

KIC 009456887

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009456887-01 | OBS | 5677.01 | 20.514113 | 148.734709 | 153.3 | 3.653 | 7.8 | 8.8 | 0.94 | 5221 | 1.41 | 30.34 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009456887-01 | OBS | PC | 0.88 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

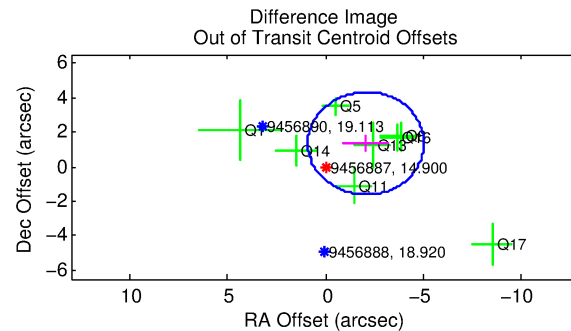
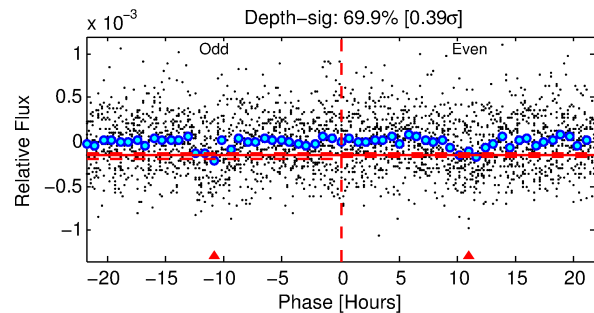
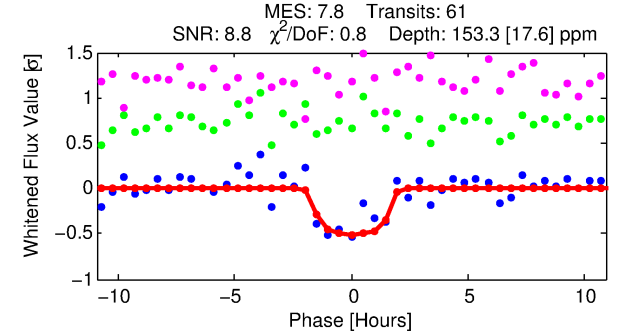
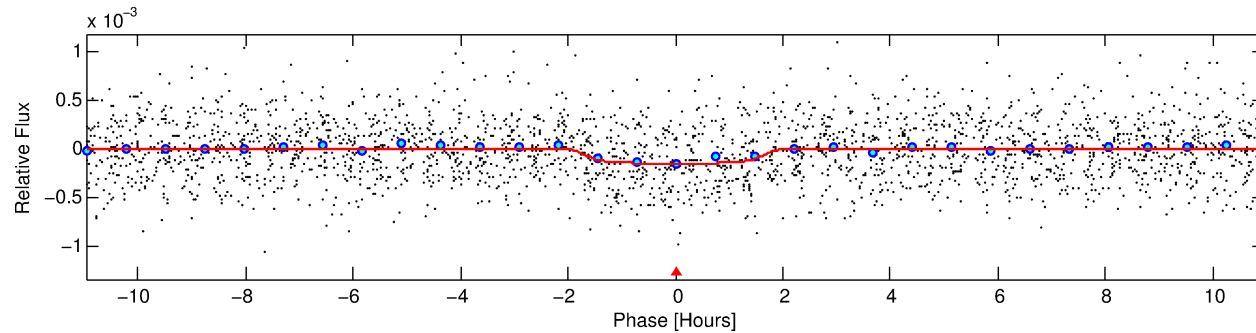
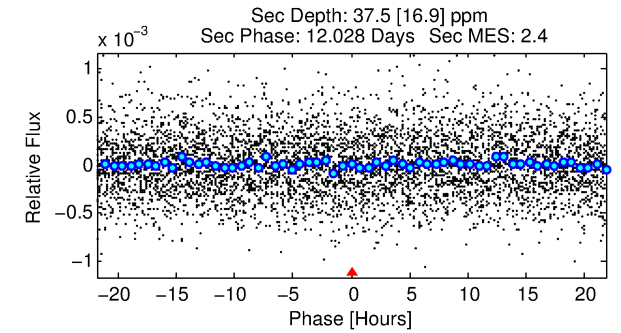
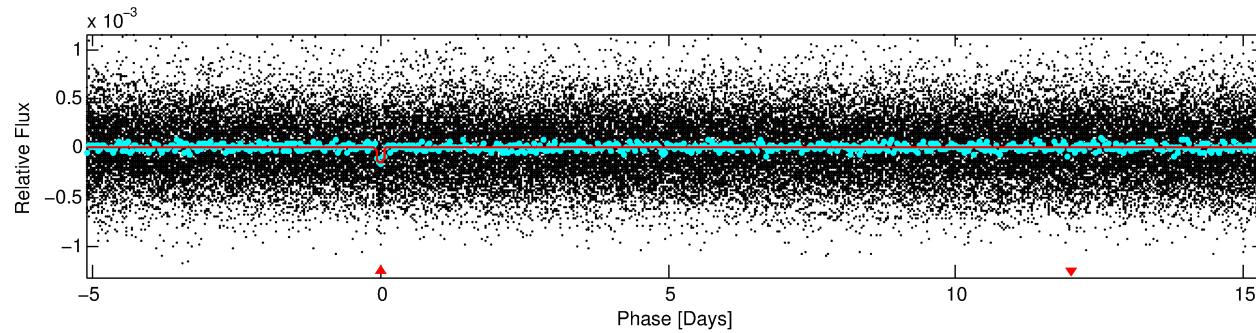
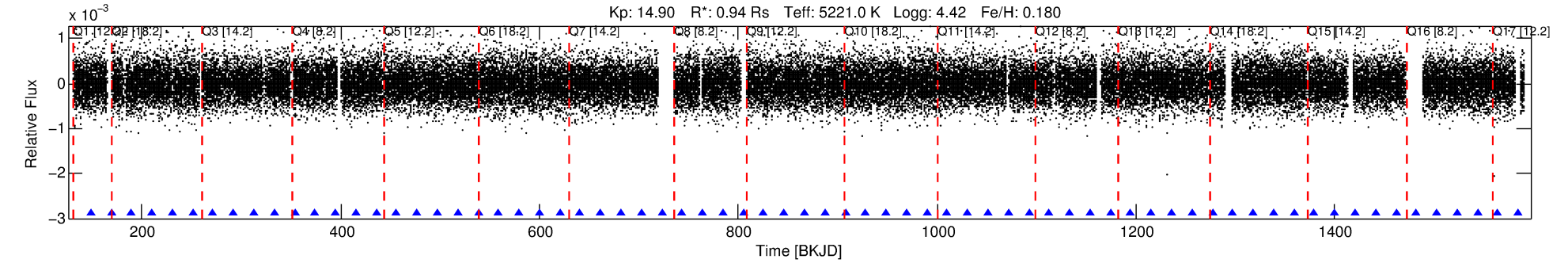
Ephemeris Match Information For 009456887-01

No Significant Match Found

DV One-Page Summary

KIC: 9456887 Candidate: 1 of 1 Period: 20.514 d

KOI: K05677.01 Corr: 0.912



DV Fit Results:

Period = 20.51411 [0.00024] d
Epoch = 148.7347 [0.0094] BKJD
Rp/R* = 0.0138 [0.0105]
a/R* = 19.70 [62.93]
b = 0.90 [0.66]
Seff = 30.34 [5.48]
Teq = 598 [27] K
Rp = 1.41 [1.09] Re
a = 0.1386 [0.0145] AU
Ag = 199.05 [317.89] [0.62σ]
Teffp = 3475 [1381] K [2.08σ]

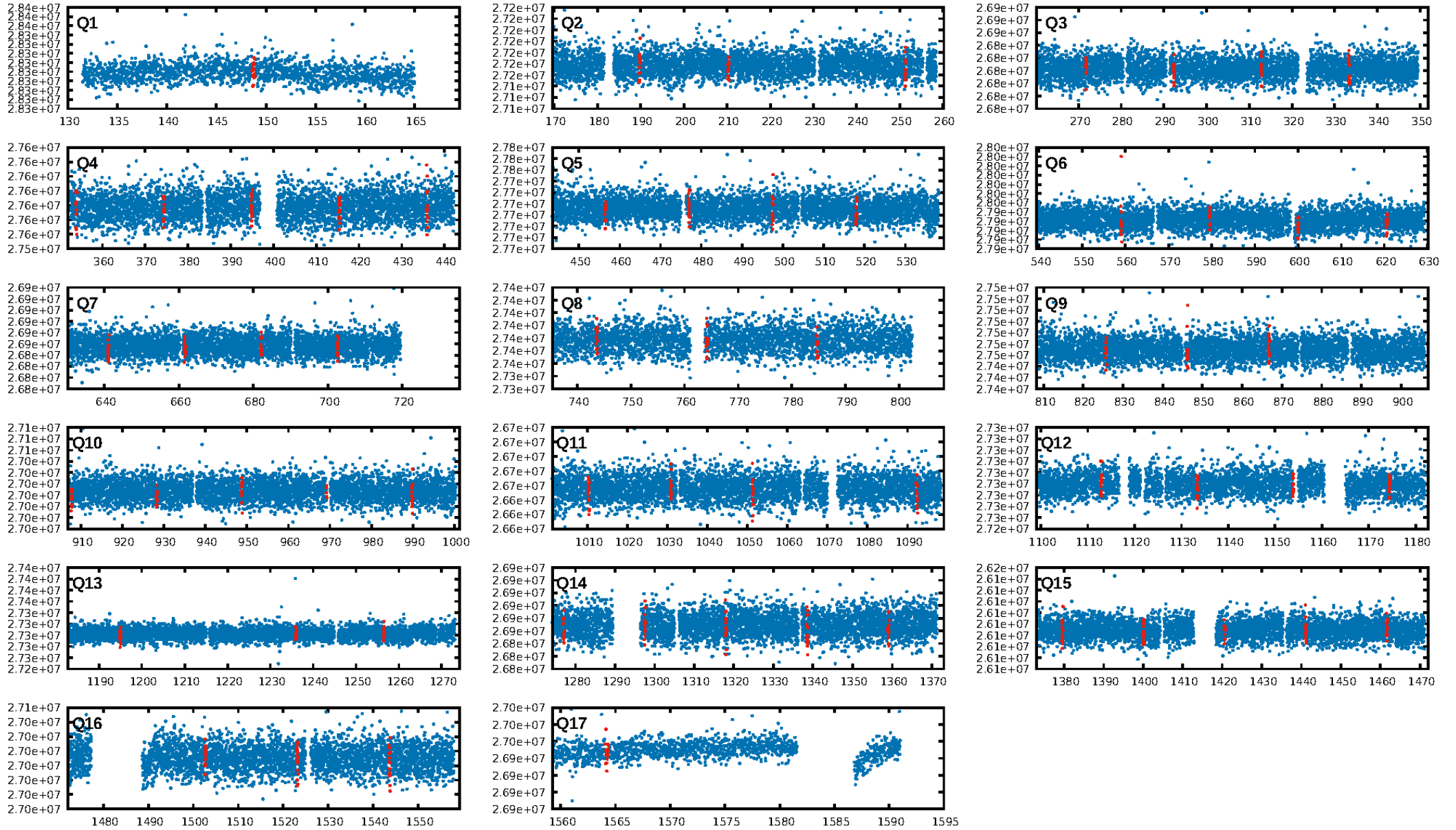
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.58e-15
RollingBand-fgt: 1.00 [59/59]
GhostDiagnostic-chr: 112.2
Centroid-sig: 10.0%
Centroid-so: 2.911 arcsec [1.68σ]
OotOffset-rm: 2.462 arcsec [2.49σ]
KicOffset-rm: 2.569 arcsec [2.55σ]
OotOffset-st: 1/1/2/4 [8]
KicOffset-st: 1/1/2/4 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 1.00 [17/17]

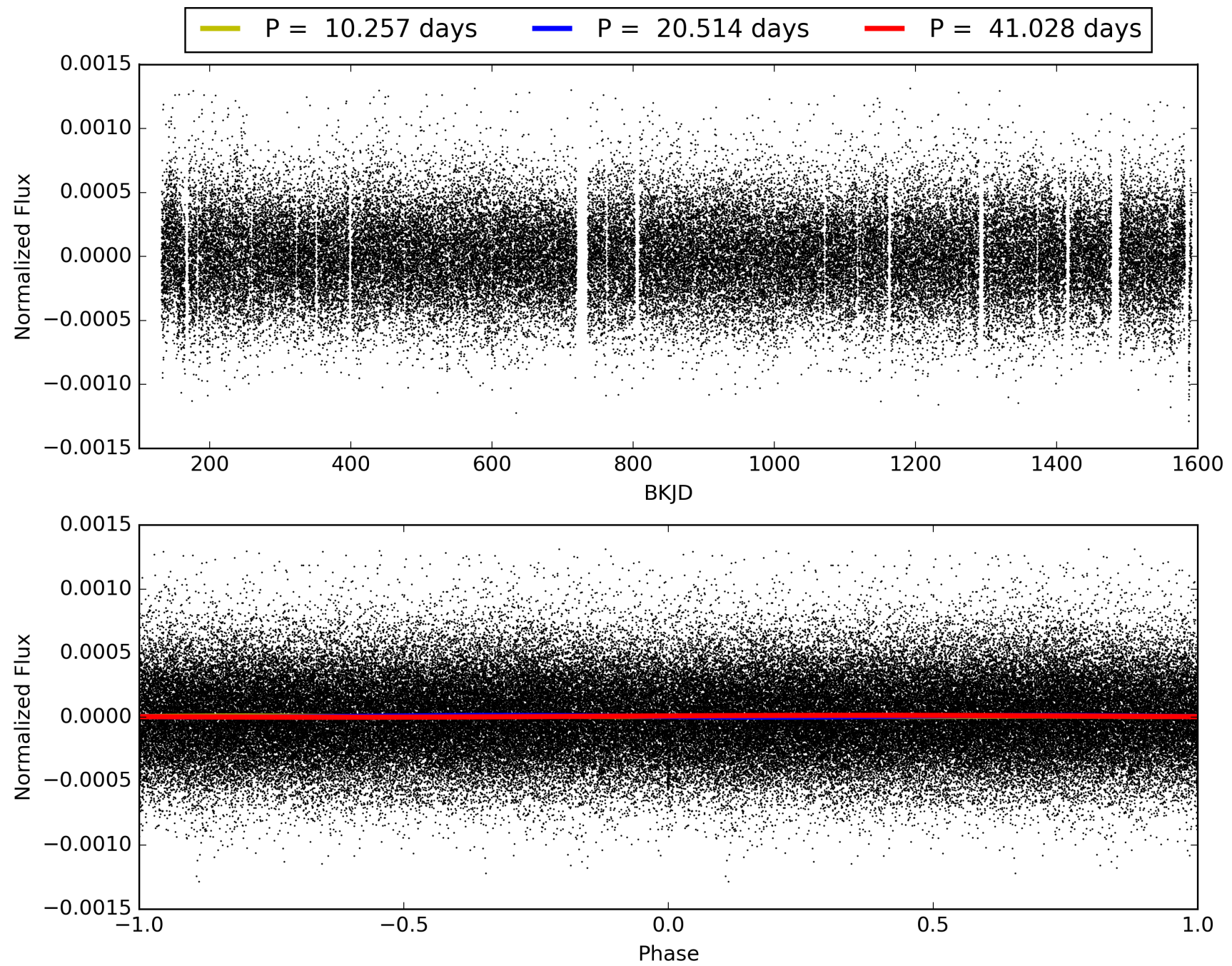
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 19:51:05 Z

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

TCE 009456887-01, PDC Light Curves

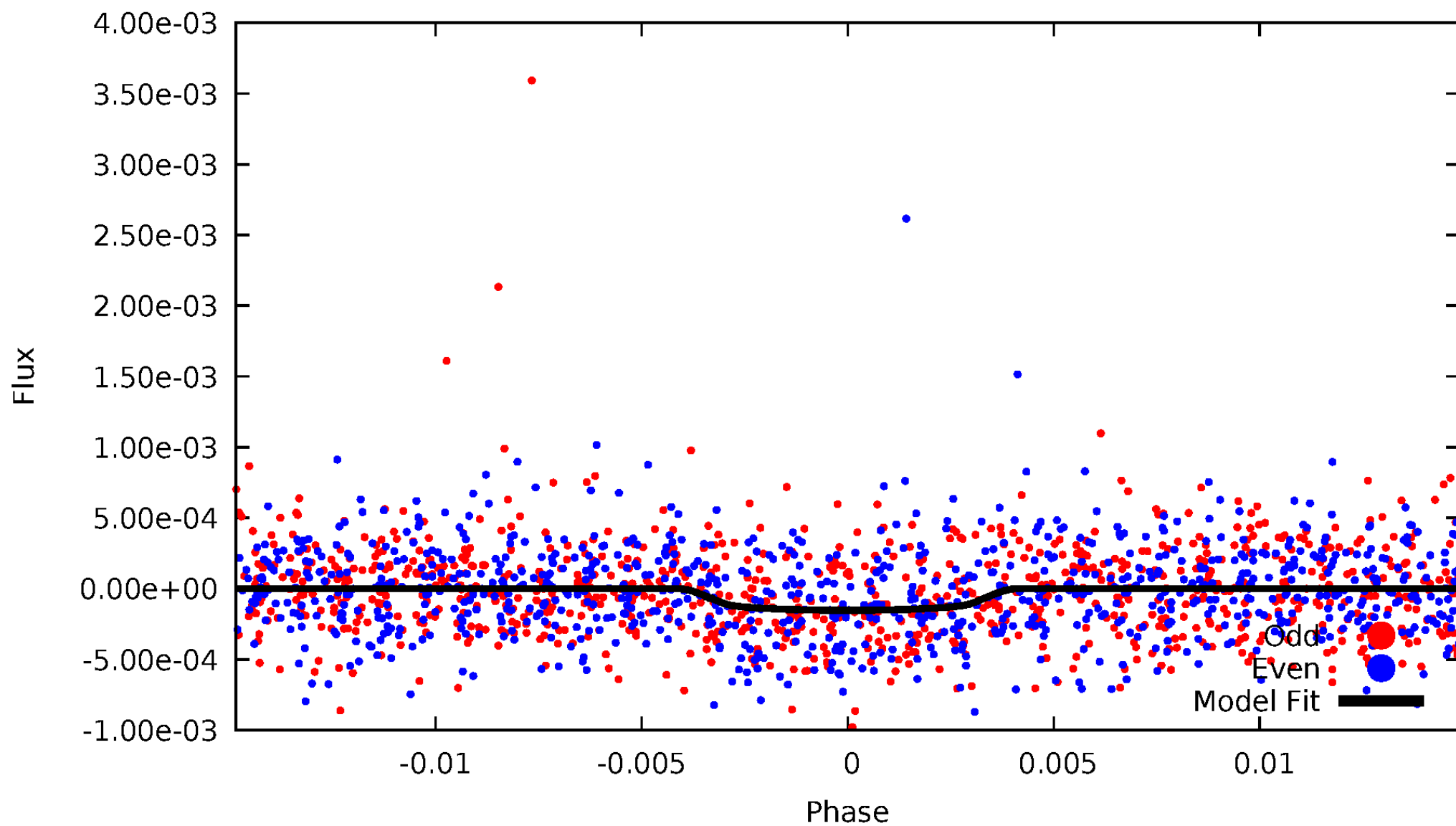


TCE 009456887-01



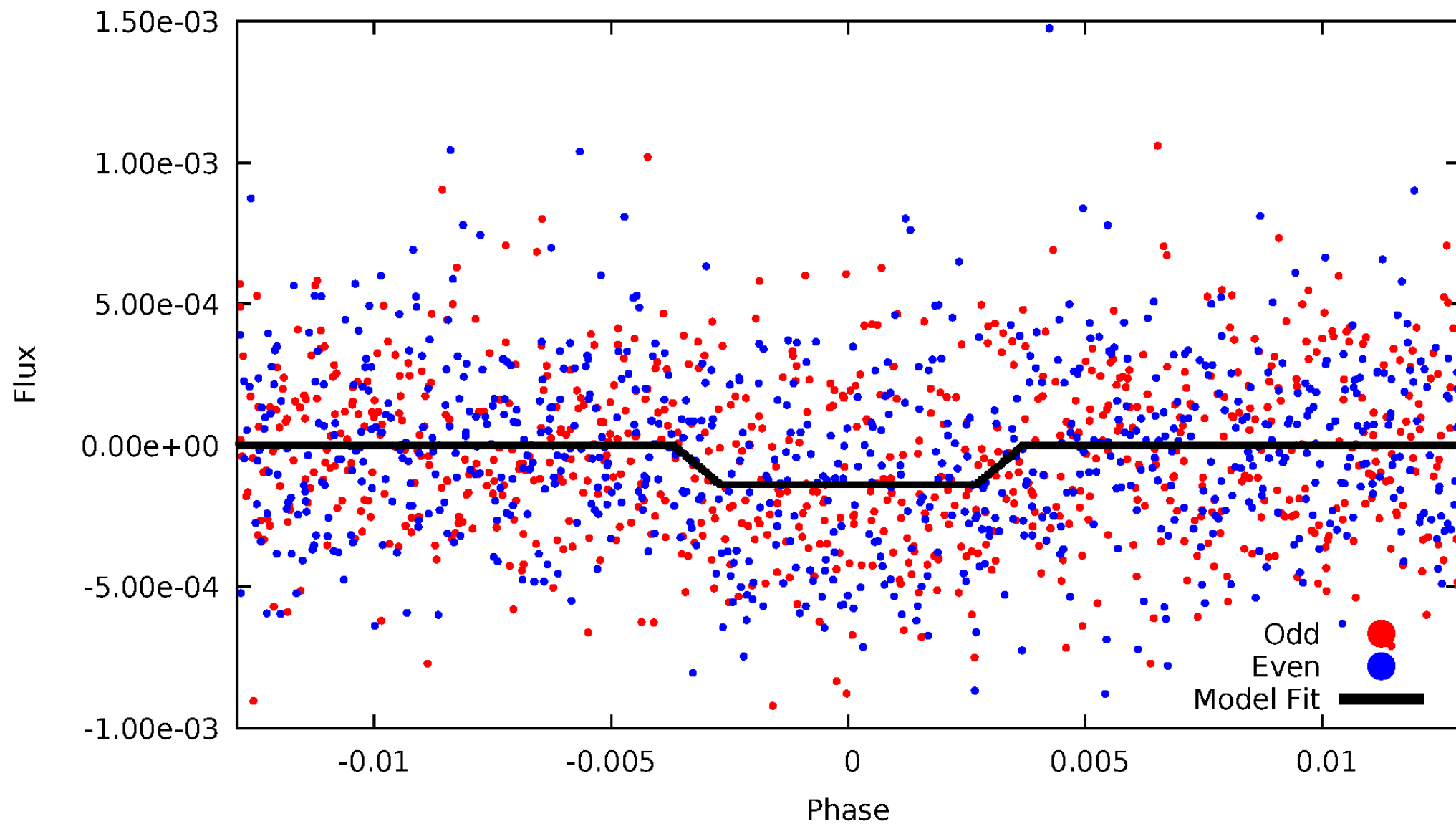
DV Odd/Even

TCE 009456887-01



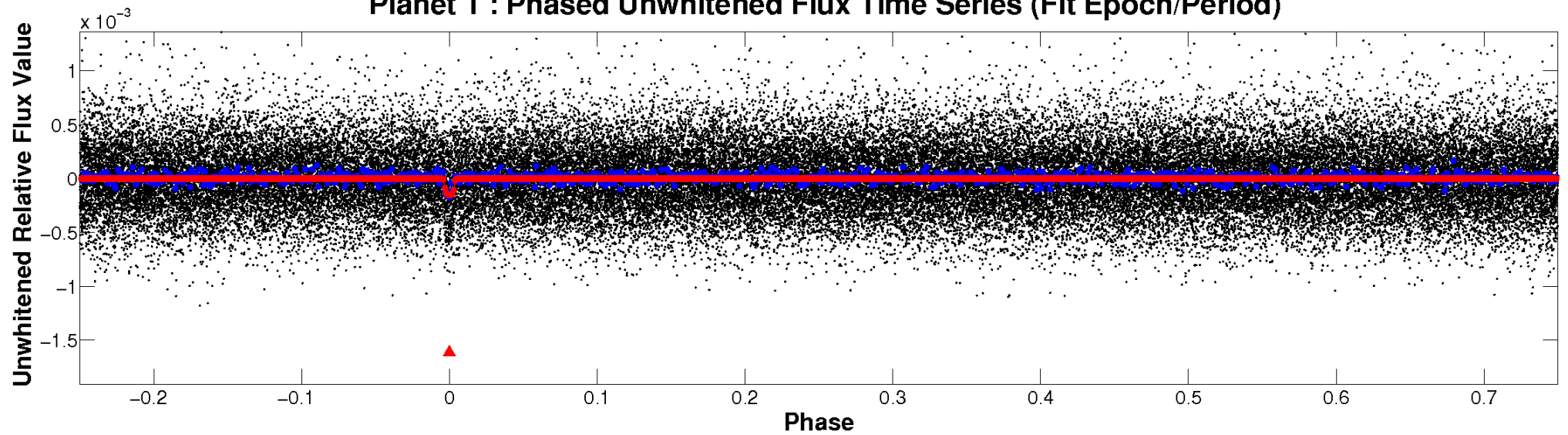
ALT Odd/Even

TCE 009456887-01

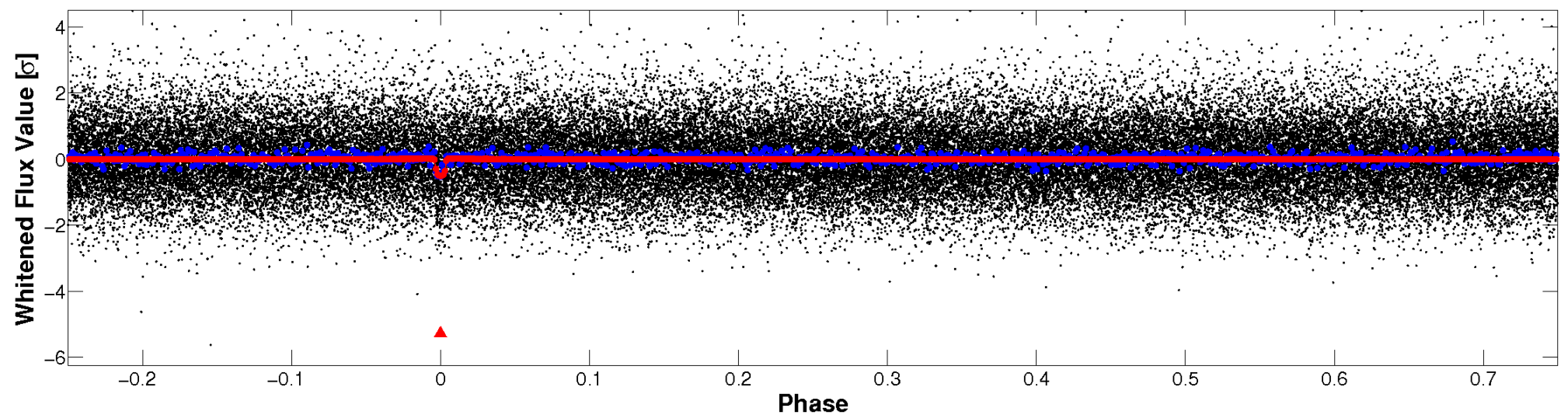


Non-Whitened Vs. Whitened Light Curve

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

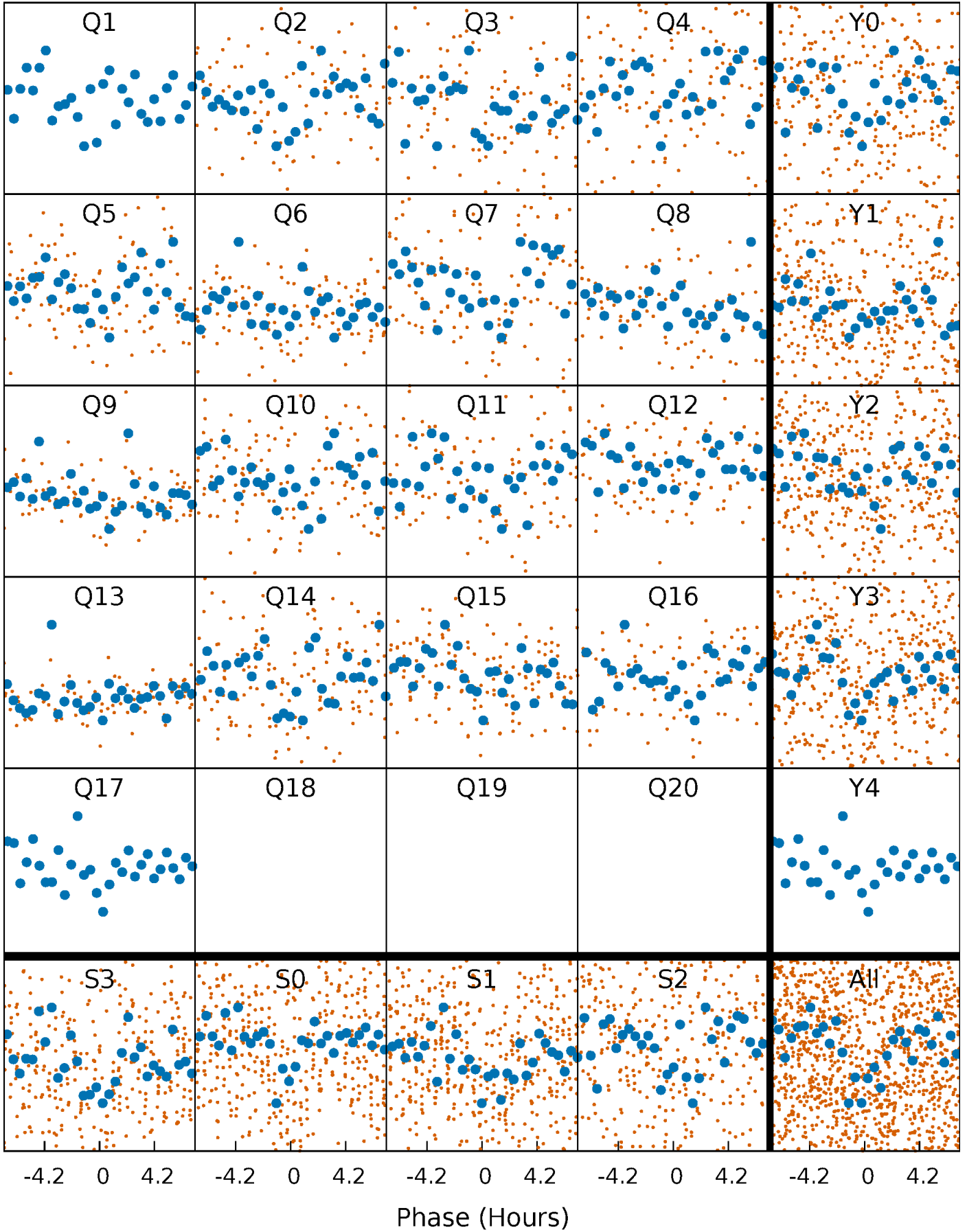


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



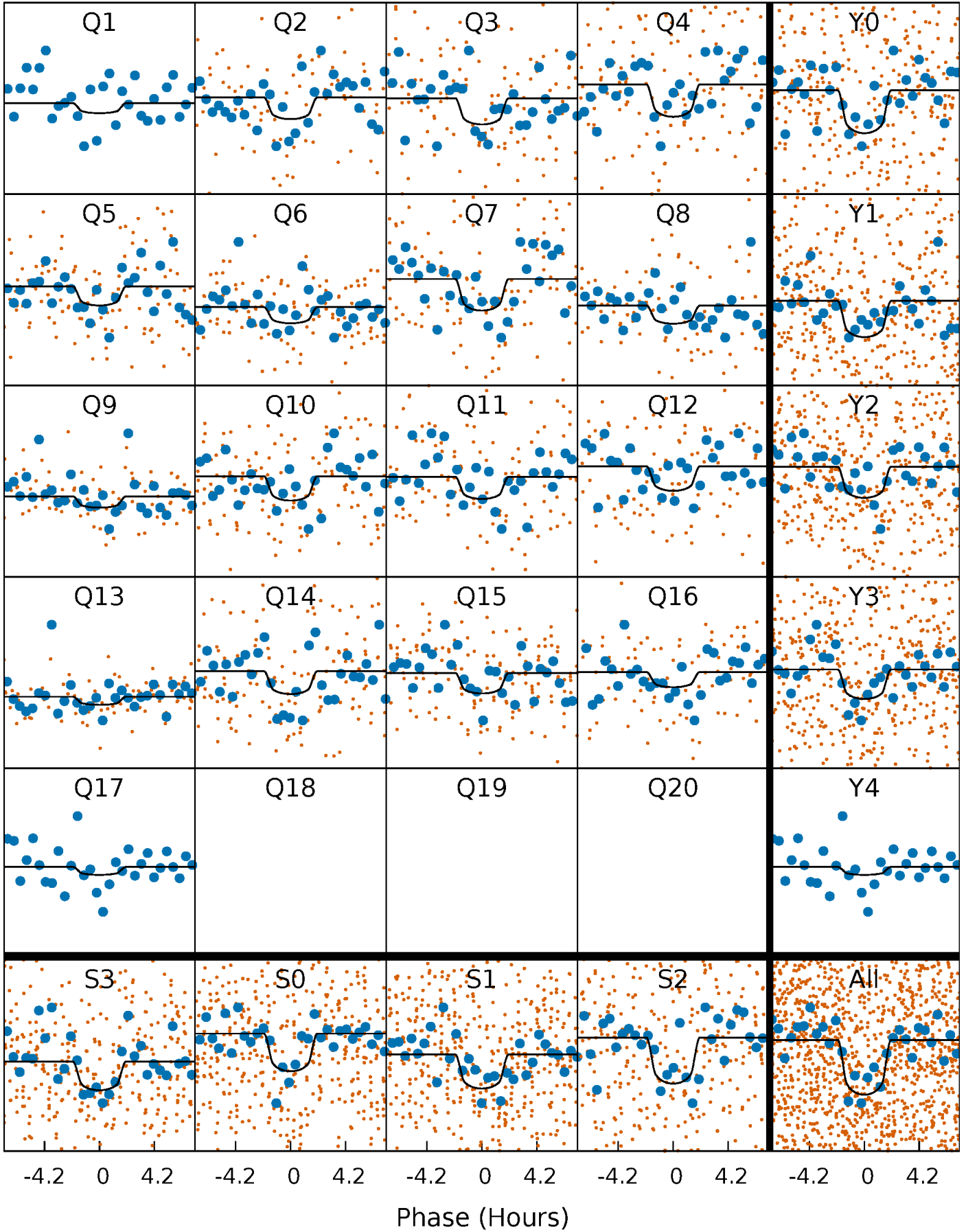
PDC Quarter-Phased Transit Curves

TCE 009456887-01 P= 20.514113 Days $T_0=148.734710$ (BKJD)



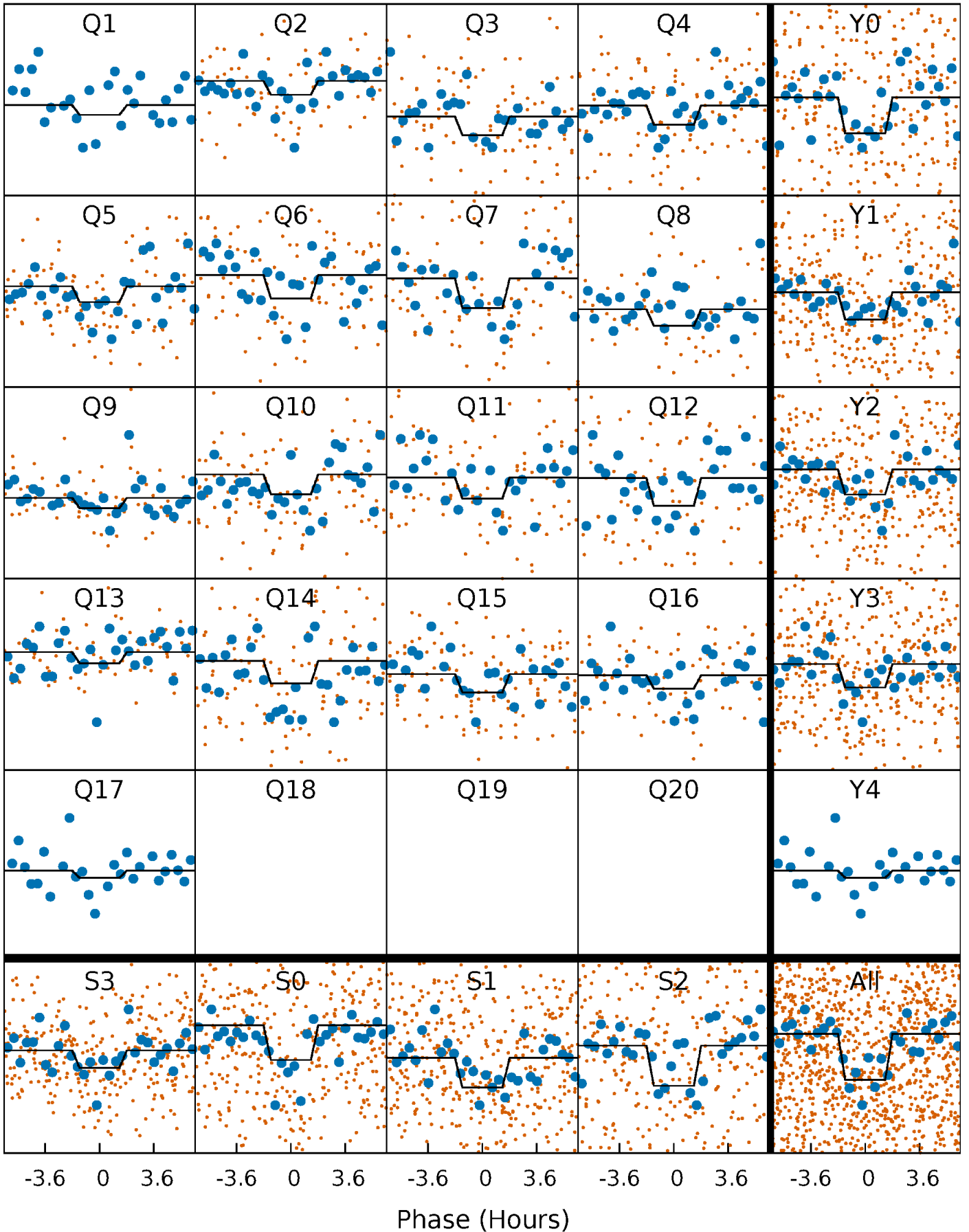
DV Quarter-Phased Transit Curves

TCE 009456887-01 P= 20.514113 Days $T_0=148.734710$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

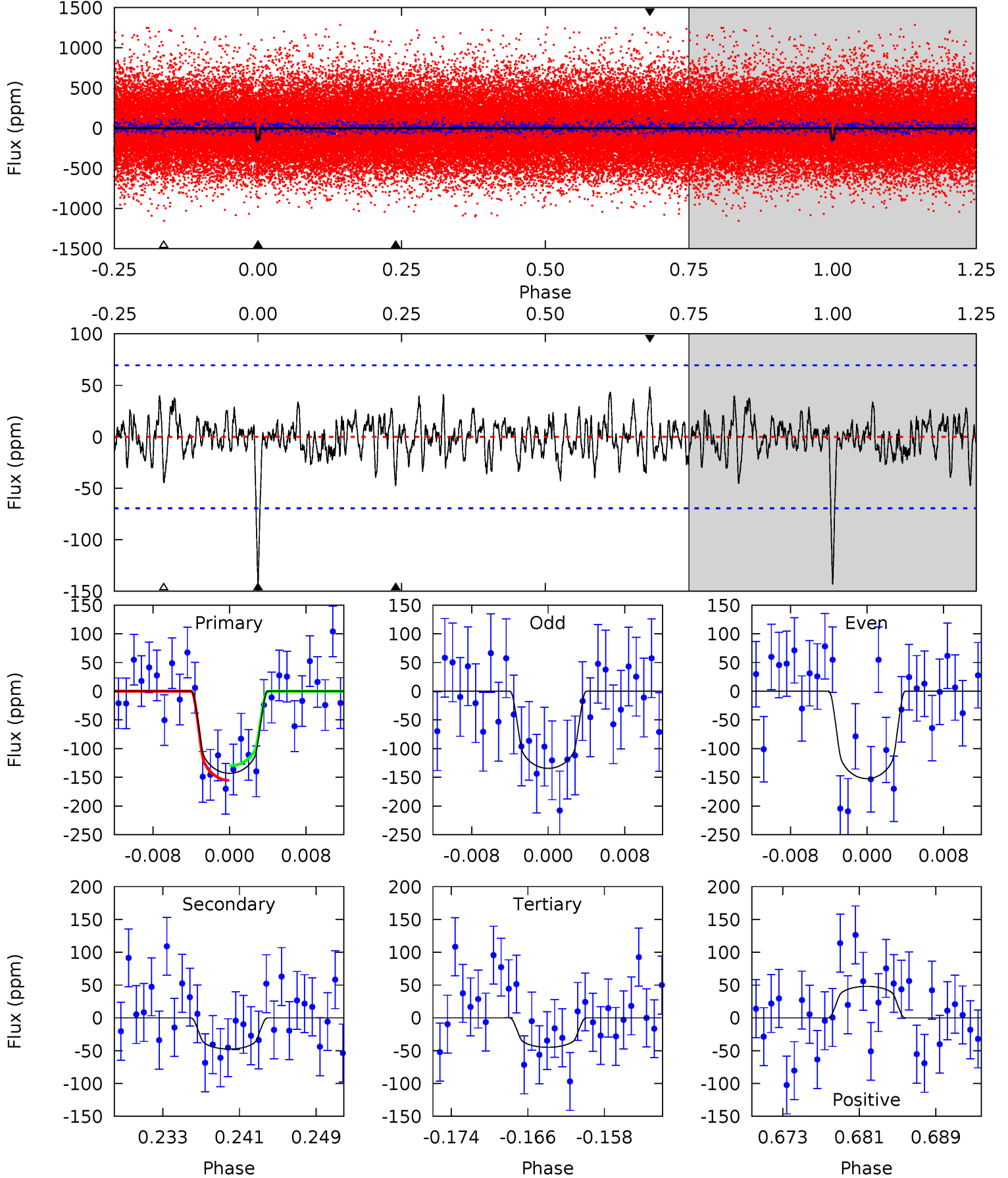
TCE 009456887-01 P= 20.514433 Days $T_0=148.721379$ (BKJD)



DV Model-Shift Uniqueness Test

009456887-01, $P = 20.514113$ Days, $E = 128.220597$ Days

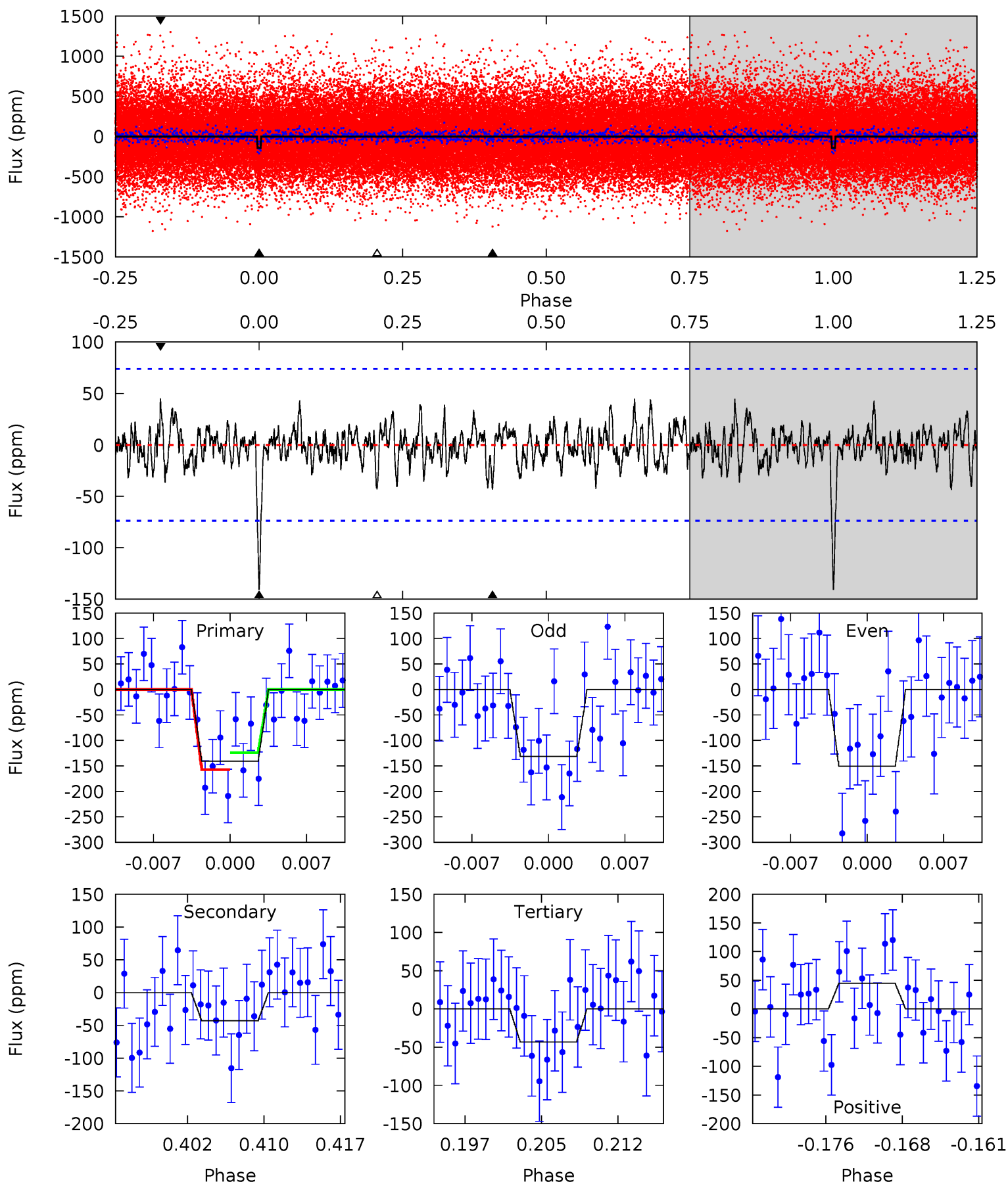
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.4 | 3.47 | 3.27 | 3.50 | 5.06 | 2.64 | 1.08 | 7.15 | 6.92 | 0.20 | -0.04 | 0.65 | 0.87 | 0.25 | 0.93 |



Alt Model-Shift Uniqueness Test

009456887-01, P = 20.514433 Days, E = 128.206946 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.71 | 2.98 | 2.98 | 3.08 | 5.09 | 2.68 | 1.03 | 6.73 | 6.63 | 0.00 | -0.10 | 0.66 | 0.97 | 0.24 | 1.15 |



Stellar Parameters For KIC 009456887

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5221^{+78}_{-86} | $4.422^{+0.099}_{-0.081}$ | $0.180^{+0.150}_{-0.100}$ | $0.936^{+0.101}_{-0.101}$ | $0.843^{+0.055}_{-0.030}$ | $1.450^{+0.590}_{-0.353}$ |
| | +1%/-2% | +2%/-2% | +83%/-56% | +11%/-11% | +7%/-4% | +41%/-24% |
| Source | SPE90 | SPE90 | SPE90 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 009456887-01 / KOI 5677.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|-------------------|-----------------------|----------------------|
| DV | -48 ± 14 | $1.50^{+1.05}_{-0.85}$ | 835^{+29}_{-30} | 3878^{+1502}_{-609} | 230^{+983}_{-155} |
| Alt. | -43 ± 14 | $1.35^{+0.95}_{-0.87}$ | 835^{+29}_{-29} | 3974^{+1962}_{-715} | 249^{+1596}_{-172} |

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 $A_{obs} \gg 1.0$

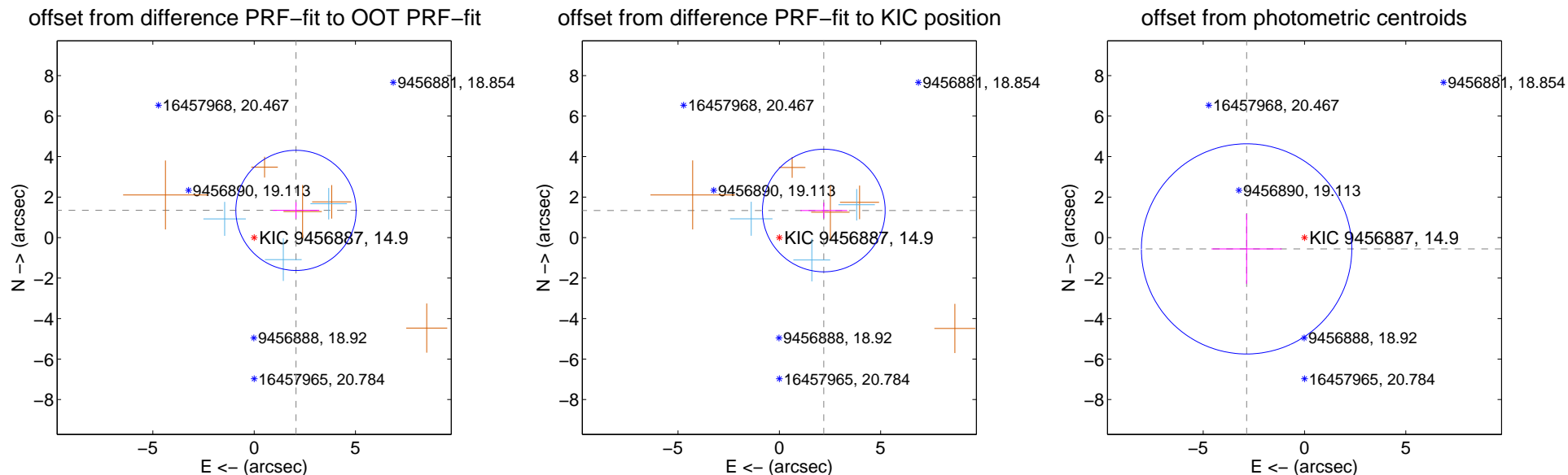
DV Centroid Data

Supplemental centroid analysis for 009456887-01. Kepler magnitude: 14.90. Transit SNR 8.79

There are 3 quarters with good PRF difference image offsets

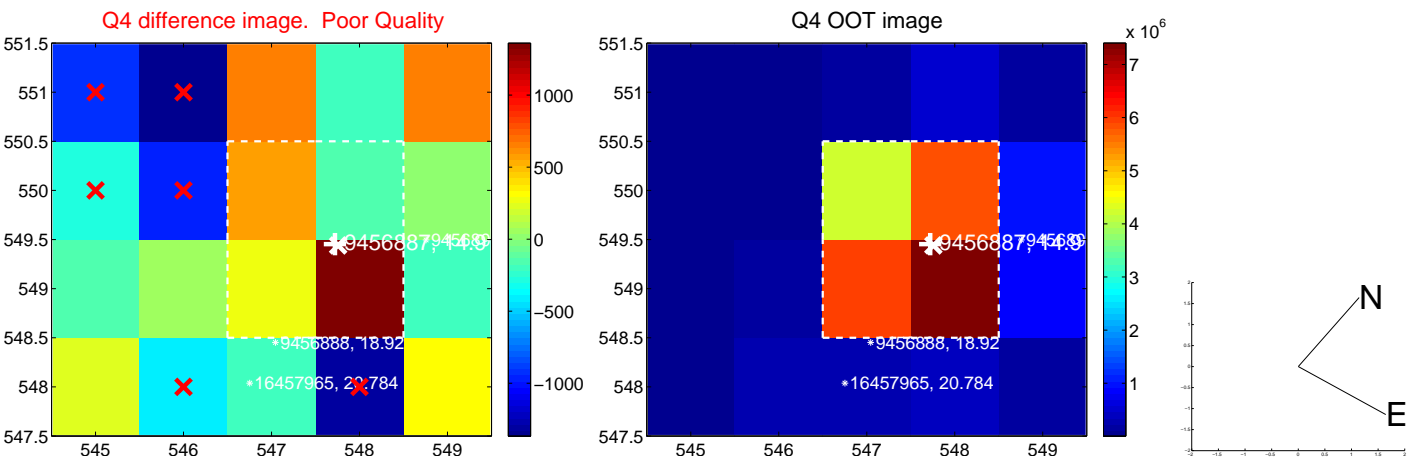
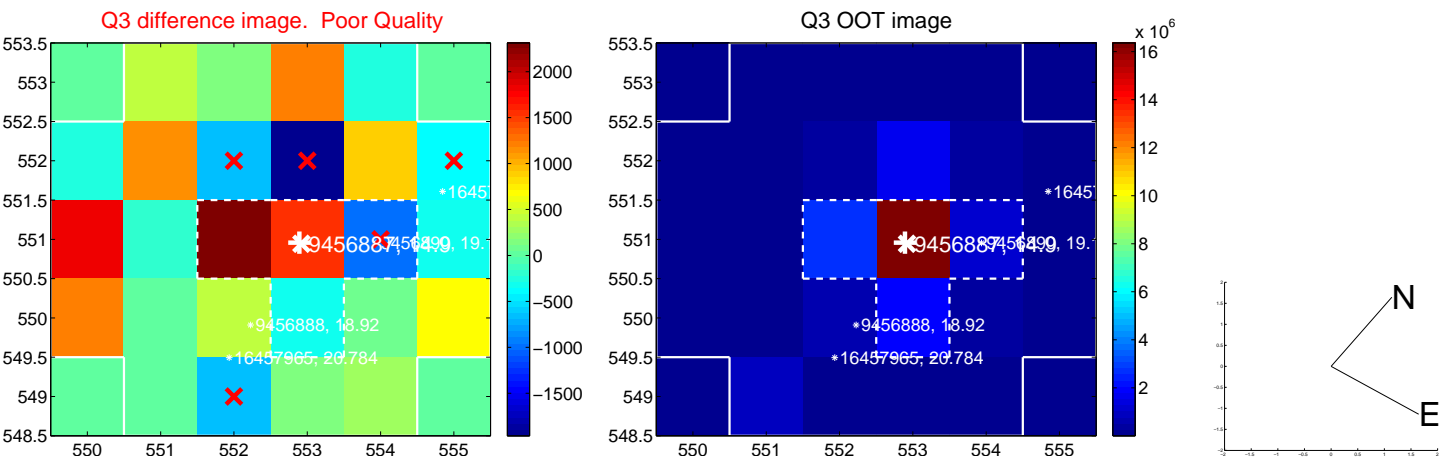
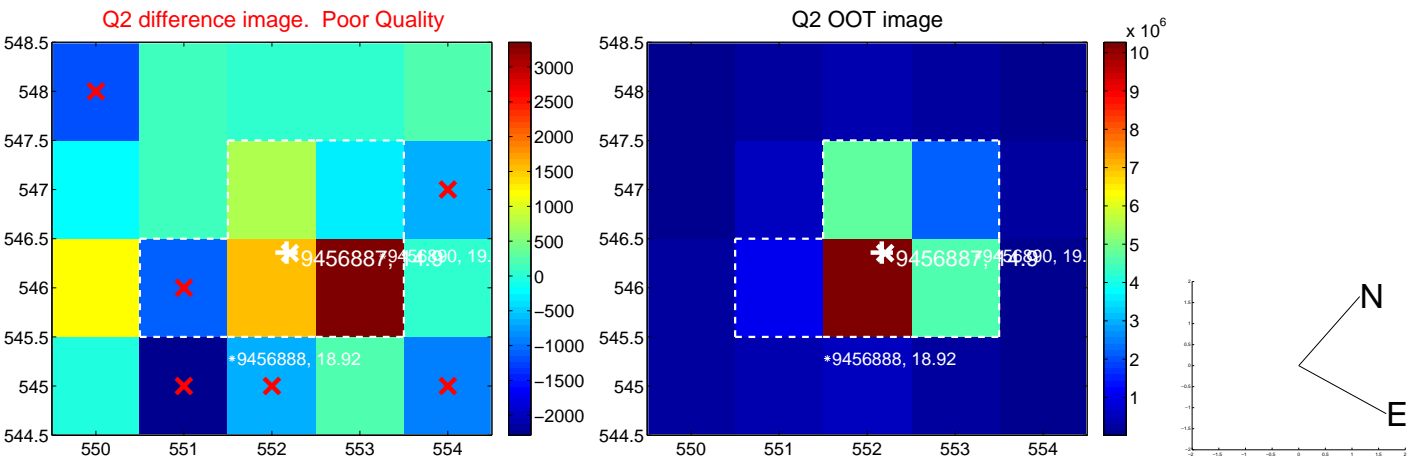
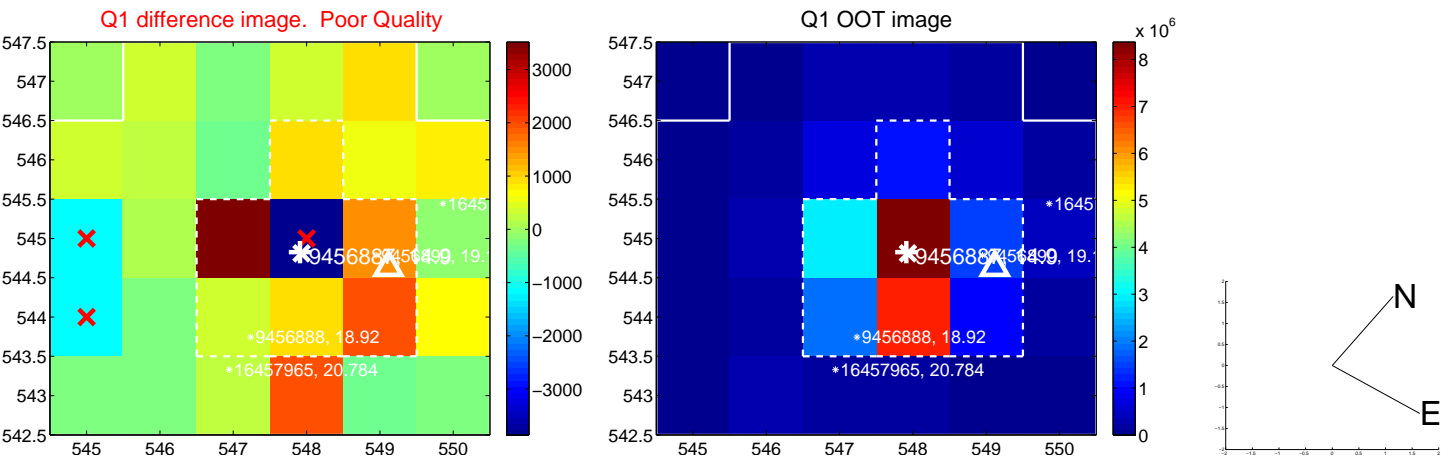
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 2.462 ± 0.989 | 2.49 | -2.063 ± 1.151 | 1.344 ± 0.401 |
| PRF-fit source offset from KIC position | 2.569 ± 1.009 | 2.55 | -2.194 ± 1.158 | 1.337 ± 0.389 |
| photometric centroid source offset | 2.91 ± 1.73 | 1.68 | 2.86 ± 1.73 | -0.56 ± 1.73 |

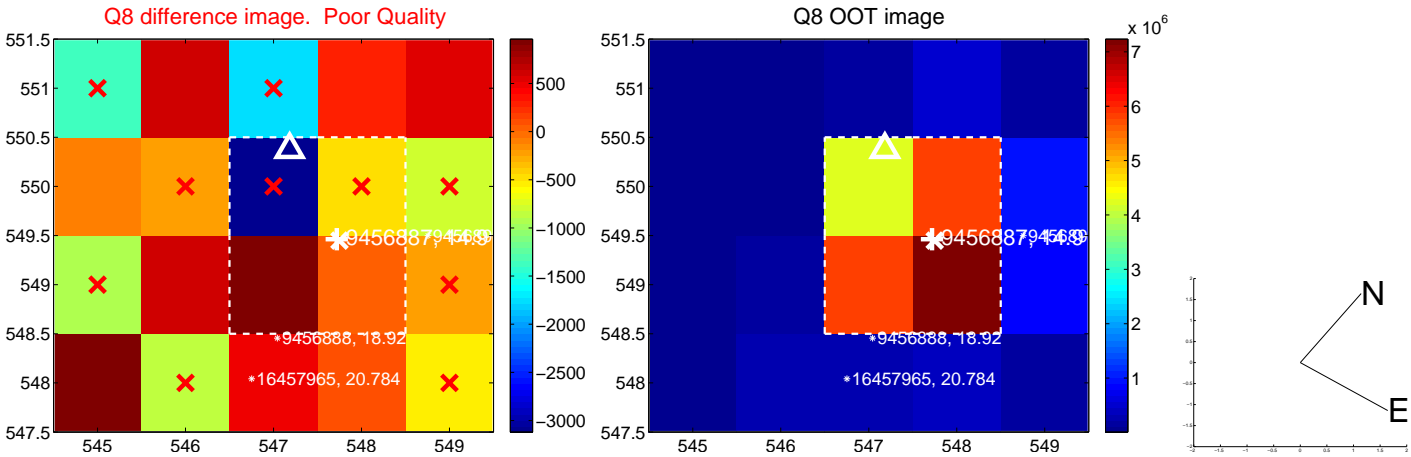
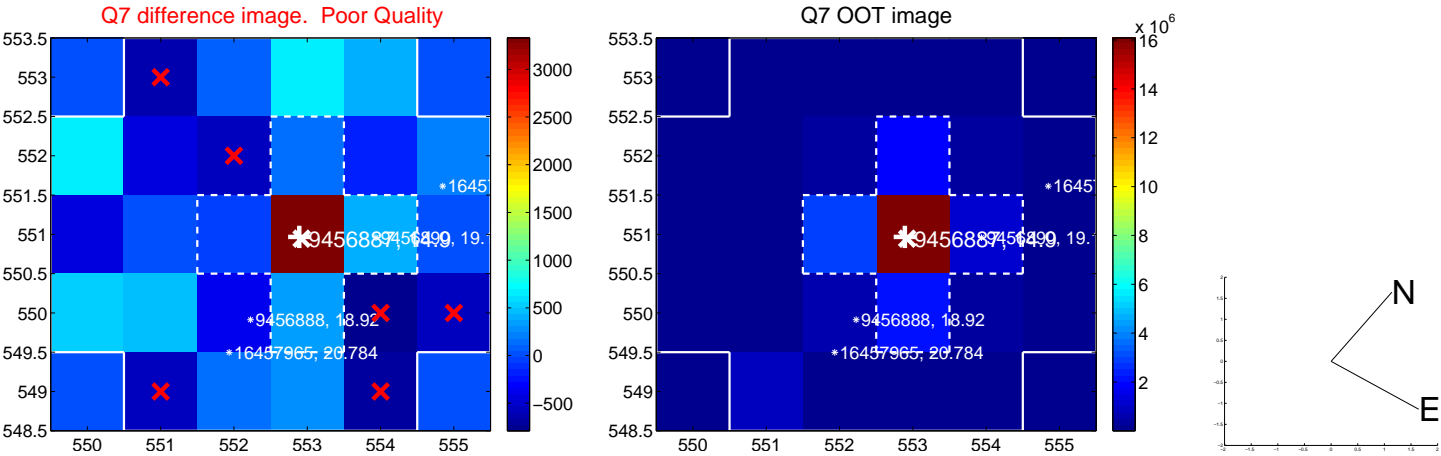
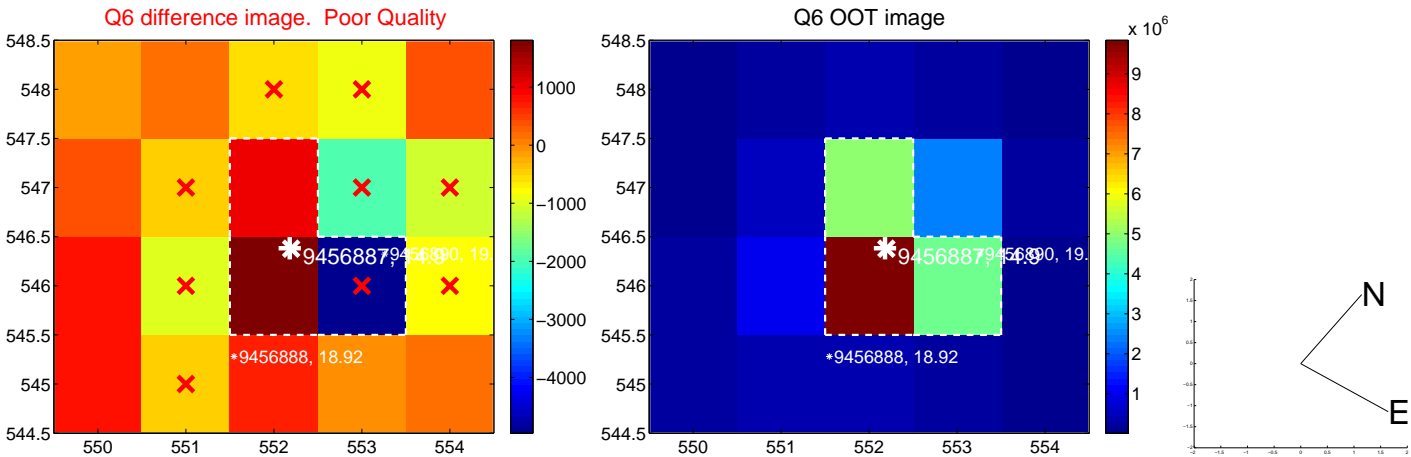
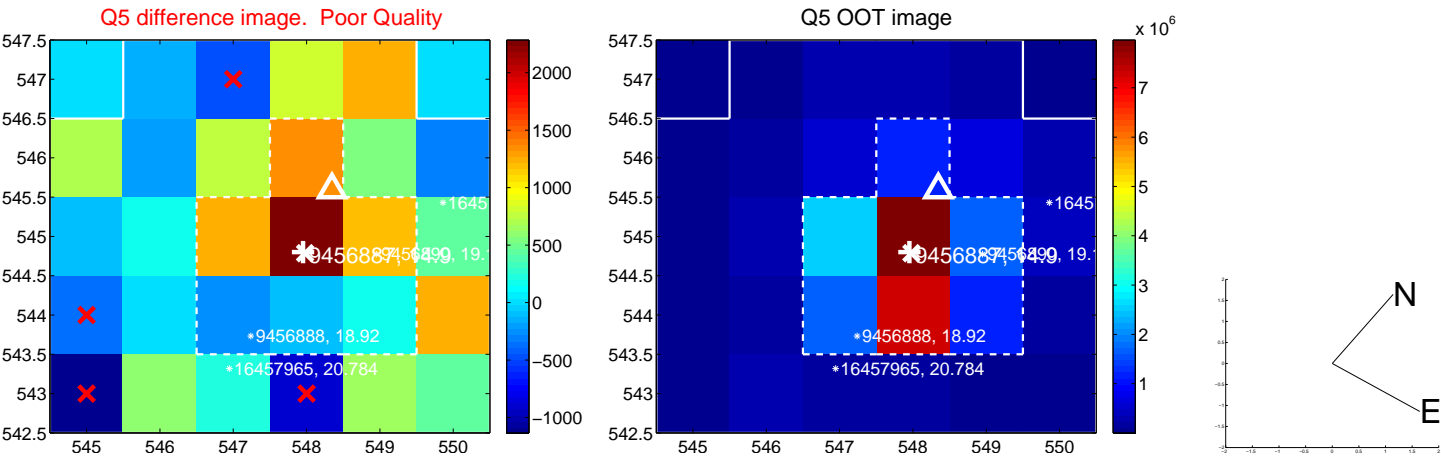


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

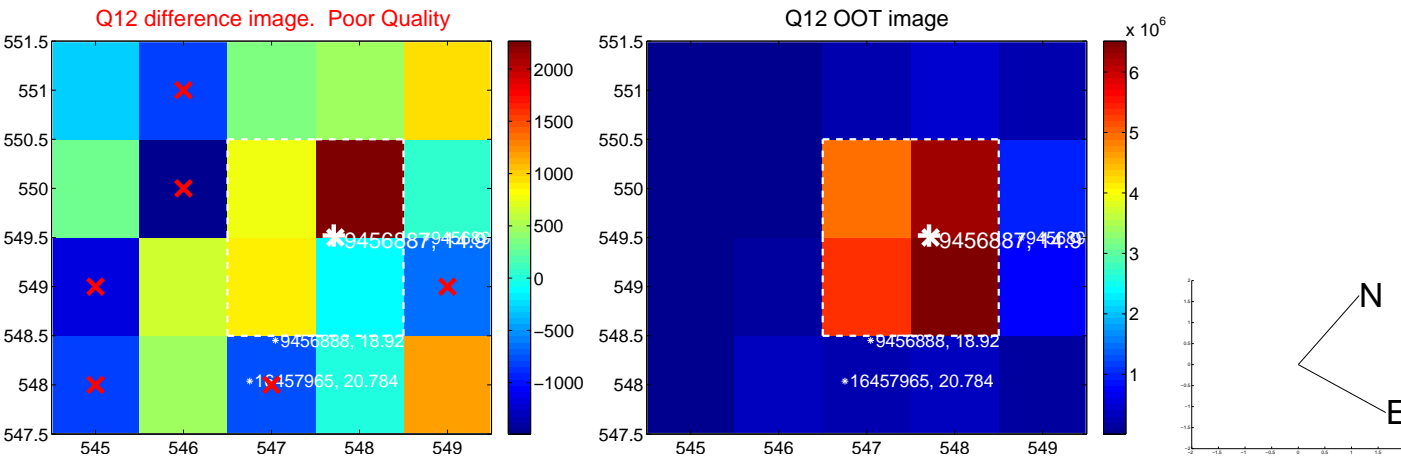
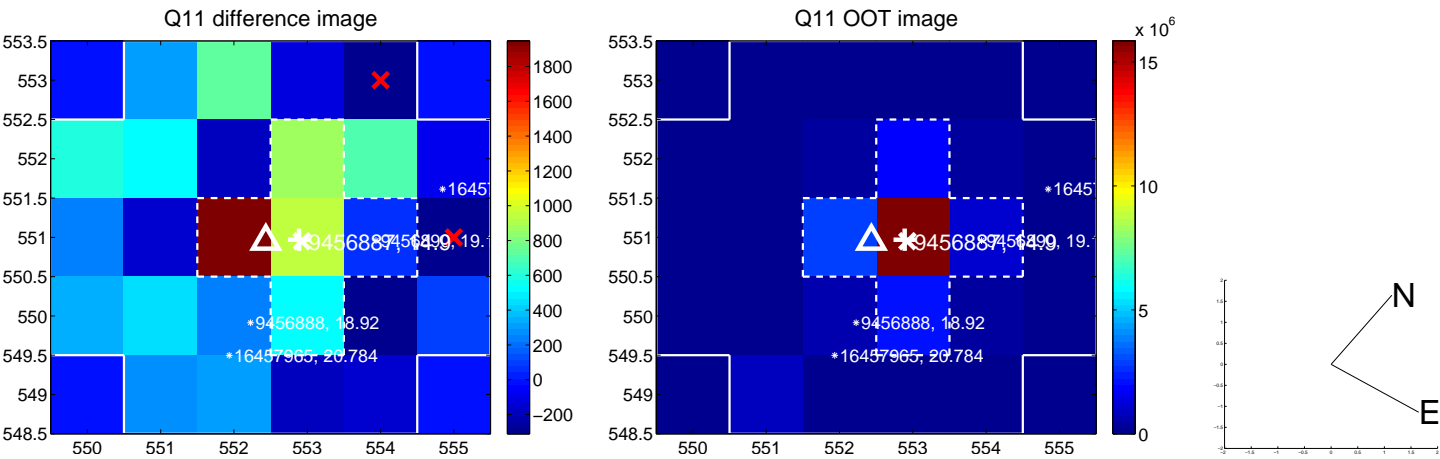
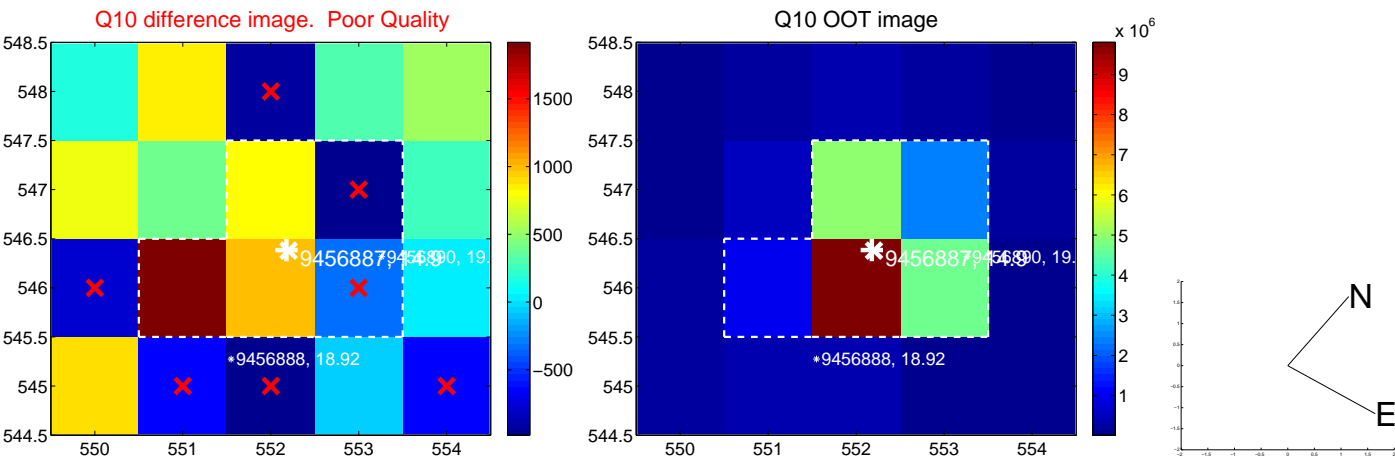
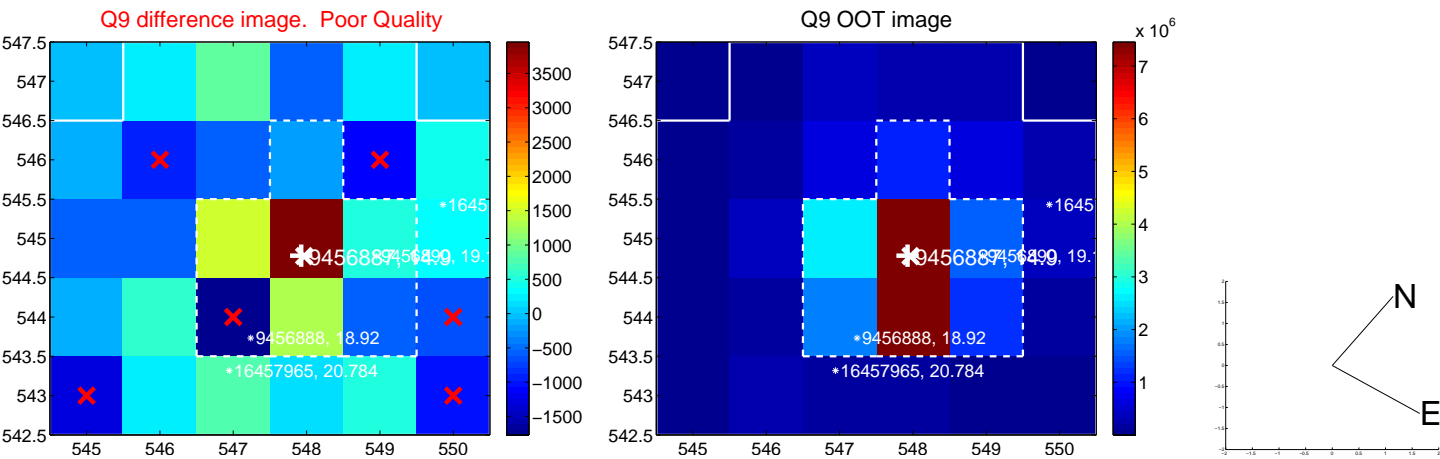
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



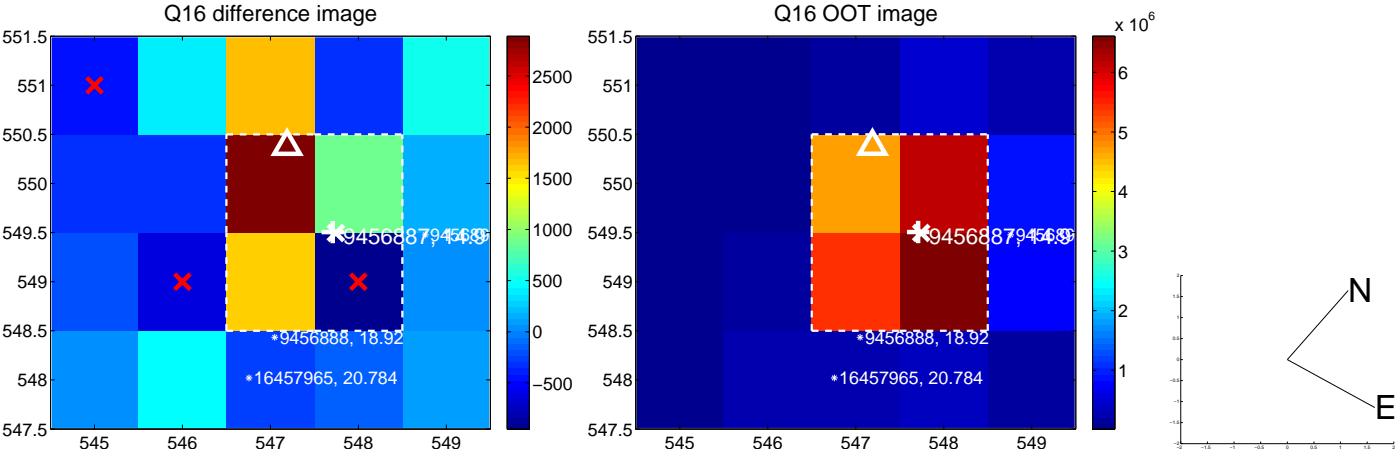
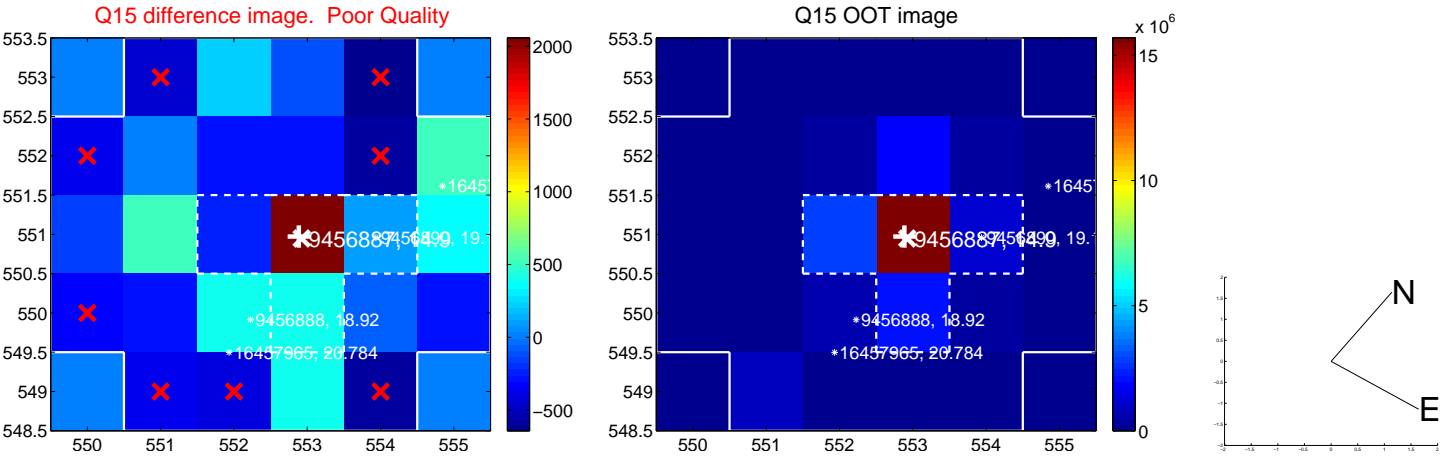
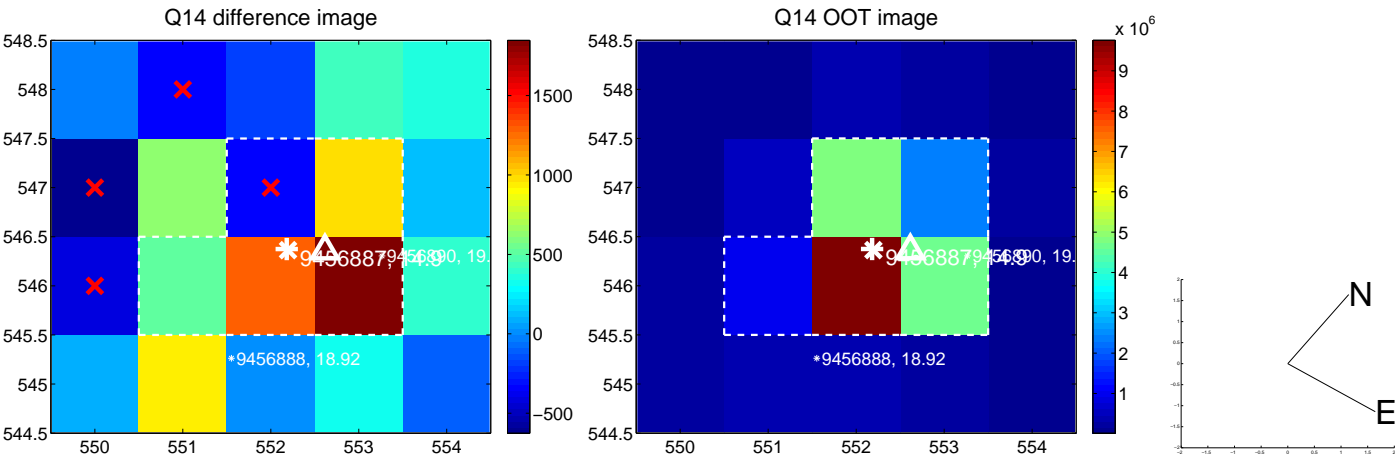
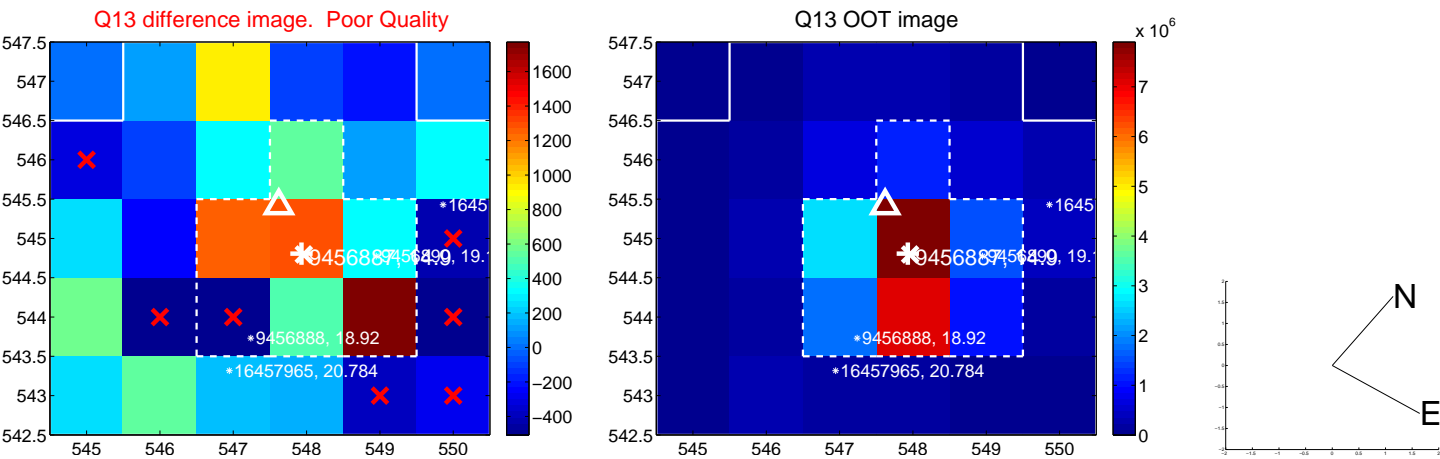
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

