

KIC 009243562

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})
009243562-01	OBS	No	2.225337	133.651285	36.7	14.504	10.3	8.7	2.39	8035	1.50	12614.75
009243562-02	OBS	No	0.799247	132.105198	130.6	5.593	13.8	16.5	2.39	8035	3.21	49411.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009243562-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009243562-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

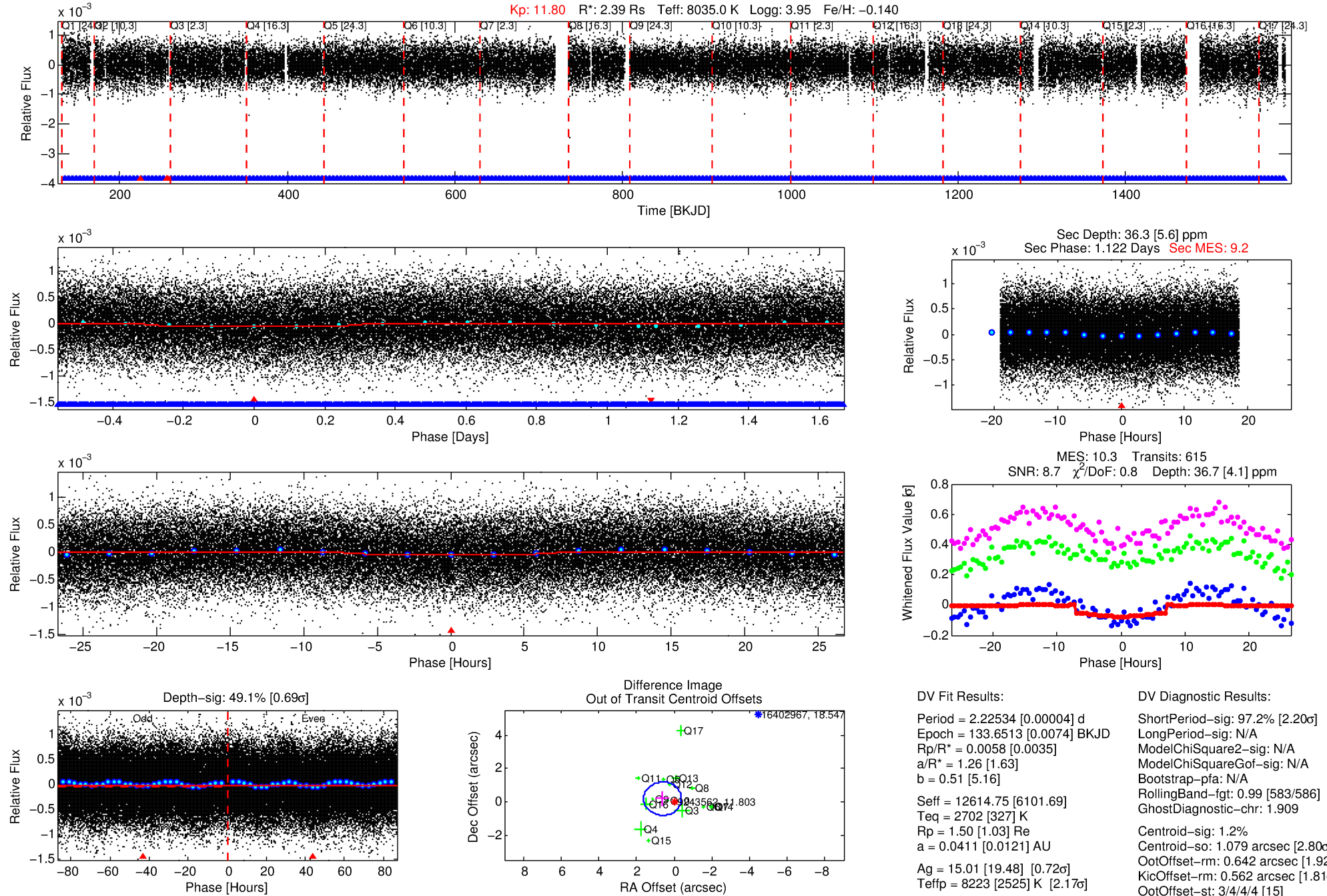
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009243562-01

No Significant Match Found

DV One-Page Summary

KIC: 9243562 Candidate: 1 of 2 Period: 2.225 d



DV Fit Results:

Period = 2.22534 [0.00004] d
Epoch = 133.6513 [0.0074] BKJD
Rp/R* = 0.0058 [0.0035]
a/R* = 1.26 [1.63]
b = 0.51 [5.16]
Seff = 12614.75 [6101.69]
Teff = 2702 [327] K
Rp = 1.50 [1.03] Re
a = 0.0411 [0.0121] AU
Ag = 15.01 [19.48] [0.72σ]
Teffp = 8223 [2525] K [2.17σ]

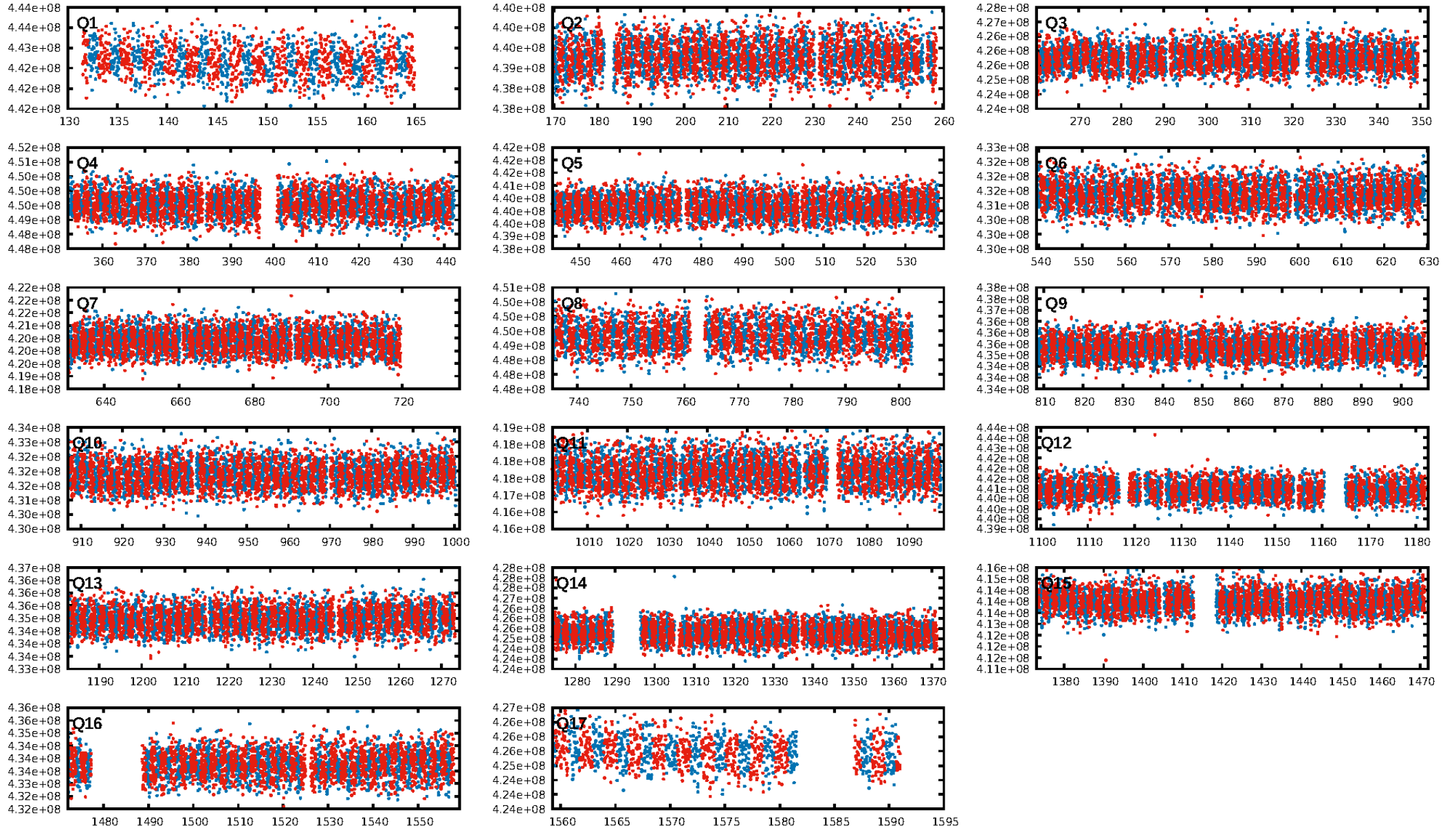
DV Diagnostic Results:

ShortPeriod-sig: 97.2% [2.20σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [583/586]
GhostDiagnostic-chr: 1.909
Centroid-sig: 1.2%
Centroid-so: 1.079 arcsec [2.80σ]
OotOffset-rm: 0.642 arcsec [1.92σ]
KicOffset-rm: 0.562 arcsec [1.81σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 0.00 [0/17]

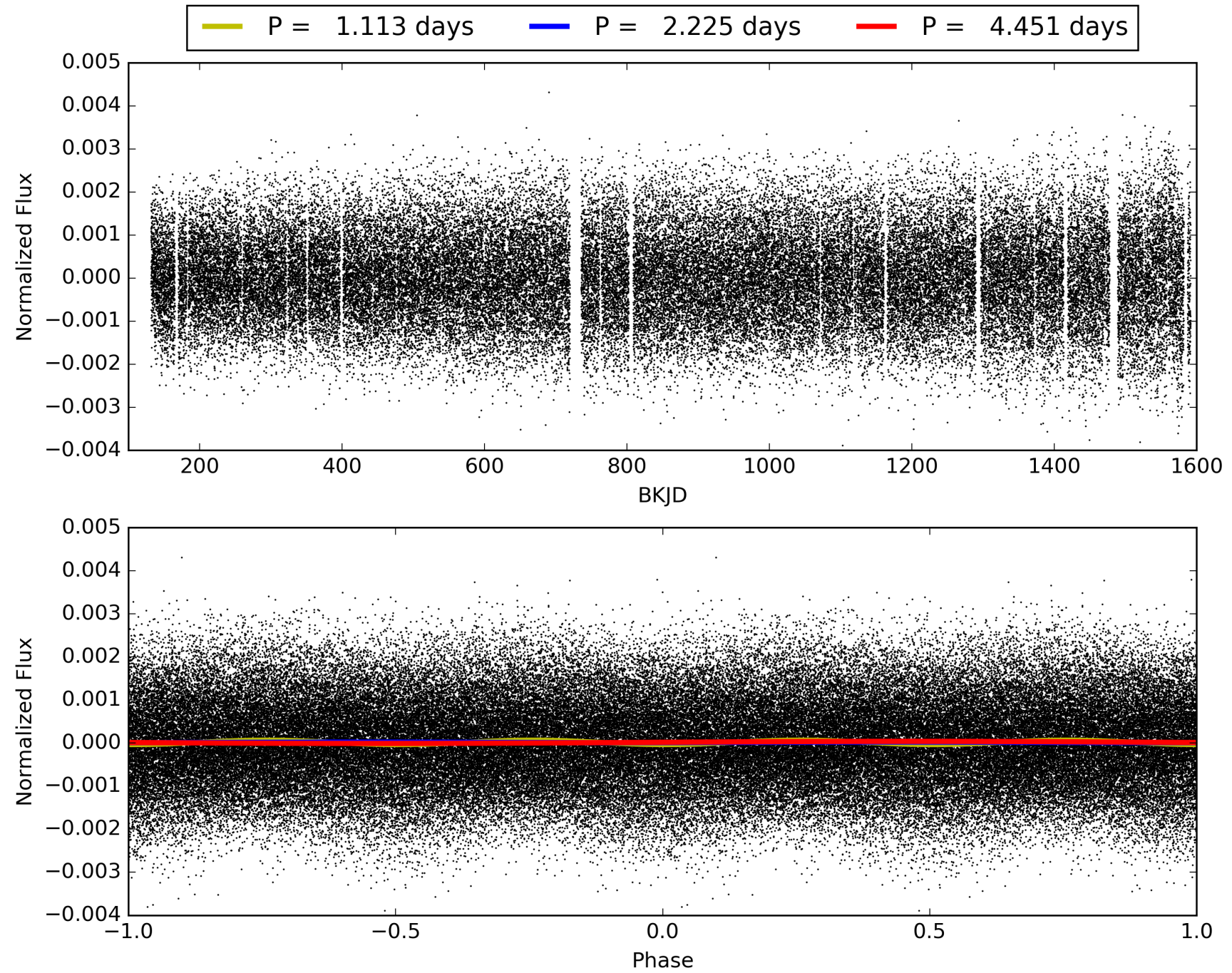
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:46:35 Z

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

TCE 009243562-01, PDC Light Curves

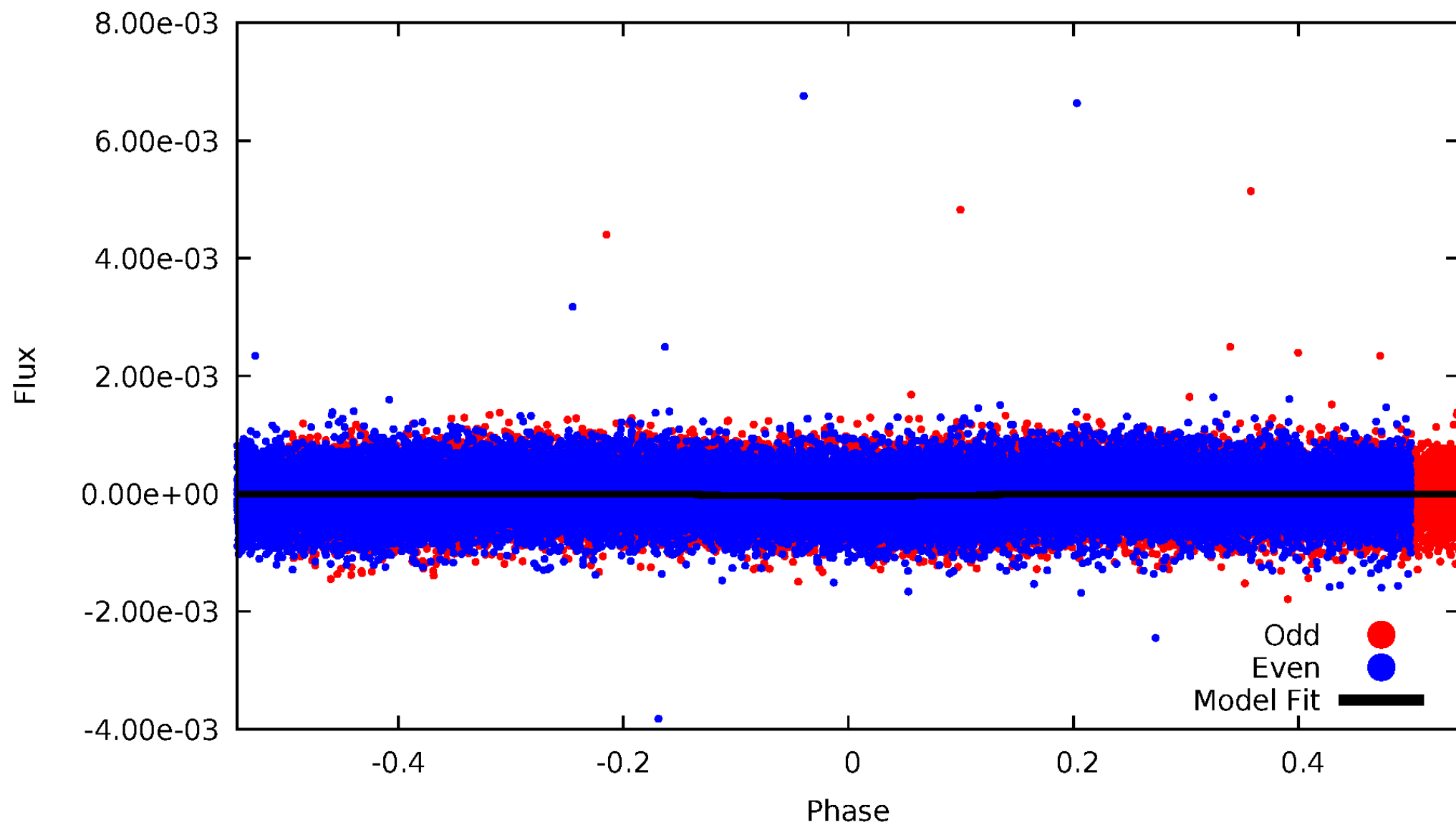


TCE 009243562-01



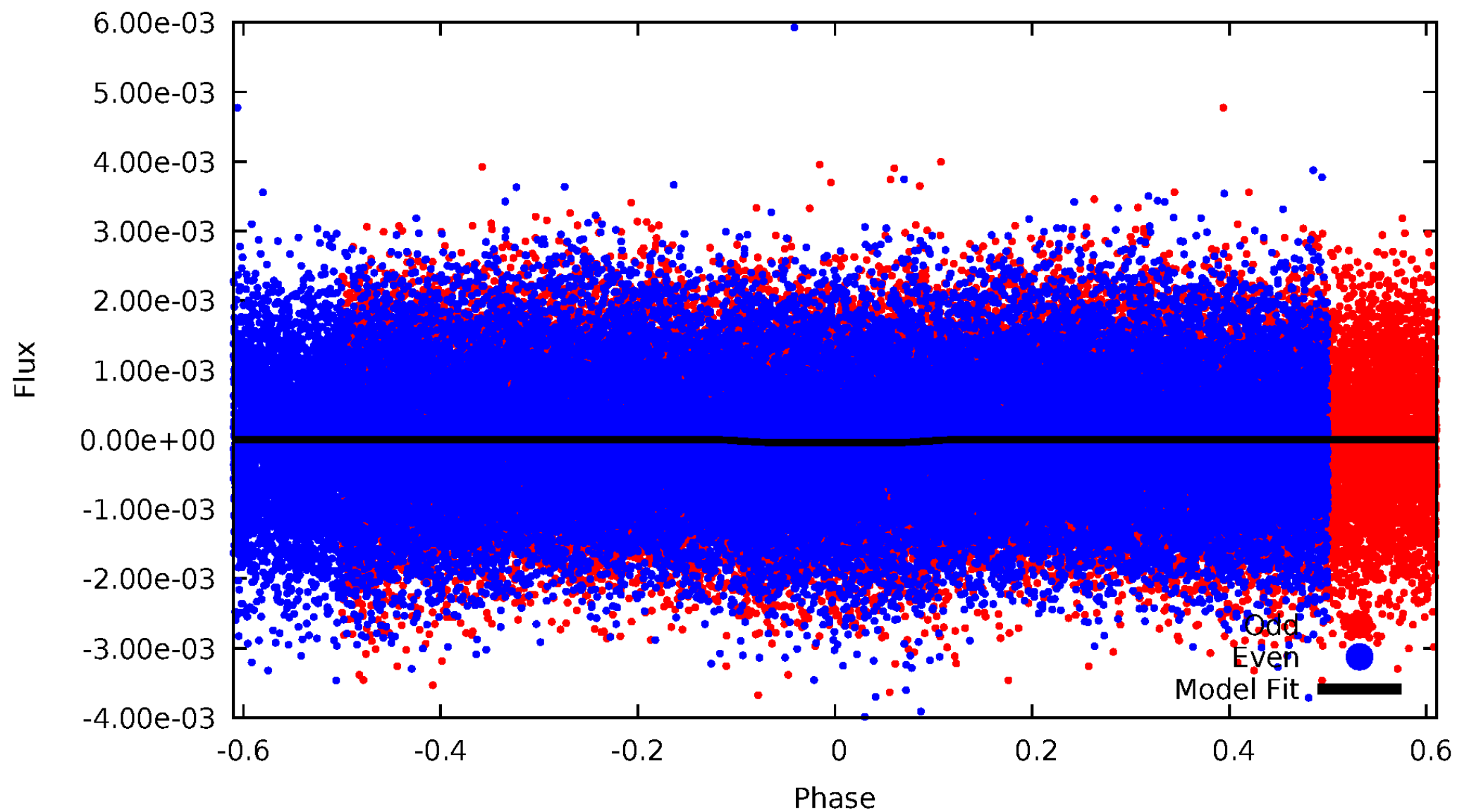
DV Odd/Even

TCE 009243562-01



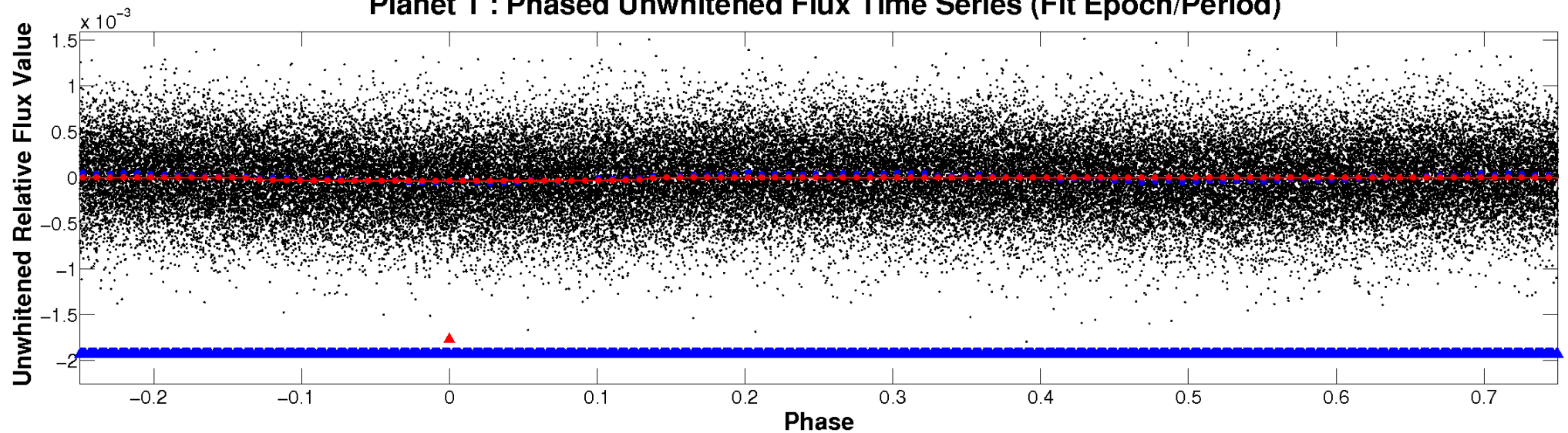
ALT Odd/Even

TCE 009243562-01

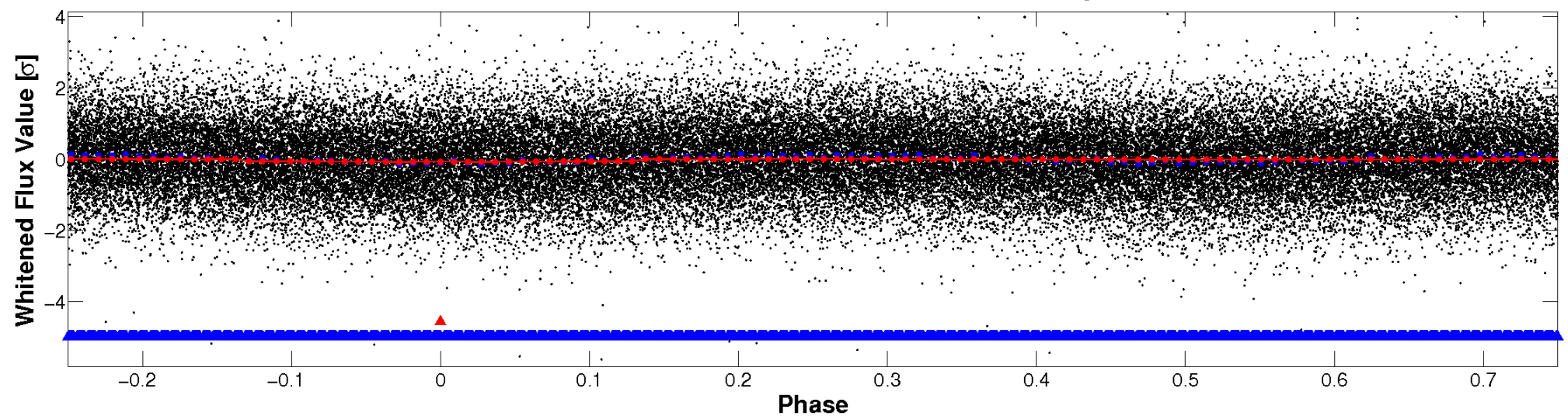


Non-Whitened Vs. Whitened Light Curve

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

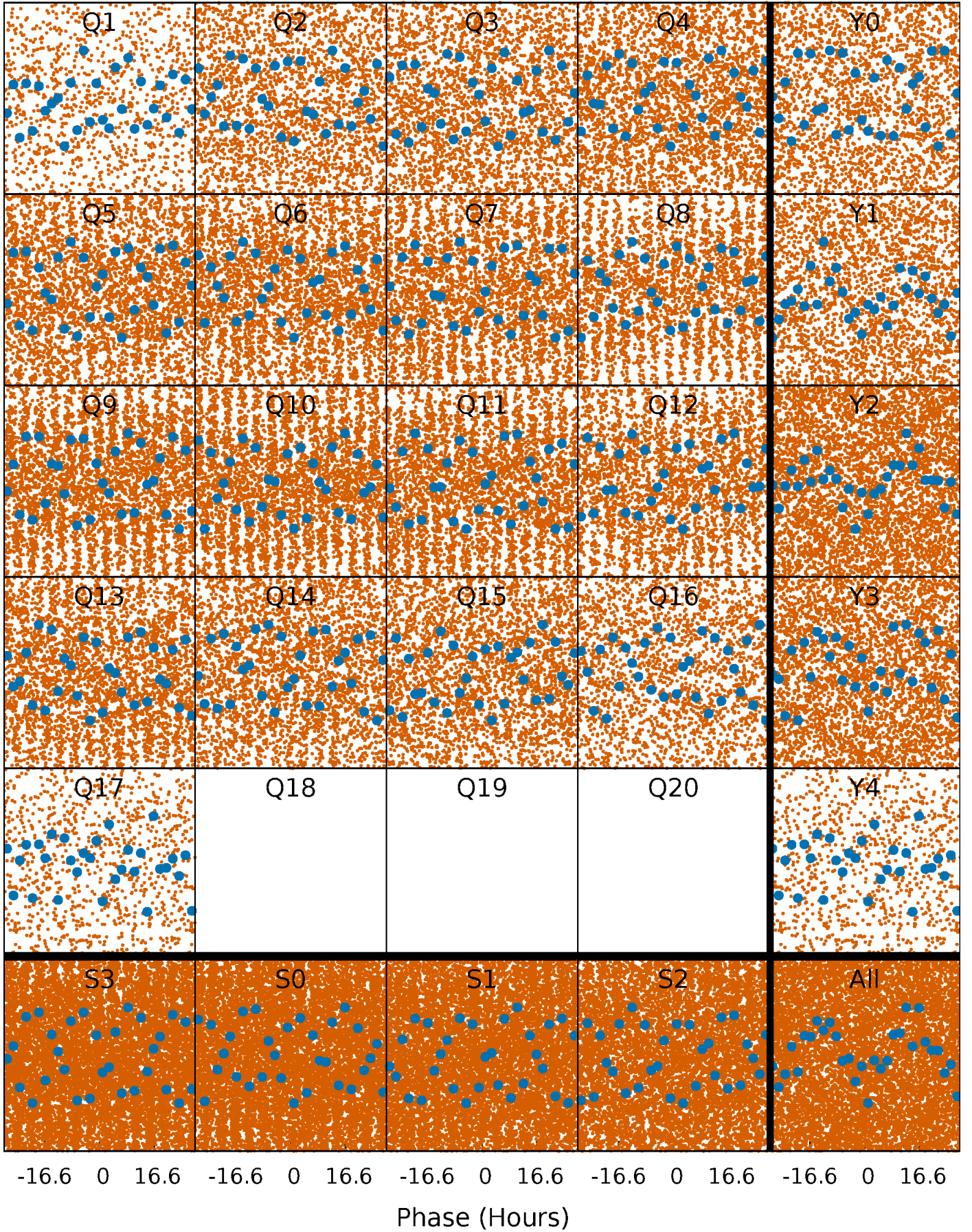


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



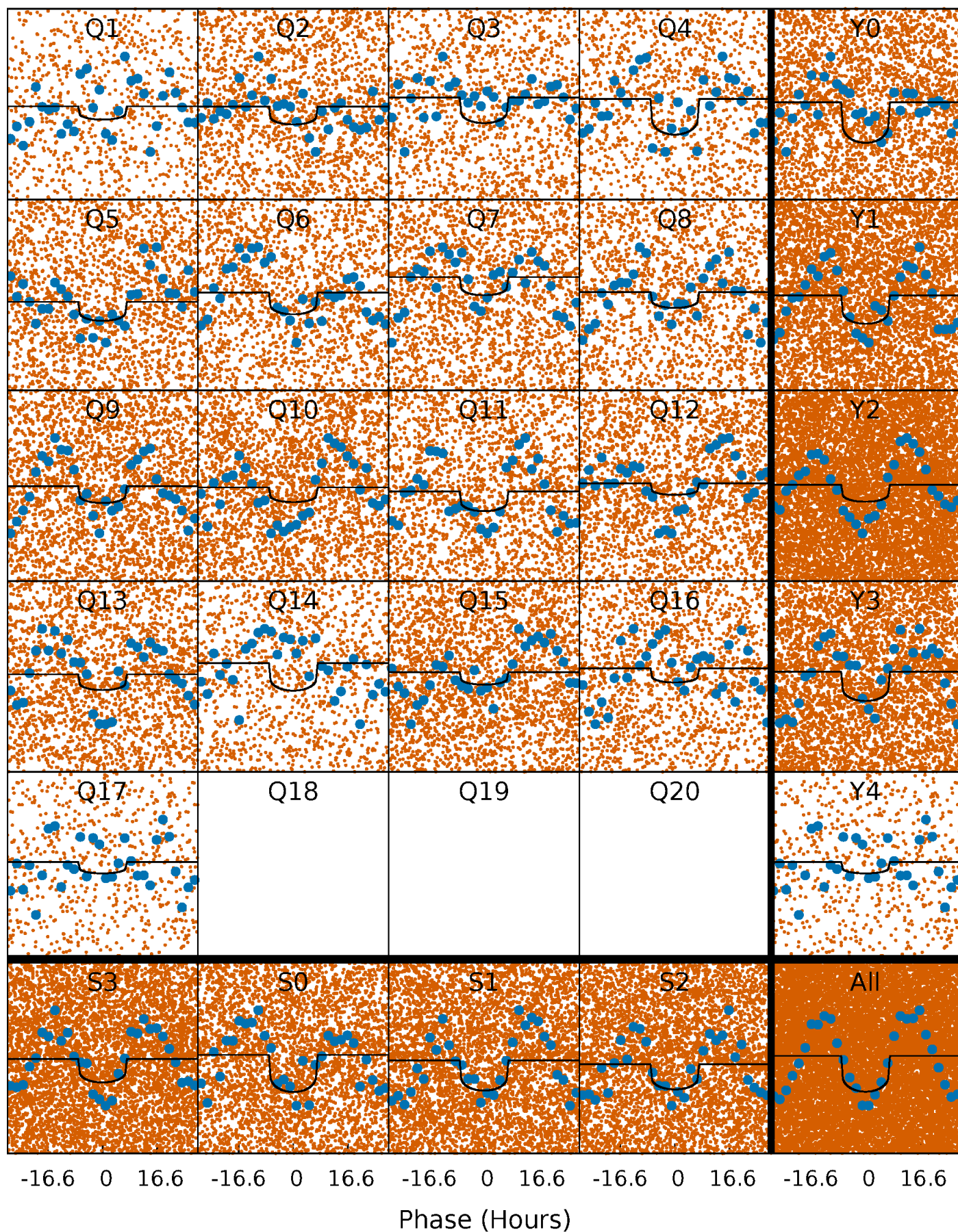
PDC Quarter-Phased Transit Curves

TCE 009243562-01 P= 2.225337 Days $T_0=133.651285$ (BKJD)



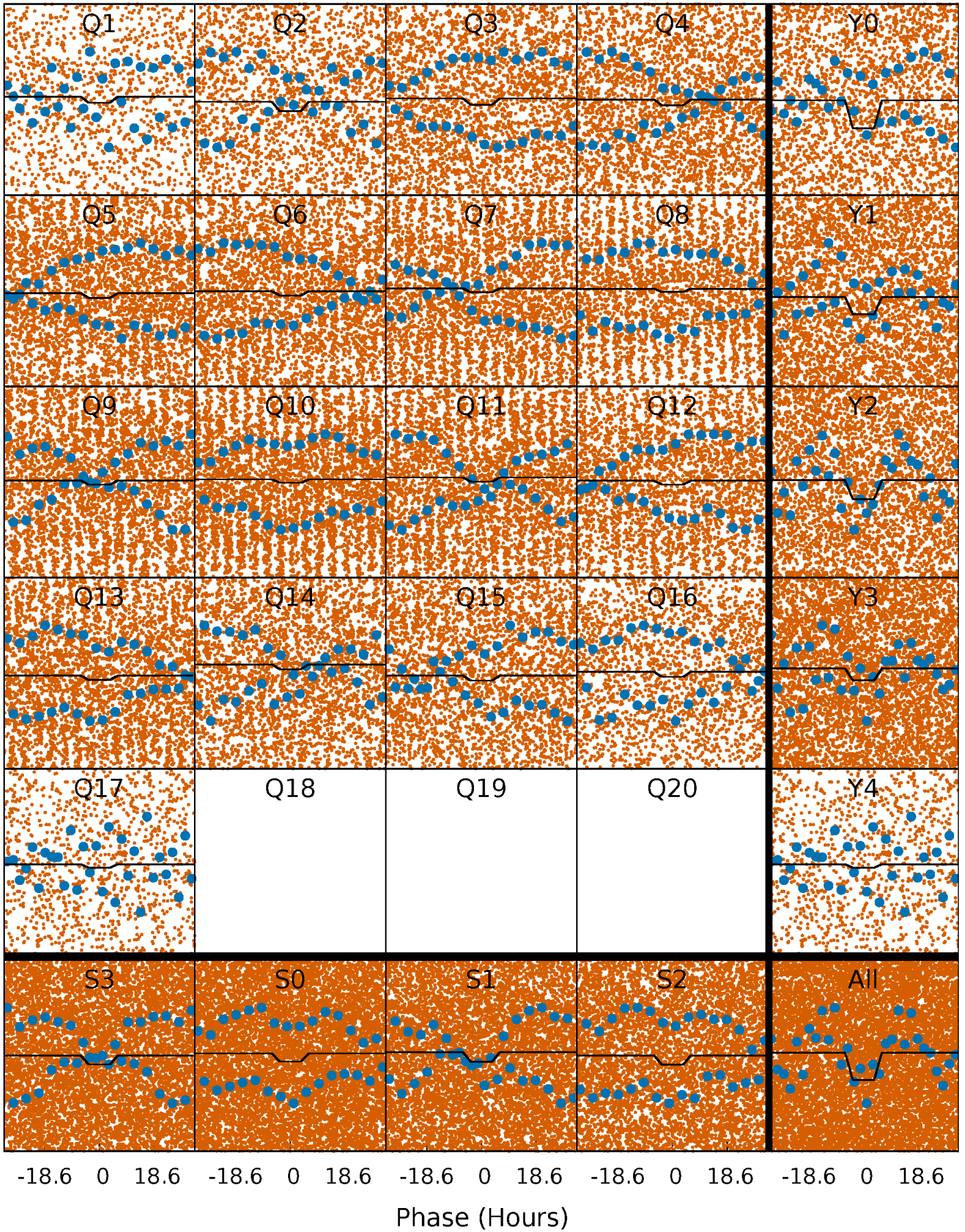
DV Quarter-Phased Transit Curves

TCE 009243562-01 P= 2.225337 Days $T_0=133.651285$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

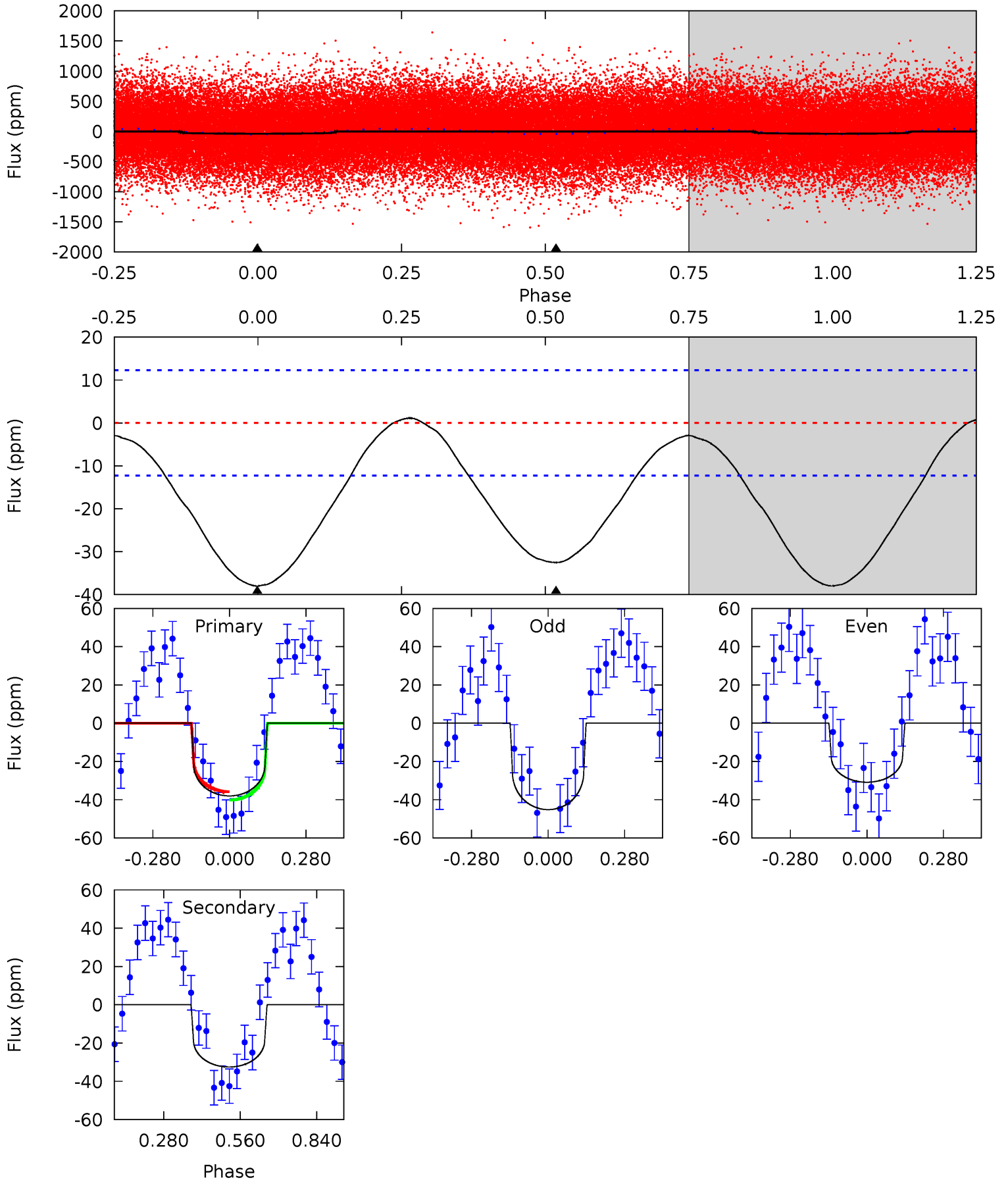
TCE 009243562-01 P= 2.225415 Days $T_0=133.614489$ (BKJD)



DV Model-Shift Uniqueness Test

009243562-01, P = 2.225337 Days, E = 131.425948 Days

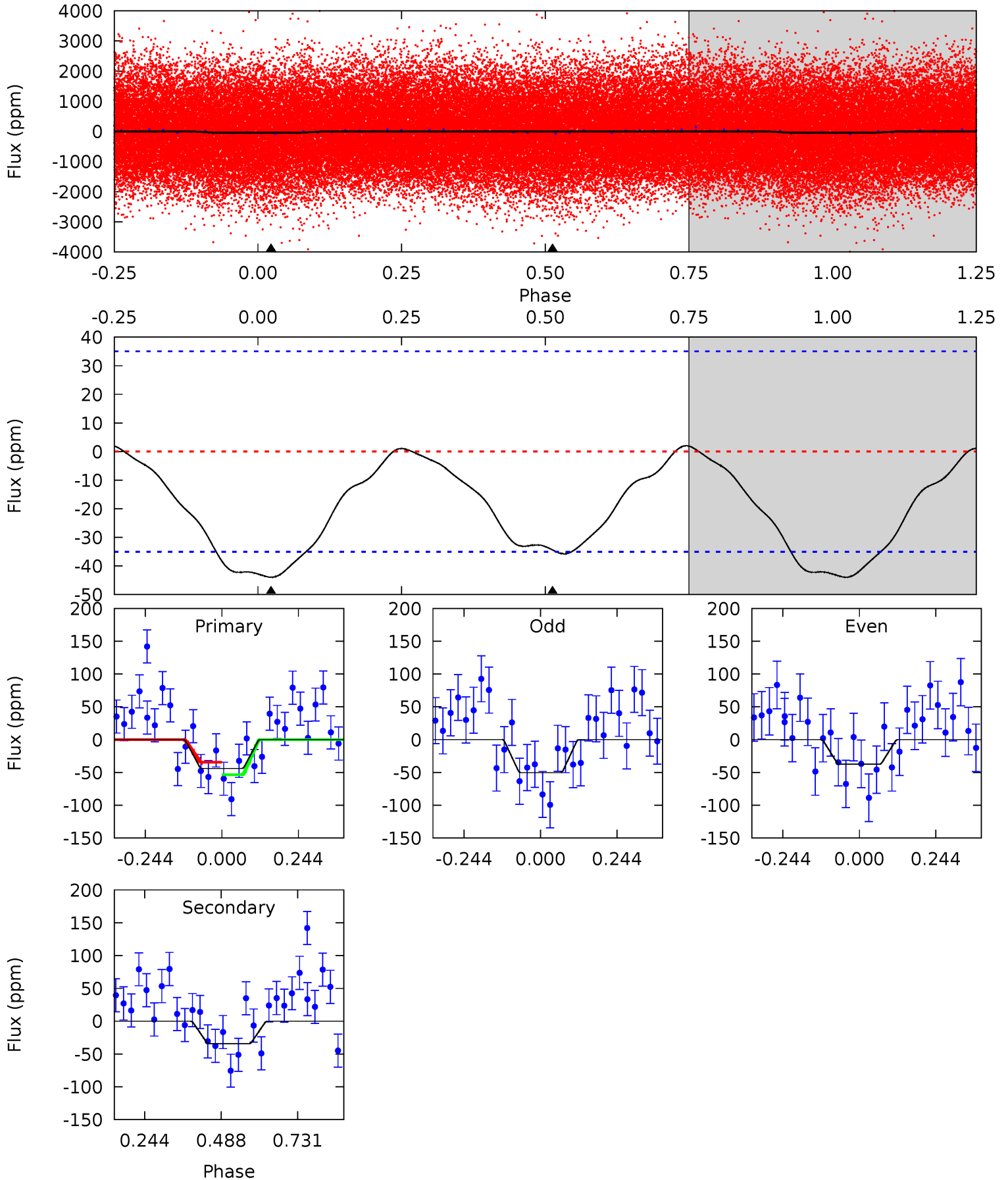
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	11.5	0	0	4.34	1.08	0.63	13.4	13.4	11.5	11.5	2.54	1.18	0.03	0.77



Alt Model-Shift Uniqueness Test

009243562-01, P = 2.225415 Days, E = 131.389074 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.48	4.29	0	0	4.37	1.17	0.21	5.48	5.48	4.29	4.29	0.79	2.40	0.04	1.18



Stellar Parameters For KIC 009243562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8035^{+225}_{-338}	$3.953^{+0.259}_{-0.111}$	$-0.140^{+0.200}_{-0.350}$	$2.387^{+0.421}_{-0.781}$	$1.865^{+0.095}_{-0.380}$	$0.193^{+0.293}_{-0.068}$
	+3%/-4%	+7%/-3%	+143%/-250%	+18%/-33%	+5%/-20%	+152%/-35%
Source	KIC0	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 009243562-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-33 ± 3	$1.43^{+0.82}_{-0.77}$	3709^{+237}_{-304}	7786^{+6098}_{-1706}	14^{+51}_{-8}
Alt.	-34 ± 8	$1.73^{+0.92}_{-0.81}$	3699^{+253}_{-290}	7107^{+3580}_{-1532}	10^{+28}_{-6}

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

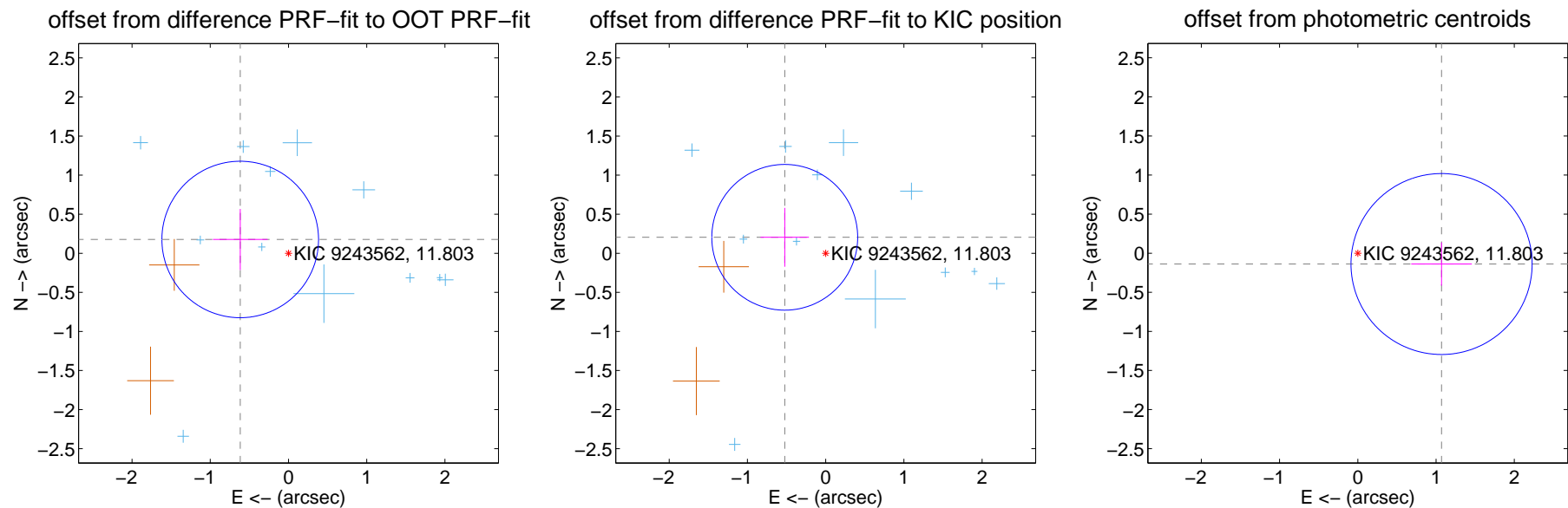
DV Centroid Data

Supplemental centroid analysis for 009243562-01. **Kepler magnitude: 11.80.** Transit SNR 8.72

There are 13 quarters with good PRF difference image offsets

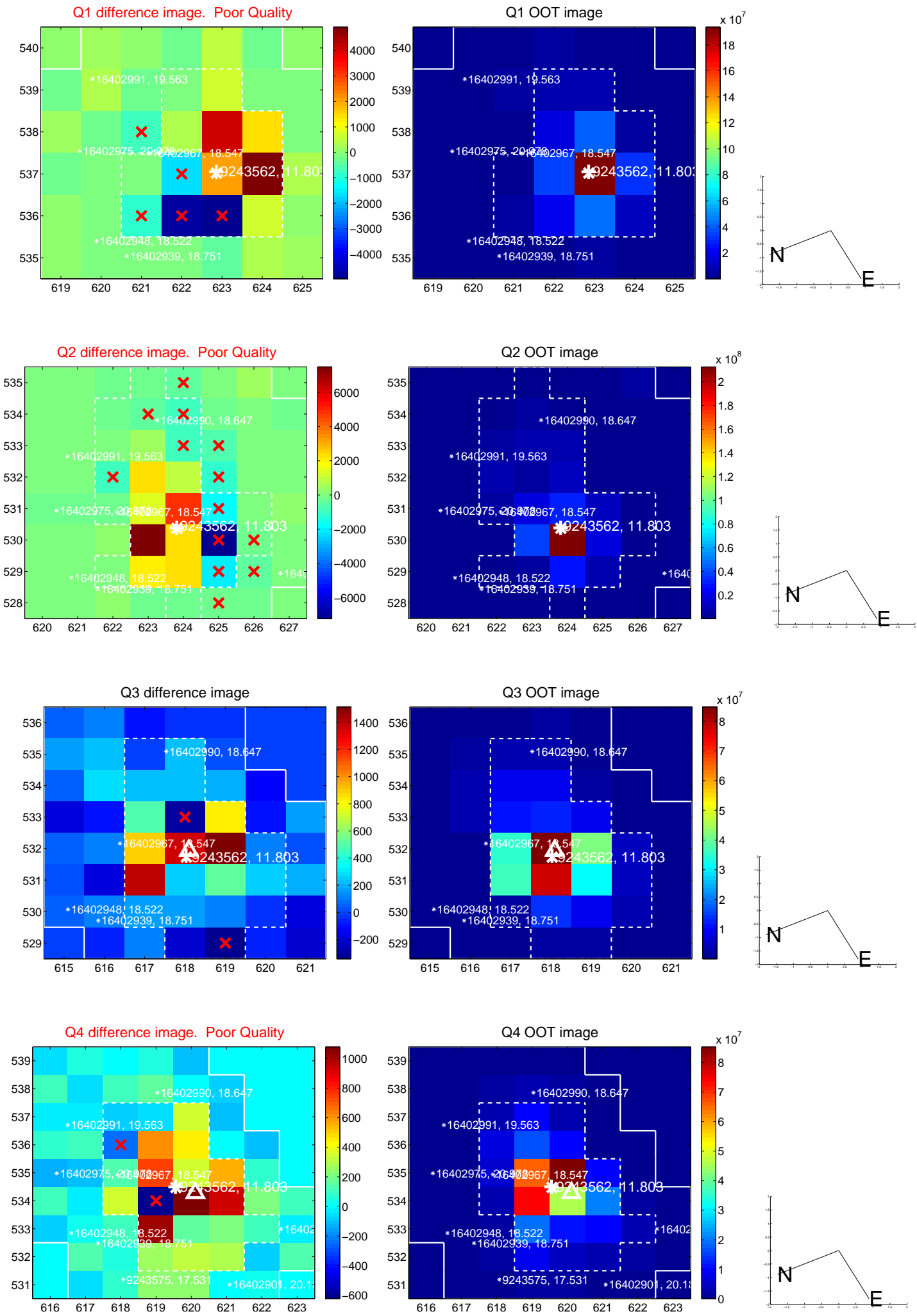
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.642 ± 0.334	1.92	0.617 ± 0.349	0.177 ± 0.391
PRF-fit source offset from KIC position	0.562 ± 0.311	1.81	0.523 ± 0.310	0.205 ± 0.377
photometric centroid source offset	1.08 ± 0.39	2.80	-1.07 ± 0.39	-0.14 ± 0.28

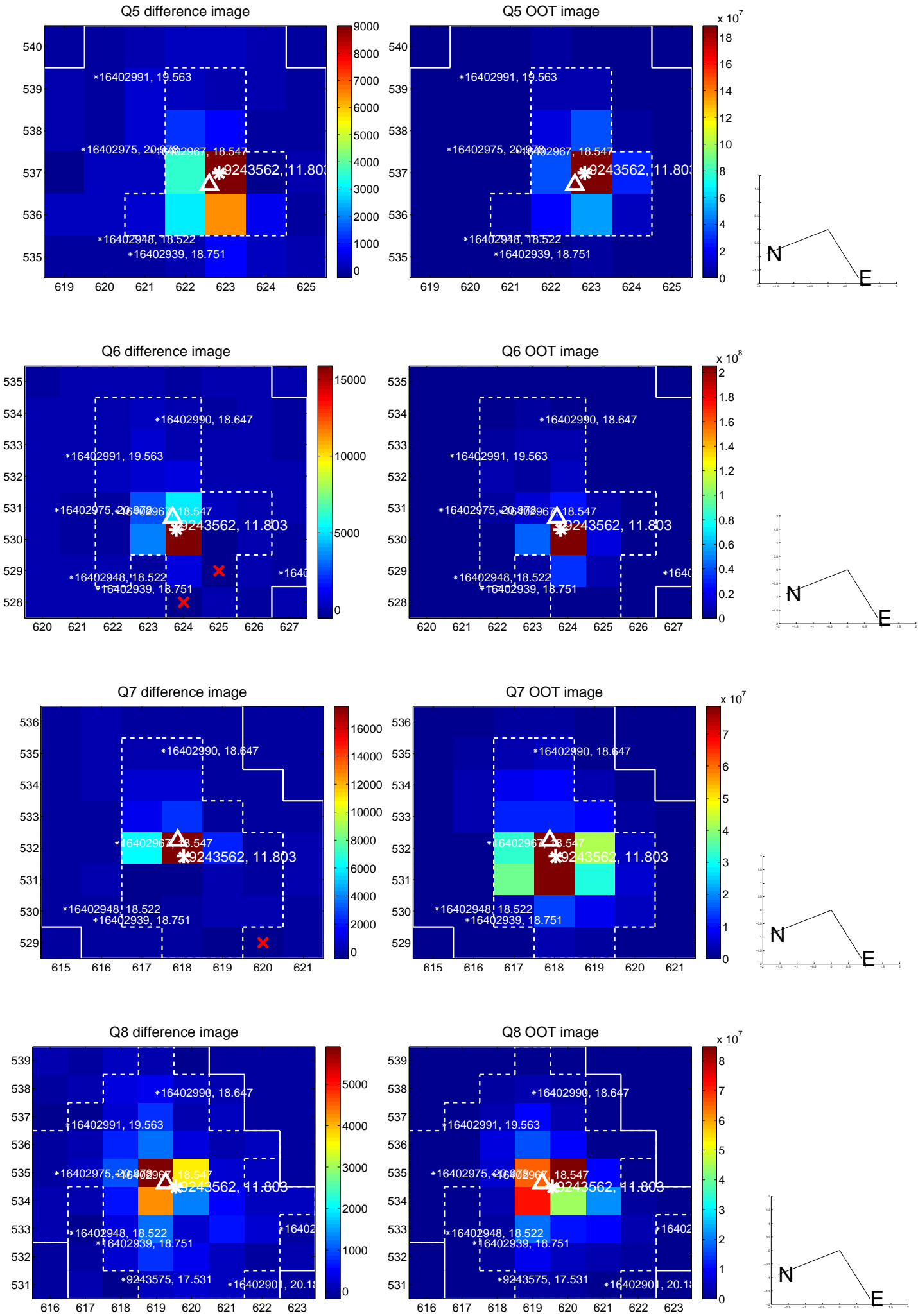


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

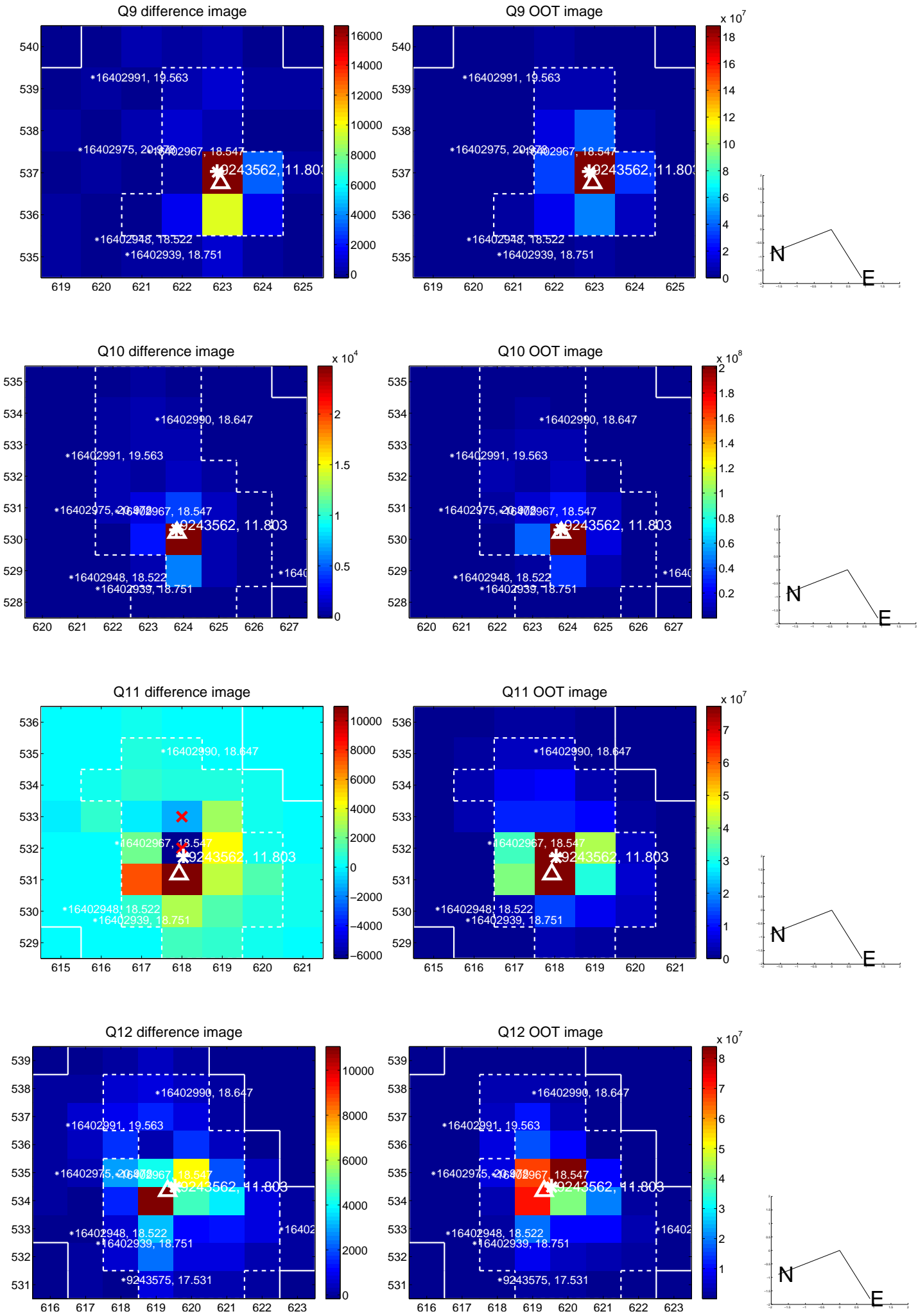
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



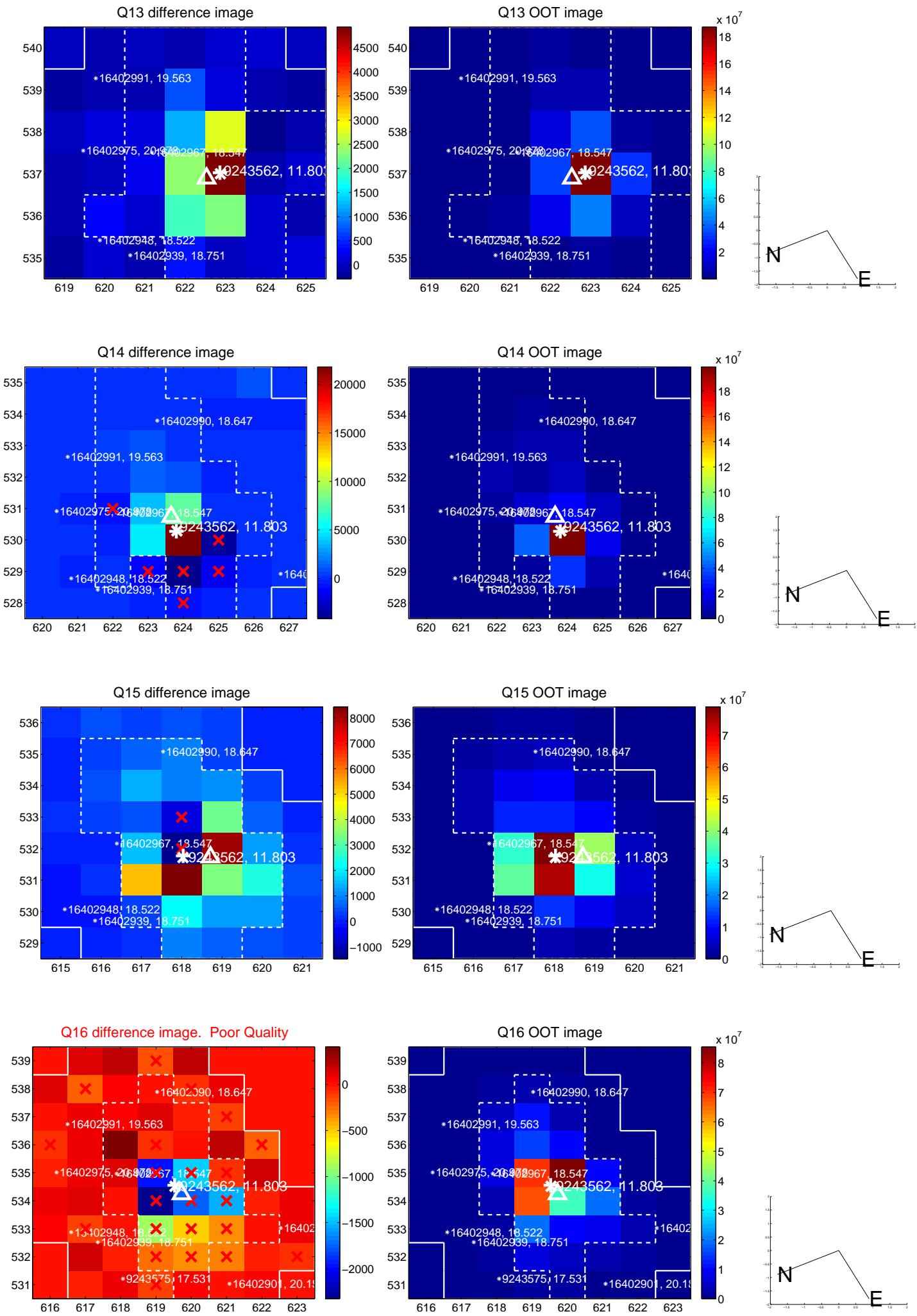
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



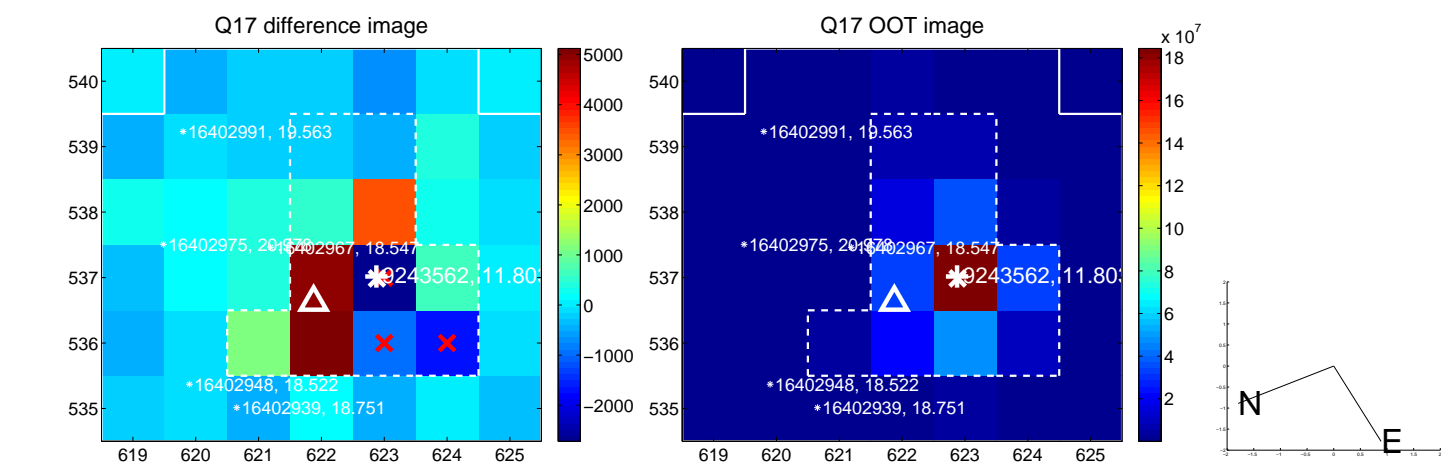
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



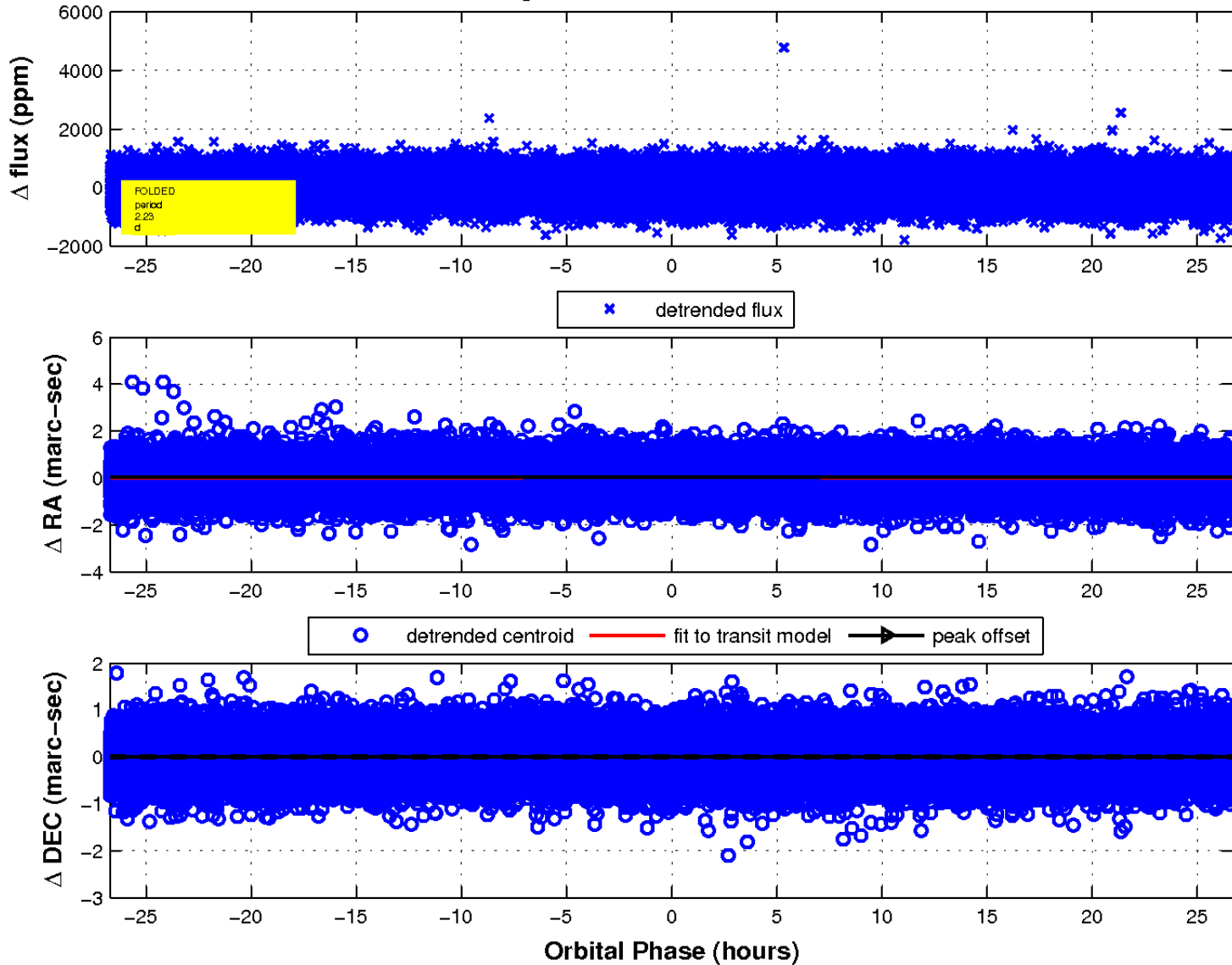
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

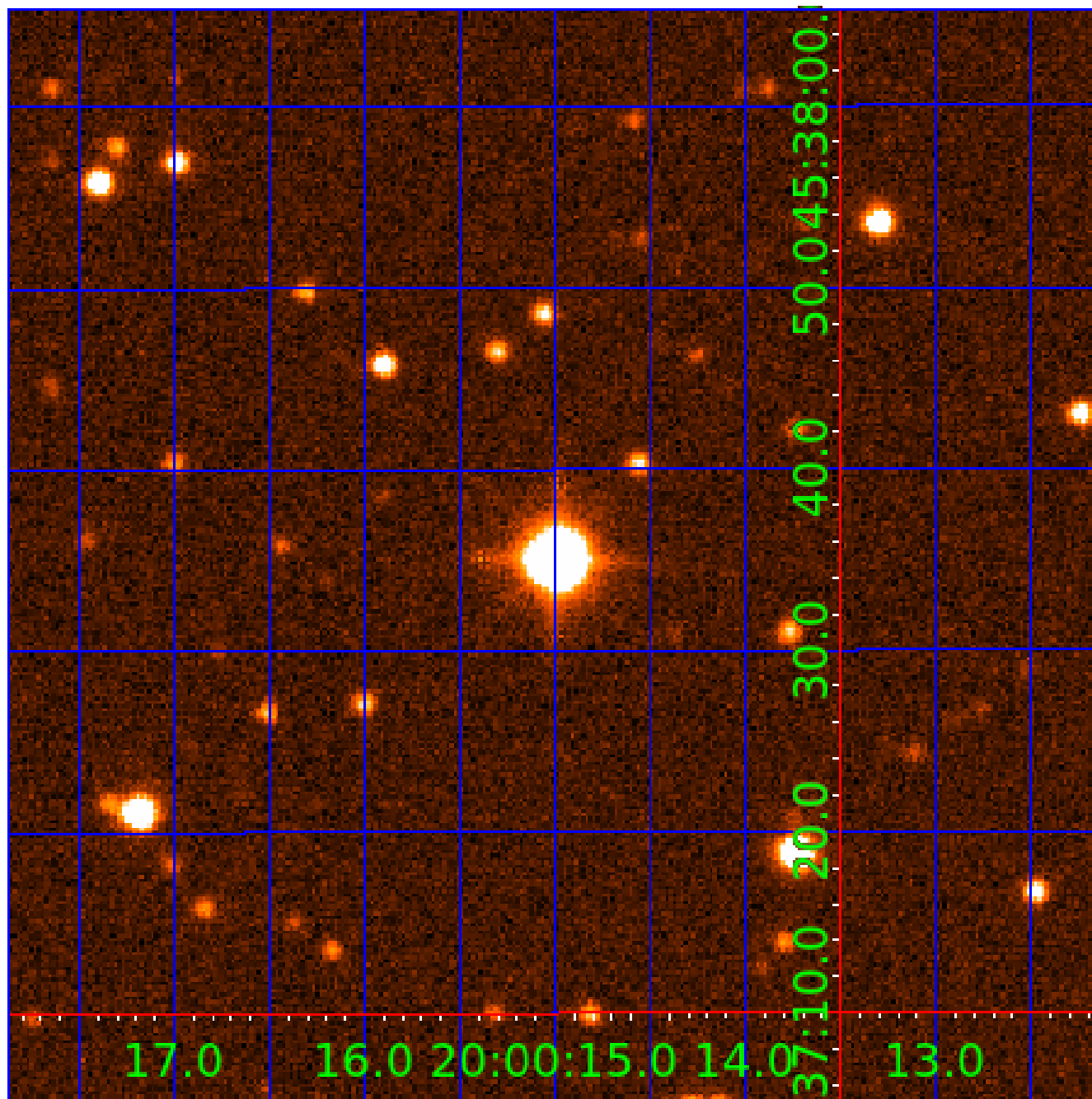


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009243562

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})
009243562-01	OBS	No	2.225337	133.651285	36.7	14.504	10.3	8.7	2.39	8035	1.50	12614.75
009243562-02	OBS	No	0.799247	132.105198	130.6	5.593	13.8	16.5	2.39	8035	3.21	49411.90

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009243562-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009243562-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

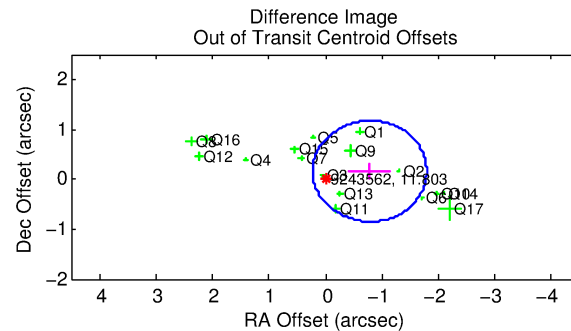
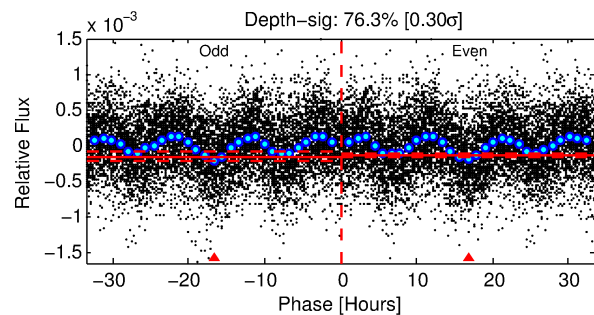
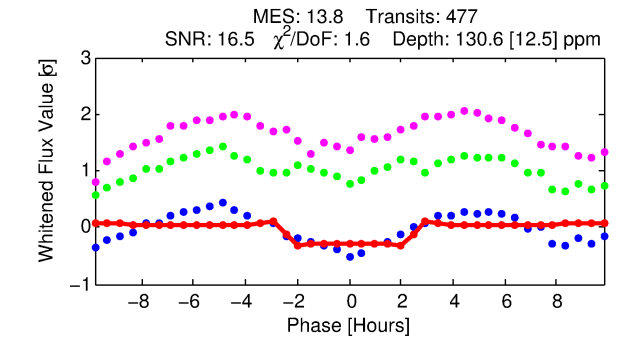
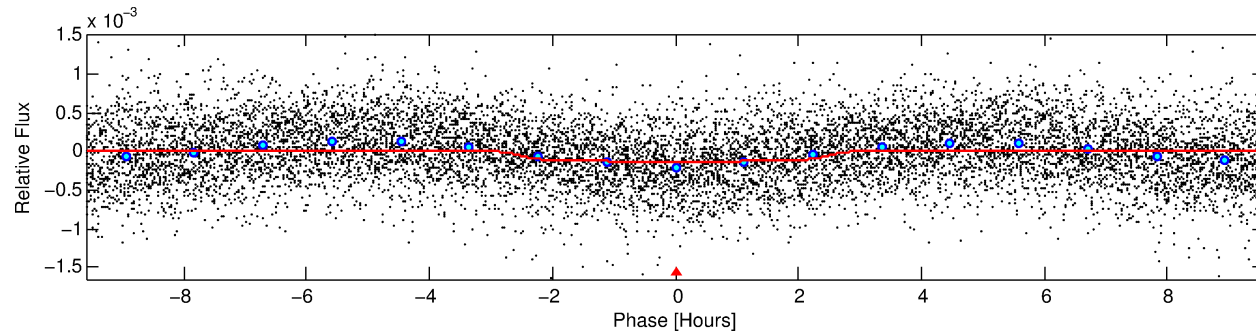
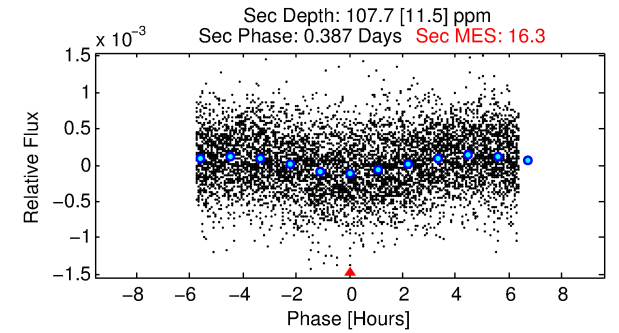
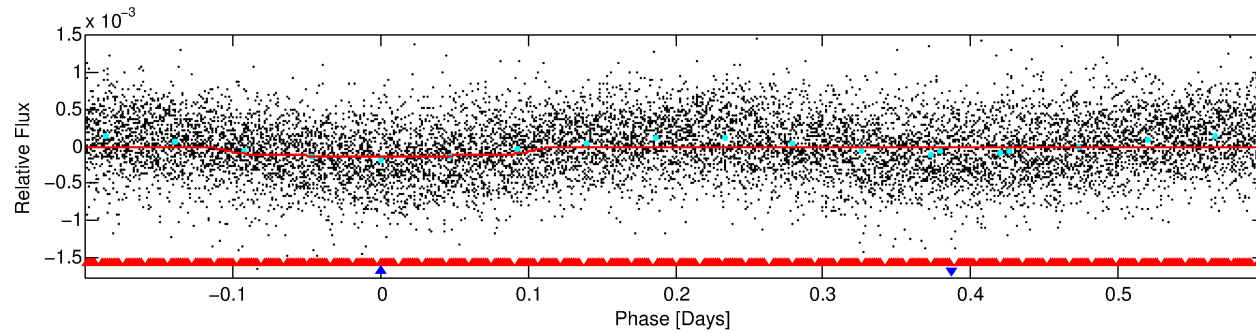
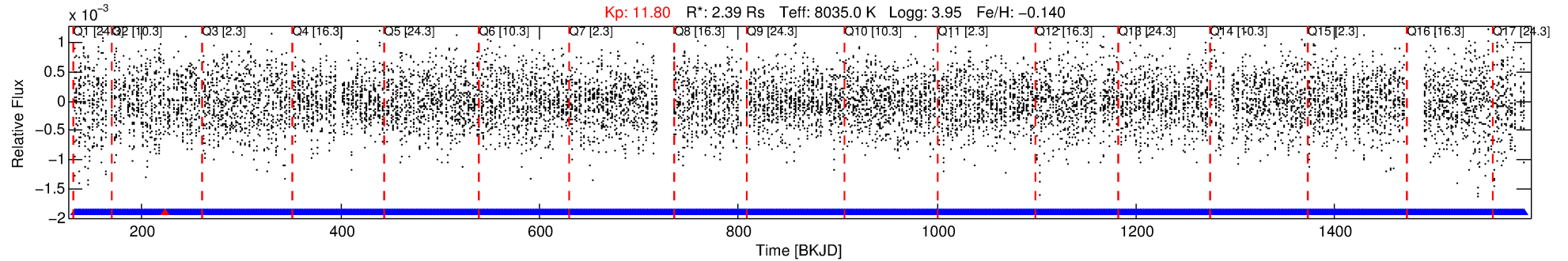
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009243562-02

No Significant Match Found

DV One-Page Summary

KIC: 9243562 Candidate: 2 of 2 Period: 0.799 d



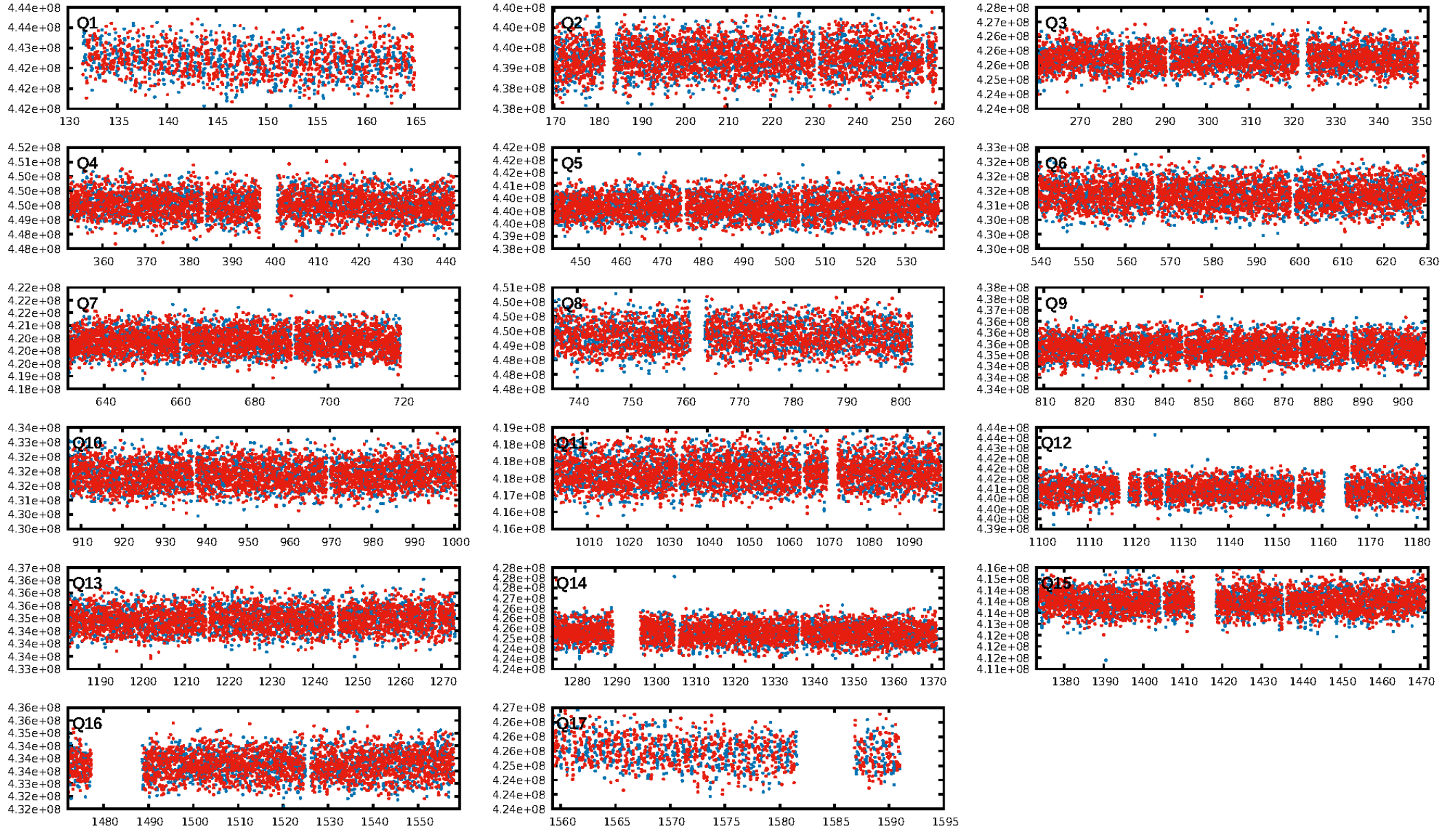
DV Fit Results:

Period = 0.79925 [0.00001] d
Epoch = 132.1052 [0.0031] BKJD
Rp/R* = 0.0123 [0.0012]
a/R* = 1.07 [0.07]
b = 0.91 [0.10]
Seff = 4941.90 [23900.31]
Teq = 3802 [460] K
Rp = 3.21 [1.10] Re
a = 0.0208 [0.0061] AU
Ag = 2.47 [1.25] [1.18σ]
Teffp = 7372 [519] K [5.15σ]

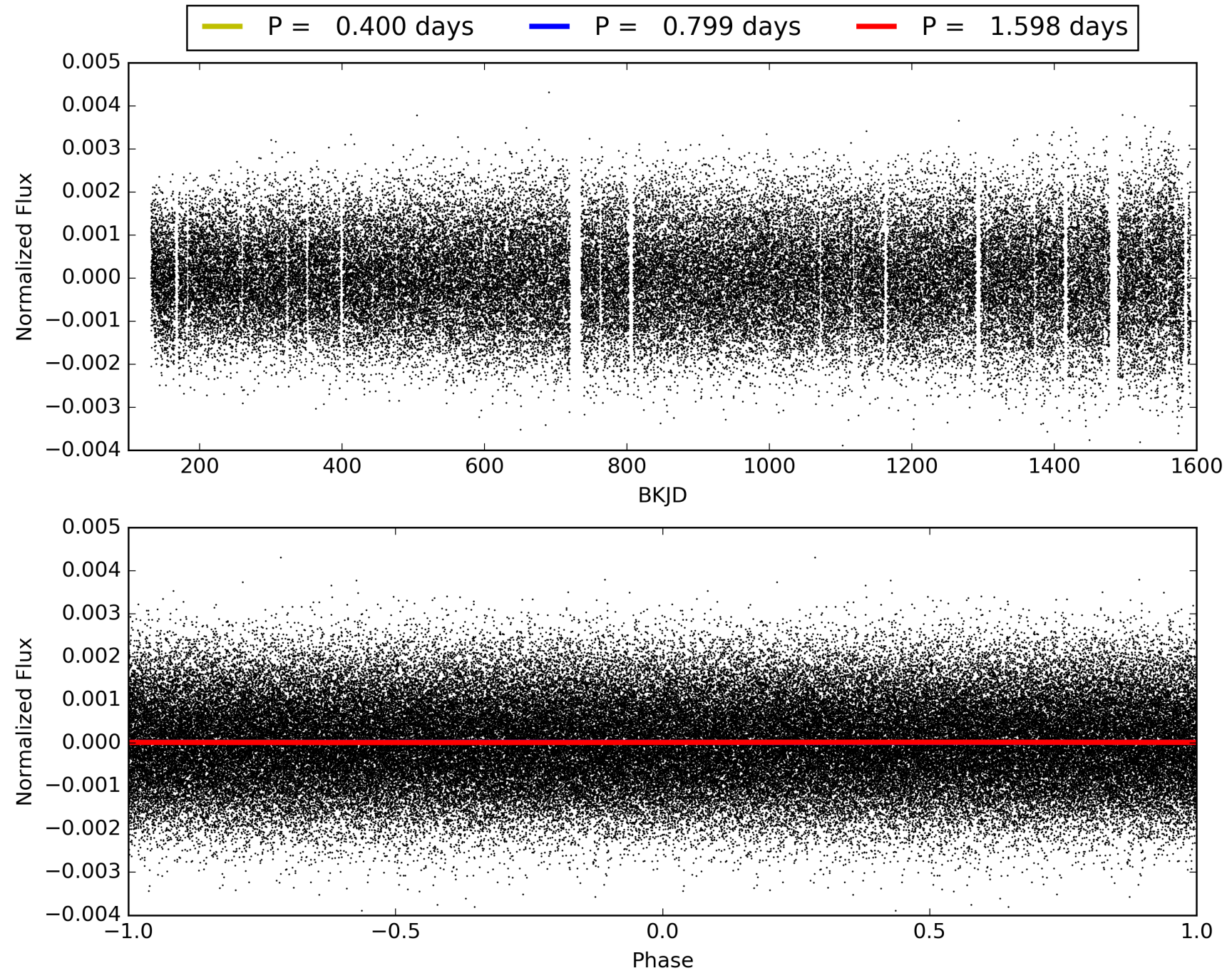
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 97.2% [2.20σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [456/457]
GhostDiagnostic-chr: -0.5752
Centroid-sig: 80.4%
Centroid-so: 0.206 arcsec [2.30σ]
OotOffset-rm: 0.798 arcsec [2.37σ]
KicOffset-rm: 0.859 arcsec [2.41σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009243562-02, PDC Light Curves

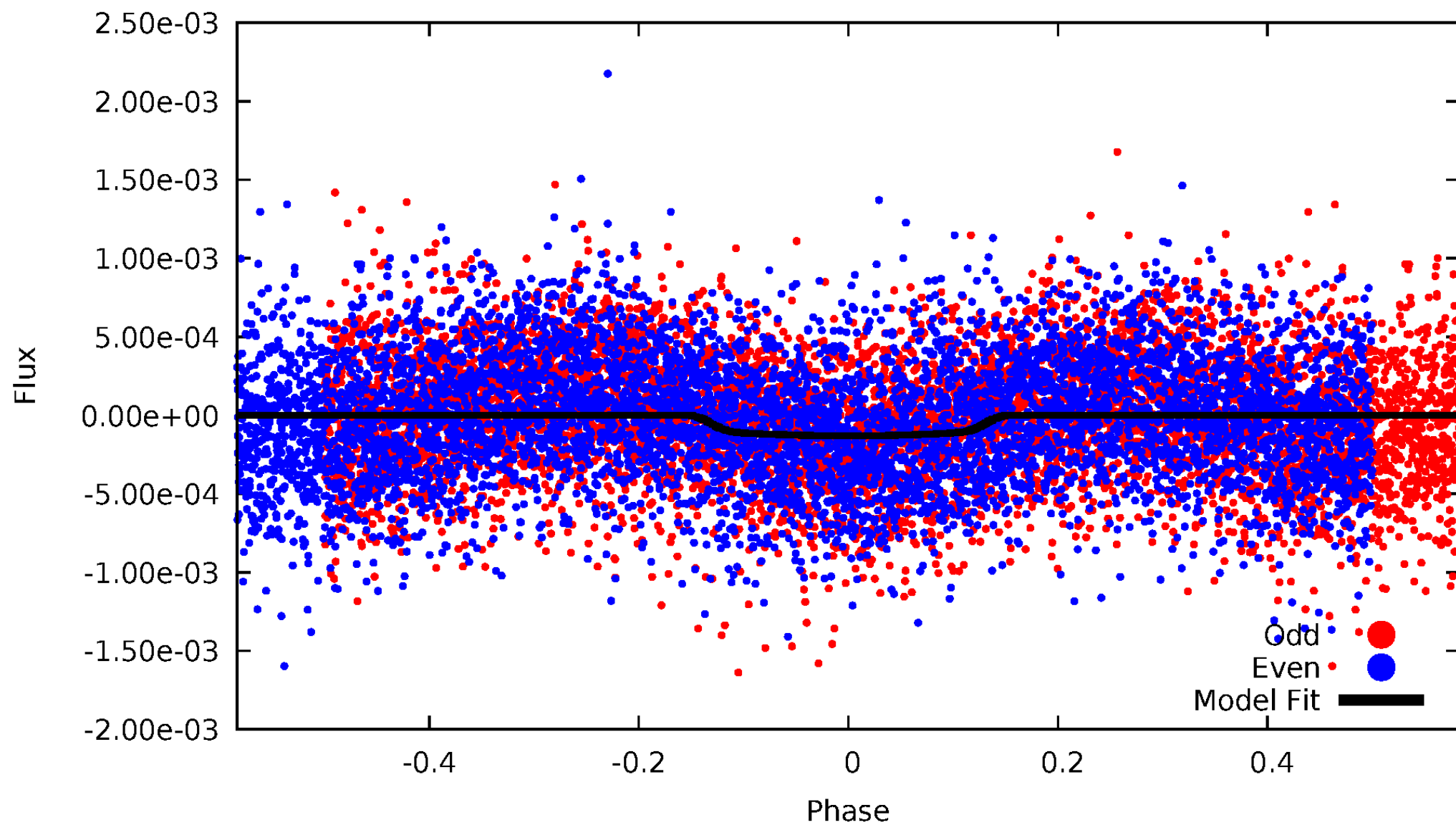


TCE 009243562-02



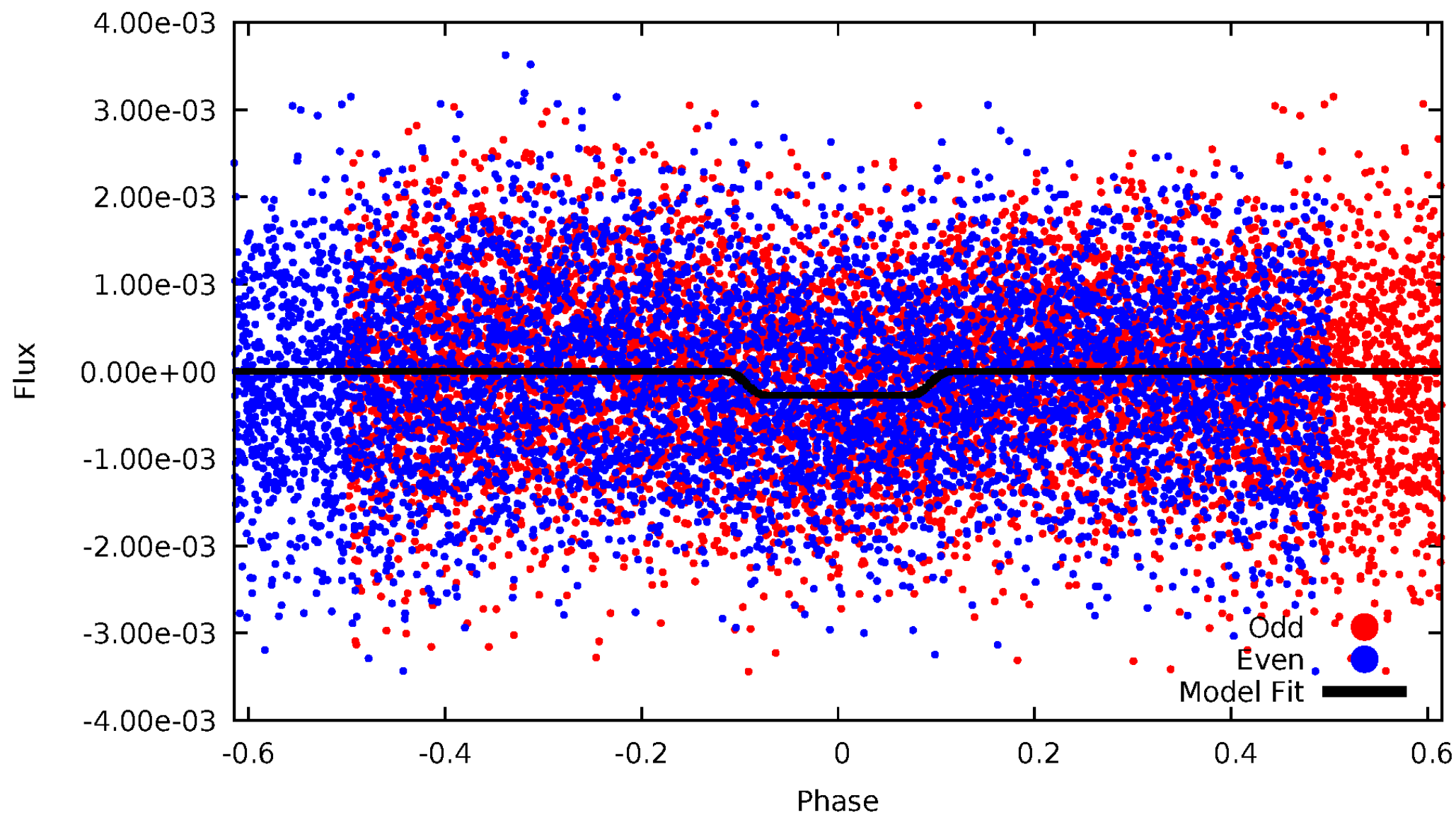
DV Odd/Even

TCE 009243562-02



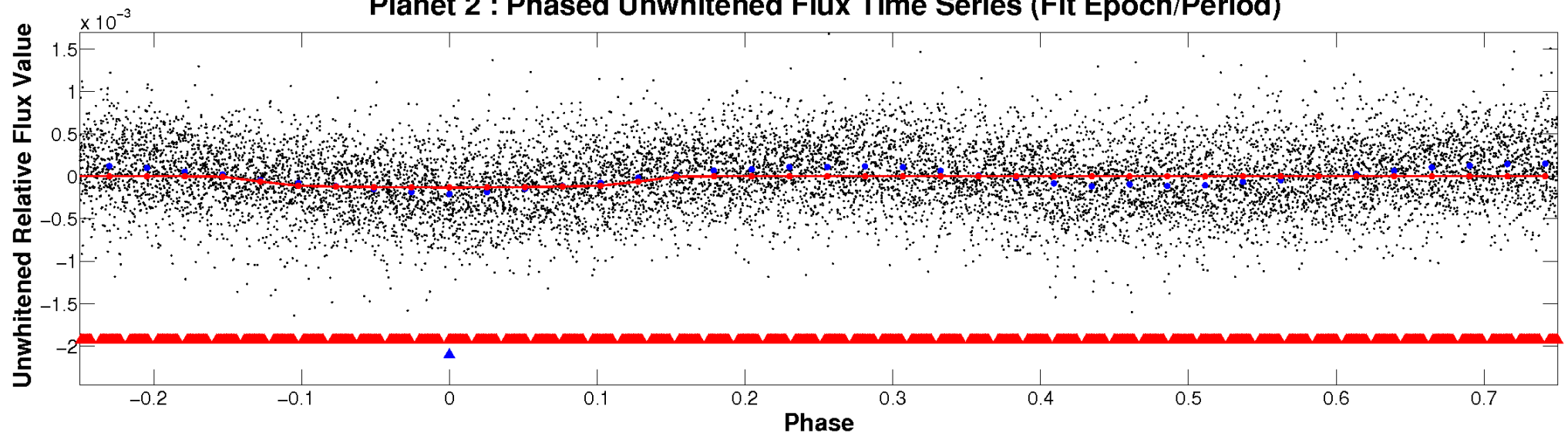
ALT Odd/Even

TCE 009243562-02

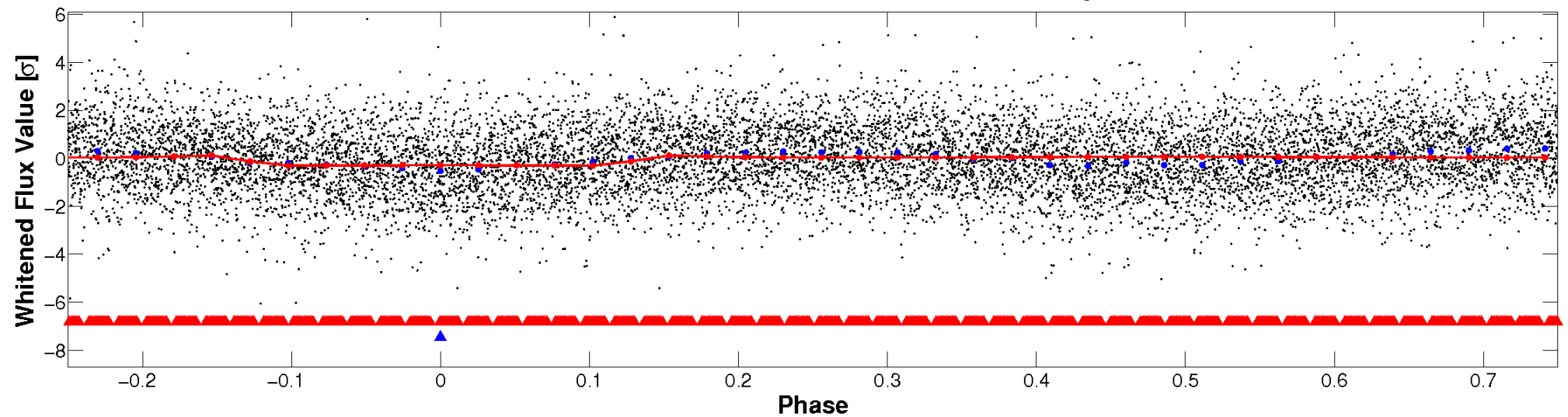


Non-Whitened Vs. Whitened Light Curve

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

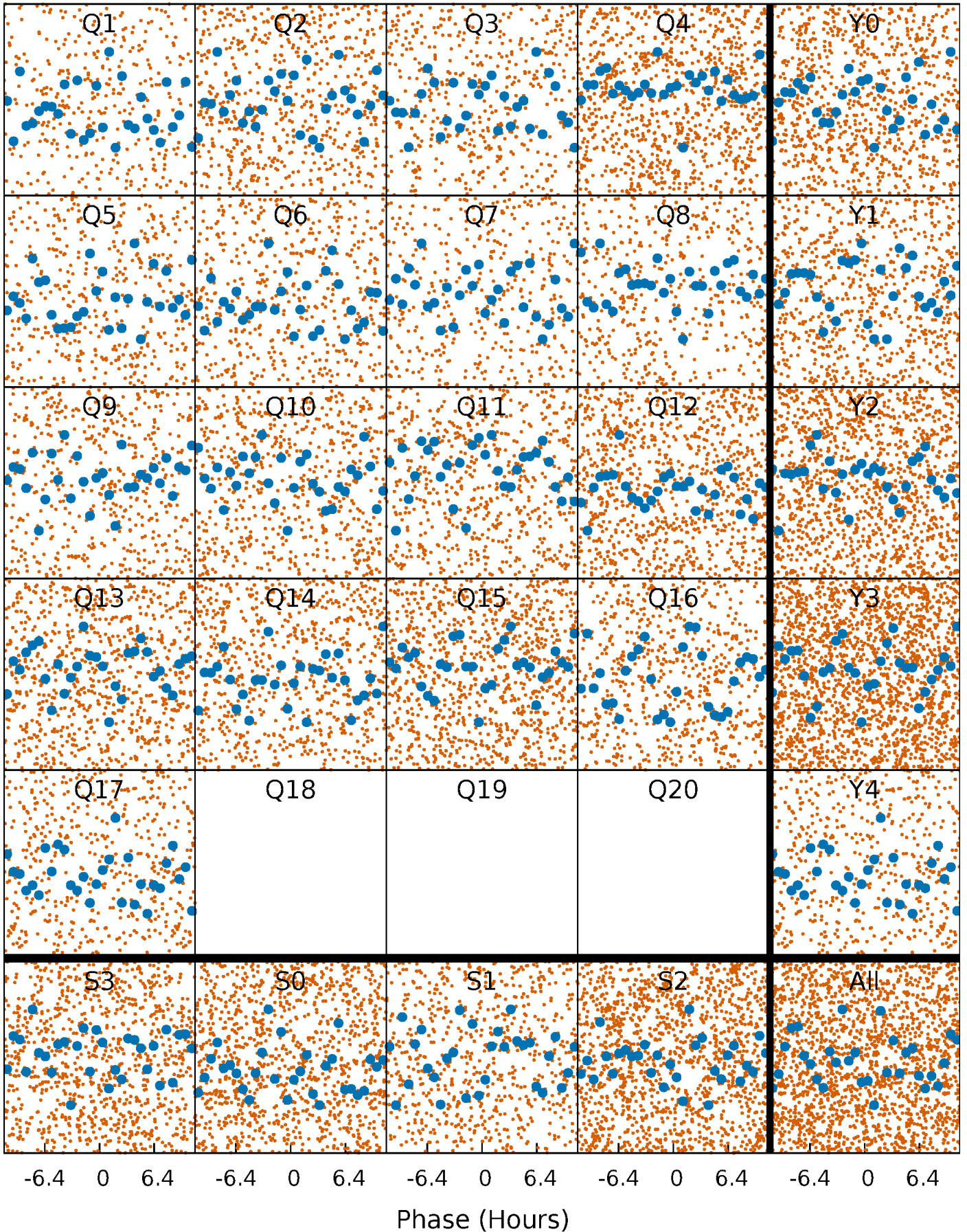


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



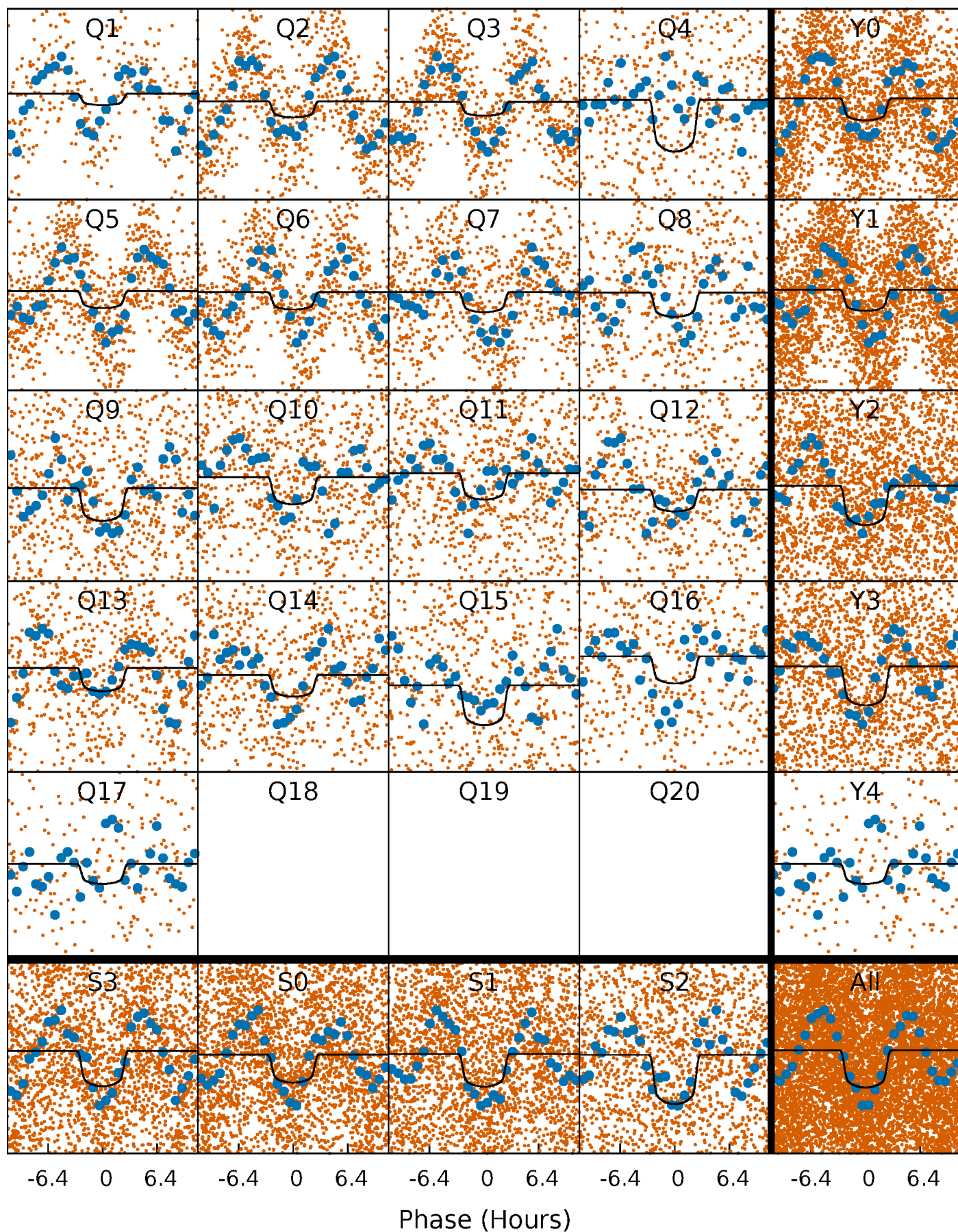
PDC Quarter-Phased Transit Curves

TCE 009243562-02 P= 0.799247 Days $T_0=132.105199$ (BKJD)



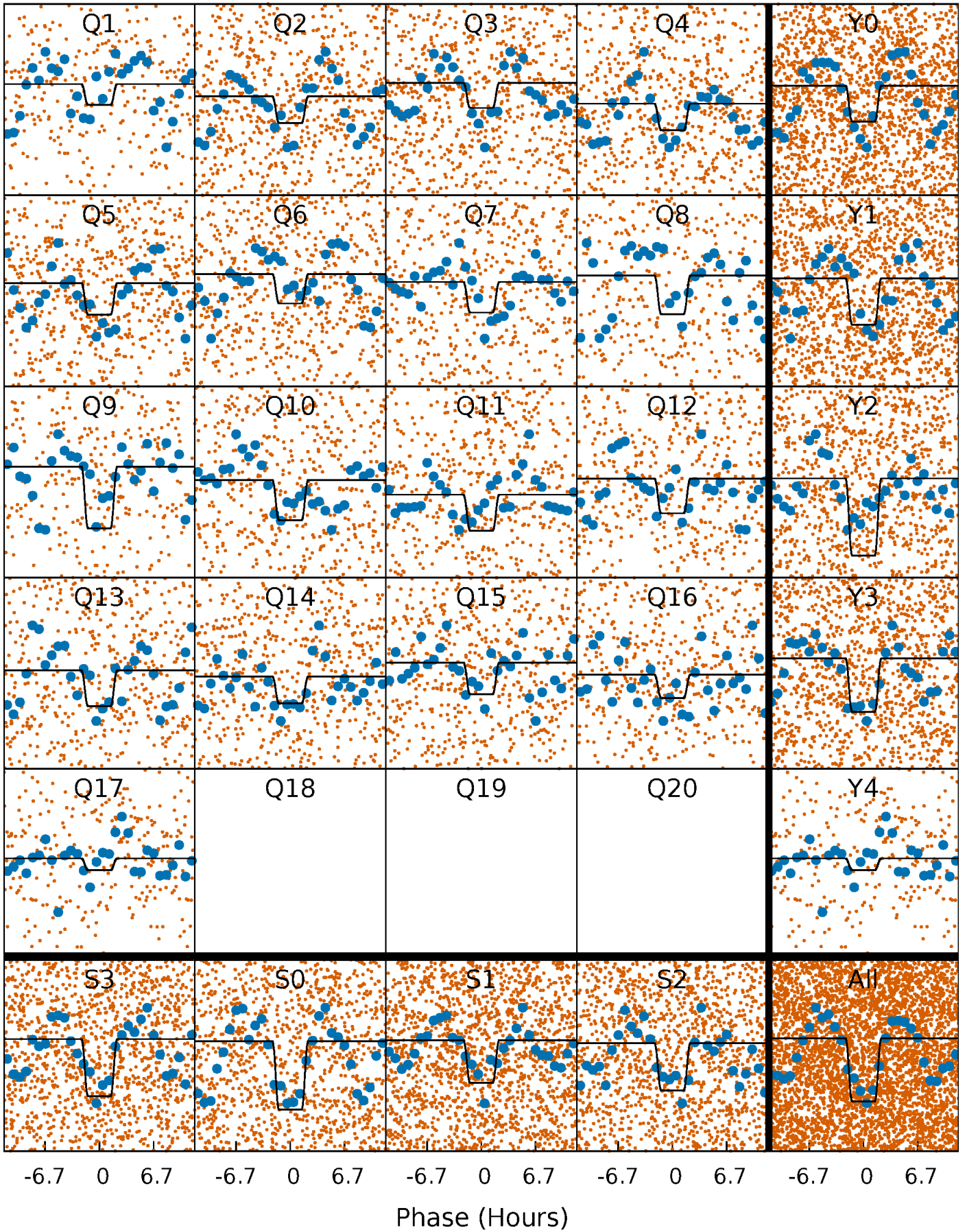
DV Quarter-Phased Transit Curves

TCE 009243562-02 P= 0.799247 Days $T_0=132.105199$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

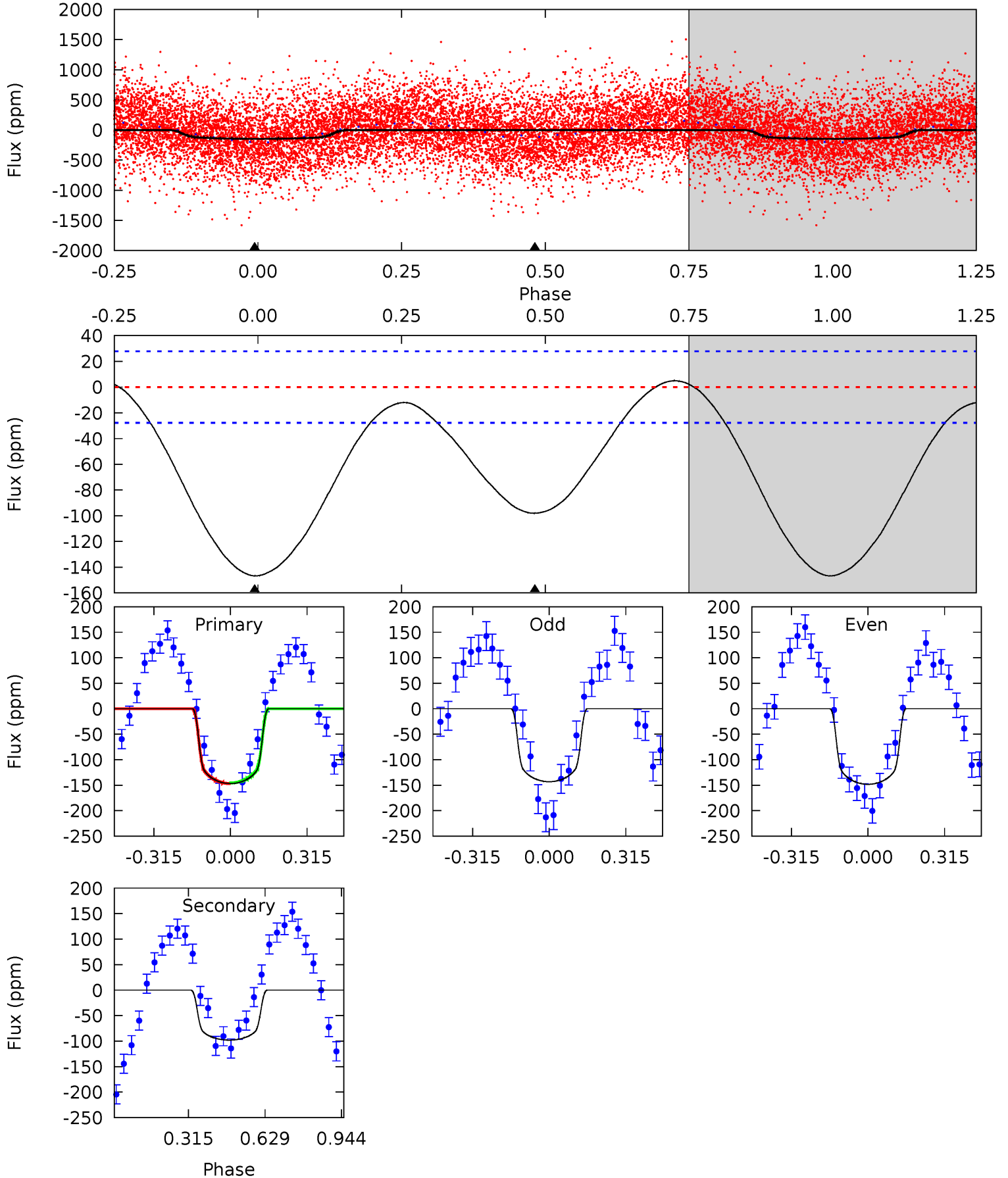
TCE 009243562-02 P= 0.799220 Days $T_0=132.119533$ (BKJD)



DV Model-Shift Uniqueness Test

009243562-02, P = 0.799247 Days, E = 132.105199 Days

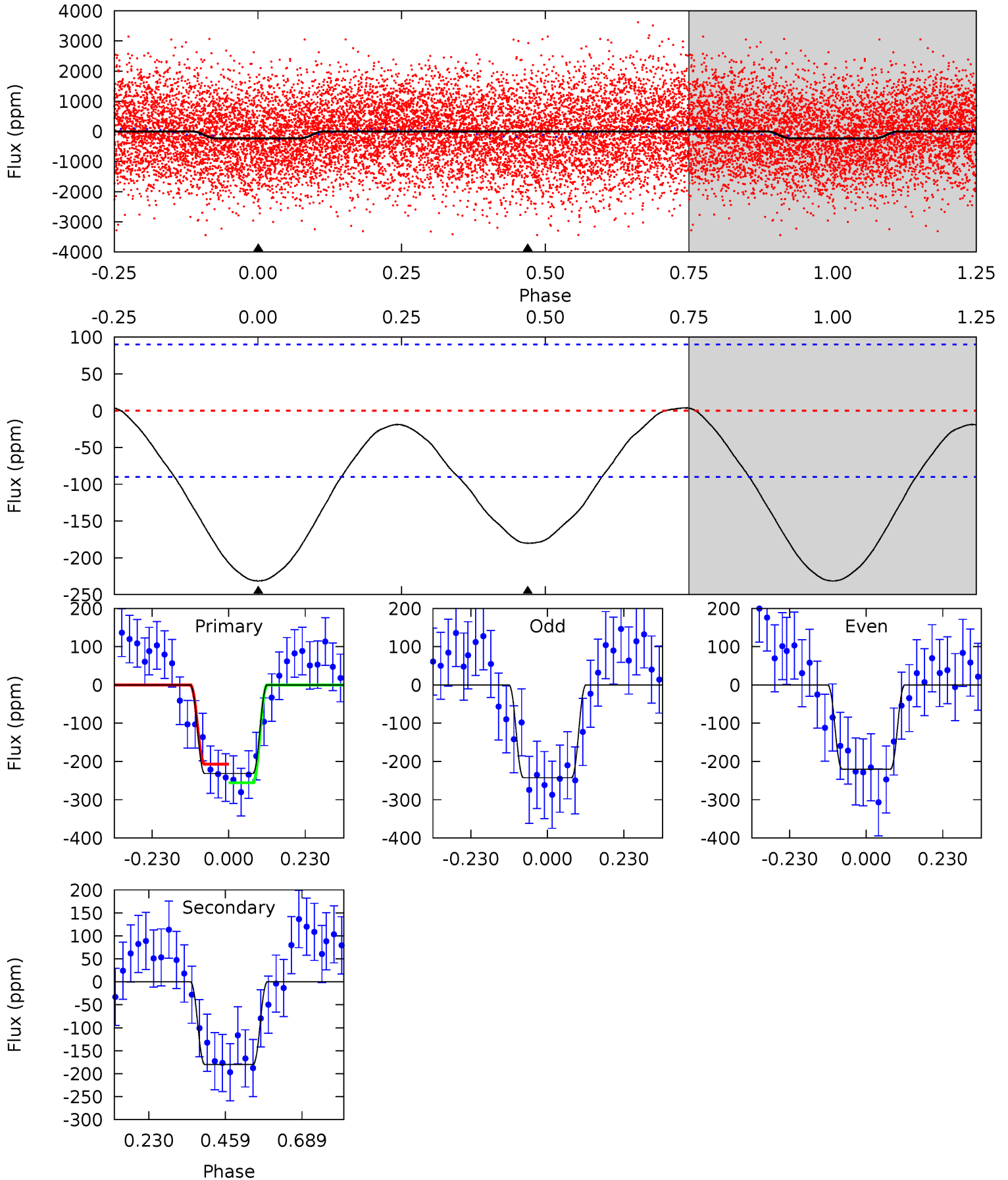
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.8	15.2	0	0	4.32	1.01	1.30	22.8	22.8	15.2	15.2	0.39	0.86	0.03	0.10



Alt Model-Shift Uniqueness Test

009243562-02, P = 0.799220 Days, E = 132.119533 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	8.78	0	0	4.39	1.20	0.42	11.3	11.3	8.78	8.78	0.55	1.05	0.02	1.22



Stellar Parameters For KIC 009243562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8035^{+225}_{-338}	$3.953^{+0.259}_{-0.111}$	$-0.140^{+0.200}_{-0.350}$	$2.387^{+0.421}_{-0.781}$	$1.865^{+0.095}_{-0.380}$	$0.193^{+0.293}_{-0.068}$
	+3%/-4%	+7%/-3%	+143%/-250%	+18%/-33%	+5%/-20%	+152%/-35%
Source	KIC0	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 009243562-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-98 ± 6	$3.13^{+0.50}_{-0.58}$	5257^{+303}_{-430}	6779^{+578}_{-493}	$2.355^{+1.073}_{-0.614}$
Alt.	-180 ± 21	$4.14^{+0.65}_{-0.72}$	5204^{+376}_{-405}	6795^{+495}_{-411}	$2.457^{+1.039}_{-0.649}$

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

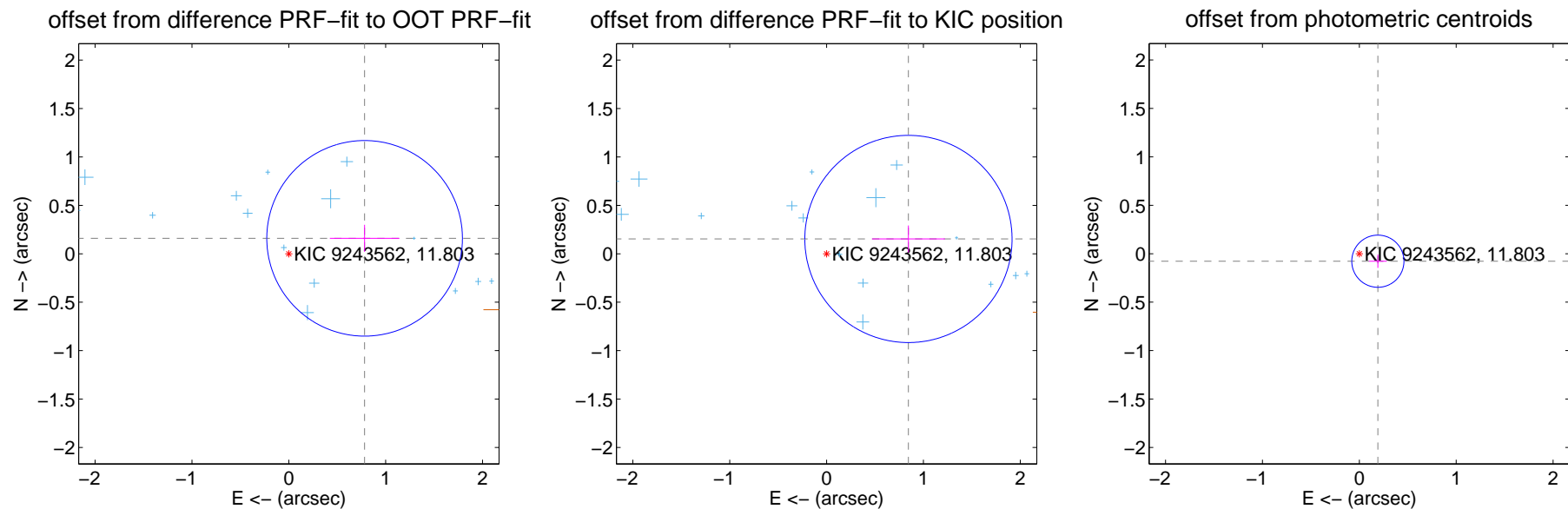
DV Centroid Data

Supplemental centroid analysis for 009243562-02. **Kepler magnitude: 11.80.** Transit SNR 16.47

There are 16 quarters with good PRF difference image offsets

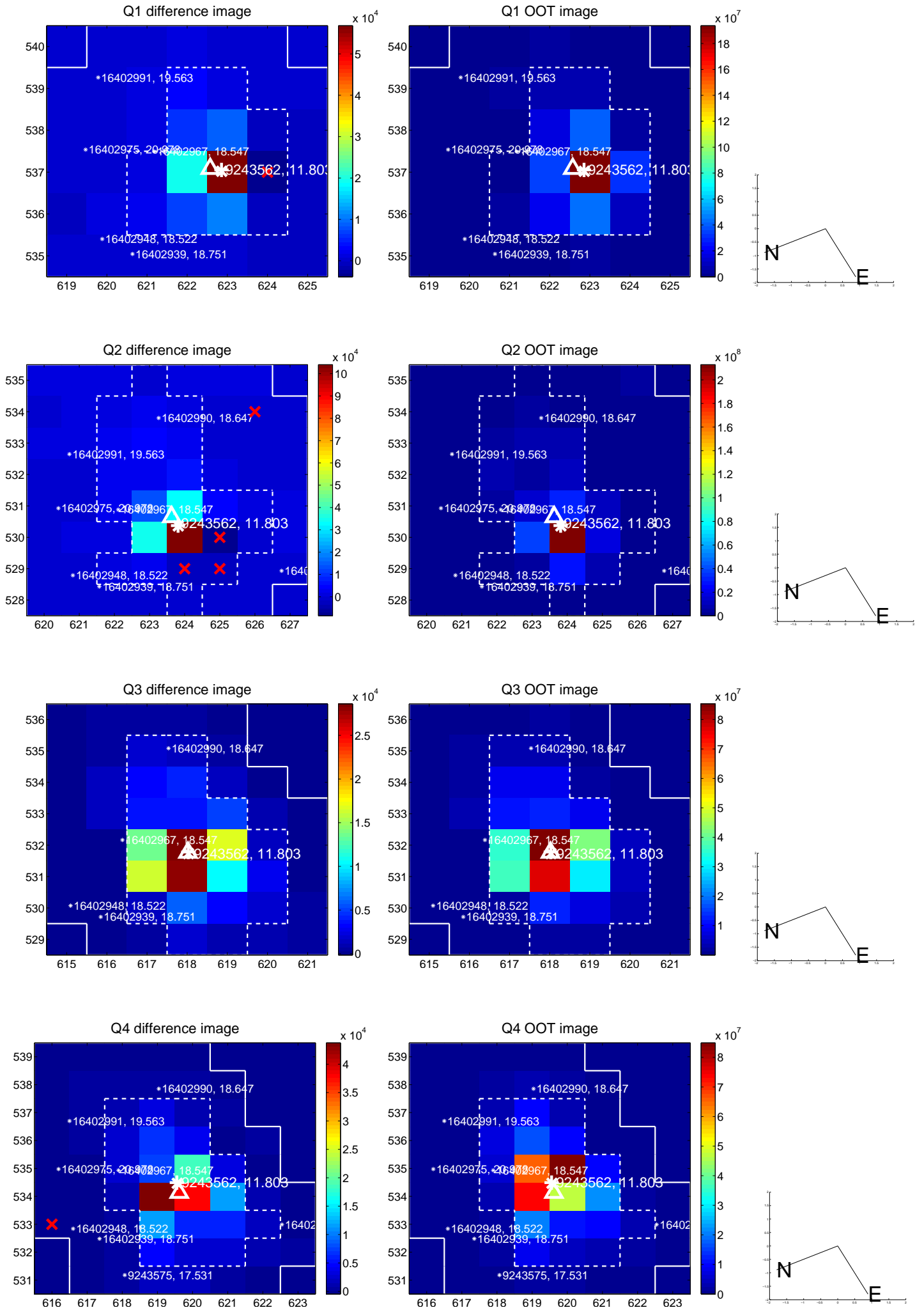
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.798 ± 0.337	2.37	-0.782 ± 0.359	0.159 ± 0.140
PRF-fit source offset from KIC position	0.859 ± 0.356	2.41	-0.845 ± 0.376	0.153 ± 0.139
photometric centroid source offset	0.21 ± 0.09	2.30	-0.19 ± 0.09	-0.08 ± 0.07

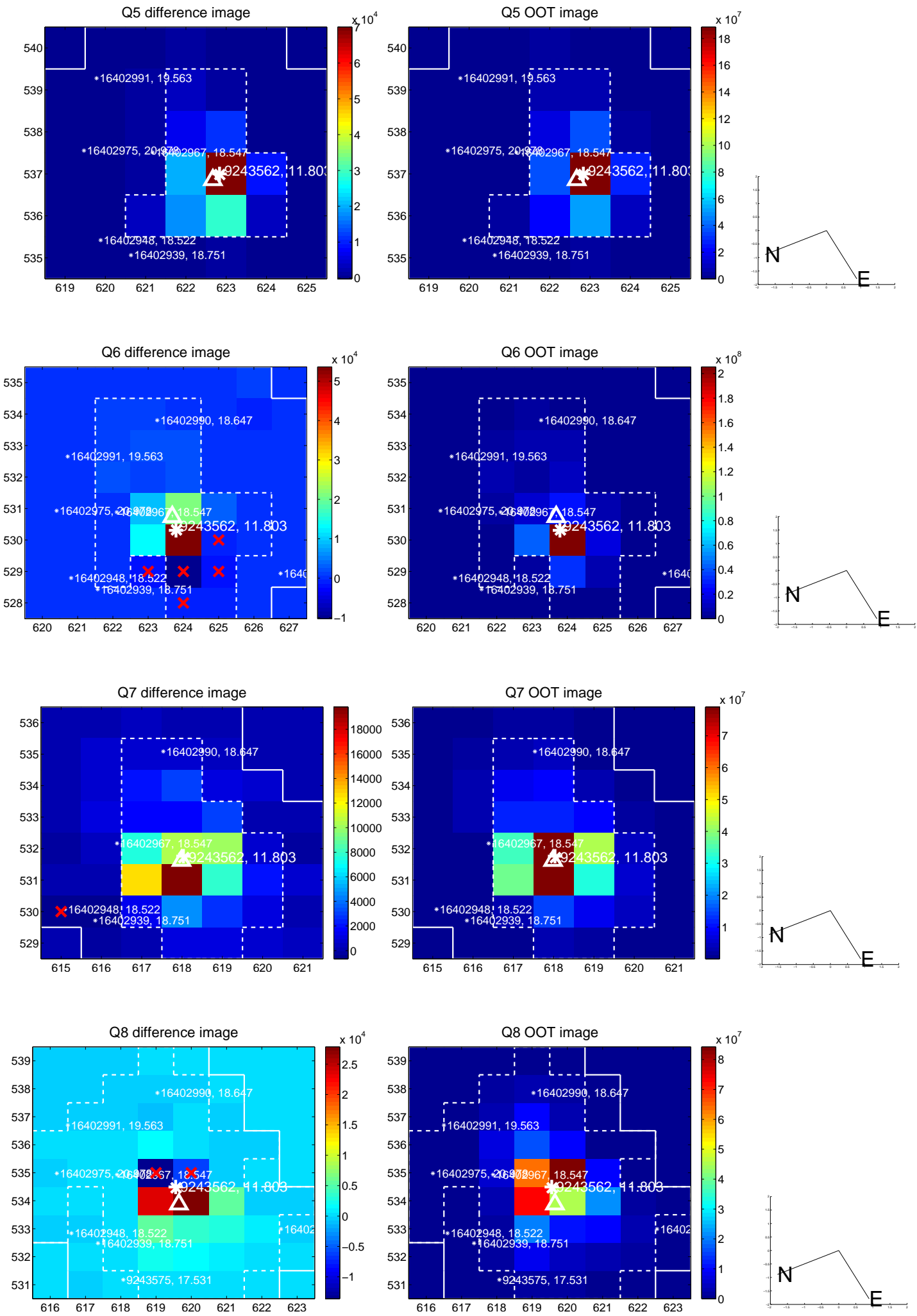


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

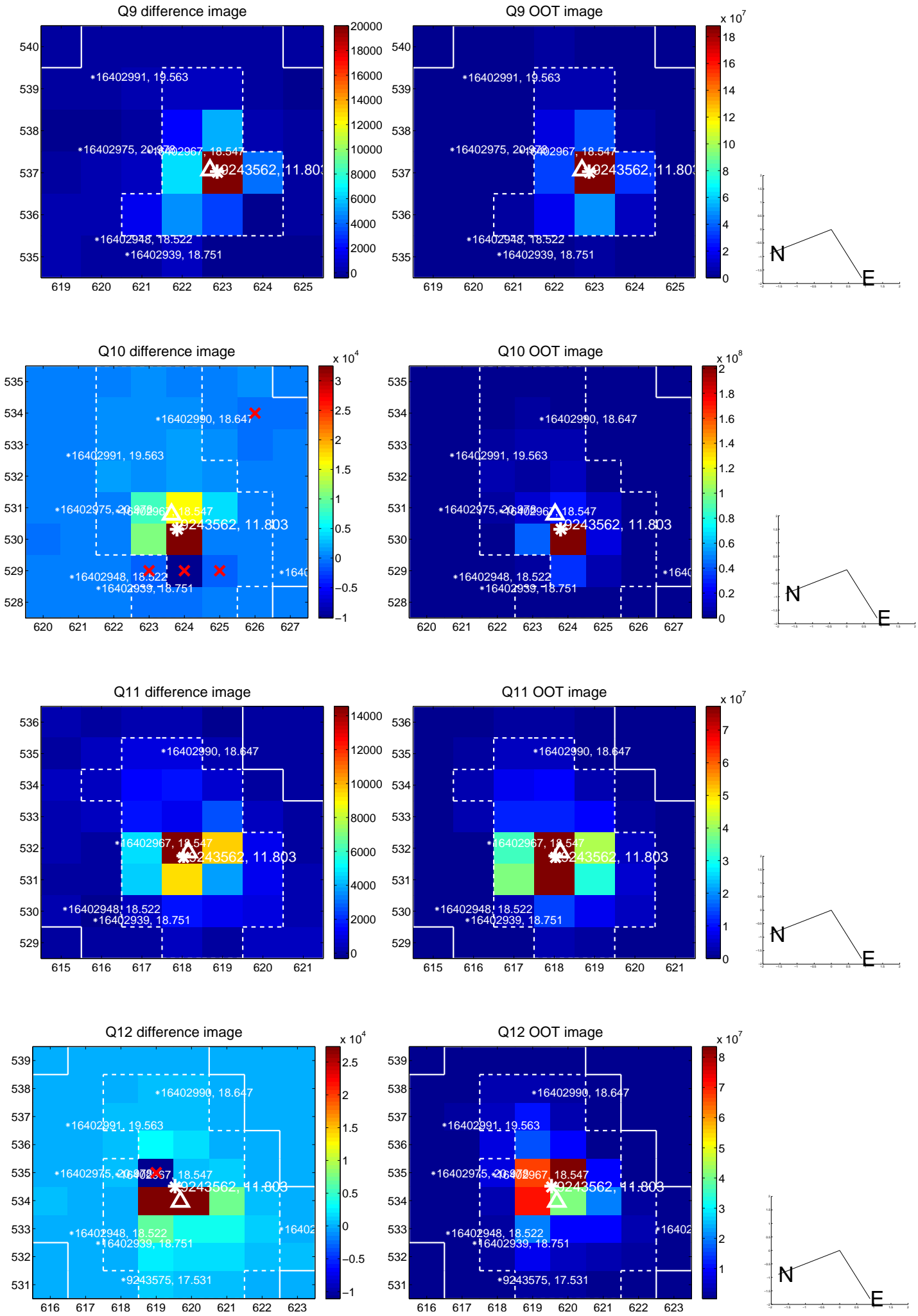
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



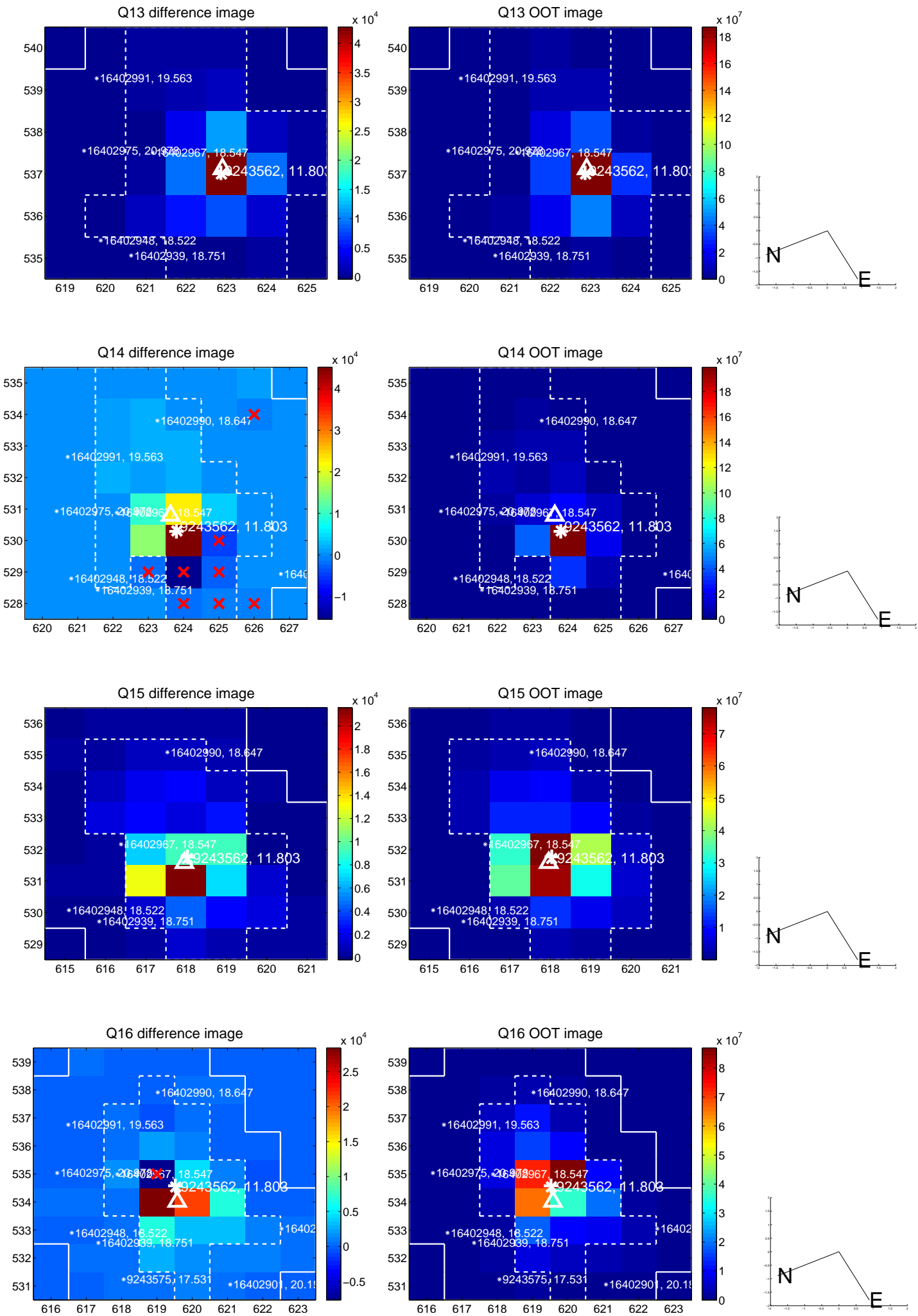
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

