

KIC 009402117

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009402117-01 | OBS | No | 0.735769 | 131.572405 | 57.9 | 1.080 | 7.6 | 7.0 | 0.71 | 5538 | 0.64 | 1976.50 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009402117-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |

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

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

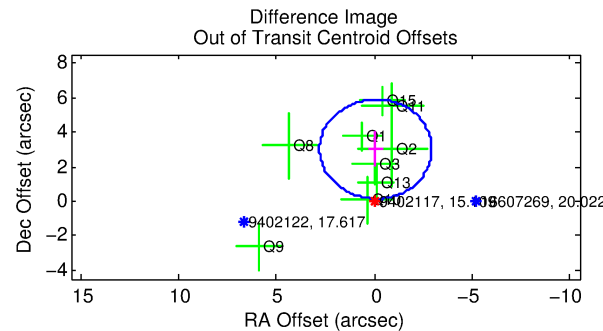
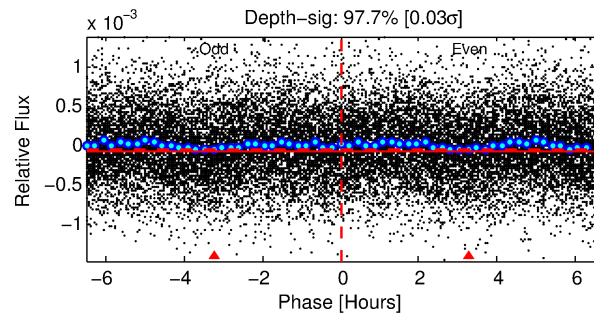
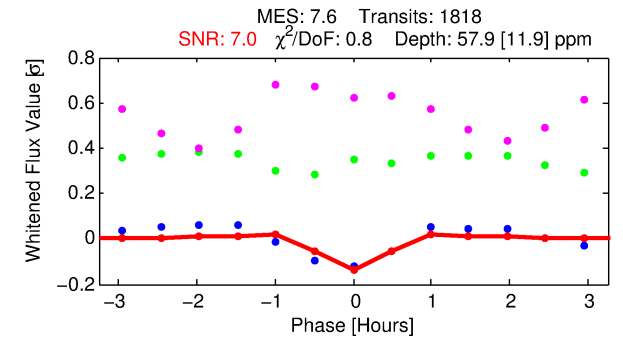
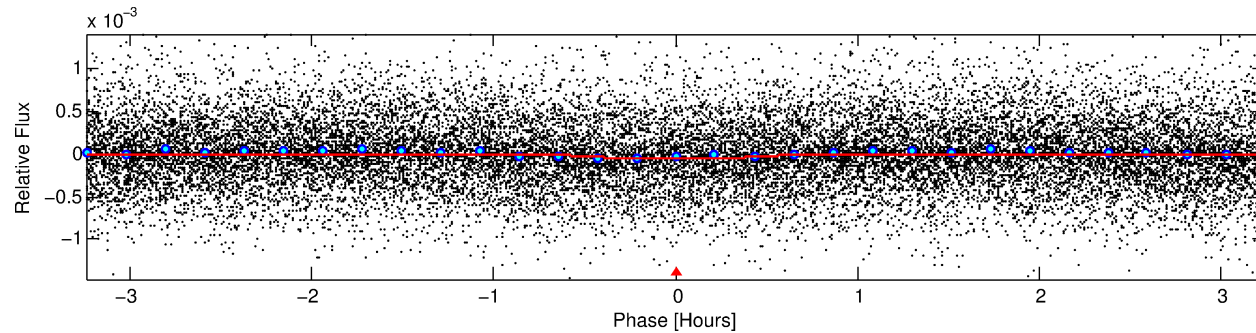
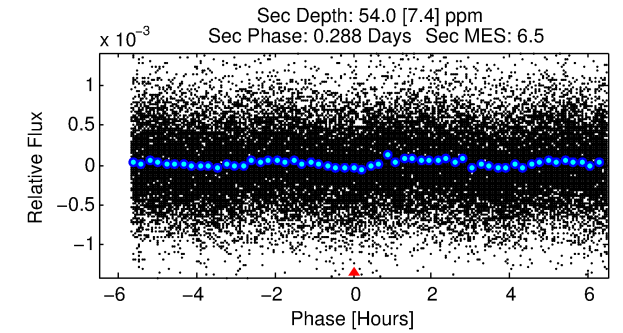
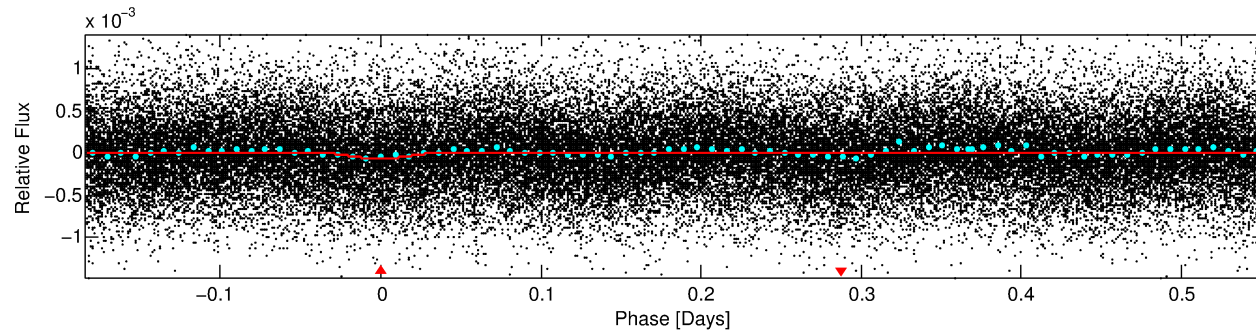
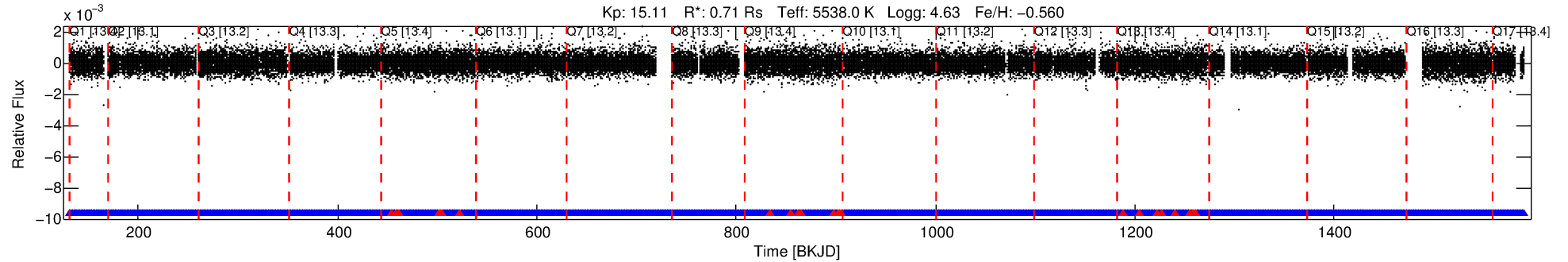
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009402117-01

No Significant Match Found

DV One-Page Summary

KIC: 9402117 Candidate: 1 of 1 Period: 0.736 d



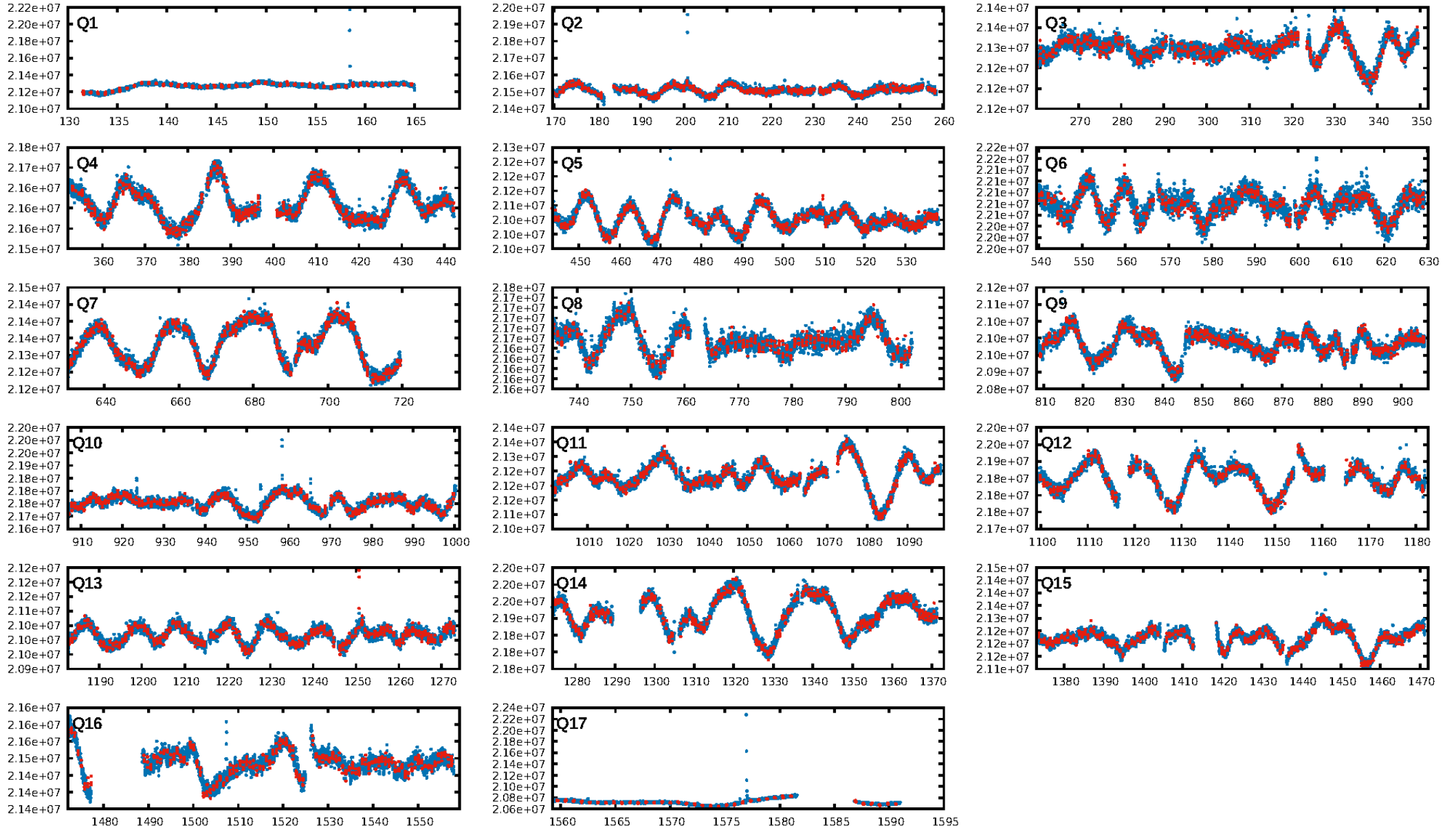
DV Fit Results:

Period = 0.73577 [0.00001] d
Epoch = 131.5724 [0.0023] BKJD
Rp/R* = 0.0083 [0.0041]
a/R* = 2.58 [5.14]
b = 0.90 [0.53]
Seff = 1976.50 [474.36]
Teq = 1700 [102] K
Rp = 0.64 [0.34] Re
a = 0.0147 [0.0022] AU
Ag = 15.42 [15.83] [0.91σ]
Teffp = 5209 [1318] K [2.66σ]

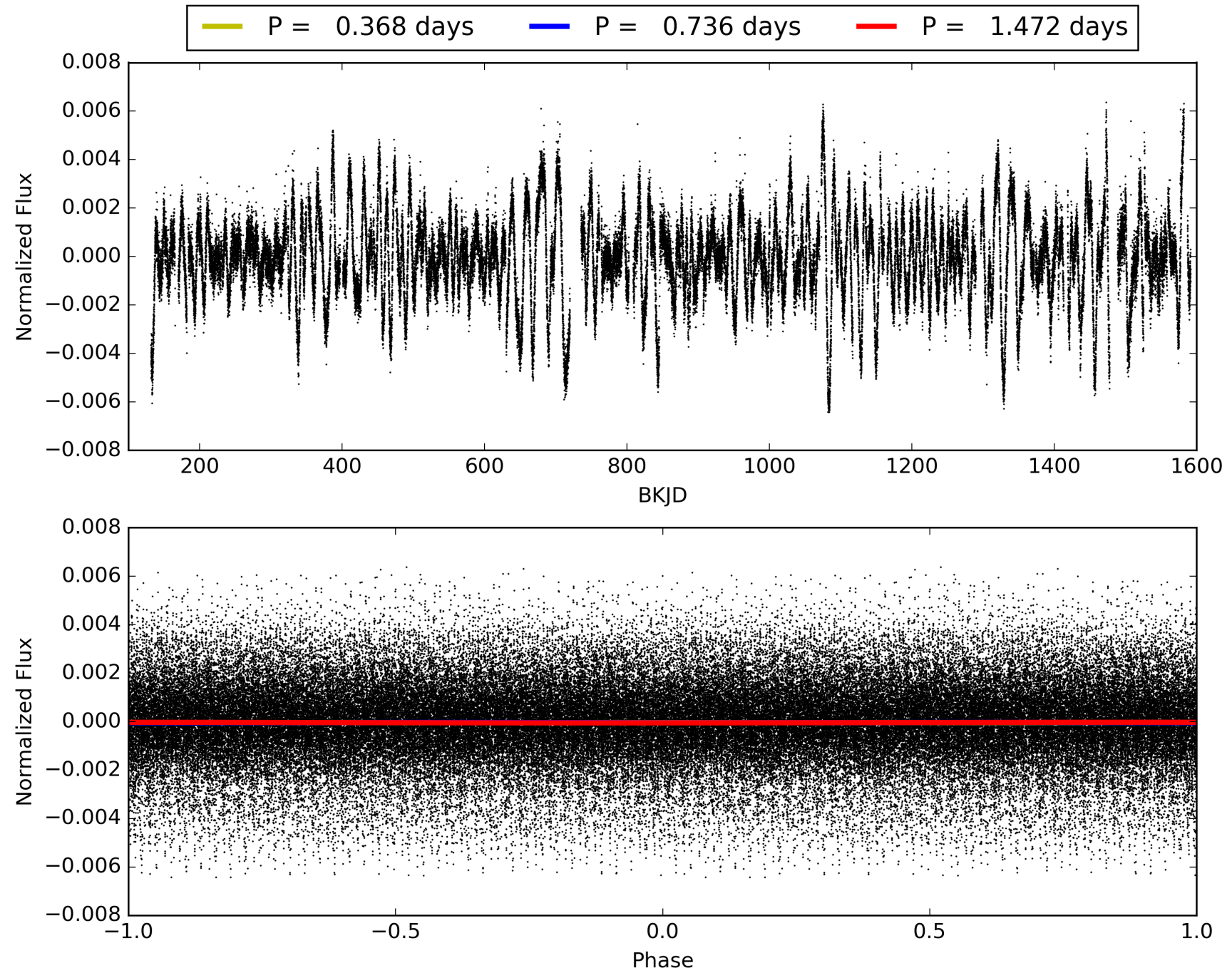
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.76e-13
RollingBand-fgt: 0.99 [1712/1736]
GhostDiagnostic-chr: 0.8514
Centroid-sig: 13.6%
Centroid-so: 1.891 arcsec [1.18σ]
OotOffset-rm: 3.010 arcsec [3.15σ]
OotOffset-st: 2/3/1/3 [9]
KicOffset-st: 2/3/1/3 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009402117-01, PDC Light Curves

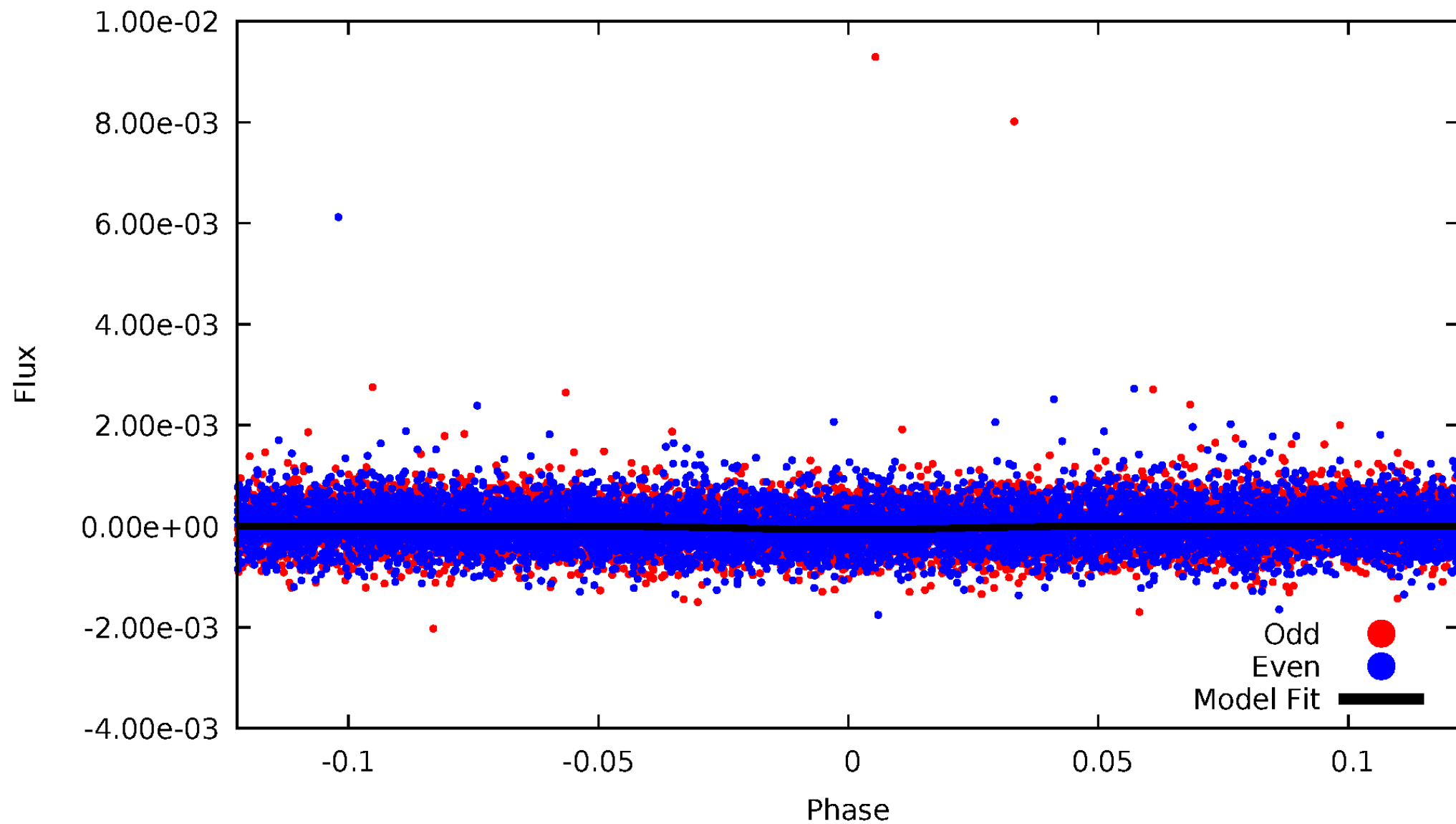


TCE 009402117-01



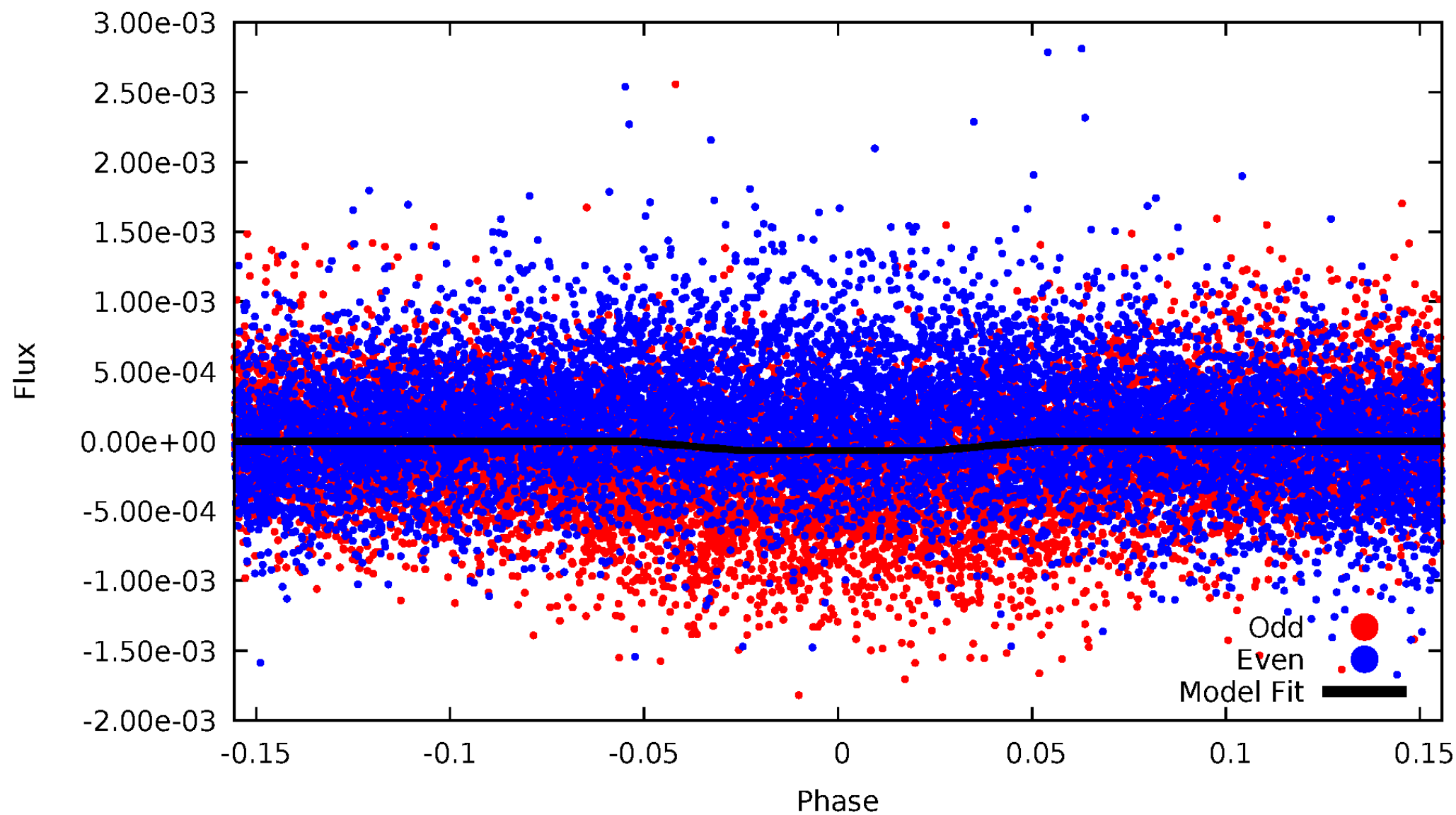
DV Odd/Even

TCE 009402117-01



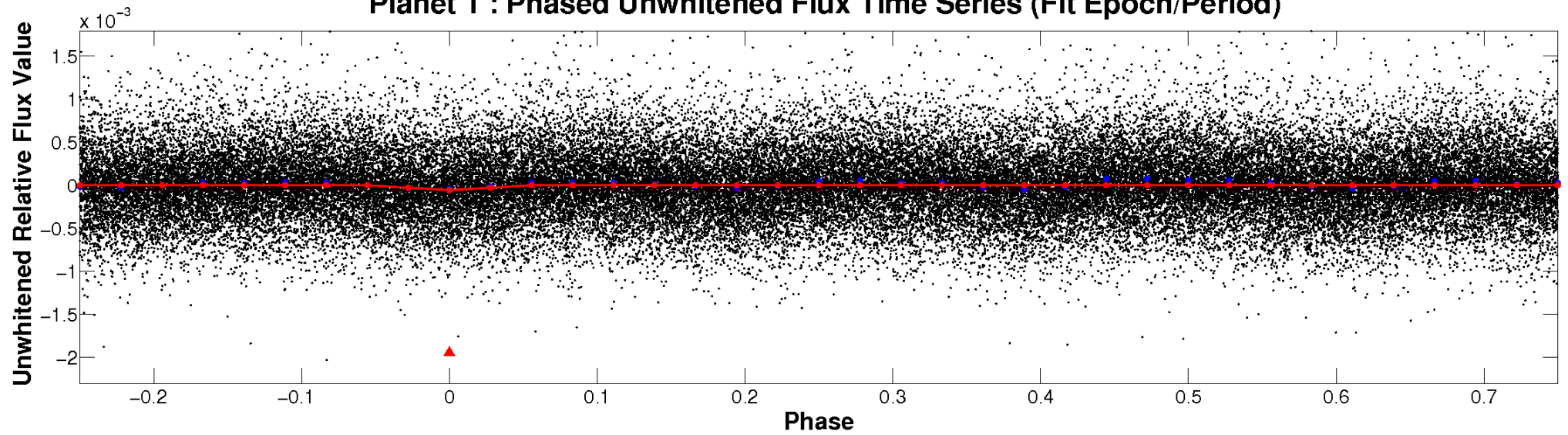
ALT Odd/Even

TCE 009402117-01

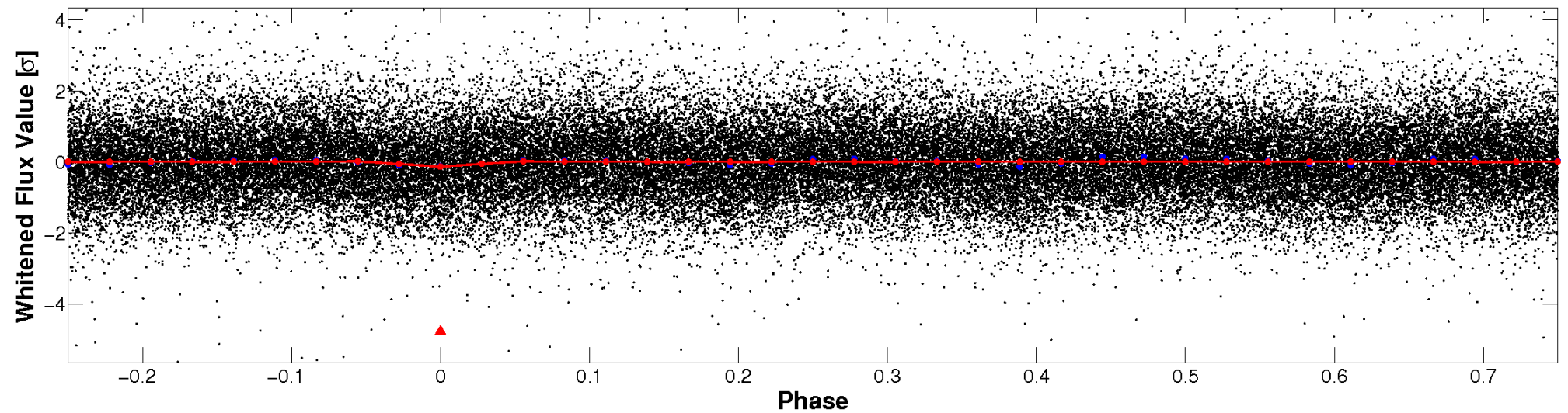


Non-Whitened Vs. Whitened Light Curve

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

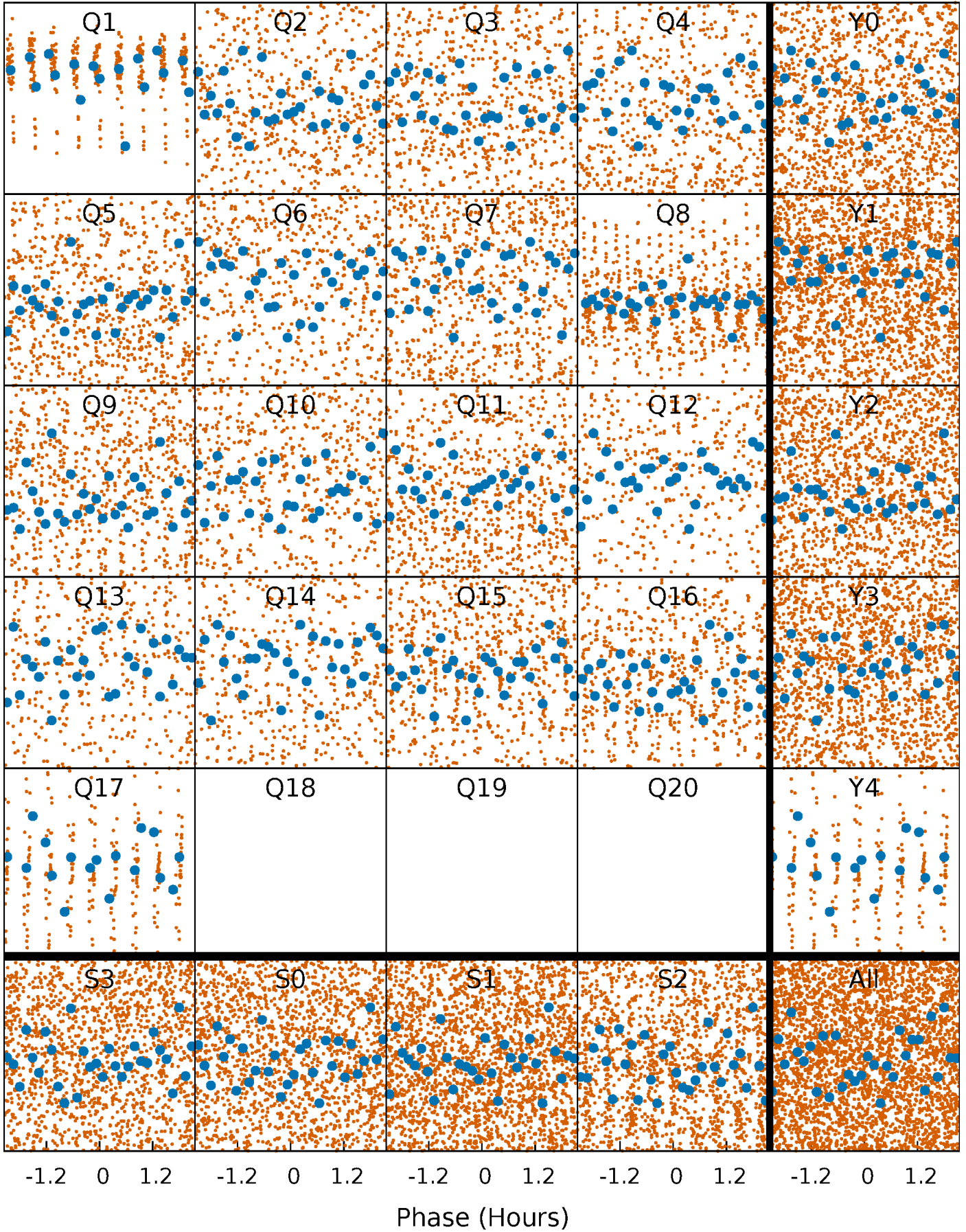


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



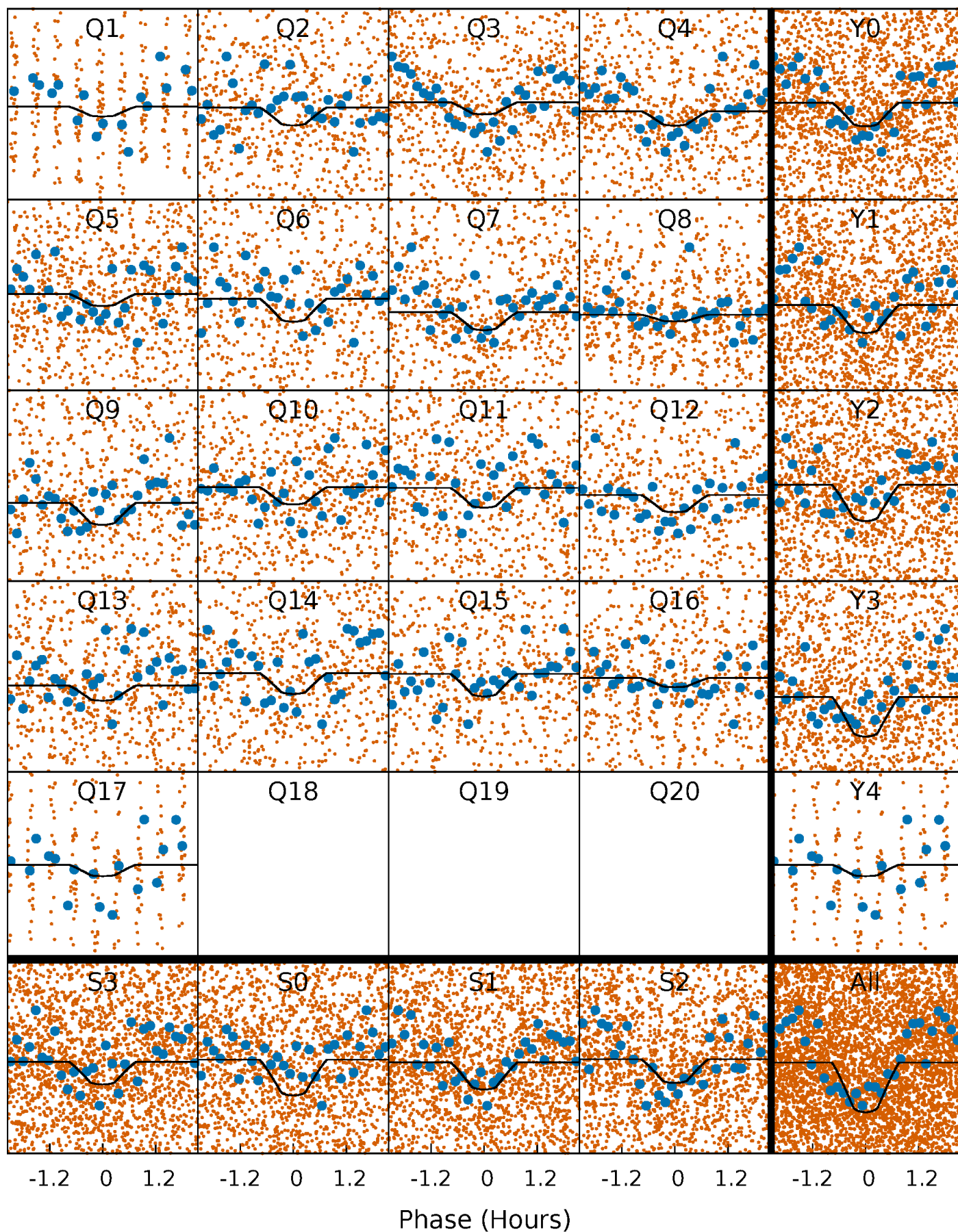
PDC Quarter-Phased Transit Curves

TCE 009402117-01 P= 0.735769 Days $T_0=131.572405$ (BKJD)



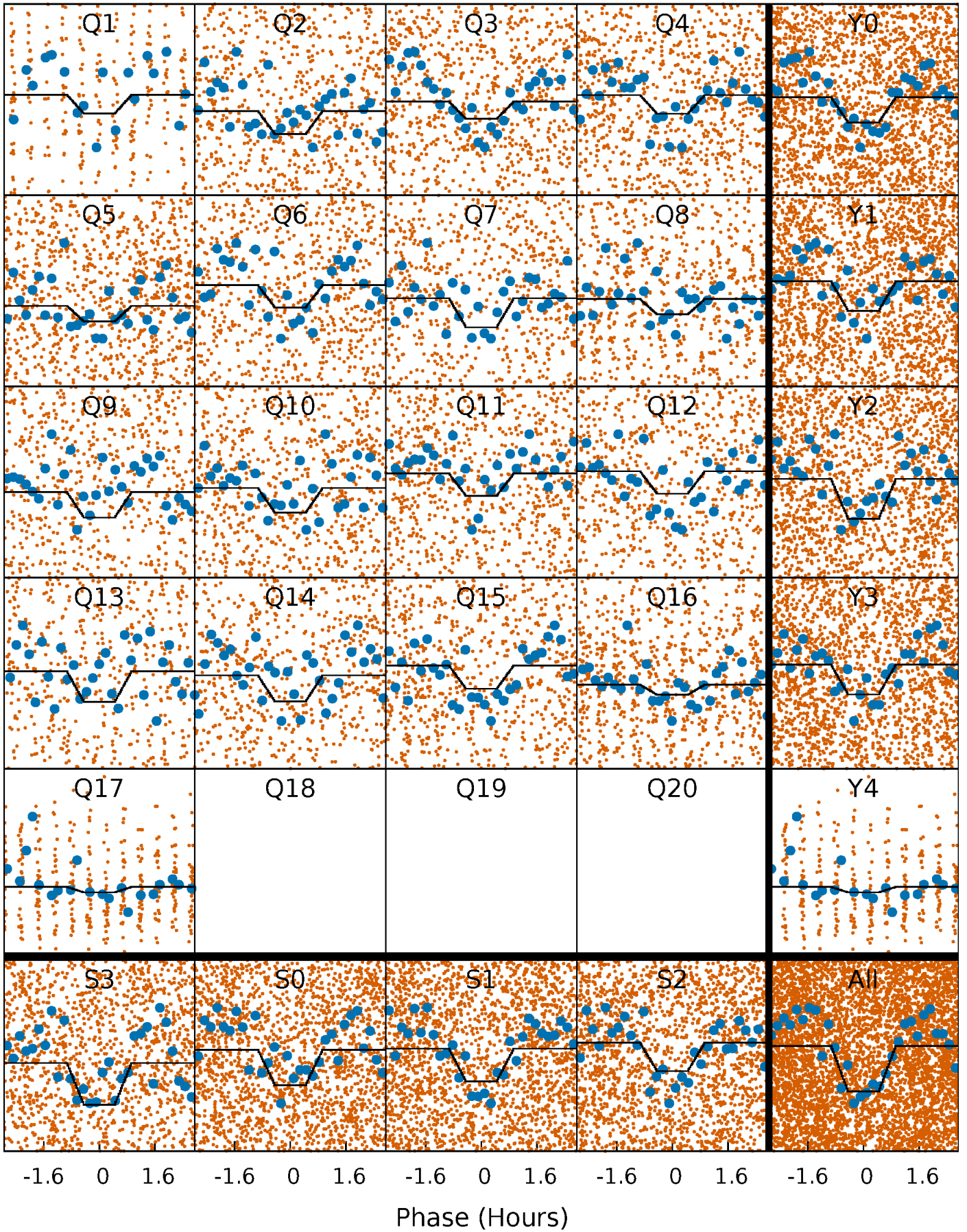
DV Quarter-Phased Transit Curves

TCE 009402117-01 P= 0.735769 Days $T_0=131.572405$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

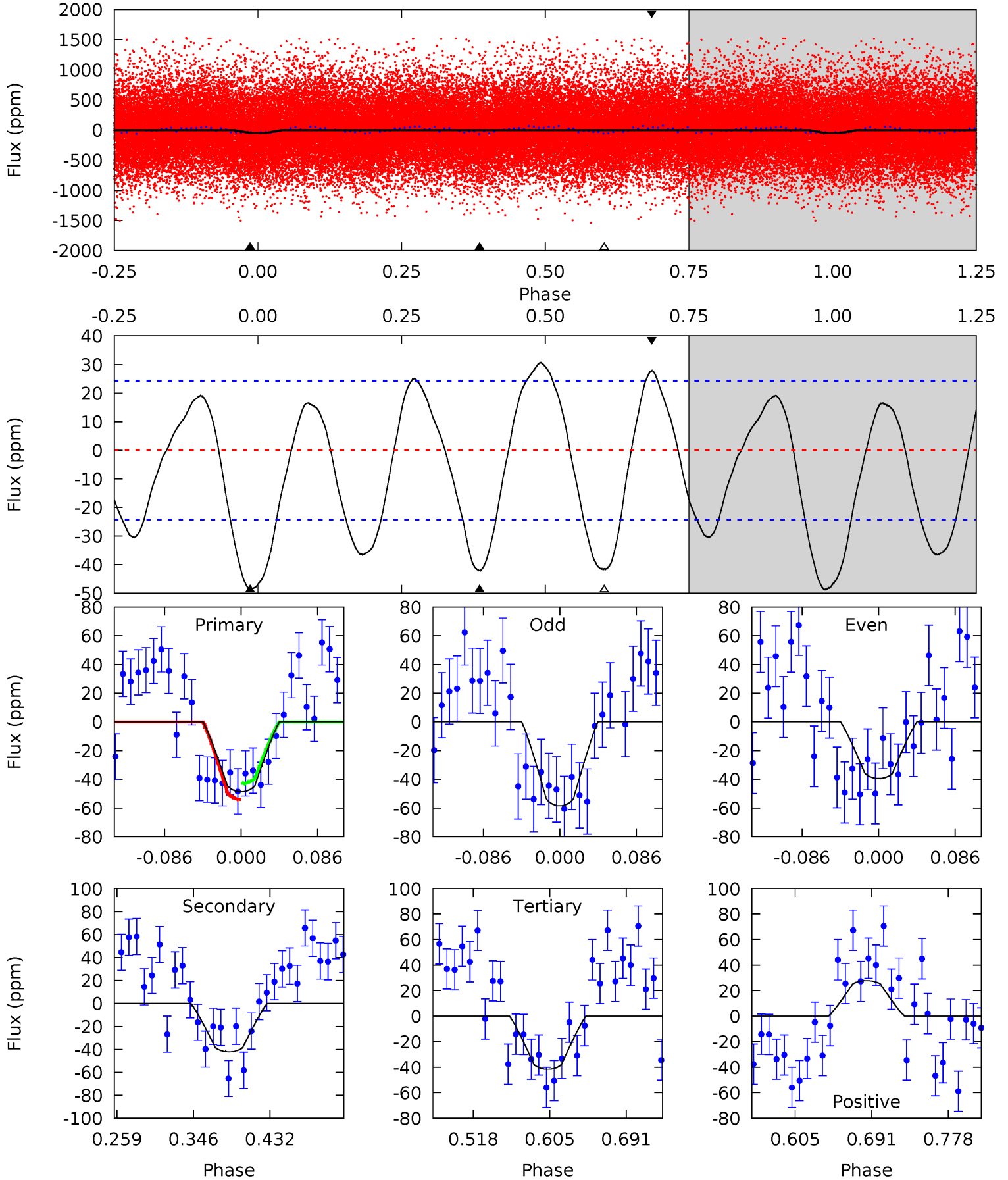
TCE 009402117-01 P= 0.735762 Days $T_0=131.572114$ (BKJD)



DV Model-Shift Uniqueness Test

009402117-01, P = 0.735769 Days, E = 130.836636 Days

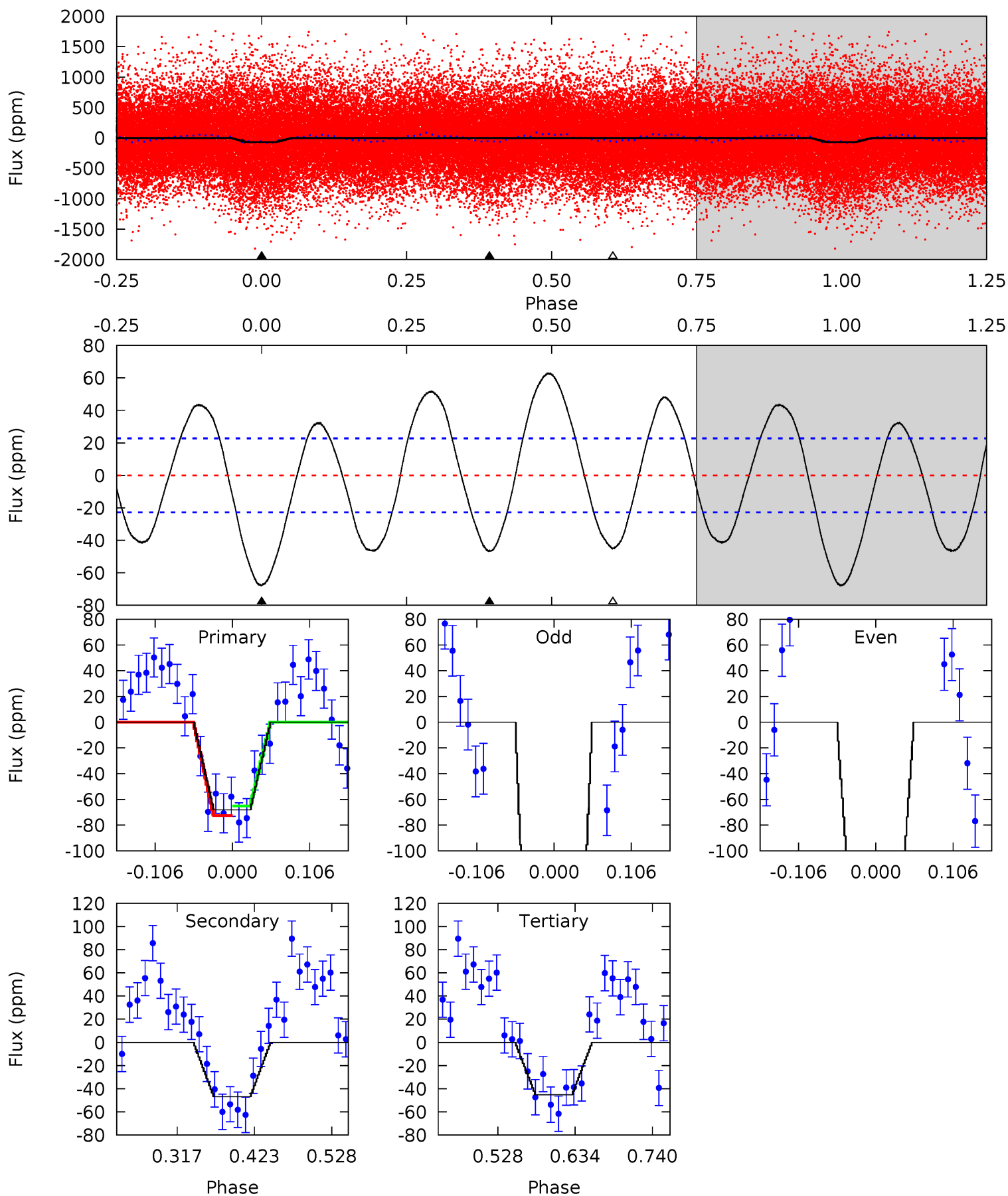
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.22 | 7.97 | 7.87 | 5.27 | 4.60 | 1.71 | 4.17 | 1.35 | 3.95 | 0.10 | 2.71 | 1.81 | 0.78 | 0.39 | 1.05 |



Alt Model-Shift Uniqueness Test

009402117-01, P = 0.735762 Days, E = 130.836352 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.6 | 9.35 | 9.03 | 0 | 4.55 | 1.62 | 6.54 | 4.56 | 13.6 | 0.32 | 9.35 | 13.6 | 0.89 | 0.48 | 0.75 |



Stellar Parameters For KIC 009402117

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5538^{+163}_{-163} | $4.626^{+0.035}_{-0.112}$ | $-0.560^{+0.300}_{-0.300}$ | $0.711^{+0.127}_{-0.045}$ | $0.796^{+0.073}_{-0.081}$ | $3.117^{+0.465}_{-1.066}$ |
| | +3%/-3% | +1%/-2% | +54%/-54% | +18%/-6% | +9%/-10% | +15%/-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 009402117-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|---------------------|-----------------------|-----------------|
| DV | -42 ± 5 | $0.66^{+0.32}_{-0.33}$ | 2413^{+110}_{-99} | 4925^{+2039}_{-738} | 11^{+34}_{-6} |
| Alt. | -47 ± 5 | $0.65^{+0.37}_{-0.29}$ | 2411^{+116}_{-95} | 5079^{+1736}_{-823} | 13^{+29}_{-8} |

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 $A_{obs} \gg 1.0$

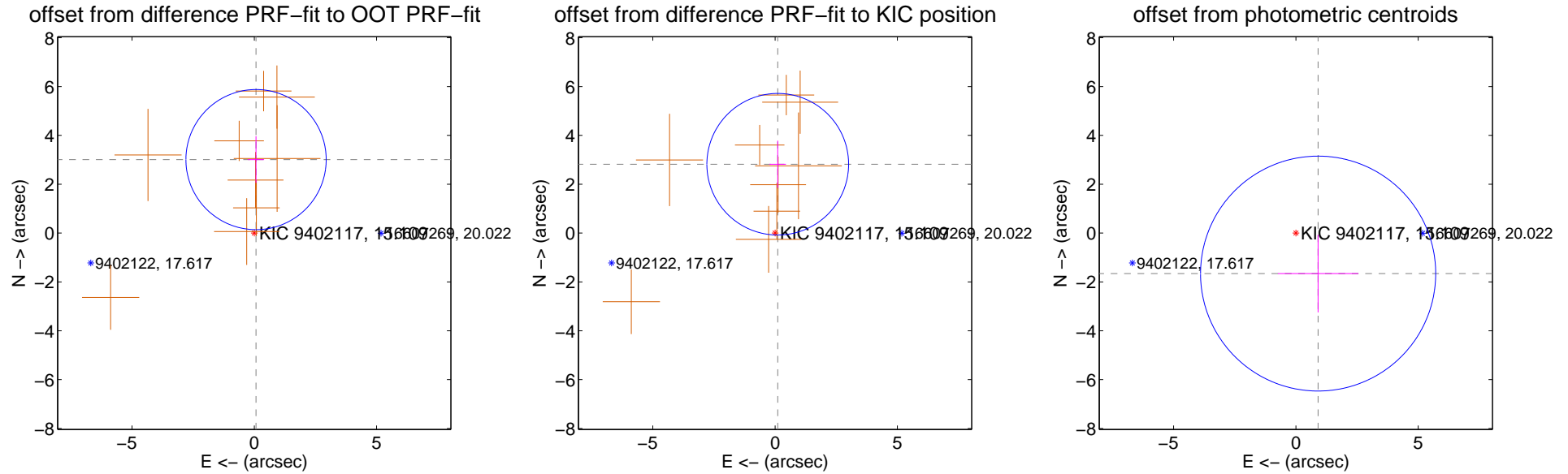
DV Centroid Data

Supplemental centroid analysis for 009402117-01. Kepler magnitude: 15.11. Transit SNR 7.01

There are 0 quarters with good PRF difference image offsets

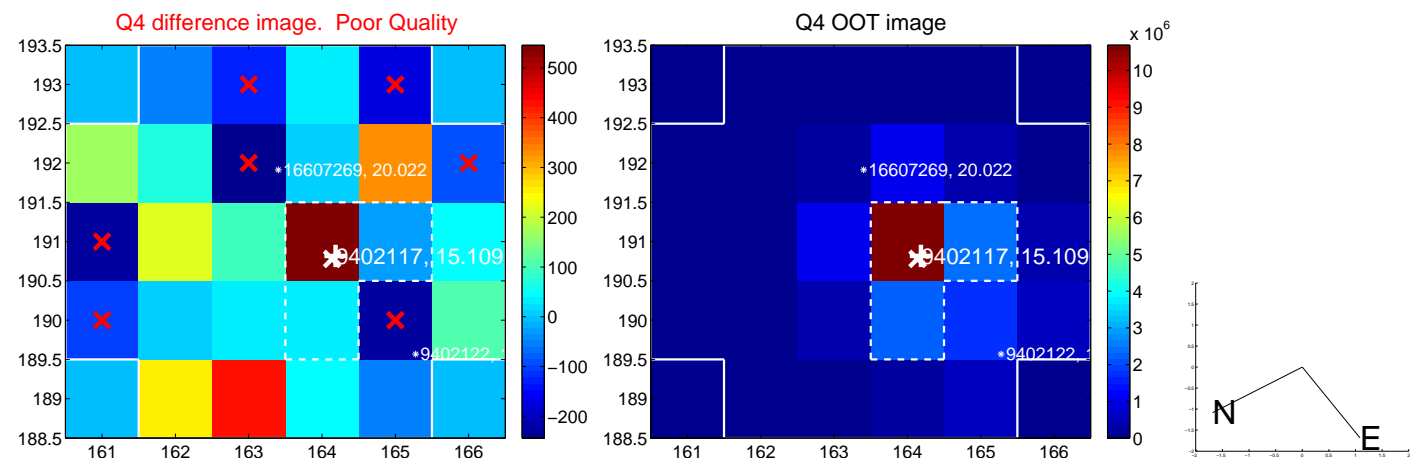
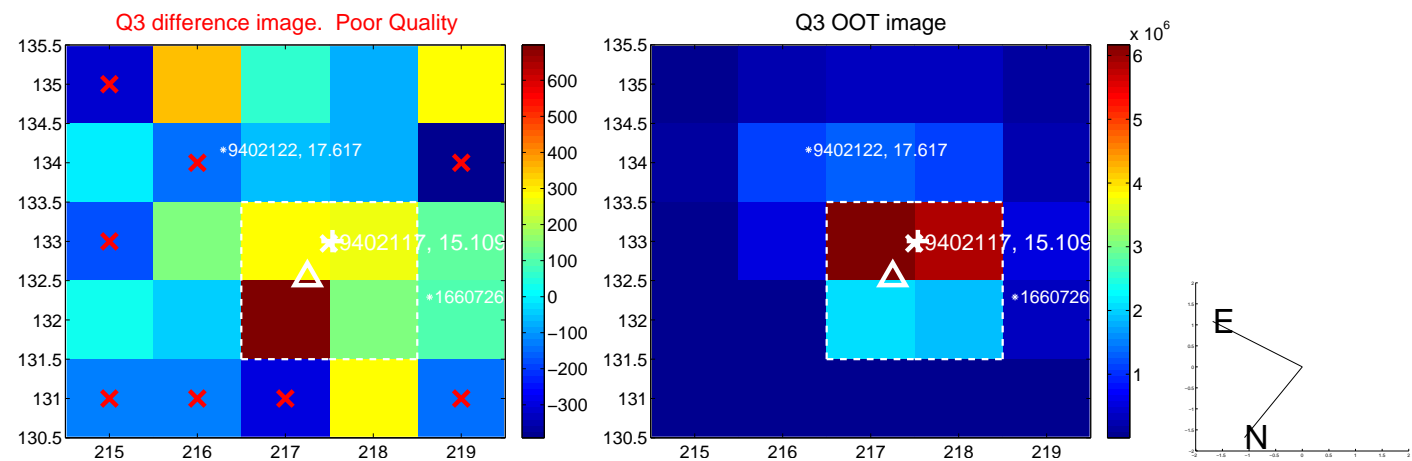
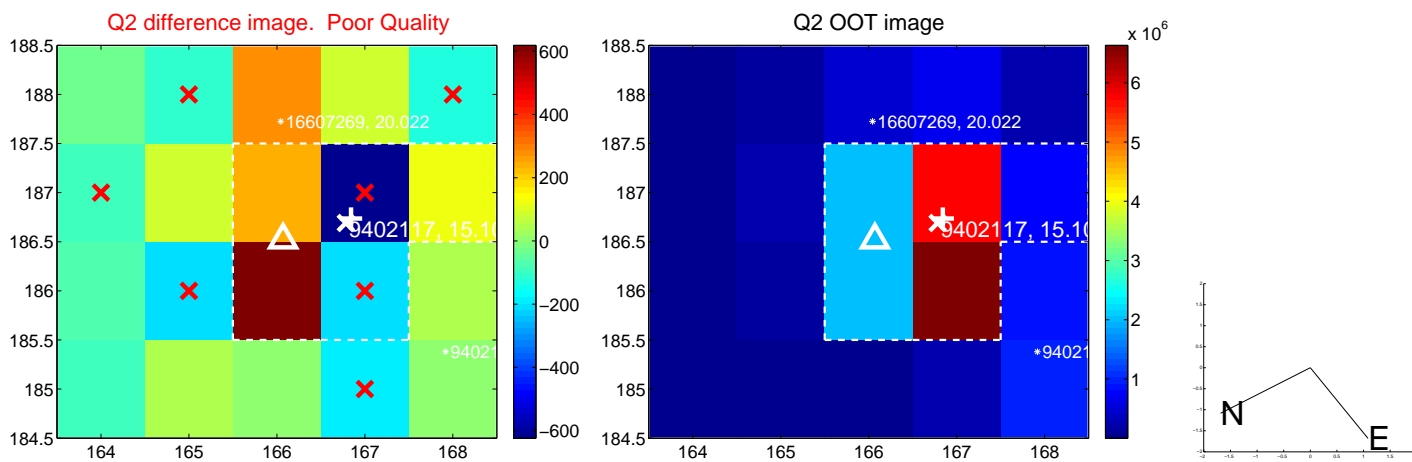
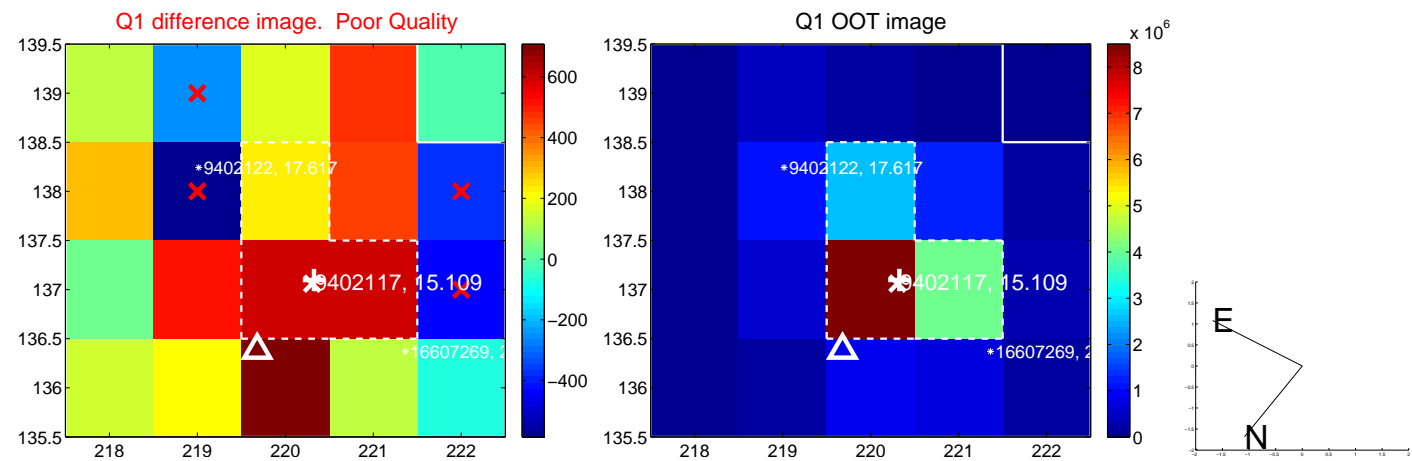
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 3.010 ± 0.956 | 3.15 | -0.072 ± 0.331 | 3.009 ± 0.956 |
| PRF-fit source offset from KIC position | 2.821 ± 0.966 | 2.92 | -0.108 ± 0.337 | 2.819 ± 0.967 |
| photometric centroid source offset | 1.89 ± 1.60 | 1.18 | -0.91 ± 1.64 | -1.66 ± 1.59 |

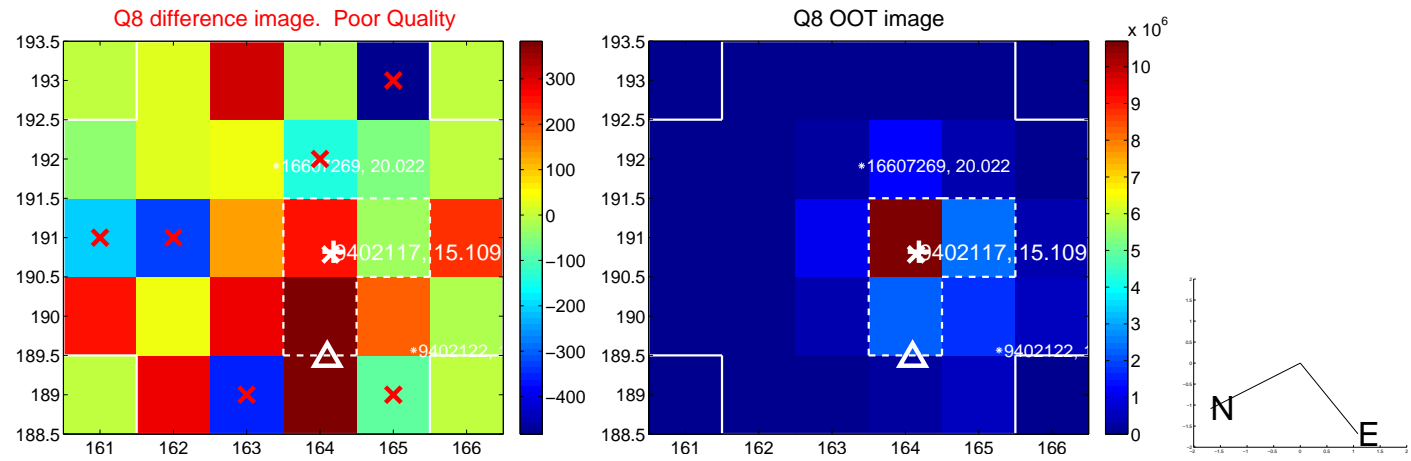
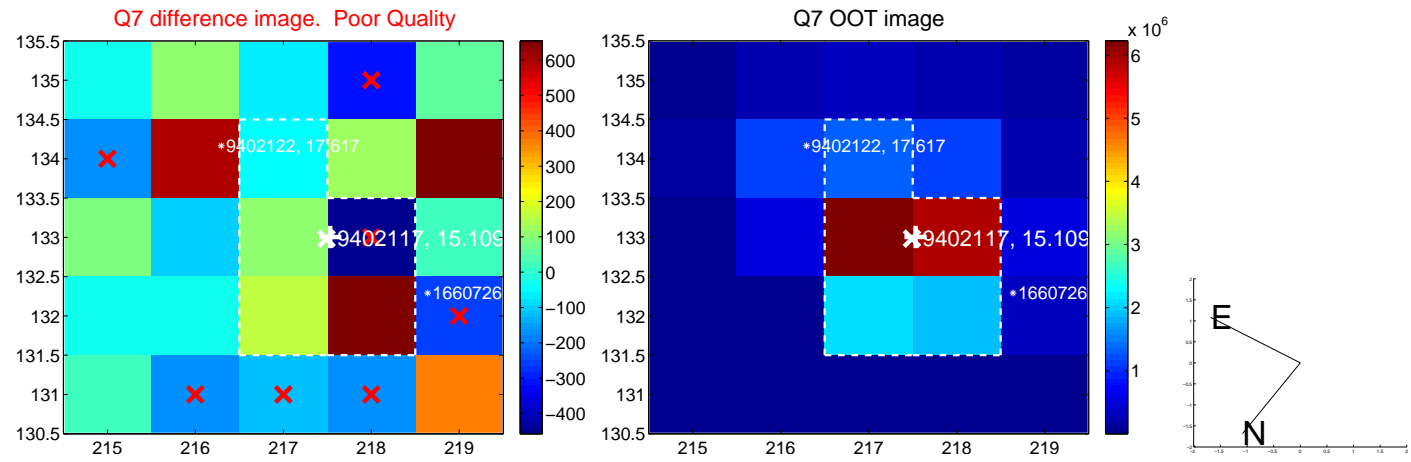
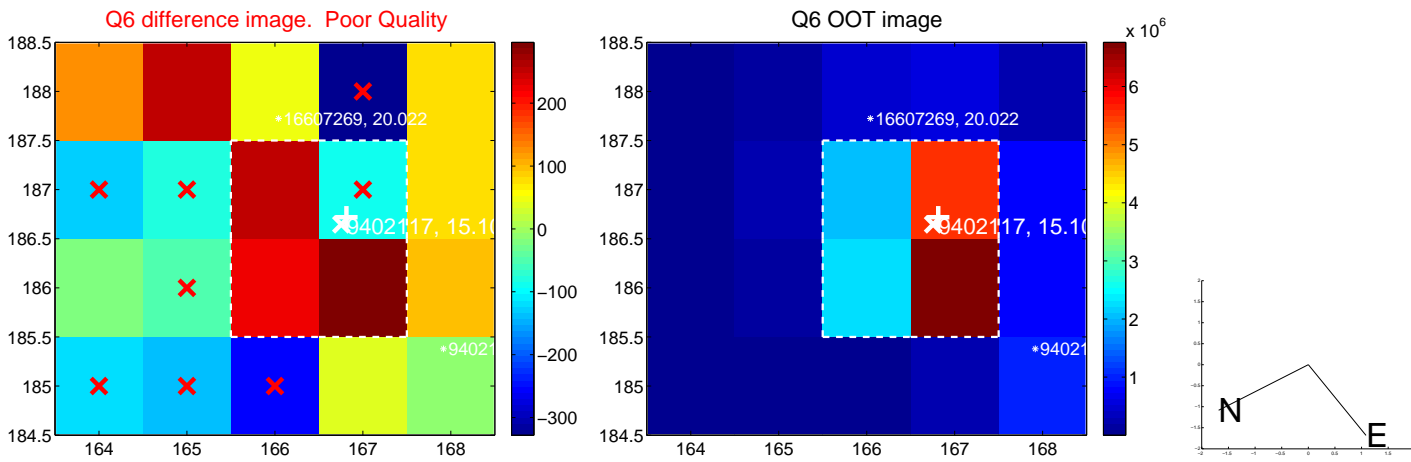
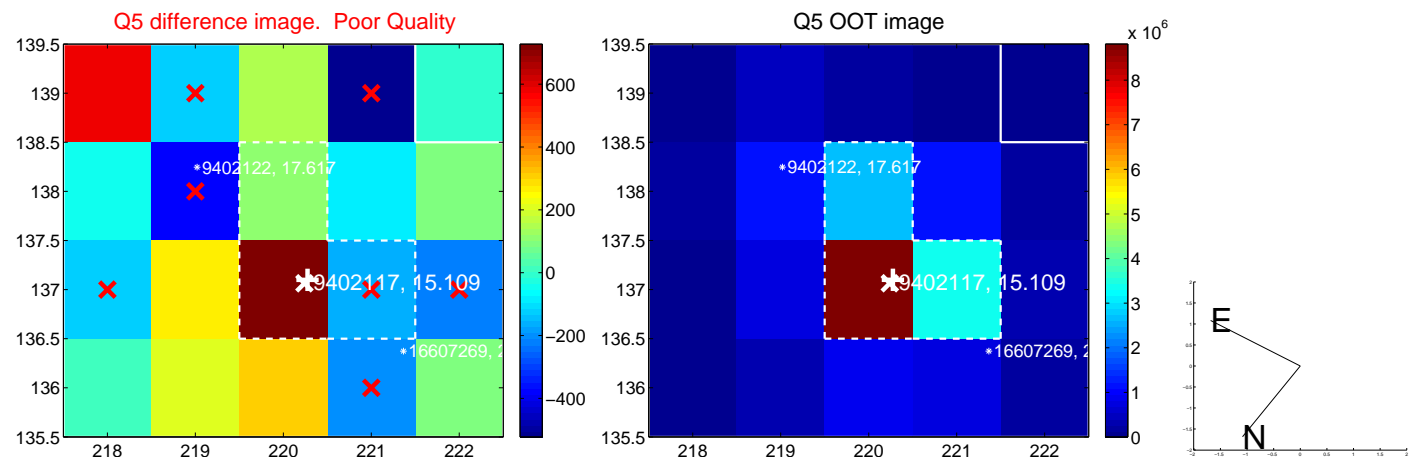


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

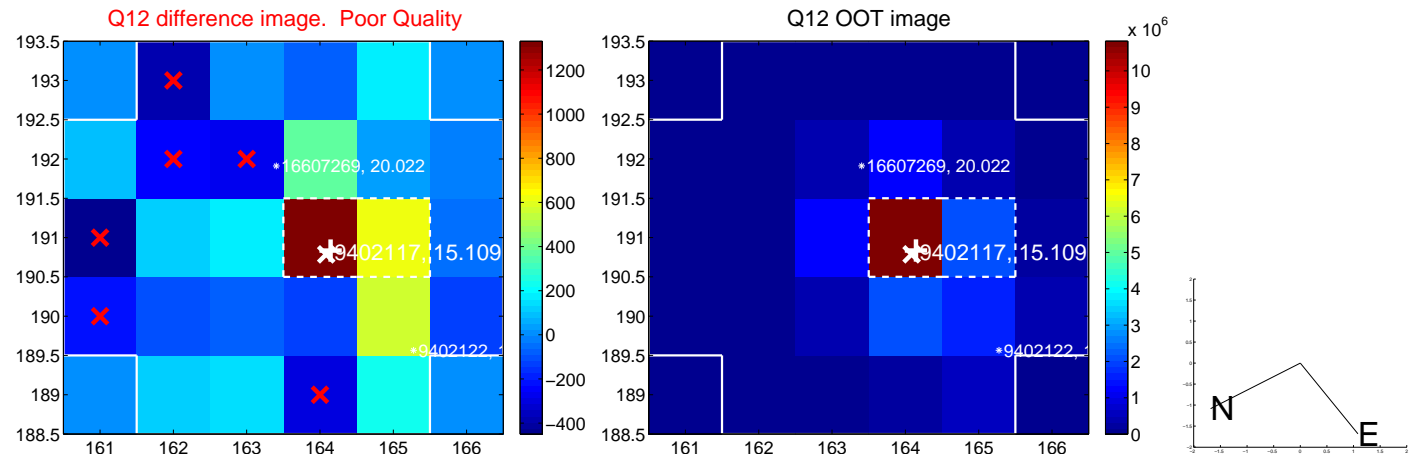
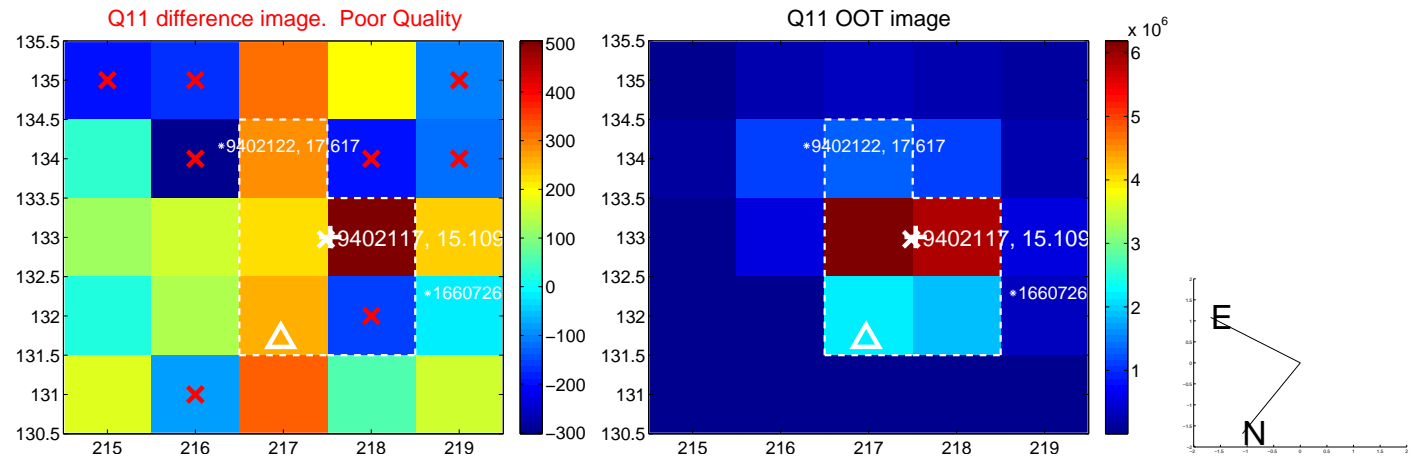
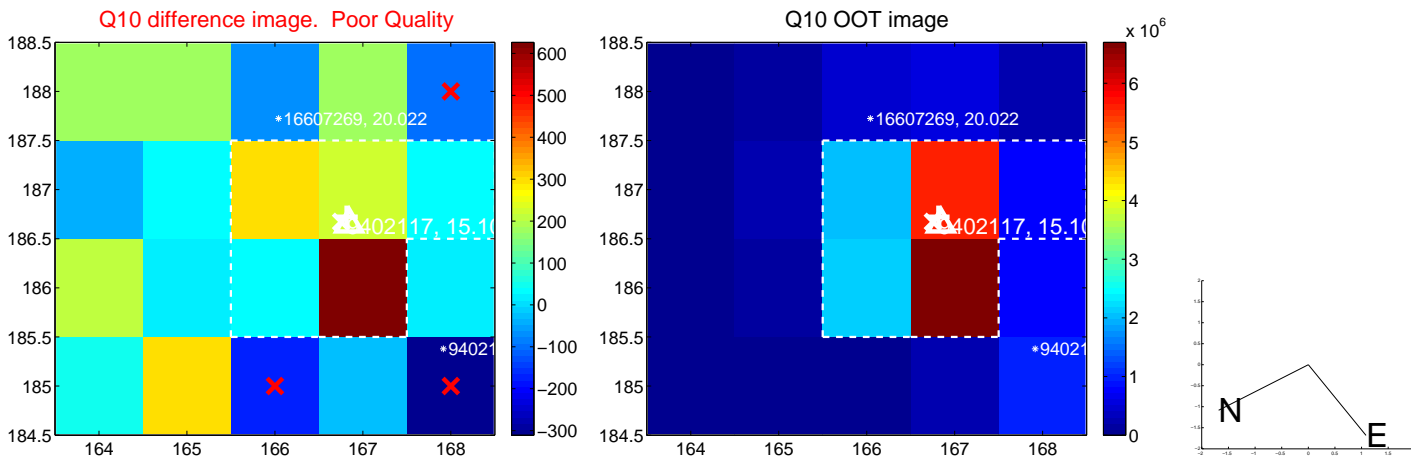
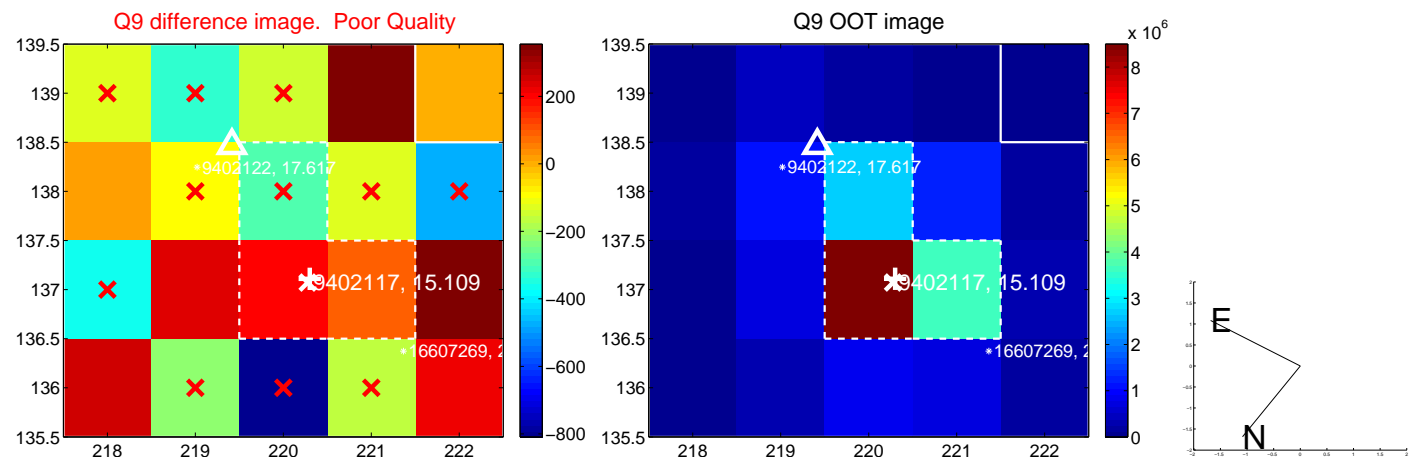
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



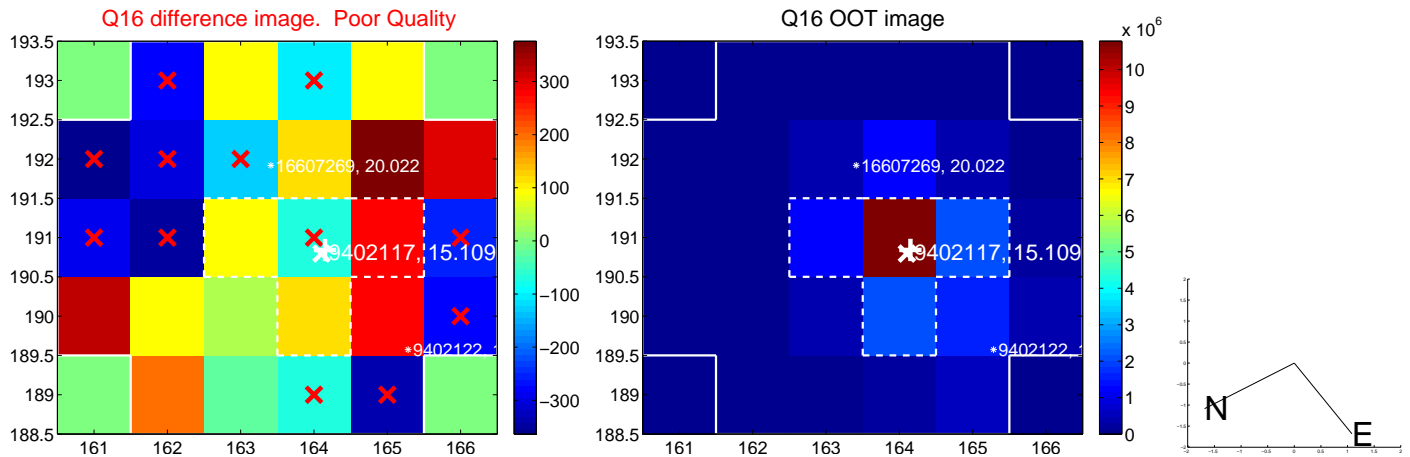
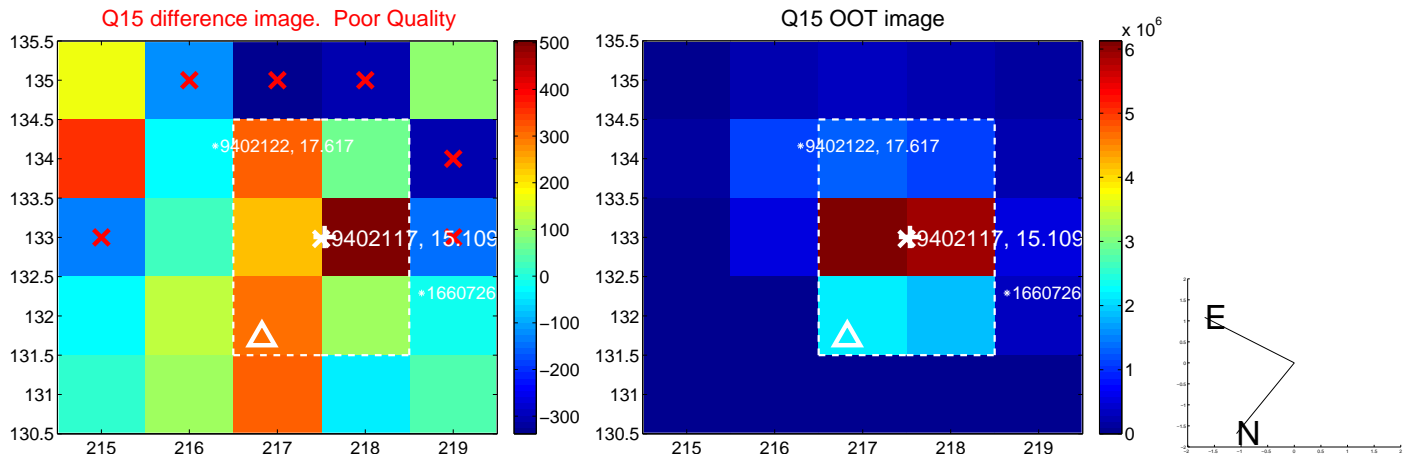
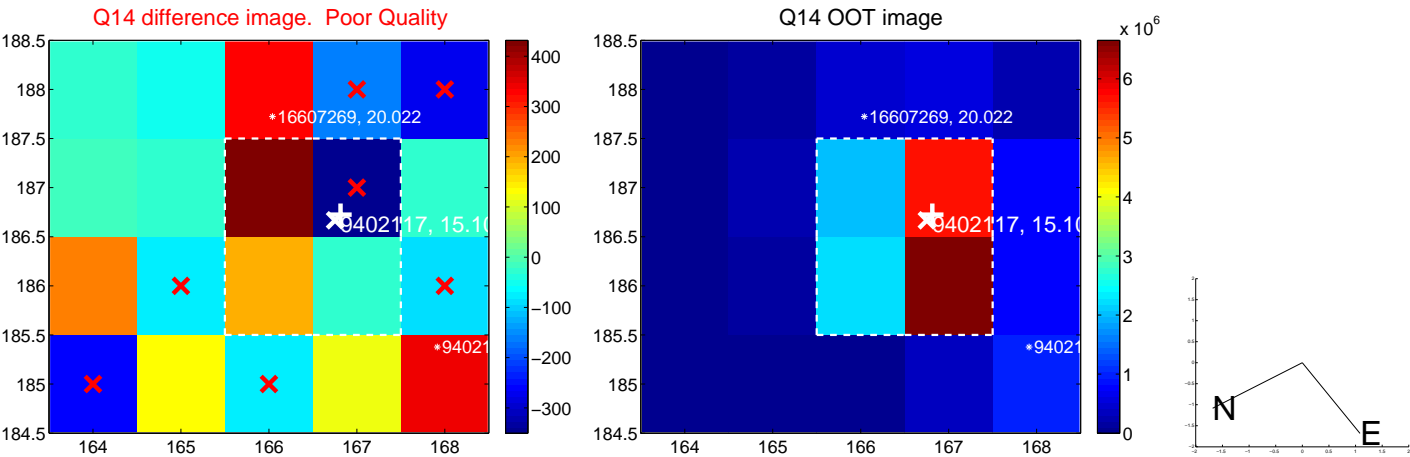
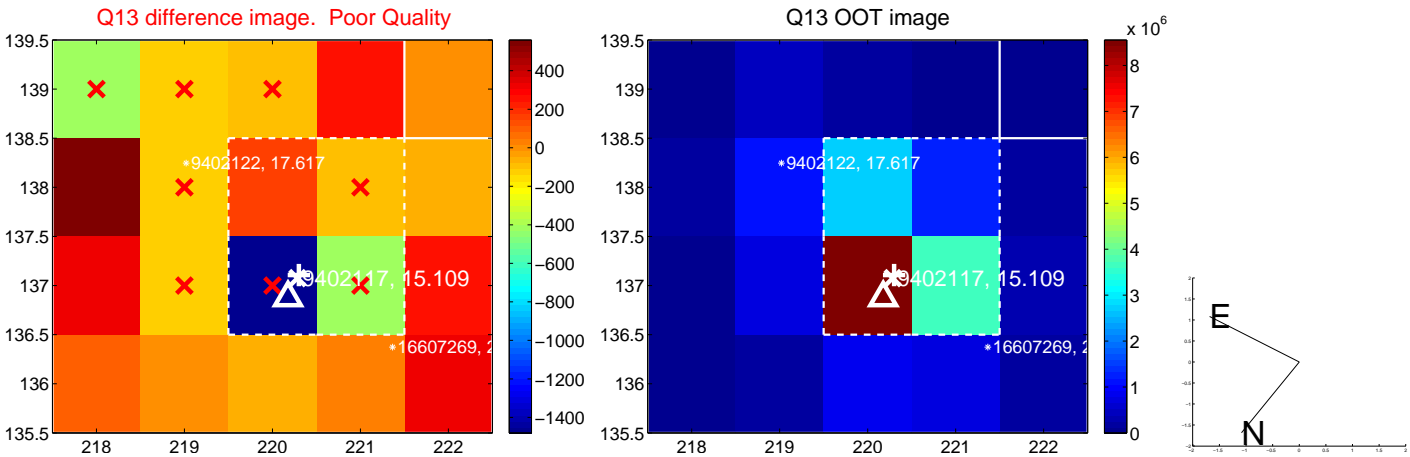
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



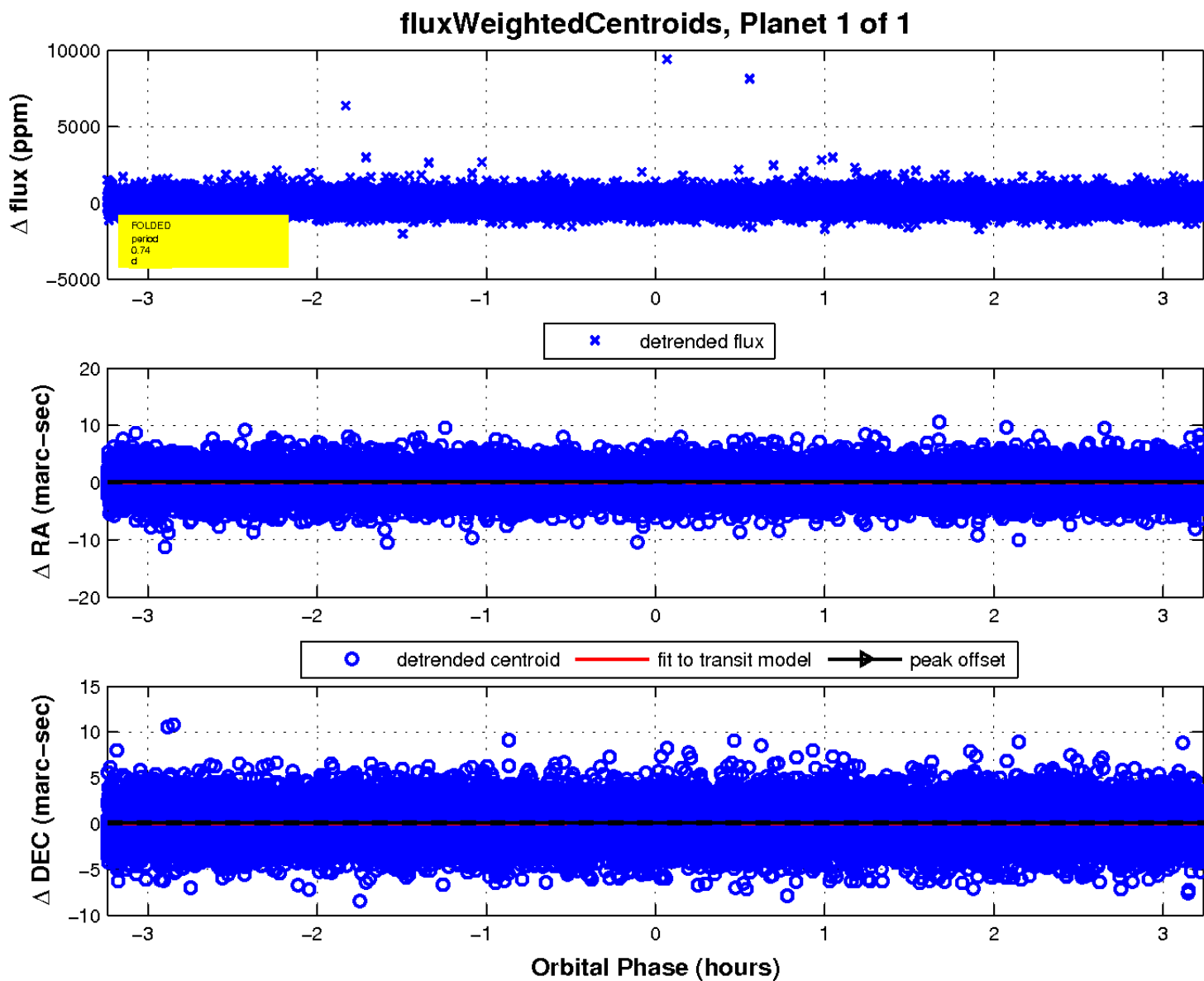
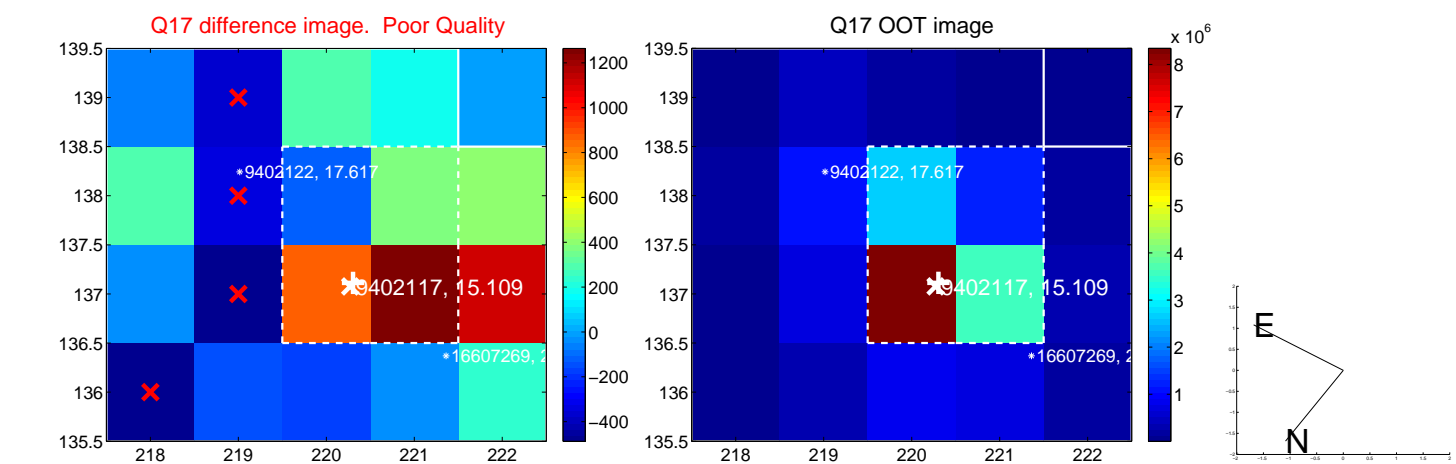
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

