

KIC 009850393

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})
009850393-01	OBS	No	0.611501	131.543805	219.9	2.189	12.1	14.6	2.18	7365	3.75	47165.94
009850393-02	OBS	No	1.215158	132.345893	246.3	14.582	7.2	11.3	2.18	7365	3.46	18879.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009850393-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009850393-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

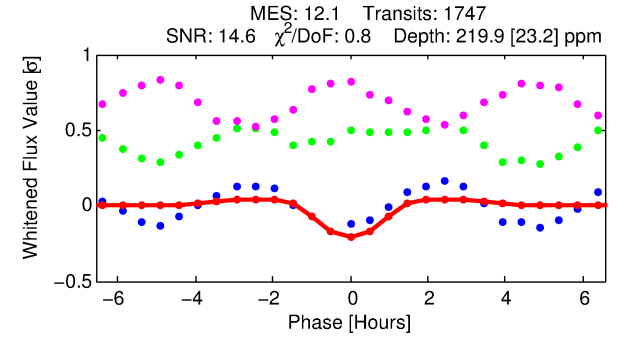
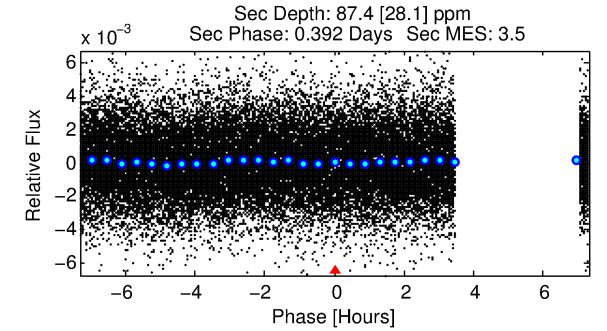
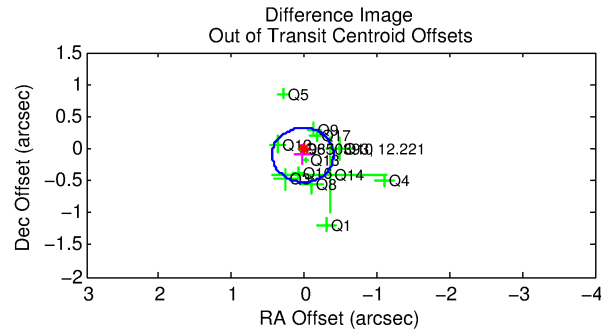
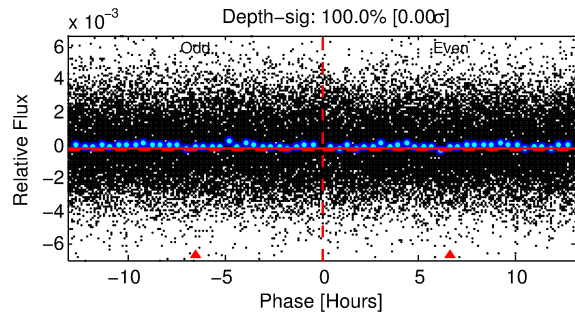
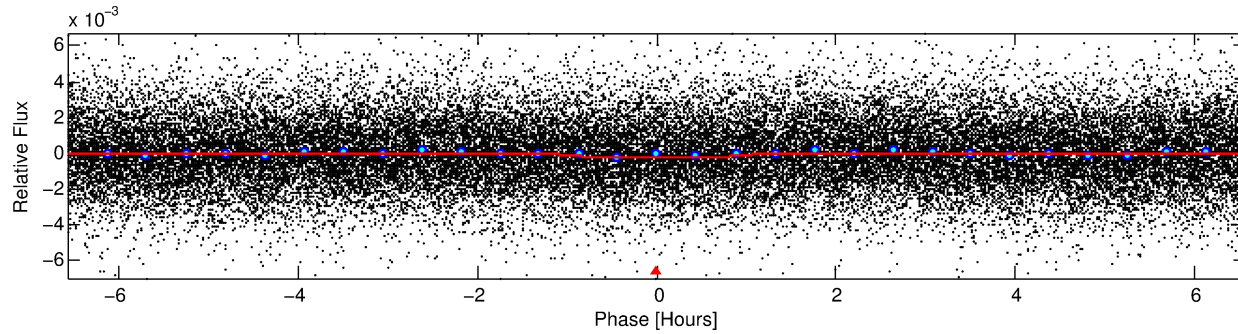
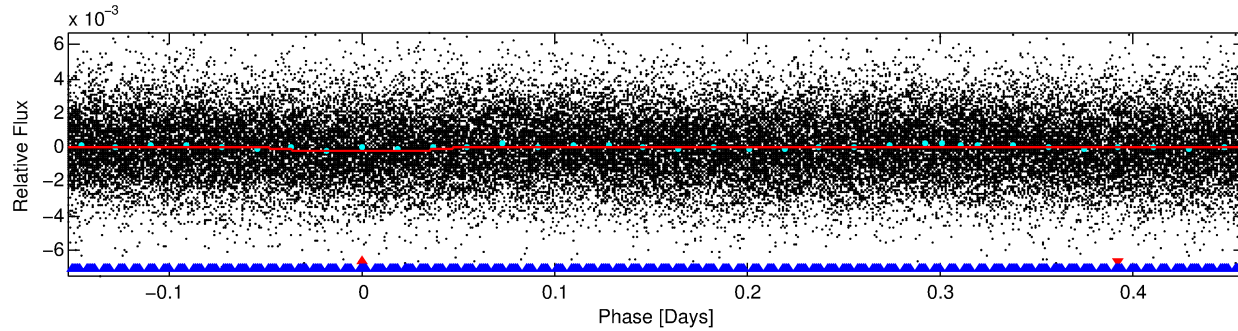
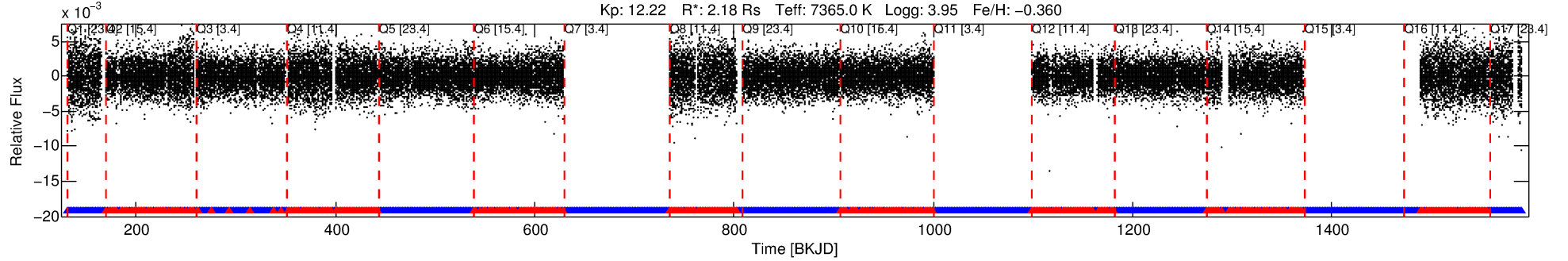
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009850393-01

No Significant Match Found

DV One-Page Summary

KIC: 9850393 Candidate: 1 of 2 Period: 0.612 d



DV Fit Results:

Period = 0.61150 [0.00001] d
Epoch = 131.5438 [0.0022] BKJD
Rp/R* = 0.0158 [0.0078]
a/R* = 1.38 [1.97]
b = 0.90 [0.65]
Seff = 47165.94 [26255.15]
Teq = 3758 [523] K
Rp = 3.75 [2.29] Re
a = 0.0163 [0.0055] AU
Ag = 0.91 [1.05] [-0.09σ]
Teffp = 5667 [1486] K [1.21σ]

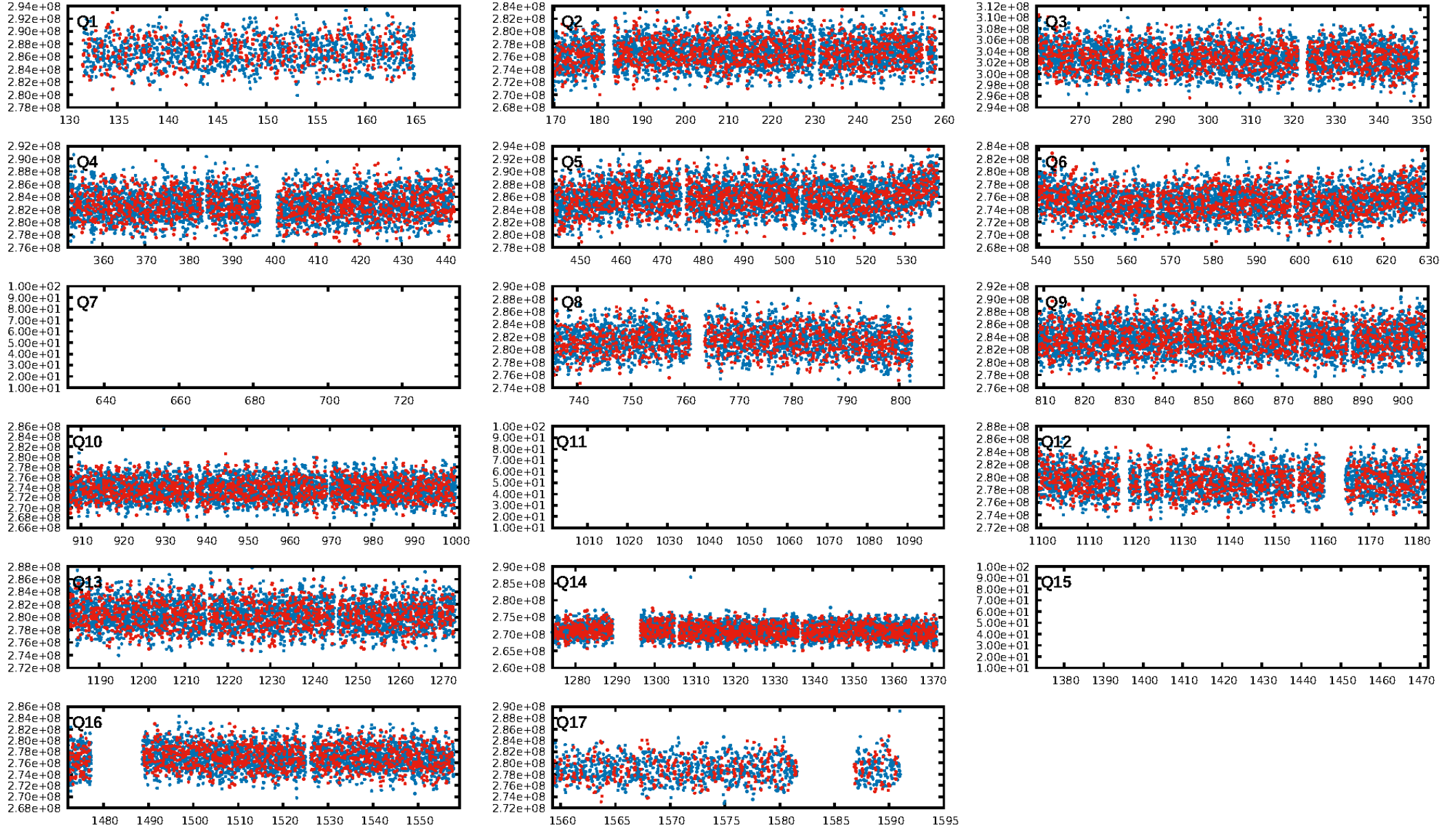
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 67.4% [0.98σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.59 [970/1648]
GhostDiagnostic-chr: 1.108
Centroid-sig: 1.5%
Centroid-so: 0.032 arcsec [0.39σ]
OotOffset-rm: 0.102 arcsec [0.73σ]
KicOffset-rm: 0.065 arcsec [0.41σ]
OotOffset-st: 3/1/4/5 [13]
KicOffset-st: 3/1/4/5 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 0.93 [13/14]

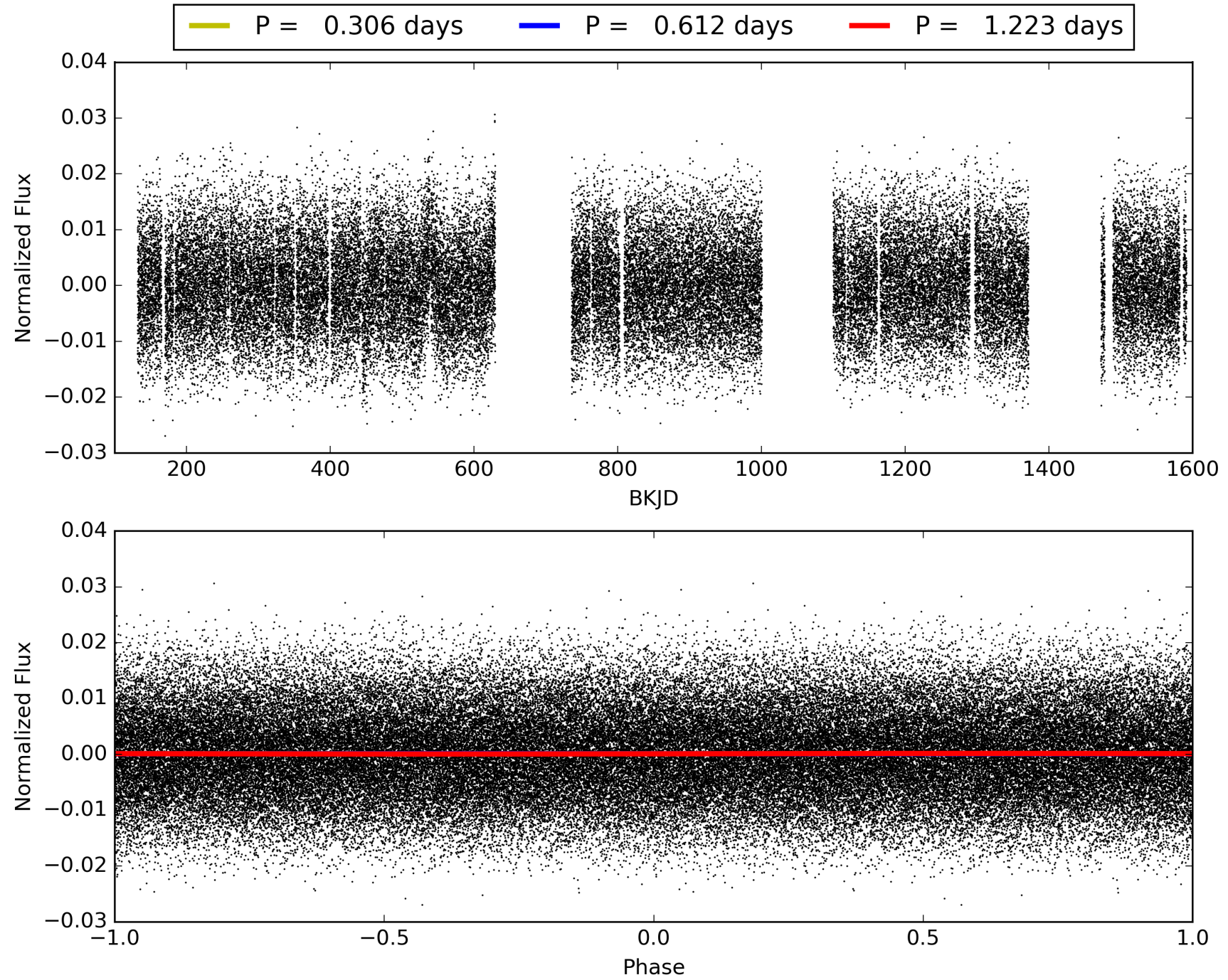
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009850393-01, PDC Light Curves

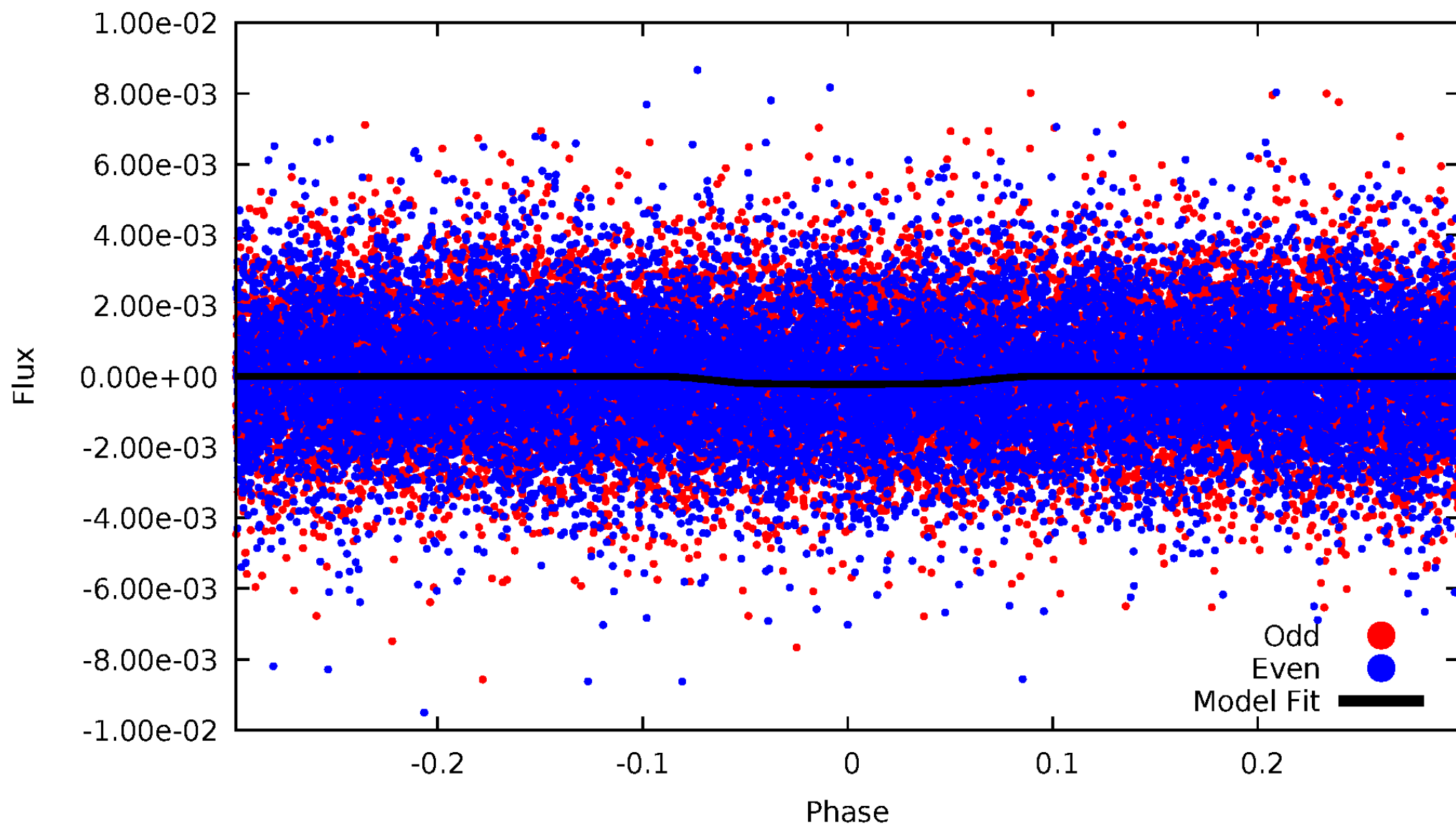


TCE 009850393-01



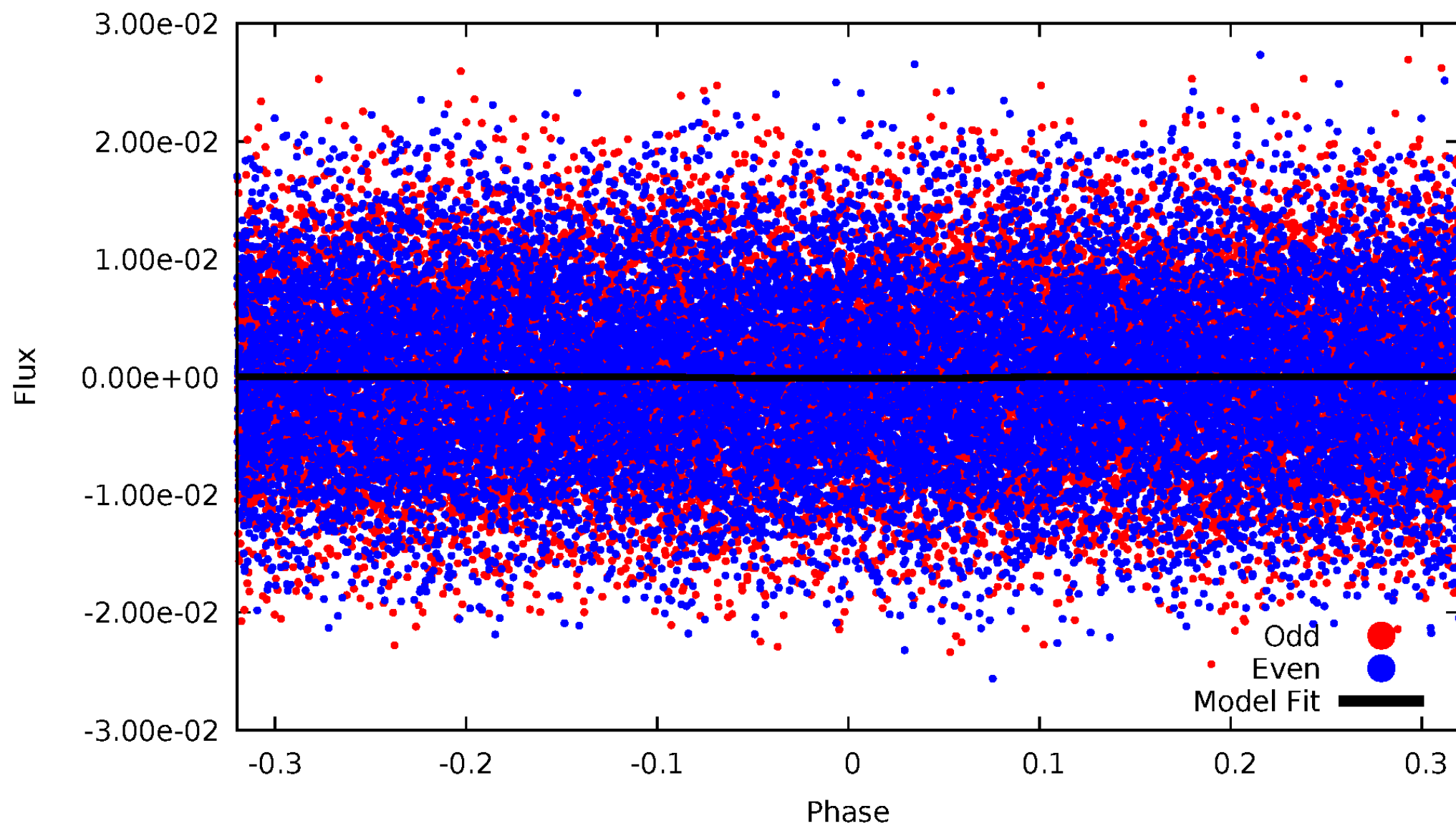
DV Odd/Even

TCE 009850393-01

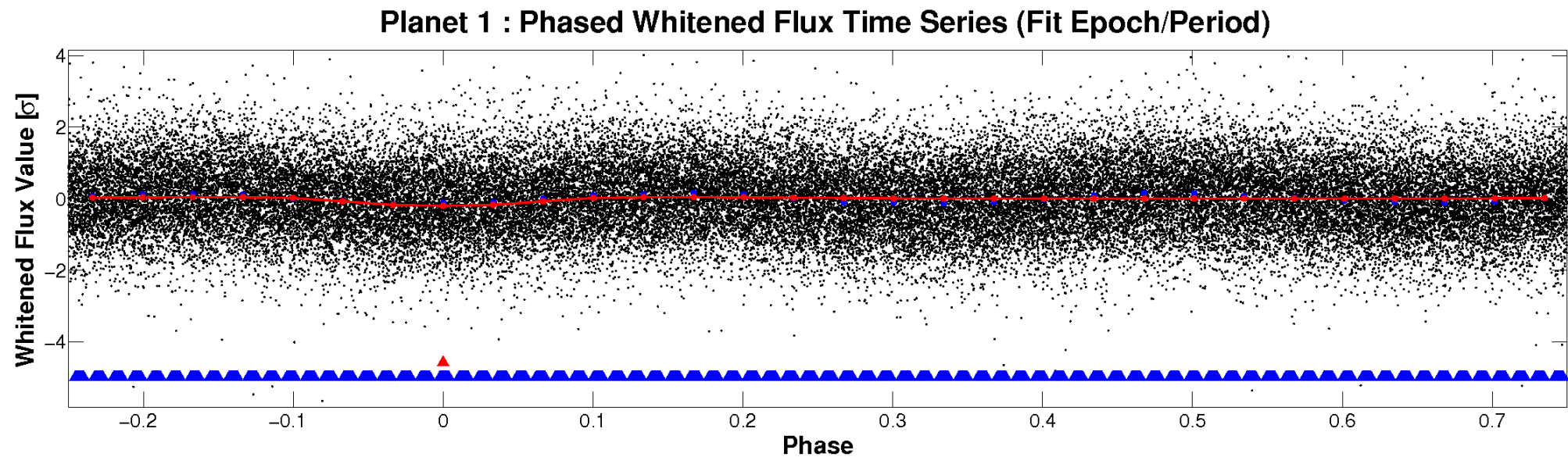
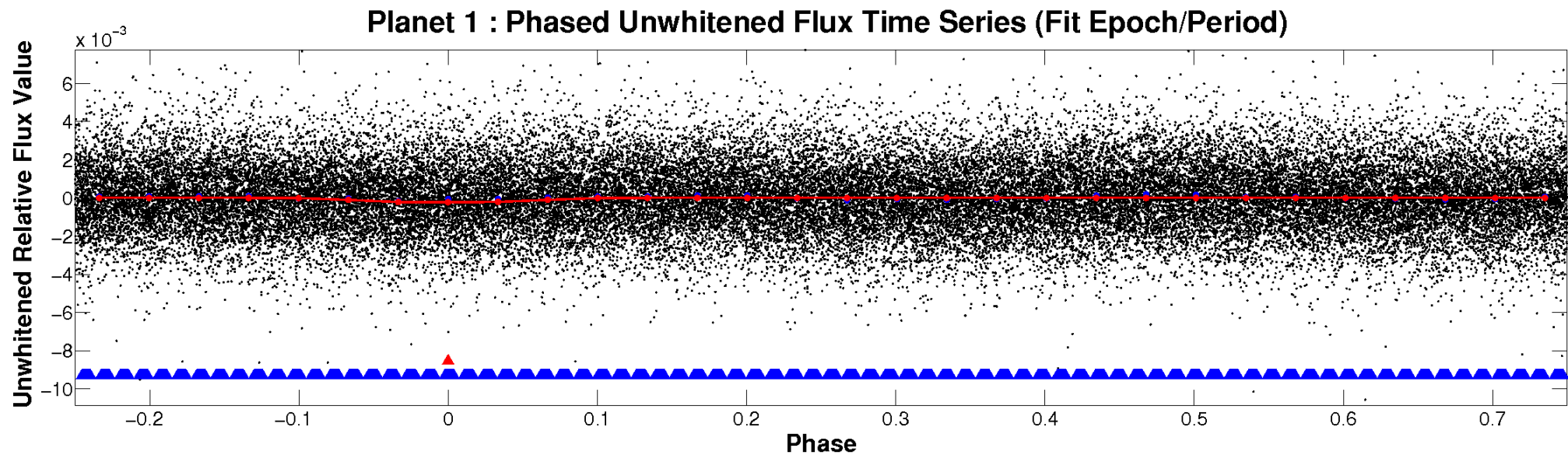


ALT Odd/Even

TCE 009850393-01

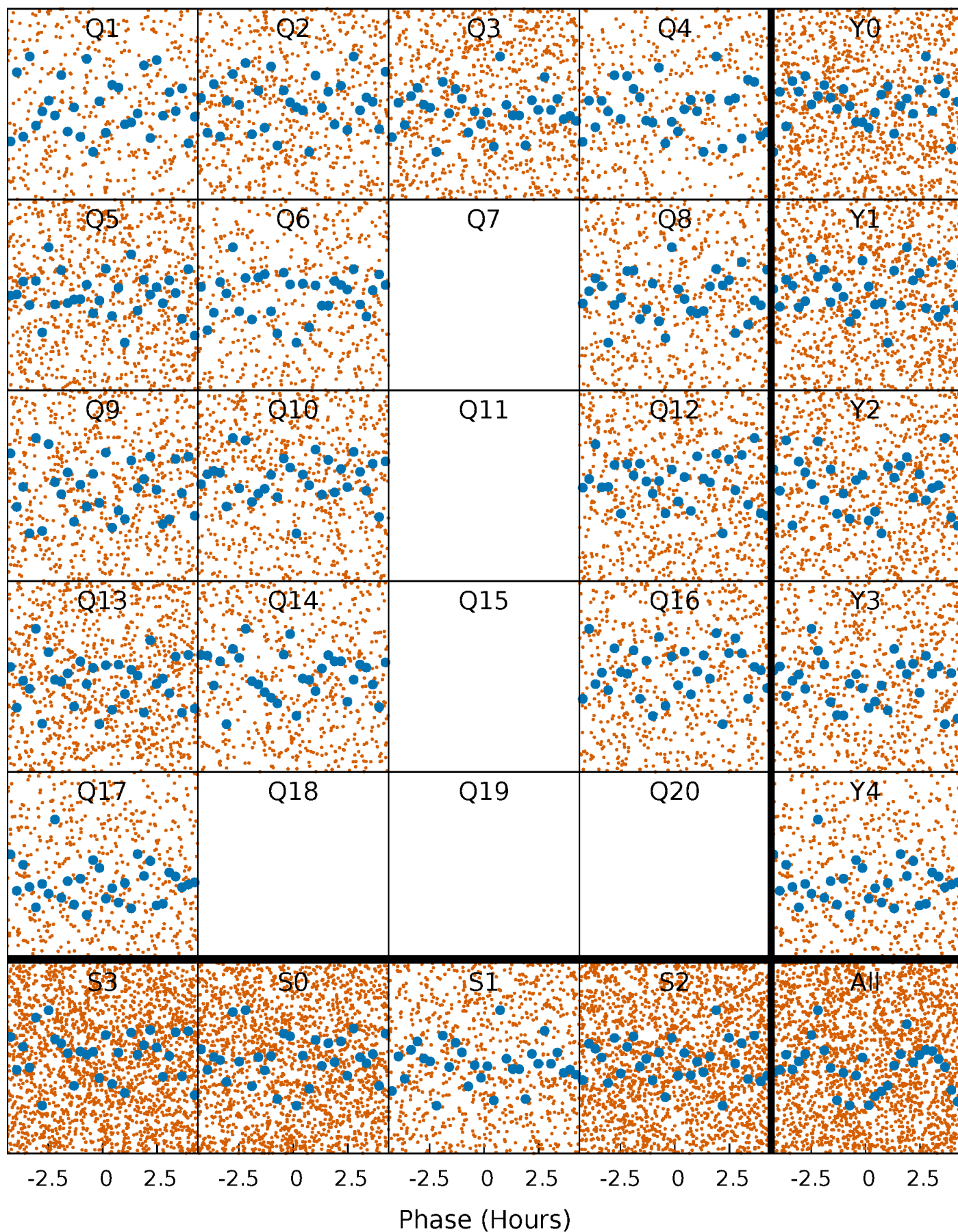


Non-Whitened Vs. Whitened Light Curve



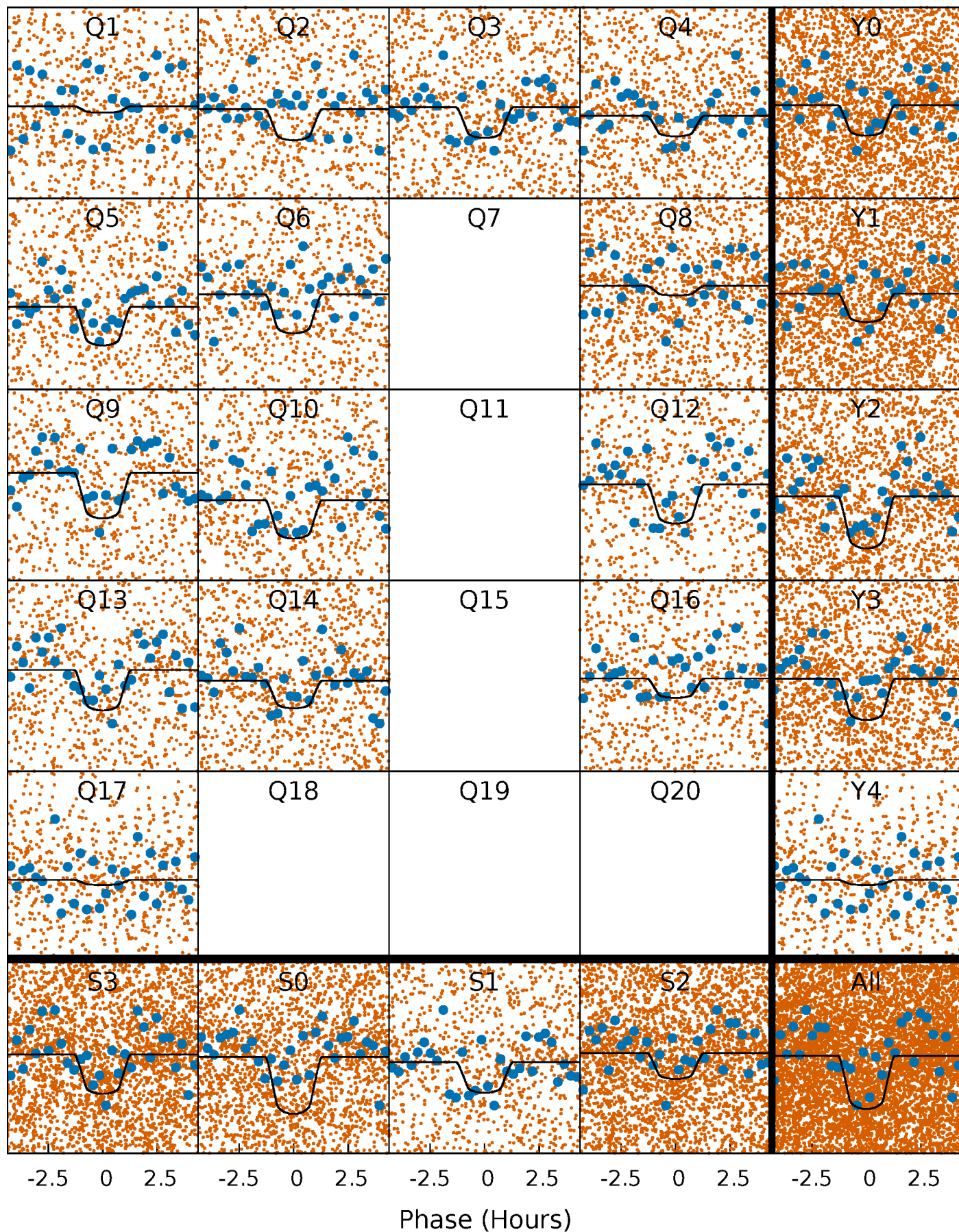
PDC Quarter-Phased Transit Curves

TCE 009850393-01 P= 0.611501 Days $T_0=131.543805$ (BKJD)



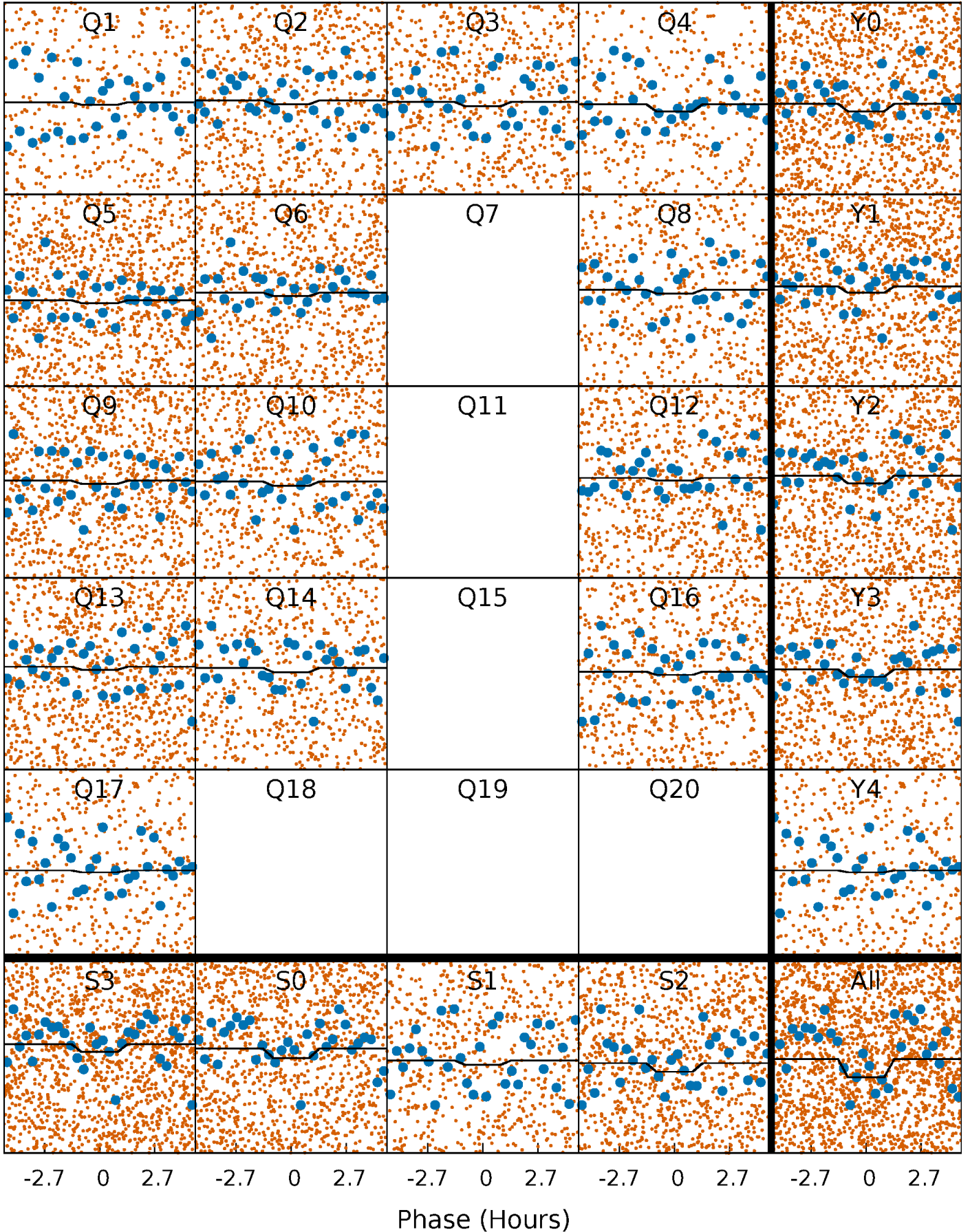
DV Quarter-Phased Transit Curves

TCE 009850393-01 P= 0.611501 Days $T_0=131.543805$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

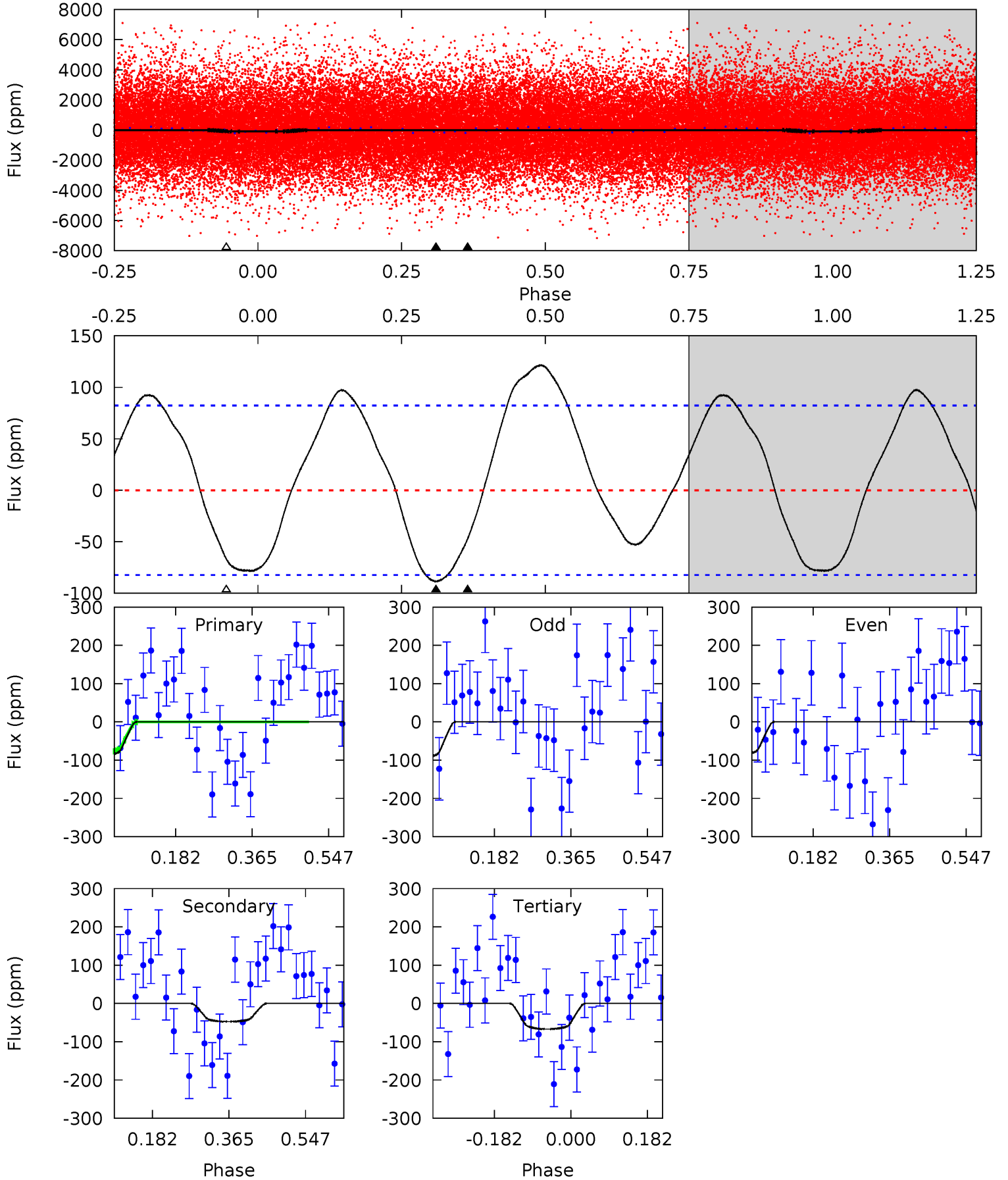
TCE 009850393-01 P= 0.611489 Days $T_0=131.555662$ (BKJD)



DV Model-Shift Uniqueness Test

009850393-01, P = 0.611501 Days, E = 130.932304 Days

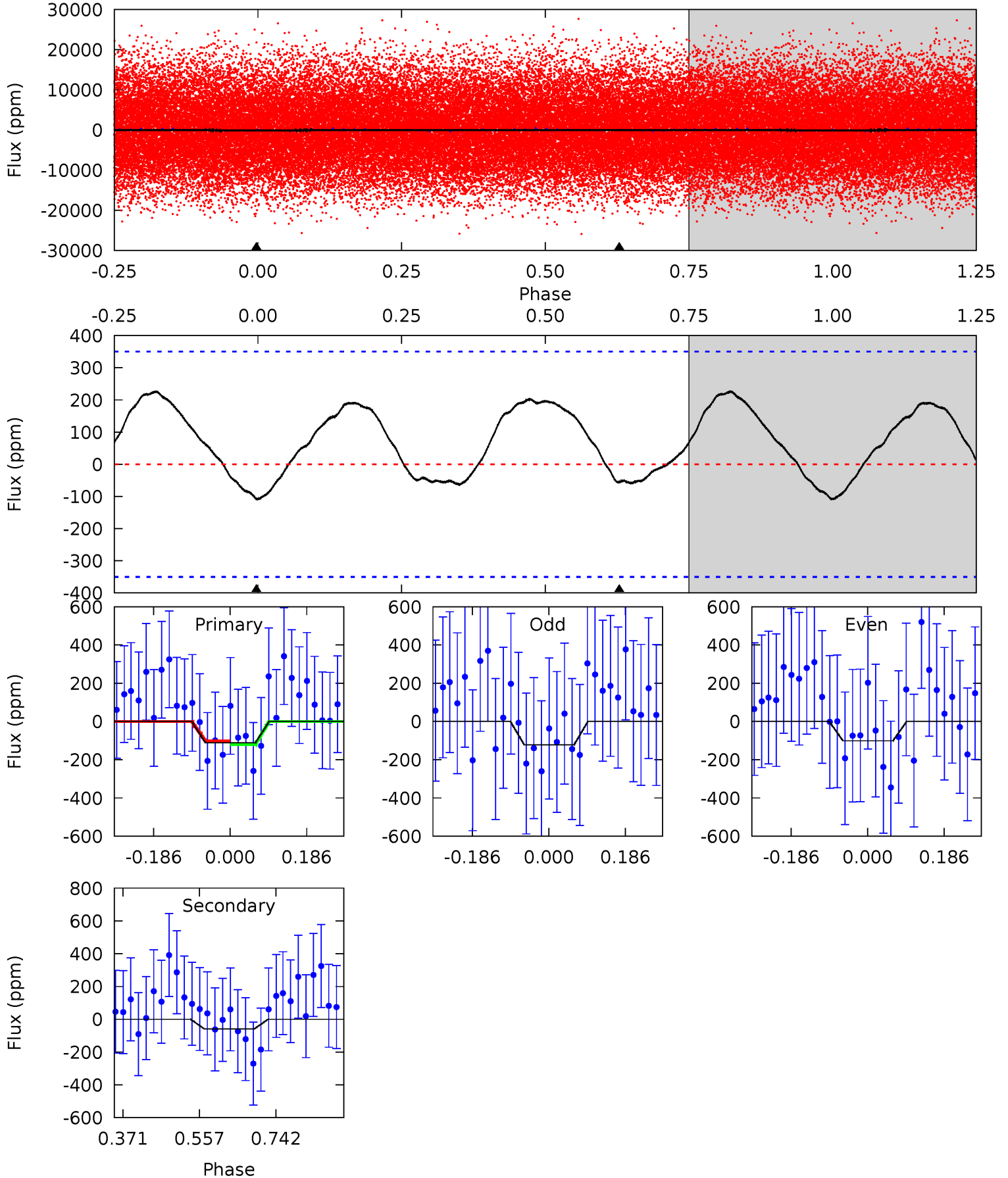
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.80	2.56	3.61	0	4.44	1.33	2.87	1.18	4.80	-1.05	2.56	0.22	0.86	0.58	0.44



Alt Model-Shift Uniqueness Test

009850393-01, P = 0.611489 Days, E = 130.944173 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.41	0.75	0	0	4.43	1.32	1.06	1.41	1.41	0.75	0.75	0.13	0.73	0.67	0.12



Stellar Parameters For KIC 009850393

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7365^{+230}_{-307}	$3.949^{+0.308}_{-0.132}$	$-0.360^{+0.250}_{-0.350}$	$2.177^{+0.526}_{-0.790}$	$1.537^{+0.204}_{-0.331}$	$0.210^{+0.467}_{-0.094}$
	+3%/-4%	+8%/-3%	+69%/-97%	+24%/-36%	+13%/-22%	+223%/-45%
Source	KIC0	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 009850393-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 19	$3.65^{+1.84}_{-1.79}$	5155^{+366}_{-521}	4044^{+2023}_{-7668}	$0.506^{+1.358}_{-0.311}$
Alt.	-59 ± 79	$2.44^{+1.69}_{-1.33}$	5131^{+412}_{-492}	4952^{+4448}_{-10492}	$0.858^{+5.989}_{-1.469}$

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 $A_{obs} \gg 1.0$

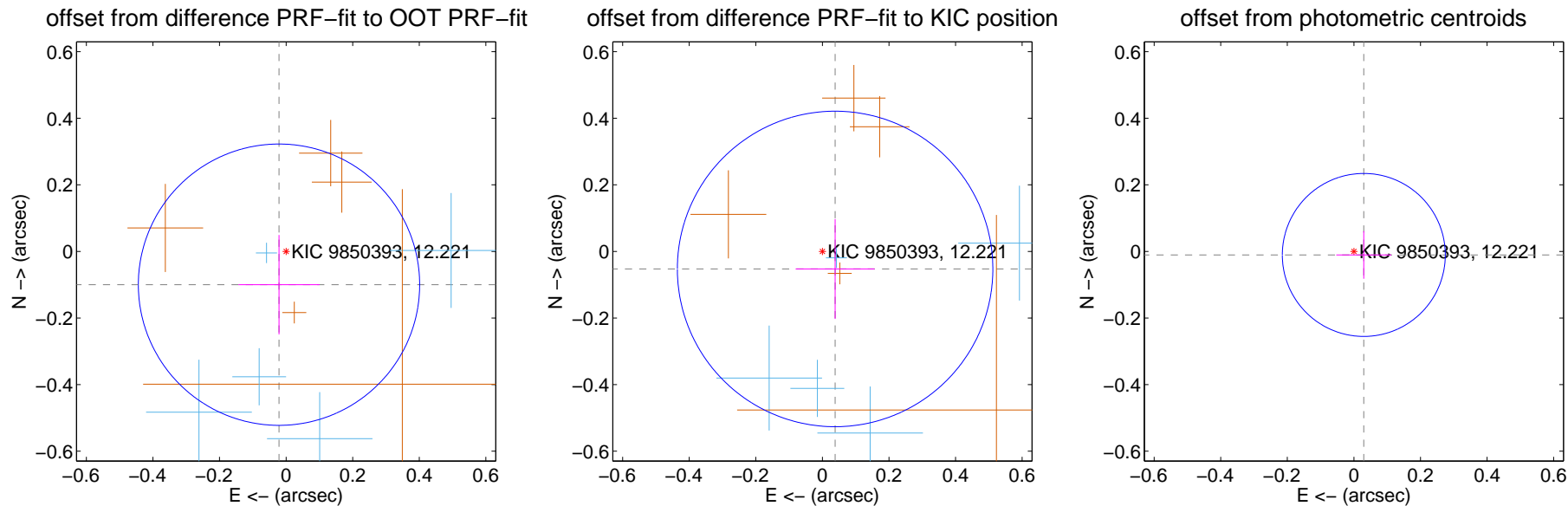
DV Centroid Data

Supplemental centroid analysis for 009850393-01. Kepler magnitude: 12.22. Transit SNR 14.57

There are 6 quarters with good PRF difference image offsets

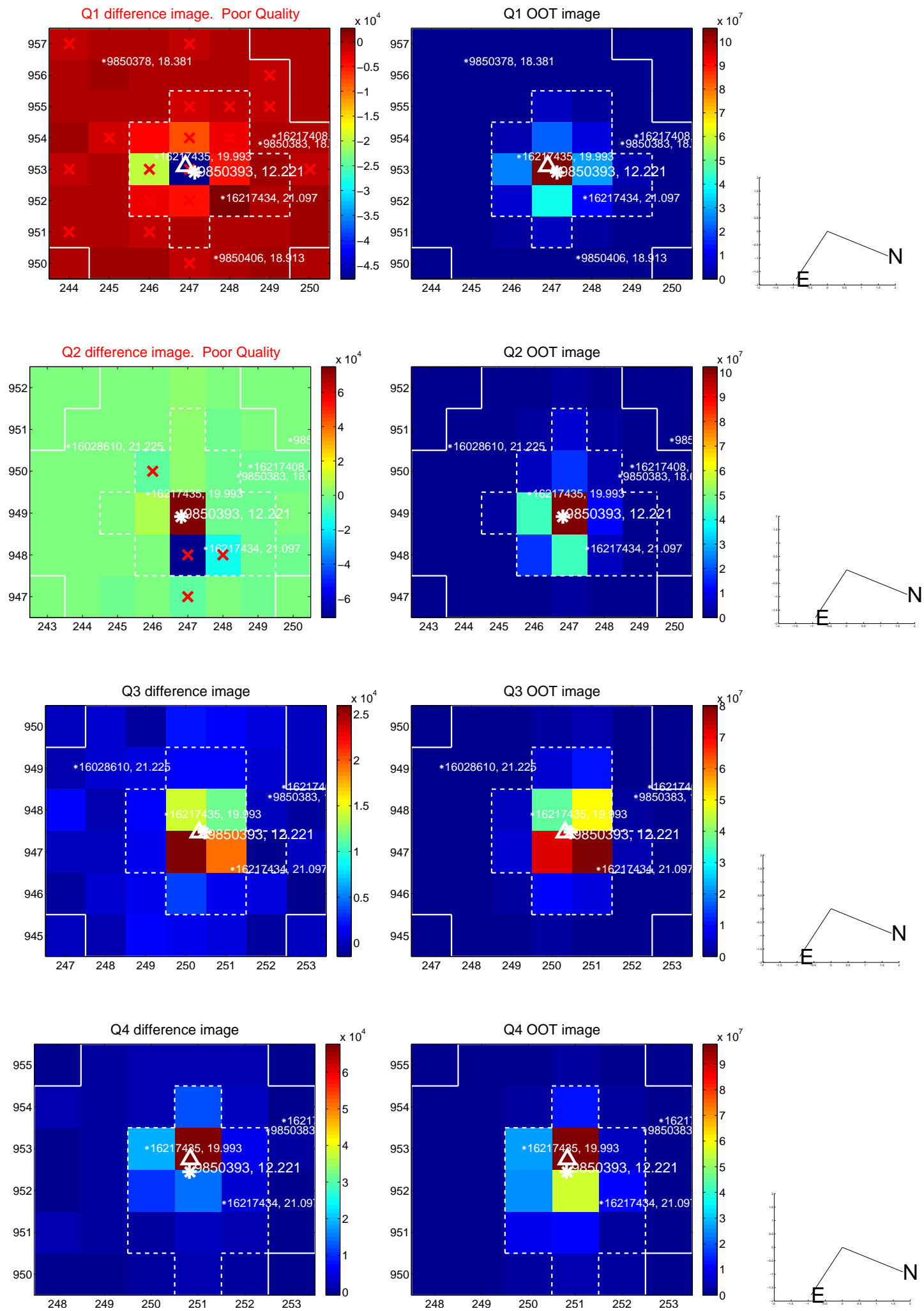
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.102 ± 0.141	0.73	0.021 ± 0.122	-0.100 ± 0.149
PRF-fit source offset from KIC position	0.065 ± 0.158	0.41	-0.038 ± 0.119	-0.053 ± 0.150
photometric centroid source offset	0.03 ± 0.08	0.39	-0.03 ± 0.08	-0.01 ± 0.07

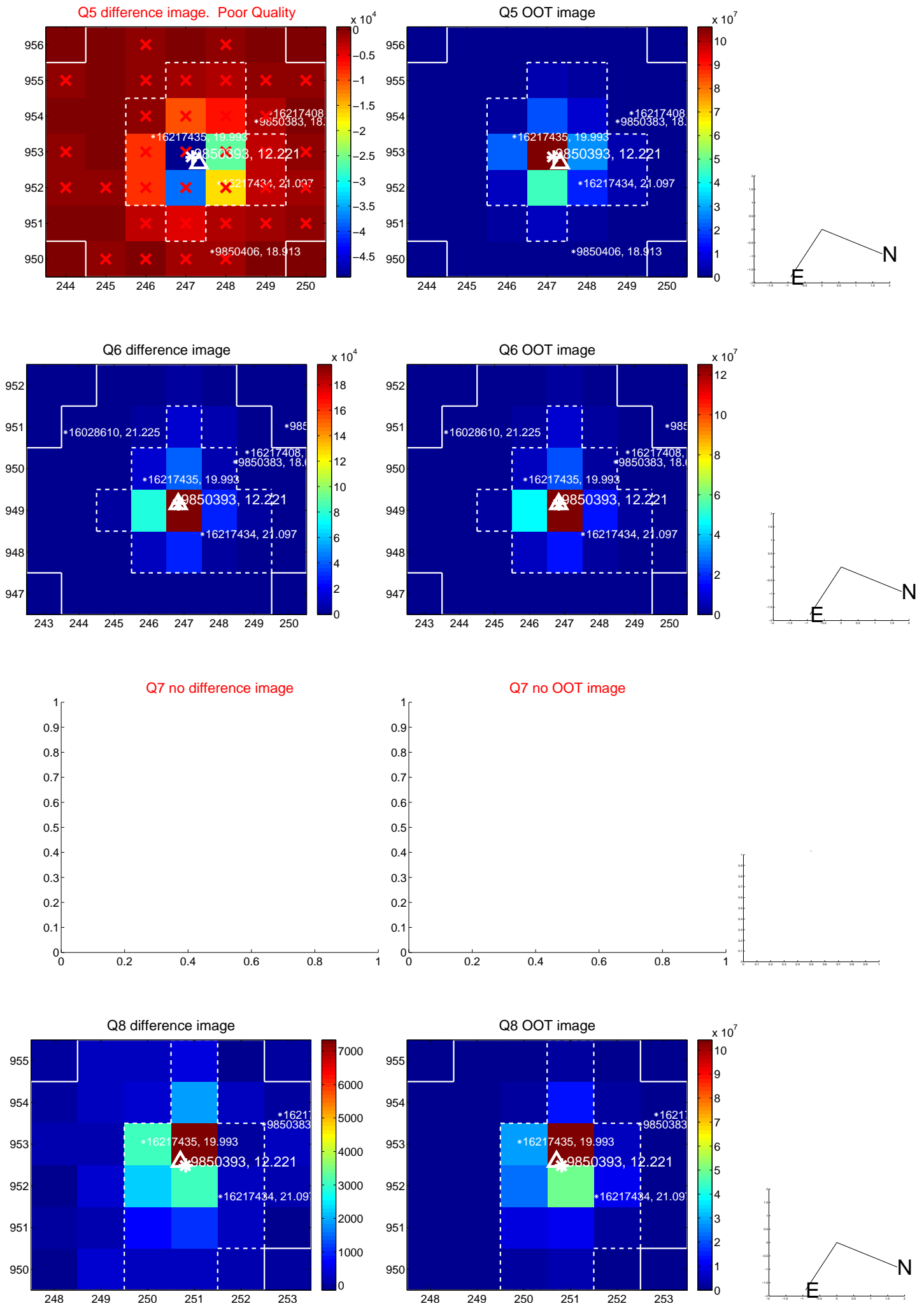


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

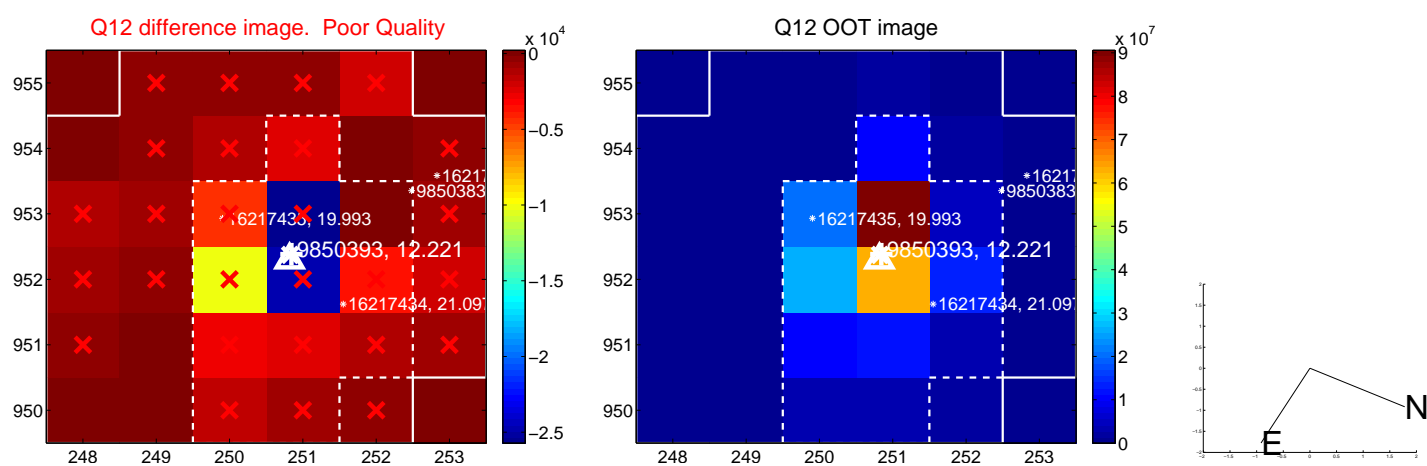
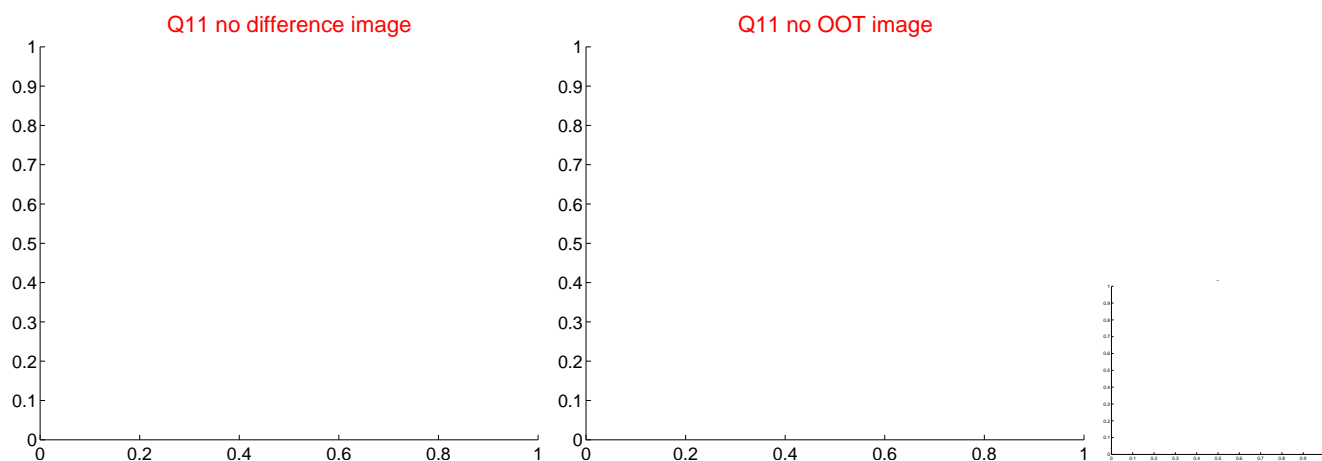
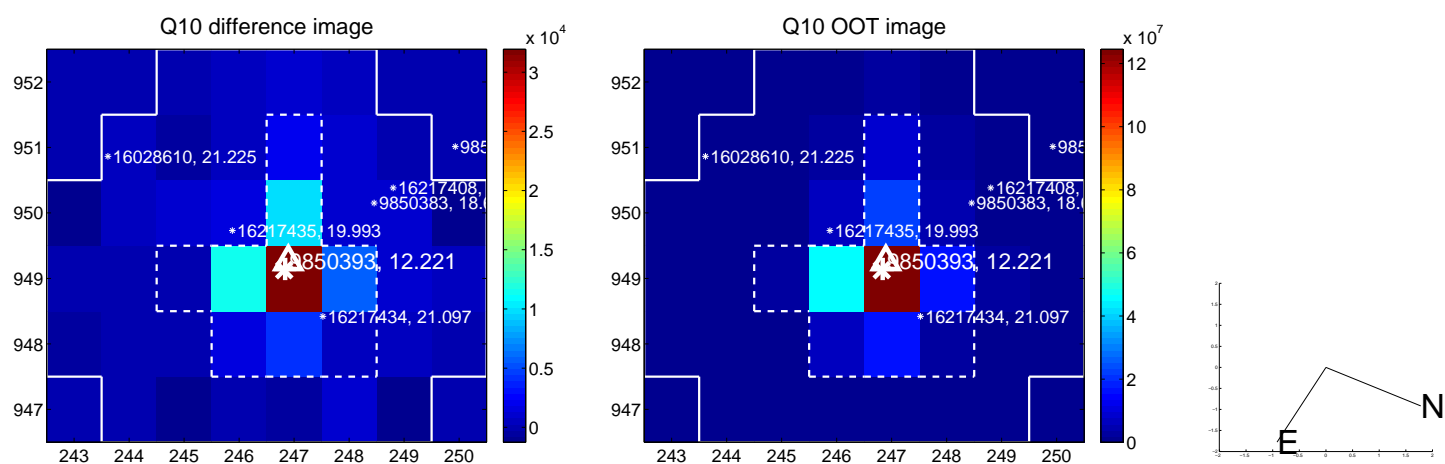
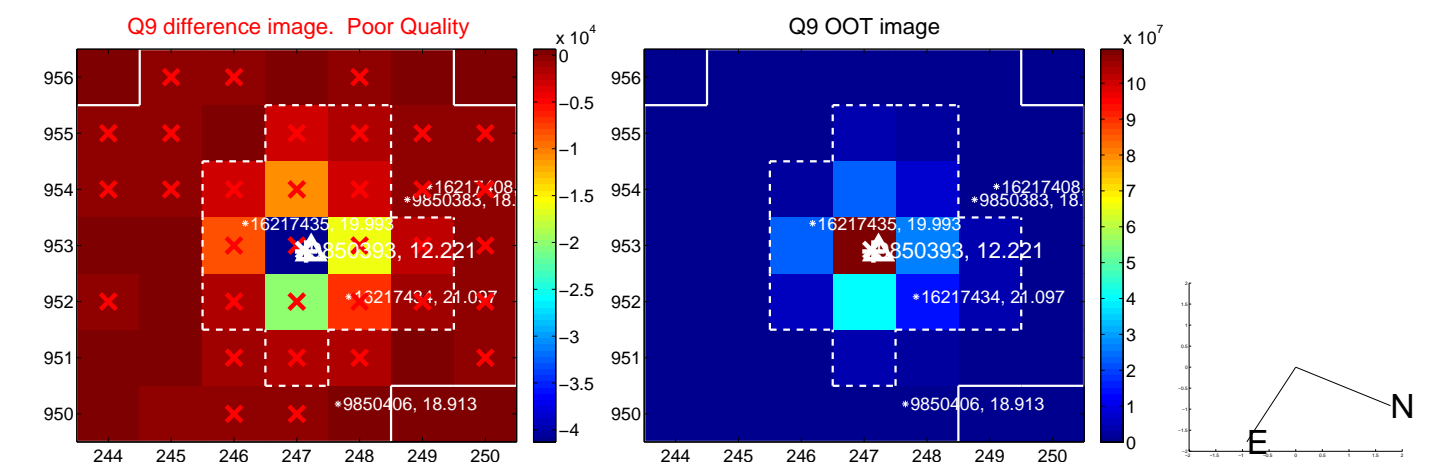
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



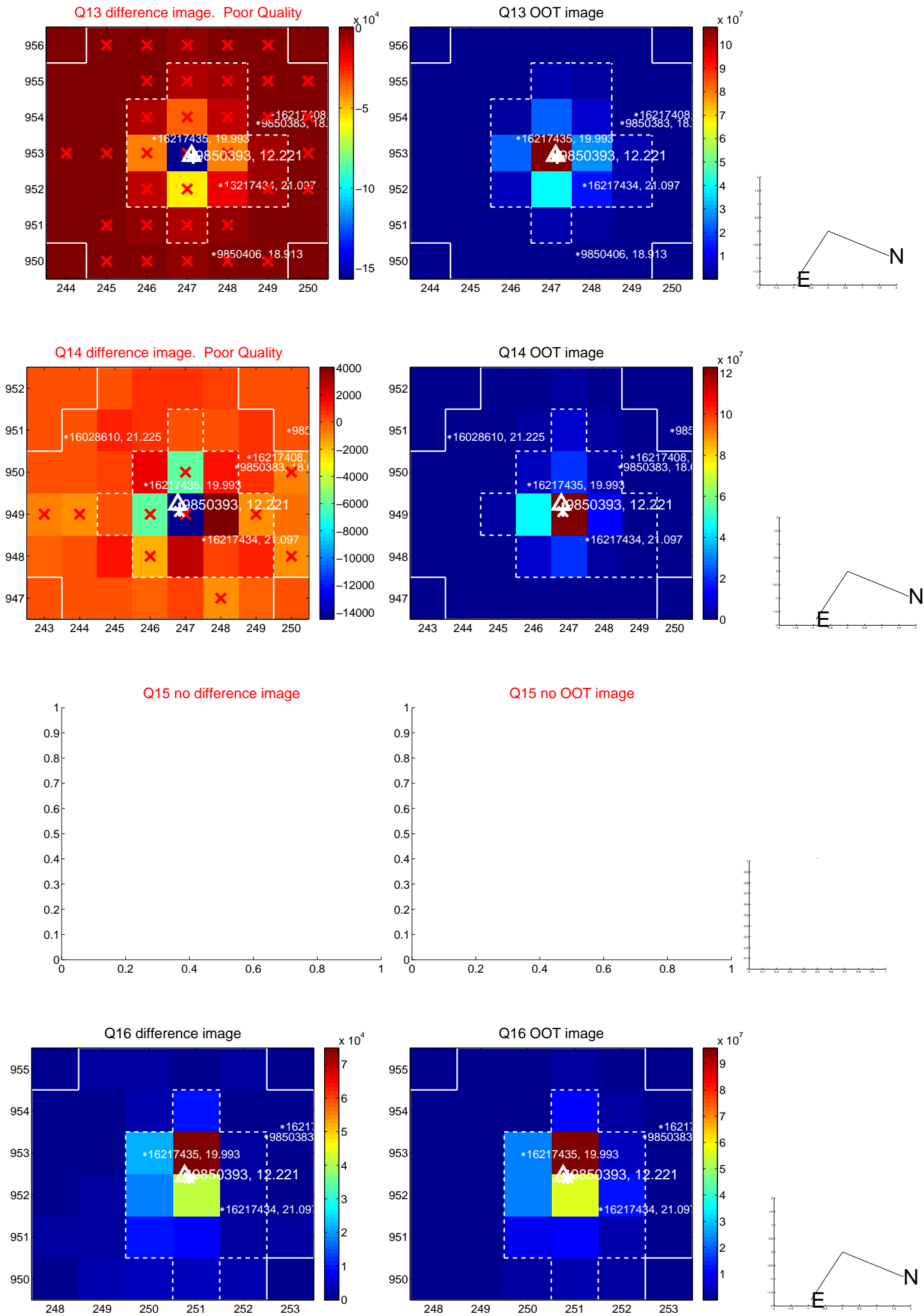
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



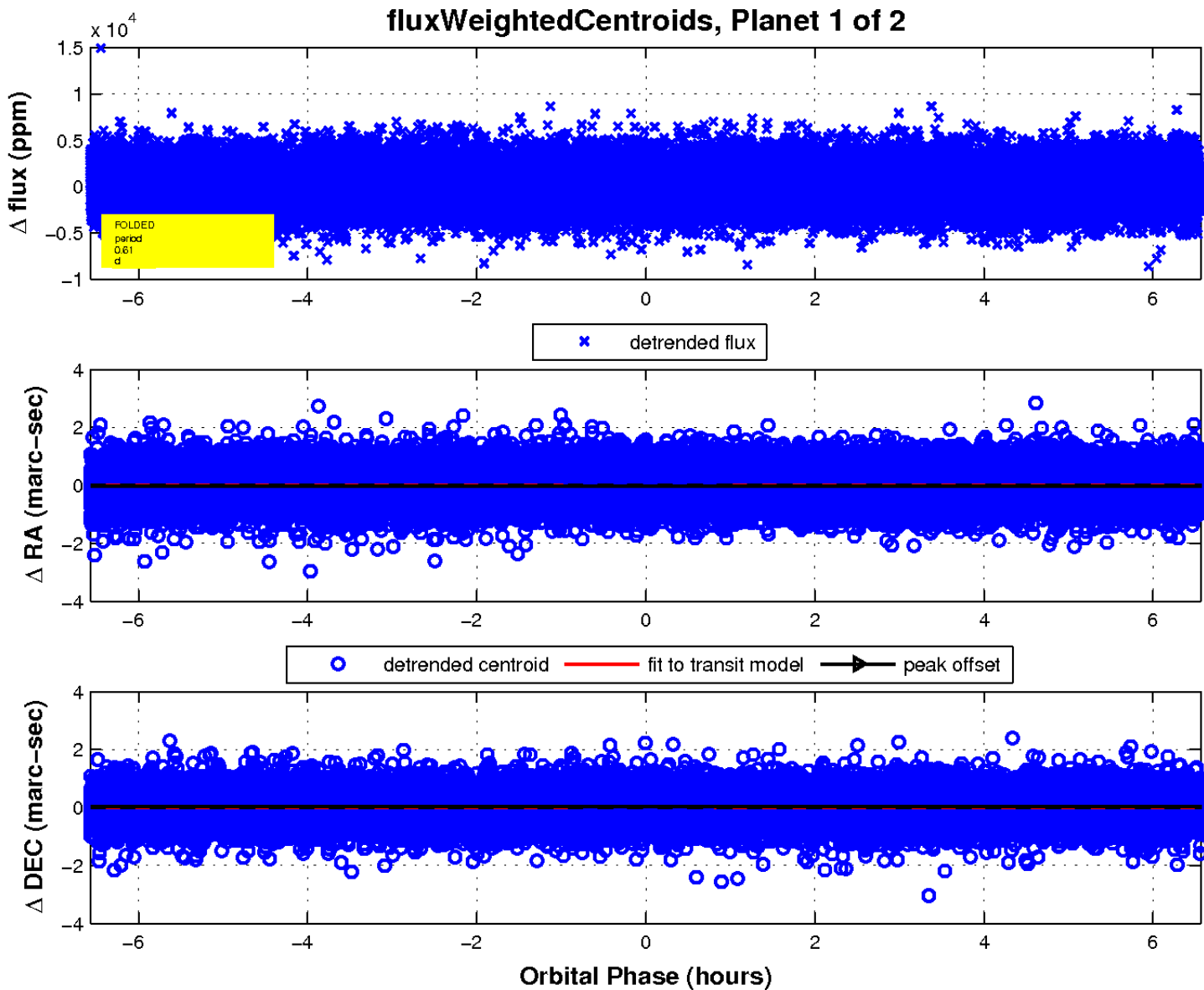
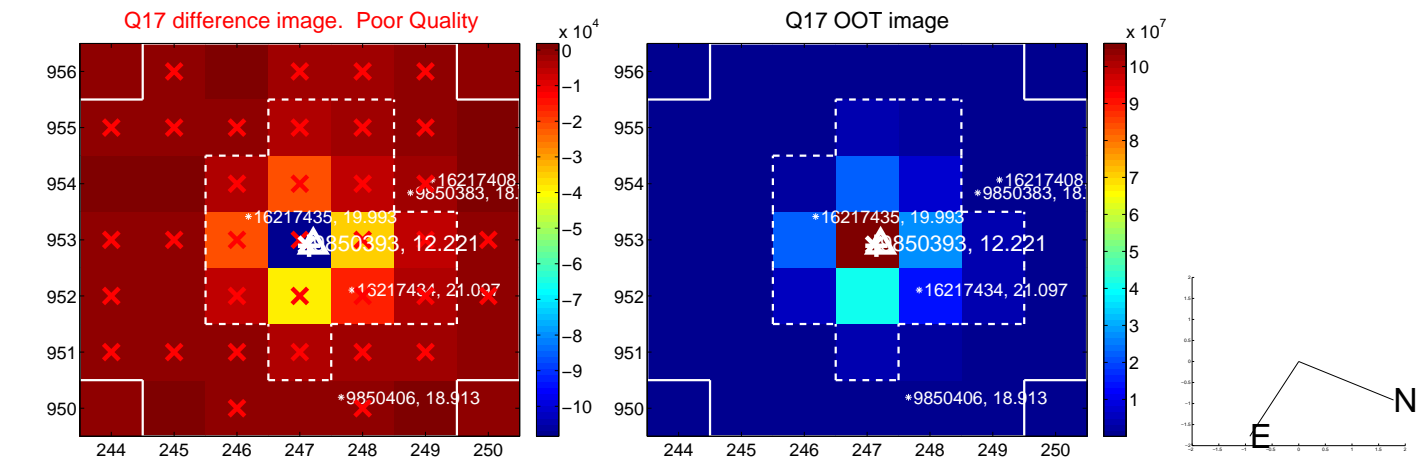
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

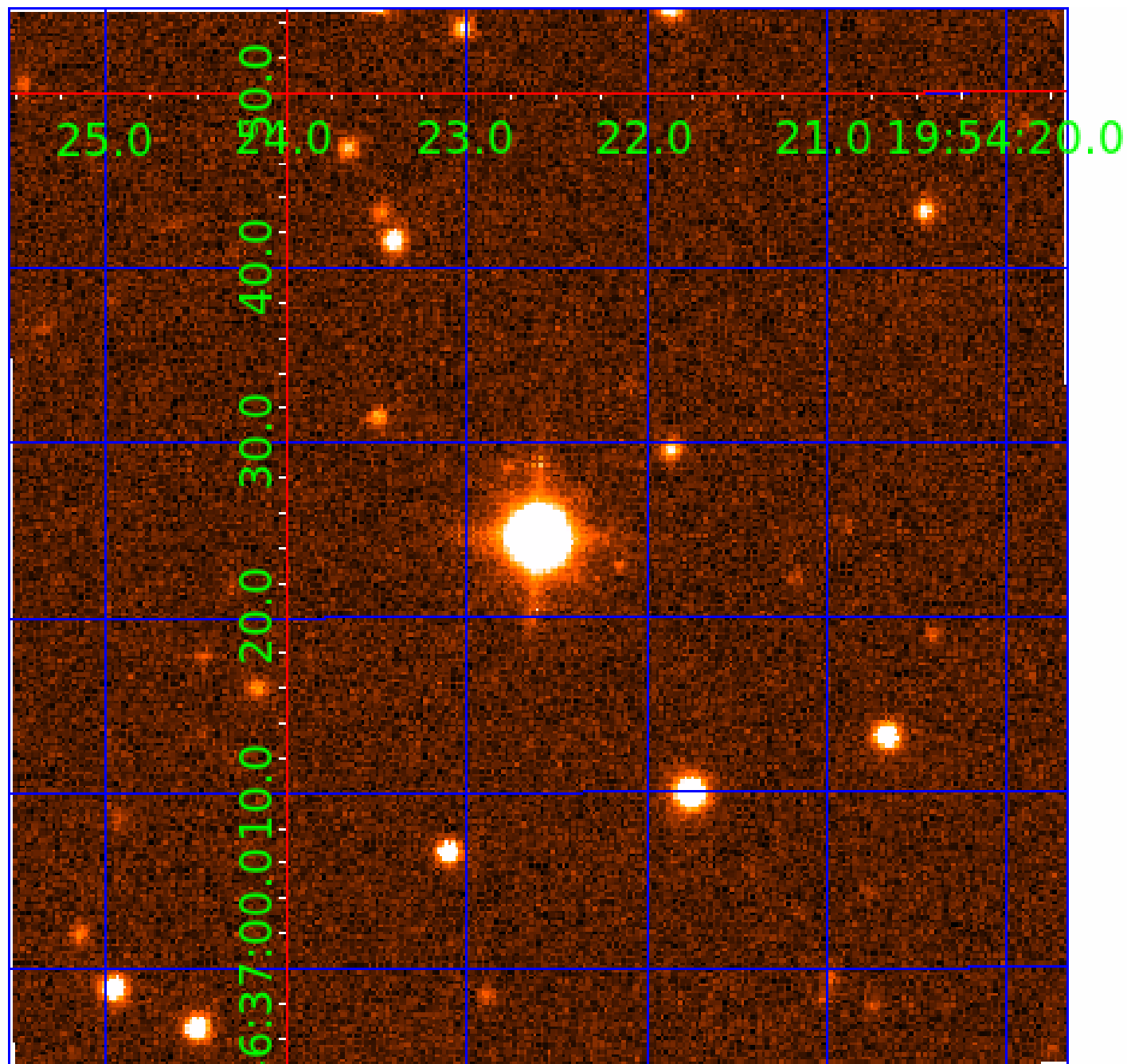


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009850393

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})
009850393-01	OBS	No	0.611501	131.543805	219.9	2.189	12.1	14.6	2.18	7365	3.75	47165.94
009850393-02	OBS	No	1.215158	132.345893	246.3	14.582	7.2	11.3	2.18	7365	3.46	18879.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009850393-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009850393-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

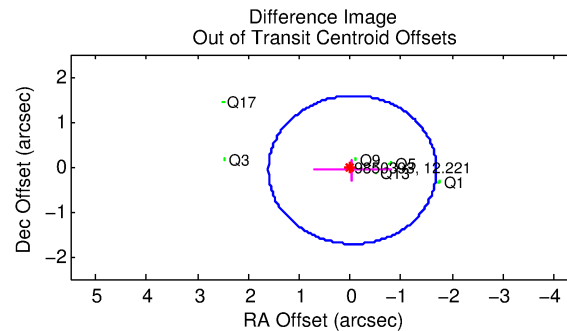
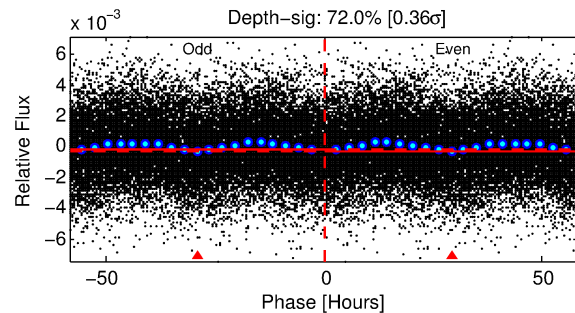
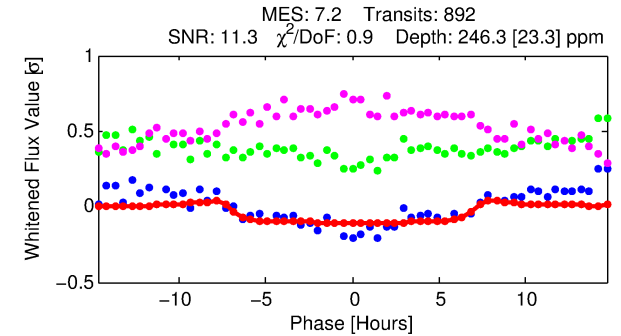
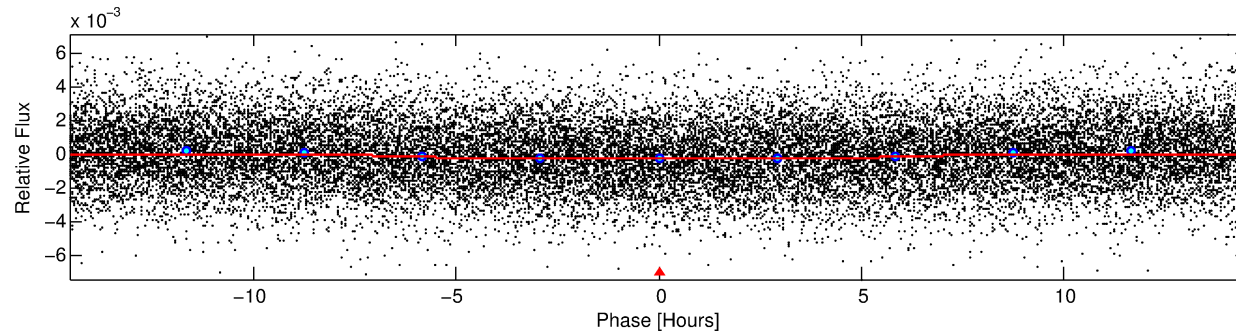
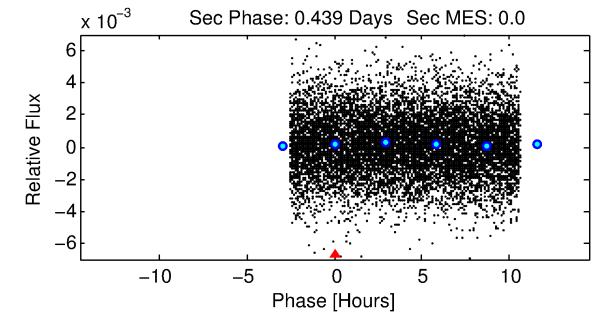
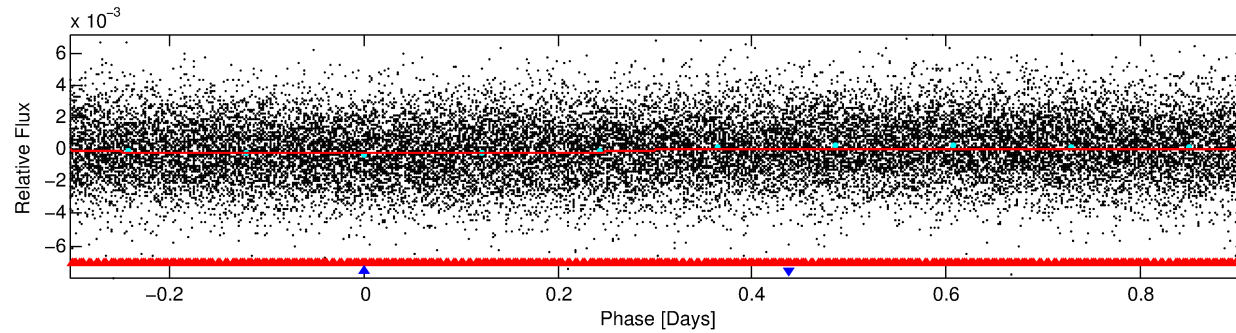
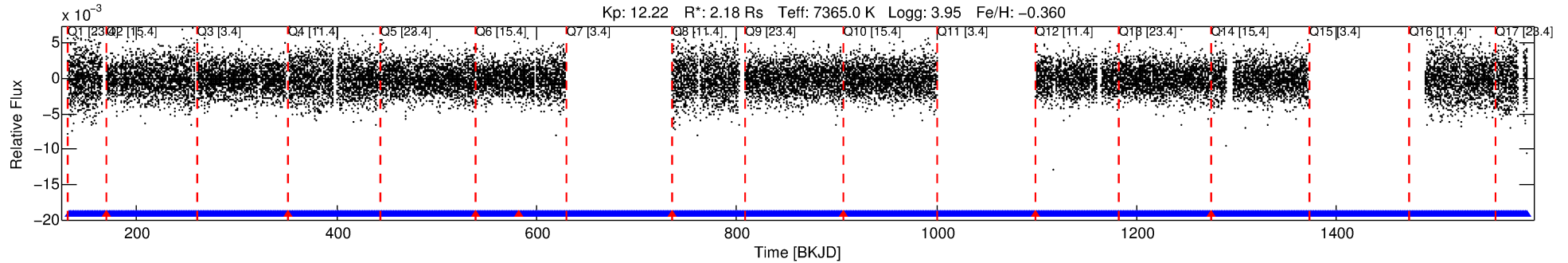
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009850393-02

No Significant Match Found

DV One-Page Summary

KIC: 9850393 Candidate: 2 of 2 Period: 1.215 d



DV Fit Results:

Period = 1.21516 [0.00003] d
Epoch = 132.3459 [0.0121] BKJD
Rp/R* = 0.0146 [0.0046]
a/R* = 1.00 [0.01]
b = 0.00 [873.57]
Seff = 18879.07 [10509.12]
Teq = 2989 [416] K
Rp = 3.46 [1.66] Re
a = 0.0257 [0.0087] AU
Ag = N/A
Teffp = N/A

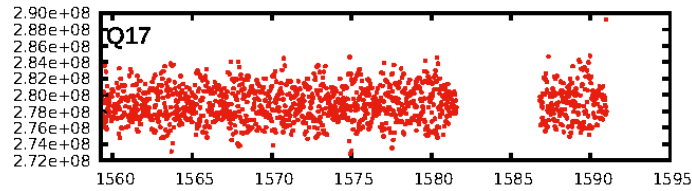
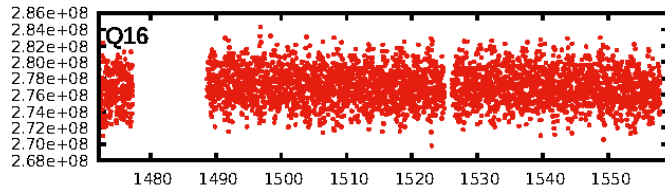
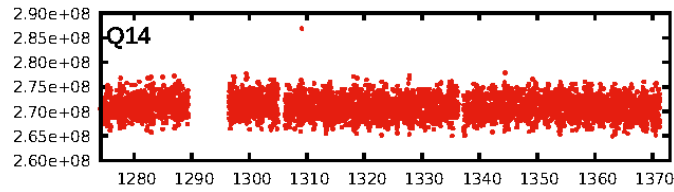
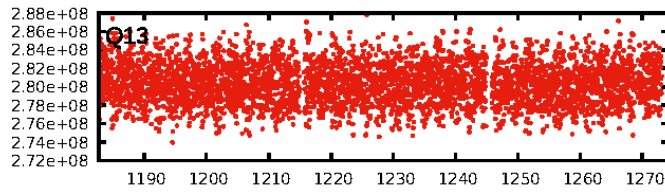
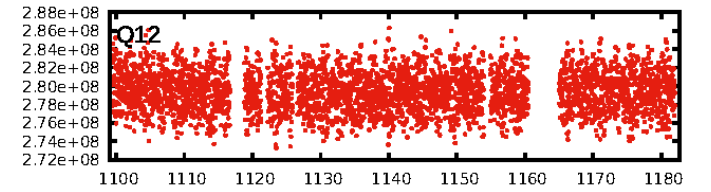
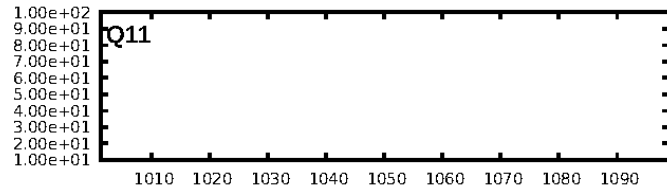
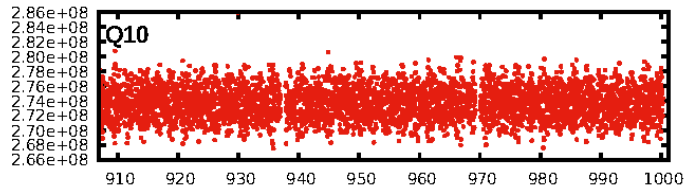
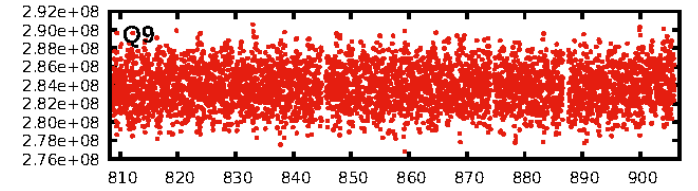
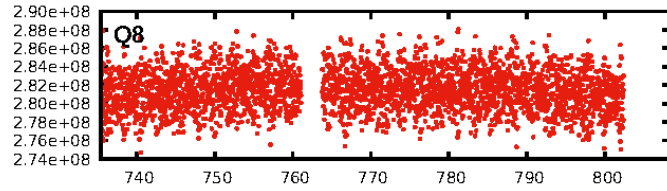
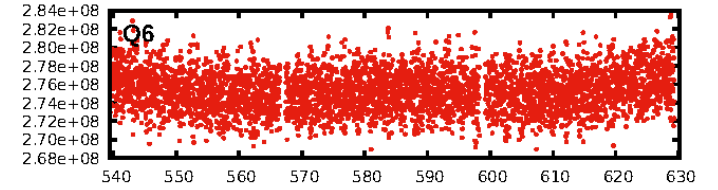
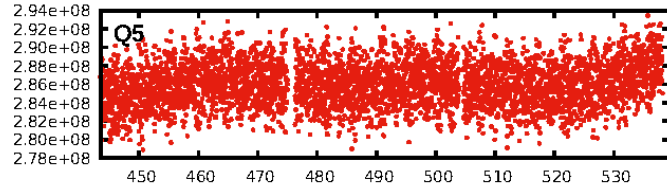
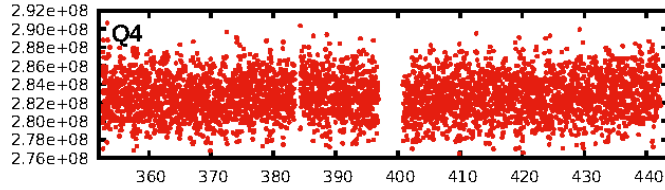
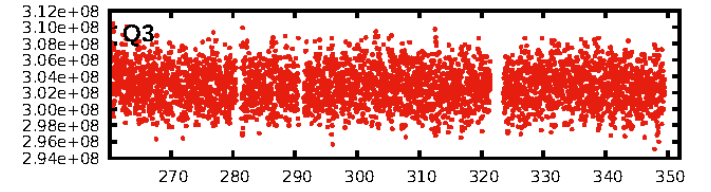
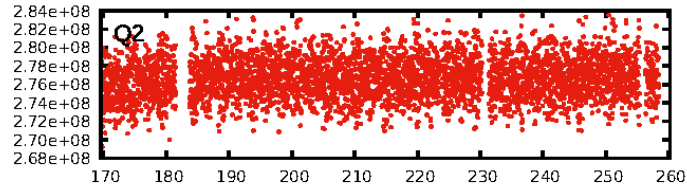
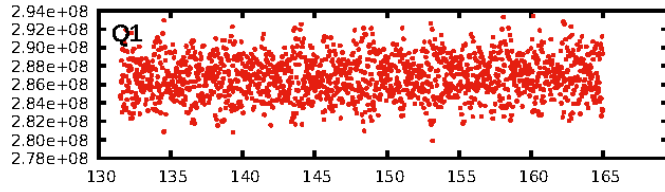
DV Diagnostic Results:

ShortPeriod-sig: 67.4% [0.98σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [833/841]
GhostDiagnostic-chr: 1.1
Centroid-sig: 3.1%
Centroid-so: 0.195 arcsec [3.85σ]
OotOffset-rm: 0.084 arcsec [0.15σ]
KicOffset-rm: 0.070 arcsec [0.10σ]
OotOffset-st: 0/1/0/5 [6]
KicOffset-st: 0/1/0/5 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.00 [0/14]

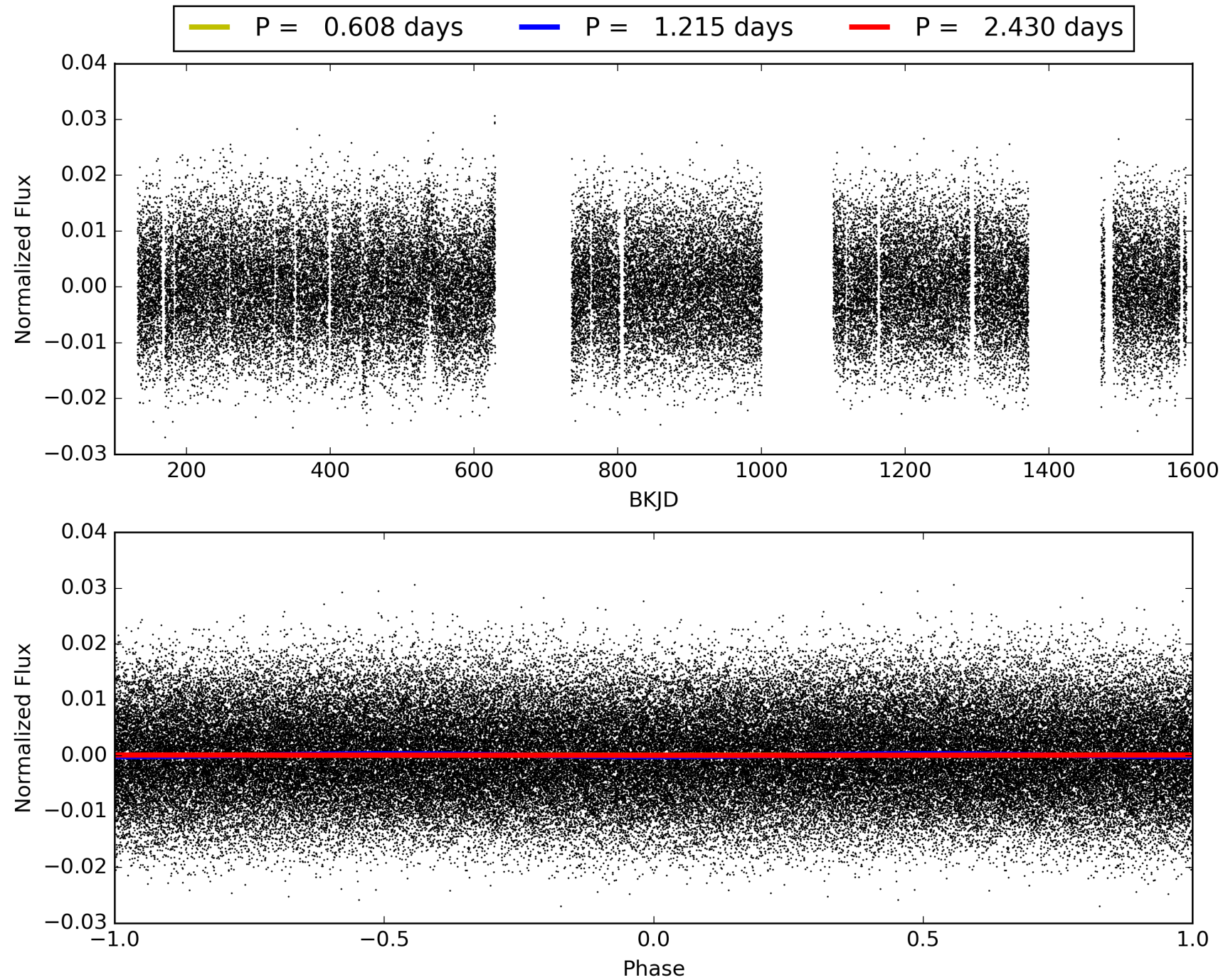
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:11:00 Z

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

TCE 009850393-02, PDC Light Curves

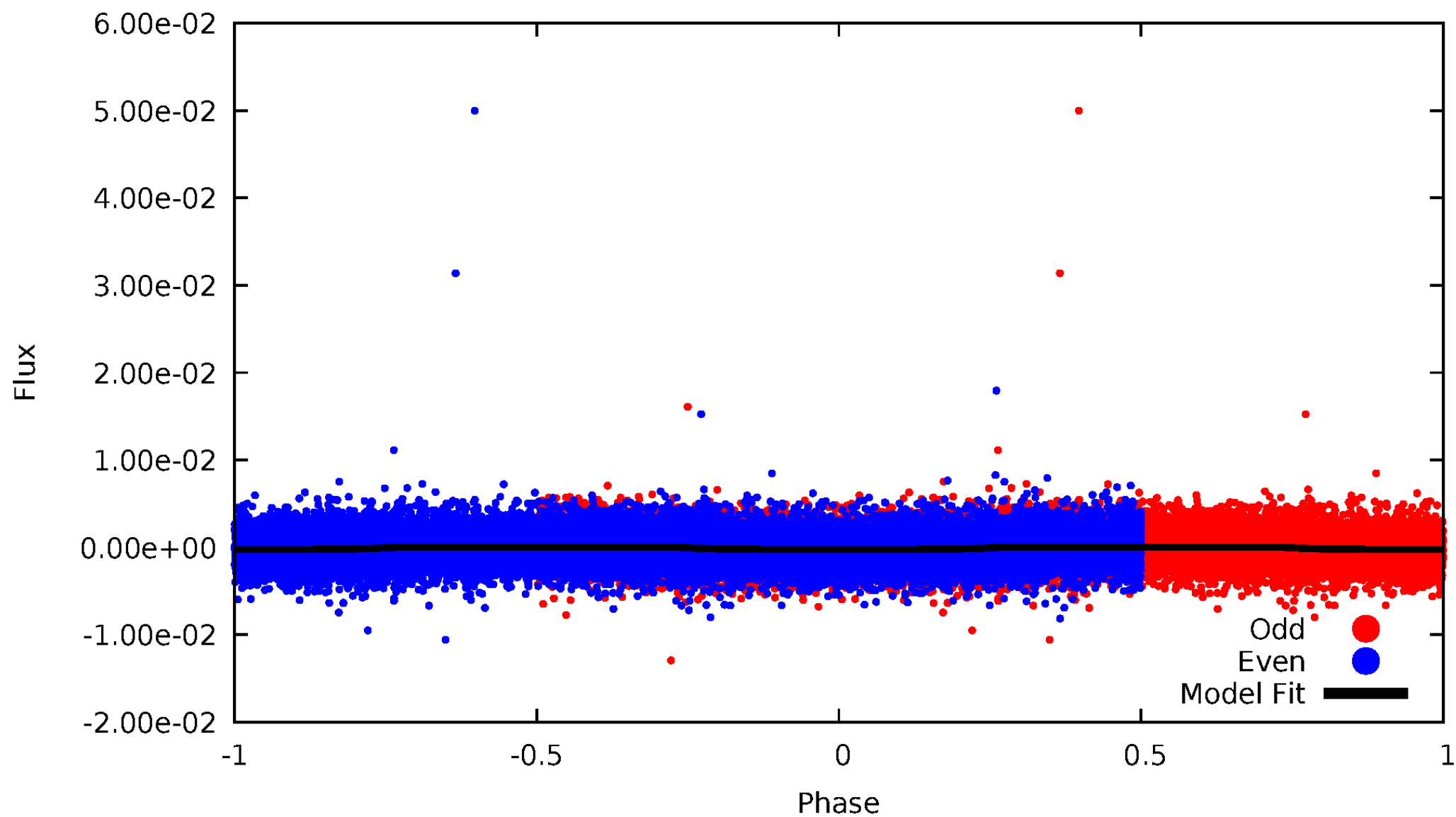


TCE 009850393-02



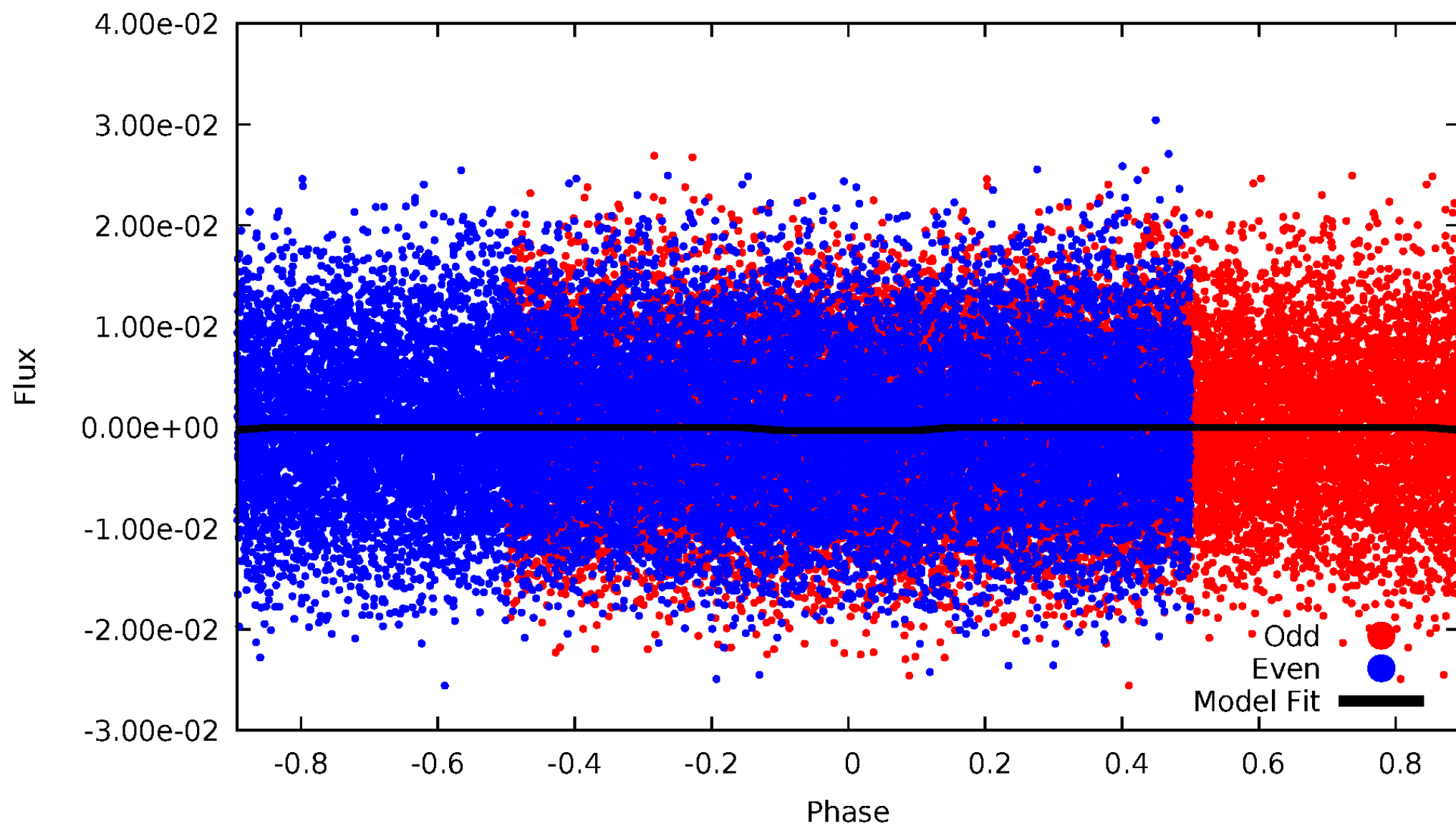
DV Odd/Even

TCE 009850393-02



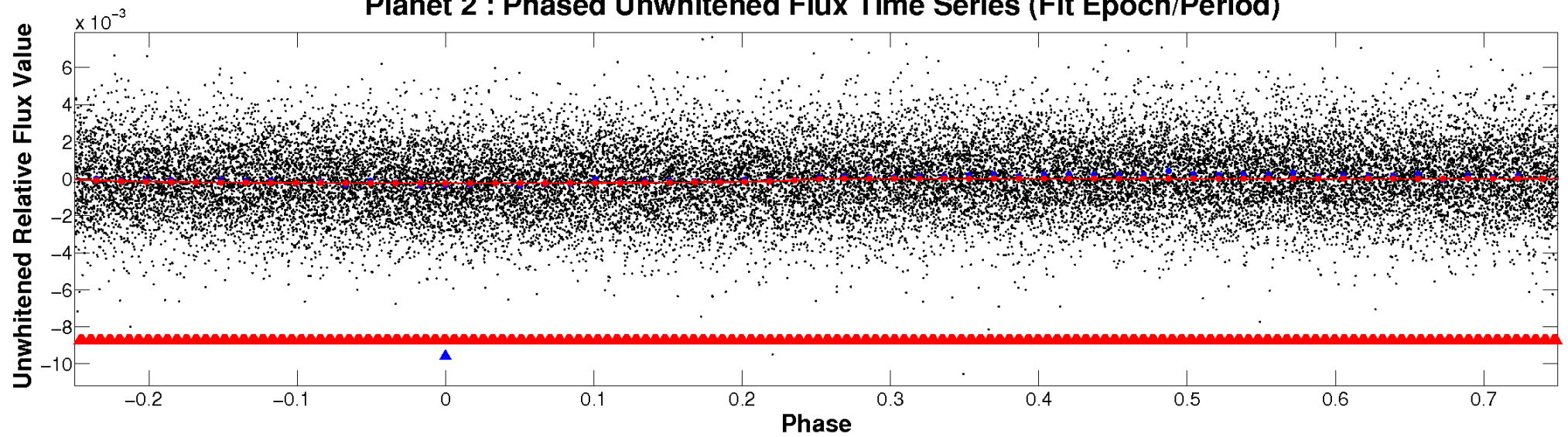
ALT Odd/Even

TCE 009850393-02

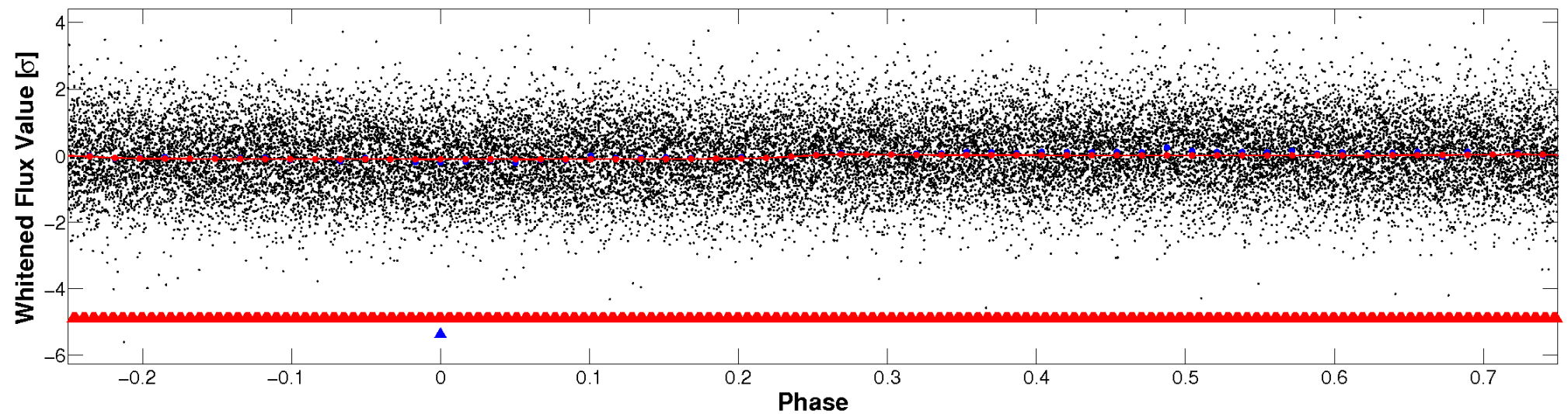


Non-Whitened Vs. Whitened Light Curve

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

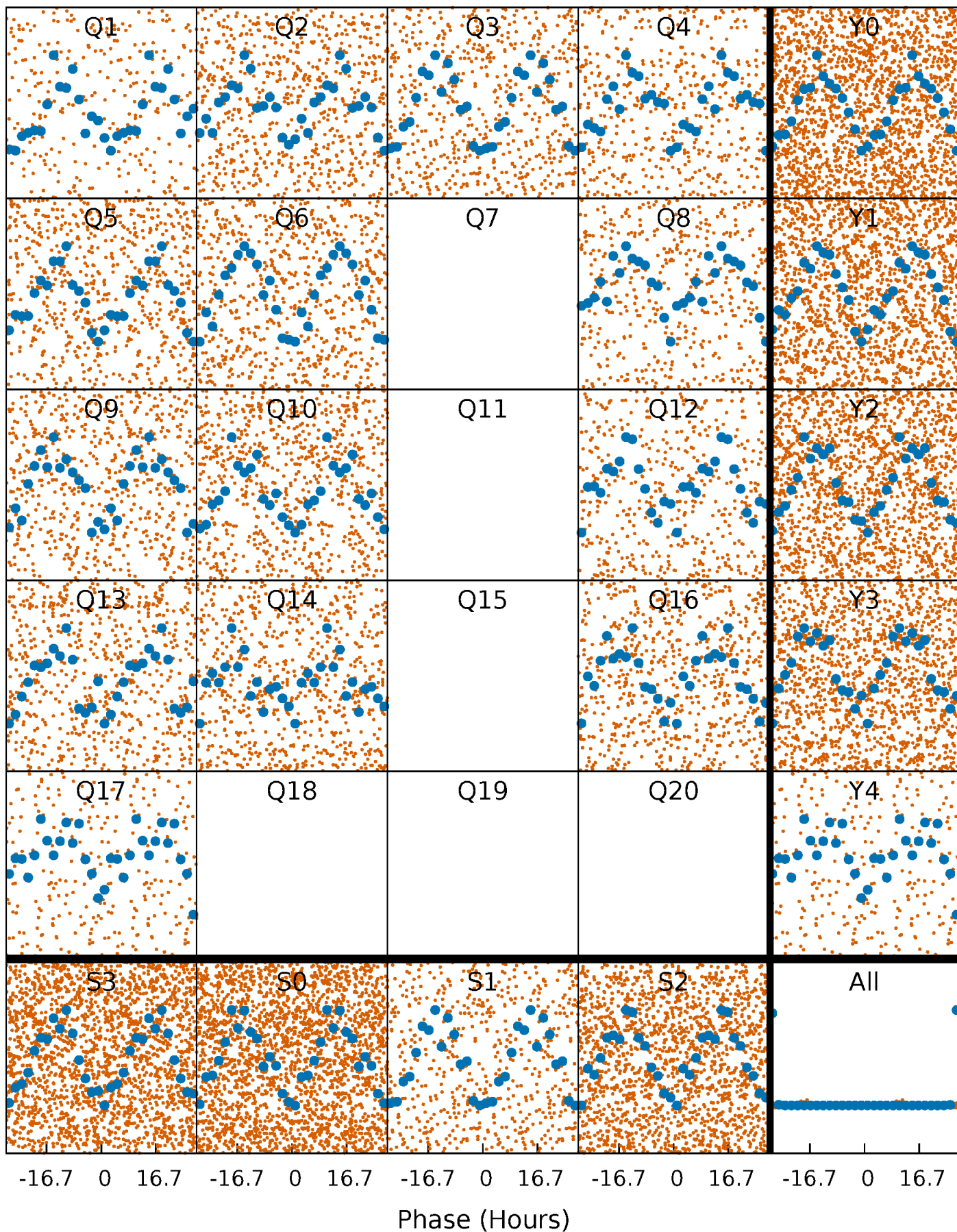


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



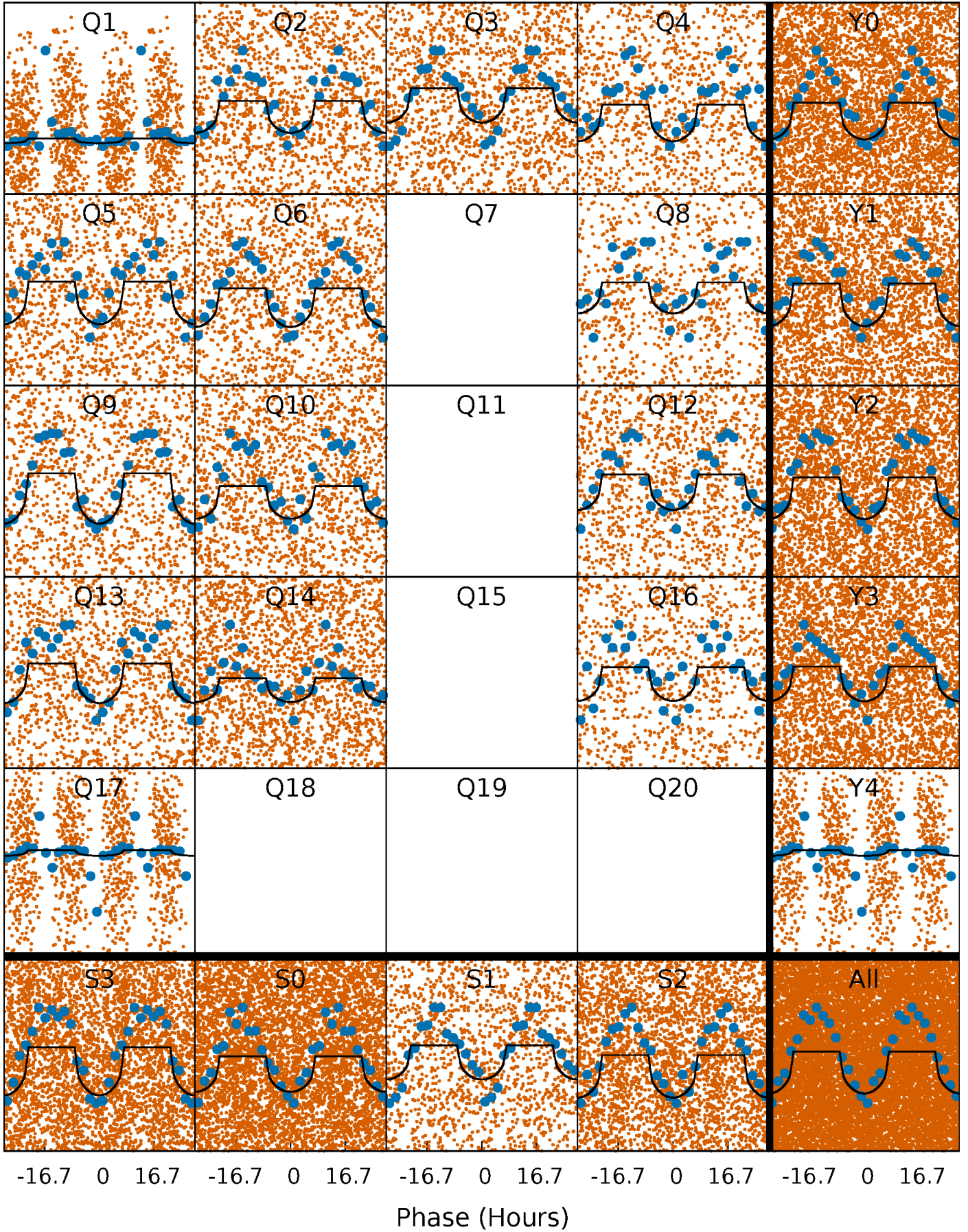
PDC Quarter-Phased Transit Curves

TCE 009850393-02 P= 1.215158 Days $T_0=132.345893$ (BKJD)



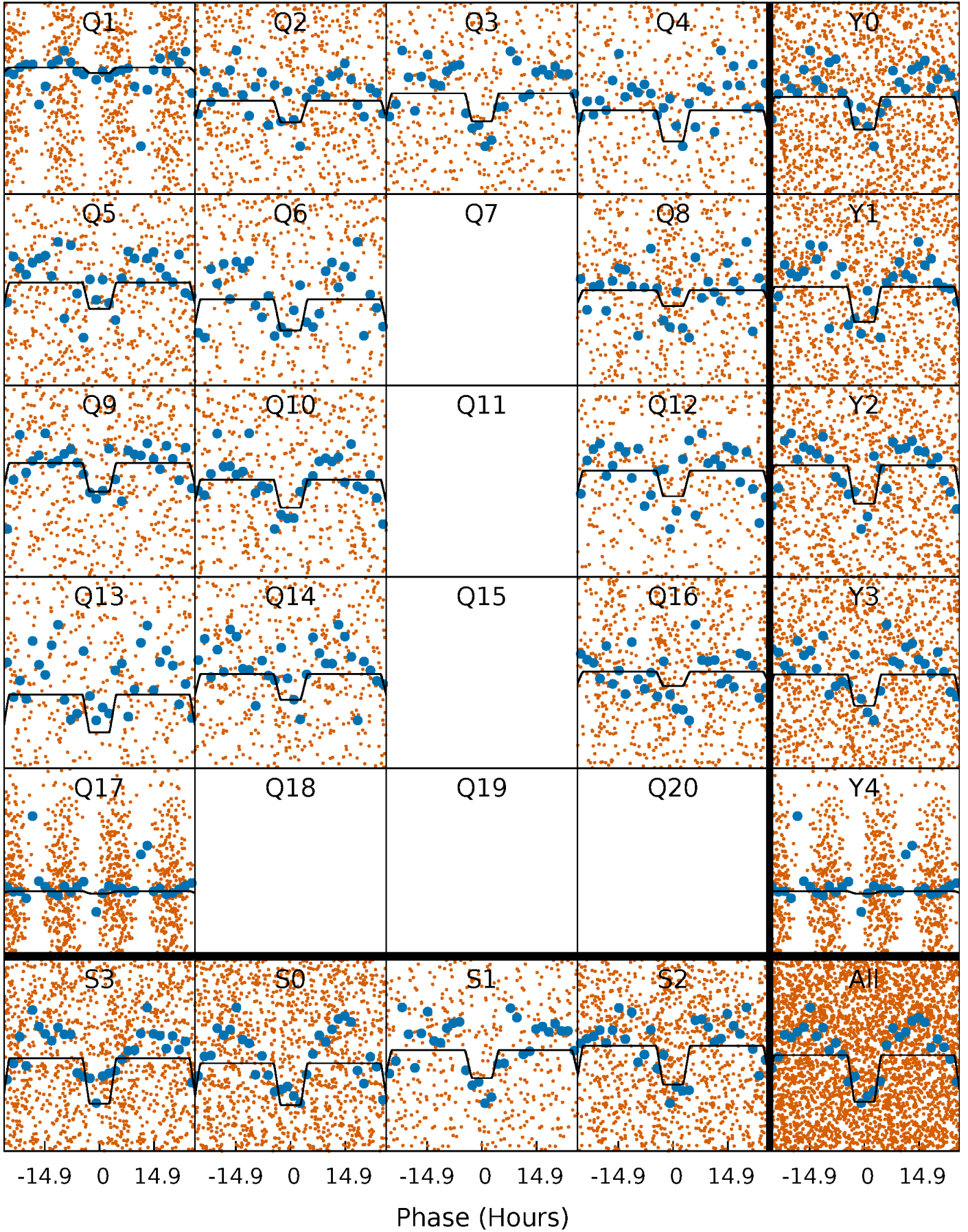
DV Quarter-Phased Transit Curves

TCE 009850393-02 P= 1.215158 Days $T_0=132.345893$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

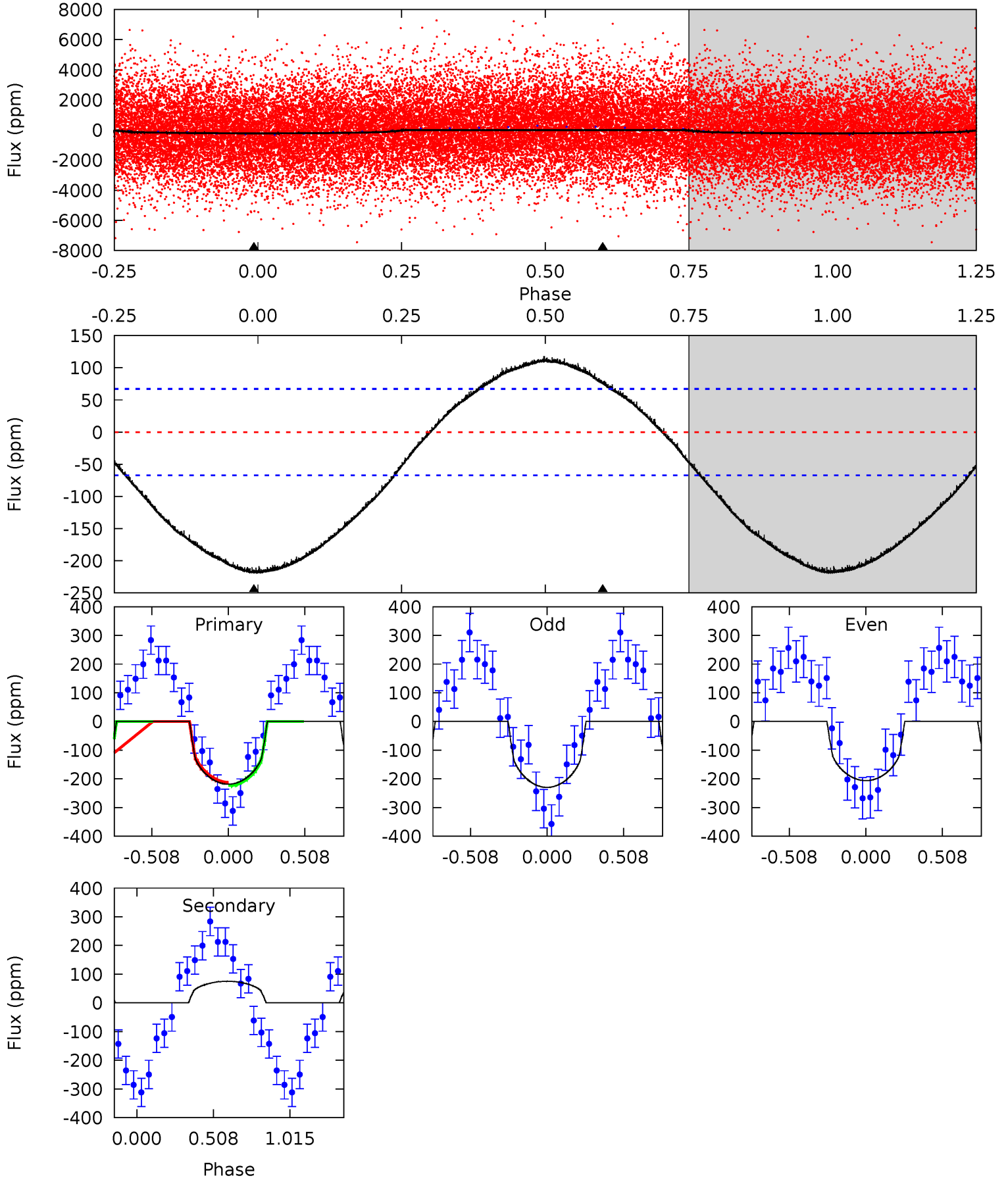
TCE 009850393-02 P= 1.215183 Days $T_0=132.369271$ (BKJD)



DV Model-Shift Uniqueness Test

009850393-02, P = 1.215158 Days, E = 131.130735 Days

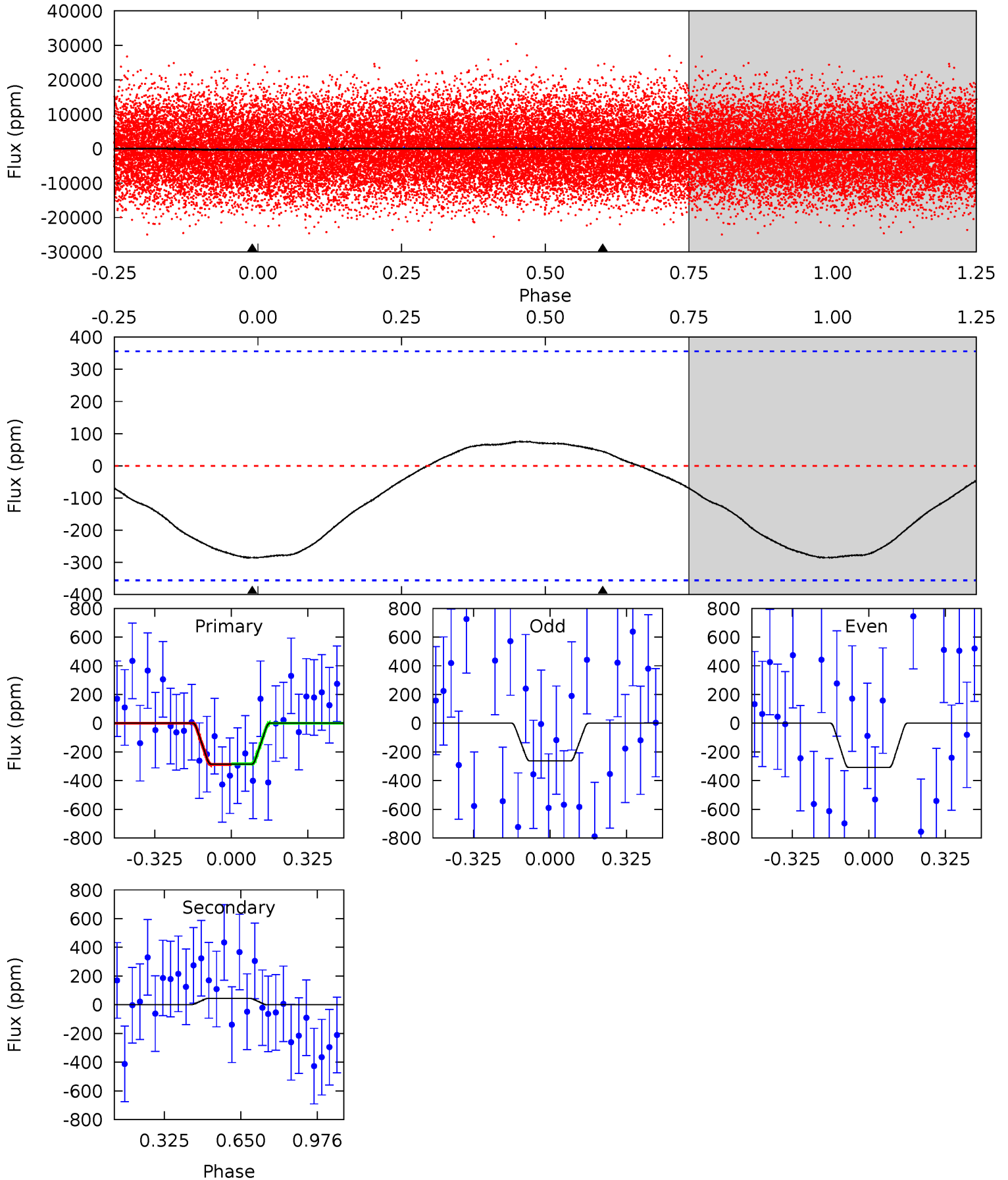
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	-4.72	0	0	4.21	0.66	1.84	13.7	13.7	-4.72	-4.72	0.75	1.03	0.35	0.34



Alt Model-Shift Uniqueness Test

009850393-02, P = 1.215183 Days, E = 131.154088 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.46	-0.54	0	0	4.31	0.98	0.34	3.46	3.46	-0.54	-0.54	0.27	1.43	0.21	0.03



Stellar Parameters For KIC 009850393

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7365^{+230}_{-307}	$3.949^{+0.308}_{-0.132}$	$-0.360^{+0.250}_{-0.350}$	$2.177^{+0.526}_{-0.790}$	$1.537^{+0.204}_{-0.331}$	$0.210^{+0.467}_{-0.094}$
	+3%/-4%	+8%/-3%	+69%/-97%	+24%/-36%	+13%/-22%	+223%/-45%
Source	KIC0	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 009850393-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	75 ± 16	$3.28^{+1.31}_{-1.07}$	4137^{+294}_{-378}	-5738^{+636}_{-1155}	$-2.430^{+1.196}_{-3.077}$
Alt.	45 ± 83	$3.96^{+1.51}_{-1.12}$	4100^{+303}_{-416}	-4772^{+8867}_{-1304}	$-0.831^{+1.716}_{-2.443}$

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 $A_{obs} \gg 1.0$

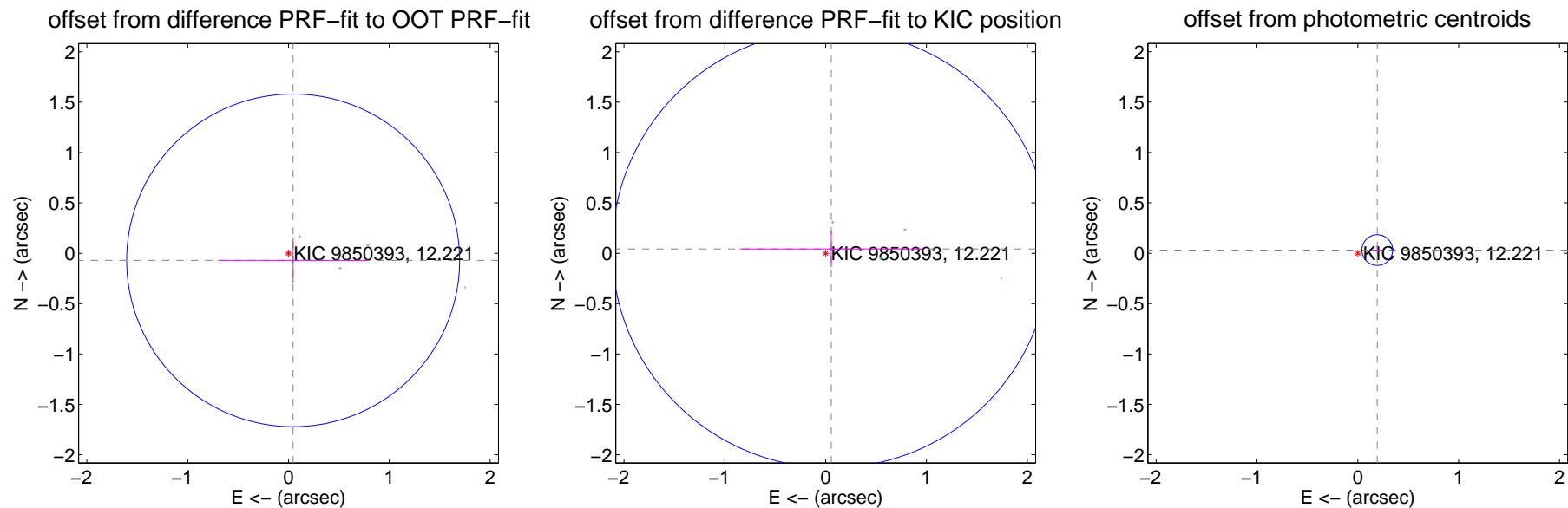
DV Centroid Data

Supplemental centroid analysis for 009850393-02. Kepler magnitude: 12.22. Transit SNR 11.25

There are 6 quarters with good PRF difference image offsets

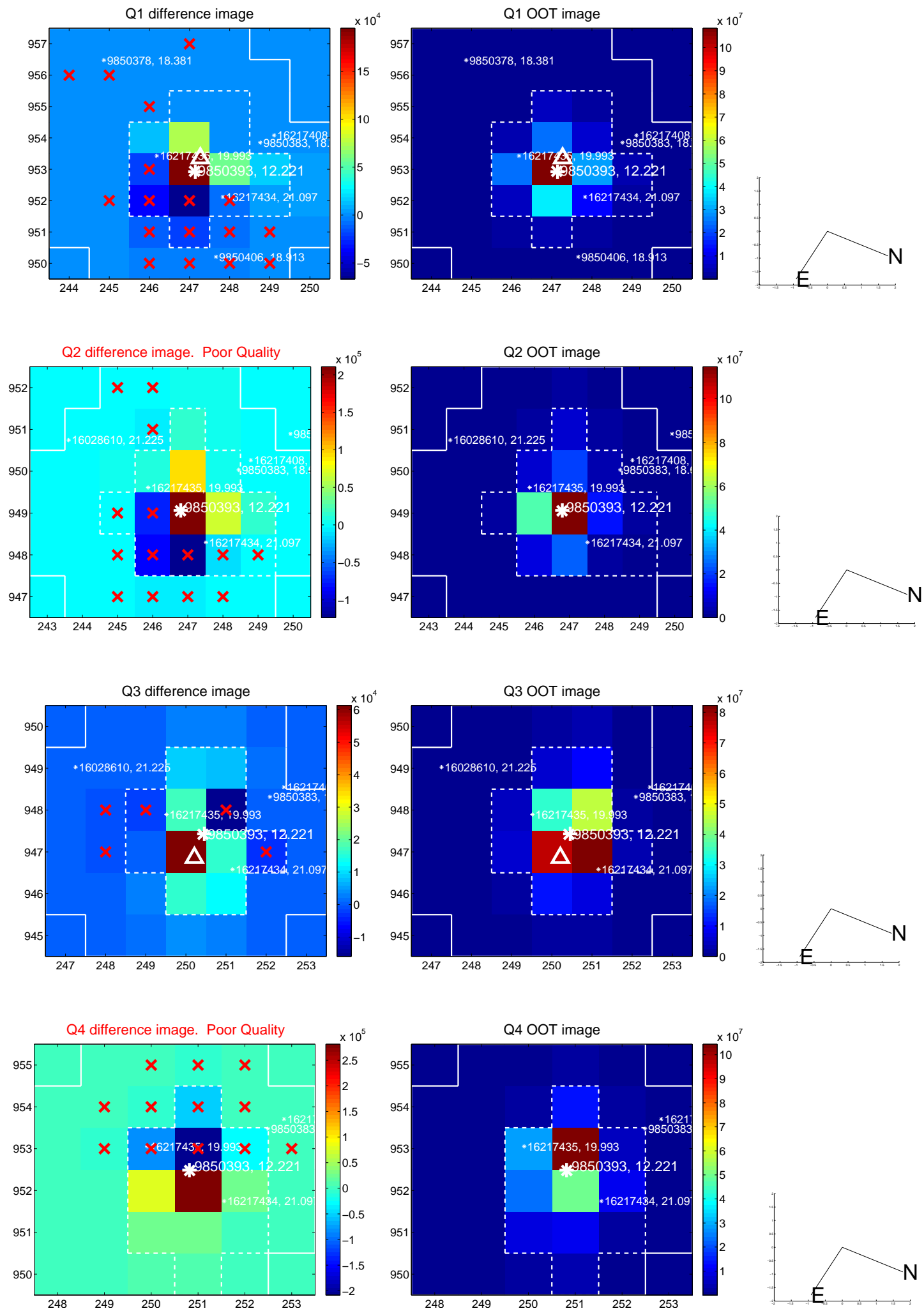
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.084 ± 0.550	0.15	-0.046 ± 0.745	-0.070 ± 0.225
PRF-fit source offset from KIC position	0.070 ± 0.724	0.10	-0.055 ± 0.907	0.043 ± 0.178
photometric centroid source offset	0.20 ± 0.05	3.85	-0.19 ± 0.05	0.03 ± 0.04

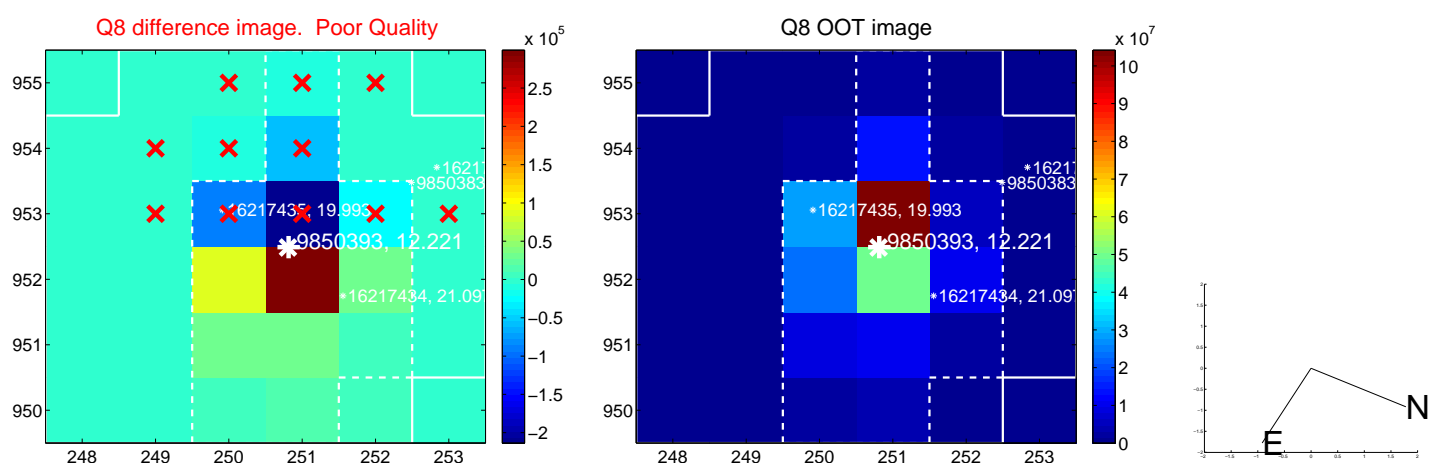
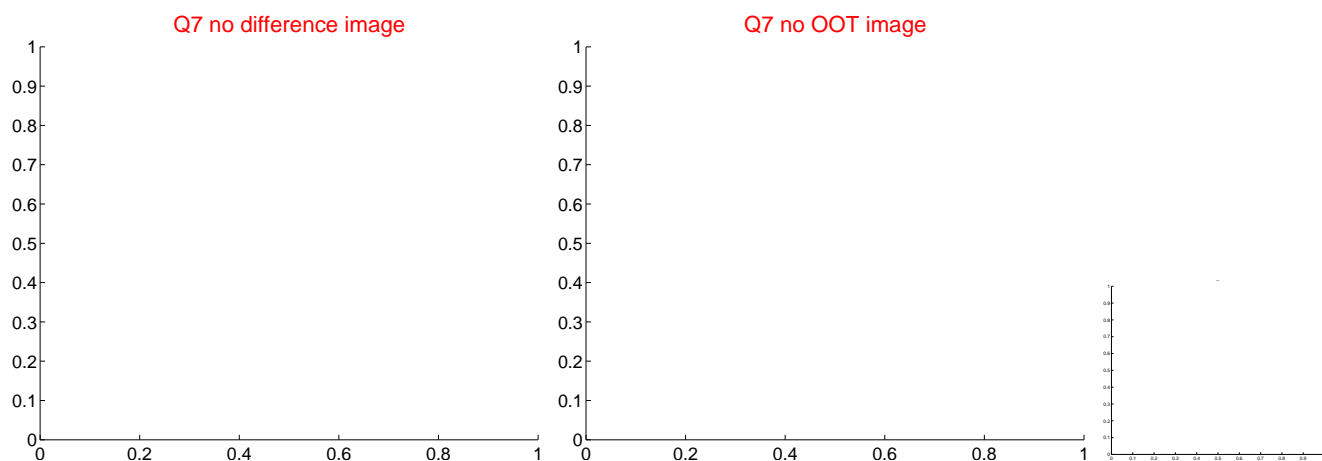
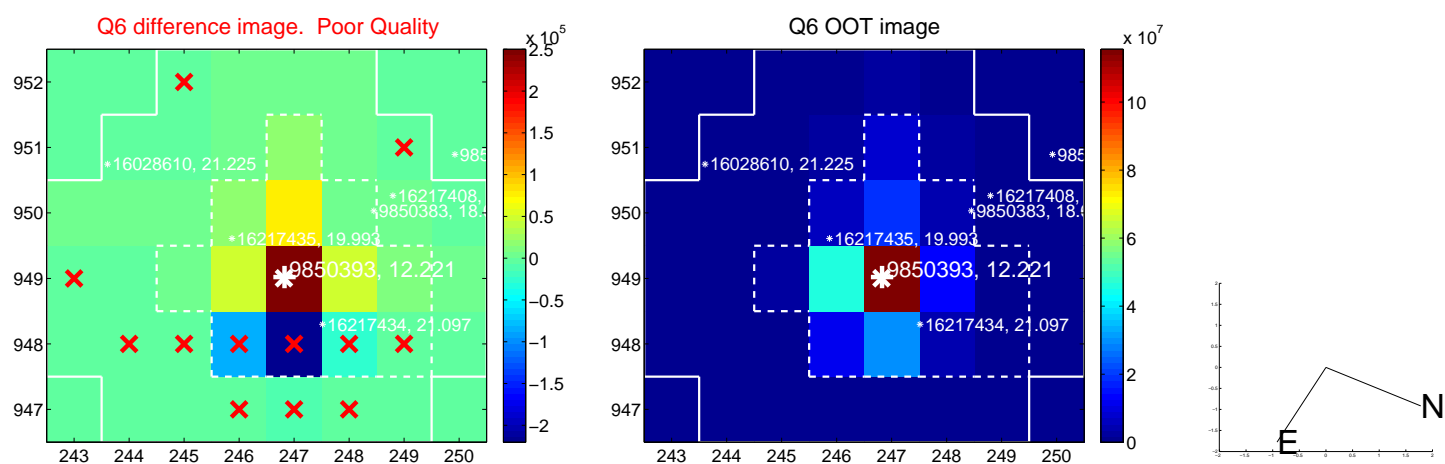
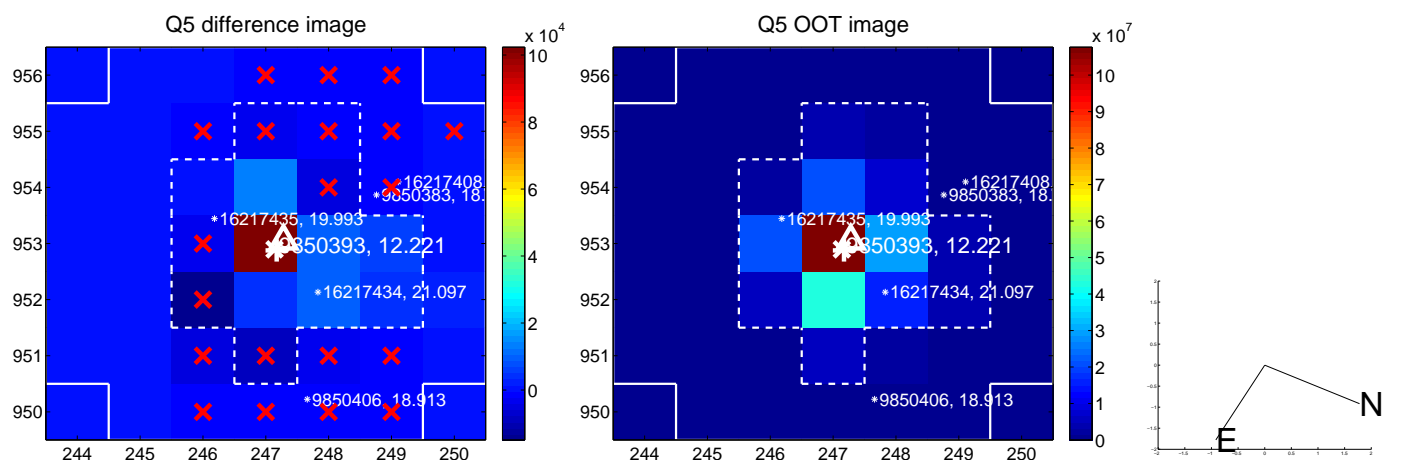


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

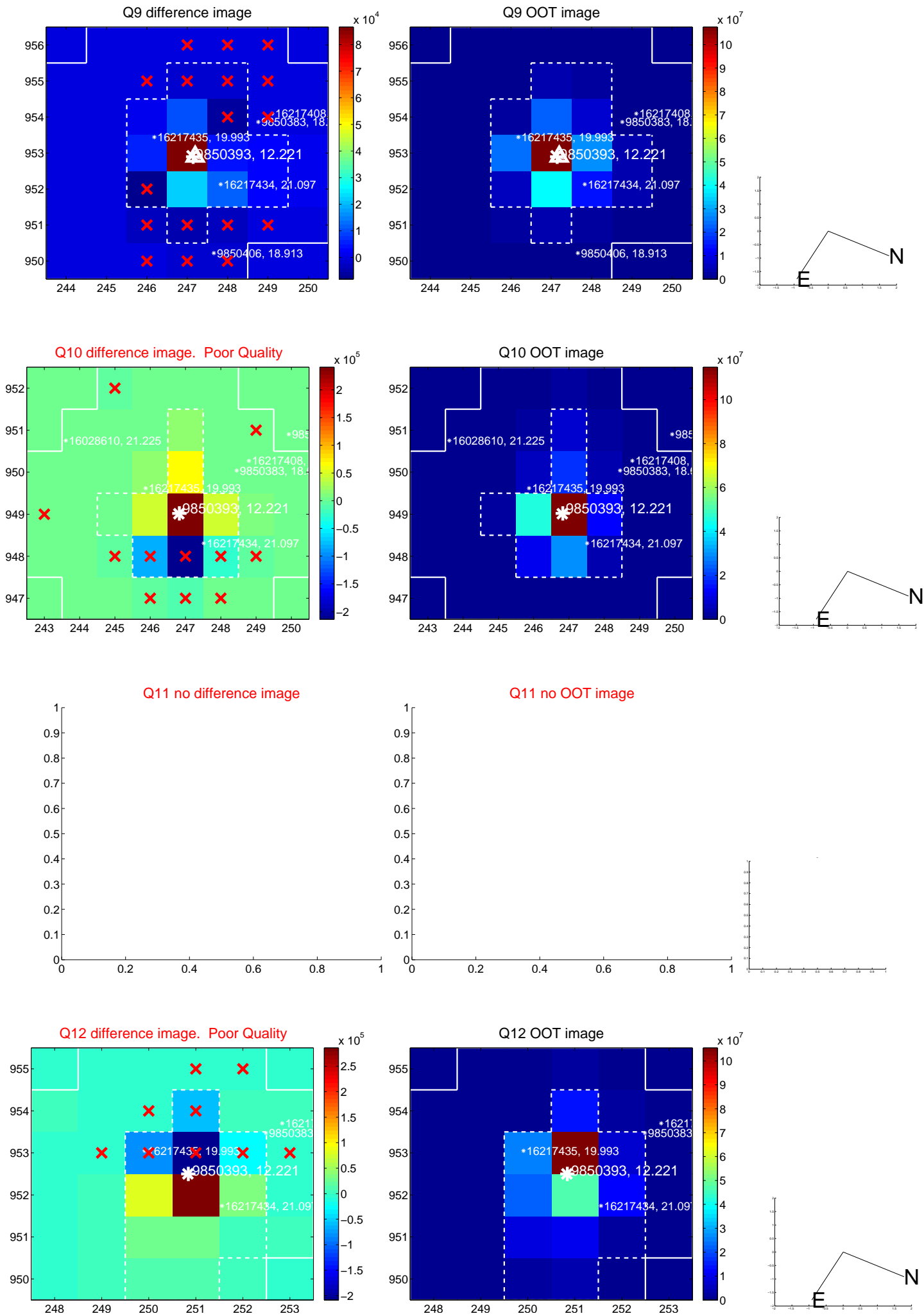
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



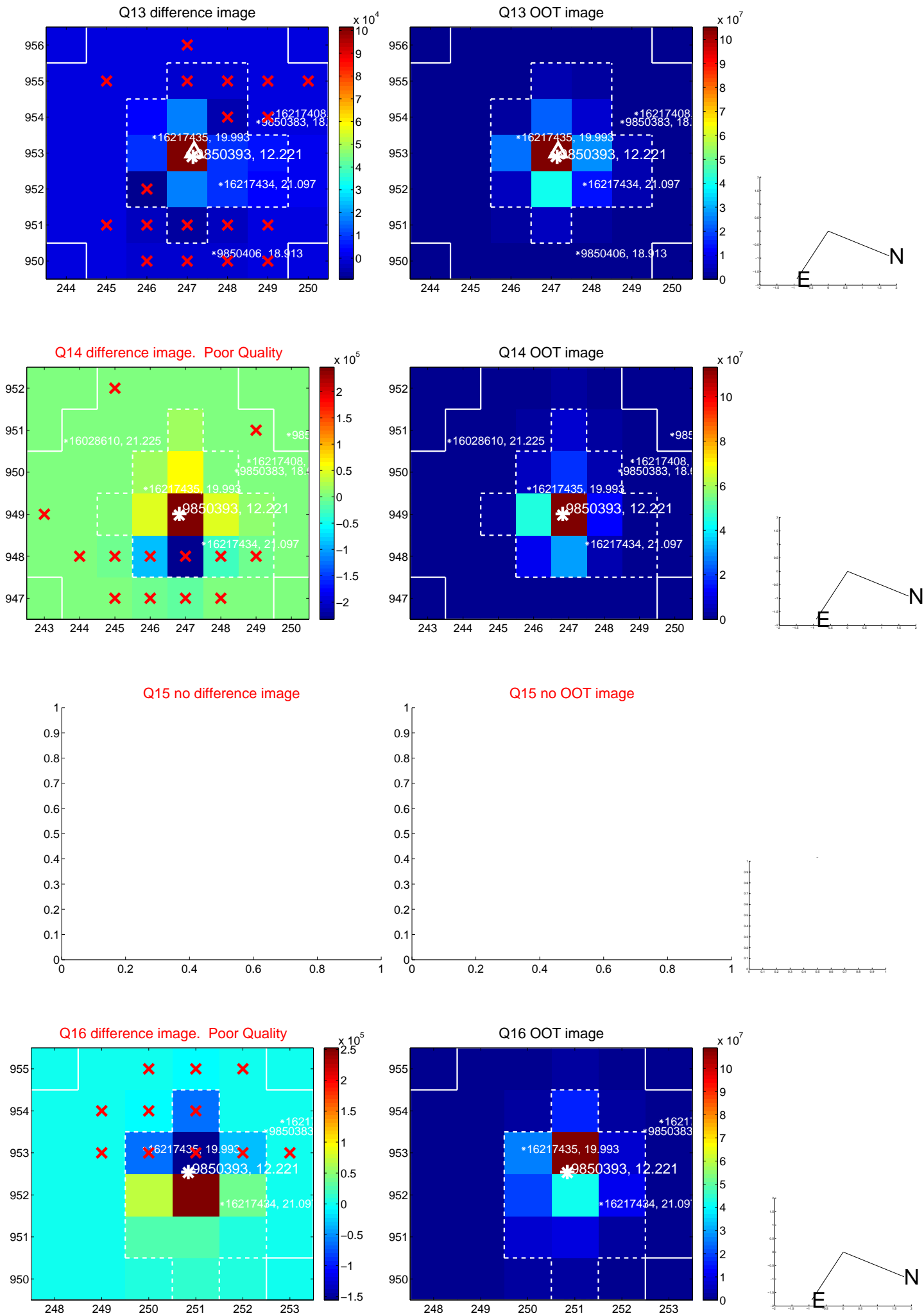
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



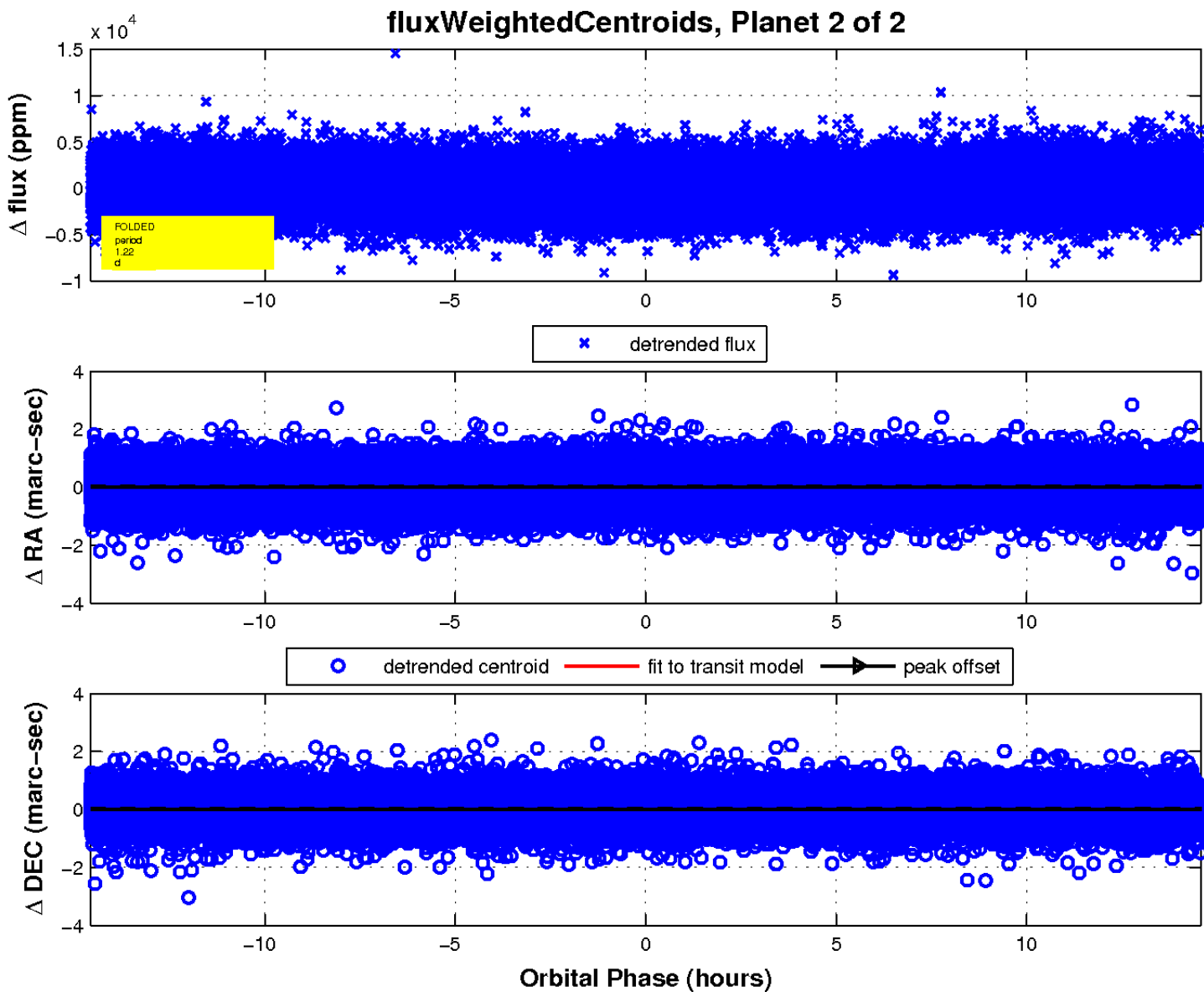
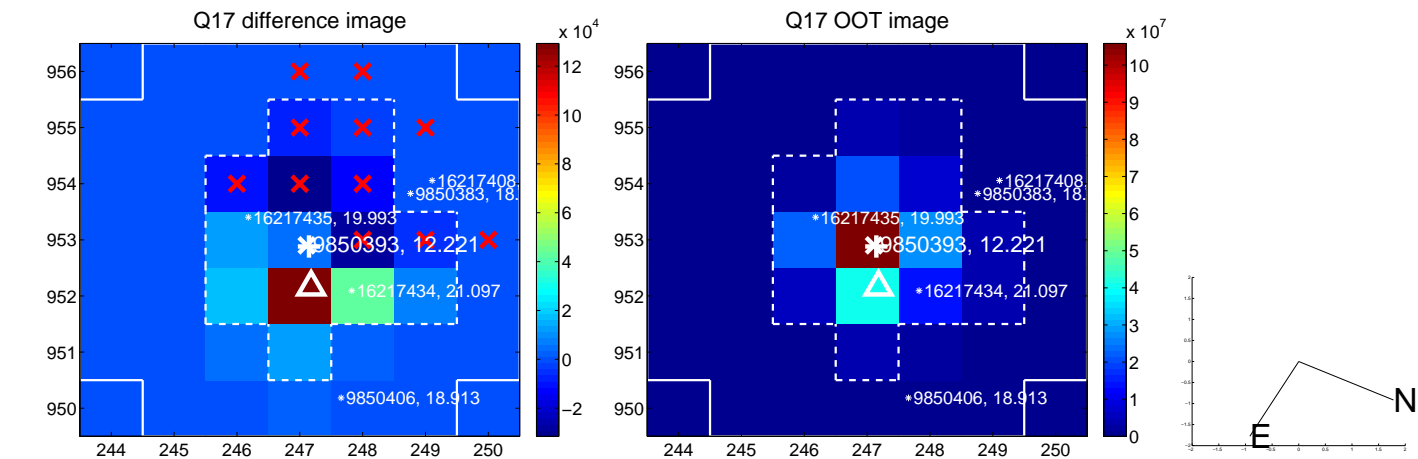
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

