

KIC 009665922

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009665922-01 | OBS | 2815.01 | 1.545313 | 132.670736 | 37.3 | 3.804 | 15.4 | 15.4 | 0.77 | 5782 | 0.55 | 964.68 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------------------|
| 009665922-01 | OBS | FP | 0.00 | 0 | 0 | 1 | 0 | CENT_UNRESOLVED_OFFSET |

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

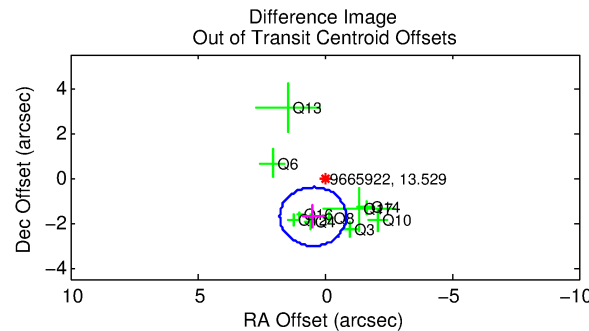
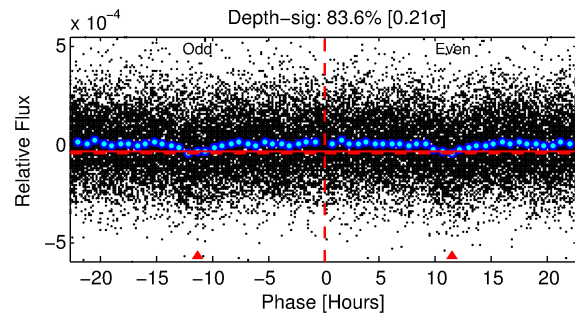
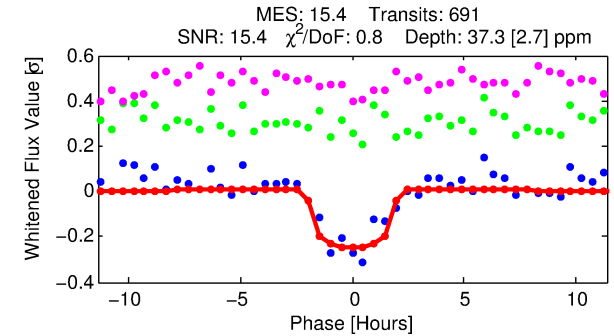
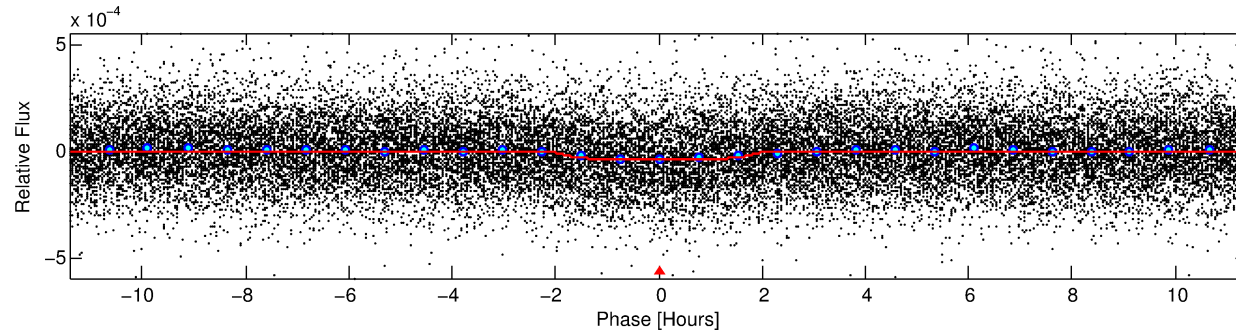
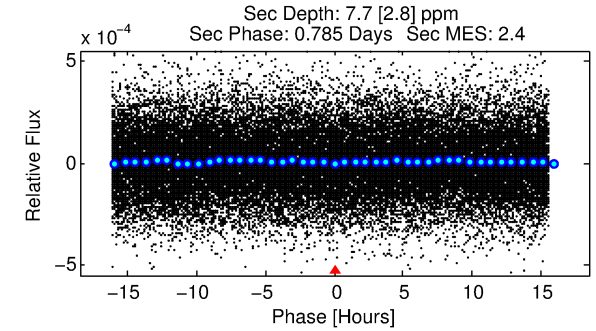
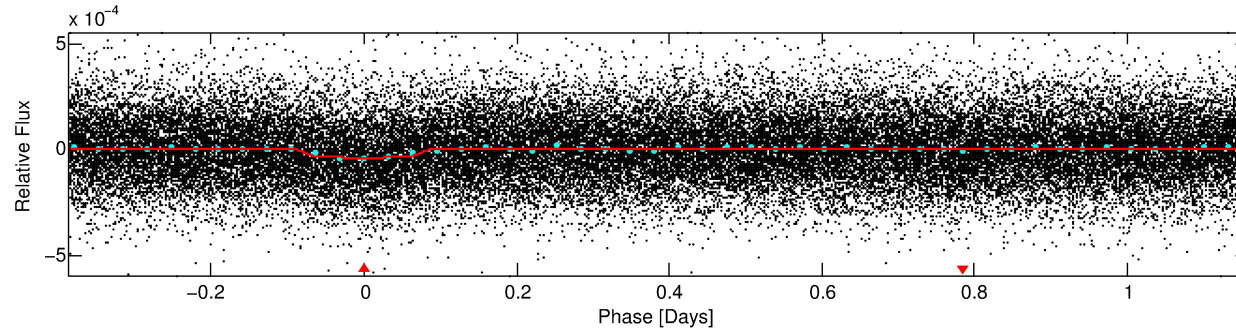
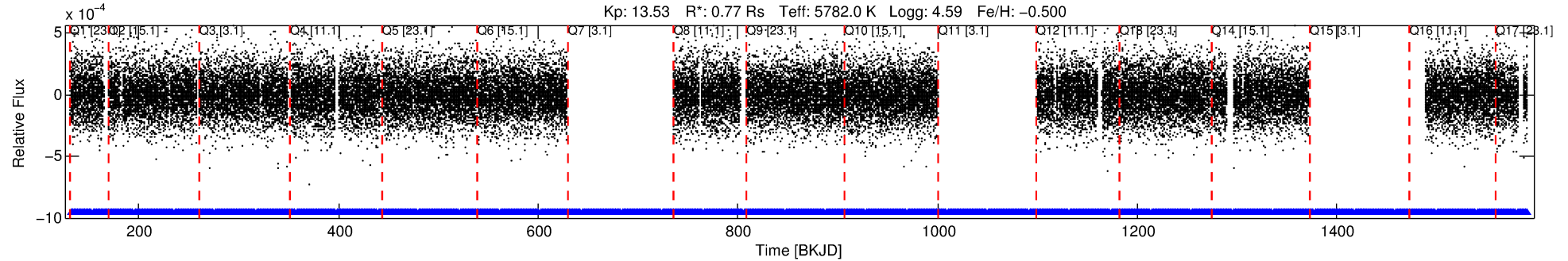
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009665922-01

No Significant Match Found

DV One-Page Summary

KIC: 9665922 Candidate: 1 of 1 Period: 1.545 d
KOI: K02815.01 Corr: 0.848



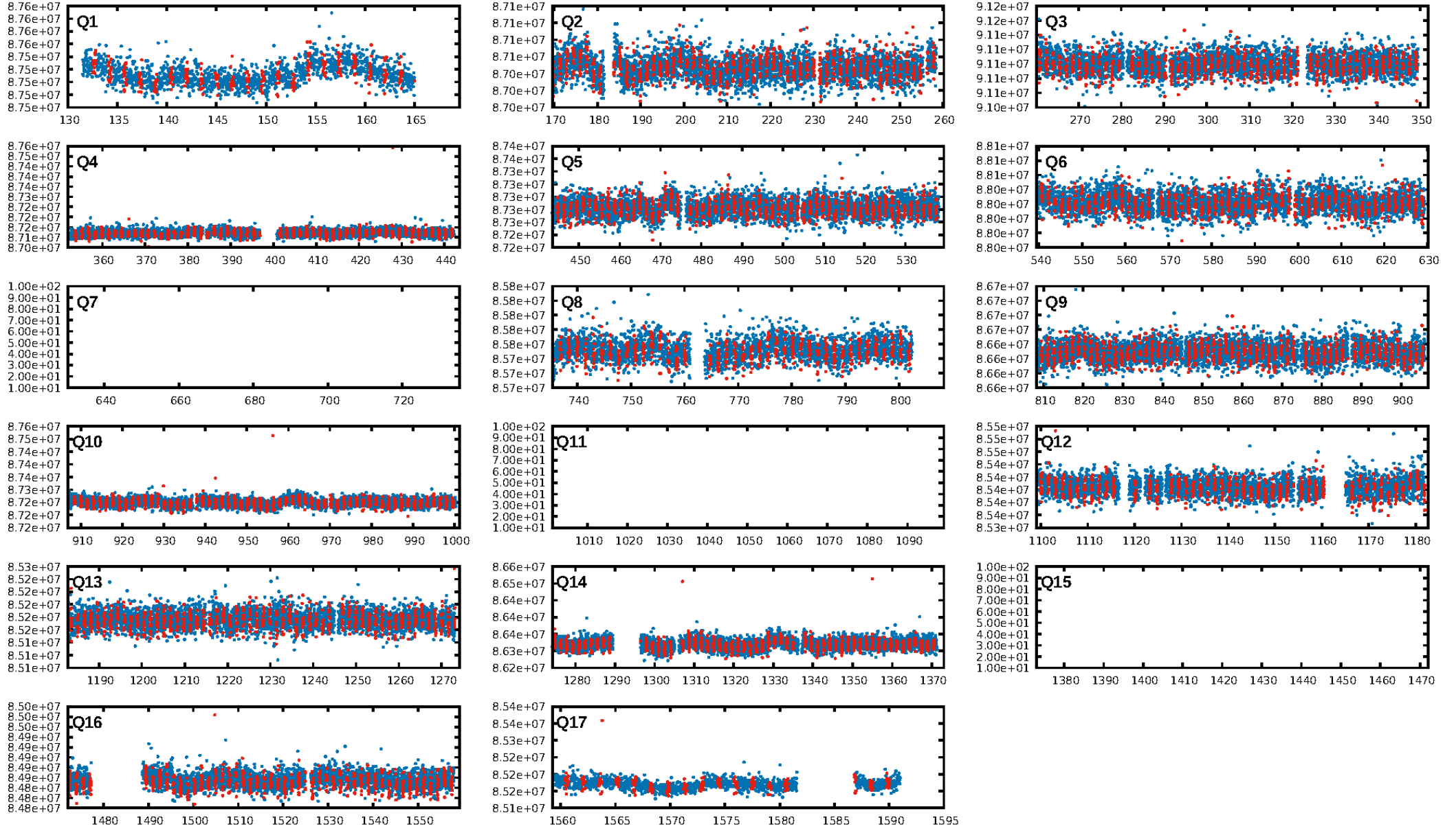
DV Fit Results:

Period = 1.54531 [0.00001] d
Epoch = 132.6707 [0.0031] BKJD
Rp/R* = 0.0066 [0.0022]
a/R* = 1.73 [1.98]
b = 0.89 [0.41]
Seff = 964.68 [275.71]
Teff = 1421 [102] K
Rp = 0.55 [0.22] Re
a = 0.0247 [0.0045] AU
Ag = 8.59 [6.96] [1.09σ]
Teffp = 3761 [727] K [3.19σ]

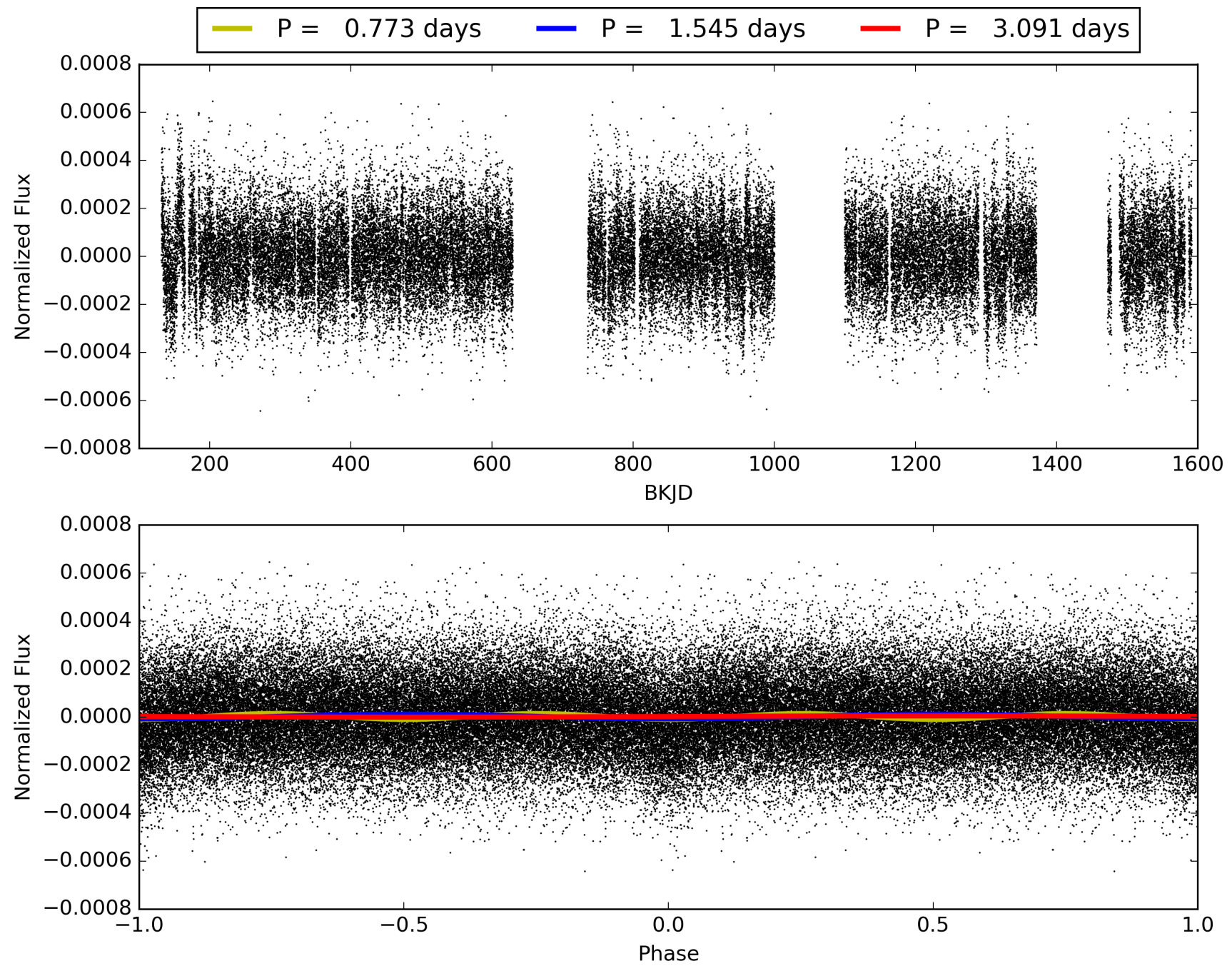
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.31e-50
RollingBand-fgt: 1.00 [653/653]
GhostDiagnostic-chr: 4.743
Centroid-sig: 0.0%
Centroid-so: 2.207 arcsec [3.01σ]
OotOffset-rm: 1.783 arcsec [4.09σ]
KicOffset-rm: 1.565 arcsec [4.41σ]
OotOffset-st: 3/1/4/2 [10]
KicOffset-st: 3/1/4/2 [10]
DiffImageQuality-fgm: 0.80 [8/10]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009665922-01, PDC Light Curves

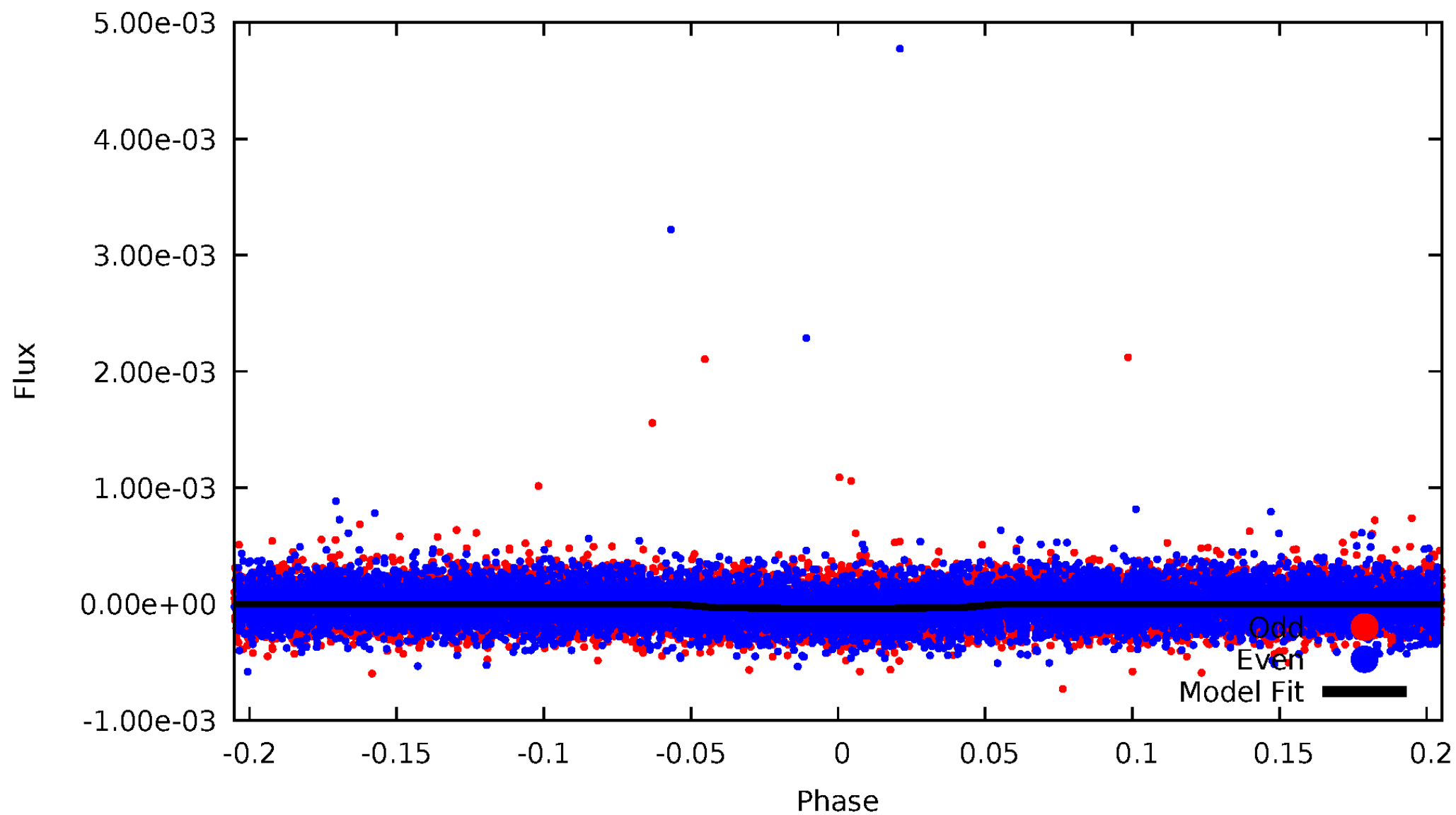


TCE 009665922-01



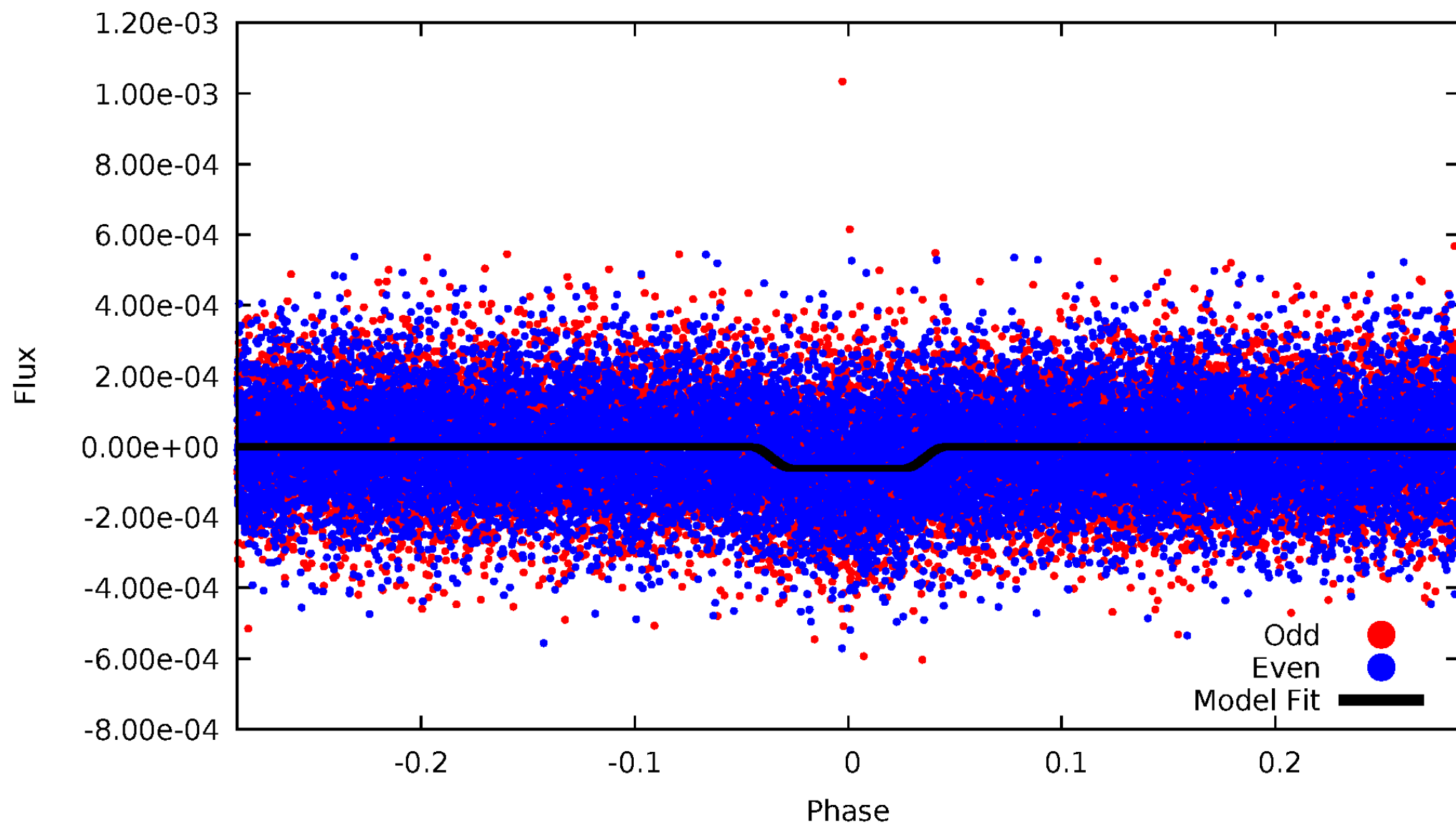
DV Odd/Even

TCE 009665922-01



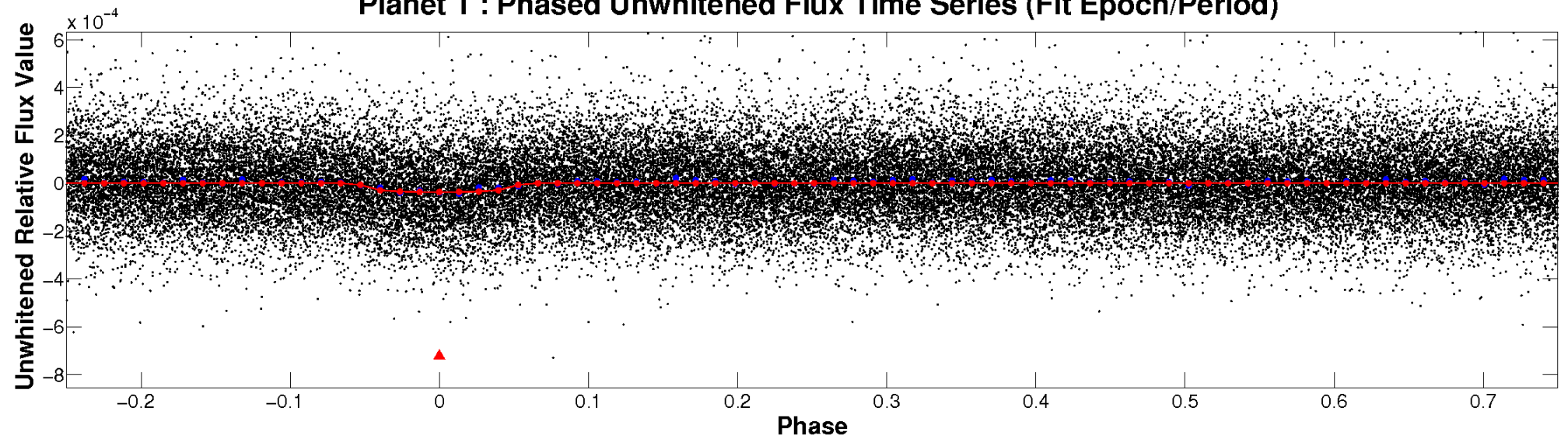
ALT Odd/Even

TCE 009665922-01

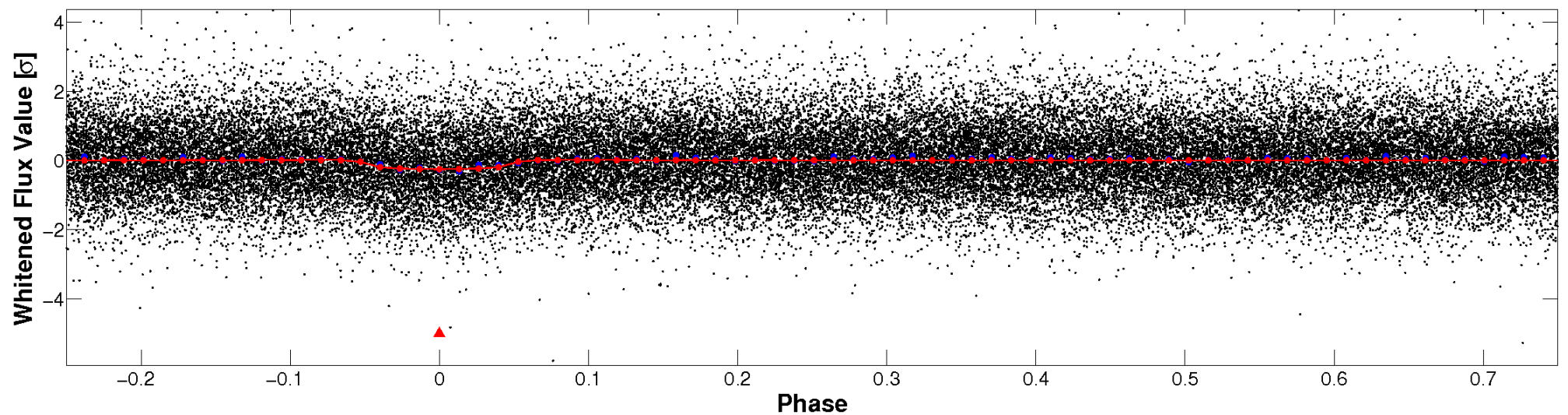


Non-Whitened Vs. Whitened Light Curve

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

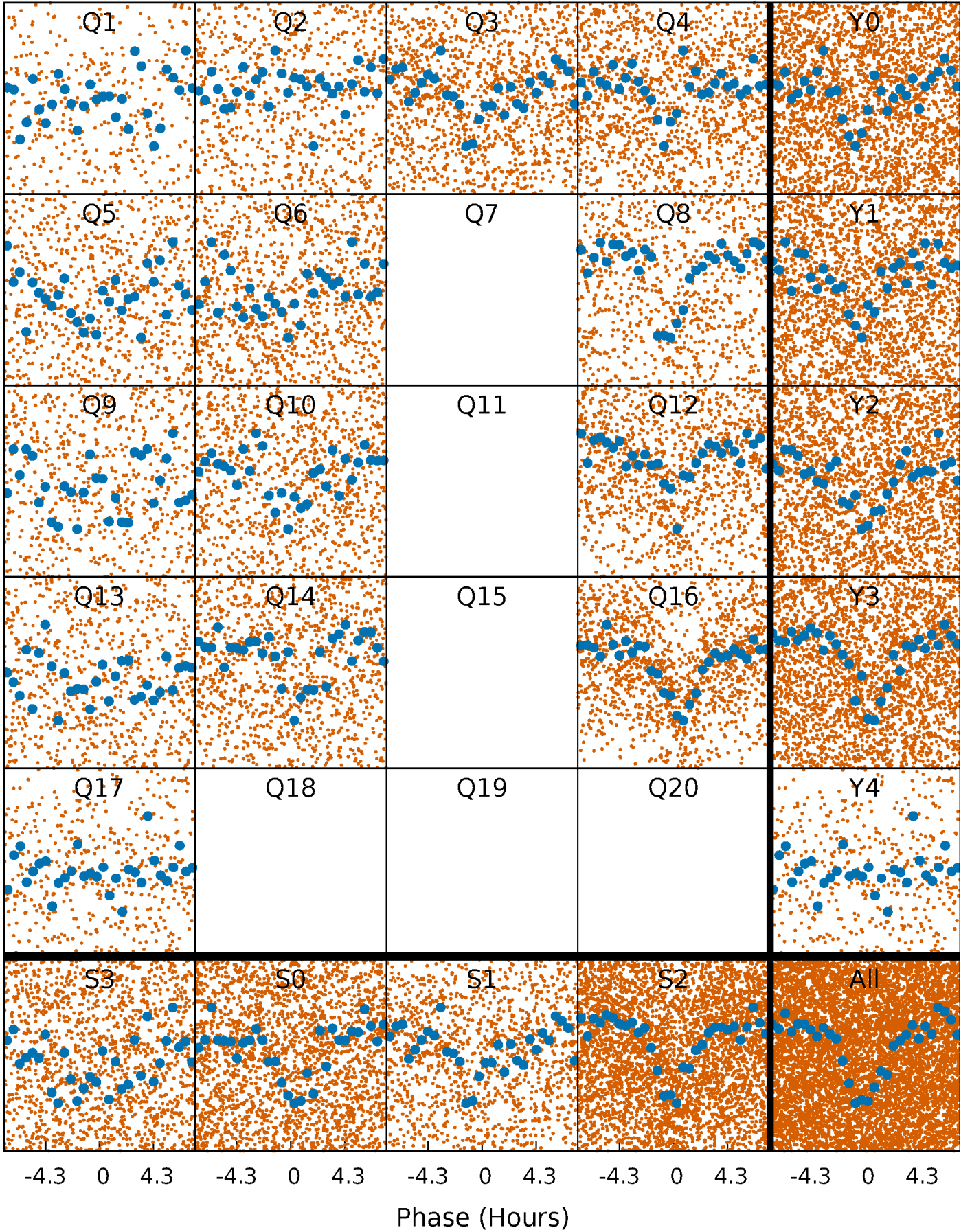


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



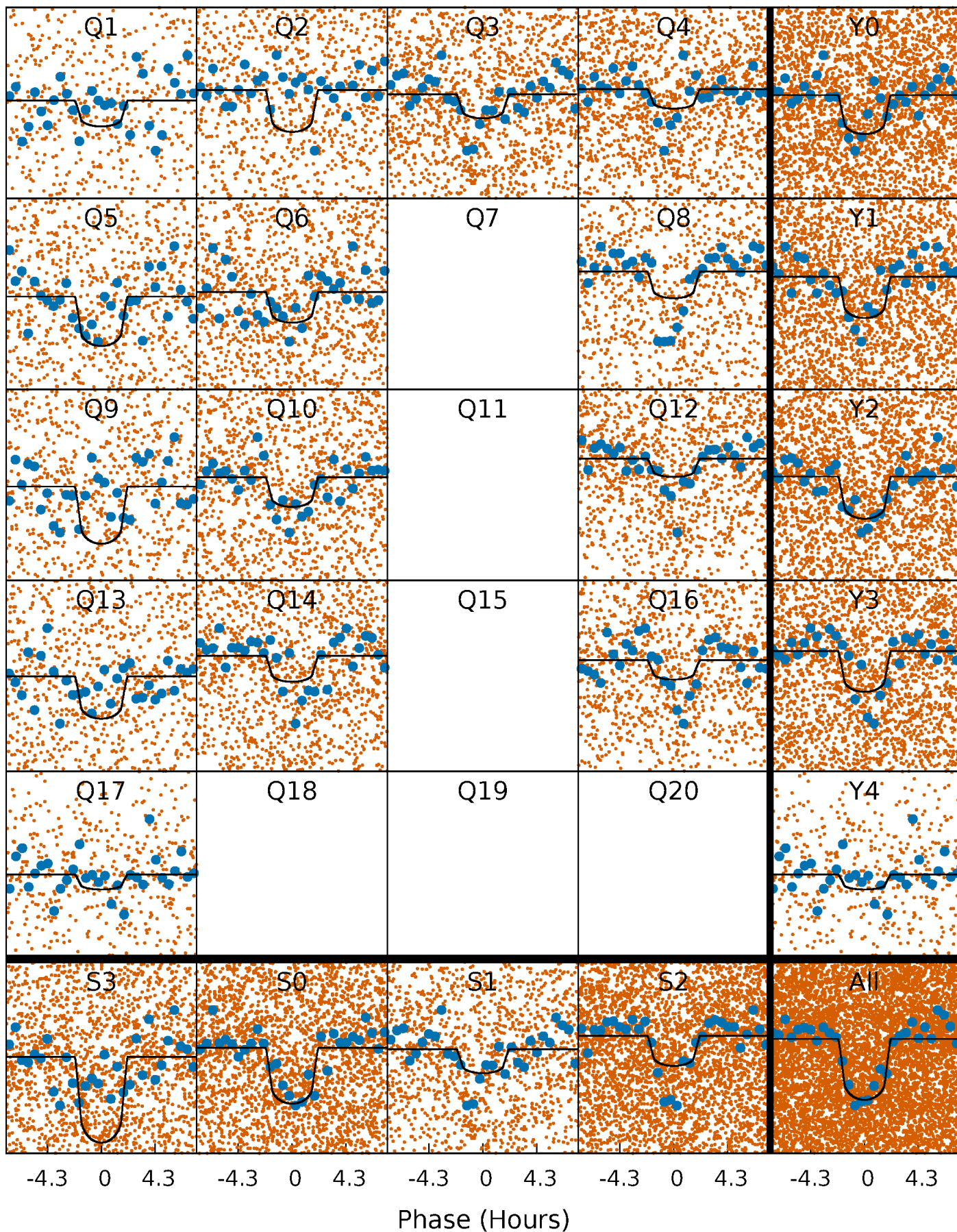
PDC Quarter-Phased Transit Curves

TCE 009665922-01 P= 1.545313 Days $T_0=132.670736$ (BKJD)



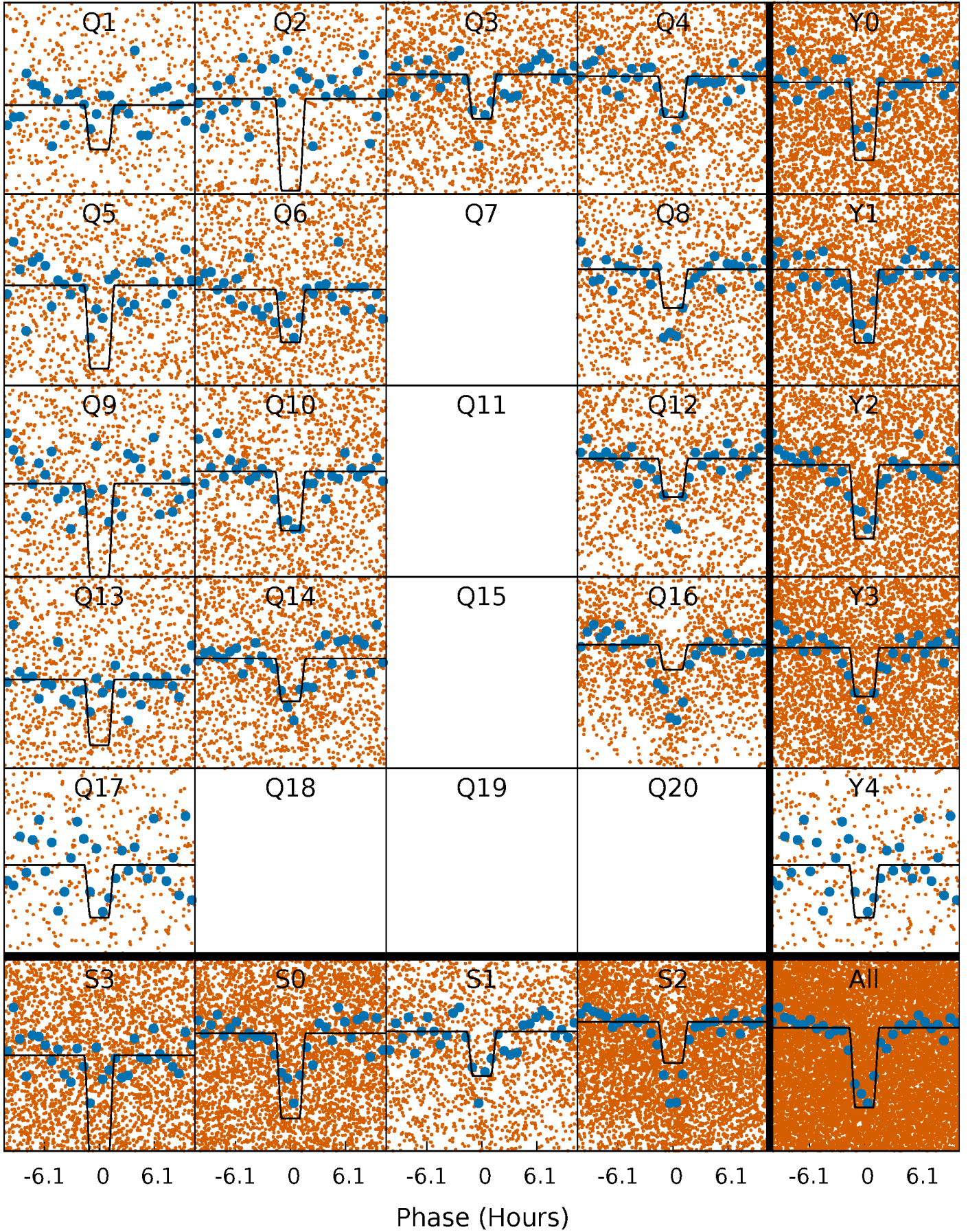
DV Quarter-Phased Transit Curves

TCE 009665922-01 P= 1.545313 Days $T_0=132.670736$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

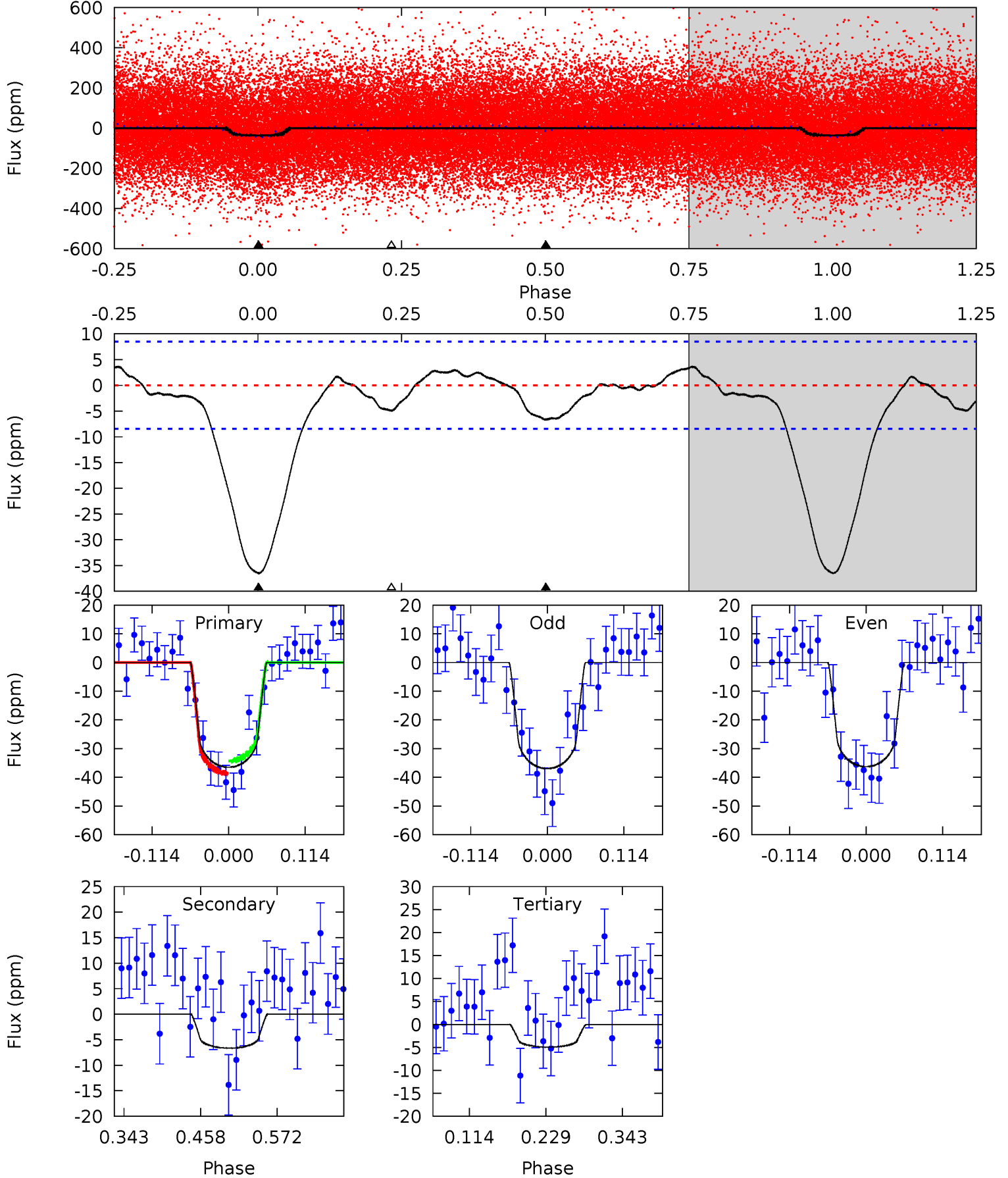
TCE 009665922-01 P= 1.545375 Days $T_0=132.636303$ (BKJD)



DV Model-Shift Uniqueness Test

009665922-01, P = 1.545313 Days, E = 131.125423 Days

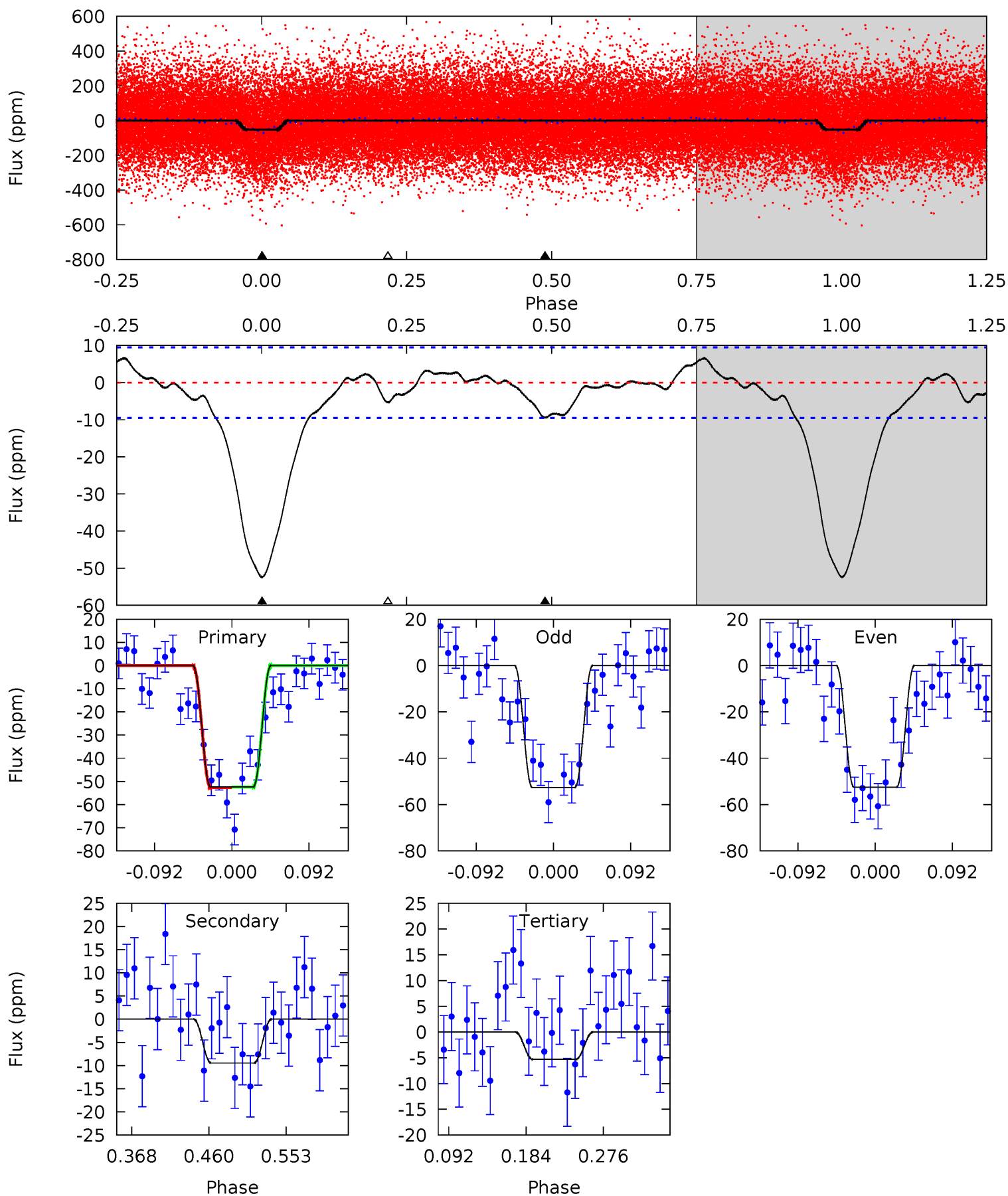
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 19.5 | 3.56 | 2.64 | 0 | 4.54 | 1.58 | 1.17 | 16.9 | 19.5 | 0.92 | 3.56 | 0.18 | 0.89 | 0.09 | 1.16 |



Alt Model-Shift Uniqueness Test

009665922-01, P = 1.545375 Days, E = 131.090928 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 25.3 | 4.56 | 2.56 | 0 | 4.58 | 1.68 | 1.37 | 22.7 | 25.3 | 2.00 | 4.56 | 0.03 | 0.97 | 0.11 | 0.07 |



Stellar Parameters For KIC 009665922

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5782^{+138}_{-155} | $4.594^{+0.036}_{-0.144}$ | $-0.500^{+0.300}_{-0.300}$ | $0.767^{+0.168}_{-0.056}$ | $0.869^{+0.077}_{-0.096}$ | $2.714^{+0.405}_{-1.160}$ |
| | +2%/-3% | +1%/-3% | +60%/-60% | +22%/-7% | +9%/-11% | +15%/-43% |
| 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 009665922-01 / KOI 2815.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -7 ± 2 | $0.57^{+0.20}_{-0.18}$ | 2022^{+101}_{-76} | 3907^{+672}_{-424} | $6.835^{+8.332}_{-3.374}$ |
| Alt. | -9 ± 2 | $0.69^{+0.21}_{-0.20}$ | 2021^{+108}_{-74} | 3896^{+547}_{-339} | $6.549^{+6.790}_{-2.743}$ |

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

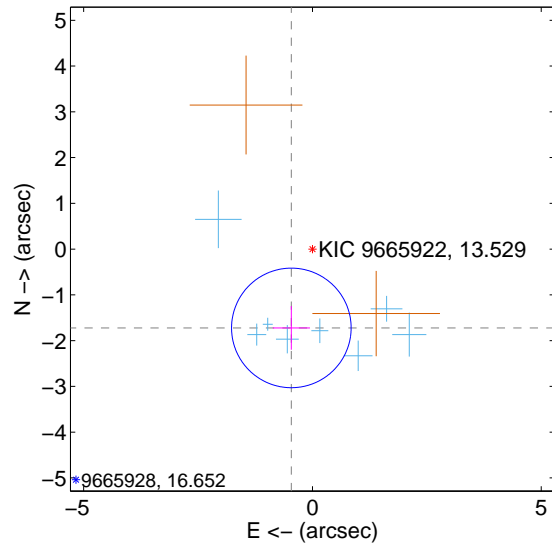
Supplemental centroid analysis for 009665922-01. Kepler magnitude: 13.53. Transit SNR 15.44

There are 8 quarters with good PRF difference image offsets

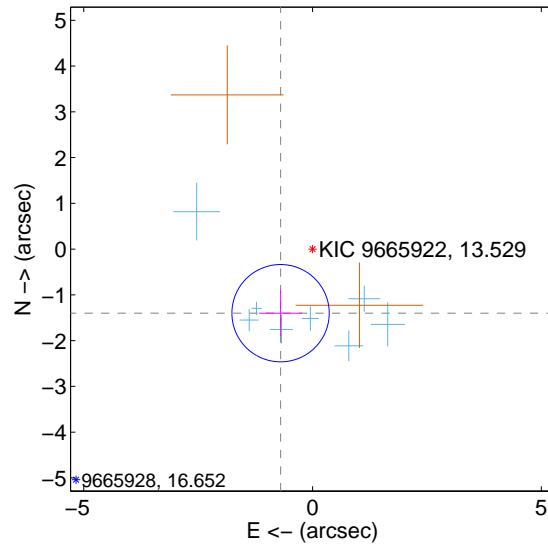
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.783 ± 0.436 | 4.09 | 0.461 ± 0.407 | -1.723 ± 0.477 |
| PRF-fit source offset from KIC position | 1.565 ± 0.354 | 4.41 | 0.698 ± 0.470 | -1.400 ± 0.497 |
| photometric centroid source offset | 2.21 ± 0.73 | 3.01 | -0.78 ± 0.78 | -2.07 ± 0.73 |

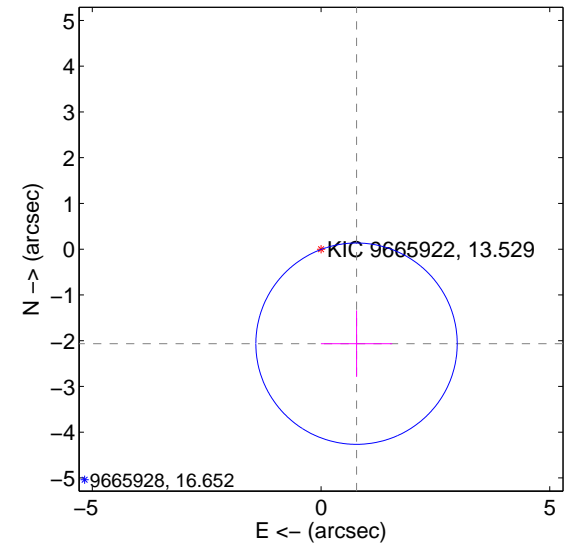
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

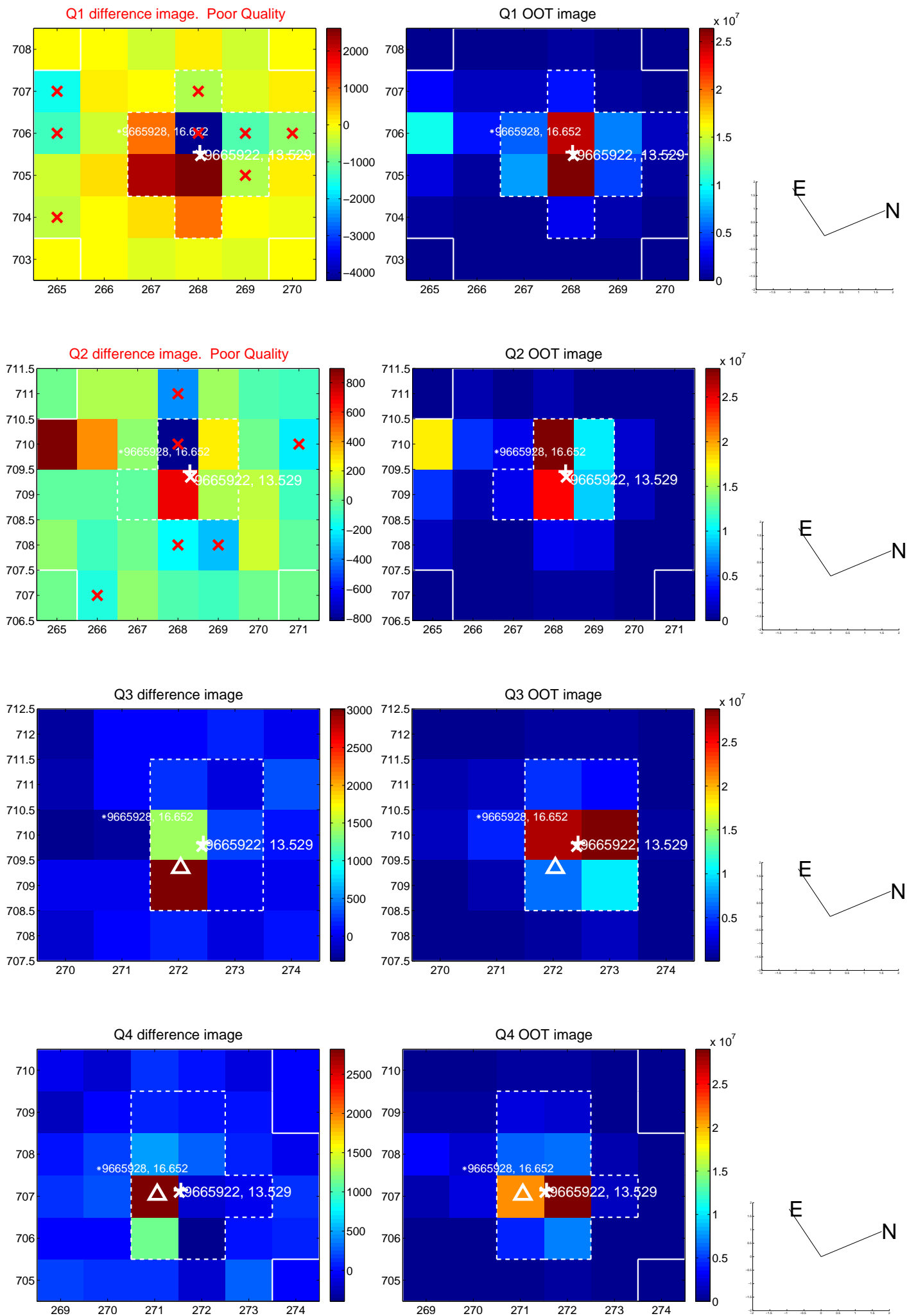


offset from photometric centroids

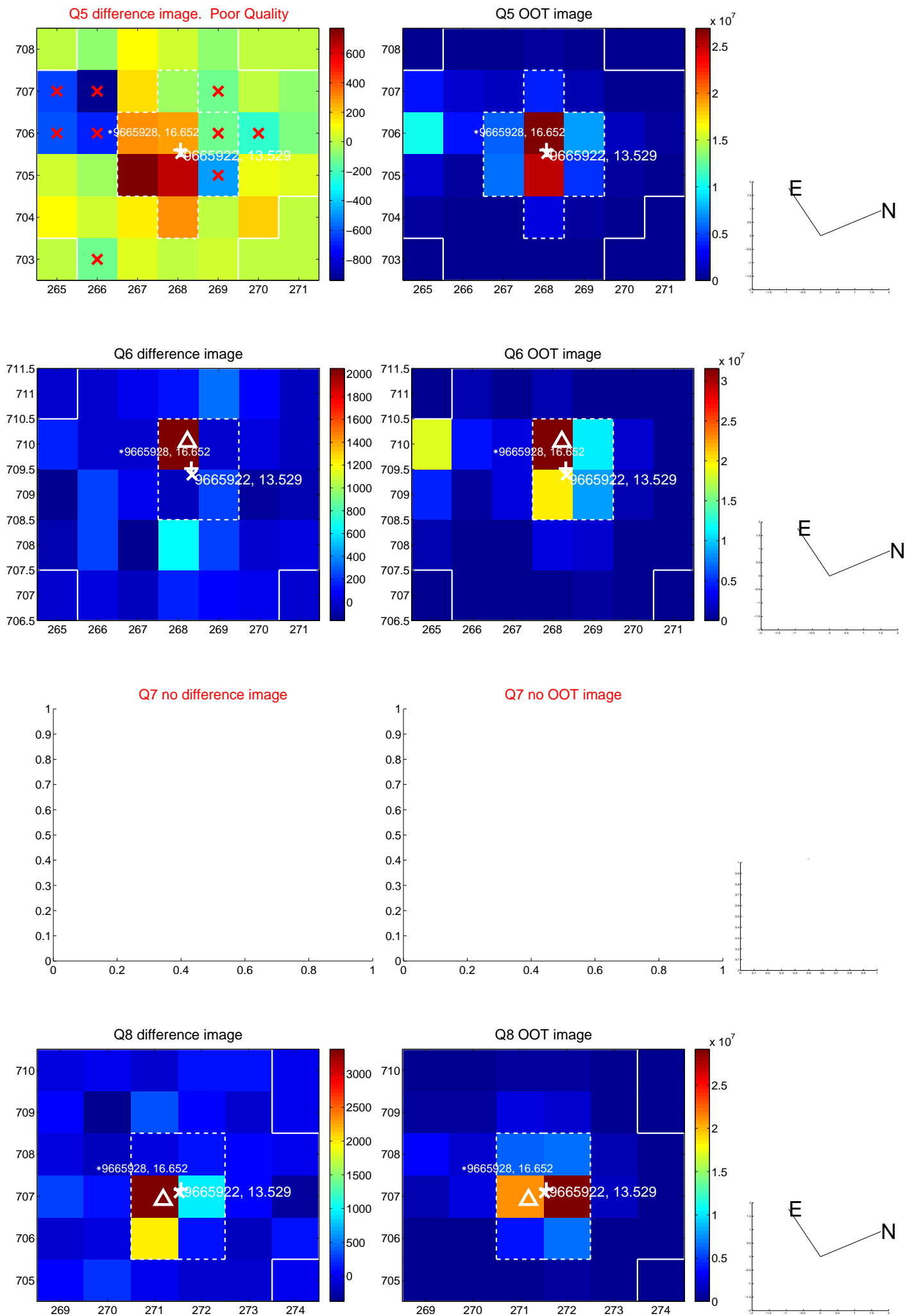


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

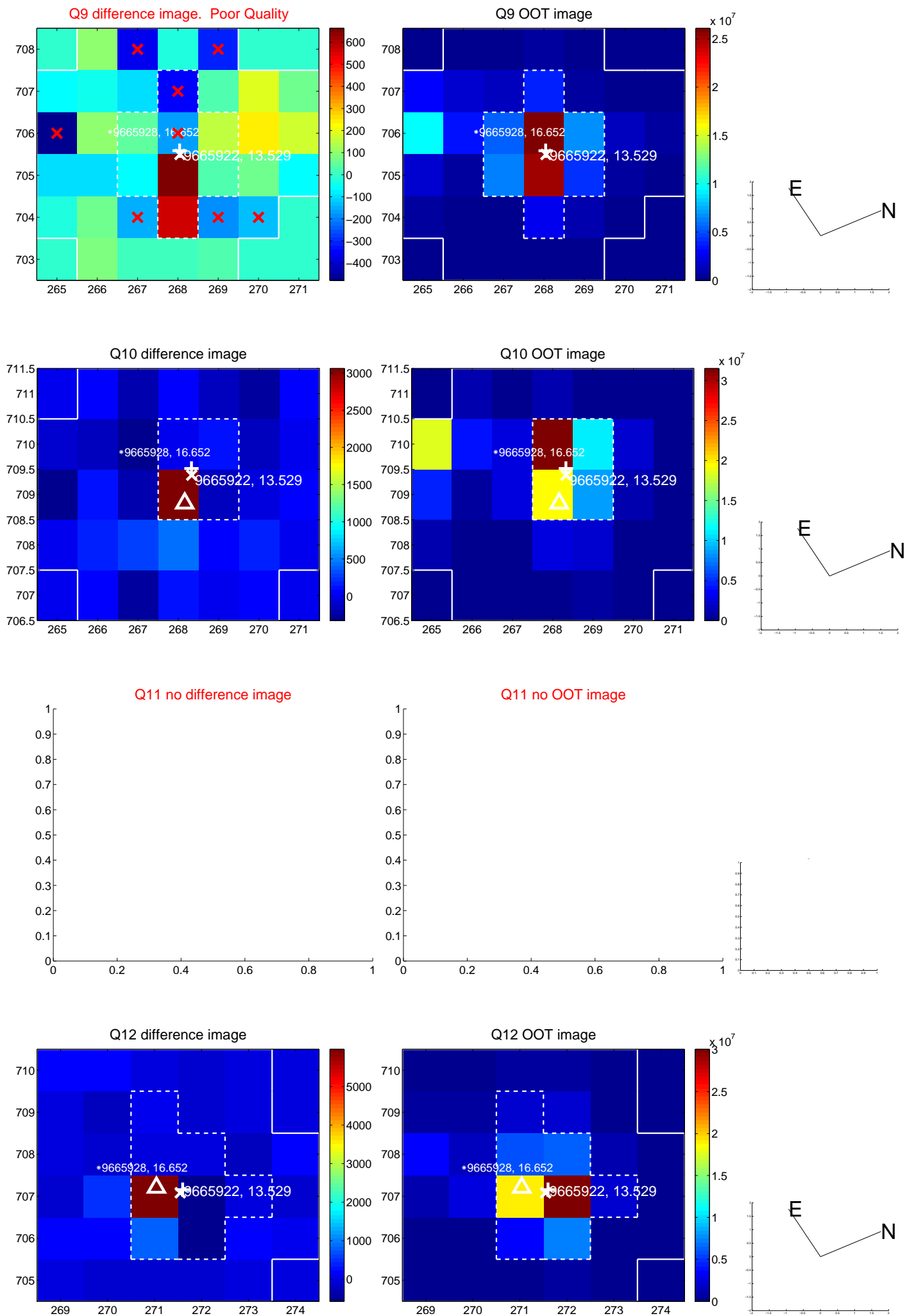
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



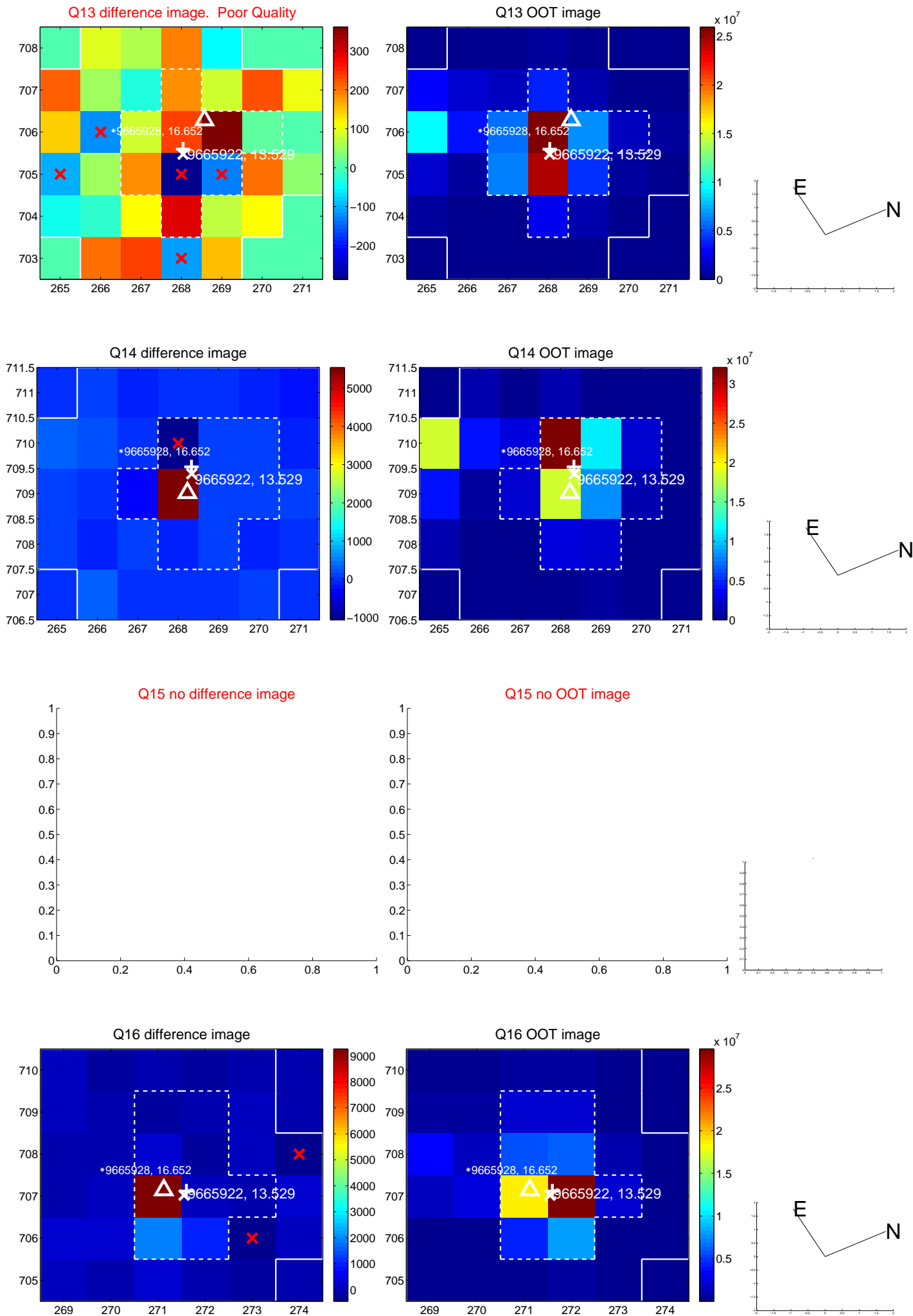
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



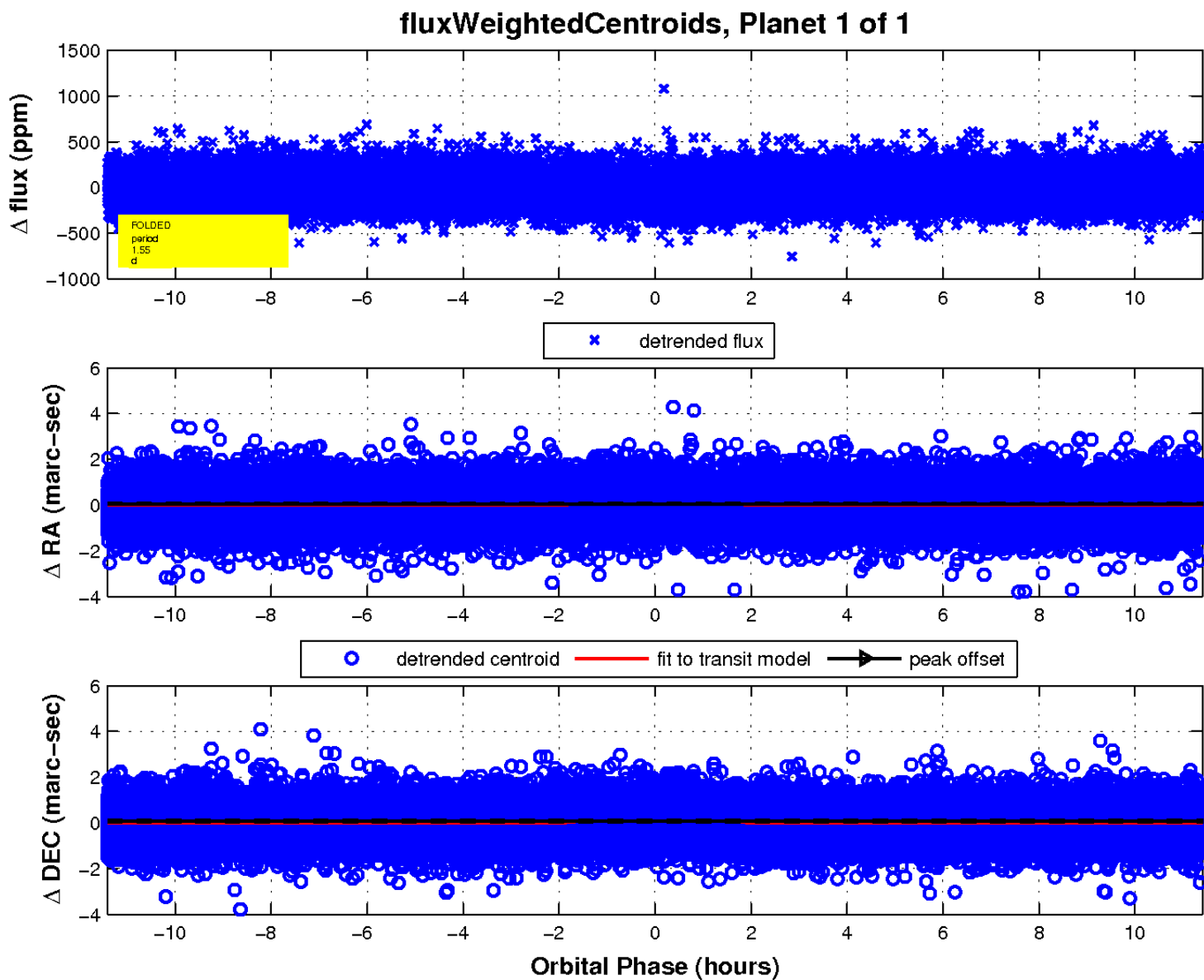
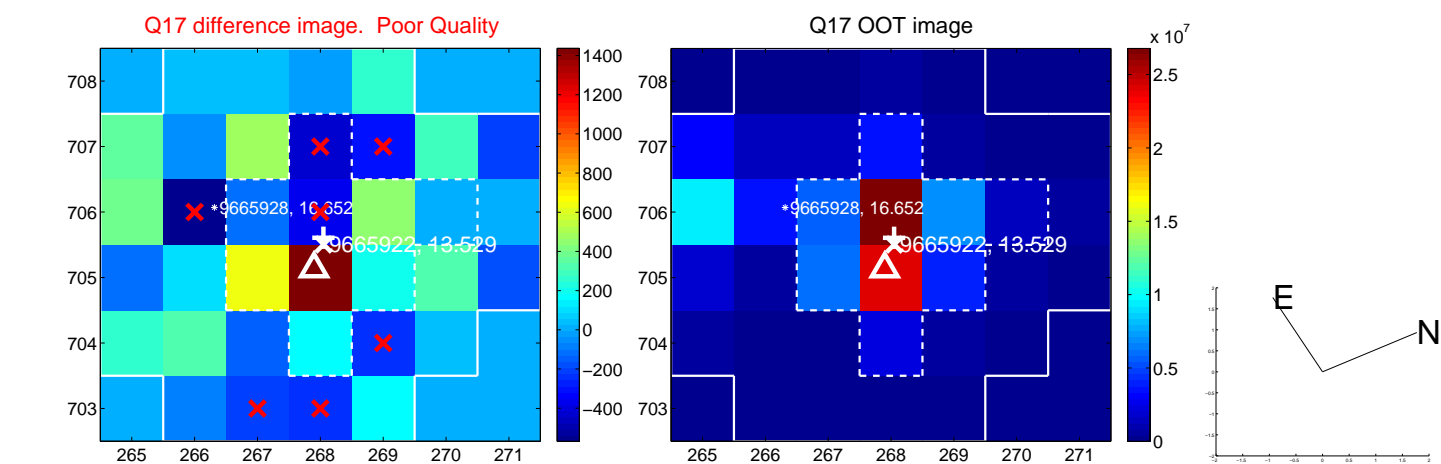
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

