

KIC 010220837

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})
010220837-01	OBS	4613.01	1.962258	131.542790	57.7	1.552	11.0	10.9	0.98	5726	0.89	1040.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010220837-01	OBS	PC	0.93	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.

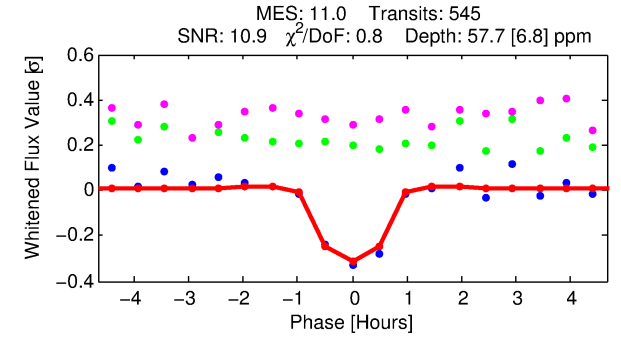
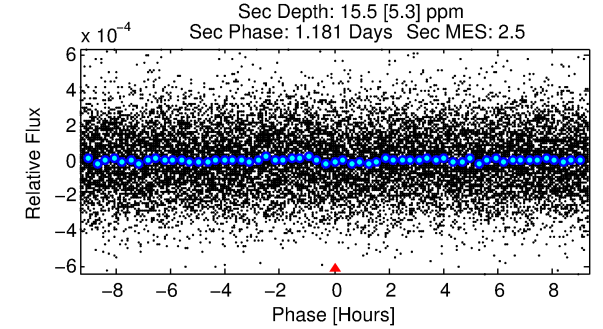
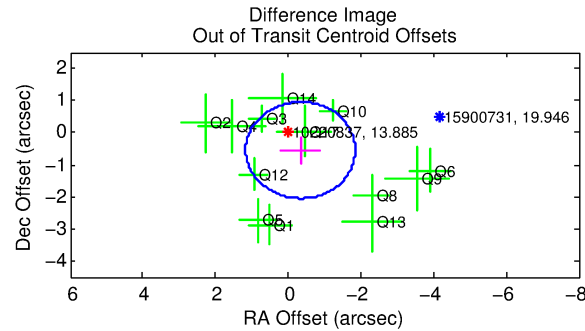
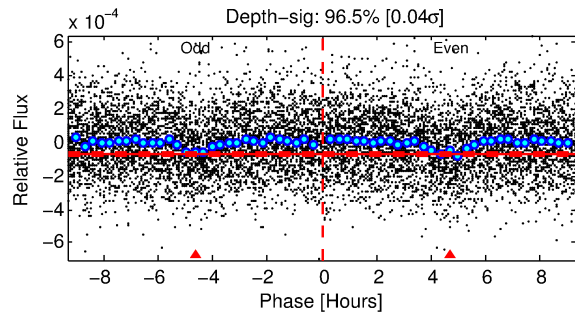
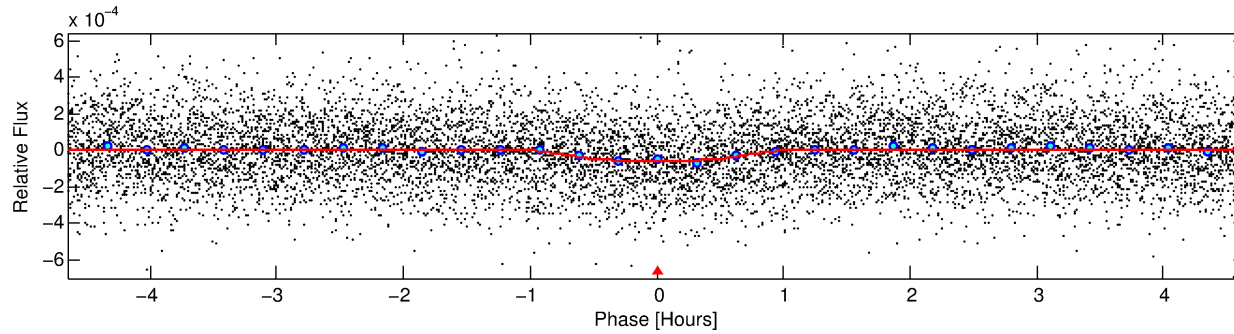
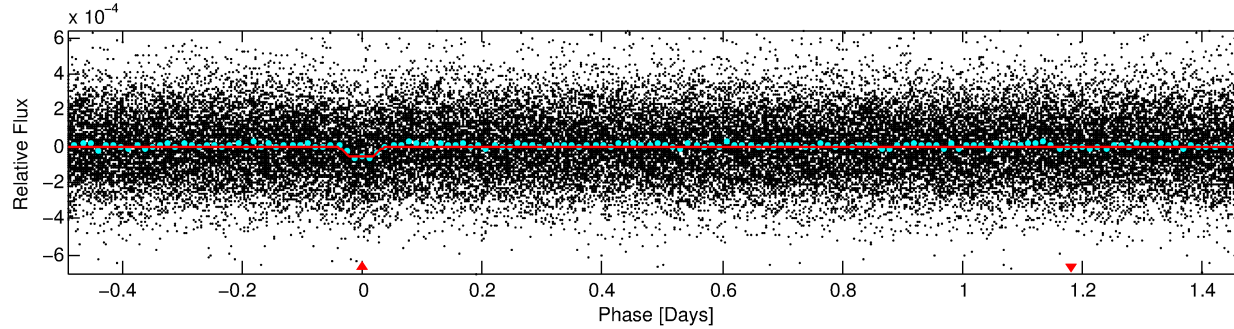
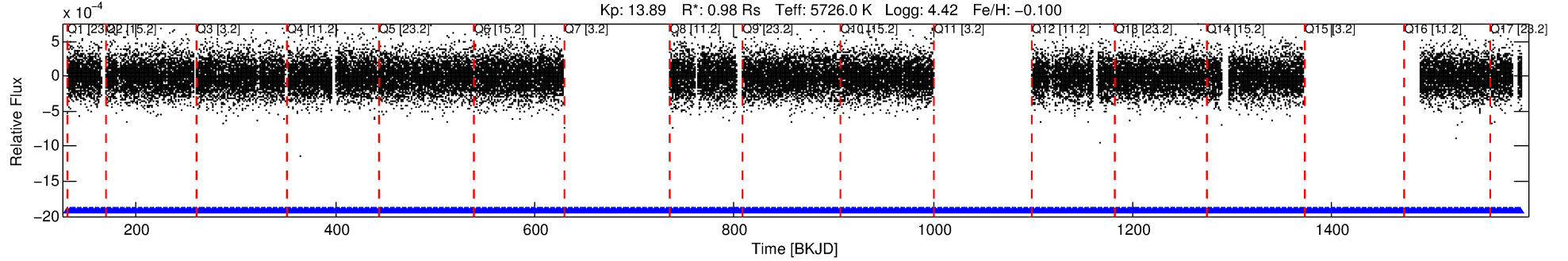
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010220837-01

No Significant Match Found

DV One-Page Summary

KIC: 10220837 Candidate: 1 of 1 Period: 1.962 d
KOI: K04613.01 Corr: 0.933



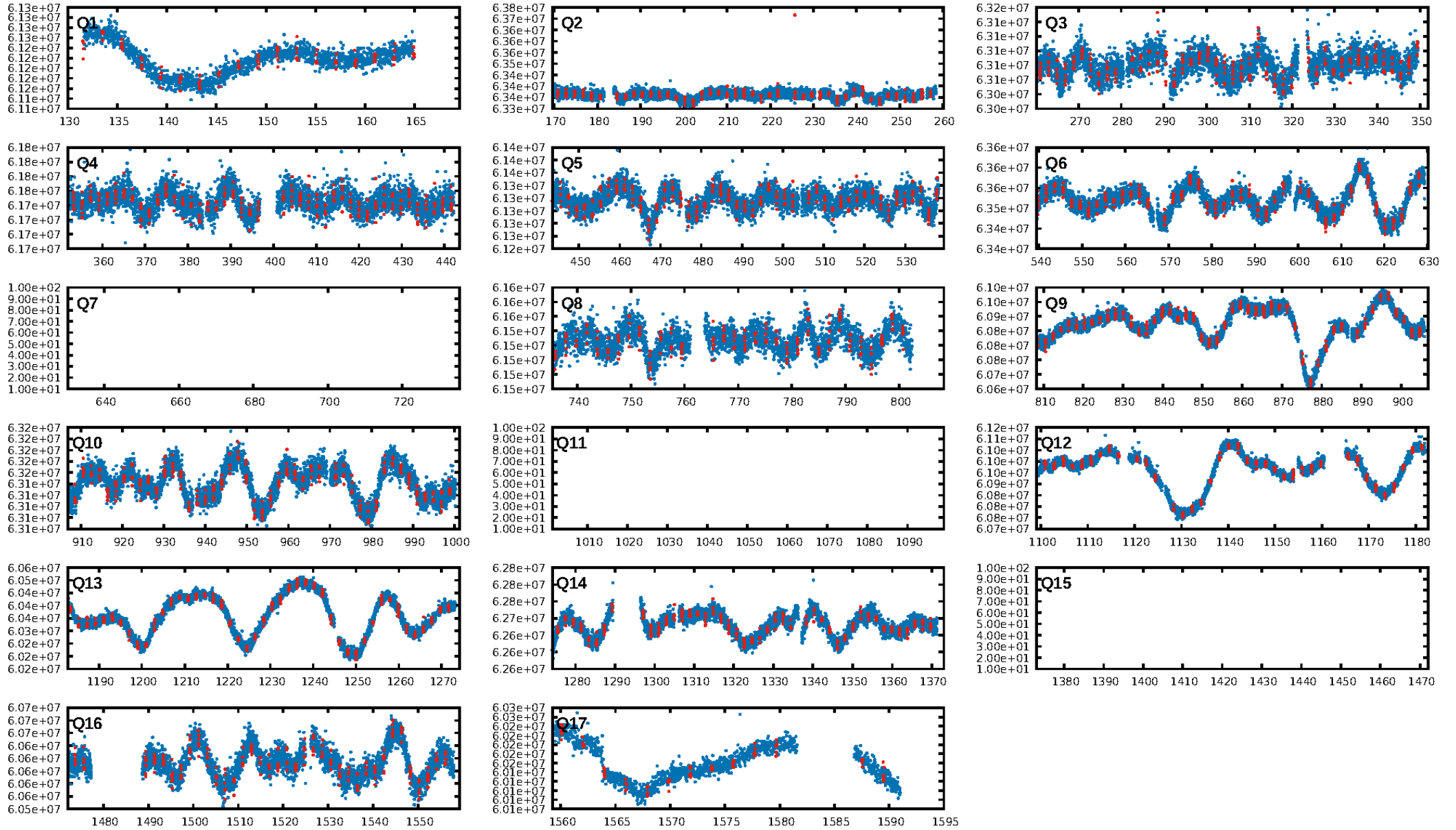
DV Fit Results:

Period = 1.96226 [0.00001] d
Epoch = 131.5428 [0.0023] BKJD
Rp/R* = 0.0083 [0.0051]
a/R* = 4.50 [12.68]
b = 0.90 [0.64]
Seff = 1040.27 [376.79]
Teff = 1448 [131] K
Rp = 0.89 [0.60] Re
a = 0.0298 [0.0070] AU
Ag = 9.65 [12.78] [0.68 σ]
Teffp = 3947 [1268] K [1.96 σ]

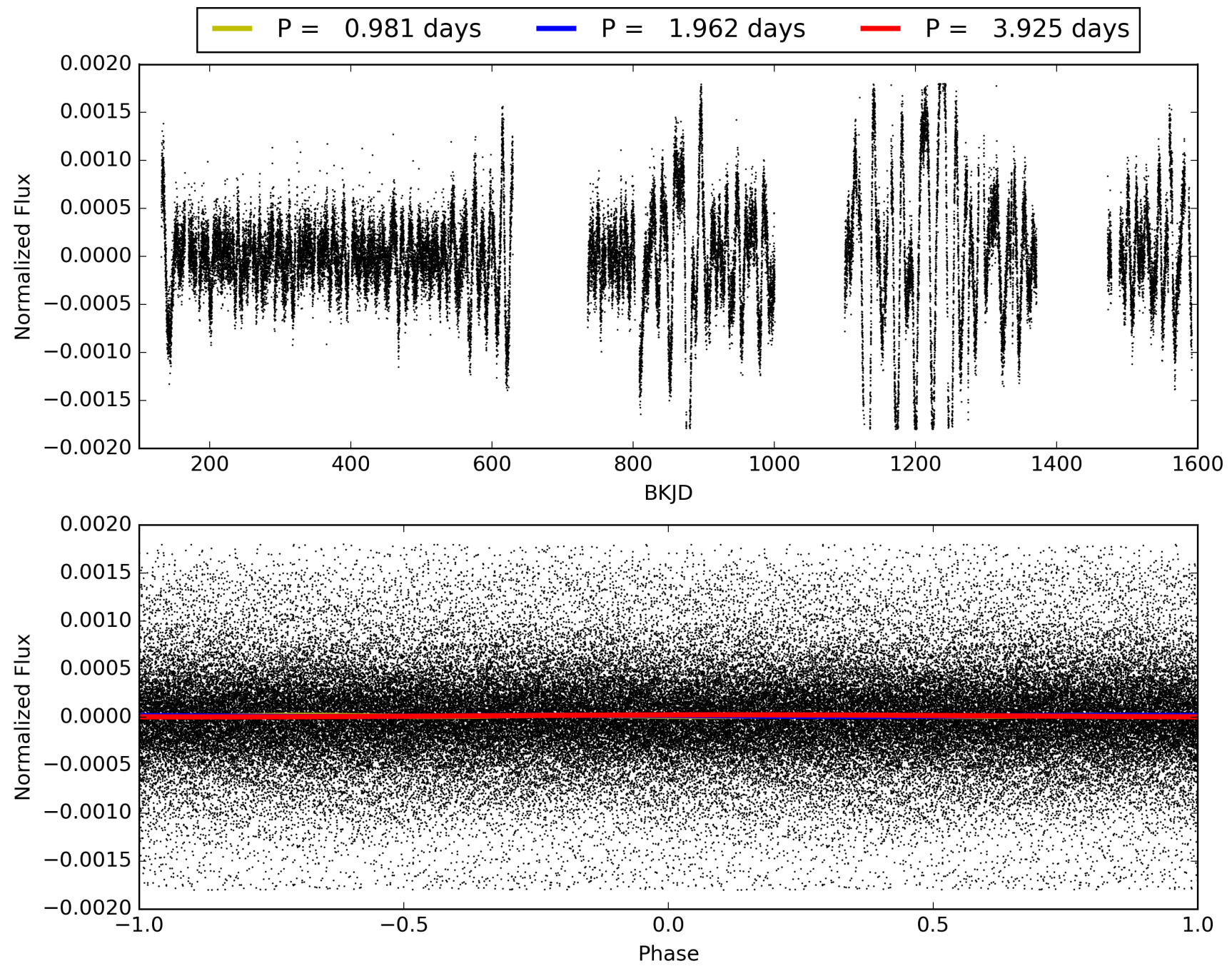
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.08e-27
RollingBand-fgt: 1.00 [514/514]
GhostDiagnostic-chr: 6.971
Centroid-sig: 79.2%
Centroid-so: 0.493 arcsec [0.42 σ]
OotOffset-rm: 0.642 arcsec [1.28 σ]
OotOffset-st: 4/1/3/5 [13]
KicOffset-rm: 0.679 arcsec [1.39 σ]
KicOffset-st: 4/1/3/5 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010220837-01, PDC Light Curves

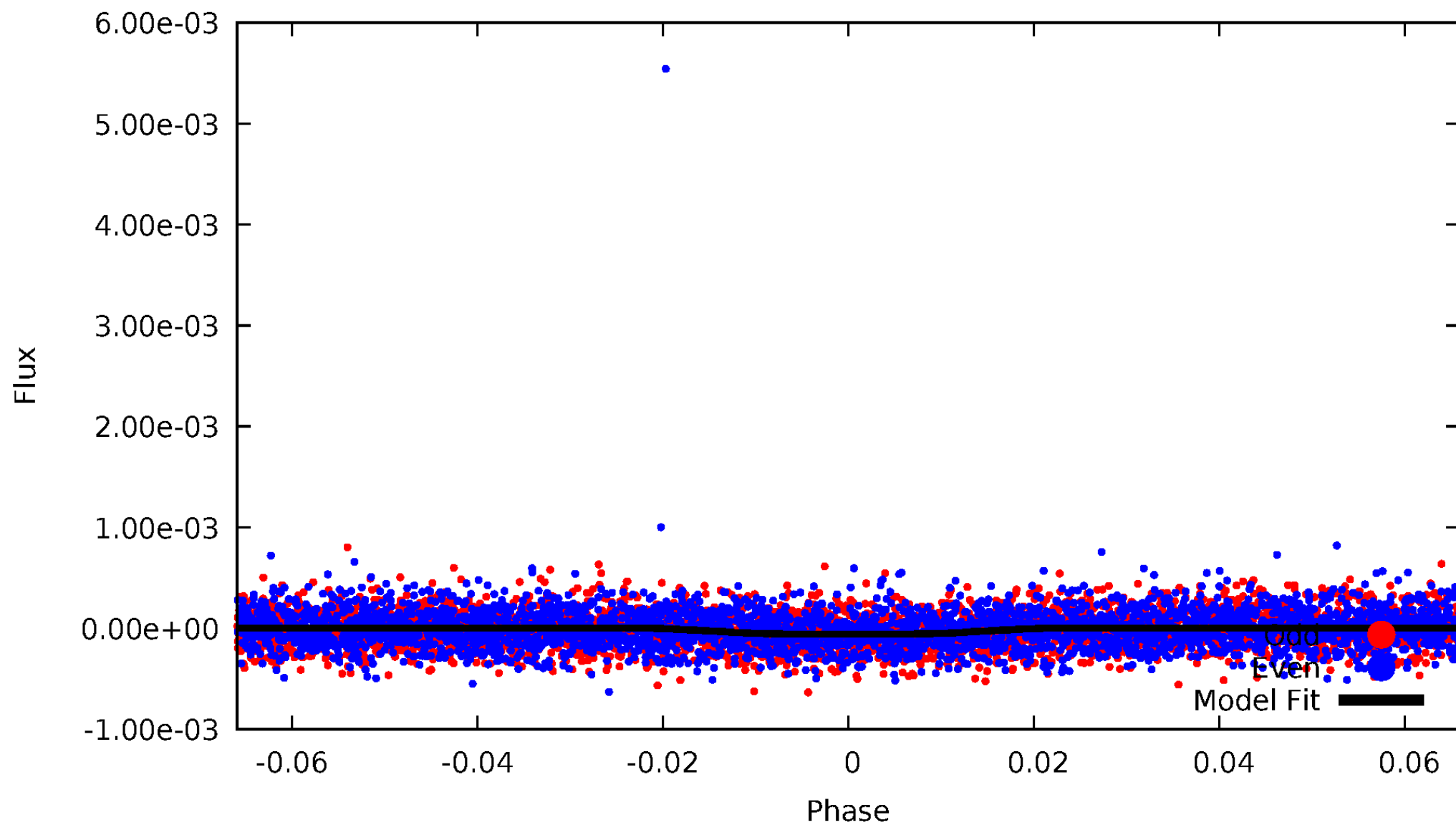


TCE 010220837-01



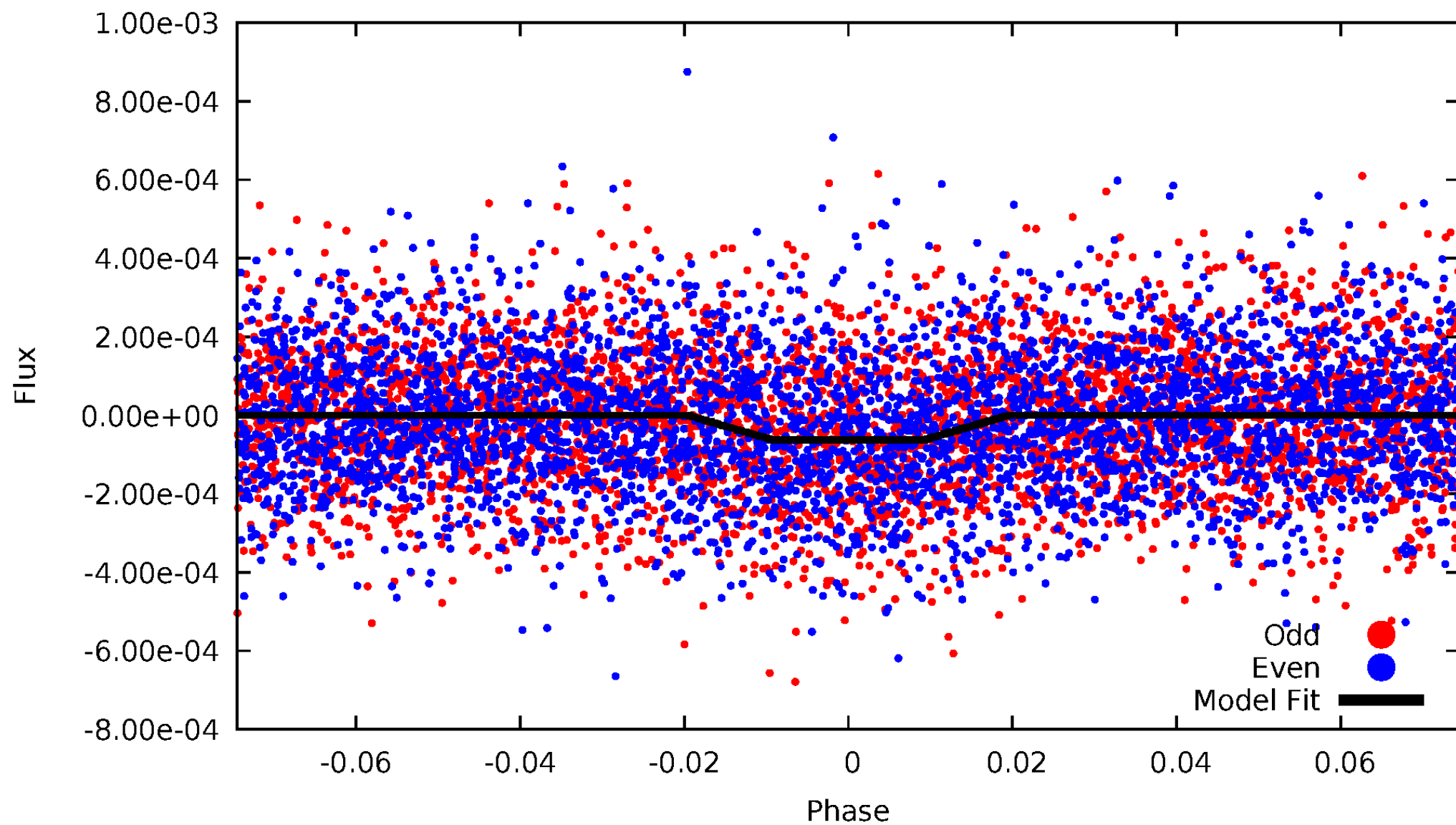
DV Odd/Even

TCE 010220837-01



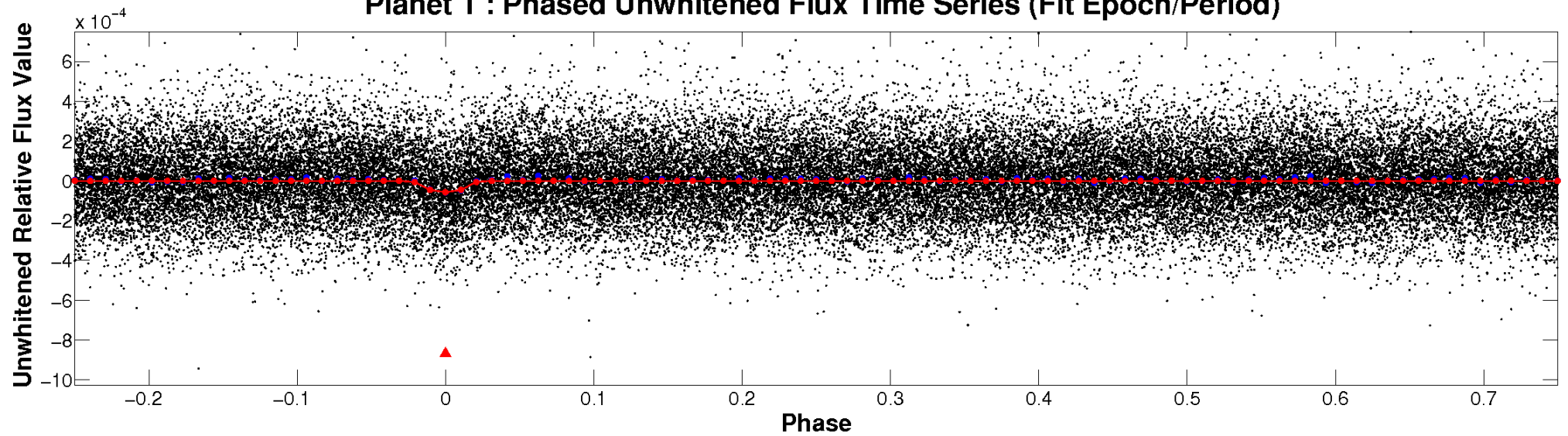
ALT Odd/Even

TCE 010220837-01

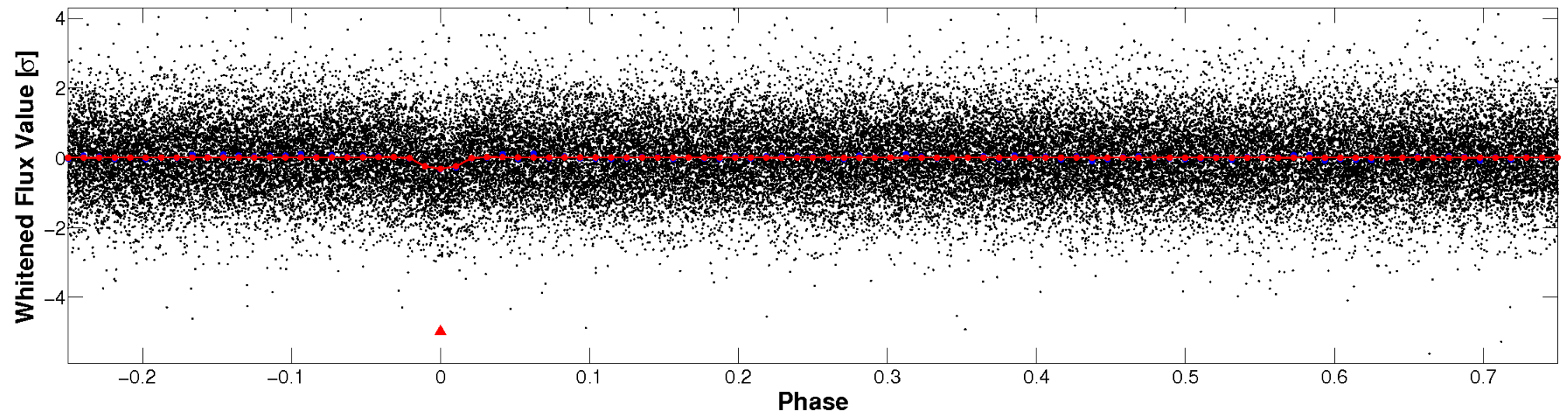


Non-Whitened Vs. Whitened Light Curve

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

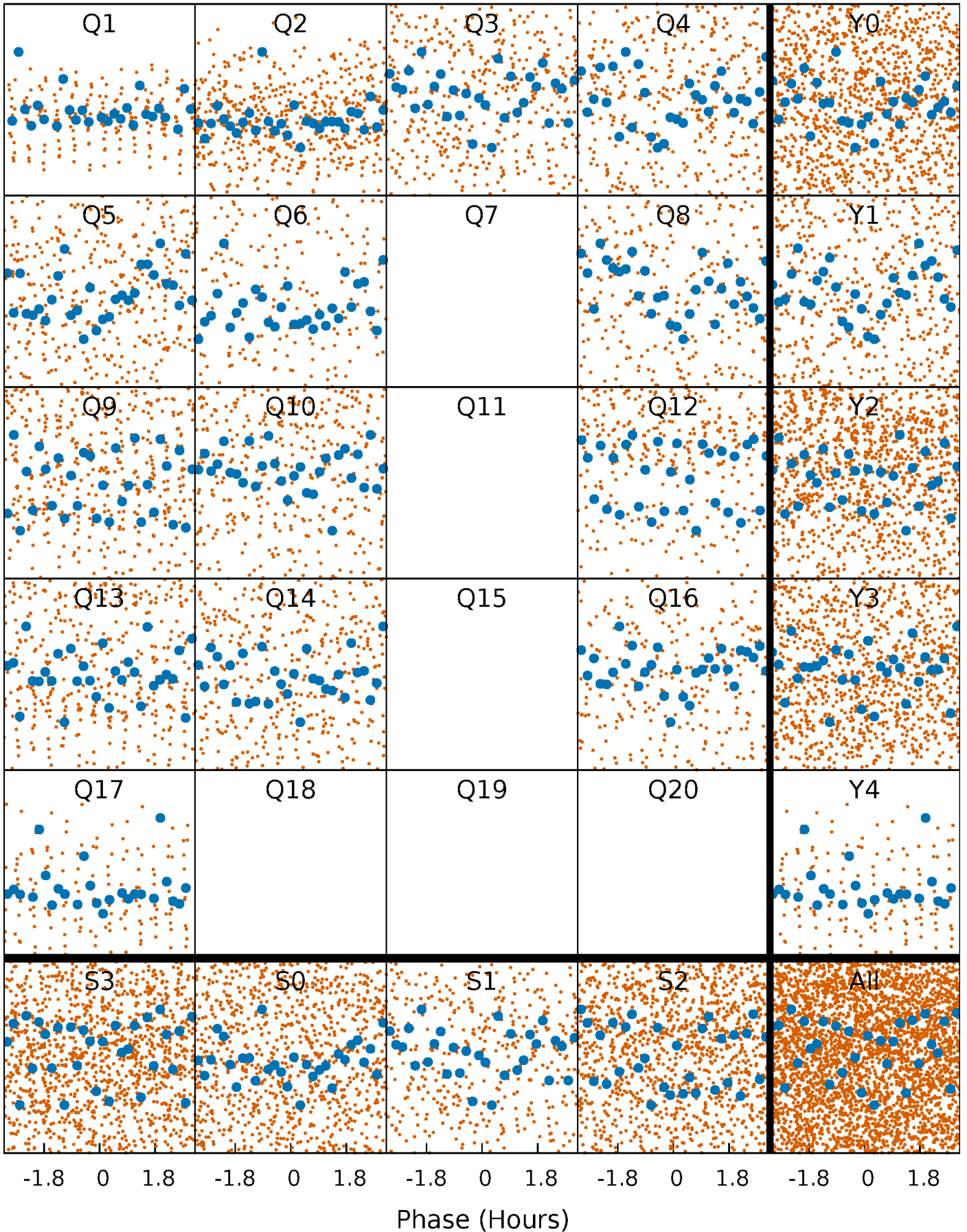


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



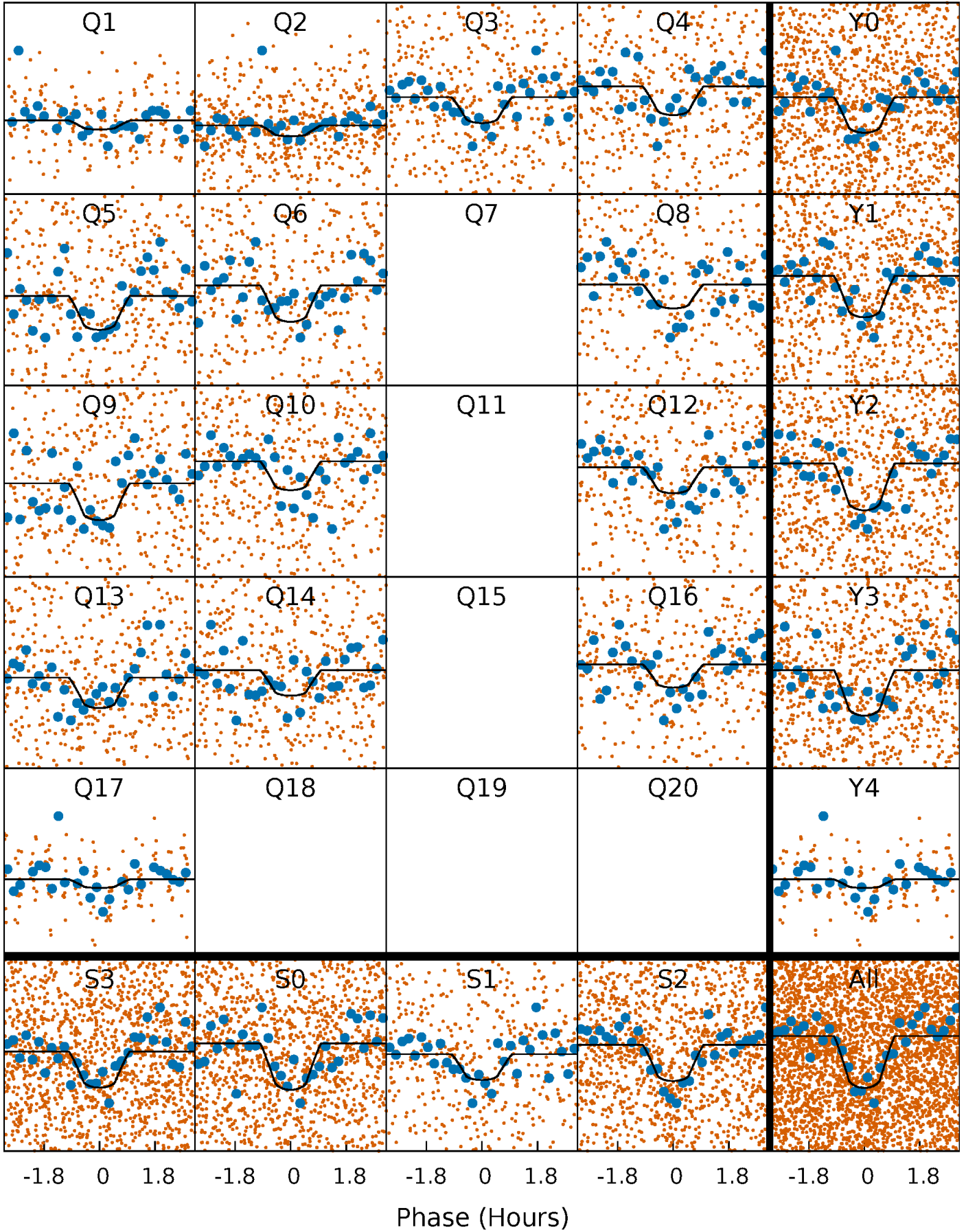
PDC Quarter-Phased Transit Curves

TCE 010220837-01 P= 1.962258 Days $T_0=131.542789$ (BKJD)



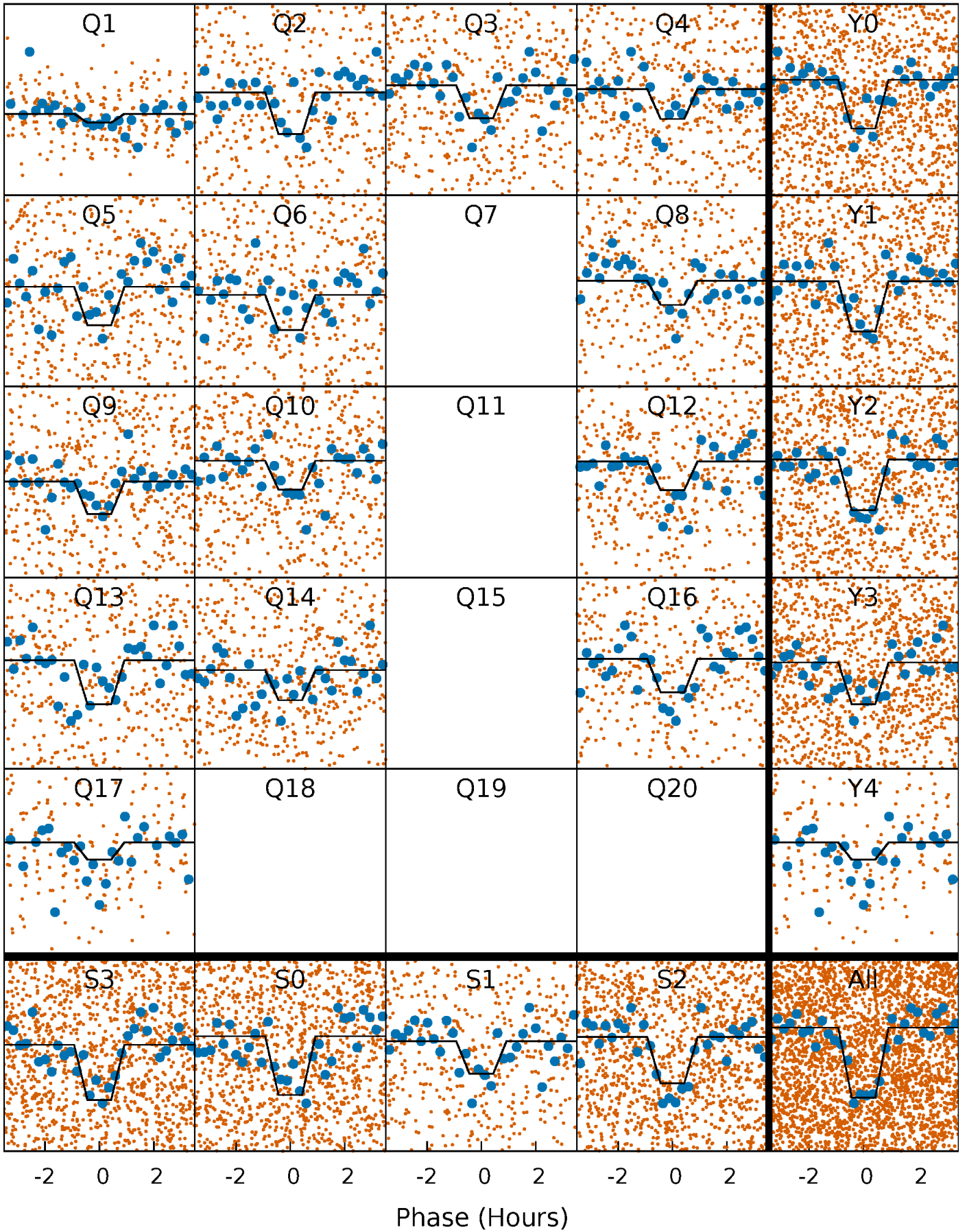
DV Quarter-Phased Transit Curves

TCE 010220837-01 P= 1.962258 Days $T_0=131.542789$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

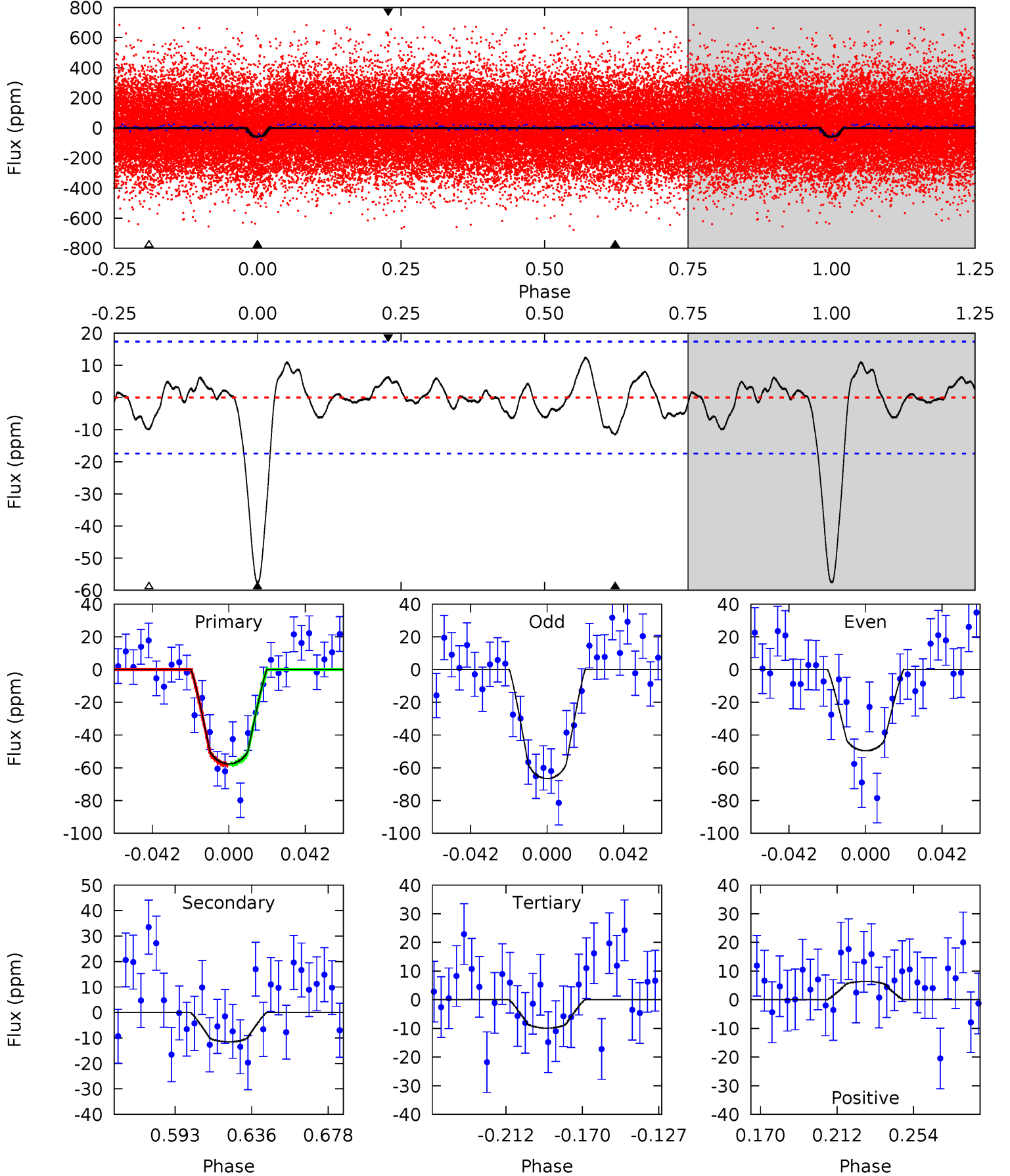
TCE 010220837-01 P= 1.962270 Days $T_0=131.540724$ (BKJD)



DV Model-Shift Uniqueness Test

010220837-01, P = 1.962258 Days, E = 129.580531 Days

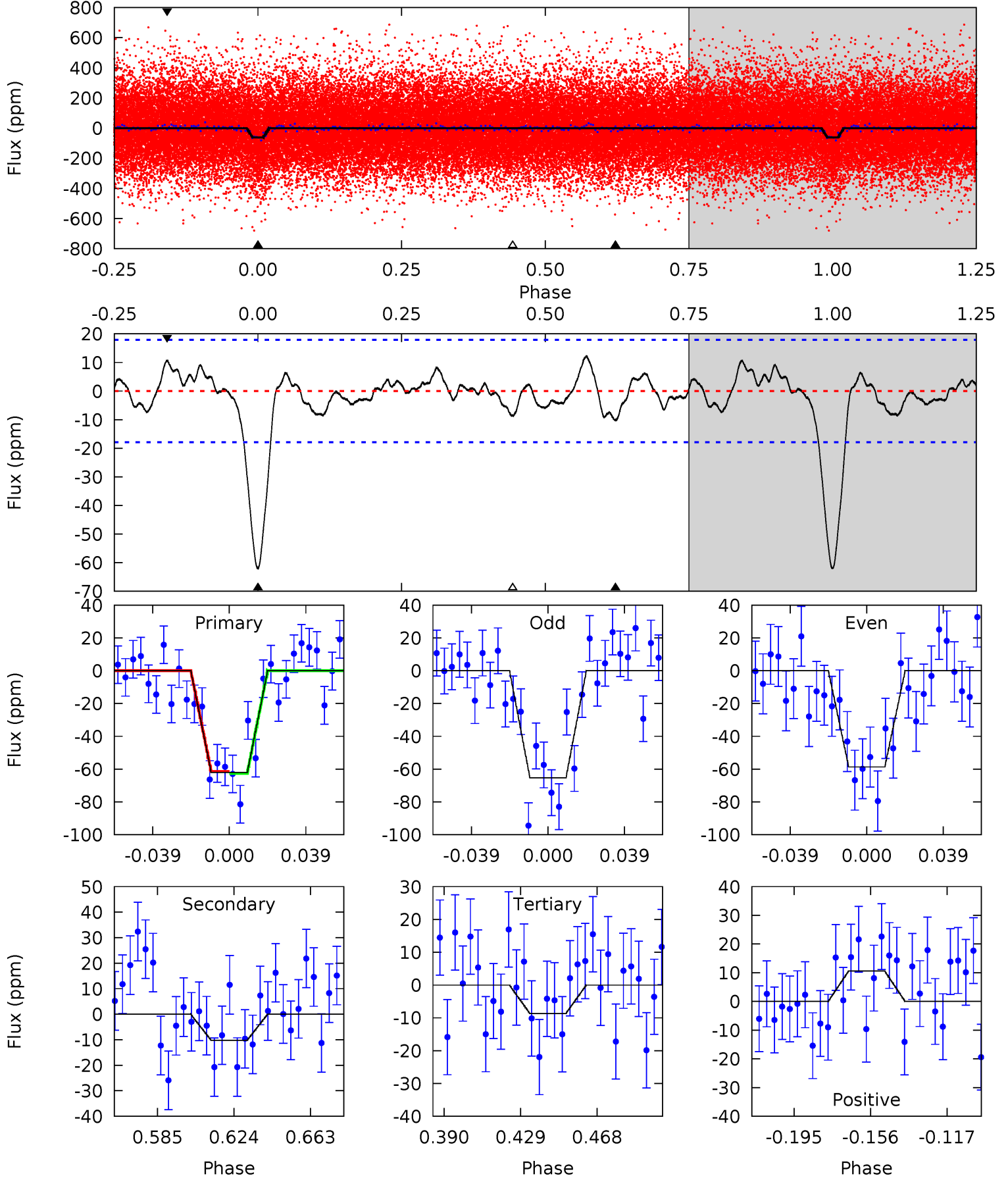
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	3.14	2.69	1.74	4.74	2.03	1.20	13.0	13.9	0.44	1.40	2.32	1.05	0.18	0.04



Alt Model-Shift Uniqueness Test

010220837-01, $P = 1.962270$ Days, $E = 129.578454$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	2.72	2.31	2.82	4.76	2.06	1.17	14.2	13.7	0.41	-0.10	0.88	0.91	0.16	0.15



Stellar Parameters For KIC 010220837

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5726^{+170}_{-170}	$4.418^{+0.101}_{-0.188}$	$-0.100^{+0.300}_{-0.300}$	$0.979^{+0.270}_{-0.146}$	$0.915^{+0.116}_{-0.085}$	$1.373^{+0.627}_{-0.695}$
	+3%/-3%	+2%/-4%	+300%/-300%	+28%/-15%	+13%/-9%	+46%/-51%
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 010220837-01 / KOI 4613.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-12 ± 4	$0.98^{+0.55}_{-0.57}$	2041^{+152}_{-103}	3889^{+1511}_{-650}	$6.243^{+26.271}_{-4.125}$
Alt.	-10 ± 4	$0.95^{+0.55}_{-0.56}$	2049^{+151}_{-120}	3810^{+1500}_{-609}	$5.677^{+23.809}_{-3.707}$

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 $A_{obs} \gg 1.0$

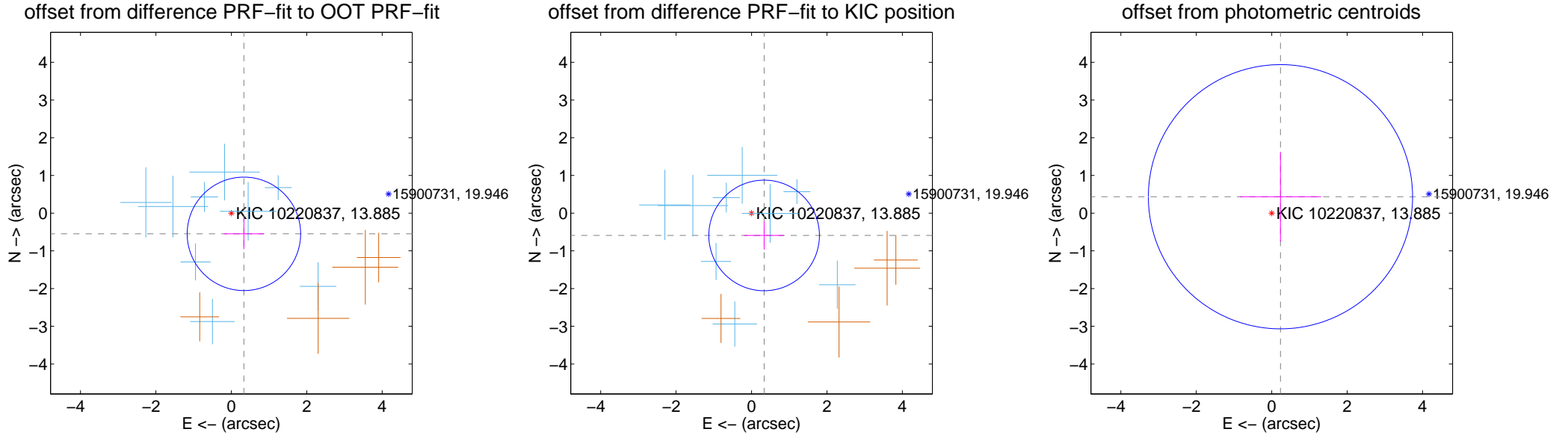
DV Centroid Data

Supplemental centroid analysis for 010220837-01. Kepler magnitude: 13.88. Transit SNR 10.91

There are 9 quarters with good PRF difference image offsets

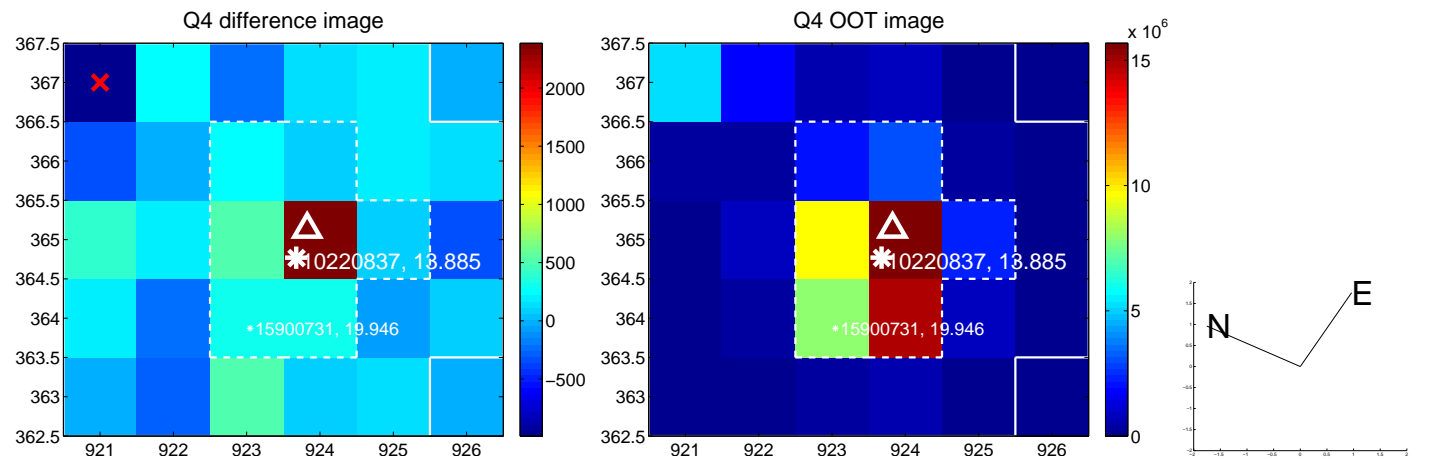
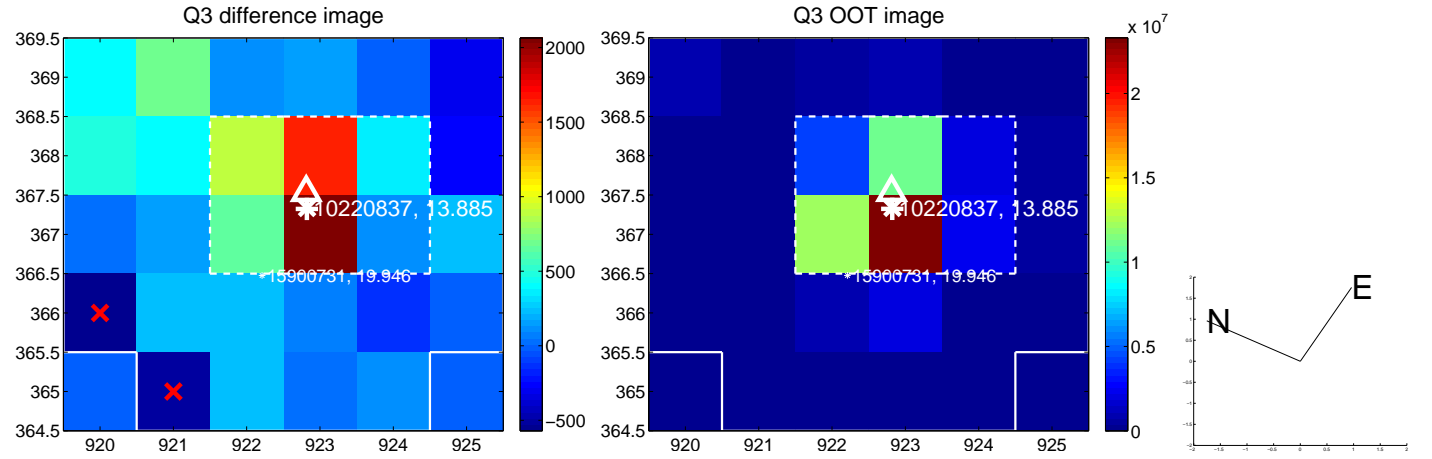
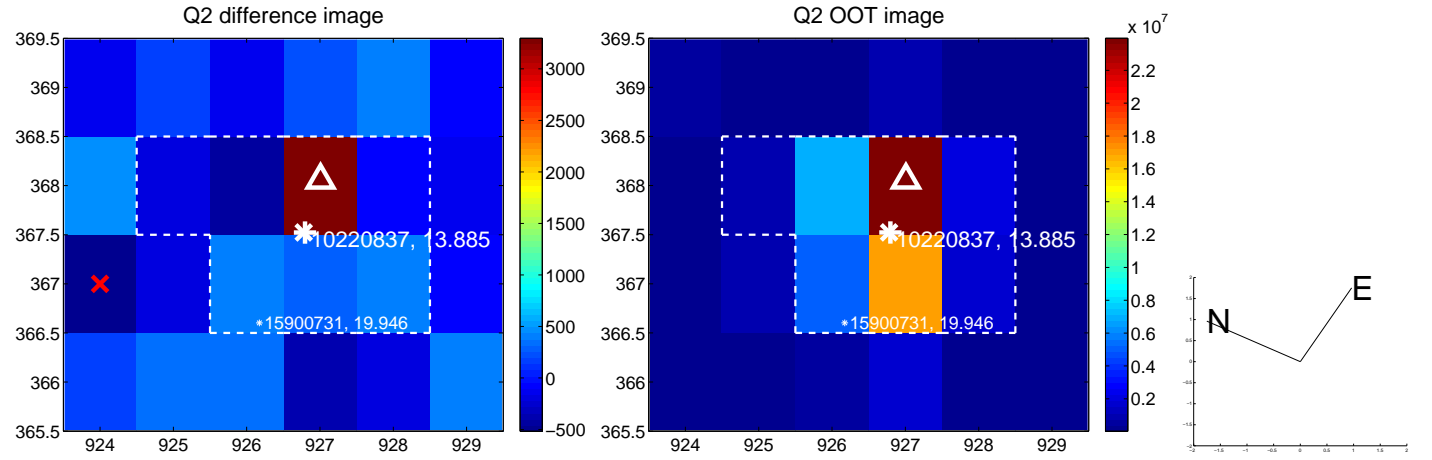
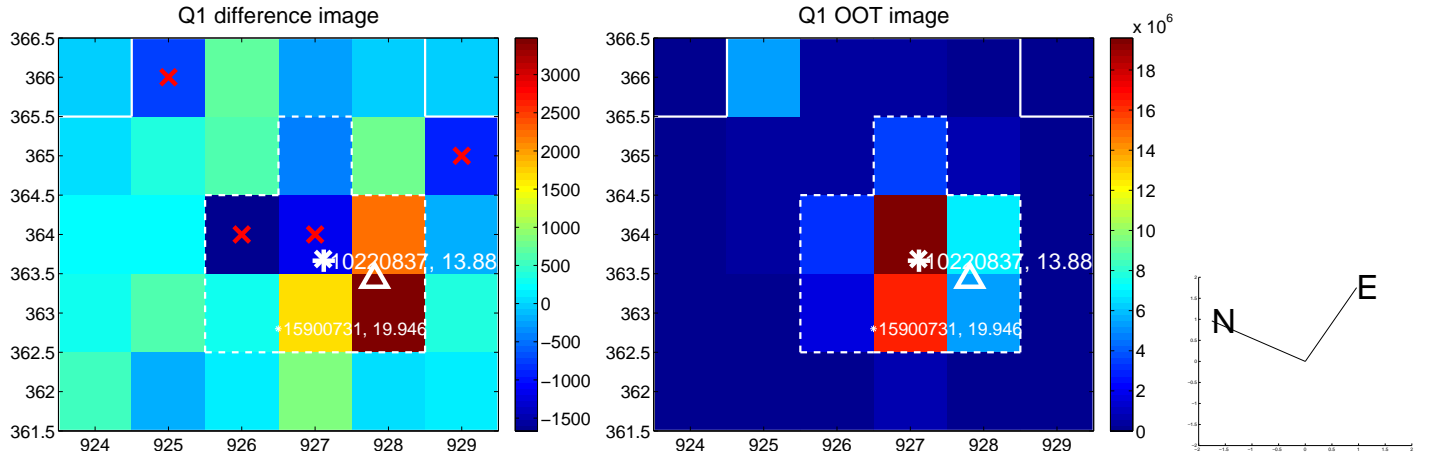
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.642 ± 0.501	1.28	-0.333 ± 0.525	-0.549 ± 0.404
PRF-fit source offset from KIC position	0.679 ± 0.489	1.39	-0.334 ± 0.531	-0.591 ± 0.374
photometric centroid source offset	0.49 ± 1.17	0.42	-0.23 ± 1.08	0.44 ± 1.19

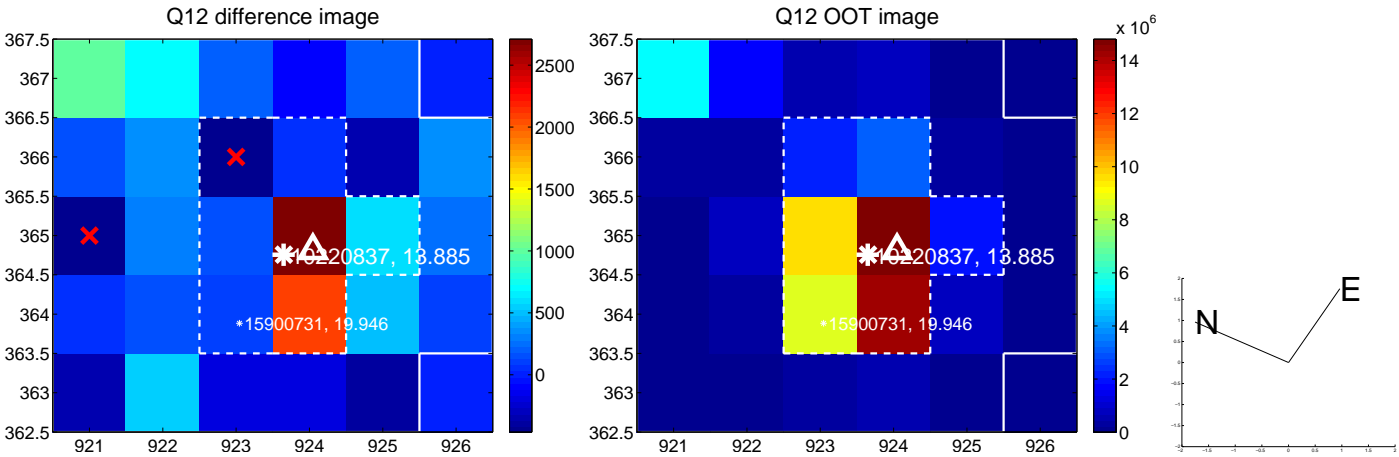
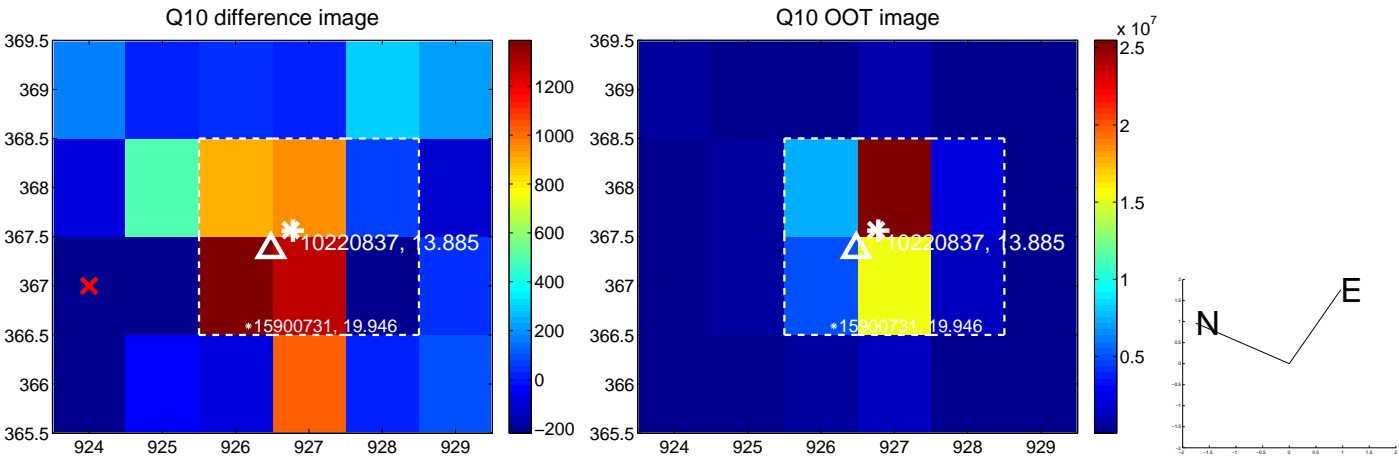
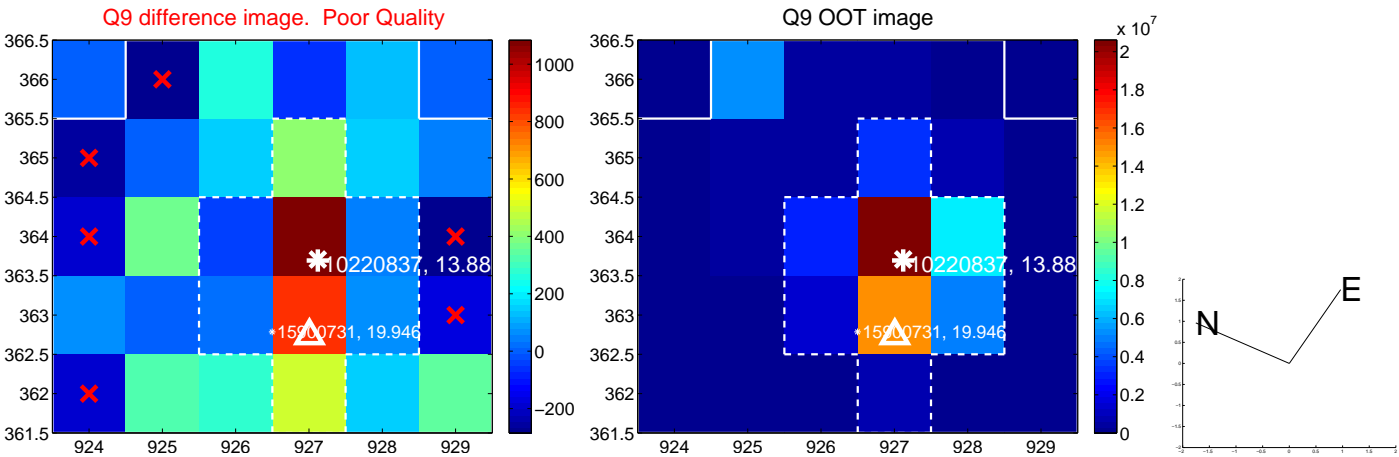


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

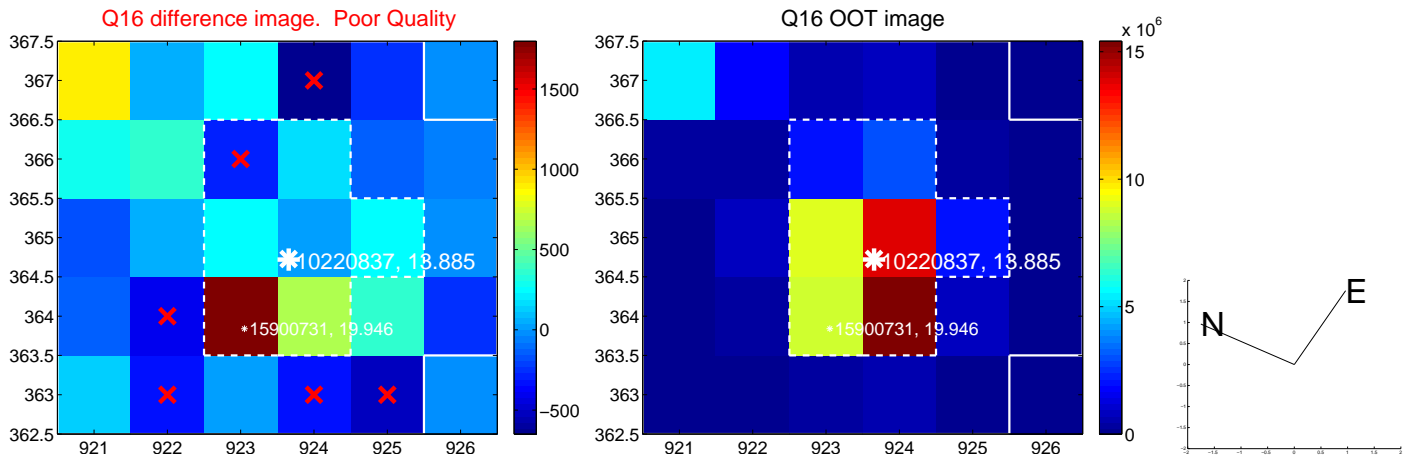
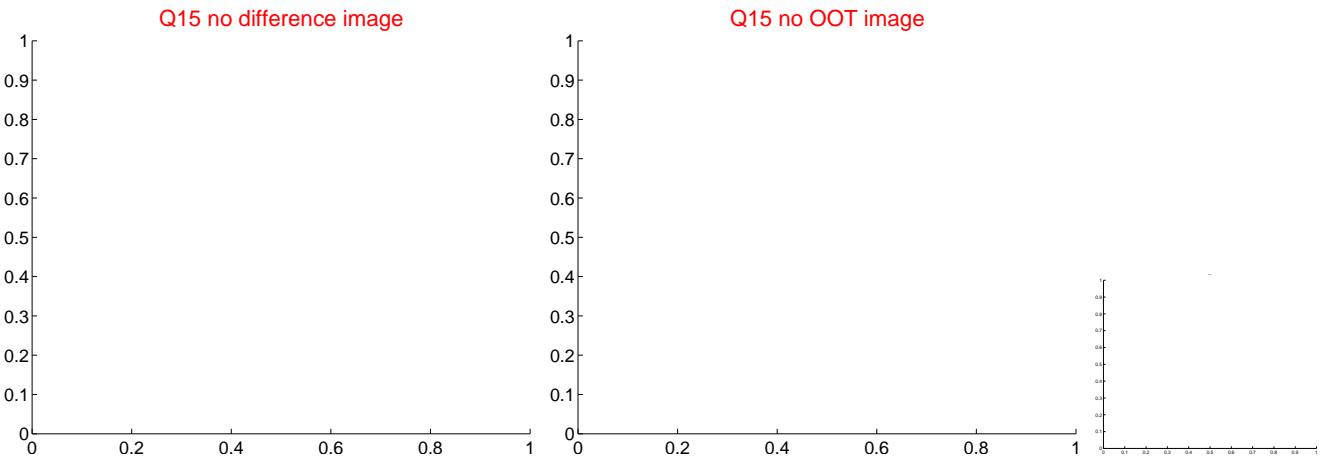
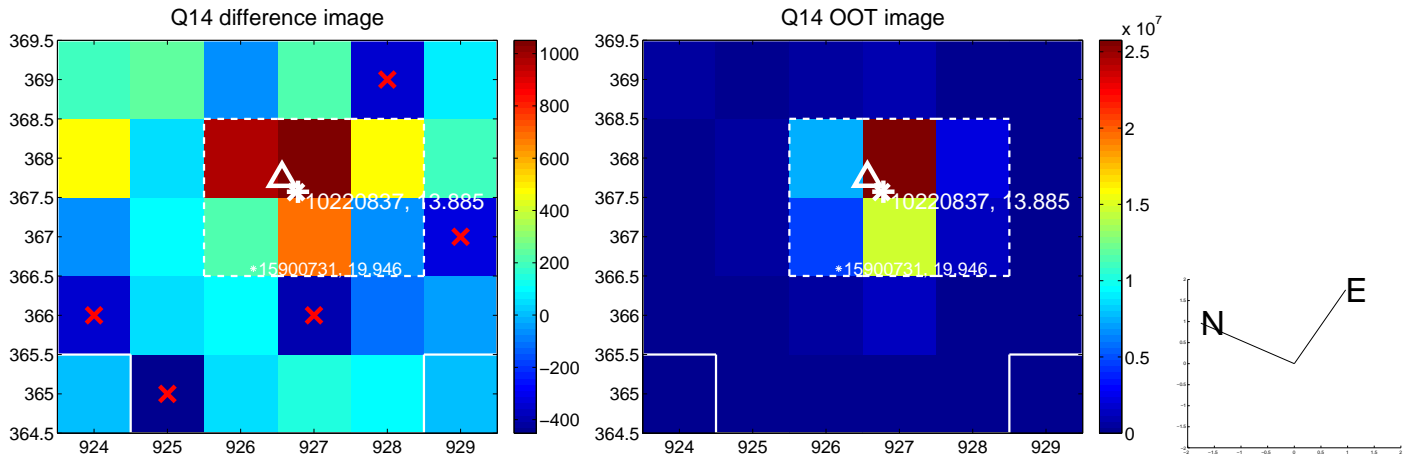
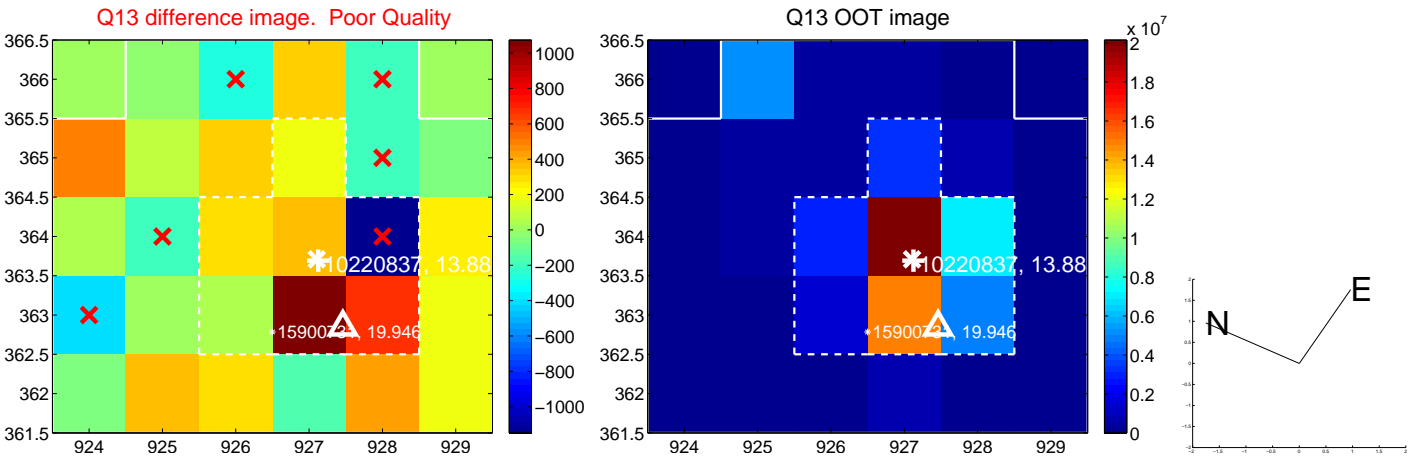
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



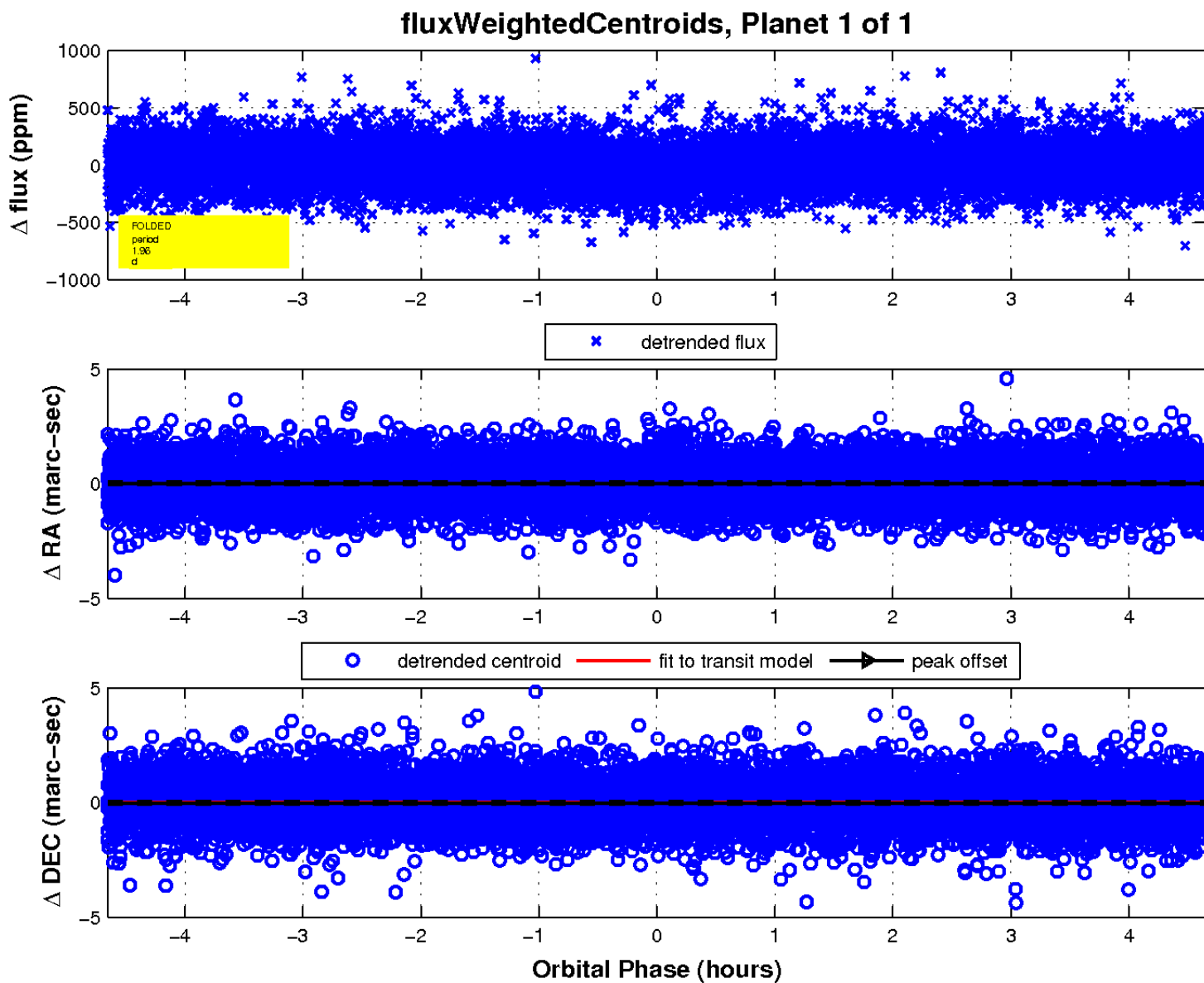
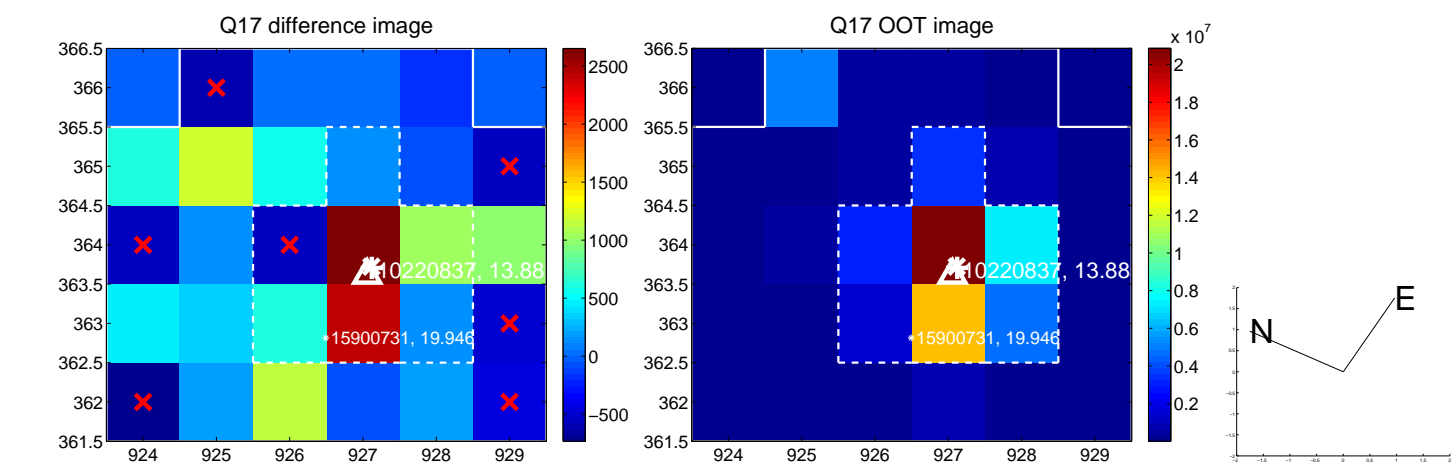
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

