

KIC 009456996

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})
009456996-01	OBS	No	1.068676	132.293597	2.0	7.905	16.4	0.3	1.91	7079	0.28	15264.27
009456996-02	OBS	No	39.564678	155.233547	5180.1	2.760	20.2	13.4	1.91	7079	14.61	123.71
009456996-06	OBS	No	31.014896	153.863351	351.8	0.777	10.0	0.9	1.91	7079	3.78	171.15
009456996-07	OBS	No	26.714889	144.567247	364.3	1.500	12.4	-1.0	1.91	7079	3.70	208.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009456996-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009456996-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT
009456996-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009456996-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

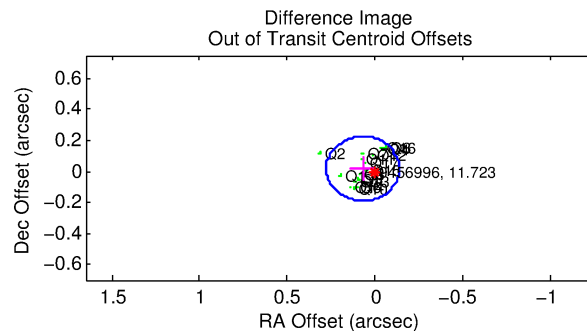
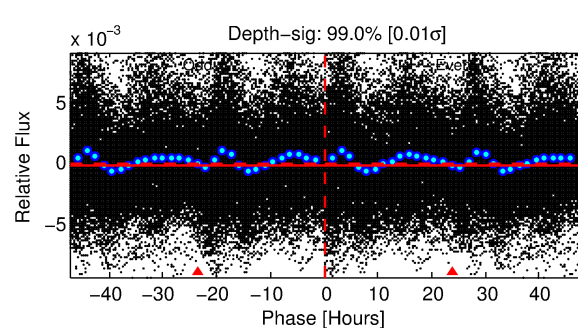
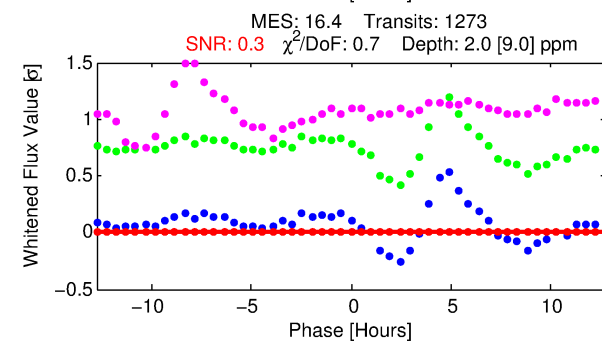
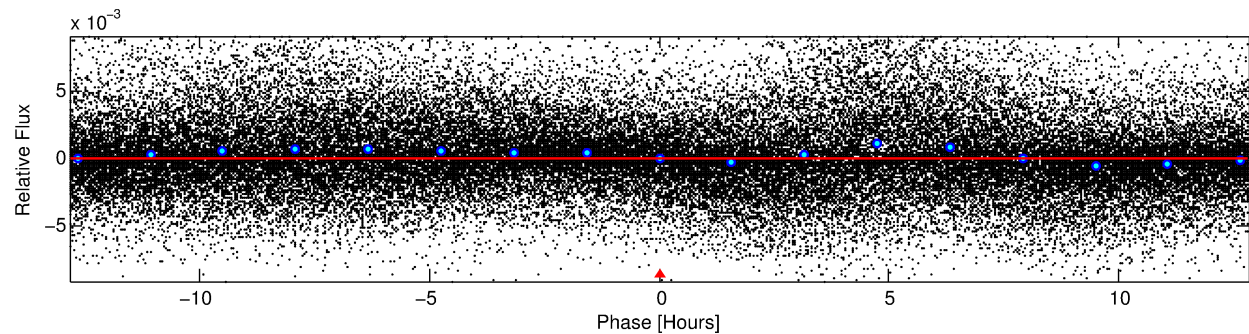
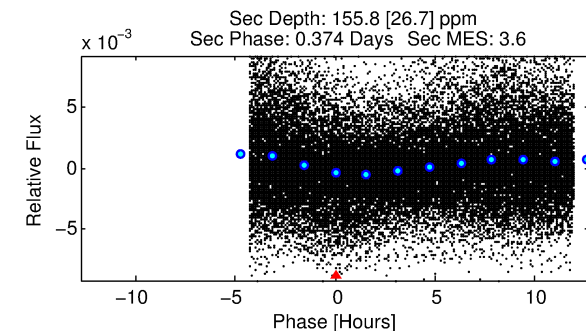
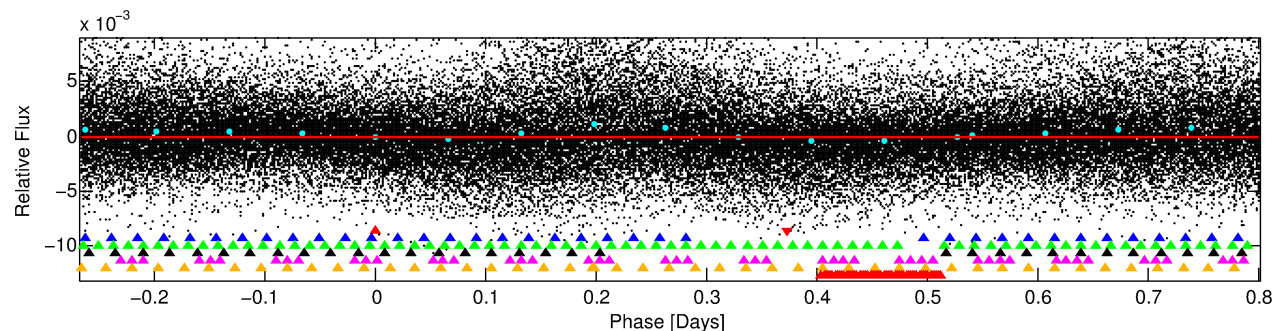
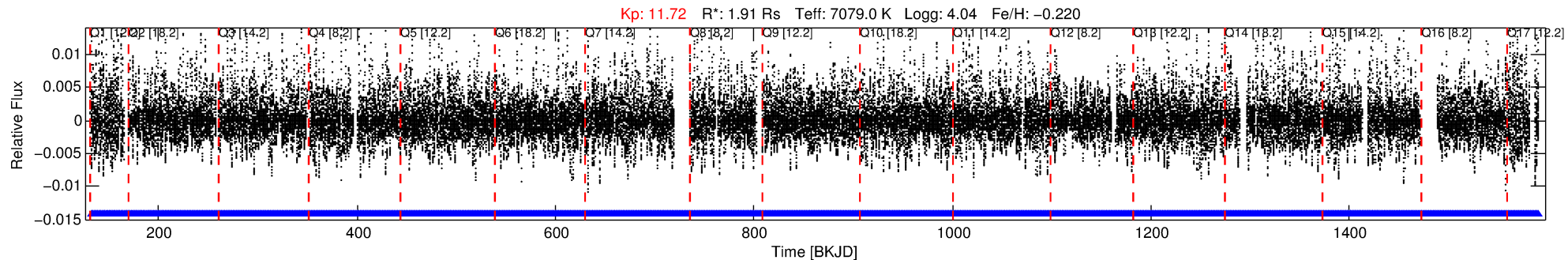
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009456996-01

No Significant Match Found

DV One-Page Summary

KIC: 9456996 Candidate: 1 of 7 Period: 1.069 d



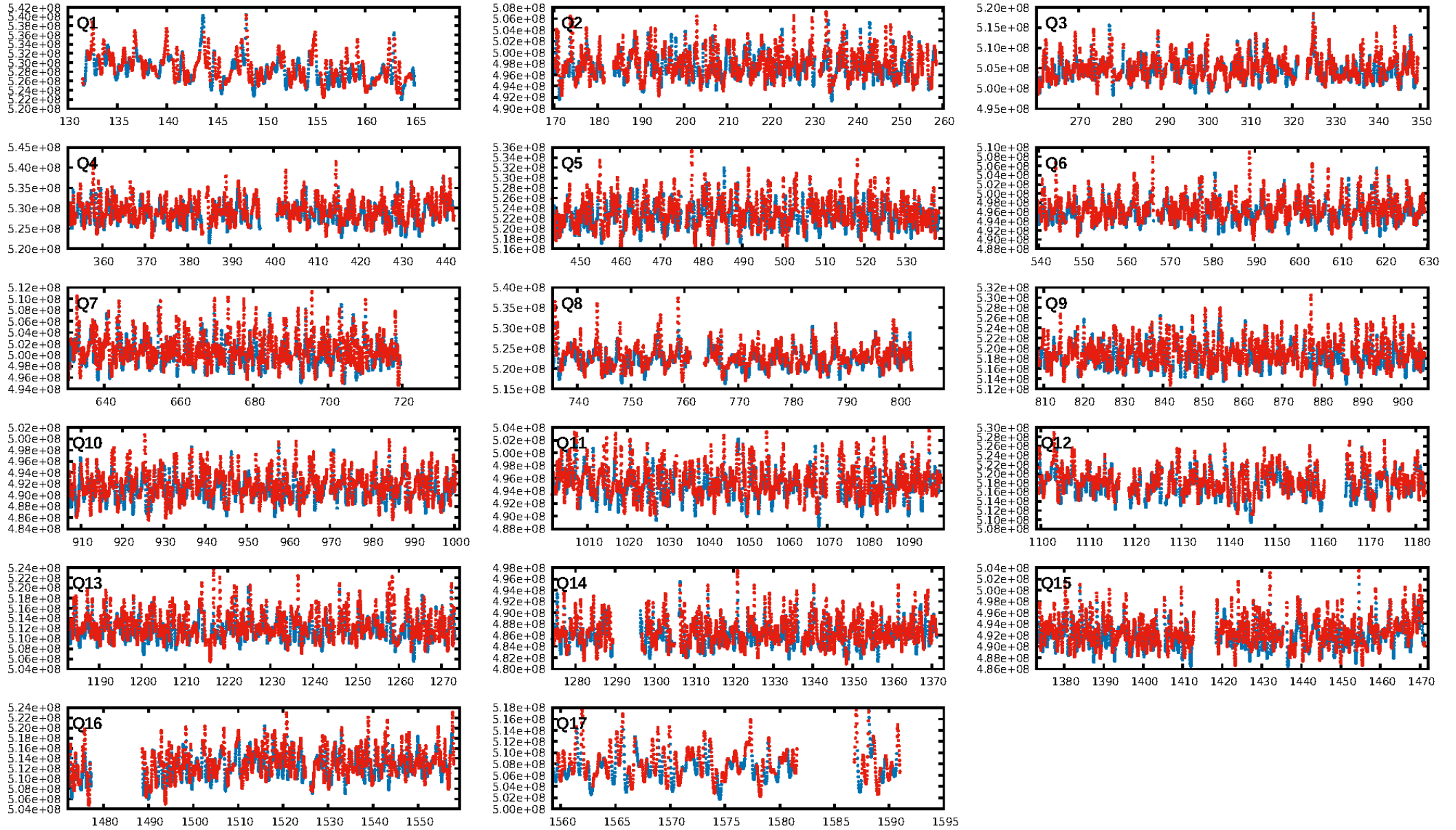
DV Fit Results:

Period = 1.06868 [0.00032] d
Epoch = 132.2936 [0.0333] BKJD
Rp/R* = 0.0013 [0.0034]
a/R* = 1.17 [2.57]
b = 0.50 [12.57]
Seff = 15264.28 [6534.20]
Teq = 2834 [303] K
Rp = 0.28 [0.72] Re
a = 0.0232 [0.0061] AU
Ag = 584.07 [2993.13] [0.19σ]
Teffp = 21543 [27523] K [0.68σ]

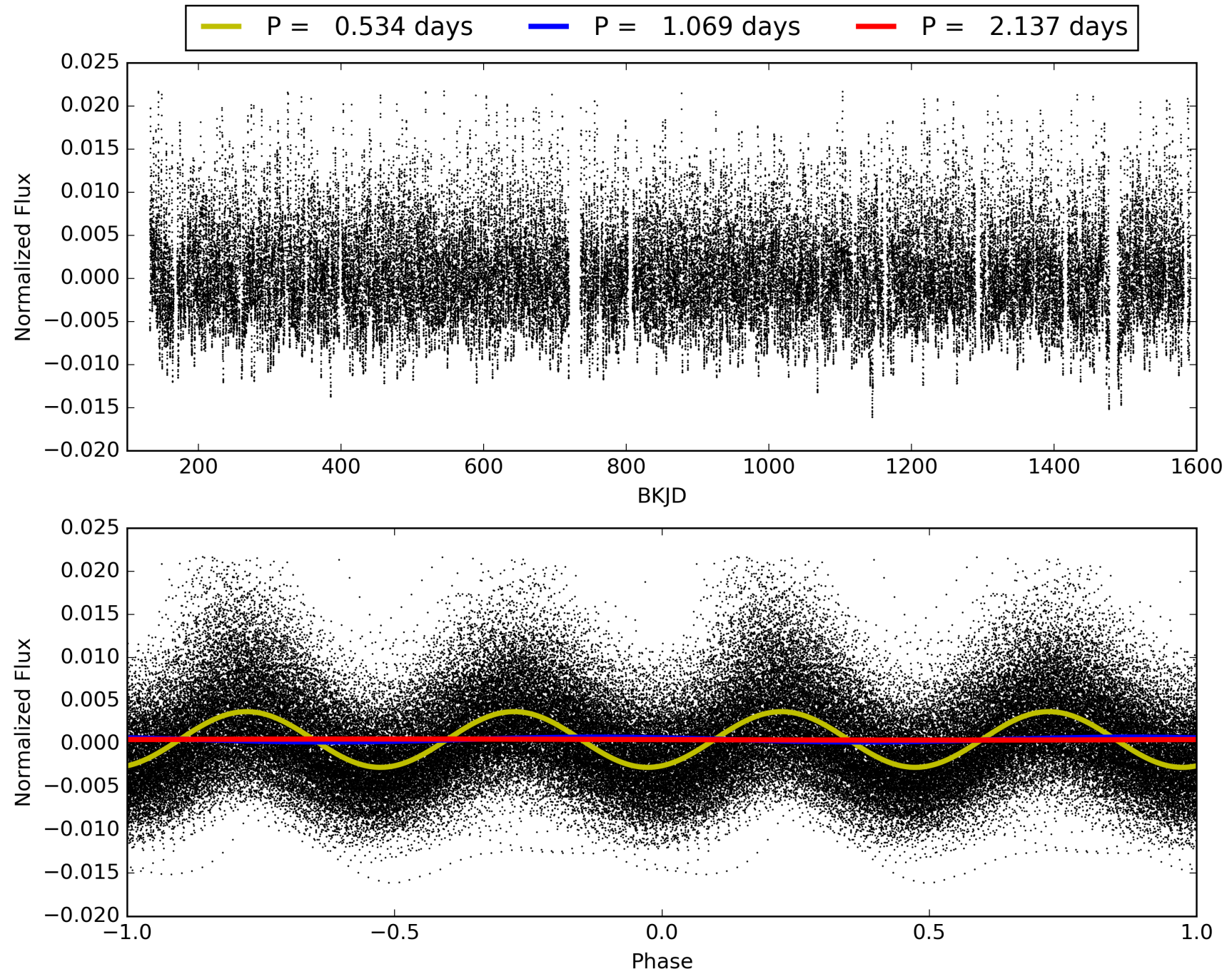
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [53.36σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1216/1216]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.074 arcsec [1.07σ]
KicOffset-rm: 0.245 arcsec [3.44σ]
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]

TCE 009456996-01, PDC Light Curves

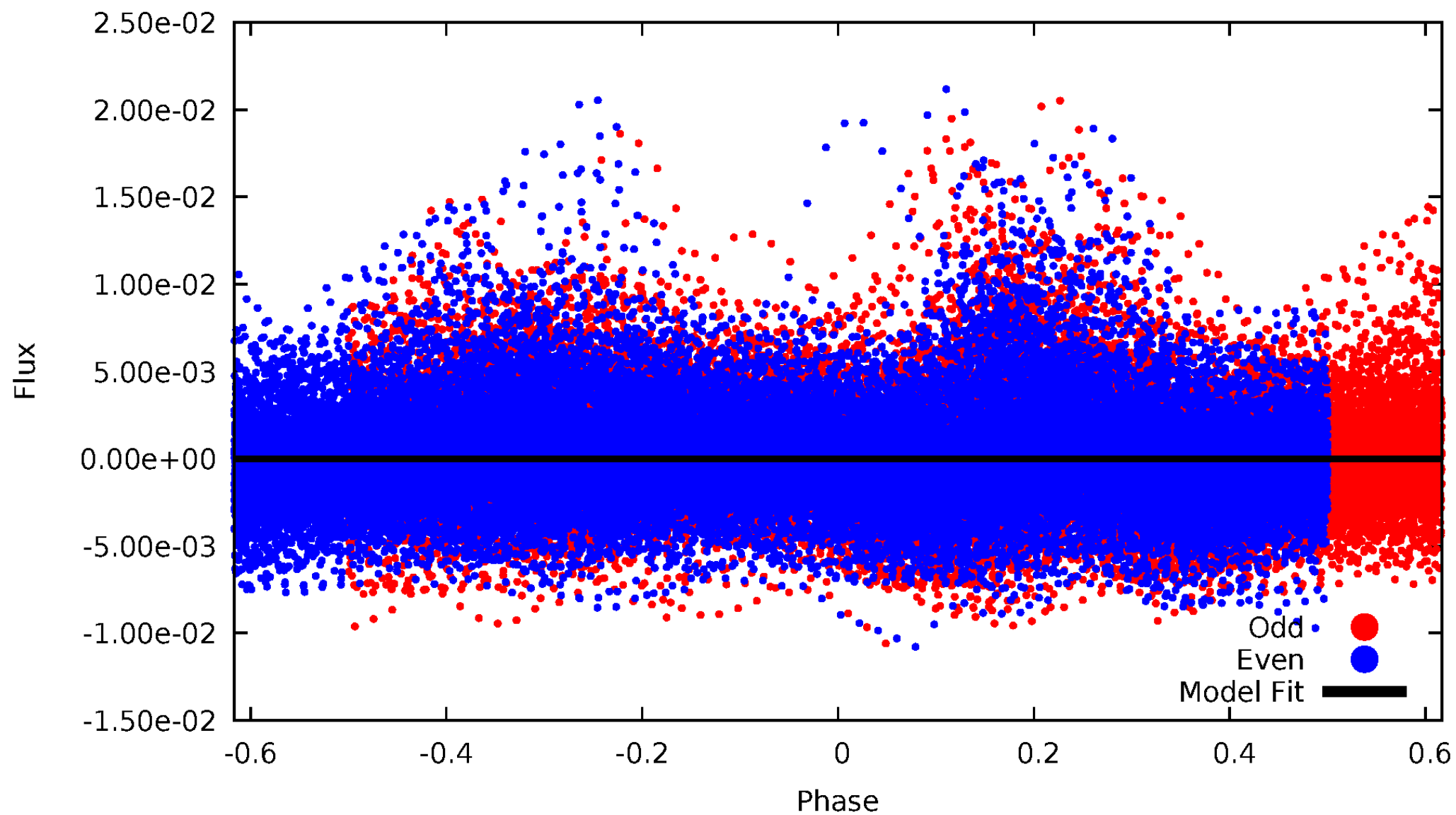


TCE 009456996-01



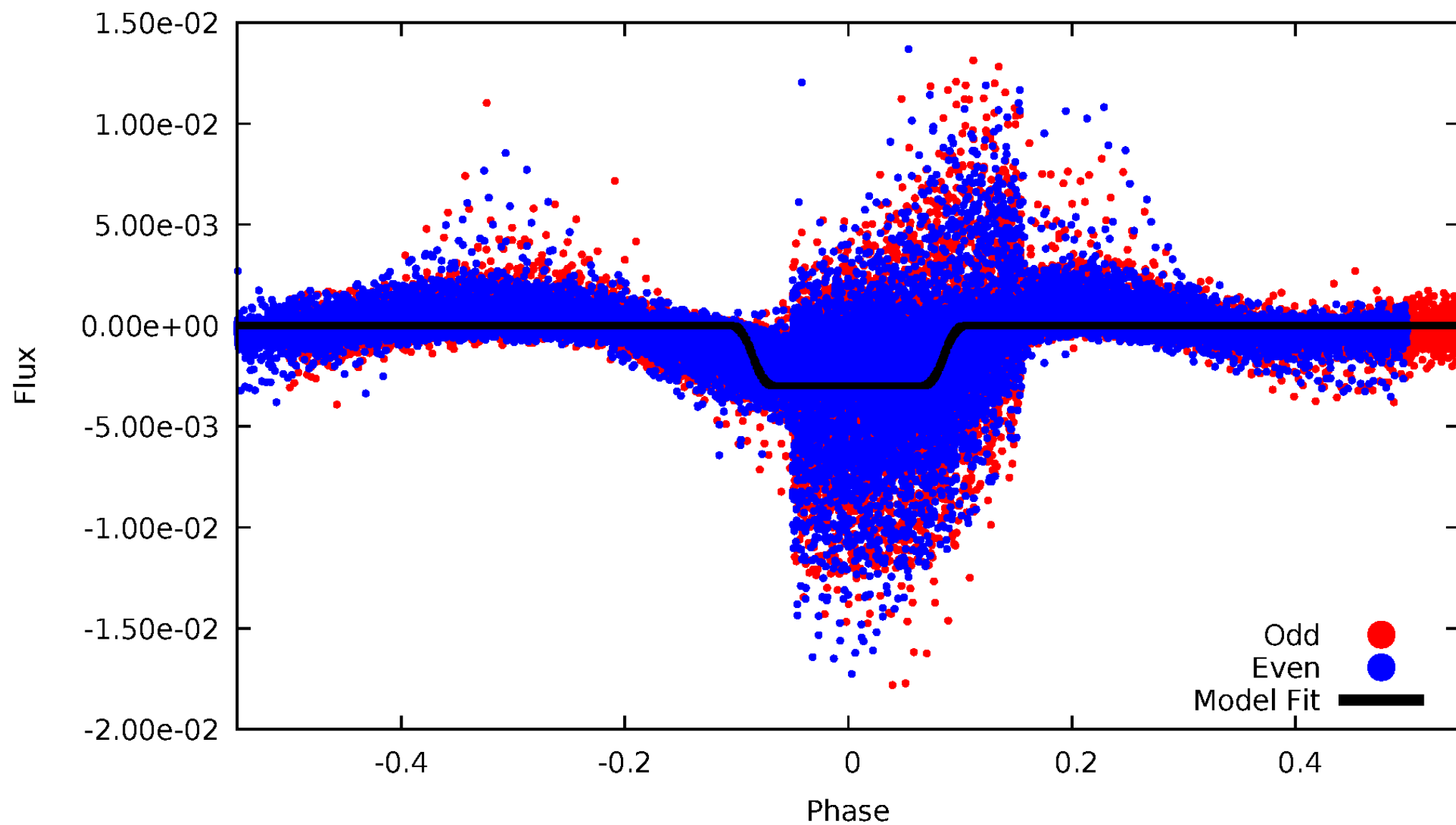
DV Odd/Even

TCE 009456996-01



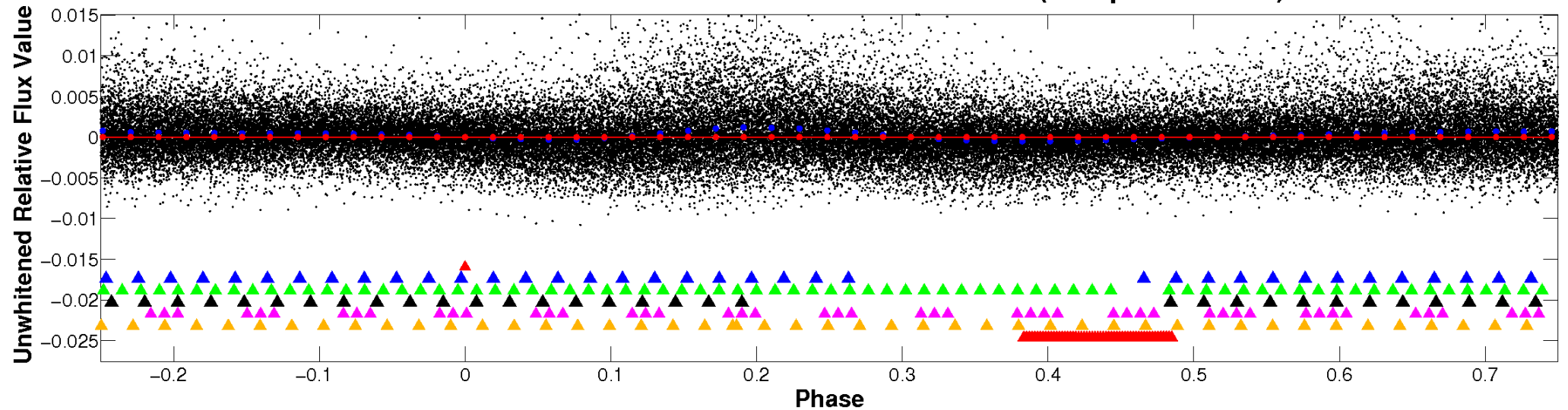
ALT Odd/Even

TCE 009456996-01

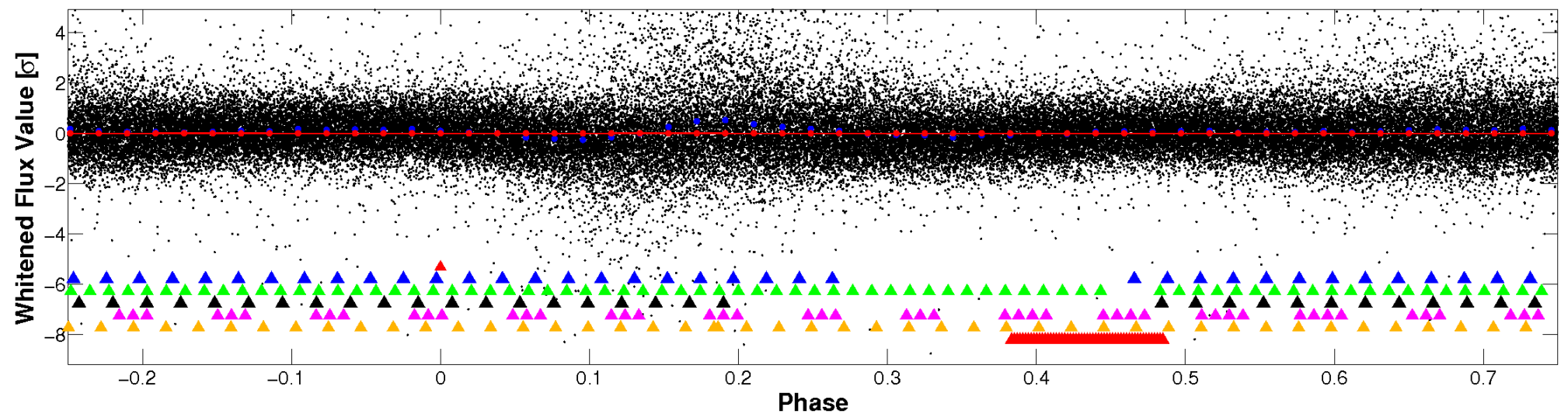


Non-Whitened Vs. Whitened Light Curve

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

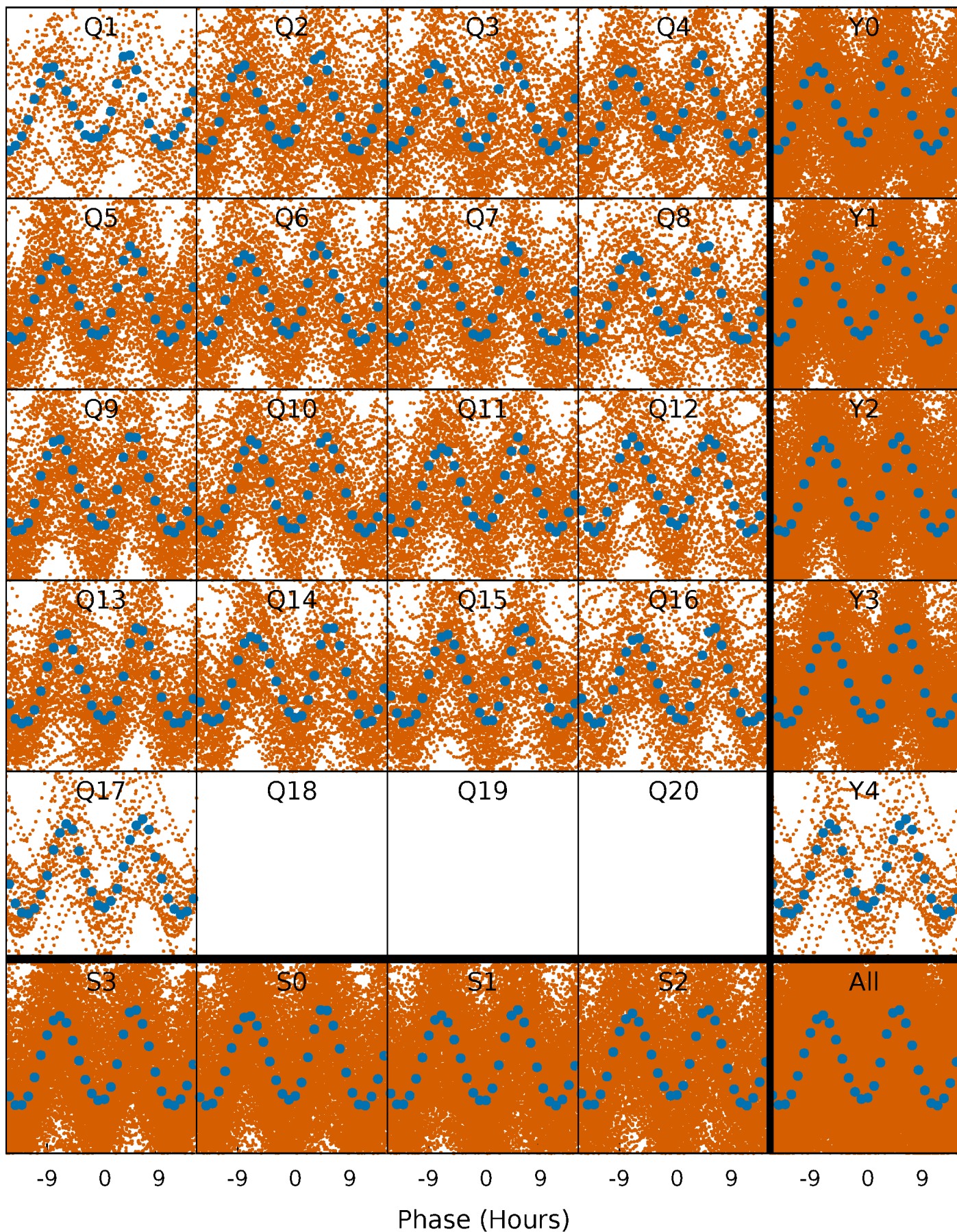


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



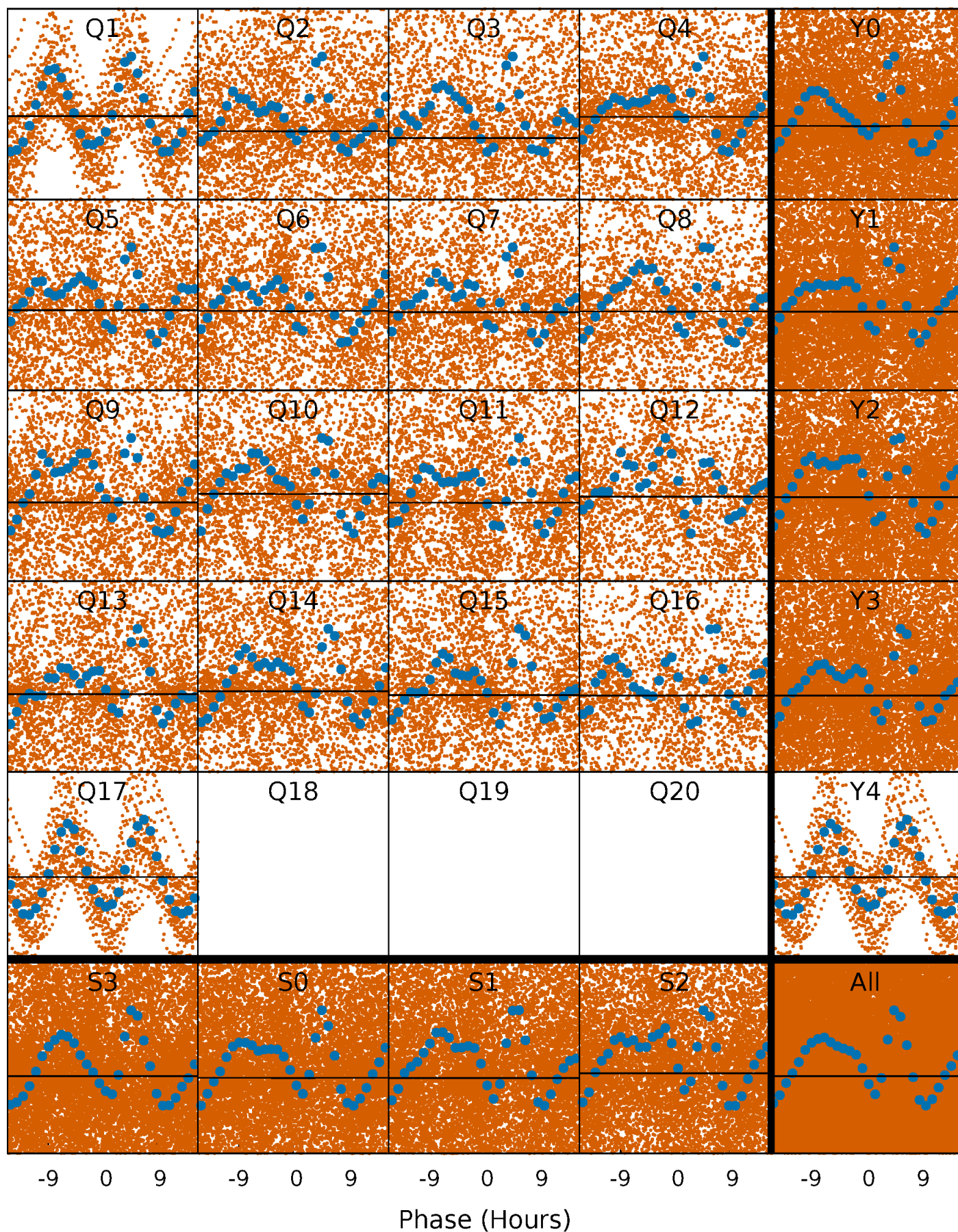
PDC Quarter-Phased Transit Curves

TCE 009456996-01 P= 1.068676 Days $T_0=132.293597$ (BKJD)



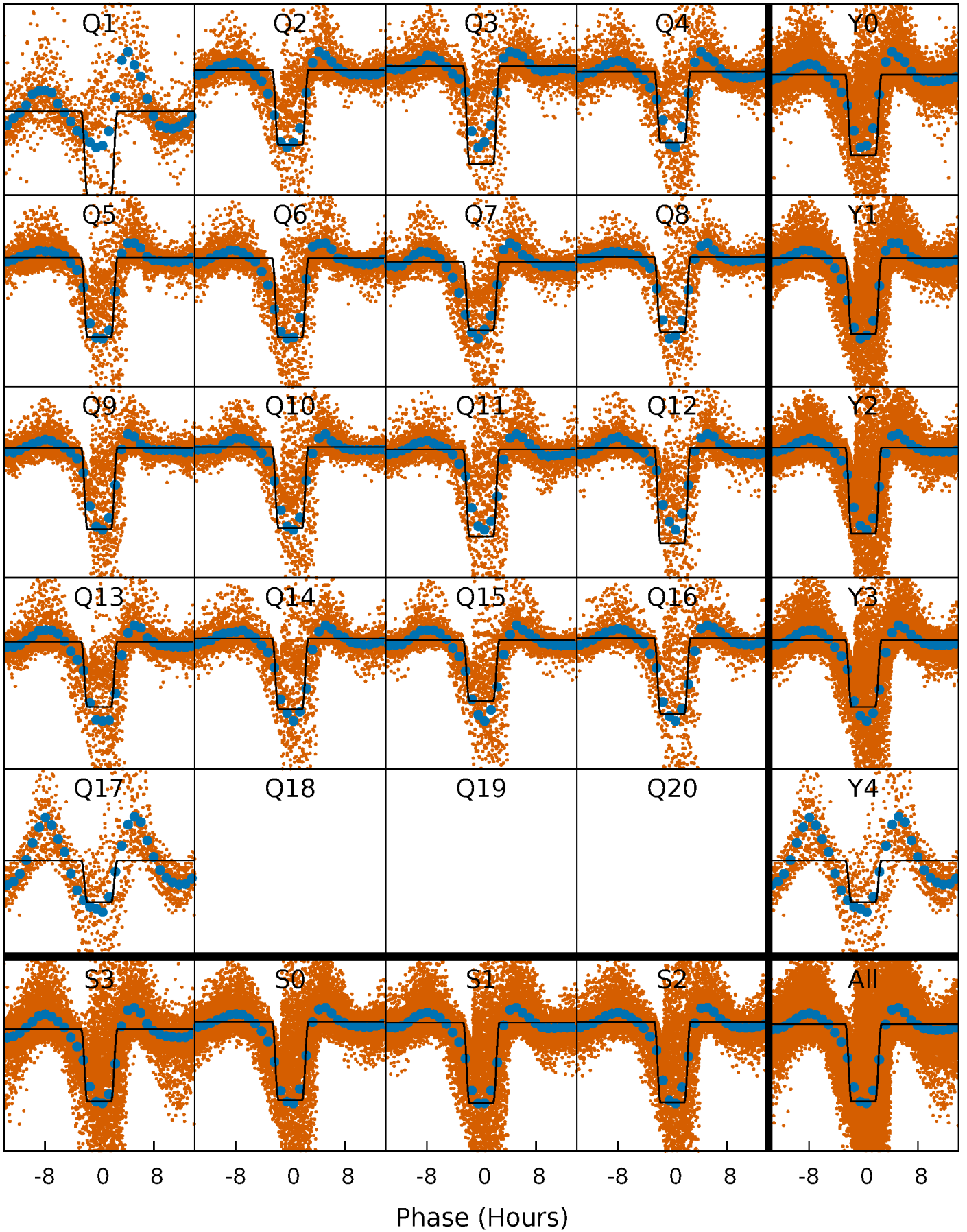
DV Quarter-Phased Transit Curves

TCE 009456996-01 P= 1.068676 Days $T_0=132.293597$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

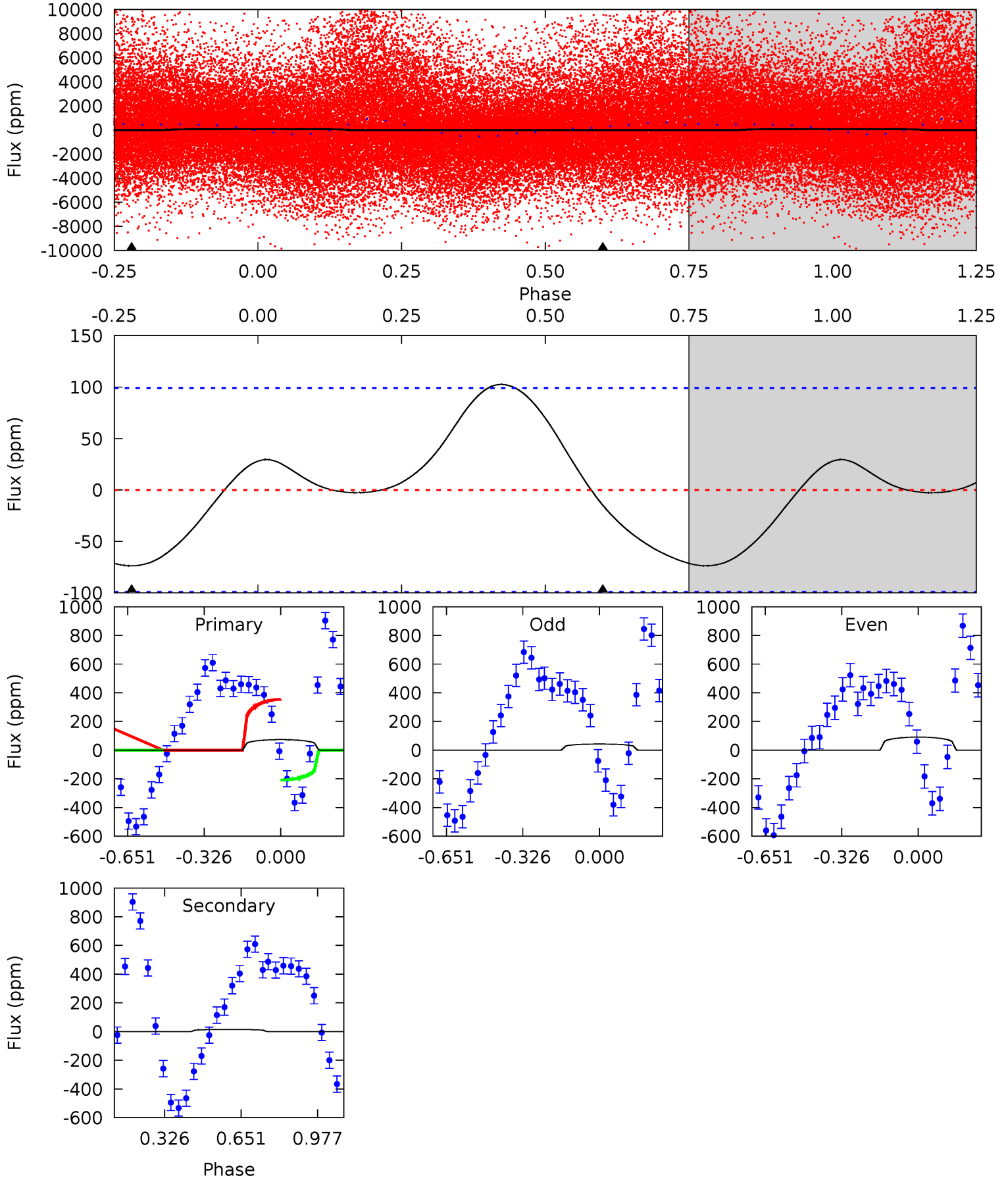
TCE 009456996-01 P= 1.068726 Days $T_0=132.294103$ (BKJD)



DV Model-Shift Uniqueness Test

009456996-01, P = 1.068676 Days, E = 131.224921 Days

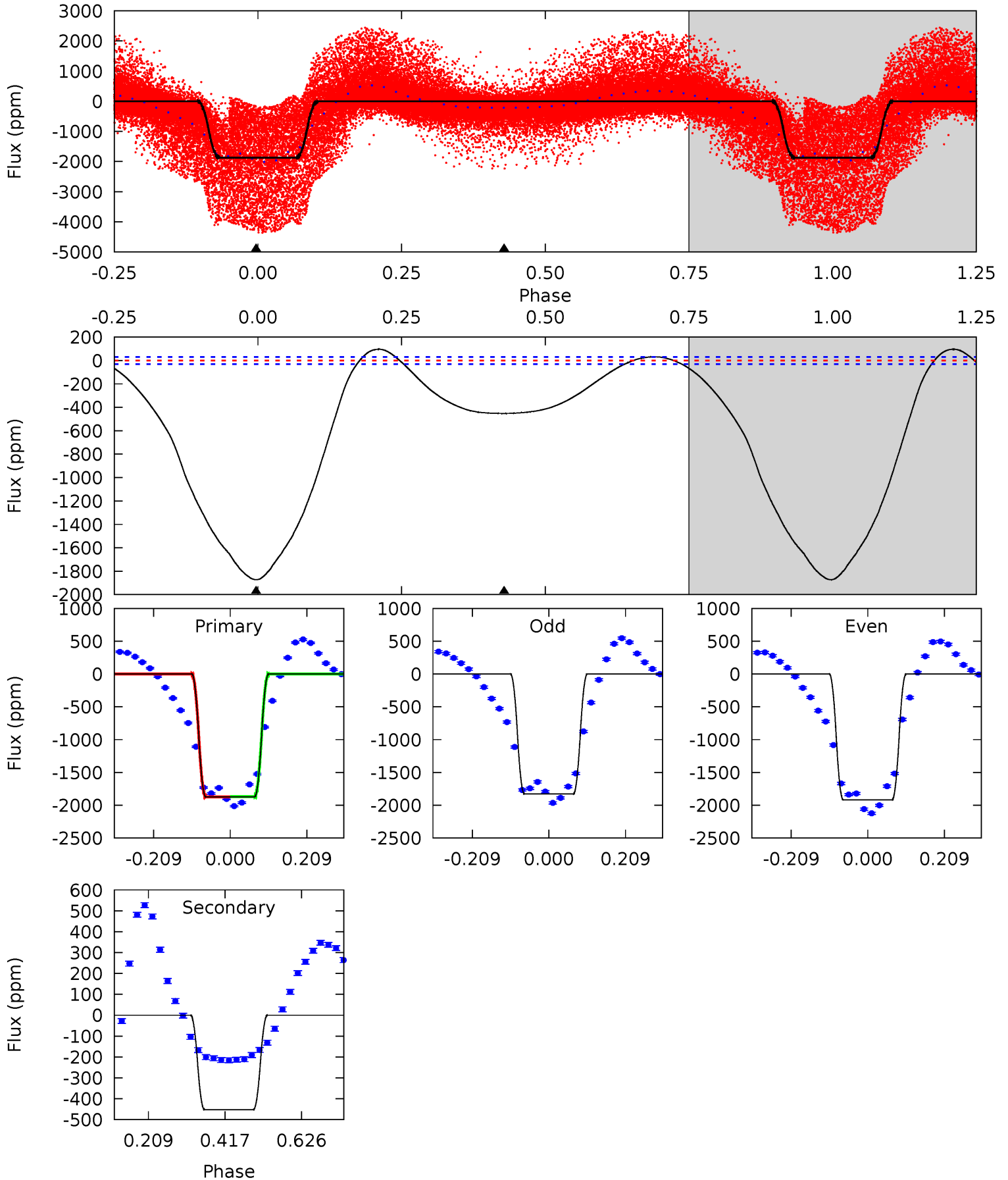
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.20	0.64	0	0	4.31	0.98	0.21	3.20	3.20	0.64	0.64	1.05	1.83	0.58	4.48



Alt Model-Shift Uniqueness Test

009456996-01, P = 1.068726 Days, E = 131.225377 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
273.8	66.1	0	0	4.41	1.26	11.4	273.8	273.8	66.1	66.1	6.39	1.38	0.05	0



Stellar Parameters For KIC 009456996

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7079^{+192}_{-235}	$4.039^{+0.234}_{-0.175}$	$-0.220^{+0.250}_{-0.350}$	$1.910^{+0.548}_{-0.548}$	$1.453^{+0.218}_{-0.267}$	$0.294^{+0.381}_{-0.146}$
	+3%/-3%	+6%/-4%	+114%/-159%	+29%/-29%	+15%/-18%	+130%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009456996-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-15 ± 23	$0.61^{+0.62}_{-0.40}$	3932^{+320}_{-299}	7439^{+13281}_{-13643}	$8.605^{+101.499}_{-12.529}$
Alt.	-452 ± 7	$11.31^{+1.97}_{-1.86}$	3942^{+311}_{-315}	4255^{+192}_{-209}	$1.046^{+0.405}_{-0.277}$

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

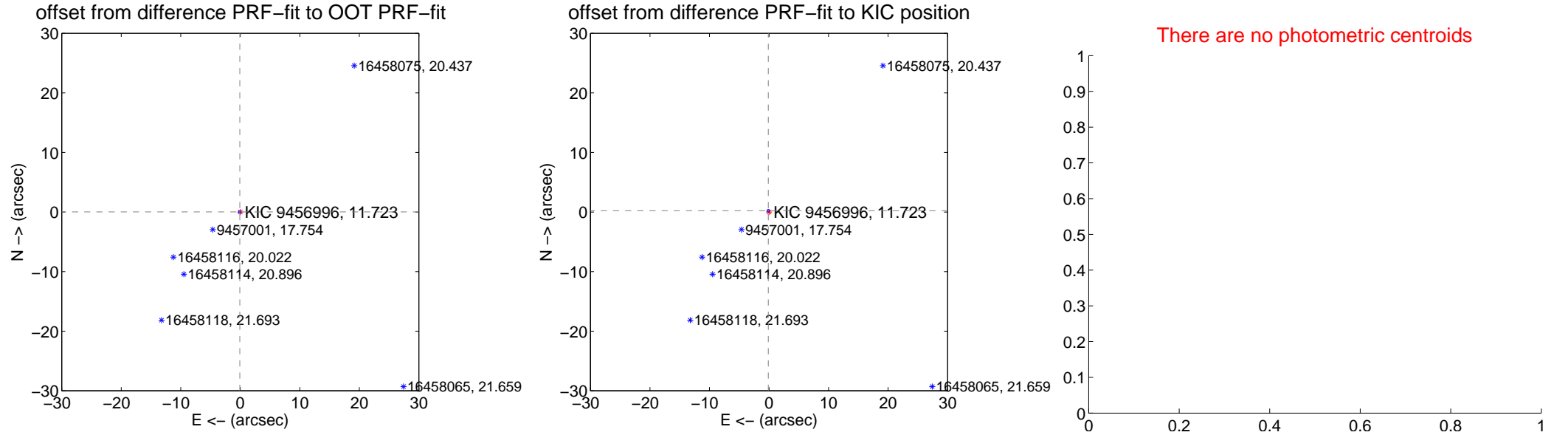
DV Centroid Data

Supplemental centroid analysis for 009456996-01. **Kepler magnitude: 11.72.** Transit SNR 0.27

There are 17 quarters with good PRF difference image offsets

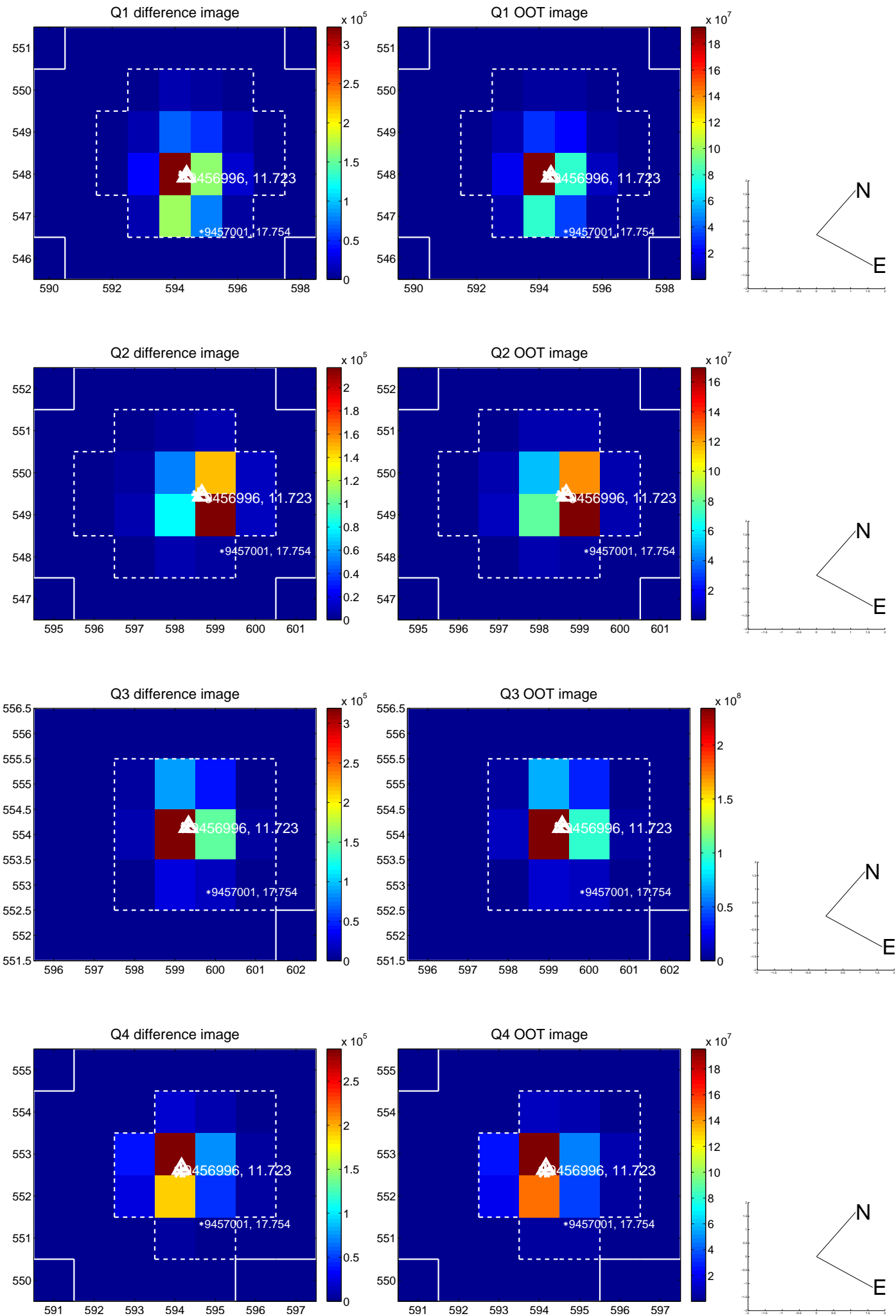
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.074 ± 0.069	1.07	0.072 ± 0.070	0.018 ± 0.070
PRF-fit source offset from KIC position	0.245 ± 0.071	3.44	0.119 ± 0.069	0.214 ± 0.072
photometric centroid source offset	—	—	—	—

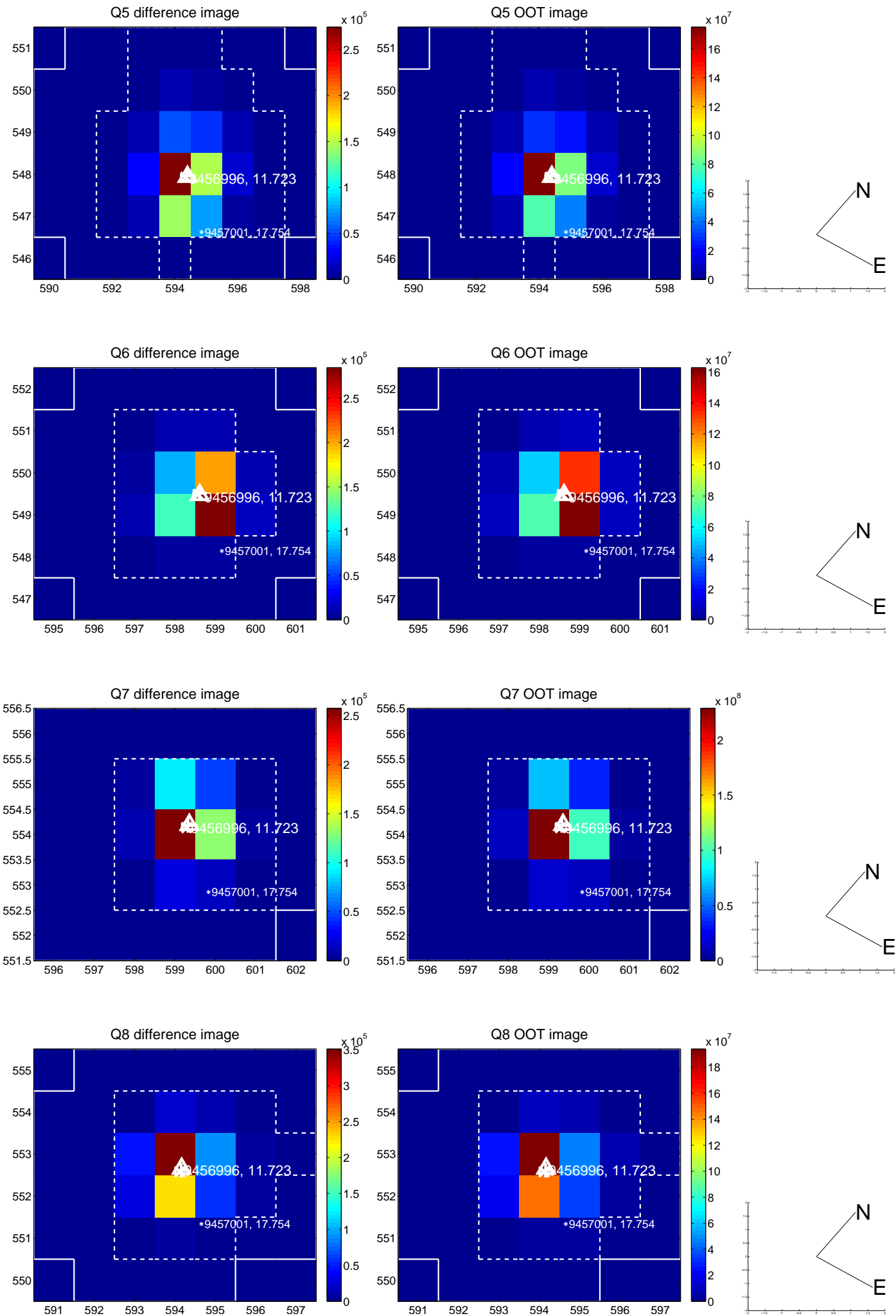


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

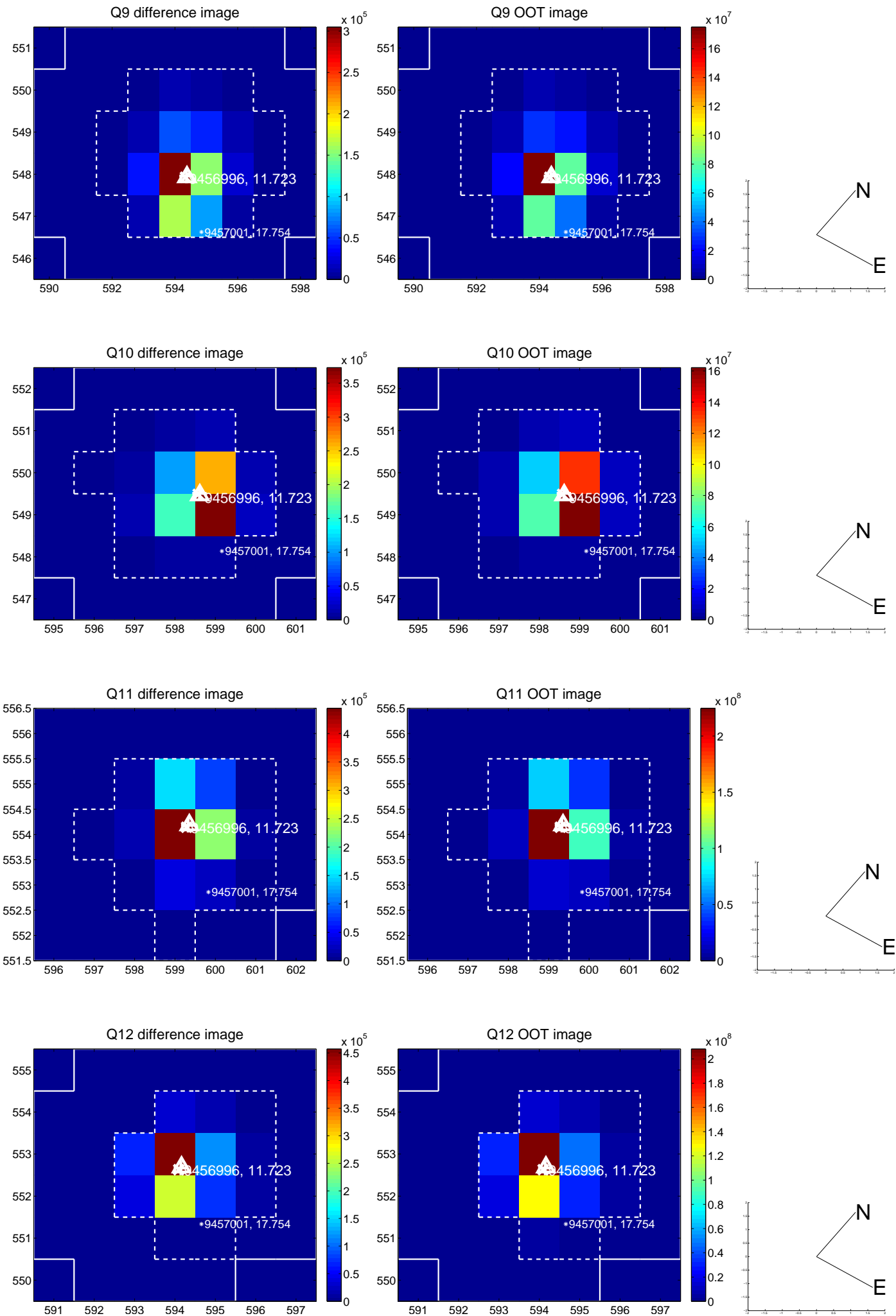
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



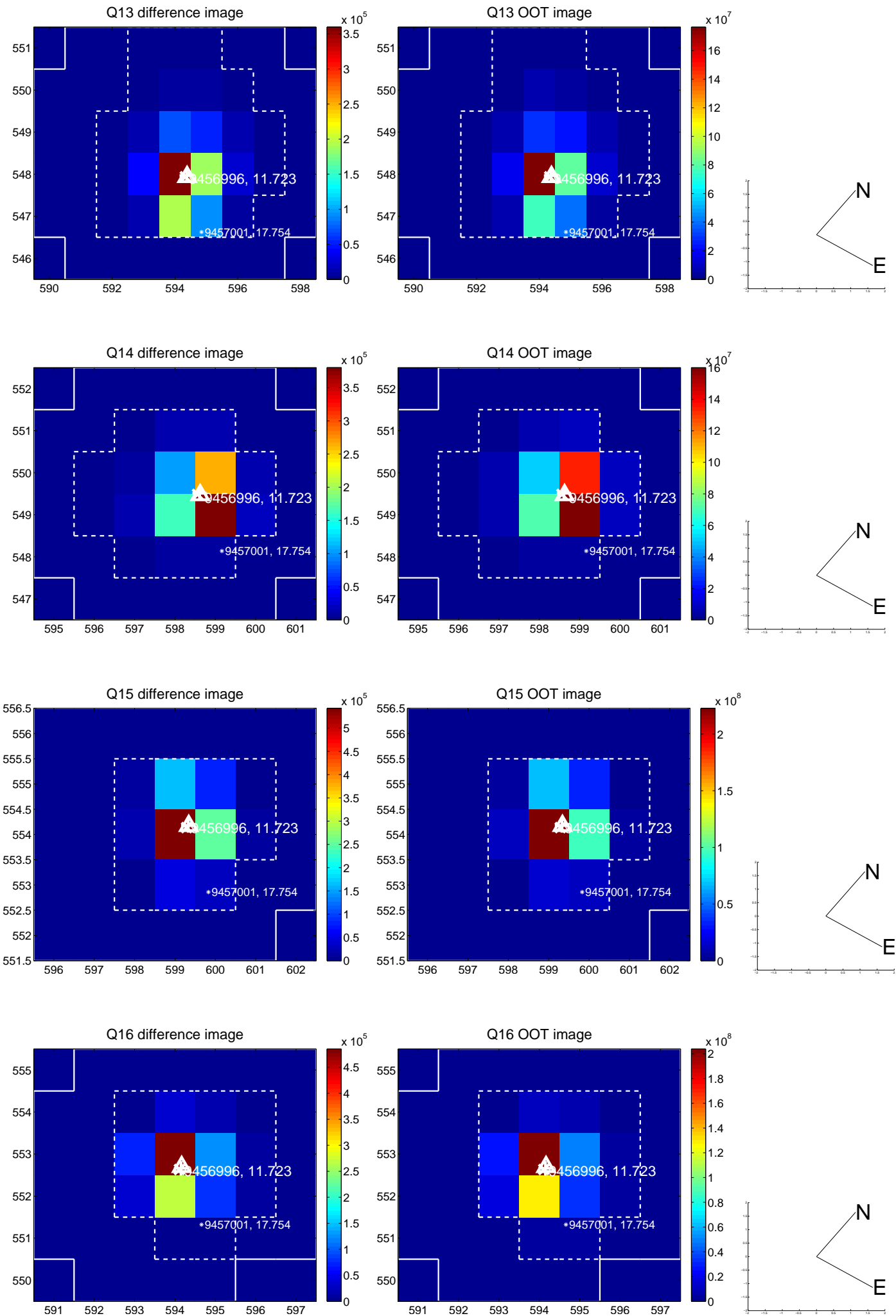
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



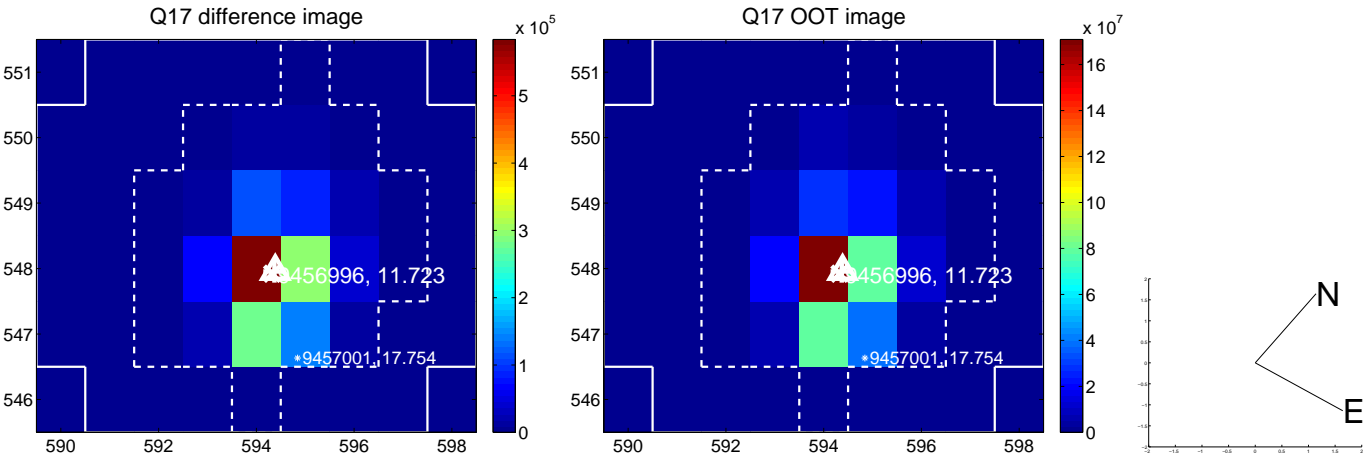
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



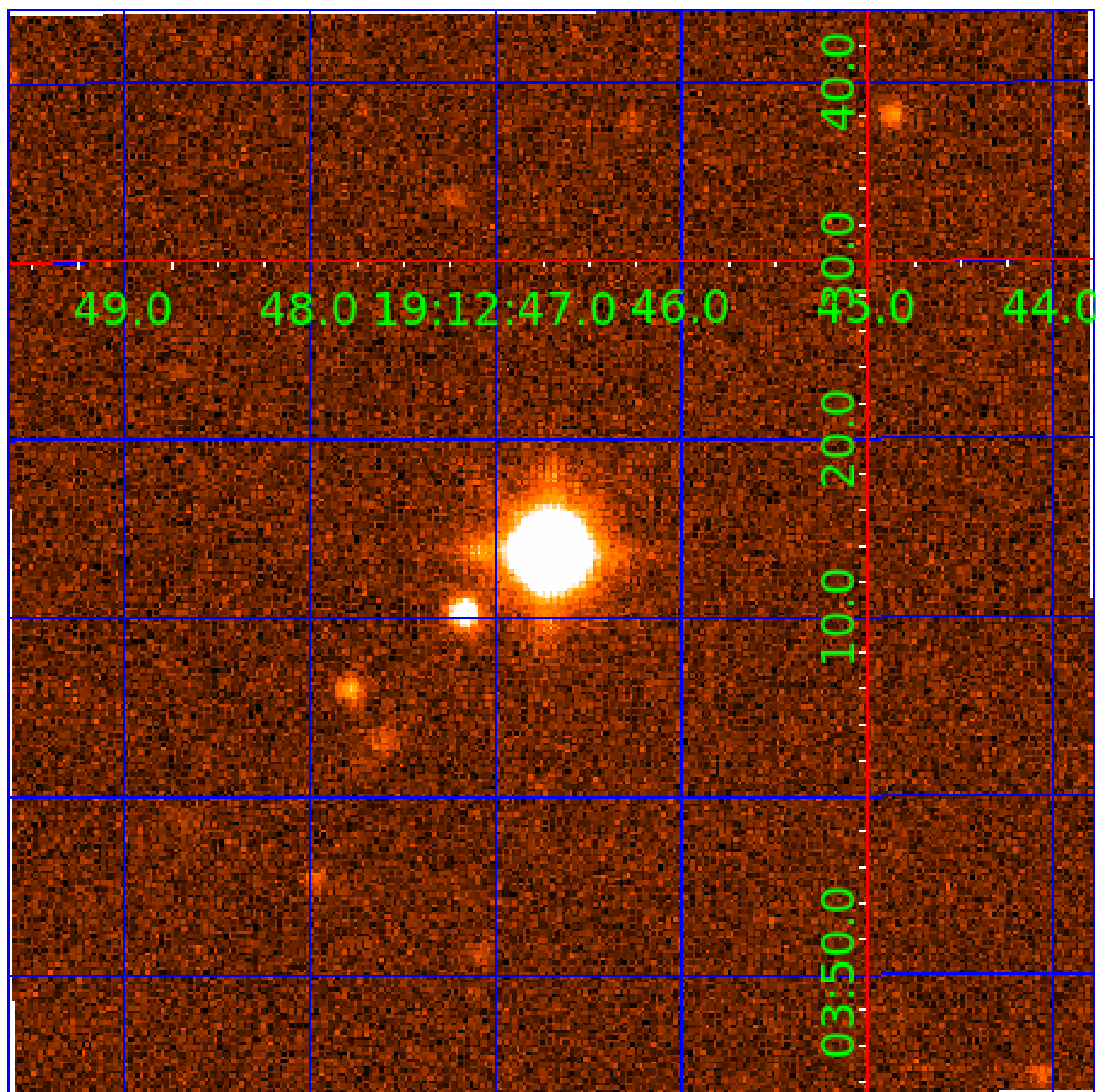
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009456996

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})
009456996-01	OBS	No	1.068676	132.293597	2.0	7.905	16.4	0.3	1.91	7079	0.28	15264.27
009456996-02	OBS	No	39.564678	155.233547	5180.1	2.760	20.2	13.4	1.91	7079	14.61	123.71
009456996-06	OBS	No	31.014896	153.863351	351.8	0.777	10.0	0.9	1.91	7079	3.78	171.15
009456996-07	OBS	No	26.714889	144.567247	364.3	1.500	12.4	-1.0	1.91	7079	3.70	208.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009456996-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009456996-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT
009456996-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009456996-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

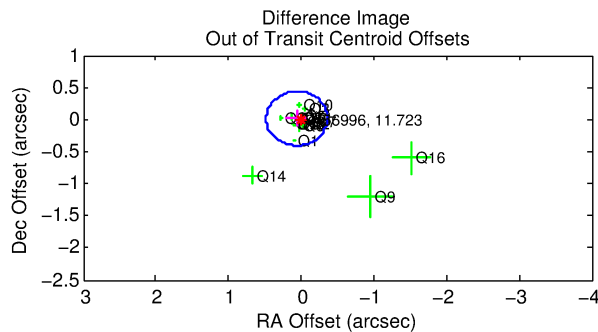
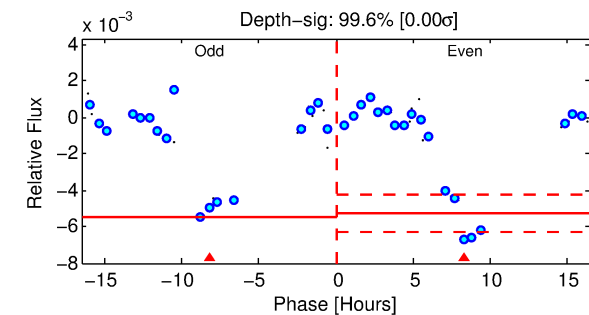
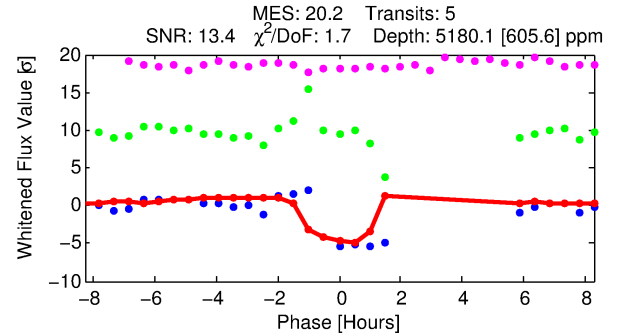
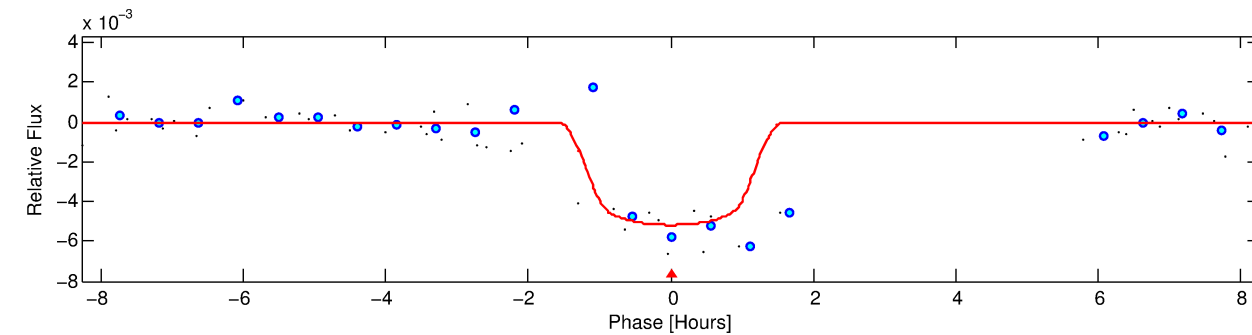
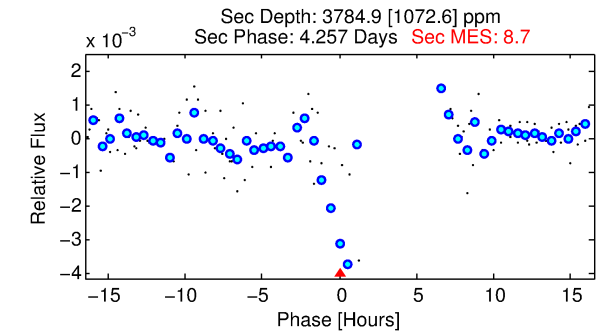
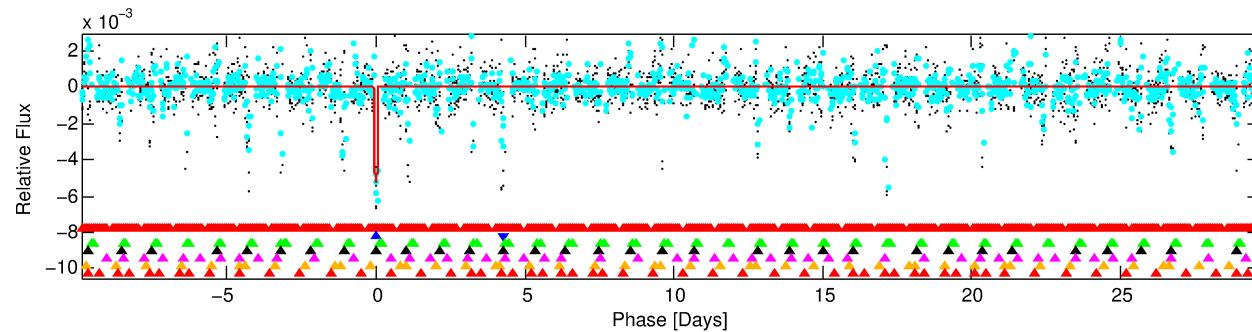
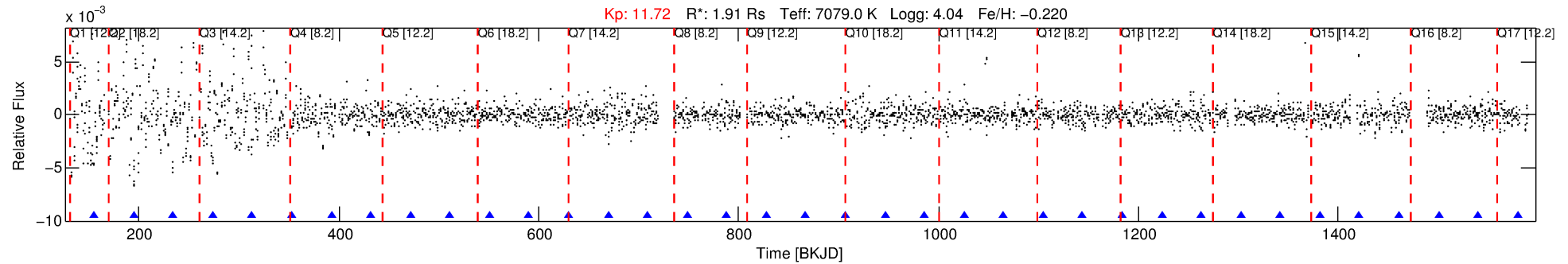
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009456996-02

No Significant Match Found

DV One-Page Summary

KIC: 9456996 Candidate: 2 of 7 Period: 39.565 d



DV Fit Results:

Period = 39.56468 [0.00374] d
Epoch = 155.2335 [0.0106] BKJD
Rp/R* = 0.0701 [0.0204]
a/R* = 92.82 [148.89]
b = 0.65 [1.38]
Seff = 123.71 [52.96]
Teq = 850 [91] K
Rp = 14.60 [5.97] Re
a = 0.2576 [0.0676] AU
Ag = 647.70 [495.79] [1.30 σ]
Teffp = 6633 [1097] K [5.25 σ]

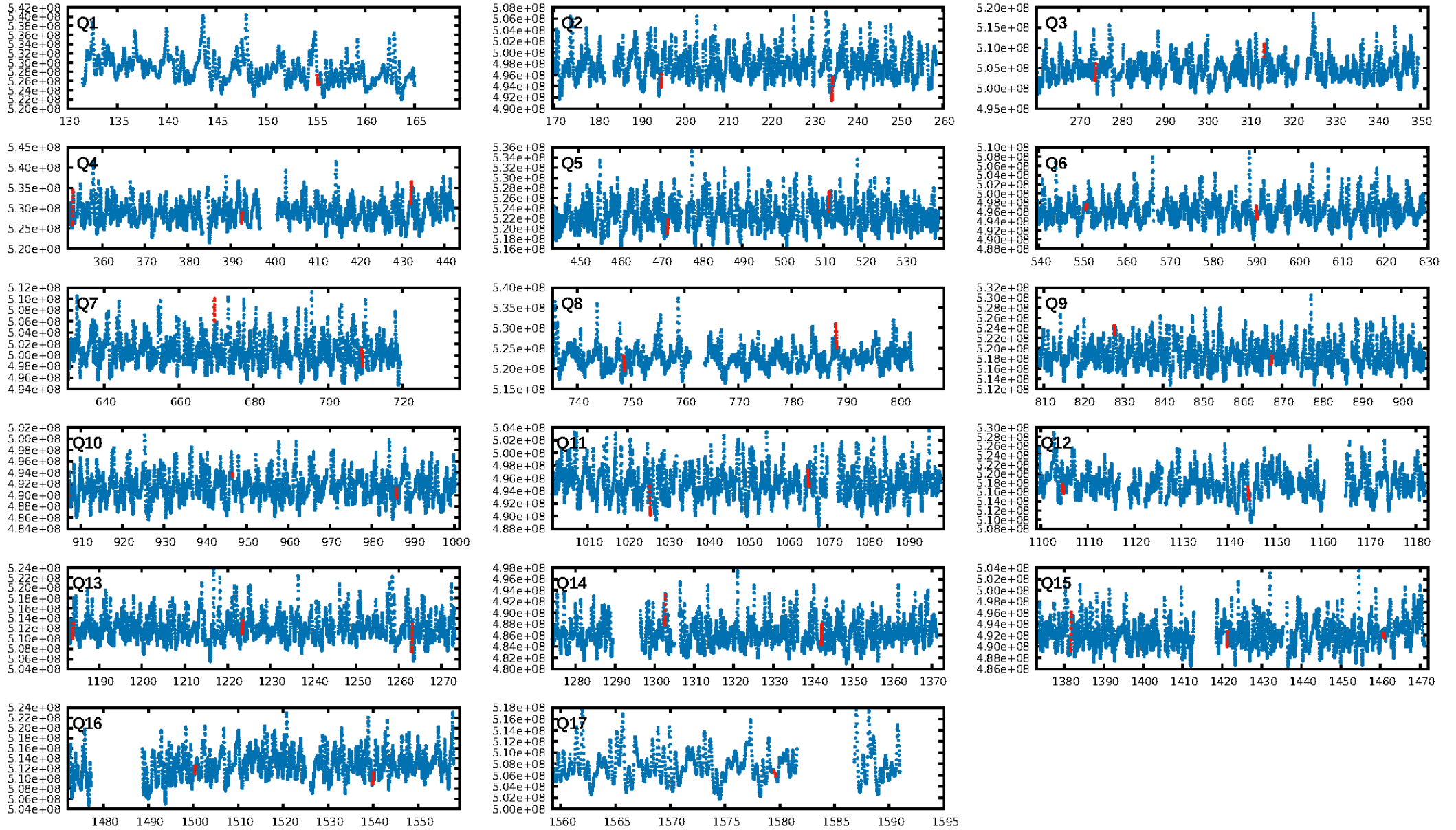
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.57 σ]
LongPeriod-sig: 100.0% [37.85 σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.4929
Centroid-sig: 0.1%
Centroid-so: 0.115 arcsec [8.33 σ]
OotOffset-rm: 0.065 arcsec [0.46 σ]
KicOffset-rm: 0.247 arcsec [1.90 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.59 [10/17]
DiffImageOverlap-fno: 0.18 [3/17]

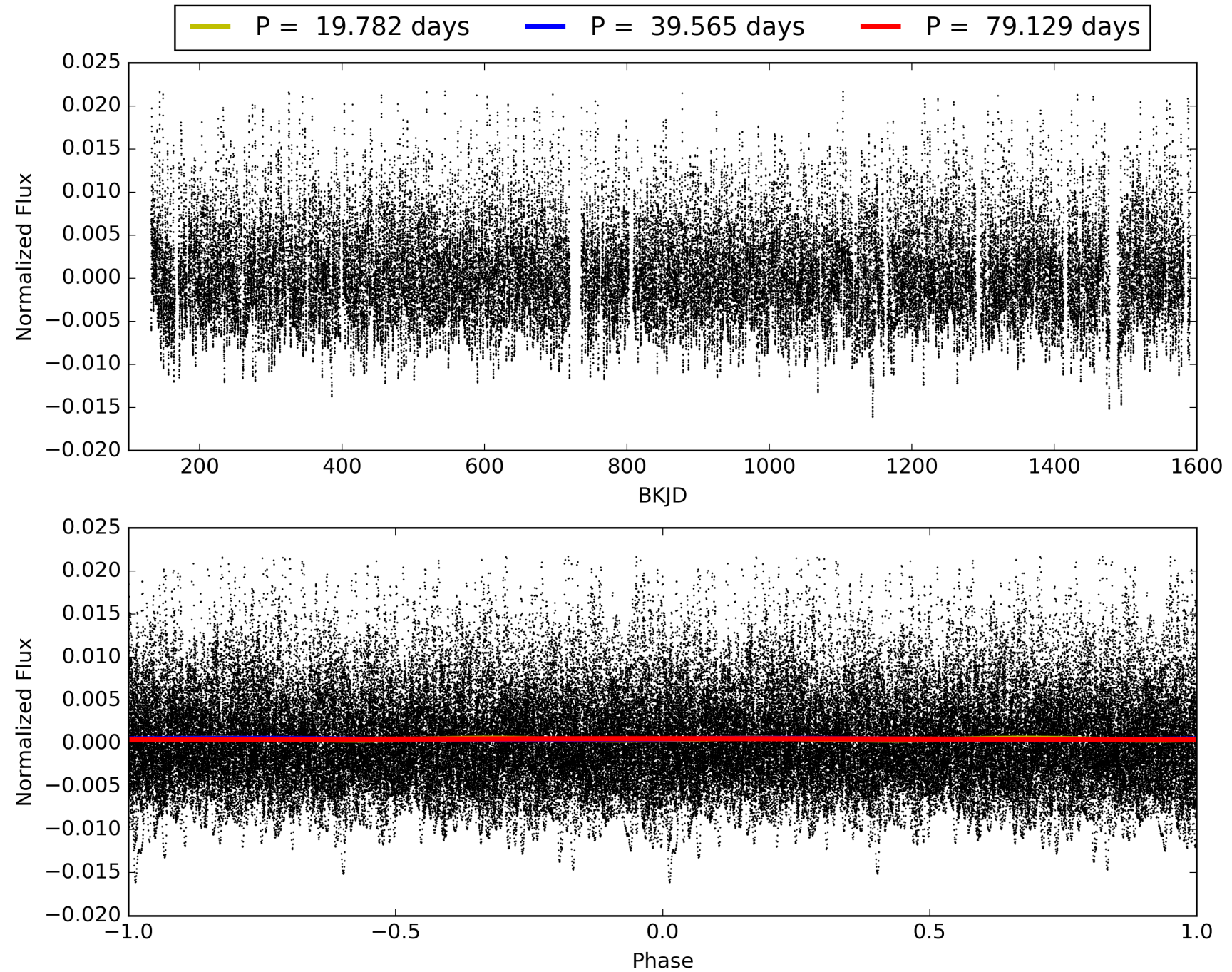
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:03:15 Z

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

TCE 009456996-02, PDC Light Curves

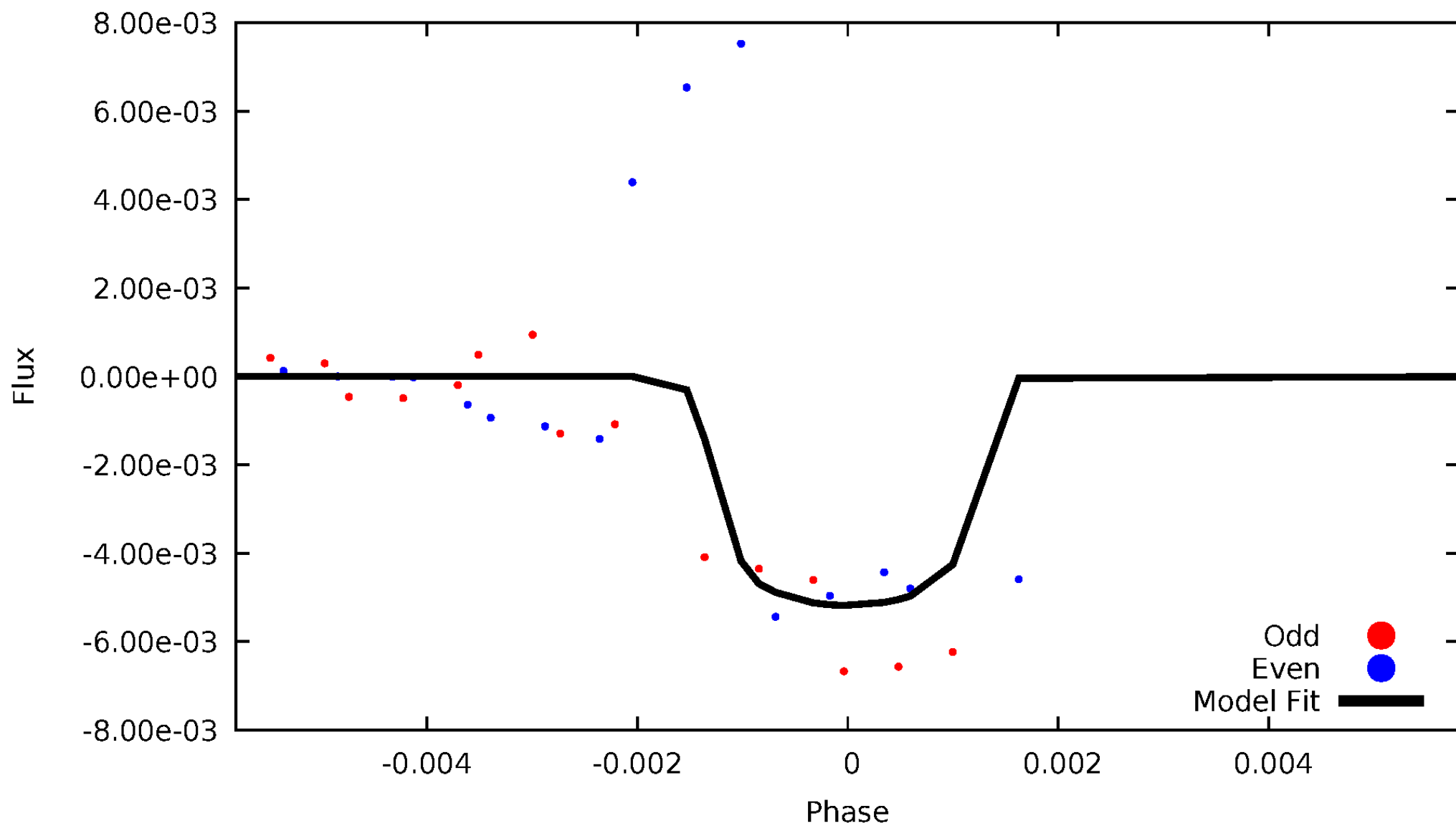


TCE 009456996-02



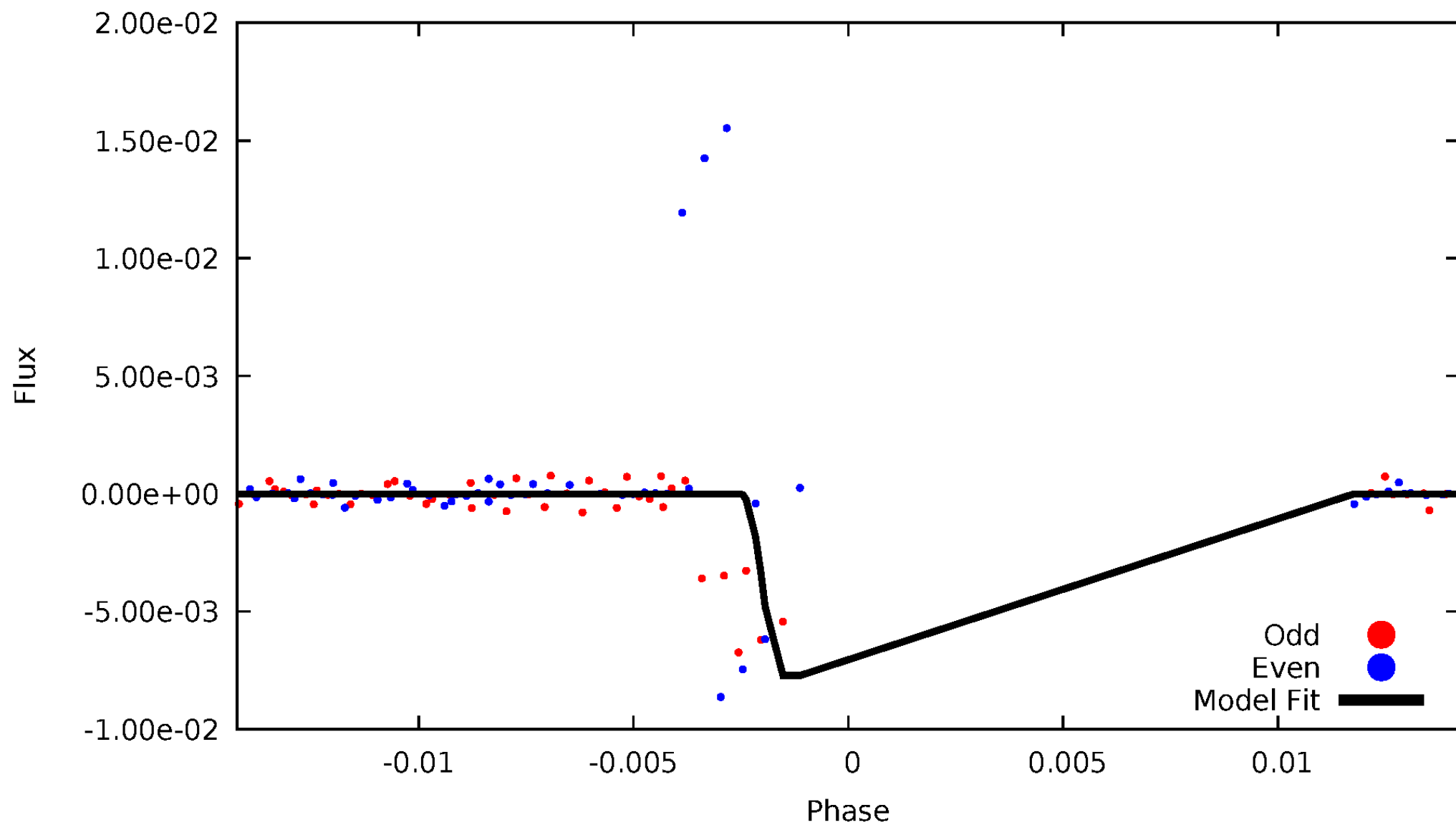
DV Odd/Even

TCE 009456996-02



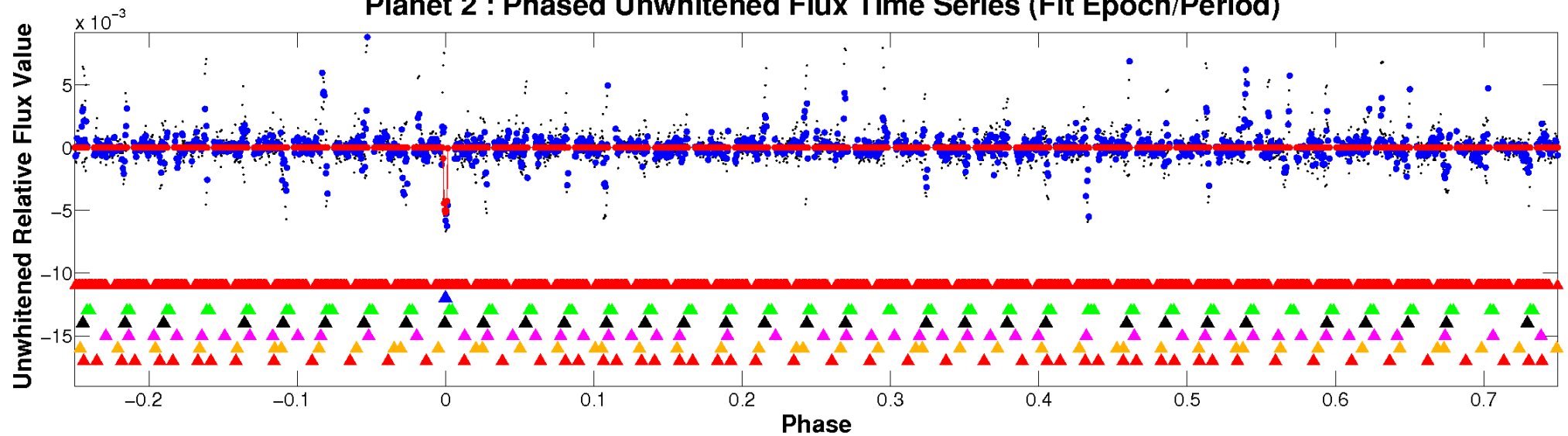
ALT Odd/Even

TCE 009456996-02

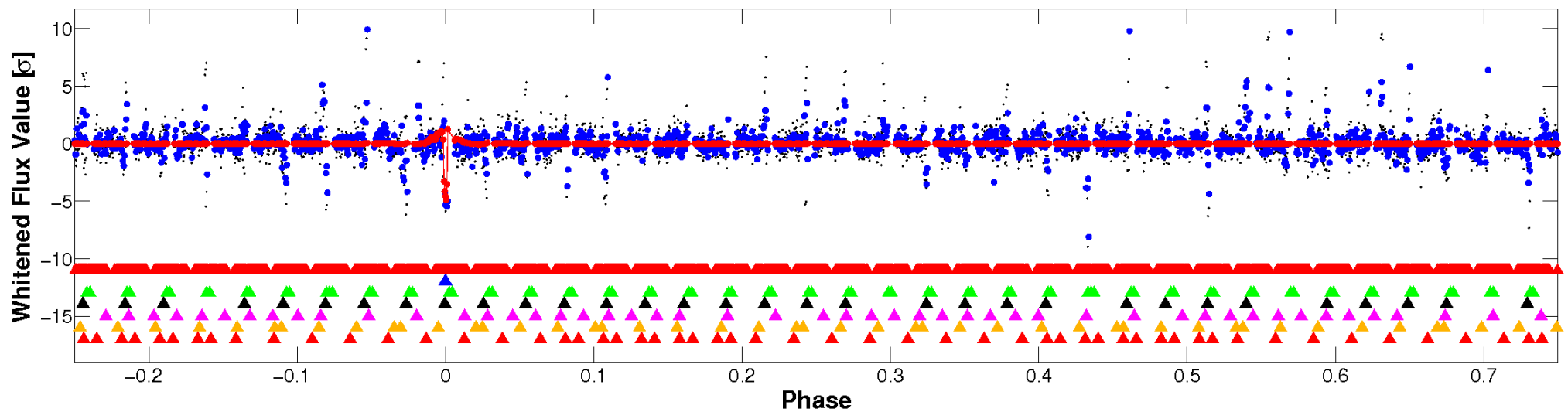


Non-Whitened Vs. Whitened Light Curve

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

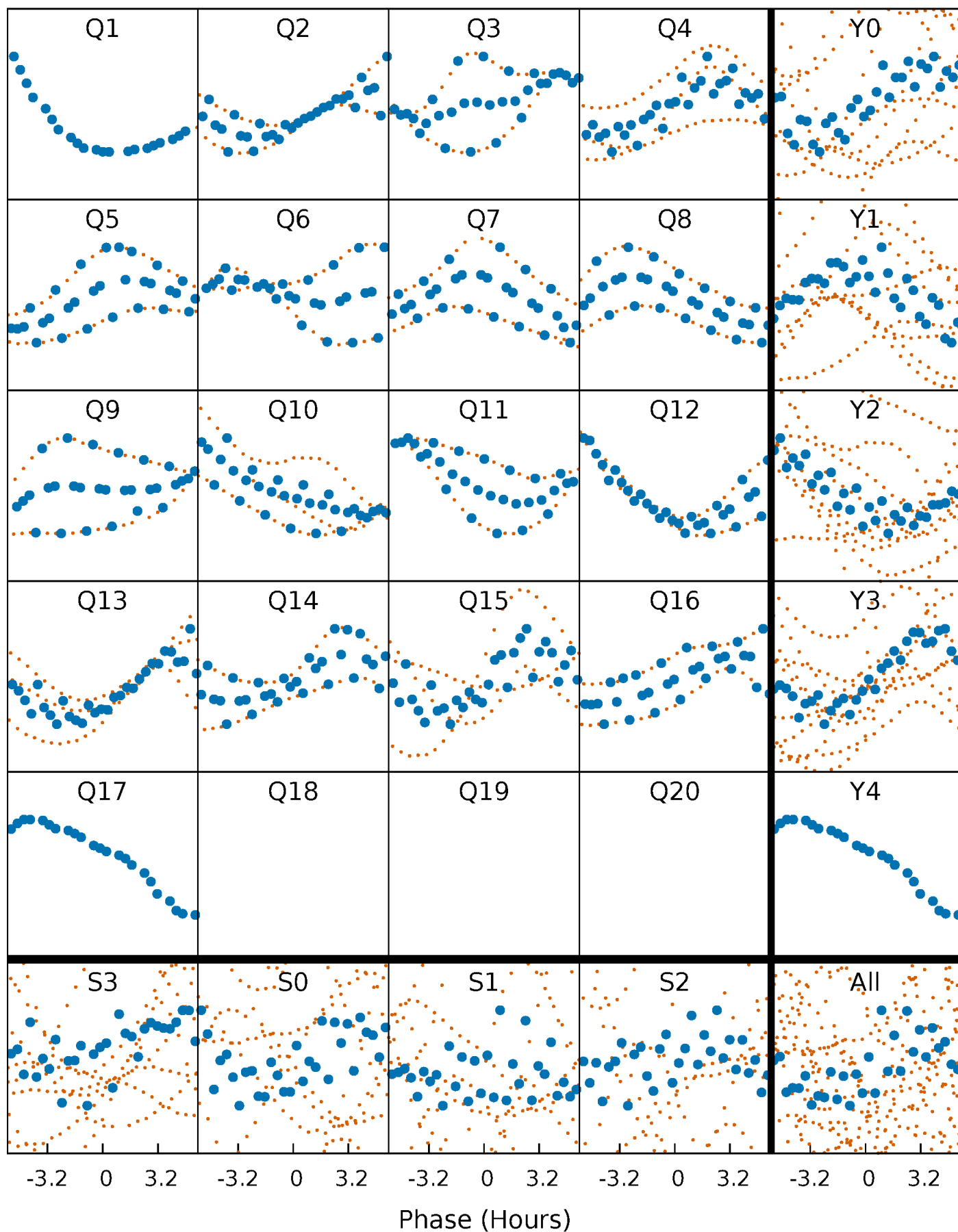


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



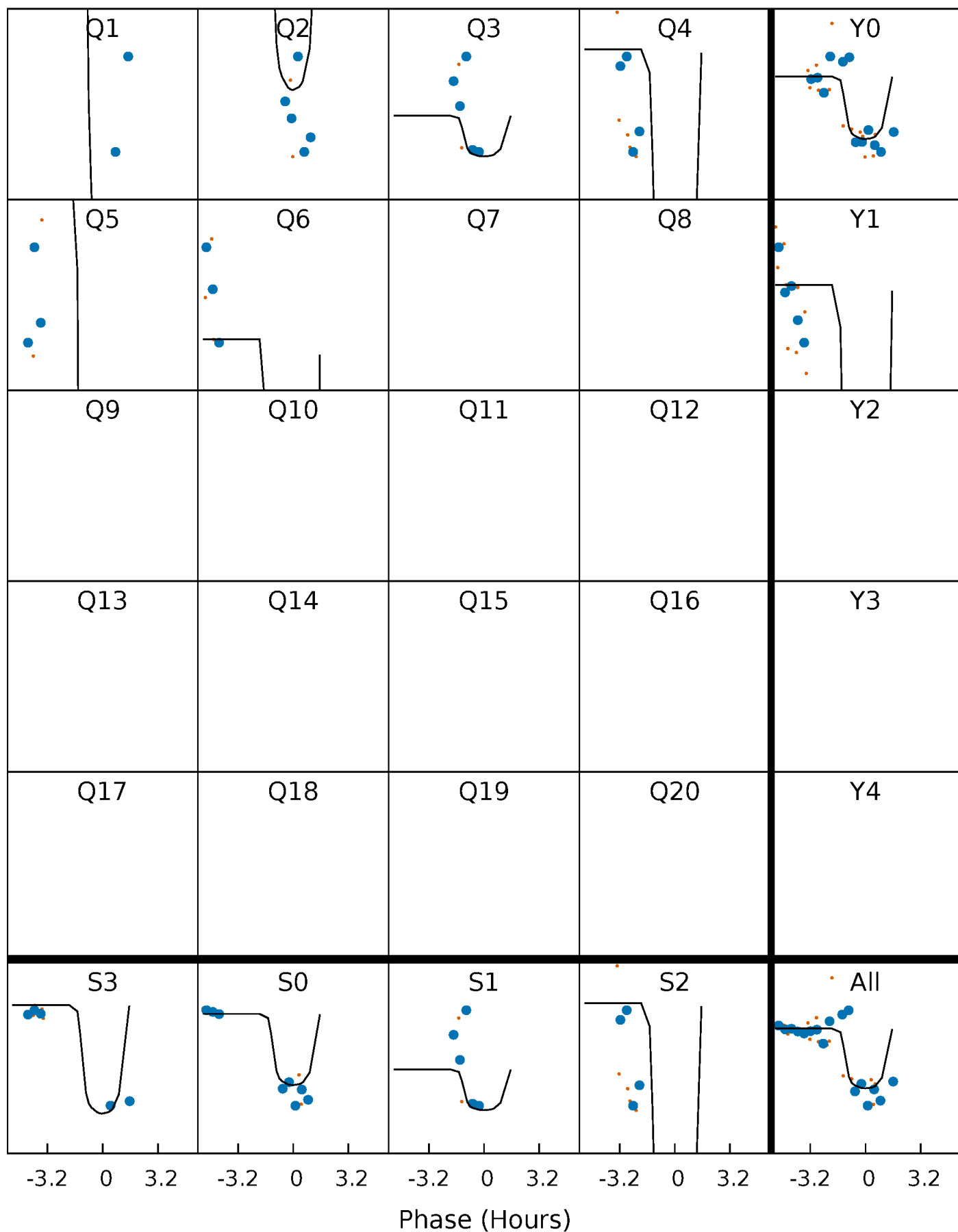
PDC Quarter-Phased Transit Curves

TCE 009456996-02 P= 39.564678 Days $T_0=155.233547$ (BKJD)



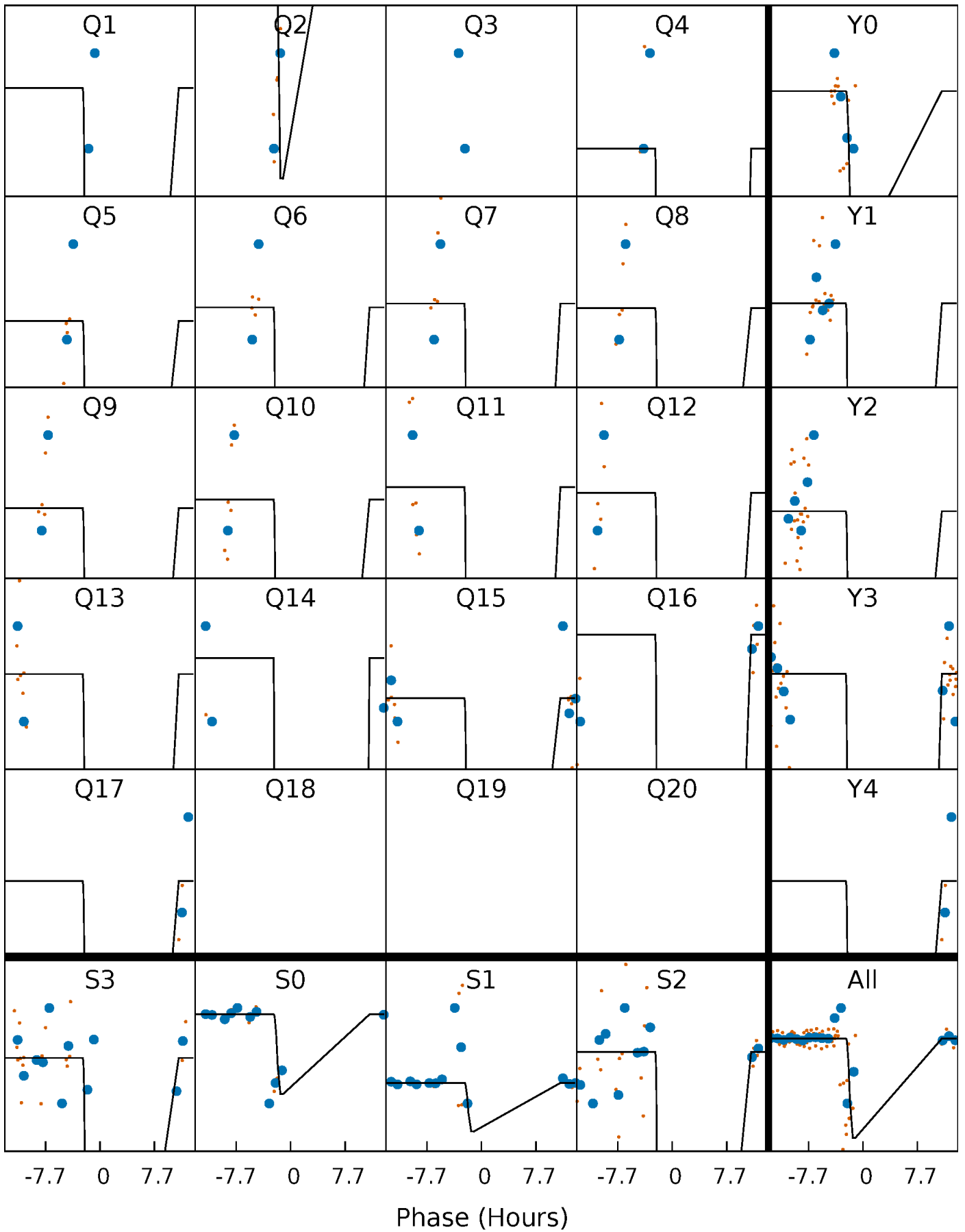
DV Quarter-Phased Transit Curves

TCE 009456996-02 $P = 39.564678$ Days $T_0 = 155.233547$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

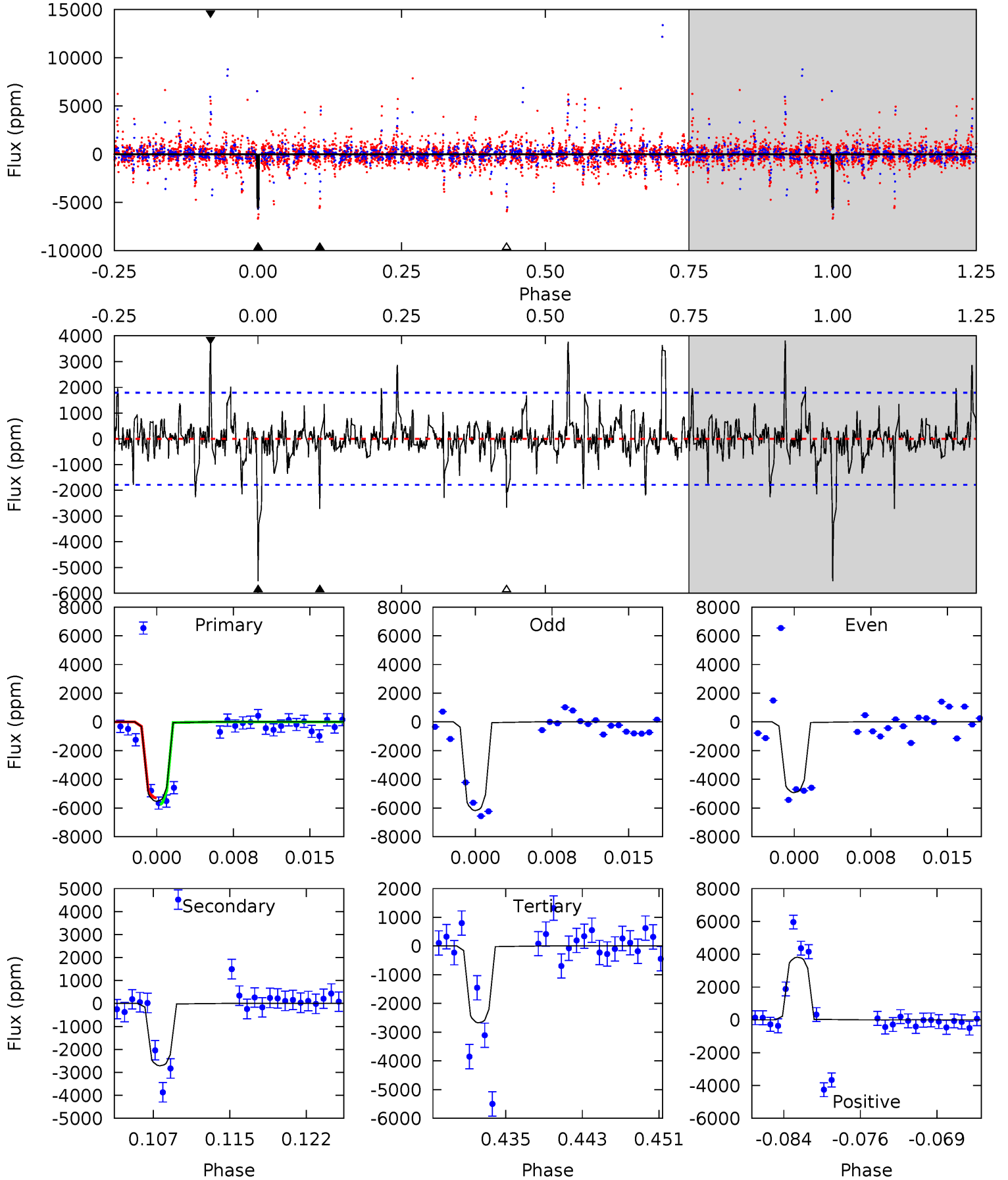
TCE 009456996-02 P= 39.555425 Days $T_0=155.342423$ (BKJD)



DV Model-Shift Uniqueness Test

009456996-02, P = 39.564678 Days, E = 115.668869 Days

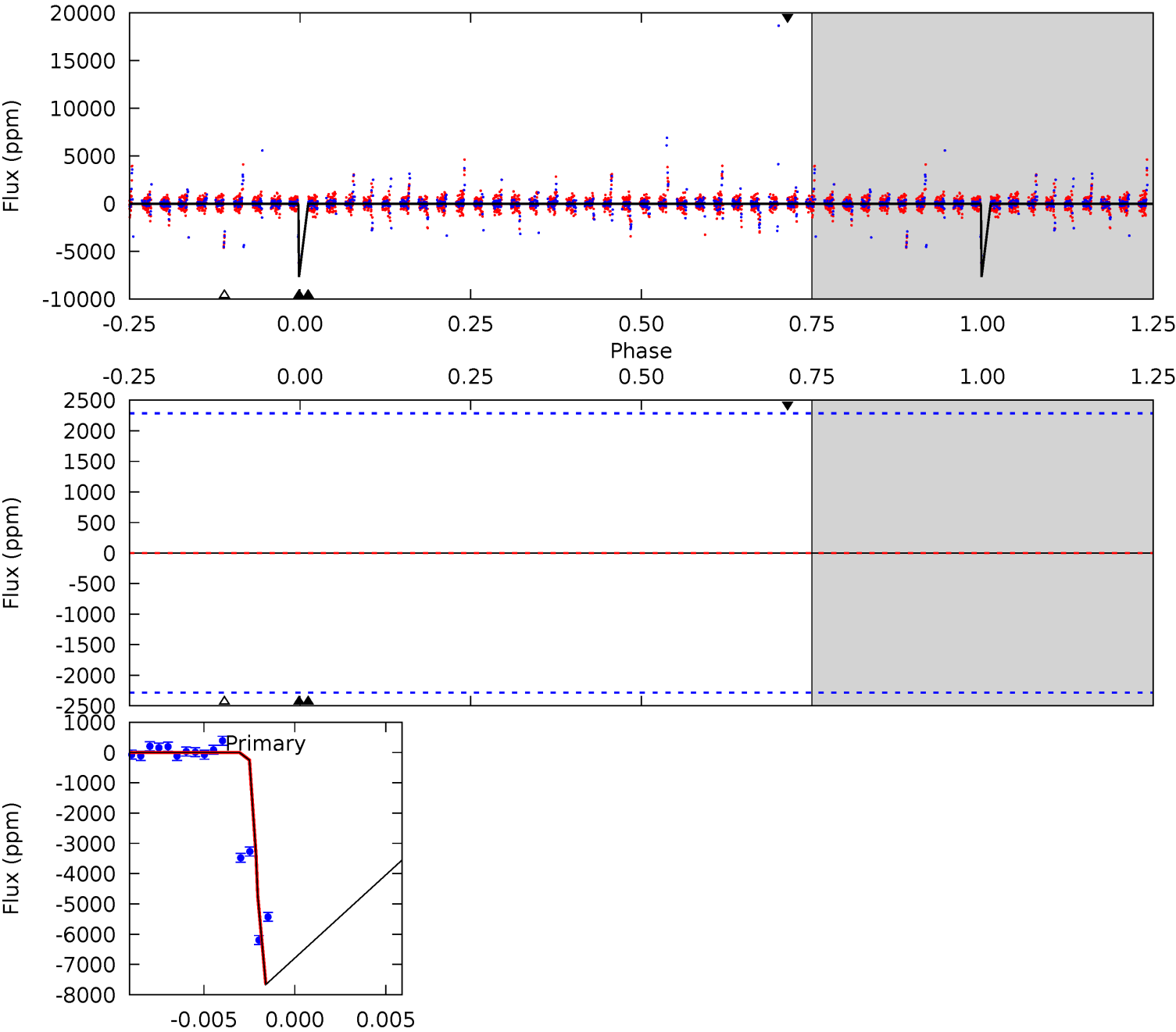
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	7.72	7.60	10.9	5.08	2.67	1.61	8.12	4.87	0.11	-3.14	1.63	0.49	0.41	0.65



Alt Model-Shift Uniqueness Test

009456996-02, P = 39.555425 Days, E = 115.786998 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	5.17	2.82	0	0	0	0	0	0	0	0	0



Stellar Parameters For KIC 009456996

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7079^{+192}_{-235}	$4.039^{+0.234}_{-0.175}$	$-0.220^{+0.250}_{-0.350}$	$1.910^{+0.548}_{-0.548}$	$1.453^{+0.218}_{-0.267}$	$0.294^{+0.381}_{-0.146}$
	+3%/-3%	+6%/-4%	+114%/-159%	+29%/-29%	+15%/-18%	+130%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009456996-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2715 ± 352	$14.14^{+4.89}_{-4.34}$	1181^{+95}_{-91}	6056^{+1299}_{-725}	492^{+568}_{-221}
Alt.	-0 ± 442	$17.82^{+5.17}_{-4.99}$	1183^{+86}_{-100}	2190^{+1680}_{-6010}	$1.200^{+53.798}_{-51.476}$

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

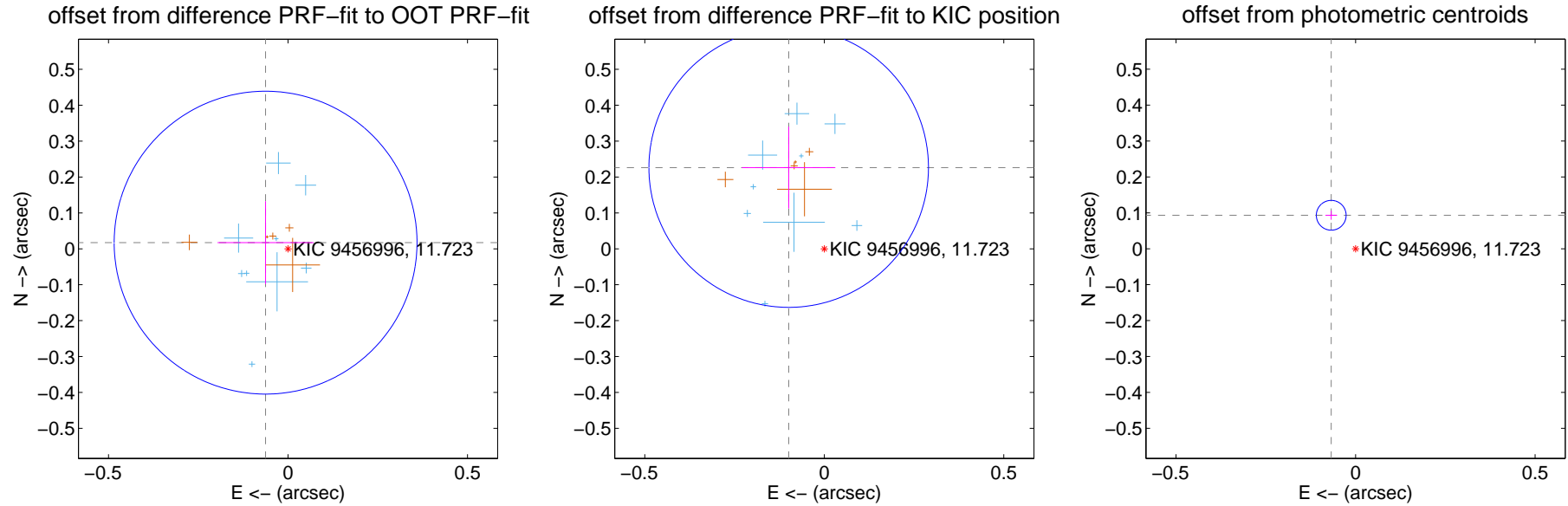
DV Centroid Data

Supplemental centroid analysis for 009456996-02. **Kepler magnitude: 11.72.** Transit SNR 13.40

There are 10 quarters with good PRF difference image offsets

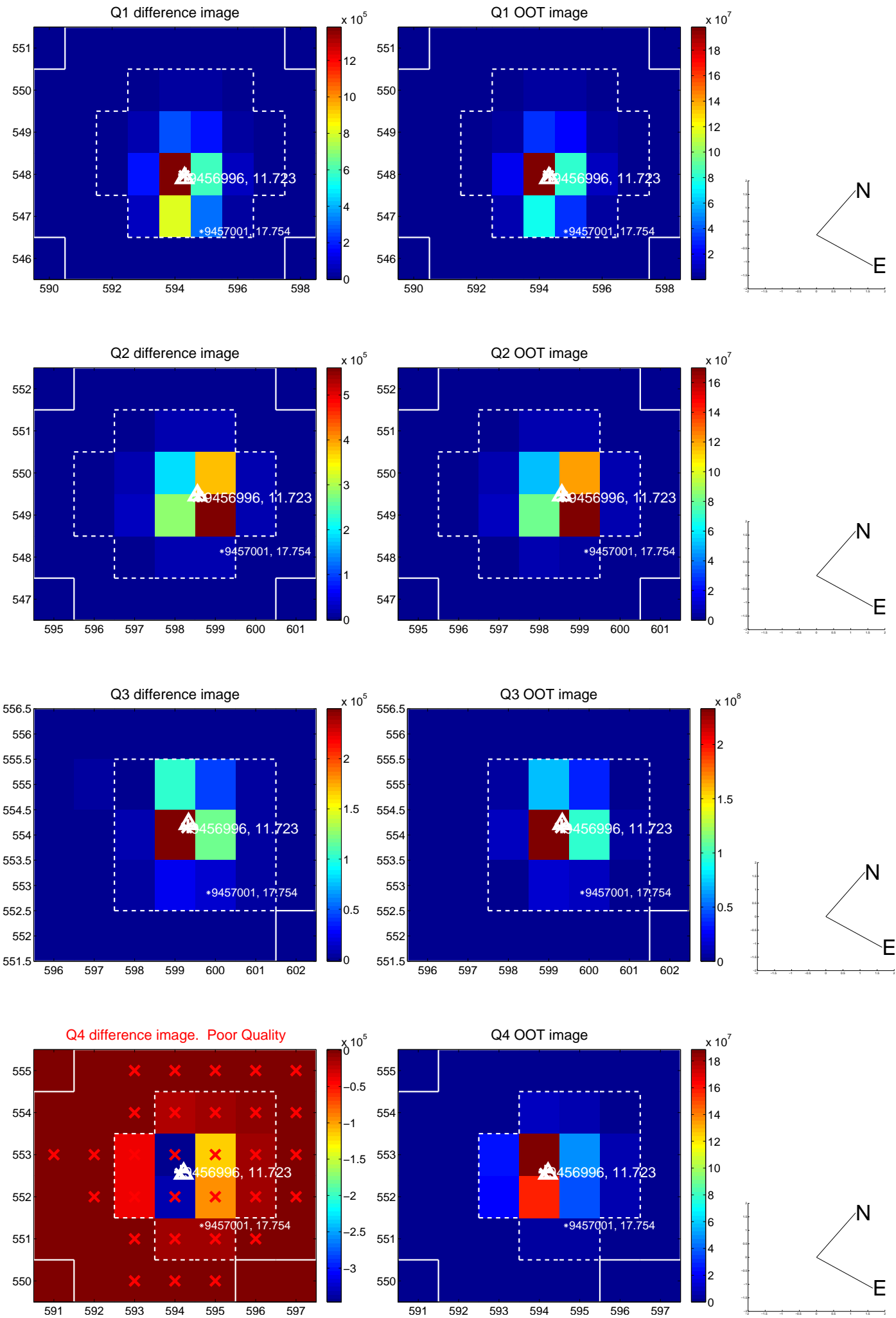
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.065 ± 0.141	0.46	0.062 ± 0.134	0.017 ± 0.115
PRF-fit source offset from KIC position	0.247 ± 0.130	1.90	0.099 ± 0.130	0.226 ± 0.114
photometric centroid source offset	0.12 ± 0.01	8.33	0.07 ± 0.02	0.09 ± 0.01

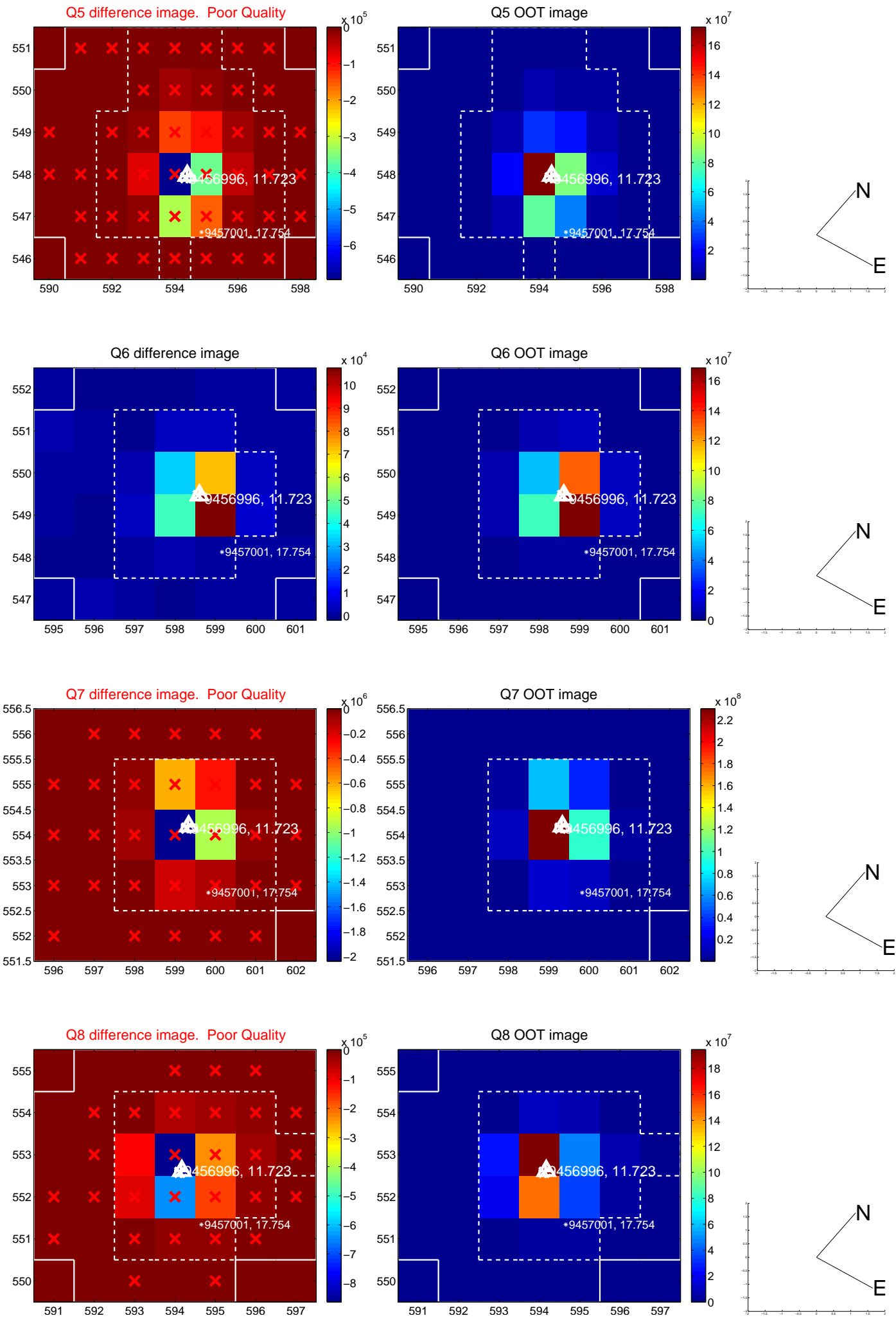


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

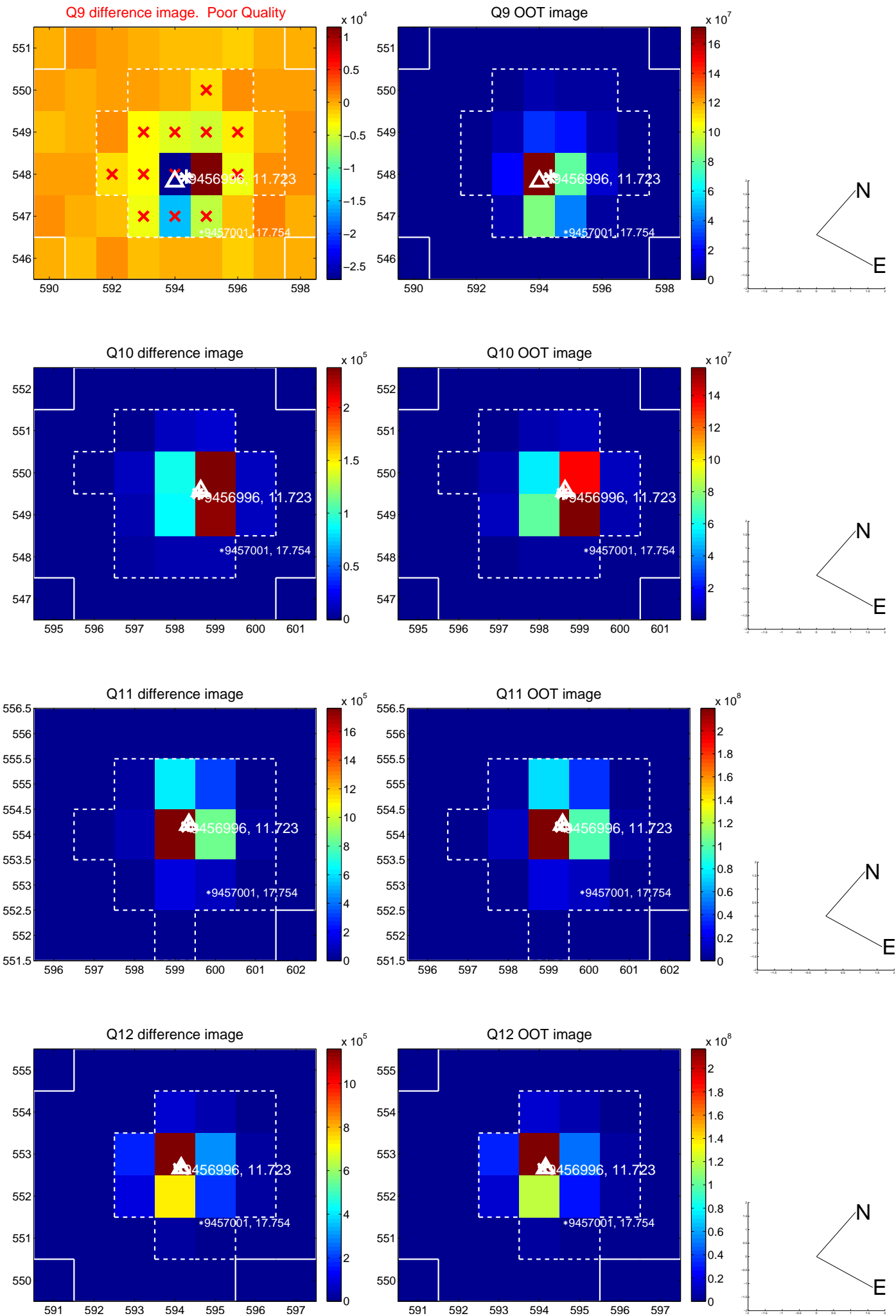
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



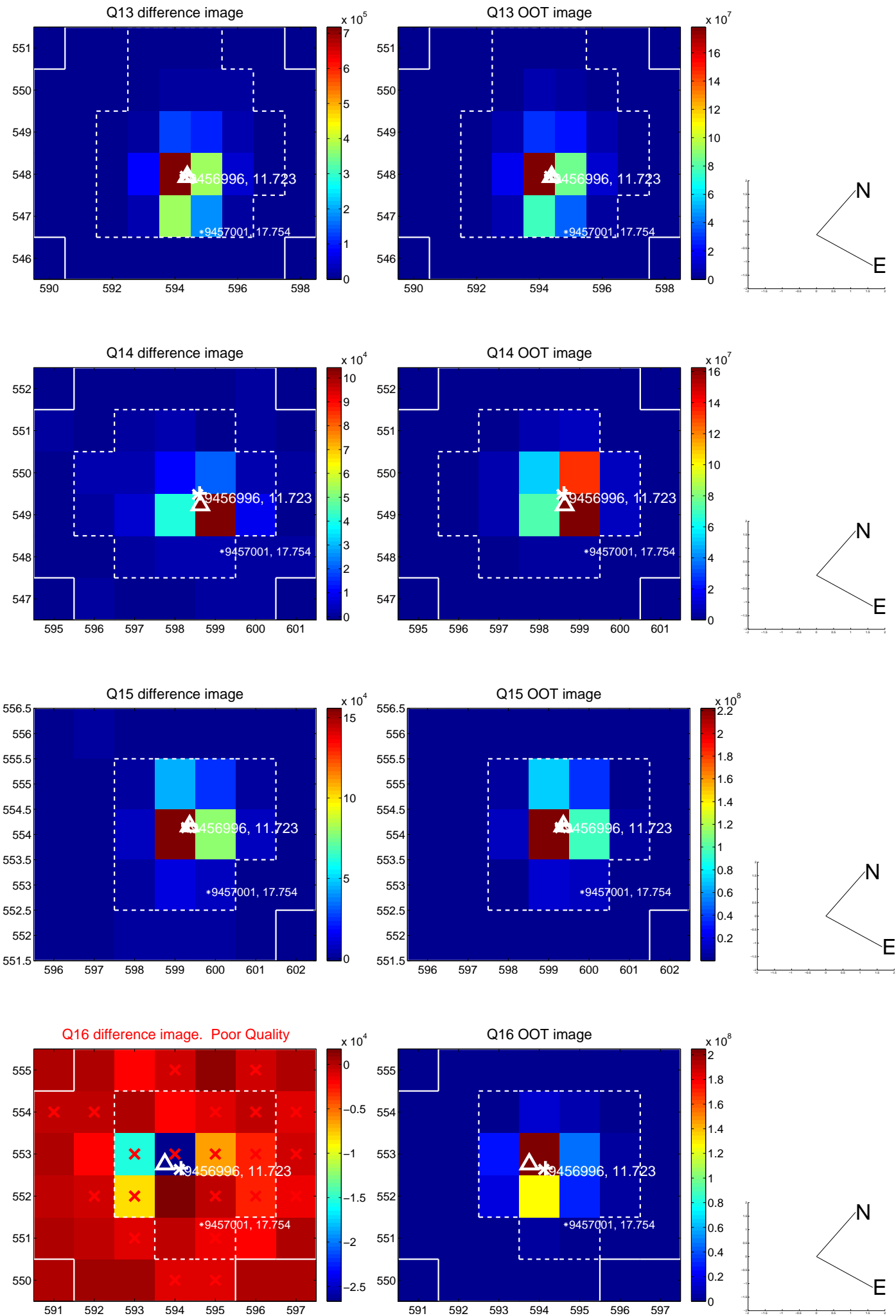
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



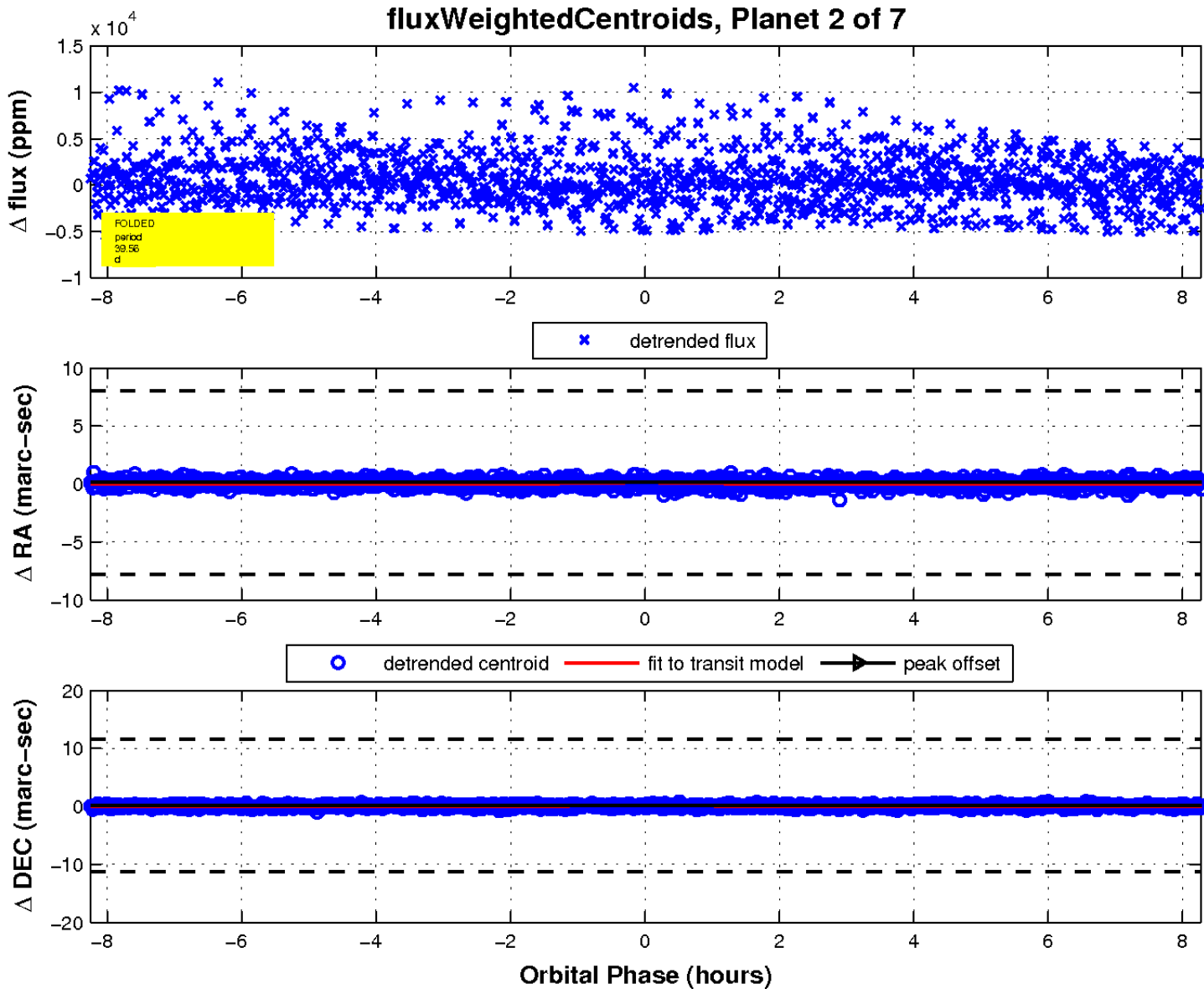
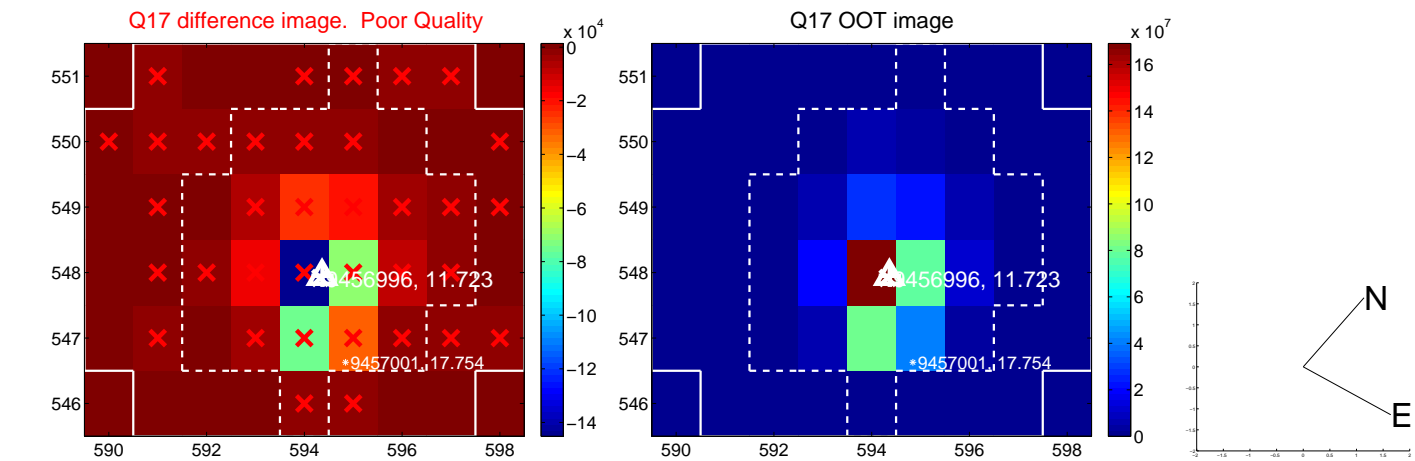
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

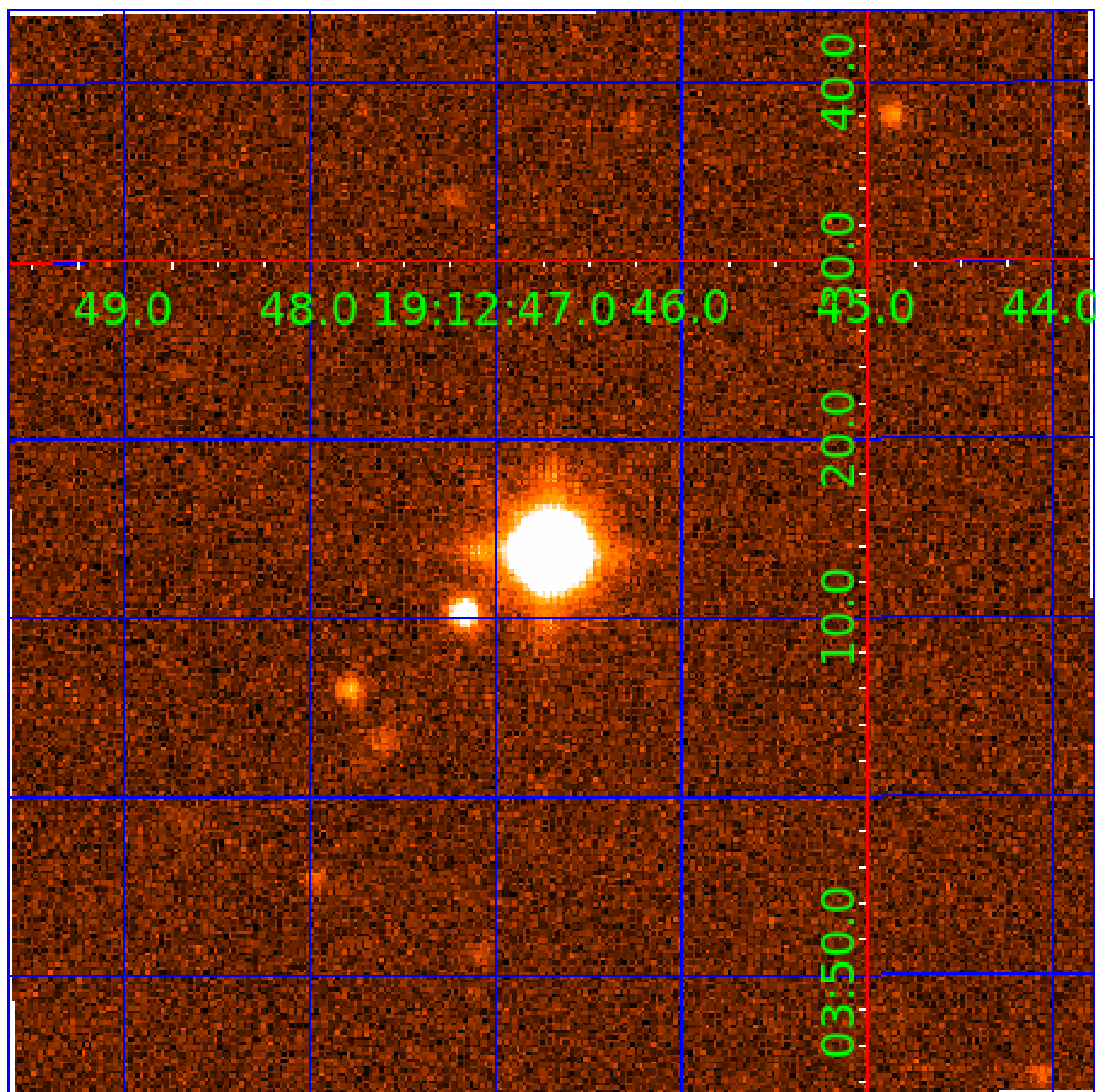


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009456996

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})
009456996-01	OBS	No	1.068676	132.293597	2.0	7.905	16.4	0.3	1.91	7079	0.28	15264.27
009456996-02	OBS	No	39.564678	155.233547	5180.1	2.760	20.2	13.4	1.91	7079	14.61	123.71
009456996-06	OBS	No	31.014896	153.863351	351.8	0.777	10.0	0.9	1.91	7079	3.78	171.15
009456996-07	OBS	No	26.714889	144.567247	364.3	1.500	12.4	-1.0	1.91	7079	3.70	208.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009456996-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009456996-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT
009456996-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009456996-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

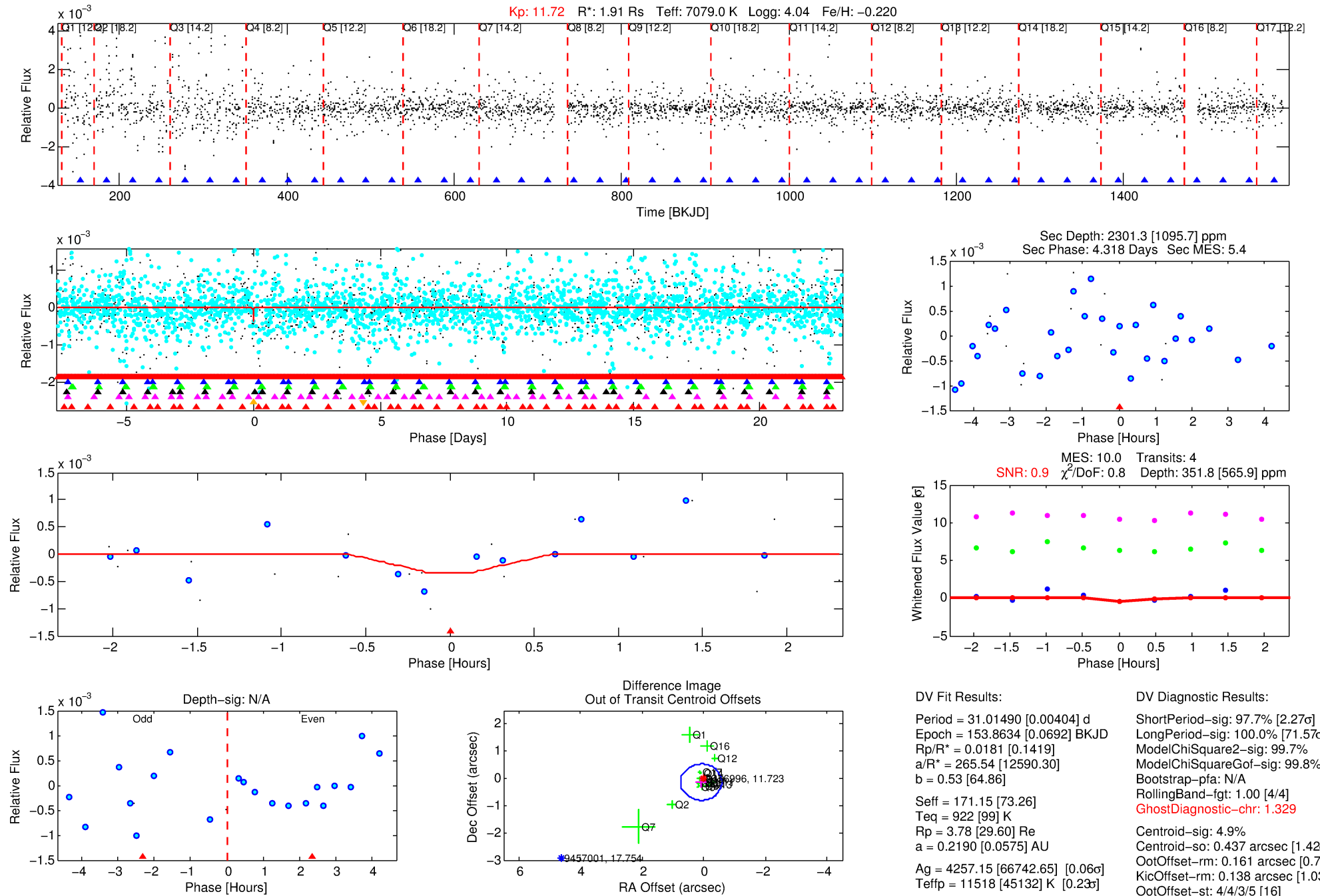
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009456996-06

No Significant Match Found

DV One-Page Summary

KIC: 9456996 Candidate: 6 of 7 Period: 31.015 d



DV Fit Results:

Period = 31.01490 [0.00404] d
Epoch = 153.8634 [0.0692] BKJD
Rp/R* = 0.0181 [0.1419]
a/R* = 265.54 [12590.30]
b = 0.53 [64.86]
Seff = 171.15 [73.26]
Teq = 922 [99] K
Rp = 3.78 [29.60] Re
a = 0.2190 [0.0575] AU
Ag = 4257.15 [66742.65] [0.06] σ
Teffp = 11518 [45132] K [0.23] σ

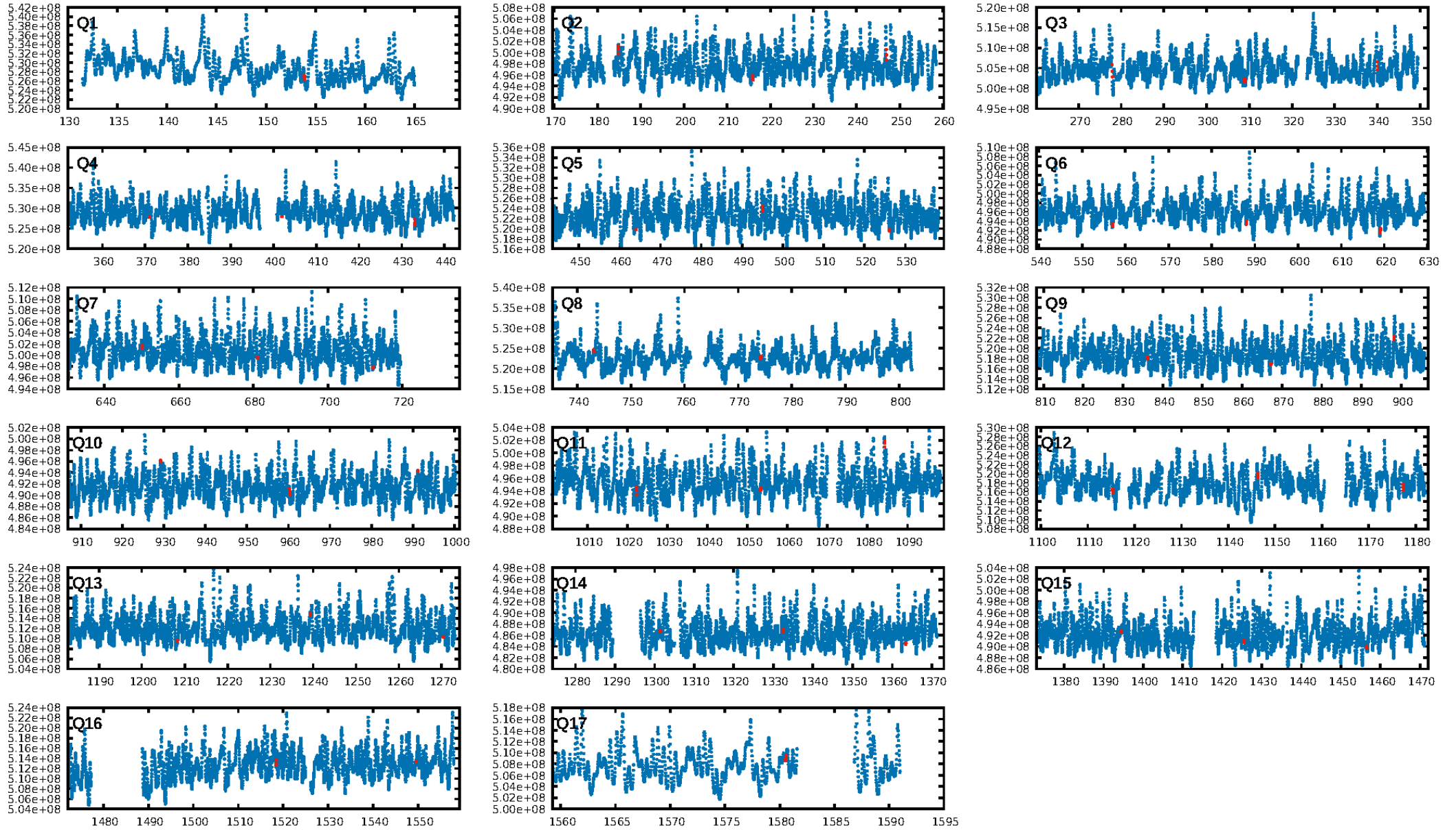
DV Diagnostic Results:

ShortPeriod-sig: 97.7% [2.27 σ]
LongPeriod-sig: 100.0% [71.57 σ]
ModelChiSquare2-sig: 99.7%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.329
Centroid-sig: 4.9%
Centroid-so: 0.437 arcsec [1.42 σ]
OotOffset-rm: 0.161 arcsec [0.72 σ]
KicOffset-rm: 0.138 arcsec [1.03 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 0.25 [4/16]

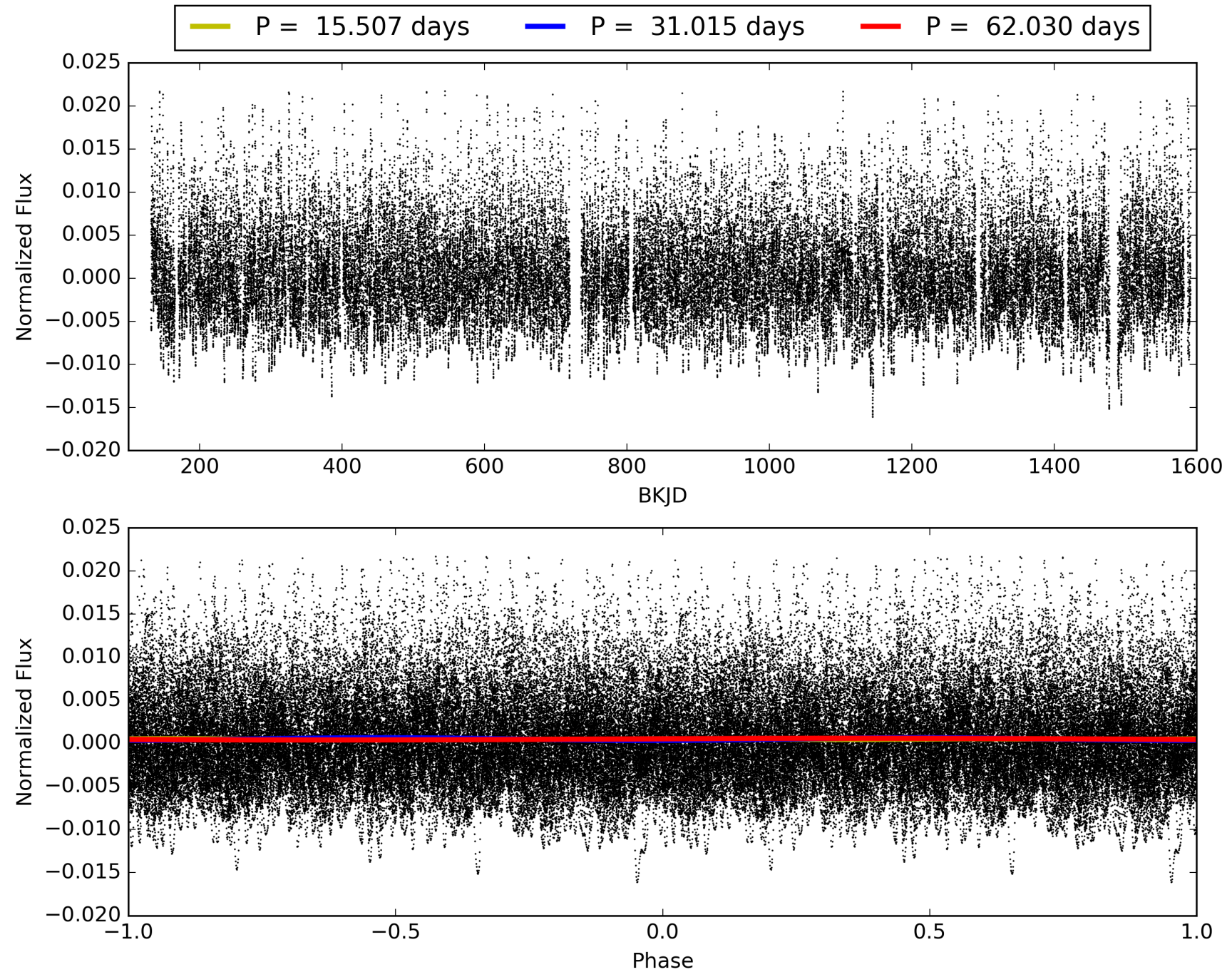
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:03:27 Z

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

TCE 009456996-06, PDC Light Curves

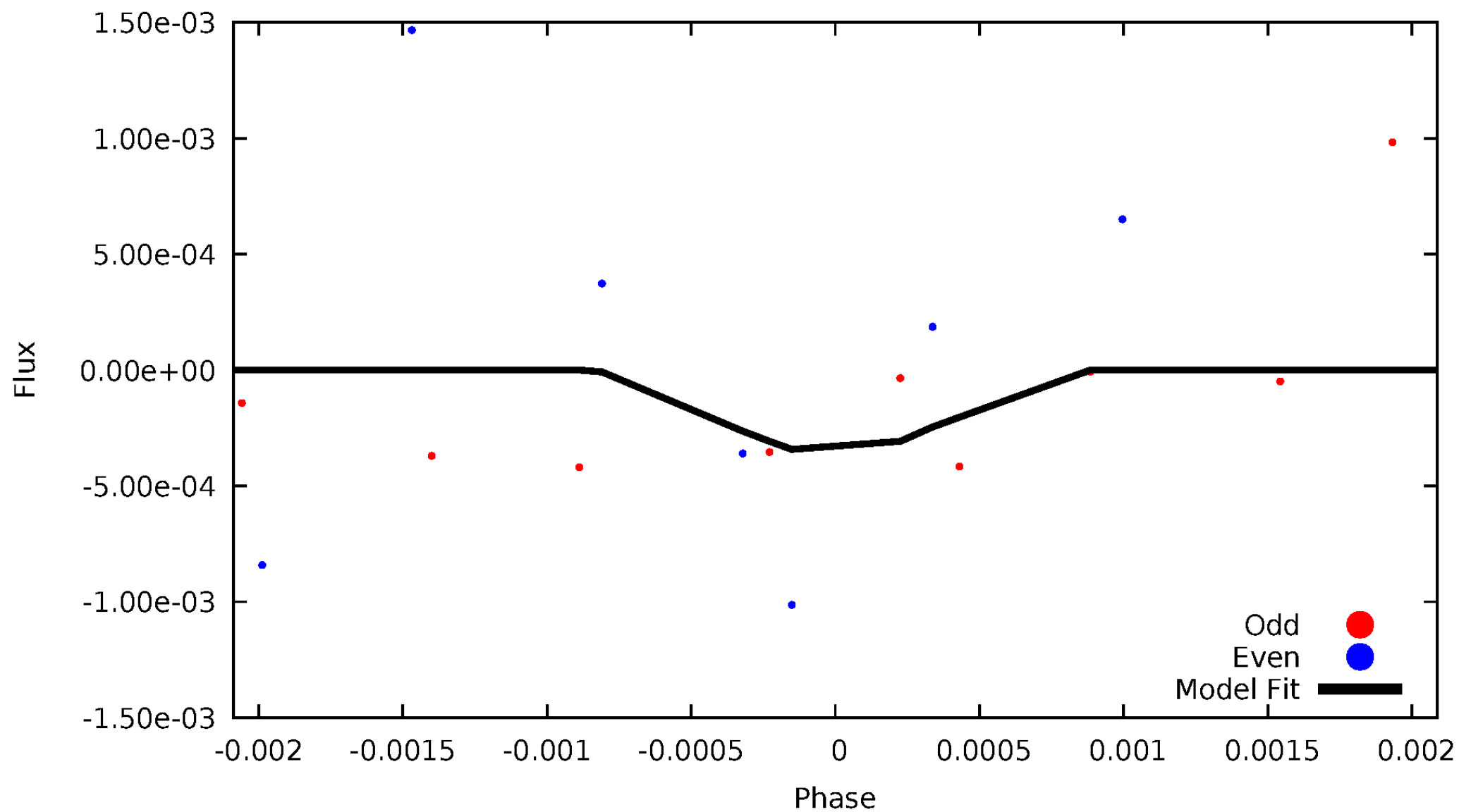


TCE 009456996-06



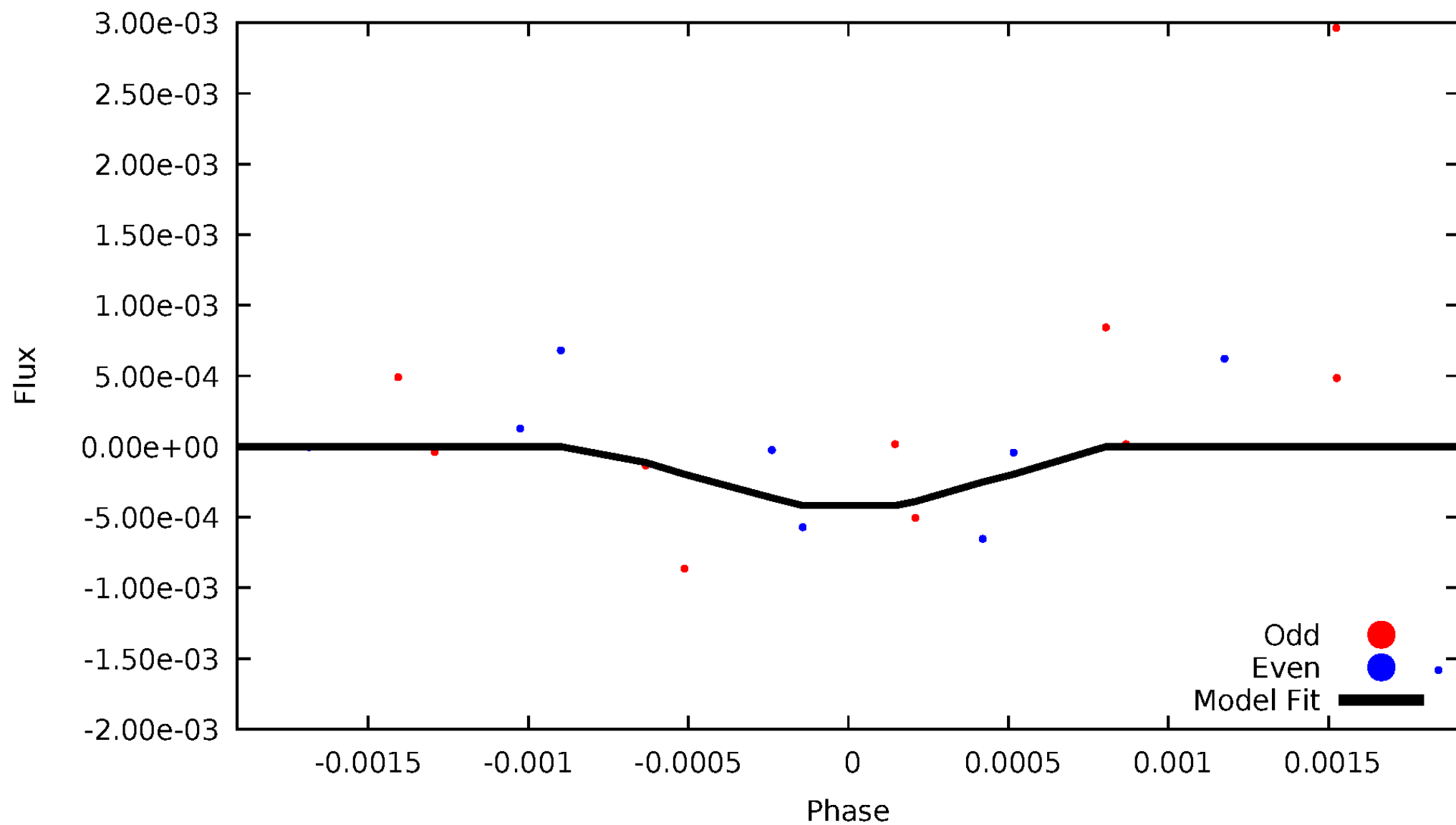
DV Odd/Even

TCE 009456996-06



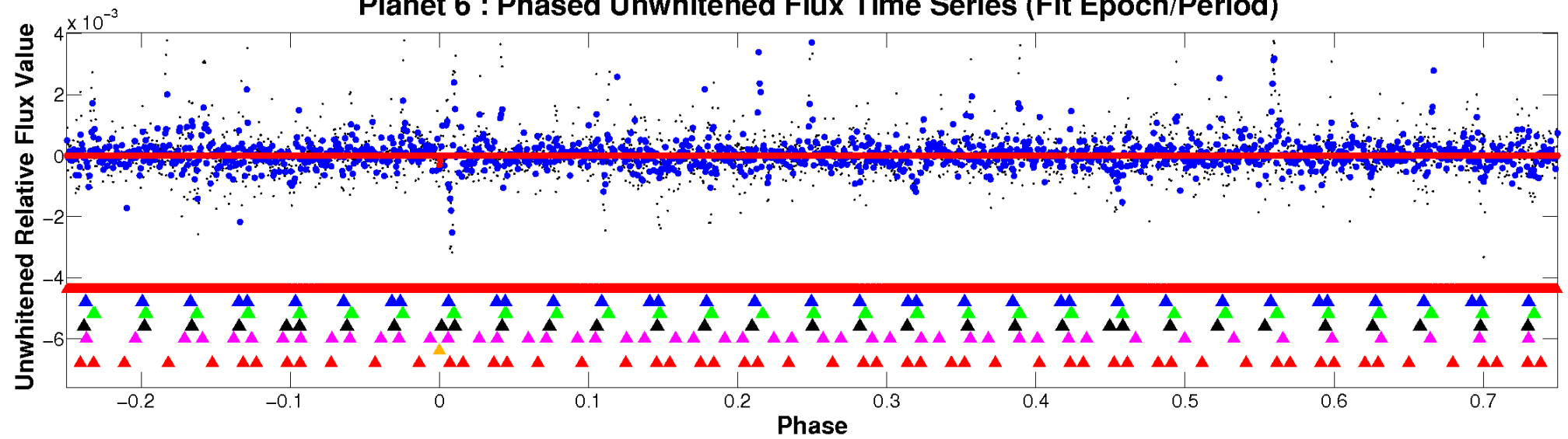
ALT Odd/Even

TCE 009456996-06

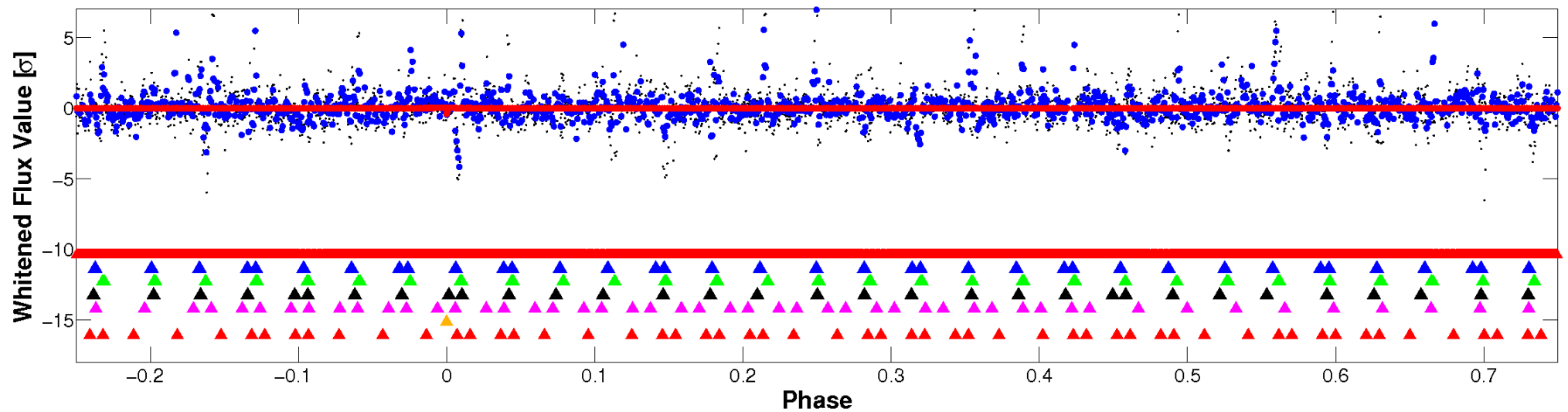


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

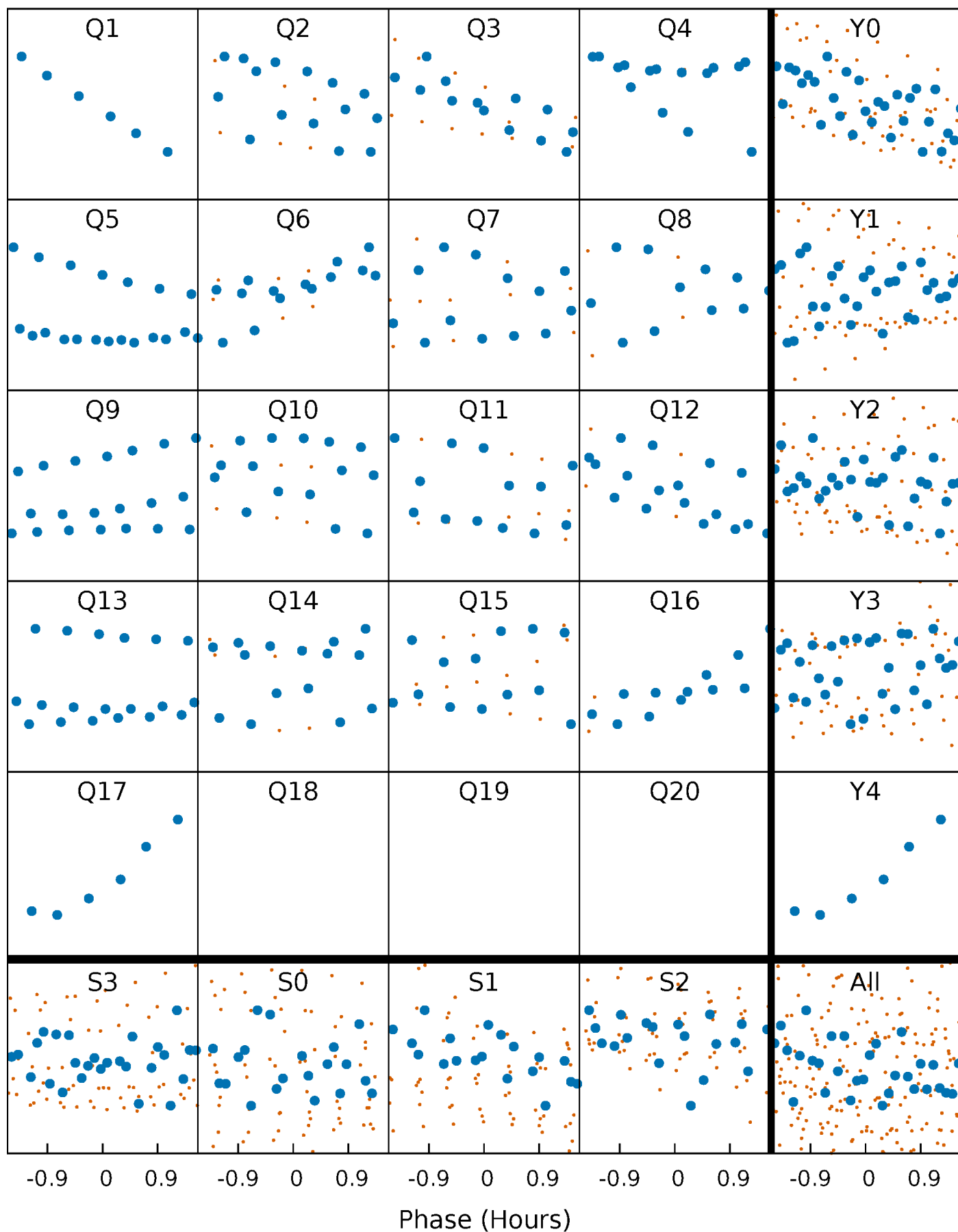


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



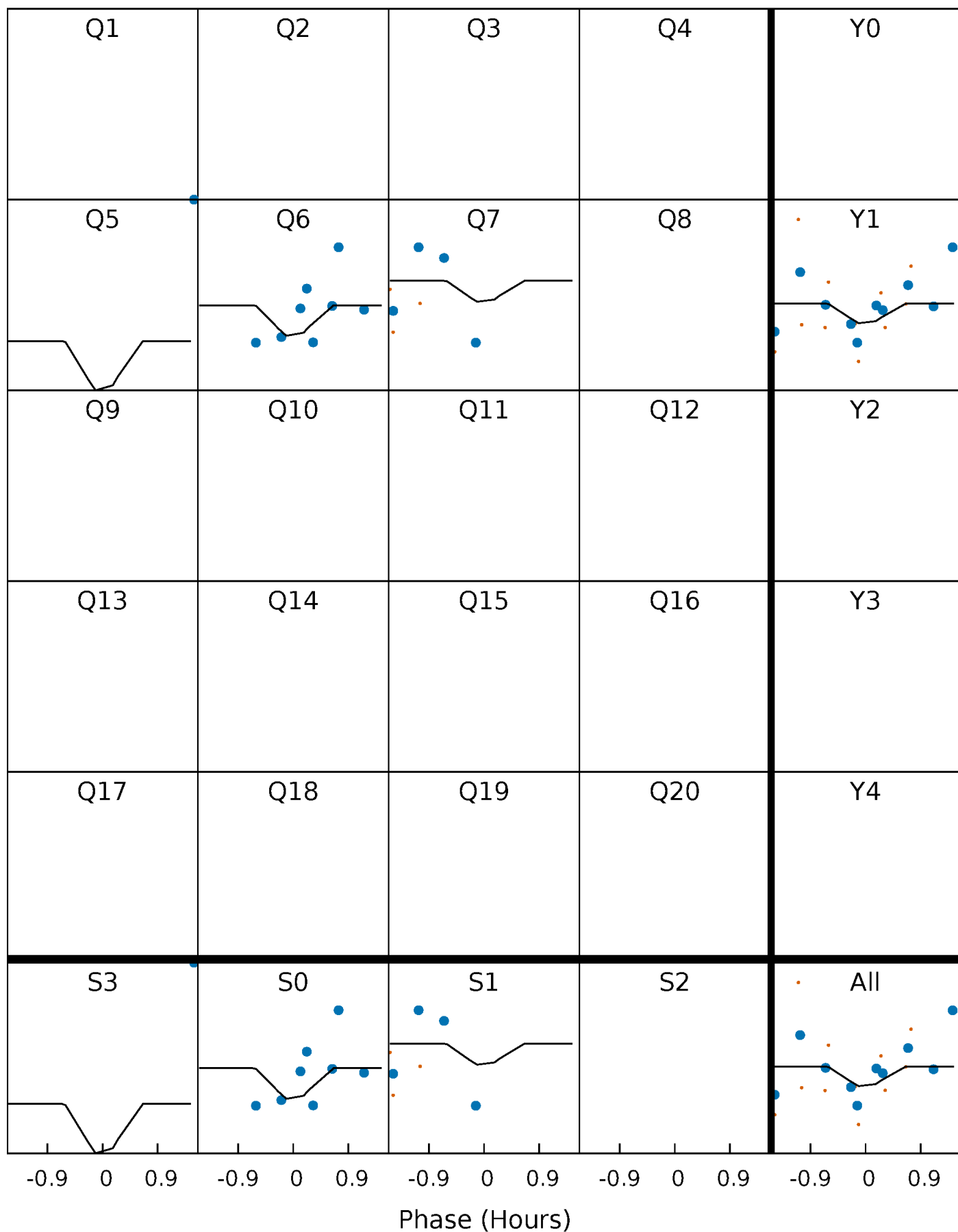
PDC Quarter-Phased Transit Curves

TCE 009456996-06 P= 31.014896 Days $T_0=153.863351$ (BKJD)



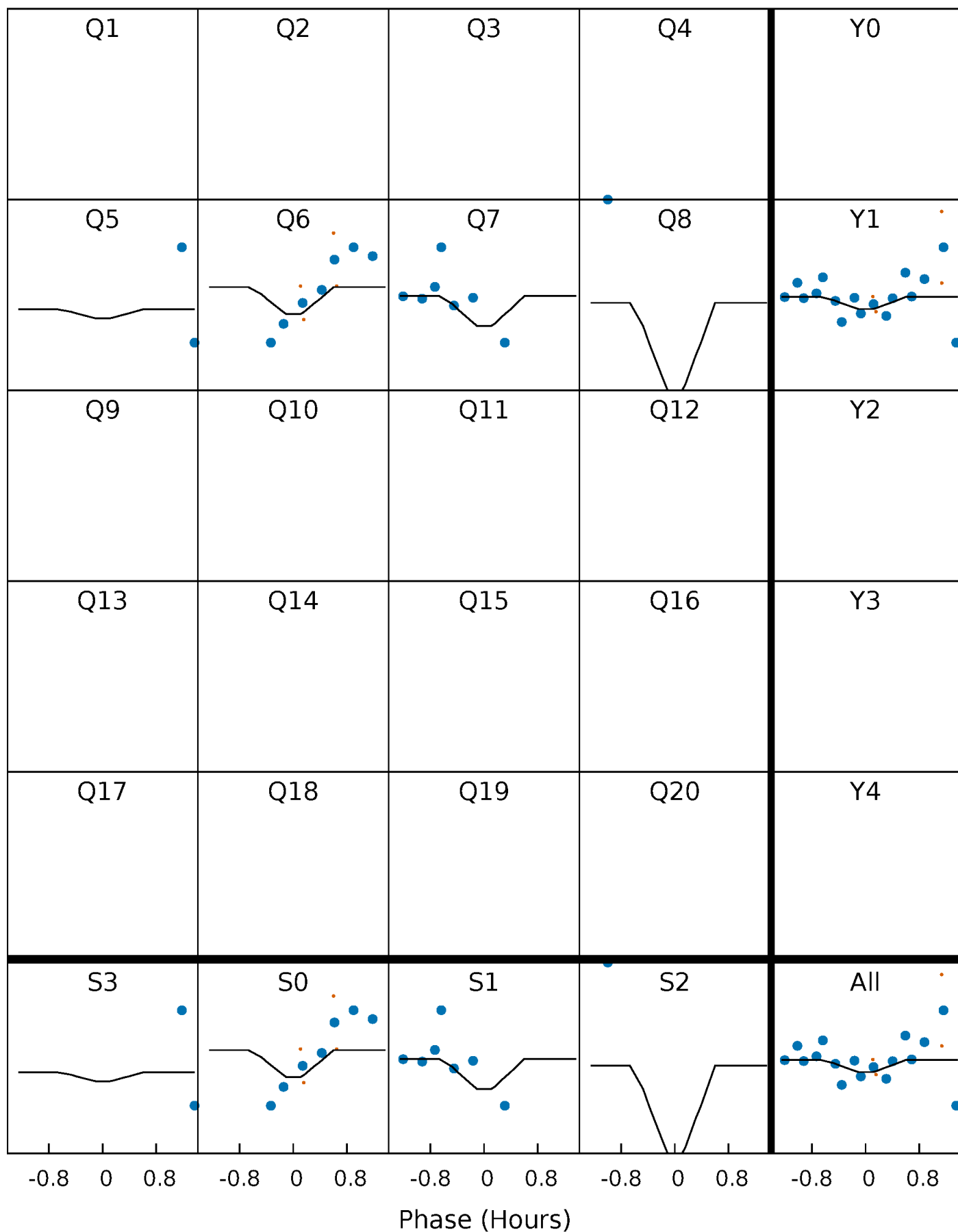
DV Quarter-Phased Transit Curves

TCE 009456996-06 P= 31.014896 Days $T_0=153.863351$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

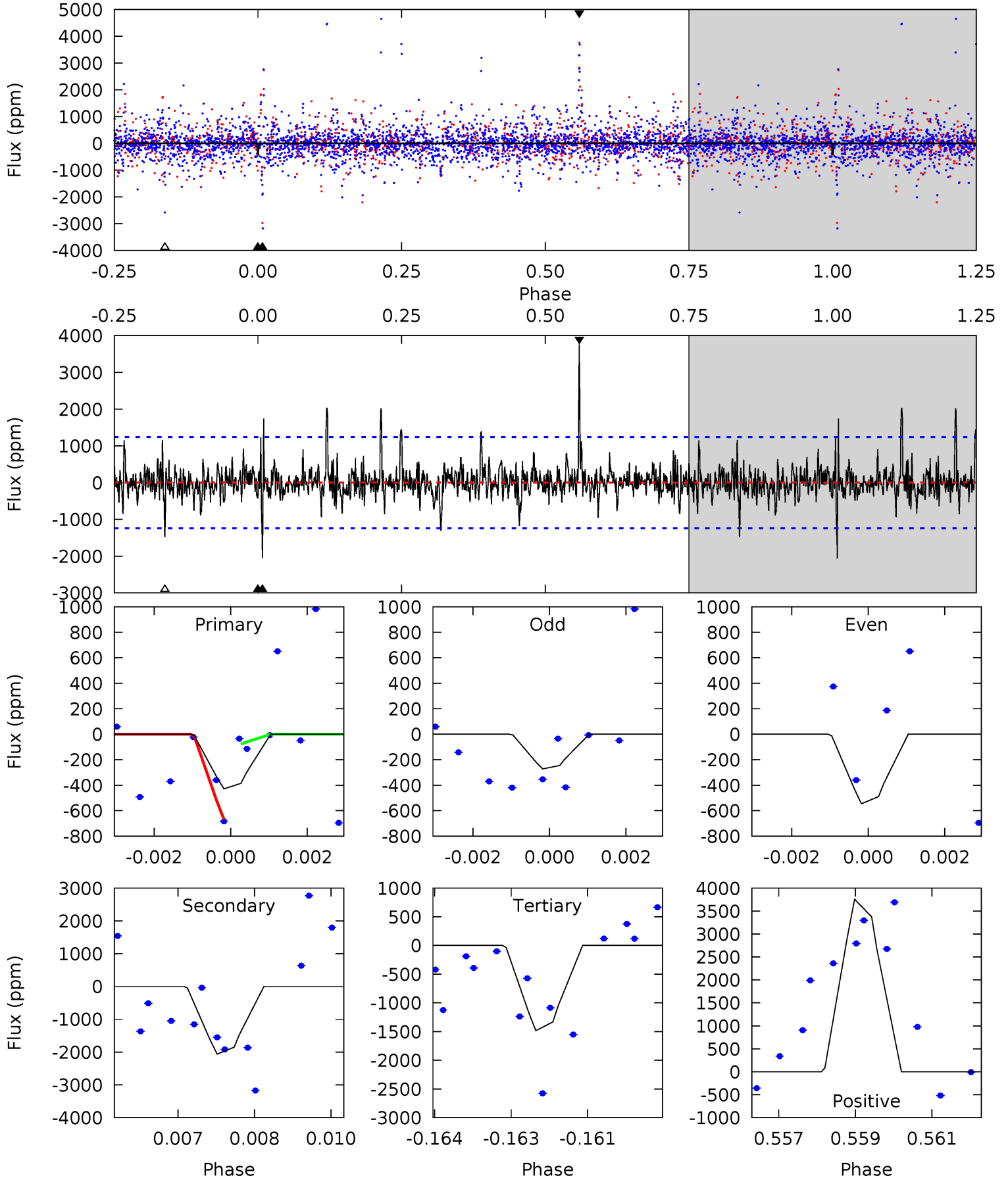
TCE 009456996-06 P= 31.008823 Days $T_0=153.942836$ (BKJD)



DV Model-Shift Uniqueness Test

009456996-06, P = 31.014896 Days, E = 122.848455 Days

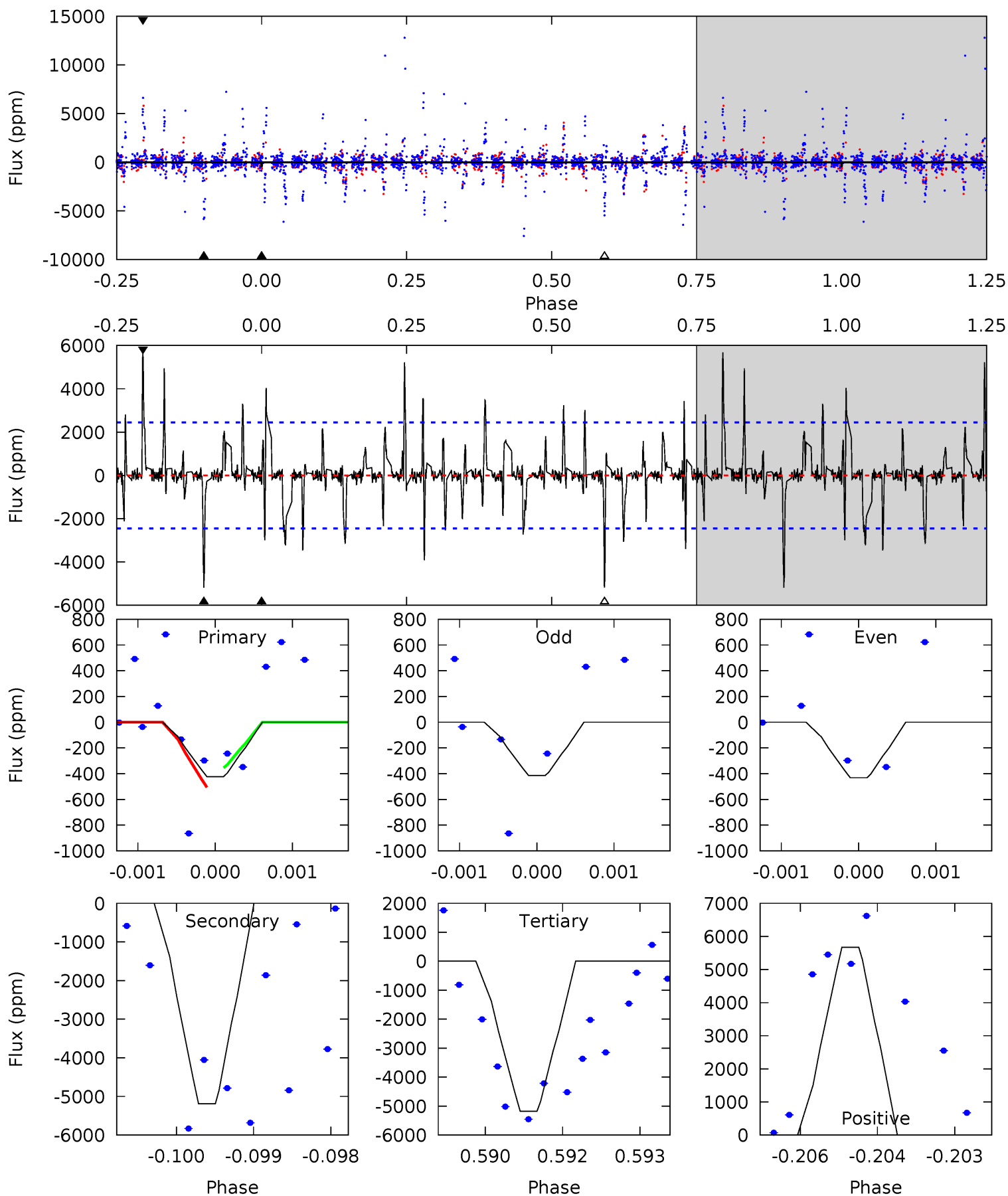
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.85	8.92	6.42	16.2	5.36	3.14	1.55	-4.56	-14.4	2.50	-7.33	0.53	1.11	0.65	1.29



Alt Model-Shift Uniqueness Test

009456996-06, P = 31.008823 Days, E = 122.934013 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.93	11.5	11.4	12.5	5.40	3.21	1.82	-10.5	-11.6	0.02	-1.08	0.01	1.05	0.52	0.17



Stellar Parameters For KIC 009456996

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7079^{+192}_{-235}	$4.039^{+0.234}_{-0.175}$	$-0.220^{+0.250}_{-0.350}$	$1.910^{+0.548}_{-0.548}$	$1.453^{+0.218}_{-0.267}$	$0.294^{+0.381}_{-0.146}$
	+3%/-3%	+6%/-4%	+114%/-159%	+29%/-29%	+15%/-18%	+130%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009456996-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2061 ± 231	$20.11^{+22.66}_{-13.89}$	1280^{+108}_{-98}	4876^{+4036}_{-1191}	131^{+1109}_{-102}
Alt.	-5187 ± 453	$20.45^{+24.01}_{-14.54}$	1279^{+103}_{-100}	5944^{+6909}_{-1643}	337^{+3151}_{-268}

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 $A_{obs} \gg 1.0$

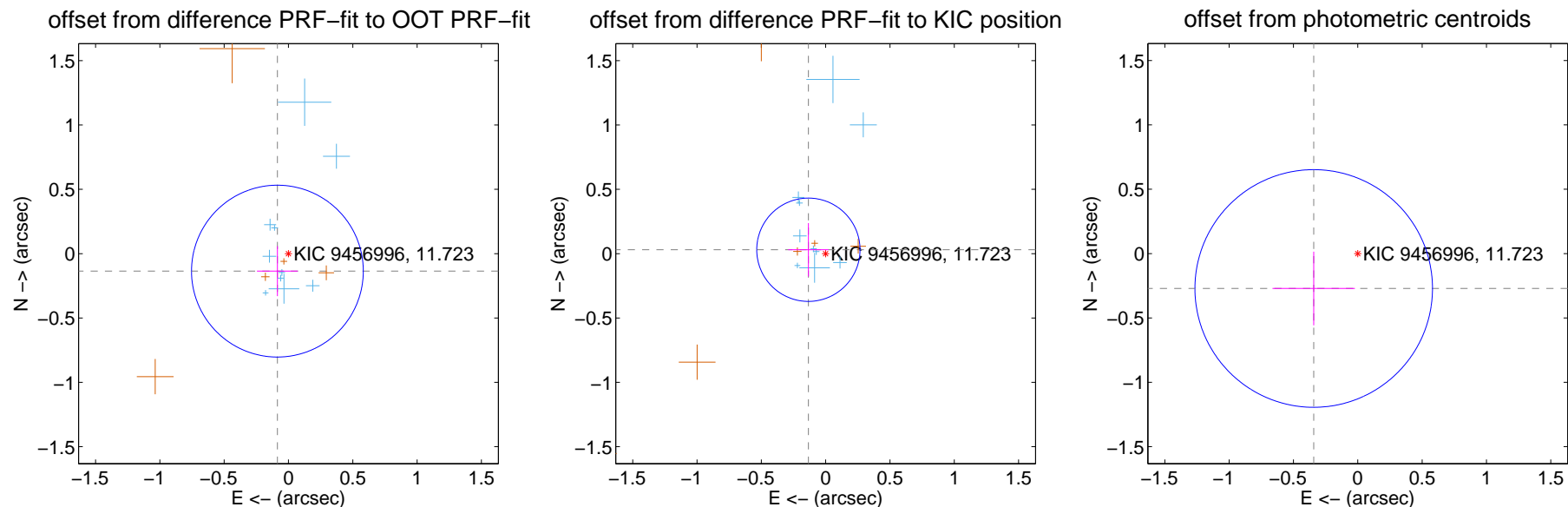
DV Centroid Data

Supplemental centroid analysis for 009456996-06. **Kepler magnitude: 11.72.** Transit SNR 0.89

There are 10 quarters with good PRF difference image offsets

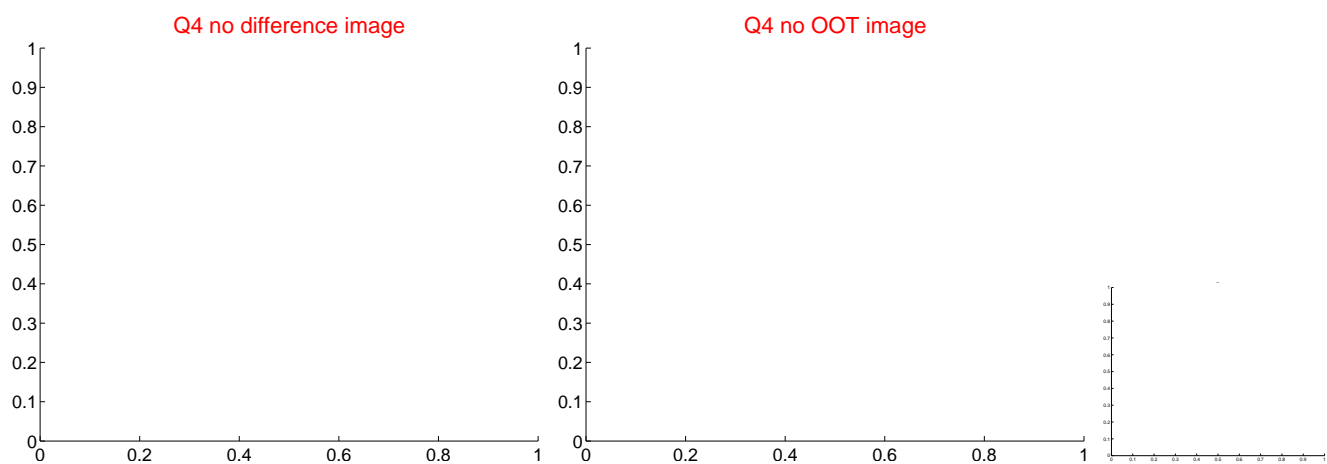
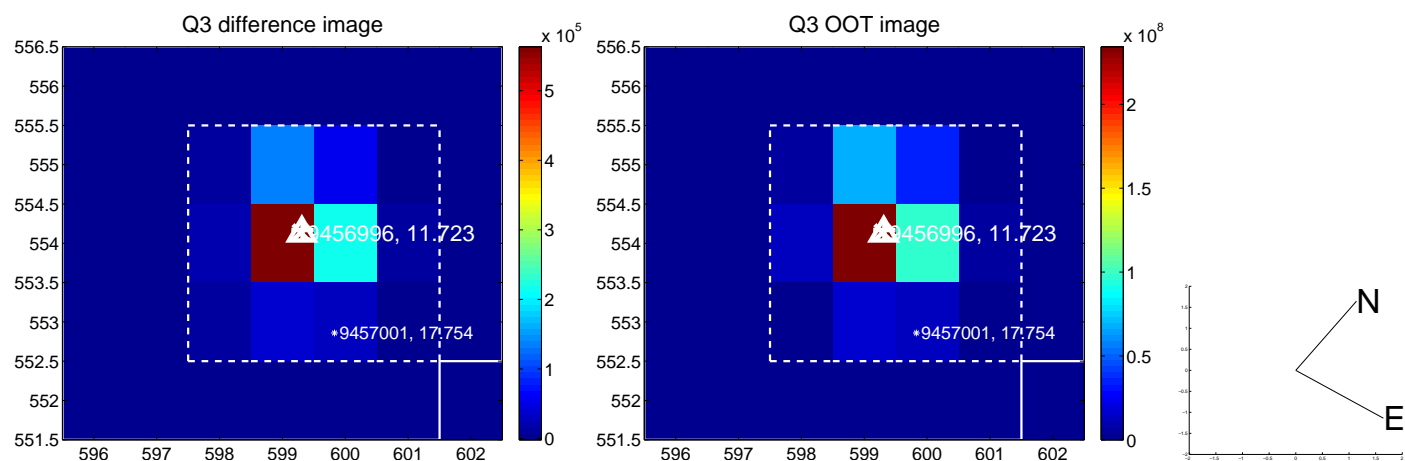
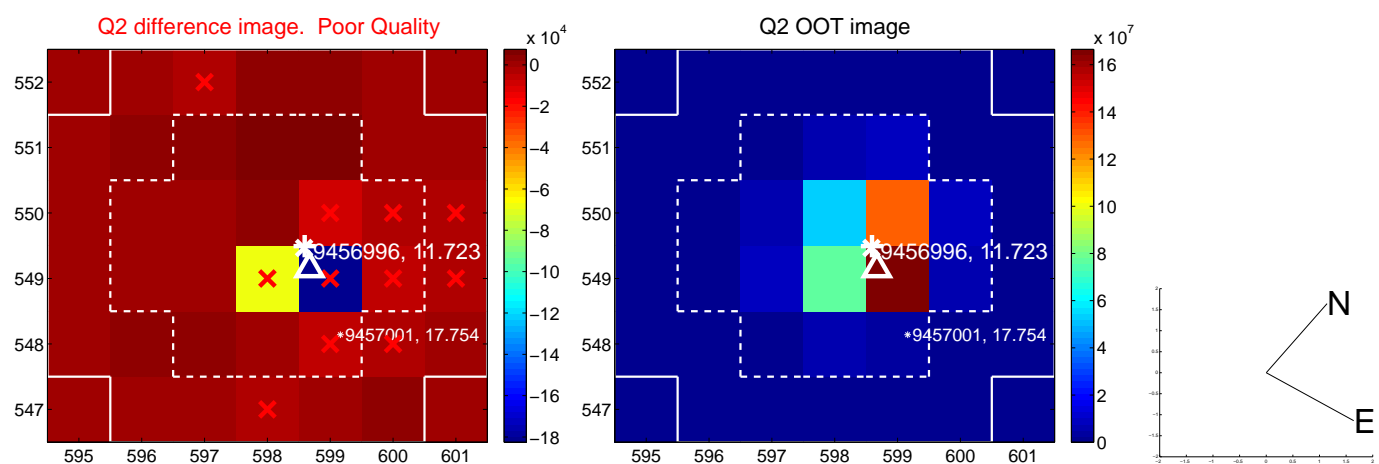
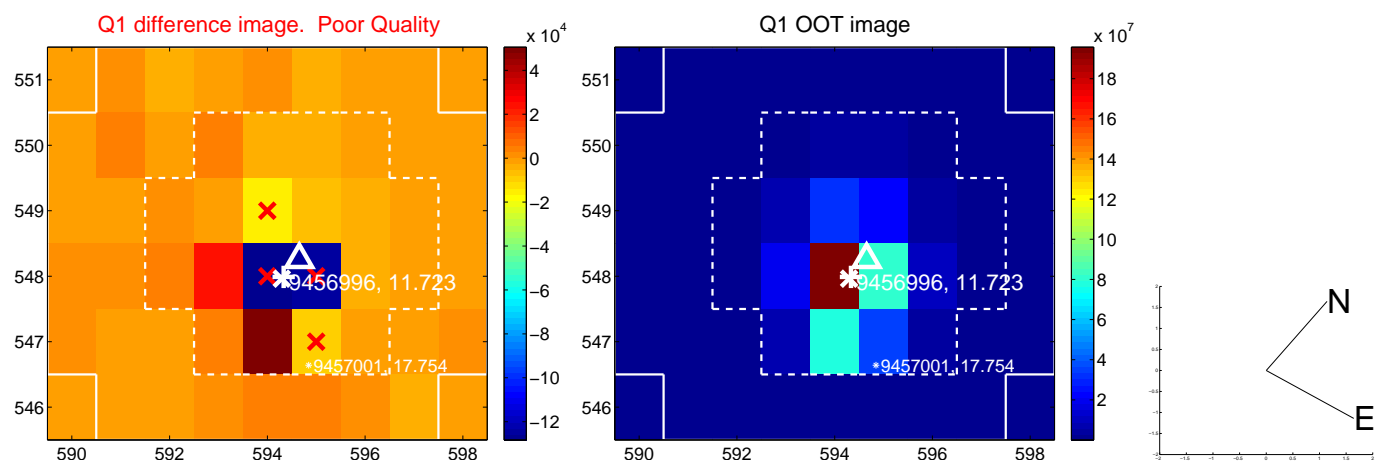
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 0.223	0.72	0.086 ± 0.159	-0.136 ± 0.194
PRF-fit source offset from KIC position	0.138 ± 0.134	1.03	0.134 ± 0.157	0.030 ± 0.207
photometric centroid source offset	0.44 ± 0.31	1.42	0.34 ± 0.32	-0.27 ± 0.29

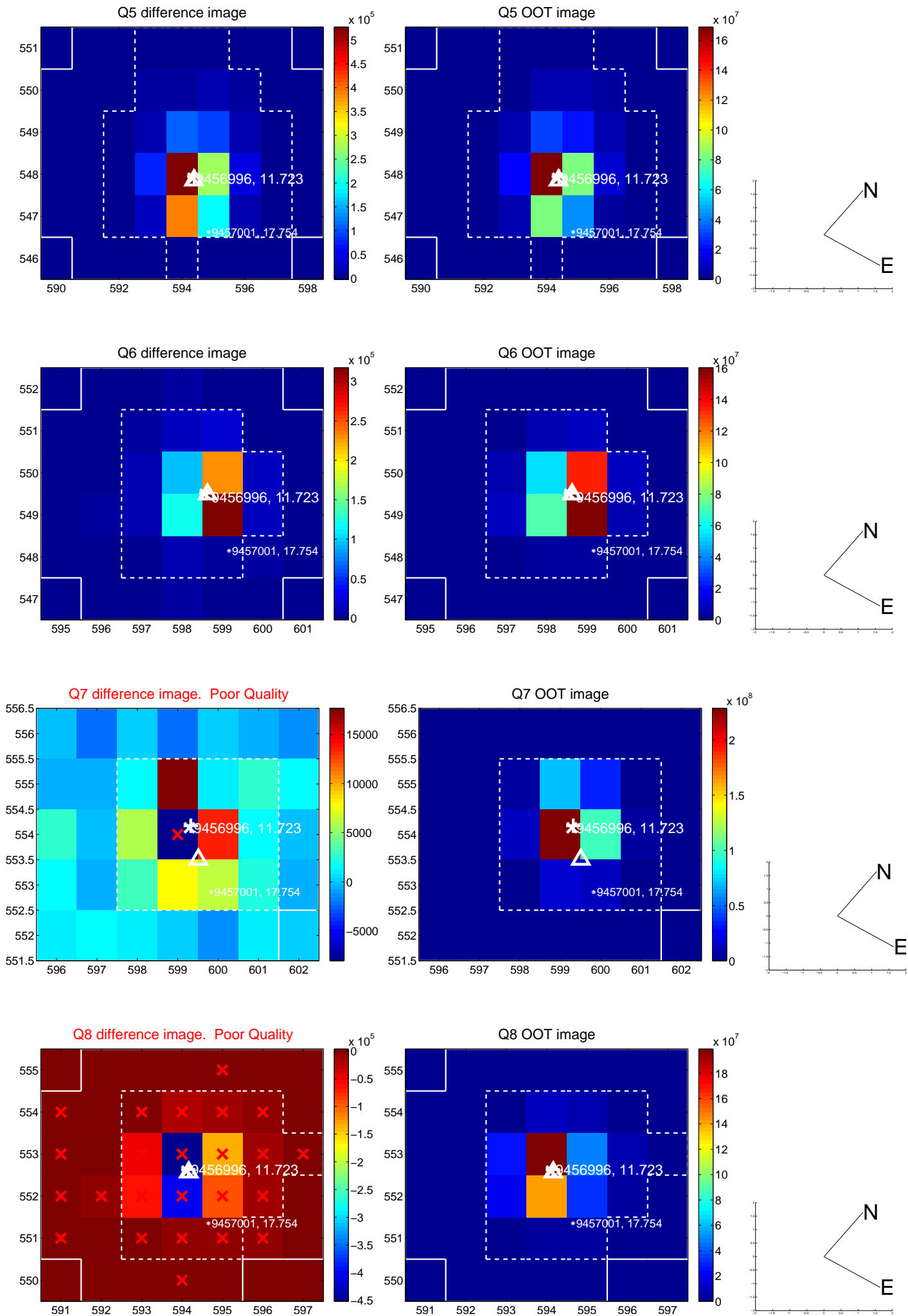


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

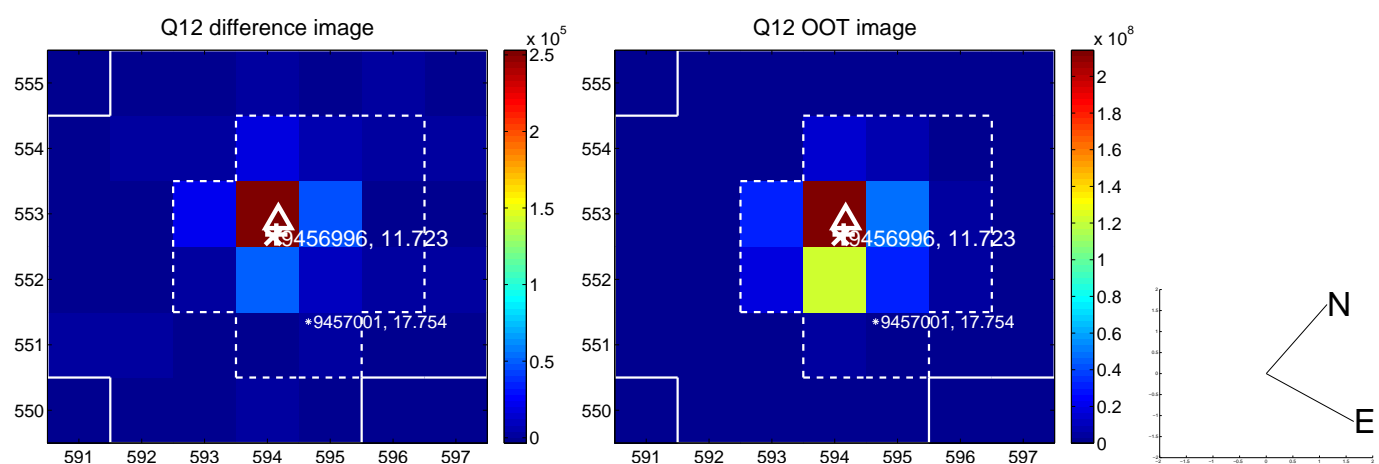
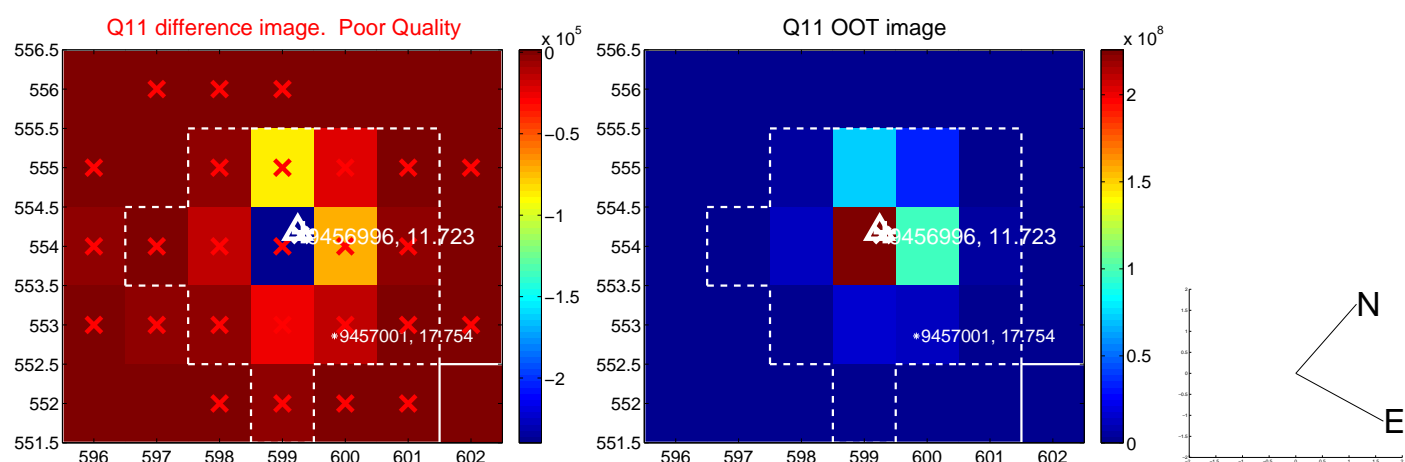
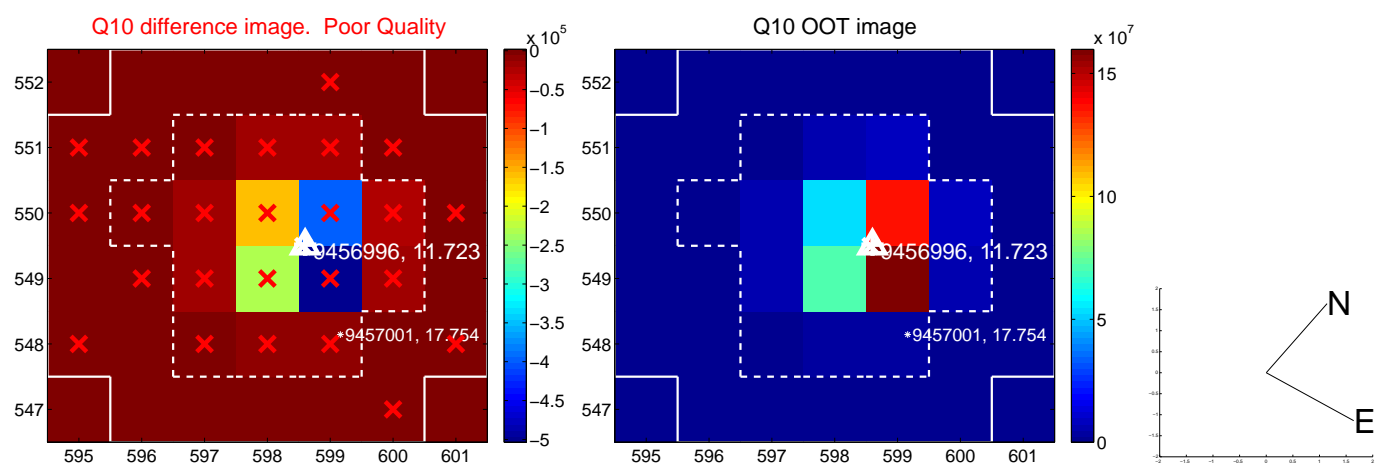
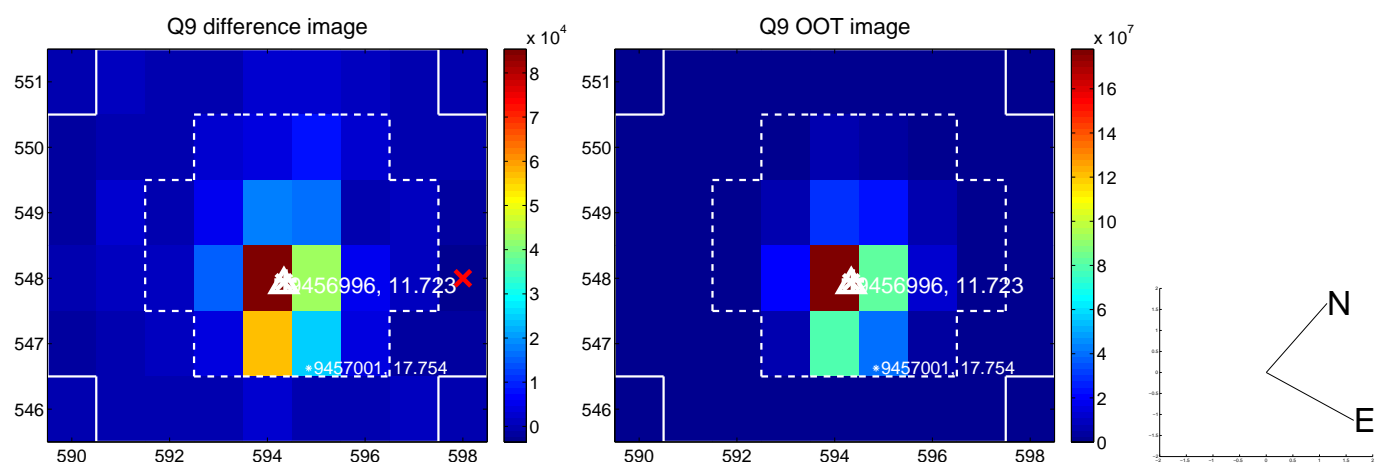
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



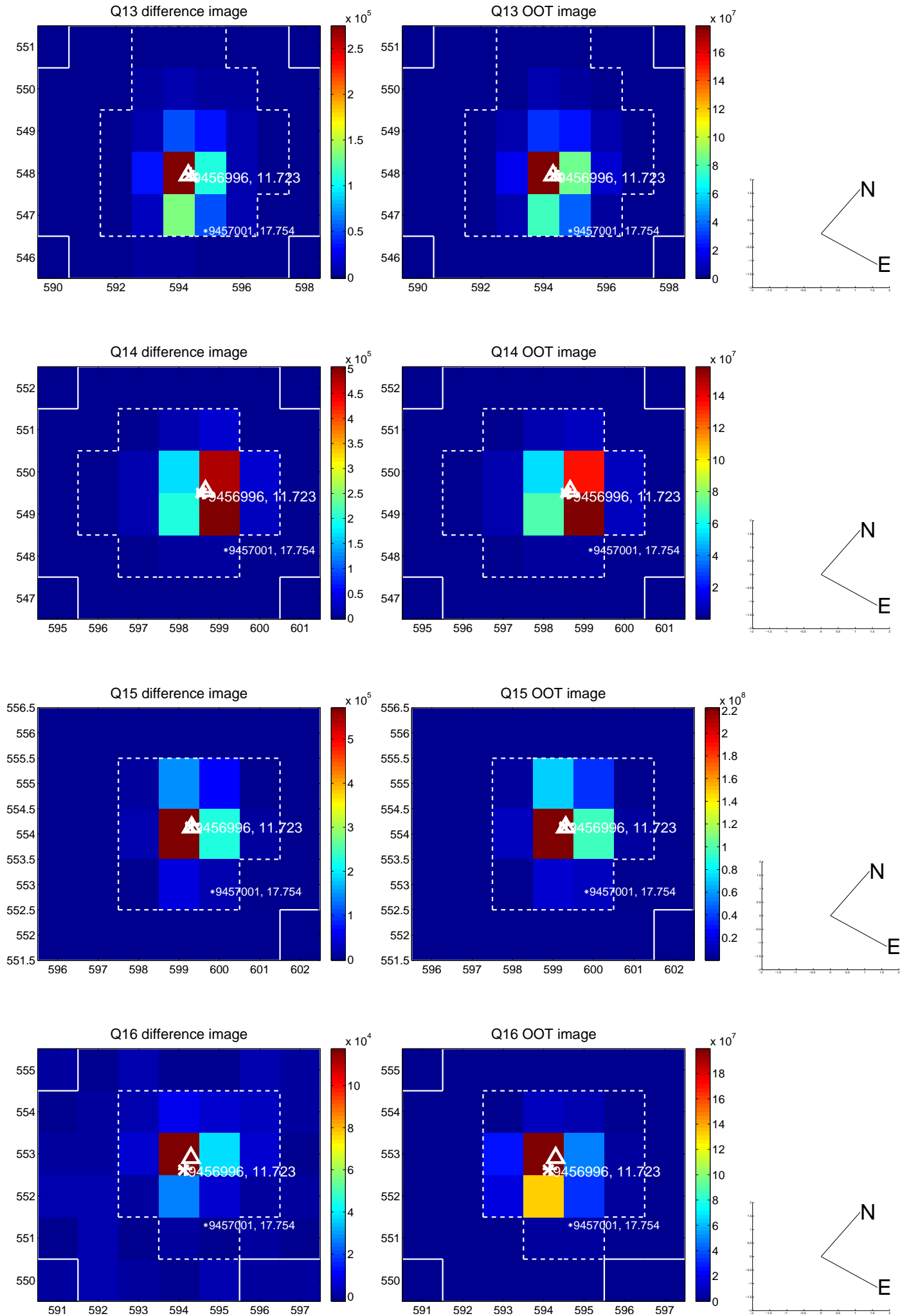
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



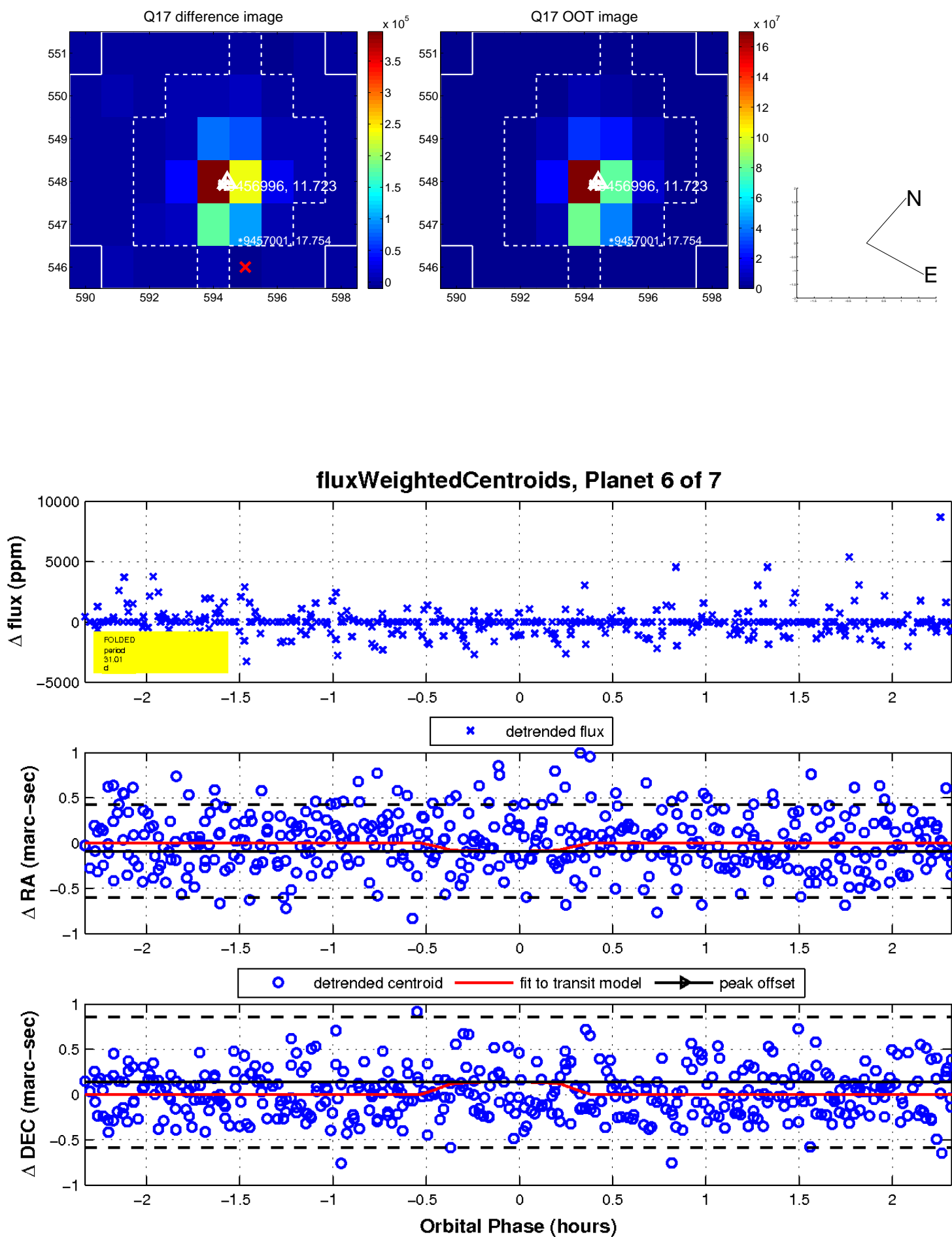
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

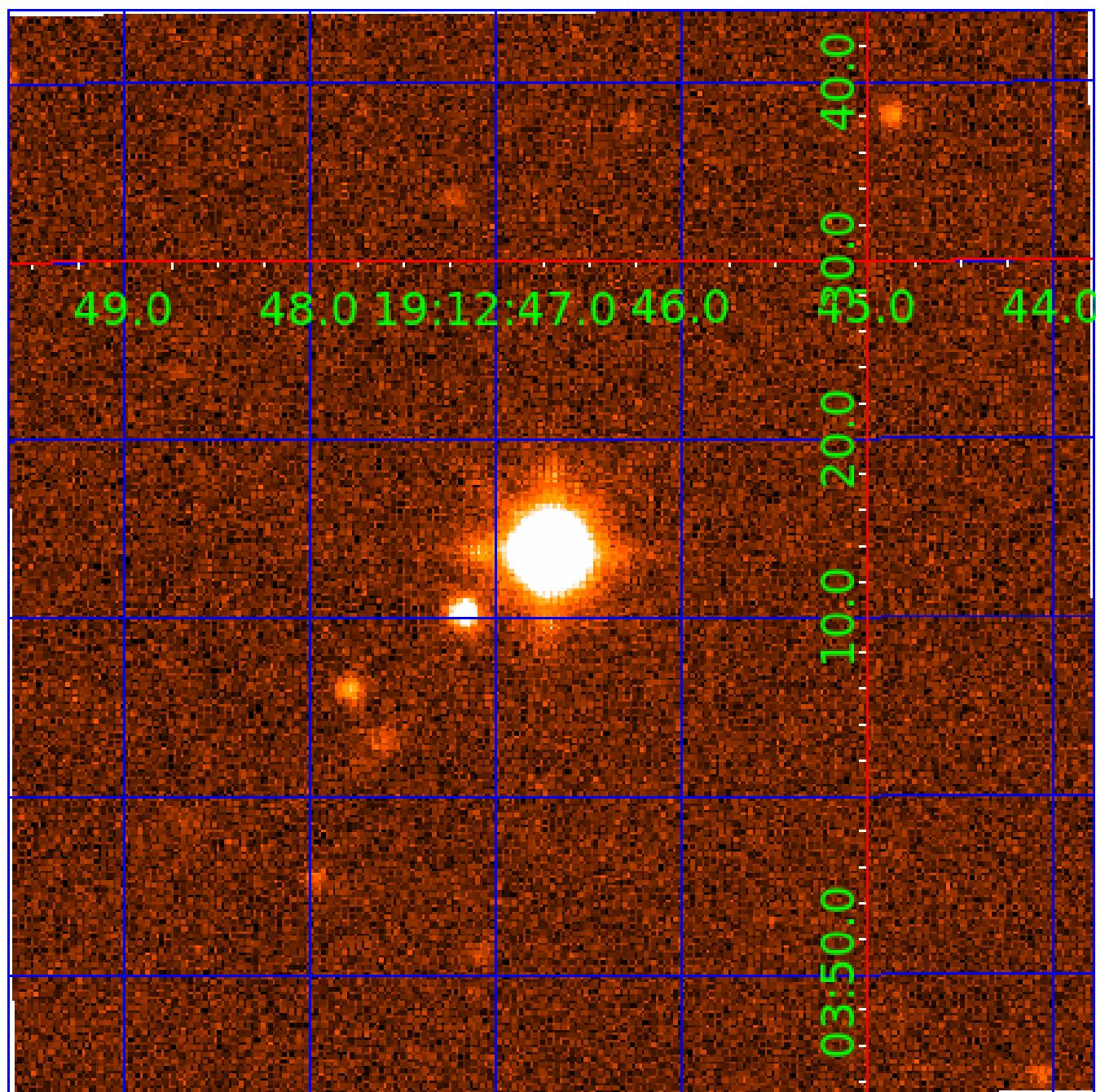


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009456996

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})
009456996-01	OBS	No	1.068676	132.293597	2.0	7.905	16.4	0.3	1.91	7079	0.28	15264.27
009456996-02	OBS	No	39.564678	155.233547	5180.1	2.760	20.2	13.4	1.91	7079	14.61	123.71
009456996-06	OBS	No	31.014896	153.863351	351.8	0.777	10.0	0.9	1.91	7079	3.78	171.15
009456996-07	OBS	No	26.714889	144.567247	364.3	1.500	12.4	-1.0	1.91	7079	3.70	208.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009456996-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009456996-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT
009456996-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009456996-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

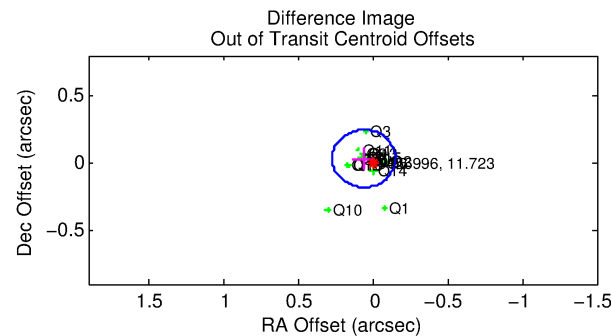
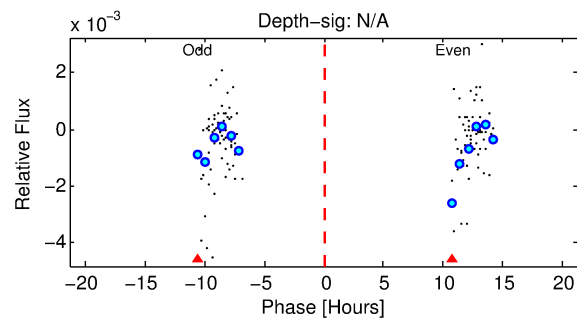
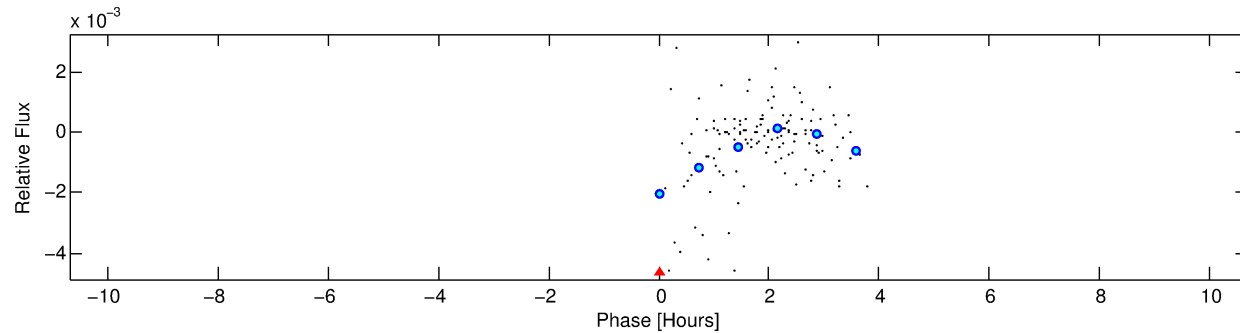
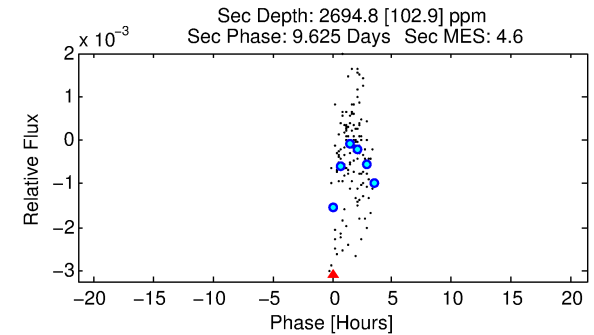
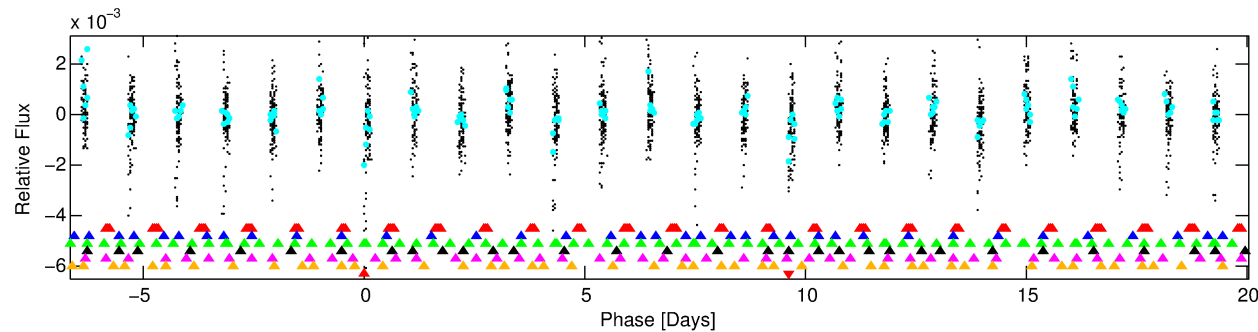
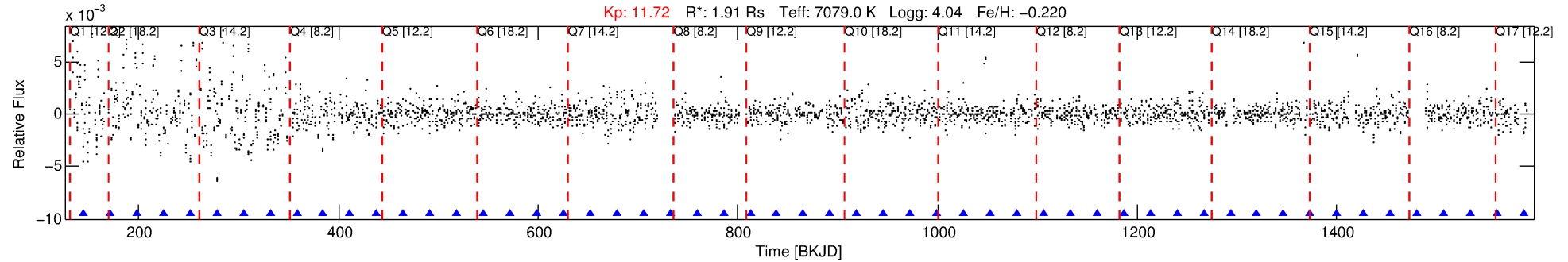
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009456996-07

No Significant Match Found

DV One-Page Summary

KIC: 9456996 Candidate: 7 of 7 Period: 26.715 d



TPS TCE Results:

Period = 26.71489 d
Epoch = 144.5672 BKJD

DV fit results are unavailable

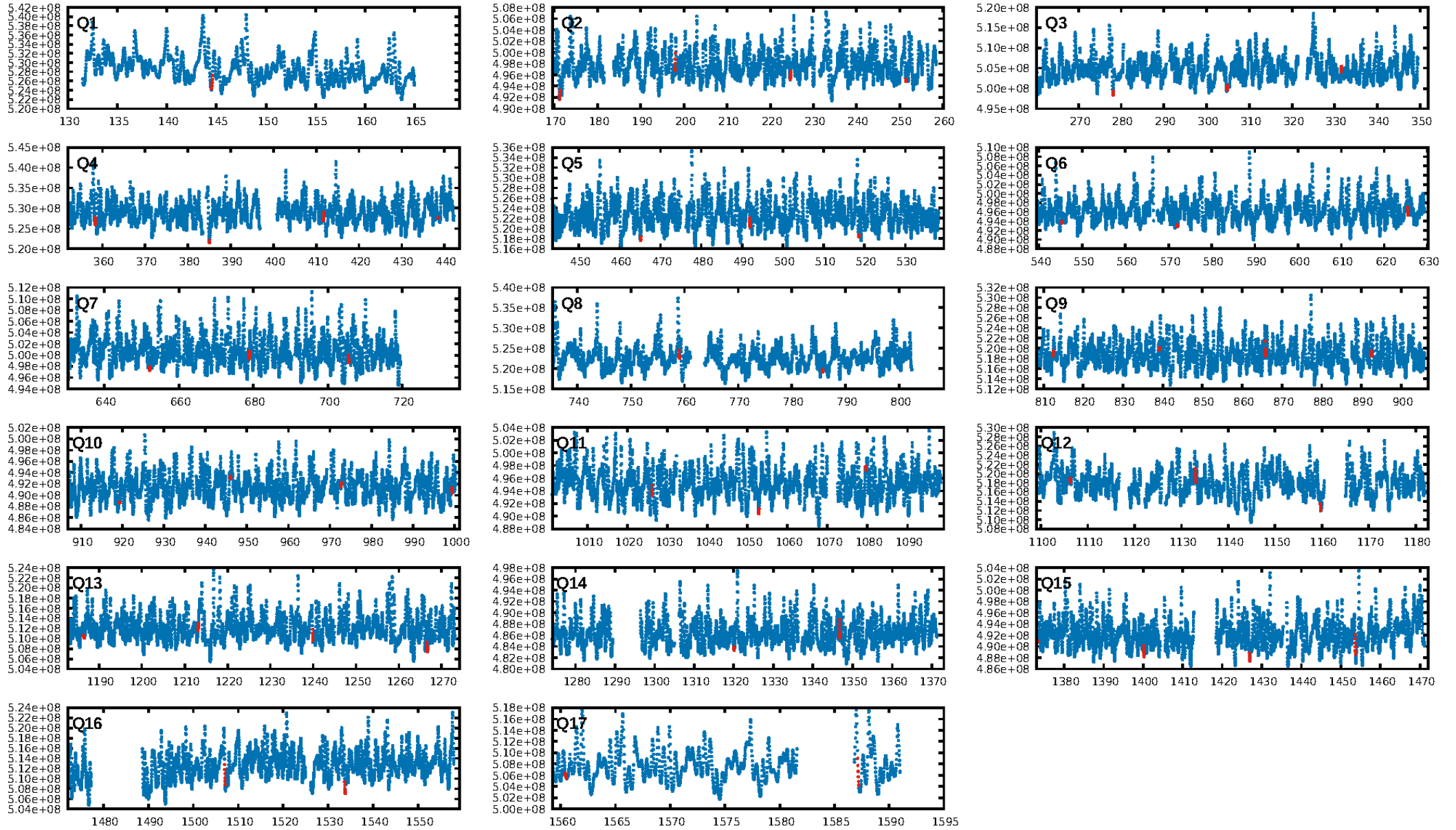
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.60 σ]
LongPeriod-sig: 100.0% [7.24 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [35/35]
GhostDiagnostic-chr: -0.1564
Centroid-sig: 0.1%
Centroid-so: 0.090 arcsec [2.05 σ]
OotOffset-rm: 0.069 arcsec [0.97 σ]
KicOffset-rm: 0.254 arcsec [3.37 σ]
OotOffset-st: 4/4/4 [16]
KicOffset-st: 4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/16]

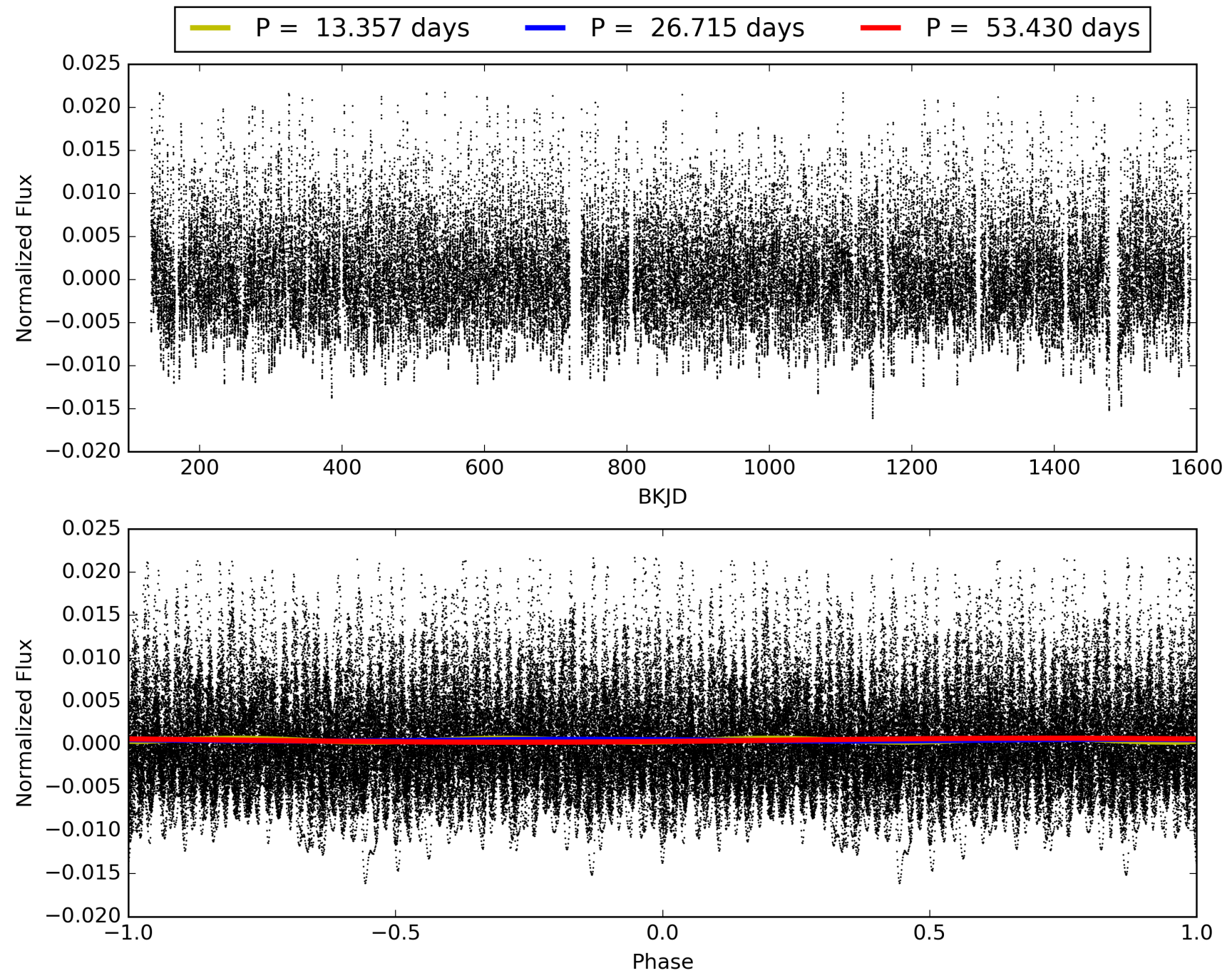
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:03:30 Z

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

TCE 009456996-07, PDC Light Curves

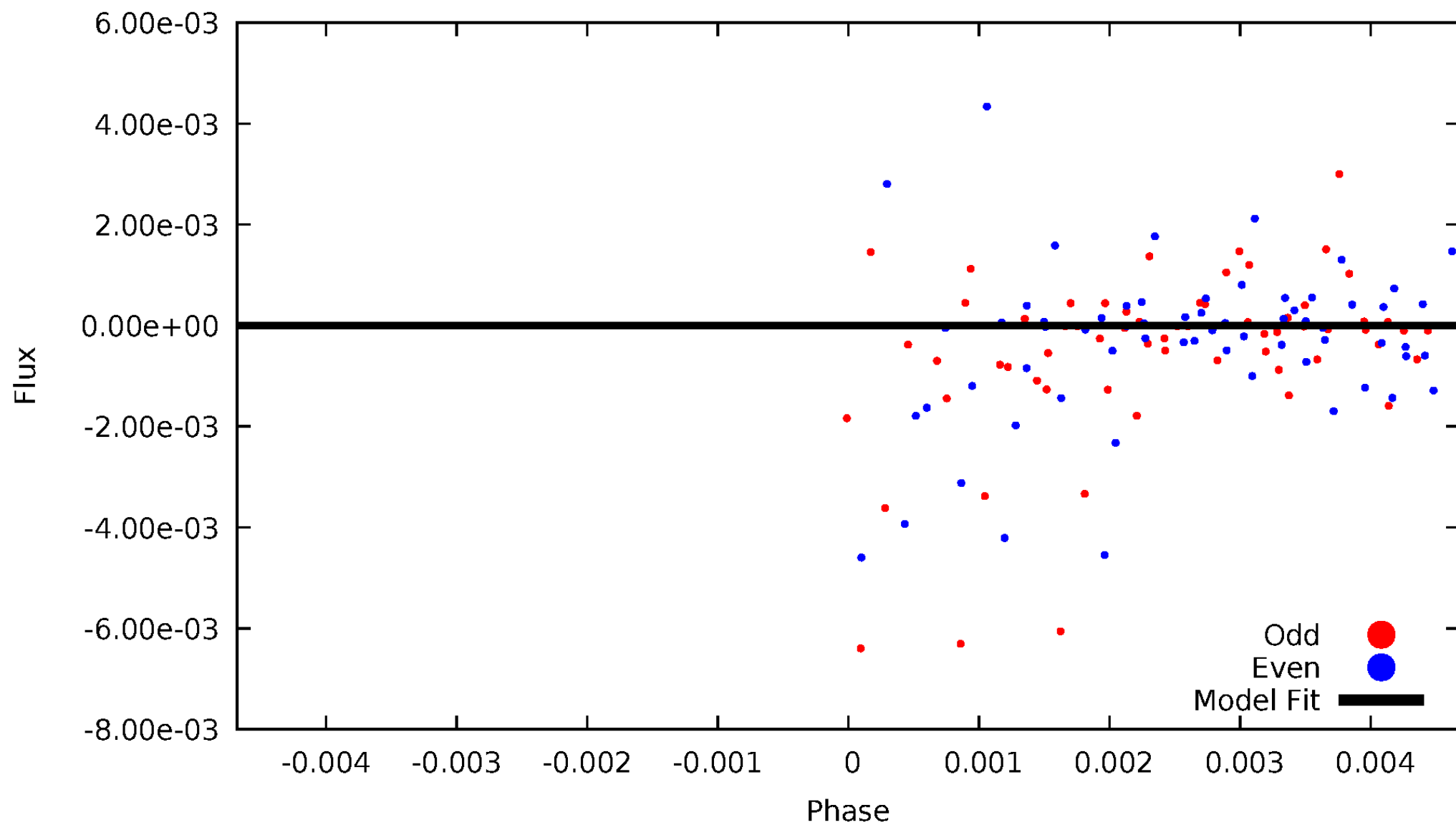


TCE 009456996-07



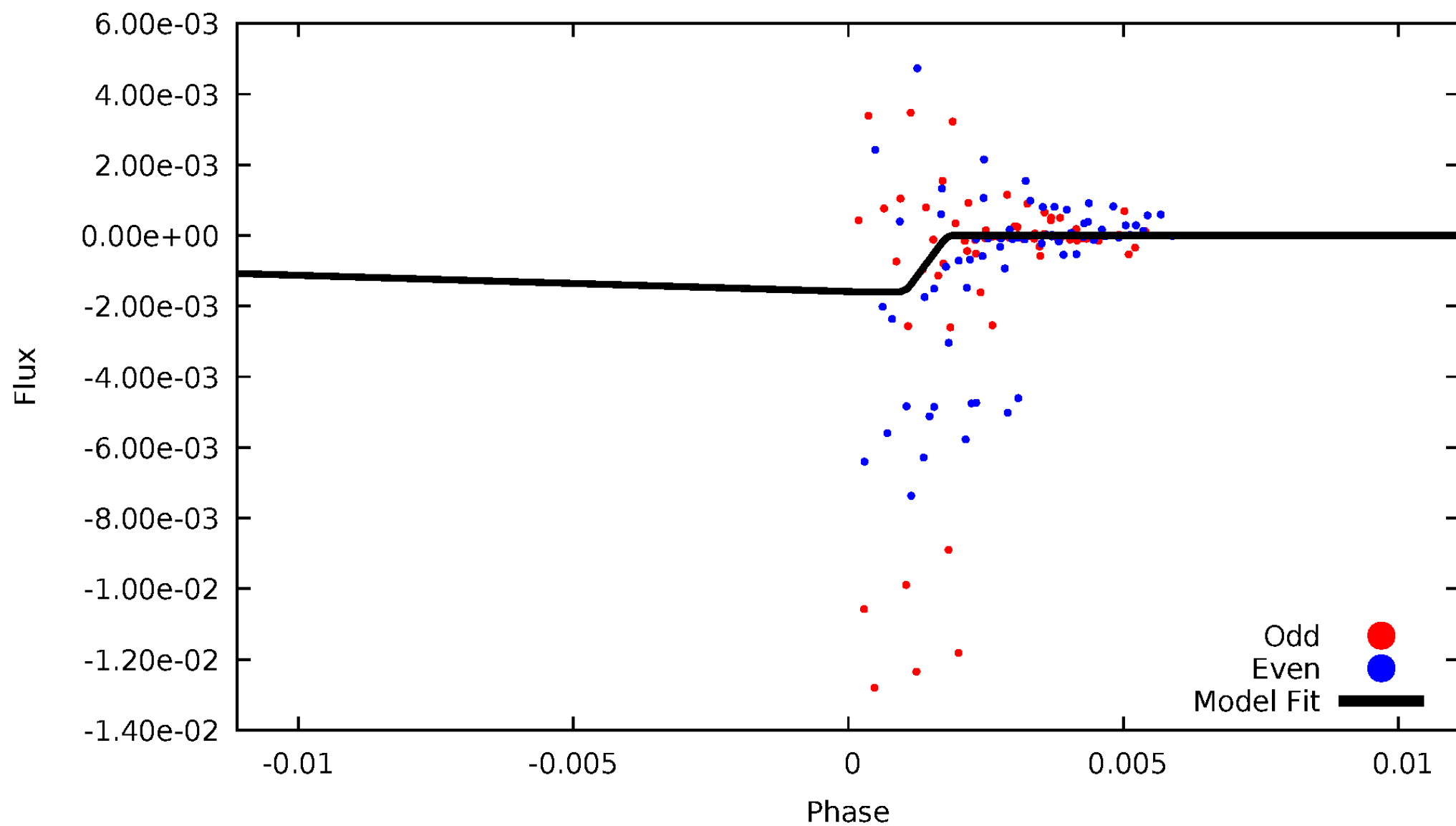
DV Odd/Even

TCE 009456996-07



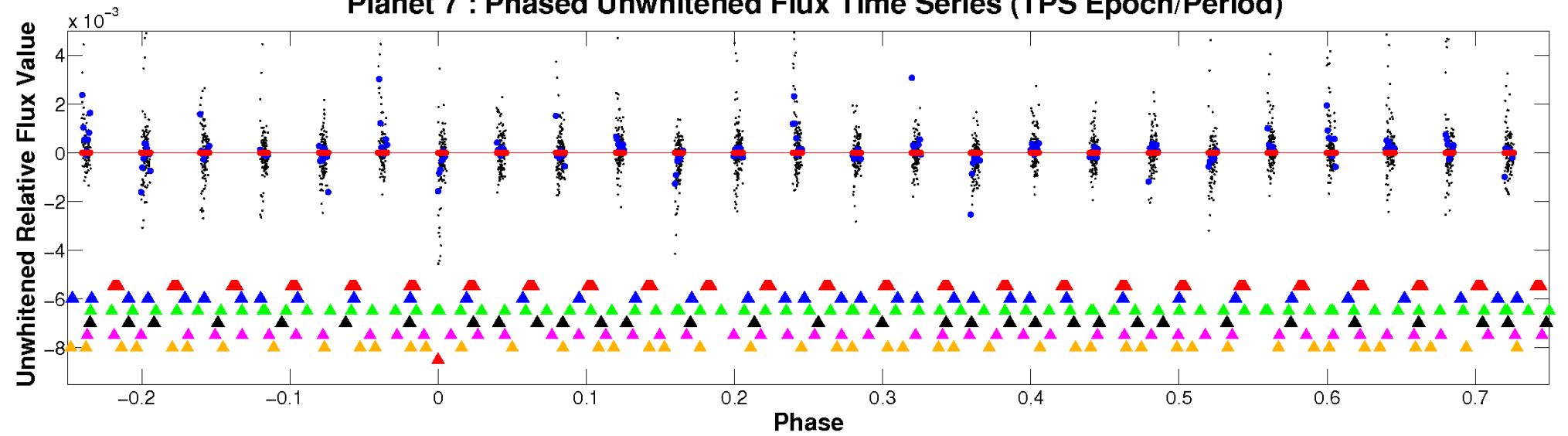
ALT Odd/Even

TCE 009456996-07

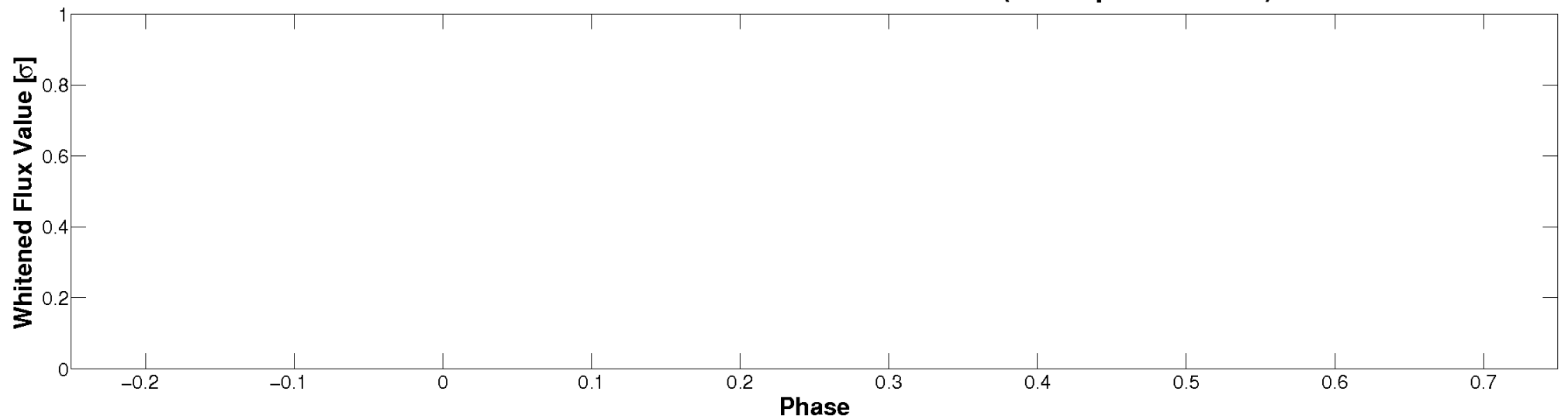


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

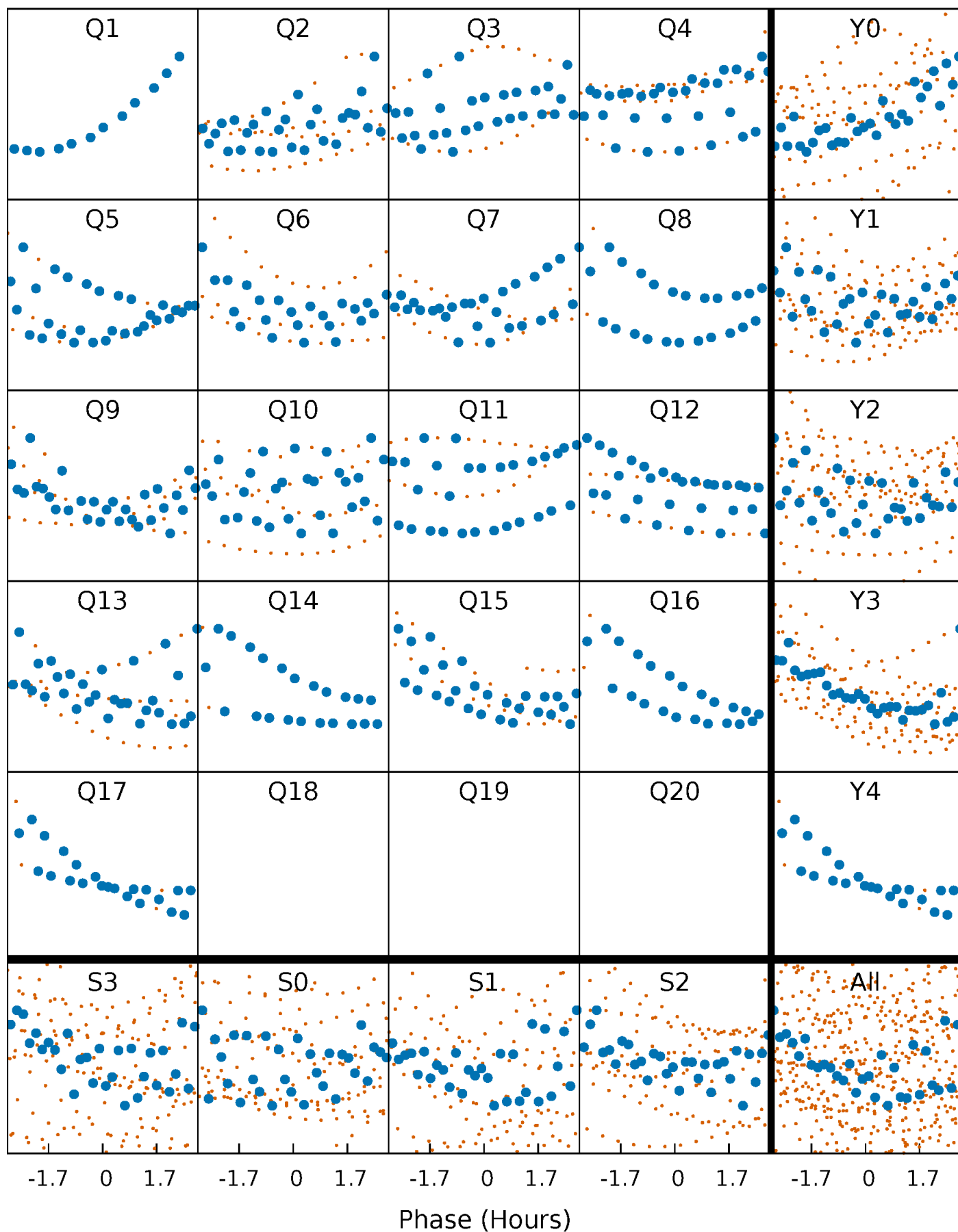


Planet 7 : Phased Whitened Flux Time Series (TPS Epoch/Period)



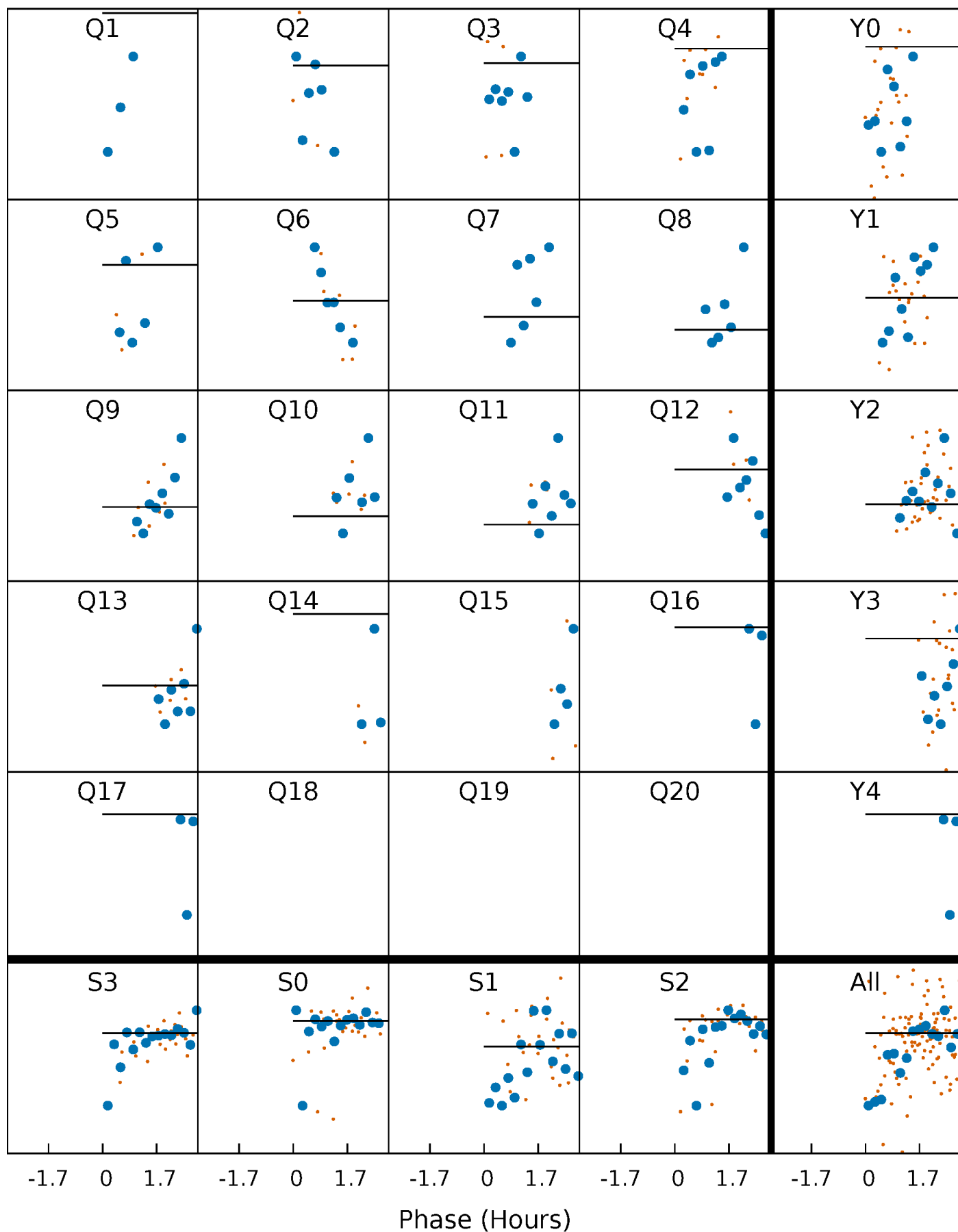
PDC Quarter-Phased Transit Curves

TCE 009456996-07 $P = 26.714889$ Days $T_0 = 144.567247$ (BKJD)



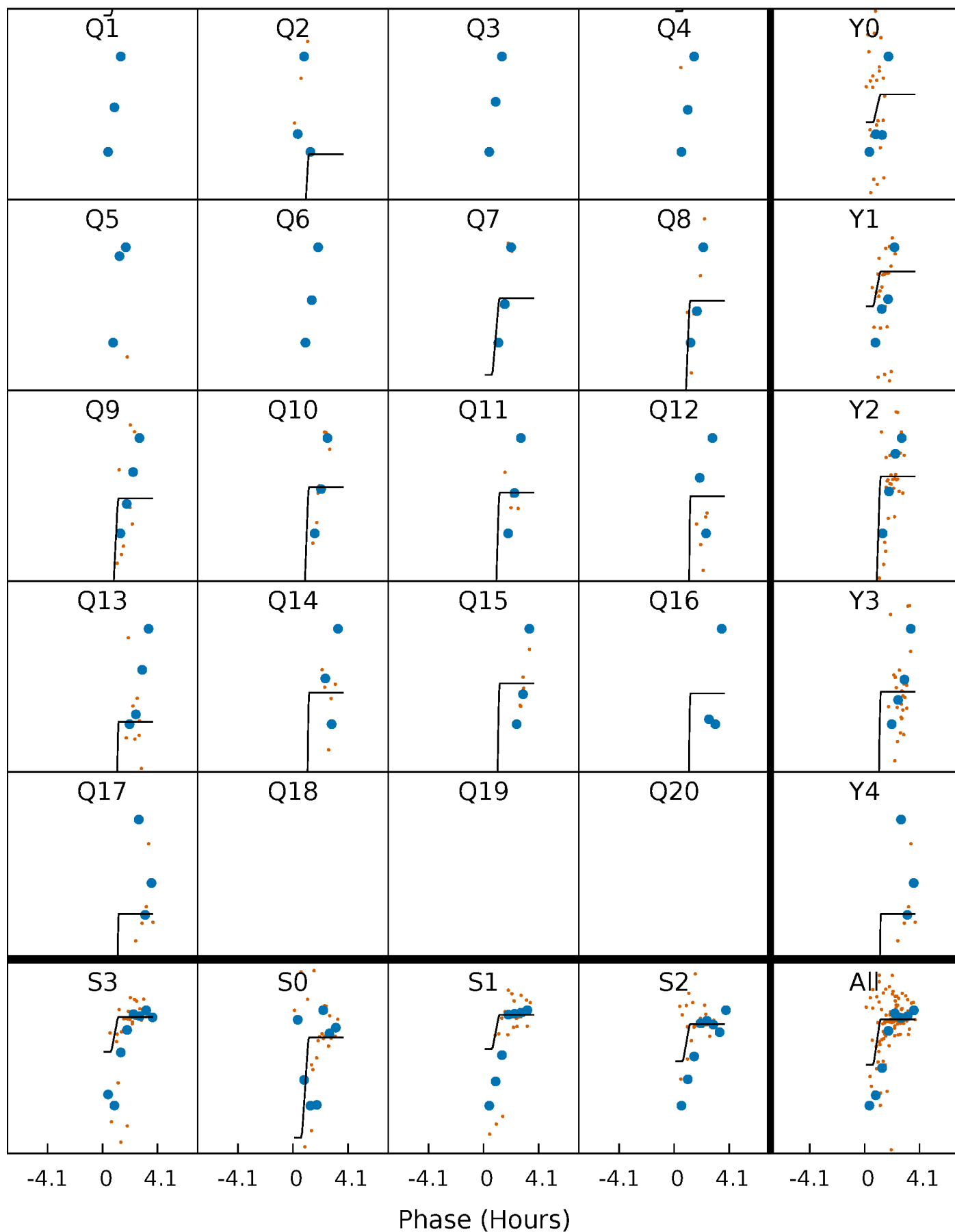
DV Quarter-Phased Transit Curves

TCE 009456996-07 P= 26.714889 Days $T_0=144.567247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

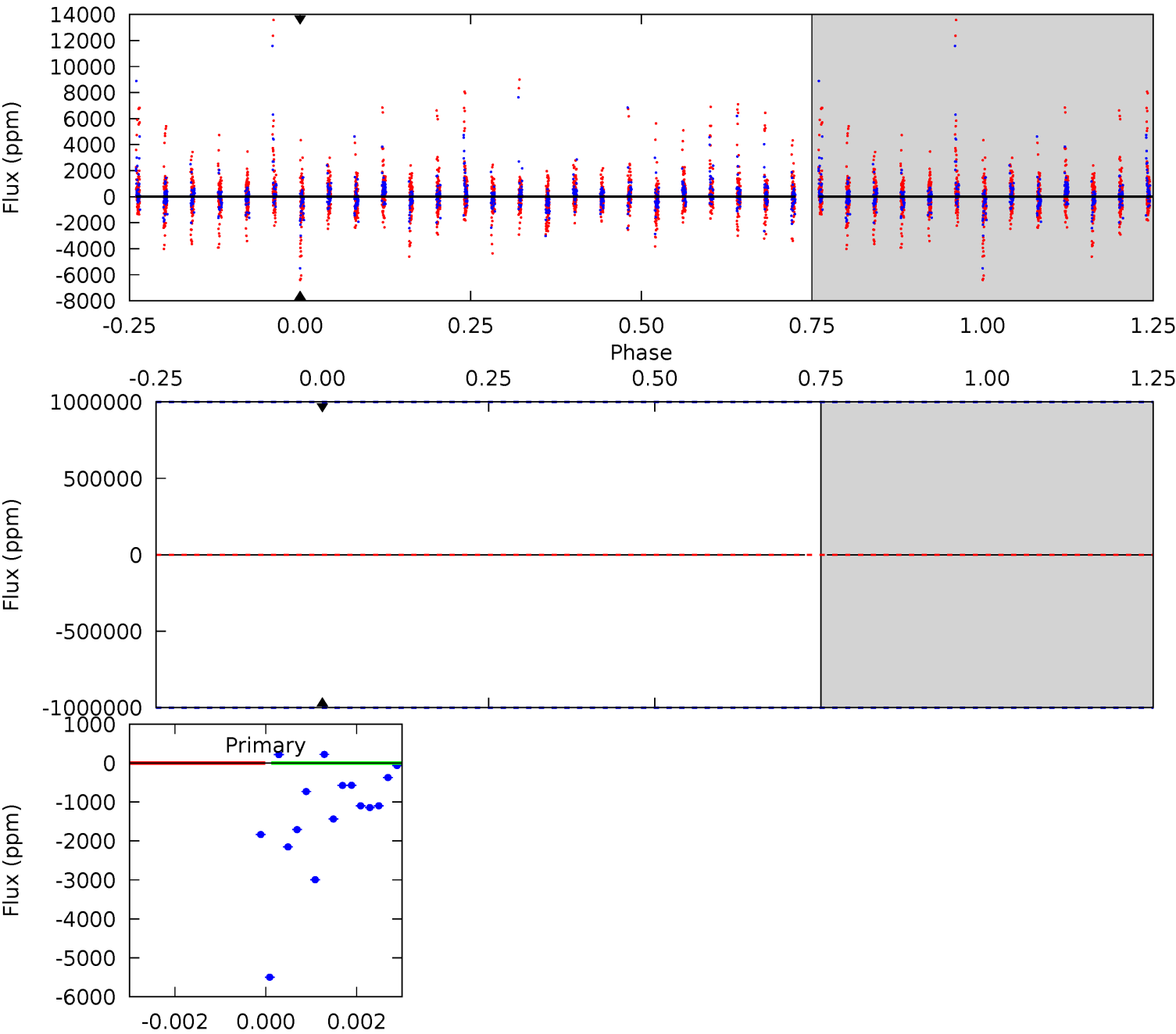
TCE 009456996-07 $P = 26.714889$ Days $T_0 = 144.562098$ (BKJD)



DV Model-Shift Uniqueness Test

009456996-07, P = 26.714889 Days, E = 117.852358 Days

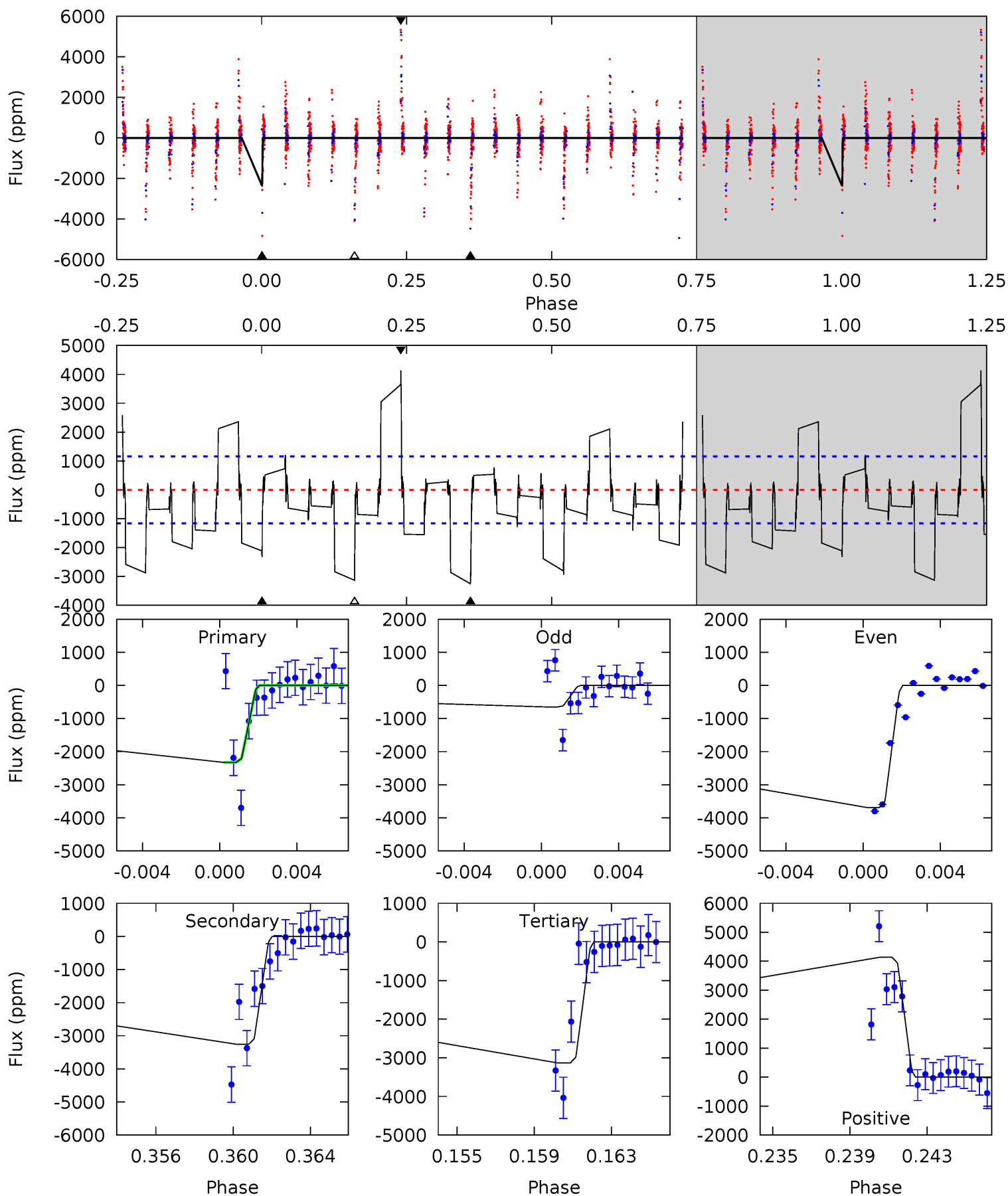
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009456996-07, P = 26.714889 Days, E = 117.847209 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	14.6	14.1	18.6	5.21	2.90	2.44	-3.63	-8.13	0.55	-3.95	6.61	1.21	0.56	0



Stellar Parameters For KIC 009456996

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7079^{+192}_{-235}	$4.039^{+0.234}_{-0.175}$	$-0.220^{+0.250}_{-0.350}$	$1.910^{+0.548}_{-0.548}$	$1.453^{+0.218}_{-0.267}$	$0.294^{+0.381}_{-0.146}$
	+3%/-3%	+6%/-4%	+114%/-159%	+29%/-29%	+15%/-18%	+130%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009456996-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$15.13^{+16.90}_{-10.42}$	1344^{+111}_{-105}	-4420^{+39168}_{-25932}	$-70.095^{+16512.122}_{-13694.439}$
Alt.	-3255 ± 223	$18.02^{+16.67}_{-12.85}$	1350^{+103}_{-110}	5663^{+6728}_{-1352}	215^{+2419}_{-156}

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

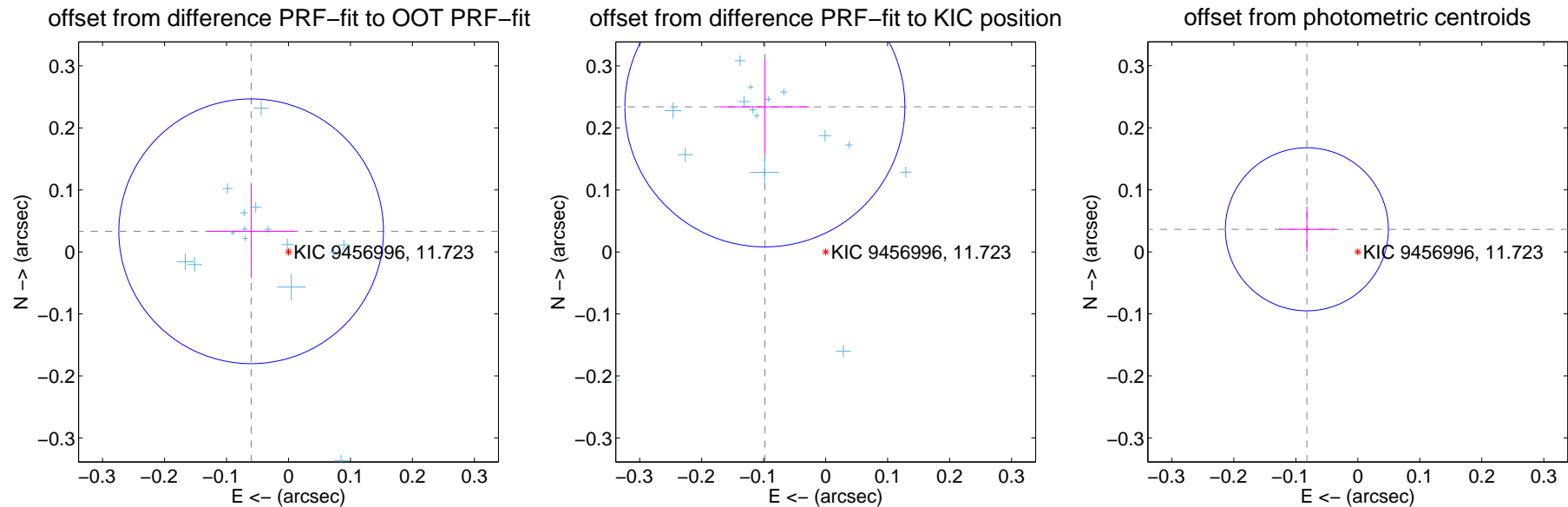
DV Centroid Data

Supplemental centroid analysis for 009456996-07. **Kepler magnitude: 11.72.** Transit SNR -1.00

There are 16 quarters with good PRF difference image offsets

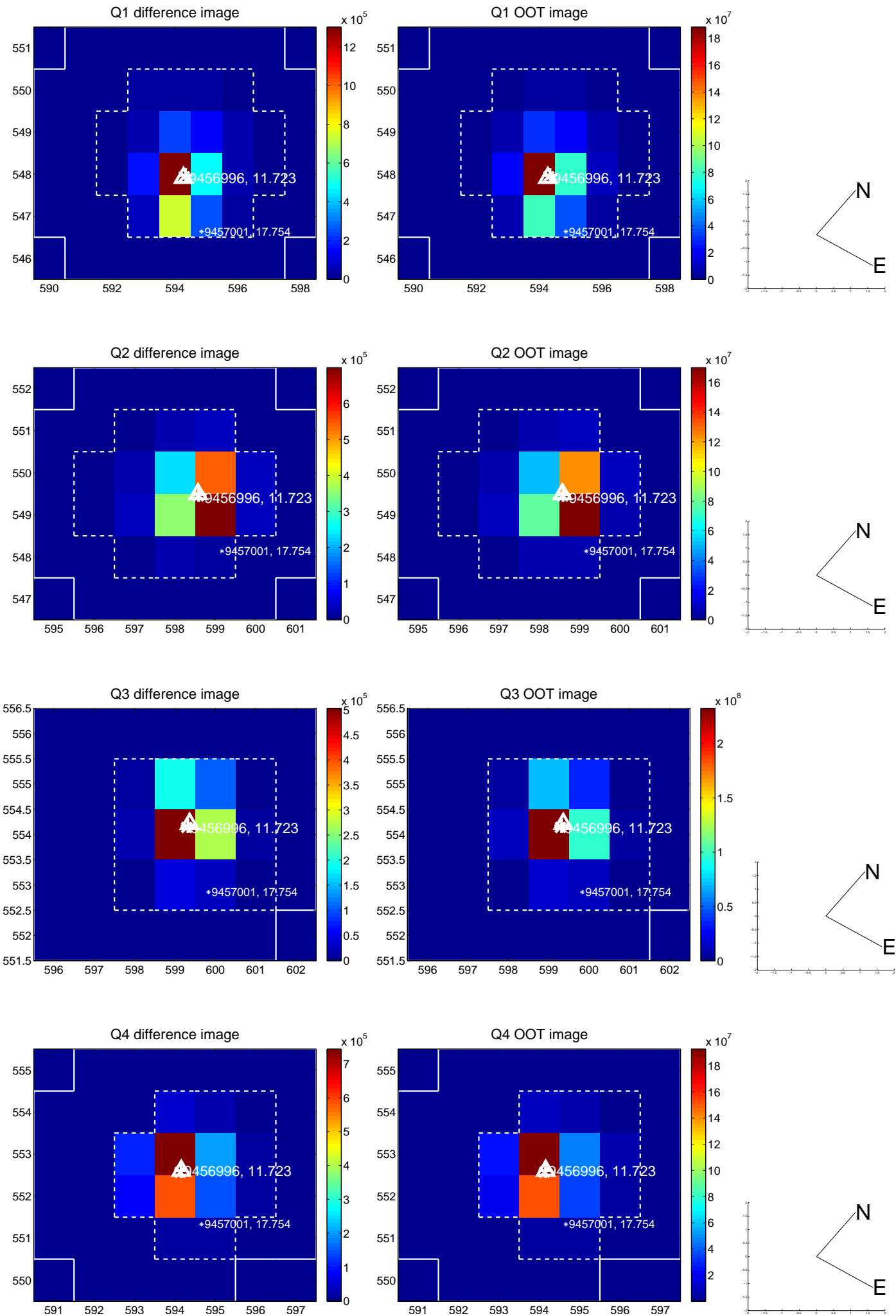
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.069 ± 0.071	0.97	0.060 ± 0.071	0.033 ± 0.075
PRF-fit source offset from KIC position	0.254 ± 0.075	3.37	0.098 ± 0.072	0.234 ± 0.077
photometric centroid source offset	0.09 ± 0.04	2.05	0.08 ± 0.05	0.04 ± 0.04

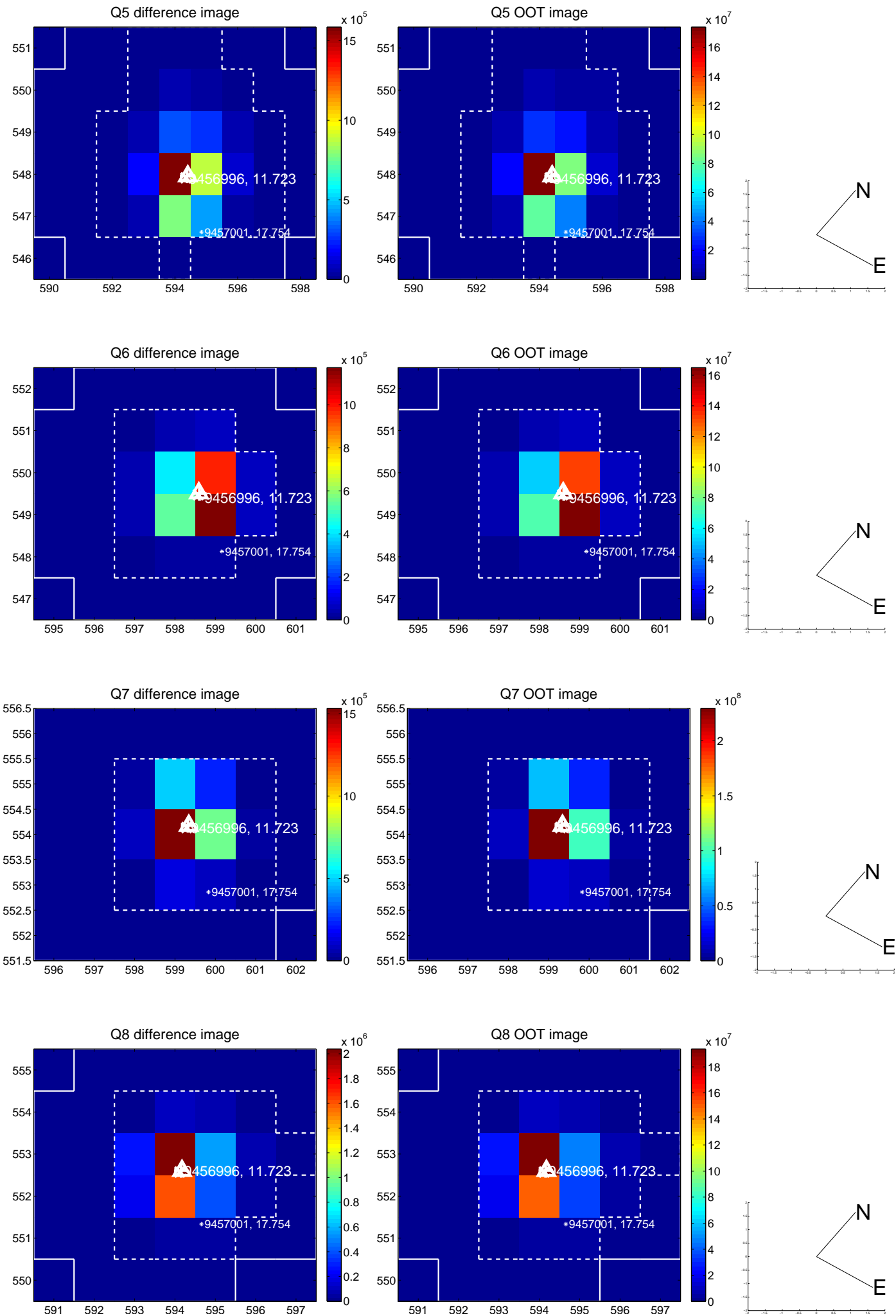


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

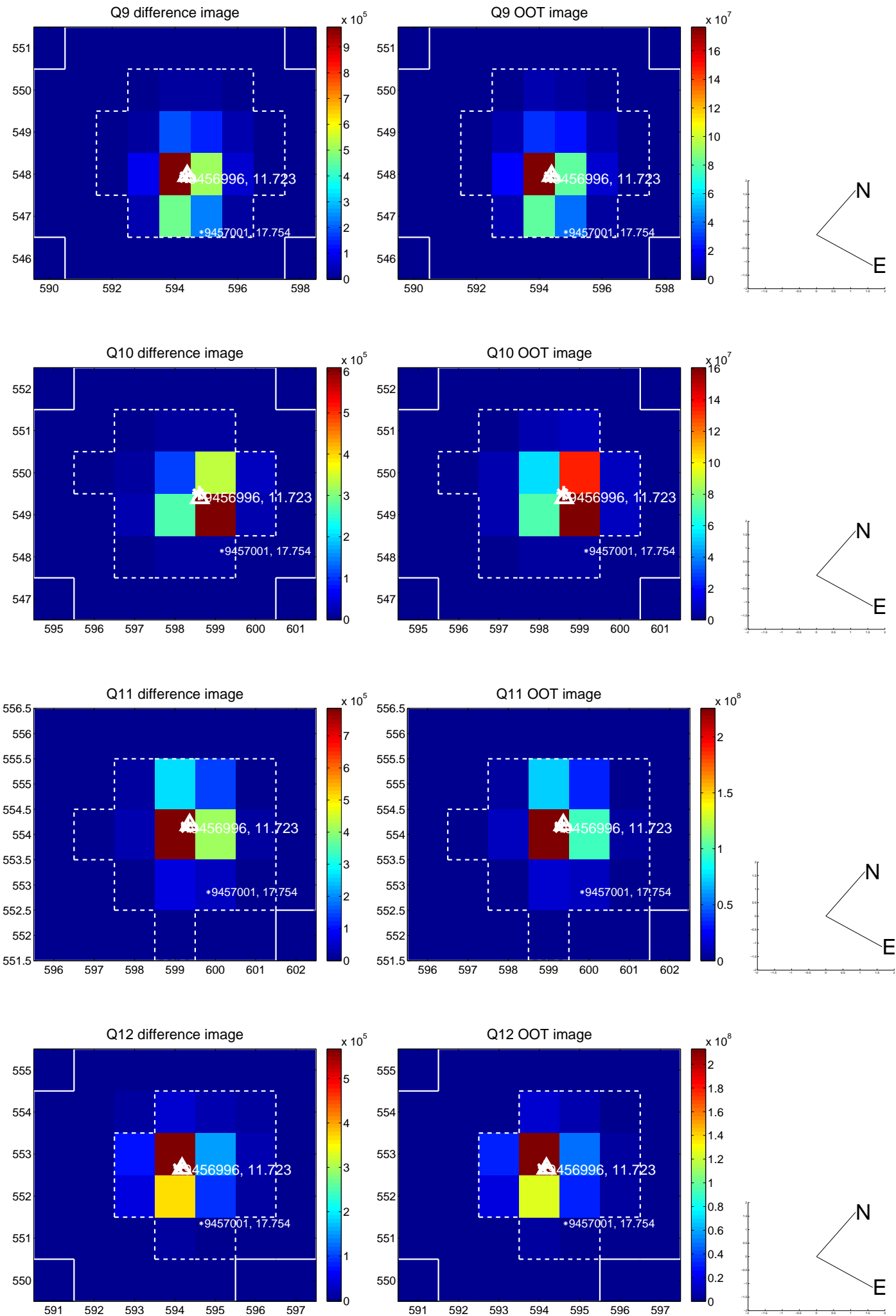
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



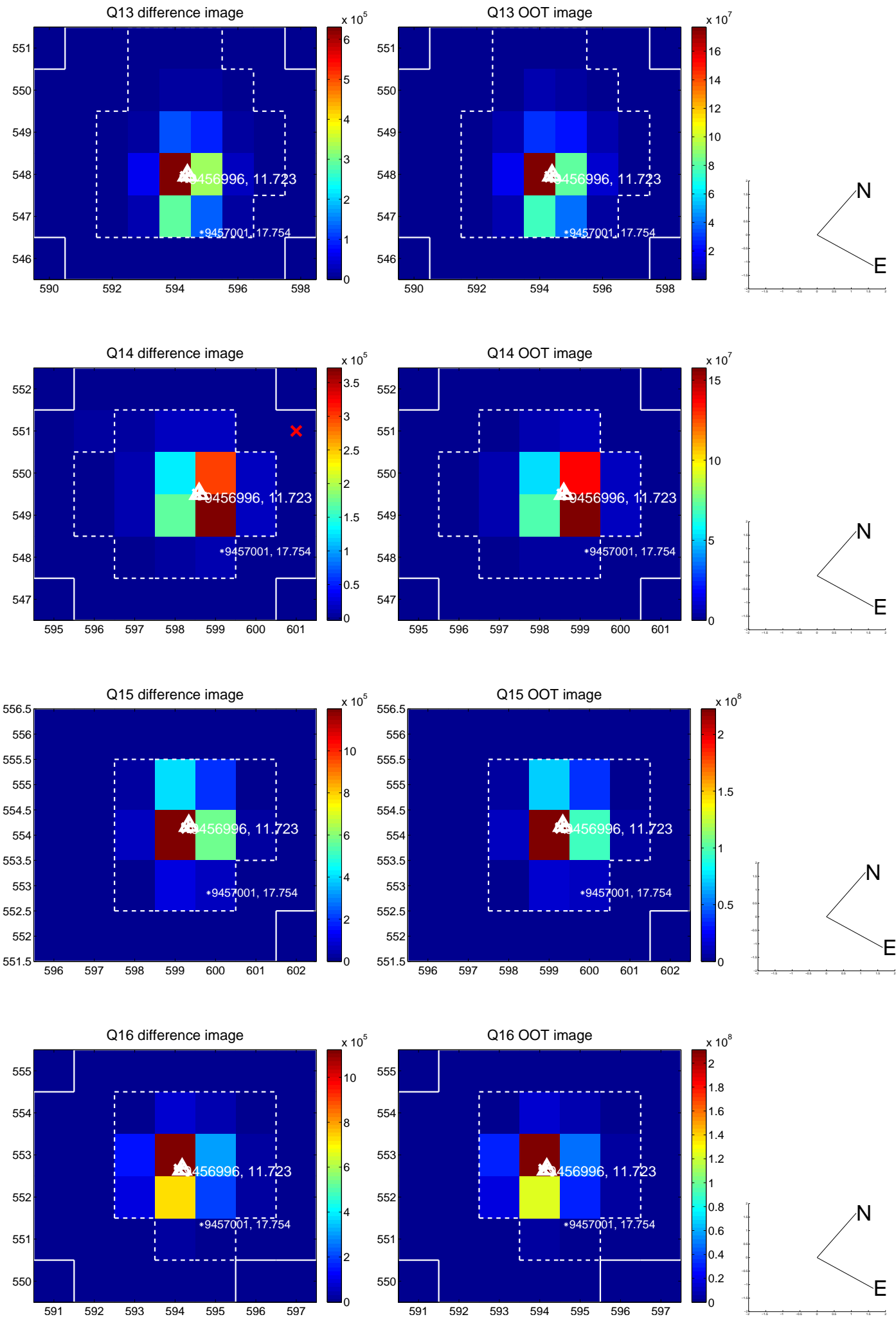
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



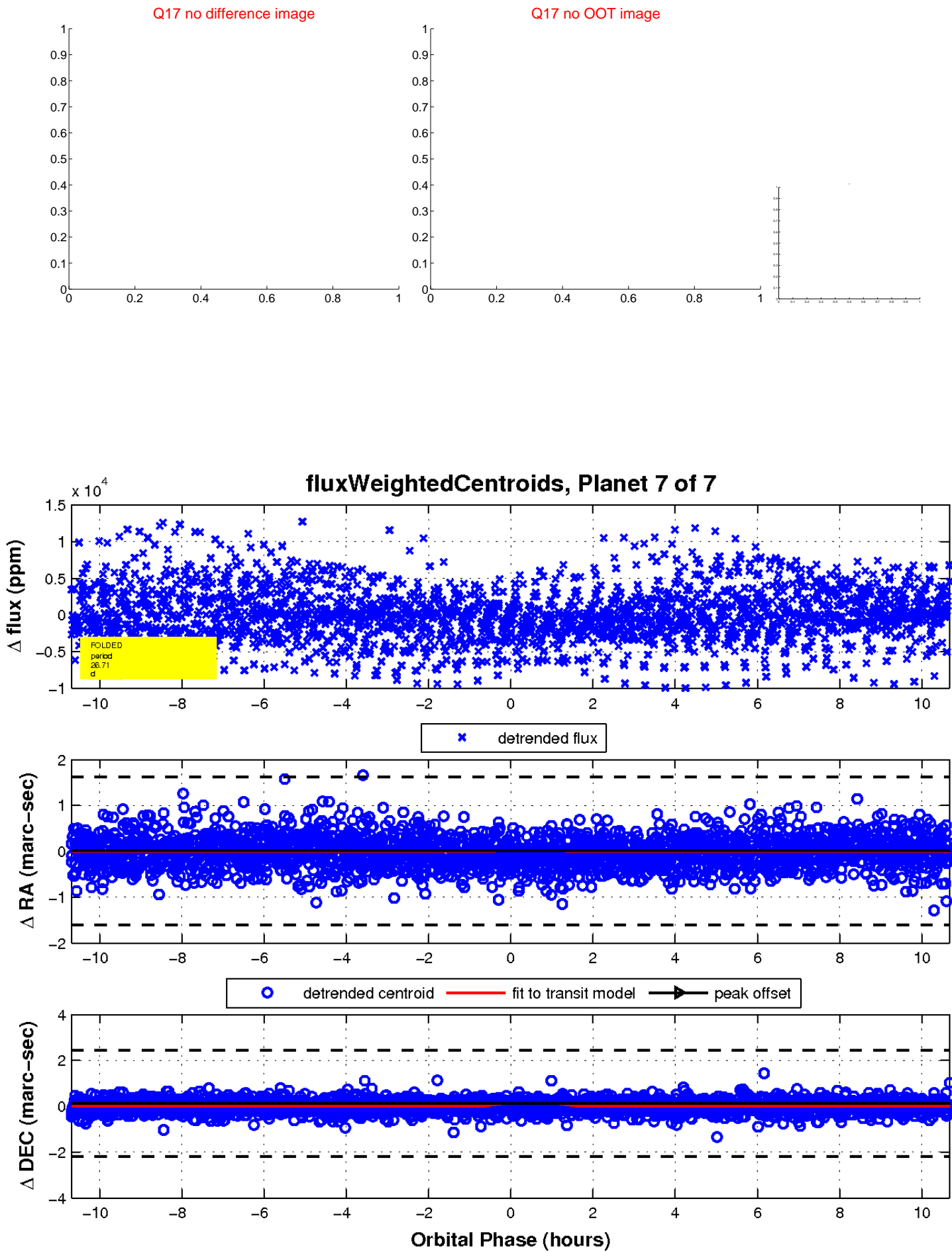
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

