

KIC 008454553

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})
008454553-01	OBS	No	0.606292	131.968374	60.5	1.564	11.2	10.2	3.36	6996	3.03	85020.65
008454553-02	OBS	No	0.561776	131.566405	90.5	1.779	10.7	12.1	3.36	6996	3.72	94120.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008454553-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008454553-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

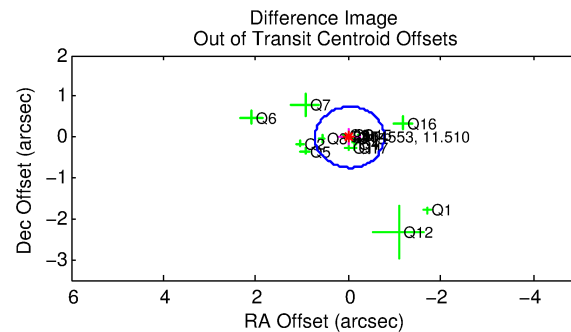
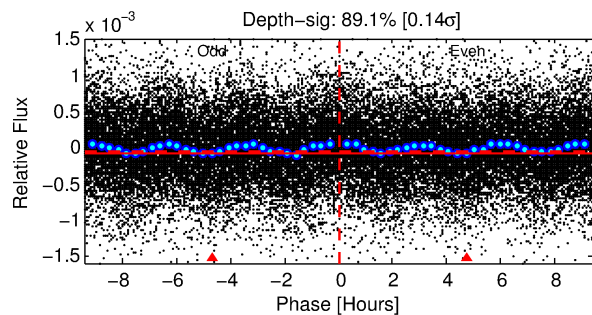
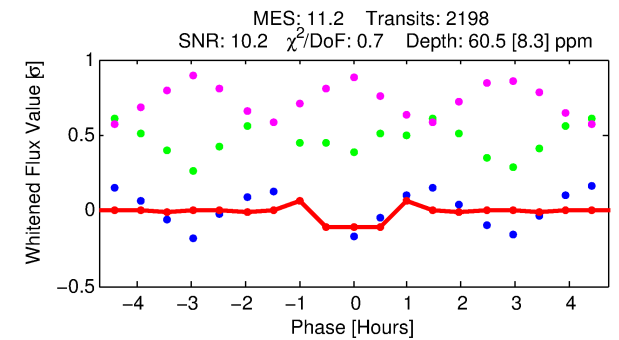
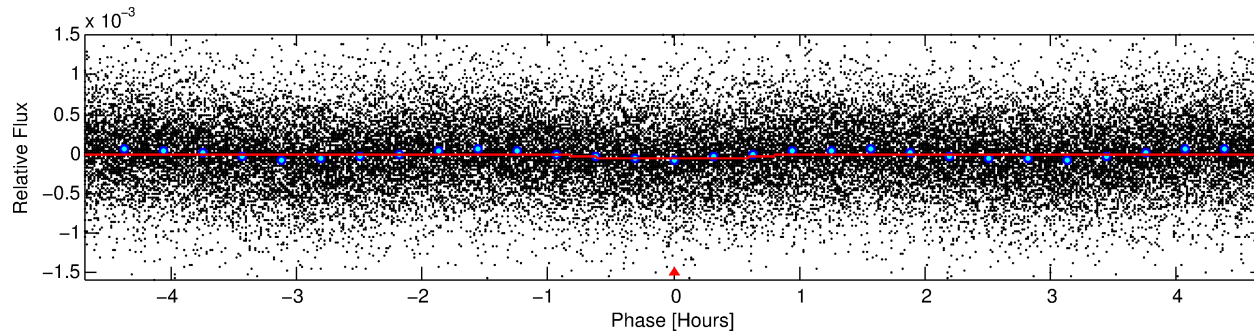
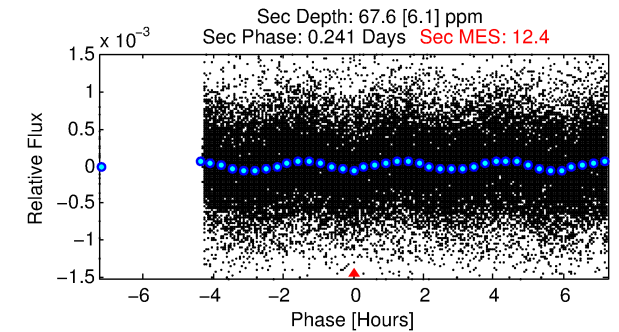
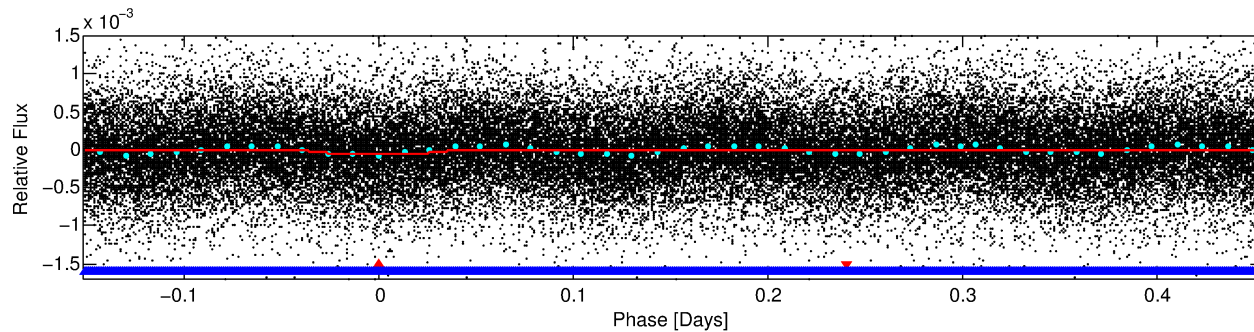
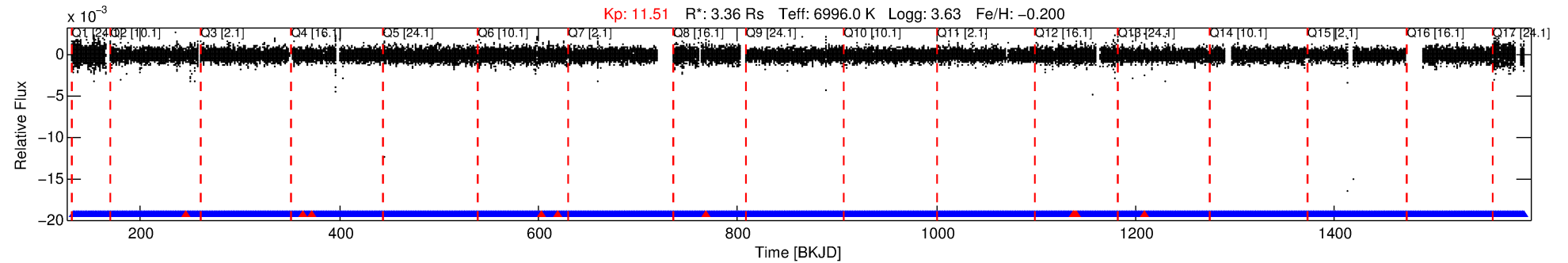
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008454553-01

No Significant Match Found

DV One-Page Summary

KIC: 8454553 Candidate: 1 of 2 Period: 0.606 d



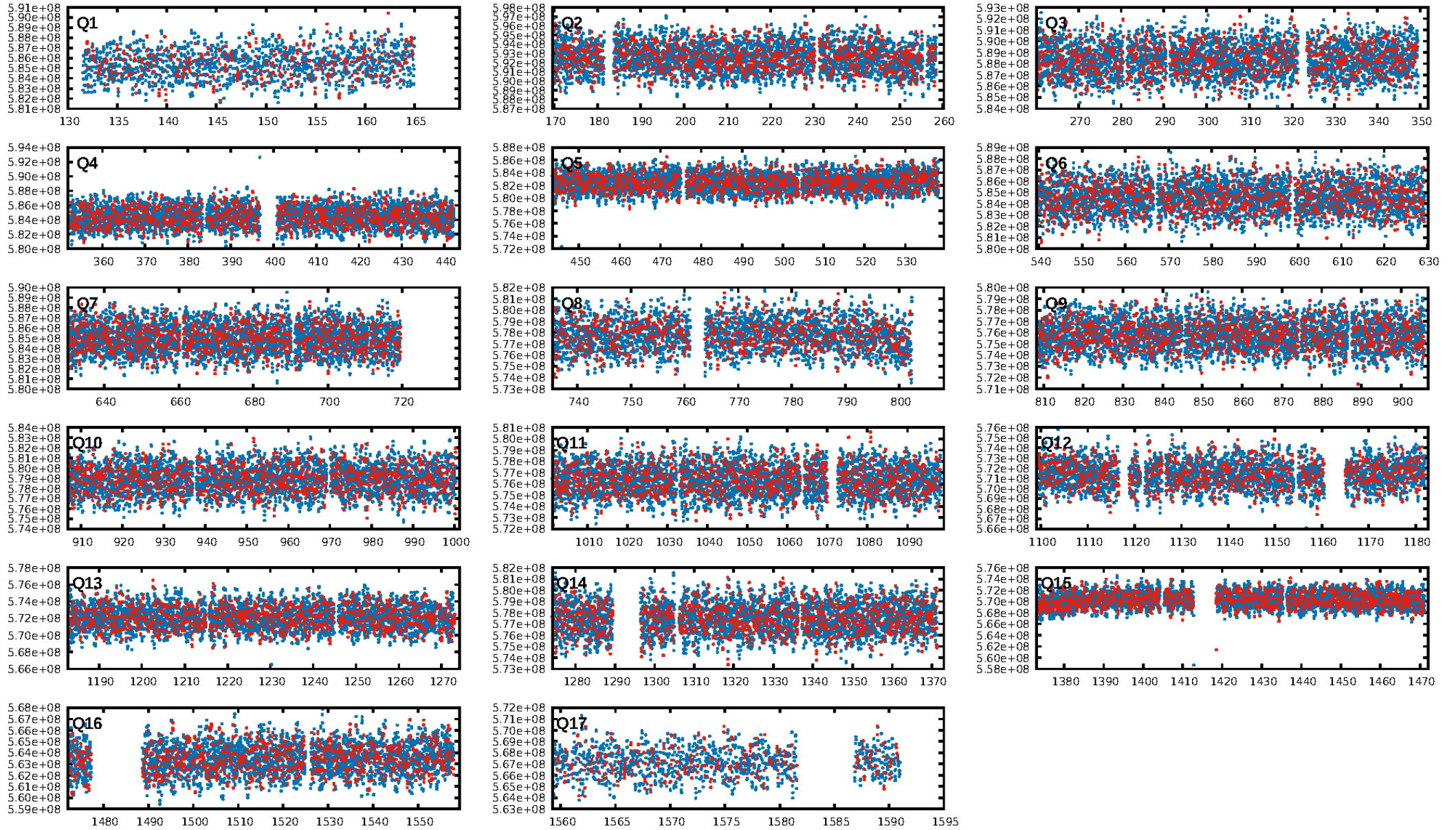
DV Fit Results:

Period = 0.60629 [0.00001] d
Epoch = 131.9684 [0.0010] BKJD
Rp/R* = 0.0083 [0.0018]
a/R* = 1.67 [1.36]
b = 0.89 [0.29]
Seff = 85020.65 [76275.99]
Teq = 4354 [977] K
Rp = 3.03 [1.70] Re
a = 0.0169 [0.0090] AU
Ag = 1.16 [1.15] [0.14σ]
Teffp = 6979 [819] K [2.06σ]

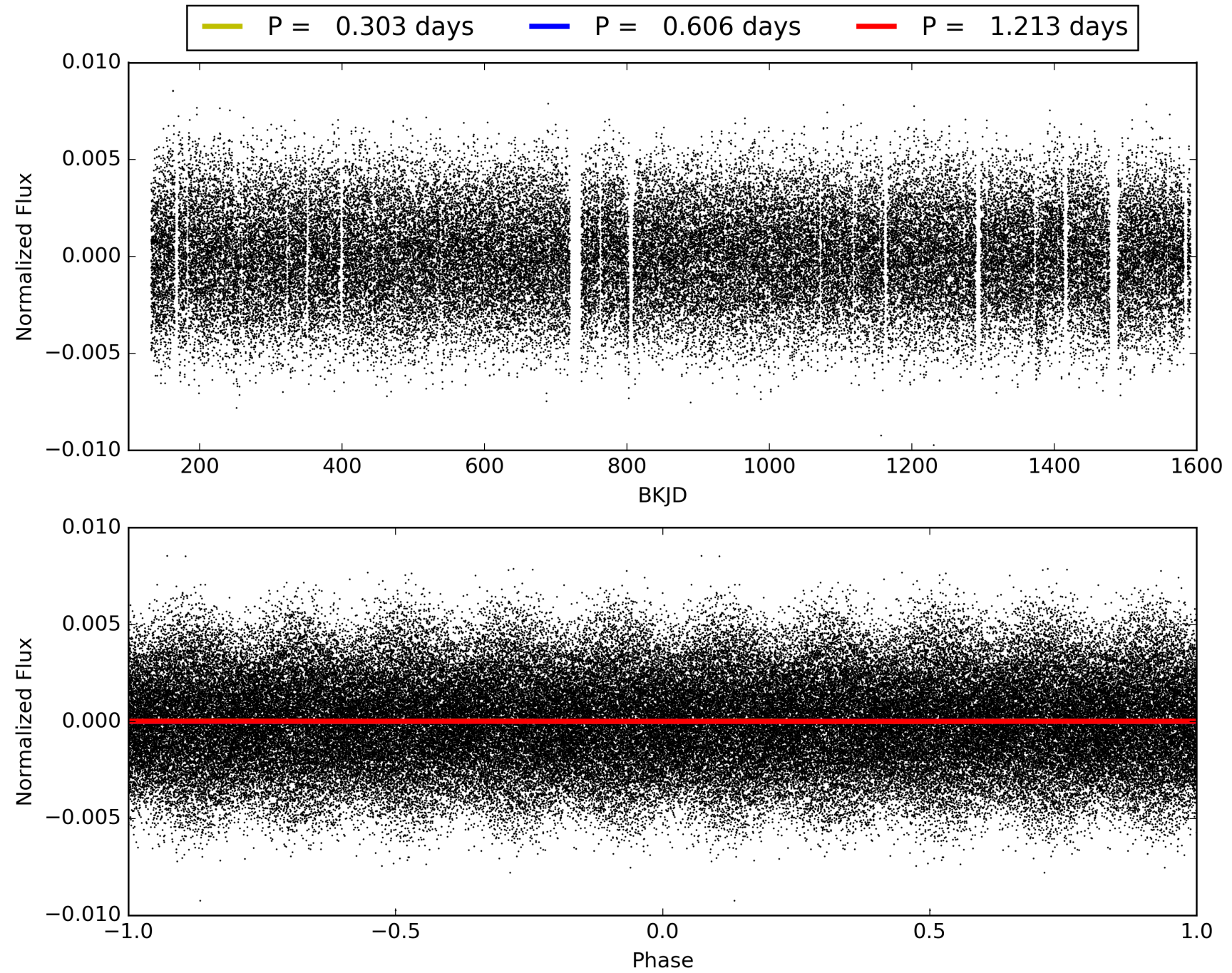
DV Diagnostic Results:

ShortPeriod-sig: 34.8% [0.45σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2089/2099]
GhostDiagnostic-chr: 0.4674
Centroid-sig: 0.1%
Centroid-so: 0.462 arcsec [2.00σ]
OotOffset-rm: 0.021 arcsec [0.08σ]
KicOffset-rm: 0.024 arcsec [0.10σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.35 [6/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008454553-01, PDC Light Curves

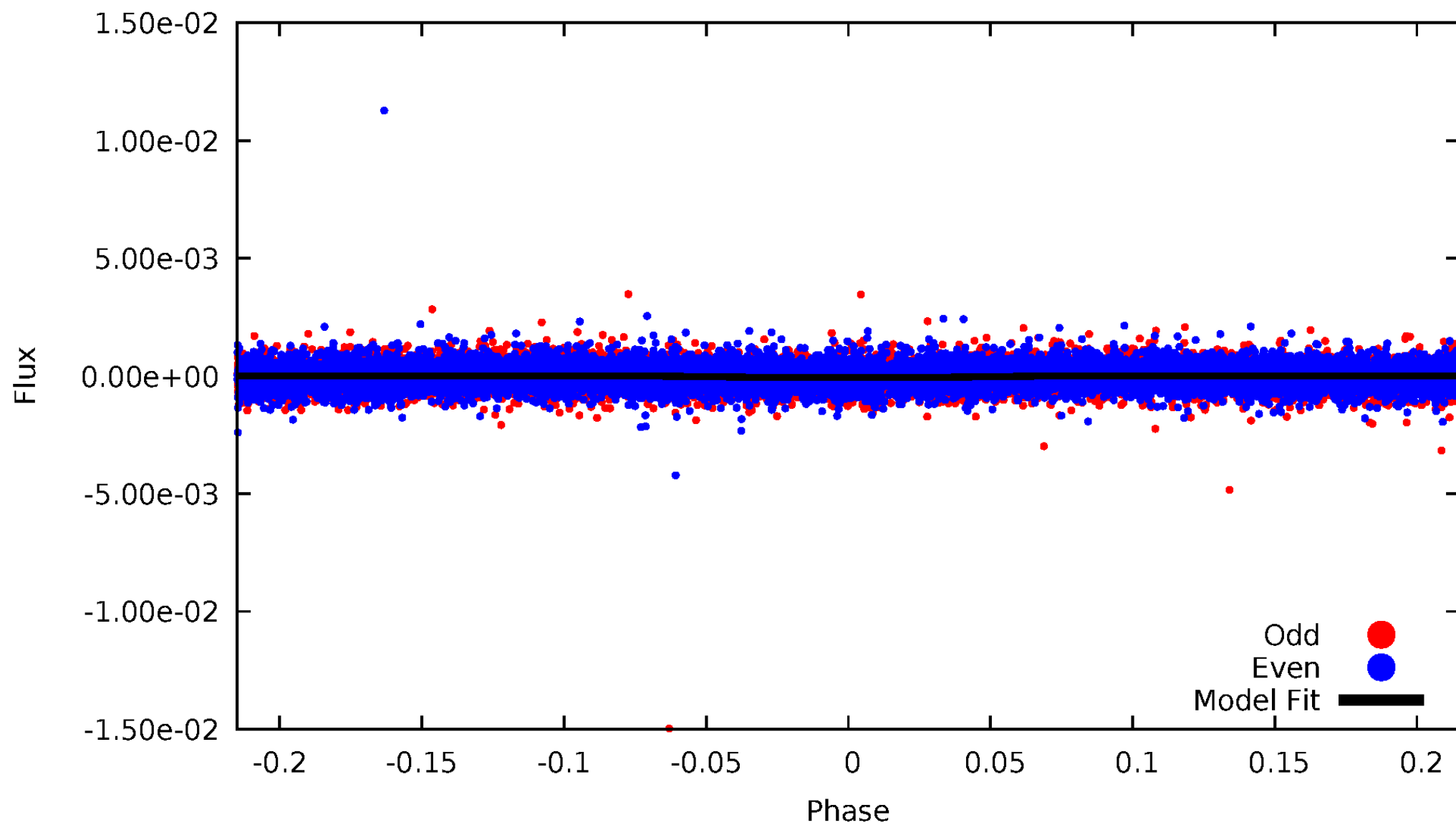


TCE 008454553-01



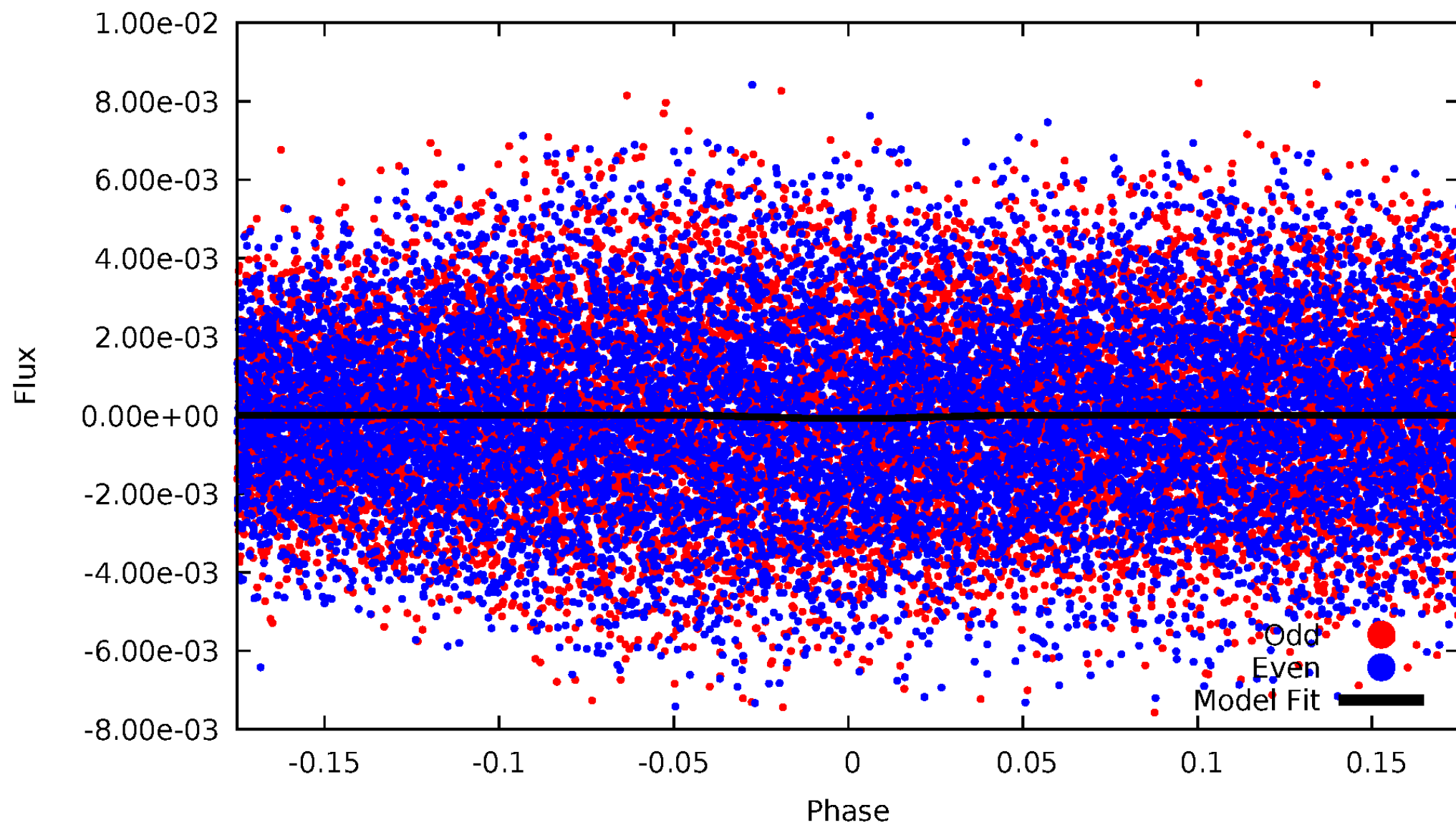
DV Odd/Even

TCE 008454553-01



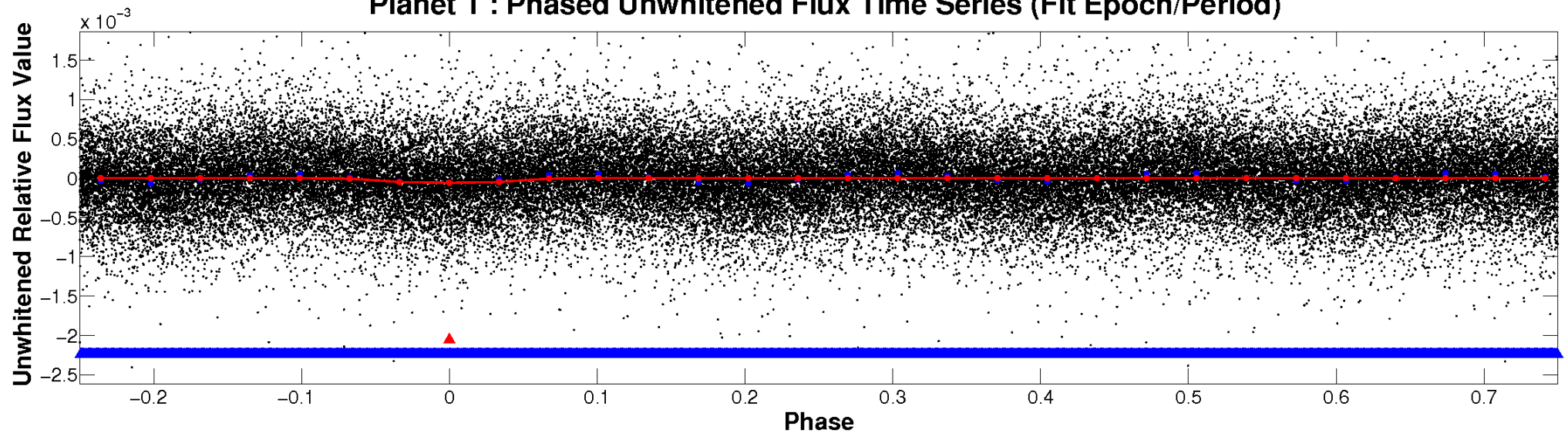
ALT Odd/Even

TCE 008454553-01

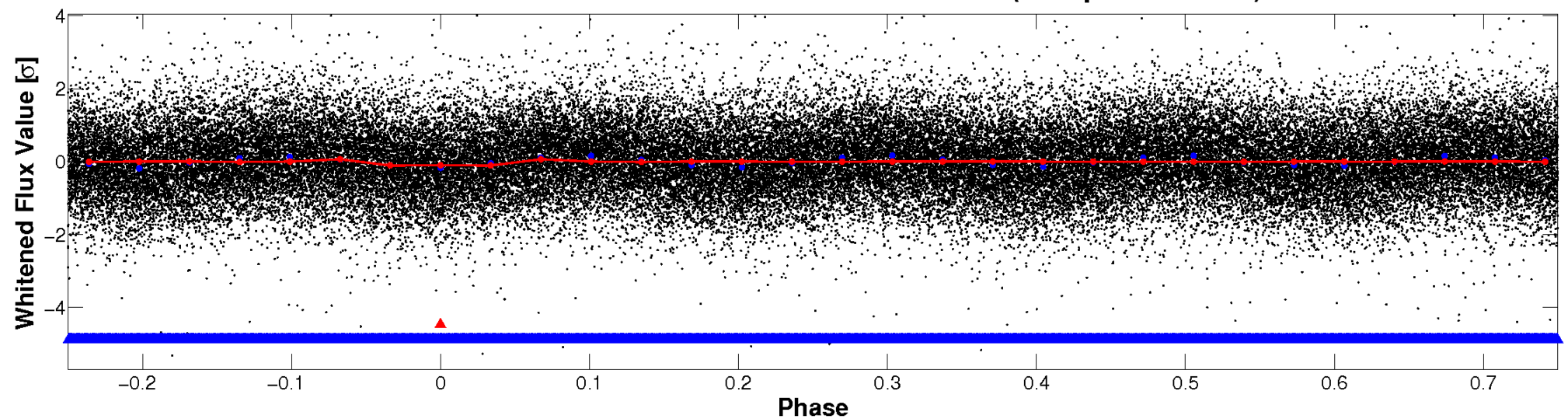


Non-Whitened Vs. Whitened Light Curve

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

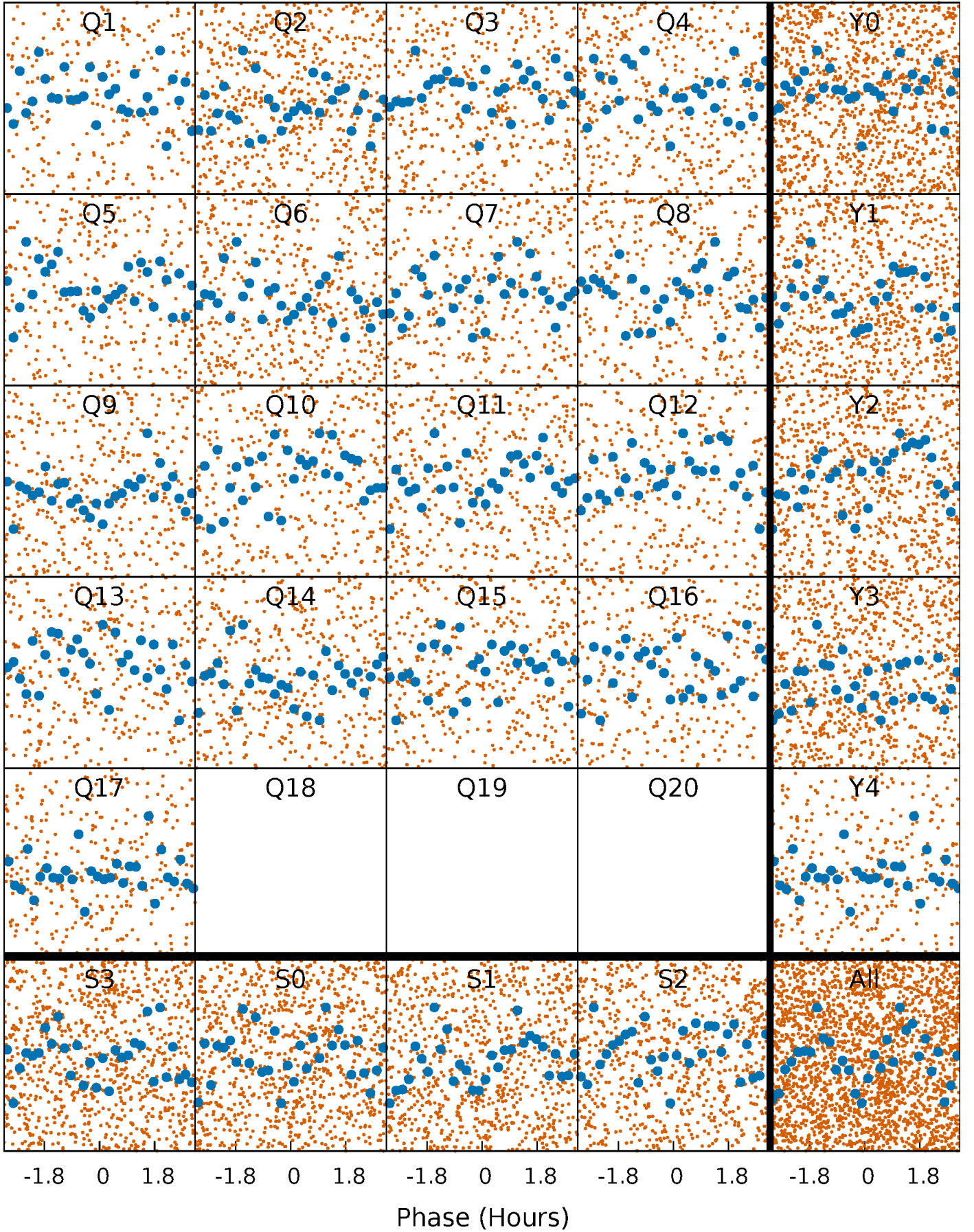


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



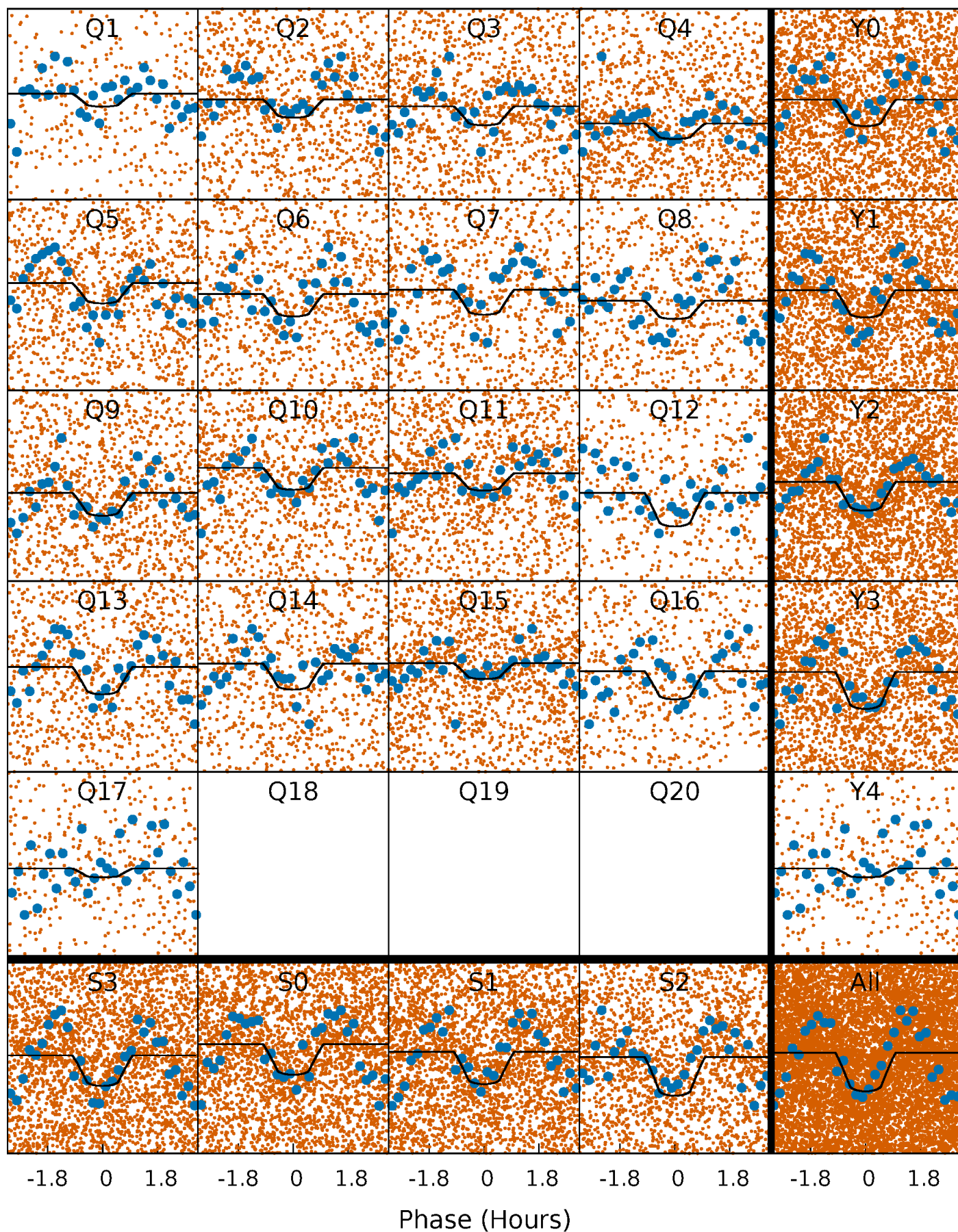
PDC Quarter-Phased Transit Curves

TCE 008454553-01 P= 0.606292 Days $T_0=131.968374$ (BKJD)



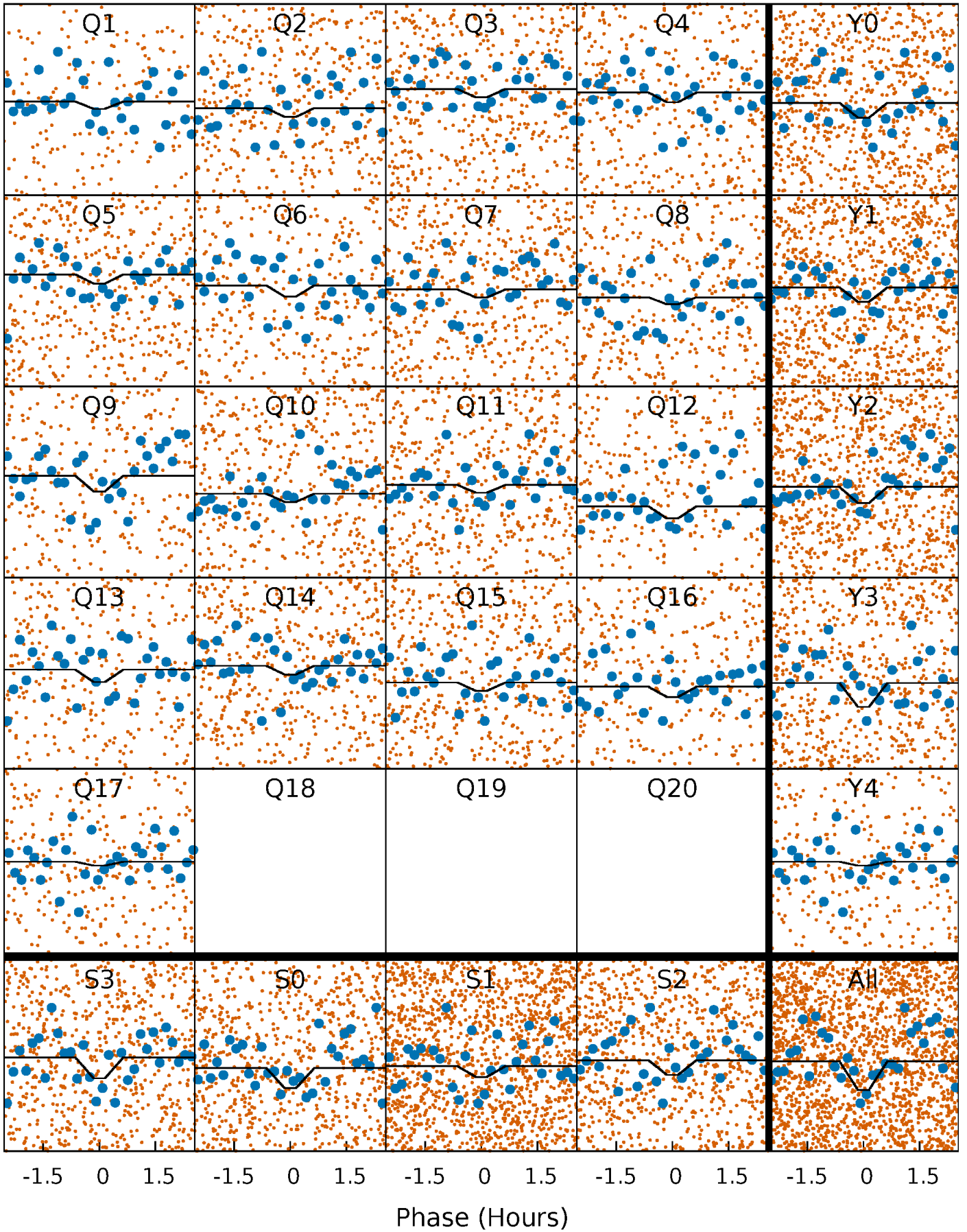
DV Quarter-Phased Transit Curves

TCE 008454553-01 P= 0.606292 Days $T_0=131.968374$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

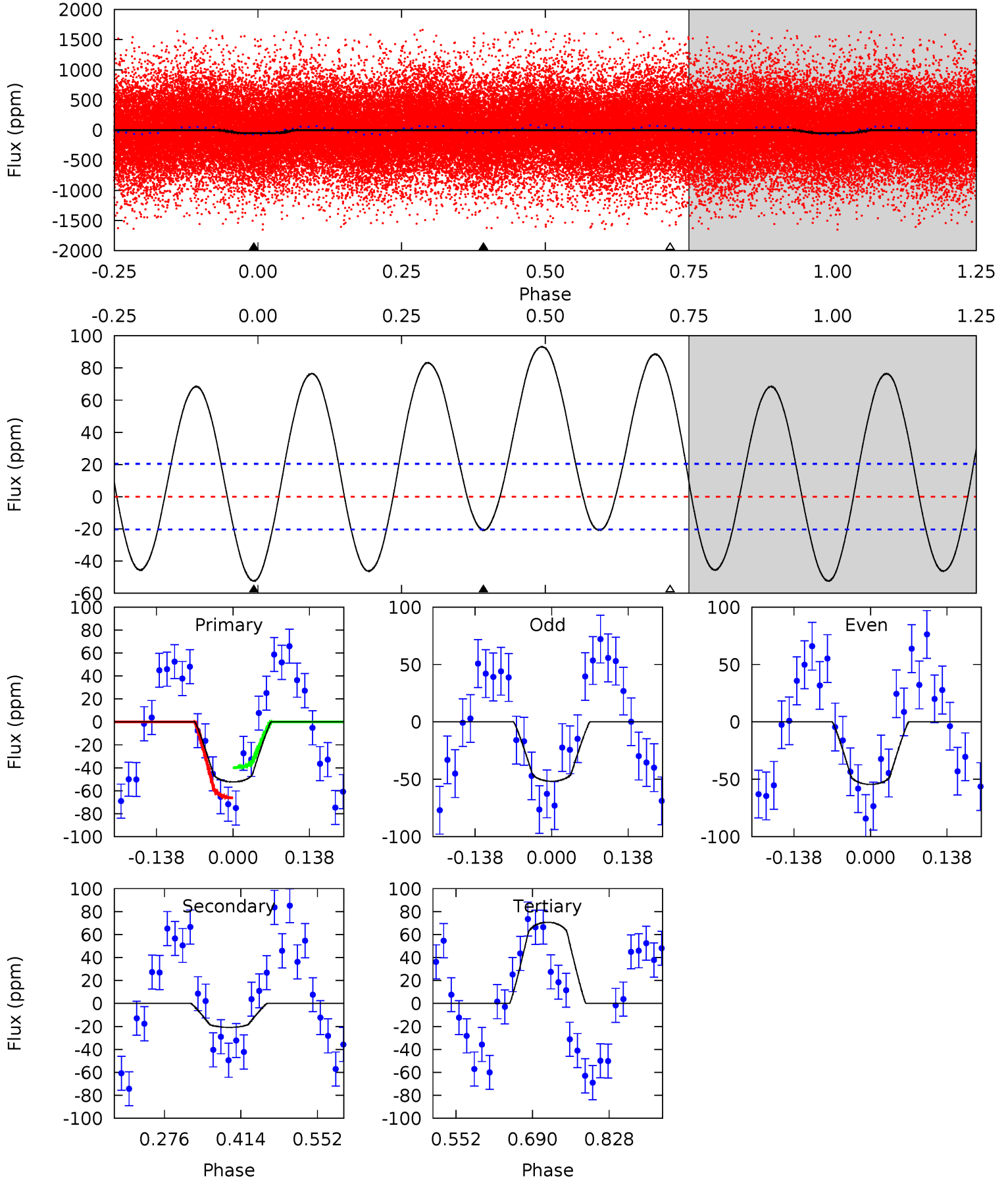
TCE 008454553-01 P= 0.606300 Days $T_0=131.951095$ (BKJD)



DV Model-Shift Uniqueness Test

008454553-01, P = 0.606292 Days, E = 131.362082 Days

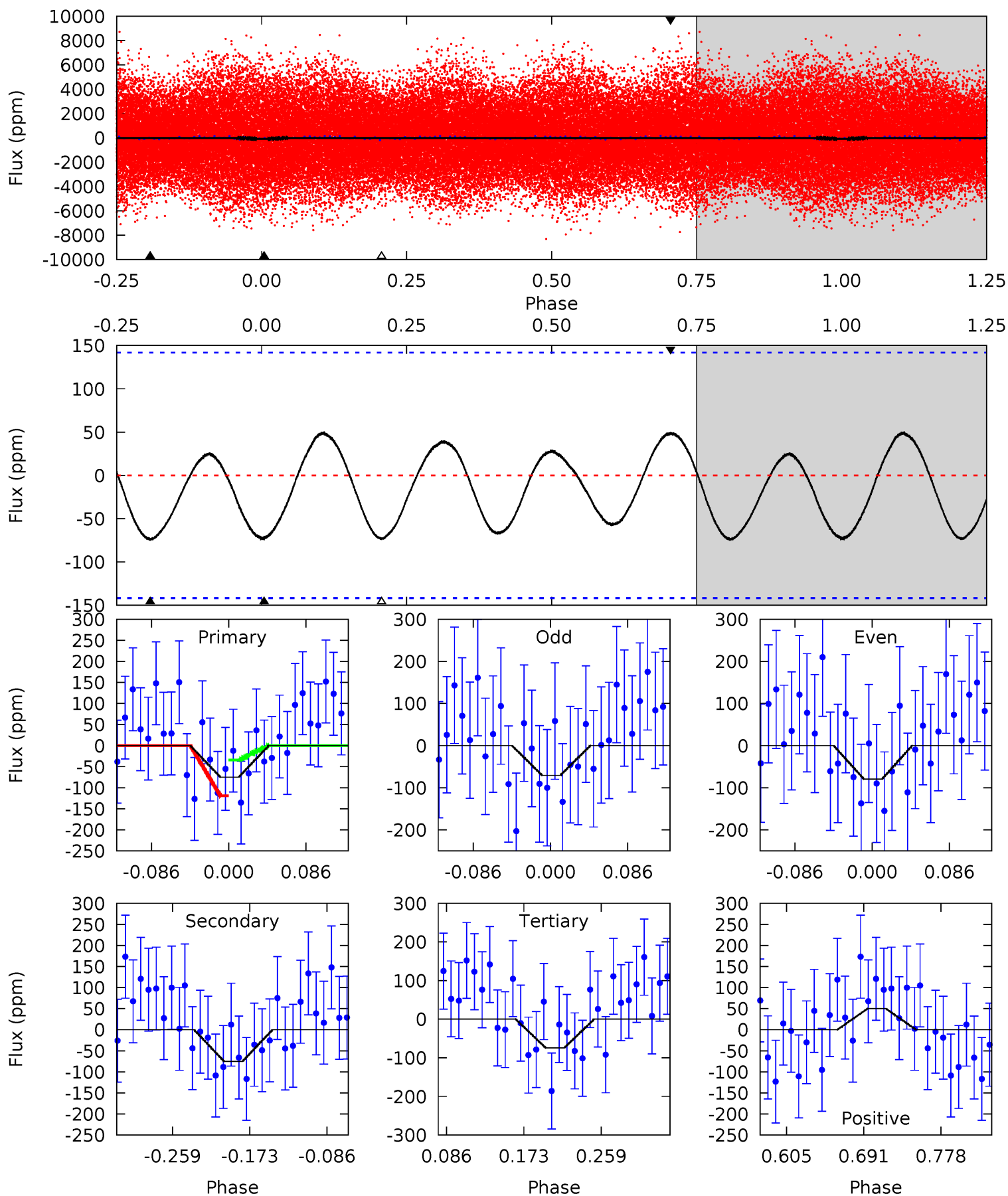
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	4.59	-15.6	0	4.50	1.48	8.88	27.1	11.5	20.2	4.59	0.30	1.14	0.64	2.94



Alt Model-Shift Uniqueness Test

008454553-01, P = 0.606300 Days, E = 131.344795 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.43	2.44	2.42	1.62	4.60	1.71	1.23	0.01	0.81	0.03	0.82	0.14	0.65	0.40	1.35



Stellar Parameters For KIC 008454553

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6996^{+211}_{-253}	$3.627^{+0.531}_{-0.059}$	$-0.200^{+0.250}_{-0.300}$	$3.359^{+0.436}_{-1.742}$	$1.742^{+0.159}_{-0.477}$	$0.065^{+0.384}_{-0.014}$
	+3%/-4%	+15%/-2%	+125%/-150%	+13%/-52%	+9%/-27%	+593%/-21%
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 008454553-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 5	$2.62^{+0.78}_{-0.85}$	5789^{+426}_{-774}	4200^{+1090}_{-7627}	$0.461^{+0.528}_{-0.199}$
Alt.	-75 ± 31	$2.83^{+0.91}_{-0.79}$	5824^{+407}_{-747}	6394^{+1433}_{-1380}	$1.385^{+1.439}_{-0.732}$

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 $A_{obs} \gg 1.0$

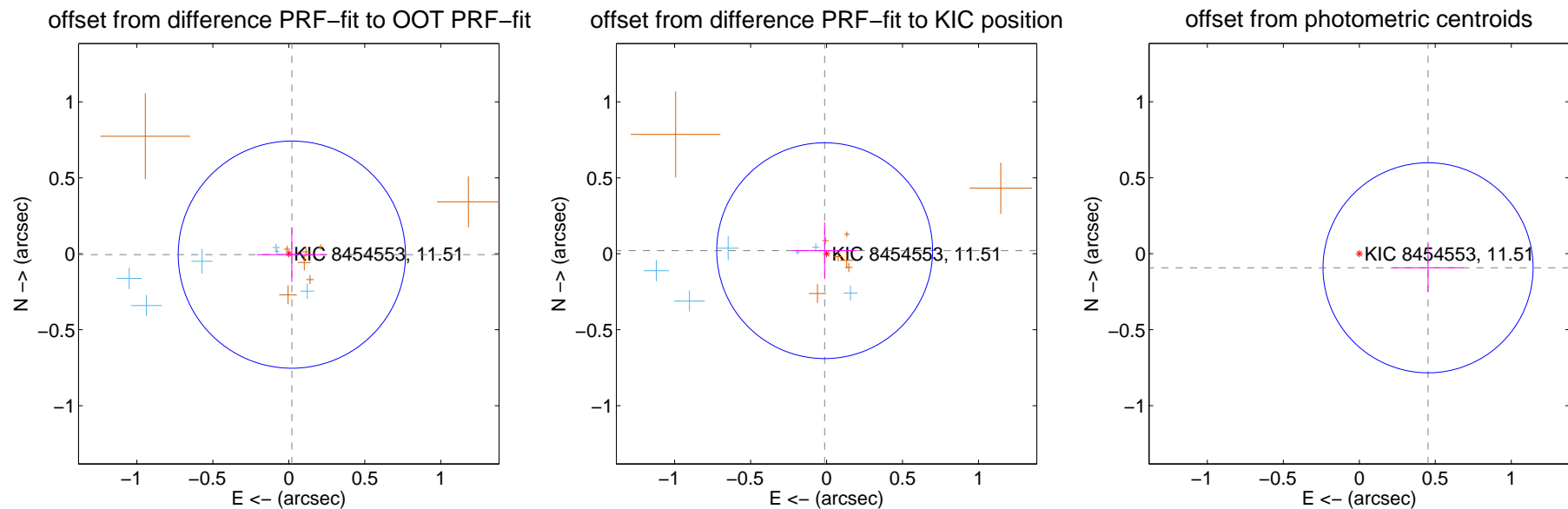
DV Centroid Data

Supplemental centroid analysis for 008454553-01. **Kepler magnitude: 11.51.** Transit SNR 10.23

There are 6 quarters with good PRF difference image offsets

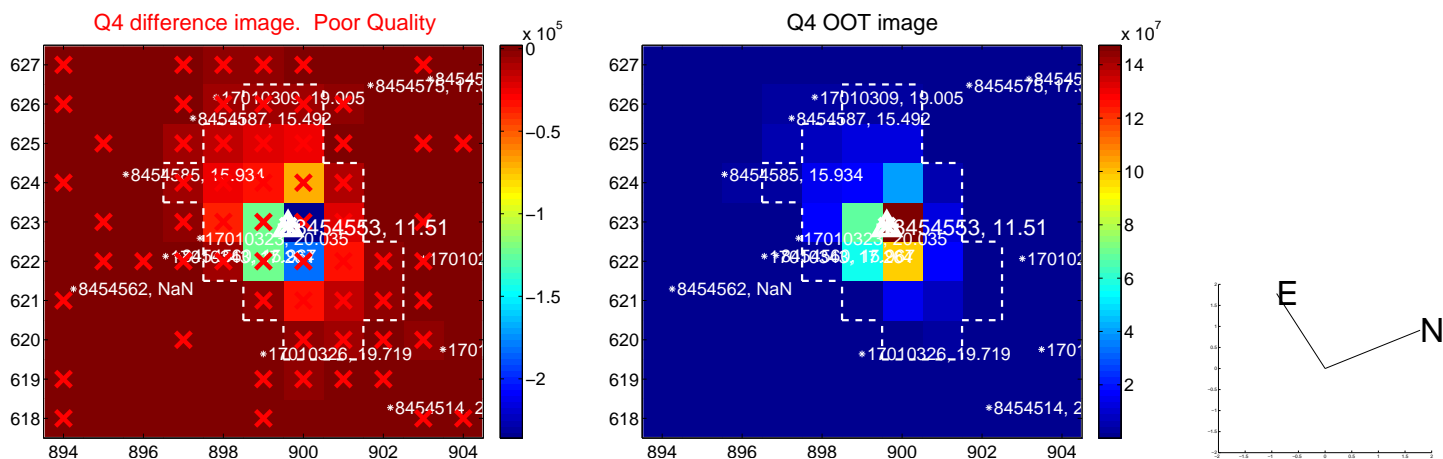
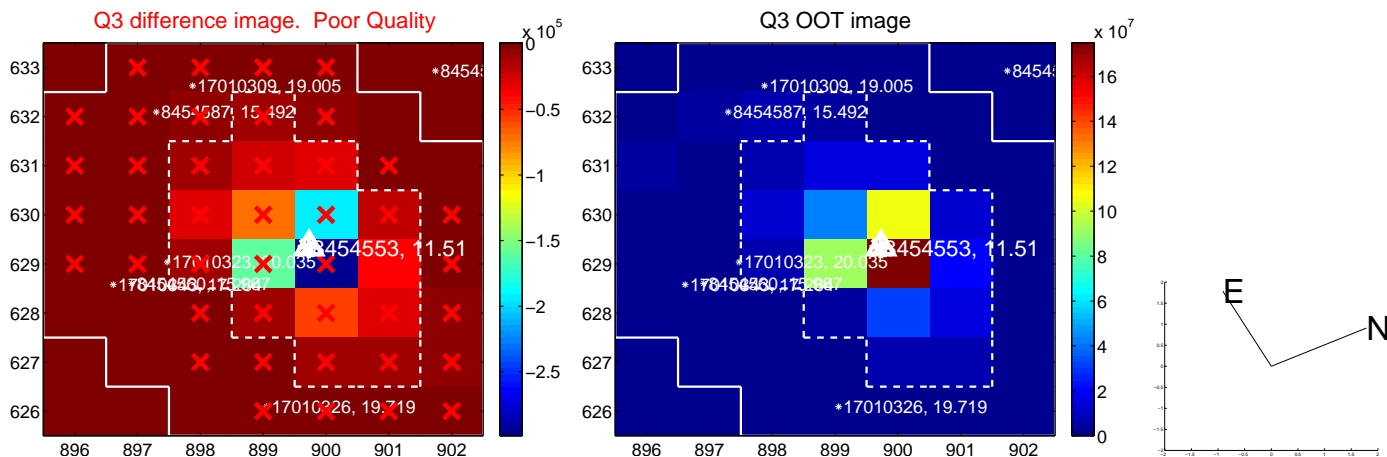
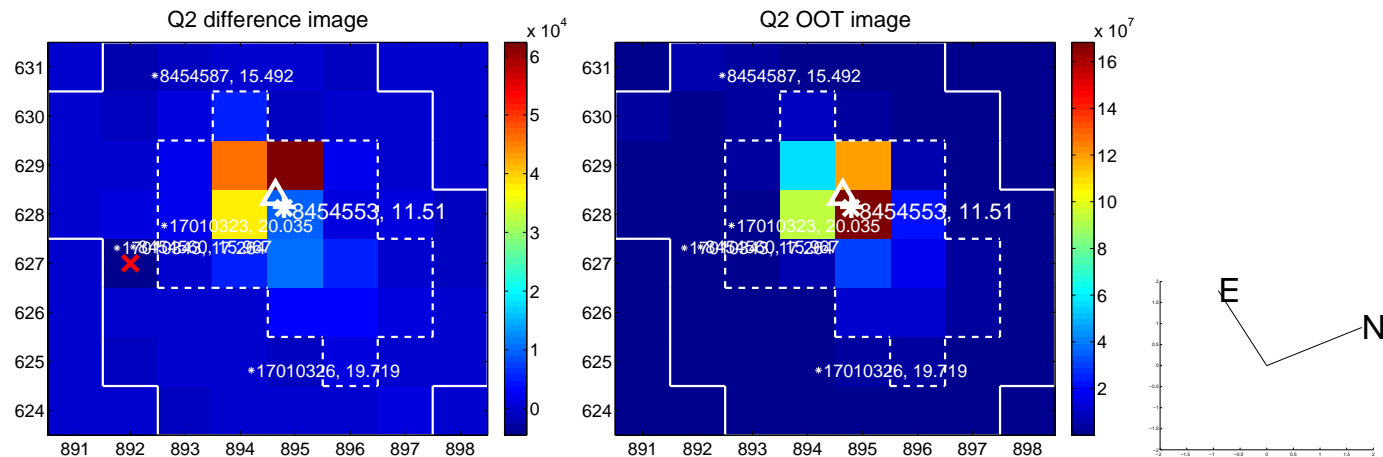
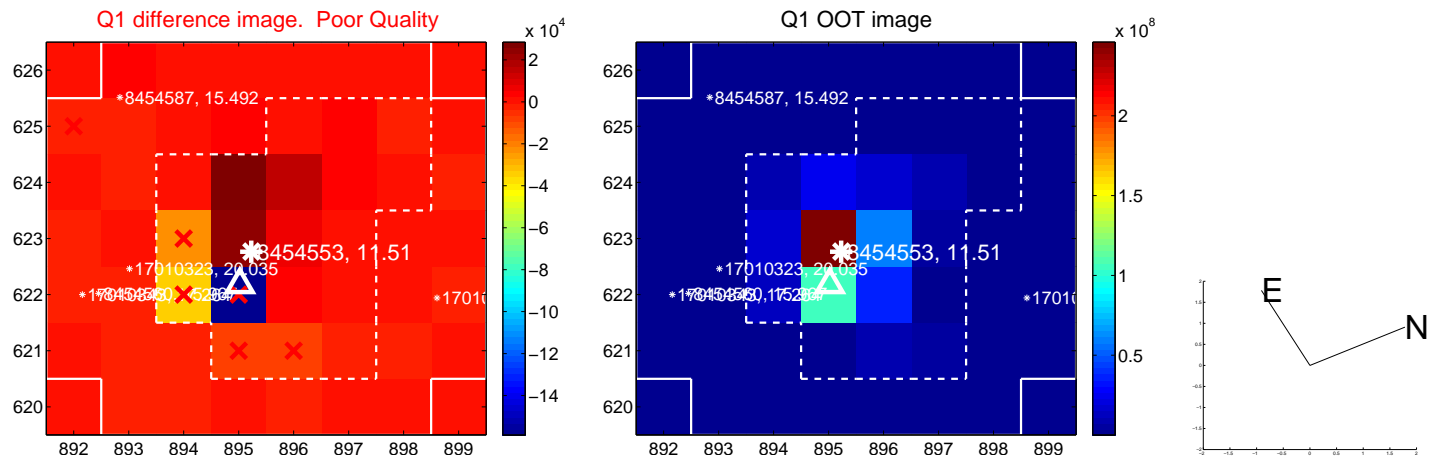
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.021 ± 0.249	0.08	-0.020 ± 0.230	-0.006 ± 0.179
PRF-fit source offset from KIC position	0.024 ± 0.237	0.10	0.012 ± 0.215	0.020 ± 0.188
photometric centroid source offset	0.46 ± 0.23	2.00	-0.45 ± 0.23	-0.09 ± 0.16

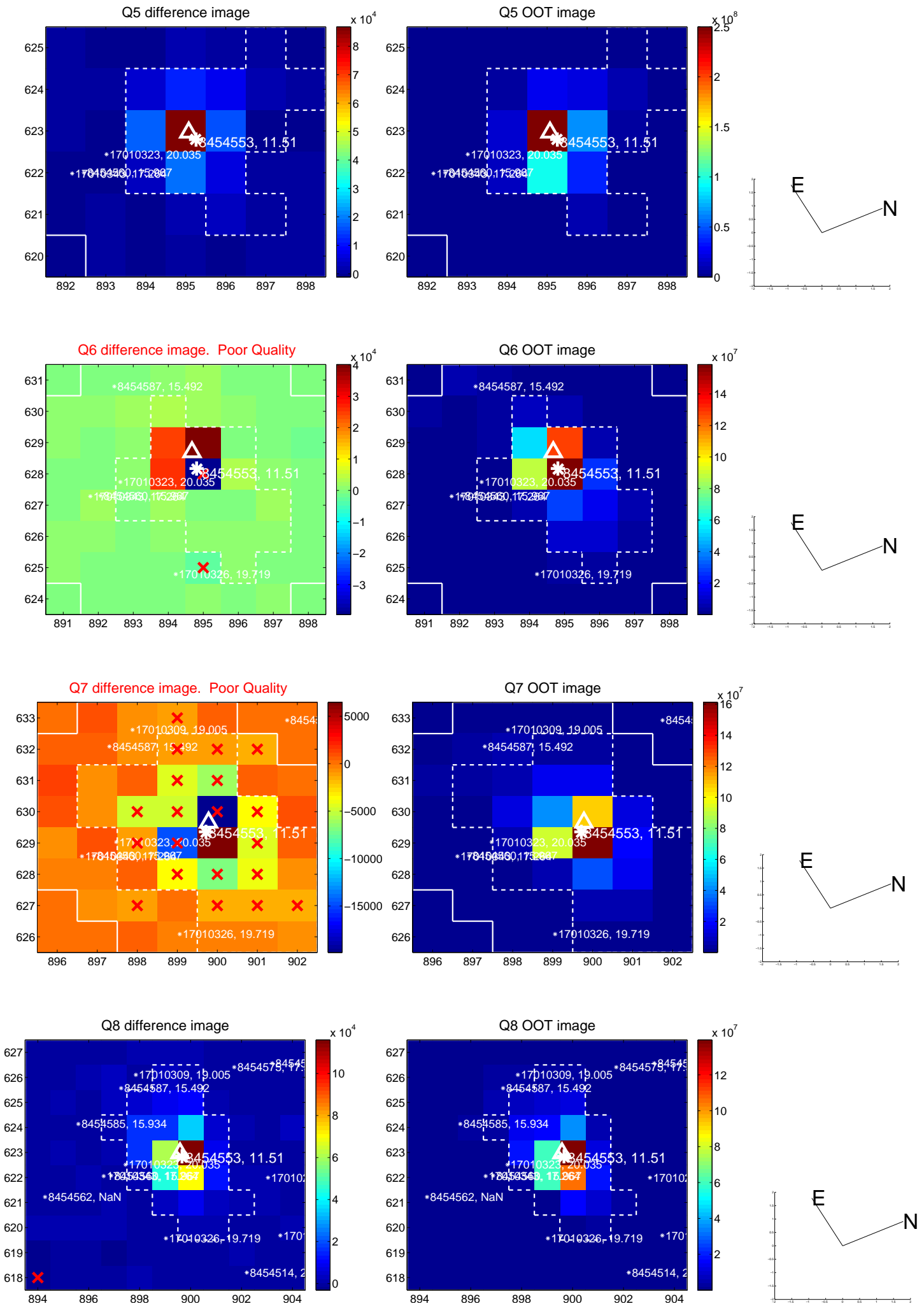


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

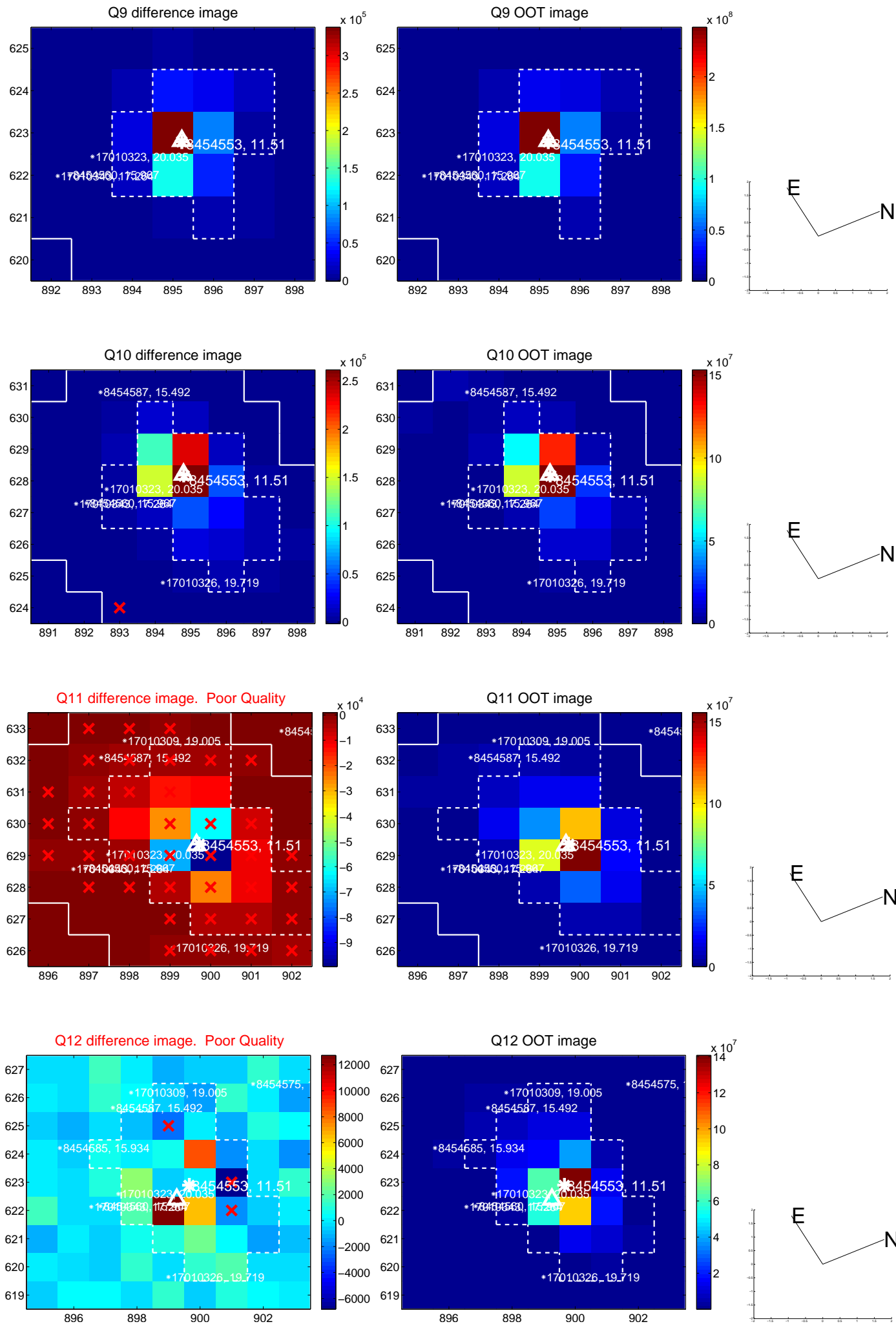
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



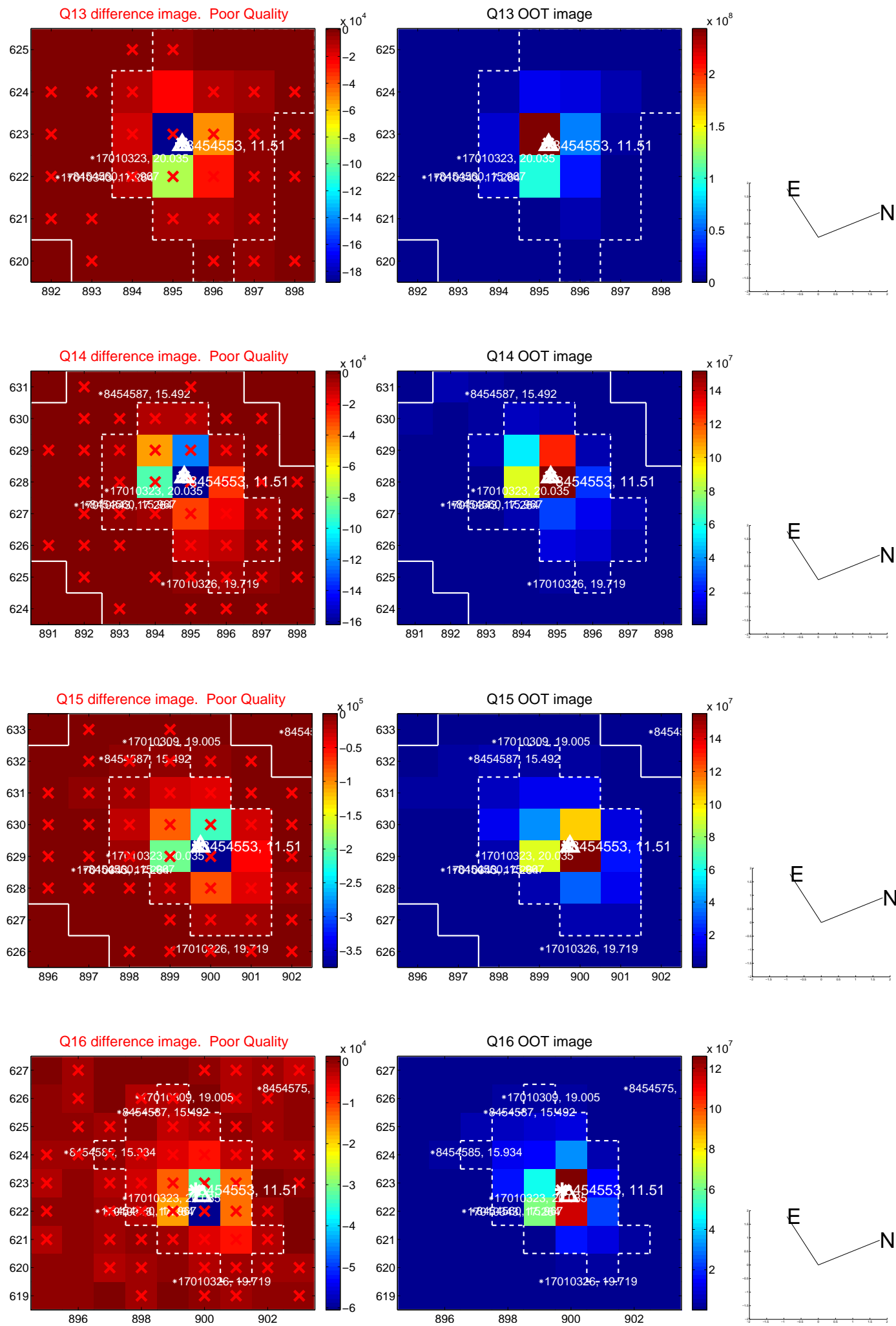
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



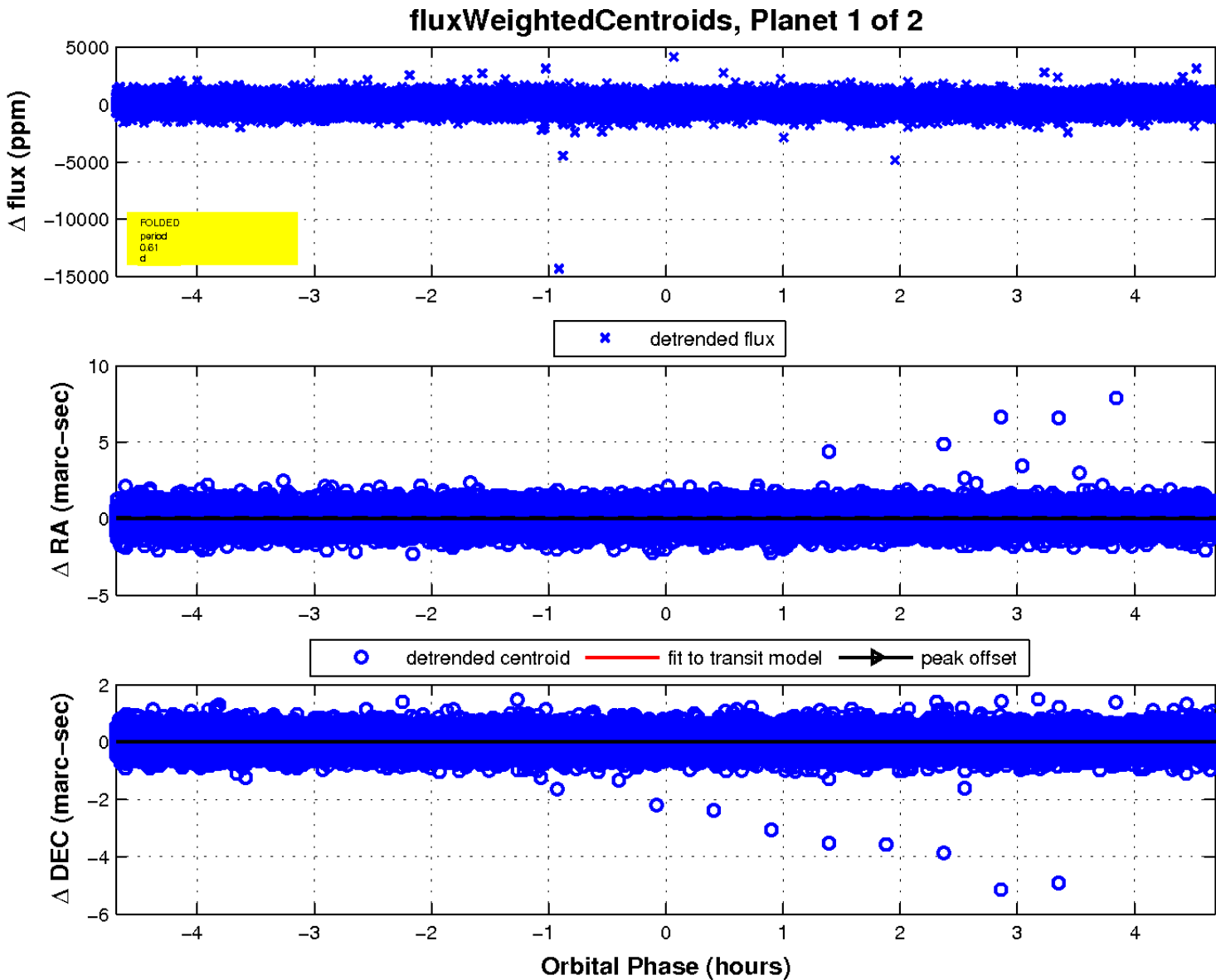
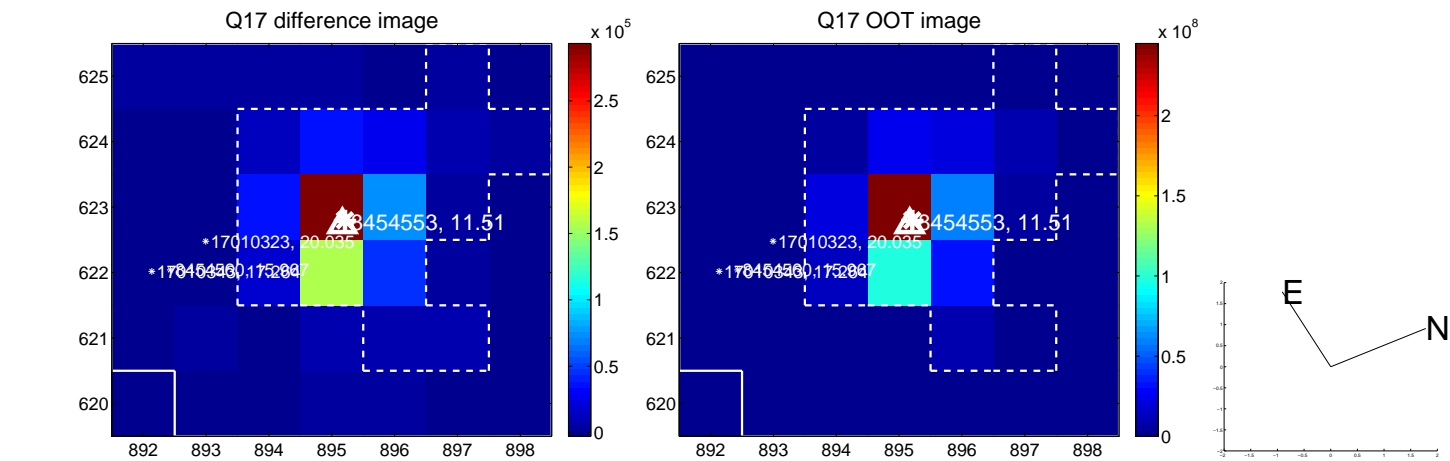
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

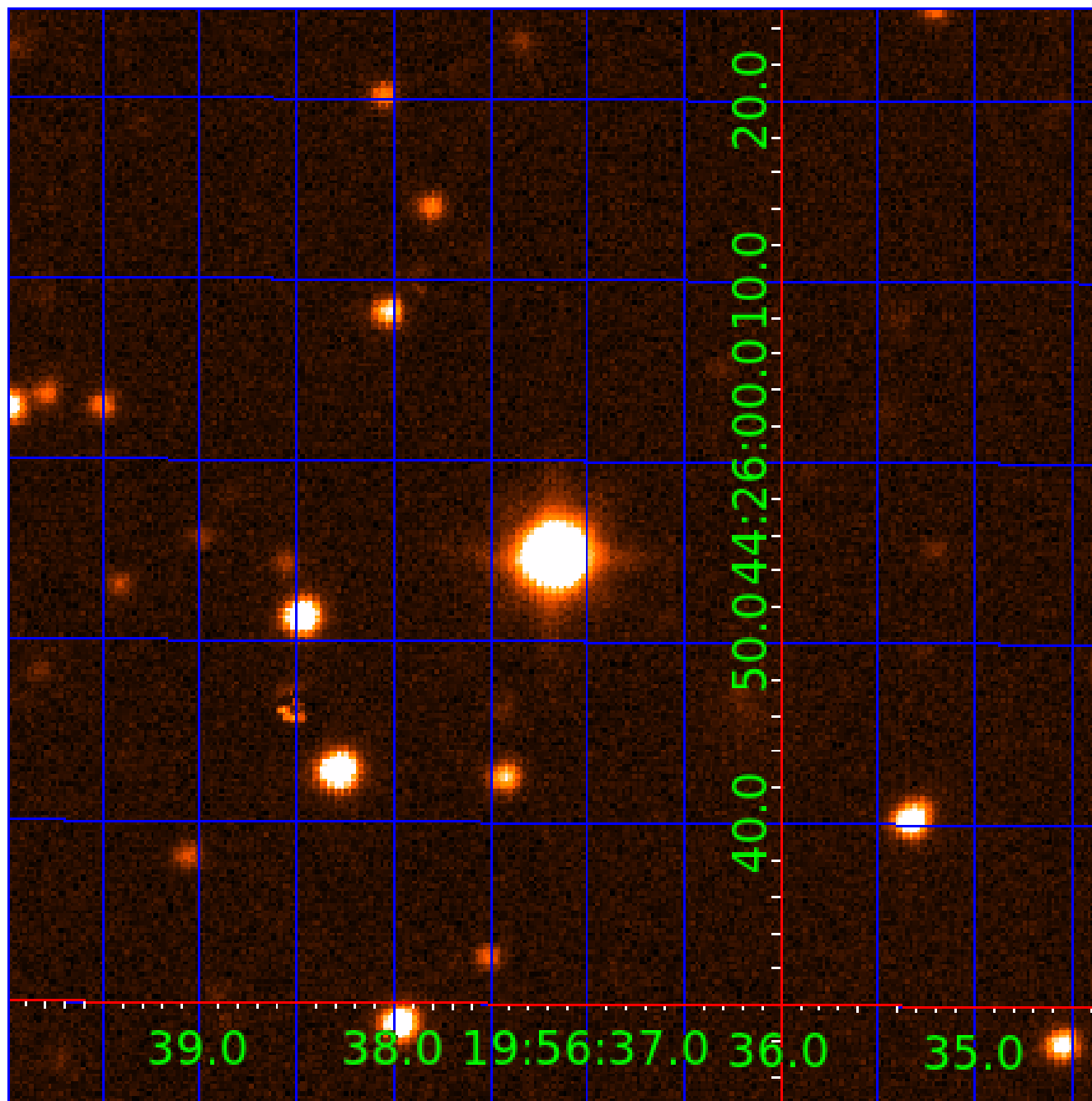


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008454553

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})
008454553-01	OBS	No	0.606292	131.968374	60.5	1.564	11.2	10.2	3.36	6996	3.03	85020.65
008454553-02	OBS	No	0.561776	131.566405	90.5	1.779	10.7	12.1	3.36	6996	3.72	94120.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008454553-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008454553-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

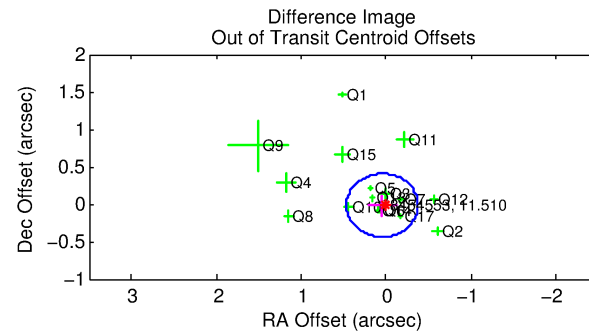
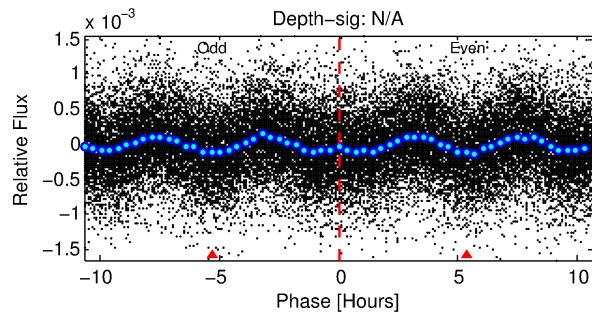
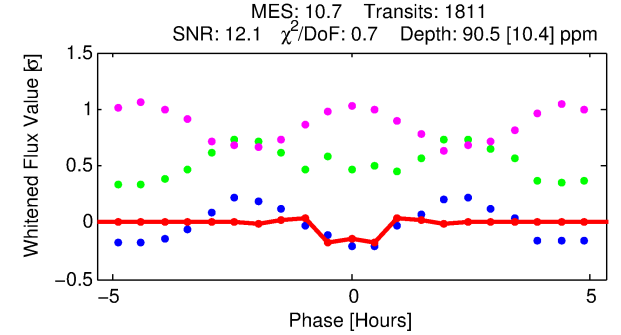
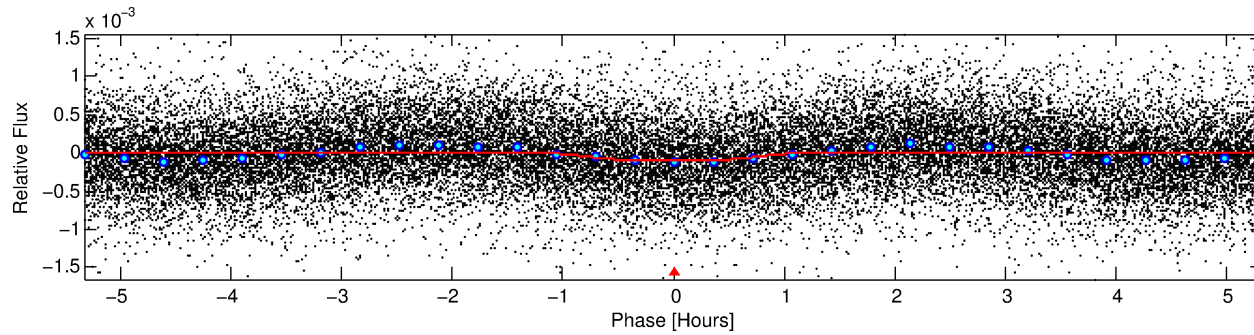
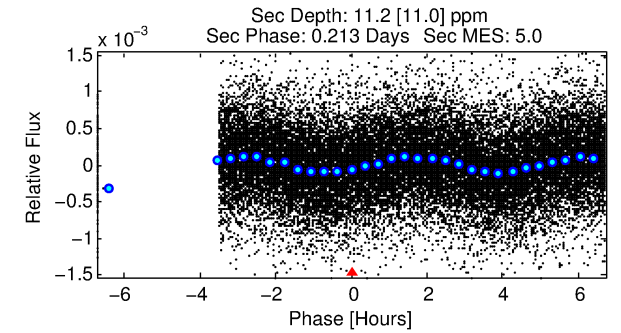
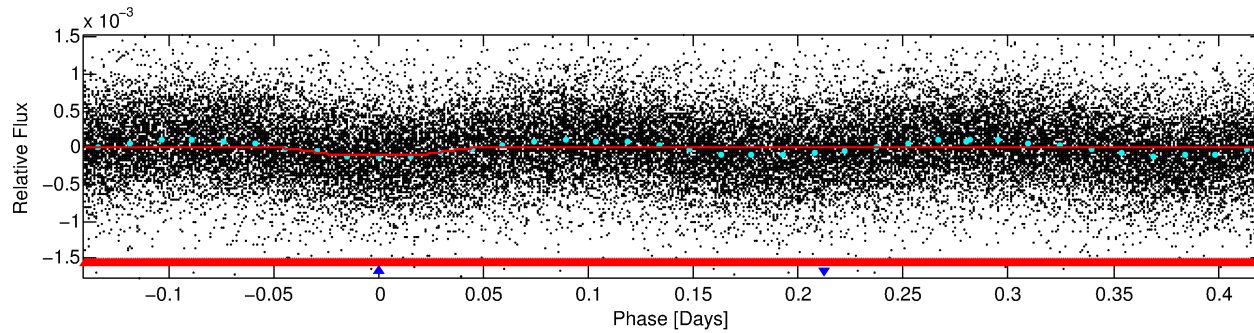
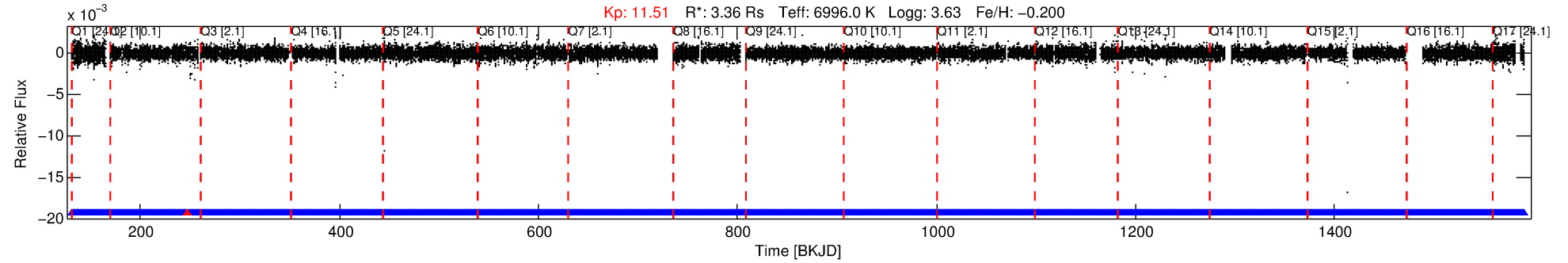
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008454553-02

No Significant Match Found

DV One-Page Summary

KIC: 8454553 Candidate: 2 of 2 Period: 0.562 d



DV Fit Results:

Period = 0.56178 [0.00001] d
Epoch = 131.5664 [0.0011] BKJD
Rp/R* = 0.0102 [0.0021]
a/R* = 1.45 [0.92]
b = 0.90 [0.26]
Seff = 94120.10 [84439.53]
Teq = 4466 [1002] K
Rp = 3.72 [2.08] Re
a = 0.0160 [0.0086] AU
Ag = 0.11 [0.16] [-5.60σ]
Teffp = 4014 [1080] K [-0.31σ]

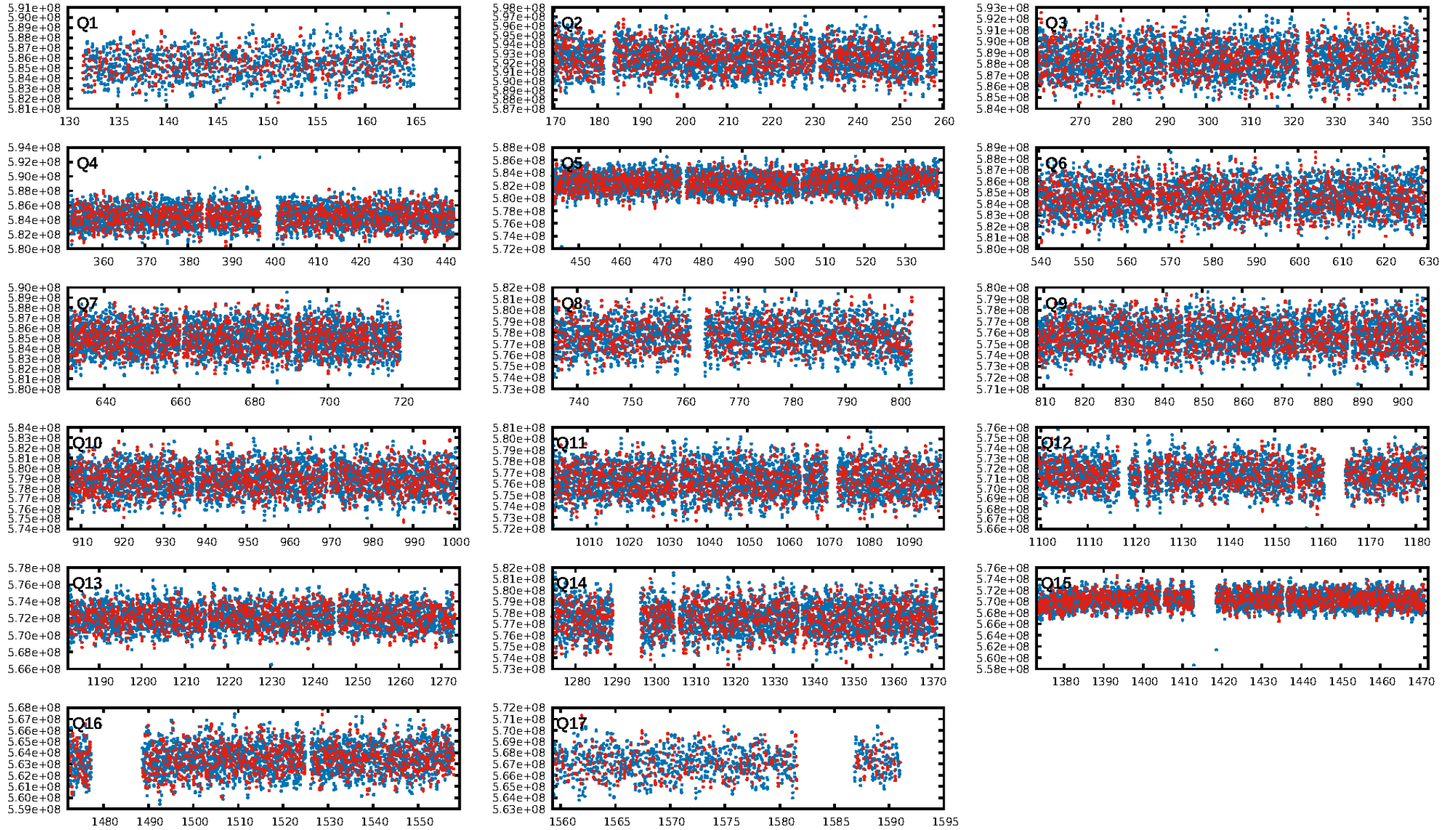
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 34.8% [0.45σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1732/1733]
GhostDiagnostic-chr: 4.006
Centroid-sig: 40.9%
Centroid-so: 0.066 arcsec [0.49σ]
OotOffset-rm: 0.046 arcsec [0.33σ]
KicOffset-rm: 0.067 arcsec [0.41σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 1.00 [17/17]

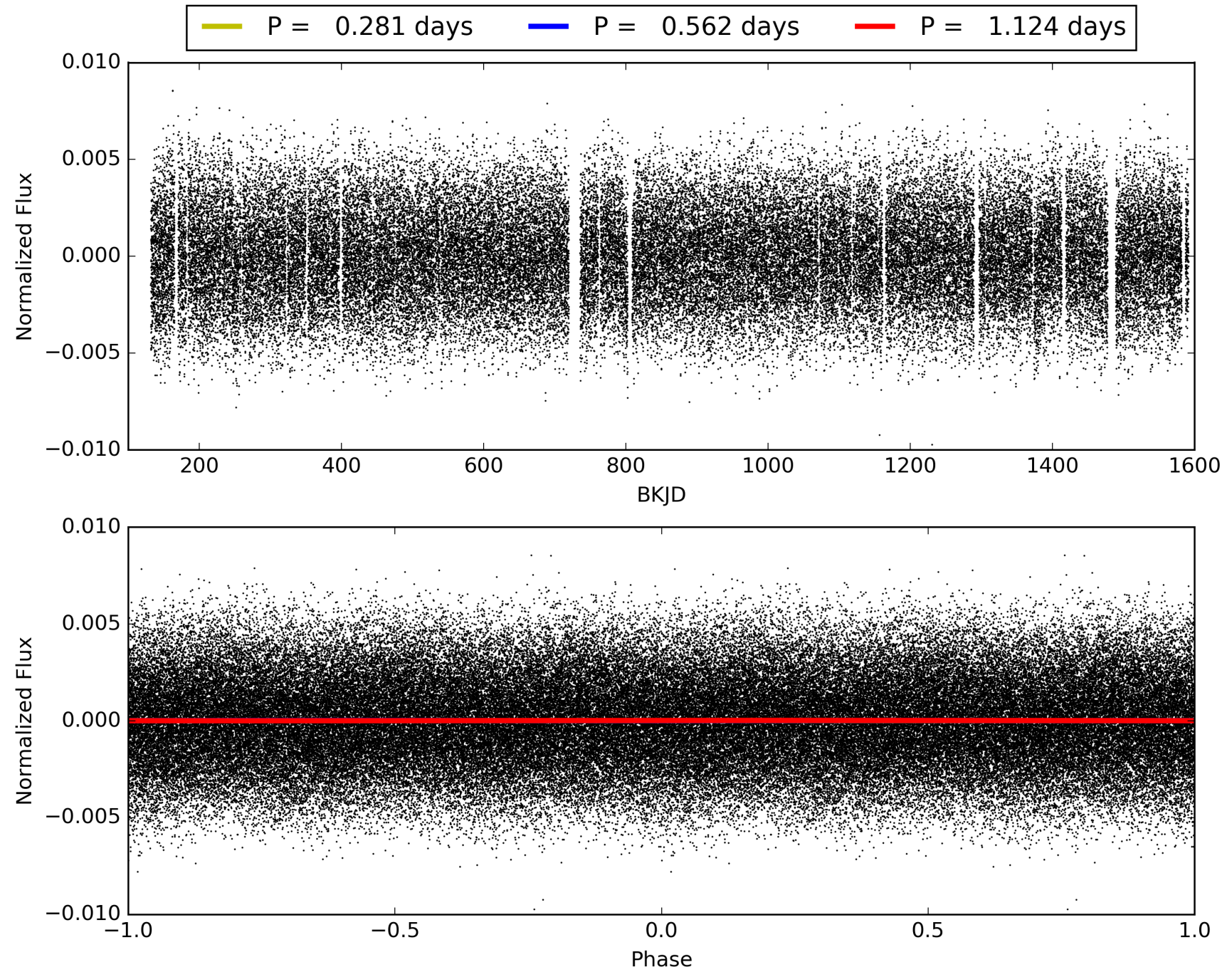
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:09:32 Z

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

TCE 008454553-02, PDC Light Curves

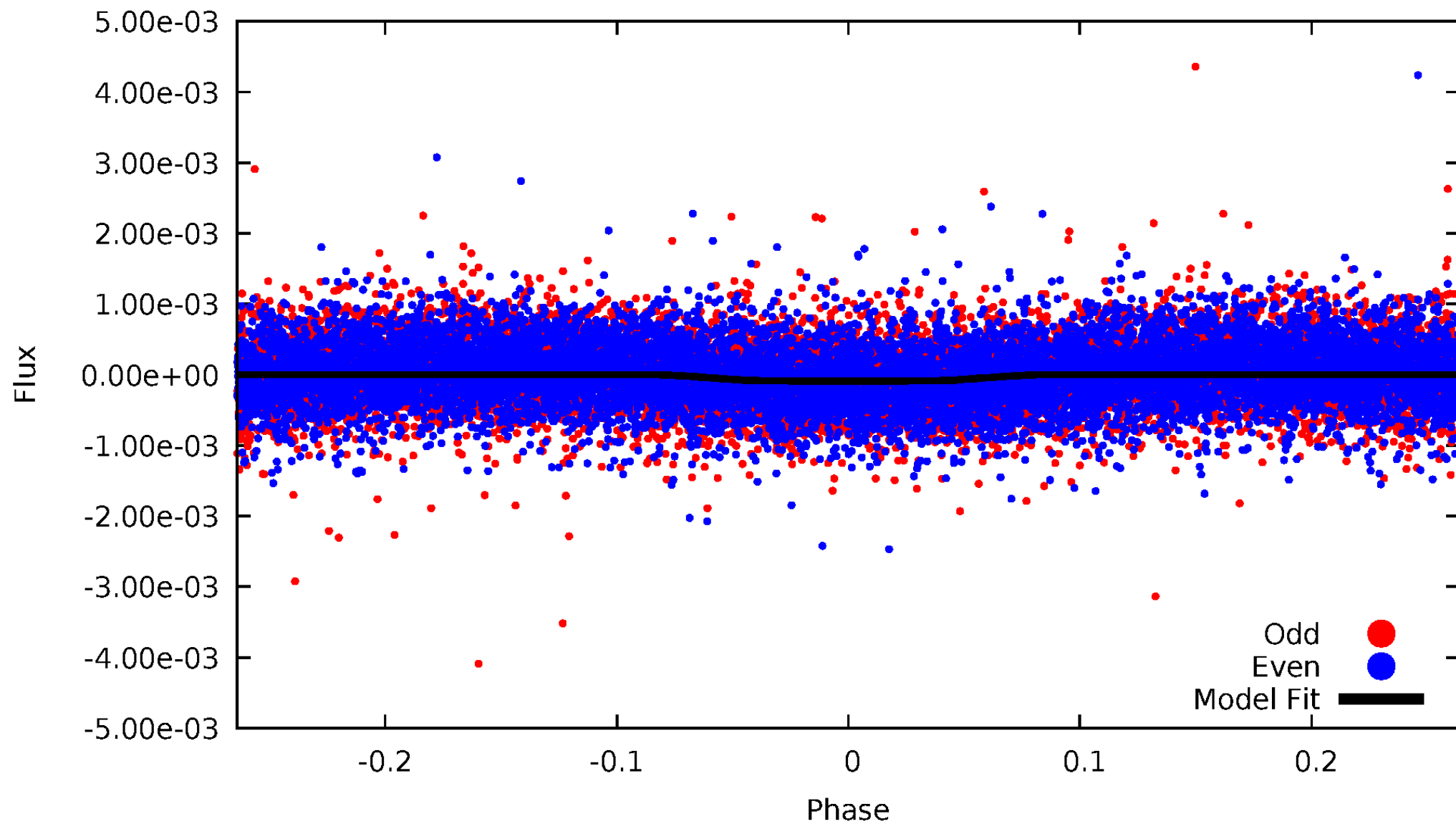


TCE 008454553-02



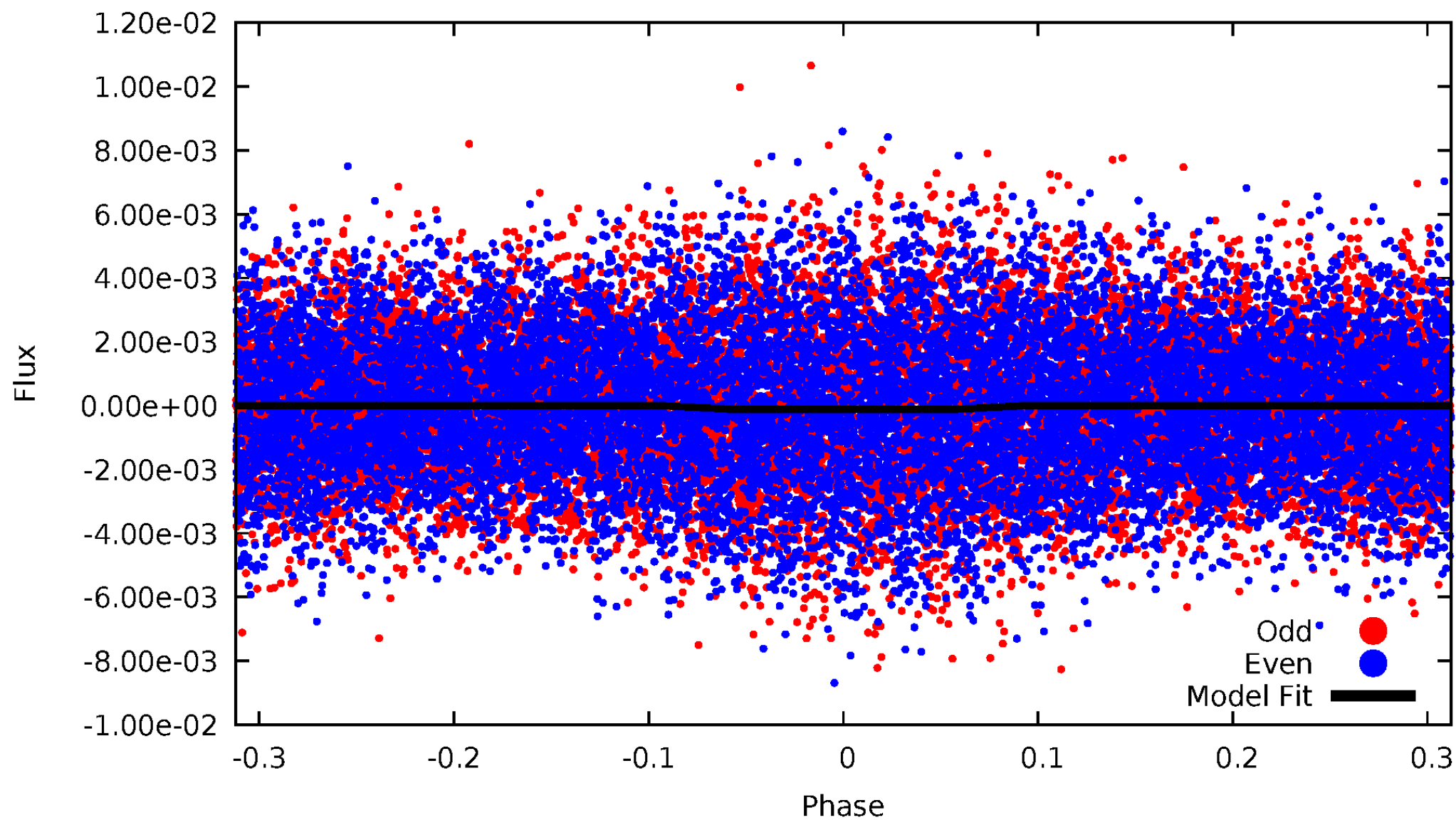
DV Odd/Even

TCE 008454553-02



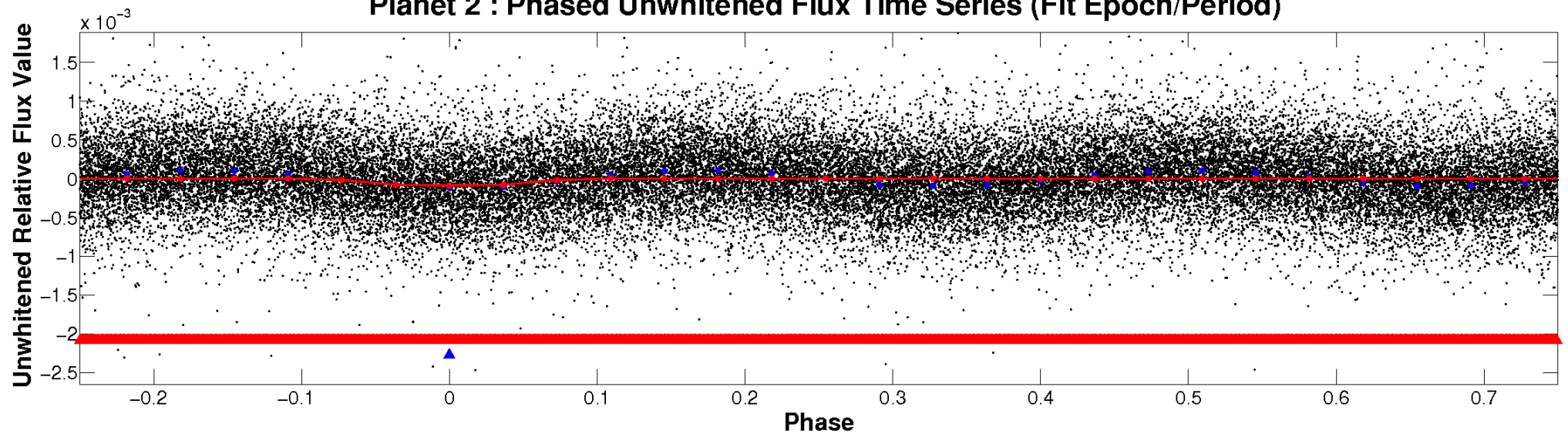
ALT Odd/Even

TCE 008454553-02

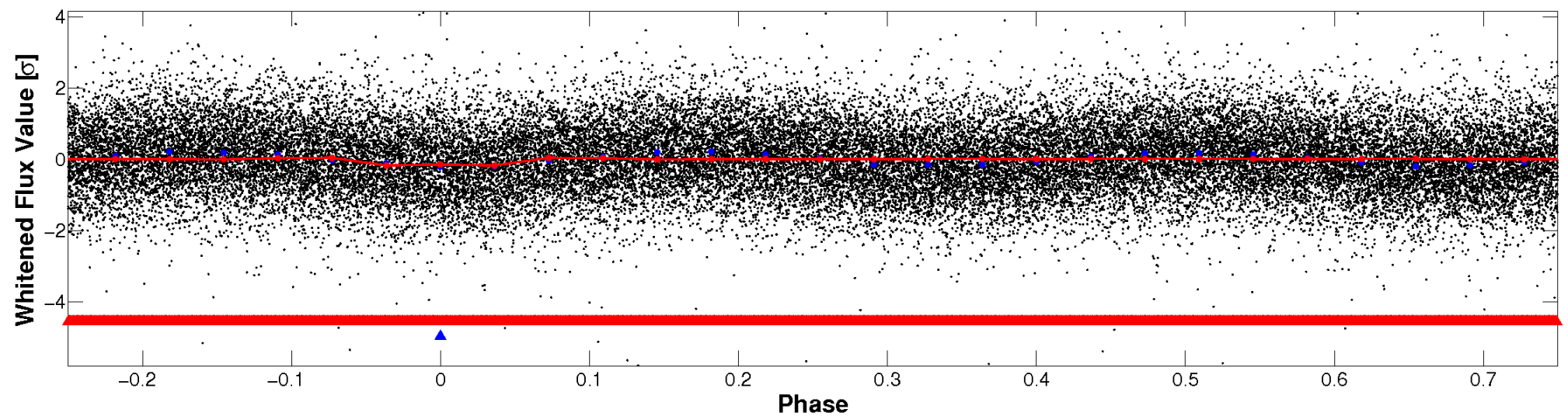


Non-Whitened Vs. Whitened Light Curve

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

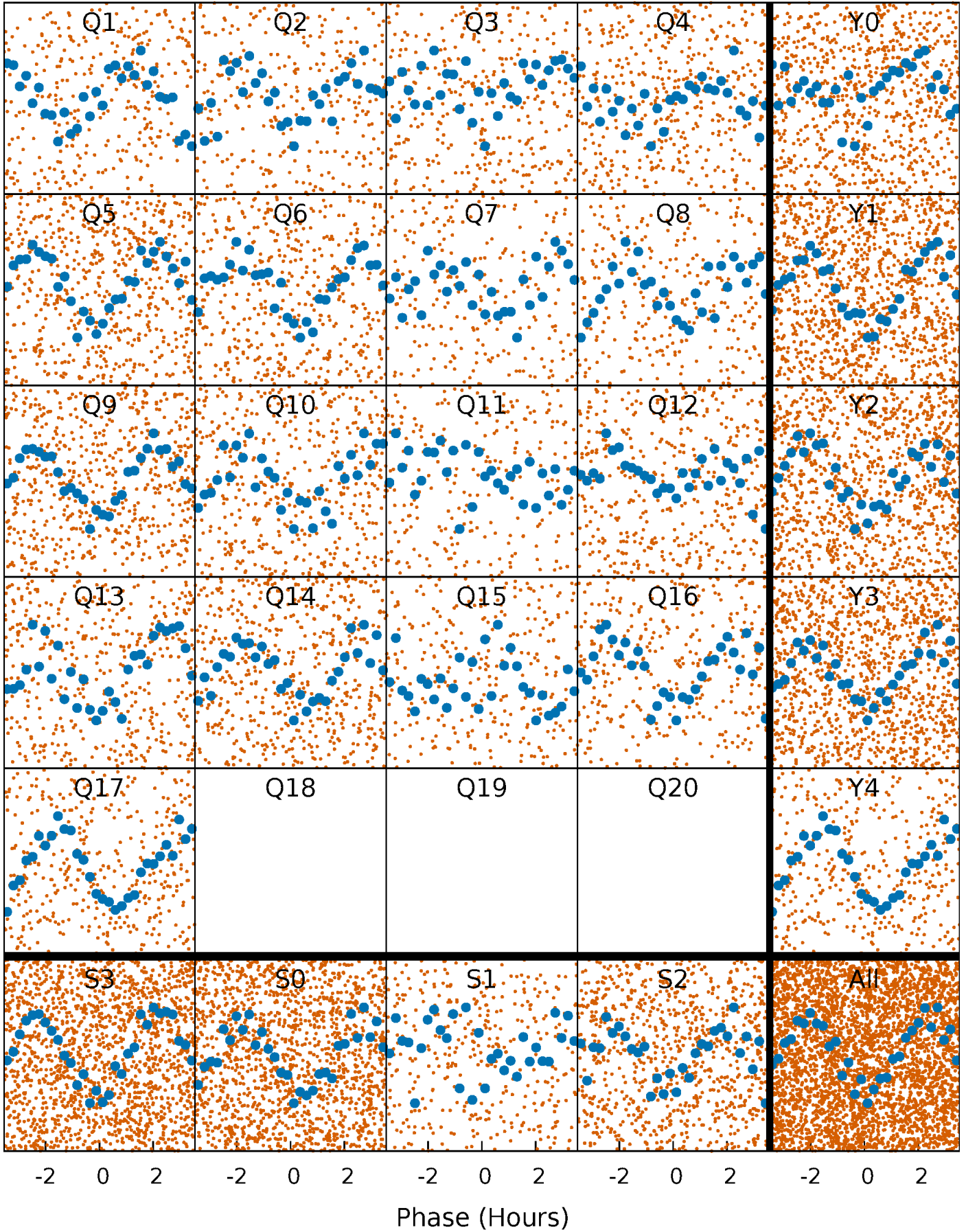


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



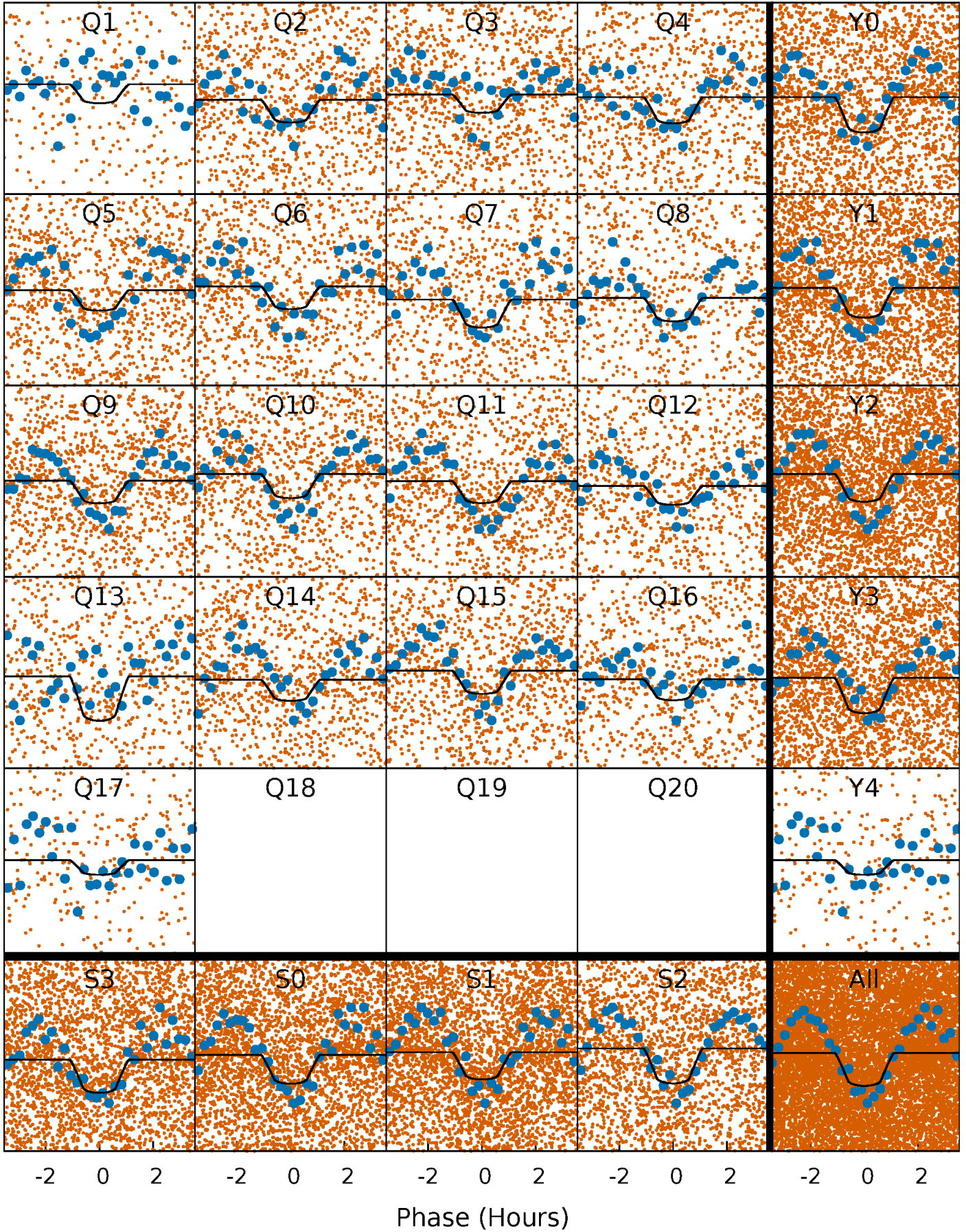
PDC Quarter-Phased Transit Curves

TCE 008454553-02 P= 0.561776 Days $T_0=131.566405$ (BKJD)



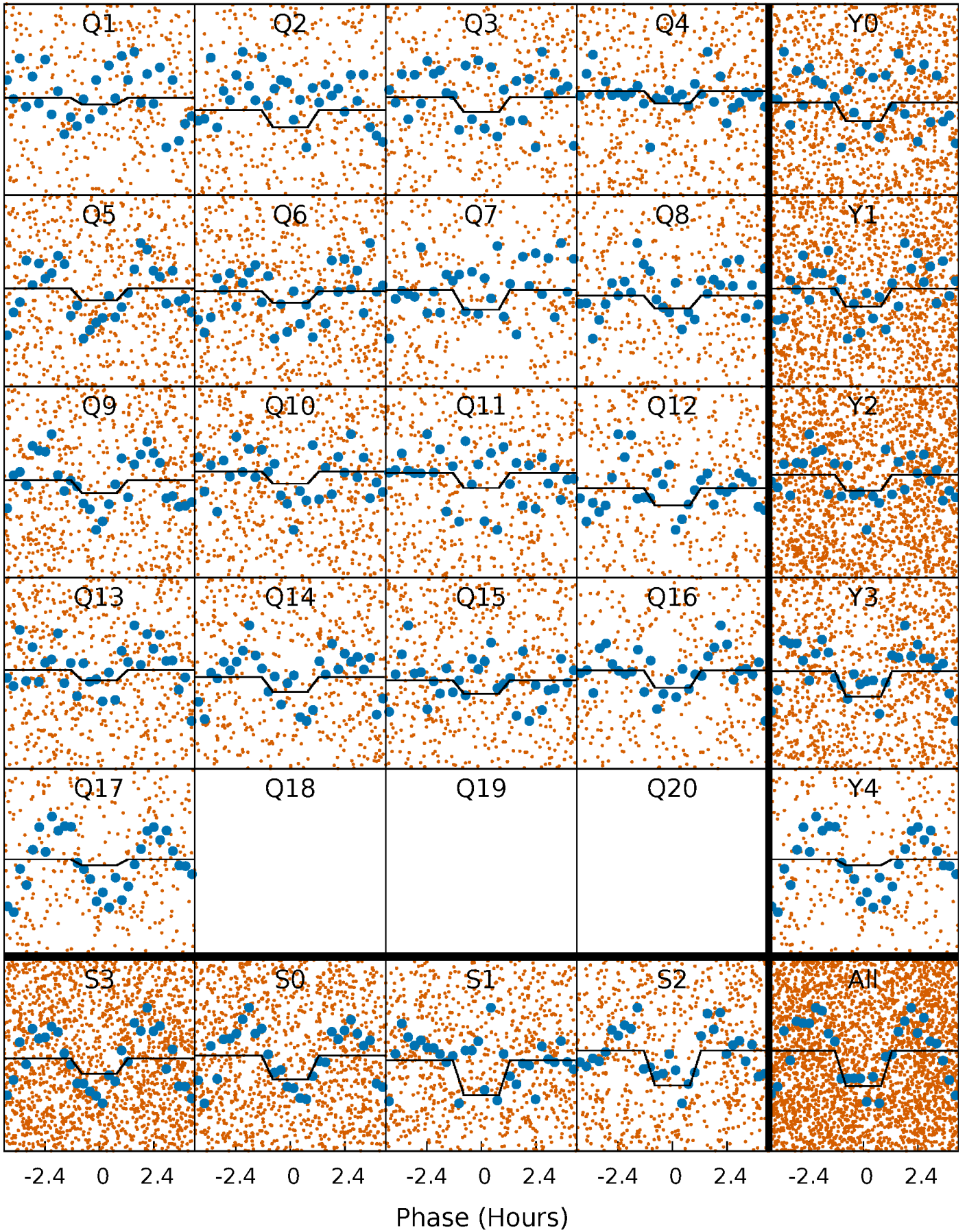
DV Quarter-Phased Transit Curves

TCE 008454553-02 P= 0.561776 Days $T_0=131.566405$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

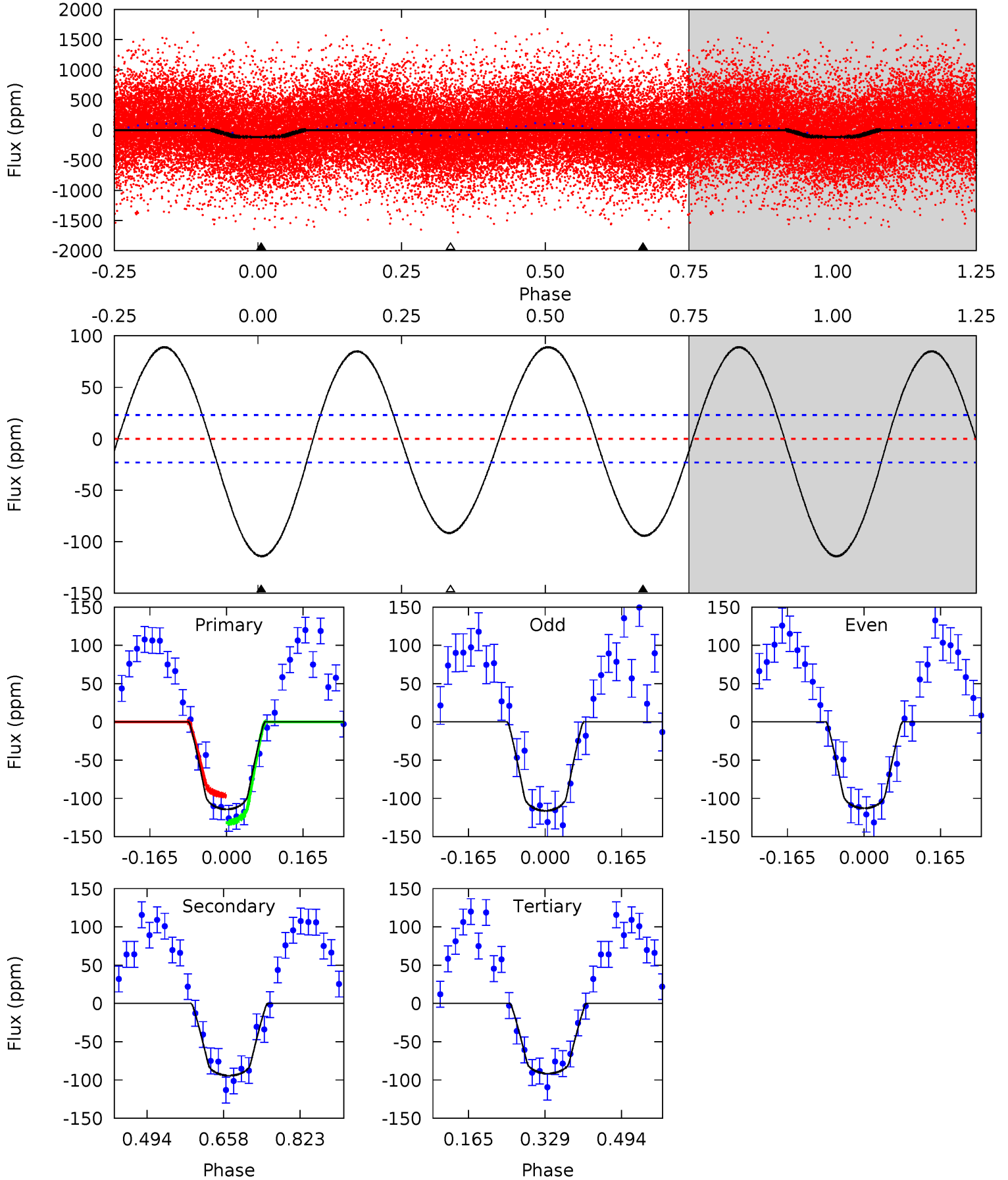
TCE 008454553-02 P= 0.561782 Days $T_0=131.564998$ (BKJD)



DV Model-Shift Uniqueness Test

008454553-02, P = 0.561776 Days, E = 131.004629 Days

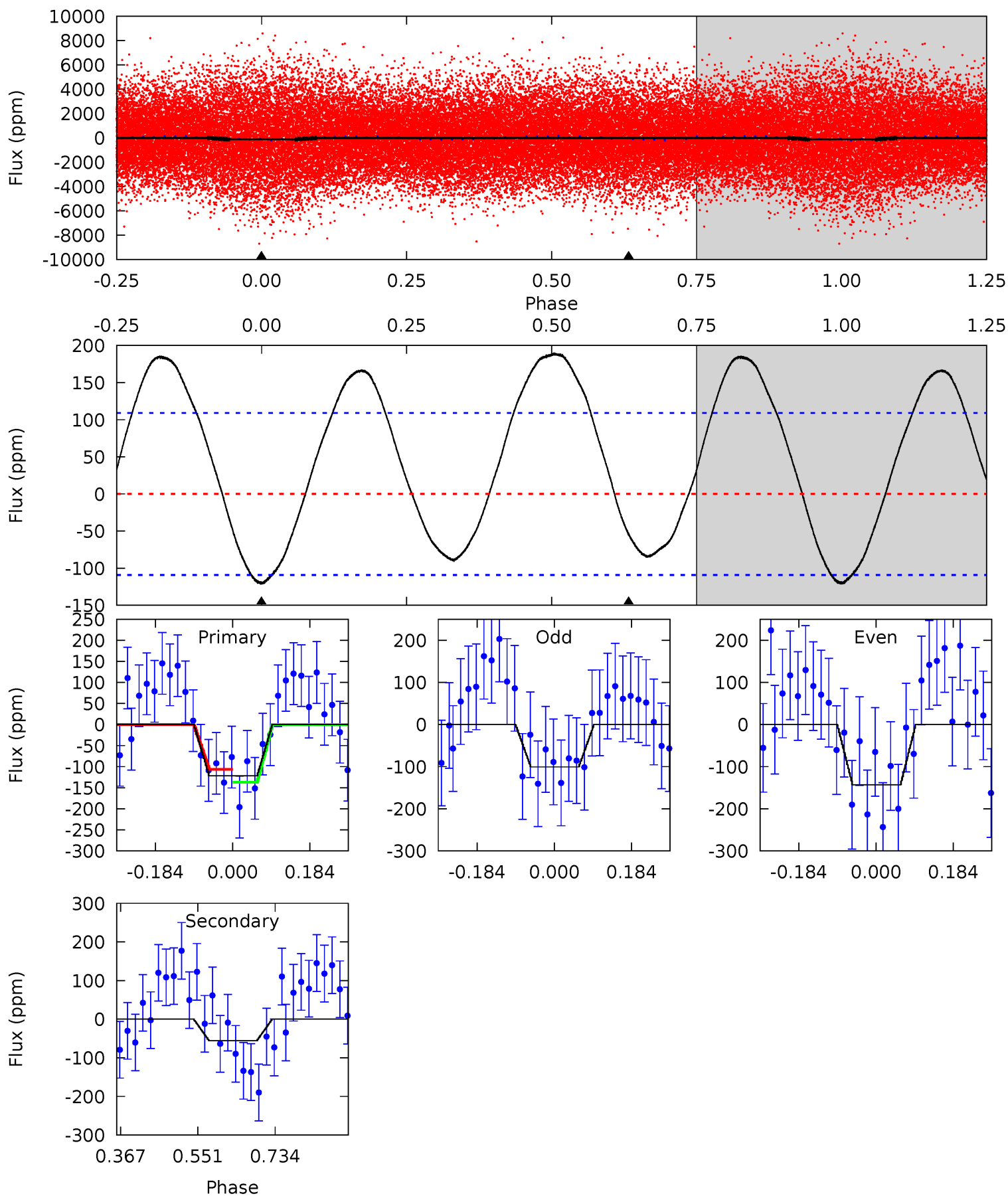
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	18.3	17.7	0	4.46	1.39	12.3	4.38	22.1	0.53	18.3	0.33	1.00	0.44	3.45



Alt Model-Shift Uniqueness Test

008454553-02, P = 0.561782 Days, E = 131.003216 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.95	2.25	0	0	4.44	1.33	3.21	4.95	4.95	2.25	2.25	0.83	0.93	0.61	0.58



Stellar Parameters For KIC 008454553

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6996^{+211}_{-253}	$3.627^{+0.531}_{-0.059}$	$-0.200^{+0.250}_{-0.300}$	$3.359^{+0.436}_{-1.742}$	$1.742^{+0.159}_{-0.477}$	$0.065^{+0.384}_{-0.014}$
	+3%/-4%	+15%/-2%	+125%/-150%	+13%/-52%	+9%/-27%	+593%/-21%
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 008454553-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-94 ± 5	$3.15^{+1.13}_{-0.93}$	5926^{+459}_{-796}	6349^{+1068}_{-847}	$1.325^{+1.224}_{-0.576}$
Alt.	-55 ± 25	$3.55^{+1.01}_{-1.04}$	5988^{+418}_{-819}	4956^{+1059}_{-7687}	$0.611^{+0.677}_{-0.320}$

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

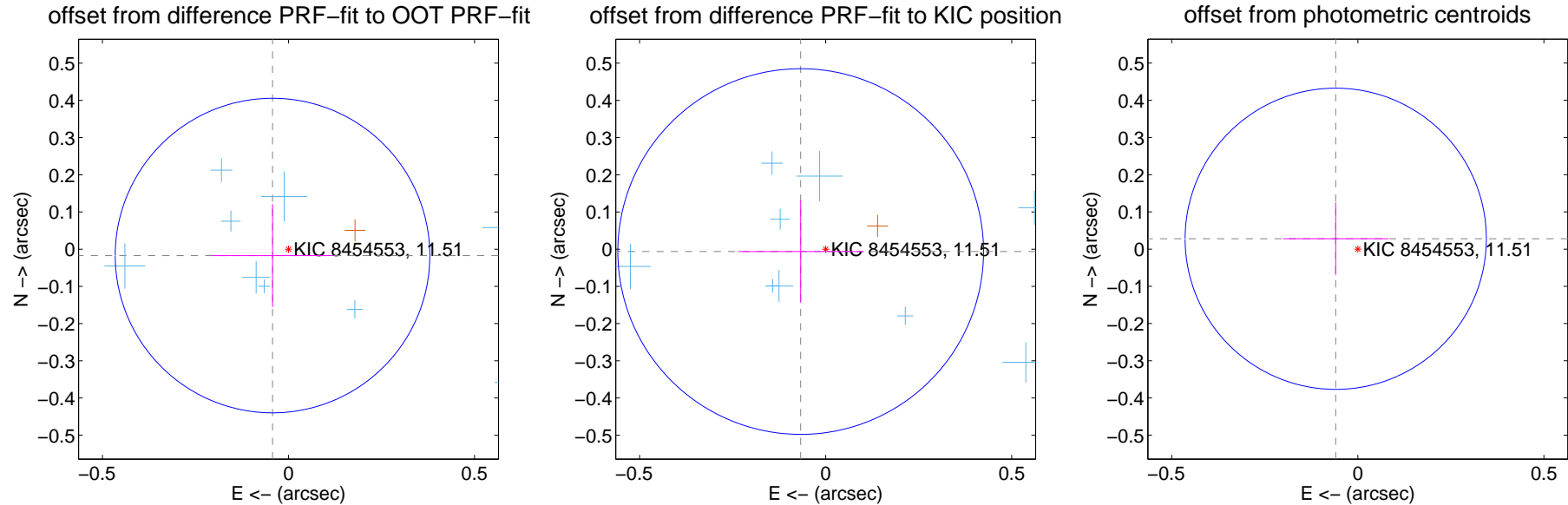
DV Centroid Data

Supplemental centroid analysis for 008454553-02. **Kepler magnitude: 11.51.** Transit SNR 12.11

There are 11 quarters with good PRF difference image offsets

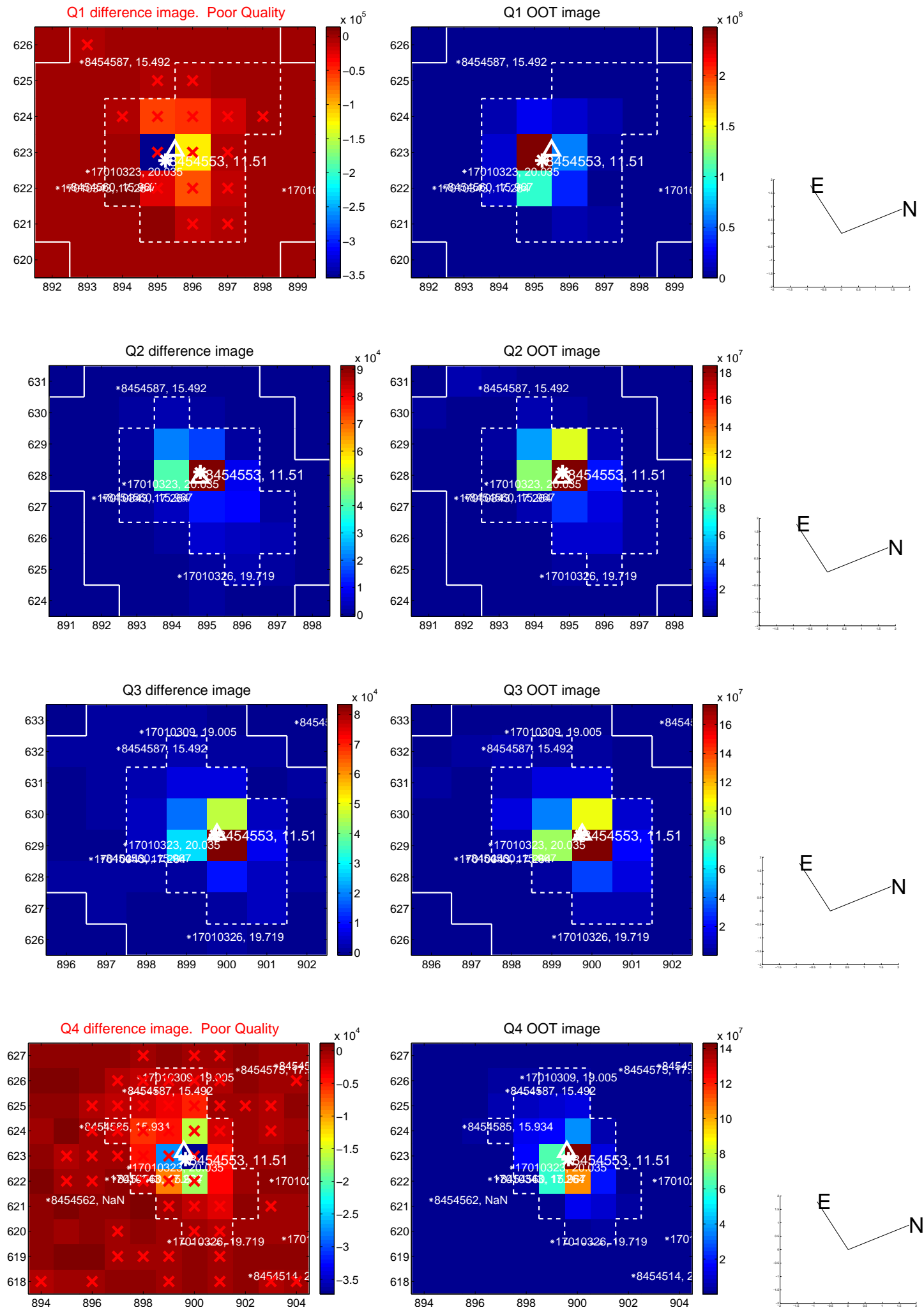
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.046 ± 0.141	0.33	0.043 ± 0.163	-0.017 ± 0.138
PRF-fit source offset from KIC position	0.067 ± 0.164	0.41	0.067 ± 0.168	-0.006 ± 0.138
photometric centroid source offset	0.07 ± 0.13	0.49	0.06 ± 0.14	0.03 ± 0.10

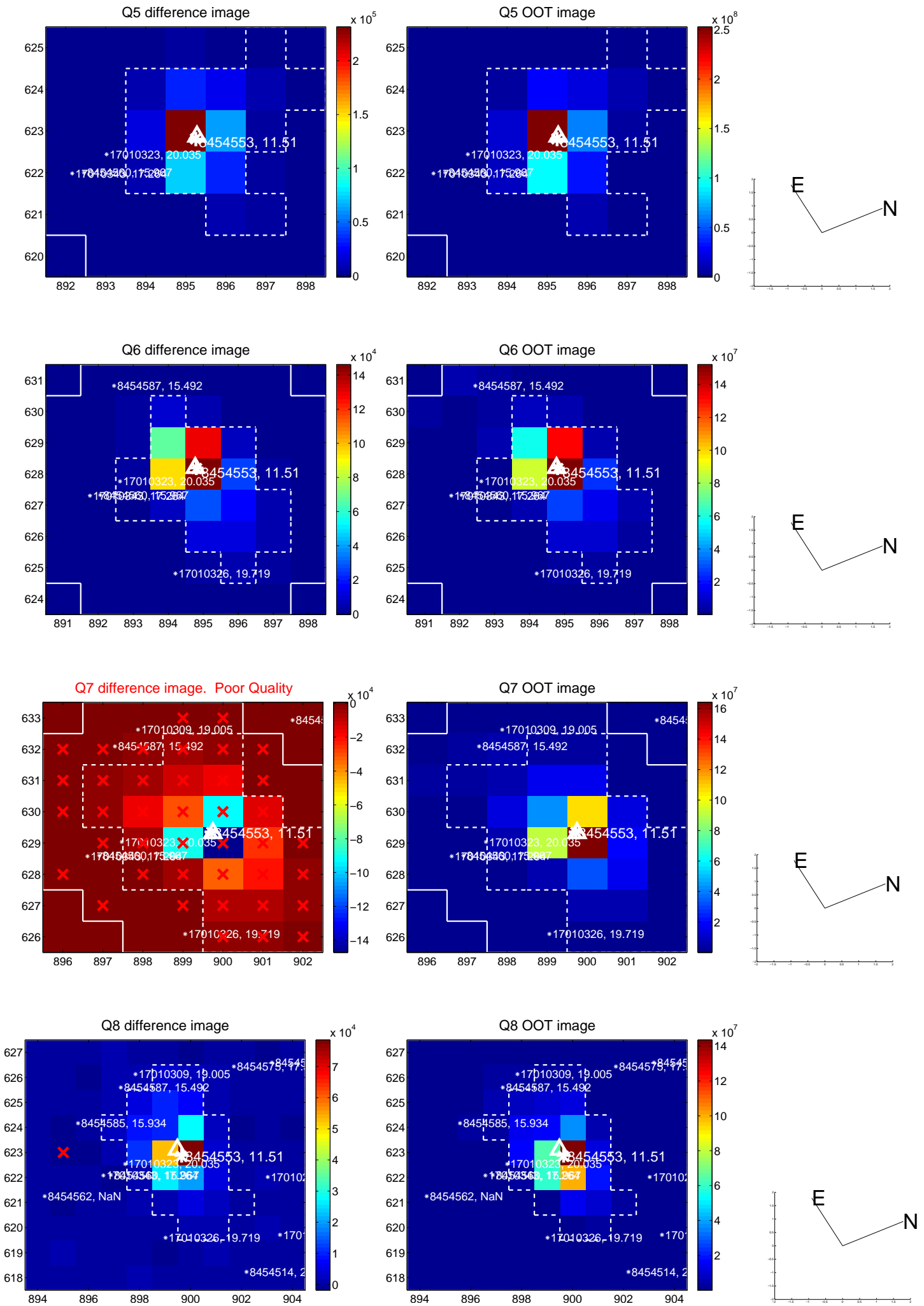


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

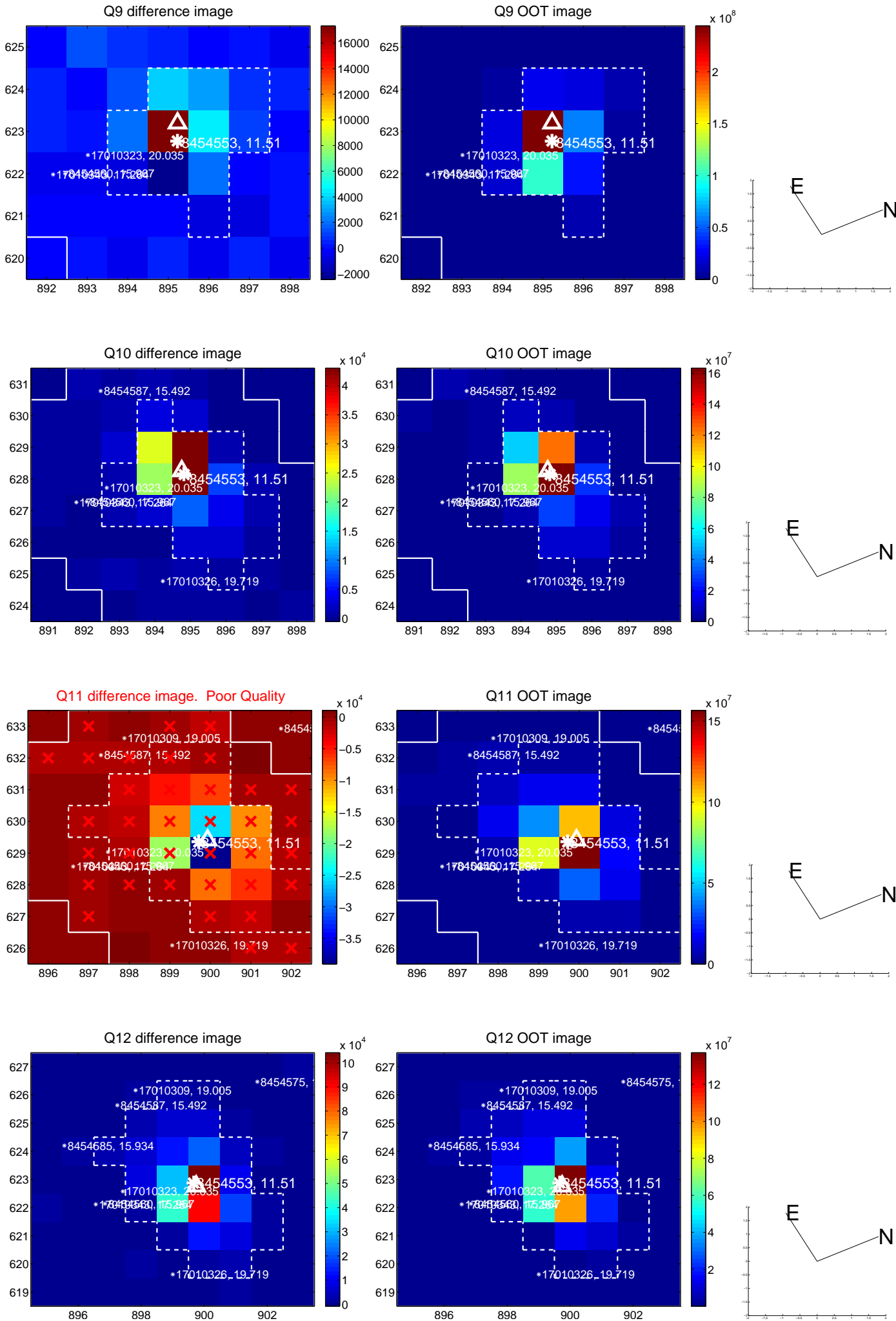
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



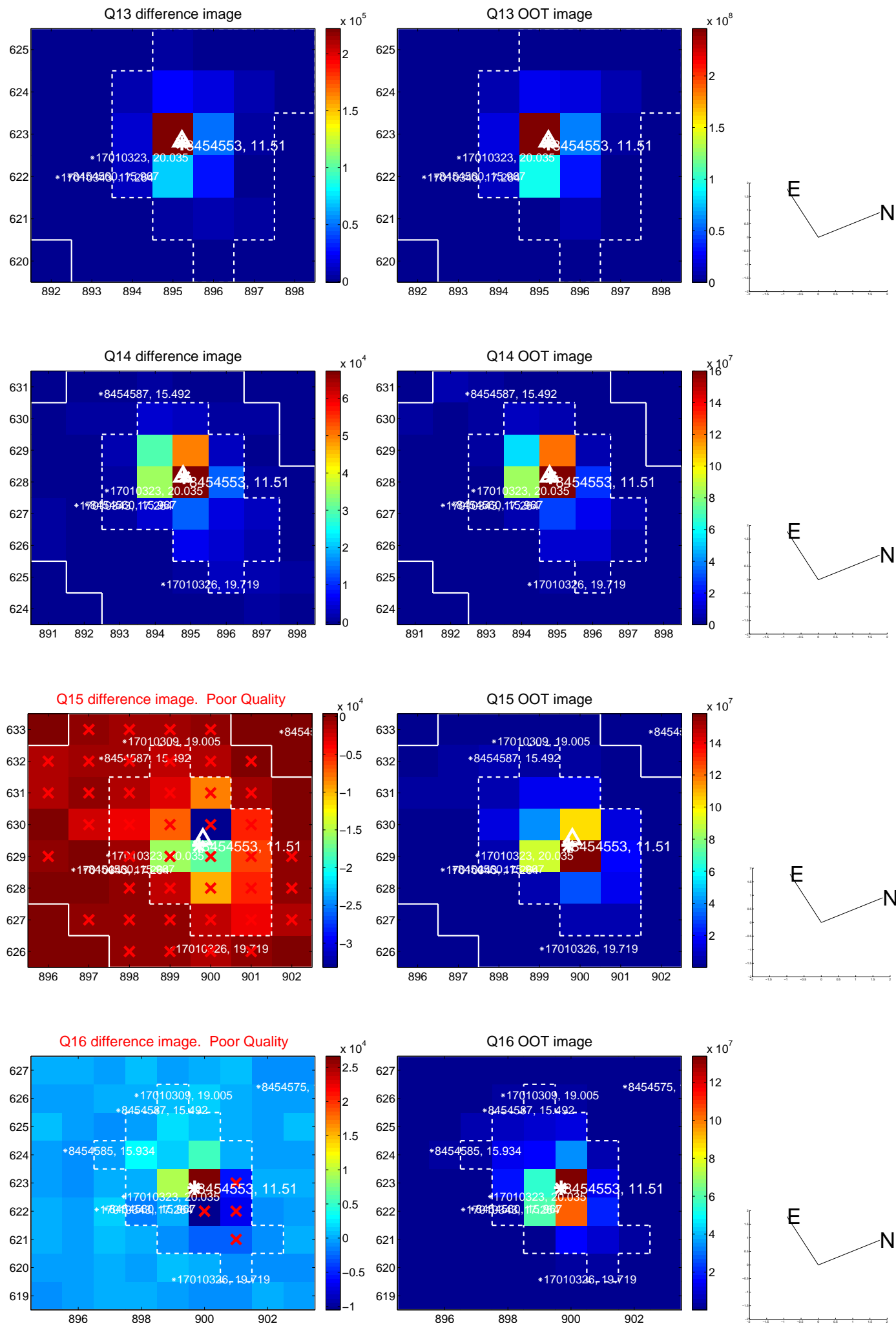
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



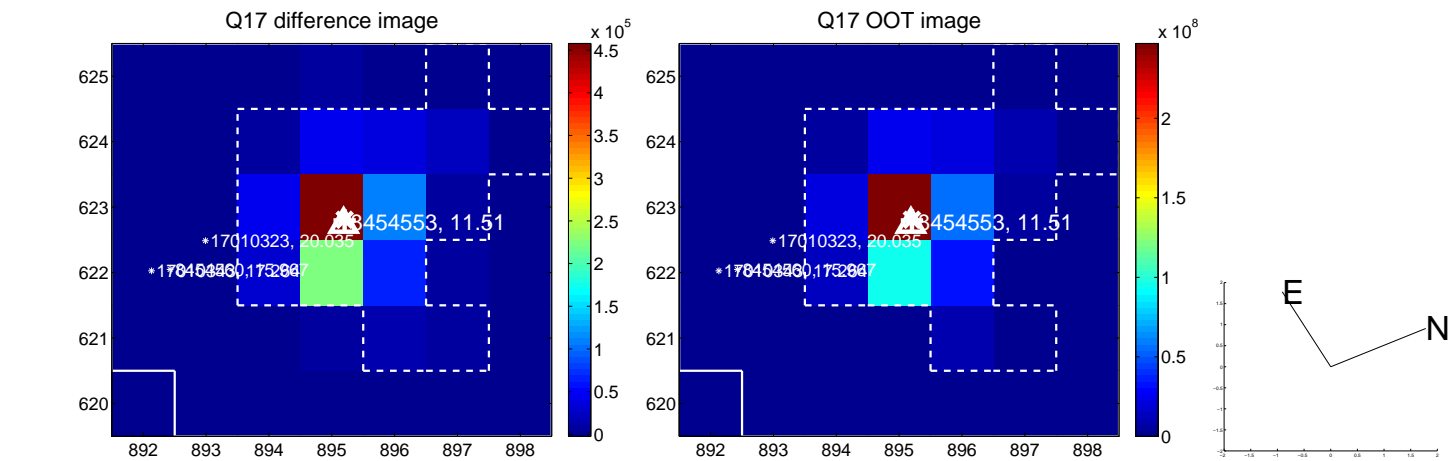
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



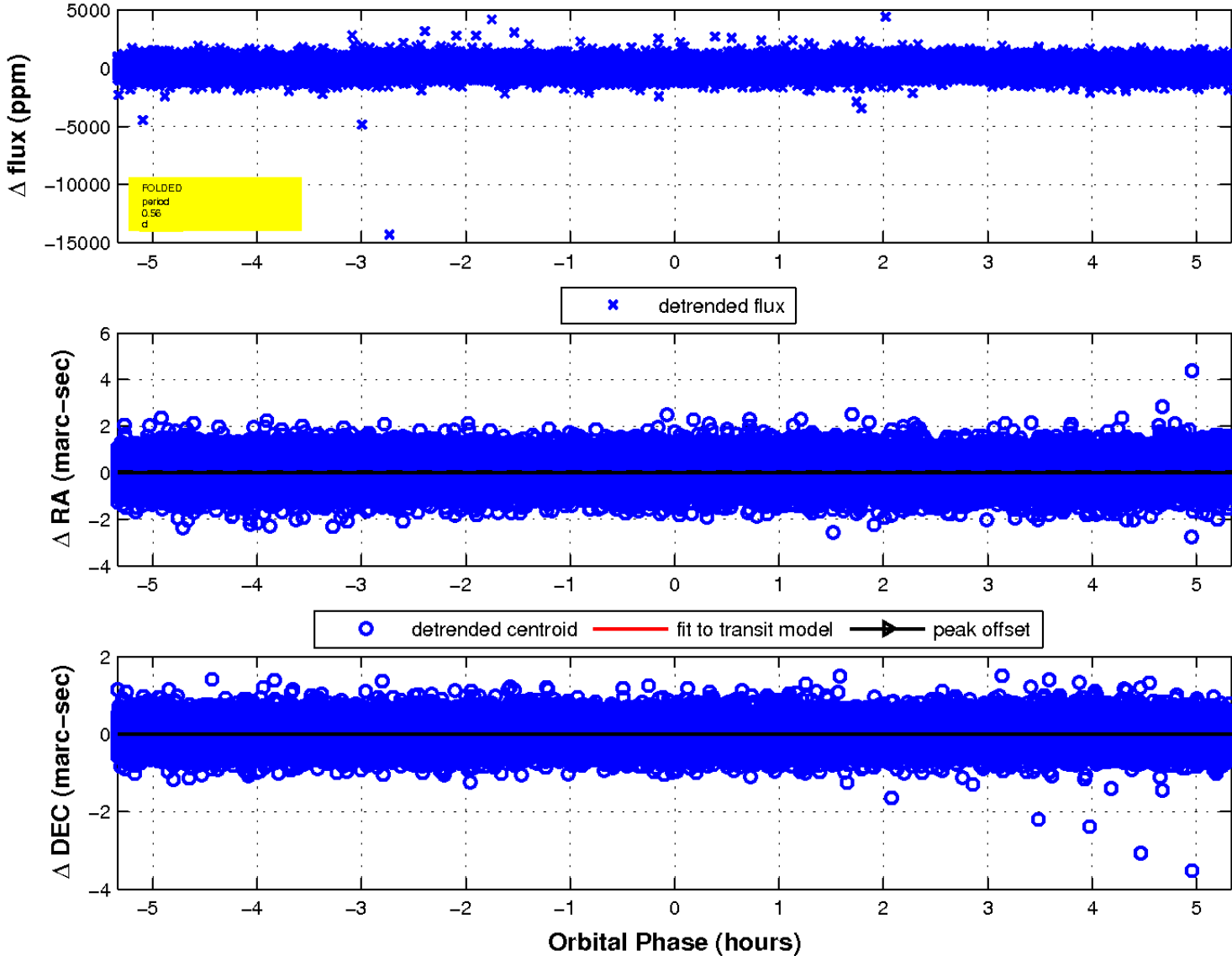
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

