

KIC 004055774

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004055774-01 | OBS | 2381.01 | 6.587283 | 133.392425 | 206.7 | 6.308 | 14.0 | 13.8 | 0.82 | 5616 | 1.34 | 136.22 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|----------------------------------|
| 004055774-01 | 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 004055774-01

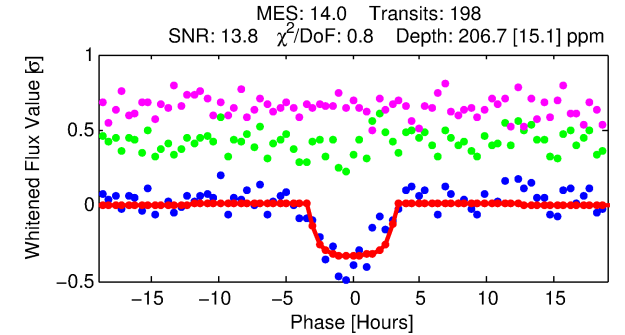
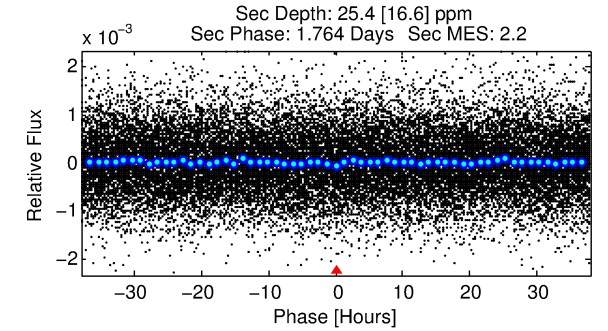
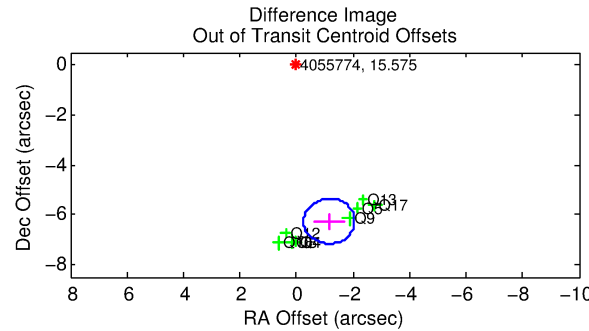
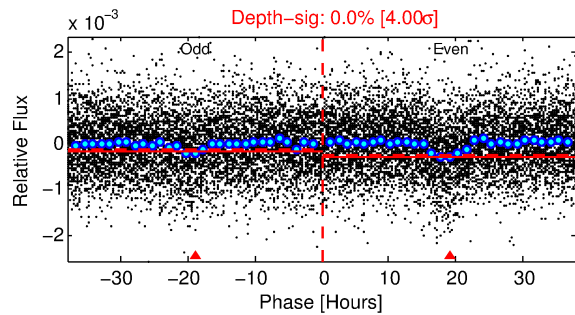
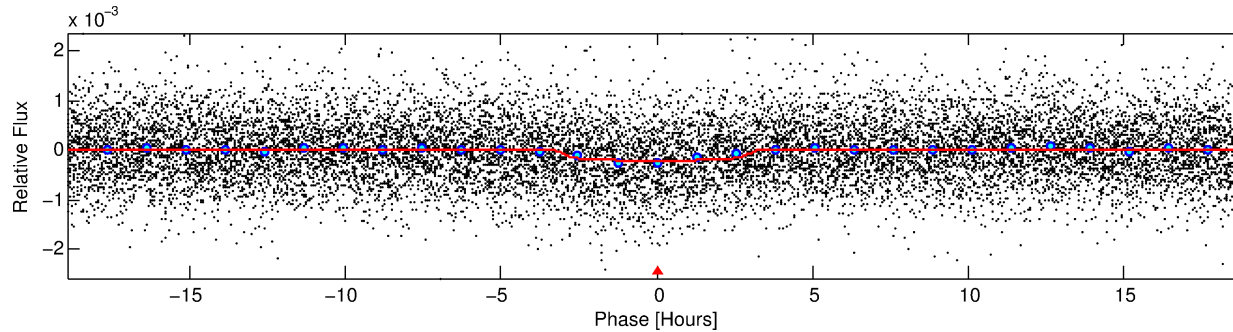
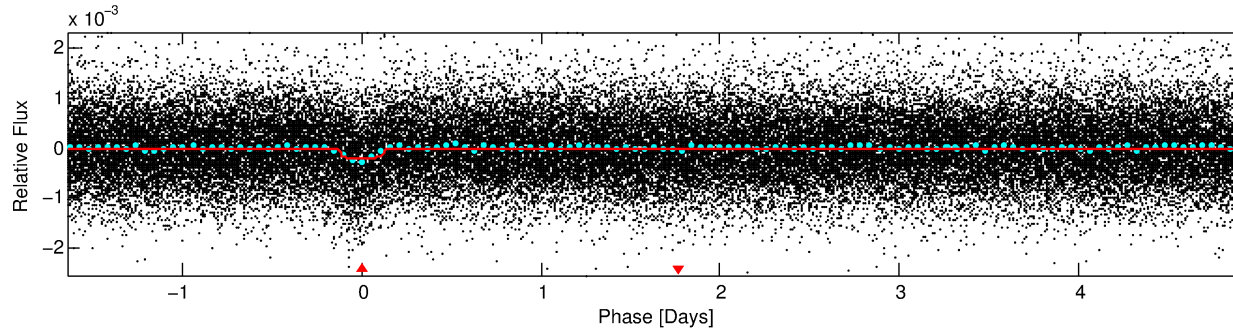
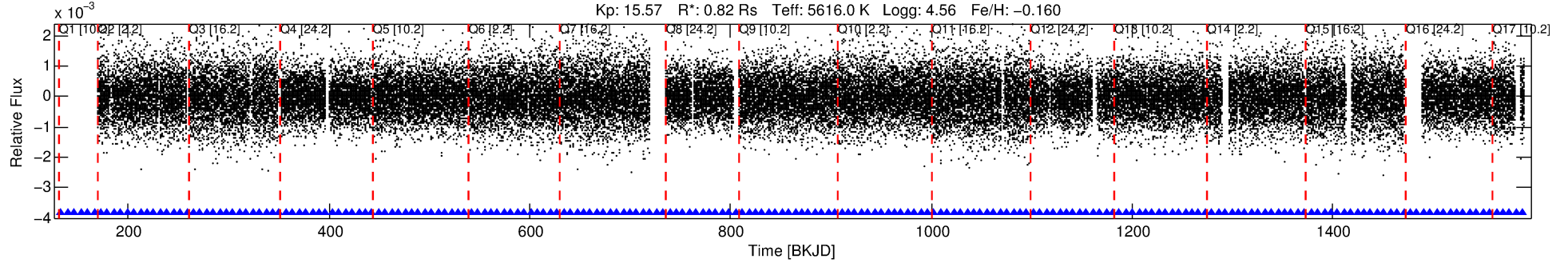
| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|---------|------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 004055774-01 | 4055774 | 5025.01 | 3953106 | 1:1 | 19.6 | -4 | -3 | 14.04 | 15.58 | 656.18 | Direct-PRF | 0 | 1.81 | 0.84 |

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: 4055774 Candidate: 1 of 1 Period: 6.587 d
KOI: K02381.01 Corr: 0.864

Kp: 15.57 R*: 0.82 Rs Teff: 5616.0 K Logg: 4.56 Fe/H: -0.160



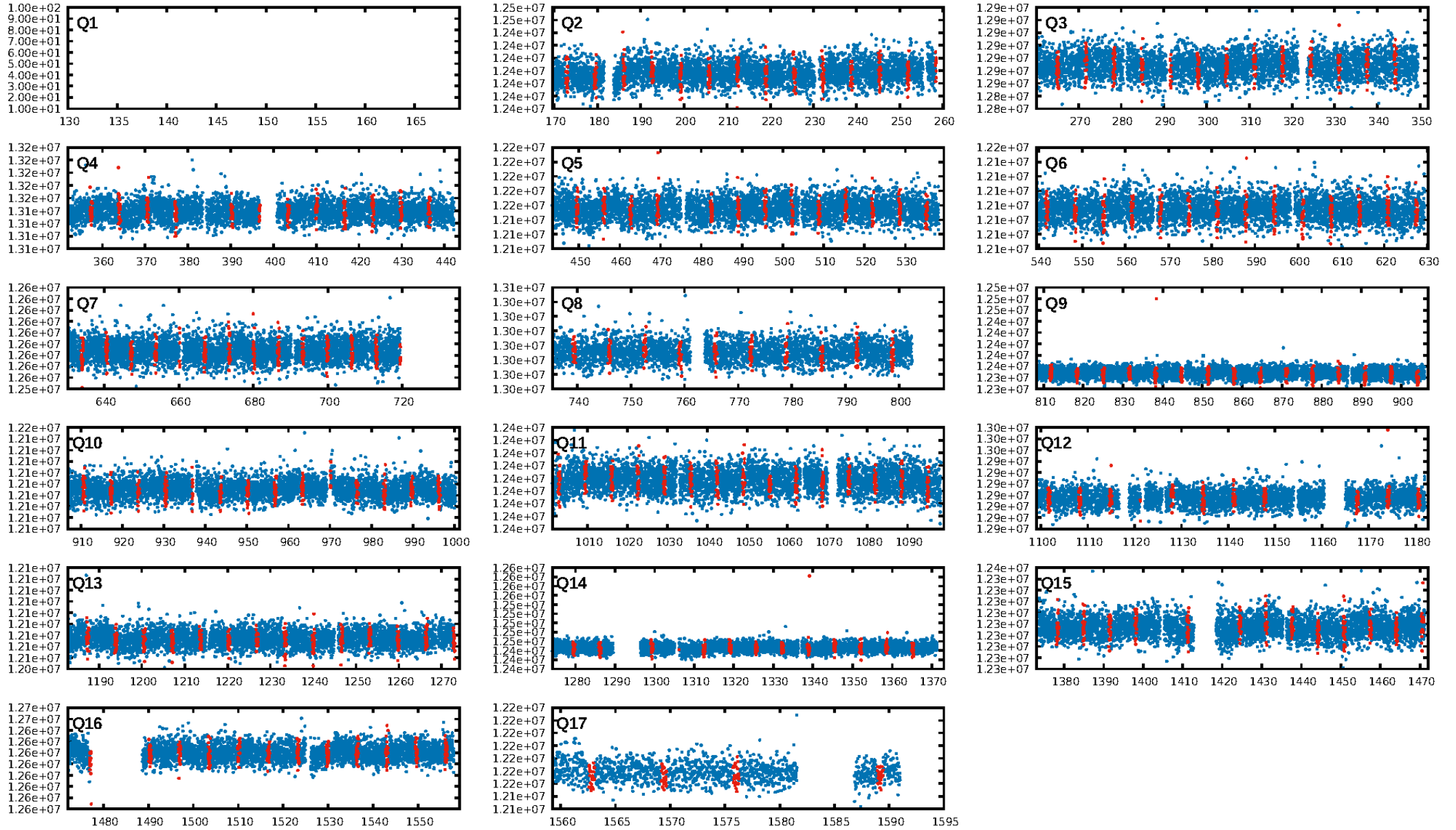
DV Fit Results:

Period = 6.58728 [0.00006] d
Epoch = 133.3924 [0.0076] BKJD
Rp/R* = 0.0149 [0.0062]
a/R* = 4.70 [8.31]
b = 0.83 [0.69]
Seff = 136.22 [45.01]
Teq = 871 [72] K
Rp = 1.34 [0.65] Re
a = 0.0665 [0.0141] AU
Ag = 34.47 [37.79] [0.89σ]
Teff = 3264 [864] K [2.76σ]

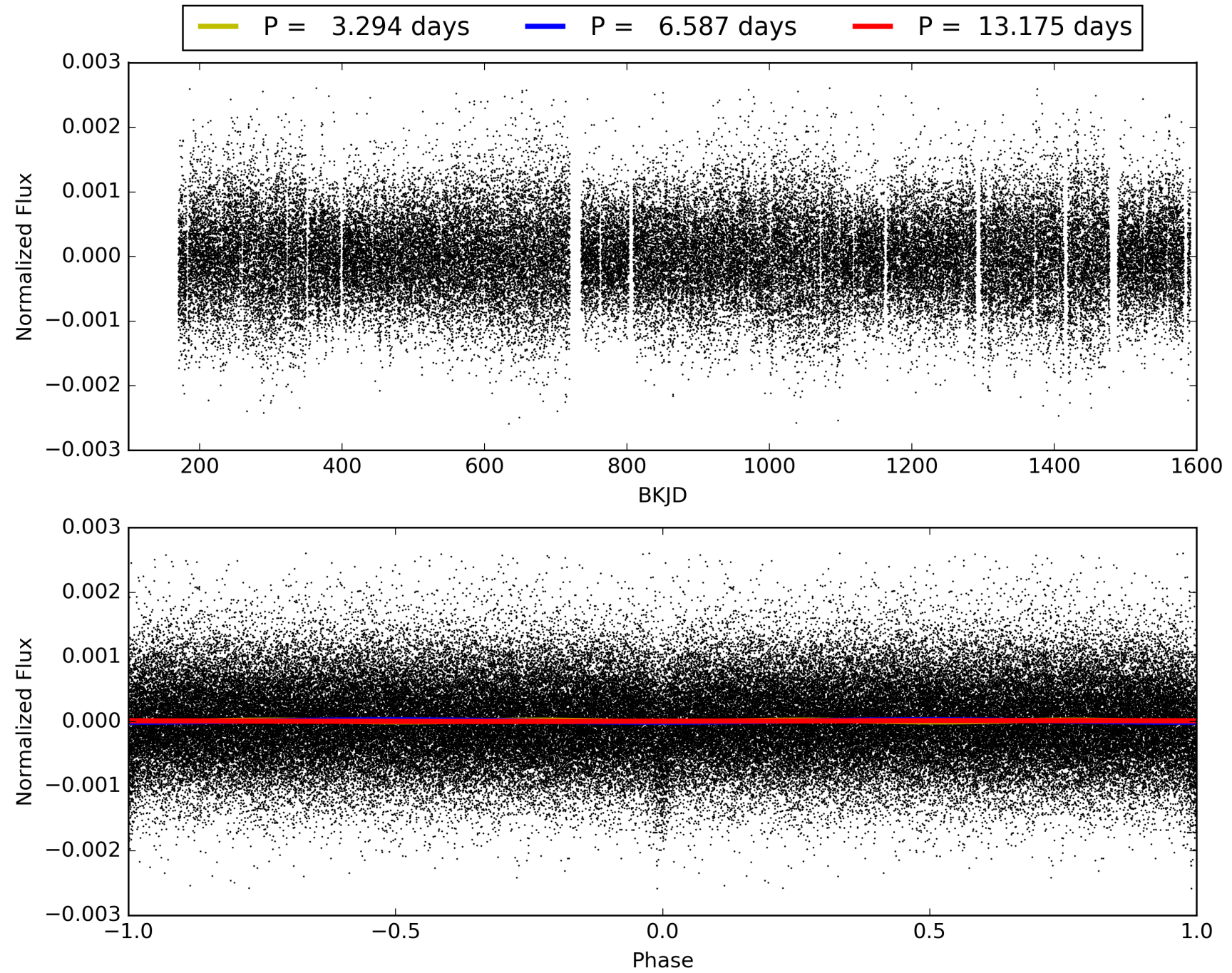
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 36.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 1.81e-44
RollingBand-fgt: 1.00 [194/194]
GhostDiagnostic-chr: -0.3325
Centroid-sig: 0.0%
Centroid-so: 31.116 arcsec [29.26σ]
OotOffset-rm: 6.370 arcsec [21.16σ]
KicOffset-rm: 6.165 arcsec [24.16σ]
OotOffset-st: 0/0/4/4 [8]
KicOffset-st: 0/0/4/4 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 004055774-01, PDC Light Curves

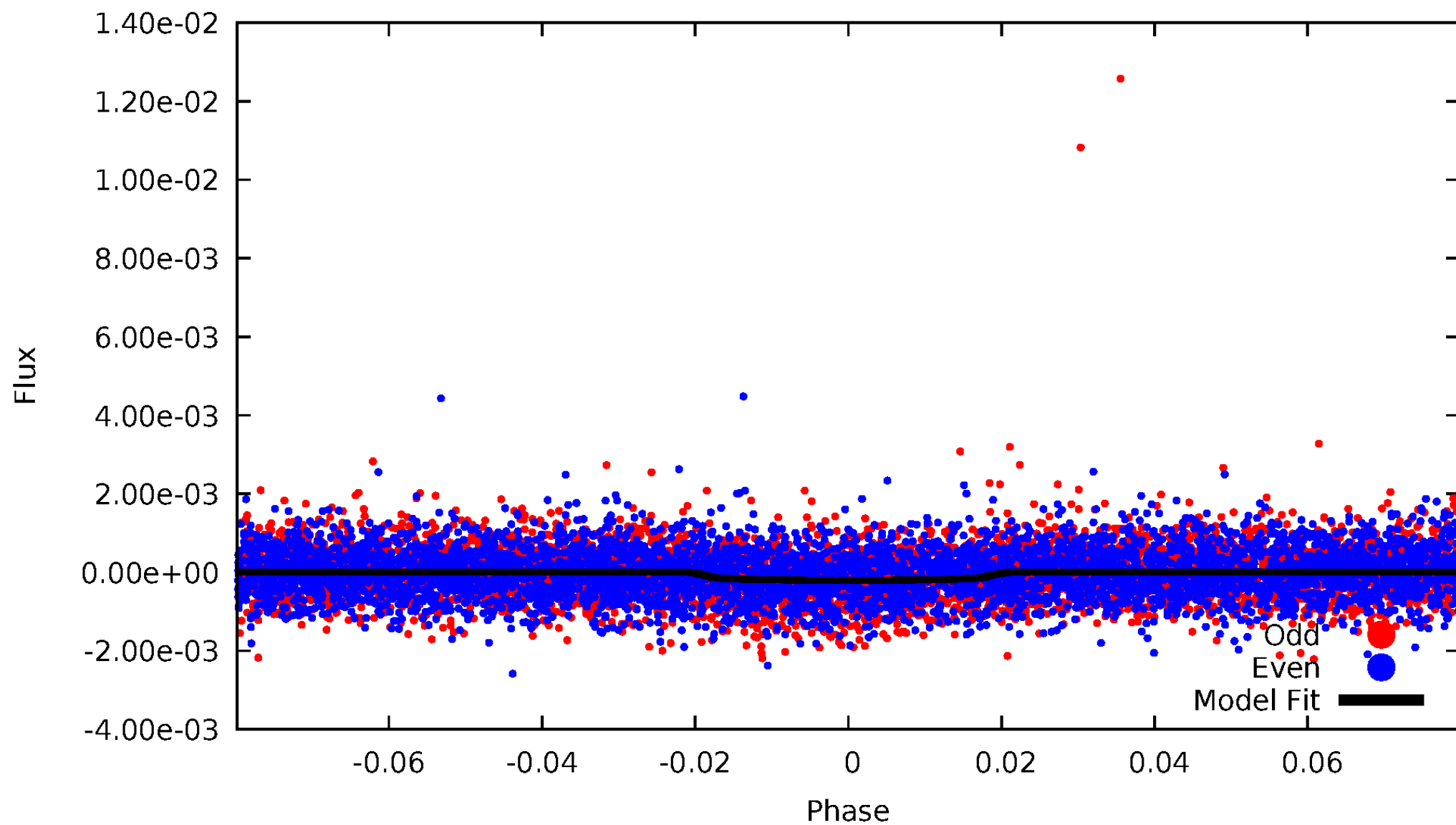


TCE 004055774-01



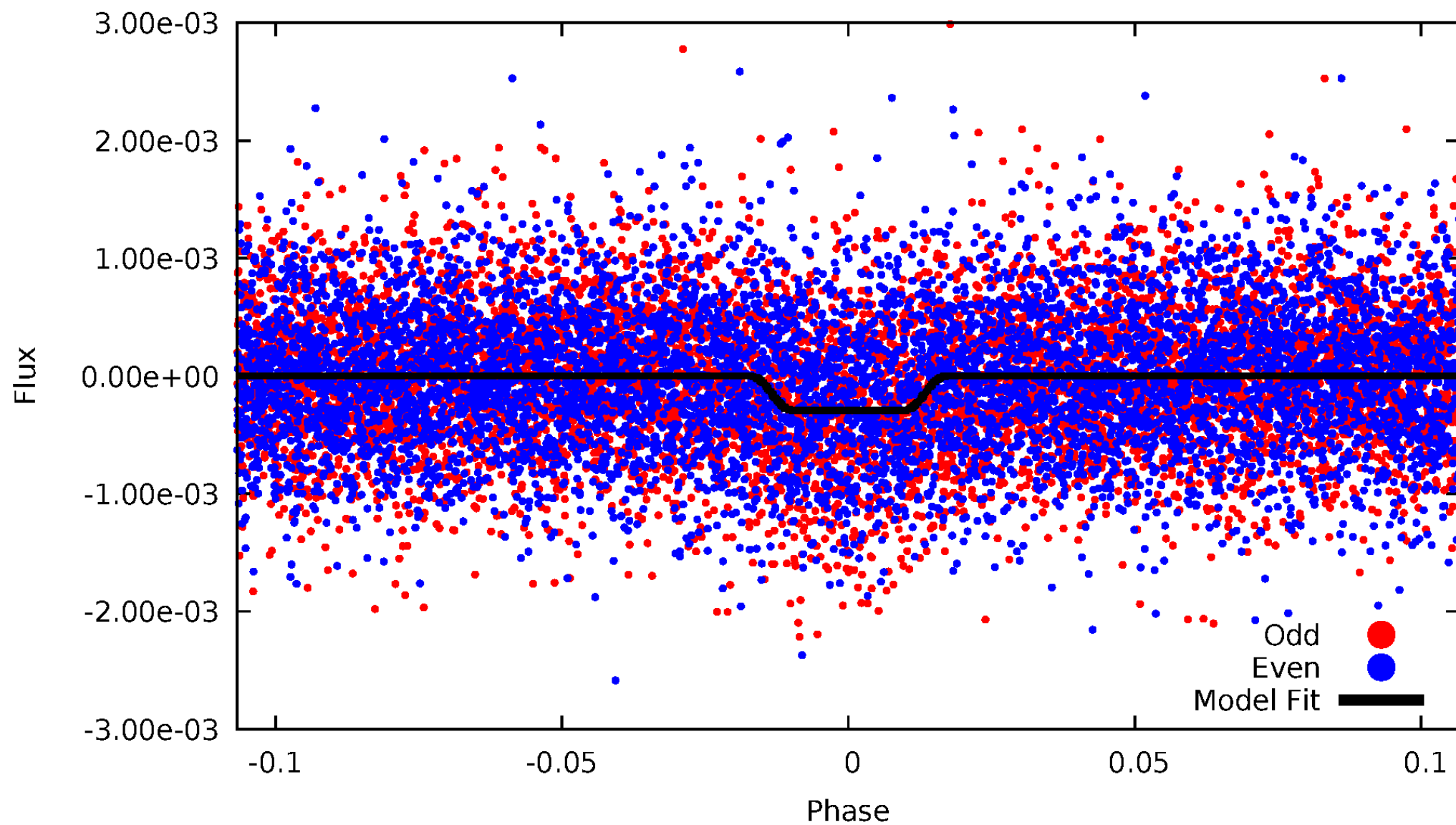
DV Odd/Even

TCE 004055774-01

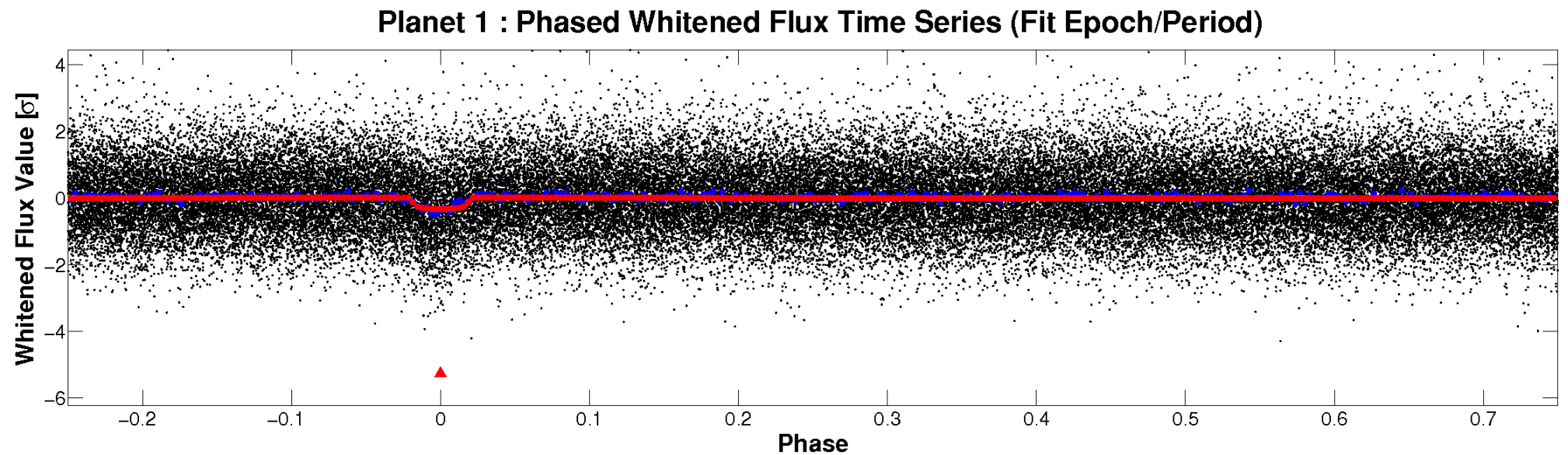
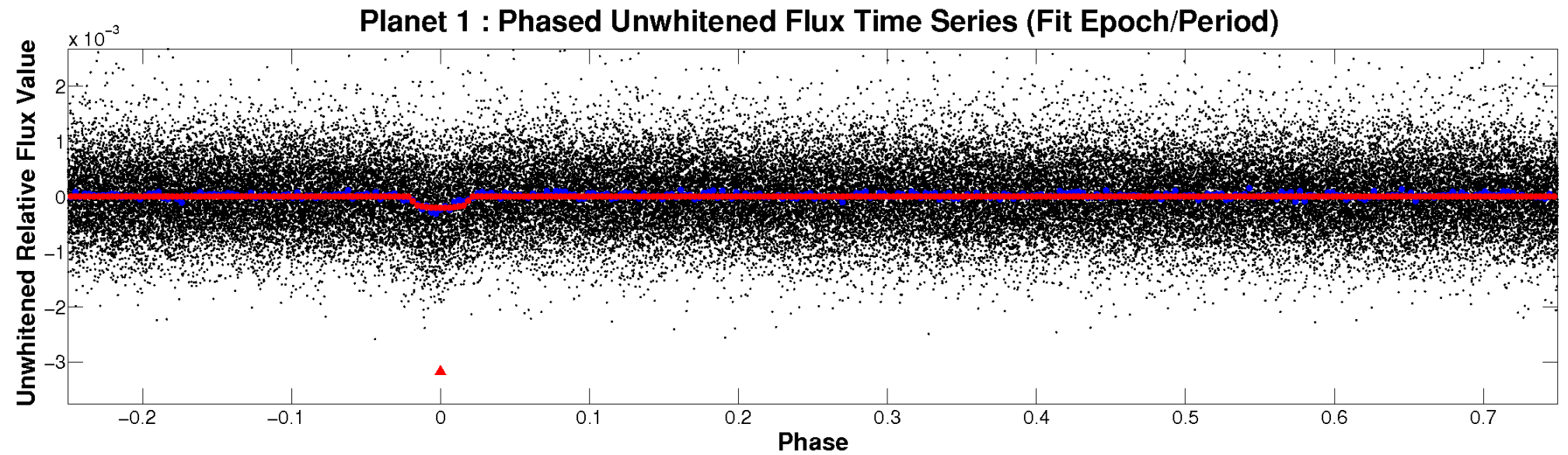


ALT Odd/Even

TCE 004055774-01

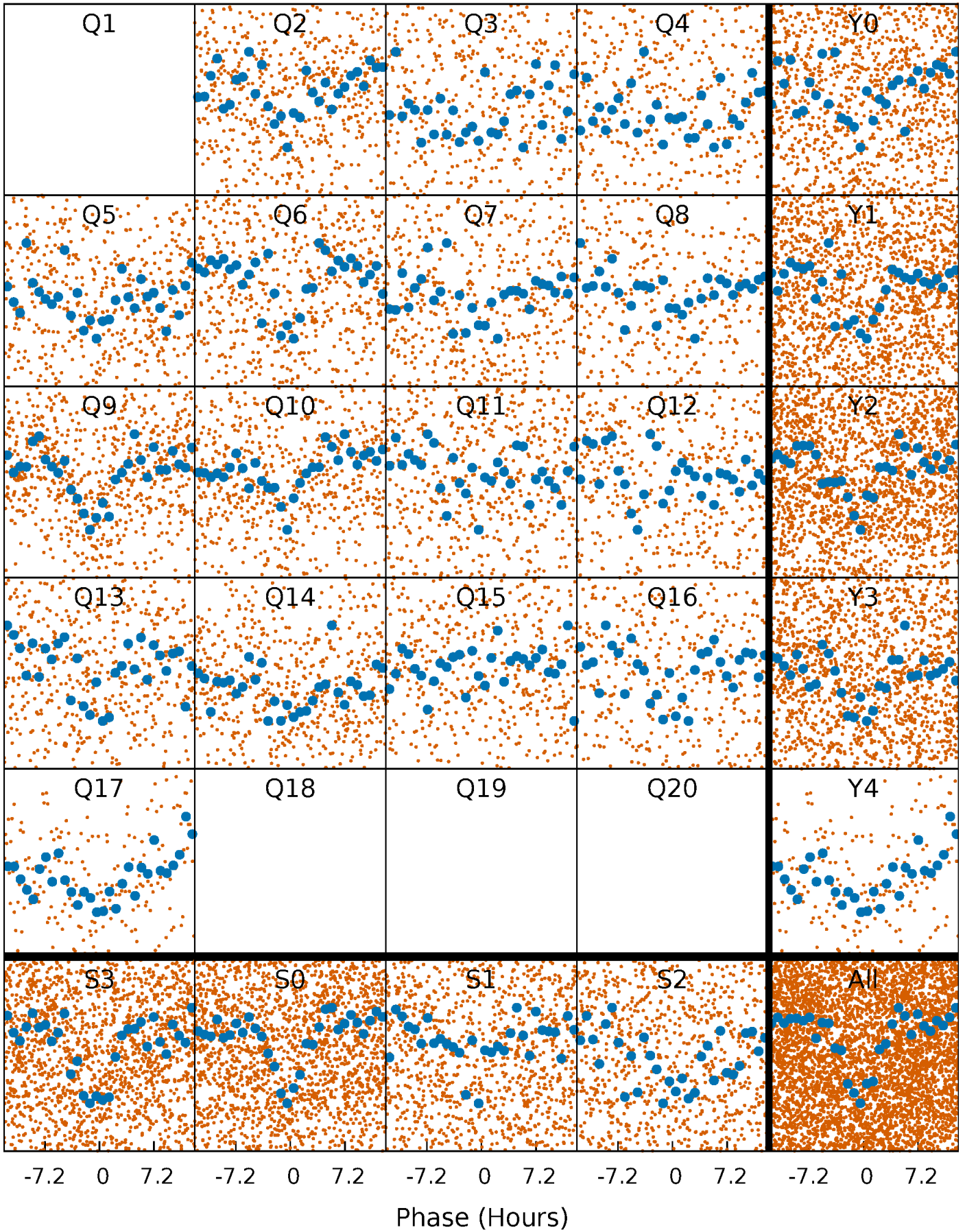


Non-Whitened Vs. Whitened Light Curve



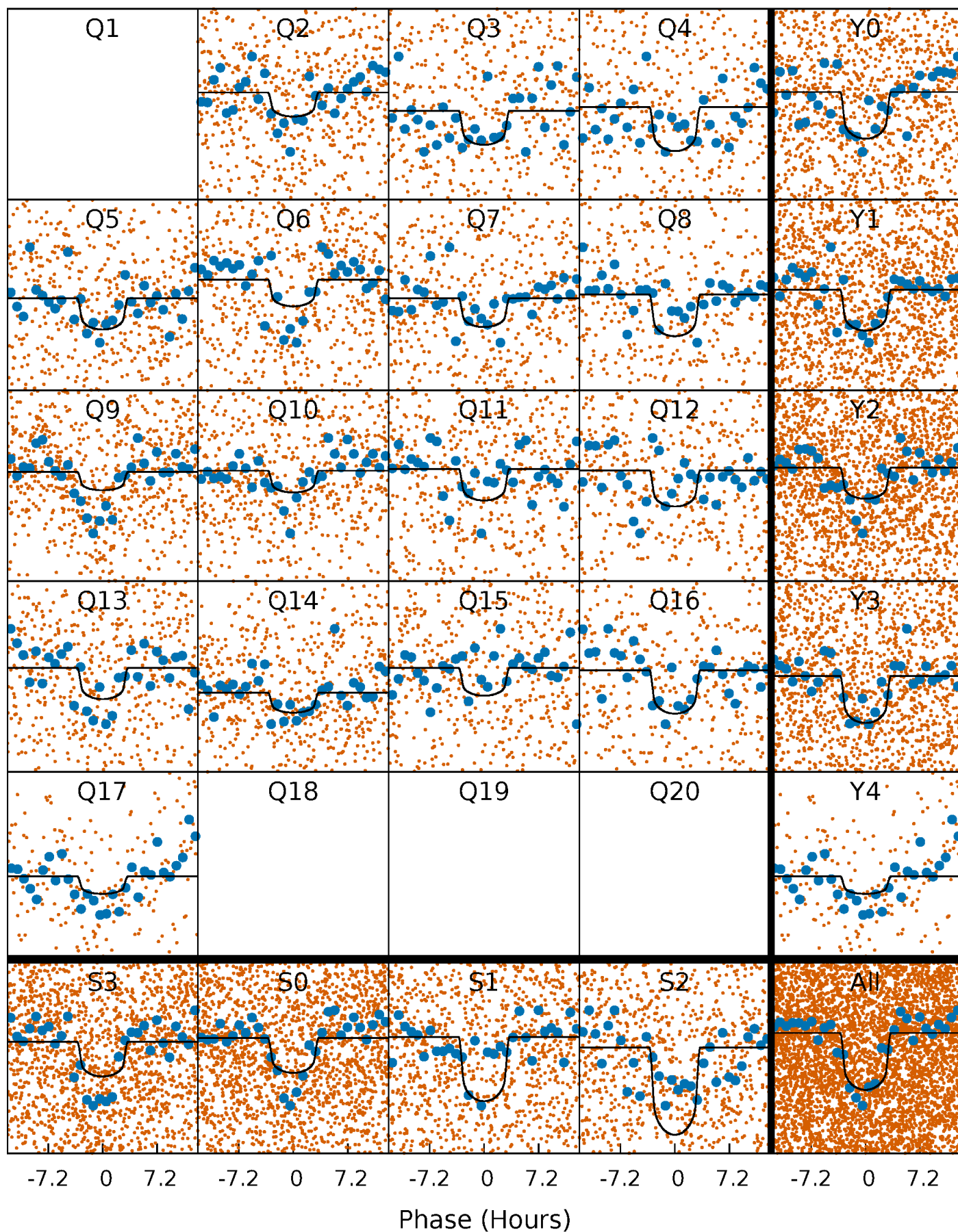
PDC Quarter-Phased Transit Curves

TCE 004055774-01 P= 6.587283 Days $T_0=133.392425$ (BKJD)



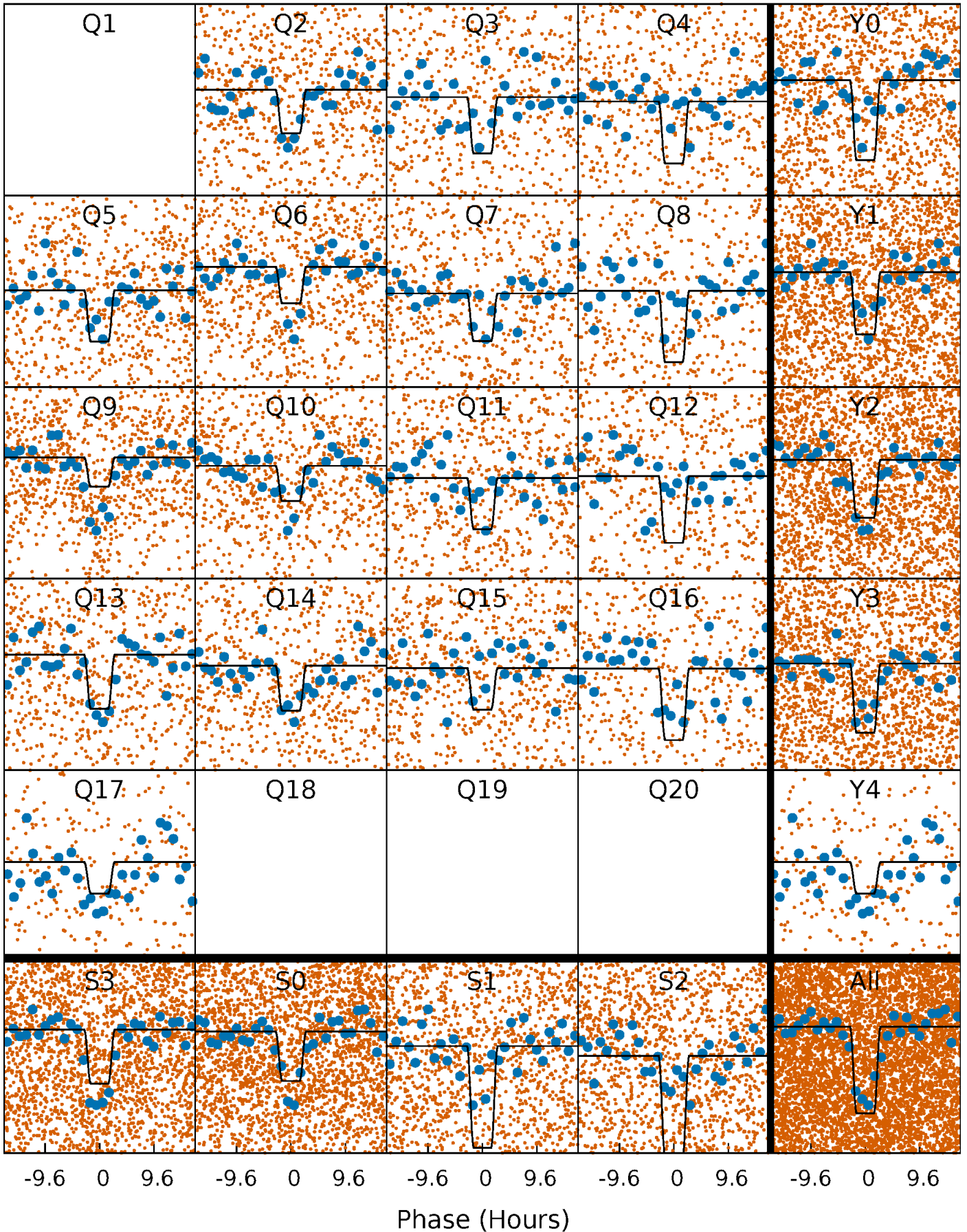
DV Quarter-Phased Transit Curves

TCE 004055774-01 P= 6.587283 Days $T_0=133.392425$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

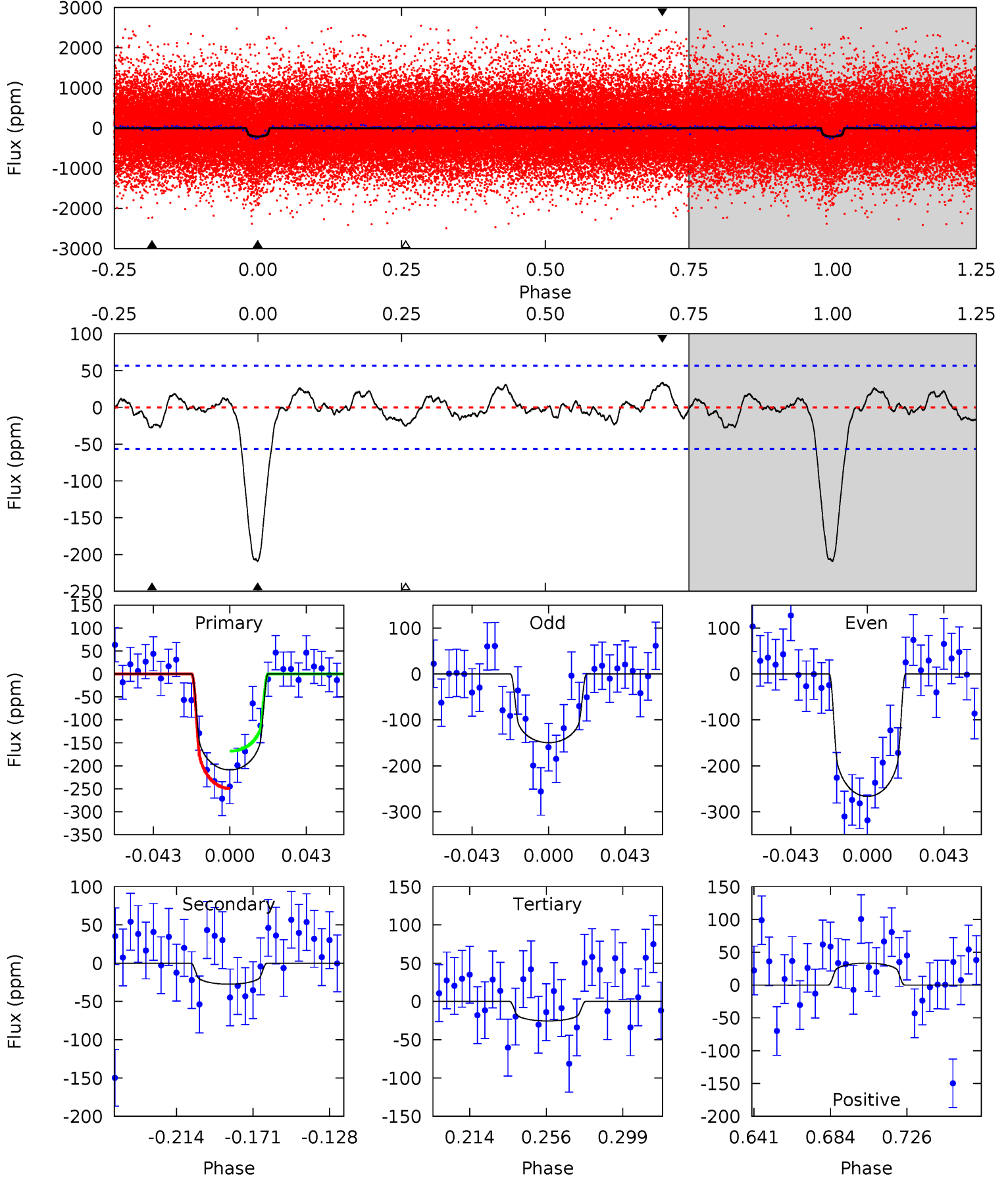
TCE 004055774-01 P= 6.587257 Days $T_0=133.376670$ (BKJD)



DV Model-Shift Uniqueness Test

004055774-01, P = 6.587283 Days, E = 133.392425 Days

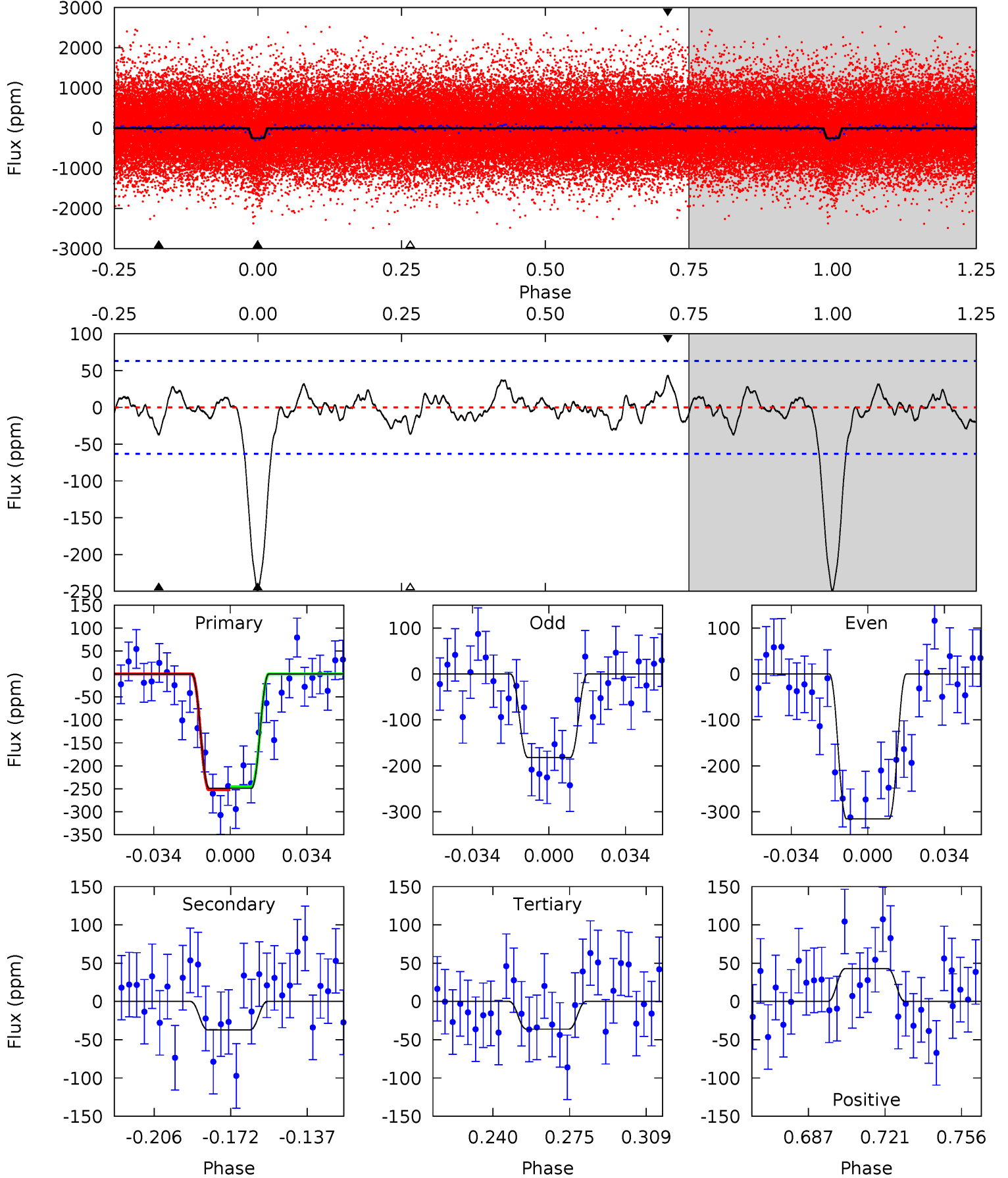
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.5 | 2.30 | 2.13 | 2.80 | 4.74 | 2.03 | 1.04 | 15.4 | 14.7 | 0.17 | -0.50 | 4.91 | 1.09 | 0.14 | 3.41 |



Alt Model-Shift Uniqueness Test

004055774-01, P = 6.587257 Days, E = 133.376670 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 18.9 | 2.81 | 2.74 | 3.25 | 4.78 | 2.12 | 1.06 | 16.1 | 15.6 | 0.07 | -0.44 | 5.08 | 1.08 | 0.15 | 0.26 |



Stellar Parameters For KIC 004055774

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5616^{+169}_{-152} | $4.564^{+0.032}_{-0.168}$ | $-0.160^{+0.300}_{-0.300}$ | $0.822^{+0.207}_{-0.069}$ | $0.907^{+0.095}_{-0.104}$ | $2.297^{+0.490}_{-1.006}$ |
| | +3%/-3% | +1%/-4% | +188%/-188% | +25%/-8% | +10%/-11% | +21%/-44% |
| 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 004055774-01 / KOI 2381.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -27 ± 12 | $1.41^{+0.62}_{-0.60}$ | 1247^{+76}_{-53} | 3682^{+849}_{-522} | 31^{+64}_{-19} |
| Alt. | -37 ± 13 | $1.62^{+0.58}_{-0.57}$ | 1250^{+73}_{-53} | 3716^{+645}_{-446} | 33^{+48}_{-19} |

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

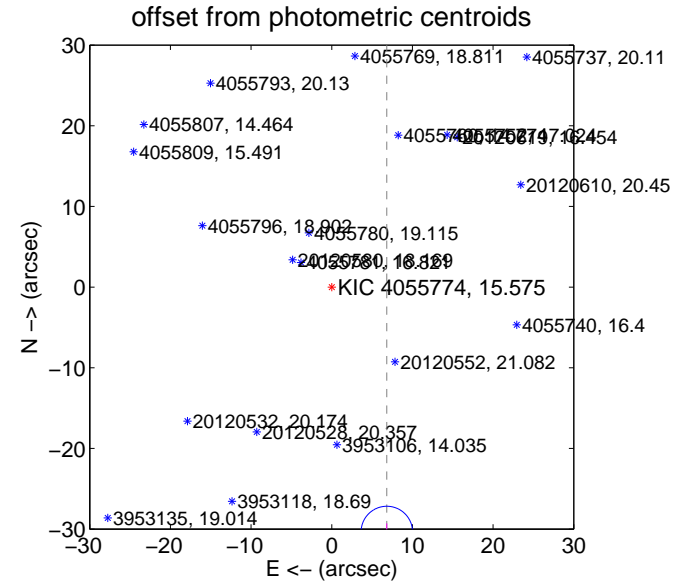
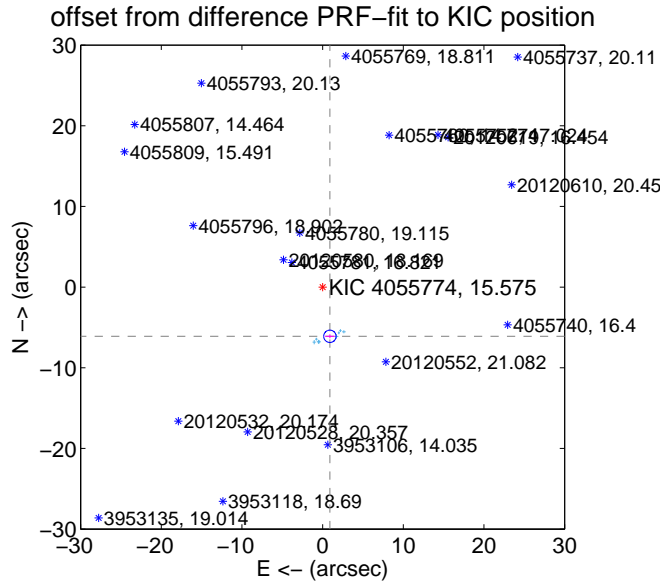
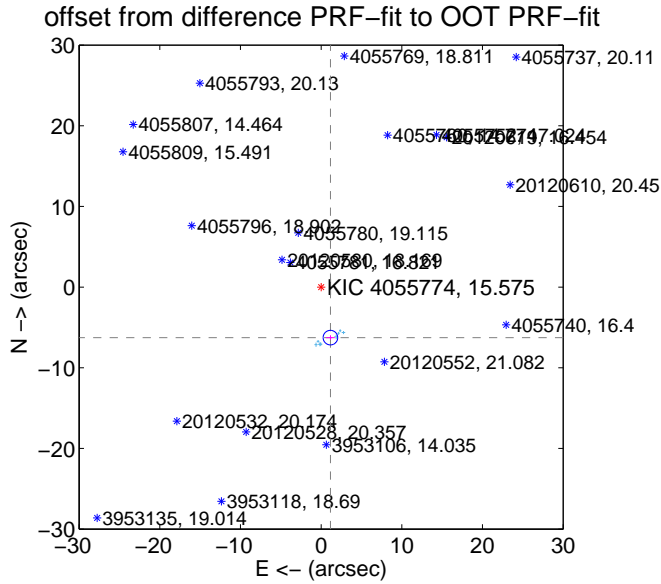
DV Centroid Data

Supplemental centroid analysis for 004055774-01. Kepler magnitude: 15.57. Transit SNR 13.81

There are 8 quarters with good PRF difference image offsets

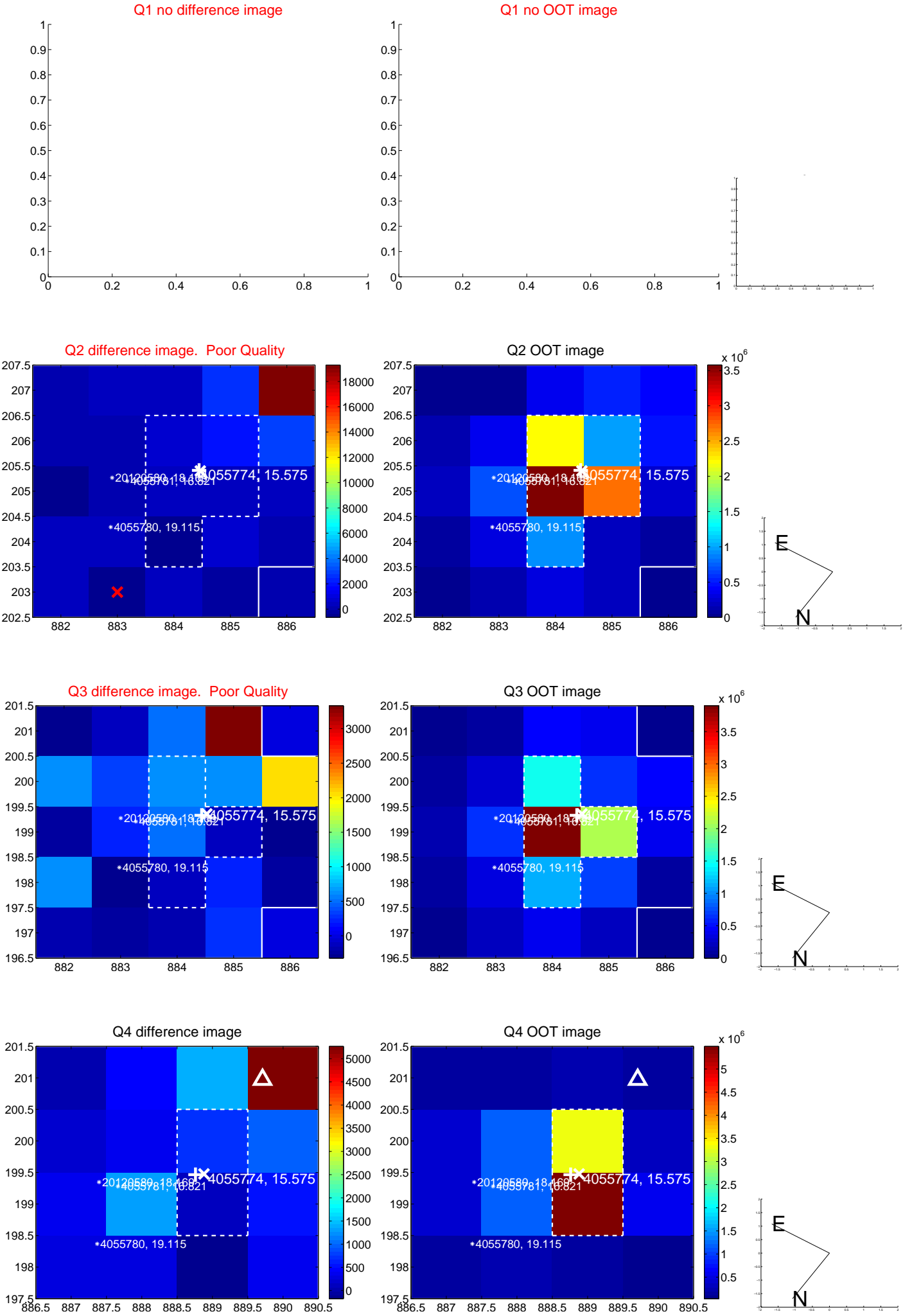
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 6.370 ± 0.301 | 21.16 | -1.152 ± 0.548 | -6.265 ± 0.289 |
| PRF-fit source offset from KIC position | 6.165 ± 0.255 | 24.16 | -0.900 ± 0.597 | -6.099 ± 0.242 |
| photometric centroid source offset | 31.12 ± 1.06 | 29.26 | -6.83 ± 1.03 | -30.36 ± 1.07 |

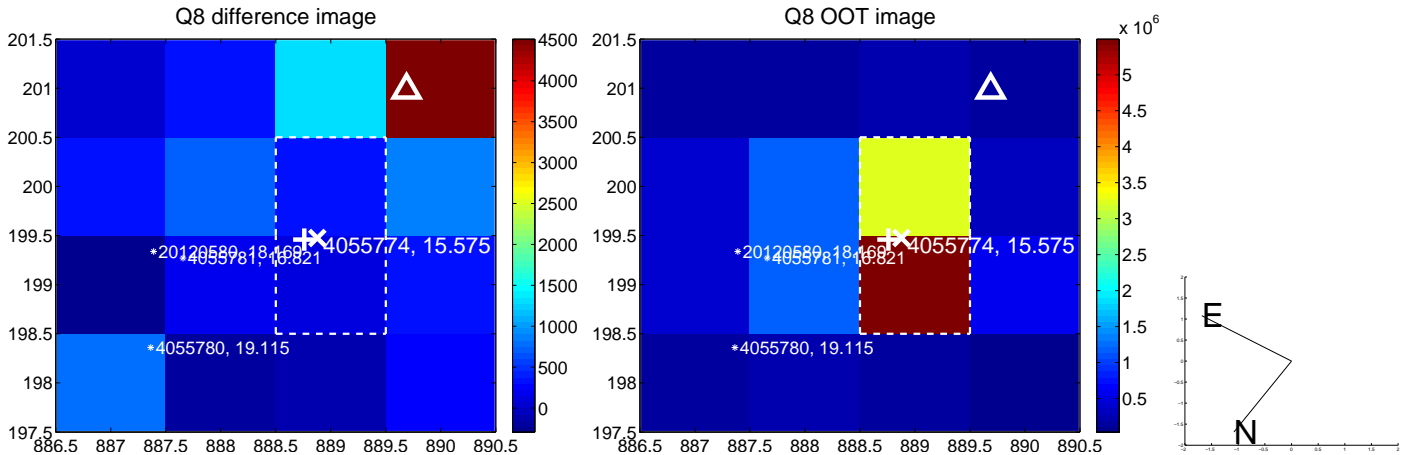
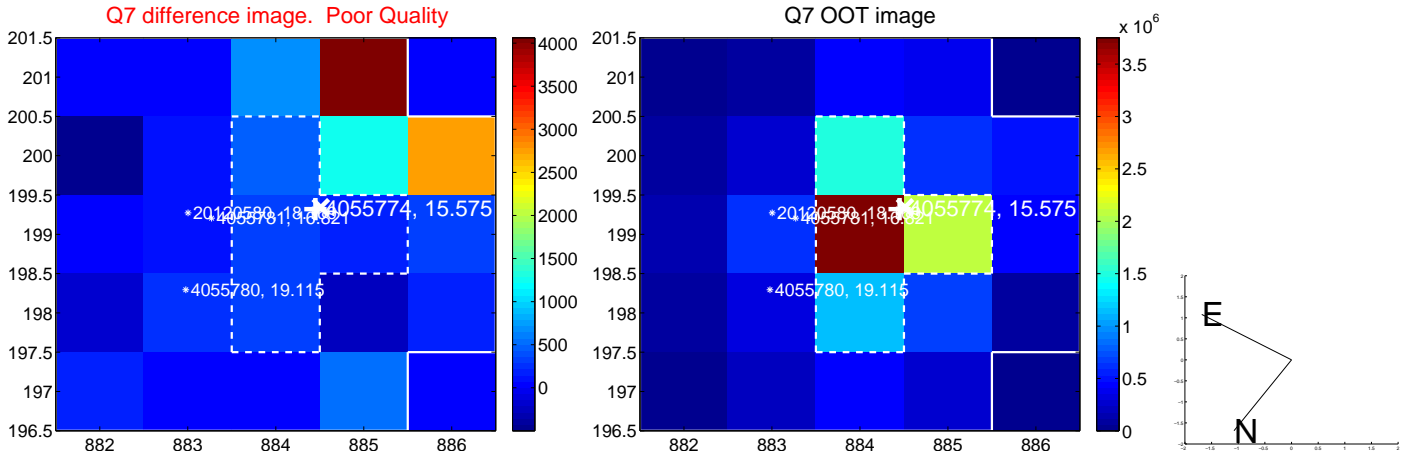
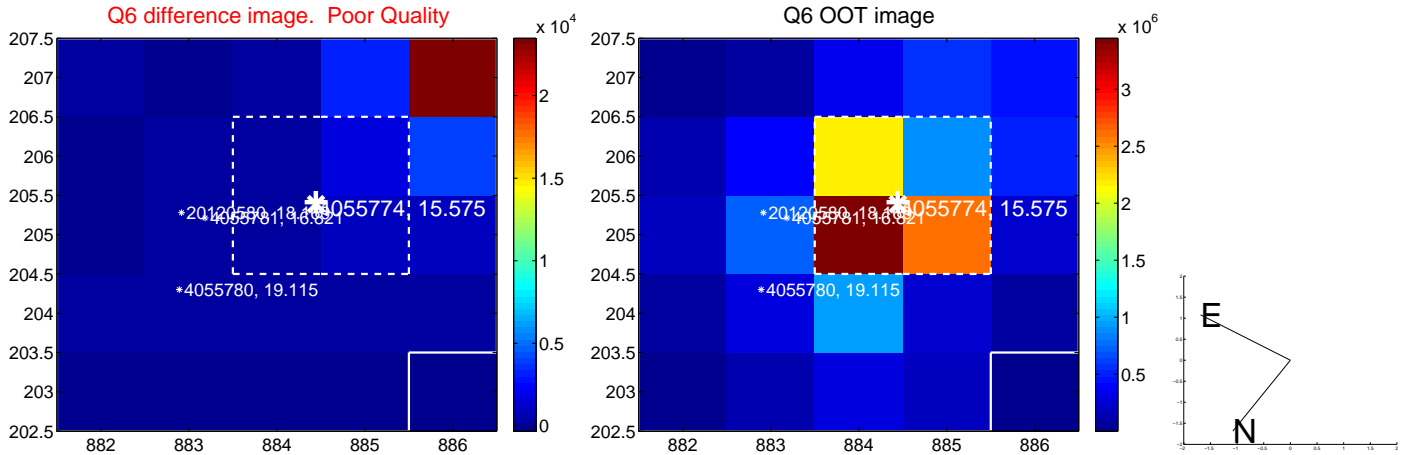
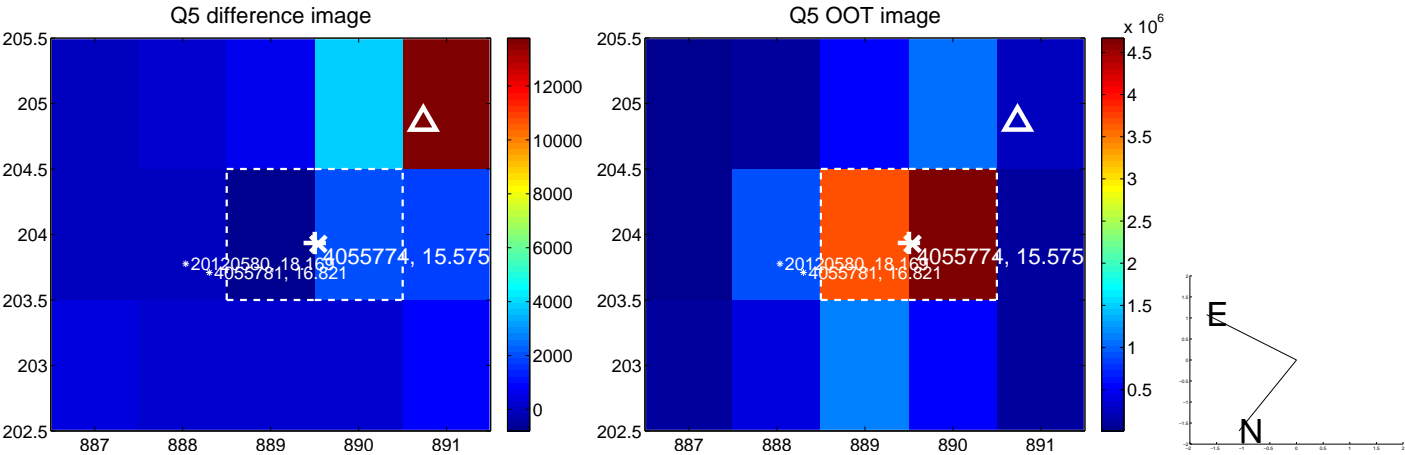


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

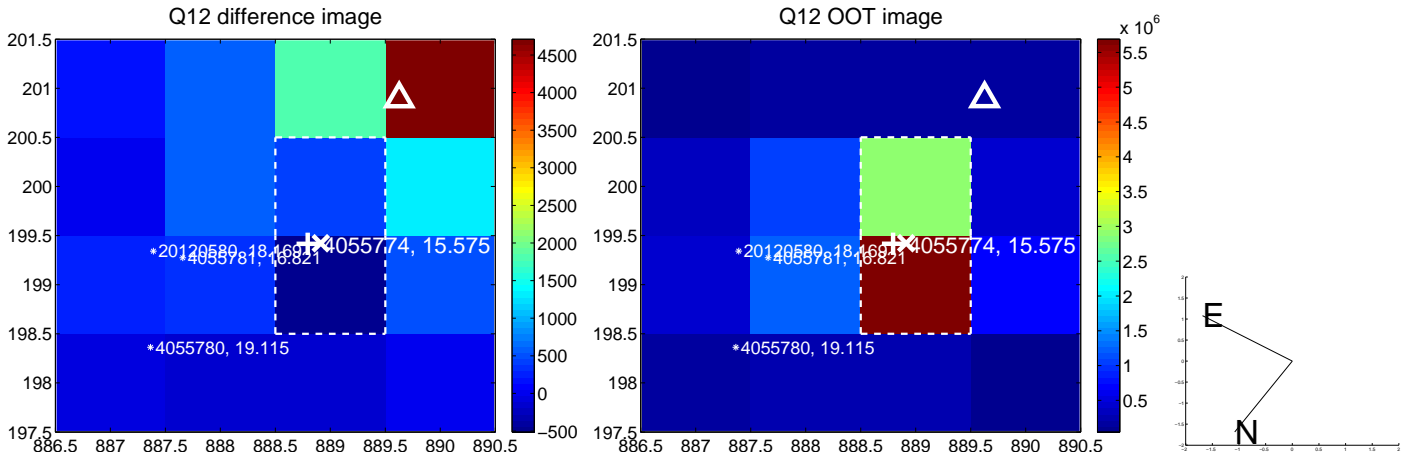
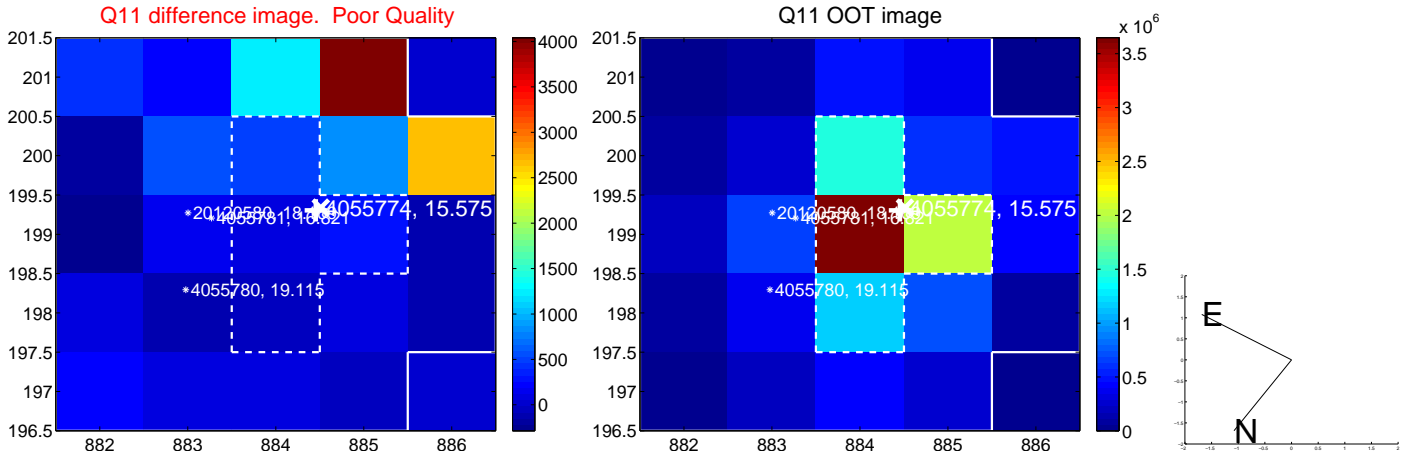
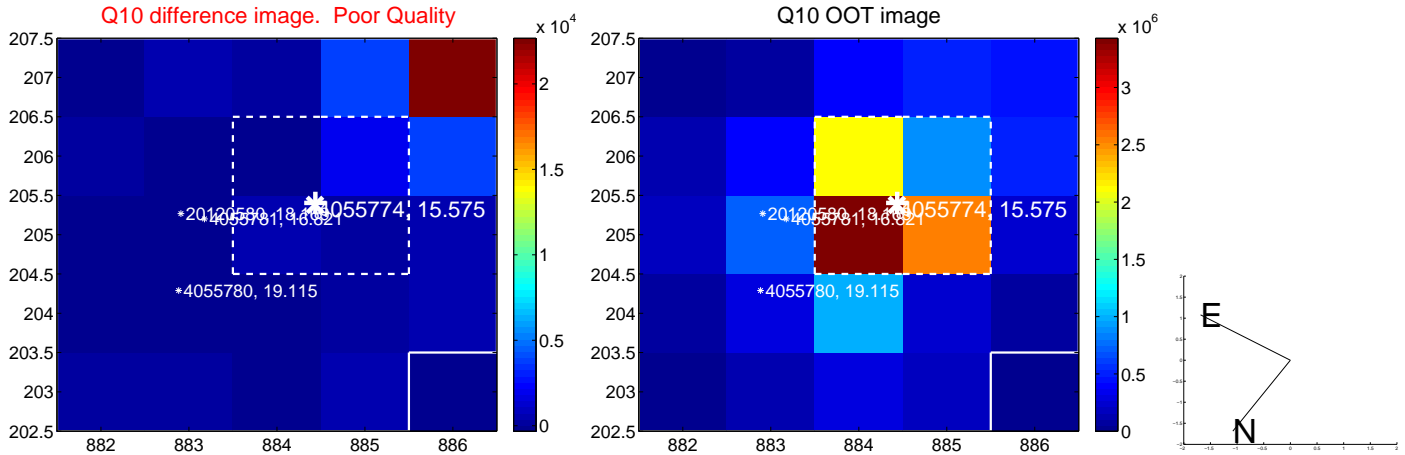
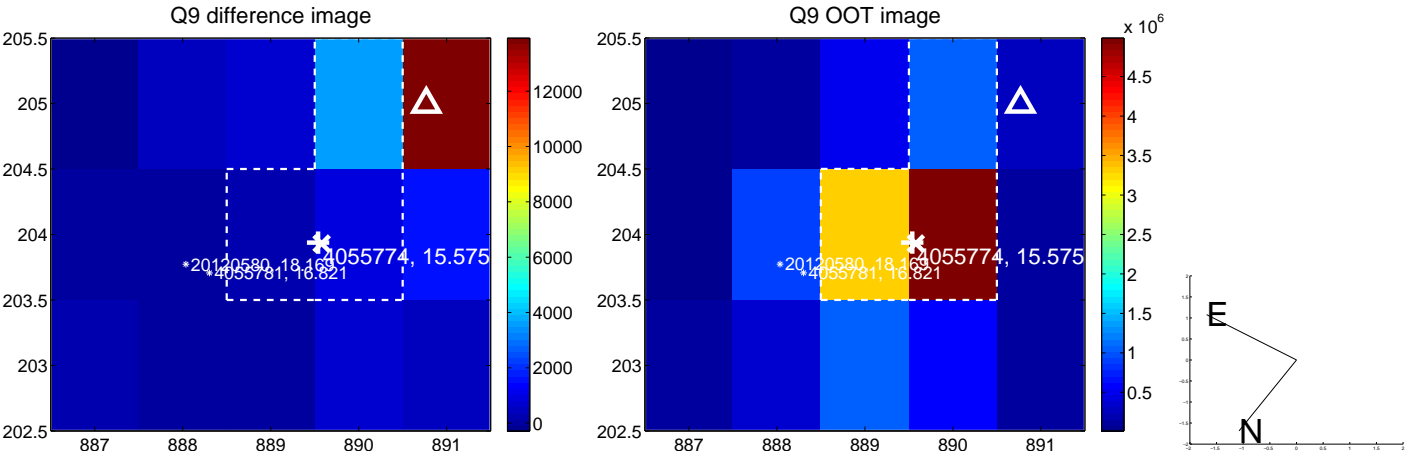
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



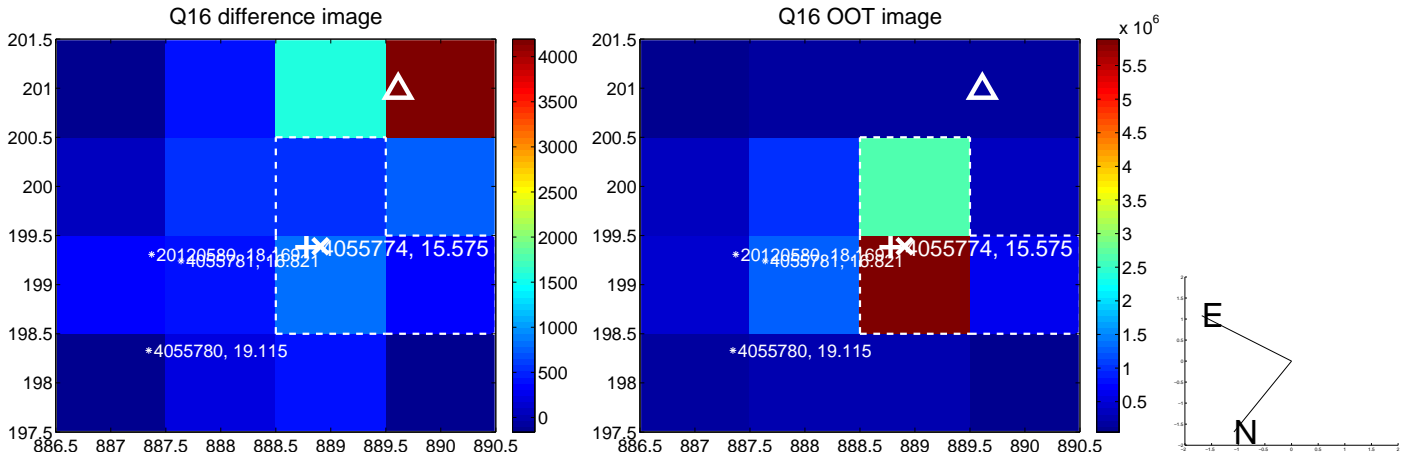
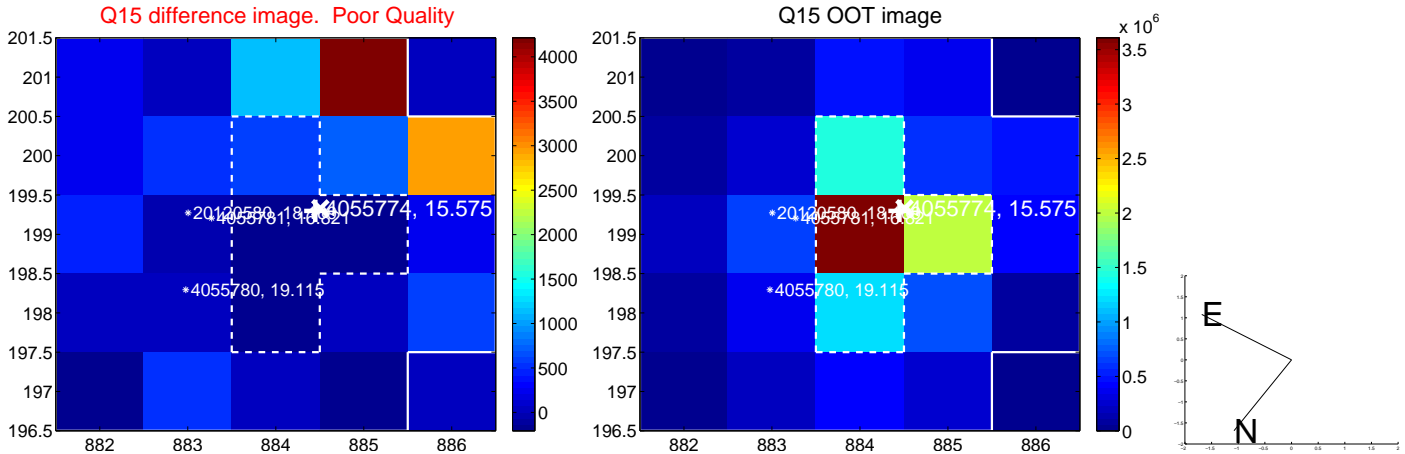
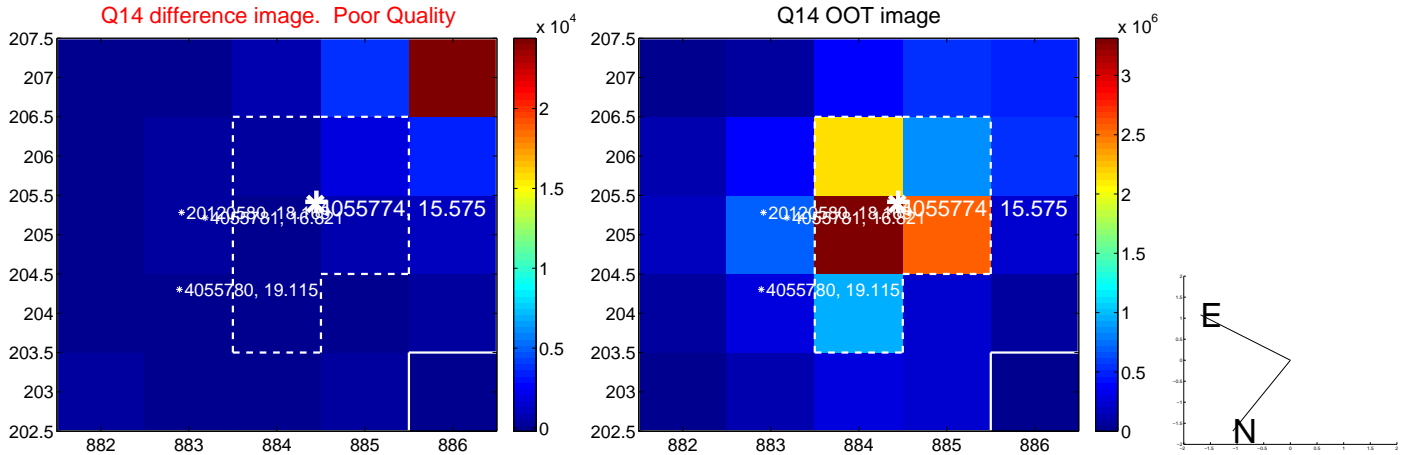
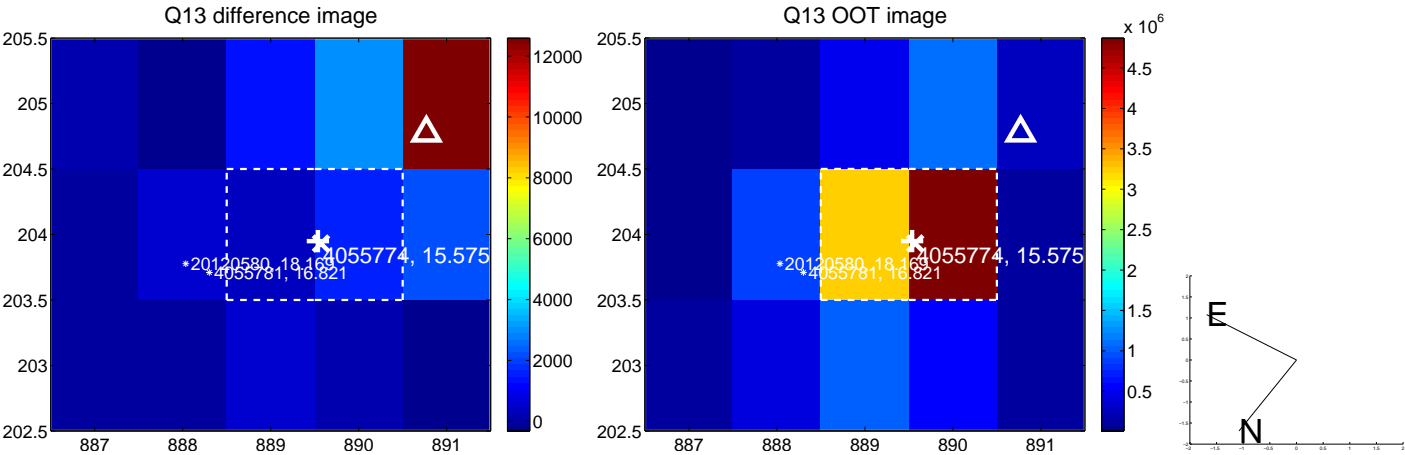
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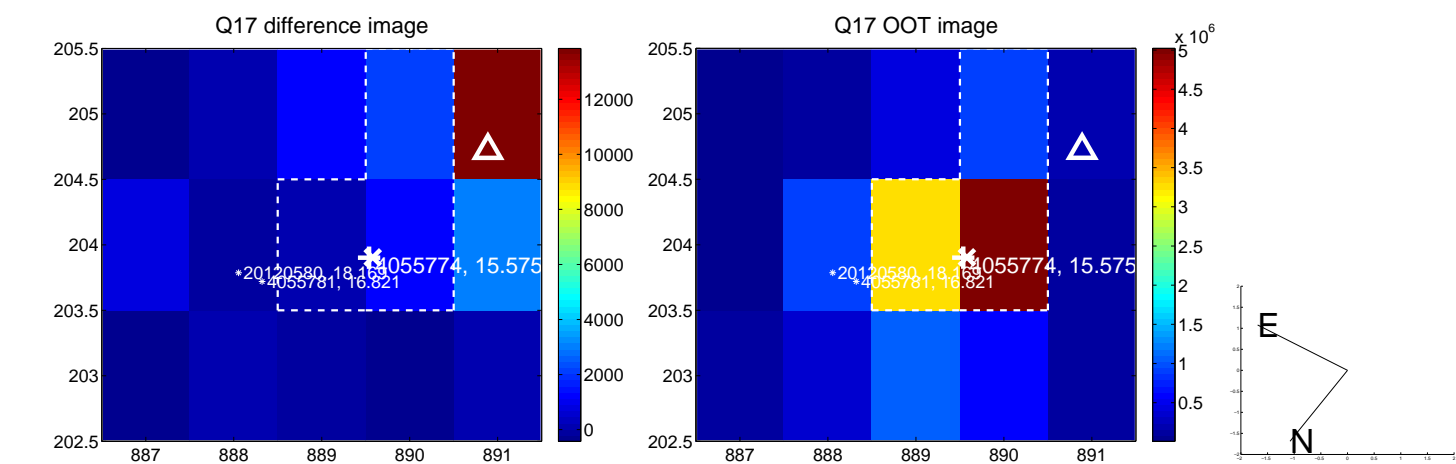
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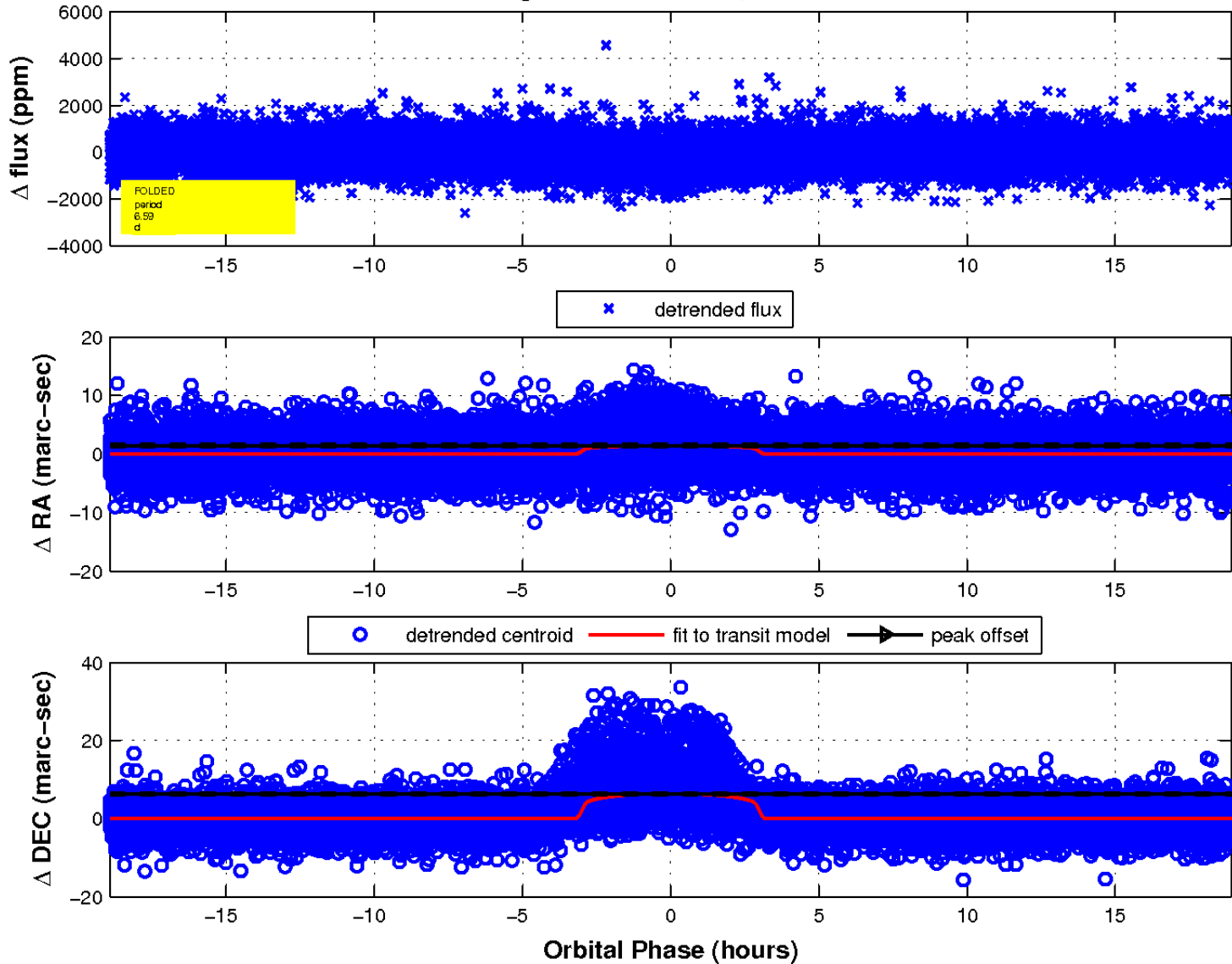
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

