

KIC 009007953

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 _⊕) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 009007953-01 | OBS | 7123.01 | 1.387208 | 132.850055 | 49.1 | 2.683 | 8.0 | 8.8 | 1.00 | 6122 | 0.82 | 2012.73 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009007953-01 | OBS | FP | 0.00 | 0 | 0 | 1 | 1 | CENT_UNRESOLVED_OFFSET—HALO_GHOST—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.

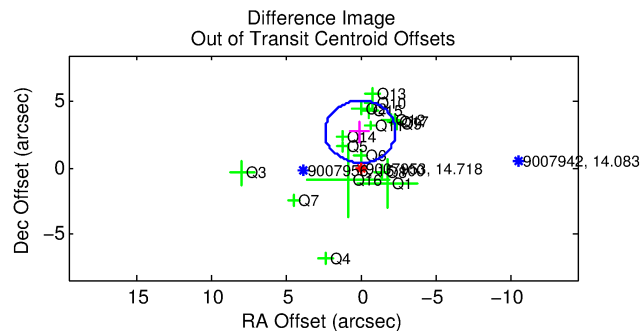
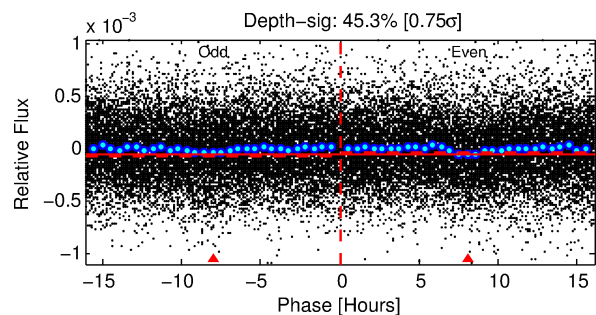
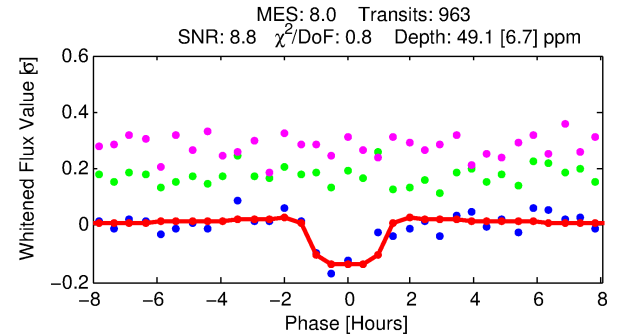
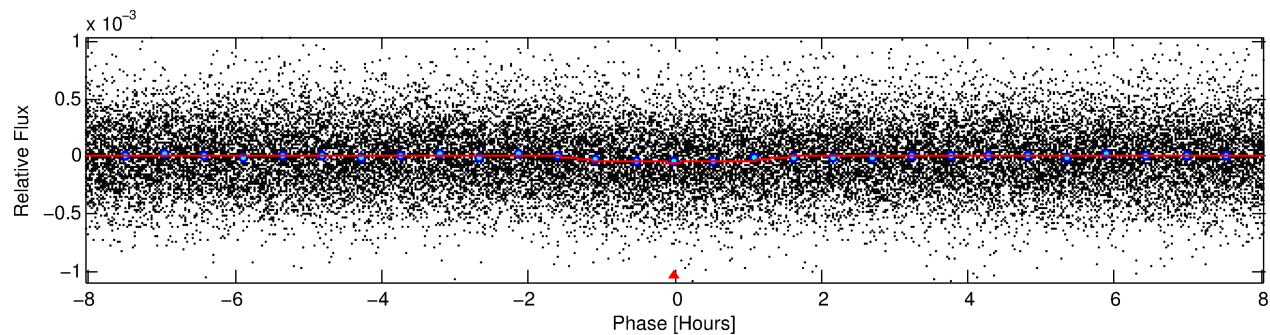
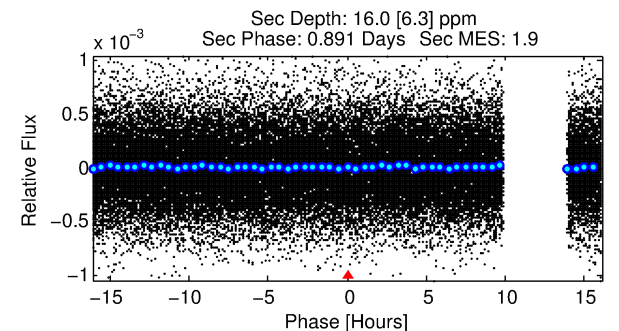
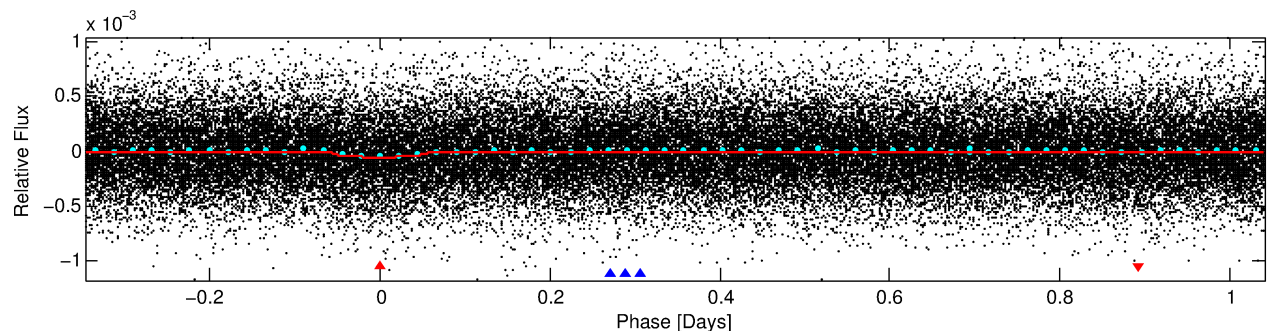
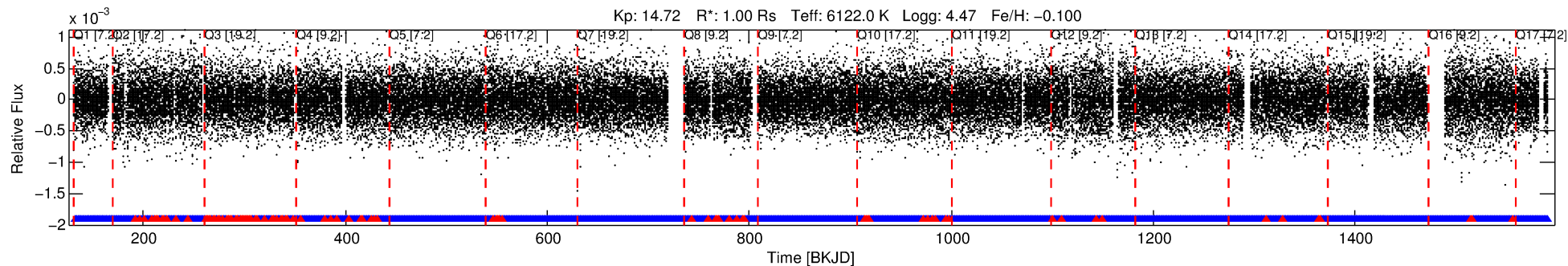
Ephemeris Match Information For 009007953-01

| 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 |
|--------------|---------|---------------|------------|--------------------------------|----------|------|------|----------------|----------------|--------------------------------|------------|------|----------------|----------------|
| 009007953-01 | 9007953 | 009007918-pri | 9007918 | 1:1 | 55.1 | 0 | -14 | 11.66 | 14.72 | 3161.20 | Direct-PRF | 0 | 0.04 | 0.37 |

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: 9007953 Candidate: 1 of 2 Period: 1.387 d
KOI: K07123.01 Corr: 0.918



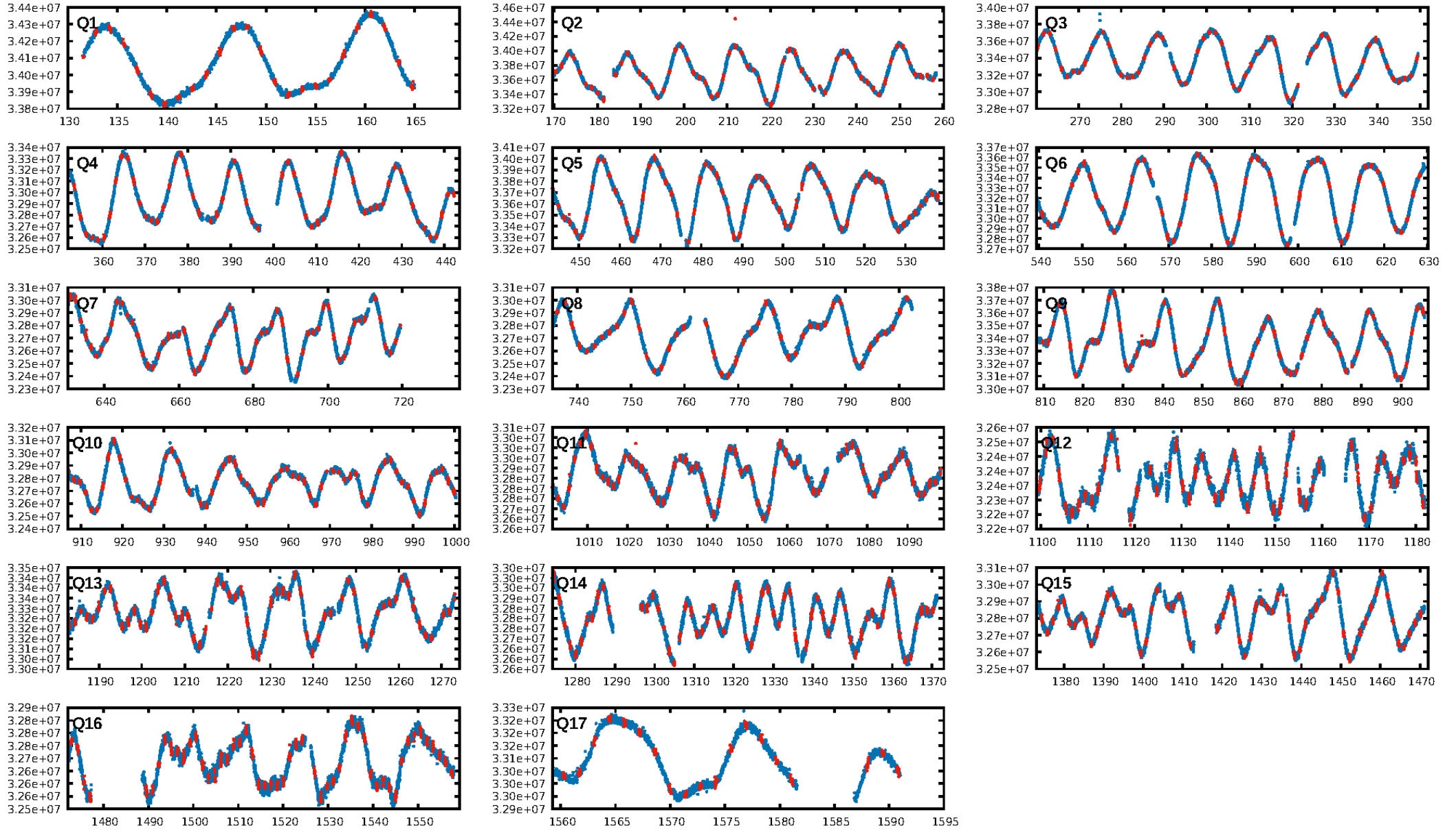
DV Fit Results:

Period = 1.38721 [0.00001] d
Epoch = 132.8501 [0.0035] BKJD
Rp/R* = 0.0075 [0.0043]
a/R* = 2.04 [4.71]
b = 0.90 [0.68]
Seff = 2012.73 [787.44]
Teq = 1708 [167] K
Rp = 0.82 [0.53] Re
a = 0.0249 [0.0062] AU
Ag = 8.13 [10.26] [0.70σ]
Teffp = 4459 [1355] K [2.02σ]

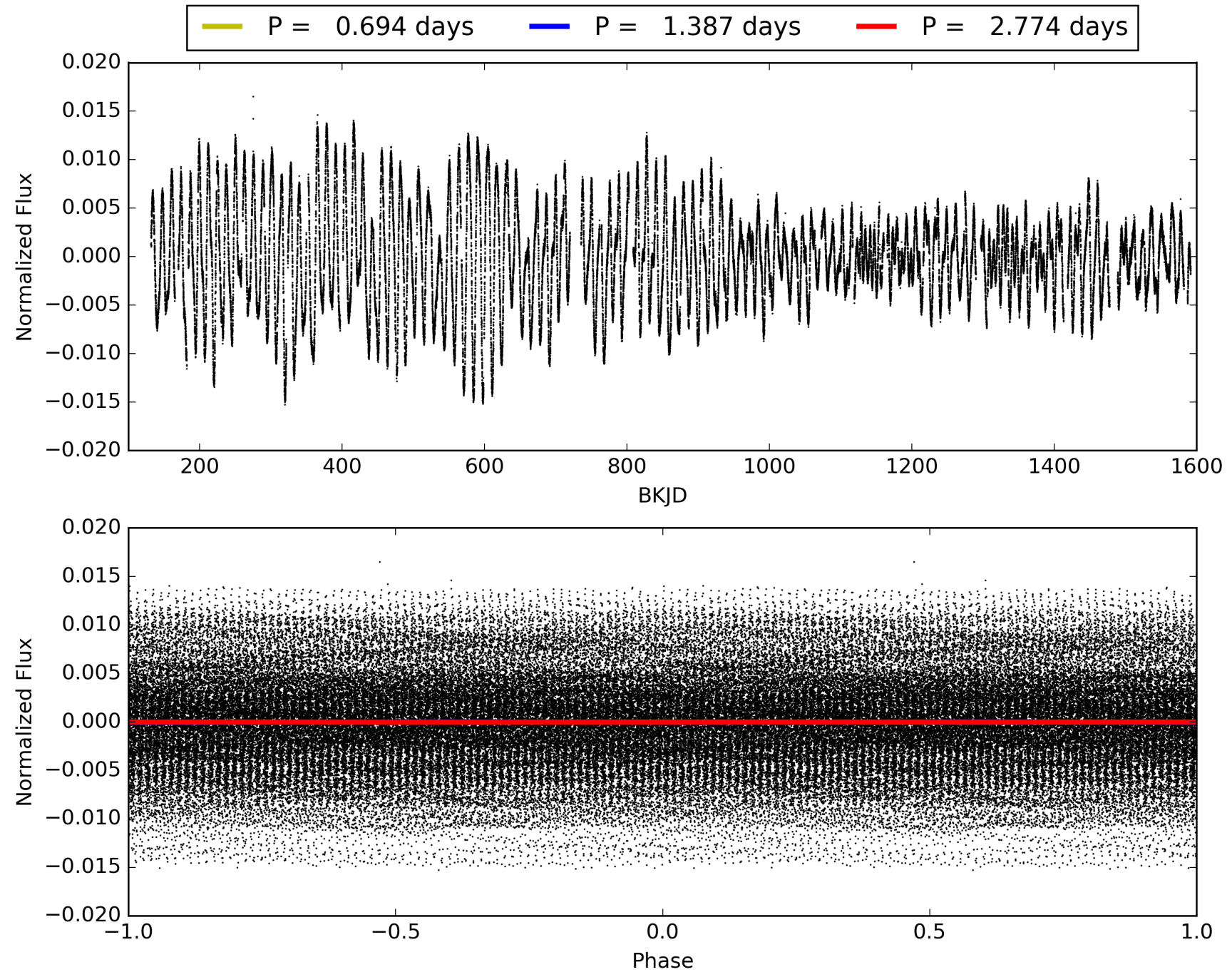
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1748.85σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.16e-14
RollingBand-fgt: 0.90 [826/919]
GhostDiagnostic-chr: 0.1145
Centroid-sig: 2.9%
Centroid-so: 0.183 arcsec [0.13σ]
OotOffset-rm: 2.720 arcsec [3.46σ]
KicOffset-rm: 2.599 arcsec [3.20σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.12 [2/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009007953-01, PDC Light Curves

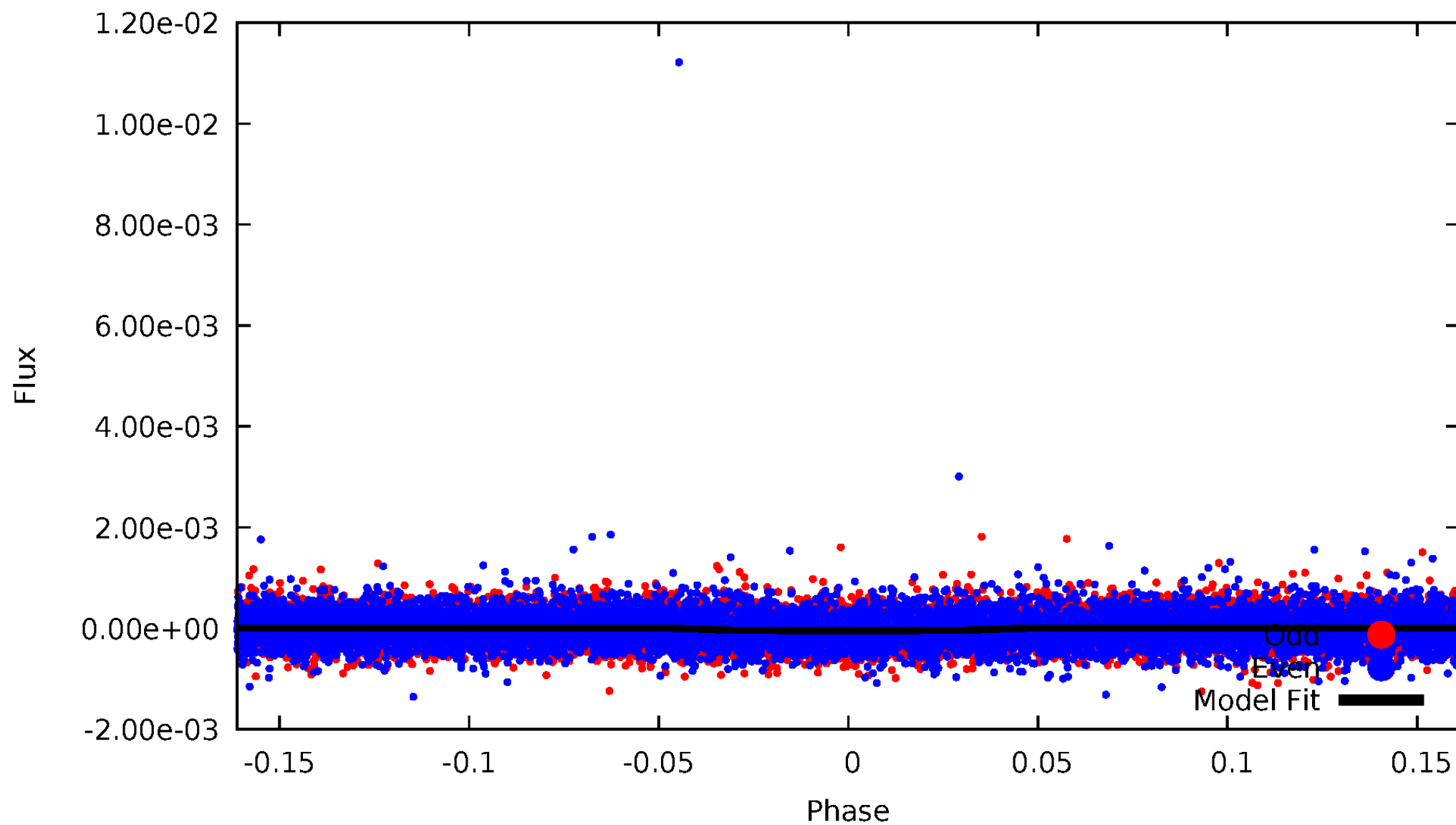


TCE 009007953-01



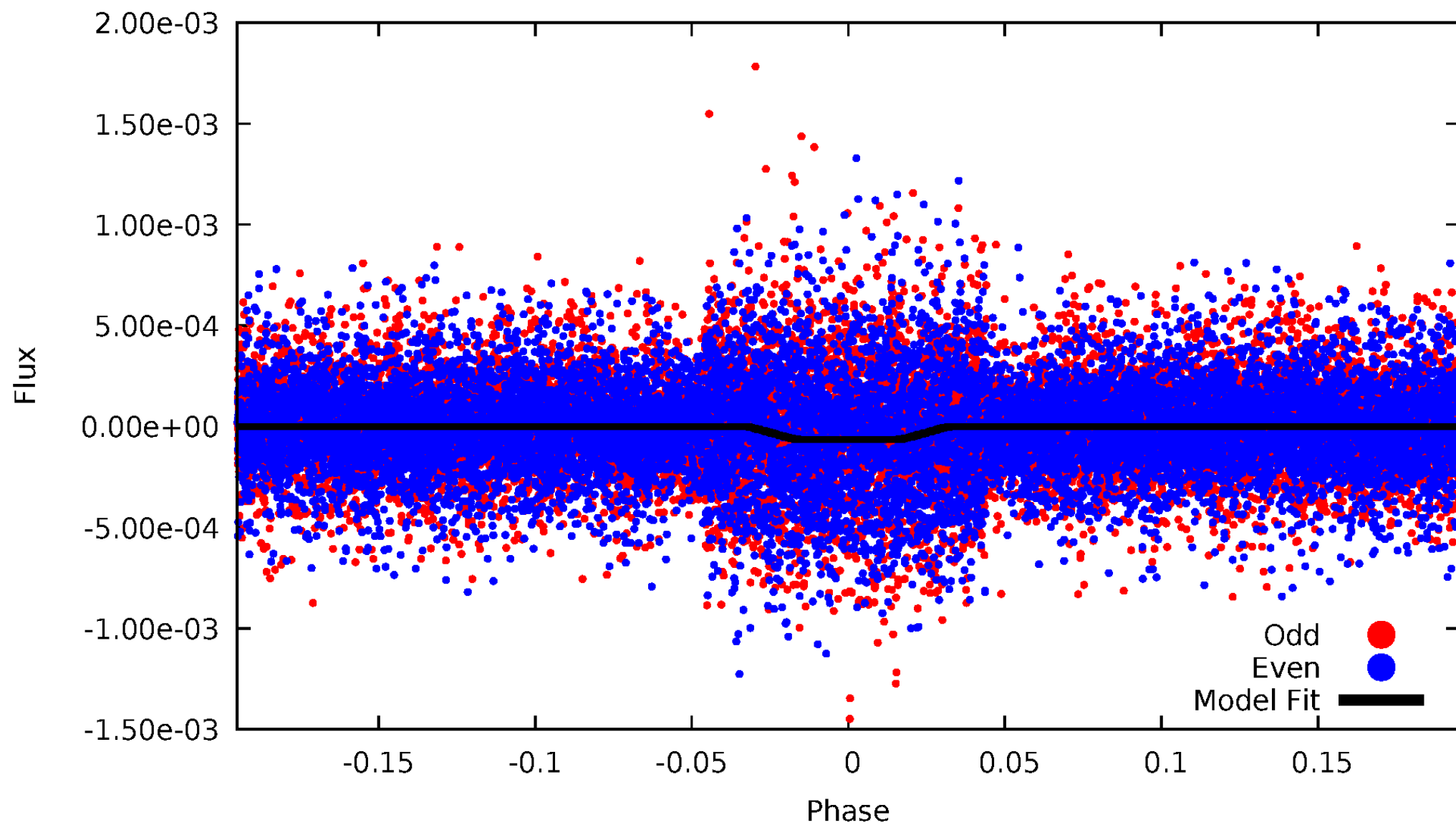
DV Odd/Even

TCE 009007953-01

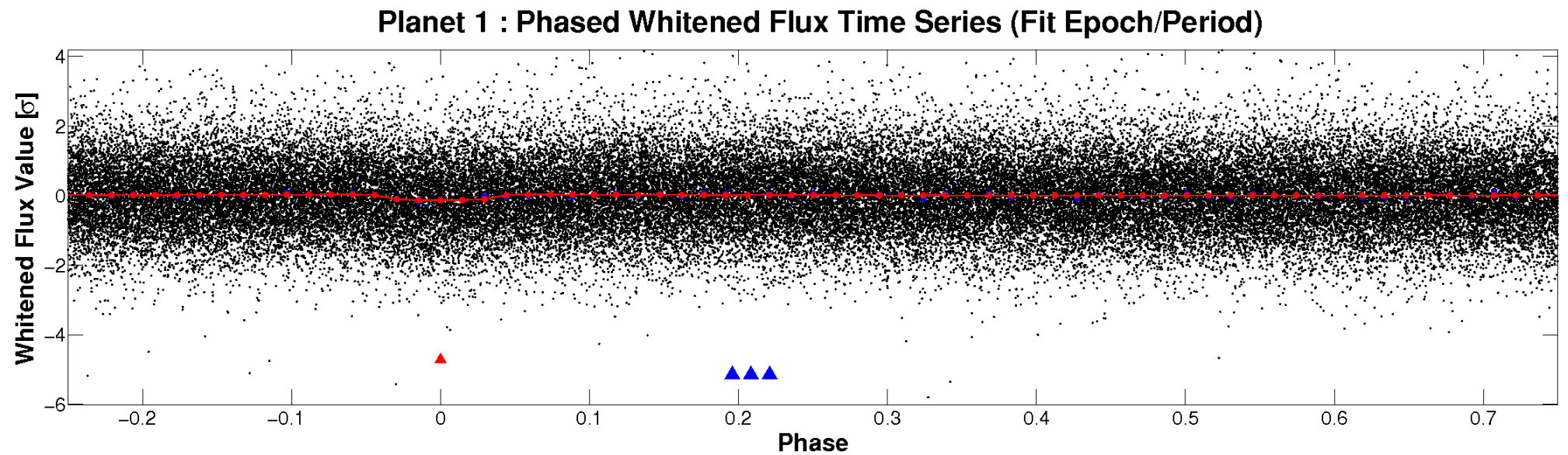
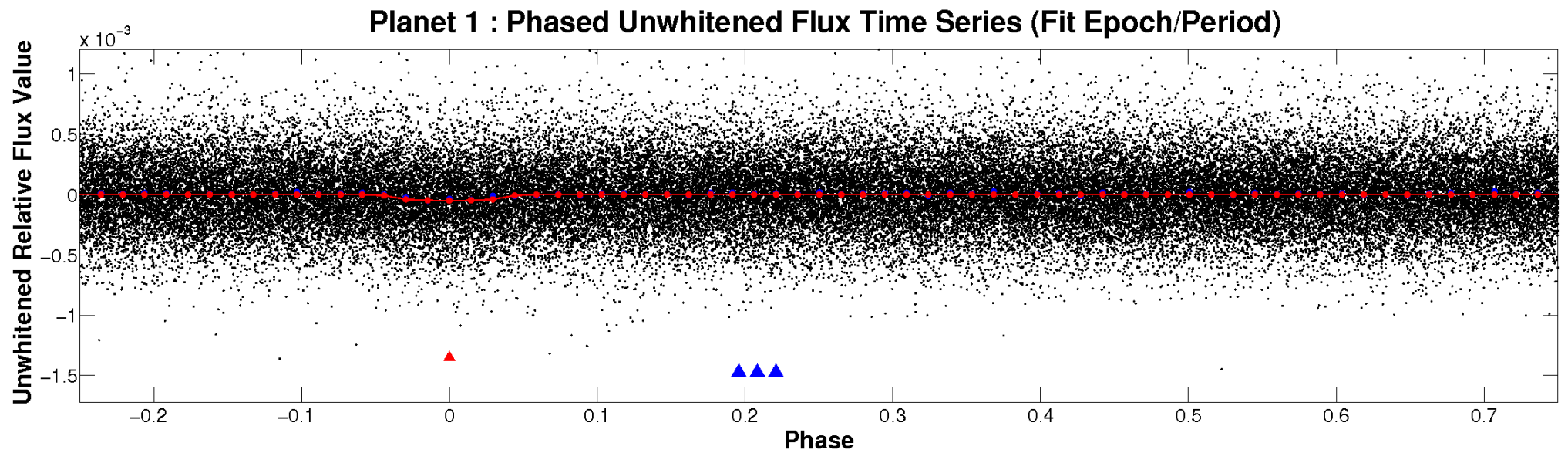


ALT Odd/Even

TCE 009007953-01

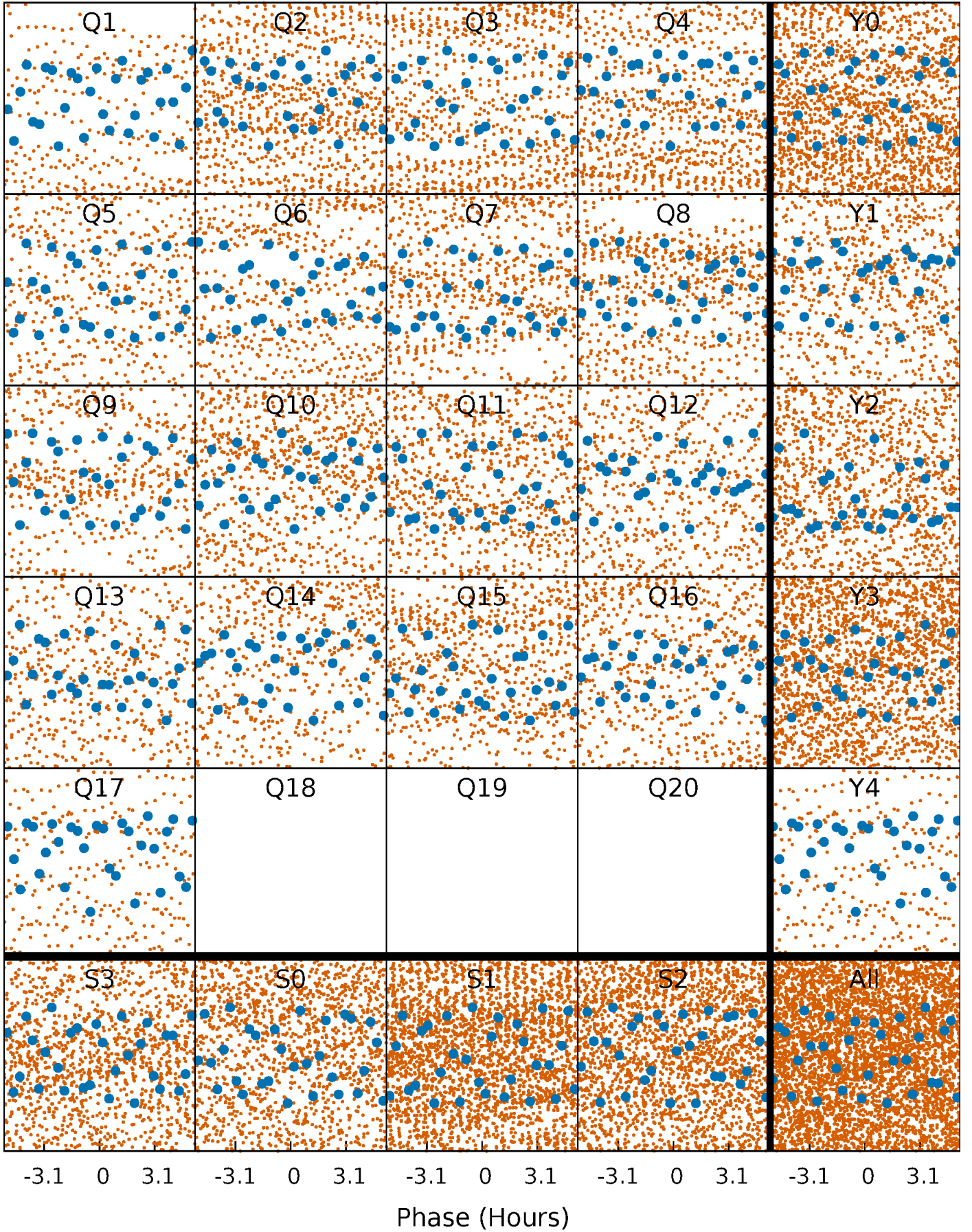


Non-Whitened Vs. Whitened Light Curve



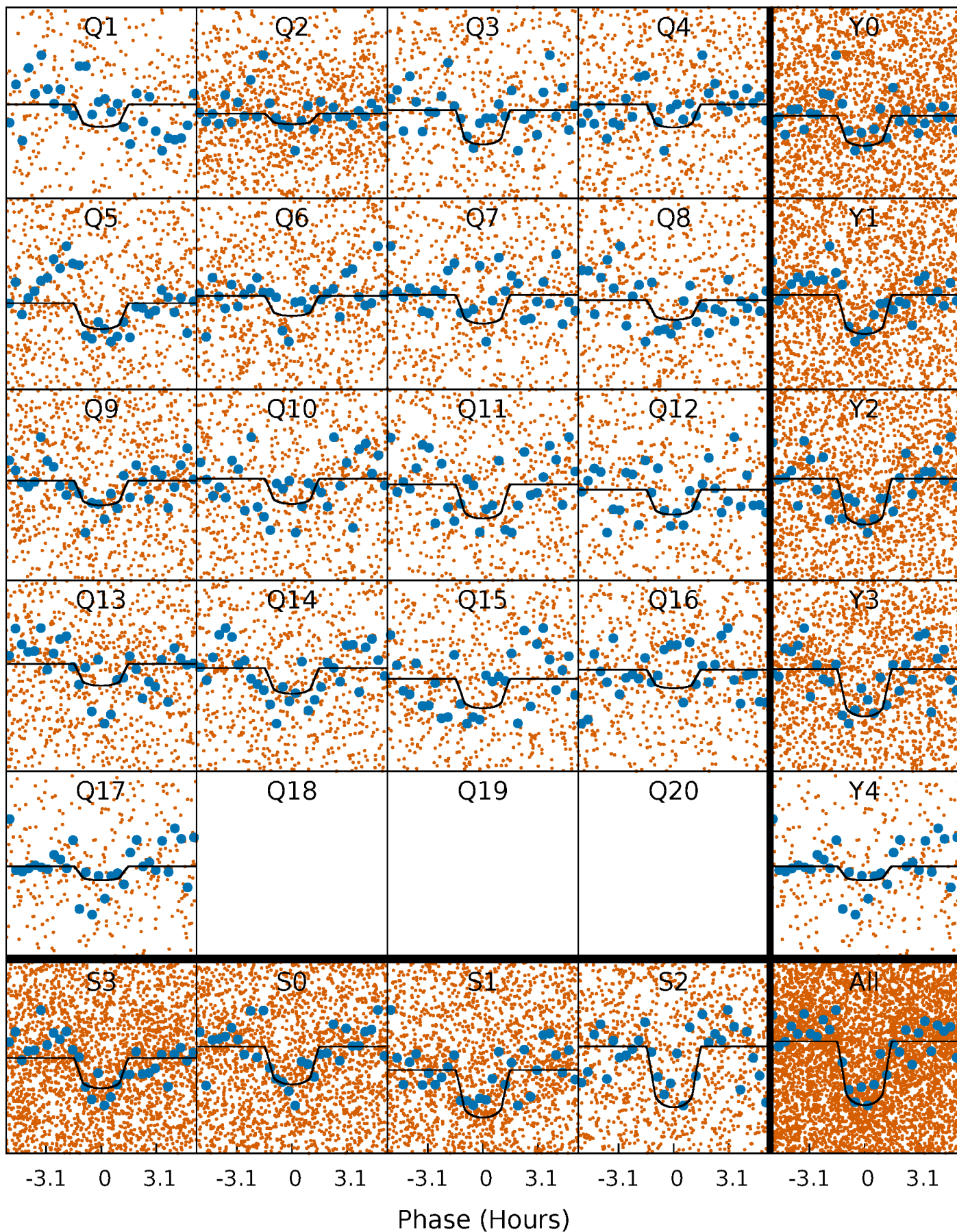
PDC Quarter-Phased Transit Curves

TCE 009007953-01 P= 1.387208 Days $T_0=132.850055$ (BKJD)



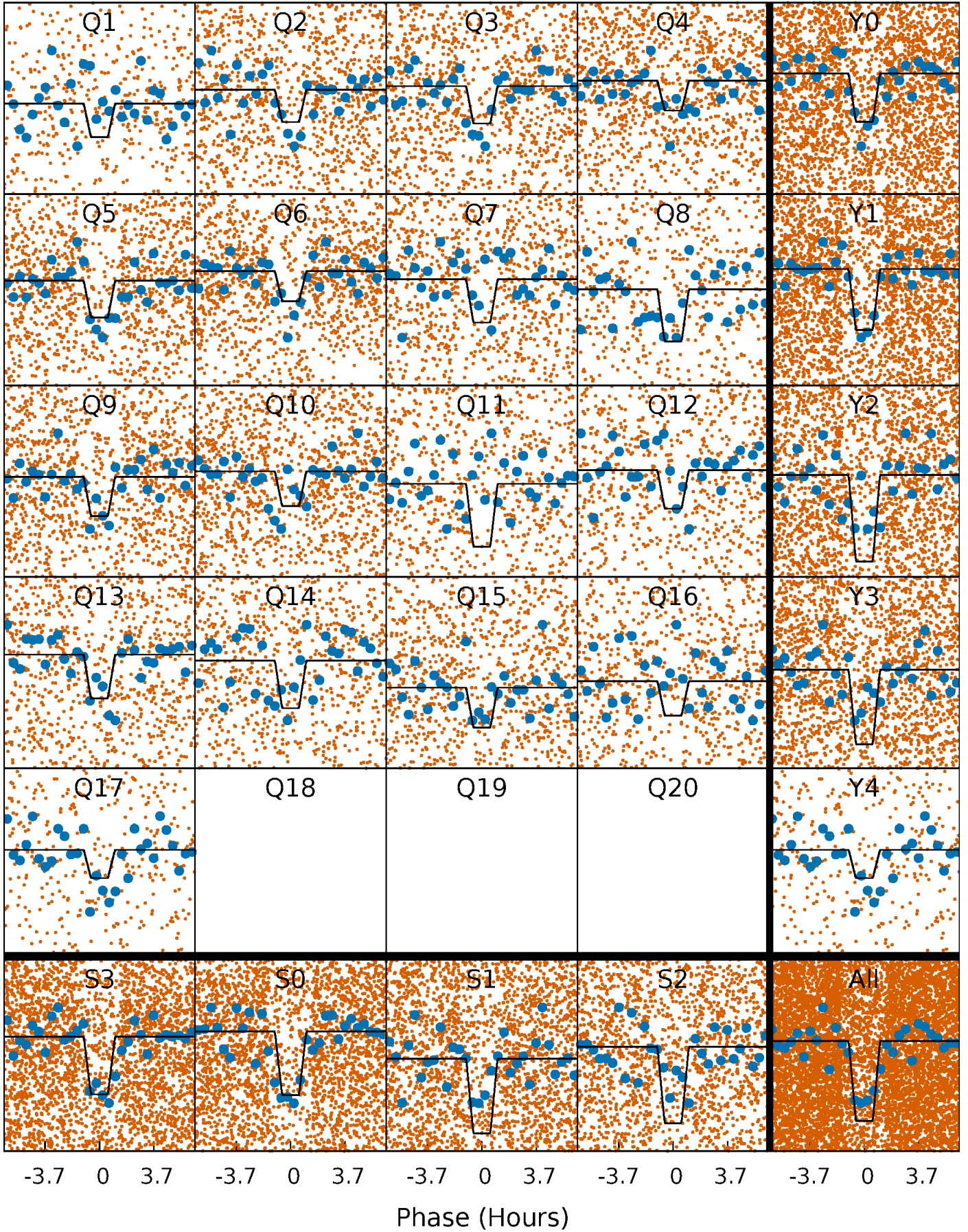
DV Quarter-Phased Transit Curves

TCE 009007953-01 P= 1.387208 Days $T_0=132.850055$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

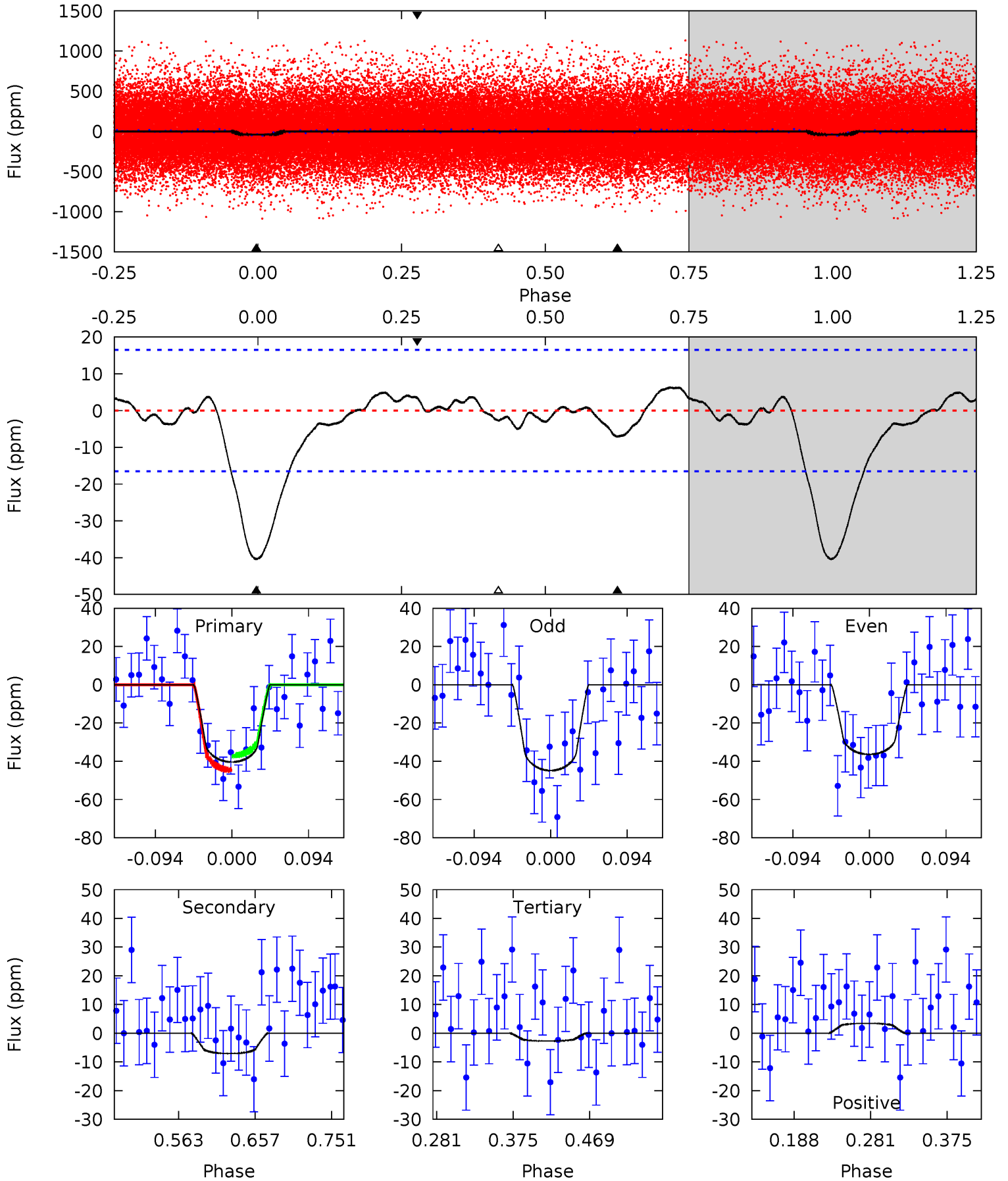
TCE 009007953-01 P= 1.387191 Days $T_0=132.842035$ (BKJD)



DV Model-Shift Uniqueness Test

009007953-01, P = 1.387208 Days, E = 131.462847 Days

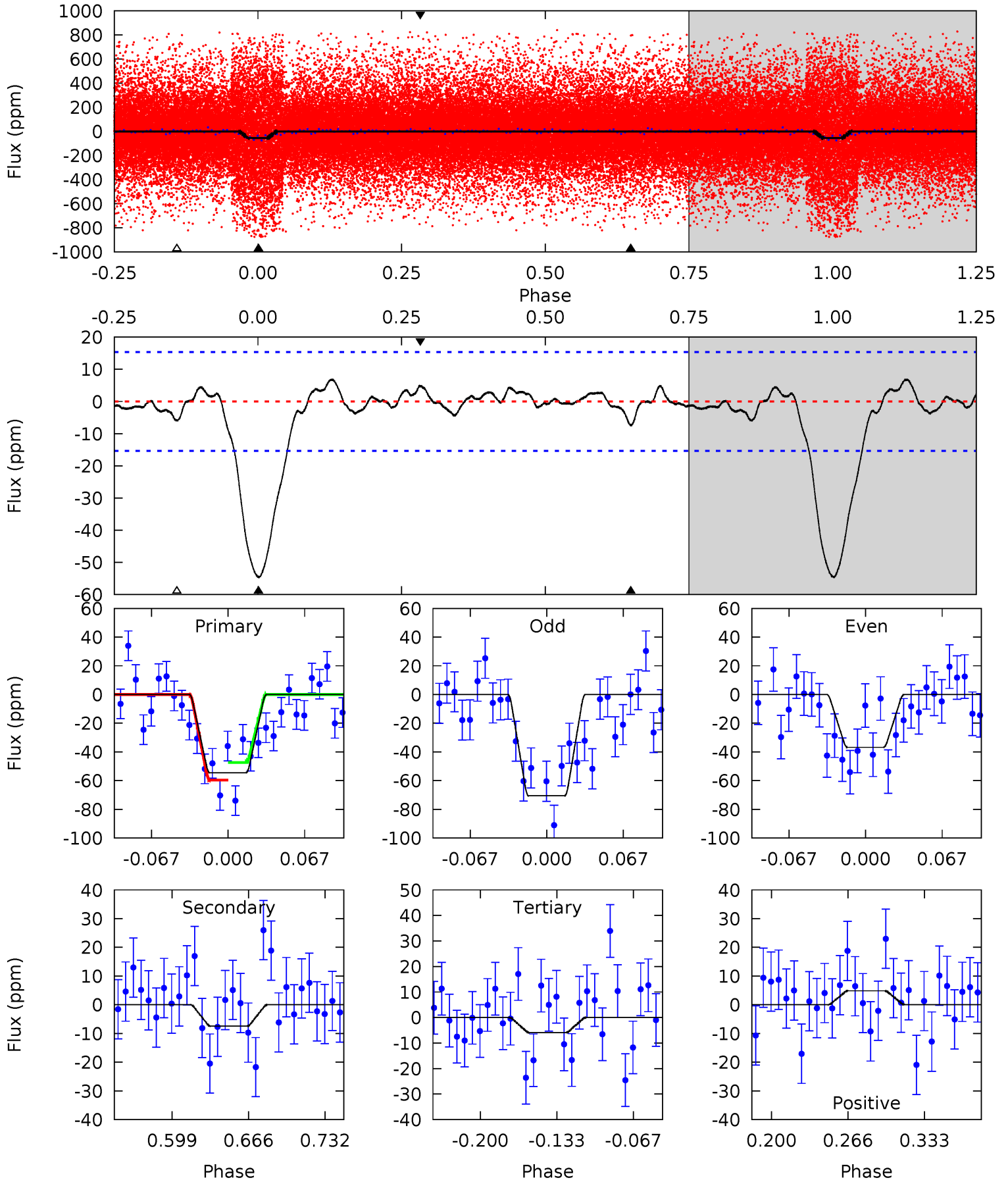
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.2 | 1.97 | 0.76 | 0.95 | 4.58 | 1.68 | 0.79 | 10.4 | 10.3 | 1.21 | 1.02 | 1.17 | 0.93 | 0.13 | 1.07 |



Alt Model-Shift Uniqueness Test

009007953-01, P = 1.387191 Days, E = 131.454844 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.5 | 2.26 | 1.79 | 1.47 | 4.65 | 1.83 | 0.75 | 14.7 | 15.1 | 0.47 | 0.78 | 5.11 | 0.86 | 0.11 | 1.85 |



Stellar Parameters For KIC 009007953

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6122^{+171}_{-214} | $4.471^{+0.062}_{-0.200}$ | $-0.100^{+0.250}_{-0.350}$ | $0.996^{+0.296}_{-0.118}$ | $1.070^{+0.133}_{-0.148}$ | $1.526^{+0.405}_{-0.772}$ |
| | +3%/-3% | +1%/-4% | +250%/-350% | +30%/-12% | +12%/-14% | +27%/-51% |
| 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 009007953-01 / KOI 7123.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | -7 ± 4 | $0.89^{+0.54}_{-0.46}$ | 2424^{+171}_{-116} | 3752^{+1377}_{-690} | $2.754^{+10.314}_{-1.855}$ |
| Alt. | -7 ± 3 | $0.93^{+0.49}_{-0.46}$ | 2433^{+176}_{-124} | 3740^{+1293}_{-673} | $2.598^{+9.311}_{-1.663}$ |

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 $A_{obs} \gg 1.0$

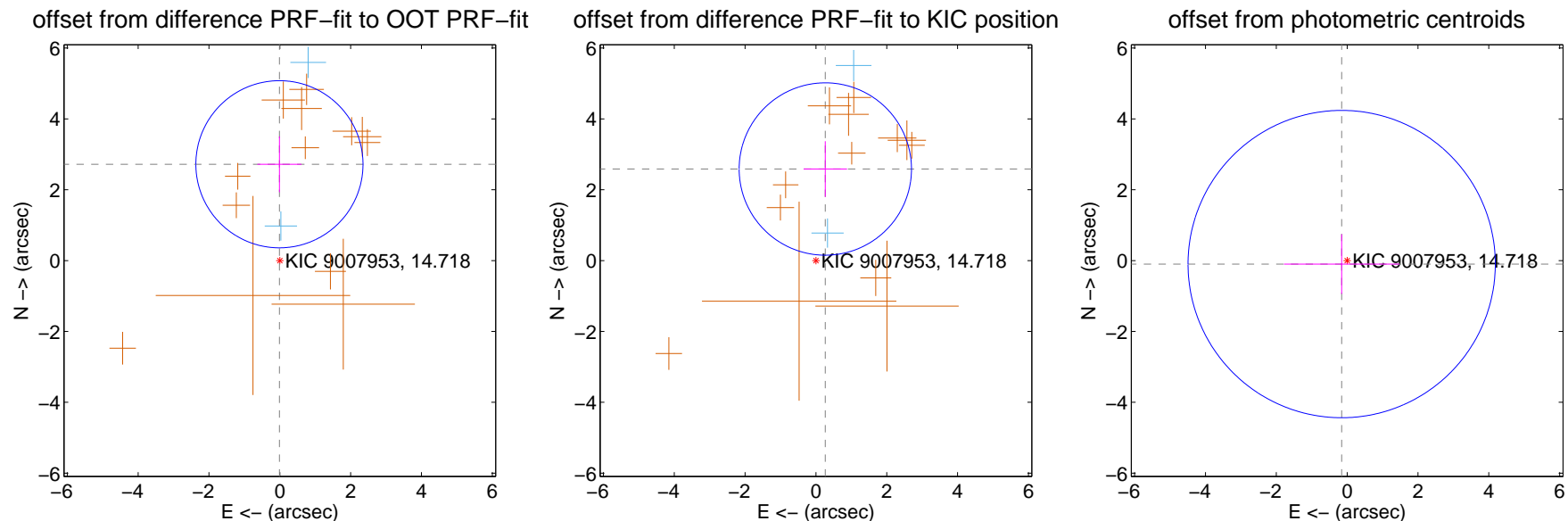
DV Centroid Data

Supplemental centroid analysis for 009007953-01. Kepler magnitude: 14.72. Transit SNR 8.85

There are 2 quarters with good PRF difference image offsets

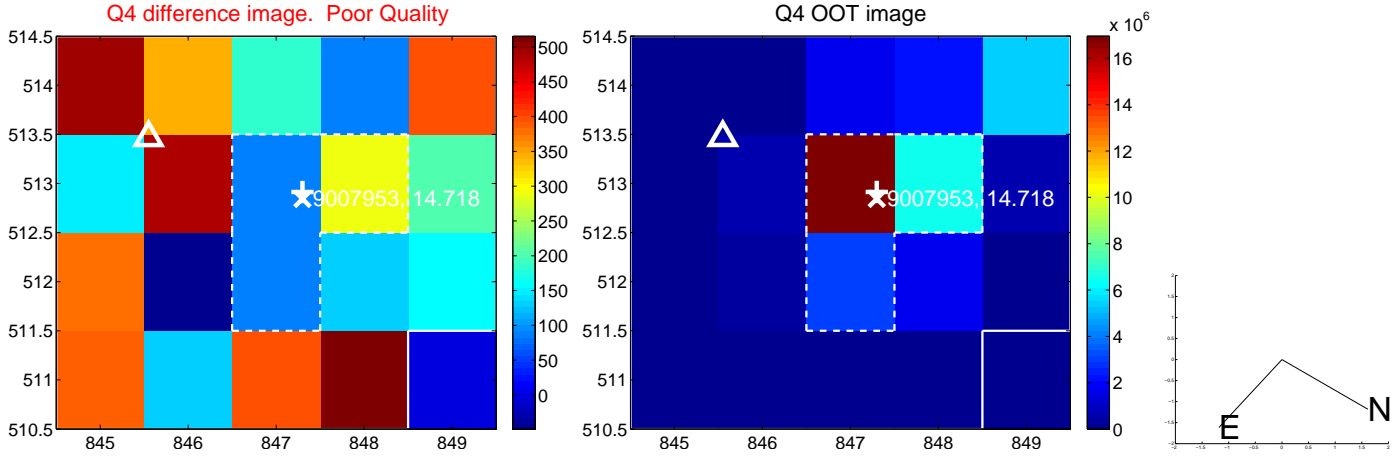
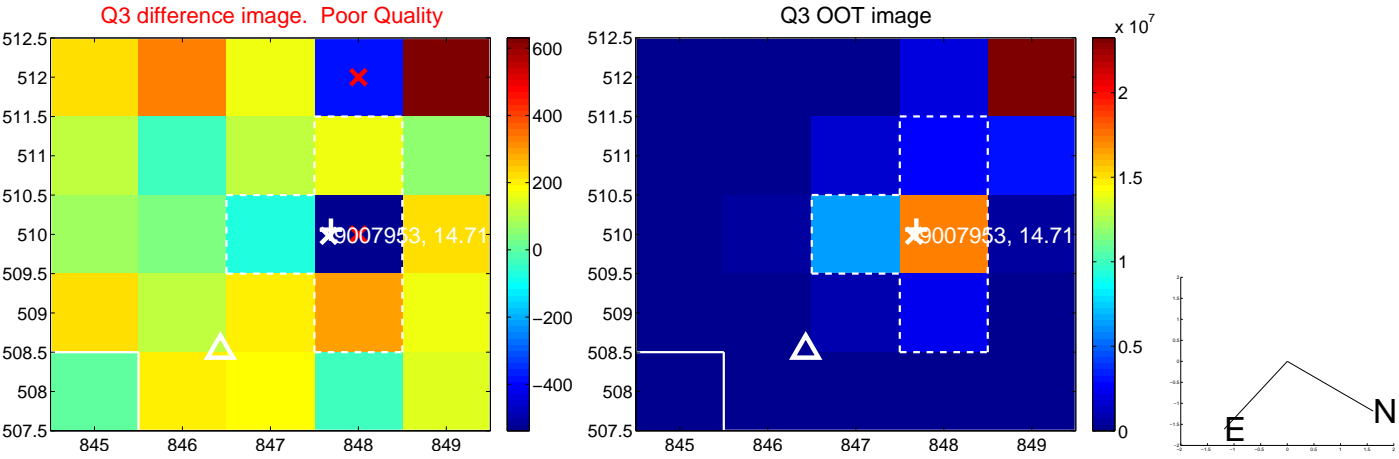
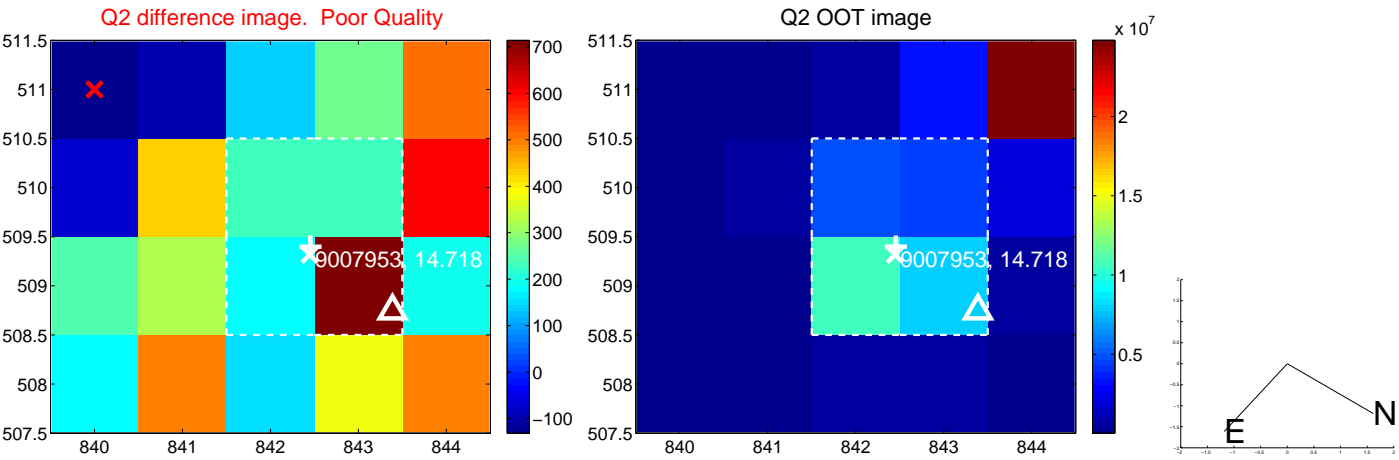
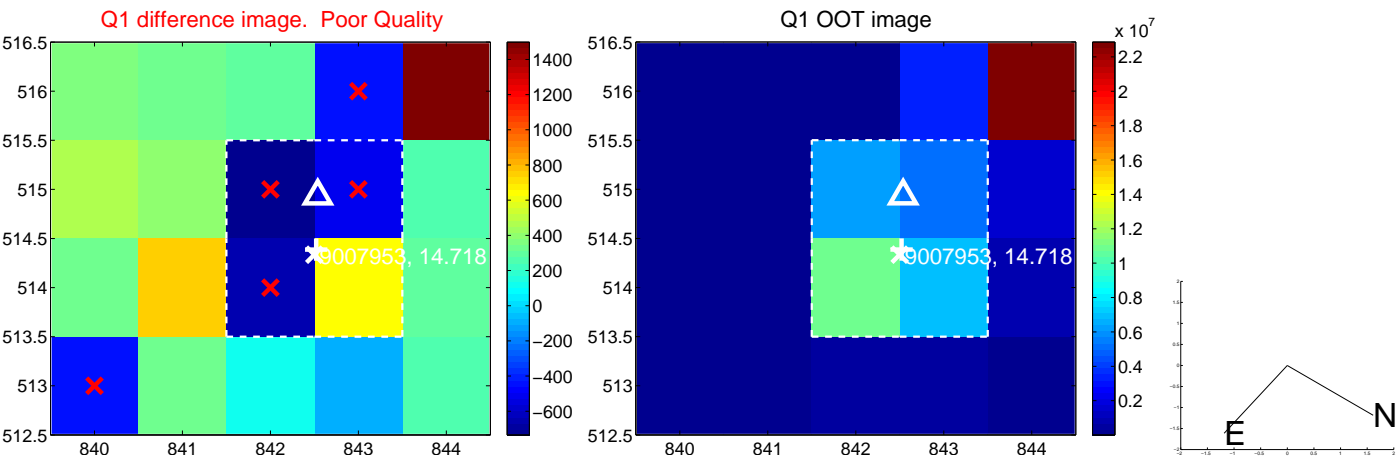
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 2.720 ± 0.786 | 3.46 | 0.011 ± 0.623 | 2.720 ± 0.788 |
| PRF-fit source offset from KIC position | 2.599 ± 0.811 | 3.20 | -0.265 ± 0.614 | 2.585 ± 0.786 |
| photometric centroid source offset | 0.18 ± 1.45 | 0.13 | 0.15 ± 1.63 | -0.10 ± 0.84 |

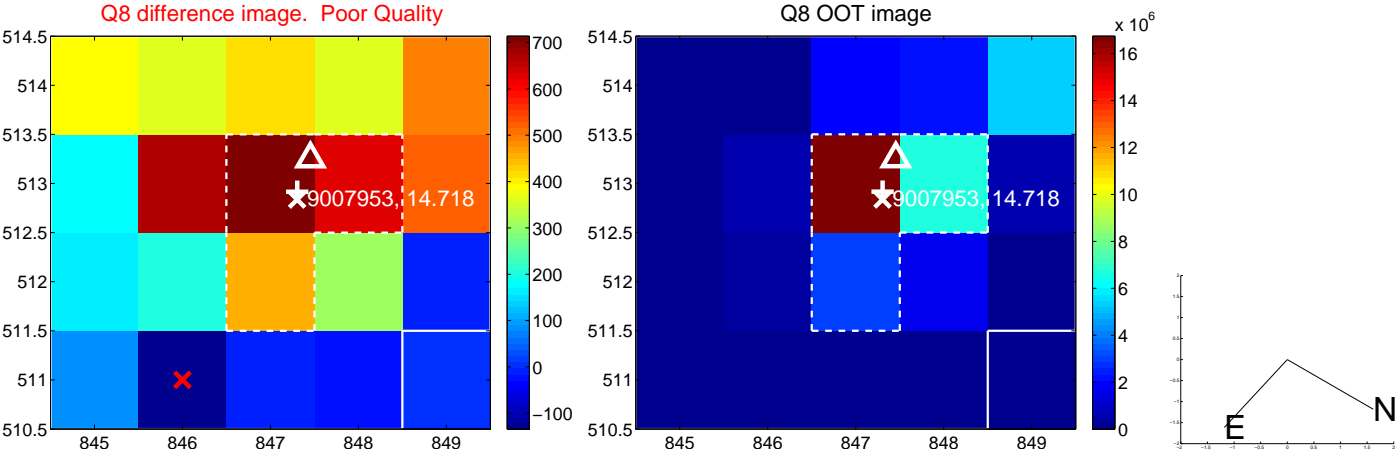
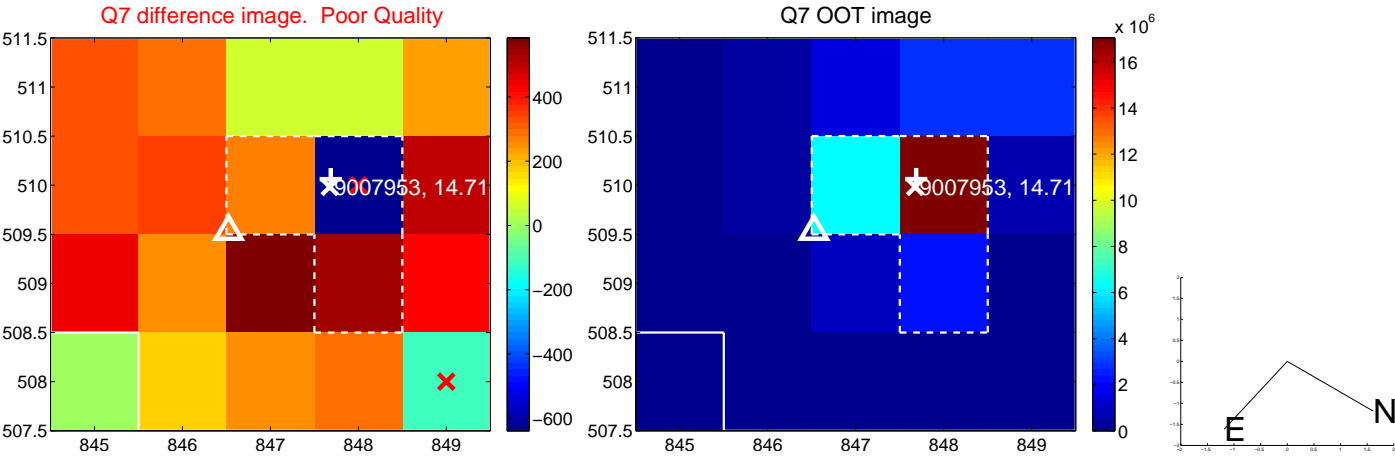
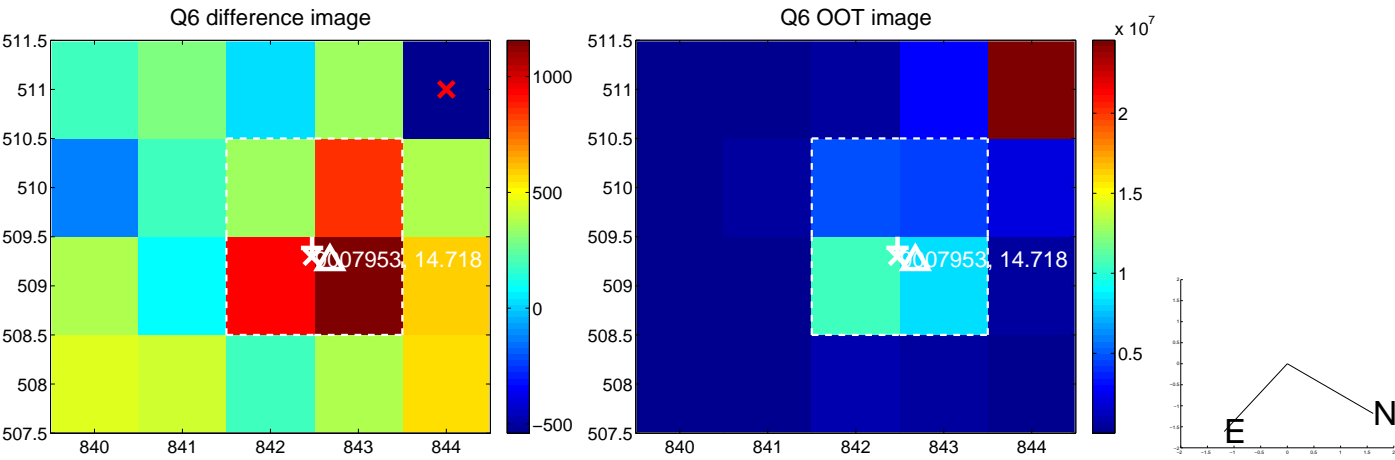
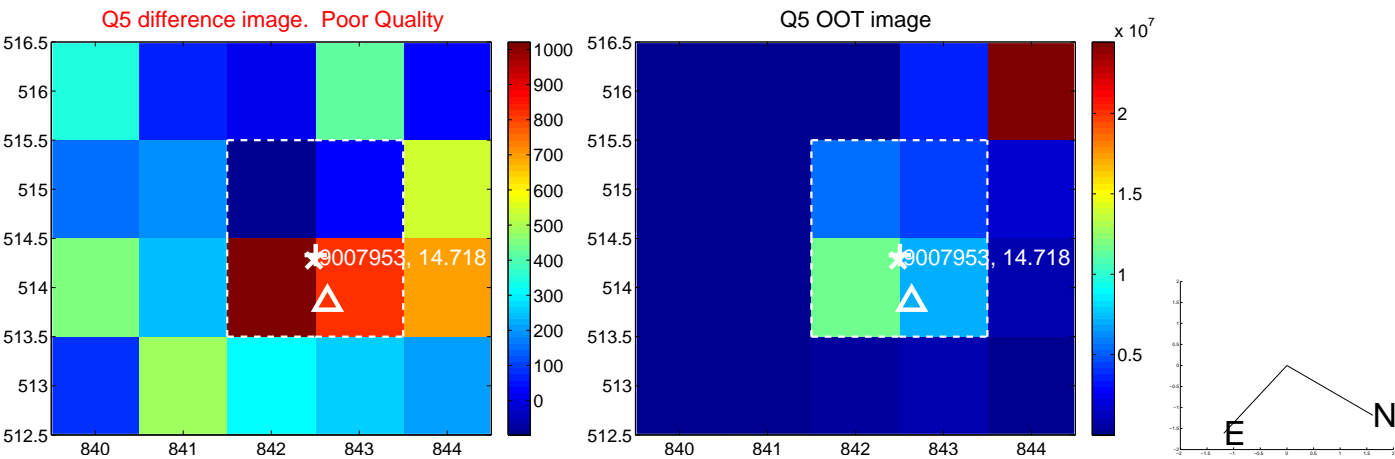


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

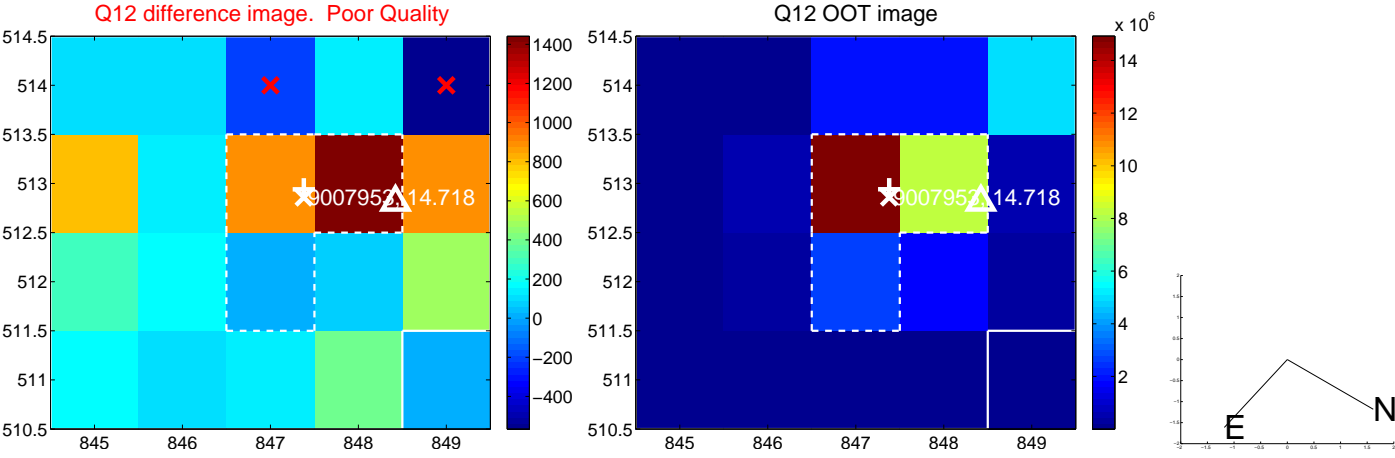
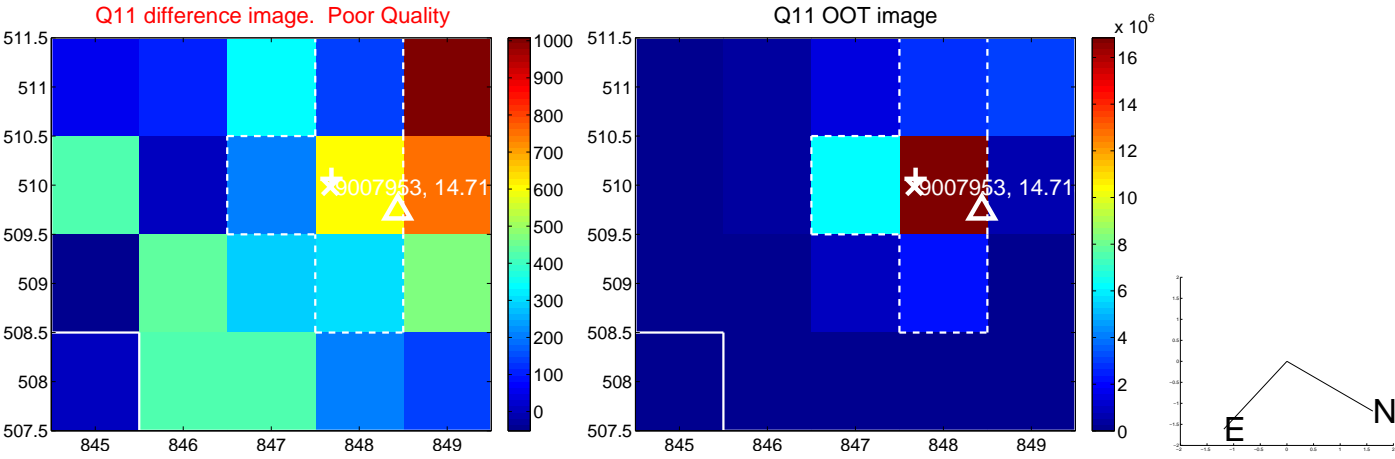
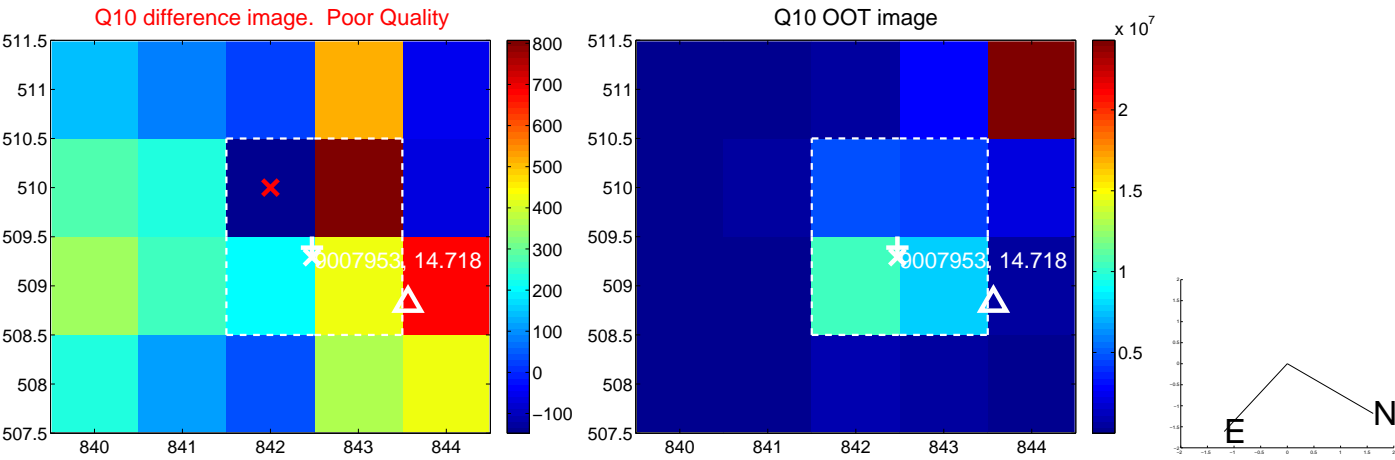
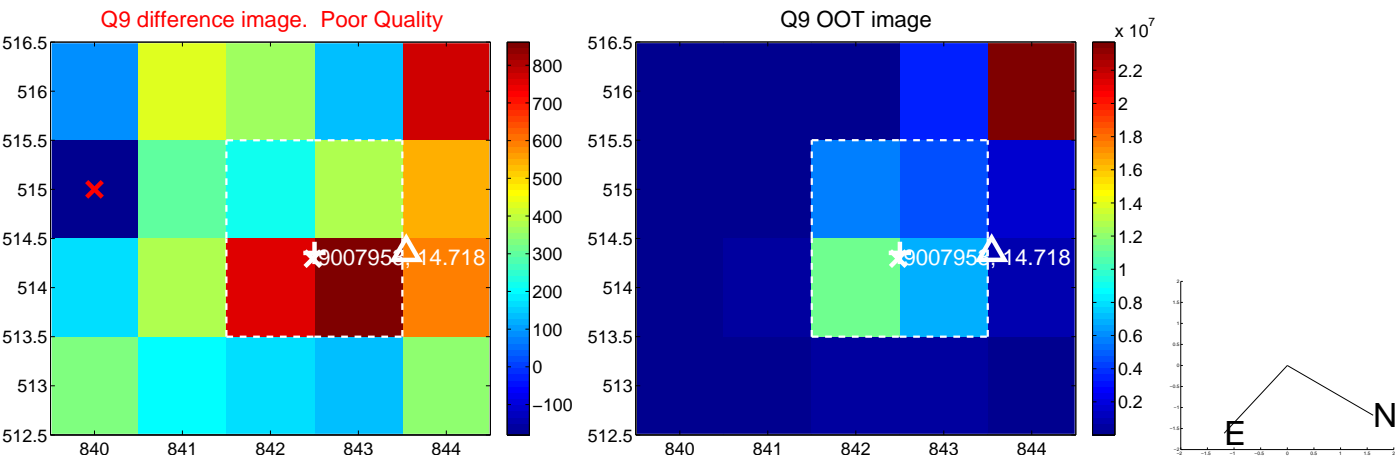
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



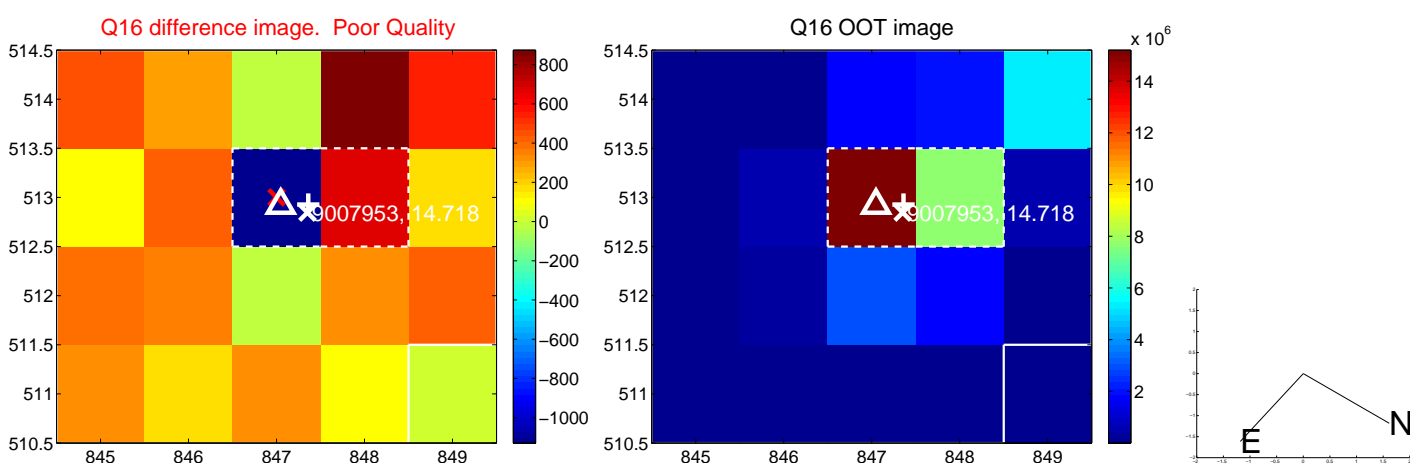
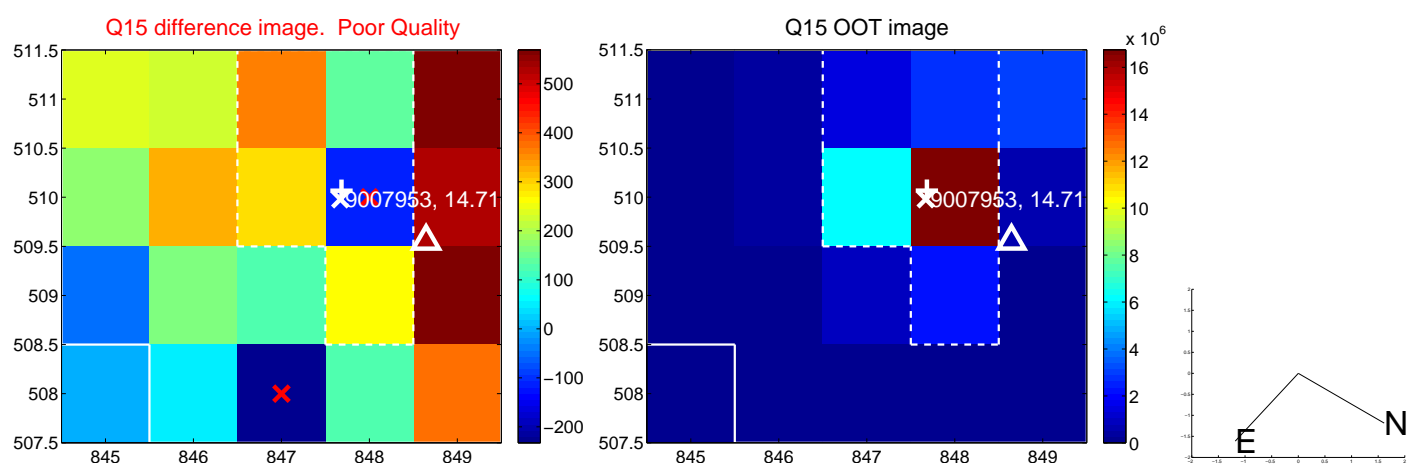
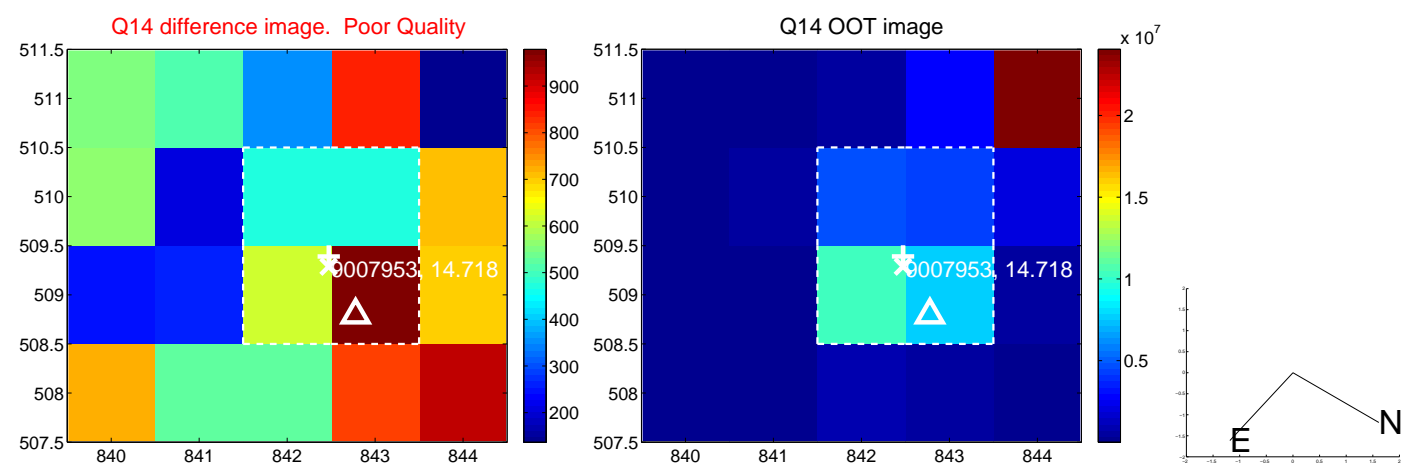
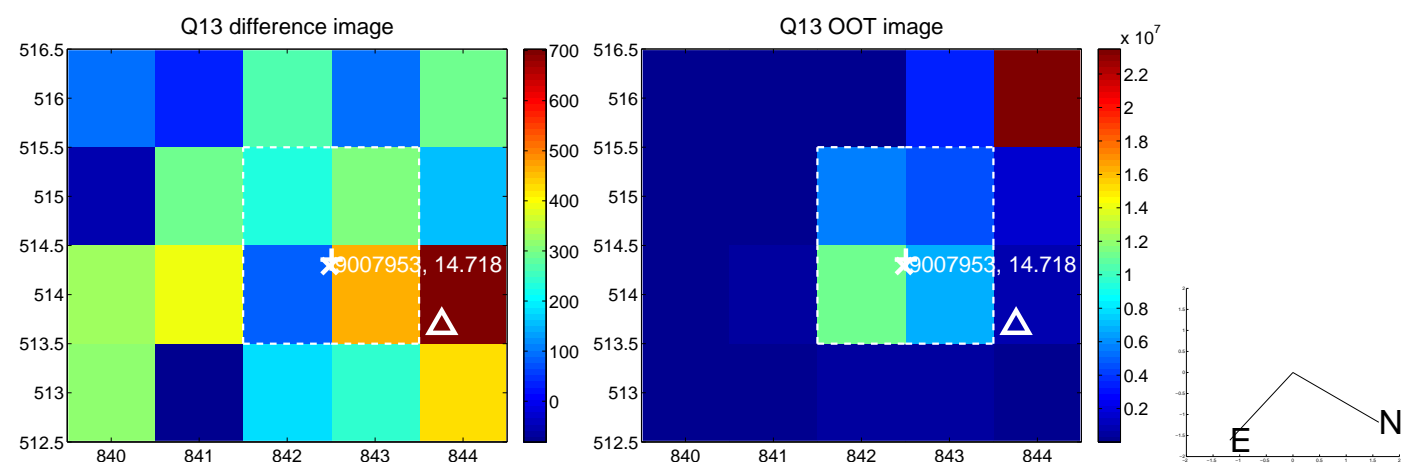
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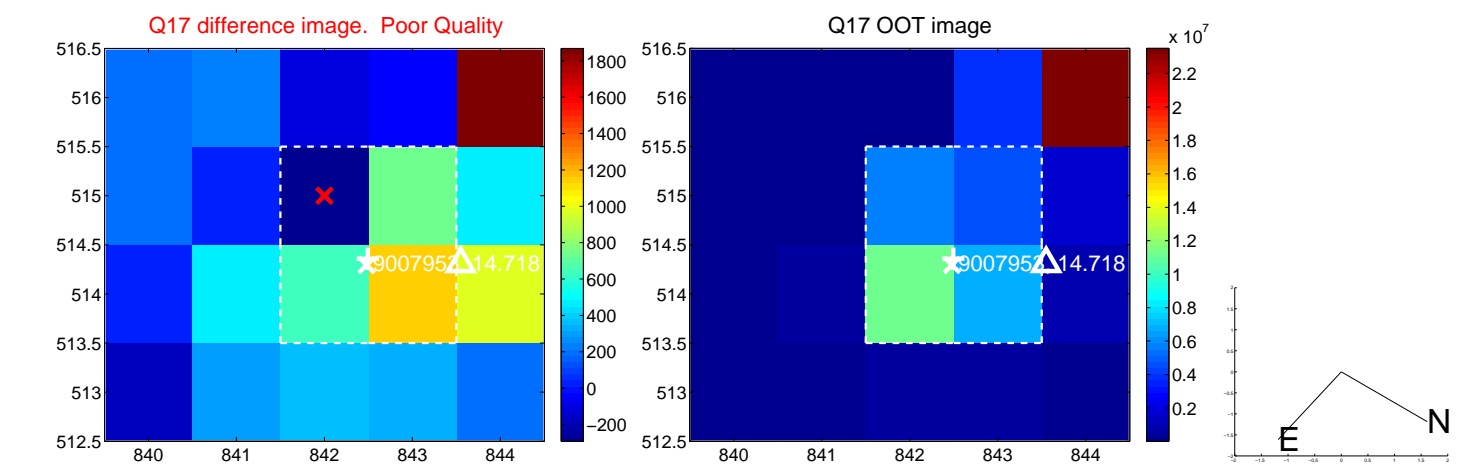
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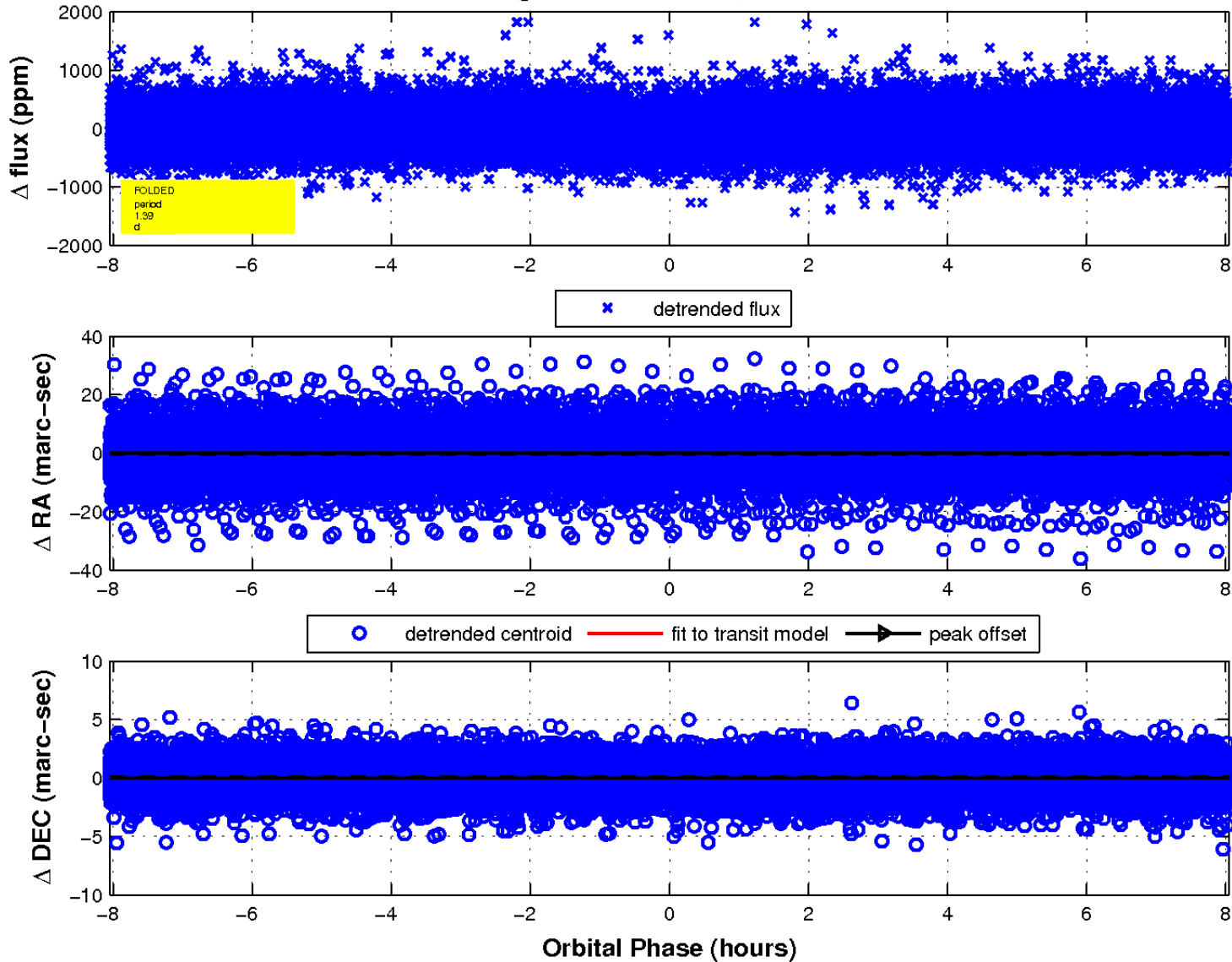
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination

