

KIC 009307509

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})
009307509-01	OBS	2096.01	9.762983	139.155000	565.5	3.124	21.4	23.4	0.82	5052	2.06	57.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009307509-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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.

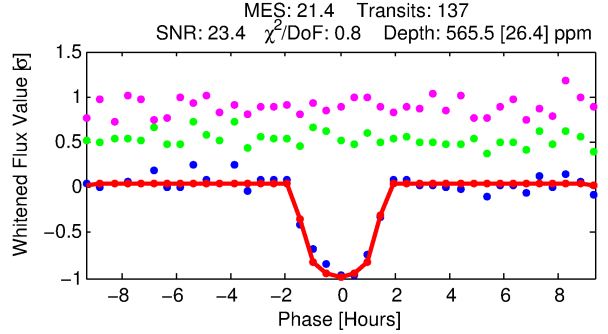
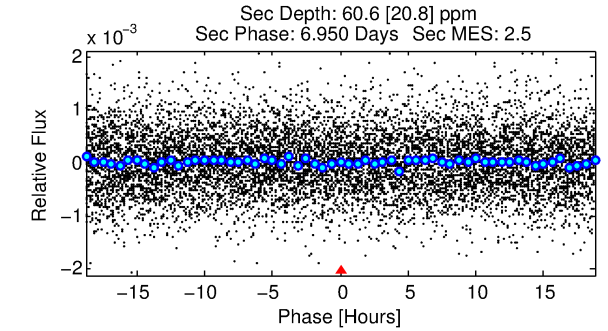
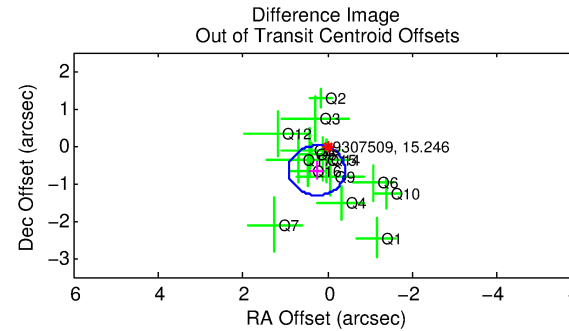
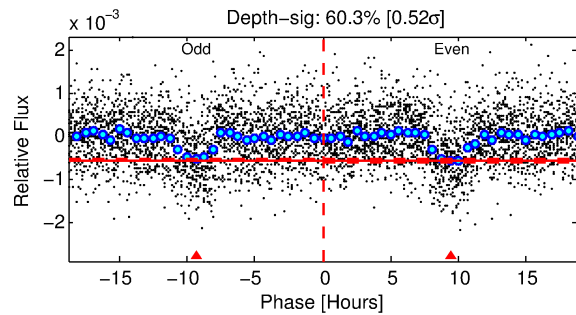
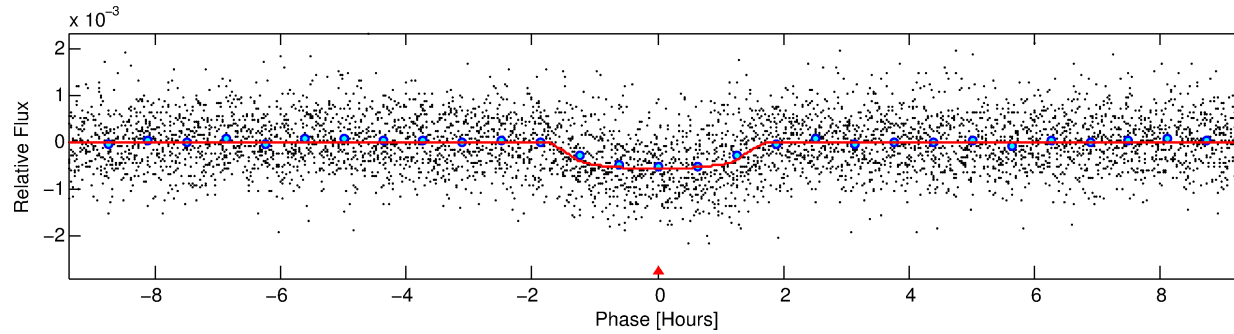
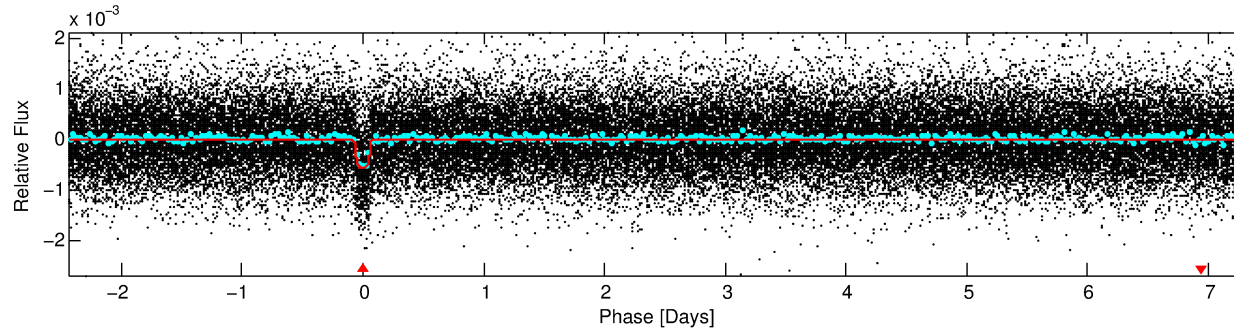
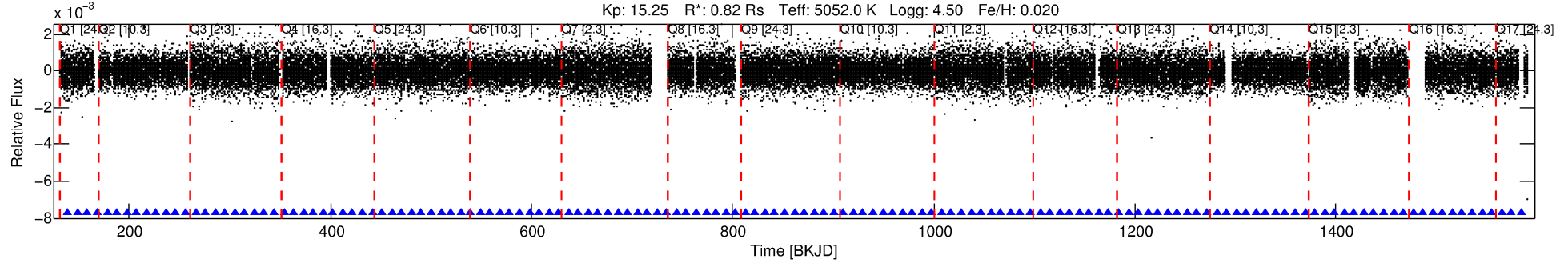
Ephemeris Match Information For 009307509-01

No Significant Match Found

DV One-Page Summary

KIC: 9307509 Candidate: 1 of 1 Period: 9.763 d
KOI: K02096.01 Corr: 0.990

Kp: 15.25 R*: 0.82 Rs Teff: 5052.0 K Logg: 4.50 Fe/H: 0.020



DV Fit Results:

Period = 9.76298 [0.00004] d
Epoch = 139.1550 [0.0030] BKJD
Rp/R* = 0.0231 [0.0142]
a/R* = 18.11 [38.76]
b = 0.69 [1.69]
Seff = 57.69 [11.33]
Teq = 703 [35] K
Rp = 2.06 [1.29] Re
a = 0.0821 [0.0084] AU
Ag = 52.87 [67.94] [0.76σ]
Teffp = 2930 [938] K [2.37σ]

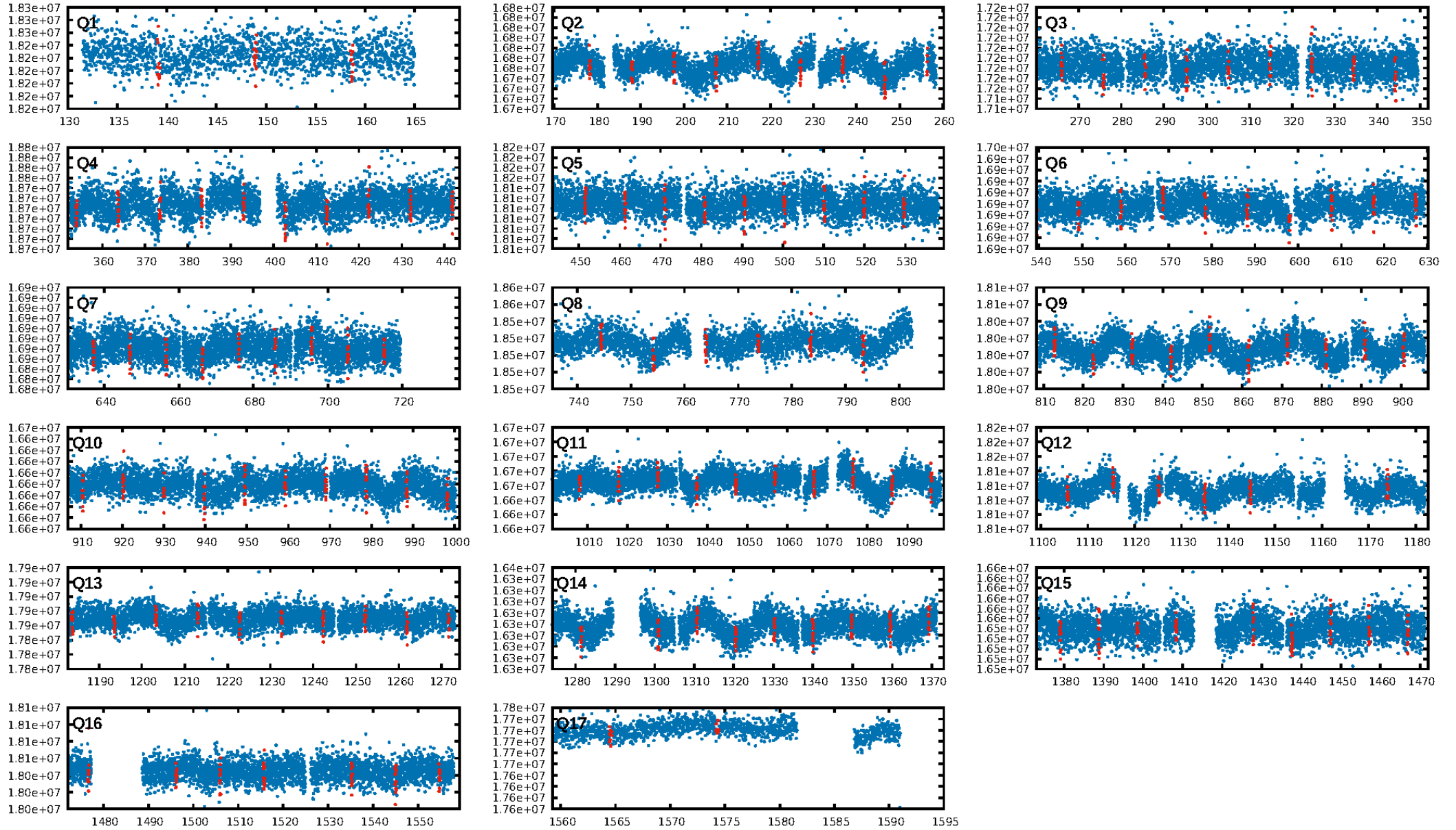
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.40e-100
RollingBand-fgt: 1.00 [132/132]
GhostDiagnostic-chr: 2.768
Centroid-sig: 0.5%
Centroid-so: 2.317 arcsec [3.59σ]
OotOffset-rm: 0.700 arcsec [3.15σ]
KicOffset-rm: 0.922 arcsec [3.95σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 1.00 [17/17]

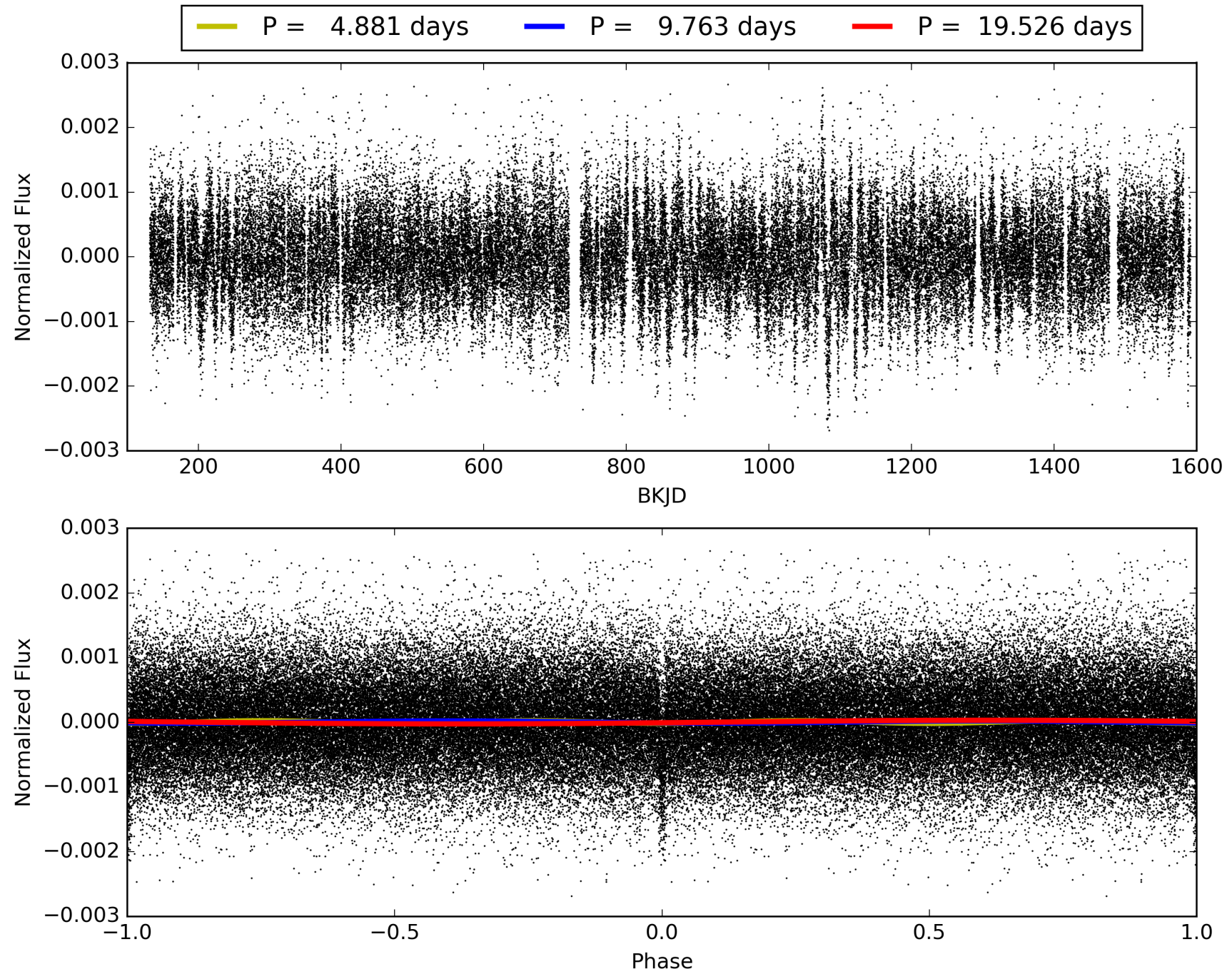
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:28:12 Z

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

TCE 009307509-01, PDC Light Curves

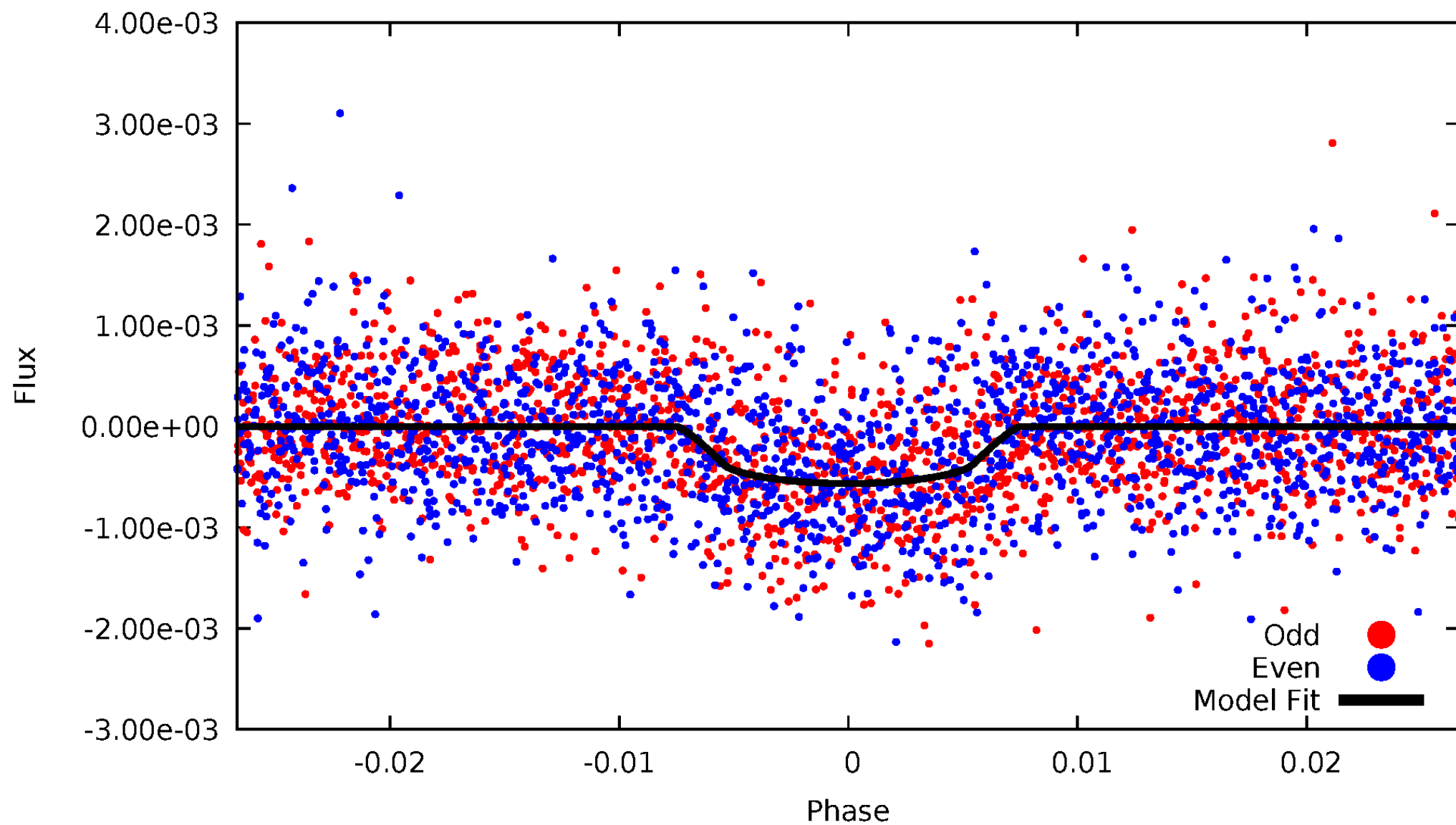


TCE 009307509-01



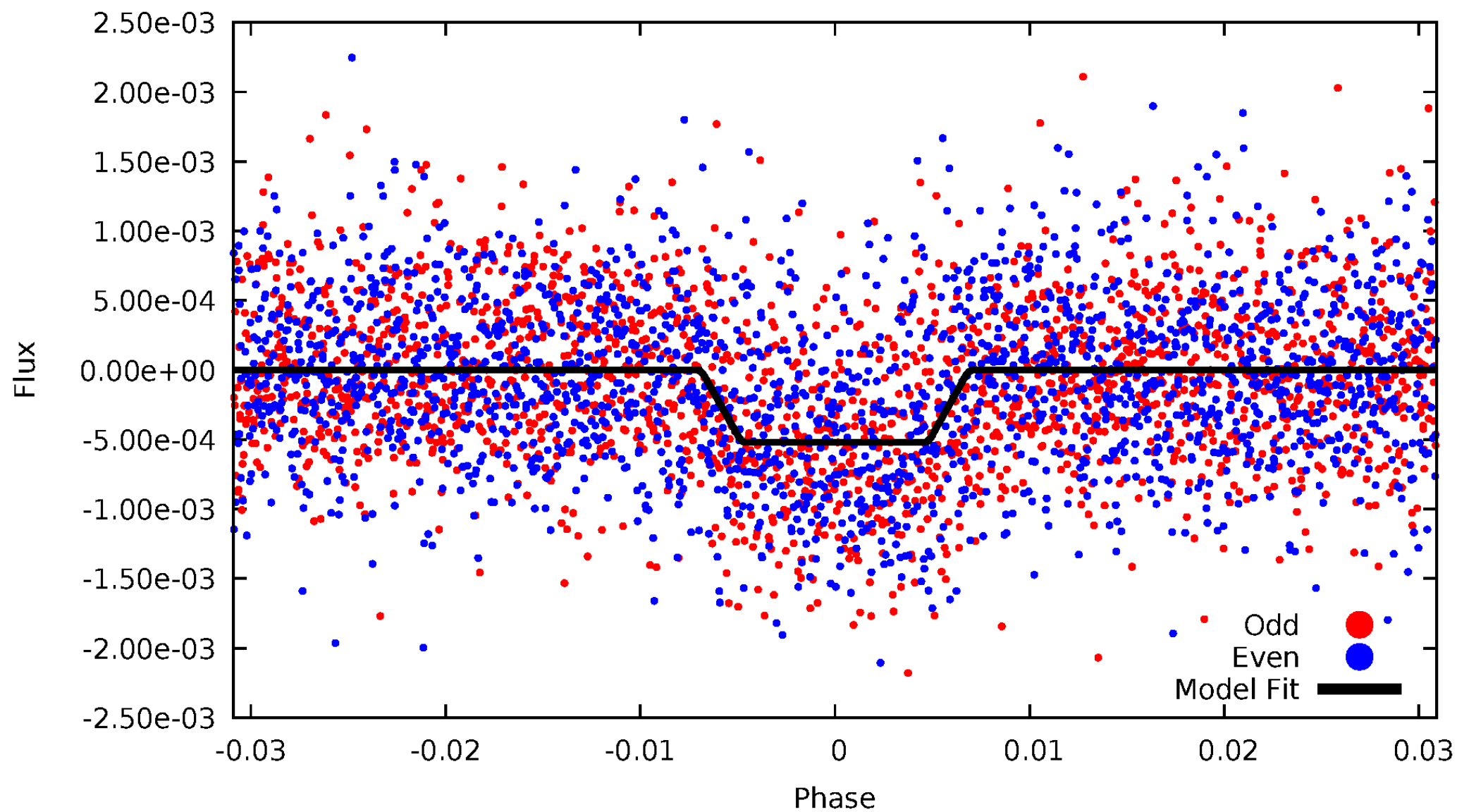
DV Odd/Even

TCE 009307509-01



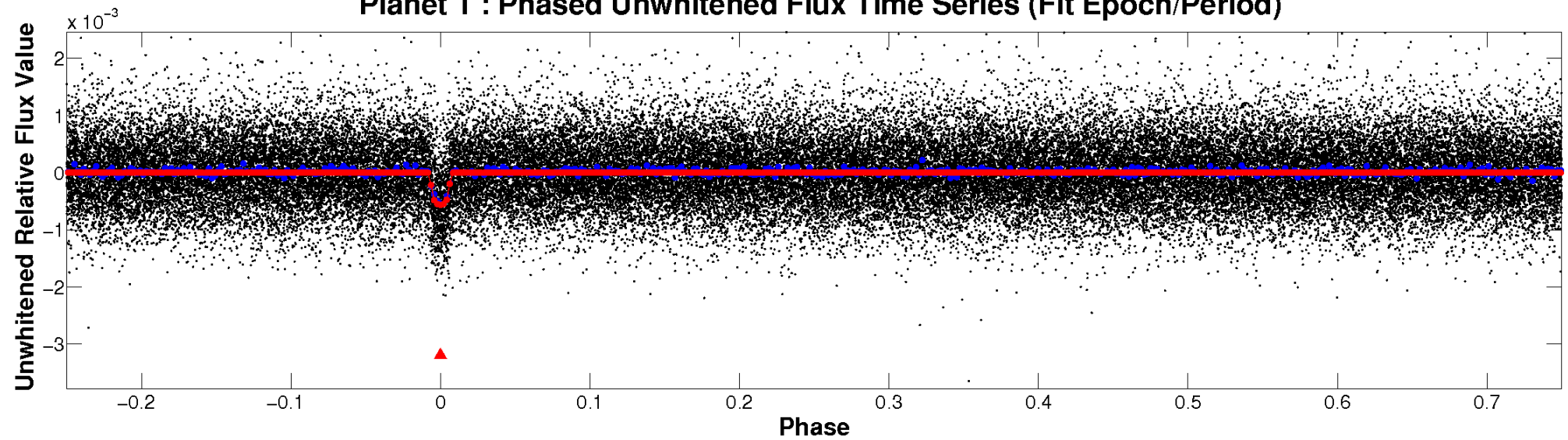
ALT Odd/Even

TCE 009307509-01

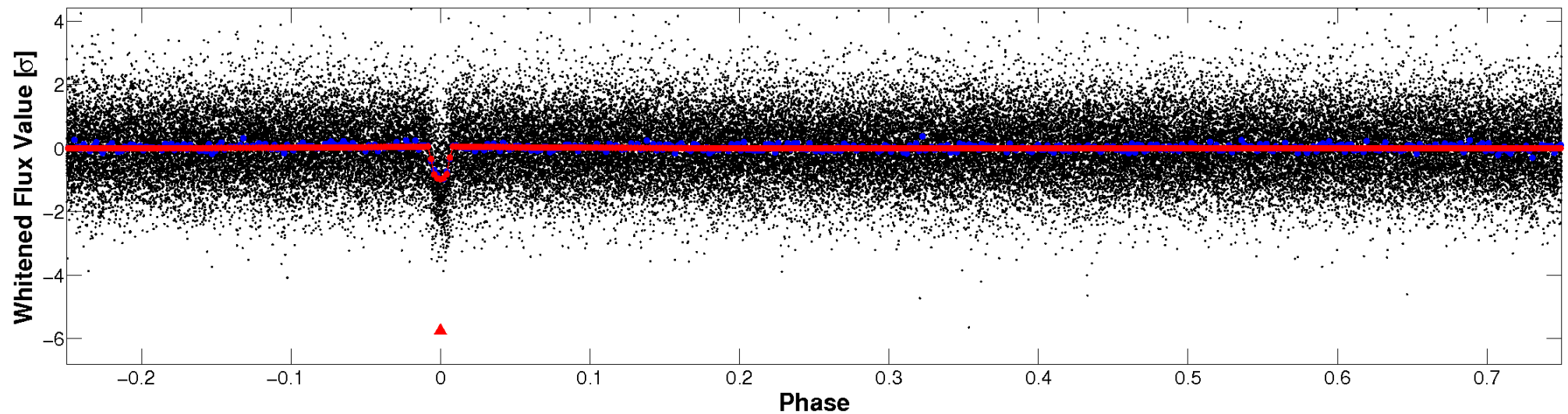


Non-Whitened Vs. Whitened Light Curve

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

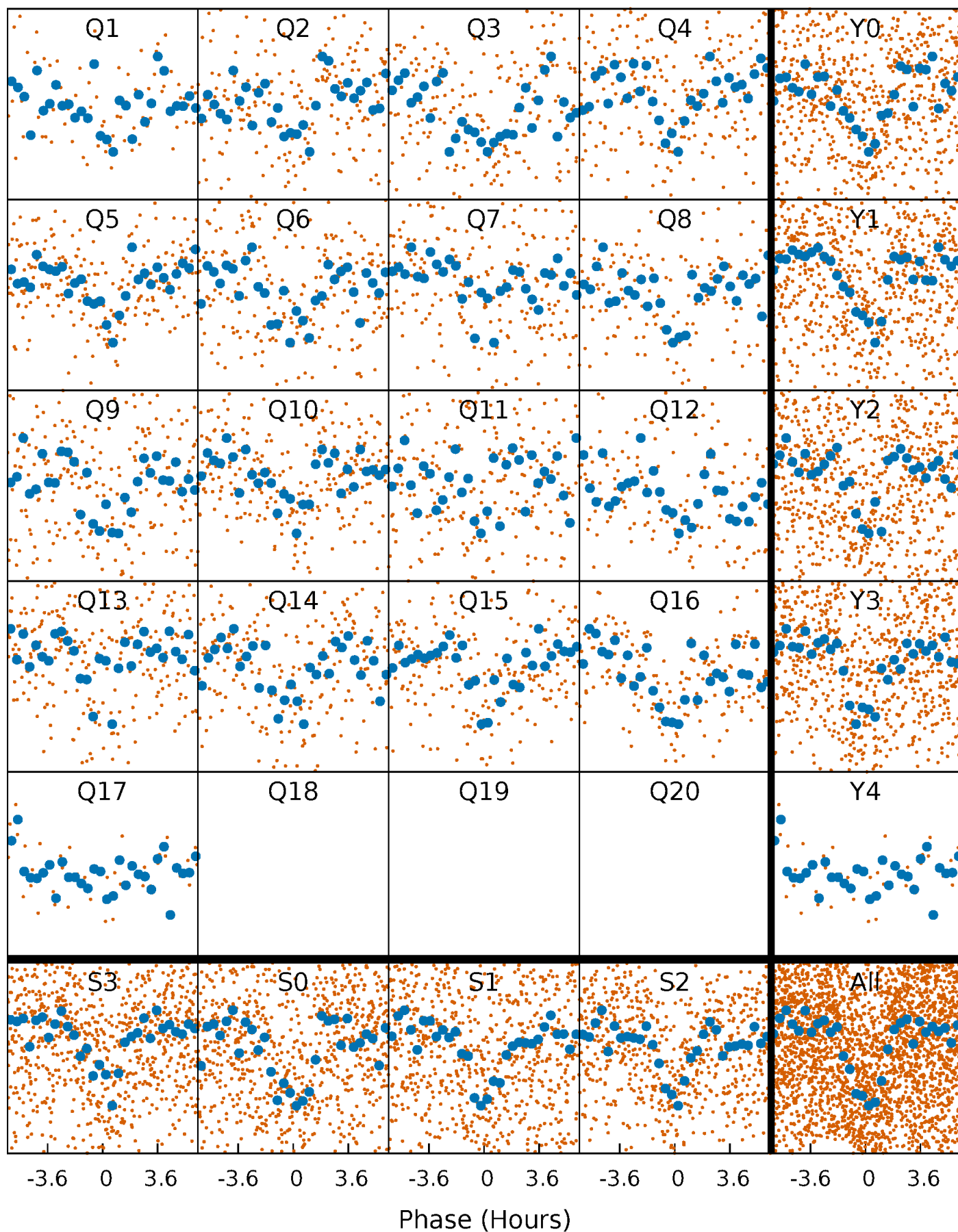


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



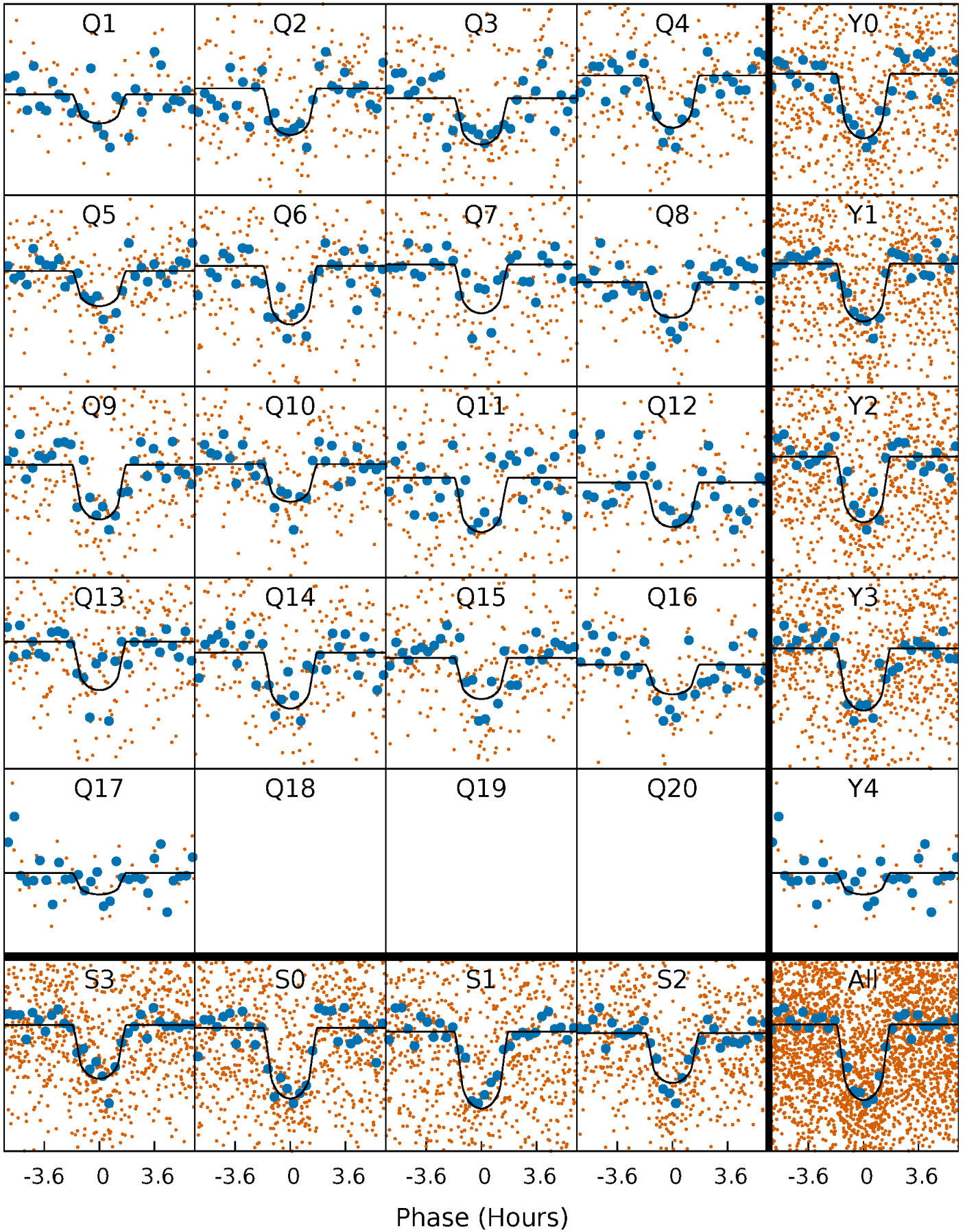
PDC Quarter-Phased Transit Curves

TCE 009307509-01 P= 9.762983 Days $T_0=139.155000$ (BKJD)



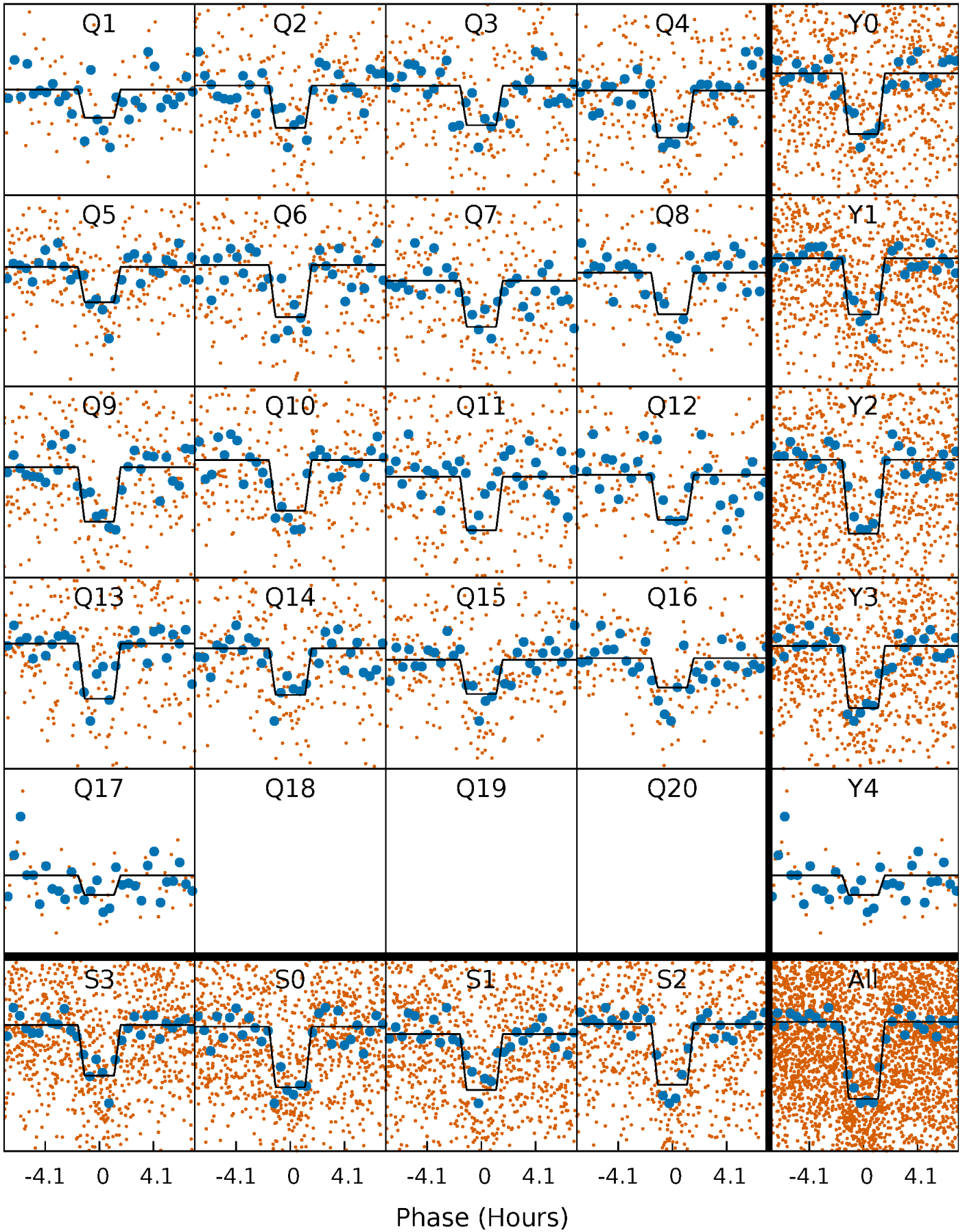
DV Quarter-Phased Transit Curves

TCE 009307509-01 P= 9.762983 Days $T_0=139.155000$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

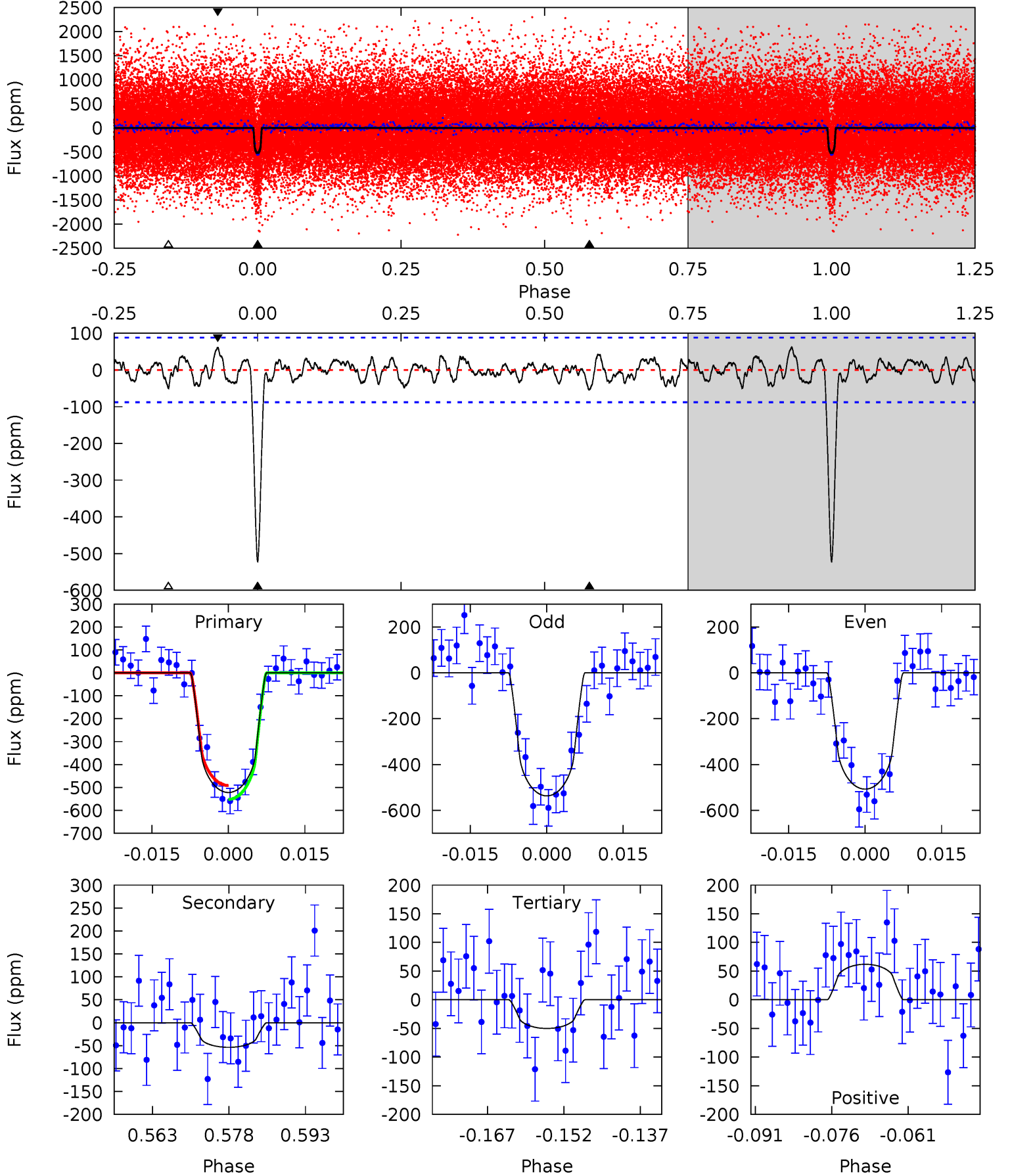
TCE 009307509-01 P= 9.763053 Days $T_0=139.150126$ (BKJD)



DV Model-Shift Uniqueness Test

009307509-01, P = 9.762983 Days, E = 129.392017 Days

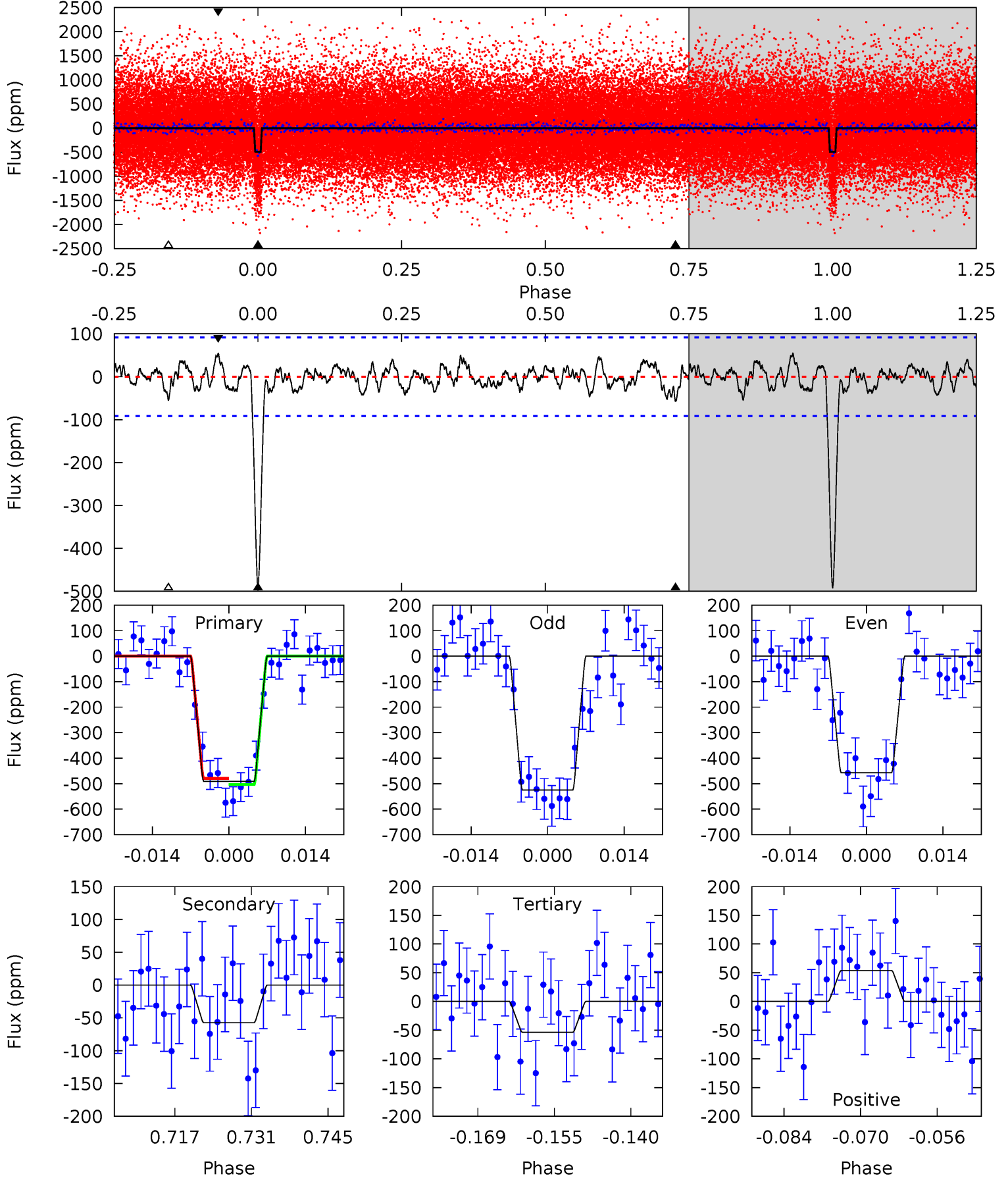
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.3	3.02	2.81	3.48	4.95	2.43	1.18	26.5	25.9	0.21	-0.46	0.83	1.00	0.11	1.70



Alt Model-Shift Uniqueness Test

009307509-01, P = 9.763053 Days, E = 129.387073 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.6	3.10	2.92	2.92	4.96	2.46	1.10	23.7	23.7	0.19	0.18	1.83	0.96	0.10	0.65



Stellar Parameters For KIC 009307509

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5052^{+151}_{-151}	$4.503^{+0.088}_{-0.072}$	$0.020^{+0.250}_{-0.300}$	$0.816^{+0.078}_{-0.095}$	$0.773^{+0.087}_{-0.055}$	$2.004^{+0.781}_{-0.437}$
	+3%/-3%	+2%/-2%	+1250%/-1500%	+10%/-12%	+11%/-7%	+39%/-22%
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 009307509-01 / KOI 2096.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-54 ± 18	$2.09^{+1.23}_{-1.03}$	981^{+39}_{-40}	3308^{+852}_{-440}	45^{+143}_{-28}
Alt.	-57 ± 18	$2.04^{+1.26}_{-1.09}$	980^{+40}_{-43}	3353^{+918}_{-450}	50^{+157}_{-32}

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

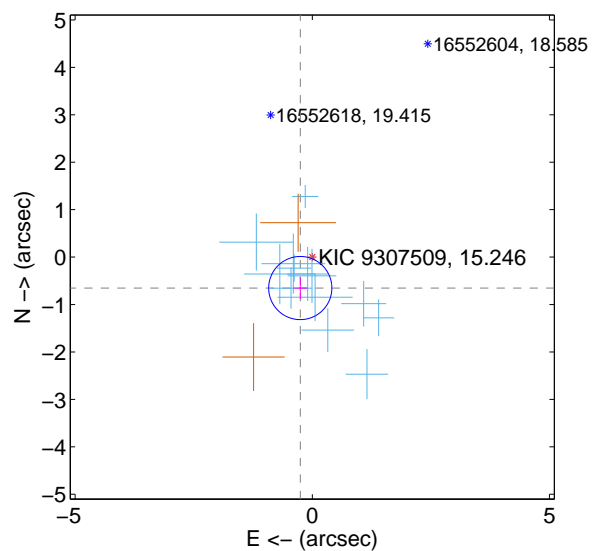
Supplemental centroid analysis for 009307509-01. Kepler magnitude: 15.25. Transit SNR 23.43

There are 13 quarters with good PRF difference image offsets

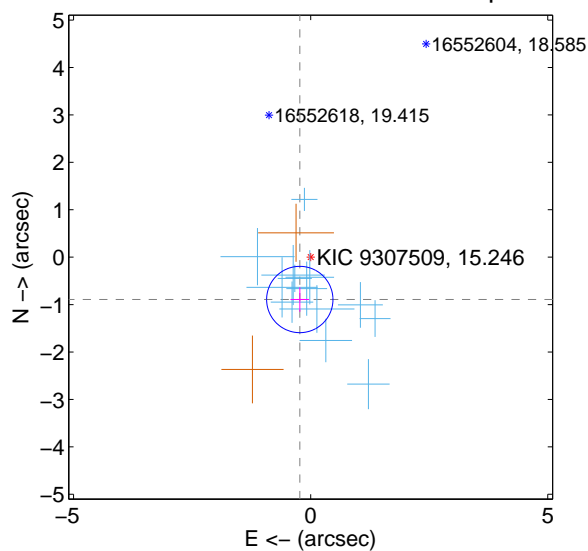
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.700 ± 0.222	3.15	0.253 ± 0.148	-0.652 ± 0.231
PRF-fit source offset from KIC position	0.922 ± 0.233	3.95	0.229 ± 0.197	-0.893 ± 0.257
photometric centroid source offset	2.32 ± 0.64	3.59	2.32 ± 0.64	0.01 ± 0.62

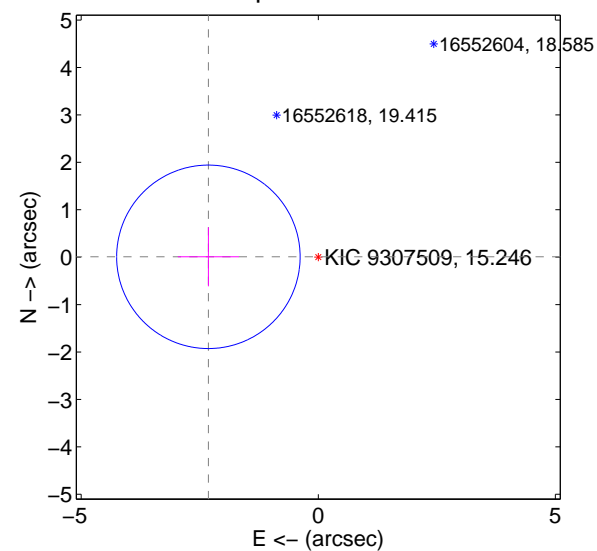
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

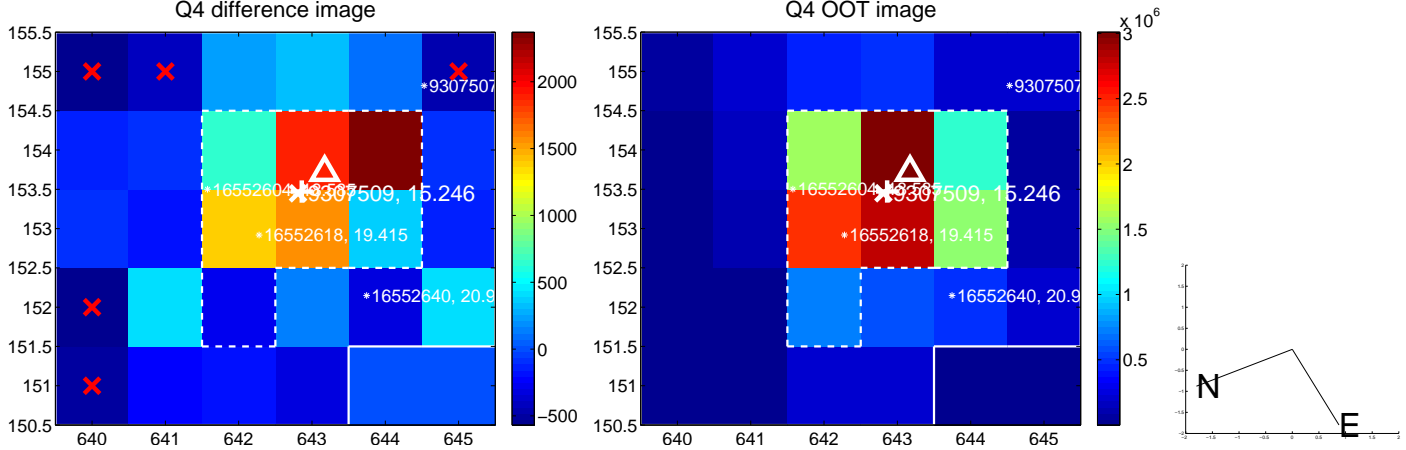
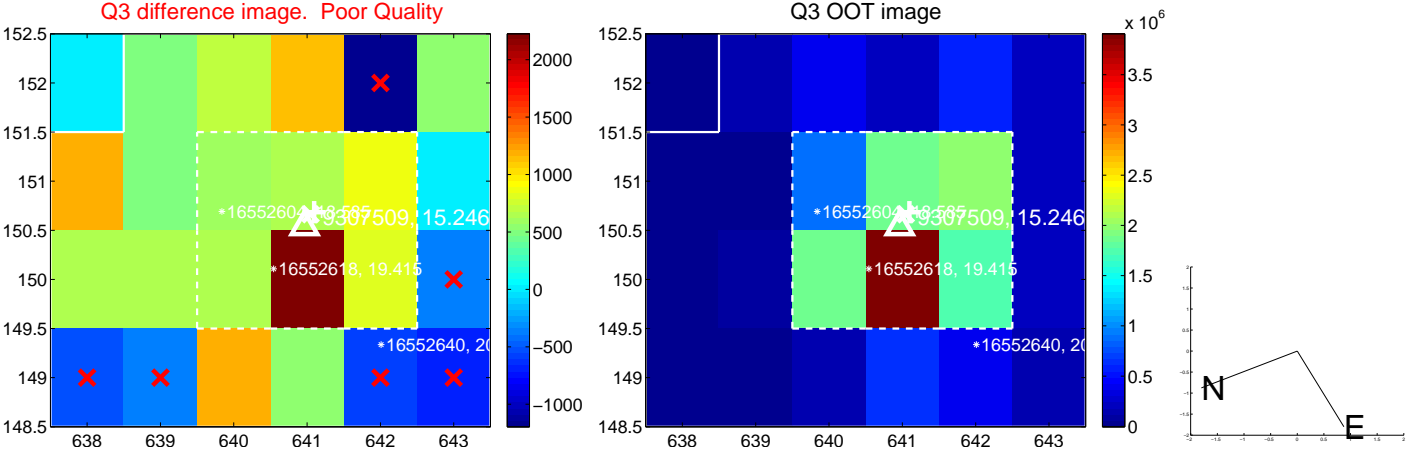
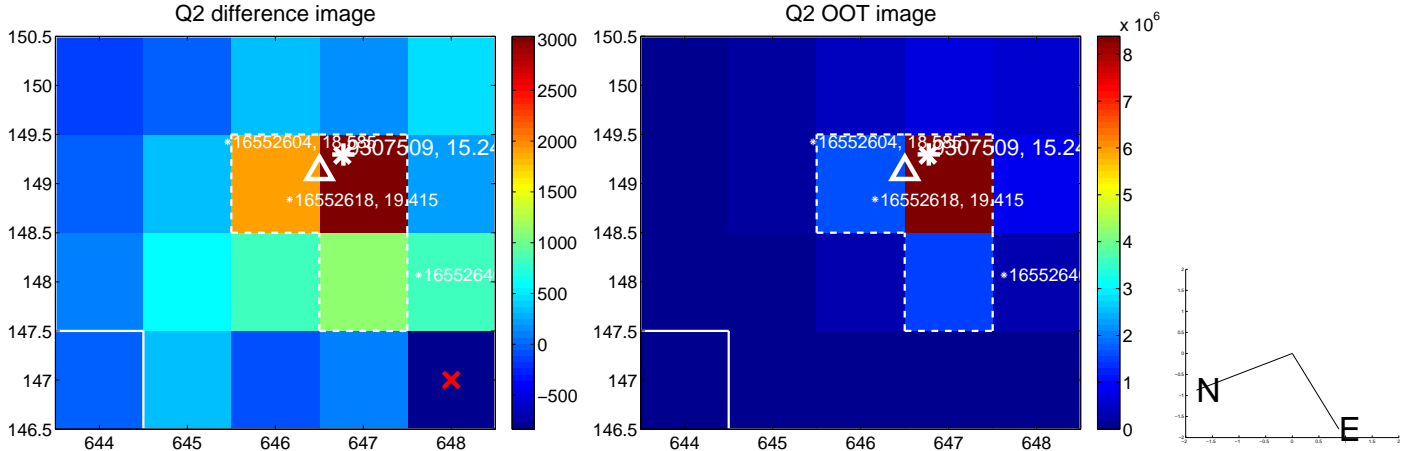
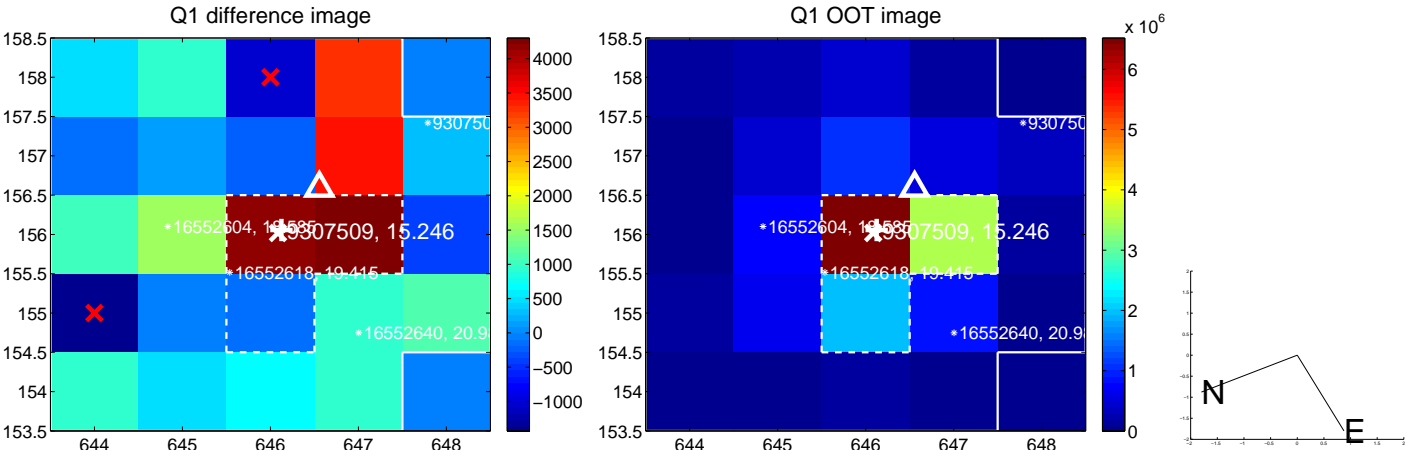


offset from photometric centroids

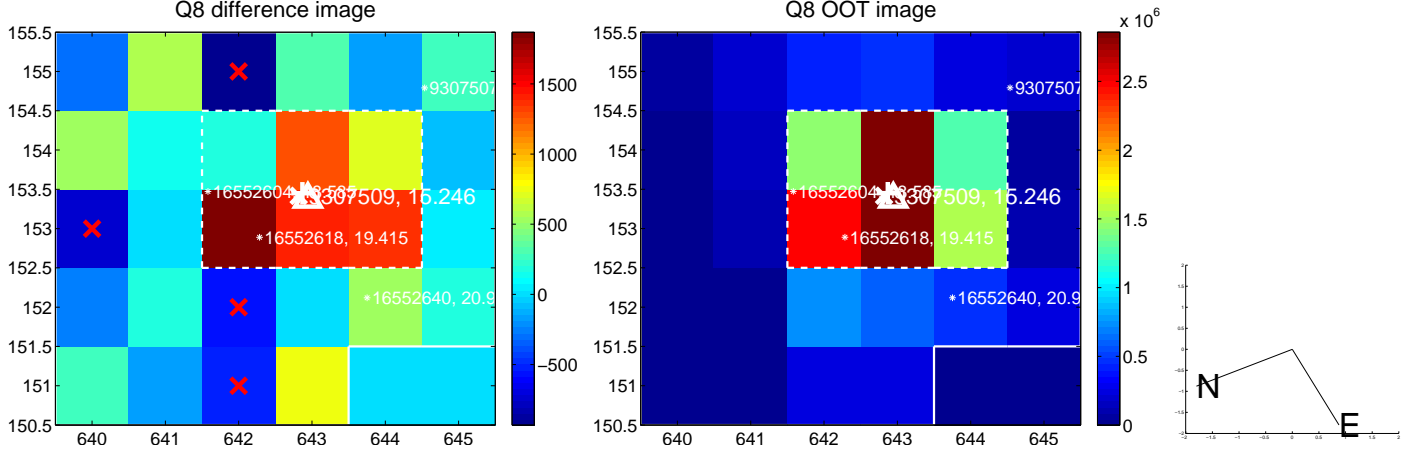
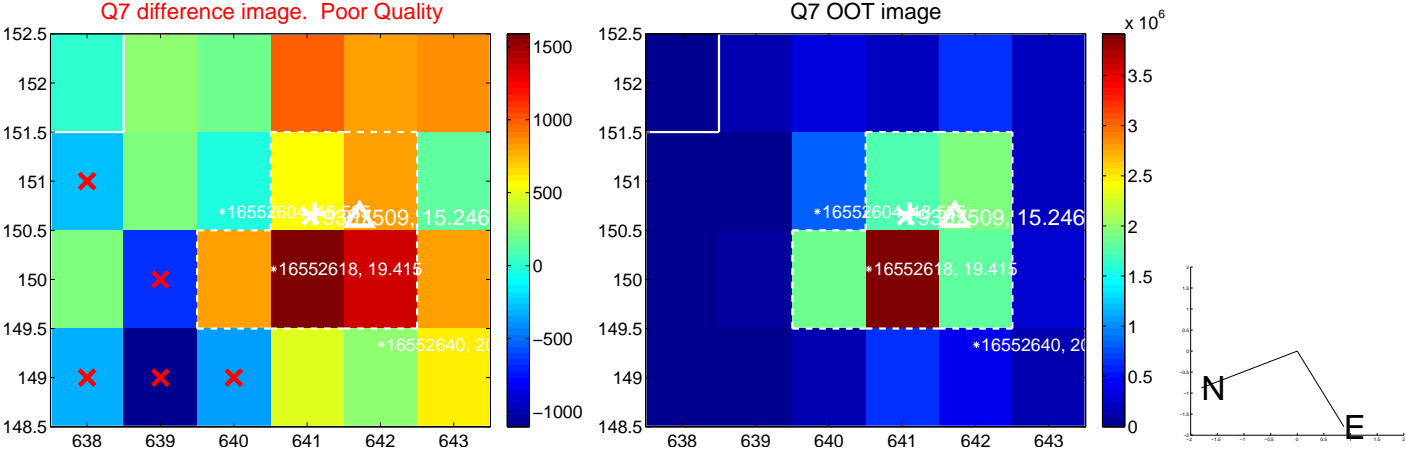
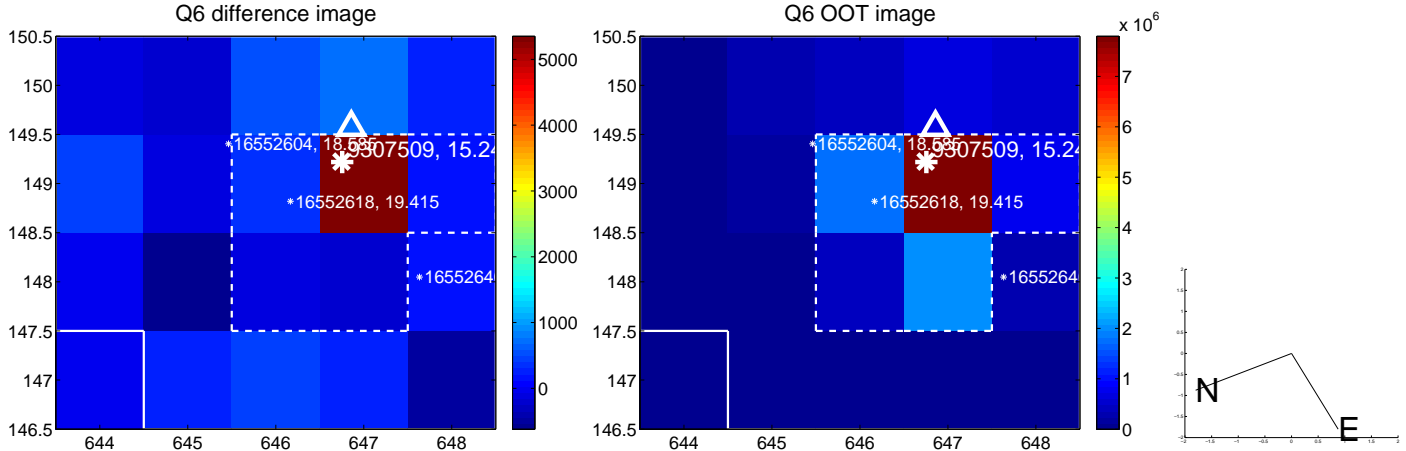
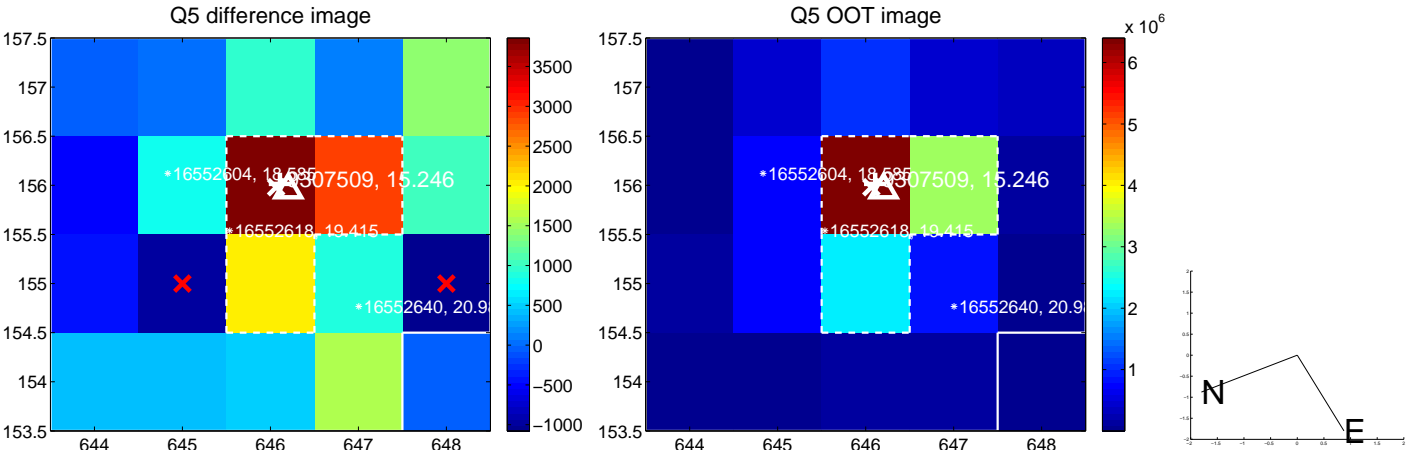


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

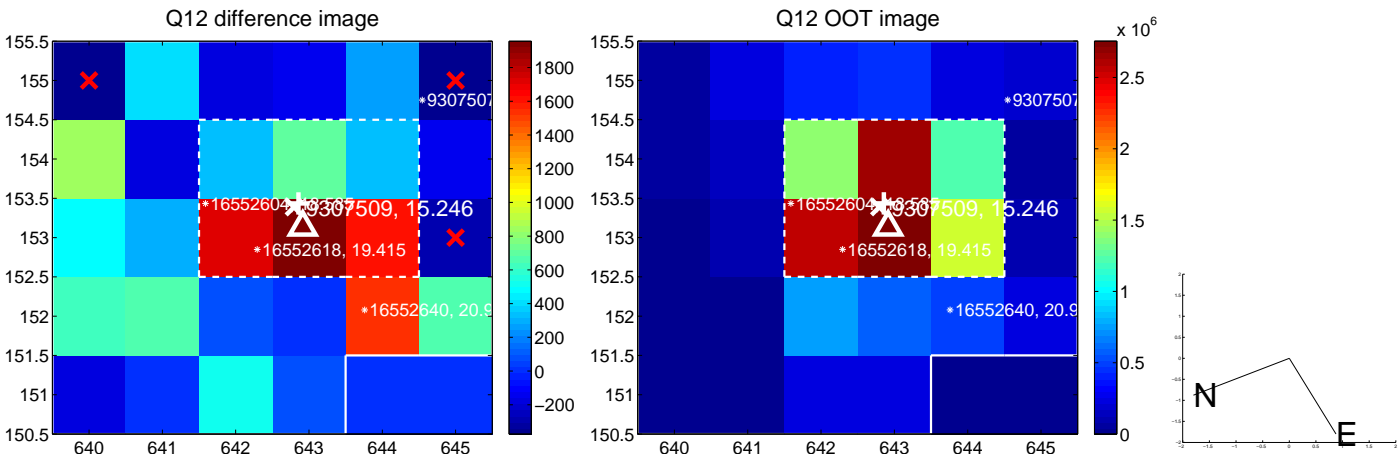
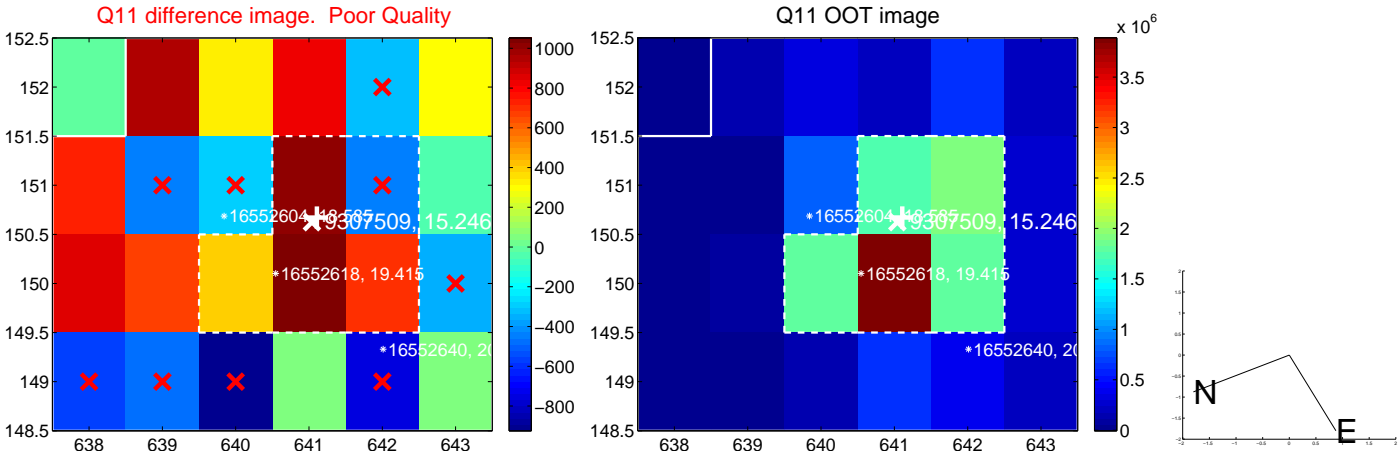
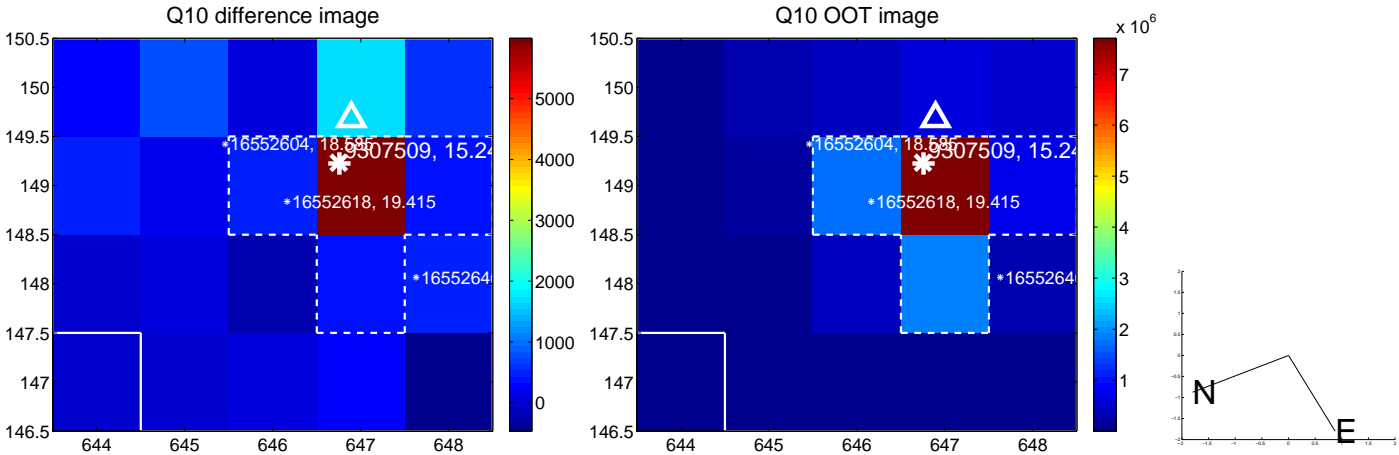
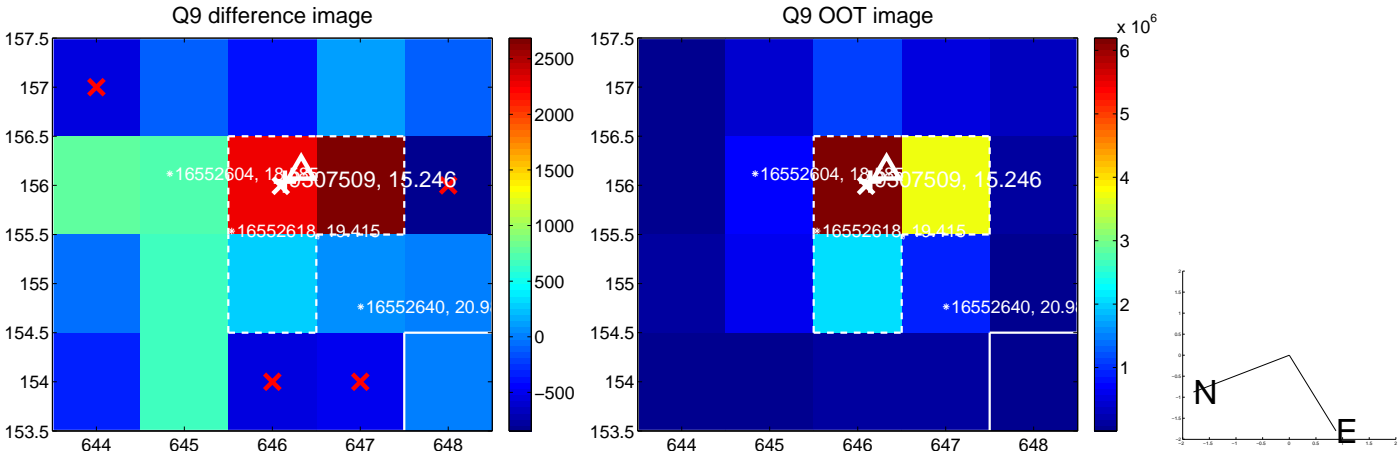
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



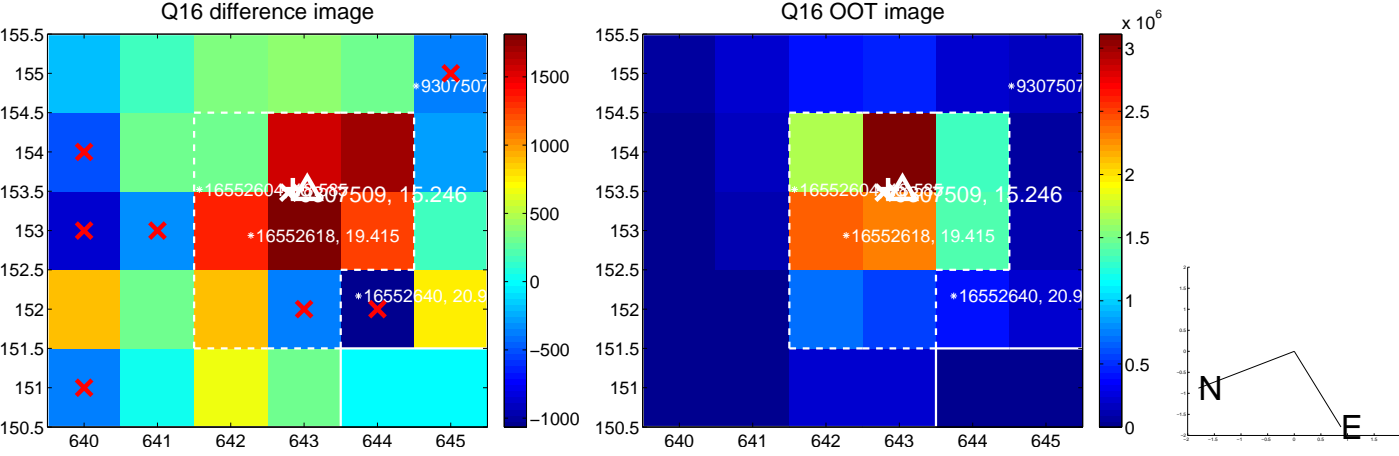
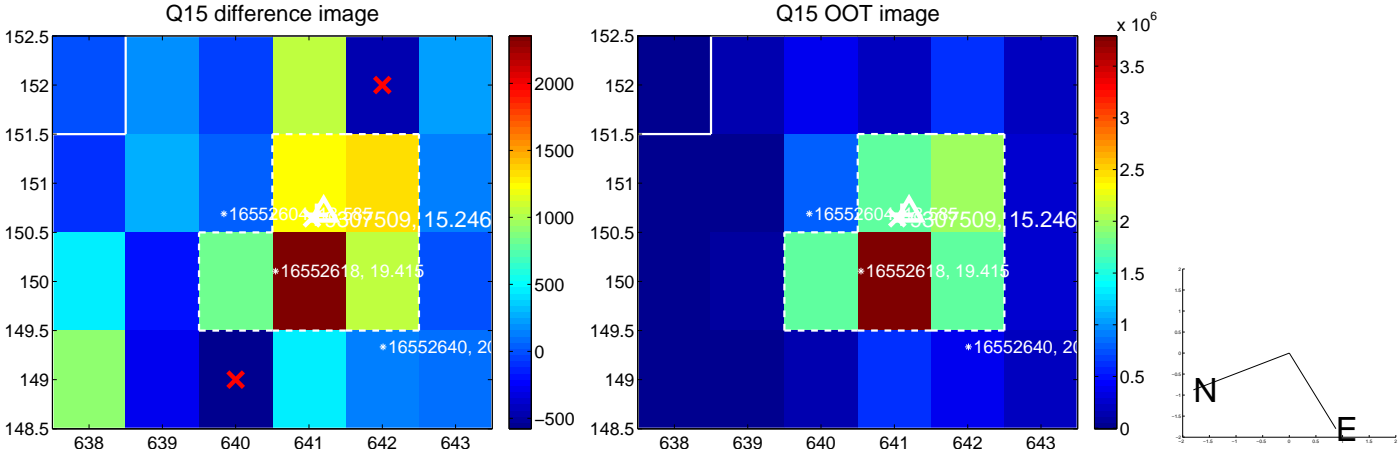
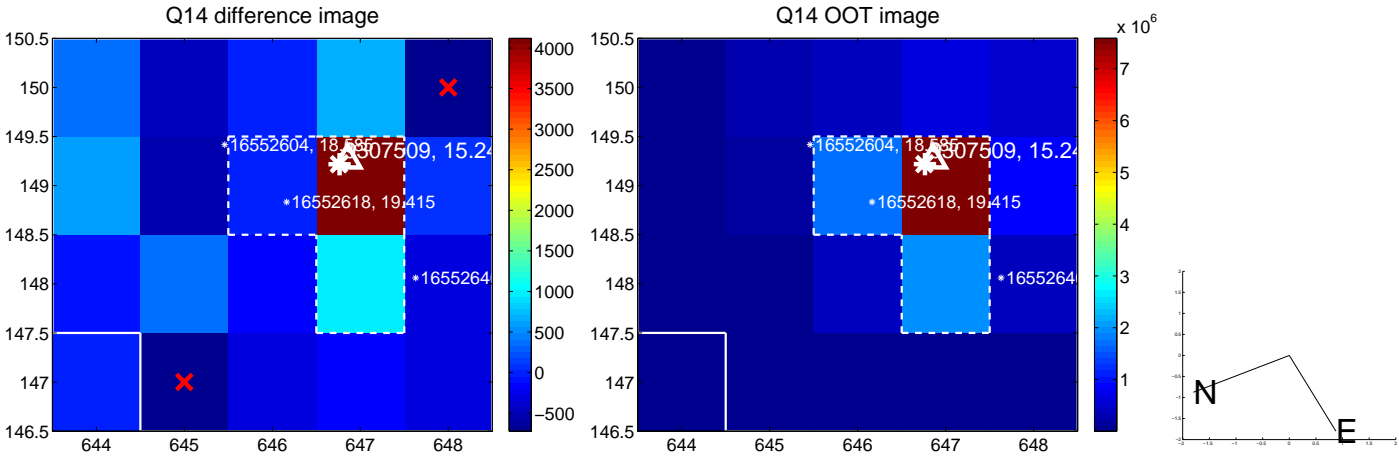
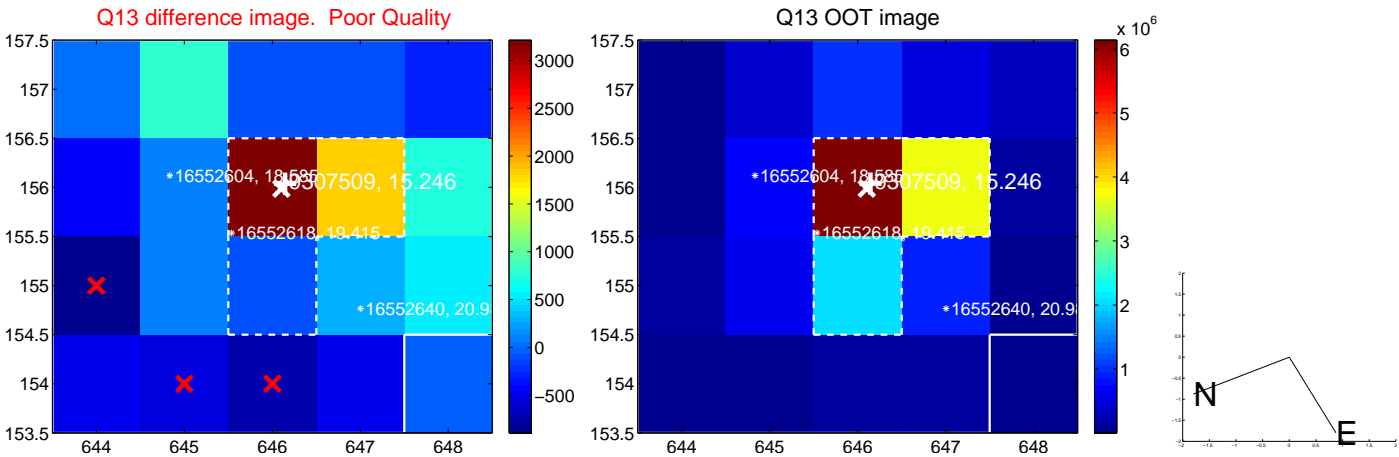
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



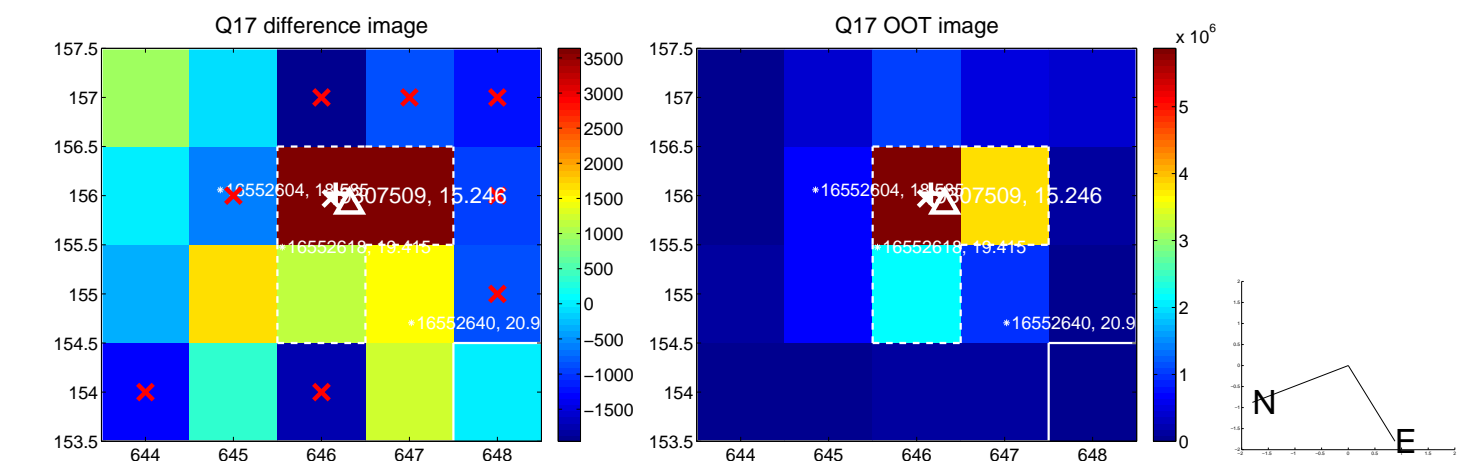
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



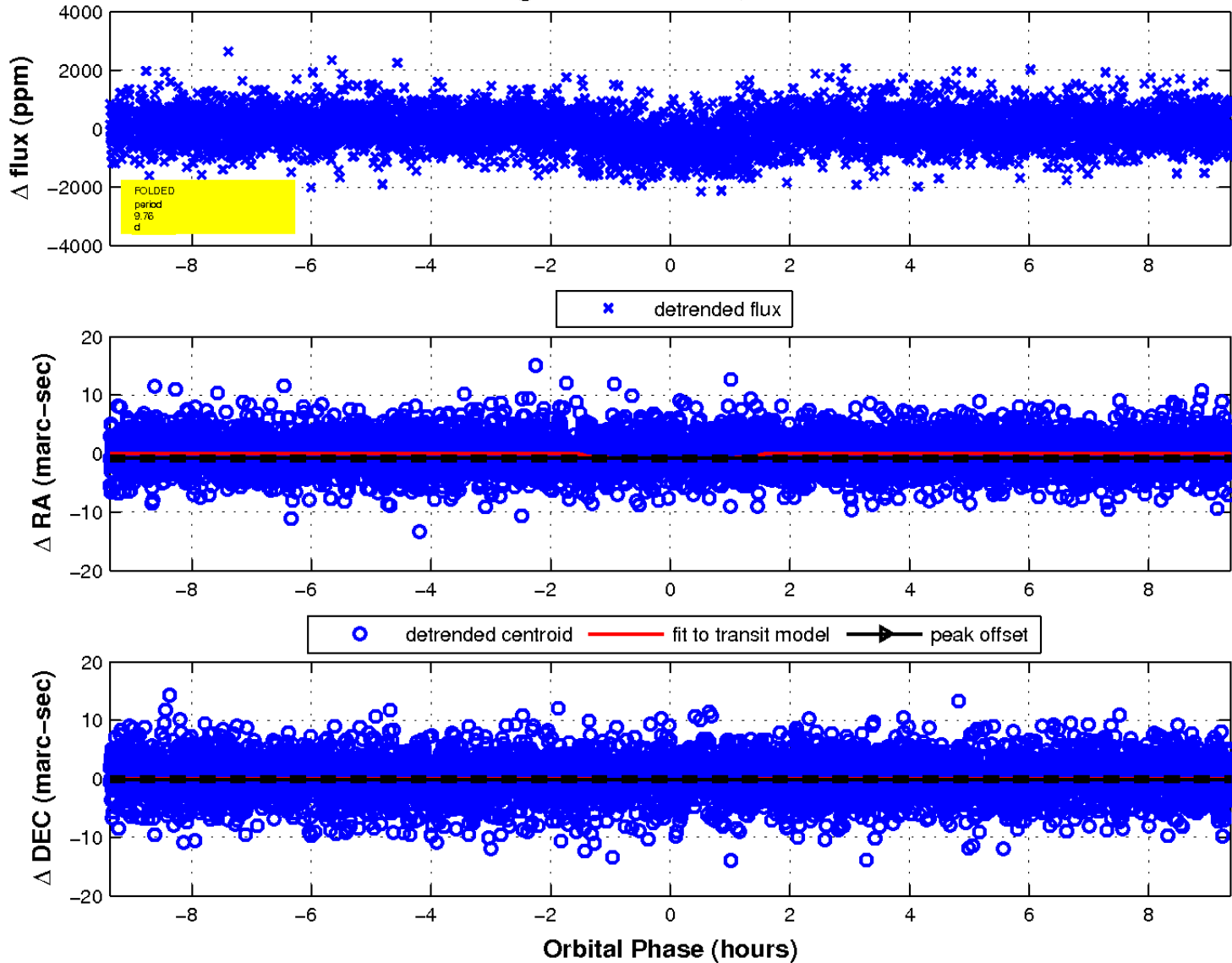
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

