

KIC 004458109

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})
004458109-01	OBS	No	4.651857	132.134502	16.4	28.044	10.9	7.9	1.50	6942	0.65	1470.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004458109-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

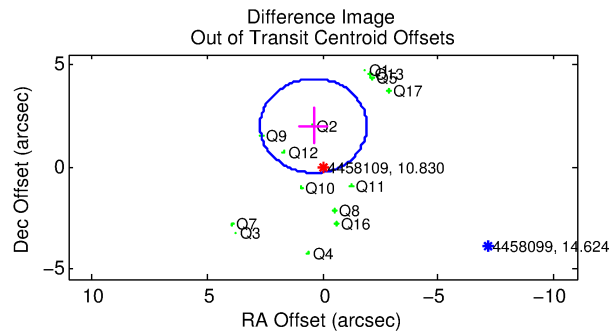
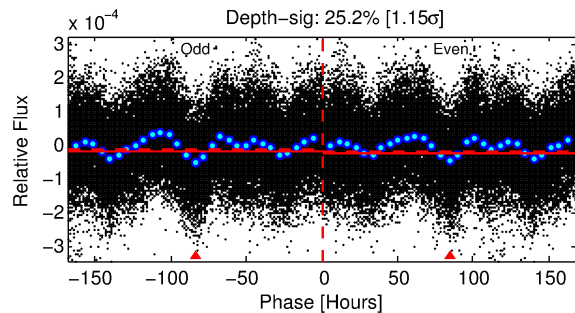
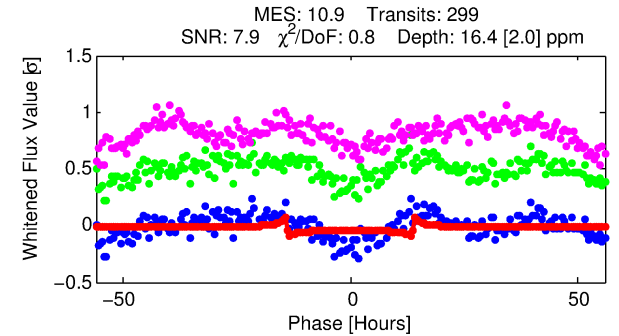
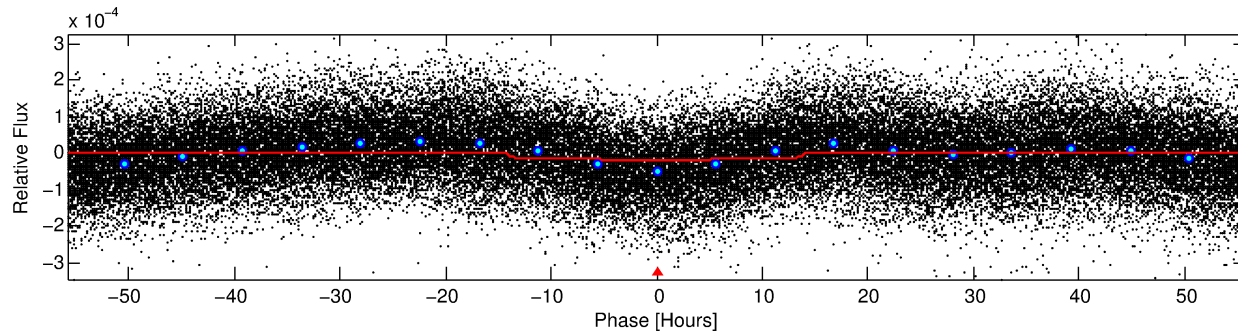
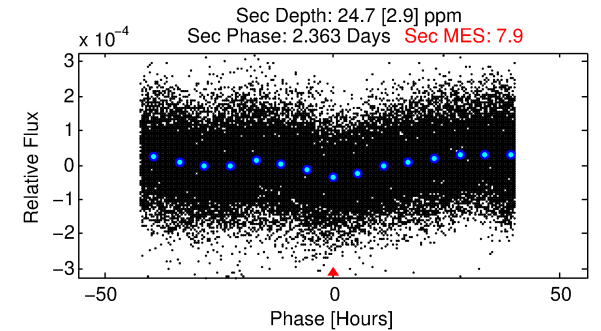
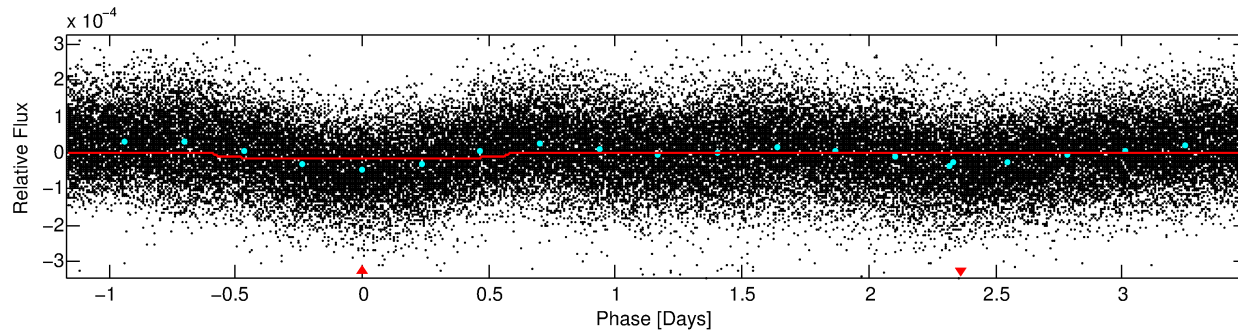
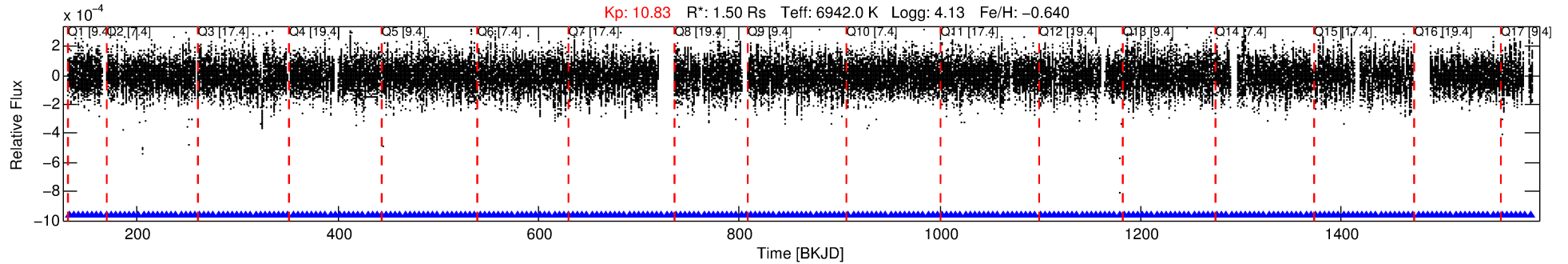
Ephemeris Match Information For 004458109-01

No Significant Match Found

DV One-Page Summary

KIC: 4458109 Candidate: 1 of 1 Period: 4.652 d

KOI: K04336 Corr: No Ephemeris Match



DV Fit Results:

Period = 4.65186 [0.00005] d
Epoch = 132.1345 [0.0066] BKJD
 $R_p/R^* = 0.0040$ [0.0005]
 $a/R^* = 1.24$ [0.29]
 $b = 0.69$ [0.52]
 $S_{\text{eff}} = 1470.61$ [533.33]
 $T_{\text{eq}} = 1579$ [143] K
 $R_p = 0.65$ [0.17] R_e
 $a = 0.0566$ [0.0120] AU
 $A_g = 102.67$ [45.62] [2.23σ]
 $T_{\text{eff}} = 7771$ [614] K [9.82σ]

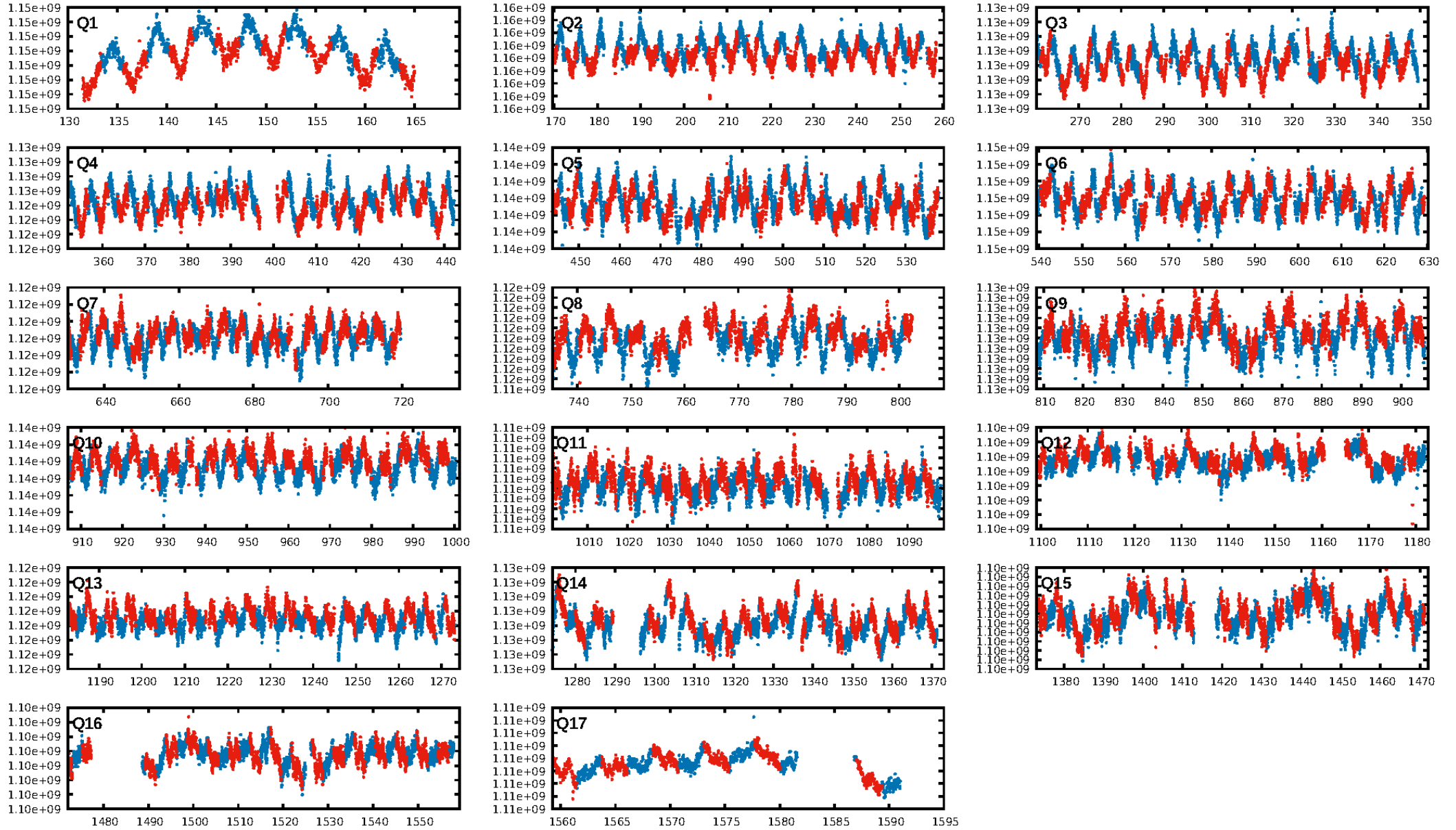
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.68e-25
RollingBand-fgt: 1.00 [285/285]
GhostDiagnostic-chr: 0.8457
Centroid-sig: 6.2%
Centroid-so: 1.212 arcsec [1.54σ]
OotOffset-rm: 2.037 arcsec [2.65σ]
KicOffset-rm: 2.303 arcsec [2.95σ]
OotOffset-st: 2/3/4/5 [14]
KicOffset-st: 2/3/4/5 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 1.00 [17/17]

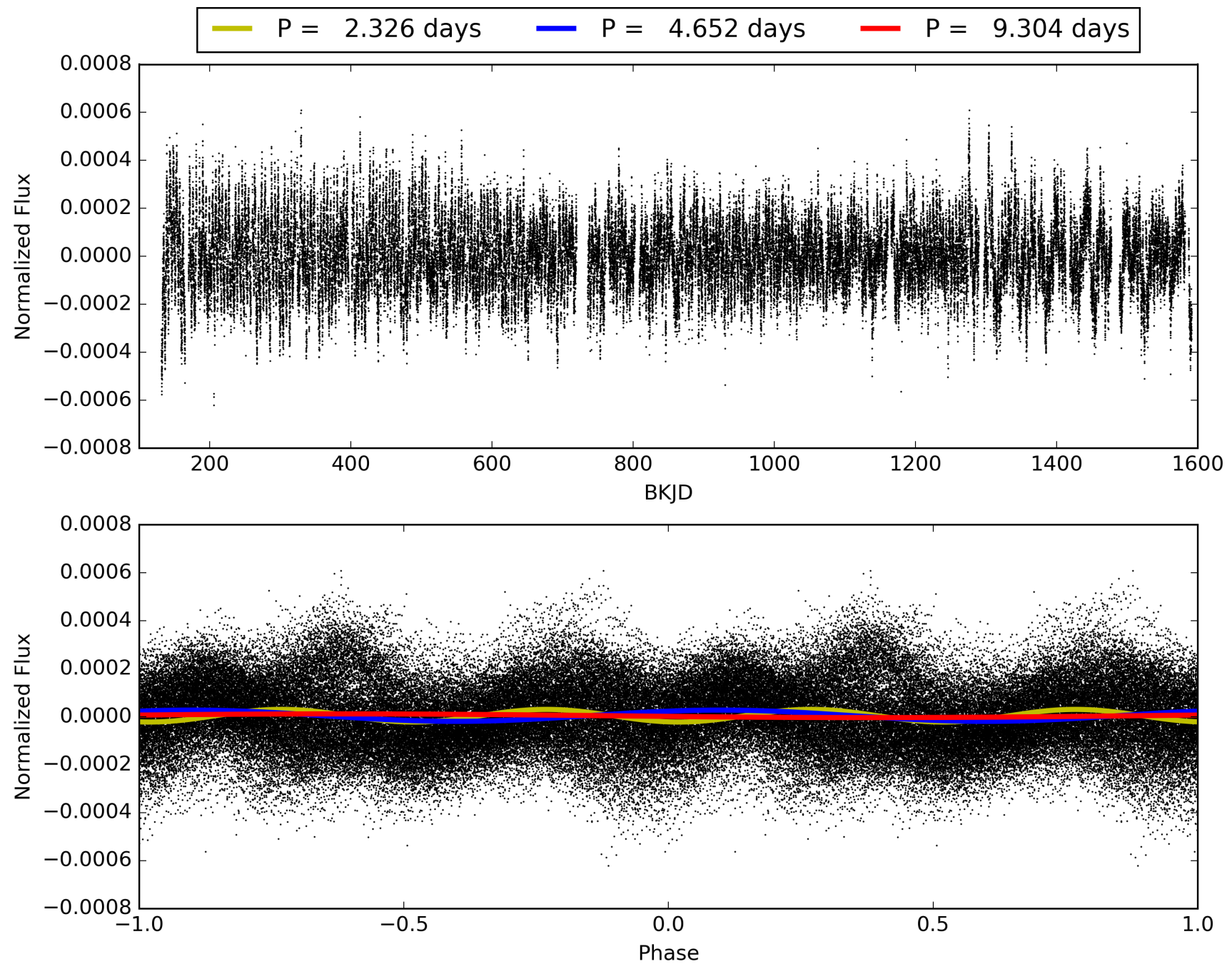
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:55:19 Z

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

TCE 004458109-01, PDC Light Curves

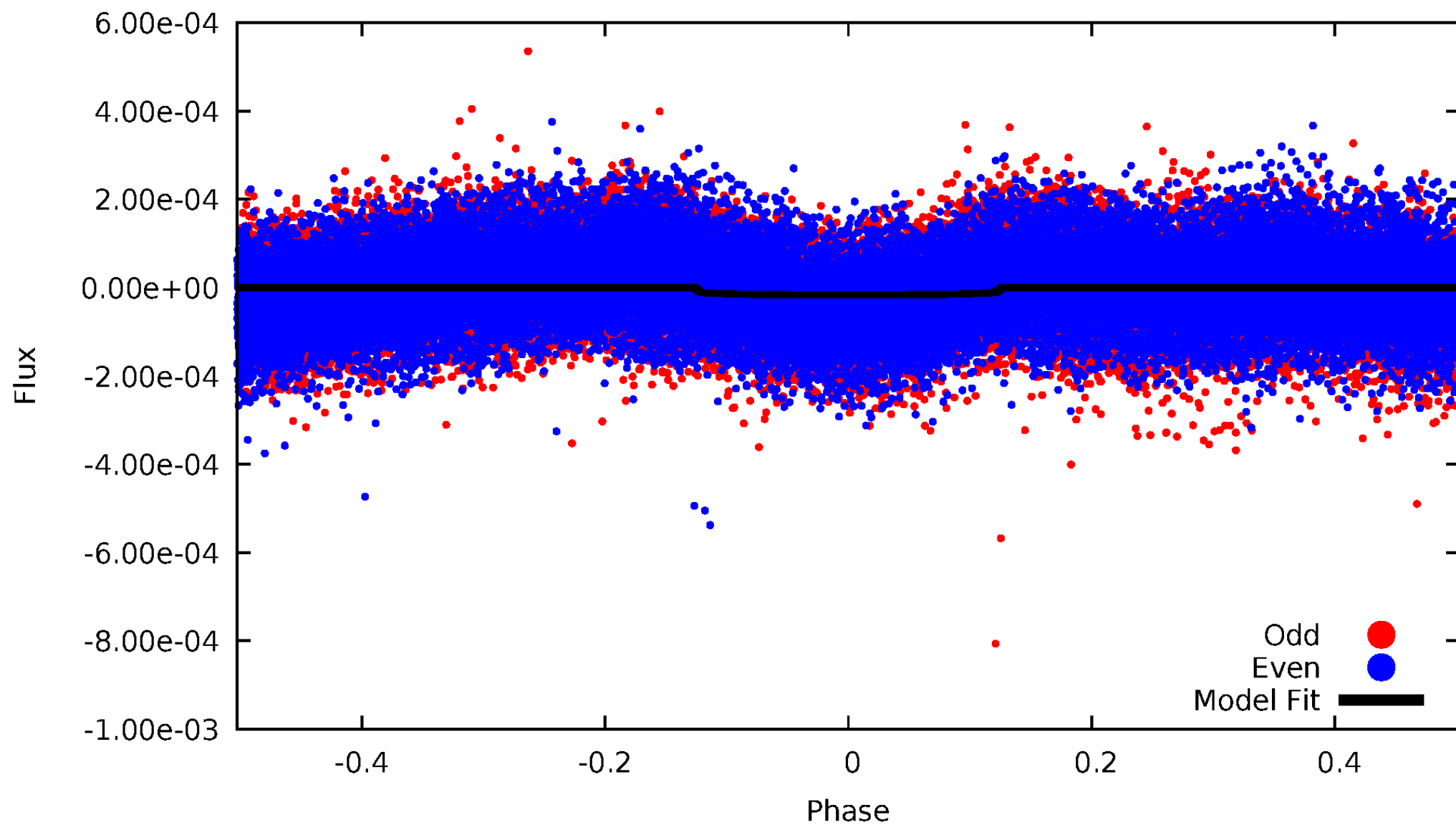


TCE 004458109-01



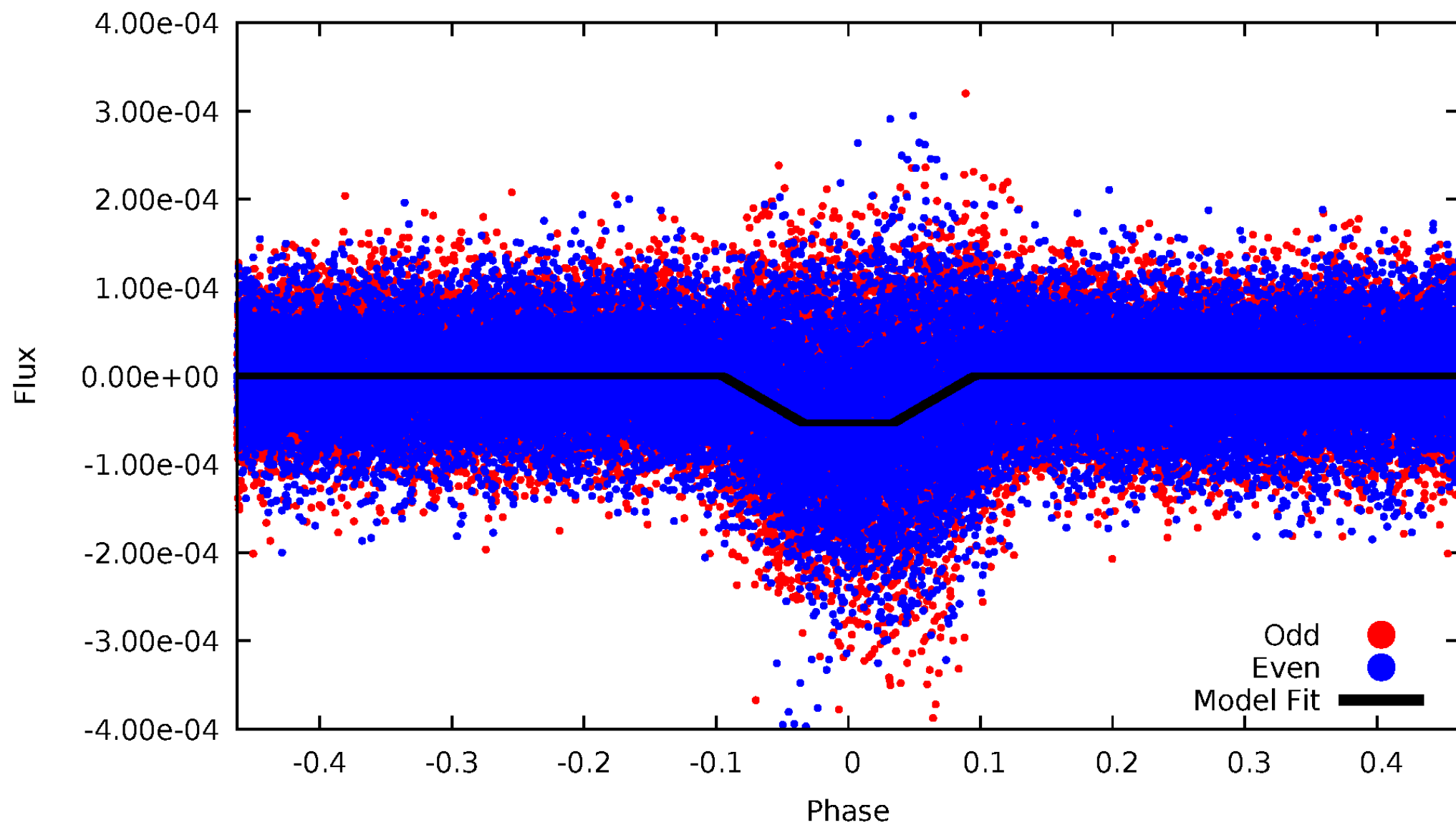
DV Odd/Even

TCE 004458109-01



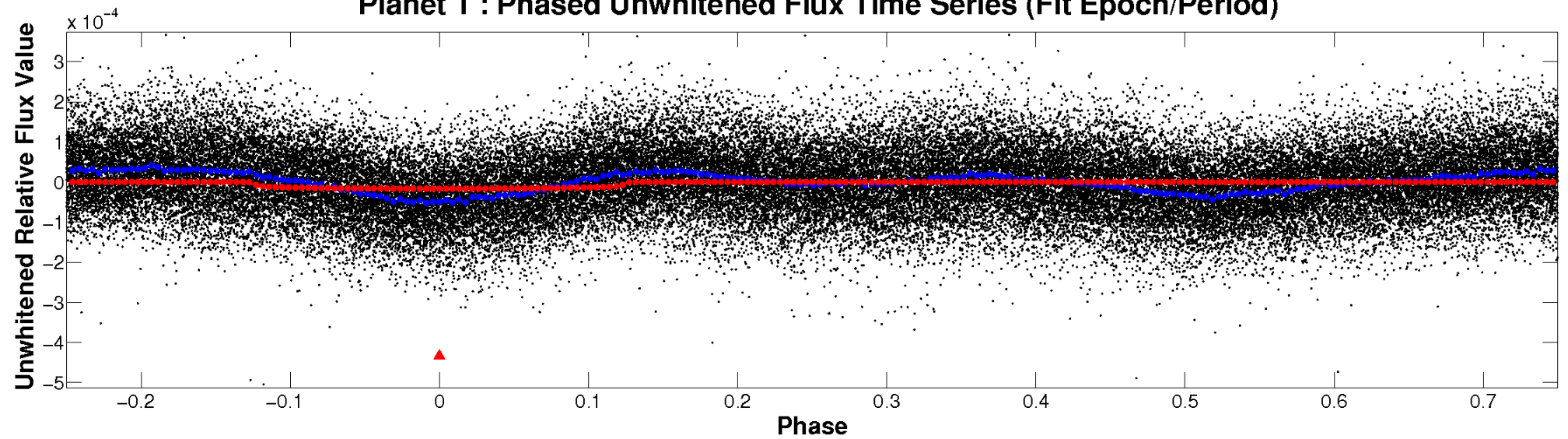
ALT Odd/Even

TCE 004458109-01

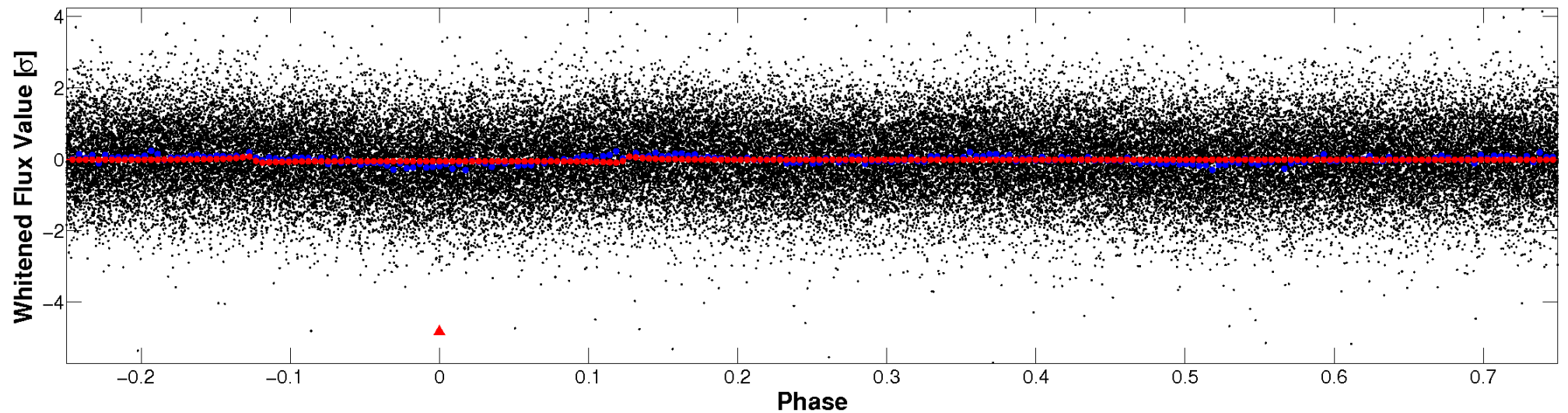


Non-Whitened Vs. Whitened Light Curve

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

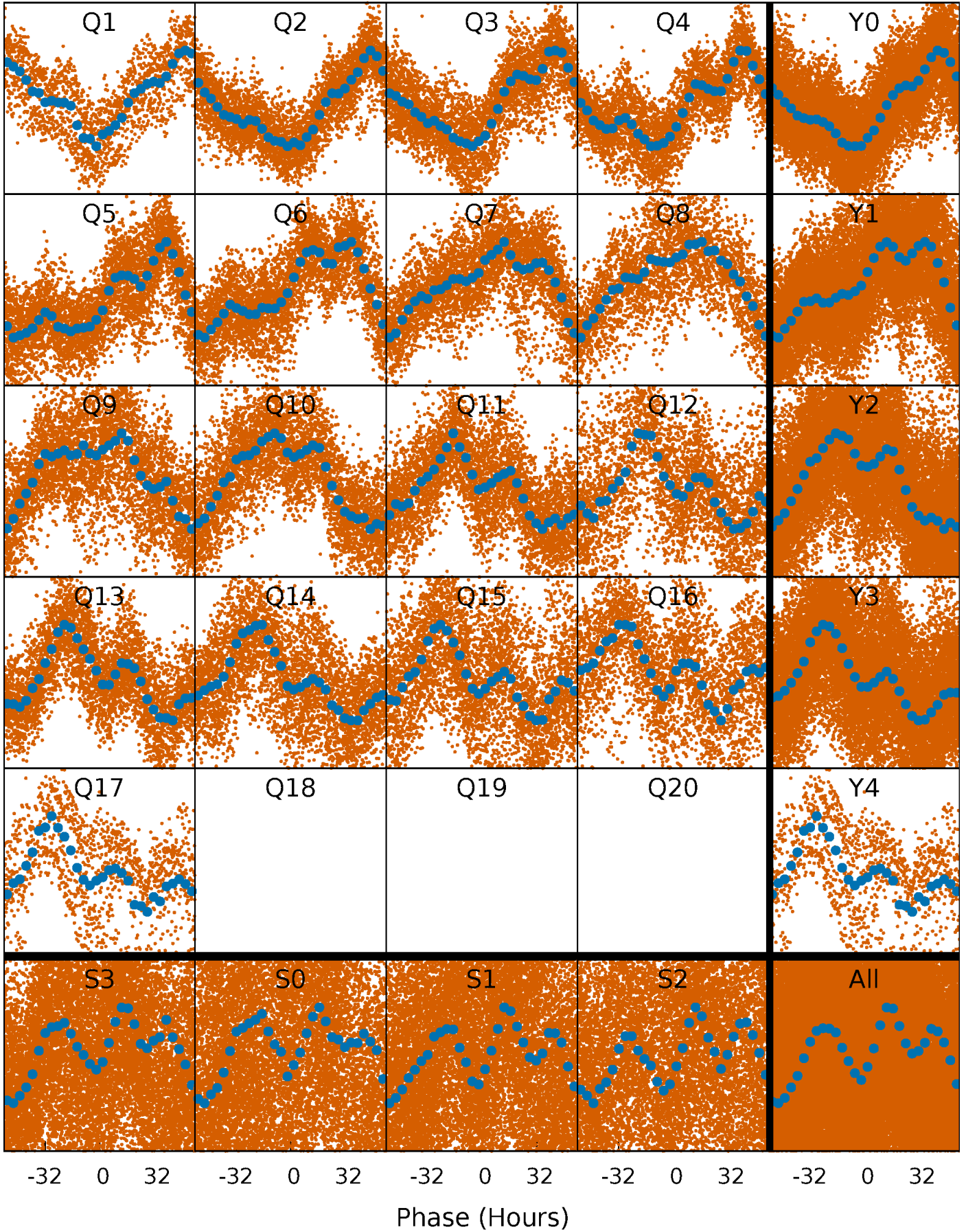


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



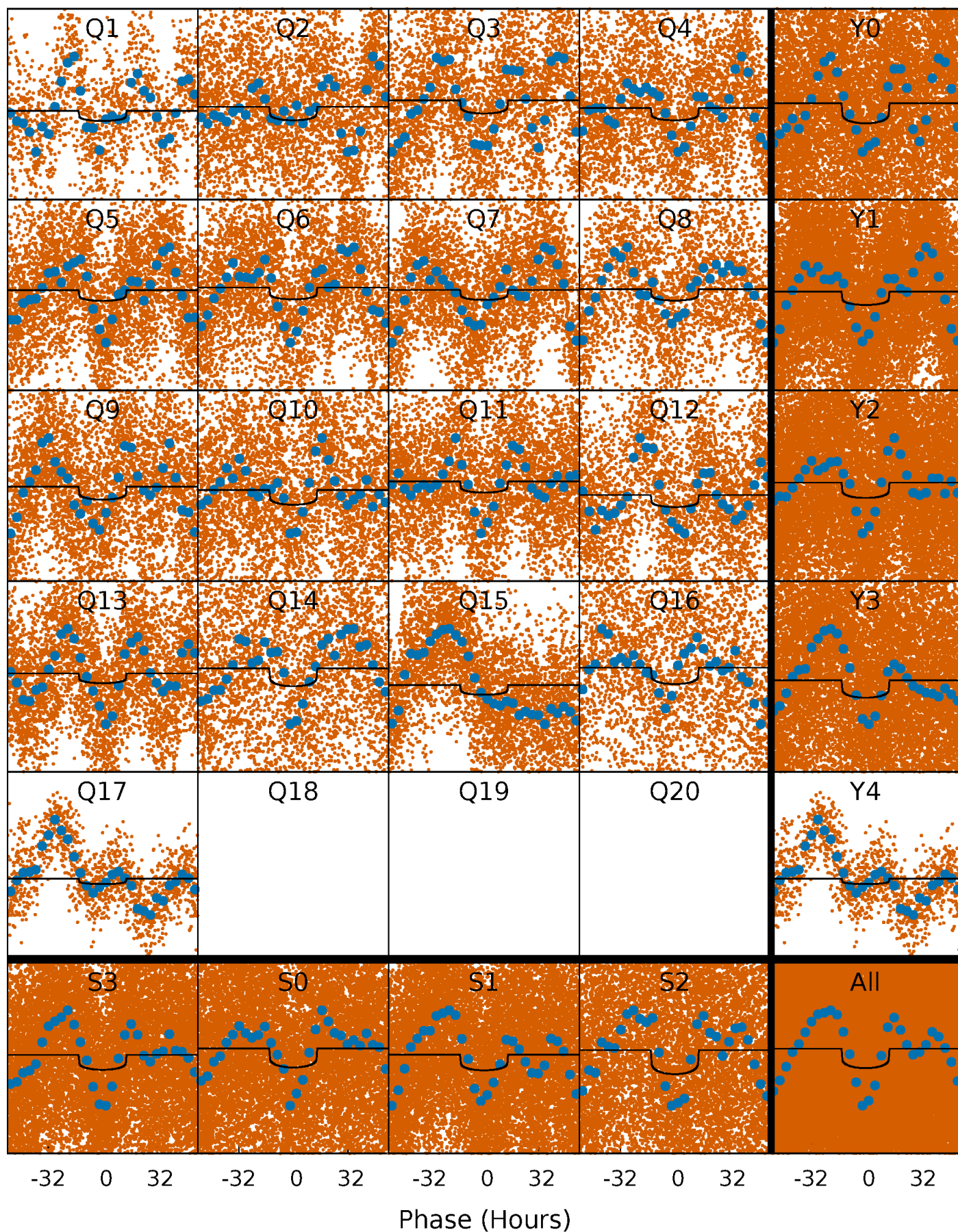
PDC Quarter-Phased Transit Curves

TCE 004458109-01 P= 4.651857 Days $T_0=132.134502$ (BKJD)



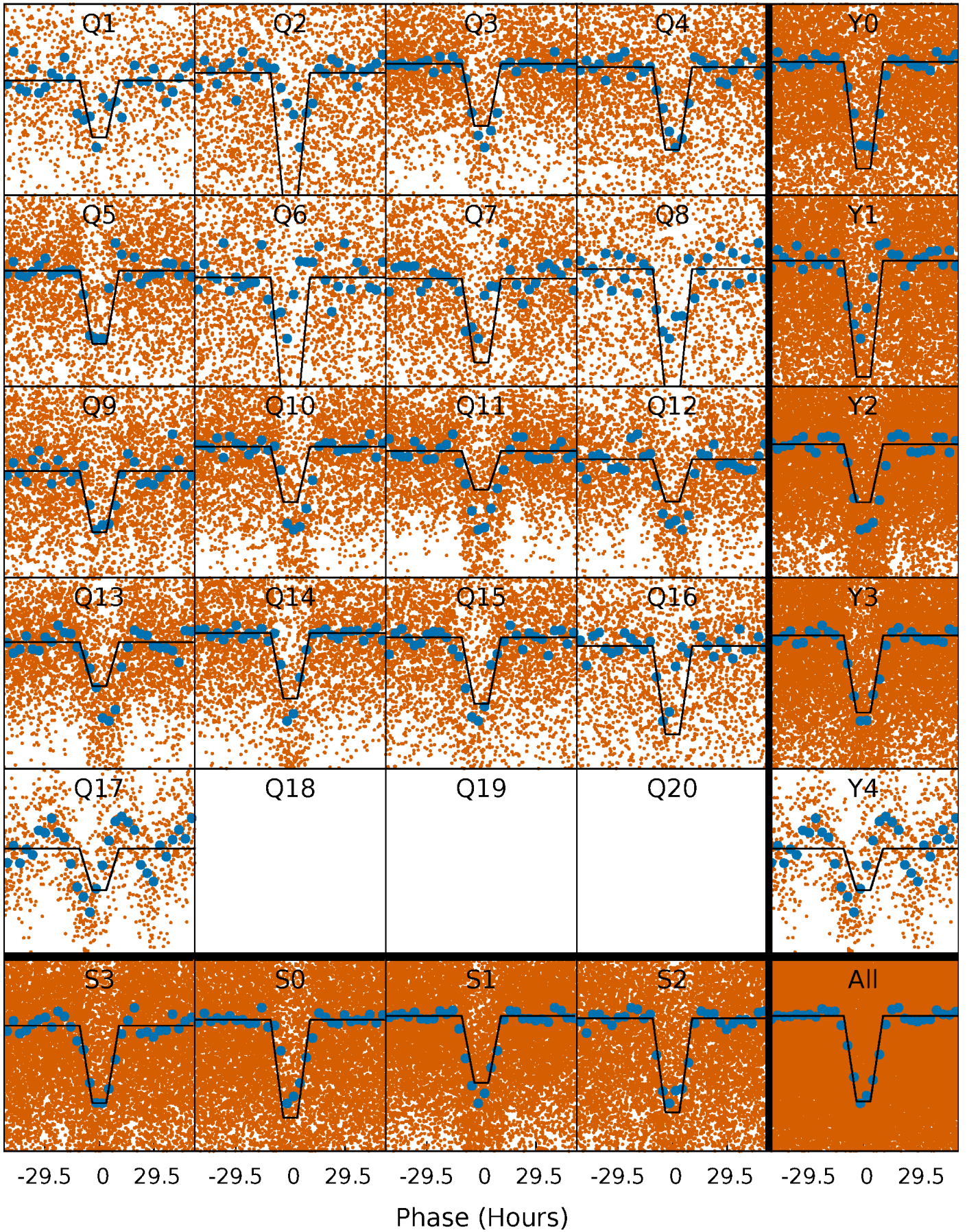
DV Quarter-Phased Transit Curves

TCE 004458109-01 P= 4.651857 Days $T_0=132.134502$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

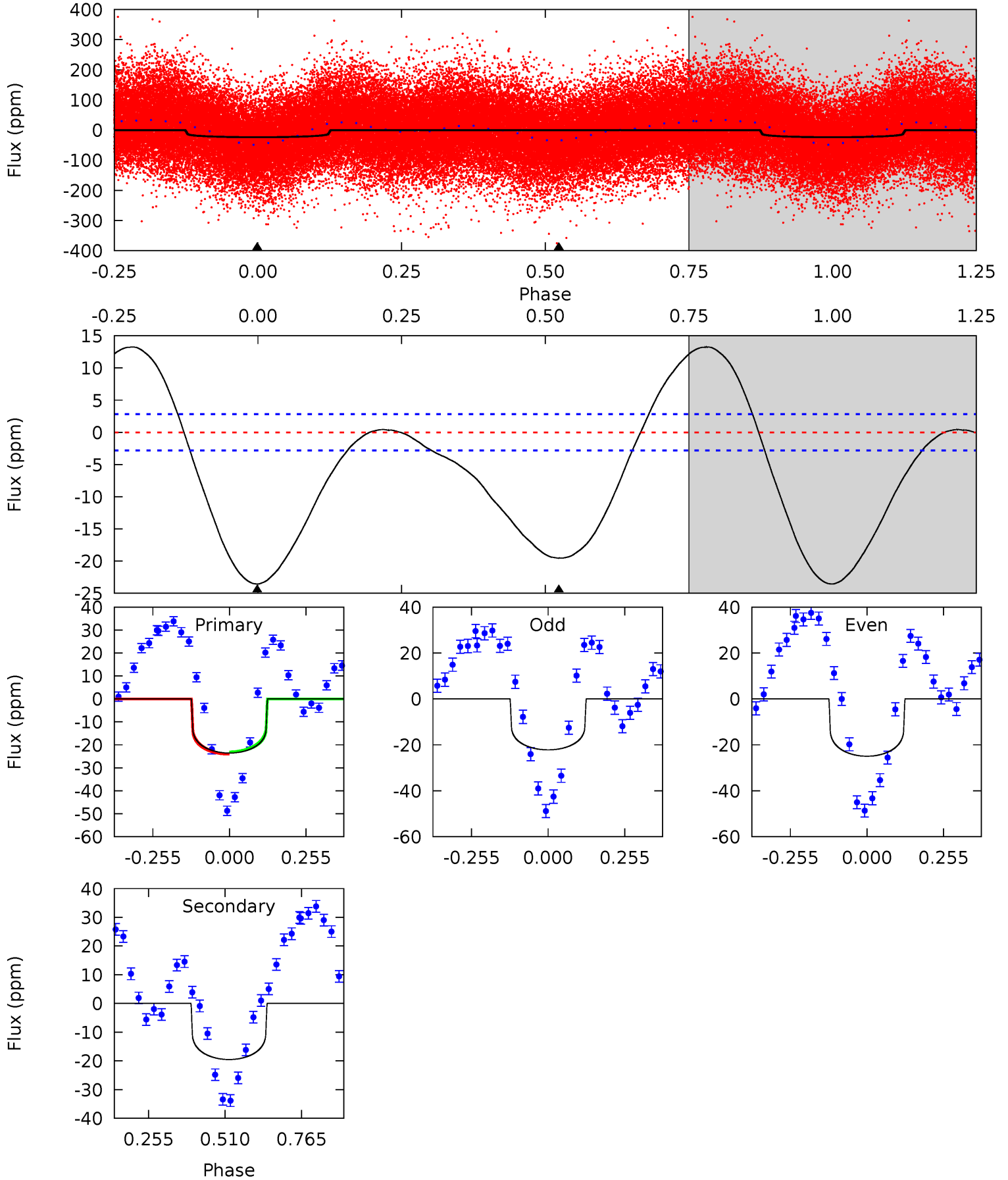
TCE 004458109-01 P= 4.651556 Days $T_0=132.169602$ (BKJD)



DV Model-Shift Uniqueness Test

004458109-01, P = 4.651857 Days, E = 127.482645 Days

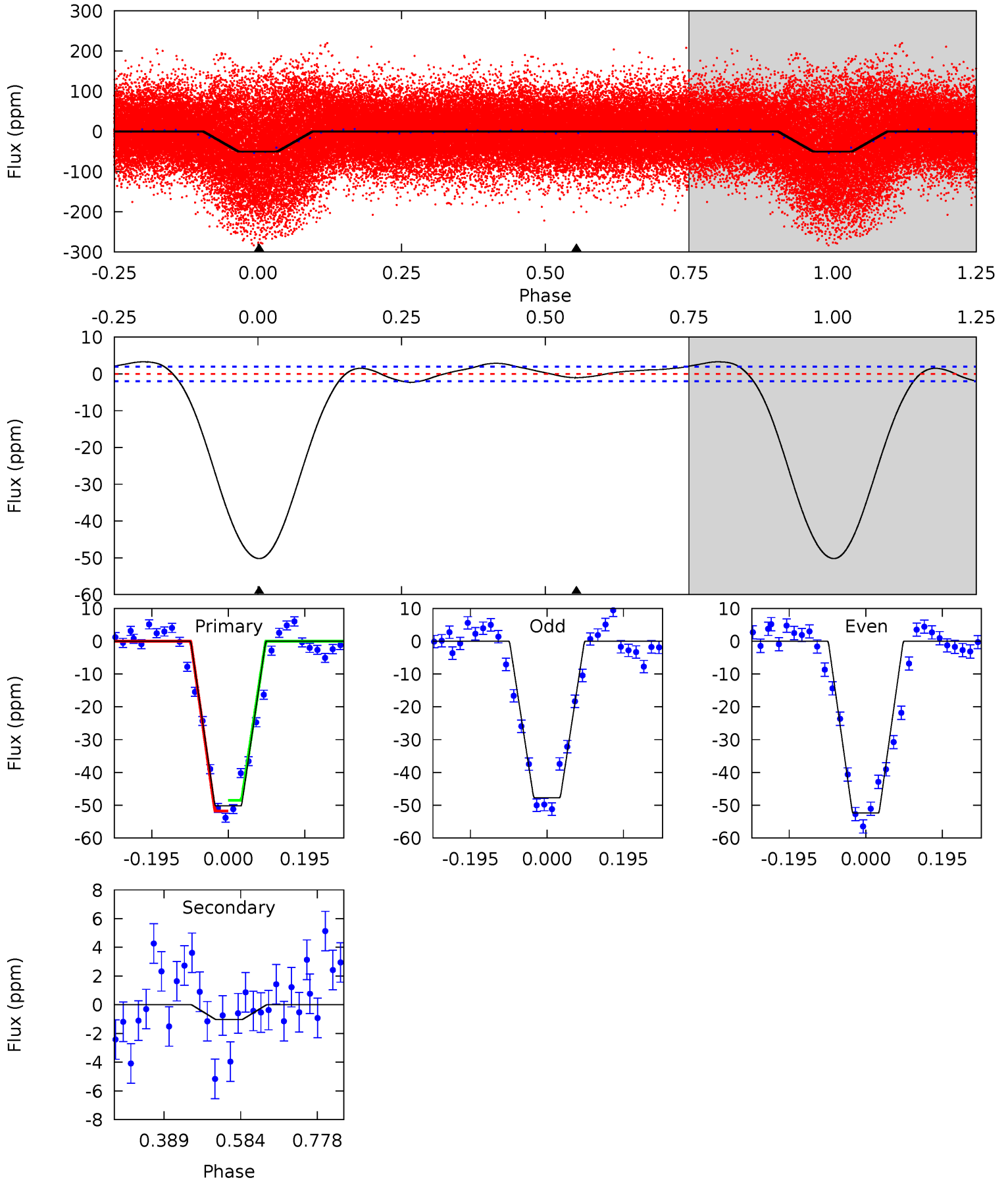
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.5	30.2	0	0	4.36	1.14	9.19	36.5	36.5	30.2	30.2	2.15	1.19	0.36	0.71



Alt Model-Shift Uniqueness Test

004458109-01, P = 4.651556 Days, E = 127.518046 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
112.3	2.30	0	0	4.42	1.30	4.15	112.3	112.3	2.30	2.30	5.18	1.03	0.06	3.62



Stellar Parameters For KIC 004458109

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6942^{+164}_{-226}	$4.131^{+0.198}_{-0.132}$	$-0.640^{+0.300}_{-0.300}$	$1.504^{+0.303}_{-0.336}$	$1.114^{+0.174}_{-0.116}$	$0.461^{+0.481}_{-0.174}$
	+2%/-3%	+5%/-3%	+47%/-47%	+20%/-22%	+16%/-10%	+104%/-38%
Source	PHO1	FLK73	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 004458109-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 1	$0.65^{+0.12}_{-0.12}$	2192^{+141}_{-146}	7354^{+656}_{-512}	83^{+38}_{-22}
Alt.	-1 ± 0	$1.20^{+0.18}_{-0.17}$	2192^{+137}_{-146}	3046^{+229}_{-342}	$1.241^{+0.813}_{-0.573}$

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

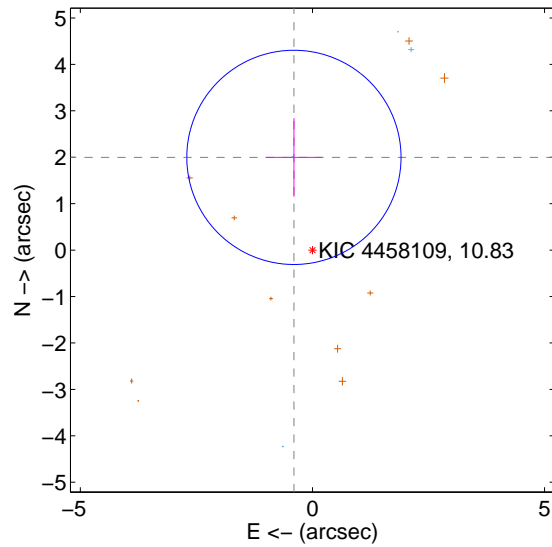
Supplemental centroid analysis for 004458109-01. **Kepler magnitude: 10.83.** Transit SNR 7.95

There are 4 quarters with good PRF difference image offsets

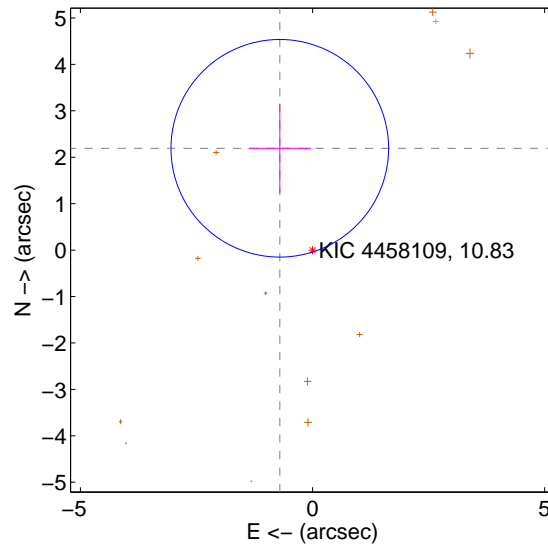
The direct PRF centroid is offset from the target star catalog position by about 0.76 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.037 ± 0.769	2.65	0.399 ± 0.609	1.997 ± 0.846
PRF-fit source offset from KIC position	2.303 ± 0.781	2.95	0.705 ± 0.671	2.193 ± 0.964
photometric centroid source offset	1.21 ± 0.79	1.54	0.54 ± 0.56	-1.09 ± 0.83

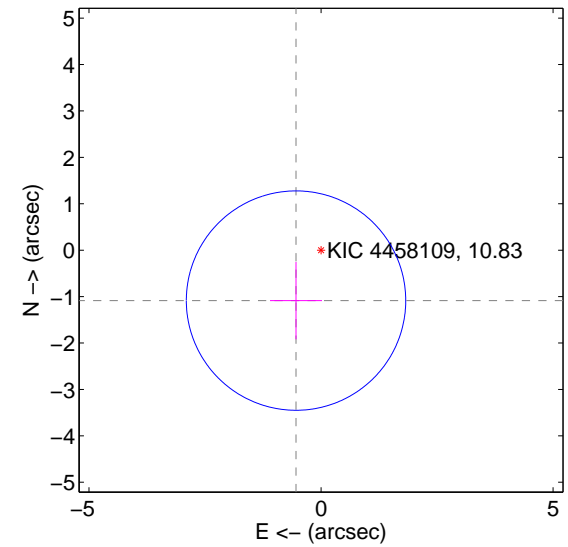
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

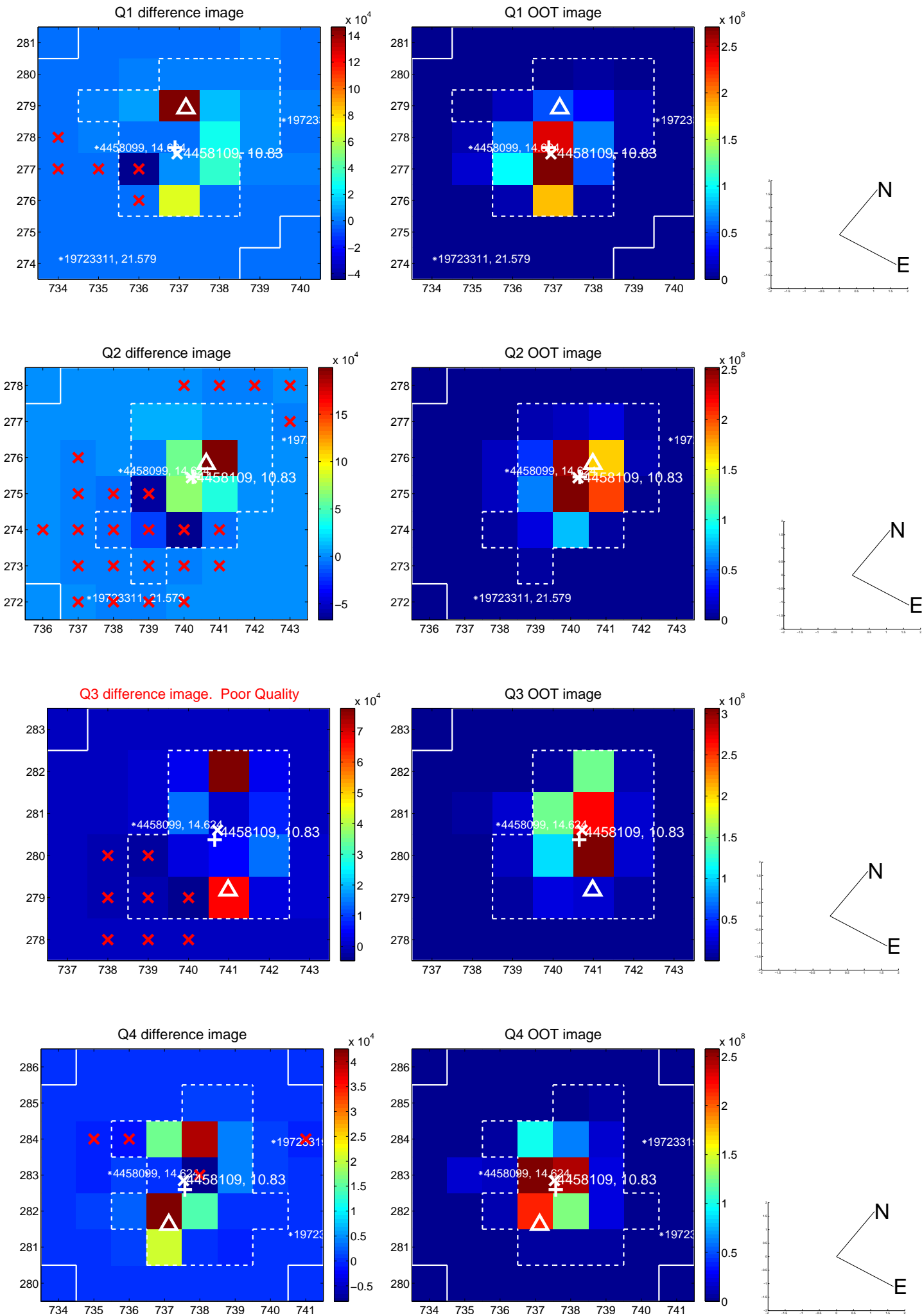


offset from photometric centroids

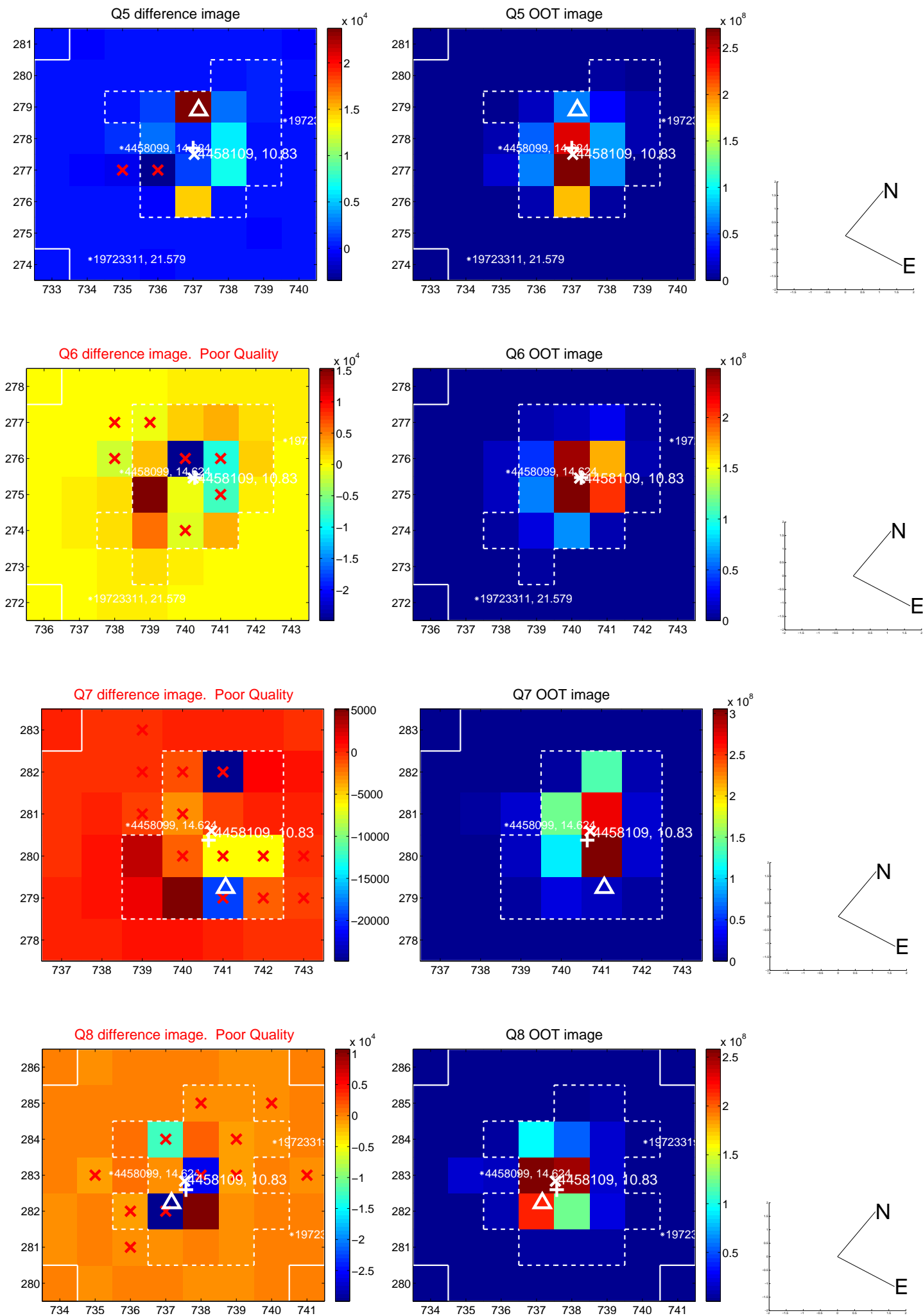


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

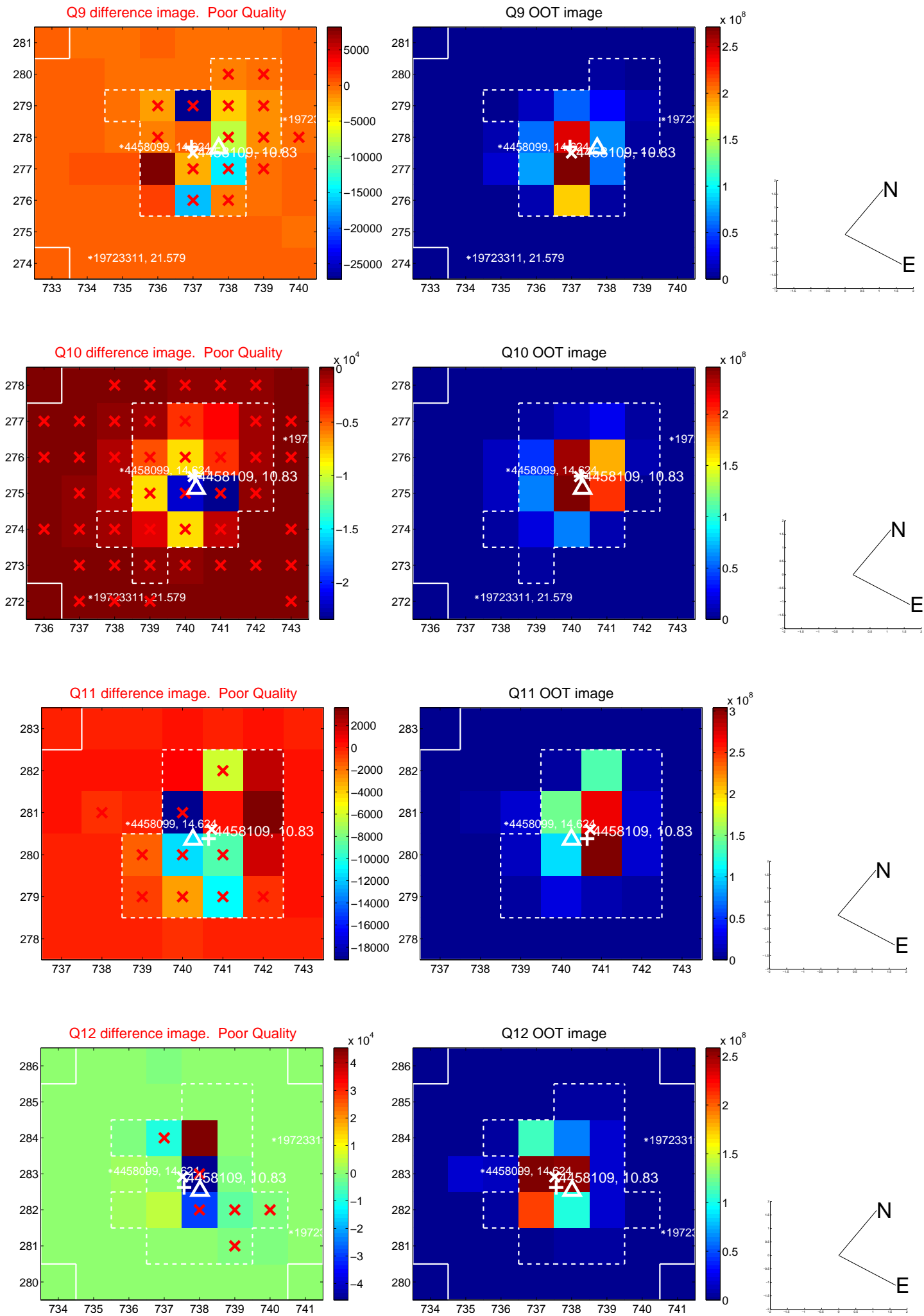
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



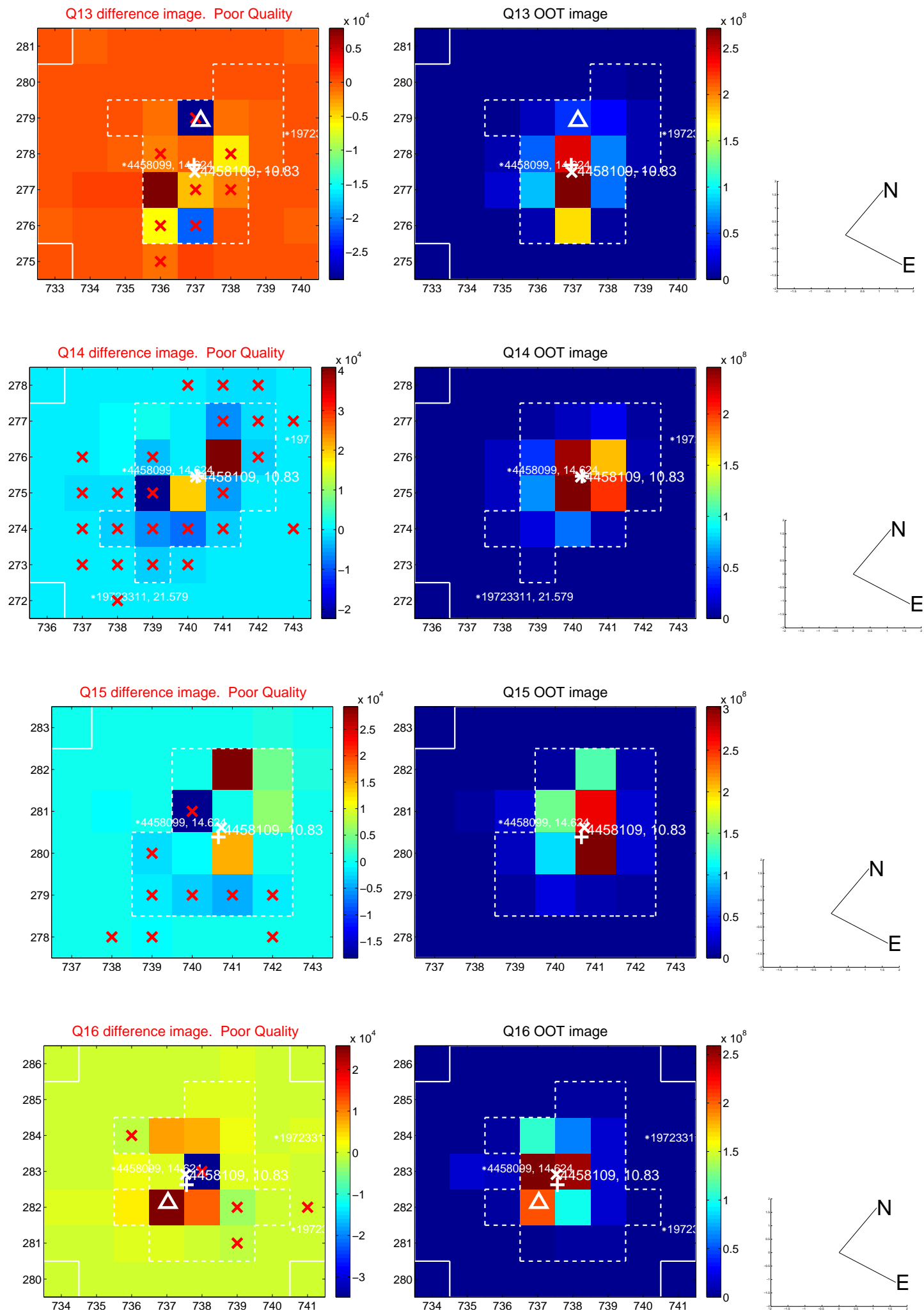
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



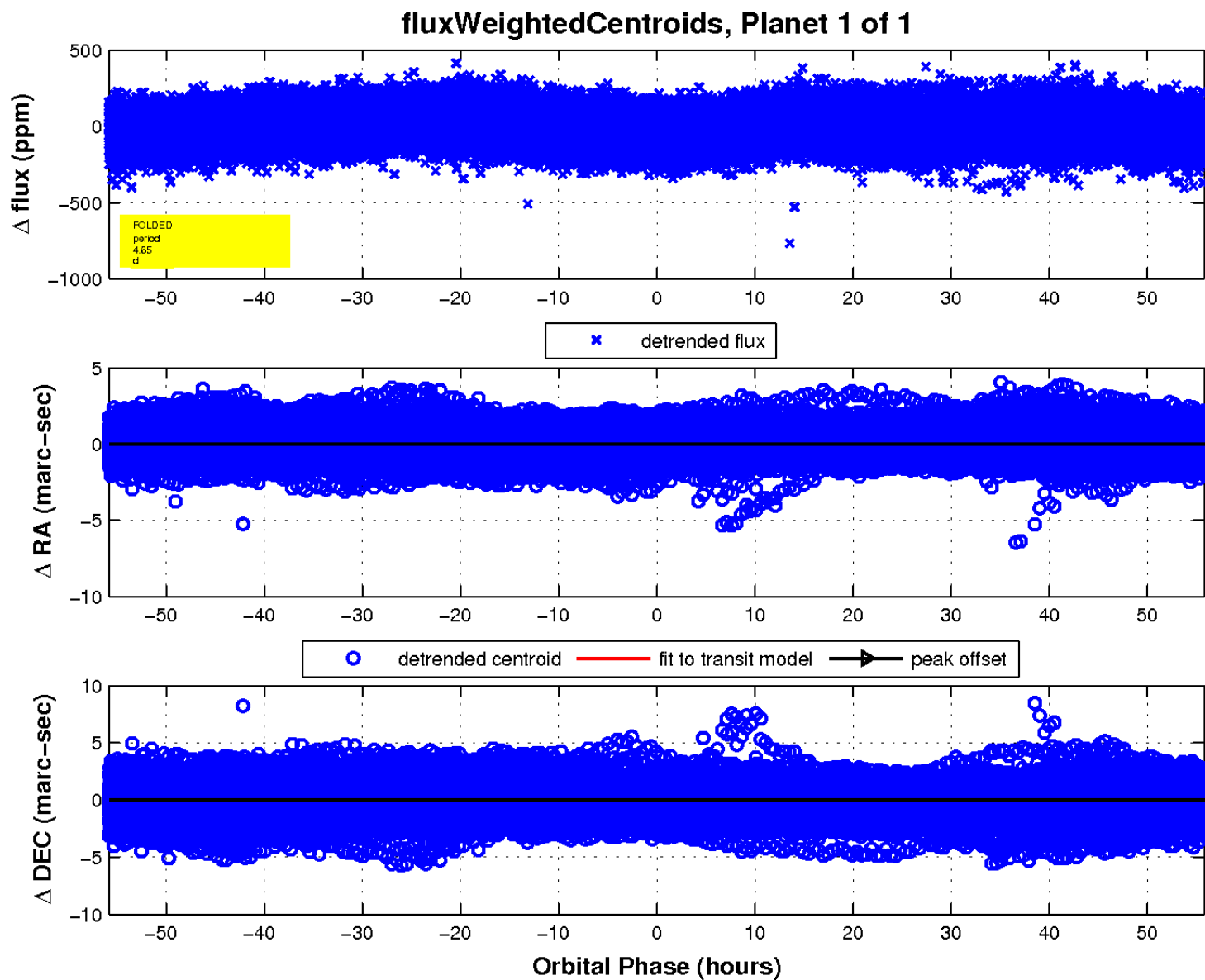
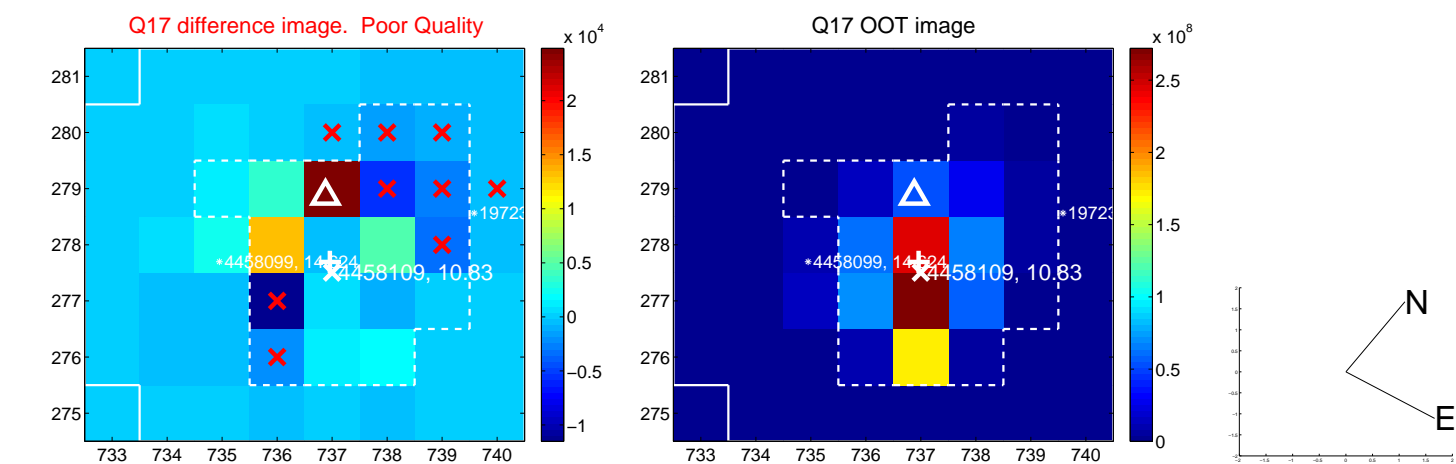
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UKIRT Image

Declination

