

KIC 004049108

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004049108-01 | OBS | 0495.01 | 4.804468 | 136.003648 | 721.9 | 3.442 | 55.5 | 61.2 | 0.81 | 5470 | 3.36 | 195.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|----------------------------------|
| 004049108-01 | OBS | FP | 0.00 | 0 | 0 | 1 | 1 | 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.

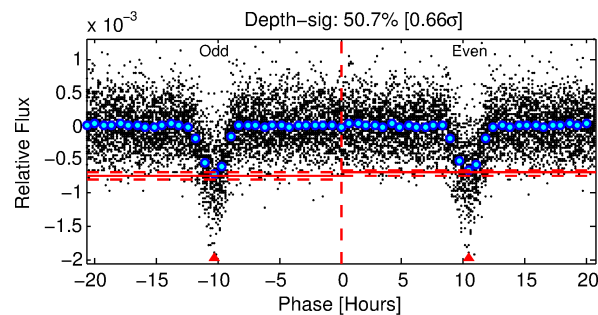
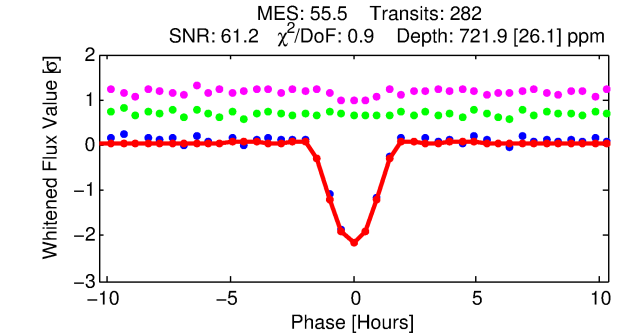
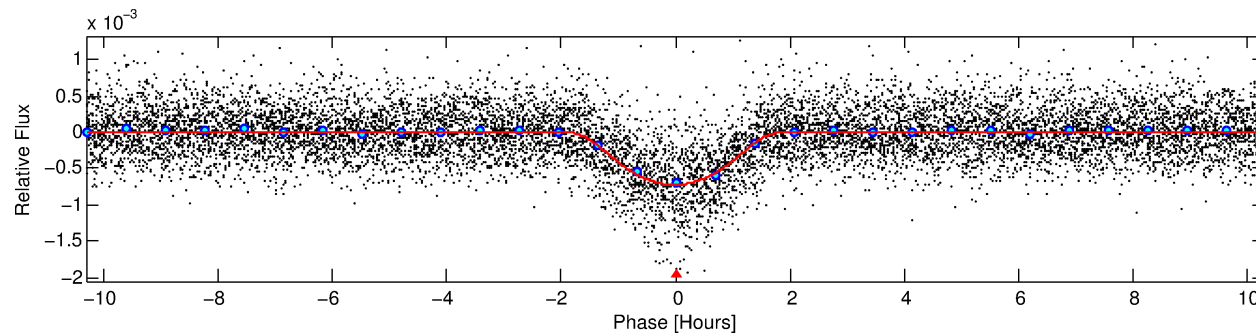
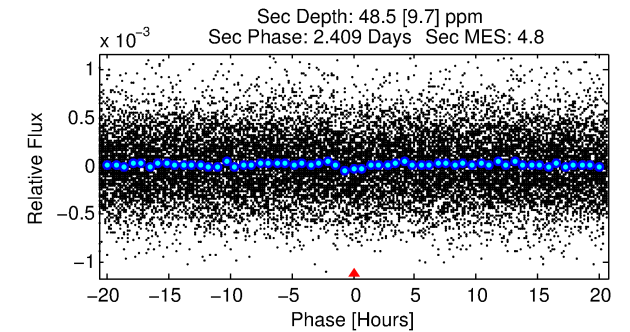
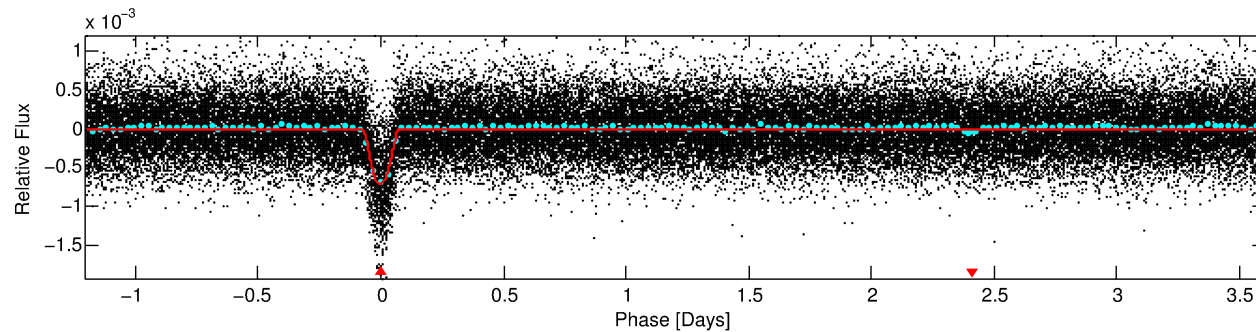
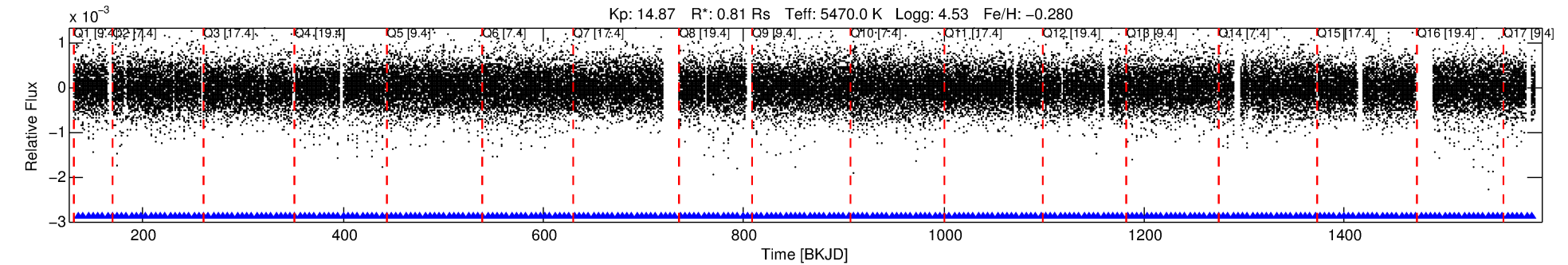
Ephemeris Match Information For 004049108-01

| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|---------|------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 004049108-01 | 4049108 | 5994.01 | 4049124 | 1:1 | 11.7 | 2 | -2 | 14.65 | 14.87 | 193.98 | Direct-PRF | 0 | 0.02 | 0.04 |

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 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 $\sigma_P < 5.0$ and $\sigma_T < 5.0$. 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: 4049108 Candidate: 1 of 1 Period: 4.804 d
KOI: K00495.01 Corr: 0.989



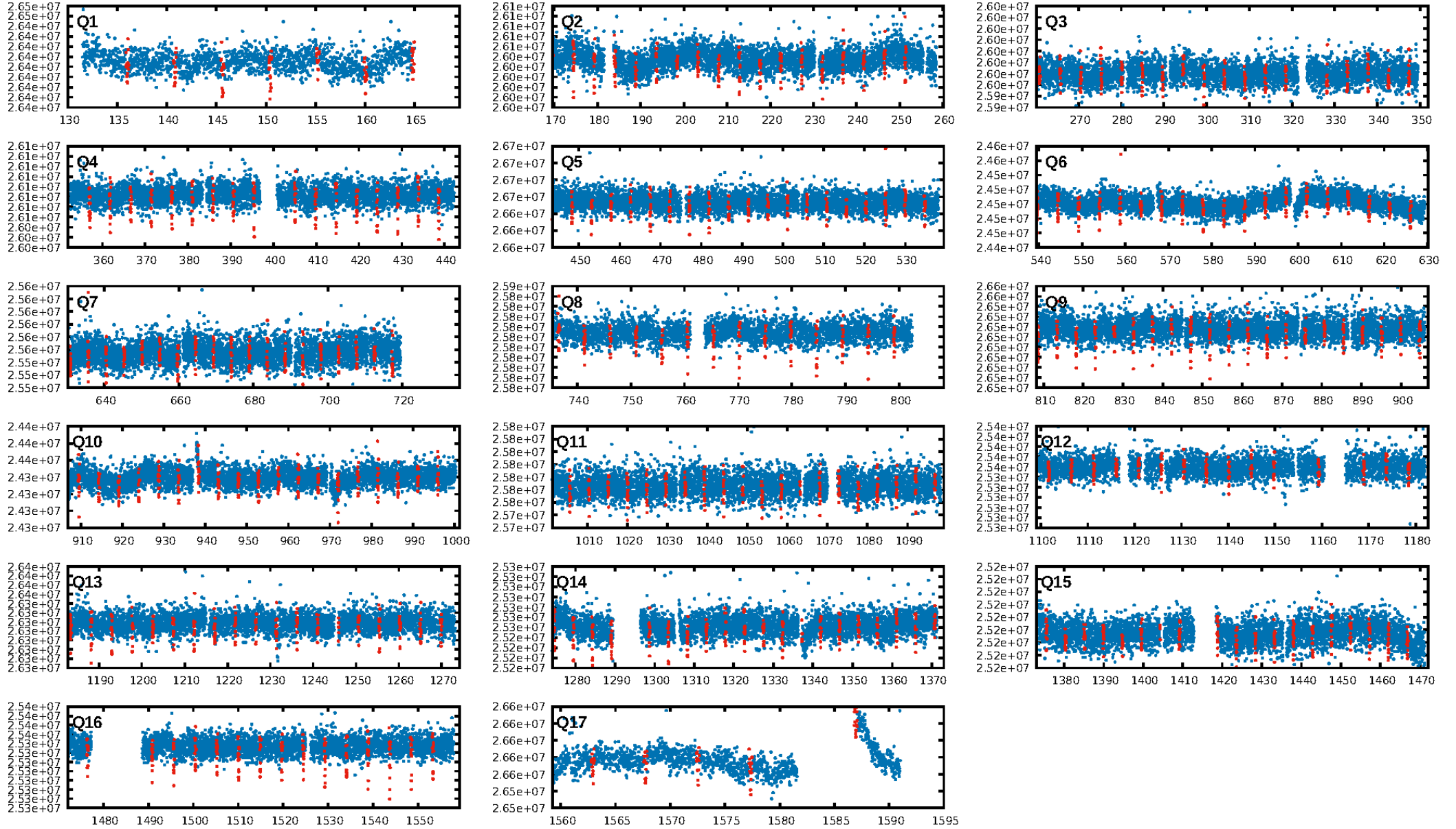
DV Fit Results:

Period = 4.80447 [0.00001] d
Epoch = 136.0036 [0.0012] BKJD
Rp/R* = 0.0380 [0.0086]
a/R* = 3.75 [0.34]
b = 0.98 [0.02]
Seff = 195.26 [47.56]
Teff = 953 [58] K
Rp = 3.36 [0.97] Re
a = 0.0519 [0.0077] AU
Ag = 6.36 [3.43] [1.57σ]
Teffp = 2341 [298] K [4.58σ]

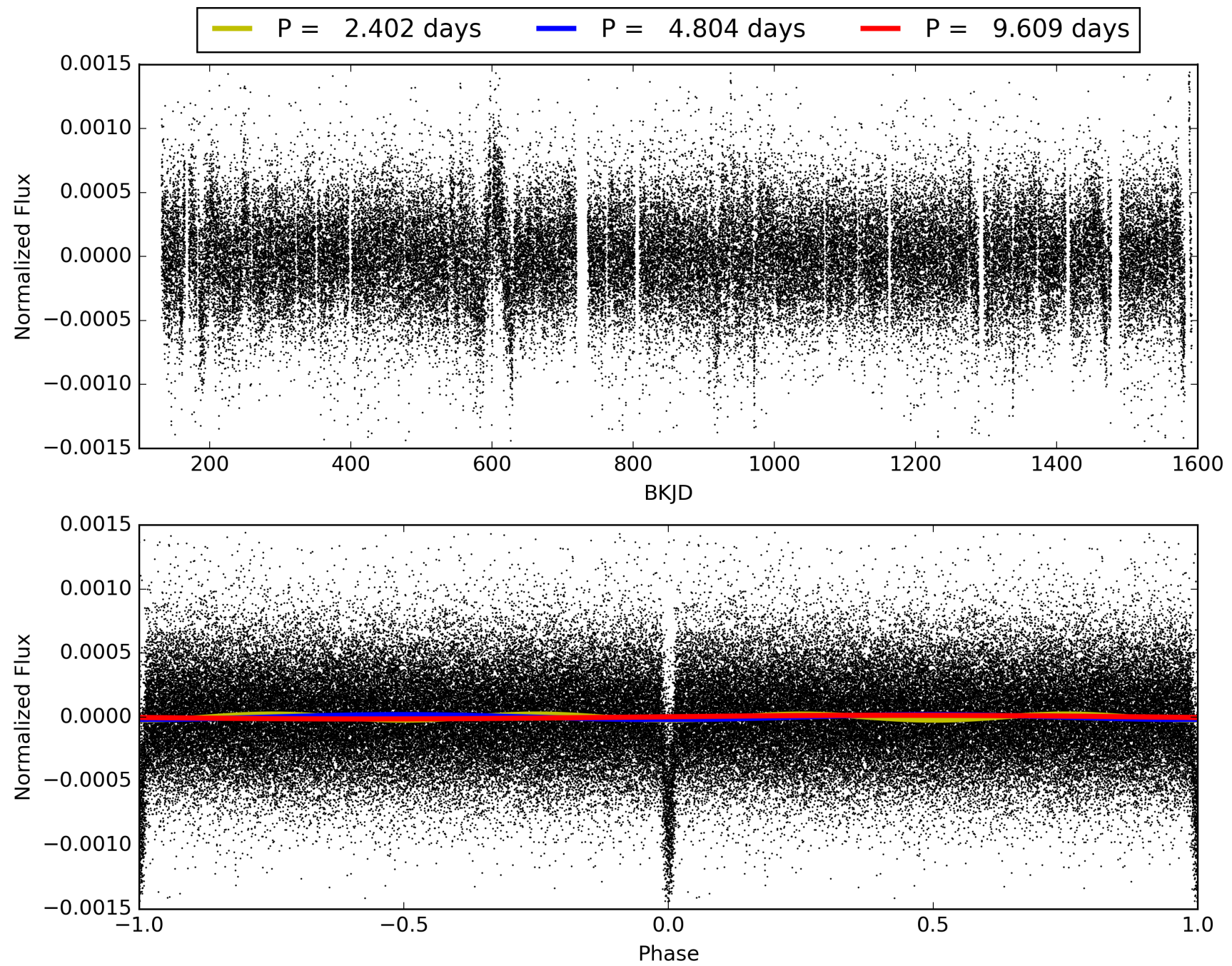
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [270/270]
GhostDiagnostic-chr: -0.6221
Centroid-sig: 0.0%
Centroid-so: N/A
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [17/17]

TCE 004049108-01, PDC Light Curves

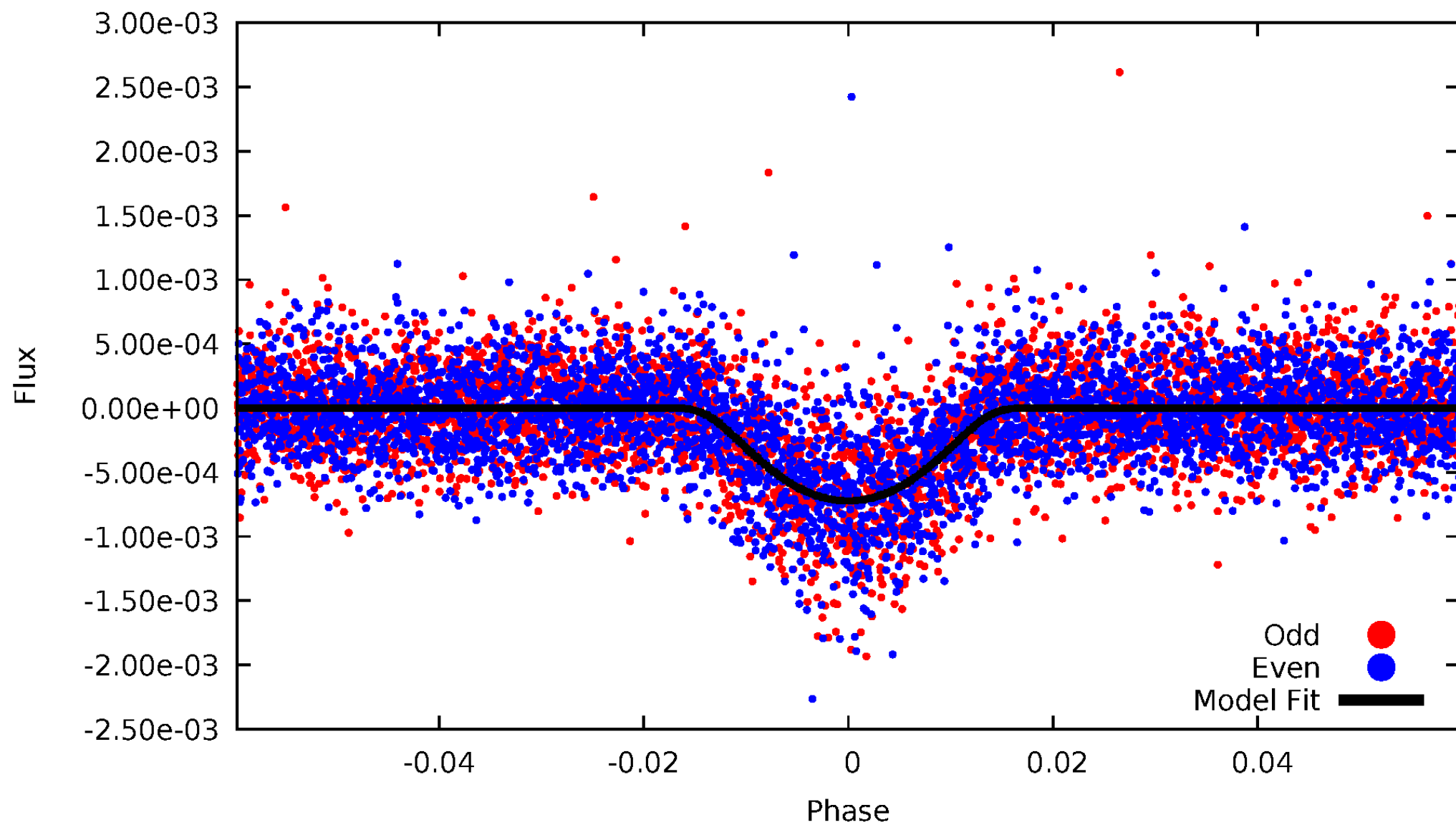


TCE 004049108-01



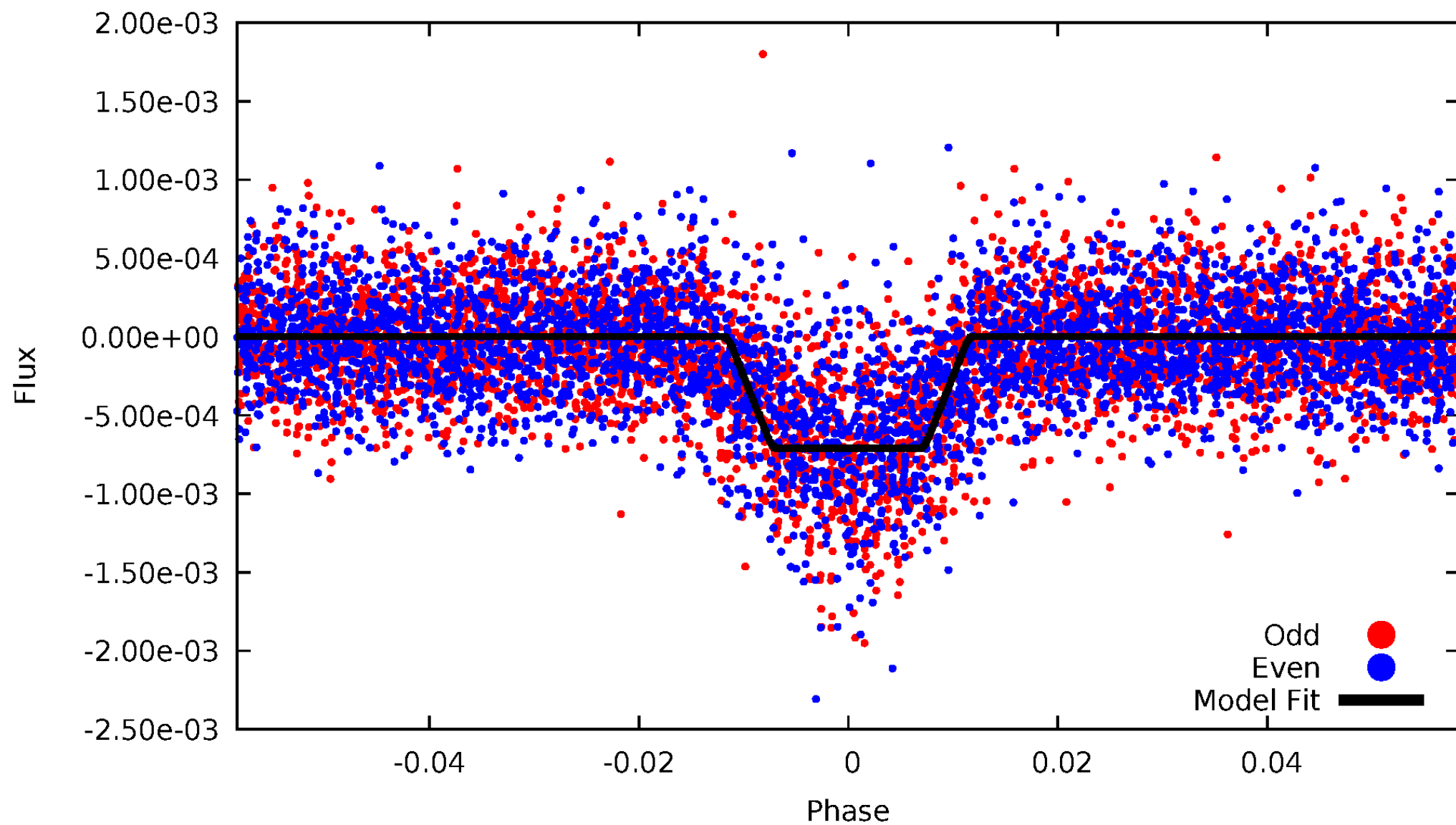
DV Odd/Even

TCE 004049108-01



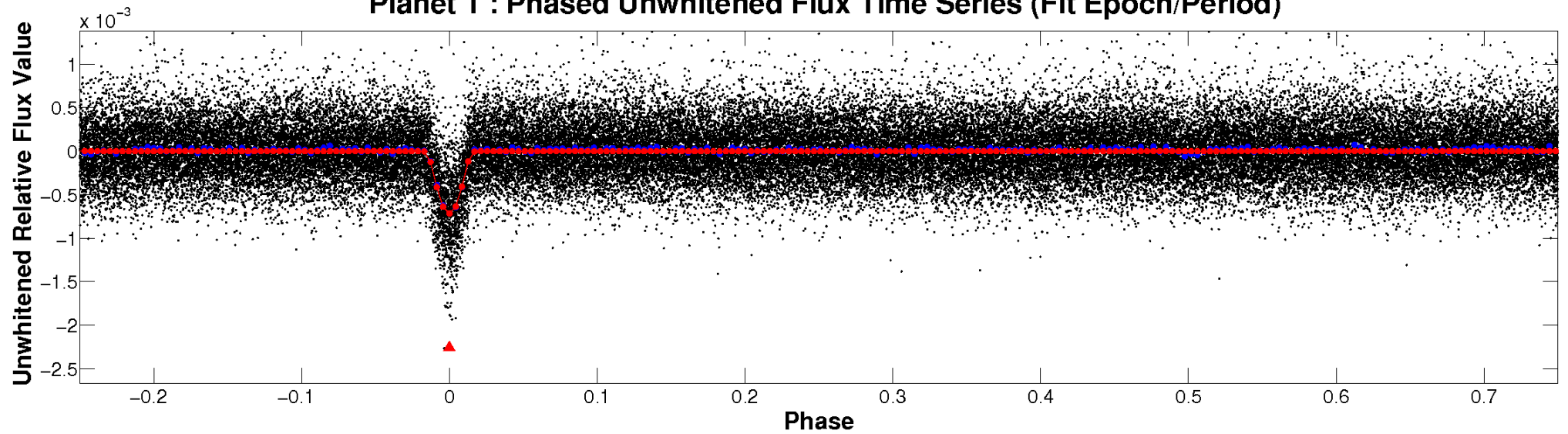
ALT Odd/Even

TCE 004049108-01

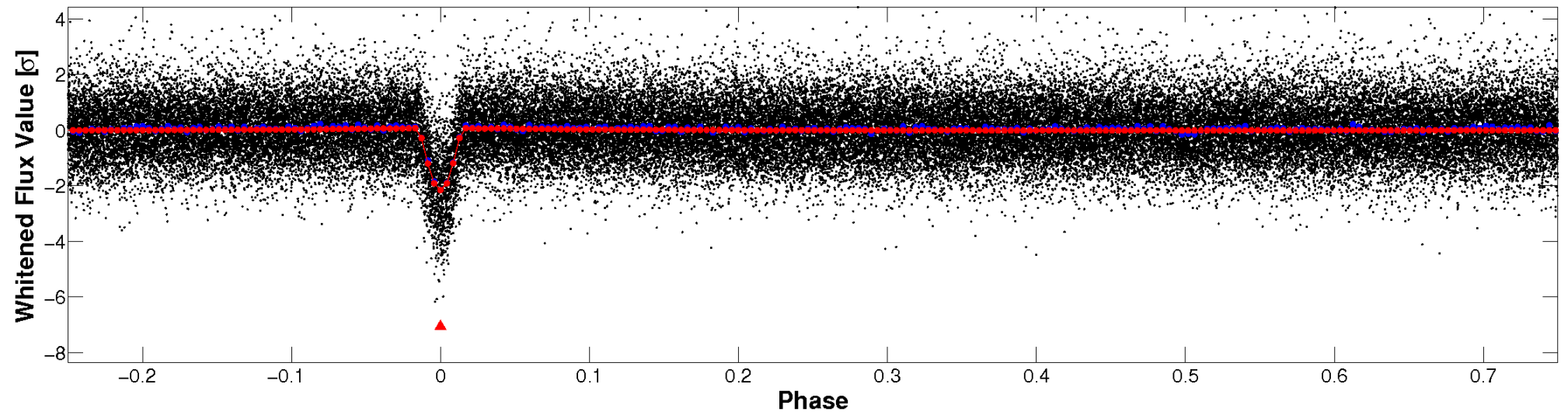


Non-Whitened Vs. Whitened Light Curve

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

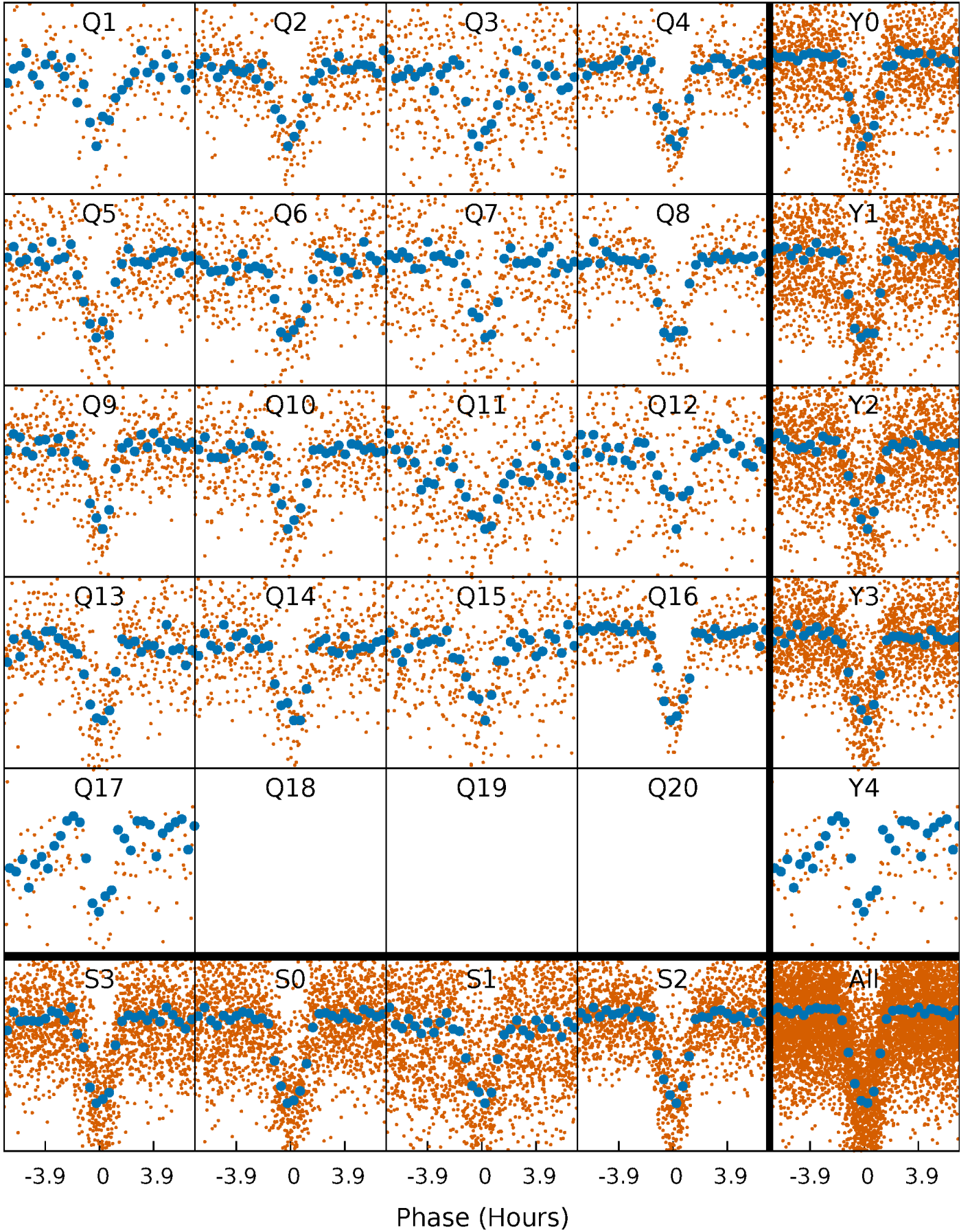


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



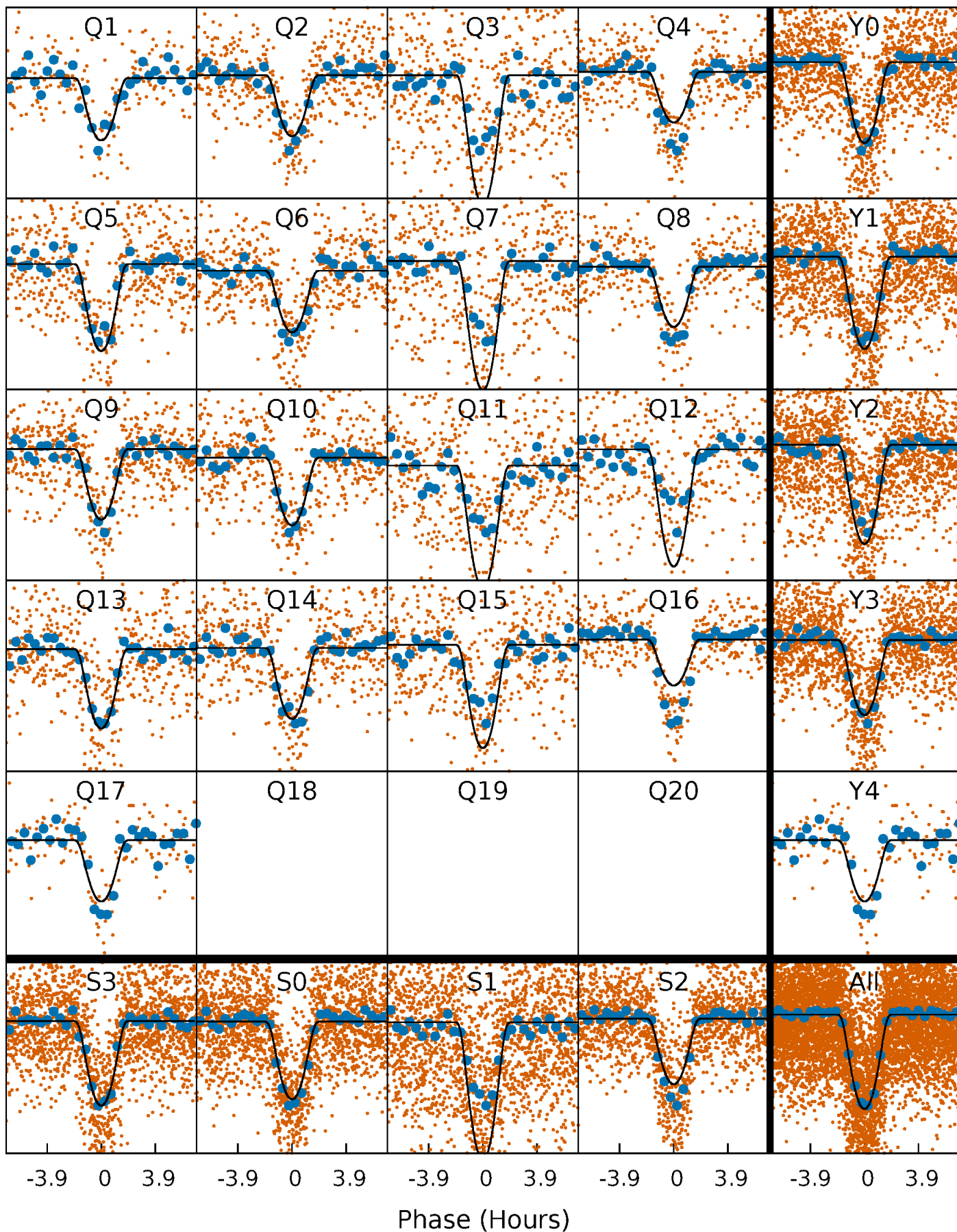
PDC Quarter-Phased Transit Curves

TCE 004049108-01 P= 4.804468 Days $T_0=136.003648$ (BKJD)



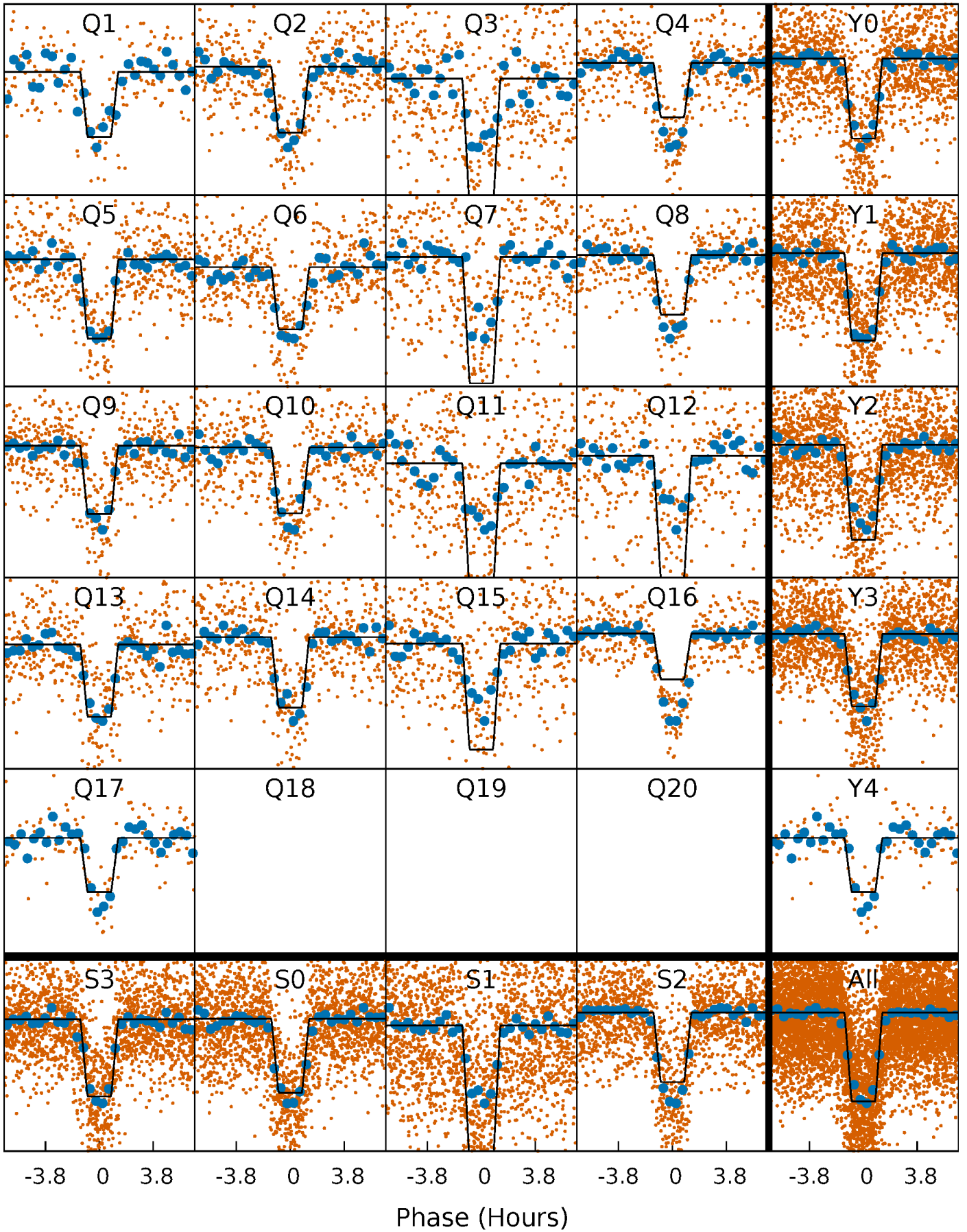
DV Quarter-Phased Transit Curves

TCE 004049108-01 P= 4.804468 Days $T_0=136.003648$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

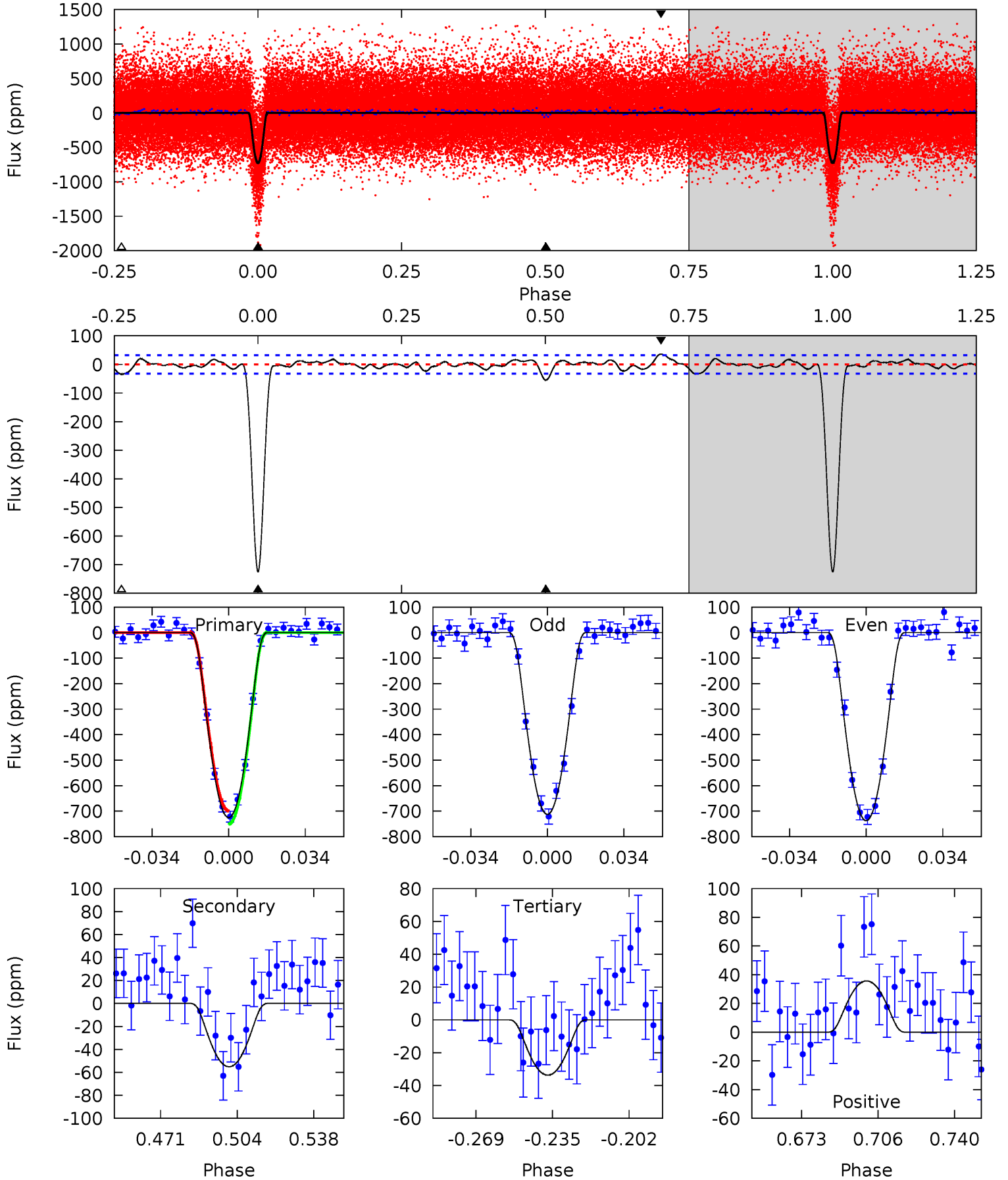
TCE 004049108-01 P= 4.804449 Days $T_0=136.007232$ (BKJD)



DV Model-Shift Uniqueness Test

004049108-01, P = 4.804468 Days, E = 131.199180 Days

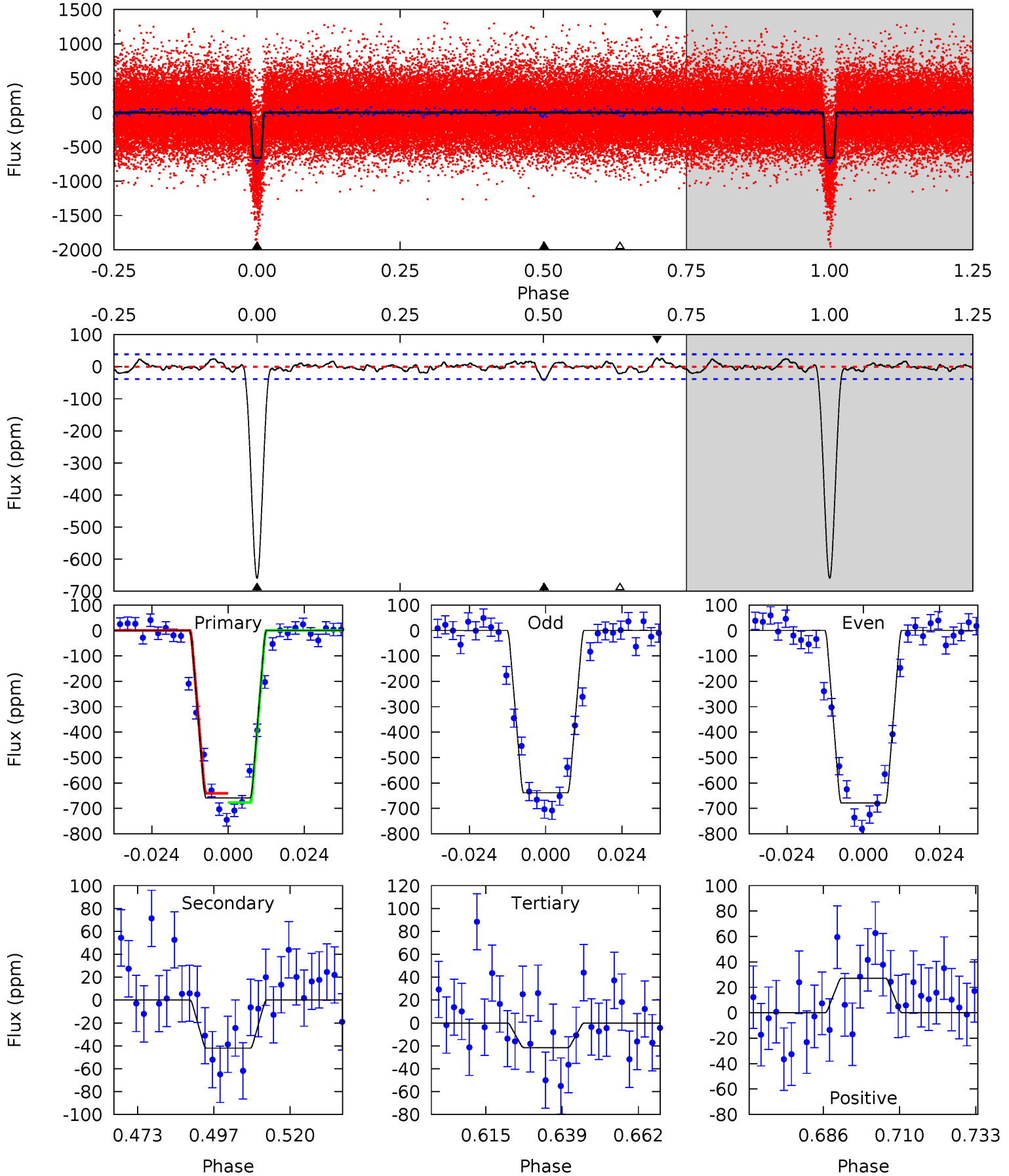
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 108.7 | 8.26 | 5.05 | 5.35 | 4.79 | 2.12 | 1.73 | 103.6 | 103.3 | 3.21 | 2.91 | 1.85 | 1.04 | 0.05 | 3.88 |



Alt Model-Shift Uniqueness Test

004049108-01, P = 4.804449 Days, E = 131.202783 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 83.1 | 5.30 | 2.71 | 3.43 | 4.86 | 2.26 | 1.22 | 80.4 | 79.7 | 2.59 | 1.88 | 2.56 | 1.02 | 0.04 | 2.29 |



Stellar Parameters For KIC 004049108

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5470^{+162}_{-162} | $4.528^{+0.067}_{-0.114}$ | $-0.280^{+0.300}_{-0.300}$ | $0.809^{+0.147}_{-0.090}$ | $0.805^{+0.098}_{-0.071}$ | $2.144^{+0.699}_{-0.736}$ |
| | +3%/-3% | +1%/-3% | +107%/-107% | +18%/-11% | +12%/-9% | +33%/-34% |
| 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 004049108-01 / KOI 0495.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|--------------------|----------------------|---------------------------|
| DV | -55 ± 7 | $3.44^{+0.85}_{-0.80}$ | 1343^{+68}_{-59} | 3033^{+244}_{-195} | $6.936^{+4.586}_{-2.548}$ |
| Alt. | -42 ± 8 | $2.40^{+0.85}_{-0.83}$ | 1341^{+68}_{-55} | 3231^{+483}_{-279} | 11^{+16}_{-5} |

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 $A_{obs} \gg 1.0$

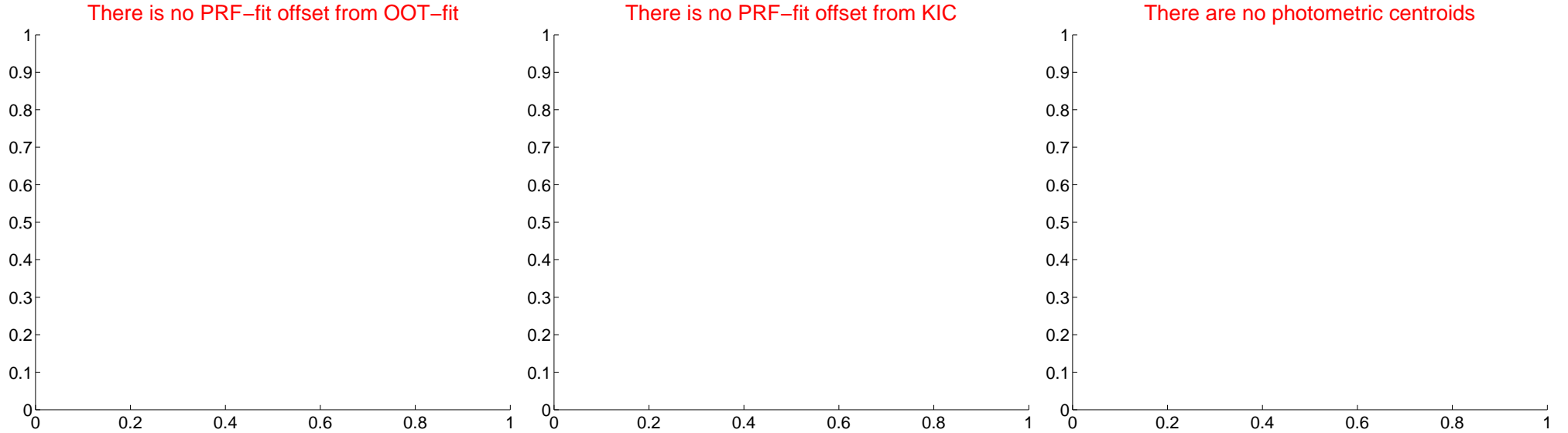
DV Centroid Data

Supplemental centroid analysis for 004049108-01. Kepler magnitude: 14.87. Transit SNR 61.20

There are 0 quarters with good PRF difference image offsets

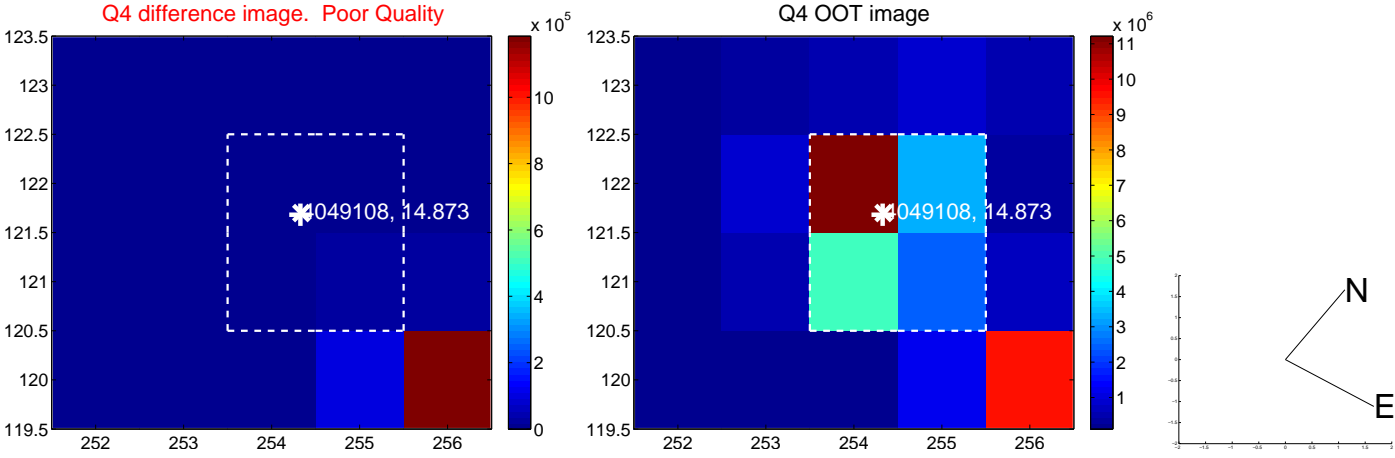
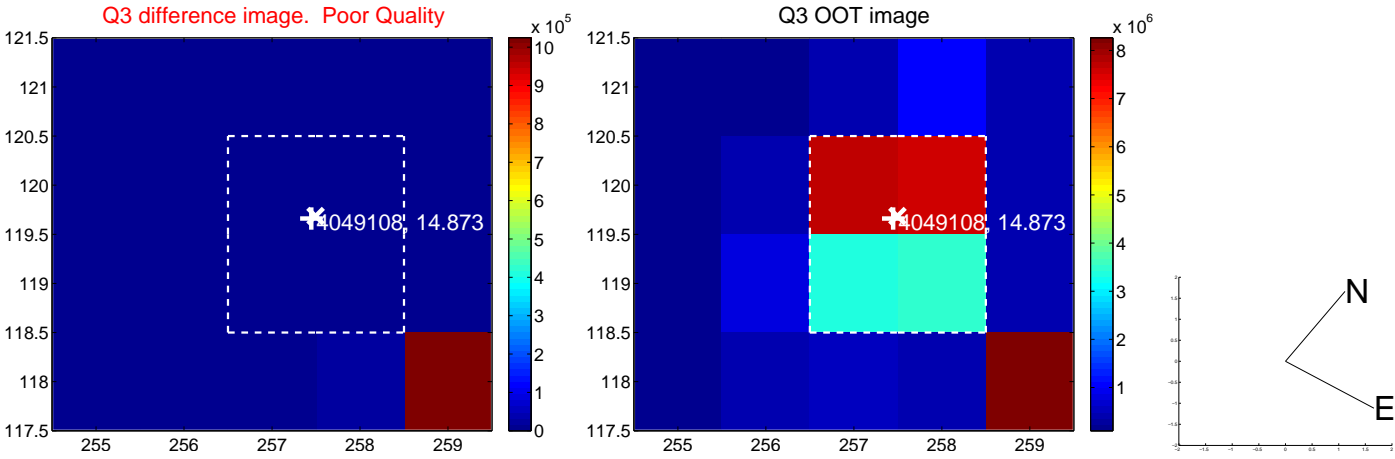
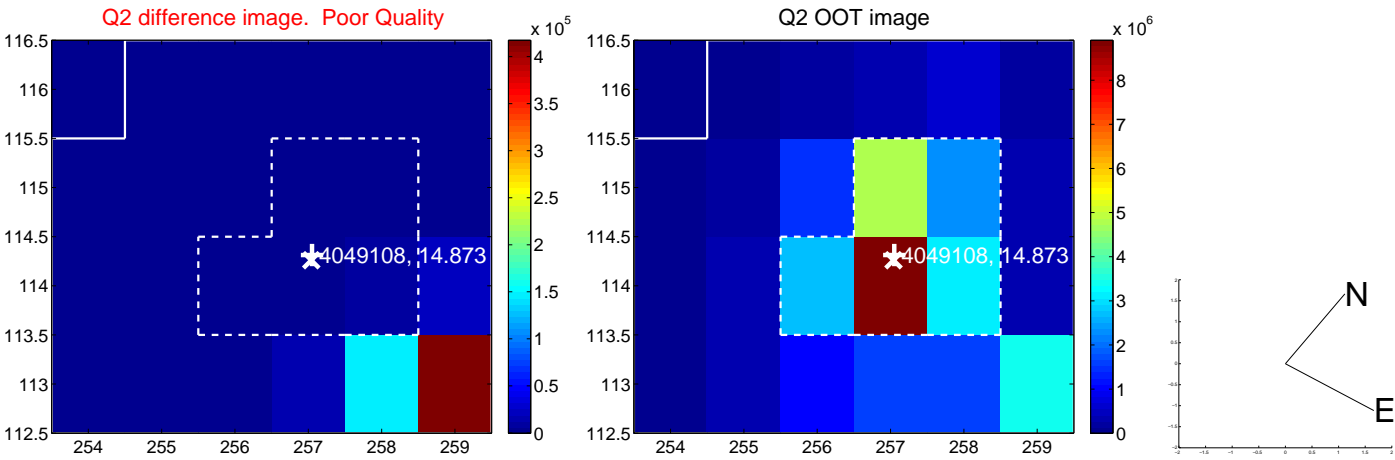
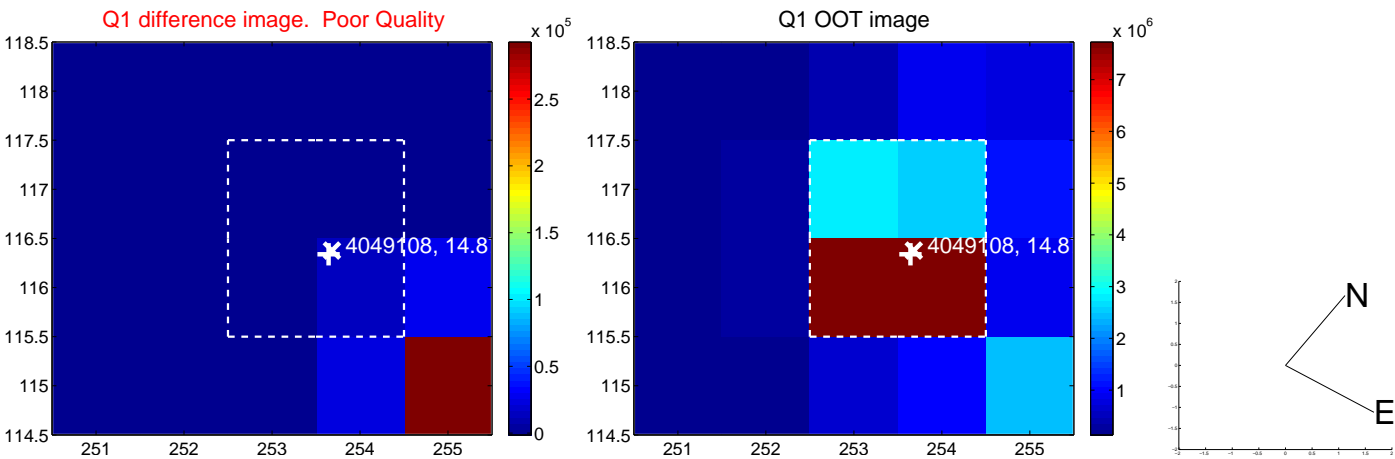
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------|--------------|
| PRF-fit source offset from OOT | — | — | — | — |
| PRF-fit source offset from KIC position | — | — | — | — |
| photometric centroid source offset | — | — | — | — |

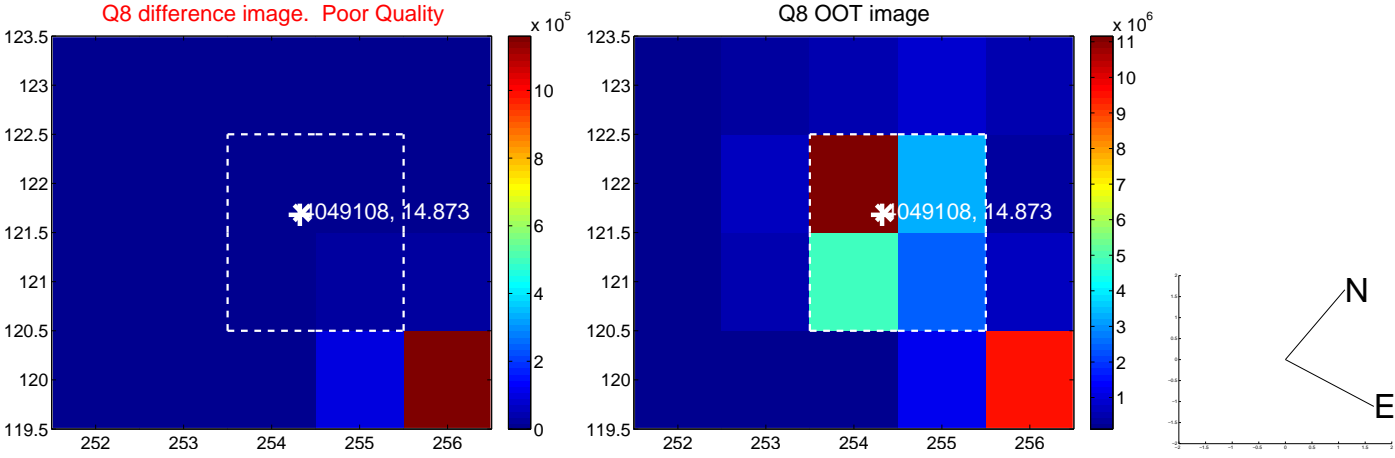
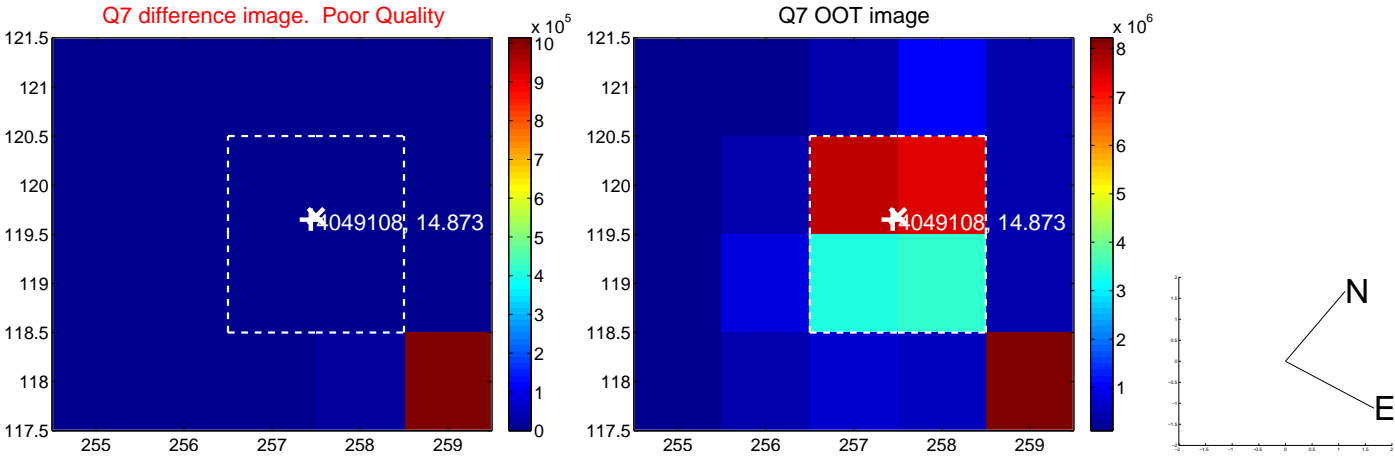
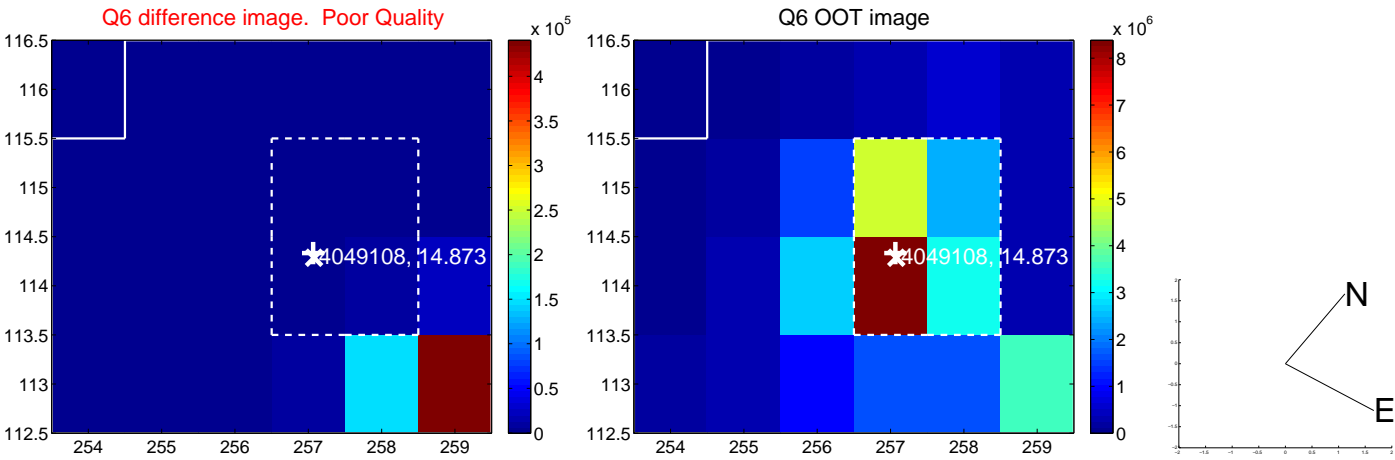
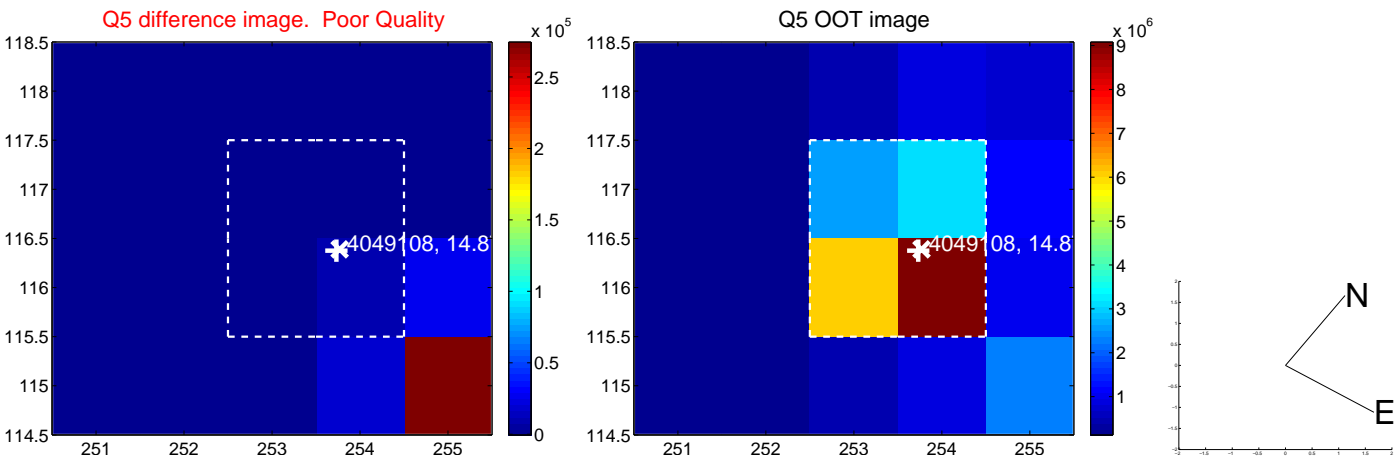


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

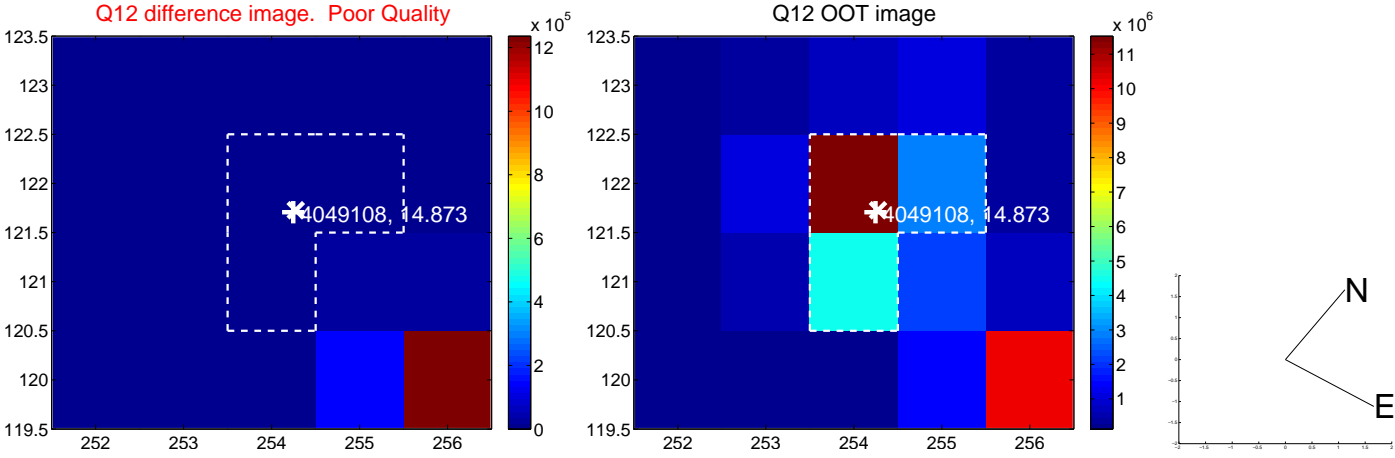
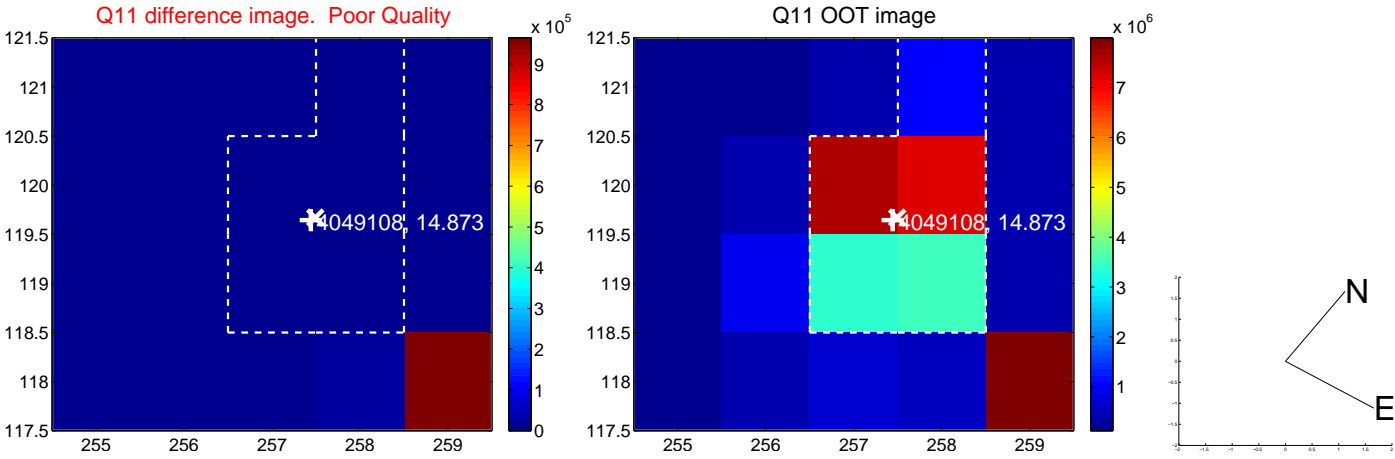
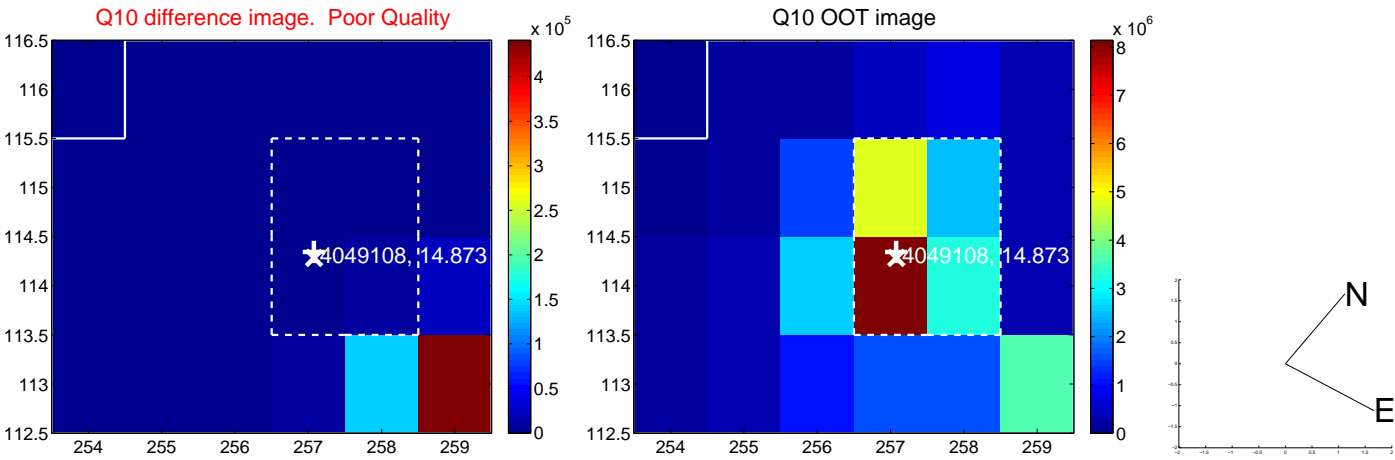
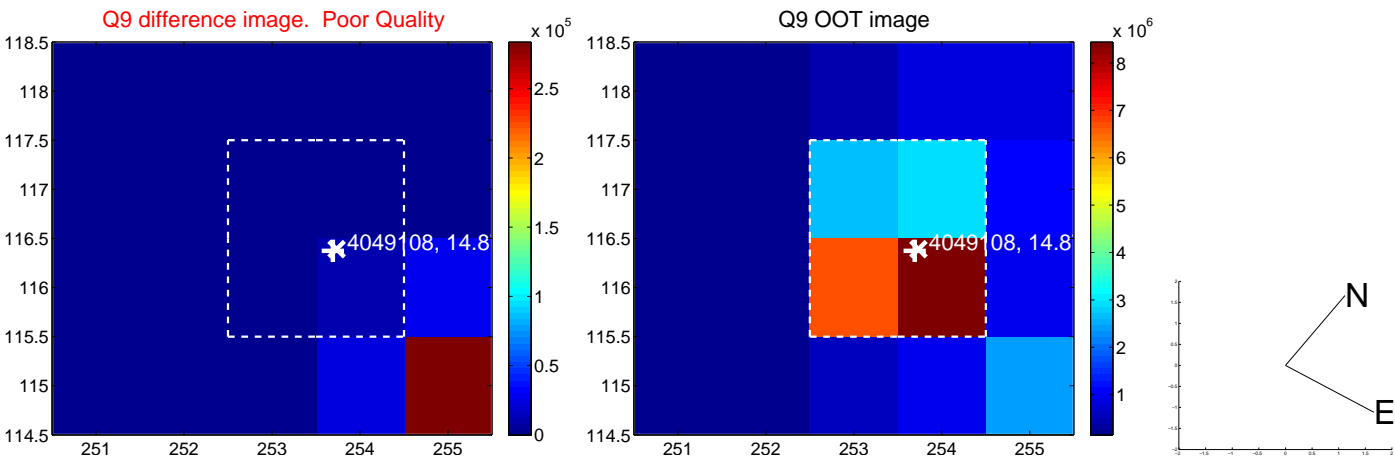
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



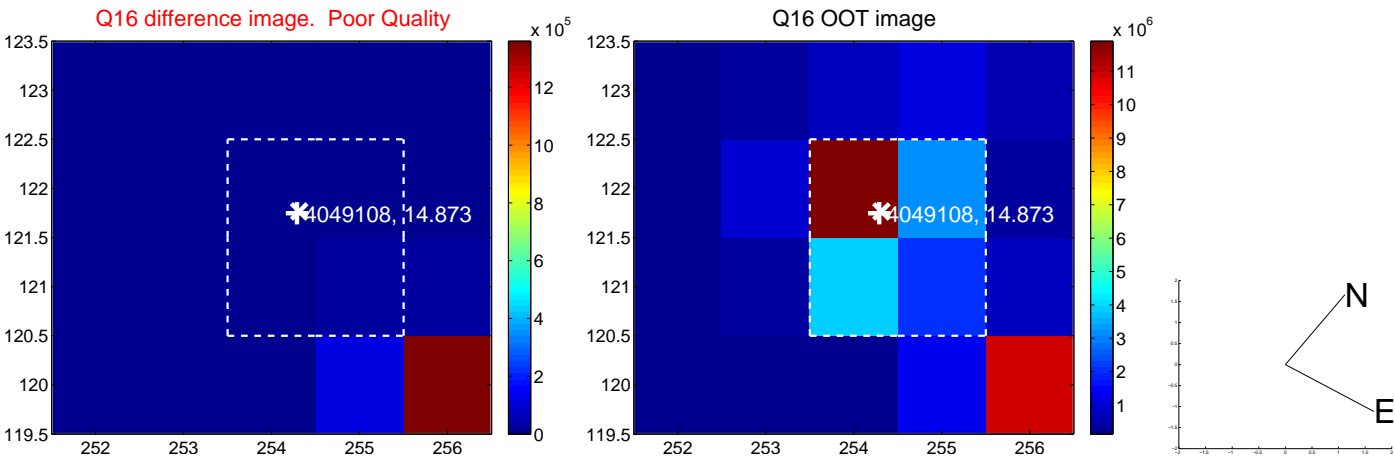
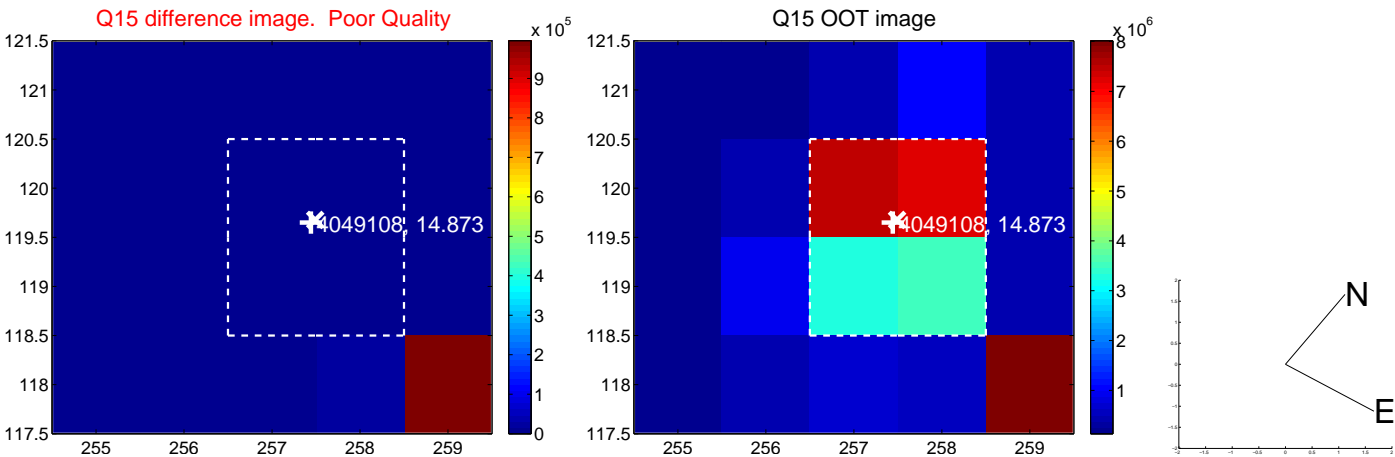
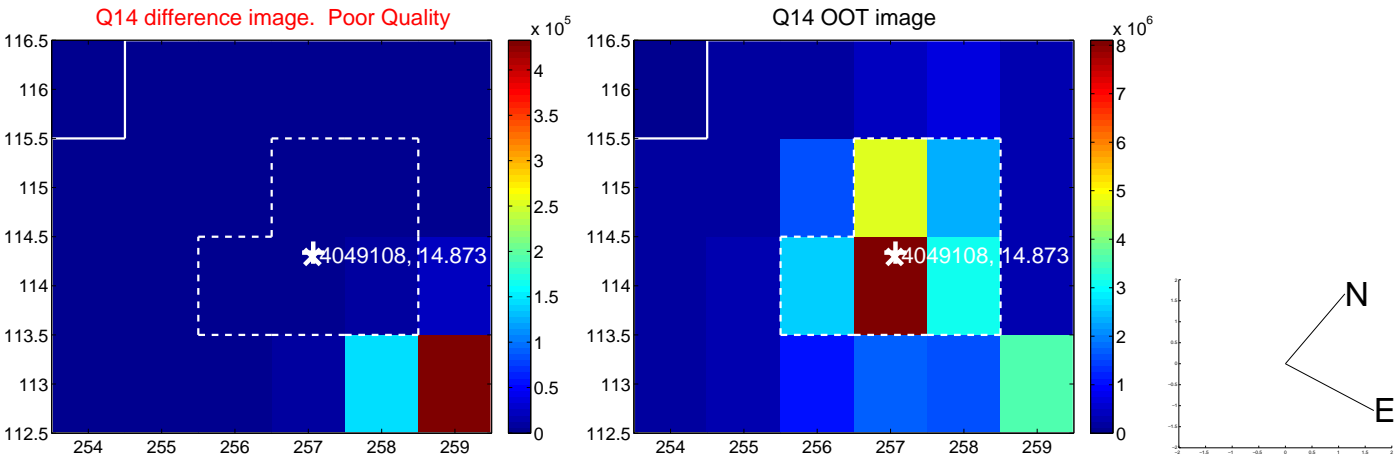
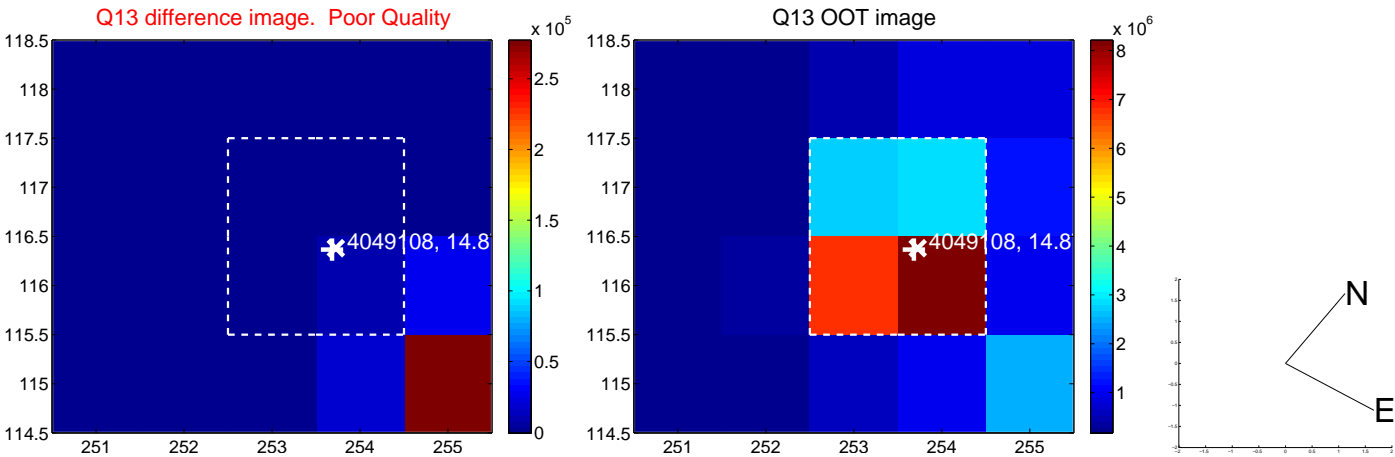
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



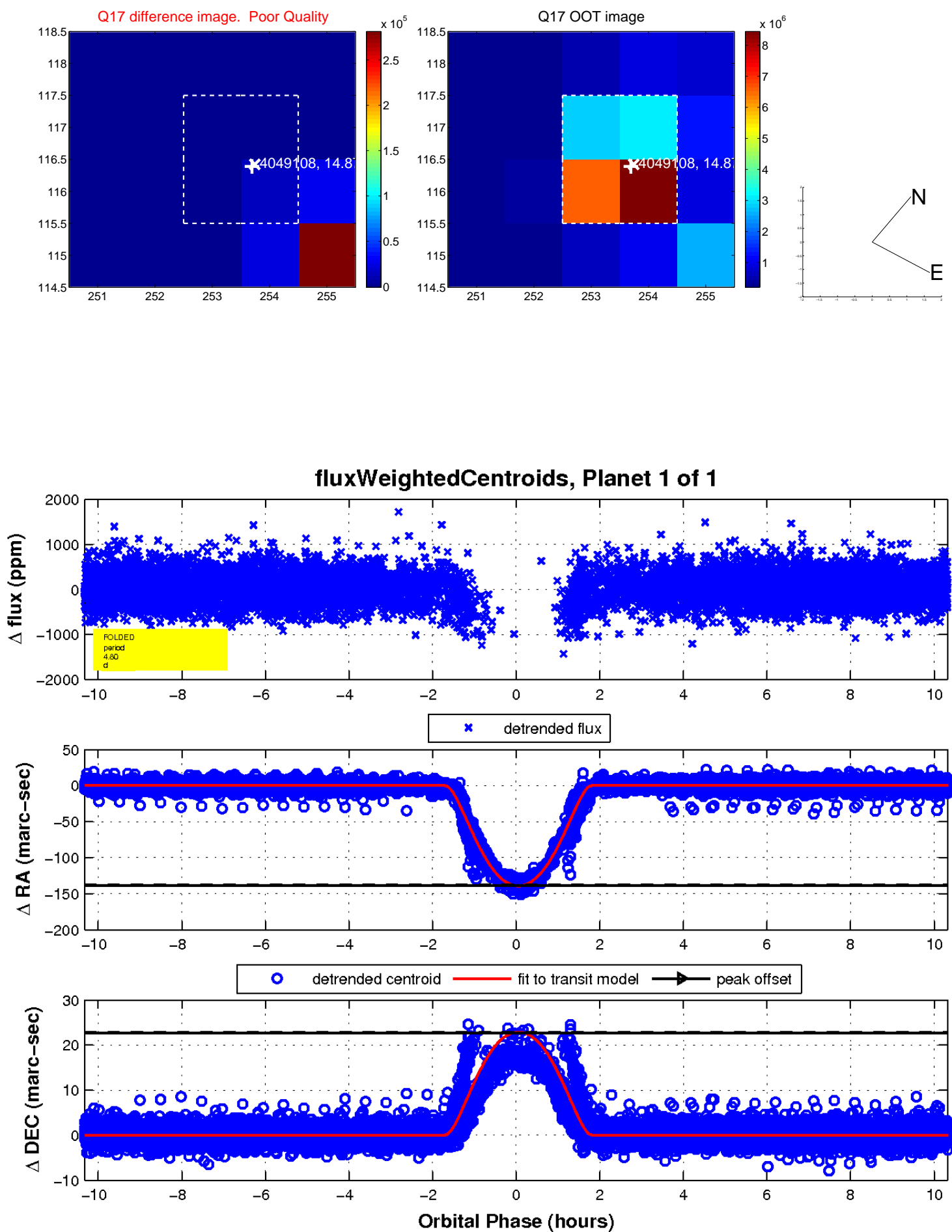
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UKIRT Image

Declination

