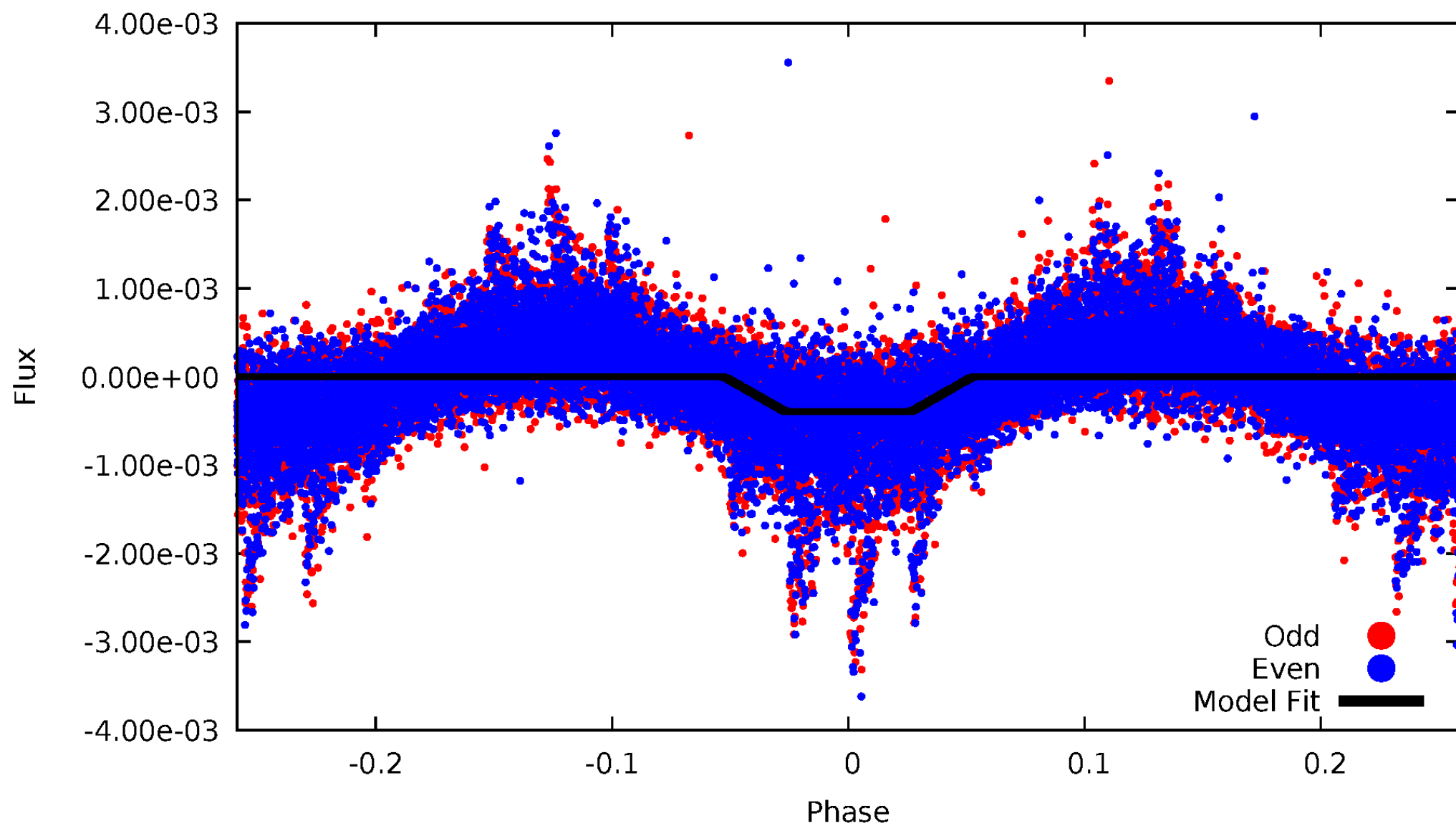
DV Odd/Even

TCE 006224148-02



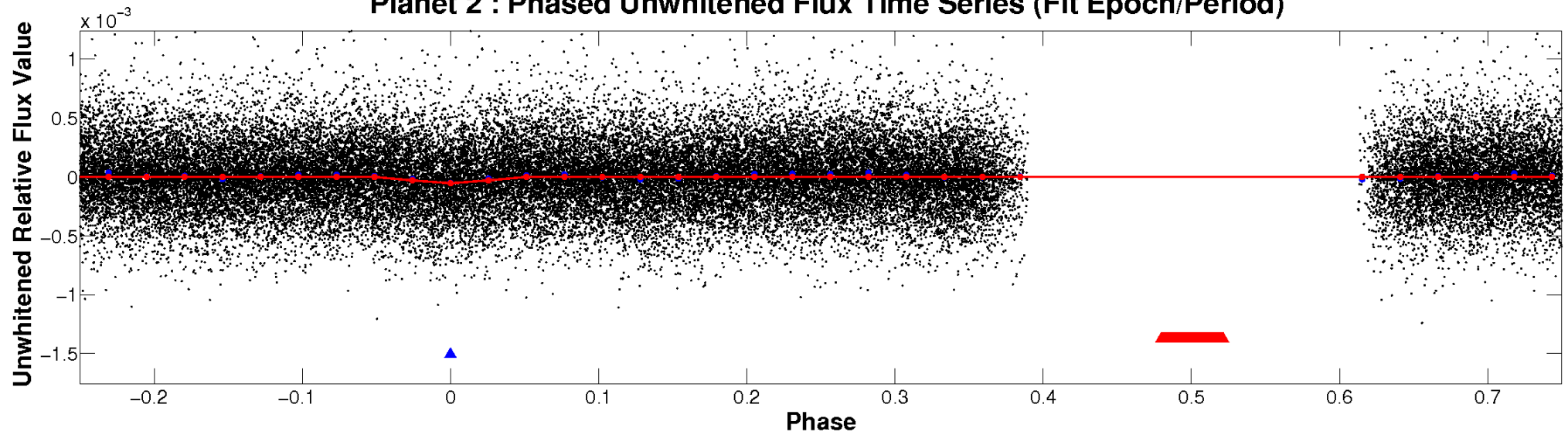
ALT Odd/Even

TCE 006224148-02

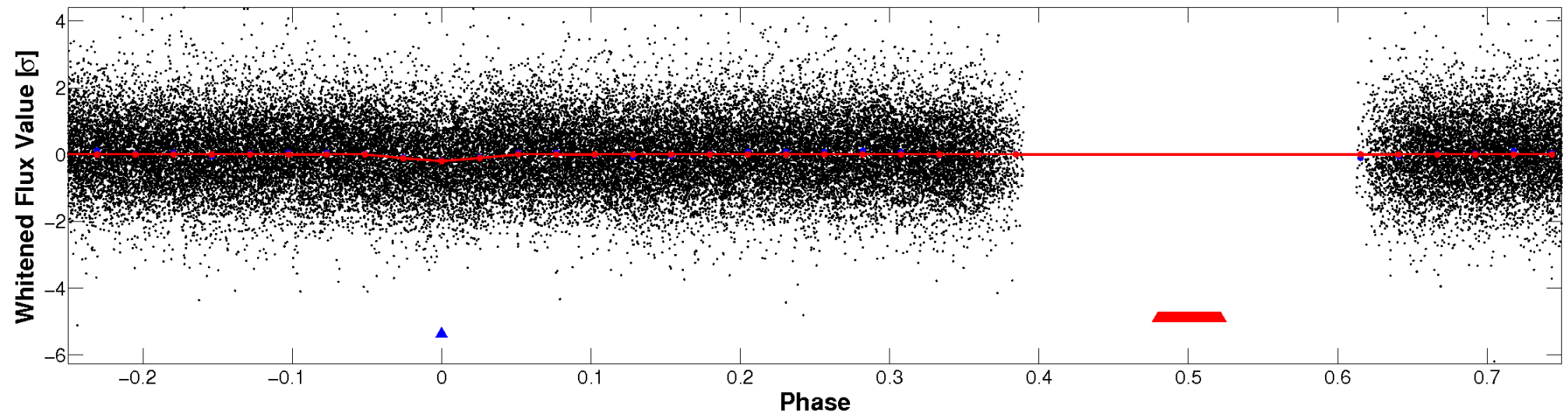


Non-Whitened Vs. Whitened Light Curve

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

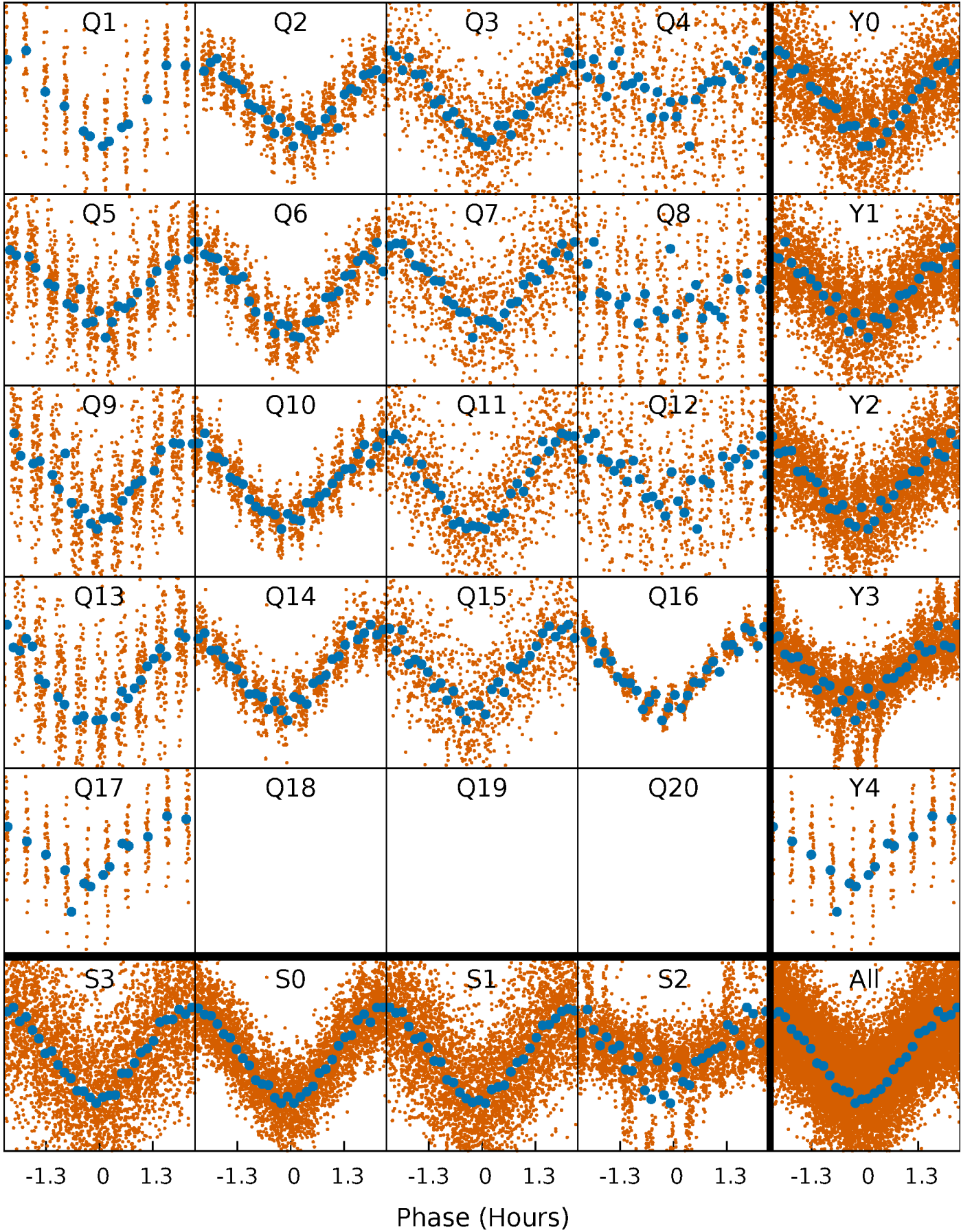


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



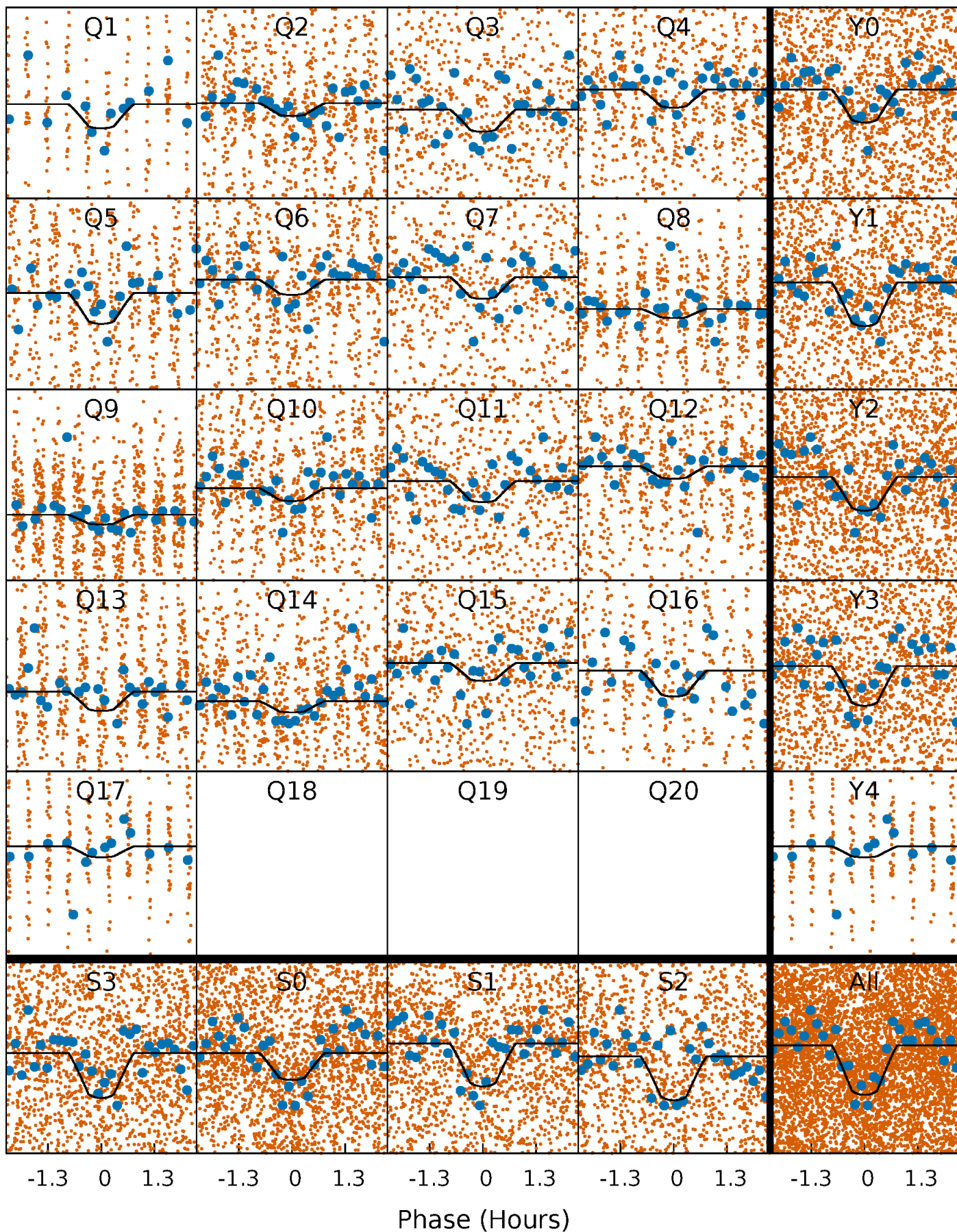
PDC Quarter-Phased Transit Curves

TCE 006224148-02 P= 0.797034 Days $T_0=131.585514$ (BKJD)



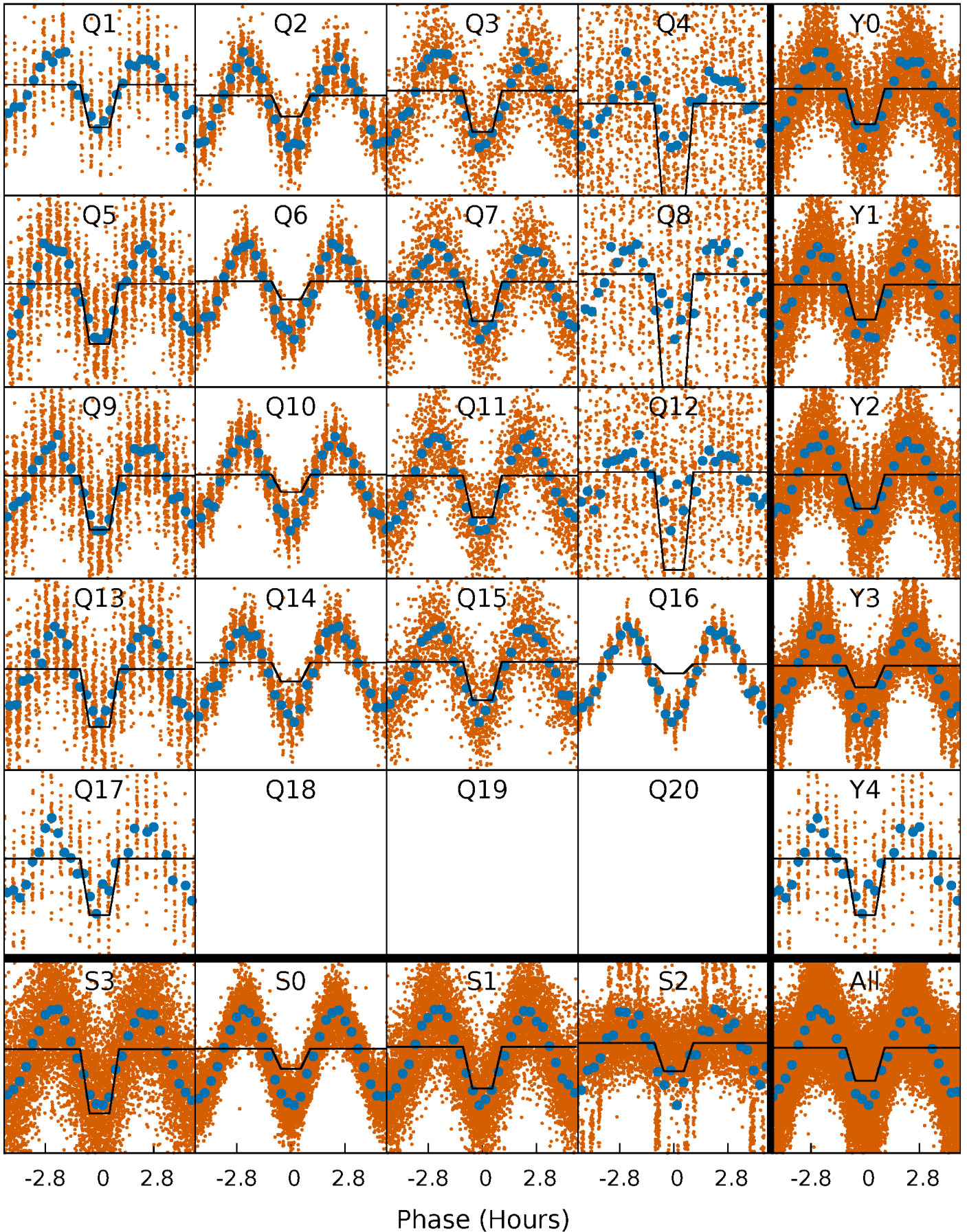
DV Quarter-Phased Transit Curves

TCE 006224148-02 P= 0.797034 Days $T_0=131.585514$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

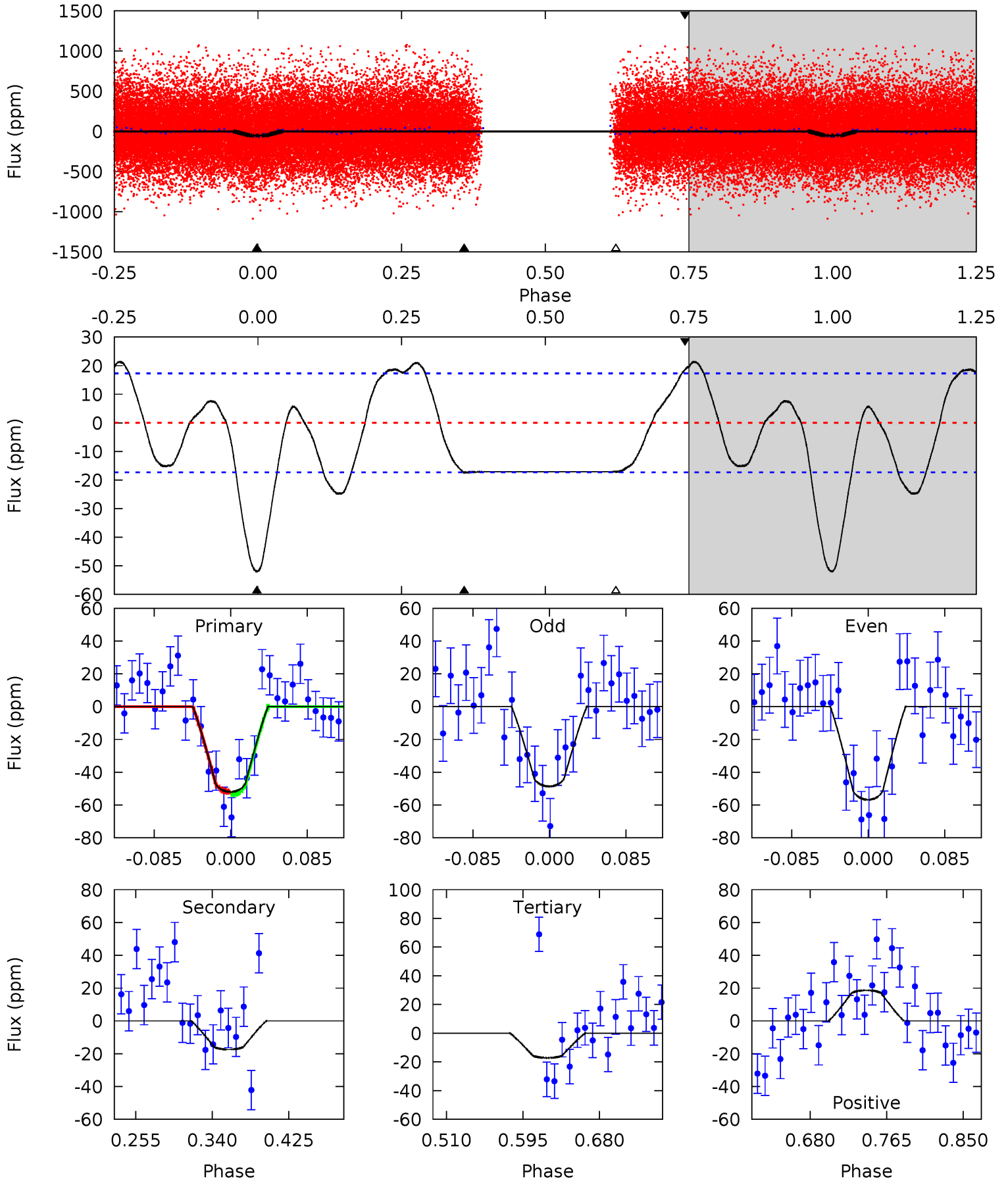
TCE 006224148-02 P= 0.797025 Days $T_0=131.589783$ (BKJD)



DV Model-Shift Uniqueness Test

006224148-02, P = 0.797034 Days, E = 130.788480 Days

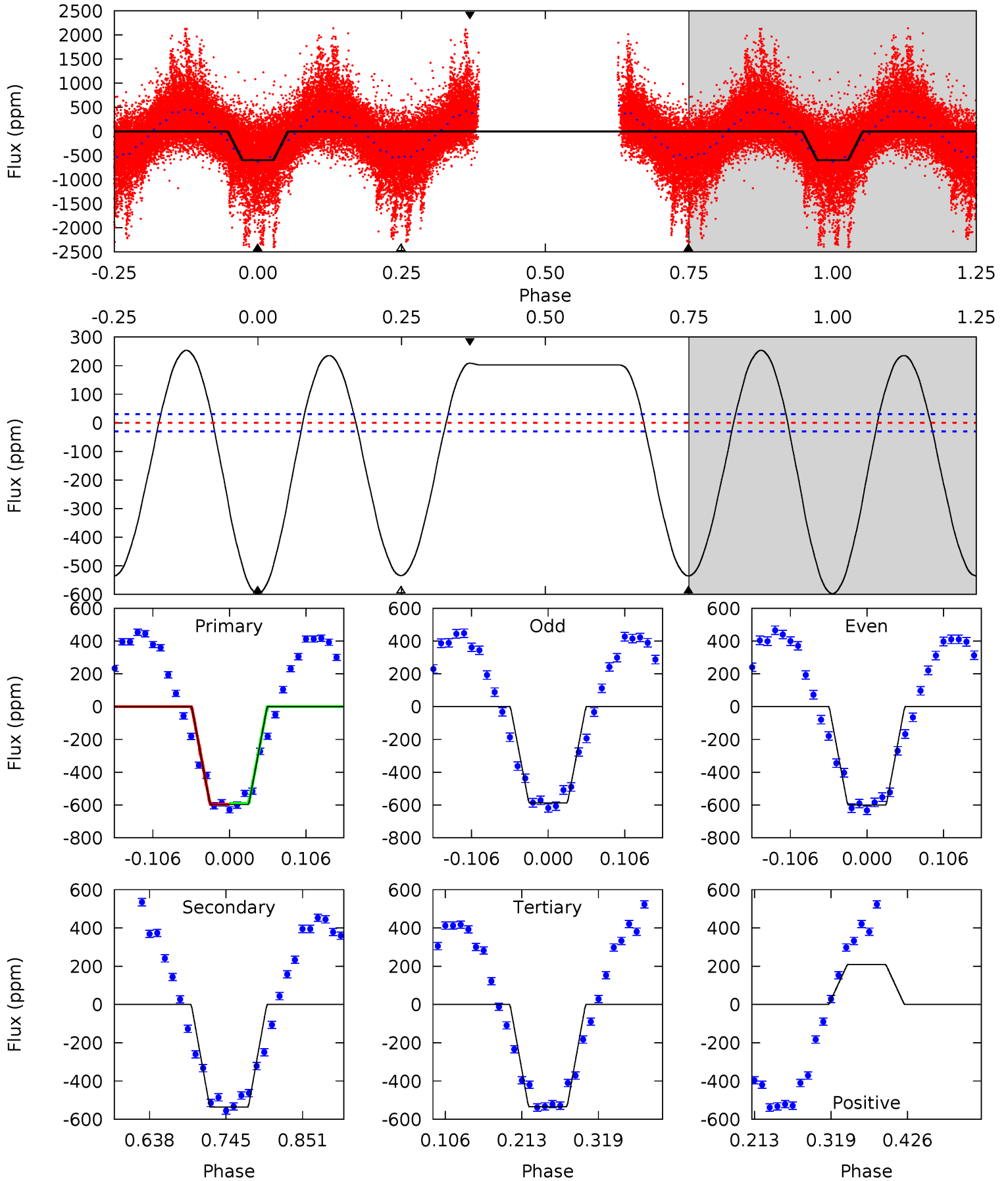
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	4.64	4.57	4.97	4.60	1.72	3.76	9.27	8.87	0.06	-0.33	1.09	0.92	0.29	0.19



Alt Model-Shift Uniqueness Test

006224148-02, P = 0.797025 Days, E = 130.792758 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.8	81.4	81.1	31.7	4.55	1.61	43.3	9.65	59.1	0.24	49.7	0.99	1.28	0.30	0.45



Stellar Parameters For KIC 006224148

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6232^{+173}_{-239}	$4.432^{+0.056}_{-0.238}$	$0.070^{+0.250}_{-0.300}$	$1.090^{+0.384}_{-0.128}$	$1.174^{+0.158}_{-0.173}$	$1.276^{+0.317}_{-0.759}$
	+3%/-4%	+1%/-5%	+357%/-429%	+35%/-12%	+13%/-15%	+25%/-59%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006224148-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-17 ± 4	$1.00^{+0.46}_{-0.40}$	3088^{+243}_{-167}	4546^{+1251}_{-701}	$2.901^{+5.207}_{-1.581}$
Alt.	-536 ± 7	$2.46^{+0.55}_{-0.50}$	3079^{+243}_{-167}	6723^{+761}_{-559}	15^{+8}_{-4}

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

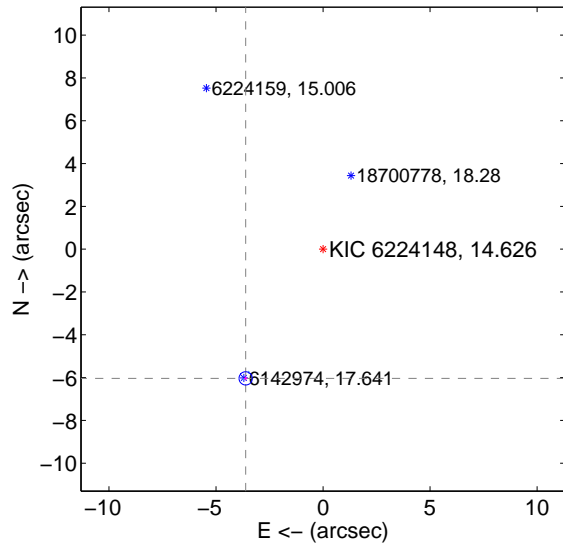
Supplemental centroid analysis for 006224148-02. Kepler magnitude: 14.63. Transit SNR 10.22

There are 8 quarters with good PRF difference image offsets

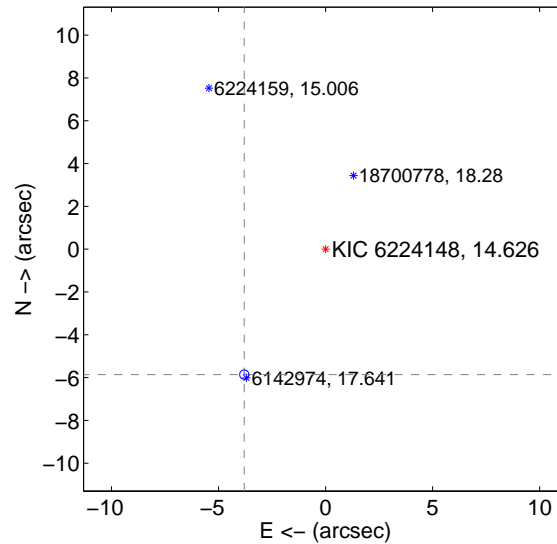
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.034 ± 0.103	68.10	3.614 ± 0.082	-6.035 ± 0.093
PRF-fit source offset from KIC position	6.982 ± 0.072	96.58	3.798 ± 0.069	-5.859 ± 0.071
photometric centroid source offset	5.74 ± 1.23	4.67	5.68 ± 1.22	-0.79 ± 1.57

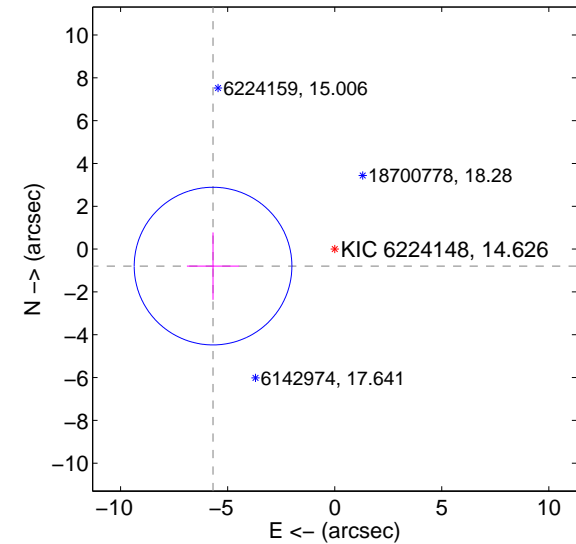
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

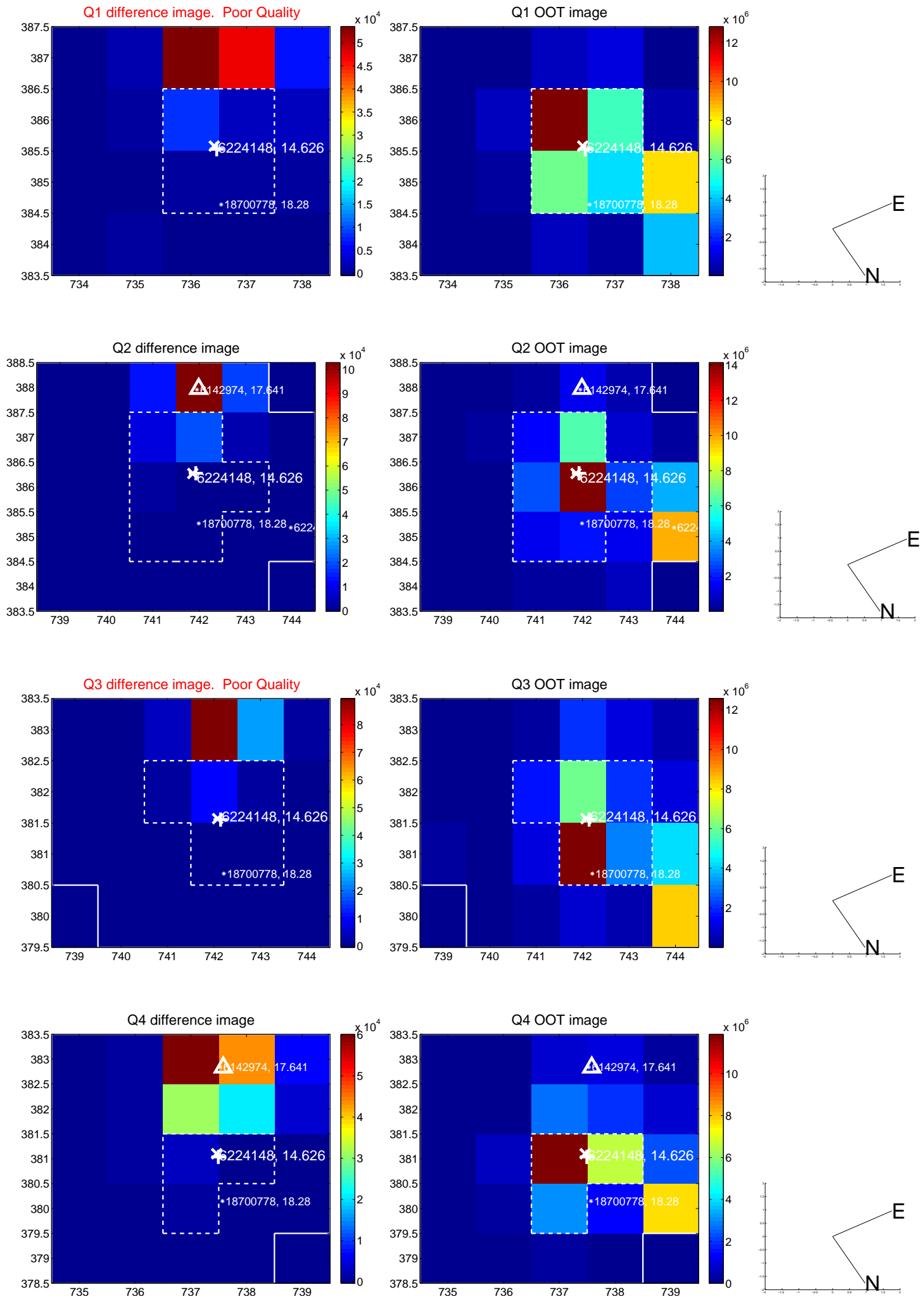


offset from photometric centroids

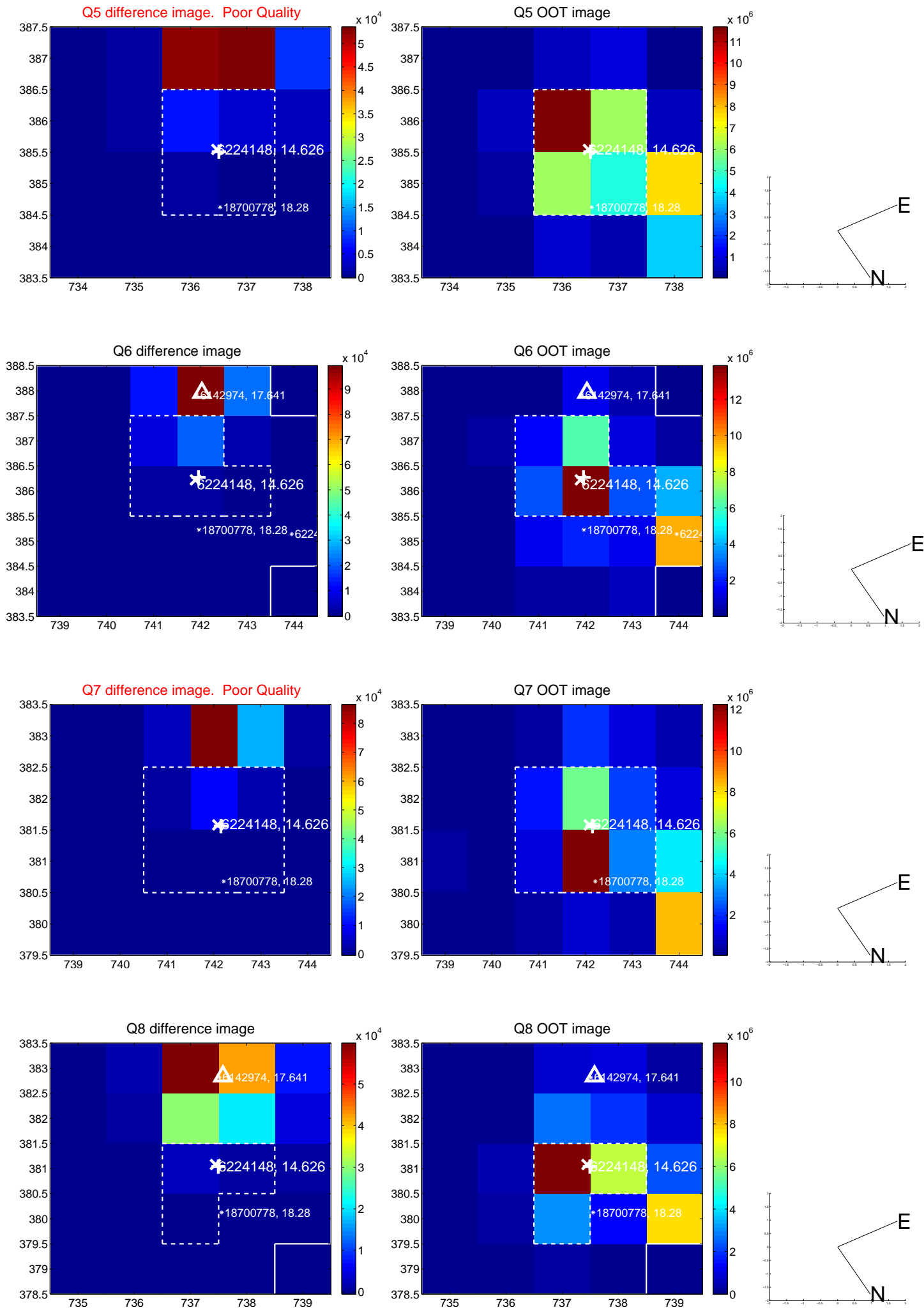


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

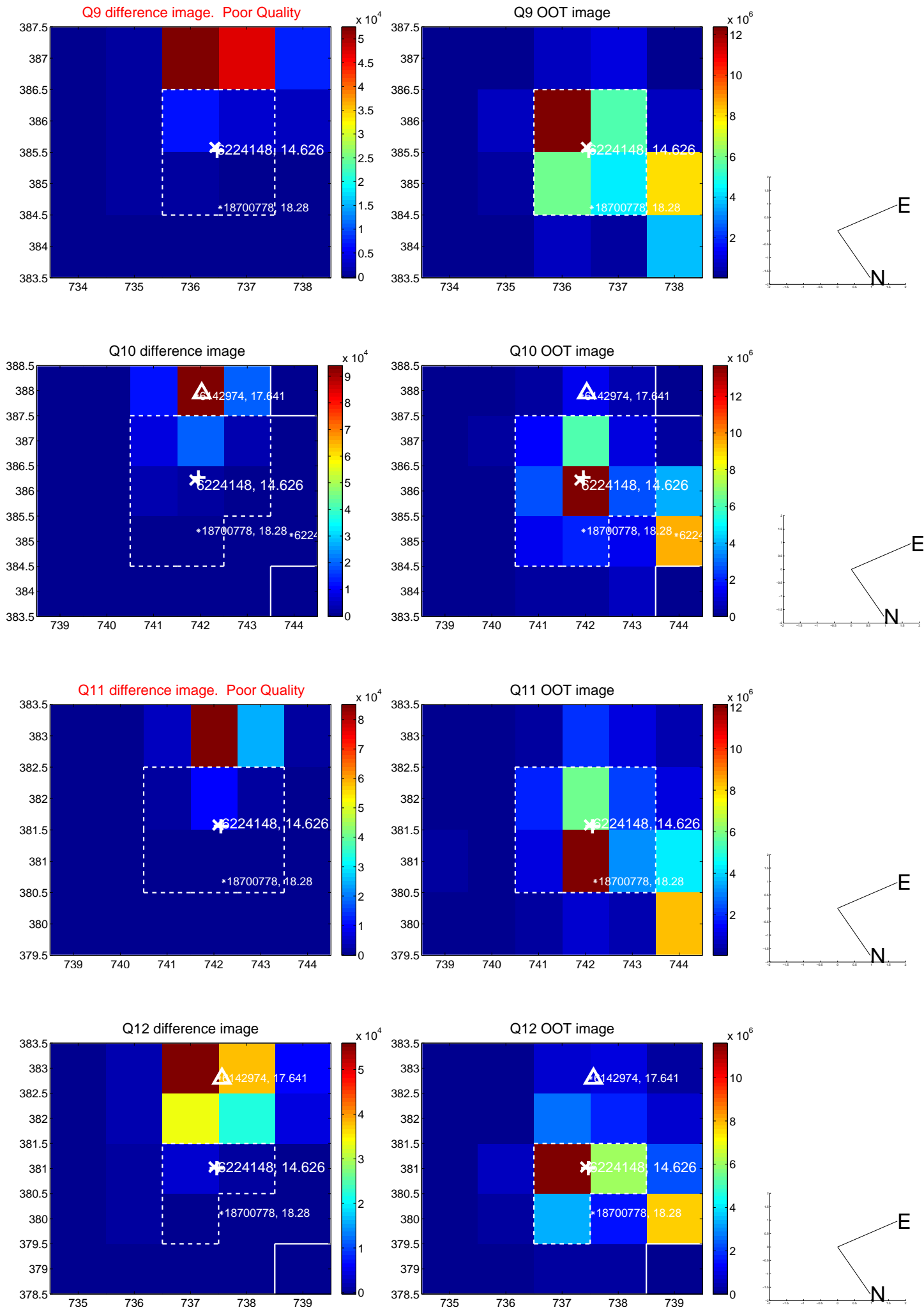
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



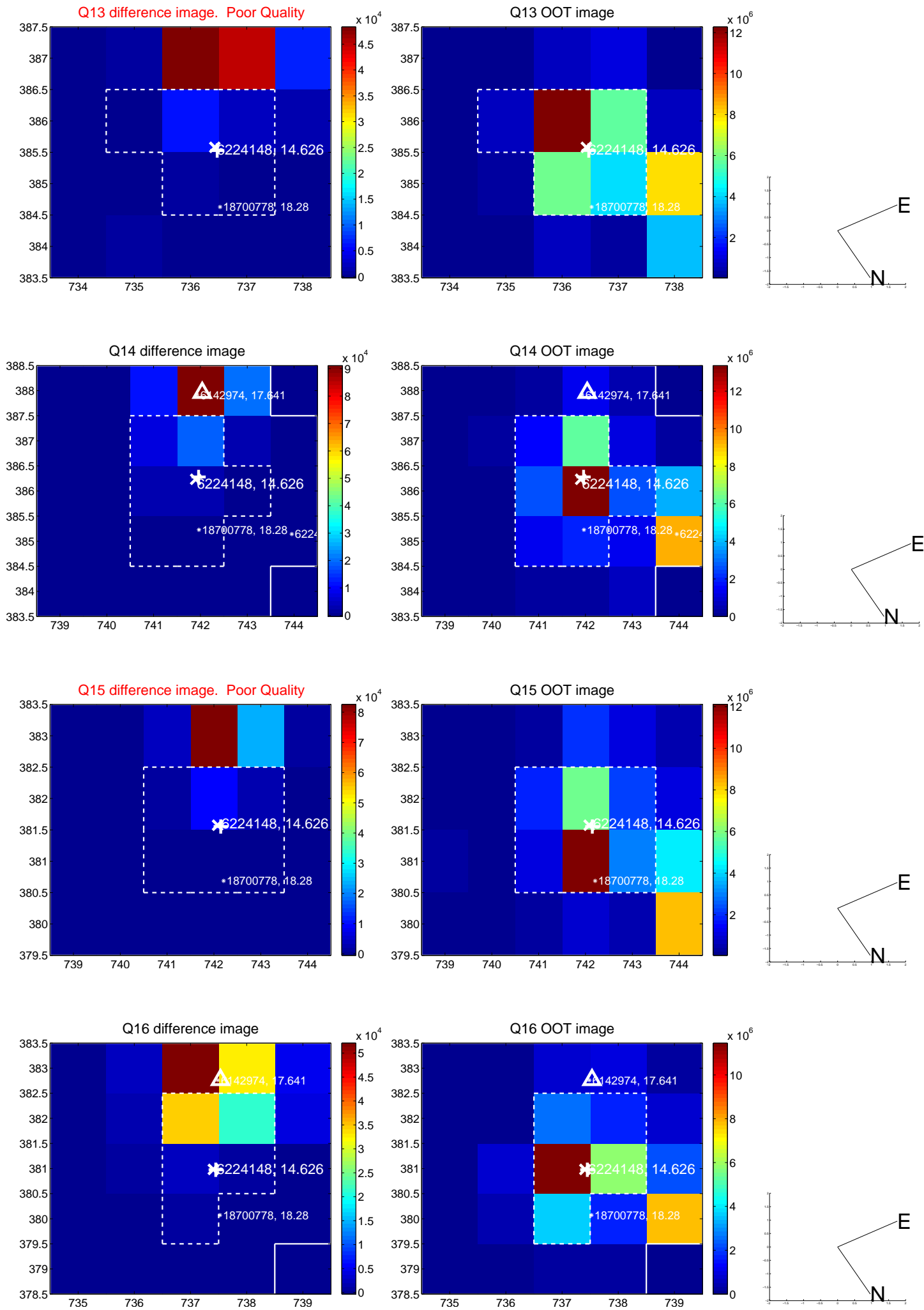
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



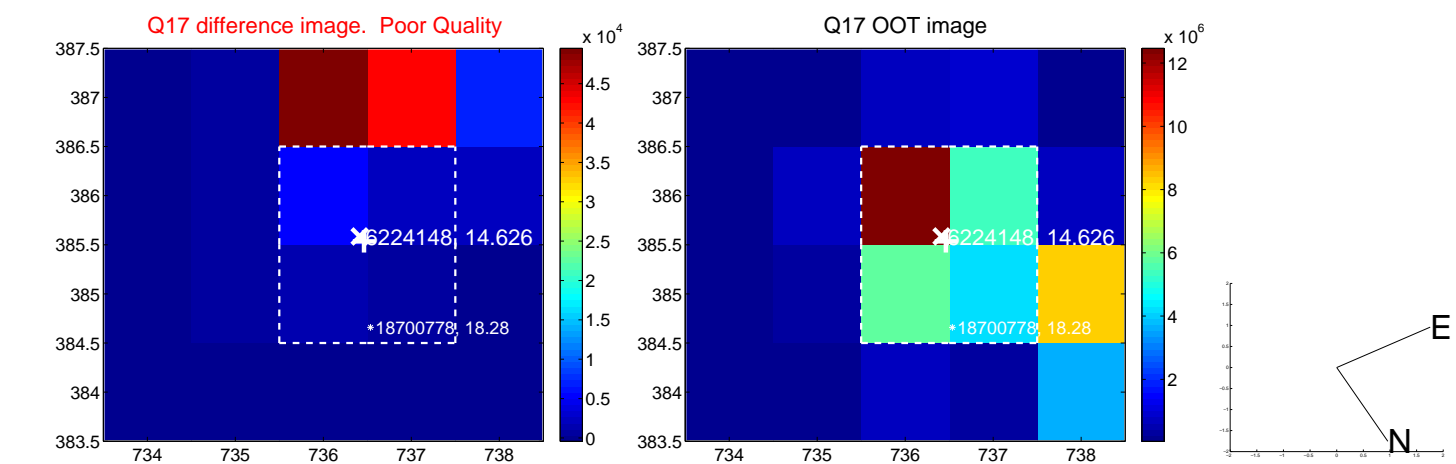
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



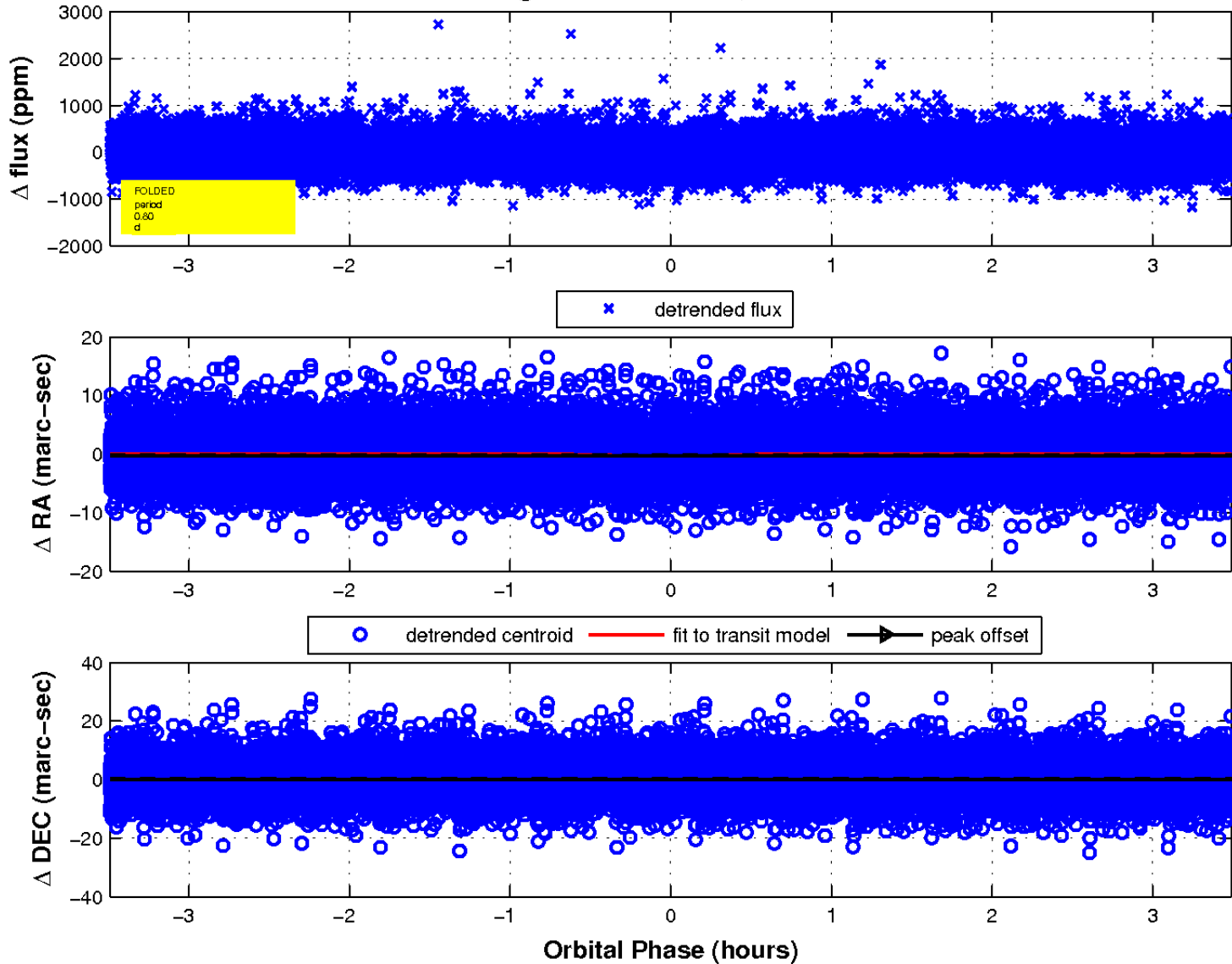
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

