

KIC 002578017

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 002578017-01 | OBS | 4629.01 | 0.592551 | 131.917666 | 226.9 | 0.924 | 13.6 | 14.2 | 0.80 | 5728 | 1.45 | 3543.58 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 002578017-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST |

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.

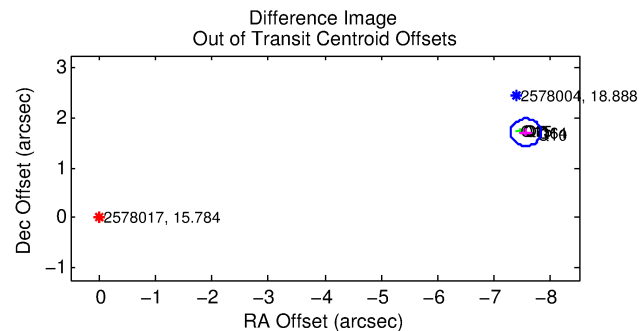
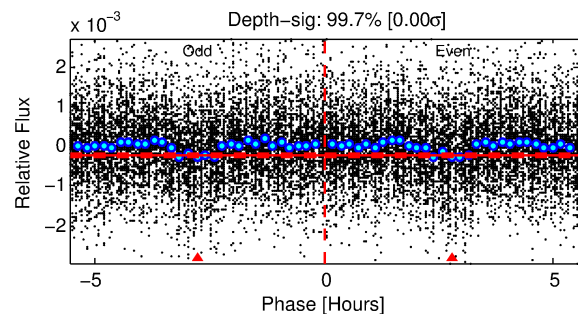
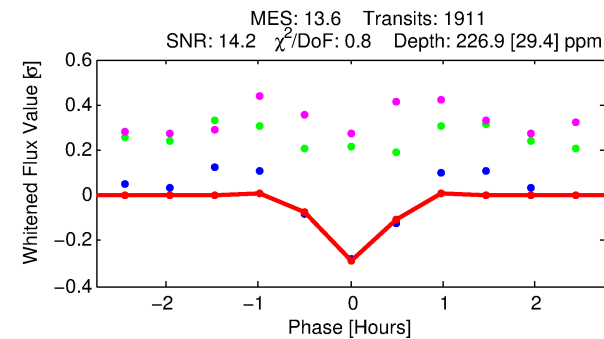
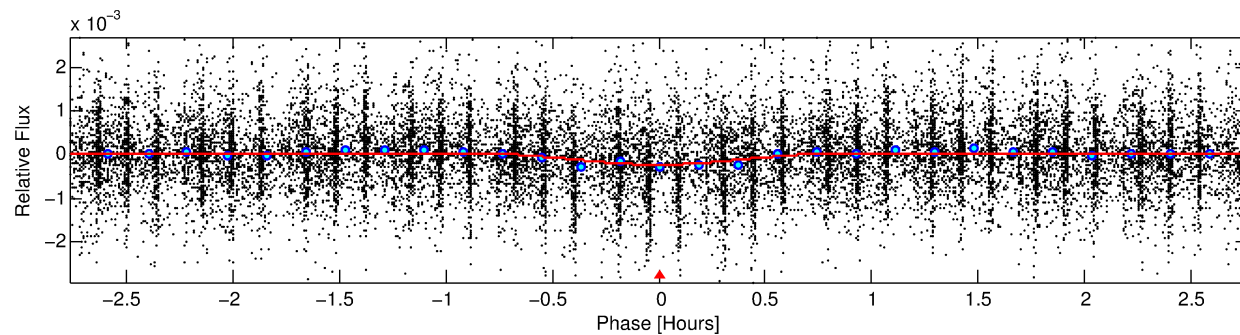
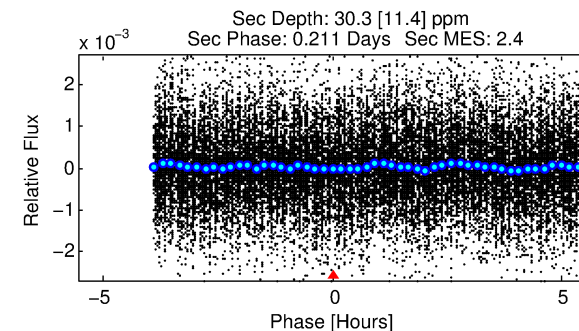
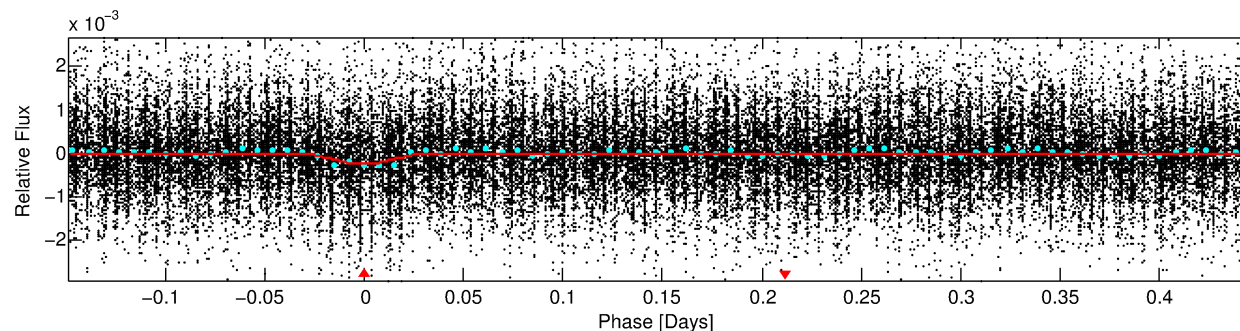
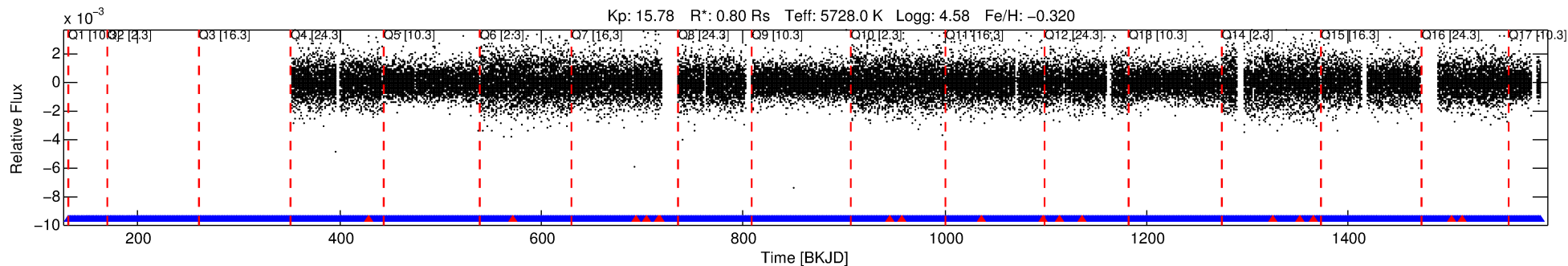
Ephemeris Match Information For 002578017-01

No Significant Match Found

DV One-Page Summary

KIC: 2578017 Candidate: 1 of 1 Period: 0.593 d
KOI: K04629 Corr: No Ephemeris Match

Kp: 15.78 R*: 0.80 Rs Teff: 5728.0 K Logg: 4.58 Fe/H: -0.320



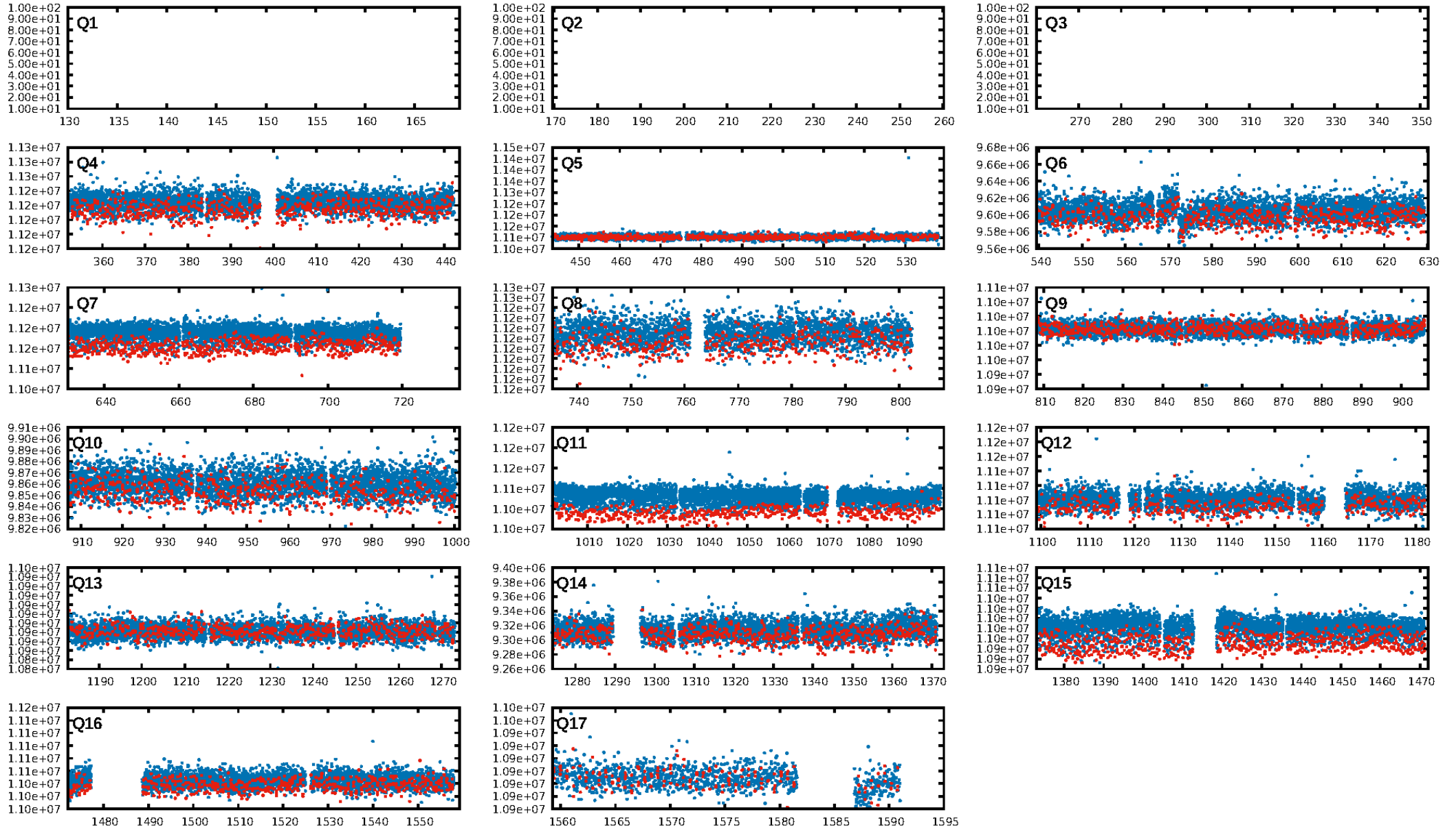
DV Fit Results:

Period = 0.59255 [0.00001] d
Epoch = 131.9177 [0.0011] BKJD
Rp/R* = 0.0166 [0.0094]
a/R* = 2.49 [5.69]
b = 0.90 [0.58]
Seff = 3543.58 [1234.23]
Teq = 1967 [171] K
Rp = 1.45 [0.91] Re
a = 0.0133 [0.0029] AU
Ag = 1.39 [1.72] [0.23σ]
Teff = 3301 [991] K [1.33σ]

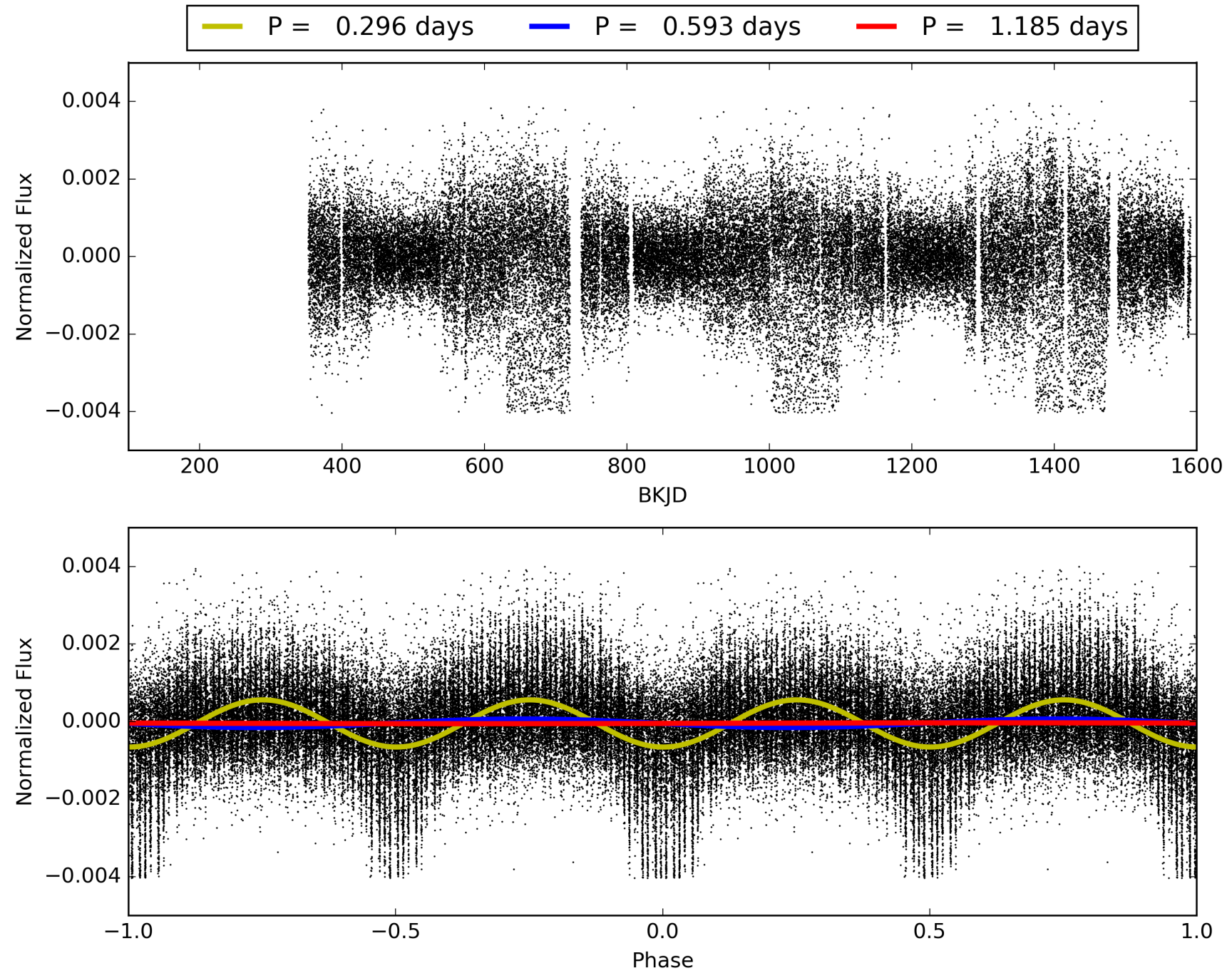
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.81e-38
RollingBand-fgt: 0.99 [1848/1866]
GhostDiagnostic-chr: -0.2205
Centroid-sig: 0.0%
Centroid-so: 180.890 arcsec [147.07σ]
OotOffset-rm: 7.744 arcsec [85.87σ]
KicOffset-rm: 7.804 arcsec [83.79σ]
OotOffset-st: 3/3/0/0 [6]
KicOffset-st: 3/3/0/0 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 002578017-01, PDC Light Curves

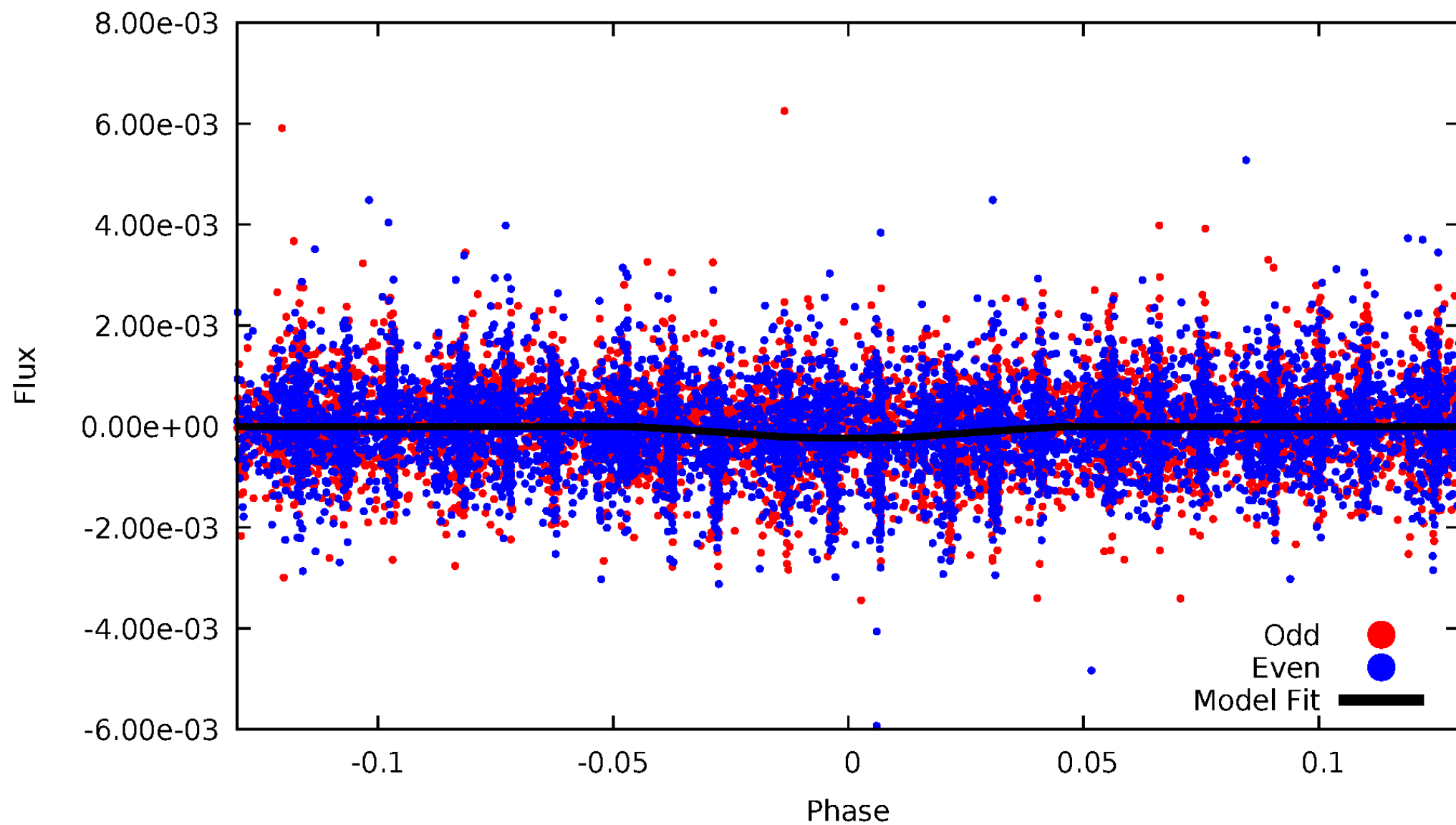


TCE 002578017-01



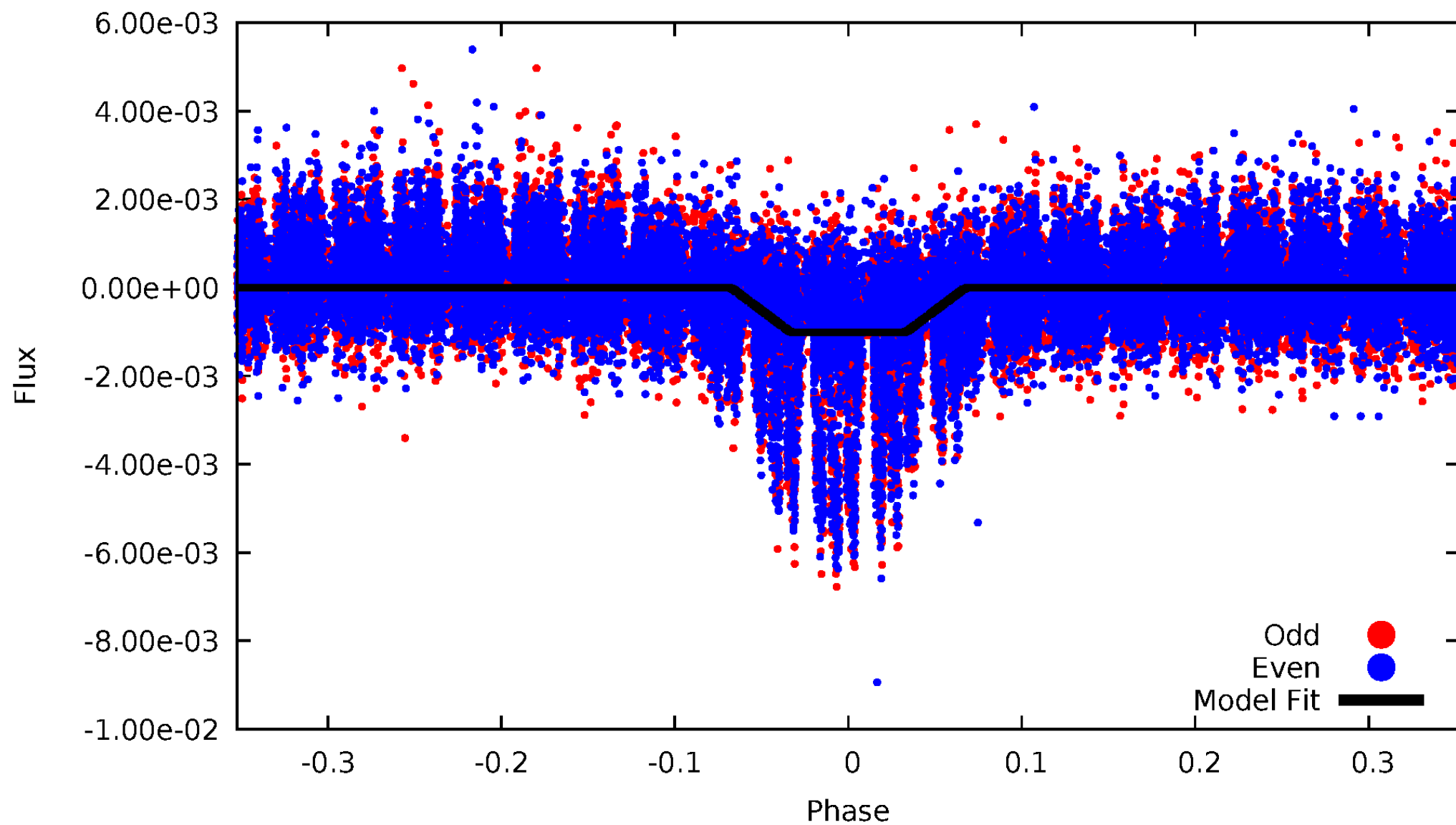
DV Odd/Even

TCE 002578017-01



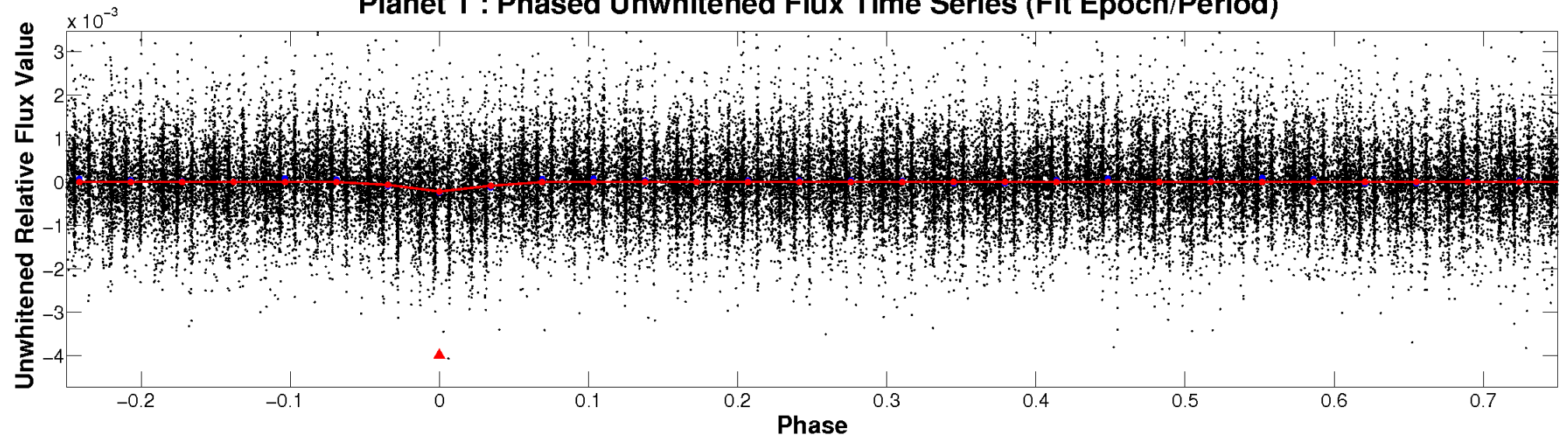
ALT Odd/Even

TCE 002578017-01

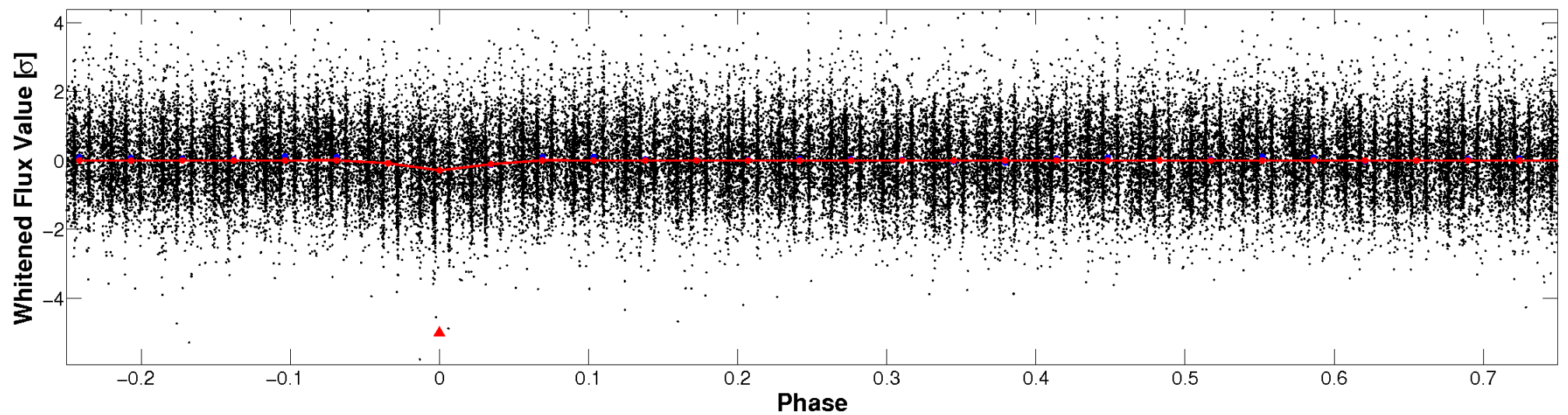


Non-Whitened Vs. Whitened Light Curve

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

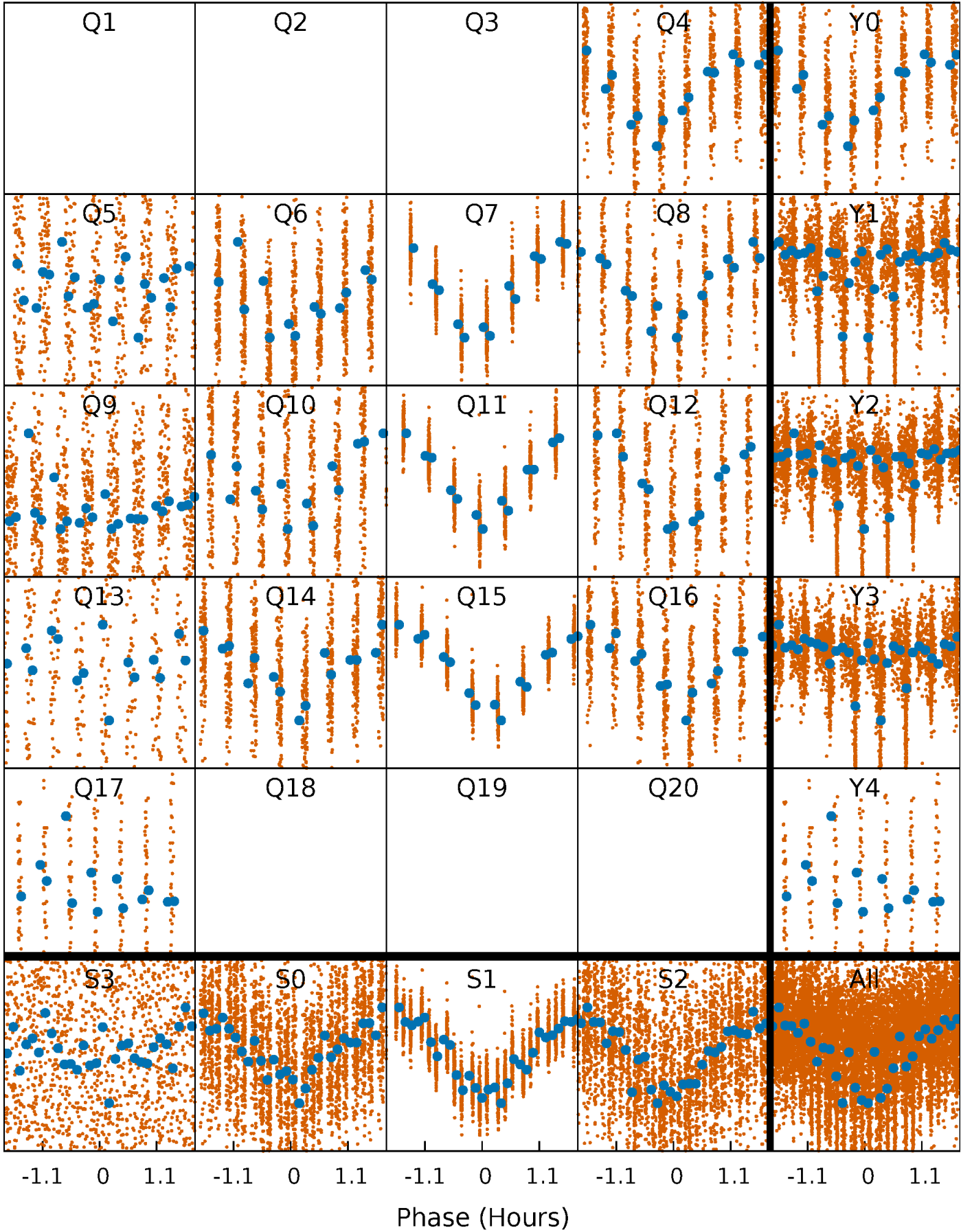


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



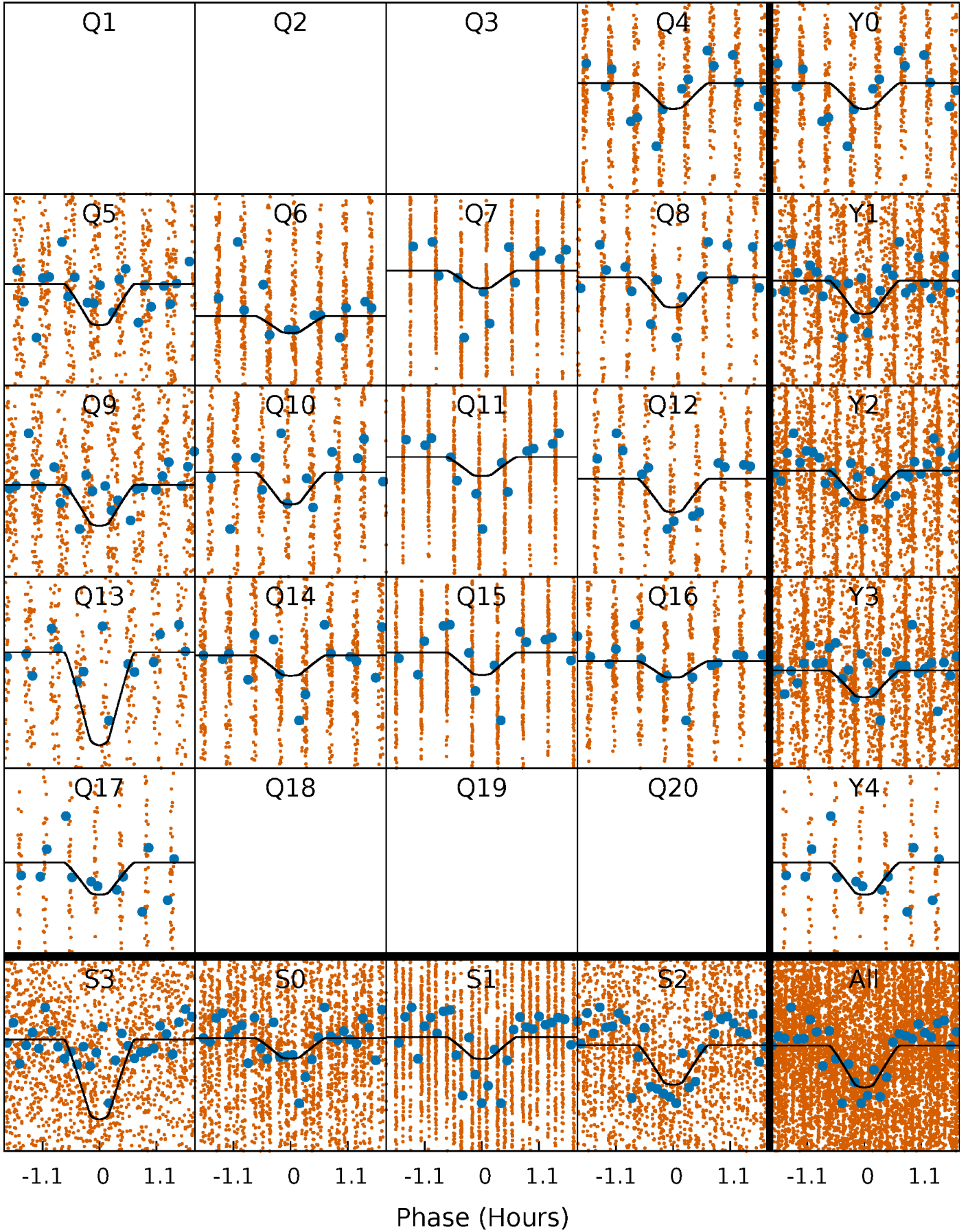
PDC Quarter-Phased Transit Curves

TCE 002578017-01 P= 0.592551 Days $T_0=131.917666$ (BKJD)



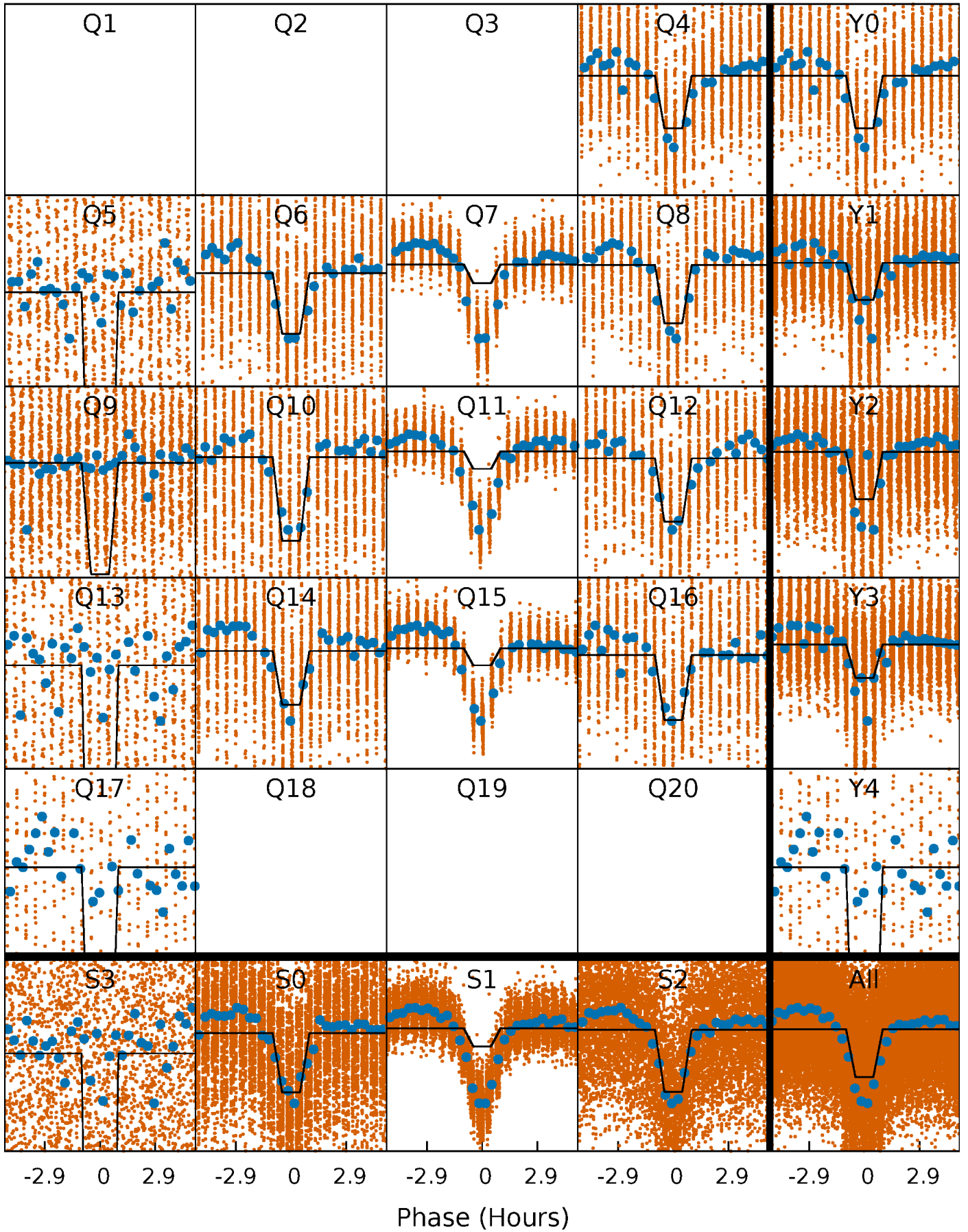
DV Quarter-Phased Transit Curves

TCE 002578017-01 P= 0.592551 Days $T_0=131.917666$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

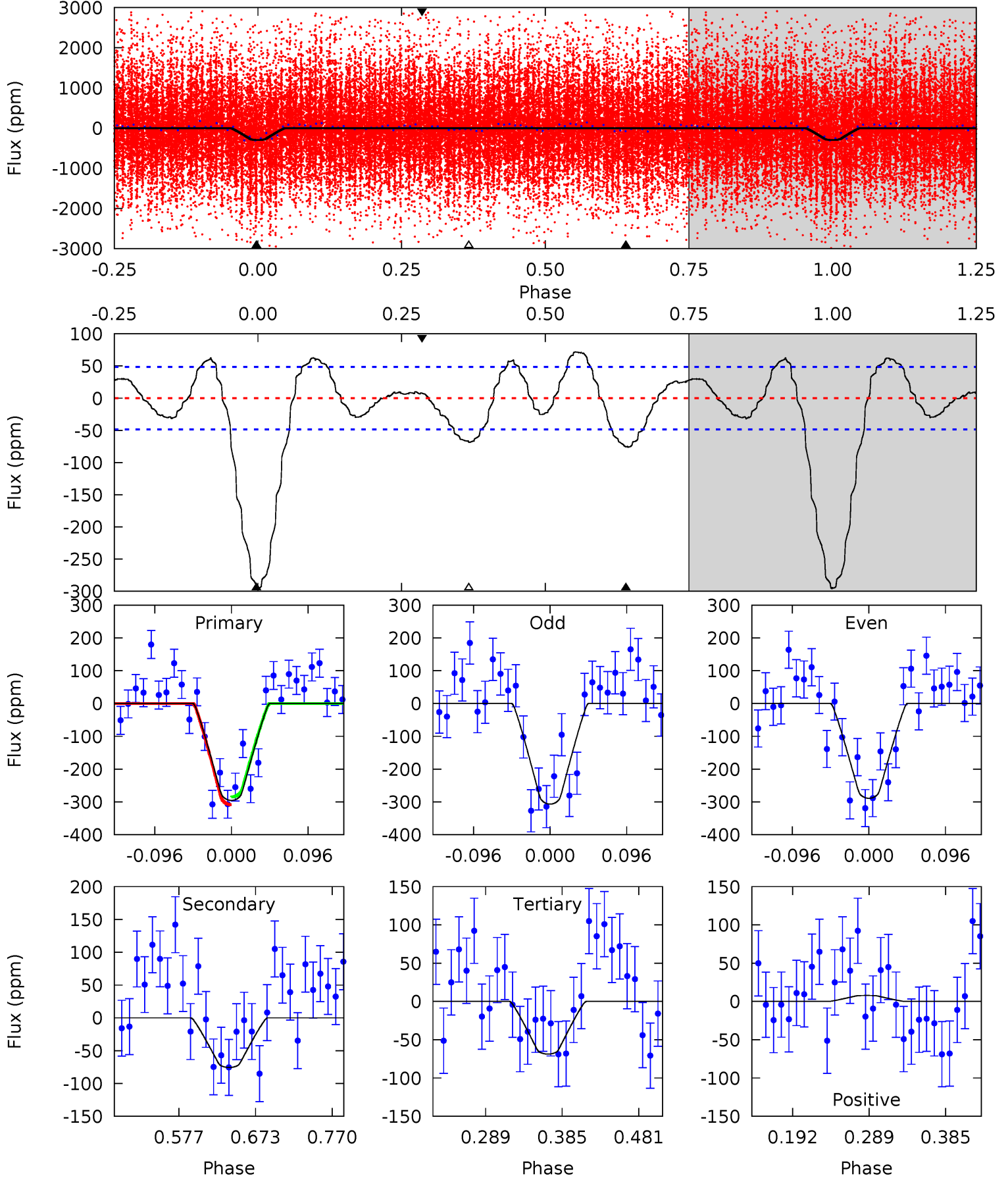
TCE 002578017-01 P= 0.592566 Days $T_0=131.897458$ (BKJD)



DV Model-Shift Uniqueness Test

002578017-01, P = 0.592551 Days, E = 131.917666 Days

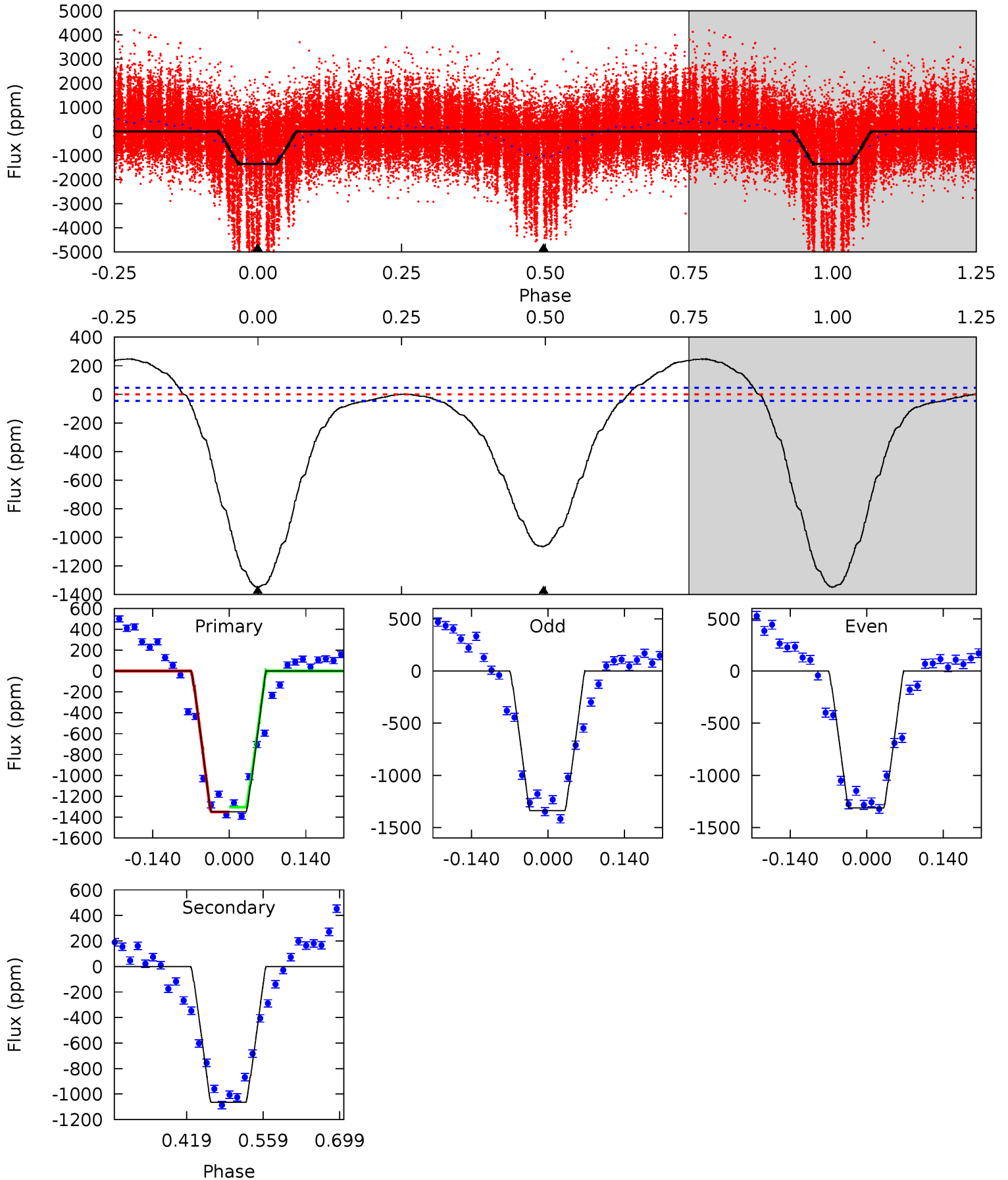
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 27.8 | 7.11 | 6.47 | 0.74 | 4.57 | 1.66 | 3.02 | 21.3 | 27.1 | 0.65 | 6.38 | 0.83 | 1.10 | 0.20 | 1.13 |



Alt Model-Shift Uniqueness Test

002578017-01, P = 0.592566 Days, E = 131.897458 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 132.2 | 104.2 | 0 | 0 | 4.49 | 1.48 | 11.7 | 132.2 | 132.2 | 104.2 | 104.2 | 1.27 | 1.48 | 0.15 | 2.21 |



Stellar Parameters For KIC 002578017

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5728^{+172}_{-189} | $4.575^{+0.033}_{-0.176}$ | $-0.320^{+0.300}_{-0.300}$ | $0.804^{+0.212}_{-0.071}$ | $0.896^{+0.090}_{-0.110}$ | $2.429^{+0.434}_{-1.114}$ |
| | +3%/-3% | +1%/-4% | +94%/-94% | +26%/-9% | +10%/-12% | +18%/-46% |
| 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 002578017-01 / KOI 4629.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -76 ± 11 | $1.51^{+0.87}_{-0.76}$ | 2810^{+170}_{-126} | 4267^{+1436}_{-701} | $3.143^{+8.598}_{-1.874}$ |
| Alt. | -1063 ± 10 | $2.92^{+1.00}_{-0.85}$ | 2806^{+174}_{-121} | 5737^{+1115}_{-674} | 12^{+11}_{-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 $A_{obs} \gg 1.0$

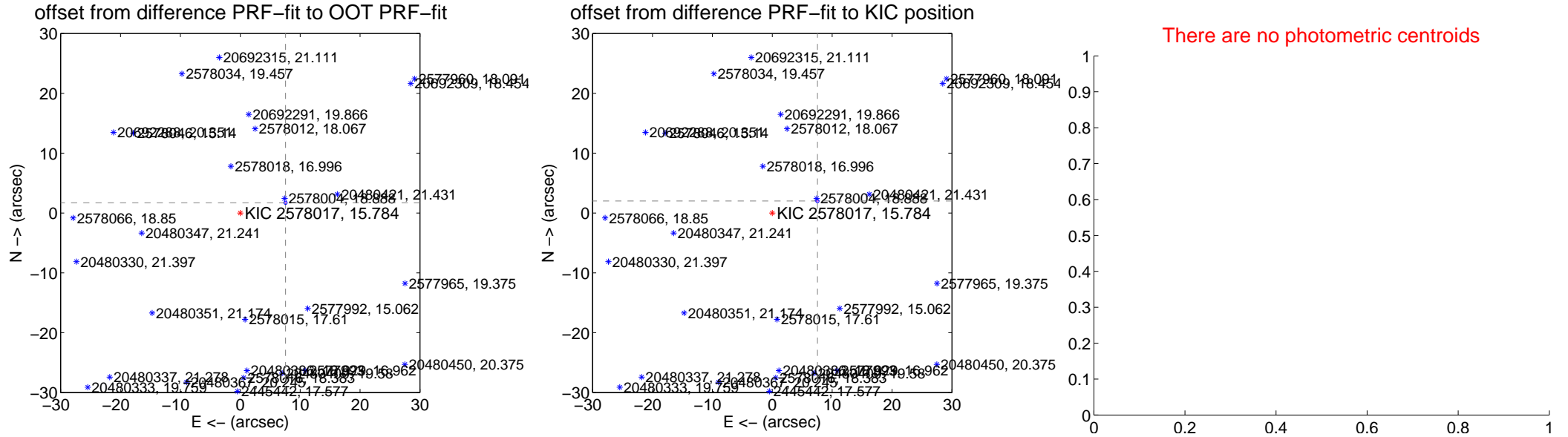
DV Centroid Data

Supplemental centroid analysis for 002578017-01. Kepler magnitude: 15.78. Transit SNR 14.22

There are 6 quarters with good PRF difference image offsets

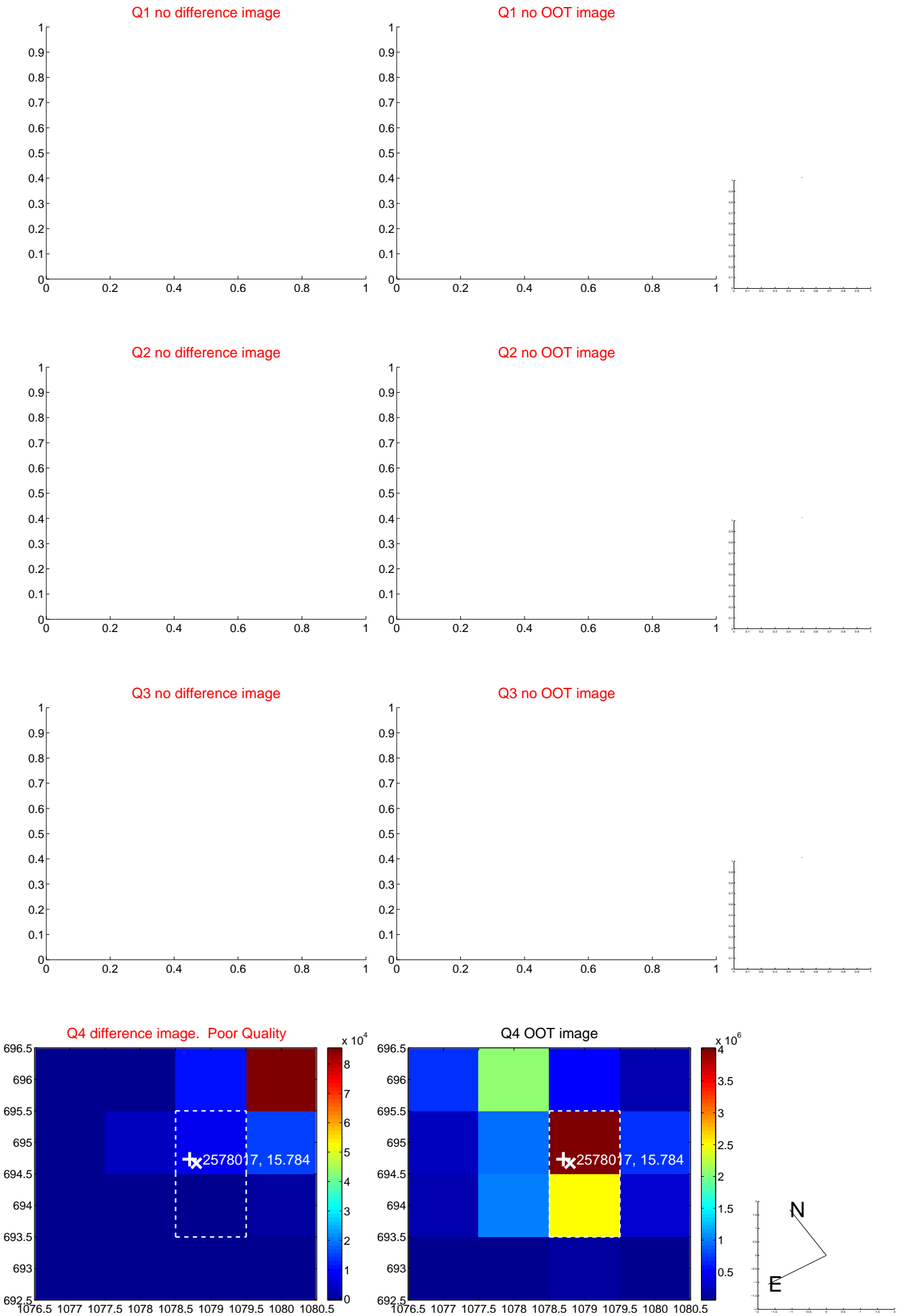
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 7.744 \pm 0.090 | 85.87 | -7.553 \pm 0.091 | 1.709 \pm 0.068 |
| PRF-fit source offset from KIC position | 7.804 \pm 0.093 | 83.79 | -7.542 \pm 0.093 | 2.006 \pm 0.089 |
| photometric centroid source offset | — | — | — | — |

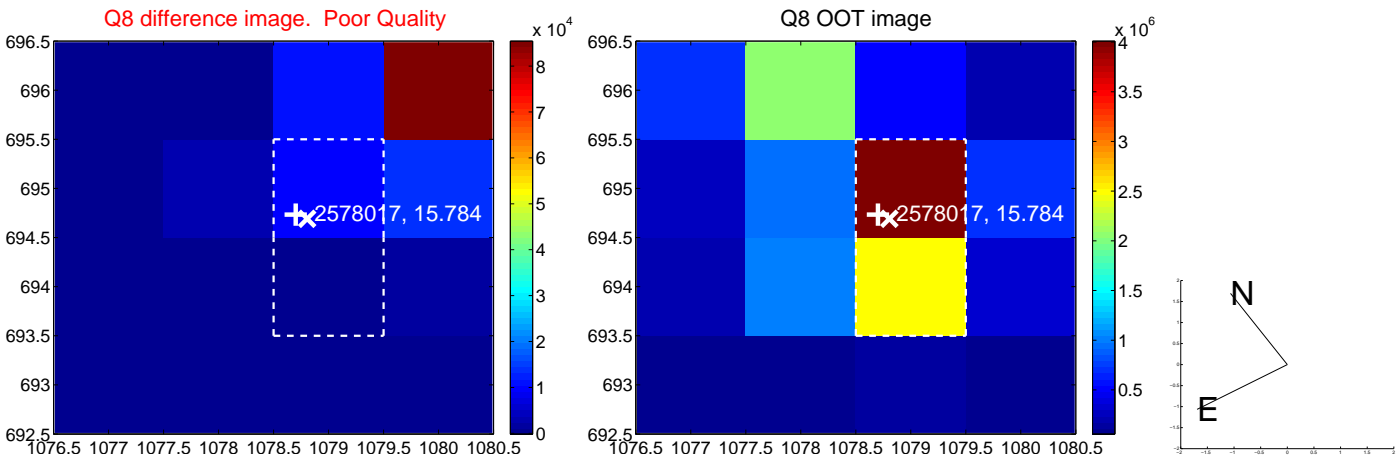
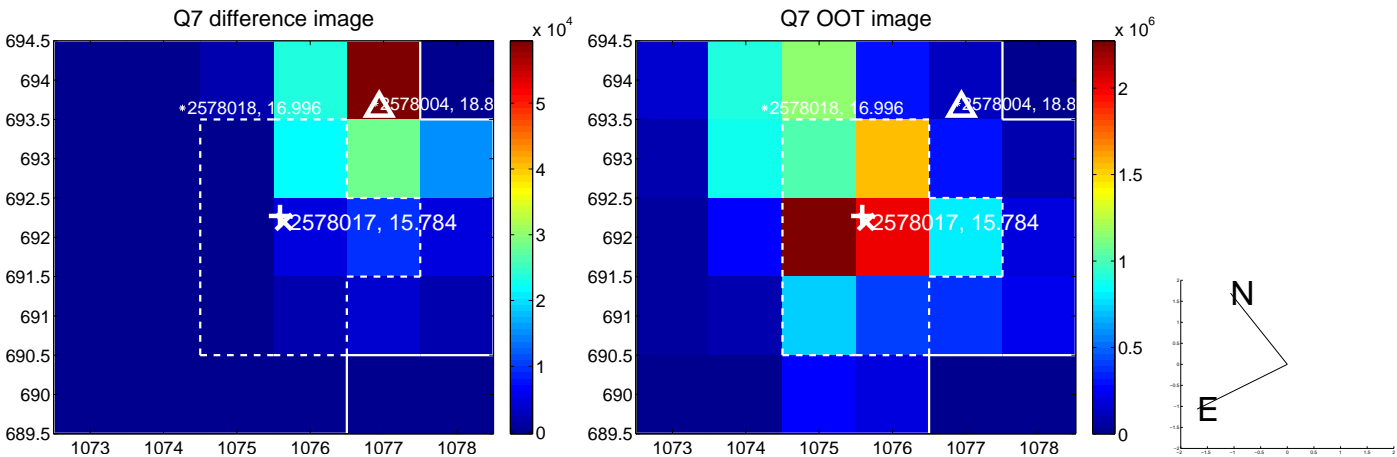
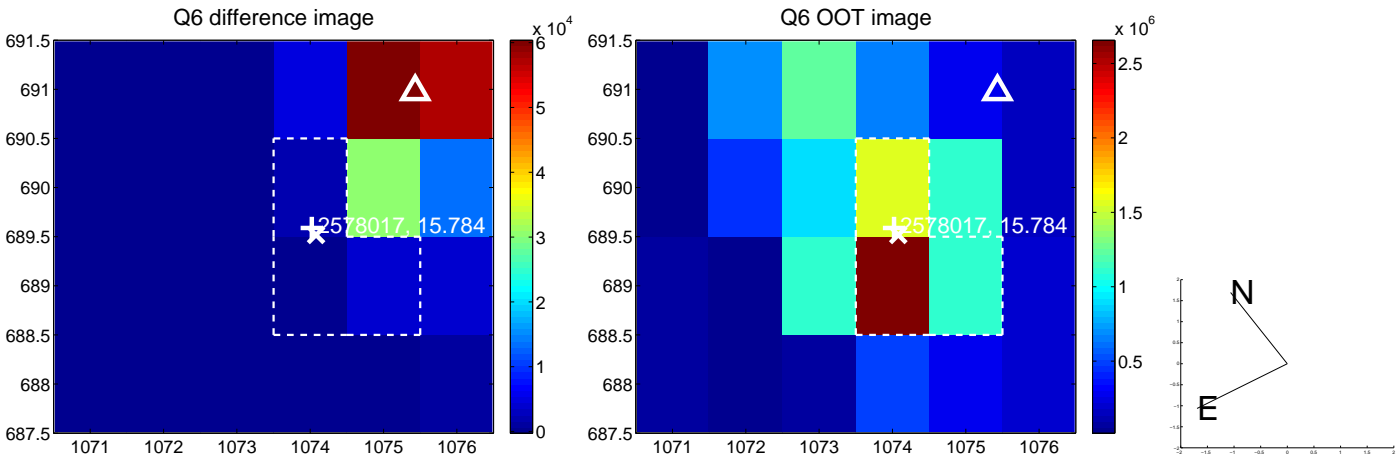
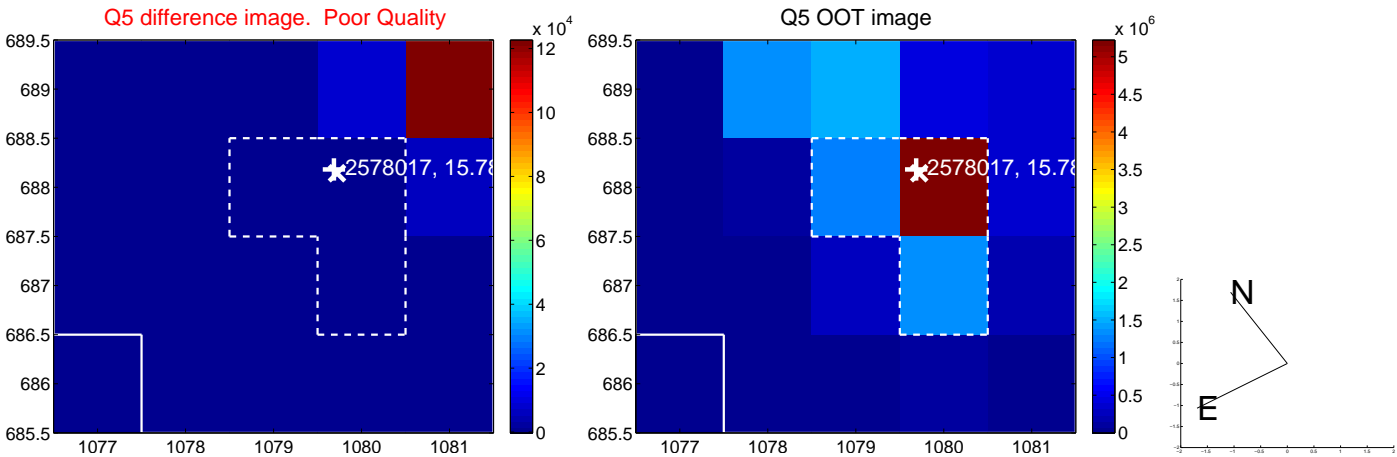


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

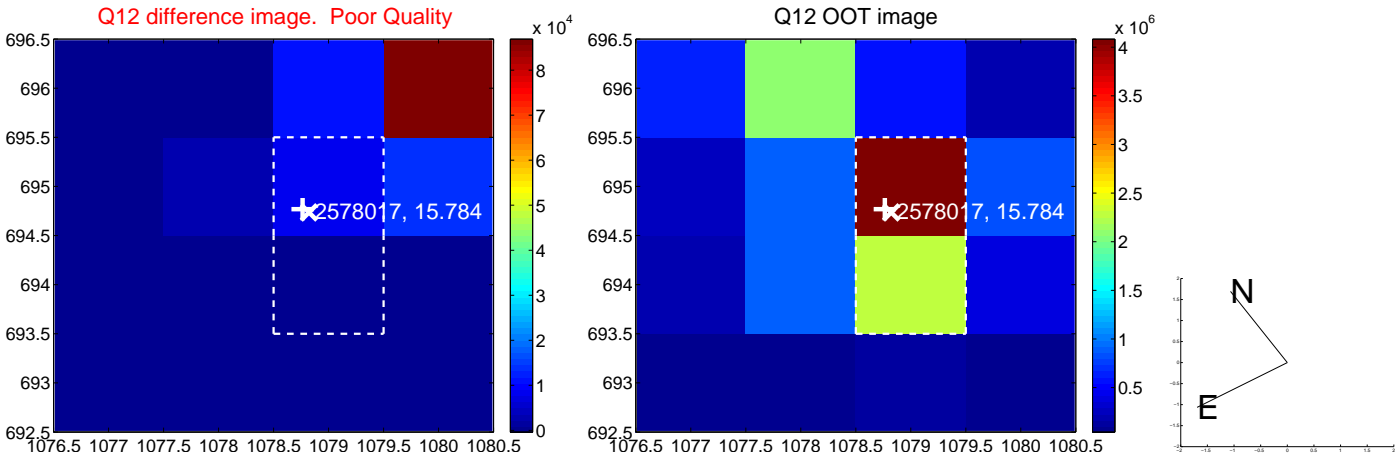
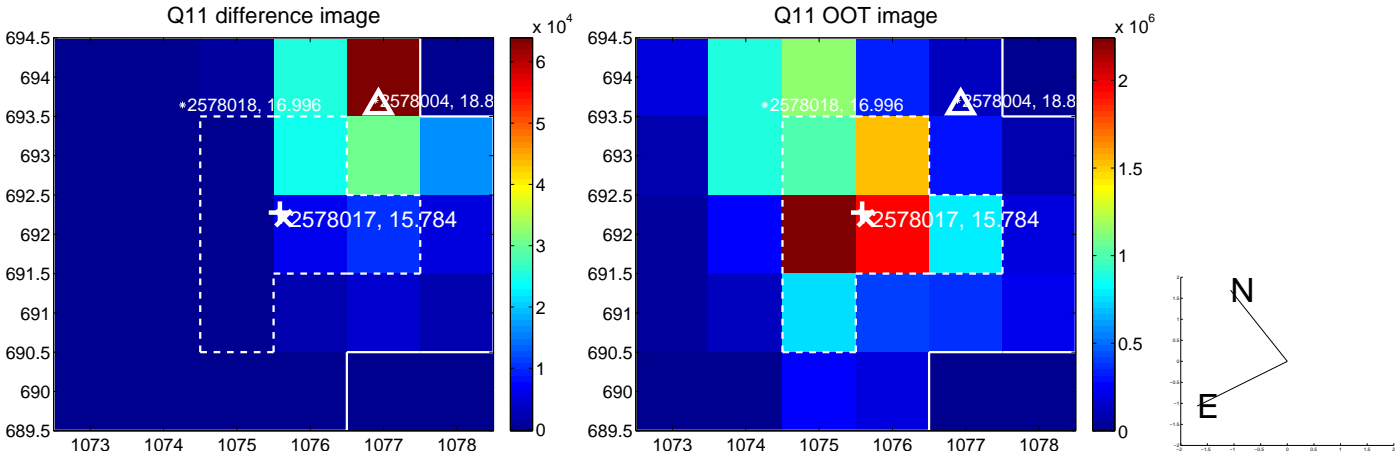
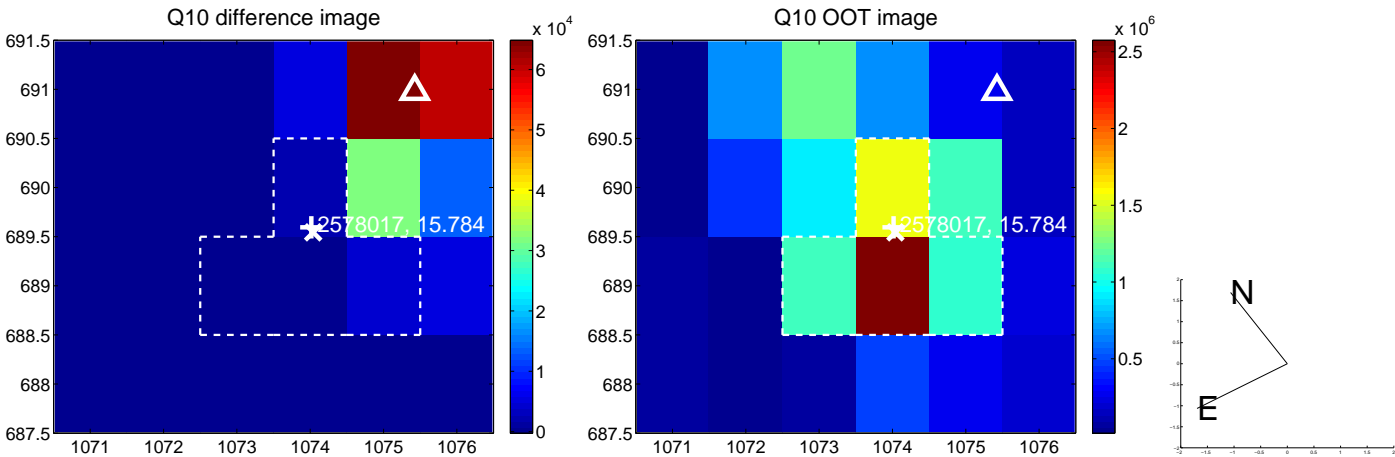
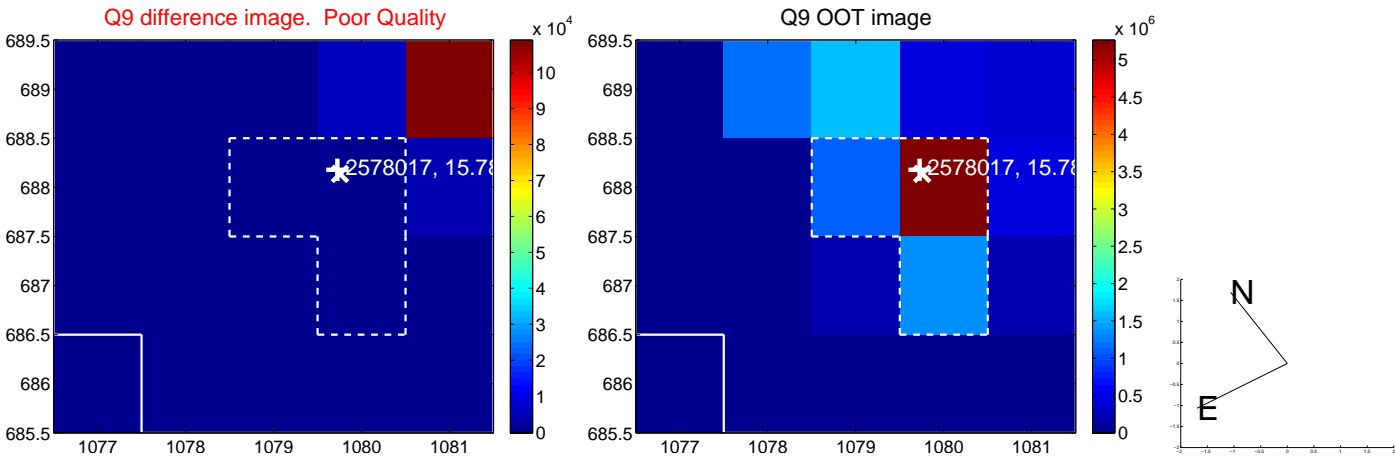
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



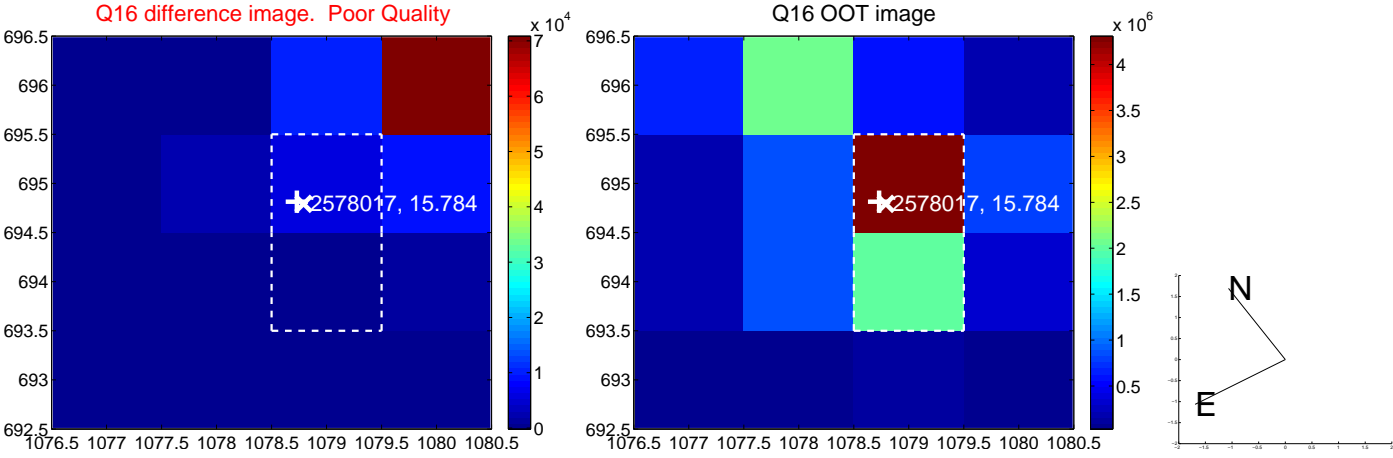
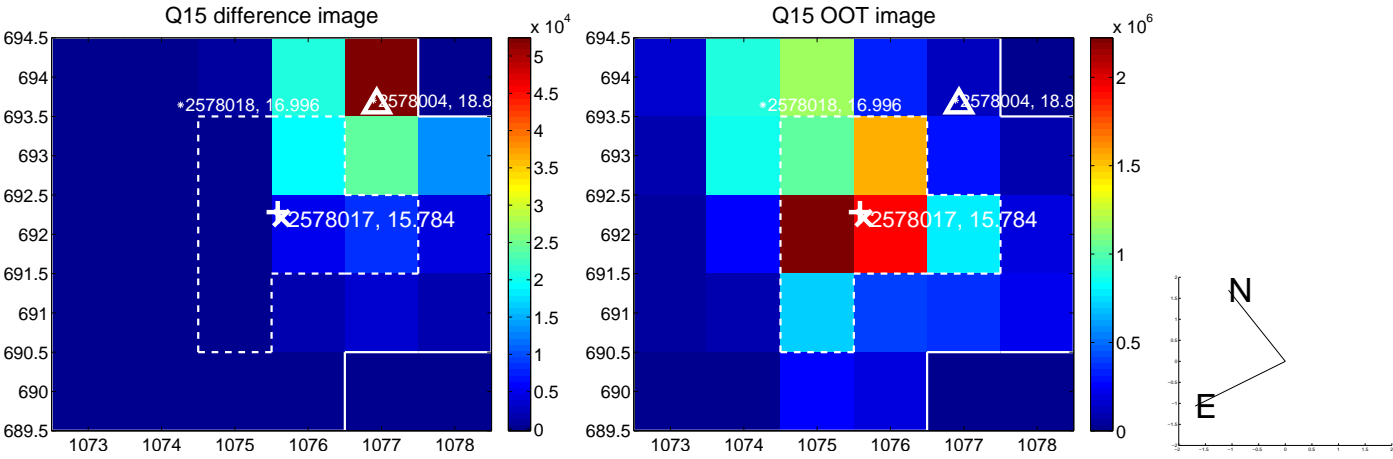
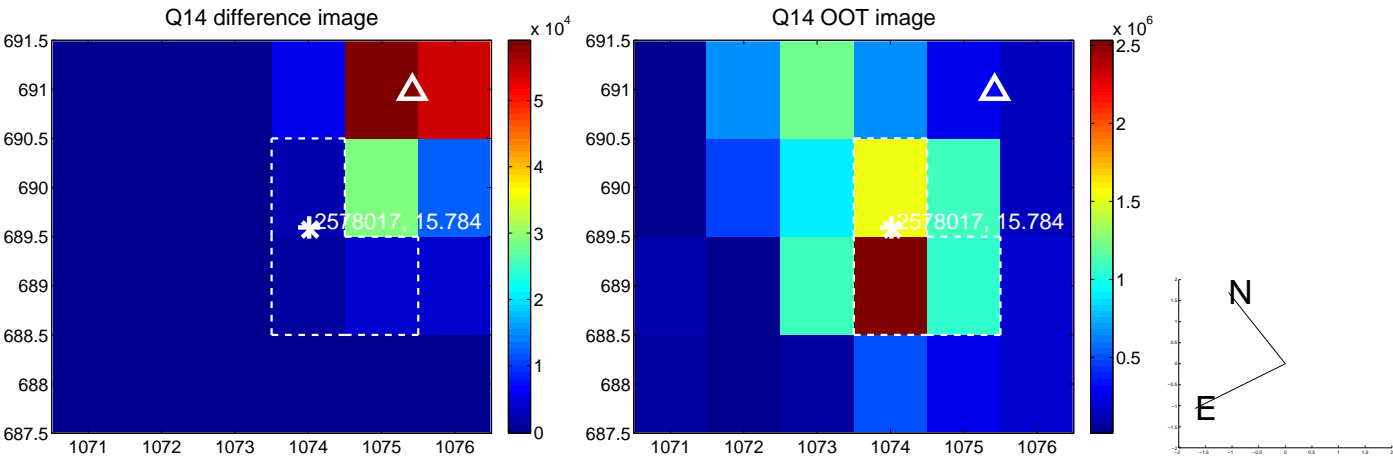
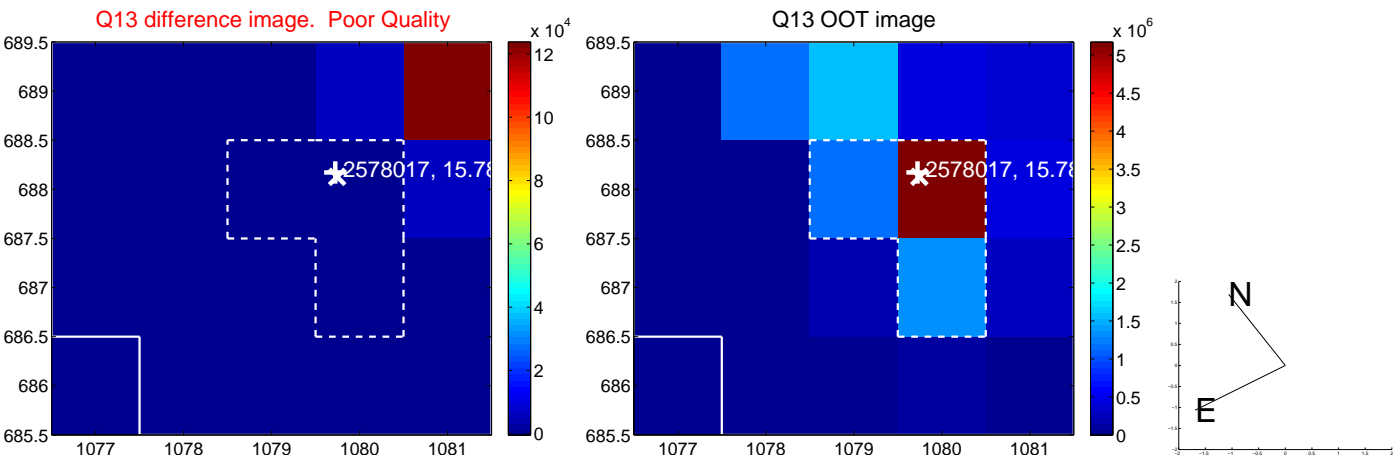
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



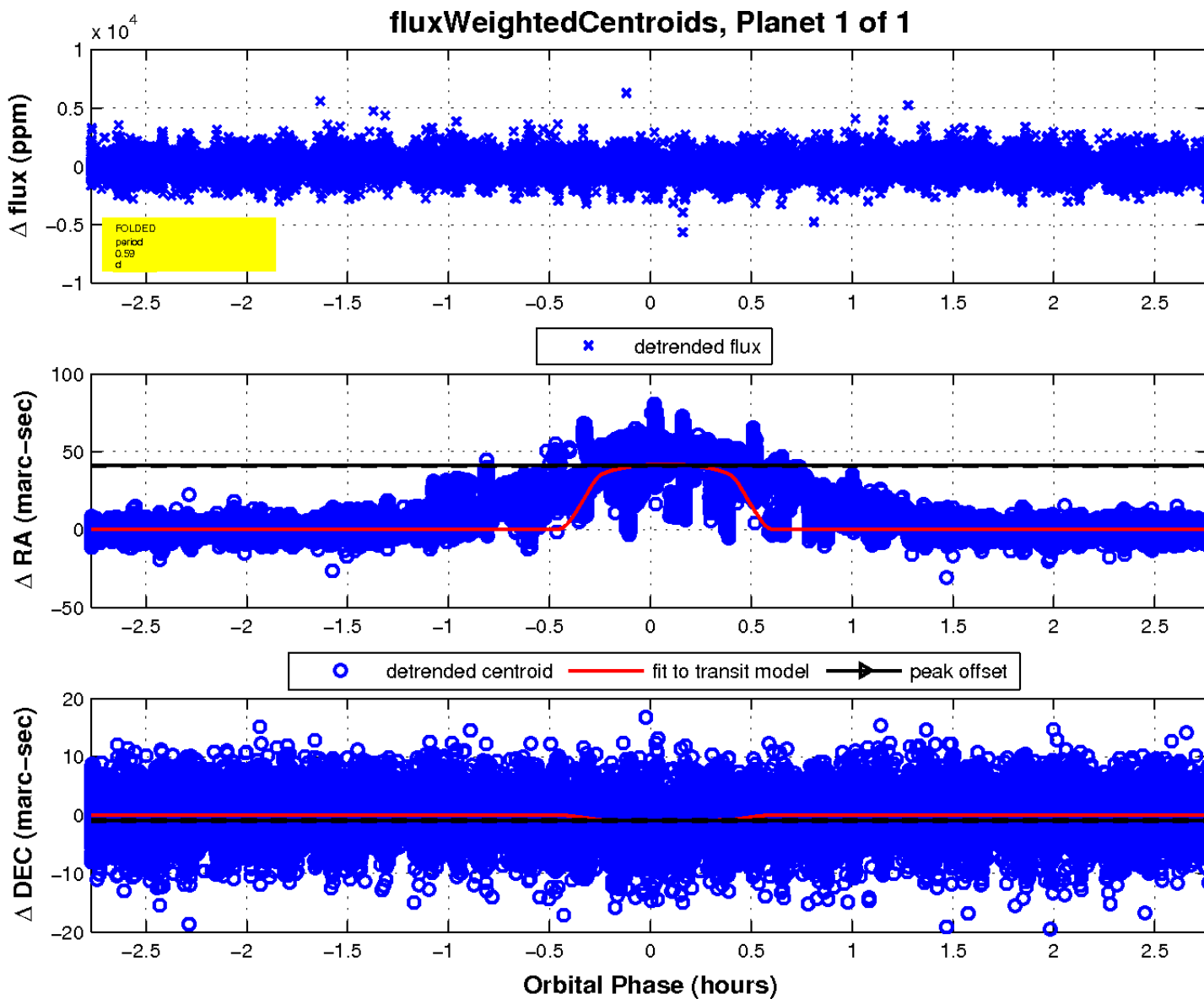
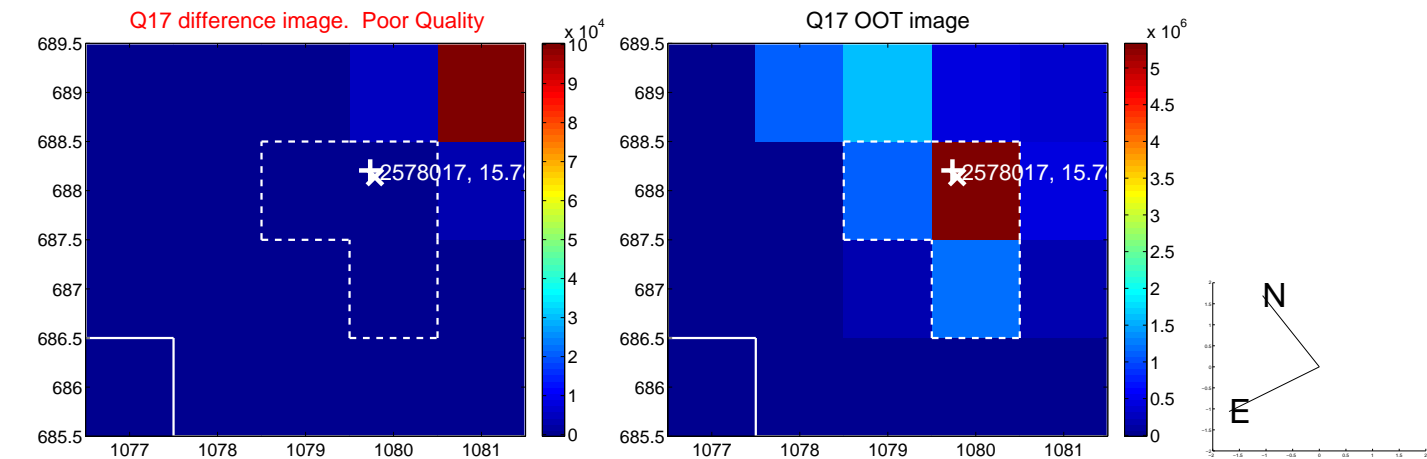
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UKIRT Image

Declination

