

KIC 005956787

Q1-17 DR25 TCE Parameters

| TCE | Run Type | KOI? | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | R _★ (R _☉) | T _★ (K) | R _p (R _⊕) | S _p (S _⊕) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|-----|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 005956787-01 | OBS | 2616.01 | 0.569112 | 132.030423 | 40.6 | 4.644 | 14.1 | 5.4 | 0.66 | 4788 | 0.41 | 1510.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005956787-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 1 | MOD_SEC_ALT—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 005956787-01

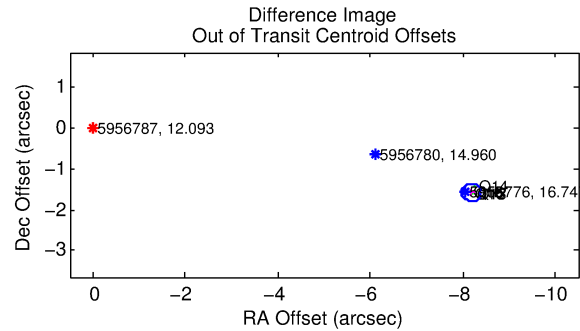
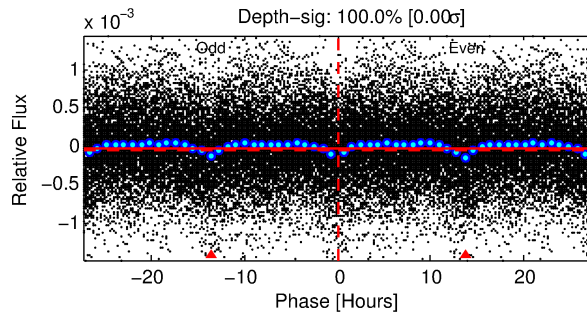
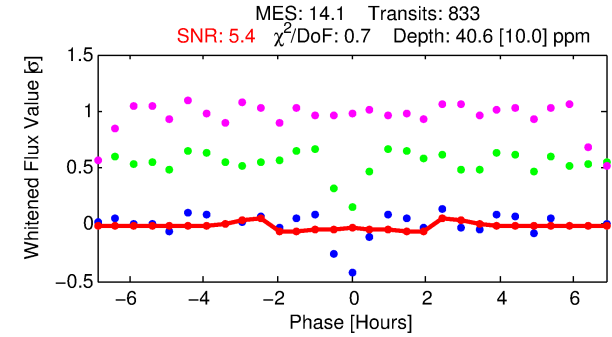
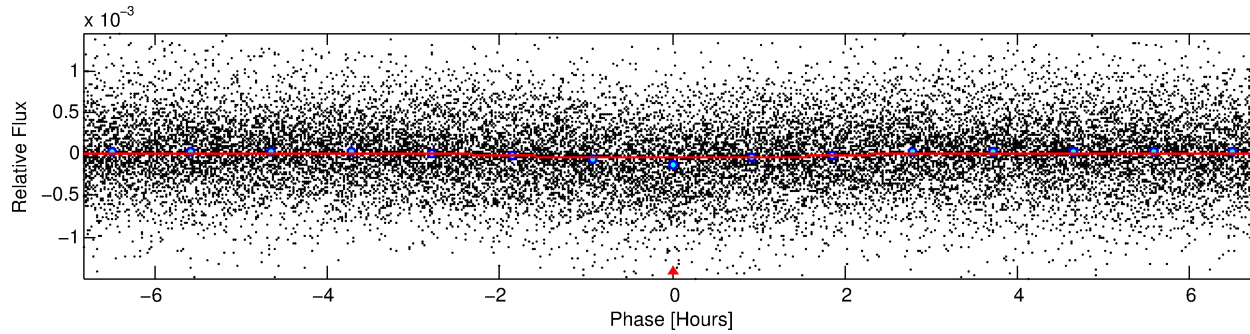
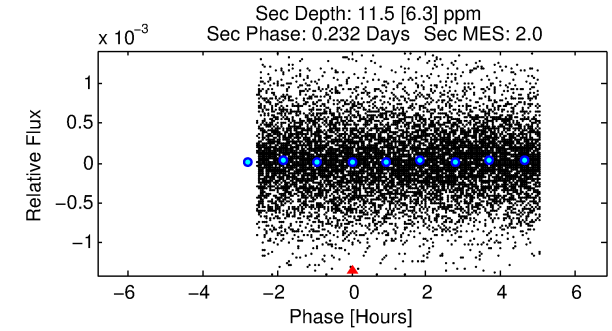
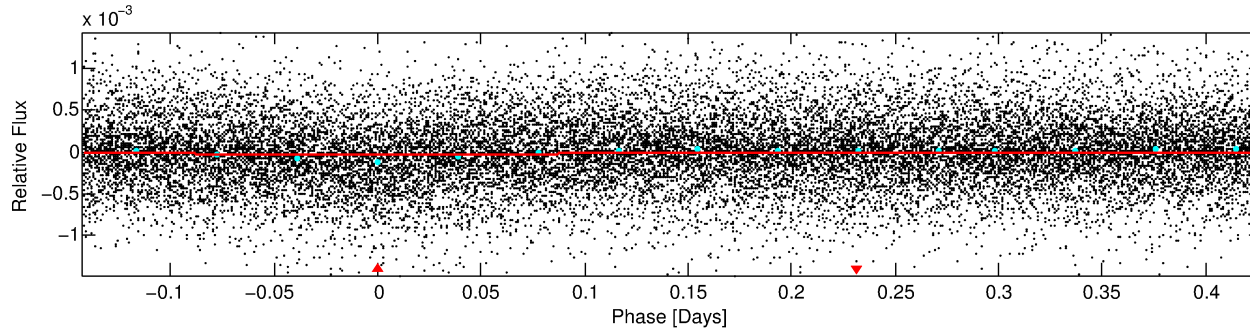
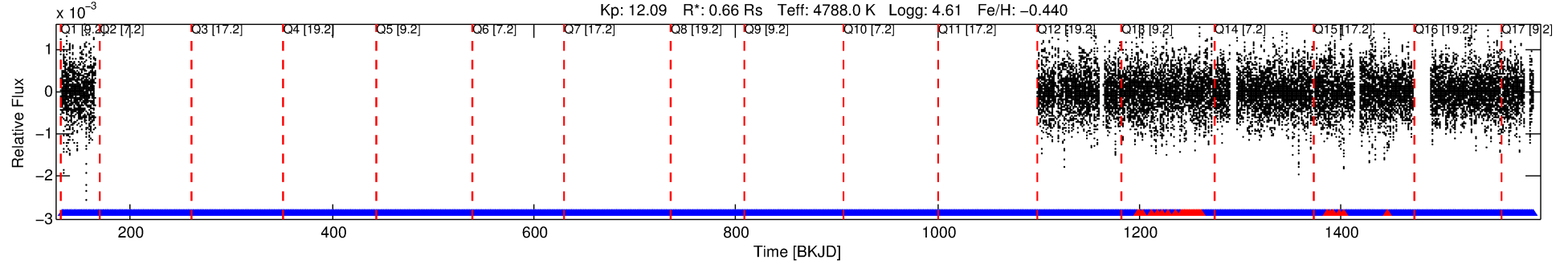
| TCE (1) | KIC | Parent (2) | Parent KIC | P ₁ :P ₂ | Dist (″) | ΔRow | ΔCol | m ₂ | m ₁ | D ₂ /D ₁ | Mechanism | Flag | σ _P | σ _T |
|--------------|---------|------------|------------|--------------------------------|----------|------|------|----------------|----------------|--------------------------------|------------|------|----------------|----------------|
| 005956787-01 | 5956787 | 3821.01 | 5956776 | 1:1 | 8.2 | 1 | -2 | 16.75 | 12.10 | 17220.00 | Direct-PRF | 0 | 0.70 | 0.85 |

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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 σ_P < 5.0 and σ_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: 5956787 Candidate: 1 of 1 Period: 0.569 d
KOI: K02616.01 Corr: 0.815

Kp: 12.09 R*: 0.66 Rs Teff: 4788.0 K Logg: 4.61 Fe/H: -0.440



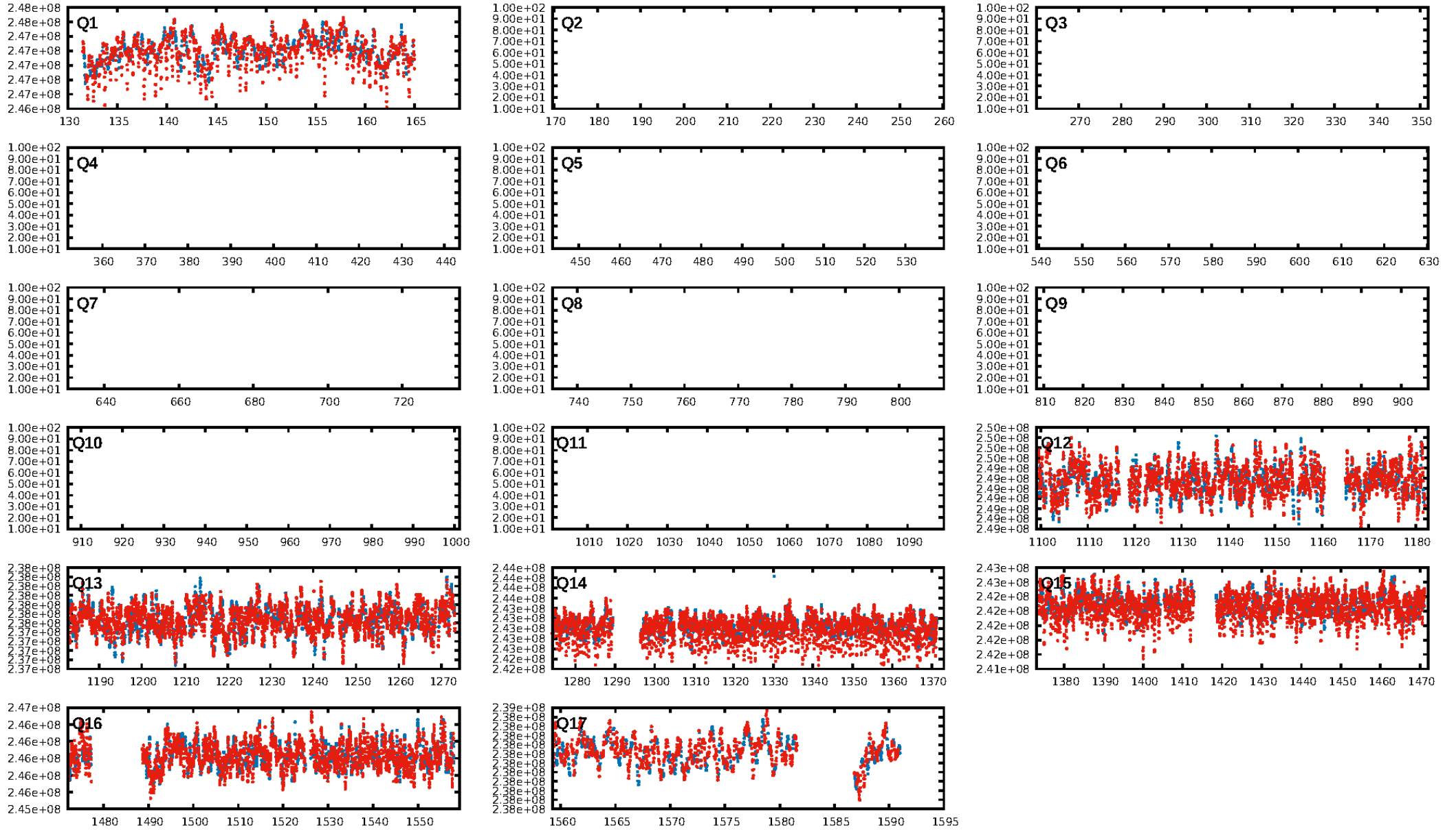
DV Fit Results:

Period = 0.56911 [0.00002] d
Epoch = 132.0304 [0.0027] BKJD
Rp/R* = 0.0057 [0.0029]
a/R* = 1.13 [0.44]
b = 0.31 [5.27]
Seff = 1510.72 [273.94]
Teq = 1590 [72] K
Rp = 0.41 [0.21] Re
a = 0.0116 [0.0009] AU
Ag = 5.06 [5.84] [0.70σ]
Teffp = 3686 [1067] K [1.96σ]

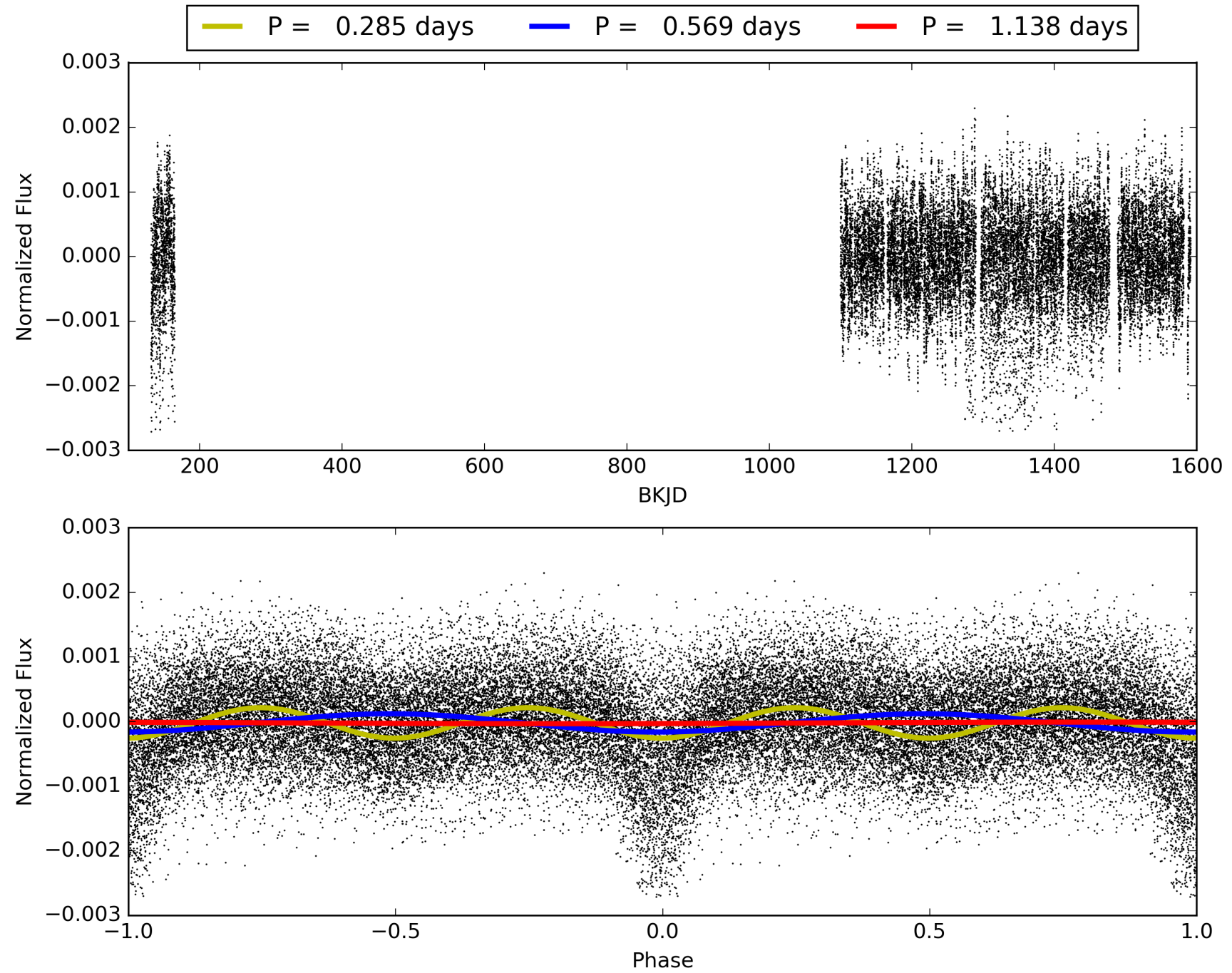
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [678/726]
GhostDiagnostic-chr: -0.3104
Centroid-sig: 0.0%
Centroid-so: 38.732 arcsec [10.70σ]
OotOffset-rm: 8.331 arcsec [118.93σ]
KicOffset-rm: 8.428 arcsec [123.48σ]
OotOffset-st: 1/1/2/3 [7]
KicOffset-st: 1/1/2/3 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 005956787-01, PDC Light Curves

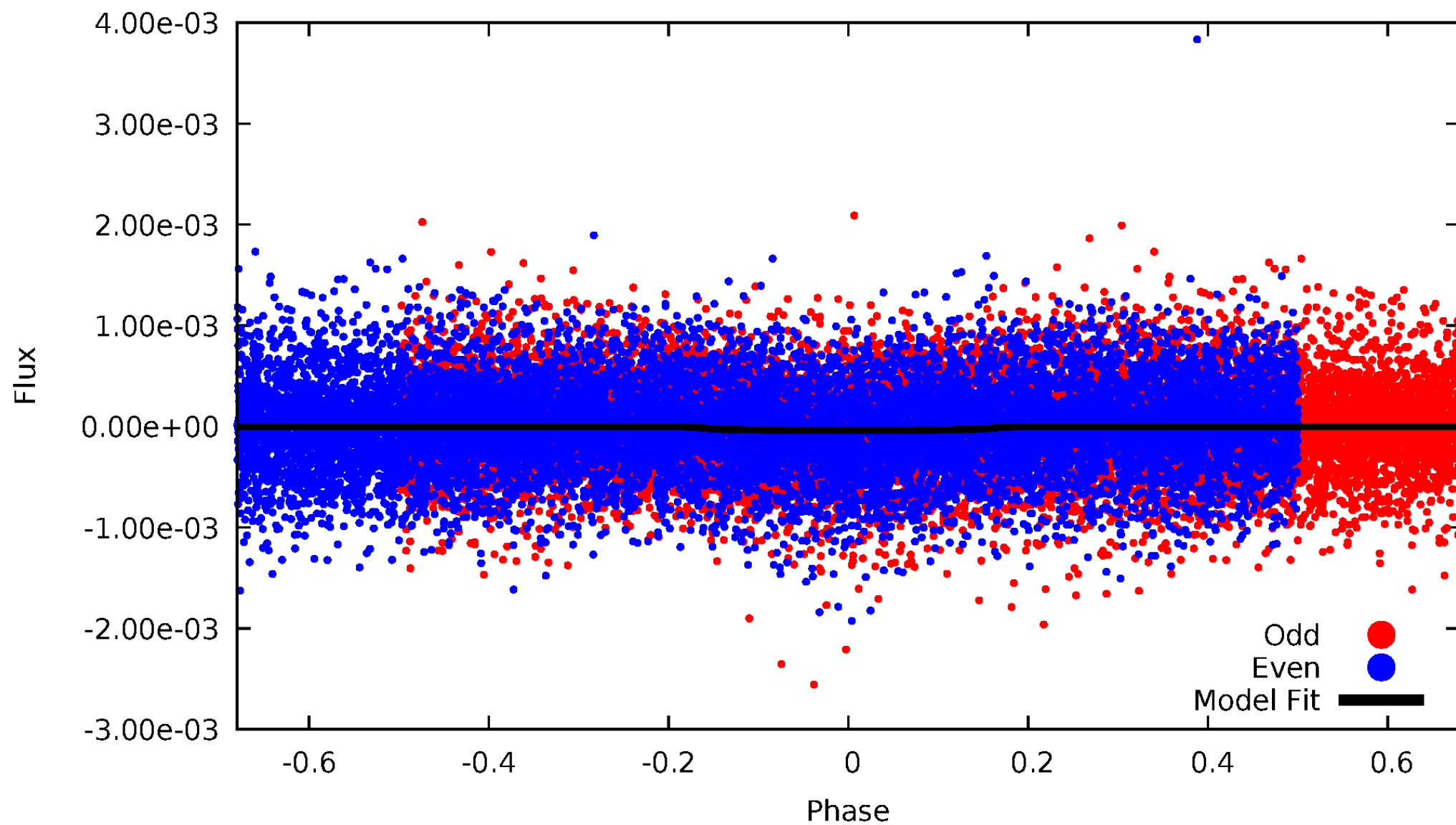


TCE 005956787-01



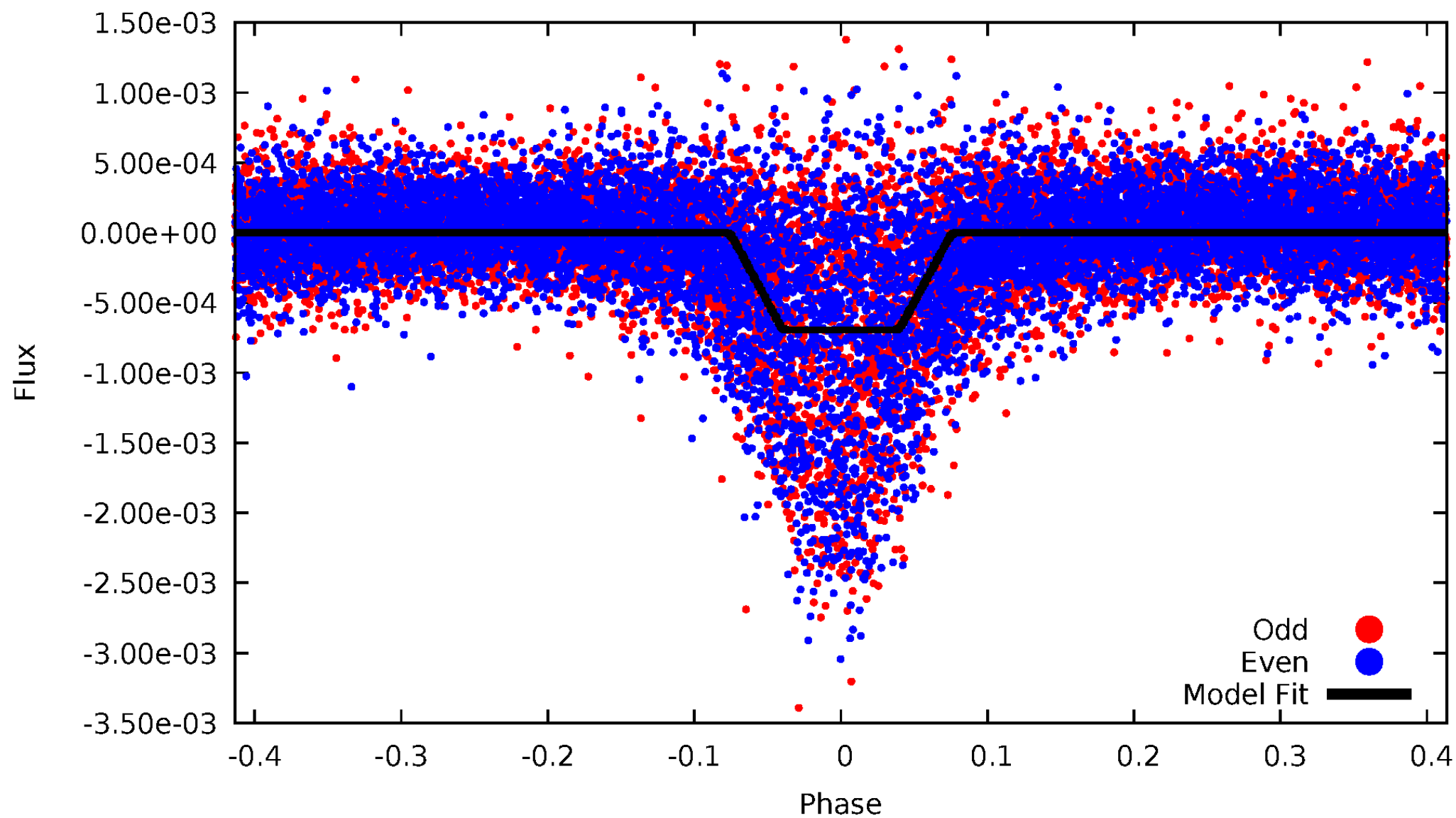
DV Odd/Even

TCE 005956787-01

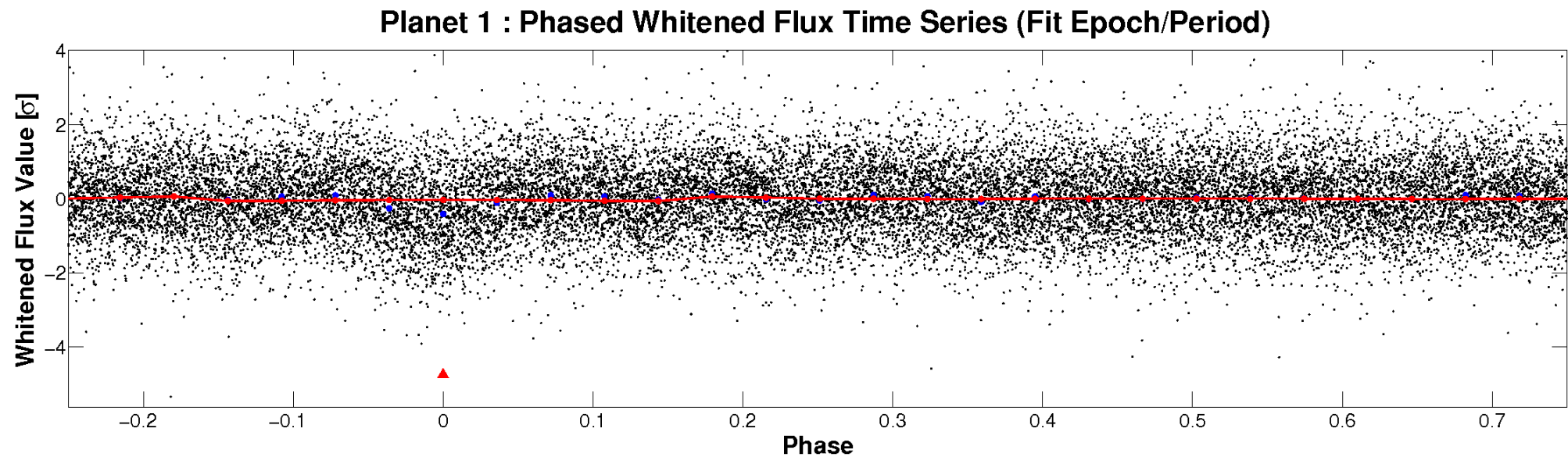
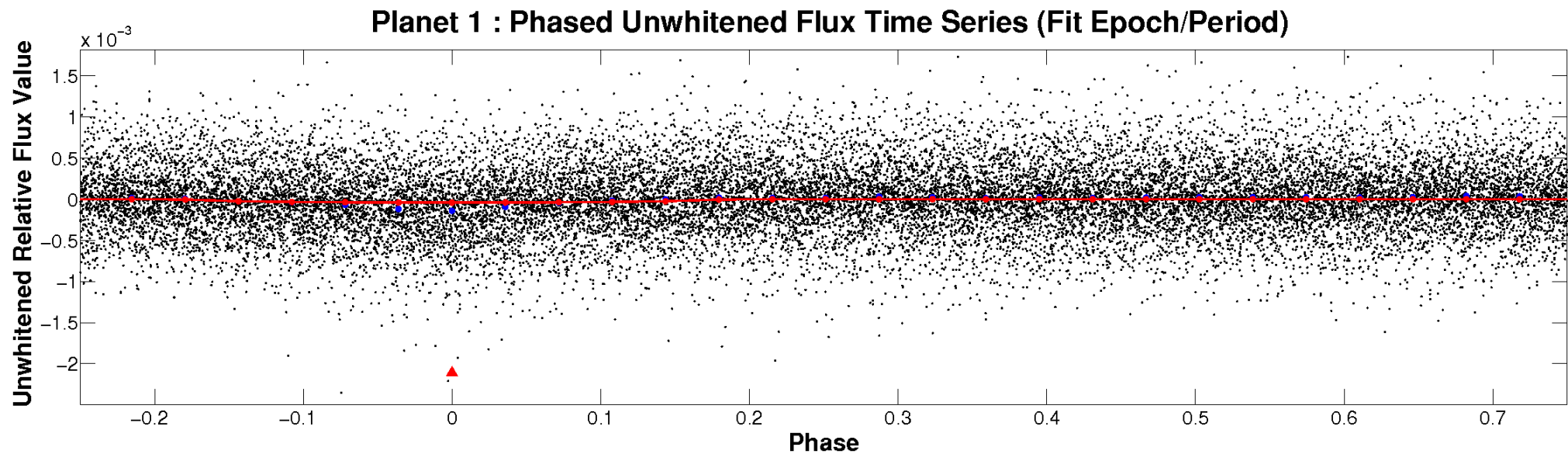


ALT Odd/Even

TCE 005956787-01

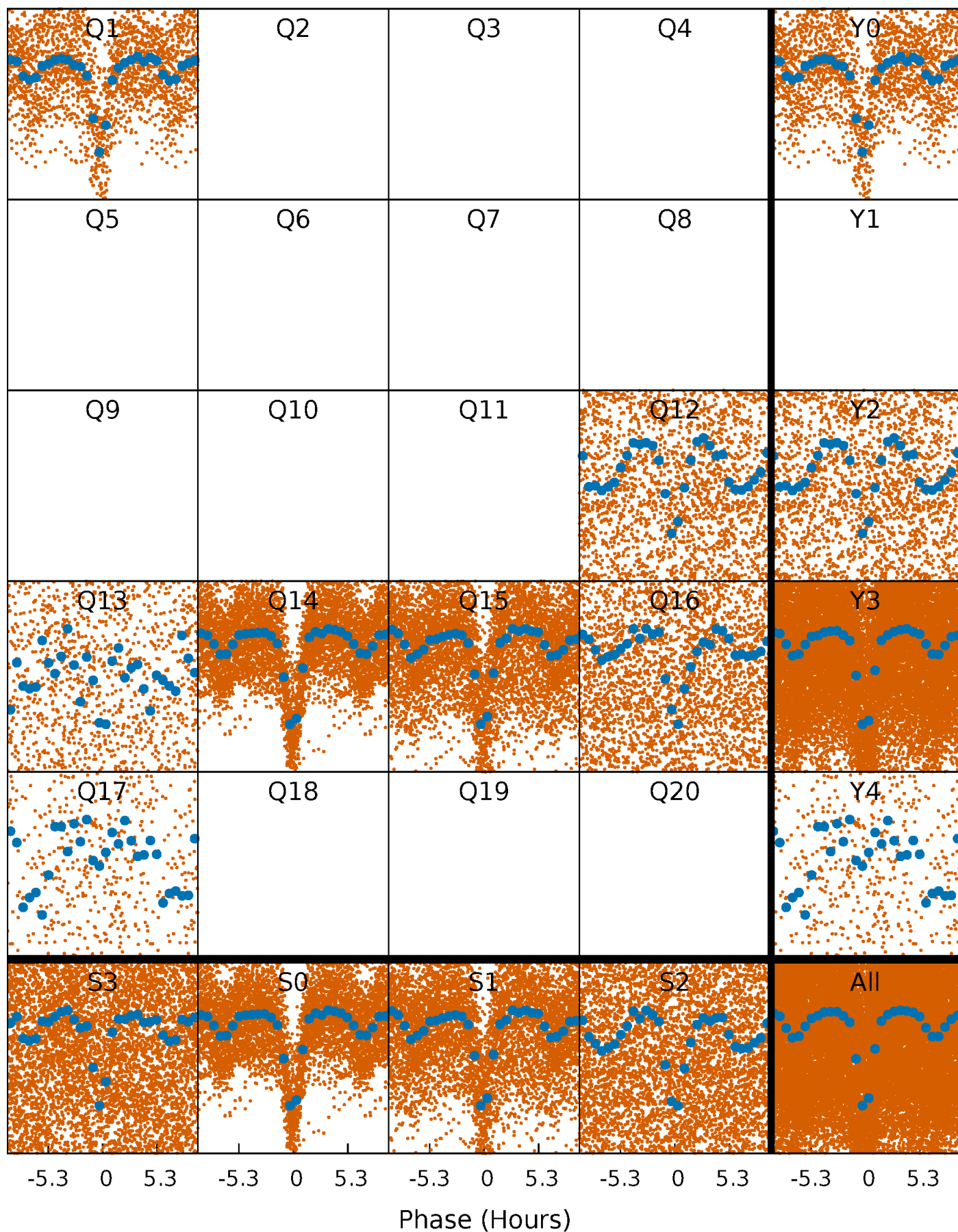


Non-Whitened Vs. Whitened Light Curve



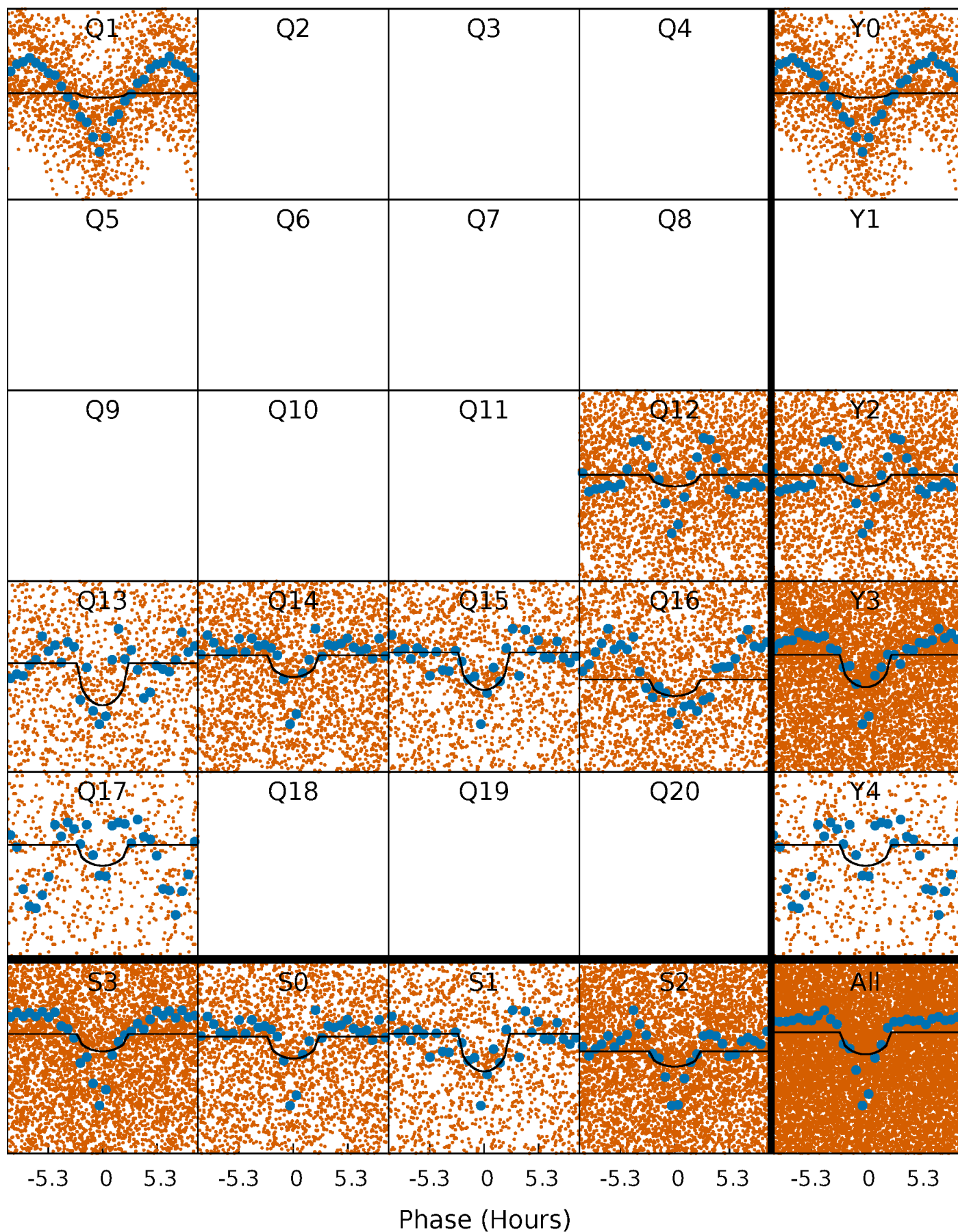
PDC Quarter-Phased Transit Curves

TCE 005956787-01 P= 0.569112 Days $T_0=132.030422$ (BKJD)



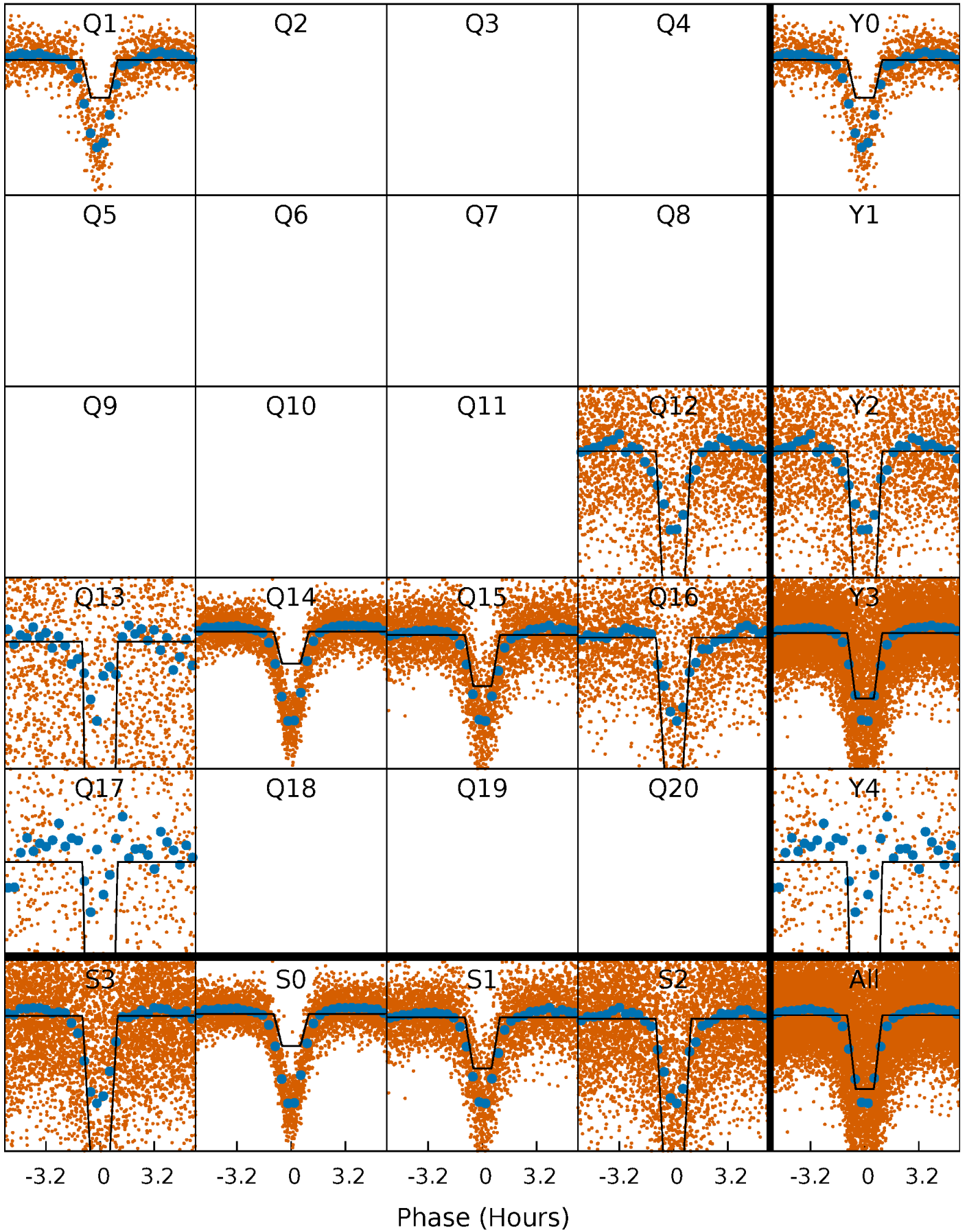
DV Quarter-Phased Transit Curves

TCE 005956787-01 P= 0.569112 Days $T_0=132.030422$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

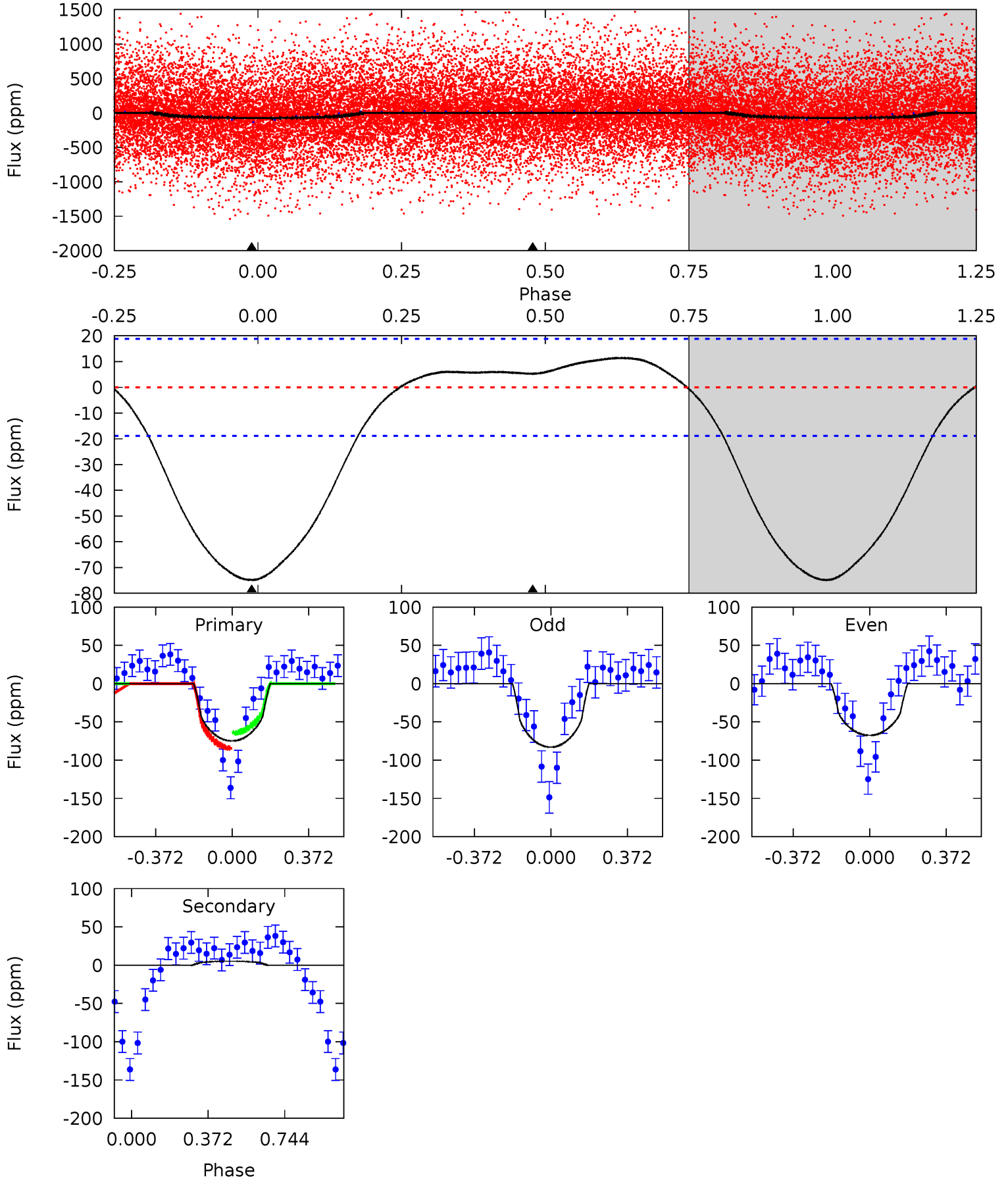
TCE 005956787-01 P= 0.569113 Days $T_0=132.024828$ (BKJD)



DV Model-Shift Uniqueness Test

005956787-01, P = 0.569112 Days, E = 131.461310 Days

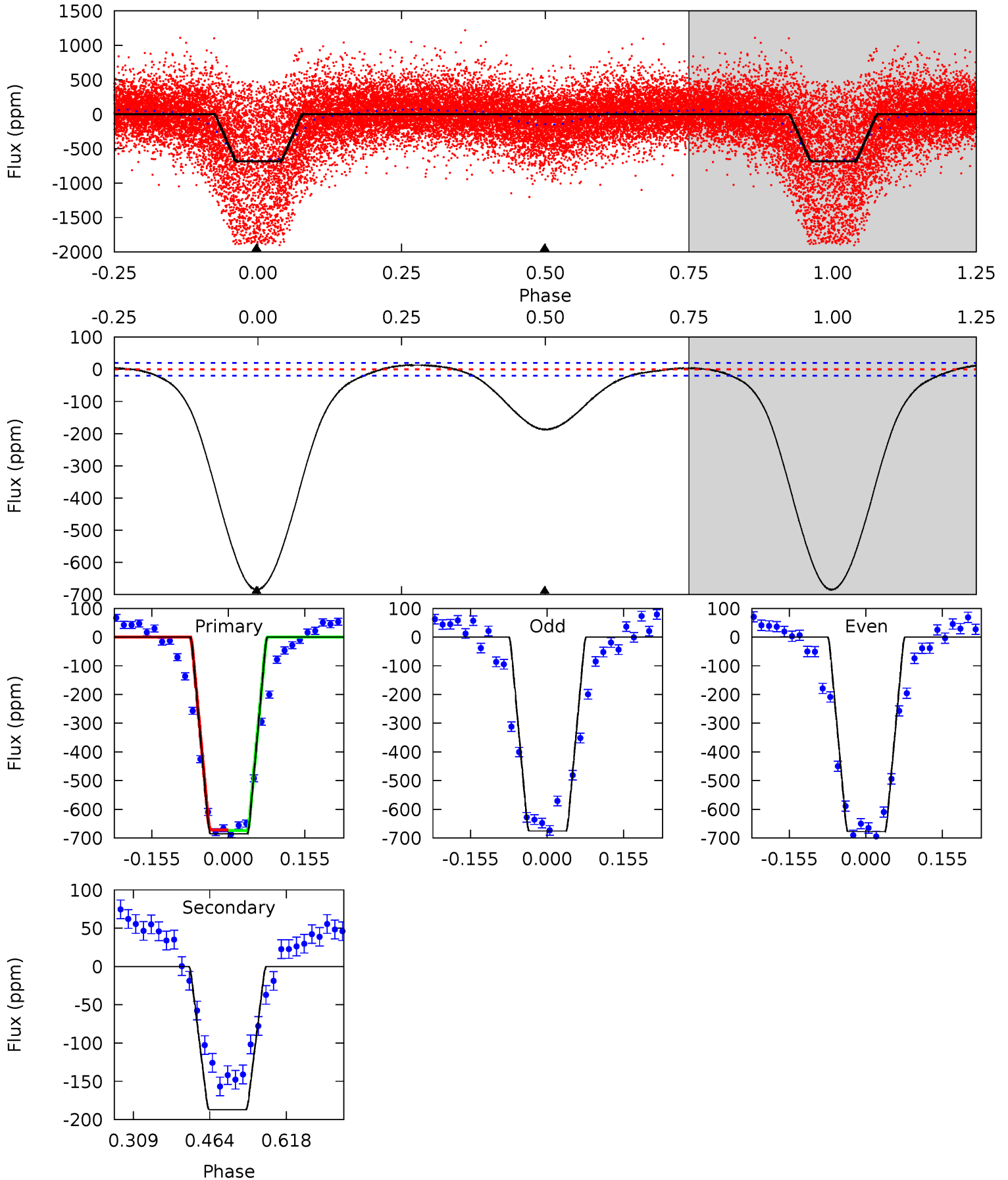
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.0 | -1.19 | 0 | 0 | 4.28 | 0.89 | 0.86 | 17.0 | 17.0 | -1.19 | -1.19 | 1.74 | 1.22 | 0.13 | 2.21 |



Alt Model-Shift Uniqueness Test

005956787-01, P = 0.569113 Days, E = 131.455715 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 154.0 | 42.0 | 0 | 0 | 4.47 | 1.42 | 3.09 | 154.0 | 154.0 | 42.0 | 42.0 | 0.25 | 1.12 | 0.02 | 0 |



Stellar Parameters For KIC 005956787

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4788^{+169}_{-169} | $4.610^{+0.063}_{-0.032}$ | $-0.440^{+0.300}_{-0.300}$ | $0.656^{+0.059}_{-0.059}$ | $0.639^{+0.078}_{-0.042}$ | $3.190^{+0.844}_{-0.462}$ |
| | +4%/-4% | +1%/-1% | +68%/-68% | +9%/-9% | +12%/-7% | +26%/-14% |
| Source | PHO54 | PHO54 | PHO54 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 005956787-01 / KOI 2616.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|--------------------|-----------------------|----------------------------|
| DV | 5 ± 4 | $0.41^{+0.22}_{-0.21}$ | 2209^{+86}_{-88} | -3417^{+666}_{-967} | $-1.997^{+1.765}_{-7.264}$ |
| Alt. | -187 ± 4 | $1.88^{+0.22}_{-0.21}$ | 2210^{+92}_{-96} | 3711^{+200}_{-175} | $4.011^{+0.972}_{-0.835}$ |

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 $A_{obs} \gg 1.0$

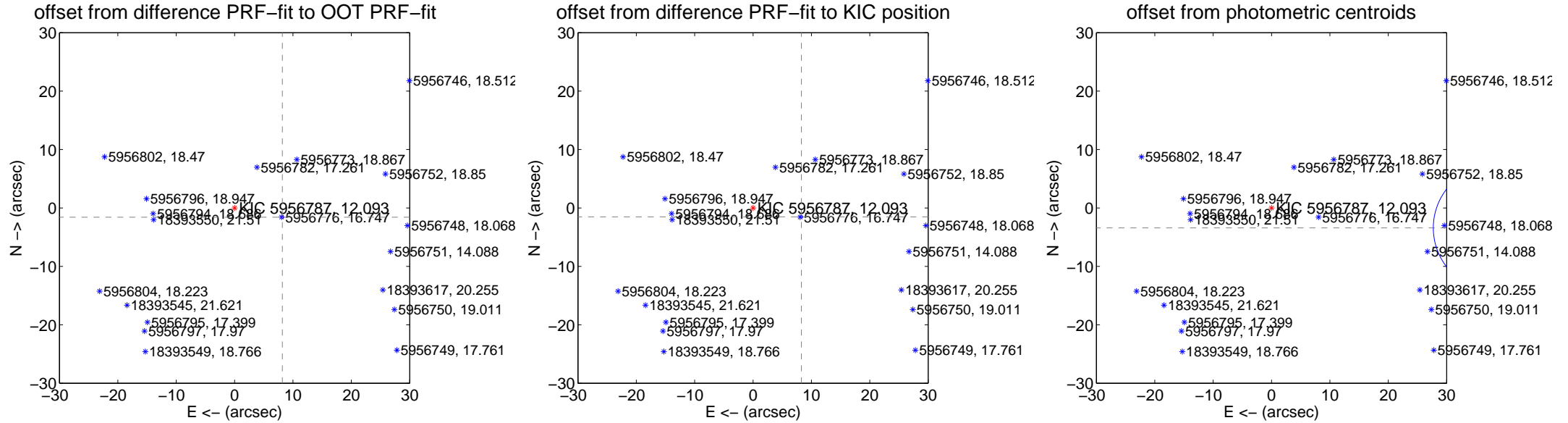
DV Centroid Data

Supplemental centroid analysis for 005956787-01. Kepler magnitude: 12.09. Transit SNR 5.37

There are 7 quarters with good PRF difference image offsets

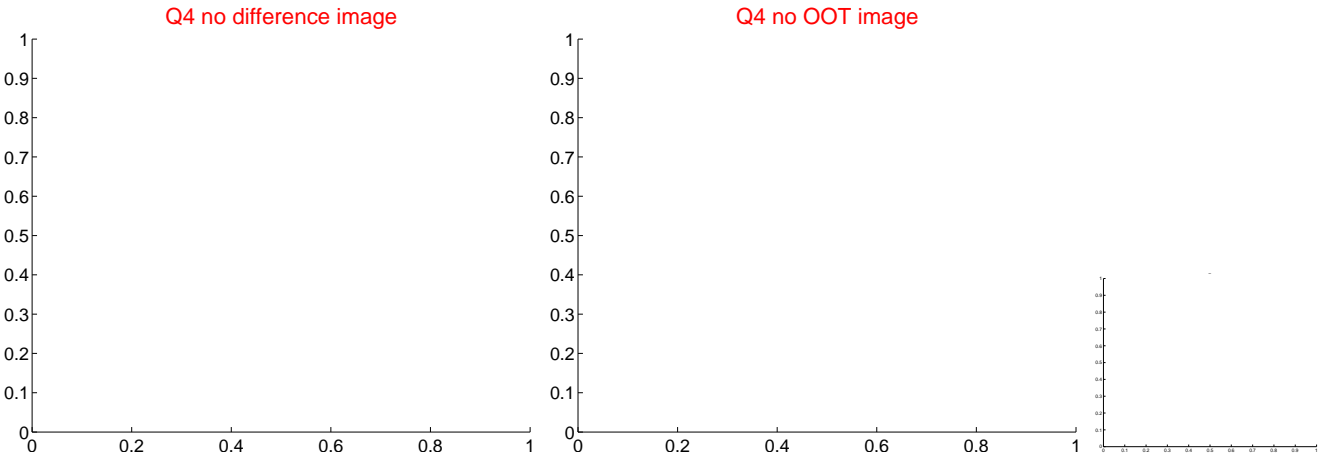
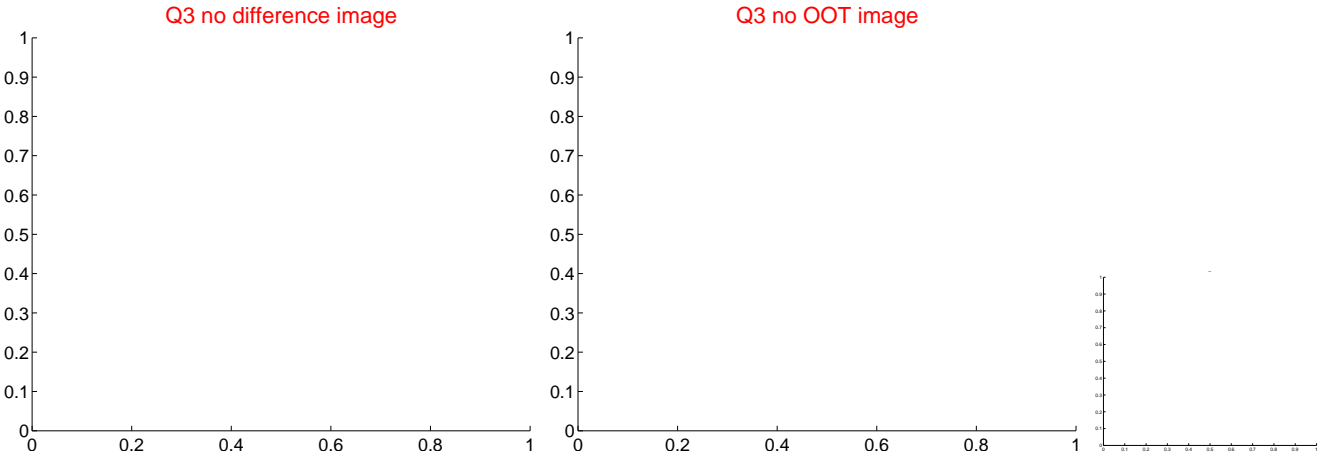
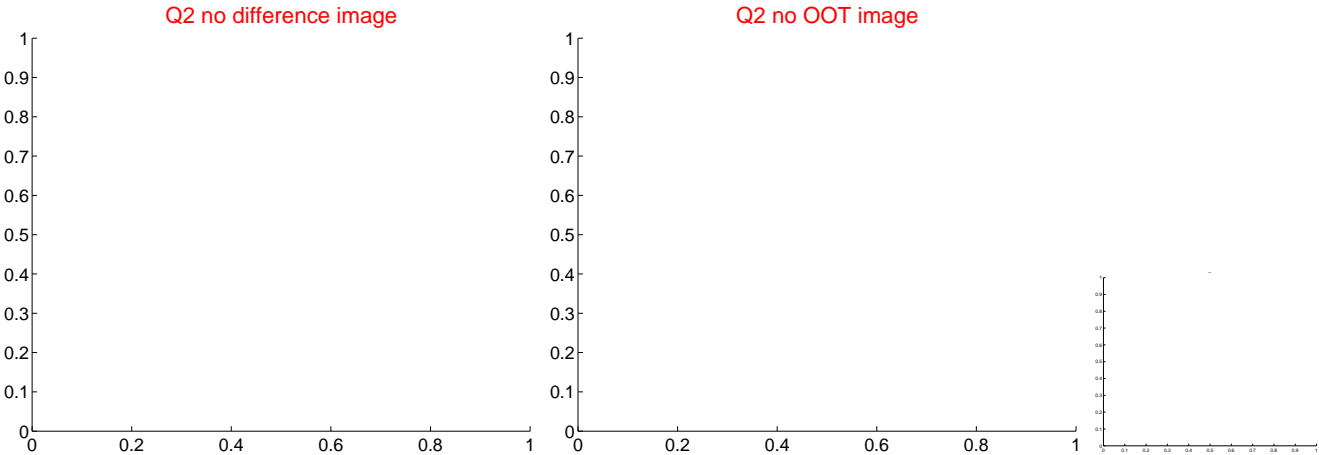
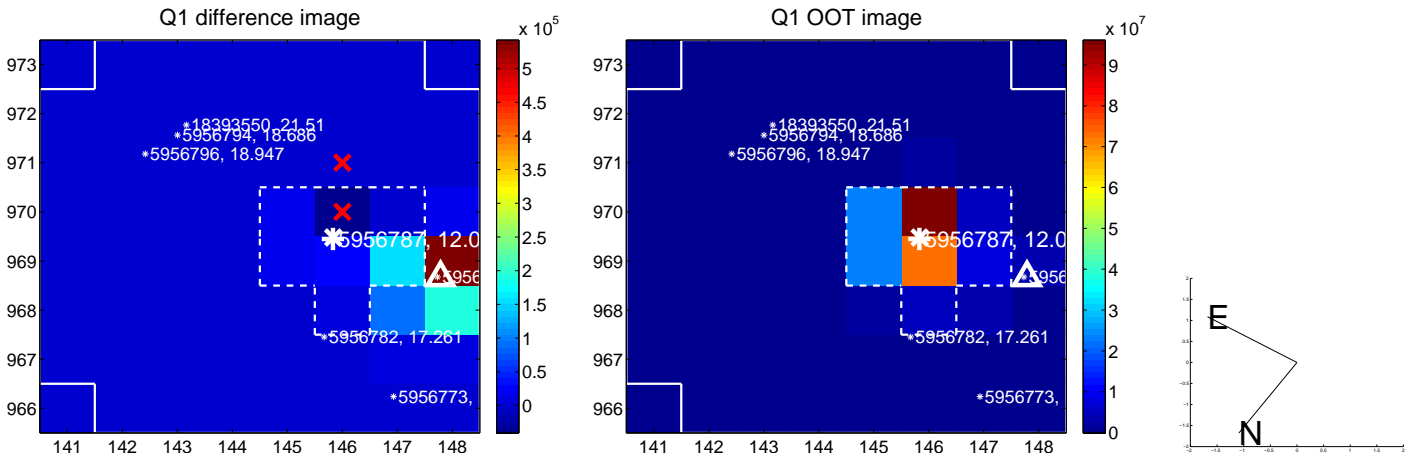
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 8.331 \pm 0.070 | 118.93 | -8.178 \pm 0.070 | -1.585 \pm 0.067 |
| PRF-fit source offset from KIC position | 8.428 \pm 0.068 | 123.48 | -8.287 \pm 0.068 | -1.532 \pm 0.068 |
| photometric centroid source offset | 38.73 \pm 3.62 | 10.70 | -38.58 \pm 3.64 | -3.42 \pm 0.50 |

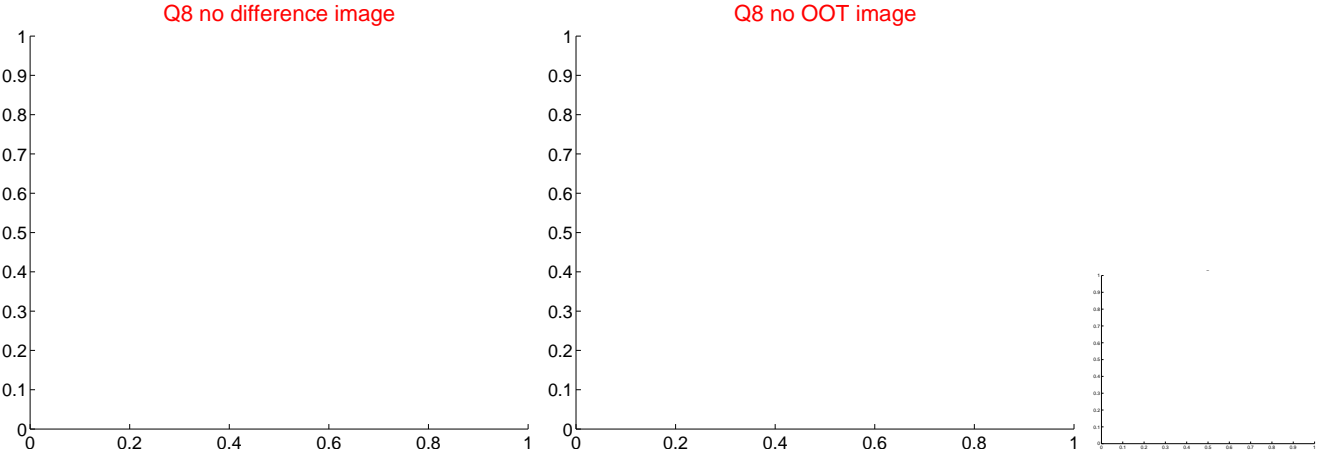
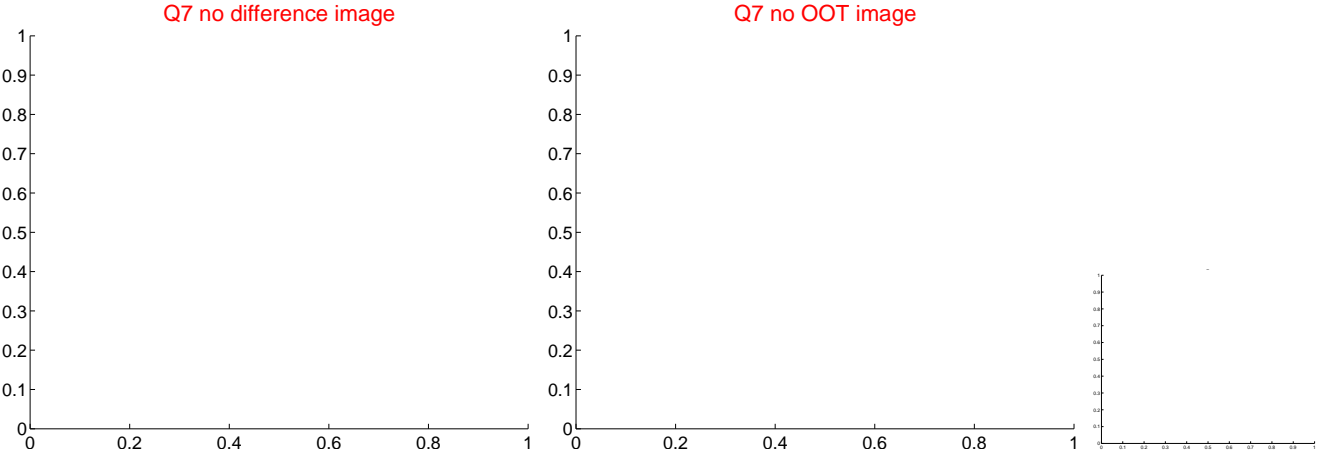
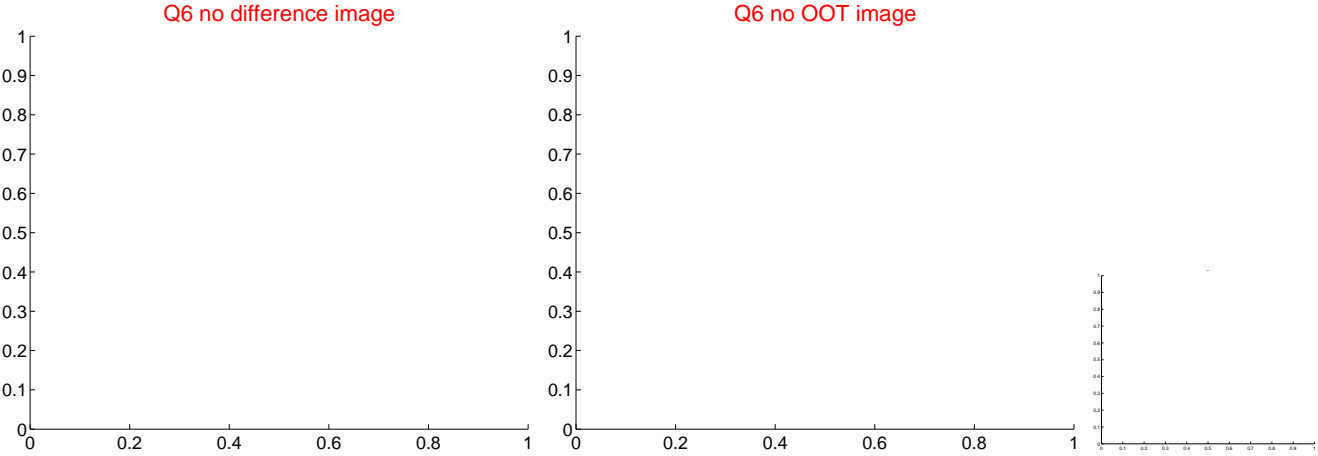
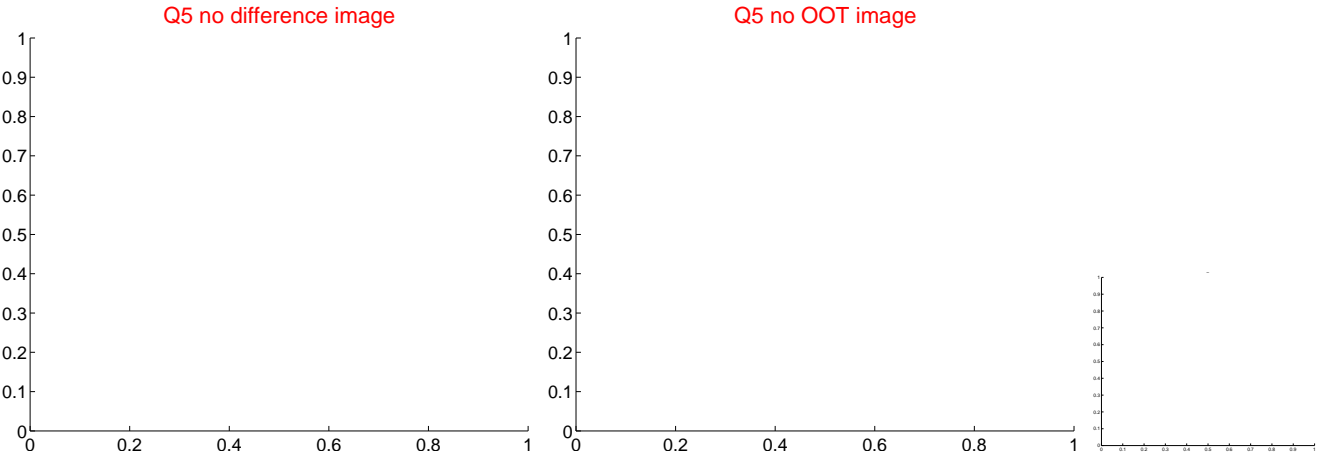


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

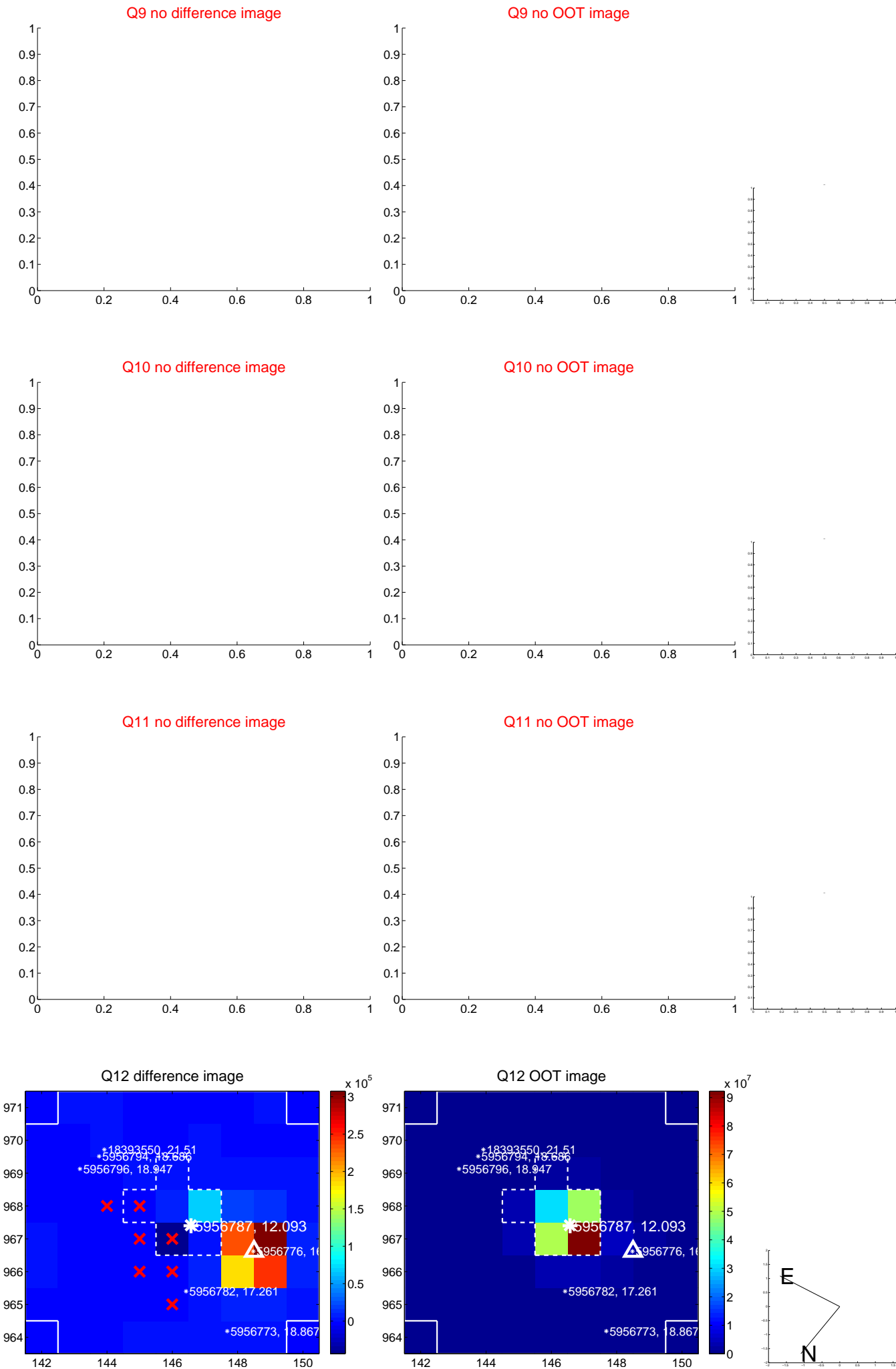
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



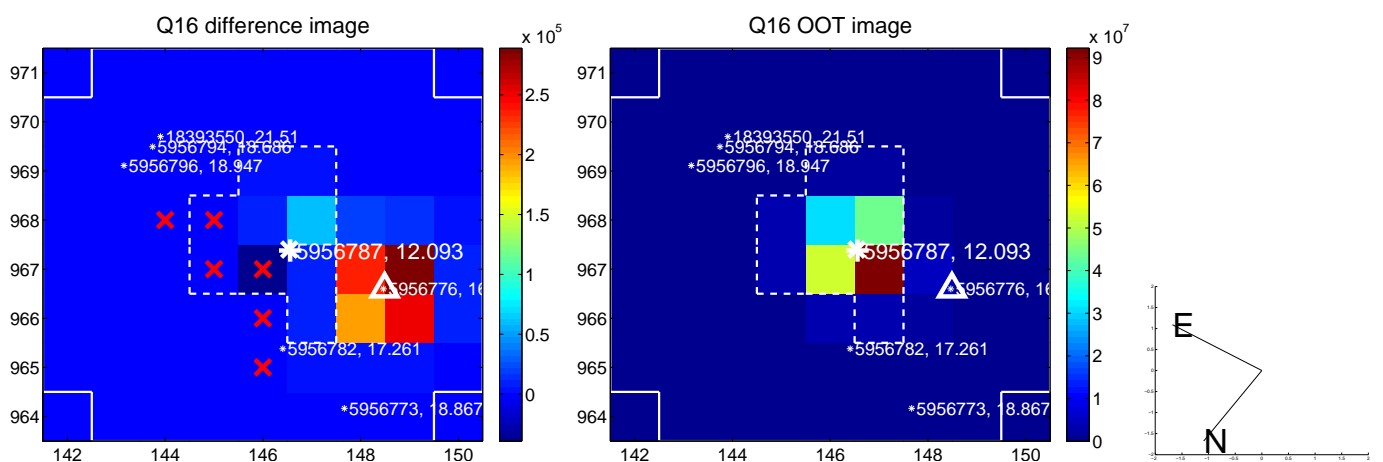
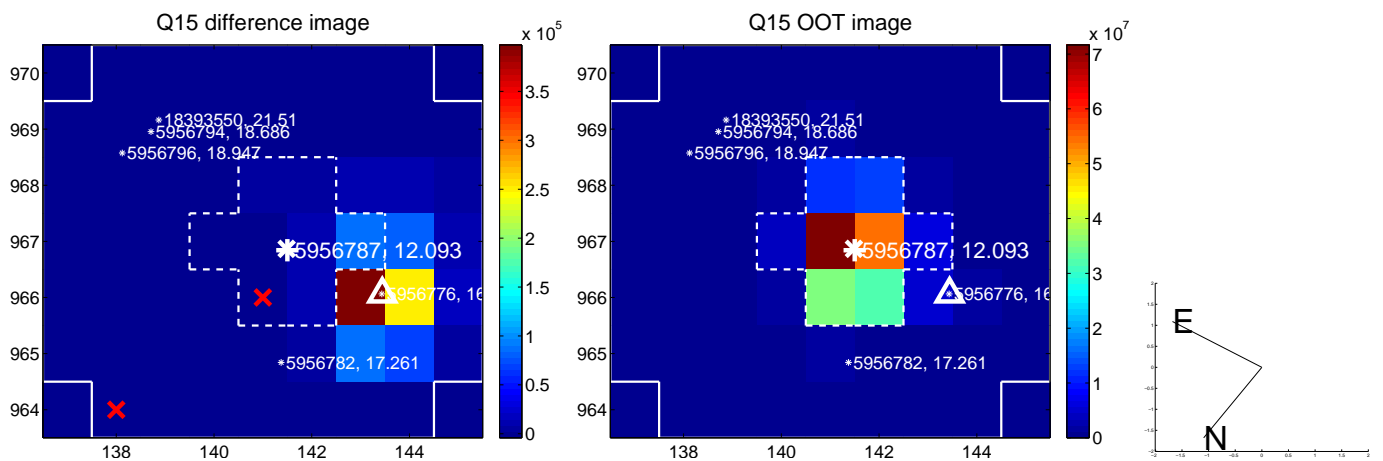
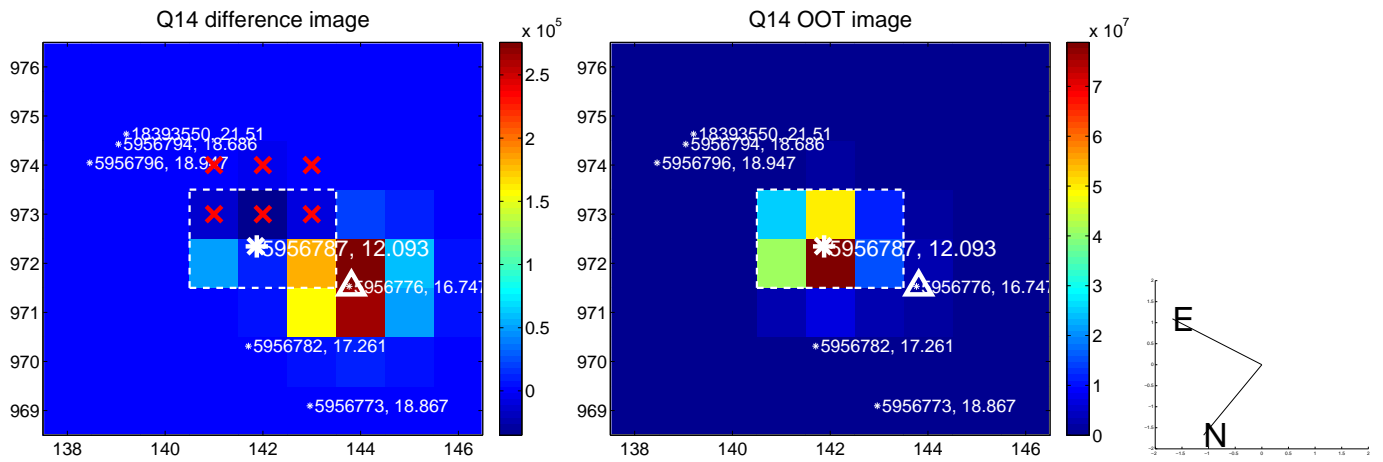
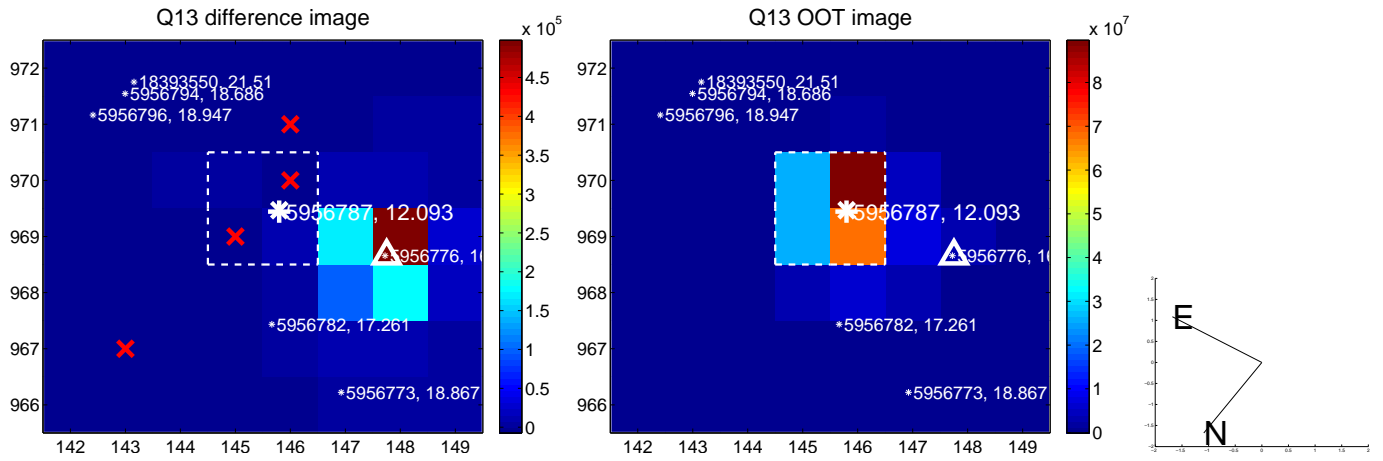
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



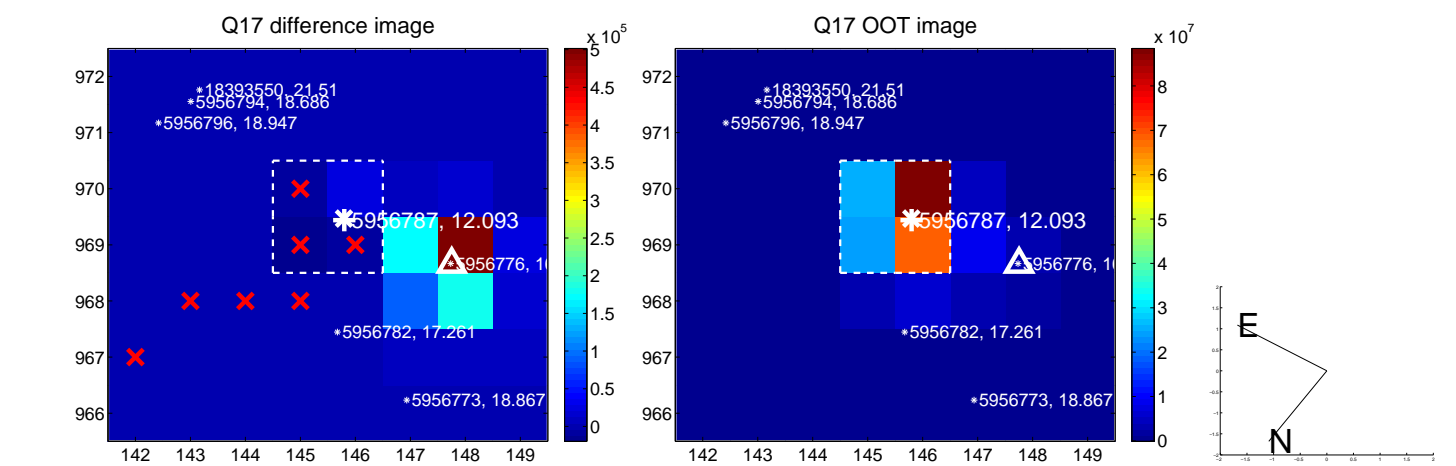
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



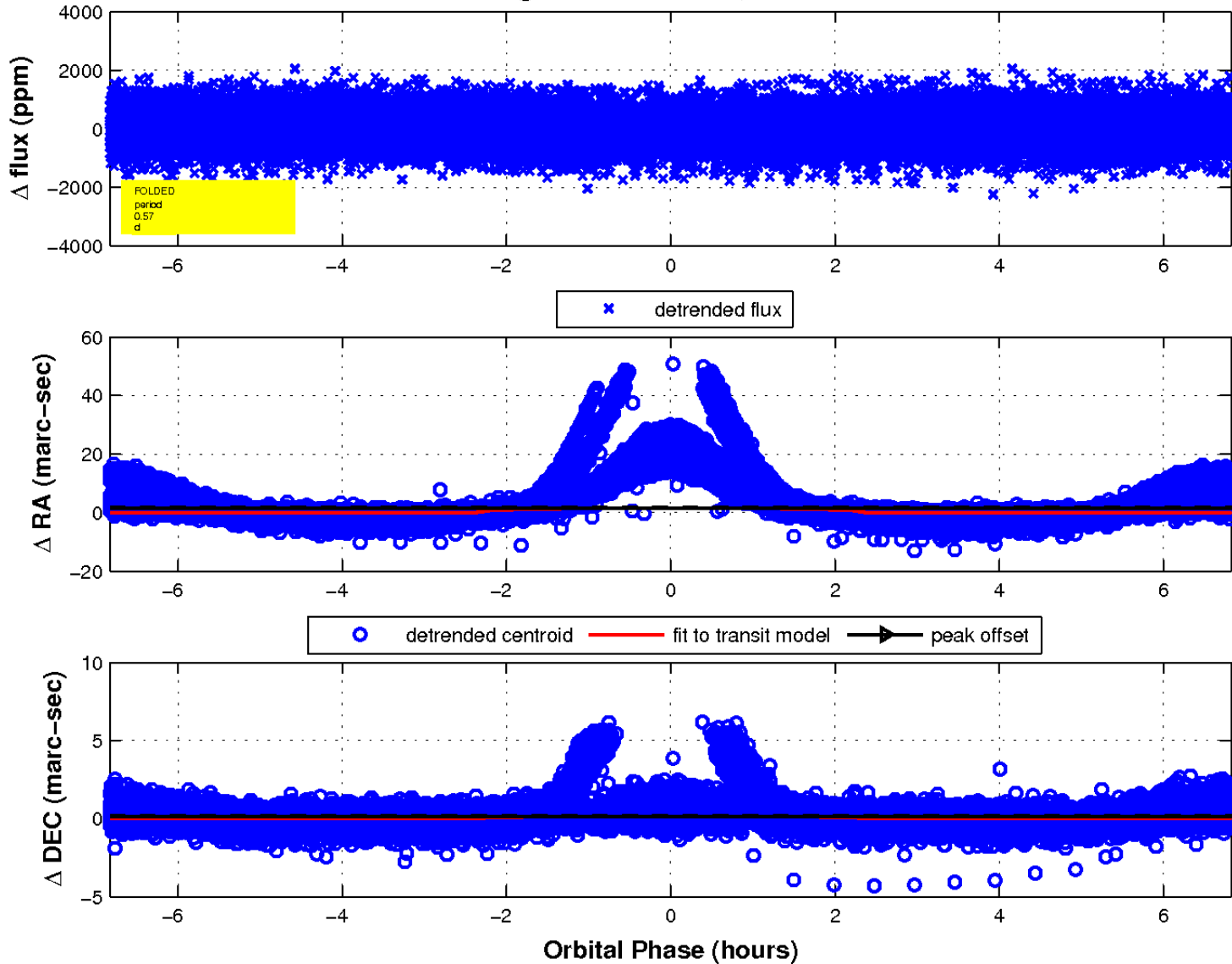
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

