

KIC 008395660

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})
008395660-01	OBS	0116.01	13.570782	136.279321	517.9	3.460	76.8	78.8	1.01	5854	2.73	89.82
008395660-02	OBS	0116.02	43.844429	151.934566	613.4	6.865	65.6	65.2	1.01	5854	2.90	18.80
008395660-03	OBS	0116.03	6.164839	135.646210	55.1	3.406	11.6	12.5	1.01	5854	0.86	257.19
008395660-04	OBS	0116.04	23.980085	147.539111	94.4	4.717	10.9	11.9	1.01	5854	1.17	42.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008395660-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-03	OBS	PC	0.95	0	0	0	0	NO_COMMENT
008395660-04	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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

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

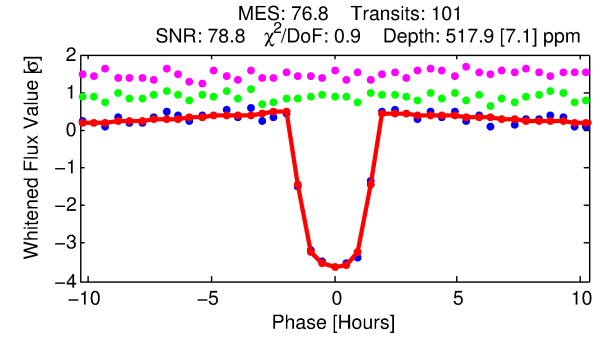
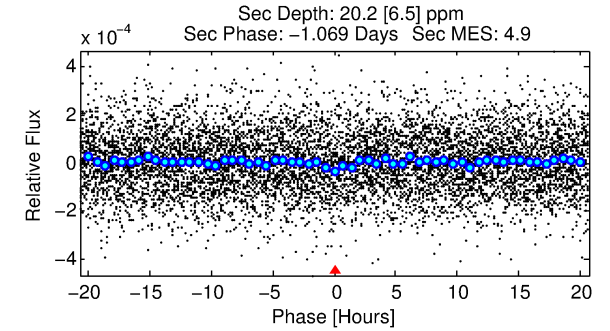
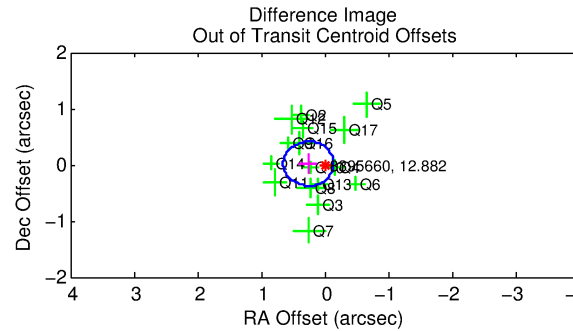
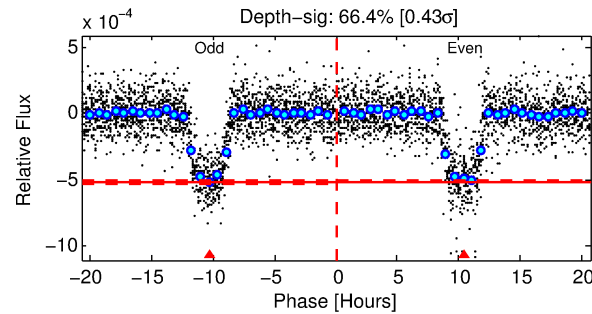
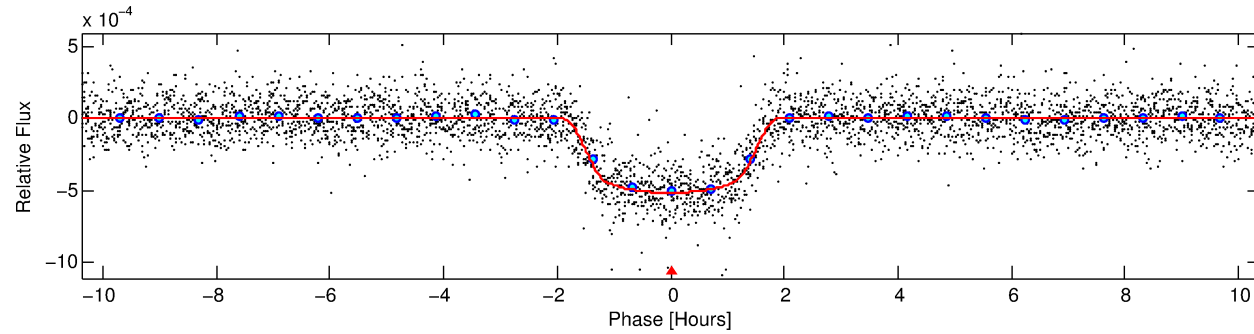
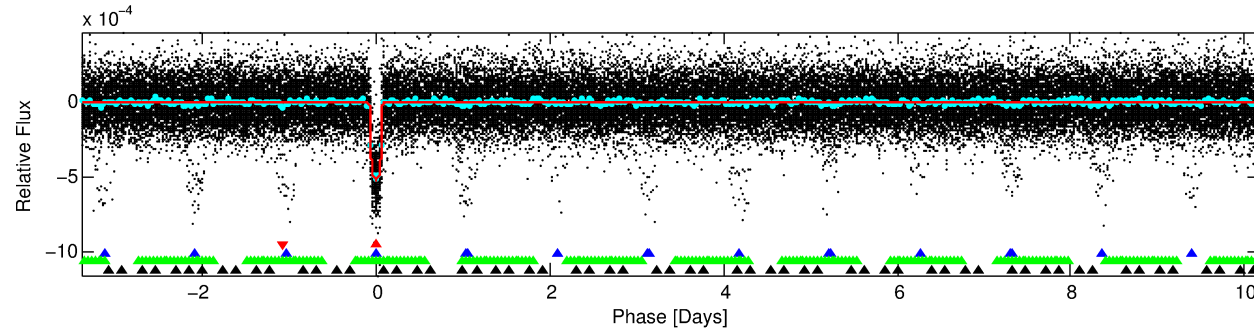
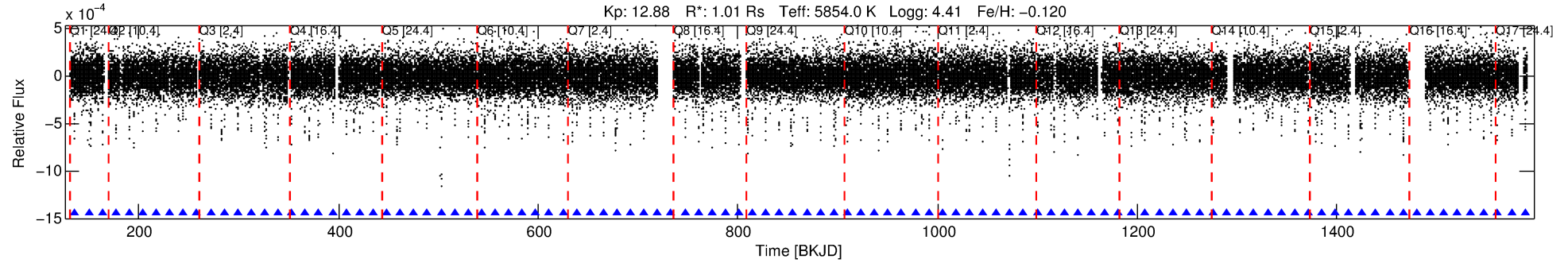
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008395660-01

No Significant Match Found

DV One-Page Summary

KIC: 8395660 Candidate: 1 of 4 Period: 13.571 d
KOI: K00116.01 Name: Kepler-106c Corr: 0.961



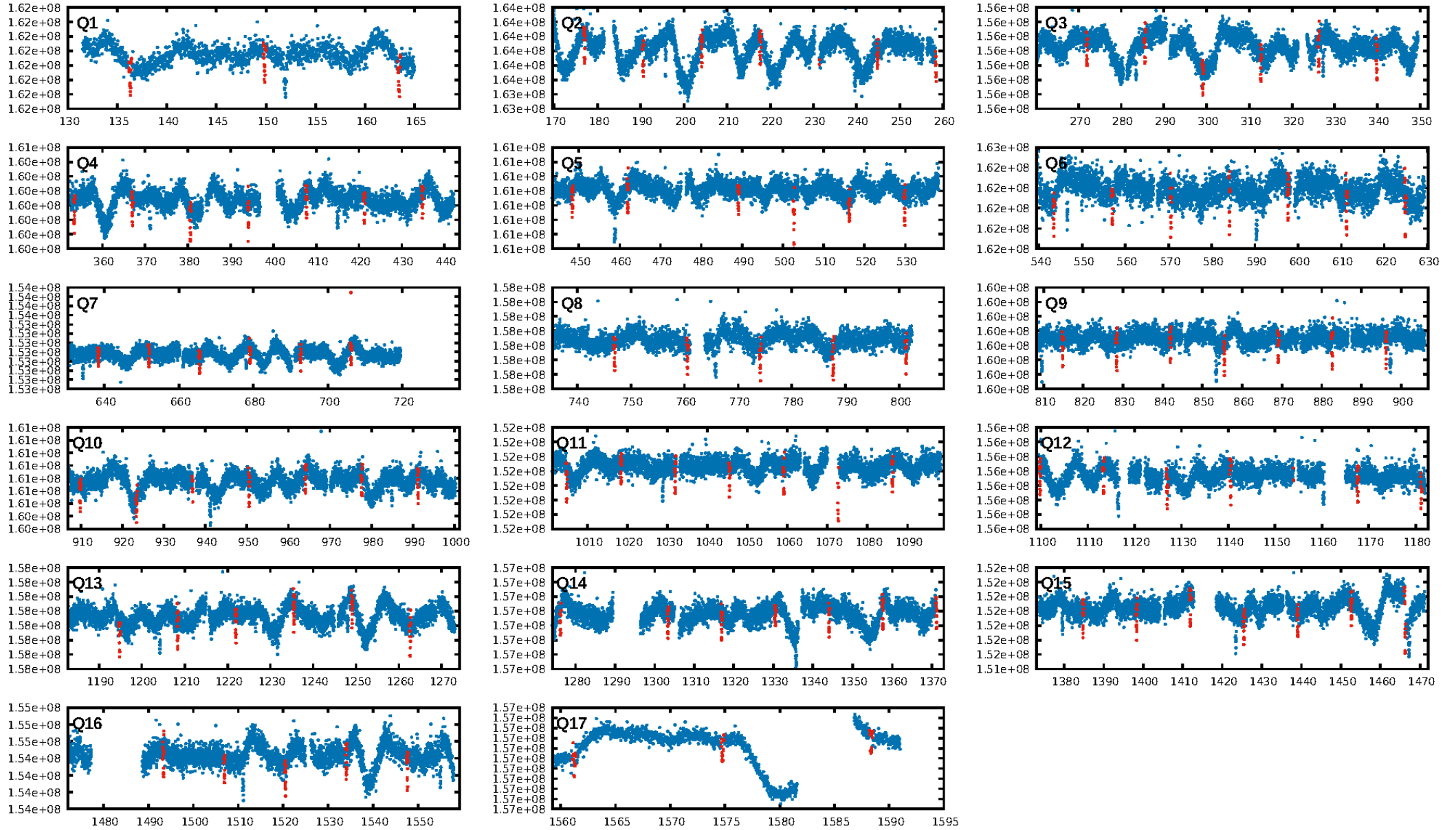
DV Fit Results:

Period = 13.57078 [0.00002] d
Epoch = 136.2793 [0.0009] BKJD
Rp/R* = 0.0247 [0.0008]
a/R* = 14.77 [2.24]
b = 0.90 [0.03]
Seff = 89.82 [19.09]
Teq = 785 [42] K
Rp = 2.73 [0.42] Re
a = 0.1095 [0.0145] AU
Ag = 17.91 [6.83] [2.48 σ]
Teffp = 2497 [210] K [8.00 σ]

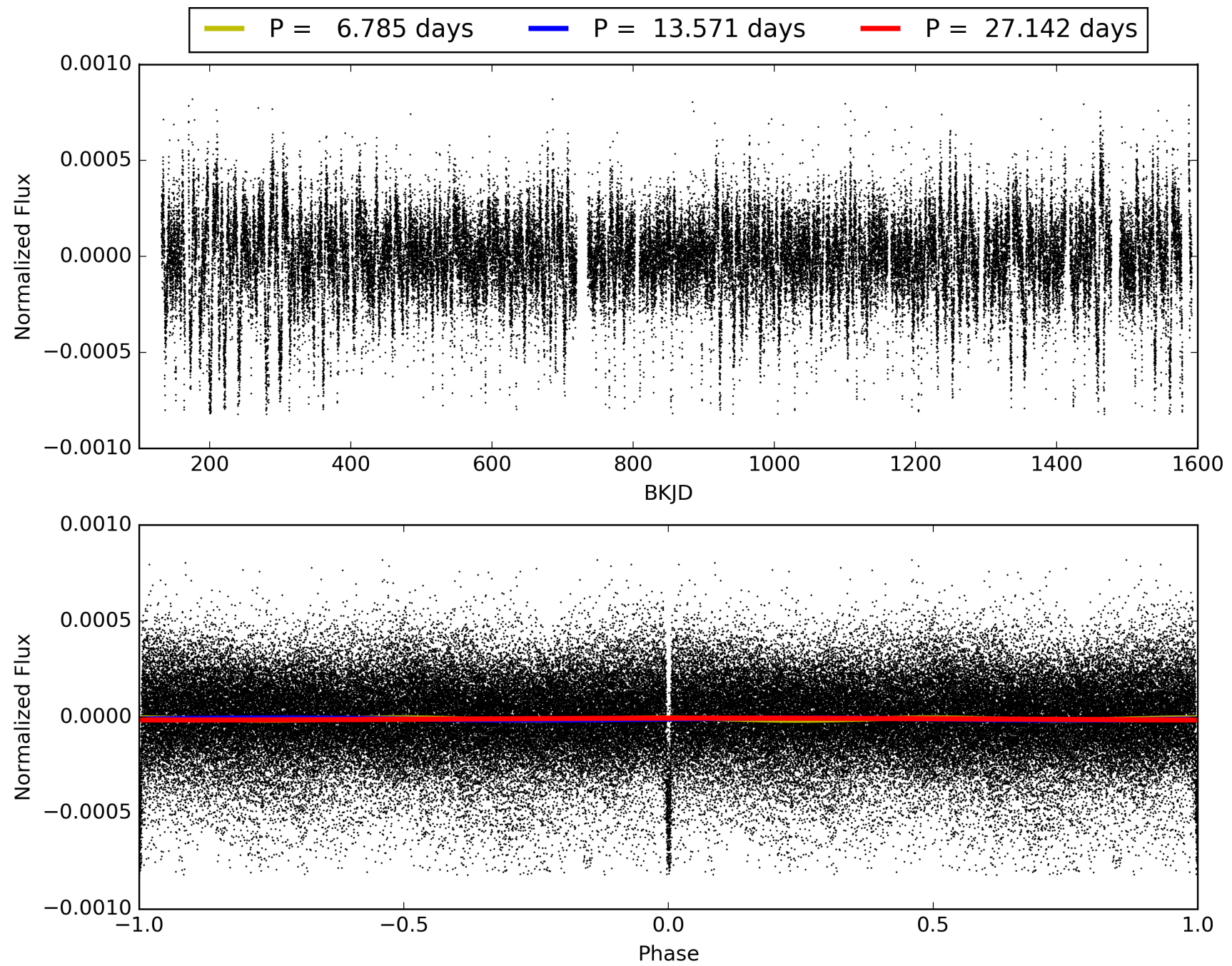
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.61 σ]
LongPeriod-sig: 100.0% [42.71 σ]
ModelChiSquare2-sig: 25.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [95/95]
GhostDiagnostic-chr: 5.582
Centroid-sig: 4.4%
Centroid-so: 0.612 arcsec [3.26 σ]
OotOffset-rm: 0.256 arcsec [1.95 σ]
KicOffset-rm: 0.414 arcsec [3.08 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008395660-01, PDC Light Curves

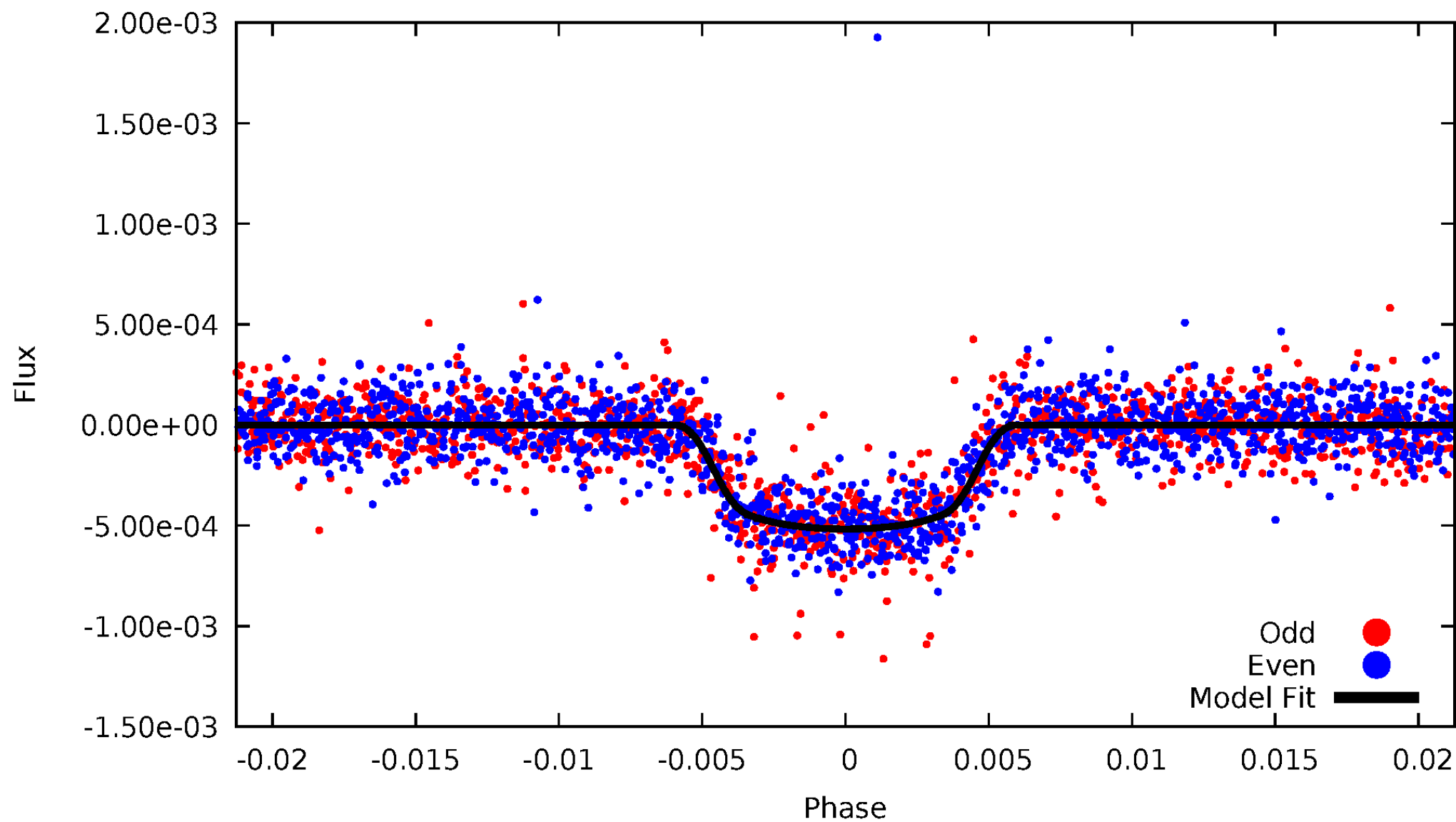


TCE 008395660-01



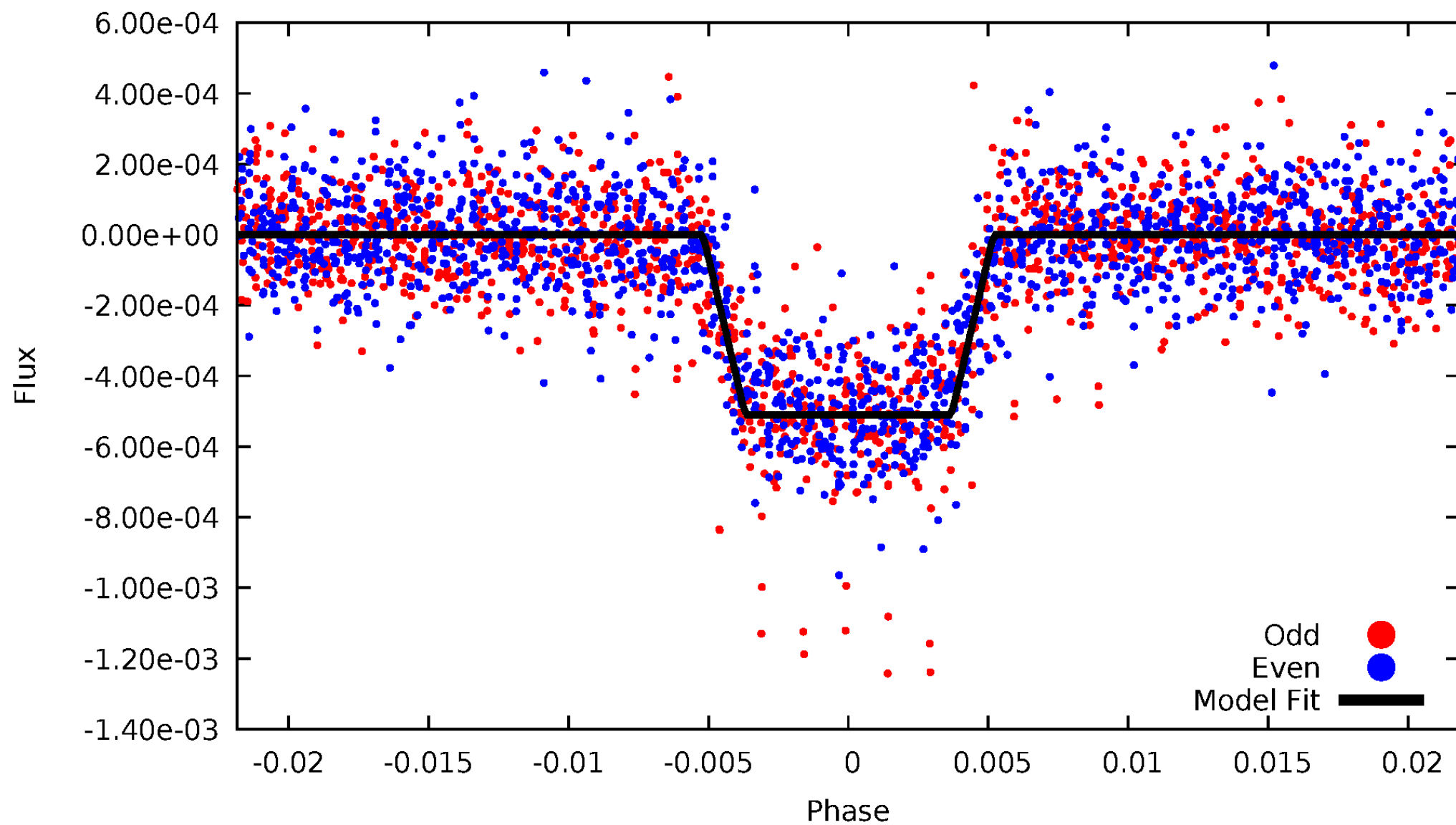
DV Odd/Even

TCE 008395660-01



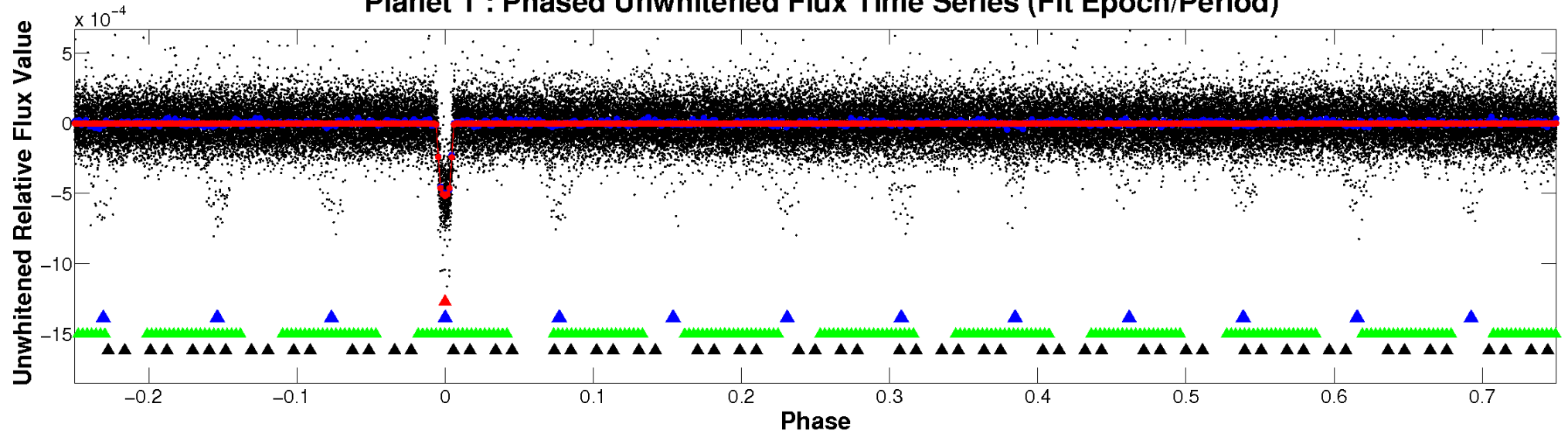
ALT Odd/Even

TCE 008395660-01

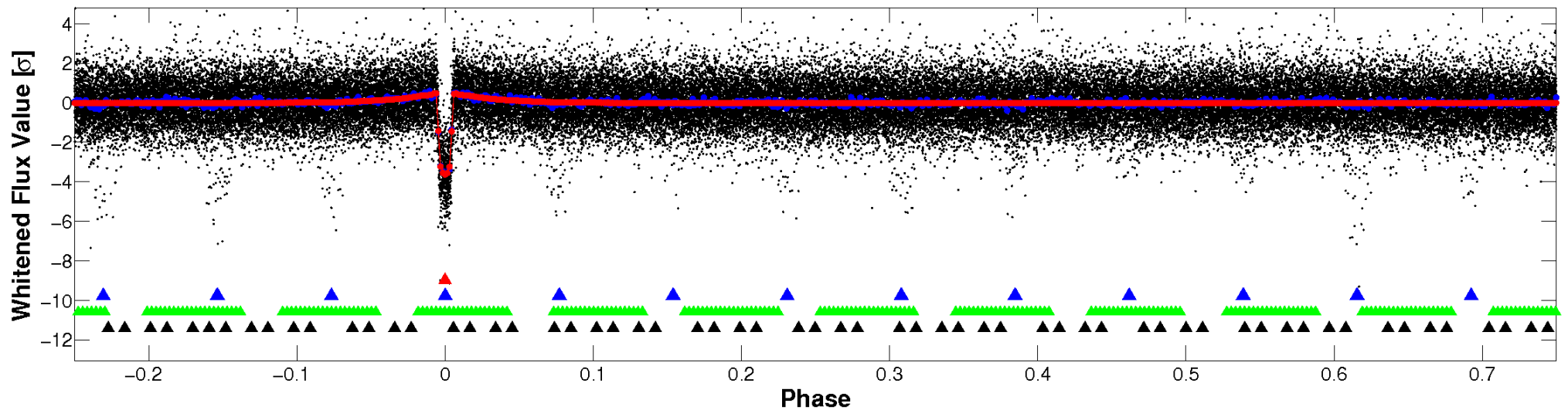


Non-Whitened Vs. Whitened Light Curve

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

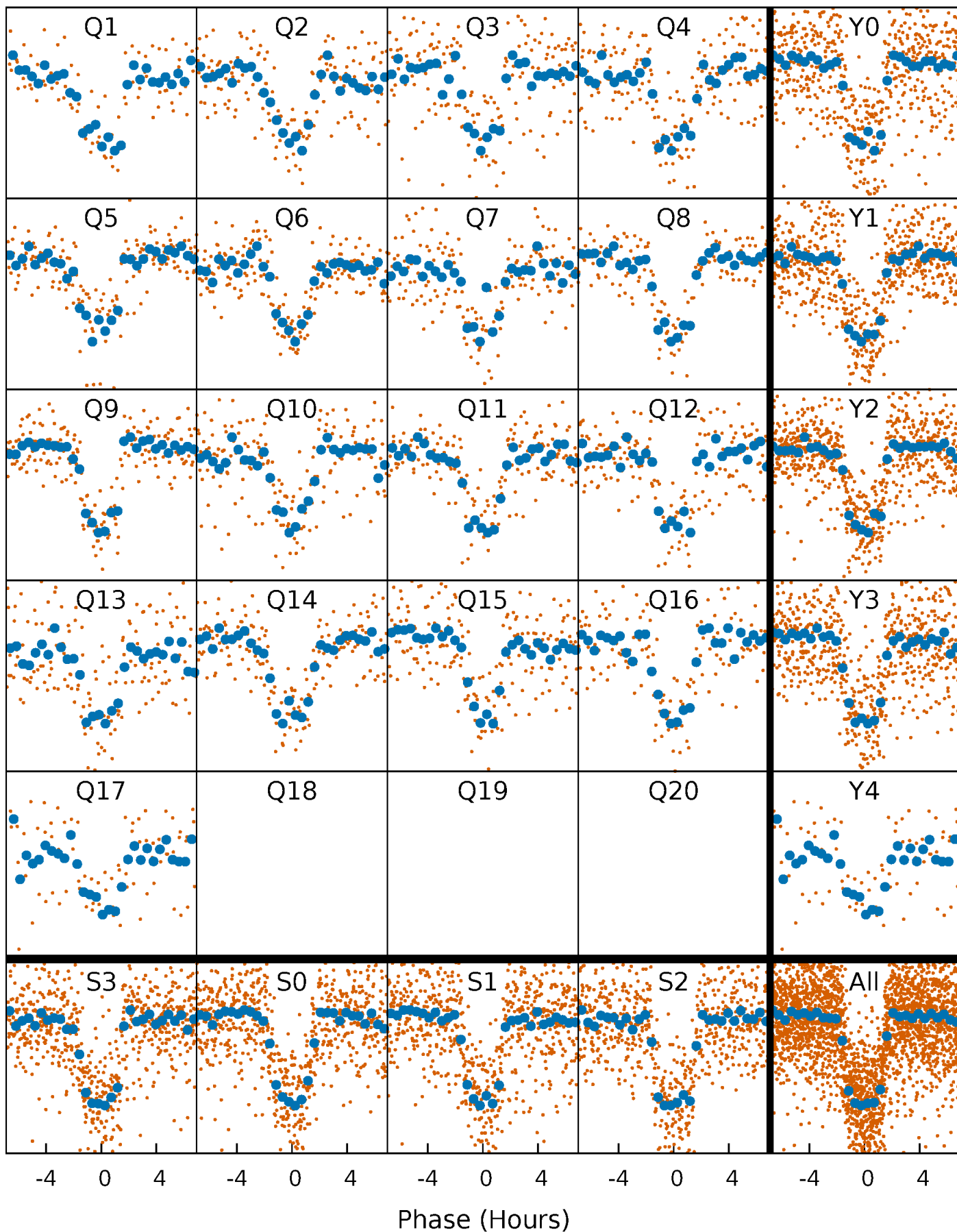


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



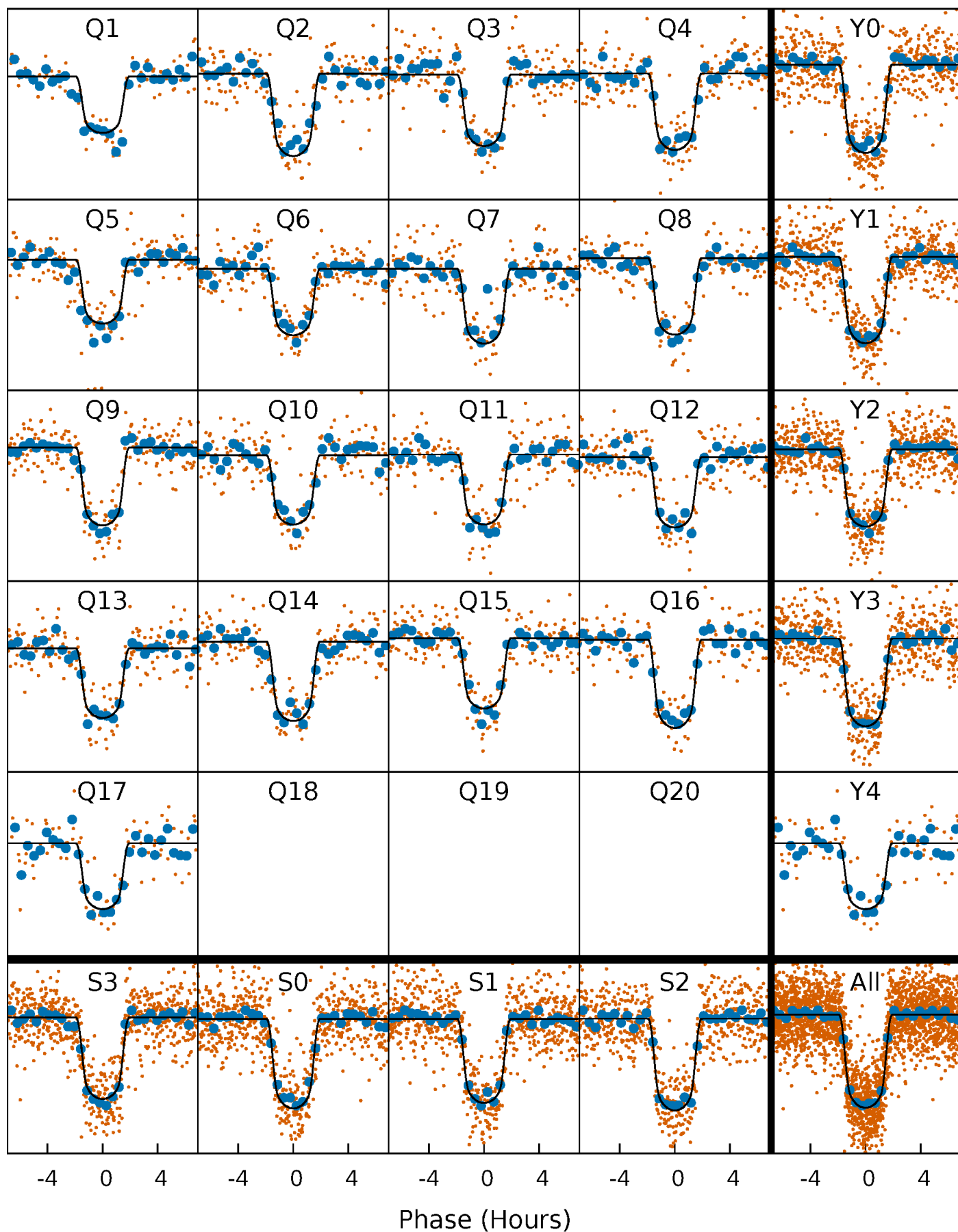
PDC Quarter-Phased Transit Curves

TCE 008395660-01 P= 13.570782 Days $T_0=136.279321$ (BKJD)



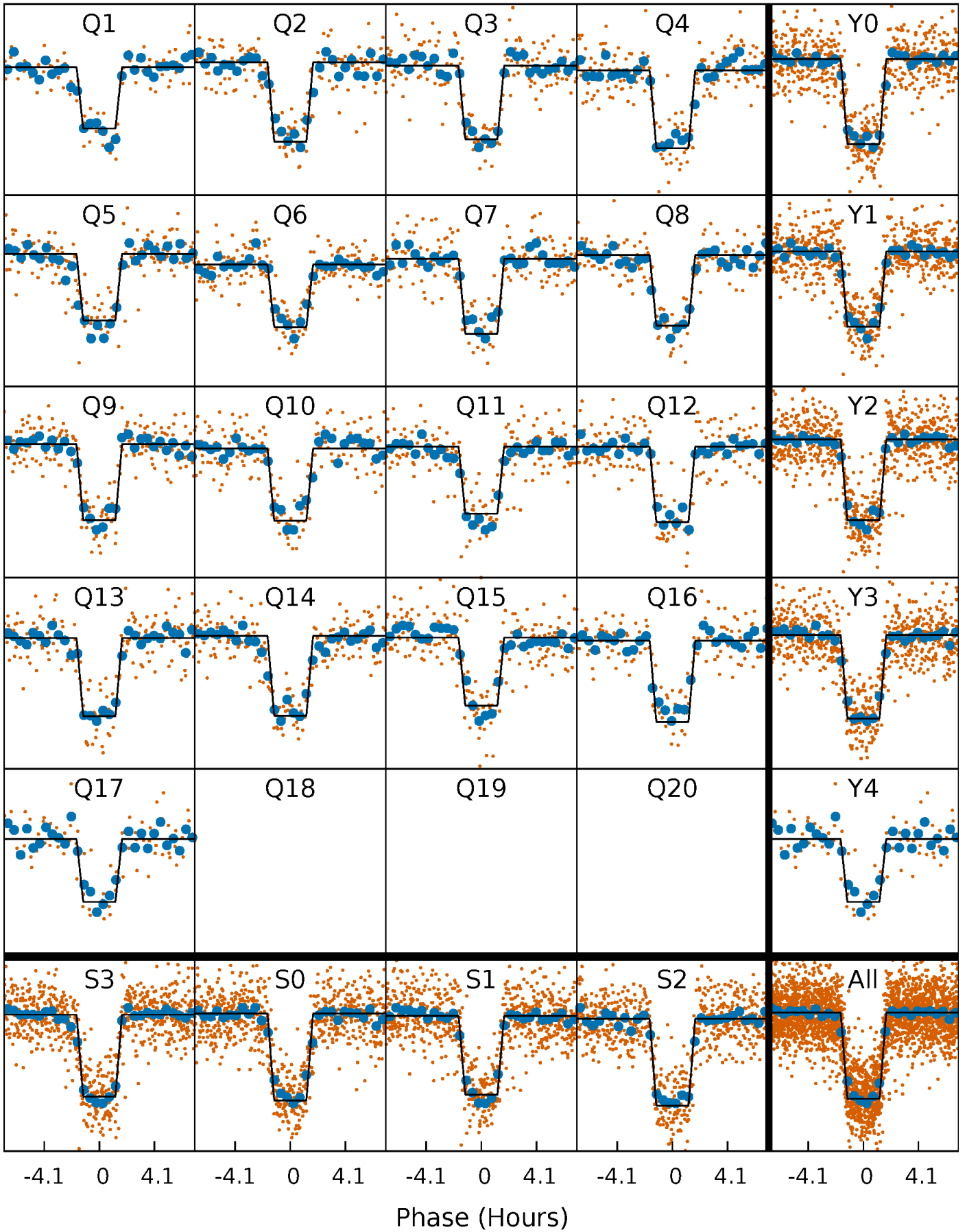
DV Quarter-Phased Transit Curves

TCE 008395660-01 P= 13.570782 Days $T_0=136.279321$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

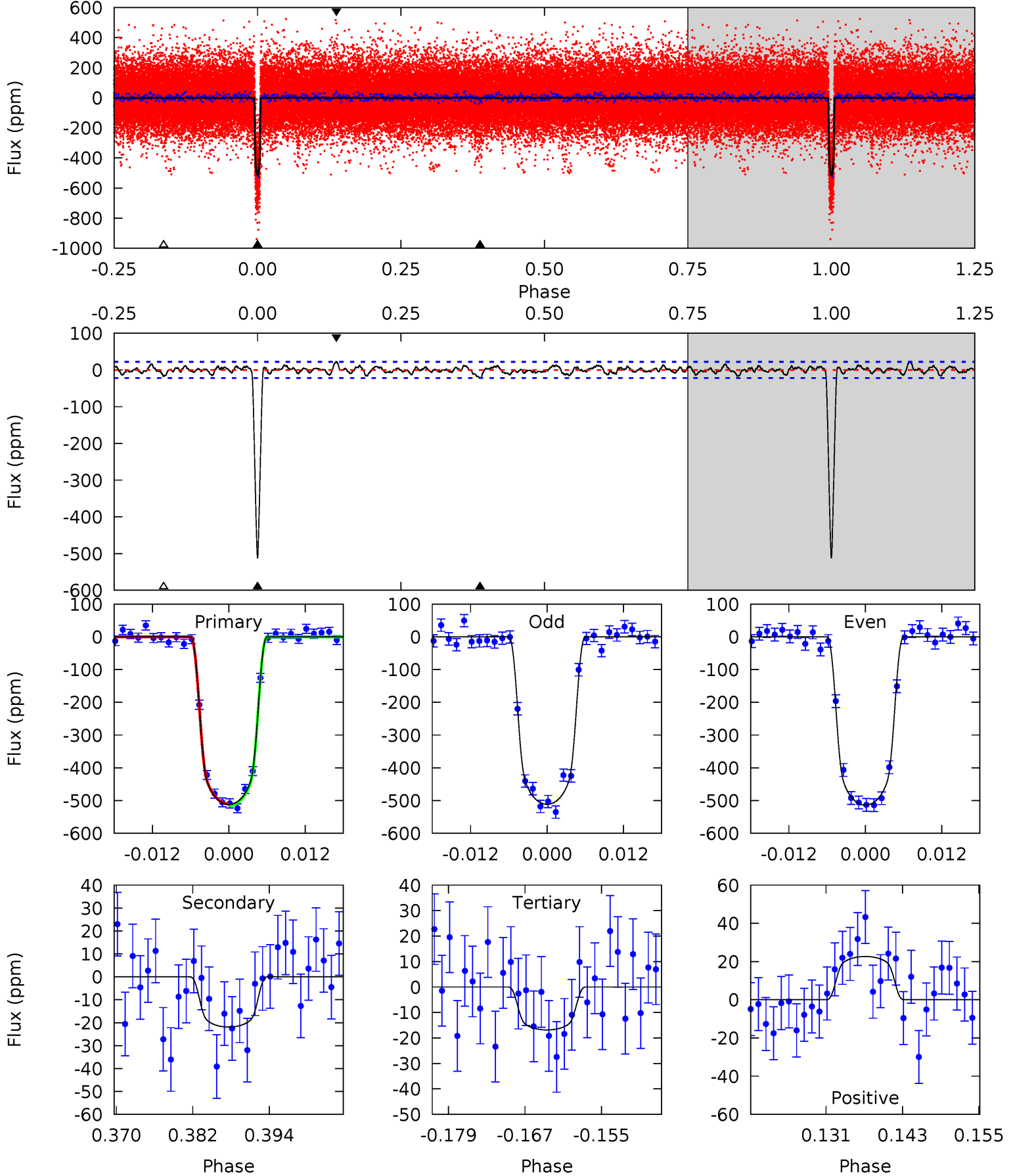
TCE 008395660-01 P= 13.570814 Days $T_0=136.277379$ (BKJD)



DV Model-Shift Uniqueness Test

008395660-01, $P = 13.570782$ Days, $E = 122.708539$ Days

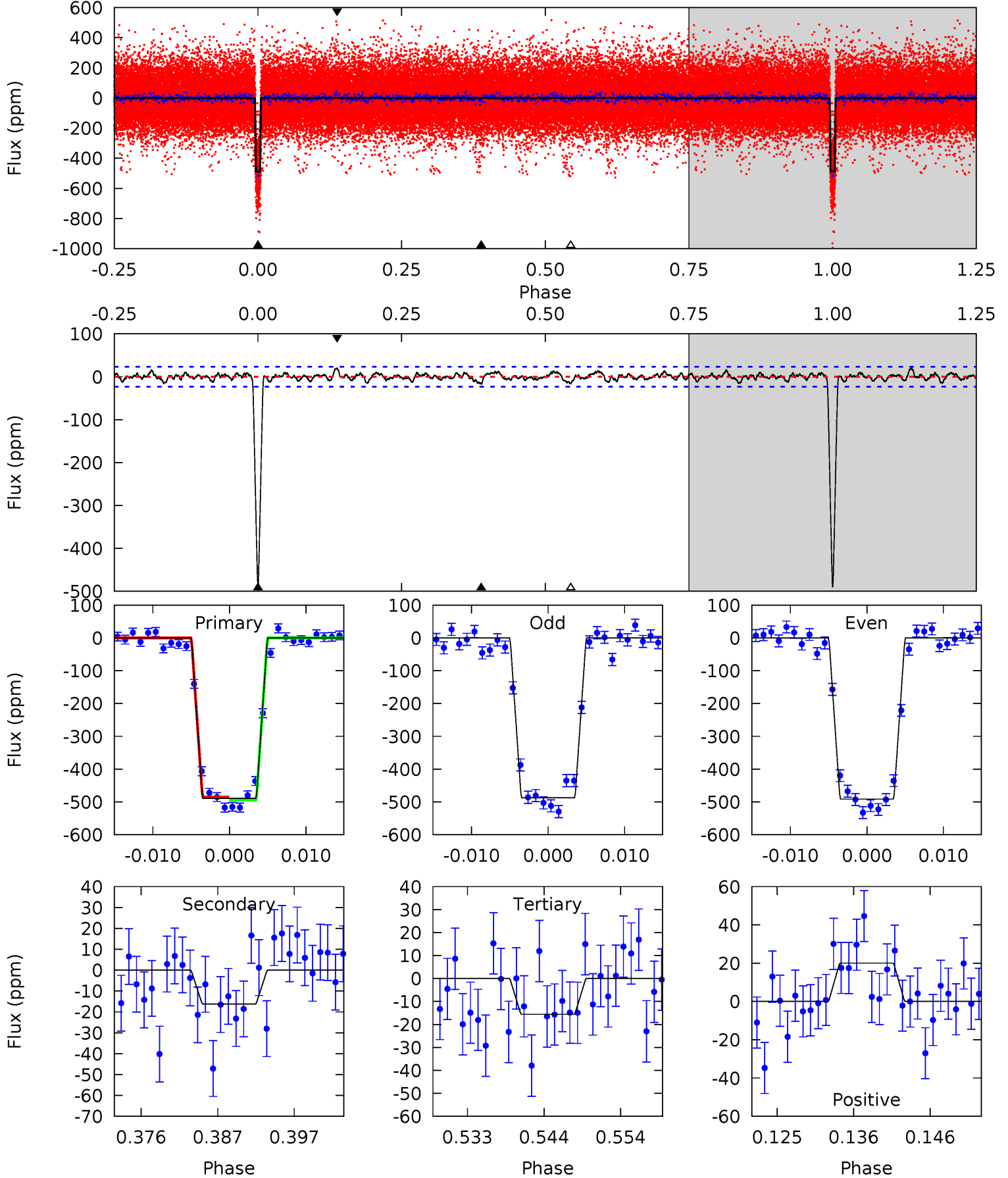
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
116.7	5.00	3.84	5.16	4.99	2.51	1.49	112.8	111.5	1.16	-0.17	0.28	0.98	0.04	0.57



Alt Model-Shift Uniqueness Test

008395660-01, $P = 13.570814$ Days, $E = 122.706565$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
105.2	3.49	3.35	4.31	5.02	2.56	1.28	101.8	100.9	0.14	-0.82	0.42	1.01	0.04	0.90



Stellar Parameters For KIC 008395660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5854^{+105}_{-117}	$4.406^{+0.090}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.012^{+0.154}_{-0.103}$	$0.951^{+0.070}_{-0.063}$	$1.294^{+0.464}_{-0.402}$
	+2%/-2%	+2%/-2%	+125%/-125%	+15%/-10%	+7%/-7%	+36%/-31%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 008395660-01 / KOI 0116.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-22 ± 4	$2.73^{+0.24}_{-0.21}$	1095^{+52}_{-38}	3152^{+92}_{-106}	19^{+5}_{-5}
Alt.	-16 ± 5	$2.50^{+0.23}_{-0.19}$	1096^{+46}_{-40}	3093^{+125}_{-145}	17^{+6}_{-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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

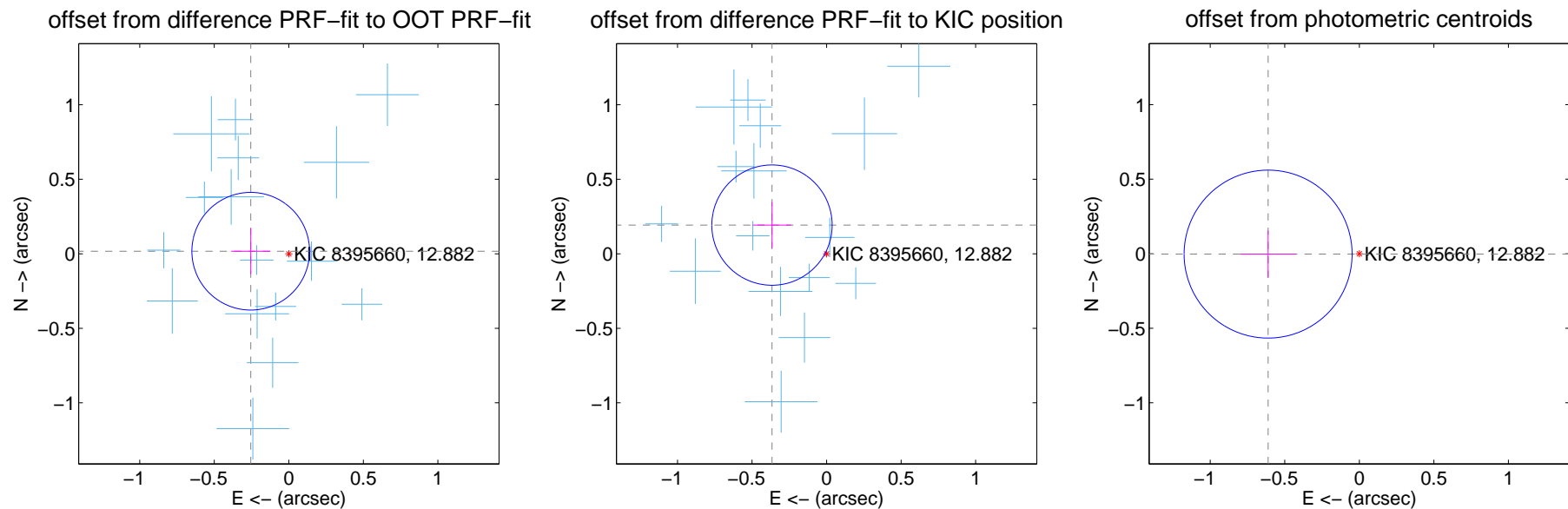
DV Centroid Data

Supplemental centroid analysis for 008395660-01. Kepler magnitude: 12.88. Transit SNR 78.81

There are 16 quarters with good PRF difference image offsets

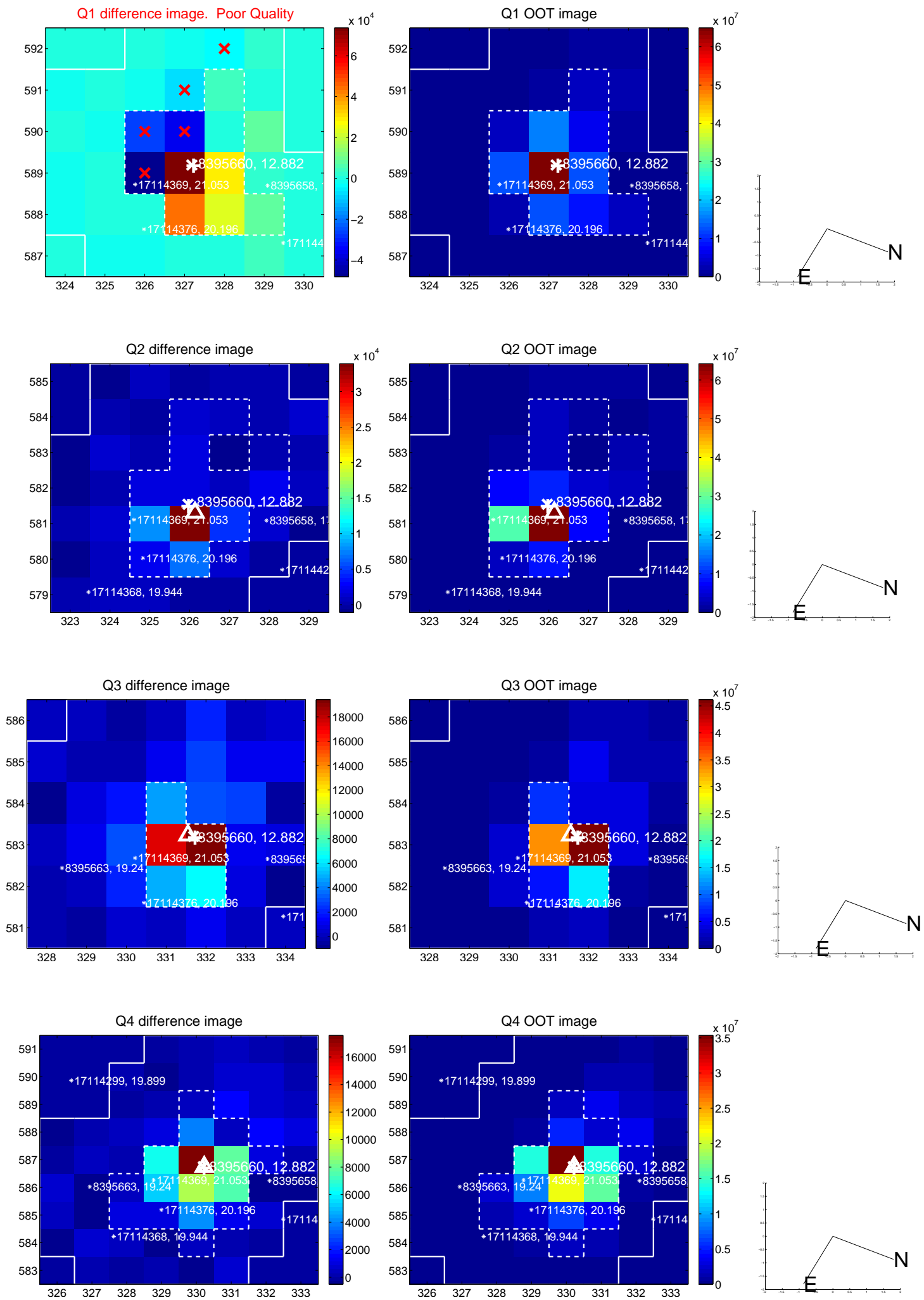
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.256 ± 0.132	1.95	0.255 ± 0.131	0.017 ± 0.154
PRF-fit source offset from KIC position	0.414 ± 0.134	3.08	0.366 ± 0.128	0.192 ± 0.155
photometric centroid source offset	0.61 ± 0.19	3.26	0.61 ± 0.19	-0.00 ± 0.16

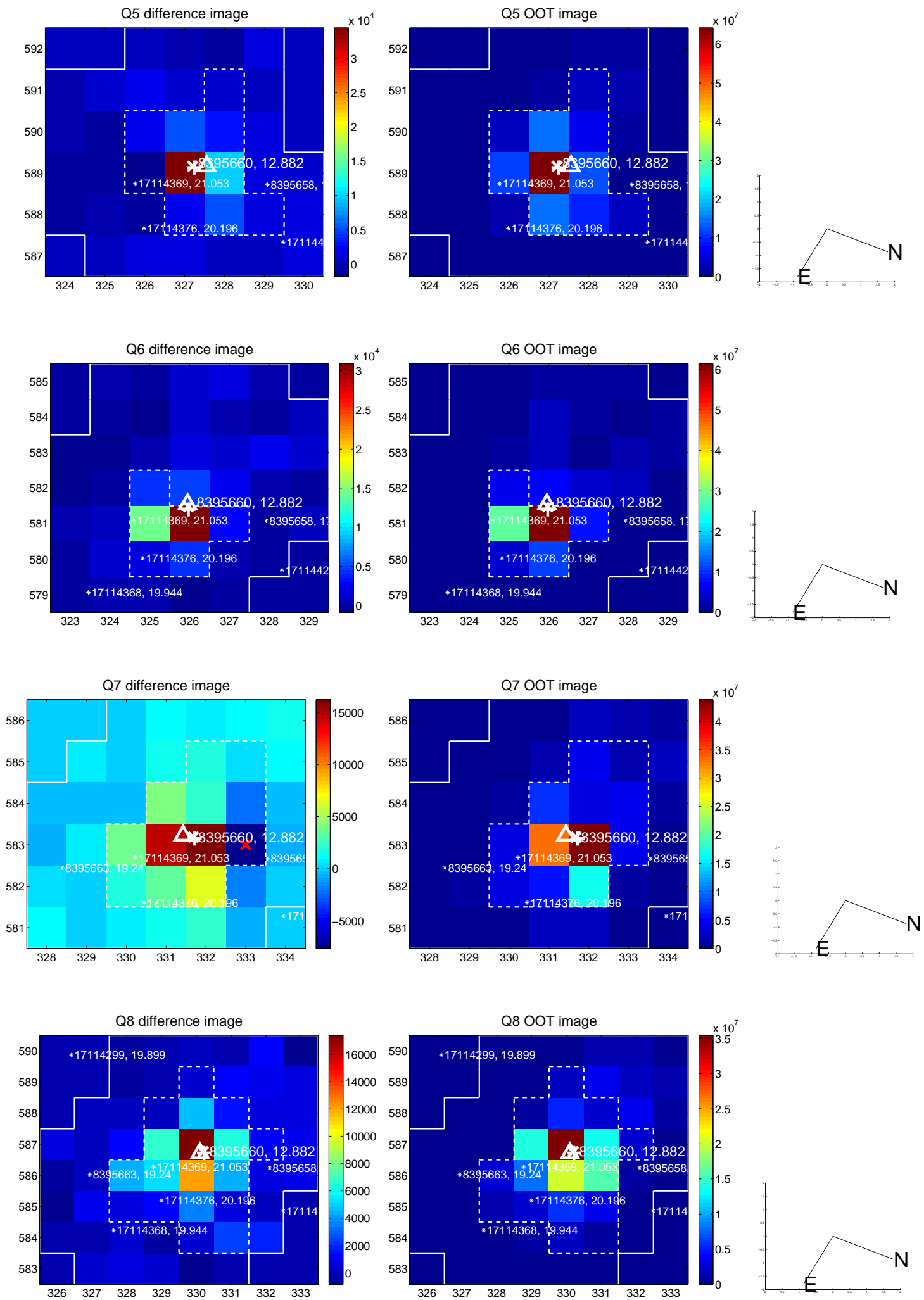


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

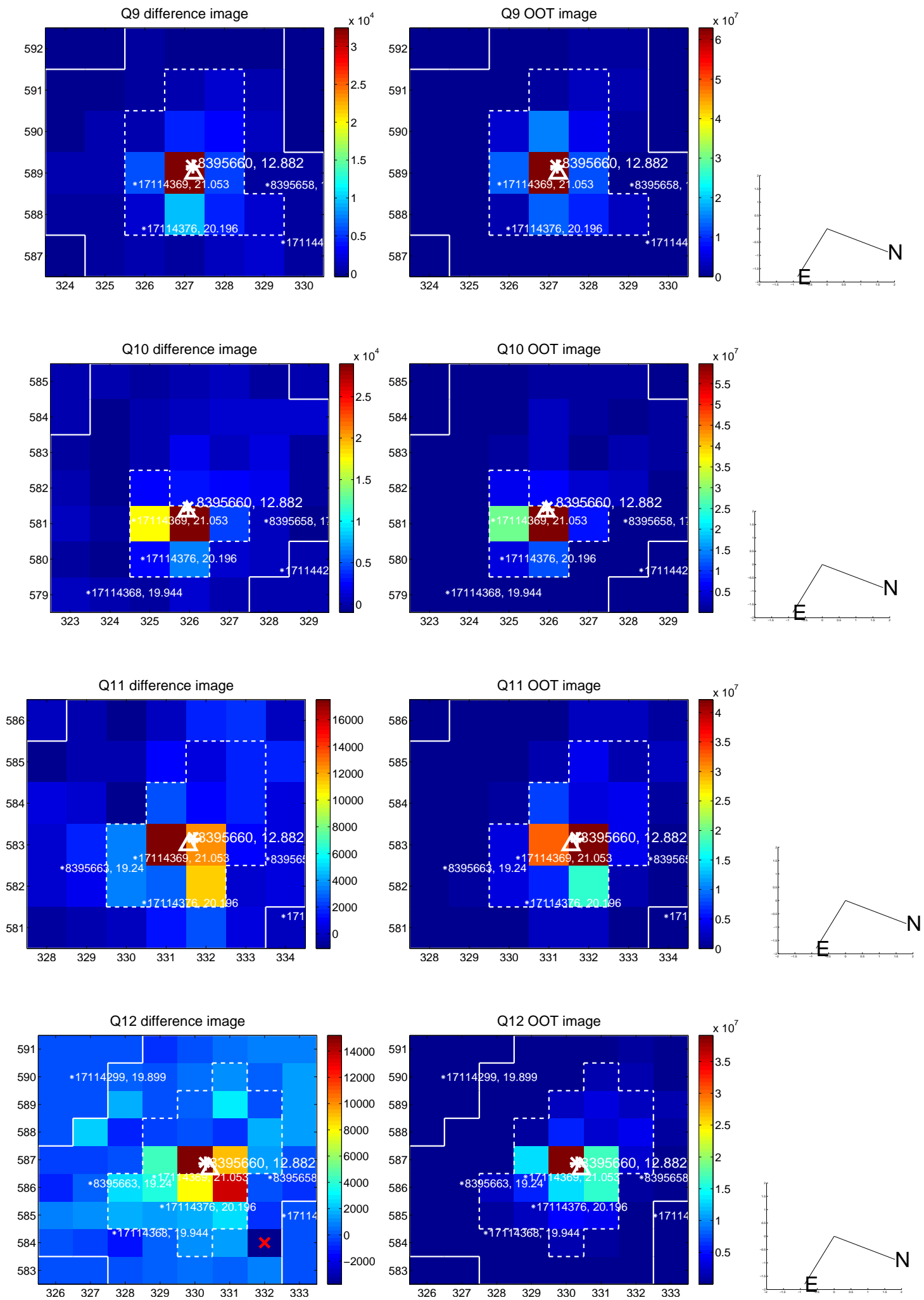
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



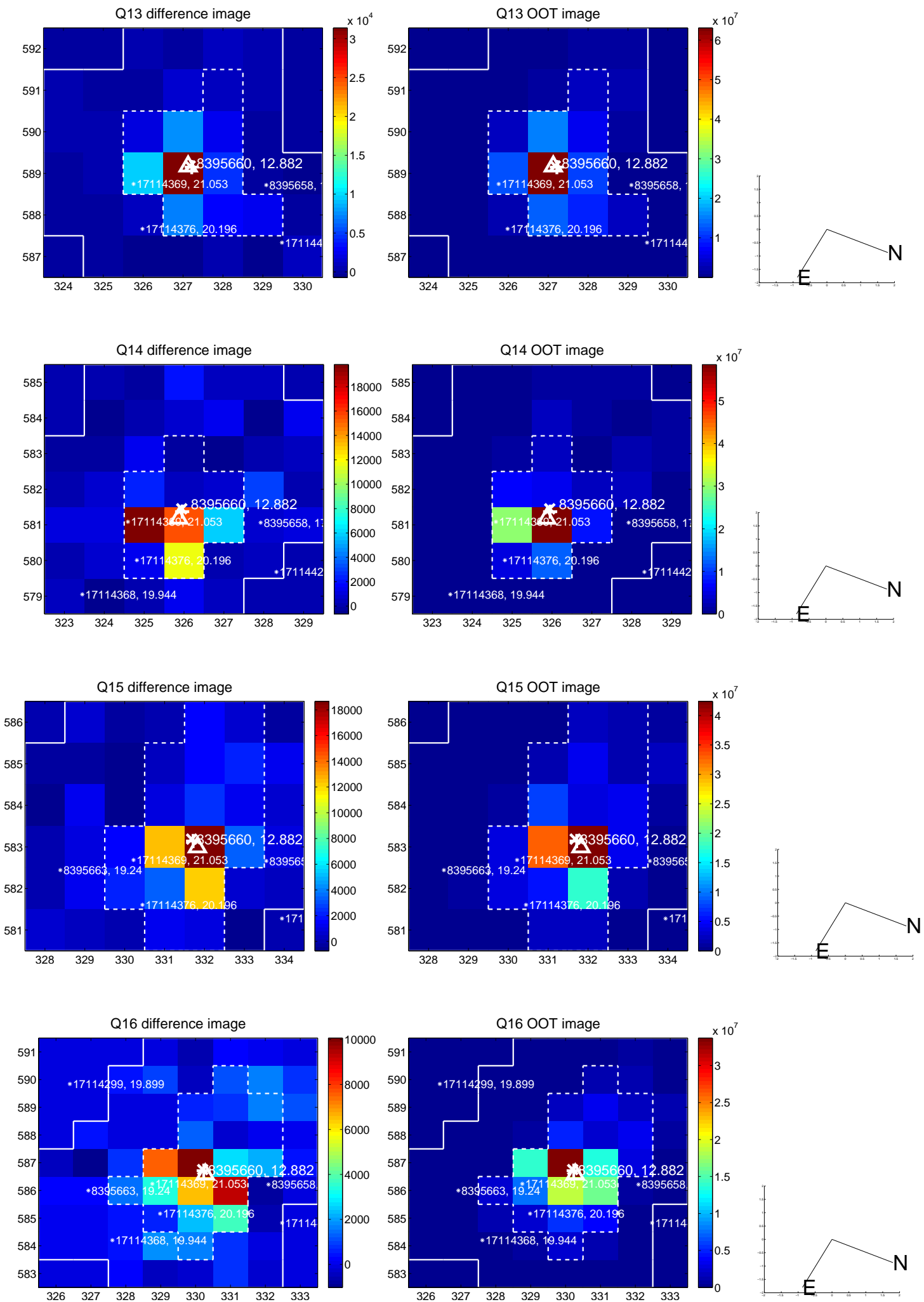
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



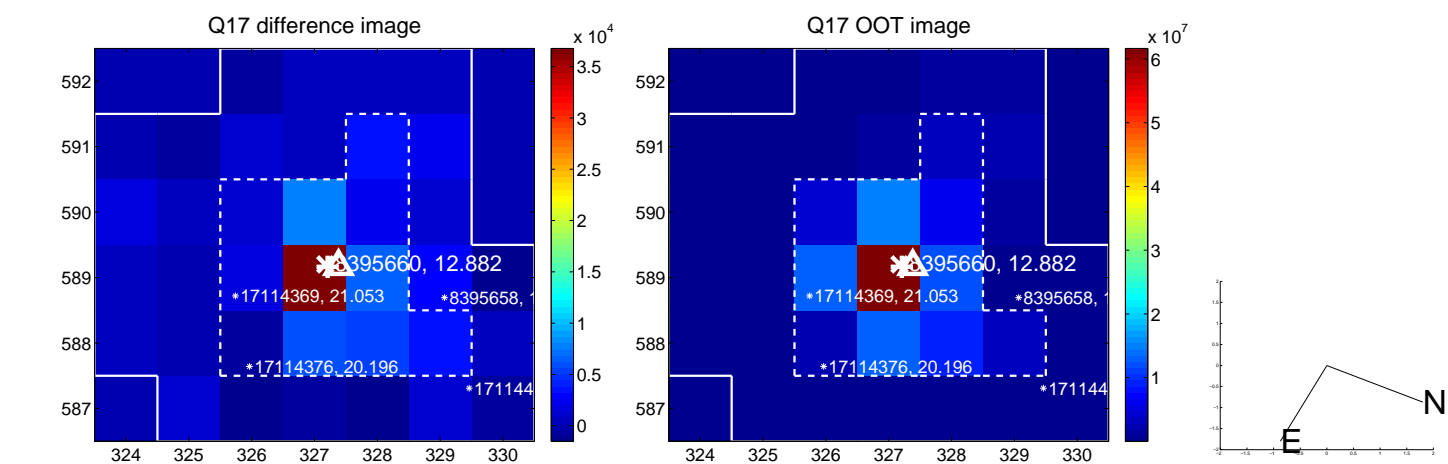
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



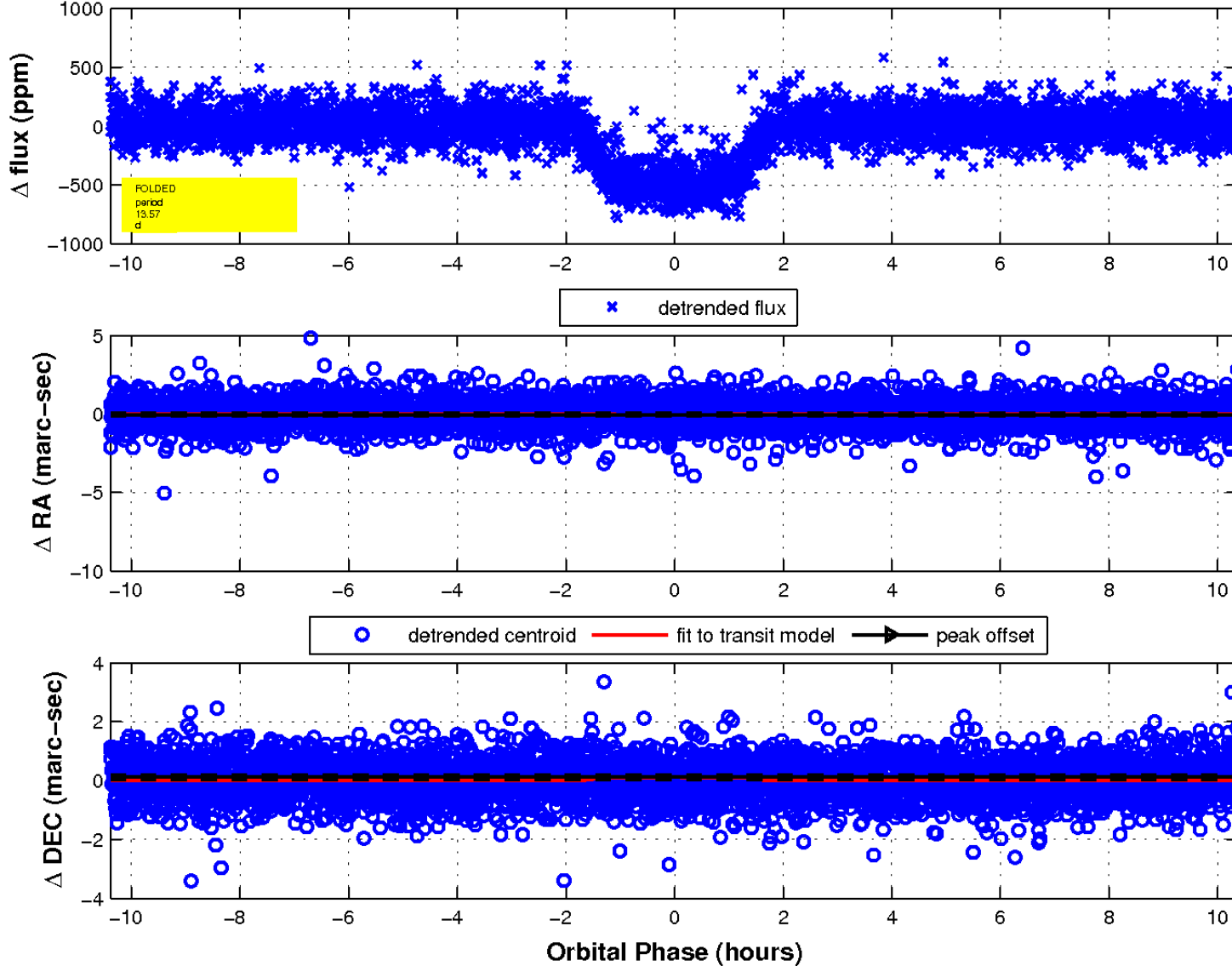
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

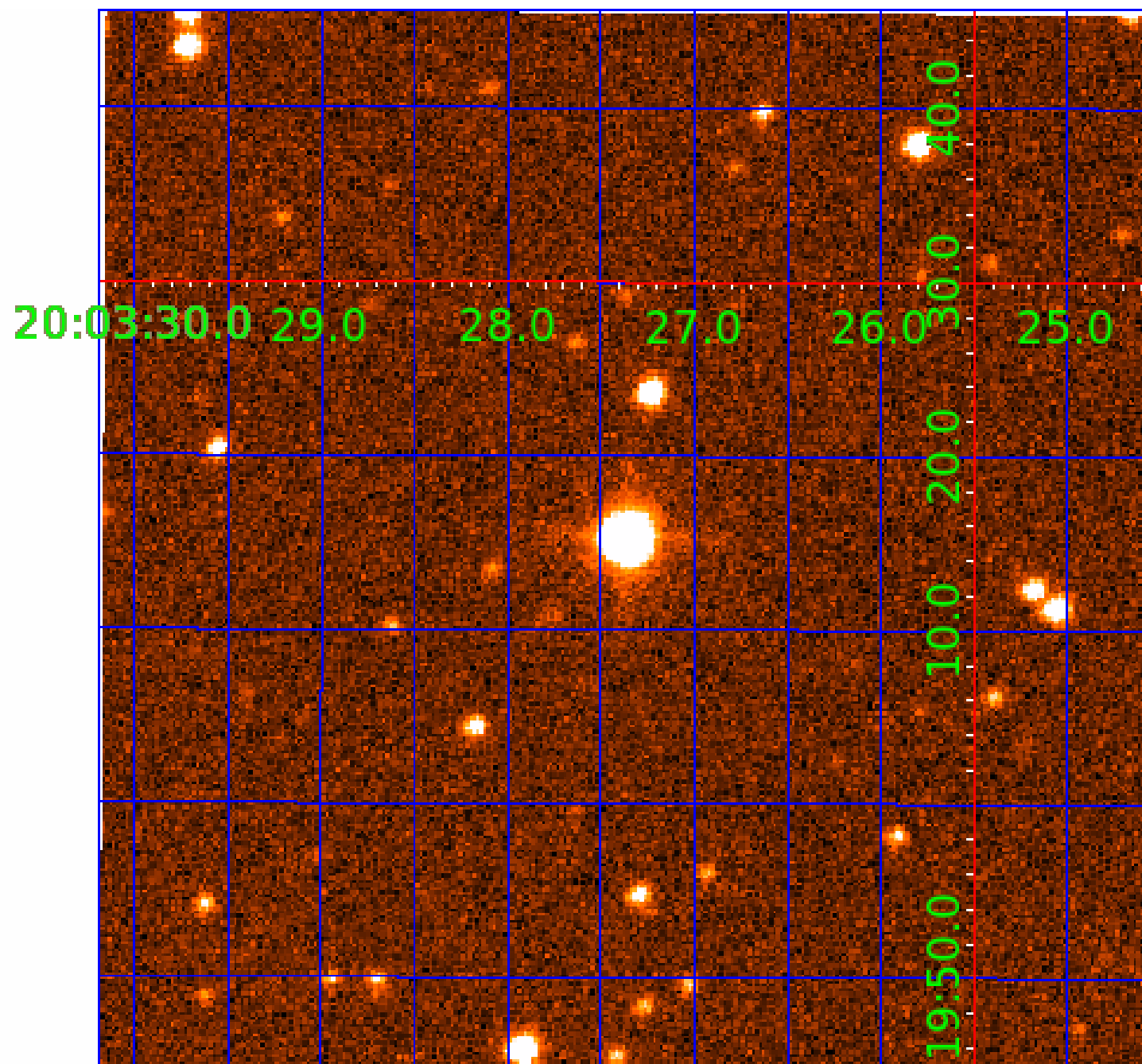


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 008395660

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})
008395660-01	OBS	0116.01	13.570782	136.279321	517.9	3.460	76.8	78.8	1.01	5854	2.73	89.82
008395660-02	OBS	0116.02	43.844429	151.934566	613.4	6.865	65.6	65.2	1.01	5854	2.90	18.80
008395660-03	OBS	0116.03	6.164839	135.646210	55.1	3.406	11.6	12.5	1.01	5854	0.86	257.19
008395660-04	OBS	0116.04	23.980085	147.539111	94.4	4.717	10.9	11.9	1.01	5854	1.17	42.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008395660-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-03	OBS	PC	0.95	0	0	0	0	NO_COMMENT
008395660-04	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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

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

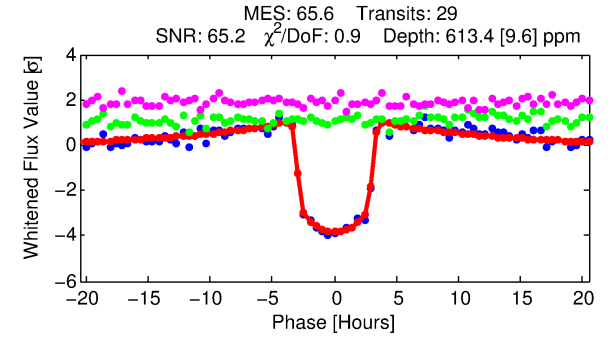
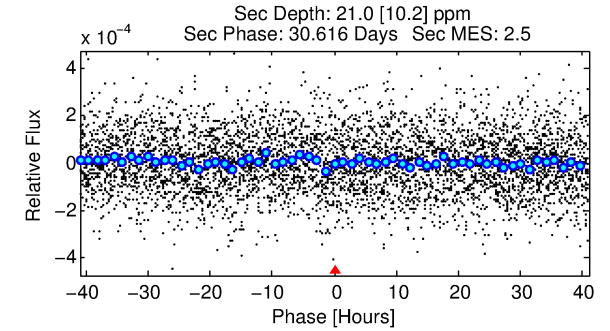
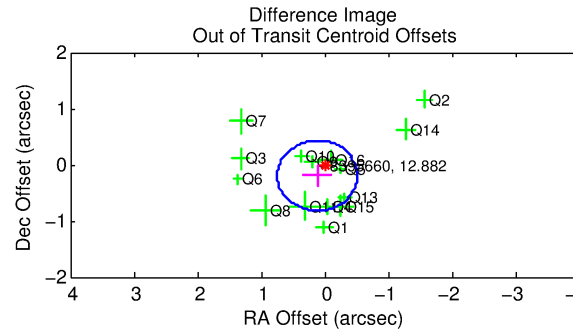
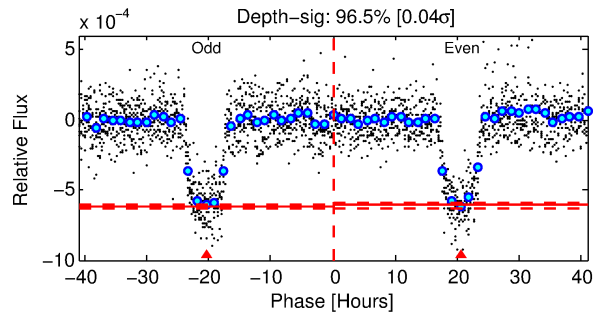
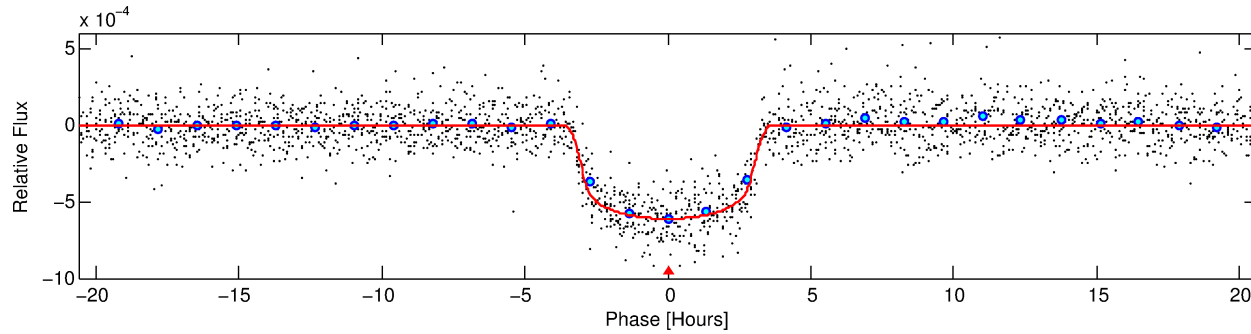
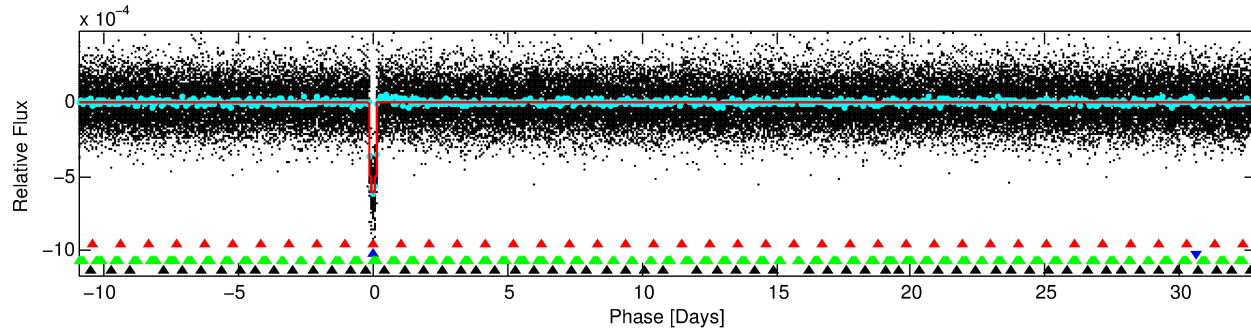
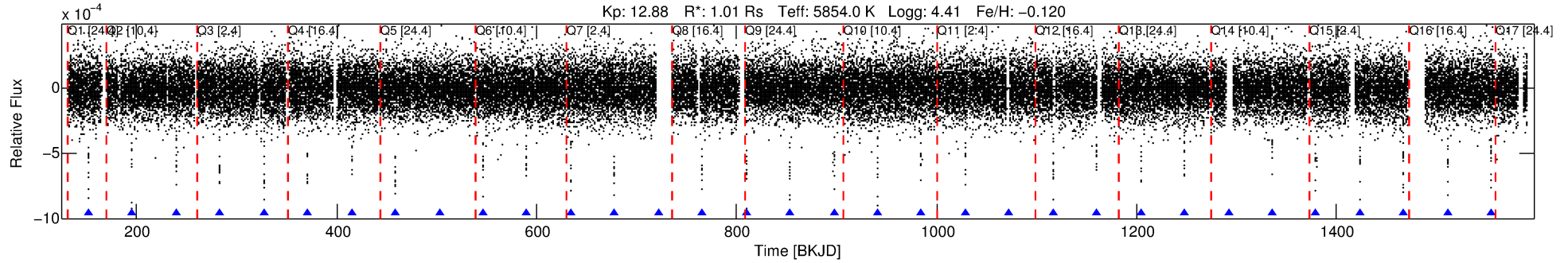
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008395660-02

No Significant Match Found

DV One-Page Summary

KIC: 8395660 Candidate: 2 of 4 Period: 43.844 d
KOI: K00116.02 Name: Kepler-106e Corr: 0.967



DV Fit Results:

Period = 43.84443 [0.00010] d
Epoch = 151.9346 [0.0018] BKJD
Rp/R* = 0.0262 [0.0007]
a/R* = 26.59 [3.09]
b = 0.87 [0.03]
Seff = 18.80 [4.00]
Teq = 531 [28] K
Rp = 2.89 [0.45] Re
a = 0.2394 [0.0316] AU
Ag = 79.01 [41.53] [1.88 σ]
Teffp = 2448 [302] K [6.32 σ]

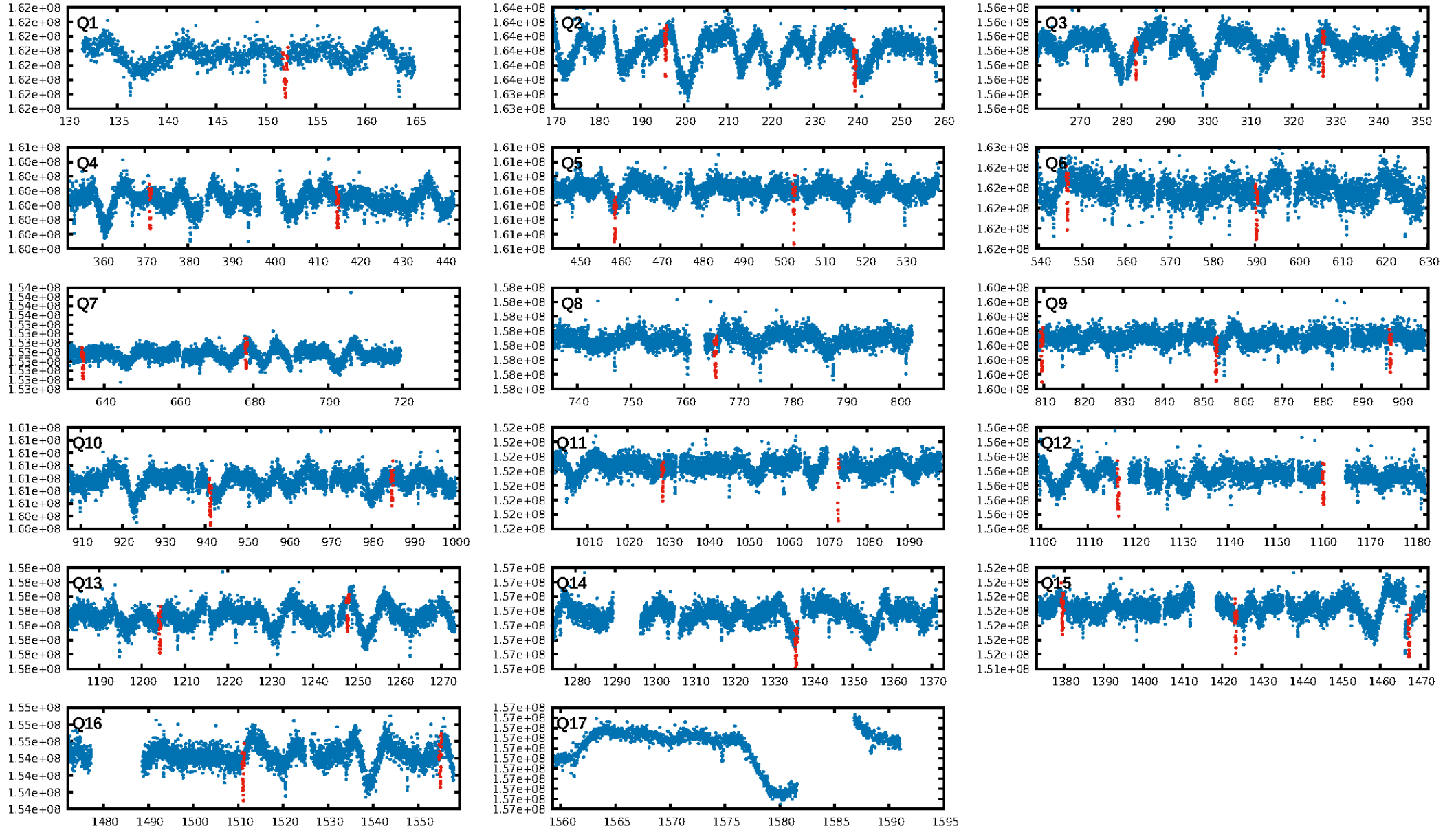
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.24 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 29.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 4.838
Centroid-sig: 1.2%
Centroid-so: 0.194 arcsec [0.87 σ]
OotOffset-rm: 0.229 arcsec [1.10 σ]
KicOffset-rm: 0.216 arcsec [0.90 σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 0.80 [12/15]

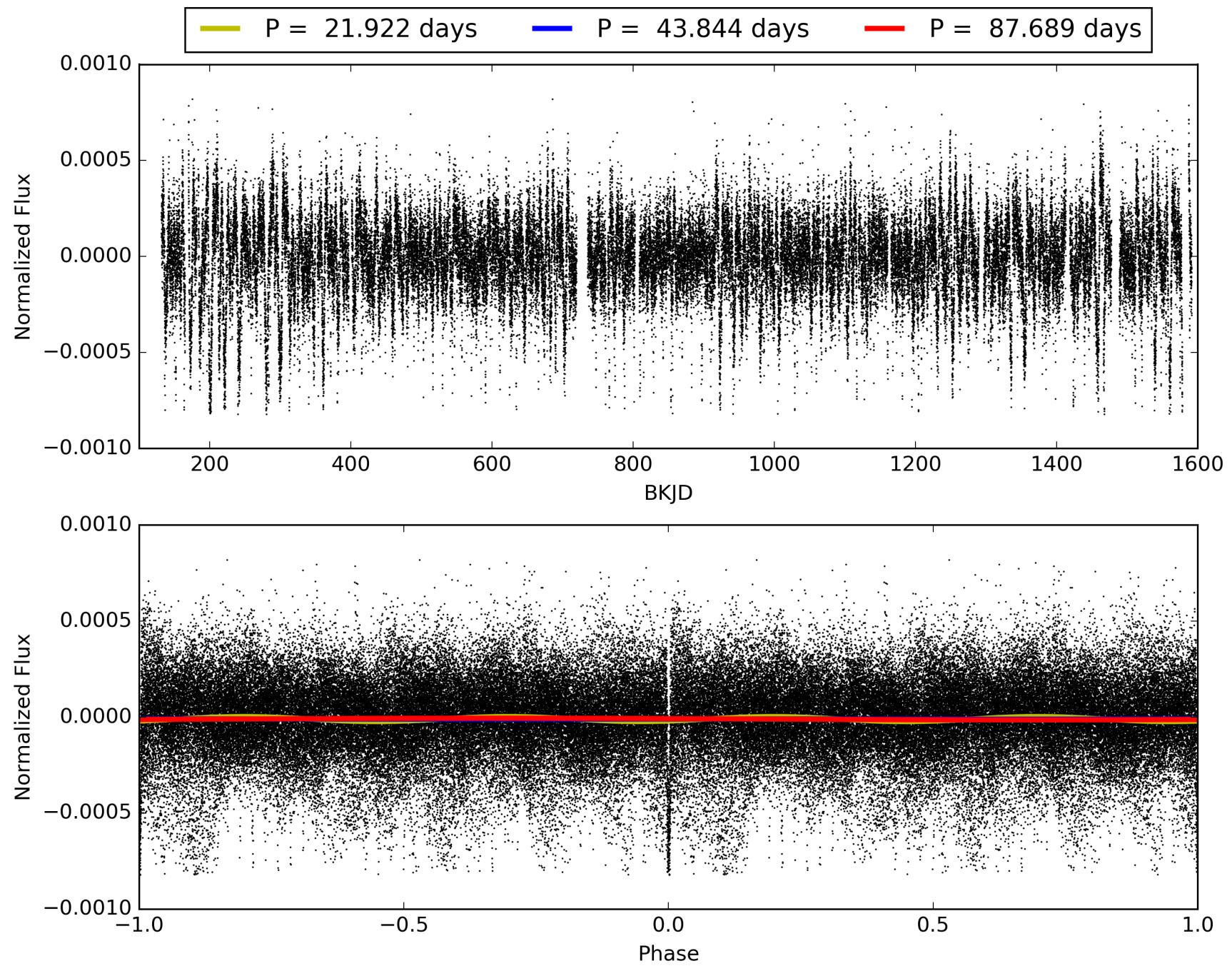
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:43:02 Z

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

TCE 008395660-02, PDC Light Curves

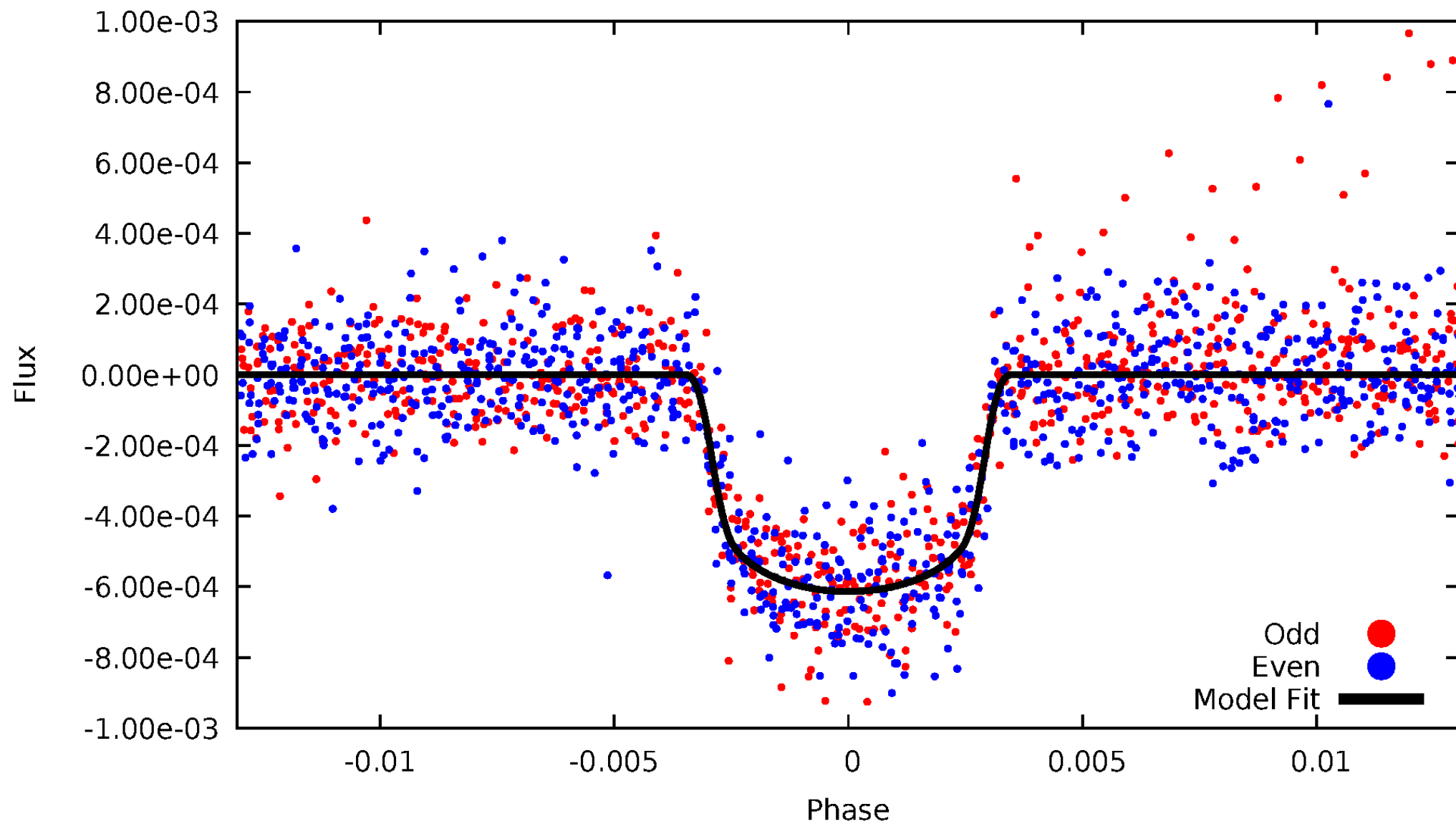


TCE 008395660-02



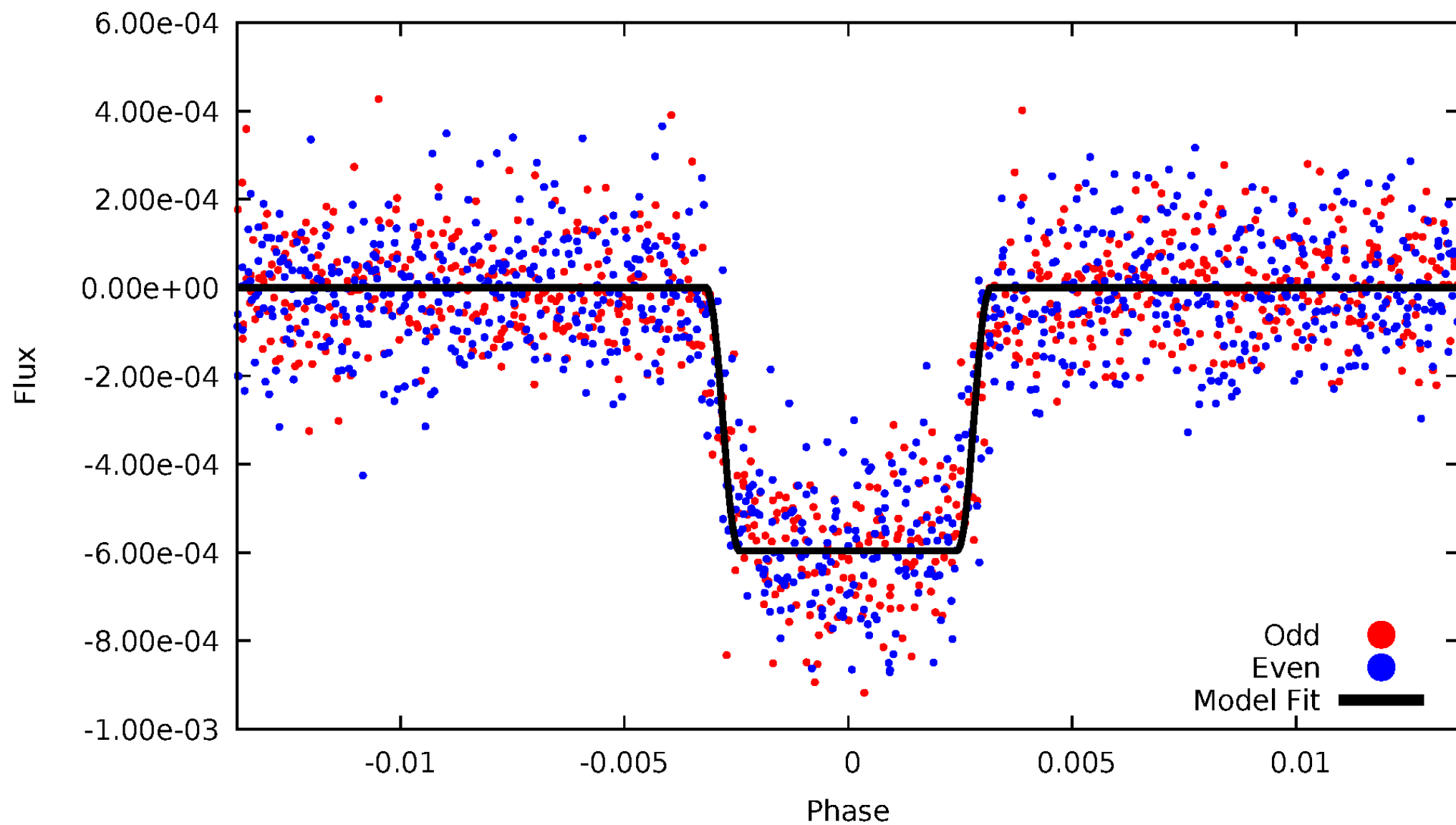
DV Odd/Even

TCE 008395660-02



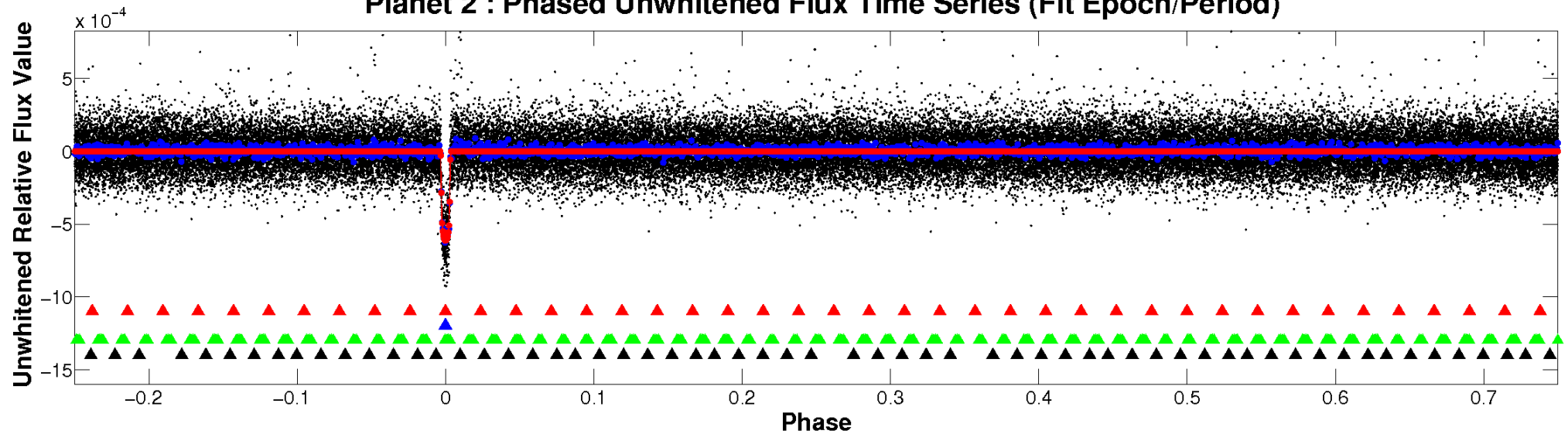
ALT Odd/Even

TCE 008395660-02

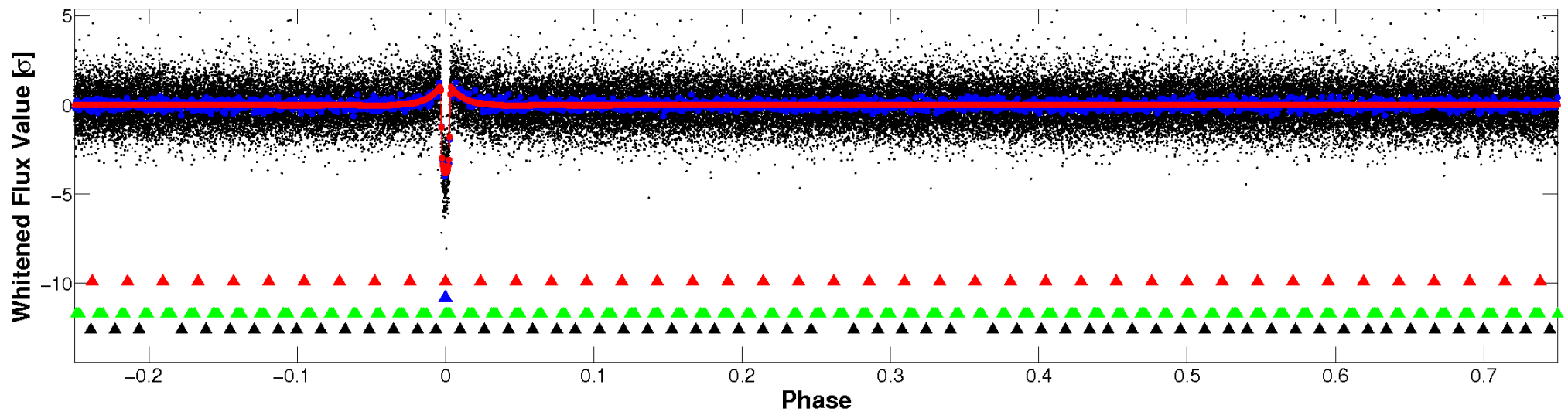


Non-Whitened Vs. Whitened Light Curve

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

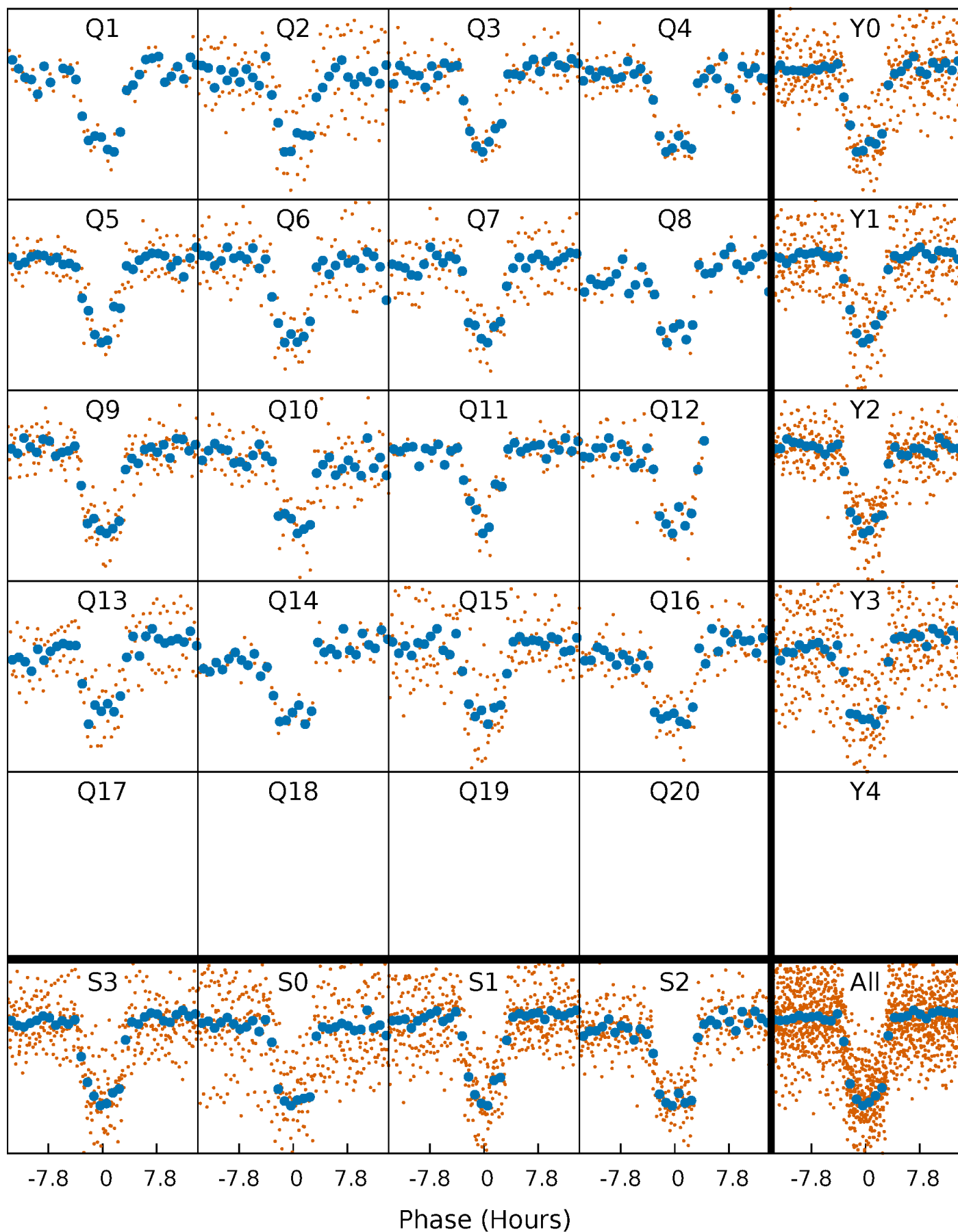


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



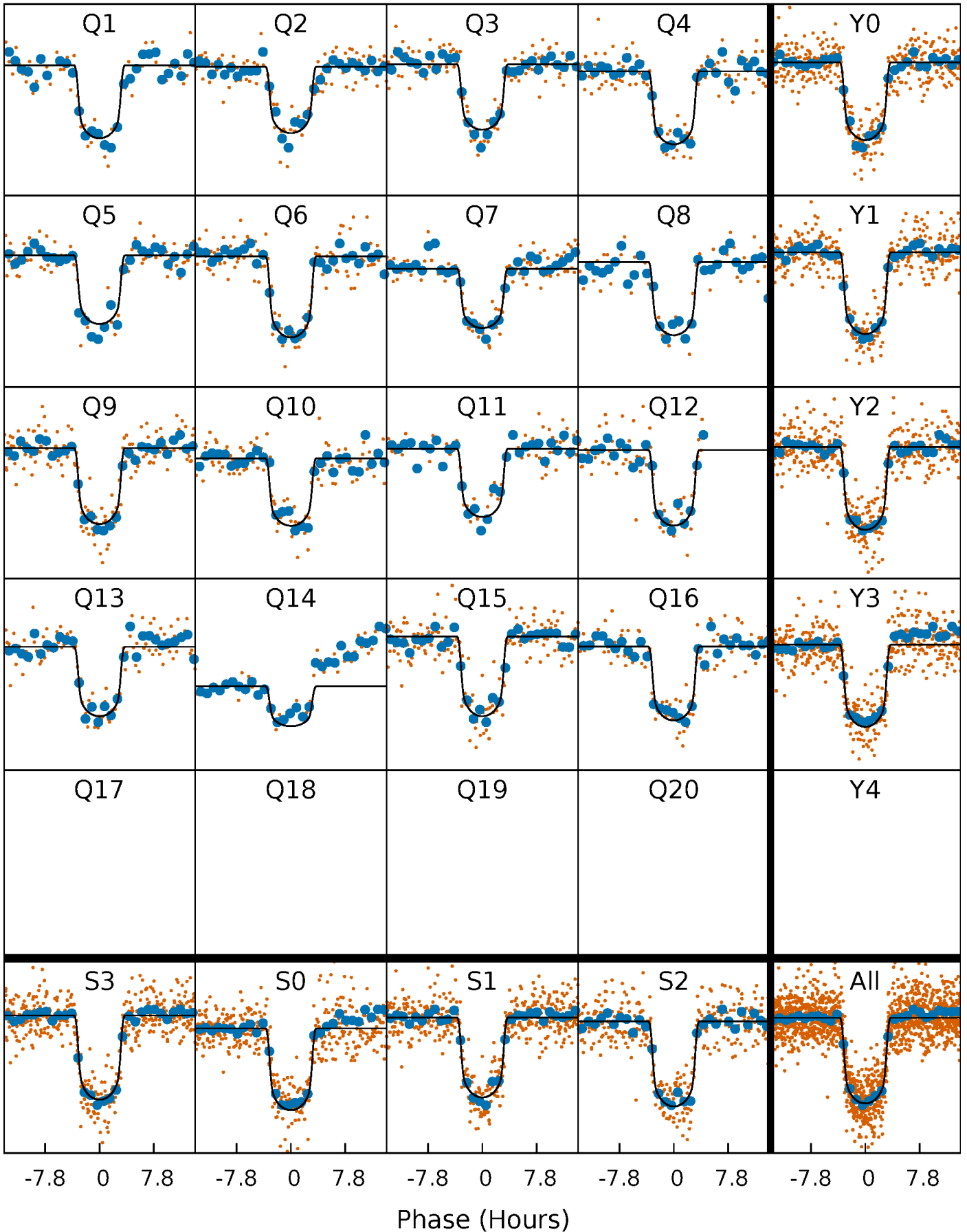
PDC Quarter-Phased Transit Curves

TCE 008395660-02 P= 43.844429 Days $T_0=151.934566$ (BKJD)



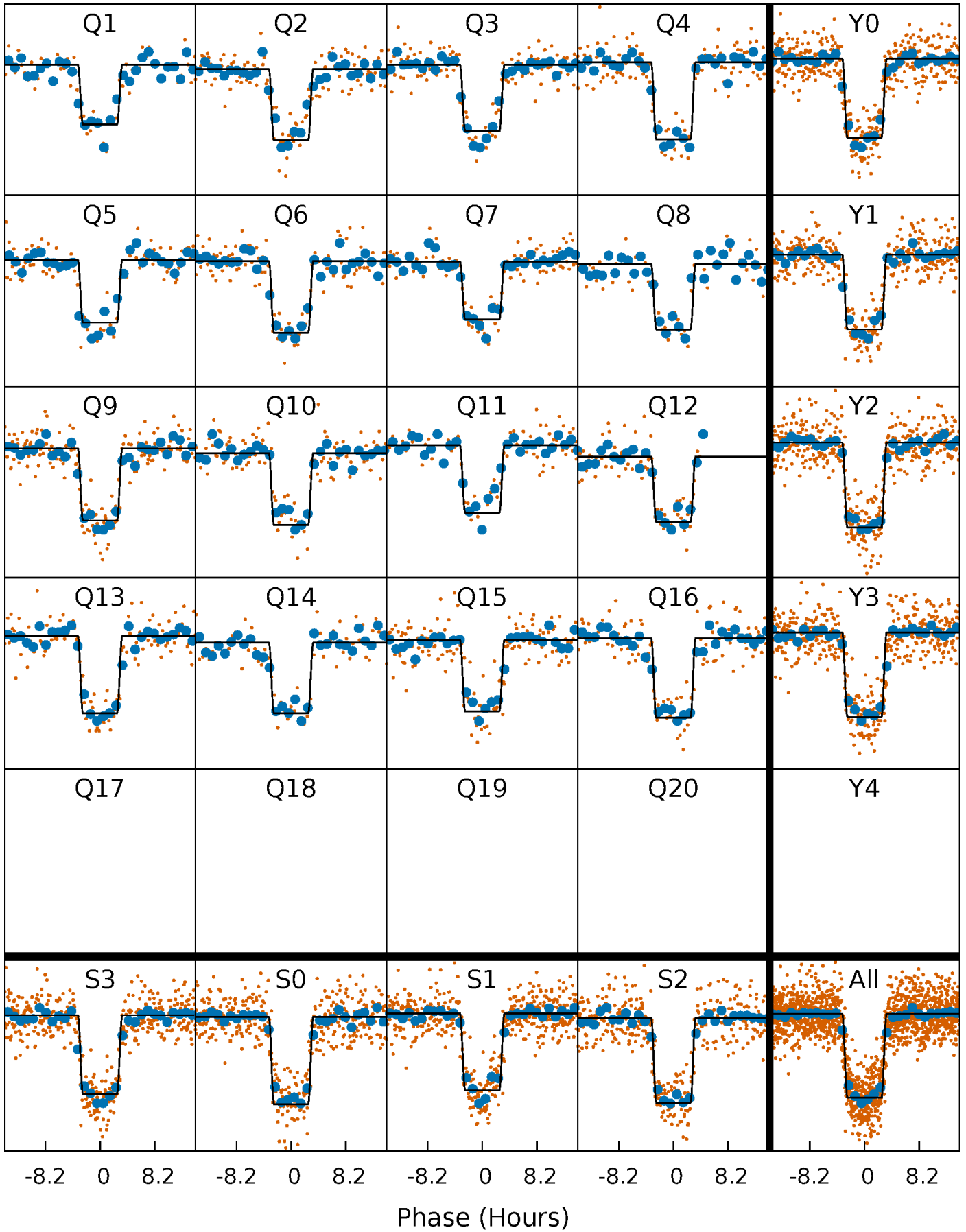
DV Quarter-Phased Transit Curves

TCE 008395660-02 P= 43.844429 Days $T_0=151.934566$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

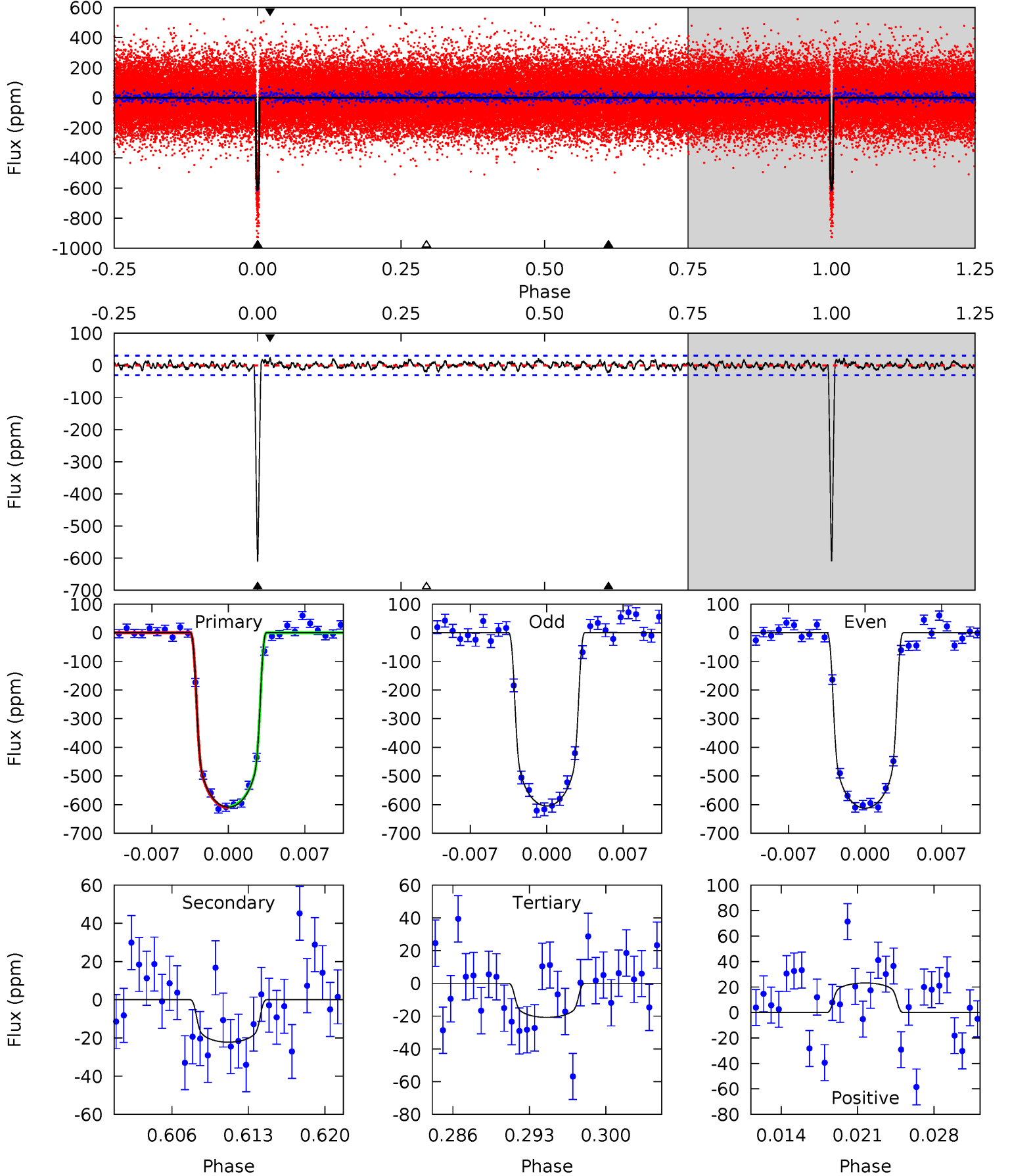
TCE 008395660-02 P= 43.843787 Days $T_0=151.946263$ (BKJD)



DV Model-Shift Uniqueness Test

008395660-02, $P = 43.844429$ Days, $E = 108.090137$ Days

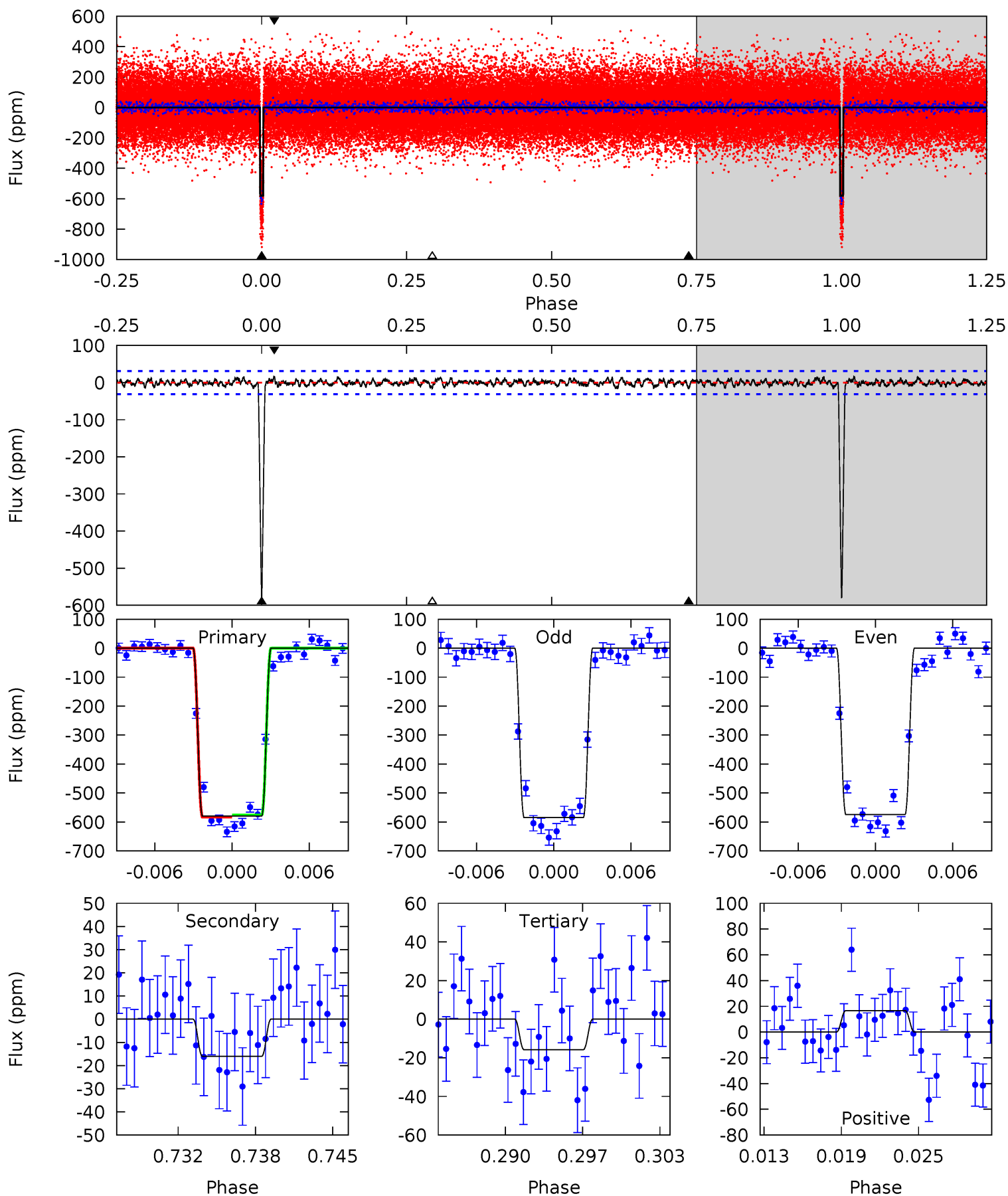
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.5	3.74	3.50	3.90	5.10	2.70	1.25	99.0	98.6	0.24	-0.16	0.66	1.00	0.04	0.36



Alt Model-Shift Uniqueness Test

008395660-02, $P = 43.843787$ Days, $E = 108.102476$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.2	2.63	2.59	2.73	5.11	2.73	0.96	92.6	92.5	0.04	-0.10	0.87	1.01	0.03	0.56



Stellar Parameters For KIC 008395660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5854^{+105}_{-117}	$4.406^{+0.090}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.012^{+0.154}_{-0.103}$	$0.951^{+0.070}_{-0.063}$	$1.294^{+0.464}_{-0.402}$
	+2%/-2%	+2%/-2%	+125%/-125%	+15%/-10%	+7%/-7%	+36%/-31%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 008395660-02 / KOI 0116.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-22 ± 6	$2.91^{+0.25}_{-0.21}$	742^{+32}_{-28}	3105^{+121}_{-150}	82^{+26}_{-24}
Alt.	-16 ± 6	$2.70^{+0.25}_{-0.20}$	741^{+34}_{-26}	3020^{+155}_{-199}	68^{+29}_{-28}

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 $A_{obs} \gg 1.0$

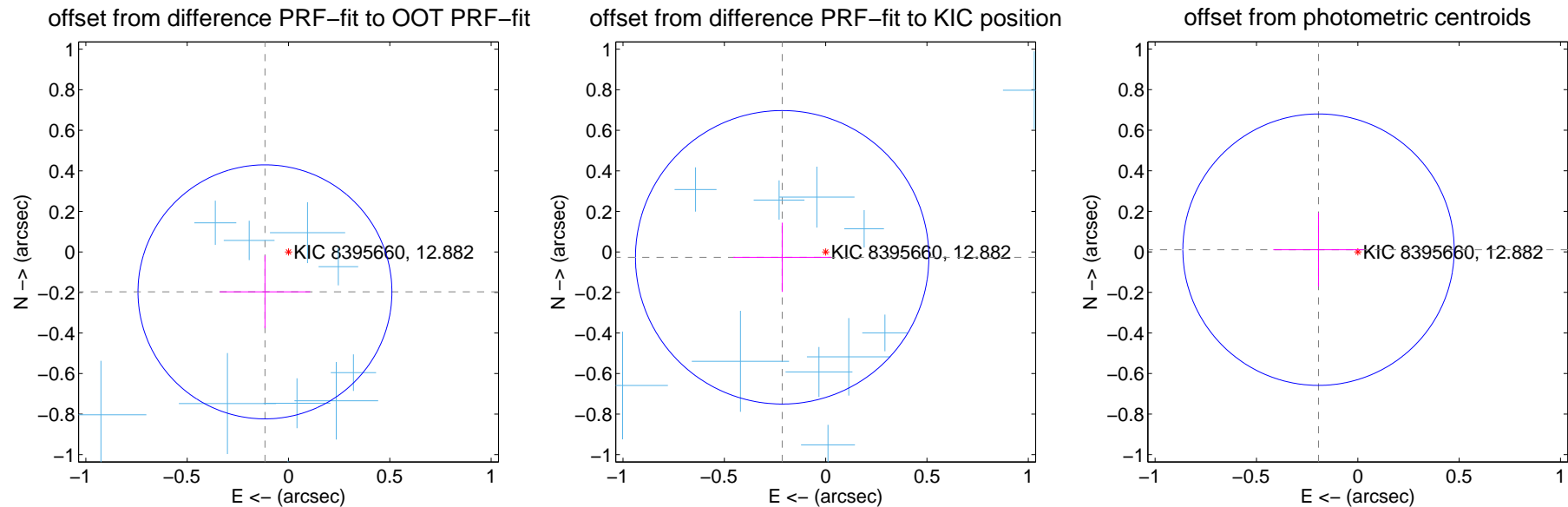
DV Centroid Data

Supplemental centroid analysis for 008395660-02. Kepler magnitude: 12.88. Transit SNR 65.18

There are 15 quarters with good PRF difference image offsets

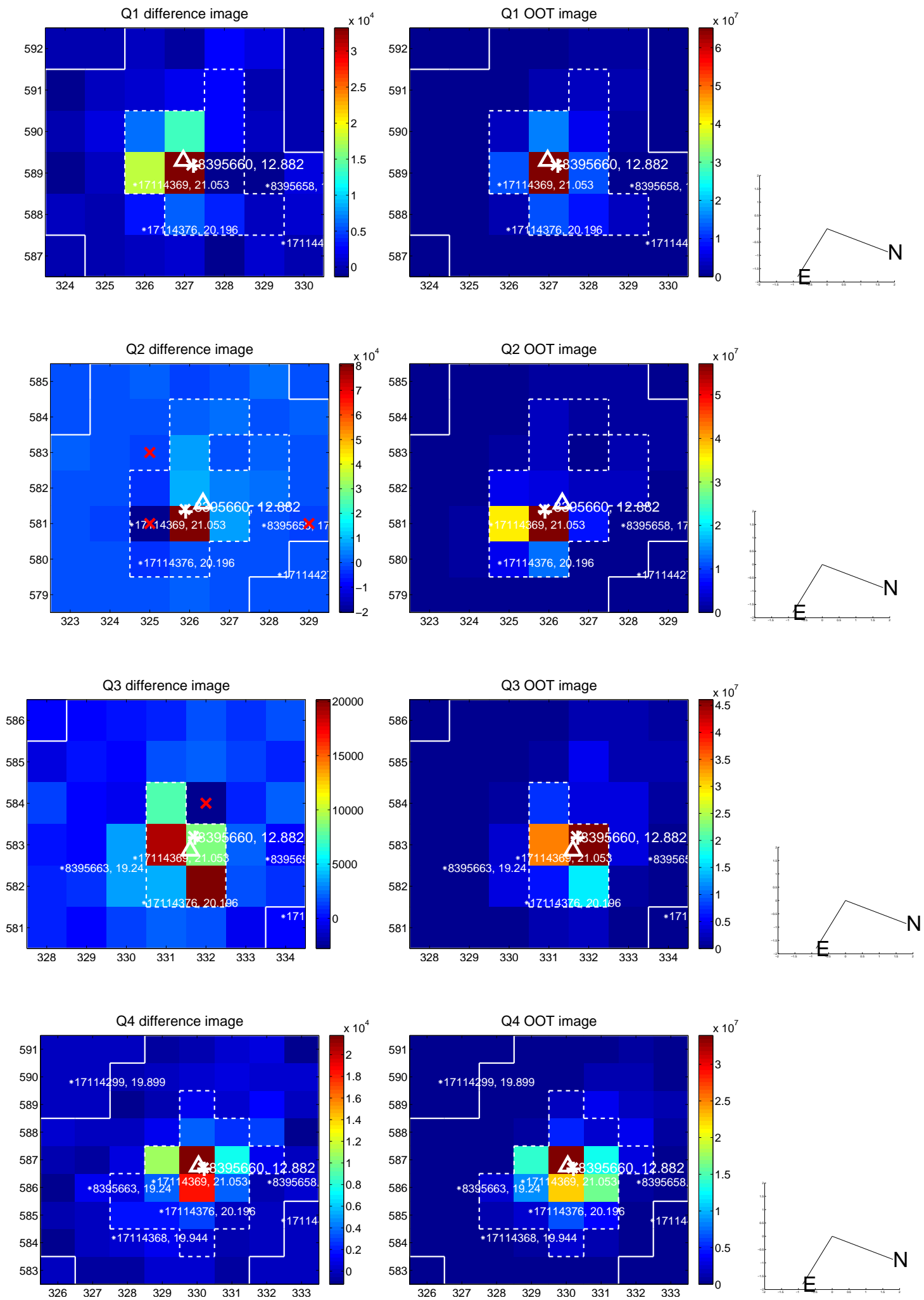
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.229 ± 0.209	1.10	0.116 ± 0.223	-0.197 ± 0.179
PRF-fit source offset from KIC position	0.216 ± 0.241	0.90	0.215 ± 0.242	-0.027 ± 0.171
photometric centroid source offset	0.19 ± 0.22	0.87	0.19 ± 0.22	0.01 ± 0.18

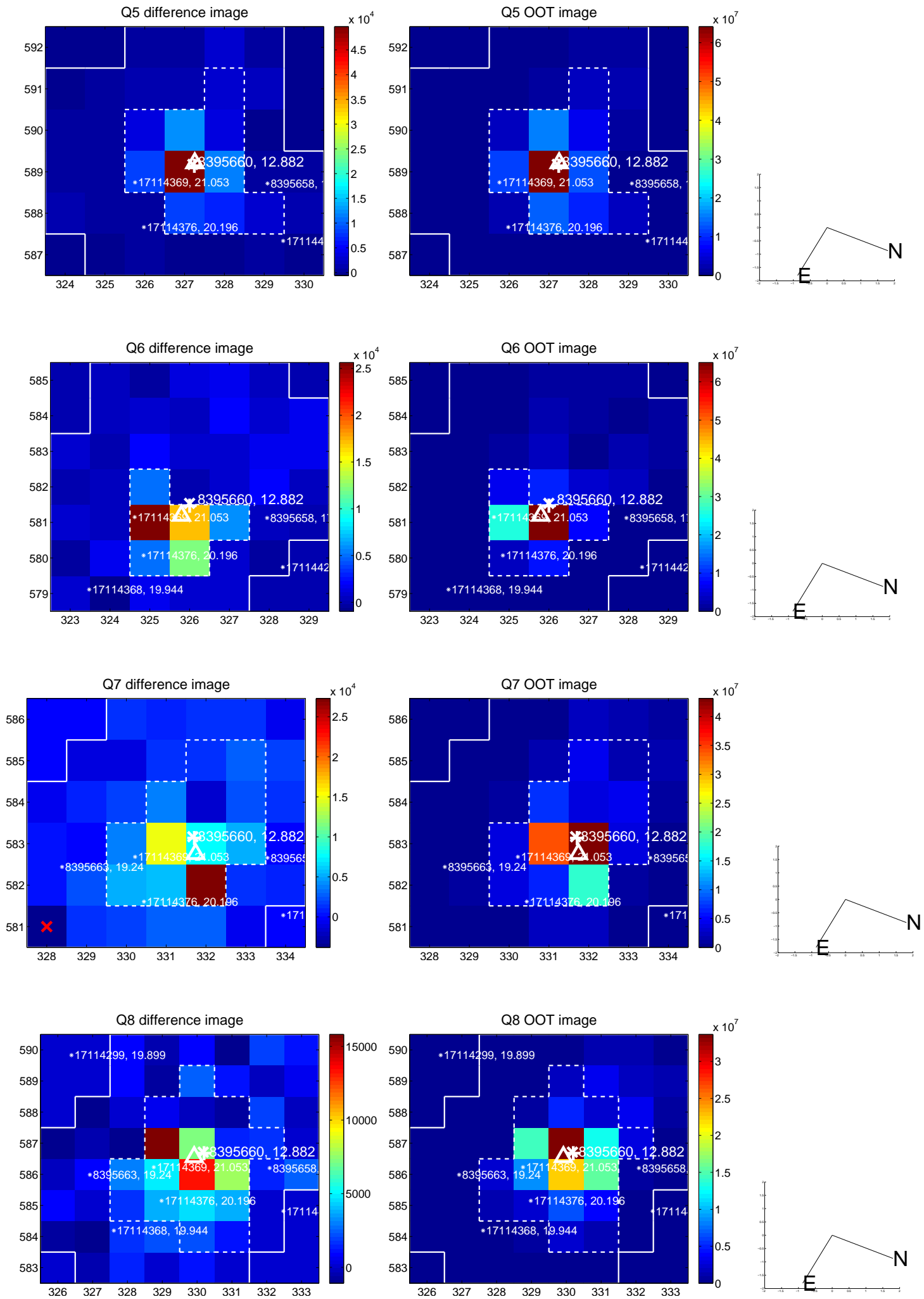


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

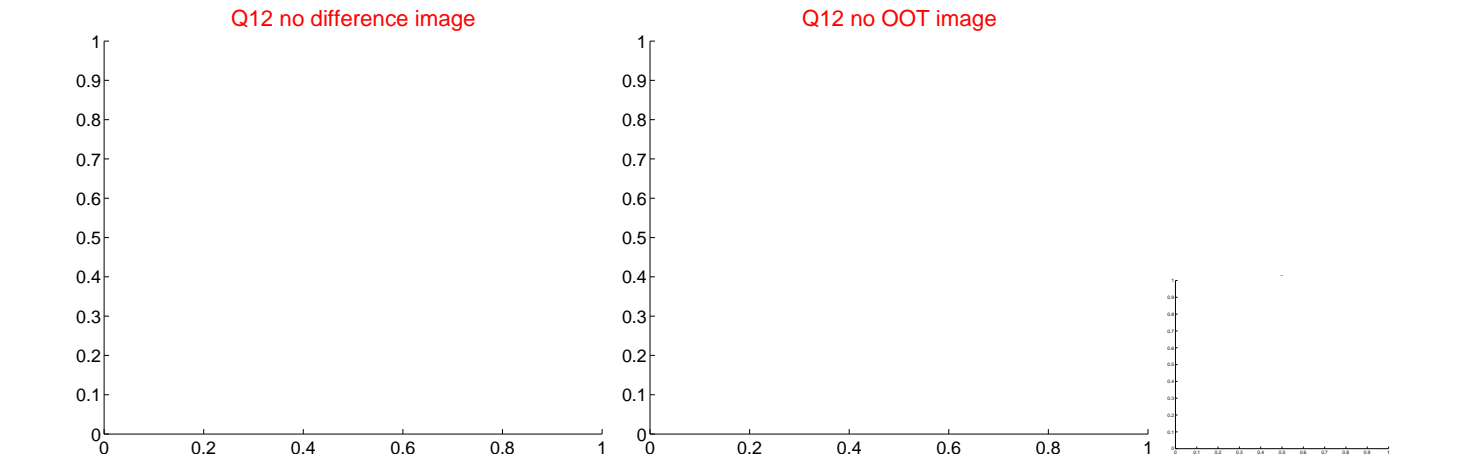
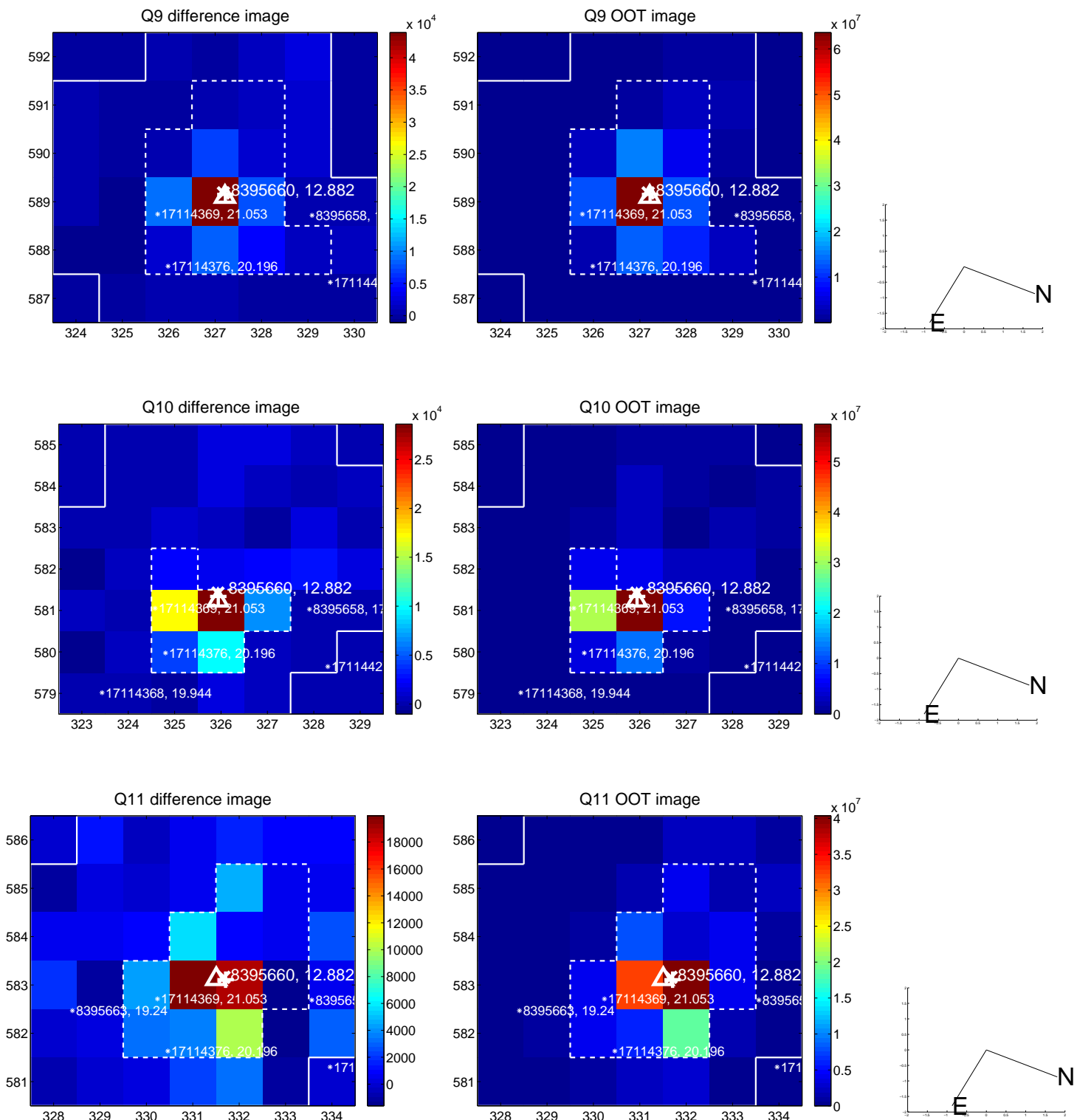
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



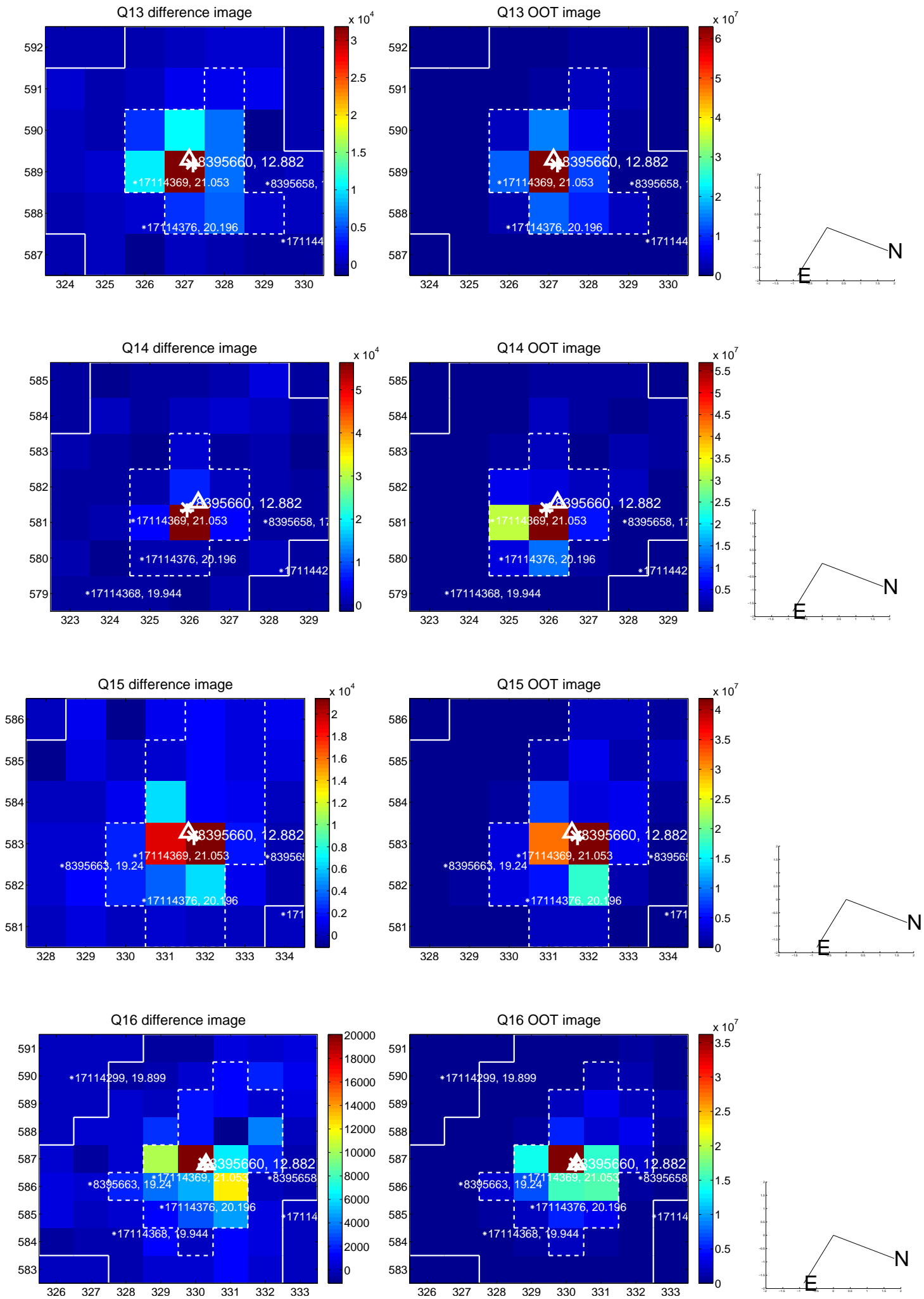
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



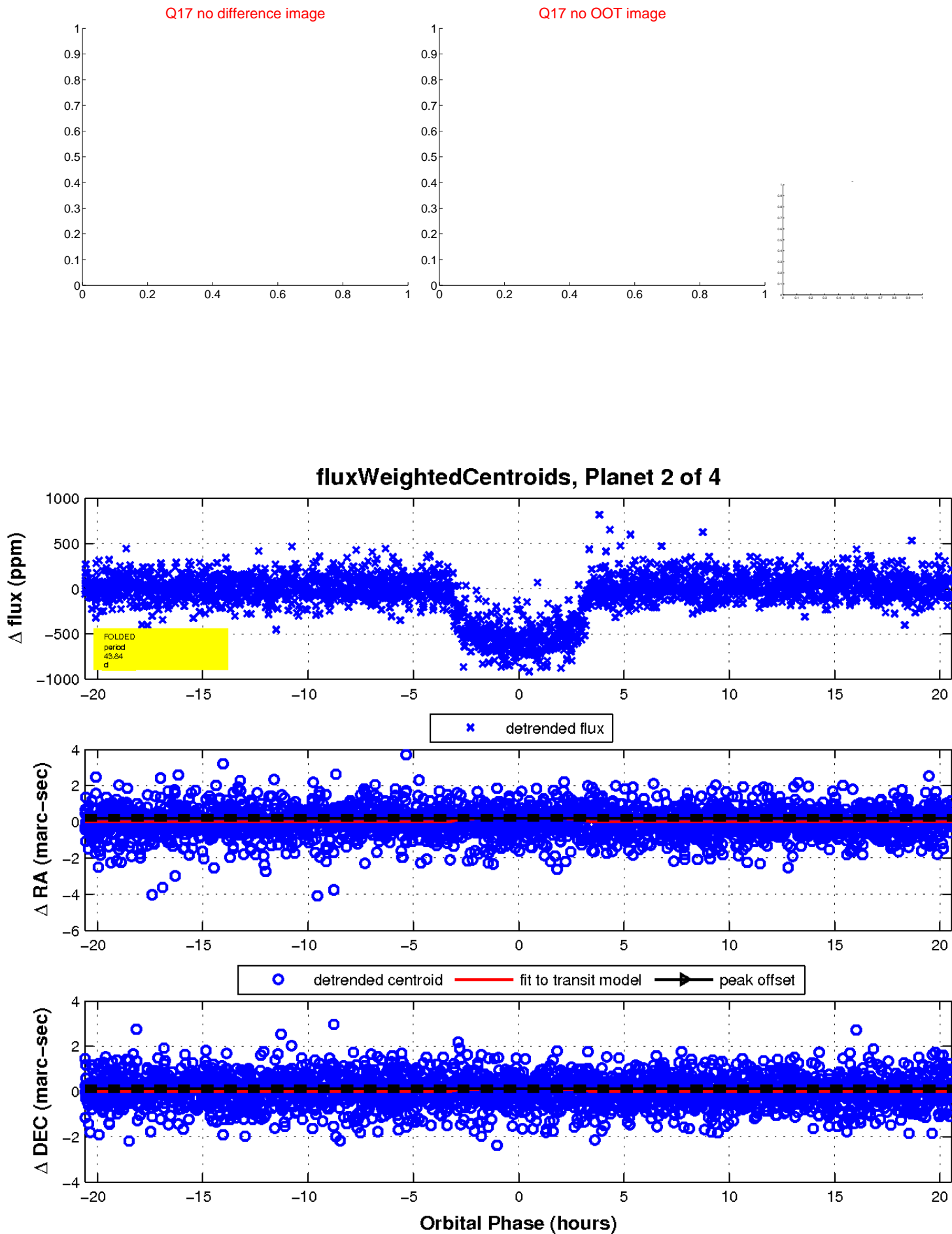
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

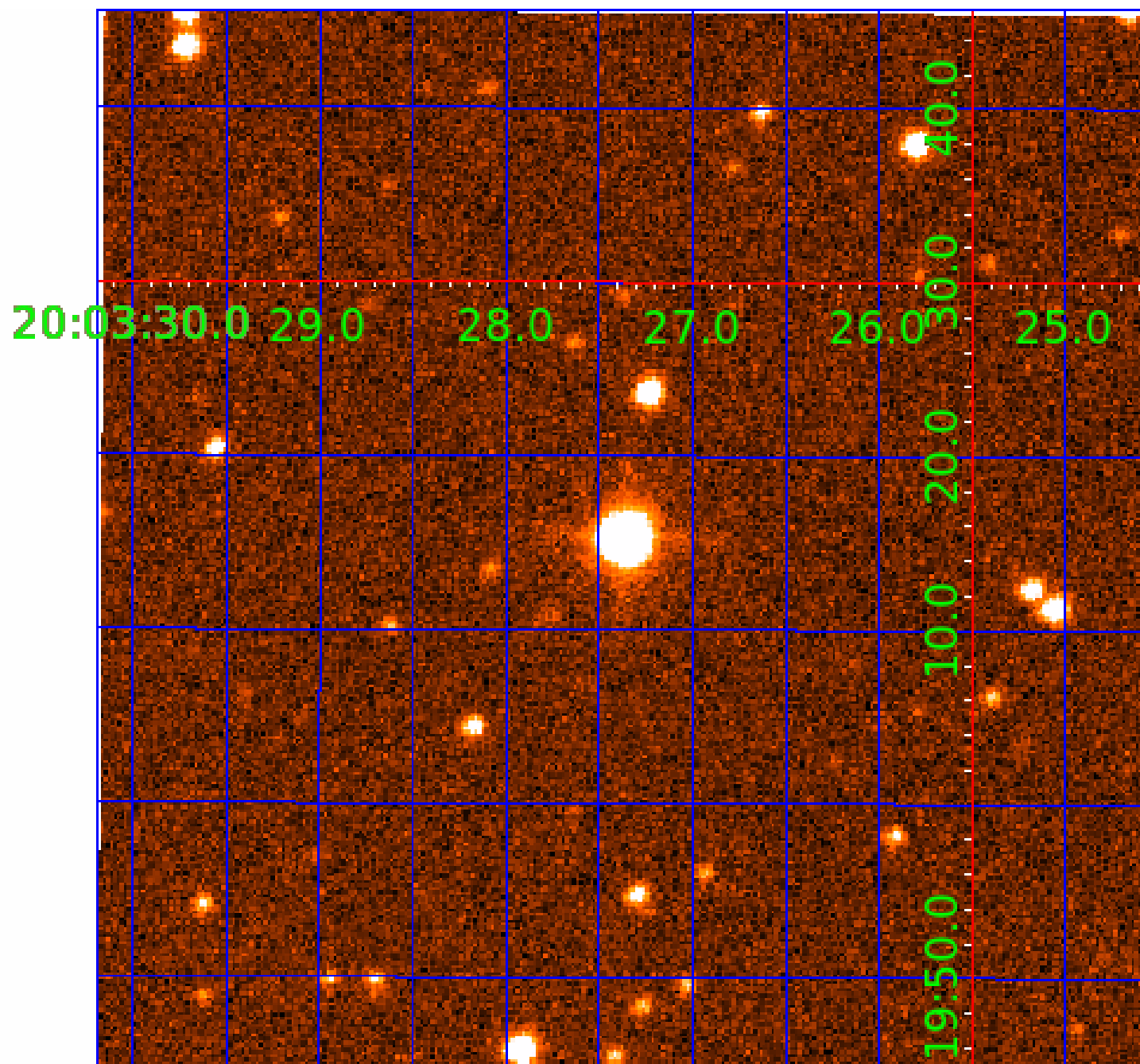


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008395660

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})
008395660-01	OBS	0116.01	13.570782	136.279321	517.9	3.460	76.8	78.8	1.01	5854	2.73	89.82
008395660-02	OBS	0116.02	43.844429	151.934566	613.4	6.865	65.6	65.2	1.01	5854	2.90	18.80
008395660-03	OBS	0116.03	6.164839	135.646210	55.1	3.406	11.6	12.5	1.01	5854	0.86	257.19
008395660-04	OBS	0116.04	23.980085	147.539111	94.4	4.717	10.9	11.9	1.01	5854	1.17	42.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008395660-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-03	OBS	PC	0.95	0	0	0	0	NO_COMMENT
008395660-04	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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

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

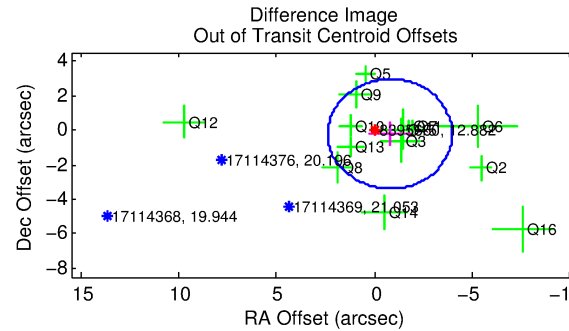
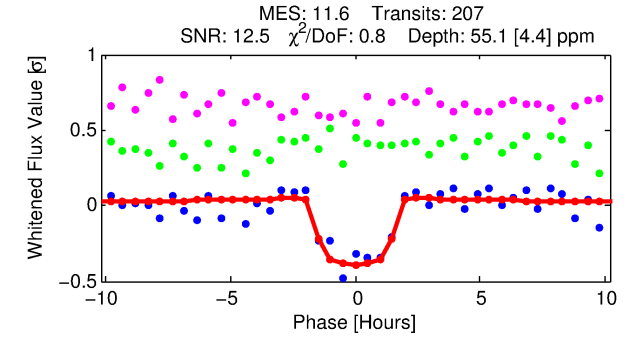
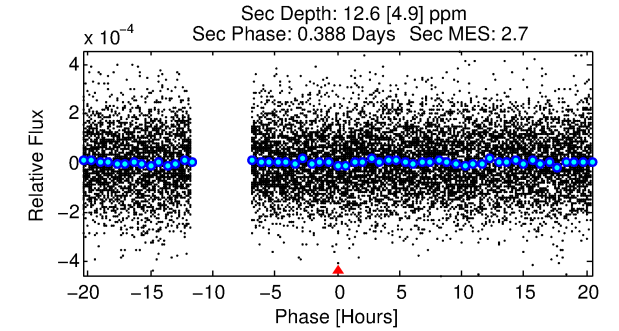
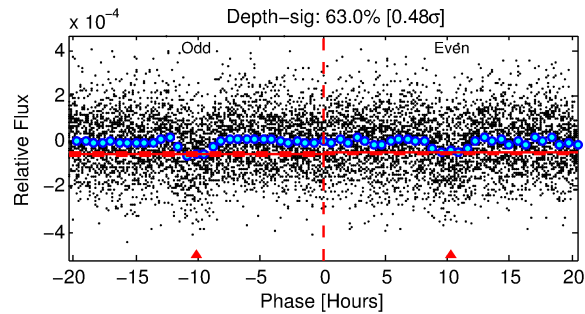
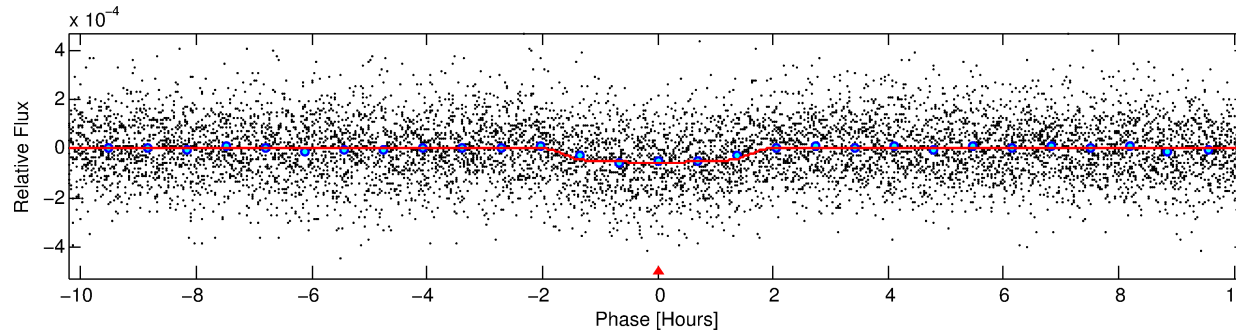
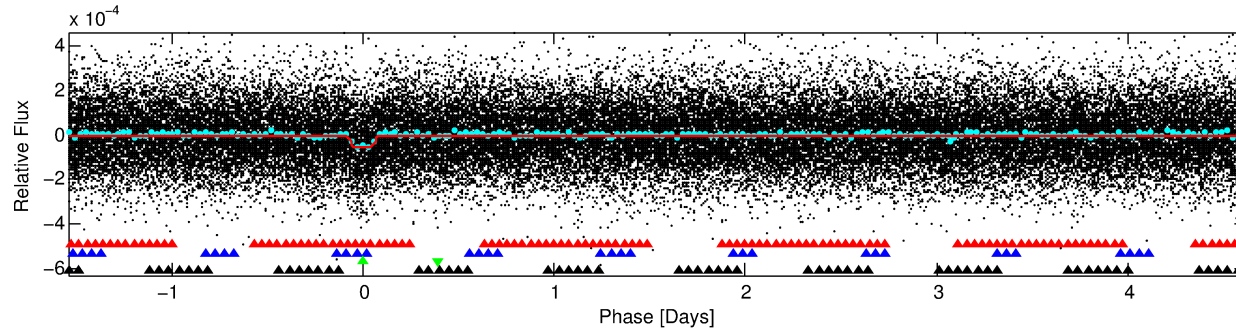
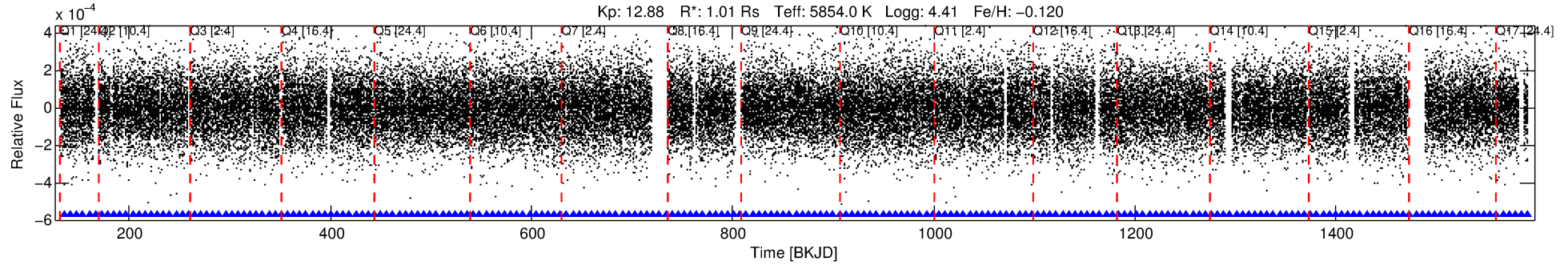
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008395660-03

No Significant Match Found

DV One-Page Summary

KIC: 8395660 Candidate: 3 of 4 Period: 6.165 d
KOI: K00116.03 Name: Kepler-106b Corr: 0.961



DV Fit Results:

Period = 6.16484 [0.00004] d
Epoch = 135.6462 [0.0045] BKJD
Rp/R* = 0.0078 [0.0035]
a/R* = 7.30 [15.71]
b = 0.86 [0.67]
Seff = 257.20 [54.68]
Teq = 1021 [54] K
Rp = 0.86 [0.41] Re
a = 0.0647 [0.0085] AU
Ag = 39.07 [39.19] [0.97 σ]
Teffp = 3947 [974] K [3.00 σ]

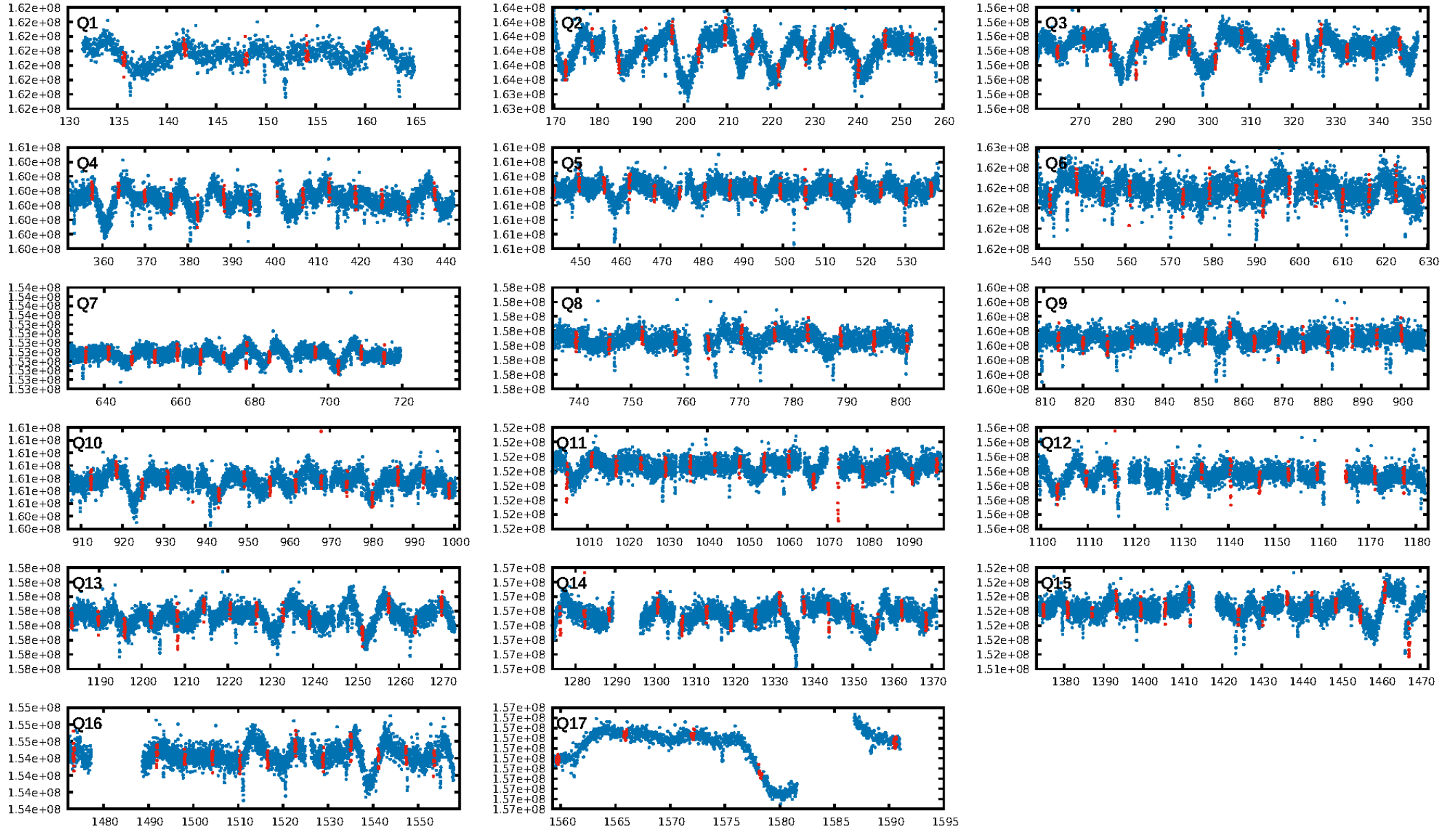
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [36.61 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.94e-30
RollingBand-fgt: 1.00 [197/197]
GhostDiagnostic-chr: 3.117
Centroid-sig: 56.7%
Centroid-so: 0.458 arcsec [0.43 σ]
OotOffset-rm: 0.823 arcsec [0.78 σ]
KicOffset-rm: 0.702 arcsec [0.63 σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [17/17]

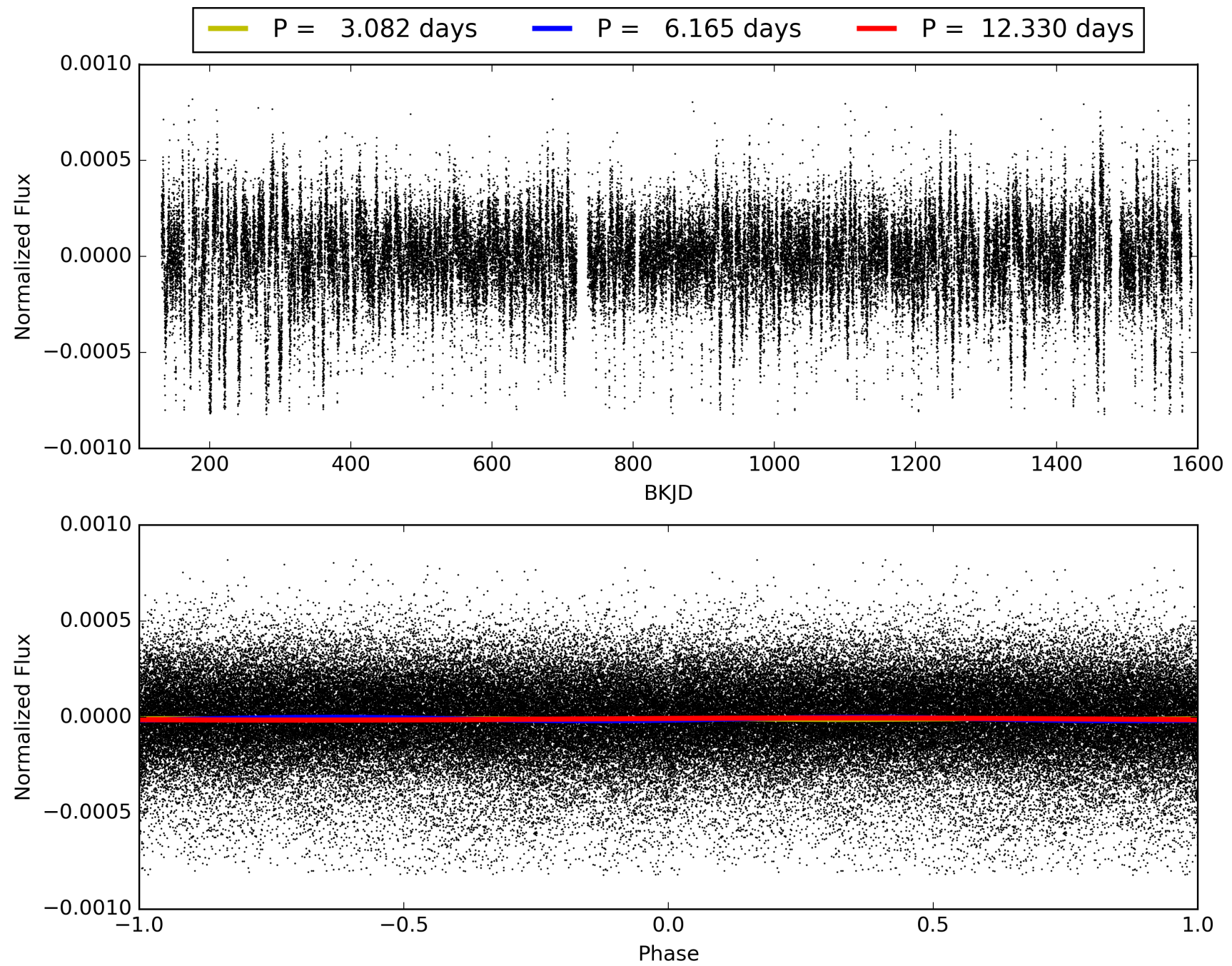
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:43:08 Z

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

TCE 008395660-03, PDC Light Curves

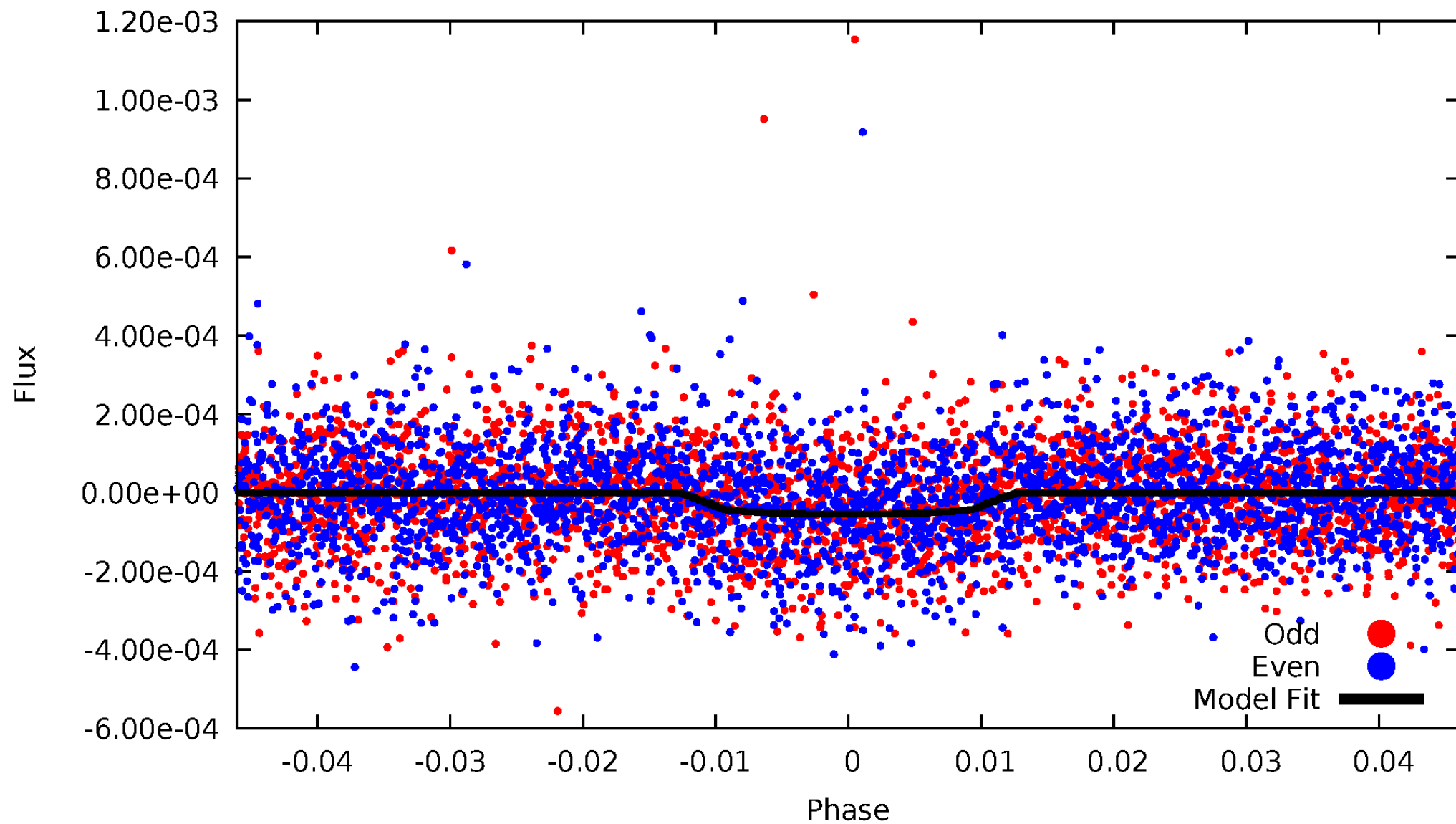


TCE 008395660-03



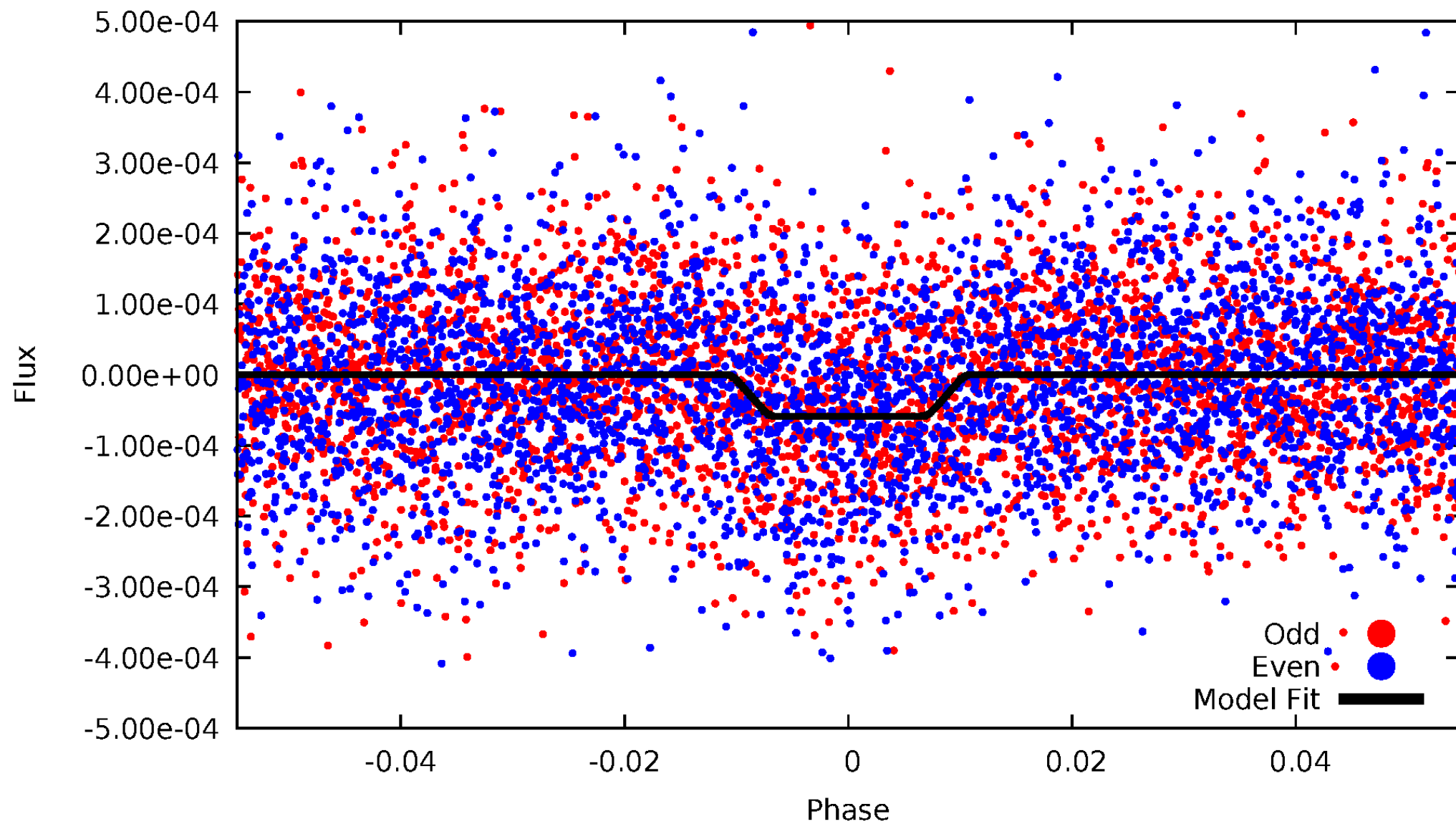
DV Odd/Even

TCE 008395660-03



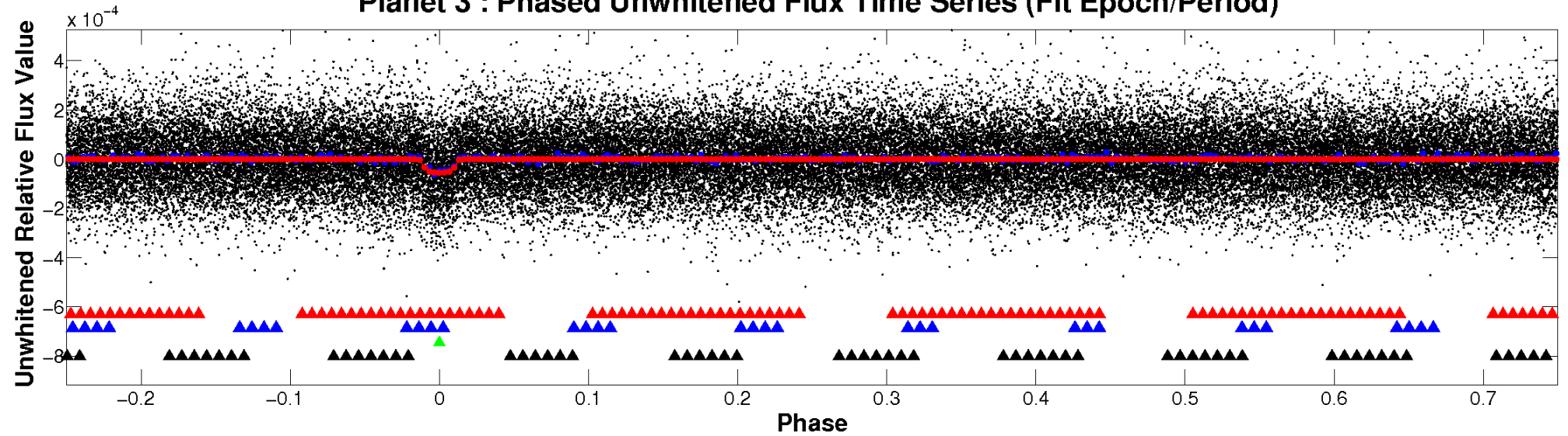
ALT Odd/Even

TCE 008395660-03

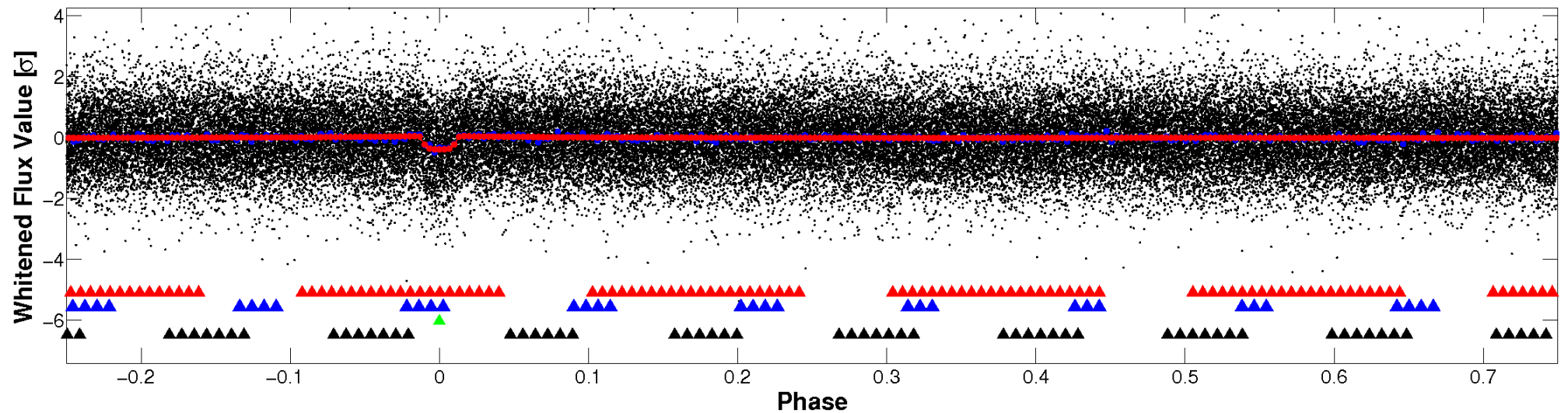


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

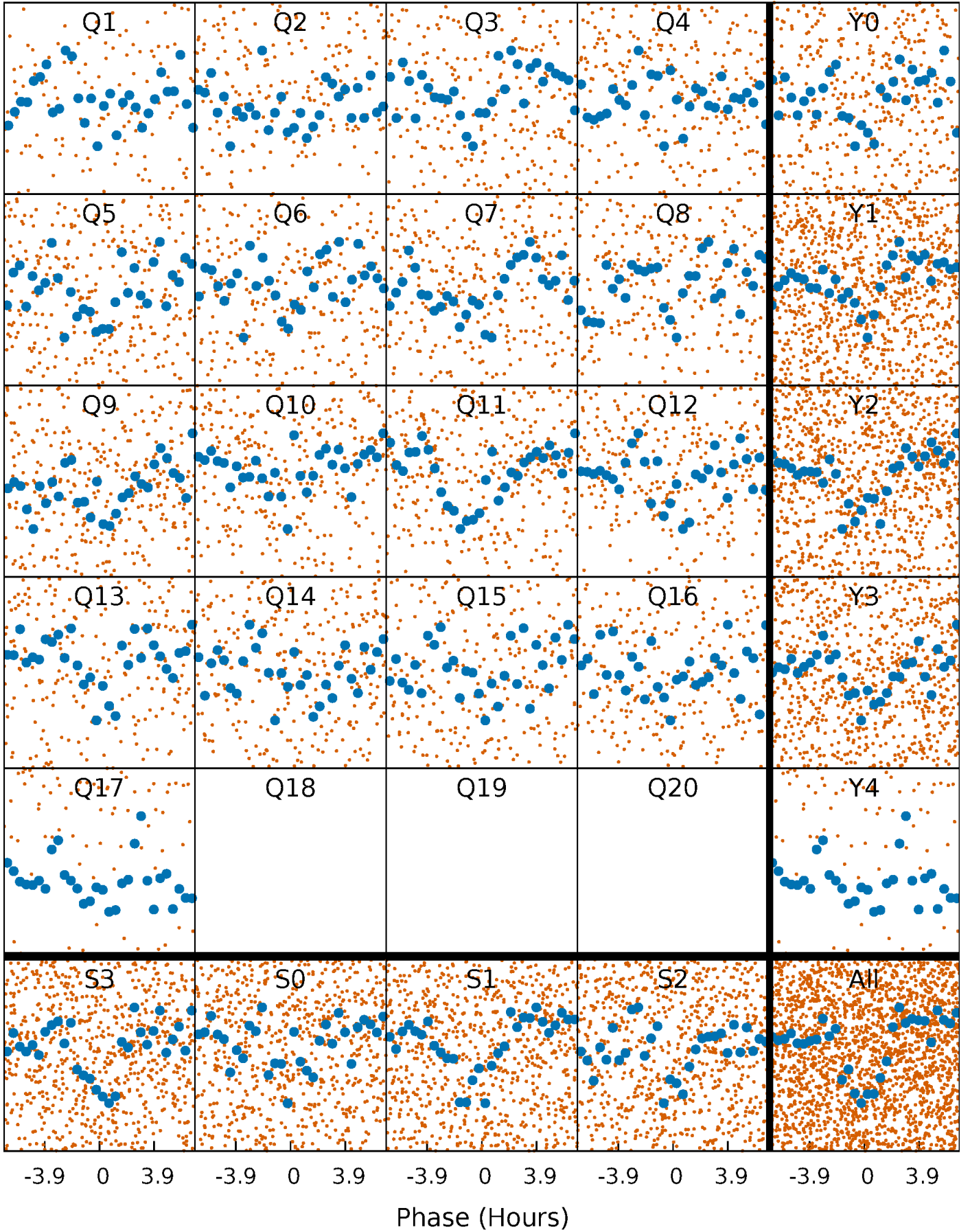


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



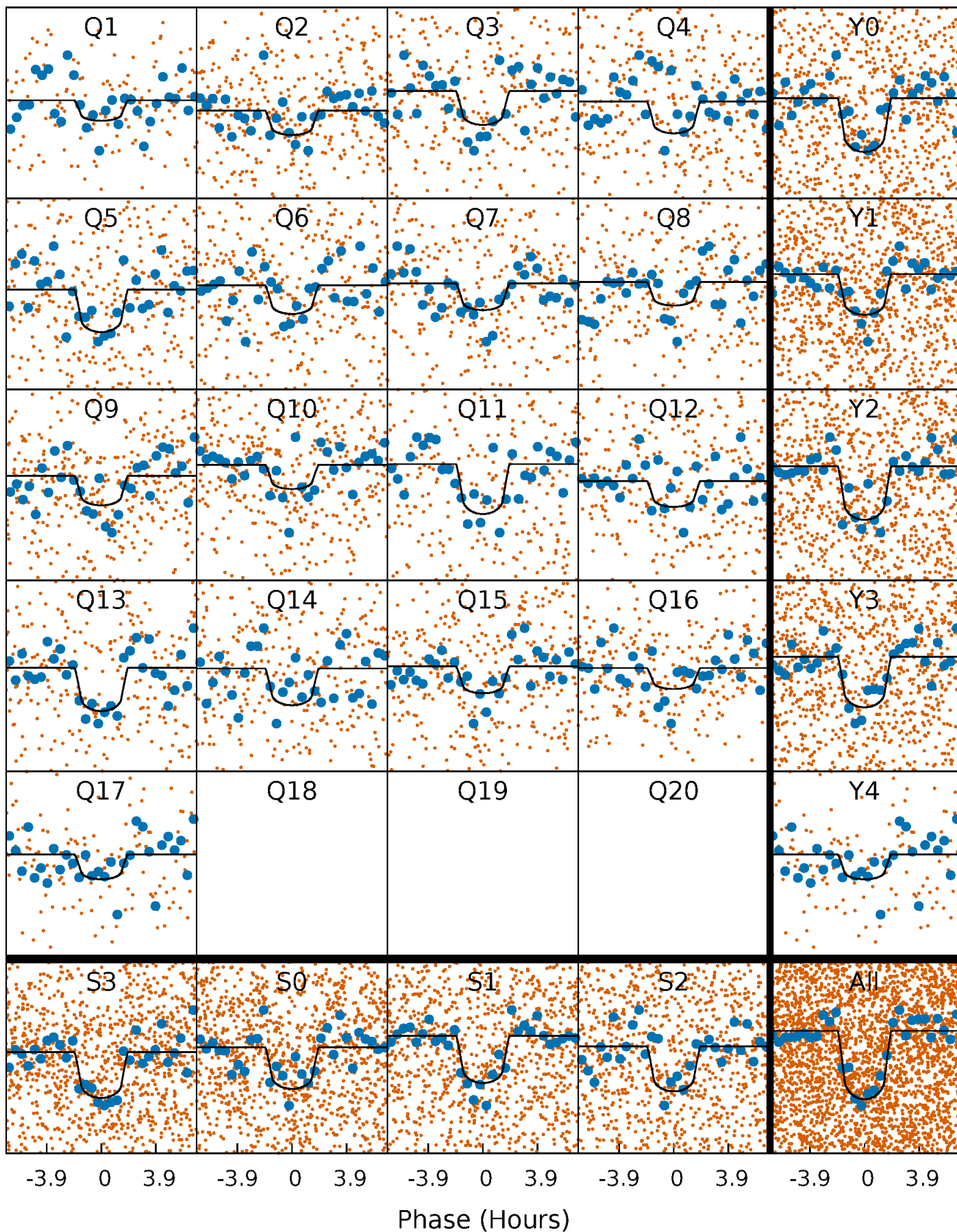
PDC Quarter-Phased Transit Curves

TCE 008395660-03 P= 6.164839 Days $T_0=135.646210$ (BKJD)



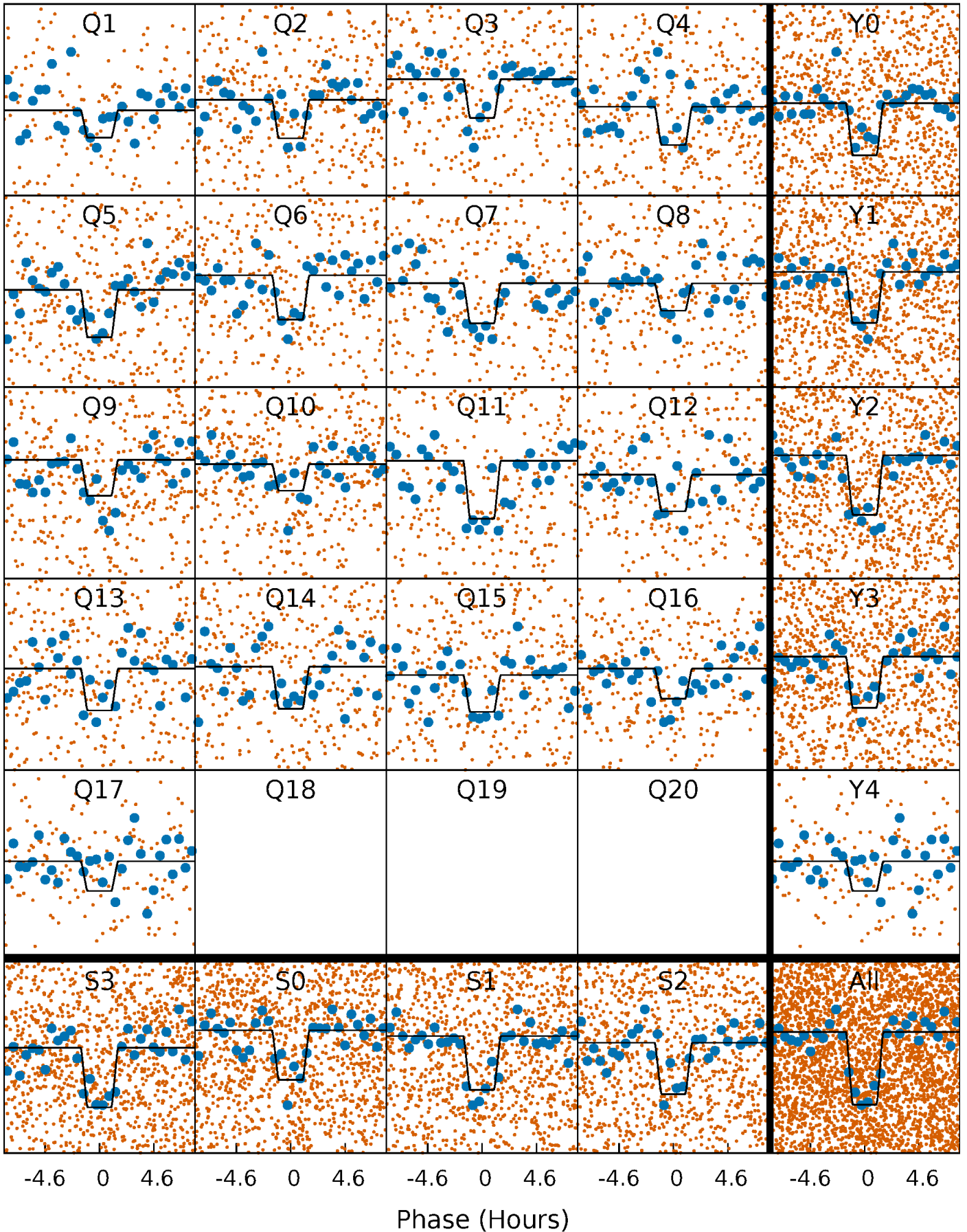
DV Quarter-Phased Transit Curves

TCE 008395660-03 P= 6.164839 Days $T_0=135.646210$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

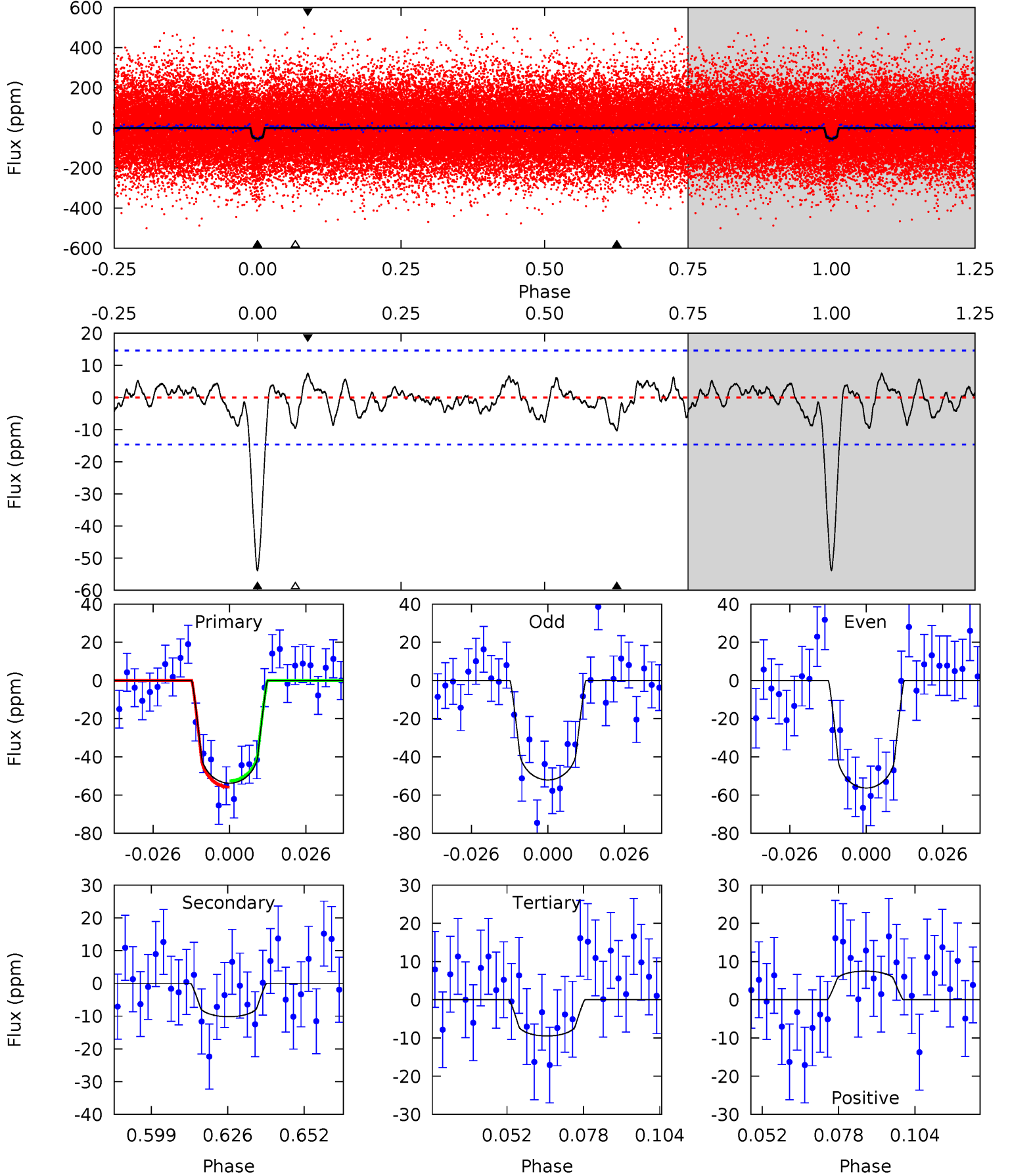
TCE 008395660-03 P= 6.164775 Days $T_0=135.653651$ (BKJD)



DV Model-Shift Uniqueness Test

008395660-03, P = 6.164839 Days, E = 129.481371 Days

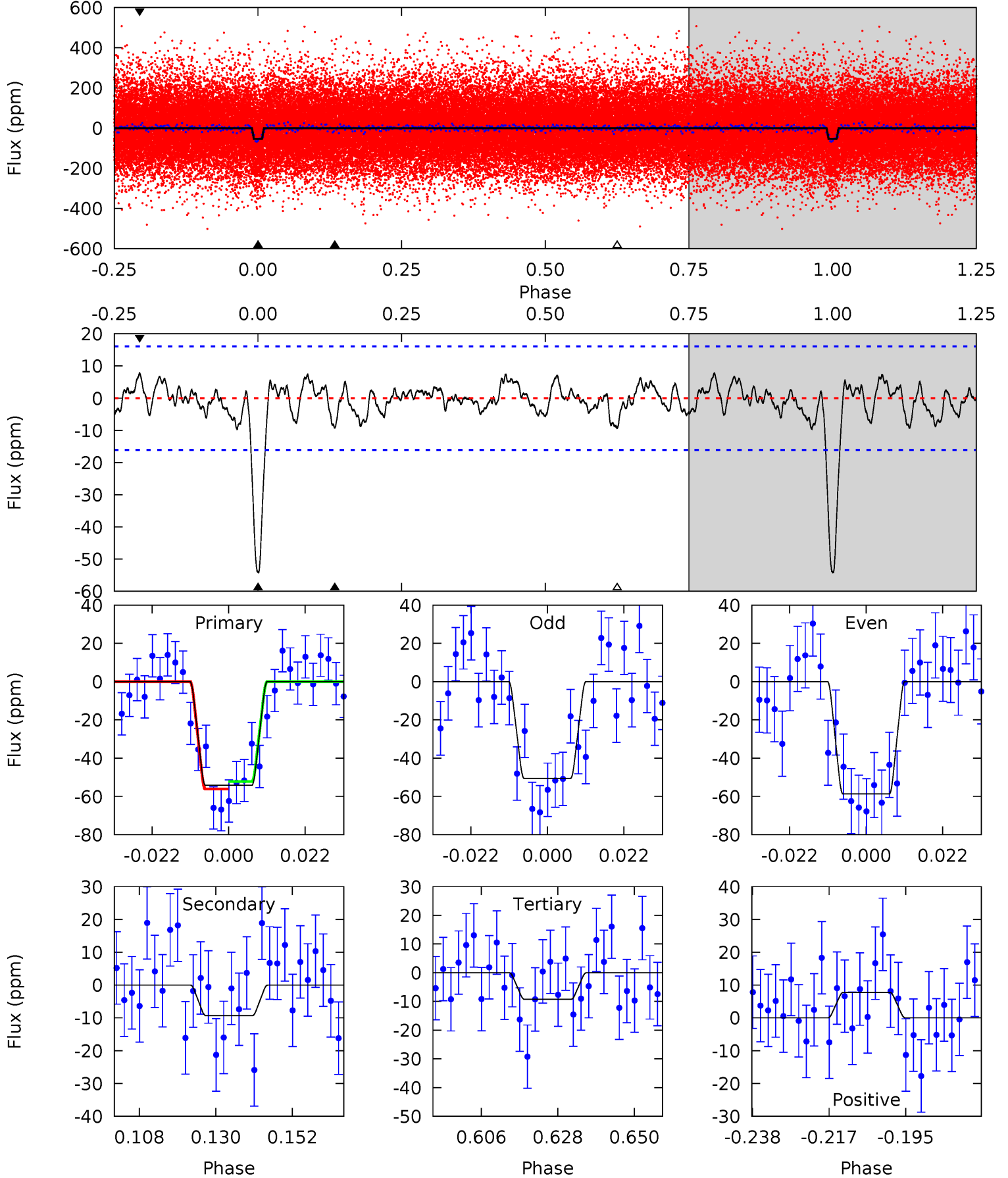
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	3.37	3.14	2.48	4.84	2.23	1.10	14.7	15.3	0.23	0.89	0.70	0.94	0.12	0.55



Alt Model-Shift Uniqueness Test

008395660-03, P = 6.164775 Days, E = 129.488876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	2.82	2.80	2.36	4.88	2.30	1.09	13.6	14.0	0.02	0.47	1.23	0.97	0.13	0.58



Stellar Parameters For KIC 008395660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5854^{+105}_{-117}	$4.406^{+0.090}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.012^{+0.154}_{-0.103}$	$0.951^{+0.070}_{-0.063}$	$1.294^{+0.464}_{-0.402}$
	+2%/-2%	+2%/-2%	+125%/-125%	+15%/-10%	+7%/-7%	+36%/-31%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 008395660-03 / KOI 0116.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-10 ± 3	$0.88^{+0.40}_{-0.39}$	1429^{+65}_{-56}	3991^{+949}_{-494}	30^{+65}_{-17}
Alt.	-9 ± 3	$0.87^{+0.43}_{-0.39}$	1428^{+58}_{-53}	3940^{+1137}_{-512}	28^{+71}_{-16}

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 $A_{obs} \gg 1.0$

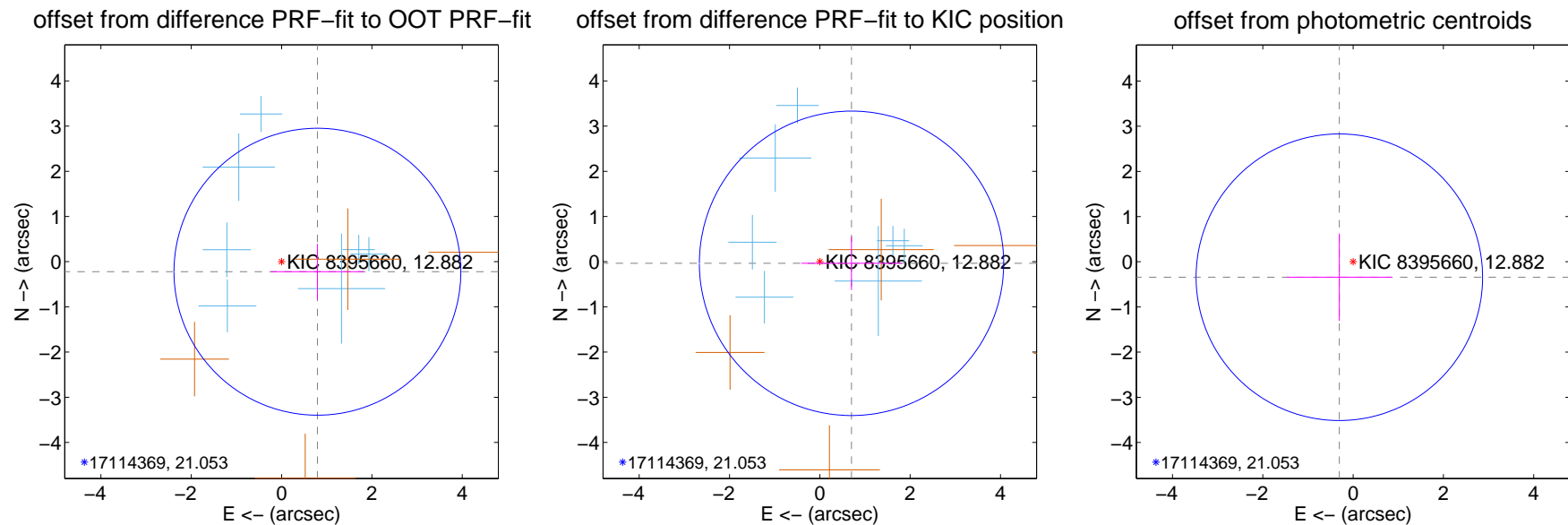
DV Centroid Data

Supplemental centroid analysis for 008395660-03. Kepler magnitude: 12.88. Transit SNR 12.51

There are 7 quarters with good PRF difference image offsets

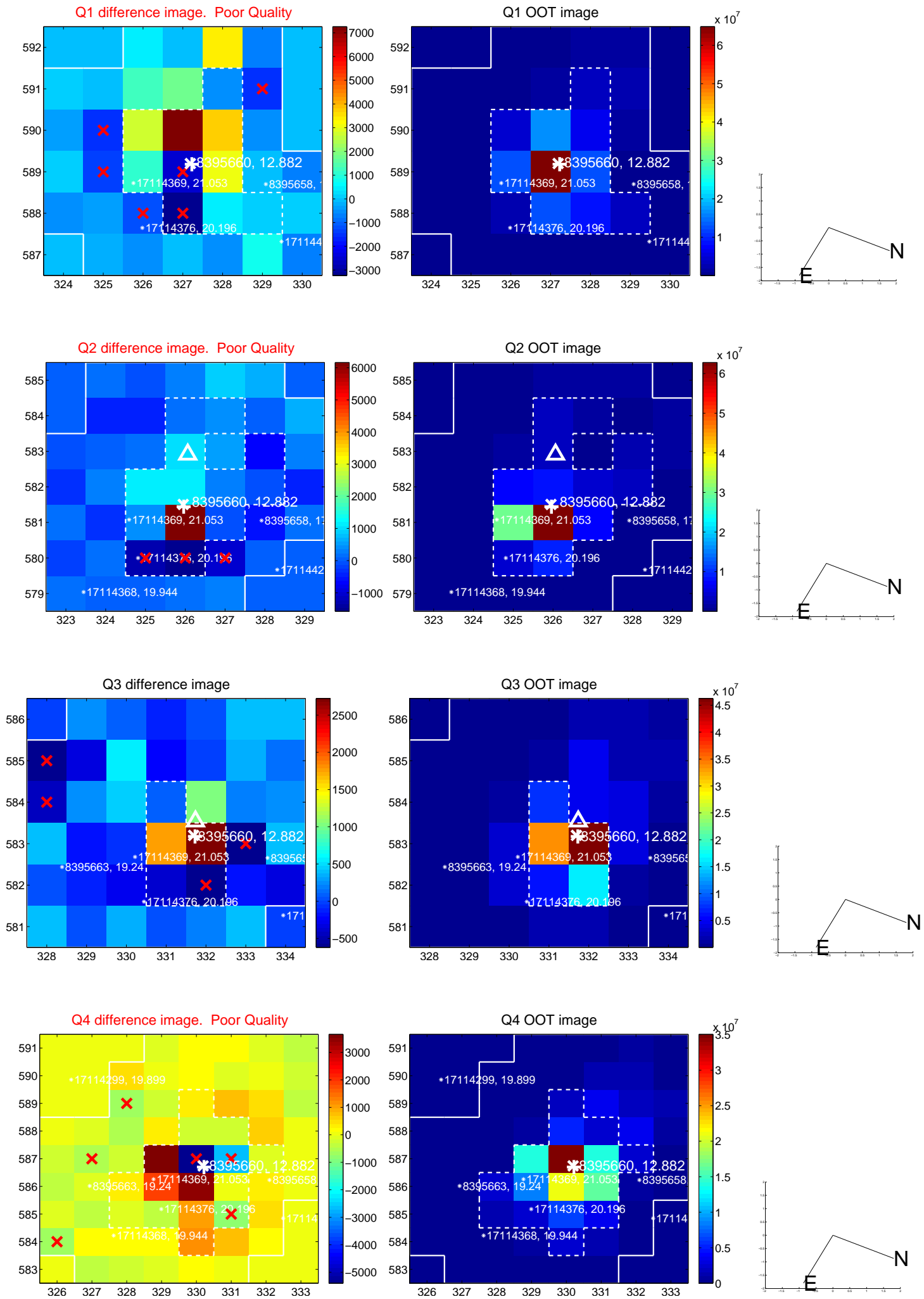
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.823 ± 1.058	0.78	-0.793 ± 1.029	-0.222 ± 0.615
PRF-fit source offset from KIC position	0.702 ± 1.123	0.63	-0.701 ± 1.111	-0.036 ± 0.592
photometric centroid source offset	0.46 ± 1.06	0.43	0.31 ± 1.16	-0.34 ± 0.97

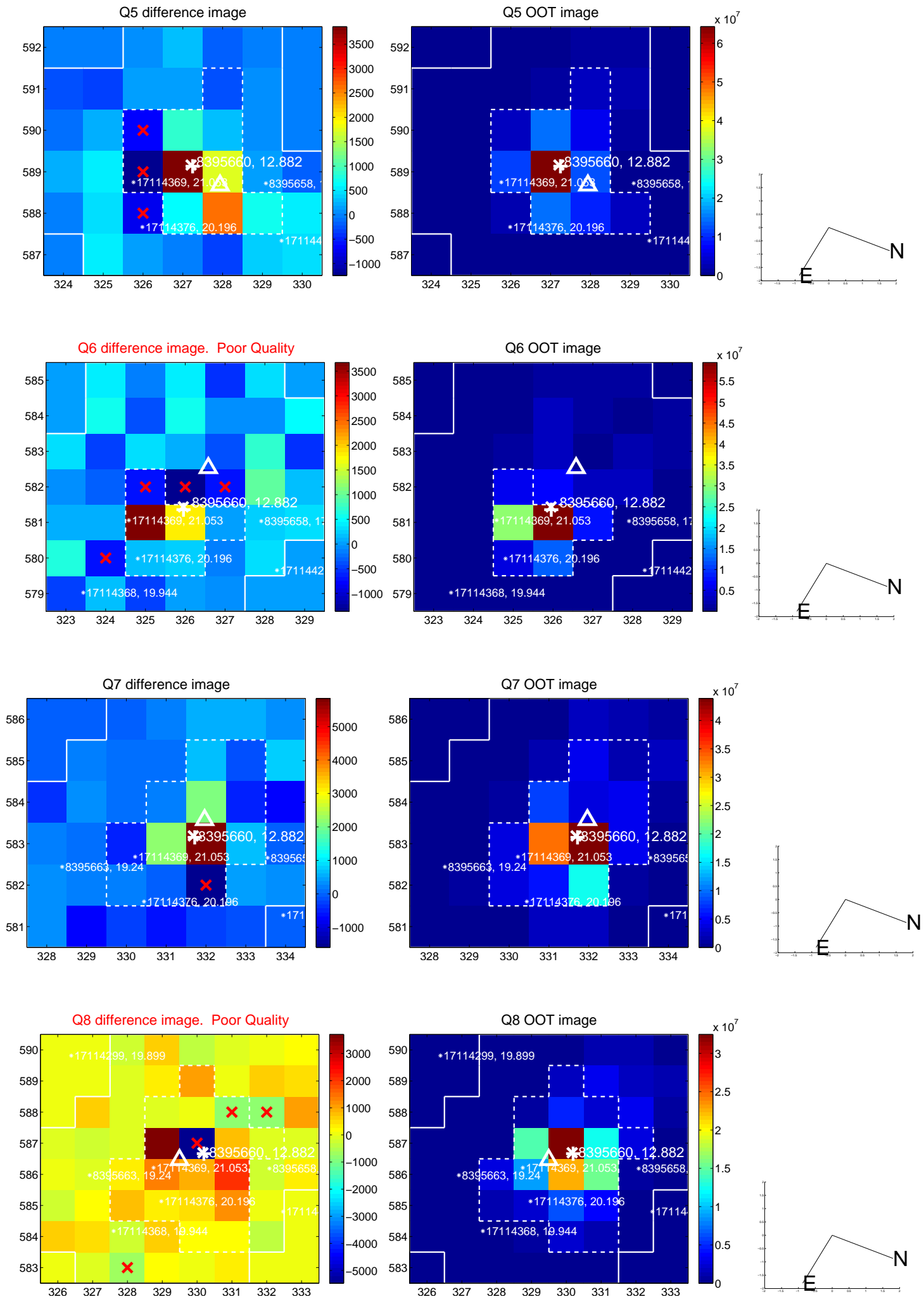


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

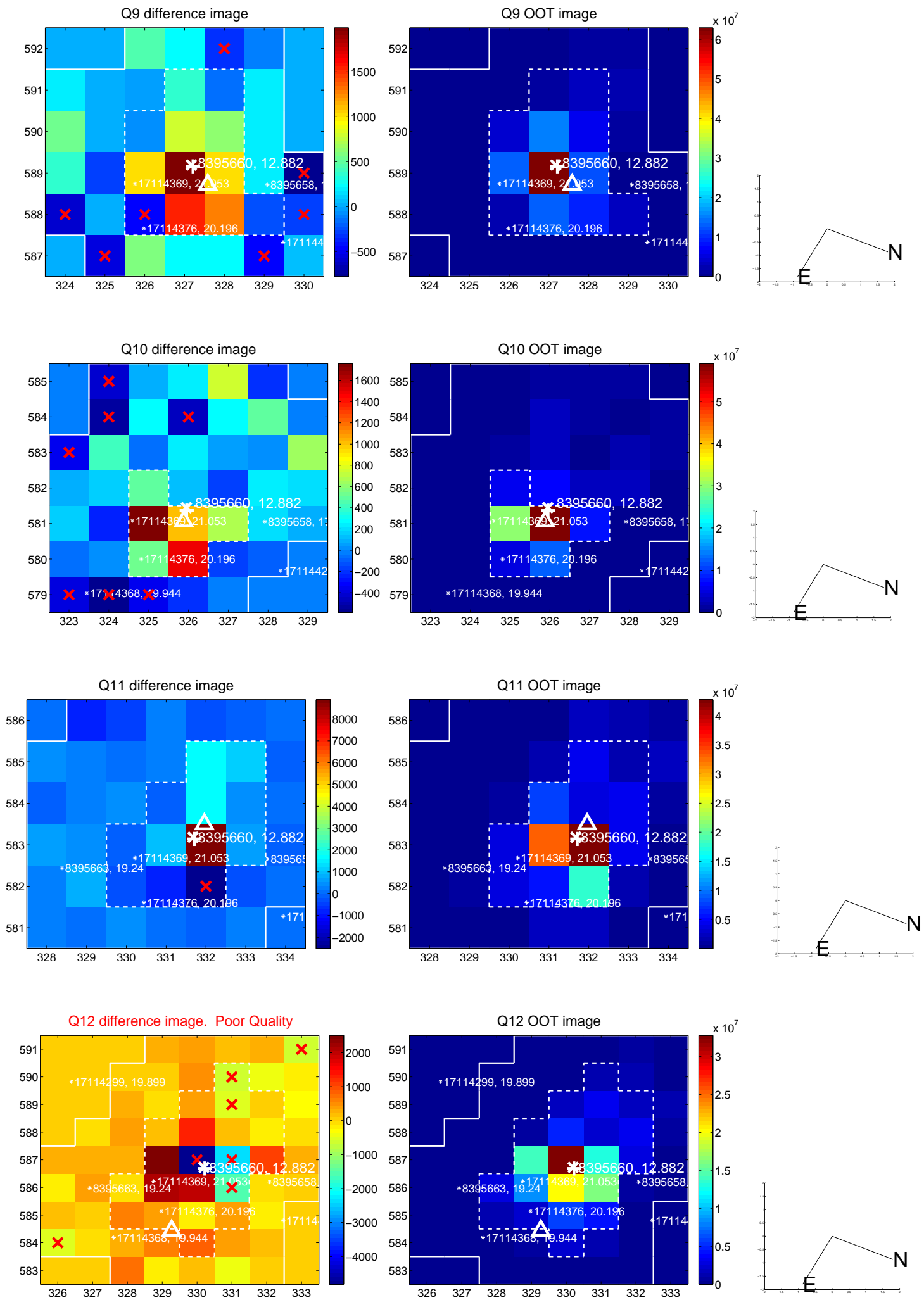
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



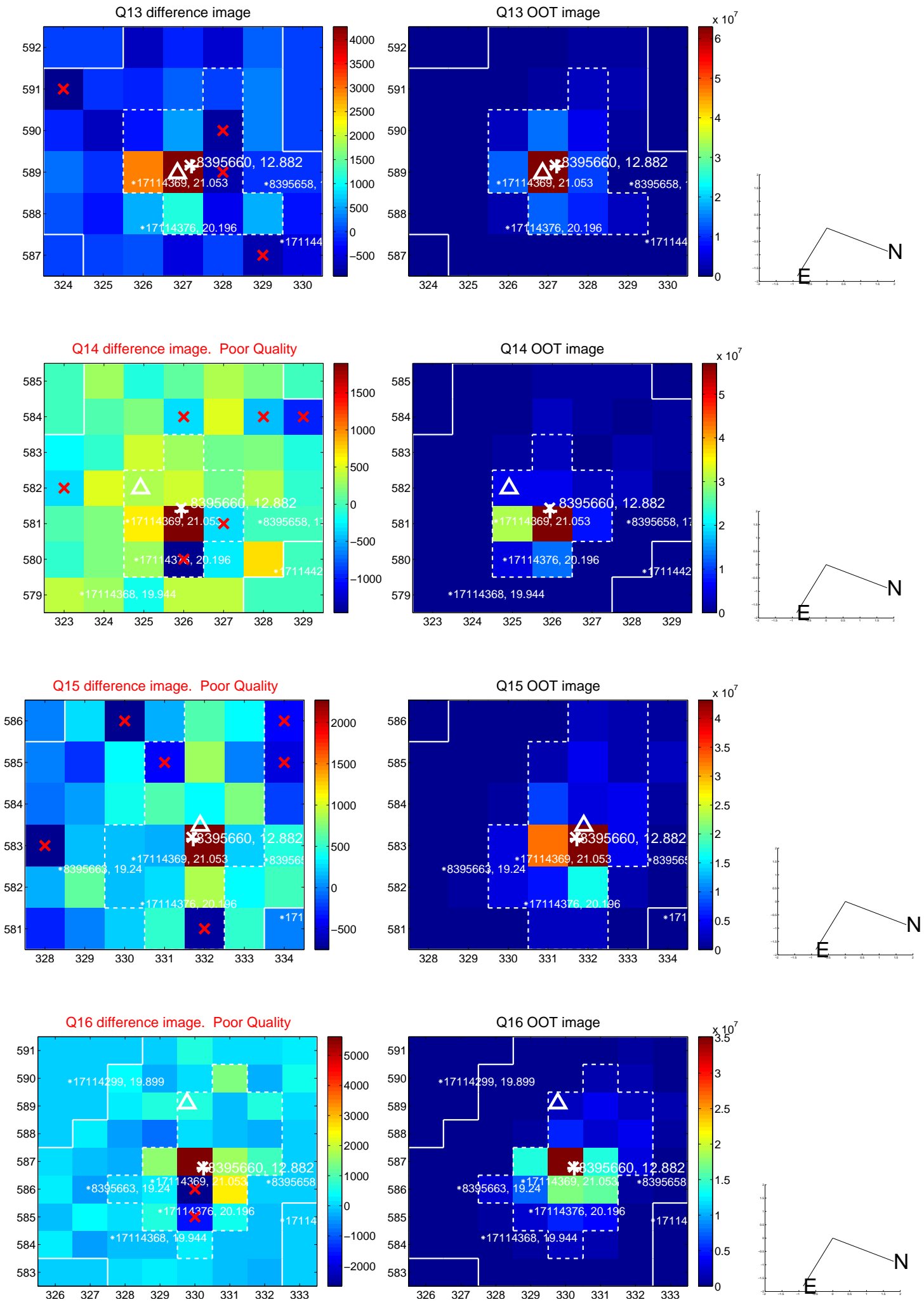
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



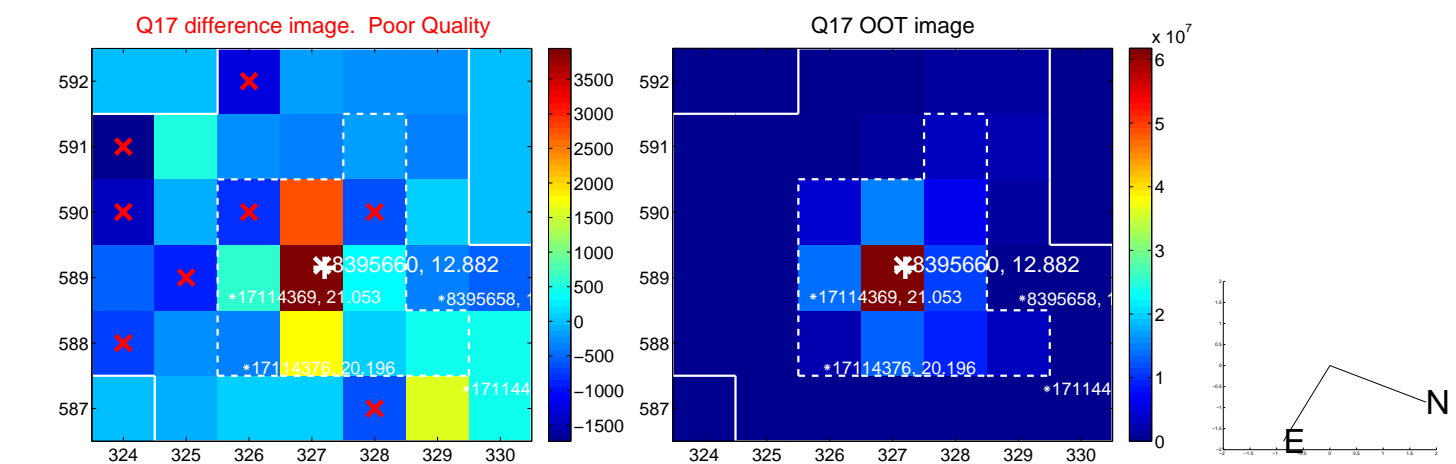
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



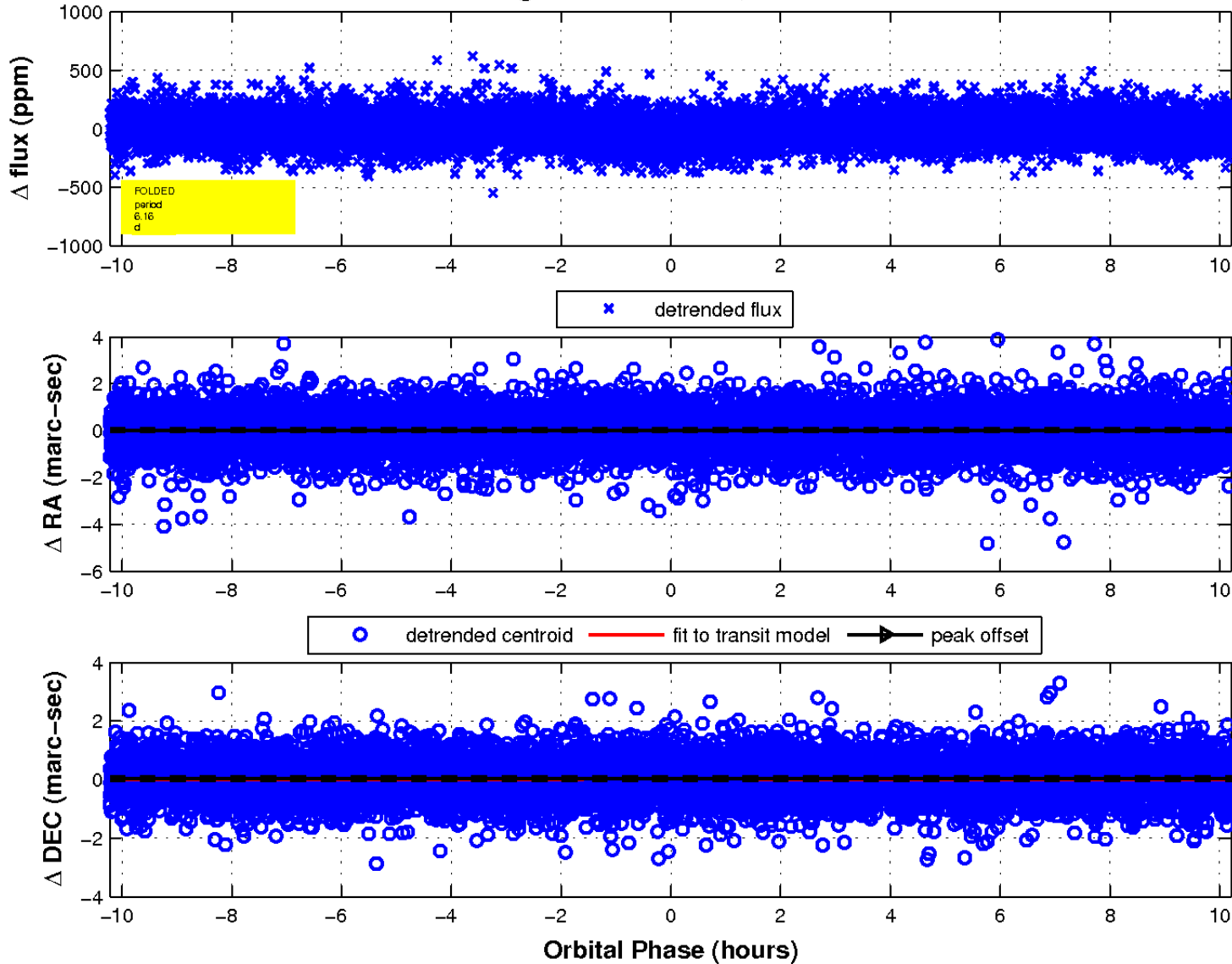
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

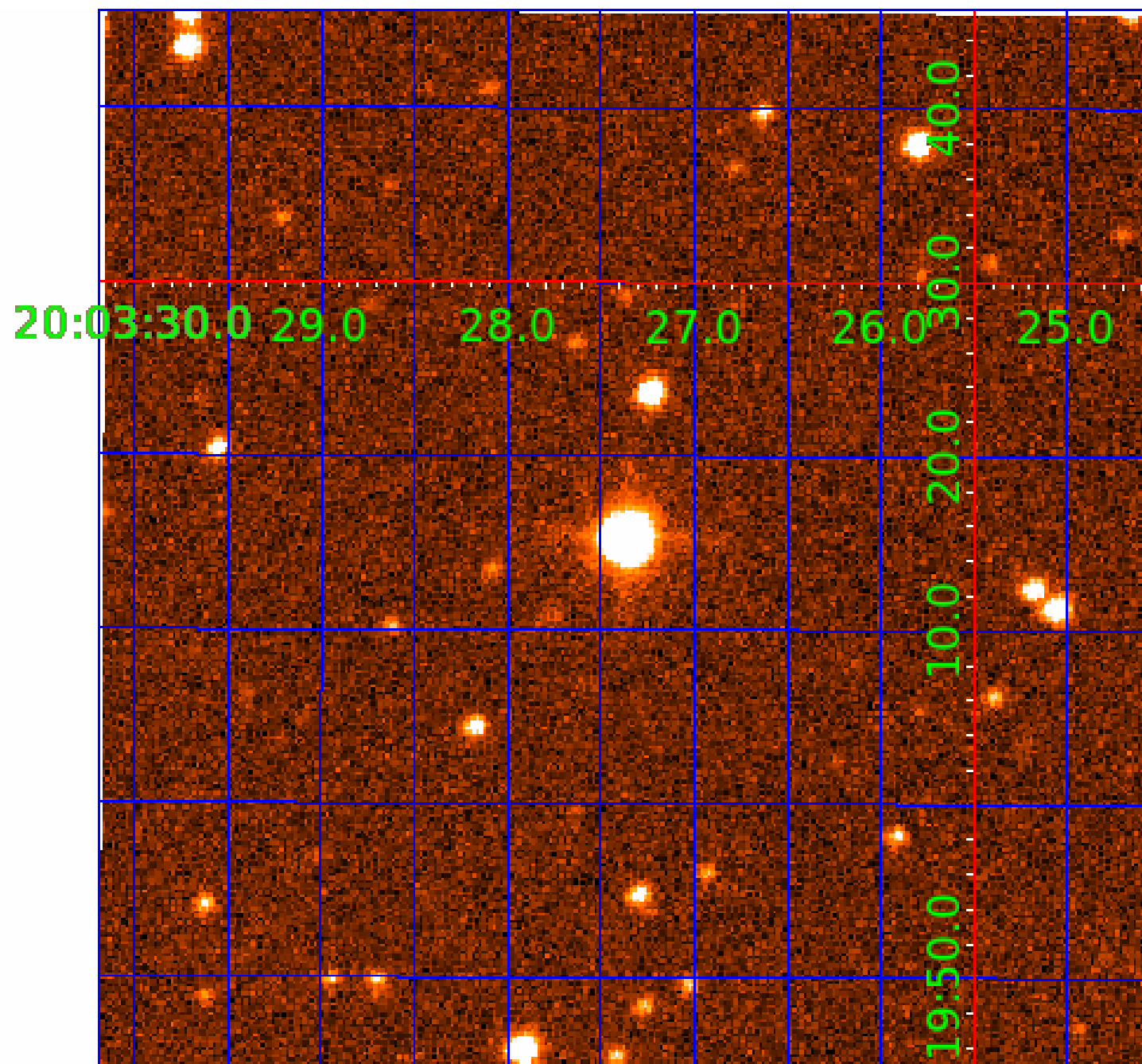


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 008395660

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})
008395660-01	OBS	0116.01	13.570782	136.279321	517.9	3.460	76.8	78.8	1.01	5854	2.73	89.82
008395660-02	OBS	0116.02	43.844429	151.934566	613.4	6.865	65.6	65.2	1.01	5854	2.90	18.80
008395660-03	OBS	0116.03	6.164839	135.646210	55.1	3.406	11.6	12.5	1.01	5854	0.86	257.19
008395660-04	OBS	0116.04	23.980085	147.539111	94.4	4.717	10.9	11.9	1.01	5854	1.17	42.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008395660-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008395660-03	OBS	PC	0.95	0	0	0	0	NO_COMMENT
008395660-04	OBS	PC	0.95	0	0	0	0	NO_COMMENT

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

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

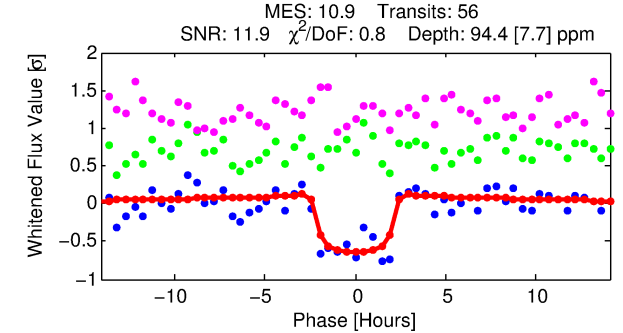
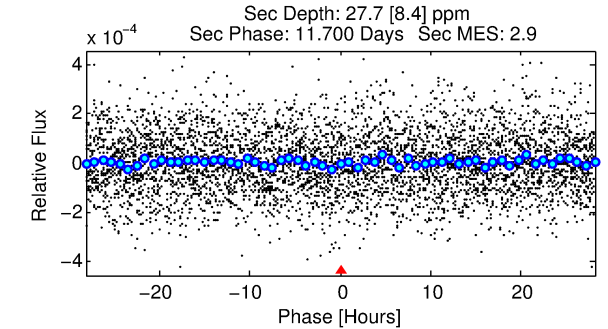
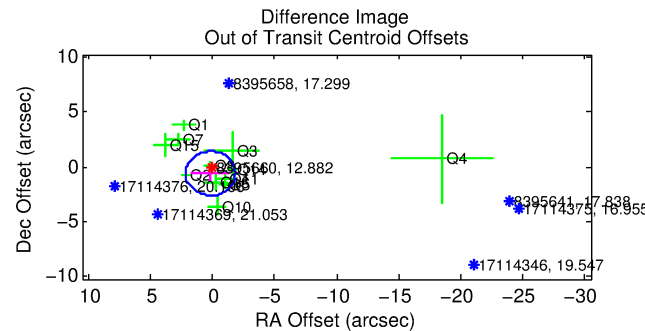
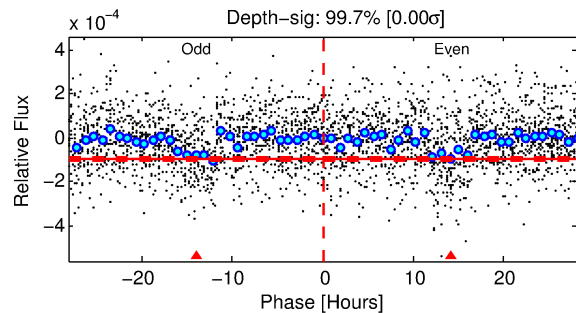
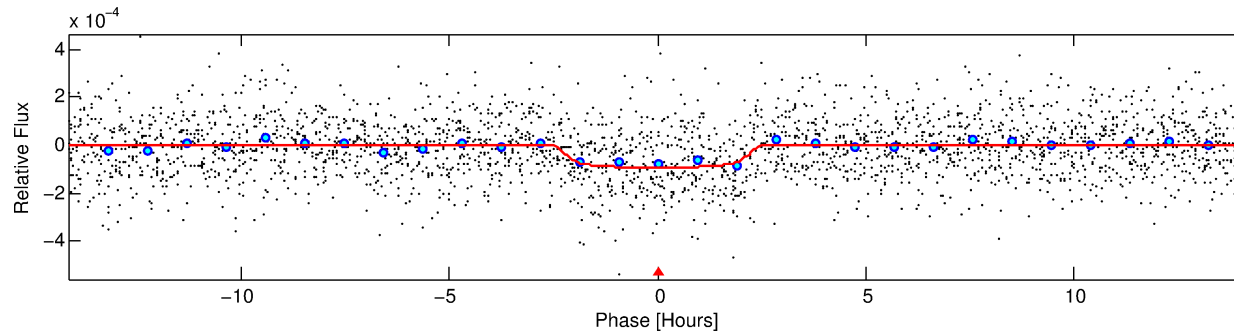
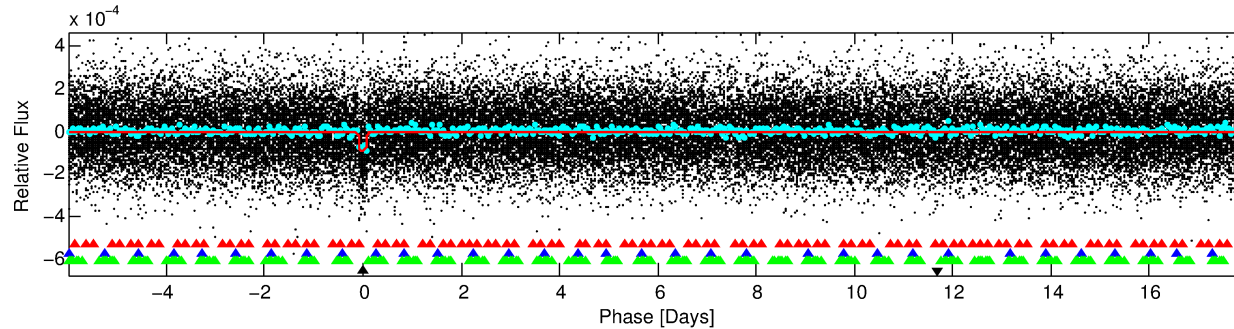
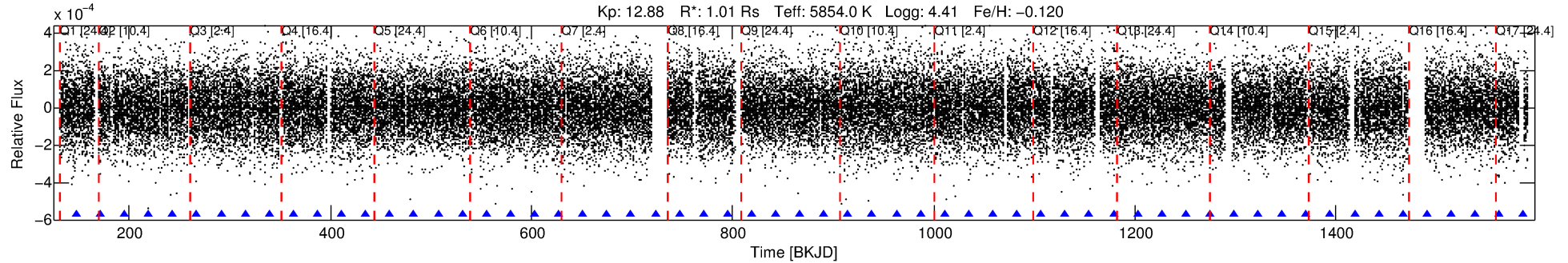
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008395660-04

No Significant Match Found

DV One-Page Summary

KIC: 8395660 Candidate: 4 of 4 Period: 23.980 d
KOI: K00116.04 Name: Kepler-106d Corr: 0.984



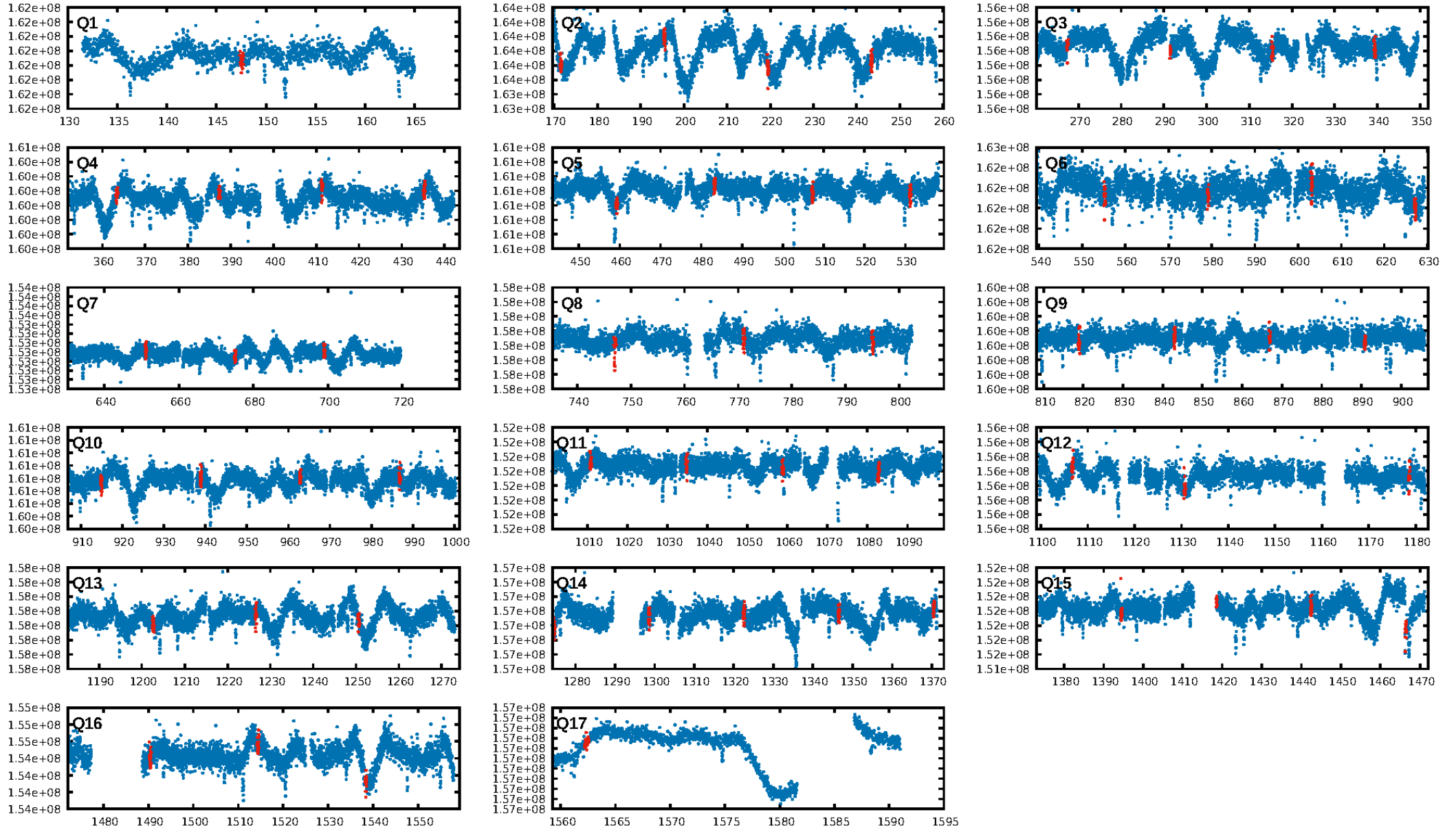
DV Fit Results:

Period = 23.98009 [0.00020] d
Epoch = 147.5391 [0.0072] BKJD
Rp/R* = 0.0106 [0.0040]
a/R* = 17.74 [33.36]
b = 0.90 [0.40]
Seff = 42.04 [8.94]
Teq = 649 [35] K
Rp = 1.17 [0.47] Re
a = 0.1601 [0.0211] AU
Ag = 287.66 [240.02] [1.19 σ]
Teff = 4134 [842] K [4.14 σ]

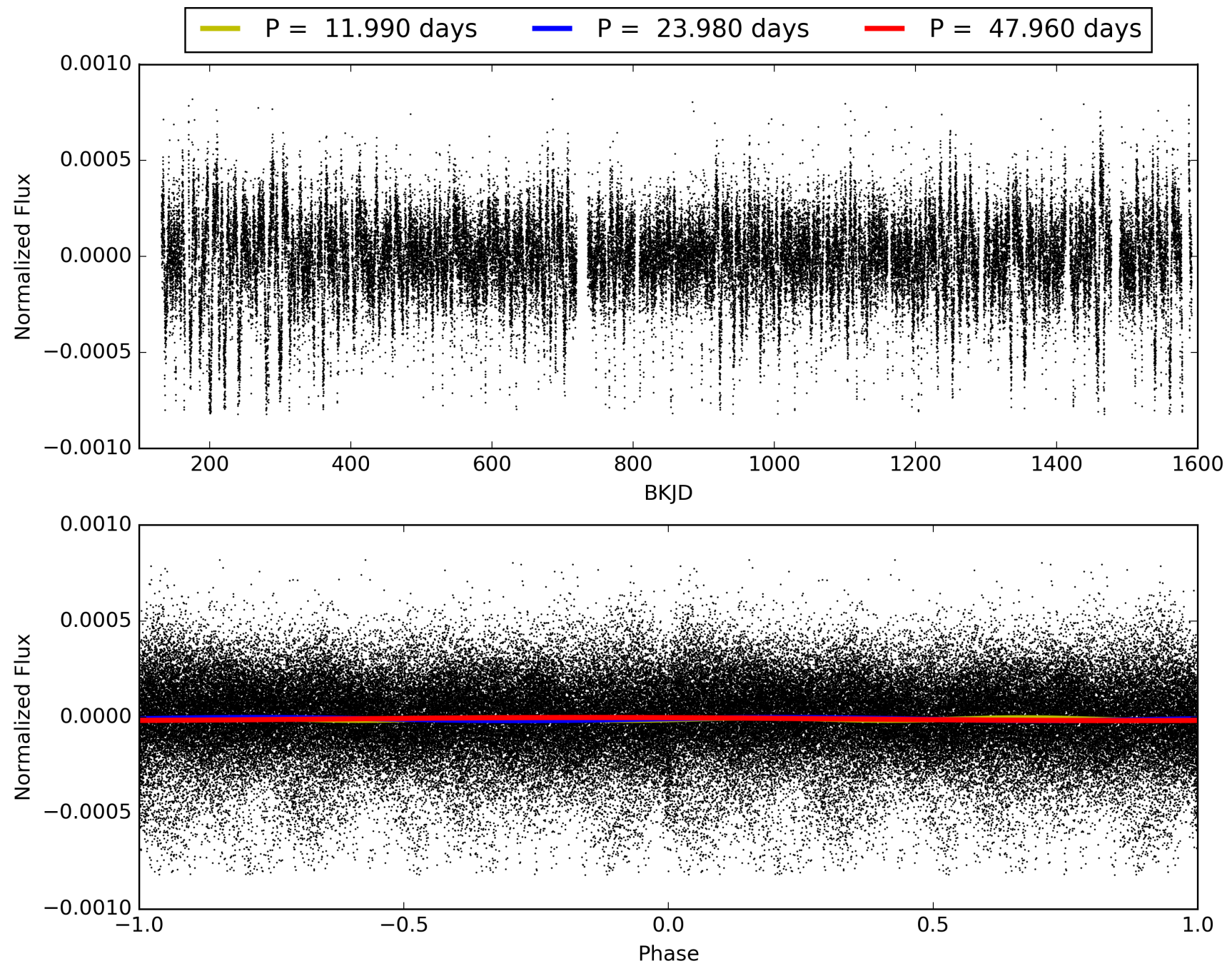
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.71 σ]
LongPeriod-sig: 100.0% [57.24 σ]
ModelChiSquare2-sig: 96.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.62e-27
RollingBand-fgt: 1.00 [54/54]
GhostDiagnostic-chr: 317.6
Centroid-sig: 9.6%
Centroid-so: 1.774 arcsec [1.65 σ]
OotOffset-rm: 0.635 arcsec [0.95 σ]
KicOffset-rm: 0.533 arcsec [0.57 σ]
OotOffset-st: 3/4/3/2 [12]
KicOffset-st: 3/4/3/2 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.88 [15/17]

TCE 008395660-04, PDC Light Curves

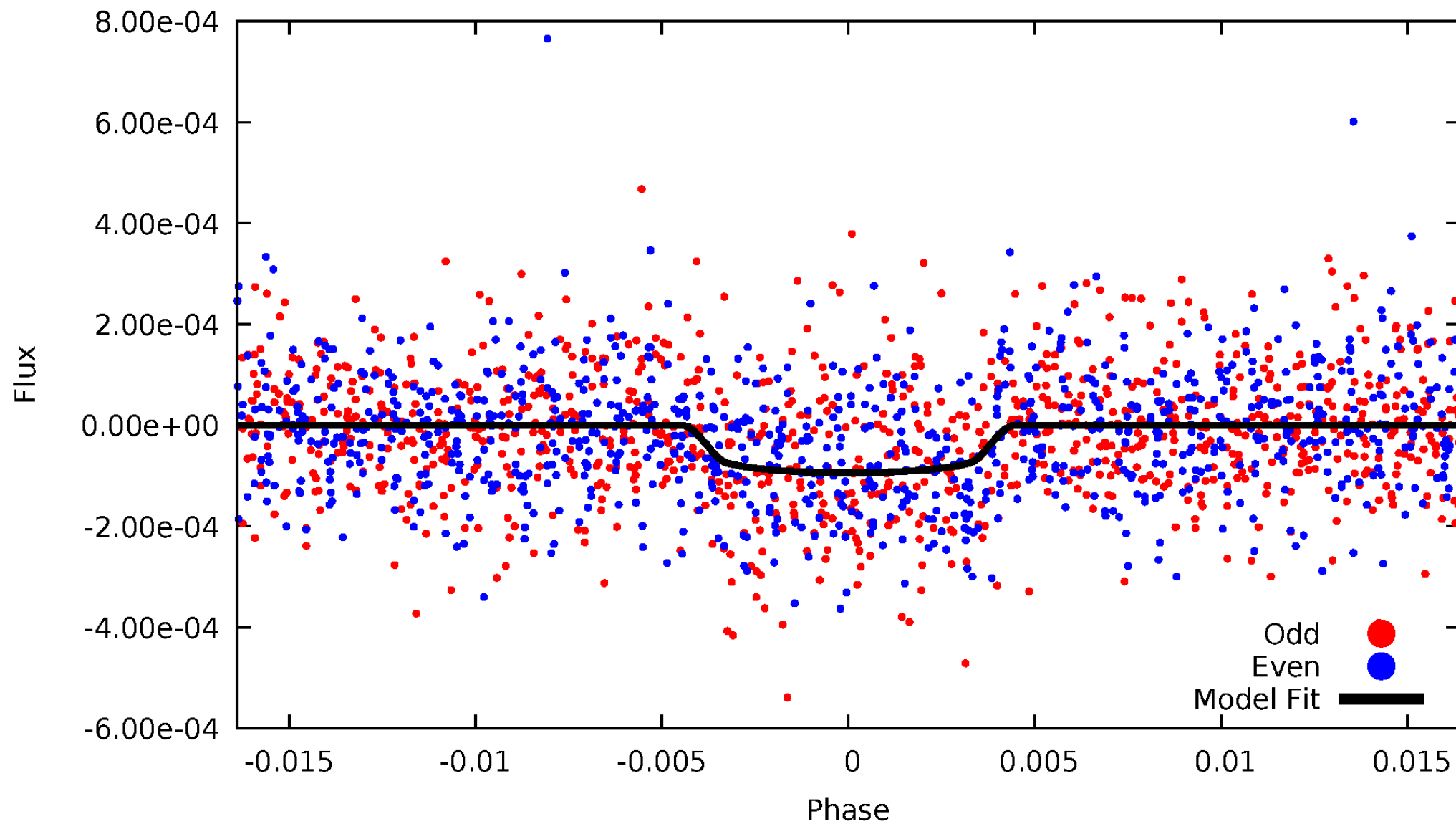


TCE 008395660-04



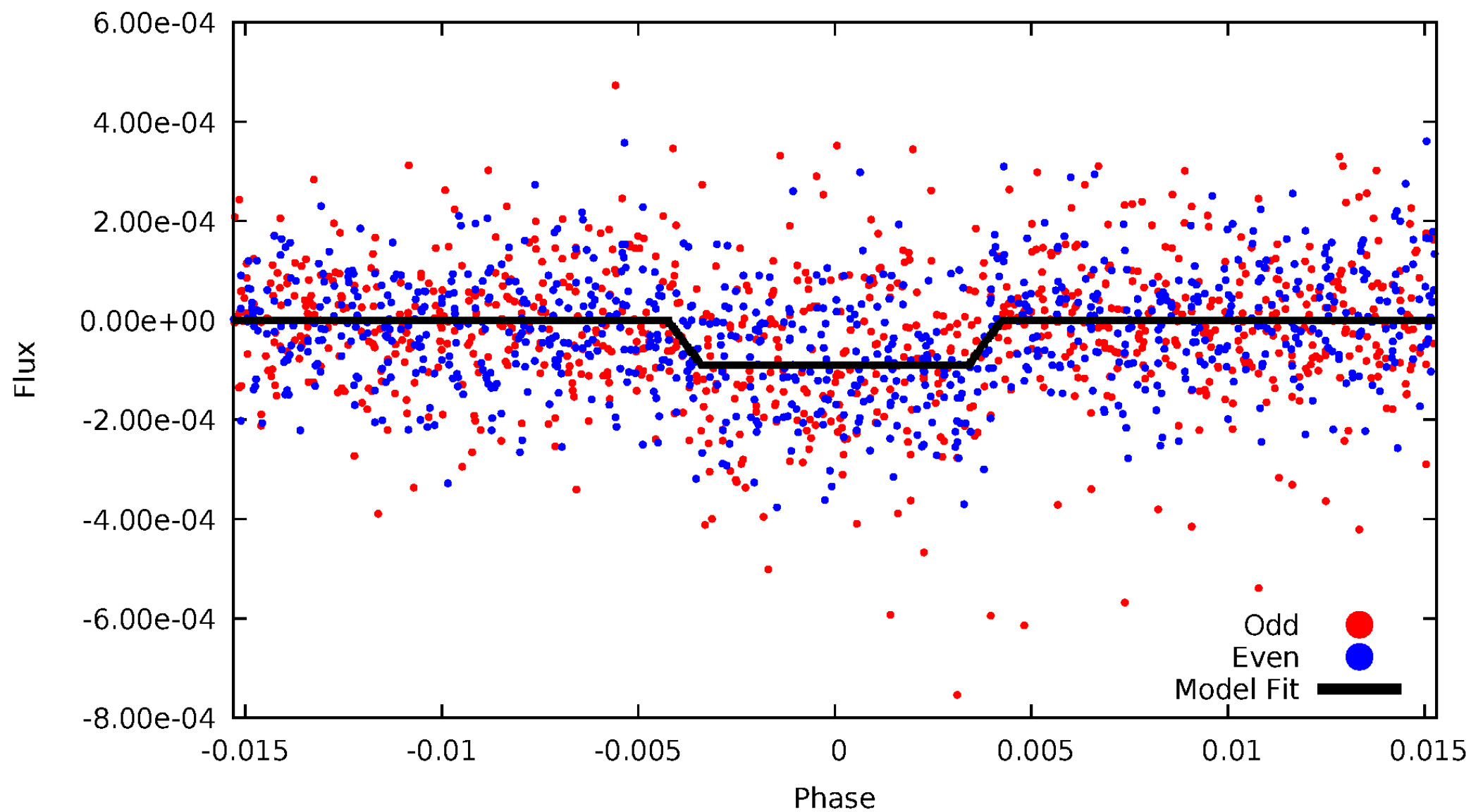
DV Odd/Even

TCE 008395660-04



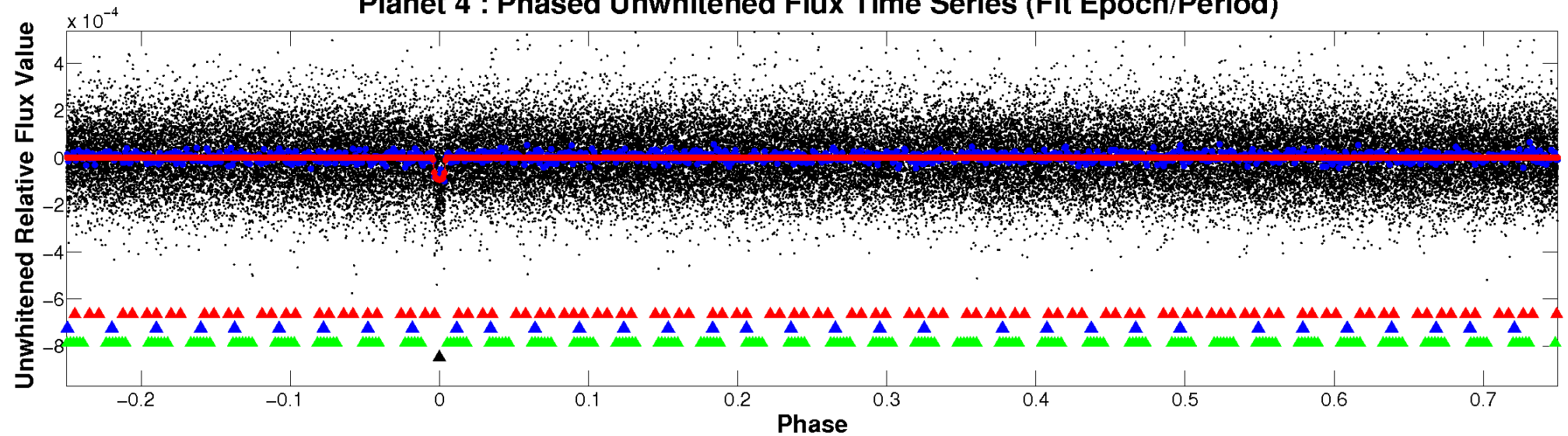
ALT Odd/Even

TCE 008395660-04

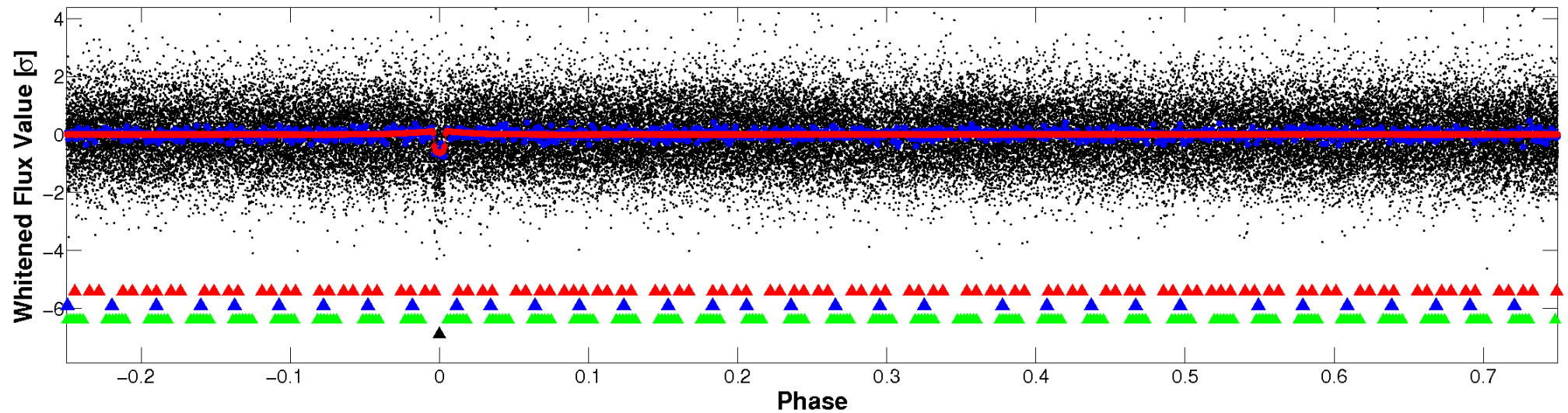


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

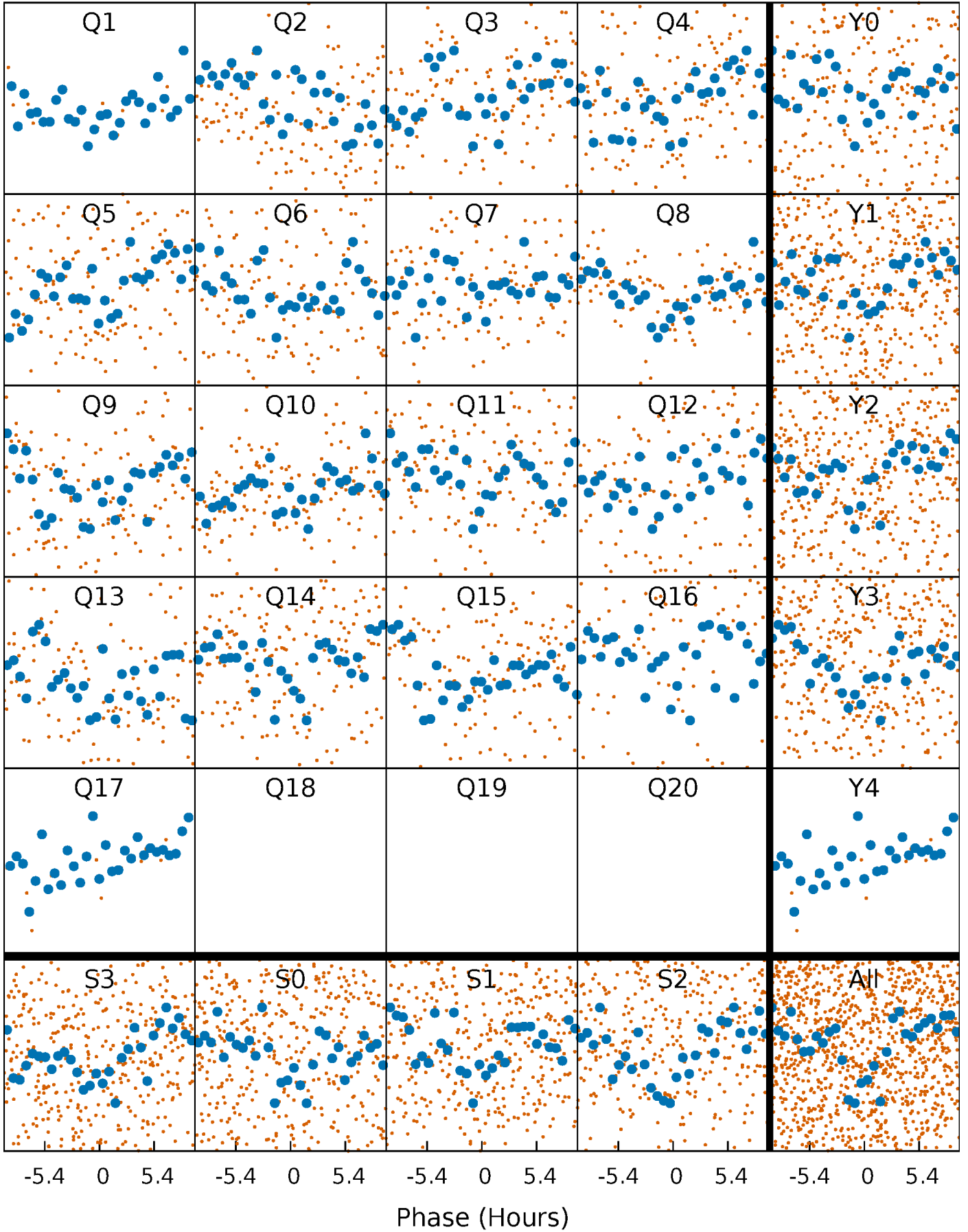


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



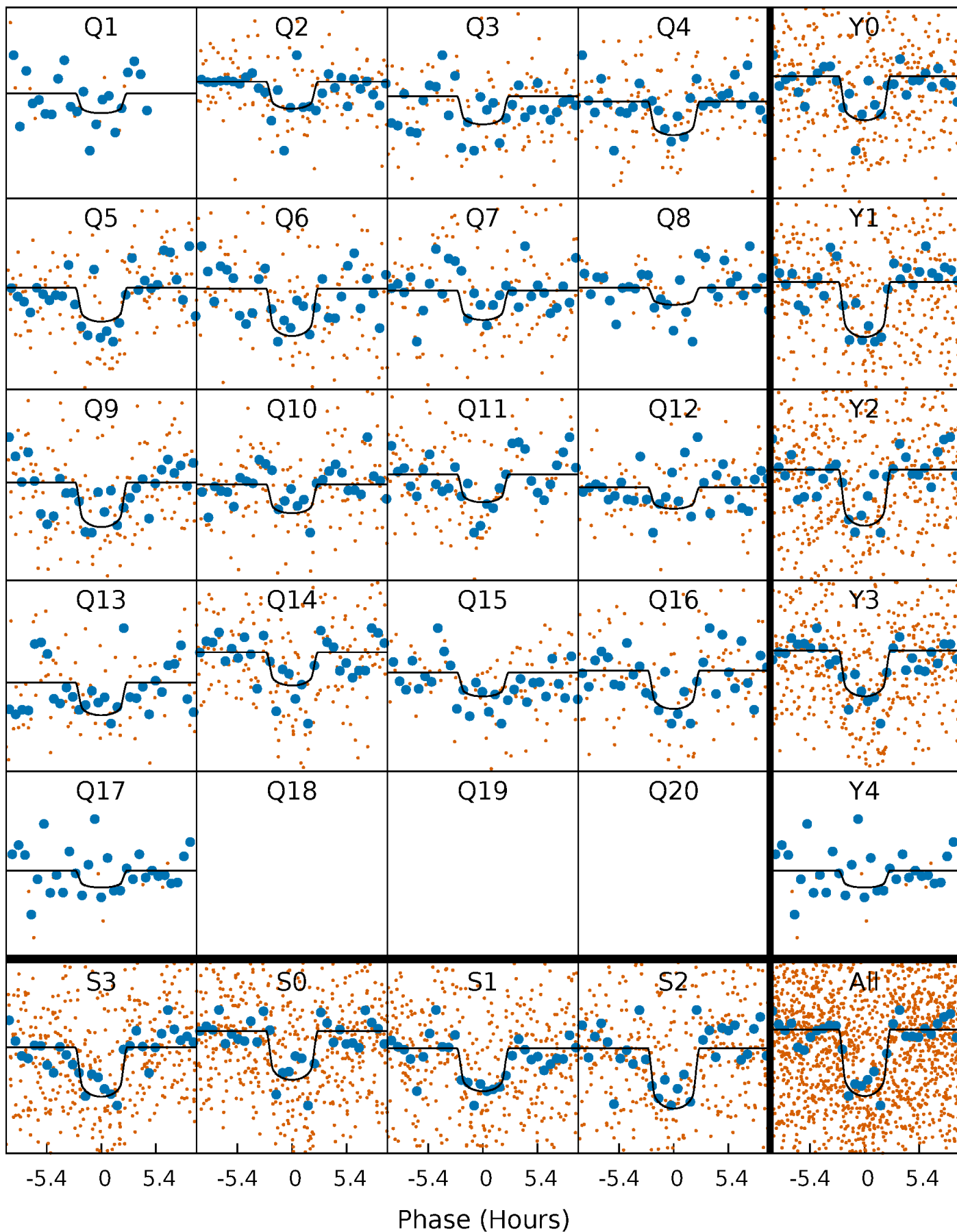
PDC Quarter-Phased Transit Curves

TCE 008395660-04 P= 23.980085 Days $T_0=147.539111$ (BKJD)



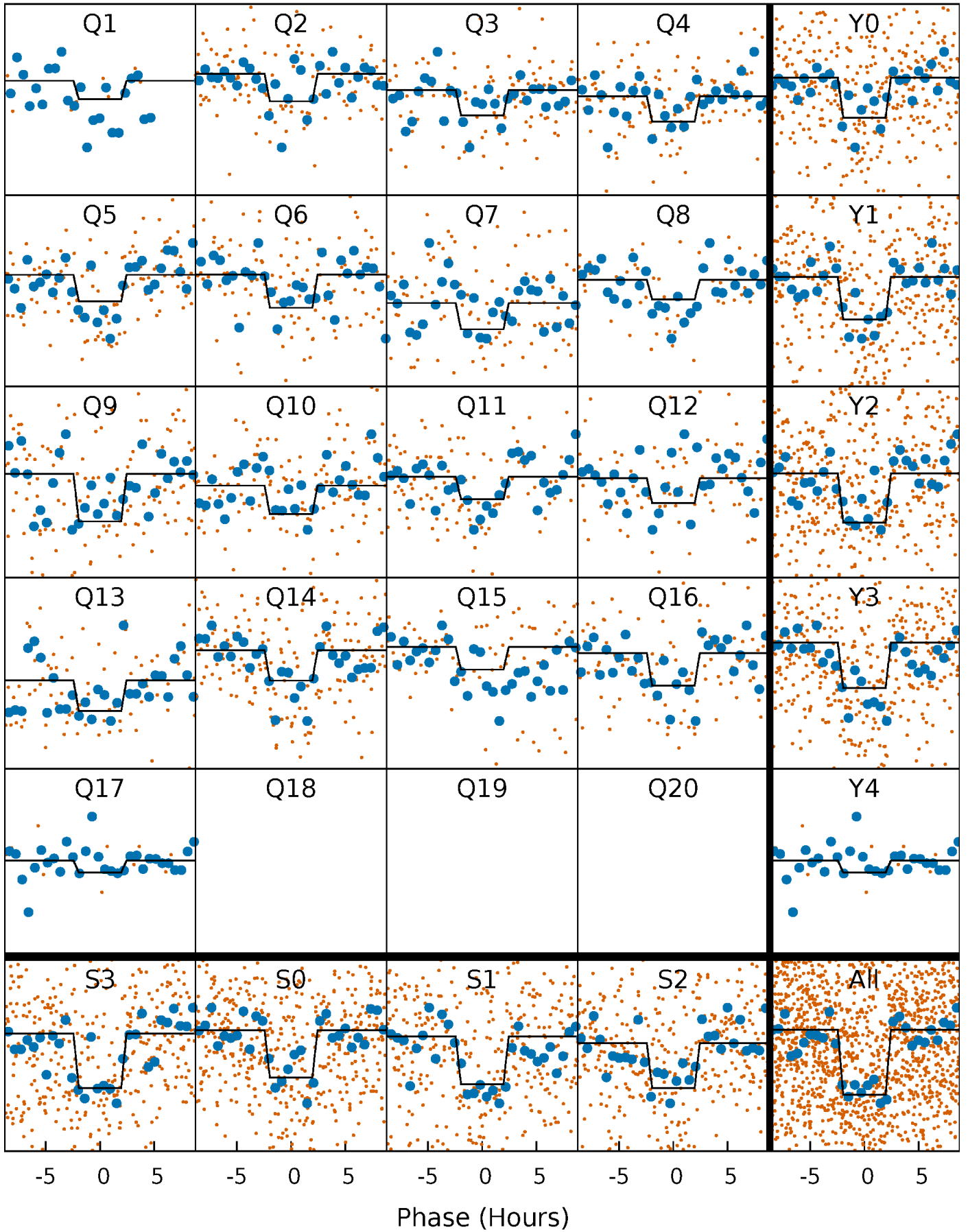
DV Quarter-Phased Transit Curves

TCE 008395660-04 P= 23.980085 Days $T_0=147.539111$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

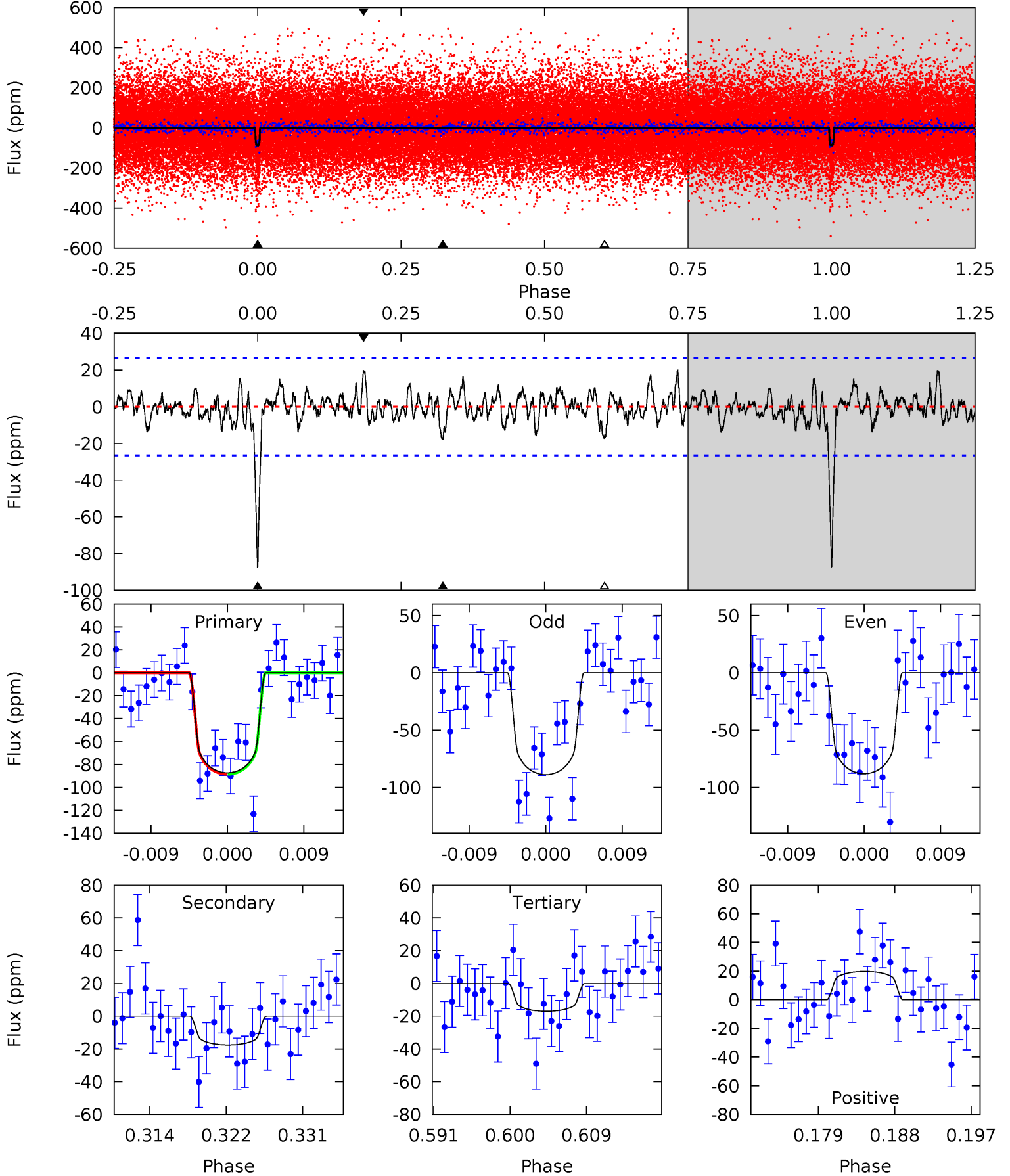
TCE 008395660-04 P= 23.980071 Days $T_0=147.540632$ (BKJD)



DV Model-Shift Uniqueness Test

008395660-04, P = 23.980085 Days, E = 123.559026 Days

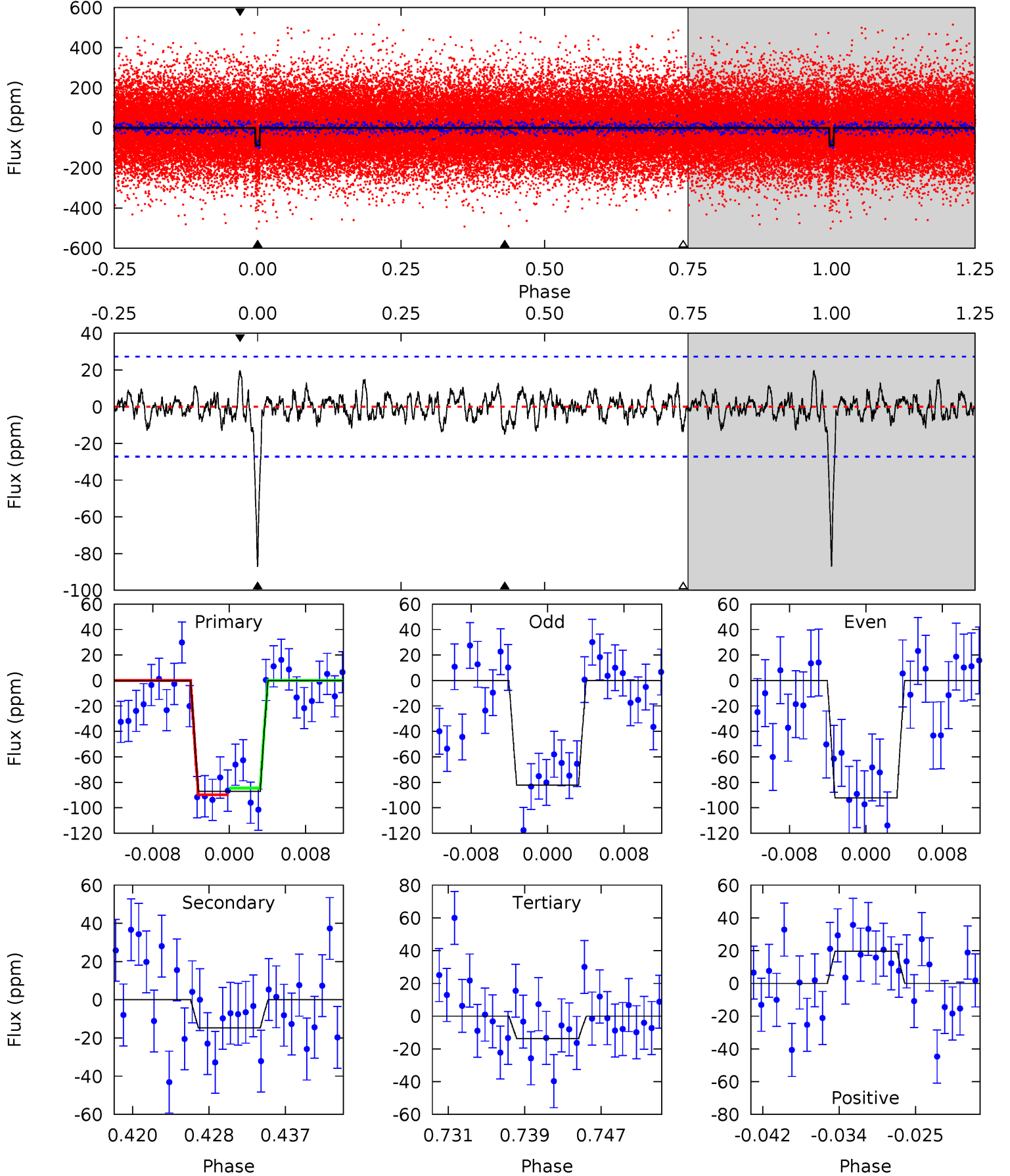
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	3.35	3.24	3.77	5.05	2.61	1.15	13.4	12.8	0.12	-0.41	0.08	1.08	0.18	0.00



Alt Model-Shift Uniqueness Test

008395660-04, P = 23.980071 Days, E = 123.560561 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	2.74	2.55	3.64	5.06	2.64	0.99	13.6	12.5	0.18	-0.91	0.93	1.13	0.18	0.49



Stellar Parameters For KIC 008395660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5854^{+105}_{-117}	$4.406^{+0.090}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.012^{+0.154}_{-0.103}$	$0.951^{+0.070}_{-0.063}$	$1.294^{+0.464}_{-0.402}$
	+2%/-2%	+2%/-2%	+125%/-125%	+15%/-10%	+7%/-7%	+36%/-31%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 008395660-04 / KOI 0116.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-18 ± 5	$1.14^{+0.46}_{-0.41}$	909^{+41}_{-32}	4042^{+785}_{-465}	187^{+287}_{-96}
Alt.	-15 ± 5	$1.07^{+0.46}_{-0.46}$	910^{+38}_{-32}	3994^{+974}_{-503}	174^{+378}_{-95}

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

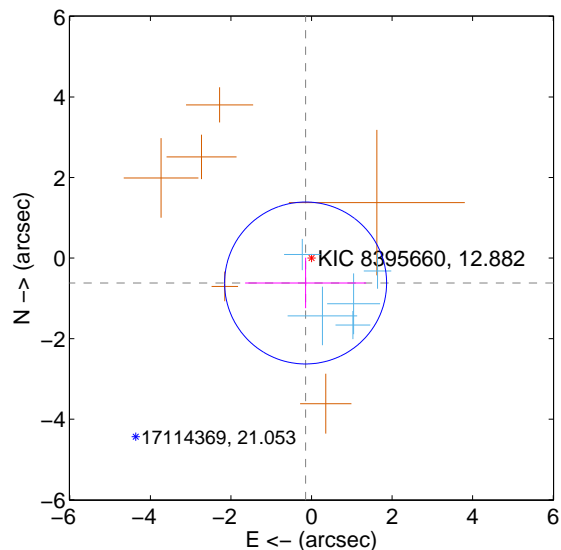
Supplemental centroid analysis for 008395660-04. Kepler magnitude: 12.88. Transit SNR 11.88

There are 5 quarters with good PRF difference image offsets

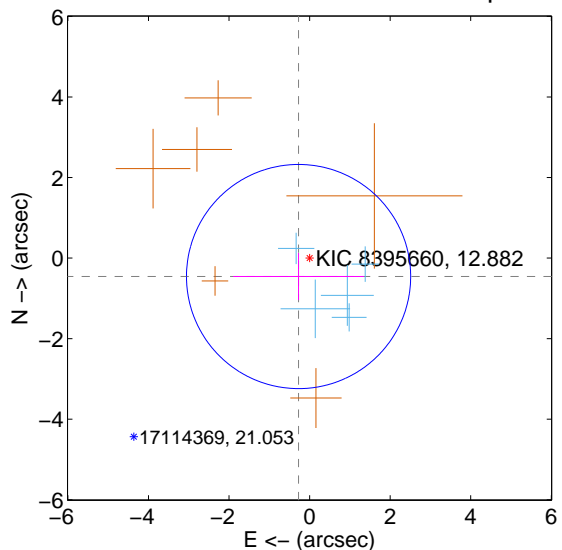
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.635 ± 0.670	0.95	0.147 ± 1.500	-0.618 ± 0.627
PRF-fit source offset from KIC position	0.533 ± 0.928	0.57	0.274 ± 1.621	-0.458 ± 0.584
photometric centroid source offset	1.77 ± 1.08	1.65	1.23 ± 1.18	1.28 ± 0.97

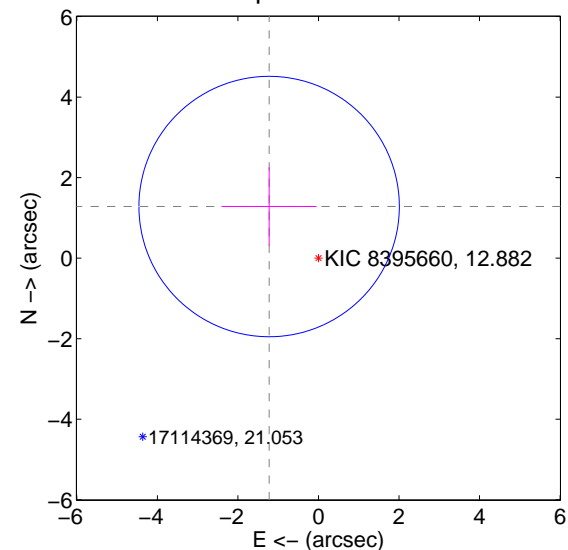
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

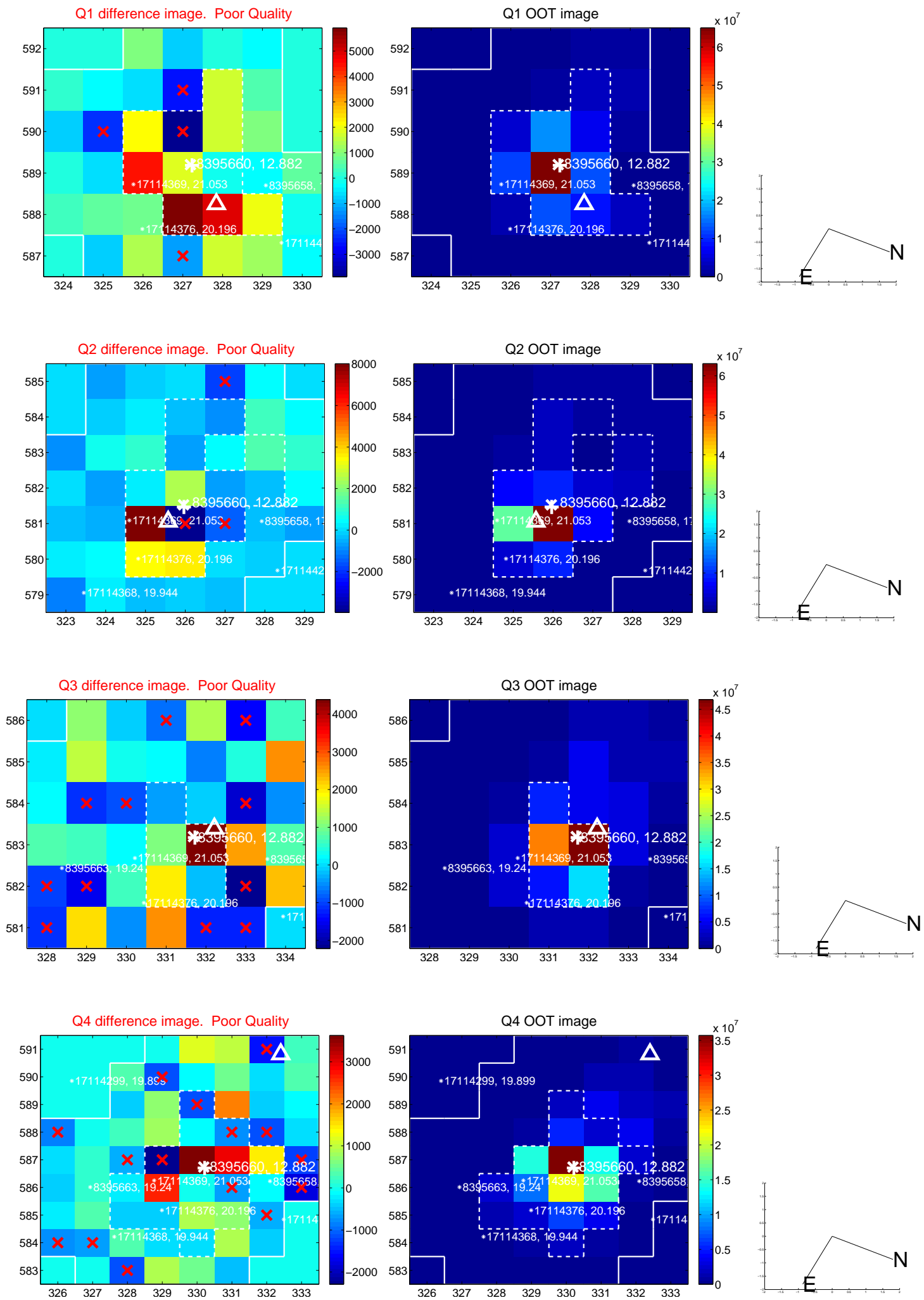


offset from photometric centroids

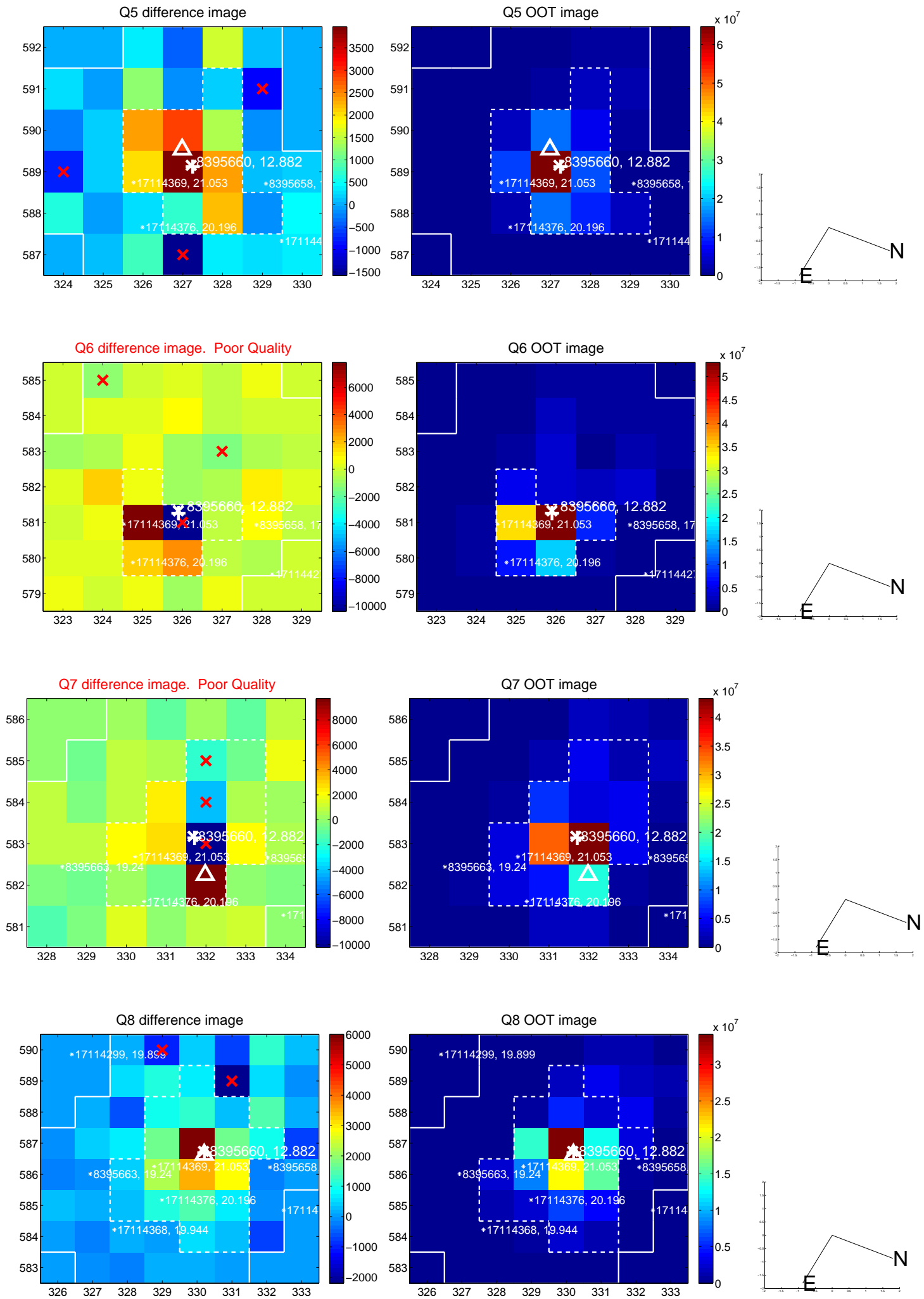


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

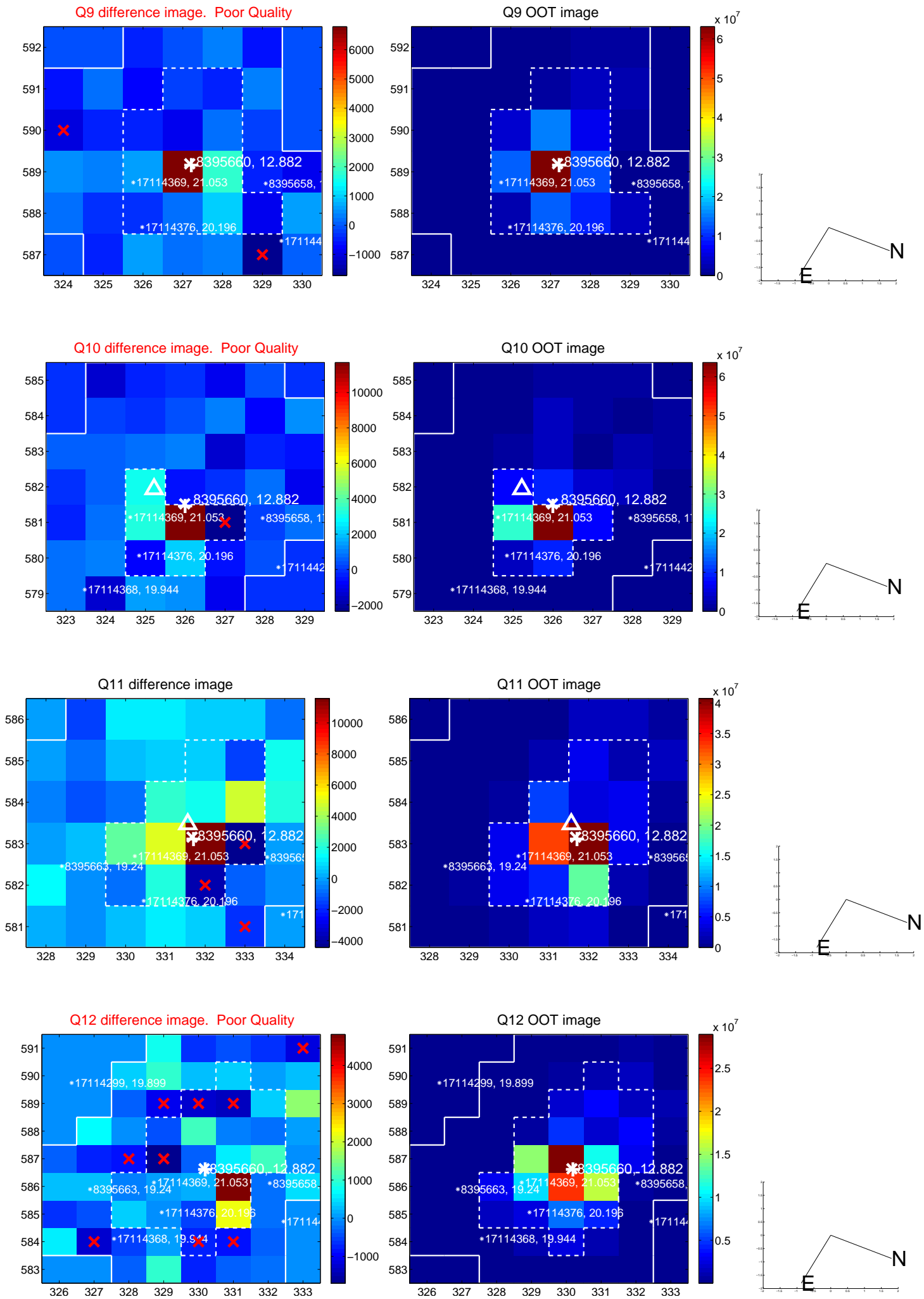
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



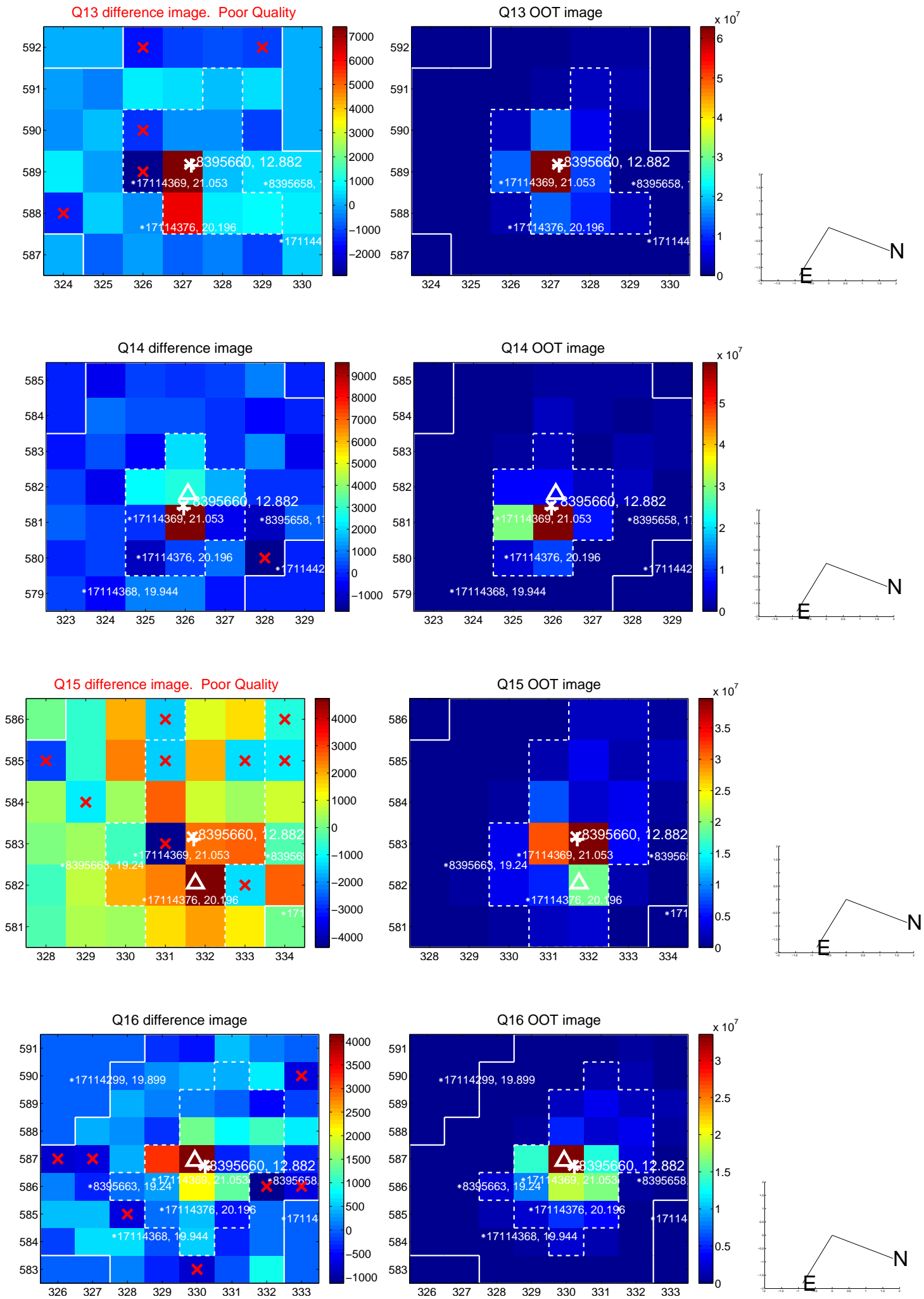
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



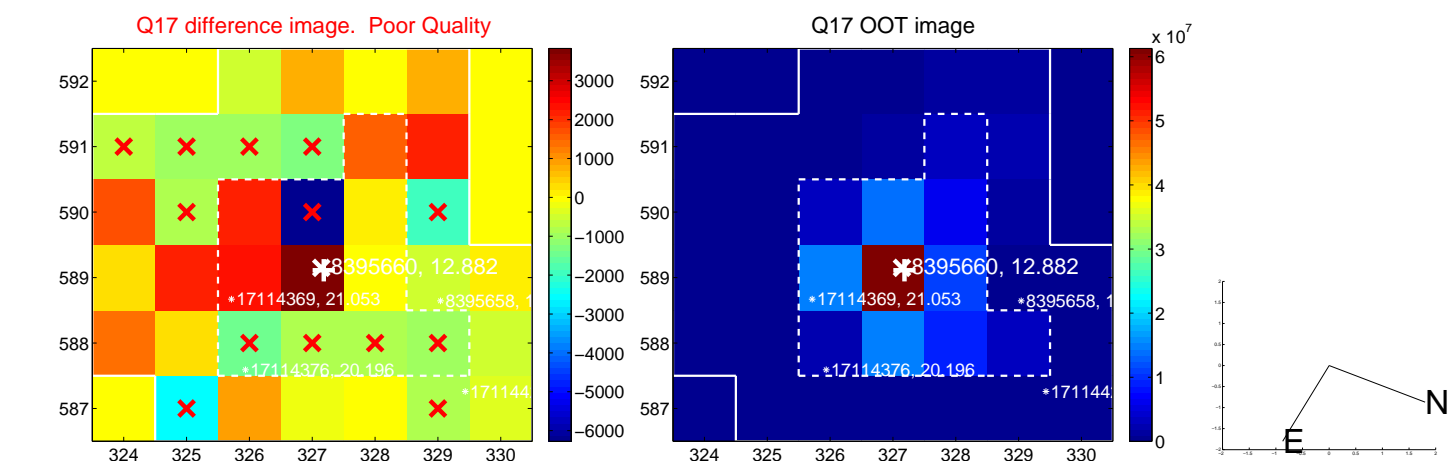
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



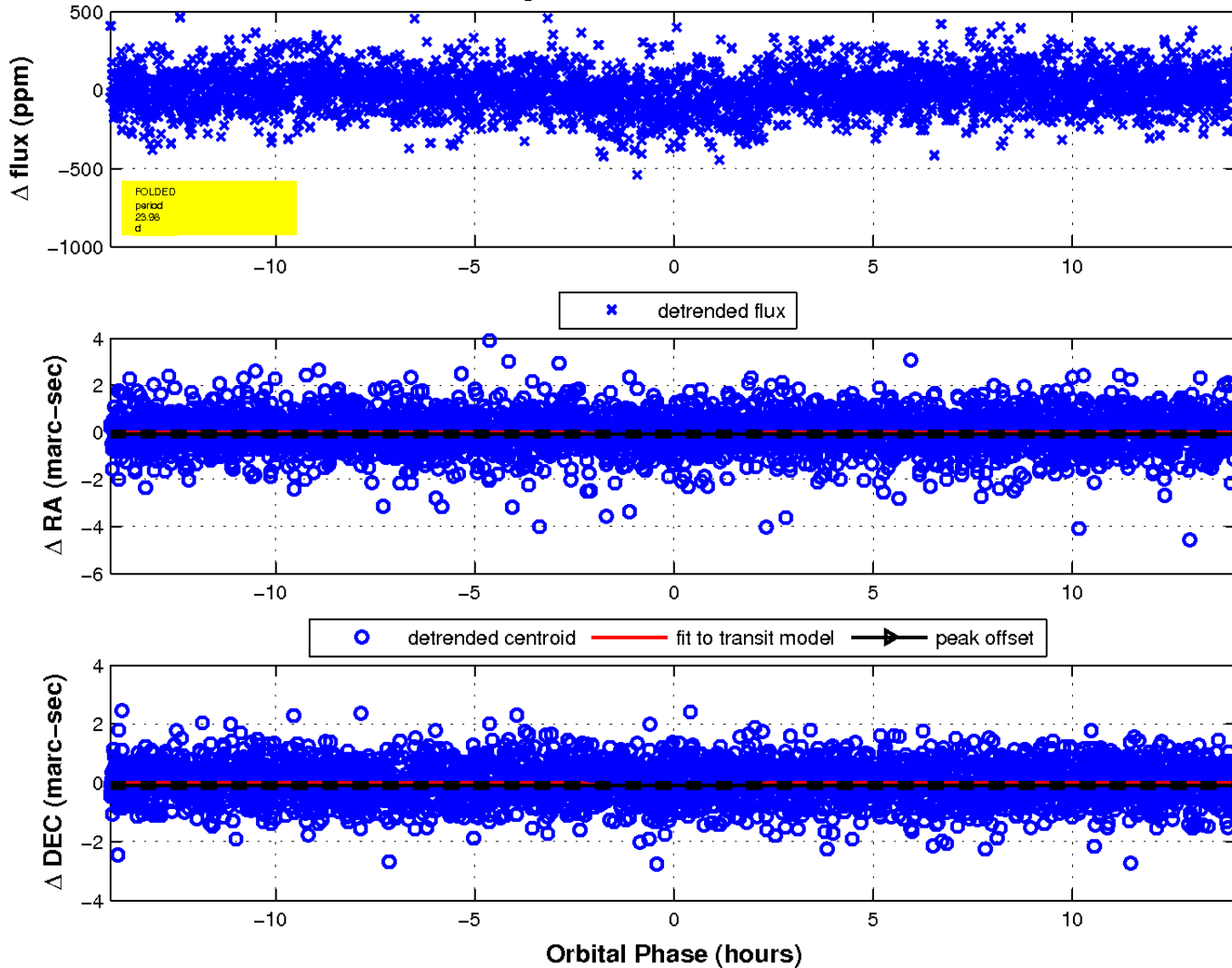
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

