

KIC 010158990

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R _★ (R _☉)	T _★ (K)	R _p (R _⊕)	S _p (S _⊕)
010158990-01	OBS	1080.01	1.096561	132.525403	133.4	1.927	18.0	17.5	0.76	5222	1.07	1118.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010158990-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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.

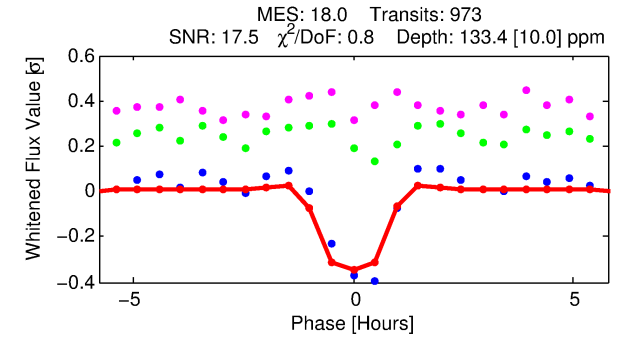
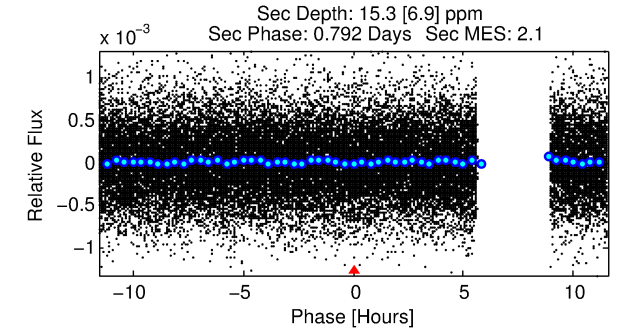
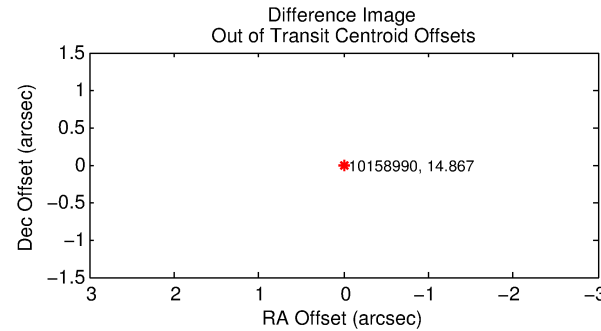
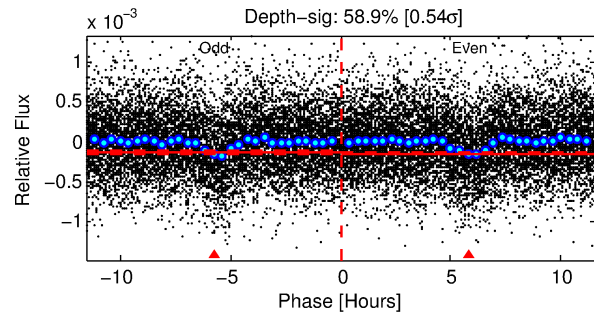
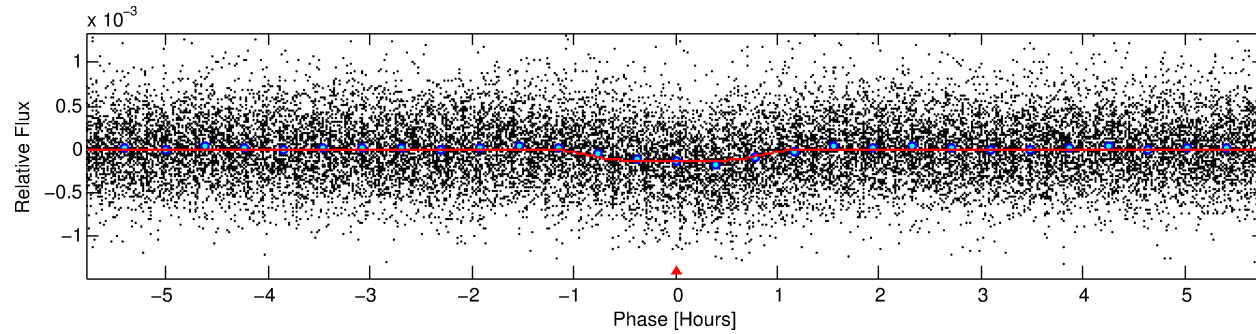
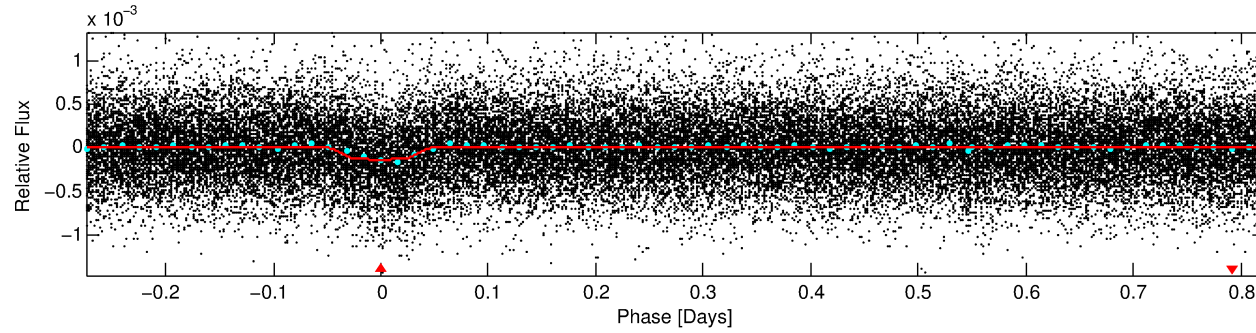
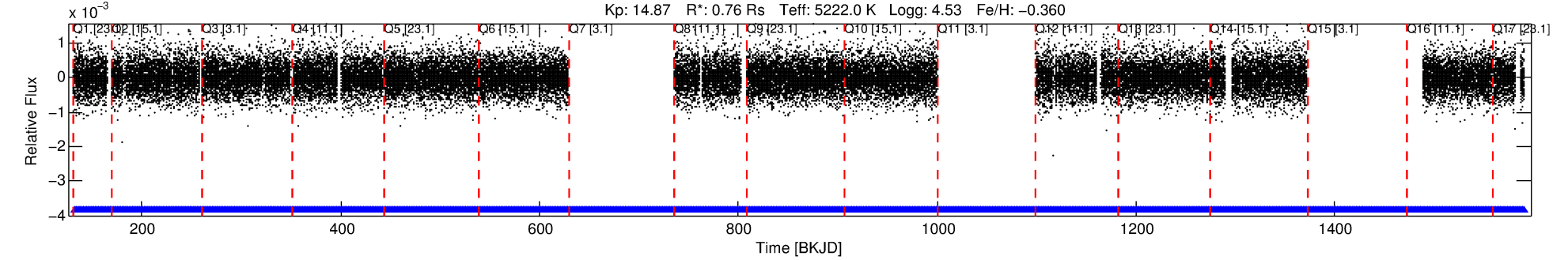
Ephemeris Match Information For 010158990-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (″)	ΔRow	ΔCol	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ _P	σ _T
010158990-01	10158990	1823.02	10092312	1:1	9.9	1	2	13.95	14.86	4.79	Direct-PRF	0	2.21	0.85

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant σ_P < 5.0 and σ_T < 5.0. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10158990 Candidate: 1 of 1 Period: 1.097 d
KOI: K01080.01 Corr: 0.885



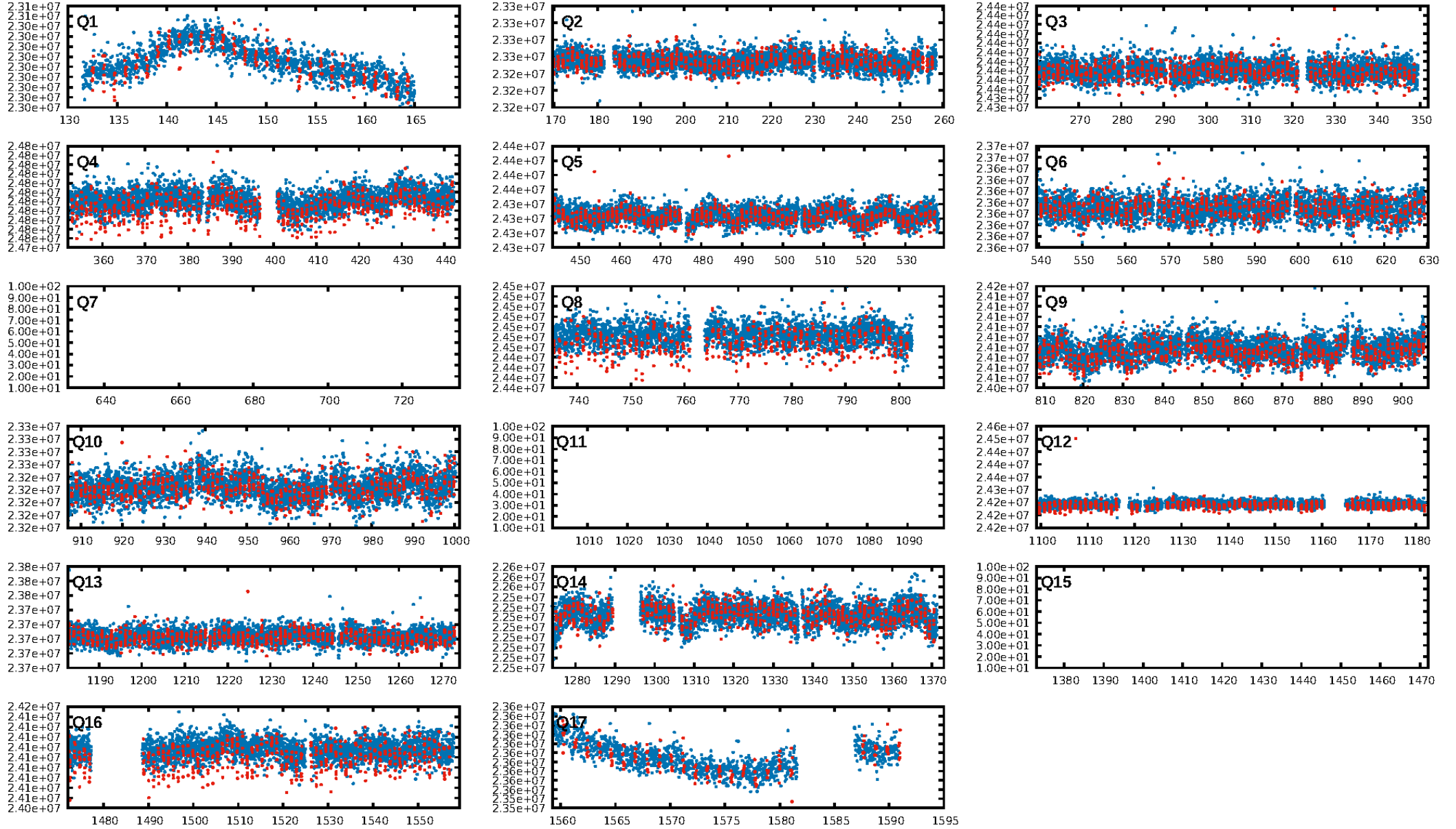
DV Fit Results:

Period = 1.09656 [0.00001] d
Epoch = 132.5254 [0.0015] BKJD
Rp/R* = 0.0128 [0.0059]
a/R* = 2.19 [3.44]
b = 0.90 [0.41]
Seff = 1118.27 [232.71]
Teff = 1475 [77] K
Rp = 1.07 [0.51] Re
a = 0.0186 [0.0021] AU
Ag = 2.55 [2.64] [0.59 σ]
Teffp = 2882 [738] K [1.90 σ]

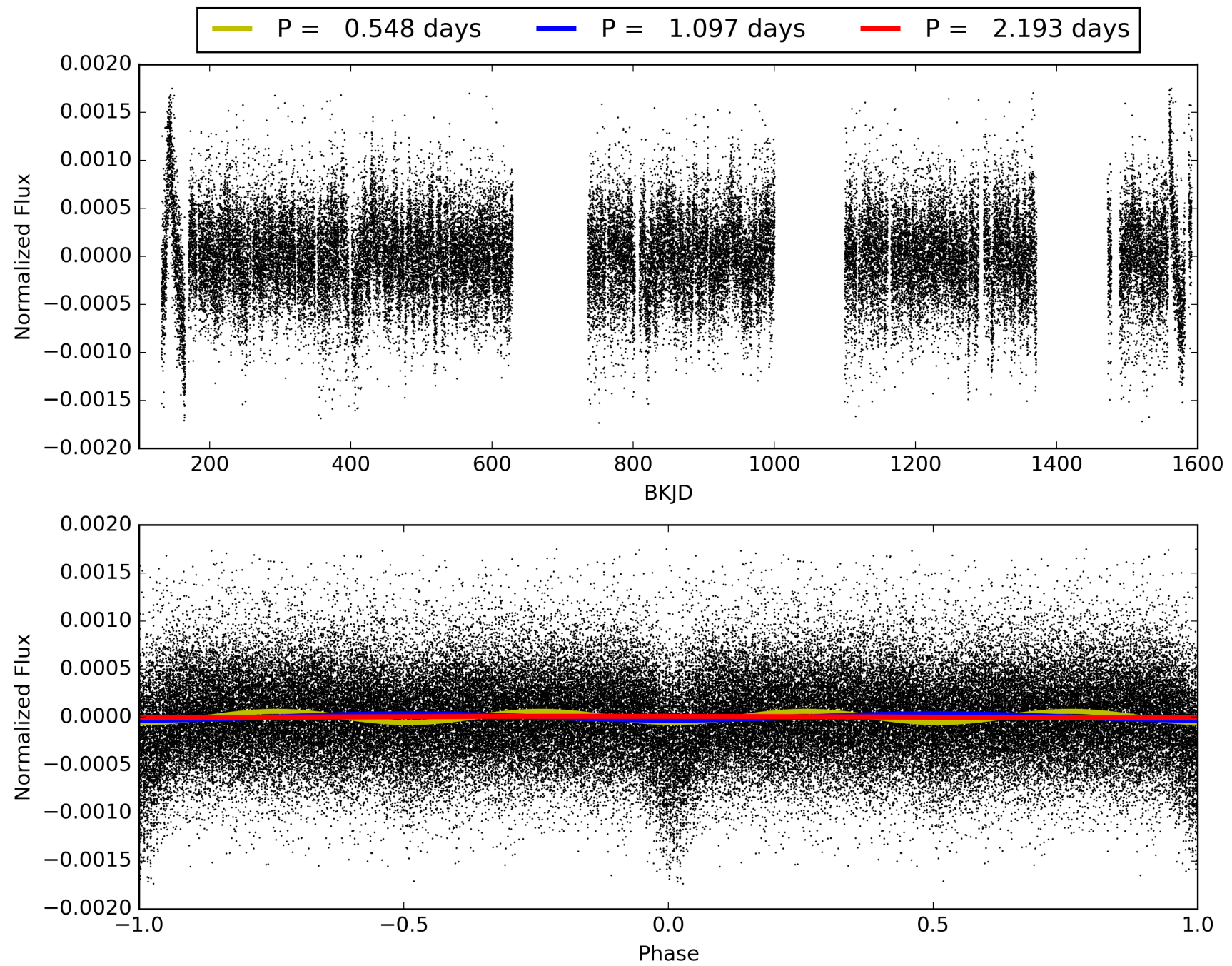
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.13e-67
RollingBand-fgt: 1.00 [919/919]
GhostDiagnostic-chr: -1.064
Centroid-sig: 0.0%
Centroid-so: 4.980 arcsec [9.10 σ]
OotOffset-rm: N/A
KicOffset-rm: 4.912 arcsec [7.09 σ]
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010158990-01, PDC Light Curves

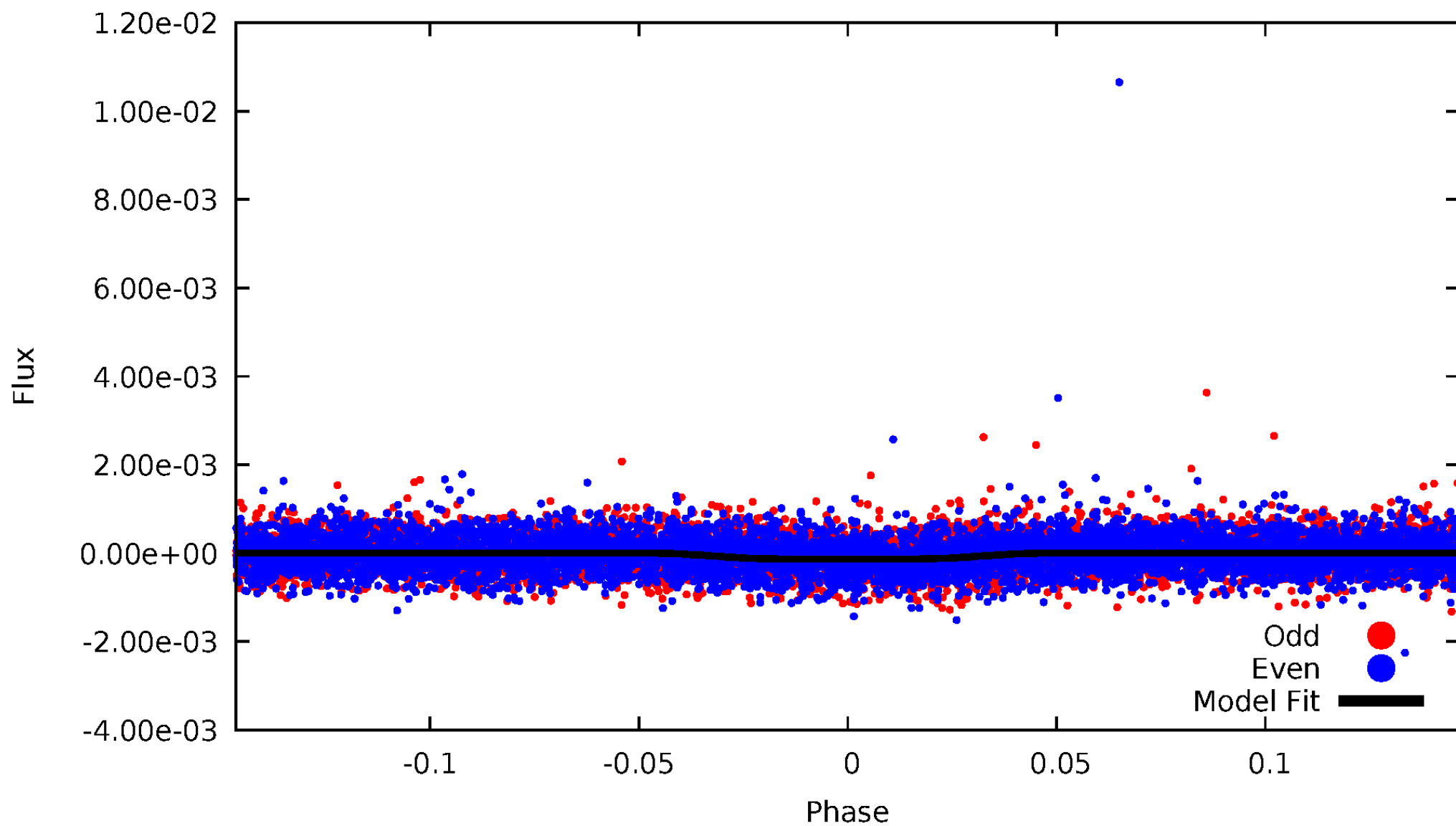


TCE 010158990-01



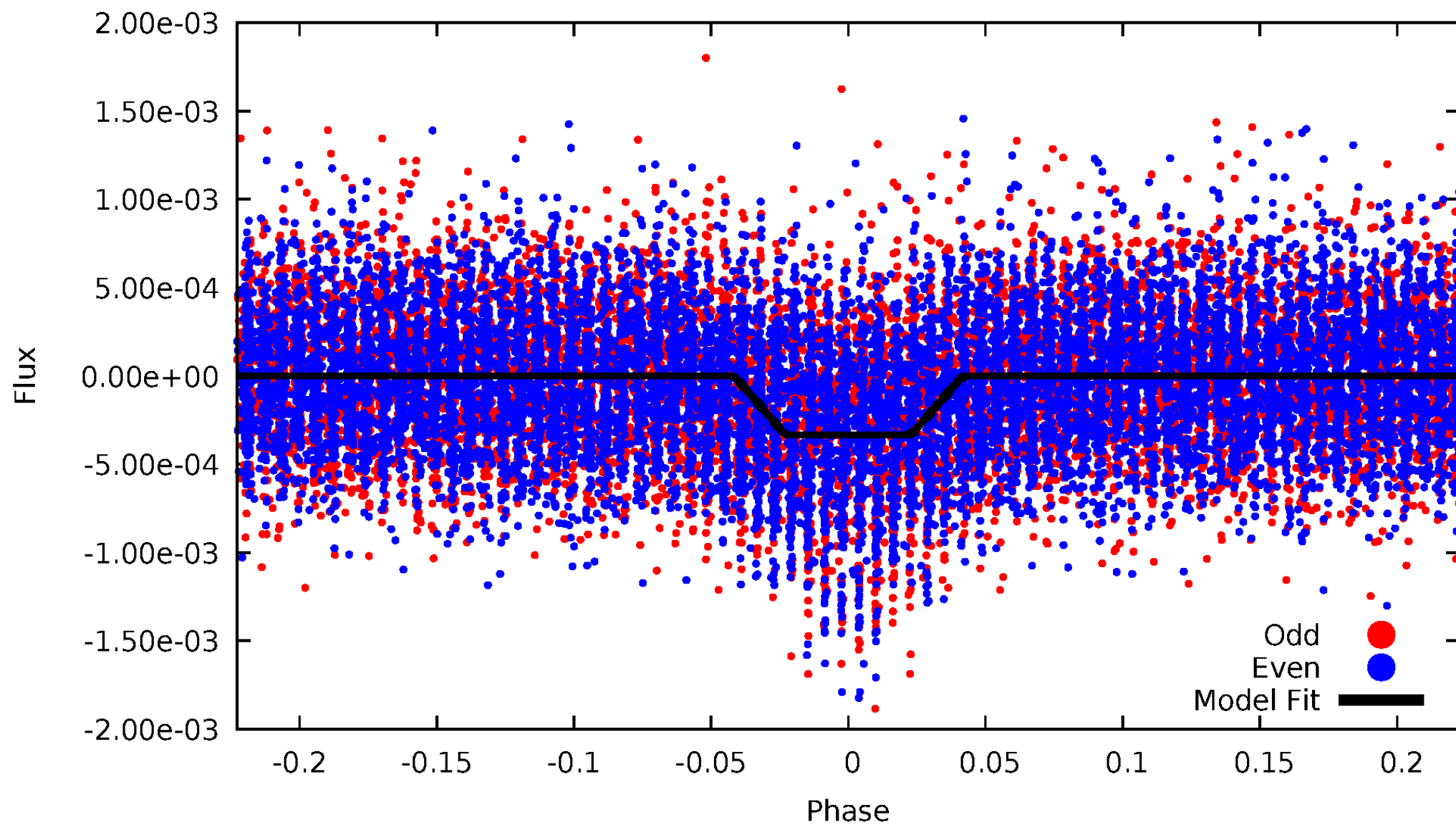
DV Odd/Even

TCE 010158990-01



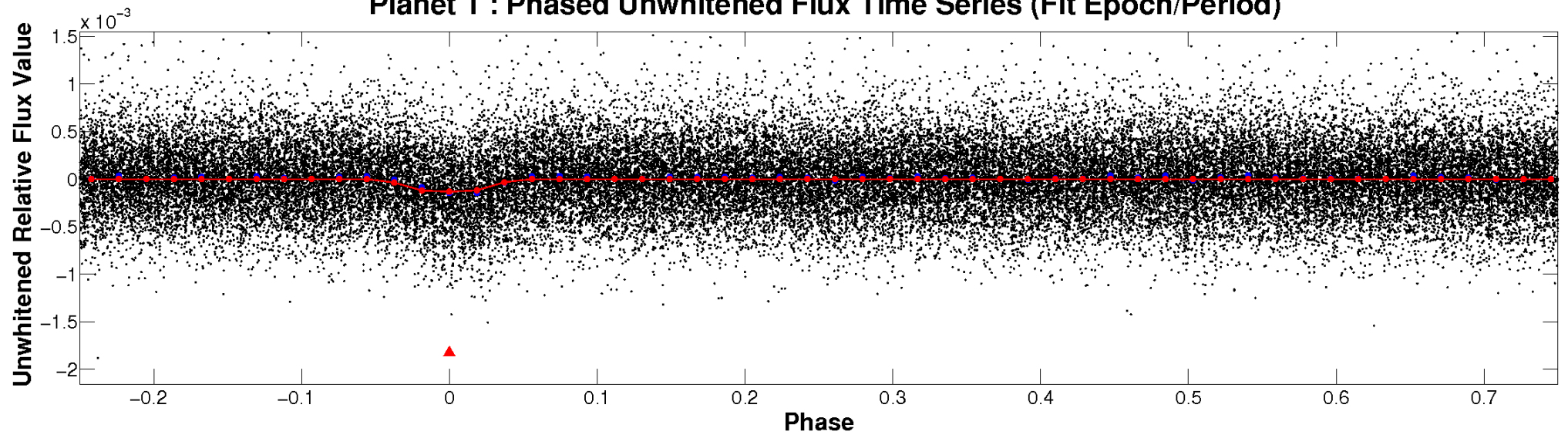
ALT Odd/Even

TCE 010158990-01

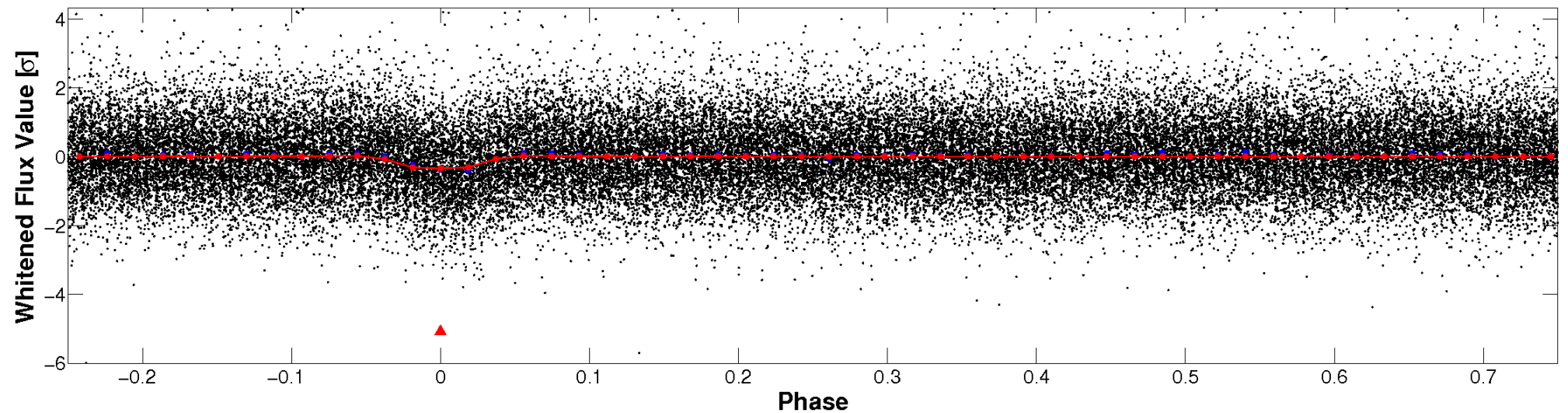


Non-Whitened Vs. Whitened Light Curve

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

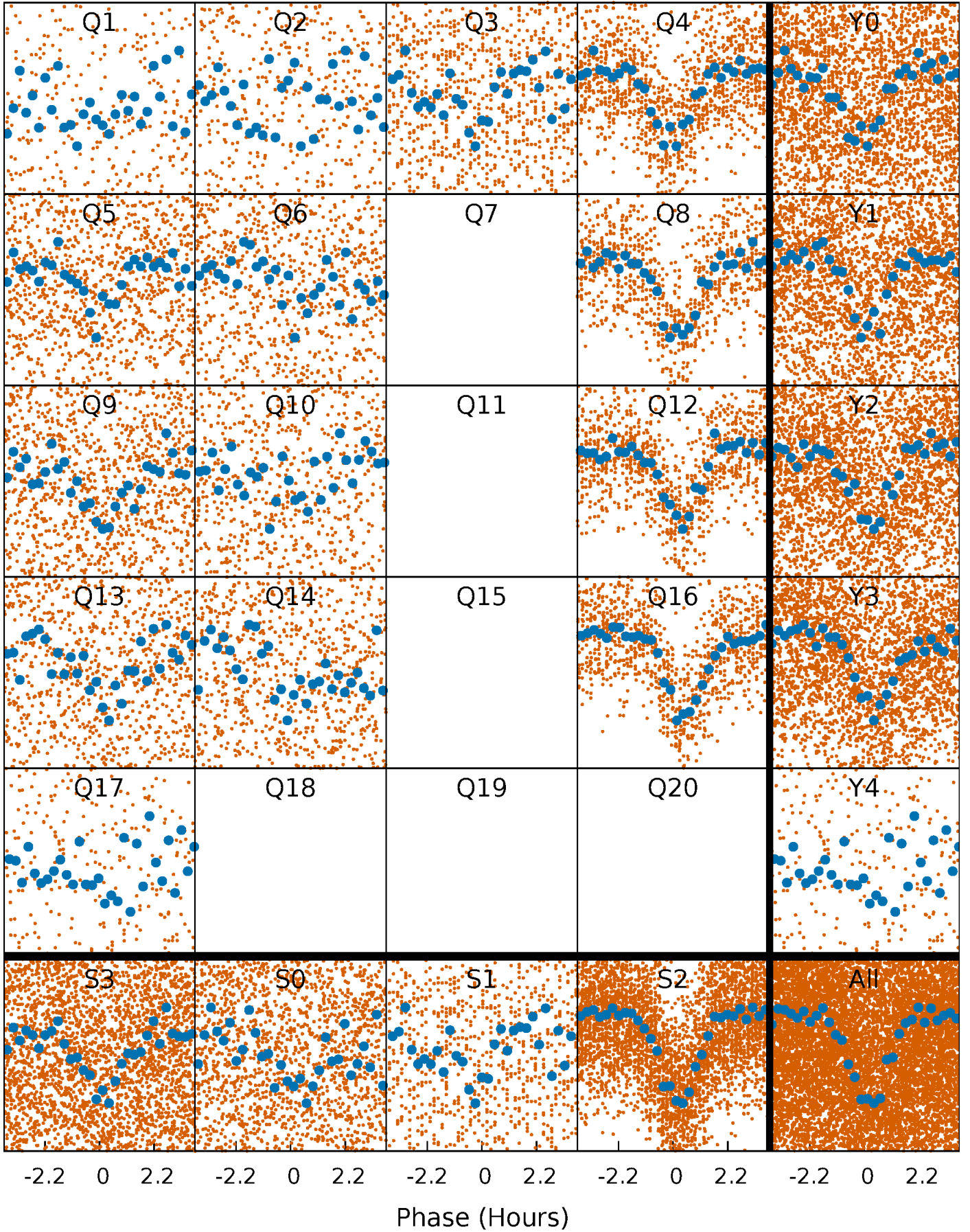


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



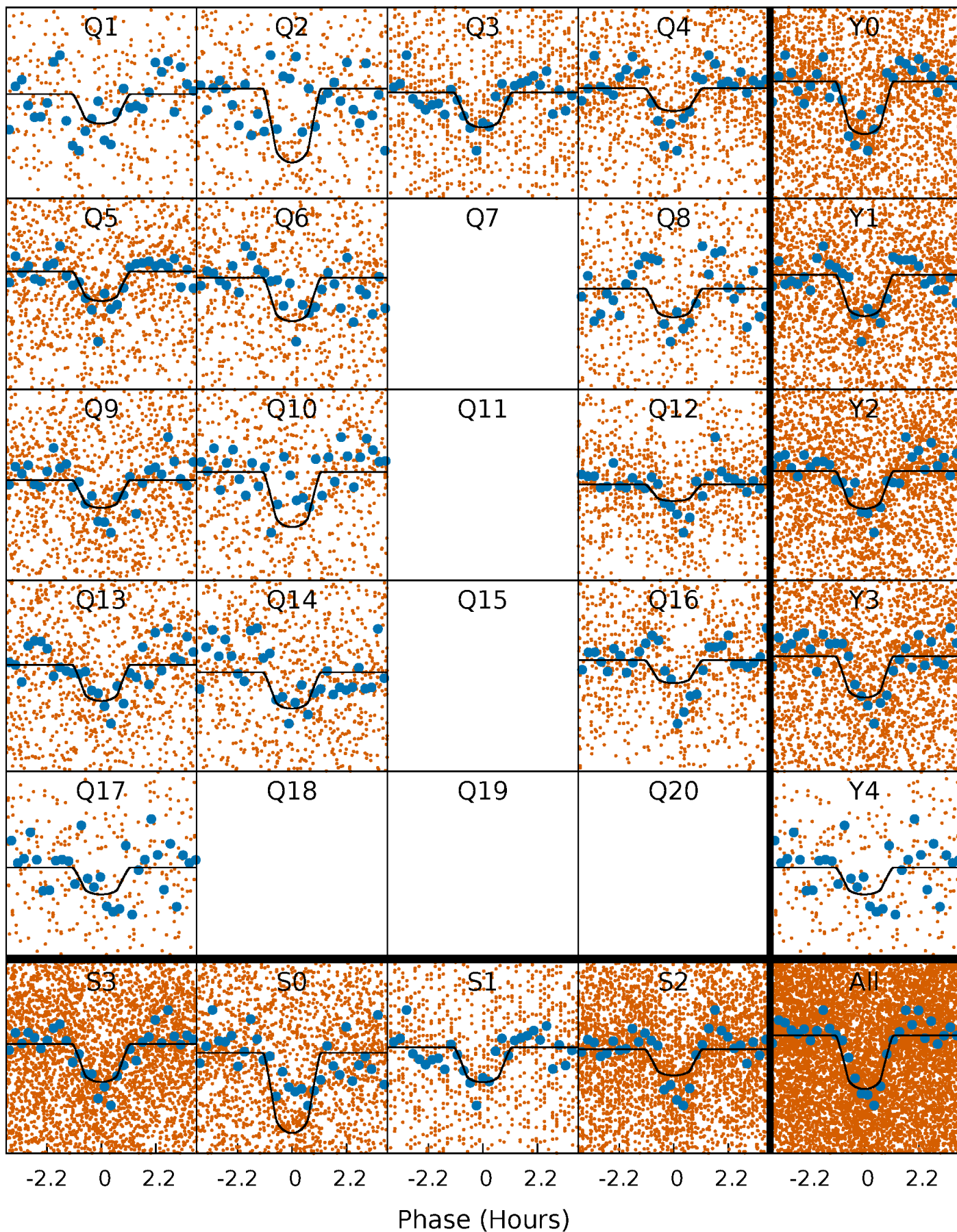
PDC Quarter-Phased Transit Curves

TCE 010158990-01 P= 1.096561 Days $T_0=132.525403$ (BKJD)



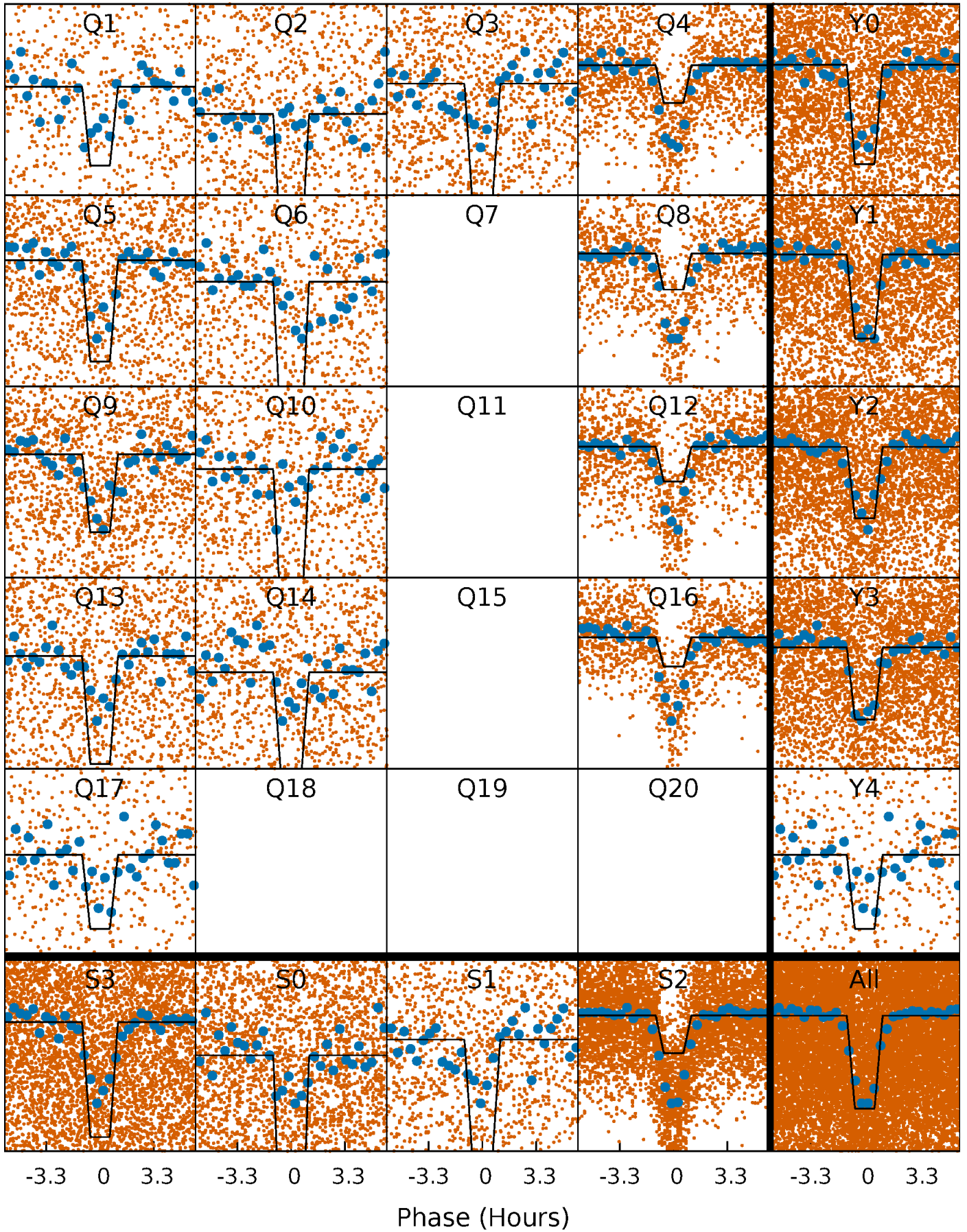
DV Quarter-Phased Transit Curves

TCE 010158990-01 P= 1.096561 Days $T_0=132.525403$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

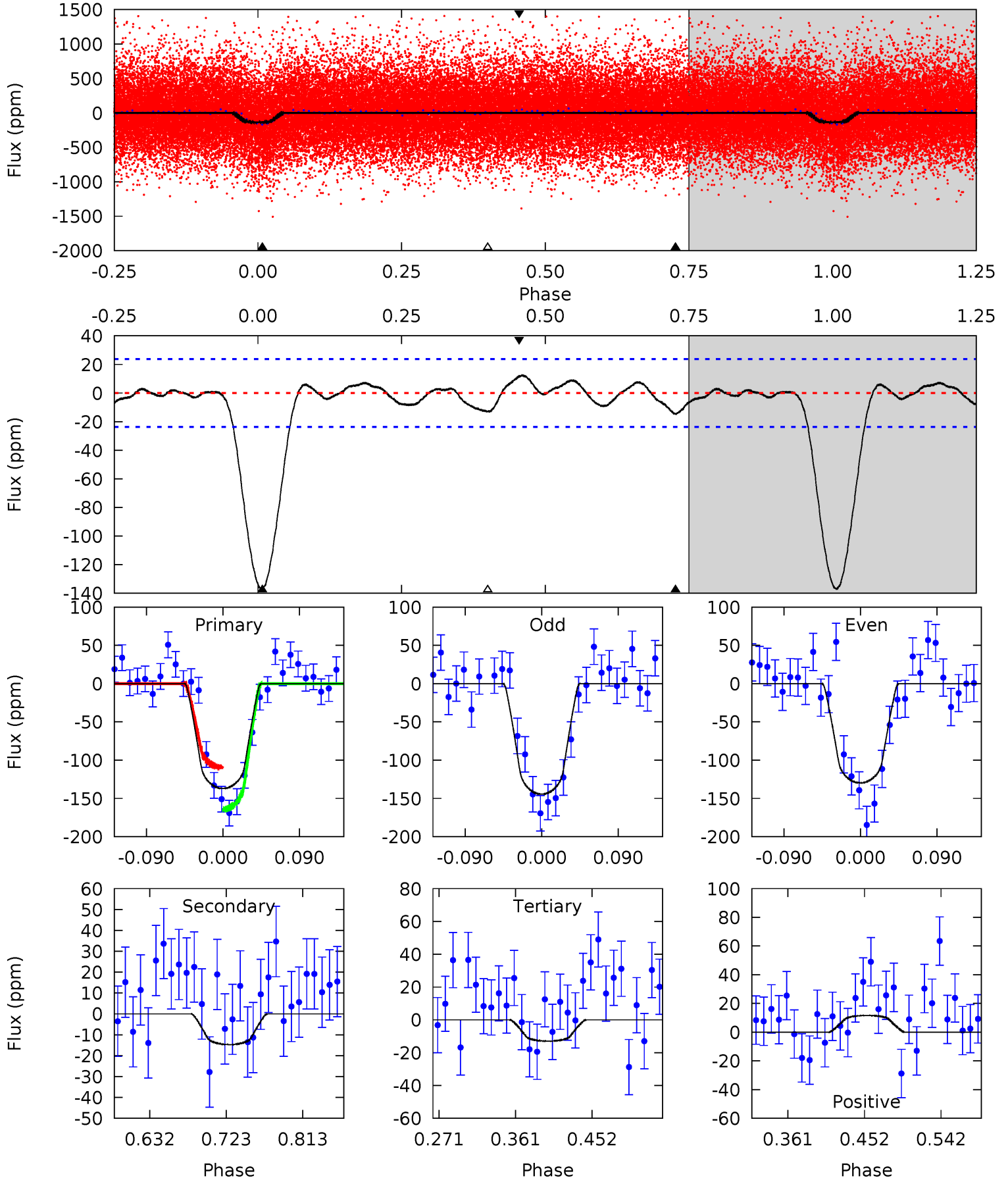
TCE 010158990-01 P= 1.096583 Days $T_0=132.517776$ (BKJD)



DV Model-Shift Uniqueness Test

010158990-01, P = 1.096561 Days, E = 131.428842 Days

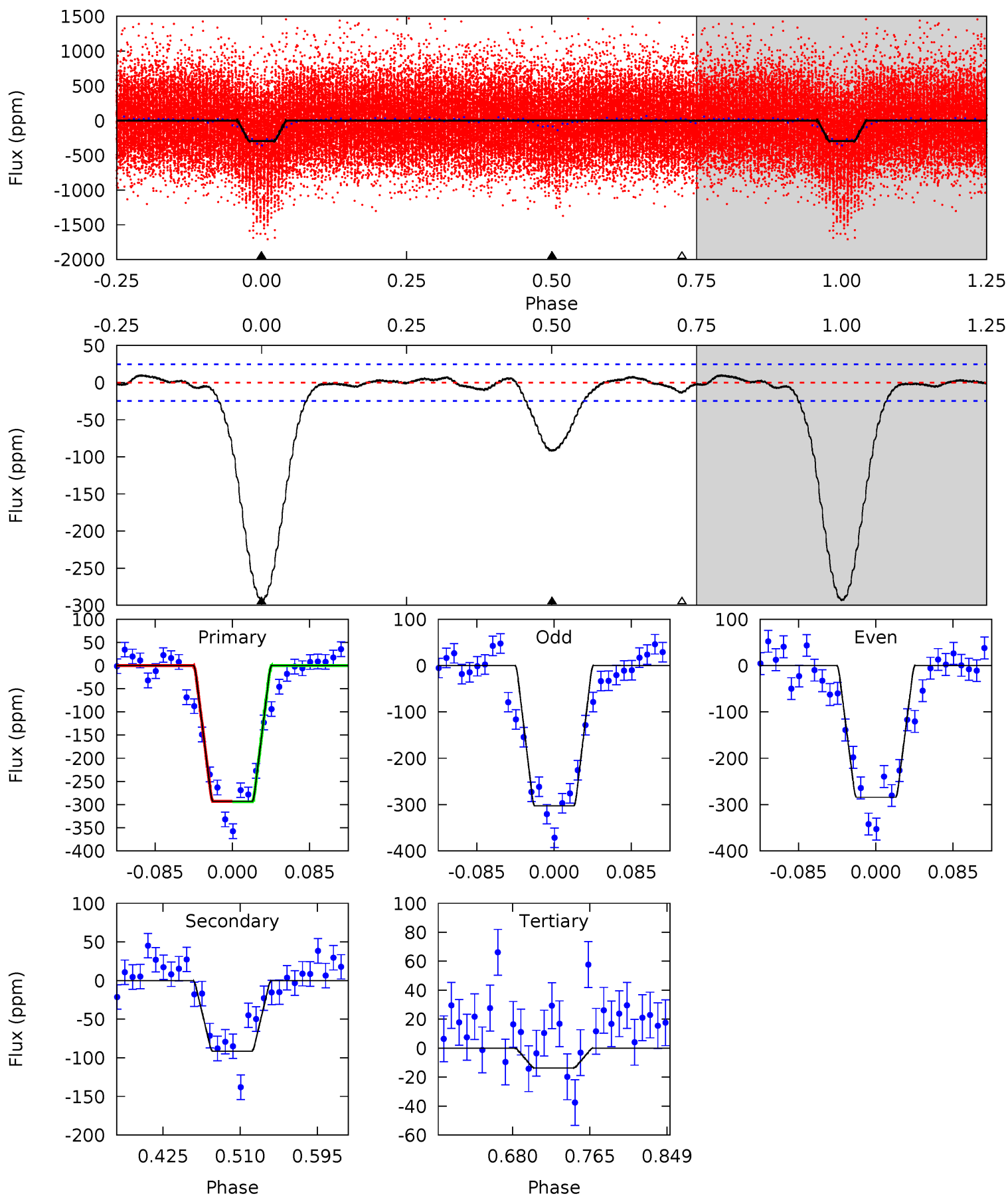
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	2.84	2.51	2.25	4.59	1.69	1.11	24.0	24.2	0.33	0.59	1.43	1.04	0.08	5.31



Alt Model-Shift Uniqueness Test

010158990-01, P = 1.096583 Days, E = 131.421193 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.5	17.0	2.55	0	4.60	1.72	0.94	52.0	54.5	14.5	17.0	1.72	1.29	0.03	0.09



Stellar Parameters For KIC 010158990

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5222^{+155}_{-155}	$4.528^{+0.085}_{-0.095}$	$-0.360^{+0.350}_{-0.300}$	$0.763^{+0.102}_{-0.084}$	$0.717^{+0.112}_{-0.045}$	$2.275^{+0.809}_{-0.655}$
	$+3\%/-3\%$	$+2\%/-2\%$	$+97\%/-83\%$	$+13\%/-11\%$	$+16\%/-6\%$	$+36\%/-29\%$
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 010158990-01 / KOI 1080.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 5	$1.07^{+0.52}_{-0.46}$	2059^{+99}_{-80}	3283^{+701}_{-506}	$2.360^{+5.286}_{-1.430}$
Alt.	-92 ± 5	$1.52^{+0.56}_{-0.47}$	2063^{+98}_{-94}	4023^{+680}_{-397}	$7.783^{+8.617}_{-3.692}$

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 $A_{obs} \gg 1.0$

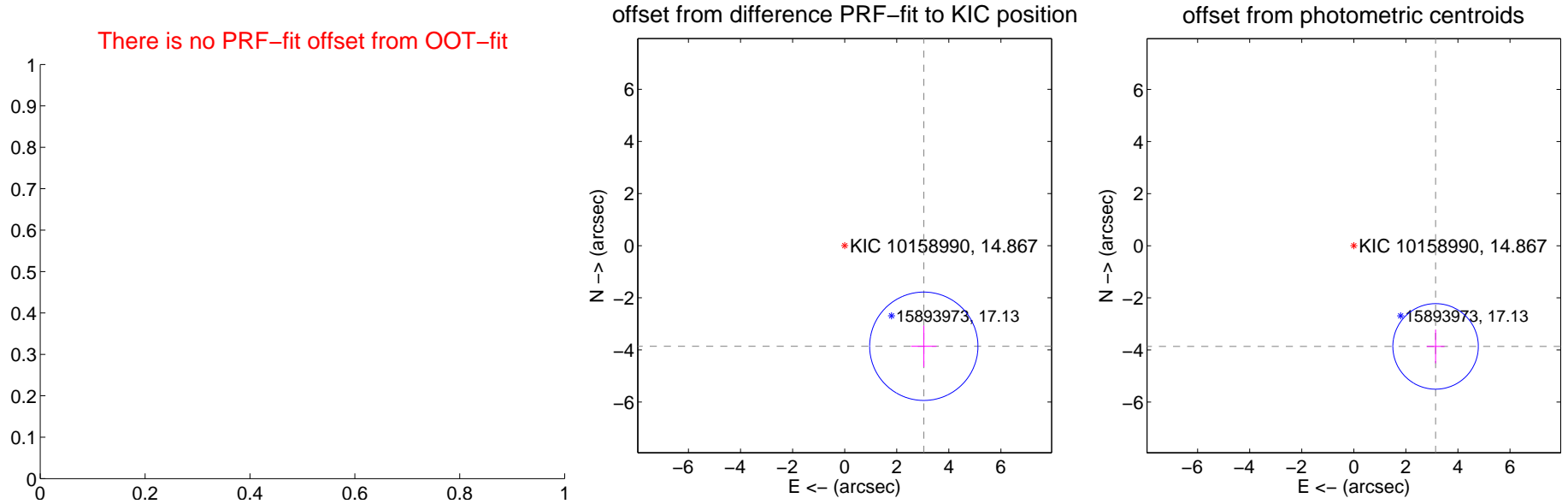
DV Centroid Data

Supplemental centroid analysis for 010158990-01. Kepler magnitude: 14.87. Transit SNR 17.49

There are 3 quarters with good PRF difference image offsets

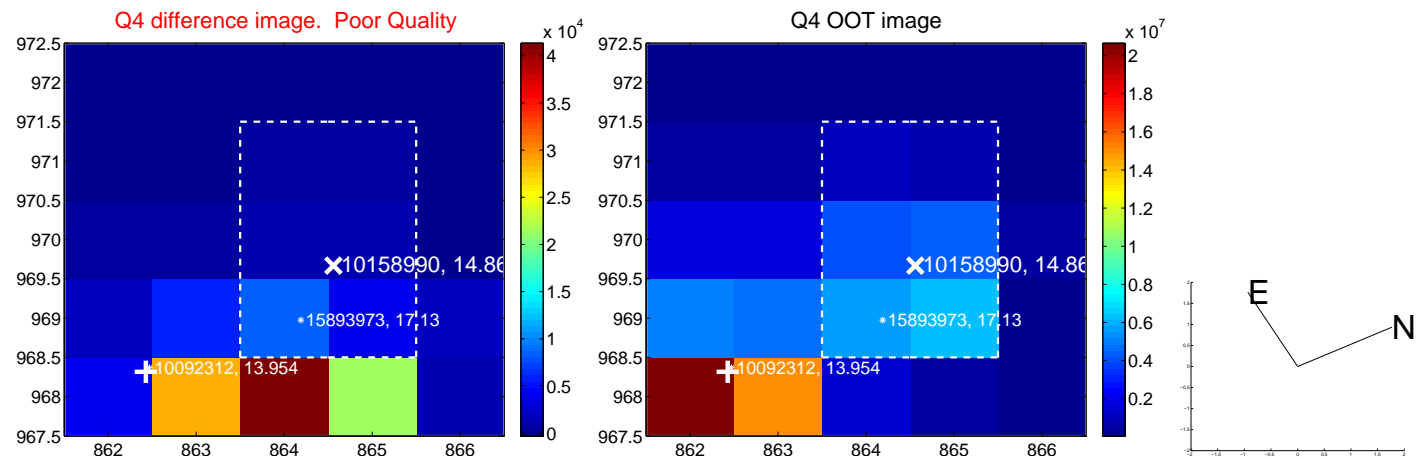
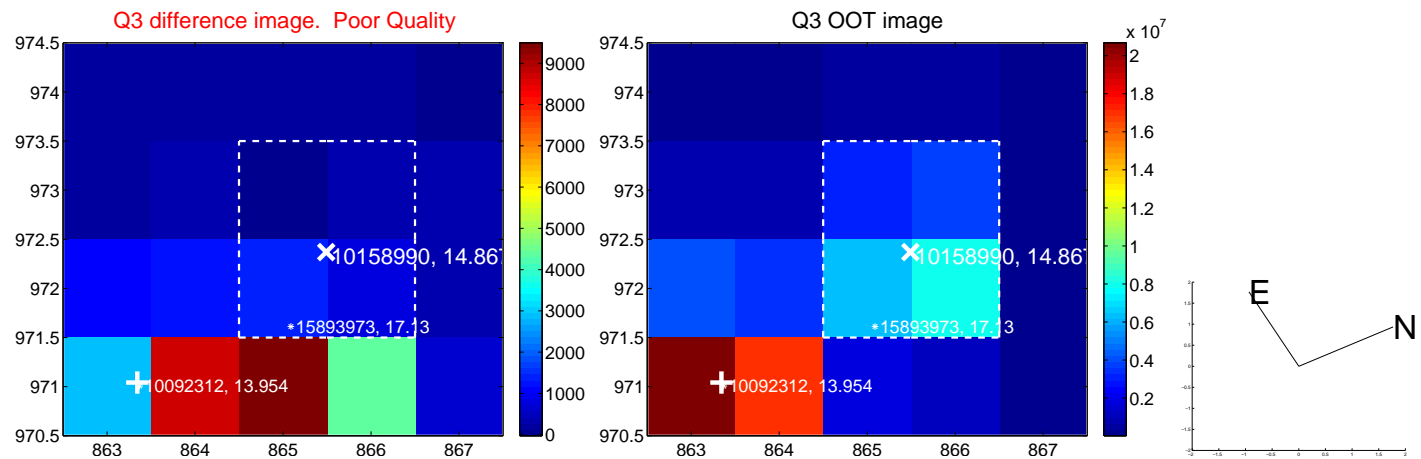
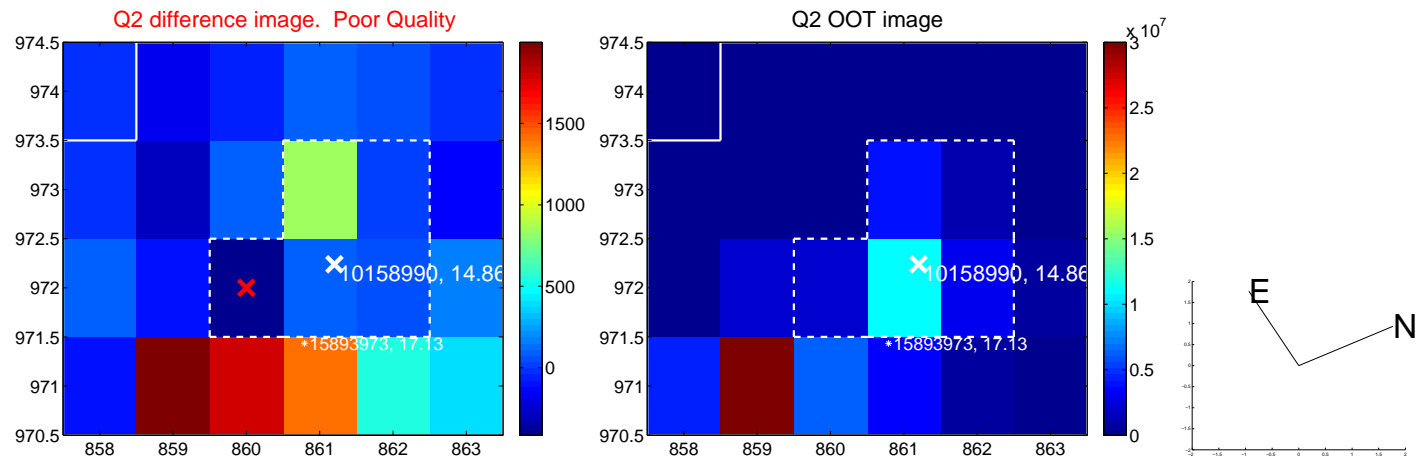
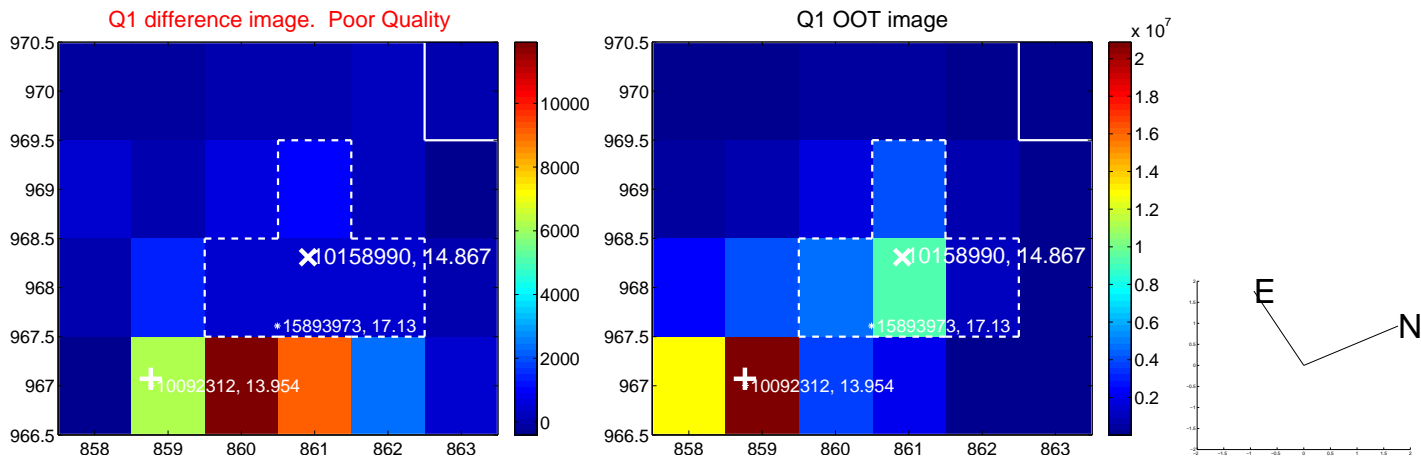
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	4.912 ± 0.693	7.09	-3.038 ± 0.487	-3.860 ± 0.795
photometric centroid source offset	4.98 ± 0.55	9.10	-3.14 ± 0.34	-3.86 ± 0.65

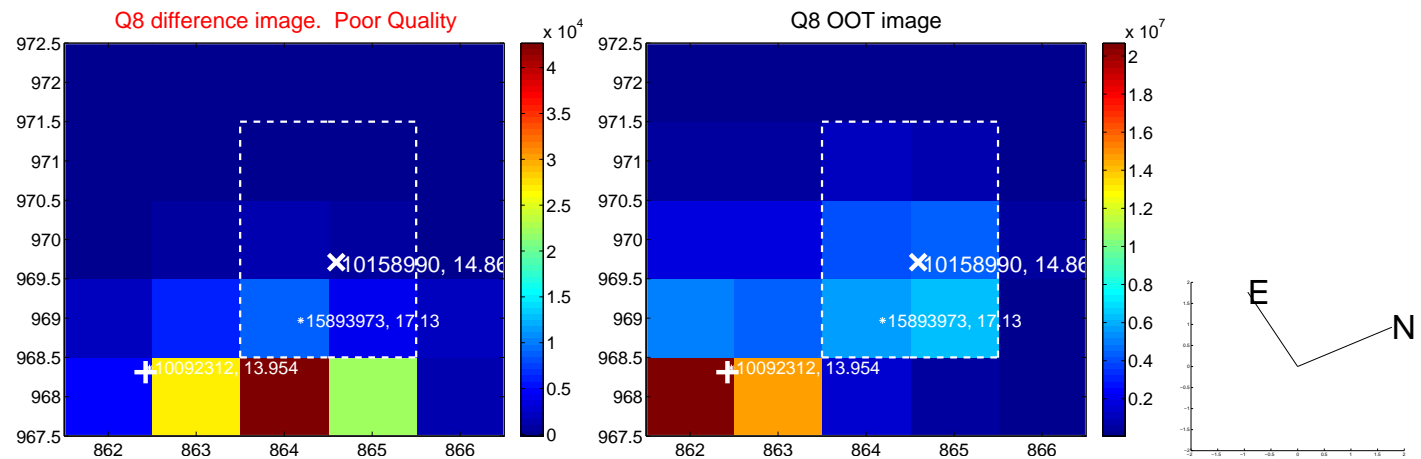
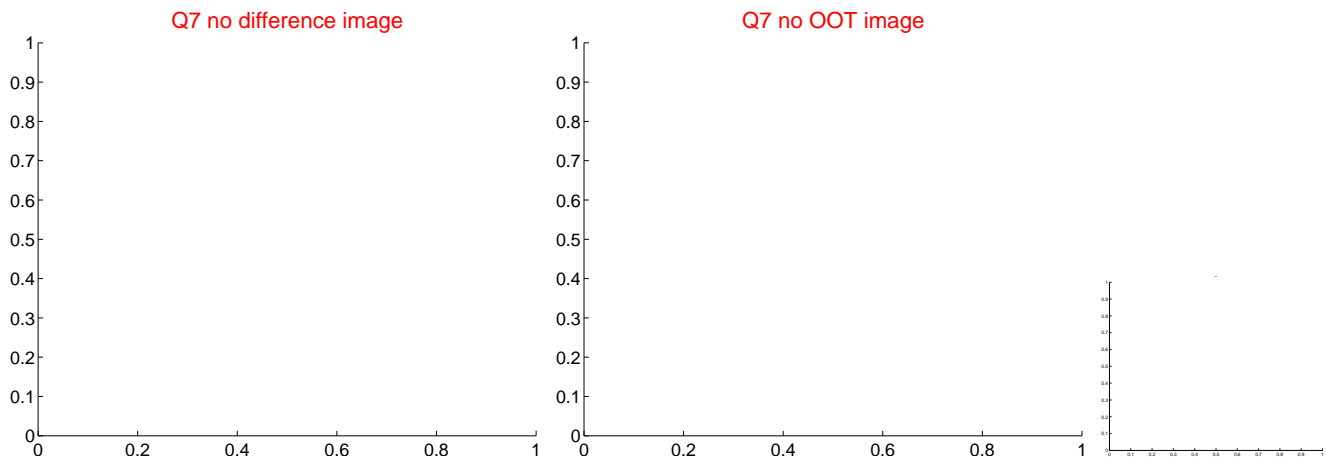
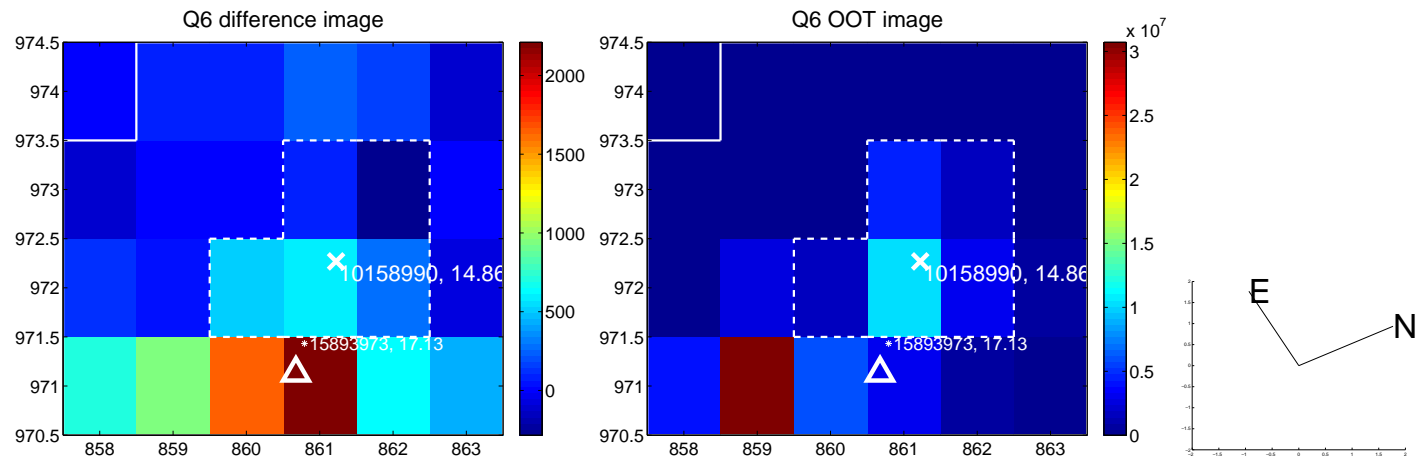
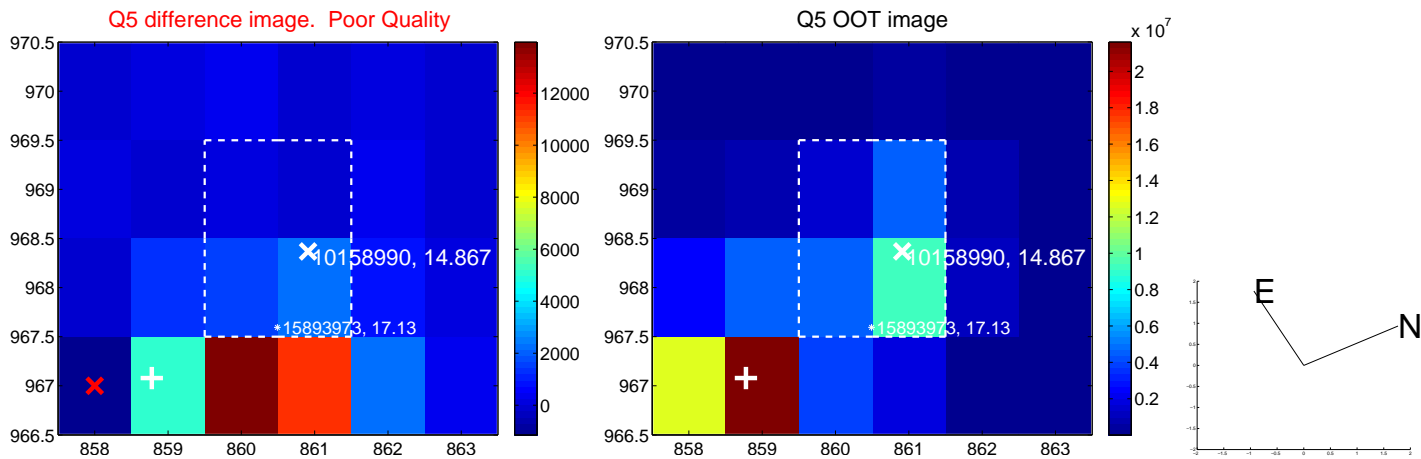


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

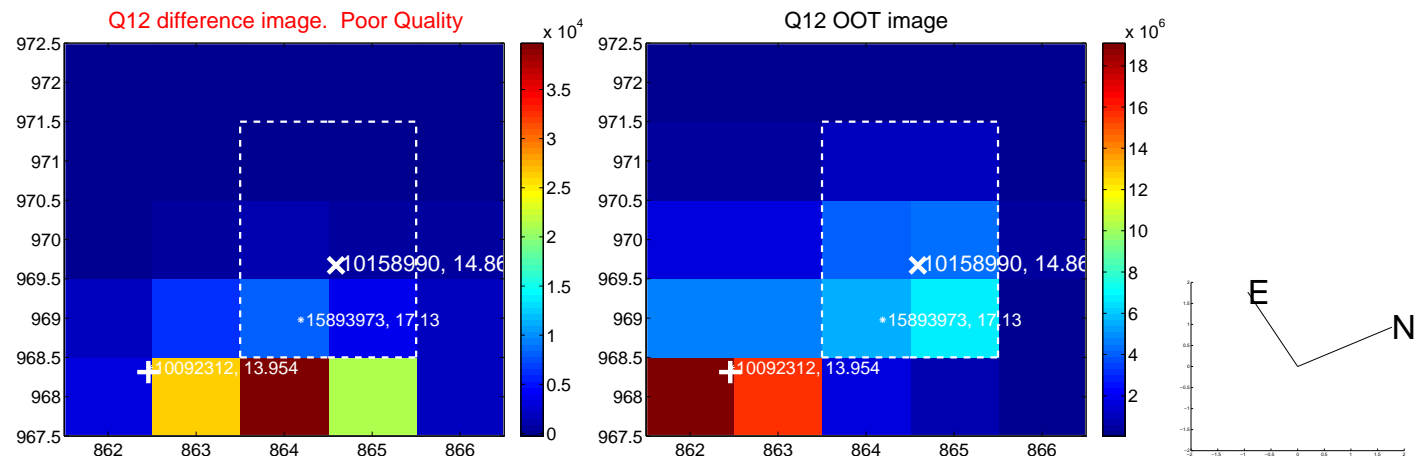
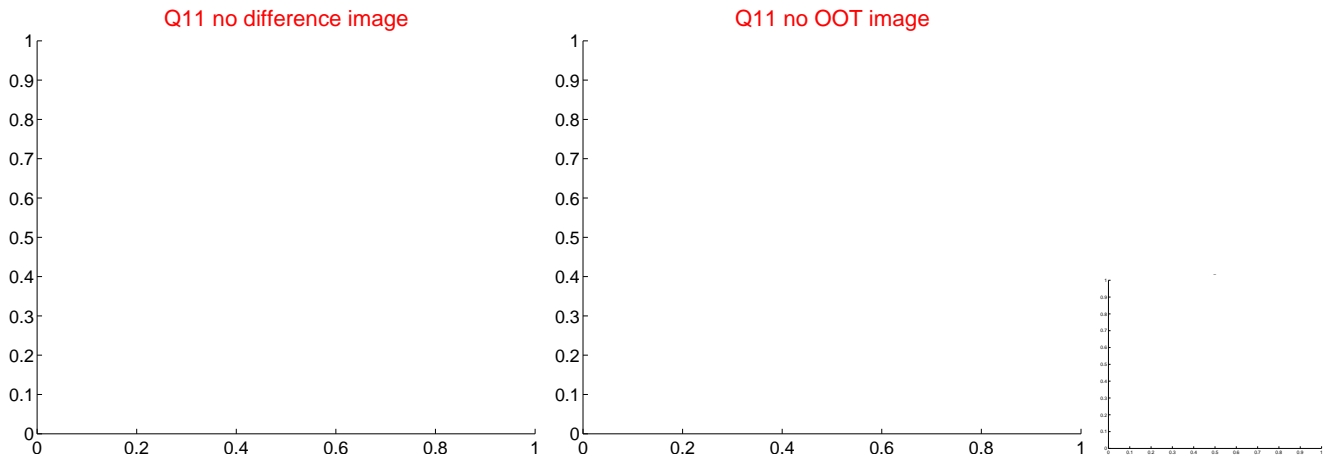
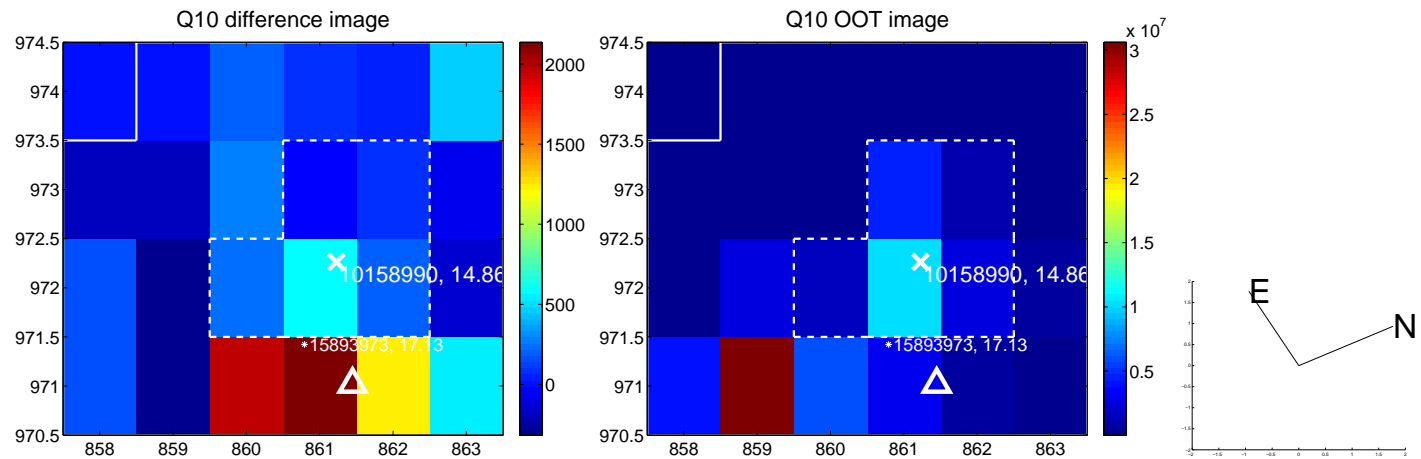
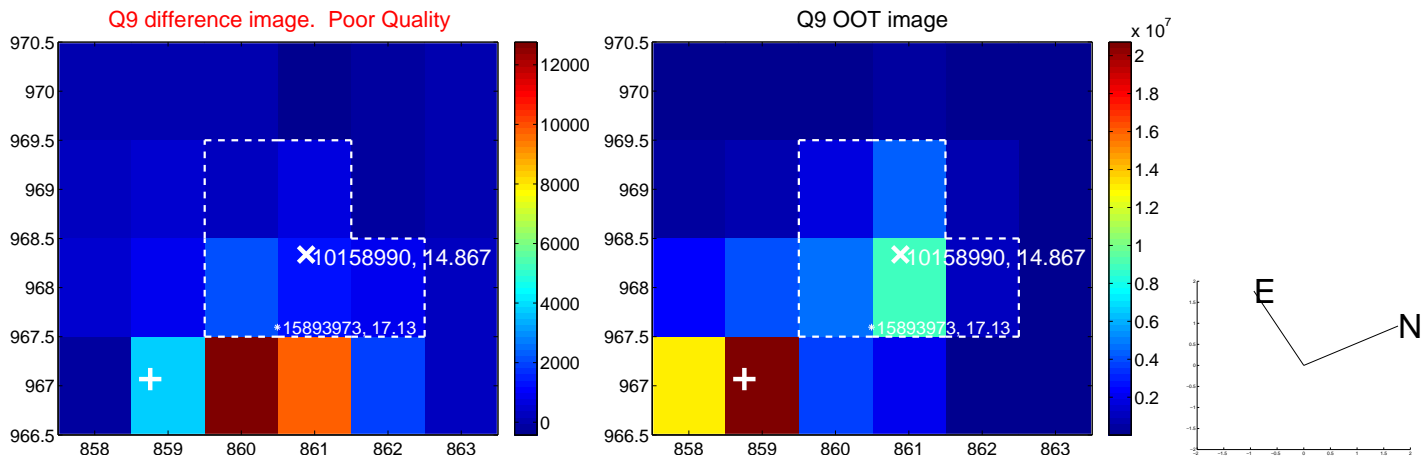
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



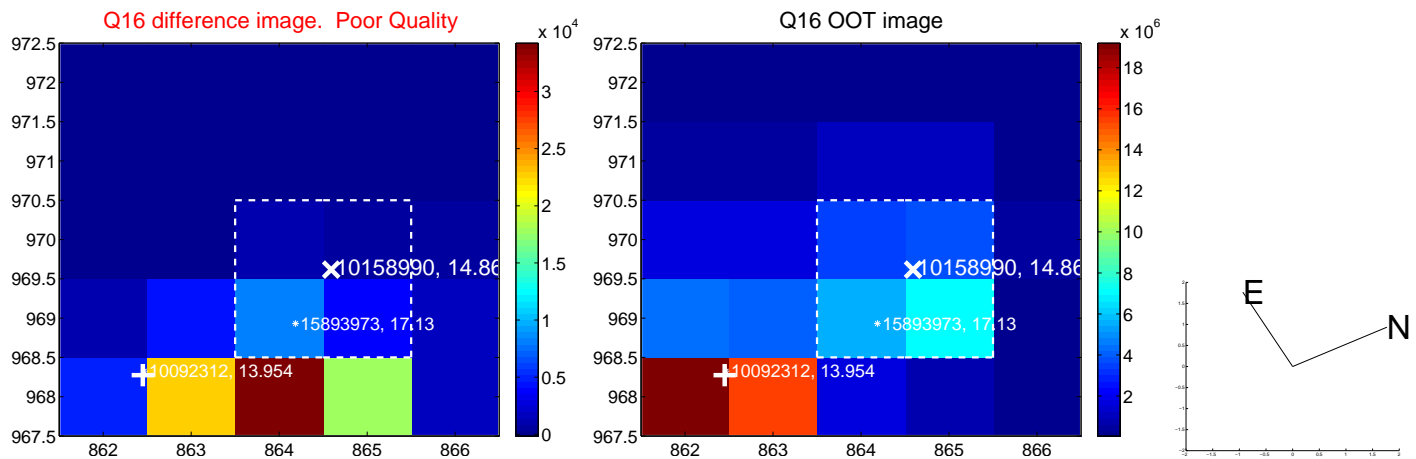
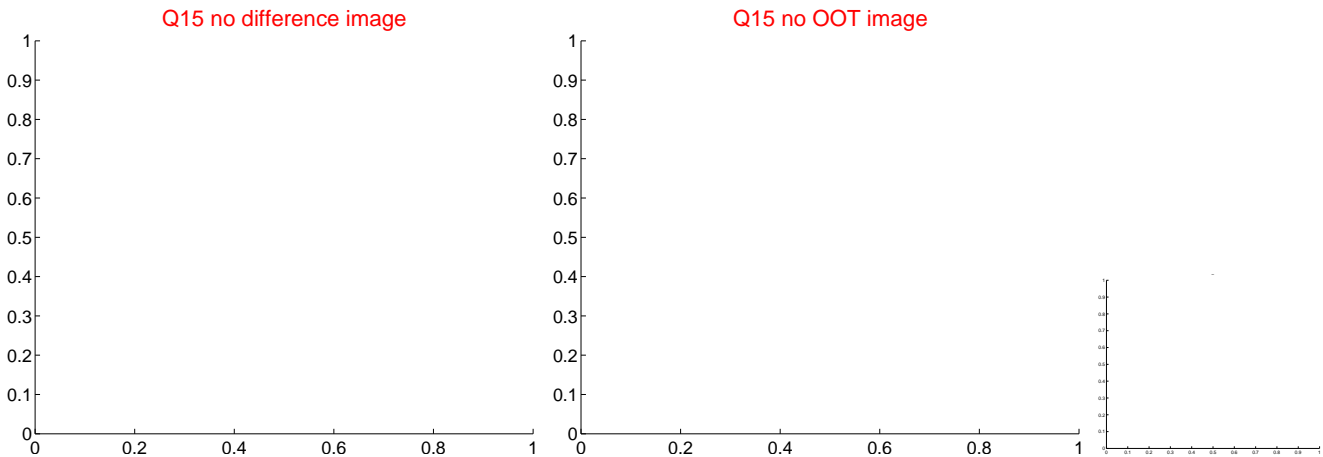
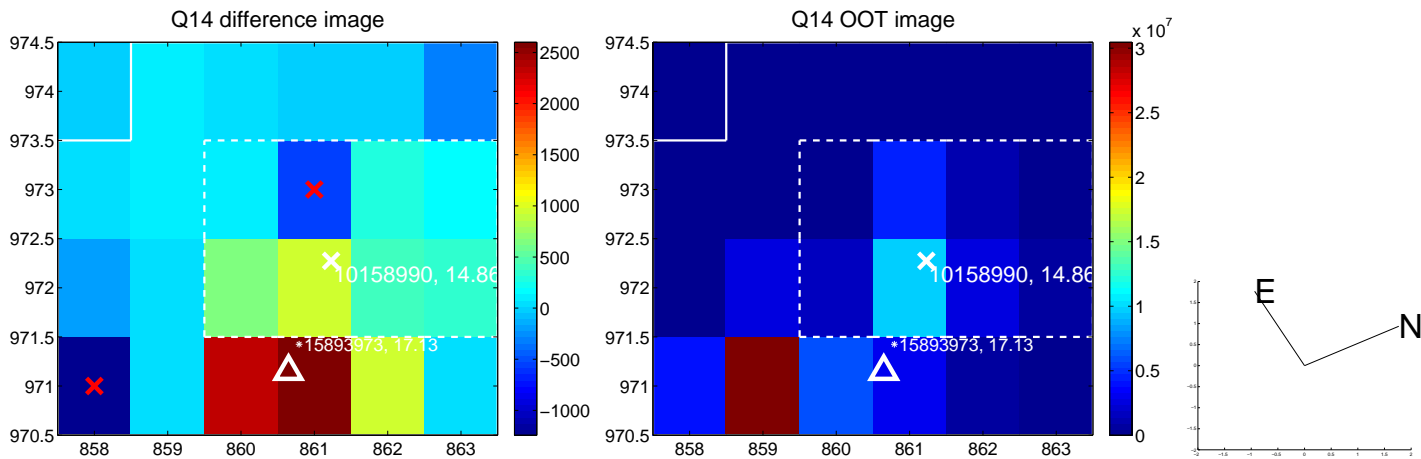
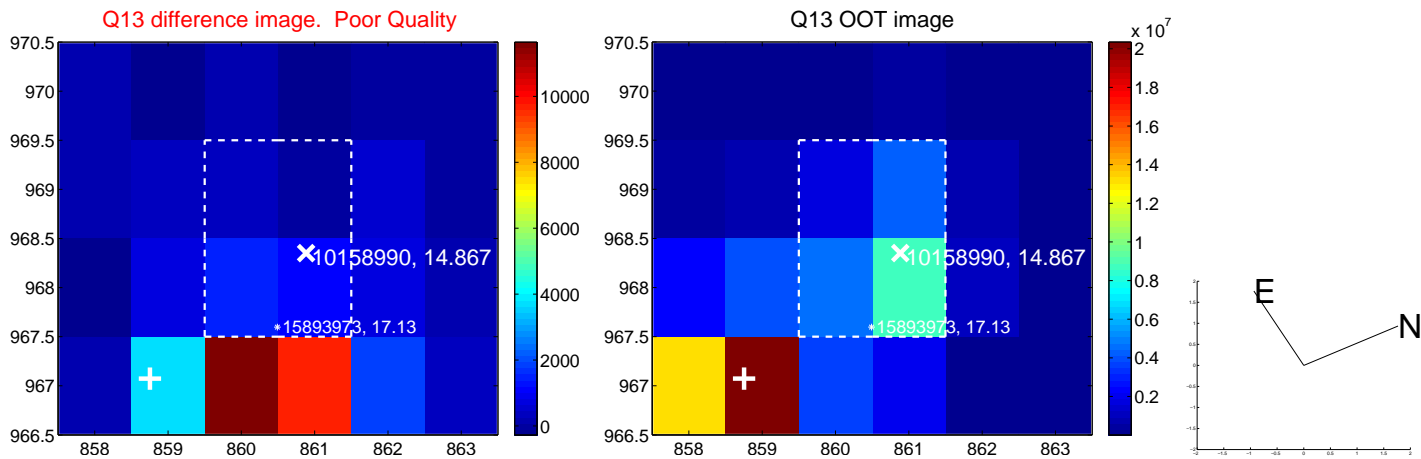
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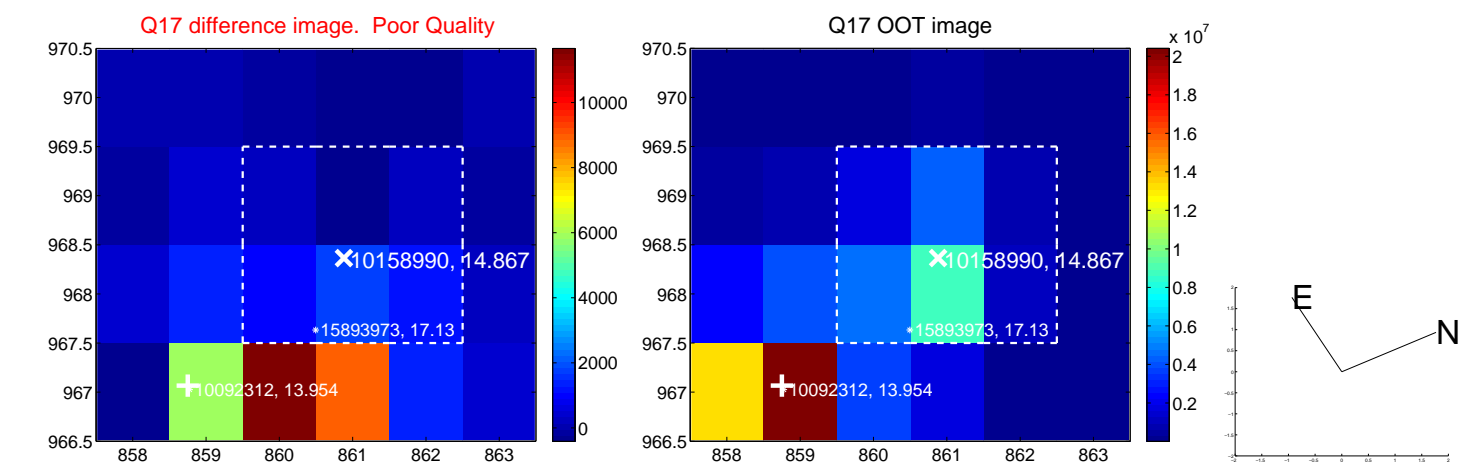
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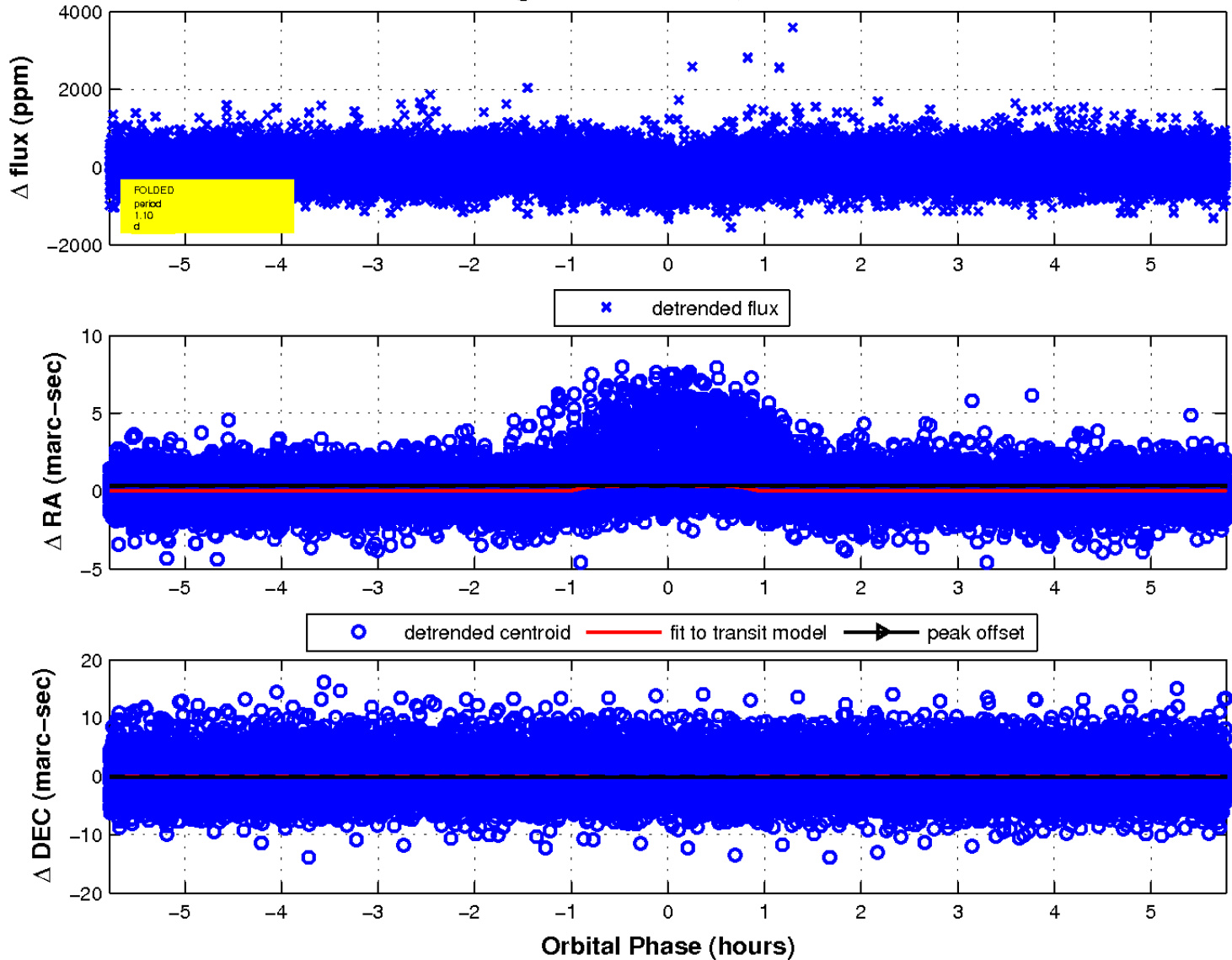
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fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

