

KIC 009180821

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})
009180821-01	OBS	No	4.478021	135.086132	35.3	25.091	7.4	7.7	1.00	5607	0.59	361.88

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009180821-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV

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

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

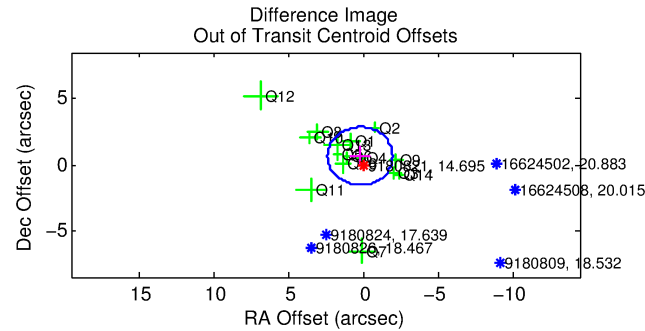
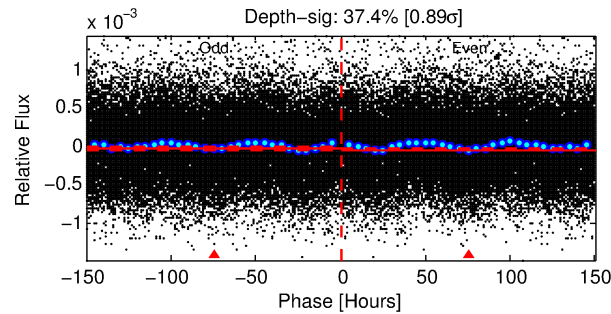
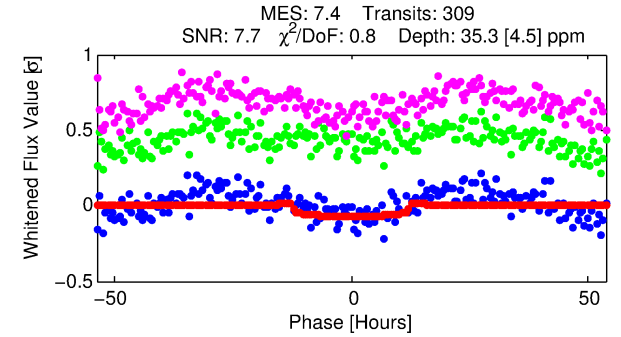
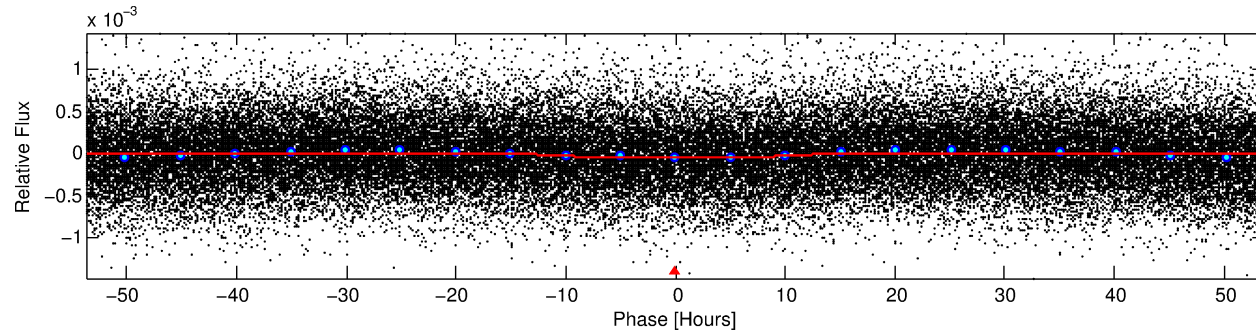
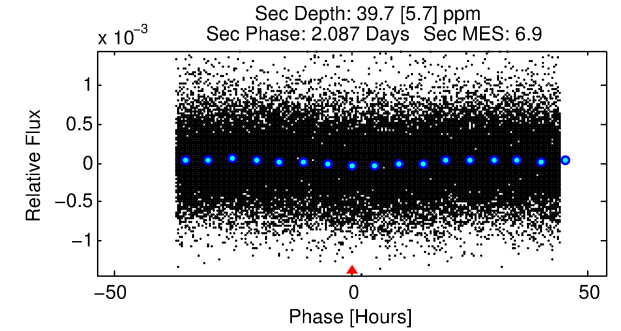
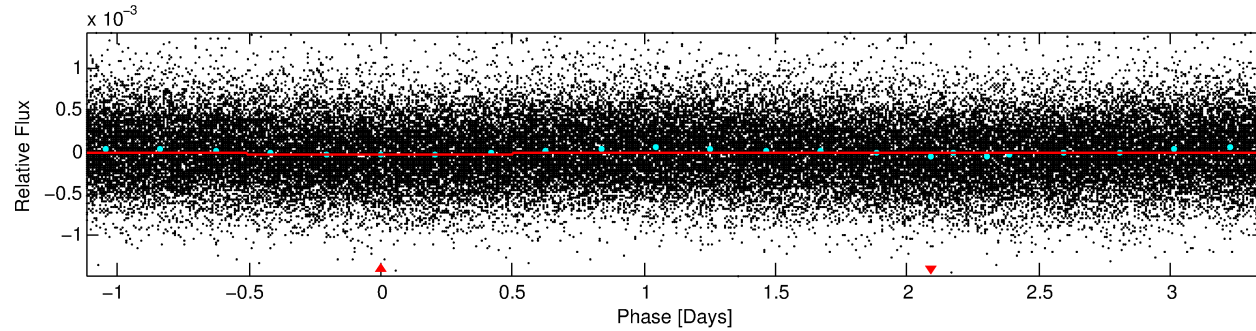
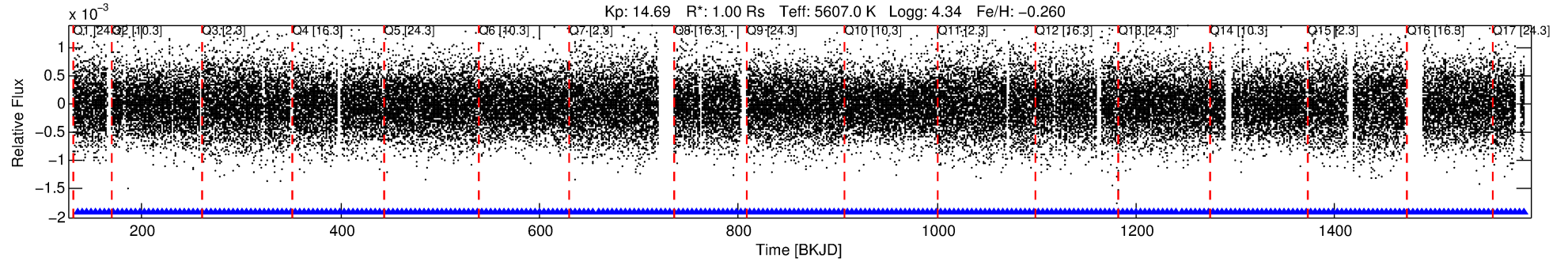
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009180821-01

No Significant Match Found

DV One-Page Summary

KIC: 9180821 Candidate: 1 of 1 Period: 4.478 d



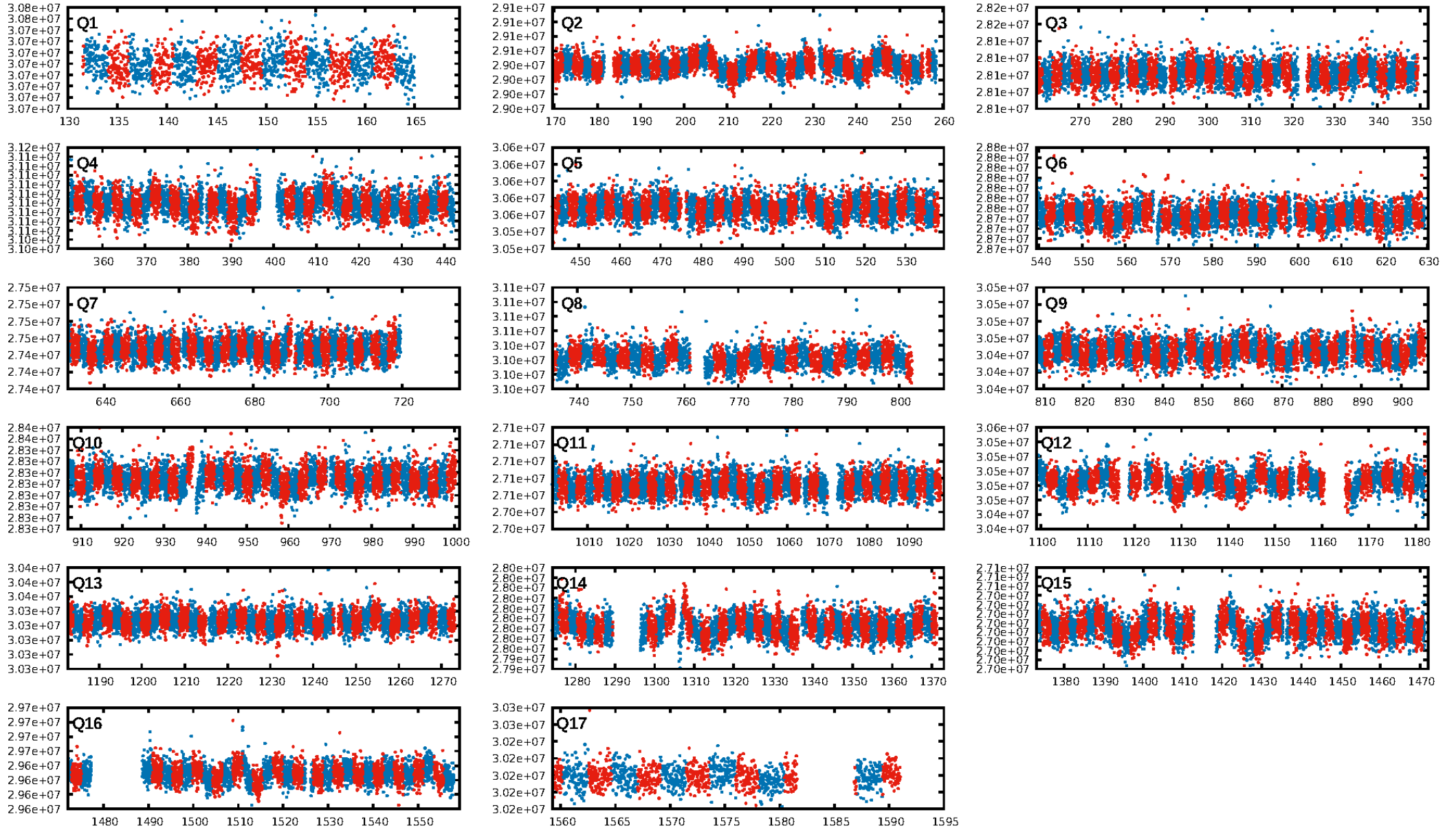
DV Fit Results:

Period = 4.47802 [0.00016] d
Epoch = 135.0861 [0.0257] BKJD
Rp/R* = 0.0054 [0.0083]
a/R* = 1.49 [5.54]
b = 0.18 [37.63]
Seff = 361.88 [166.64]
Teq = 1112 [128] K
Rp = 0.59 [0.94] Re
a = 0.0496 [0.0152] AU
Ag = 154.08 [480.69] [0.32σ]
Teffp = 6058 [4680] K [1.06σ]

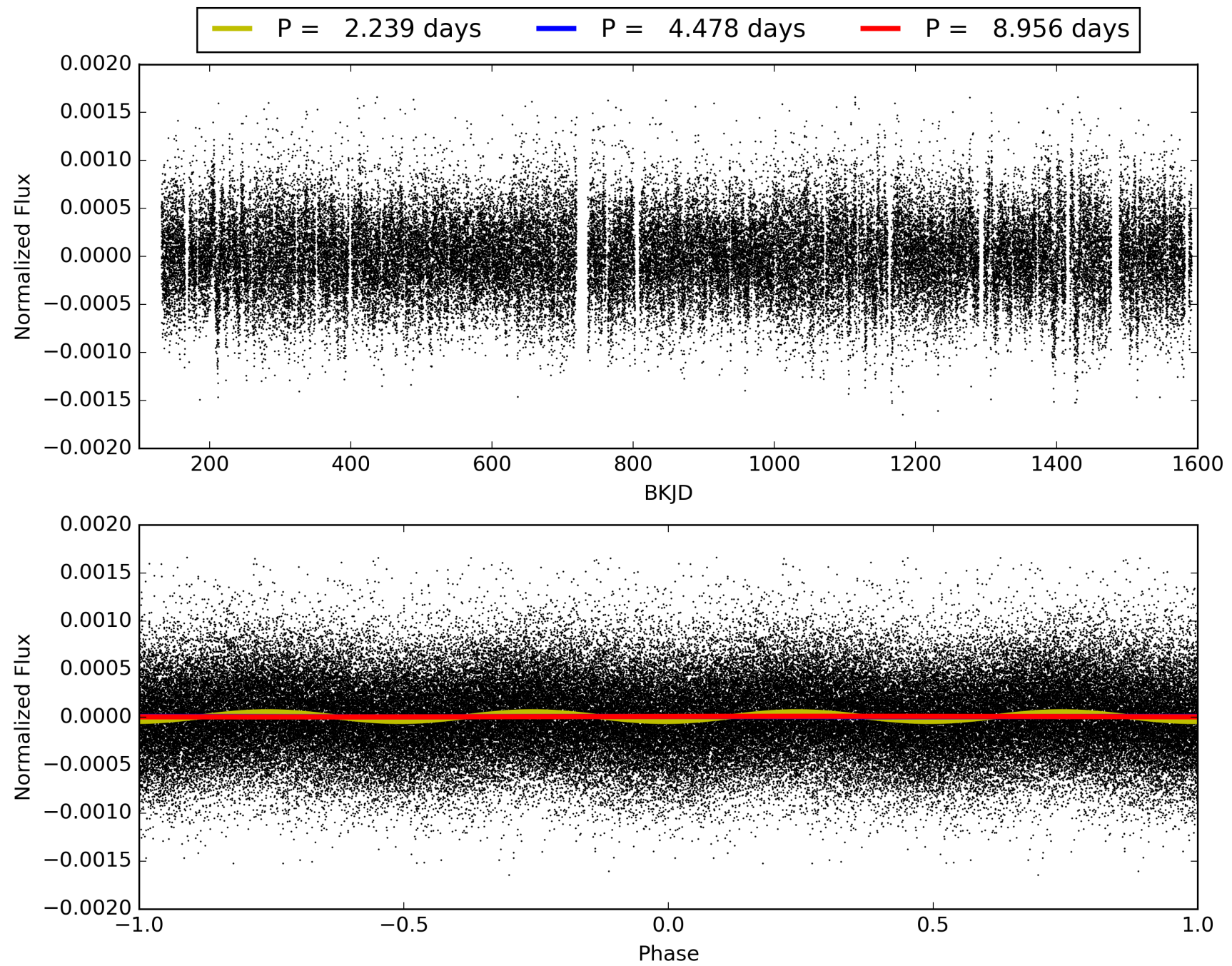
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.31e-13
RollingBand-fgt: 1.00 [295/295]
GhostDiagnostic-chr: 1.785
Centroid-sig: 86.6%
Centroid-so: 0.726 arcsec [0.47σ]
OotOffset-rm: 0.680 arcsec [0.93σ]
KicOffset-rm: 0.653 arcsec [0.96σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.60 [9/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009180821-01, PDC Light Curves

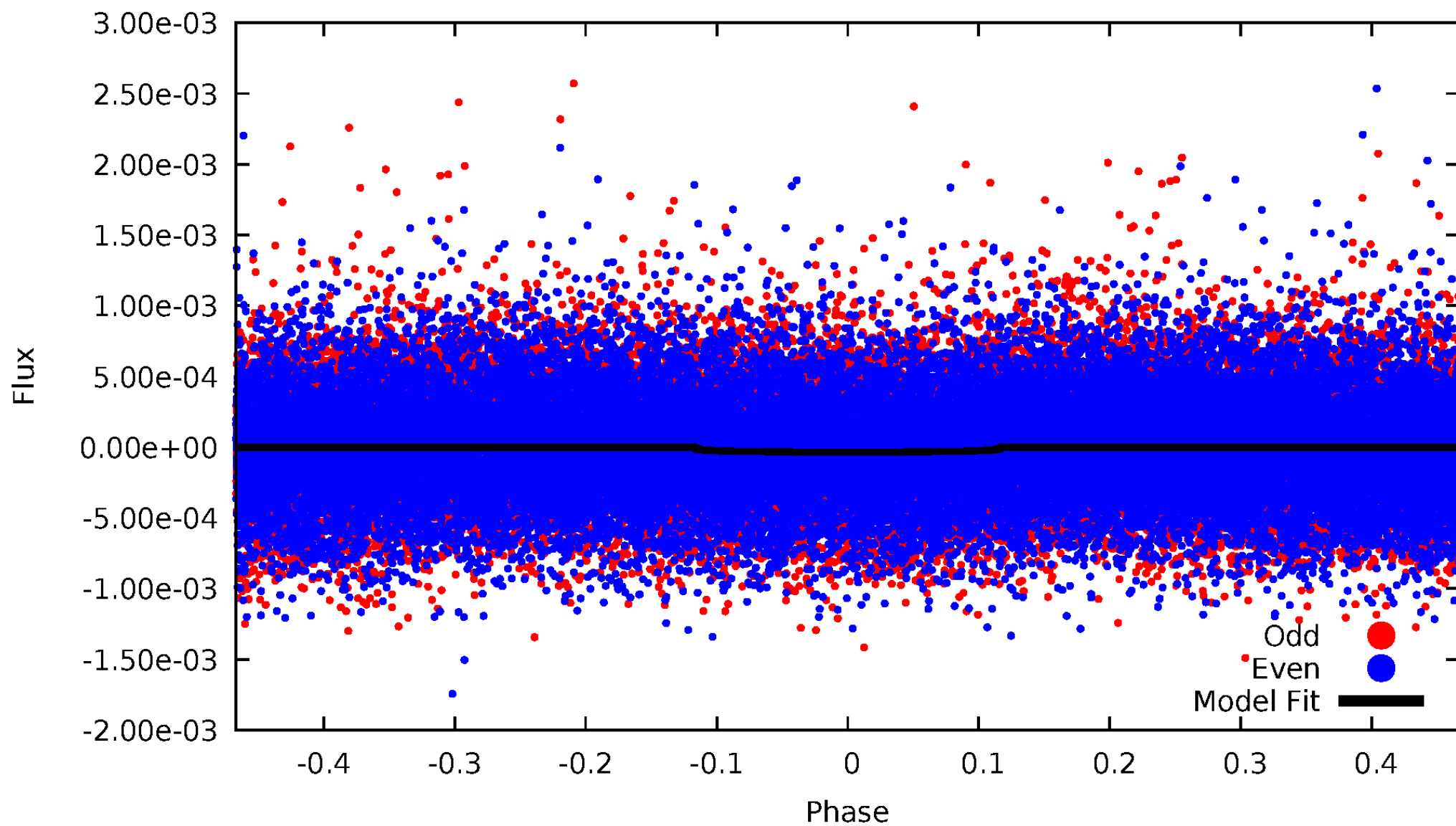


TCE 009180821-01



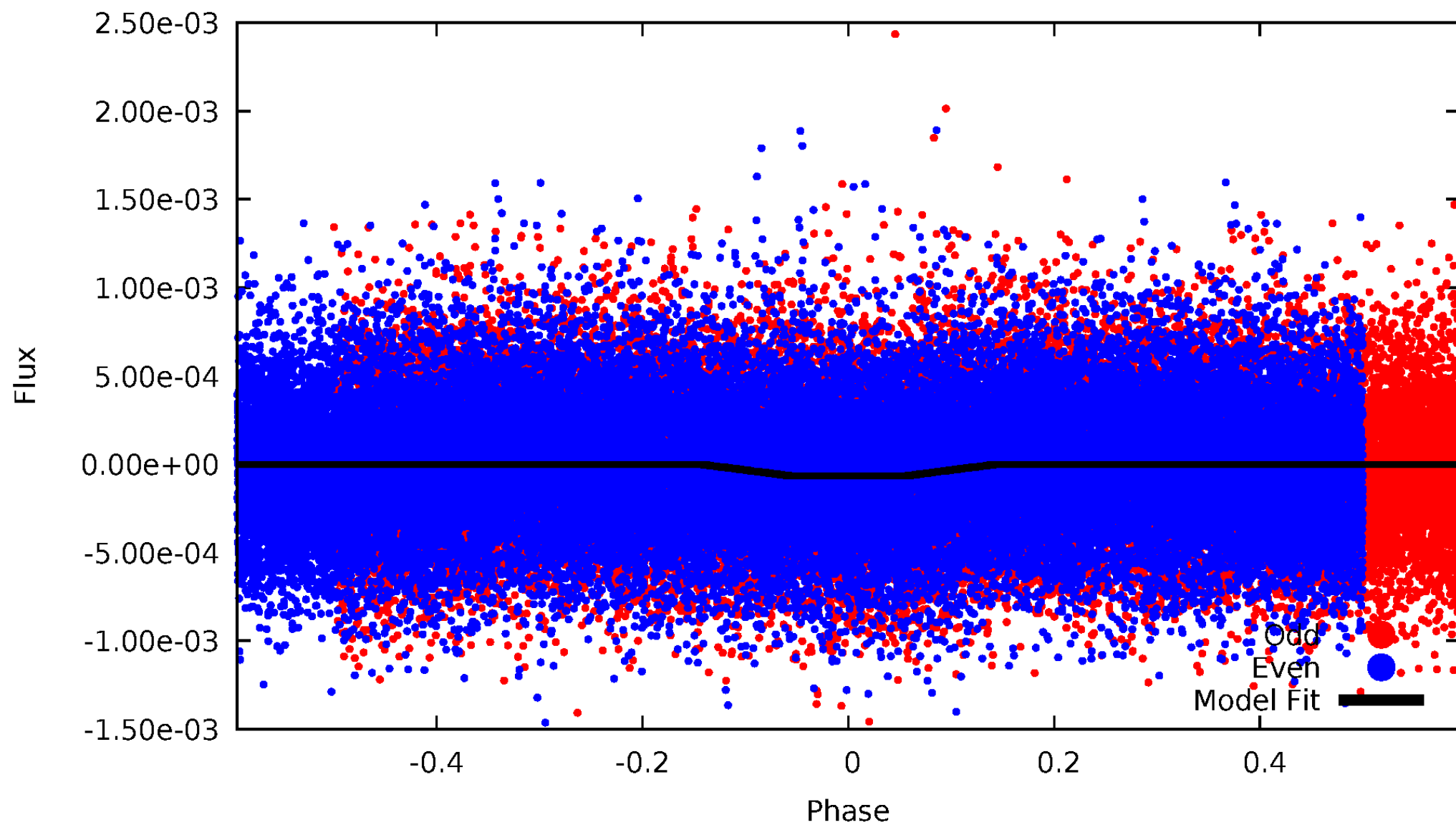
DV Odd/Even

TCE 009180821-01



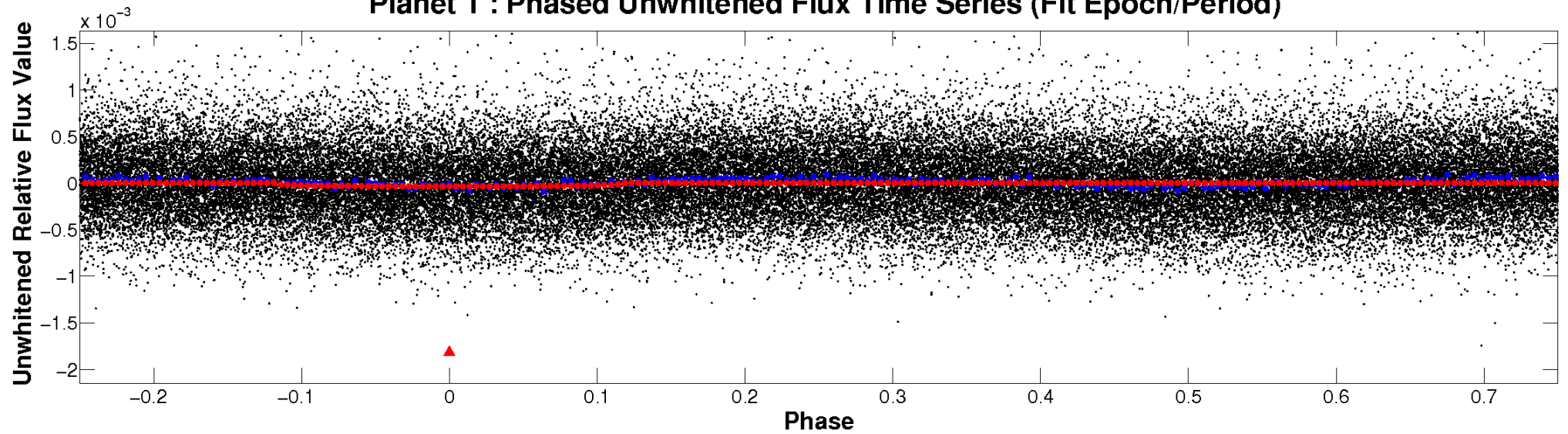
ALT Odd/Even

TCE 009180821-01

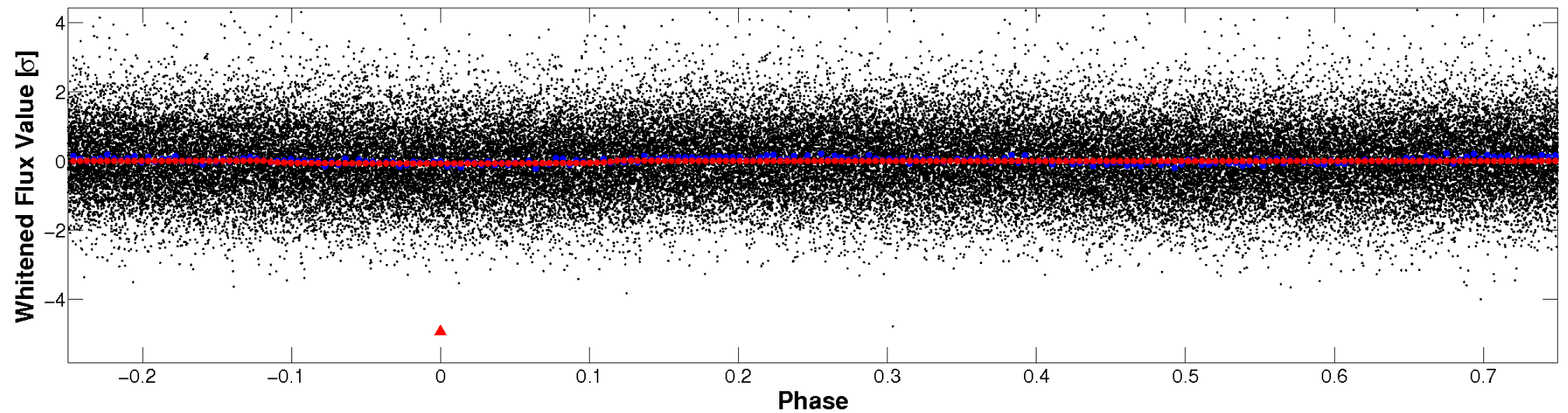


Non-Whitened Vs. Whitened Light Curve

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

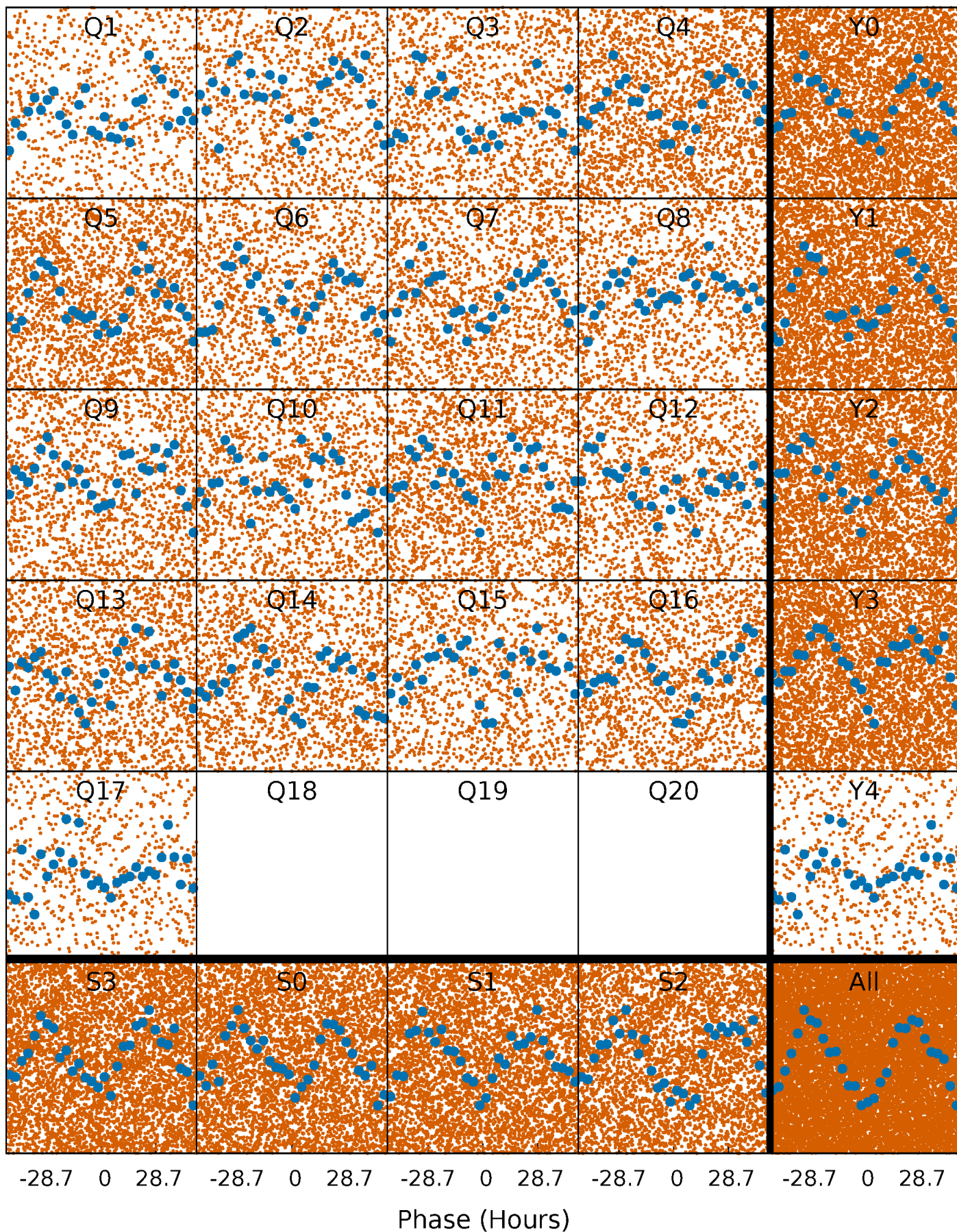


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



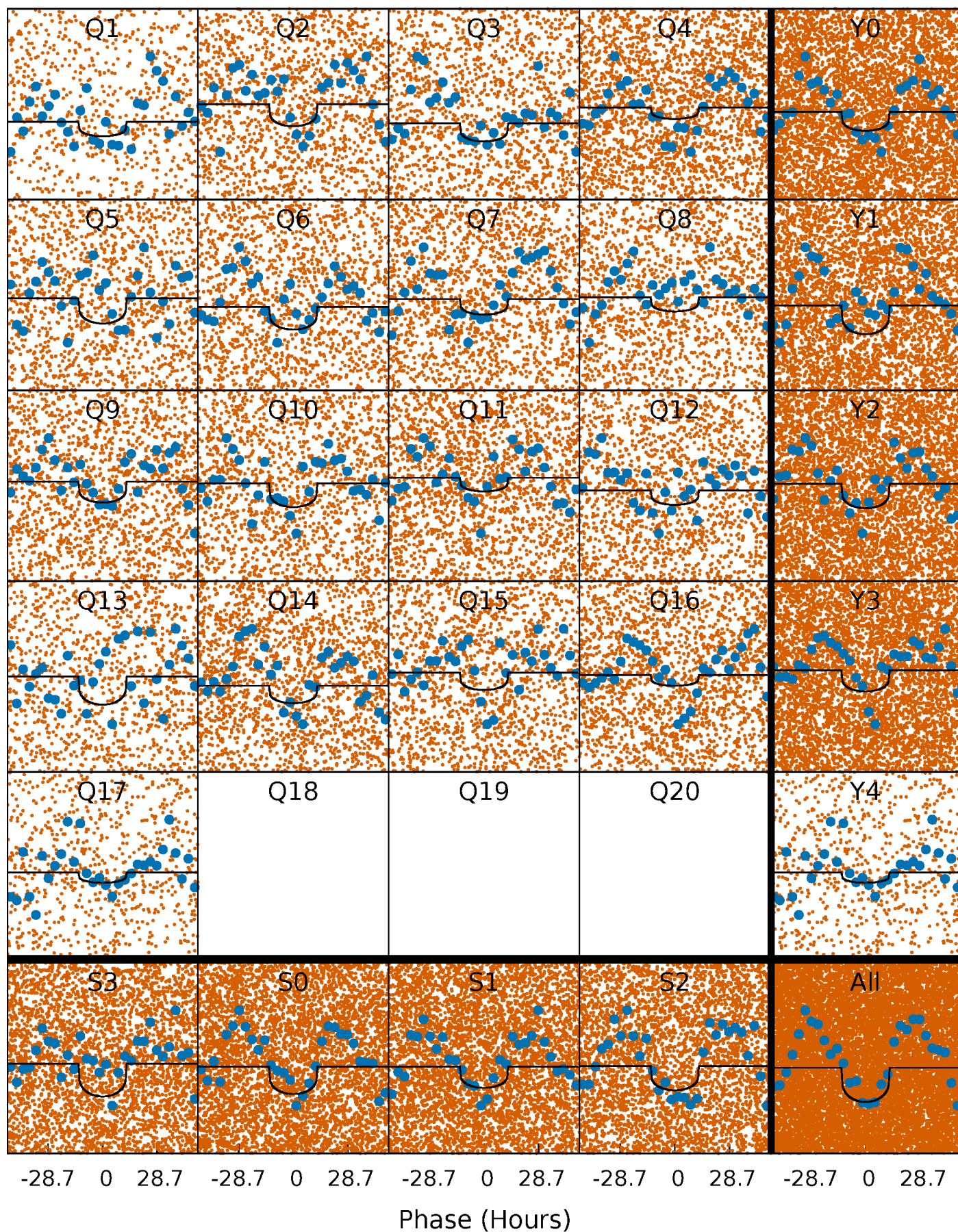
PDC Quarter-Phased Transit Curves

TCE 009180821-01 P= 4.478021 Days $T_0=135.086132$ (BKJD)



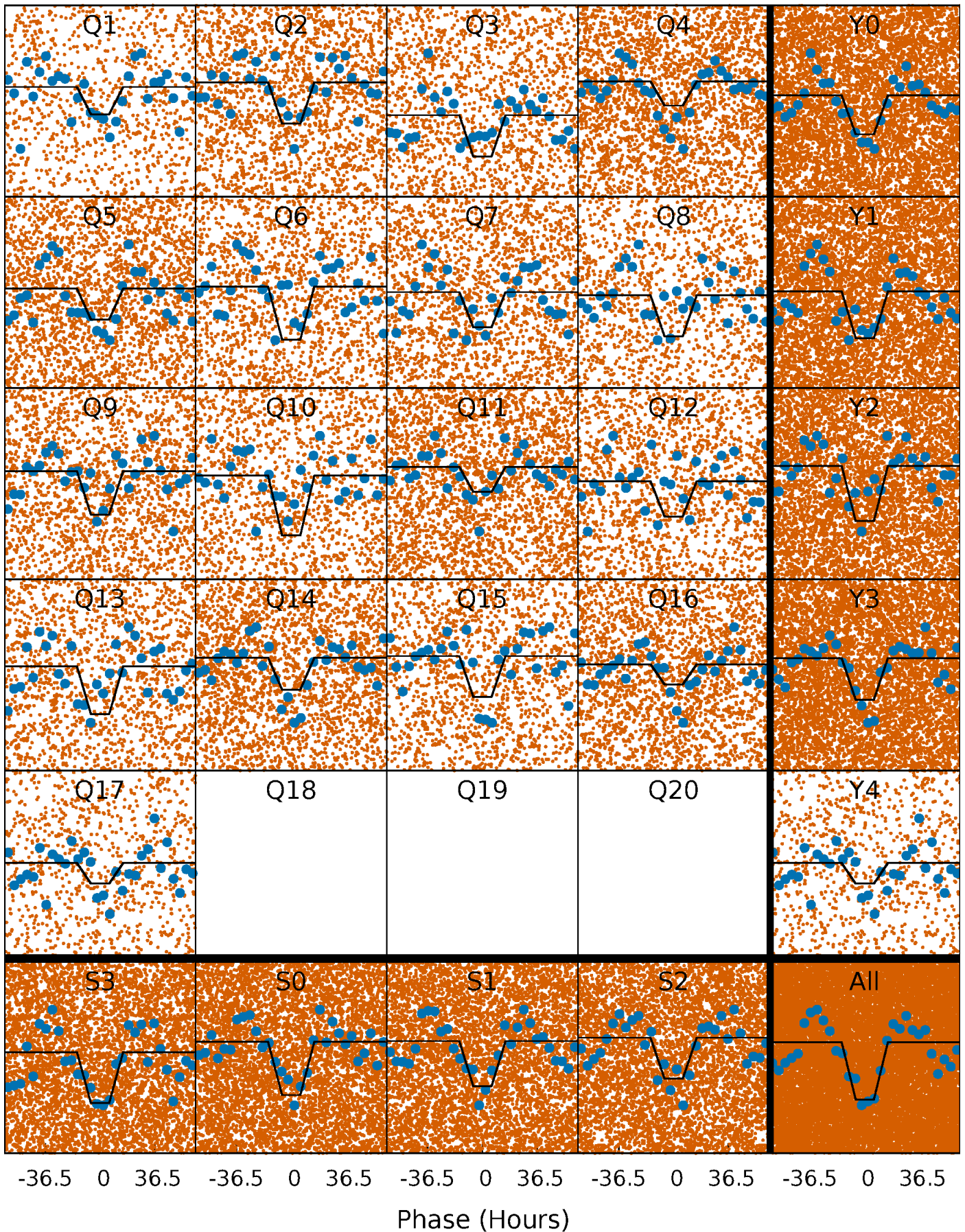
DV Quarter-Phased Transit Curves

TCE 009180821-01 P= 4.478021 Days $T_0=135.086132$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

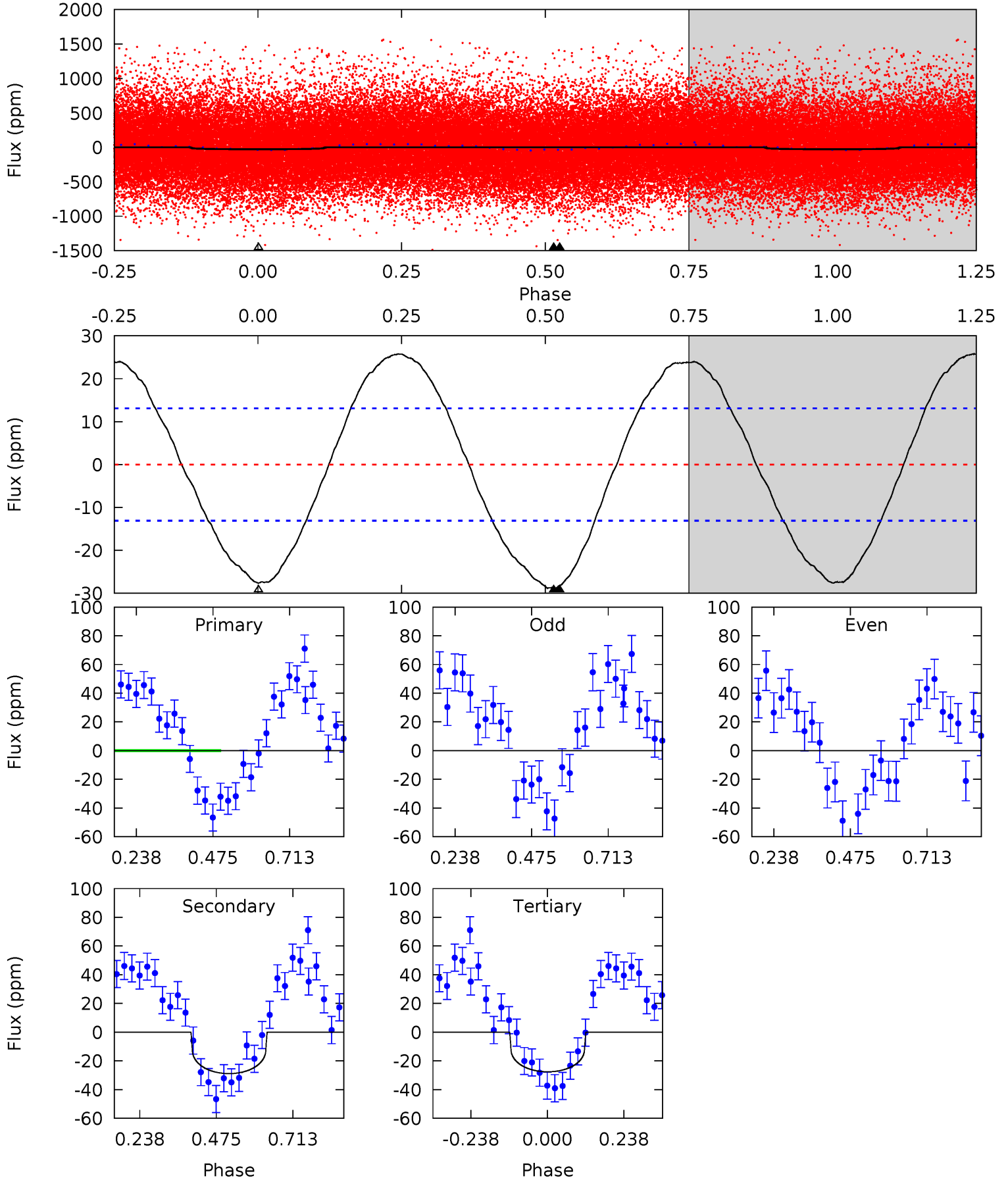
TCE 009180821-01 P= 4.477499 Days $T_0=135.216175$ (BKJD)



DV Model-Shift Uniqueness Test

009180821-01, P = 4.478021 Days, E = 130.608111 Days

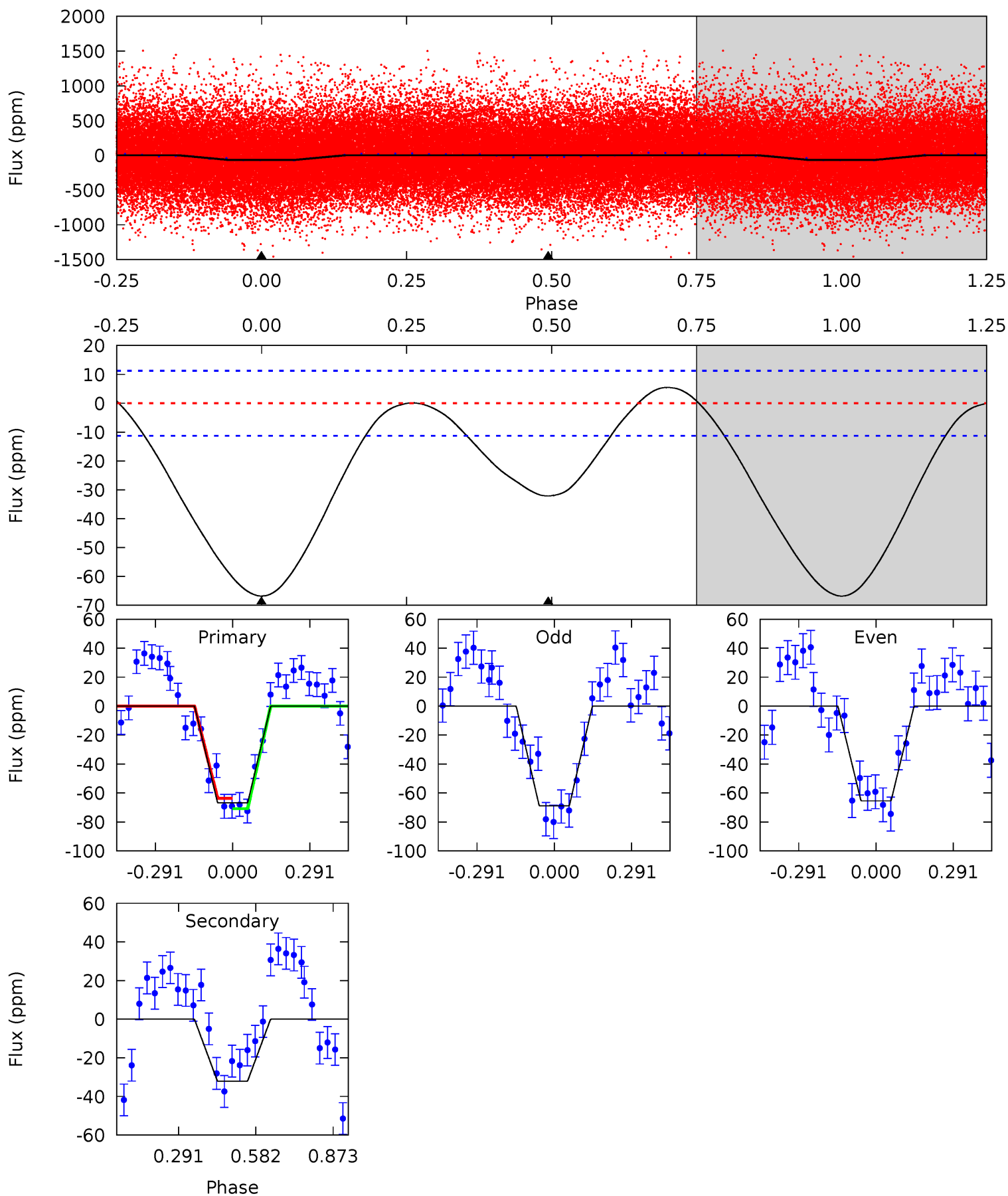
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.42	9.64	9.23	0	4.38	1.18	6.25	0.19	9.42	0.42	9.64	1.18	1.23	0.47	1.63



Alt Model-Shift Uniqueness Test

009180821-01, P = 4.477499 Days, E = 130.738676 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.7	12.4	0	0	4.34	1.06	0.89	25.7	25.7	12.4	12.4	0.67	0.95	0.08	1.37



Stellar Parameters For KIC 009180821

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5607^{+169}_{-169}	$4.345^{+0.198}_{-0.242}$	$-0.260^{+0.300}_{-0.250}$	$1.003^{+0.367}_{-0.198}$	$0.812^{+0.127}_{-0.058}$	$1.135^{+1.150}_{-0.649}$
	+3%/-3%	+5%/-6%	+115%/-96%	+37%/-20%	+16%/-7%	+101%/-57%
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 009180821-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-29 ± 3	$0.93^{+0.80}_{-0.63}$	1567^{+126}_{-116}	4702^{+3231}_{-1022}	45^{+372}_{-32}
Alt.	-32 ± 3	$1.12^{+0.88}_{-0.76}$	1560^{+138}_{-111}	4384^{+2931}_{-788}	35^{+299}_{-24}

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

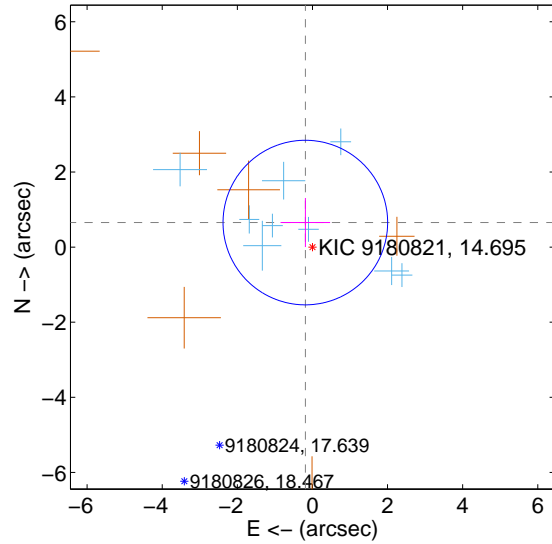
Supplemental centroid analysis for 009180821-01. Kepler magnitude: 14.70. Transit SNR 7.68

There are 9 quarters with good PRF difference image offsets

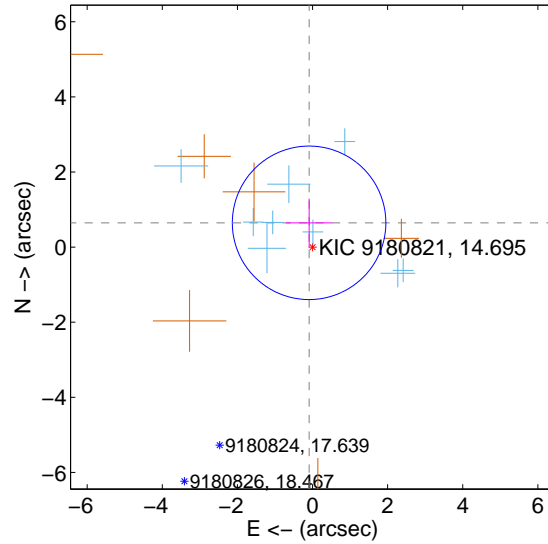
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.680 ± 0.730	0.93	0.189 ± 0.661	0.654 ± 0.653
PRF-fit source offset from KIC position	0.653 ± 0.681	0.96	0.091 ± 0.619	0.647 ± 0.645
photometric centroid source offset	0.73 ± 1.55	0.47	0.51 ± 1.53	-0.51 ± 1.57

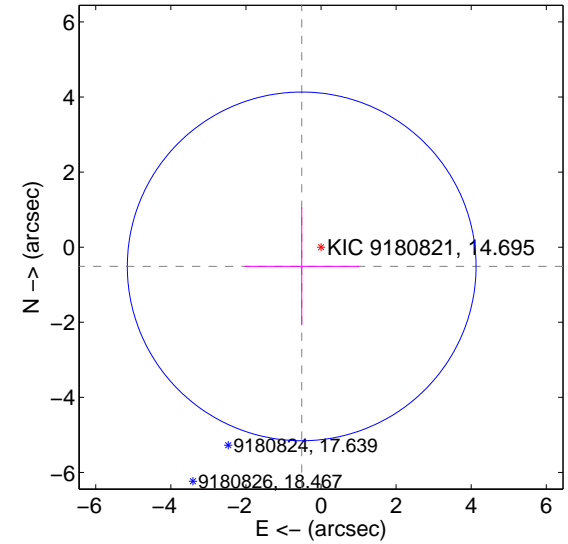
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

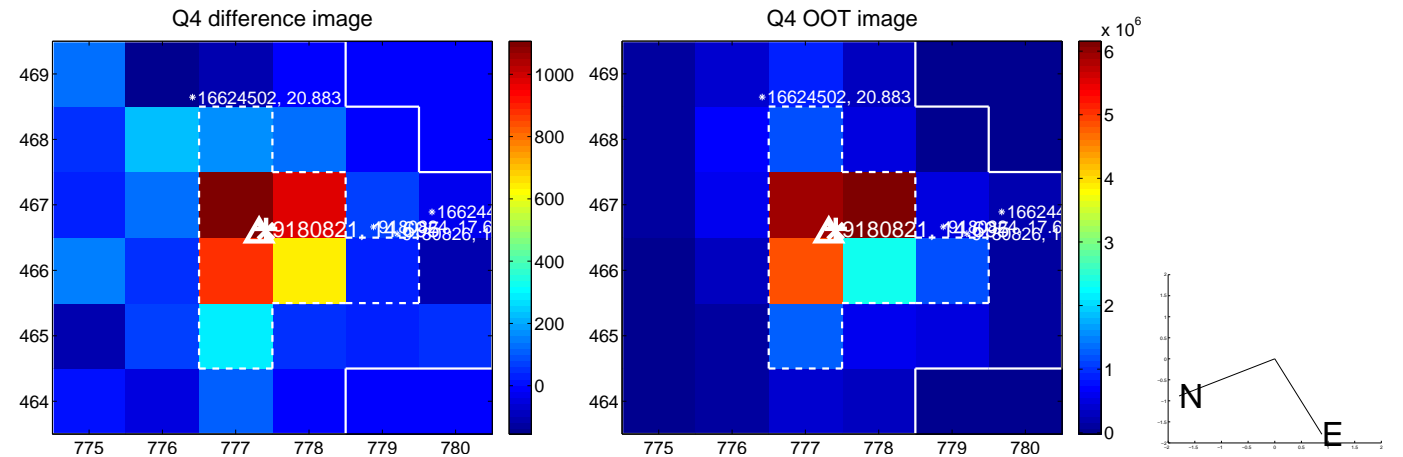
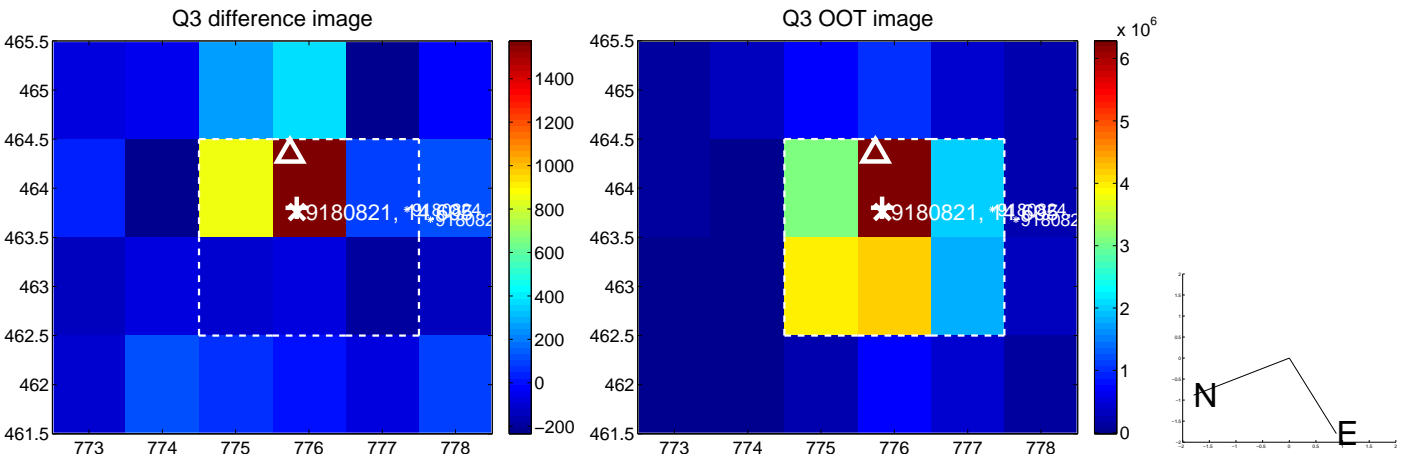
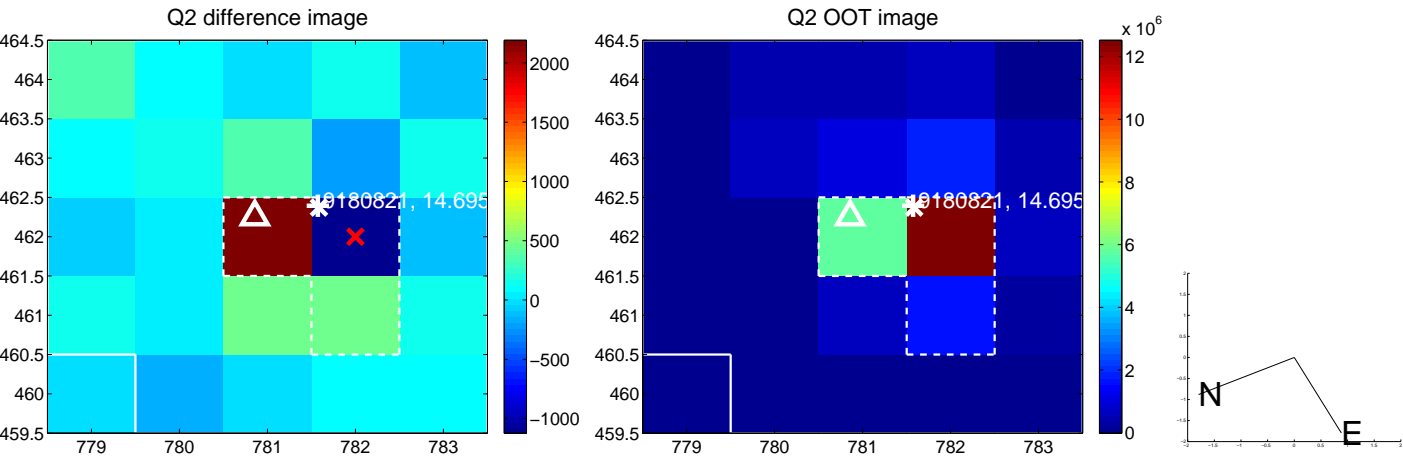
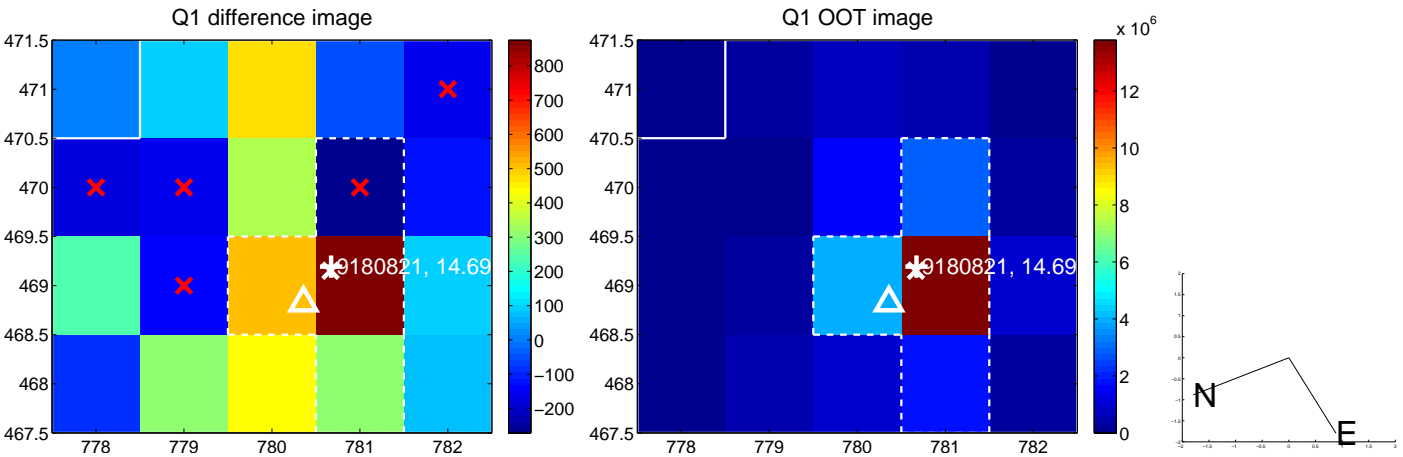


offset from photometric centroids

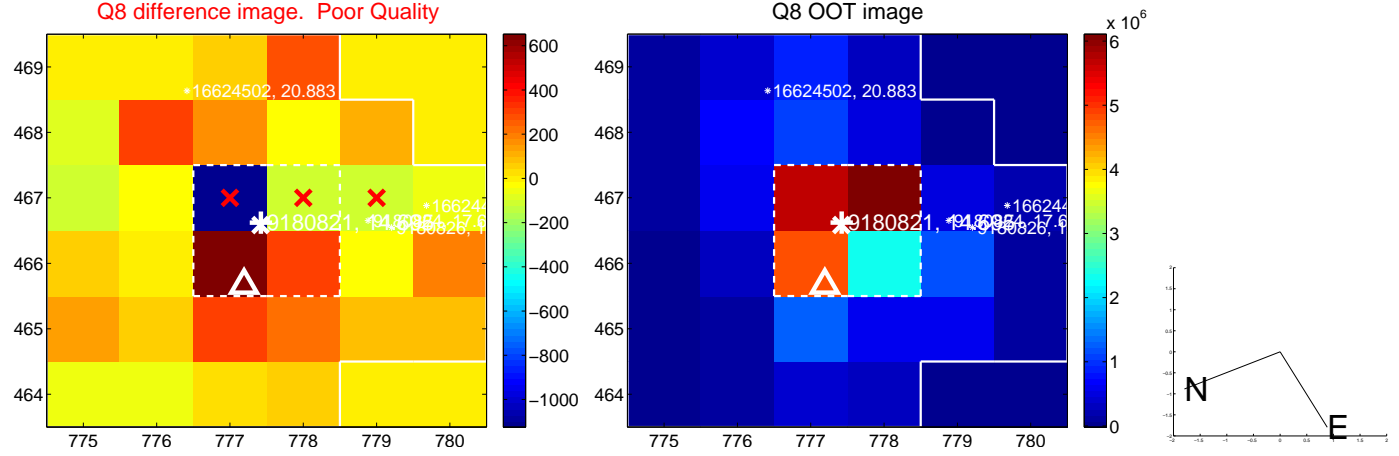
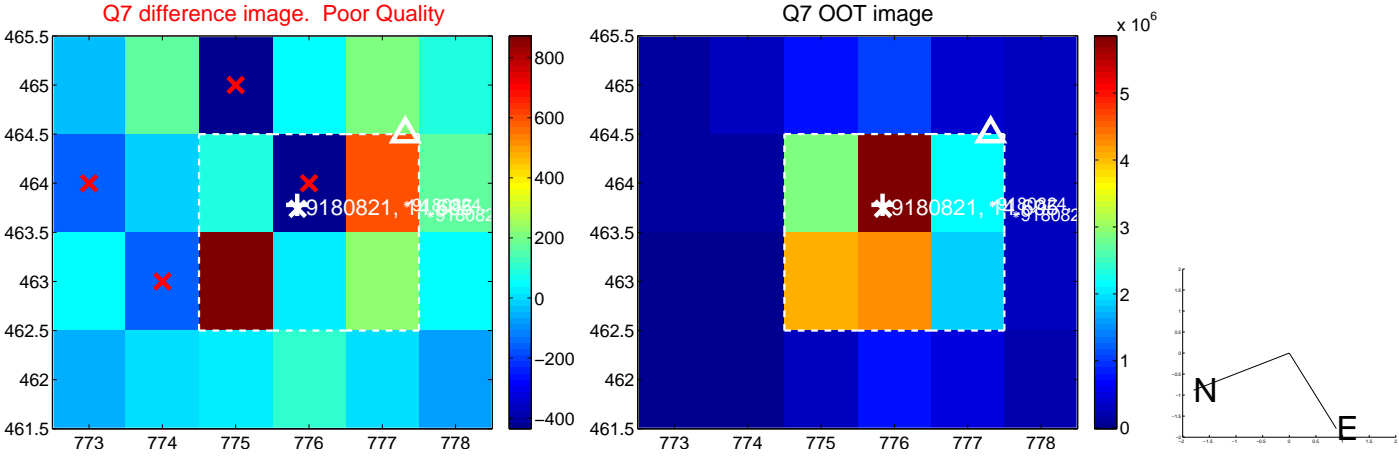
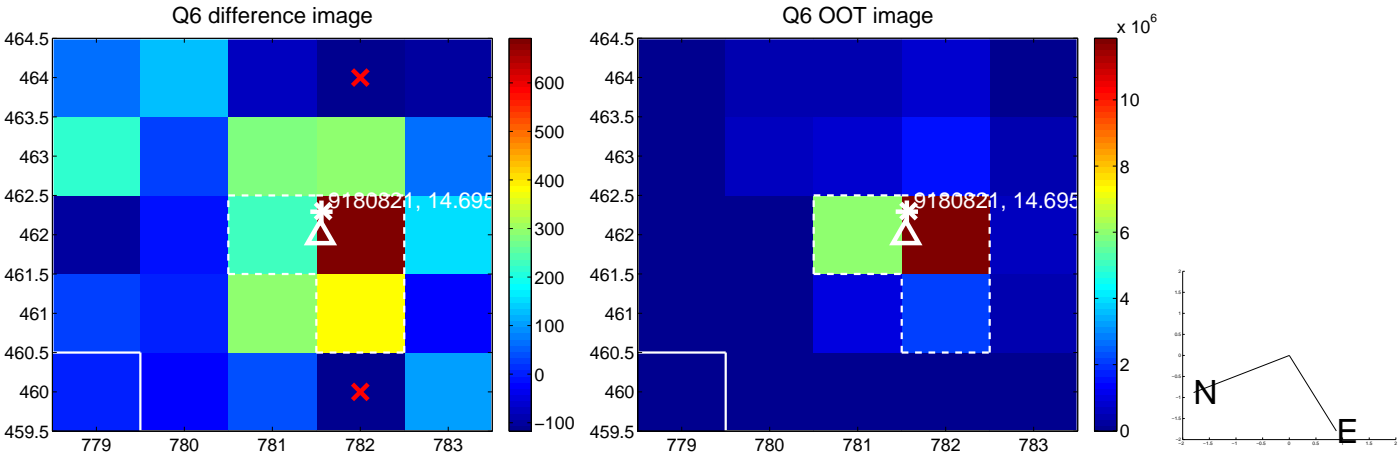
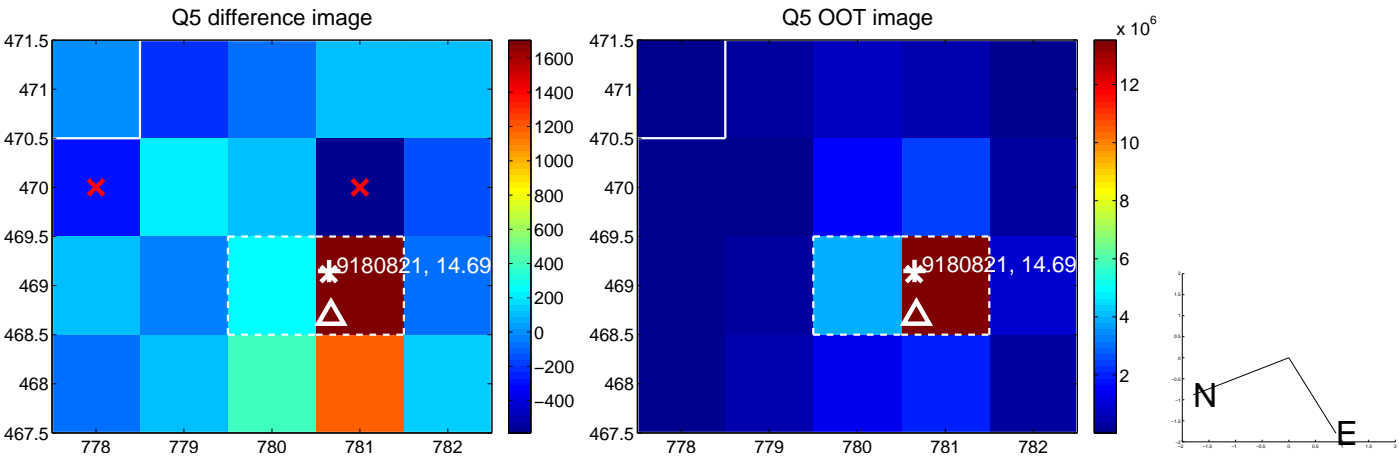


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

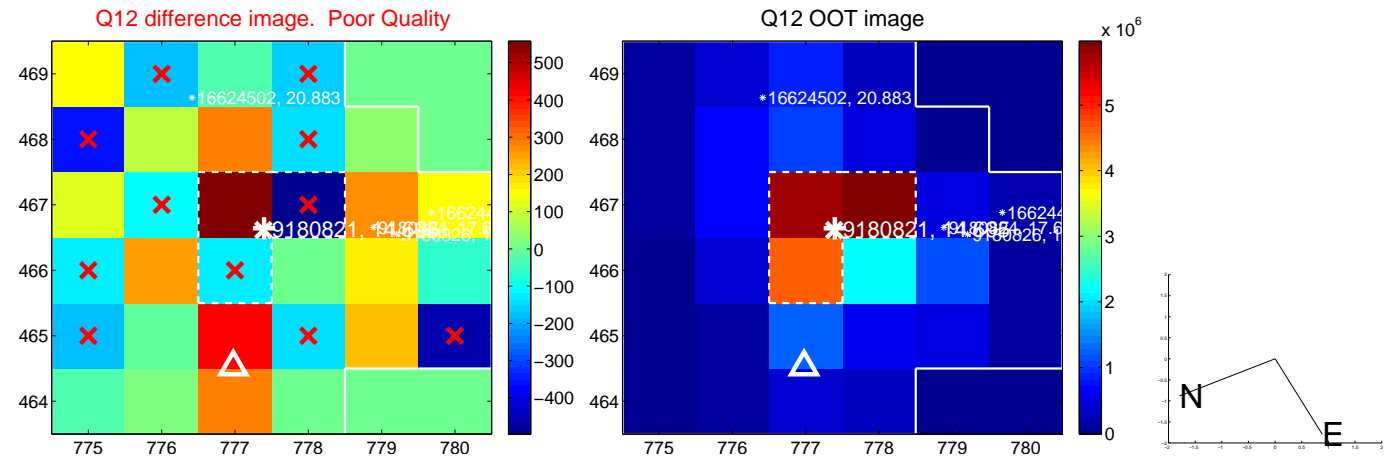
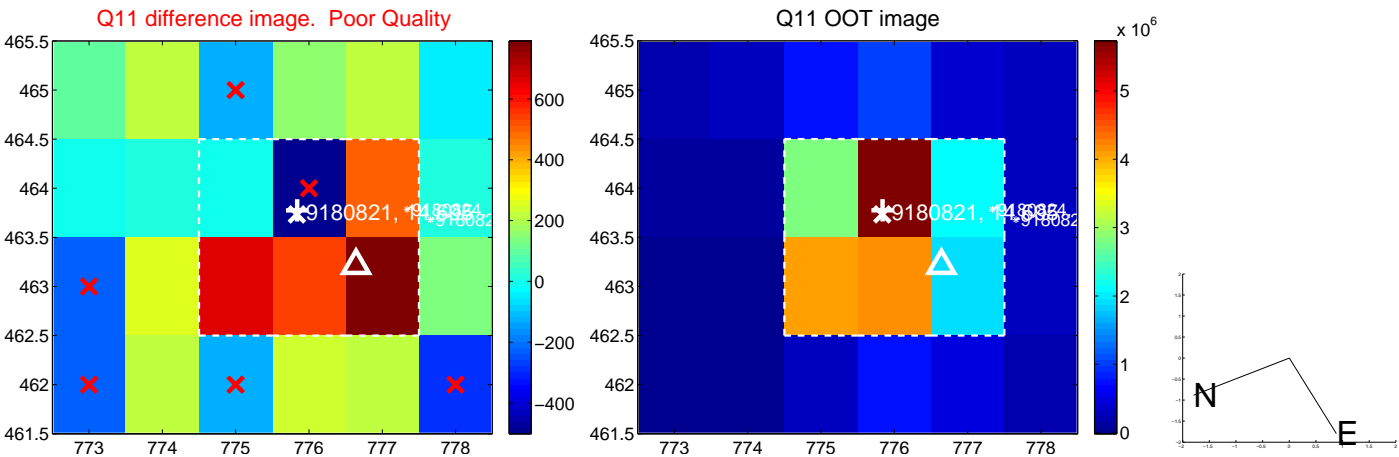
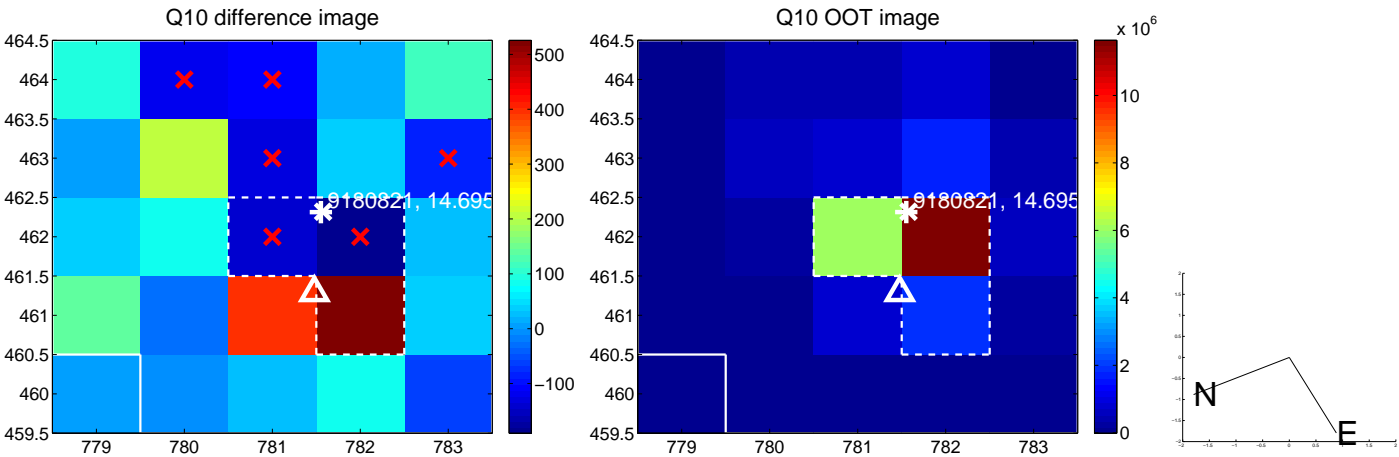
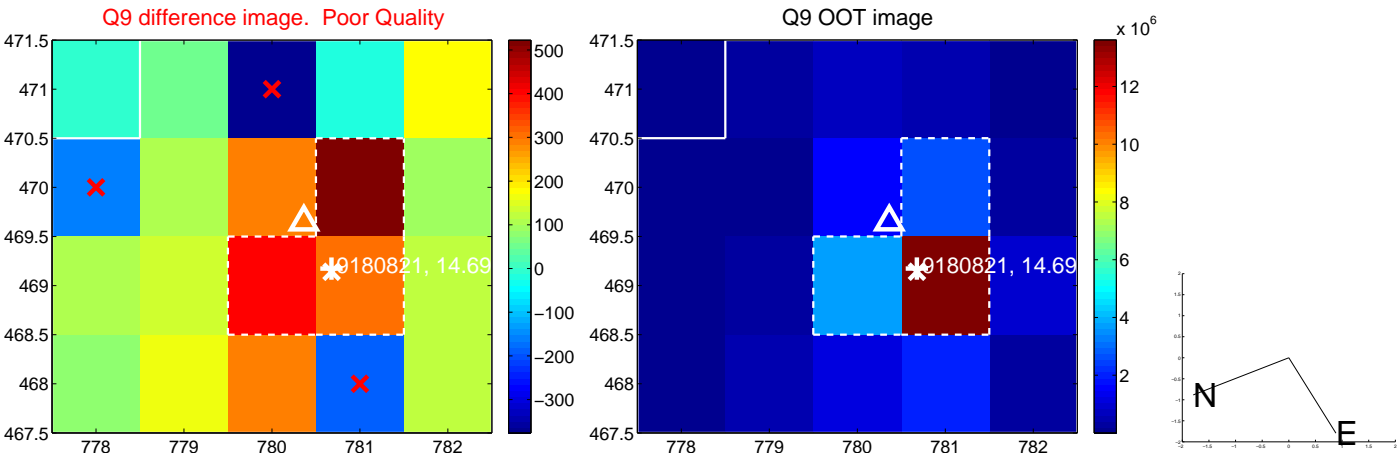
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



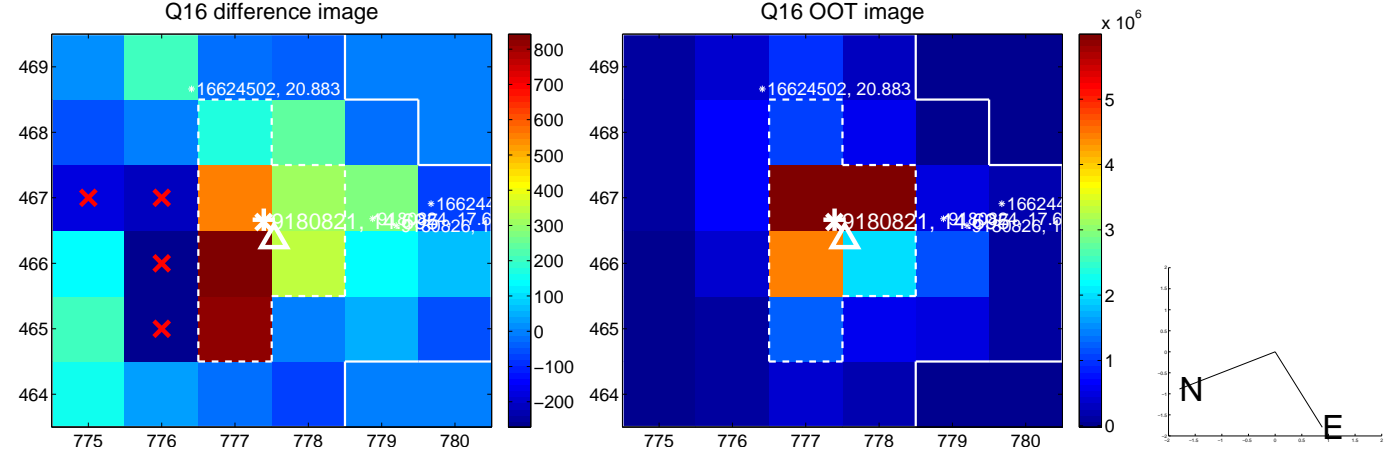
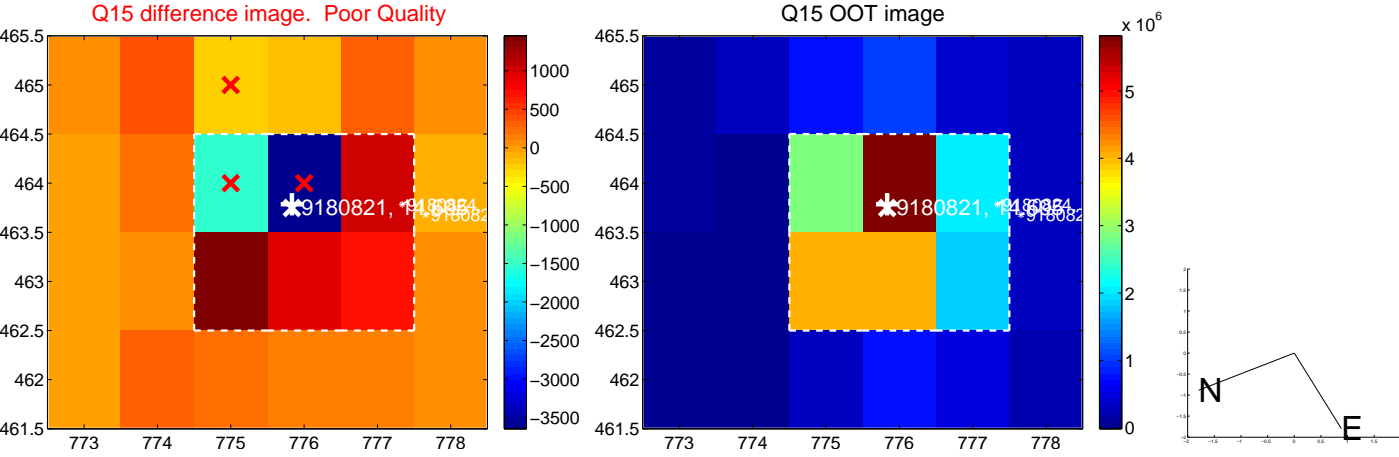
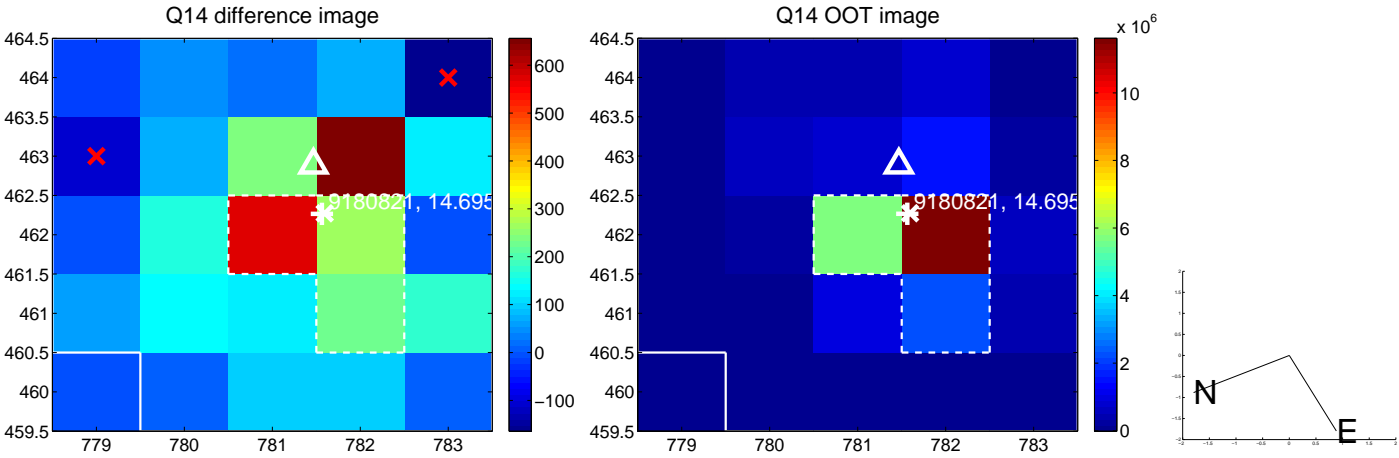
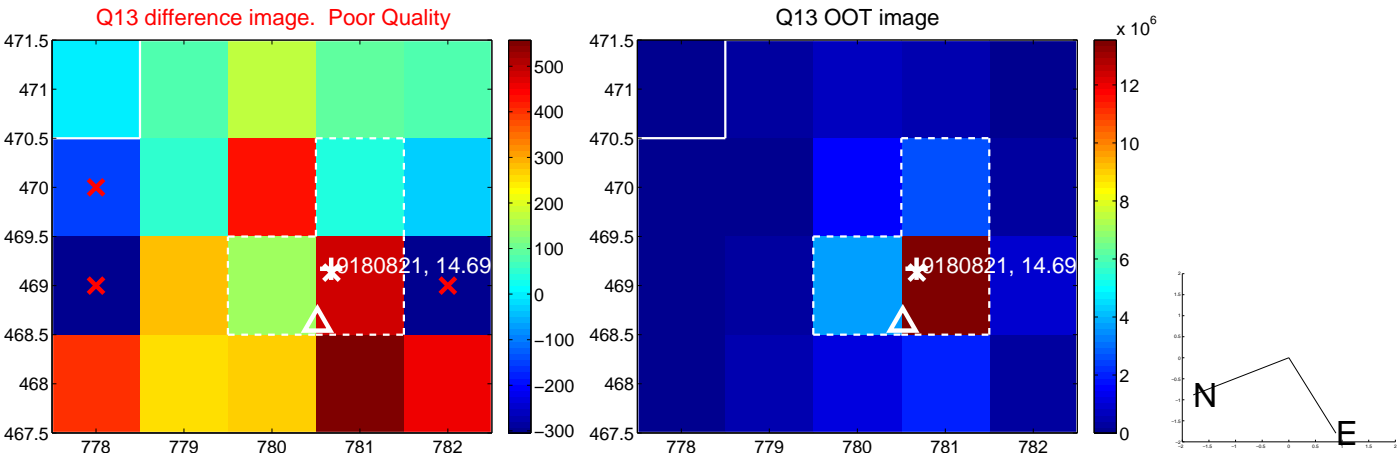
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



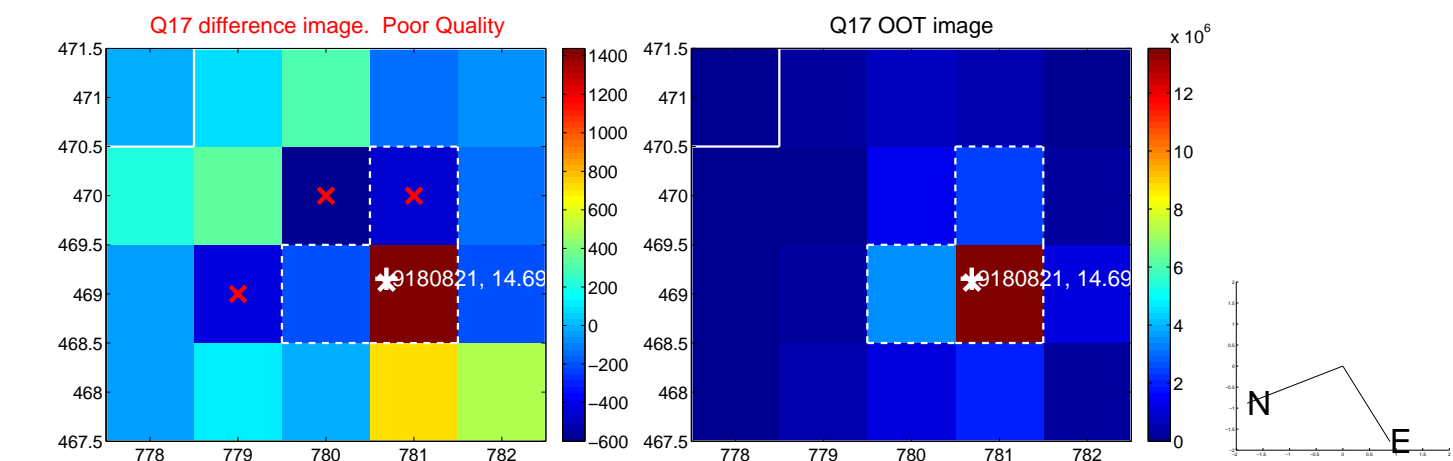
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



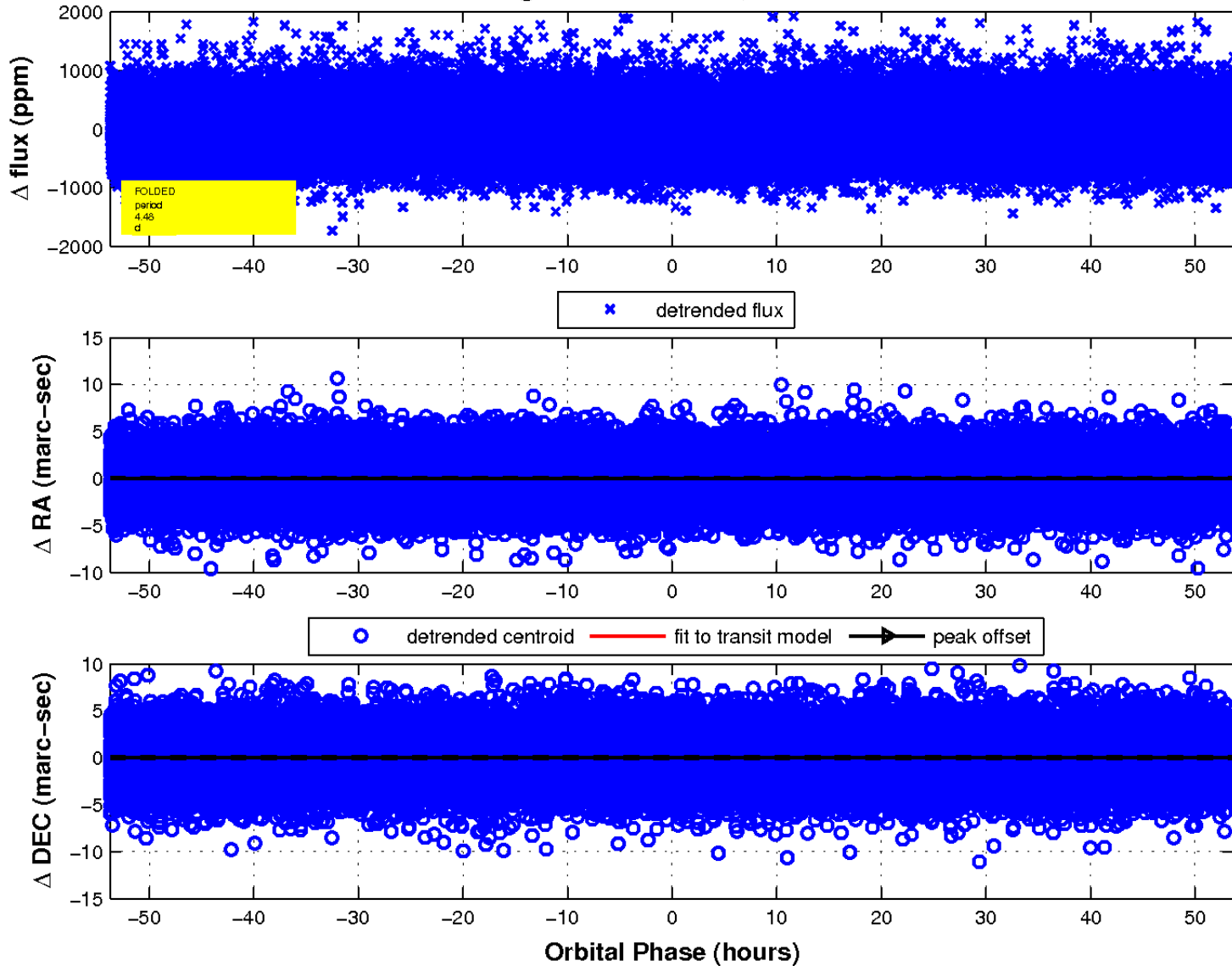
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

