

KIC 009451706

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})
009451706-01	OBS	0271.02	29.393275	150.280858	325.5	7.184	62.0	65.2	1.35	6075	2.74	56.07
009451706-02	OBS	0271.01	48.630315	172.548468	348.5	7.213	49.8	49.8	1.35	6075	2.81	28.65
009451706-03	OBS	0271.03	14.435983	141.509702	97.7	3.557	24.1	25.3	1.35	6075	1.58	144.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009451706-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

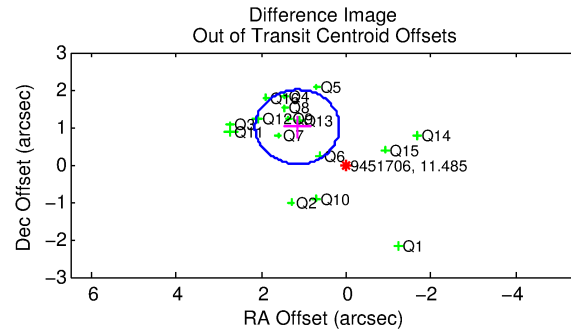
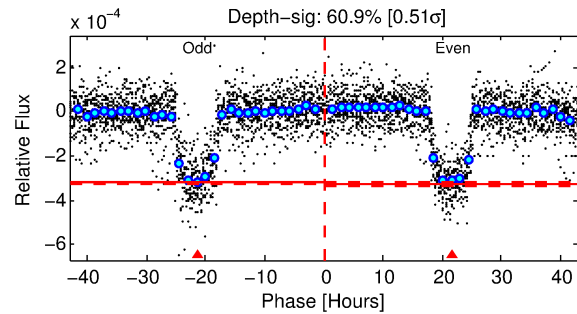
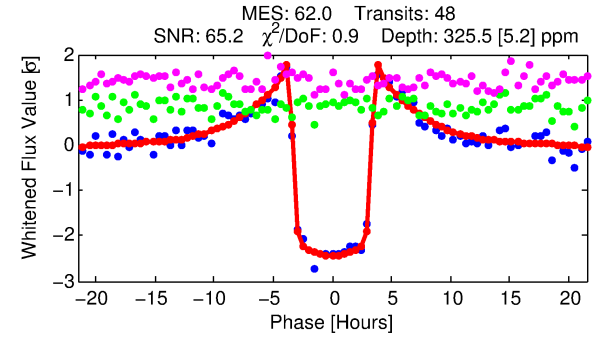
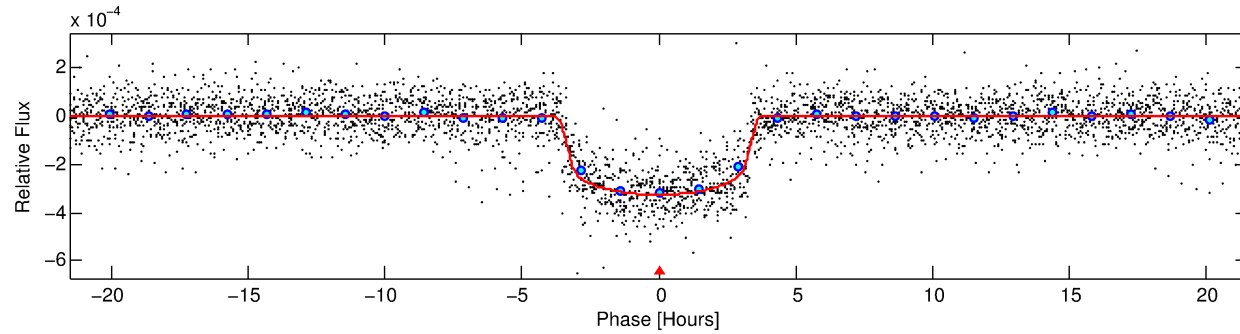
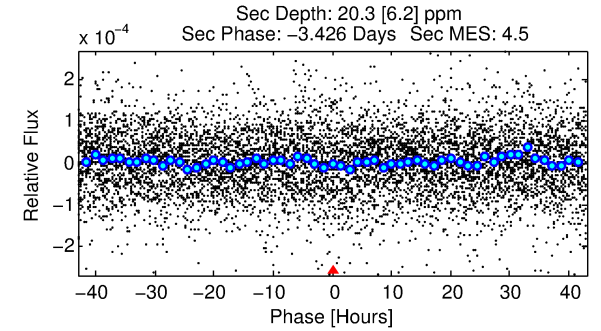
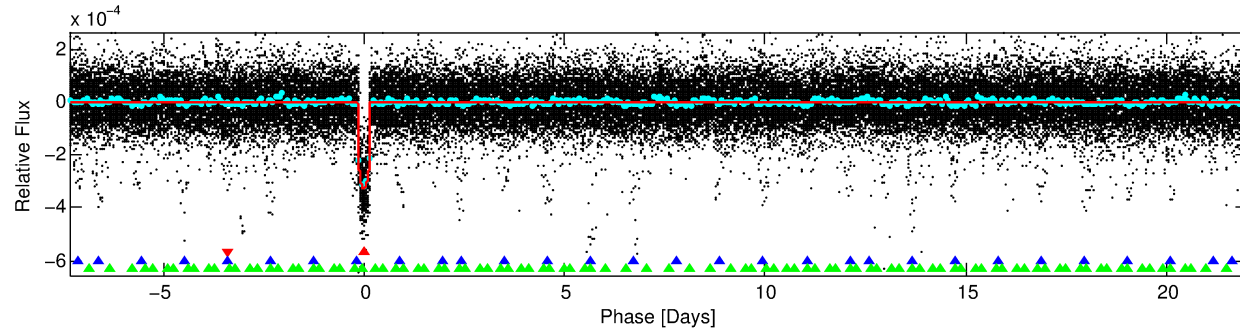
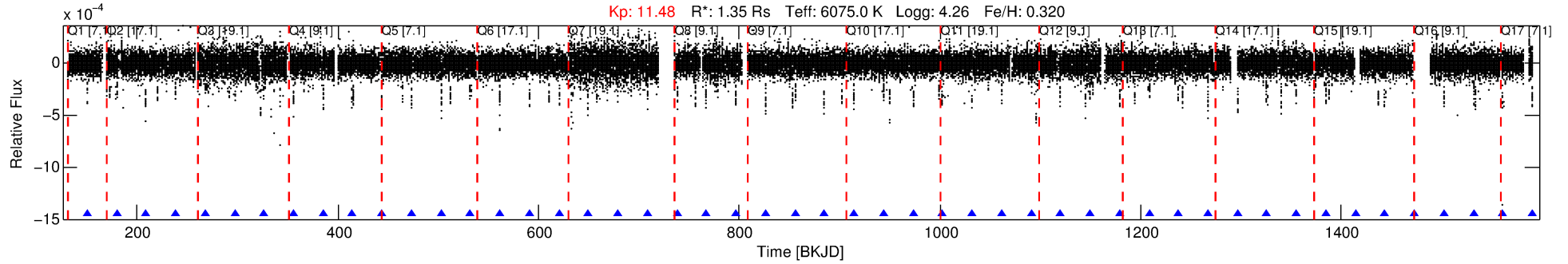
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009451706-01

No Significant Match Found

DV One-Page Summary

KIC: 9451706 Candidate: 1 of 3 Period: 29.393 d
KOI: K00271.02 Name: Kepler-127c Corr: 0.987



DV Fit Results:

Period = 29.39327 [0.00005] d
Epoch = 150.2809 [0.0013] BKJD
Rp/R* = 0.0185 [0.0007]
a/R* = 18.75 [3.01]
b = 0.82 [0.06]
Seff = 56.07 [4.73]
Teff = 698 [15] K
Rp = 2.74 [0.12] Re
a = 0.1995 [0.0040] AU
Ag = 59.30 [18.59] [3.14σ]
Teffp = 2994 [241] K [9.49σ]

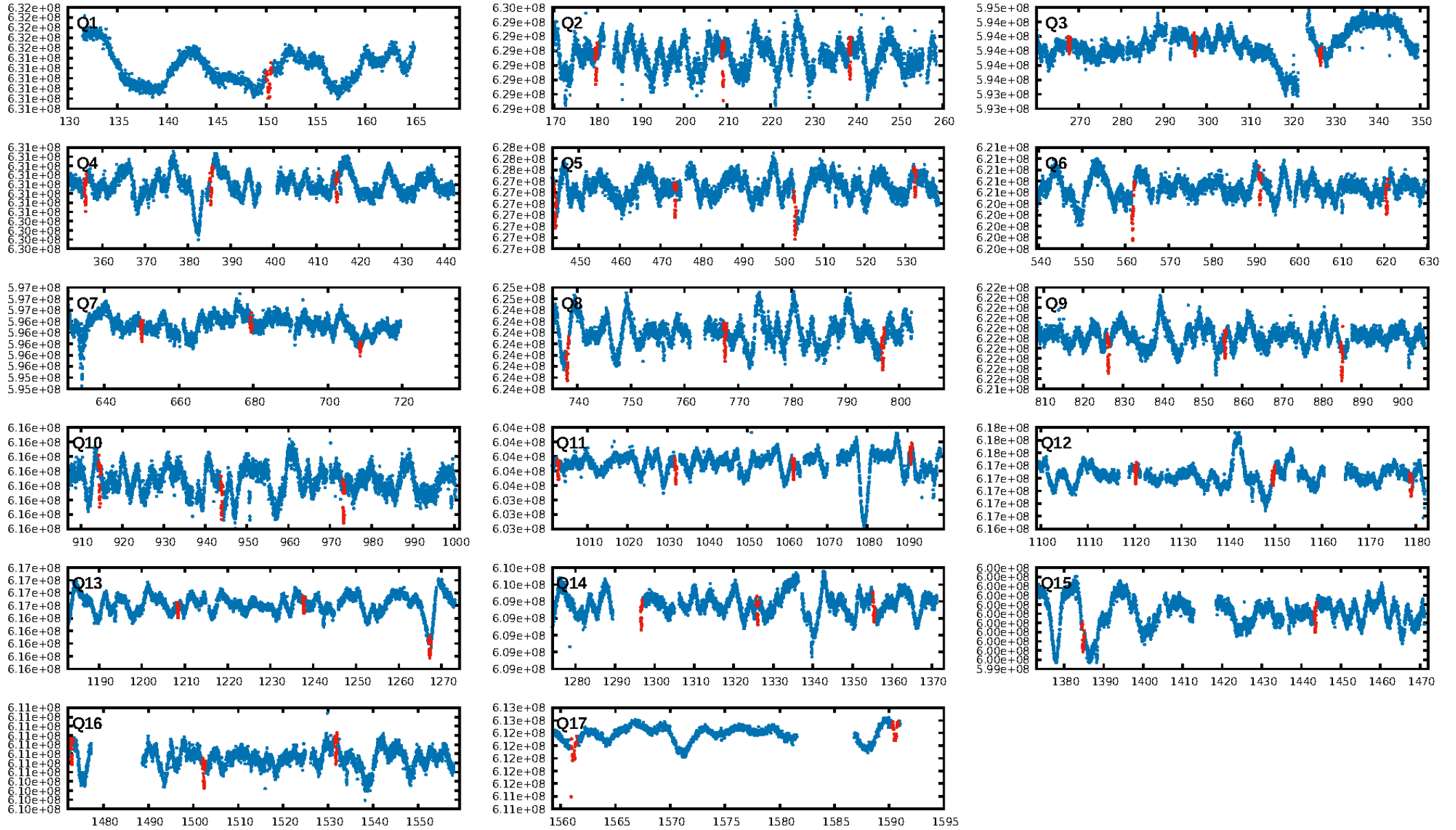
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [44.78σ]
LongPeriod-sig: 100.0% [45.35σ]
ModelChiSquare2-sig: 16.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [45/45]
GhostDiagnostic-chr: 8.382
Centroid-sig: 0.0%
Centroid-so: 1.180 arcsec [9.56σ]
OotOffset-rm: 1.525 arcsec [4.61σ]
KicOffset-rm: 1.719 arcsec [4.71σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [16/16]

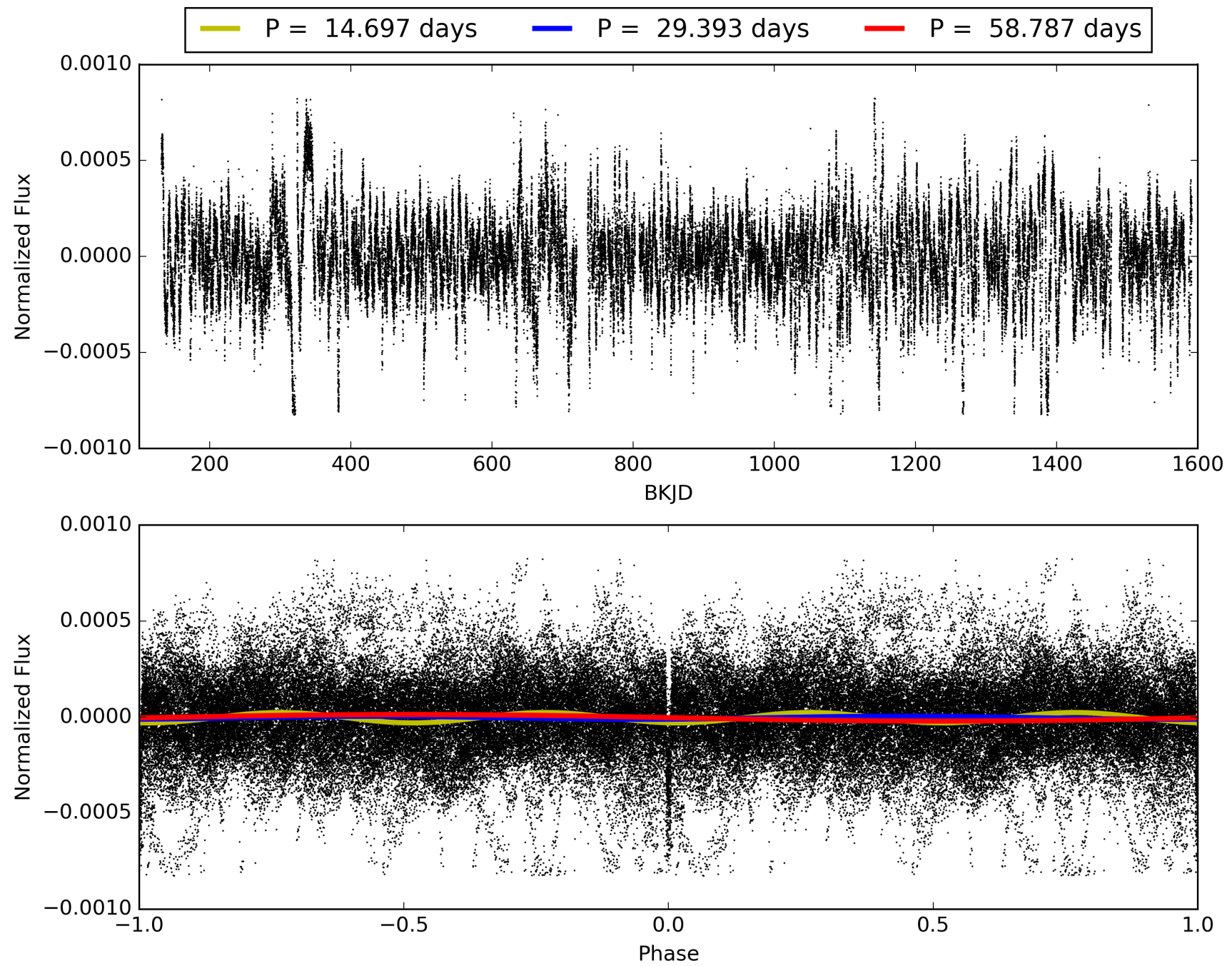
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:52:39 Z

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

TCE 009451706-01, PDC Light Curves

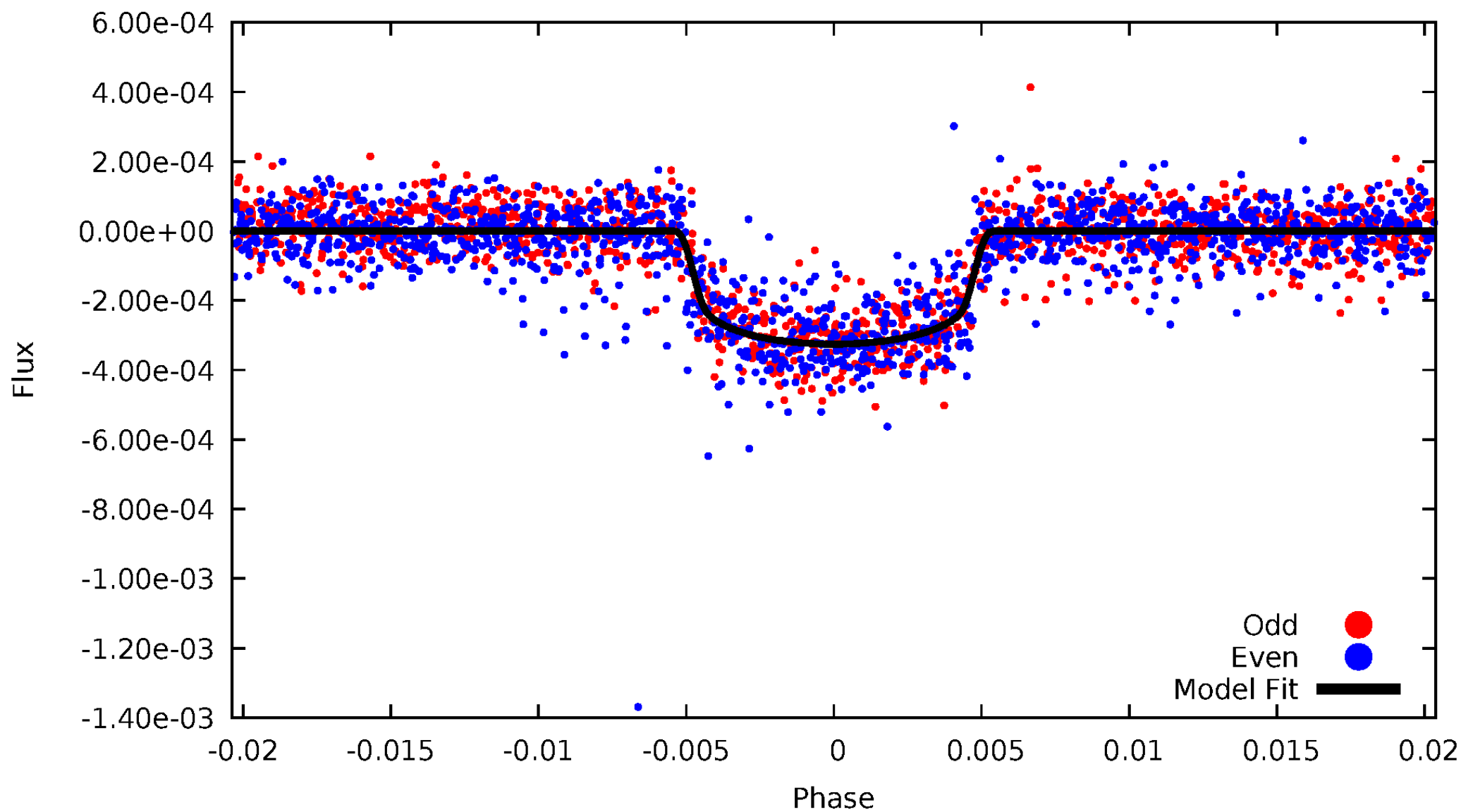


TCE 009451706-01



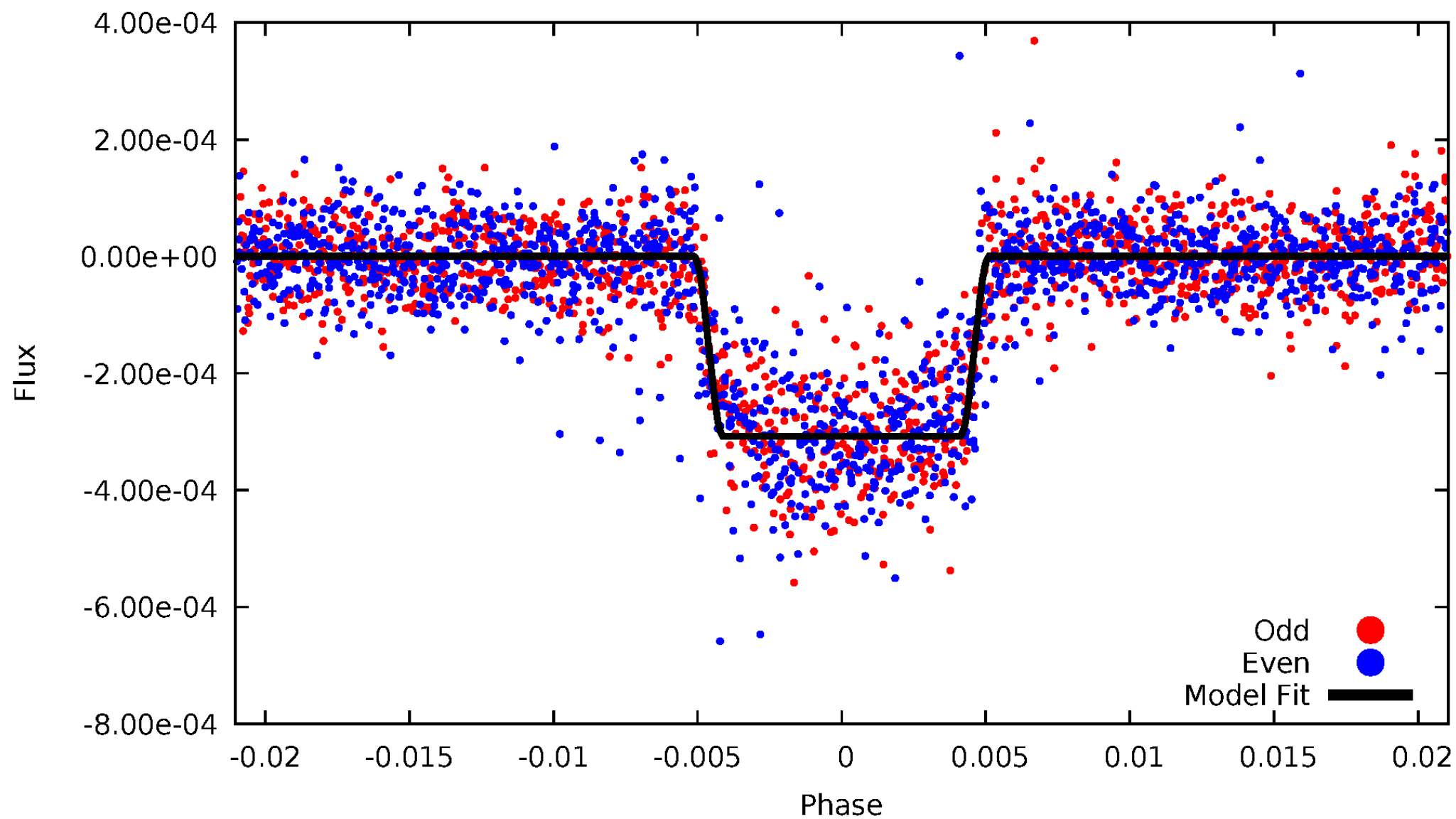
DV Odd/Even

TCE 009451706-01



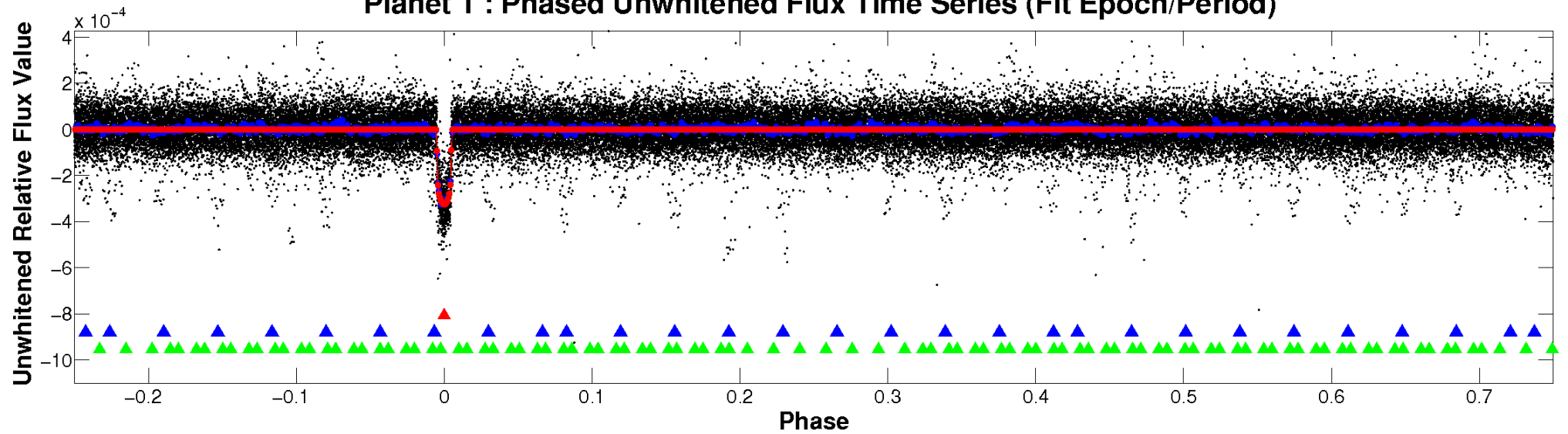
ALT Odd/Even

TCE 009451706-01

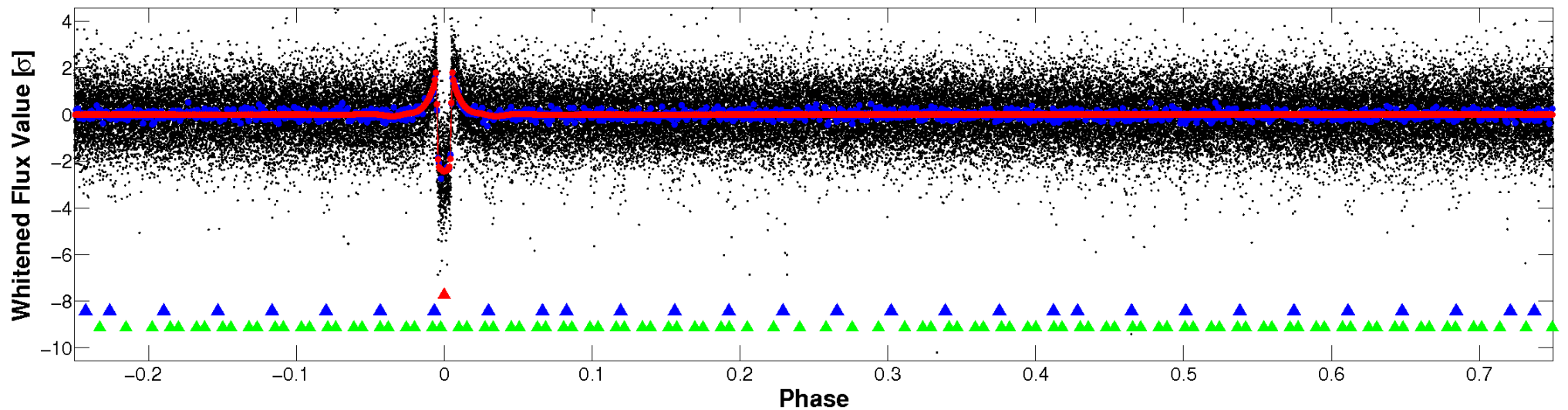


Non-Whitened Vs. Whitened Light Curve

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

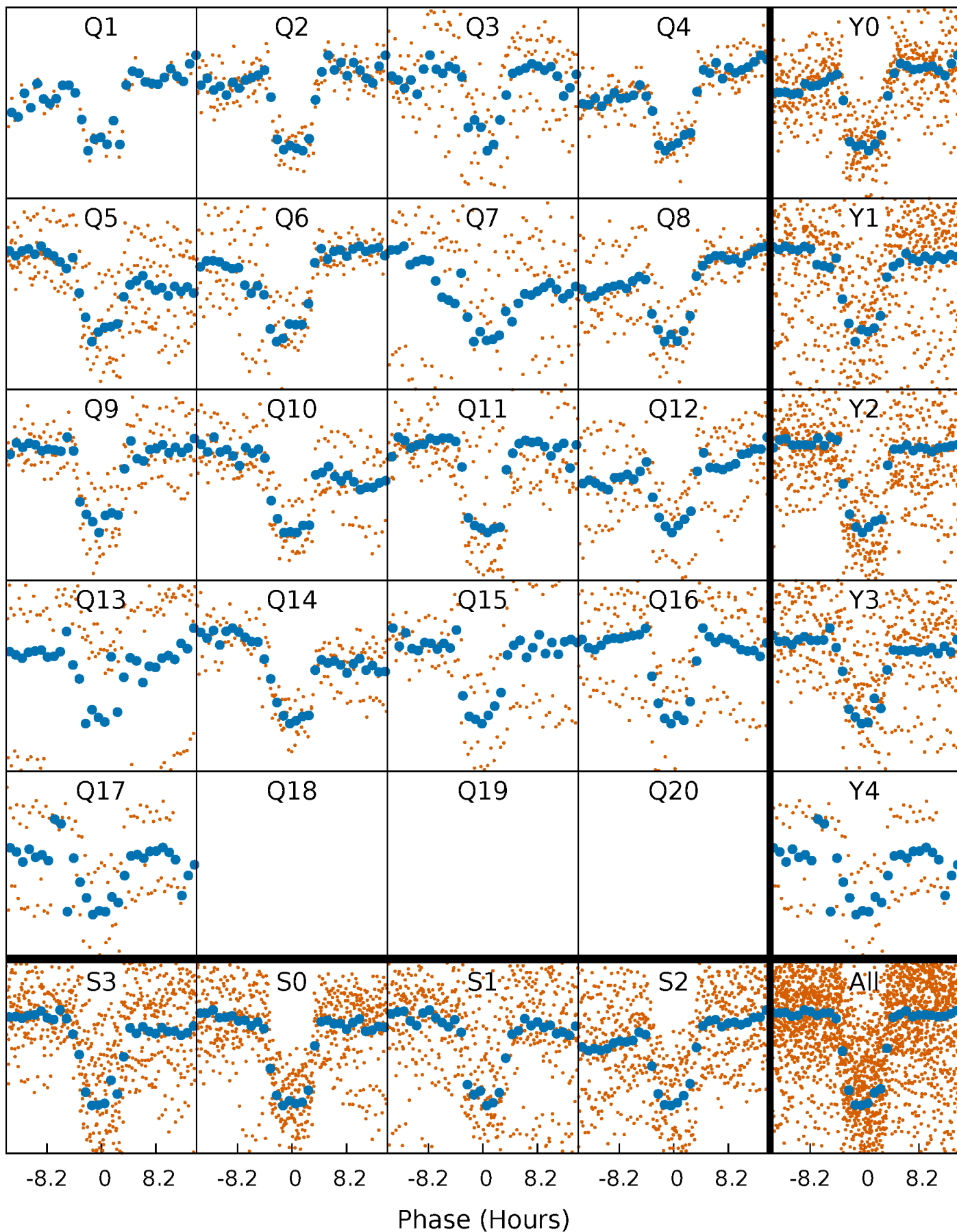


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



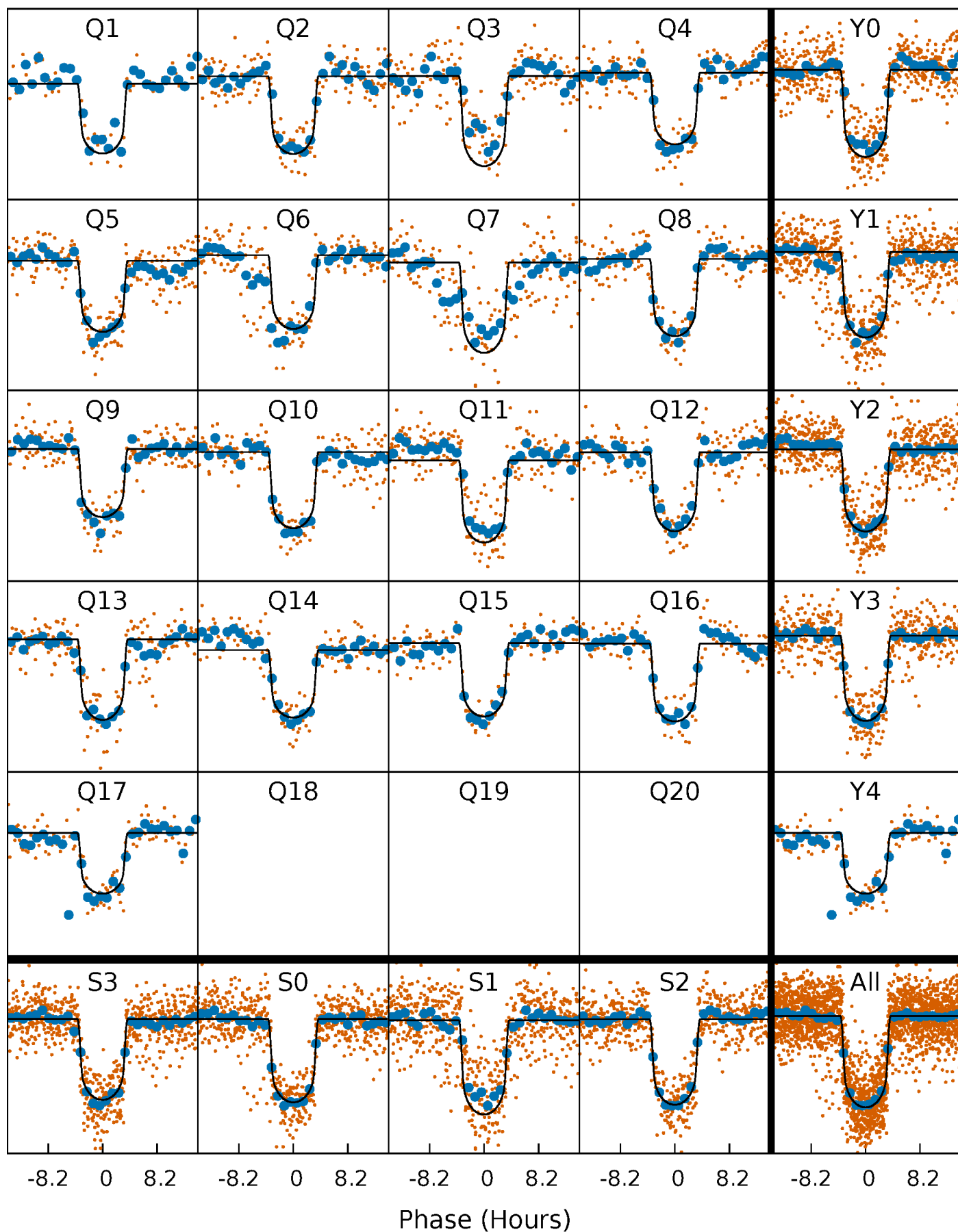
PDC Quarter-Phased Transit Curves

TCE 009451706-01 P= 29.393275 Days $T_0=150.280858$ (BKJD)



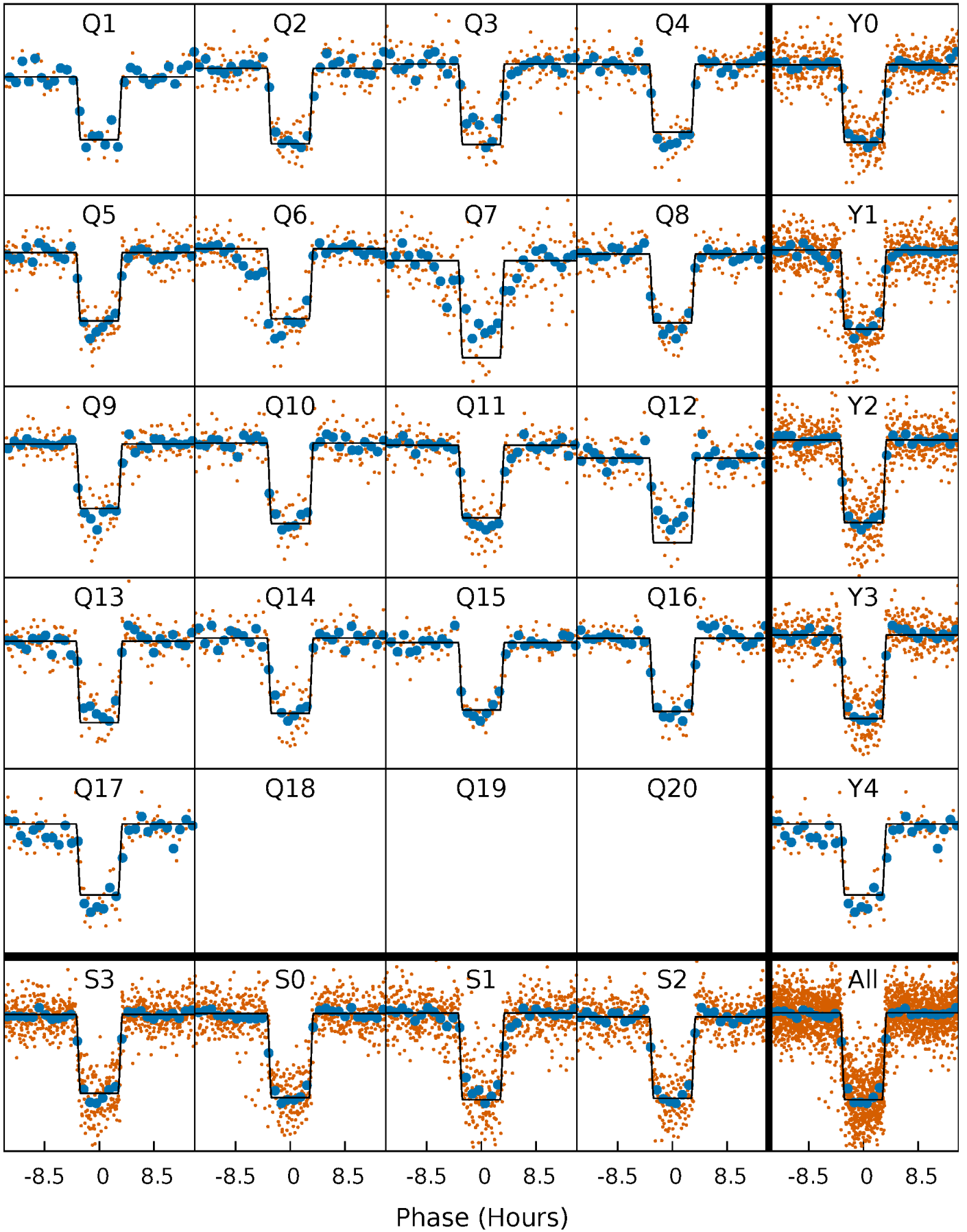
DV Quarter-Phased Transit Curves

TCE 009451706-01 P= 29.393275 Days $T_0=150.280858$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

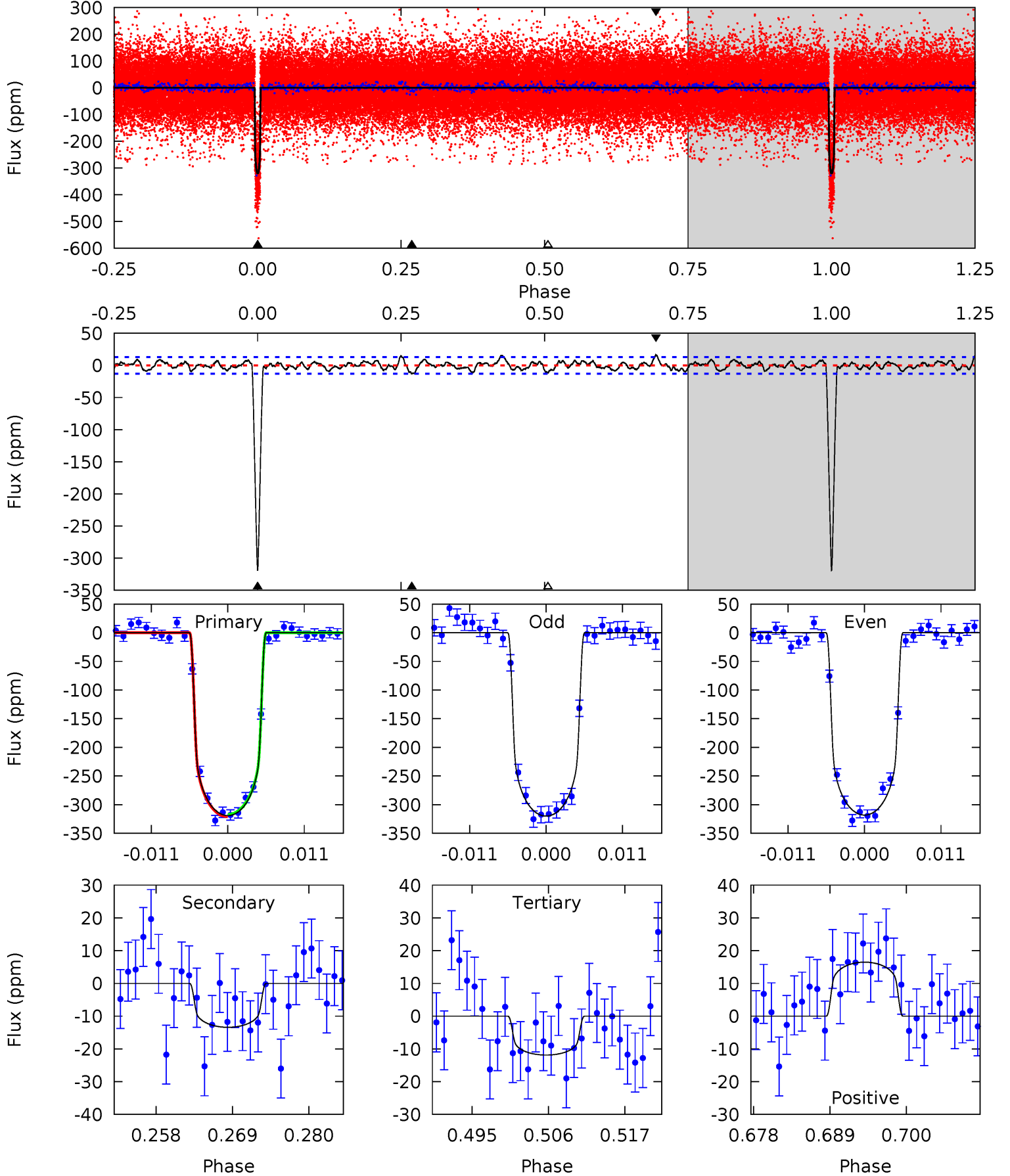
TCE 009451706-01 P= 29.393293 Days $T_0=150.279639$ (BKJD)



DV Model-Shift Uniqueness Test

009451706-01, $P = 29.393275$ Days, $E = 120.887583$ Days

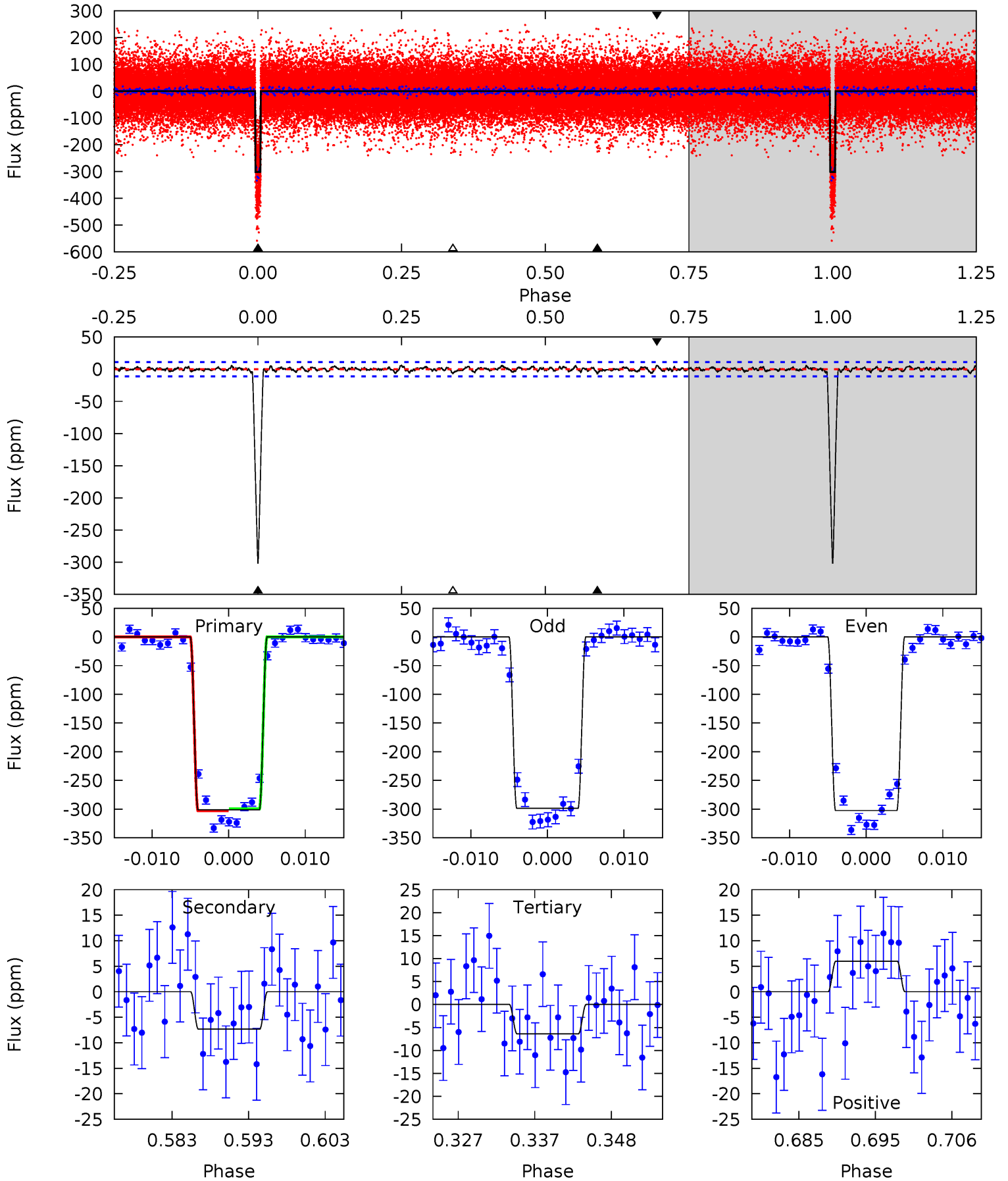
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
122.4	5.14	4.56	6.32	5.01	2.55	1.90	117.9	116.1	0.58	-1.18	0.35	0.96	0.05	0.71



Alt Model-Shift Uniqueness Test

009451706-01, P = 29.393293 Days, E = 120.886346 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
135.5	3.30	2.87	2.69	5.02	2.57	0.95	132.6	132.8	0.42	0.60	0.88	0.95	0.02	0.76



Stellar Parameters For KIC 009451706

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6075^{+122}_{-97}	$4.264^{+0.012}_{-0.012}$	$0.320^{+0.100}_{-0.100}$	$1.352^{+0.036}_{-0.030}$	$1.225^{+0.055}_{-0.040}$	$0.698^{+0.033}_{-0.035}$
	+2%/-2%	+0%/-0%	+31%/-31%	+3%/-2%	+4%/-3%	+5%/-5%
Source	SPE8	AST8	SPE8	DSEP		

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

Secondary Eclipse Parameters for KIC 009451706-01 / KOI 0271.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-13 ± 3	$2.73^{+0.12}_{-0.11}$	976^{+19}_{-18}	3267^{+108}_{-108}	39^{+9}_{-7}
Alt.	-7 ± 2	$2.59^{+0.10}_{-0.10}$	976^{+20}_{-17}	3037^{+128}_{-143}	24^{+7}_{-7}

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

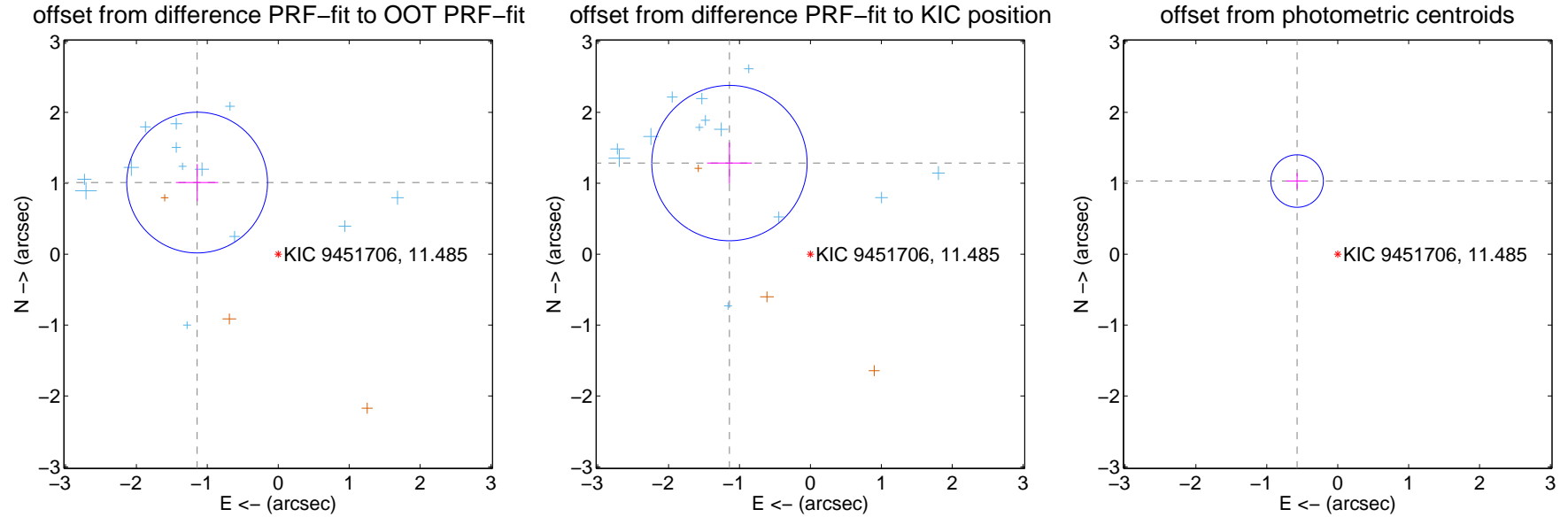
DV Centroid Data

Supplemental centroid analysis for 009451706-01. **Kepler magnitude: 11.48.** Transit SNR 65.20

There are 13 quarters with good PRF difference image offsets

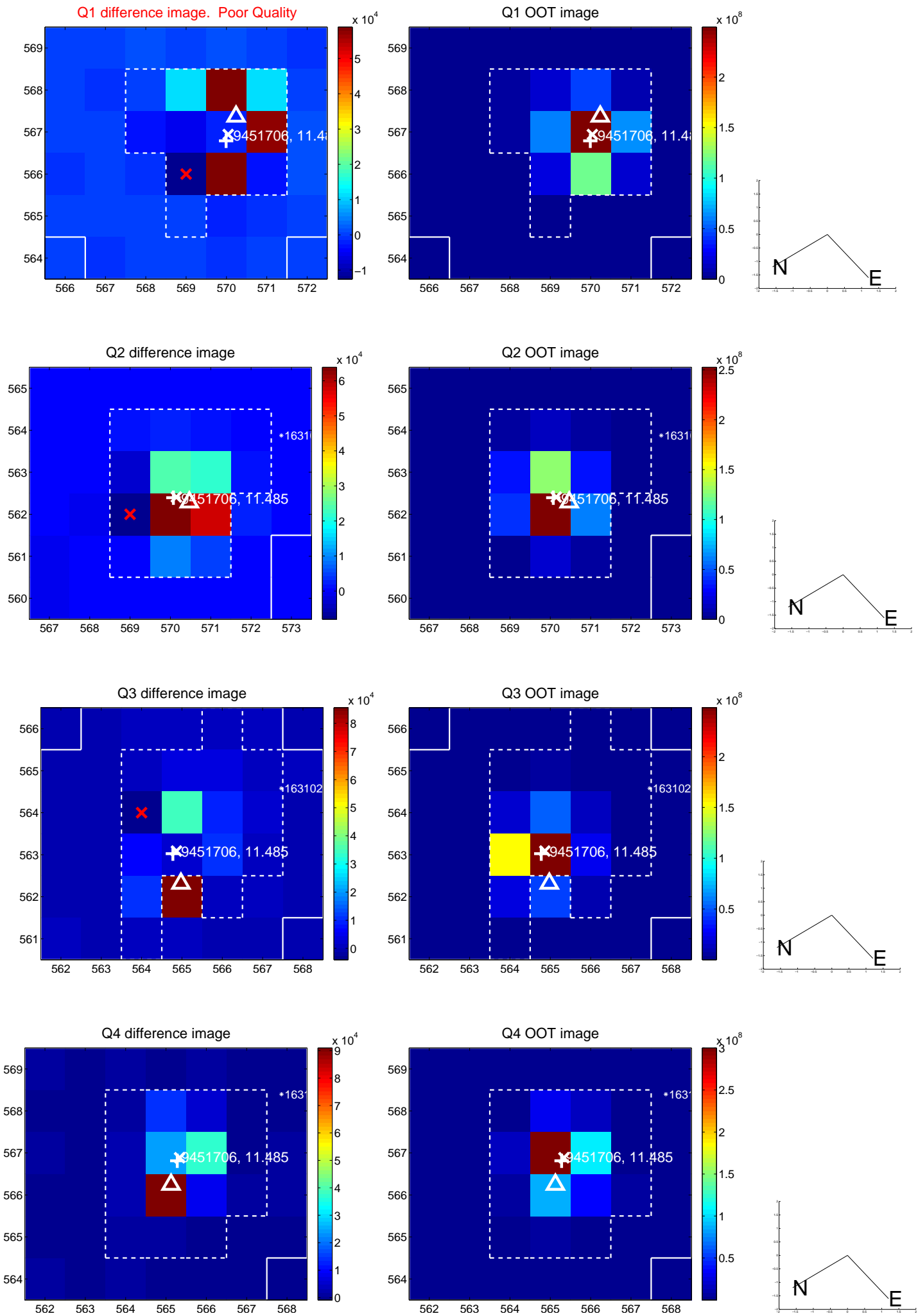
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.525 ± 0.331	4.61	1.144 ± 0.298	1.010 ± 0.261
PRF-fit source offset from KIC position	1.719 ± 0.365	4.71	1.141 ± 0.316	1.285 ± 0.291
photometric centroid source offset	1.18 ± 0.12	9.56	0.57 ± 0.15	1.03 ± 0.11

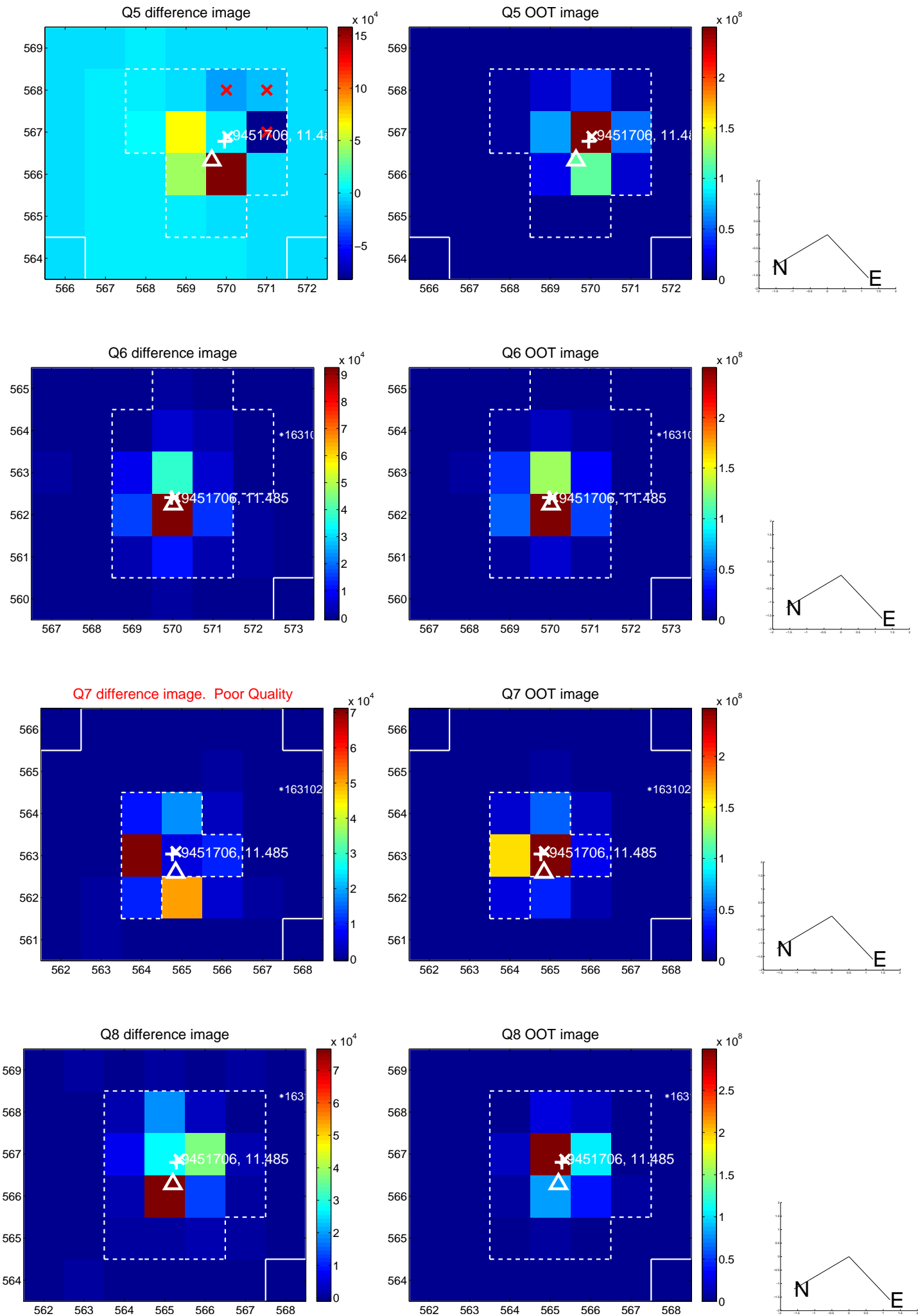


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

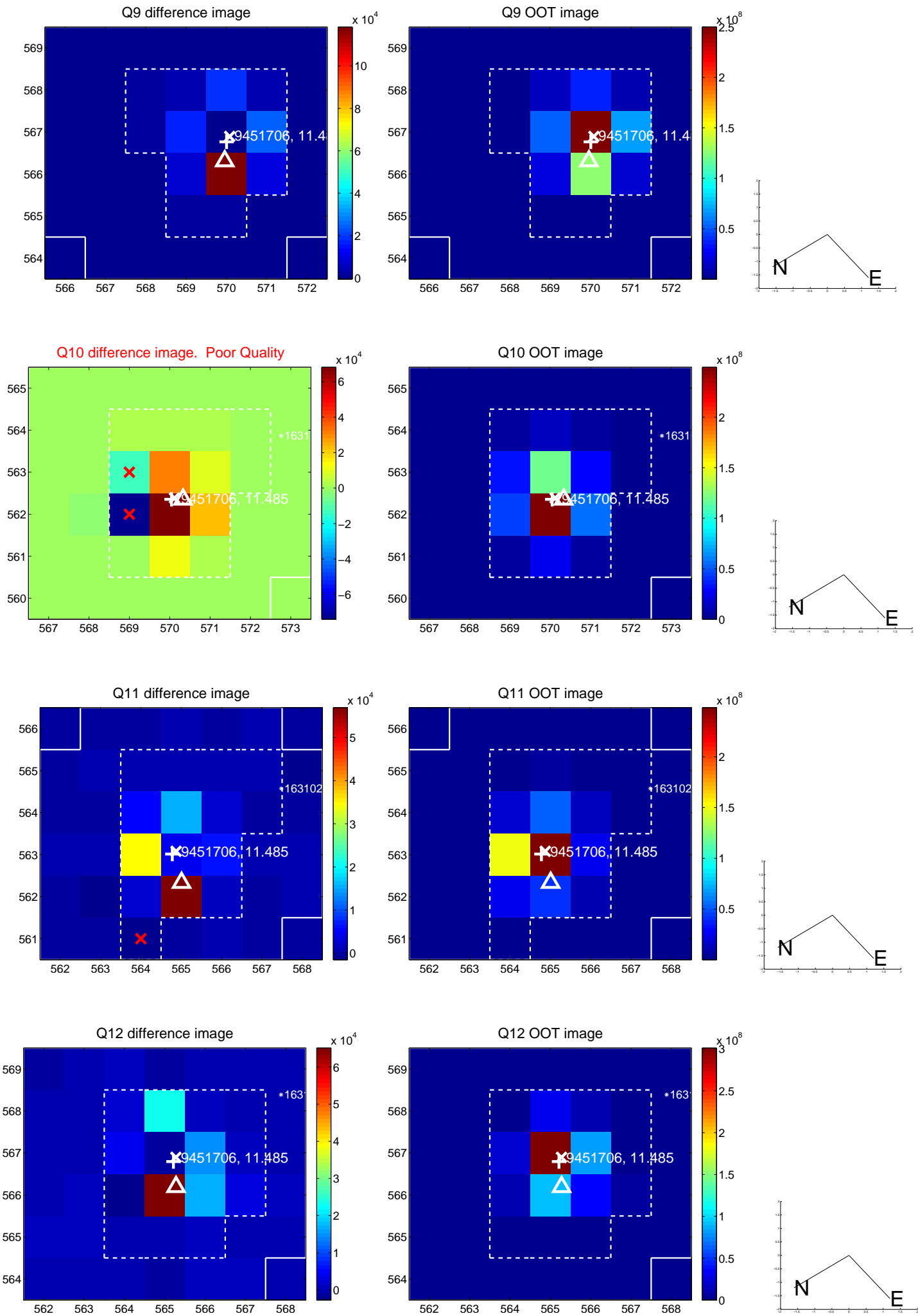
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



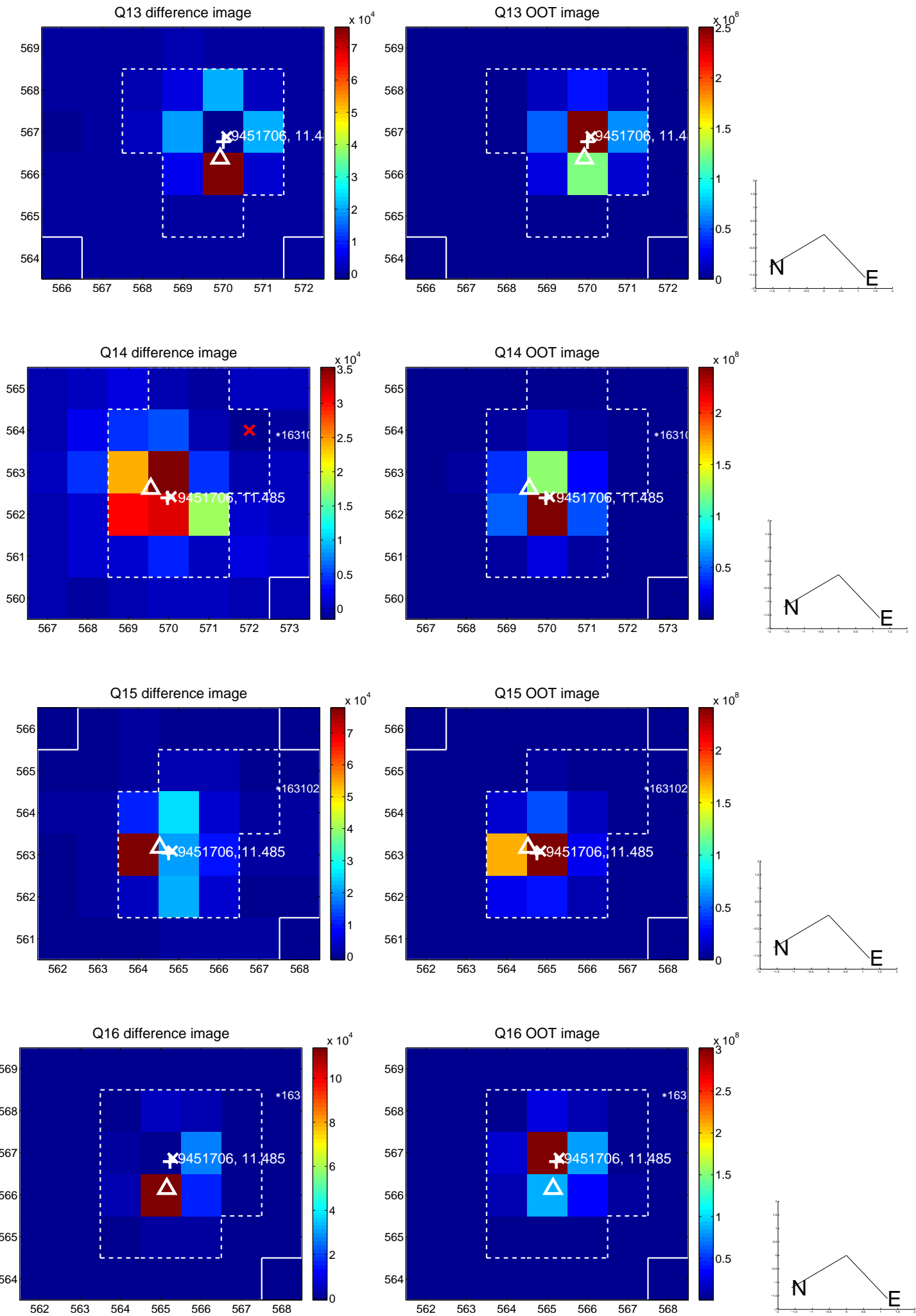
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



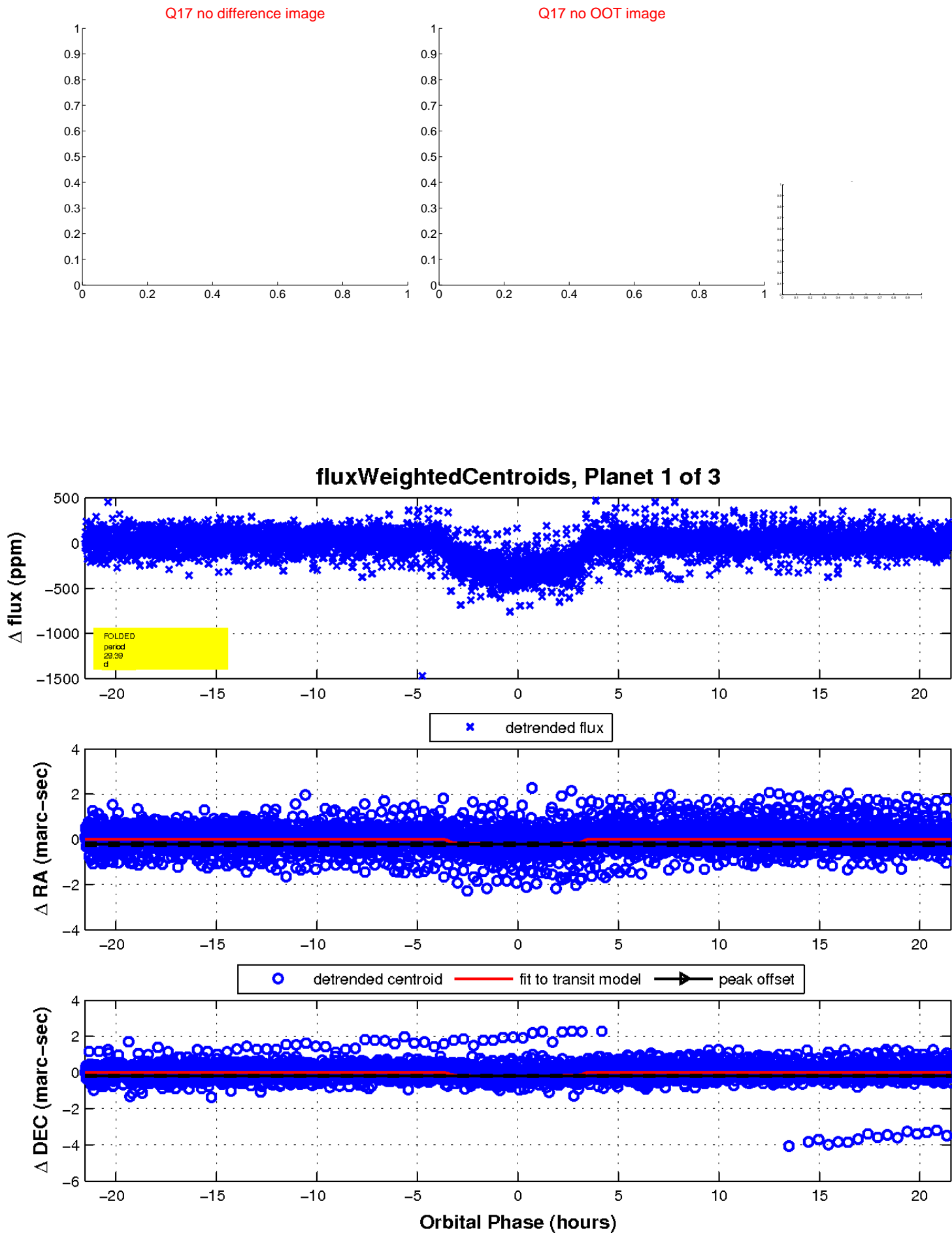
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

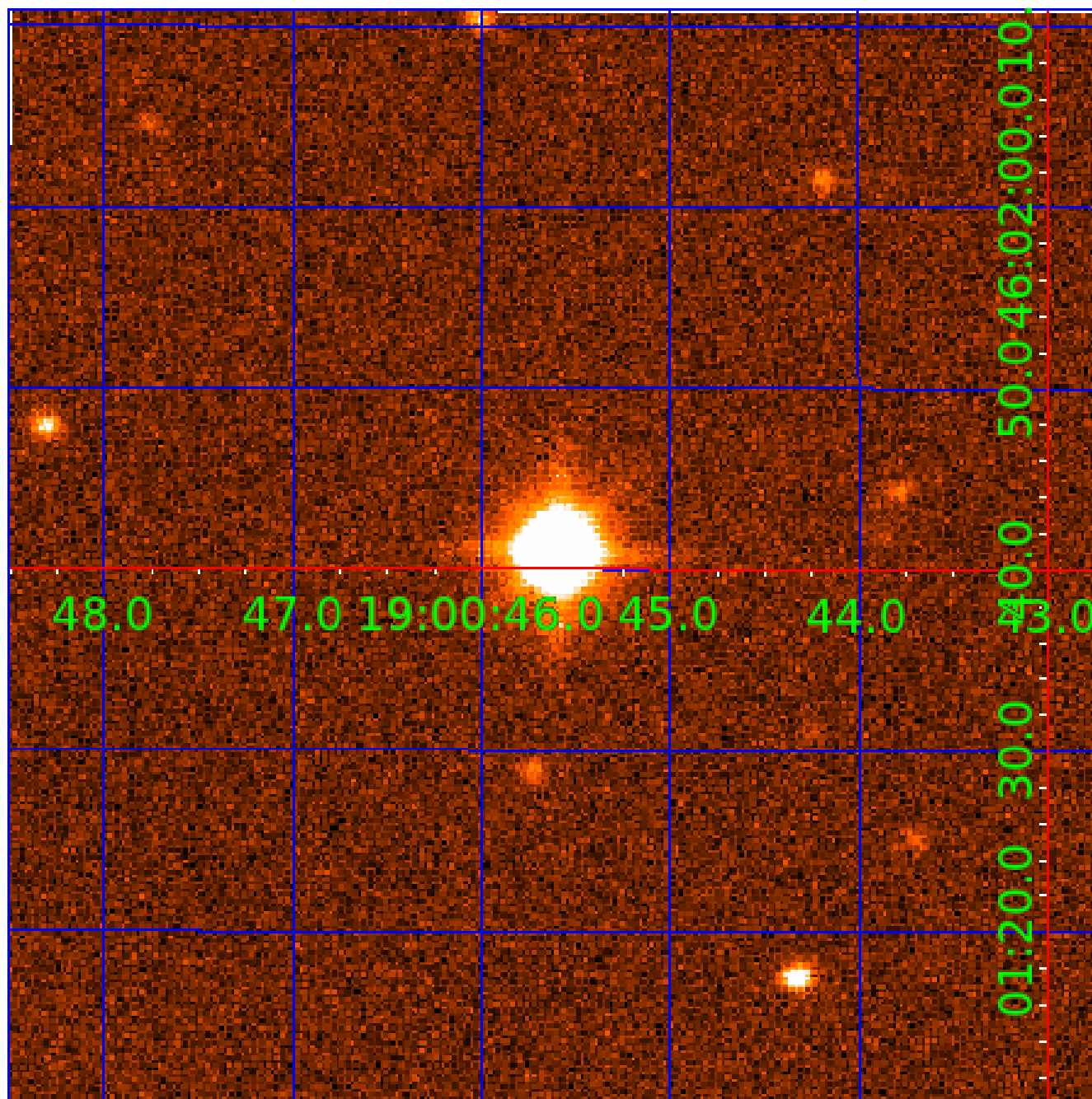


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009451706

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})
009451706-01	OBS	0271.02	29.393275	150.280858	325.5	7.184	62.0	65.2	1.35	6075	2.74	56.07
009451706-02	OBS	0271.01	48.630315	172.548468	348.5	7.213	49.8	49.8	1.35	6075	2.81	28.65
009451706-03	OBS	0271.03	14.435983	141.509702	97.7	3.557	24.1	25.3	1.35	6075	1.58	144.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009451706-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

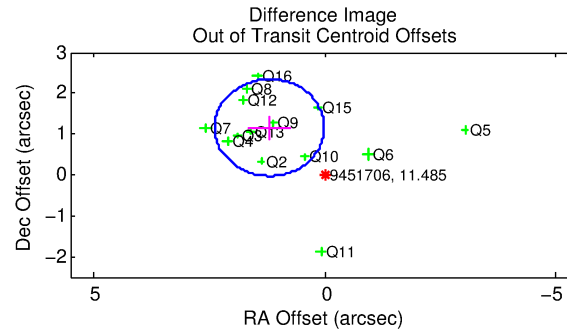
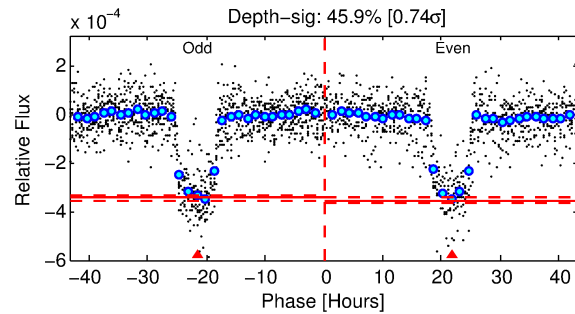
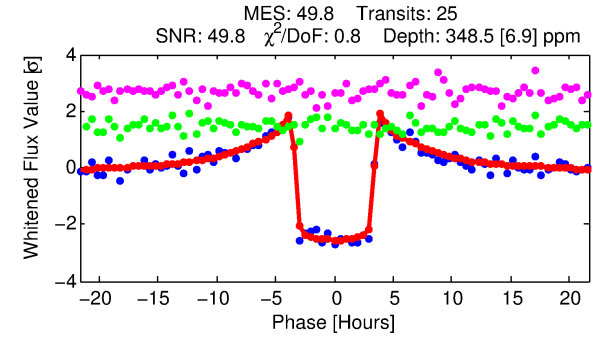
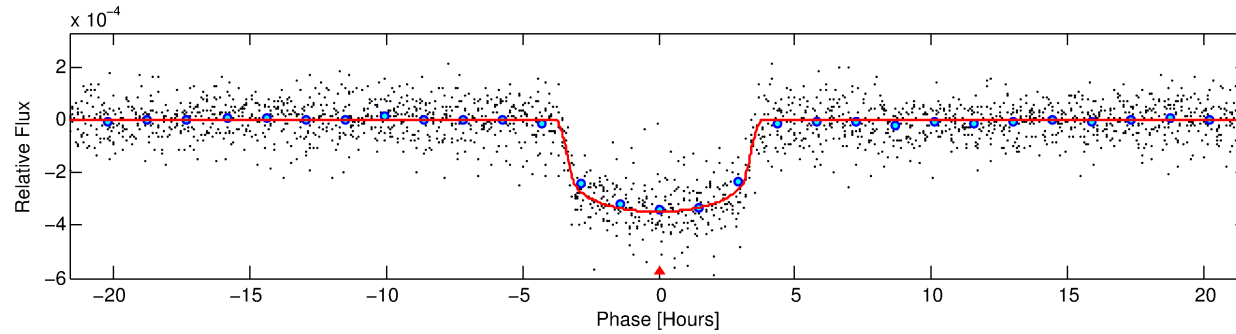
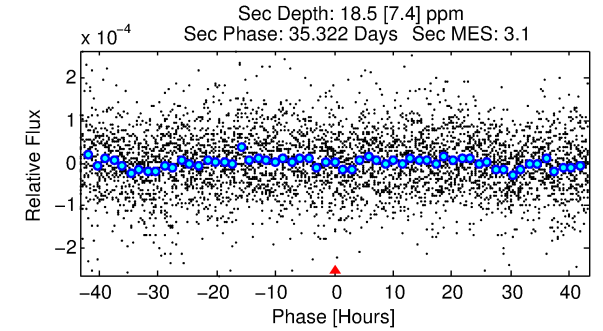
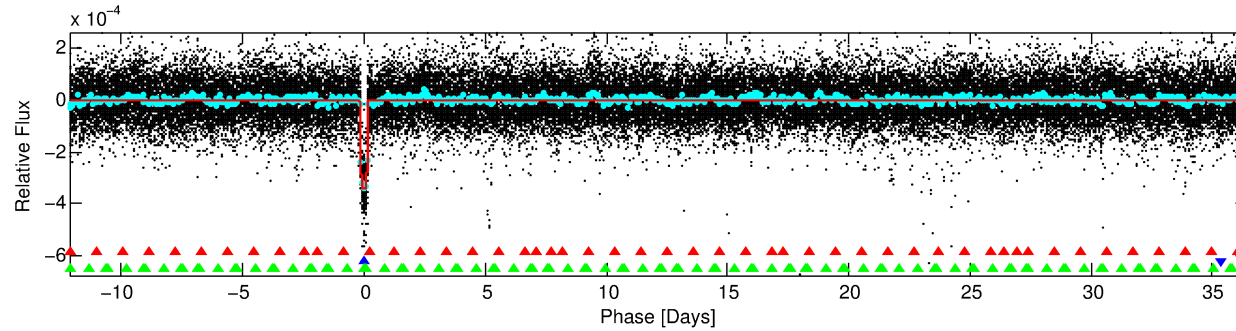
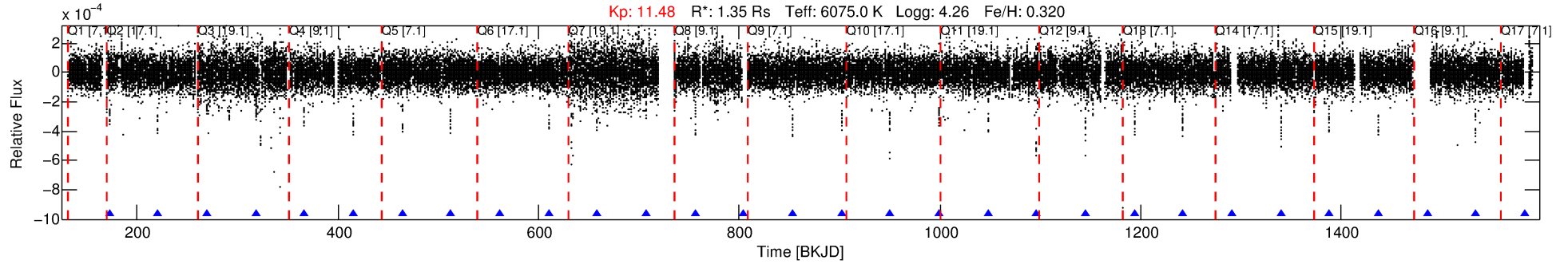
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009451706-02

No Significant Match Found

DV One-Page Summary

KIC: 9451706 Candidate: 2 of 3 Period: 48.630 d
KOI: K00271.01 Name: Kepler-127d Corr: 0.983



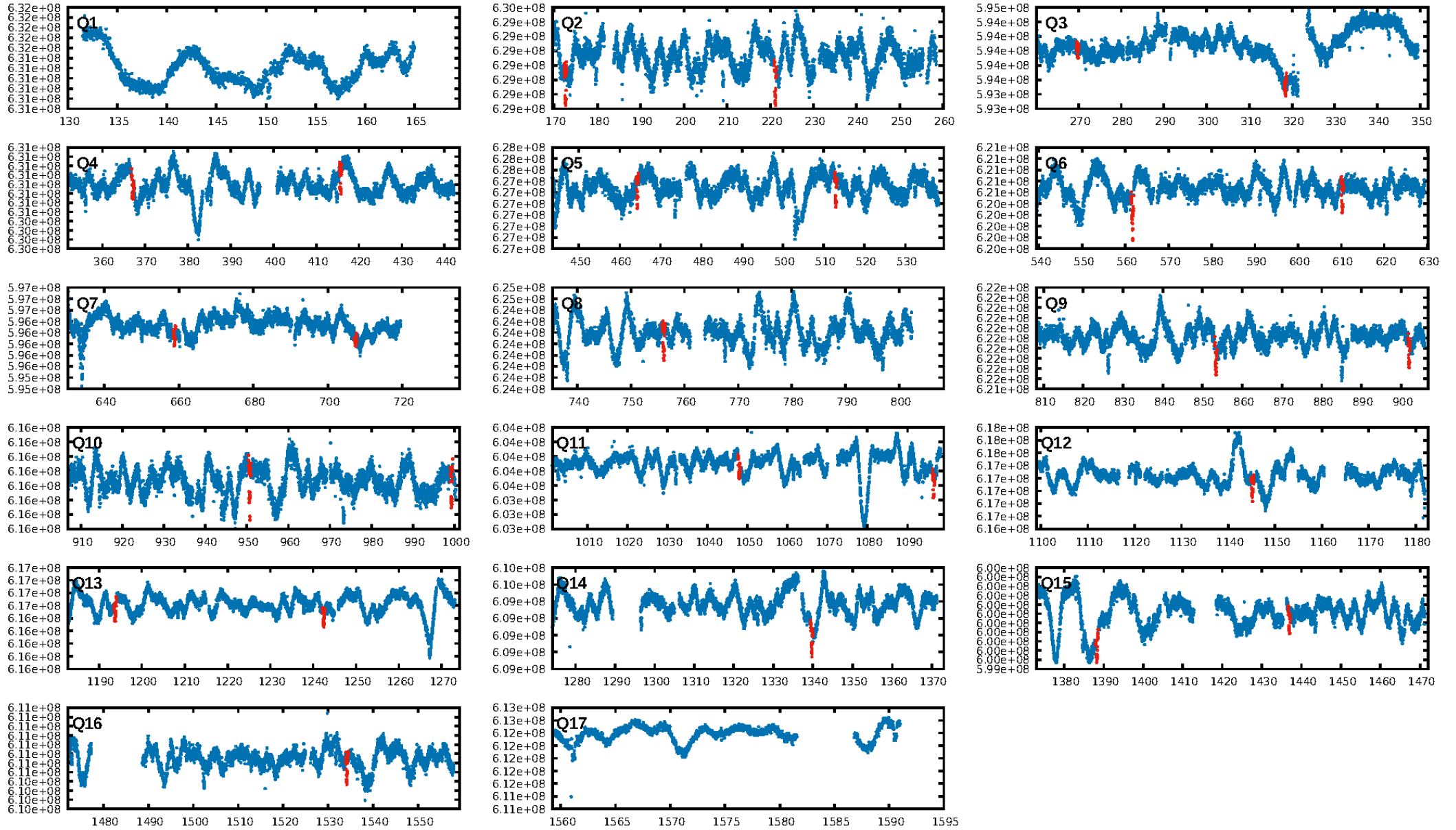
DV Fit Results:

Period = 48.63031 [0.00009] d
Epoch = 172.5485 [0.0015] BKJD
Rp/R* = 0.0191 [0.0010]
a/R* = 31.79 [7.63]
b = 0.81 [0.10]
Seff = 28.65 [2.42]
Teff = 590 [12] K
Rp = 2.81 [0.17] Re
a = 0.2790 [0.0056] AU
Ag = 100.11 [41.32] [2.40σ]
Teffp = 2885 [303] K [7.57σ]

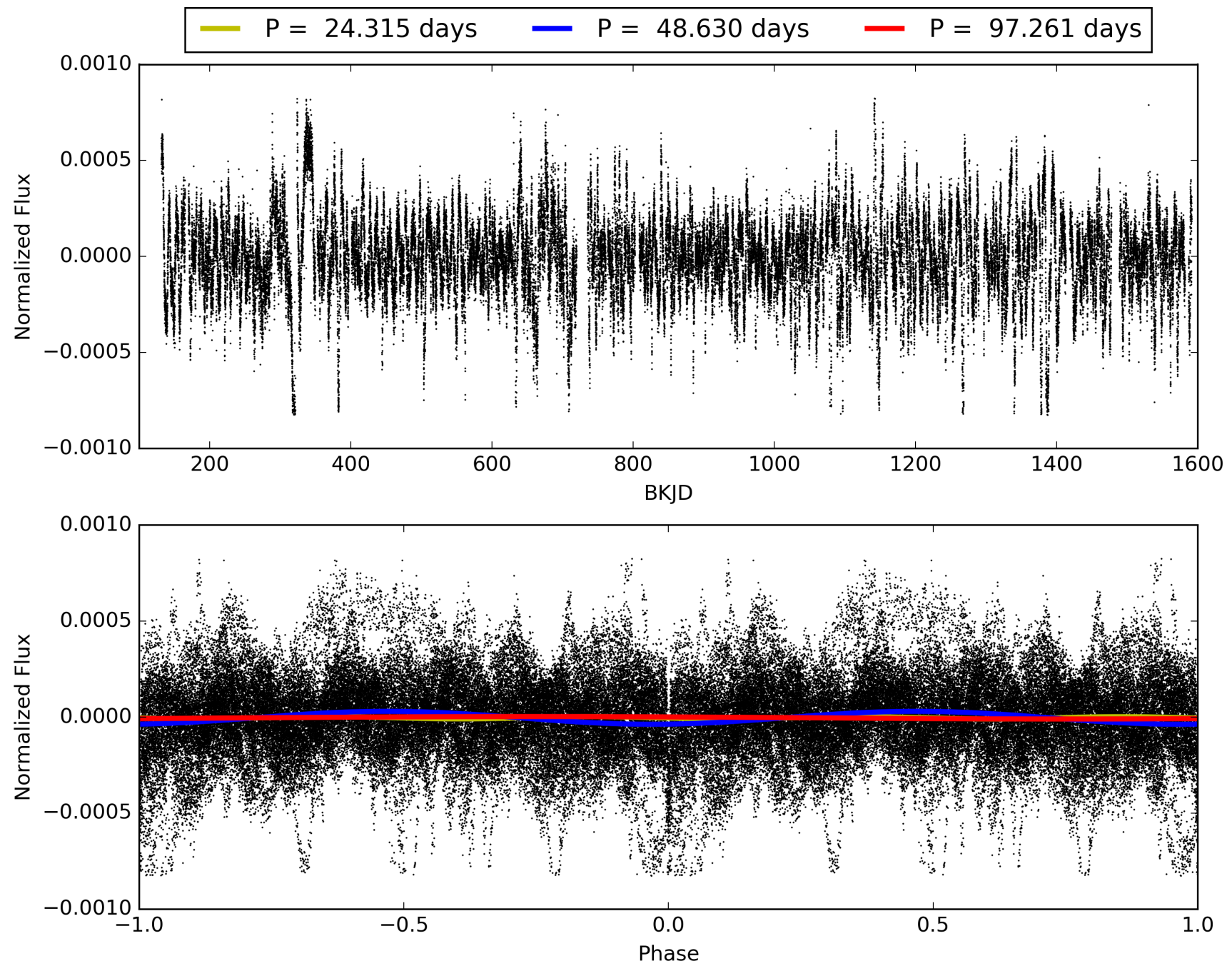
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.35σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 34.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [25/25]
GhostDiagnostic-chr: 7.179
Centroid-sig: 0.0%
Centroid-so: 1.294 arcsec [8.17σ]
OotOffset-rm: 1.664 arcsec [4.21σ]
KicOffset-rm: 1.982 arcsec [5.95σ]
OotOffset-st: 3/4/4/3 [14]
KicOffset-st: 3/4/4/3 [14]
DiffImageQuality-fgm: 0.79 [11/14]
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TCE 009451706-02, PDC Light Curves

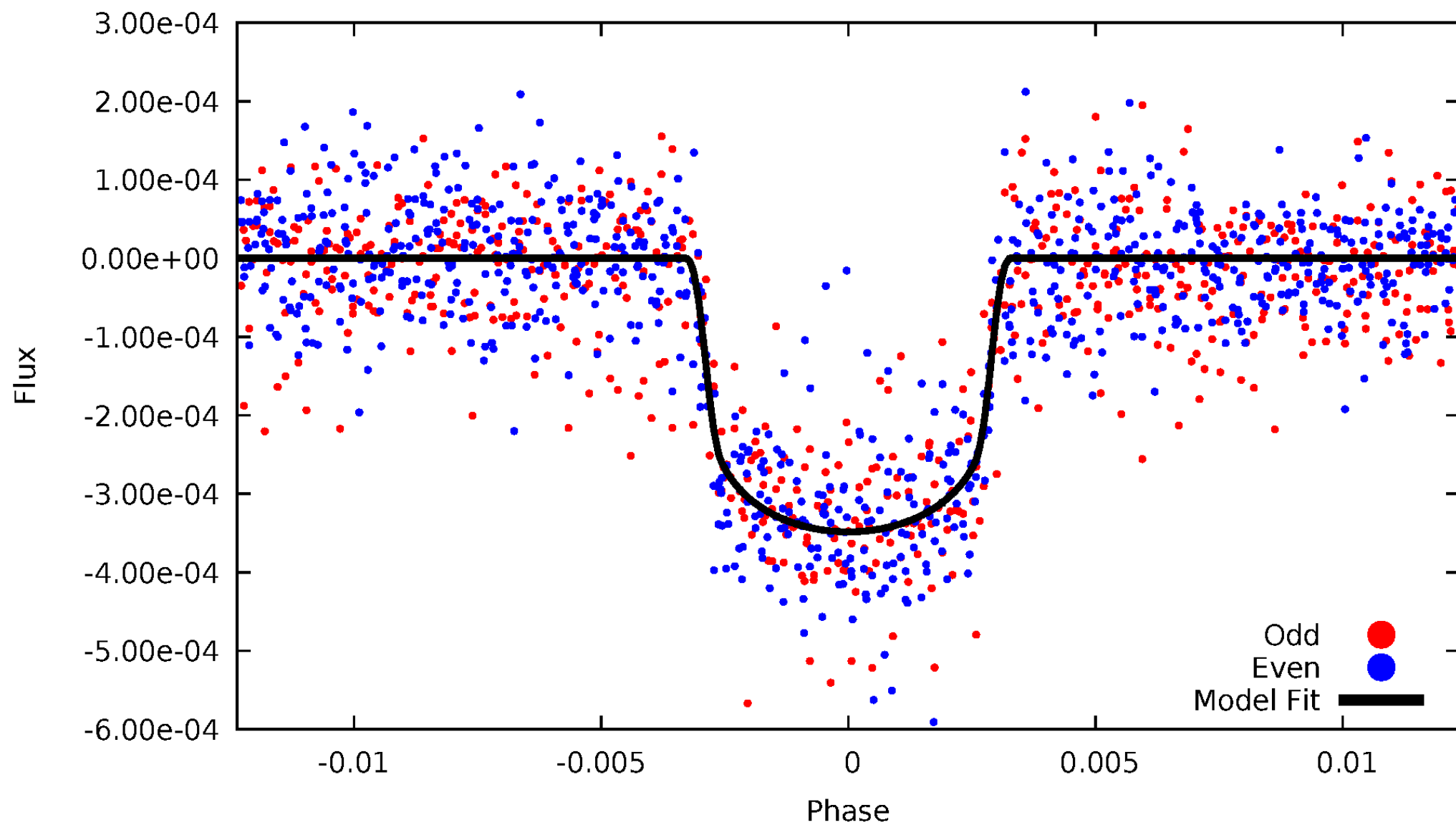


TCE 009451706-02



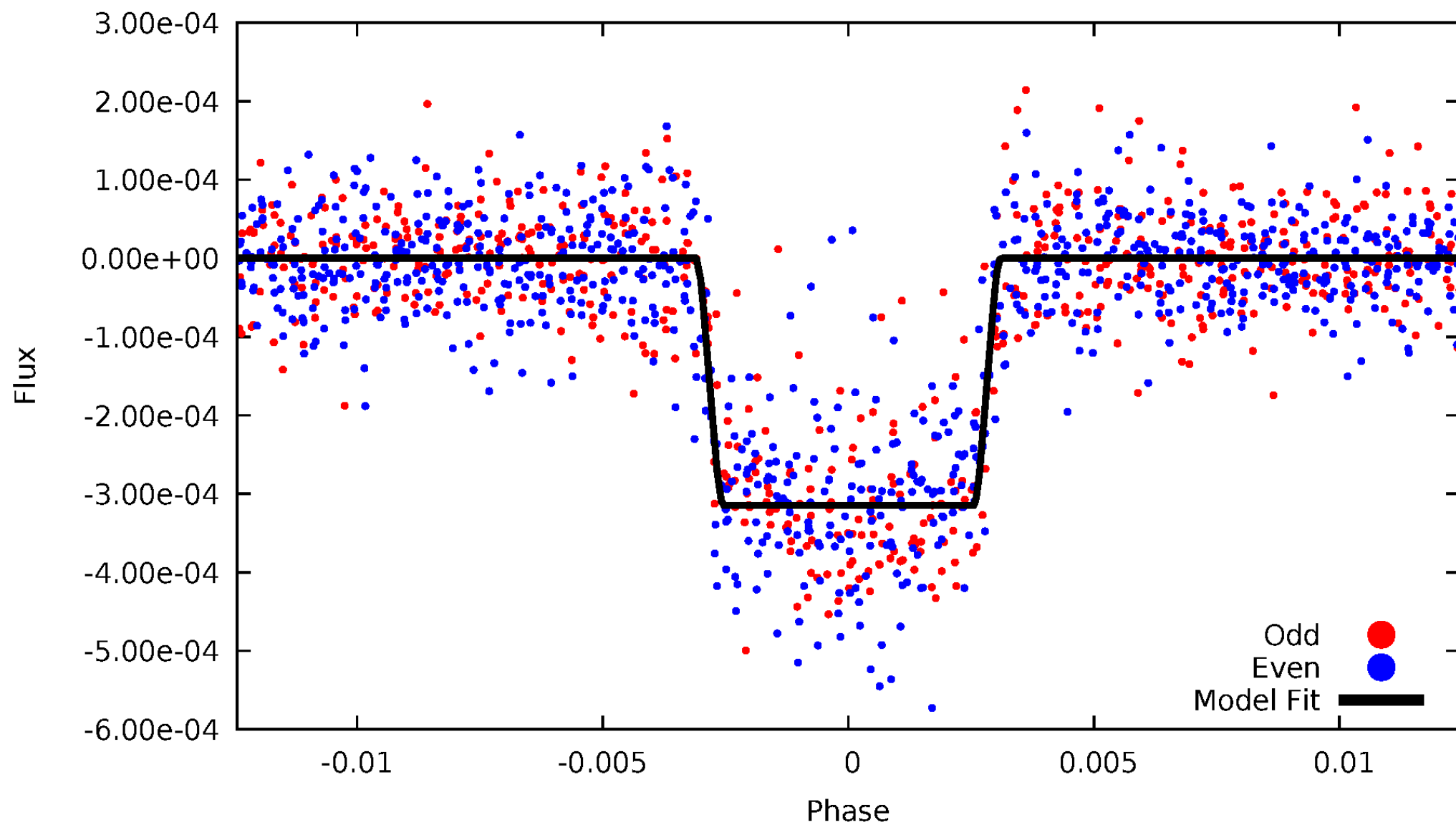
DV Odd/Even

TCE 009451706-02



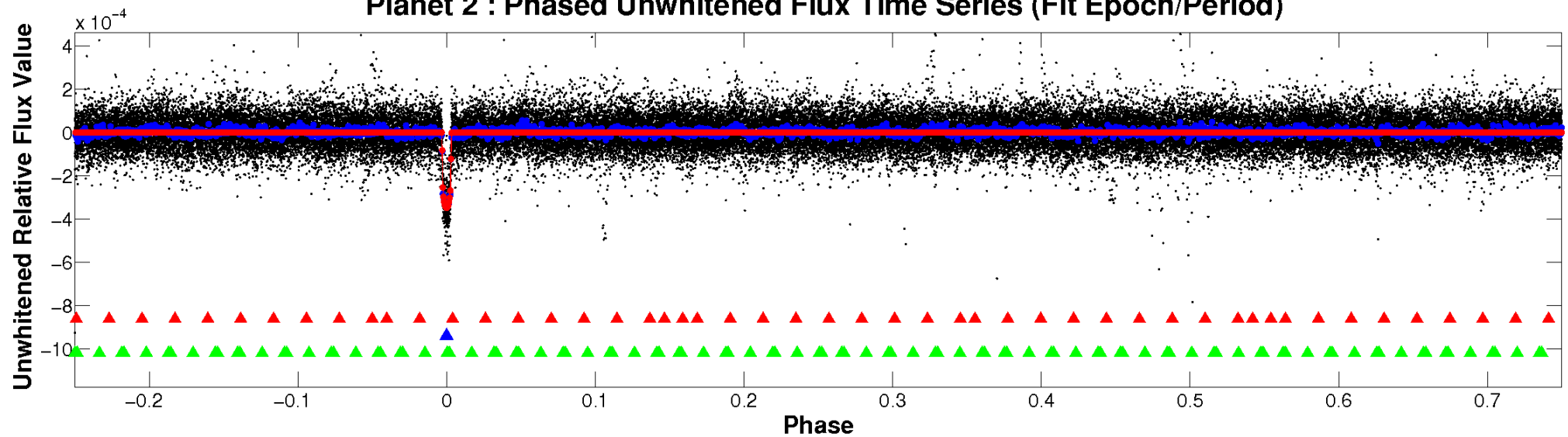
ALT Odd/Even

TCE 009451706-02

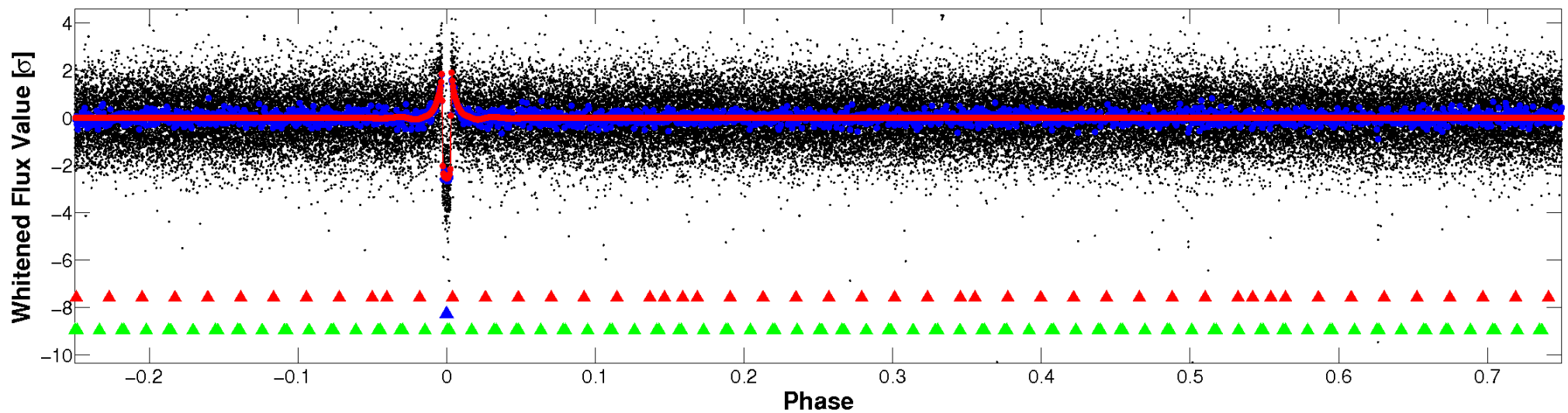


Non-Whitened Vs. Whitened Light Curve

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

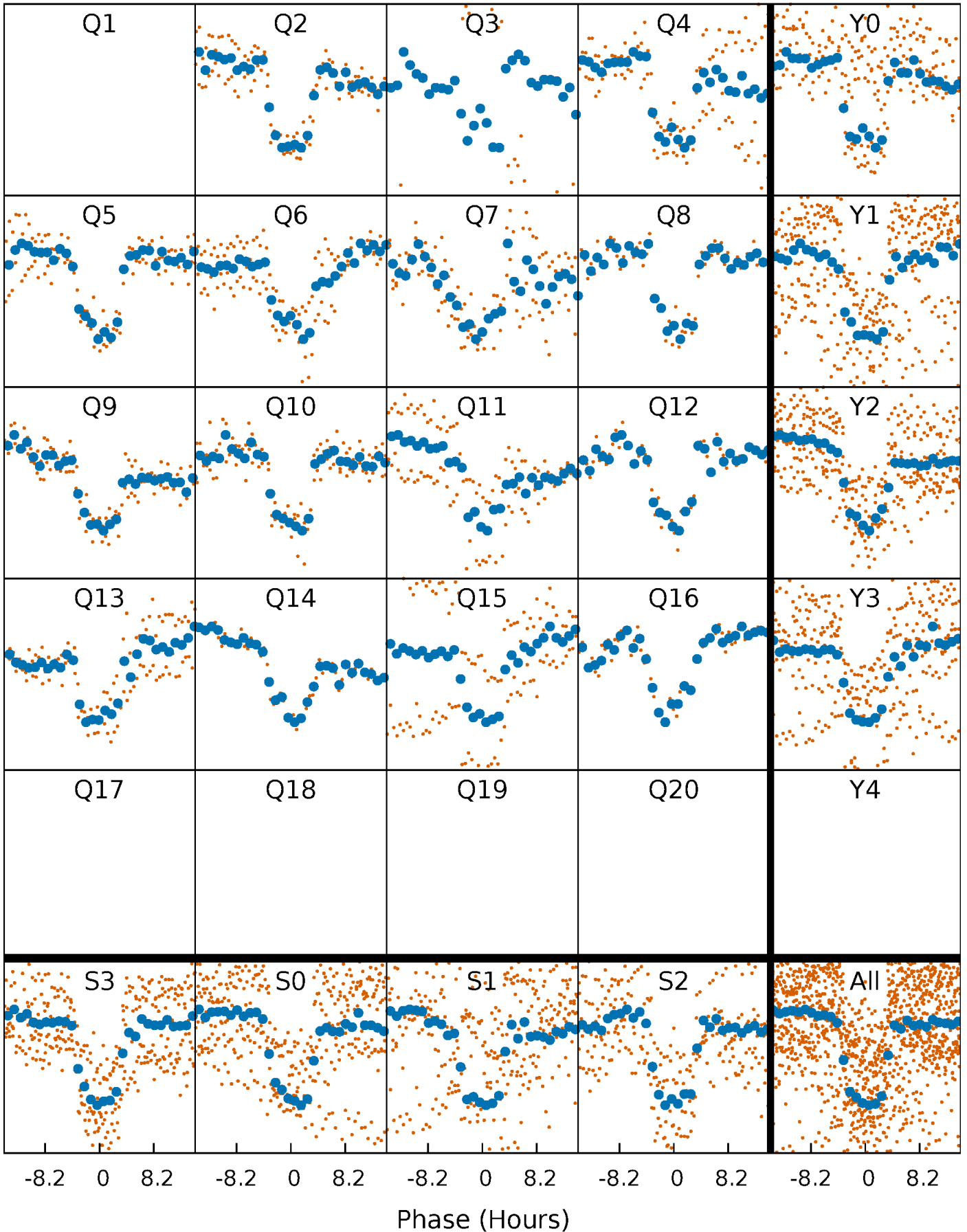


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



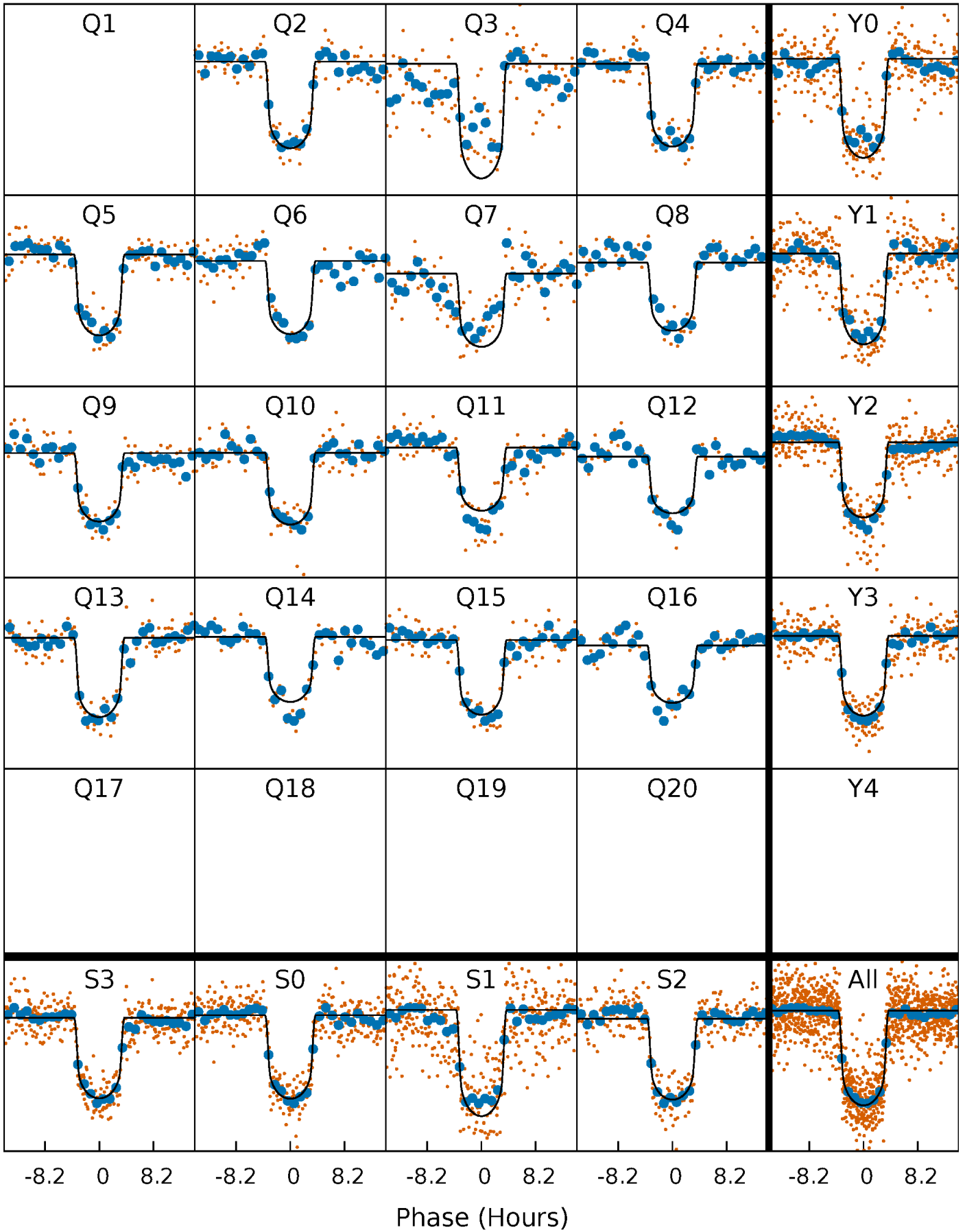
PDC Quarter-Phased Transit Curves

TCE 009451706-02 P= 48.630315 Days $T_0=172.548468$ (BKJD)



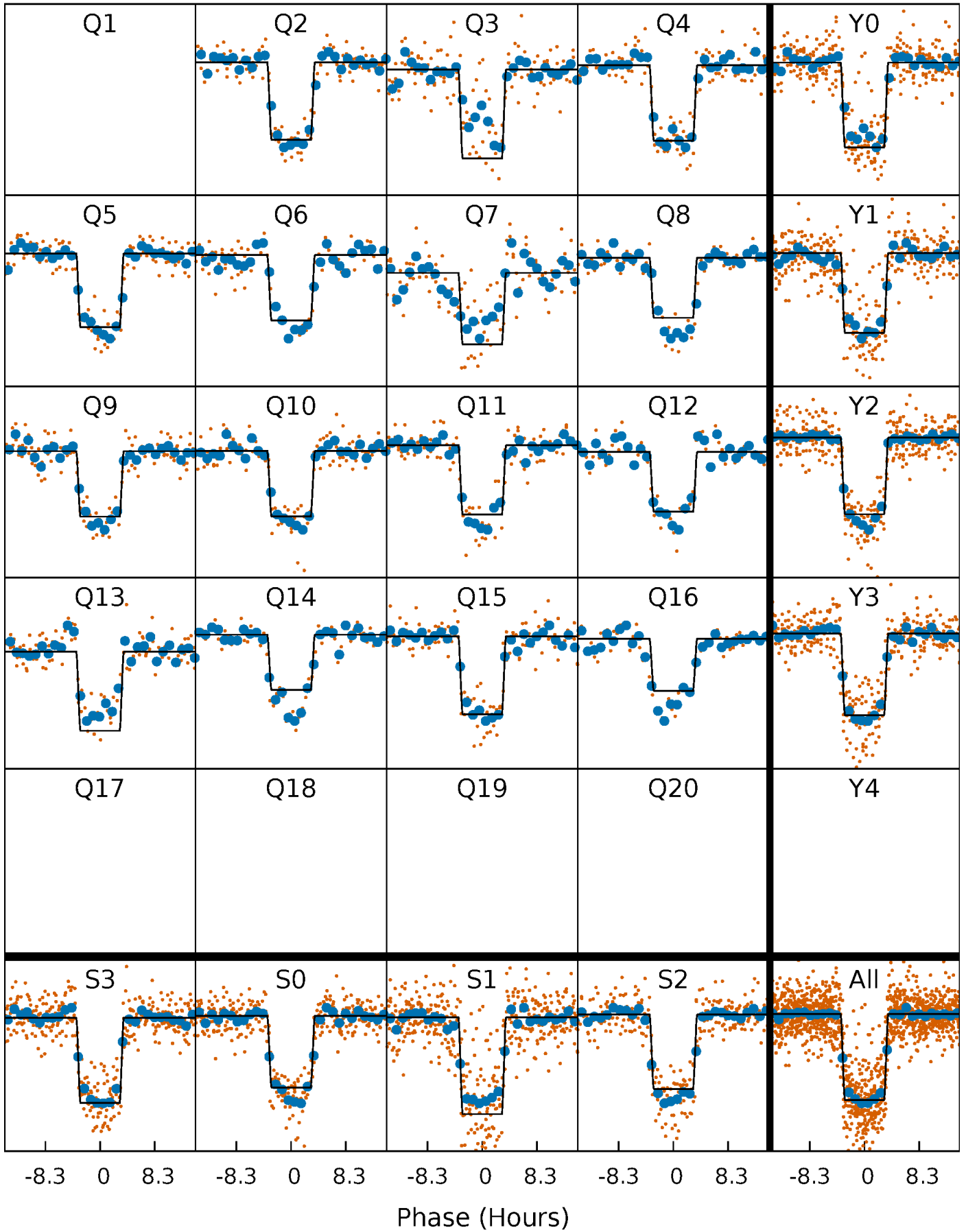
DV Quarter-Phased Transit Curves

TCE 009451706-02 P= 48.630315 Days $T_0=172.548468$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

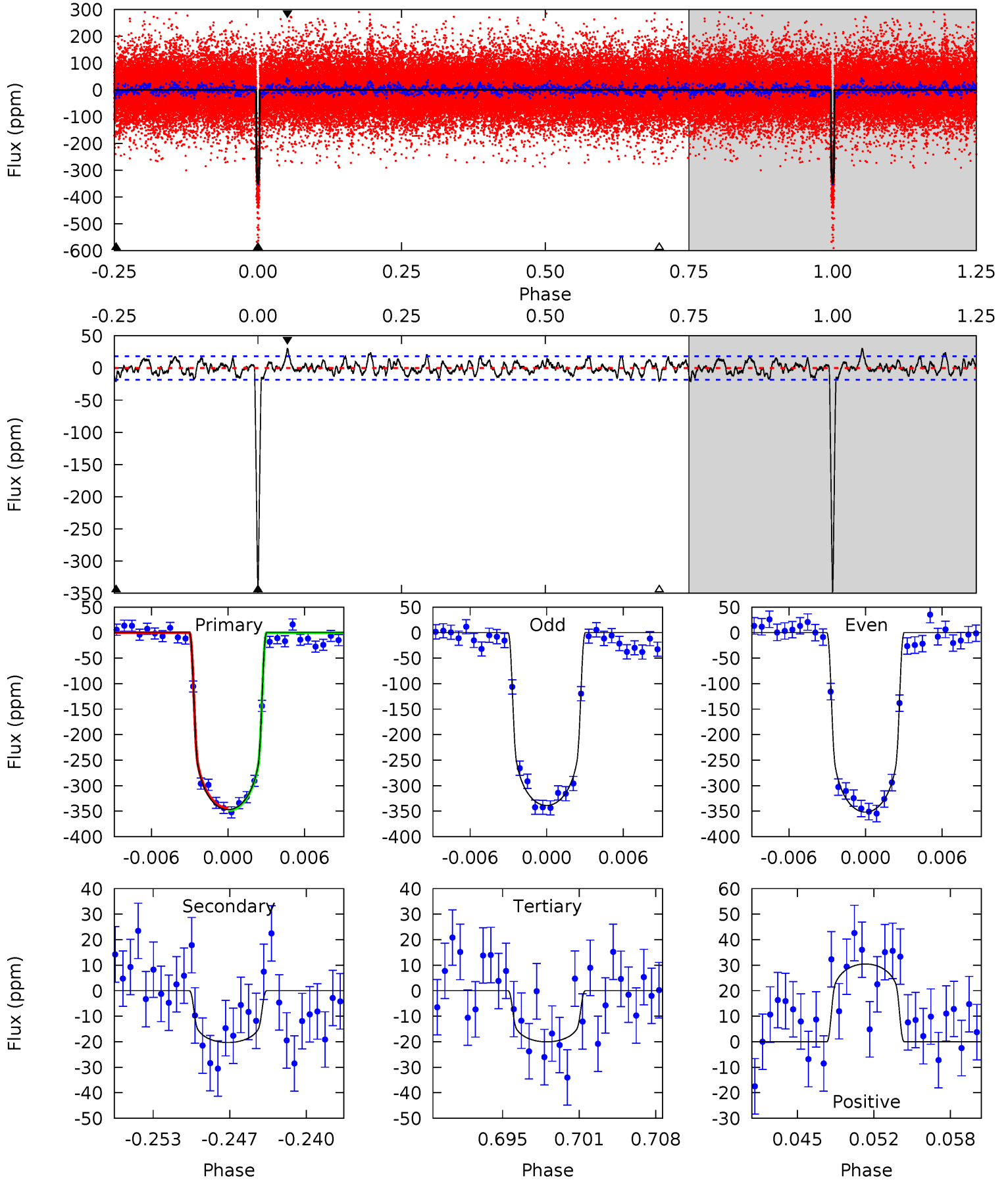
TCE 009451706-02 P= 48.630784 Days $T_0=172.541782$ (BKJD)



DV Model-Shift Uniqueness Test

009451706-02, P = 48.630315 Days, E = 123.918153 Days

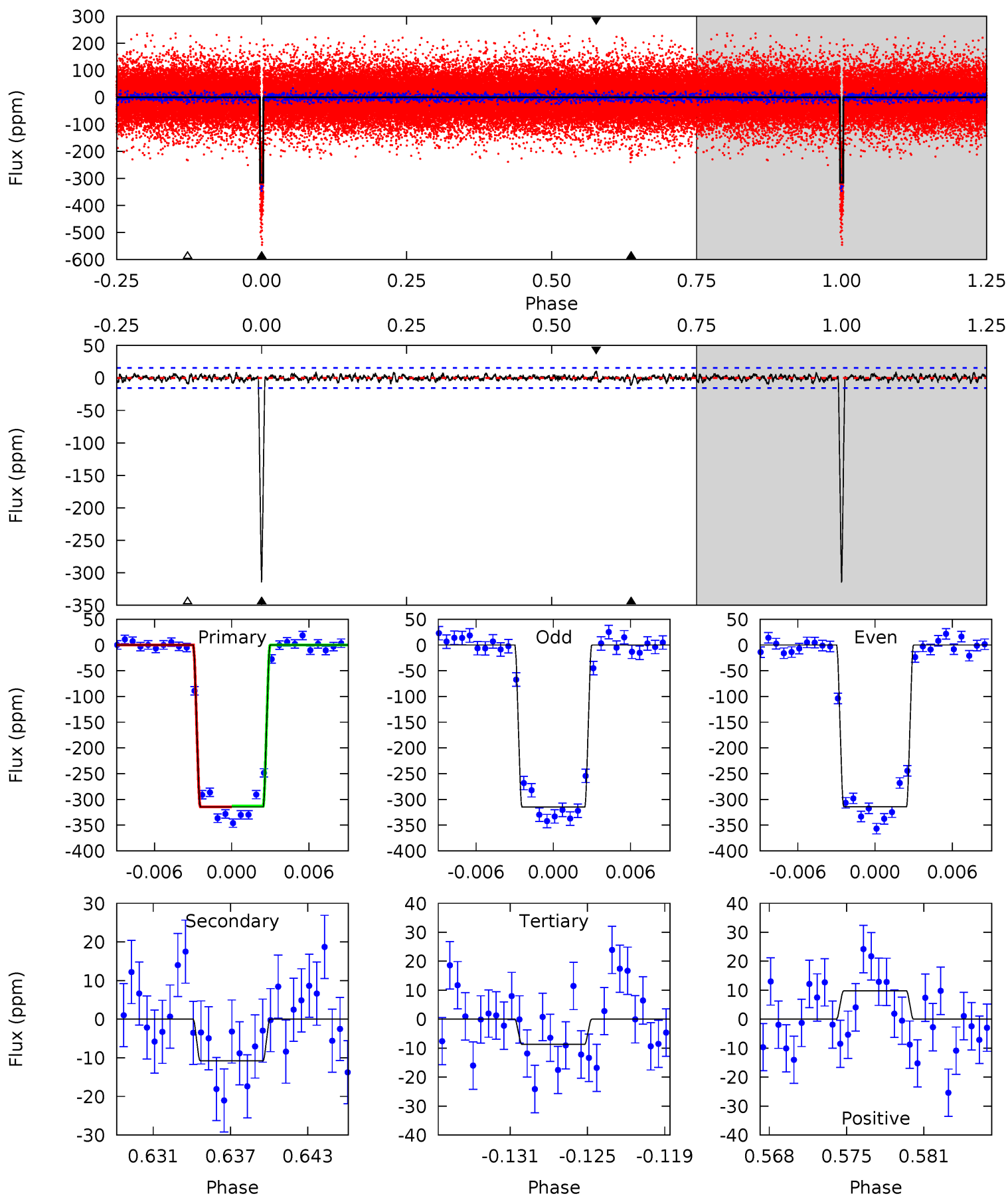
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
96.9	5.67	5.60	8.51	5.11	2.72	2.17	91.3	88.4	0.07	-2.84	1.81	0.99	0.08	0.61



Alt Model-Shift Uniqueness Test

009451706-02, P = 48.630784 Days, E = 123.910998 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
103.7	3.55	2.85	3.22	5.12	2.73	0.91	100.8	100.4	0.70	0.33	0.14	0.95	0.03	0.24



Stellar Parameters For KIC 009451706

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6075^{+122}_{-97}	$4.264^{+0.012}_{-0.012}$	$0.320^{+0.100}_{-0.100}$	$1.352^{+0.036}_{-0.030}$	$1.225^{+0.055}_{-0.040}$	$0.698^{+0.033}_{-0.035}$
	+2%/-2%	+0%/-0%	+31%/-31%	+3%/-2%	+4%/-3%	+5%/-5%
Source	SPE8	AST8	SPE8	DSEP		

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

Secondary Eclipse Parameters for KIC 009451706-02 / KOI 0271.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-20 ± 4	$2.82^{+0.16}_{-0.16}$	825^{+17}_{-15}	3458^{+124}_{-126}	111^{+24}_{-23}
Alt.	-11 ± 3	$2.62^{+0.15}_{-0.15}$	824^{+16}_{-14}	3206^{+138}_{-170}	67^{+21}_{-21}

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

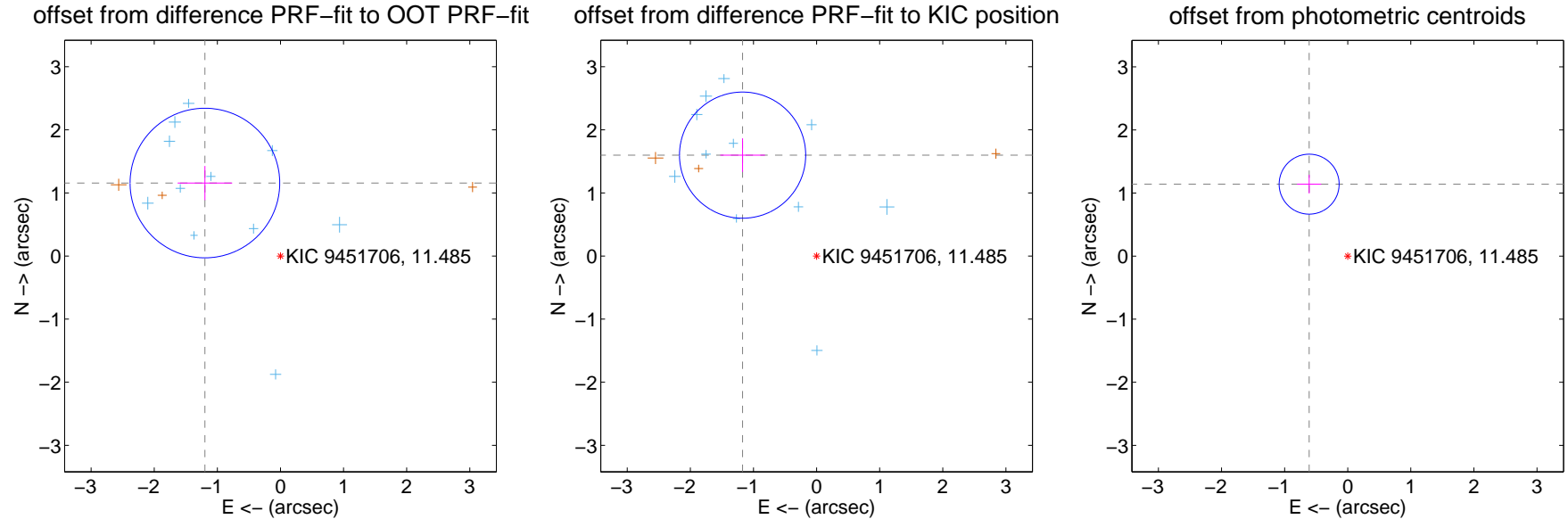
DV Centroid Data

Supplemental centroid analysis for 009451706-02. **Kepler magnitude: 11.48.** Transit SNR 49.82

There are 11 quarters with good PRF difference image offsets

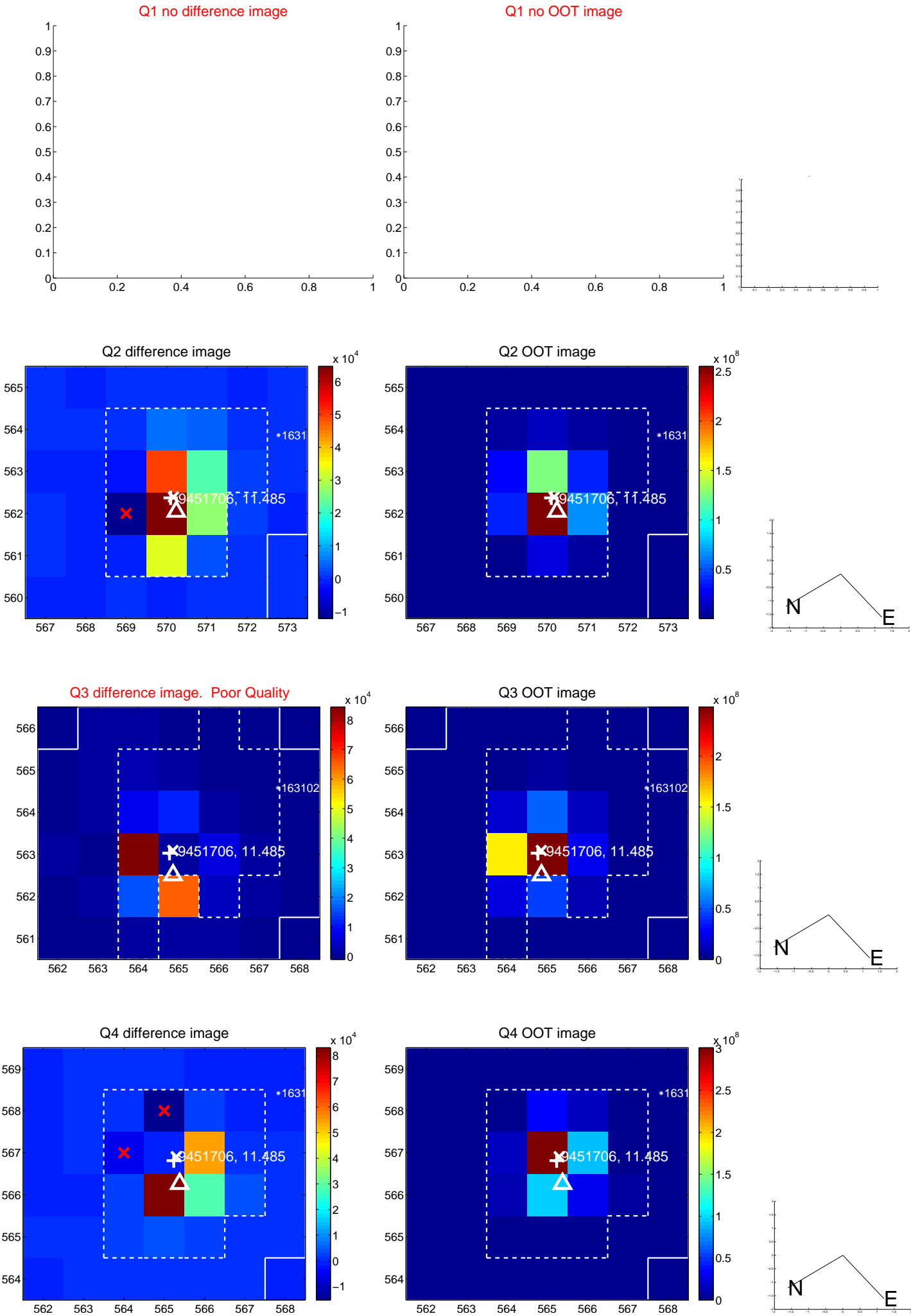
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.664 ± 0.395	4.21	1.197 ± 0.432	1.156 ± 0.270
PRF-fit source offset from KIC position	1.982 ± 0.333	5.95	1.172 ± 0.354	1.599 ± 0.266
photometric centroid source offset	1.29 ± 0.16	8.17	0.61 ± 0.19	1.14 ± 0.15

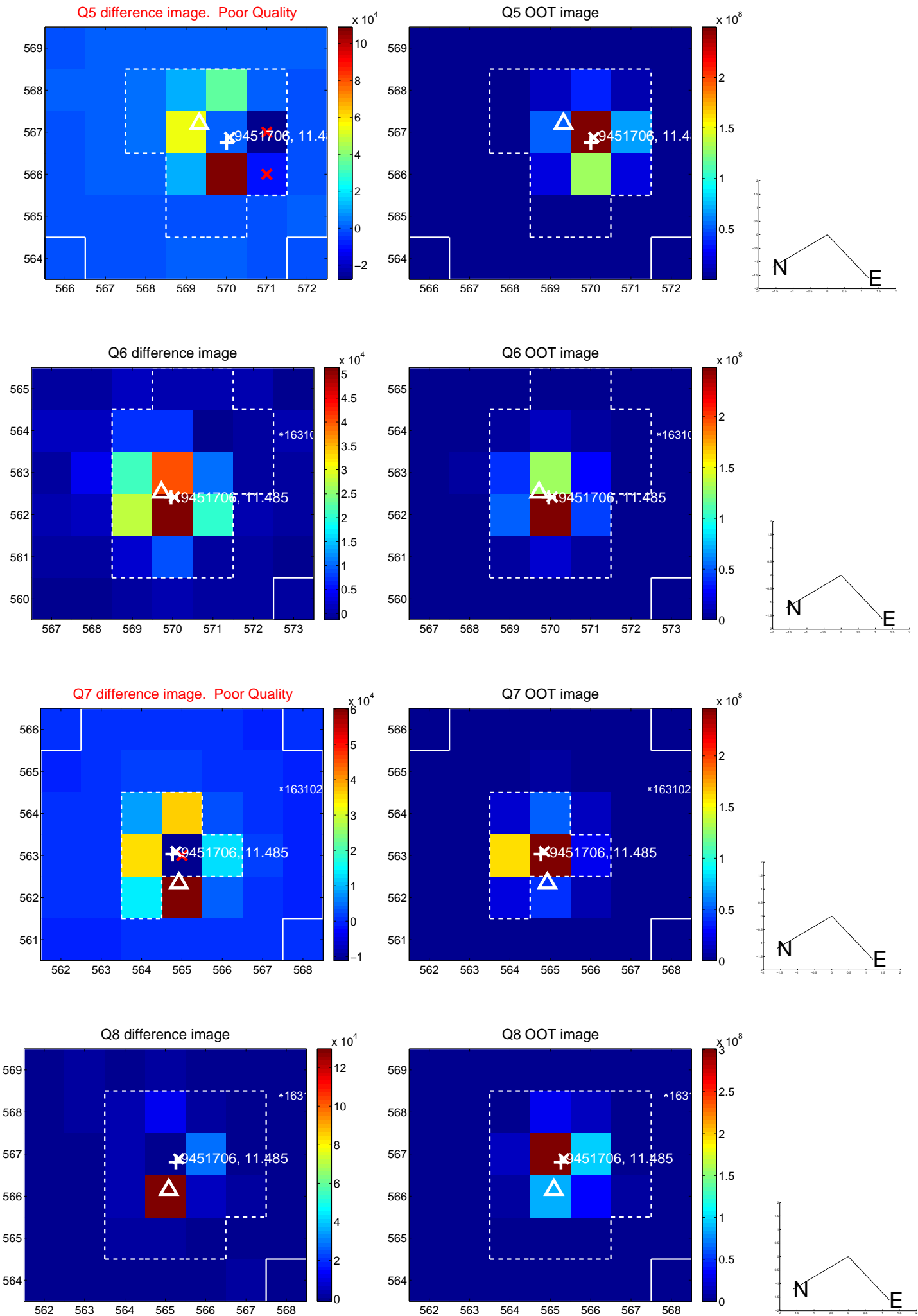


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

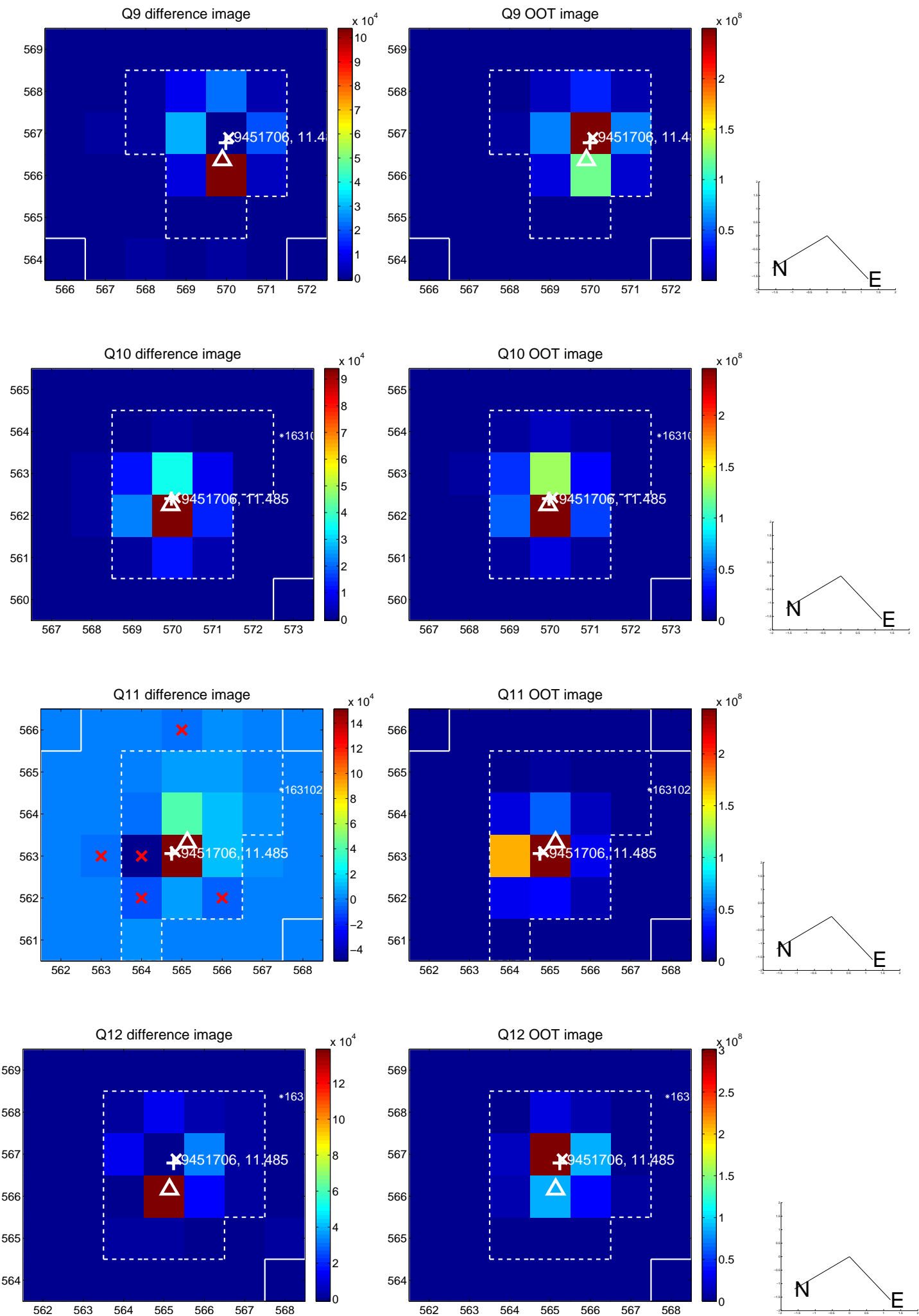
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



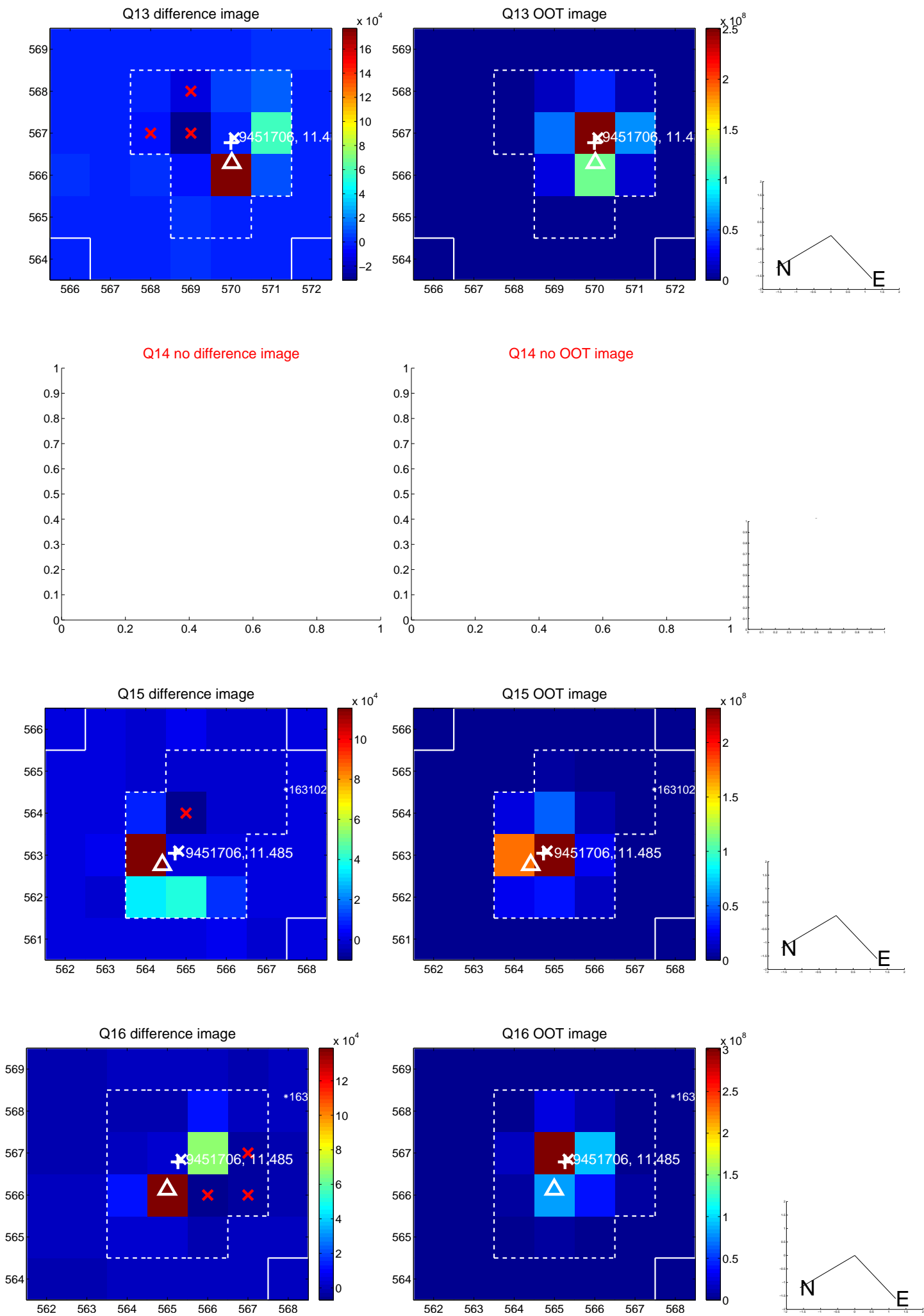
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



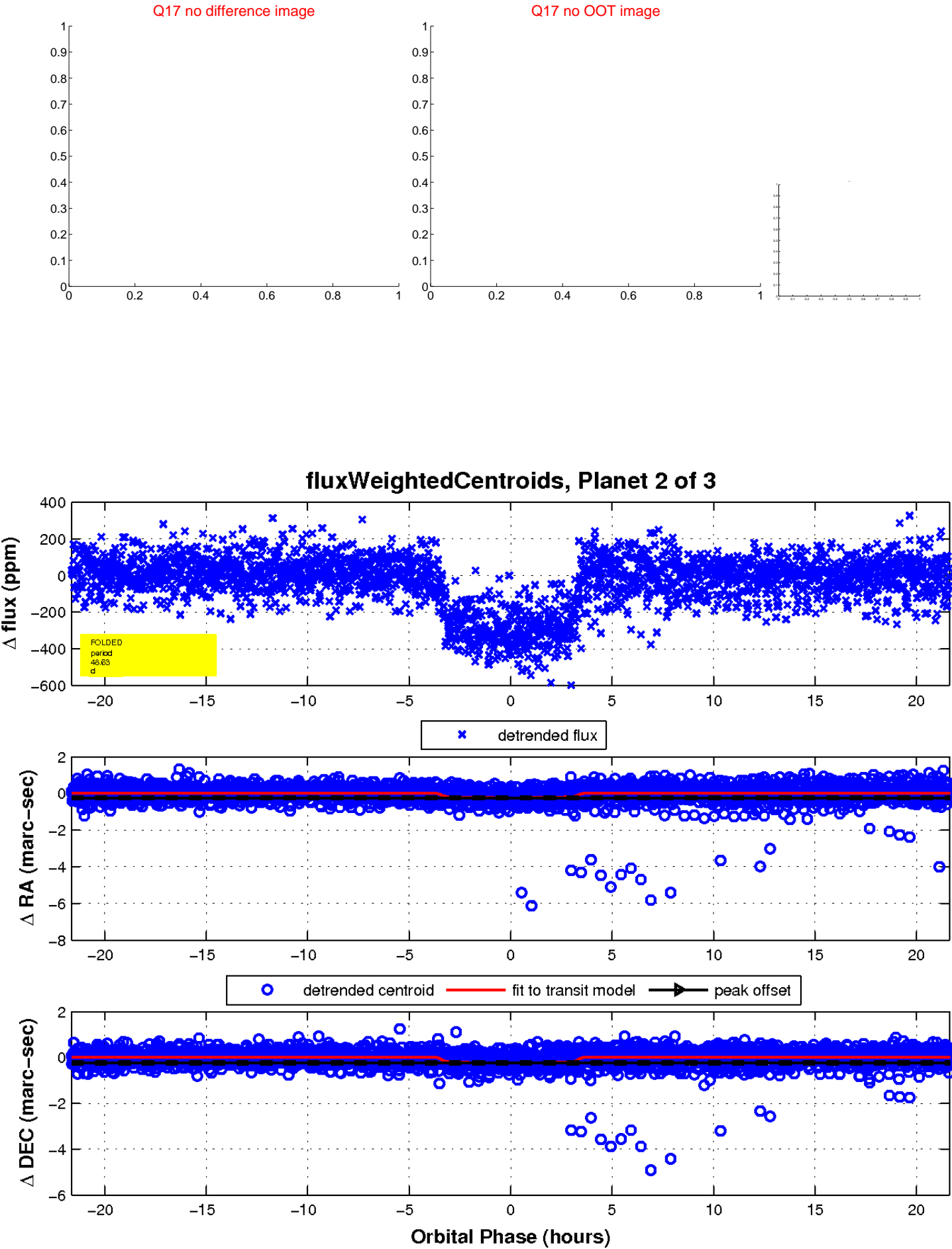
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

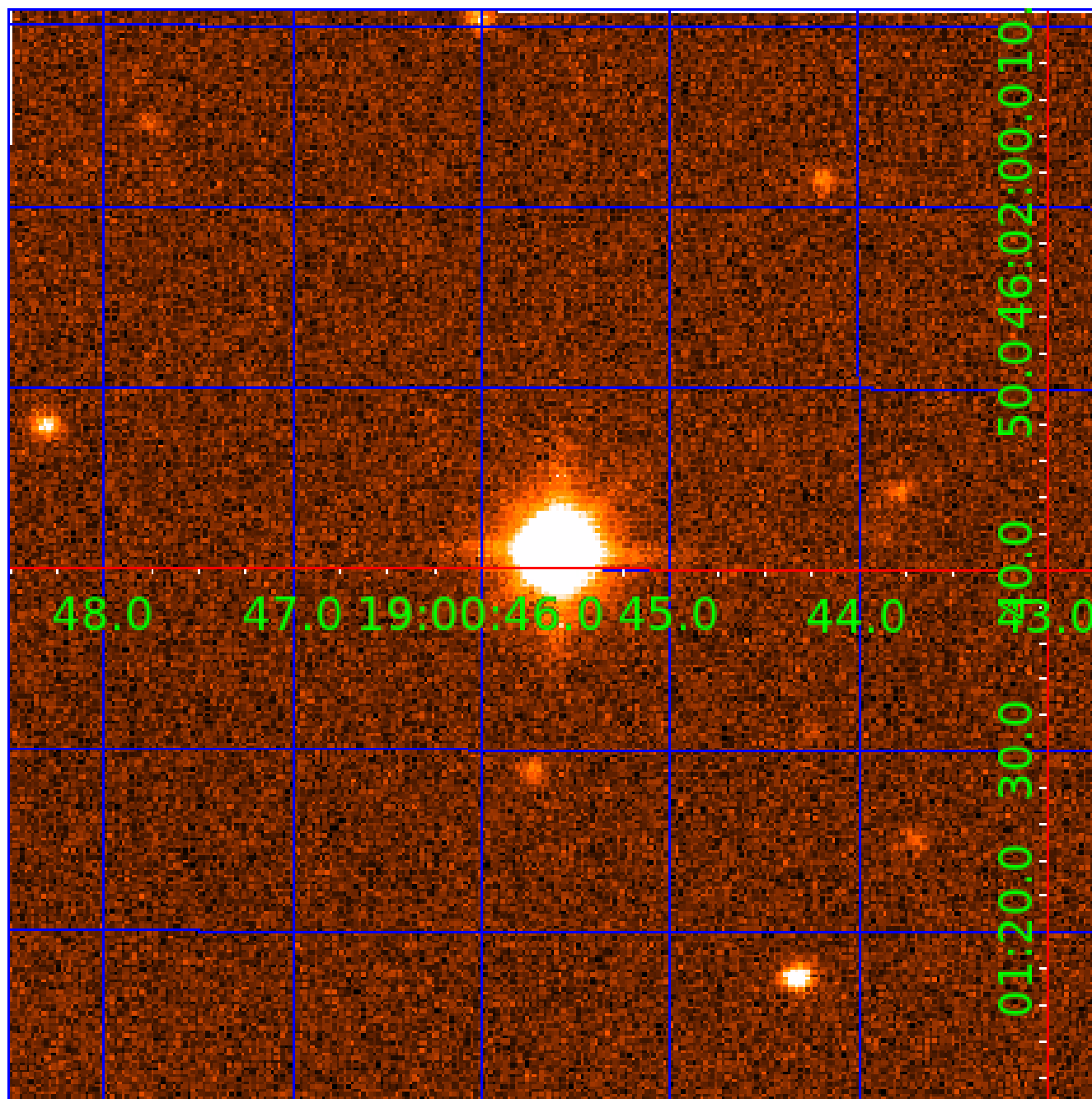


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009451706

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})
009451706-01	OBS	0271.02	29.393275	150.280858	325.5	7.184	62.0	65.2	1.35	6075	2.74	56.07
009451706-02	OBS	0271.01	48.630315	172.548468	348.5	7.213	49.8	49.8	1.35	6075	2.81	28.65
009451706-03	OBS	0271.03	14.435983	141.509702	97.7	3.557	24.1	25.3	1.35	6075	1.58	144.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009451706-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
009451706-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

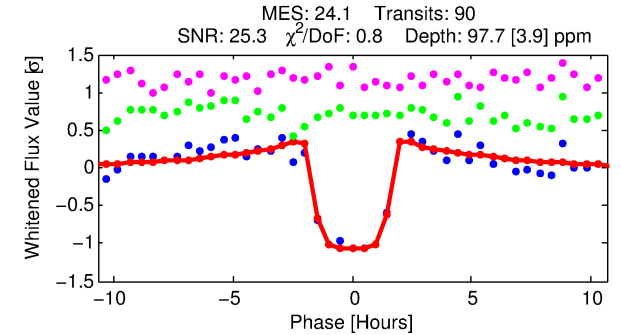
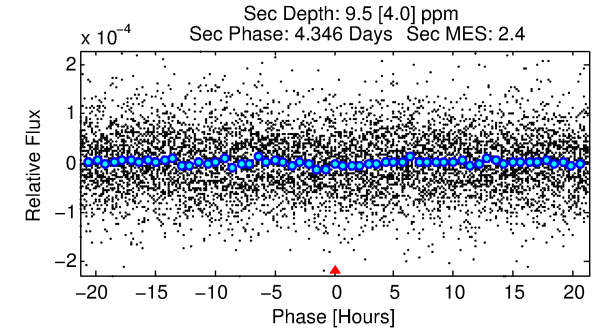
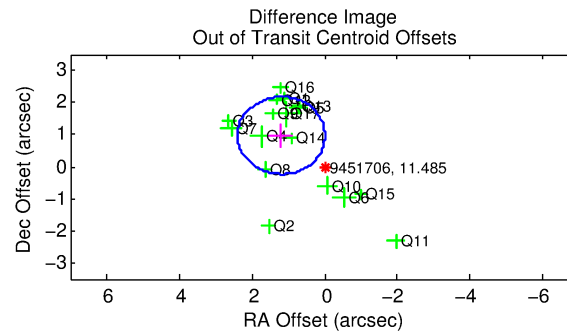
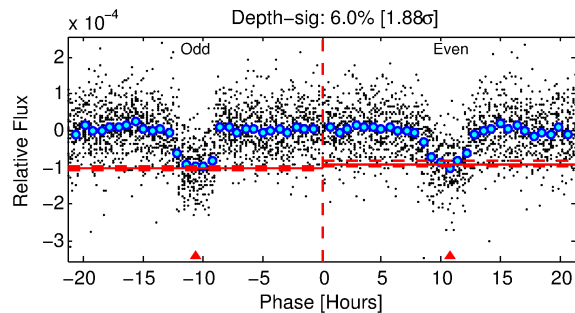
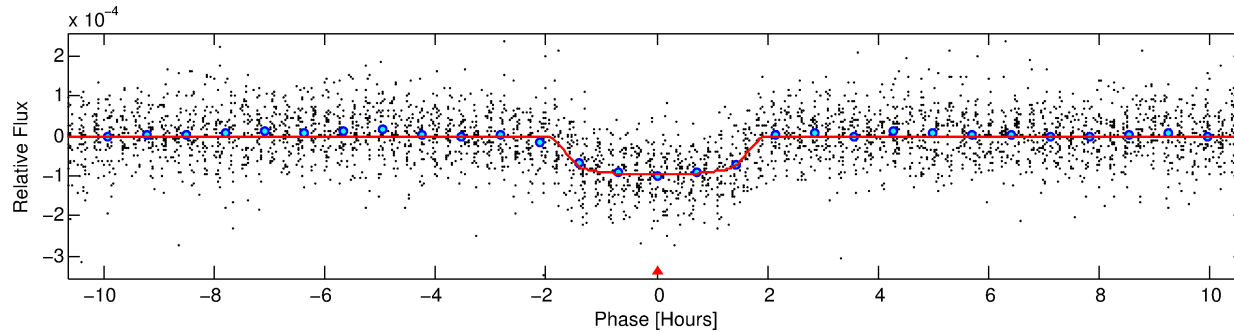
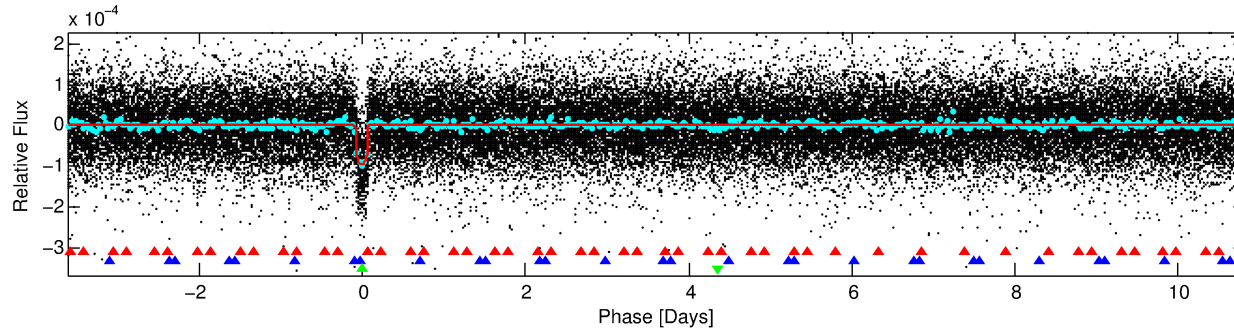
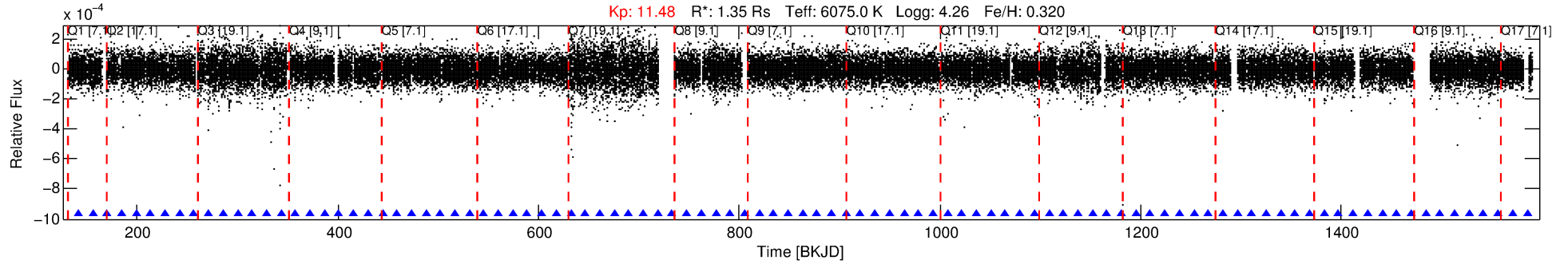
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009451706-03

No Significant Match Found

DV One-Page Summary

KIC: 9451706 Candidate: 3 of 3 Period: 14.436 d
KOI: K00271.03 Name: Kepler-127b Corr: 0.987



DV Fit Results:

Period = 14.43598 [0.00004] d
Epoch = 141.5097 [0.0023] BKJD
Rp/R* = 0.0107 [0.0020]
a/R* = 14.30 [13.08]
b = 0.90 [0.20]
Seff = 144.70 [12.20]
Teff = 884 [19] K
Rp = 1.58 [0.30] Re
a = 0.1242 [0.0025] AU
Ag = 32.11 [17.99] [1.73 σ]
Teffp = 3255 [460] K [5.15 σ]

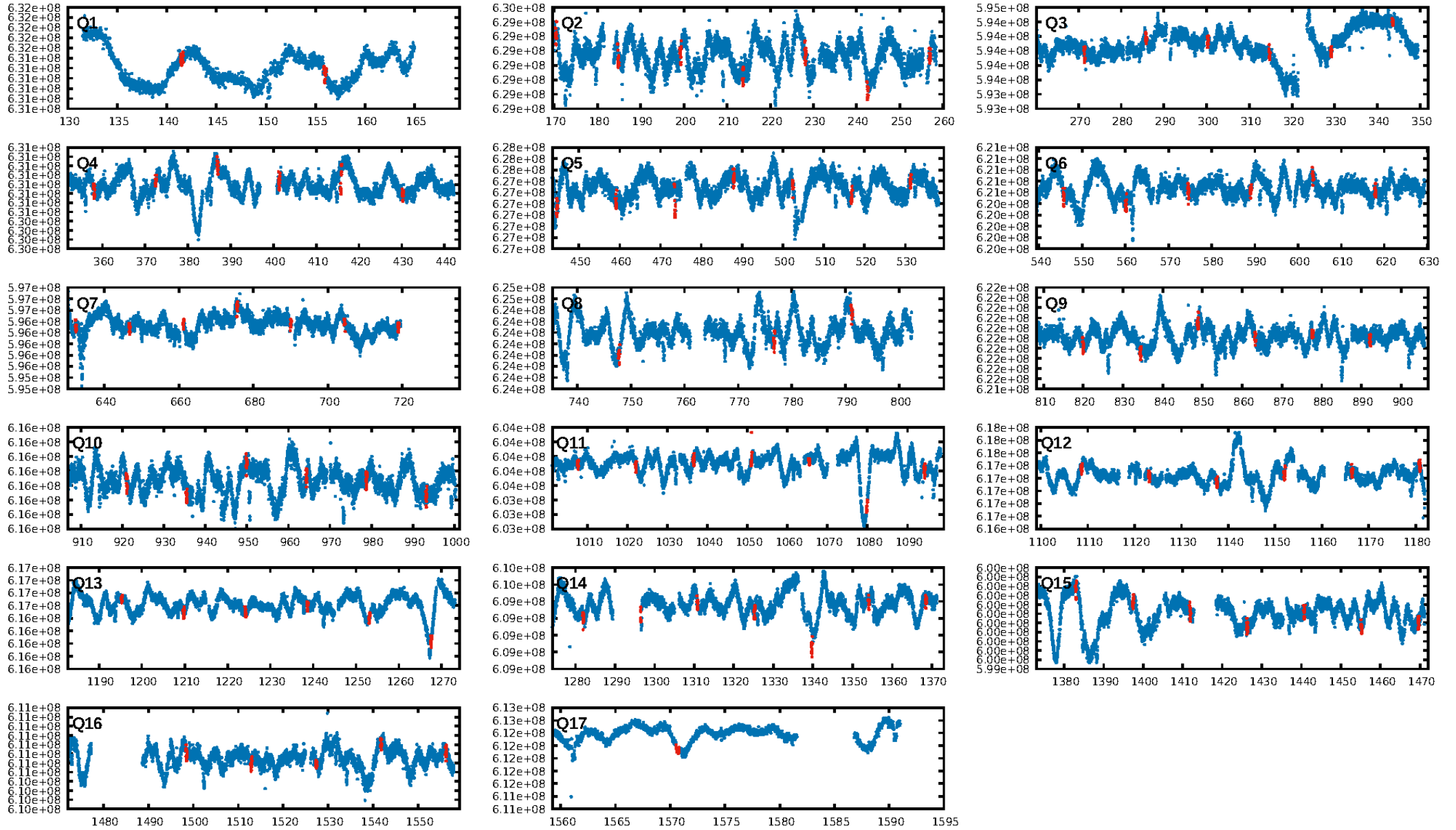
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [44.78 σ]
ModelChiSquare2-sig: 85.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.98e-121
RollingBand-fgt: 1.00 [87/87]
GhostDiagnostic-chr: 5.012
Centroid-sig: 0.0%
Centroid-so: 1.251 arcsec [3.67 σ]
OotOffset-rm: 1.540 arcsec [3.83 σ]
KicOffset-rm: 1.878 arcsec [4.50 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

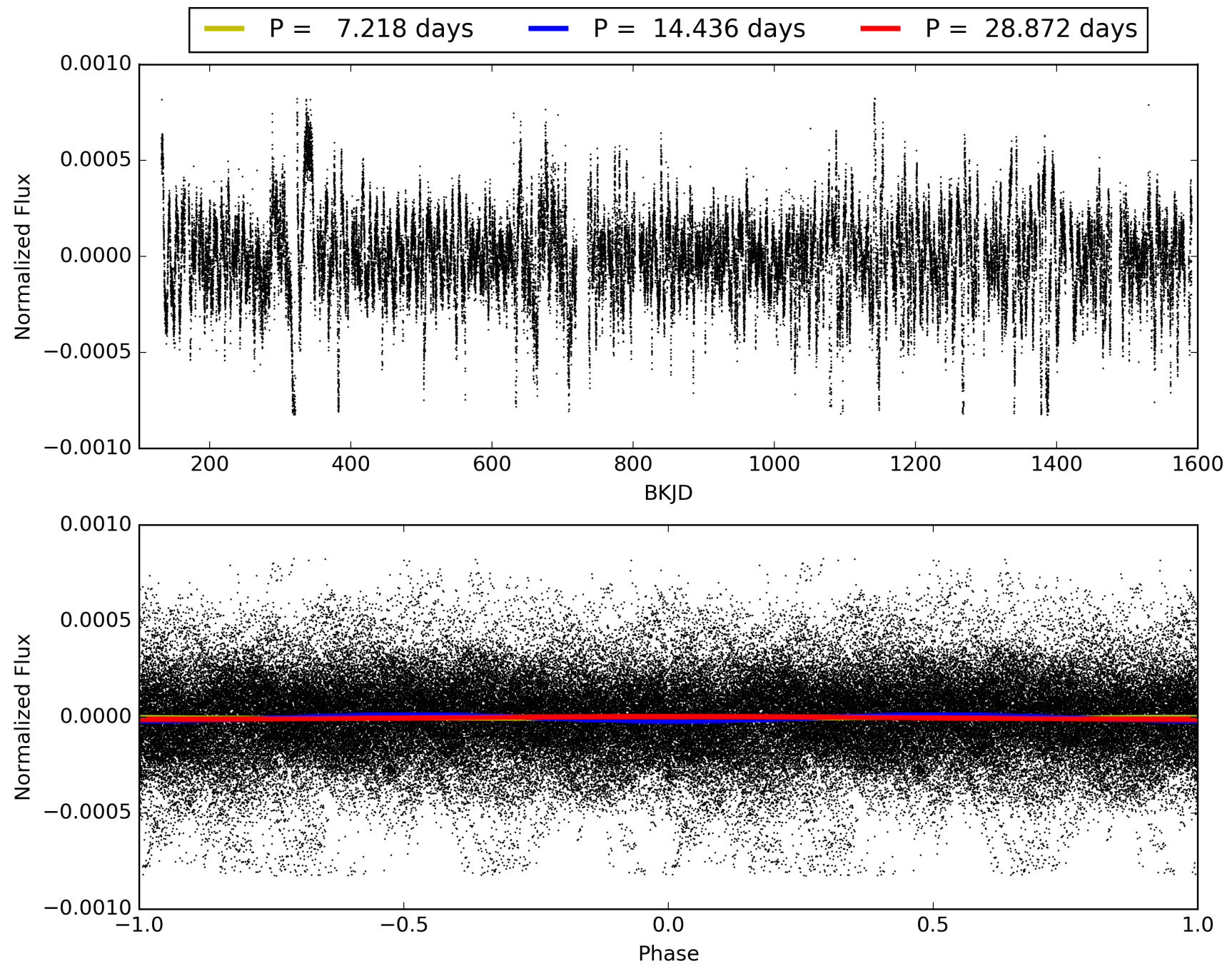
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:52:57 Z

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

TCE 009451706-03, PDC Light Curves

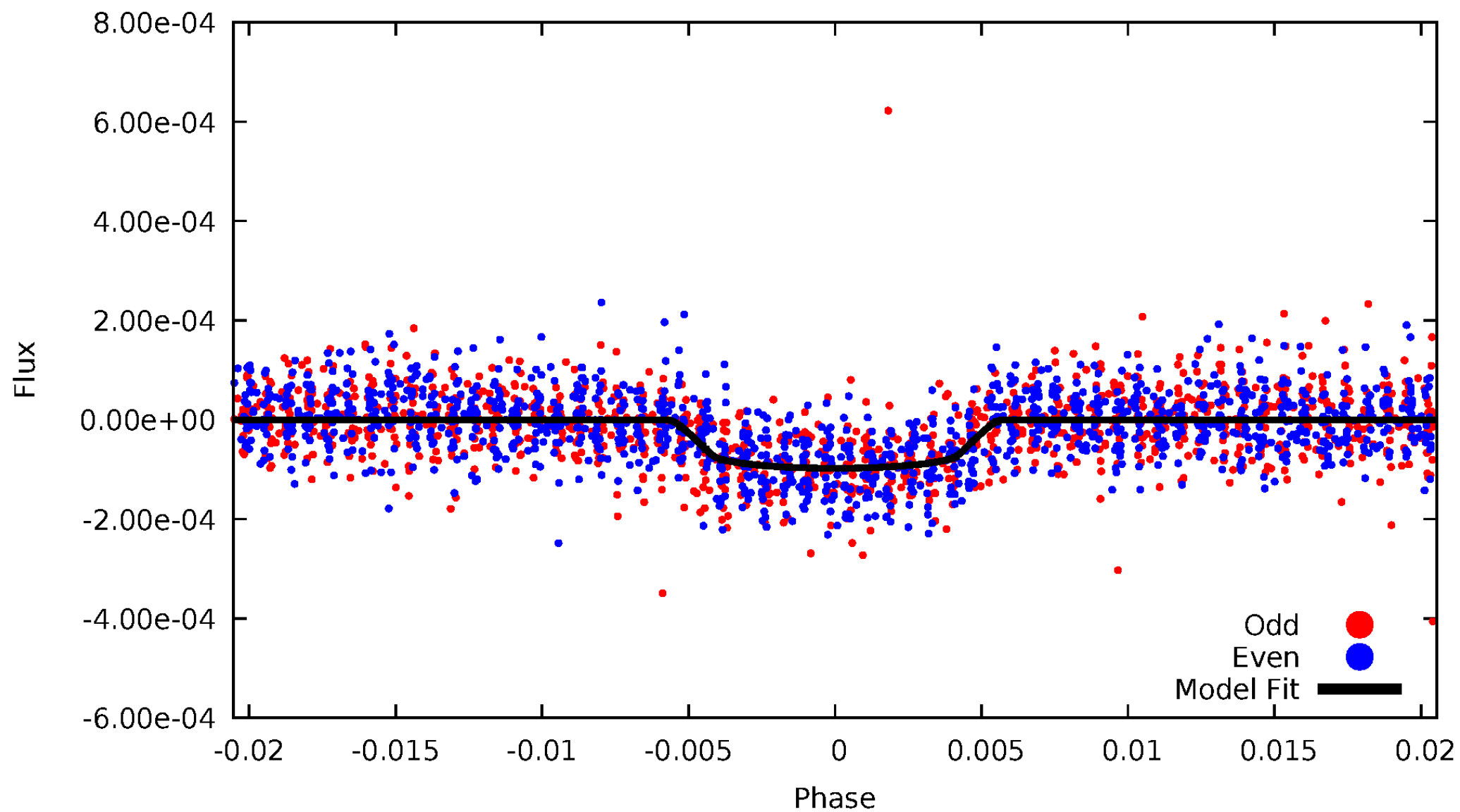


TCE 009451706-03



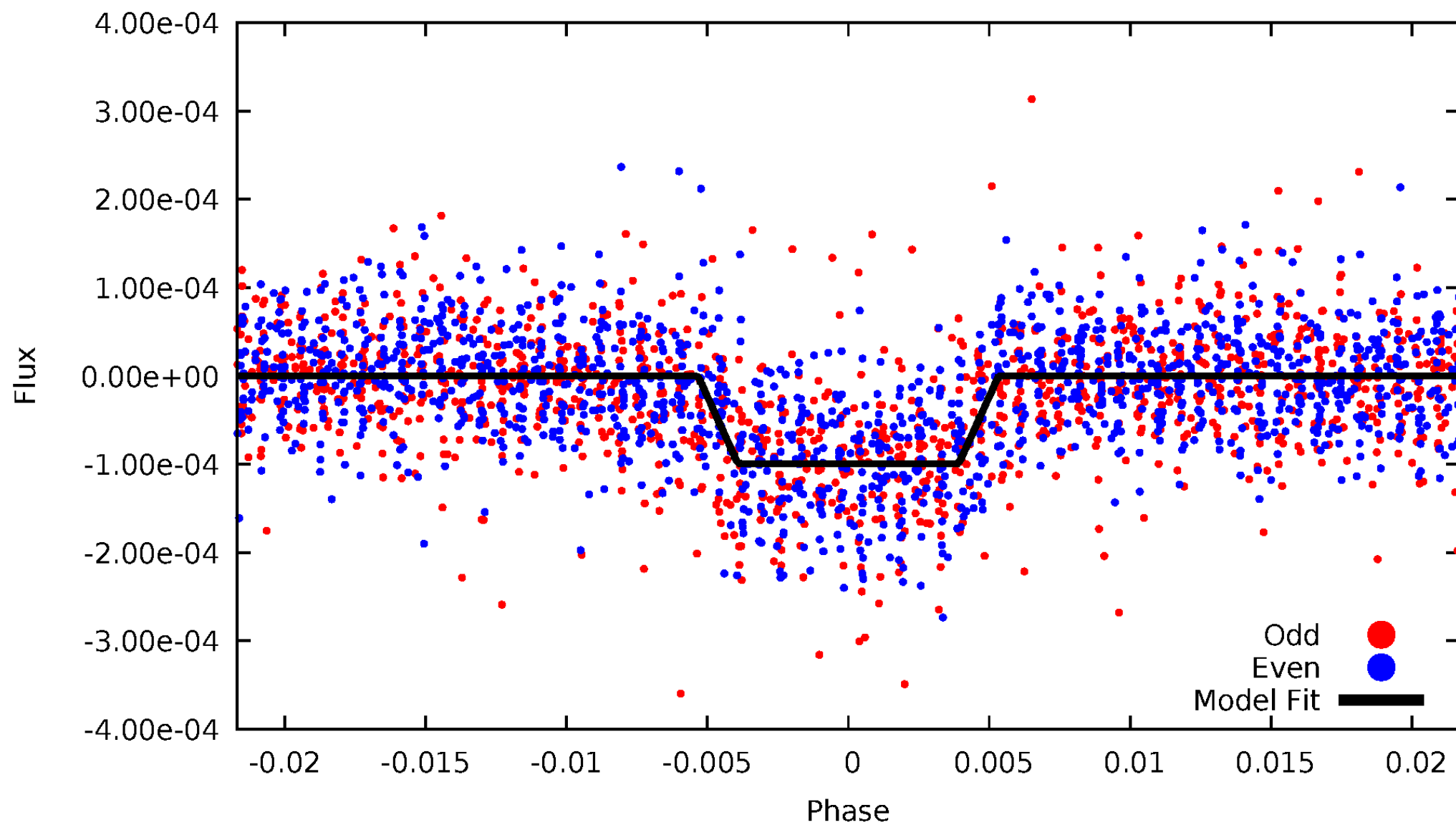
DV Odd/Even

TCE 009451706-03

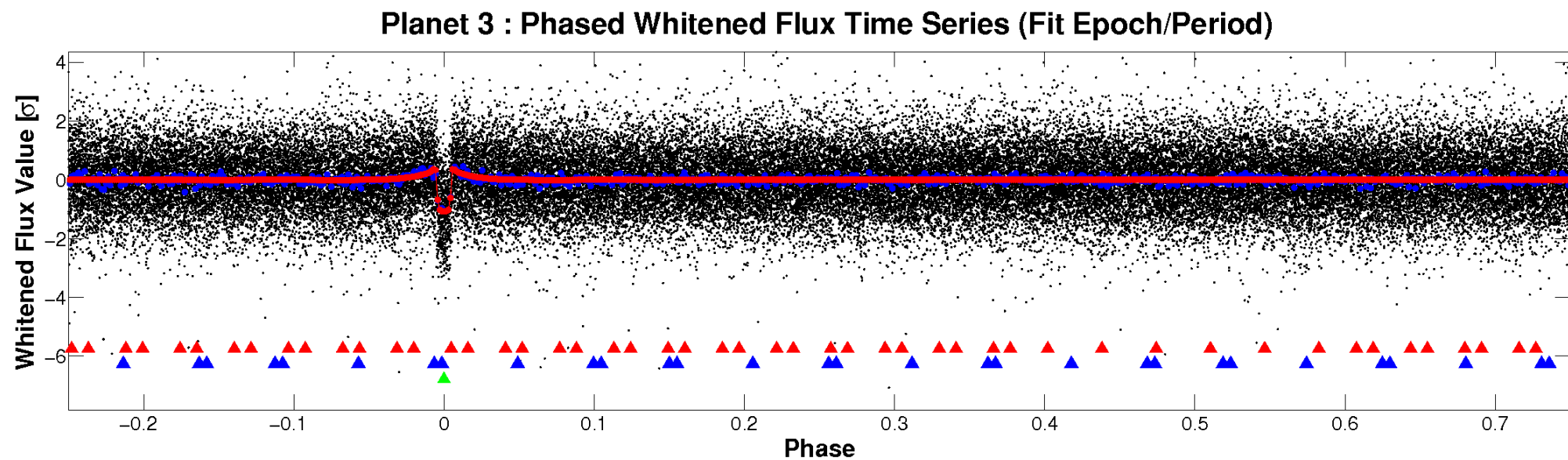
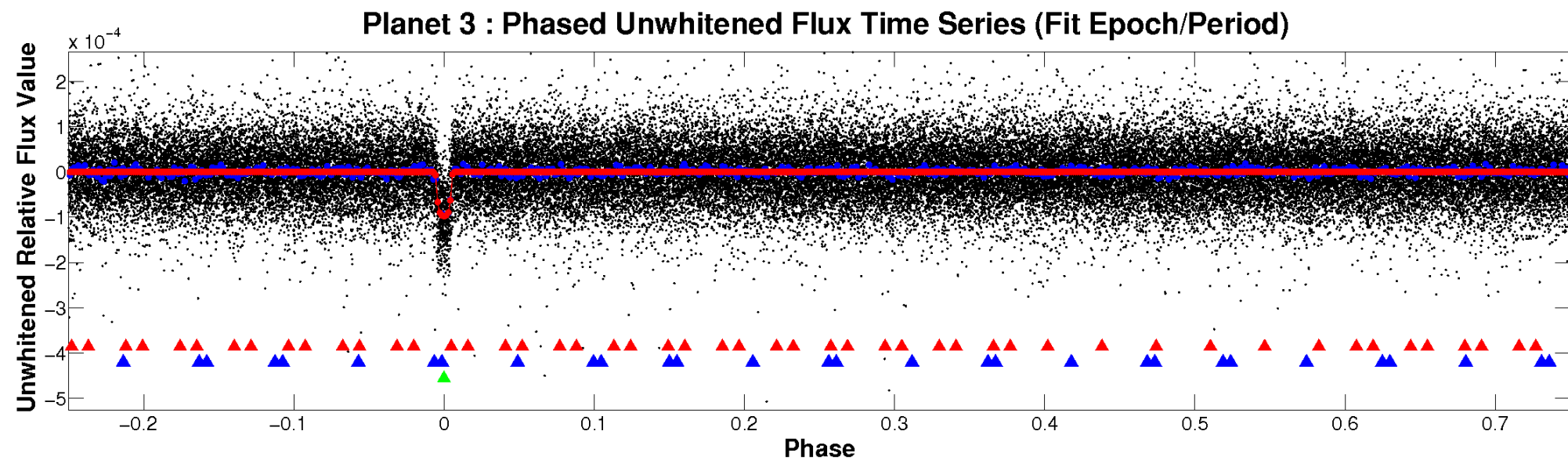


ALT Odd/Even

TCE 009451706-03

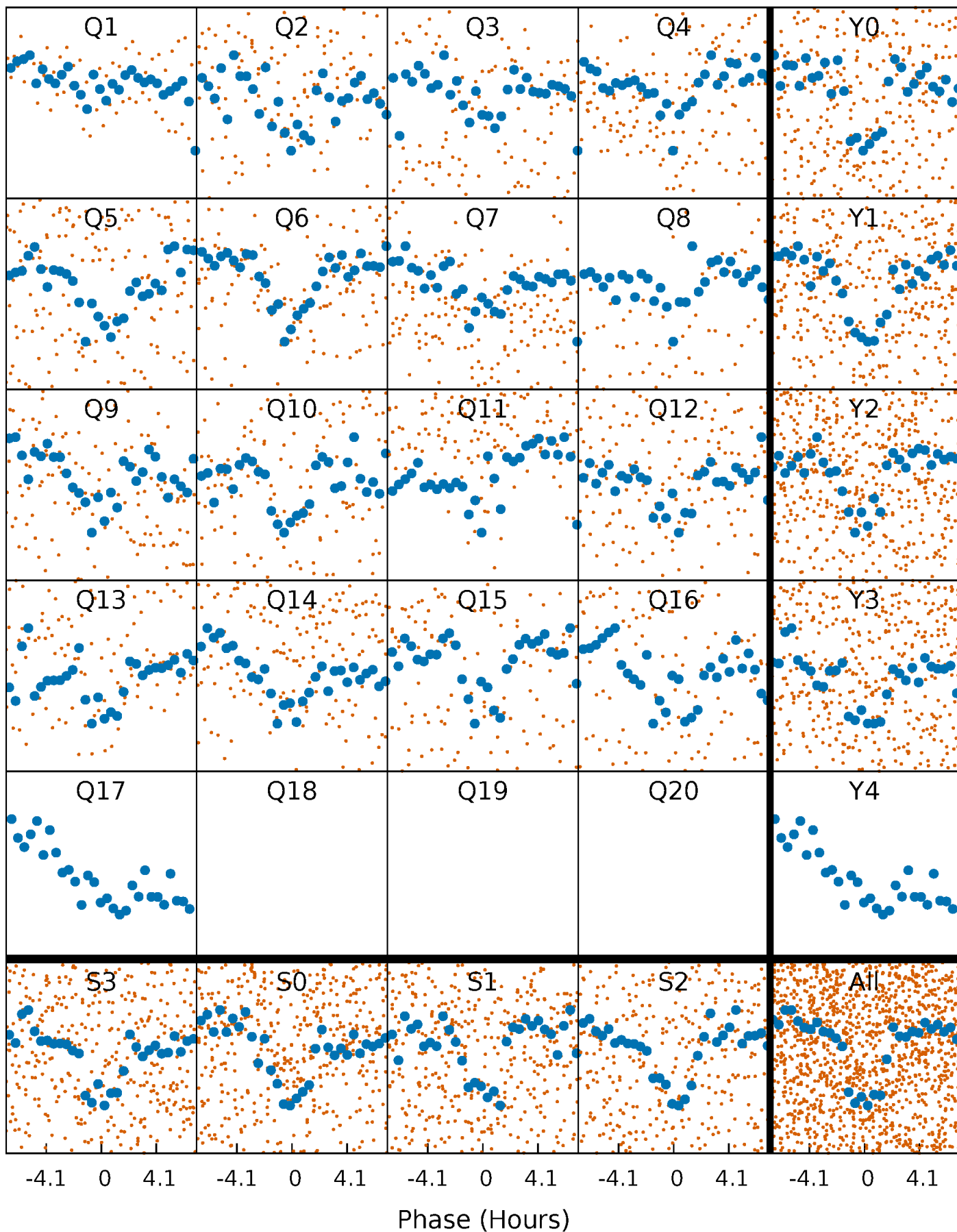


Non-Whitened Vs. Whitened Light Curve



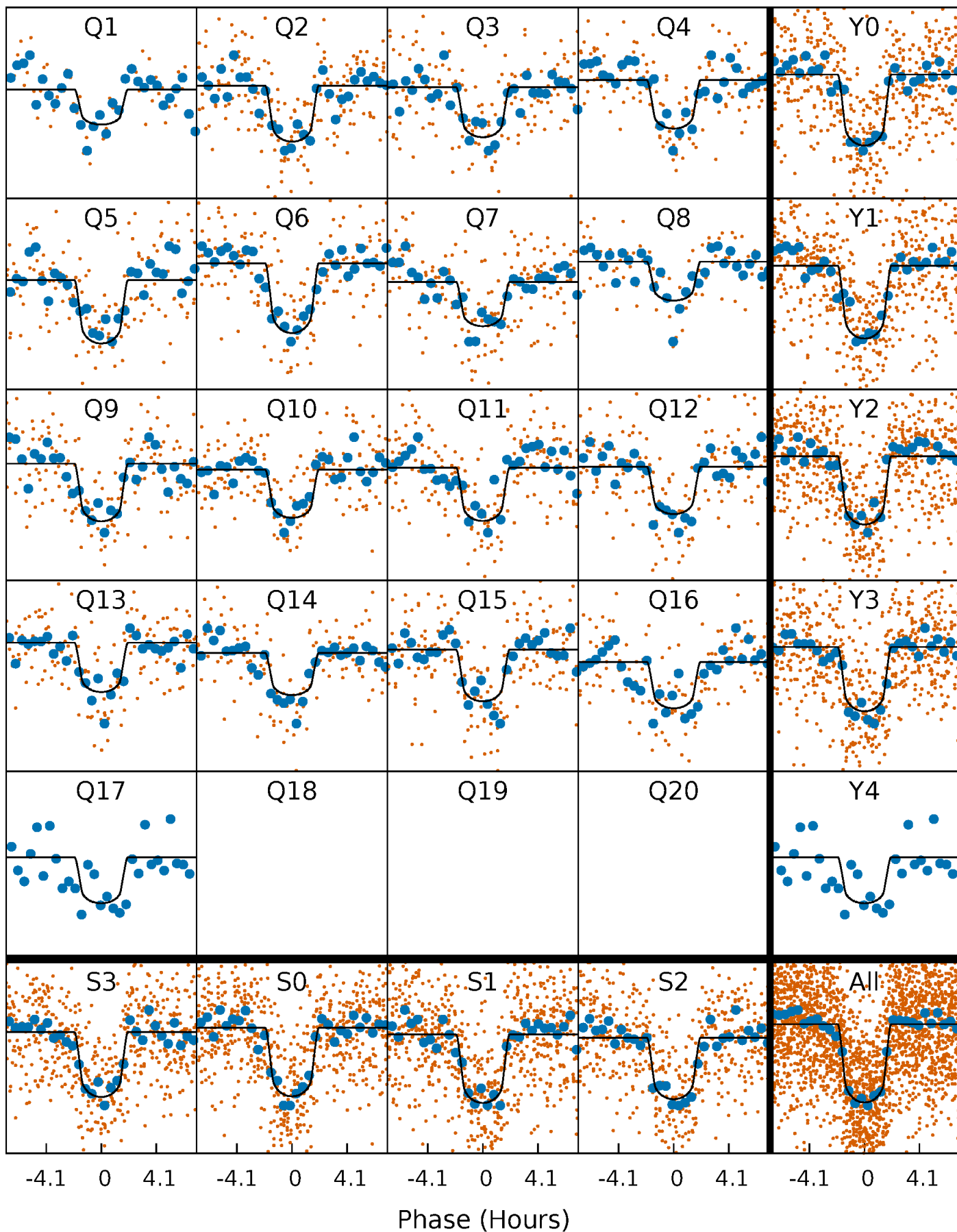
PDC Quarter-Phased Transit Curves

TCE 009451706-03 P= 14.435983 Days $T_0=141.509702$ (BKJD)



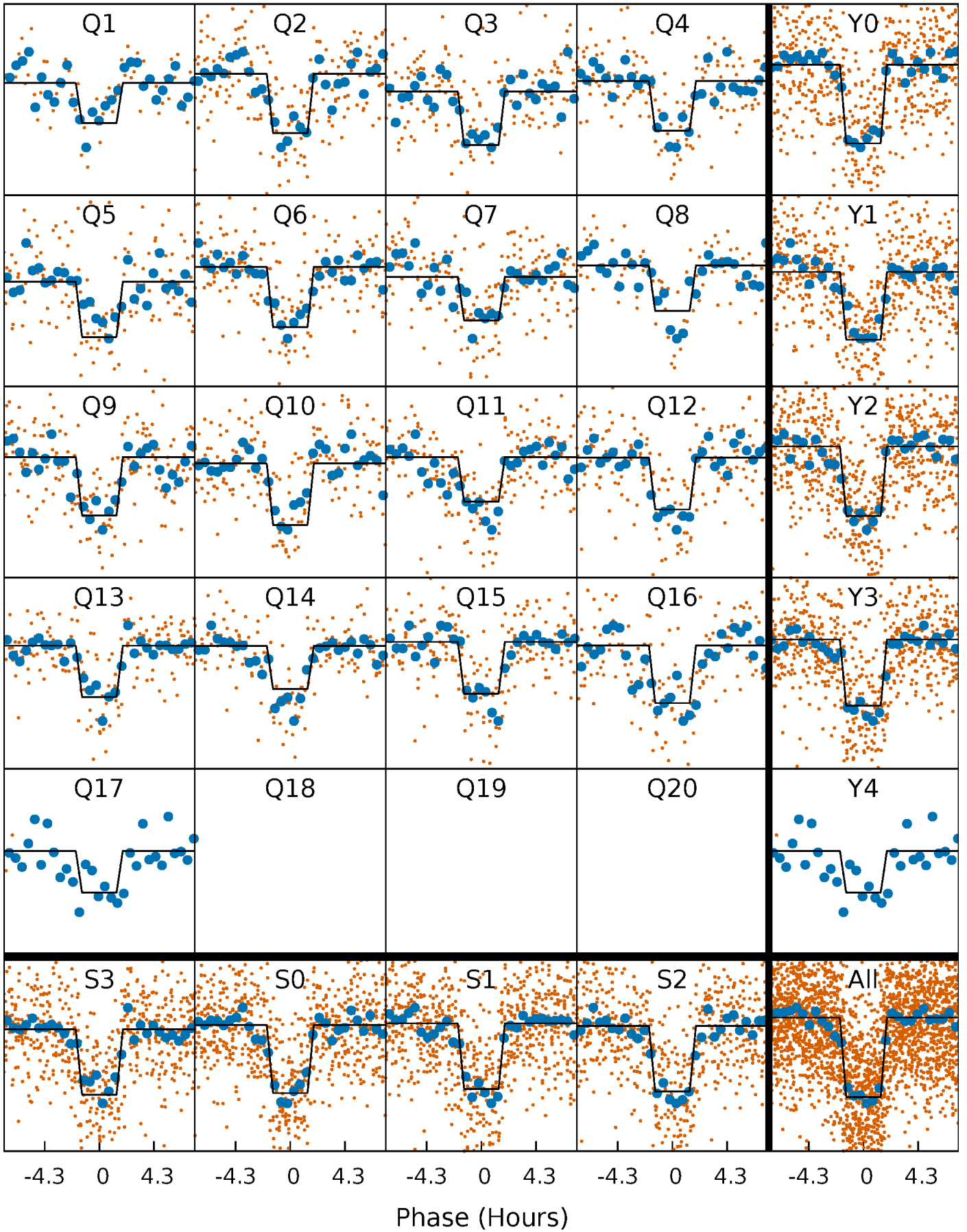
DV Quarter-Phased Transit Curves

TCE 009451706-03 P= 14.435983 Days $T_0=141.509702$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

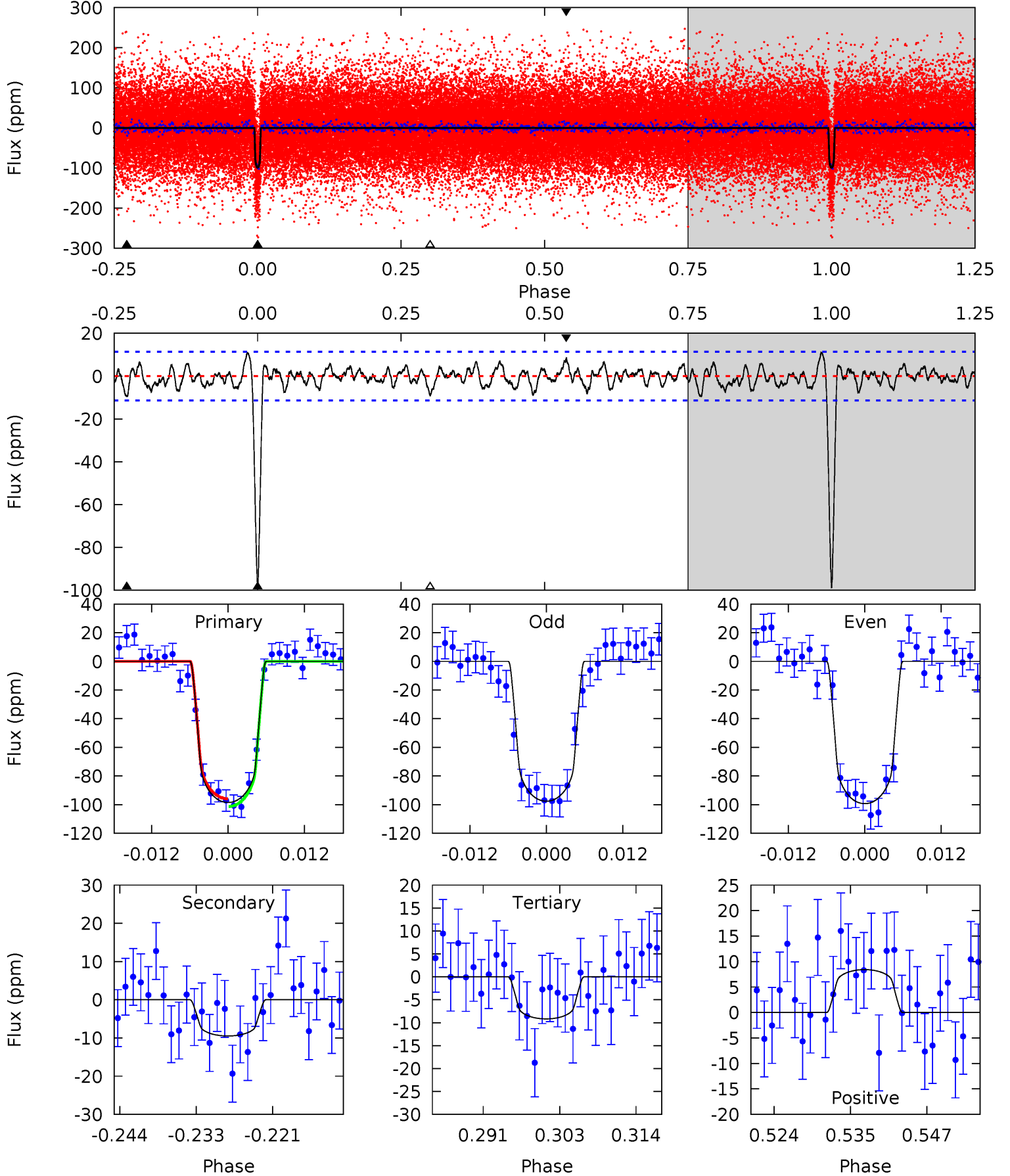
TCE 009451706-03 P= 14.435914 Days $T_0=141.513236$ (BKJD)



DV Model-Shift Uniqueness Test

009451706-03, $P = 14.435983$ Days, $E = 127.073719$ Days

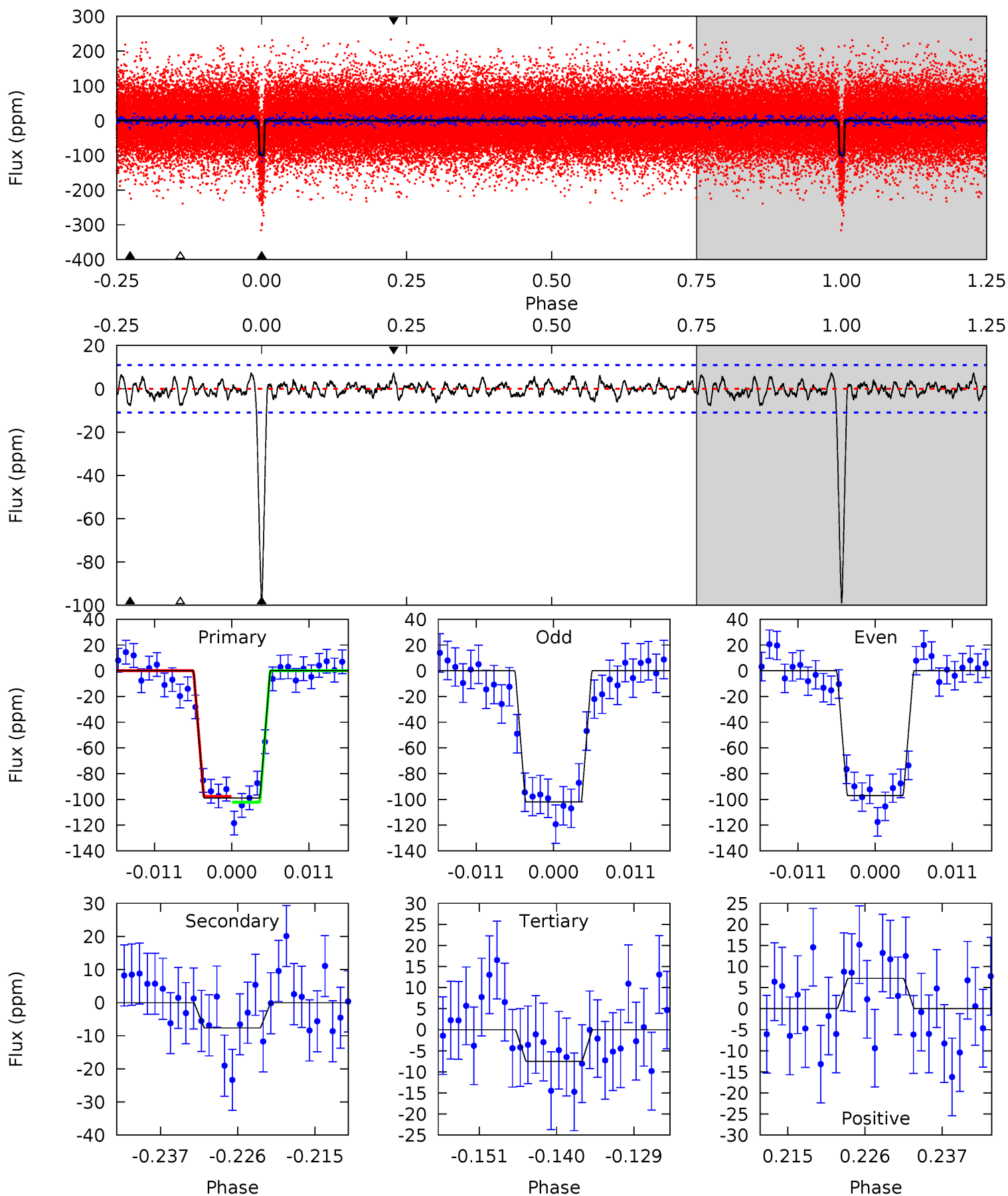
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.3	4.16	4.03	3.70	5.00	2.52	1.47	39.2	39.6	0.13	0.47	0.38	1.04	0.10	1.19



Alt Model-Shift Uniqueness Test

009451706-03, P = 14.435914 Days, E = 127.077322 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.1	3.49	3.42	3.28	5.01	2.55	1.15	41.7	41.9	0.07	0.21	1.12	1.05	0.07	1.03



Stellar Parameters For KIC 009451706

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6075^{+122}_{-97}	$4.264^{+0.012}_{-0.012}$	$0.320^{+0.100}_{-0.100}$	$1.352^{+0.036}_{-0.030}$	$1.225^{+0.055}_{-0.040}$	$0.698^{+0.033}_{-0.035}$
	+2%/-2%	+0%/-0%	+31%/-31%	+3%/-2%	+4%/-3%	+5%/-5%
Source	SPE8	AST8	SPE8	DSEP		

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

Secondary Eclipse Parameters for KIC 009451706-03 / KOI 0271.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-9 ± 2	$1.57^{+0.32}_{-0.31}$	1235^{+24}_{-20}	3673^{+313}_{-260}	32^{+20}_{-12}
Alt.	-8 ± 2	$1.48^{+0.30}_{-0.32}$	1238^{+25}_{-23}	3617^{+336}_{-280}	29^{+20}_{-12}

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

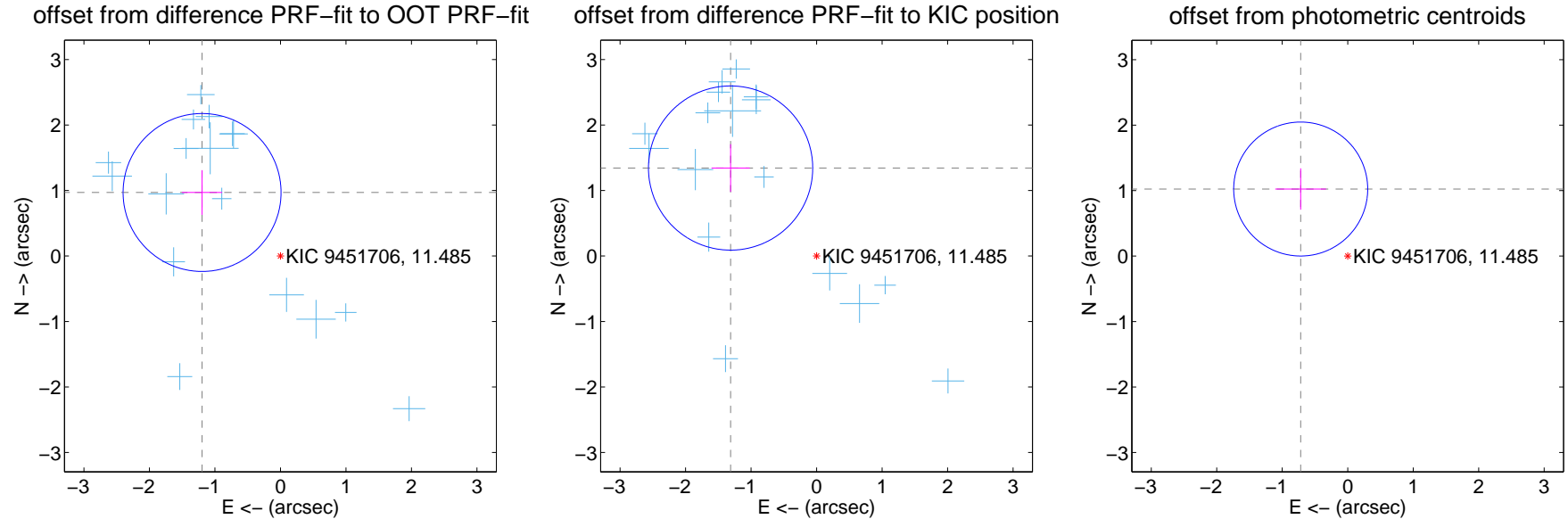
DV Centroid Data

Supplemental centroid analysis for 009451706-03. **Kepler magnitude: 11.48.** Transit SNR 25.32

There are 17 quarters with good PRF difference image offsets

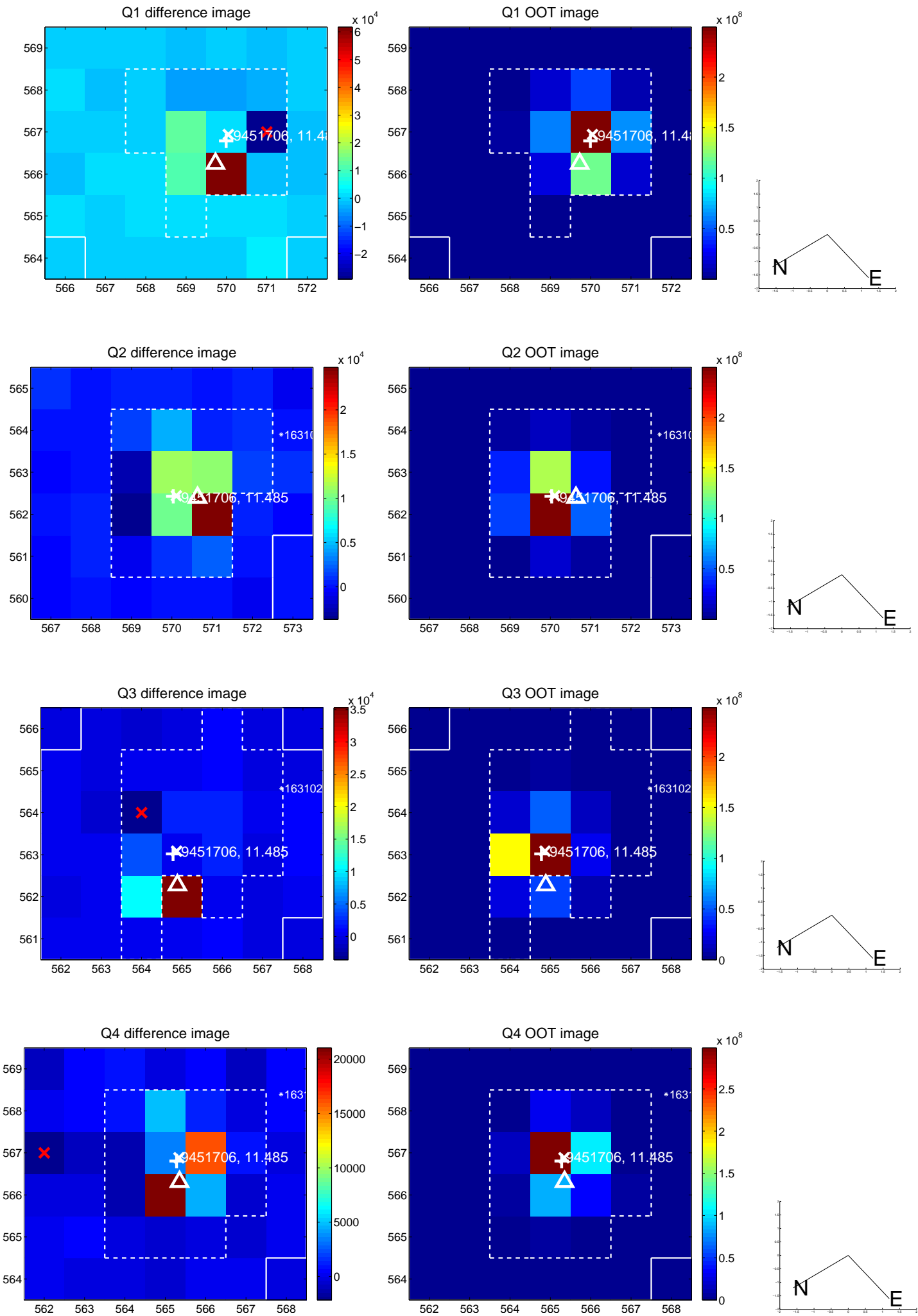
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.540 ± 0.402	3.83	1.196 ± 0.307	0.970 ± 0.341
PRF-fit source offset from KIC position	1.878 ± 0.418	4.50	1.312 ± 0.292	1.343 ± 0.363
photometric centroid source offset	1.25 ± 0.34	3.67	0.72 ± 0.39	1.02 ± 0.32

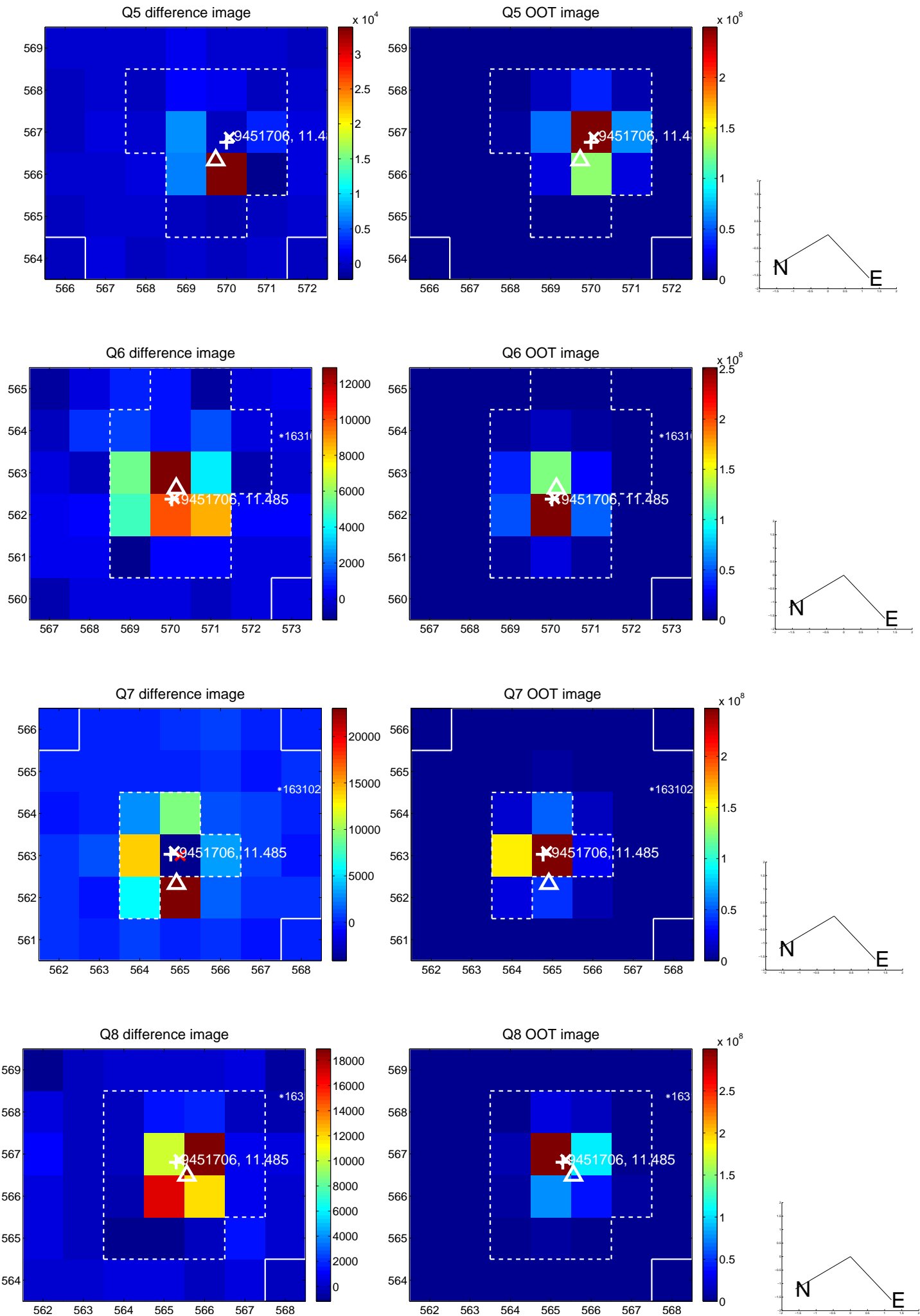


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

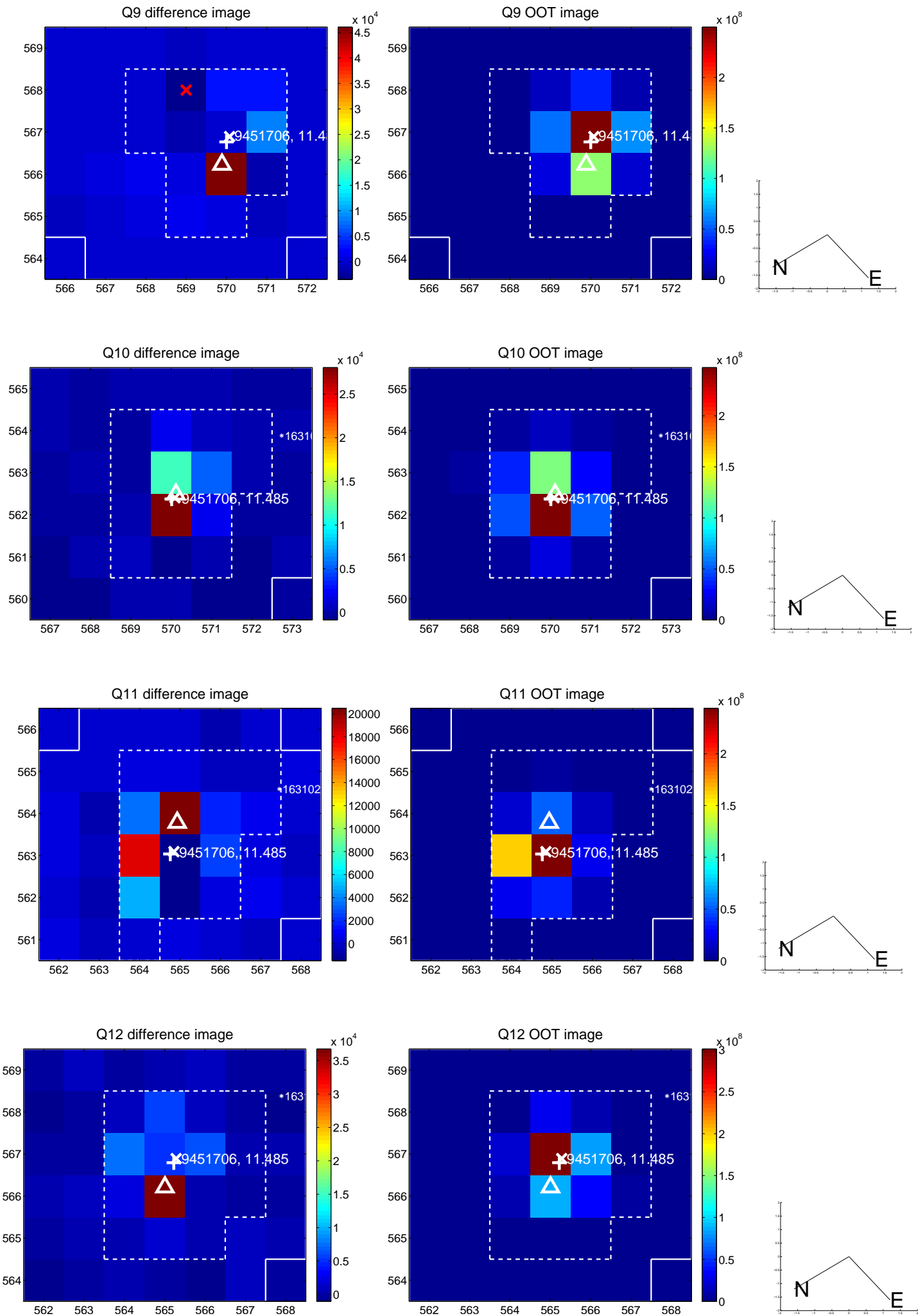
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



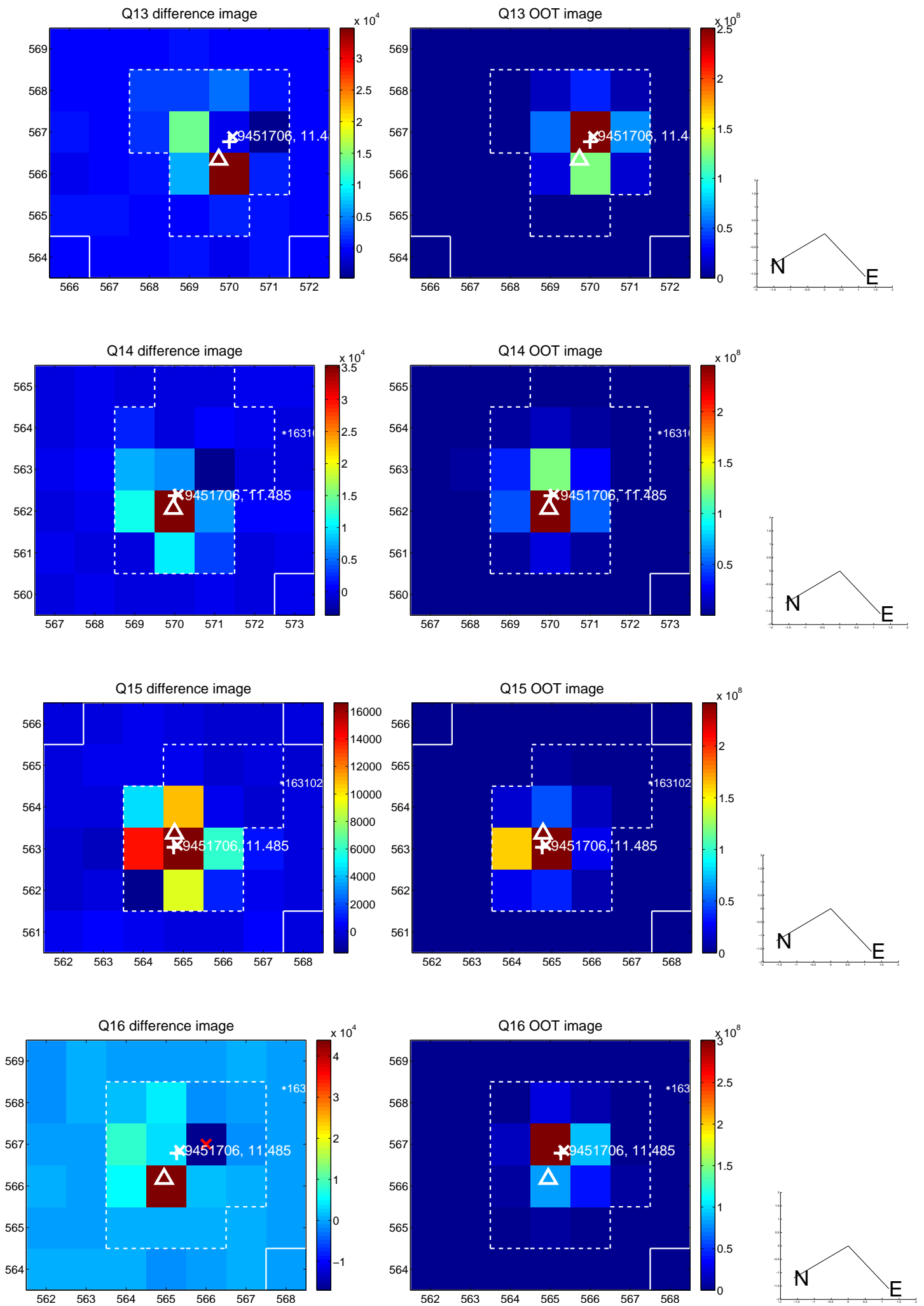
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



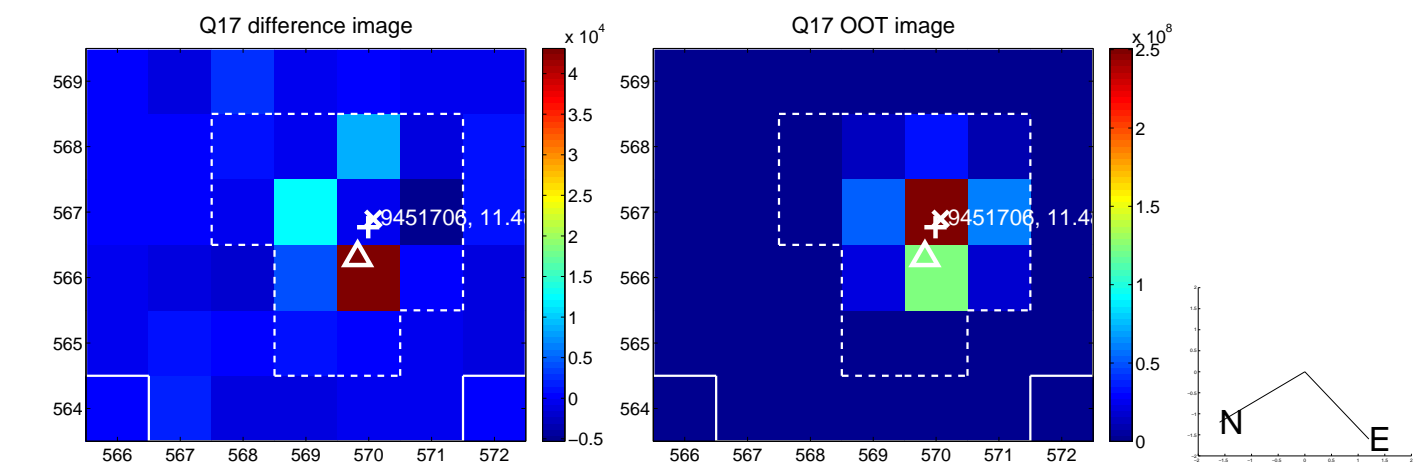
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



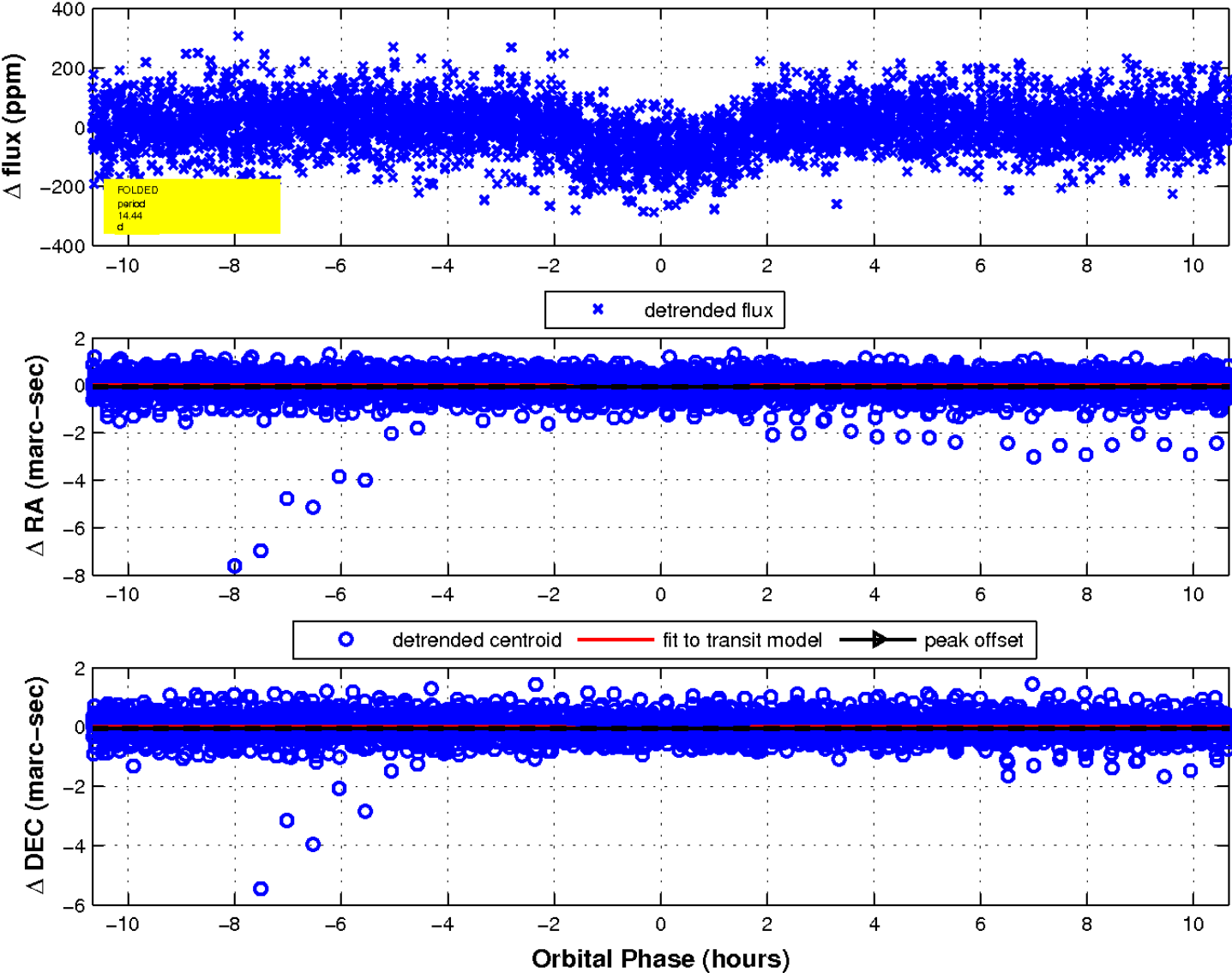
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

