

# KIC 005042210

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005042210-01 | OBS      | 2462.01 | 12.146796     | 131.559858   | 69.3        | 6.314            | 19.4 | 19.7 | 1.96                        | 5877            | 1.94                   | 343.18                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments     |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 005042210-01 | OBS      | PC   | 1.00  | 0 | 0 | 0 | 0 | CENT_KIC_POS |

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

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

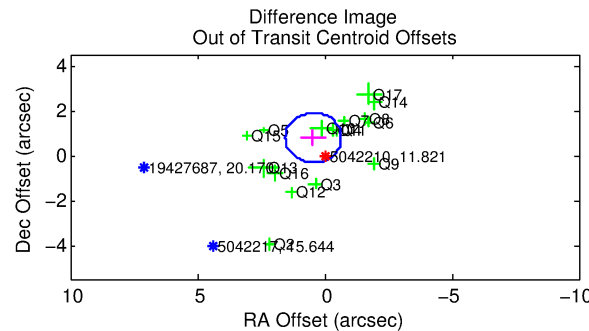
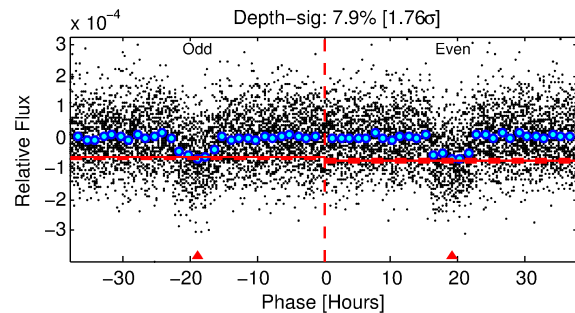
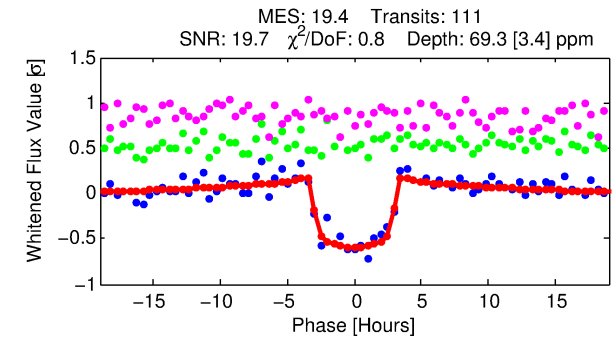
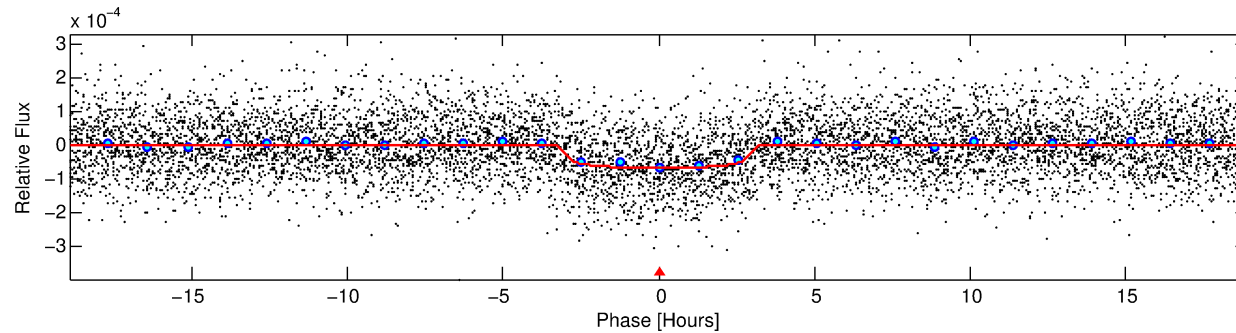
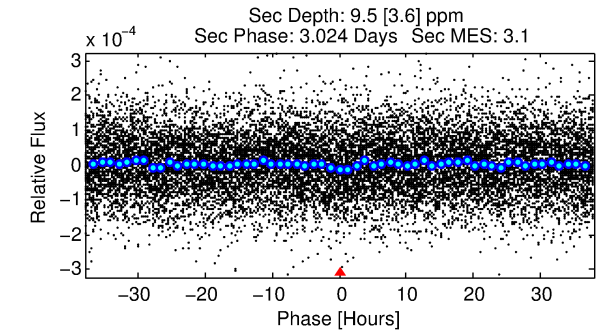
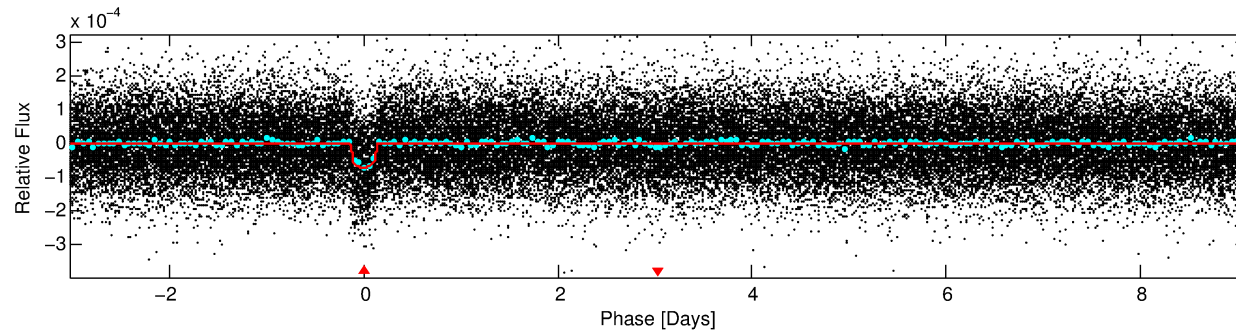
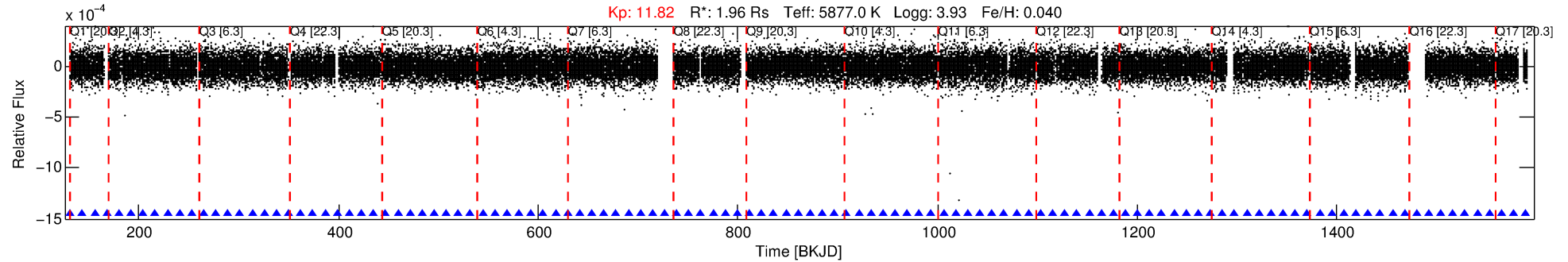
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005042210-01

No Significant Match Found

# DV One-Page Summary

KIC: 5042210 Candidate: 1 of 1 Period: 12.147 d  
KOI: K02462.01 Corr: 0.980



## DV Fit Results:

Period = 12.14680 [0.00007] d  
Epoch = 131.5599 [0.0046] BKJD  
Rp/R\* = 0.0090 [0.0014]  
a/R\* = 6.78 [5.08]  
b = 0.90 [0.16]  
Seff = 343.17 [125.15]  
Teq = 1098 [100] K  
Rp = 1.93 [0.58] Re  
a = 0.1096 [0.0254] AU  
Ag = 16.82 [10.13] [1.56σ]  
Teffp = 3436 [423] K [5.38σ]

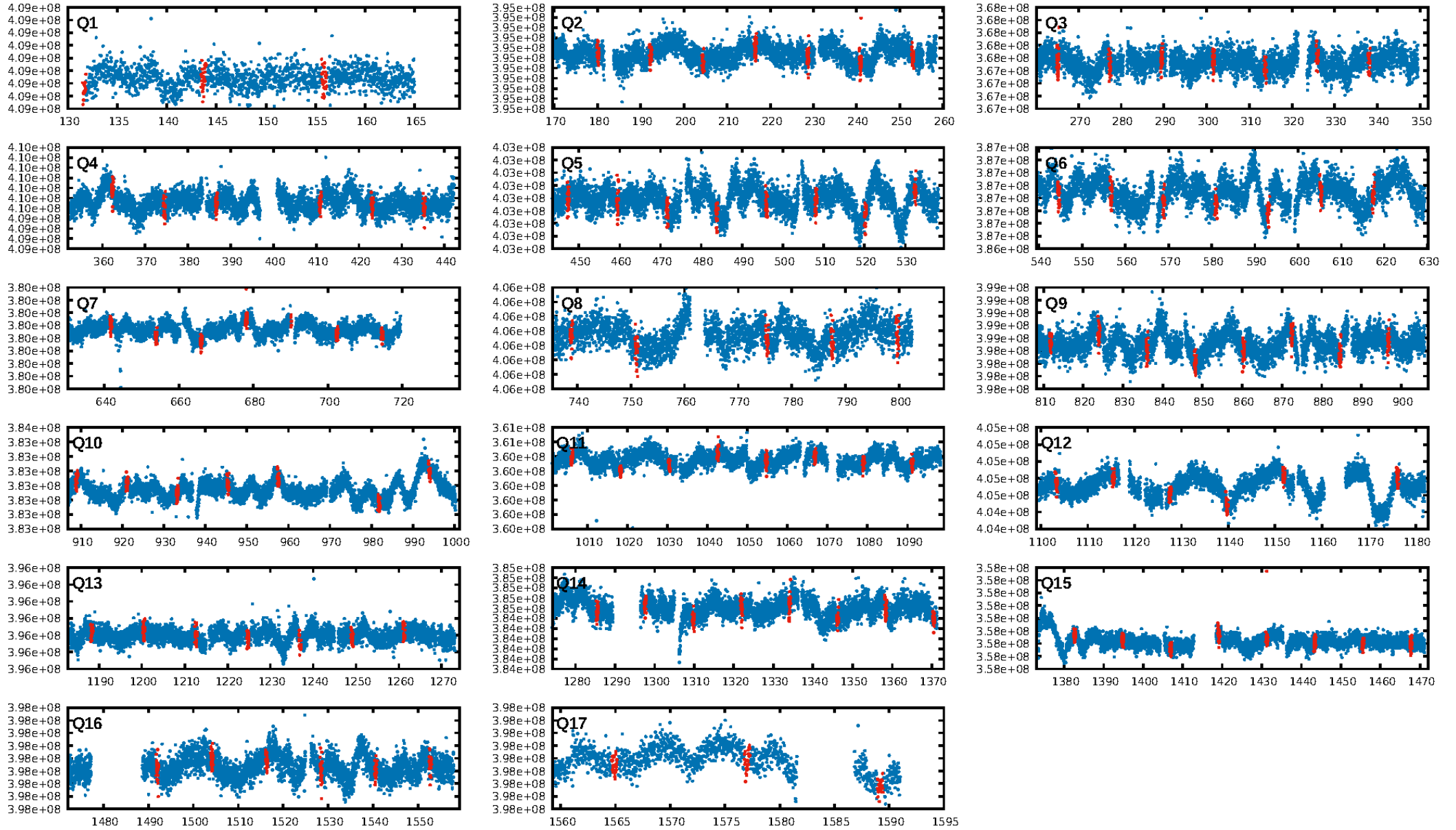
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.05e-81  
RollingBand-fgt: 1.00 [105/105]  
GhostDiagnostic-chr: 3.037  
Centroid-sig: 39.0%  
Centroid-so: 0.392 arcsec [0.52σ]  
OotOffset-rm: 0.903 arcsec [2.45σ]  
KicOffset-rm: 0.486 arcsec [1.06σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 1.00 [17/17]

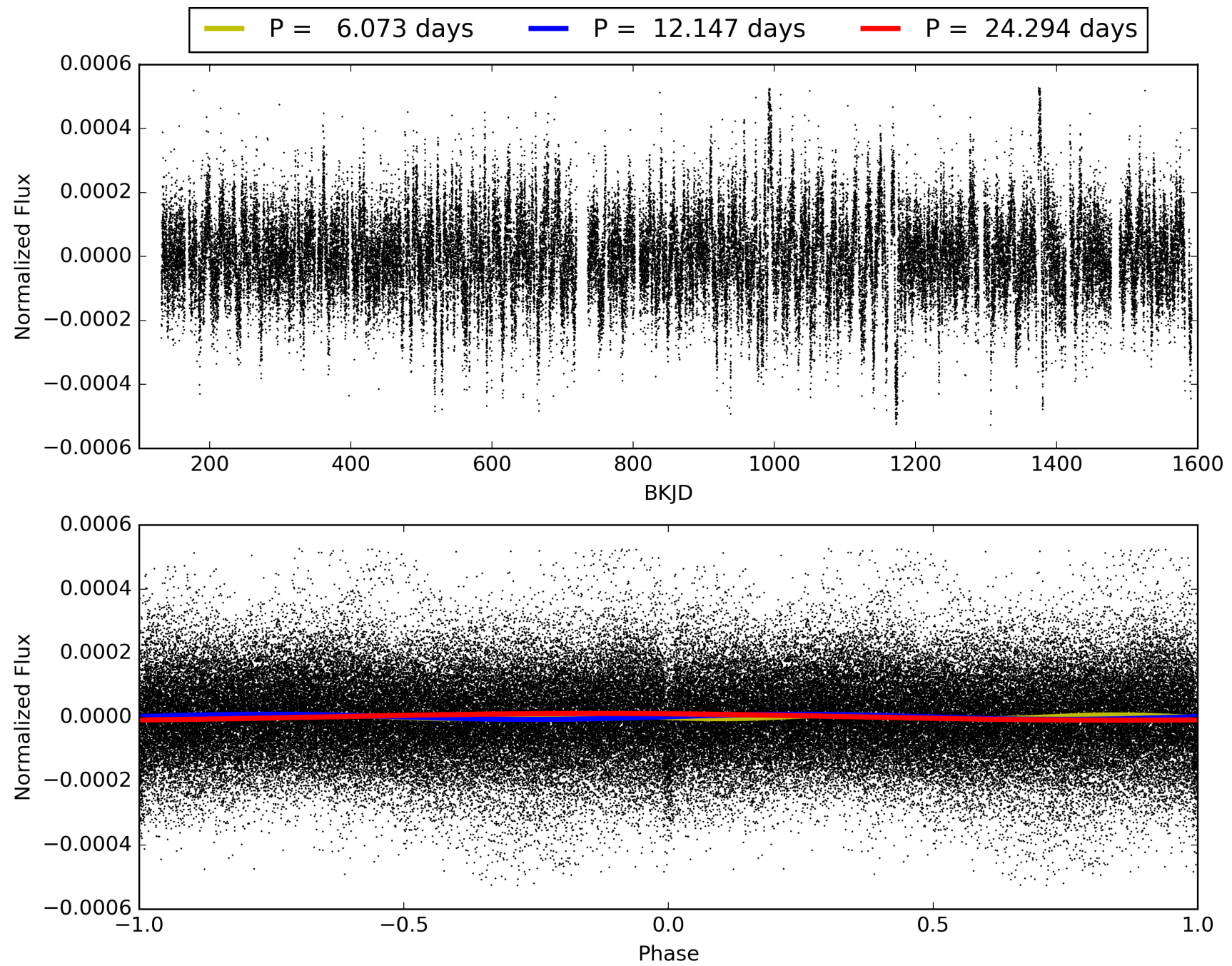
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:45:55 Z

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

# TCE 005042210-01, PDC Light Curves

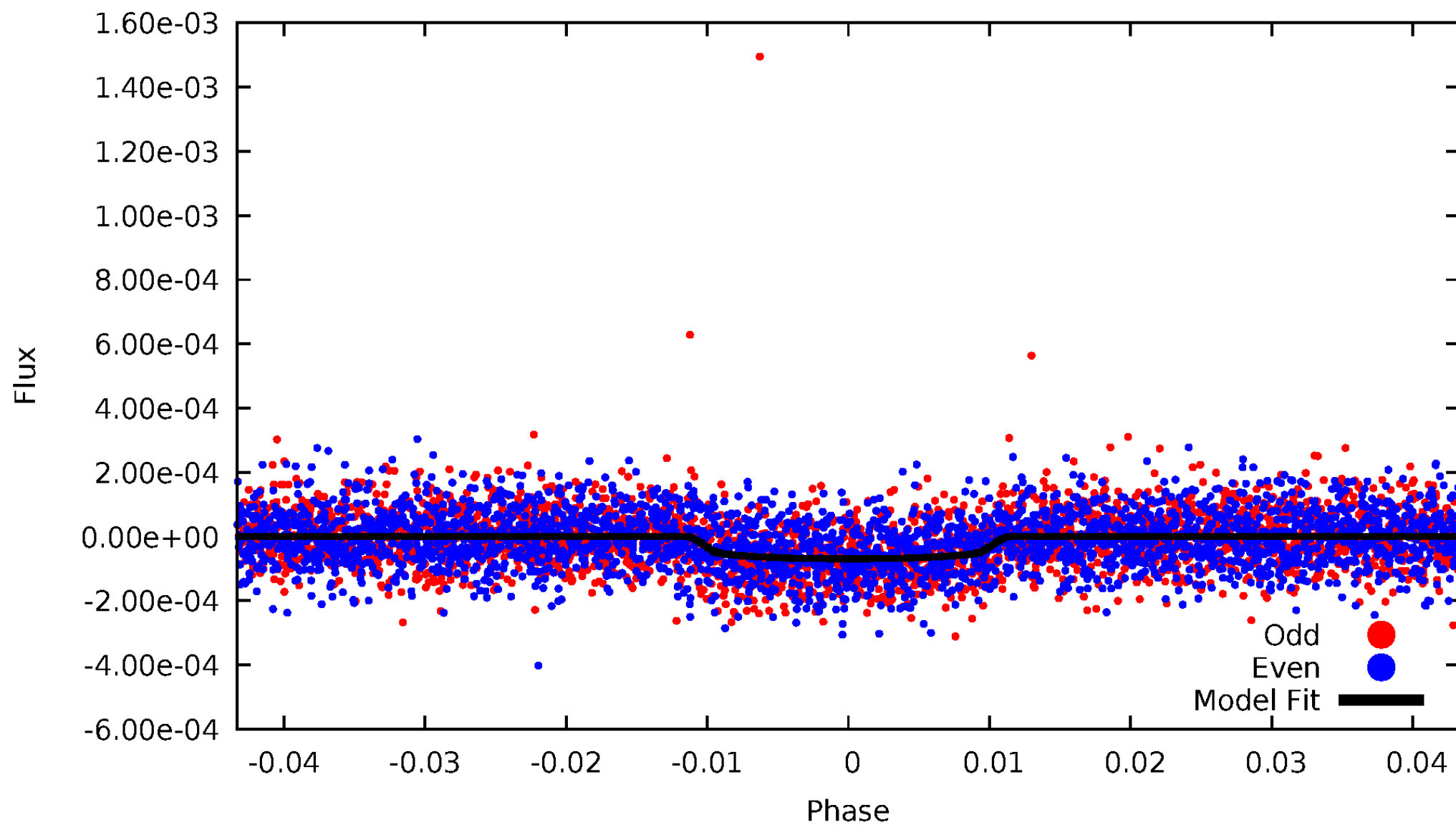


TCE 005042210-01



# DV Odd/Even

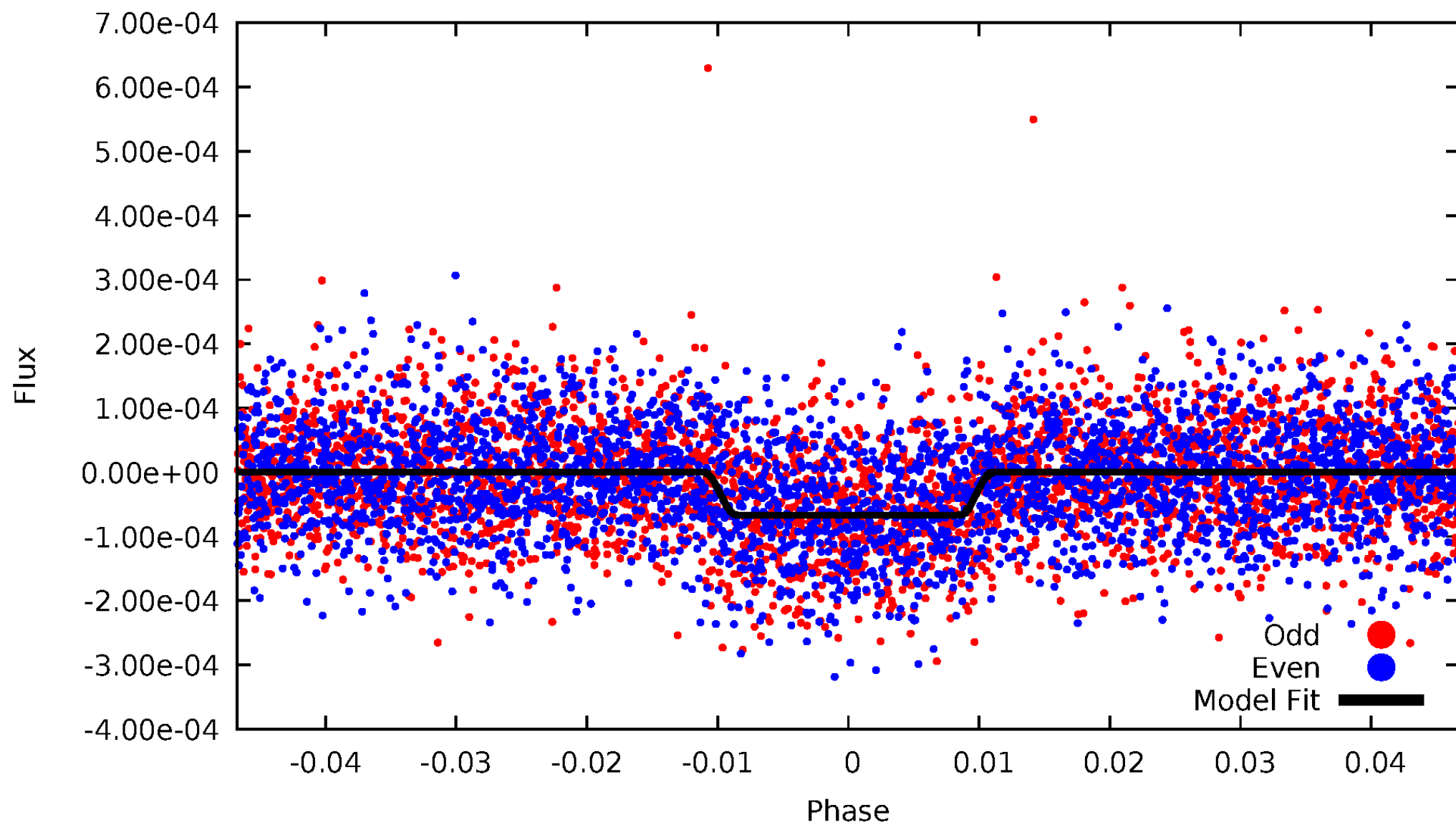
TCE 005042210-01



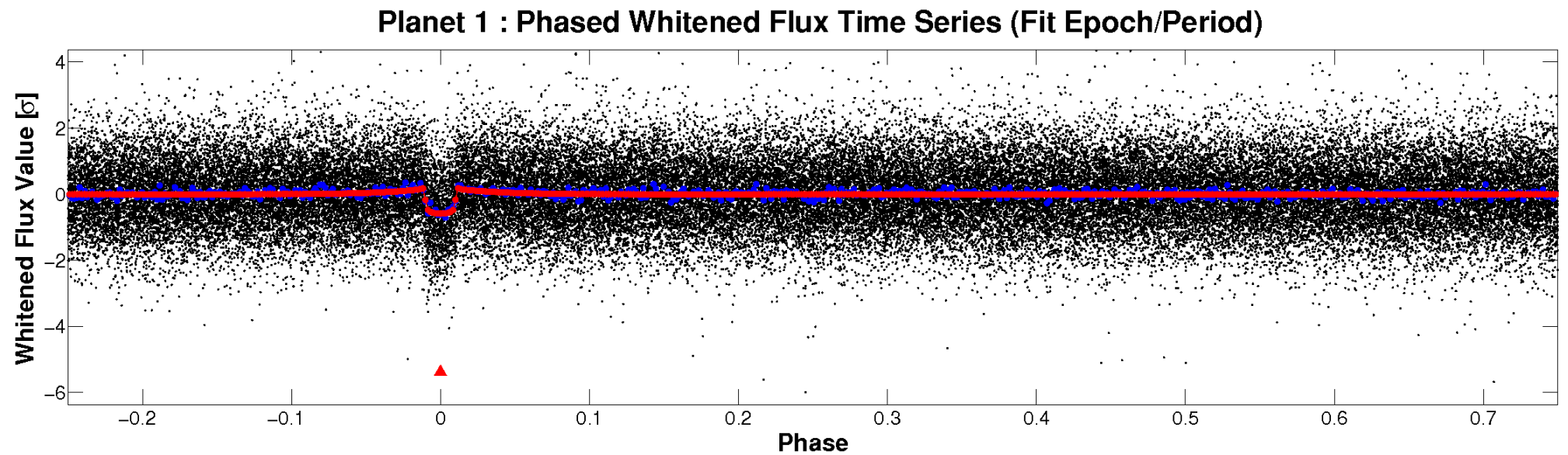
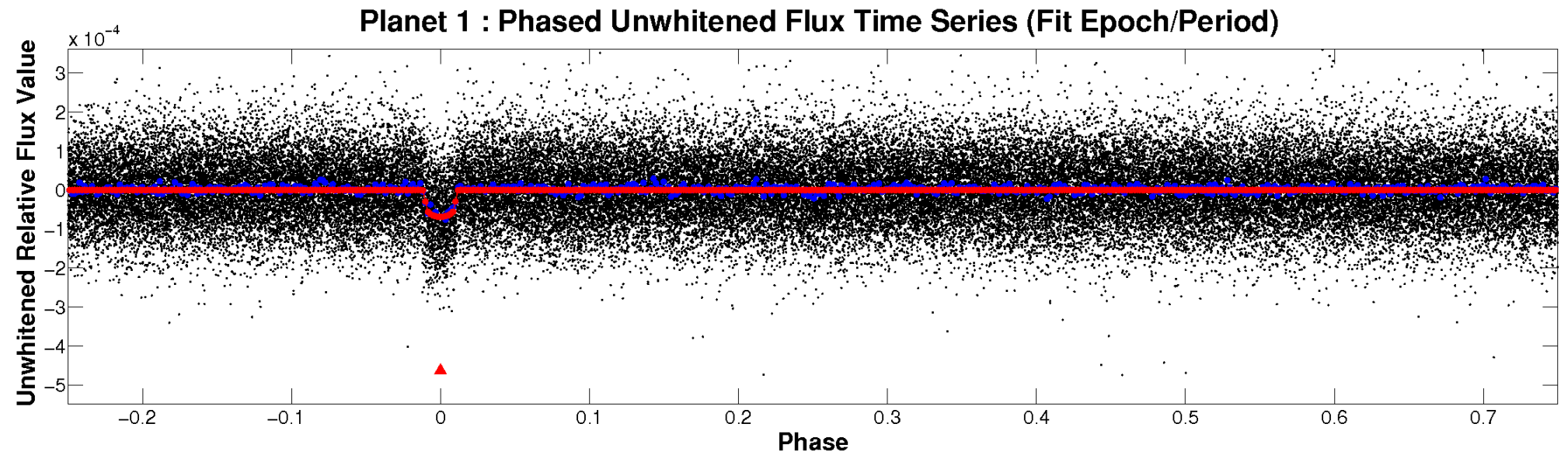


# ALT Odd/Even

TCE 005042210-01

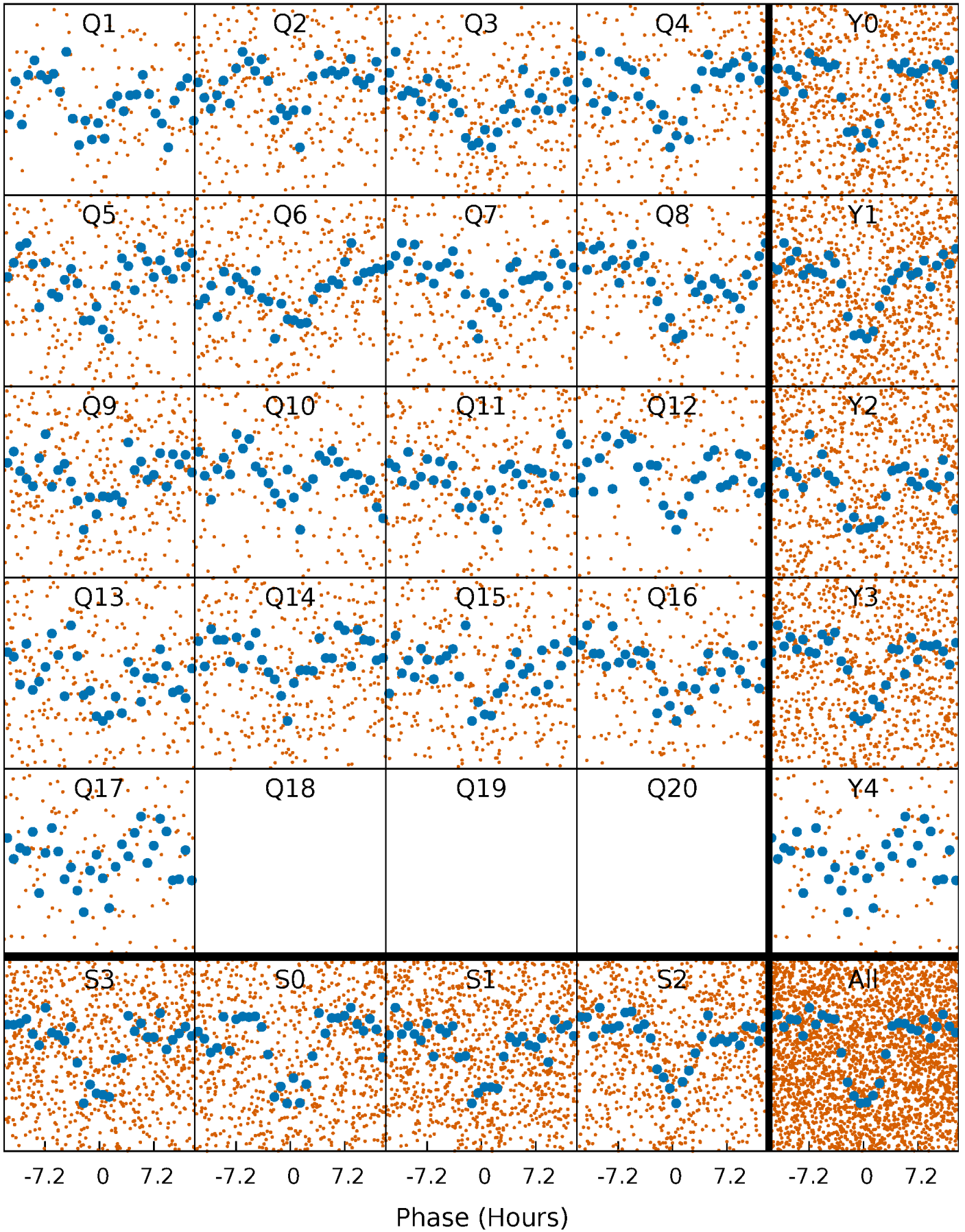


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

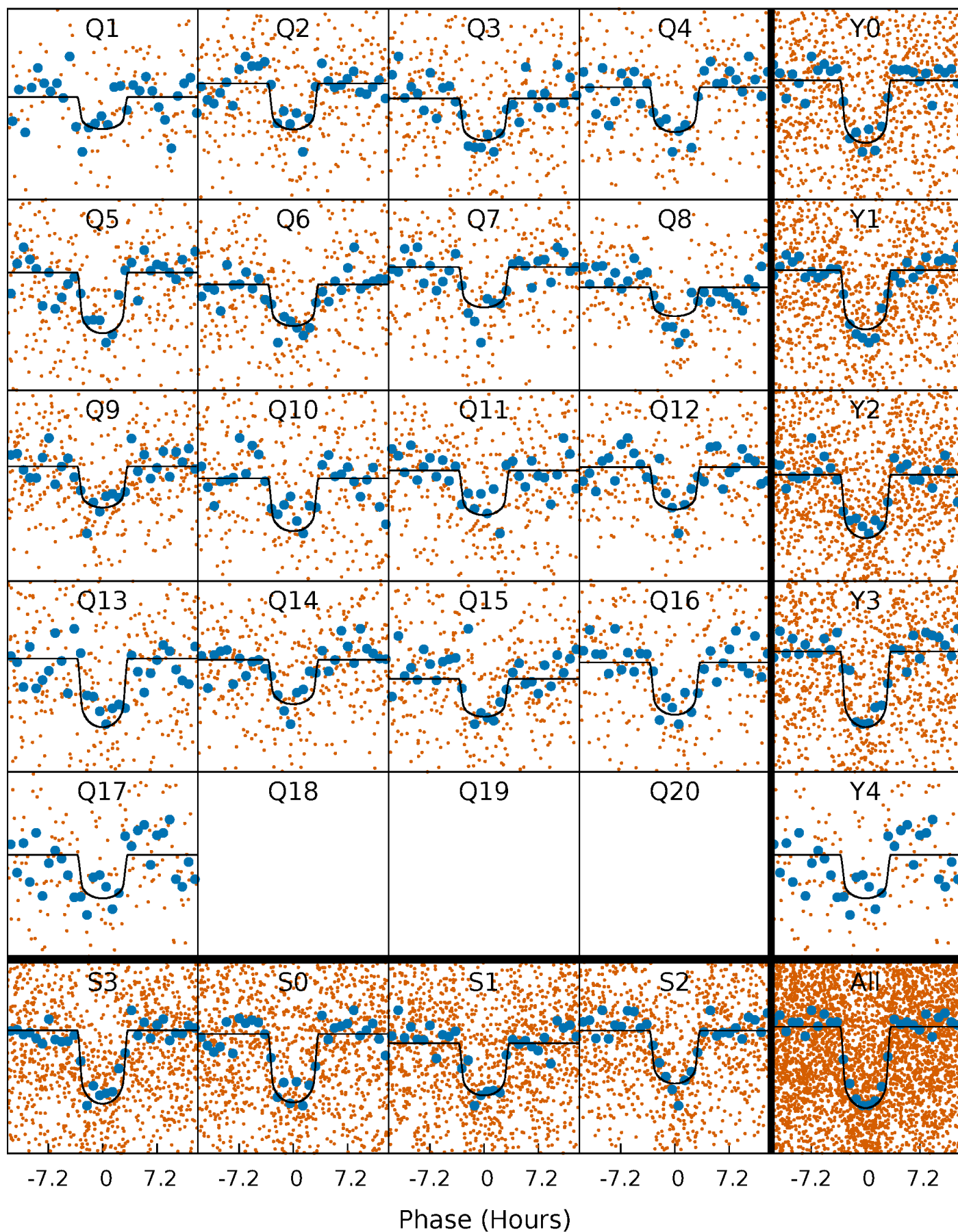
TCE 005042210-01 P= 12.146796 Days  $T_0=131.559858$  (BKJD)





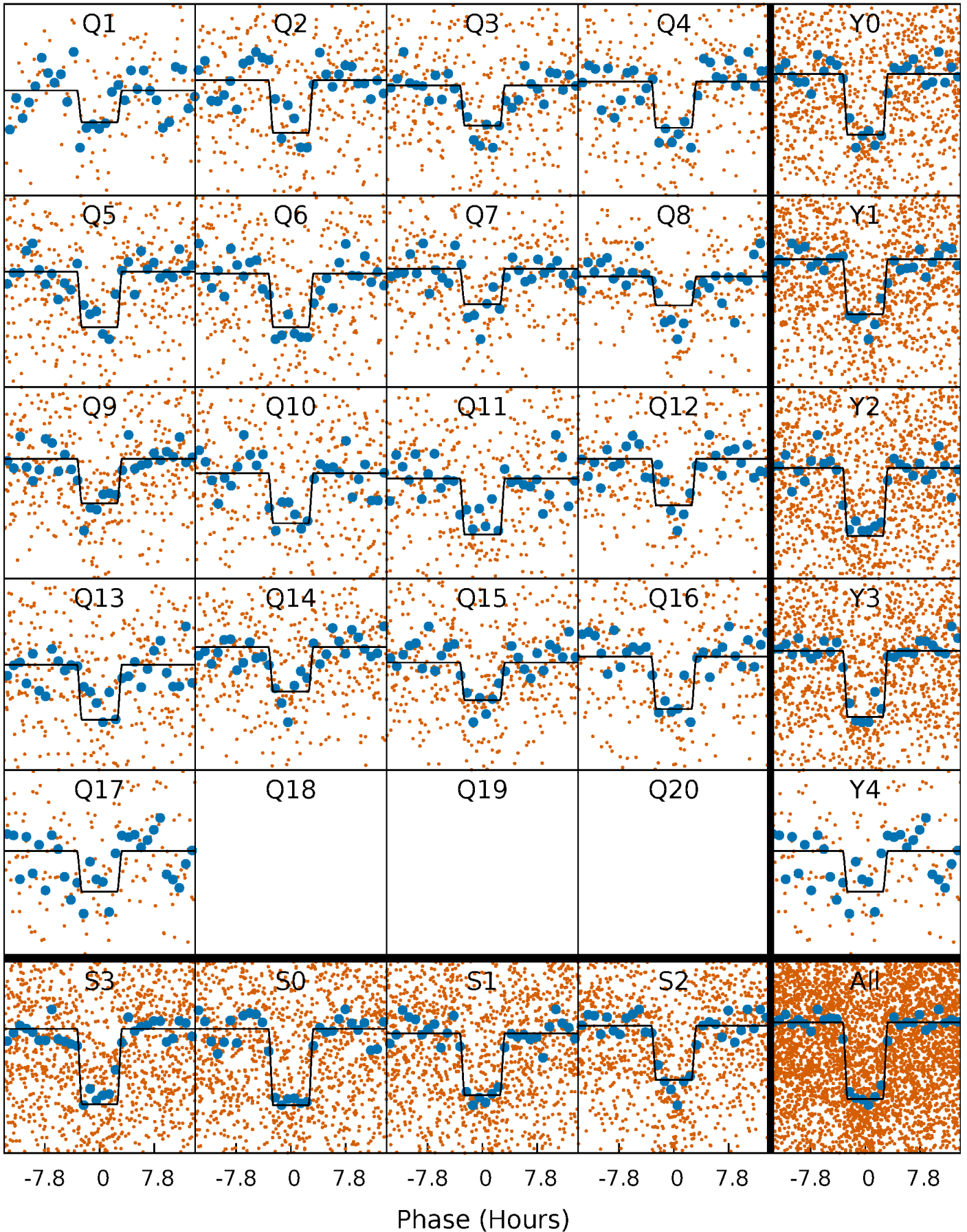
# DV Quarter-Phased Transit Curves

TCE 005042210-01 P= 12.146796 Days  $T_0=131.559858$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

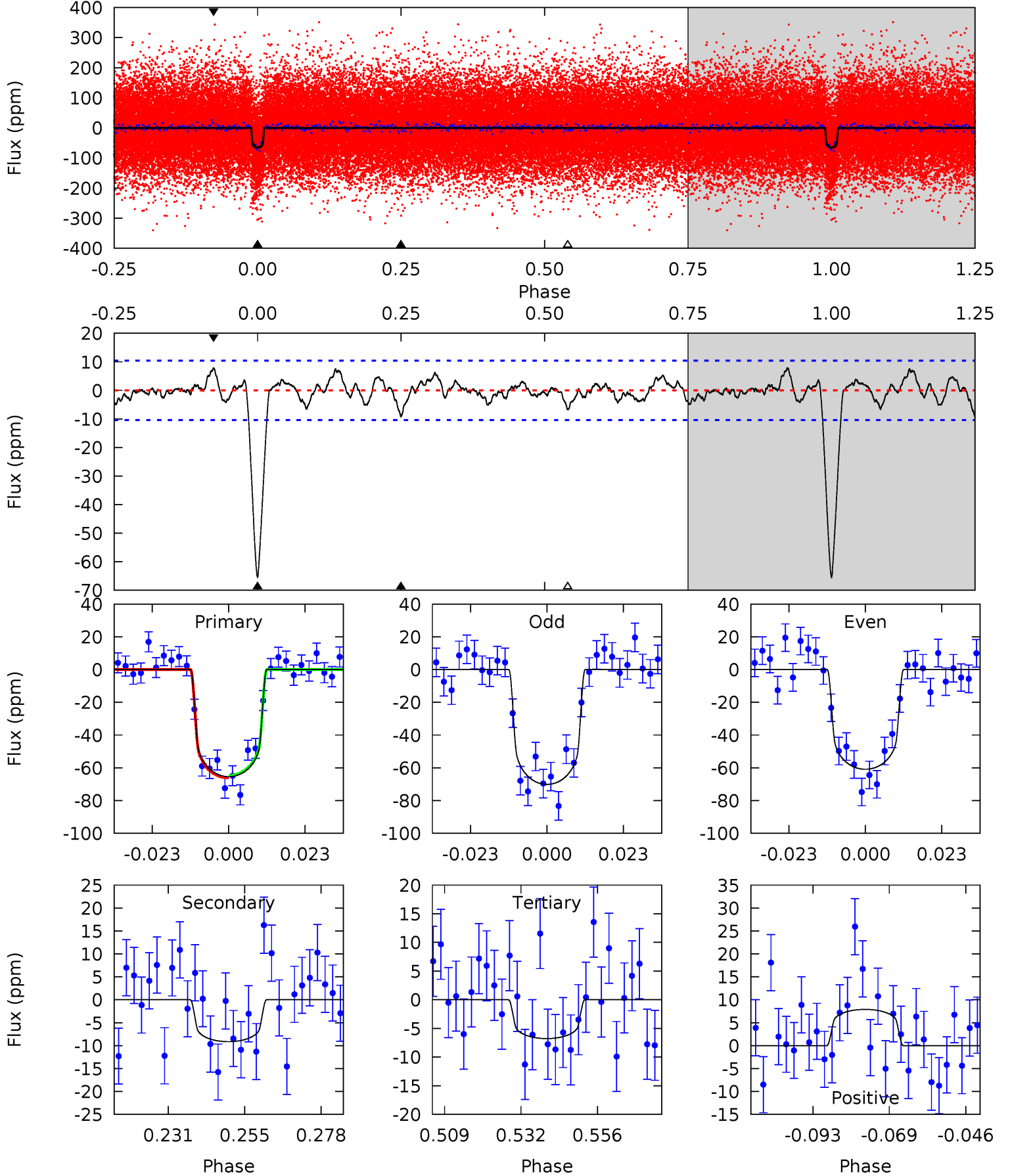
TCE 005042210-01 P= 12.147023 Days  $T_0=131.543519$  (BKJD)



# DV Model-Shift Uniqueness Test

005042210-01, P = 12.146796 Days, E = 119.413062 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 30.6 | 4.27 | 3.16 | 3.69 | 4.86            | 2.27            | 1.24             | 27.4    | 26.9    | 1.11    | 0.58    | 2.16    | 0.99 | 0.11  | 0.32 |





### Stellar Parameters For KIC 005042210

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$    | $R (R_{\odot})$           | $M (M_{\odot})$           | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $5877^{+116}_{-116}$ | $3.927^{+0.203}_{-0.087}$ | $0.040^{+0.150}_{-0.150}$ | $1.963^{+0.273}_{-0.507}$ | $1.187^{+0.133}_{-0.147}$ | $0.221^{+0.273}_{-0.061}$                 |
|        | +2%/-2%              | +5%/-2%                   | +375%/-375%               | +14%/-26%                 | +11%/-12%                 | +124%/-27%                                |
| Source | SPE59                | SPE59                     | SPE59                     | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 005042210-01 / KOI 2462.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$ |
|---------|-------------|------------------------|----------------------|----------------------|------------------|
| DV      | $-9 \pm 2$  | $1.88^{+0.36}_{-0.38}$ | $1521^{+68}_{-101}$  | $3781^{+260}_{-248}$ | $17^{+10}_{-6}$  |
| Alt.    | $-8 \pm 2$  | $1.68^{+0.38}_{-0.34}$ | $1515^{+73}_{-100}$  | $3849^{+361}_{-274}$ | $19^{+14}_{-7}$  |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = 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  $A_{\text{obs}} \gg 1.0$



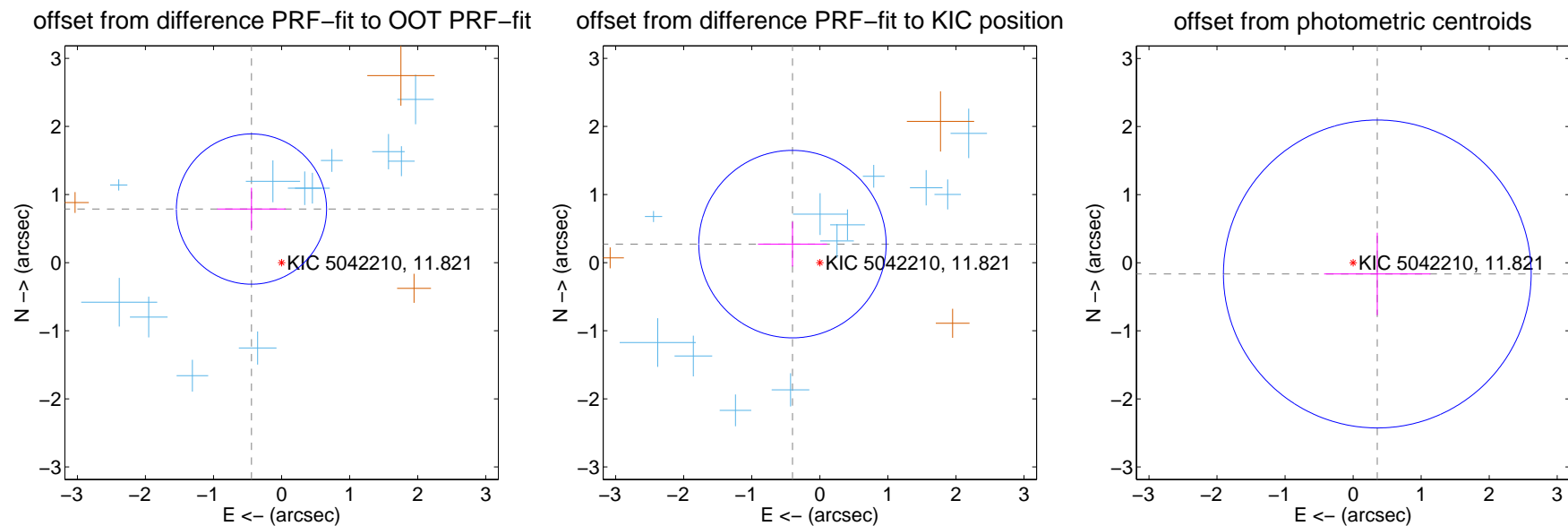
## DV Centroid Data

Supplemental centroid analysis for 005042210-01. **Kepler magnitude: 11.82.** Transit SNR 19.67

There are 12 quarters with good PRF difference image offsets

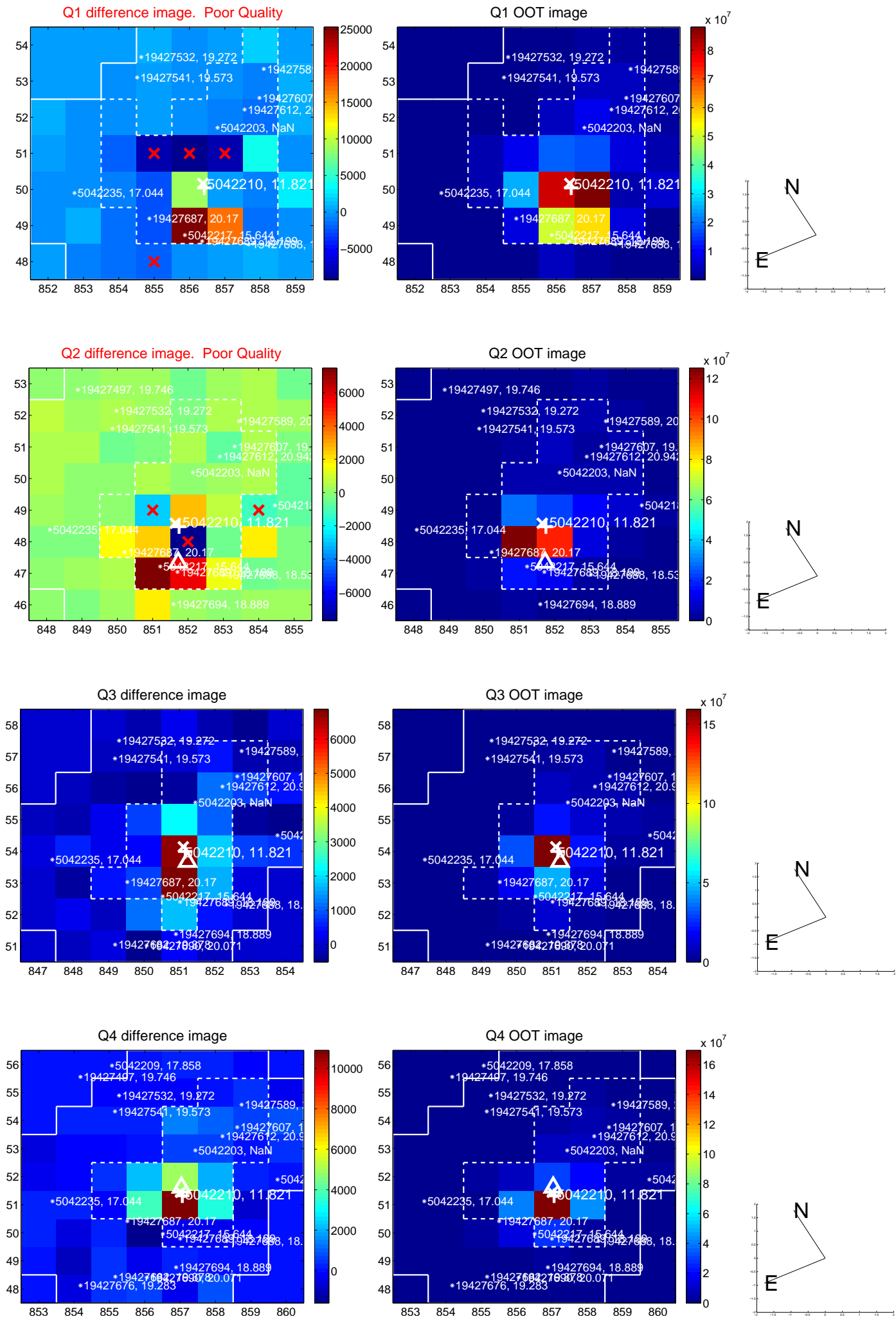
The direct PRF centroid is offset from the target star catalog position by about 0.67 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $0.903 \pm 0.368$  | 2.45                | $0.442 \pm 0.503$ | $0.787 \pm 0.313$ |
| PRF-fit source offset from KIC position | $0.486 \pm 0.459$  | 1.06                | $0.402 \pm 0.508$ | $0.272 \pm 0.328$ |
| photometric centroid source offset      | $0.39 \pm 0.75$    | 0.52                | $-0.36 \pm 0.78$  | $-0.17 \pm 0.61$  |

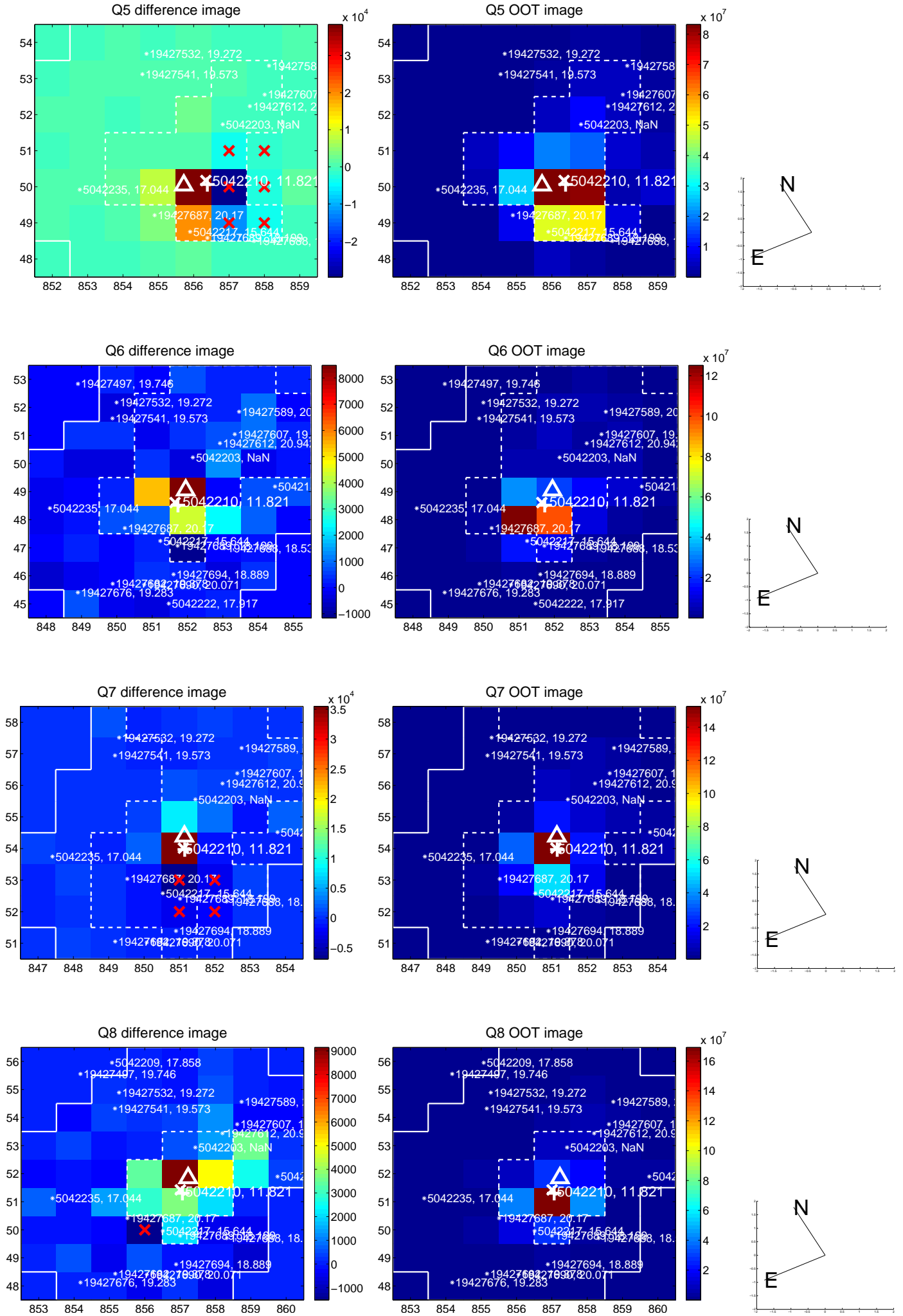


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

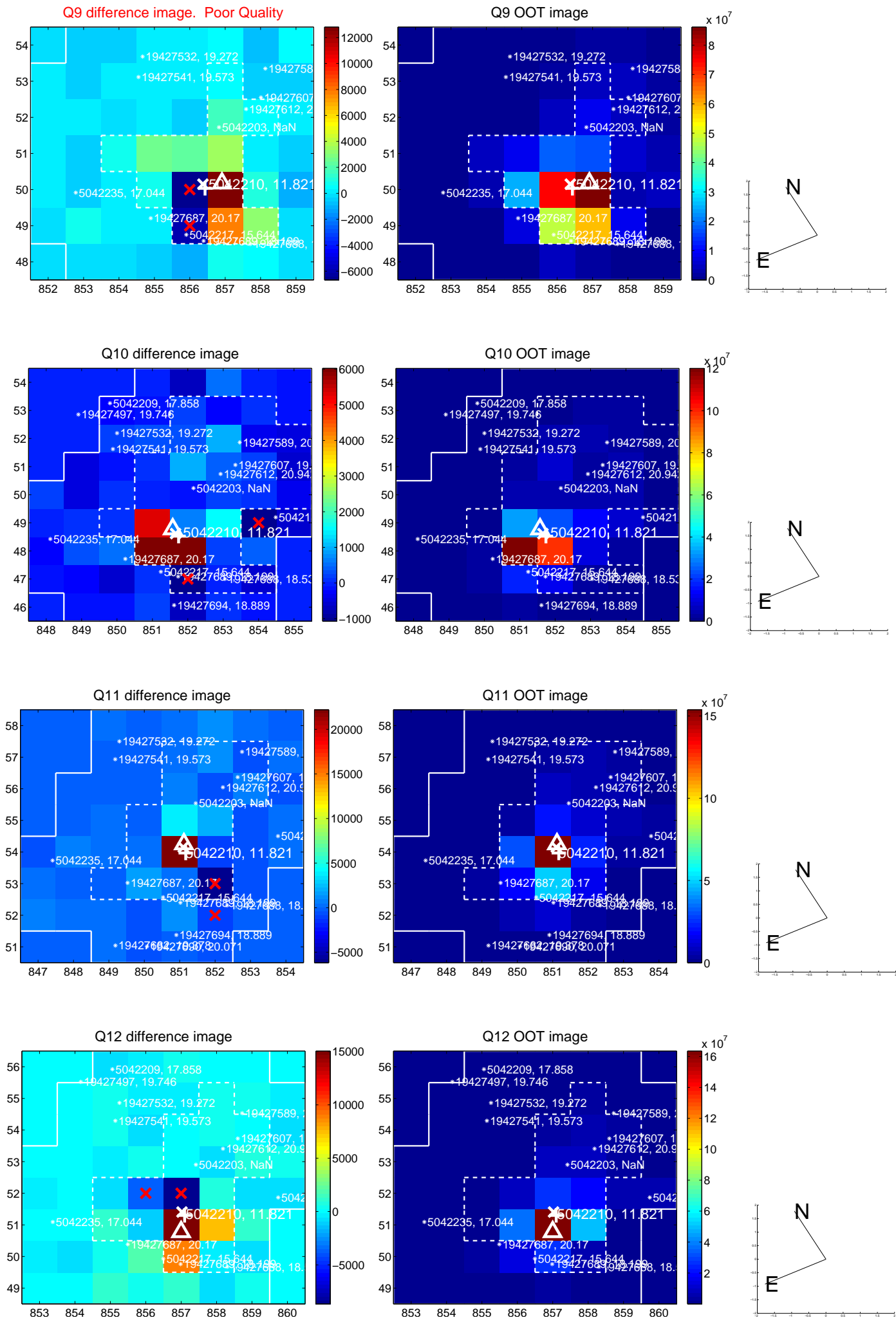
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



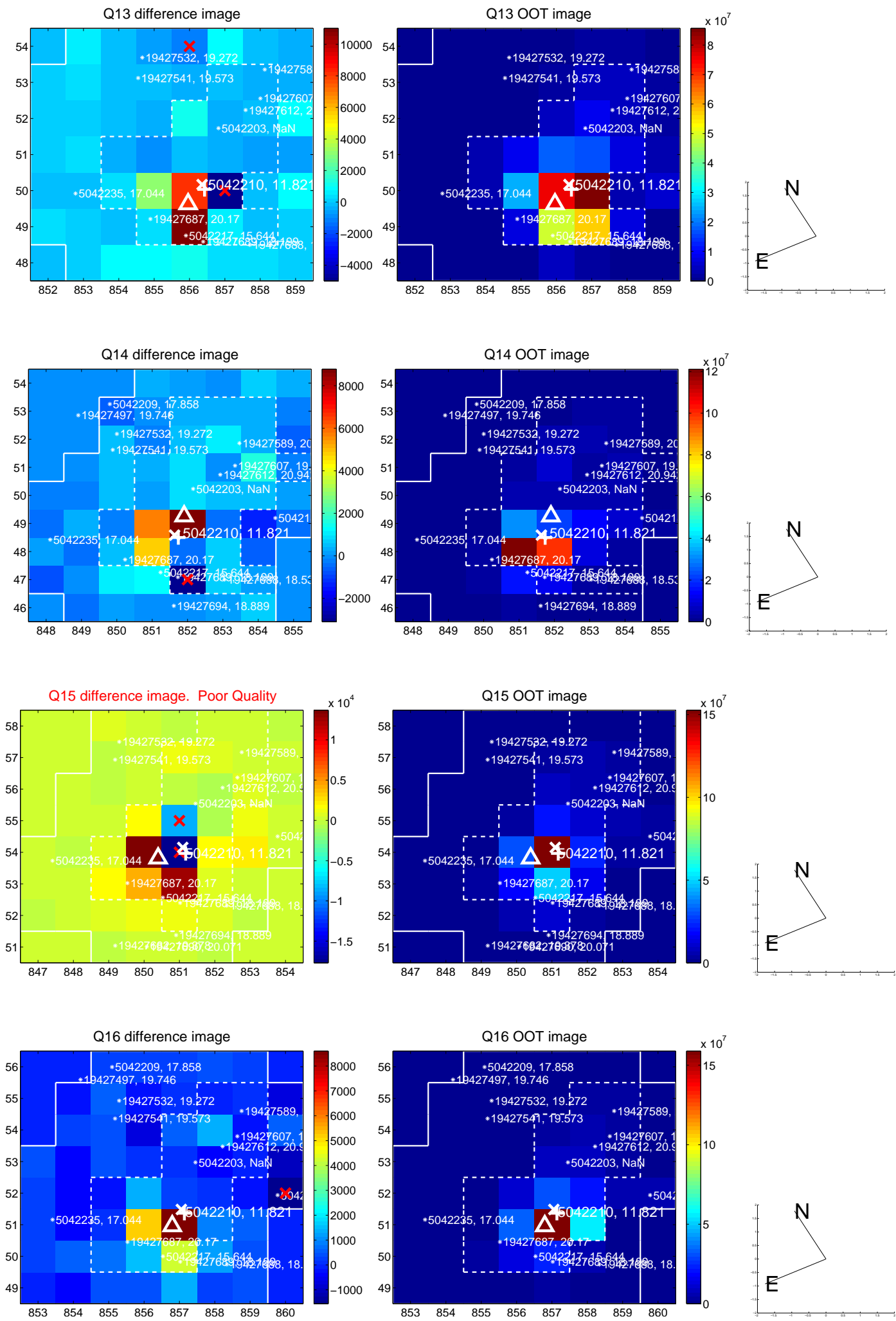
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

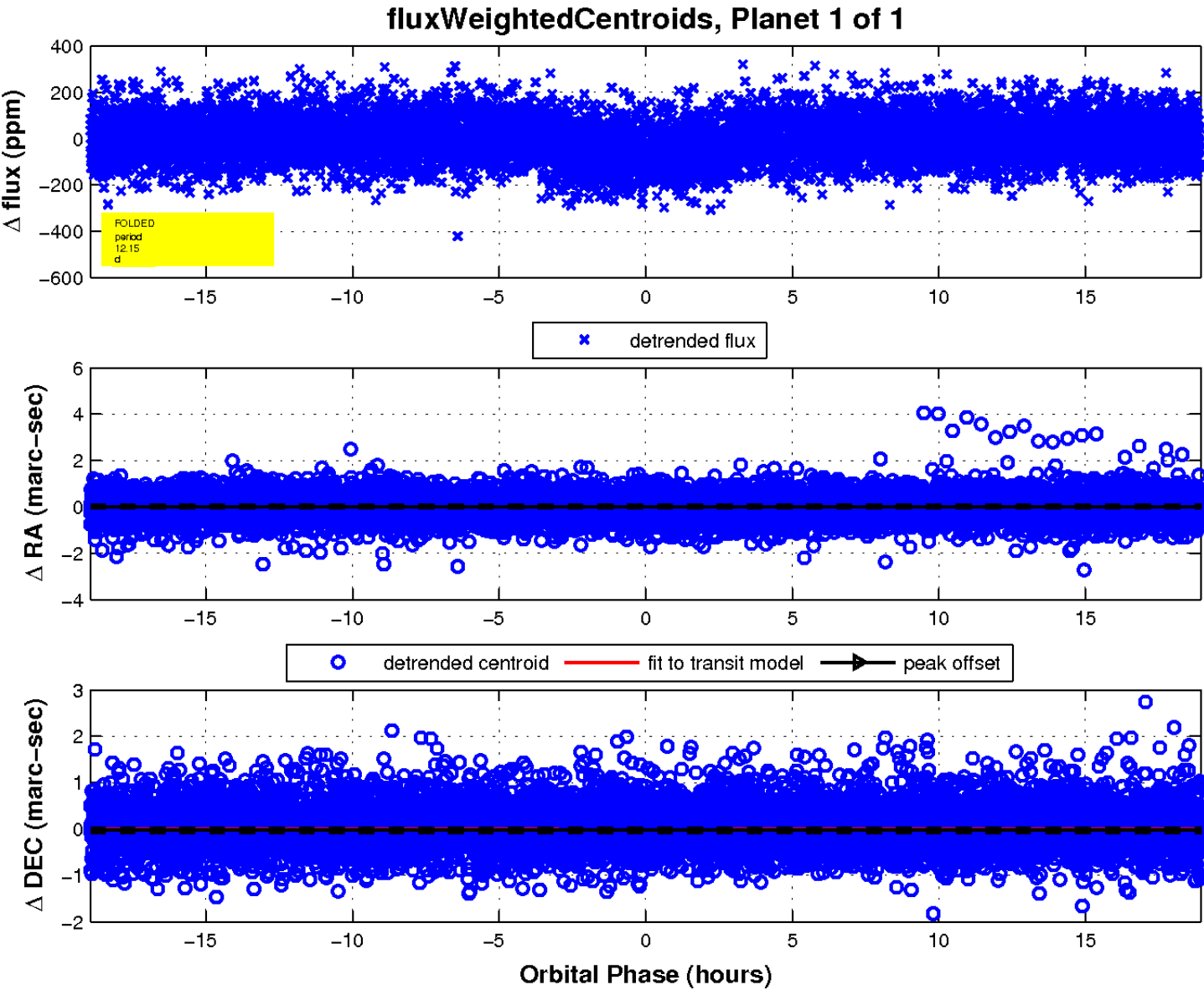
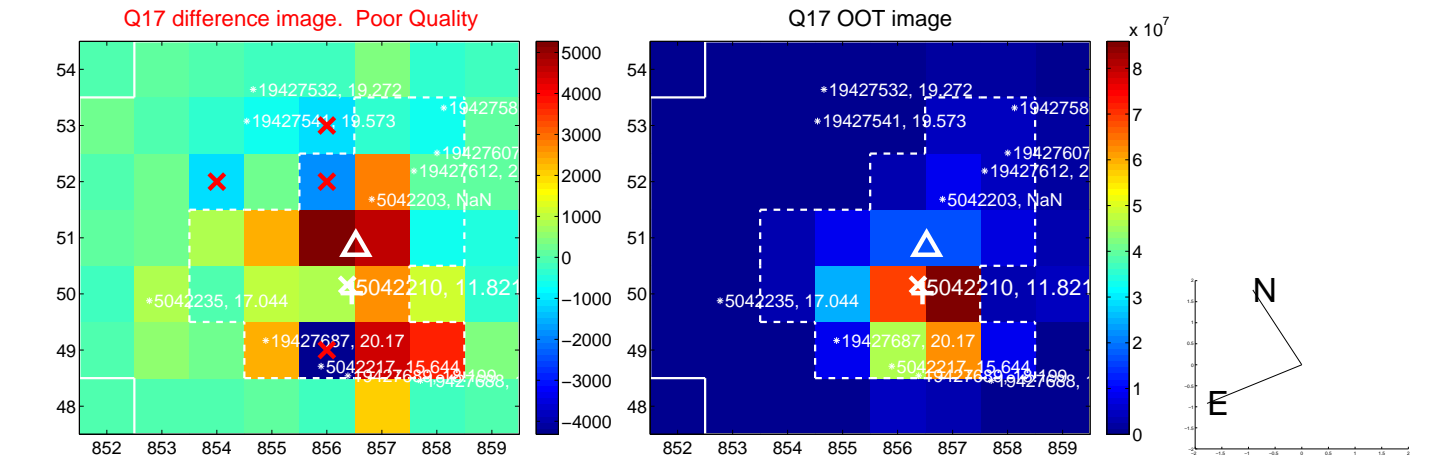


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





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



UKIRT Image

