

KIC 003641023

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})
003641023-01	OBS	No	0.543870	131.599276	29.5	1.068	9.8	11.7	2.09	8466	1.32	80258.24
003641023-02	OBS	No	0.543853	131.974736	15.5	1.557	8.8	7.6	2.09	8466	0.96	80261.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003641023-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003641023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_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.

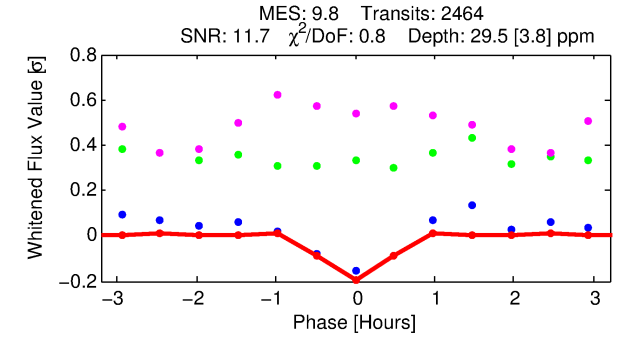
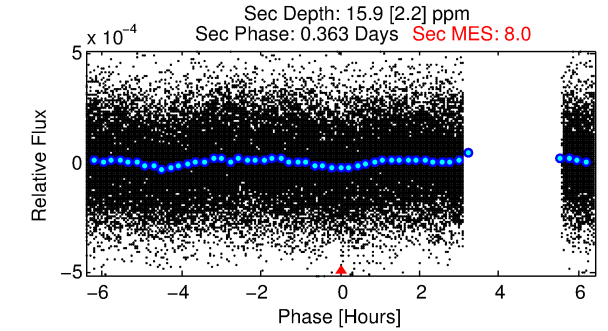
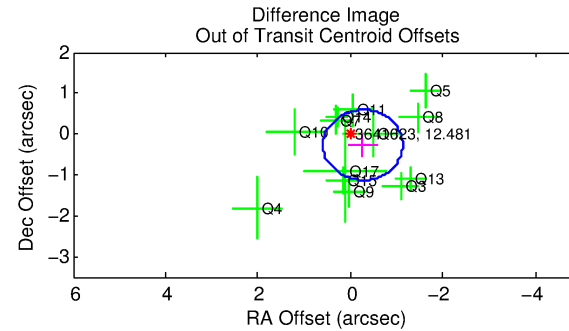
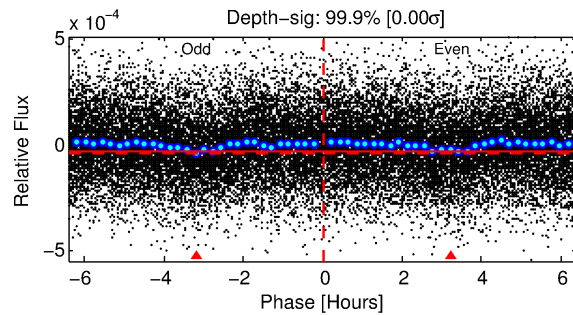
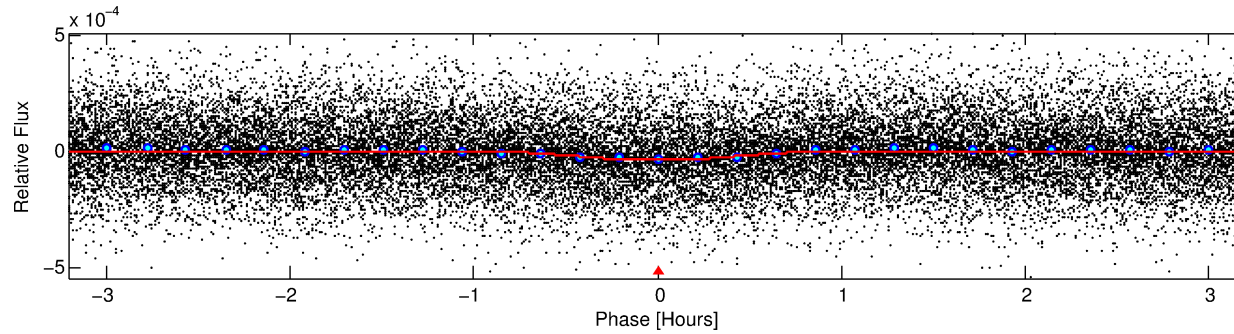
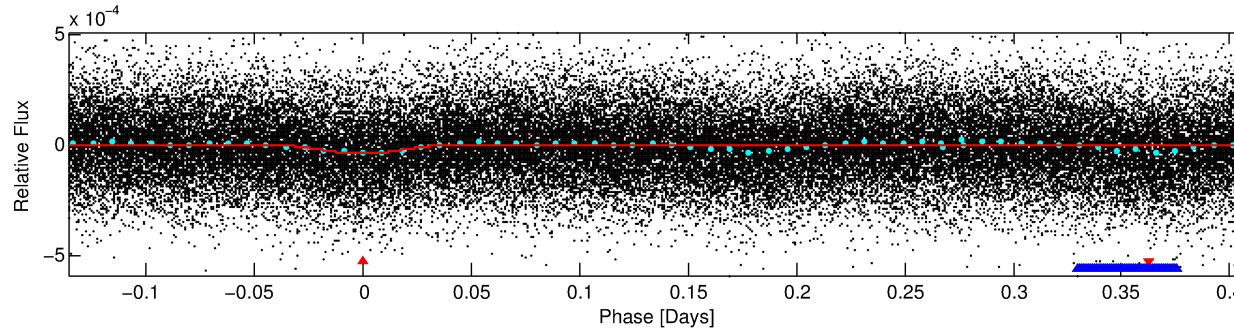
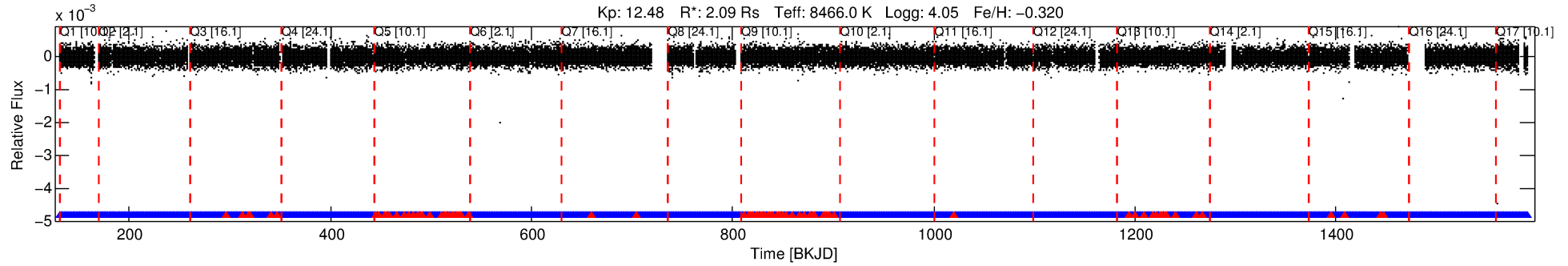
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003641023-01

No Significant Match Found

DV One-Page Summary

KIC: 3641023 Candidate: 1 of 2 Period: 0.544 d



DV Fit Results:

Period = 0.54387 [0.00001] d
Epoch = 131.5993 [0.0015] BKJD
Rp/R* = 0.0058 [0.0009]
a/R* = 1.98 [1.49]
b = 0.90 [0.22]
Seff = 80258.24 [17773.21]
Teff = 4292 [238] K
Rp = 1.32 [0.32] Re
a = 0.0158 [0.0023] AU
Ag = 1.26 [0.52] [0.49 σ]
Teffp = 7025 [629] K [4.07 σ]

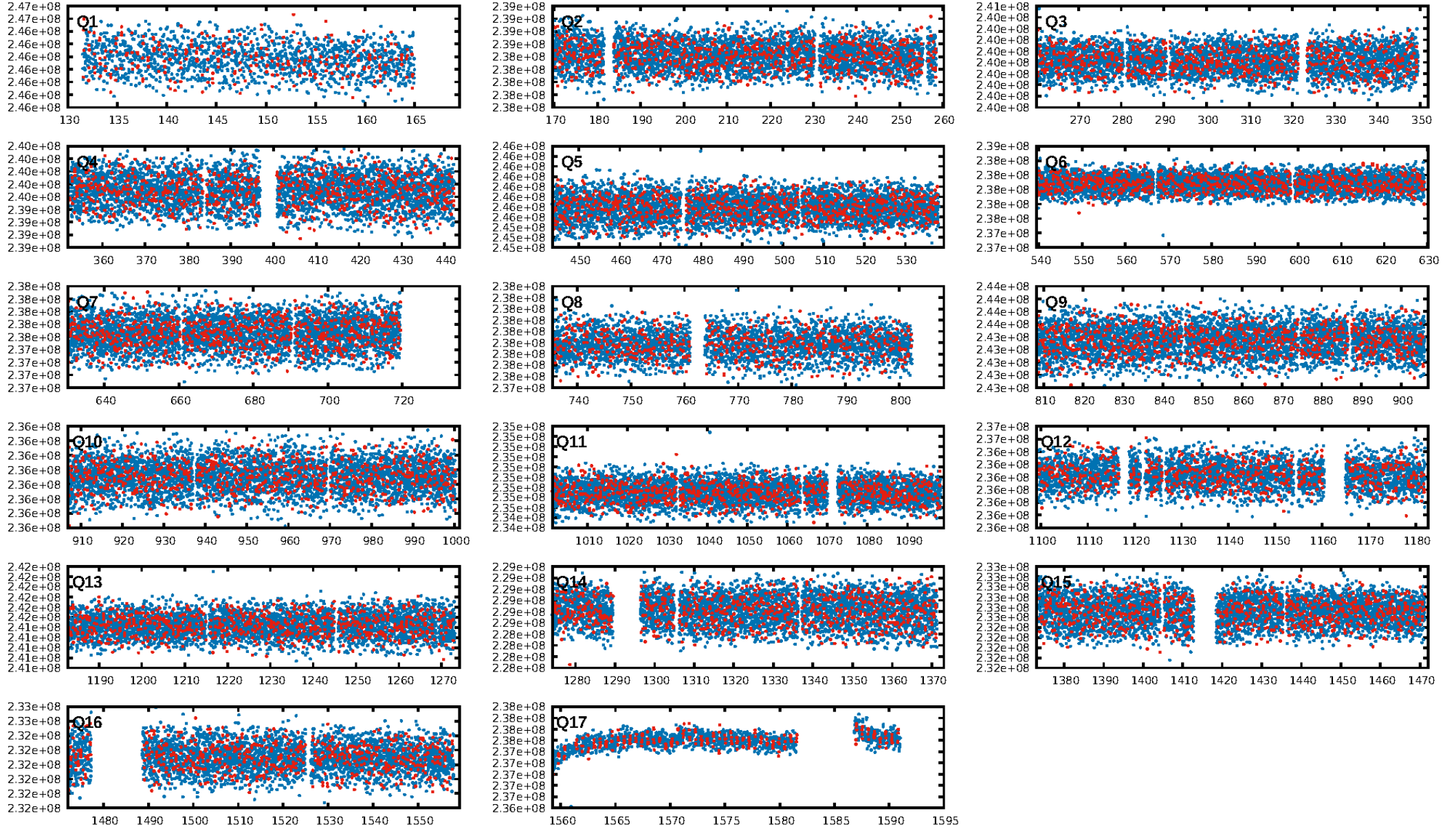
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.61e-14
RollingBand-fgt: 0.96 [2267/2353]
GhostDiagnostic-chr: 0.5764
Centroid-sig: 1.8%
Centroid-so: 1.119 arcsec [1.84 σ]
OotOffset-rm: 0.377 arcsec [1.31 σ]
OotOffset-st: 3/4/2/4 [13]
KicOffset-rm: 0.448 arcsec [1.66 σ]
KicOffset-st: 3/4/2/4 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 0.00 [0/17]

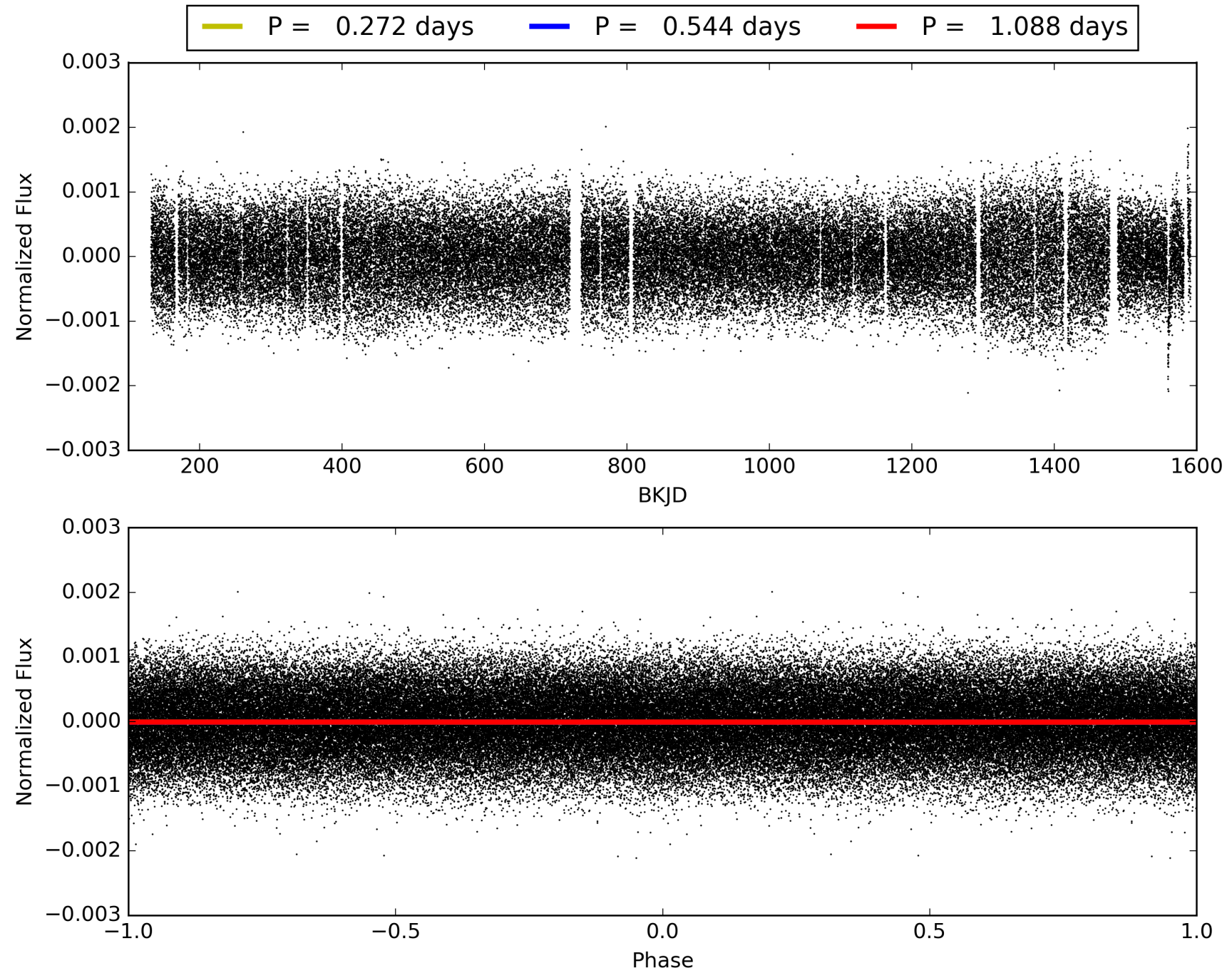
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:45:09 Z

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

TCE 003641023-01, PDC Light Curves

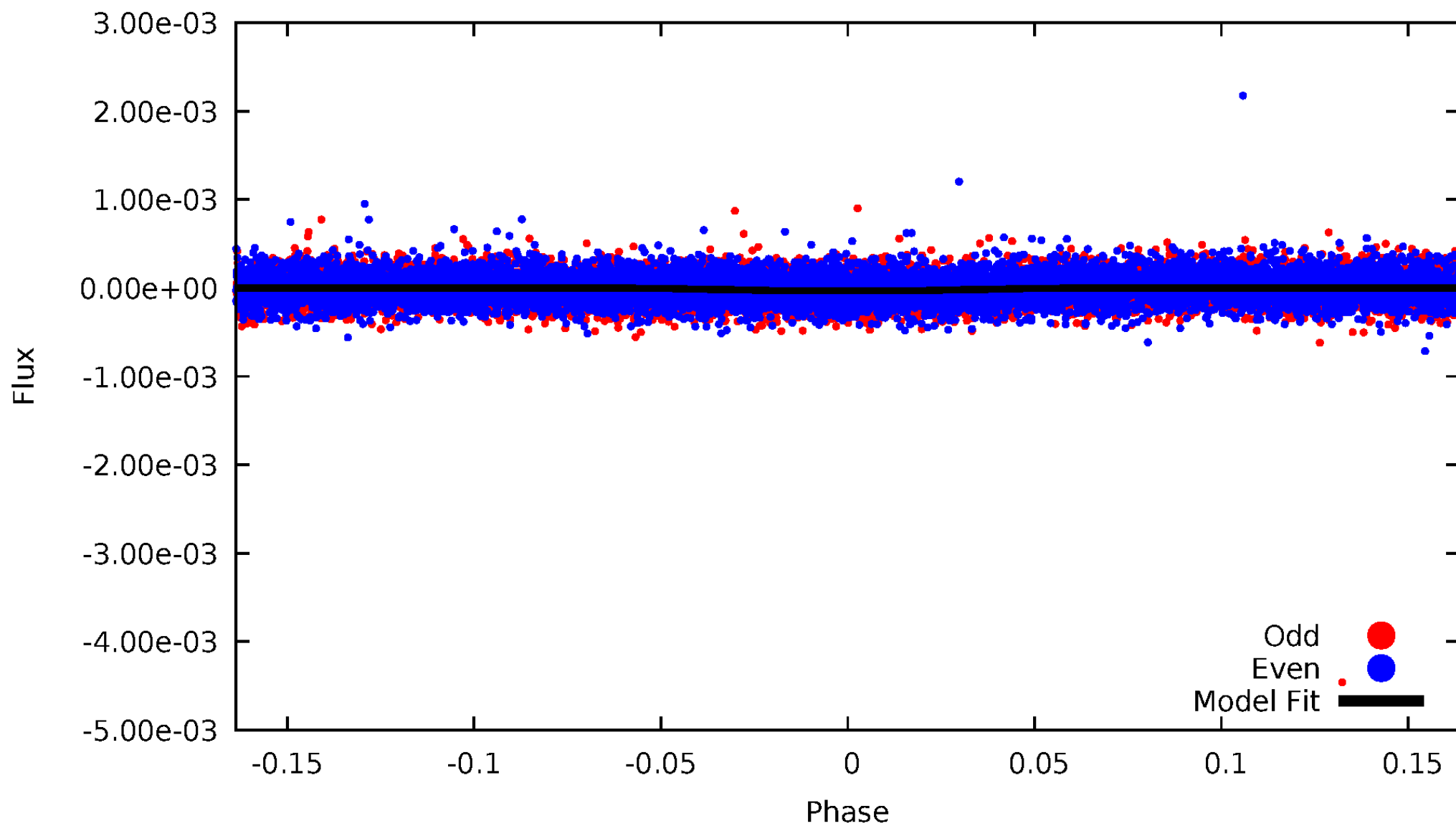


TCE 003641023-01



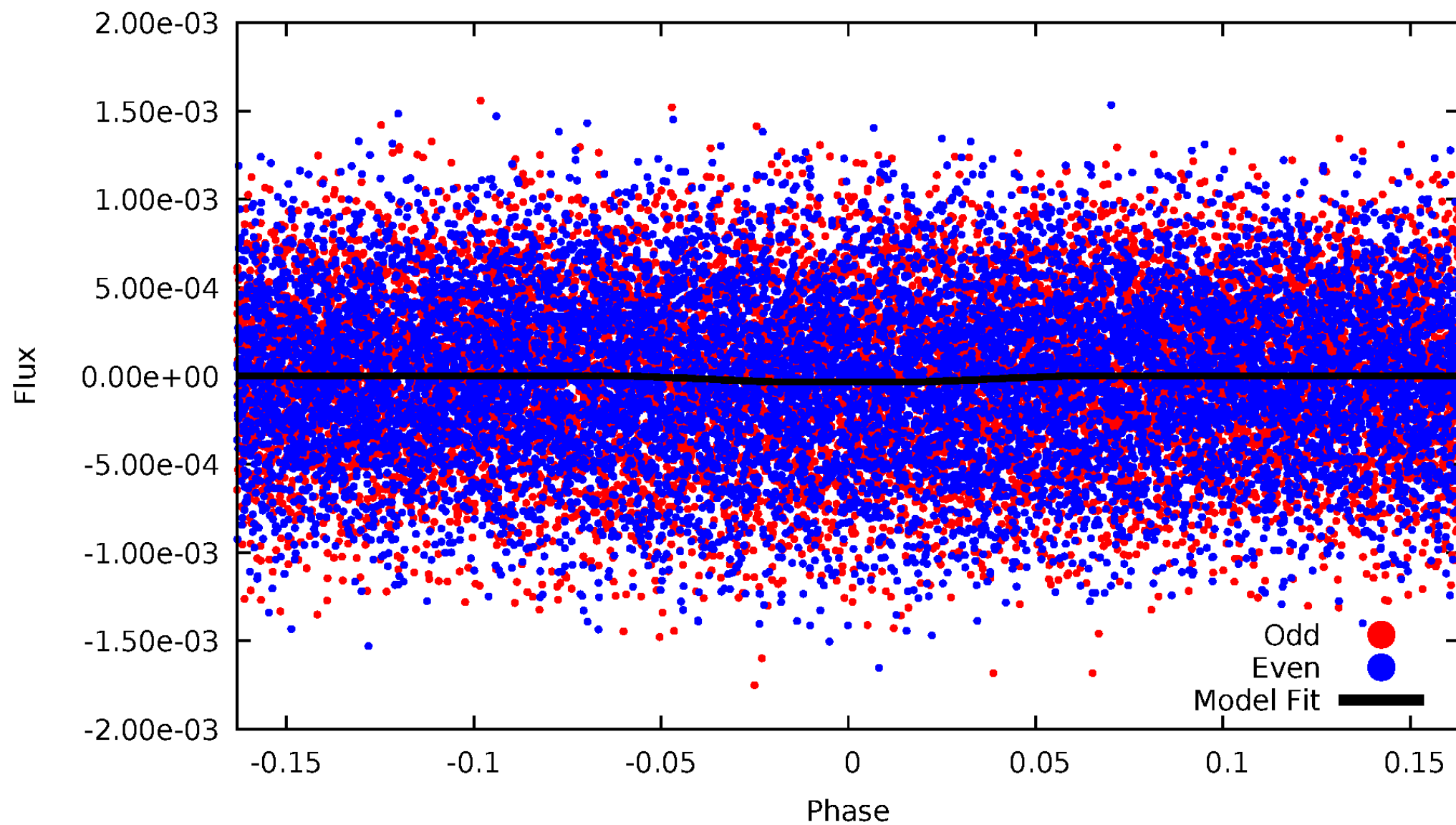
DV Odd/Even

TCE 003641023-01



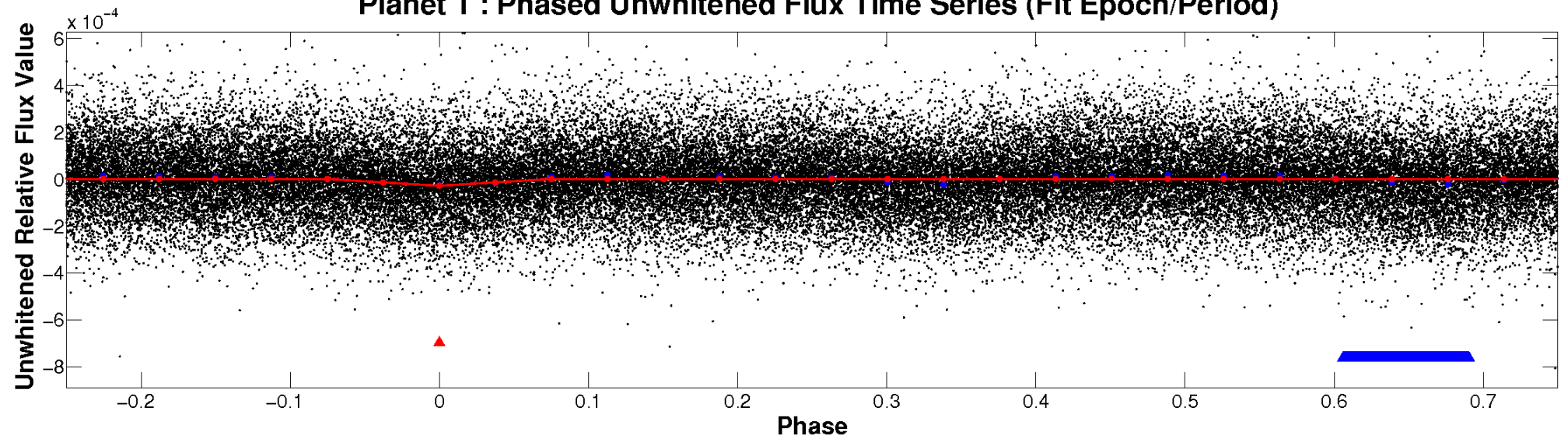
ALT Odd/Even

TCE 003641023-01

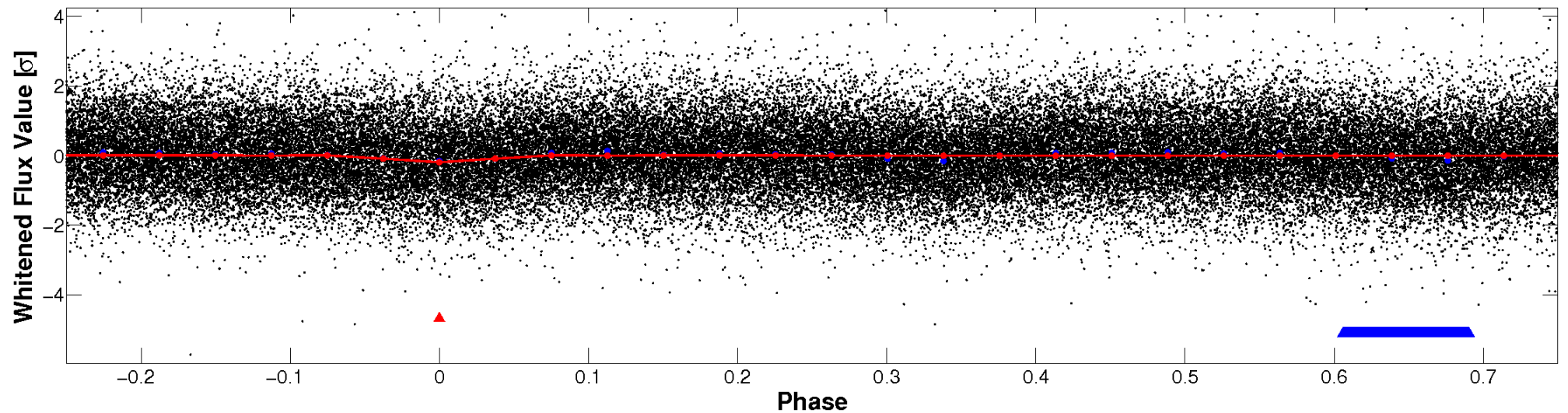


Non-Whitened Vs. Whitened Light Curve

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

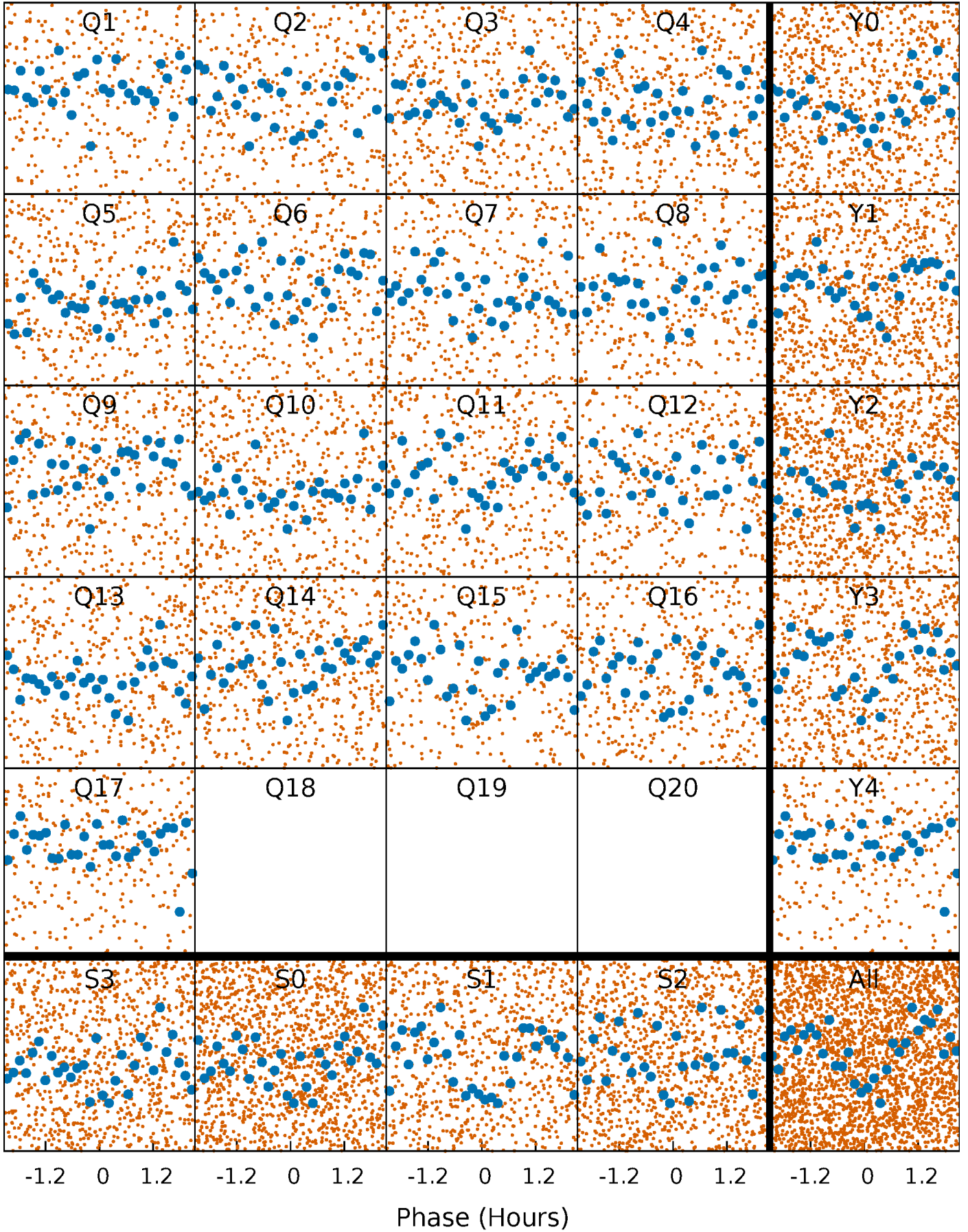


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



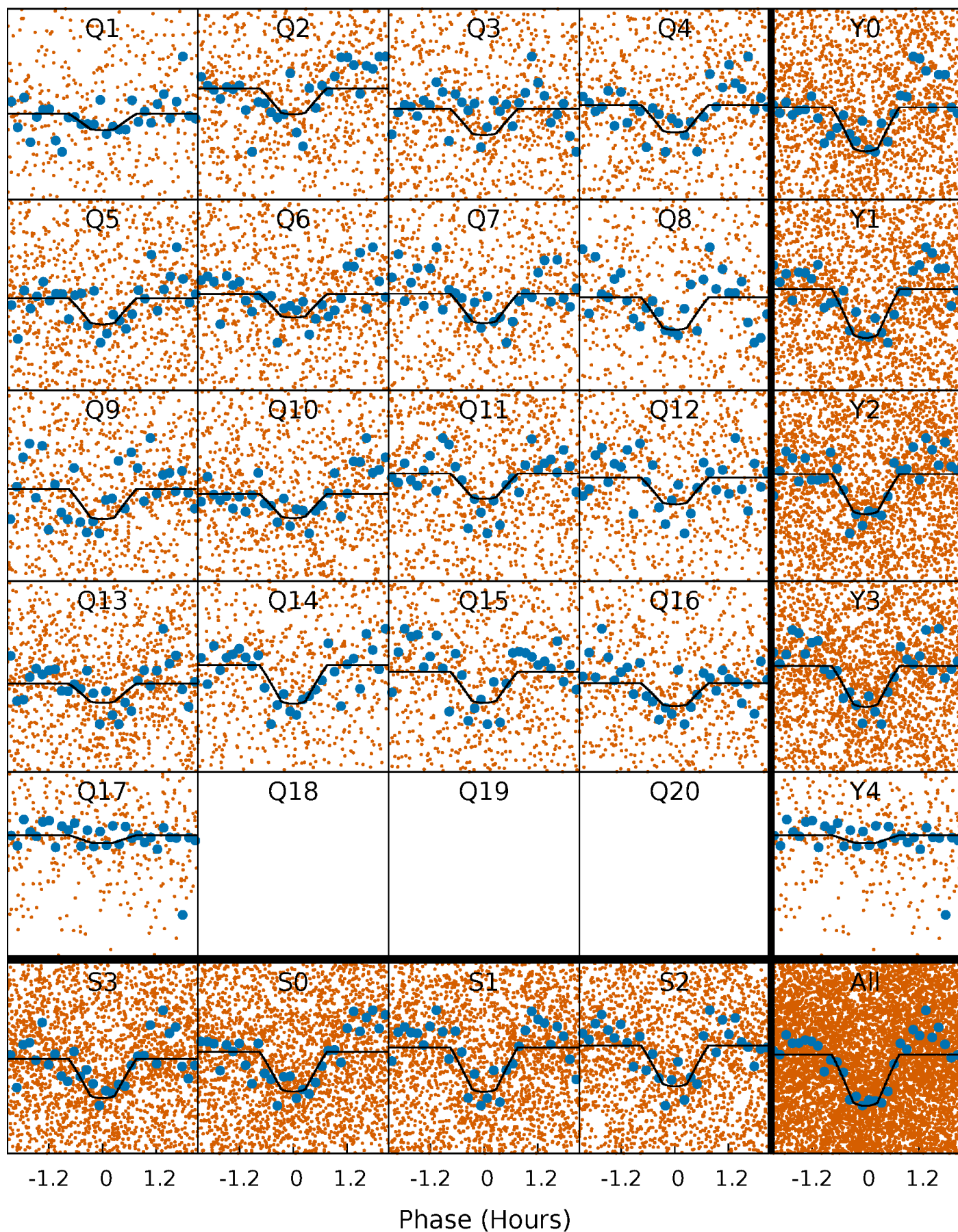
PDC Quarter-Phased Transit Curves

TCE 003641023-01 P= 0.543870 Days $T_0=131.599276$ (BKJD)



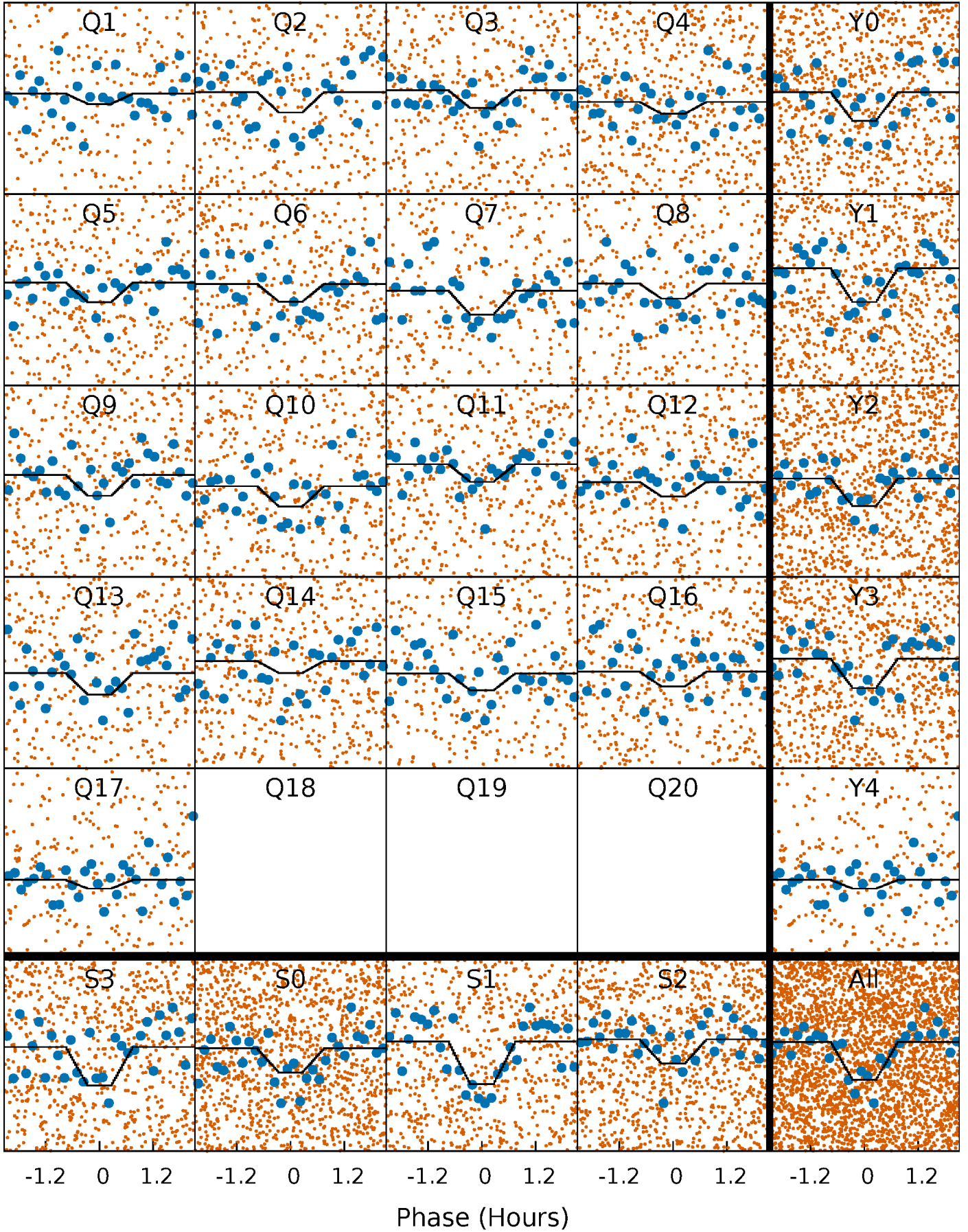
DV Quarter-Phased Transit Curves

TCE 003641023-01 P= 0.543870 Days $T_0=131.599276$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

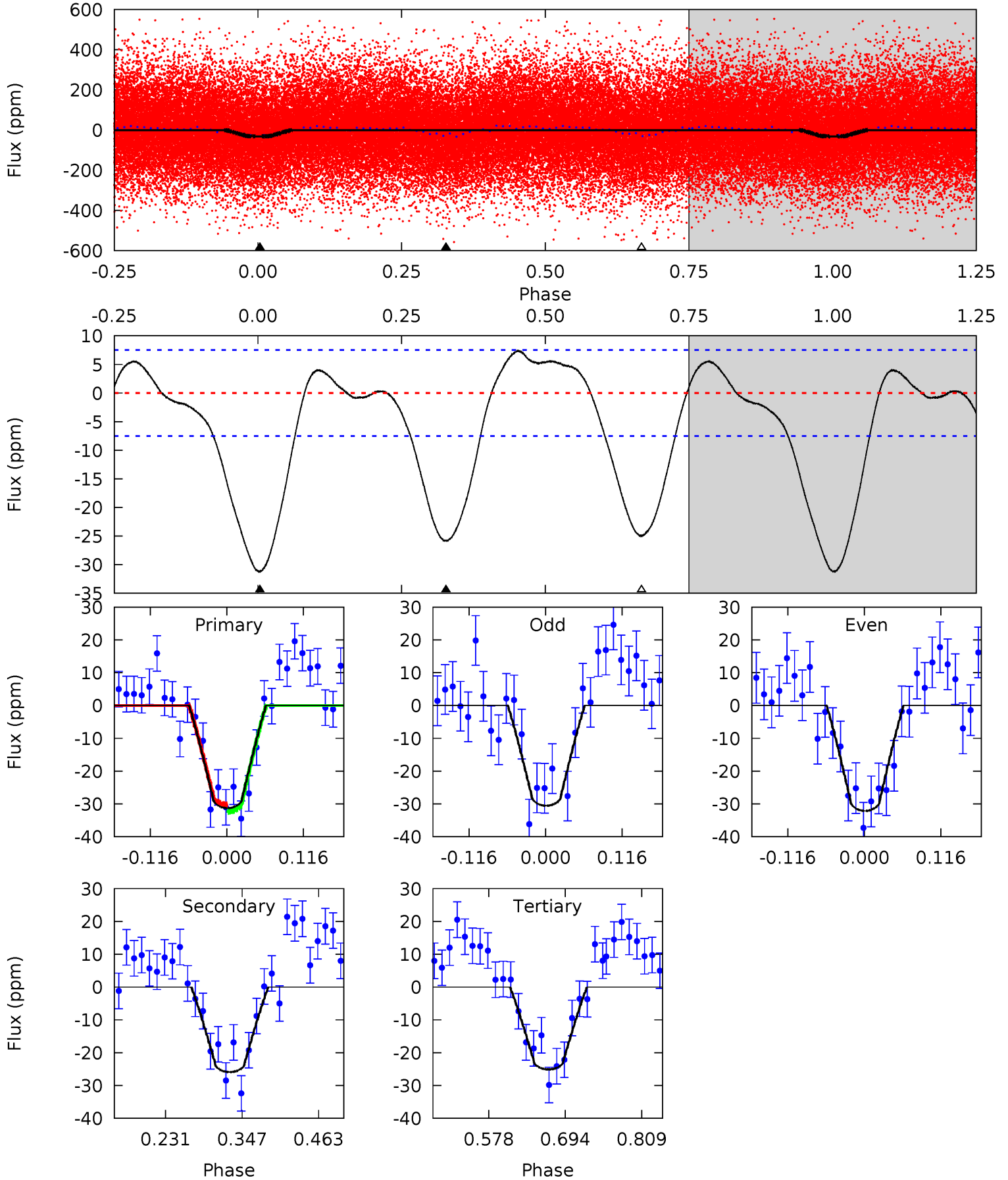
TCE 003641023-01 P= 0.543872 Days $T_0=131.599374$ (BKJD)



DV Model-Shift Uniqueness Test

003641023-01, P = 0.543870 Days, E = 131.055406 Days

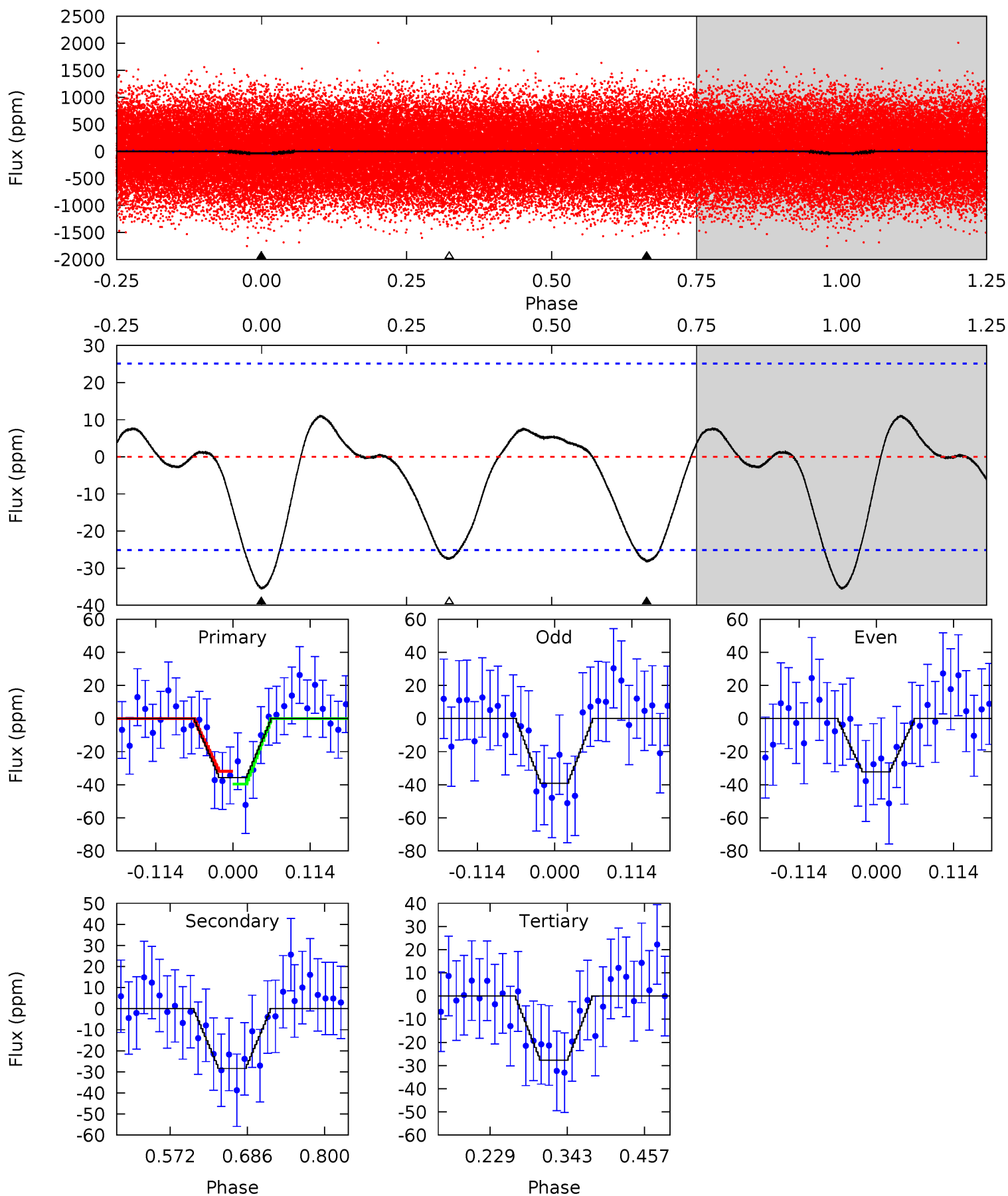
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	15.6	15.1	0	4.53	1.57	5.60	3.73	18.9	0.49	15.6	0.48	0.90	0.19	0.61



Alt Model-Shift Uniqueness Test

003641023-01, P = 0.543872 Days, E = 131.055502 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.44	5.12	5.00	0	4.54	1.58	1.85	1.44	6.44	0.12	5.12	0.63	1.13	0.24	0.70



Stellar Parameters For KIC 003641023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8466^{+76}_{-84}	$4.049^{+0.120}_{-0.080}$	$-0.320^{+0.050}_{-0.100}$	$2.086^{+0.213}_{-0.364}$	$1.779^{+0.042}_{-0.159}$	$0.276^{+0.168}_{-0.070}$
	+1%/-1%	+3%/-2%	+16%/-31%	+10%/-17%	+2%/-9%	+61%/-25%
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 003641023-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-26 ± 2	$1.30^{+0.23}_{-0.23}$	6006^{+187}_{-238}	7446^{+979}_{-707}	$2.074^{+0.972}_{-0.591}$
Alt.	-28 ± 6	$1.31^{+0.26}_{-0.24}$	5990^{+190}_{-238}	7643^{+1119}_{-904}	$2.248^{+1.242}_{-0.762}$

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 $A_{obs} \gg 1.0$

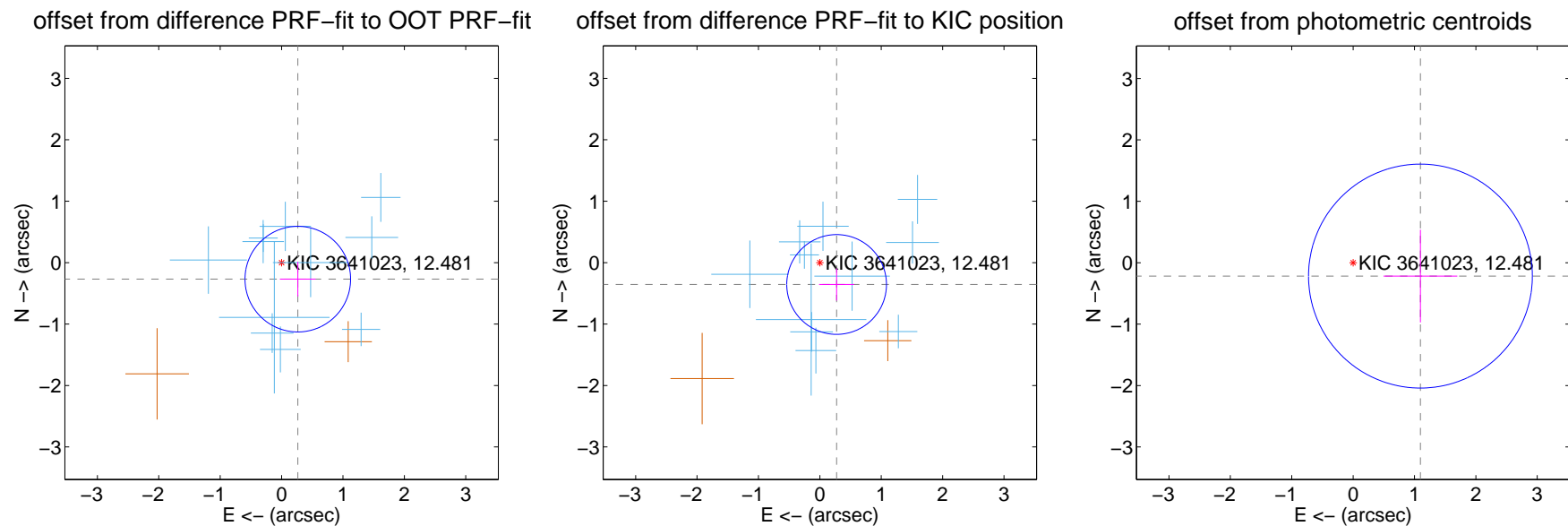
DV Centroid Data

Supplemental centroid analysis for 003641023-01. Kepler magnitude: 12.48. Transit SNR 11.75

There are 11 quarters with good PRF difference image offsets

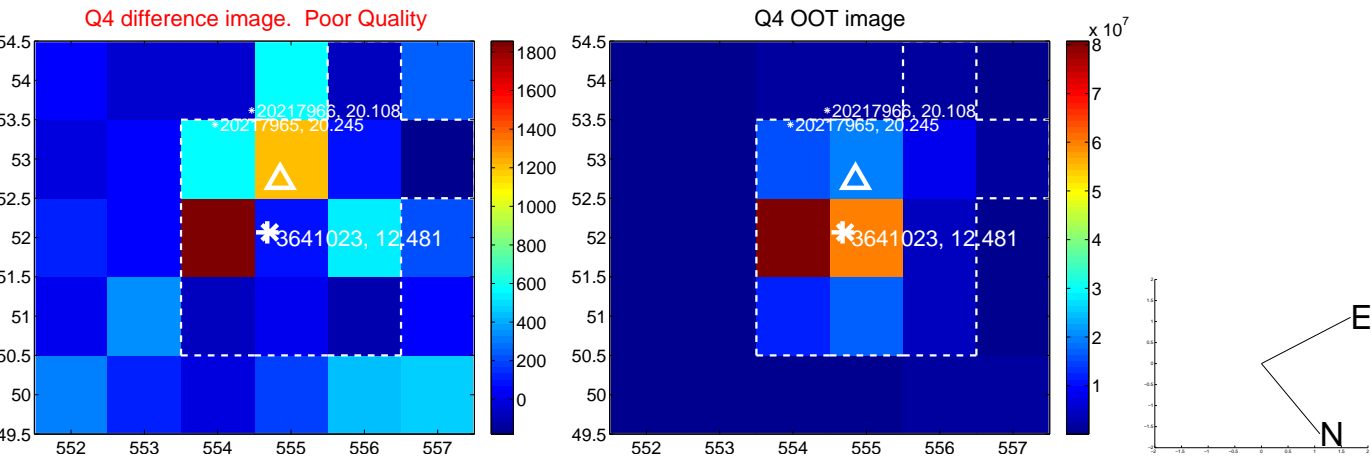
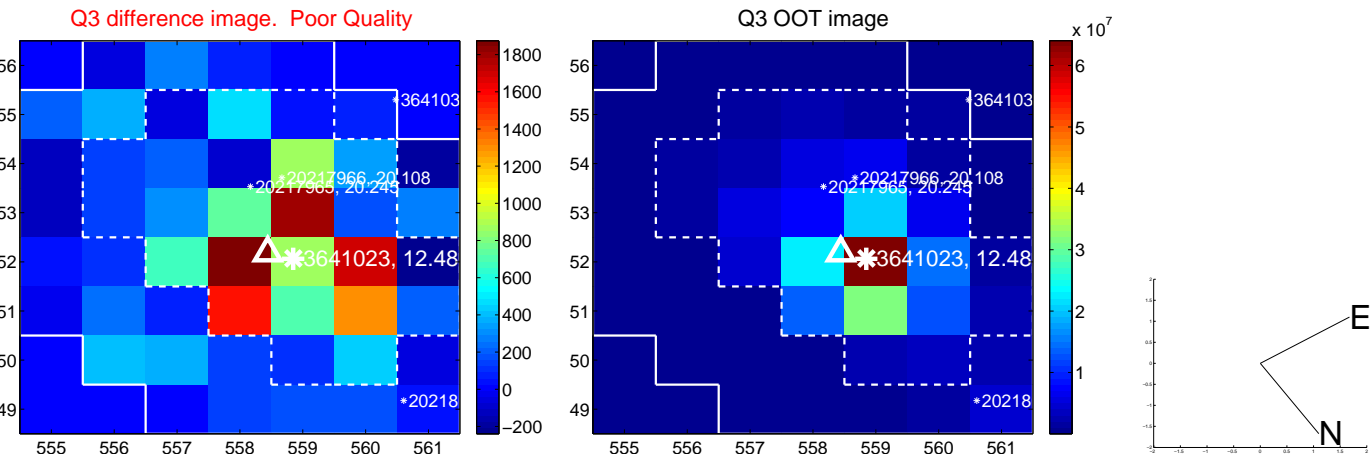
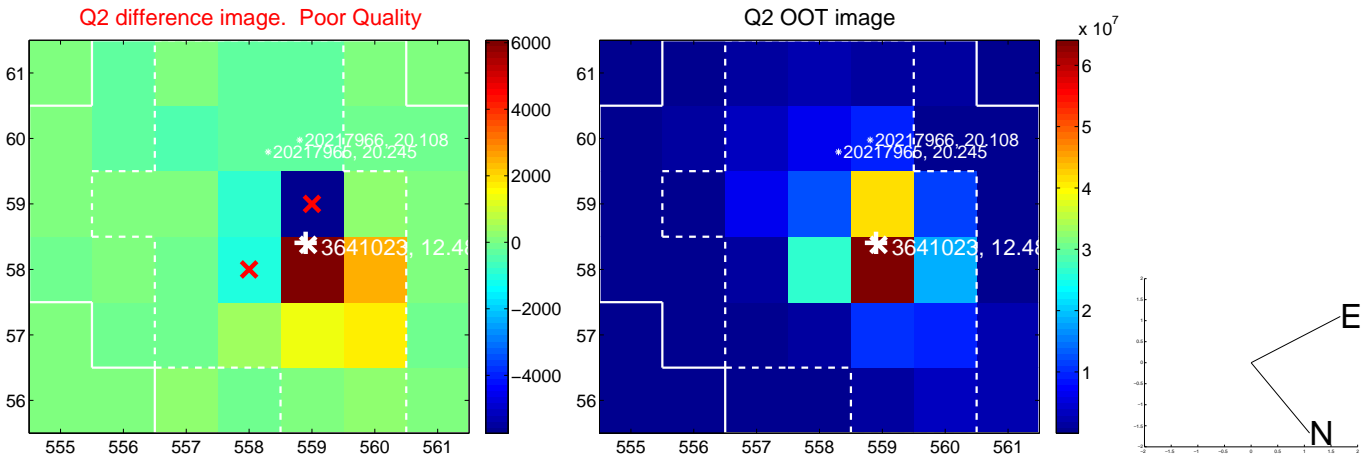
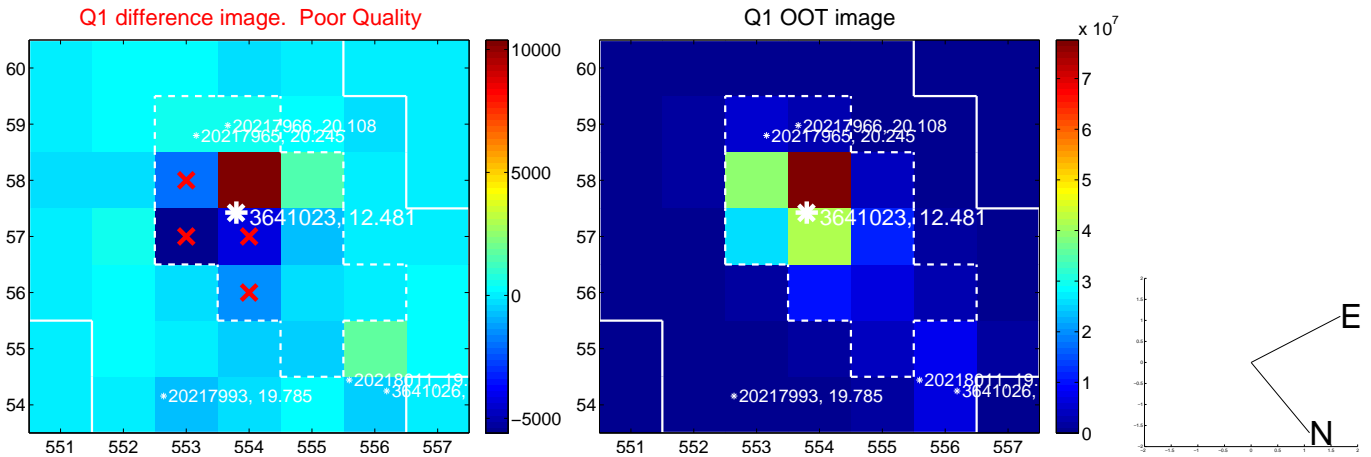
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.377 ± 0.287	1.31	-0.264 ± 0.291	-0.268 ± 0.282
PRF-fit source offset from KIC position	0.448 ± 0.271	1.66	-0.273 ± 0.286	-0.355 ± 0.261
photometric centroid source offset	1.12 ± 0.61	1.84	-1.10 ± 0.60	-0.22 ± 0.75

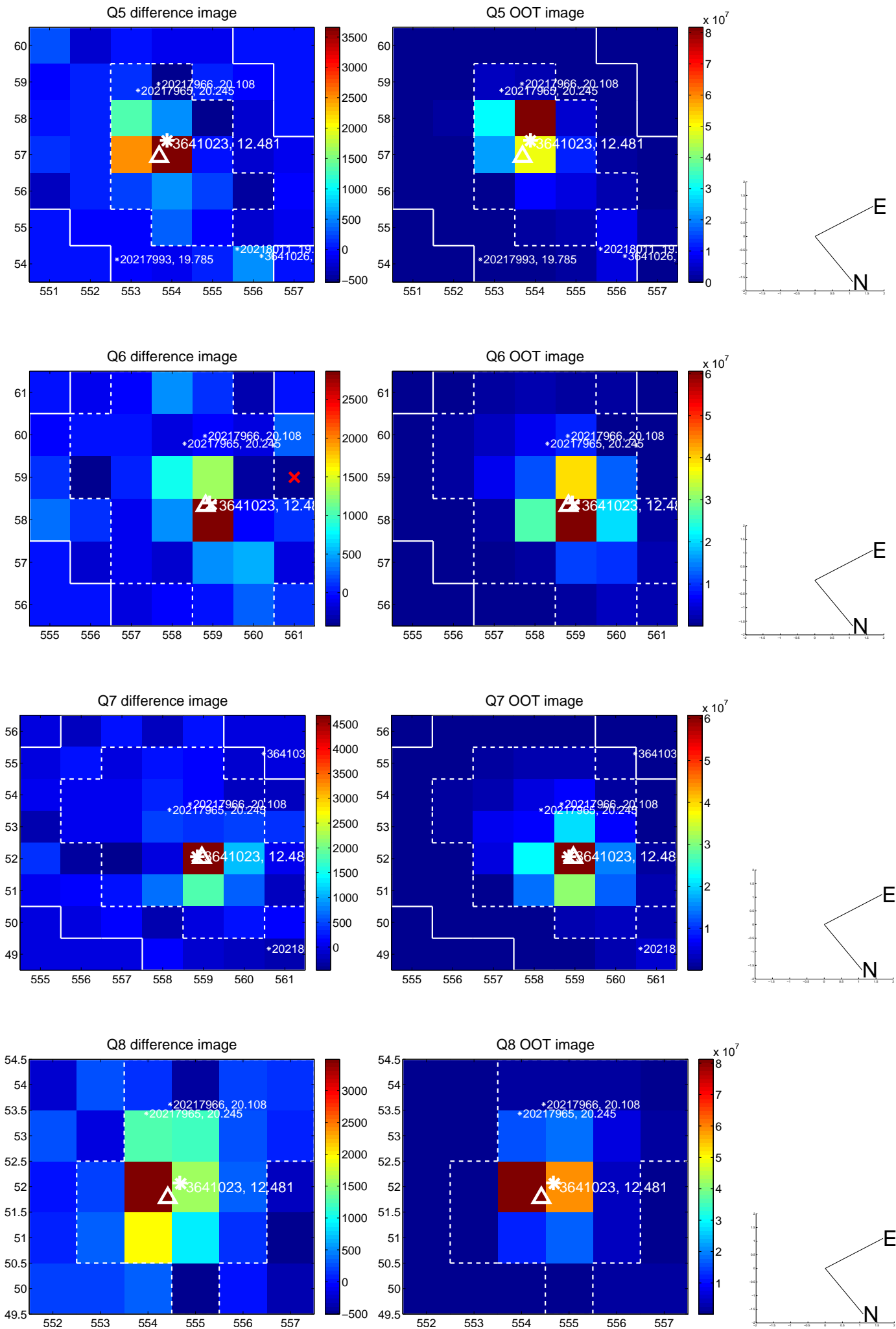


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

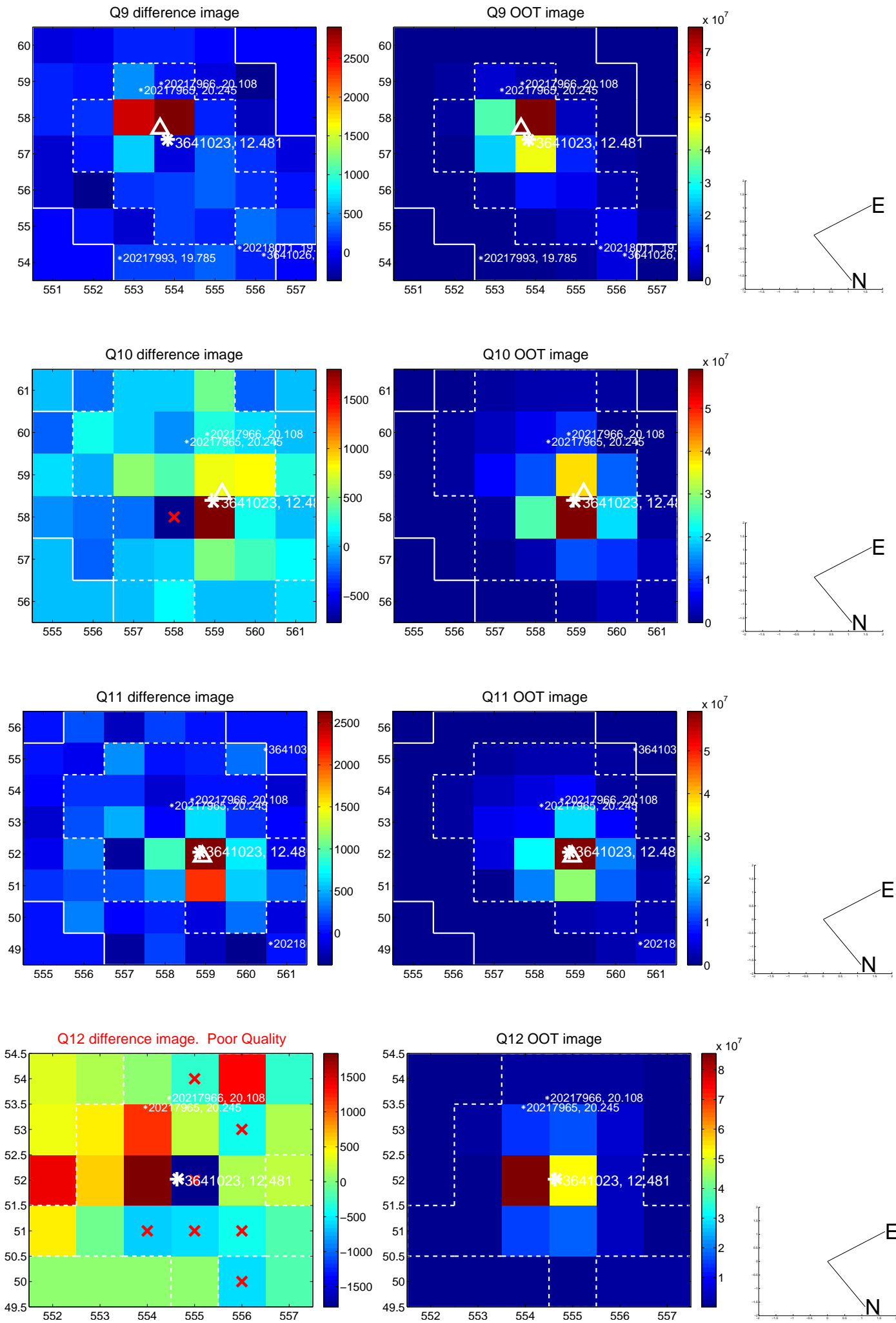
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



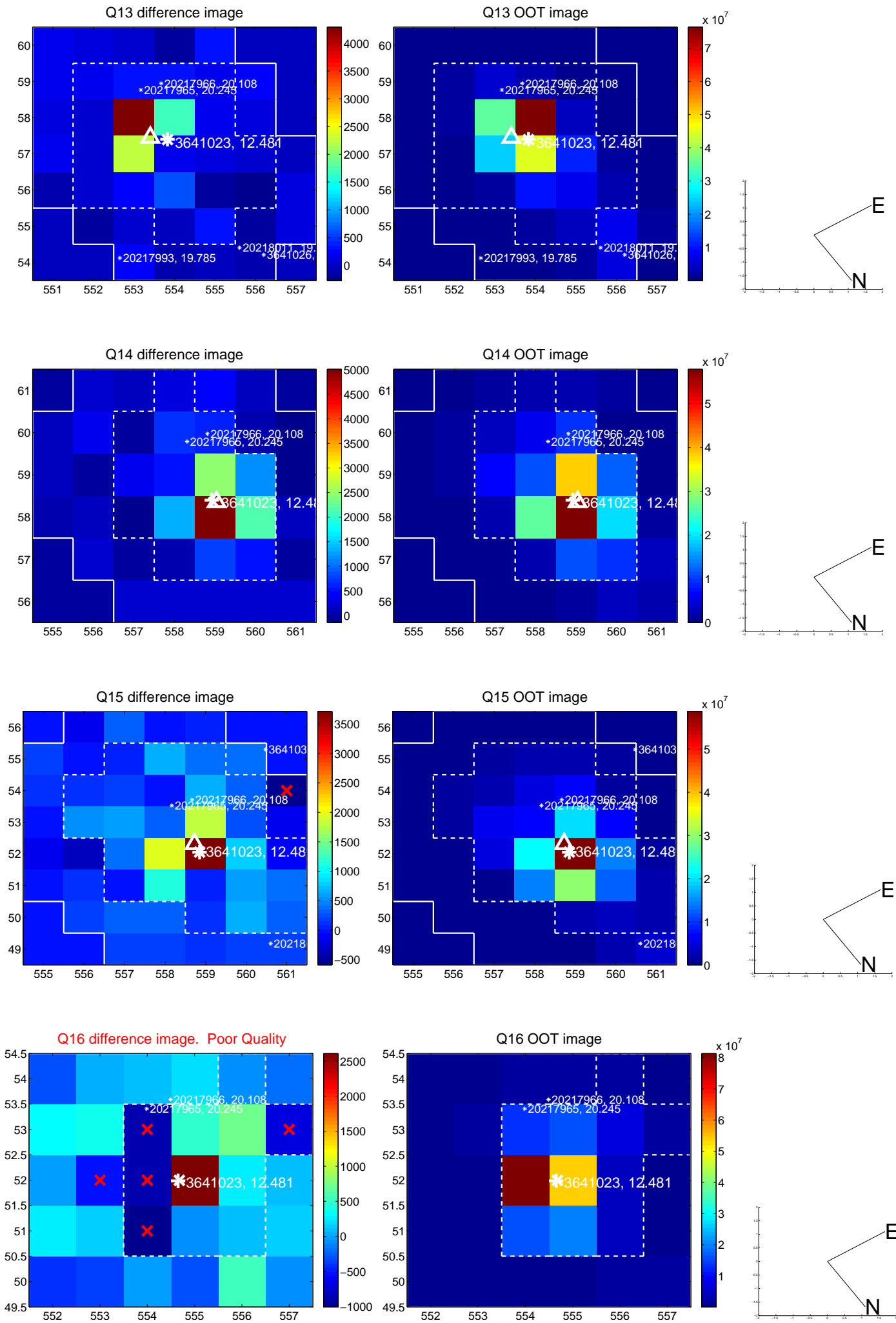
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



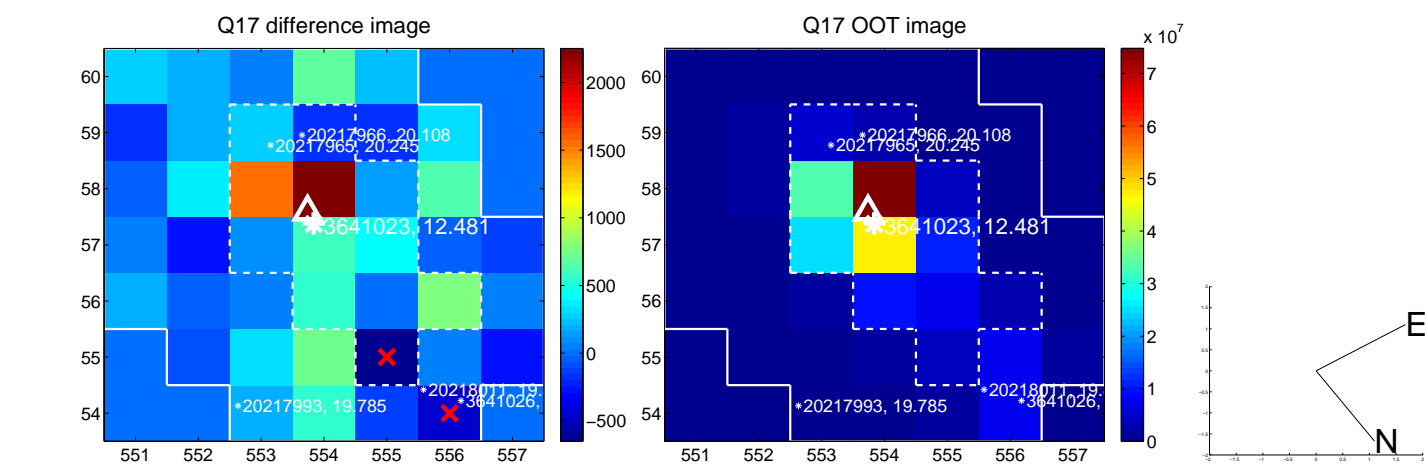
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



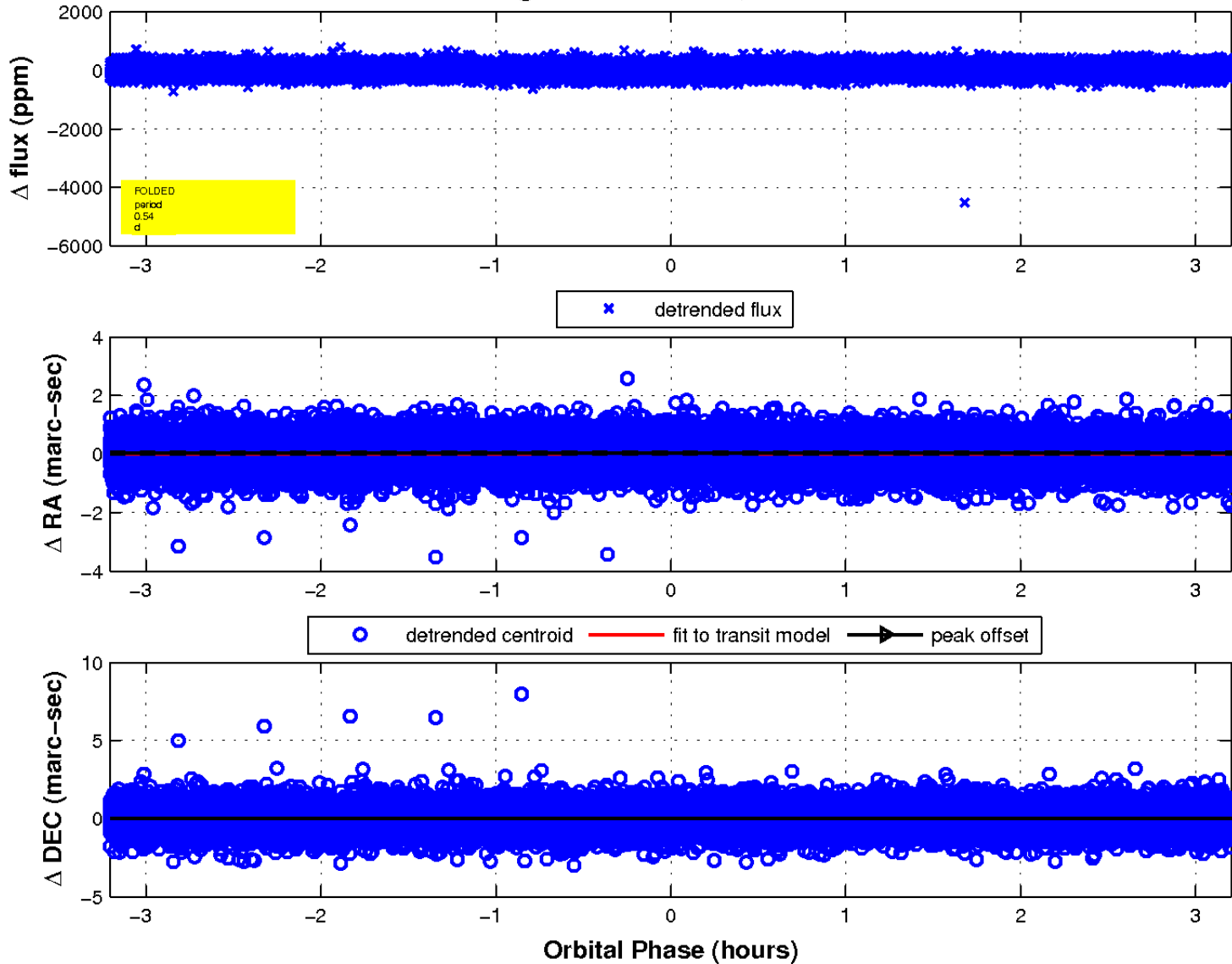
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



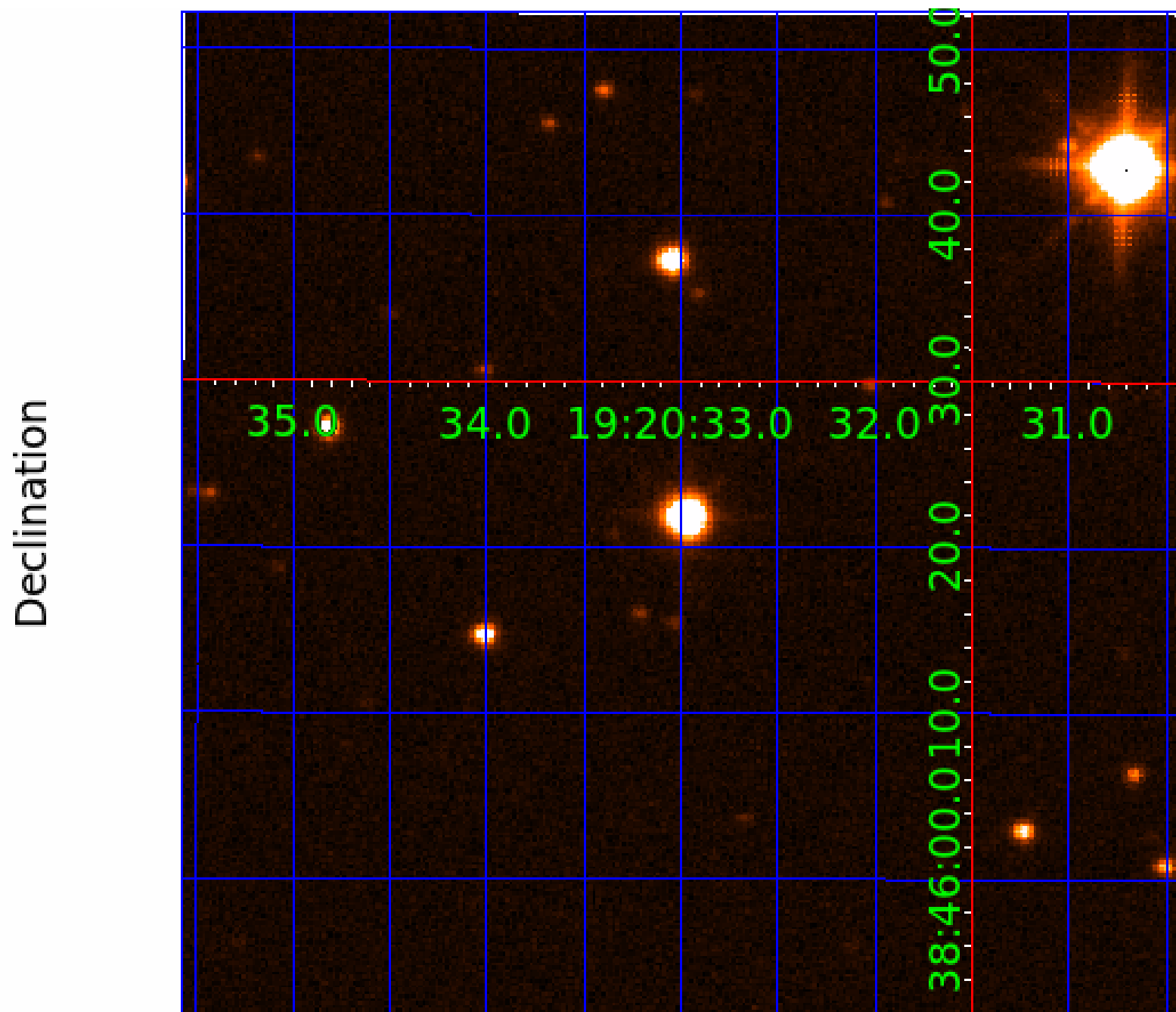
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 003641023

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})
003641023-01	OBS	No	0.543870	131.599276	29.5	1.068	9.8	11.7	2.09	8466	1.32	80258.24
003641023-02	OBS	No	0.543853	131.974736	15.5	1.557	8.8	7.6	2.09	8466	0.96	80261.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003641023-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003641023-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_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.

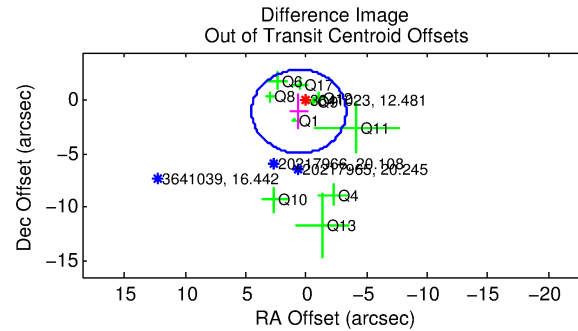
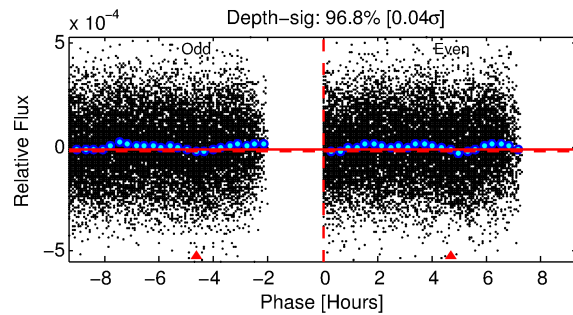
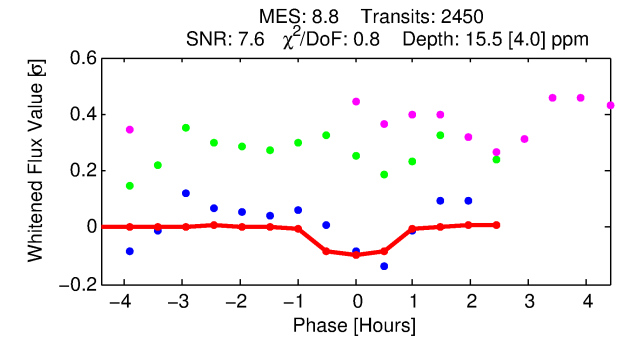
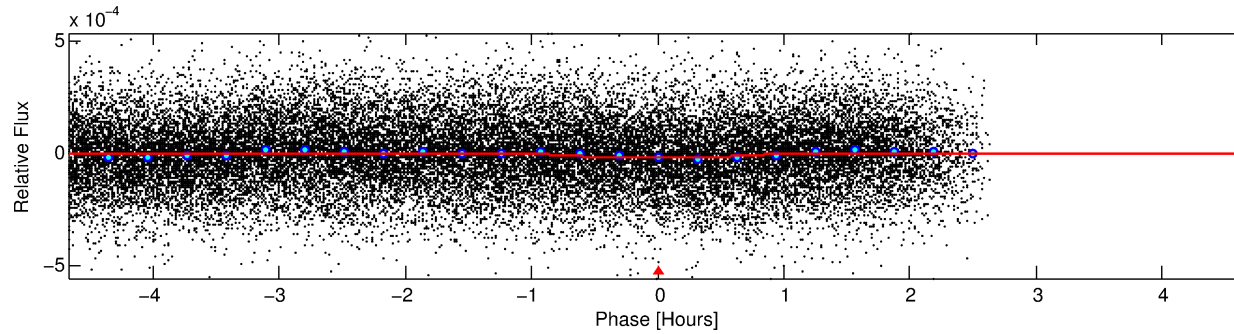
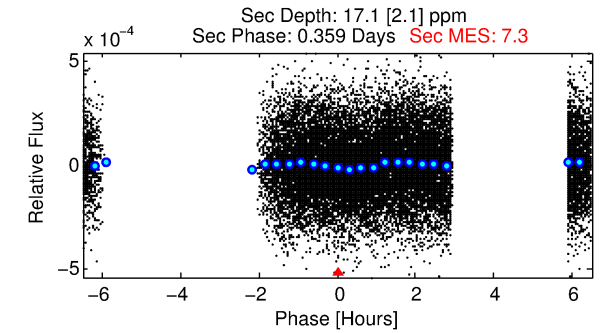
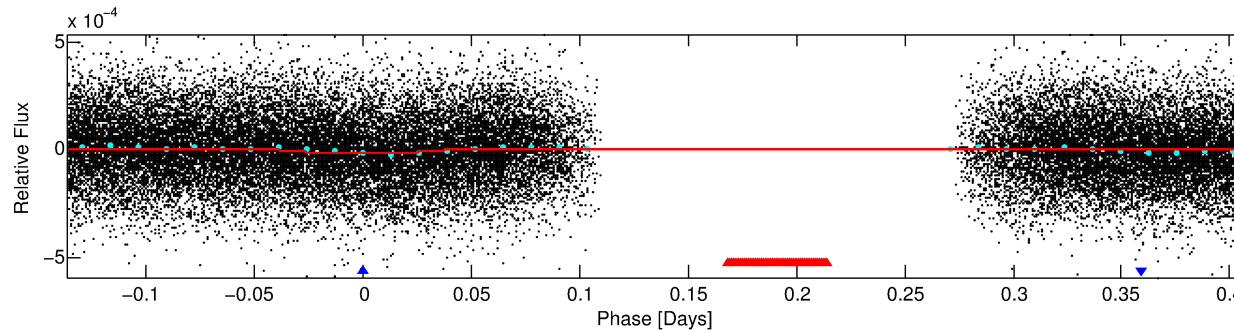
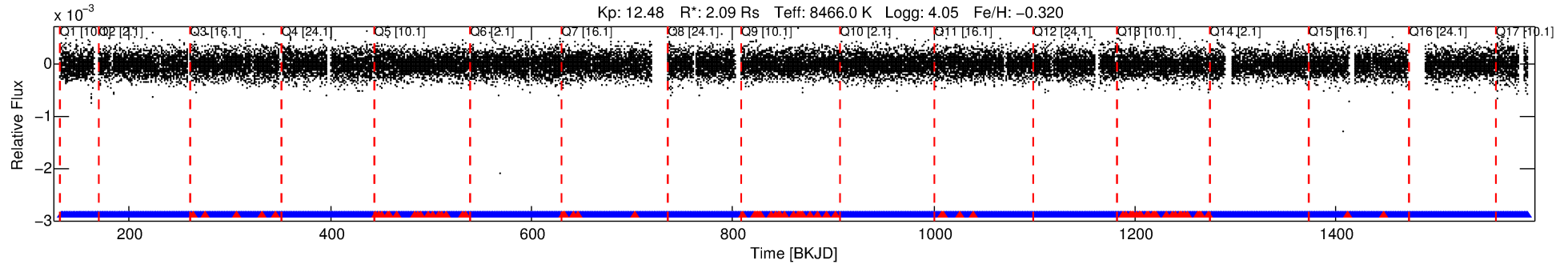
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003641023-02

No Significant Match Found

DV One-Page Summary

KIC: 3641023 Candidate: 2 of 2 Period: 0.544 d



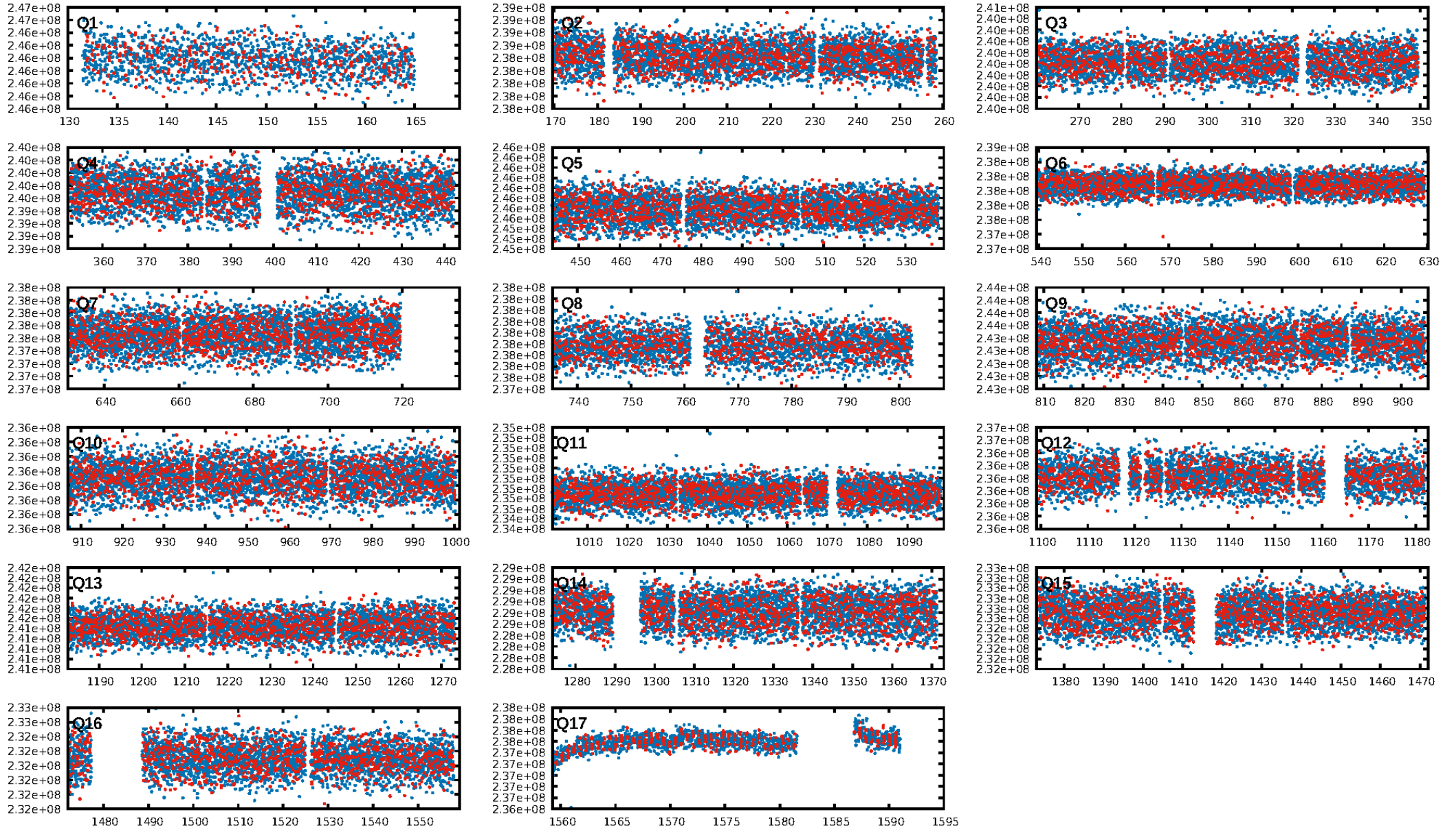
DV Fit Results:

Period = 0.54385 [0.00002] d
Epoch = 131.9747 [0.0030] BKJD
Rp/R* = 0.0042 [0.0010]
a/R* = 1.50 [1.14]
b = 0.90 [0.28]
Seff = 80261.61 [17773.96]
Teq = 4292 [238] K
Rp = 0.96 [0.28] Re
a = 0.0158 [0.0023] AU
Ag = 2.56 [1.39] [1.12σ]
Teffp = 8394 [1045] K [3.83σ]

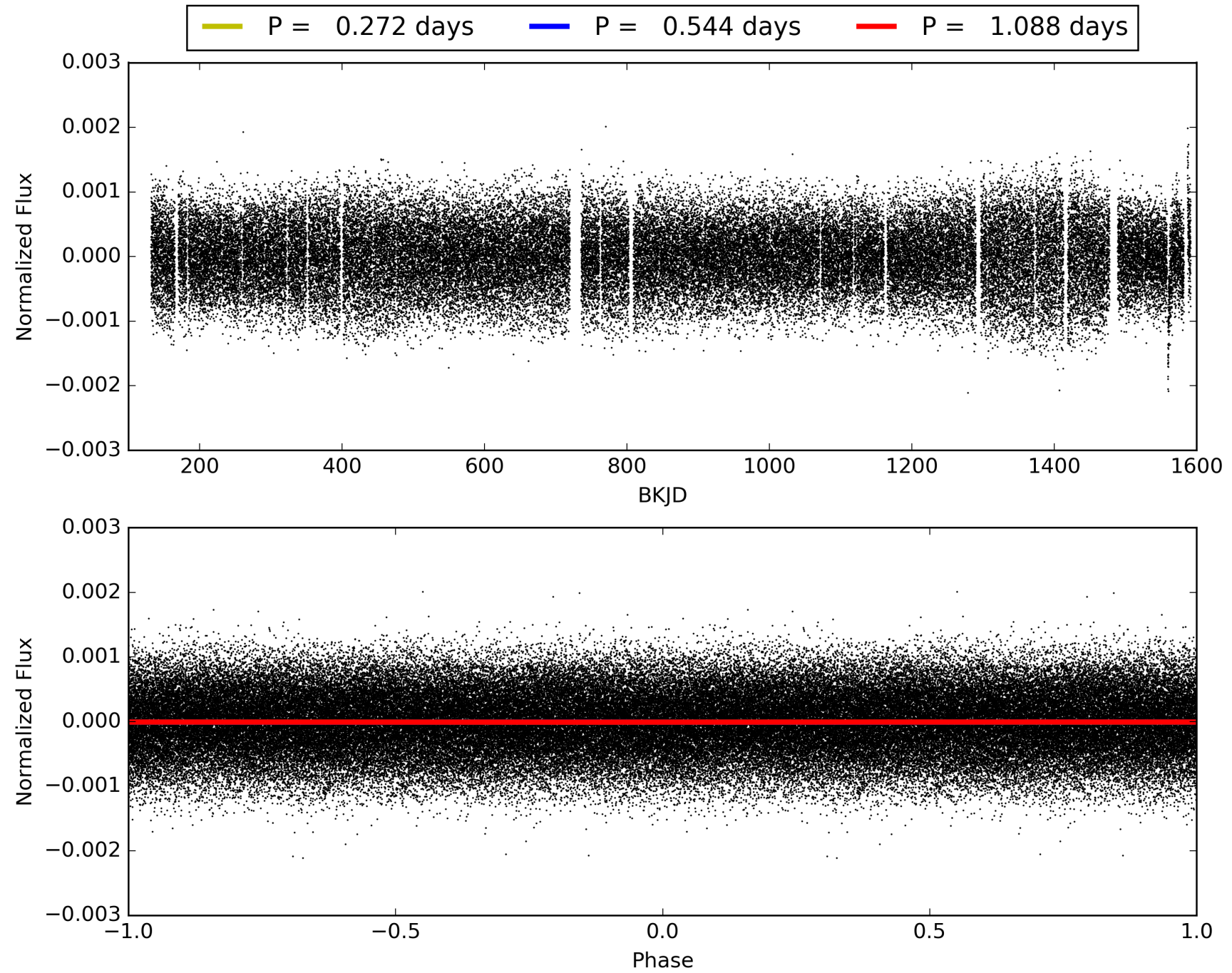
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.00e-11
RollingBand-fgt: 0.96 [2258/2341]
GhostDiagnostic-chr: 0.3899
Centroid-sig: 0.1%
Centroid-so: 2.163 arcsec [2.00σ]
OotOffset-rm: 1.192 arcsec [0.92σ]
OotOffset-st: 2/1/3/4 [10]
KicOffset-rm: 1.214 arcsec [1.04σ]
KicOffset-st: 2/1/3/4 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 003641023-02, PDC Light Curves

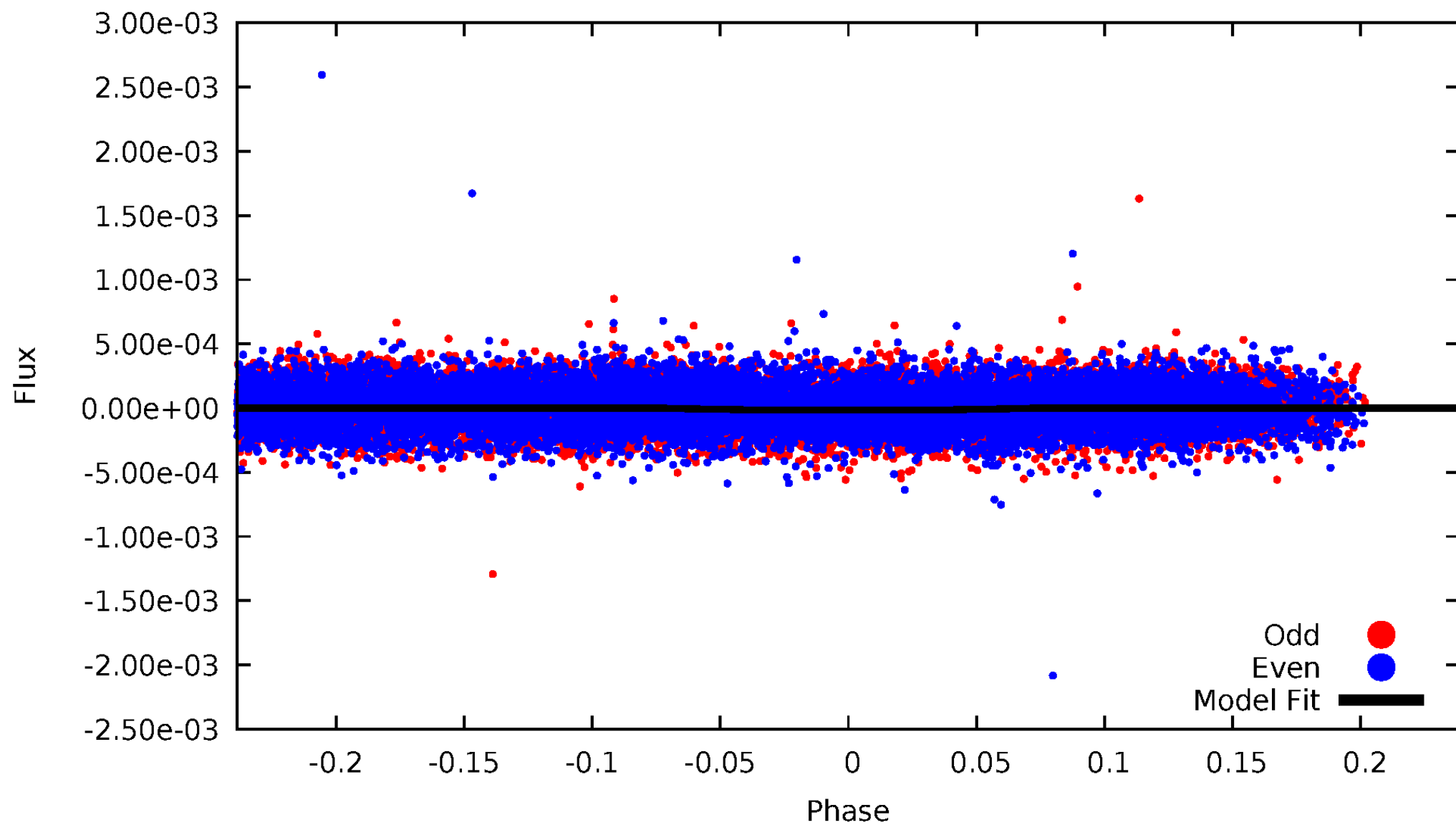


TCE 003641023-02



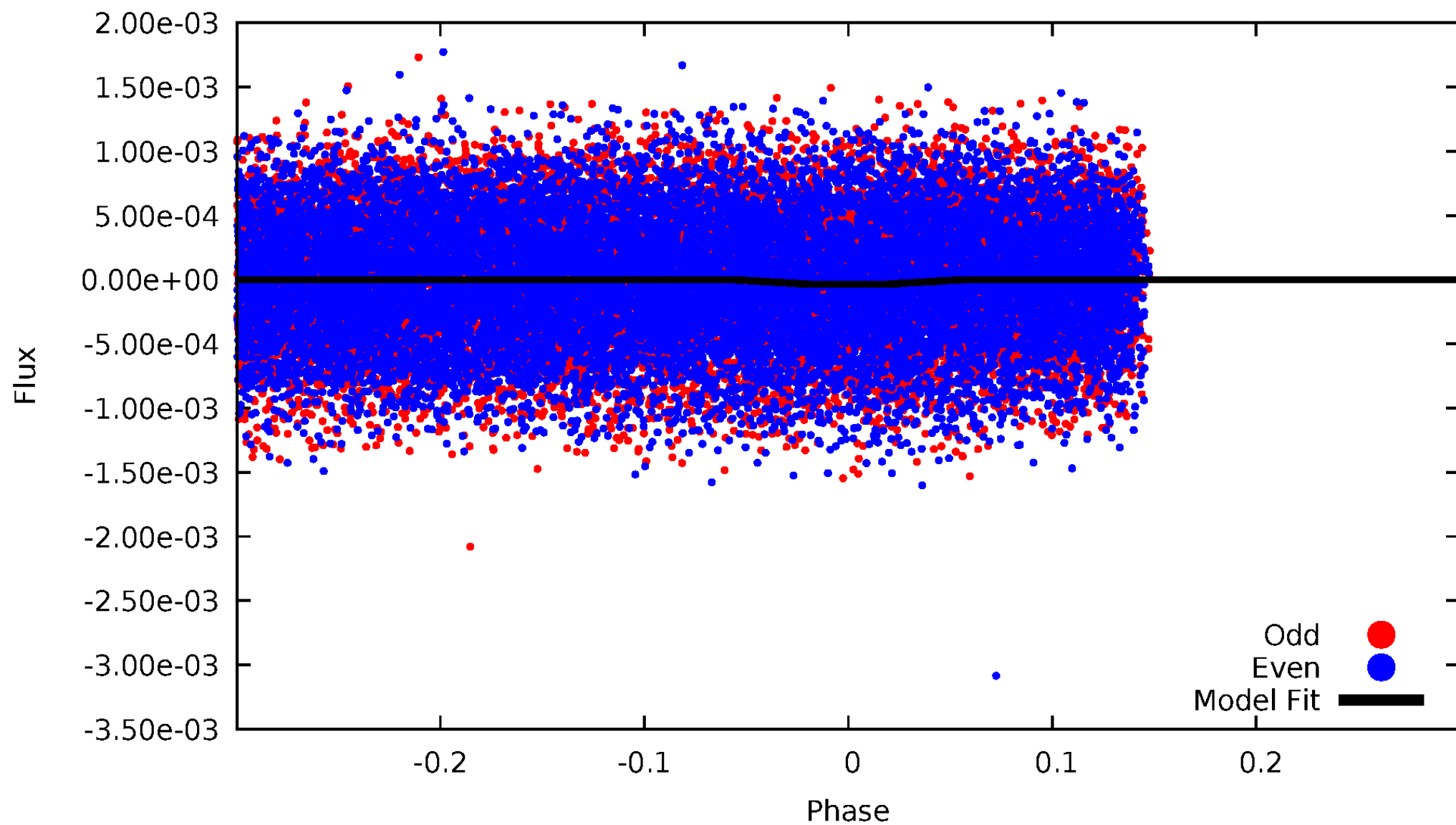
DV Odd/Even

TCE 003641023-02



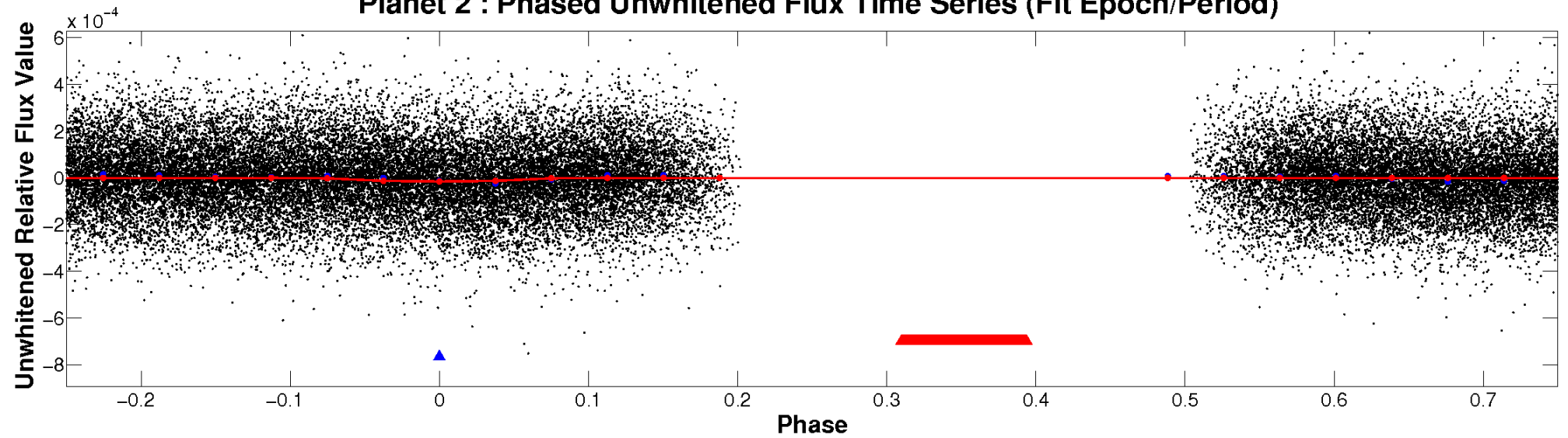
ALT Odd/Even

TCE 003641023-02

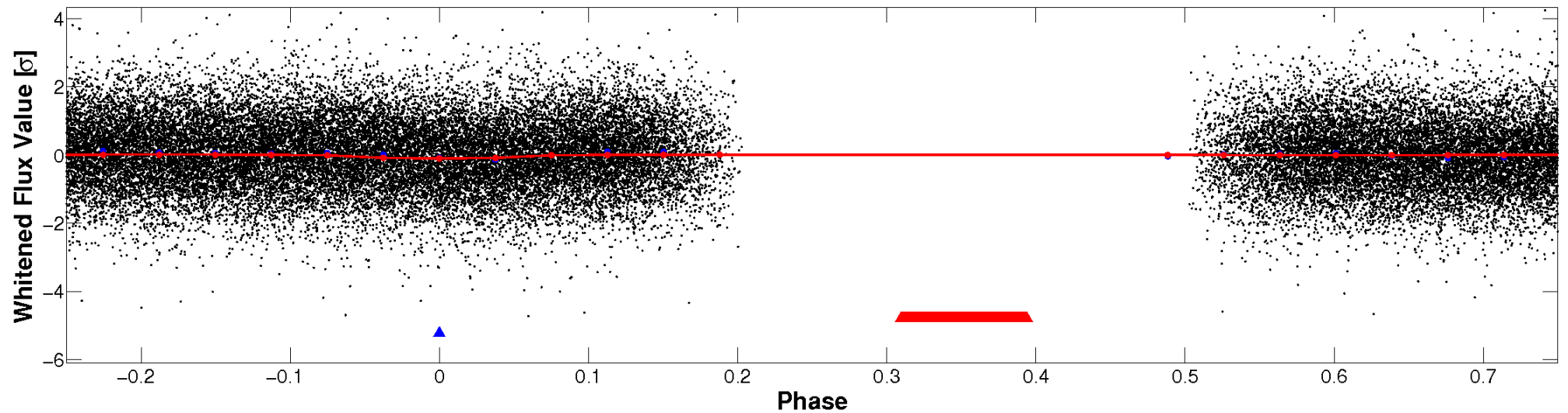


Non-Whitened Vs. Whitened Light Curve

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

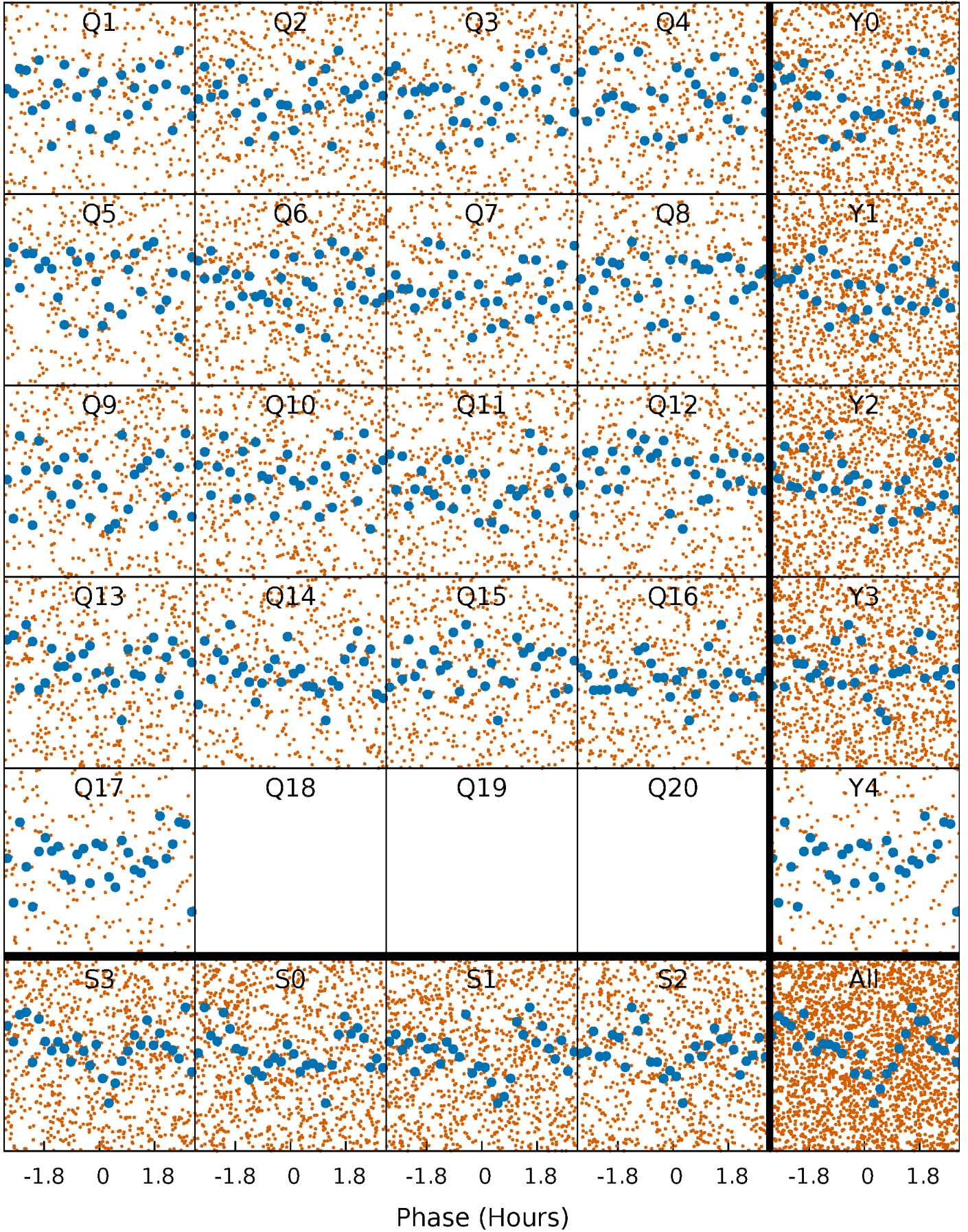


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



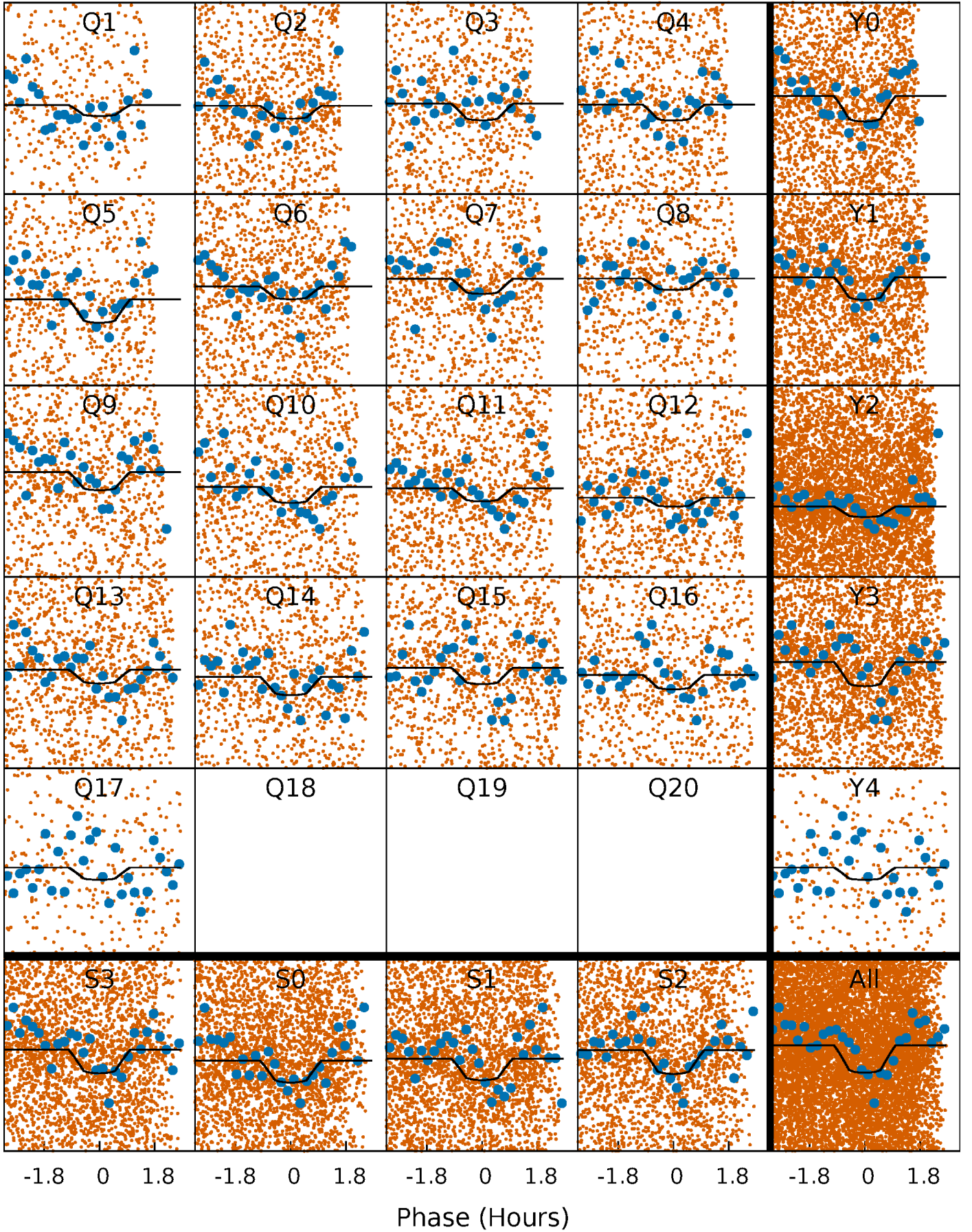
PDC Quarter-Phased Transit Curves

TCE 003641023-02 P= 0.543853 Days $T_0=131.974736$ (BKJD)



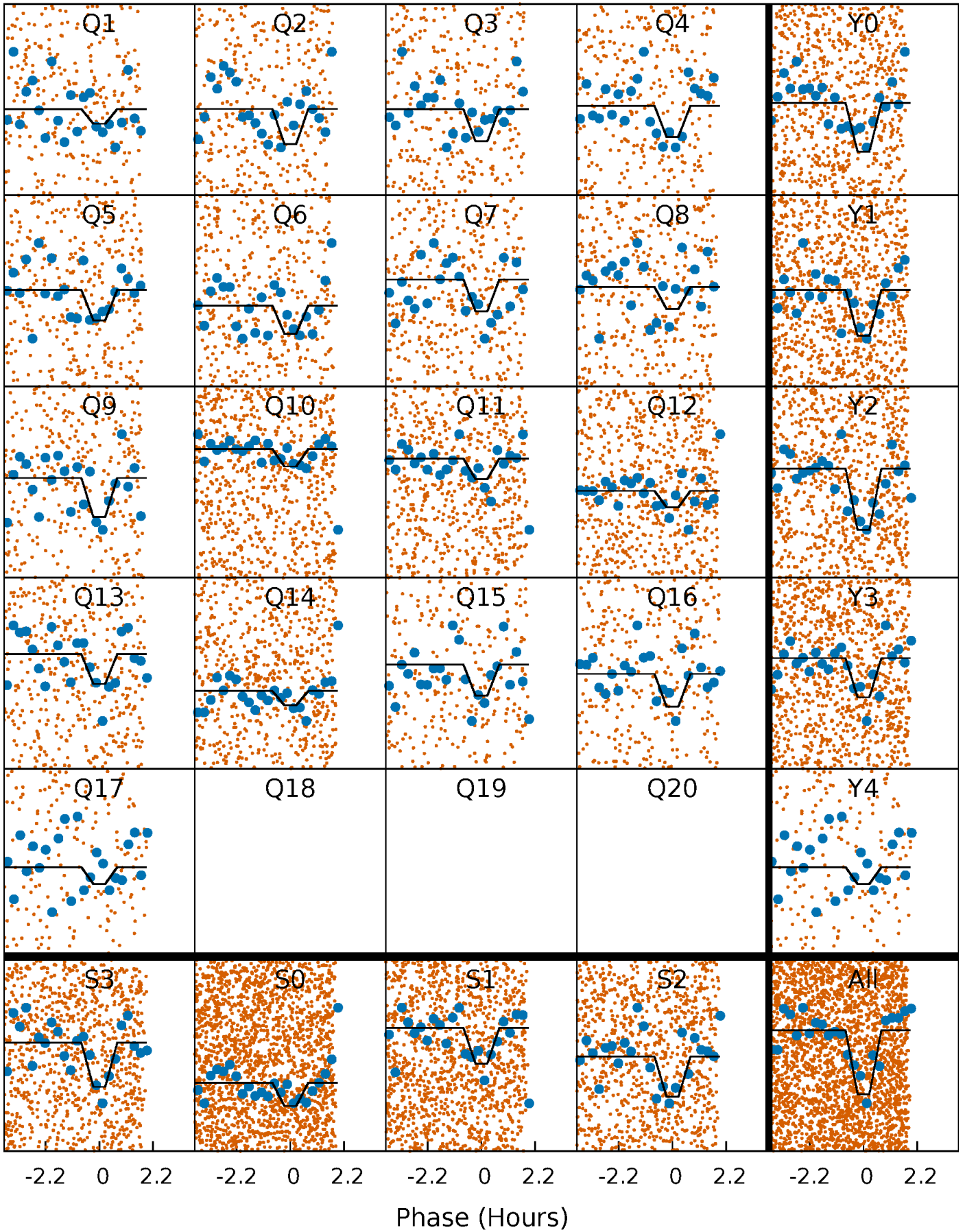
DV Quarter-Phased Transit Curves

TCE 003641023-02 P= 0.543853 Days $T_0=131.974736$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

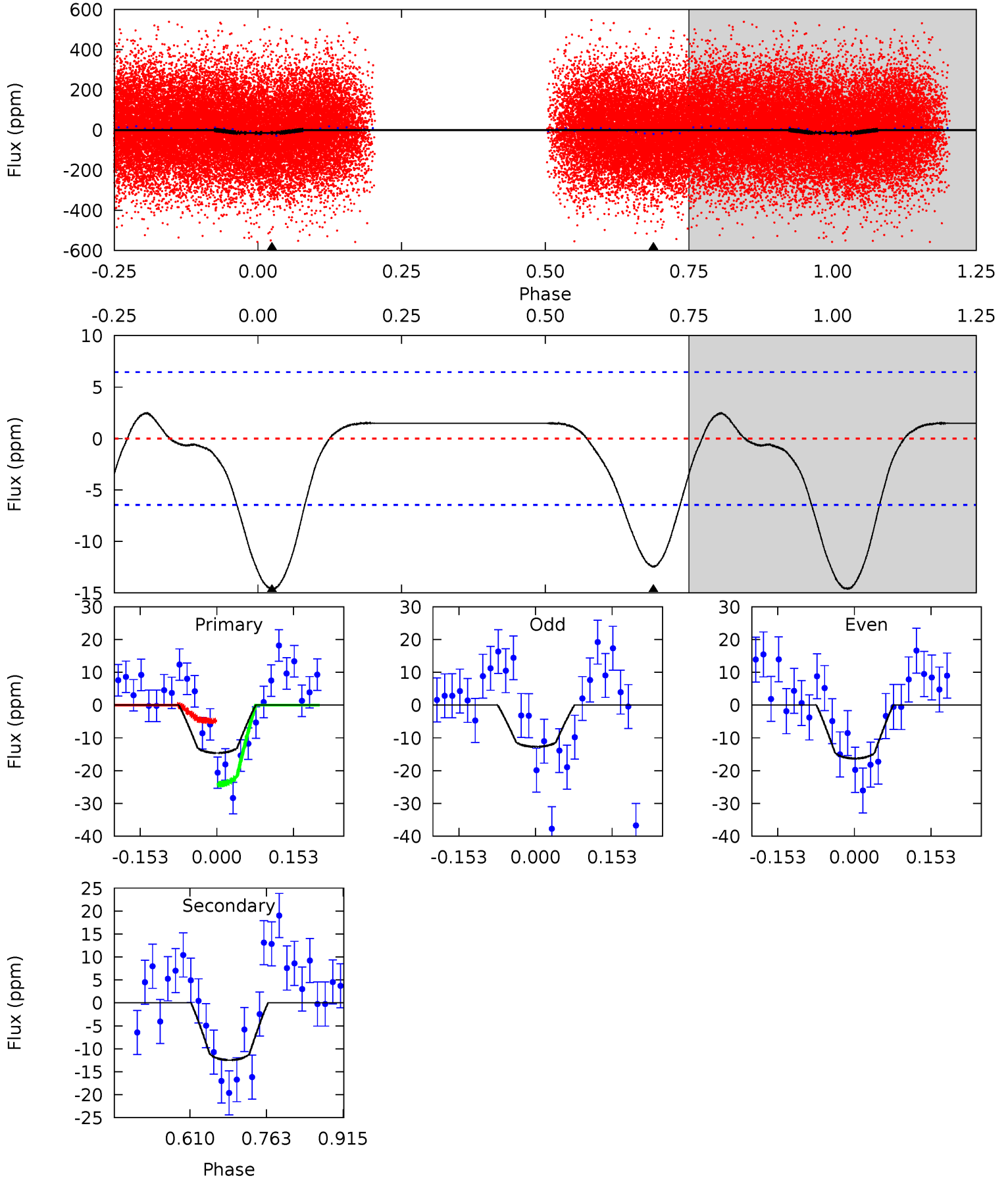
TCE 003641023-02 P= 0.543867 Days $T_0=131.967675$ (BKJD)



DV Model-Shift Uniqueness Test

003641023-02, P = 0.543853 Days, E = 131.430883 Days

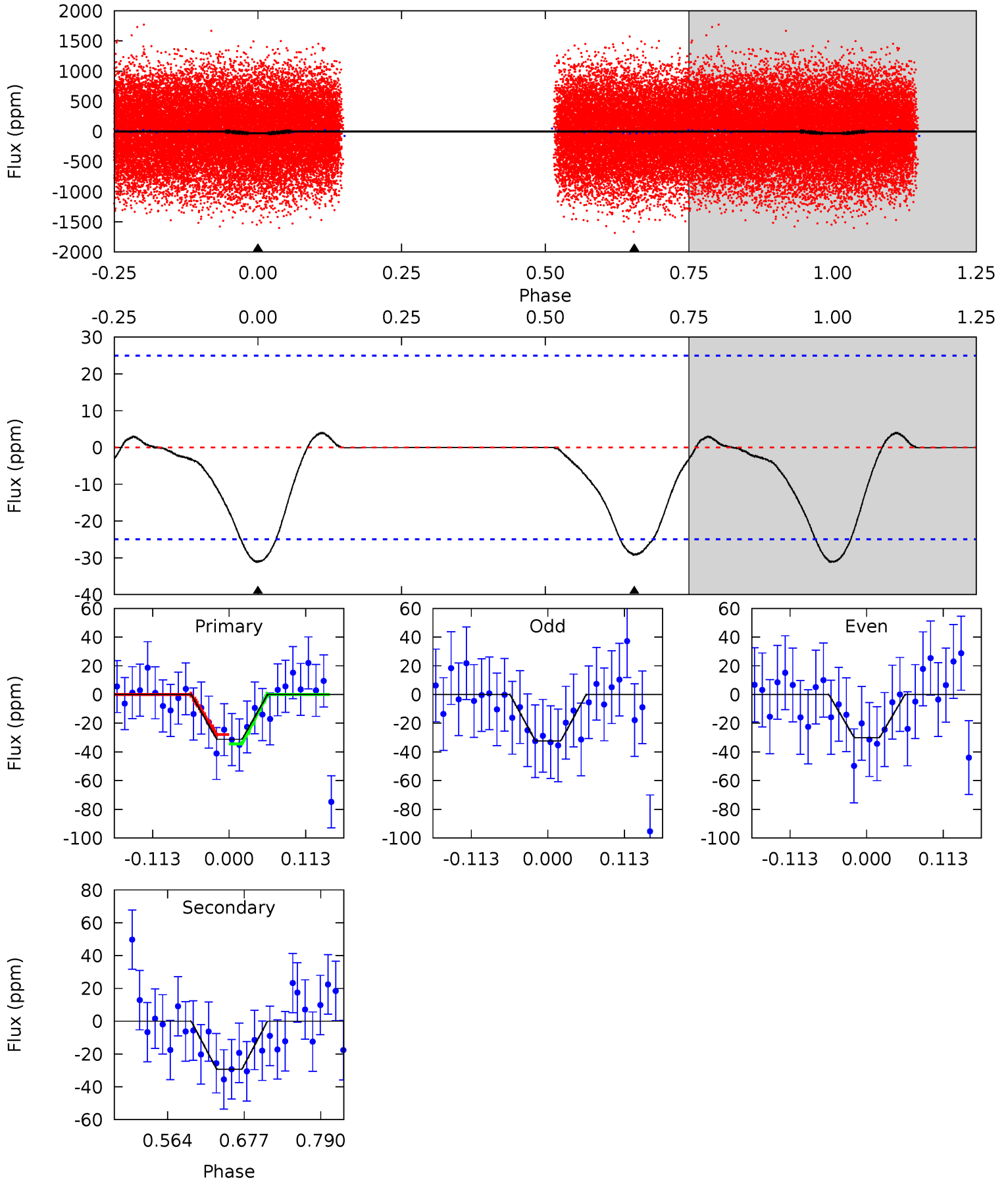
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	8.65	0	0	4.48	1.43	0.57	10.1	10.1	8.65	8.65	1.24	0.99	0.15	6.65



Alt Model-Shift Uniqueness Test

003641023-02, P = 0.543867 Days, E = 131.423808 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.67	5.32	0	0	4.54	1.59	0.37	5.67	5.67	5.32	5.32	0.21	0.83	0.12	0.57



Stellar Parameters For KIC 003641023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8466^{+76}_{-84}	$4.049^{+0.120}_{-0.080}$	$-0.320^{+0.050}_{-0.100}$	$2.086^{+0.213}_{-0.364}$	$1.779^{+0.042}_{-0.159}$	$0.276^{+0.168}_{-0.070}$
	+1%/-1%	+3%/-2%	+16%/-31%	+10%/-17%	+2%/-9%	+61%/-25%
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 003641023-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-12 ± 1	$0.96^{+0.24}_{-0.23}$	5971^{+219}_{-237}	7131^{+1491}_{-1007}	$1.839^{+1.453}_{-0.690}$
Alt.	-29 ± 6	$1.32^{+0.27}_{-0.25}$	5987^{+185}_{-262}	7604^{+1194}_{-916}	$2.255^{+1.213}_{-0.791}$

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

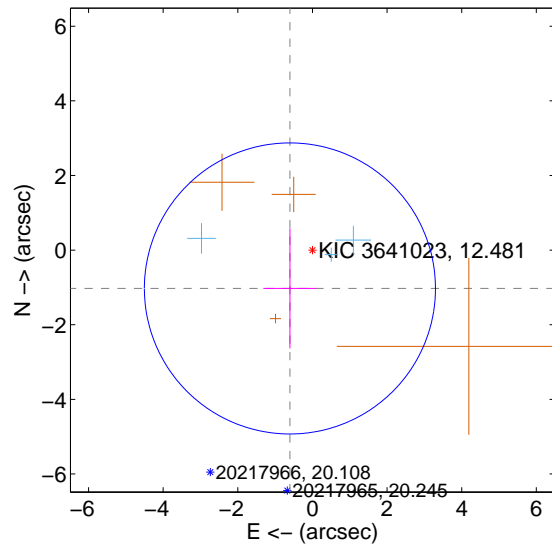
Supplemental centroid analysis for 003641023-02. Kepler magnitude: 12.48. Transit SNR 7.63

There are 3 quarters with good PRF difference image offsets

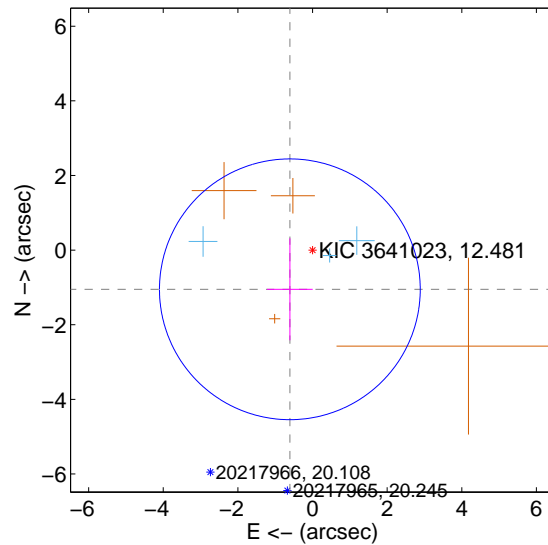
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.192 ± 1.300	0.92	0.604 ± 0.711	-1.028 ± 1.608
PRF-fit source offset from KIC position	1.214 ± 1.165	1.04	0.607 ± 0.612	-1.051 ± 1.365
photometric centroid source offset	2.16 ± 1.08	2.00	-1.39 ± 0.93	-1.65 ± 1.17

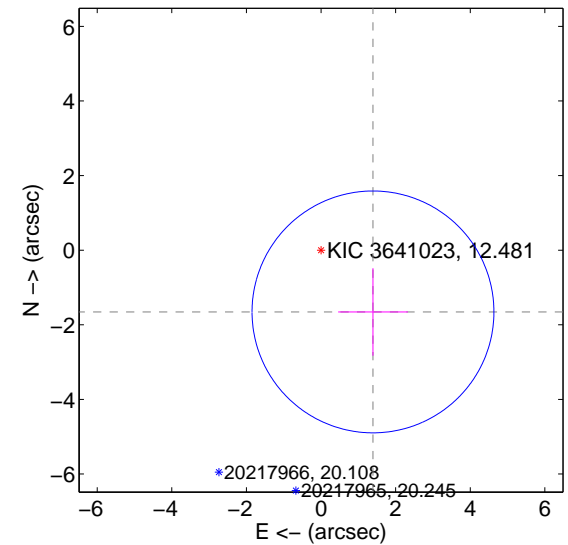
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

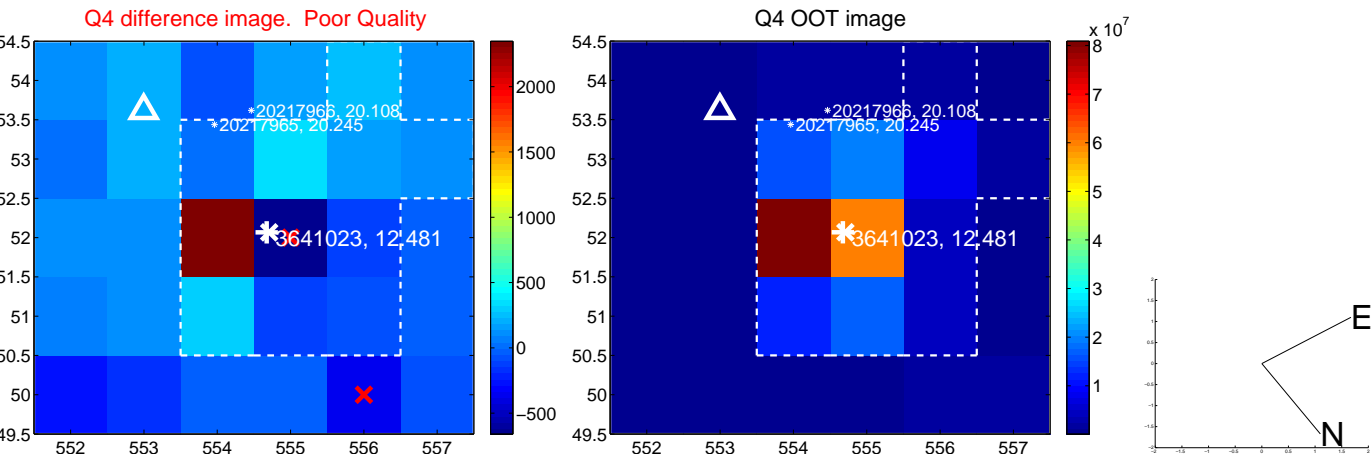
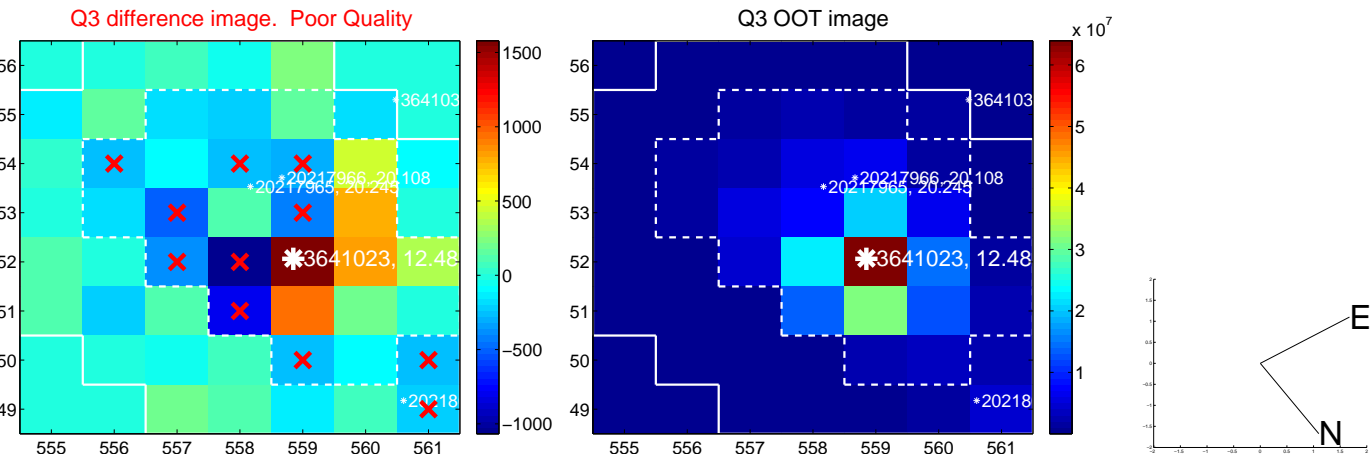
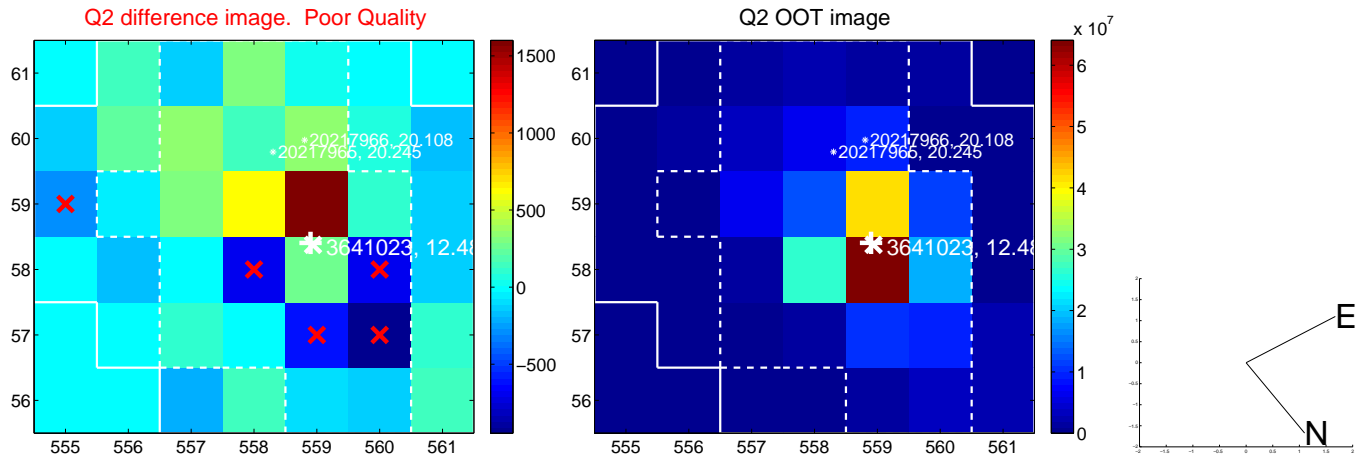
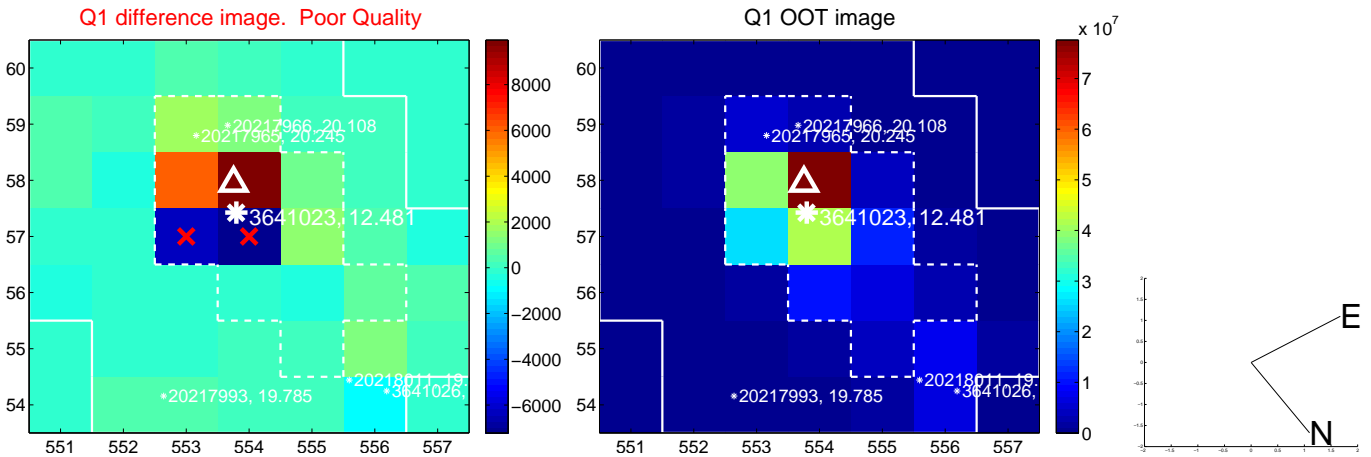


offset from photometric centroids

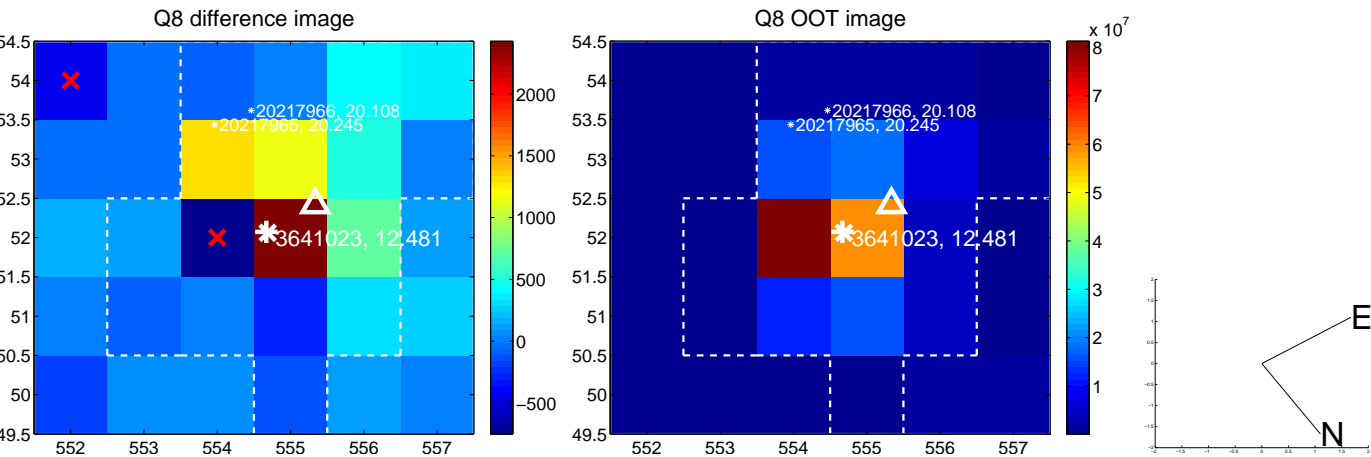
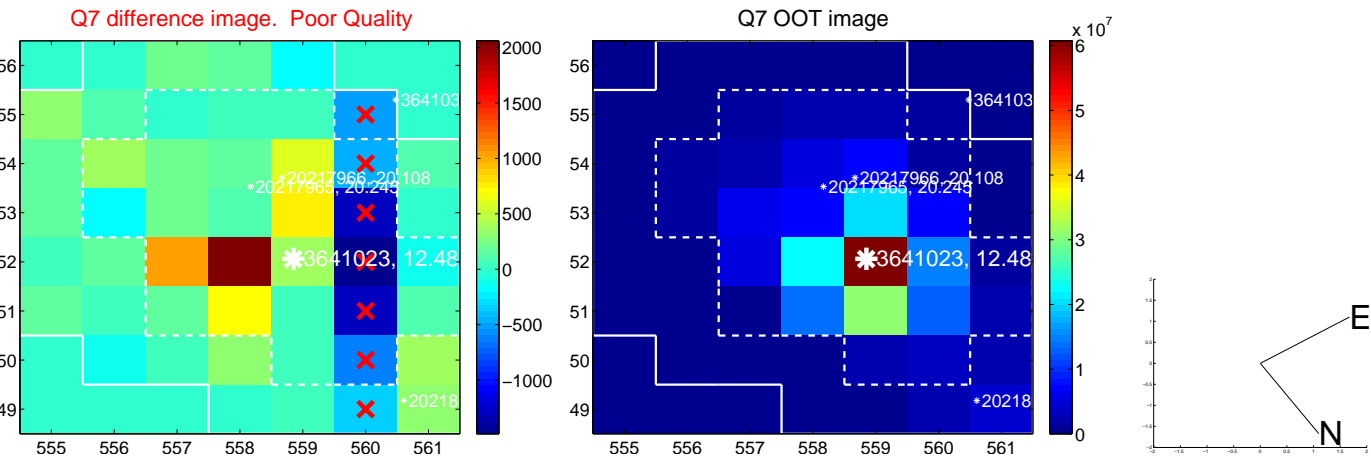
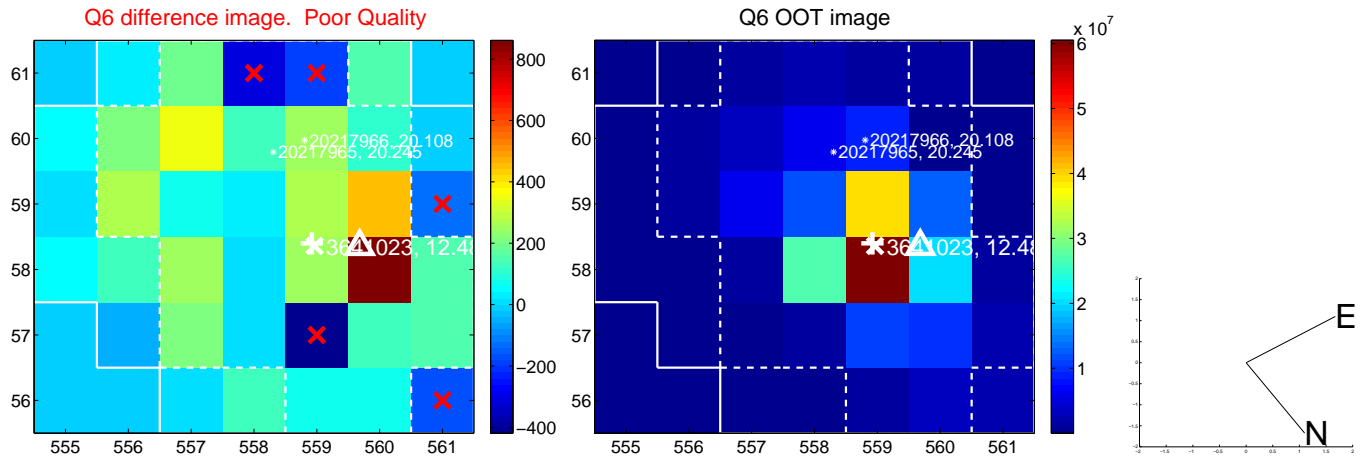
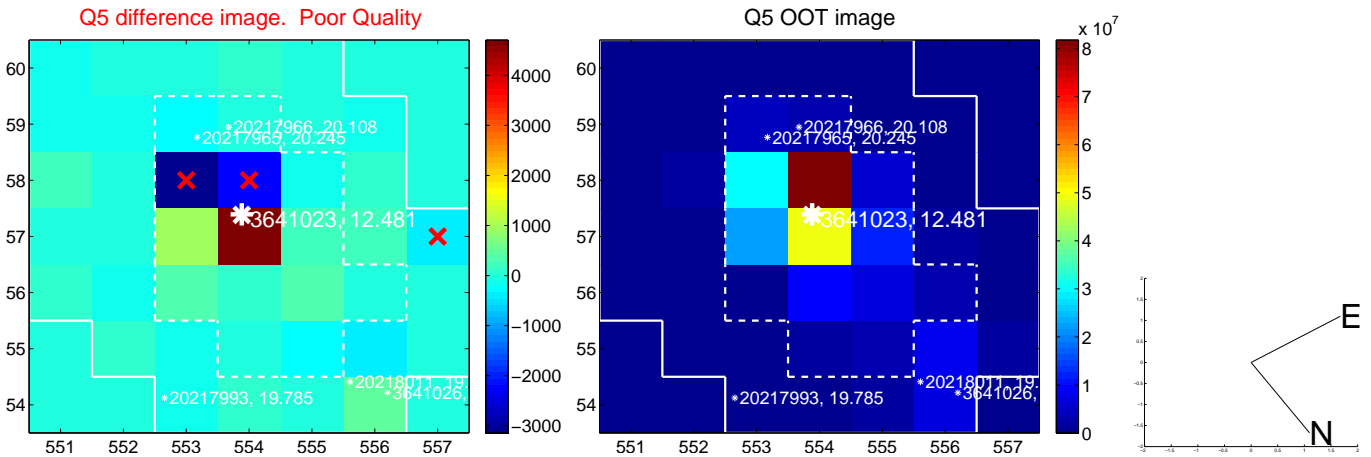


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

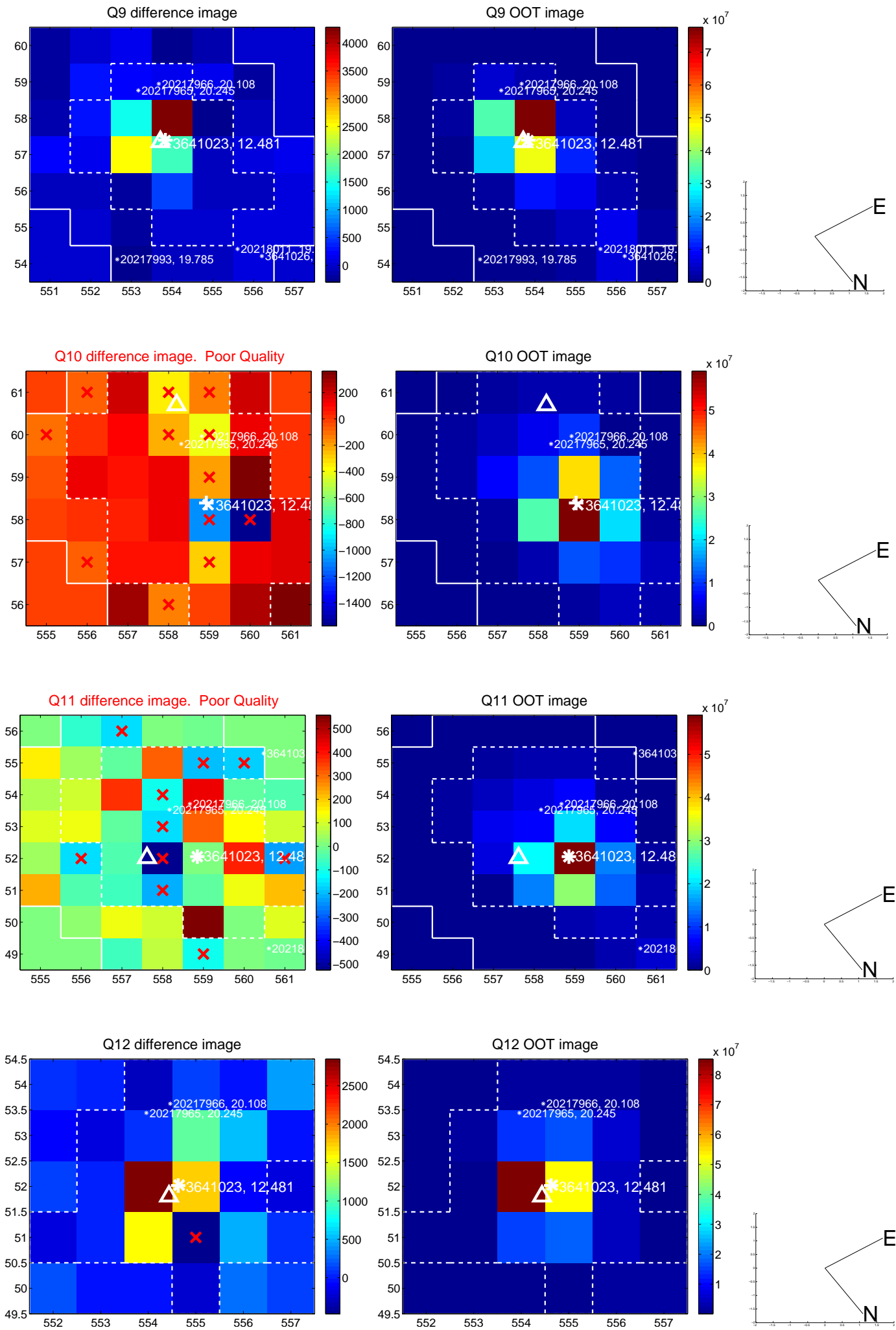
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



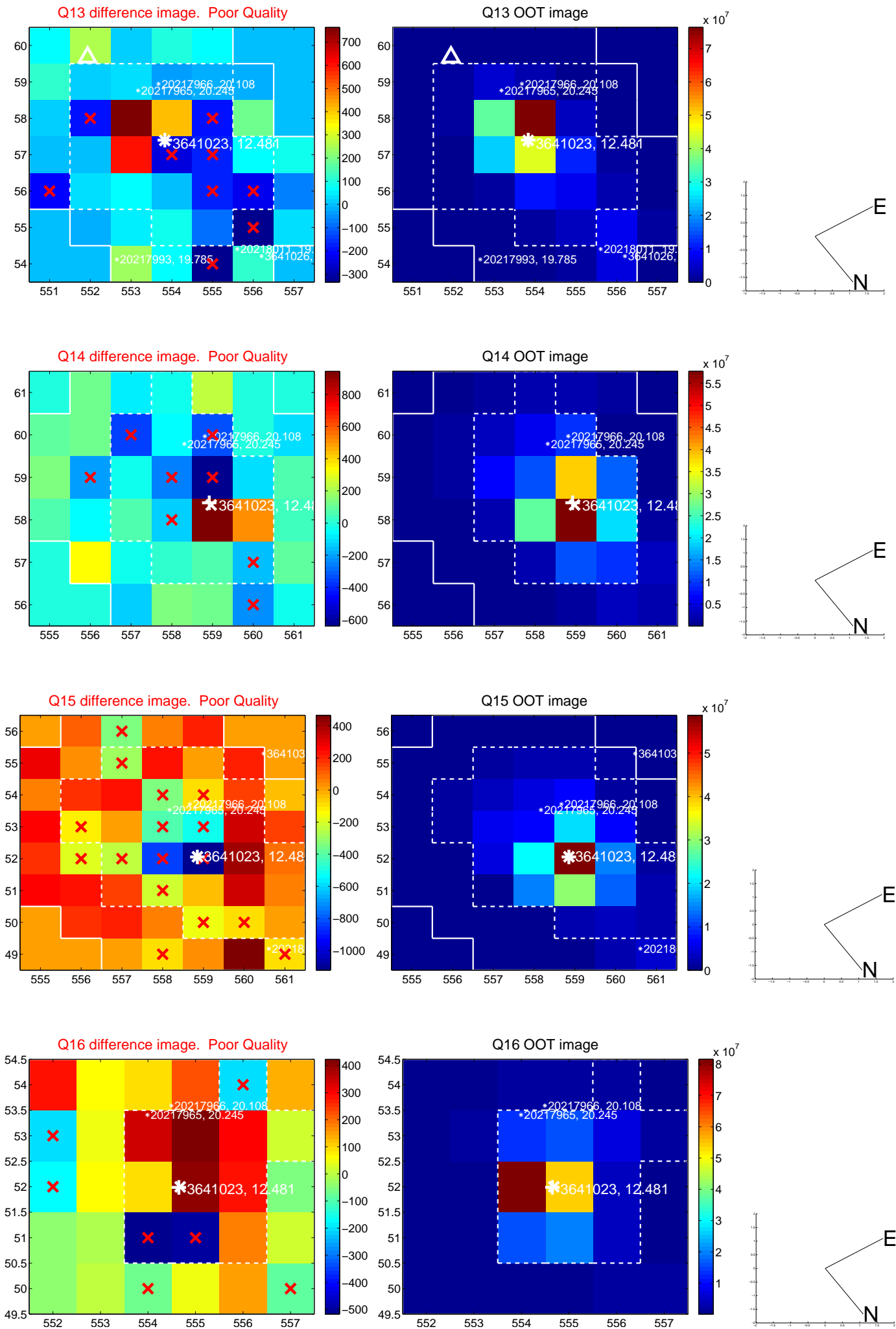
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

