

KIC 004756776

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})
004756776-01	OBS	No	2.476973	132.998632	8.0	17.034	11.4	9.8	1.76	6677	0.60	3477.99
004756776-02	OBS	No	74.435111	156.819172	200.9	10.079	27.4	15.3	1.76	6677	4.91	37.23
004756776-03	OBS	No	27.083855	149.534697	70.9	5.710	11.9	11.5	1.76	6677	1.70	143.31
004756776-04	OBS	No	28.604106	151.552323	130.4	0.989	9.6	8.8	1.76	6677	2.08	133.25
004756776-05	OBS	No	36.018461	139.320816	84.0	1.980	8.8	9.0	1.76	6677	1.85	97.99
004756776-06	OBS	No	44.362801	141.937107	145.3	1.063	8.3	9.3	1.76	6677	2.63	74.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004756776-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

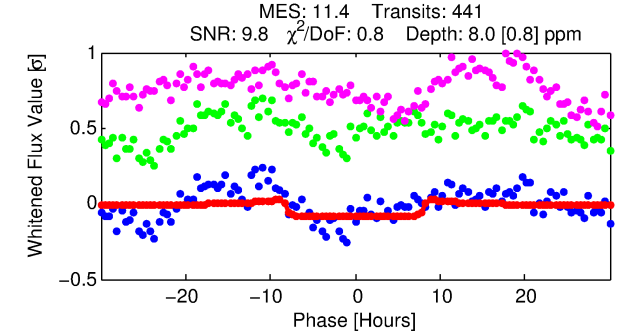
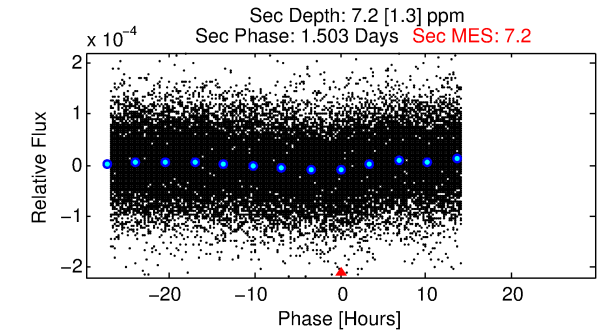
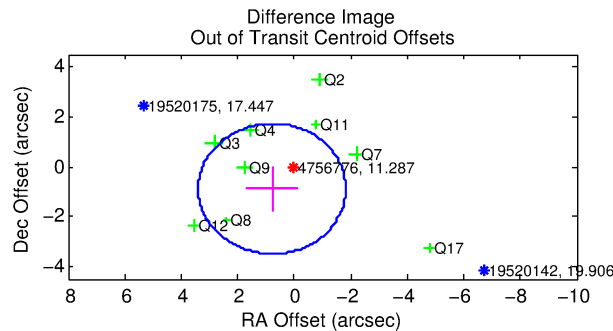
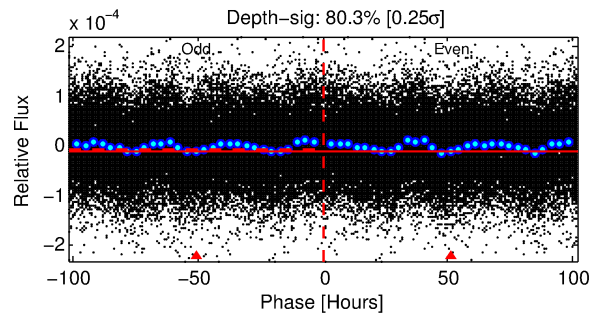
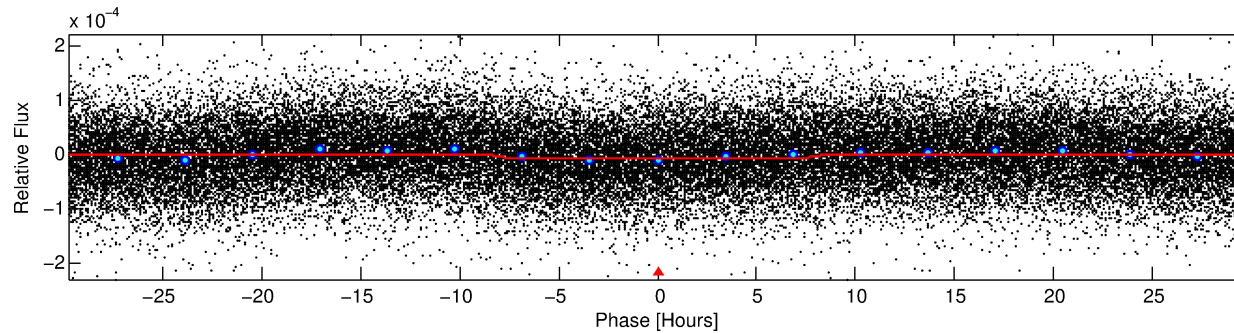
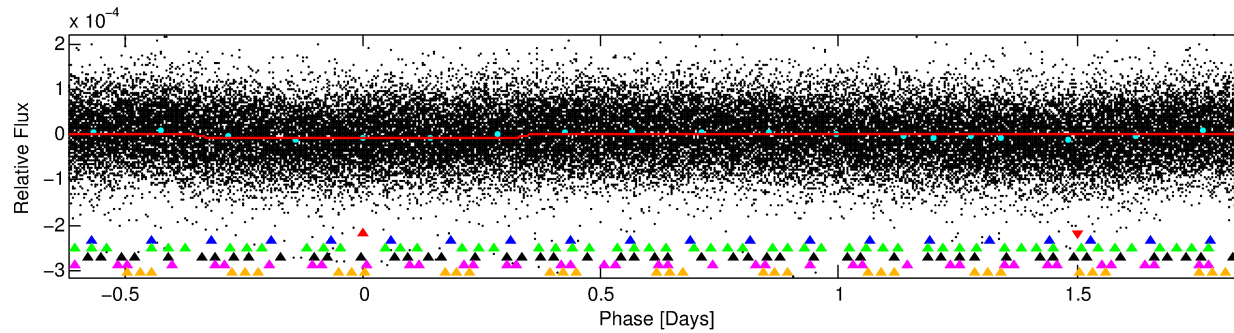
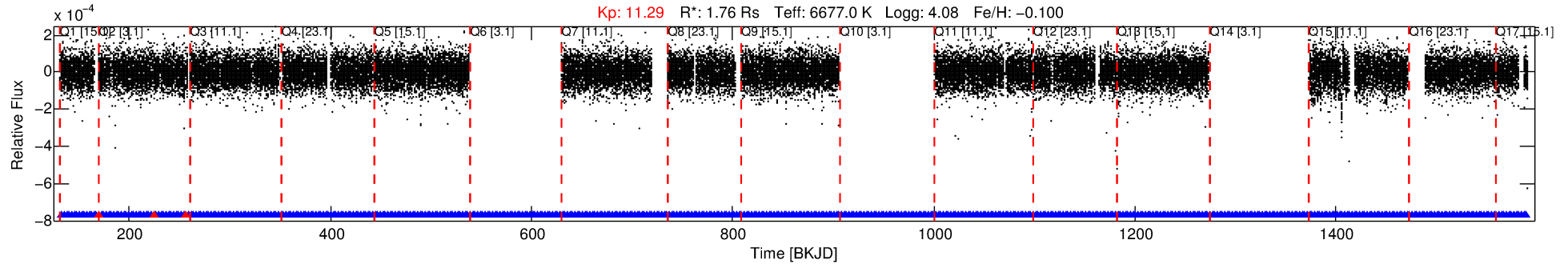
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004756776-01

No Significant Match Found

DV One-Page Summary

KIC: 4756776 Candidate: 1 of 6 Period: 2.477 d



DV Fit Results:

Period = 2.47697 [0.00004] d
Epoch = 132.9986 [0.0106] BKJD
 $R_p/R^* = 0.0031$ [0.0005]
 $a/R^* = 1.04$ [0.08]
 $b = 0.94$ [0.12]
 $\text{Seff} = 3477.99$ [1563.30]
 $T_{\text{eq}} = 1958$ [220] K
 $R_p = 0.60$ [0.20] R_e
 $a = 0.0399$ [0.0107] AU
 $A_g = 17.51$ [9.59] [1.72 σ]
 $T_{\text{eff}} = 6193$ [608] K [6.55 σ]

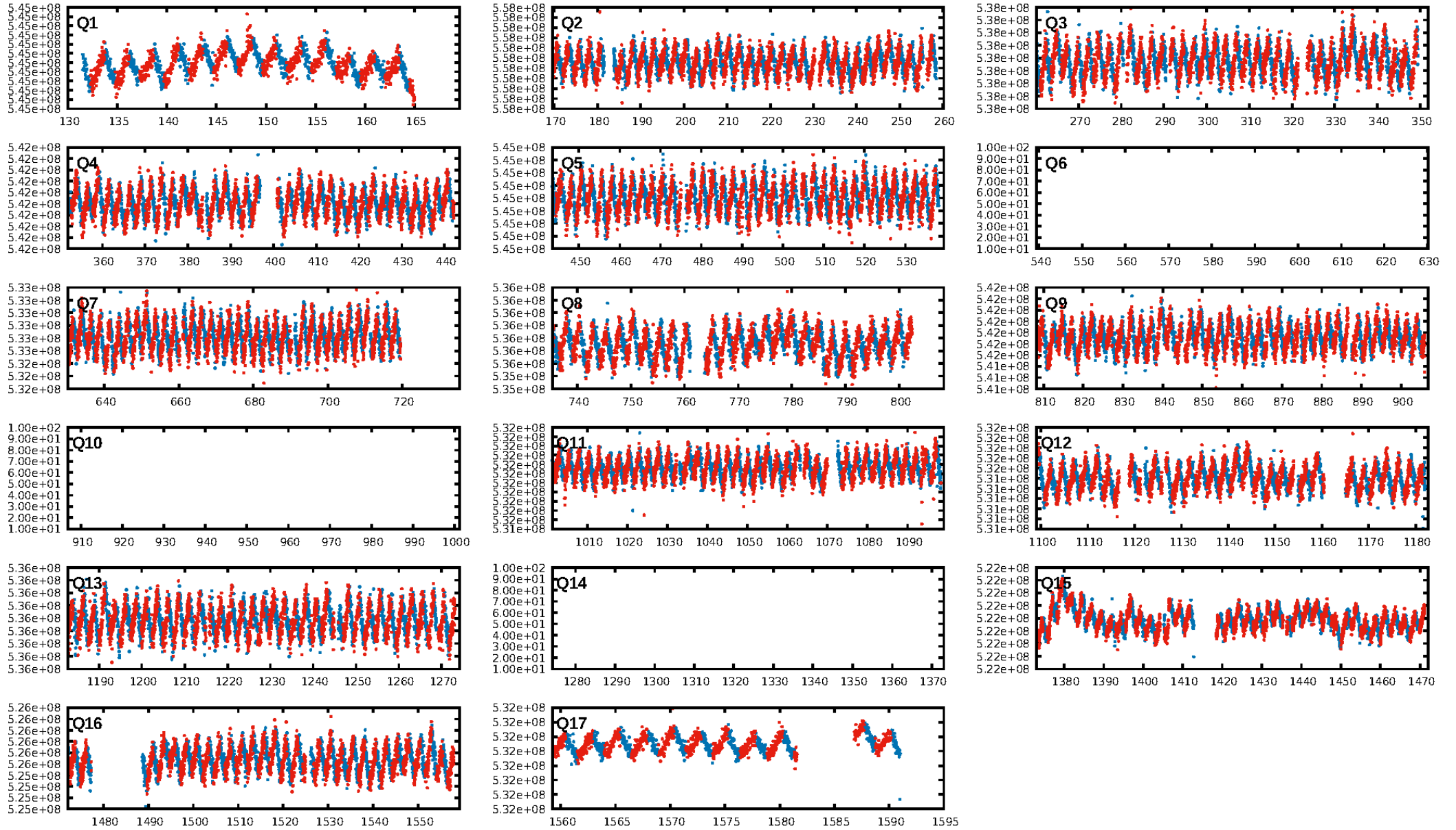
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [32.87 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.28e-08
RollingBand-fgt: 0.99 [413/416]
GhostDiagnostic-chr: -9.639
Centroid-sig: N/A
Centroid-so: 0.707 arcsec [0.65 σ]
OotOffset-rm: 1.186 arcsec [1.36 σ]
KicOffset-rm: 1.201 arcsec [1.39 σ]
OotOffset-st: 1/3/3/2 [9]
KicOffset-st: 1/3/3/2 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 1.00 [14/14]

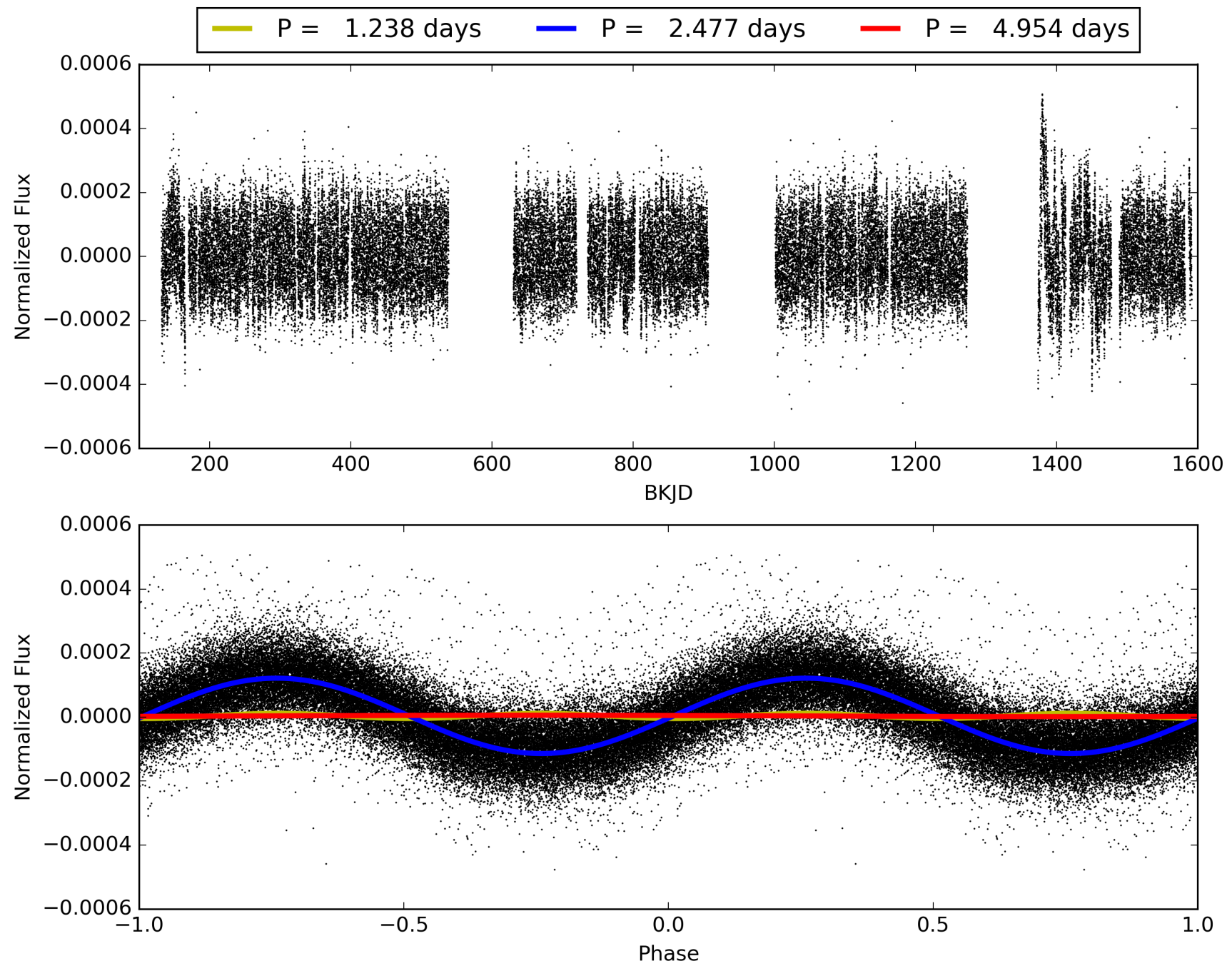
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004756776-01, PDC Light Curves

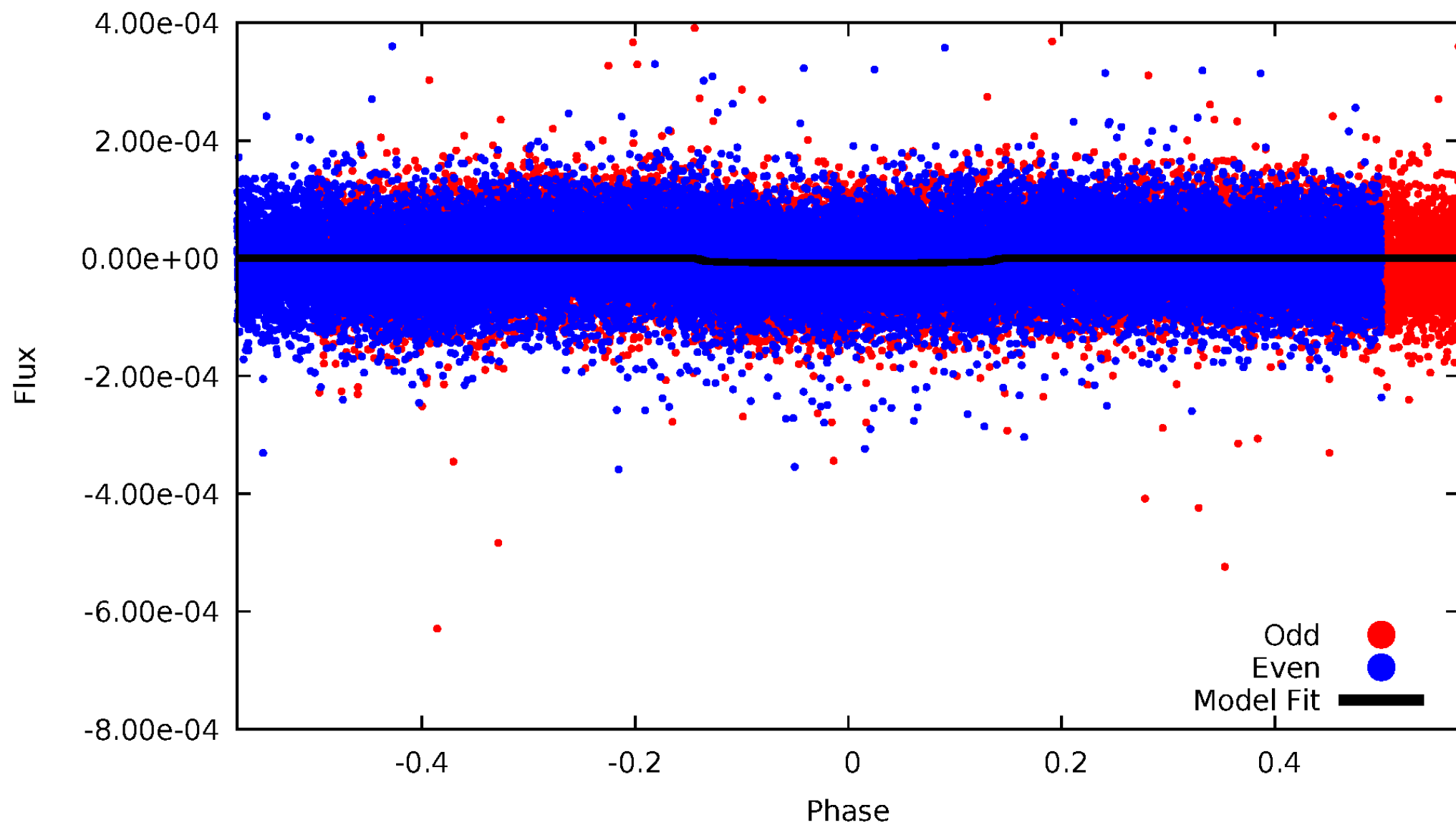


TCE 004756776-01



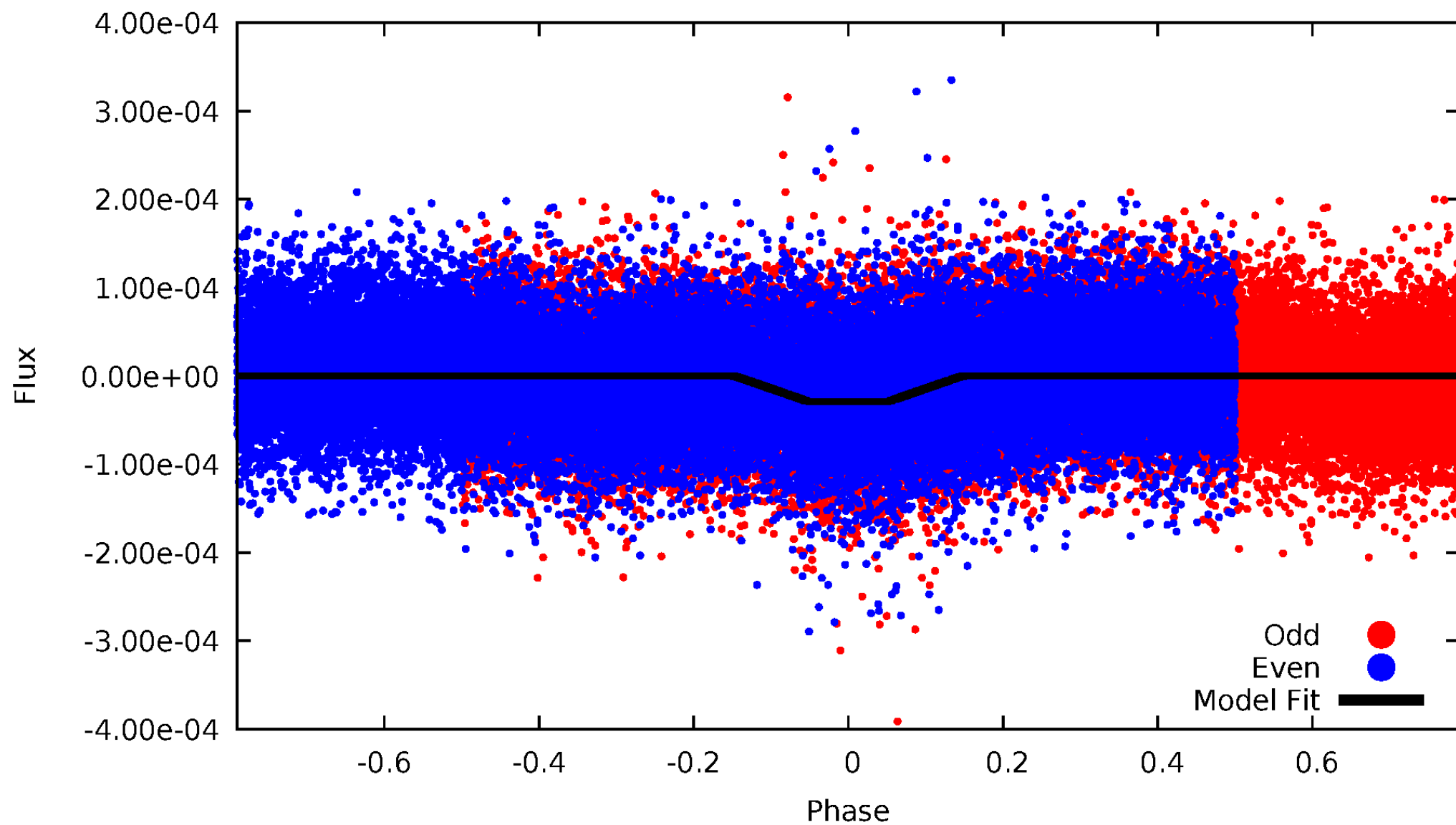
DV Odd/Even

TCE 004756776-01



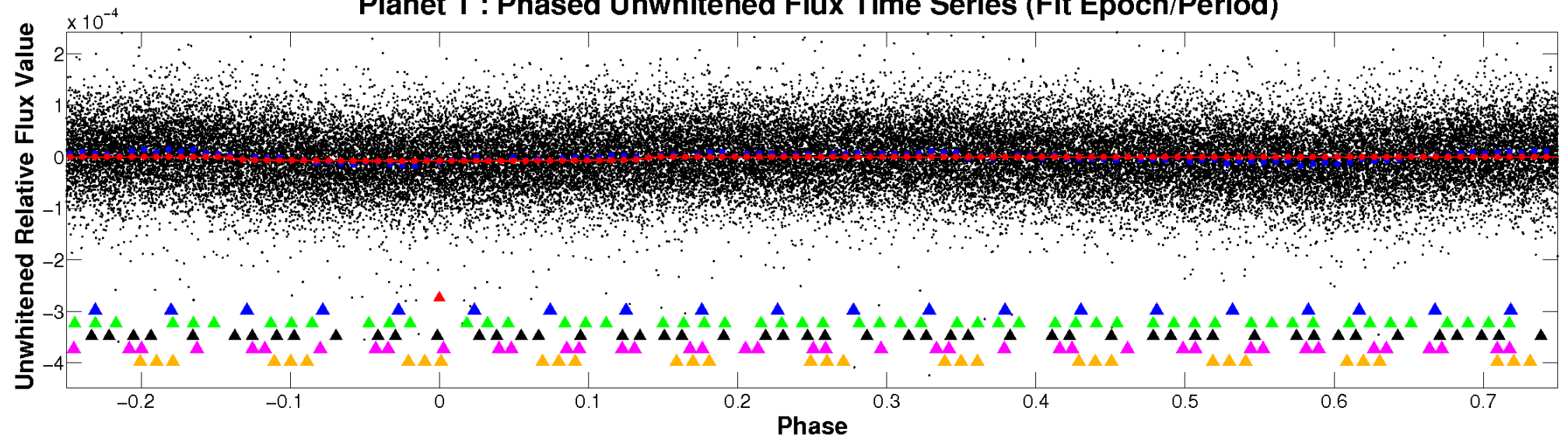
ALT Odd/Even

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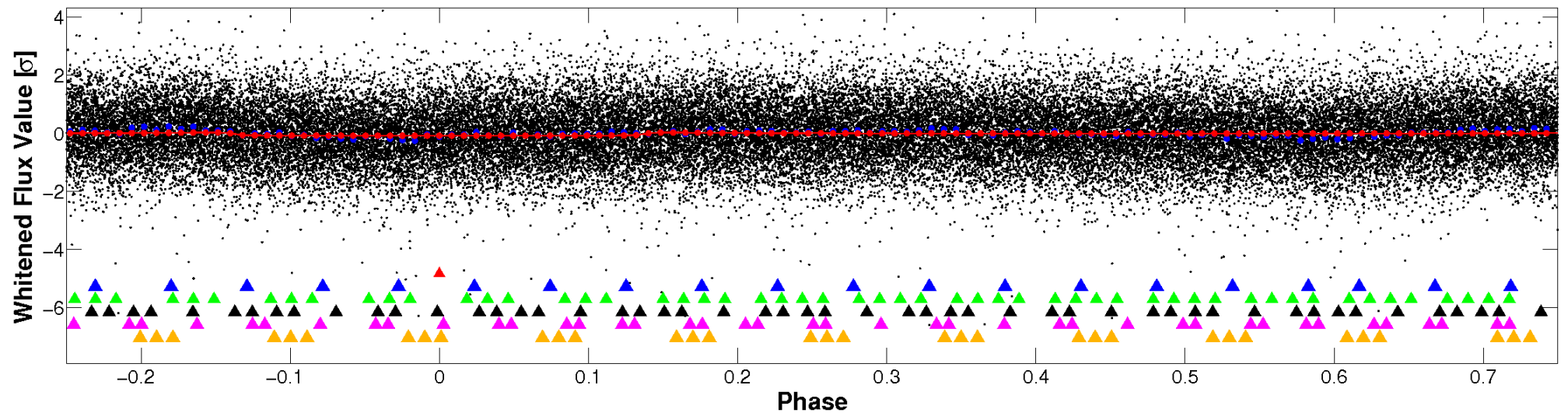


Non-Whitened Vs. Whitened Light Curve

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

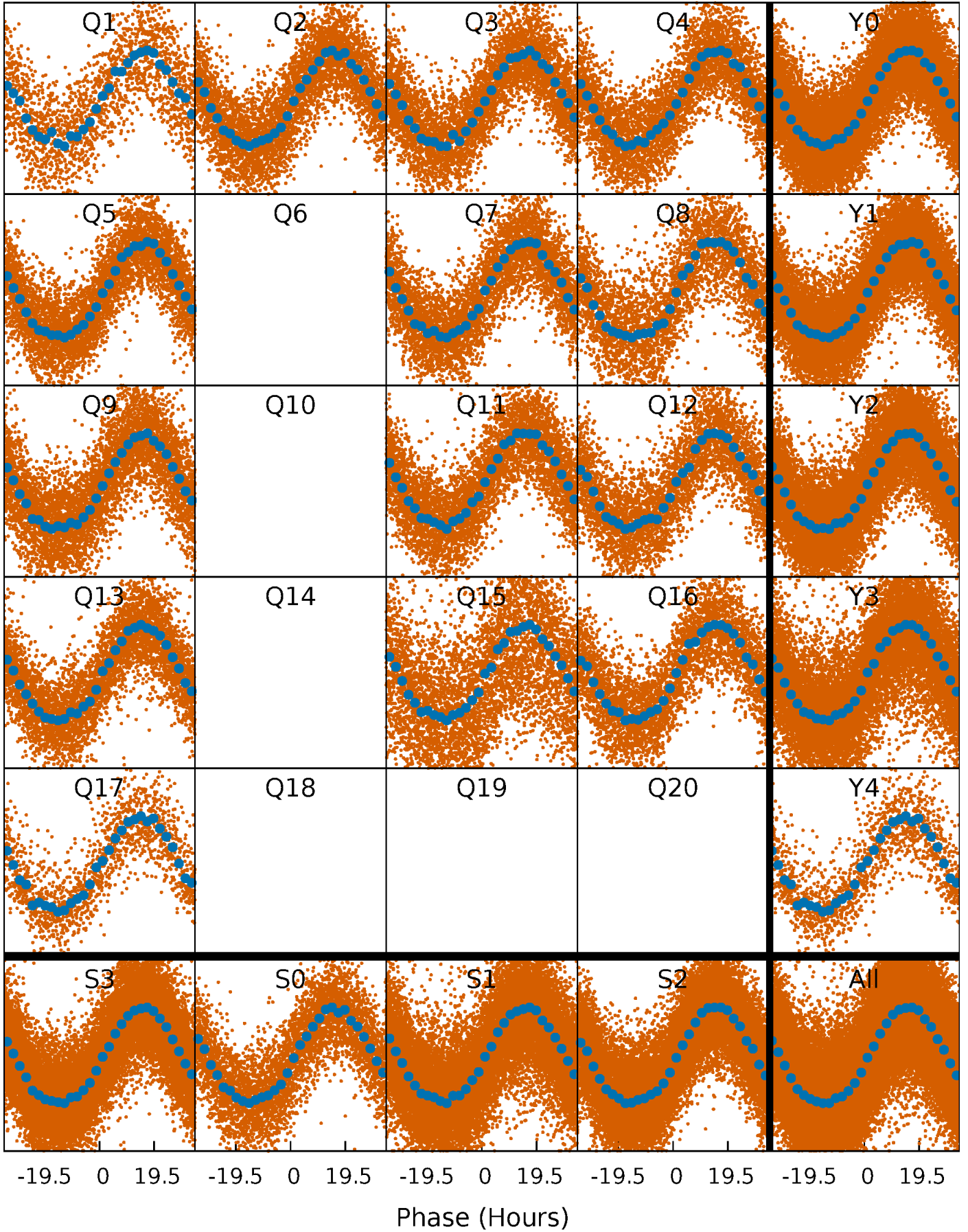


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



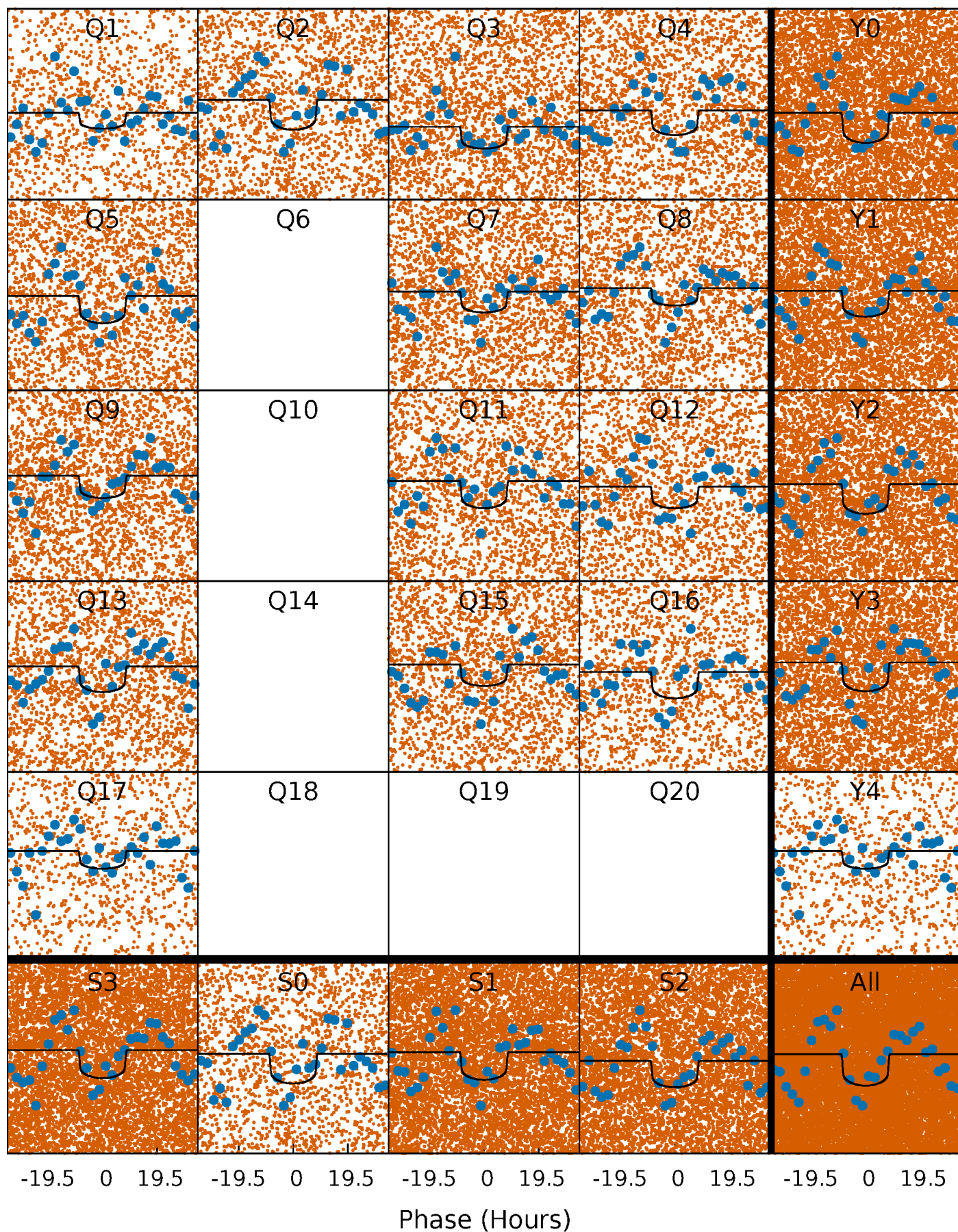
PDC Quarter-Phased Transit Curves

TCE 004756776-01 P= 2.476973 Days $T_0=132.998632$ (BKJD)



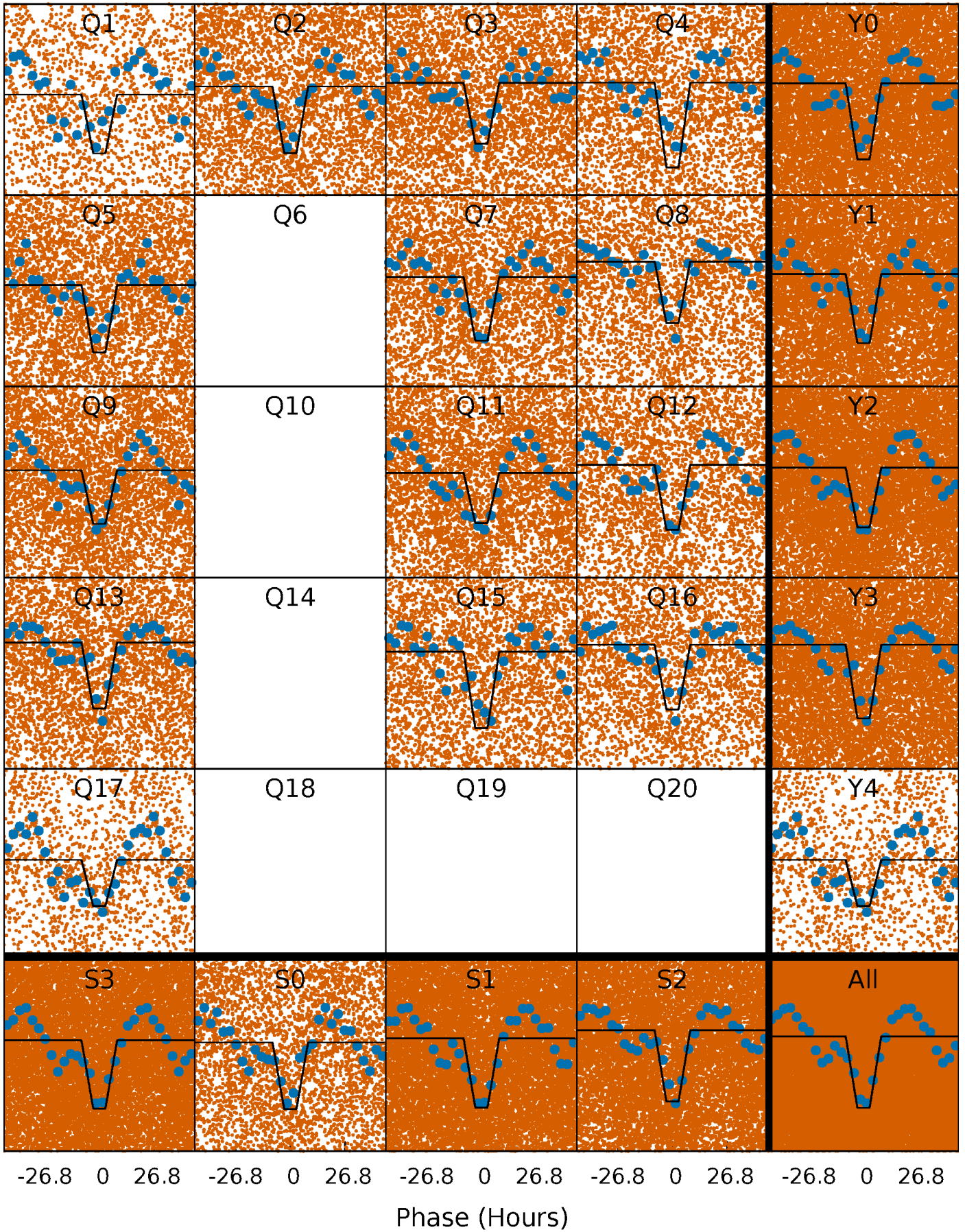
DV Quarter-Phased Transit Curves

TCE 004756776-01 P= 2.476973 Days $T_0=132.998632$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

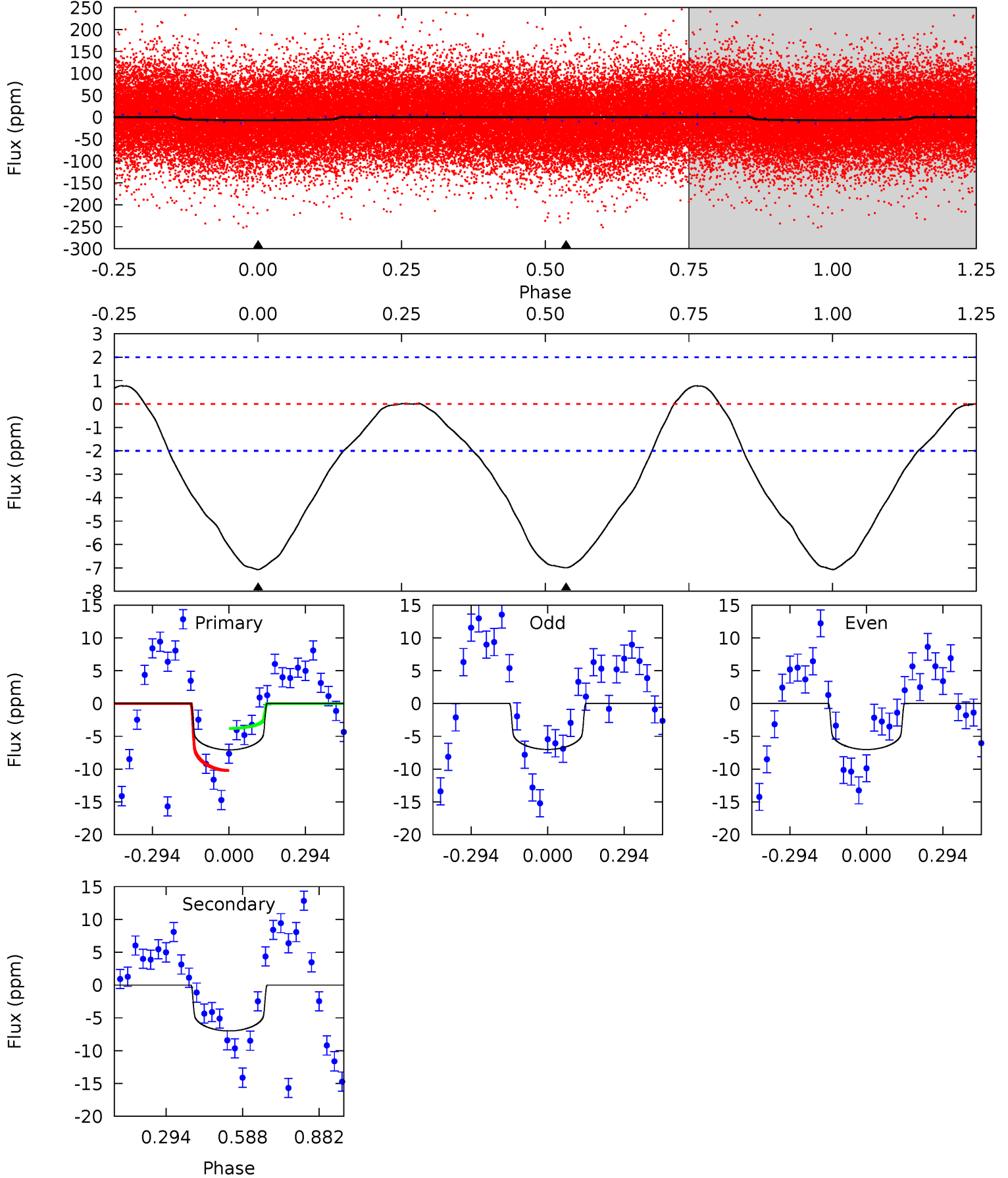
TCE 004756776-01 P= 2.476748 Days $T_0=132.894136$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-01, P = 2.476973 Days, E = 130.521659 Days

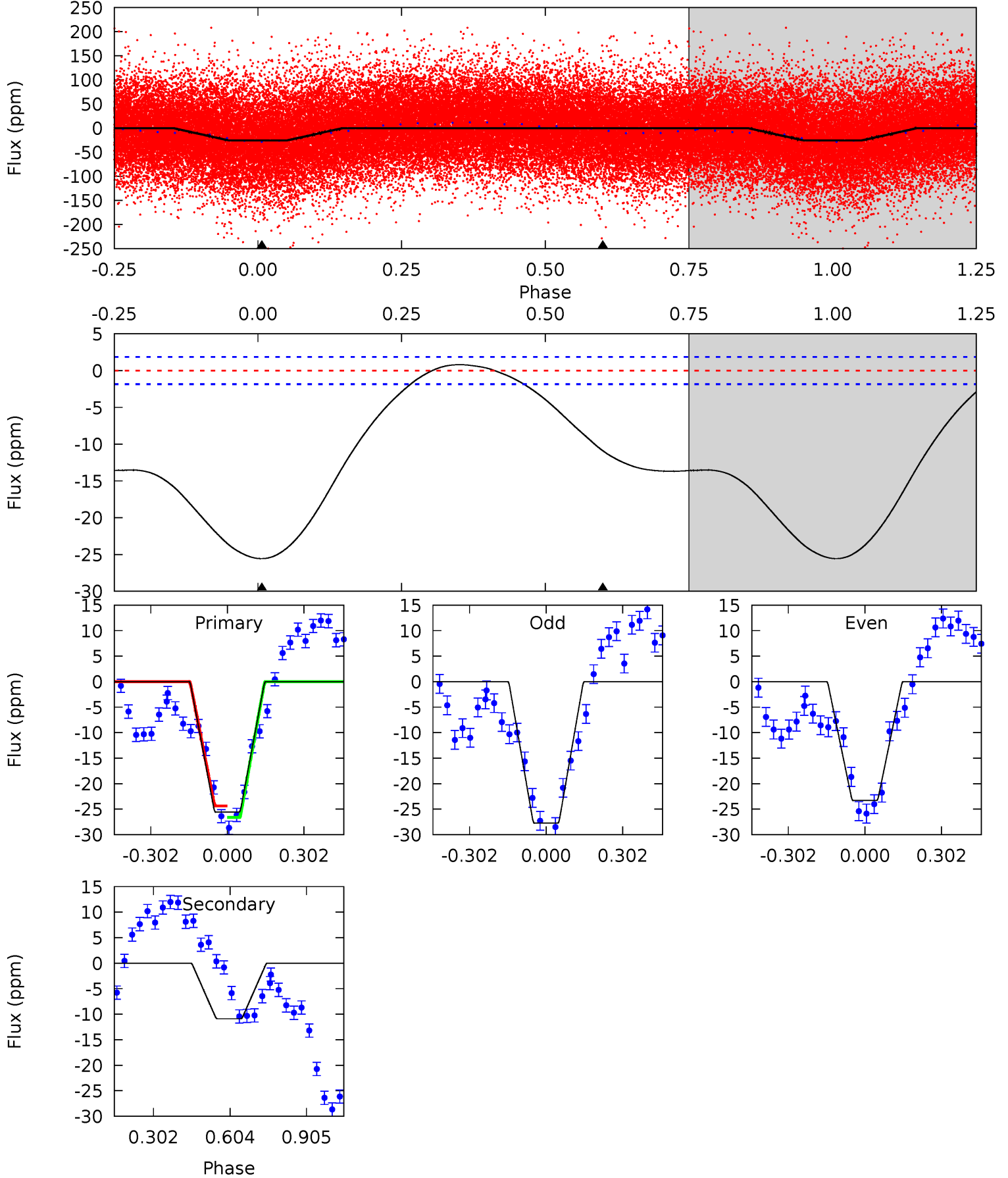
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	15.2	0	0	4.33	1.05	0.72	15.3	15.3	15.2	15.2	0.01	0.96	0.10	7.04



Alt Model-Shift Uniqueness Test

004756776-01, P = 2.476748 Days, E = 130.417388 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.6	25.4	0	0	4.33	1.03	2.47	59.6	59.6	25.4	25.4	5.13	0.99	0.03	2.57



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7 ± 0	$0.58^{+0.15}_{-0.12}$	2716^{+216}_{-231}	6064^{+613}_{-435}	18^{+10}_{-6}
Alt.	-11 ± 0	$1.02^{+0.19}_{-0.18}$	2702^{+216}_{-226}	5194^{+281}_{-254}	$9.077^{+4.086}_{-2.546}$

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

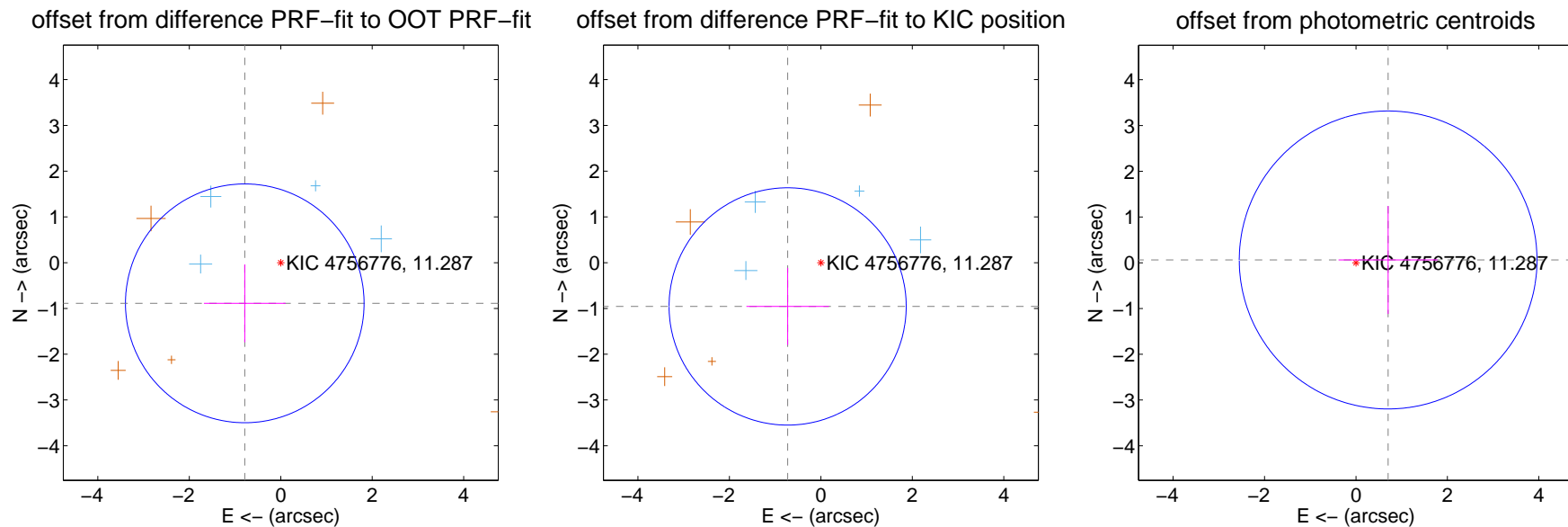
DV Centroid Data

Supplemental centroid analysis for 004756776-01. **Kepler magnitude: 11.29.** Transit SNR 9.75

There are 4 quarters with good PRF difference image offsets

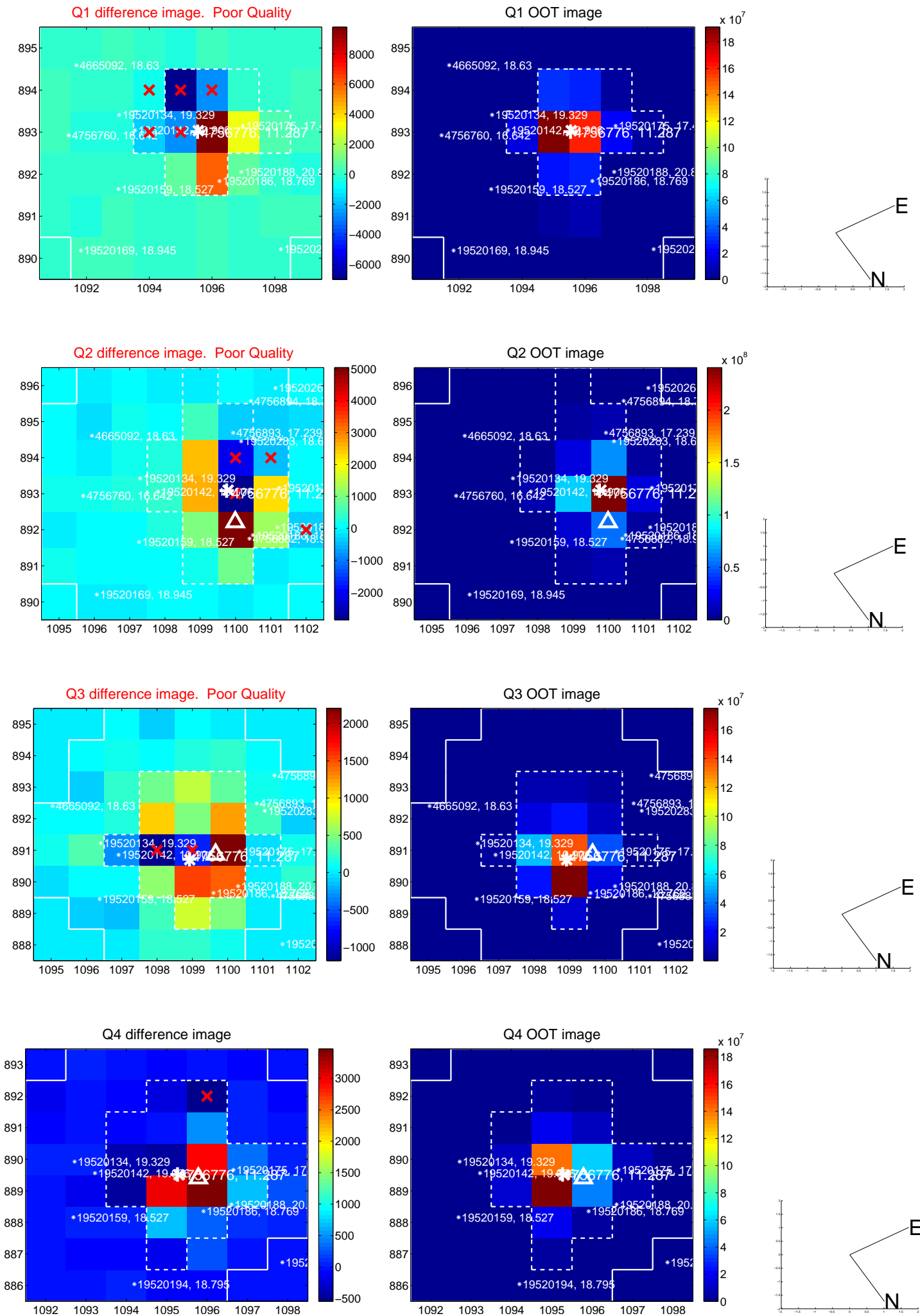
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.186 ± 0.870	1.36	0.787 ± 0.894	-0.888 ± 0.850
PRF-fit source offset from KIC position	1.201 ± 0.864	1.39	0.726 ± 0.902	-0.956 ± 0.842
photometric centroid source offset	0.71 ± 1.09	0.65	-0.70 ± 1.08	0.06 ± 1.18

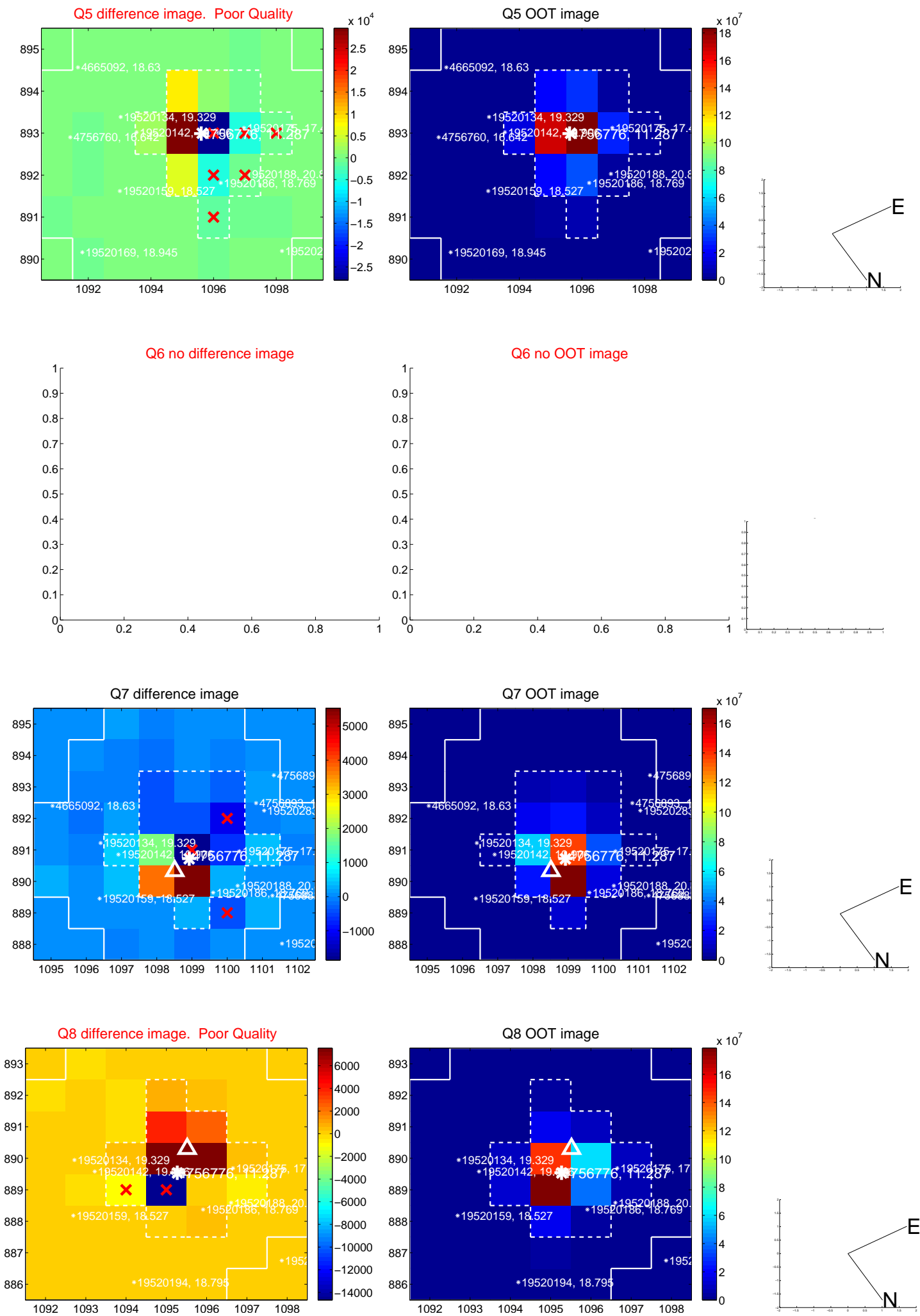


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

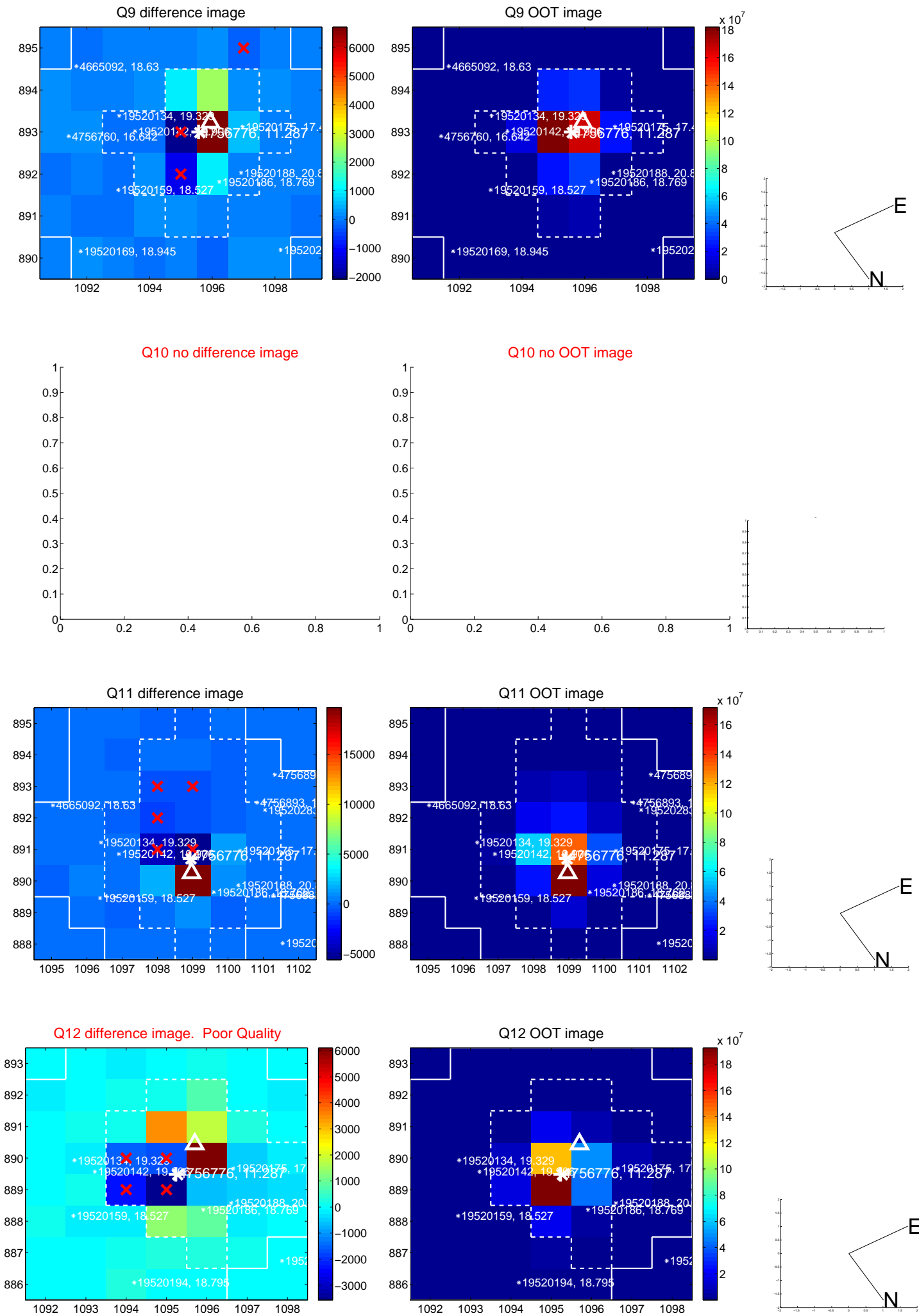
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



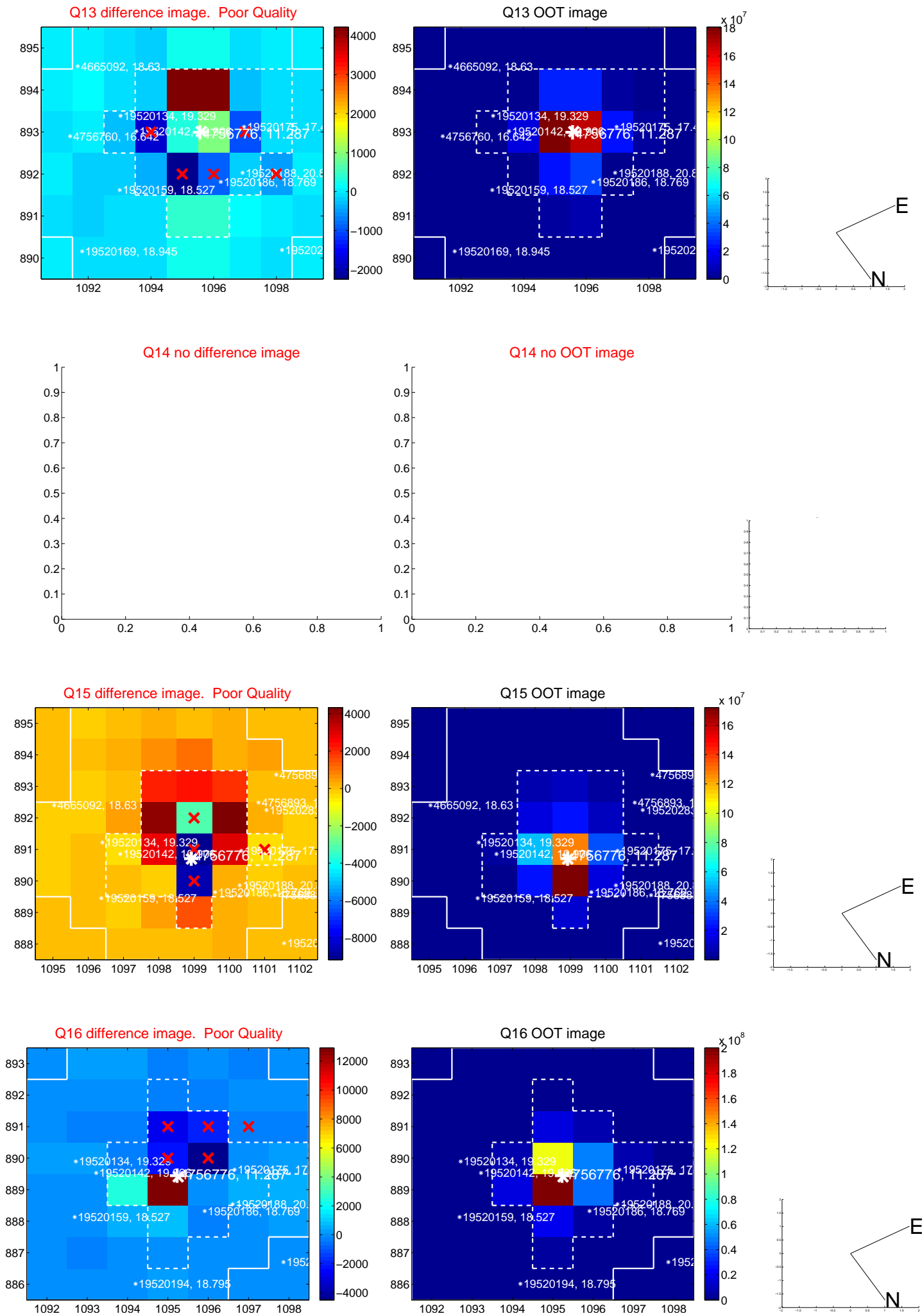
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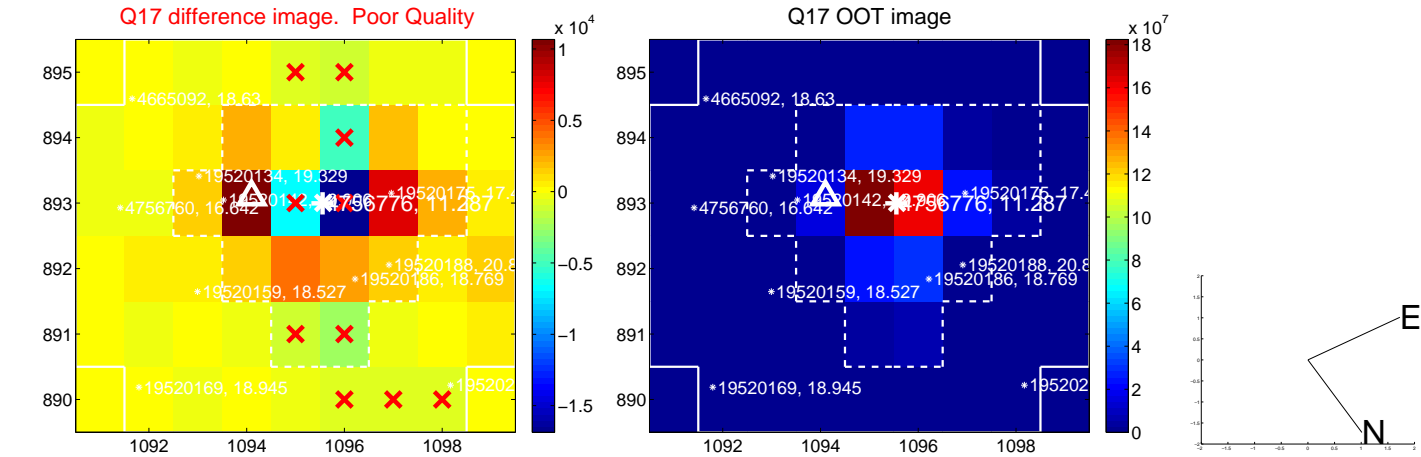
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



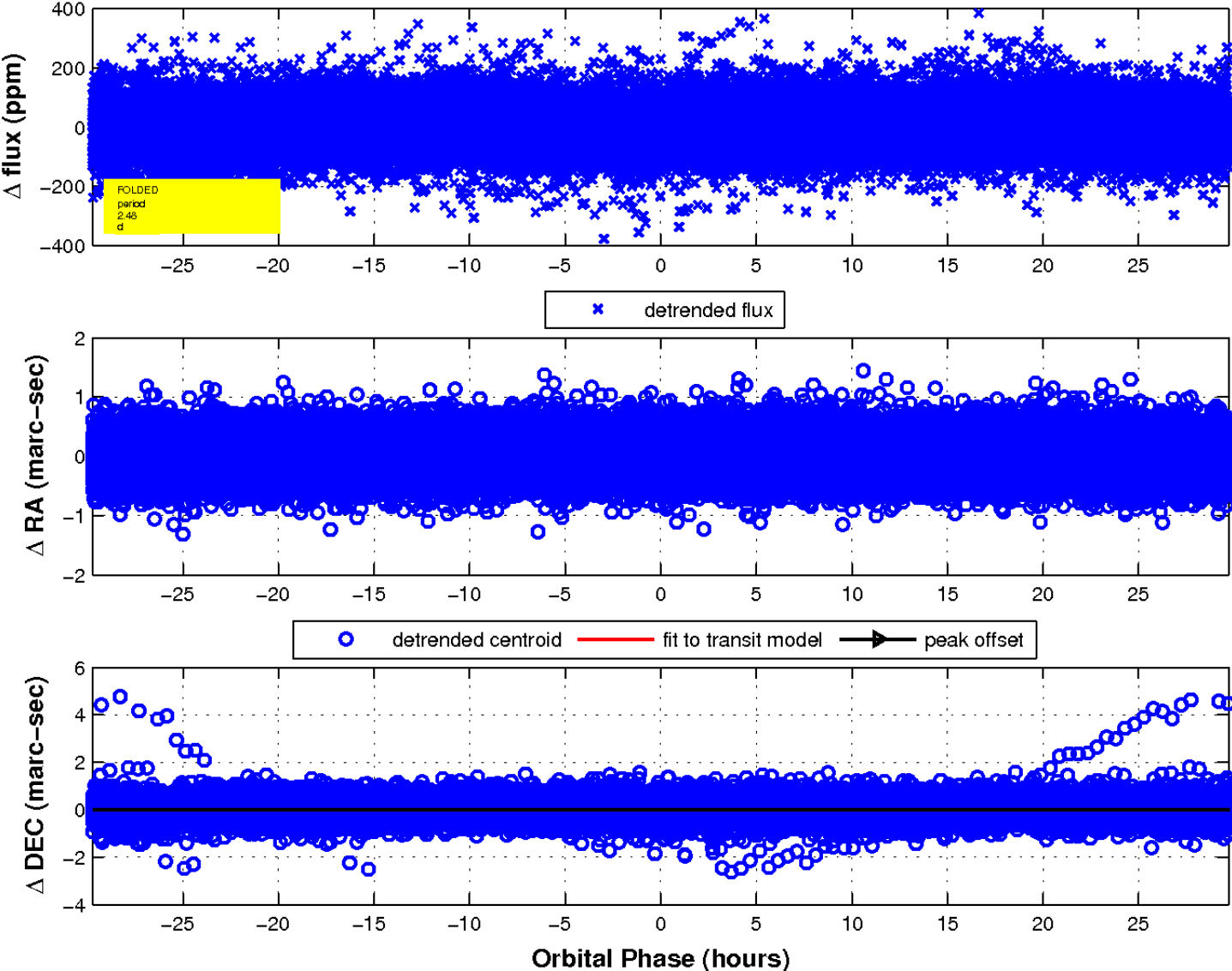
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

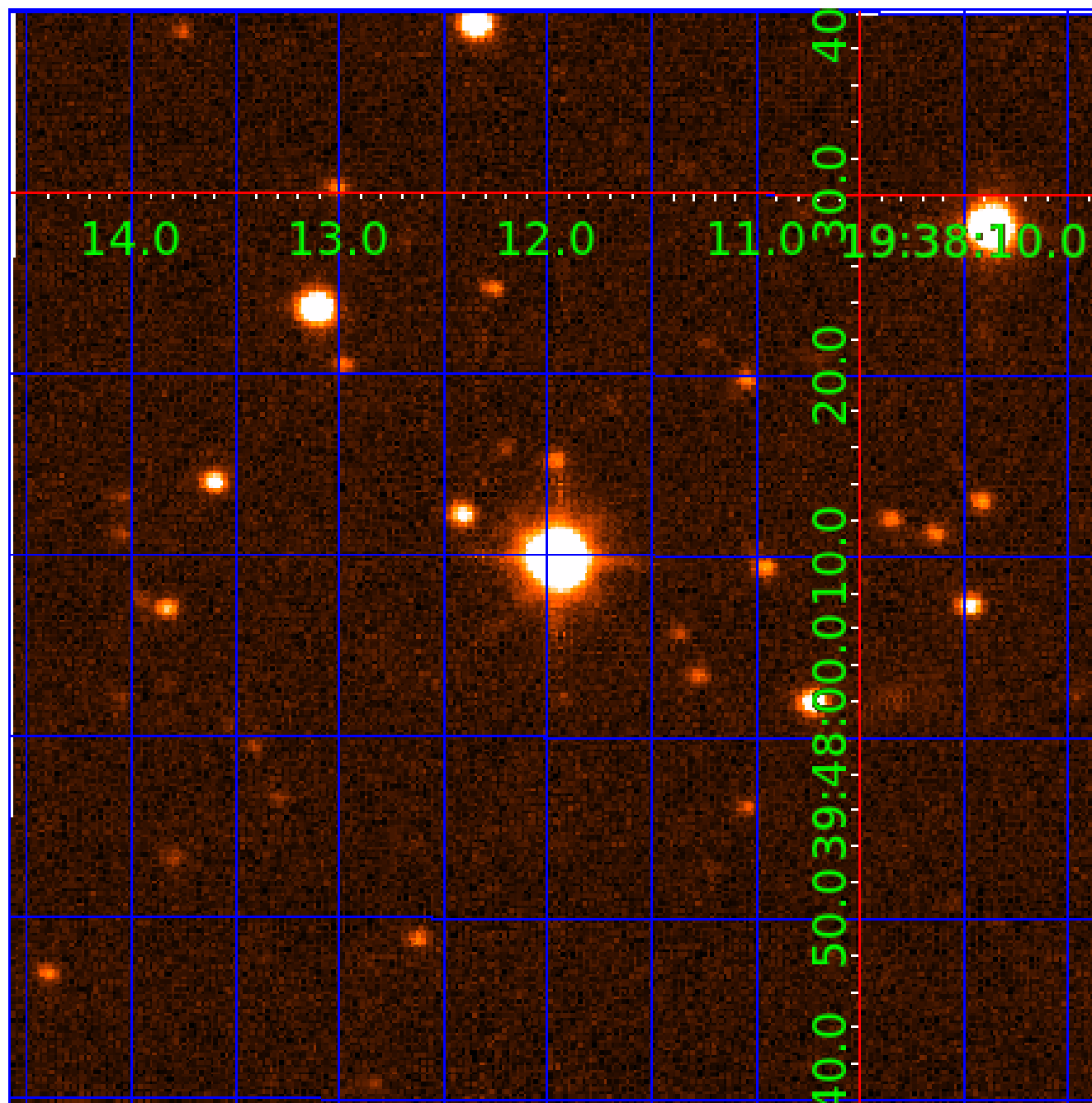


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 004756776

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

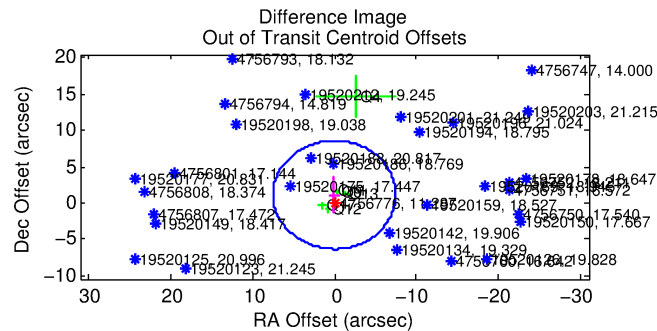
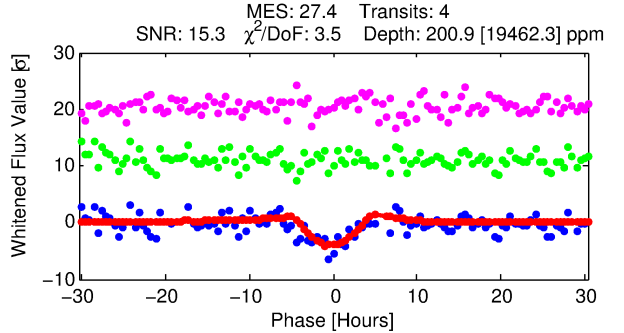
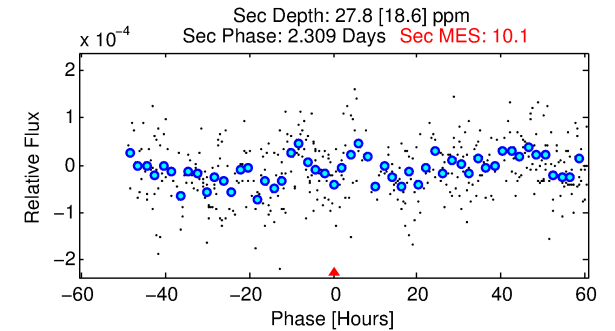
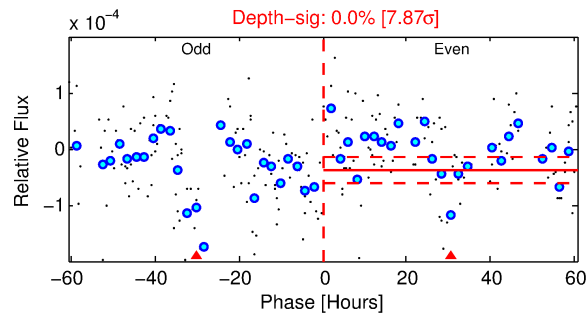
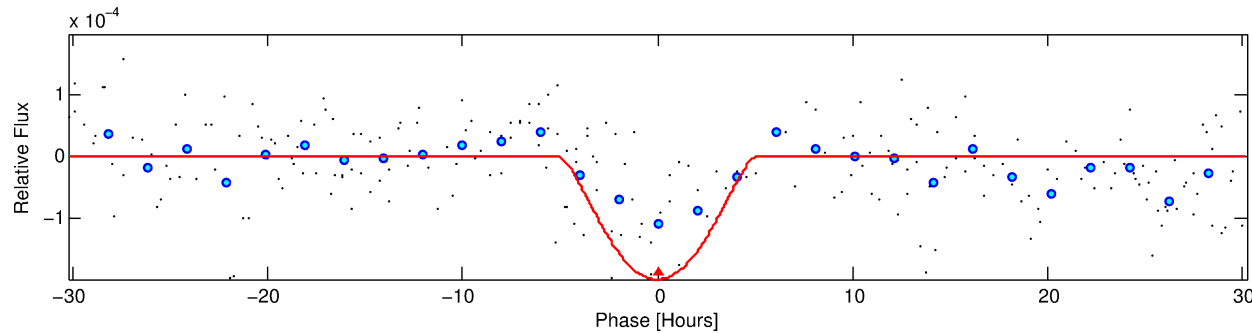
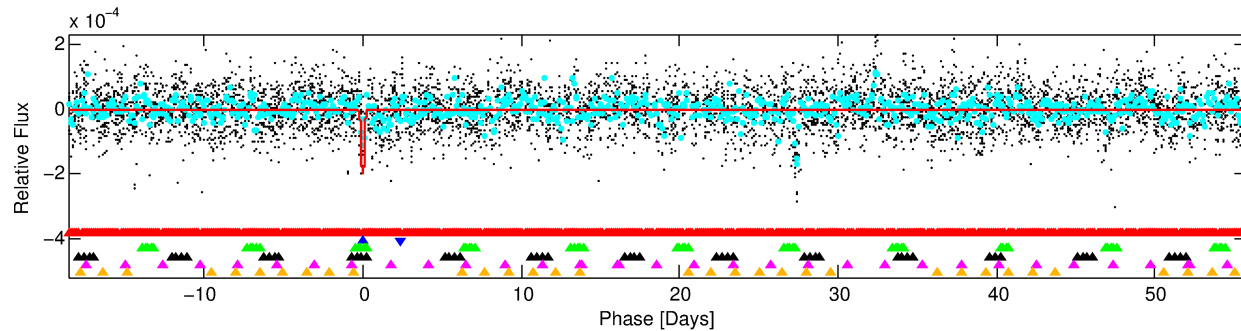
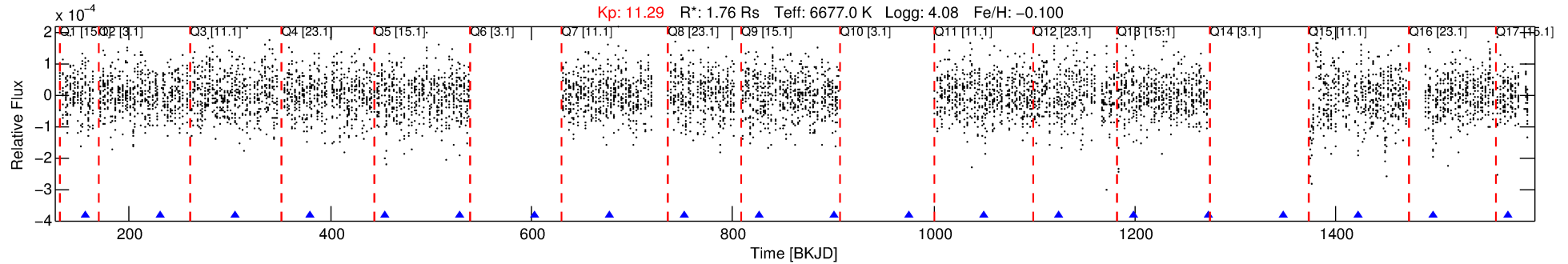
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004756776-02

No Significant Match Found

DV One-Page Summary

KIC: 4756776 Candidate: 2 of 6 Period: 74.435 d



DV Fit Results:

Period = 74.43511 [0.00161] d
Epoch = 156.8192 [0.0281] BKJD
Rp/R* = 0.0255 [0.0792]
a/R* = 12.87 [10.62]
b = 1.00 [1.61]
Seff = 37.23 [16.73]
Teq = 630 [71] K
Rp = 4.91 [15.29] Re
a = 0.3854 [0.1033] AU
Ag = 94.28 [589.04] [0.16 σ]
Teffp = 3035 [4731] K [0.51 σ]

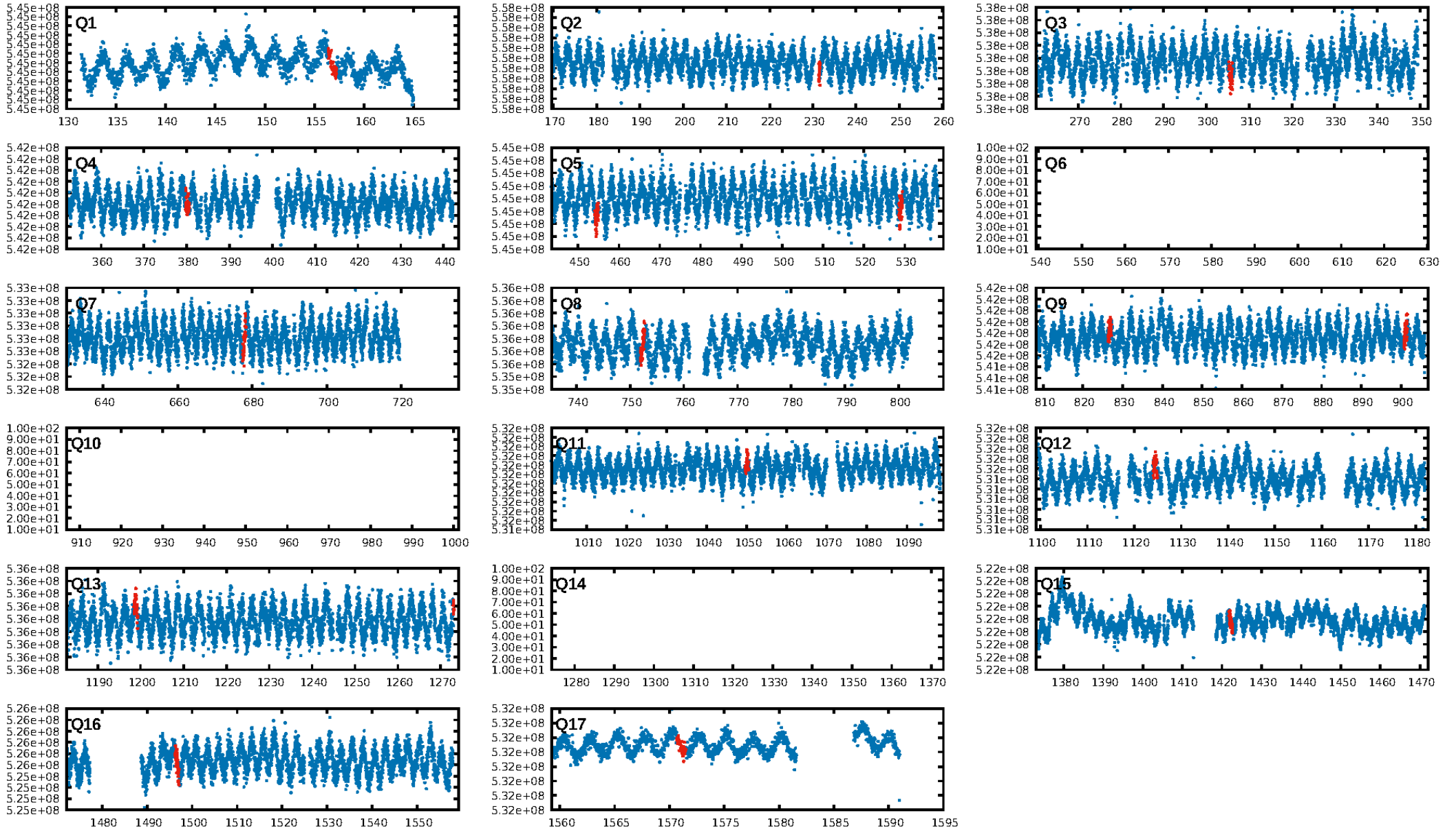
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.22 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 1.0%
Bootstrap-pfa: 1.03e-72
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.9922
Centroid-sig: N/A
Centroid-so: 0.651 arcsec [1.68 σ]
OotOffset-rm: 1.105 arcsec [0.44 σ]
KicOffset-rm: 1.014 arcsec [0.47 σ]
OotOffset-st: 0/1/2/3 [6]
KicOffset-st: 0/1/2/3 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/13]

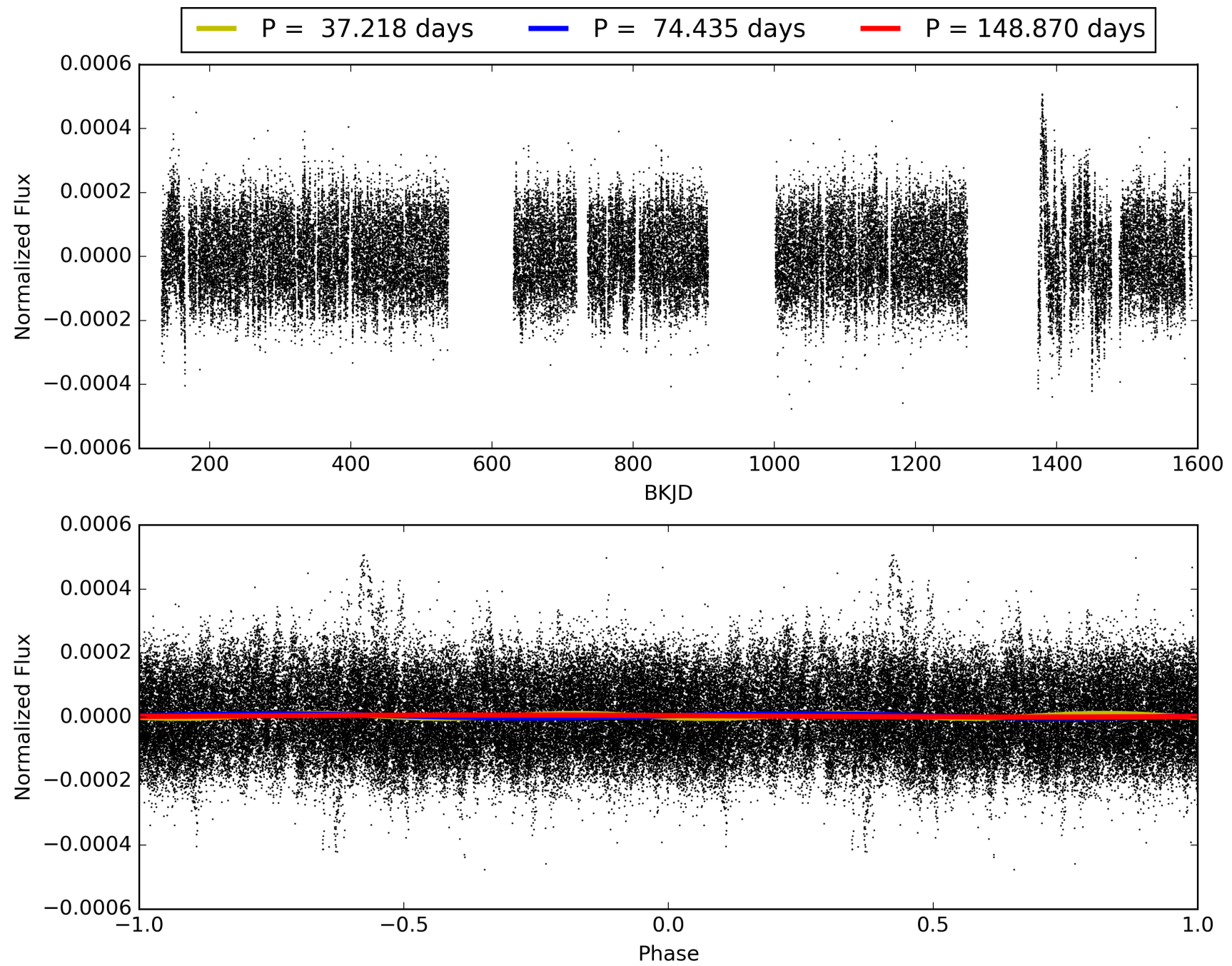
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:57:29 Z

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

TCE 004756776-02, PDC Light Curves

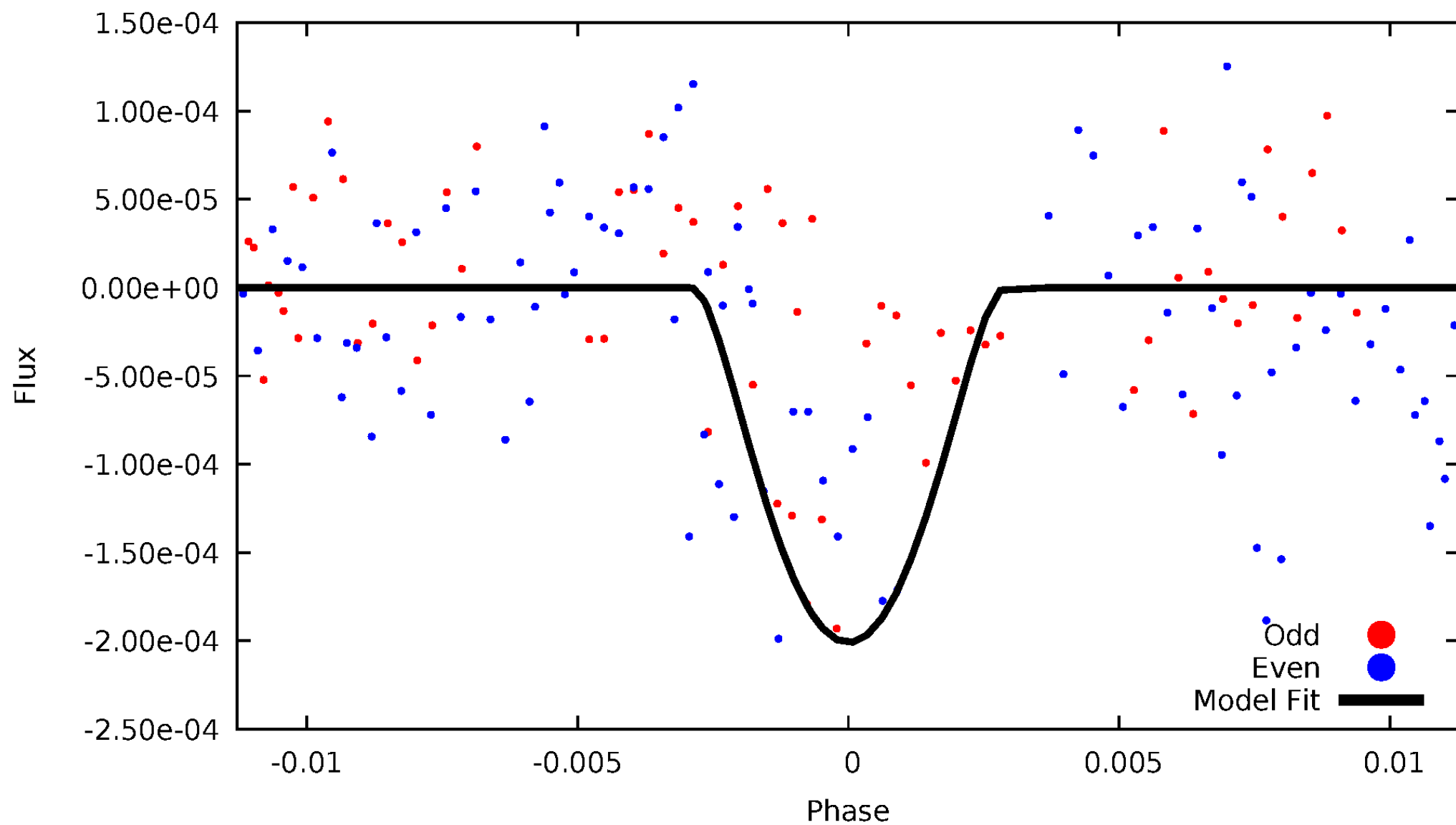


TCE 004756776-02



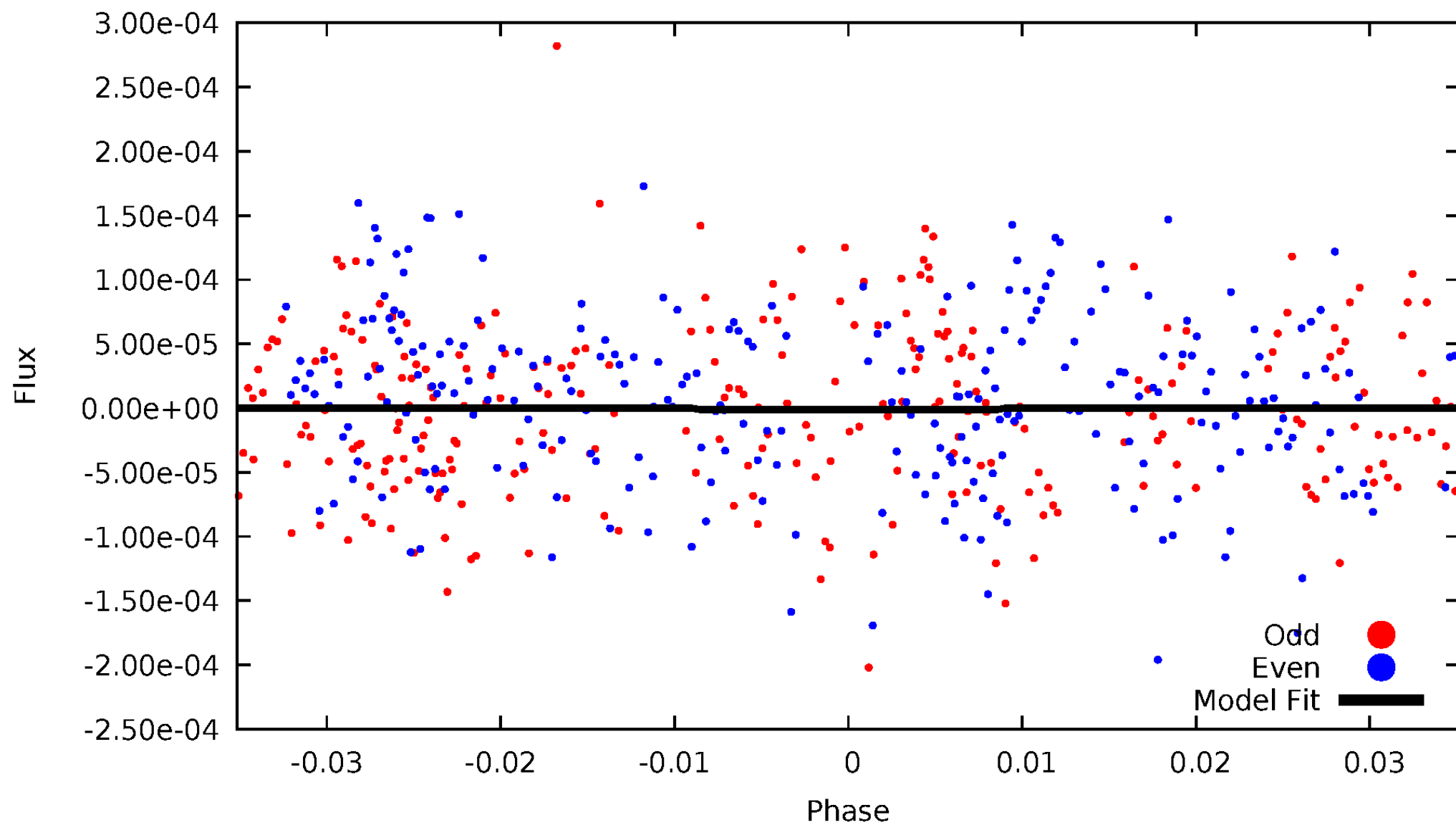
DV Odd/Even

TCE 004756776-02



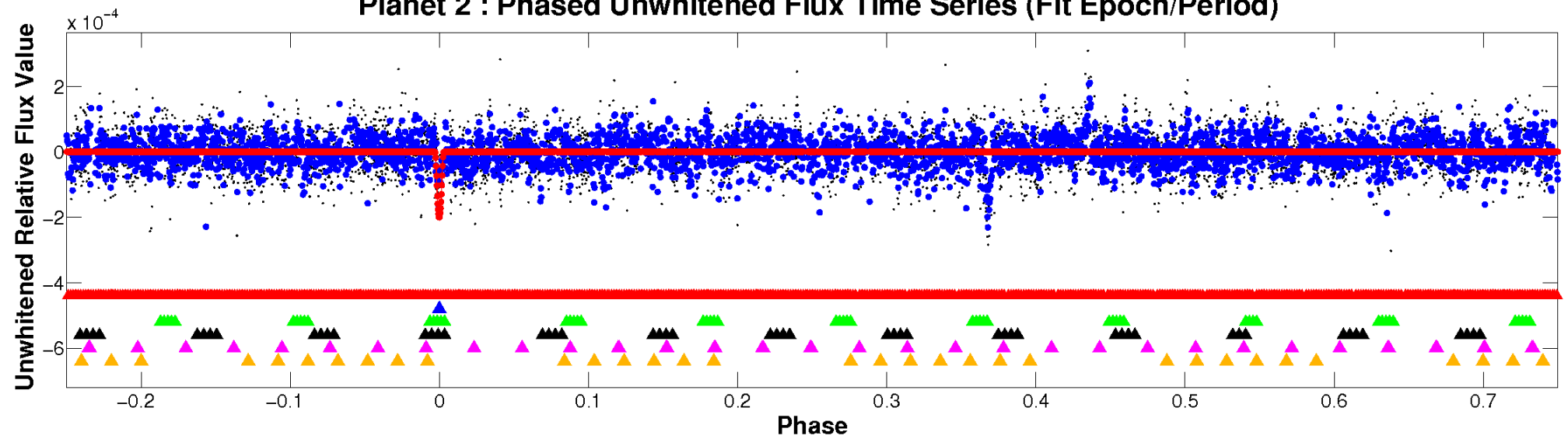
ALT Odd/Even

TCE 004756776-02

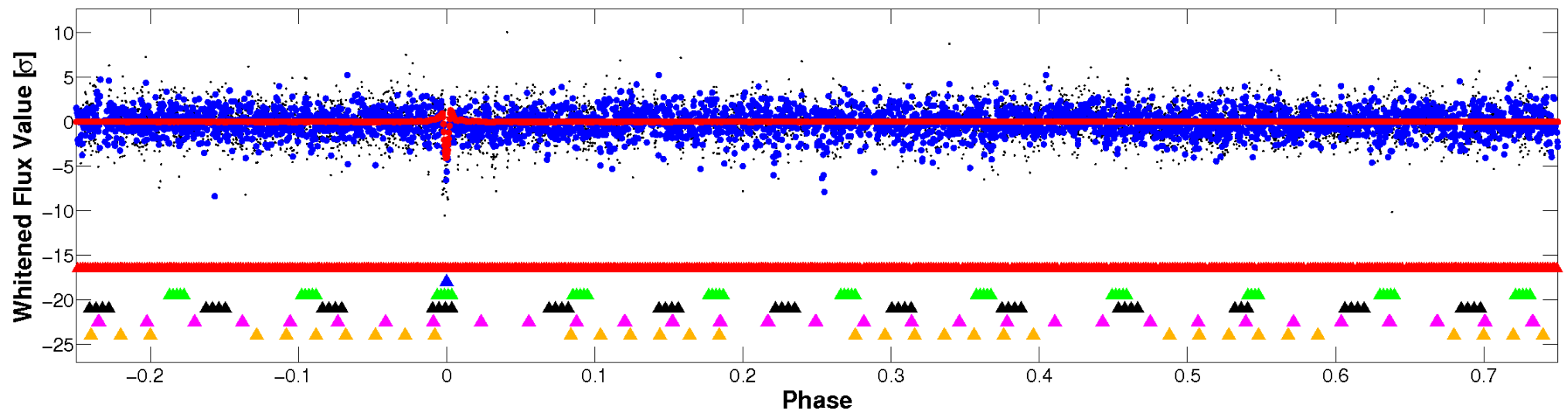


Non-Whitened Vs. Whitened Light Curve

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

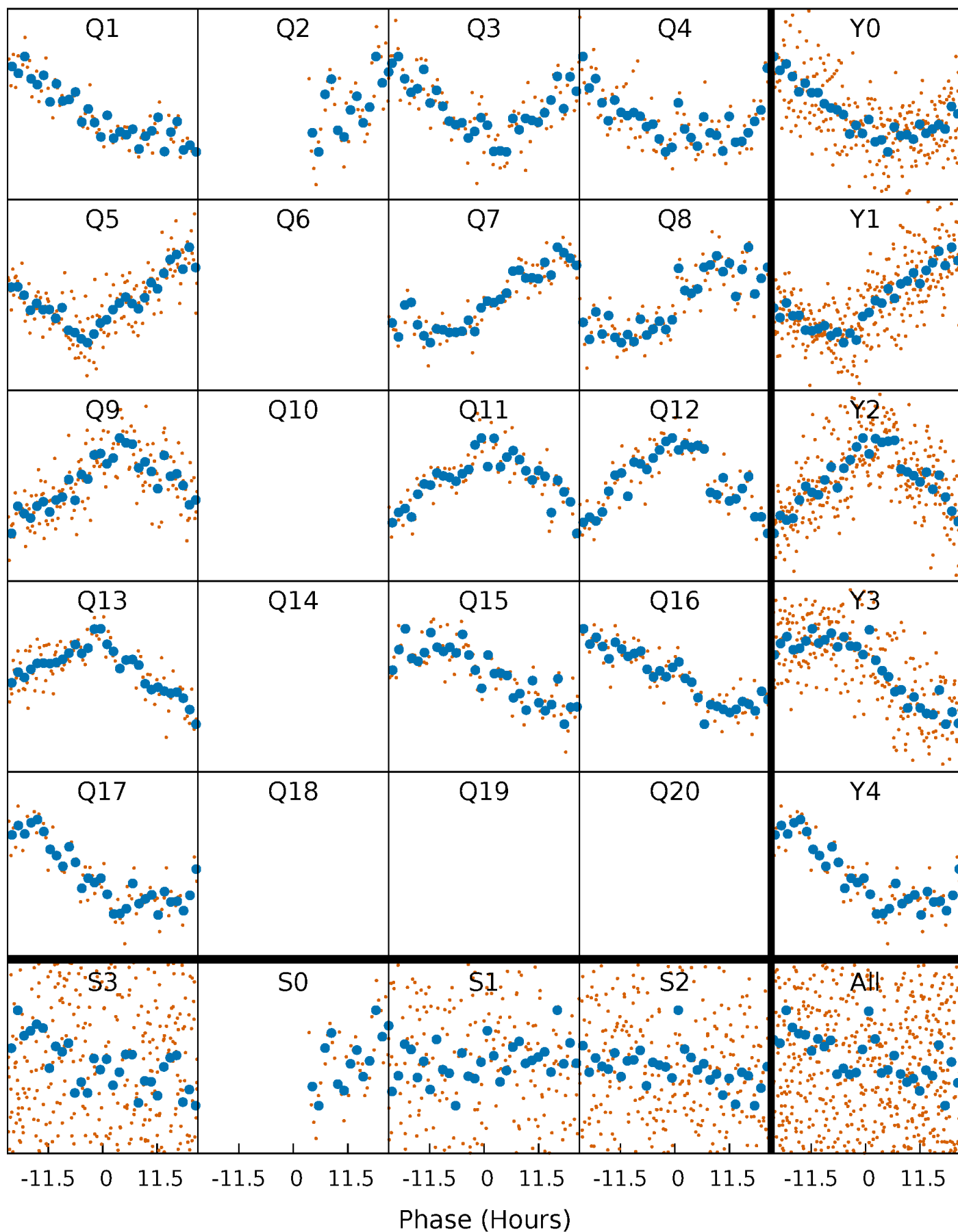


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



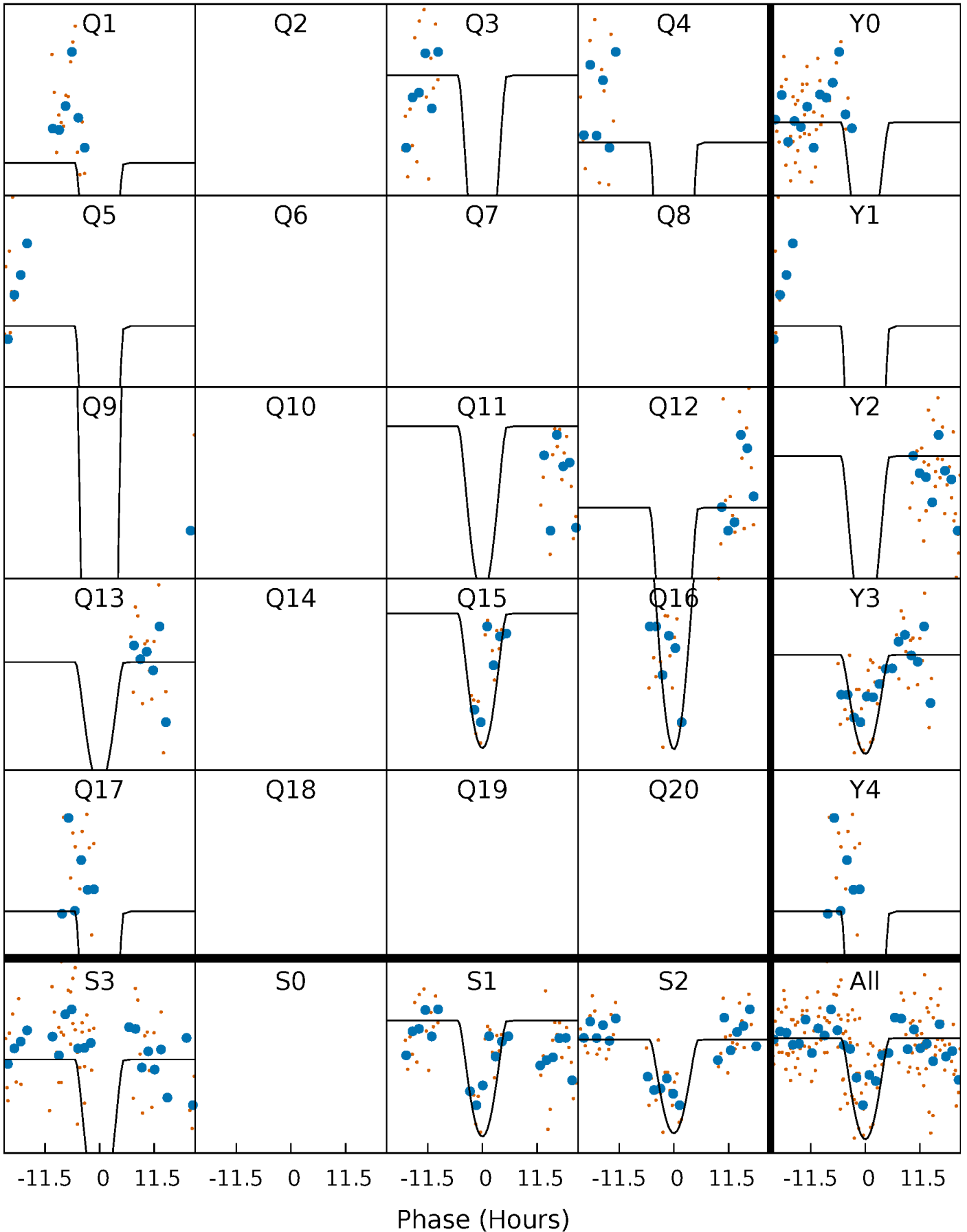
PDC Quarter-Phased Transit Curves

TCE 004756776-02 P= 74.435111 Days $T_0=156.819172$ (BKJD)



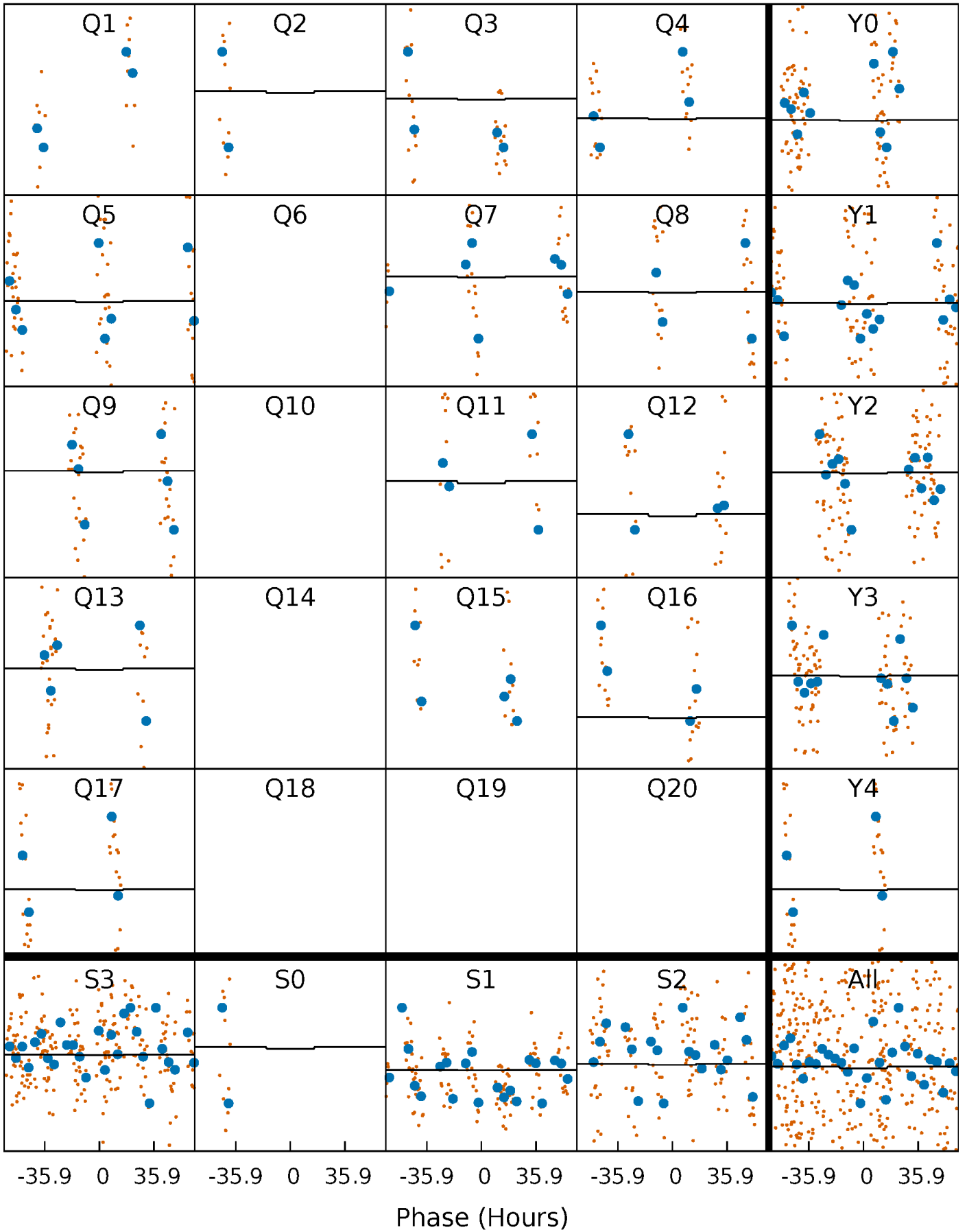
DV Quarter-Phased Transit Curves

TCE 004756776-02 P= 74.435111 Days $T_0=156.819172$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

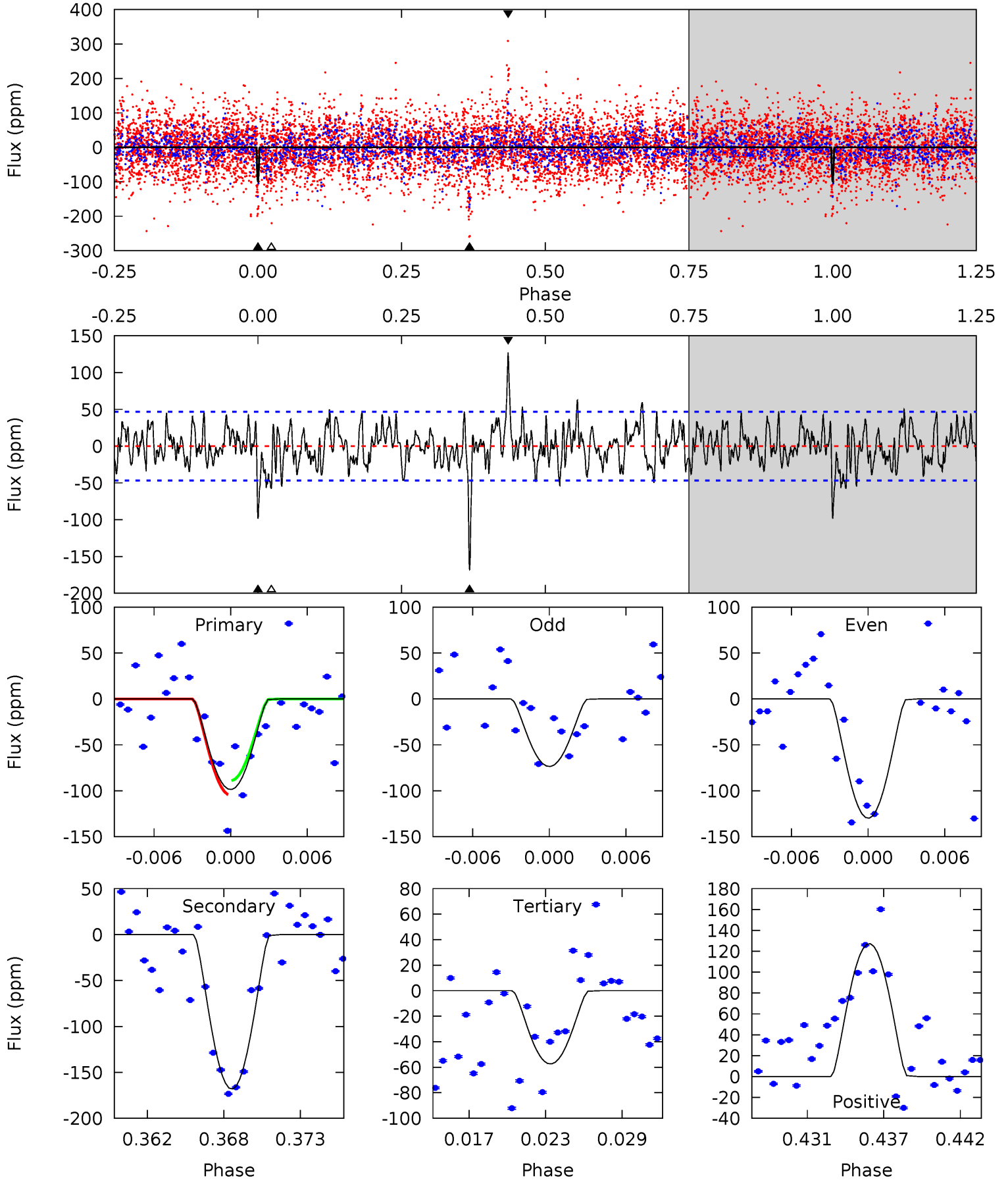
TCE 004756776-02 P= 74.460501 Days $T_0=155.698822$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-02, P = 74.435111 Days, E = 82.384061 Days

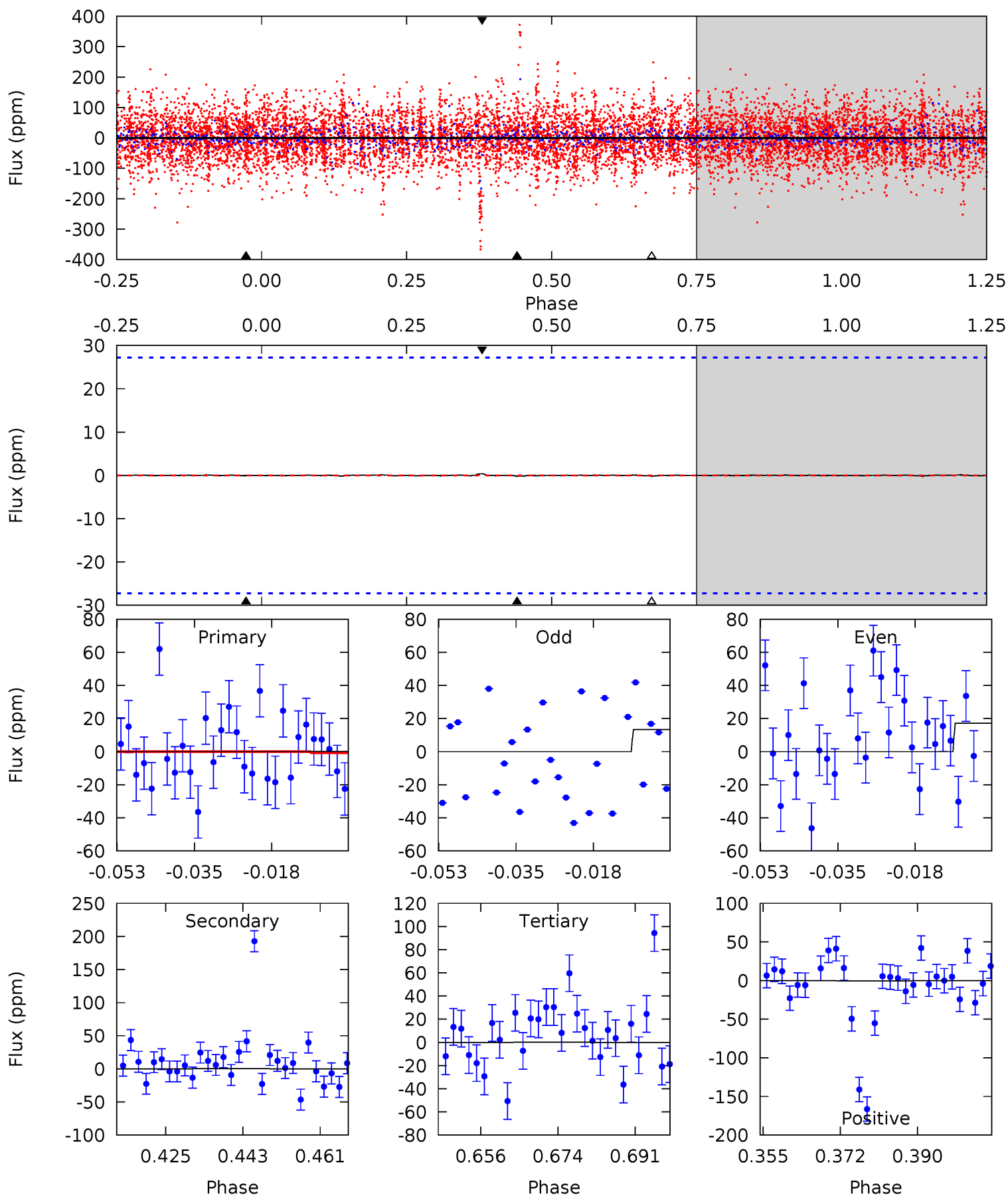
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	18.4	6.29	13.9	5.13	2.76	2.47	4.52	-3.13	12.1	4.48	3.09	1.09	0.43	0.77



Alt Model-Shift Uniqueness Test

004756776-02, P = 74.460501 Days, E = 81.238321 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.01	0.04	0.04	0.07	4.92	2.37	0.01	-0.02	-0.06	0.00	-0.03	0.32	2.68	0.65	0.01



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-168 ± 9	$12.00^{+13.05}_{-8.19}$	873^{+68}_{-77}	3503^{+1777}_{-689}	97^{+844}_{-74}
Alt.	-0 ± 6	$9.69^{+11.35}_{-6.52}$	873^{+70}_{-70}	-1747^{+4244}_{-724}	$0.018^{+9.058}_{-7.412}$

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

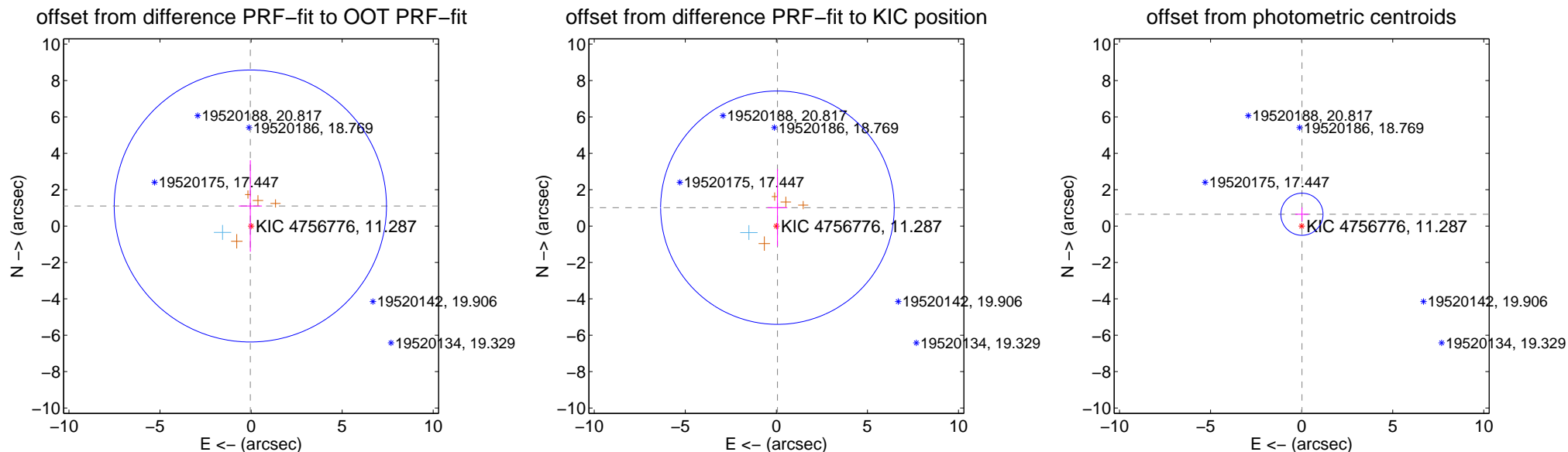
DV Centroid Data

Supplemental centroid analysis for 004756776-02. **Kepler magnitude: 11.29.** Transit SNR 15.26

There are 1 quarters with good PRF difference image offsets

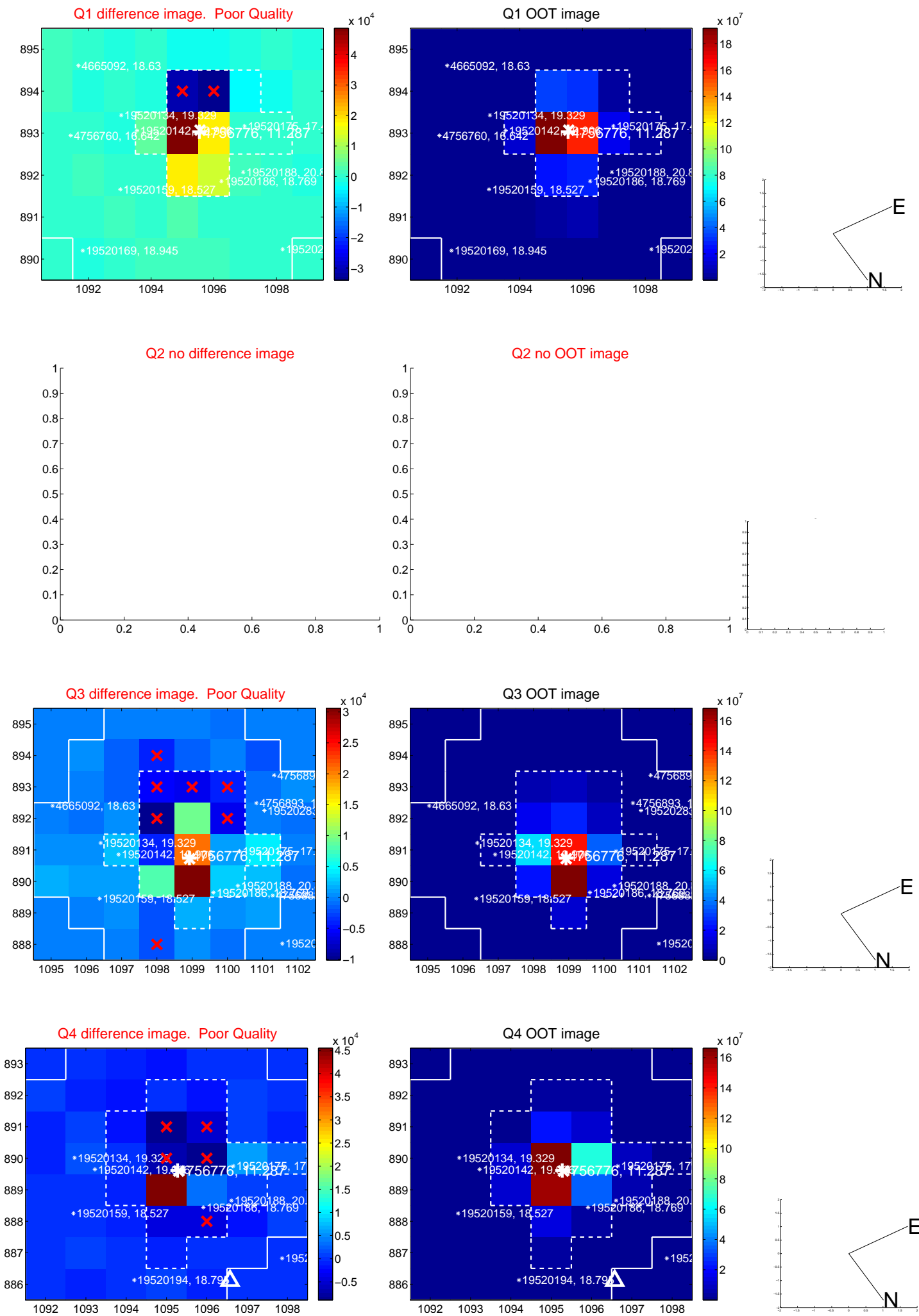
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.105 ± 2.492	0.44	0.041 ± 0.636	1.104 ± 2.514
PRF-fit source offset from KIC position	1.014 ± 2.138	0.47	-0.058 ± 0.545	1.012 ± 2.118
photometric centroid source offset	0.65 ± 0.39	1.68	-0.02 ± 0.37	0.65 ± 0.39

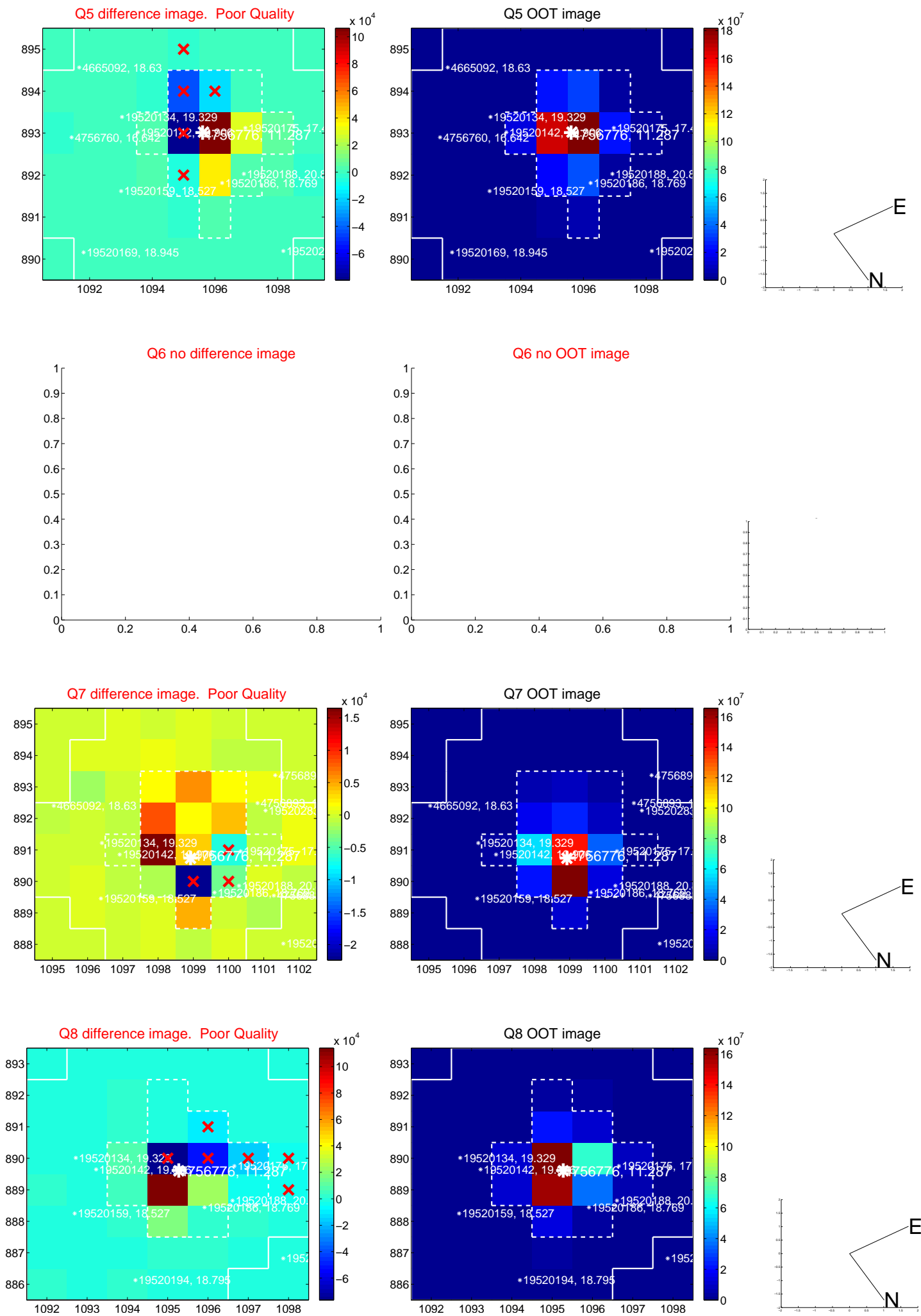


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

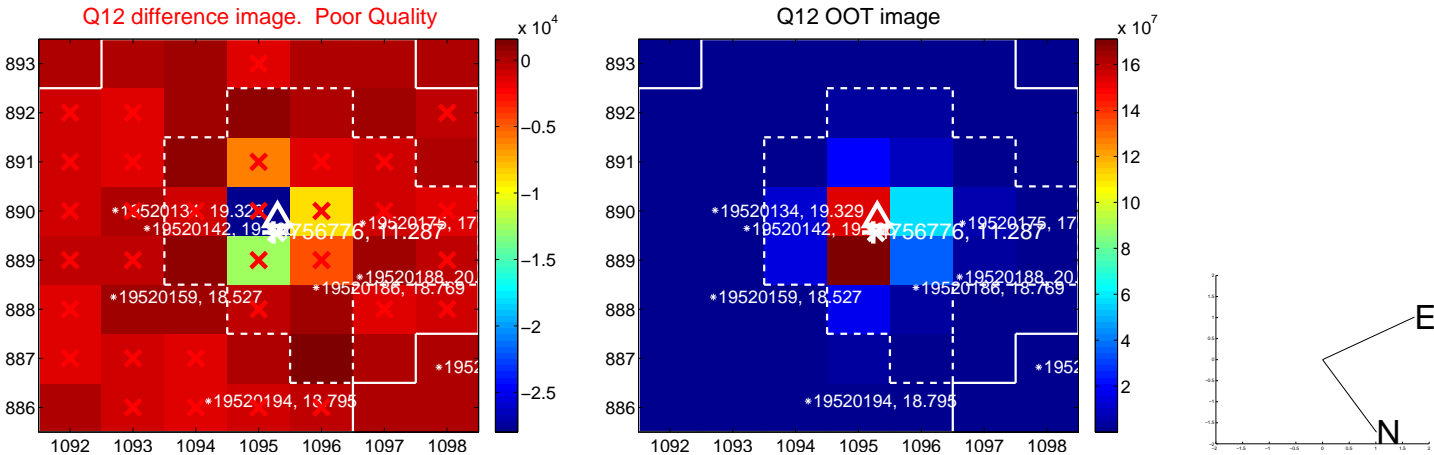
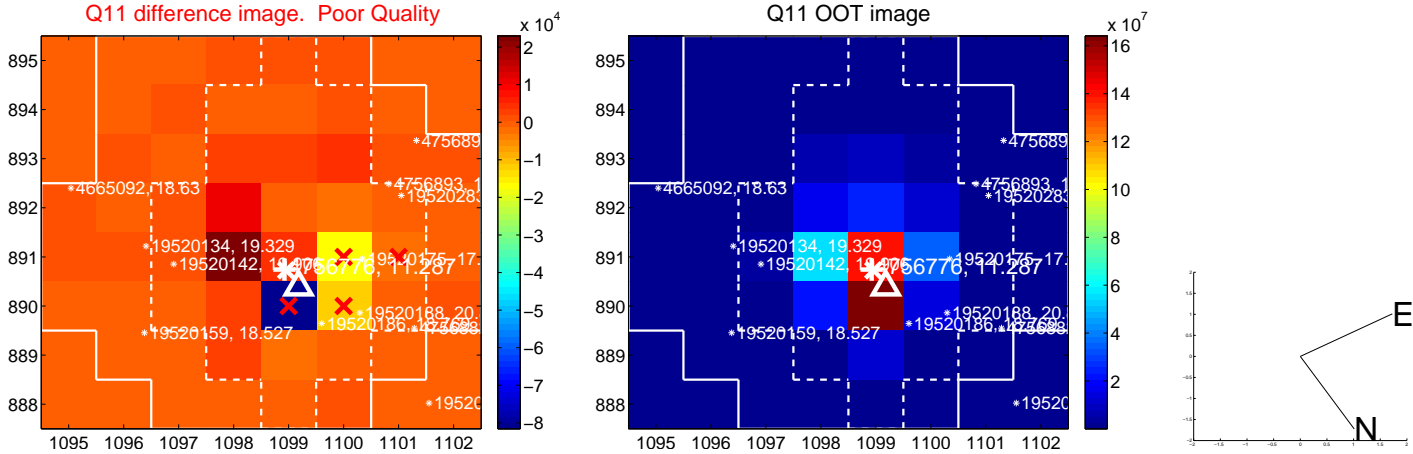
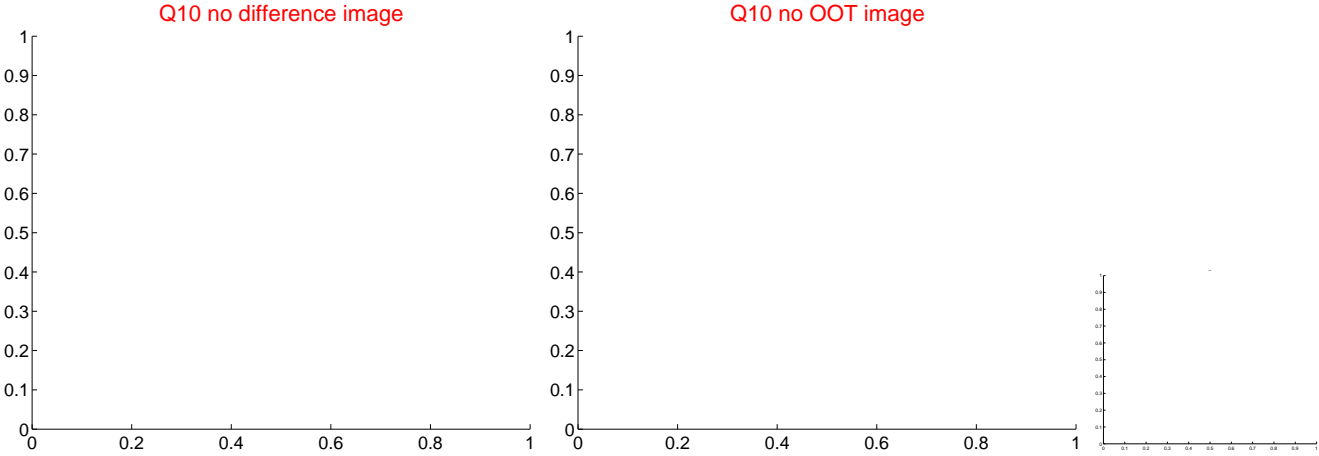
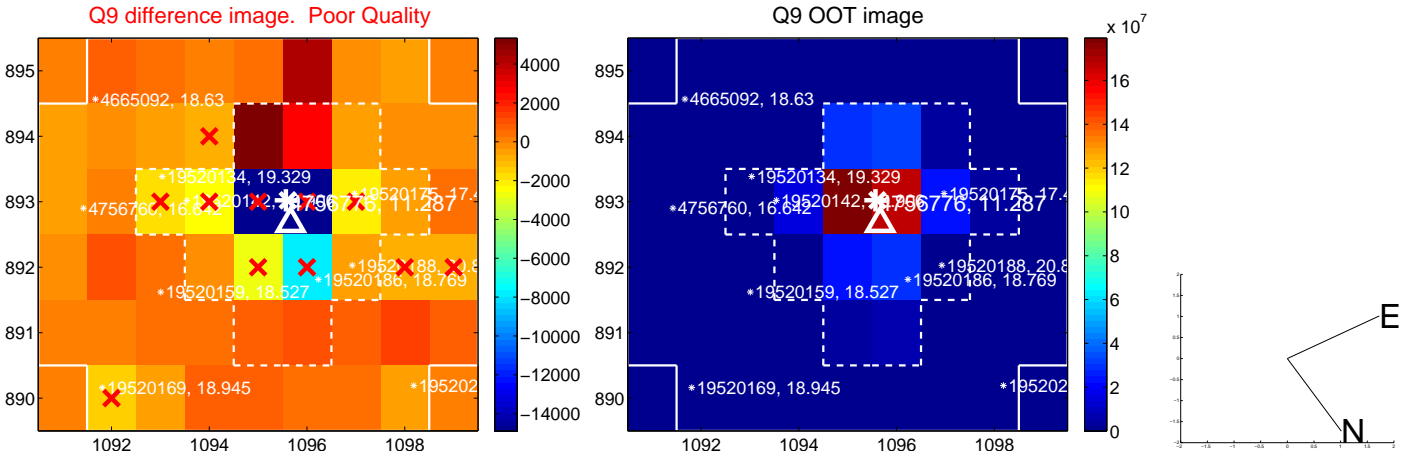
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



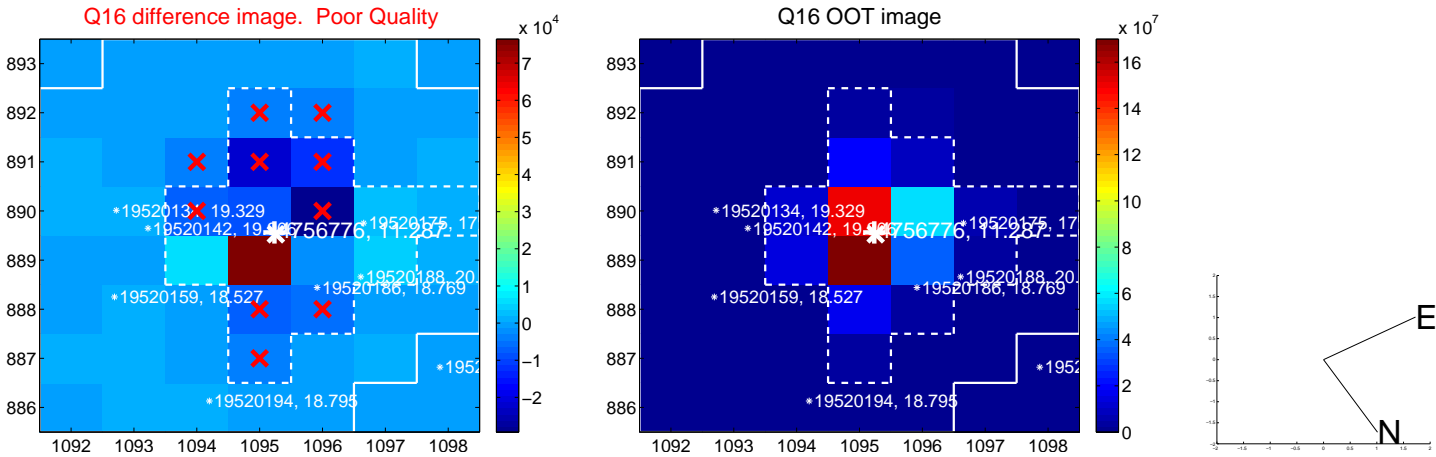
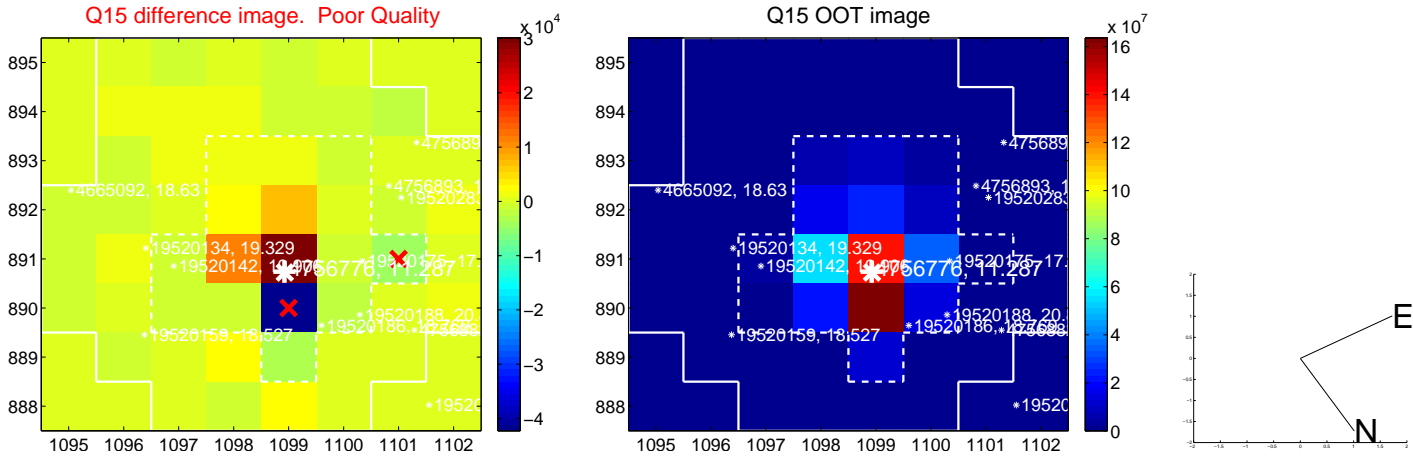
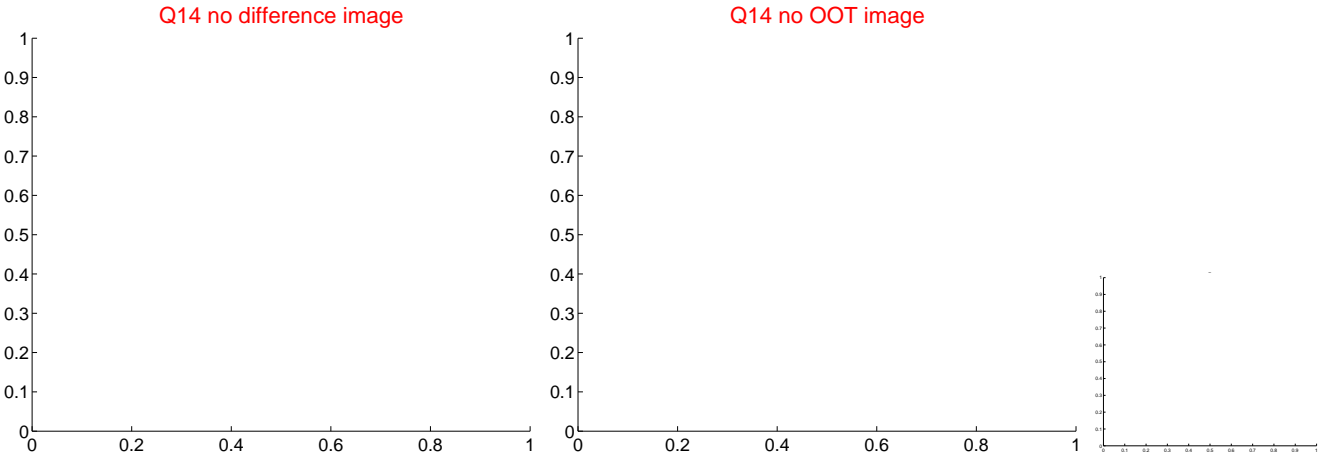
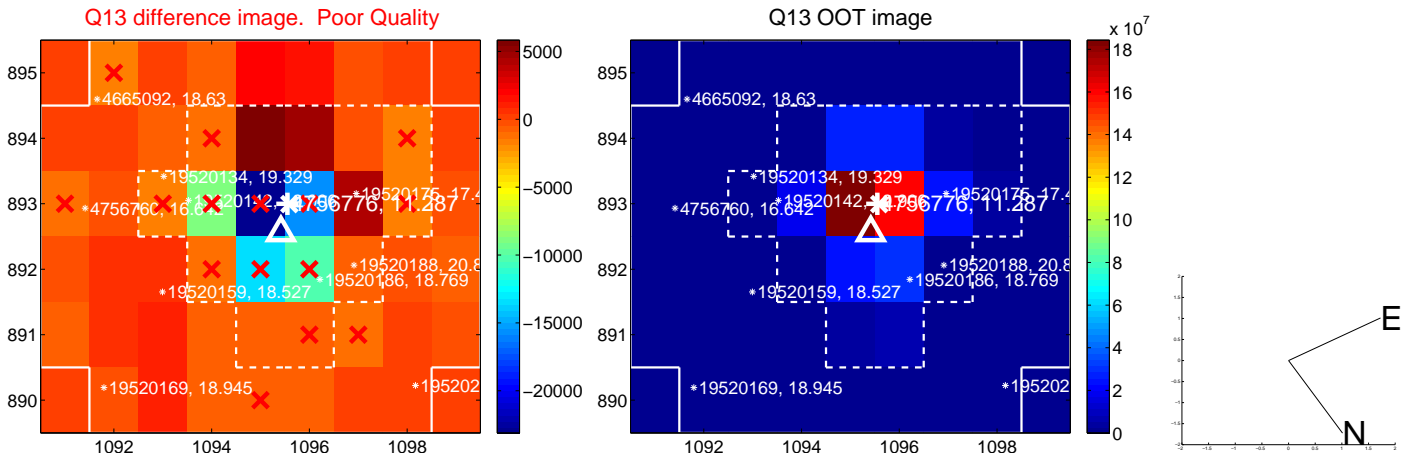
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



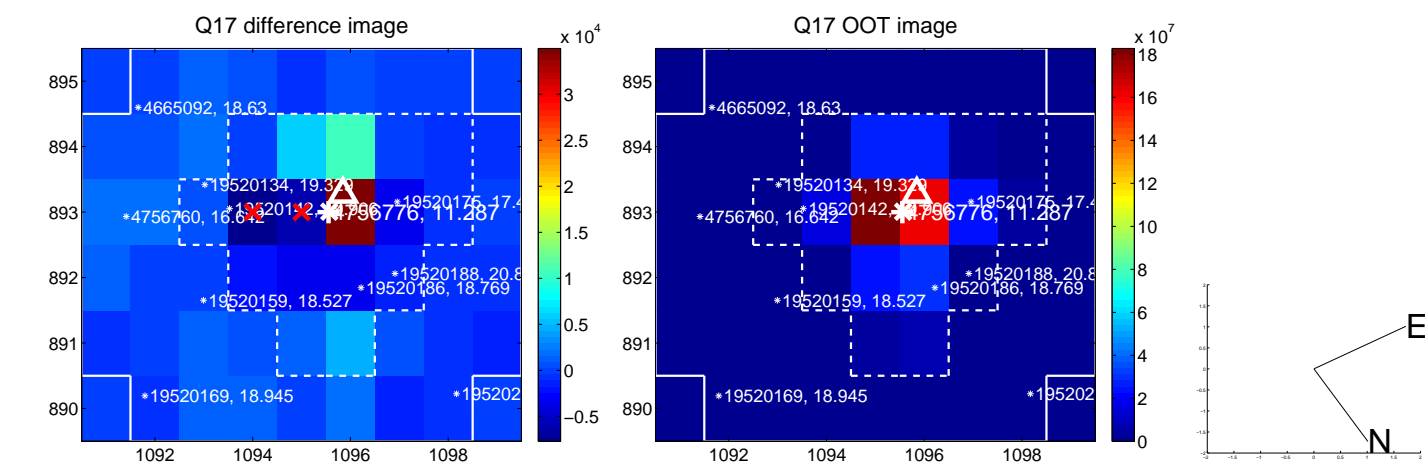
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



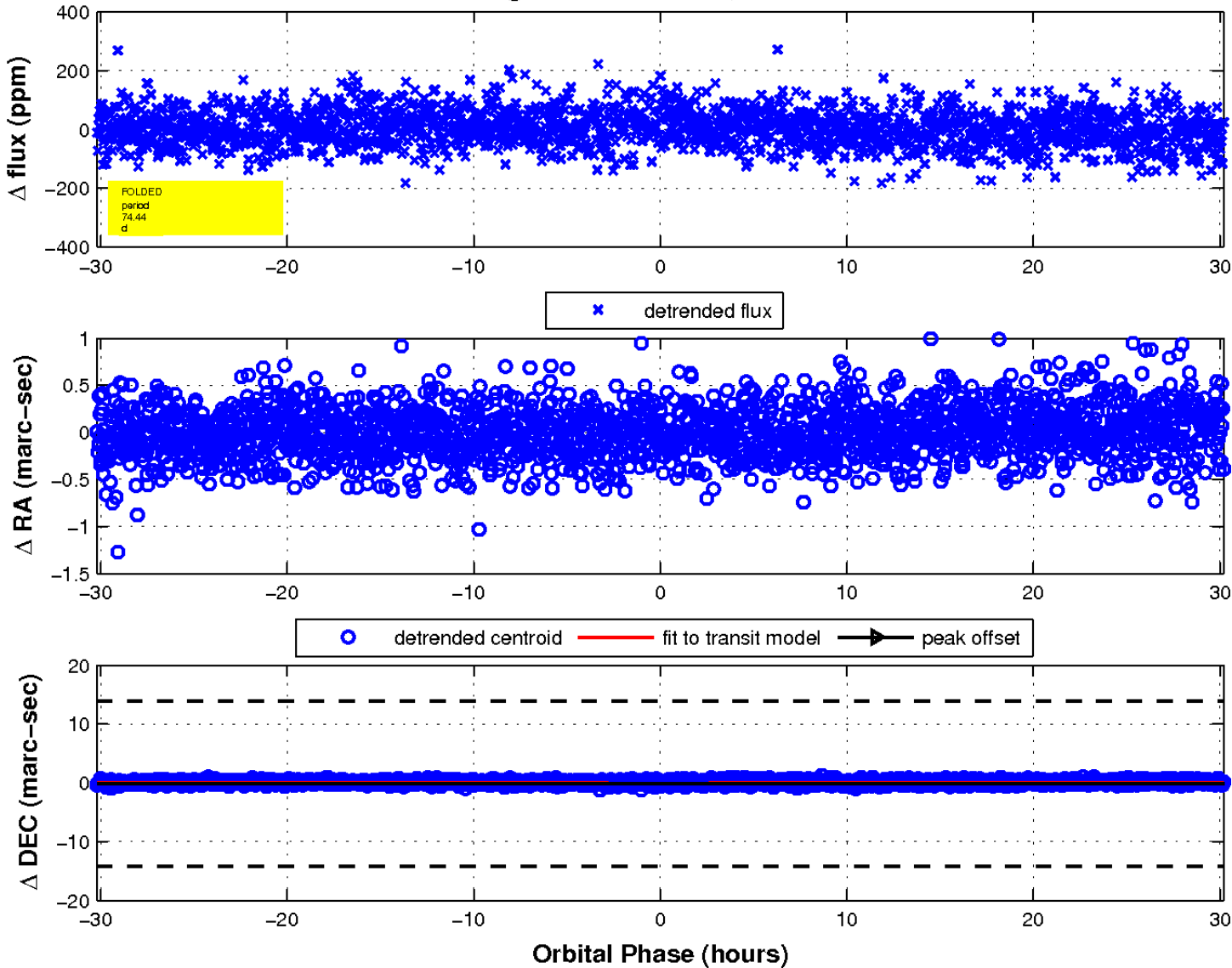
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

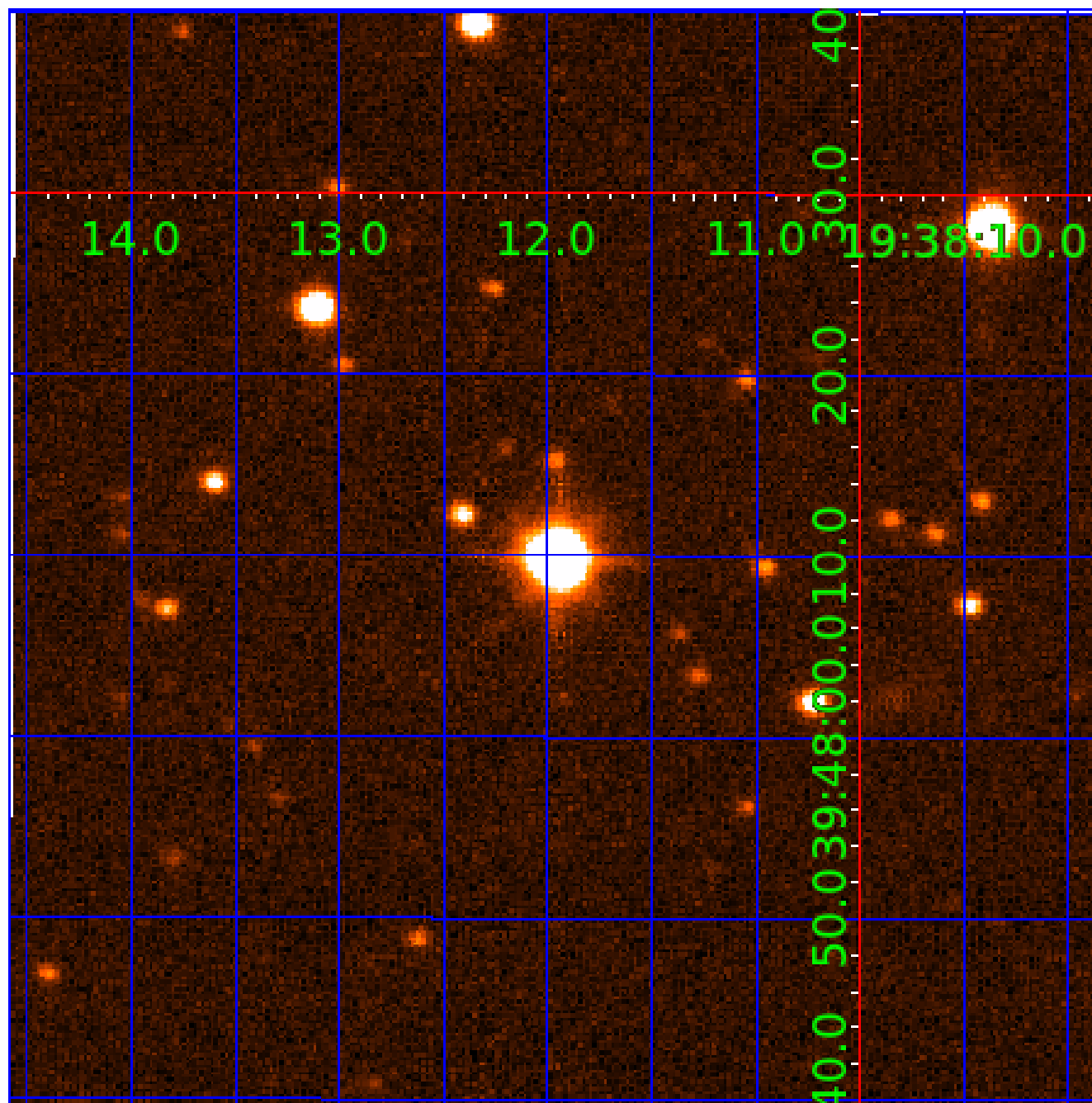


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



KIC 004756776

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})
004756776-01	OBS	No	2.476973	132.998632	8.0	17.034	11.4	9.8	1.76	6677	0.60	3477.99
004756776-02	OBS	No	74.435111	156.819172	200.9	10.079	27.4	15.3	1.76	6677	4.91	37.23
004756776-03	OBS	No	27.083855	149.534697	70.9	5.710	11.9	11.5	1.76	6677	1.70	143.31
004756776-04	OBS	No	28.604106	151.552323	130.4	0.989	9.6	8.8	1.76	6677	2.08	133.25
004756776-05	OBS	No	36.018461	139.320816	84.0	1.980	8.8	9.0	1.76	6677	1.85	97.99
004756776-06	OBS	No	44.362801	141.937107	145.3	1.063	8.3	9.3	1.76	6677	2.63	74.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004756776-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

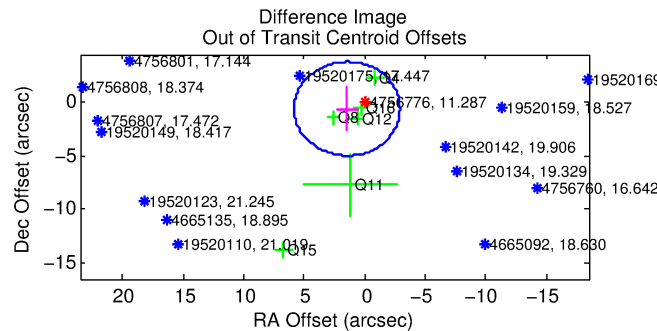
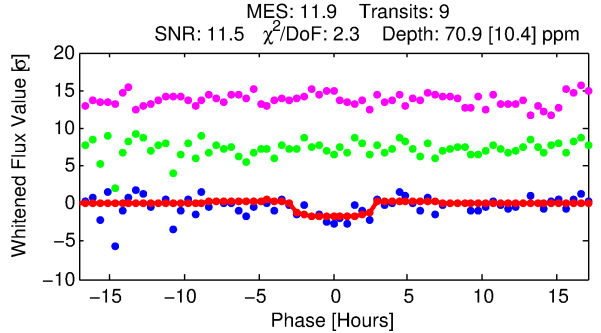
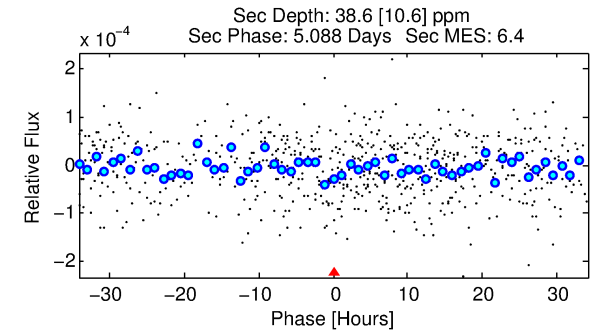
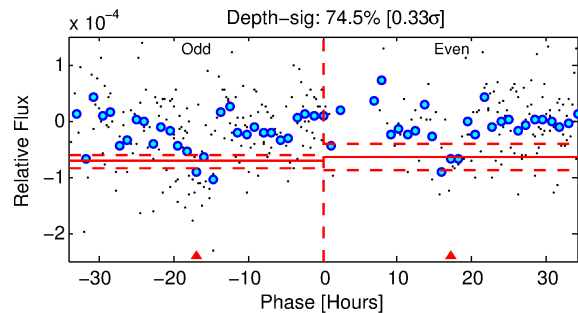
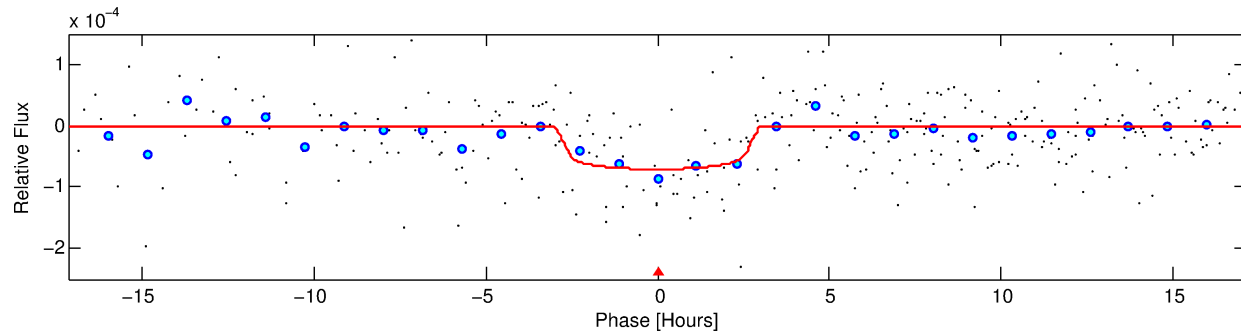
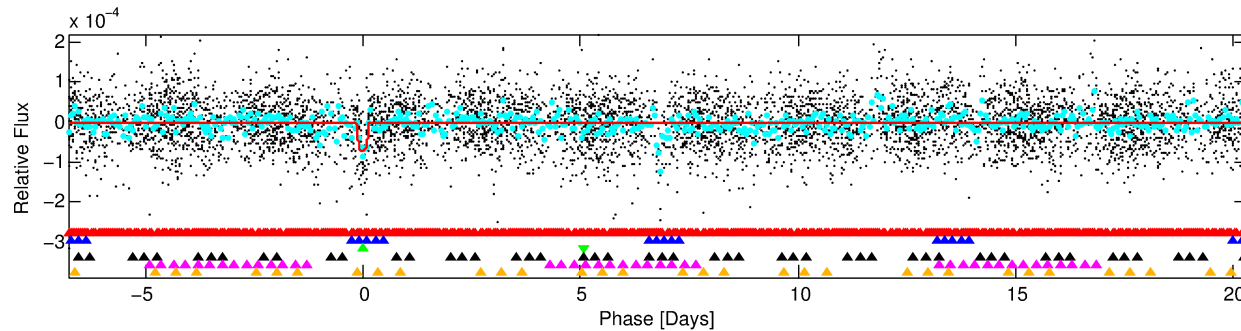
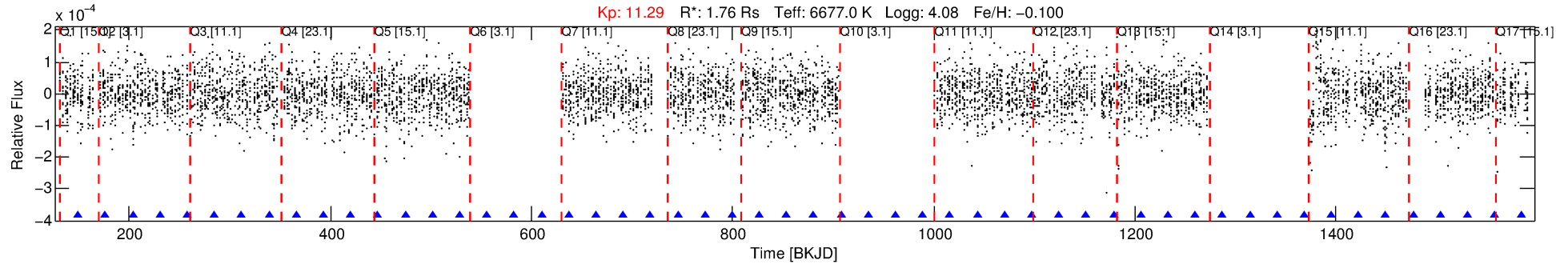
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004756776-03

No Significant Match Found

DV One-Page Summary

KIC: 4756776 Candidate: 3 of 6 Period: 27.084 d



DV Fit Results:

Period = 27.08386 [0.00044] d
Epoch = 149.5347 [0.0112] BKJD
Rp/R* = 0.0089 [0.0043]
a/R* = 18.05 [50.72]
b = 0.88 [0.75]
Seff = 143.31 [64.42]
Teq = 882 [99] K
Rp = 1.70 [0.97] Re
a = 0.1964 [0.0527] AU
Ag = 282.56 [310.59] [0.91 σ]
Teffp = 5593 [1441] K [3.26 σ]

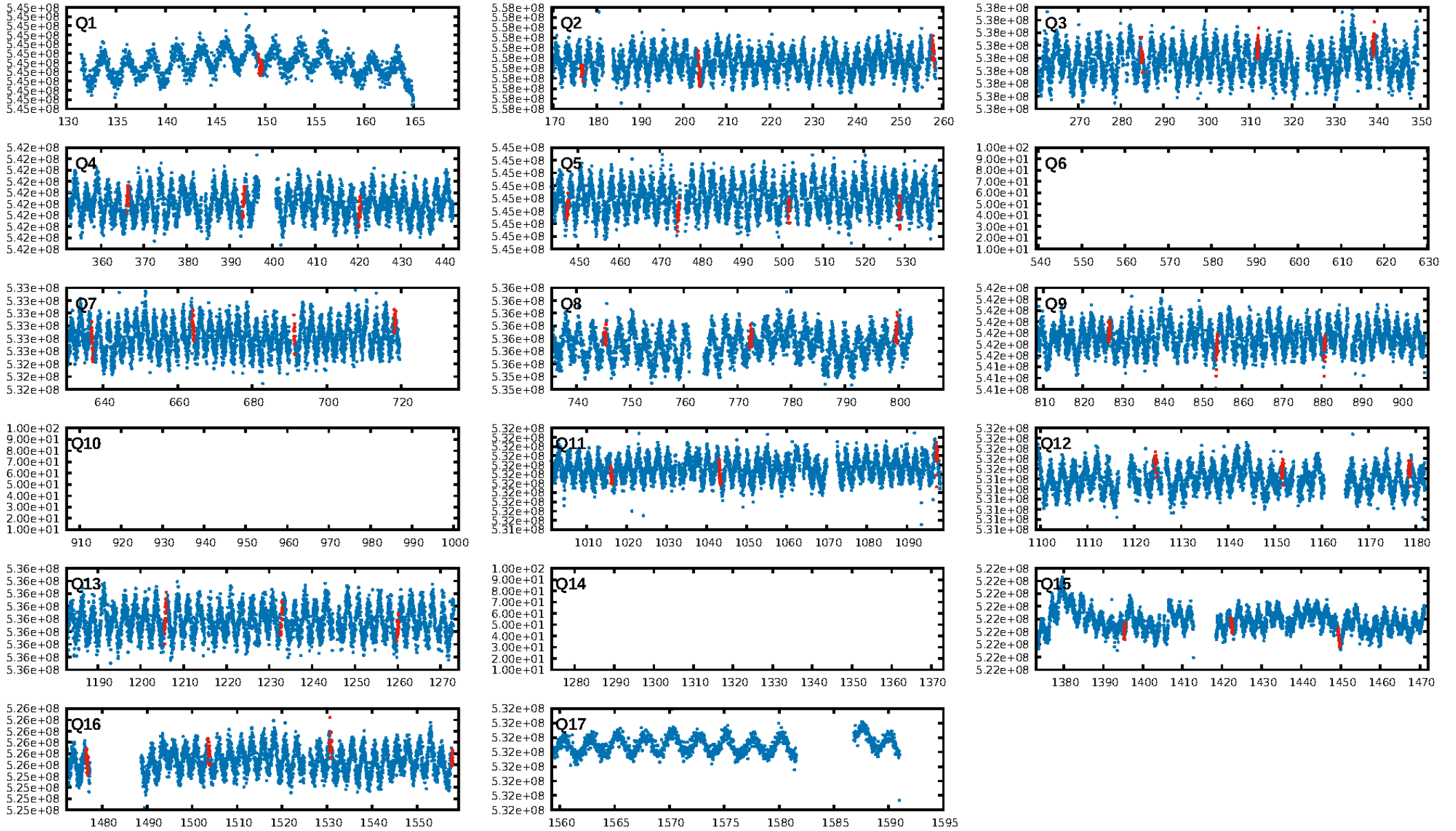
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [32.87 σ]
LongPeriod-sig: 100.0% [6.30 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 87.6%
Bootstrap-pfa: 2.52e-11
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -1.292
Centroid-sig: N/A
Centroid-so: 0.764 arcsec [1.26 σ]
OotOffset-rm: 1.587 arcsec [1.09 σ]
OotOffset-st: 0/2/4/0 [6]
KicOffset-rm: 1.583 arcsec [0.91 σ]
KicOffset-st: 0/2/4/0 [6]
DiffImageQuality-fgm: 0.00 [0/6]
DiffImageOverlap-fno: 0.46 [6/13]

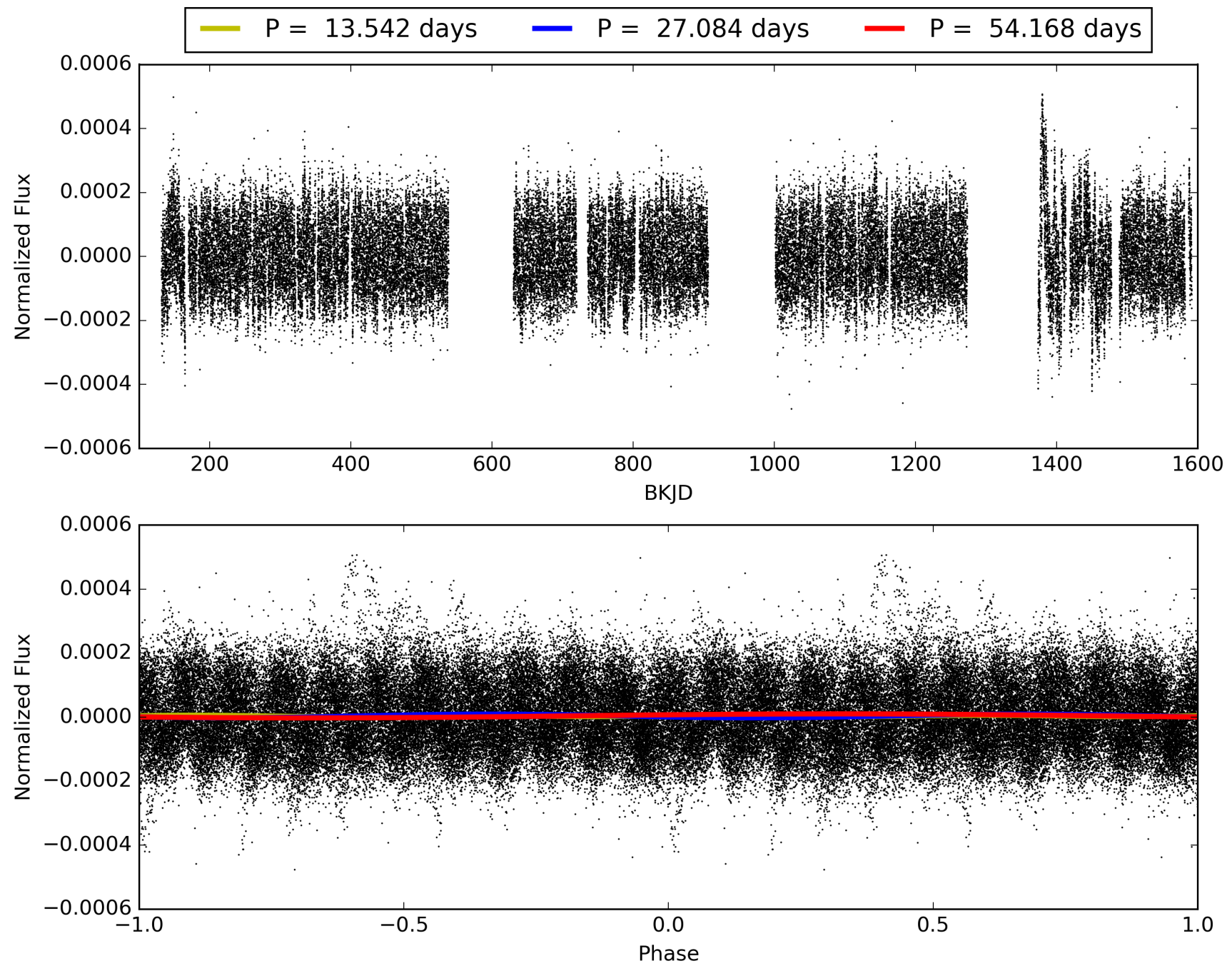
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:57:32 Z

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

TCE 004756776-03, PDC Light Curves

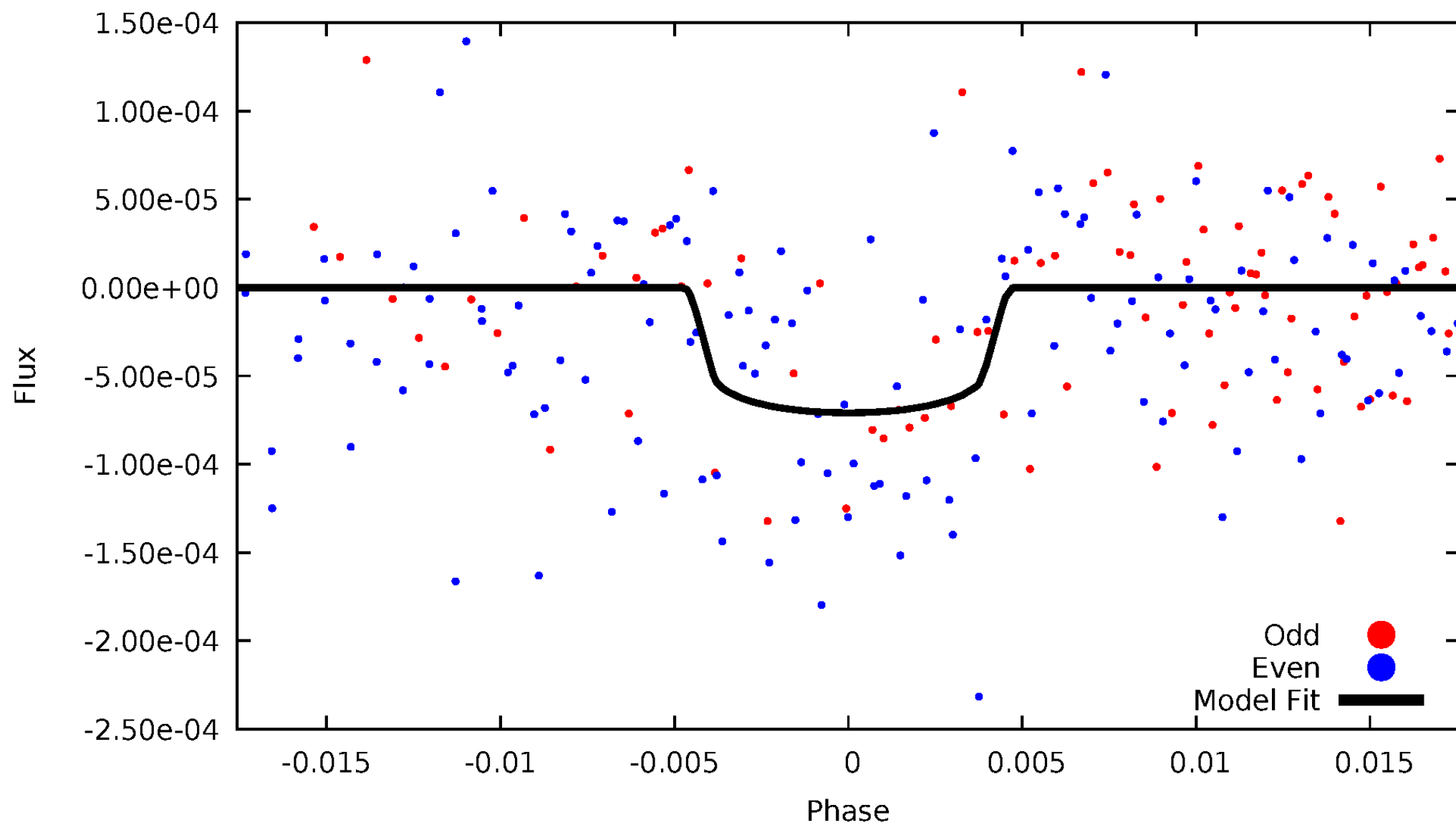


TCE 004756776-03



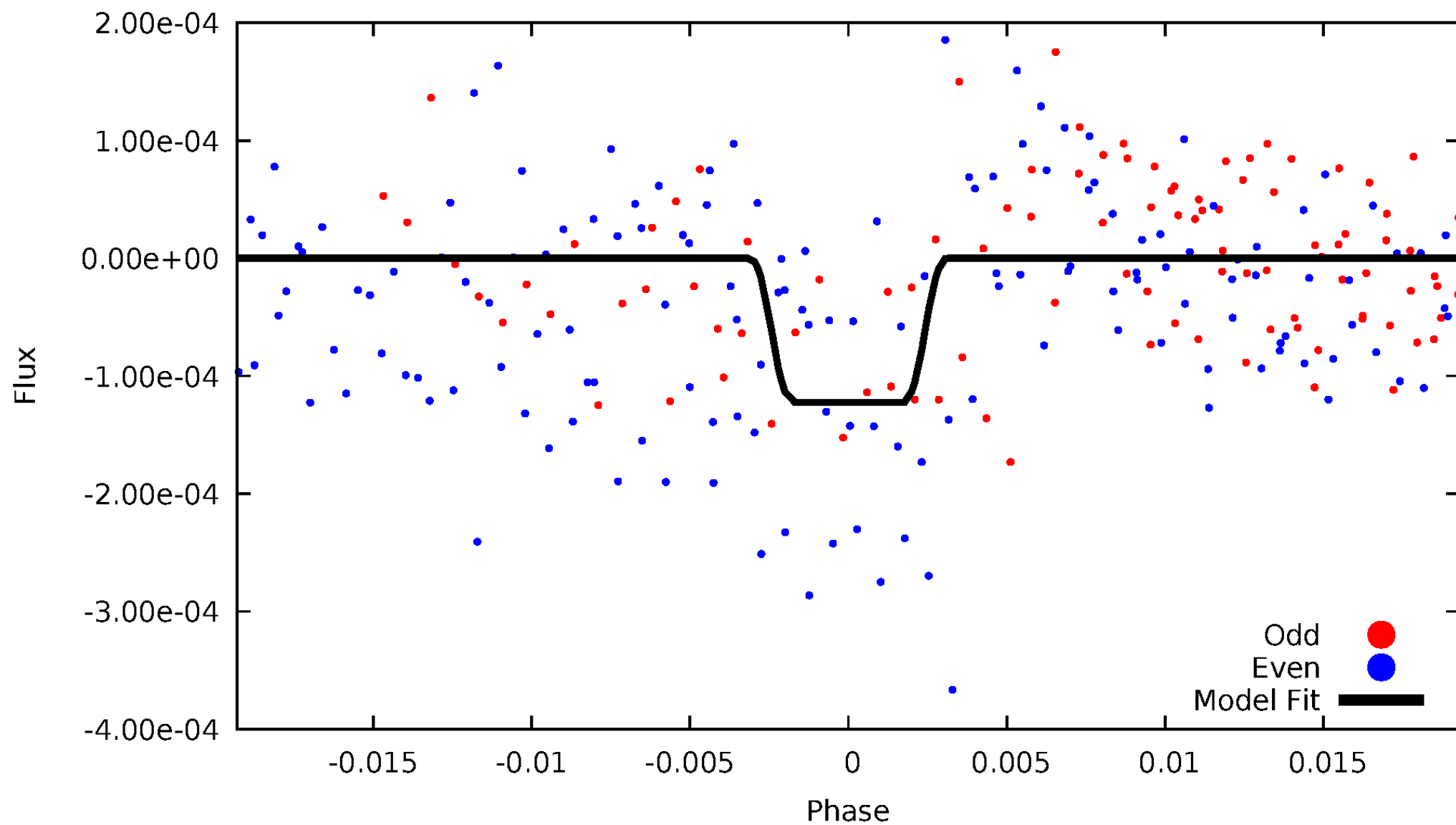
DV Odd/Even

TCE 004756776-03



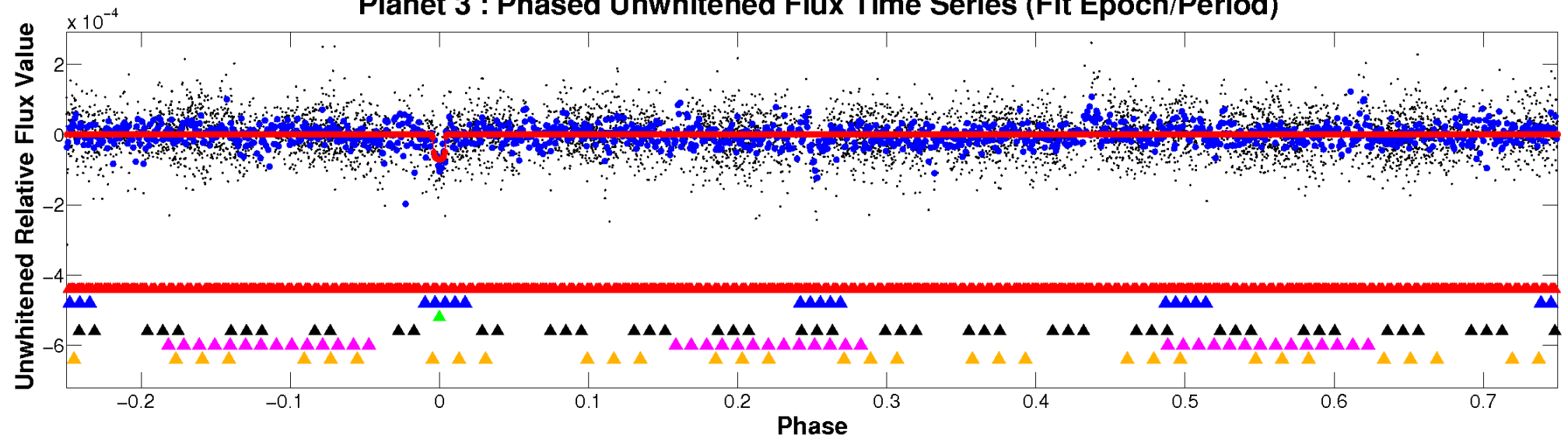
ALT Odd/Even

TCE 004756776-03

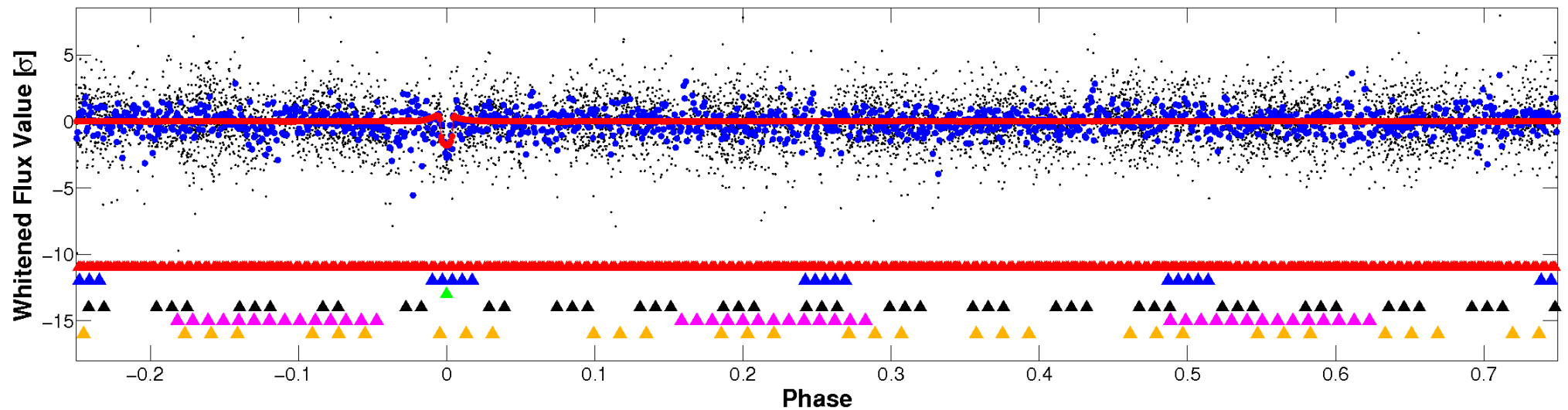


Non-Whitened Vs. Whitened Light Curve

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

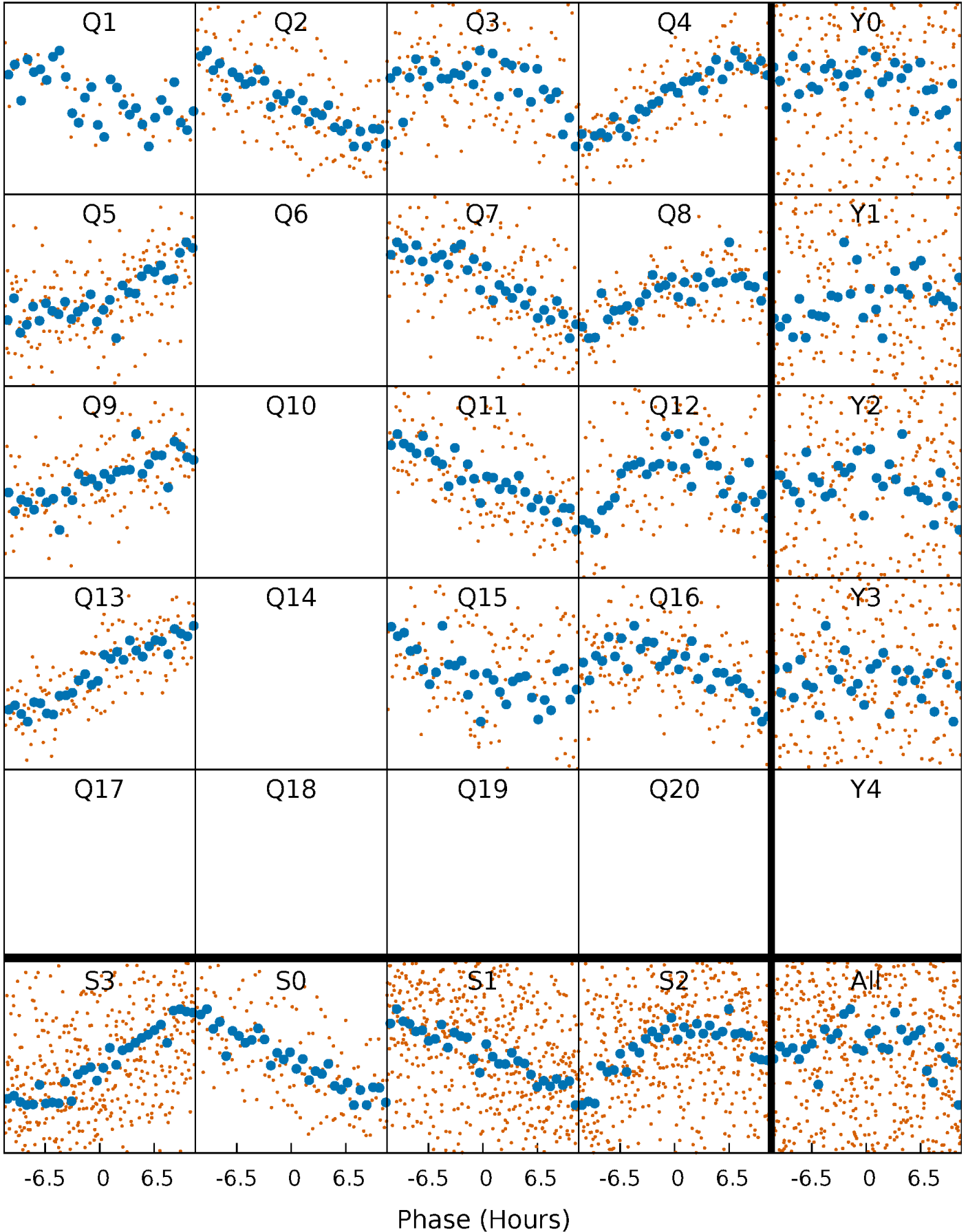


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



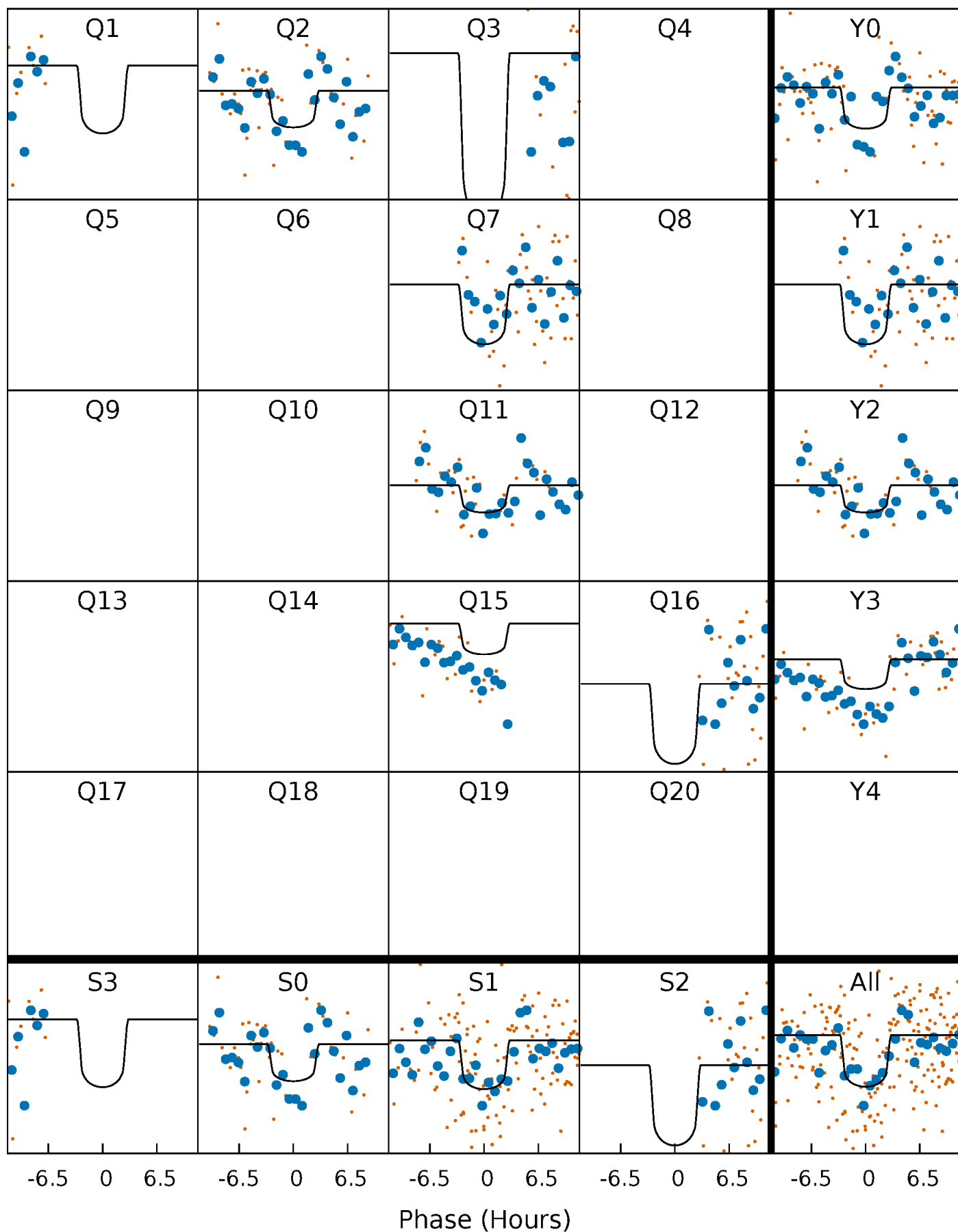
PDC Quarter-Phased Transit Curves

TCE 004756776-03 P= 27.083855 Days $T_0=149.534697$ (BKJD)



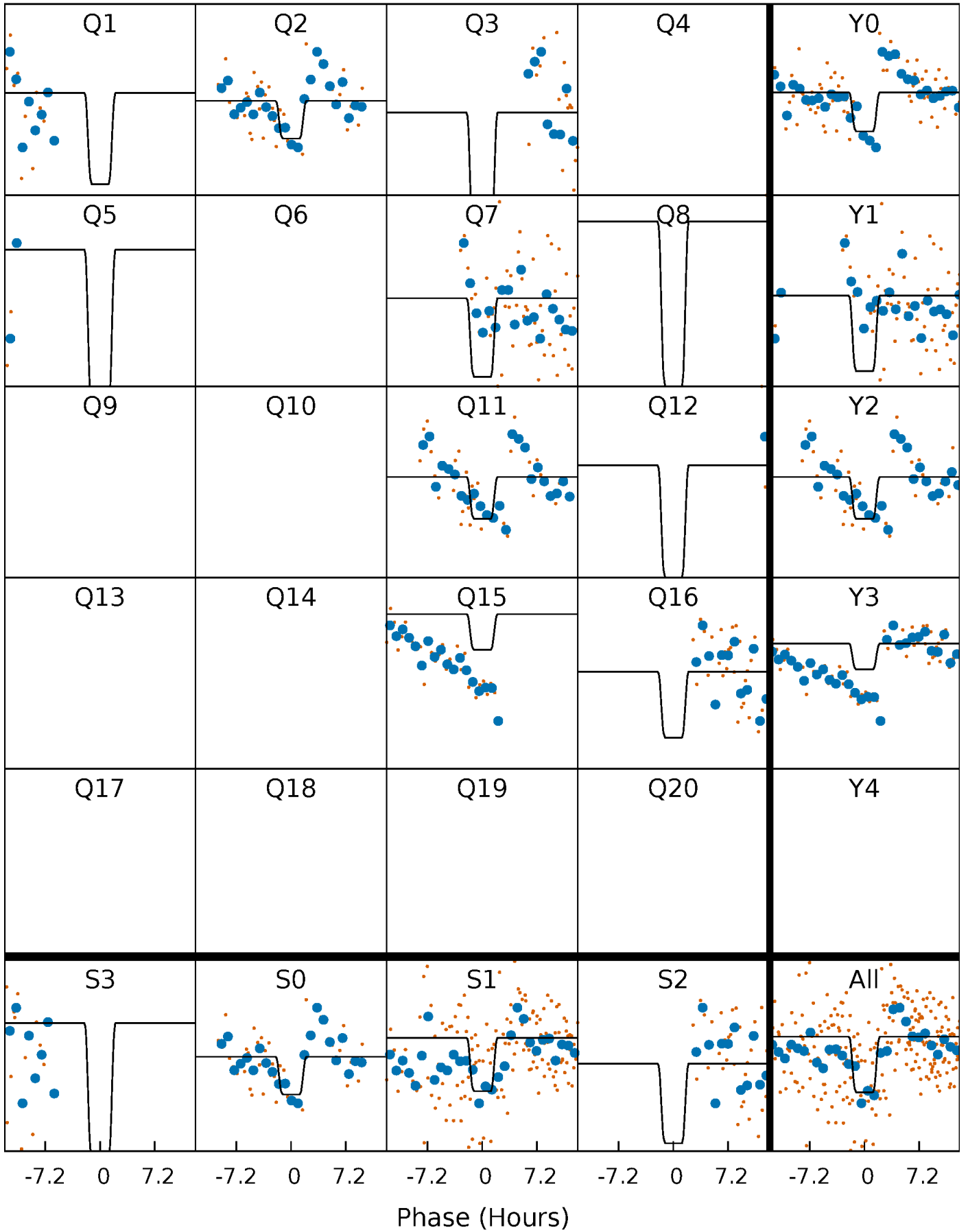
DV Quarter-Phased Transit Curves

TCE 004756776-03 P= 27.083855 Days $T_0=149.534697$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

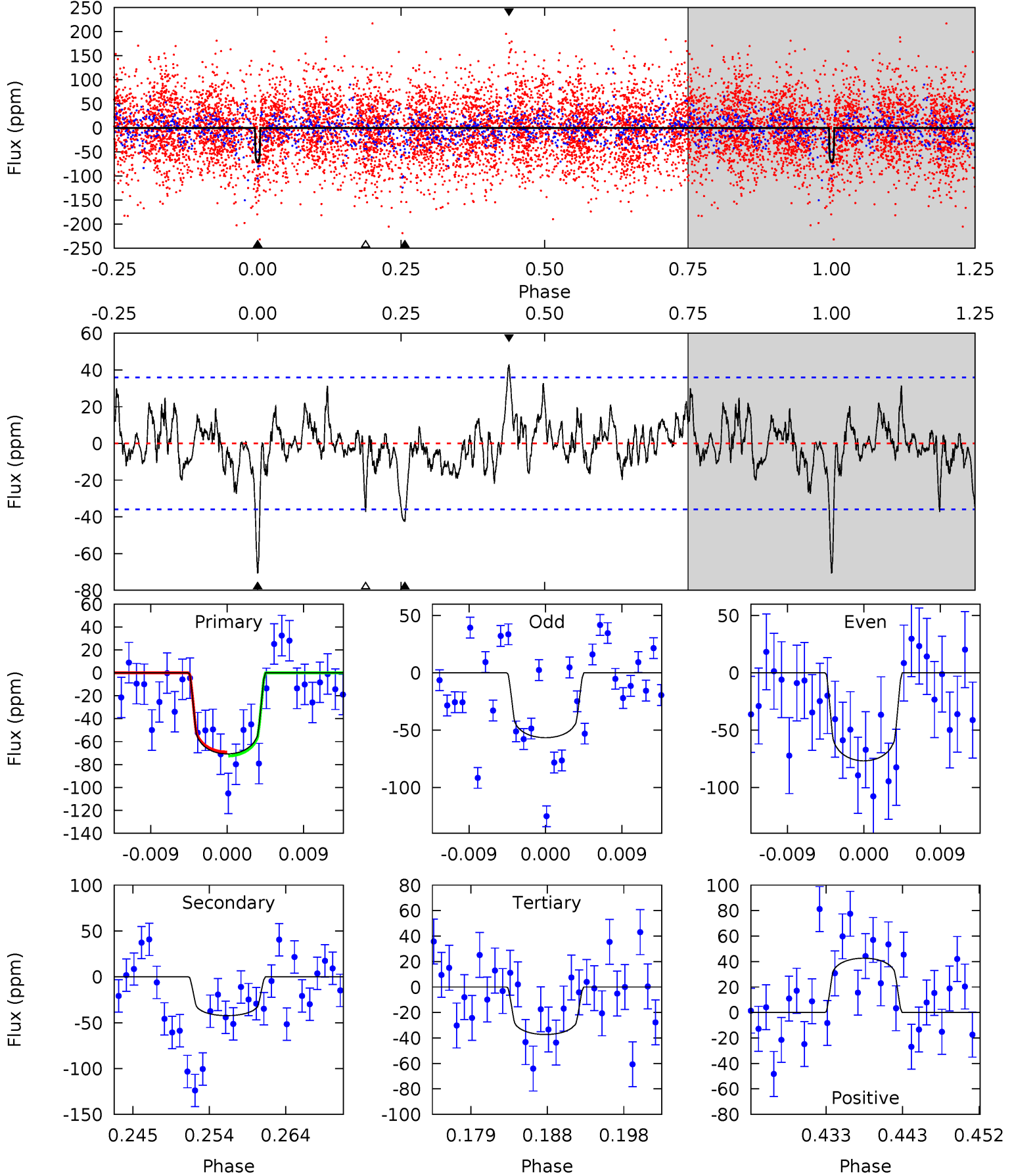
TCE 004756776-03 P= 27.084518 Days $T_0=149.515610$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-03, P = 27.083855 Days, E = 122.450842 Days

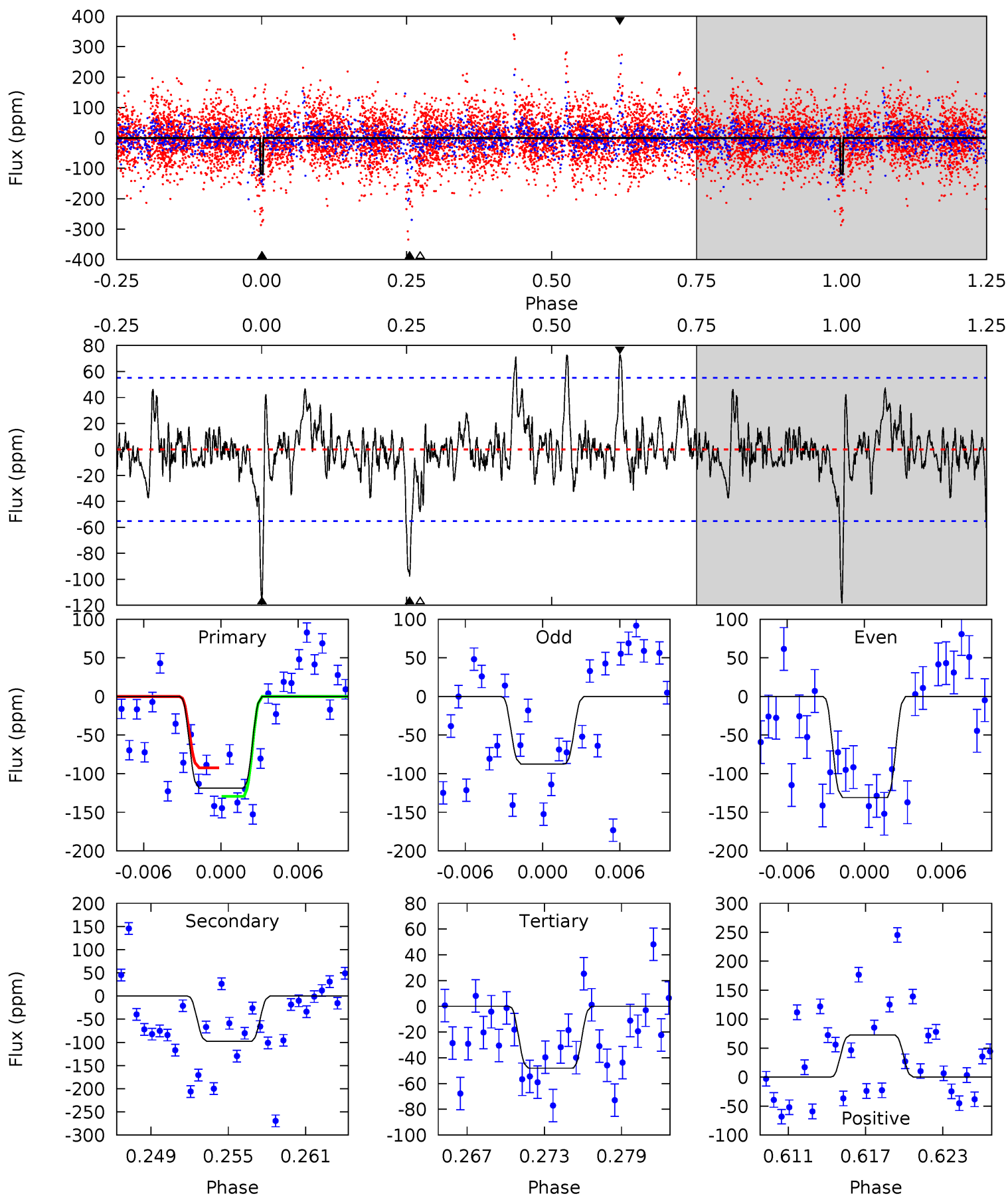
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.93	5.94	5.23	5.98	5.04	2.60	1.50	4.70	3.94	0.71	-0.05	1.31	1.39	0.38	0.25



Alt Model-Shift Uniqueness Test

004756776-03, P = 27.084518 Days, E = 122.431092 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	9.09	4.46	6.78	5.13	2.75	1.49	6.56	4.24	4.63	2.31	1.83	1.28	0.38	1.68



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-42 ± 7	$1.66^{+0.97}_{-0.79}$	1220^{+106}_{-103}	5647^{+2436}_{-955}	322^{+825}_{-193}
Alt.	-98 ± 11	$2.08^{+0.90}_{-0.87}$	1217^{+104}_{-109}	6232^{+2015}_{-930}	477^{+899}_{-250}

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

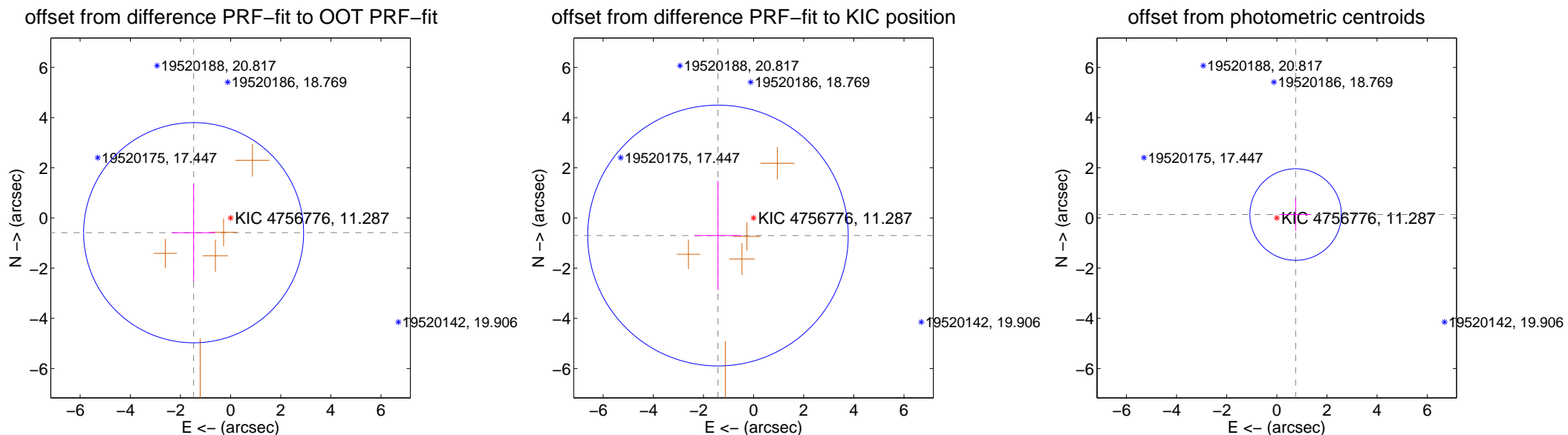
DV Centroid Data

Supplemental centroid analysis for 004756776-03. **Kepler magnitude: 11.29.** Transit SNR 11.53

There are 0 quarters with good PRF difference image offsets

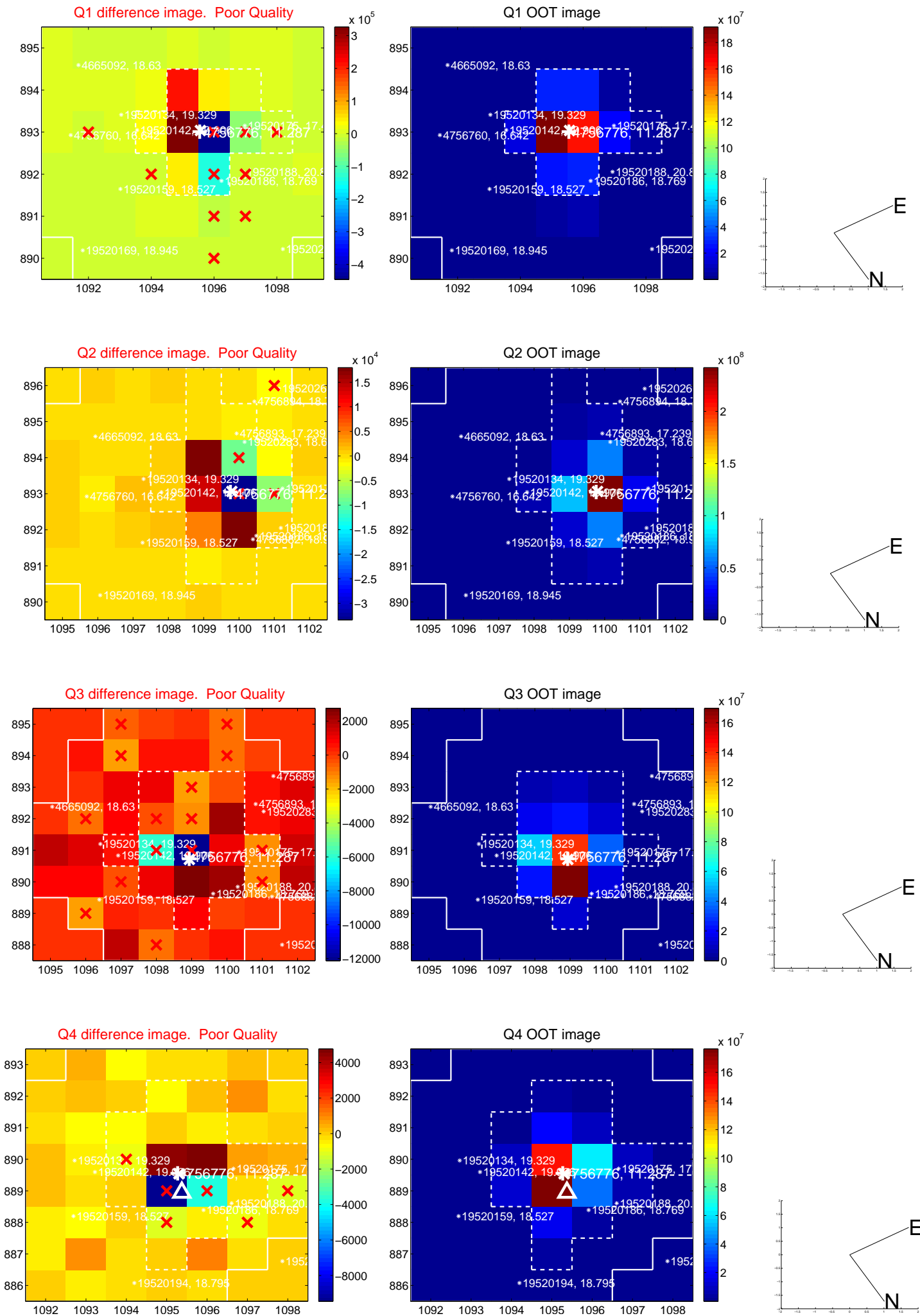
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.587 ± 1.463	1.09	1.475 ± 0.869	-0.587 ± 1.961
PRF-fit source offset from KIC position	1.583 ± 1.732	0.91	1.420 ± 0.939	-0.699 ± 2.177
photometric centroid source offset	0.76 ± 0.61	1.26	-0.75 ± 0.61	0.14 ± 0.65

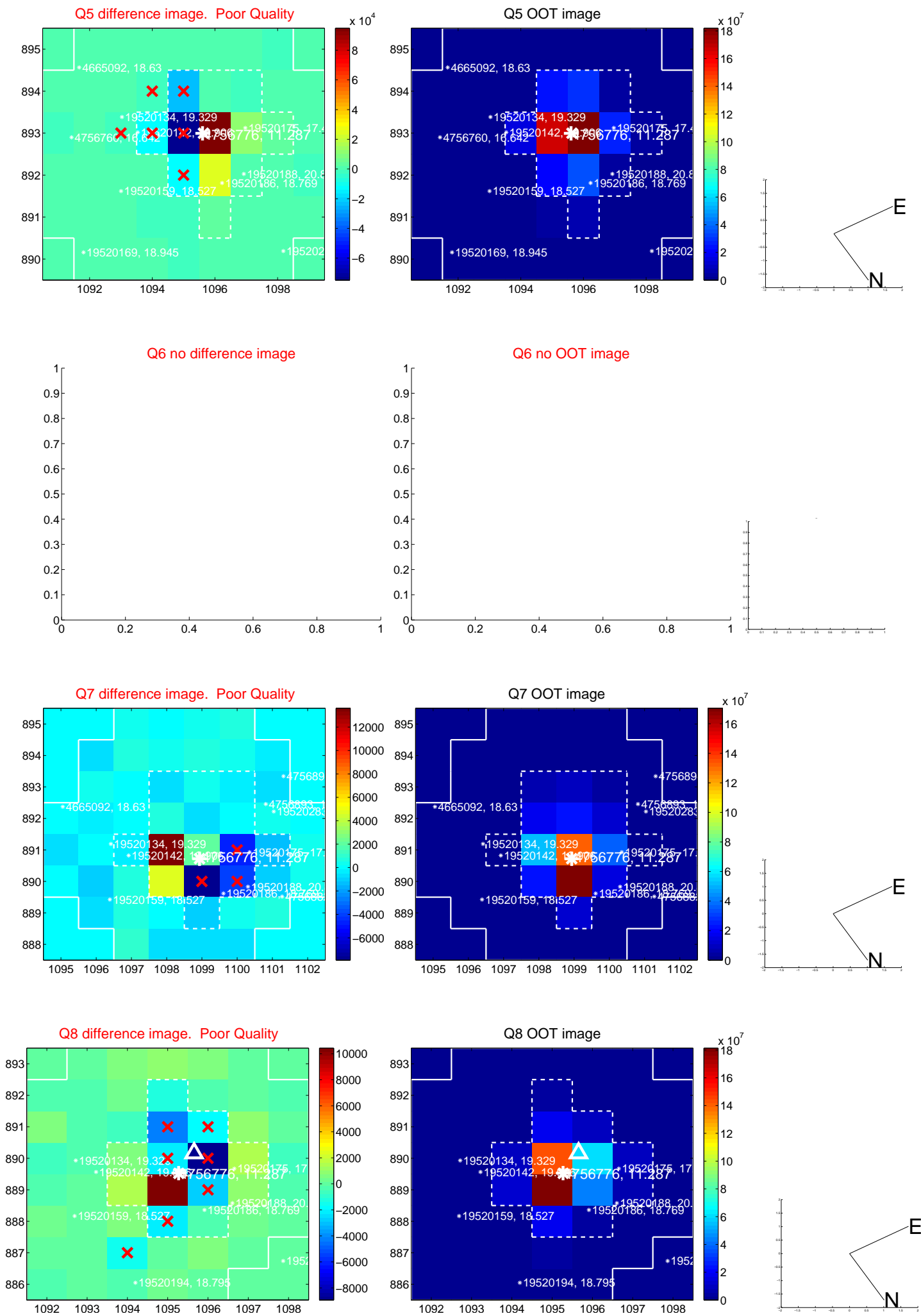


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

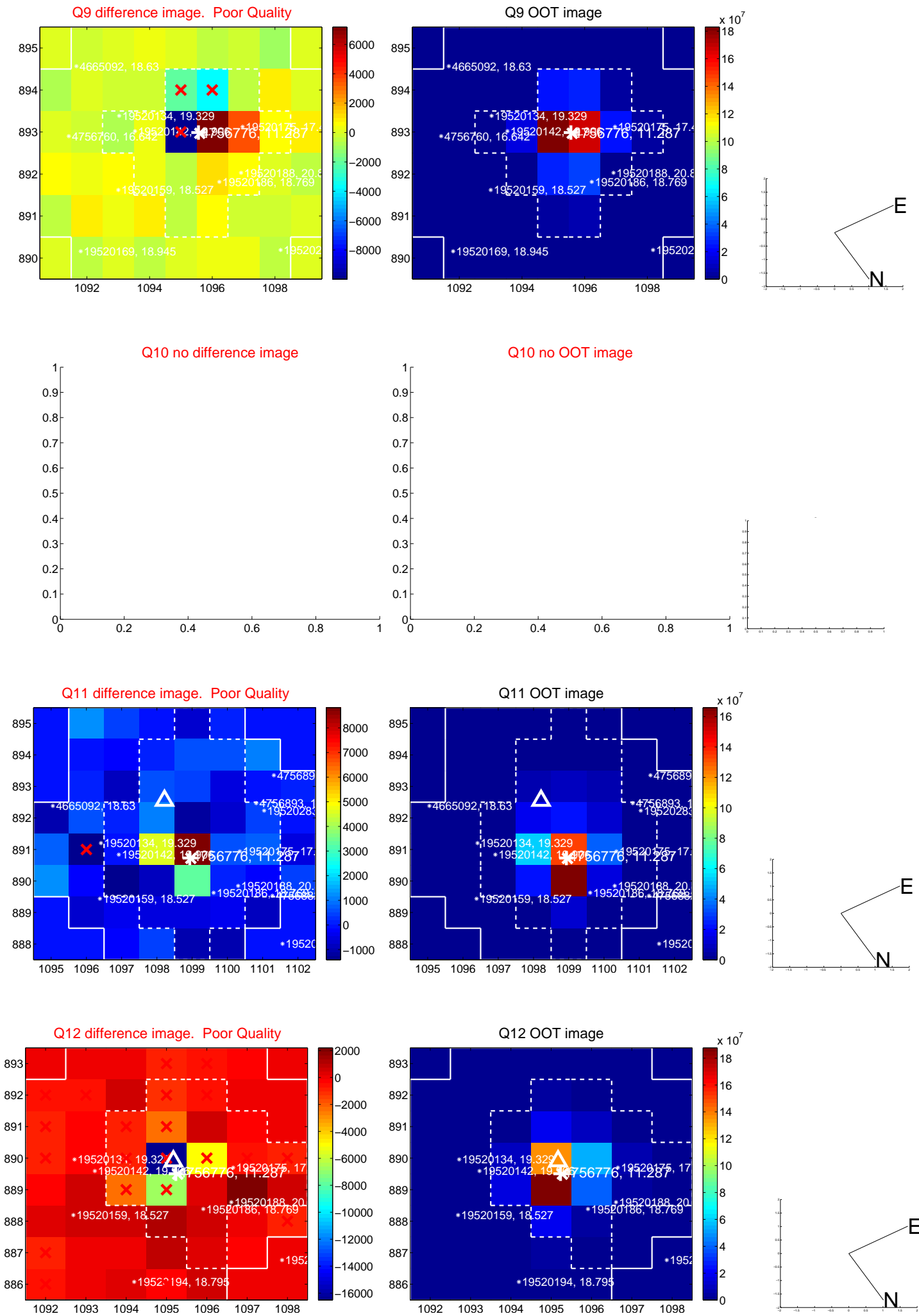
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



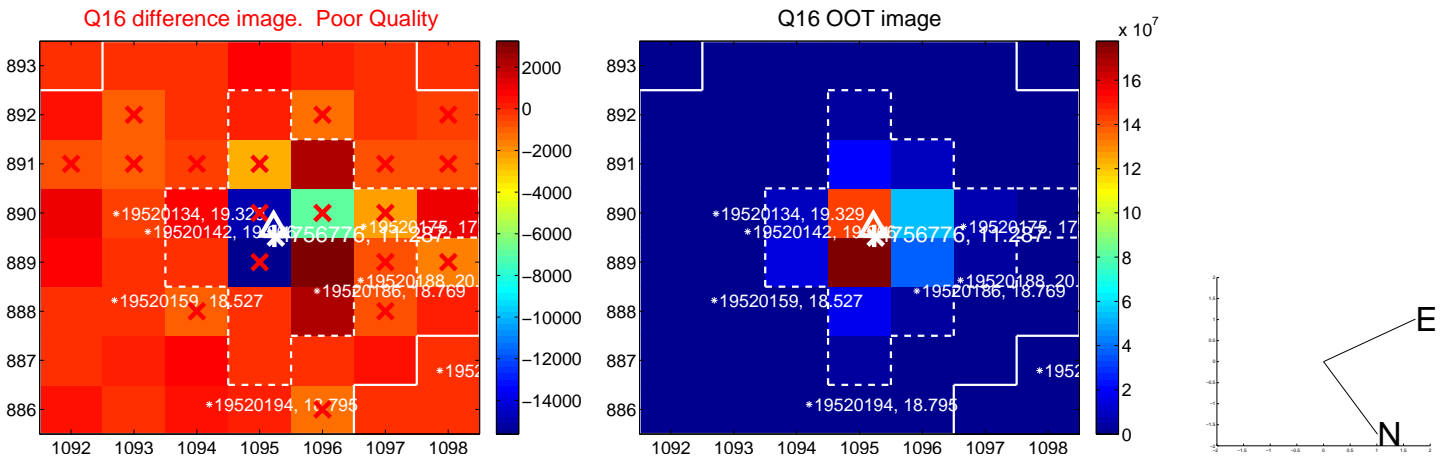
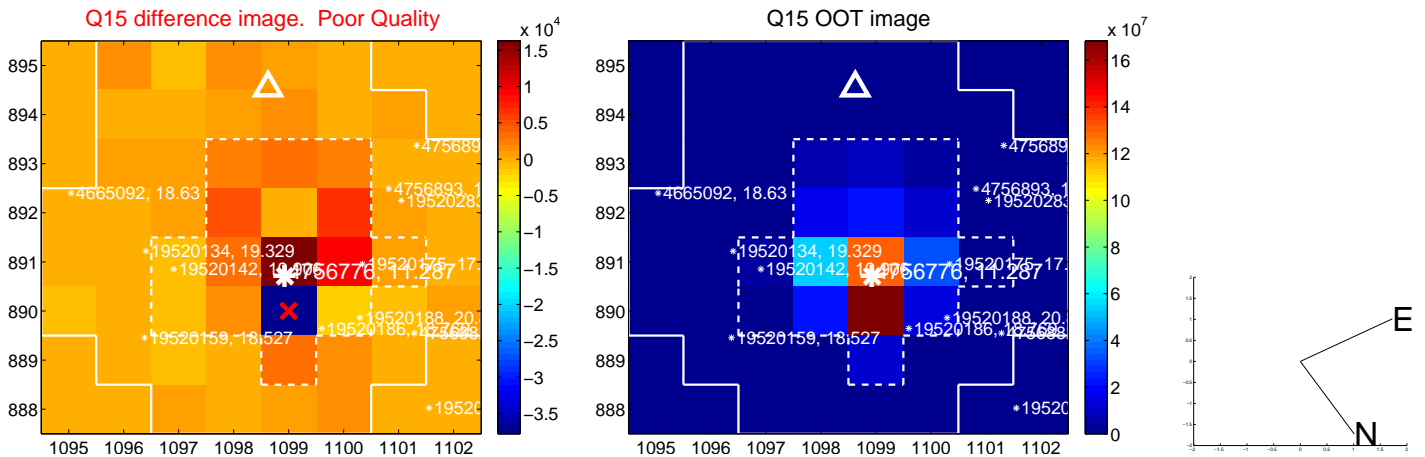
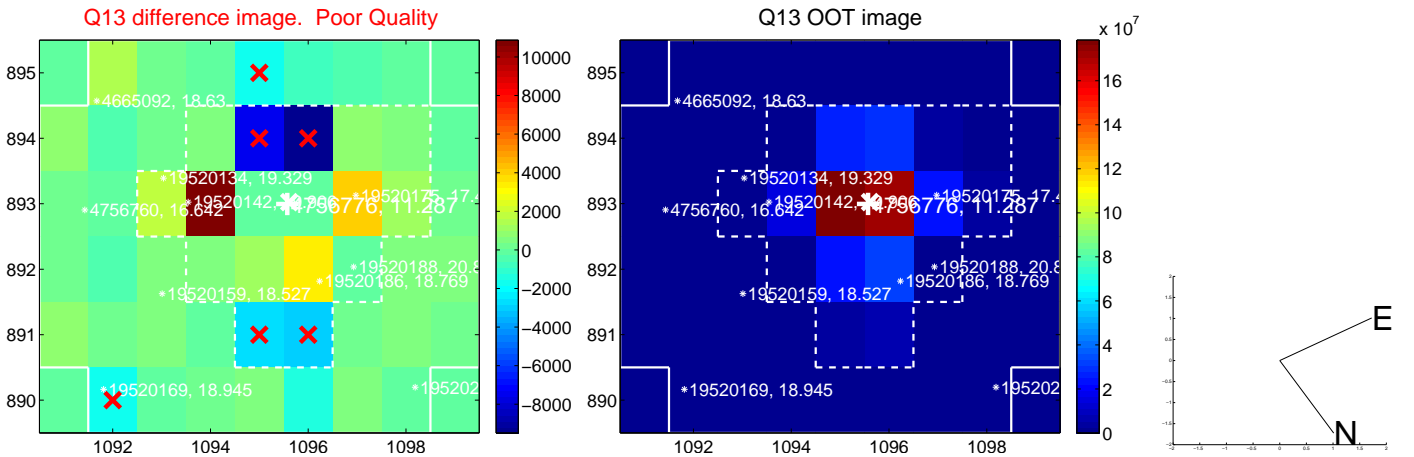
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



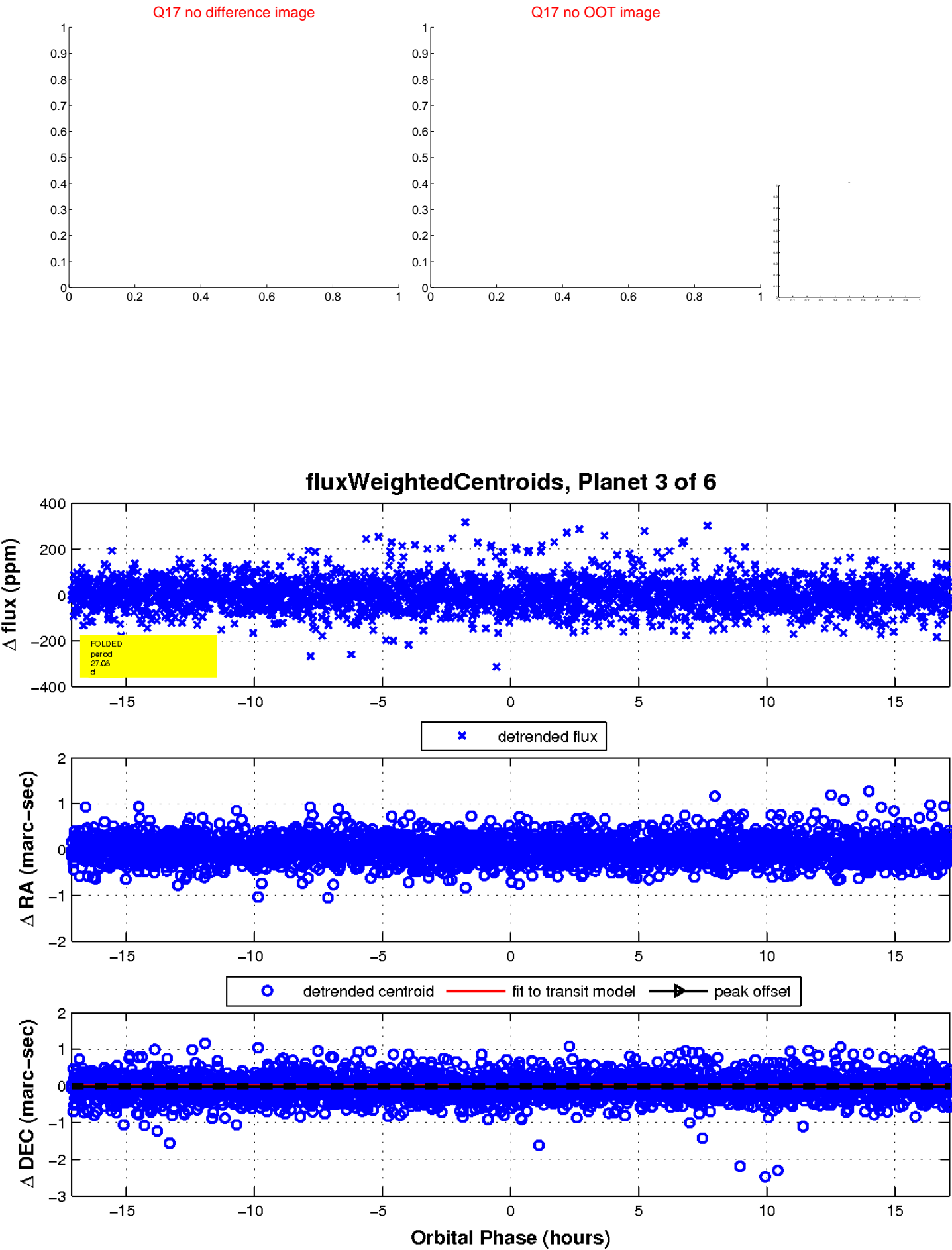
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

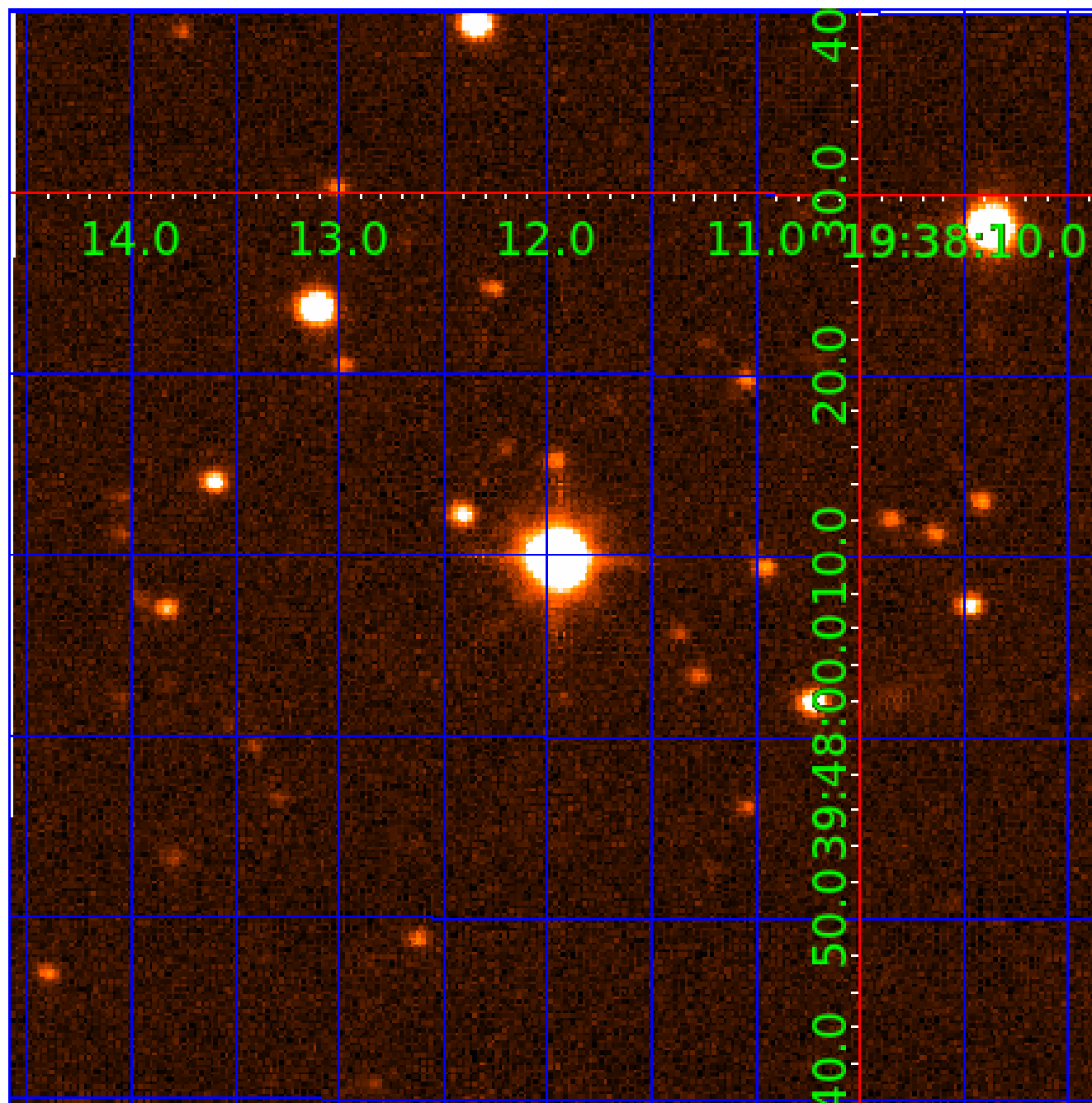


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004756776

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})
004756776-01	OBS	No	2.476973	132.998632	8.0	17.034	11.4	9.8	1.76	6677	0.60	3477.99
004756776-02	OBS	No	74.435111	156.819172	200.9	10.079	27.4	15.3	1.76	6677	4.91	37.23
004756776-03	OBS	No	27.083855	149.534697	70.9	5.710	11.9	11.5	1.76	6677	1.70	143.31
004756776-04	OBS	No	28.604106	151.552323	130.4	0.989	9.6	8.8	1.76	6677	2.08	133.25
004756776-05	OBS	No	36.018461	139.320816	84.0	1.980	8.8	9.0	1.76	6677	1.85	97.99
004756776-06	OBS	No	44.362801	141.937107	145.3	1.063	8.3	9.3	1.76	6677	2.63	74.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004756776-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

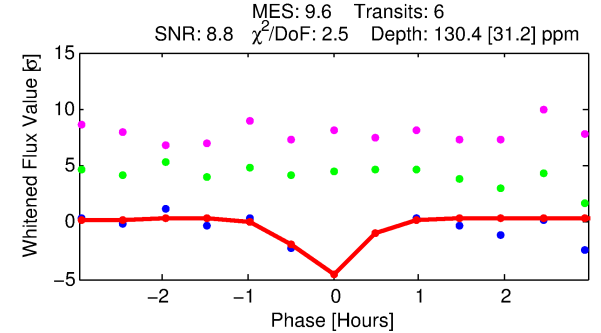
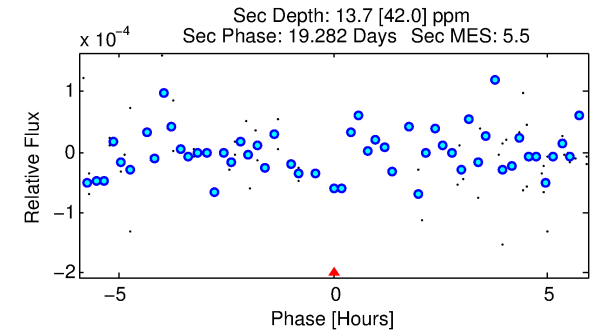
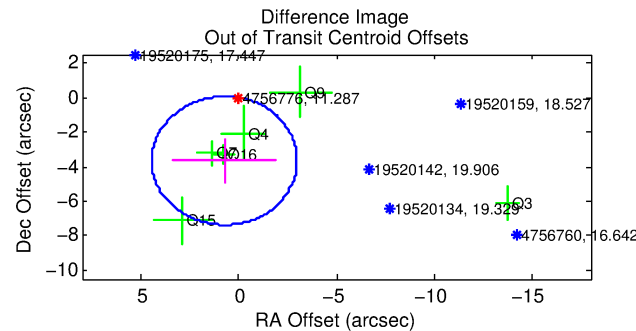
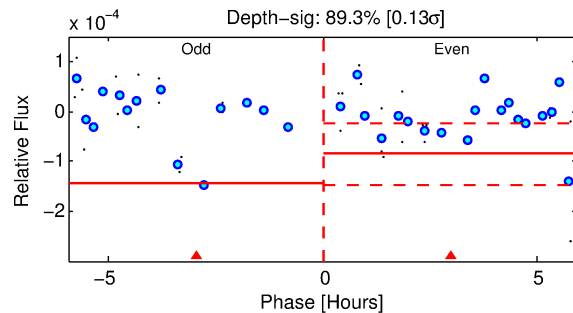
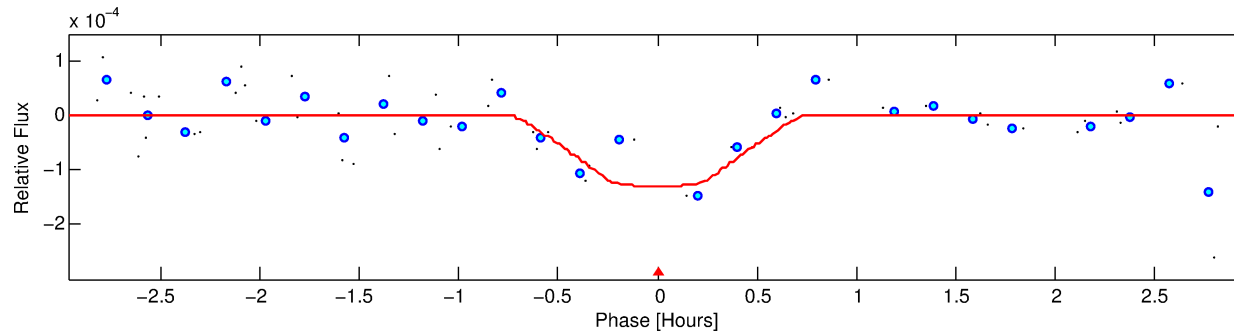
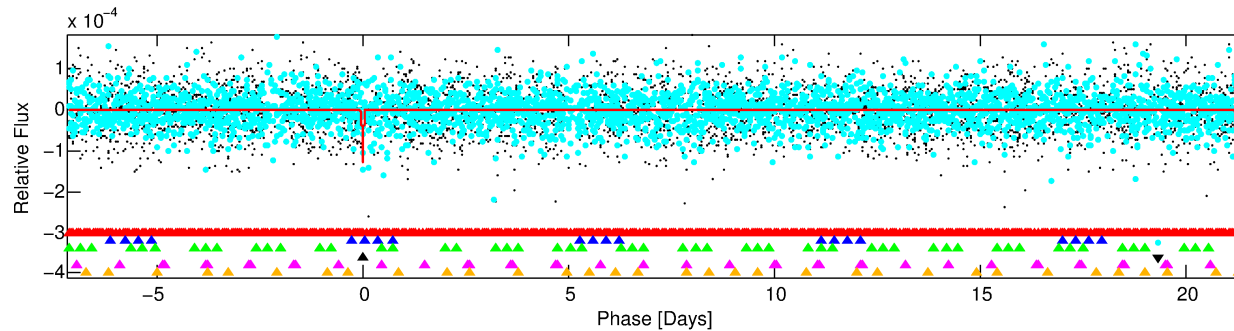
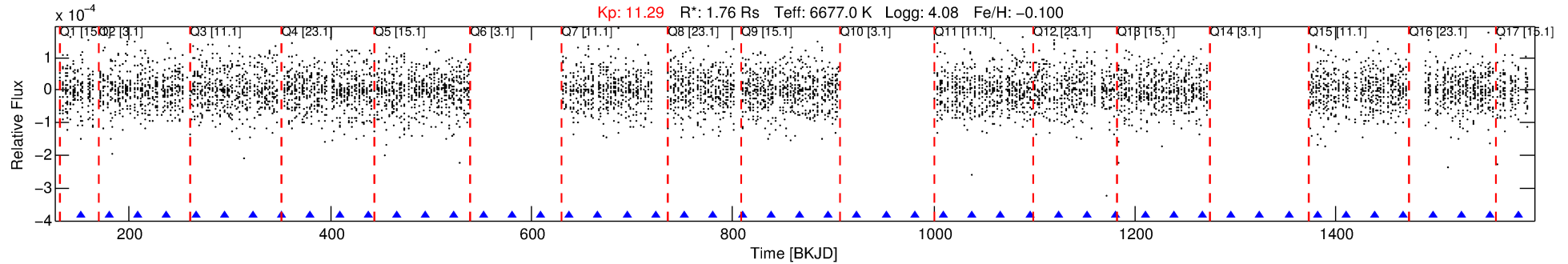
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004756776-04

No Significant Match Found

DV One-Page Summary

KIC: 4756776 Candidate: 4 of 6 Period: 28.604 d



DV Fit Results:

Period = 28.60411 [0.00028] d
Epoch = 151.5523 [0.0044] BKJD
Rp/R* = 0.0108 [0.0224]
a/R* = 202.10 [2172.10]
b = 0.43 [21.08]
Seff = 133.25 [59.89]
Teq = 866 [97] K
Rp = 2.08 [4.35] Re
a = 0.2037 [0.0546] AU
Ag = 72.38 [373.77] [0.19 σ]
Teff = 3907 [5030] K [0.60 σ]

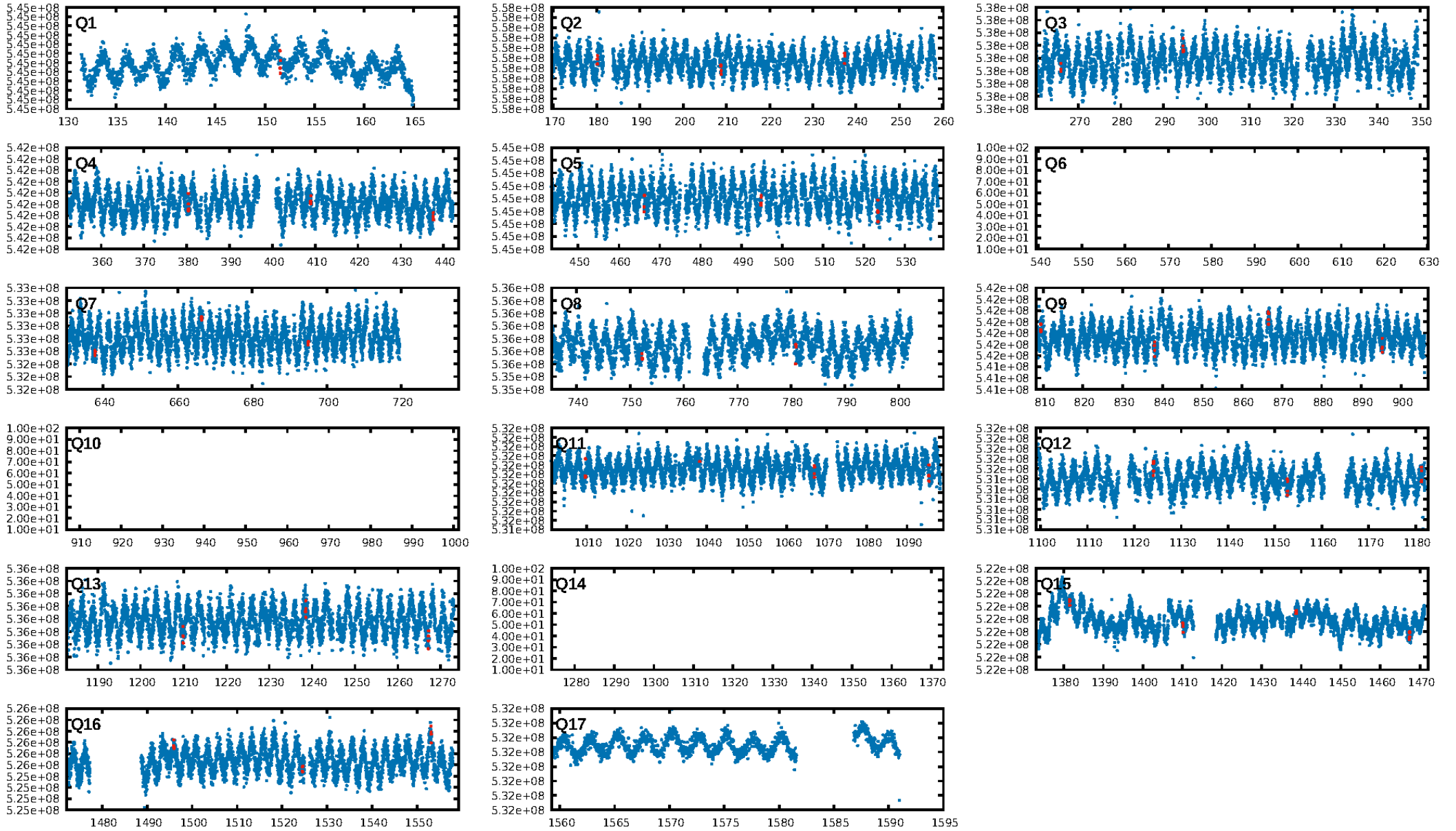
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.30 σ]
LongPeriod-sig: 100.0% [80.40 σ]
ModelChiSquare2-sig: 42.3%
ModelChiSquareGof-sig: 89.5%
Bootstrap-pfa: 1.46e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.535
Centroid-sig: N/A
Centroid-so: 0.364 arcsec [0.50 σ]
OotOffset-rm: 3.729 arcsec [3.01 σ]
KicOffset-rm: 3.835 arcsec [3.86 σ]
OotOffset-st: 0/3/2/1 [6]
KicOffset-st: 0/3/2/1 [6]
DiffImageQuality-fgm: 0.00 [0/6]
DiffImageOverlap-fno: 1.00 [12/12]

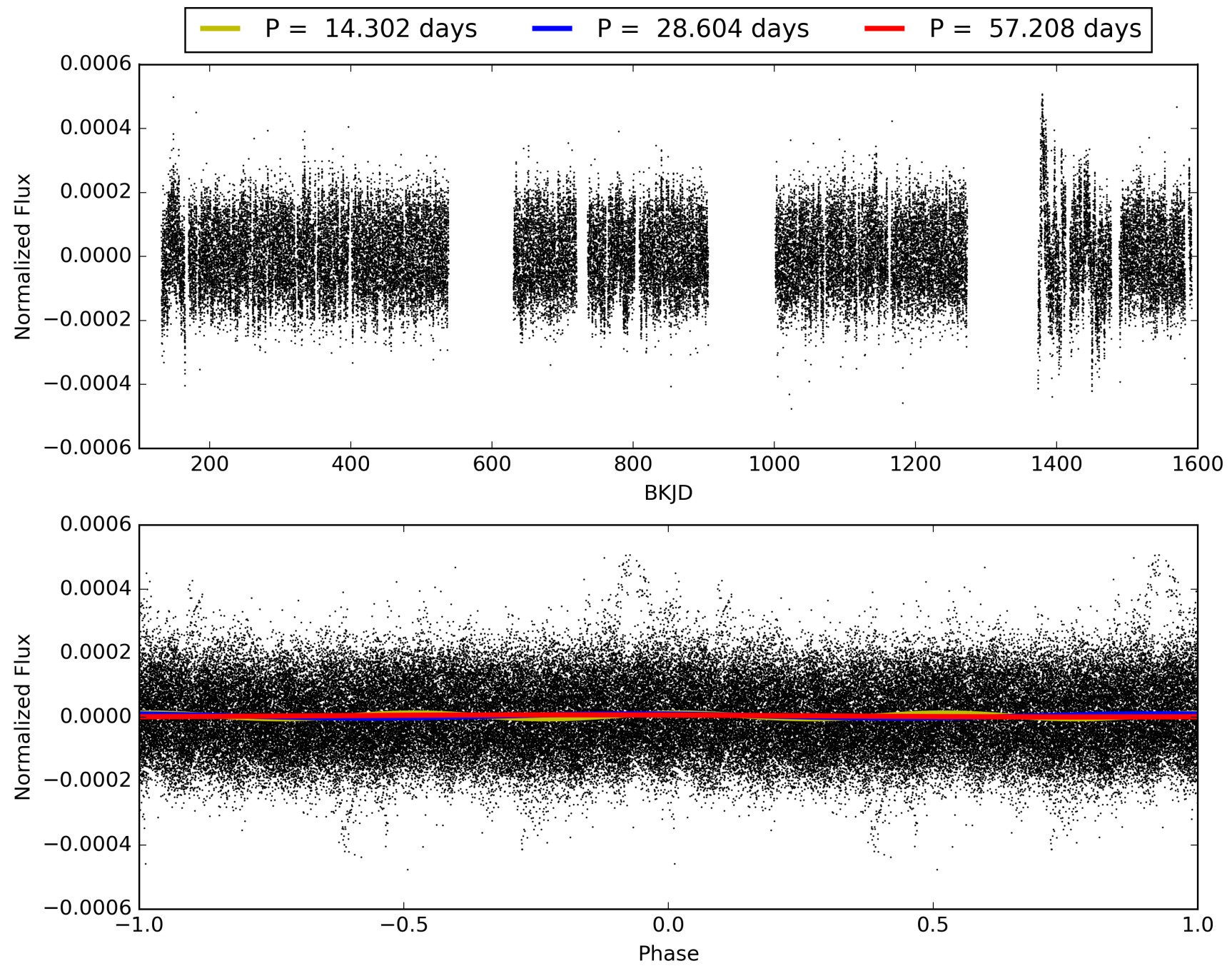
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:57:36 Z

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

TCE 004756776-04, PDC Light Curves

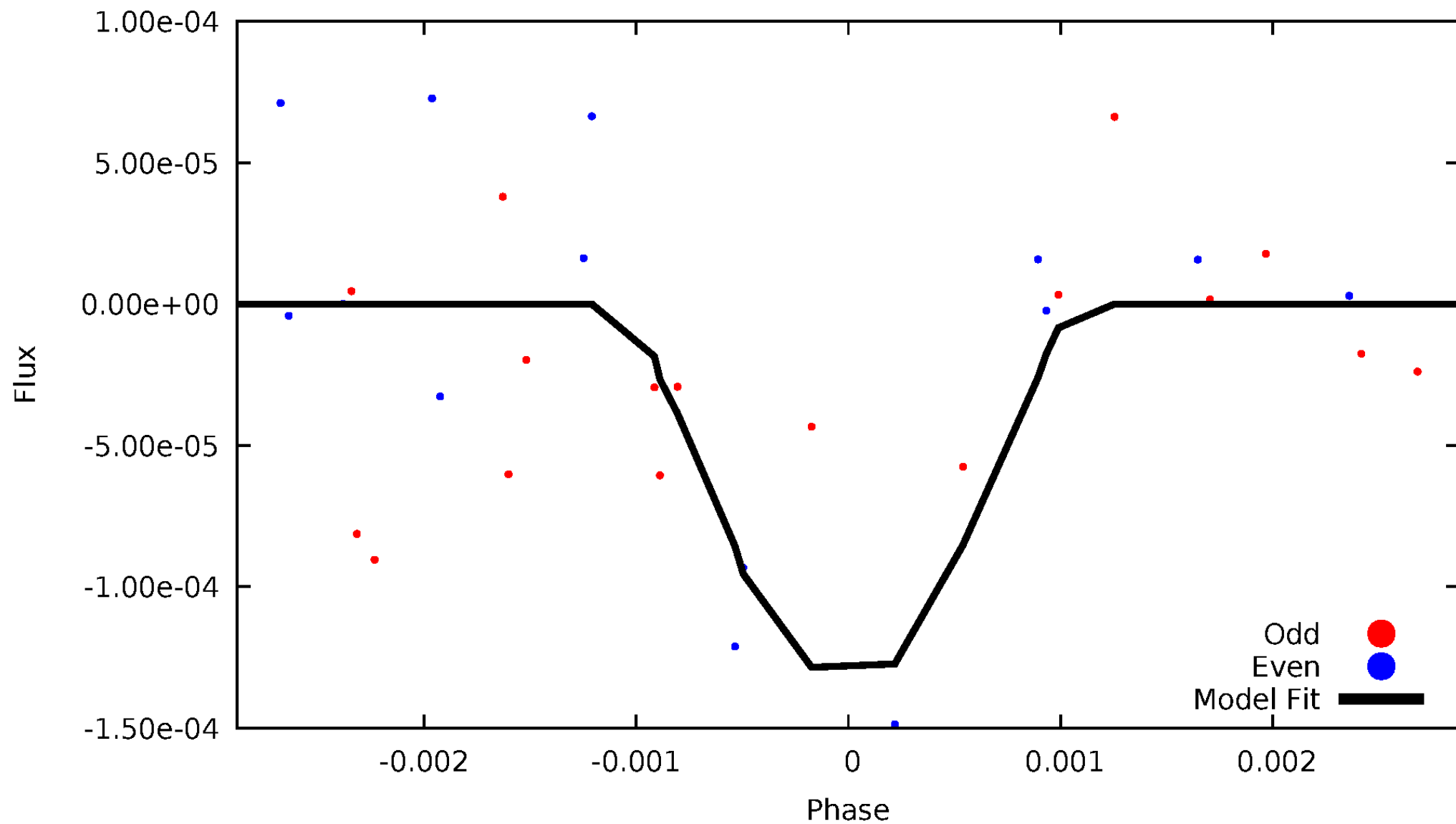


TCE 004756776-04



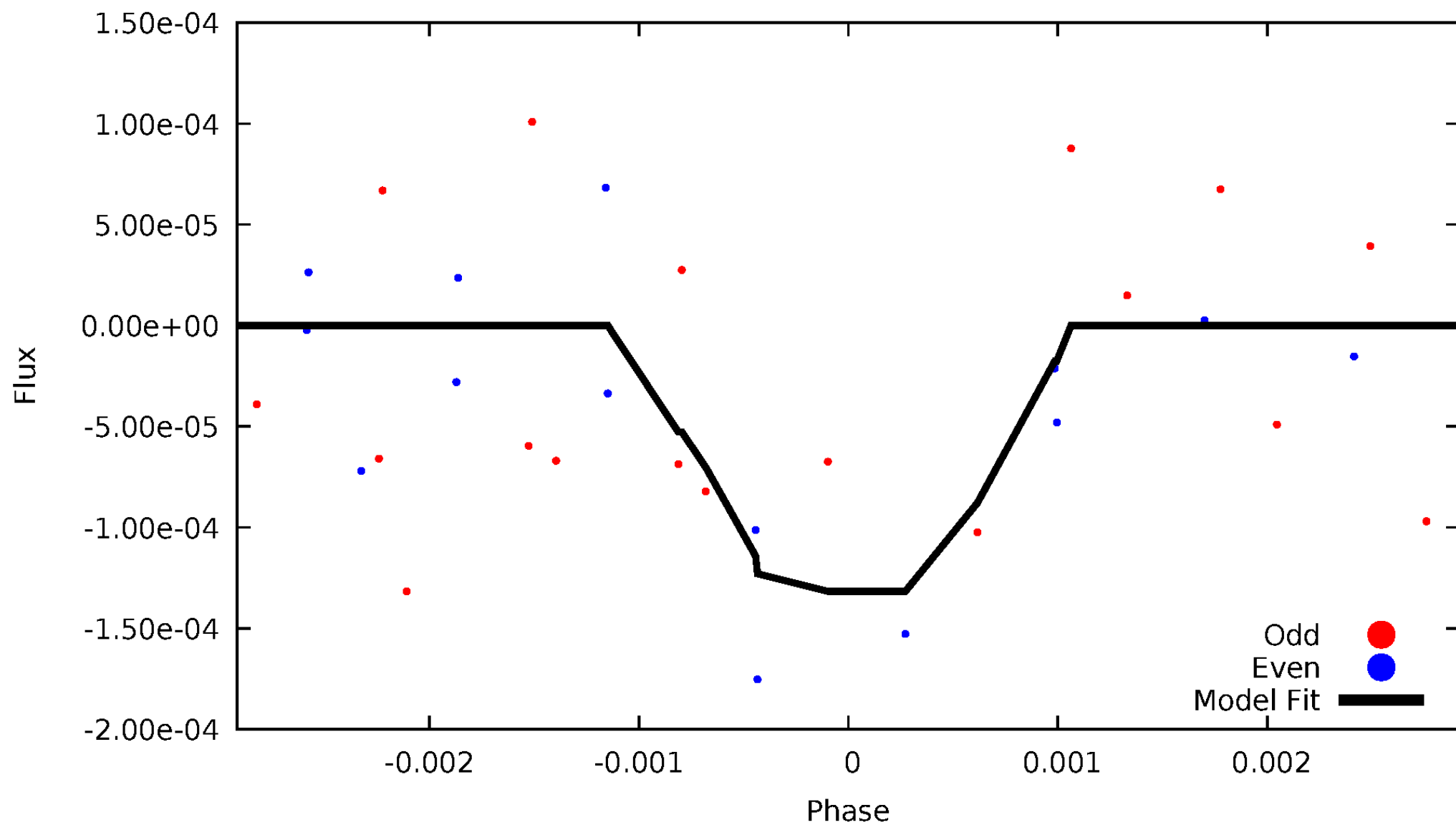
DV Odd/Even

TCE 004756776-04



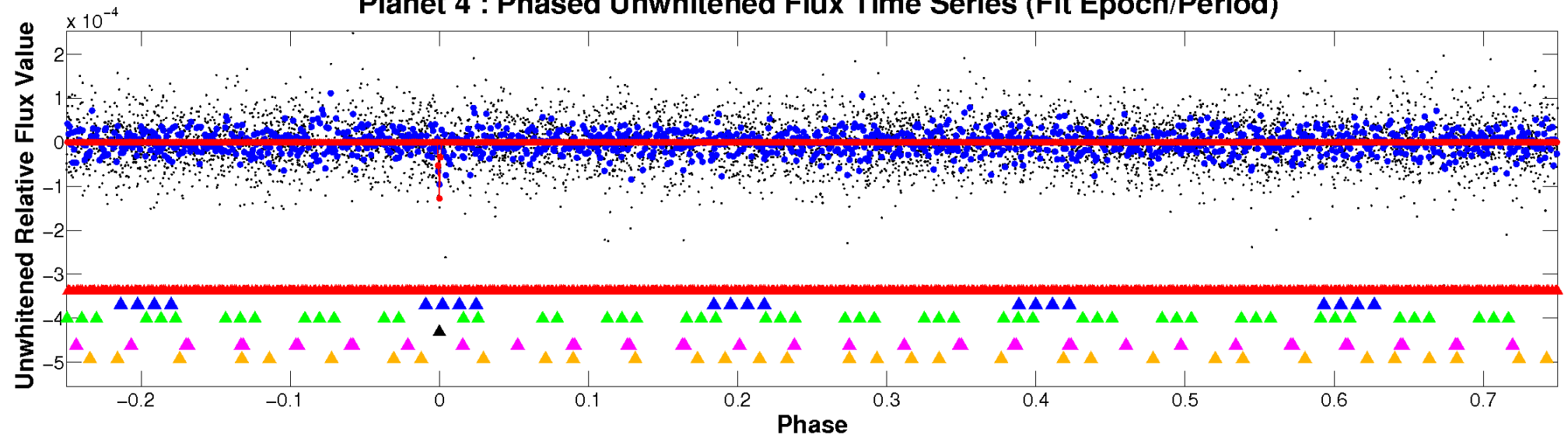
ALT Odd/Even

TCE 004756776-04

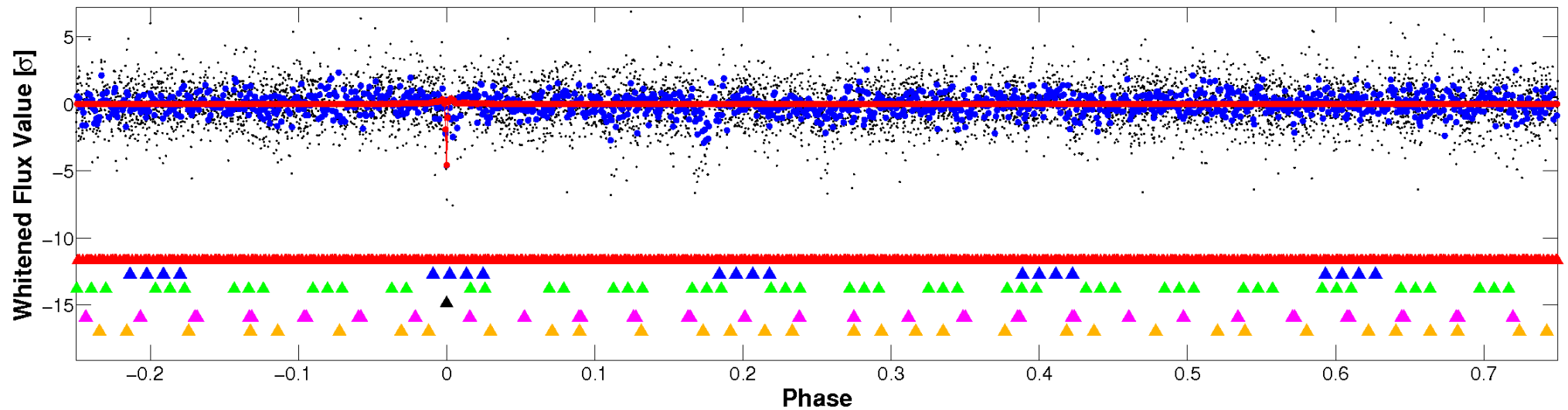


Non-Whitened Vs. Whitened Light Curve

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

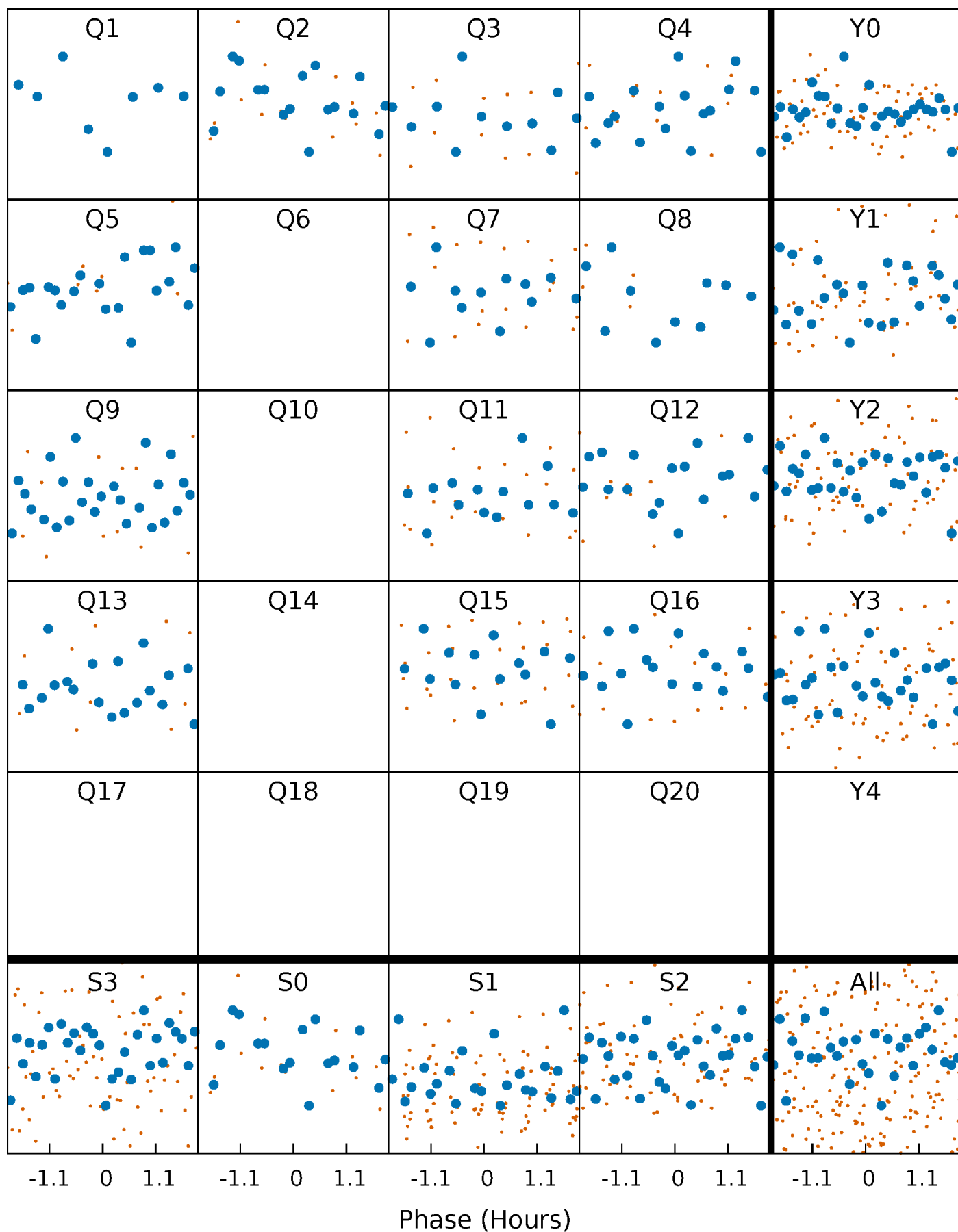


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



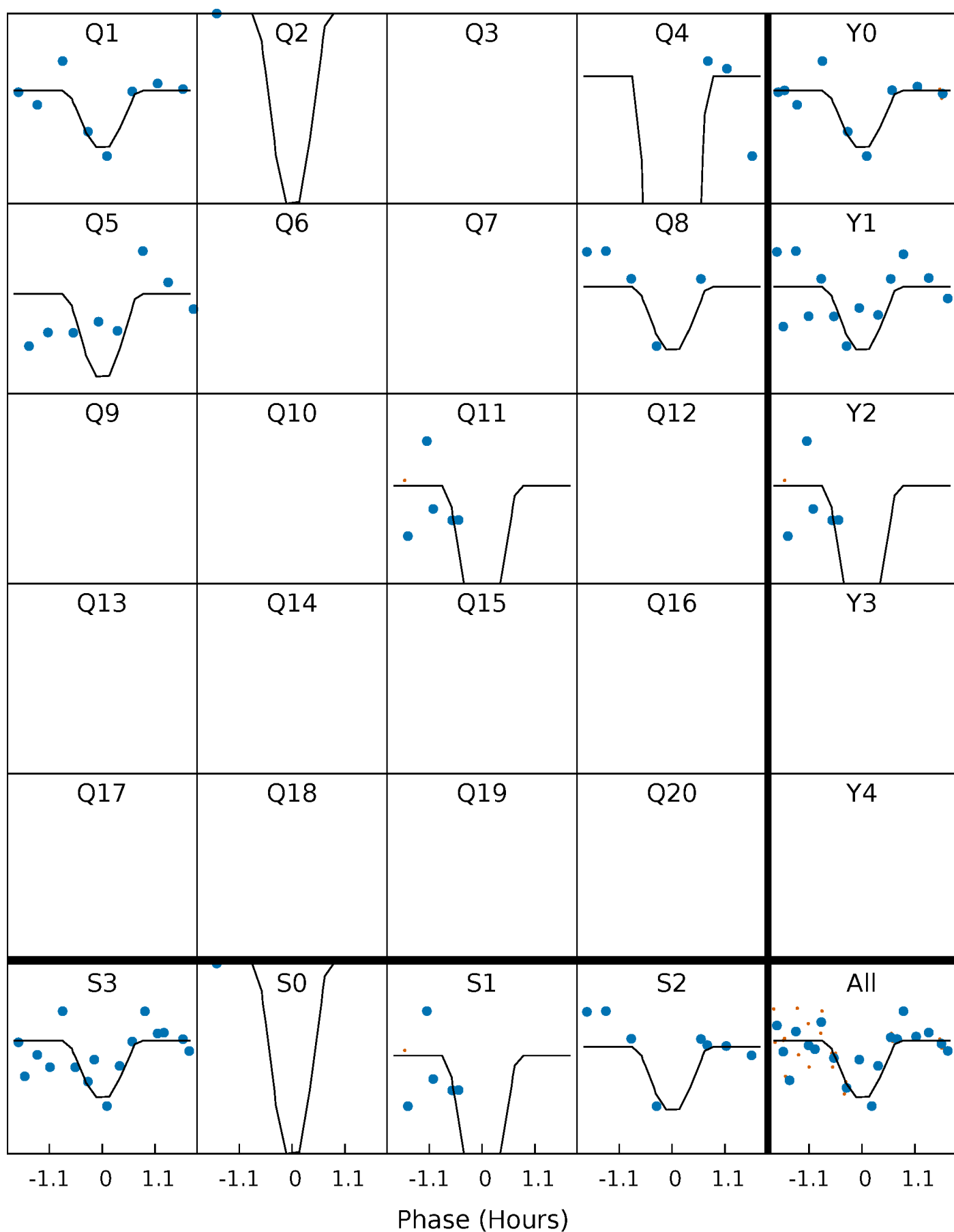
PDC Quarter-Phased Transit Curves

TCE 004756776-04 P= 28.604106 Days $T_0=151.552323$ (BKJD)



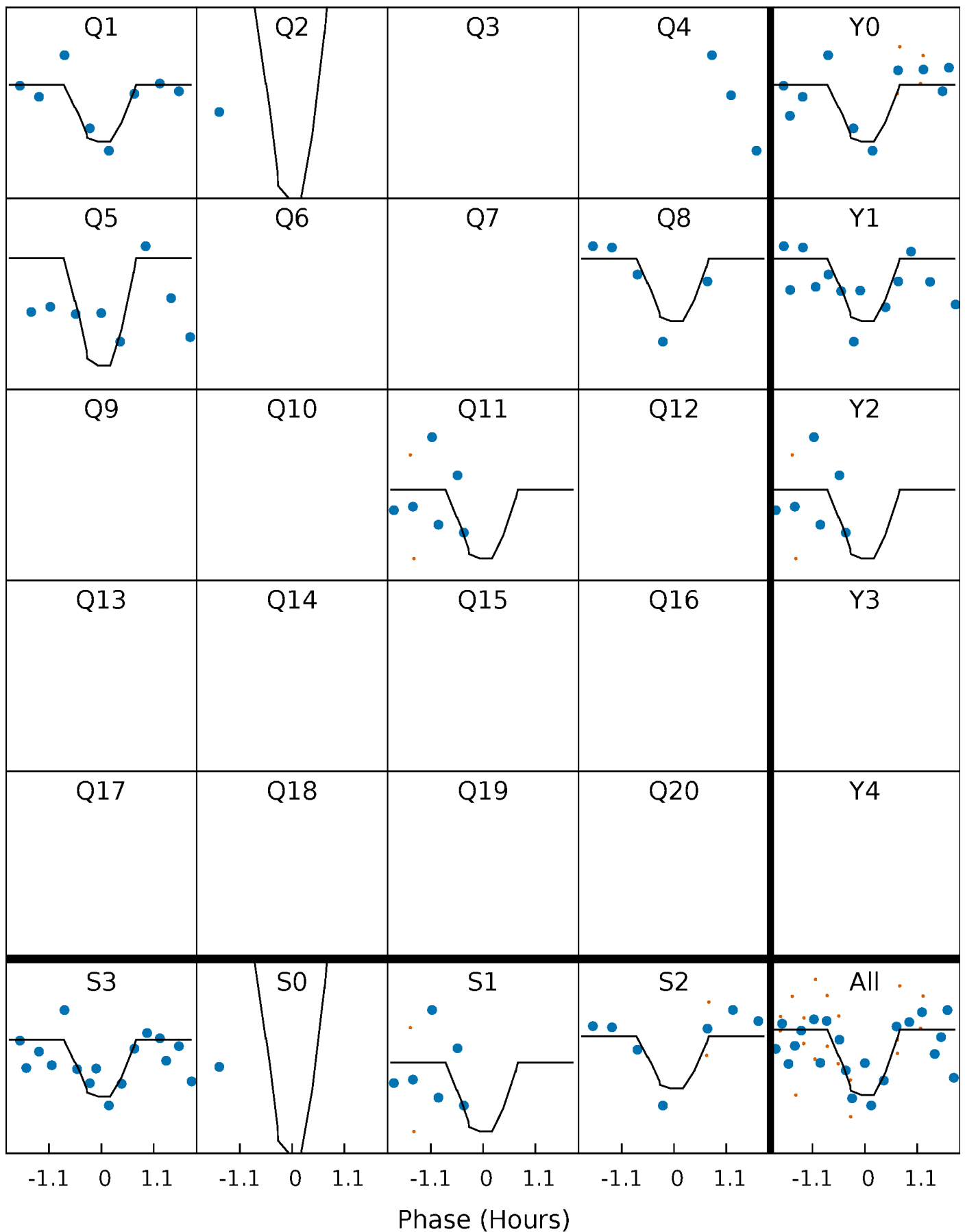
DV Quarter-Phased Transit Curves

TCE 004756776-04 P= 28.604106 Days $T_0=151.552323$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

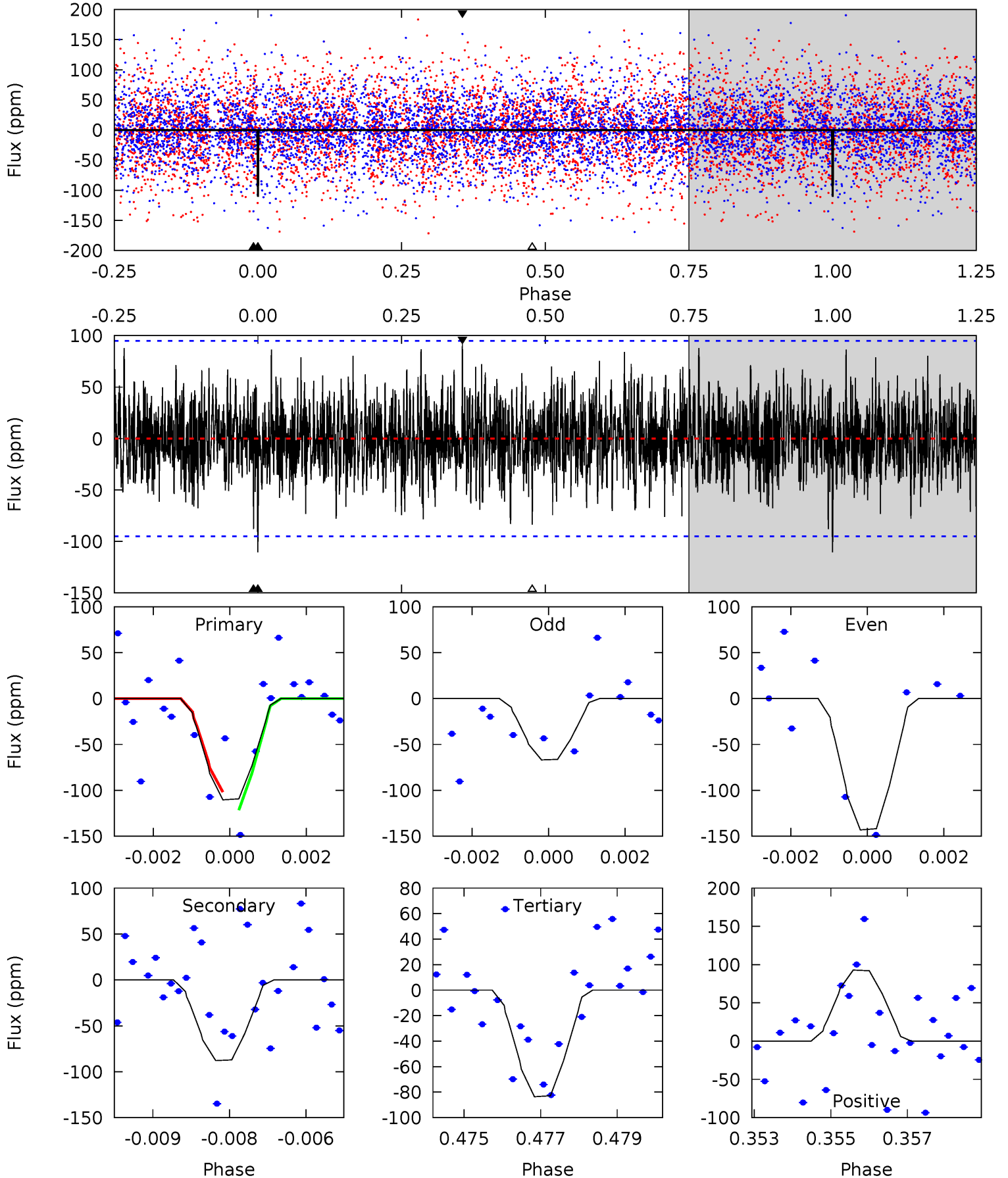
TCE 004756776-04 P= 28.604044 Days $T_0=151.550813$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-04, P = 28.604106 Days, E = 122.948217 Days

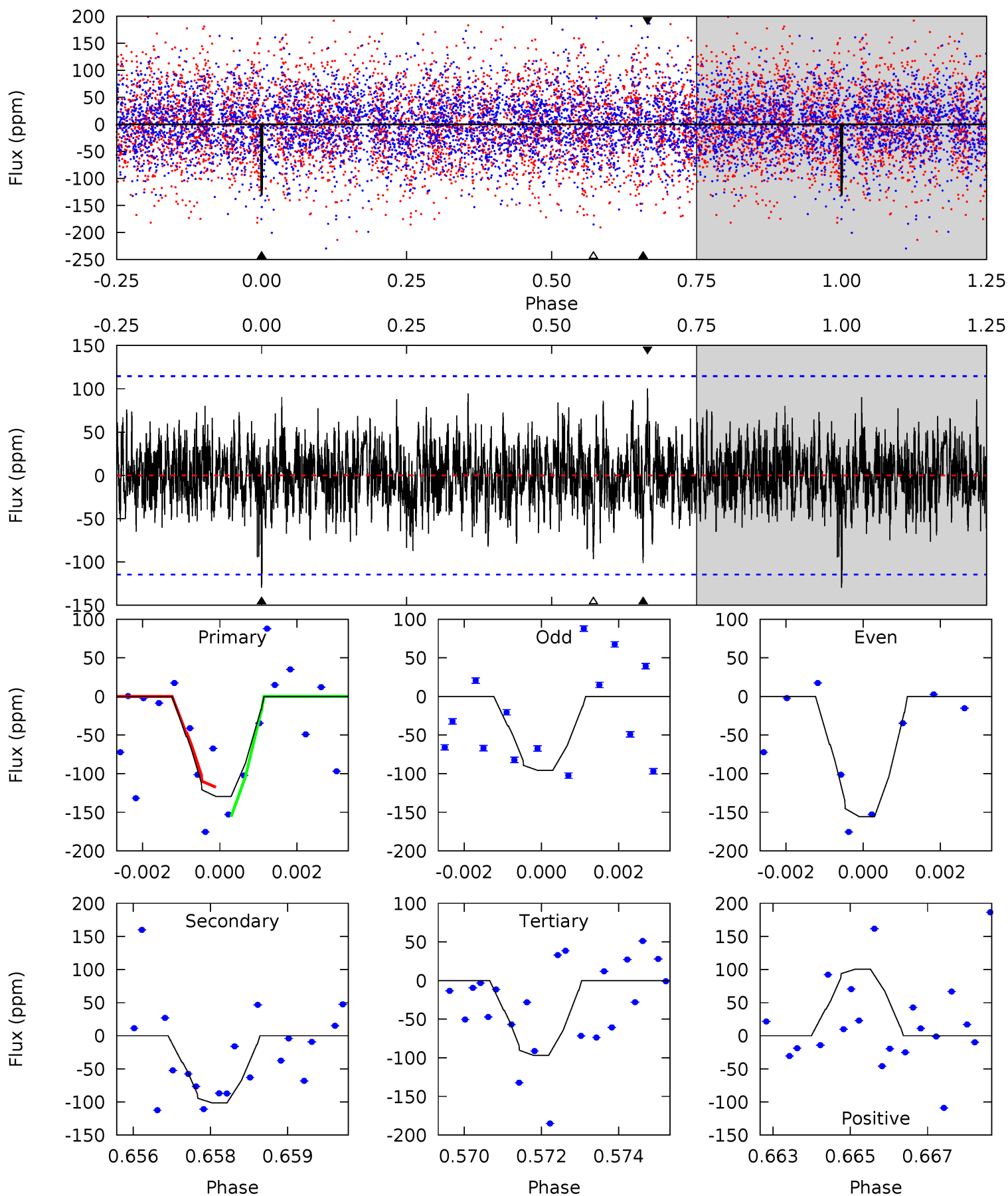
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.21	4.94	4.70	5.22	5.34	3.11	1.46	1.50	0.98	0.24	-0.28	2.08	0.87	0.46	0.56



Alt Model-Shift Uniqueness Test

004756776-04, P = 28.604044 Days, E = 122.946769 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.04	4.72	4.51	4.68	5.34	3.11	1.28	1.53	1.35	0.21	0.04	1.36	1.04	0.44	0.89



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-88 ± 18	$3.72^{+3.70}_{-2.48}$	1205^{+98}_{-115}	4653^{+3592}_{-970}	144^{+1118}_{-107}
Alt.	-101 ± 21	$3.92^{+3.71}_{-2.61}$	1199^{+94}_{-103}	4674^{+3428}_{-975}	140^{+1215}_{-101}

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

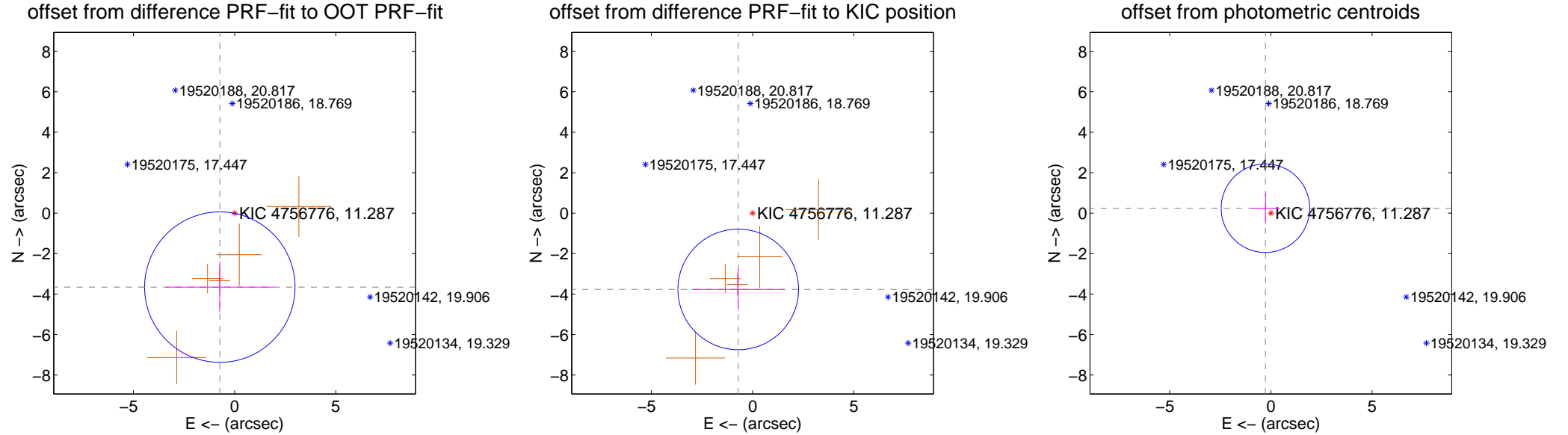
DV Centroid Data

Supplemental centroid analysis for 004756776-04. **Kepler magnitude: 11.29.** Transit SNR 8.85

There are 0 quarters with good PRF difference image offsets

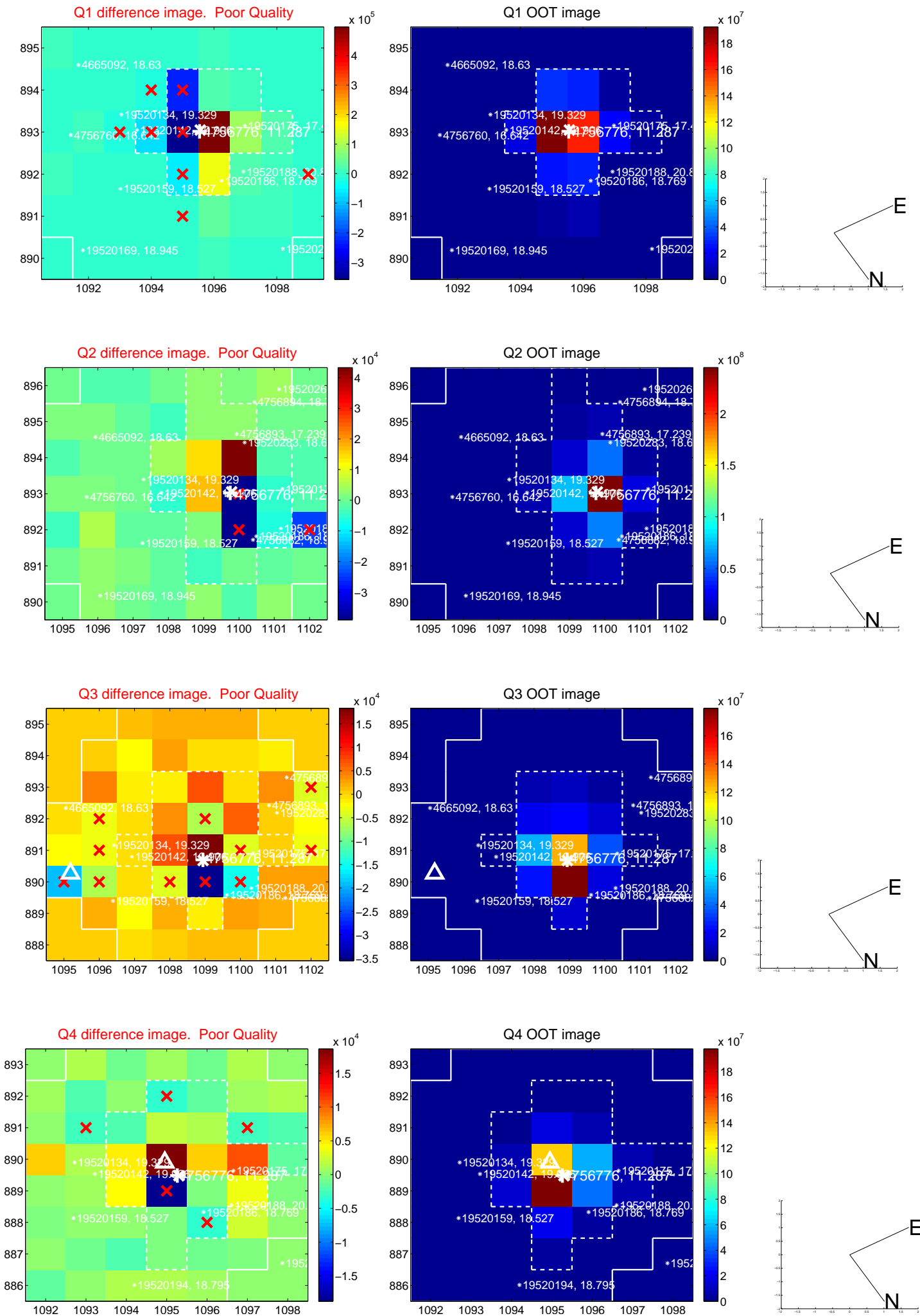
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.729 ± 1.239	3.01	0.732 ± 2.672	-3.656 ± 1.261
PRF-fit source offset from KIC position	3.835 ± 0.993	3.86	0.711 ± 2.290	-3.769 ± 1.032
photometric centroid source offset	0.36 ± 0.73	0.50	0.27 ± 0.71	0.24 ± 0.75

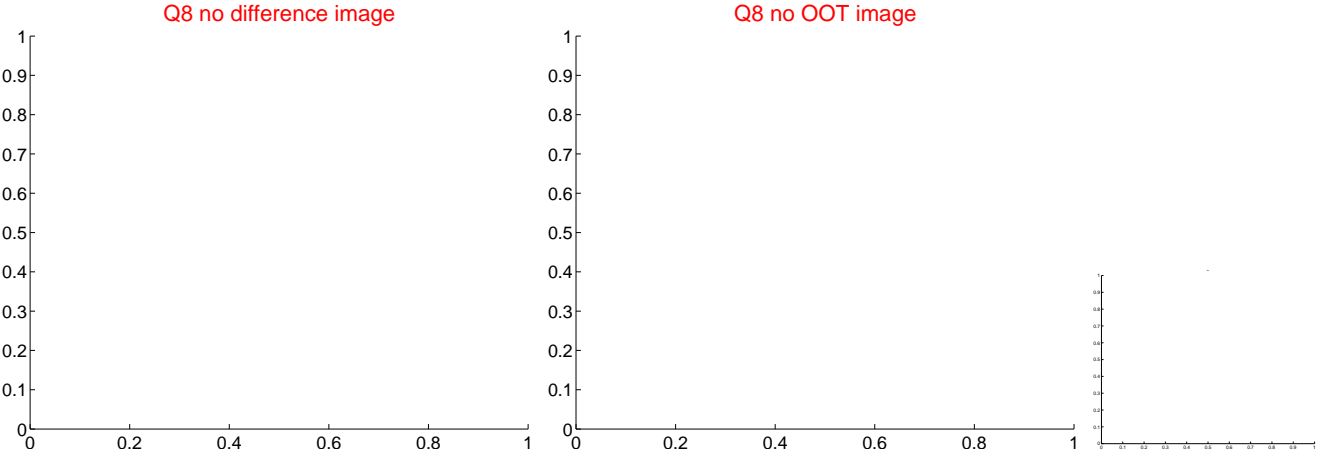
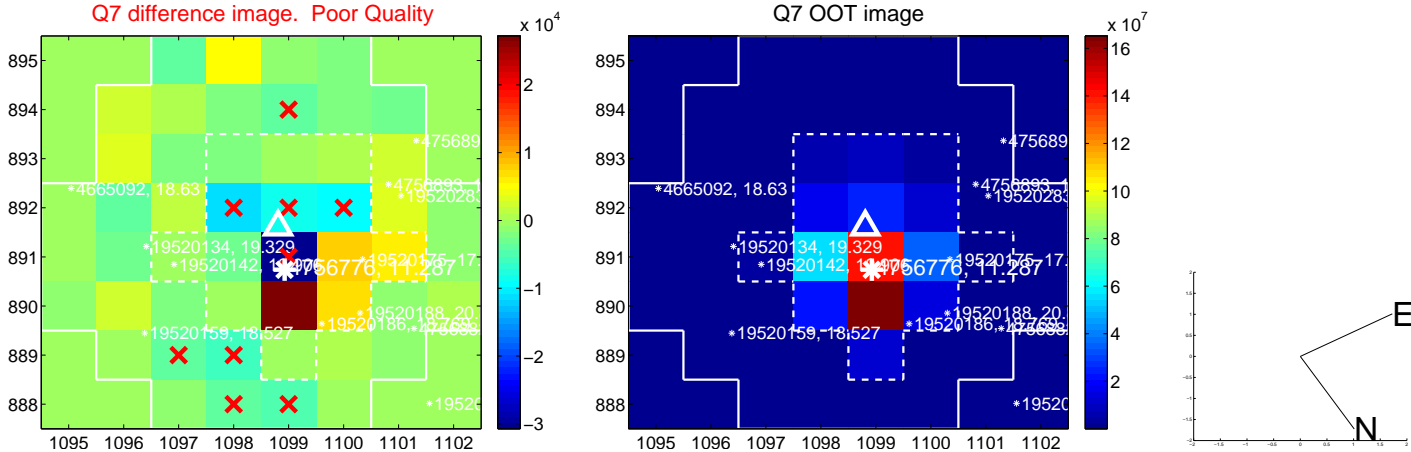
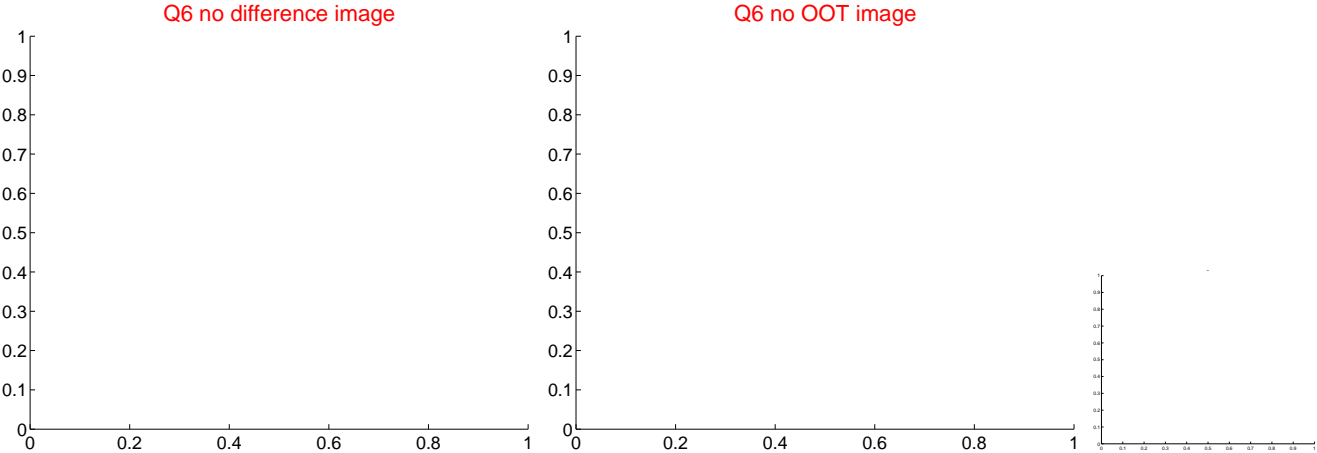
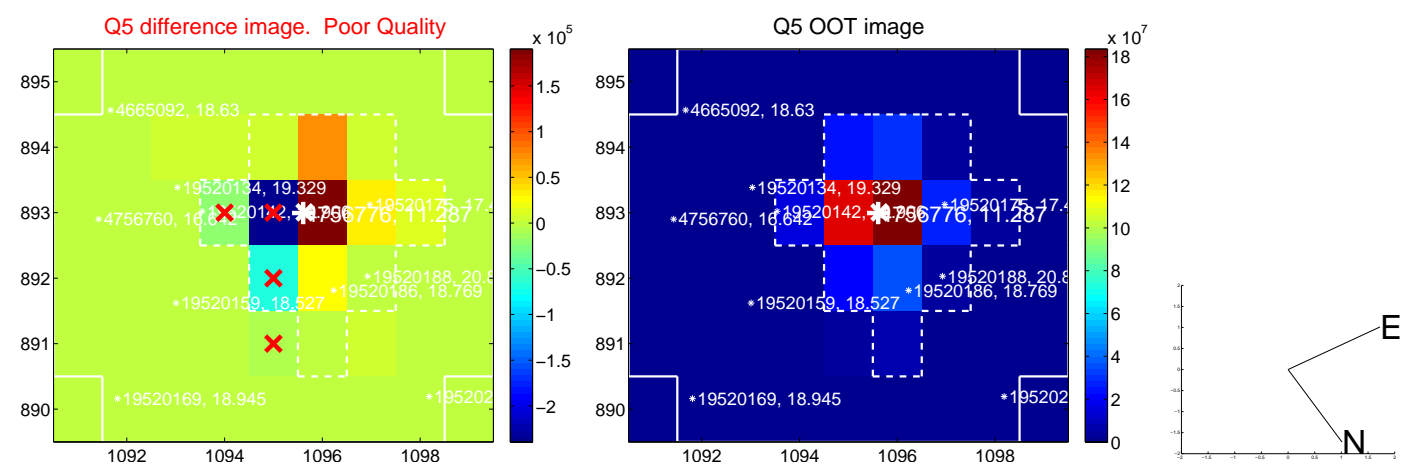


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

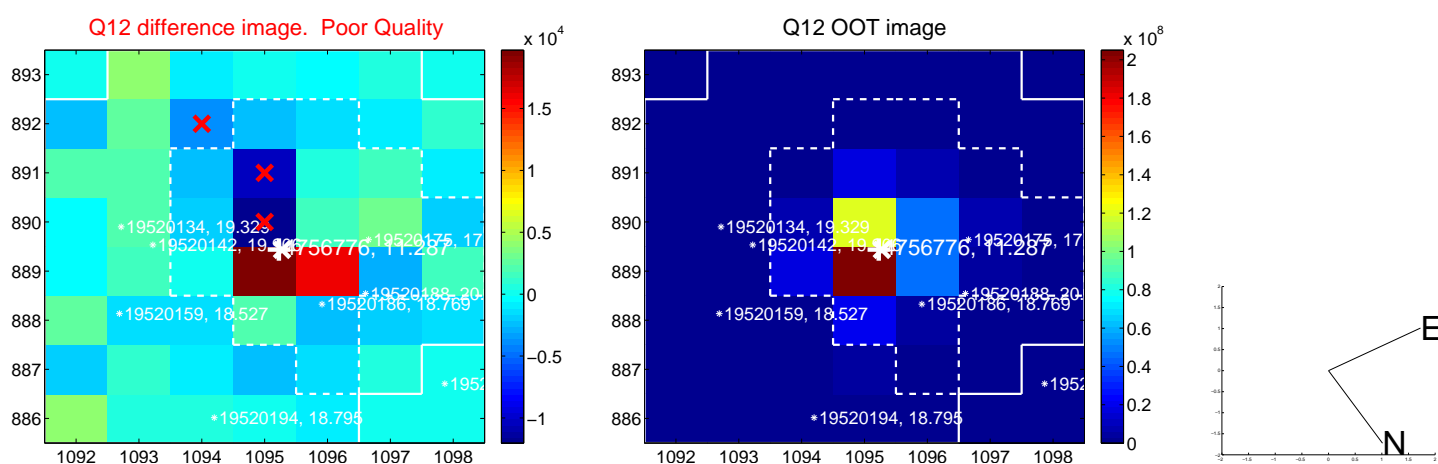
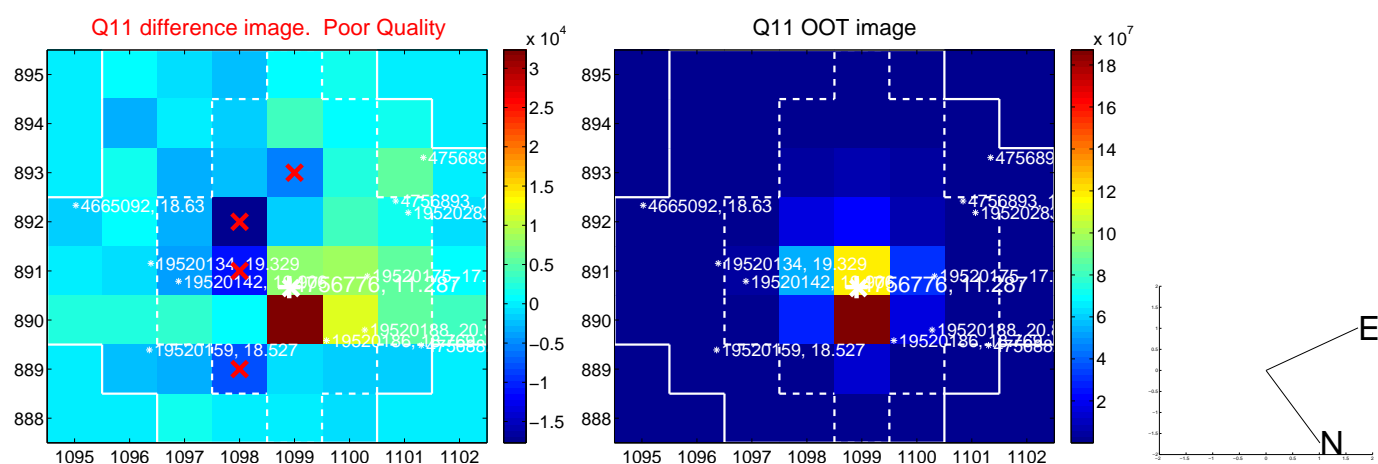
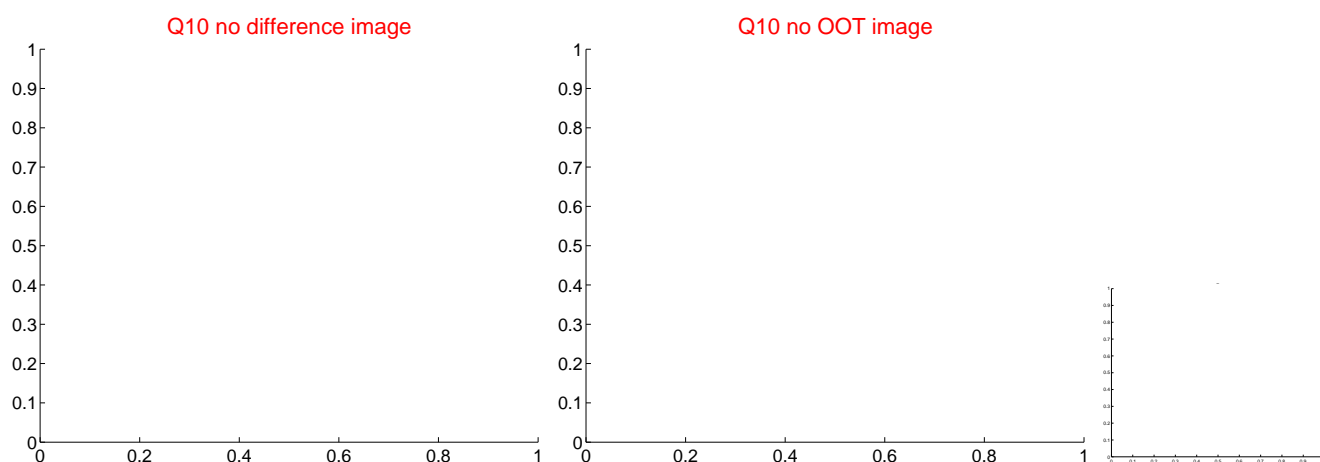
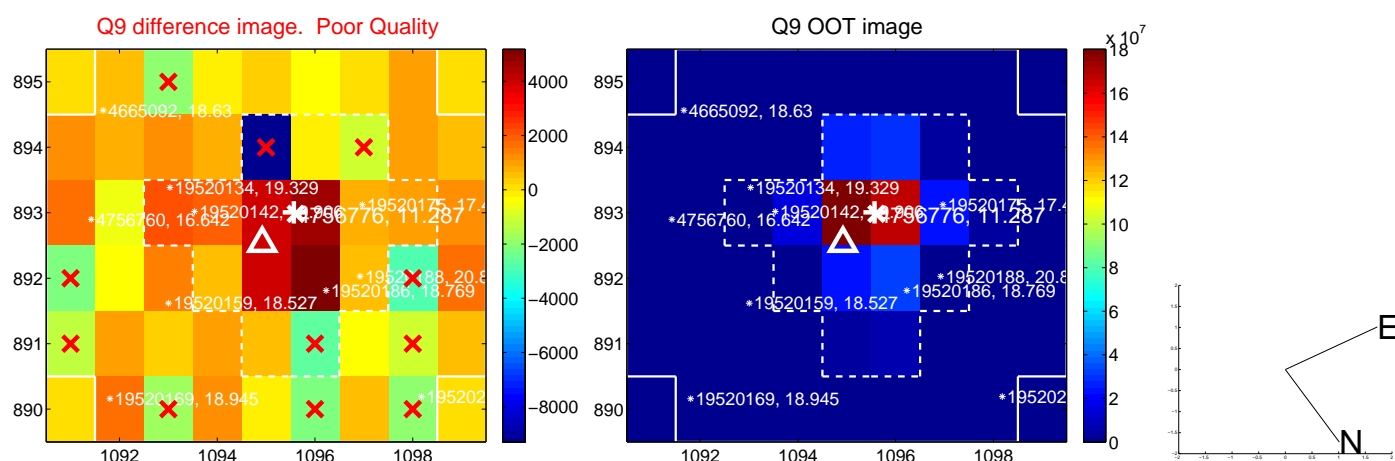
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



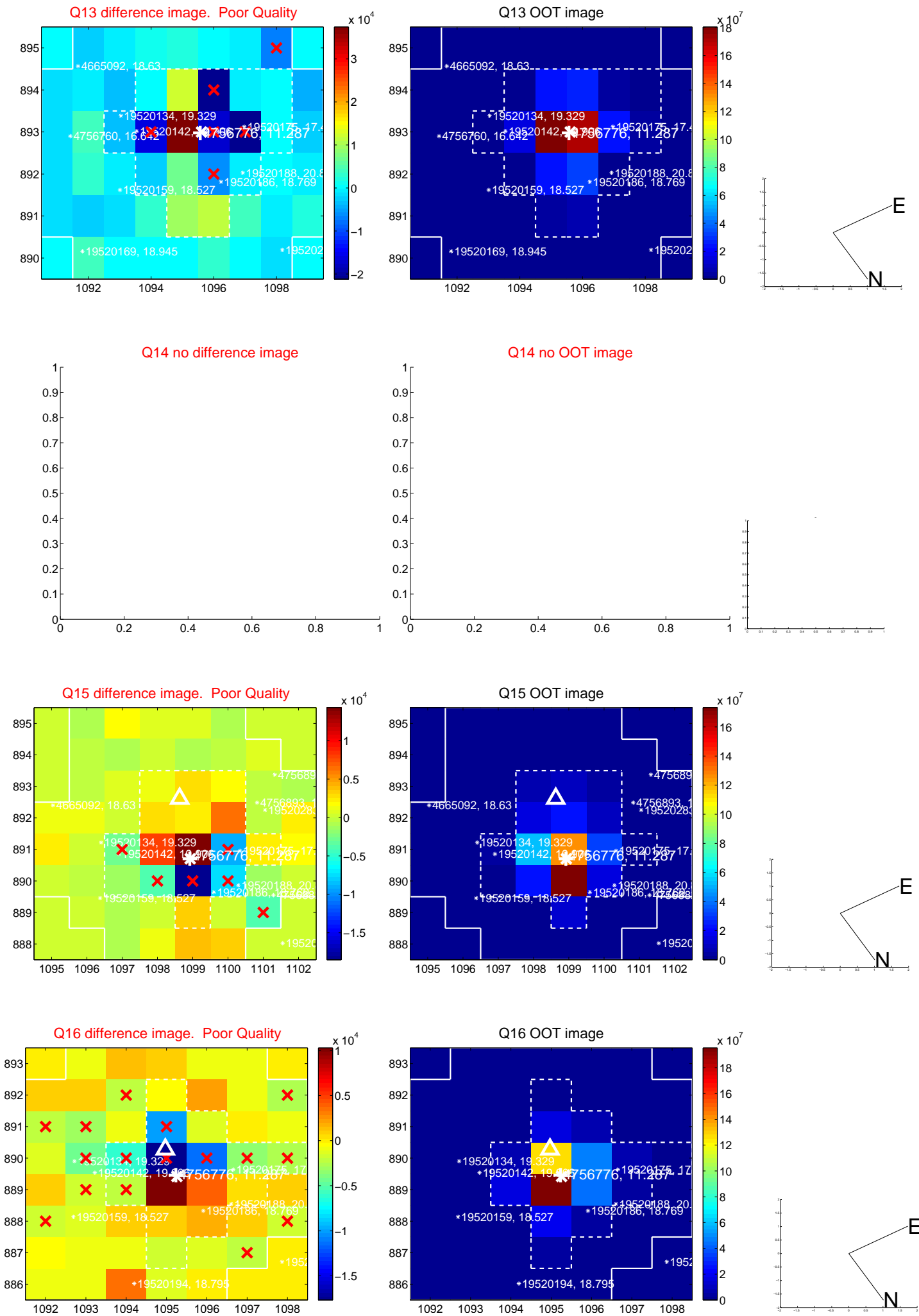
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



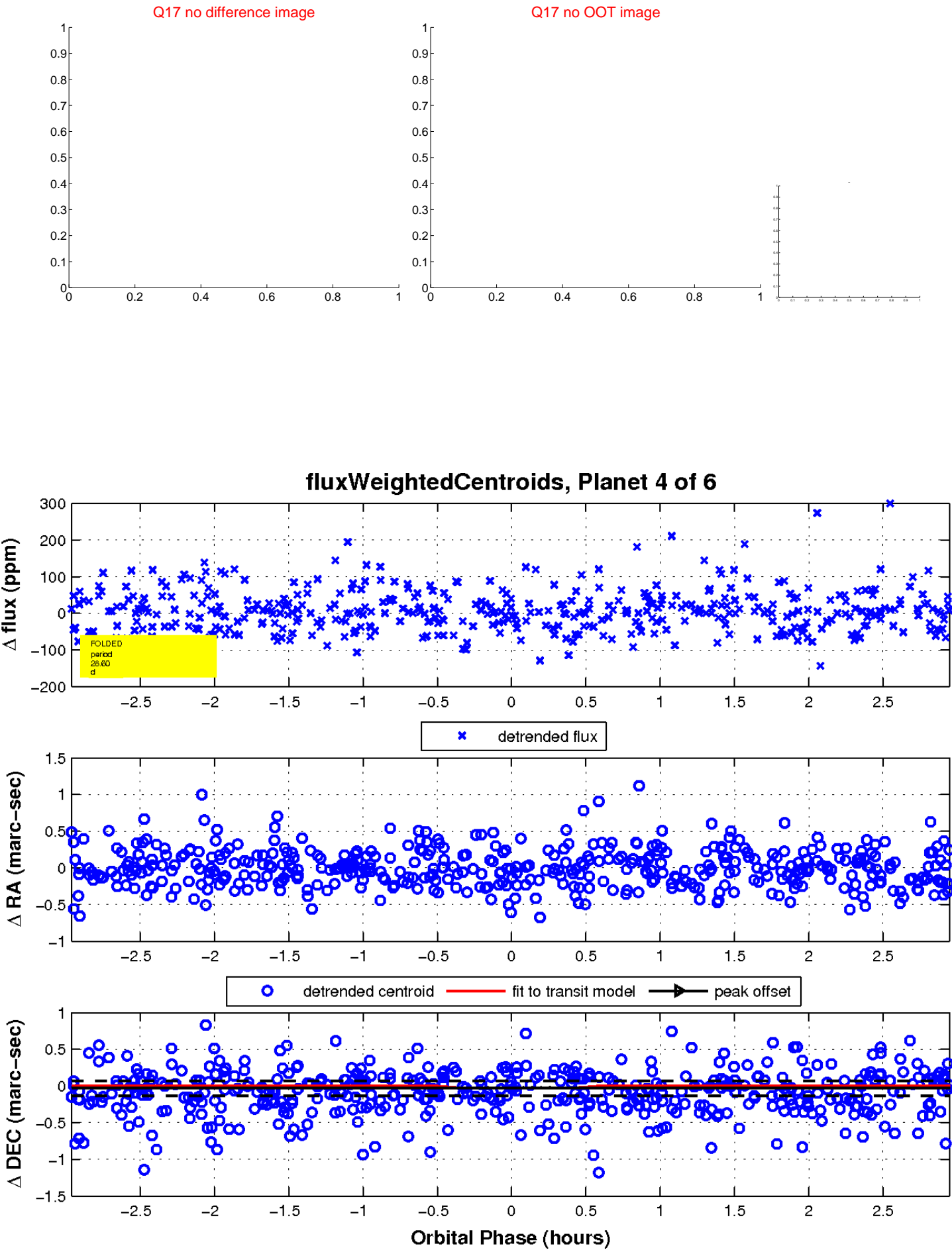
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

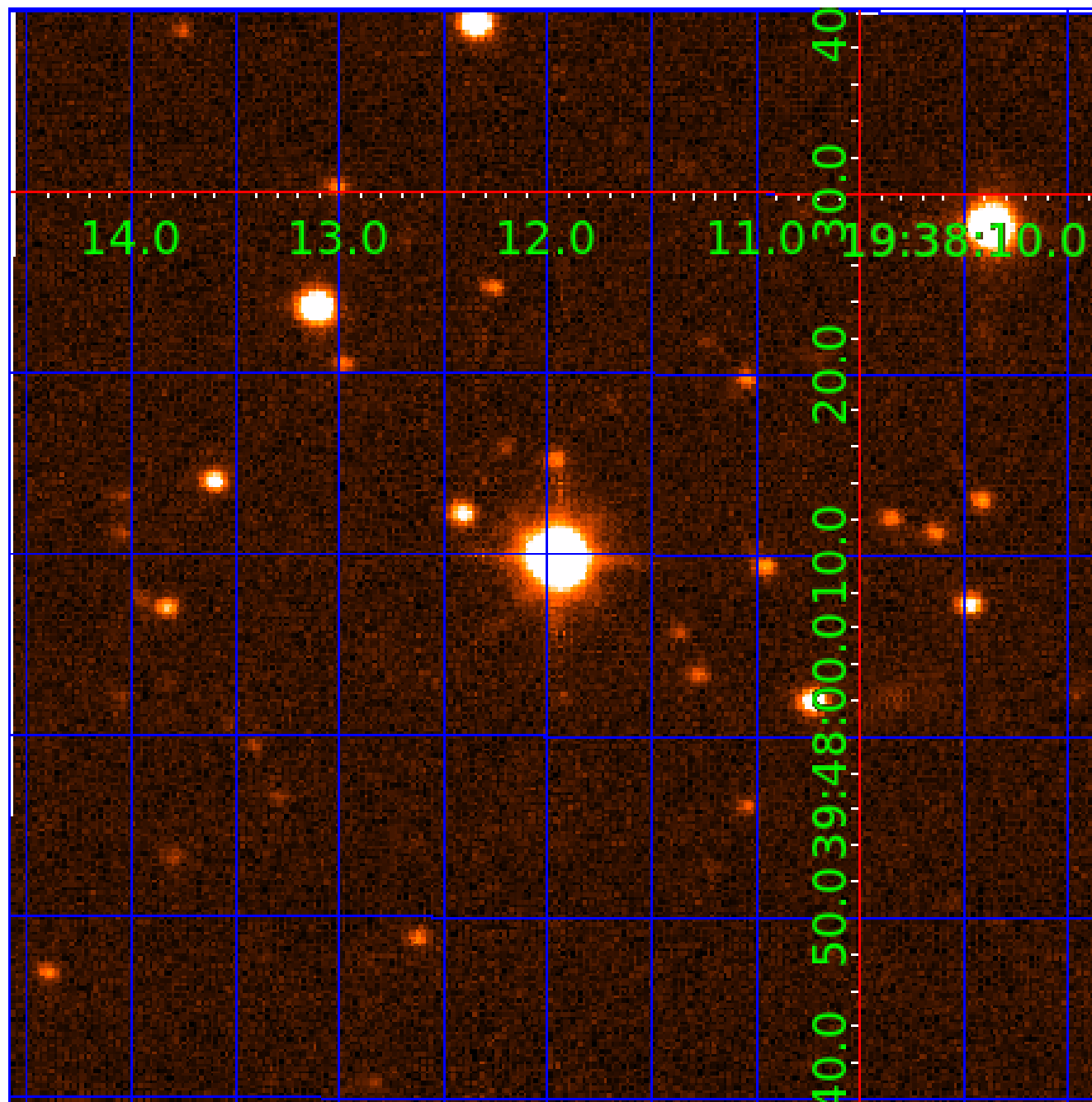


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004756776

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})
004756776-01	OBS	No	2.476973	132.998632	8.0	17.034	11.4	9.8	1.76	6677	0.60	3477.99
004756776-02	OBS	No	74.435111	156.819172	200.9	10.079	27.4	15.3	1.76	6677	4.91	37.23
004756776-03	OBS	No	27.083855	149.534697	70.9	5.710	11.9	11.5	1.76	6677	1.70	143.31
004756776-04	OBS	No	28.604106	151.552323	130.4	0.989	9.6	8.8	1.76	6677	2.08	133.25
004756776-05	OBS	No	36.018461	139.320816	84.0	1.980	8.8	9.0	1.76	6677	1.85	97.99
004756776-06	OBS	No	44.362801	141.937107	145.3	1.063	8.3	9.3	1.76	6677	2.63	74.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004756776-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

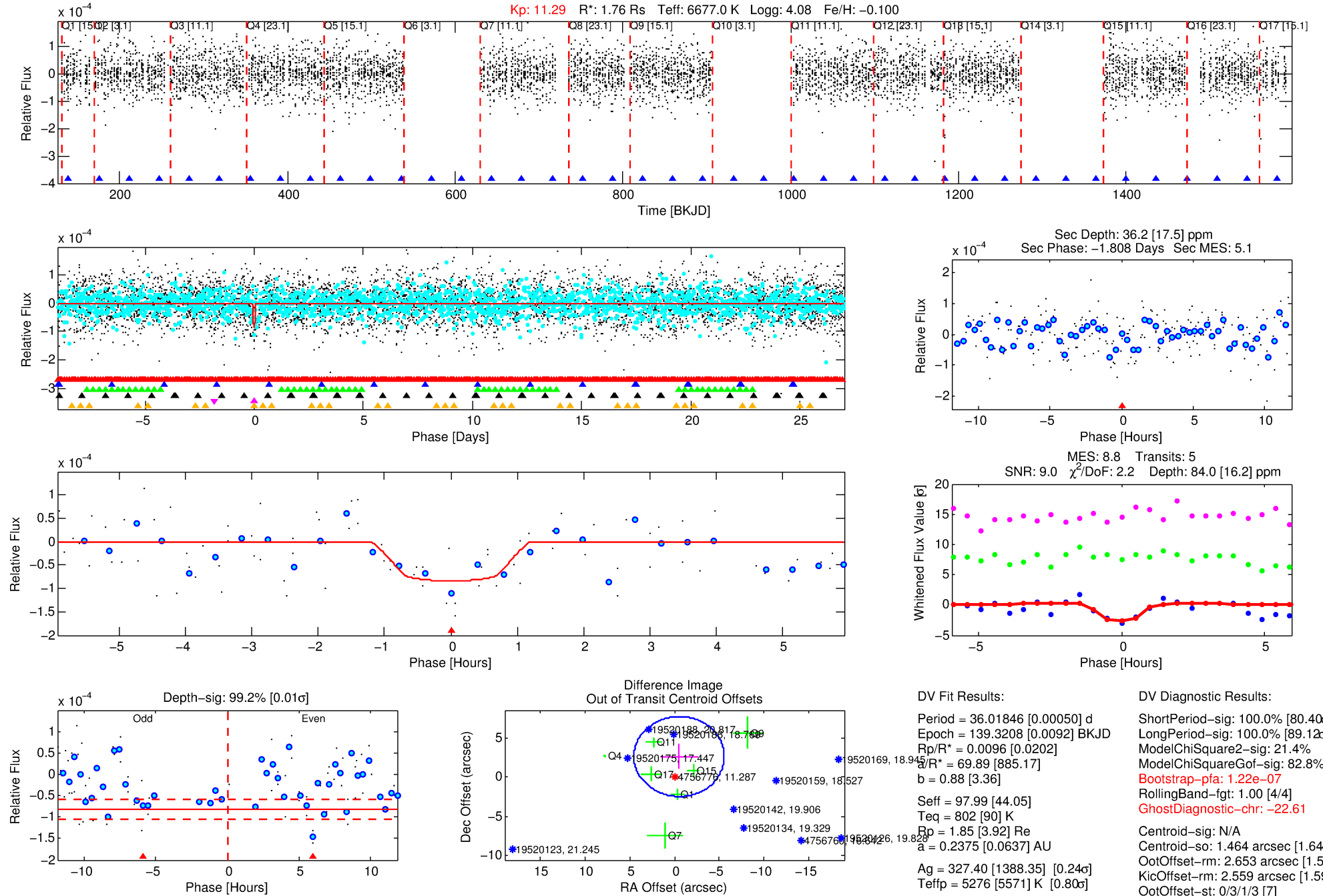
Ephemeris Match Information For 004756776-05

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
004756776-05	4756776	011341164-01	11341164	6:1	39157.3	136	359	12.37	11.29	0.45	Reflection	1	2.84	0.90

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

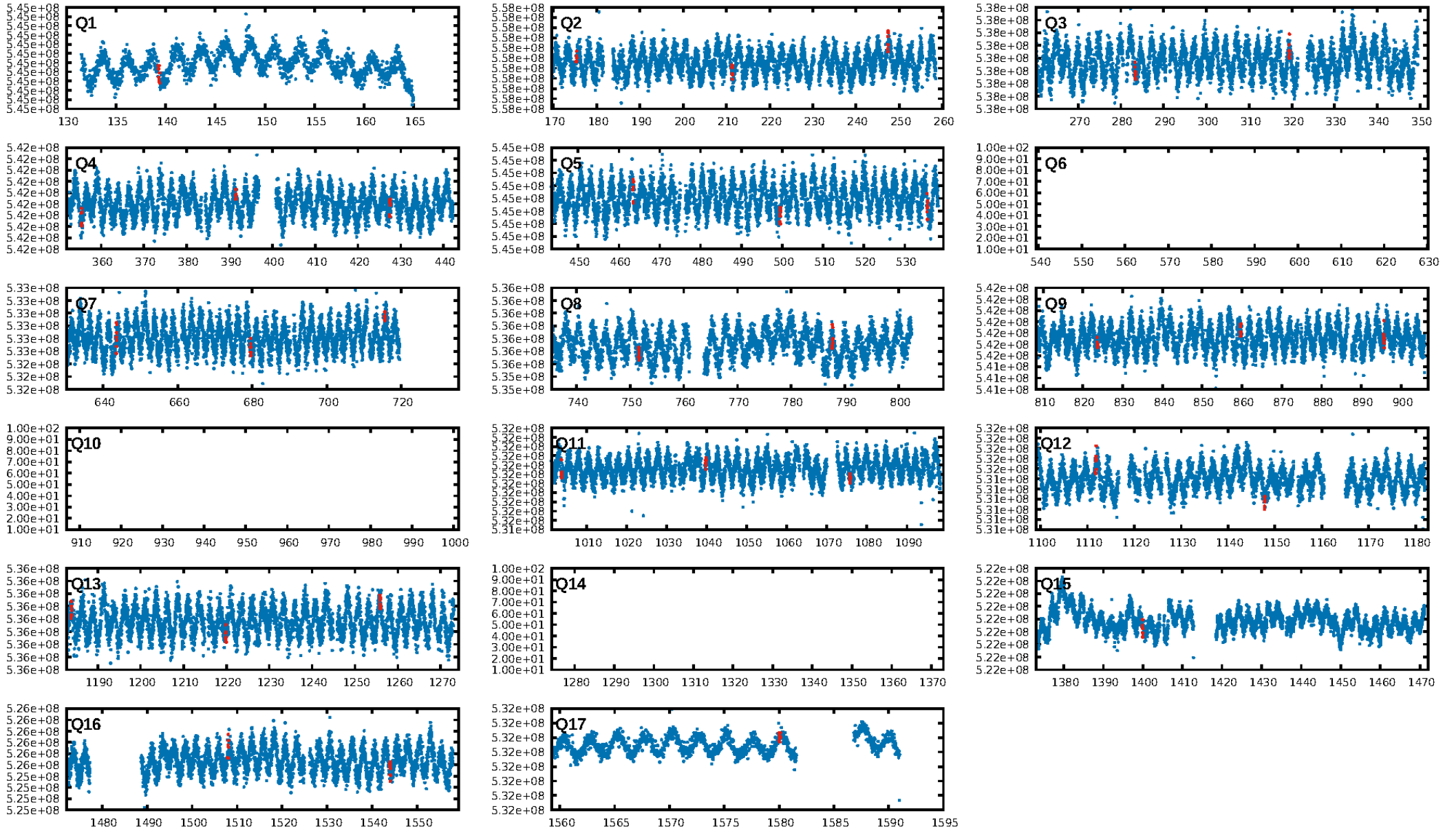
KIC: 4756776 Candidate: 5 of 6 Period: 36.018 d



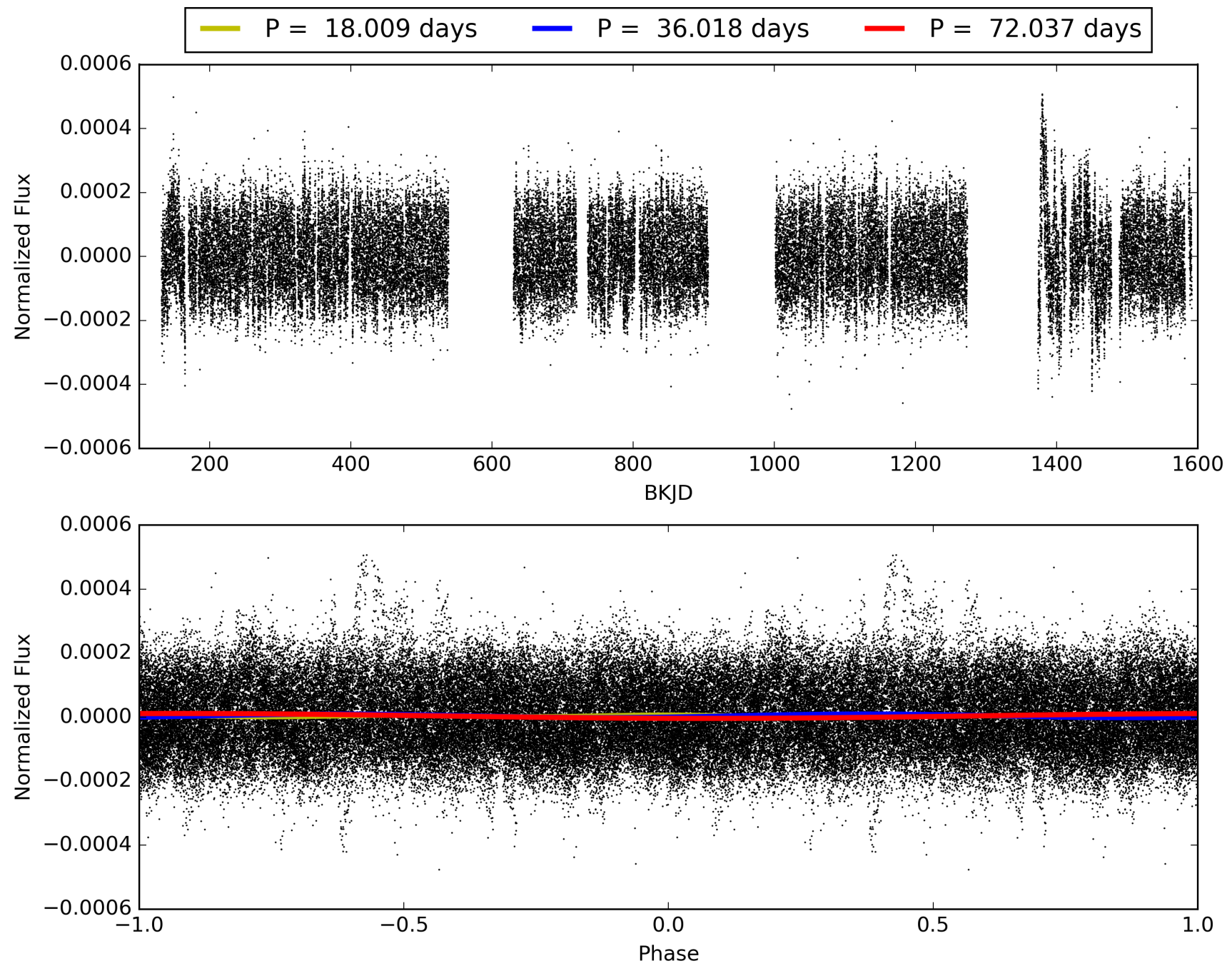
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:57:39 Z

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

TCE 004756776-05, PDC Light Curves

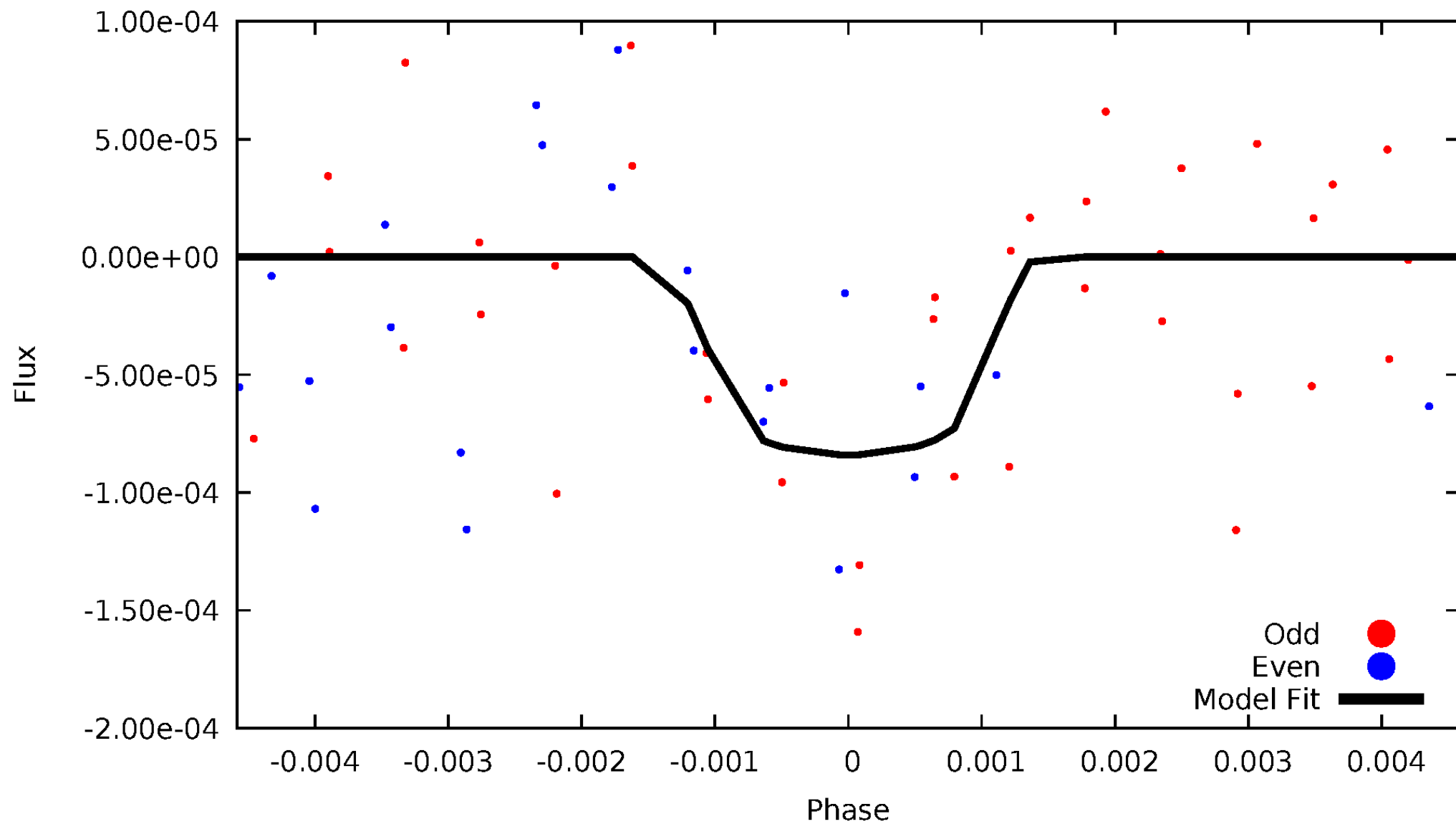


TCE 004756776-05



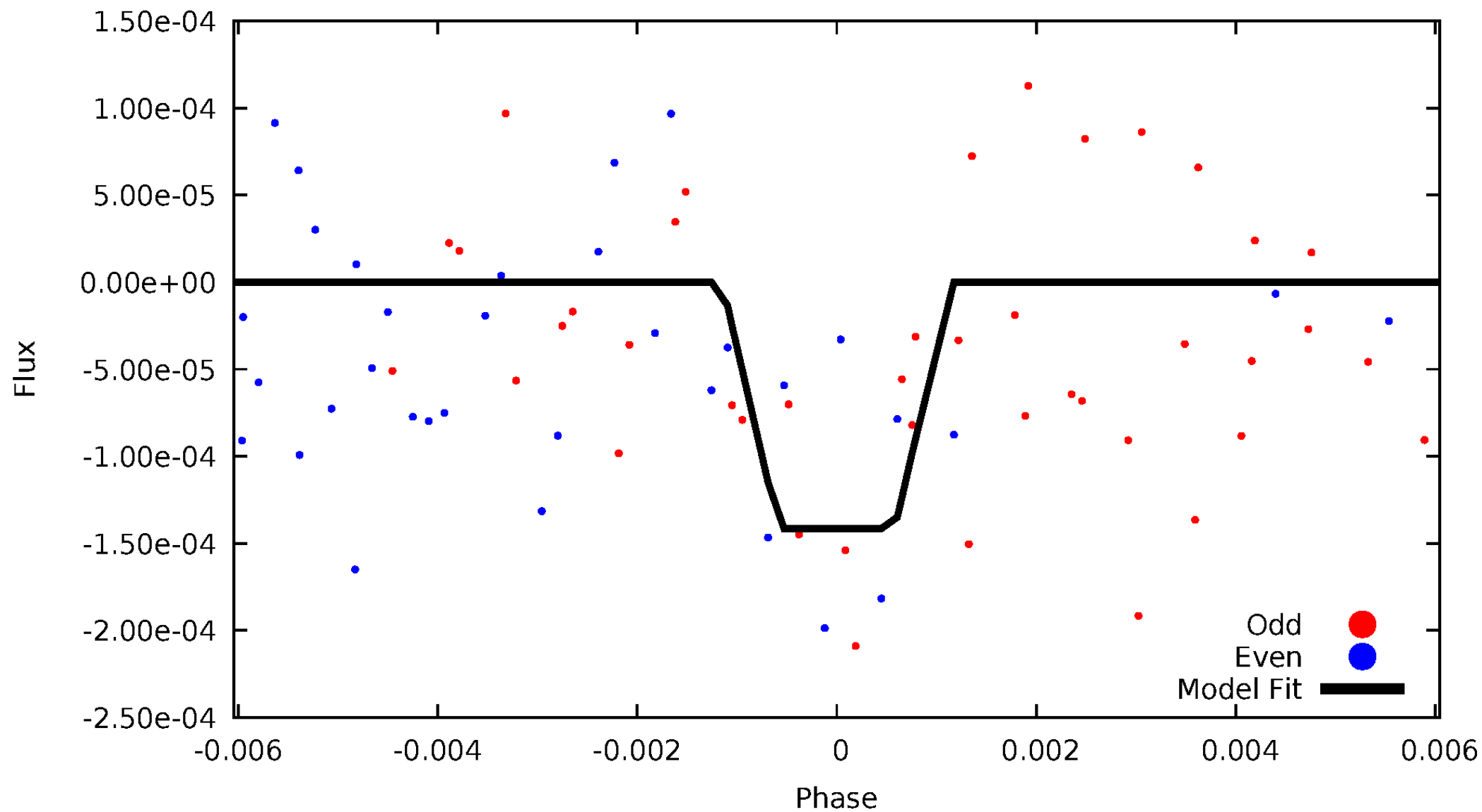
DV Odd/Even

TCE 004756776-05



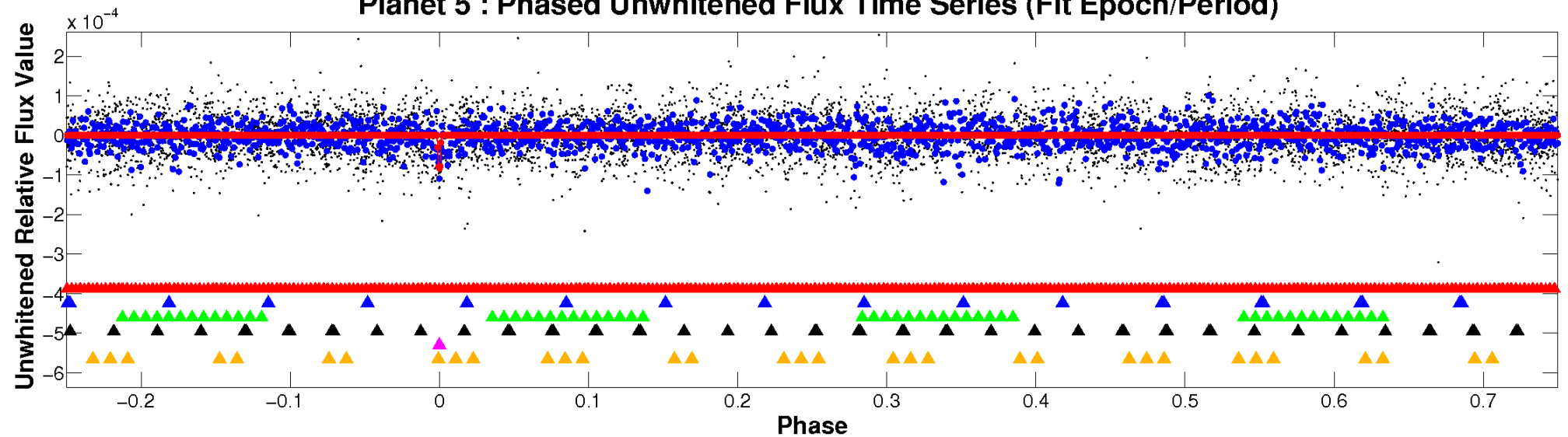
ALT Odd/Even

TCE 004756776-05

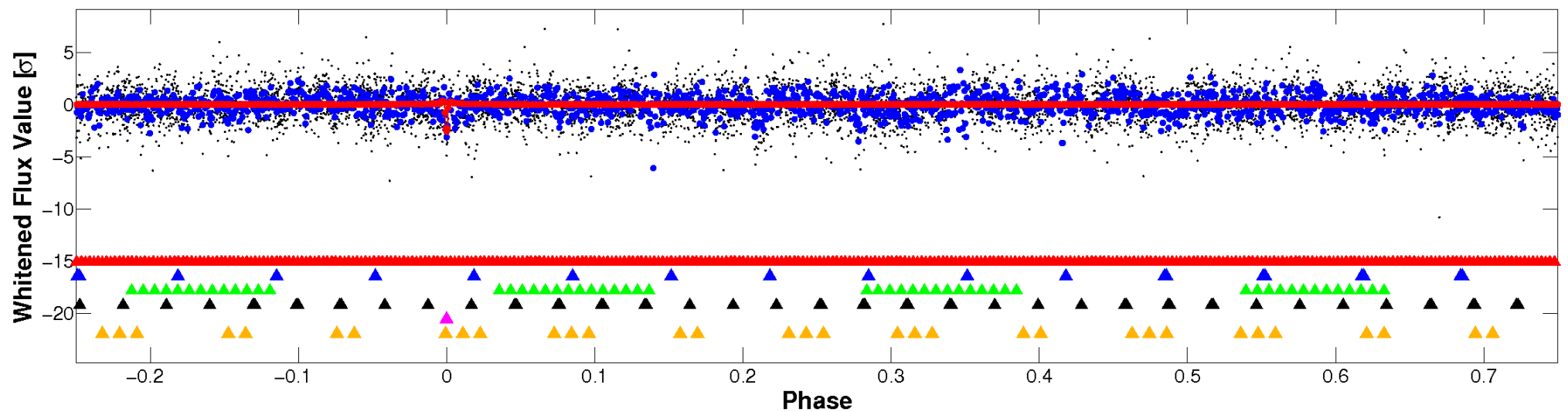


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

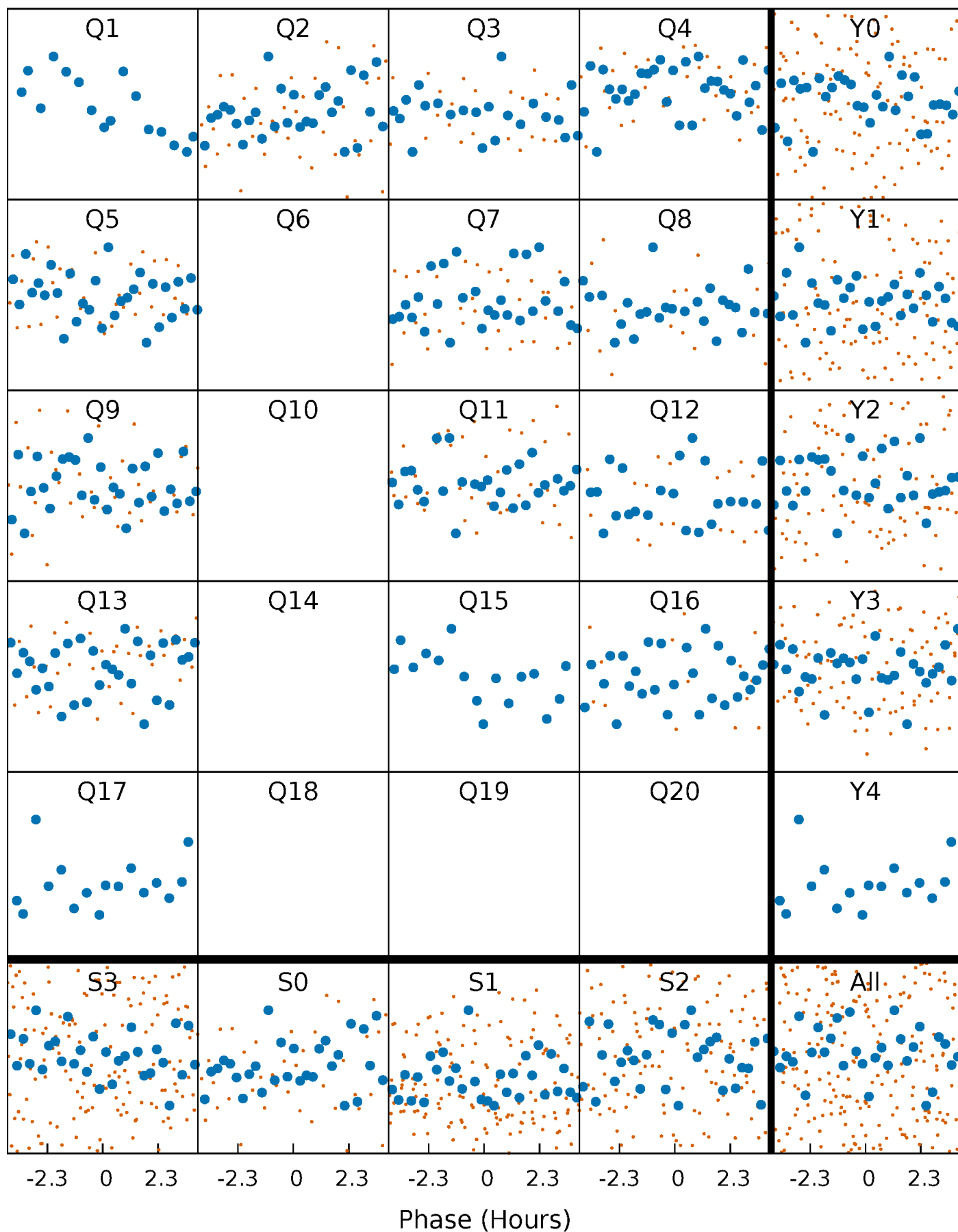


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



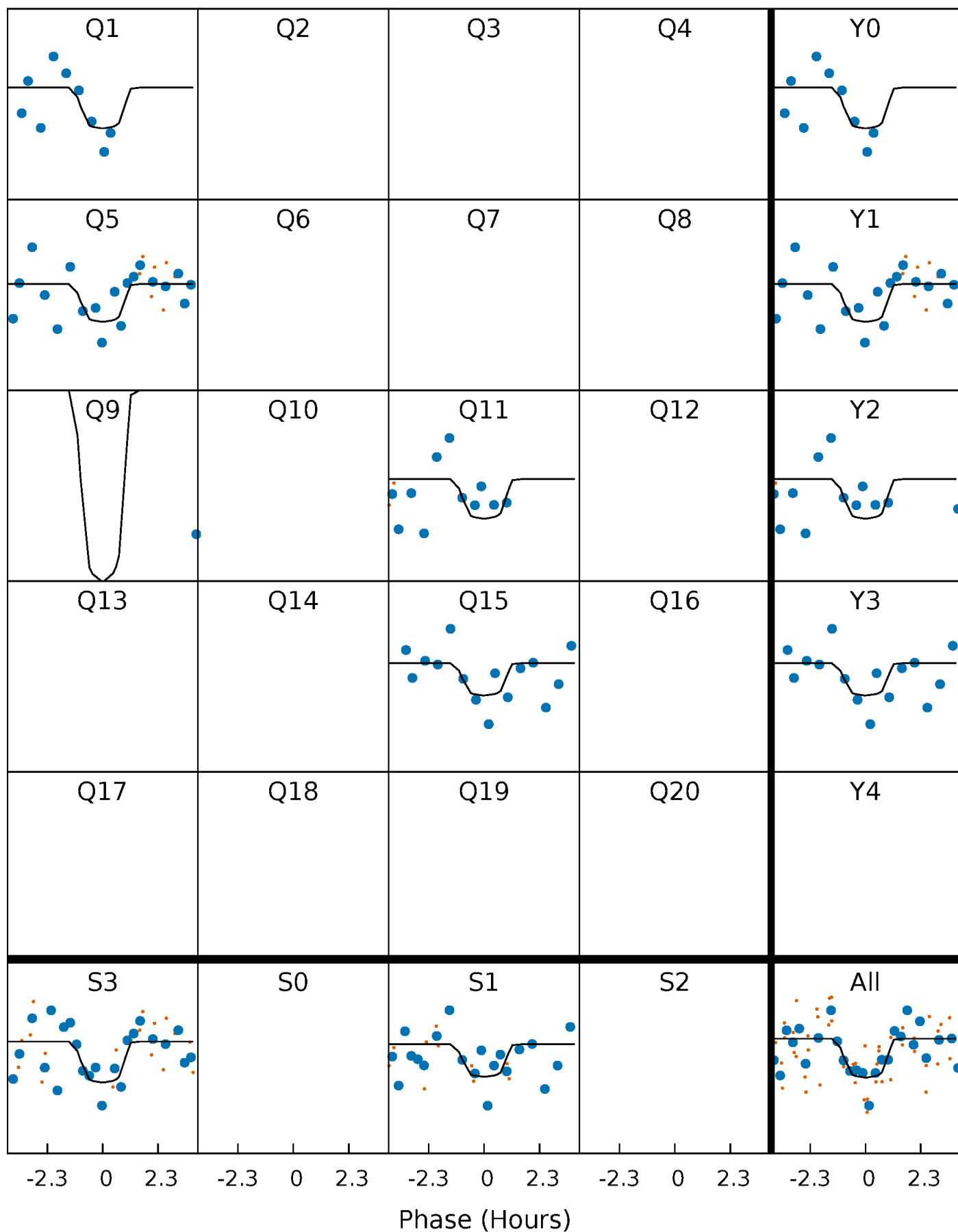
PDC Quarter-Phased Transit Curves

TCE 004756776-05 P= 36.018461 Days $T_0=139.320816$ (BKJD)



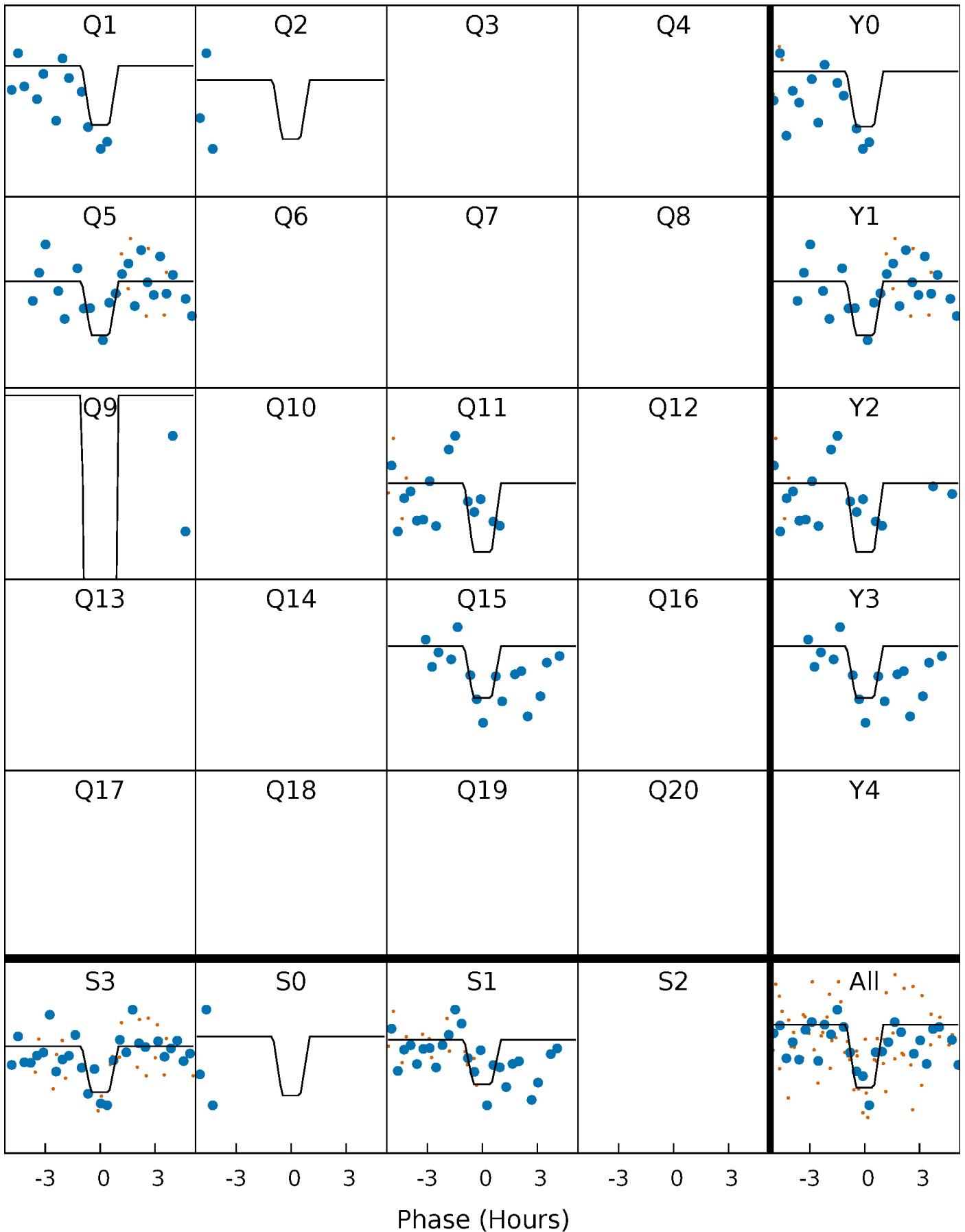
DV Quarter-Phased Transit Curves

TCE 004756776-05 $P = 36.018461$ Days $T_0 = 139.320816$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

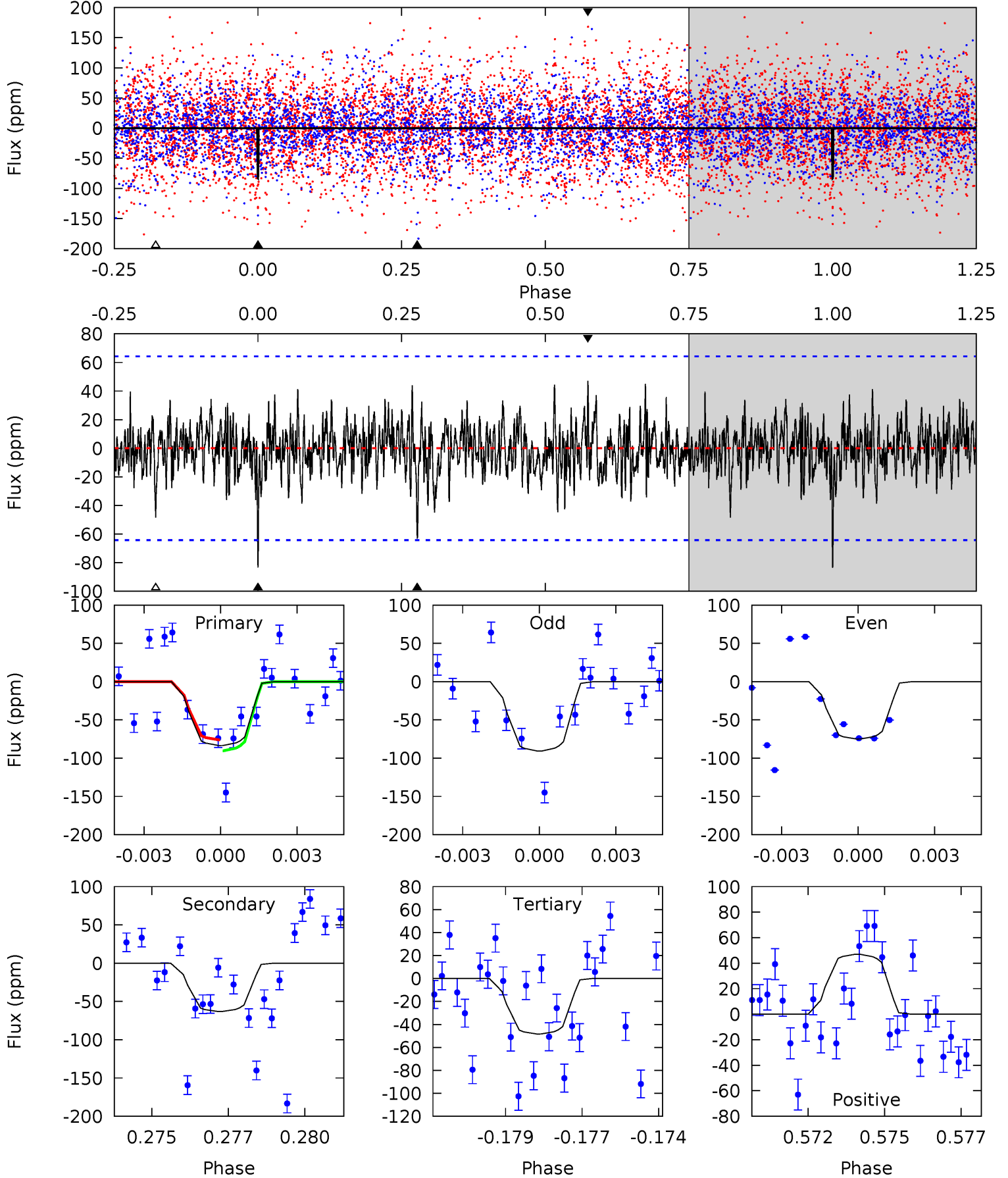
TCE 004756776-05 P= 36.018287 Days $T_0=139.322651$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-05, P = 36.018461 Days, E = 103.302355 Days

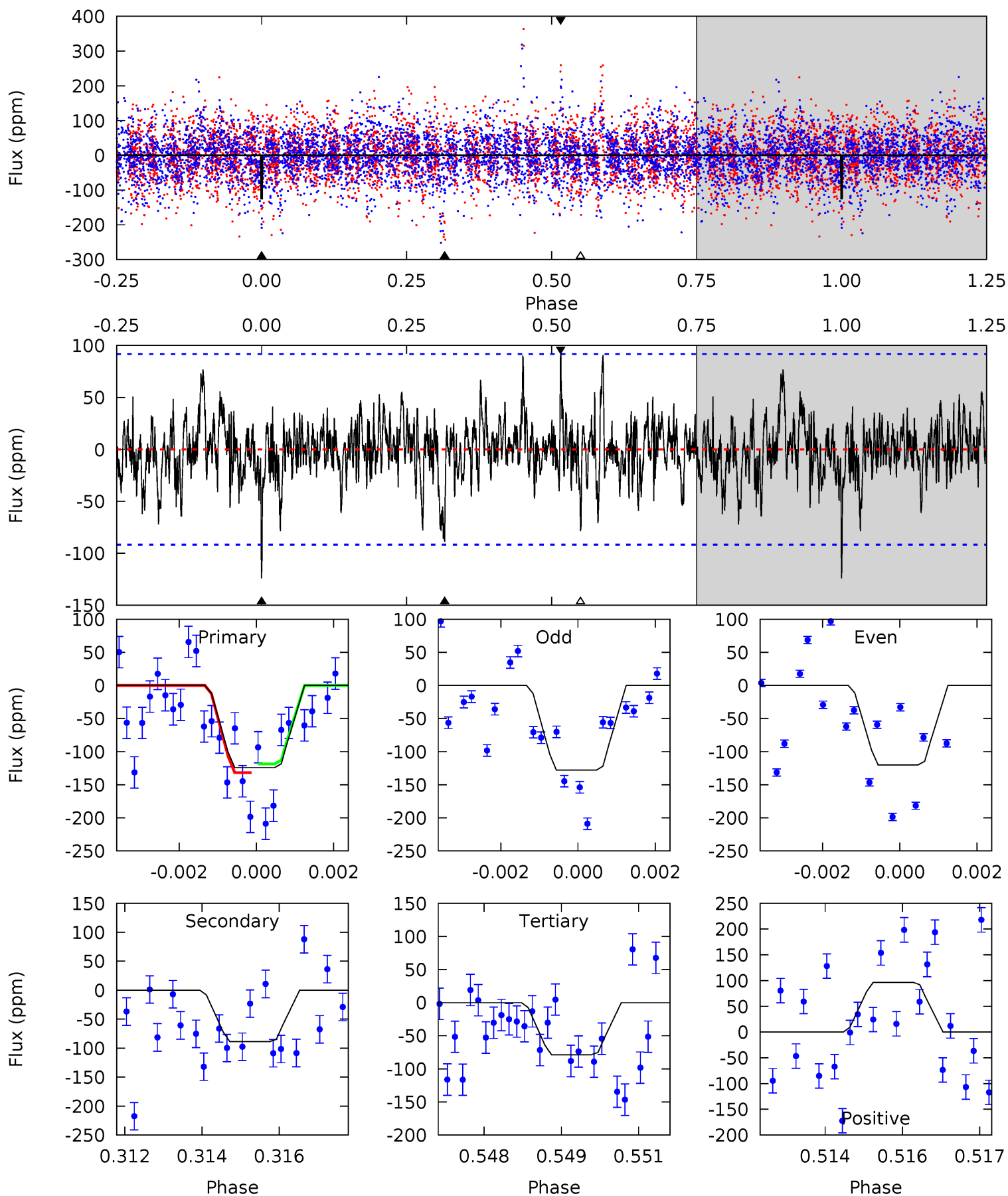
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.87	5.19	3.98	3.87	5.28	3.02	1.17	2.89	3.00	1.22	1.33	0.63	0.86	0.36	0.59



Alt Model-Shift Uniqueness Test

004756776-05, P = 36.018287 Days, E = 103.304364 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.22	5.16	4.58	5.61	5.34	3.11	1.31	2.64	1.61	0.58	-0.45	0.23	0.96	0.44	0.39



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-63 ± 12	$3.48^{+3.51}_{-2.33}$	1109^{+88}_{-88}	4518^{+3120}_{-964}	163^{+1312}_{-123}
Alt.	-89 ± 17	$3.54^{+3.54}_{-2.35}$	1113^{+90}_{-98}	4715^{+3691}_{-972}	212^{+1759}_{-158}

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

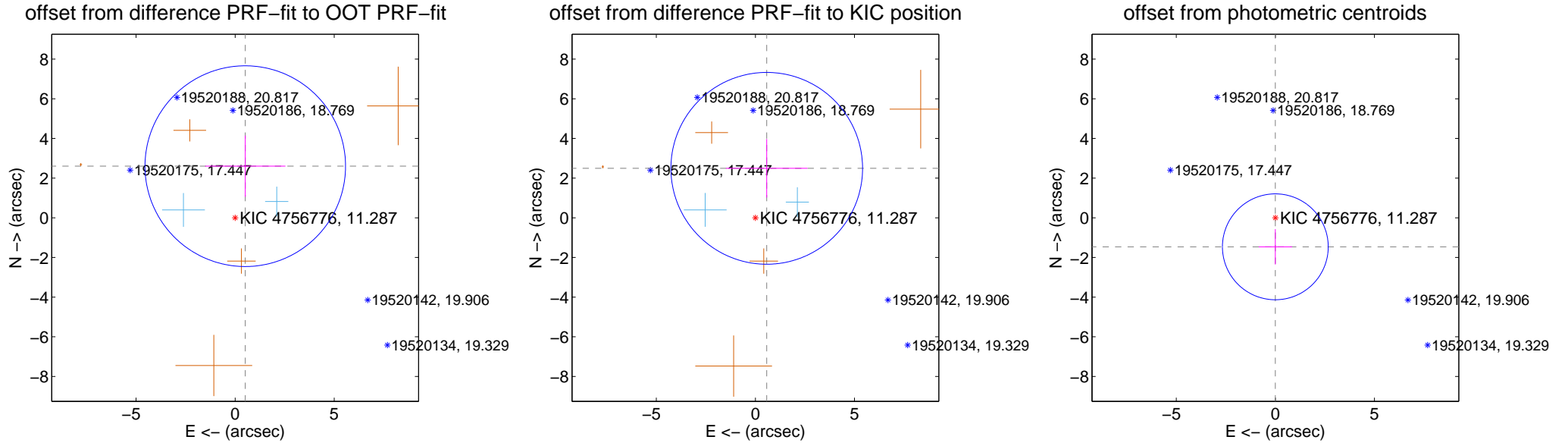
DV Centroid Data

Supplemental centroid analysis for 004756776-05. **Kepler magnitude: 11.29.** Transit SNR 9.05

There are 2 quarters with good PRF difference image offsets

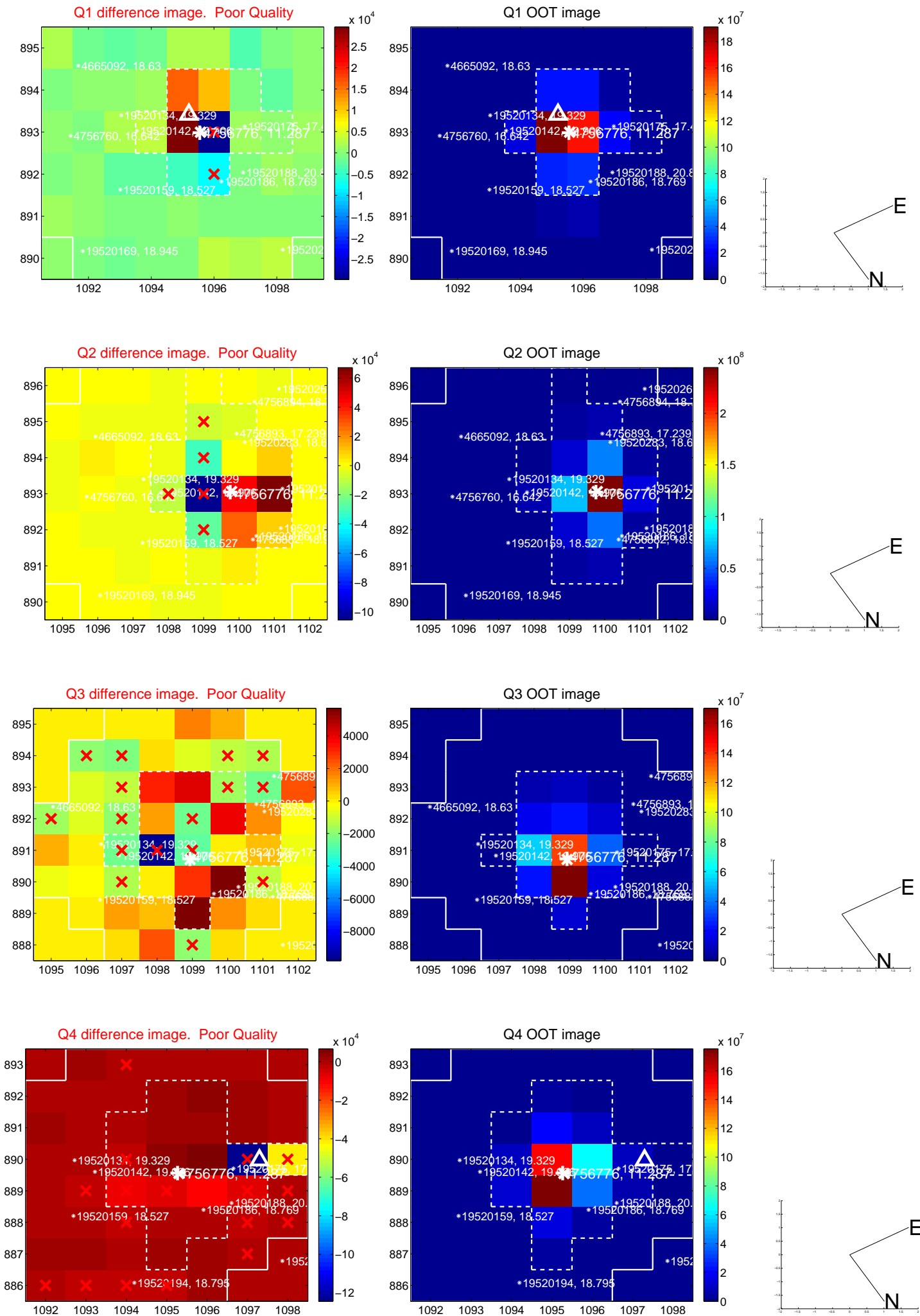
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.653 ± 1.687	1.57	-0.511 ± 2.026	2.603 ± 1.545
PRF-fit source offset from KIC position	2.559 ± 1.612	1.59	-0.572 ± 2.060	2.494 ± 1.476
photometric centroid source offset	1.46 ± 0.89	1.64	0.00 ± 0.84	-1.46 ± 0.89

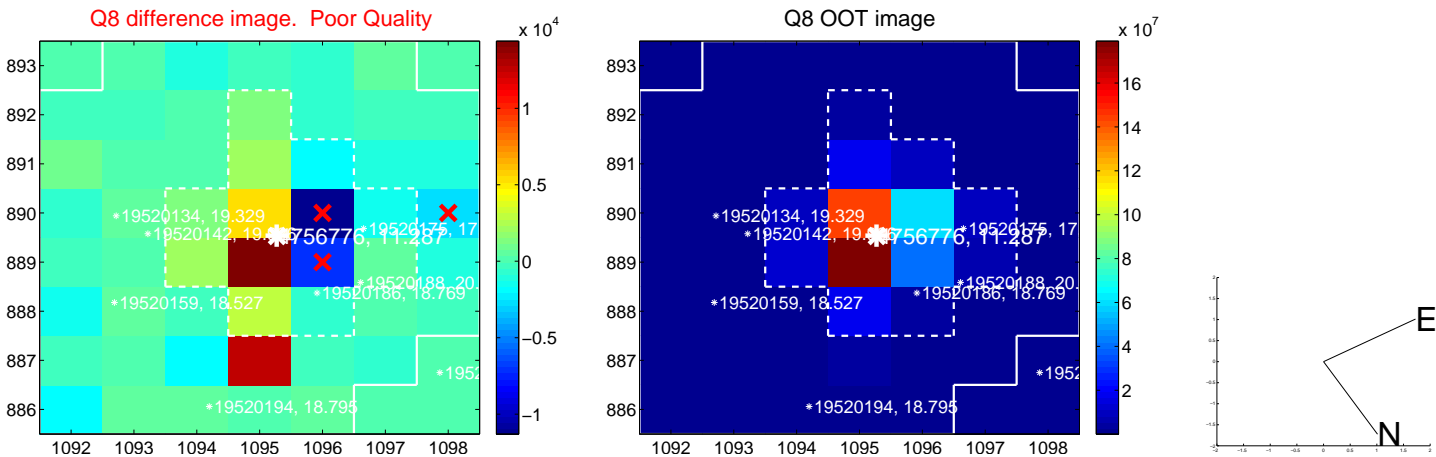
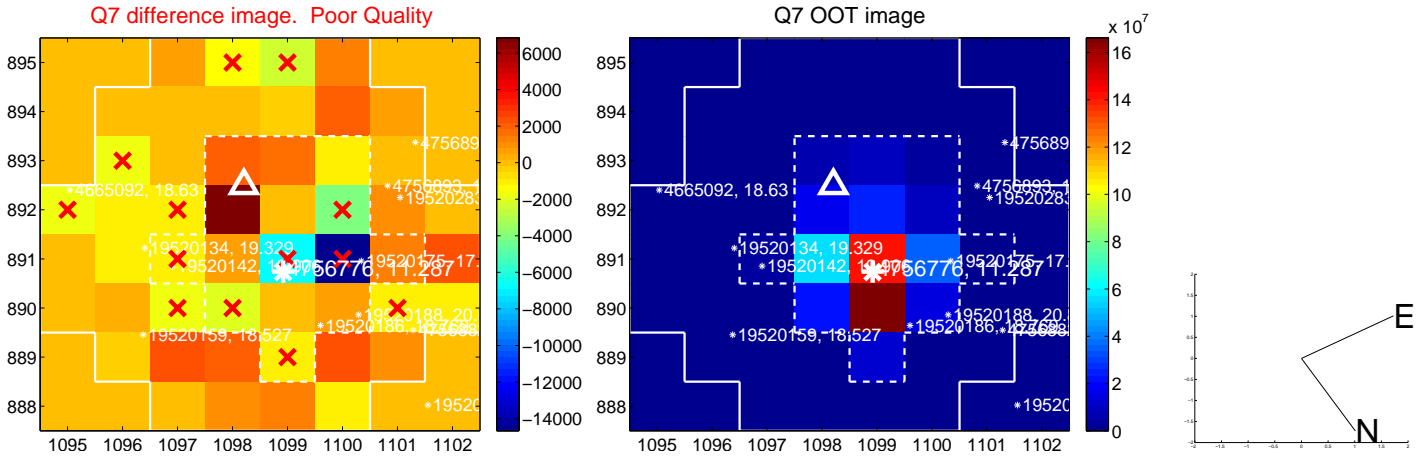
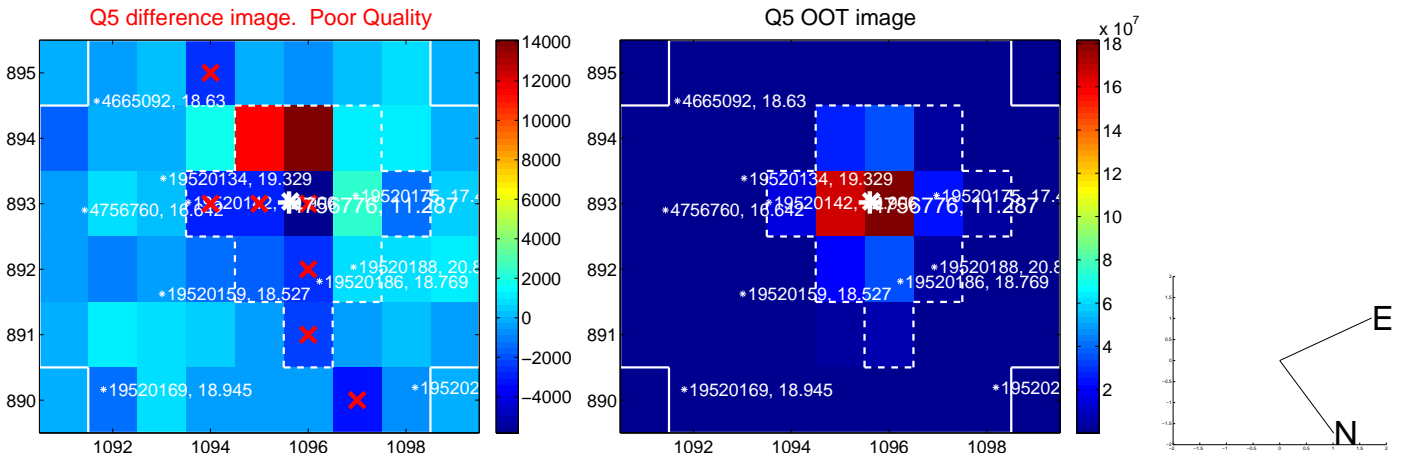


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 are from the UKIRT catalog.

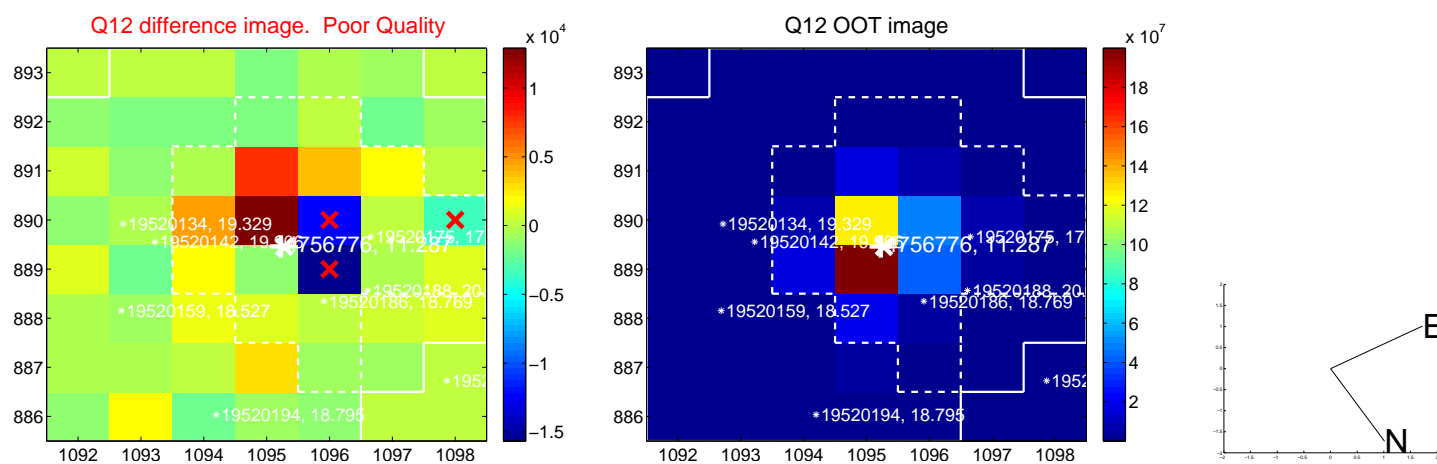
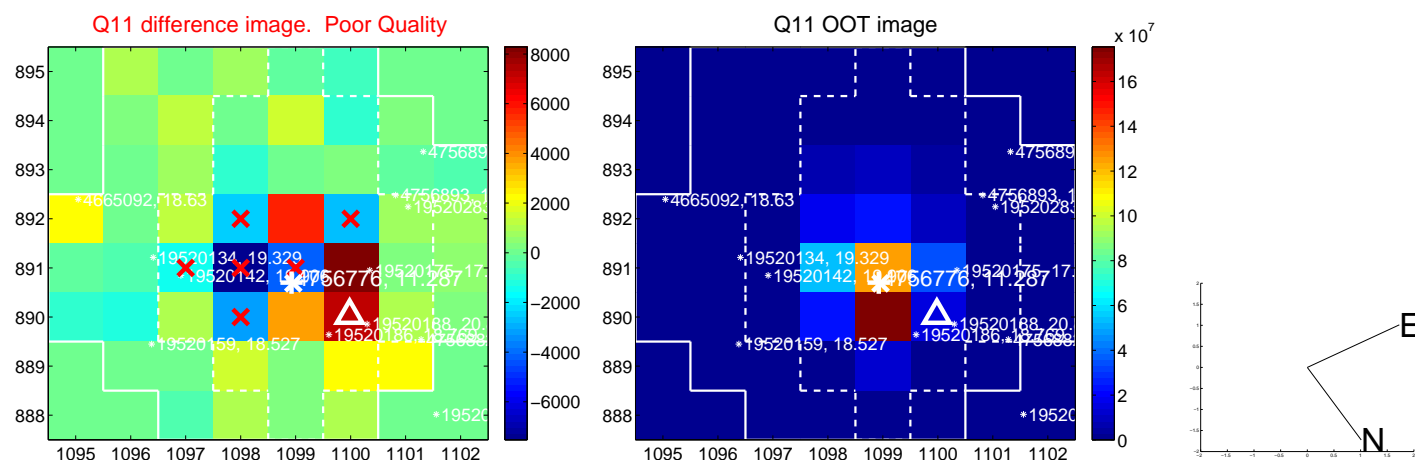
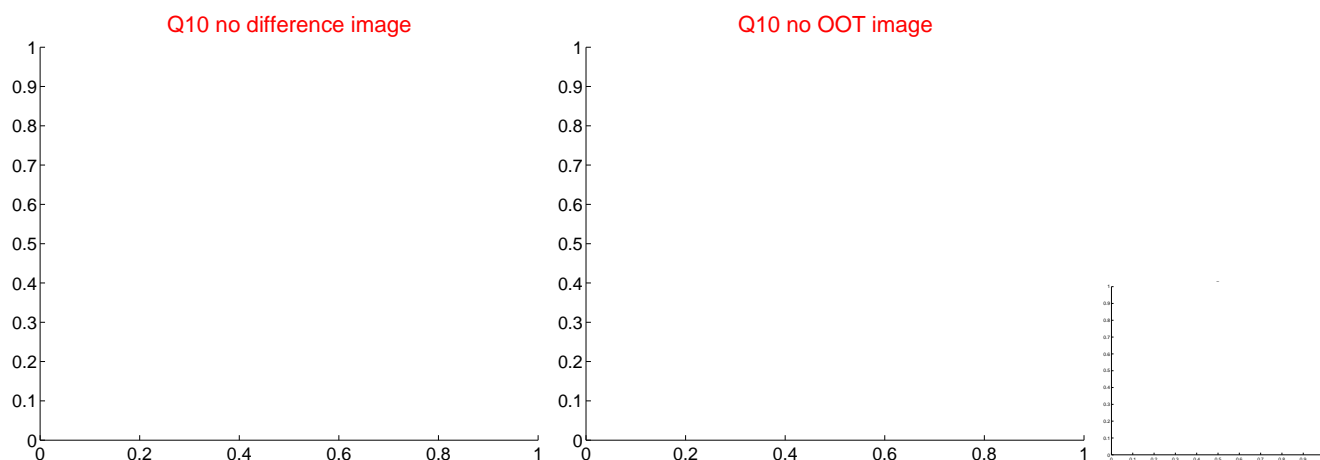
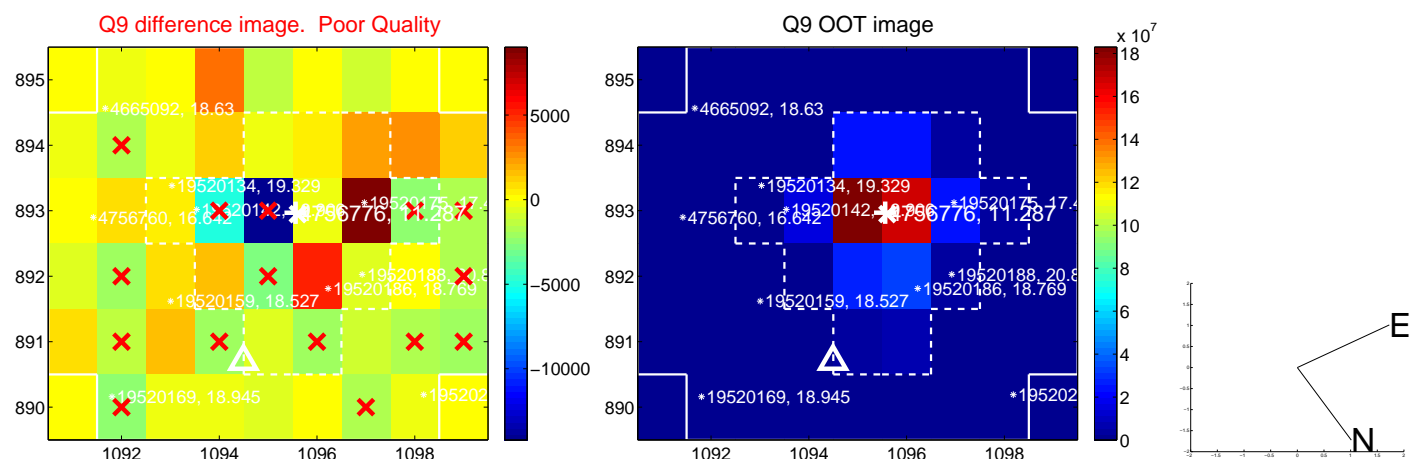
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



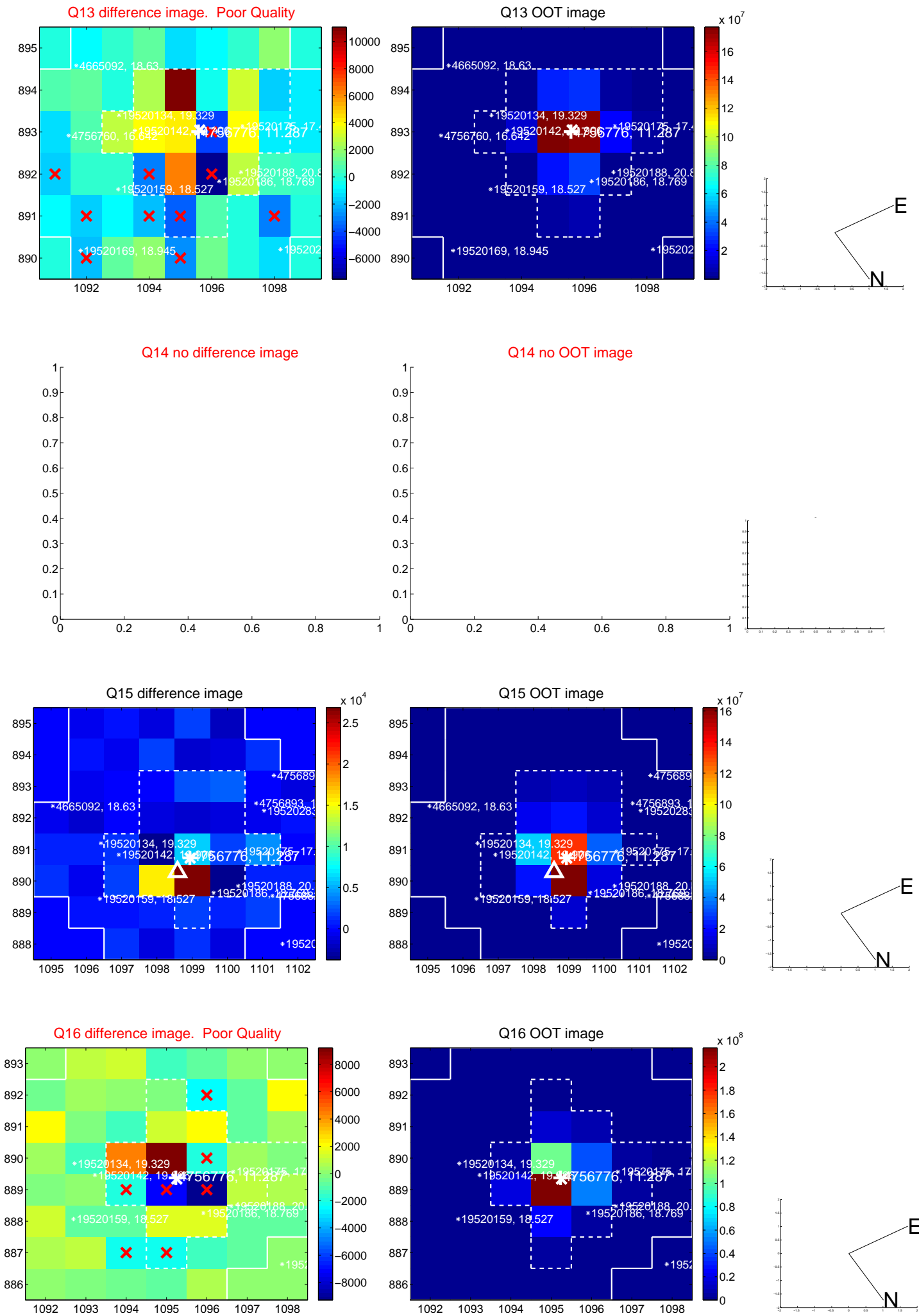
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



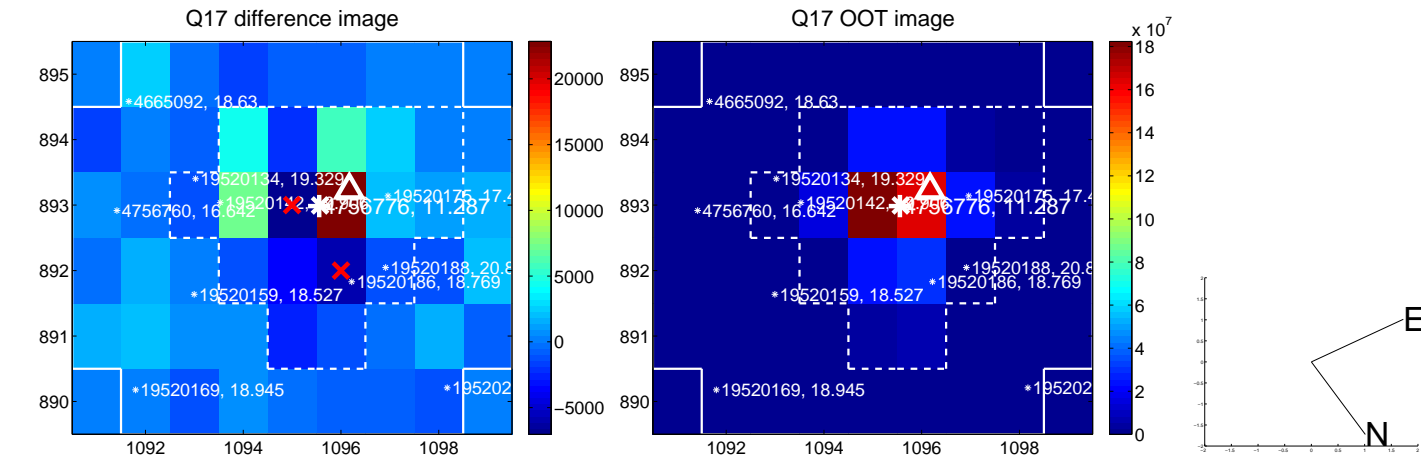
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



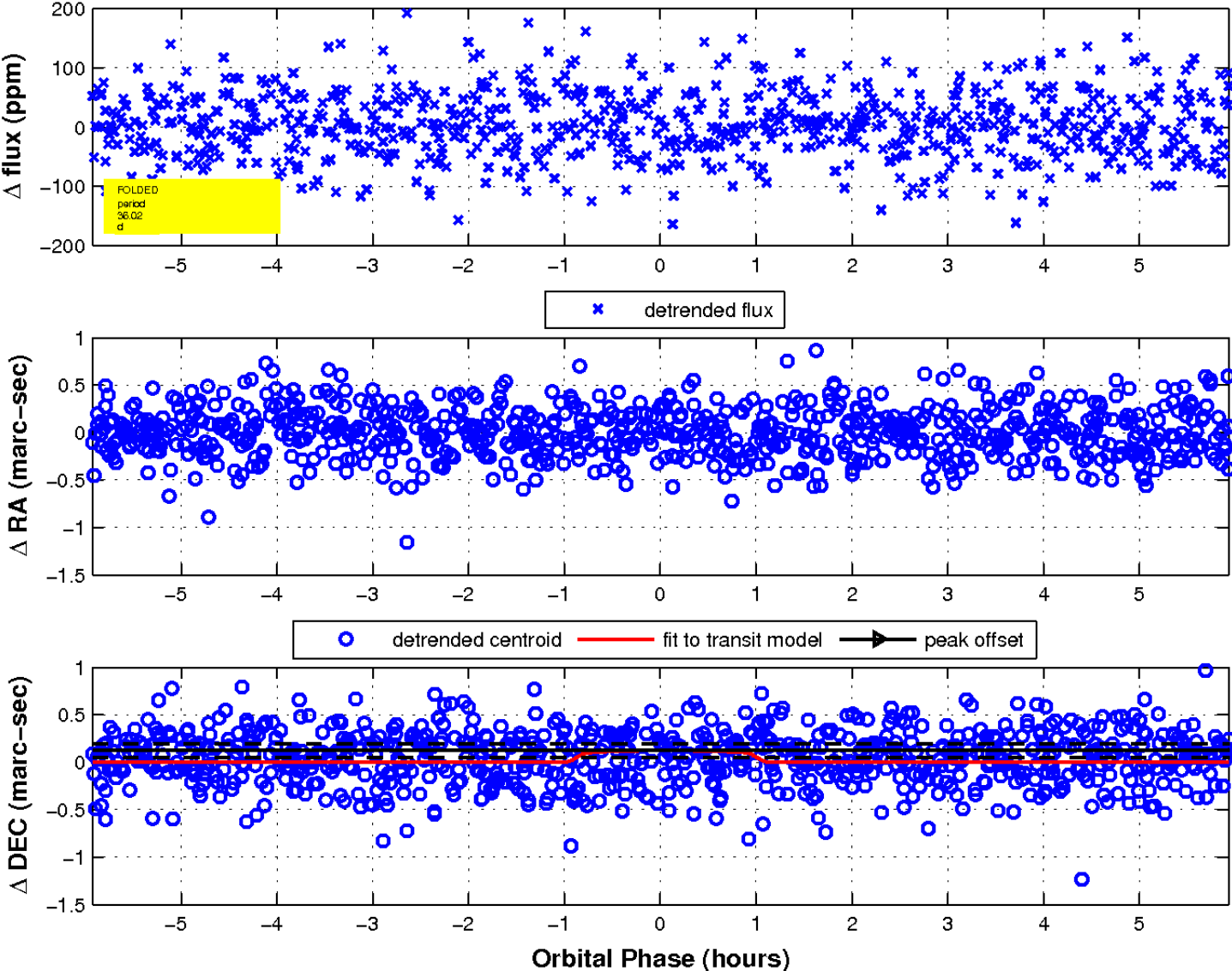
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

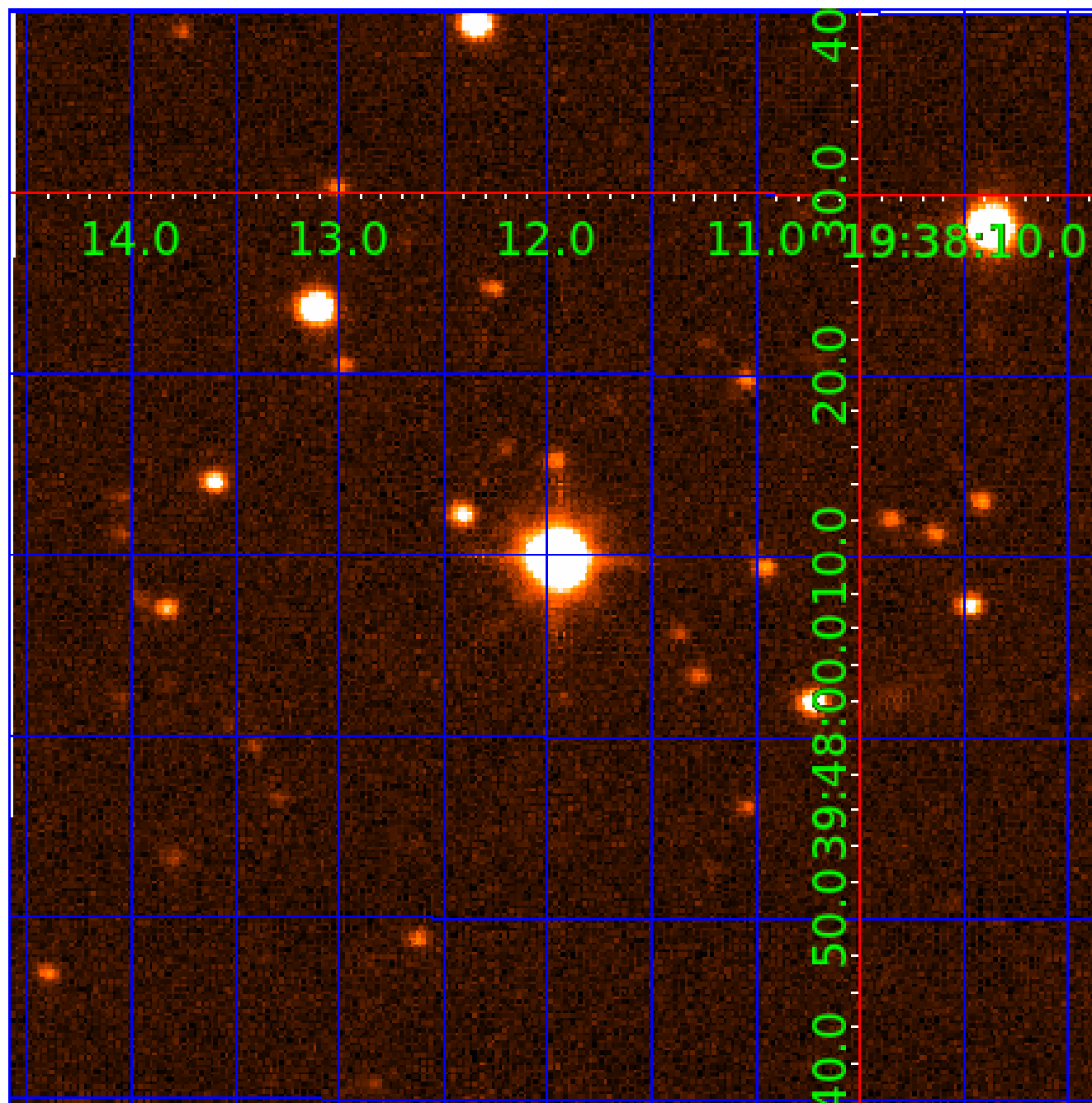


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 004756776

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})
004756776-01	OBS	No	2.476973	132.998632	8.0	17.034	11.4	9.8	1.76	6677	0.60	3477.99
004756776-02	OBS	No	74.435111	156.819172	200.9	10.079	27.4	15.3	1.76	6677	4.91	37.23
004756776-03	OBS	No	27.083855	149.534697	70.9	5.710	11.9	11.5	1.76	6677	1.70	143.31
004756776-04	OBS	No	28.604106	151.552323	130.4	0.989	9.6	8.8	1.76	6677	2.08	133.25
004756776-05	OBS	No	36.018461	139.320816	84.0	1.980	8.8	9.0	1.76	6677	1.85	97.99
004756776-06	OBS	No	44.362801	141.937107	145.3	1.063	8.3	9.3	1.76	6677	2.63	74.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004756776-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
004756776-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004756776-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
004756776-05	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED—EPHEM_MATCH
004756776-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

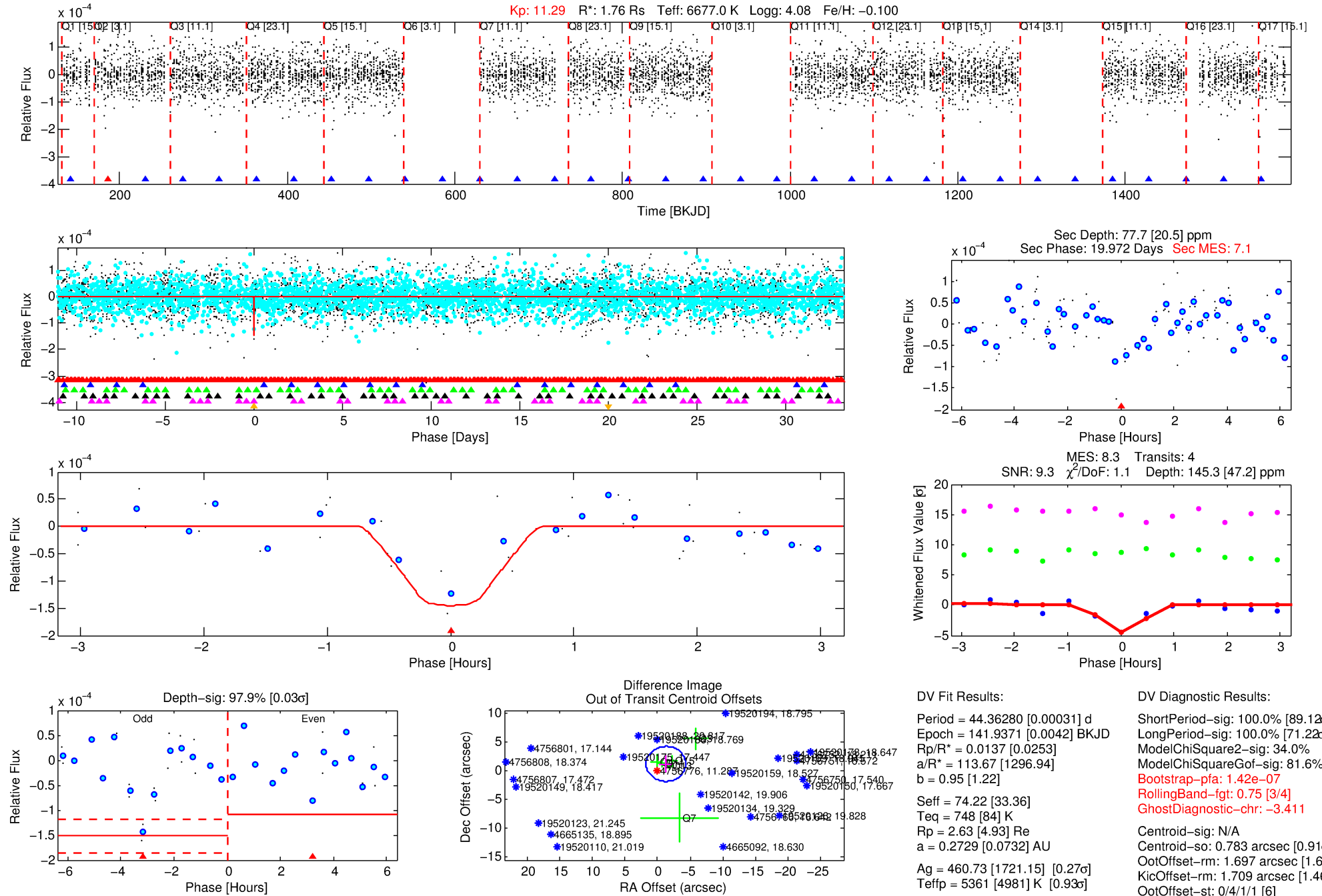
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004756776-06

No Significant Match Found

DV One-Page Summary

KIC: 4756776 Candidate: 6 of 6 Period: 44.363 d



DV Fit Results:

Period = 44.36280 [0.00031] d
Epoch = 141.9371 [0.0042] BKJD
Rp/R* = 0.0137 [0.0253]
a/R* = 113.67 [1296.94]
b = 0.95 [1.22]
Seff = 74.22 [33.36]
Teq = 748 [84] K
Rp = 2.63 [4.93] Re
a = 0.2729 [0.0732] AU
Ag = 460.73 [1721.15] [0.27σ]
Teff = 5361 [4981] K [0.93σ]

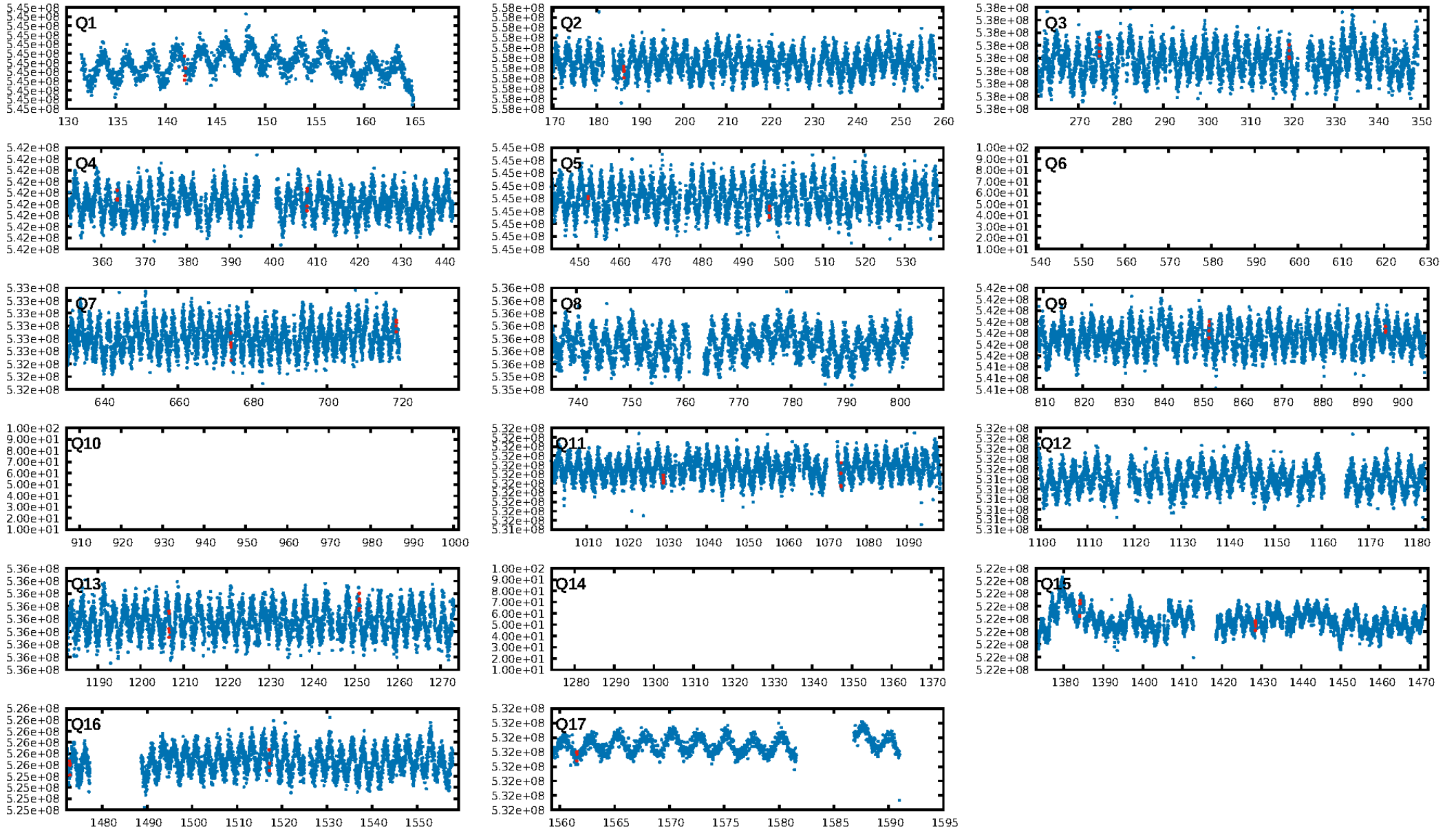
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.12σ]
LongPeriod-sig: 100.0% [71.22σ]
ModelChiSquare2-sig: 34.0%
ModelChiSquareGof-sig: 81.6%
Bootstrap-pfa: 1.42e-07
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: -3.411
Centroid-sig: N/A
Centroid-so: 0.783 arcsec [0.91σ]
OotOffset-rm: 1.697 arcsec [1.67σ]
KicOffset-rm: 1.709 arcsec [1.46σ]
OotOffset-st: 0/4/1/1 [6]
KicOffset-st: 0/4/1/1 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.58 [7/12]

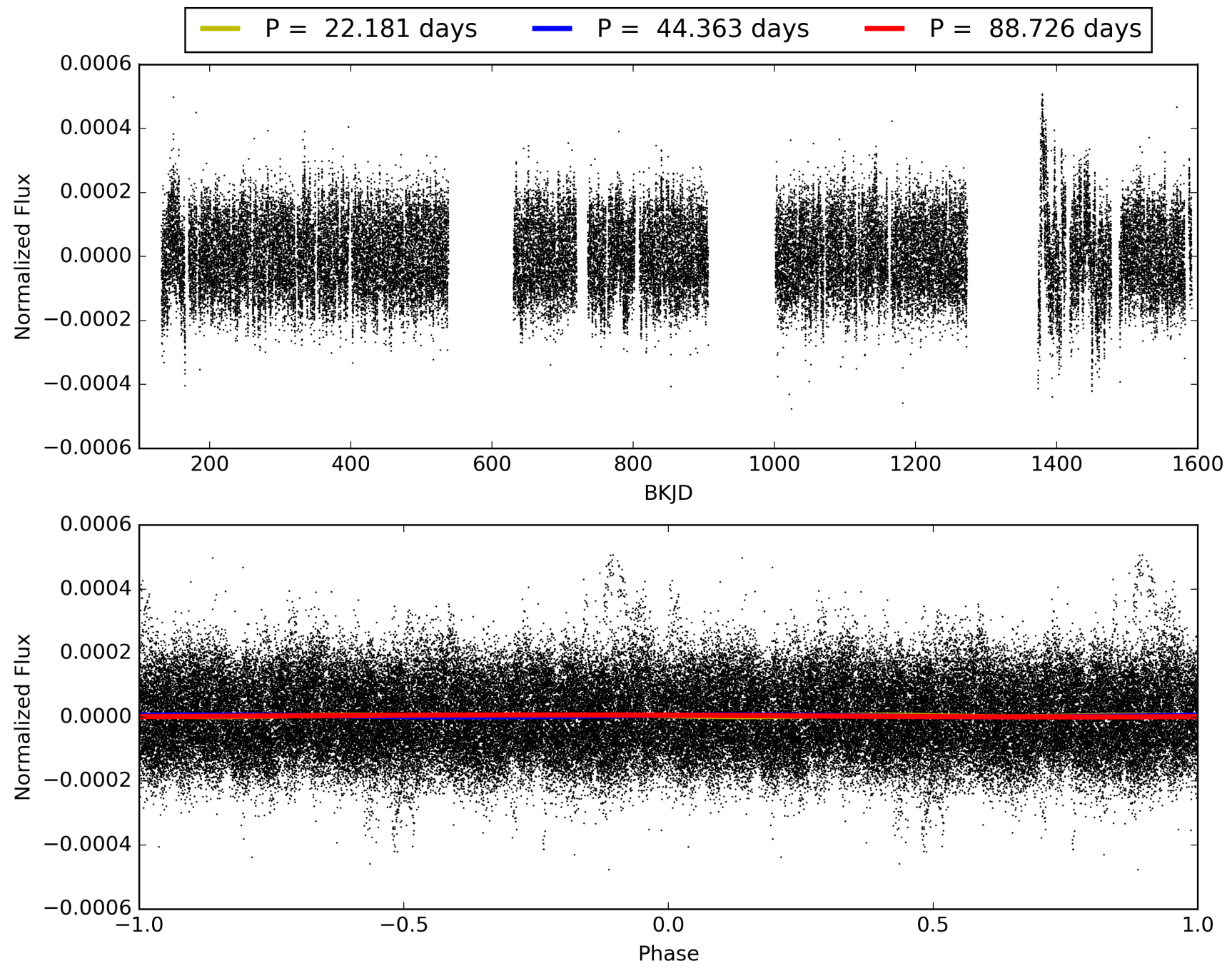
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:57:43 Z

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

TCE 004756776-06, PDC Light Curves

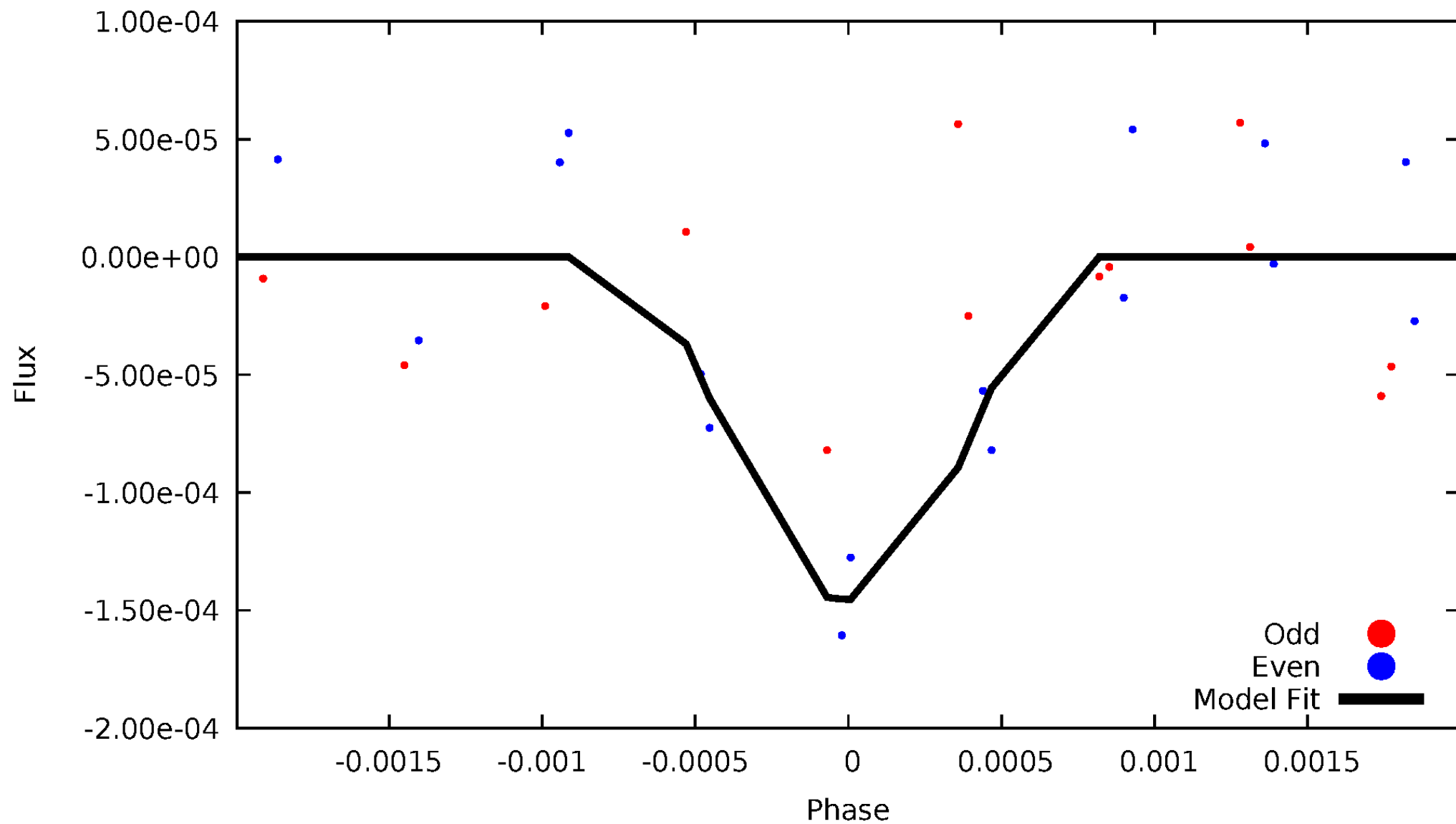


TCE 004756776-06



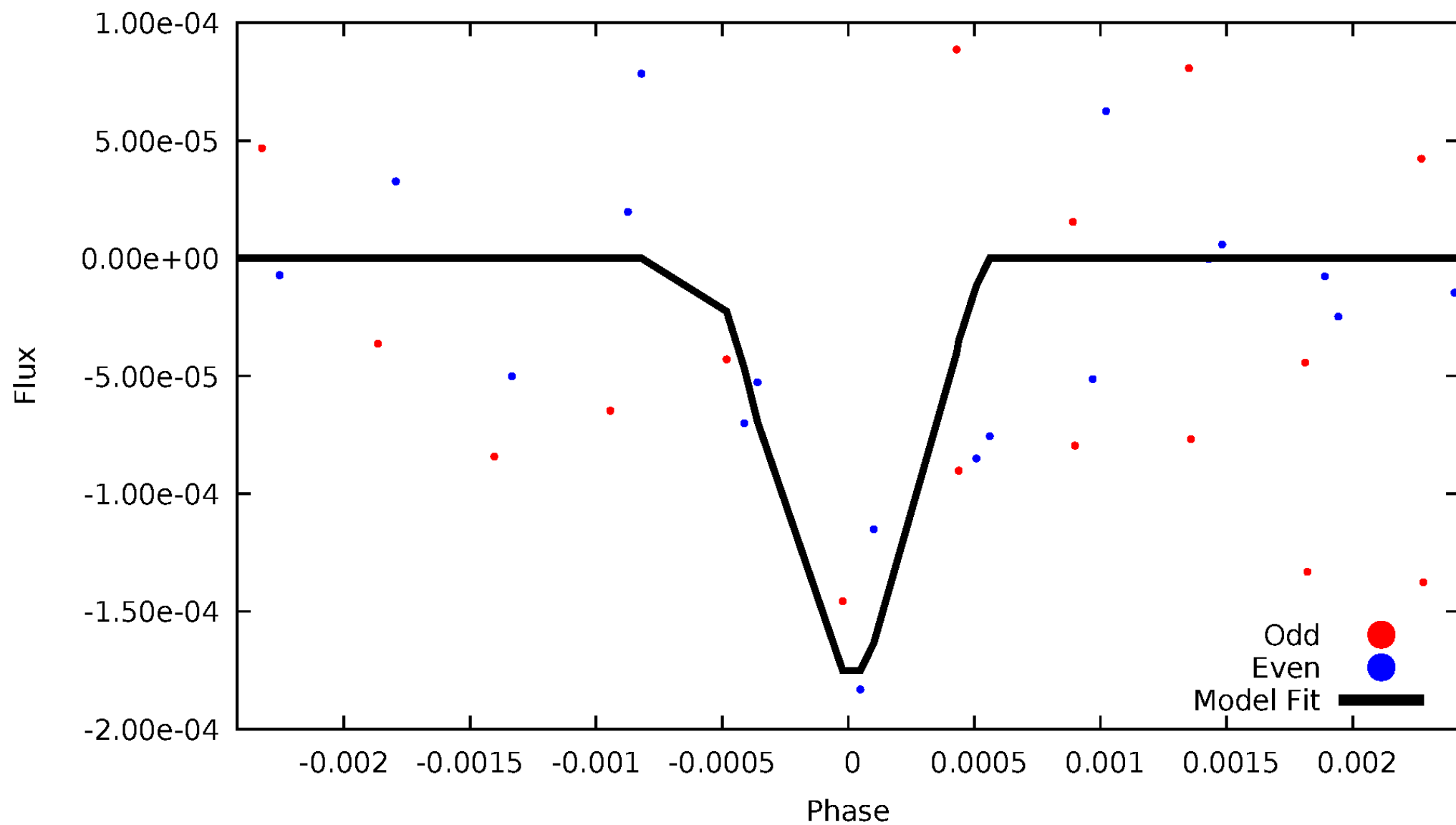
DV Odd/Even

TCE 004756776-06



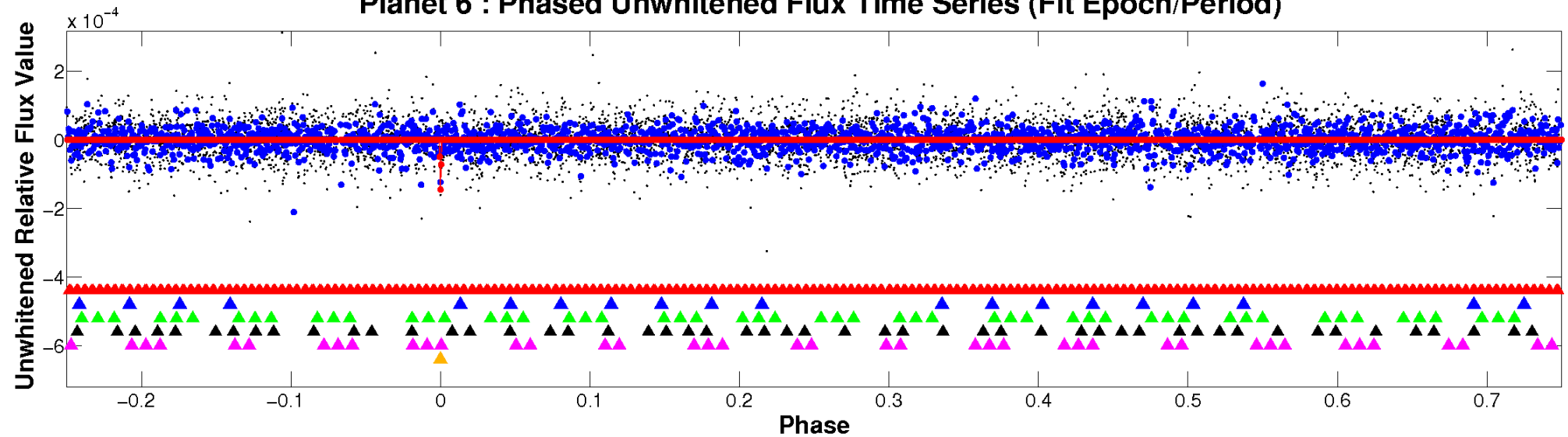
ALT Odd/Even

TCE 004756776-06

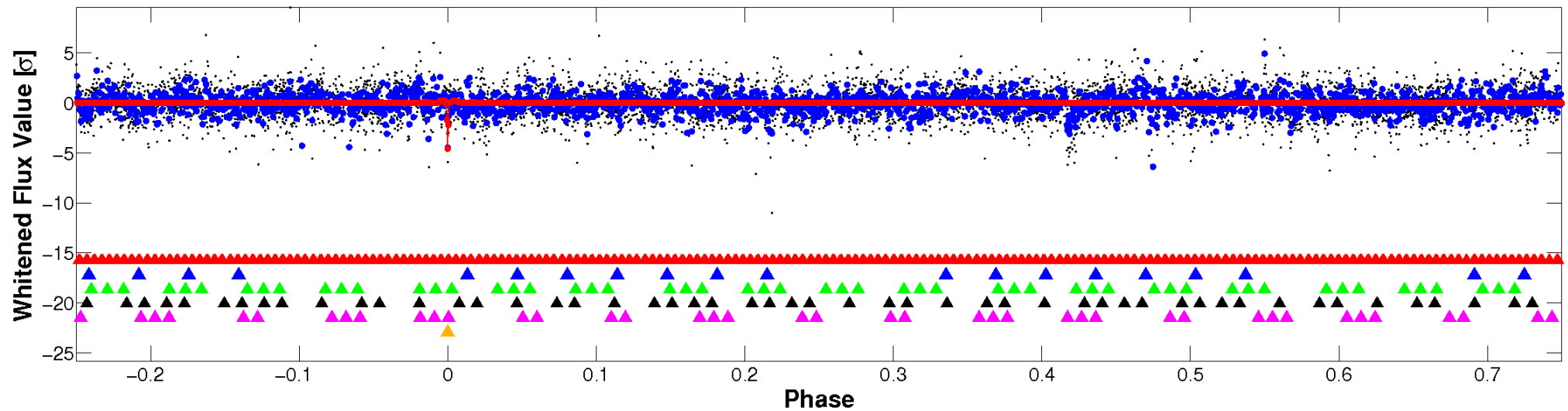


Non-Whitened Vs. Whitened Light Curve

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

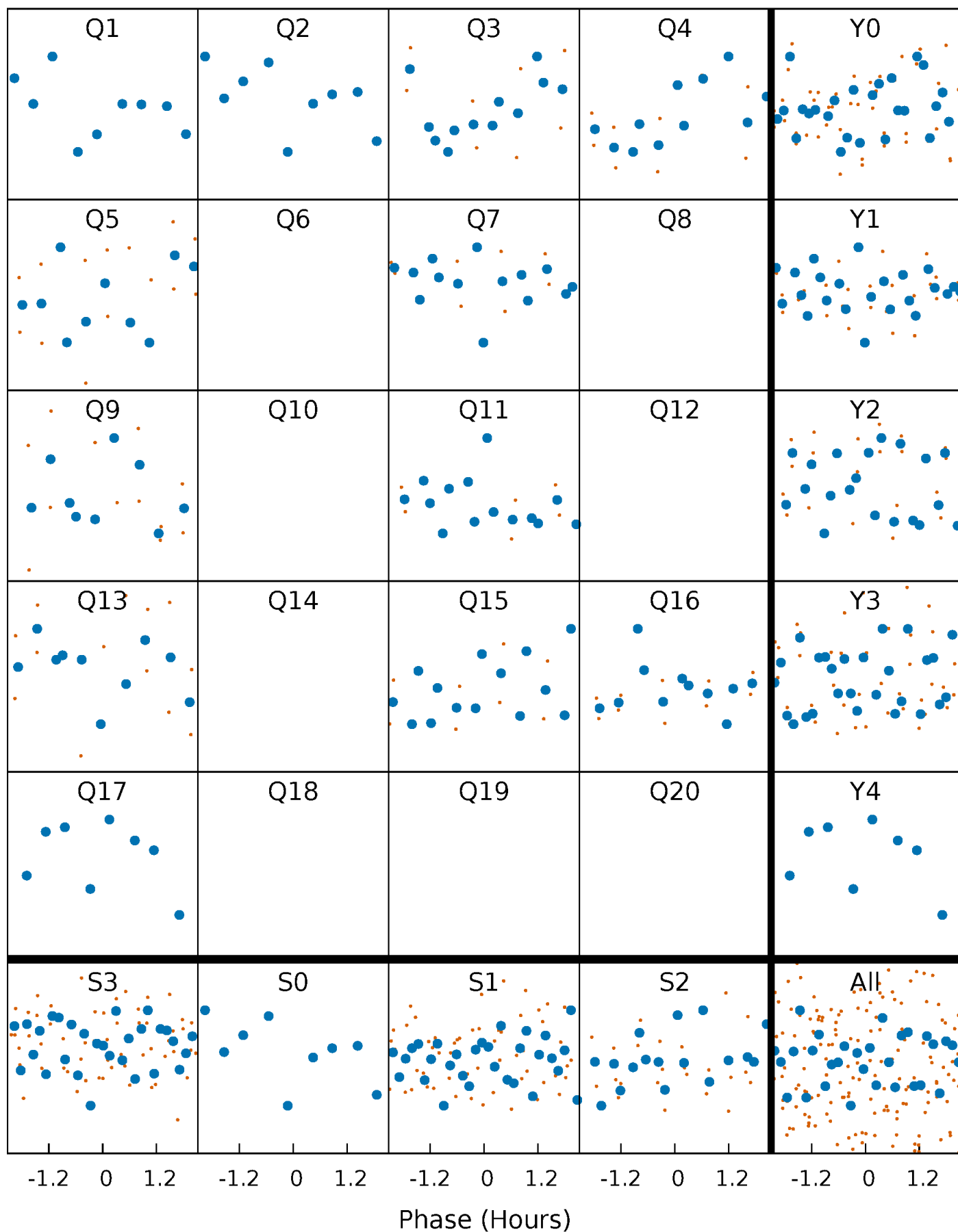


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



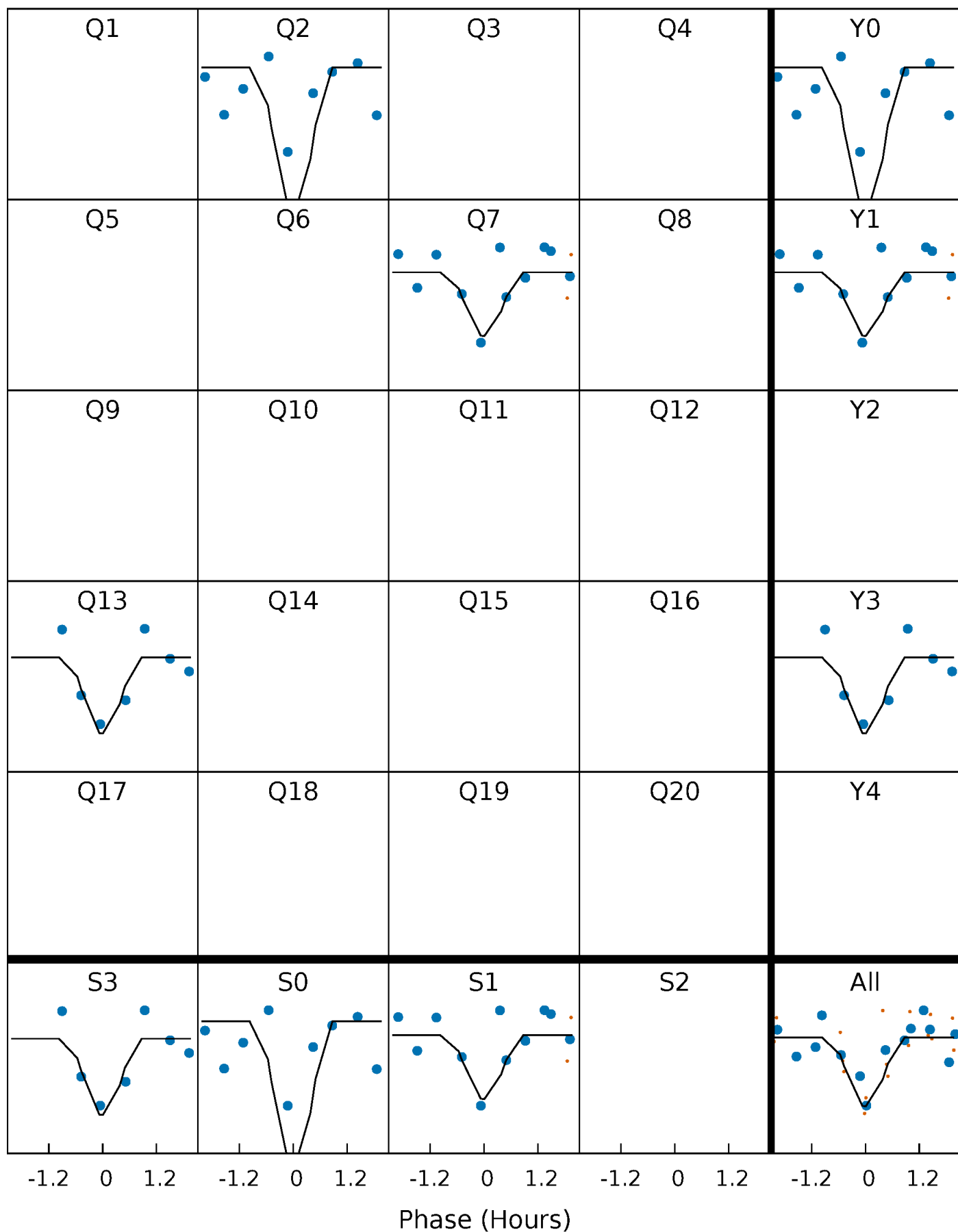
PDC Quarter-Phased Transit Curves

TCE 004756776-06 P= 44.362801 Days $T_0=141.937107$ (BKJD)



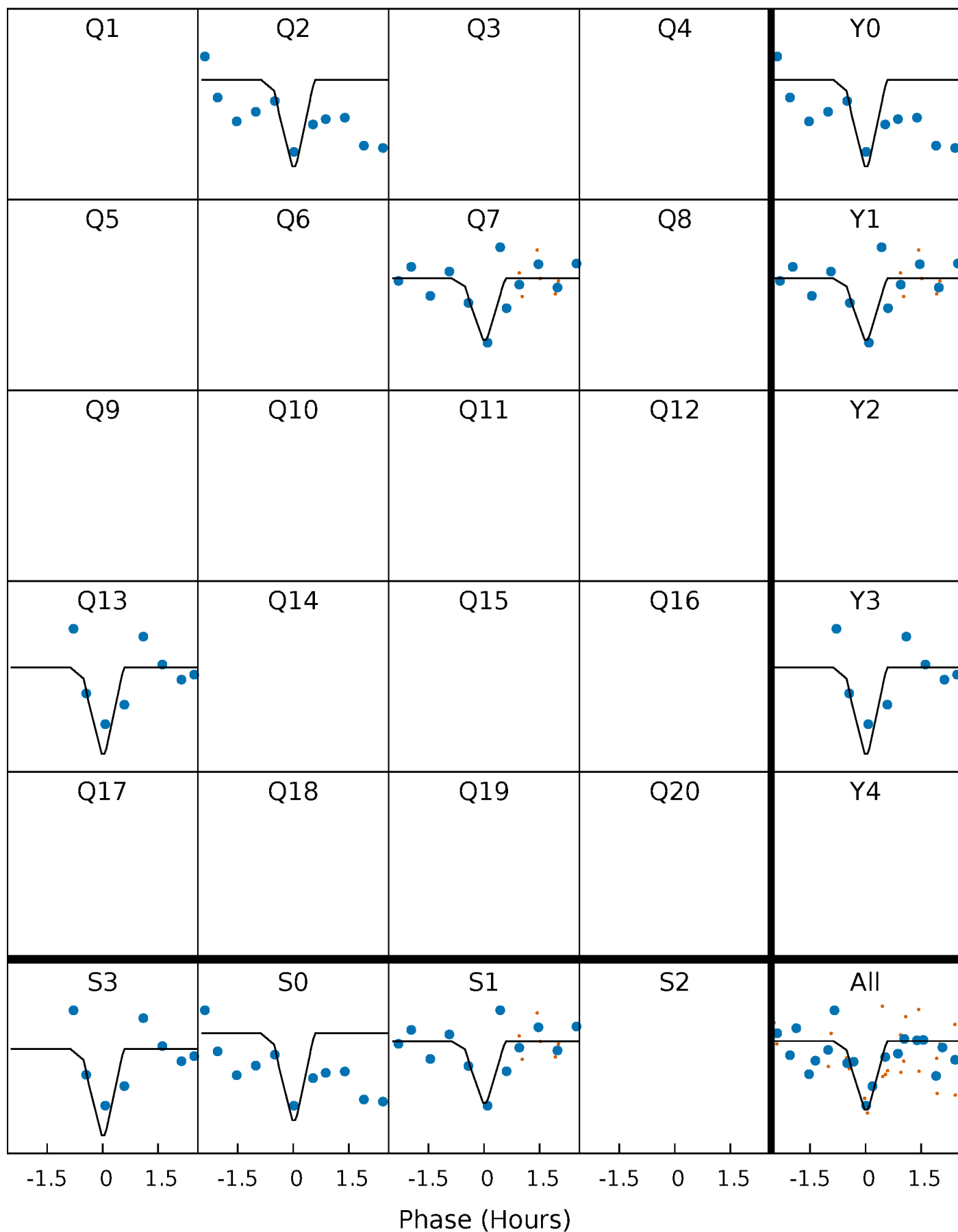
DV Quarter-Phased Transit Curves

TCE 004756776-06 P= 44.362801 Days $T_0=141.937107$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

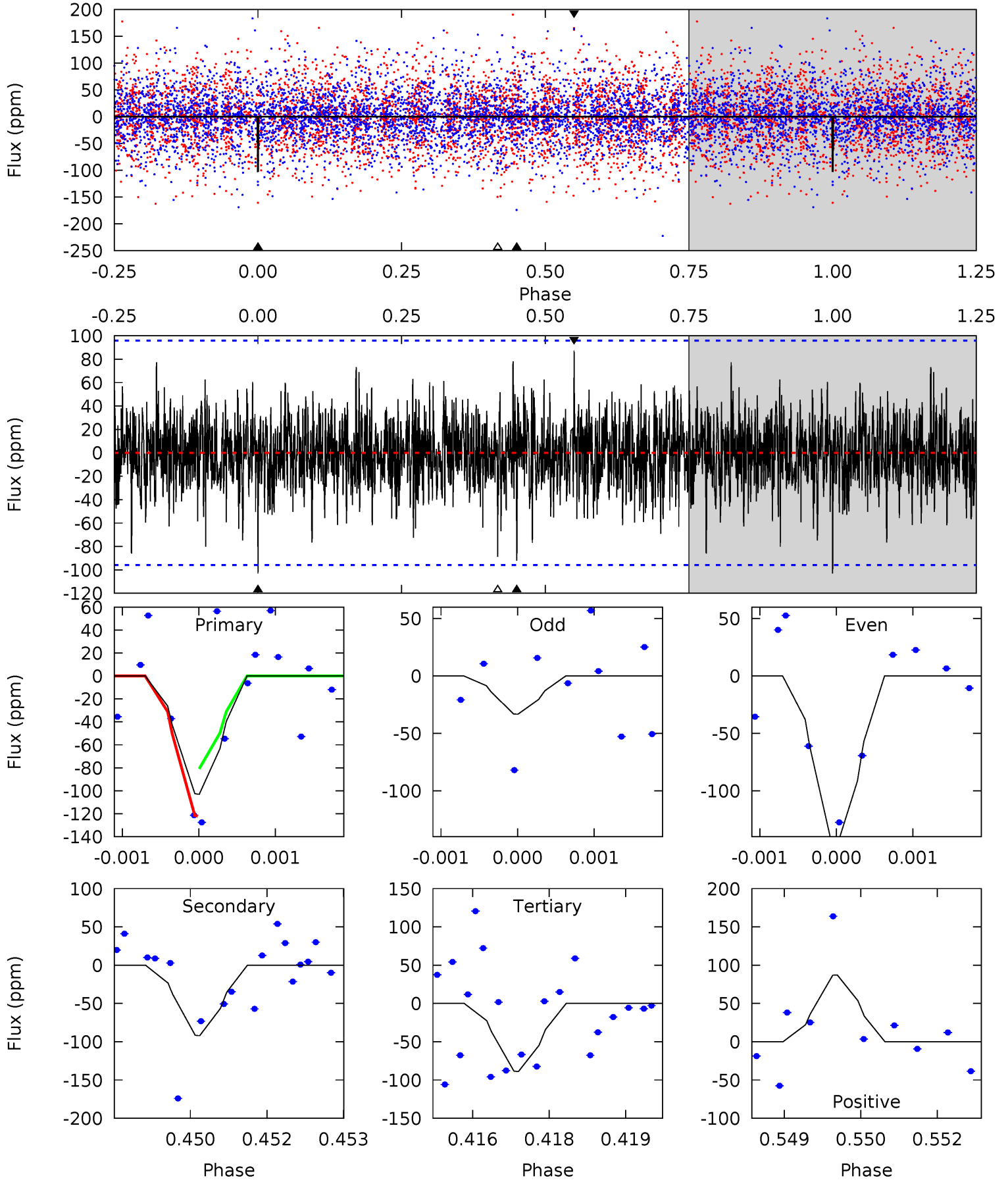
TCE 004756776-06 $P = 44.362712$ Days $T_0 = 141.935128$ (BKJD)



DV Model-Shift Uniqueness Test

004756776-06, P = 44.362801 Days, E = 97.574306 Days

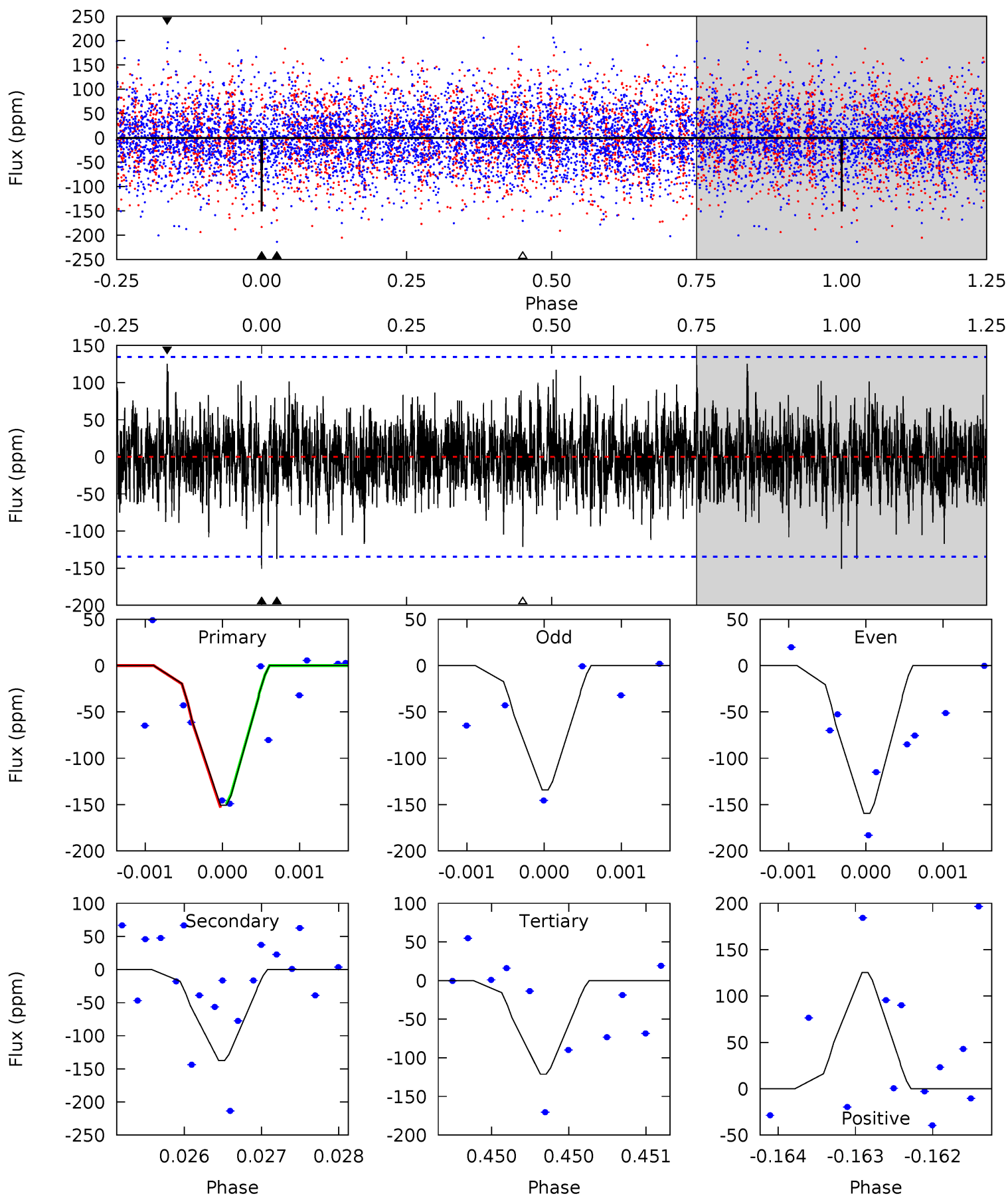
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.81	5.19	5.01	4.91	5.40	3.22	1.29	0.80	0.89	0.18	0.27	3.17	0.85	0.46	1.13



Alt Model-Shift Uniqueness Test

004756776-06, P = 44.362712 Days, E = 97.572416 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.12	5.58	4.92	5.09	5.47	3.31	1.34	1.20	1.03	0.66	0.49	0.52	0.99	0.45	0.08



Stellar Parameters For KIC 004756776

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6677^{+164}_{-281}	$4.085^{+0.240}_{-0.180}$	$-0.100^{+0.250}_{-0.300}$	$1.762^{+0.515}_{-0.515}$	$1.383^{+0.192}_{-0.288}$	$0.356^{+0.478}_{-0.181}$
	+2%/-4%	+6%/-4%	+250%/-300%	+29%/-29%	+14%/-21%	+134%/-51%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004756776-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-92 ± 18	$4.48^{+4.01}_{-3.03}$	1035^{+83}_{-88}	4413^{+2833}_{-911}	185^{+1504}_{-136}
Alt.	-137 ± 25	$4.19^{+3.87}_{-2.87}$	1036^{+80}_{-98}	4914^{+4154}_{-1124}	312^{+2893}_{-229}

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

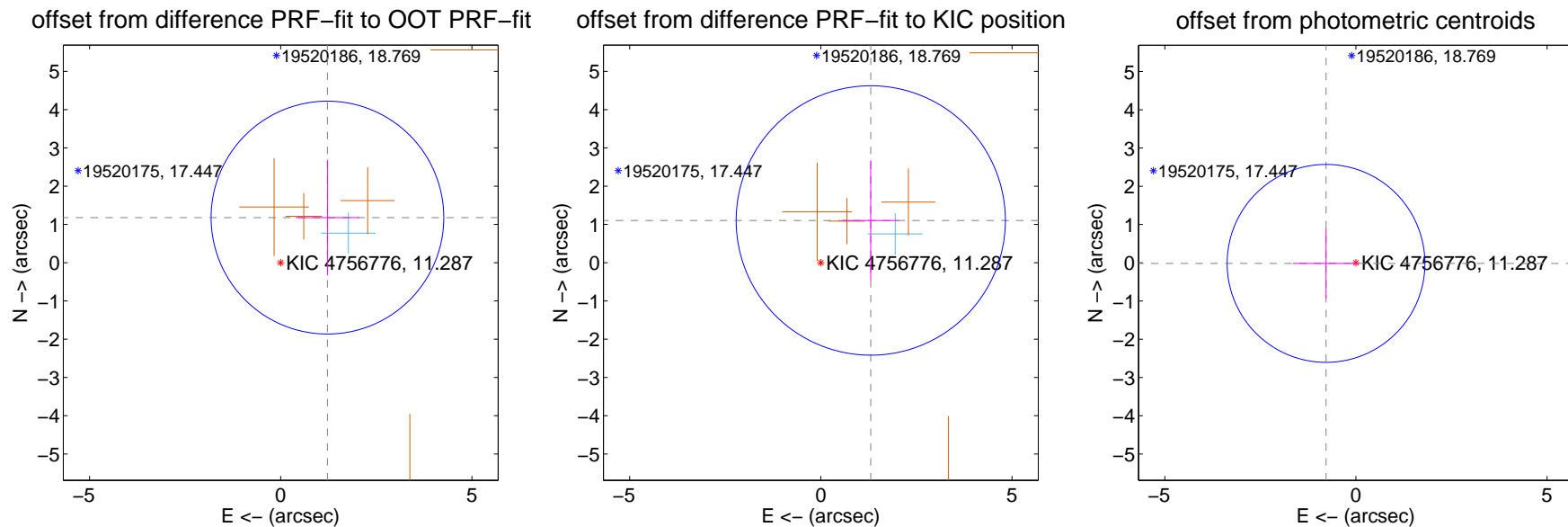
DV Centroid Data

Supplemental centroid analysis for 004756776-06. **Kepler magnitude: 11.29.** Transit SNR 9.26

There are 1 quarters with good PRF difference image offsets

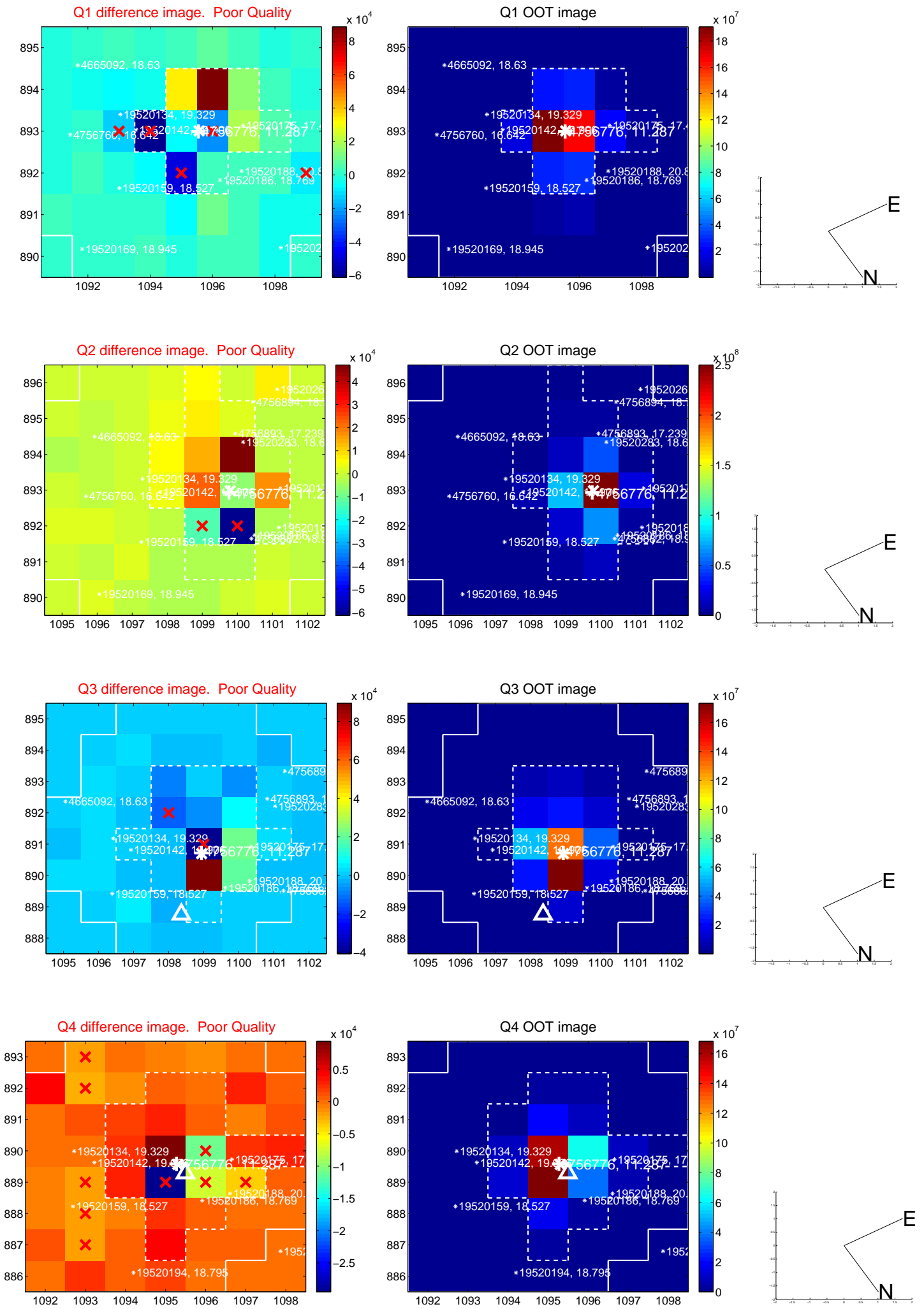
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.697 ± 1.014	1.67	-1.221 ± 0.830	1.178 ± 1.508
PRF-fit source offset from KIC position	1.709 ± 1.173	1.46	-1.305 ± 0.735	1.103 ± 1.568
photometric centroid source offset	0.78 ± 0.86	0.91	0.78 ± 0.86	-0.02 ± 0.92

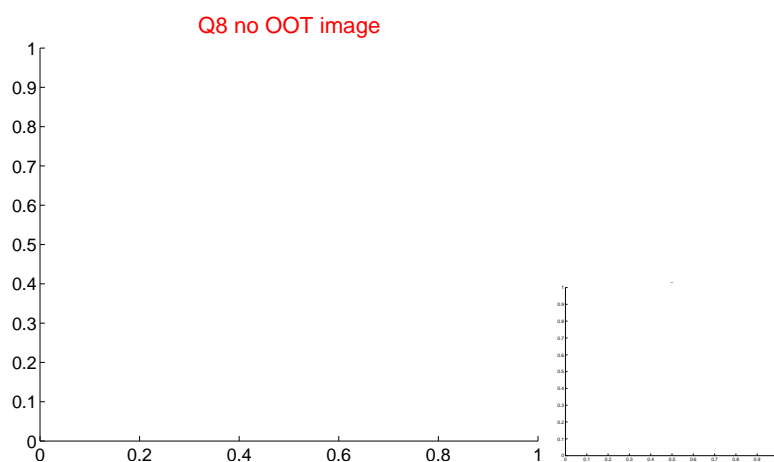
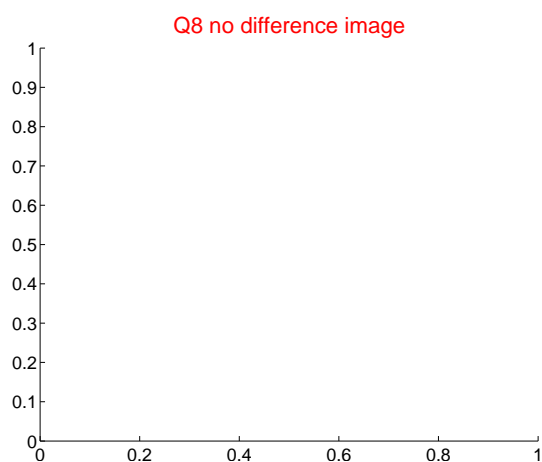
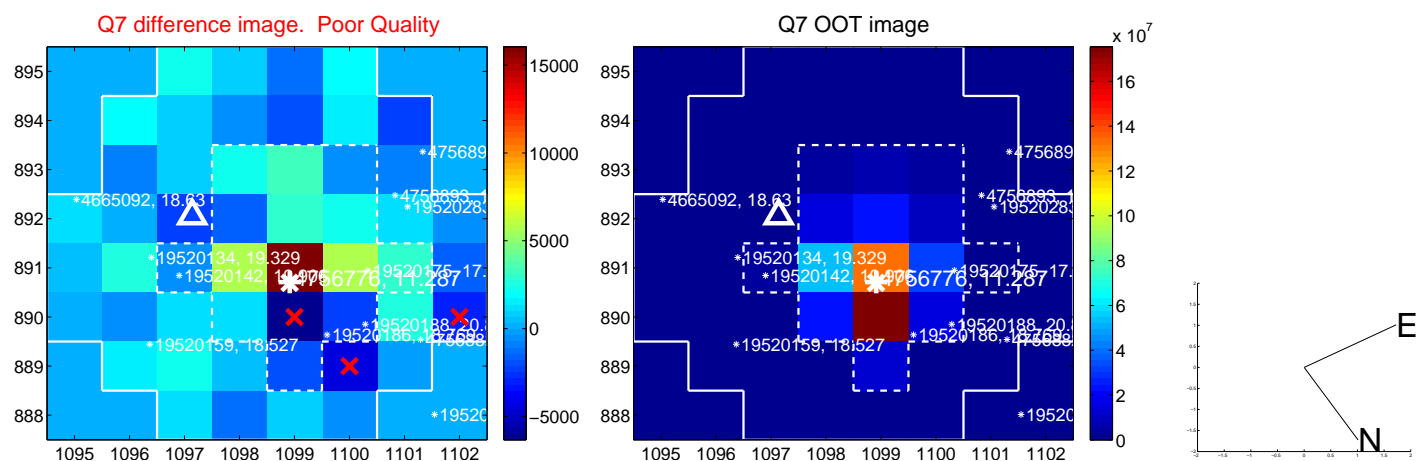
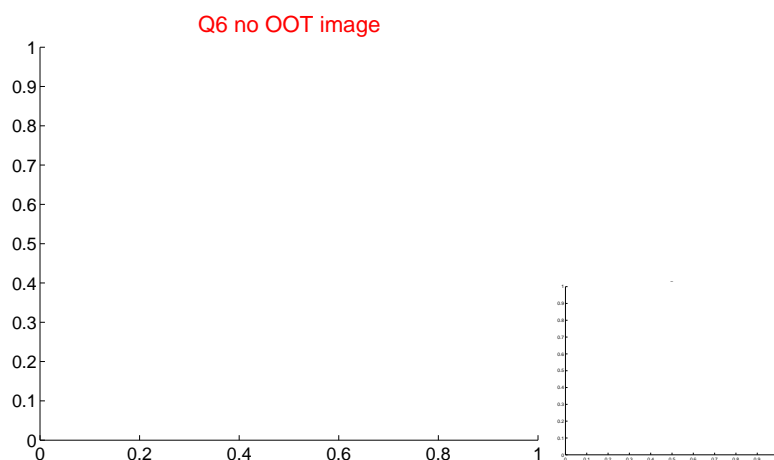
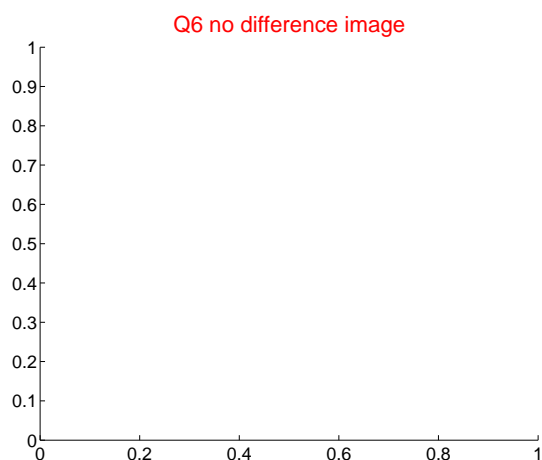
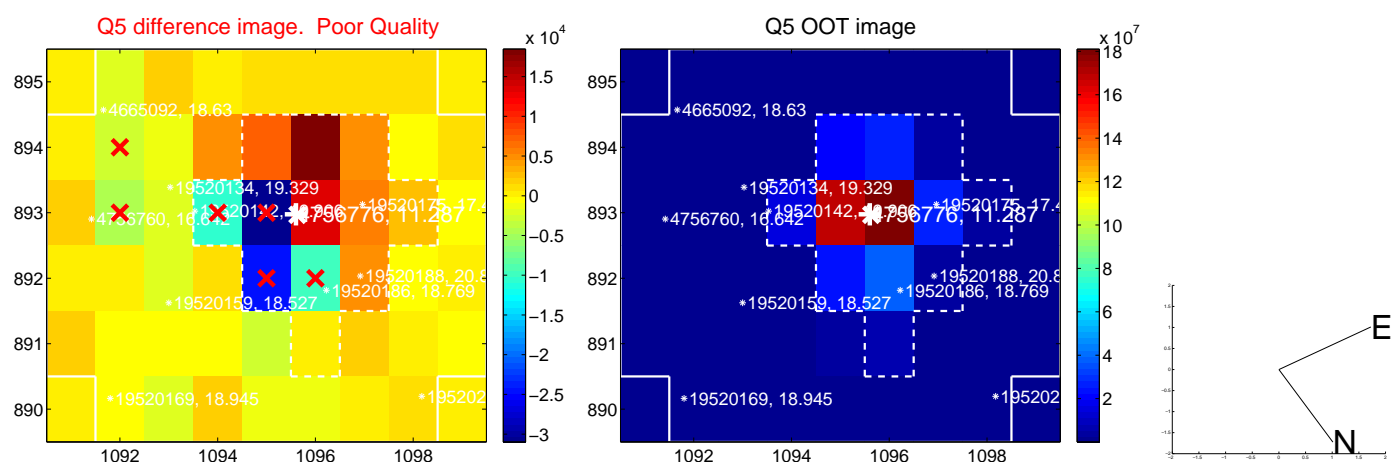


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

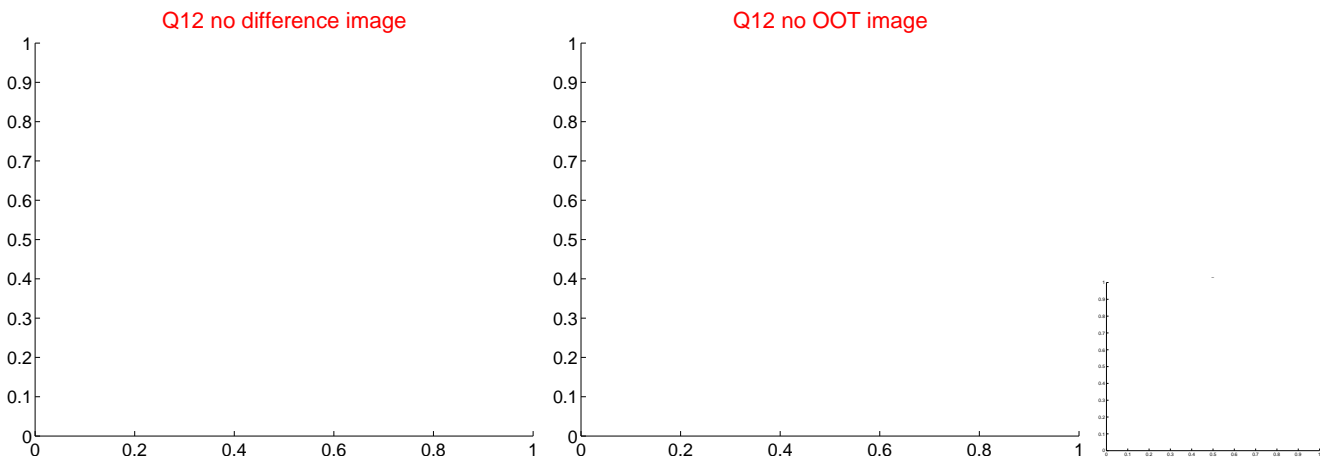
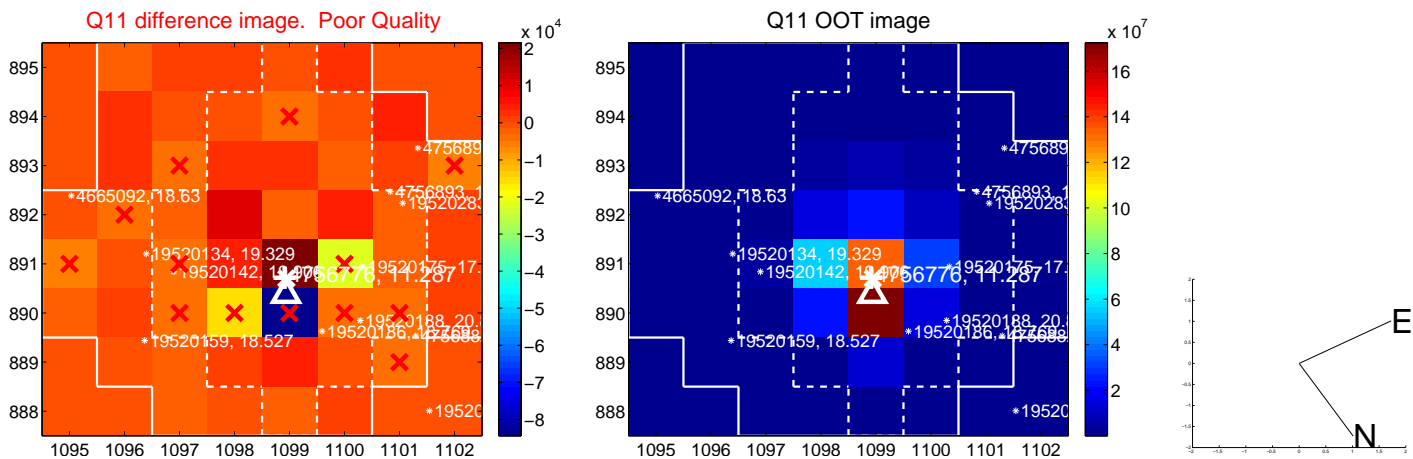
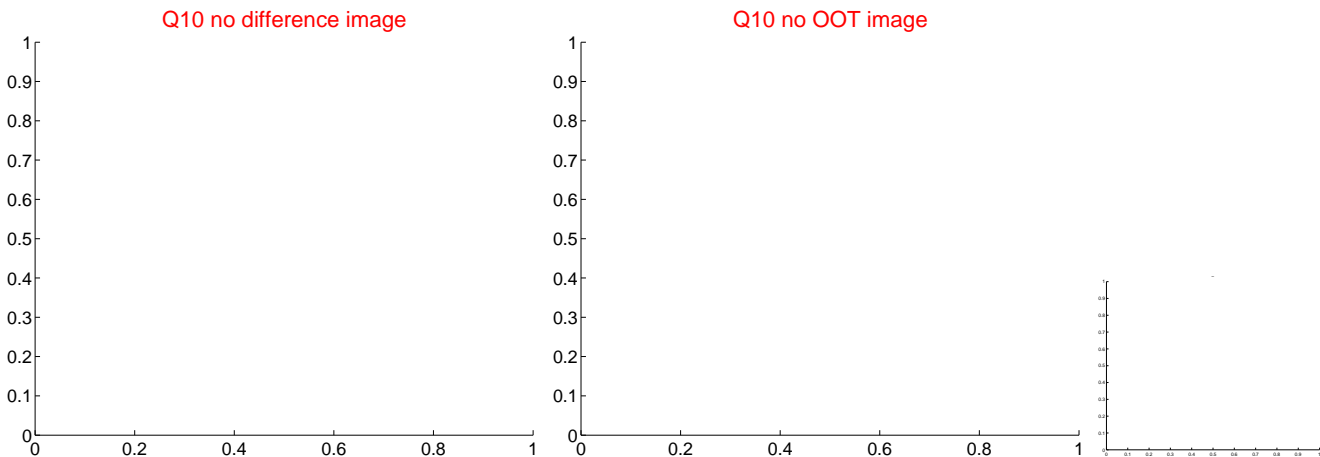
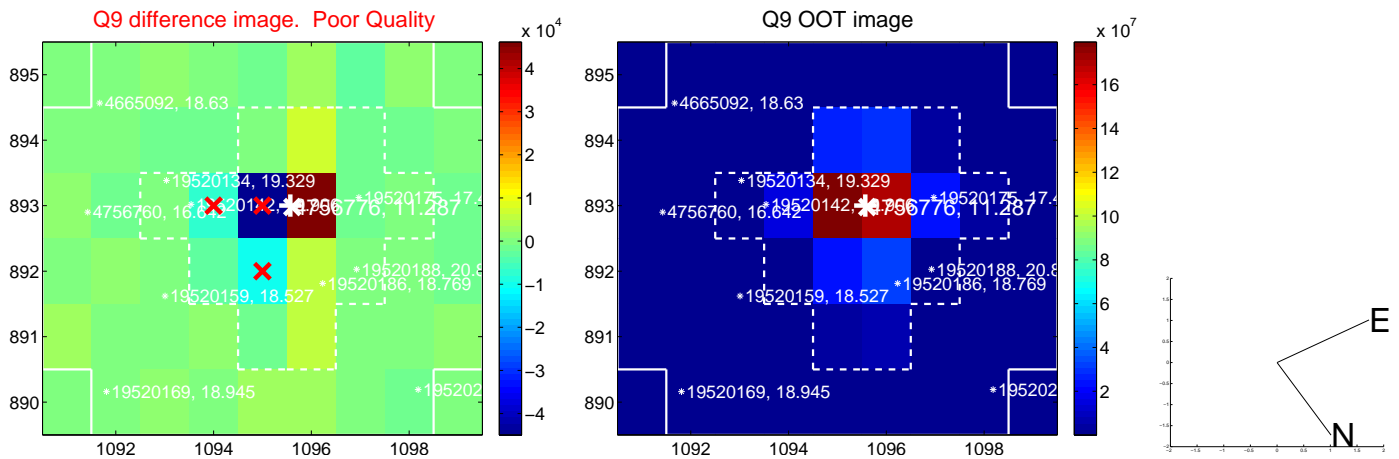
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



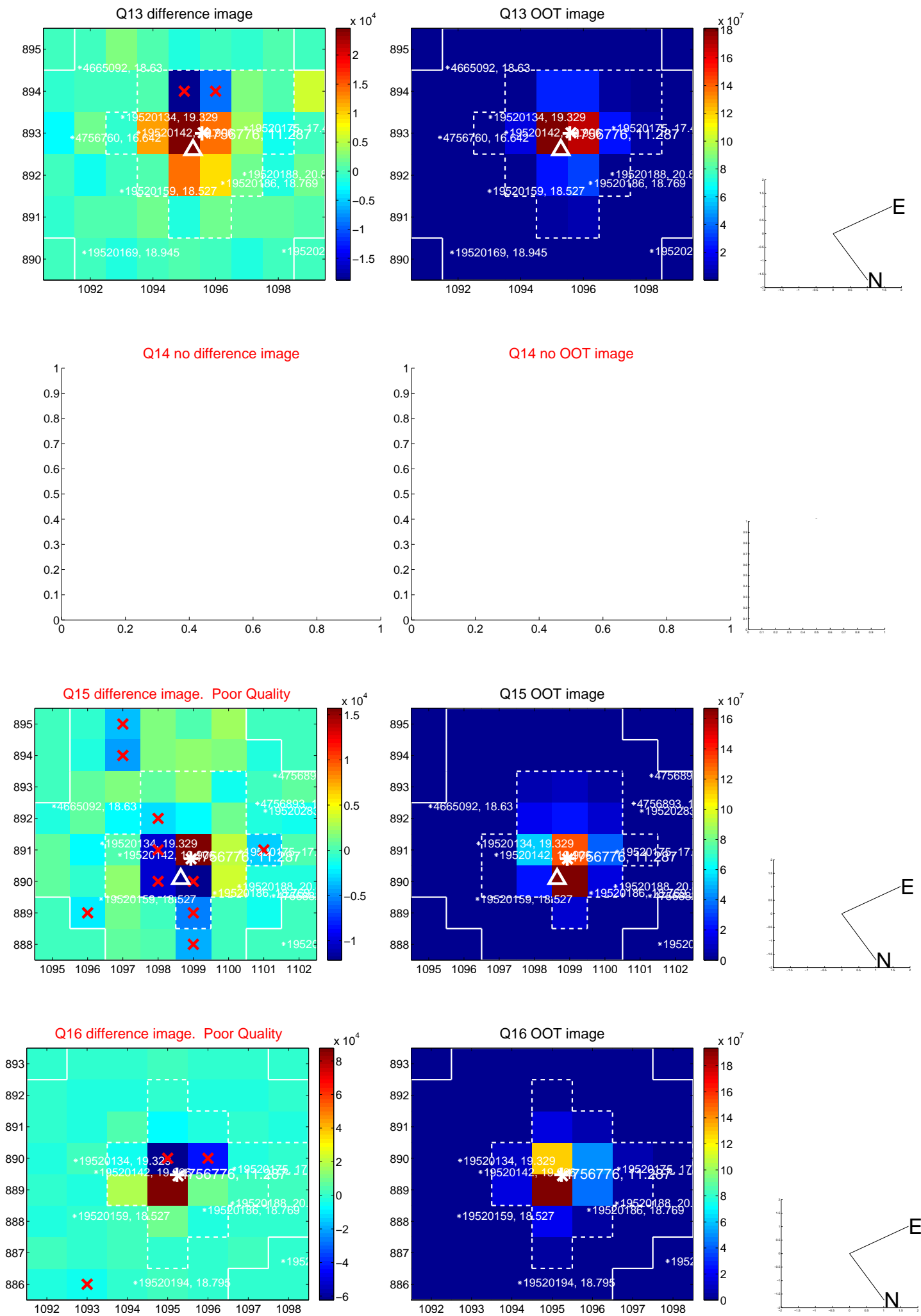
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



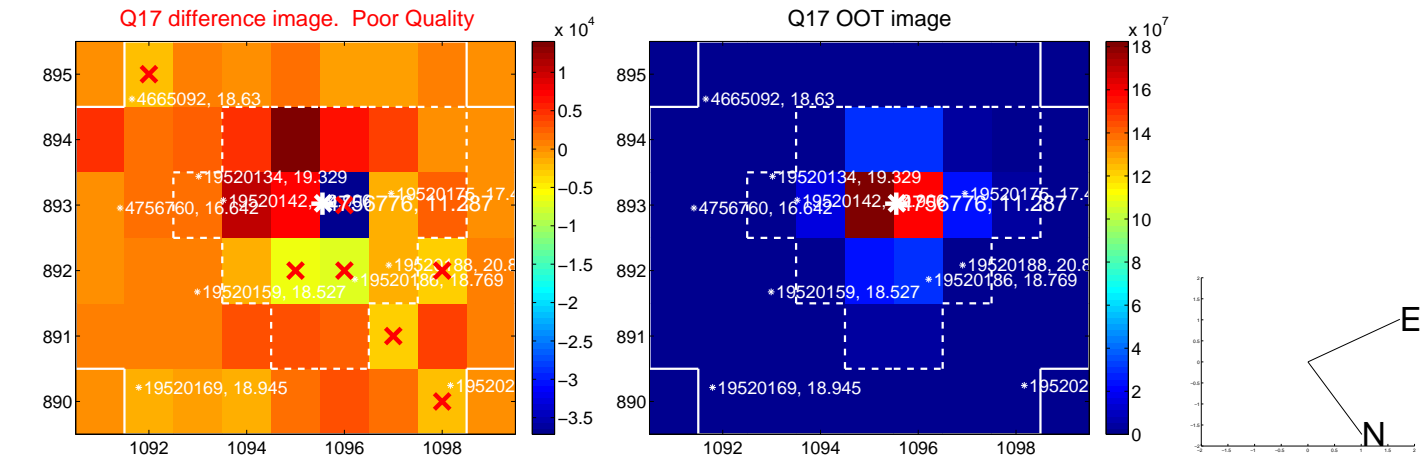
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



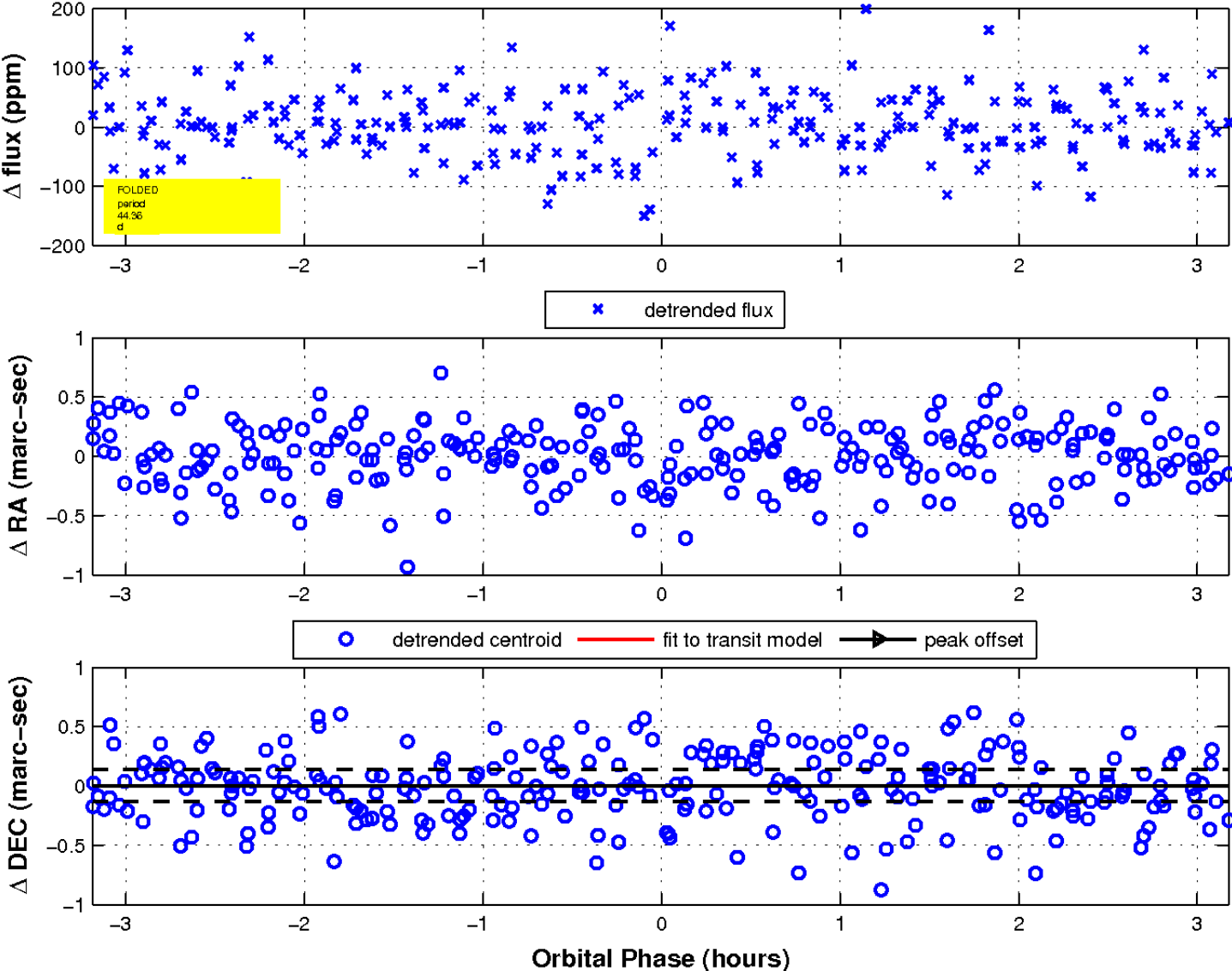
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

