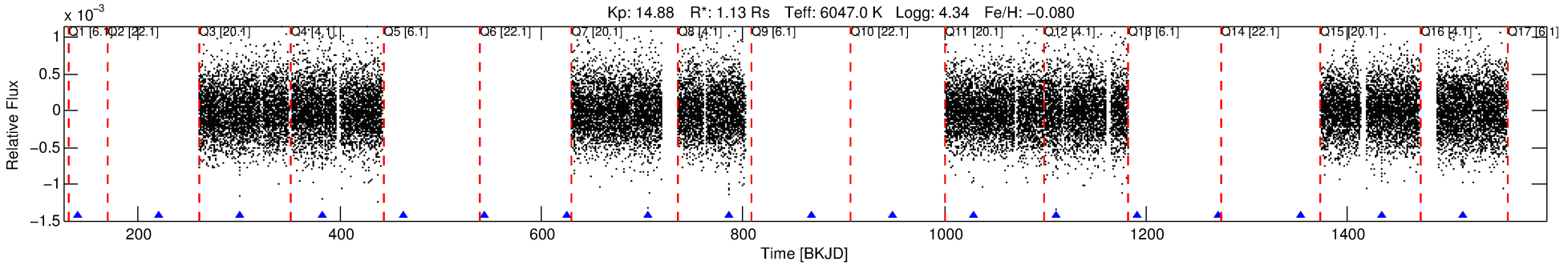
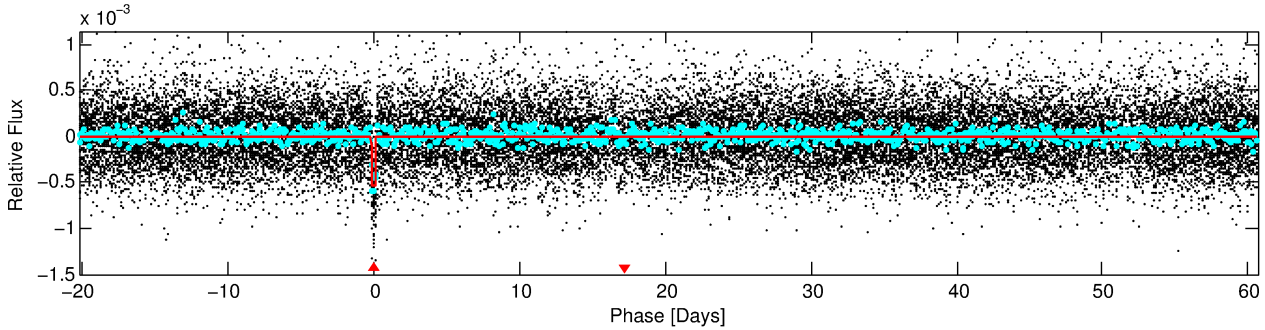
WARNING: THIS DATA IS SIMULATED, NOT OBSERVED

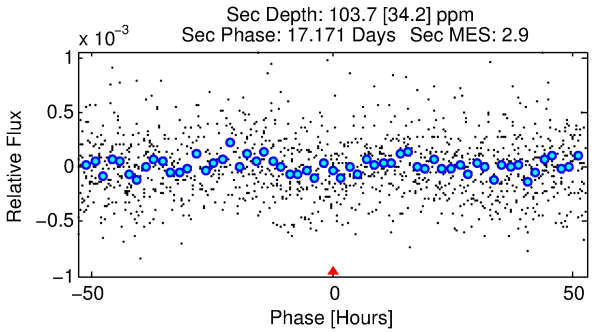
# DV One-Page Summary

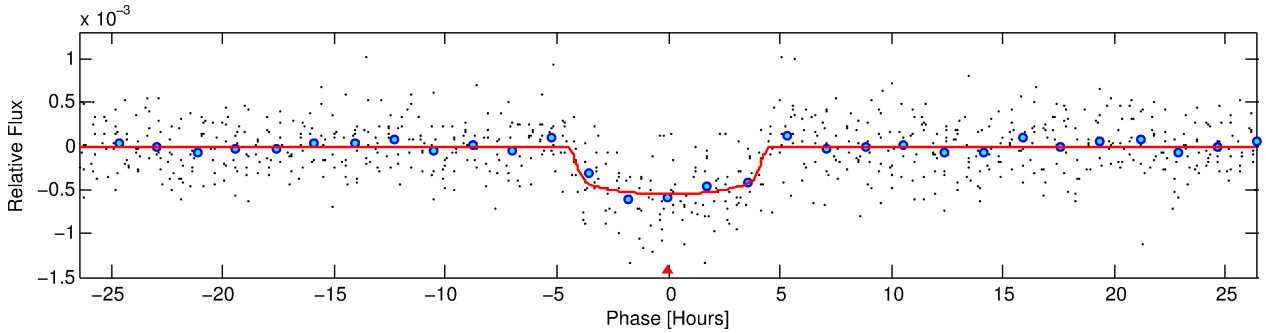
**KIC: 9936959 Candidate: 1 of 1 Period: 80.897 d**

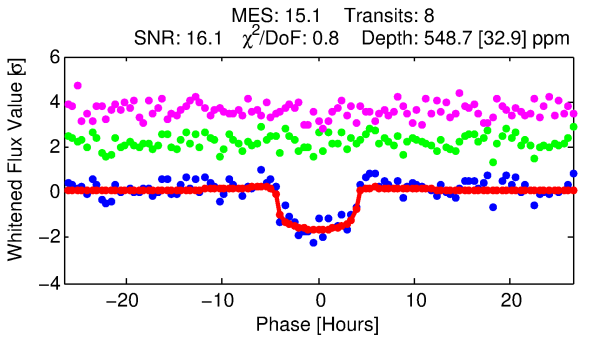
WARNING: THIS DATA IS SIMULATED, NOT OBSERVED

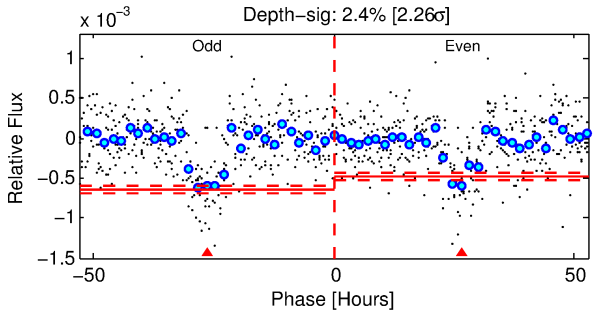


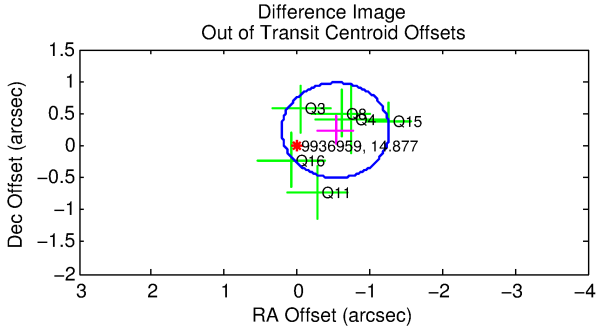




DV Fit Results:

Period = 80.89709 [0.00092] d
Epoch = 139.5282 [0.0095] BKJD
Rp/R* = 0.0233 [0.0092]
a/R* = 48.70 [93.64]
b = 0.75 [1.13]

Seff = 11.21 [4.39]
Teq = 467 [46] K
Rp = 2.87 [1.44] Re
a = 0.3691 [0.0939] AU

Ag = 942.72 [872.83] [1.08σ]
Teffp = 3997 [866] K [4.07σ]

DV Diagnostic Results:

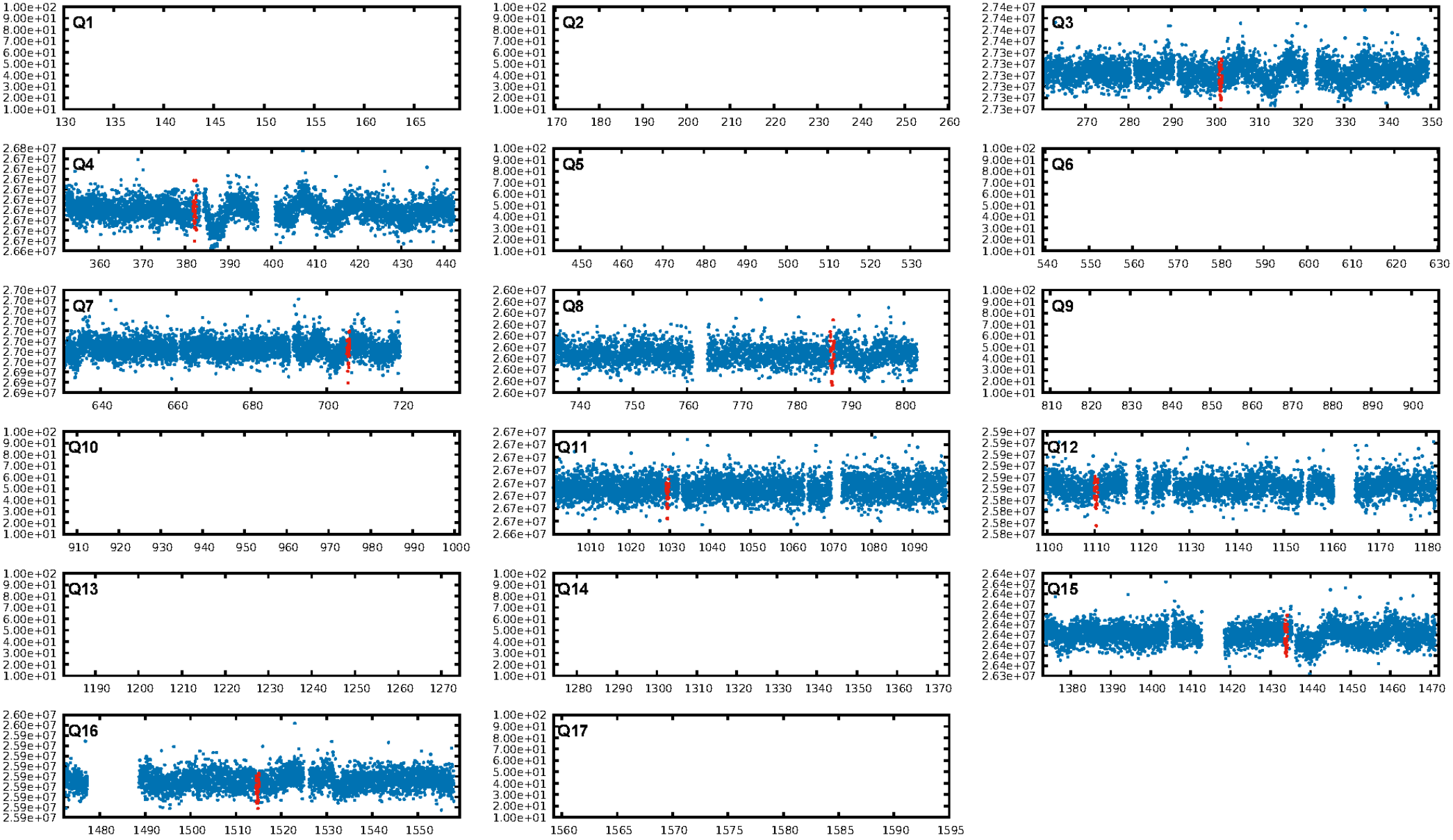
ShortPeriod−sig: N/A
LongPeriod−sig: N/A
ModelChiSquare2−sig: 77.4%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: 1.09e−46
RollingBand−fgt: 1.00 [8/8]
GhostDiagnostic−chr: 1.952

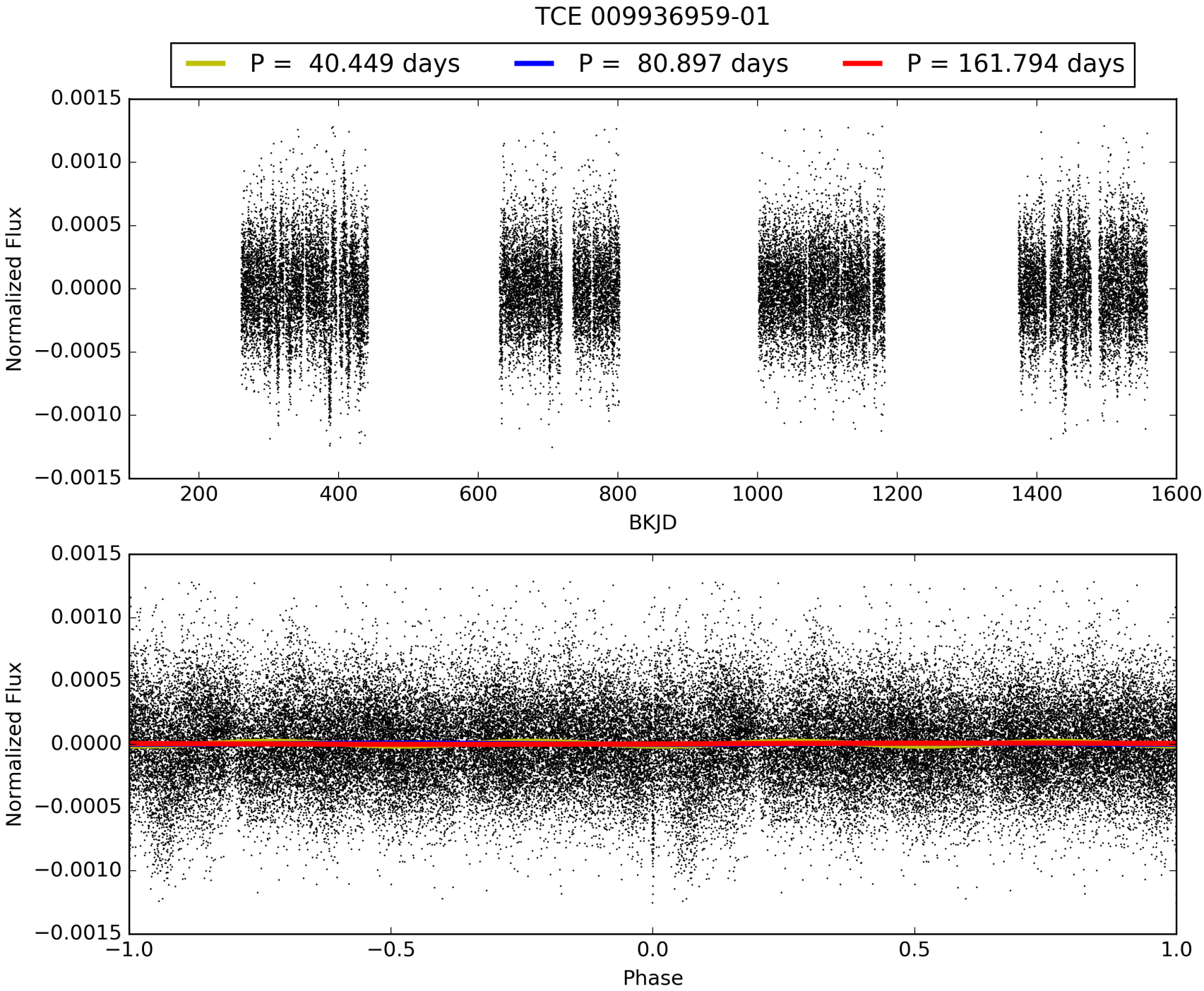
Centroid−sig: 39.3%
Centroid−so: 0.825 arcsec [1.07σ]
OotOffset−rm: 0.580 arcsec [2.35σ]
KicOffset−rm: 0.472 arcsec [1.97σ]
OotOffset−st: 0/3/3/0 [6]
KicOffset−st: 0/3/3/0 [6]
DiffImageQuality−fgm: 0.83 [5/6]
DiffImageOverlap−fno: 1.00 [7/7]

**Software Revision: svn+ssh://murzim/repo/soc/branches/integ/ksop−2174@60968 −− Date Generated: 06−Feb−2016 06:36:50 Z**

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

# TCE 009936959-01, PDC Light Curves

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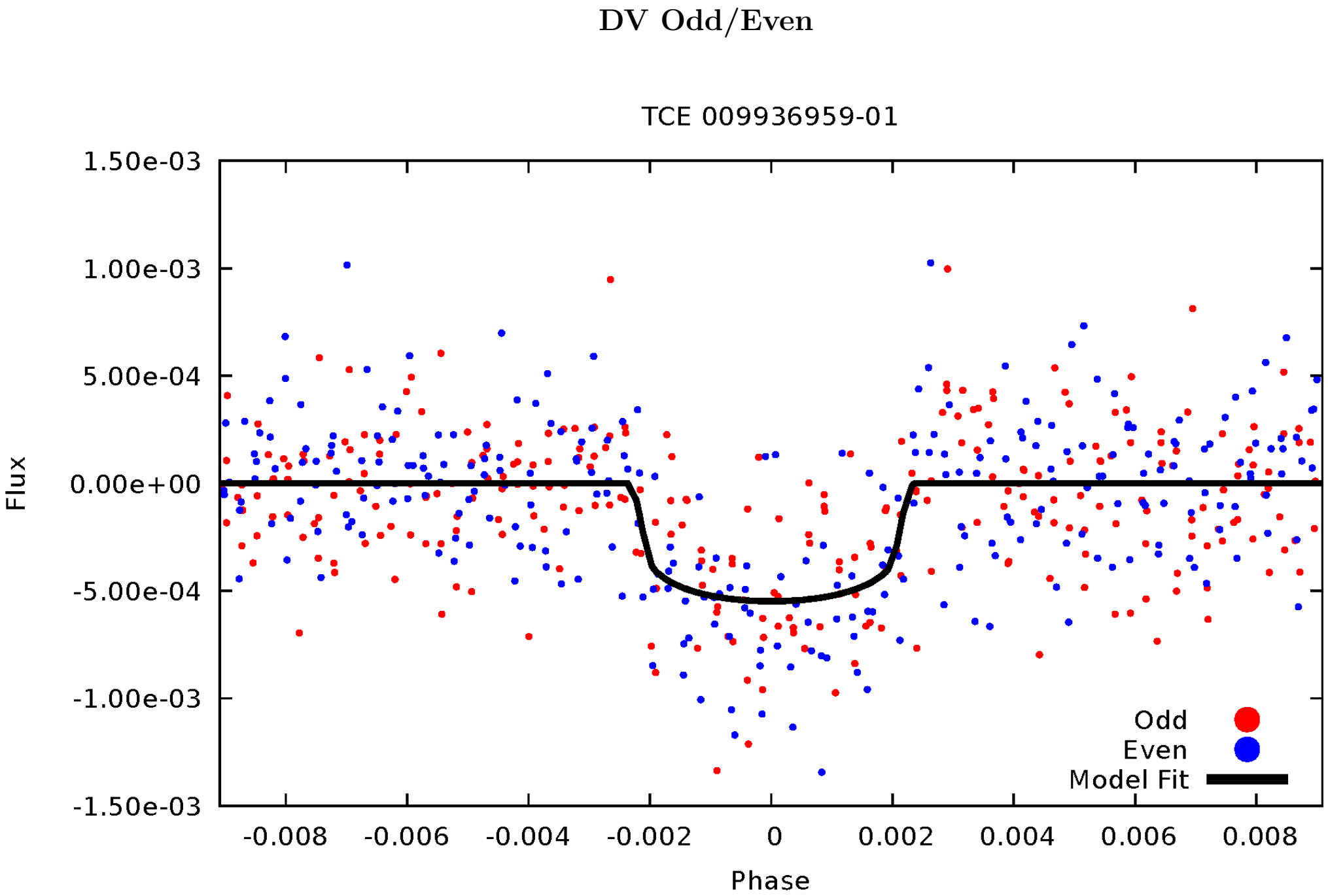
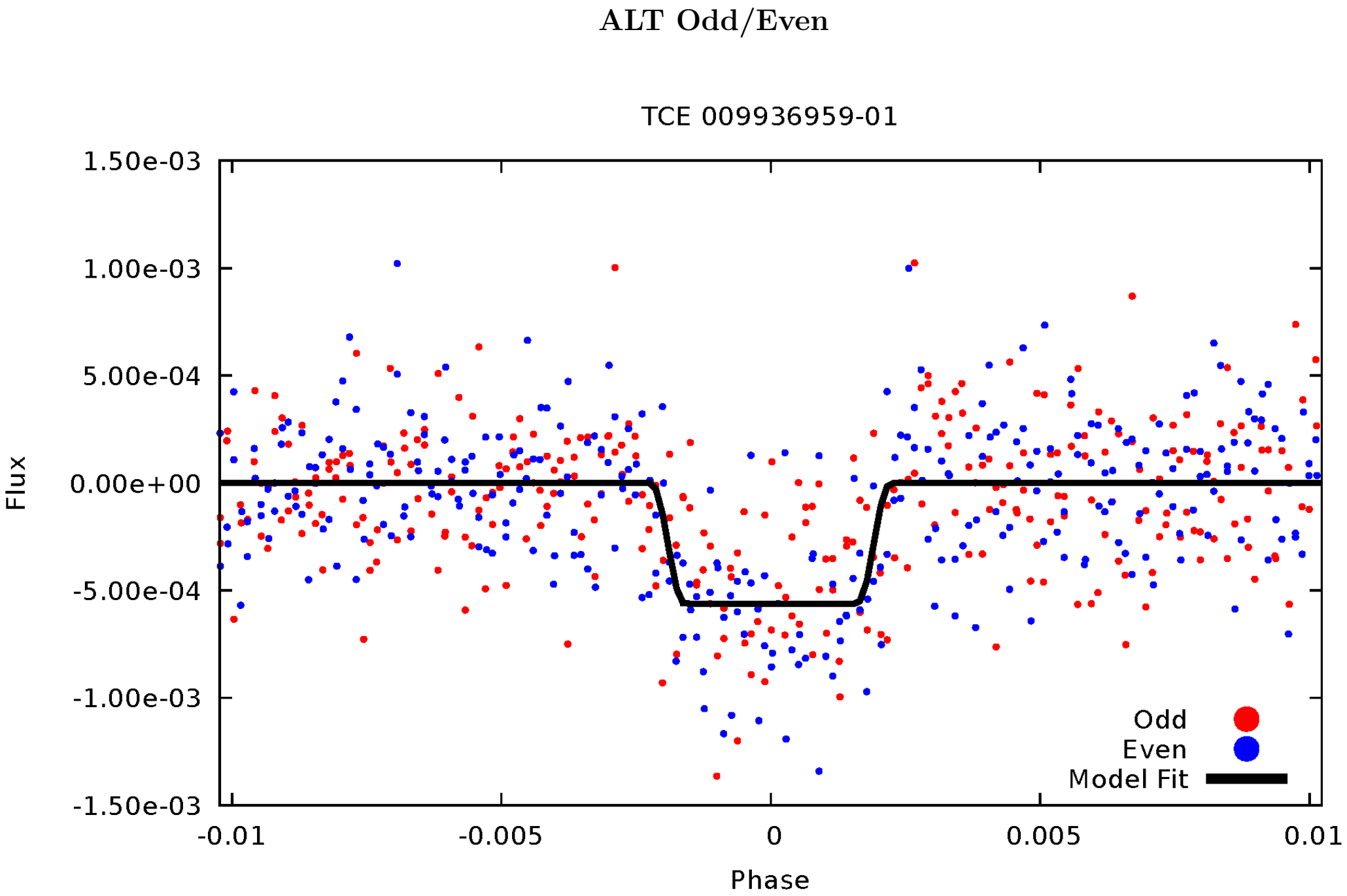
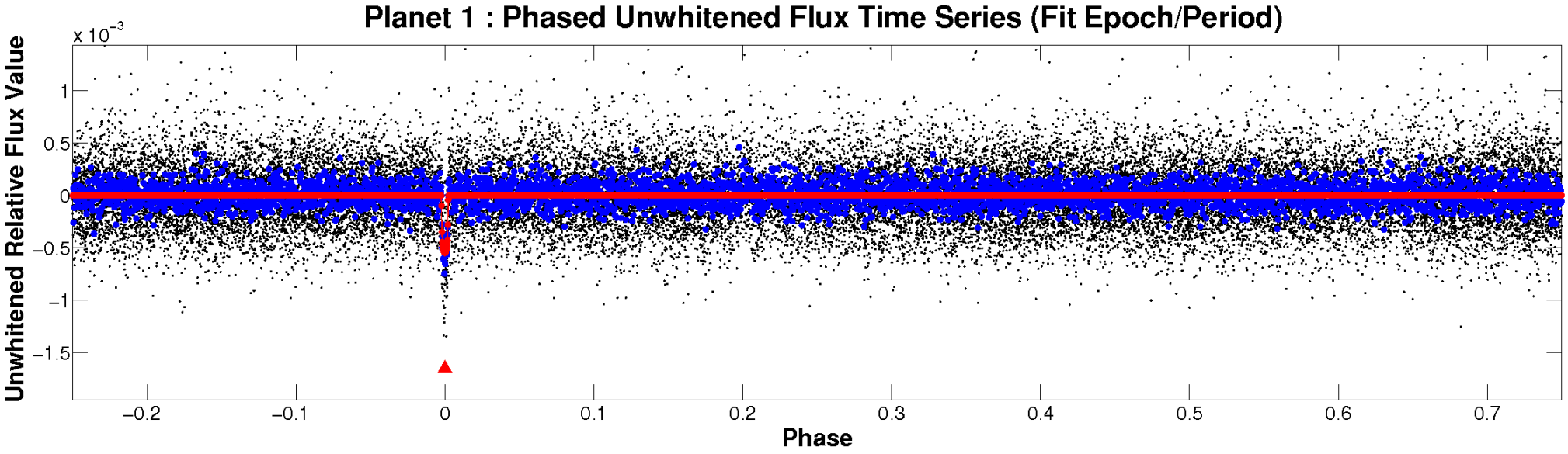
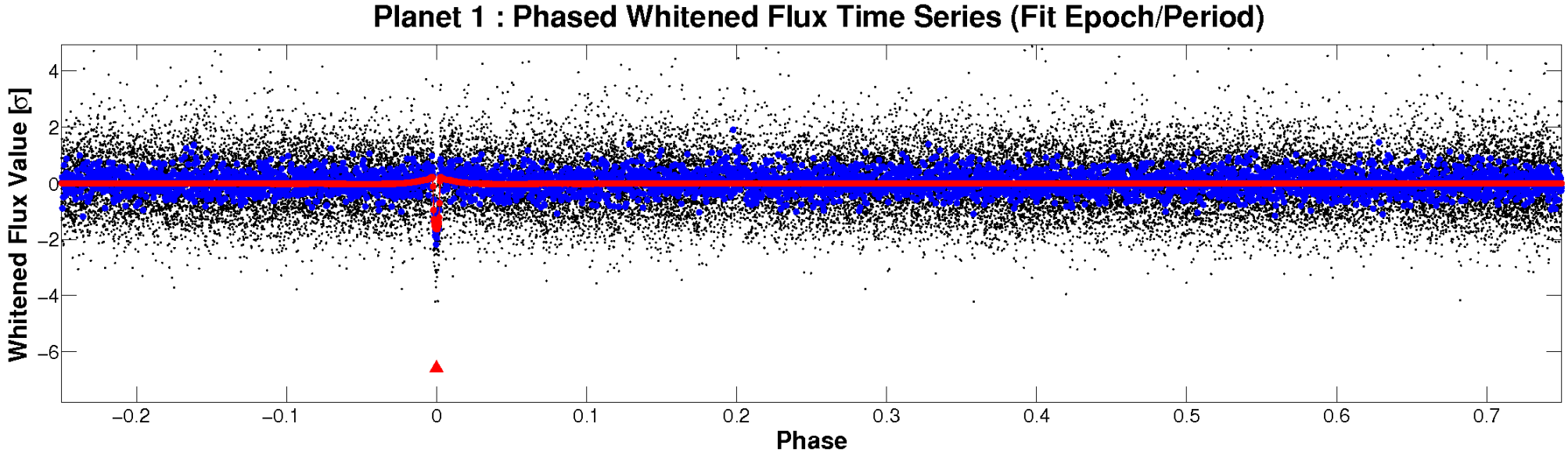
P = 40.449 days
P = 80.897 days
P = 161.794 days
Normalized Flux
0.0015
0.0010
0.0005
0.0000
−0.0005
−0.0010
−0.0015
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0015
0.0010
0.0005
0.0000
−0.0005
−0.0010
−0.0015
−1.0
−0.5
0.0
0.5
1.0
Phase


DV Odd/Even
TCE 009936959-01
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
Flux
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 009936959-01
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
Flux
-0.01
-0.005
0
0.005
0.01
Phase
Odd
Even
Model Fit

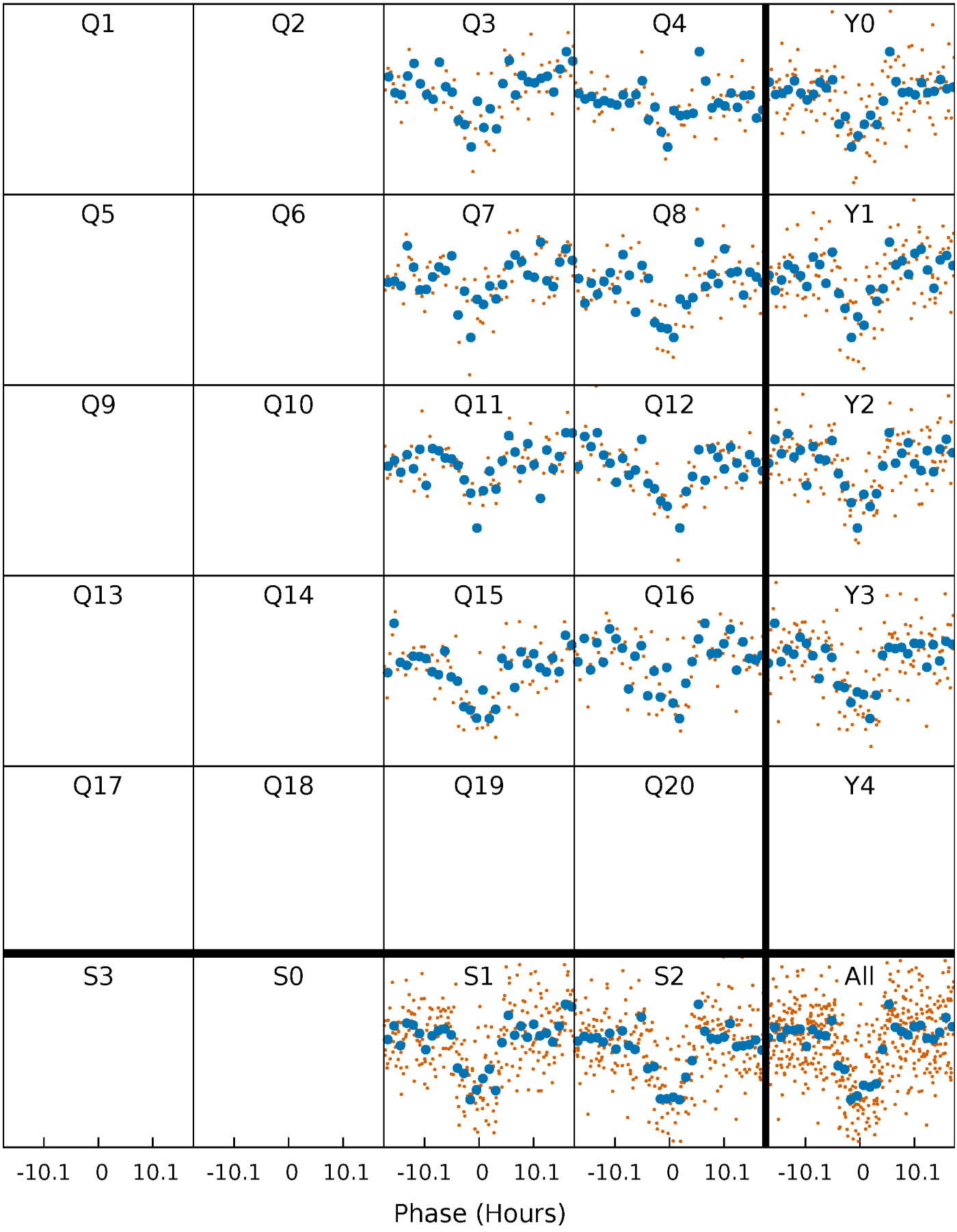
# Non-Whitened Vs. Whitened Light Curve



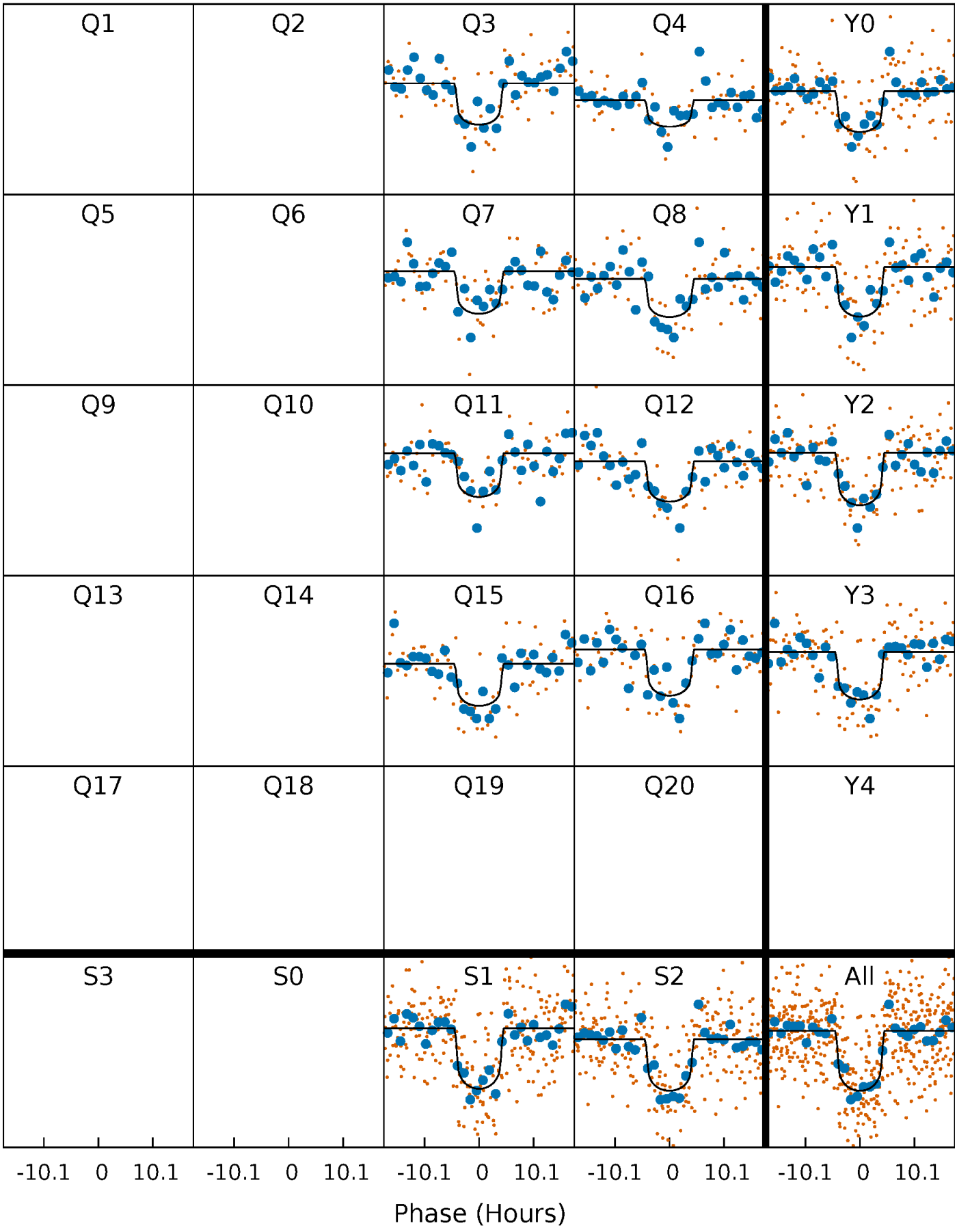
# PDC Quarter-Phased Transit Curves

TCE 009936959-01  P= 80.897087 Days  $T_0$=139.528247 (BKJD)



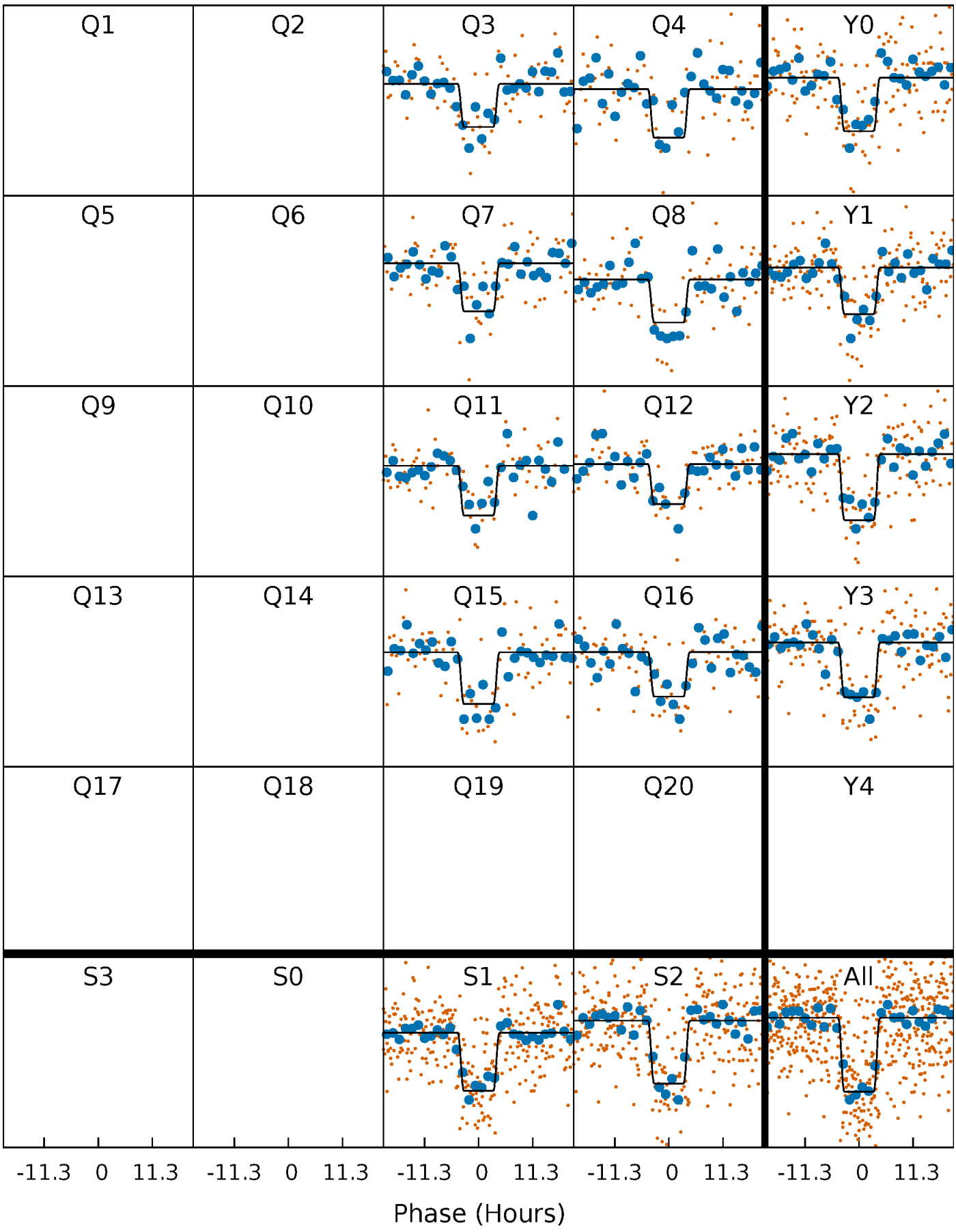
# DV Quarter-Phased Transit Curves

TCE 009936959-01  P= 80.897087 Days  $T_0$=139.528247 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

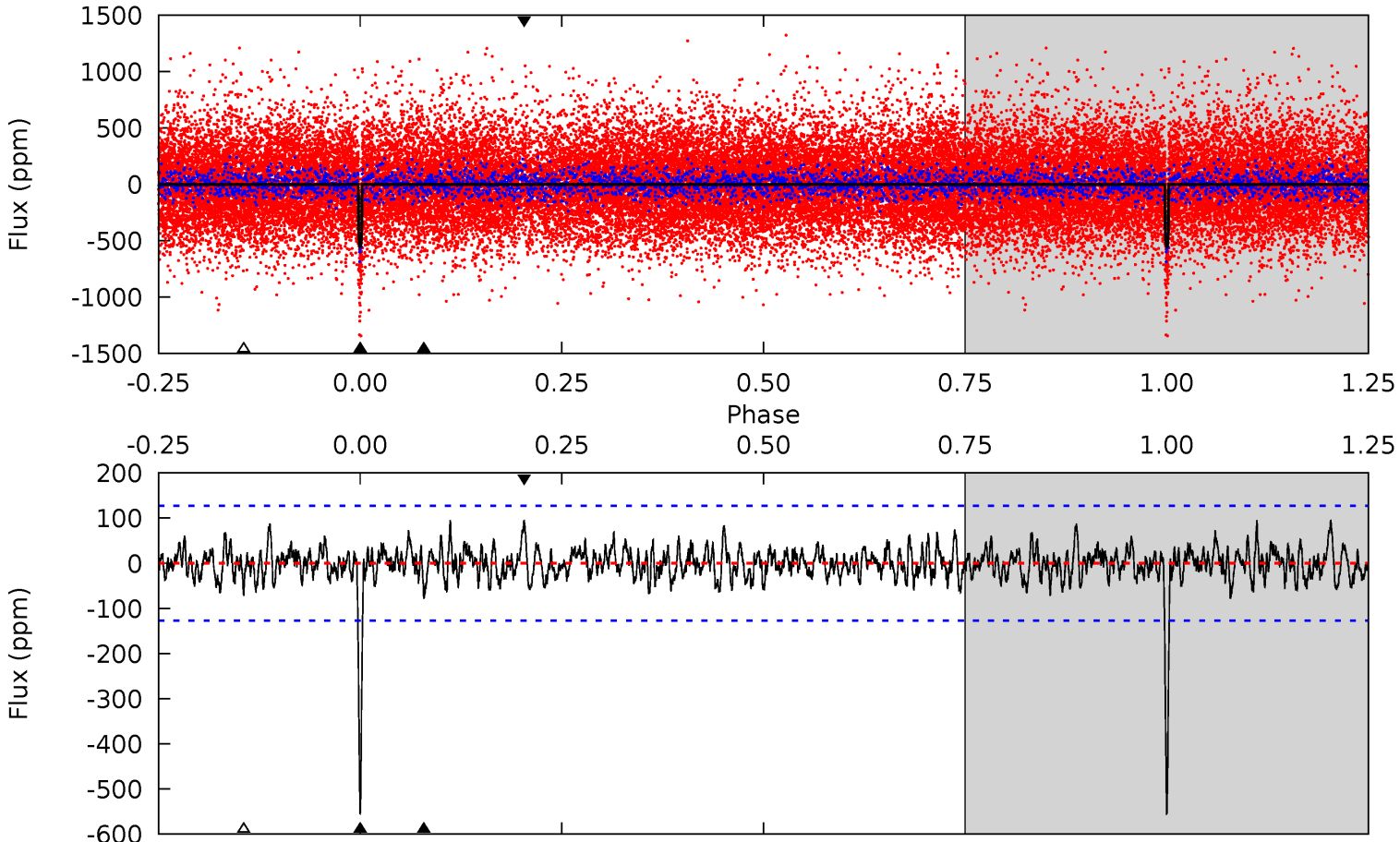
TCE 009936959-01  P= 80.894384 Days  $T_0$=139.555827 (BKJD)



# DV Model-Shift Uniqueness Test

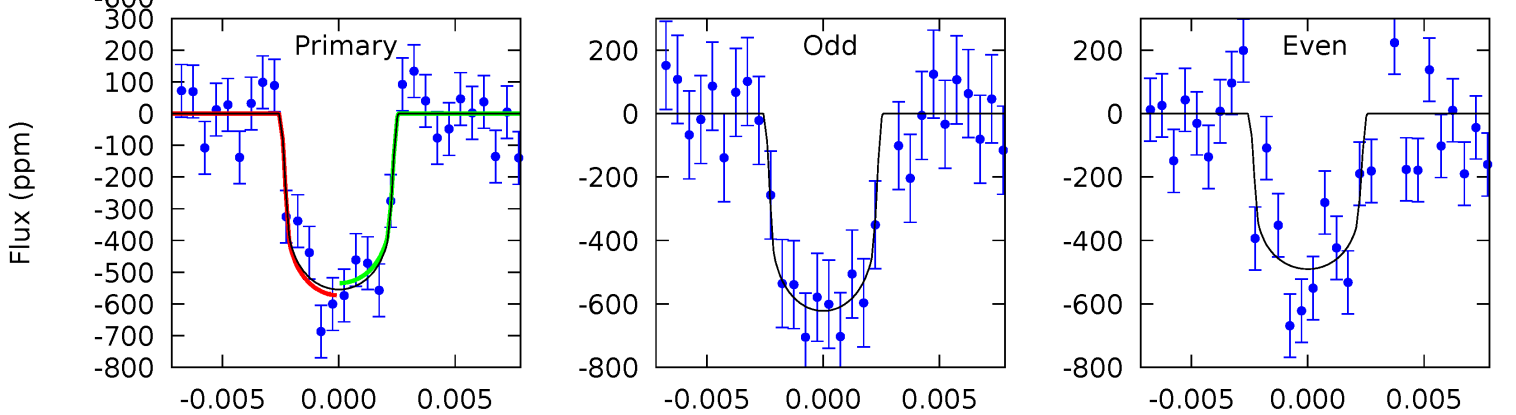
009936959-01, P = 80.897087 Days, E = 139.528247 Days

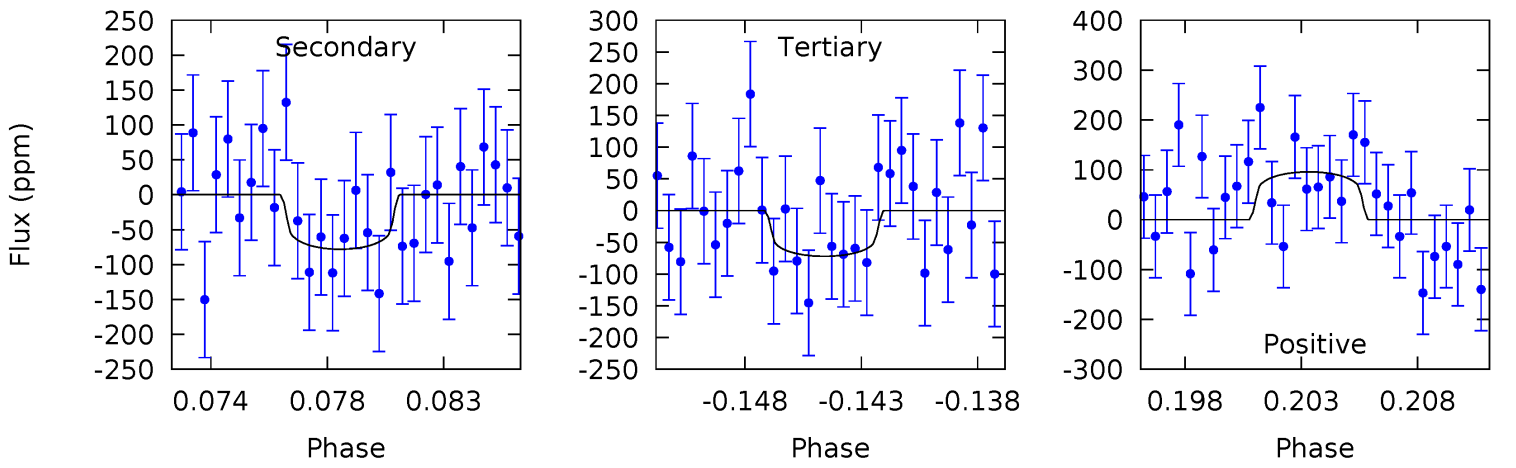
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22.6 | 3.18 | 2.93 | 3.90 | 5.17 | 2.83 | 1.13 | 19.7 | 18.7 | 0.25 | -0.72 | 2.70 | 1.00 | 0.15 | 0.78 |







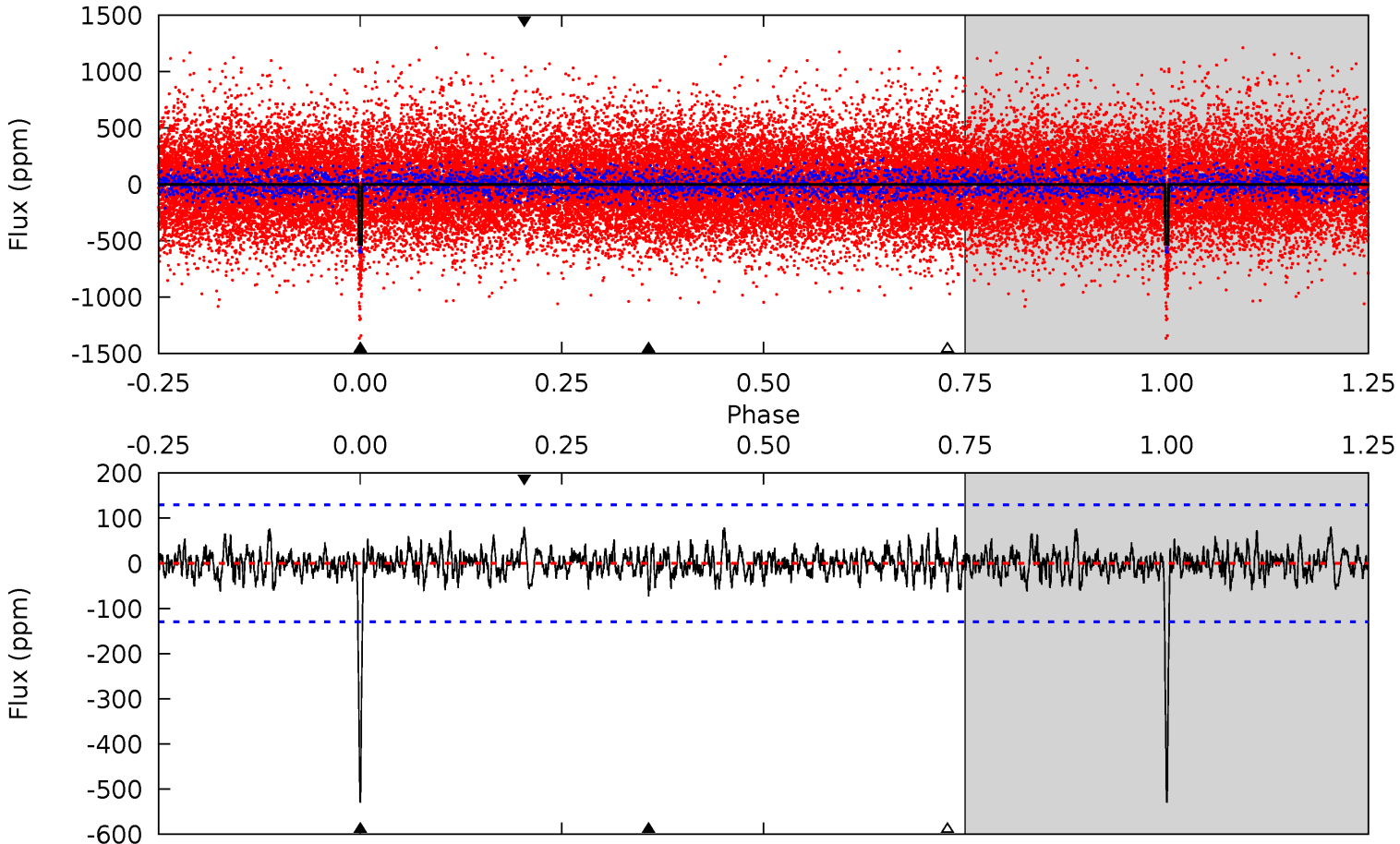


# Alt Model-Shift Uniqueness Test

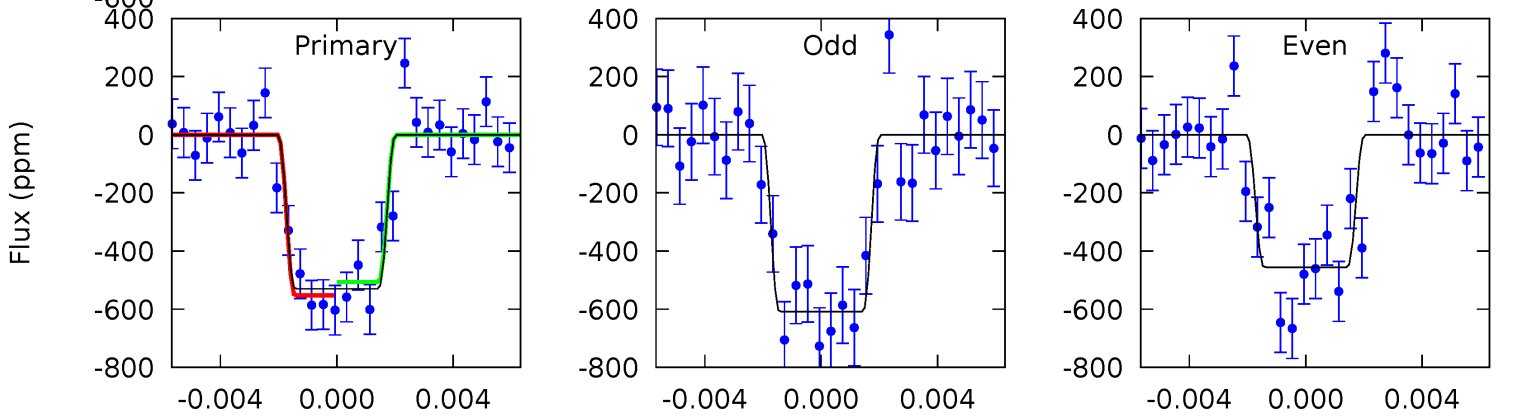
009936959-01, P = 80.894384 Days, E = 139.555827 Days

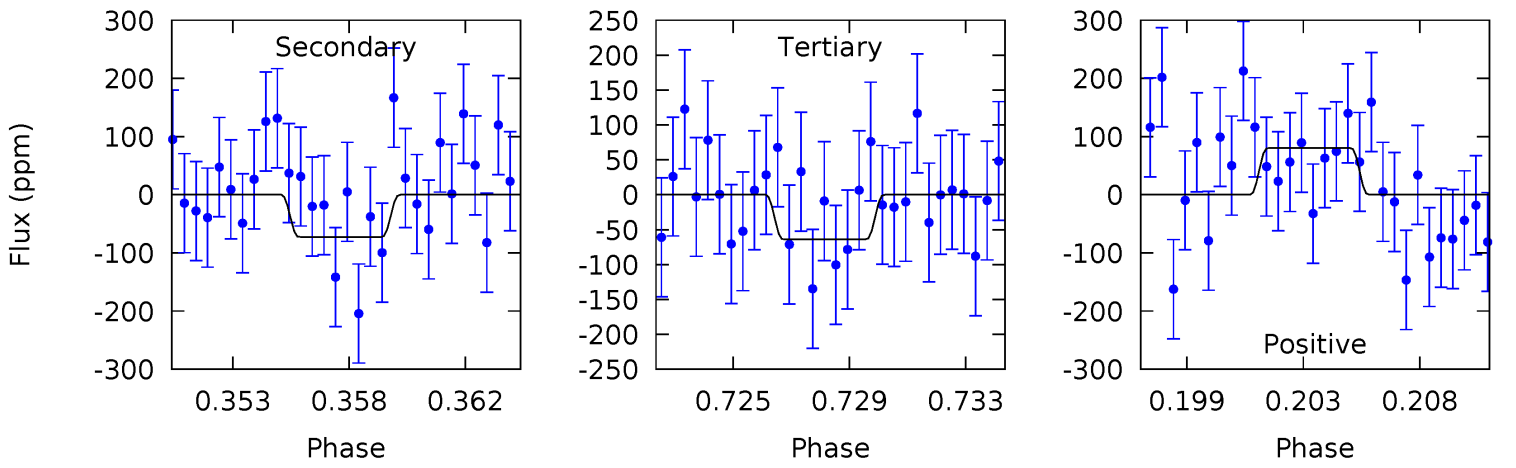
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21.2 | 2.90 | 2.55 | 3.21 | 5.18 | 2.85 | 0.94 | 18.6 | 18.0 | 0.34 | -0.31 | 3.06 | 0.98 | 0.13 | 0.92 |









Stellar Parameters For KIC 009936959

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $6047^{+189}_{-232}$ | $4.343^{+0.128}_{-0.192}$ | $-0.080^{+0.250}_{-0.300}$ | $1.129^{+0.351}_{-0.189}$ | $1.021^{+0.167}_{-0.126}$ | $1.000^{+0.606}_{-0.505}$ |
| | +3%/-4% | +3%/-4% | +312%/-375% | +31%/-17% | +16%/-12% | +61%/-51% |
| Source | KIC0 | 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 009936959-01 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -78±25 | $2.90^{+1.27}_{-1.21}$ | $653^{+55}_{-40}$ | $4036^{+952}_{-511}$ | $693^{+1452}_{-391}$ |
| Alt. | -73±25 | $2.93^{+1.34}_{-1.14}$ | $656^{+49}_{-41}$ | $3966^{+798}_{-510}$ | $627^{+1067}_{-364}$ |

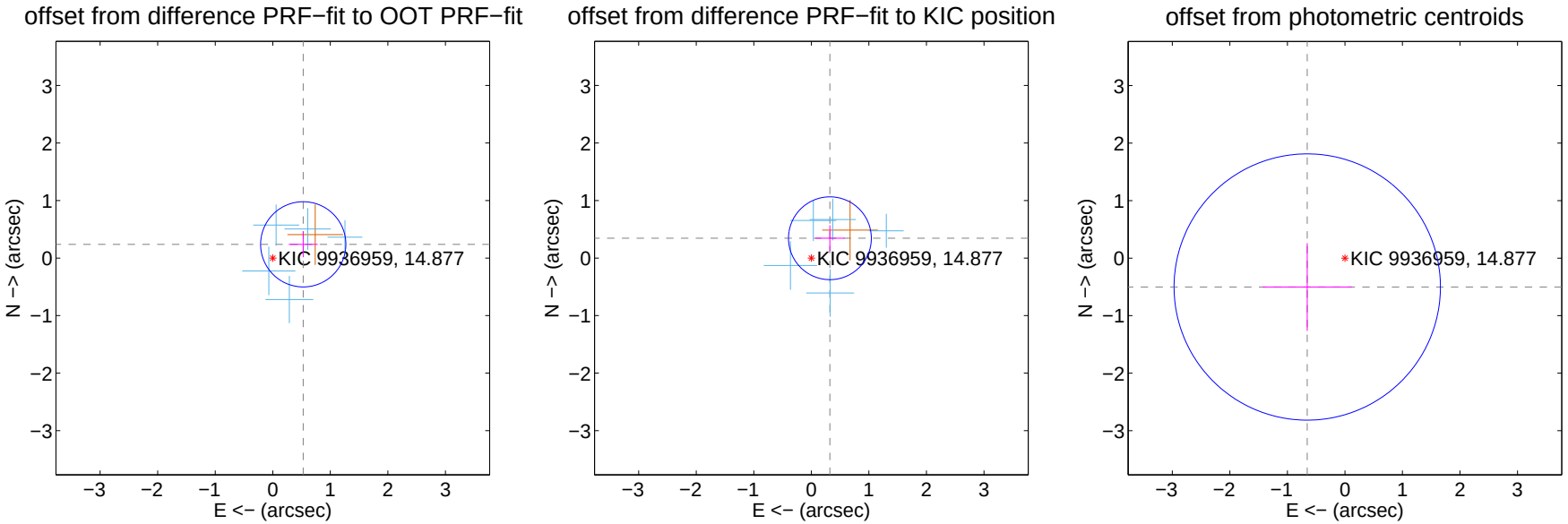
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

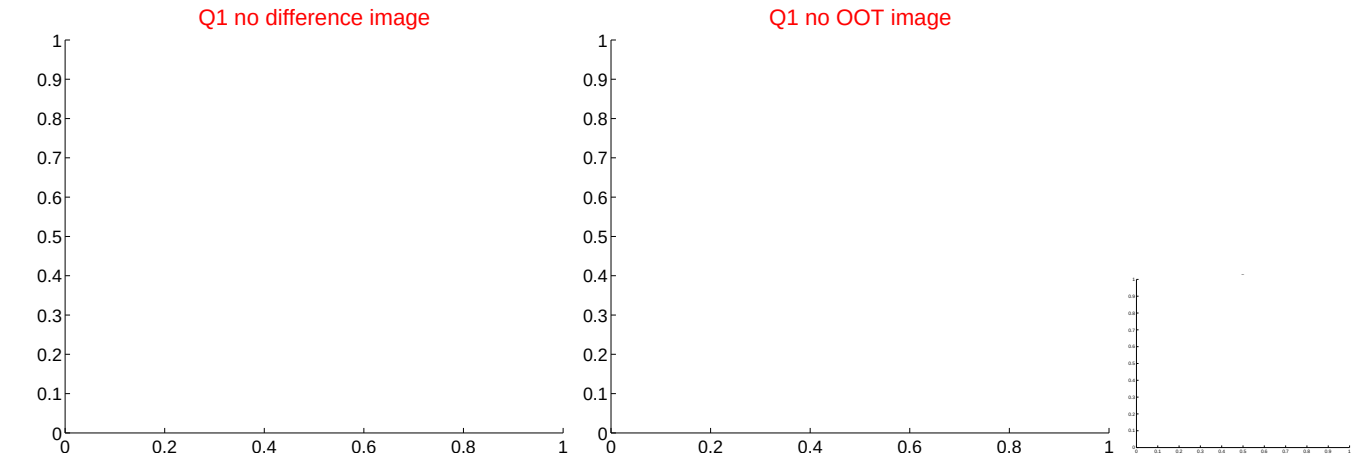
Supplemental centroid analysis for 009936959-01. Kepler magnitude: 14.88. Transit SNR 16.07
There are 5 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

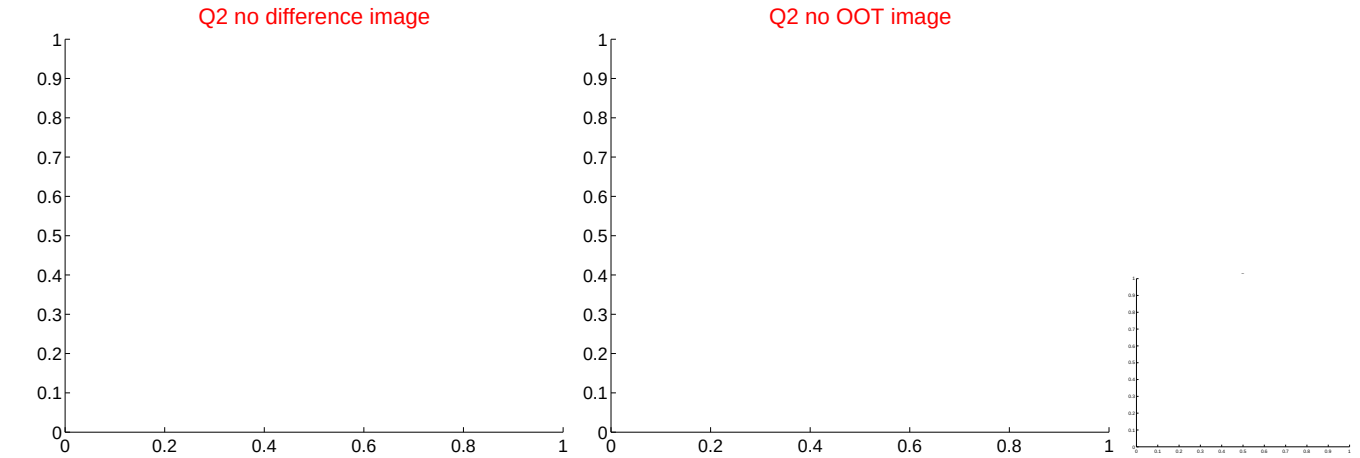
| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.580 ± 0.247 | 2.35 | -0.529 ± 0.251 | 0.239 ± 0.224 |
| PRF-fit source offset from KIC position | 0.472 ± 0.240 | 1.97 | -0.323 ± 0.255 | 0.344 ± 0.226 |
| photometric centroid source offset | 0.82 ± 0.77 | 1.07 | 0.65 ± 0.78 | -0.50 ± 0.76 |

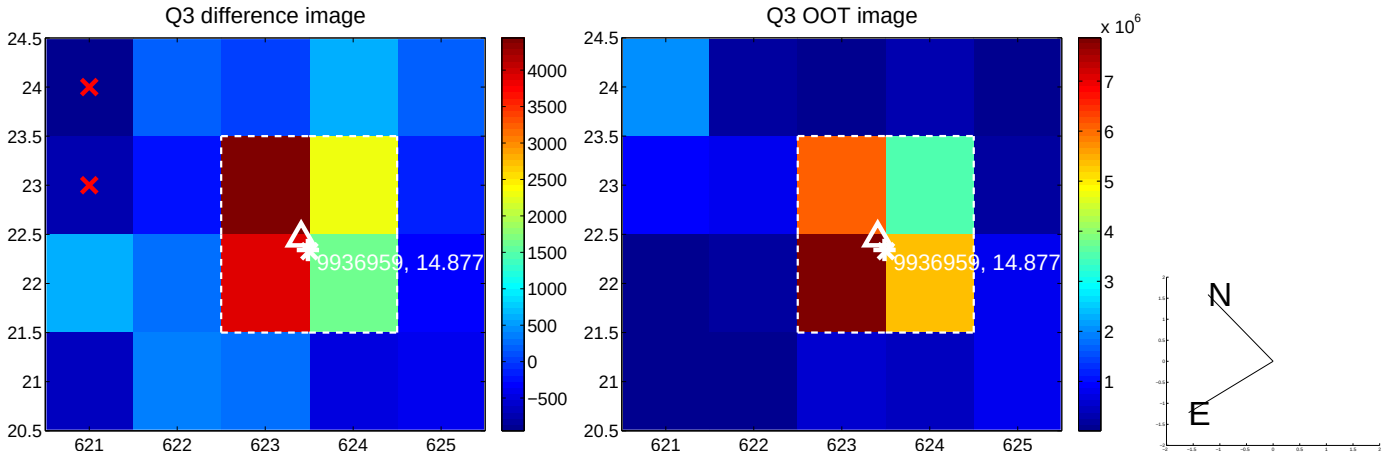


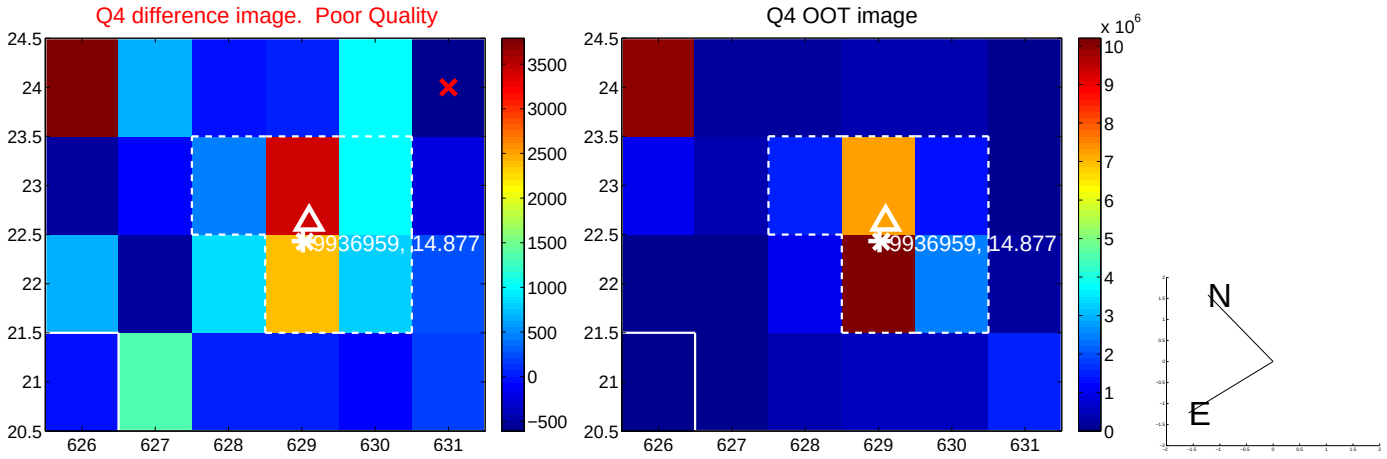

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$. 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

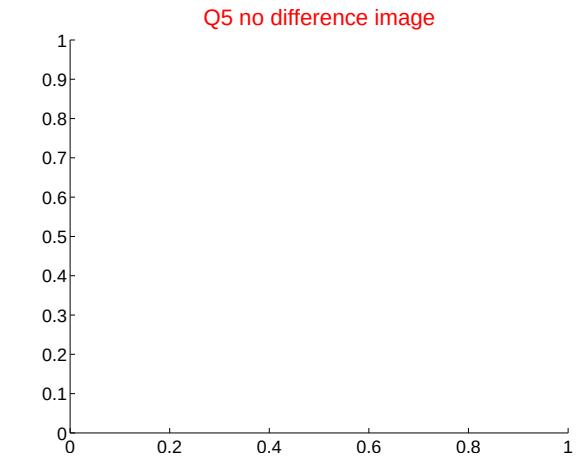


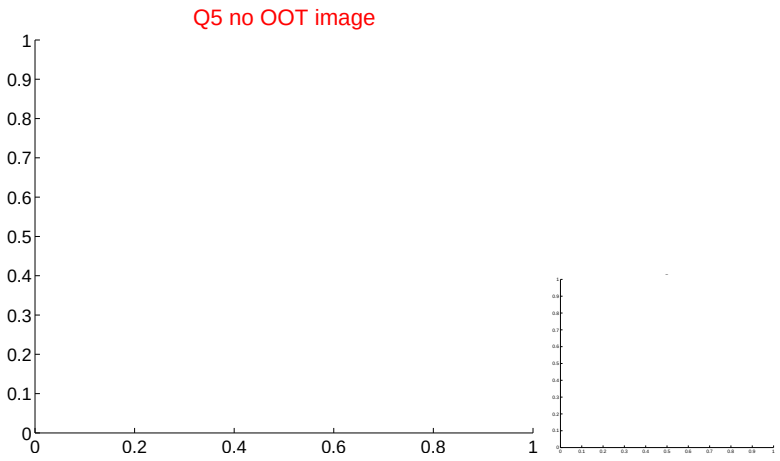



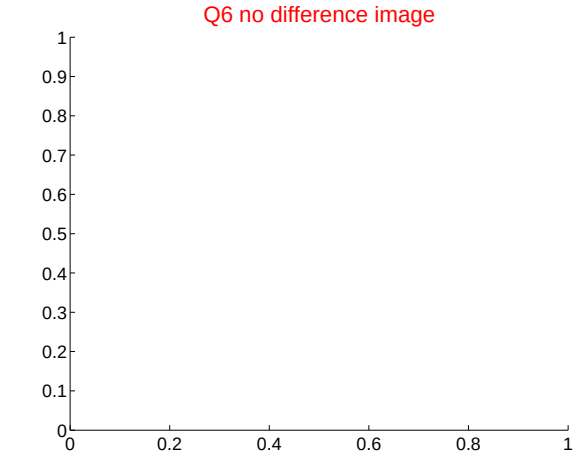



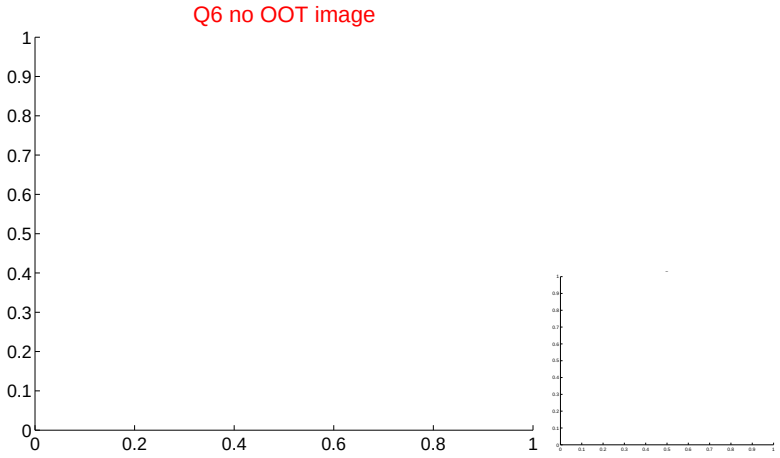



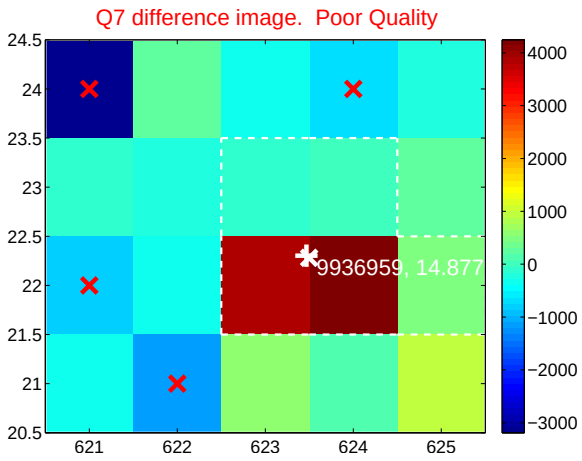
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

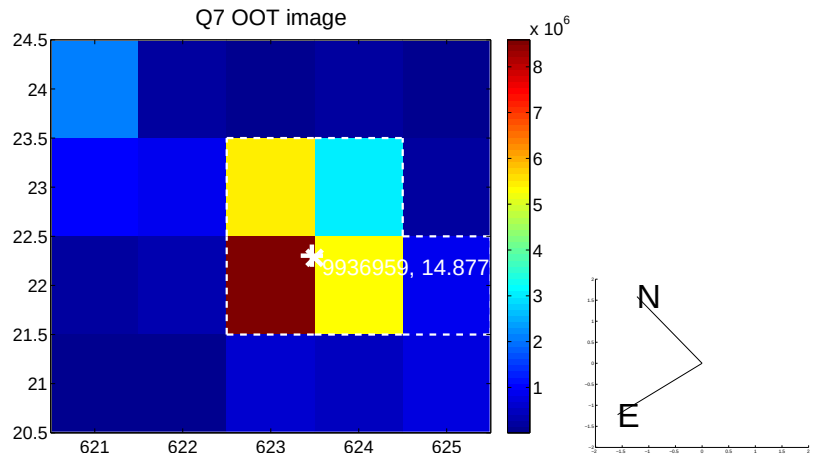


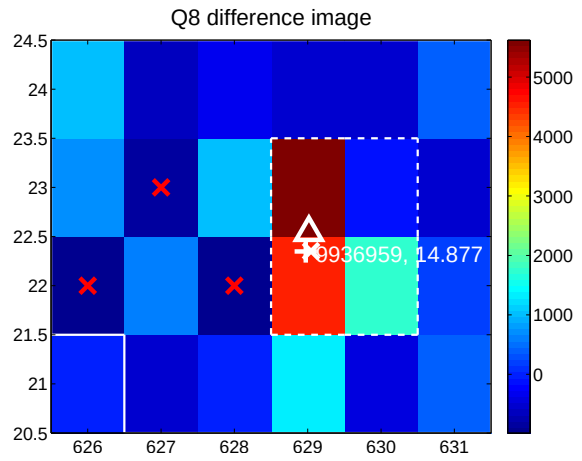



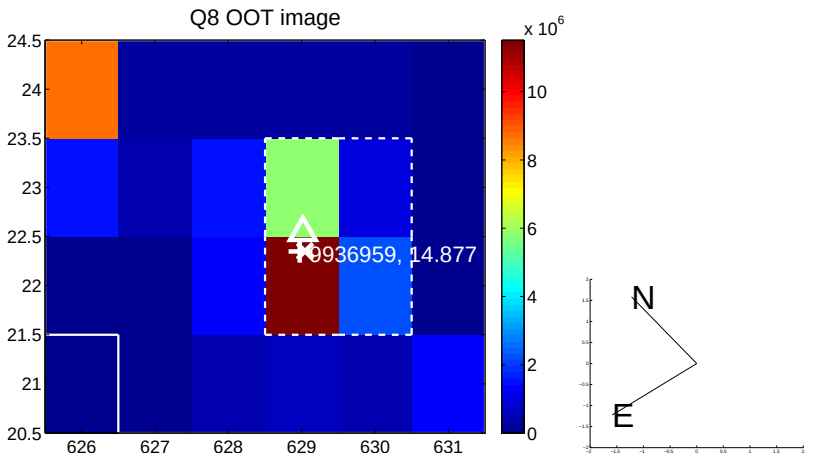



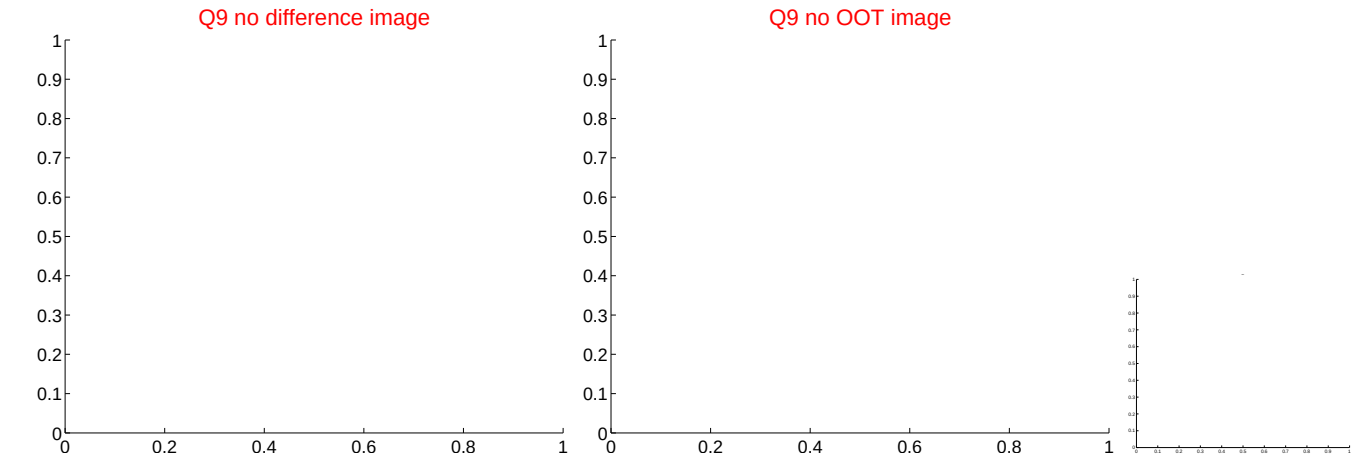



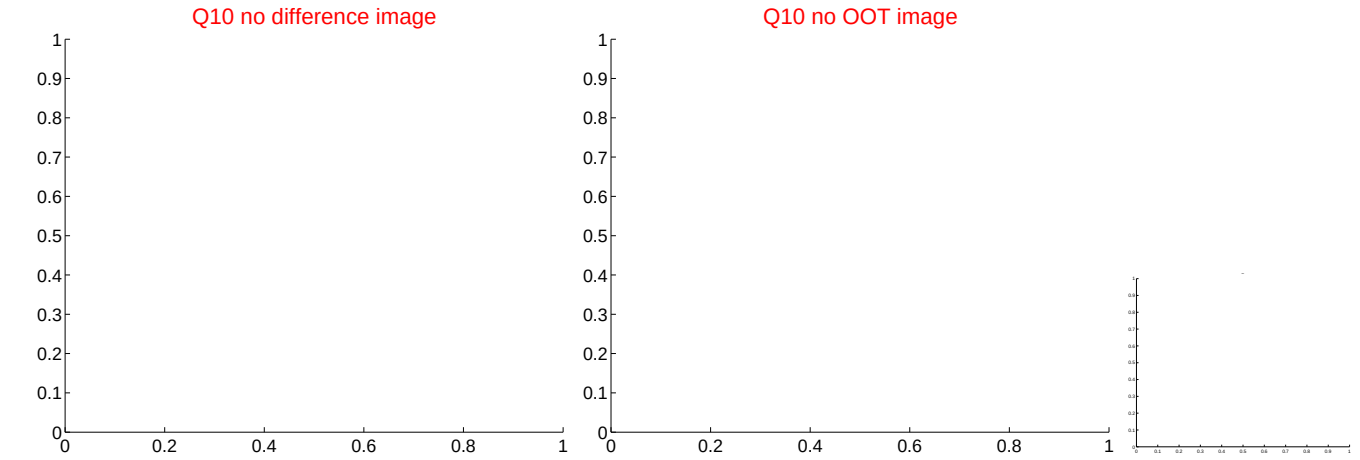



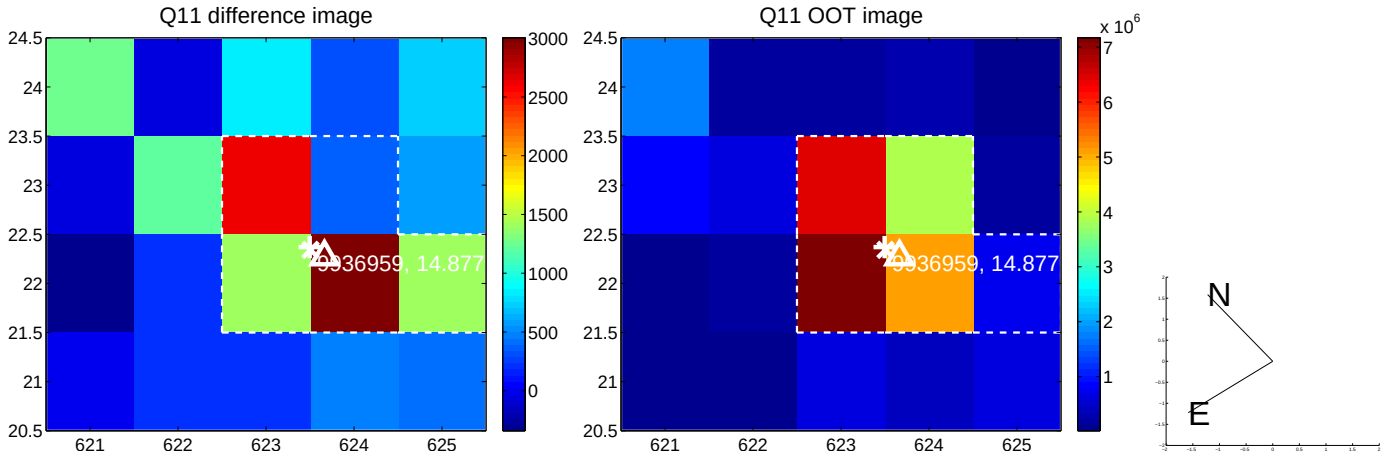



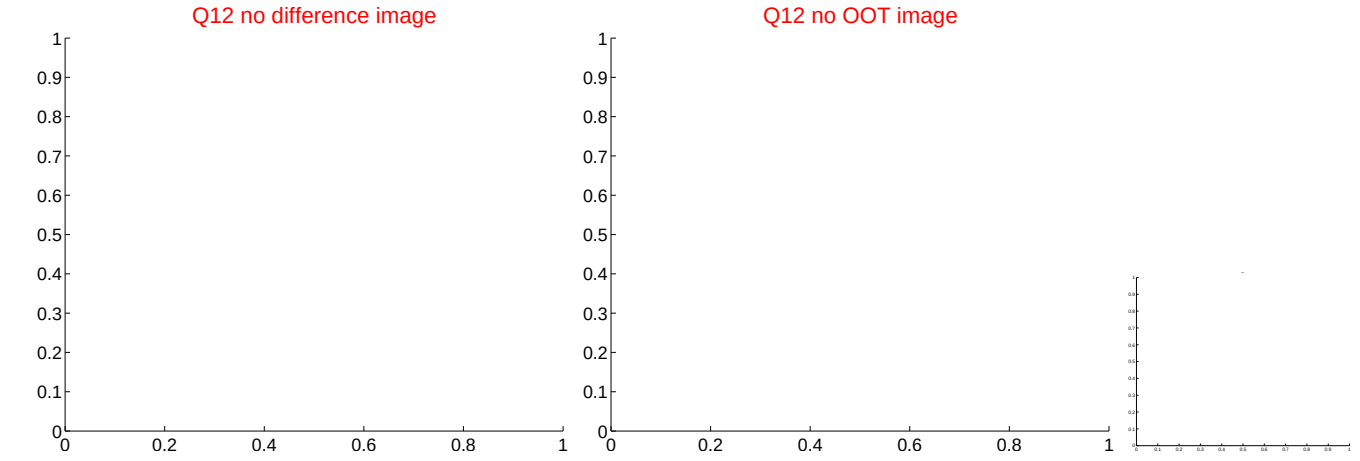



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

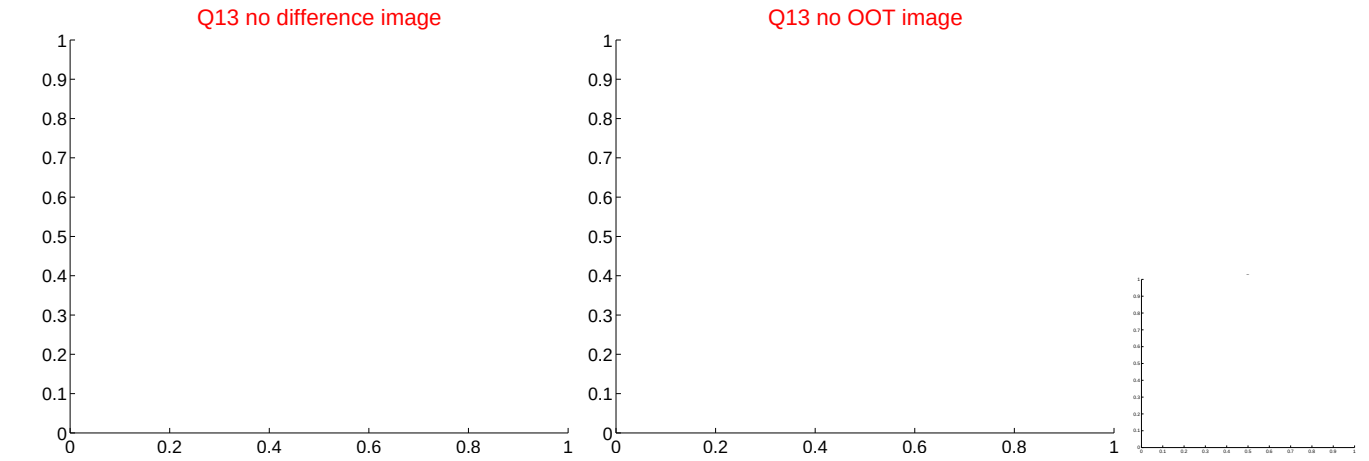


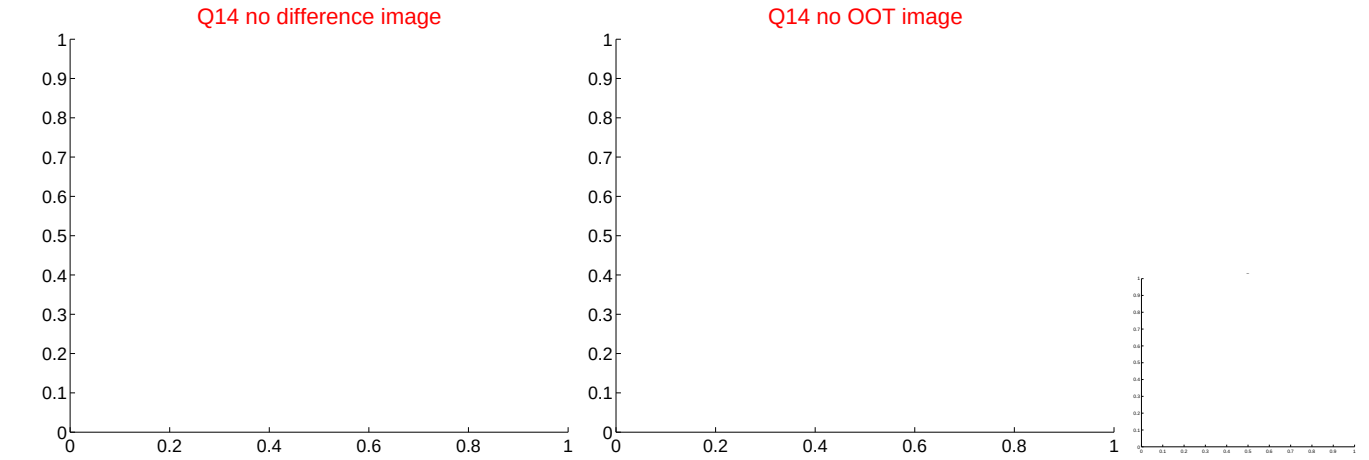



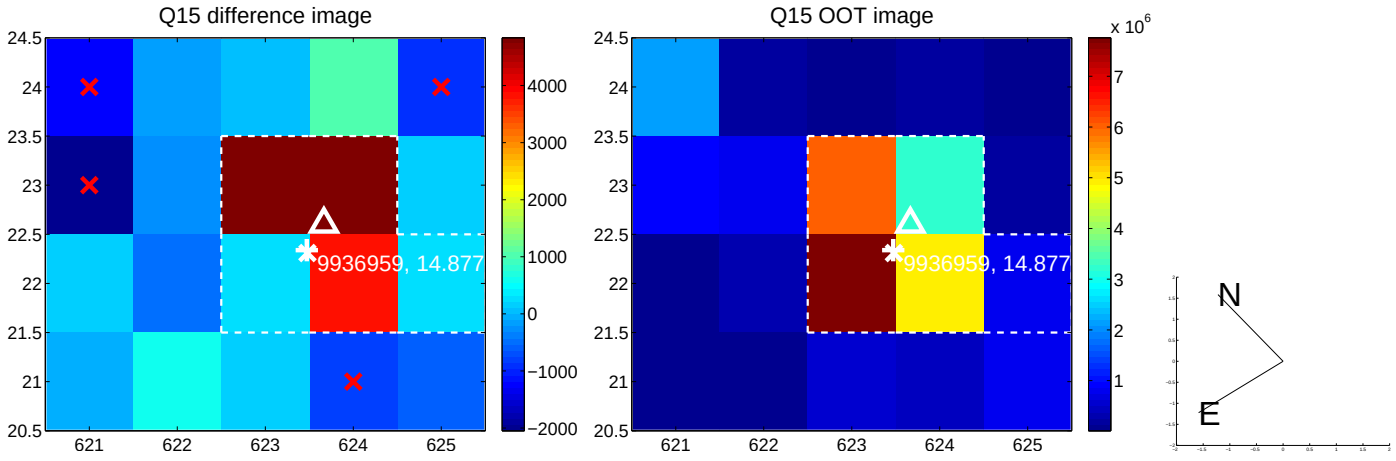



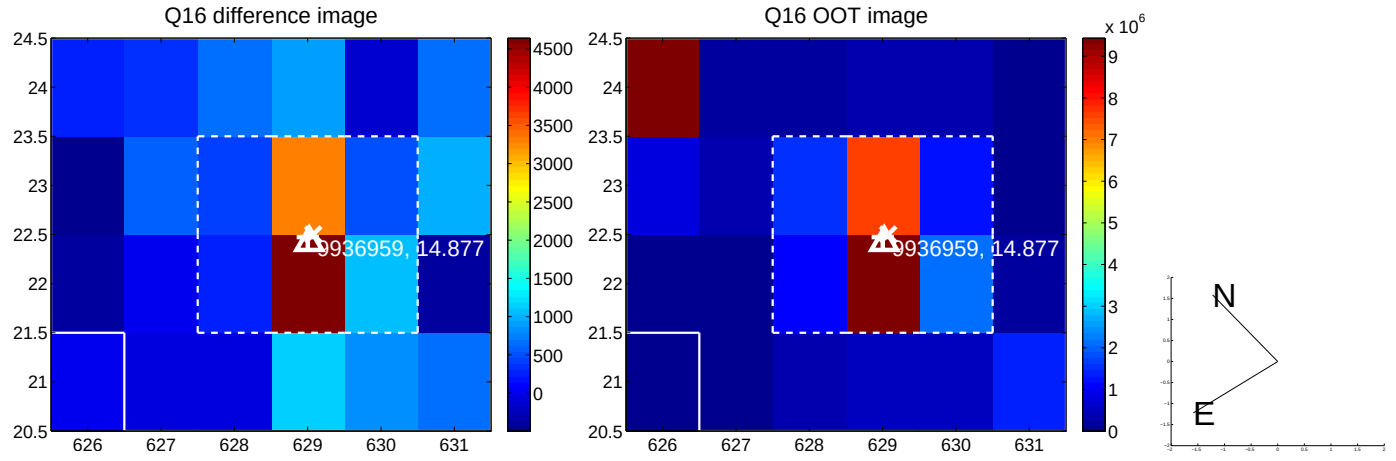



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

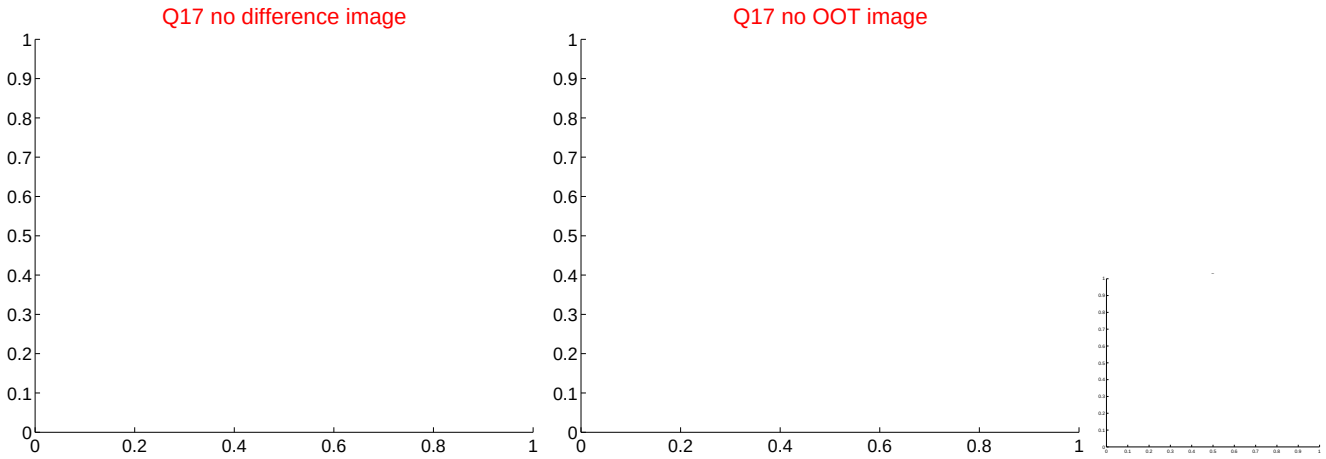


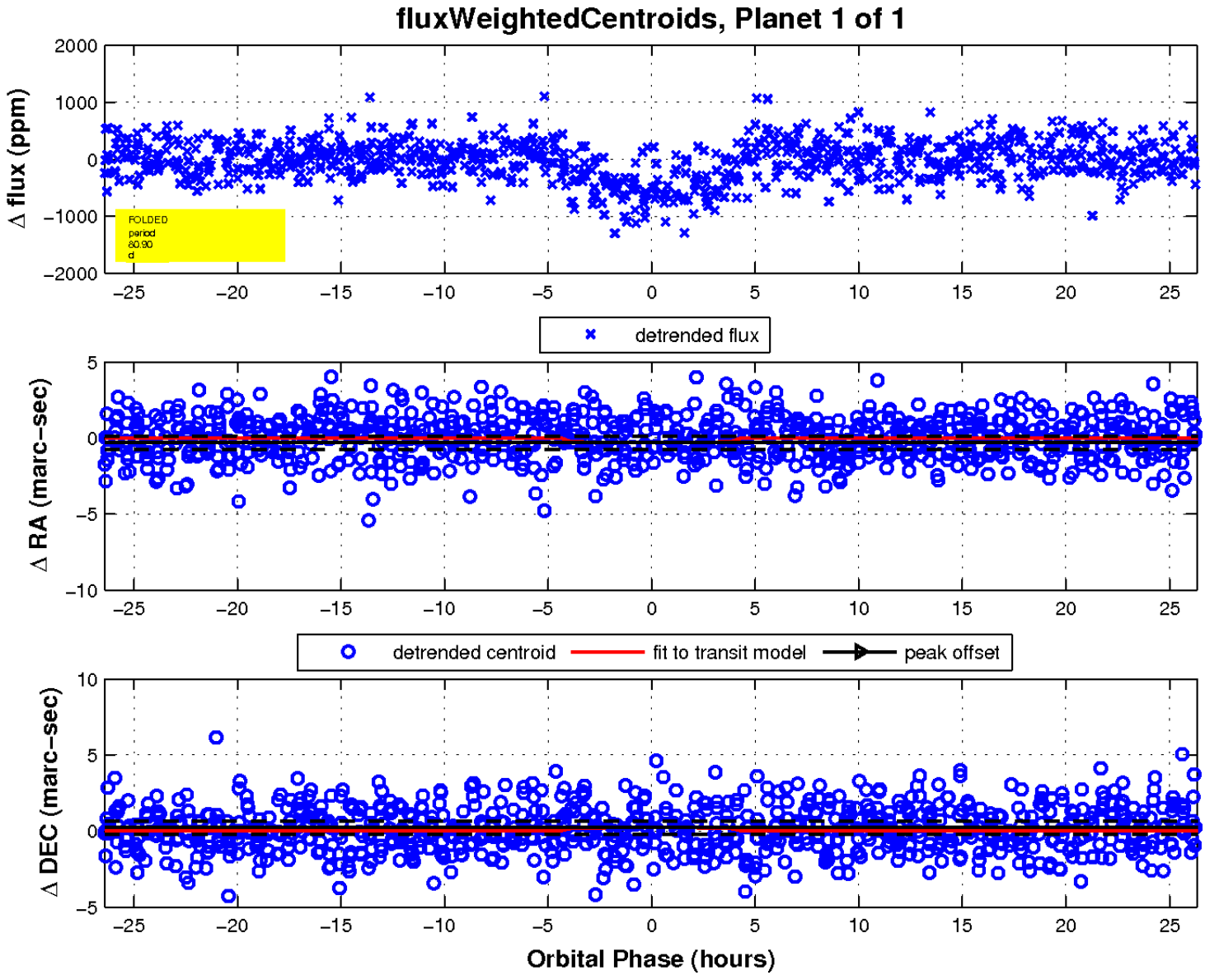



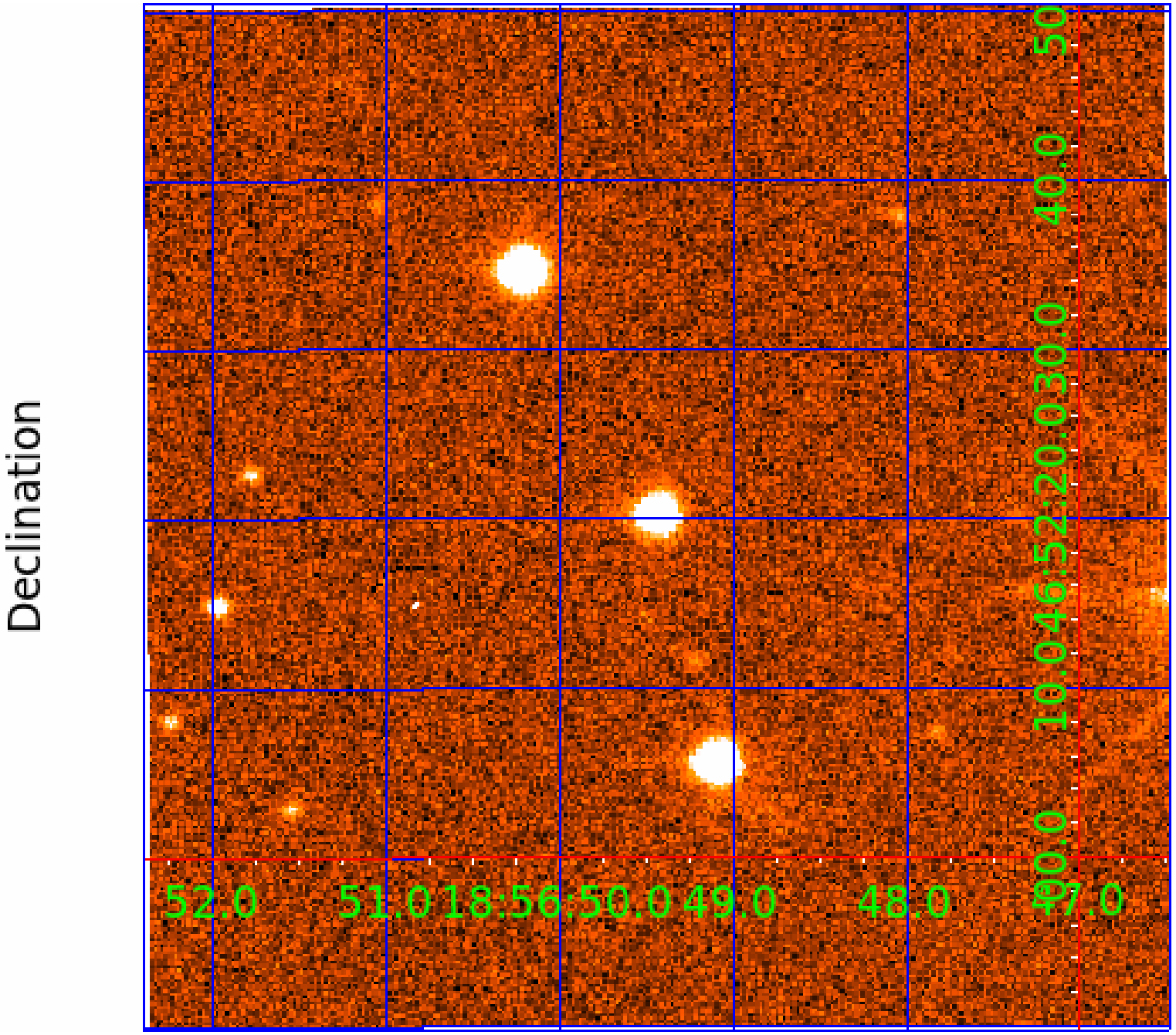



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**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