

KIC 011350238

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011350238-01 | OBS | No | 8.358448 | 133.332797 | 38.1 | 18.823 | 8.7 | 9.5 | 2.06 | 7302 | 1.41 | 1211.88 |
| 011350238-02 | OBS | No | 4.180390 | 132.172293 | 24.6 | 27.407 | 9.3 | 8.4 | 2.06 | 7302 | 1.07 | 3052.60 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011350238-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 011350238-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV |

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

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

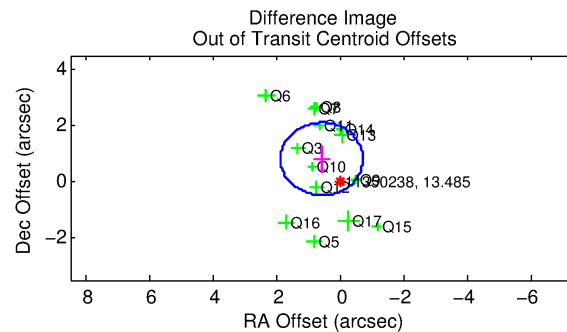
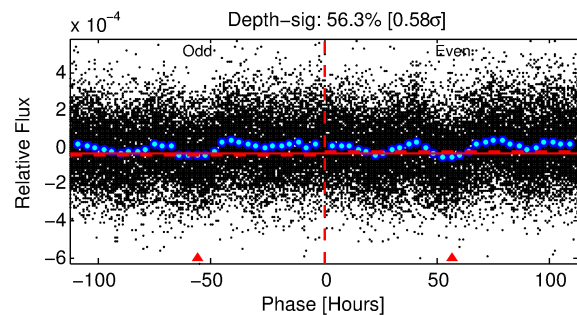
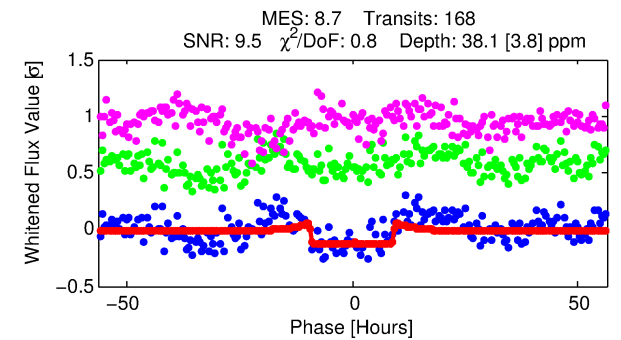
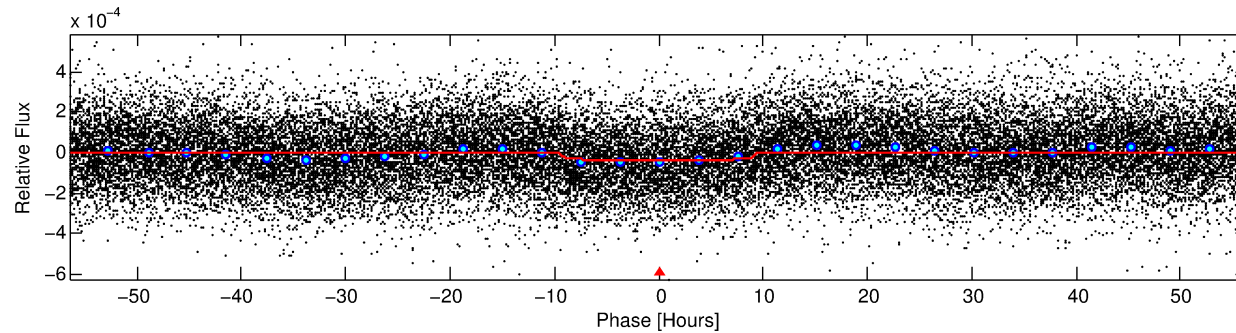
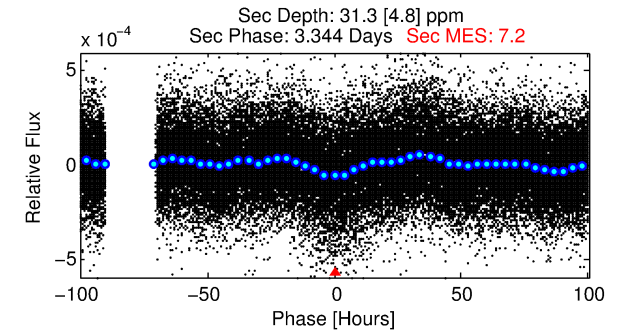
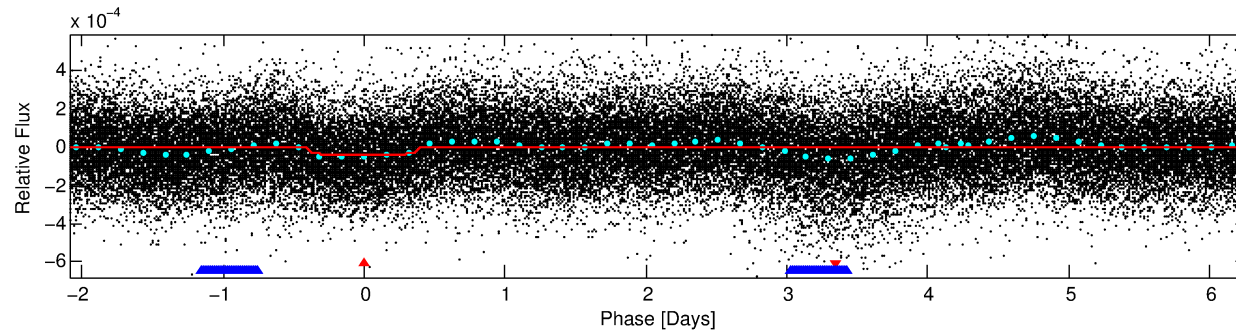
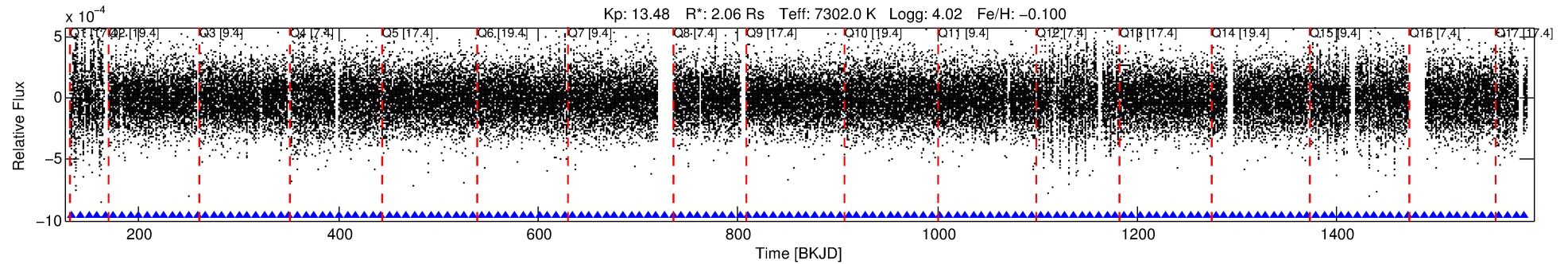
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011350238-01

No Significant Match Found

DV One-Page Summary

KIC: 11350238 Candidate: 1 of 2 Period: 8.358 d



DV Fit Results:

Period = 8.35845 [0.00014] d
Epoch = 133.3328 [0.0129] BKJD
Rp/R* = 0.0063 [0.0008]
a/R* = 2.18 [1.20]
b = 0.82 [0.28]
Seff = 1211.87 [499.06]
Teq = 1504 [155] K
Rp = 1.41 [0.43] Re
a = 0.0944 [0.0231] AU
Ag = 77.27 [36.39] [2.10σ]
Teffp = 6897 [591] K [8.83σ]

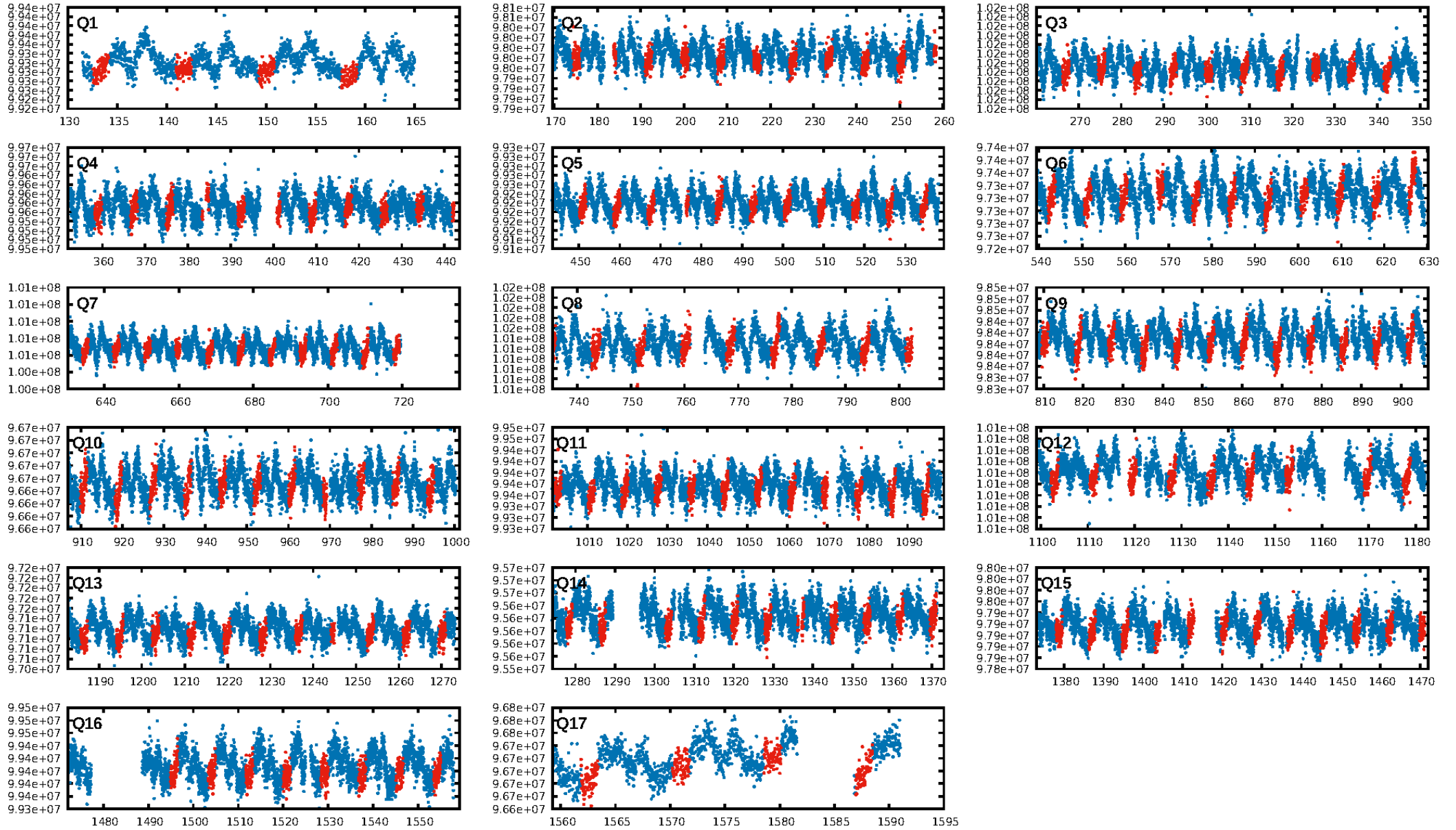
DV Diagnostic Results:

ShortPeriod-sig: 99.7% [3.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.64e-21
RollingBand-fgt: 1.00 [160/160]
GhostDiagnostic-chr: 2.046
Centroid-sig: 2.2%
Centroid-so: 0.902 arcsec [1.22σ]
OotOffset-rm: 1.004 arcsec [2.32σ]
KicOffset-rm: 0.905 arcsec [2.15σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 0.00 [0/17]

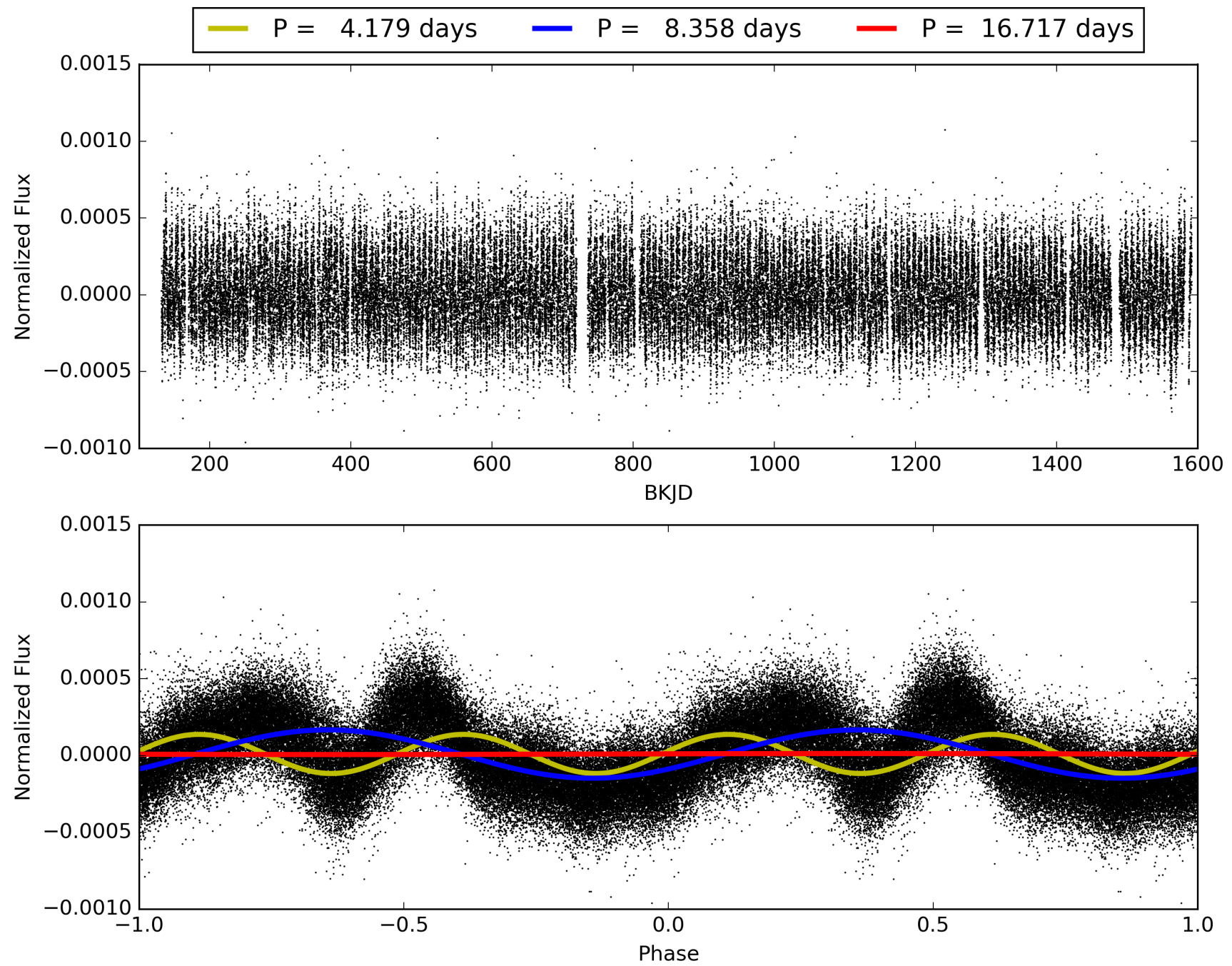
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:28:59 Z

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

TCE 011350238-01, PDC Light Curves

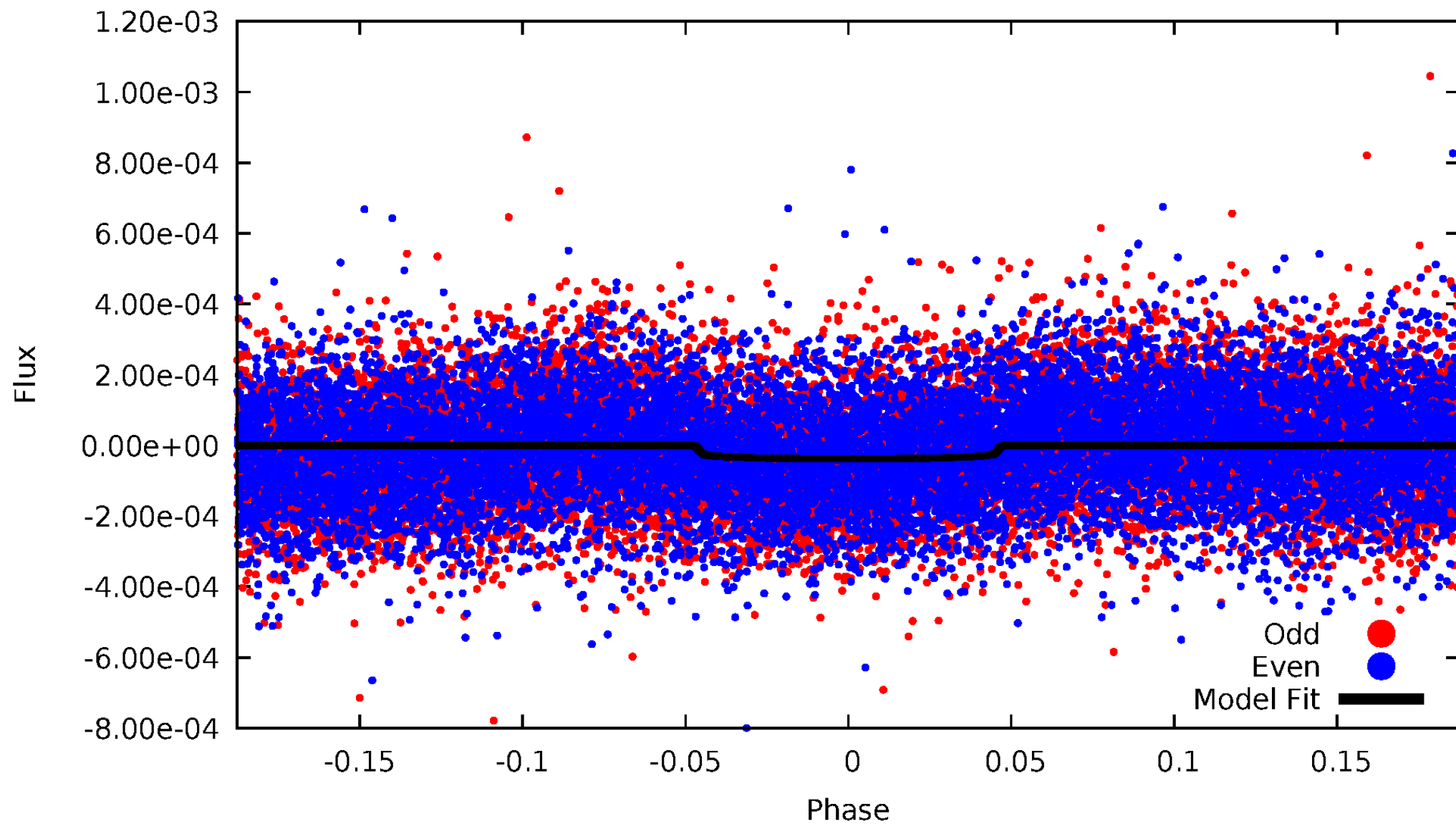


TCE 011350238-01



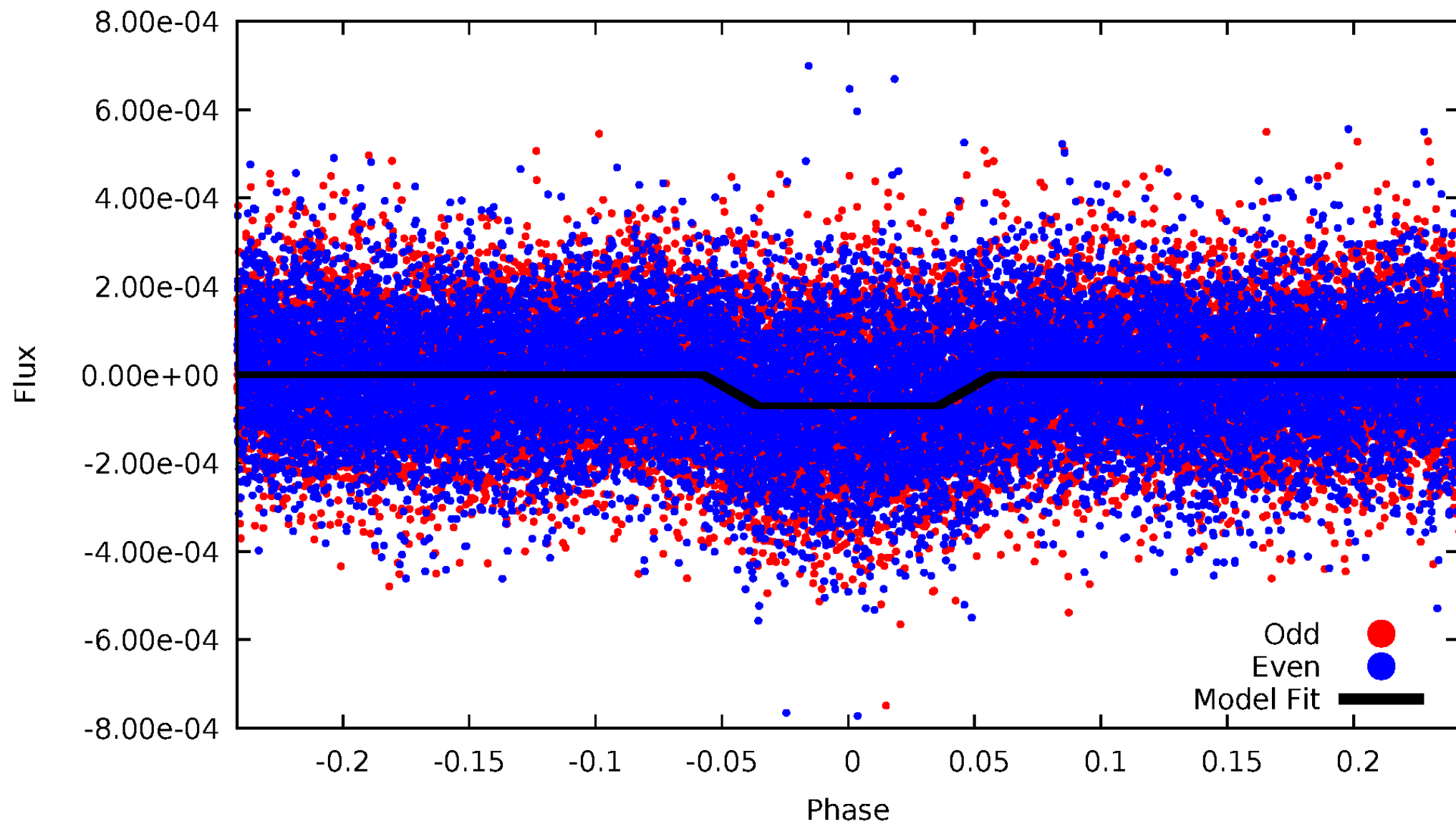
DV Odd/Even

TCE 011350238-01

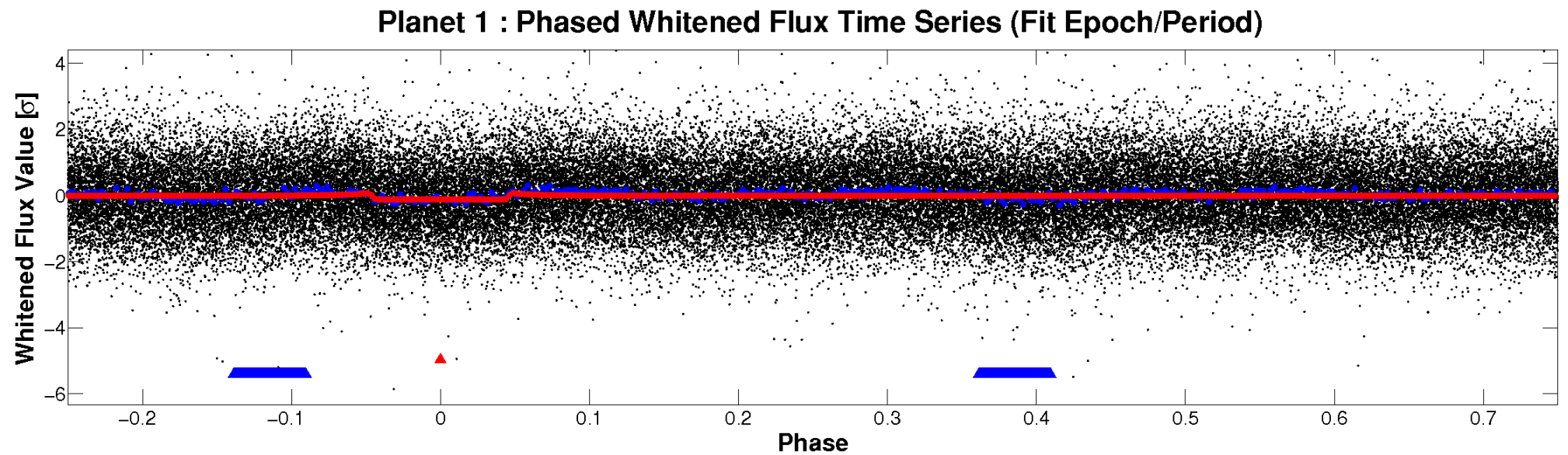
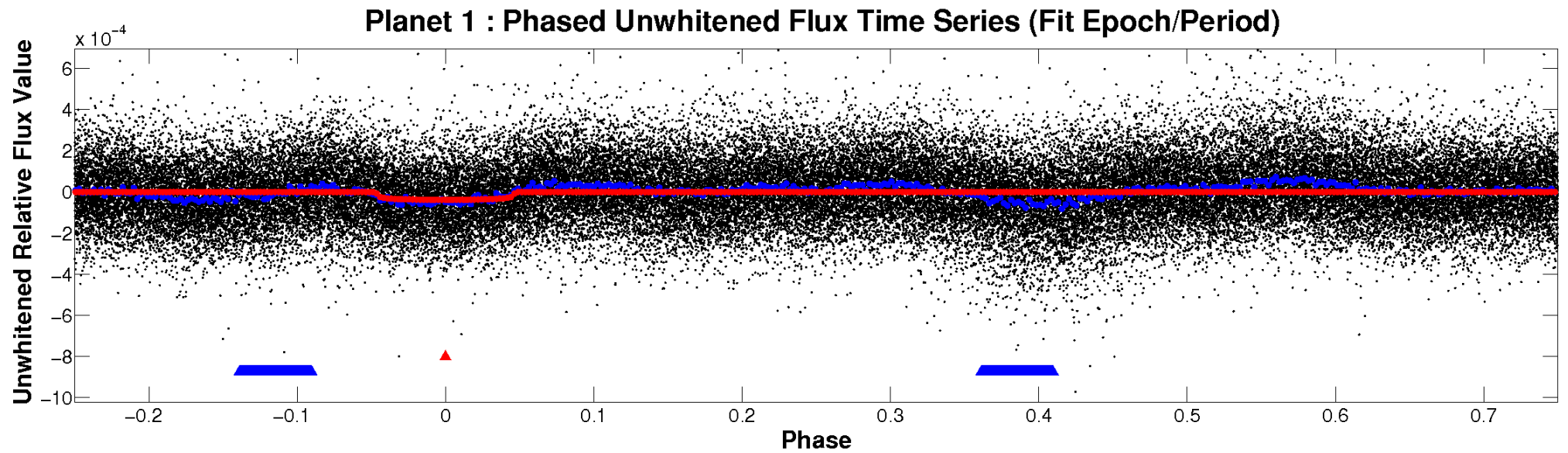


ALT Odd/Even

TCE 011350238-01

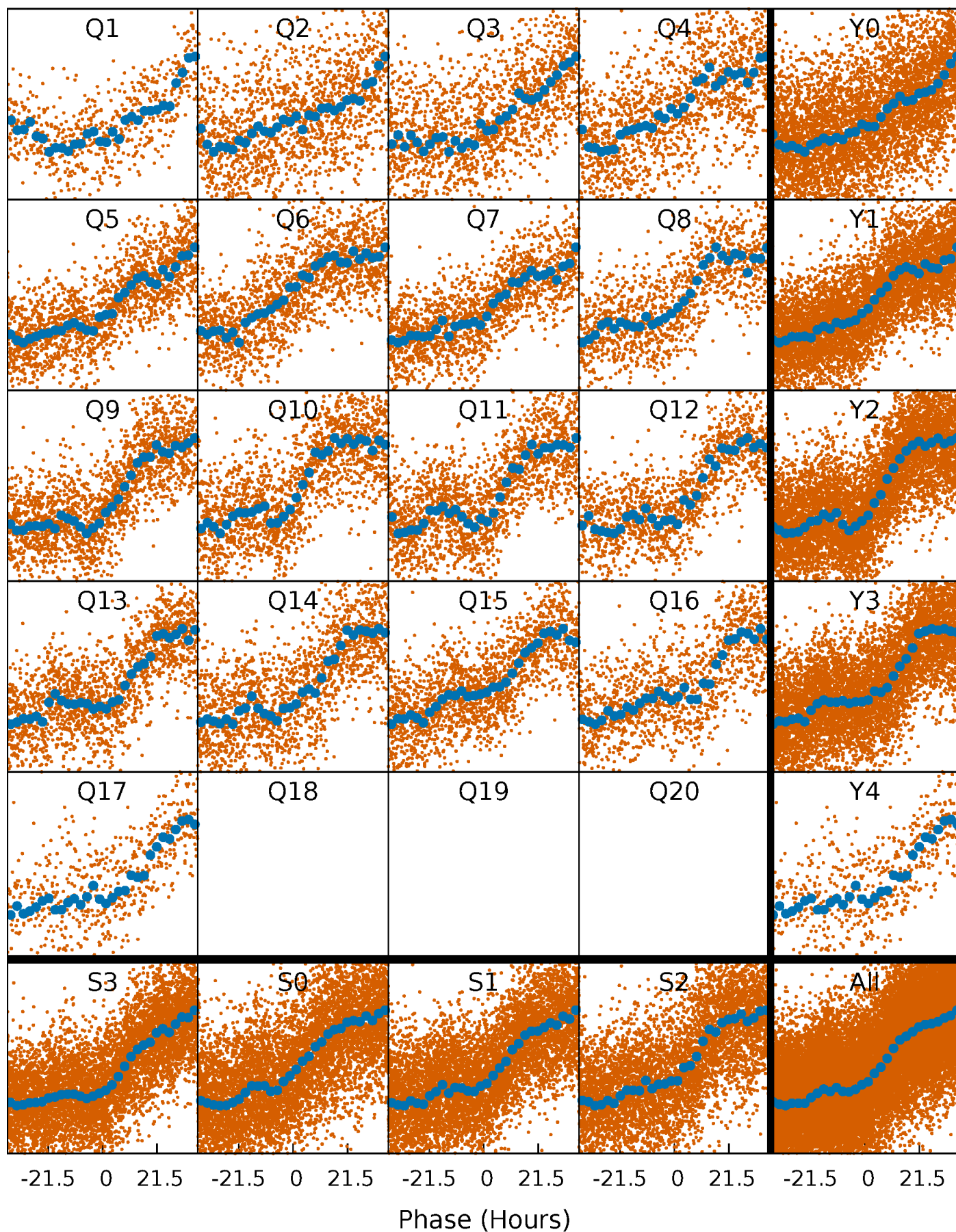


Non-Whitened Vs. Whitened Light Curve



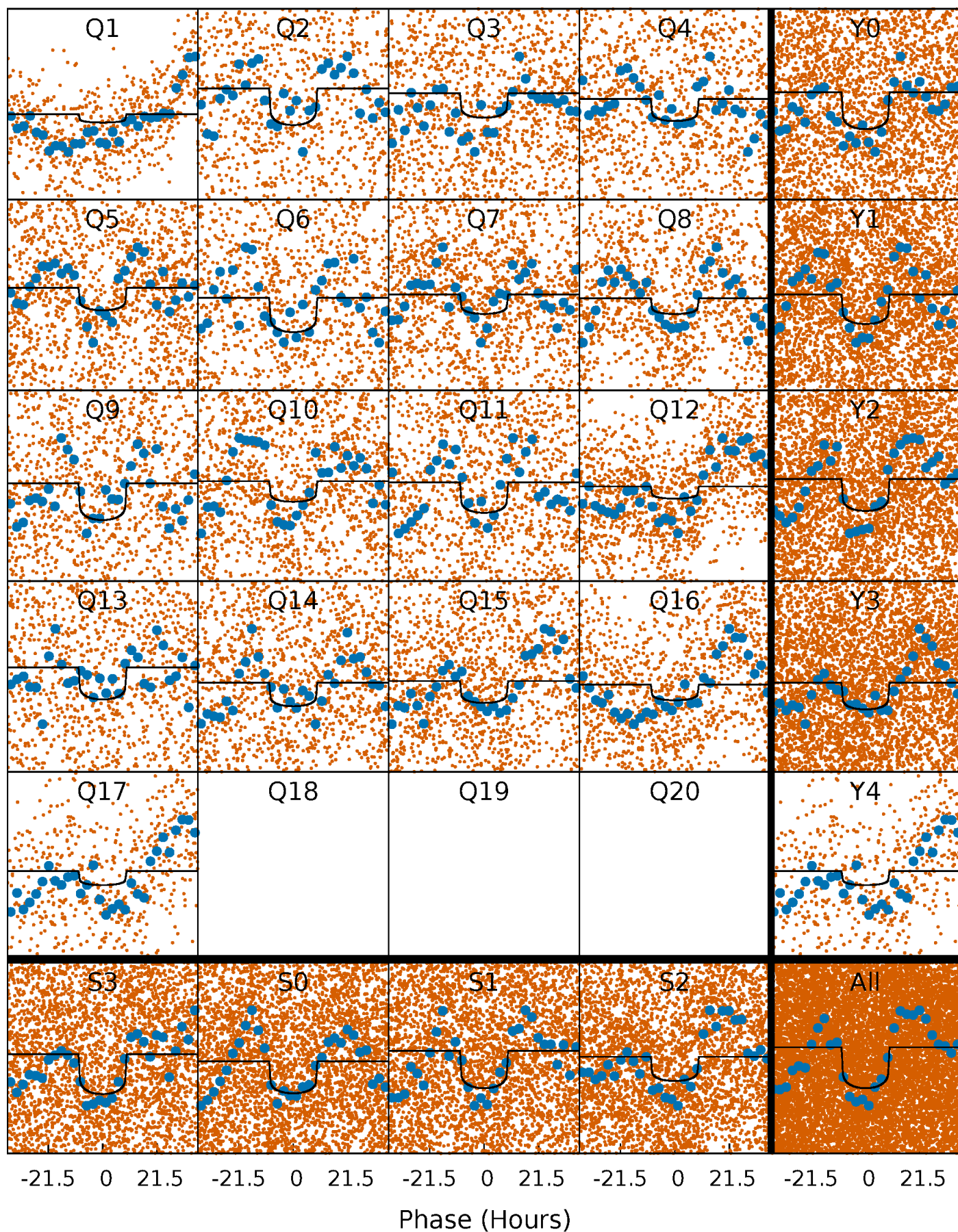
PDC Quarter-Phased Transit Curves

TCE 011350238-01 P= 8.358448 Days $T_0=133.332797$ (BKJD)



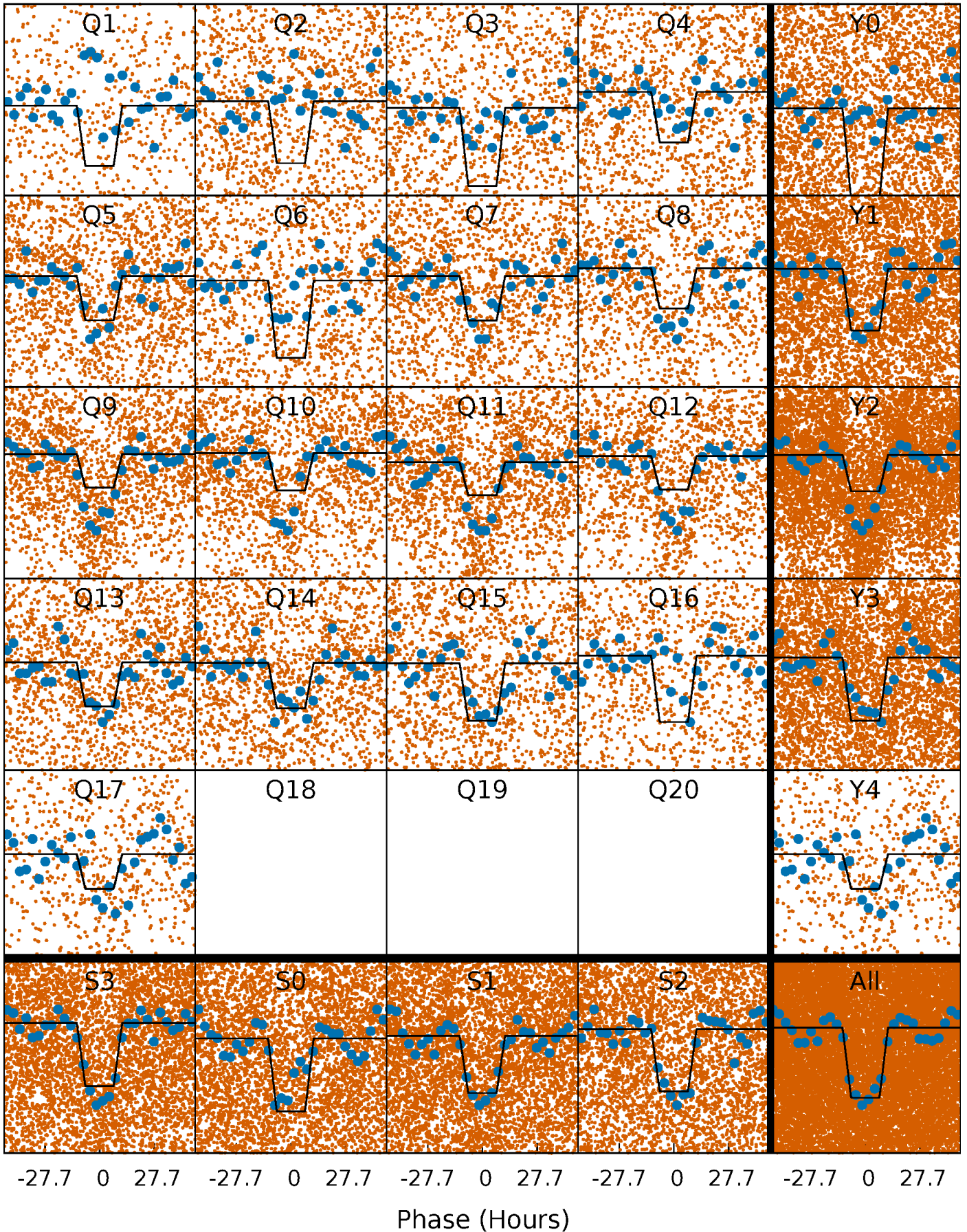
DV Quarter-Phased Transit Curves

TCE 011350238-01 P= 8.358448 Days $T_0=133.332797$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

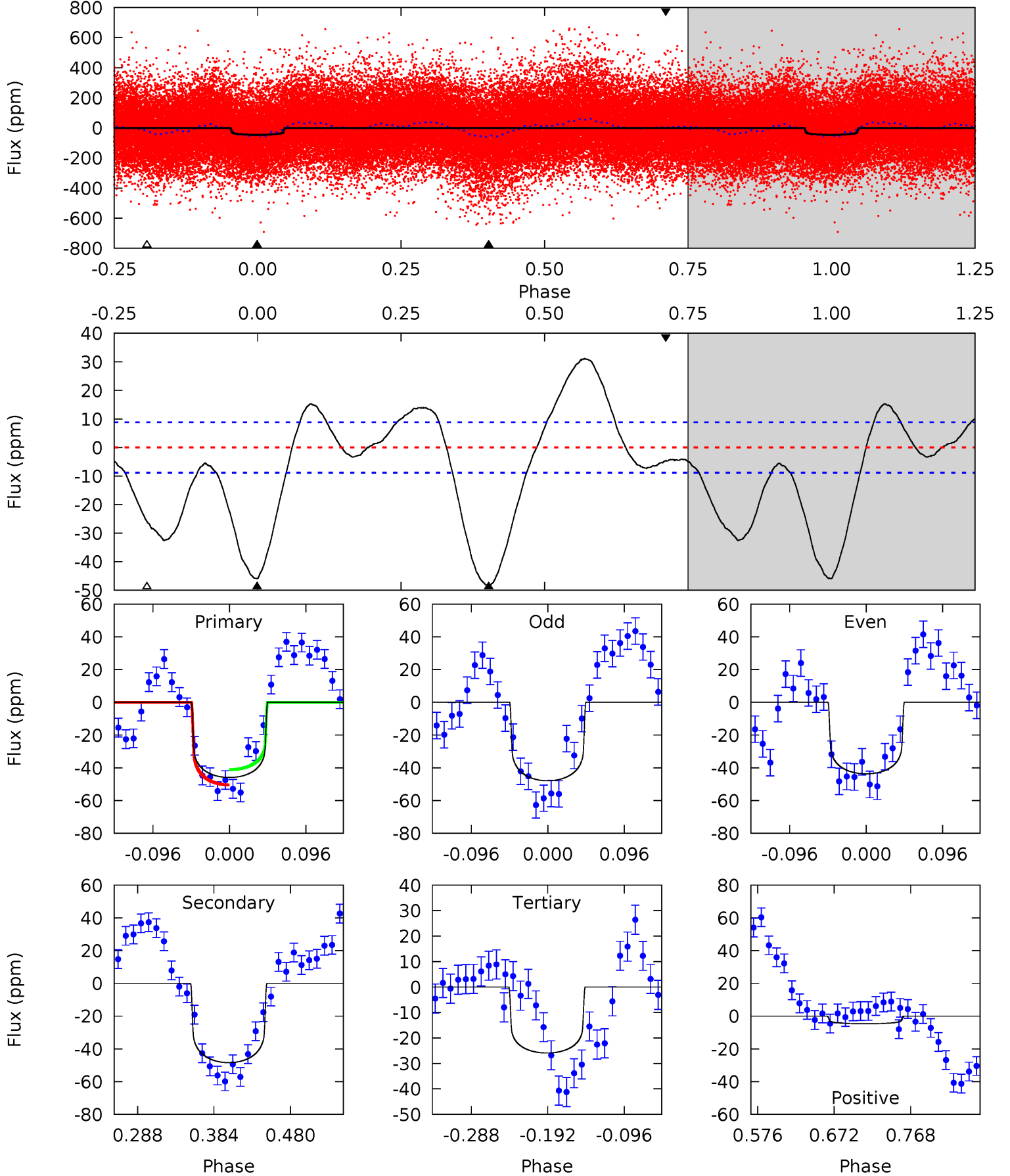
TCE 011350238-01 P= 8.359096 Days $T_0=133.267749$ (BKJD)



DV Model-Shift Uniqueness Test

011350238-01, P = 8.358448 Days, E = 124.974349 Days

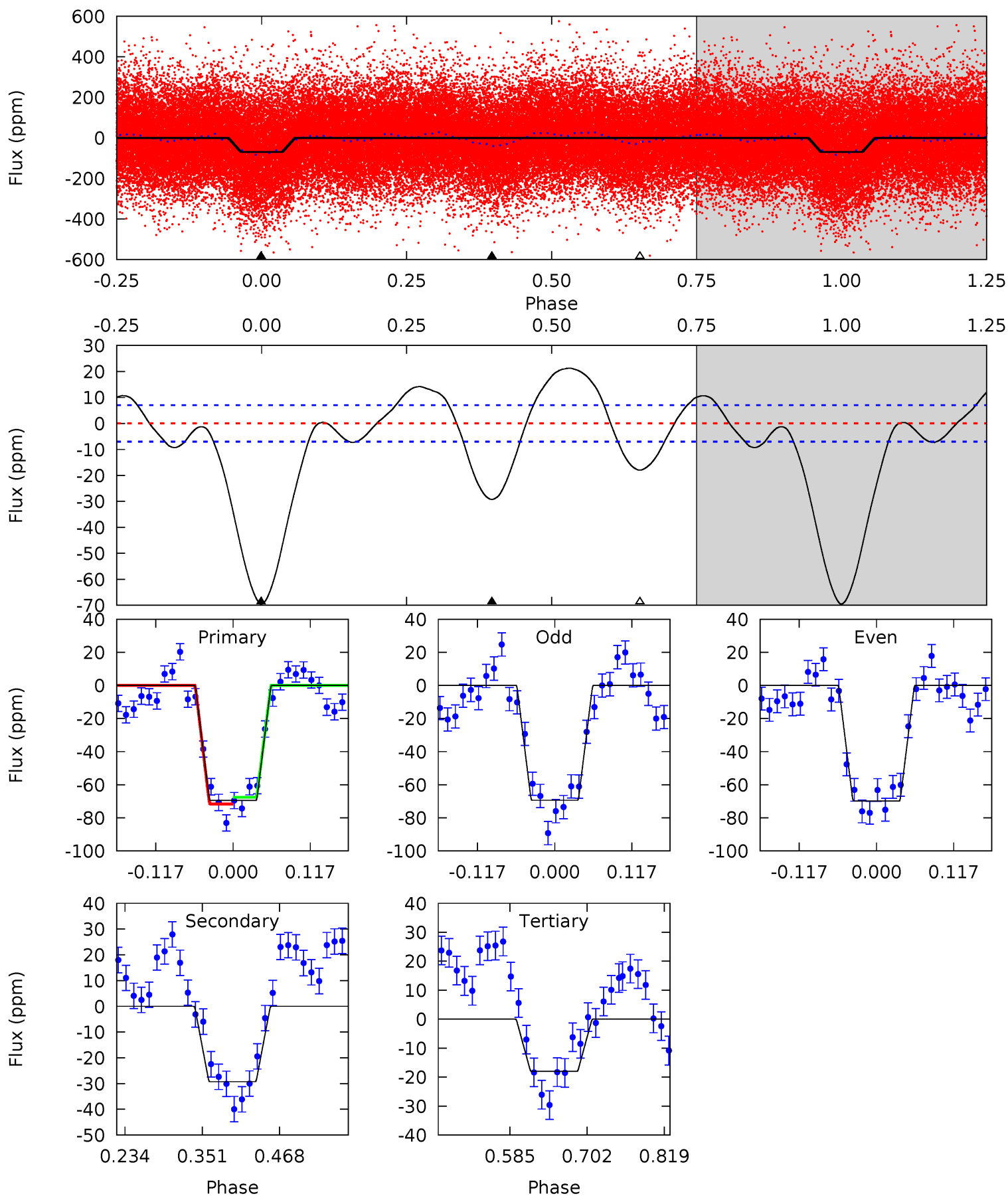
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.8 | 25.1 | 13.4 | -2.40 | 4.57 | 1.66 | 8.32 | 10.4 | 26.2 | 11.6 | 27.5 | 1.09 | 0.95 | 0.39 | 2.45 |



Alt Model-Shift Uniqueness Test

011350238-01, P = 8.359096 Days, E = 124.908653 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 44.8 | 18.8 | 11.6 | 0 | 4.53 | 1.57 | 6.87 | 33.2 | 44.8 | 7.25 | 18.8 | 0.14 | 1.02 | 0.23 | 1.33 |



Stellar Parameters For KIC 011350238

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7302^{+228}_{-330} | $4.016^{+0.209}_{-0.171}$ | $-0.100^{+0.250}_{-0.350}$ | $2.058^{+0.569}_{-0.569}$ | $1.601^{+0.199}_{-0.323}$ | $0.259^{+0.340}_{-0.109}$ |
| | +3%/-5% | +5%/-4% | +250%/-350% | +28%/-28% | +12%/-20% | +131%/-42% |
| 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 011350238-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|-------------------|
| DV | -48 ± 2 | $1.40^{+0.29}_{-0.28}$ | 2087^{+167}_{-167} | 7695^{+688}_{-566} | 121^{+64}_{-38} |
| Alt. | -29 ± 2 | $1.86^{+0.35}_{-0.32}$ | 2094^{+161}_{-173} | 5789^{+322}_{-324} | 40^{+18}_{-11} |

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 $A_{\text{obs}} \gg 1.0$

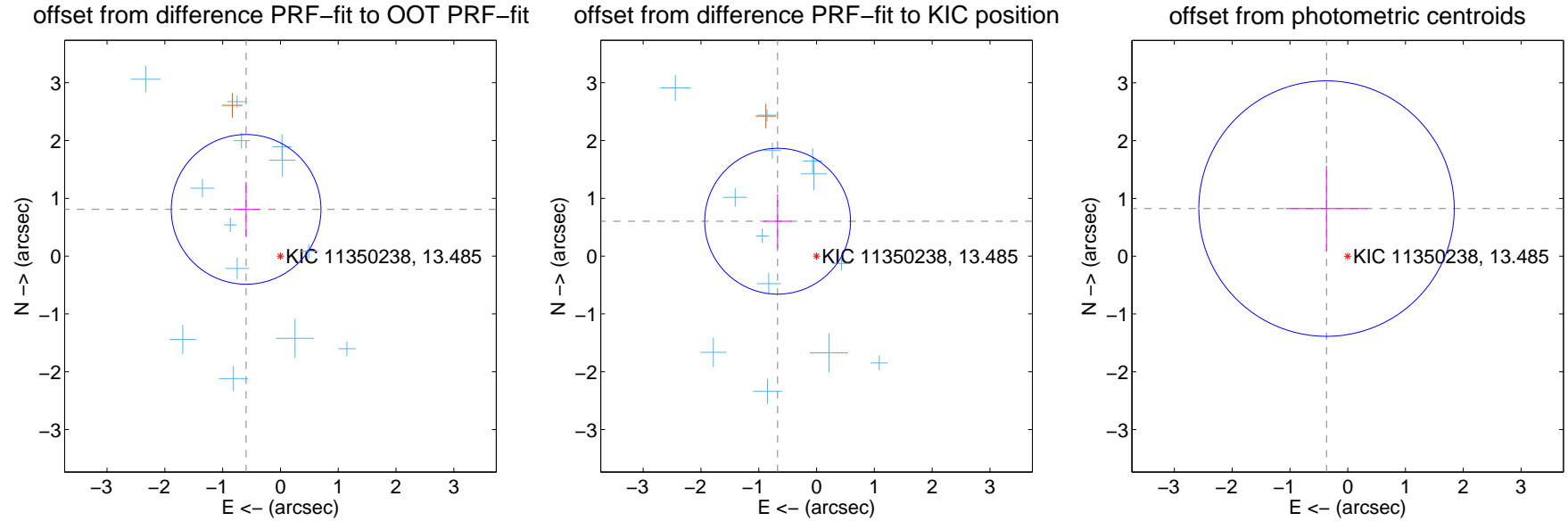
DV Centroid Data

Supplemental centroid analysis for 011350238-01. Kepler magnitude: 13.48. Transit SNR 9.55

There are 13 quarters with good PRF difference image offsets

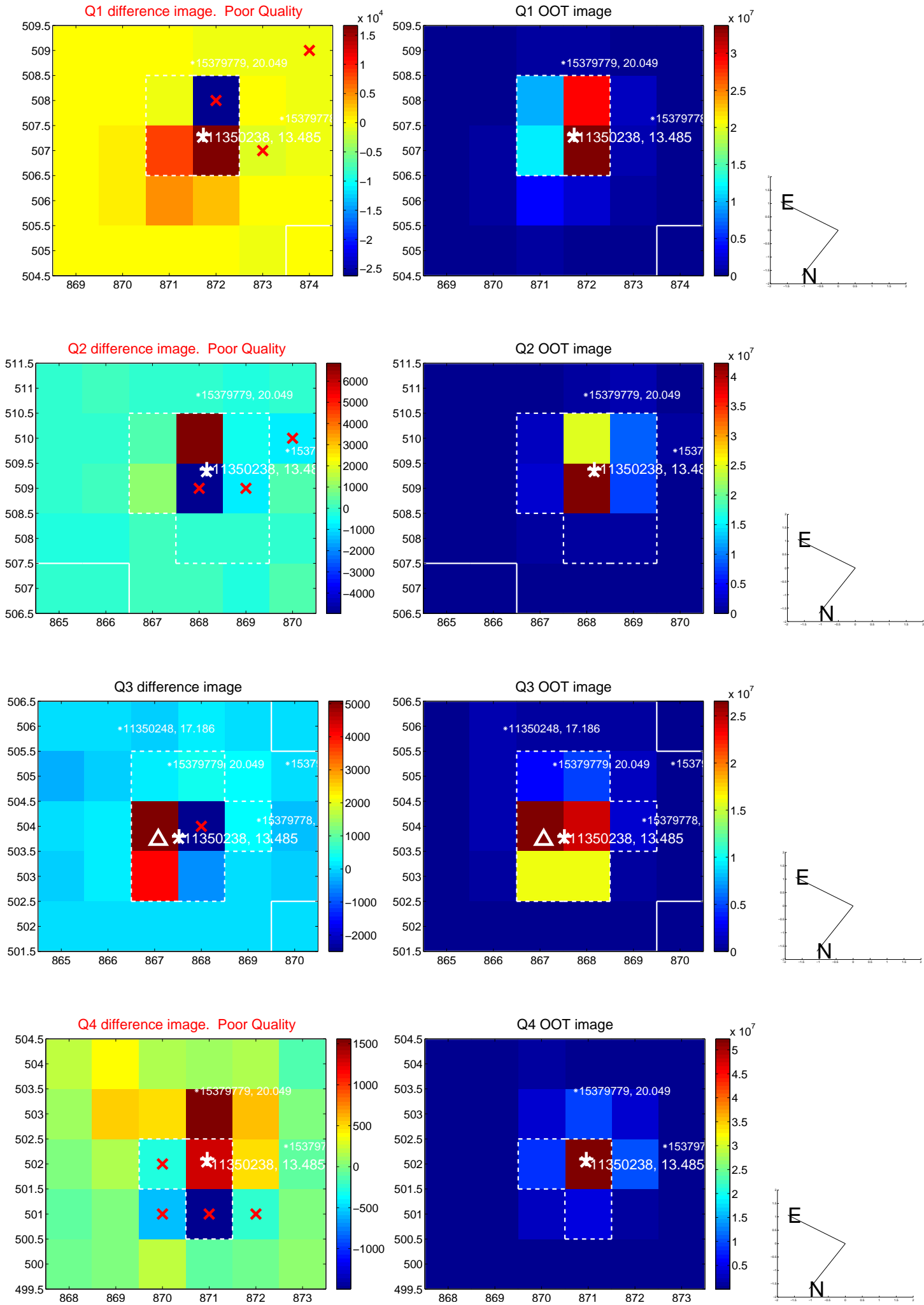
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.004 ± 0.432 | 2.32 | 0.594 ± 0.228 | 0.809 ± 0.473 |
| PRF-fit source offset from KIC position | 0.905 ± 0.421 | 2.15 | 0.674 ± 0.245 | 0.604 ± 0.470 |
| photometric centroid source offset | 0.90 ± 0.74 | 1.22 | 0.37 ± 0.70 | 0.82 ± 0.74 |

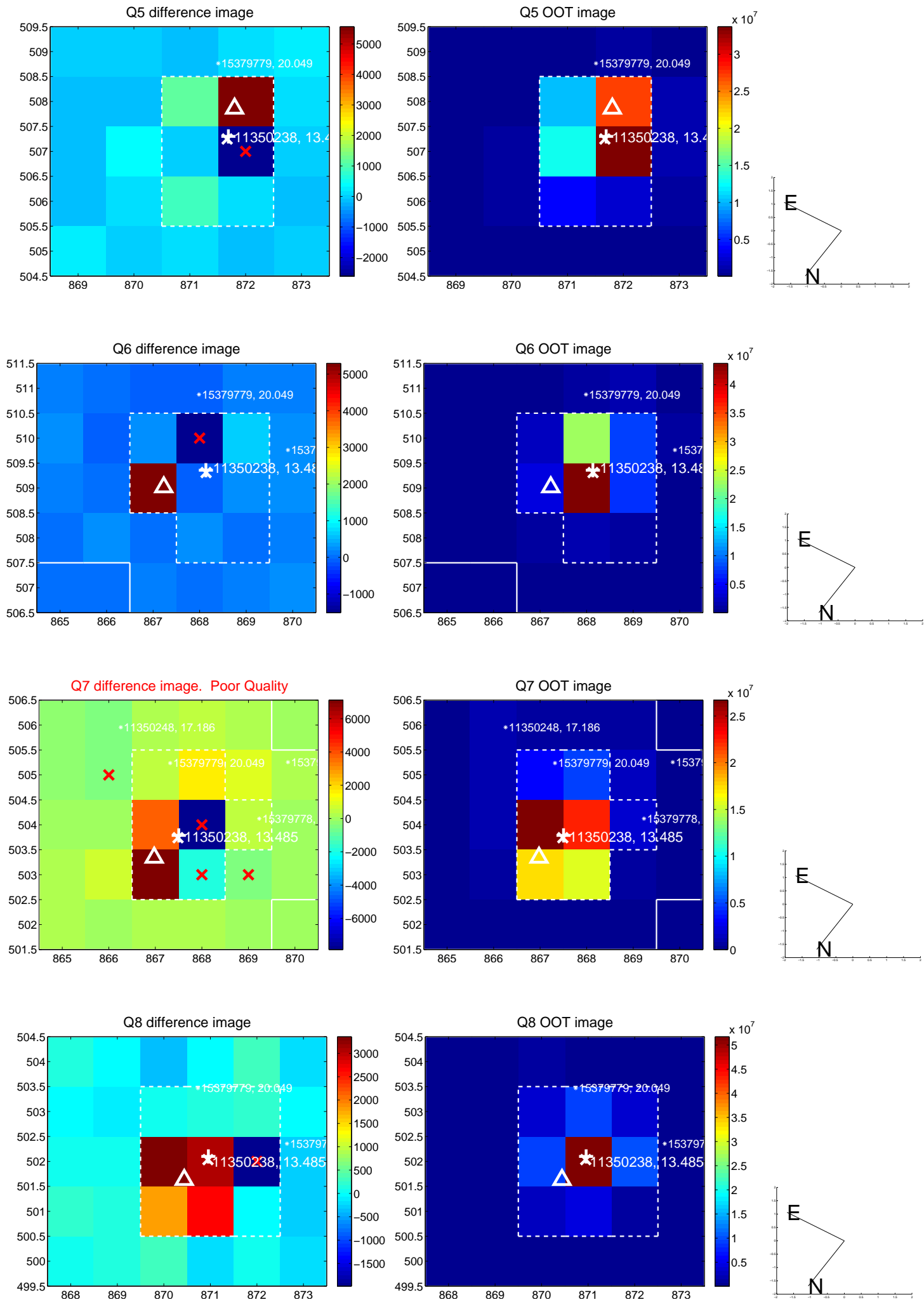


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

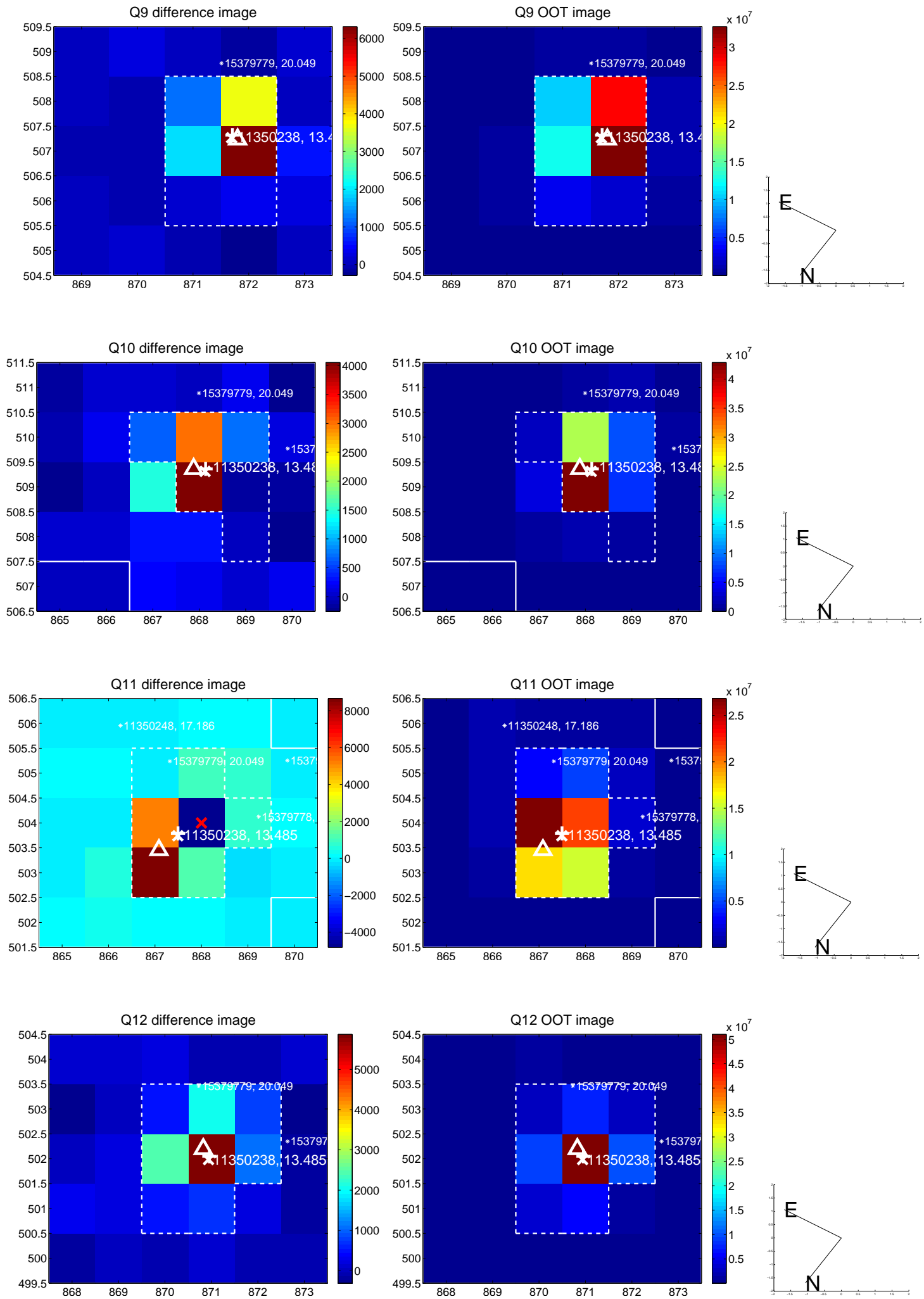
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



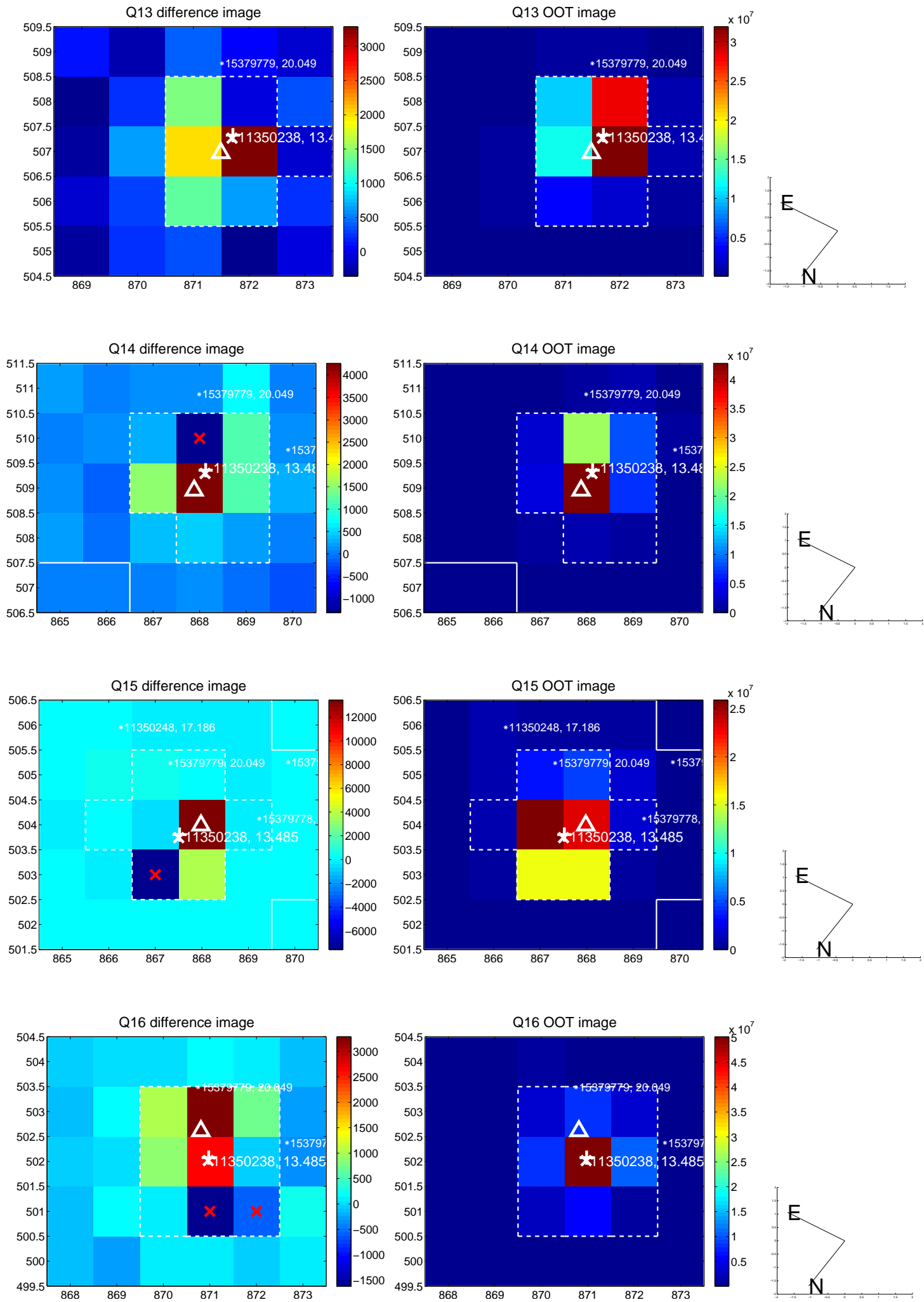
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



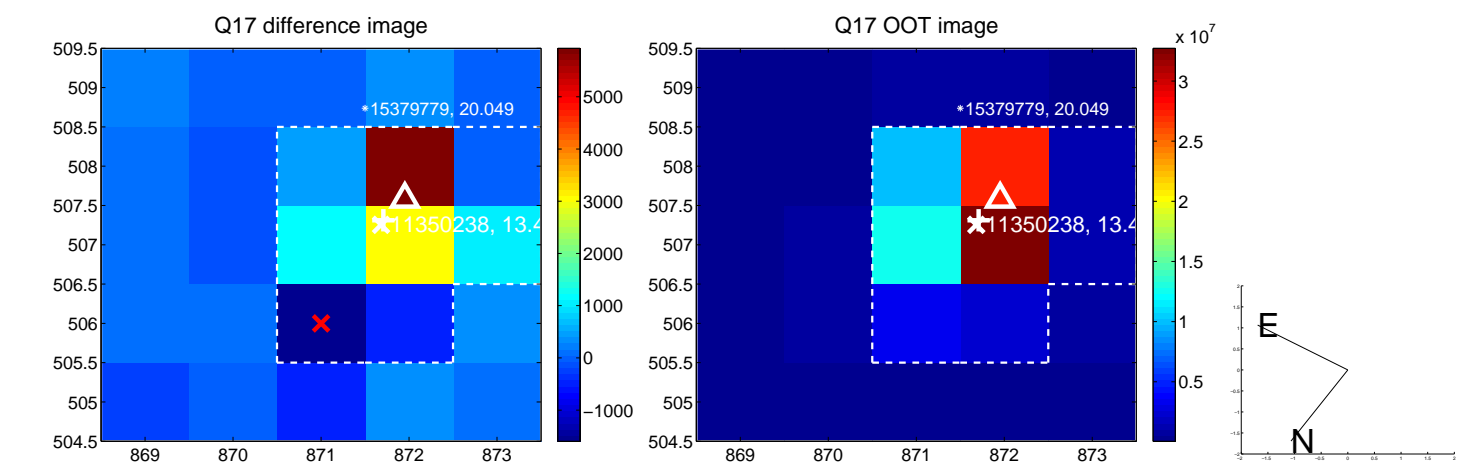
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



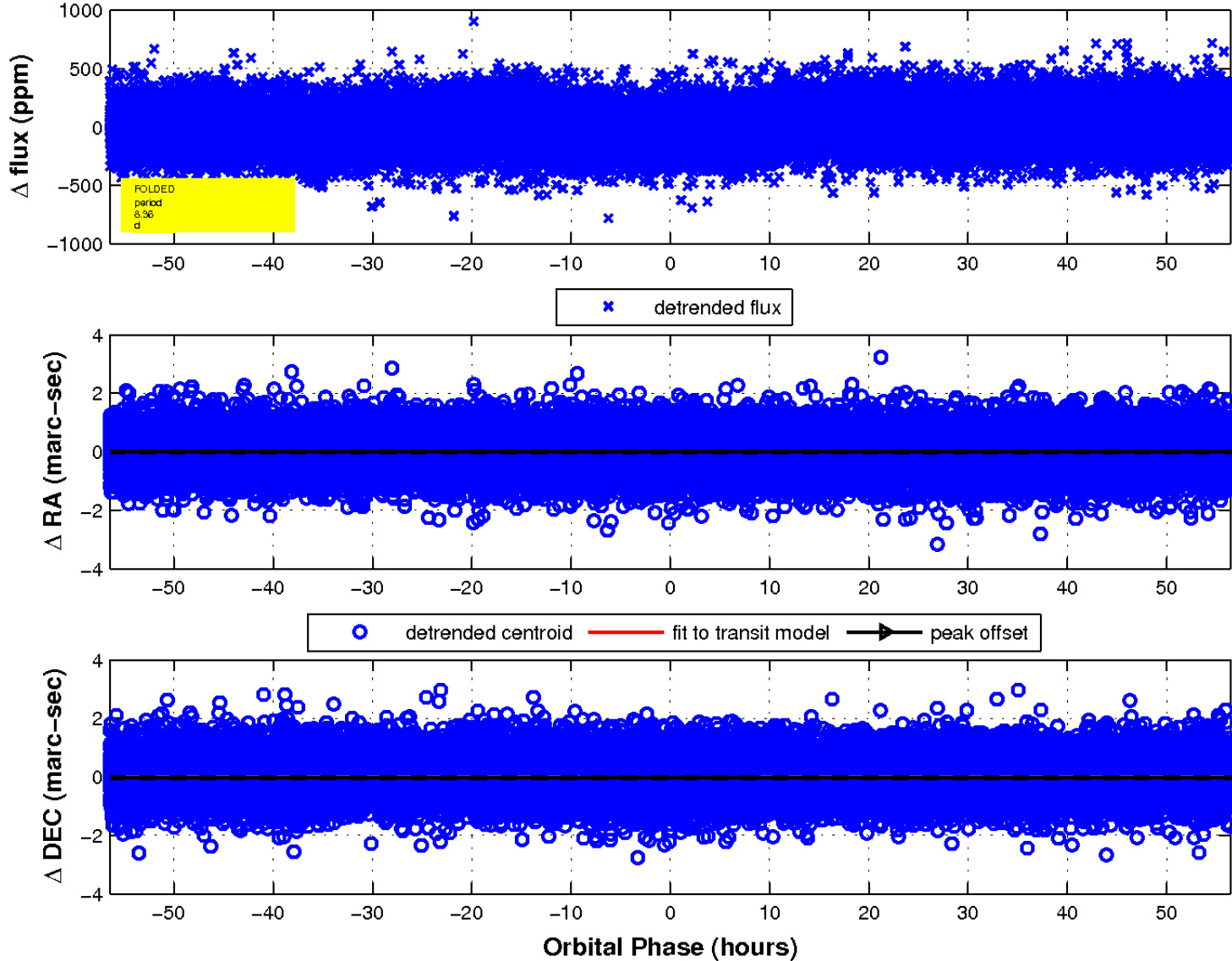
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

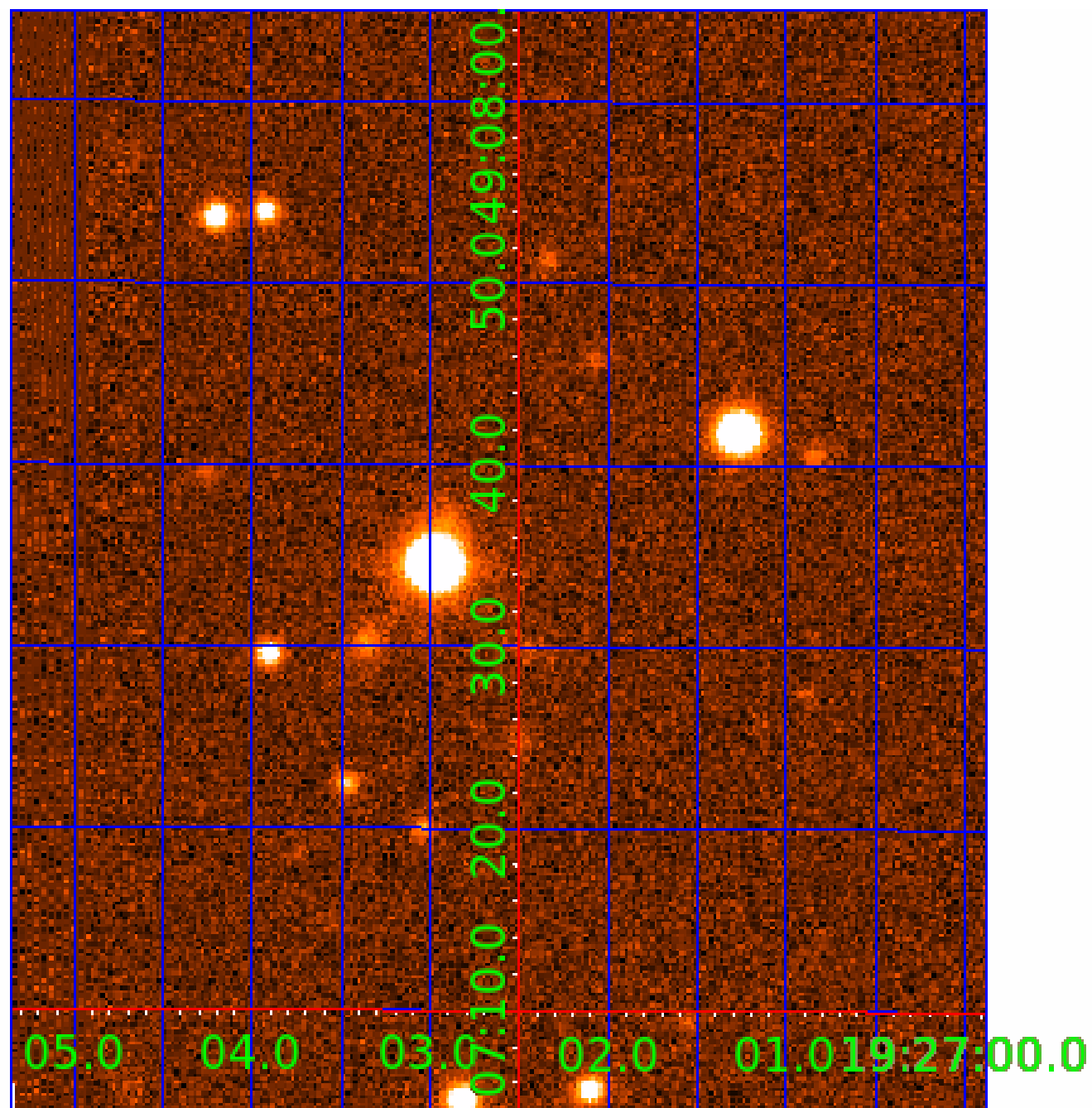


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 011350238

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011350238-01 | OBS | No | 8.358448 | 133.332797 | 38.1 | 18.823 | 8.7 | 9.5 | 2.06 | 7302 | 1.41 | 1211.88 |
| 011350238-02 | OBS | No | 4.180390 | 132.172293 | 24.6 | 27.407 | 9.3 | 8.4 | 2.06 | 7302 | 1.07 | 3052.60 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011350238-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 011350238-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV |

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

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

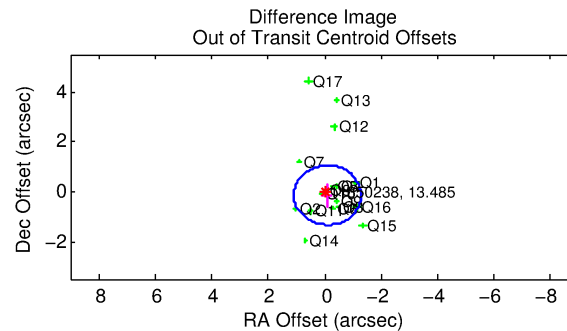
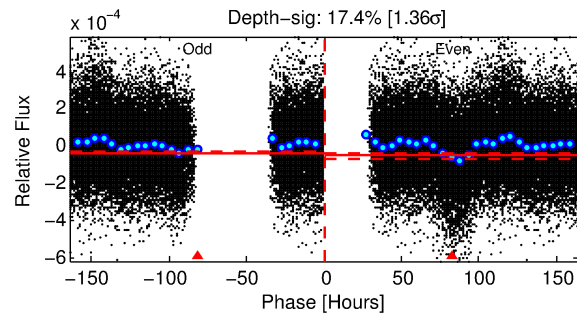
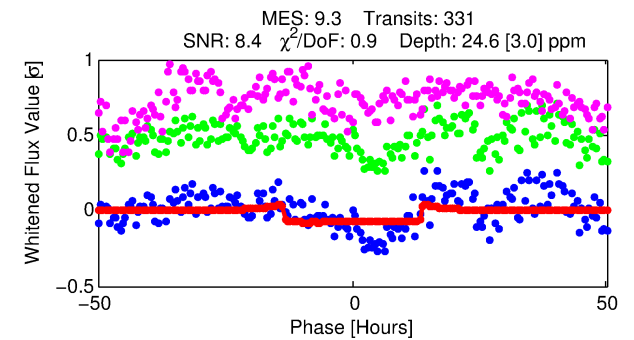
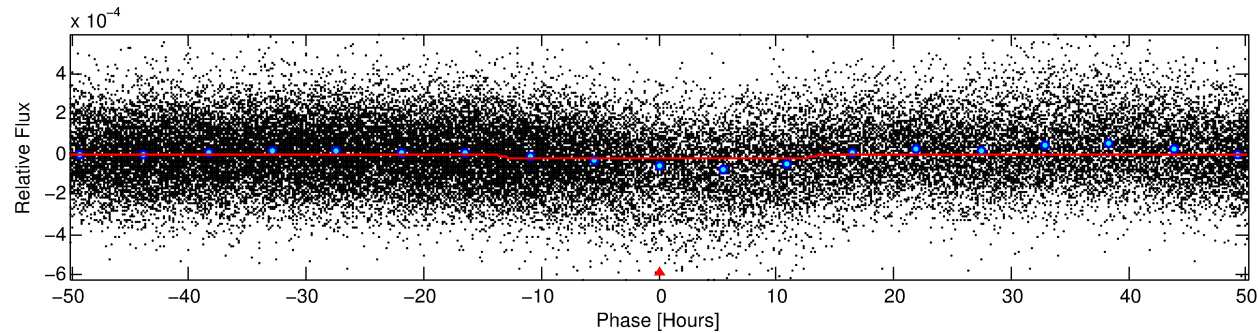
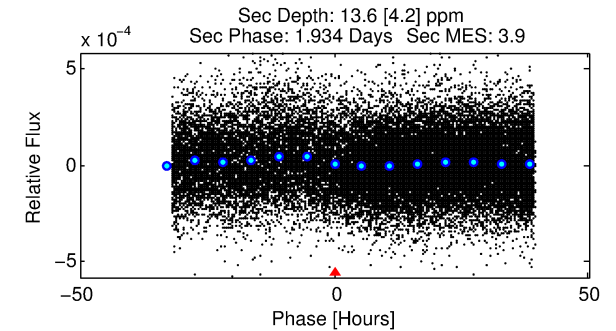
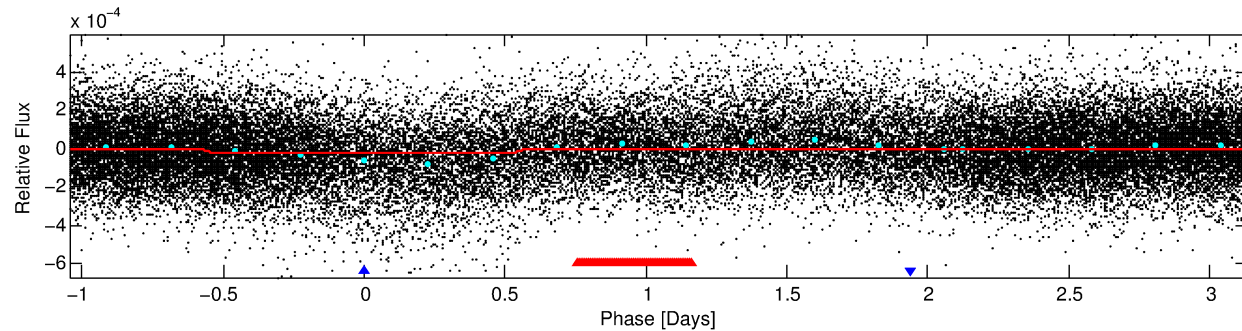
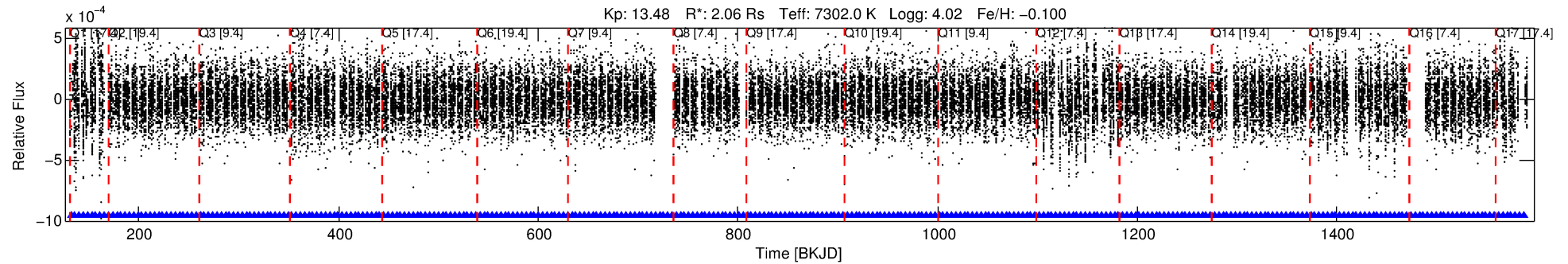
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011350238-02

No Significant Match Found

DV One-Page Summary

KIC: 11350238 Candidate: 2 of 2 Period: 4.180 d



DV Fit Results:

Period = 4.18039 [0.00008] d
Epoch = 132.1723 [0.0140] BKJD
Rp/R* = 0.0048 [0.0019]
a/R* = 1.23 [1.02]
b = 0.58 [2.82]
Seff = 3052.60 [1257.07]
Teq = 1895 [195] K
Rp = 1.07 [0.52] Re
a = 0.0594 [0.0145] AU
Ag = 23.13 [21.38] [1.03σ]
Teffp = 6426 [1392] K [3.22σ]

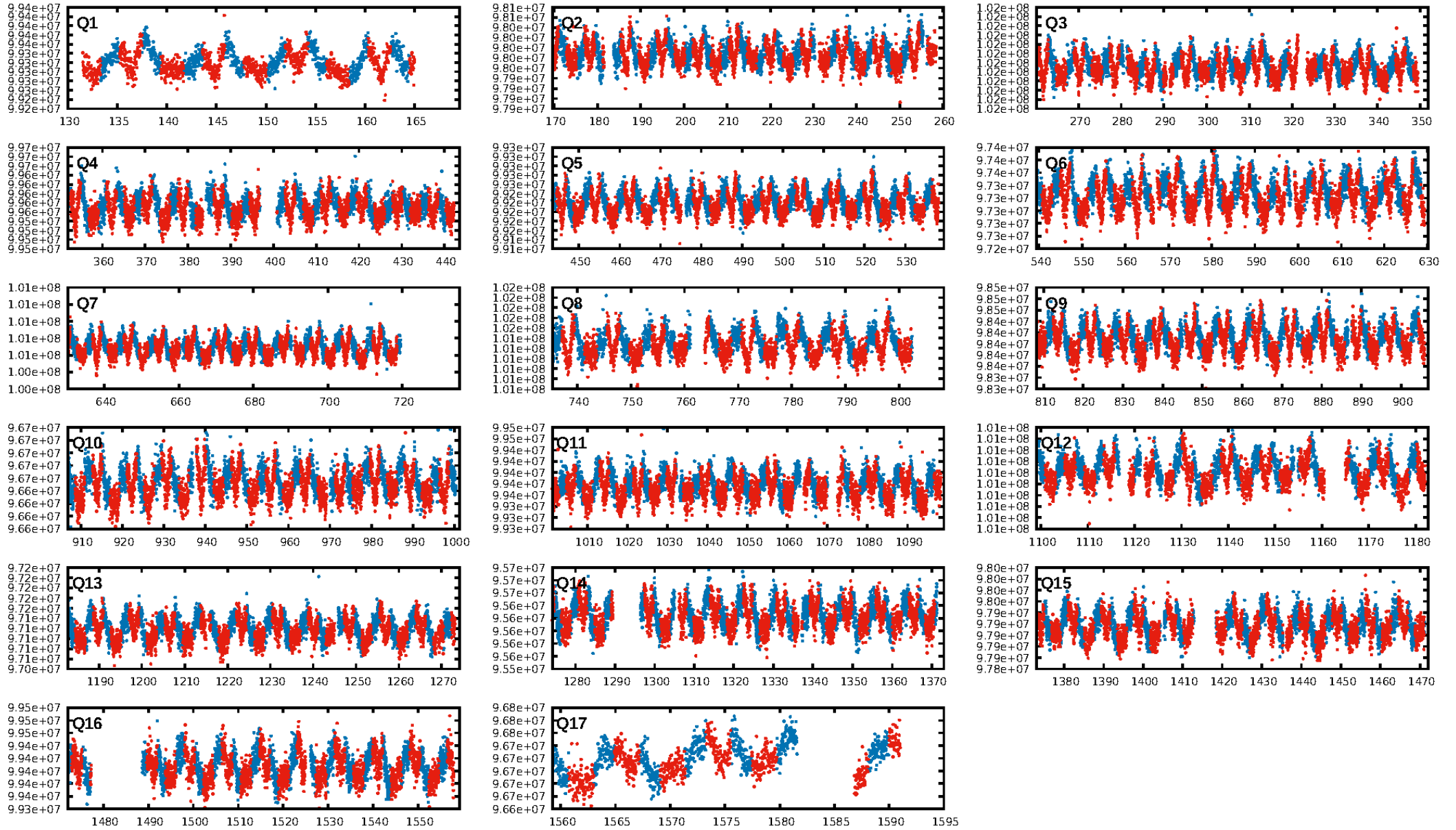
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.7% [3.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.83e-24
RollingBand-fgt: 1.00 [317/317]
GhostDiagnostic-chr: 1.523
Centroid-sig: 14.5%
Centroid-so: 0.779 arcsec [1.19σ]
OotOffset-rm: 0.172 arcsec [0.43σ]
KicOffset-rm: 0.355 arcsec [0.86σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

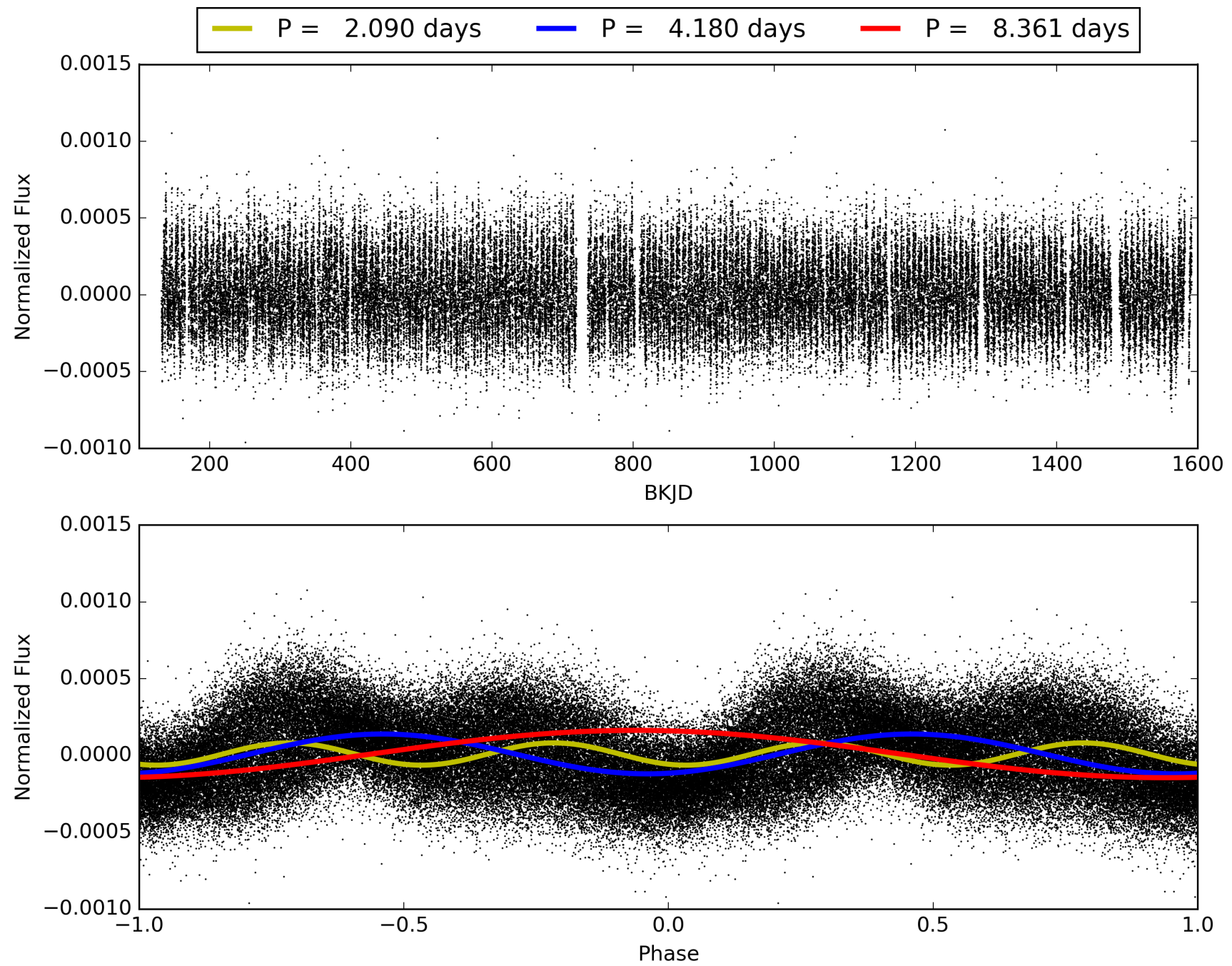
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:29:12 Z

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

TCE 011350238-02, PDC Light Curves

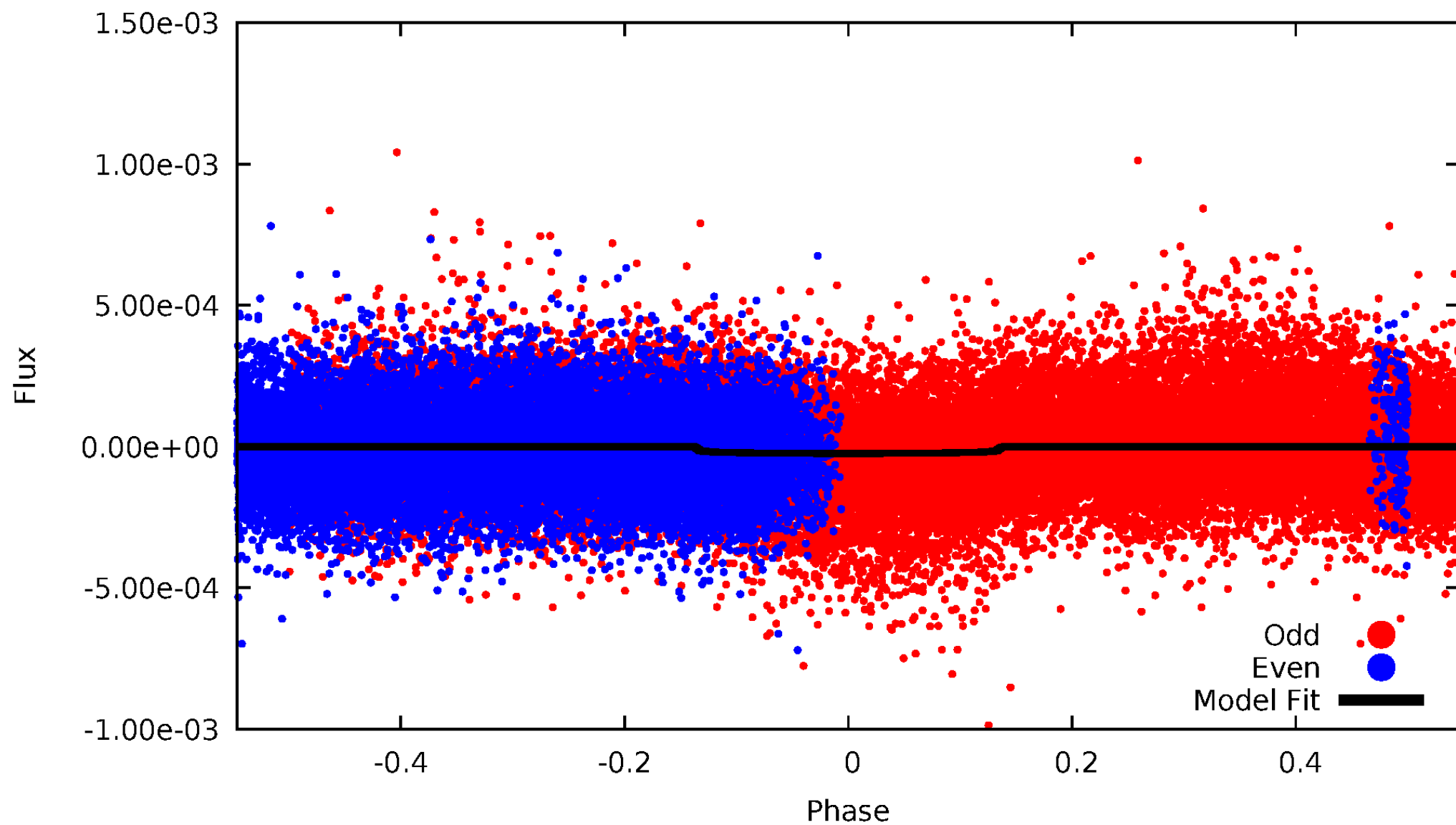


TCE 011350238-02



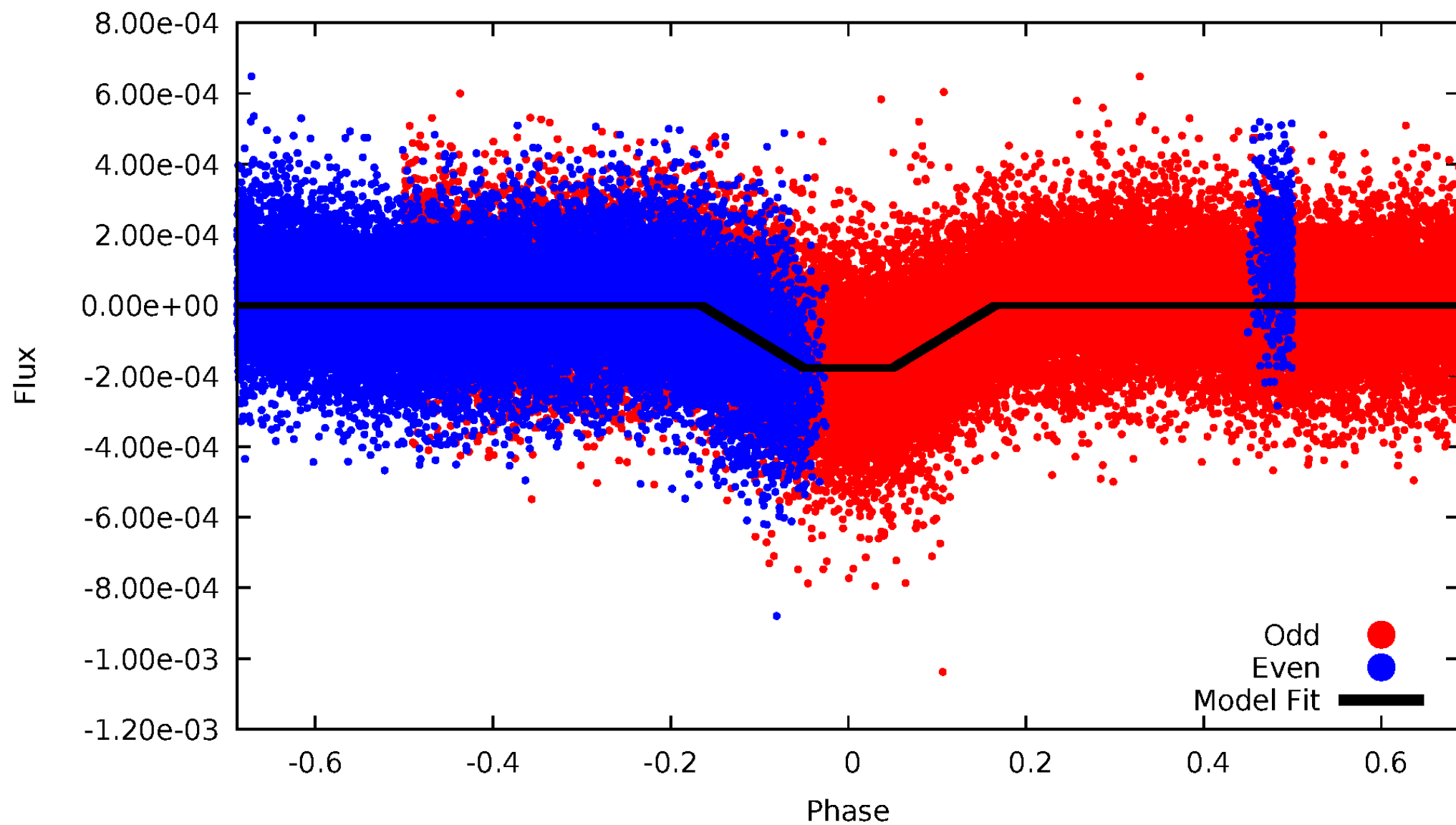
DV Odd/Even

TCE 011350238-02



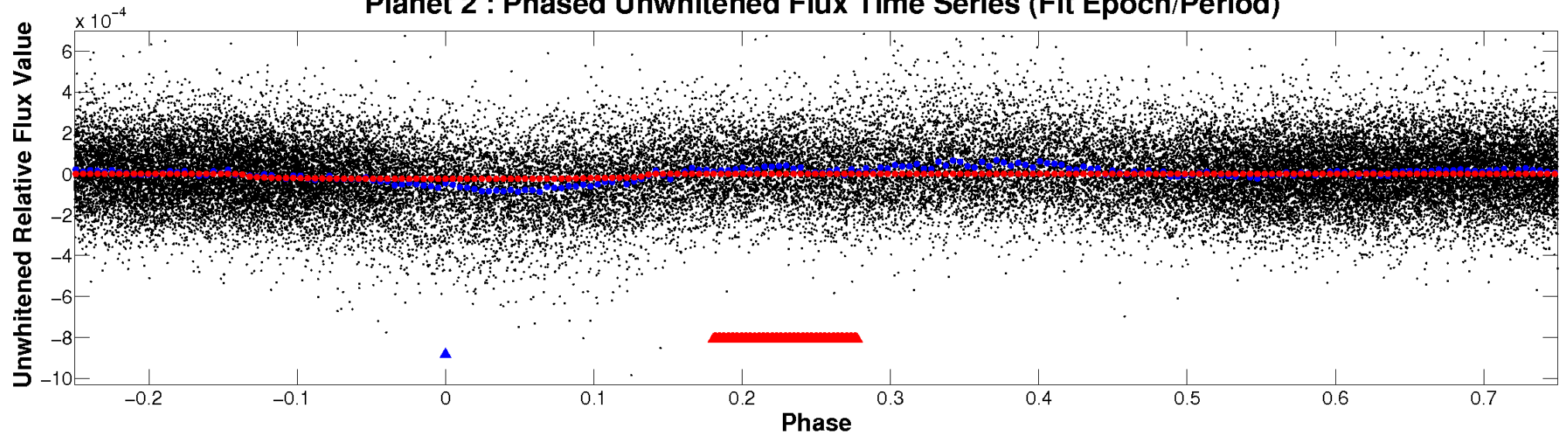
ALT Odd/Even

TCE 011350238-02

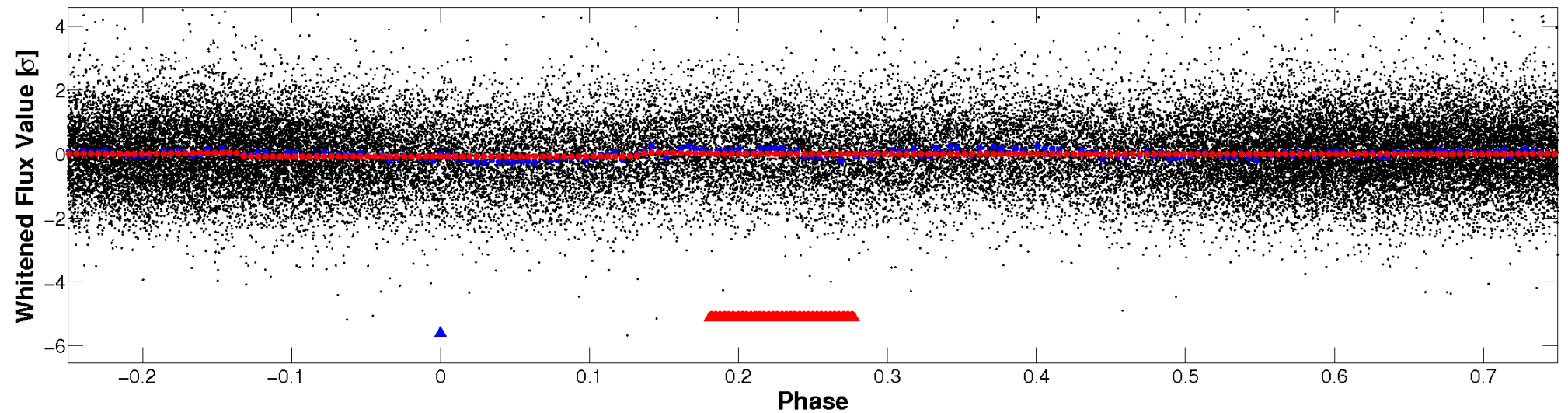


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

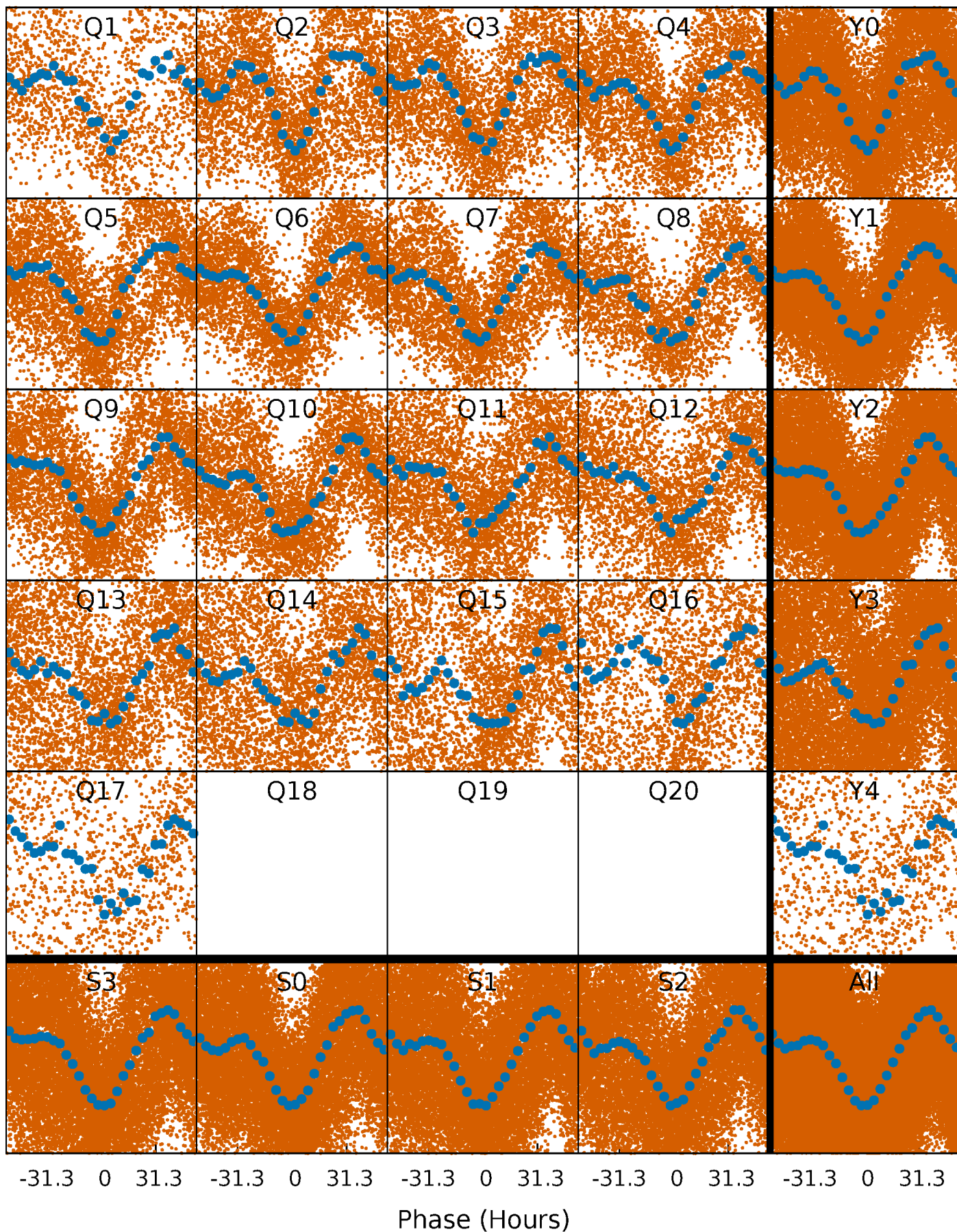


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



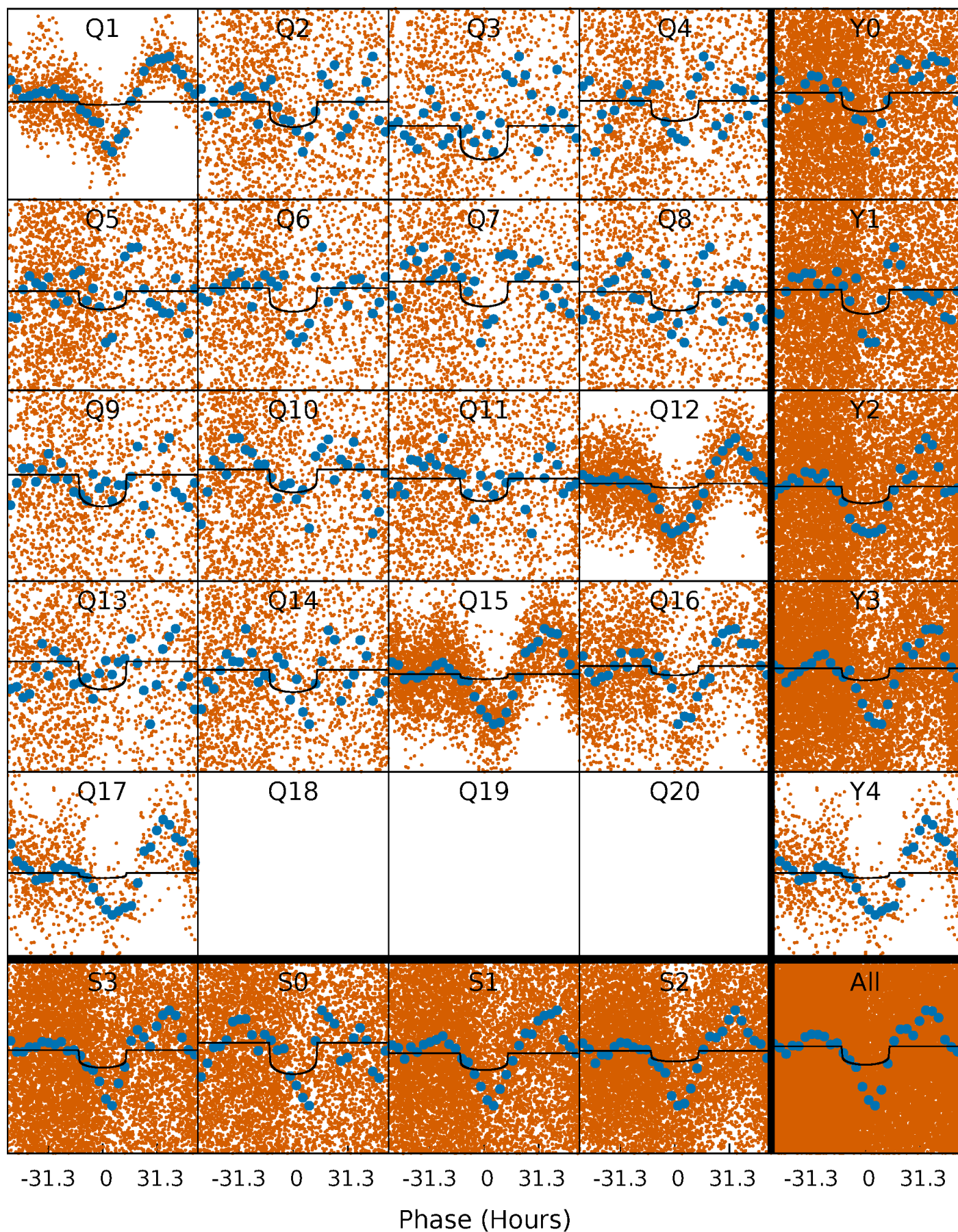
PDC Quarter-Phased Transit Curves

TCE 011350238-02 P= 4.180390 Days $T_0=132.172293$ (BKJD)



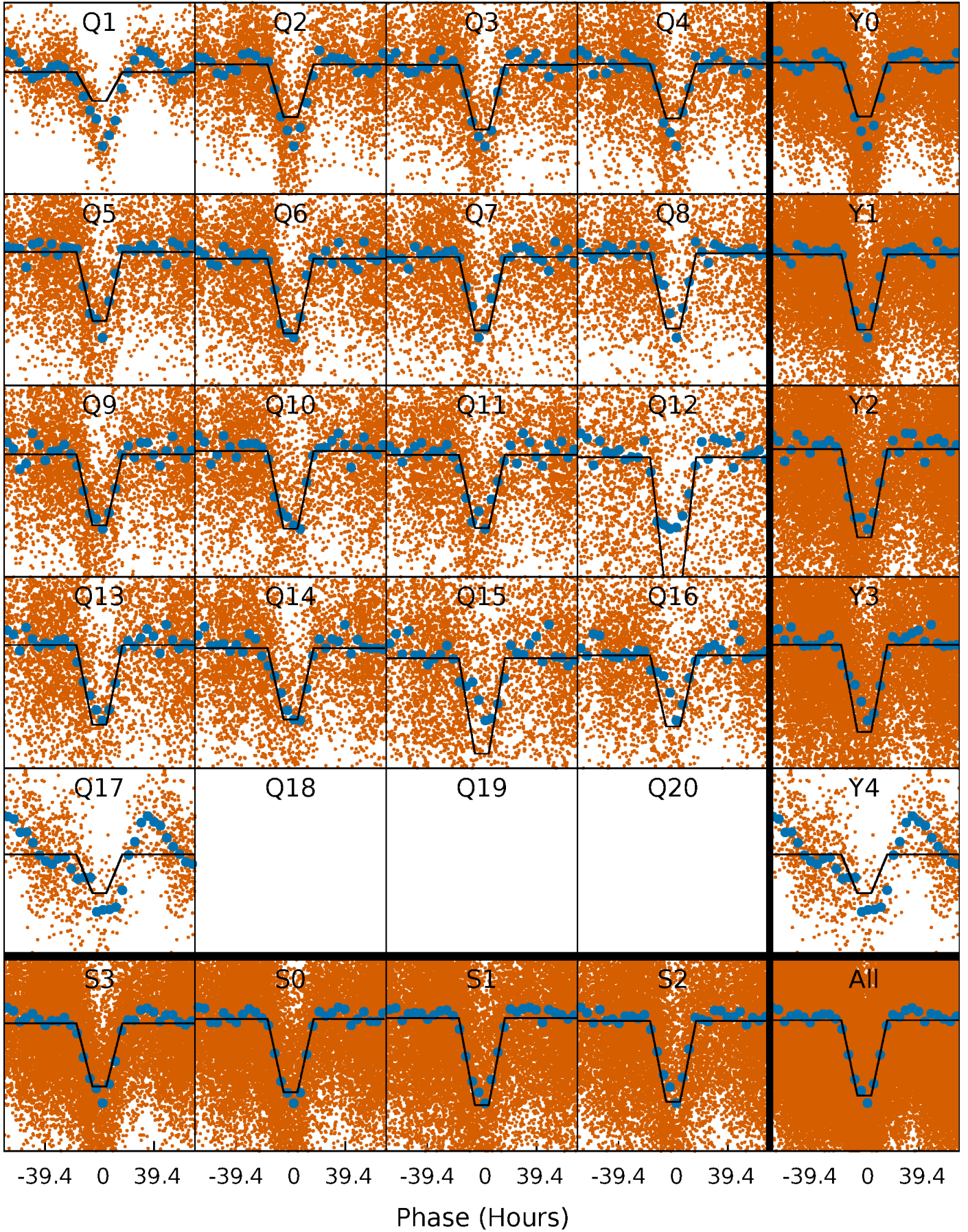
DV Quarter-Phased Transit Curves

TCE 011350238-02 P= 4.180390 Days $T_0=132.172293$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

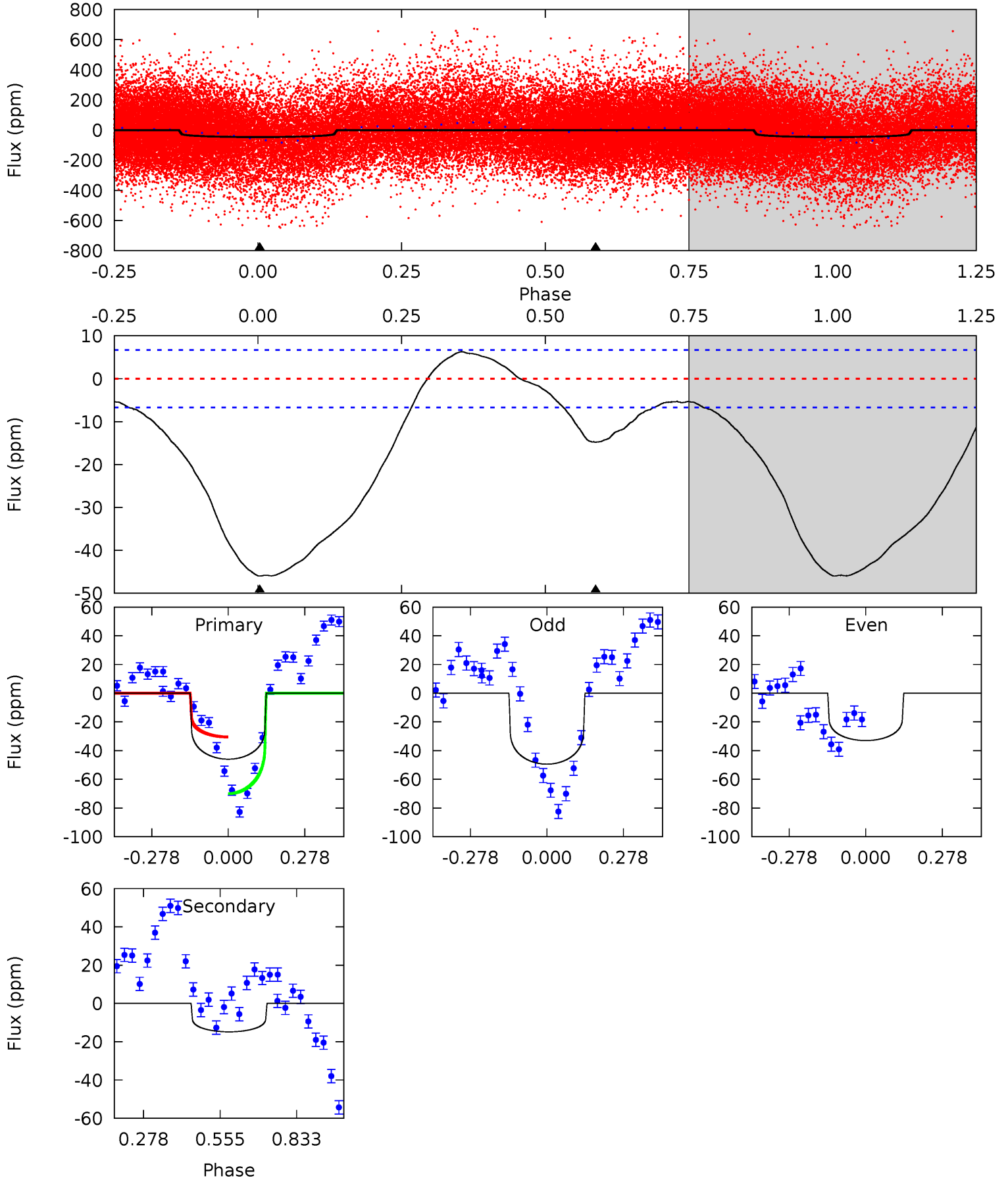
TCE 011350238-02 P= 4.180359 Days $T_0=132.252661$ (BKJD)



DV Model-Shift Uniqueness Test

011350238-02, P = 4.180390 Days, E = 127.991903 Days

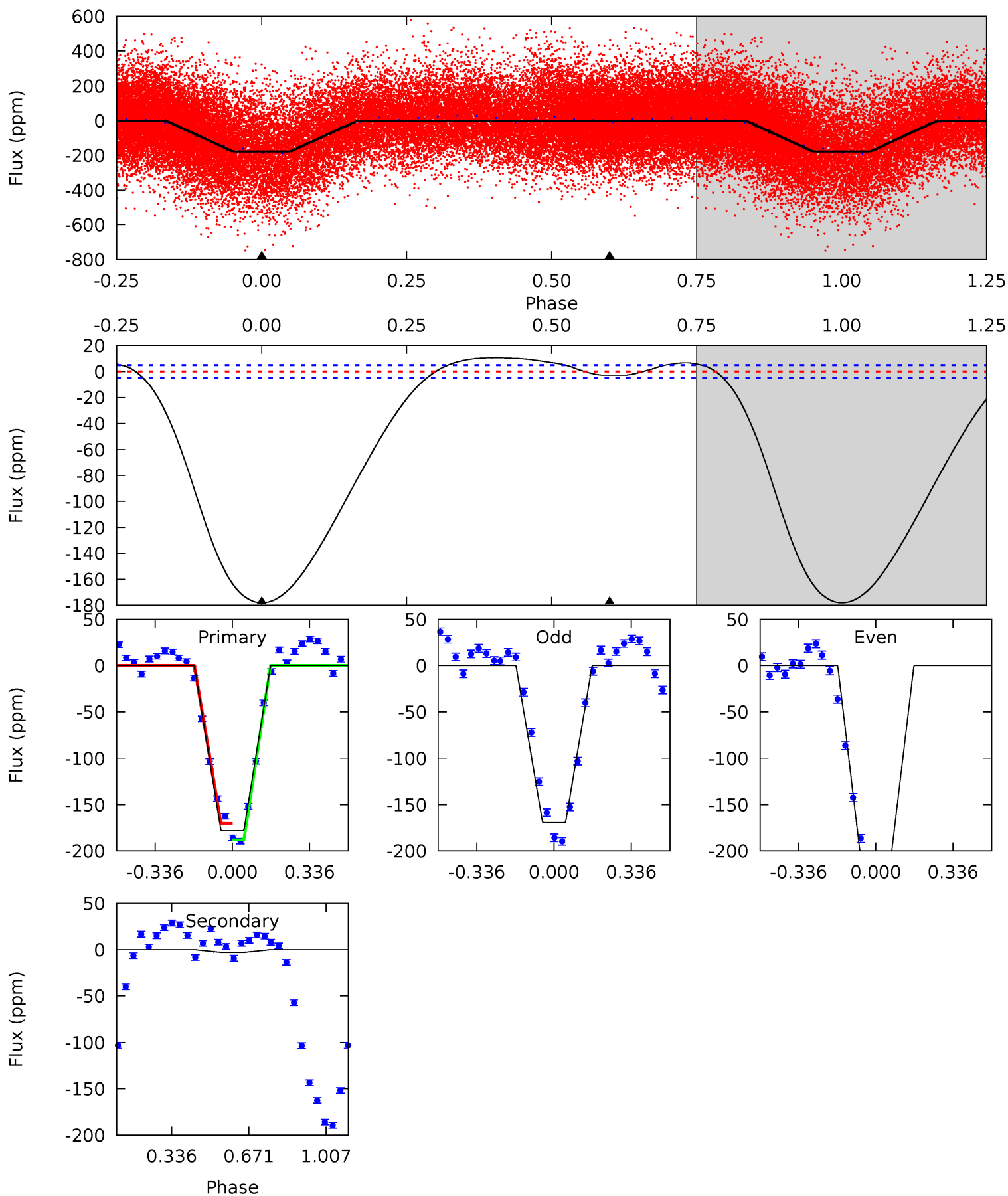
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 29.9 | 9.65 | 0 | 0 | 4.35 | 1.09 | 5.15 | 29.9 | 29.9 | 9.65 | 9.65 | 4.90 | 1.44 | 0.12 | 13.1 |



Alt Model-Shift Uniqueness Test

011350238-02, P = 4.180359 Days, E = 128.072302 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 155.3 | 2.54 | 0 | 0 | 4.30 | 0.96 | 11.6 | 155.3 | 155.3 | 2.54 | 2.54 | 25.8 | 1.09 | 0.06 | 7.75 |



Stellar Parameters For KIC 011350238

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7302^{+228}_{-330} | $4.016^{+0.209}_{-0.171}$ | $-0.100^{+0.250}_{-0.350}$ | $2.058^{+0.569}_{-0.569}$ | $1.601^{+0.199}_{-0.323}$ | $0.259^{+0.340}_{-0.109}$ |
| | +3%/-5% | +5%/-4% | +250%/-350% | +28%/-28% | +12%/-20% | +131%/-42% |
| 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 011350238-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -15 ± 2 | $1.03^{+0.48}_{-0.41}$ | 2632^{+198}_{-203} | 6448^{+2272}_{-958} | 27^{+44}_{-14} |
| Alt. | -3 ± 1 | $2.92^{+0.69}_{-0.62}$ | 2633^{+194}_{-206} | 2858^{+367}_{-765} | $0.606^{+0.512}_{-0.284}$ |

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 $A_{\text{obs}} \gg 1.0$

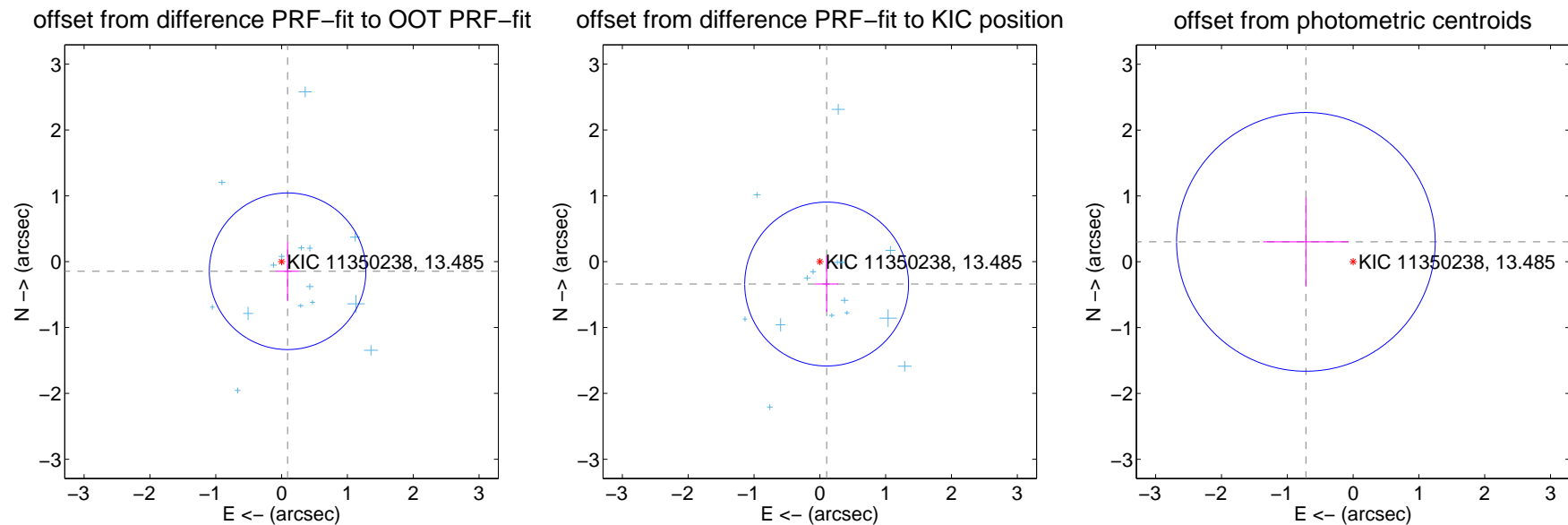
DV Centroid Data

Supplemental centroid analysis for 011350238-02. Kepler magnitude: 13.48. Transit SNR 8.36

There are 16 quarters with good PRF difference image offsets

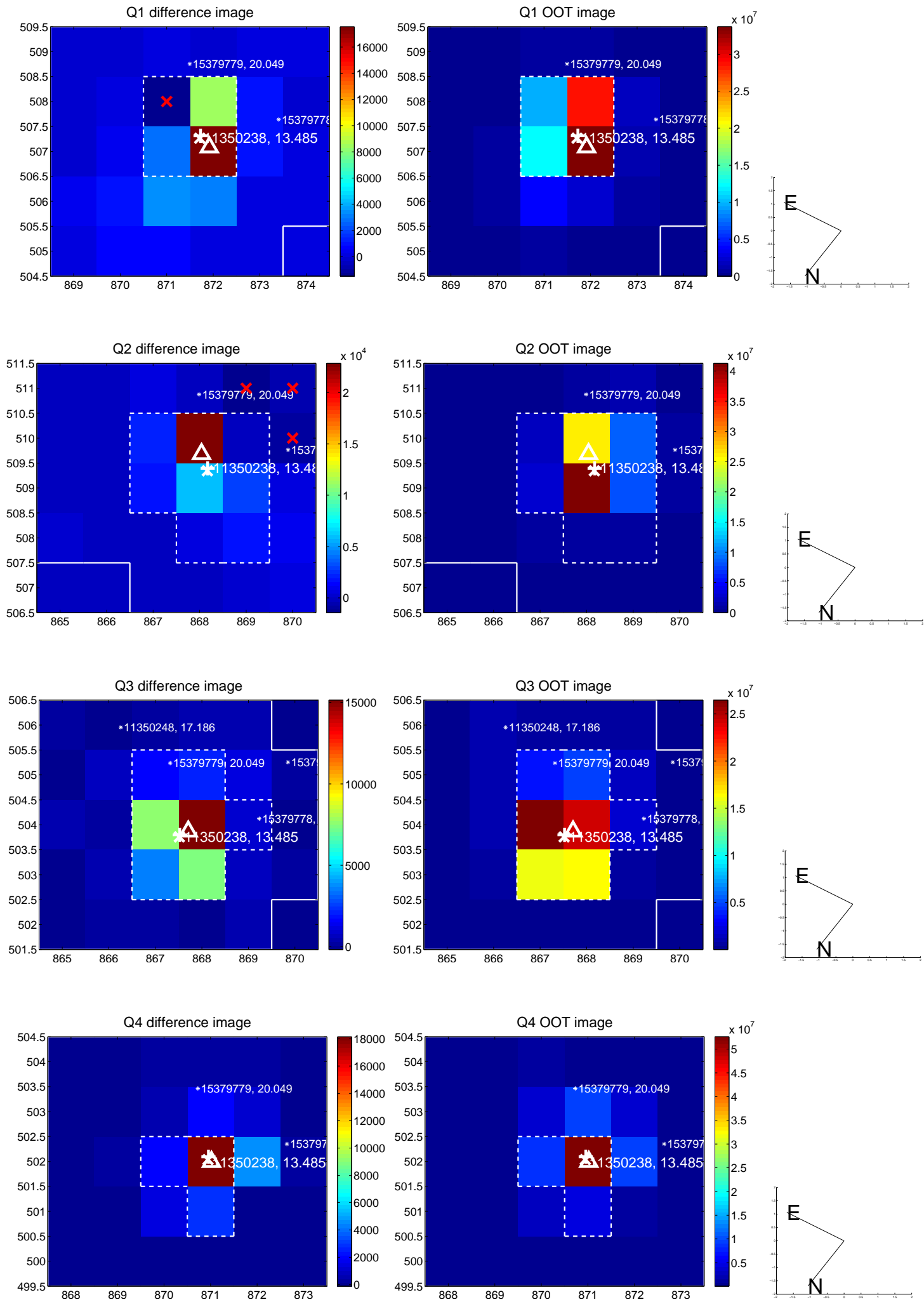
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.172 ± 0.396 | 0.43 | -0.091 ± 0.173 | -0.145 ± 0.443 |
| PRF-fit source offset from KIC position | 0.355 ± 0.415 | 0.86 | -0.103 ± 0.174 | -0.339 ± 0.422 |
| photometric centroid source offset | 0.78 ± 0.66 | 1.19 | 0.72 ± 0.65 | 0.30 ± 0.67 |

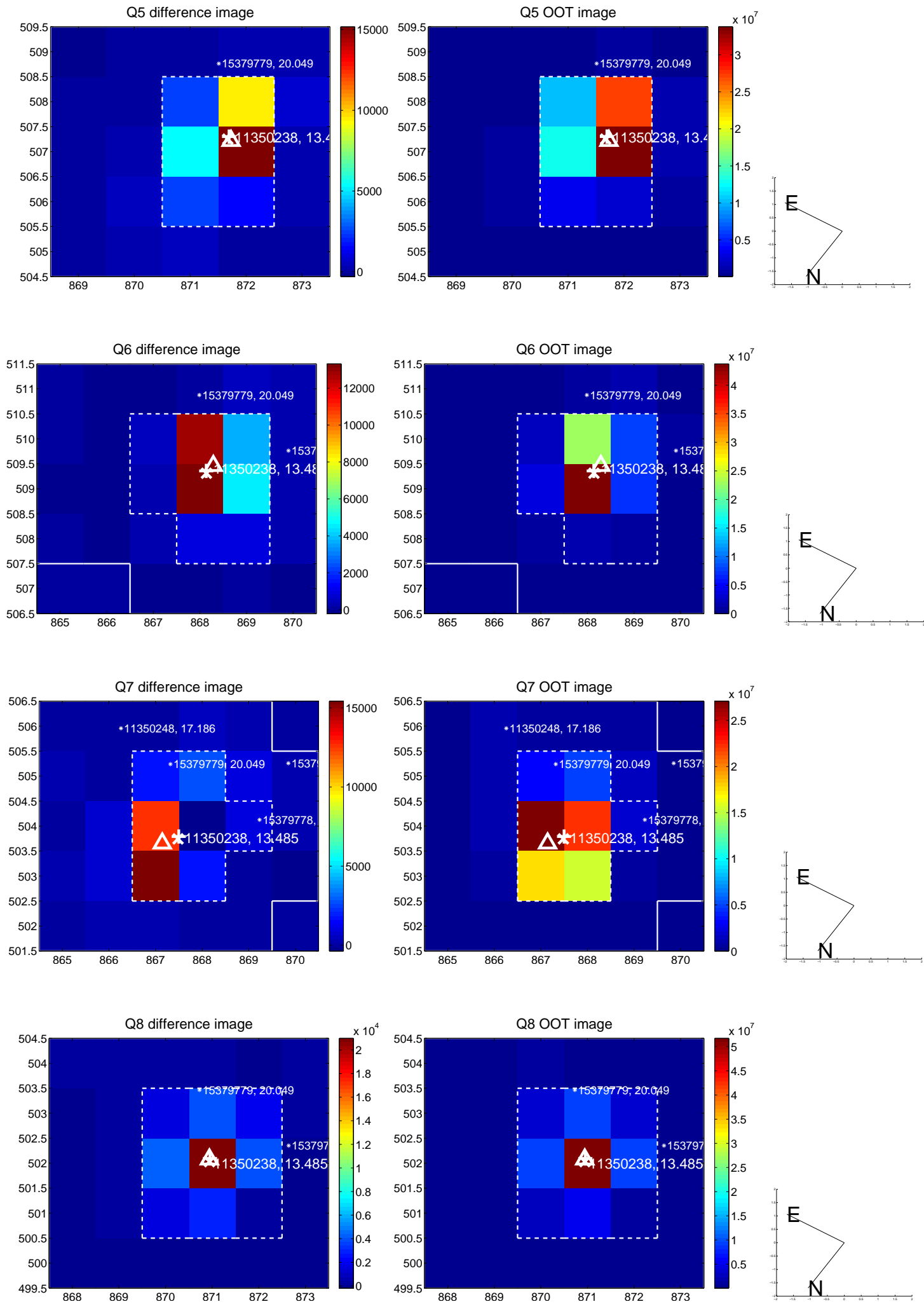


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

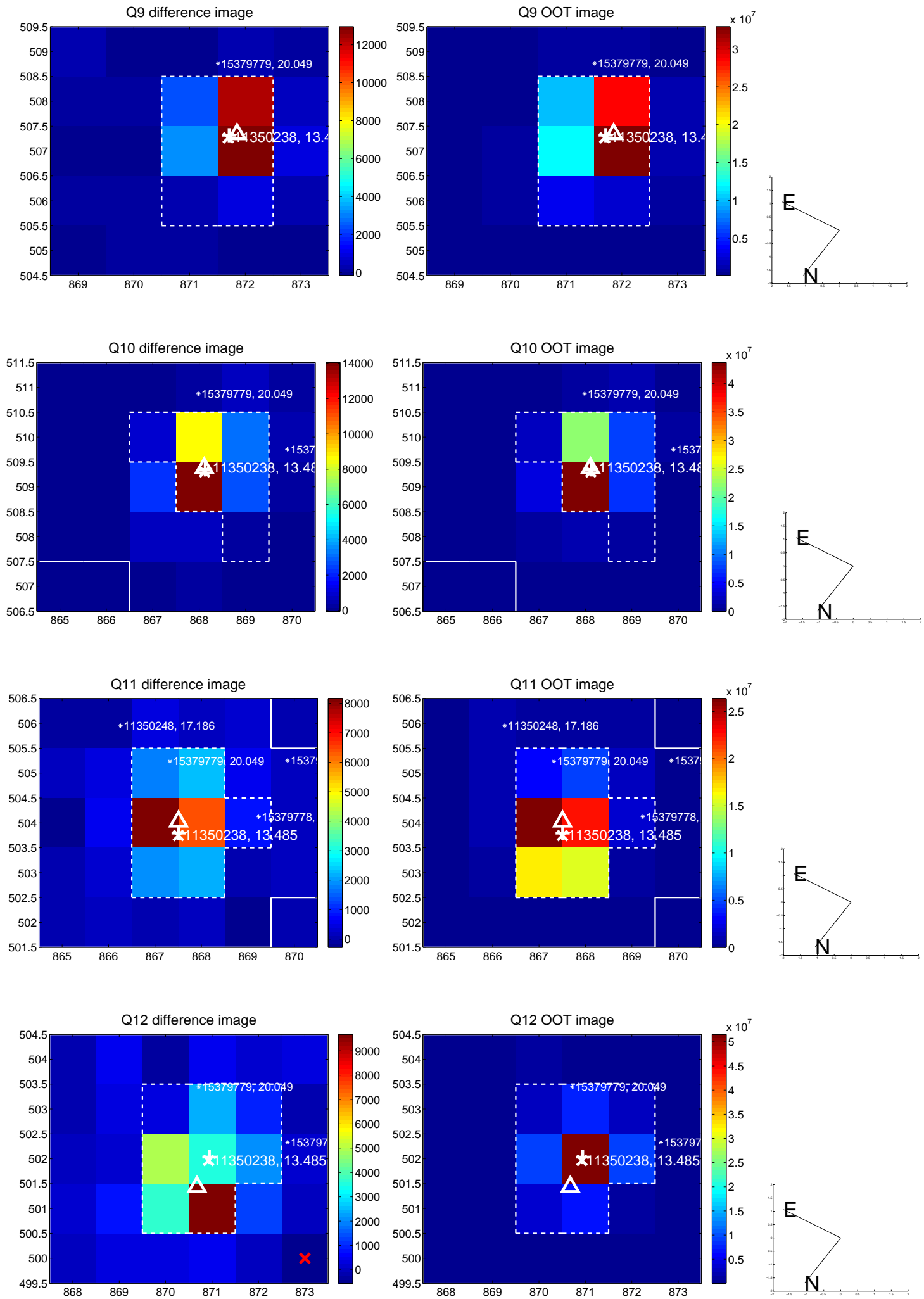
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



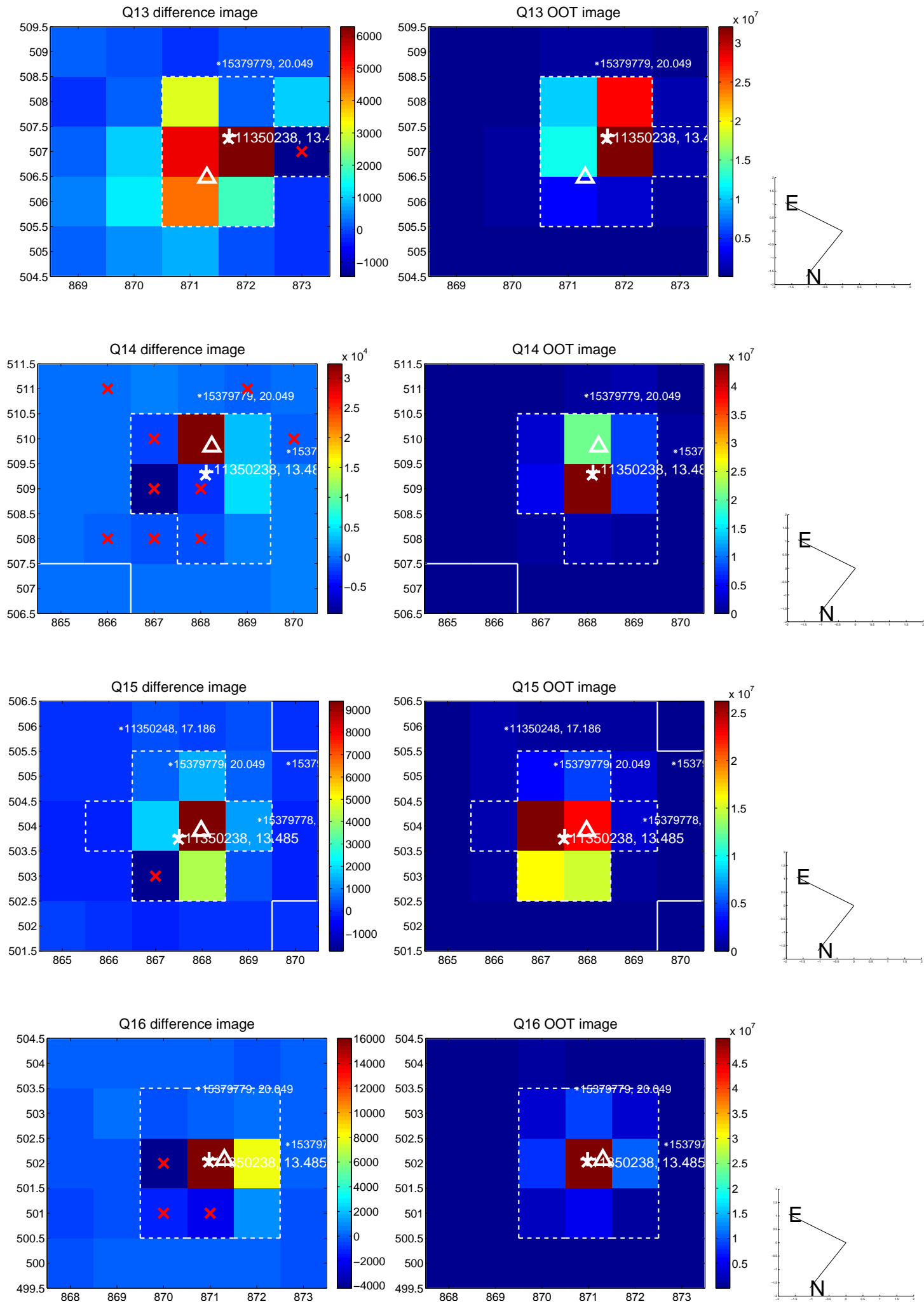
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



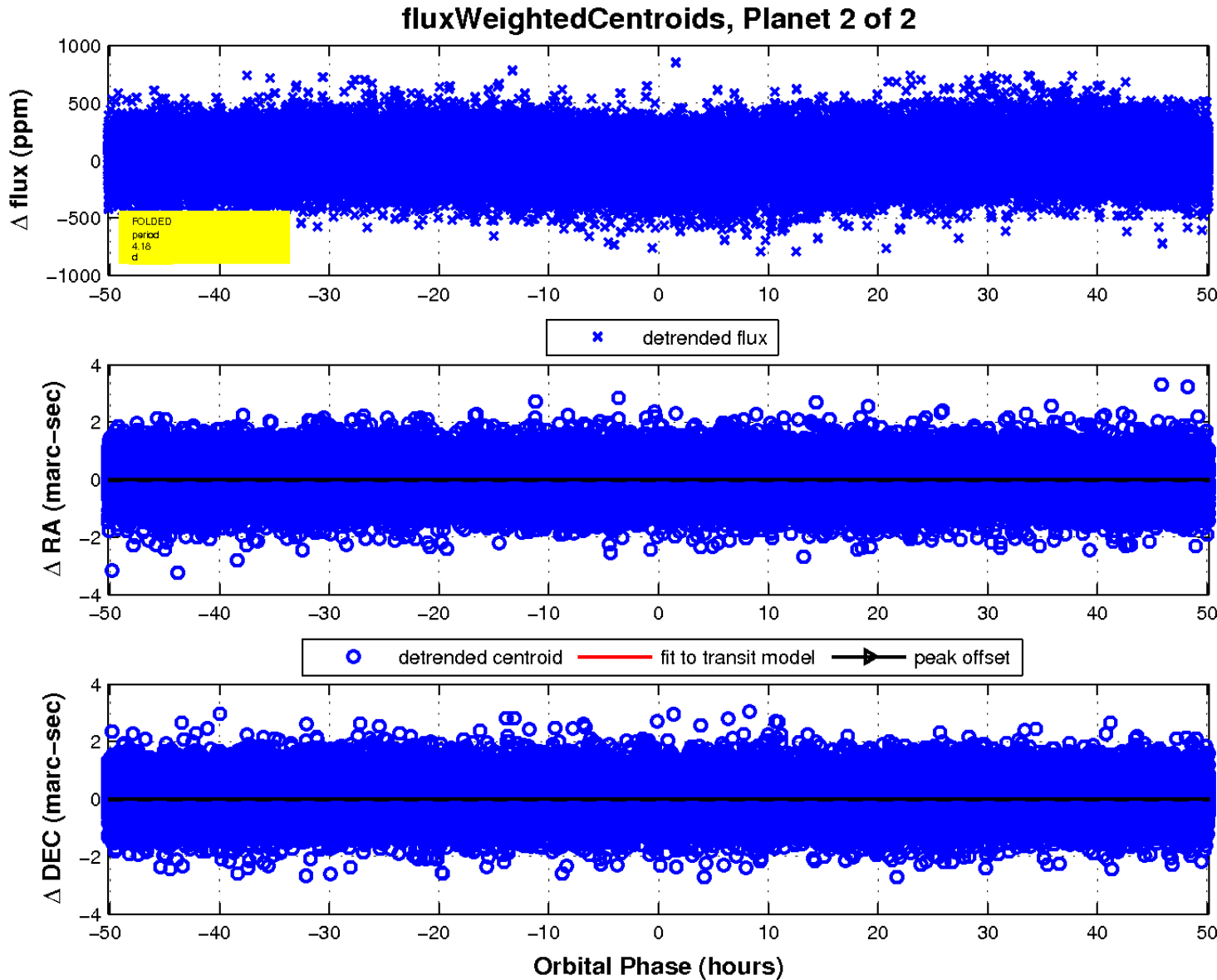
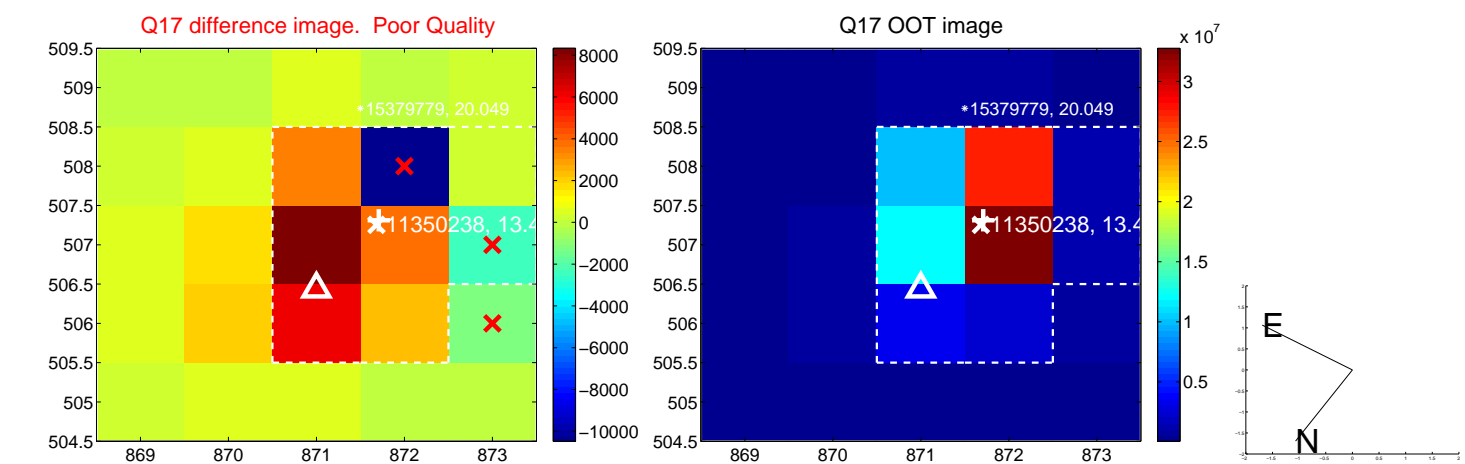
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

