

KIC 008388610

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})
008388610-01	OBS	No	2.729907	133.861624	155.3	16.205	11.9	13.3	2.69	6940	4.43	8034.51
008388610-02	OBS	No	357.587435	165.386621	1092.6	5.019	7.7	7.9	2.69	6940	9.61	12.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008388610-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008388610-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—HALO_GHOST

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

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

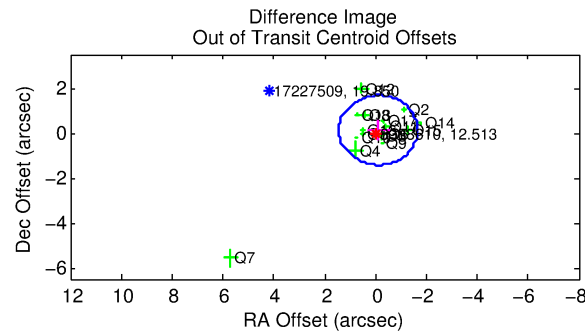
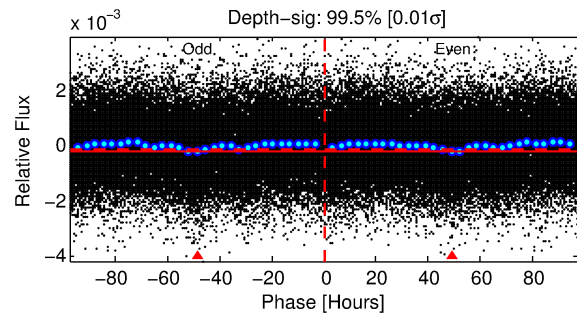
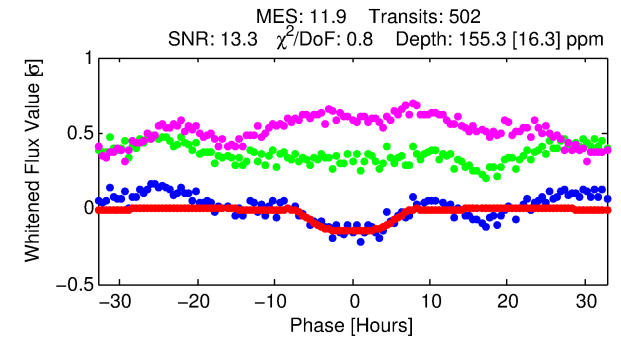
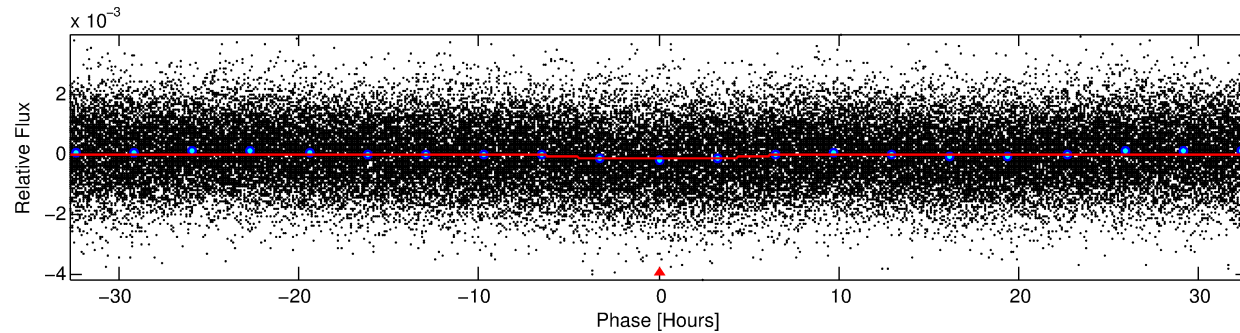
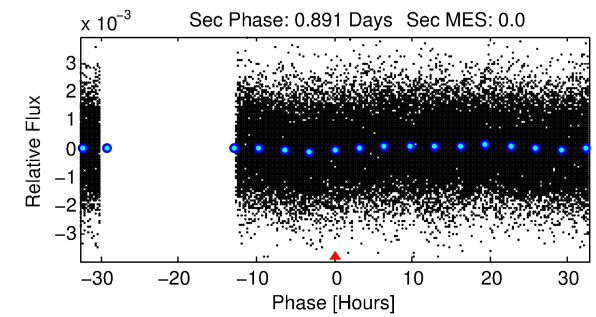
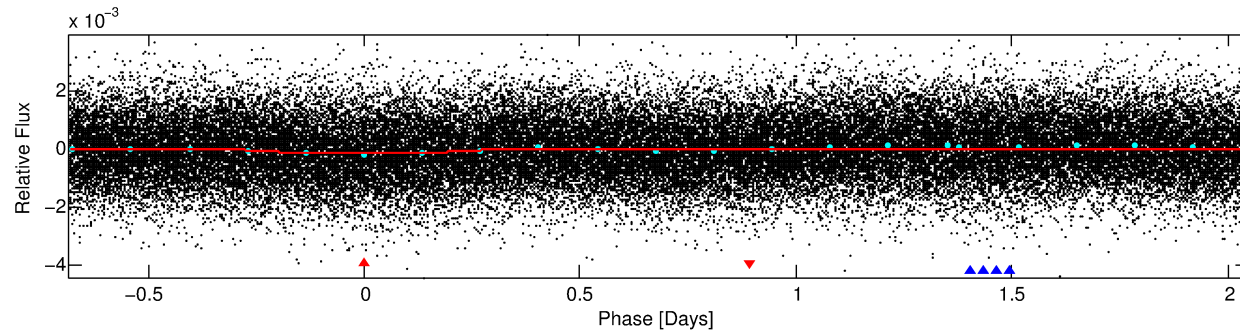
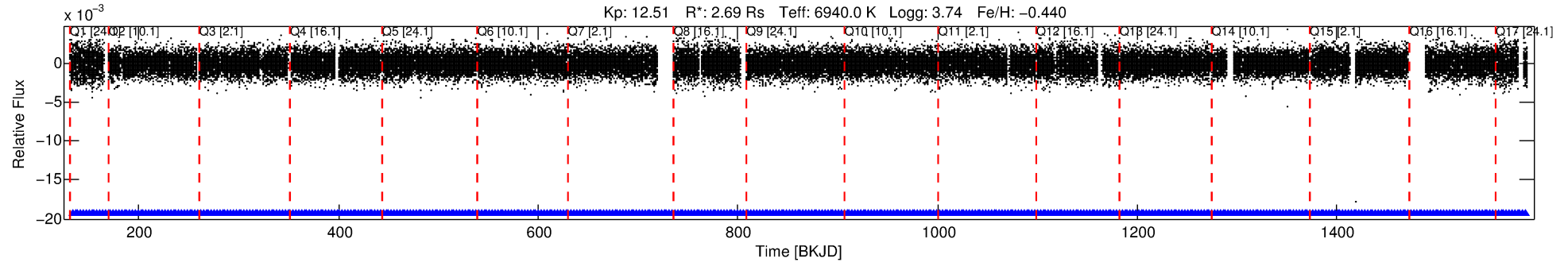
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008388610-01

No Significant Match Found

DV One-Page Summary

KIC: 8388610 Candidate: 1 of 2 Period: 2.730 d



DV Fit Results:

Period = 2.72991 [0.00010] d
Epoch = 133.8616 [0.0285] BKJD
Rp/R* = 0.0151 [0.0010]
a/R* = 1.05 [0.01]
b = 0.98 [0.01]
Seff = 8034.51 [7162.20]
Teq = 2414 [538] K
Rp = 4.43 [2.16] Re
a = 0.0433 [0.0225] AU
Ag = N/A
Teffp = N/A

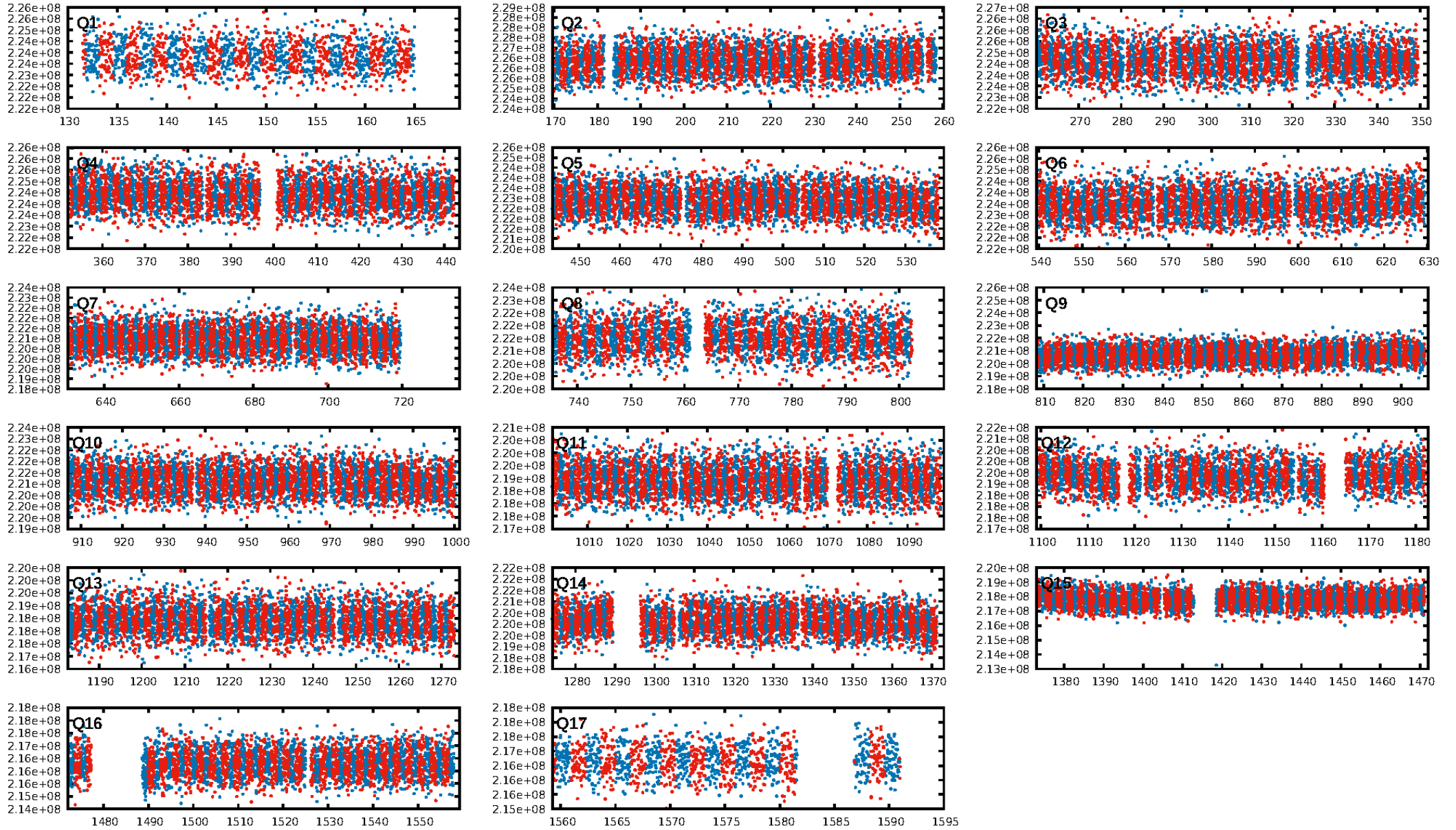
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [502.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.17e-24
RollingBand-fgt: 1.00 [481/481]
GhostDiagnostic-chr: 1.617
Centroid-sig: 81.0%
Centroid-so: 0.132 arcsec [1.24σ]
OotOffset-rm: 0.166 arcsec [0.32σ]
KicOffset-rm: 0.260 arcsec [0.53σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [17/17]

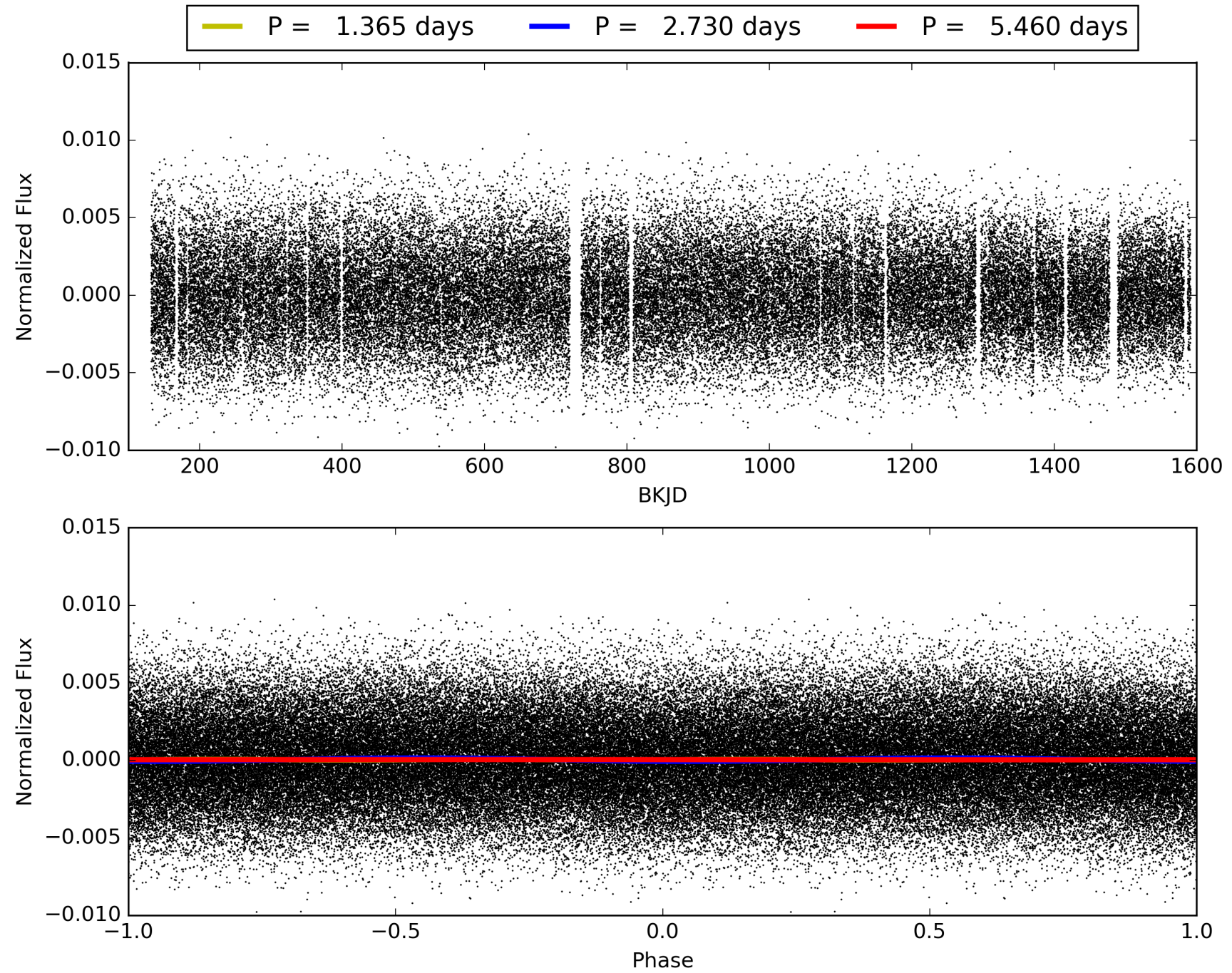
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:11:48 Z

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

TCE 008388610-01, PDC Light Curves

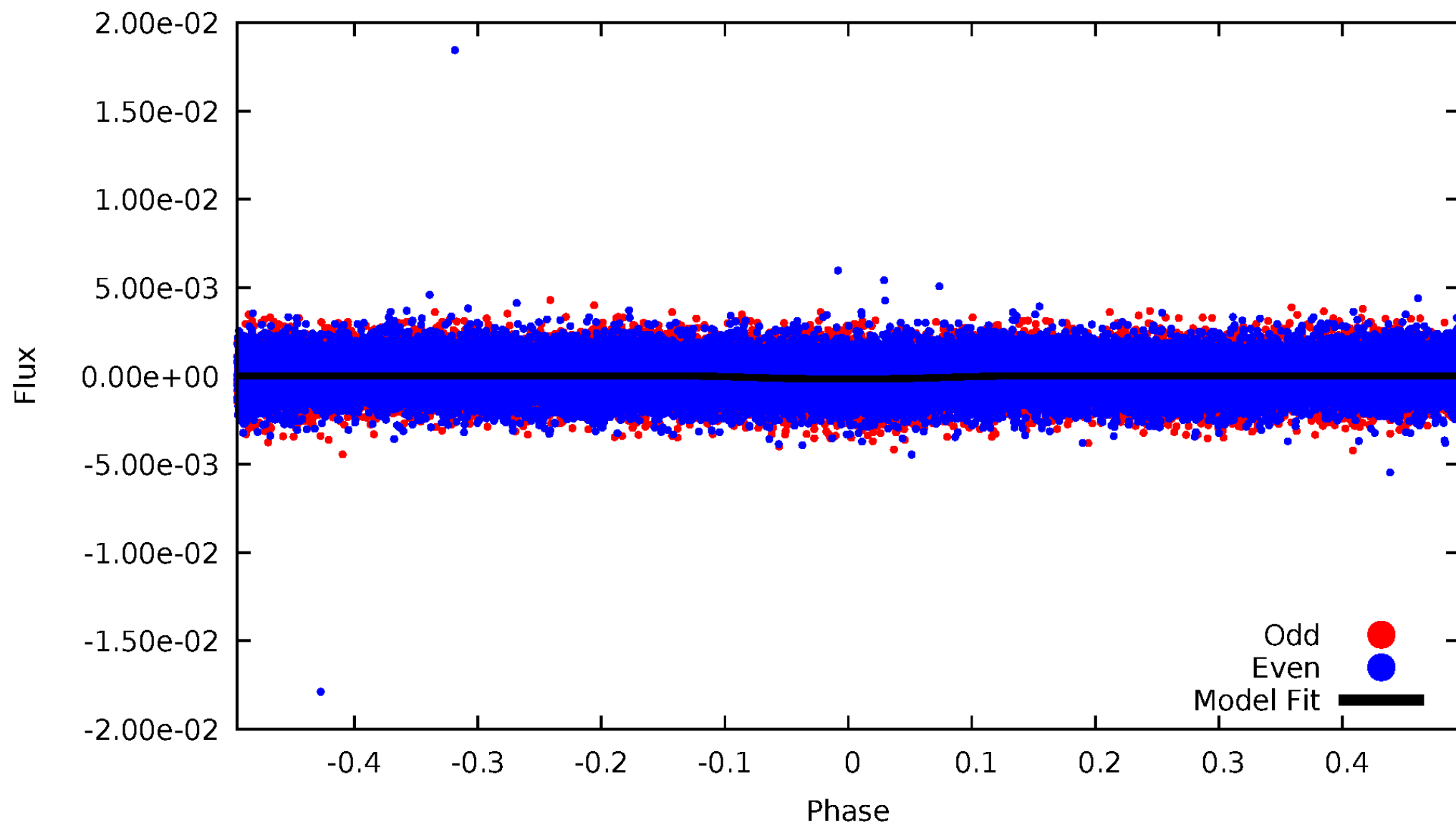


TCE 008388610-01



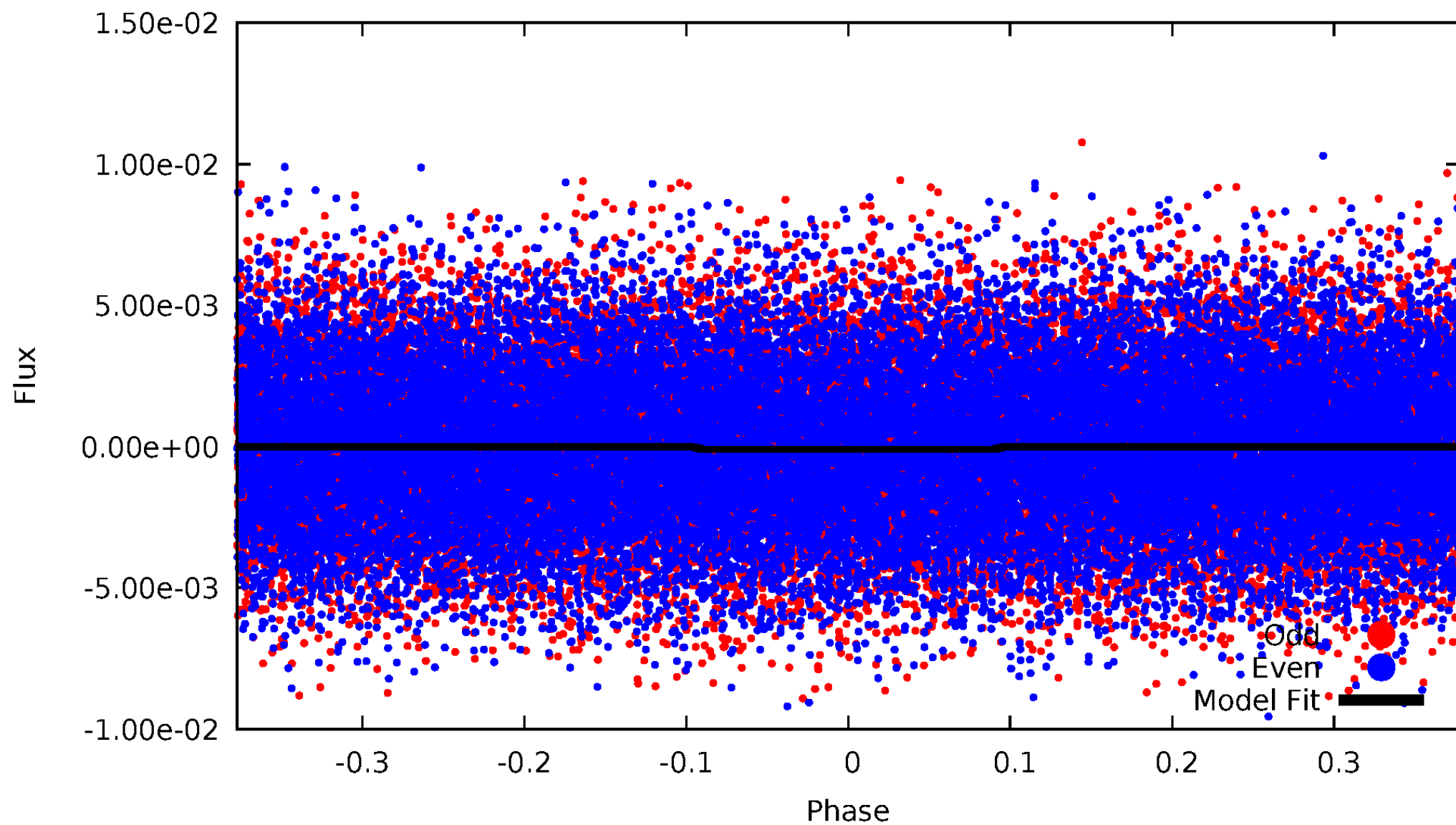
DV Odd/Even

TCE 008388610-01



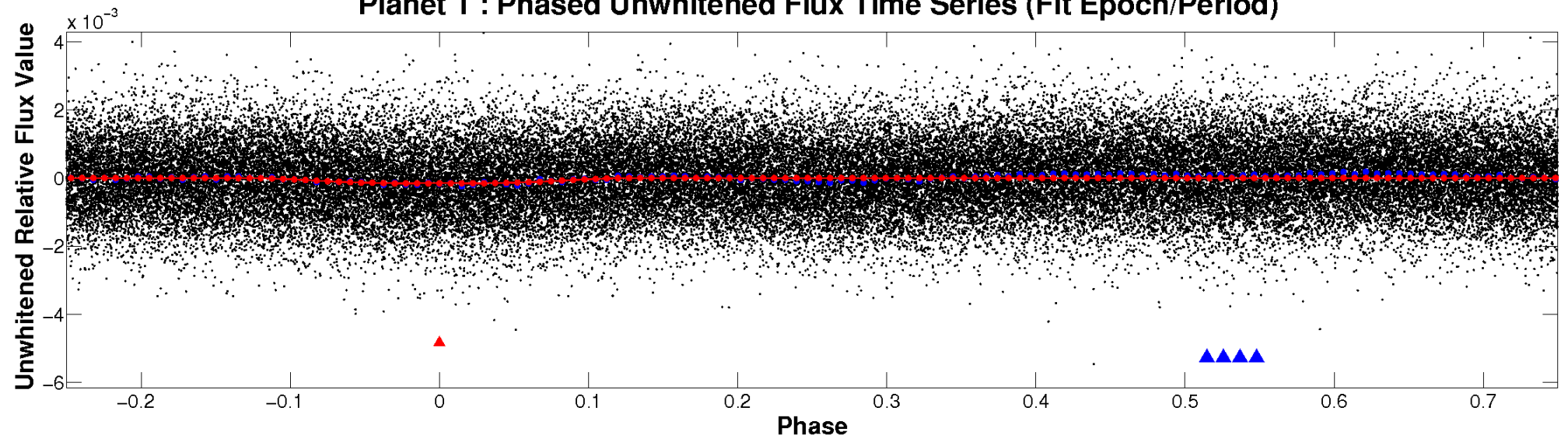
ALT Odd/Even

TCE 008388610-01

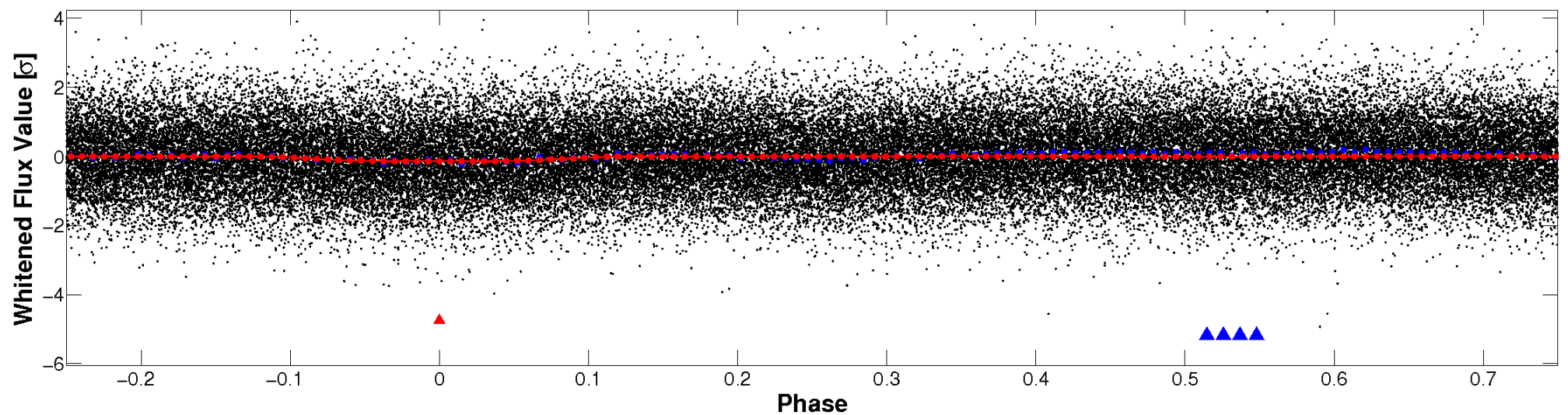


Non-Whitened Vs. Whitened Light Curve

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

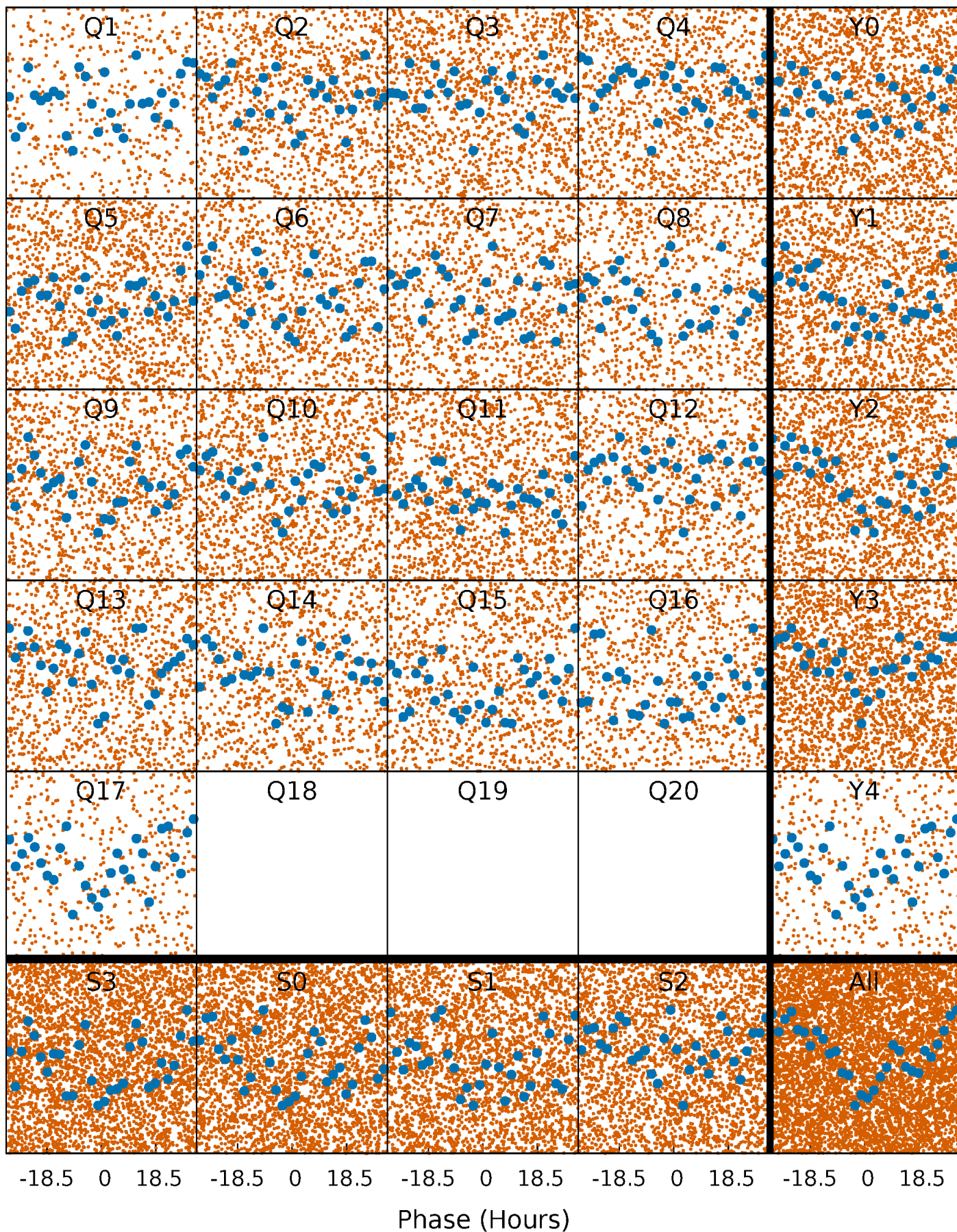


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



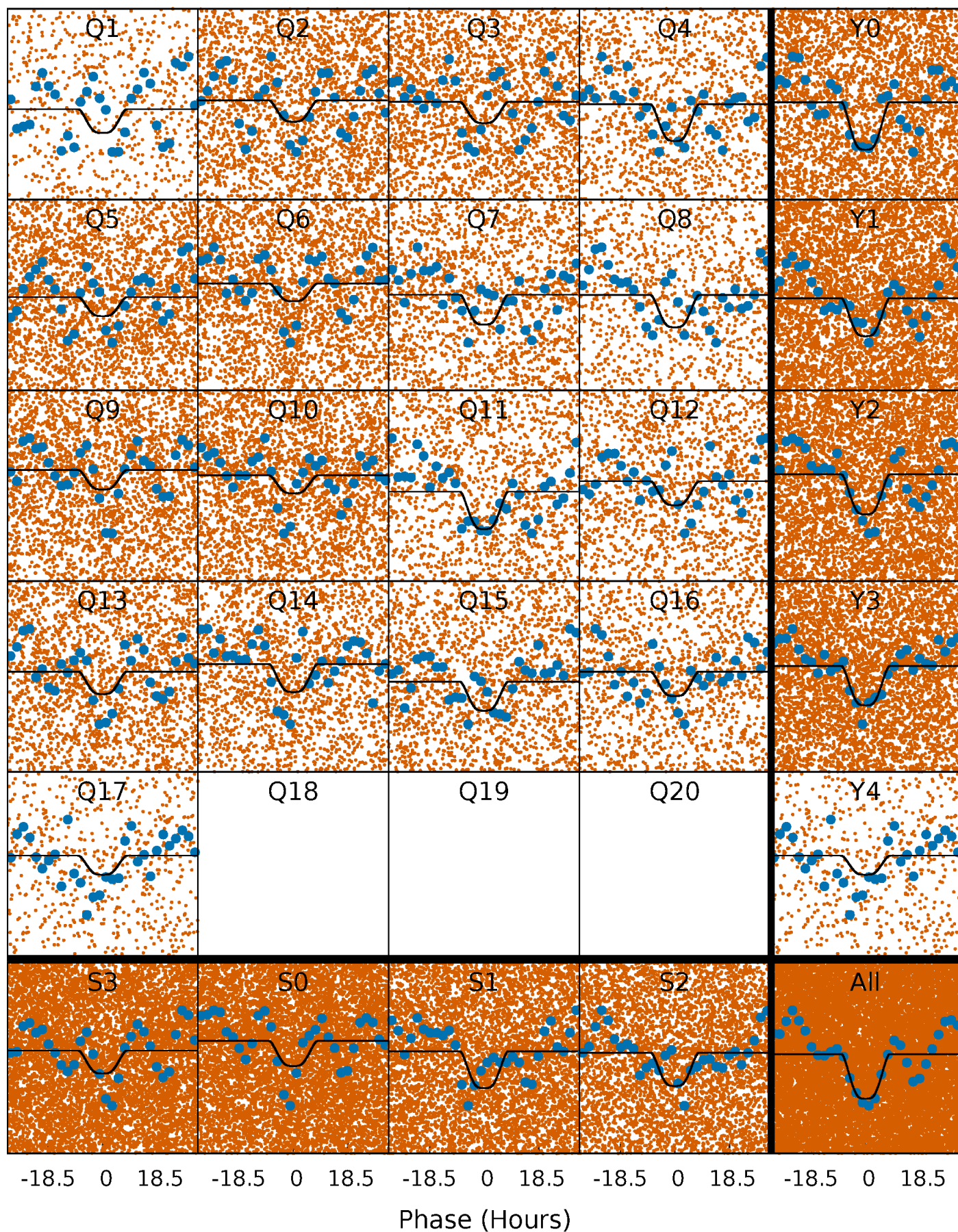
PDC Quarter-Phased Transit Curves

TCE 008388610-01 P= 2.729907 Days $T_0=133.861624$ (BKJD)



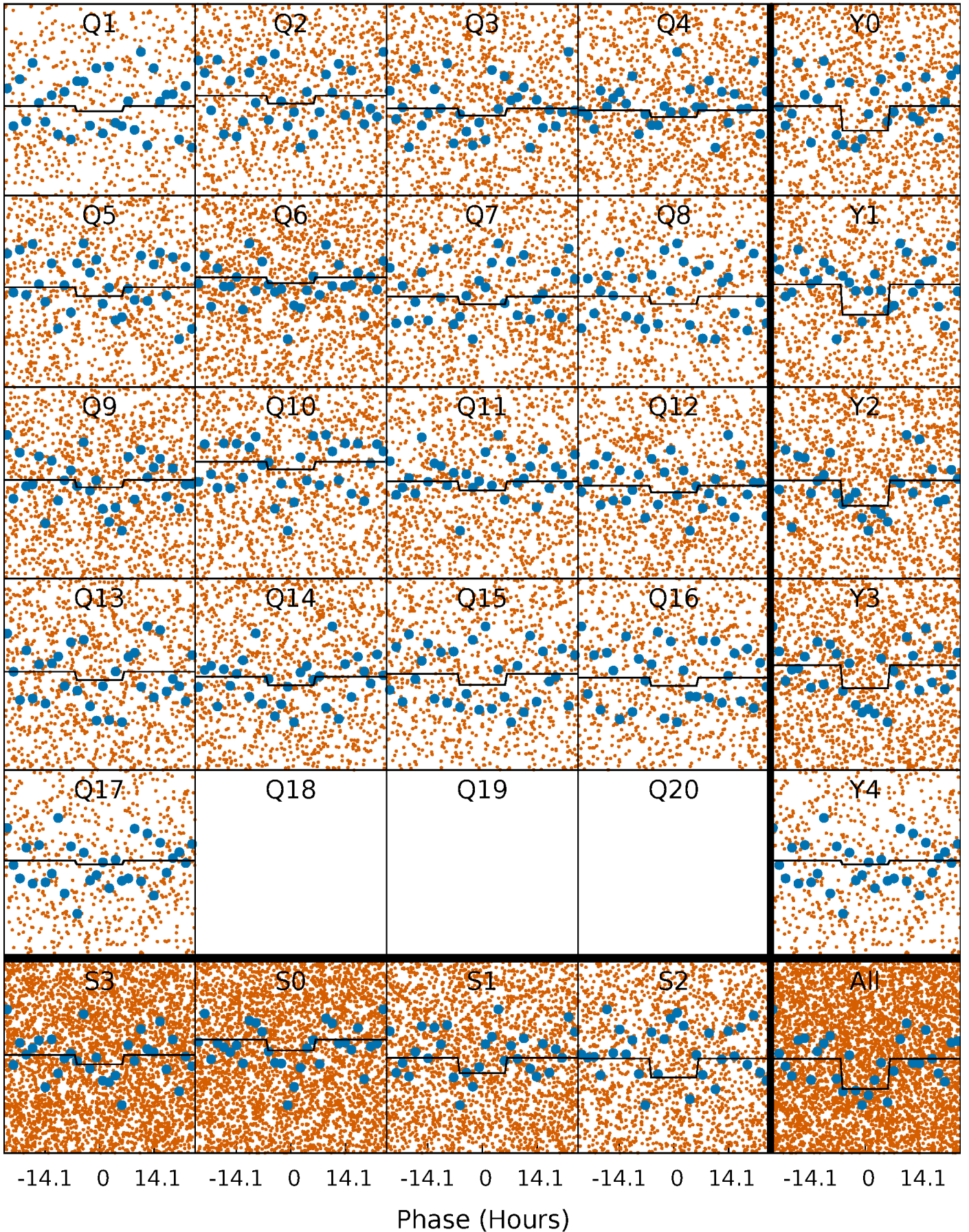
DV Quarter-Phased Transit Curves

TCE 008388610-01 P= 2.729907 Days $T_0=133.861624$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

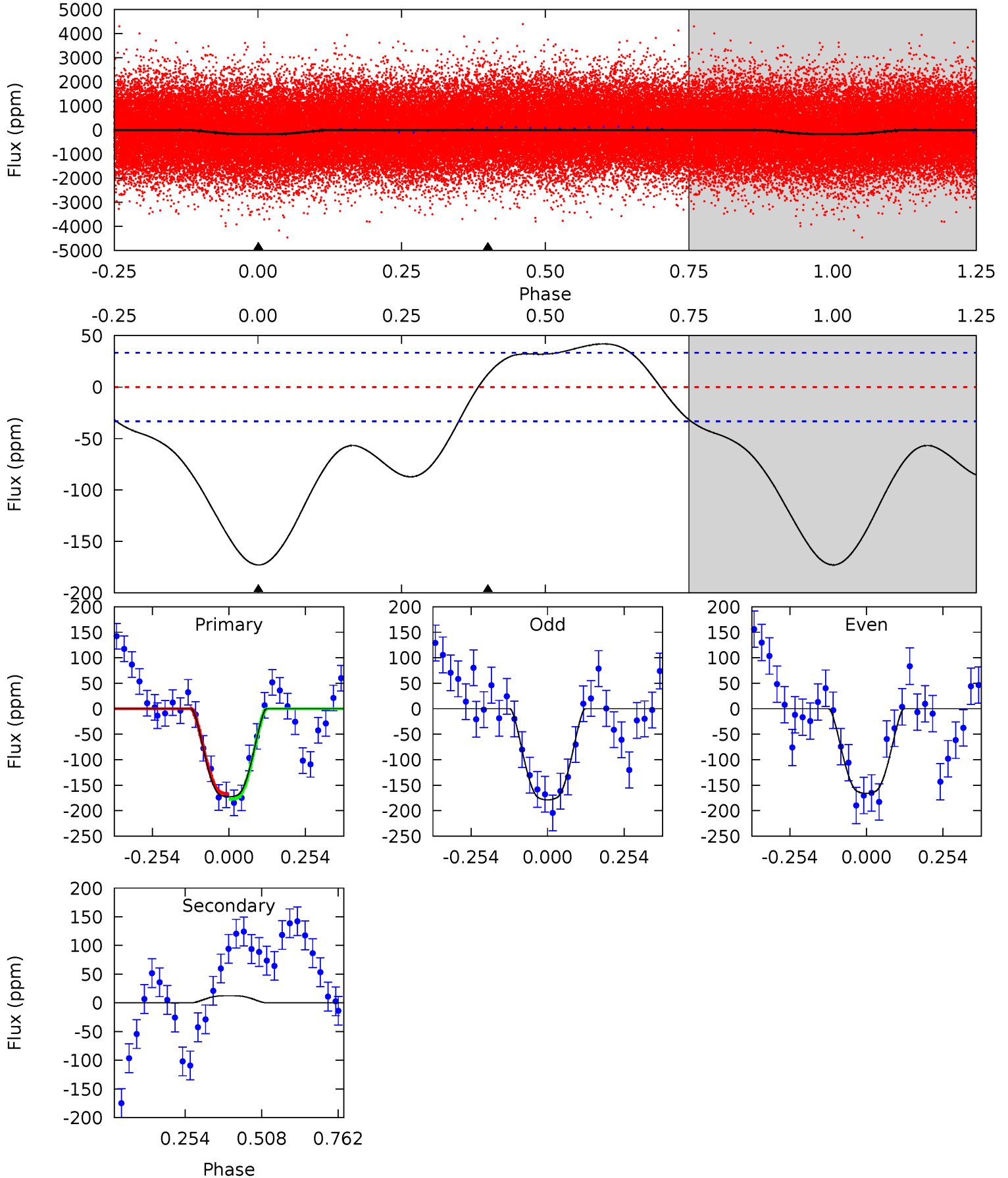
TCE 008388610-01 P= 2.729961 Days $T_0=133.796270$ (BKJD)



DV Model-Shift Uniqueness Test

008388610-01, P = 2.729907 Days, E = 131.131717 Days

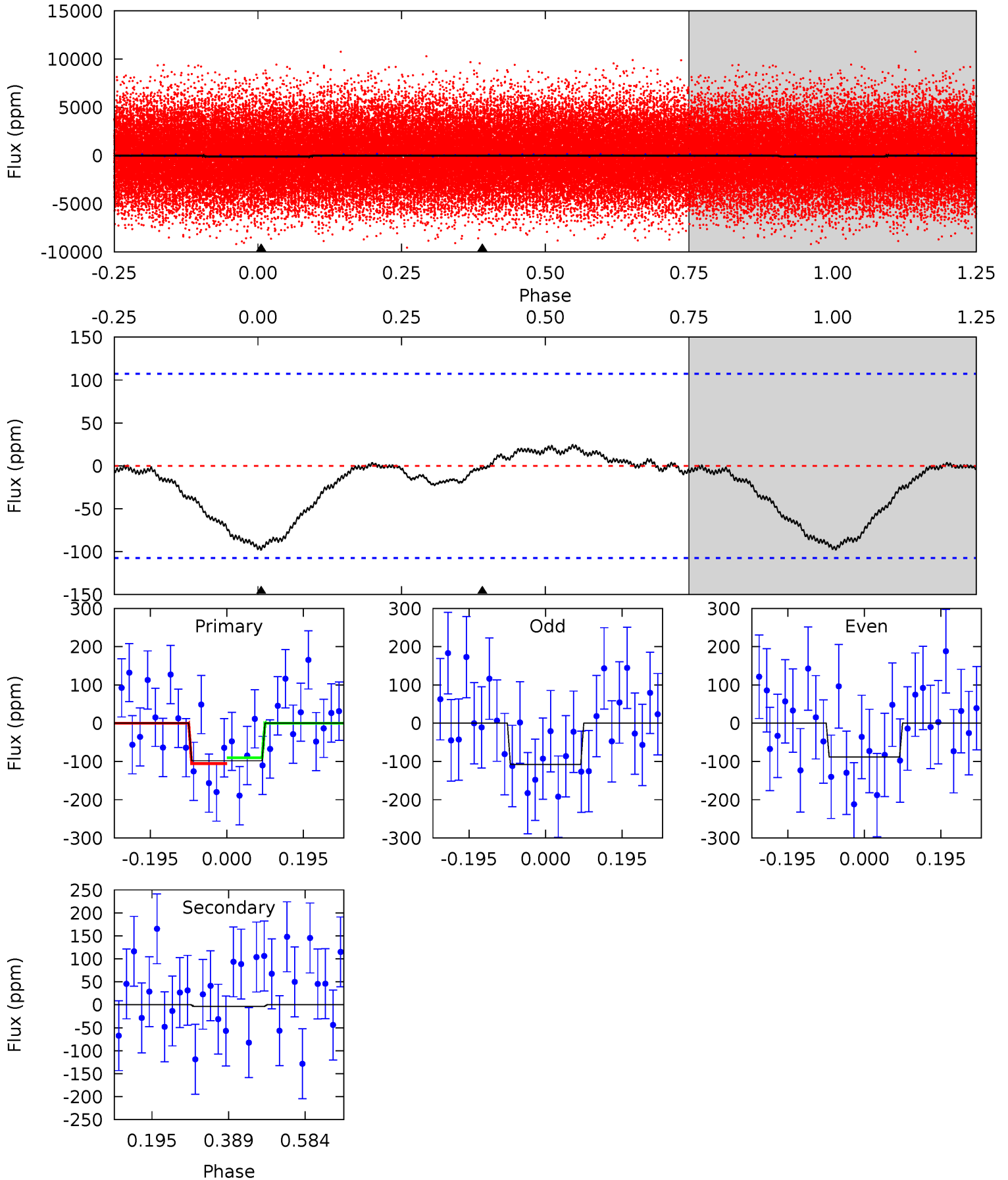
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	-1.63	0	0	4.37	1.14	2.65	22.6	22.6	-1.63	-1.63	0.84	1.11	0.20	0.68



Alt Model-Shift Uniqueness Test

008388610-01, P = 2.729961 Days, E = 131.066309 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.04	0.15	0	0	4.42	1.30	0.26	4.04	4.04	0.15	0.15	0.40	1.08	0.20	0.31



Stellar Parameters For KIC 008388610

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6940^{+190}_{-285}	$3.740^{+0.531}_{-0.088}$	$-0.440^{+0.300}_{-0.300}$	$2.693^{+0.464}_{-1.298}$	$1.453^{+0.199}_{-0.340}$	$0.105^{+0.587}_{-0.029}$
	+3%/-4%	+14%/-2%	+68%/-68%	+17%/-48%	+14%/-23%	+560%/-28%
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 008388610-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	12 ± 8	$4.09^{+0.78}_{-1.10}$	3234^{+257}_{-456}	-3954^{+392}_{-296}	$-0.807^{+0.471}_{-0.806}$
Alt.	-4 ± 24	$2.67^{+0.59}_{-0.71}$	3205^{+266}_{-430}	3265^{+1709}_{-8075}	$0.629^{+4.007}_{-3.547}$

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

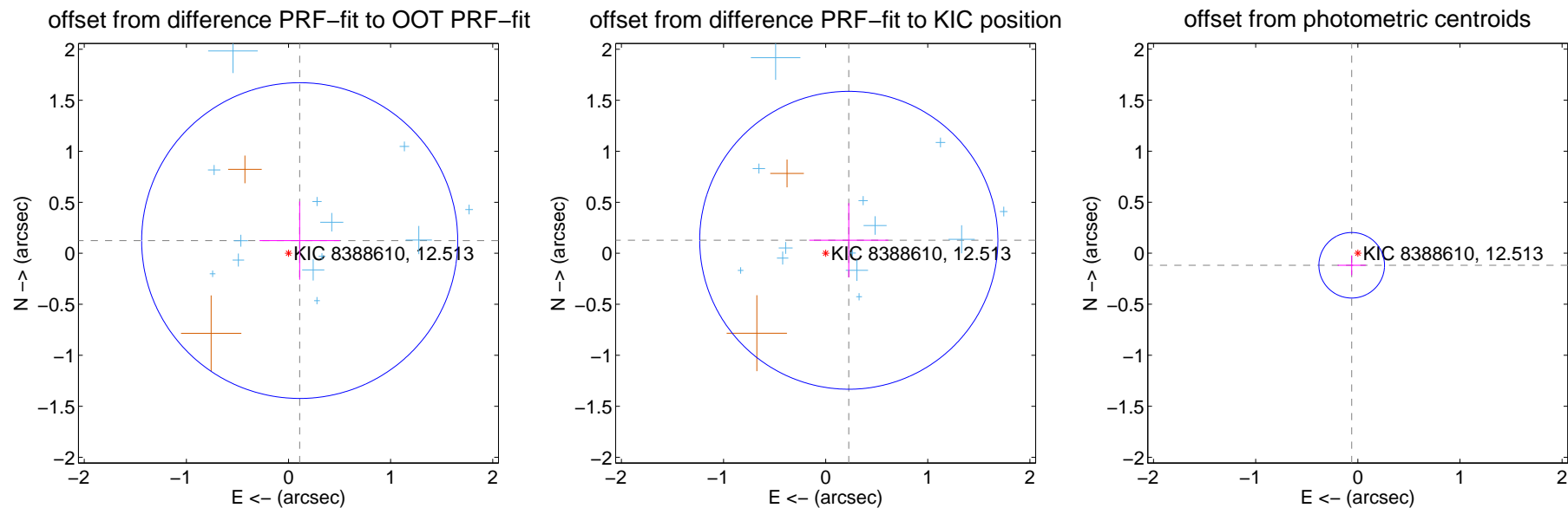
DV Centroid Data

Supplemental centroid analysis for 008388610-01. Kepler magnitude: 12.51. Transit SNR 13.25

There are 13 quarters with good PRF difference image offsets

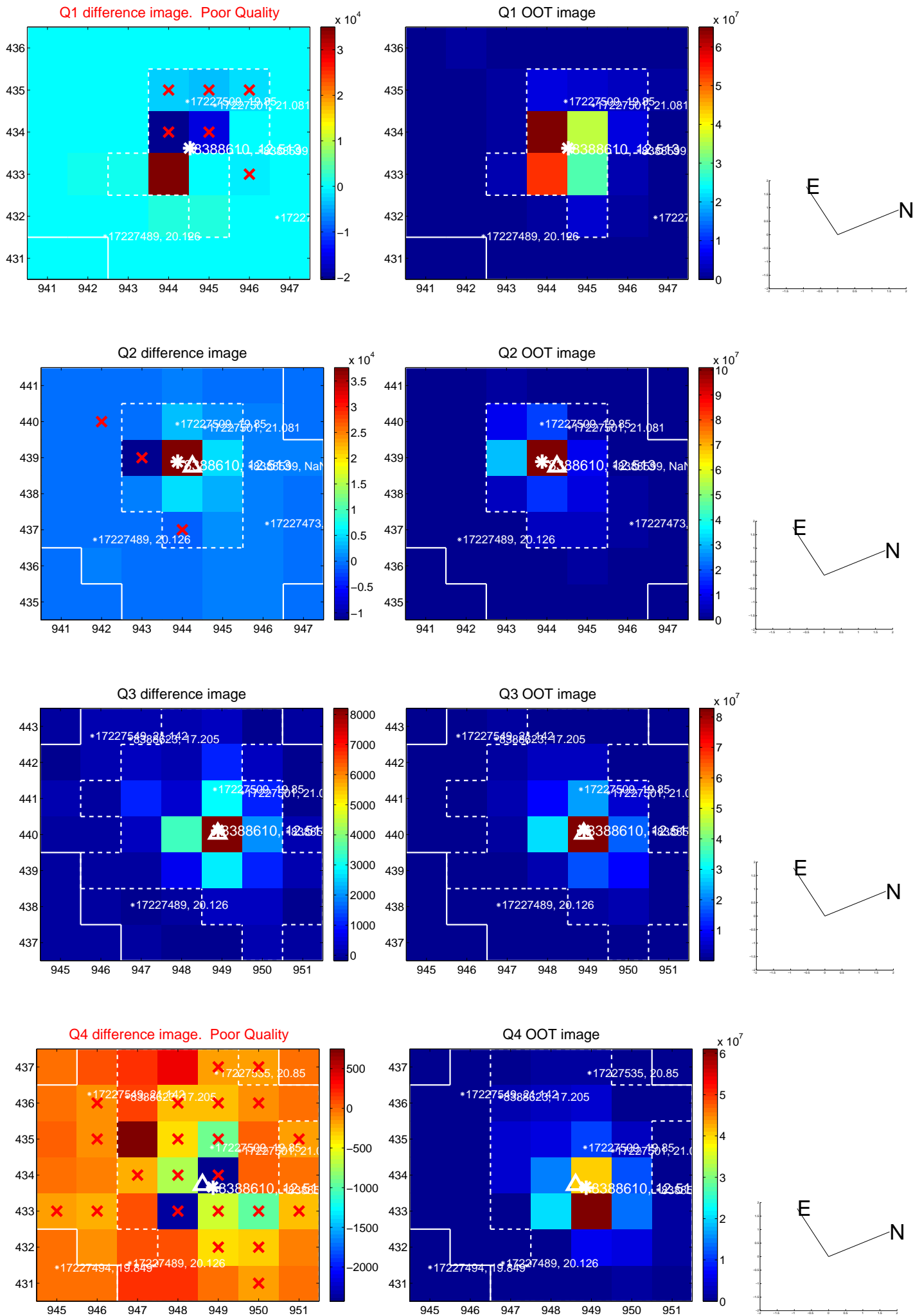
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.516	0.32	-0.109 ± 0.393	0.125 ± 0.383
PRF-fit source offset from KIC position	0.260 ± 0.487	0.53	-0.226 ± 0.387	0.127 ± 0.365
photometric centroid source offset	0.13 ± 0.11	1.24	0.06 ± 0.14	-0.12 ± 0.10

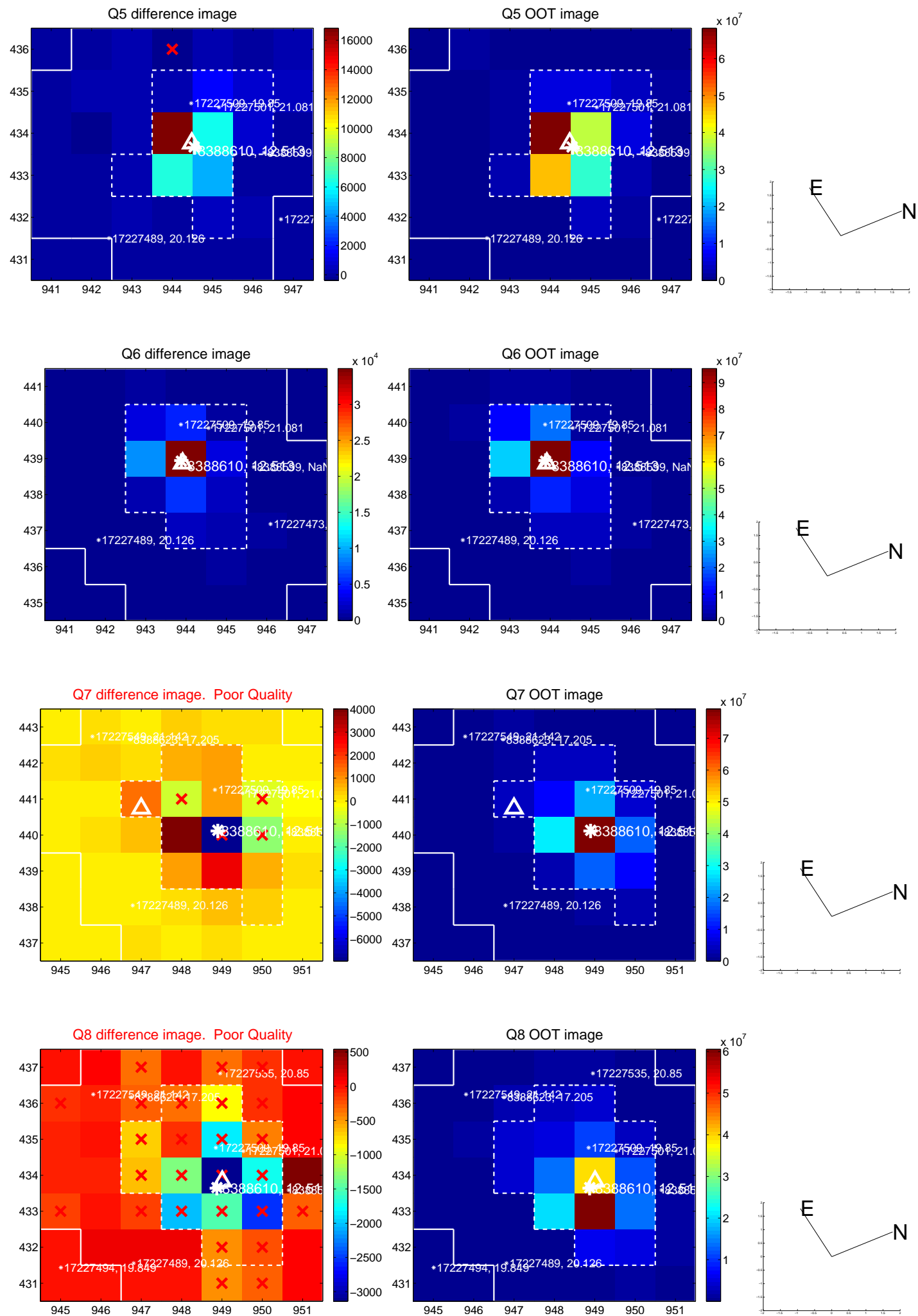


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

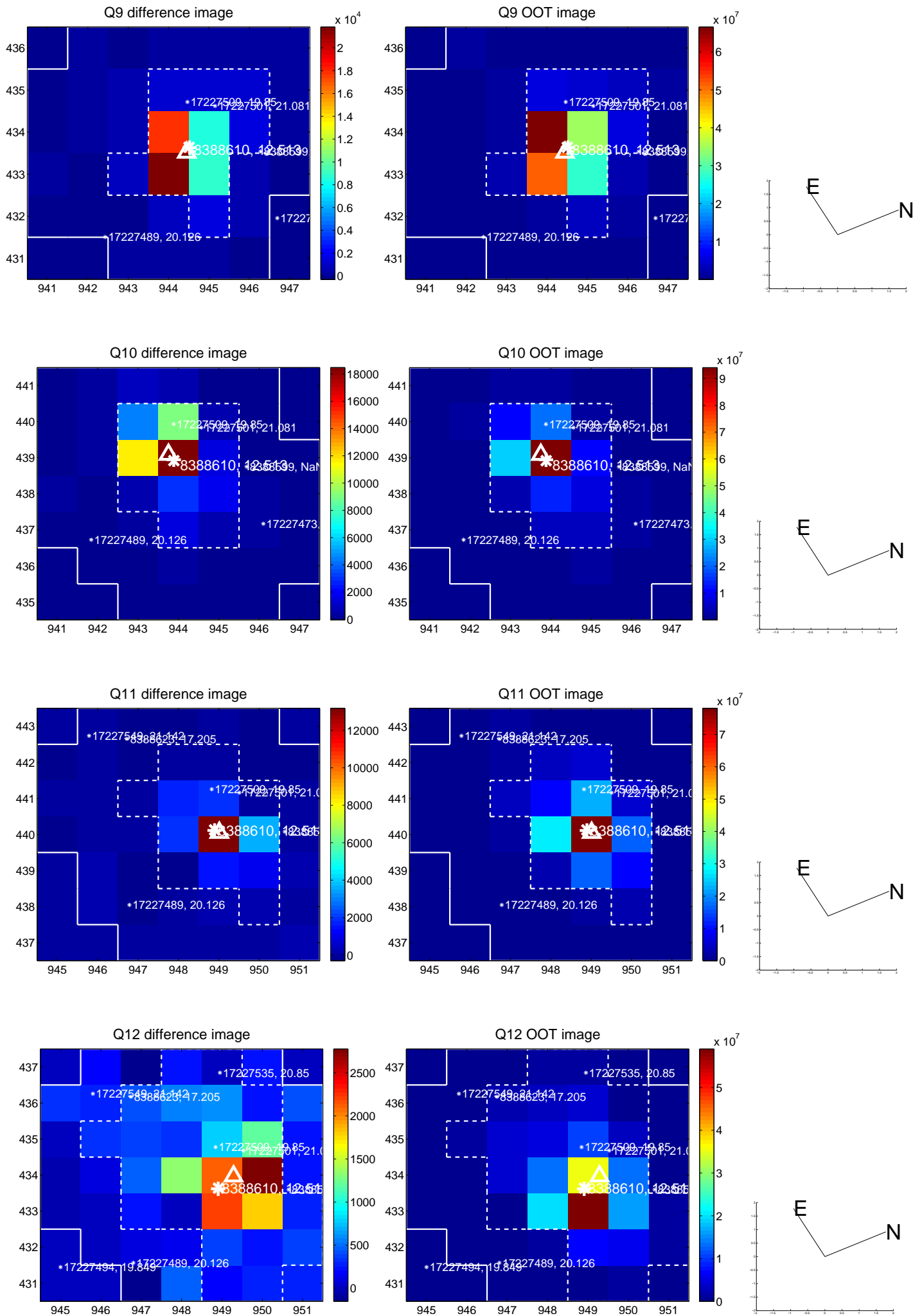
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



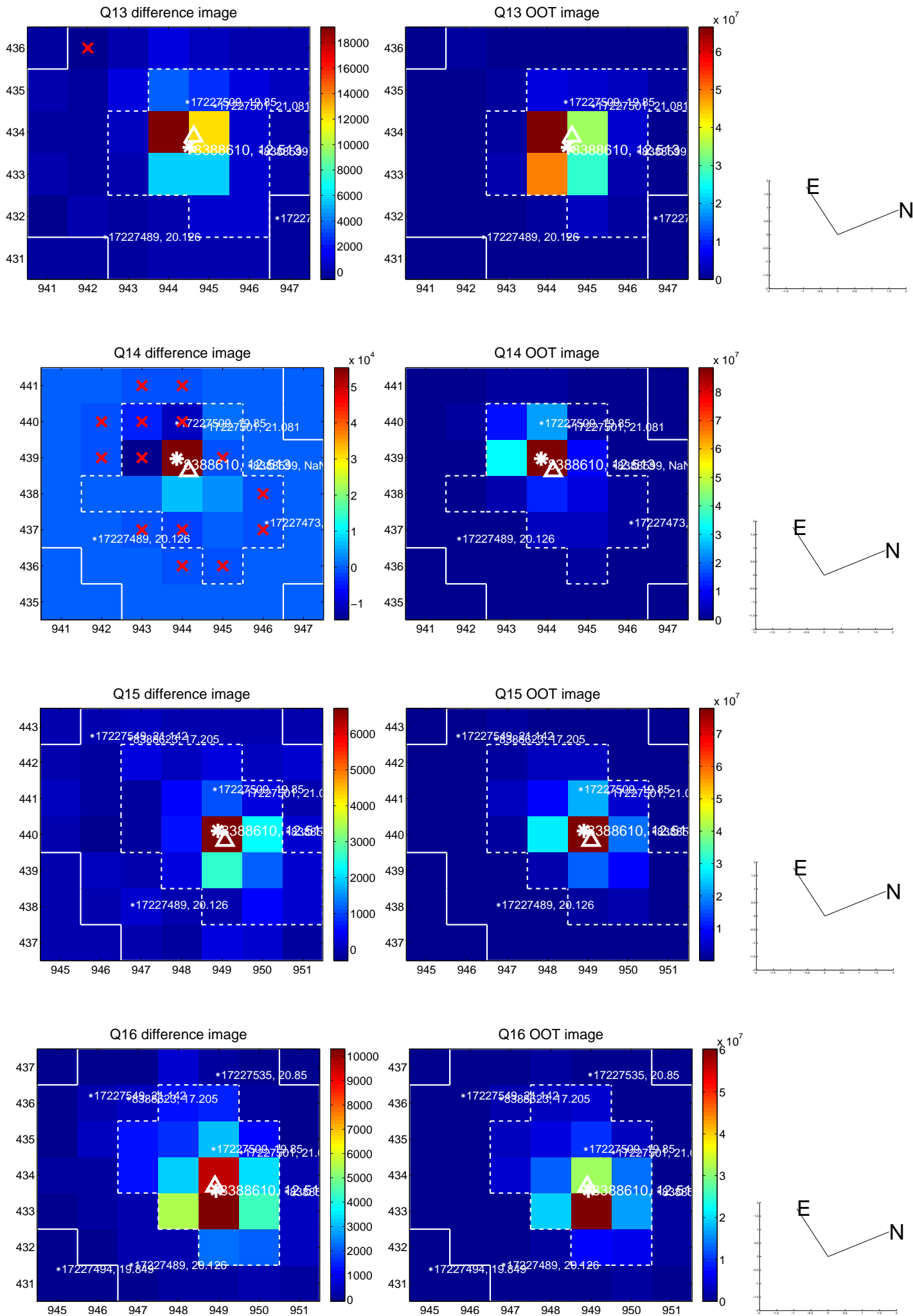
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



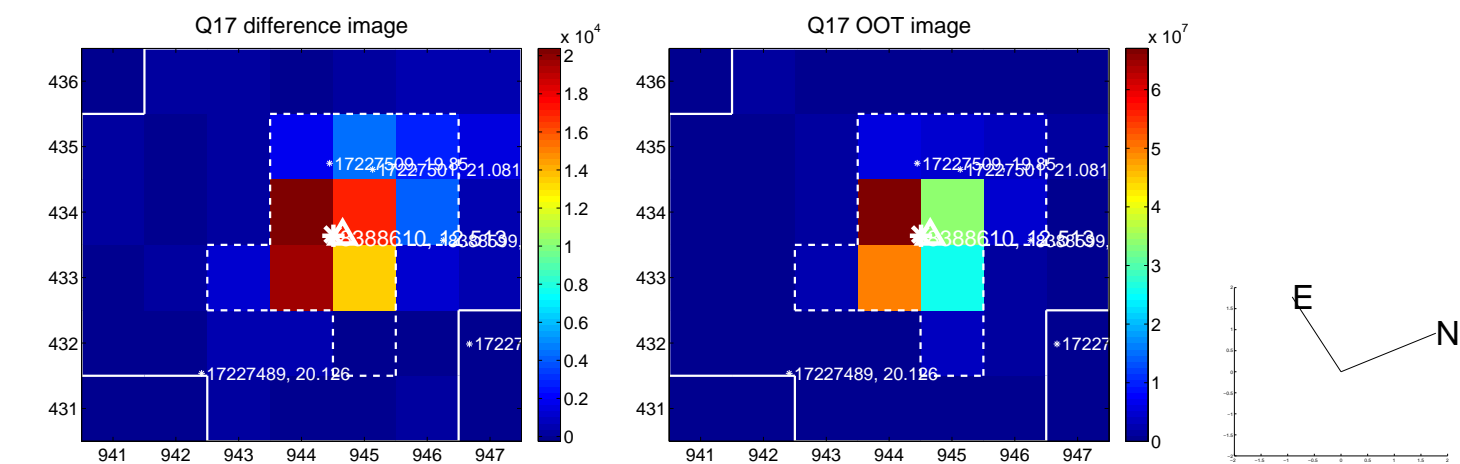
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



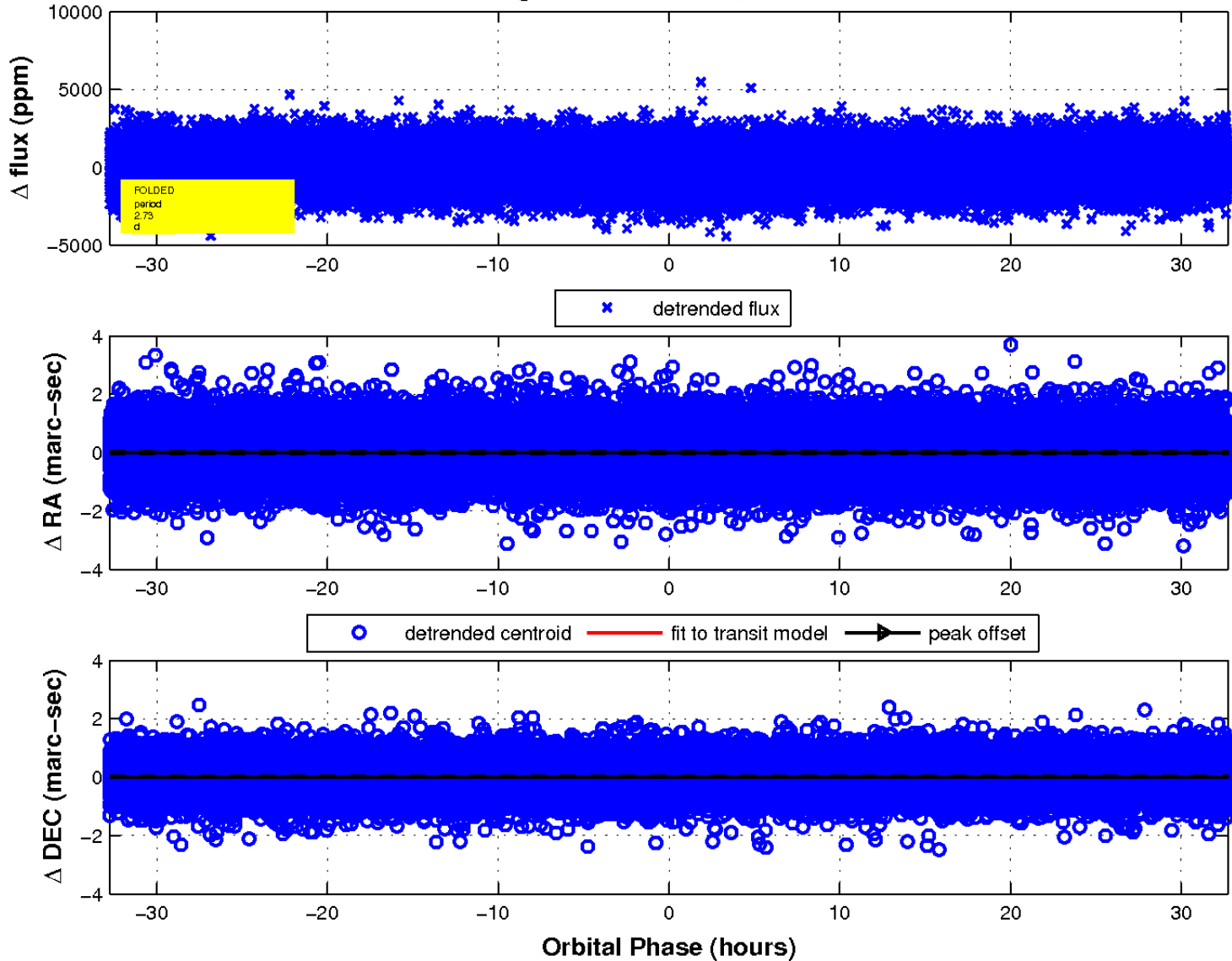
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

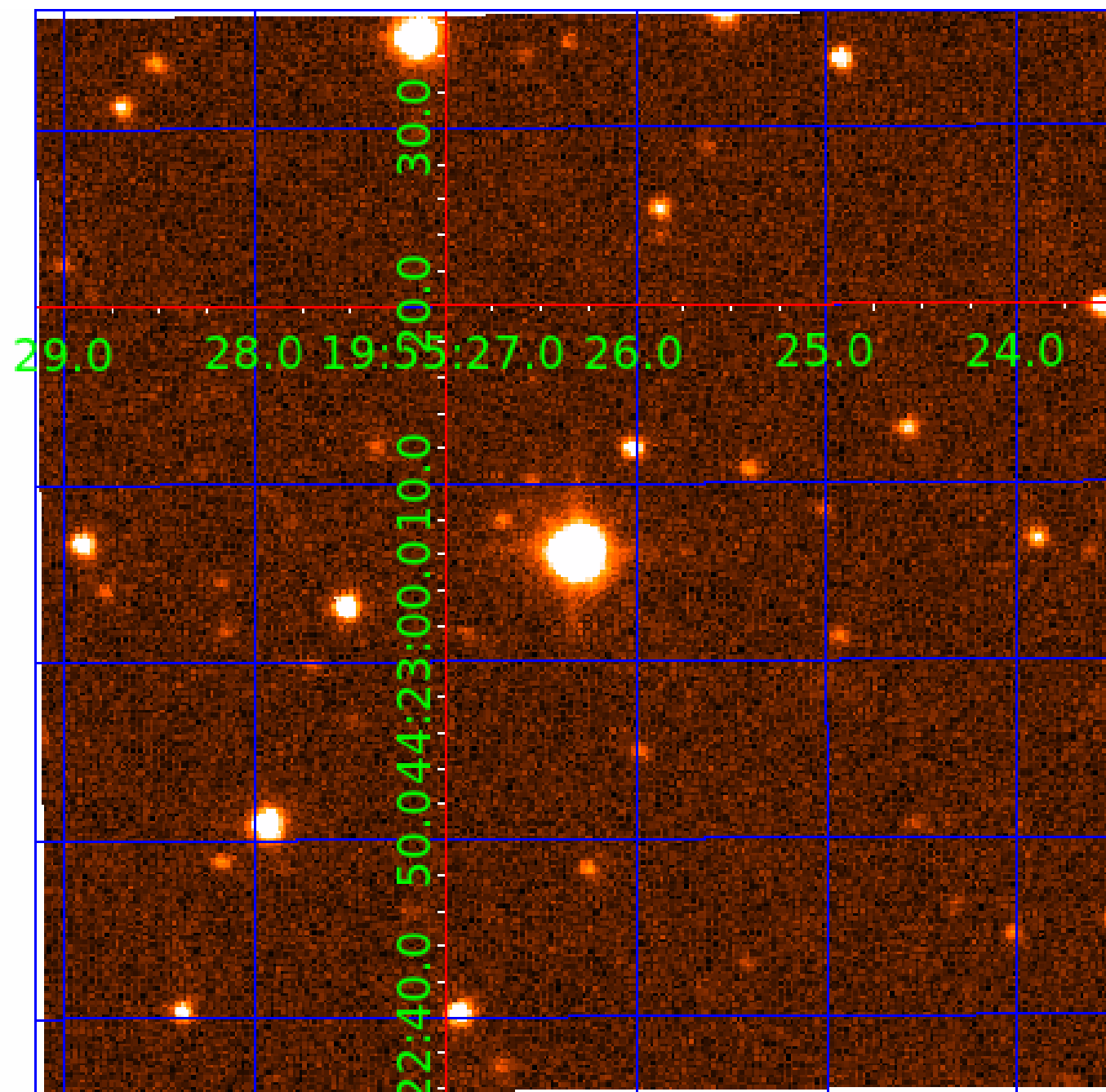


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008388610

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})
008388610-01	OBS	No	2.729907	133.861624	155.3	16.205	11.9	13.3	2.69	6940	4.43	8034.51
008388610-02	OBS	No	357.587435	165.386621	1092.6	5.019	7.7	7.9	2.69	6940	9.61	12.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008388610-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008388610-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—HALO_GHOST

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

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

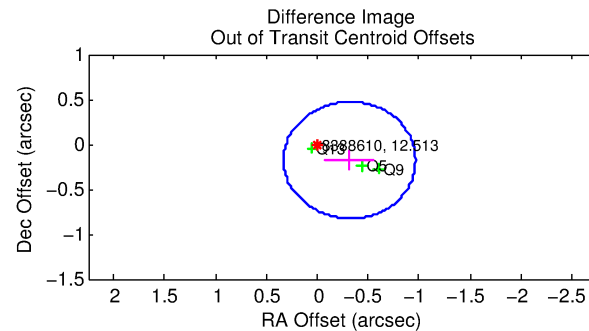
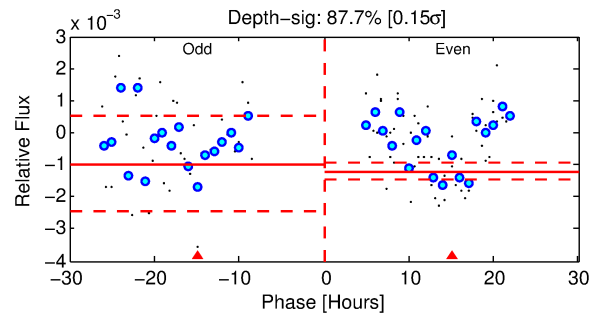
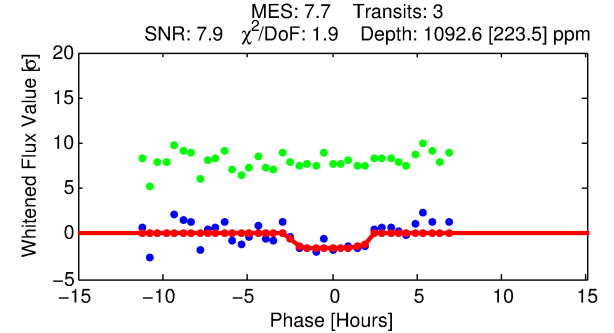
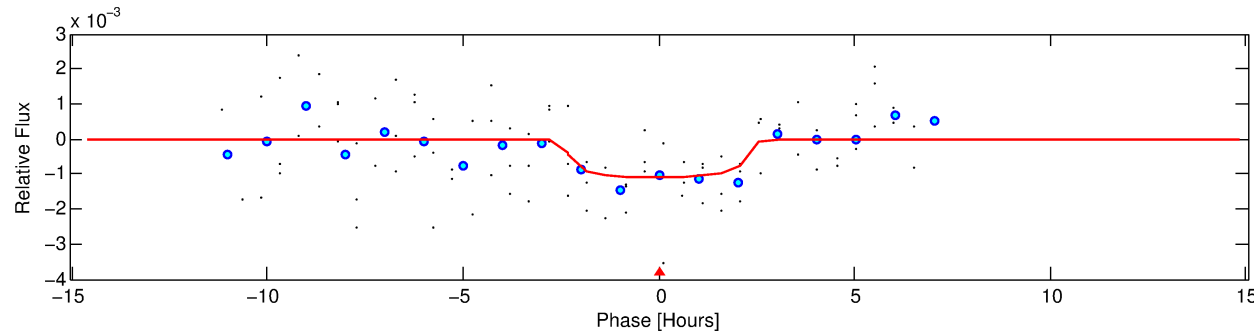
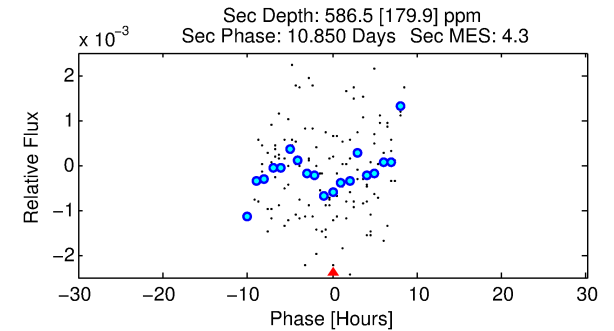
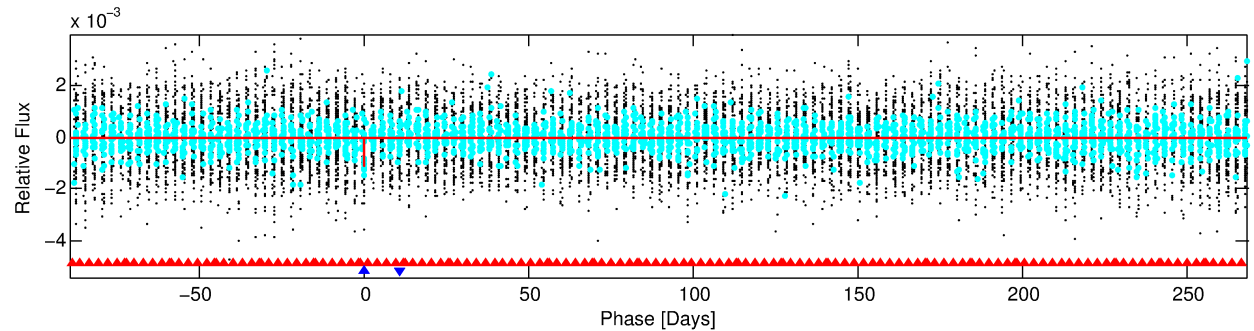
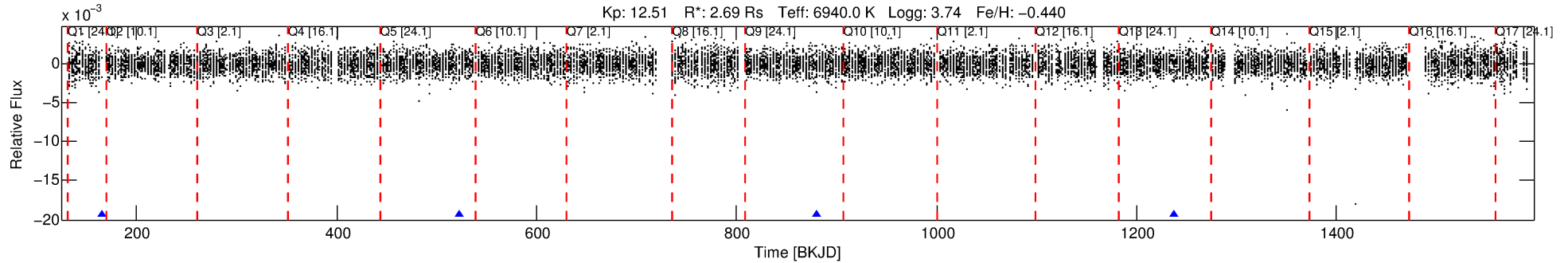
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008388610-02

No Significant Match Found

DV One-Page Summary

KIC: 8388610 Candidate: 2 of 2 Period: 357.587 d



DV Fit Results:

Period = 357.58744 [0.01250] d
Epoch = 165.3866 [0.0287] BKJD
Rp/R* = 0.0327 [0.0216]
a/R* = 398.32 [1507.18]
b = 0.73 [2.45]
Seff = 12.08 [10.77]
Teq = 475 [106] K
Rp = 9.61 [7.85] Re
a = 1.1171 [0.5798] AU
Ag = 4362.16 [7041.10] [0.62σ]
Teffp = 5973 [2039] K [2.69σ]

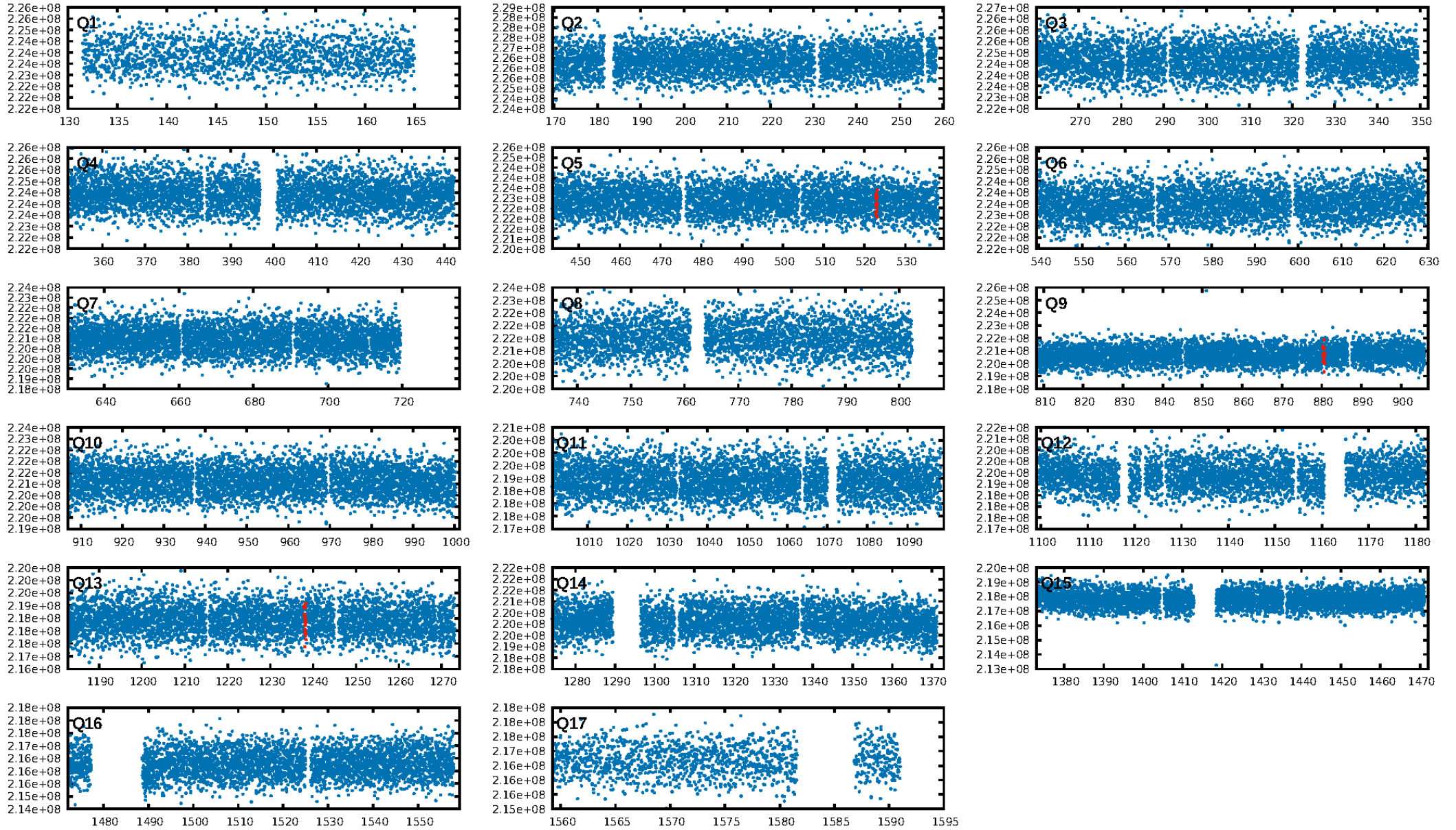
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [502.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 14.1%
ModelChiSquareGof-sig: 55.3%
Bootstrap-pfa: 6.83e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2344
Centroid-sig: 17.1%
Centroid-so: 0.182 arcsec [0.70σ]
OotOffset-rm: 0.366 arcsec [1.69σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 0.420 arcsec [1.86σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

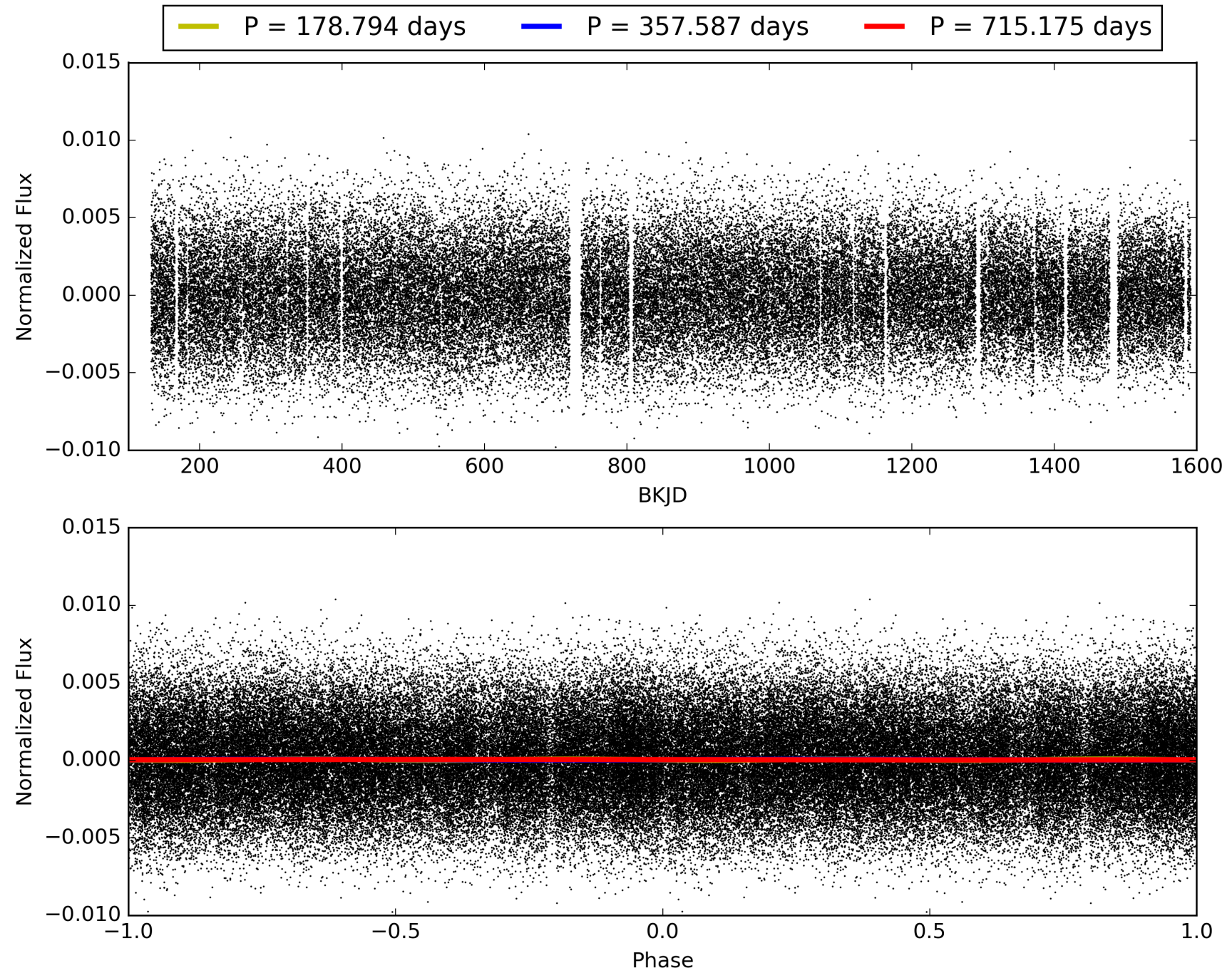
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:12:00 Z

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

TCE 008388610-02, PDC Light Curves

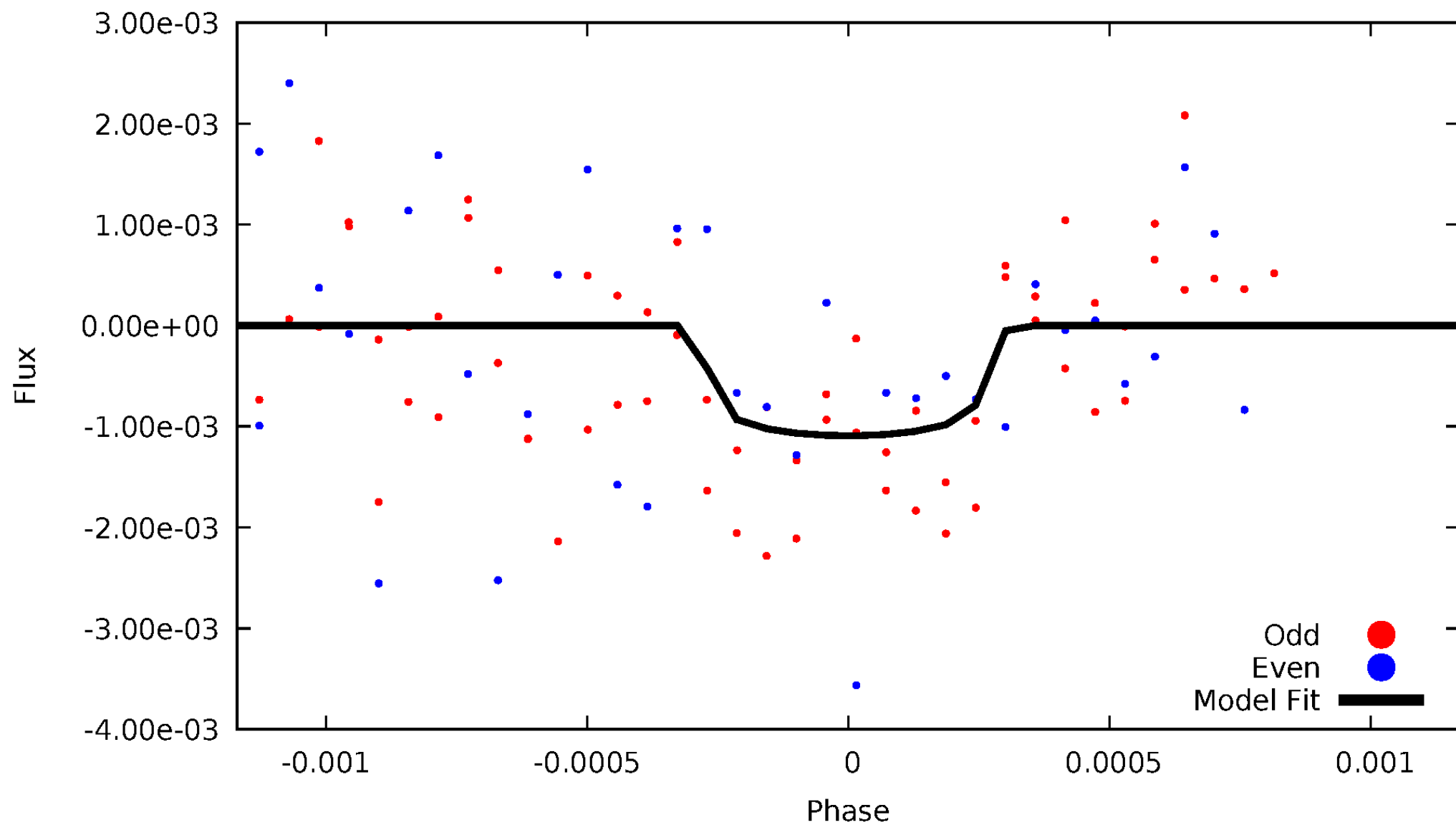


TCE 008388610-02



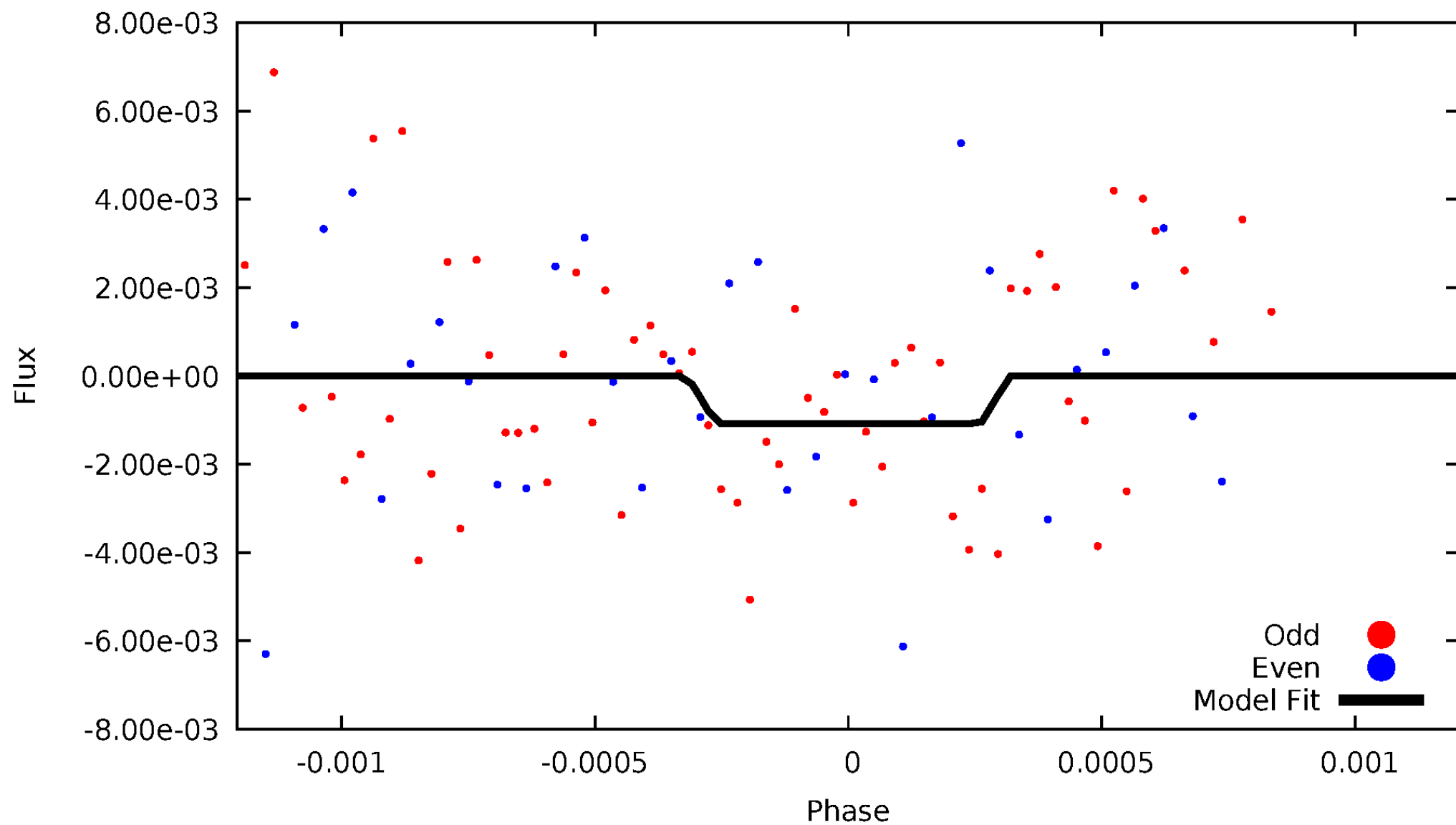
DV Odd/Even

TCE 008388610-02



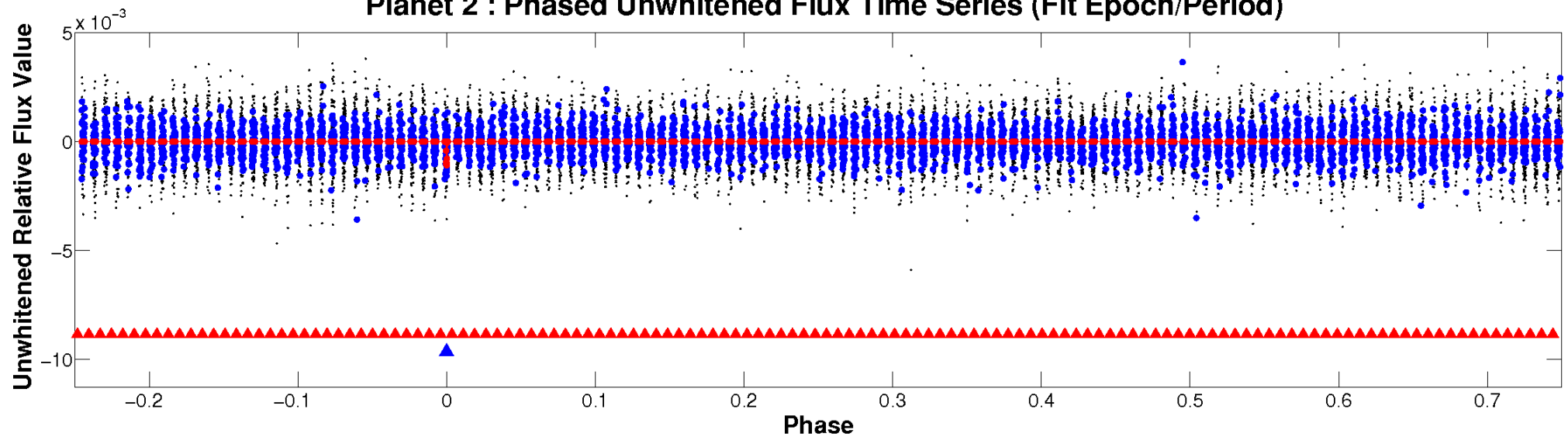
ALT Odd/Even

TCE 008388610-02

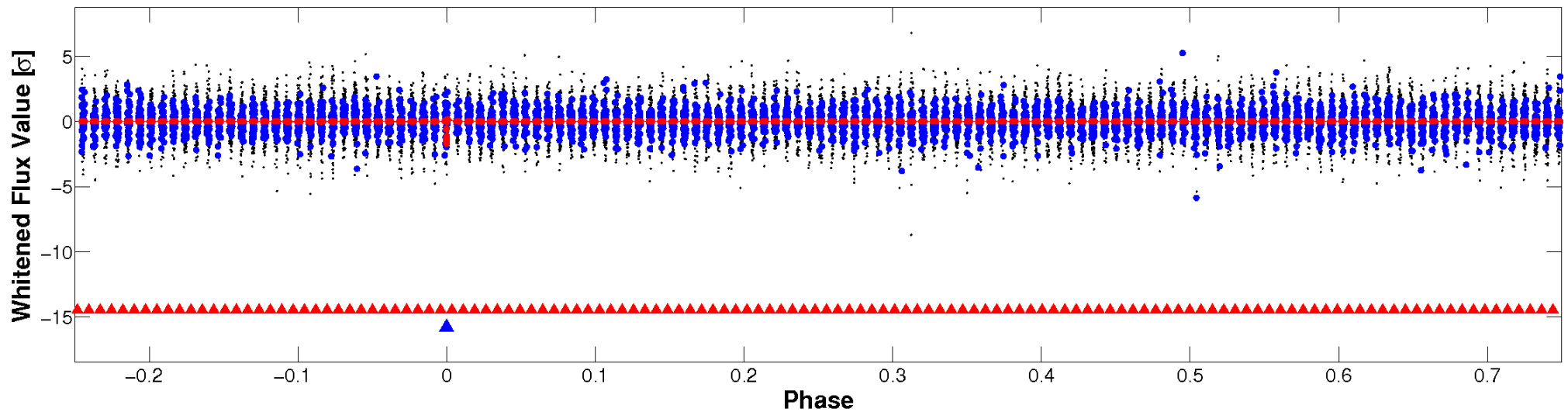


Non-Whitened Vs. Whitened Light Curve

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



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



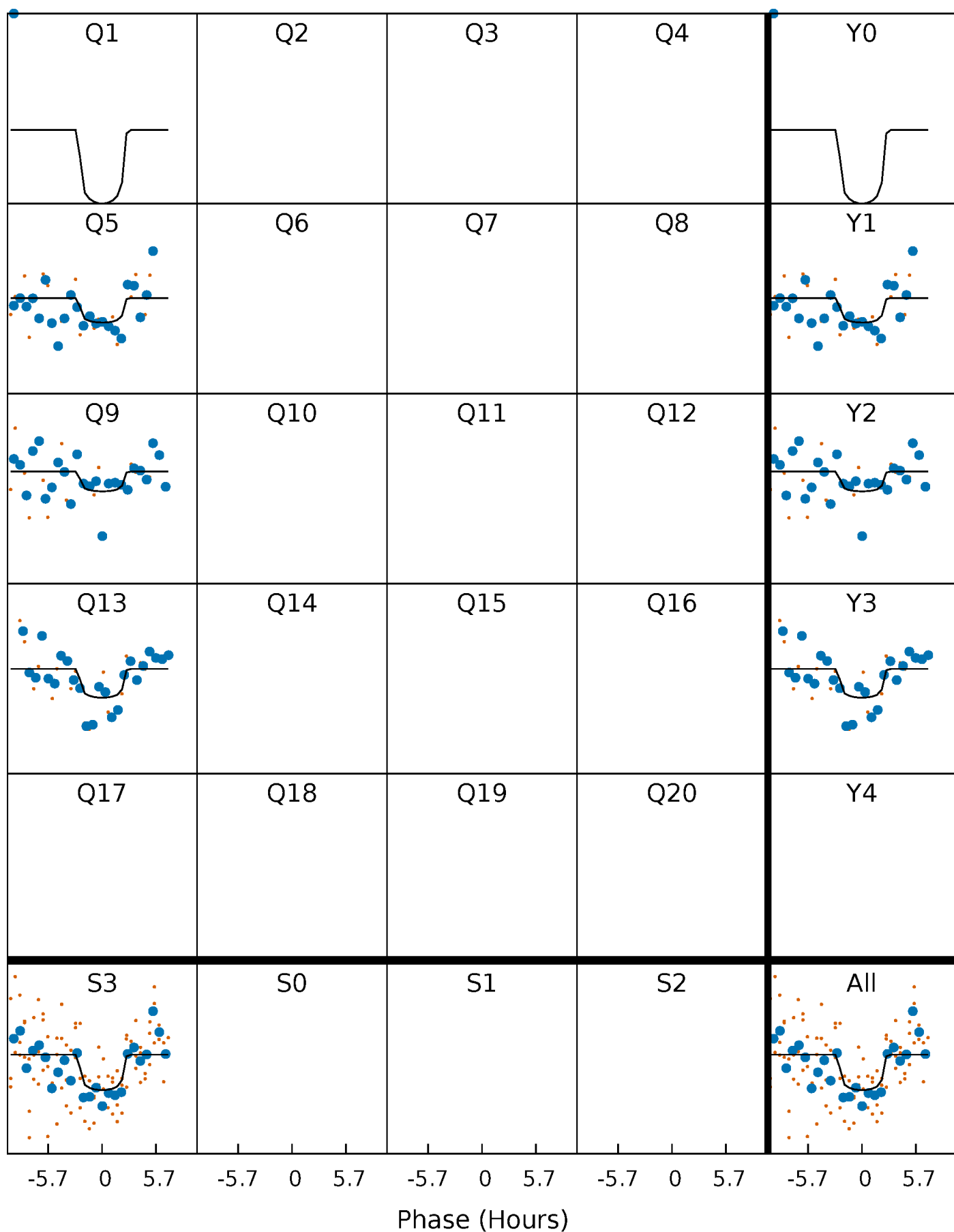
PDC Quarter-Phased Transit Curves

TCE 008388610-02 $P=357.587435$ Days $T_0=165.386621$ (BKJD)



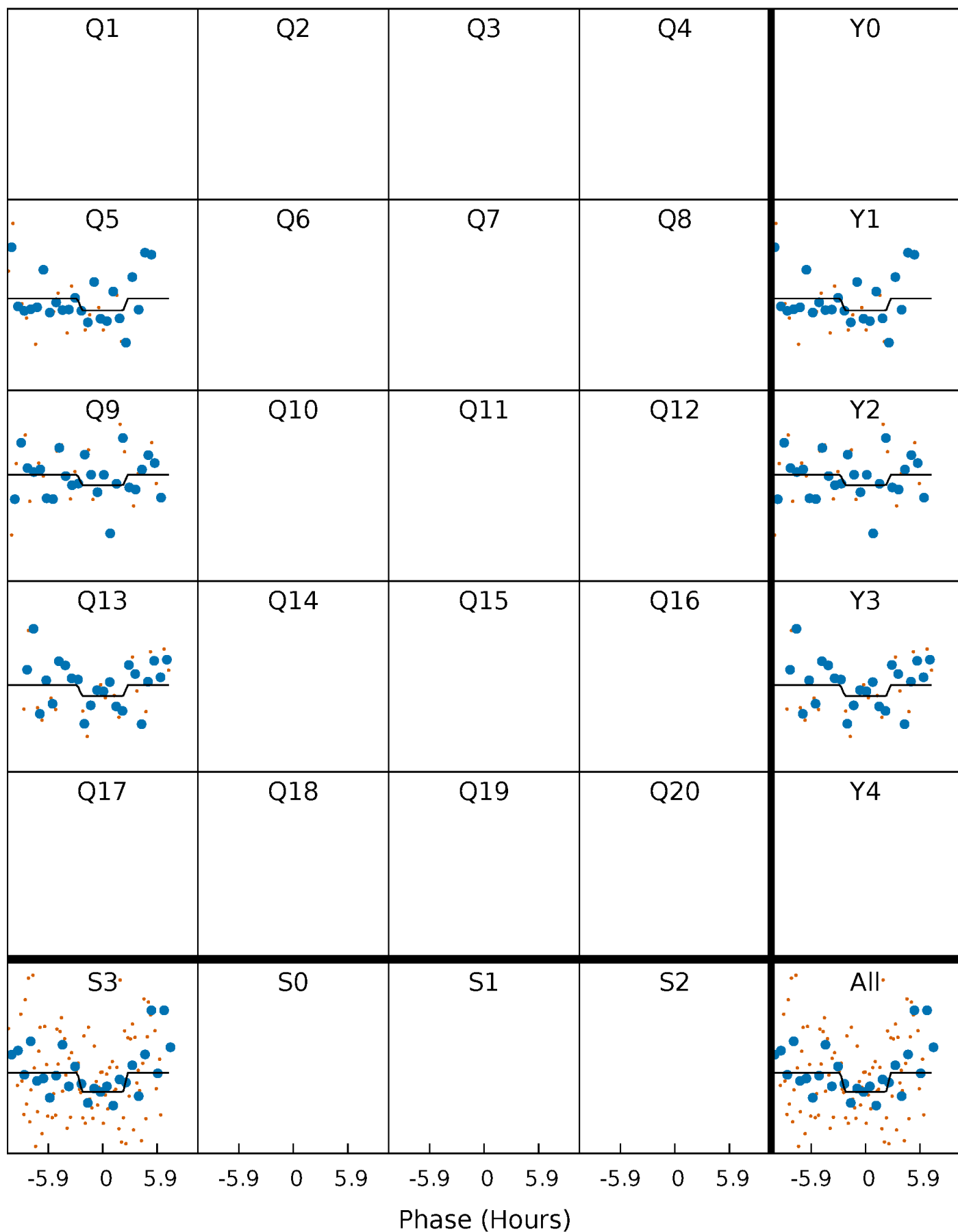
DV Quarter-Phased Transit Curves

TCE 008388610-02 P=357.587435 Days $T_0=165.386621$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

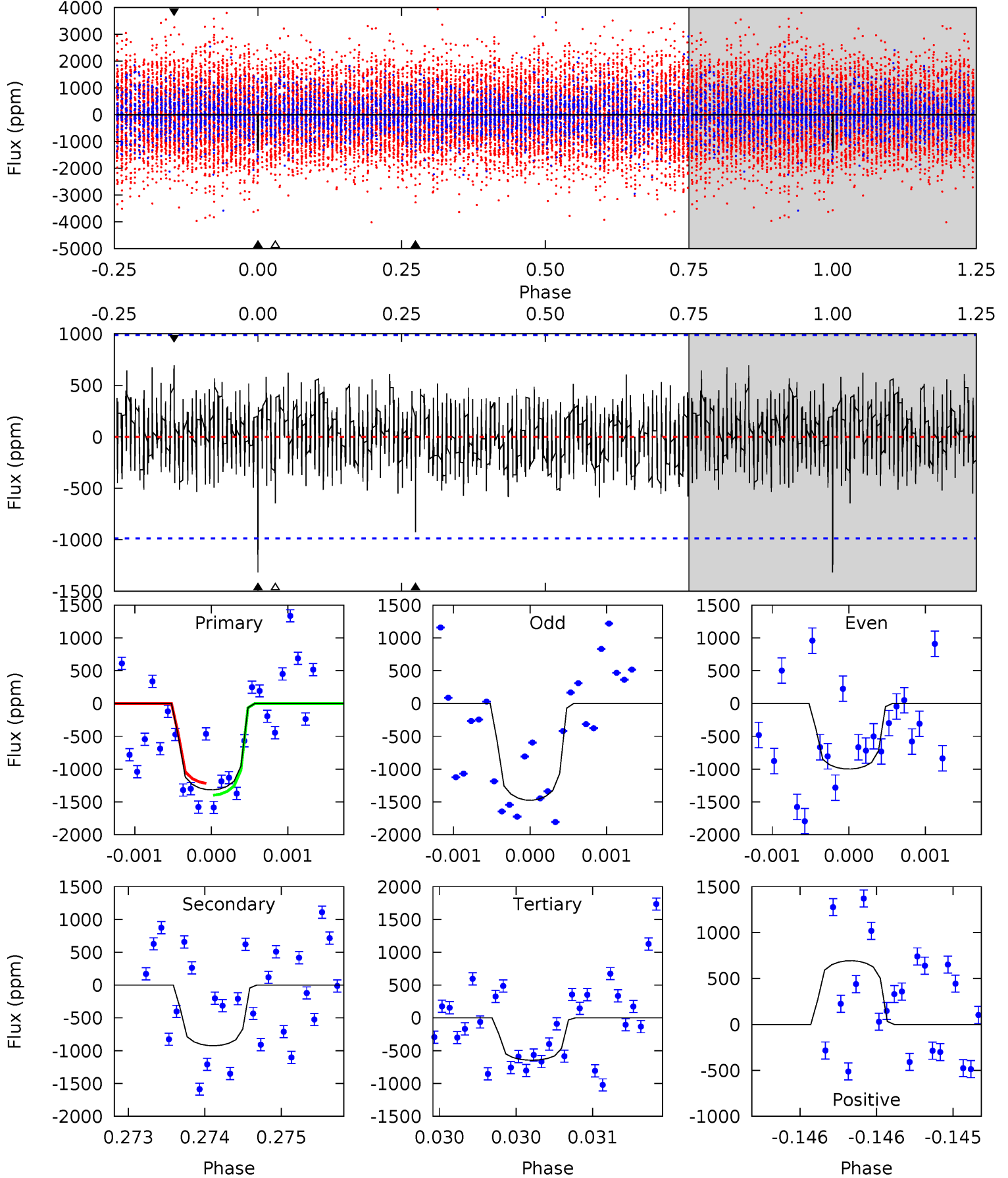
TCE 008388610-02 $P=357.572652$ Days $T_0=165.423948$ (BKJD)



DV Model-Shift Uniqueness Test

008388610-02, $P = 357.587435$ Days, $E = 165.386621$ Days

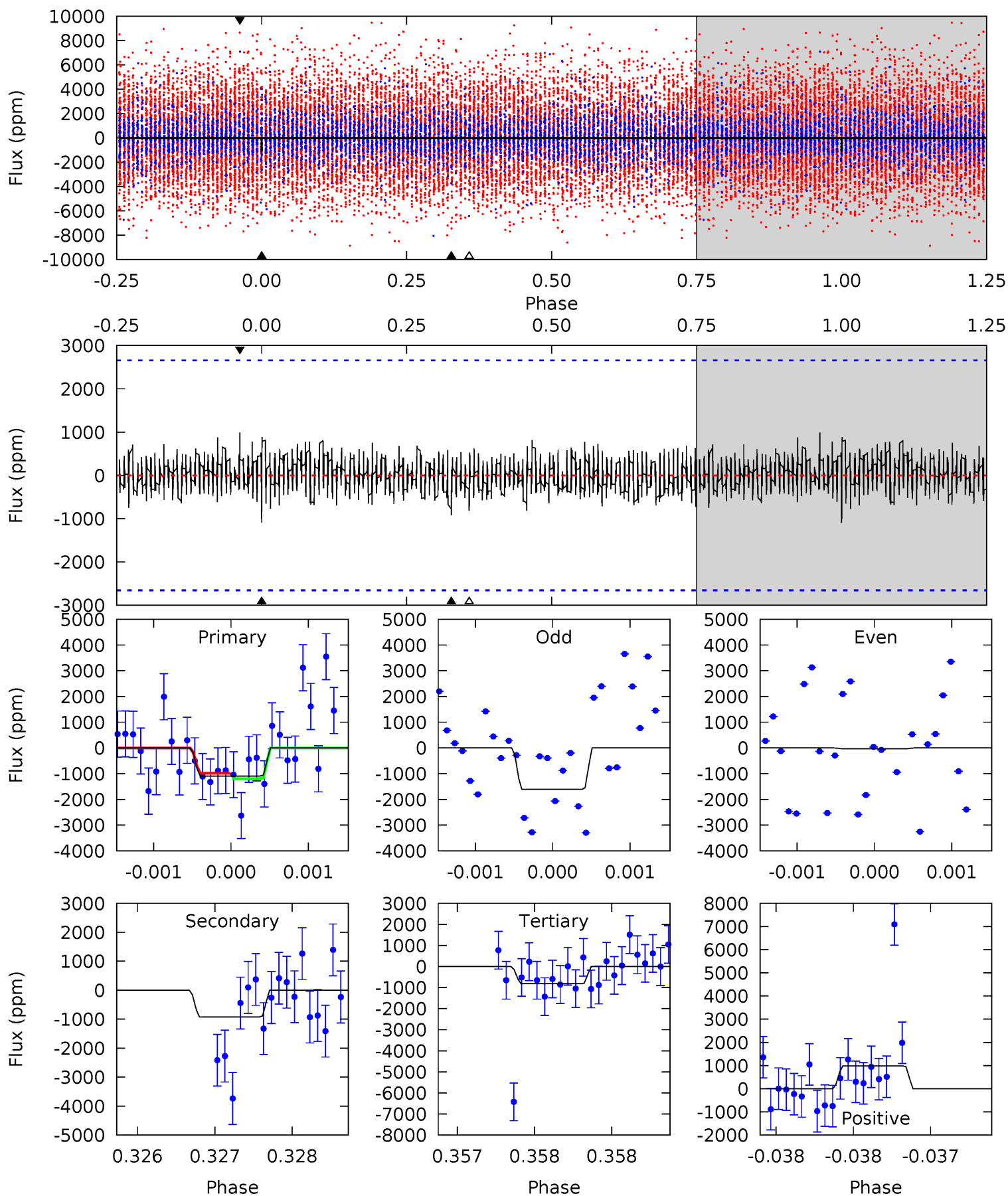
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.39	5.19	3.62	3.89	5.53	3.42	1.19	3.77	3.50	1.57	1.30	1.26	0.96	0.34	0.50



Alt Model-Shift Uniqueness Test

008388610-02, P = 357.572652 Days, E = 165.423948 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.27	1.92	1.71	2.05	5.53	3.42	0.53	0.57	0.22	0.21	-0.13	1.55	0.75	0.47	0.22



Stellar Parameters For KIC 008388610

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6940^{+190}_{-285}	$3.740^{+0.531}_{-0.088}$	$-0.440^{+0.300}_{-0.300}$	$2.693^{+0.464}_{-1.298}$	$1.453^{+0.199}_{-0.340}$	$0.105^{+0.587}_{-0.029}$
	+3%/-4%	+14%/-2%	+68%/-68%	+17%/-48%	+14%/-23%	+560%/-28%
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 008388610-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-925 ± 178	$9.00^{+5.58}_{-5.10}$	641^{+46}_{-86}	6413^{+4491}_{-1204}	7635^{+37576}_{-4710}
Alt.	-921 ± 480	$8.78^{+6.00}_{-5.17}$	636^{+50}_{-79}	6296^{+4288}_{-1554}	7416^{+35586}_{-5488}

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 $A_{obs} \gg 1.0$

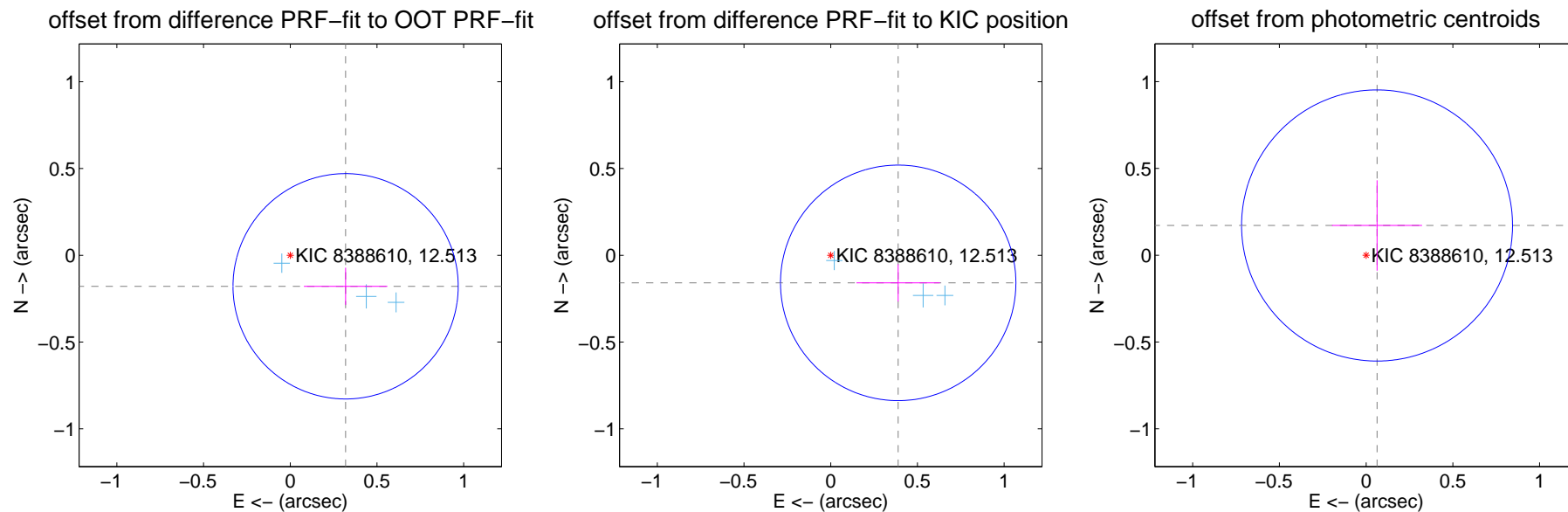
DV Centroid Data

Supplemental centroid analysis for 008388610-02. Kepler magnitude: 12.51. Transit SNR 7.86

There are 3 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	0.366 ± 0.216	1.69	-0.319 ± 0.241	-0.179 ± 0.107
PRF-fit source offset from KIC position	0.420 ± 0.226	1.86	-0.389 ± 0.240	-0.159 ± 0.107
photometric centroid source offset	0.18 ± 0.26	0.70	-0.06 ± 0.26	0.17 ± 0.26

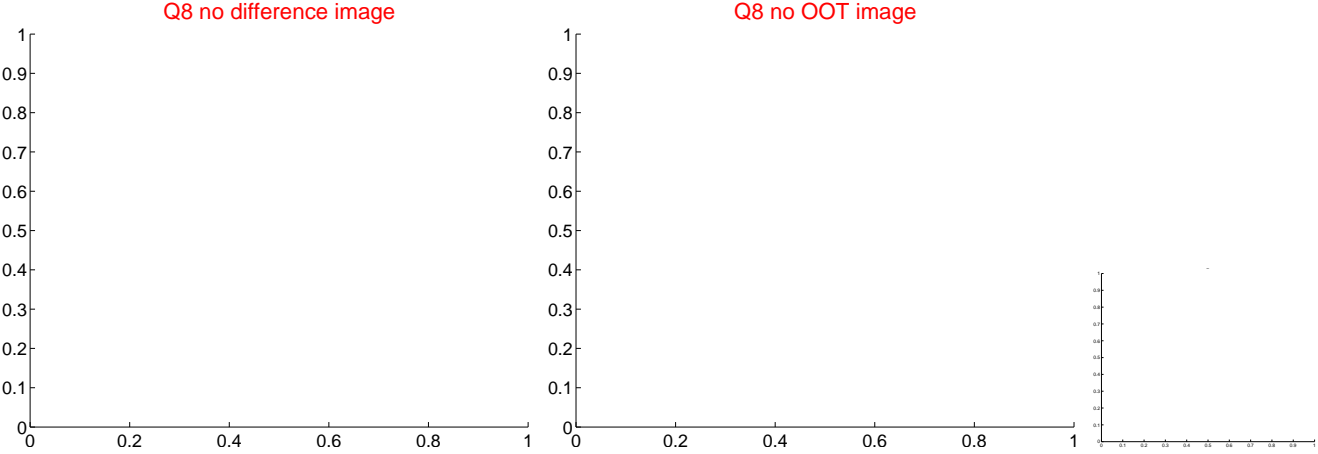
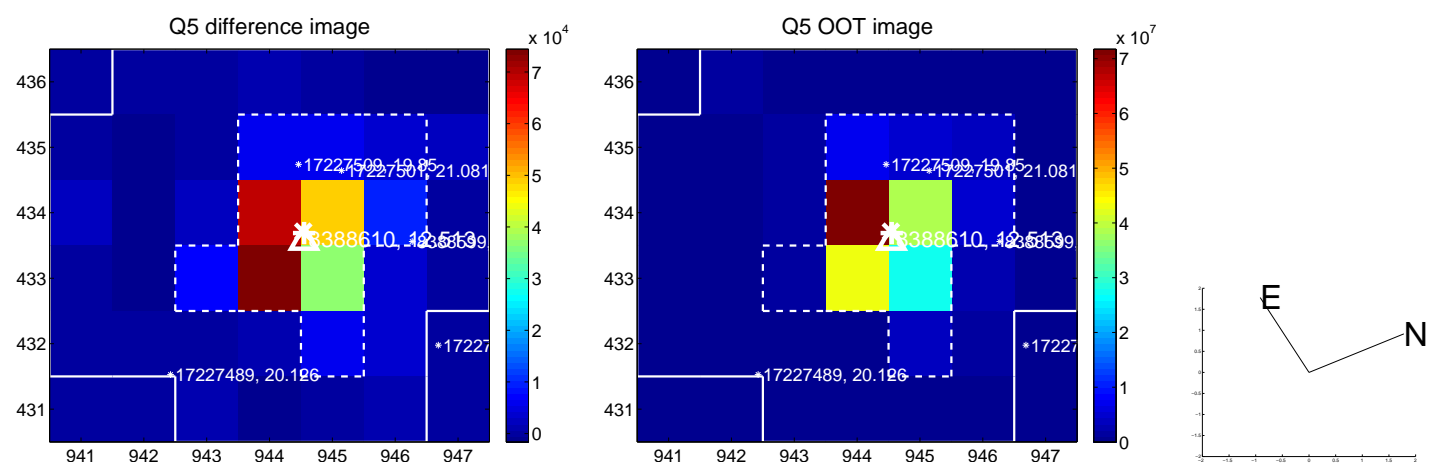


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

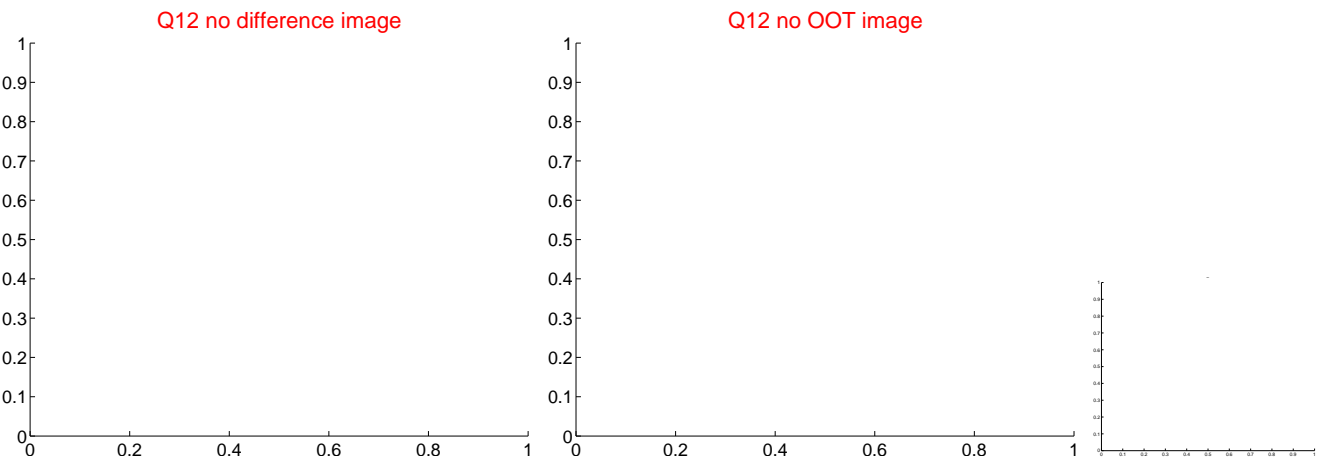
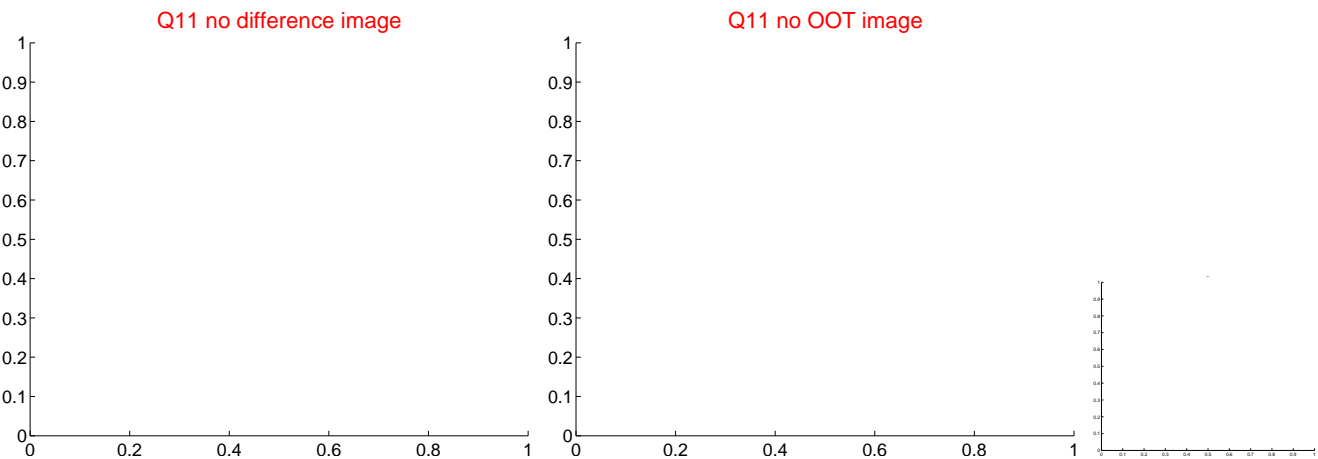
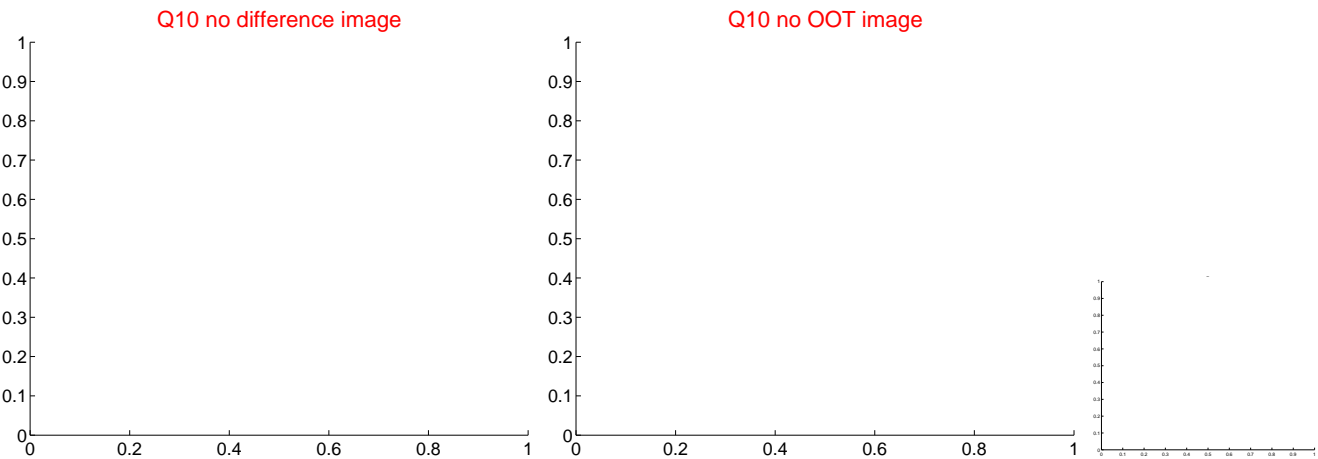
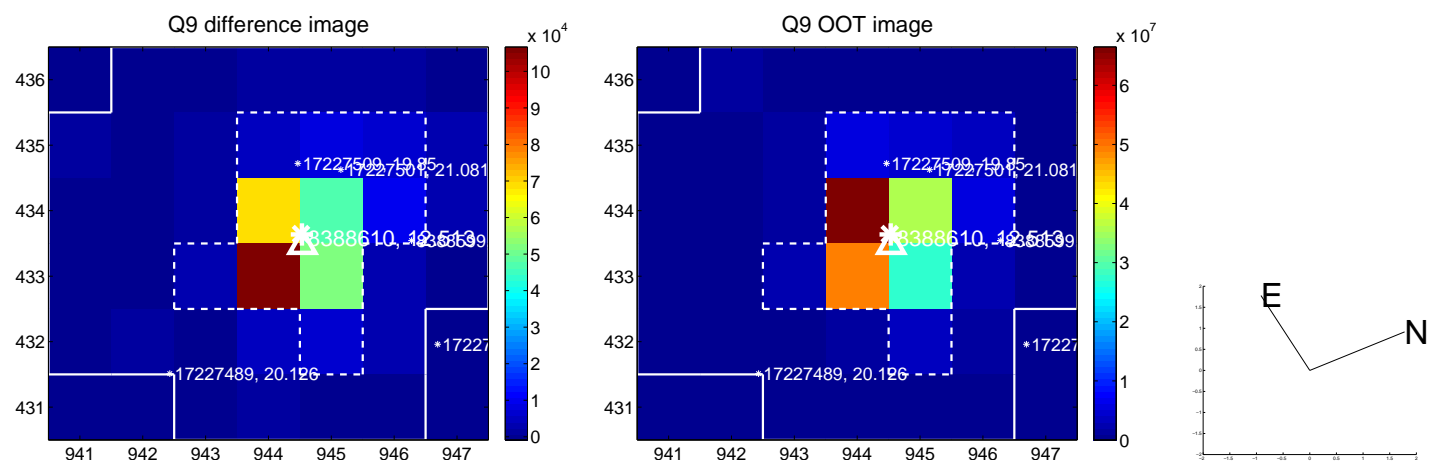
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



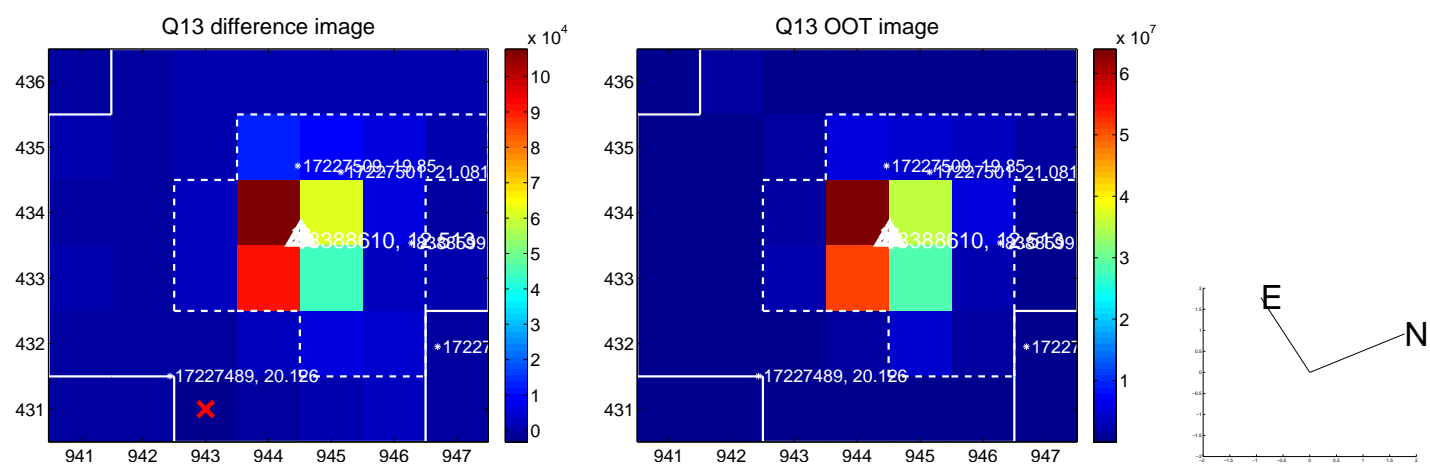
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



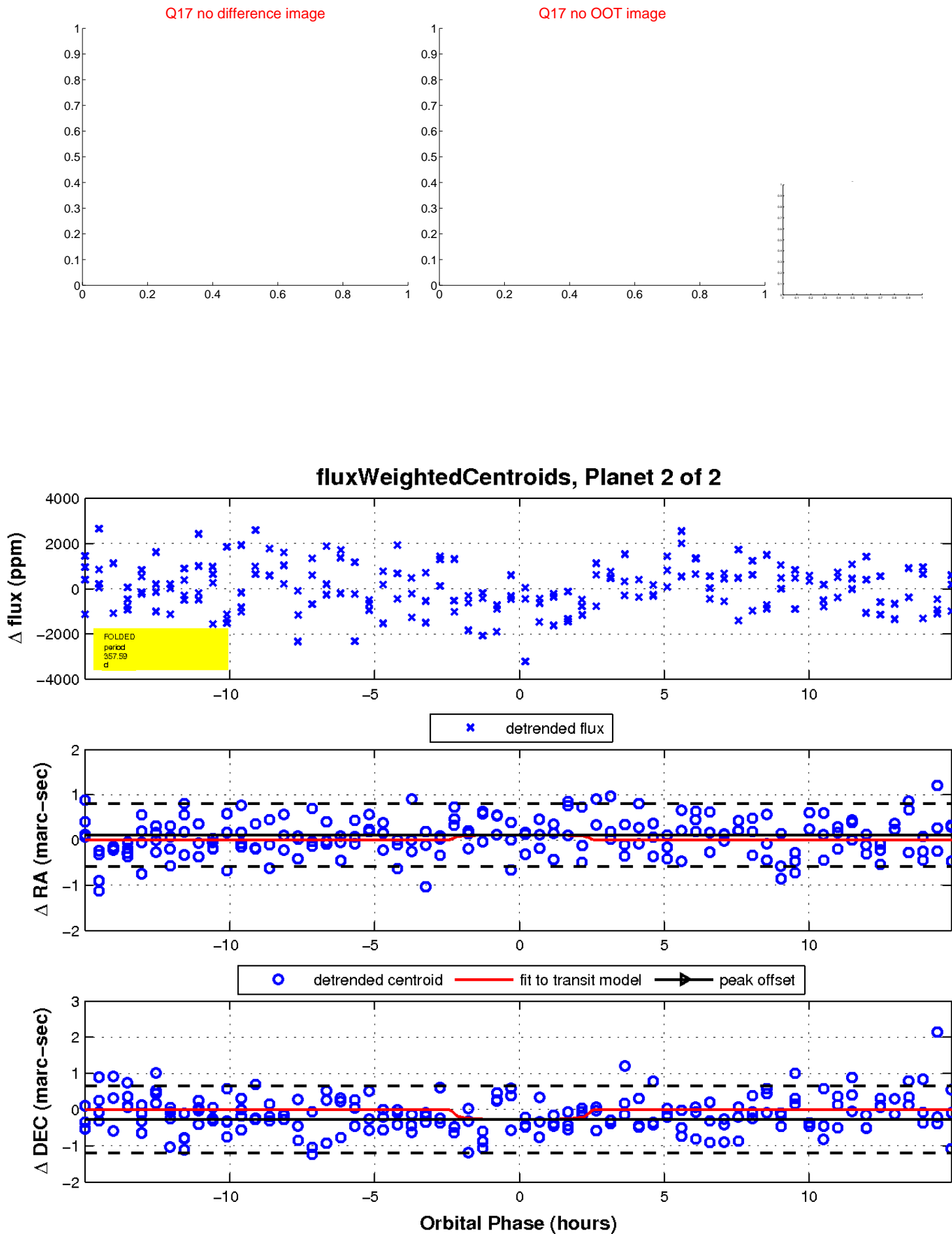
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

