

KIC 009945390

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009945390-01 | OBS | No | 0.965838 | 131.647707 | 23.8 | 1.542 | 7.5 | 9.3 | 3.89 | 8269 | 2.21 | 97437.42 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009945390-01 | 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.

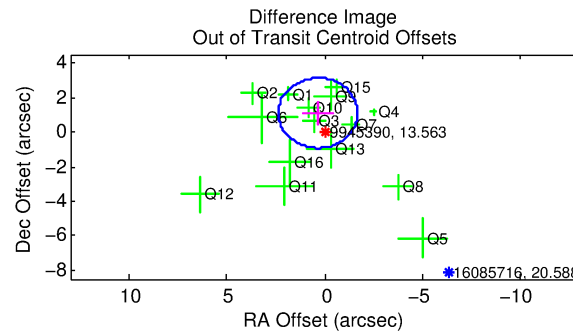
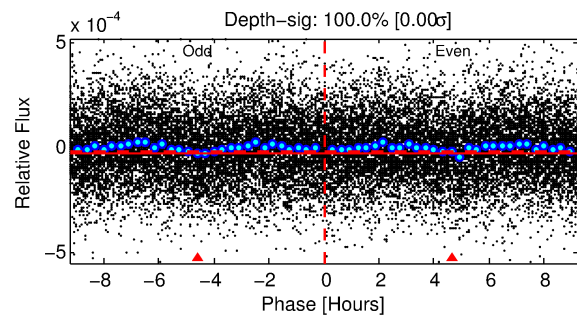
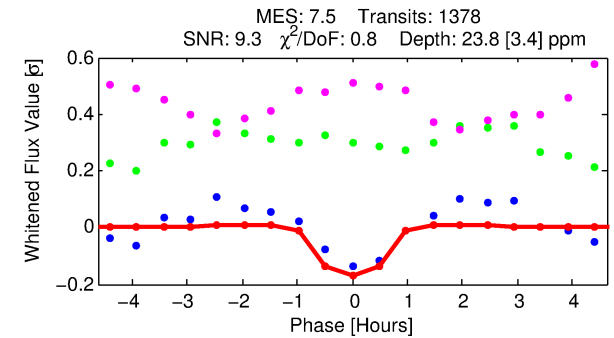
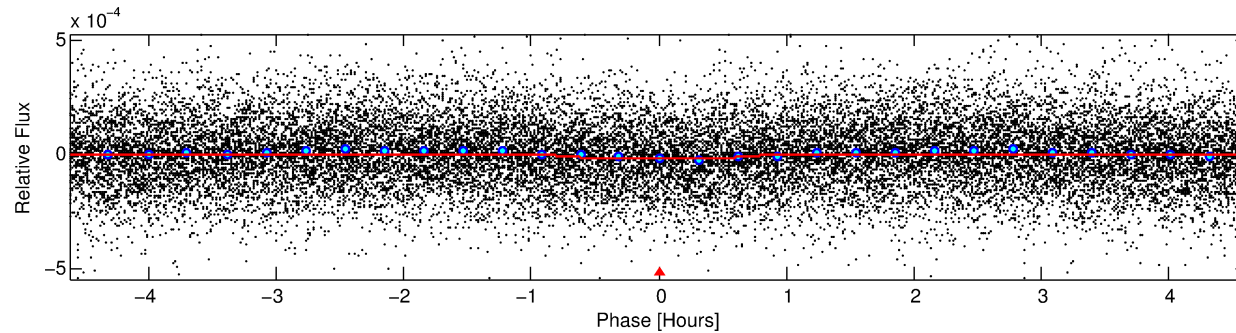
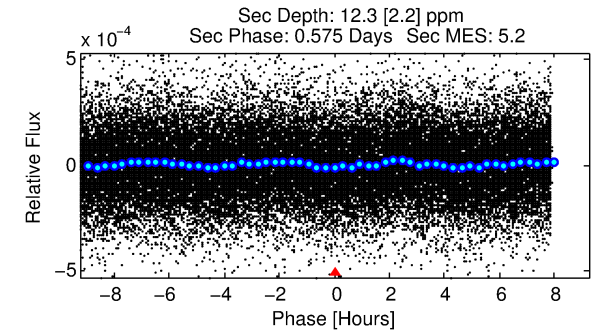
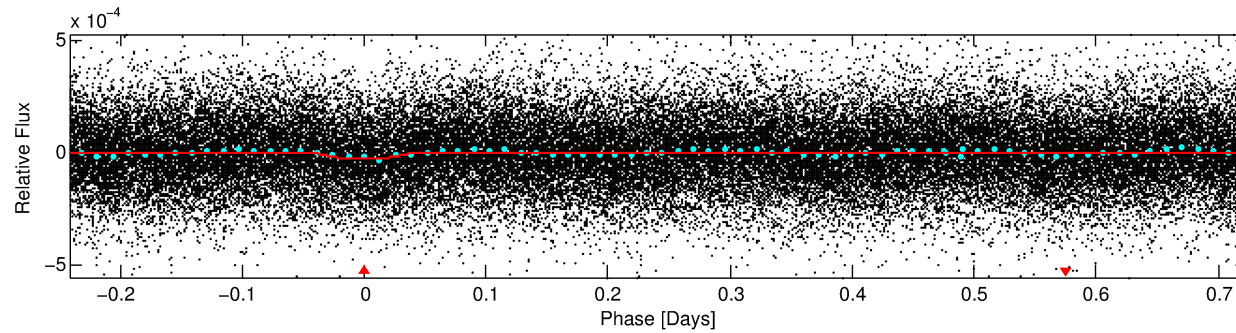
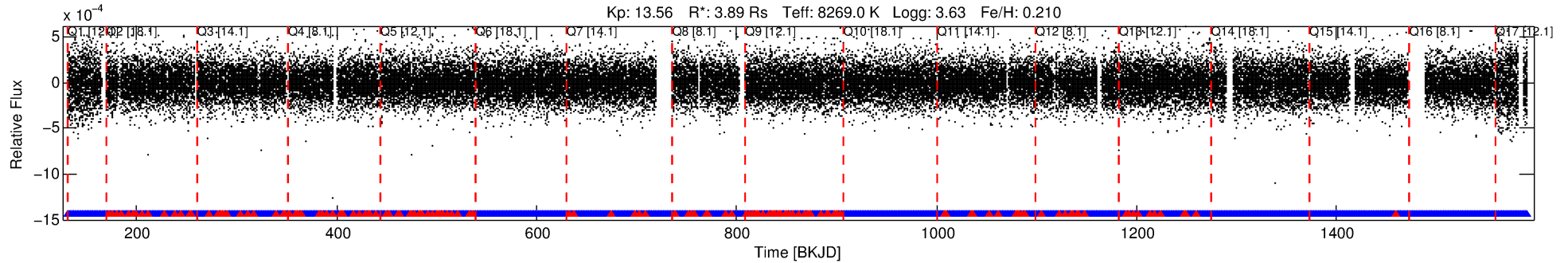
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009945390-01

No Significant Match Found

DV One-Page Summary

KIC: 9945390 Candidate: 1 of 1 Period: 0.966 d



DV Fit Results:

Period = 0.96584 [0.00001] d
Epoch = 131.6477 [0.0026] BKJD
Rp/R* = 0.0052 [0.0012]
a/R* = 2.34 [2.61]
b = 0.90 [0.29]
Seff = 97437.42 [78454.18]
Teff = 4505 [907] K
Rp = 2.21 [1.21] Re
a = 0.0255 [0.0124] AU
Ag = 0.90 [0.83] [-0.12σ]
Teffp = 6789 [869] K [1.82σ]

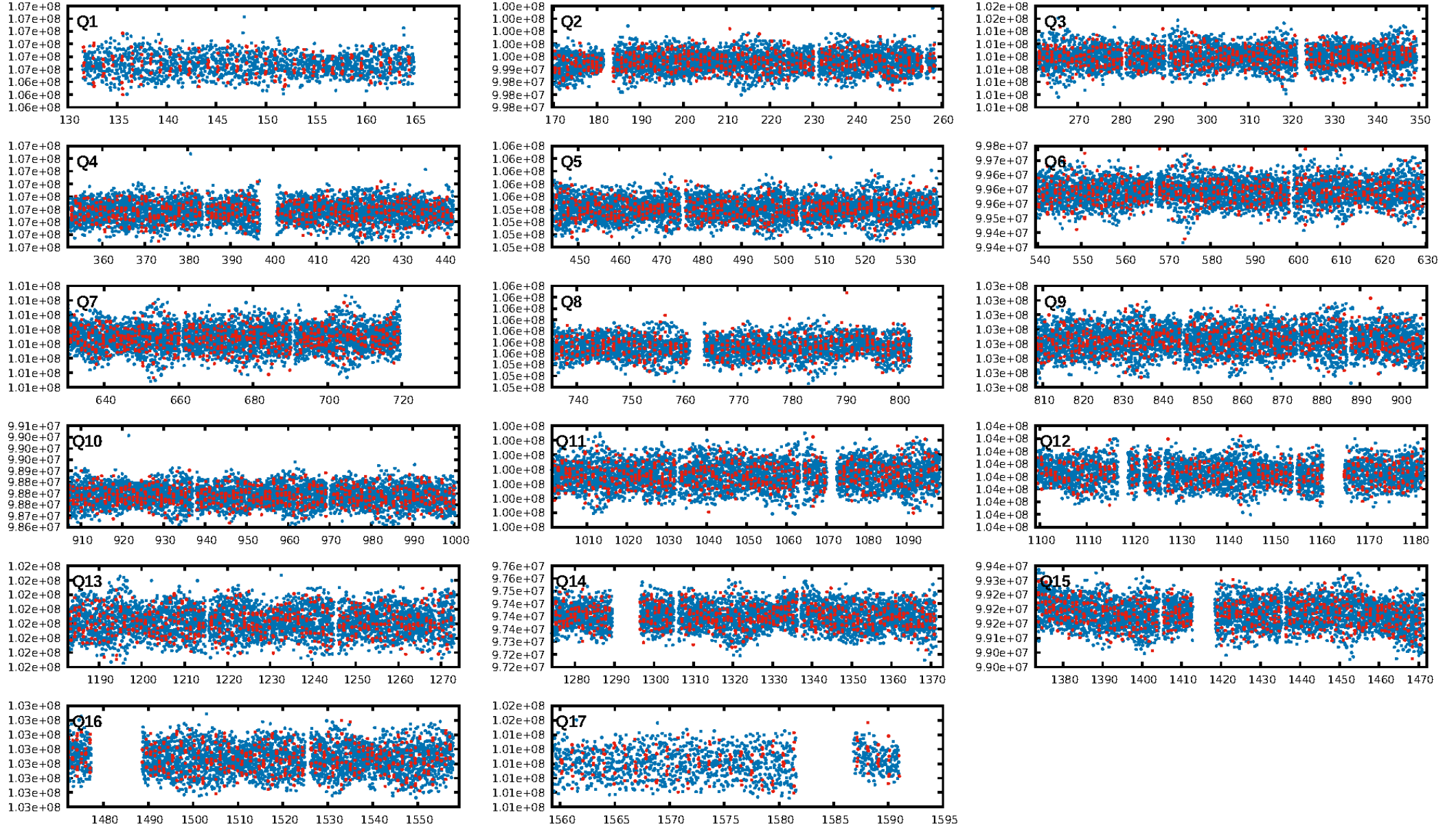
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.27e-13
RollingBand-fgt: 0.89 [1170/1315]
GhostDiagnostic-chr: 4.192
Centroid-sig: 1.9%
Centroid-so: 2.796 arcsec [2.22σ]
OotOffset-rm: 1.156 arcsec [1.71σ]
KicOffset-rm: 1.304 arcsec [2.07σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.47 [7/15]
DiffImageOverlap-fno: 1.00 [17/17]

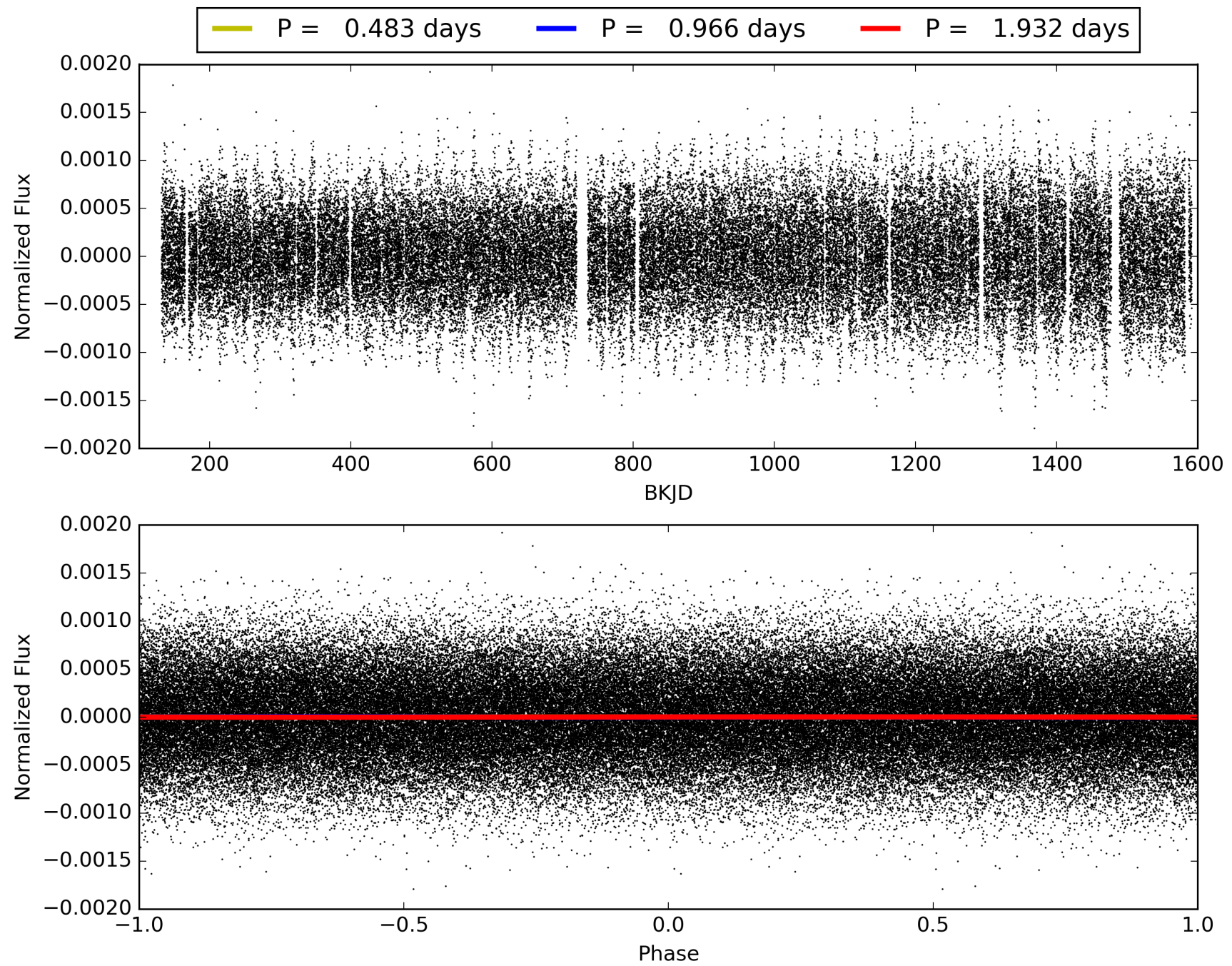
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:03:44 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009945390-01, PDC Light Curves

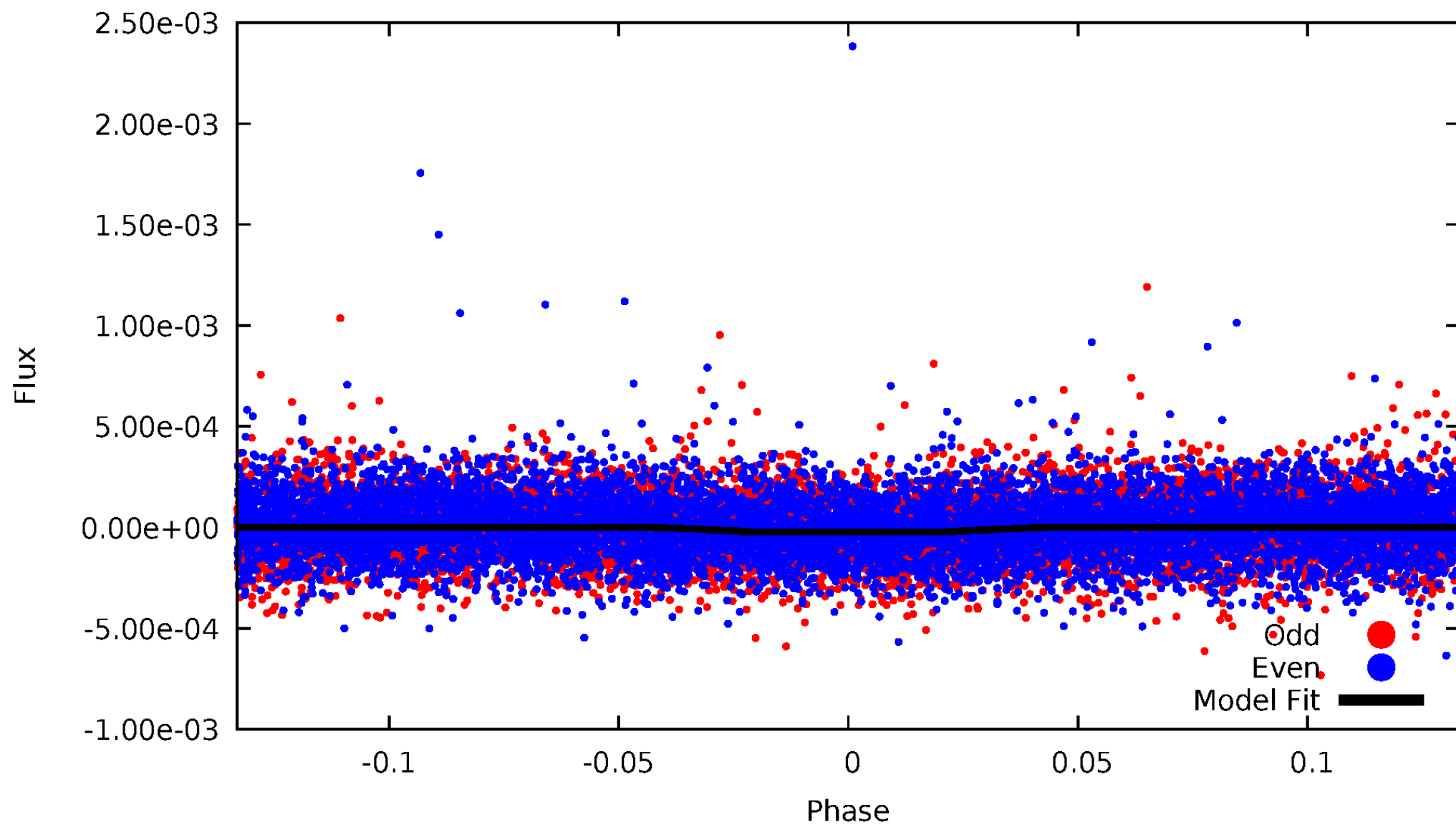


TCE 009945390-01



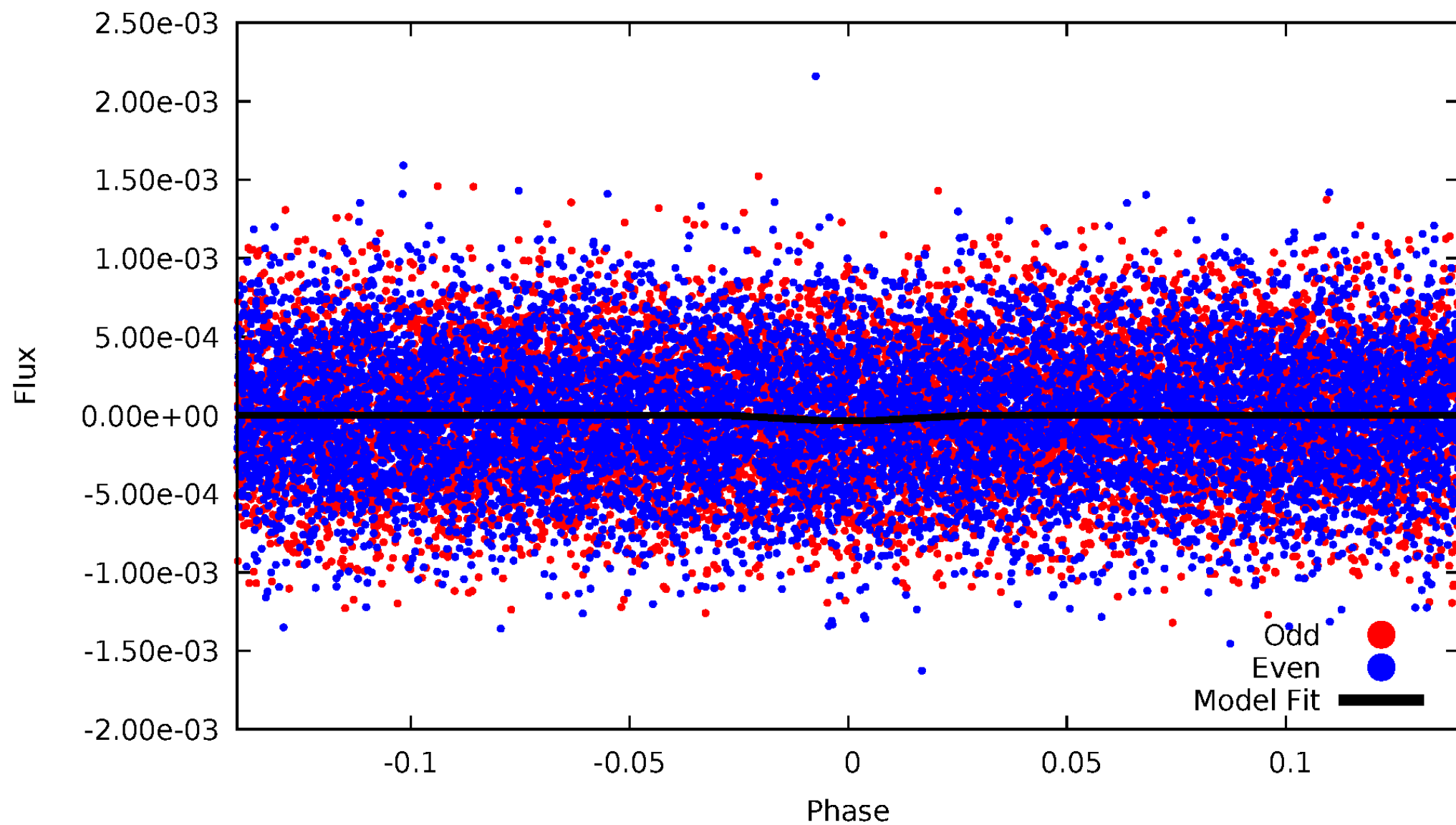
DV Odd/Even

TCE 009945390-01



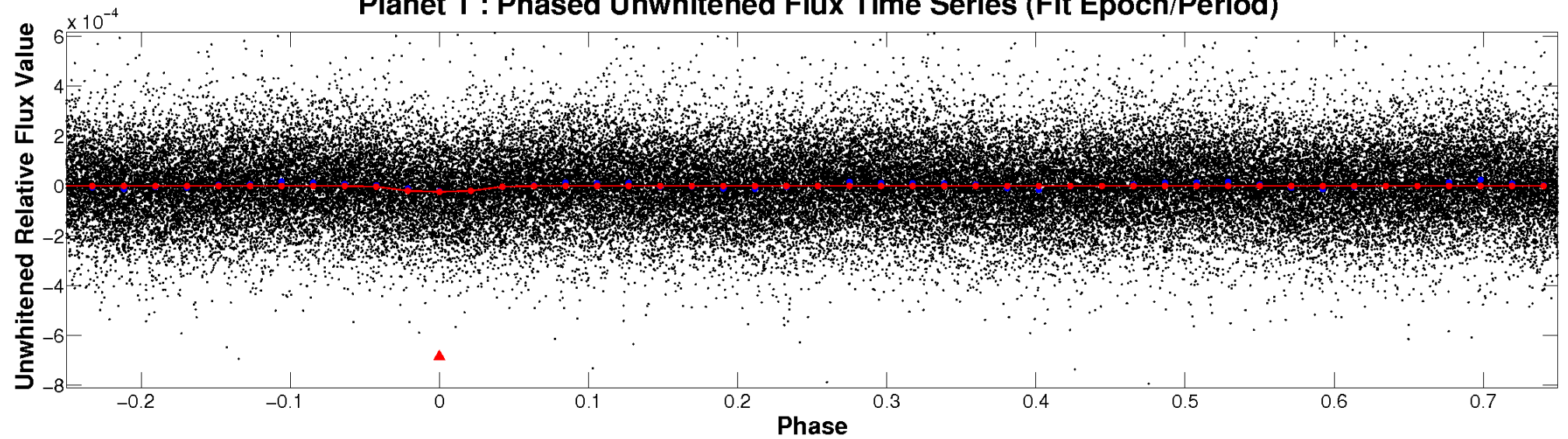
ALT Odd/Even

TCE 009945390-01

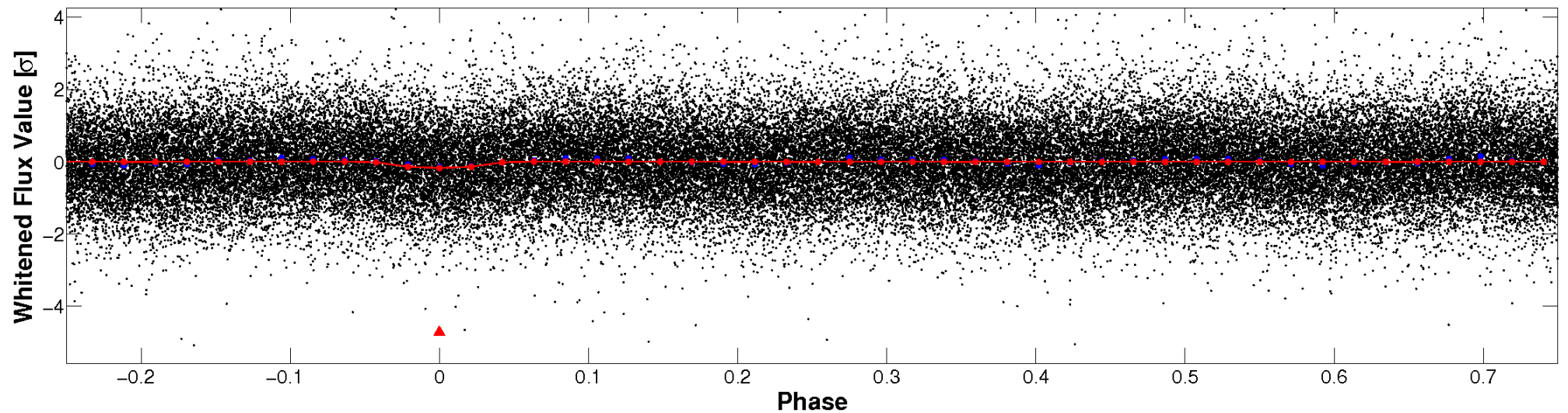


Non-Whitened Vs. Whitened Light Curve

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

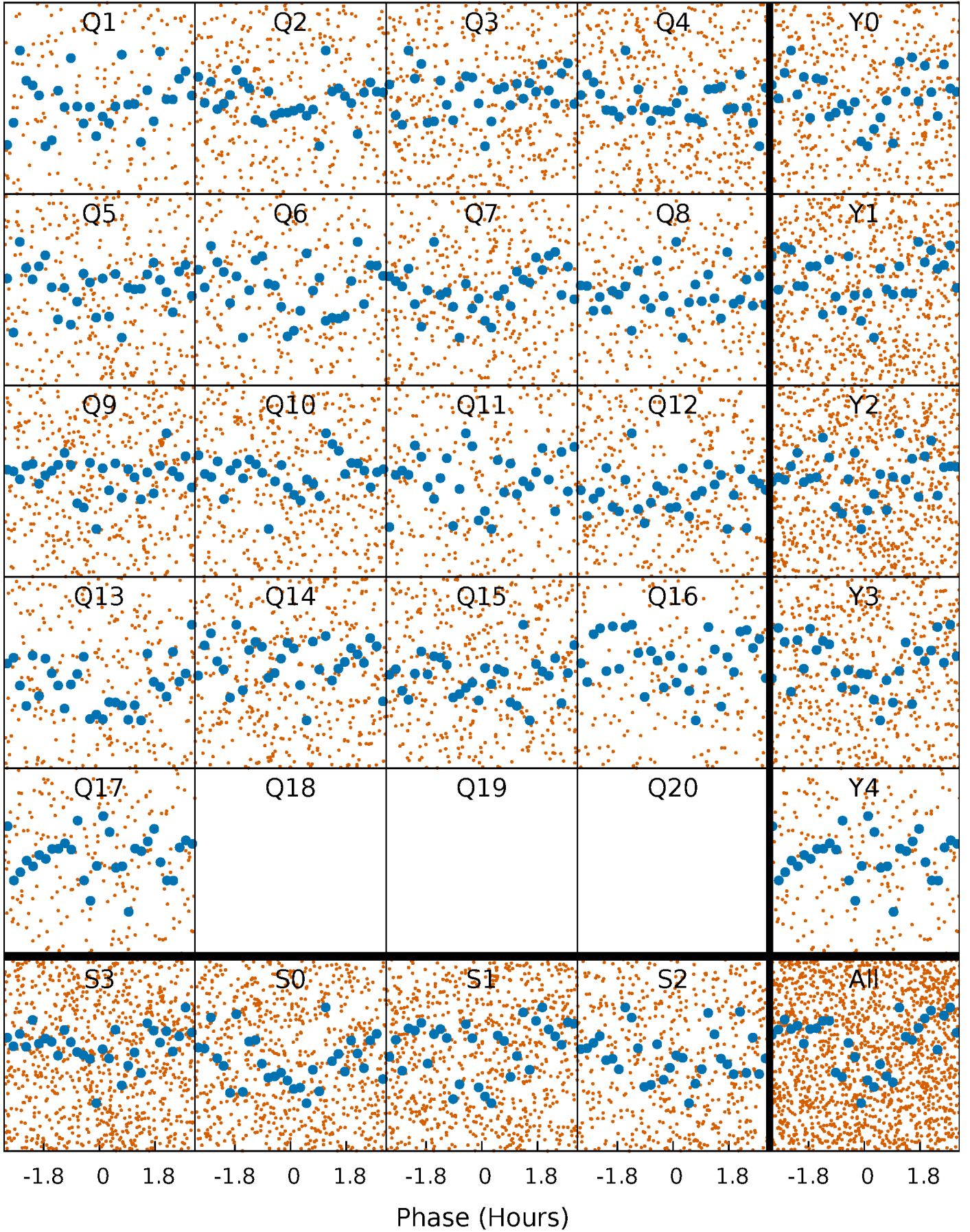


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



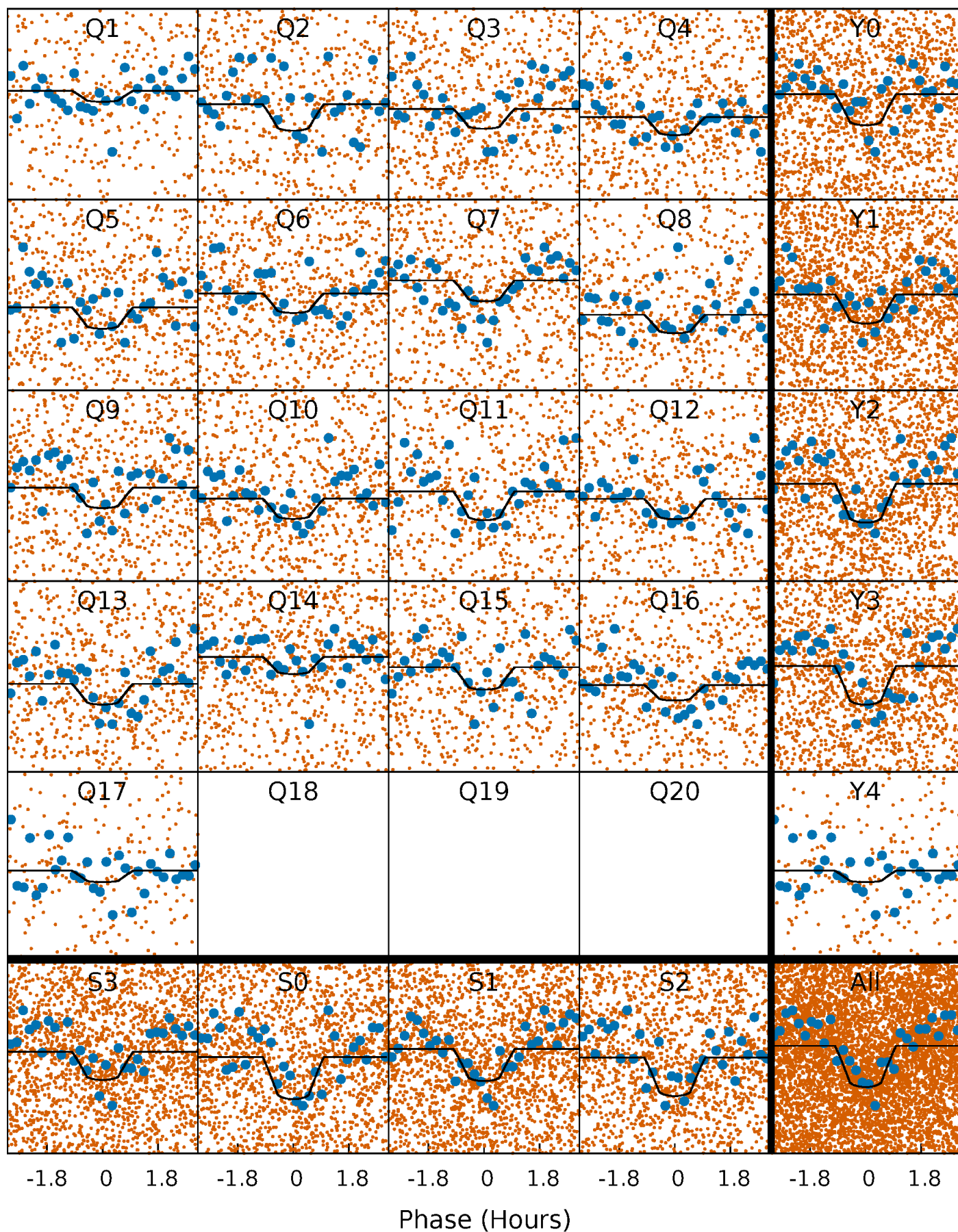
PDC Quarter-Phased Transit Curves

TCE 009945390-01 P= 0.965838 Days $T_0=131.647707$ (BKJD)



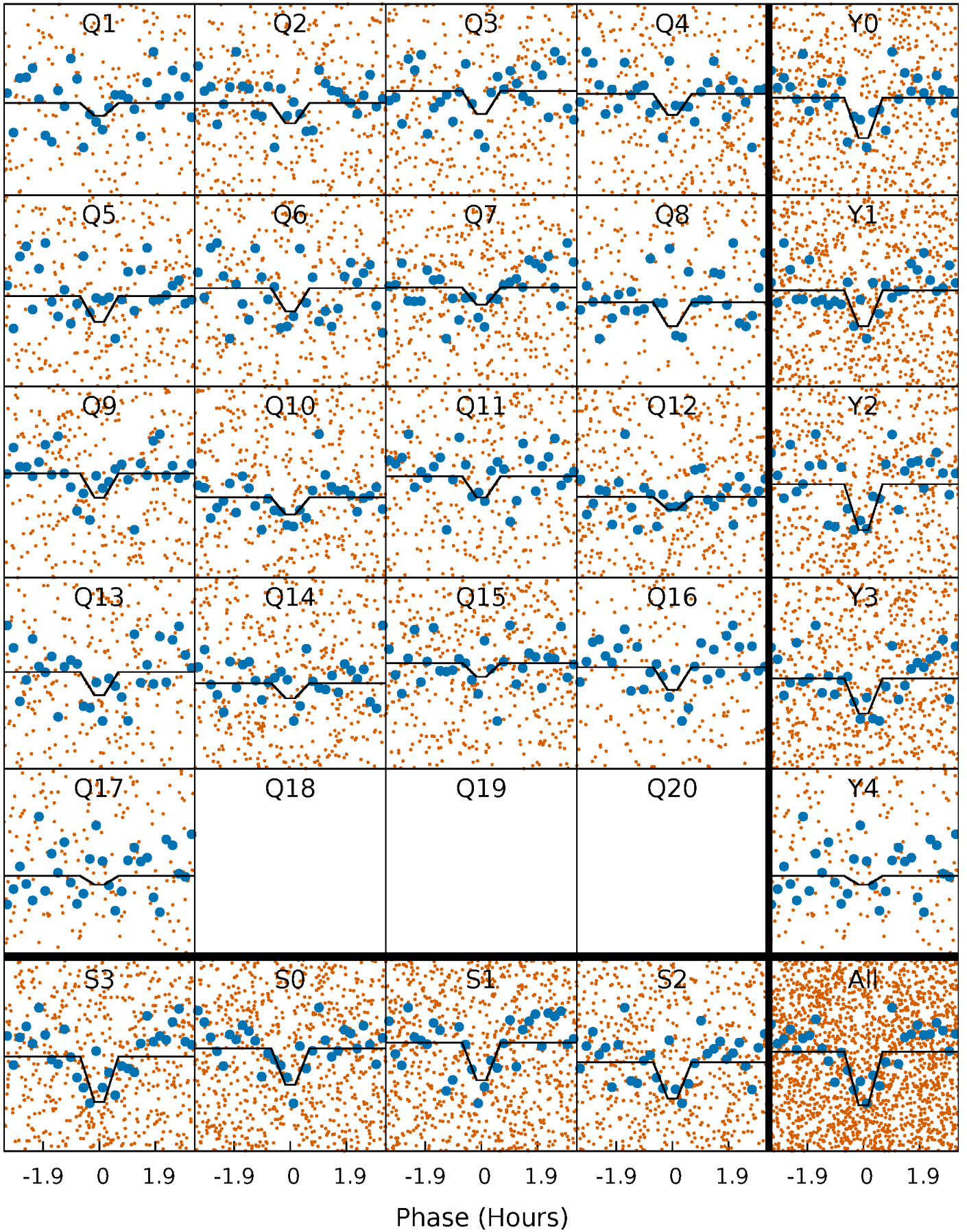
DV Quarter-Phased Transit Curves

TCE 009945390-01 P= 0.965838 Days $T_0=131.647707$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

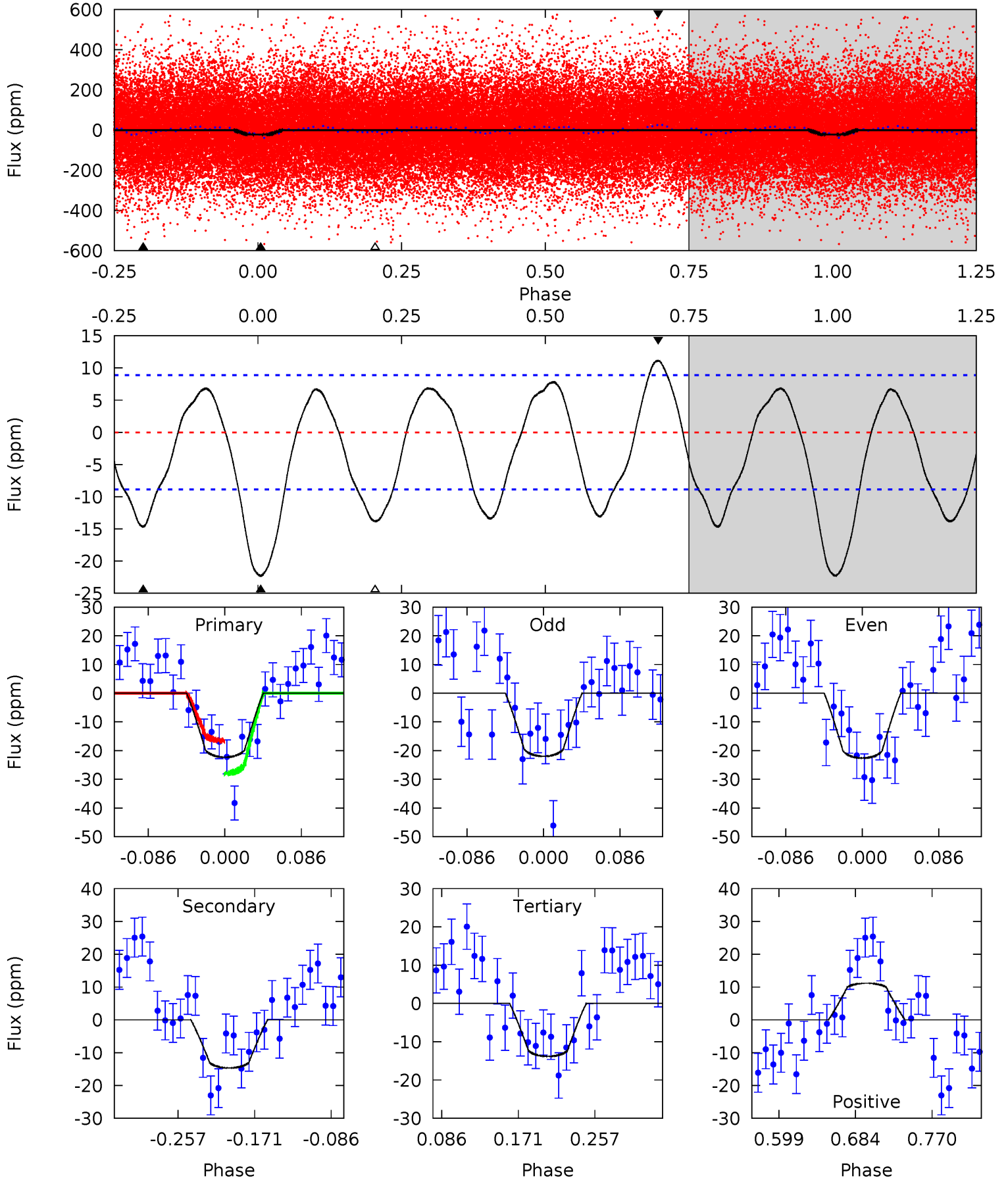
TCE 009945390-01 $P = 0.965847$ Days $T_0 = 131.649855$ (BKJD)



DV Model-Shift Uniqueness Test

009945390-01, P = 0.965838 Days, E = 130.681869 Days

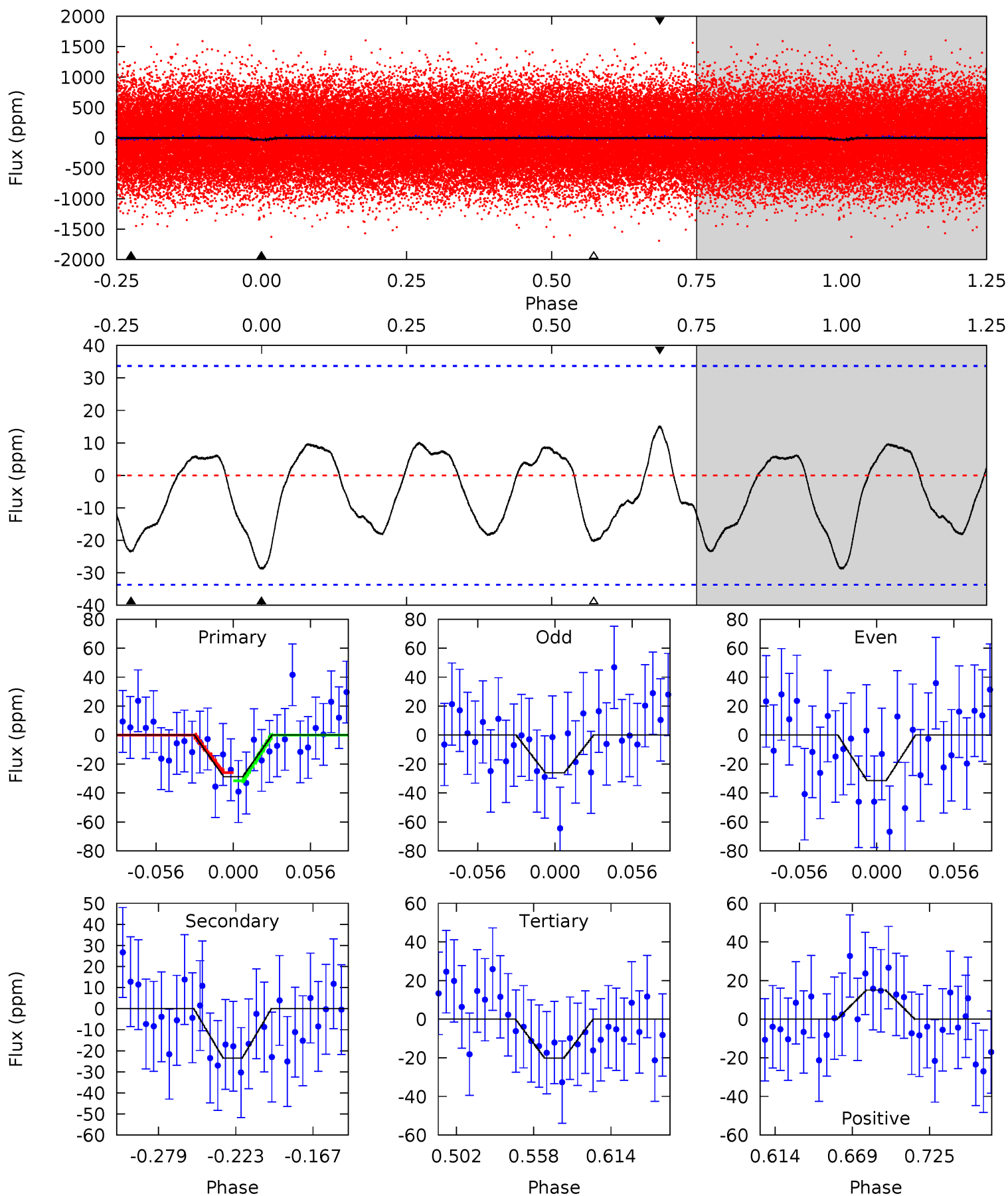
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.5 | 7.59 | 7.16 | 5.77 | 4.60 | 1.72 | 3.89 | 4.38 | 5.77 | 0.43 | 1.81 | 0.17 | 1.01 | 0.33 | 2.95 |



Alt Model-Shift Uniqueness Test

009945390-01, P = 0.965847 Days, E = 130.684008 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.00 | 3.26 | 2.81 | 2.10 | 4.69 | 1.91 | 1.31 | 1.19 | 1.90 | 0.45 | 1.16 | 0.38 | 0.98 | 0.34 | 0.39 |



Stellar Parameters For KIC 009945390

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 8269^{+261}_{-359} | $3.633^{+0.464}_{-0.116}$ | $0.210^{+0.150}_{-0.500}$ | $3.889^{+0.832}_{-1.942}$ | $2.366^{+0.336}_{-0.624}$ | $0.057^{+0.257}_{-0.019}$ |
| | +3%/-4% | +13%/-3% | +71%/-238% | +21%/-50% | +14%/-26% | +453%/-34% |
| 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 009945390-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|---------------------------|
| DV | -15 ± 2 | $1.99^{+0.64}_{-0.55}$ | 6127^{+488}_{-785} | 6378^{+1232}_{-894} | $1.293^{+1.150}_{-0.533}$ |
| Alt. | -23 ± 7 | $2.21^{+0.72}_{-0.67}$ | 6110^{+500}_{-708} | 6987^{+1557}_{-1130} | $1.696^{+1.686}_{-0.799}$ |

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 $A_{obs} \gg 1.0$

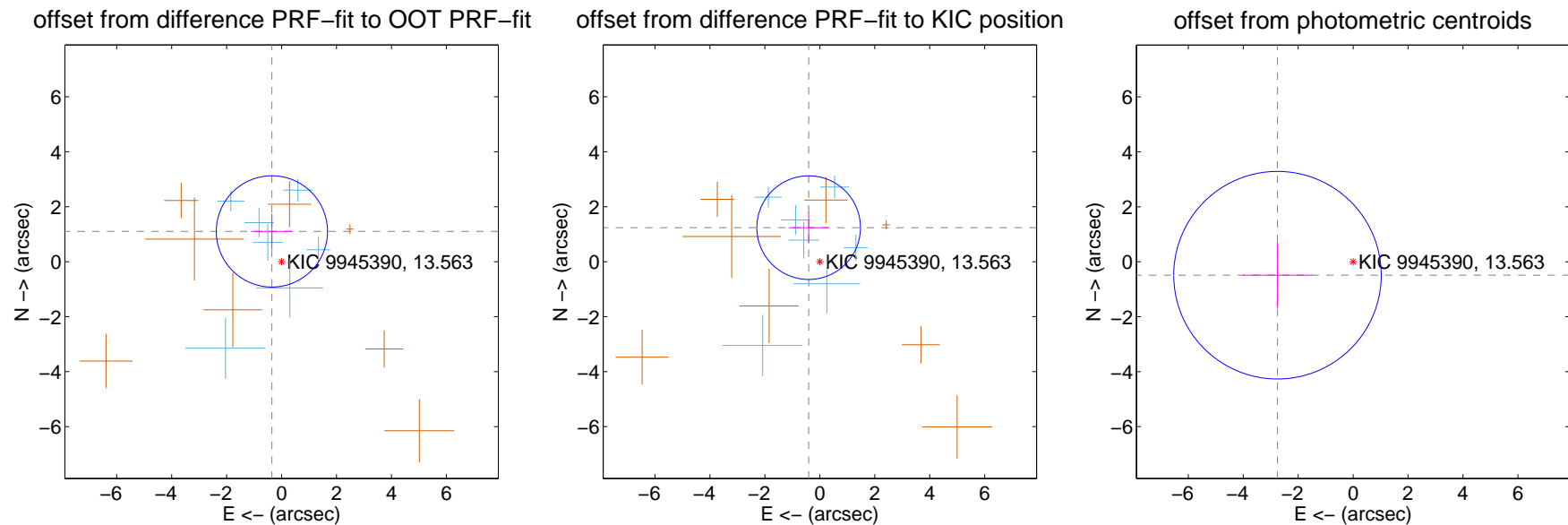
DV Centroid Data

Supplemental centroid analysis for 009945390-01. Kepler magnitude: 13.56. Transit SNR 9.34

There are 7 quarters with good PRF difference image offsets

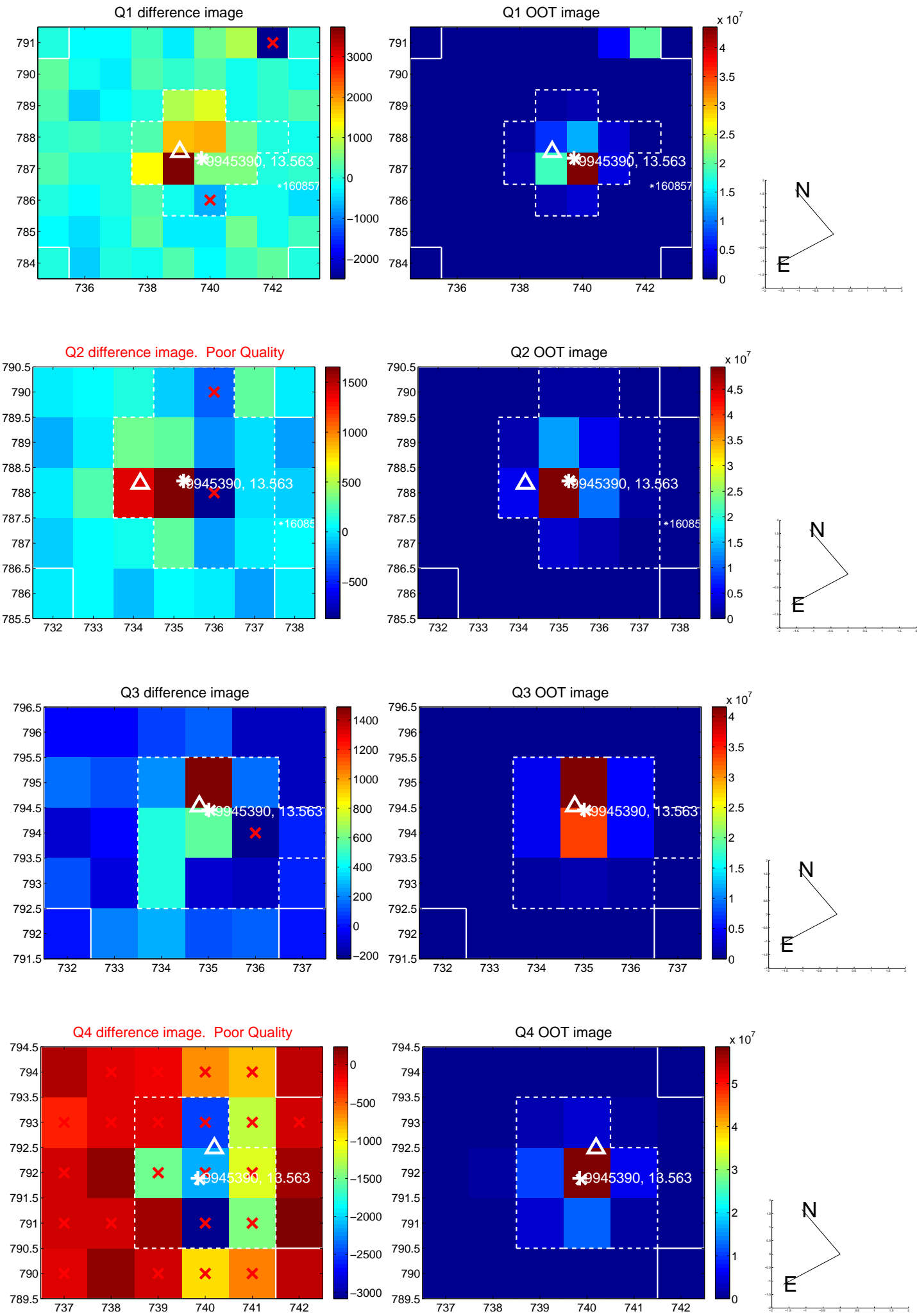
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.156 ± 0.675 | 1.71 | 0.352 ± 0.758 | 1.101 ± 0.645 |
| PRF-fit source offset from KIC position | 1.304 ± 0.628 | 2.07 | 0.407 ± 0.721 | 1.239 ± 0.578 |
| photometric centroid source offset | 2.80 ± 1.26 | 2.22 | 2.75 ± 1.26 | -0.49 ± 1.19 |

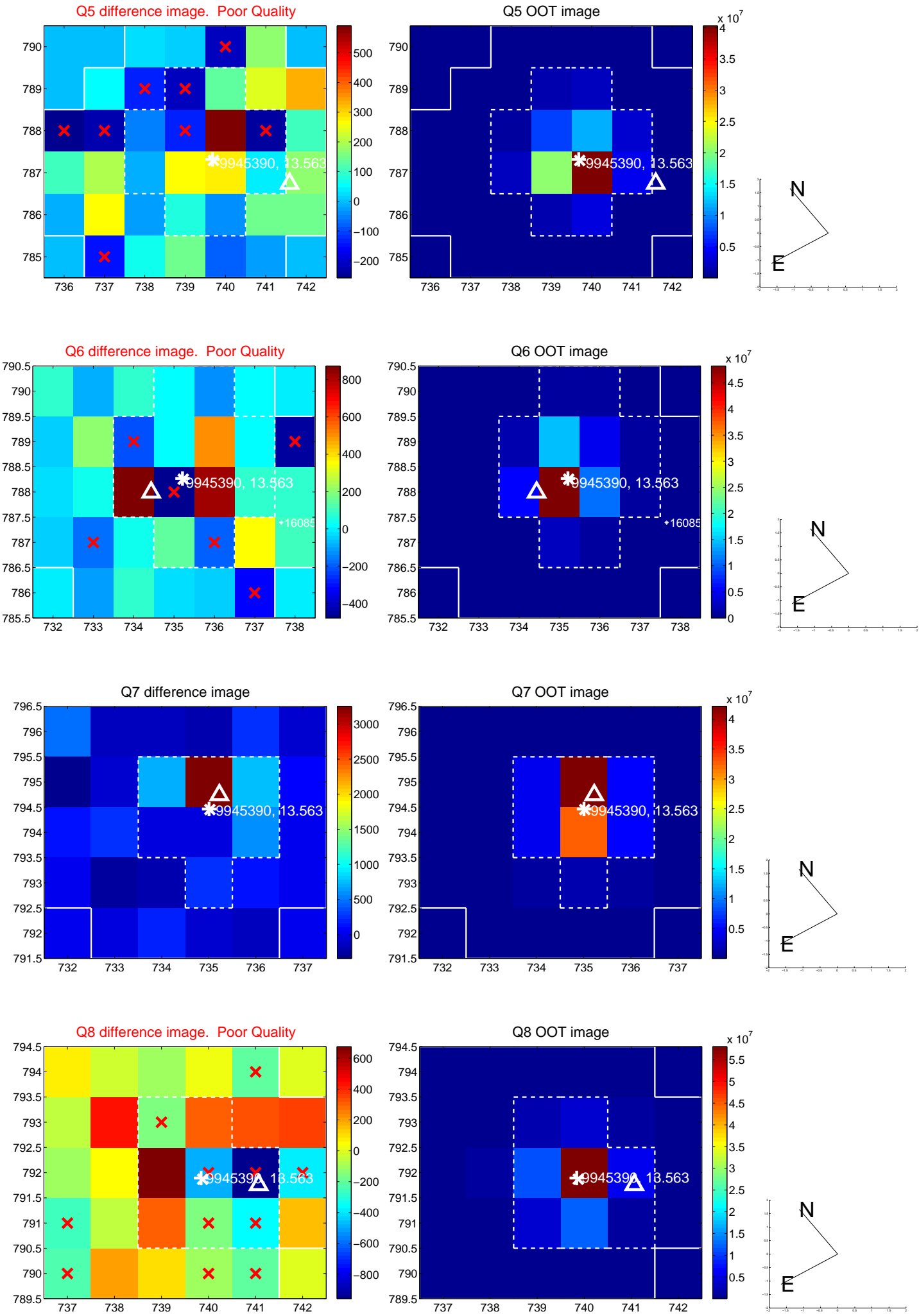


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

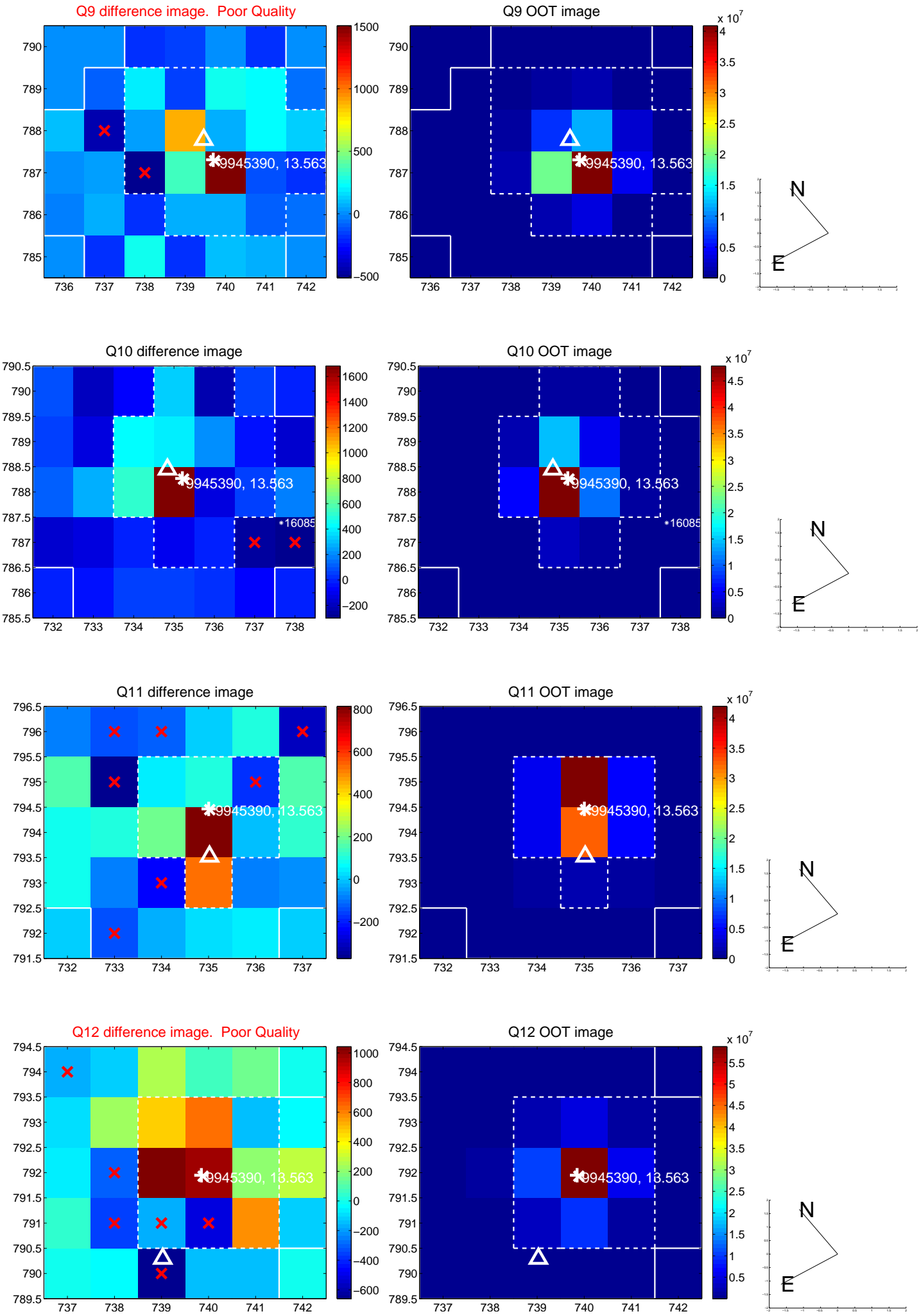
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



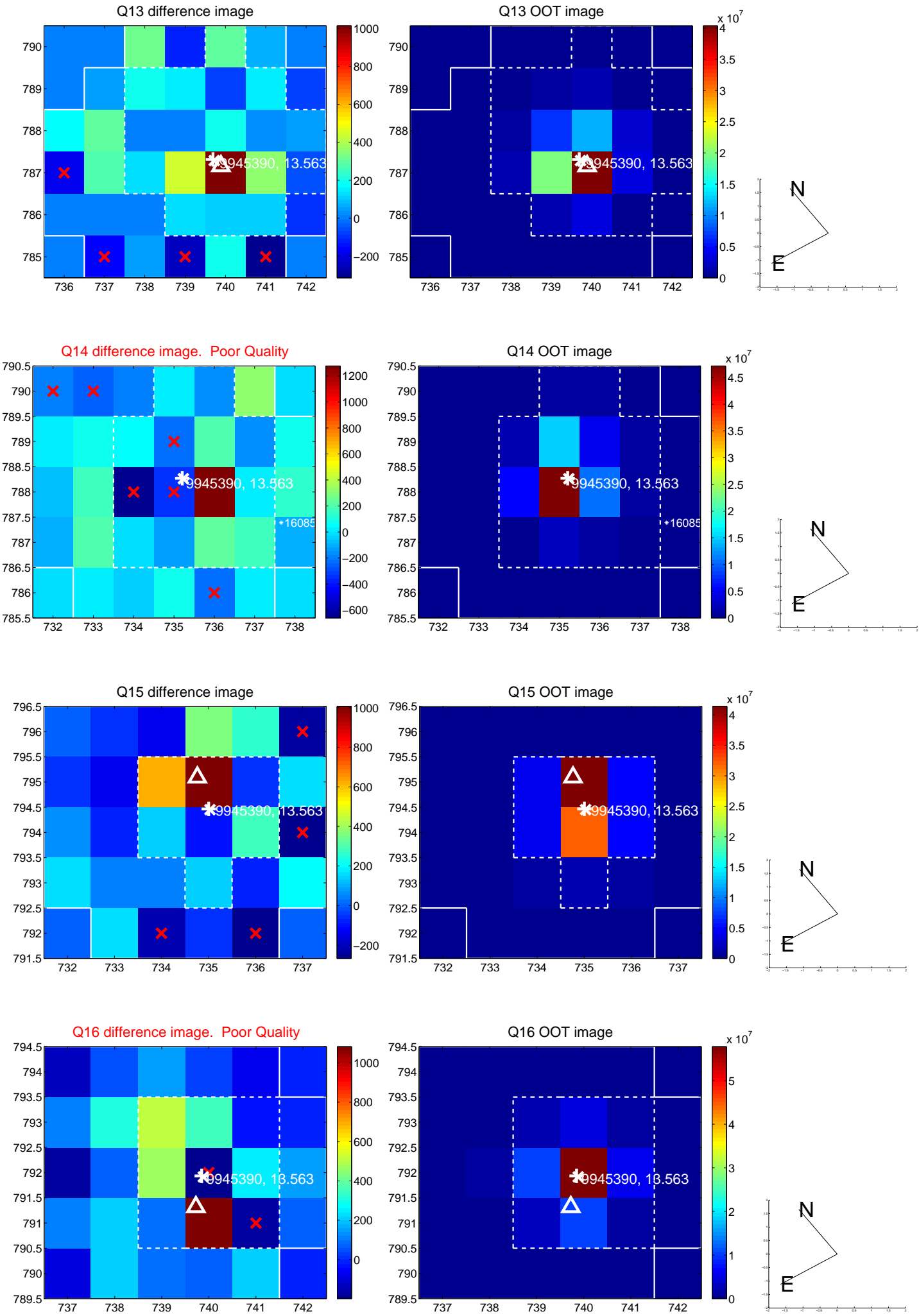
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



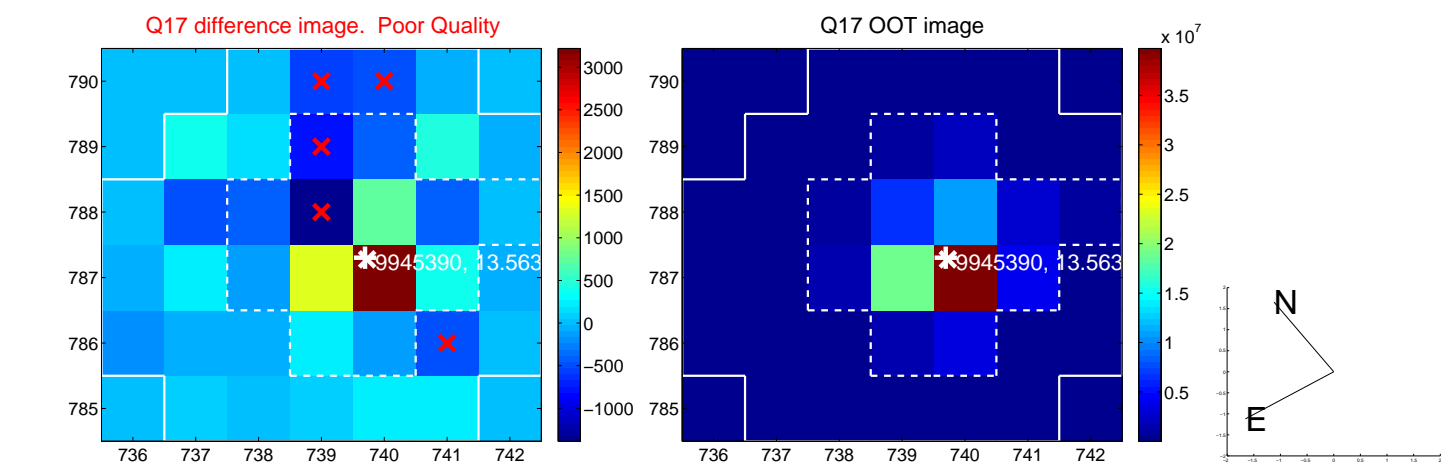
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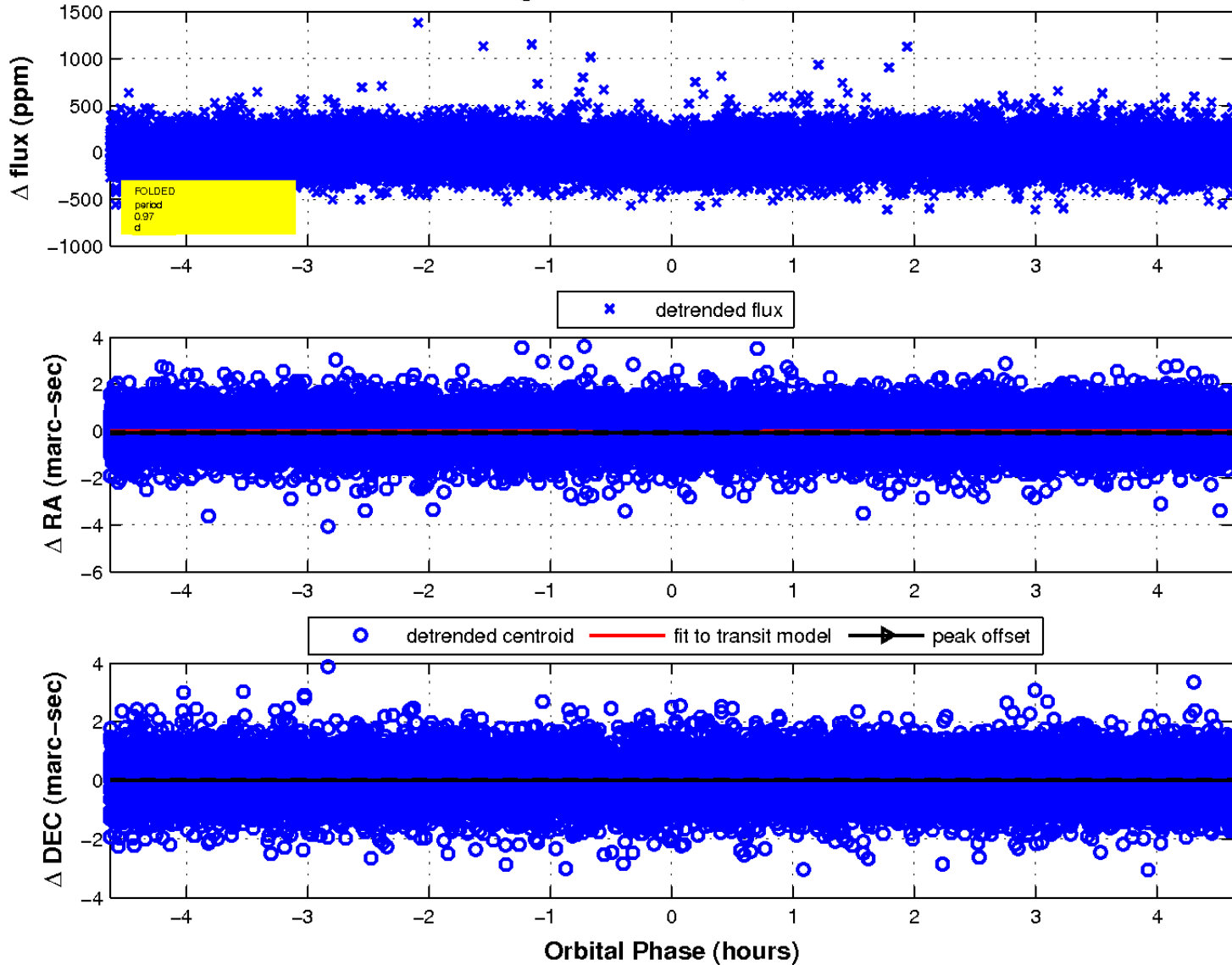
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

