

KIC 010921894

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010921894-01 | OBS | No | 0.615063 | 131.537995 | 210.8 | 2.535 | 11.9 | 13.6 | 2.00 | 7542 | 3.40 | 42542.51 |
| 010921894-02 | OBS | No | 0.615041 | 131.702733 | 185.0 | 5.193 | 12.6 | 10.9 | 2.00 | 7542 | 2.73 | 42544.51 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010921894-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 010921894-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS |

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

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

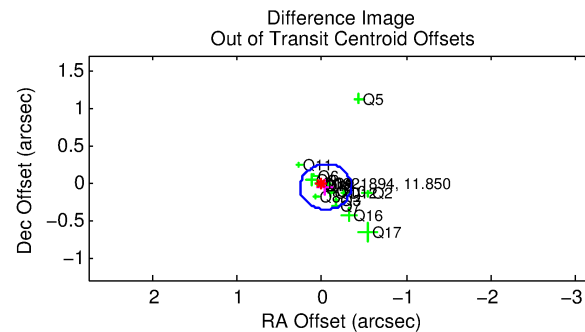
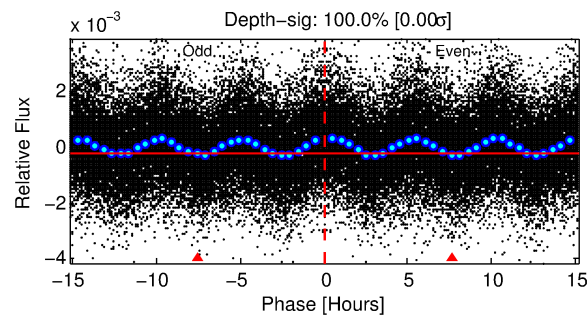
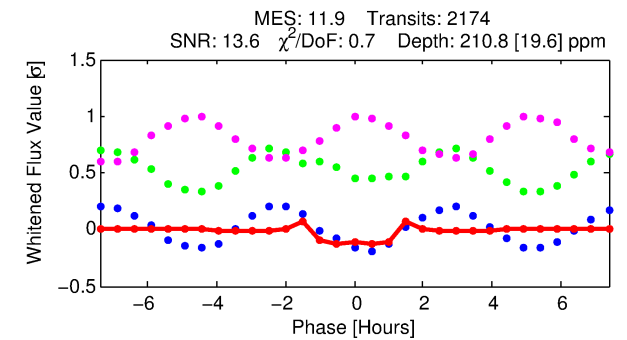
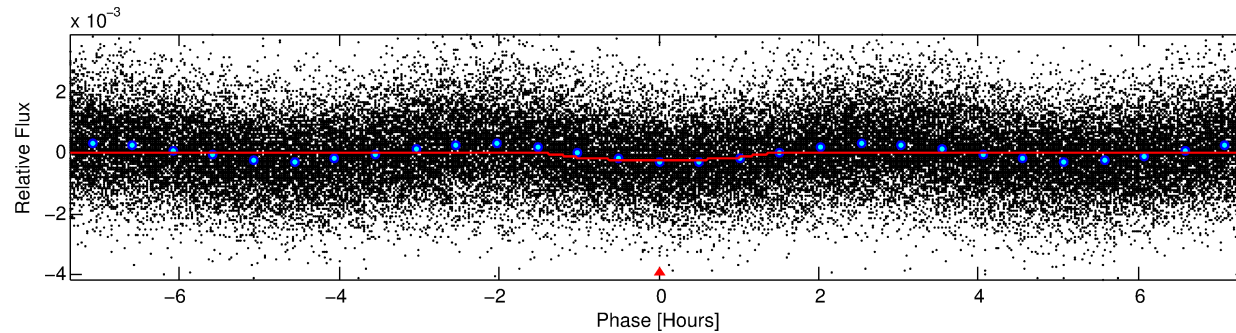
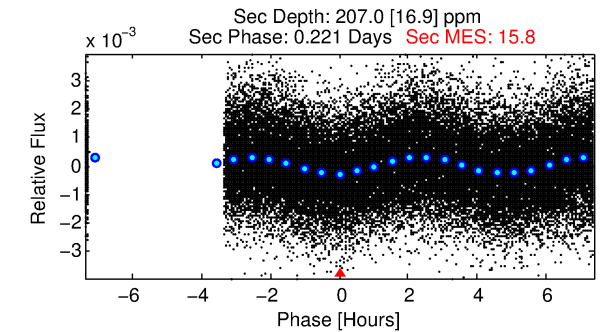
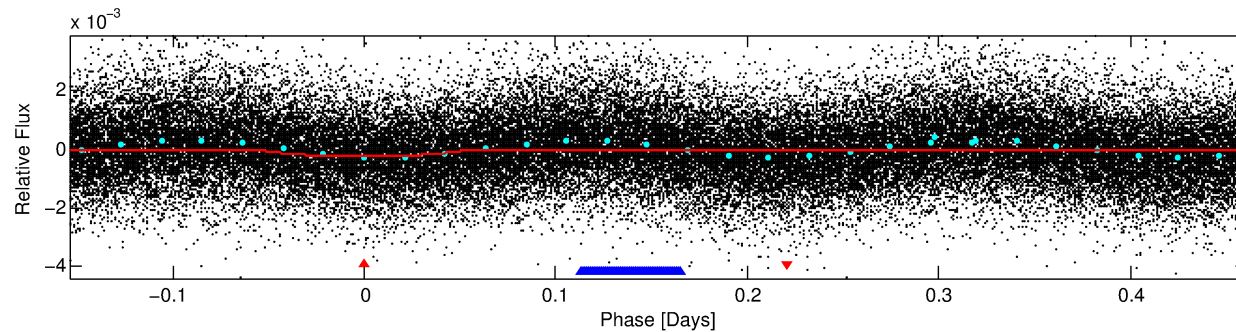
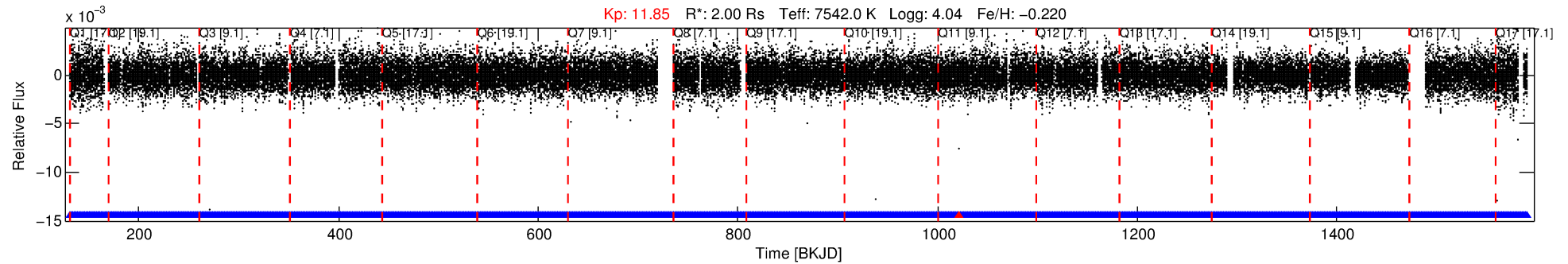
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010921894-01

No Significant Match Found

DV One-Page Summary

KIC: 10921894 Candidate: 1 of 2 Period: 0.615 d



DV Fit Results:

Period = 0.61506 [0.00001] d
Epoch = 131.5380 [0.0011] BKJD
Rp/R* = 0.0156 [0.0024]
a/R* = 1.28 [0.41]
b = 0.90 [0.17]
Seff = 42542.51 [16846.38]
Teq = 3662 [363] K
Rp = 3.40 [1.04] Re
a = 0.0165 [0.0039] AU
Ag = 2.68 [1.29] [1.30σ]
Teffp = 7243 [655] K [4.79σ]

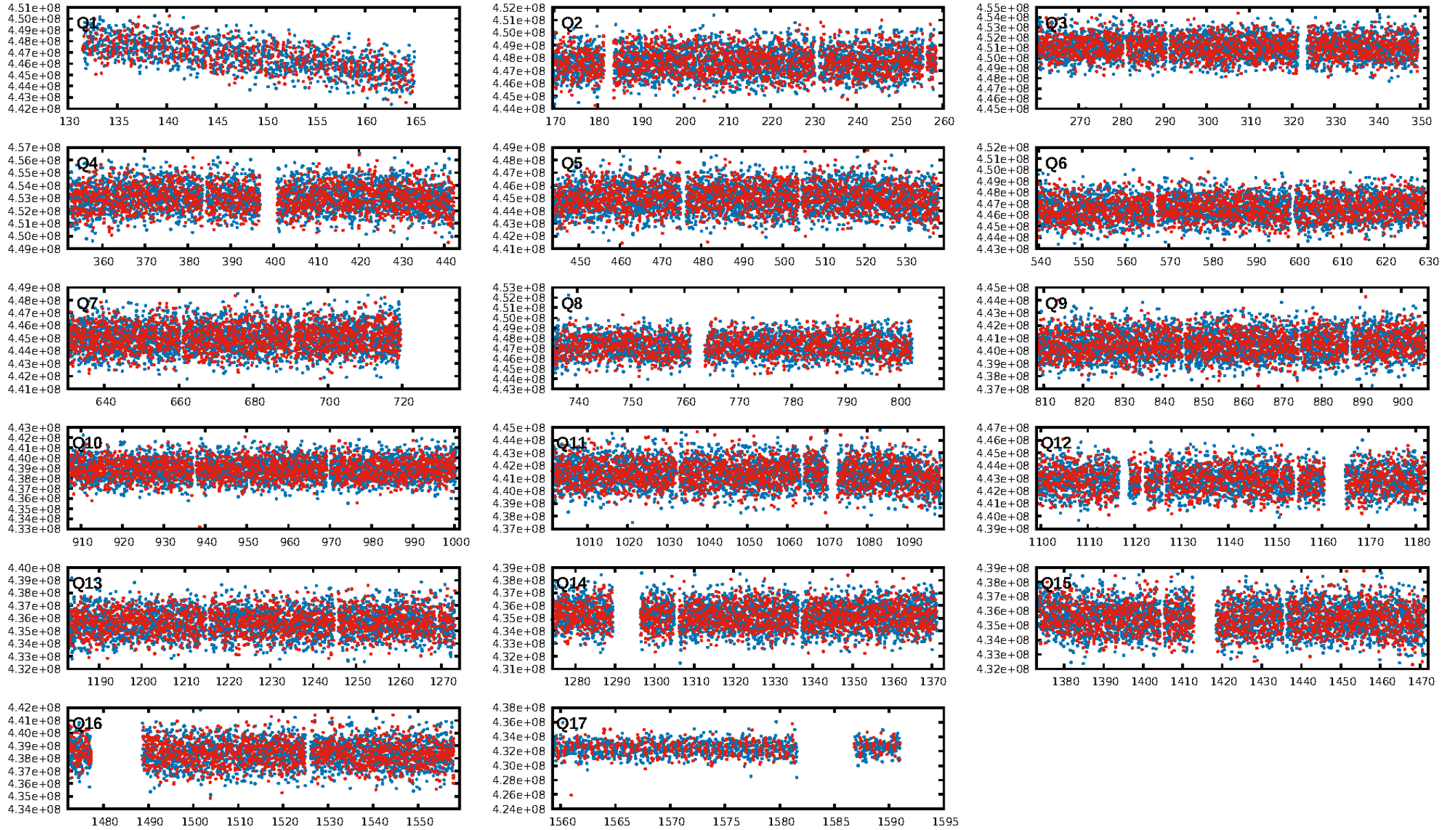
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2075/2076]
GhostDiagnostic-chr: 3.27
Centroid-sig: 0.0%
Centroid-so: 0.053 arcsec [1.47σ]
OotOffset-rm: 0.074 arcsec [0.74σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.060 arcsec [0.57σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.00 [0/17]

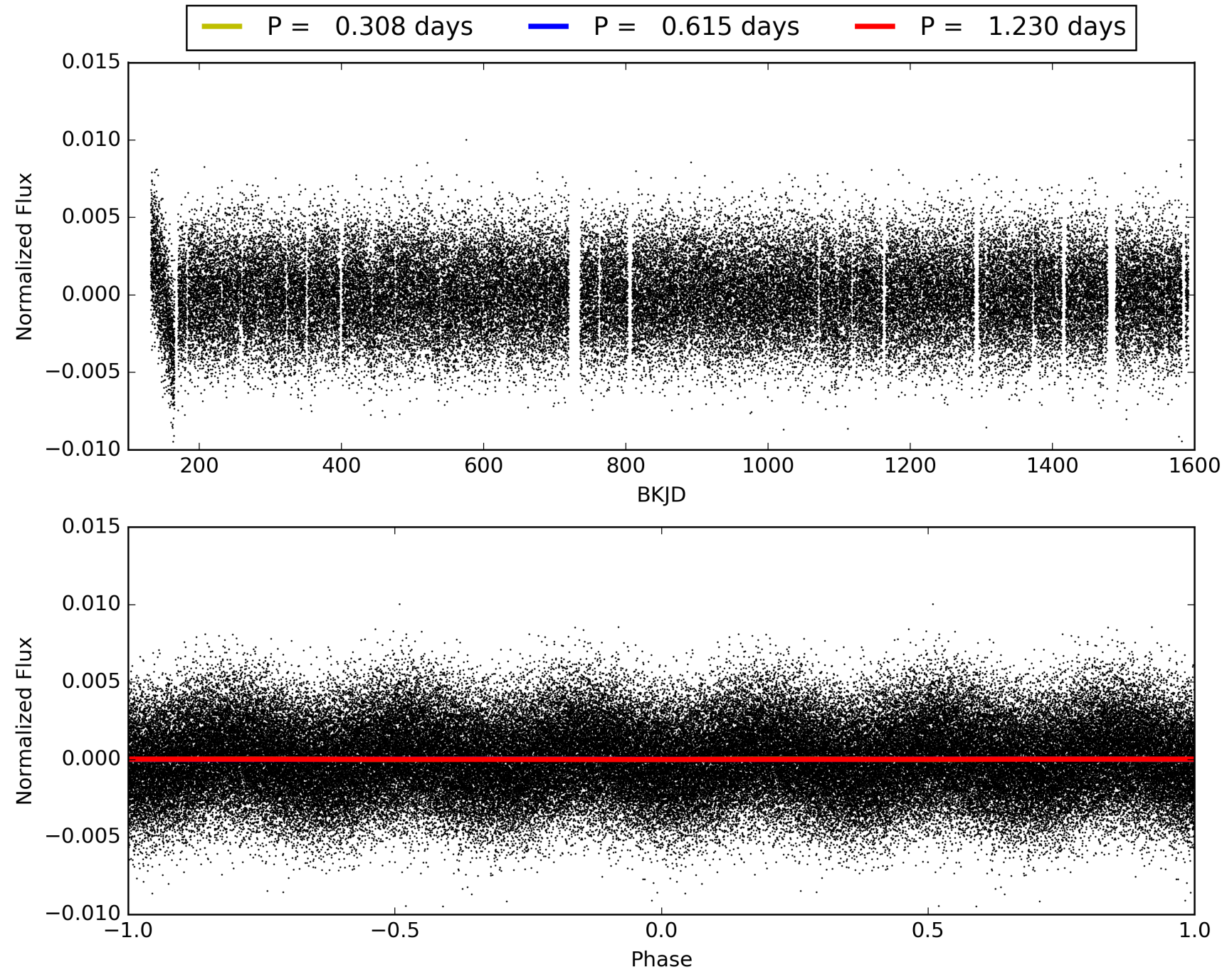
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:09:22 Z

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

TCE 010921894-01, PDC Light Curves

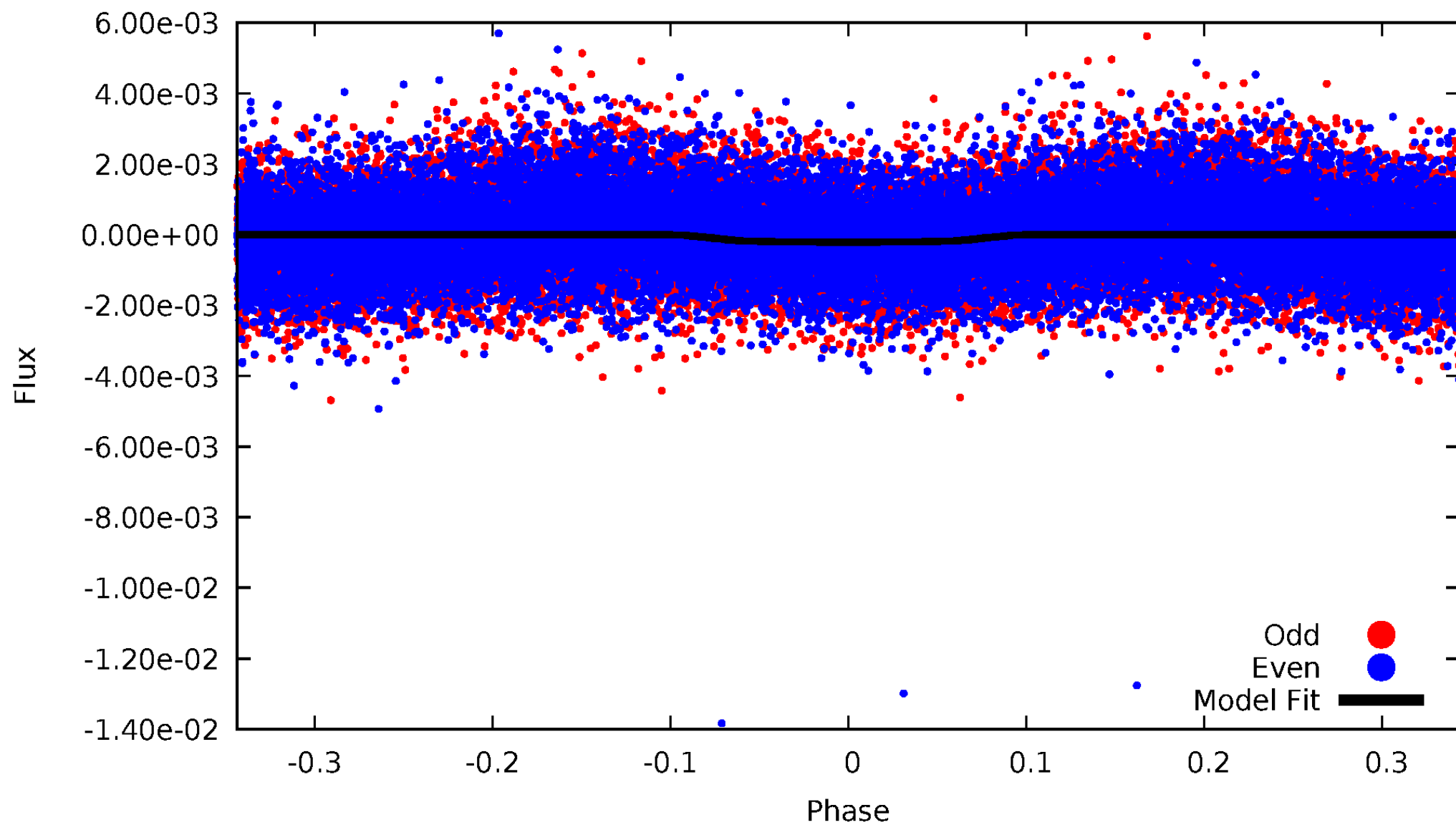


TCE 010921894-01



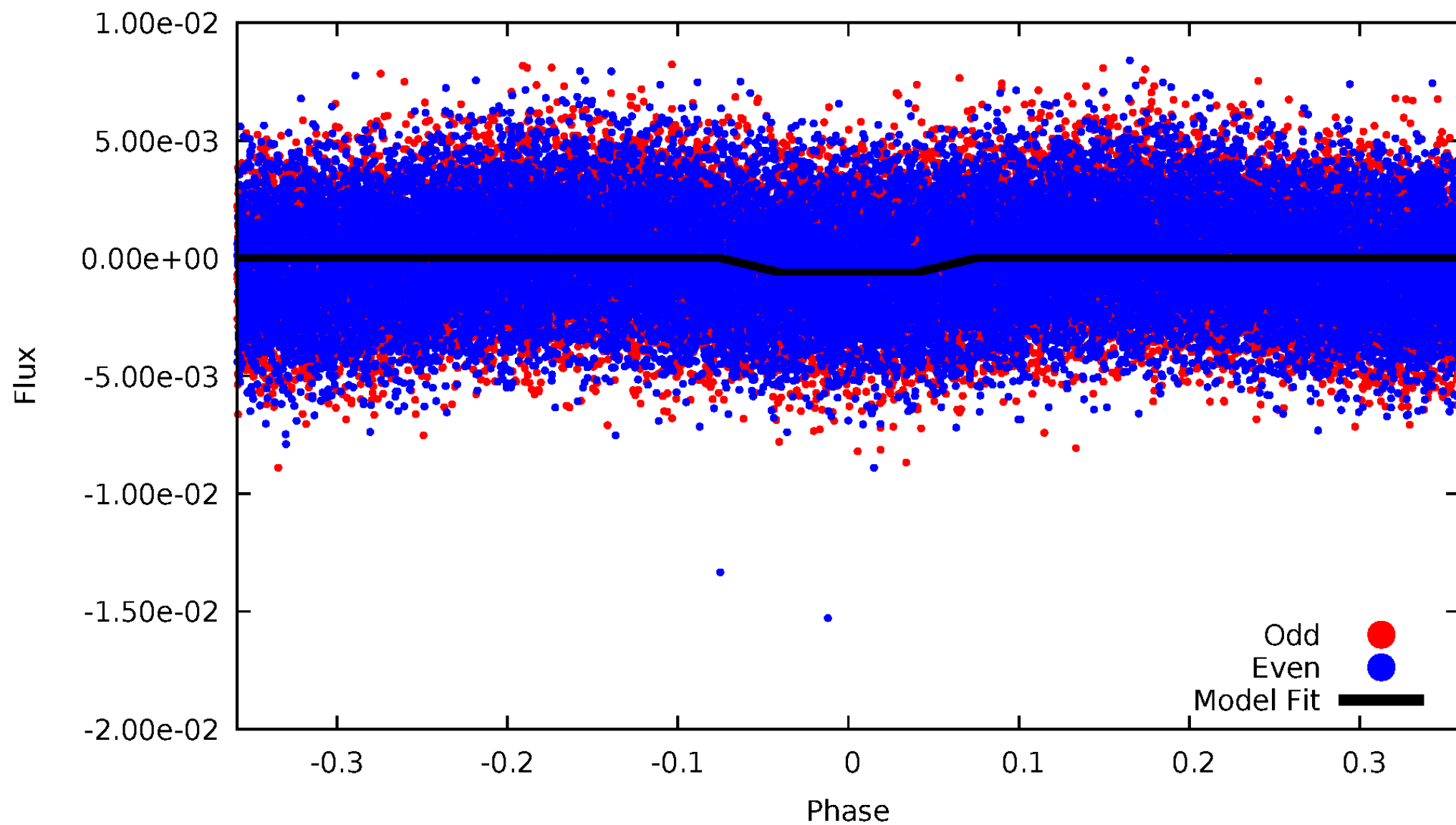
DV Odd/Even

TCE 010921894-01



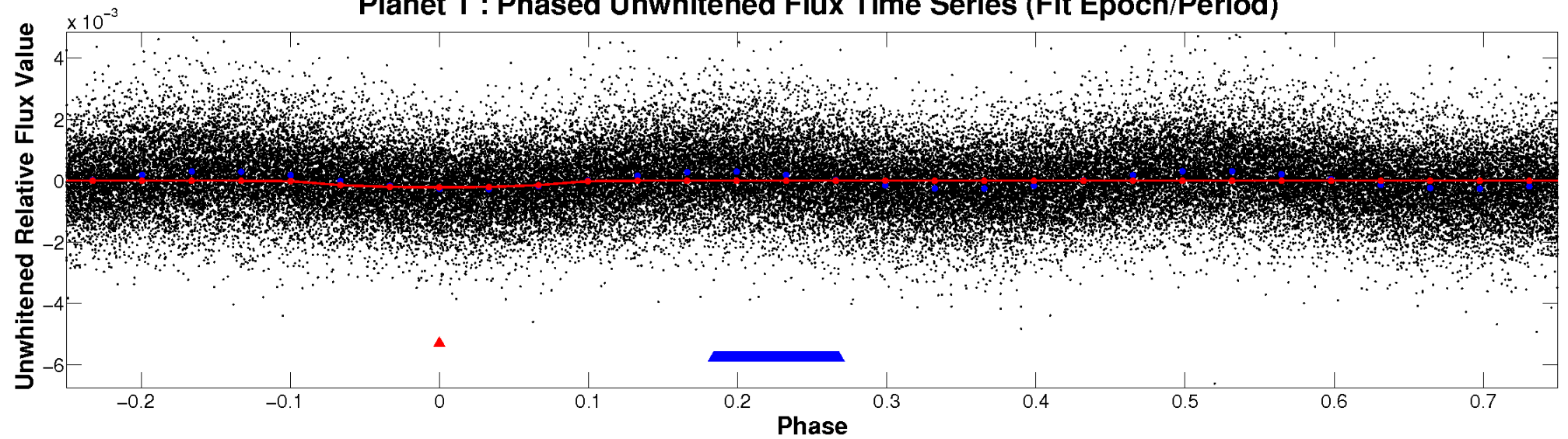
ALT Odd/Even

TCE 010921894-01

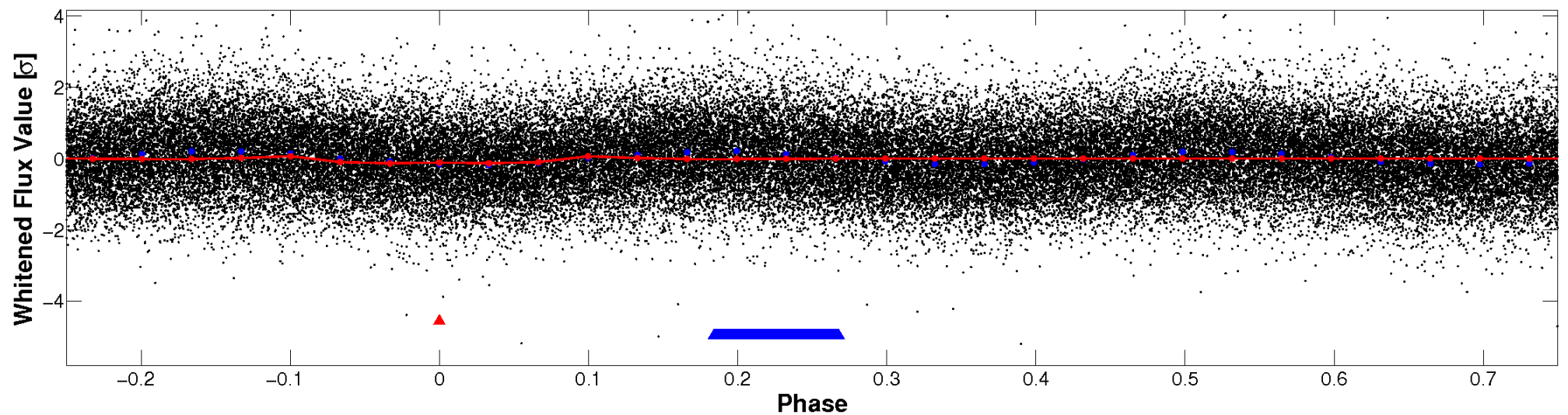


Non-Whitened Vs. Whitened Light Curve

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

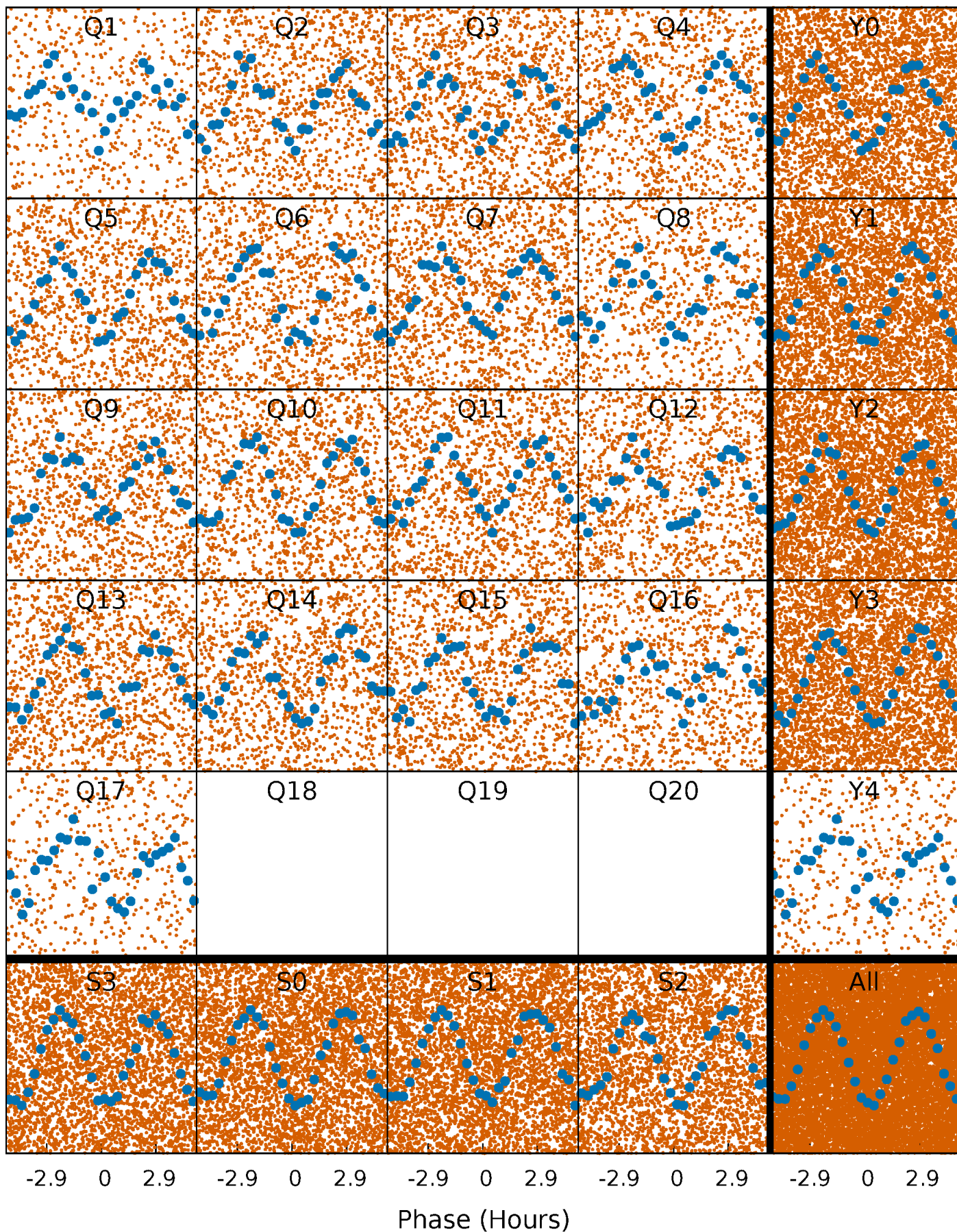


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



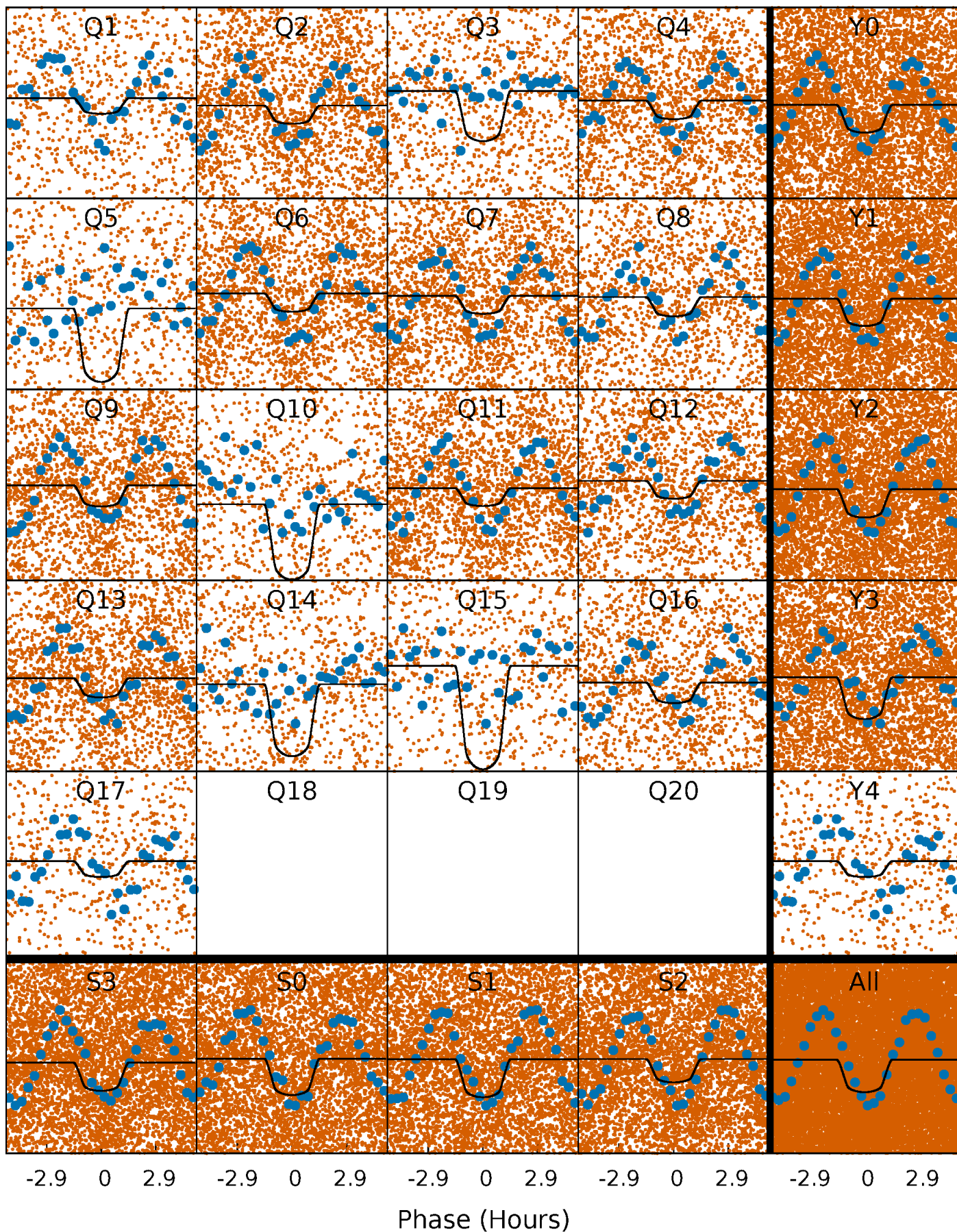
PDC Quarter-Phased Transit Curves

TCE 010921894-01 P= 0.615063 Days $T_0=131.537995$ (BKJD)



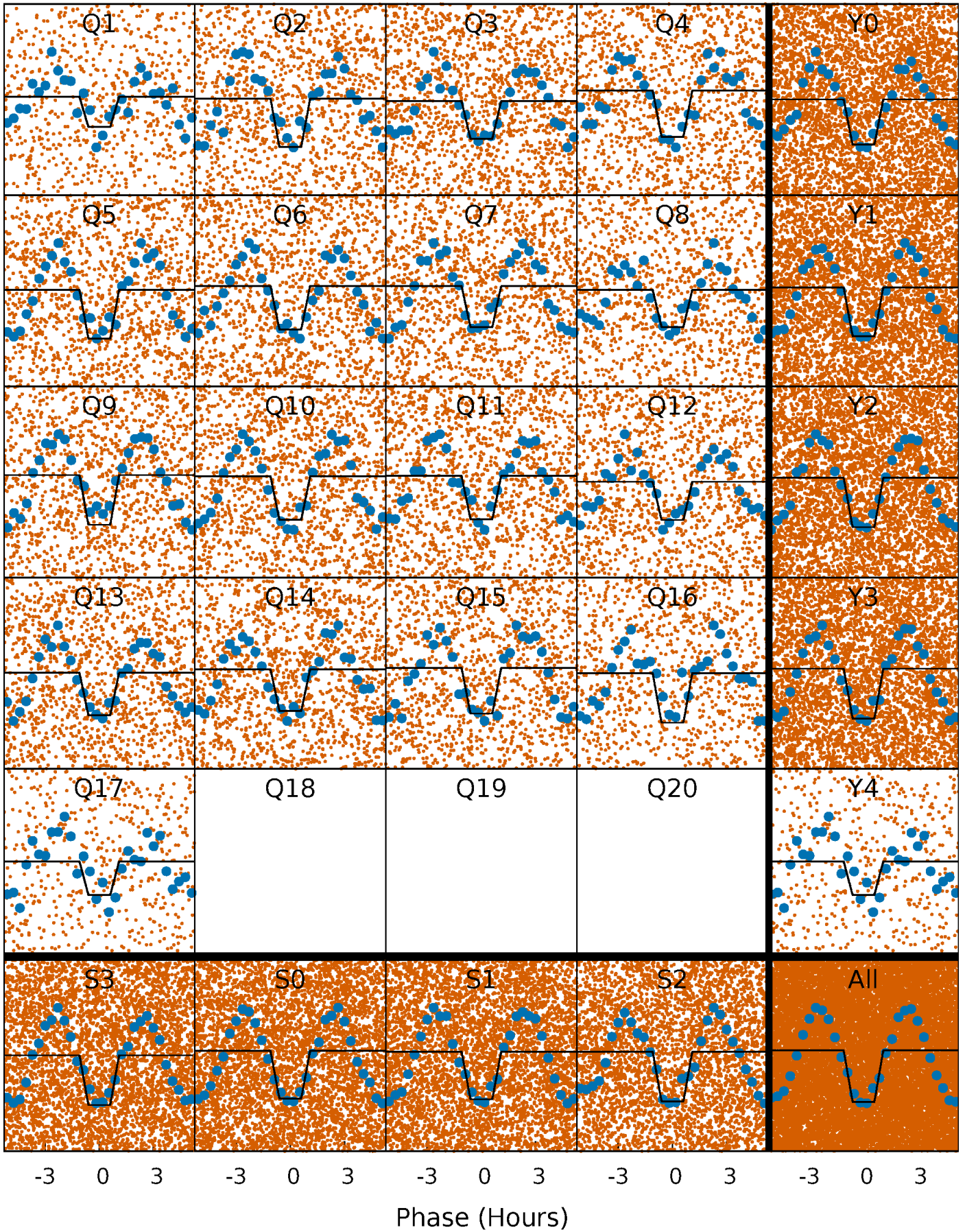
DV Quarter-Phased Transit Curves

TCE 010921894-01 P= 0.615063 Days $T_0=131.537995$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

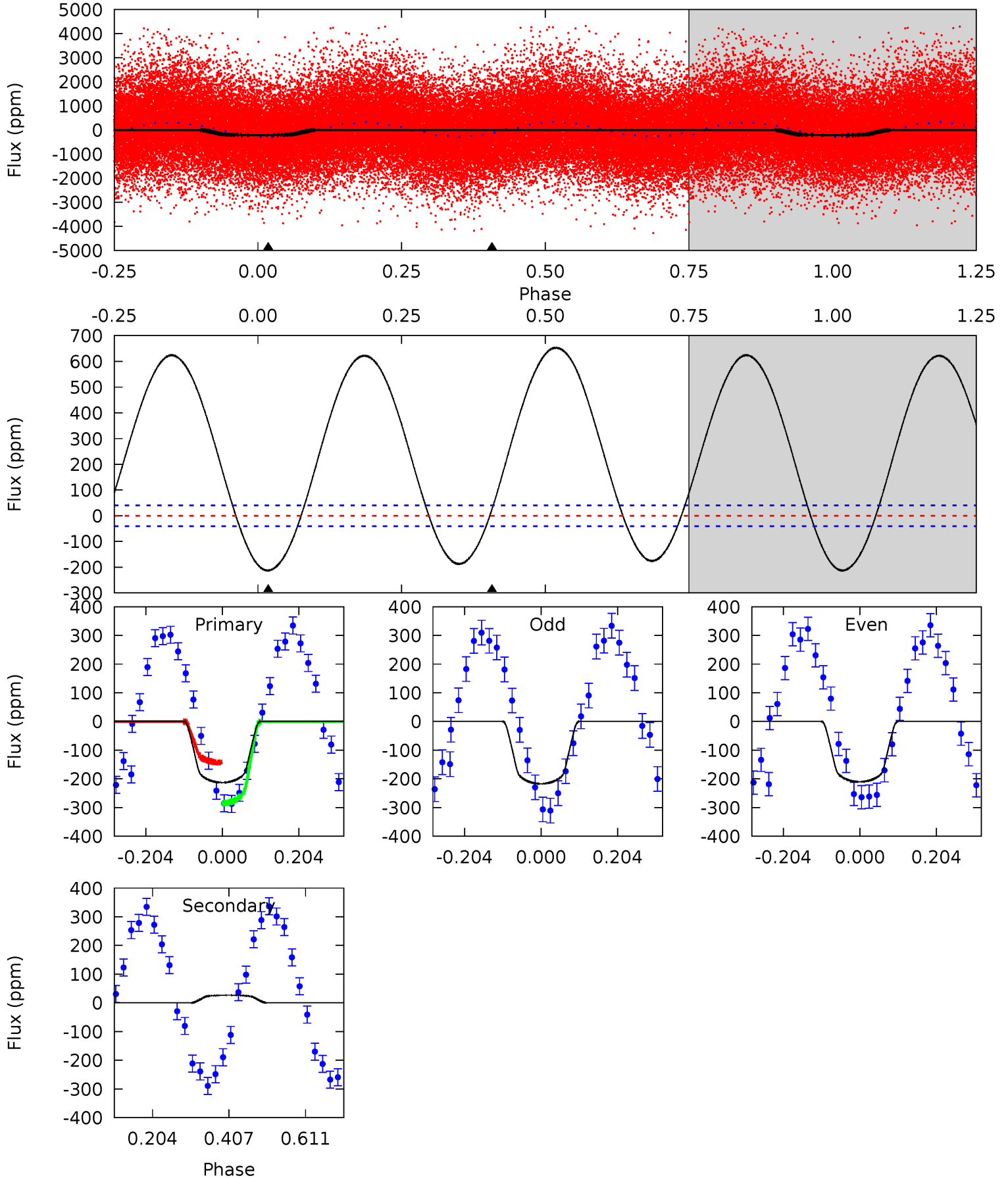
TCE 010921894-01 P= 0.615074 Days $T_0=131.537806$ (BKJD)



DV Model-Shift Uniqueness Test

010921894-01, P = 0.615063 Days, E = 130.922932 Days

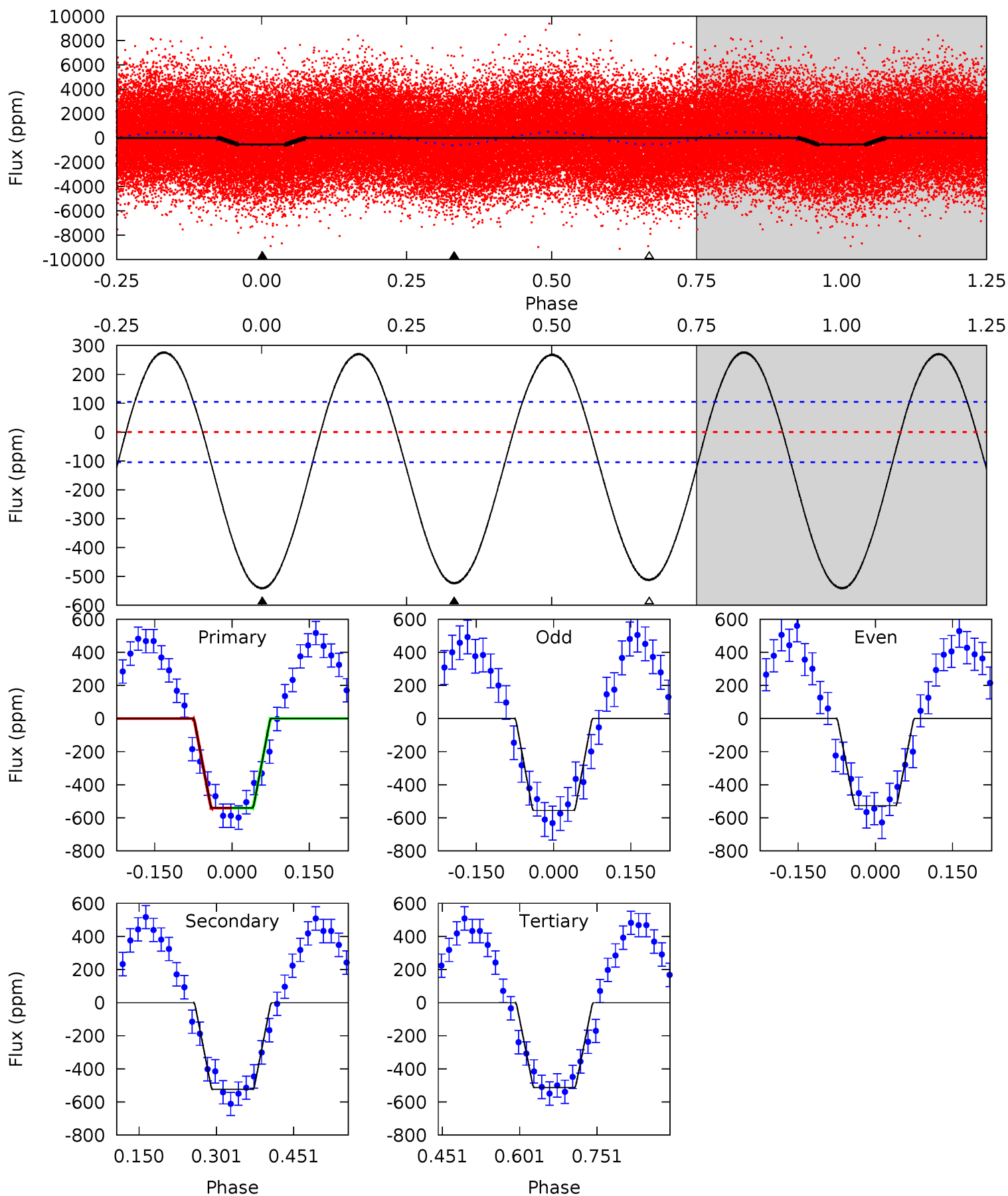
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.2 | -2.91 | 0 | 0 | 4.41 | 1.27 | 23.0 | 23.2 | 23.2 | -2.91 | -2.91 | 0.37 | 1.02 | 0.75 | 8.13 |



Alt Model-Shift Uniqueness Test

010921894-01, P = 0.615074 Days, E = 130.922732 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.2 | 22.4 | 21.9 | 0 | 4.48 | 1.44 | 12.5 | 1.23 | 23.2 | 0.49 | 22.4 | 0.62 | 1.00 | 0.34 | 0.01 |



Stellar Parameters For KIC 010921894

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7542^{+237}_{-316} | $4.036^{+0.204}_{-0.167}$ | $-0.220^{+0.250}_{-0.350}$ | $1.999^{+0.525}_{-0.525}$ | $1.582^{+0.187}_{-0.280}$ | $0.279^{+0.316}_{-0.129}$ |
| | +3%/-4% | +5%/-4% | +114%/-159% | +26%/-26% | +12%/-18% | +113%/-46% |
| Source | KIC0 | 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 010921894-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | 27 ± 9 | $3.38^{+0.76}_{-0.68}$ | 5109^{+399}_{-382} | -5078^{+322}_{-385} | $-0.343^{+0.148}_{-0.249}$ |
| Alt. | -524 ± 23 | $5.21^{+0.96}_{-0.89}$ | 5080^{+410}_{-378} | 7019^{+541}_{-465} | $2.827^{+1.237}_{-0.793}$ |

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

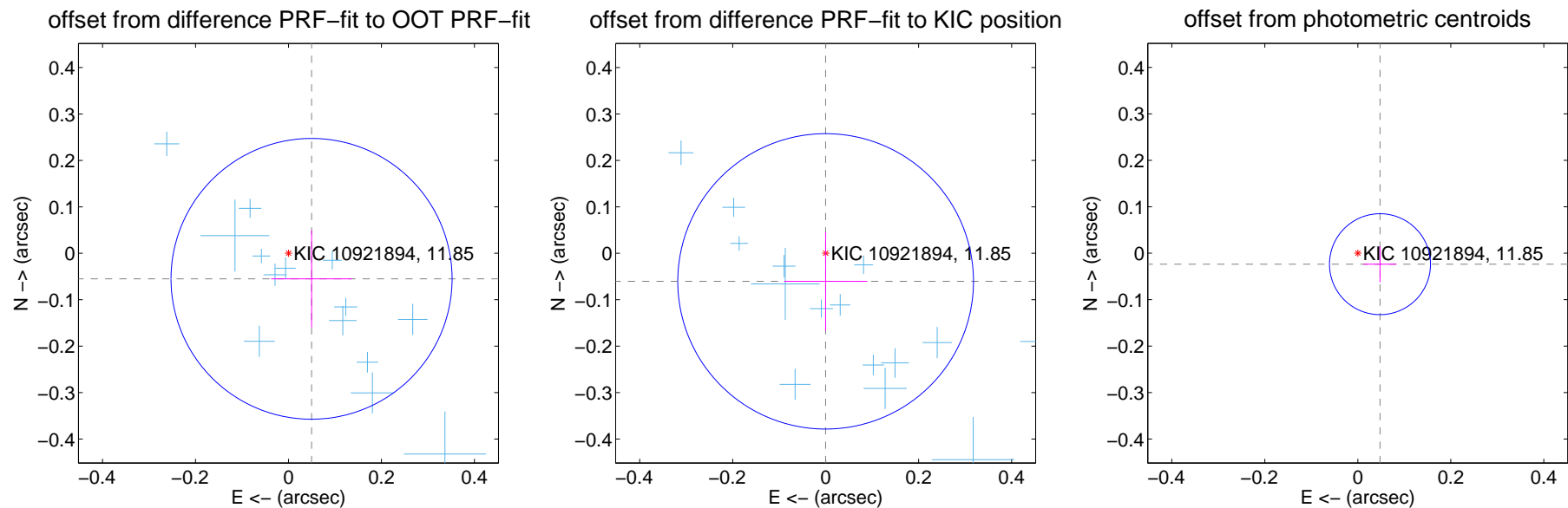
DV Centroid Data

Supplemental centroid analysis for 010921894-01. **Kepler magnitude: 11.85.** Transit SNR 13.55

There are 16 quarters with good PRF difference image offsets

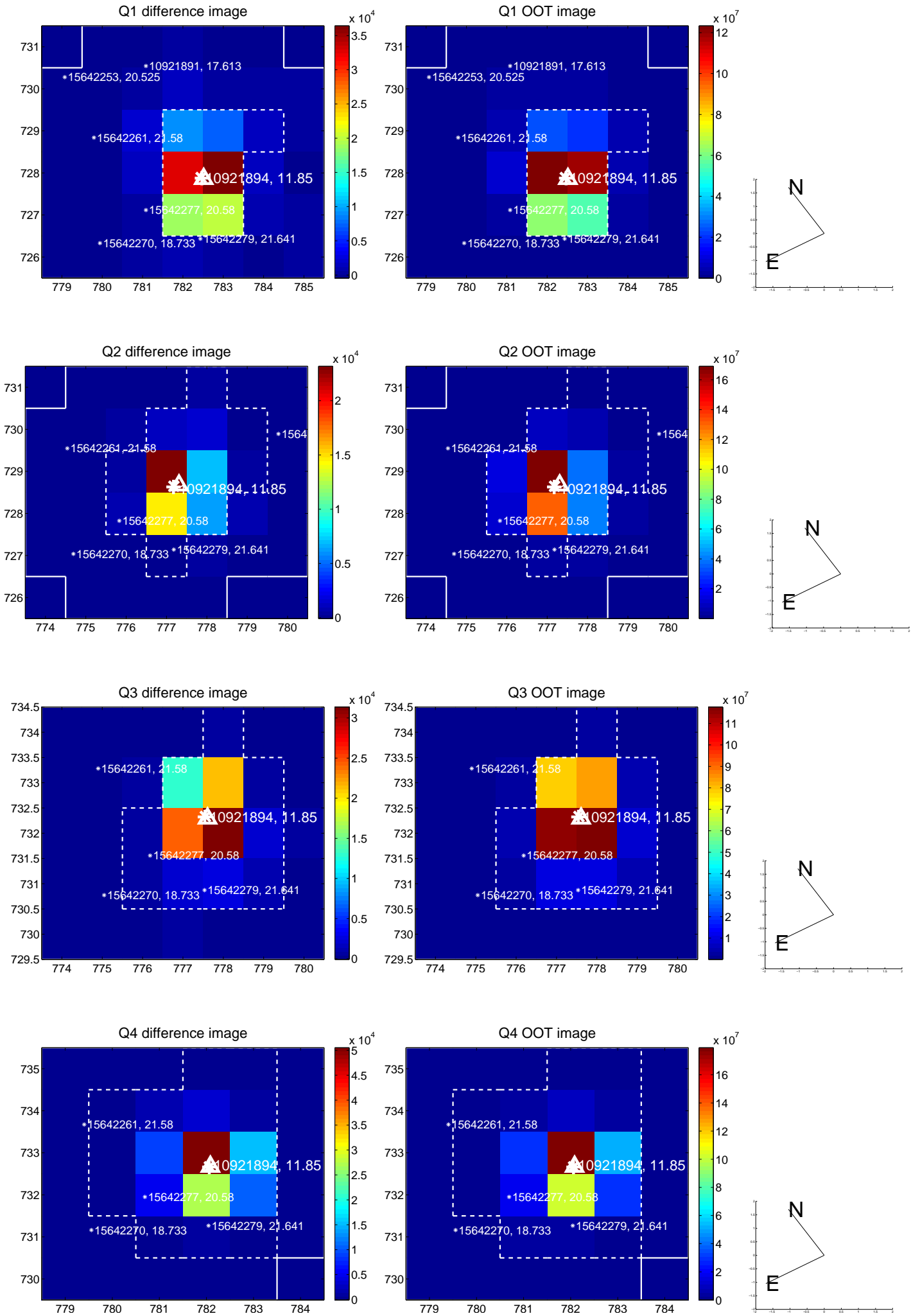
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.074 ± 0.101 | 0.74 | -0.050 ± 0.087 | -0.055 ± 0.105 |
| PRF-fit source offset from KIC position | 0.060 ± 0.106 | 0.57 | 0.000 ± 0.090 | -0.060 ± 0.106 |
| photometric centroid source offset | 0.05 ± 0.04 | 1.47 | -0.05 ± 0.04 | -0.02 ± 0.04 |

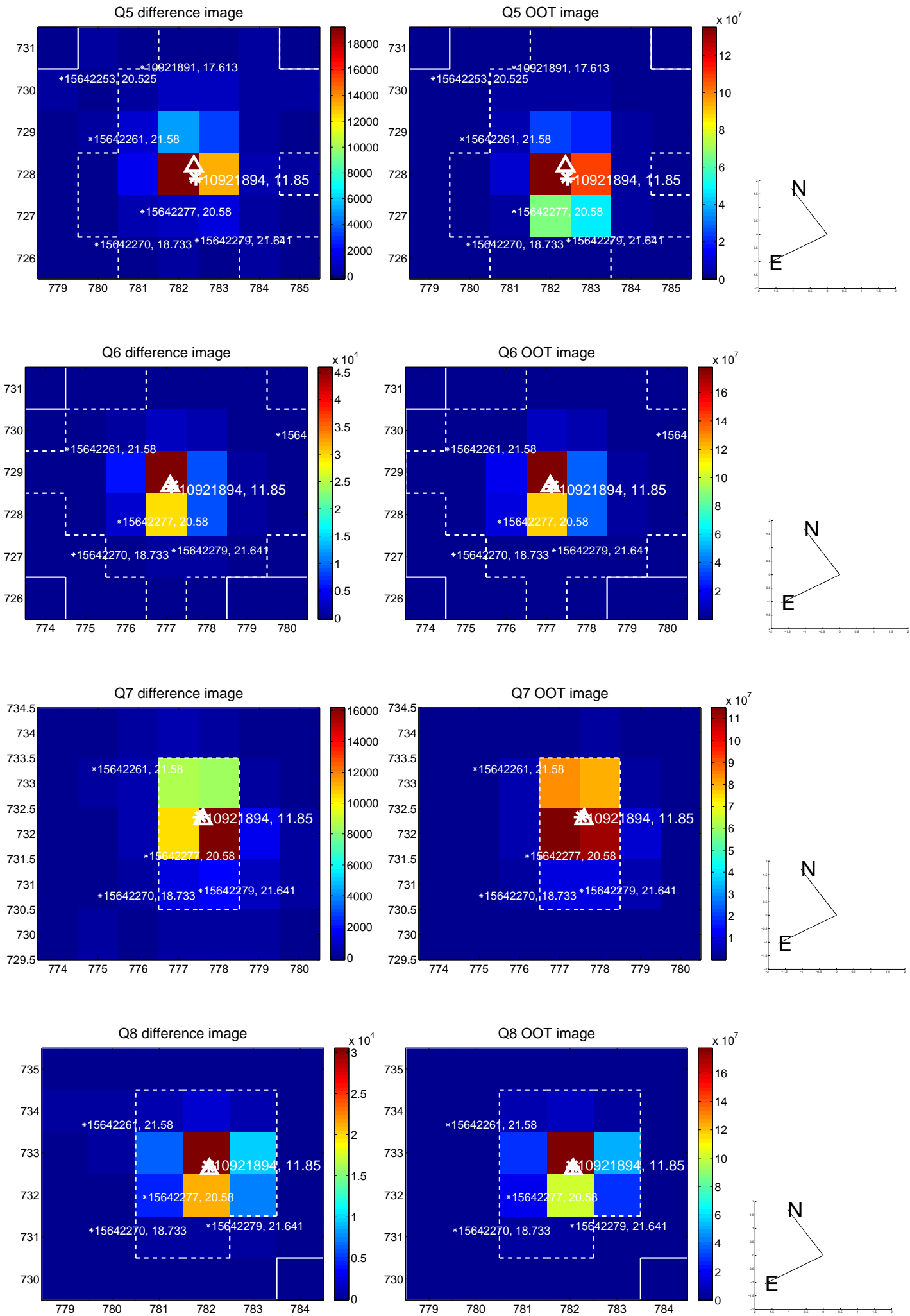


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

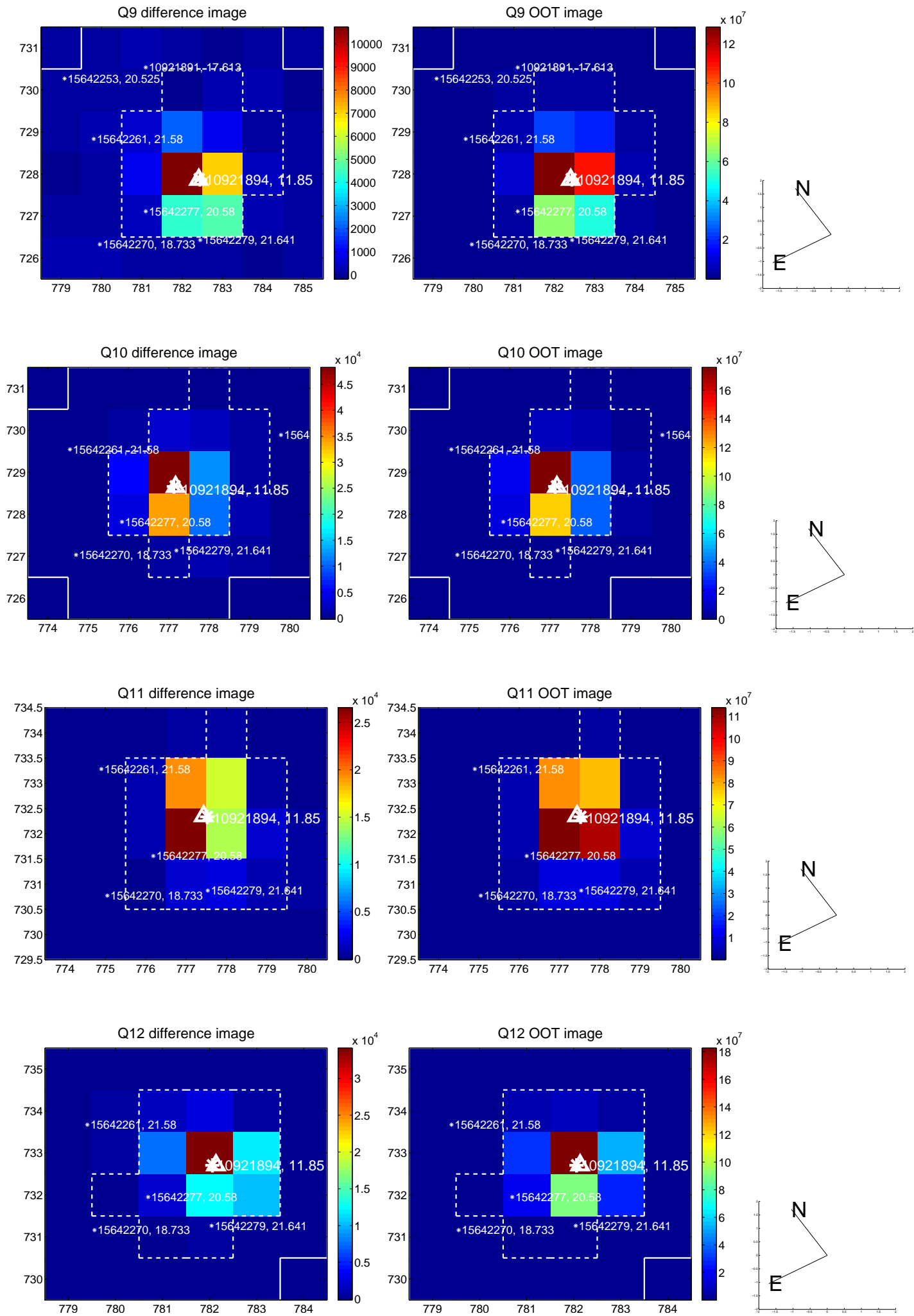
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



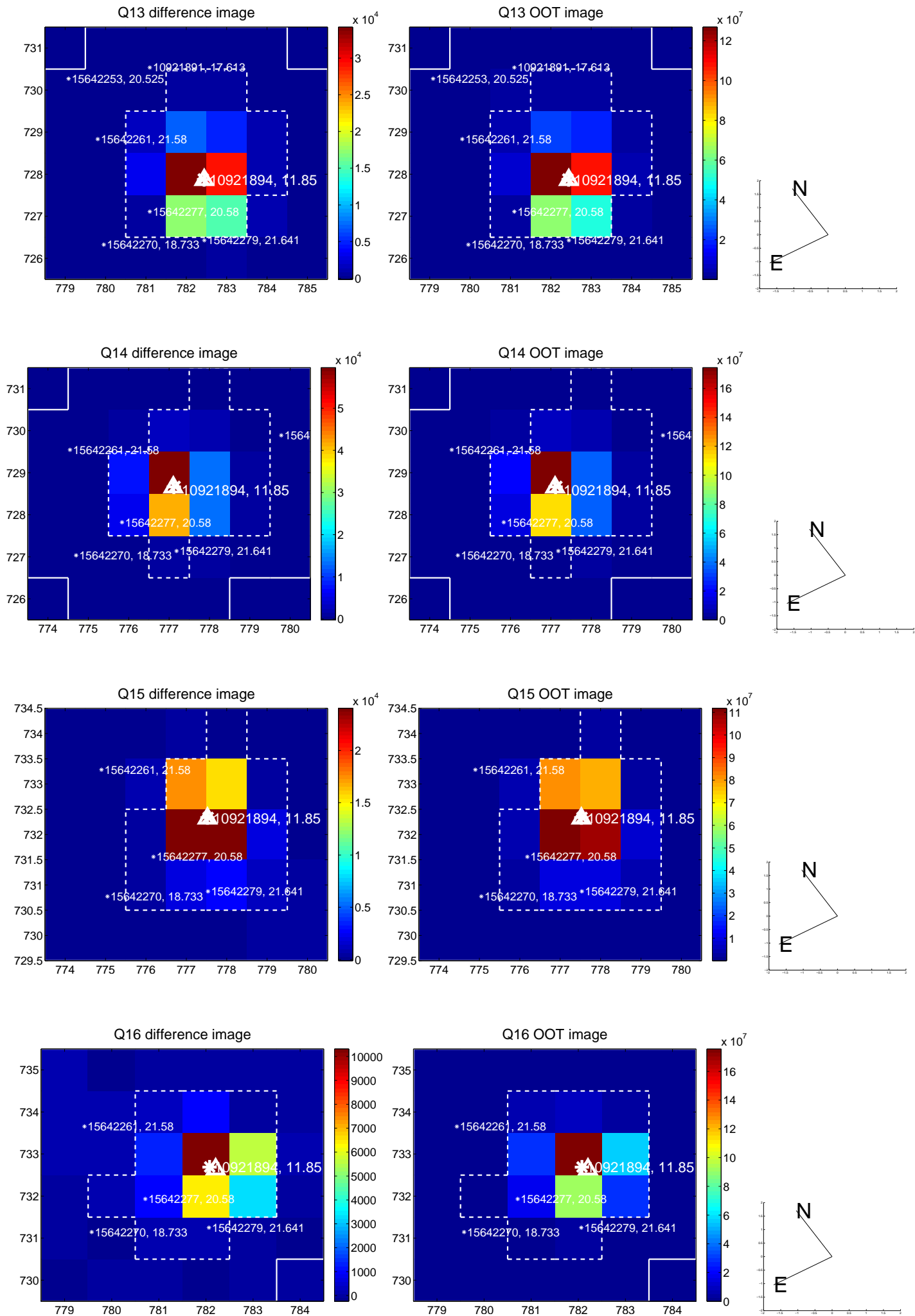
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



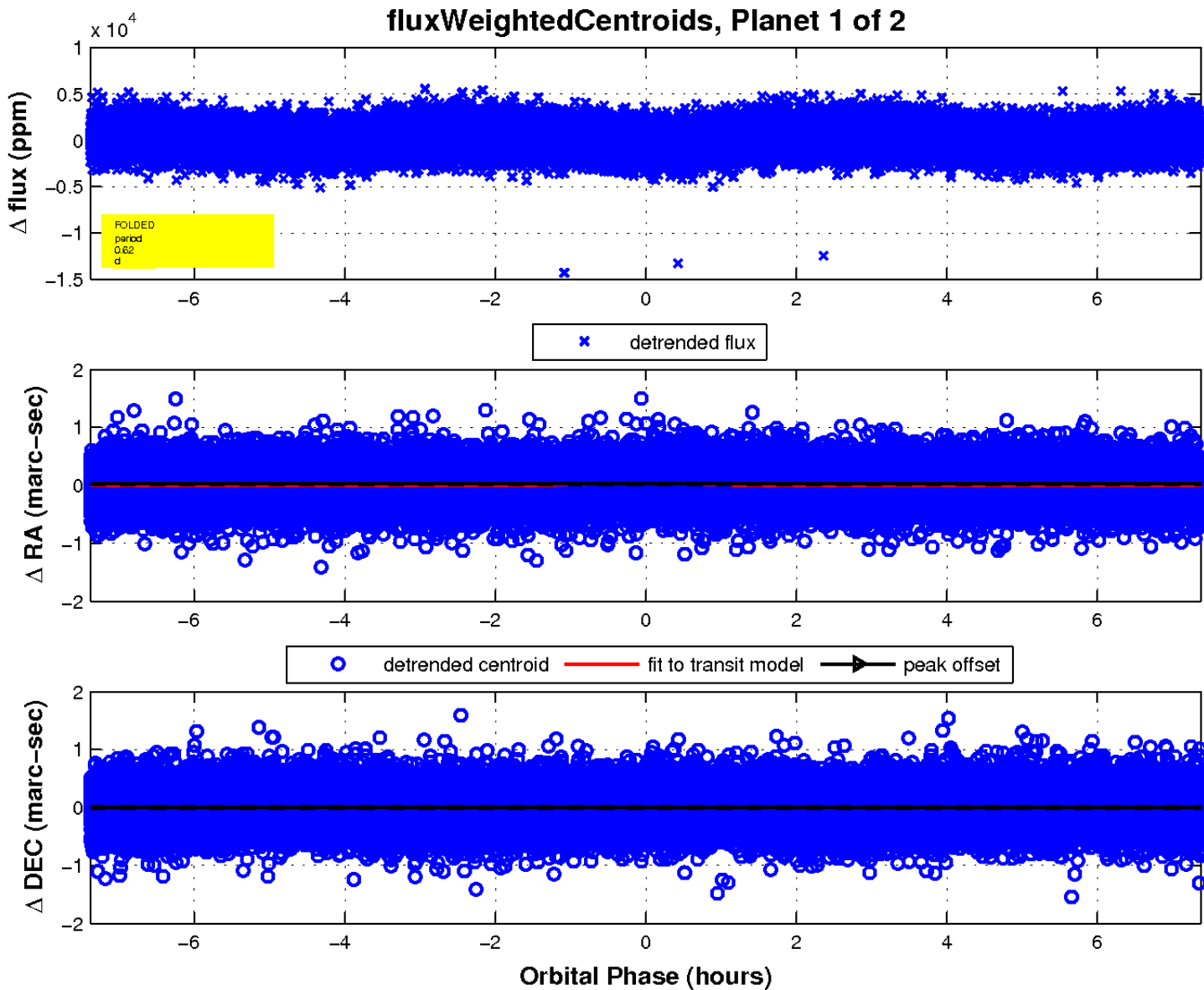
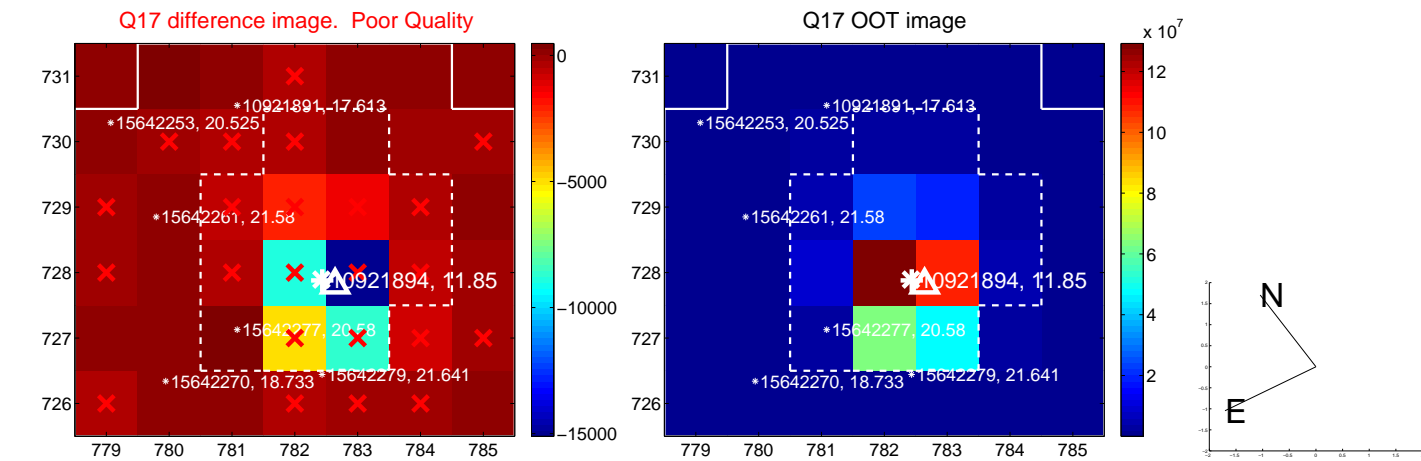
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

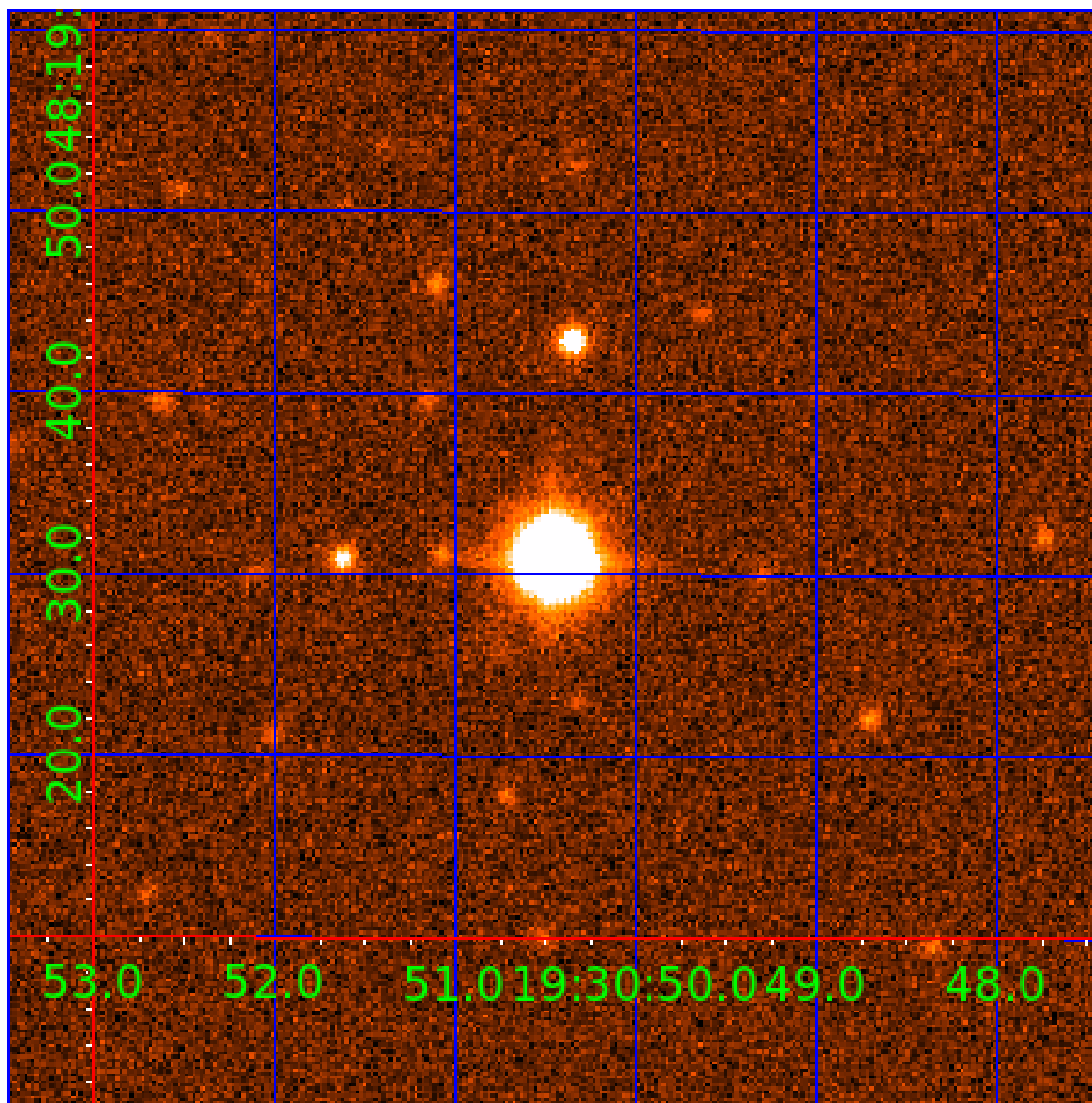


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010921894

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010921894-01 | OBS | No | 0.615063 | 131.537995 | 210.8 | 2.535 | 11.9 | 13.6 | 2.00 | 7542 | 3.40 | 42542.51 |
| 010921894-02 | OBS | No | 0.615041 | 131.702733 | 185.0 | 5.193 | 12.6 | 10.9 | 2.00 | 7542 | 2.73 | 42544.51 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010921894-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 010921894-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFS |

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

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

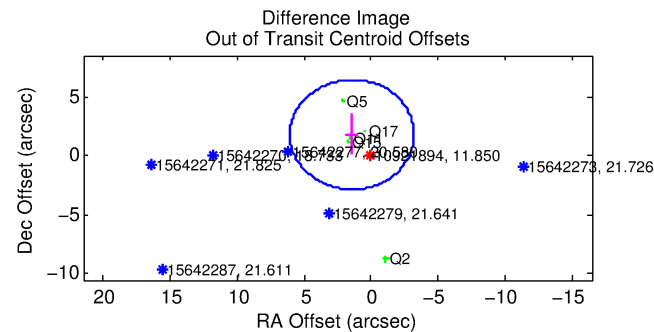
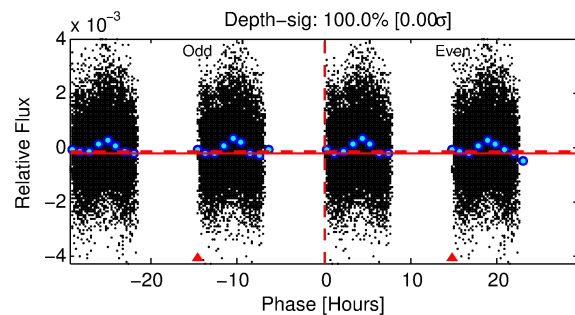
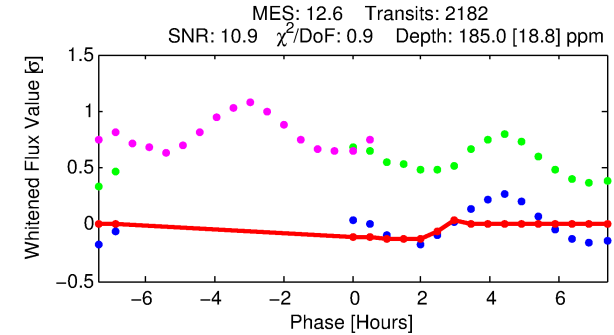
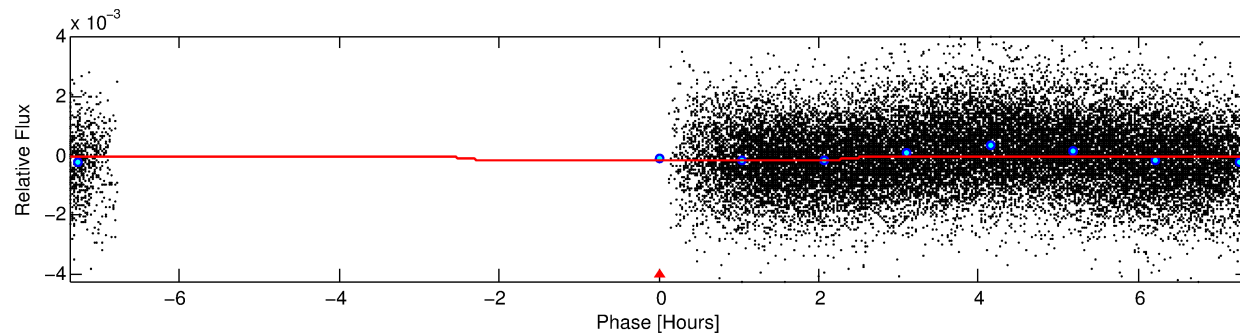
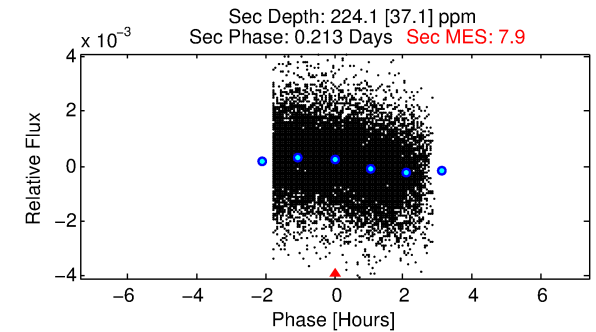
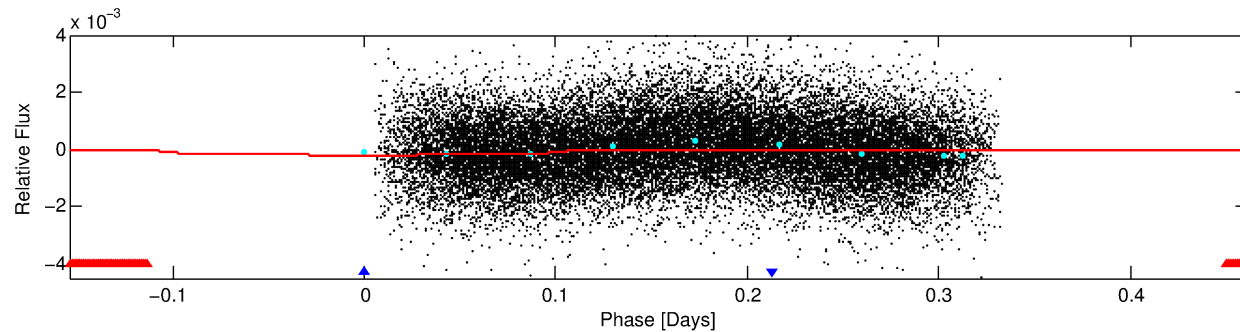
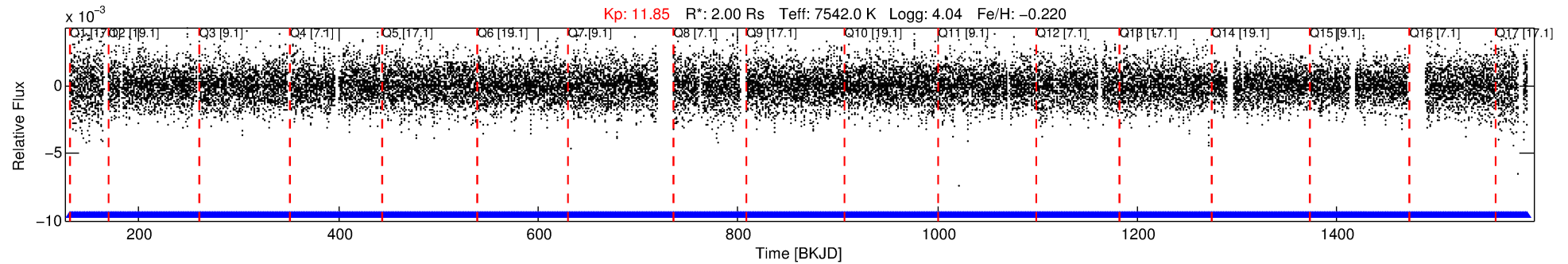
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010921894-02

No Significant Match Found

DV One-Page Summary

KIC: 10921894 Candidate: 2 of 2 Period: 0.615 d



DV Fit Results:

Period = 0.61504 [0.00001] d
Epoch = 131.7027 [0.0092] BKJD
Rp/R* = 0.0125 [0.0098]
a/R* = 1.13 [1.03]
b = 0.10 [41.36]
Seff = 42544.51 [16847.17]
Teq = 3662 [363] K
Rp = 2.73 [2.25] Re
a = 0.0165 [0.0039] AU
Ag = 4.49 [7.22] [0.48σ]
Teffp = 8242 [3247] K [1.40σ]

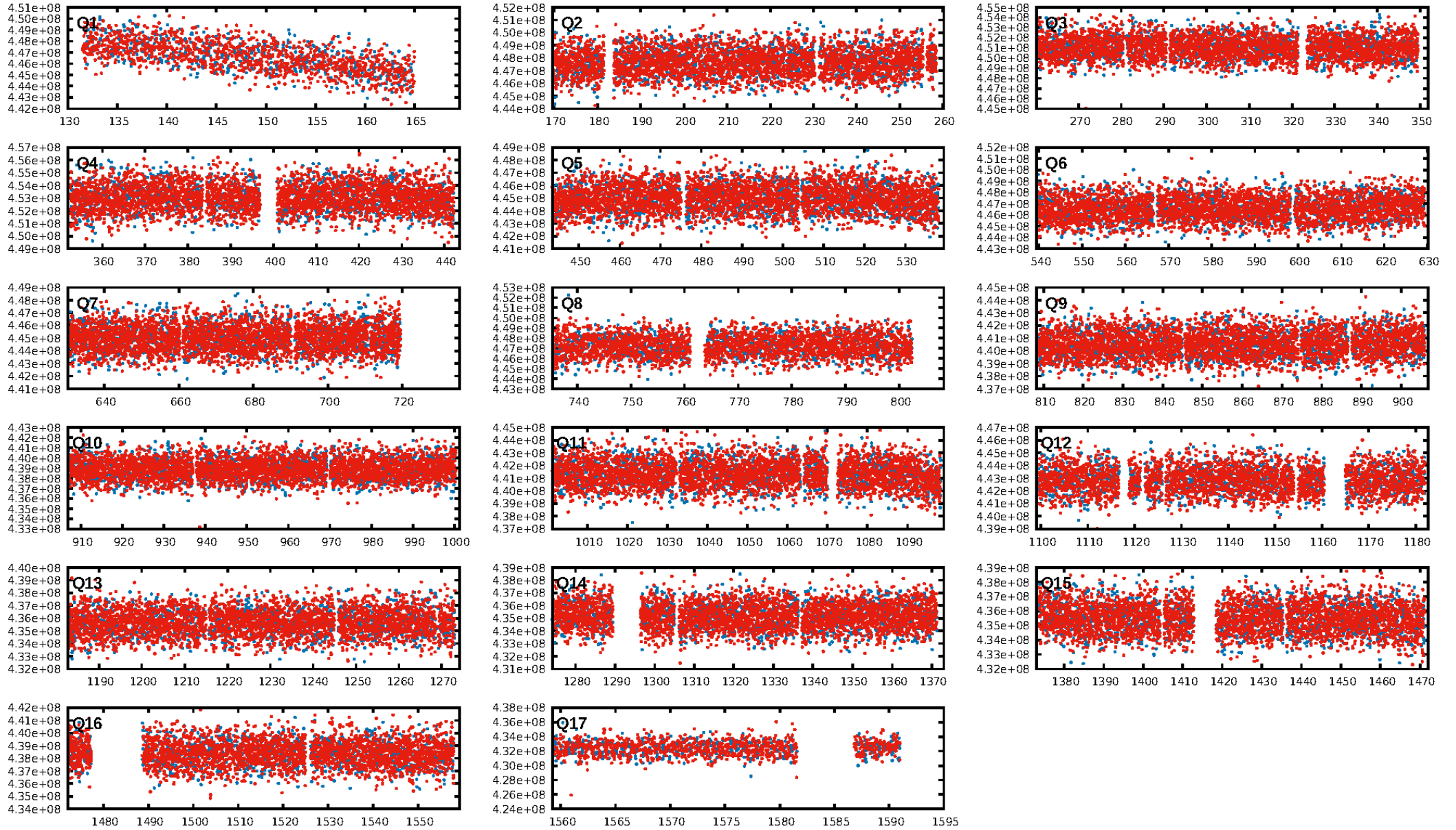
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2083/2083]
GhostDiagnostic-chr: -1.445
Centroid-sig: 6.9%
Centroid-so: 0.115 arcsec [3.99σ]
OotOffset-rm: 2.299 arcsec [1.49σ]
KicOffset-rm: 2.276 arcsec [1.45σ]
OotOffset-st: 1/2/0/2 [5]
KicOffset-st: 1/2/0/2 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/17]

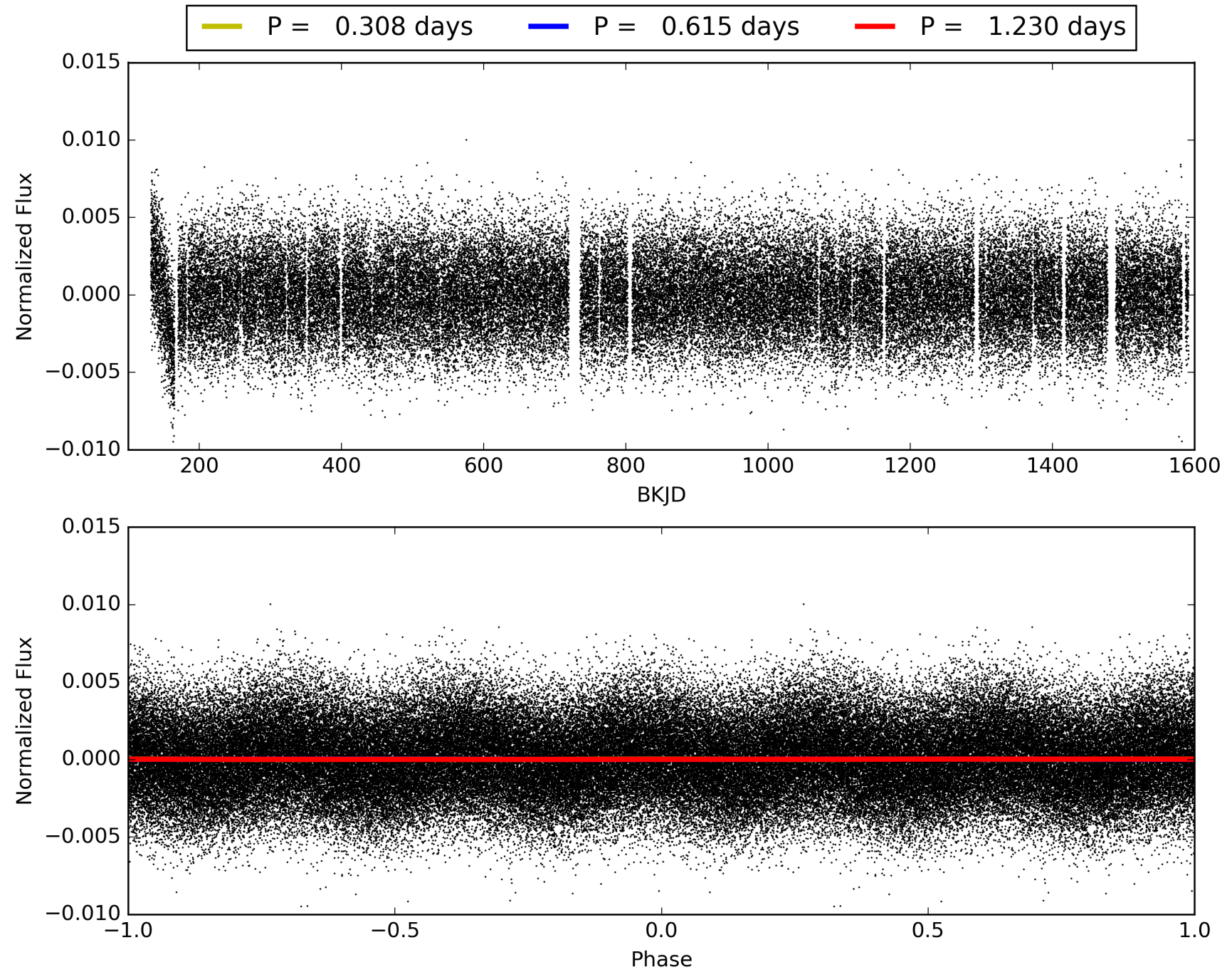
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:09:37 Z

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

TCE 010921894-02, PDC Light Curves

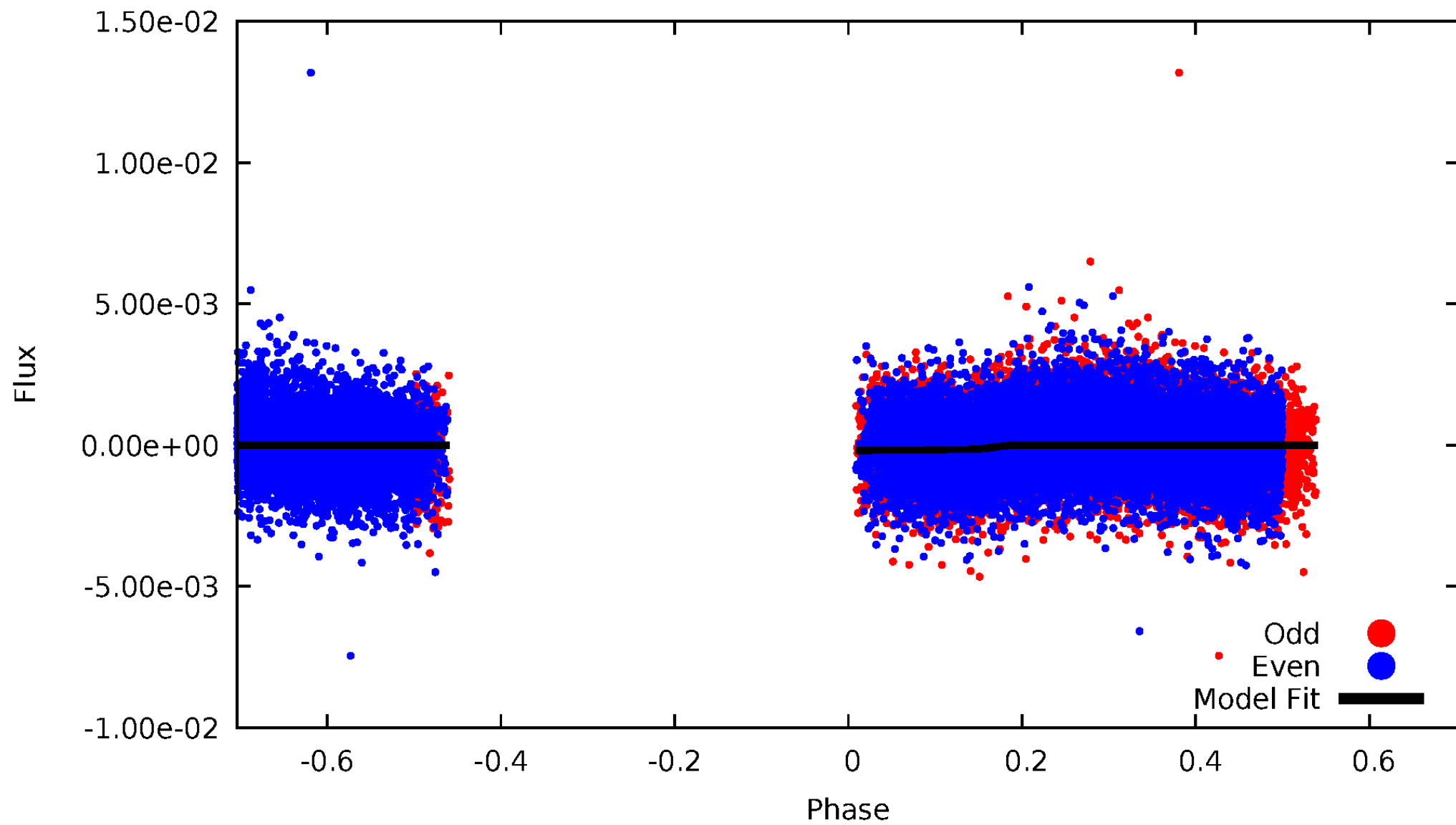


TCE 010921894-02



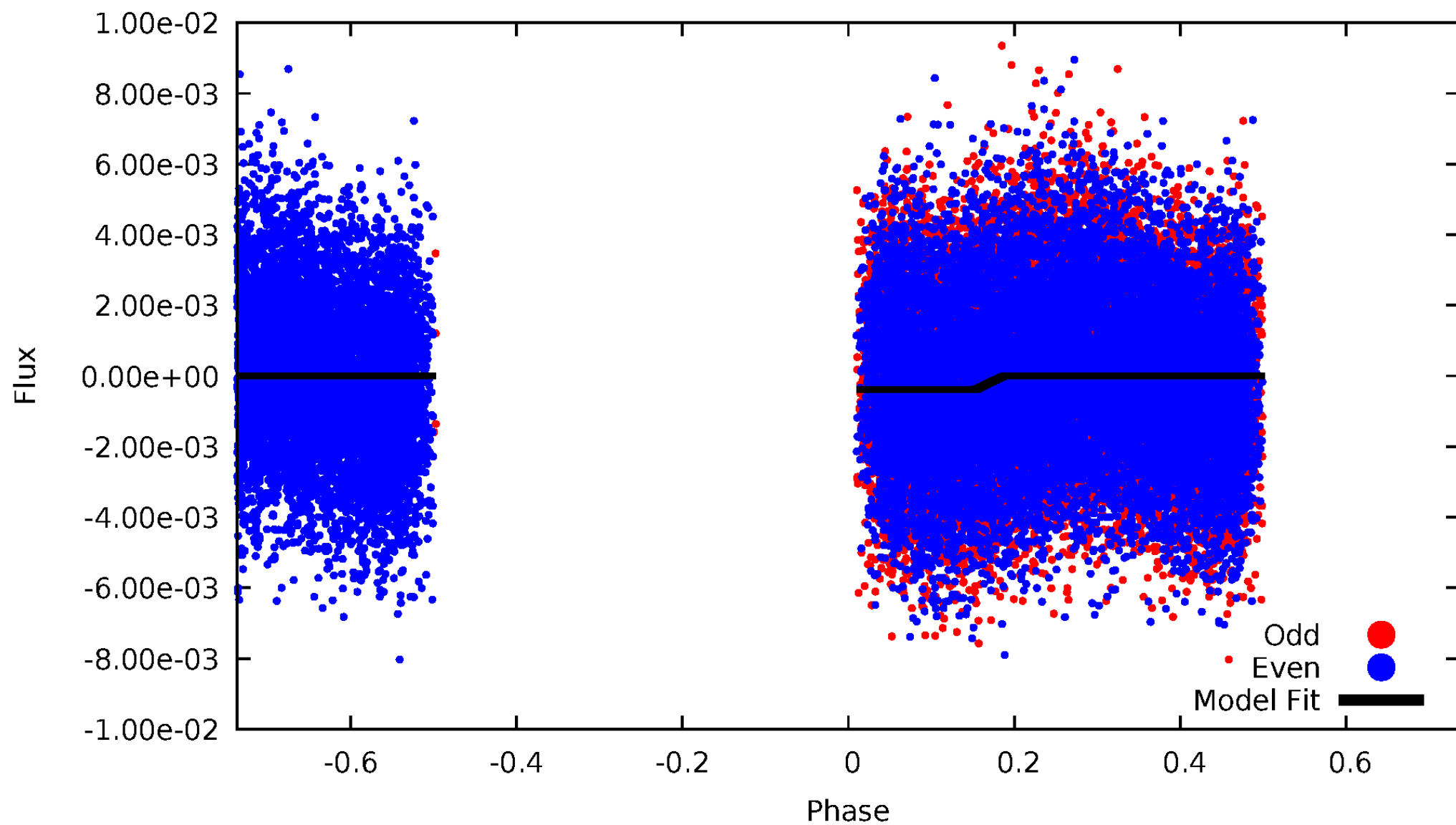
DV Odd/Even

TCE 010921894-02



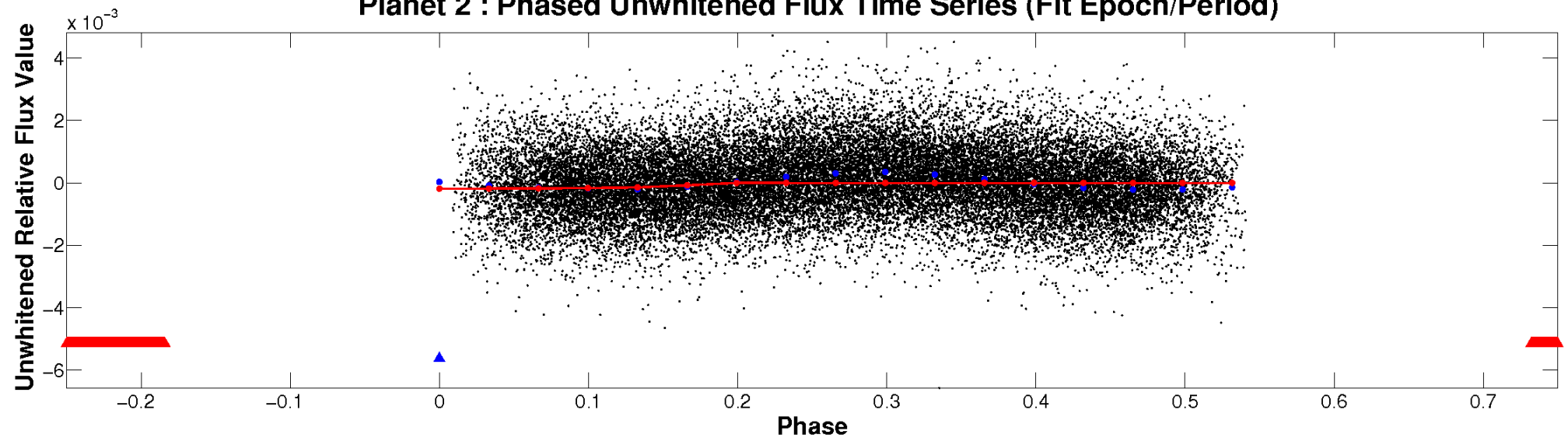
ALT Odd/Even

TCE 010921894-02

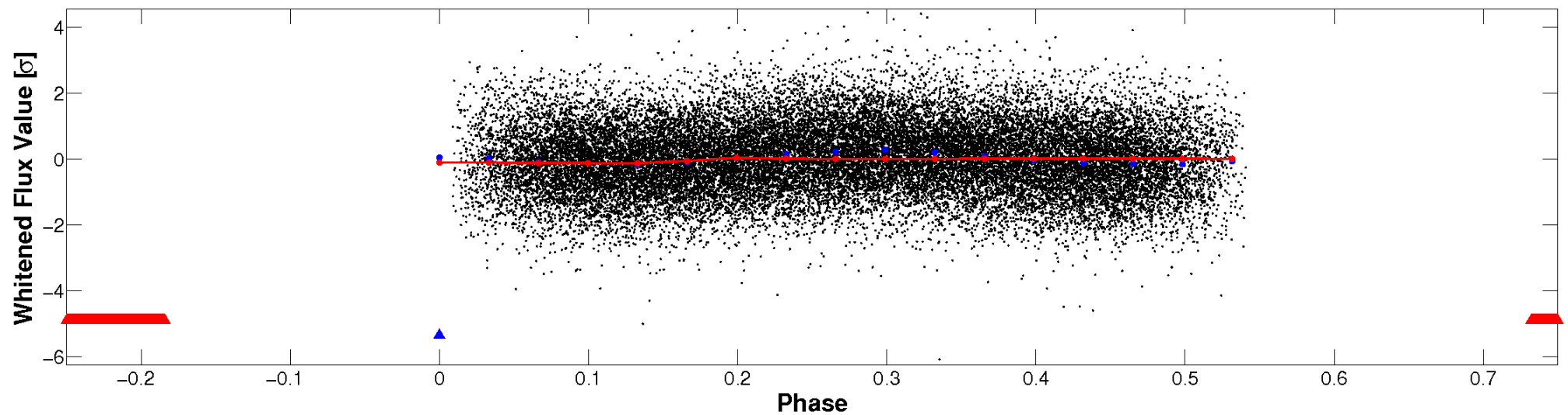


Non-Whitened Vs. Whitened Light Curve

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

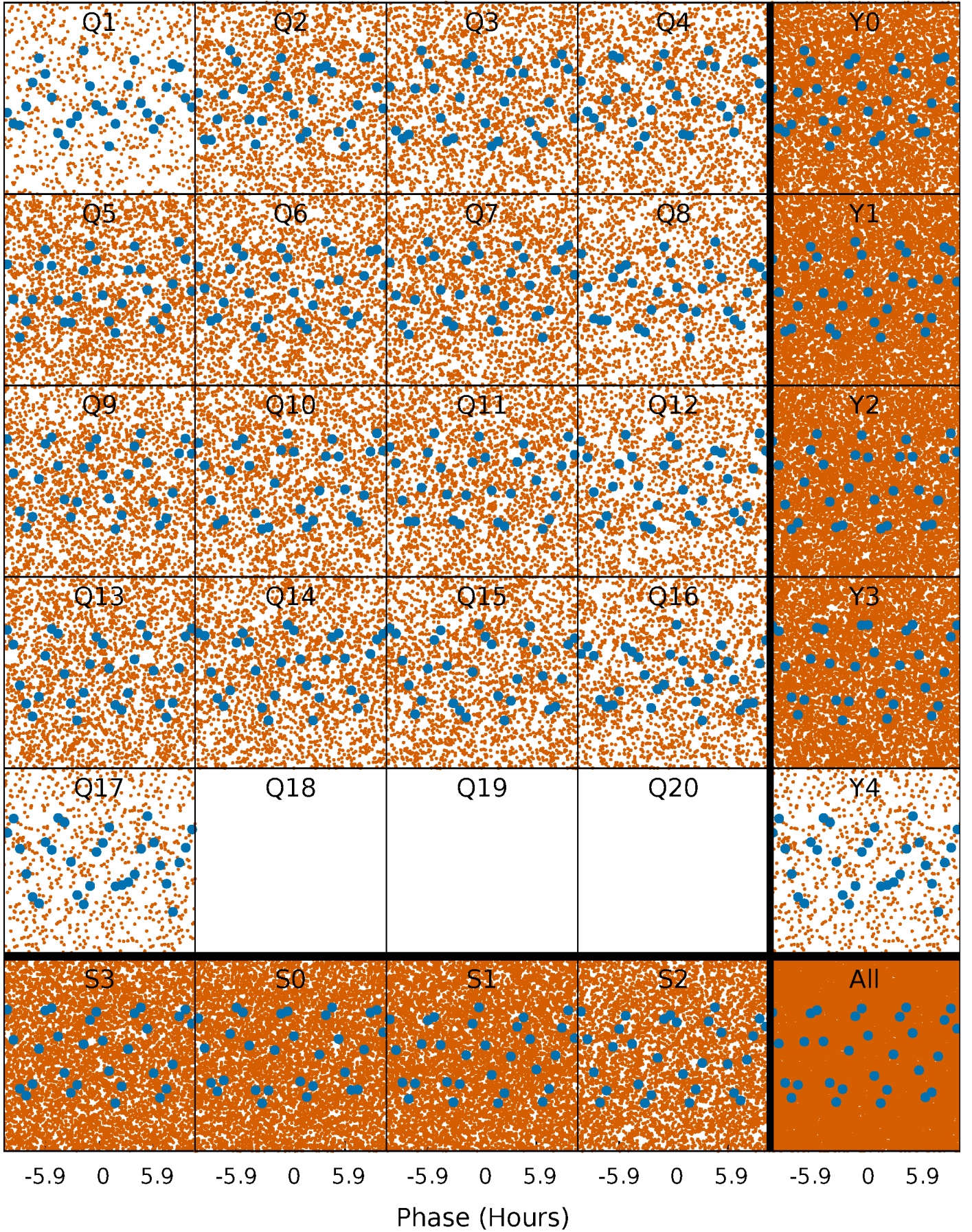


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



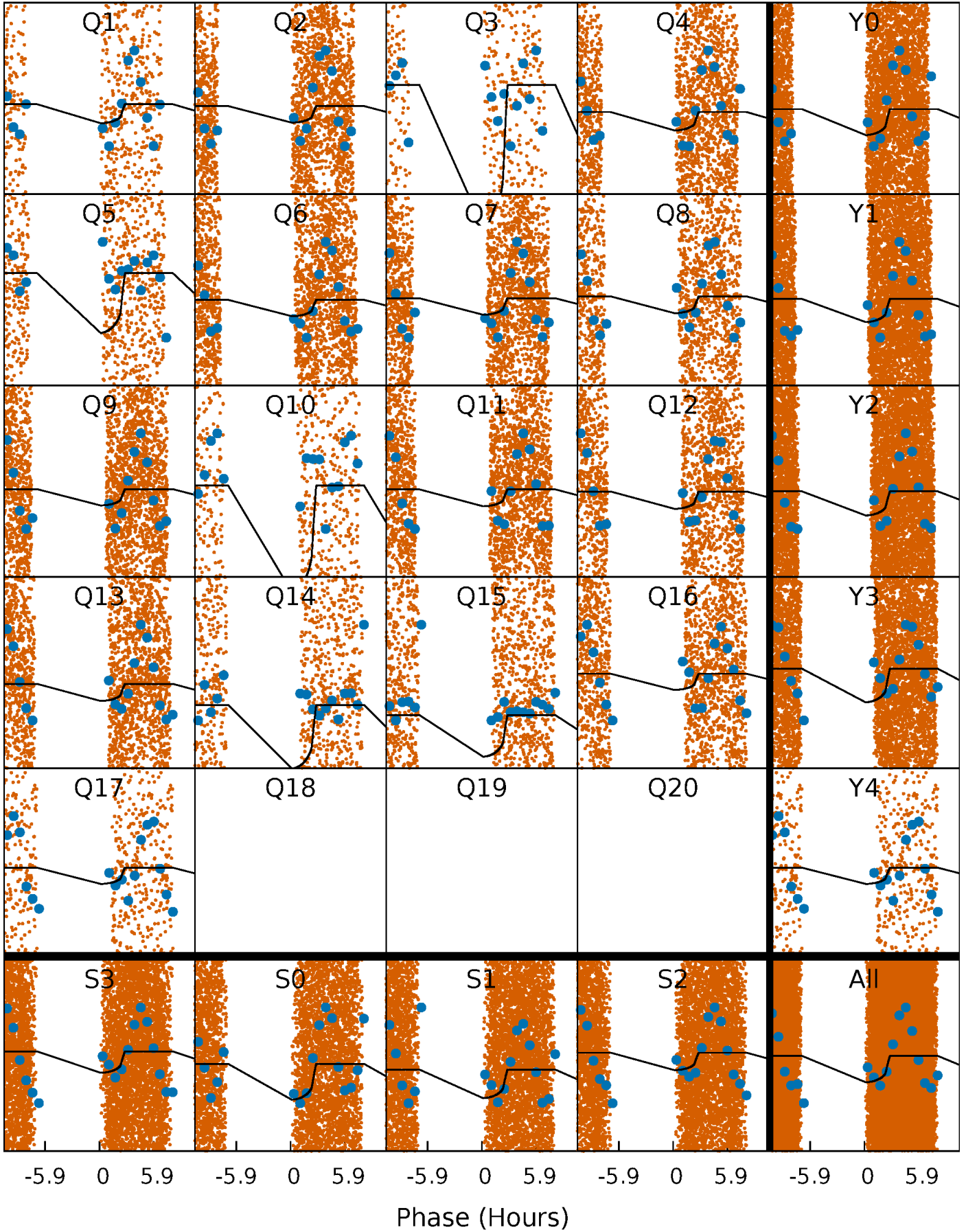
PDC Quarter-Phased Transit Curves

TCE 010921894-02 P= 0.615041 Days $T_0=131.702733$ (BKJD)



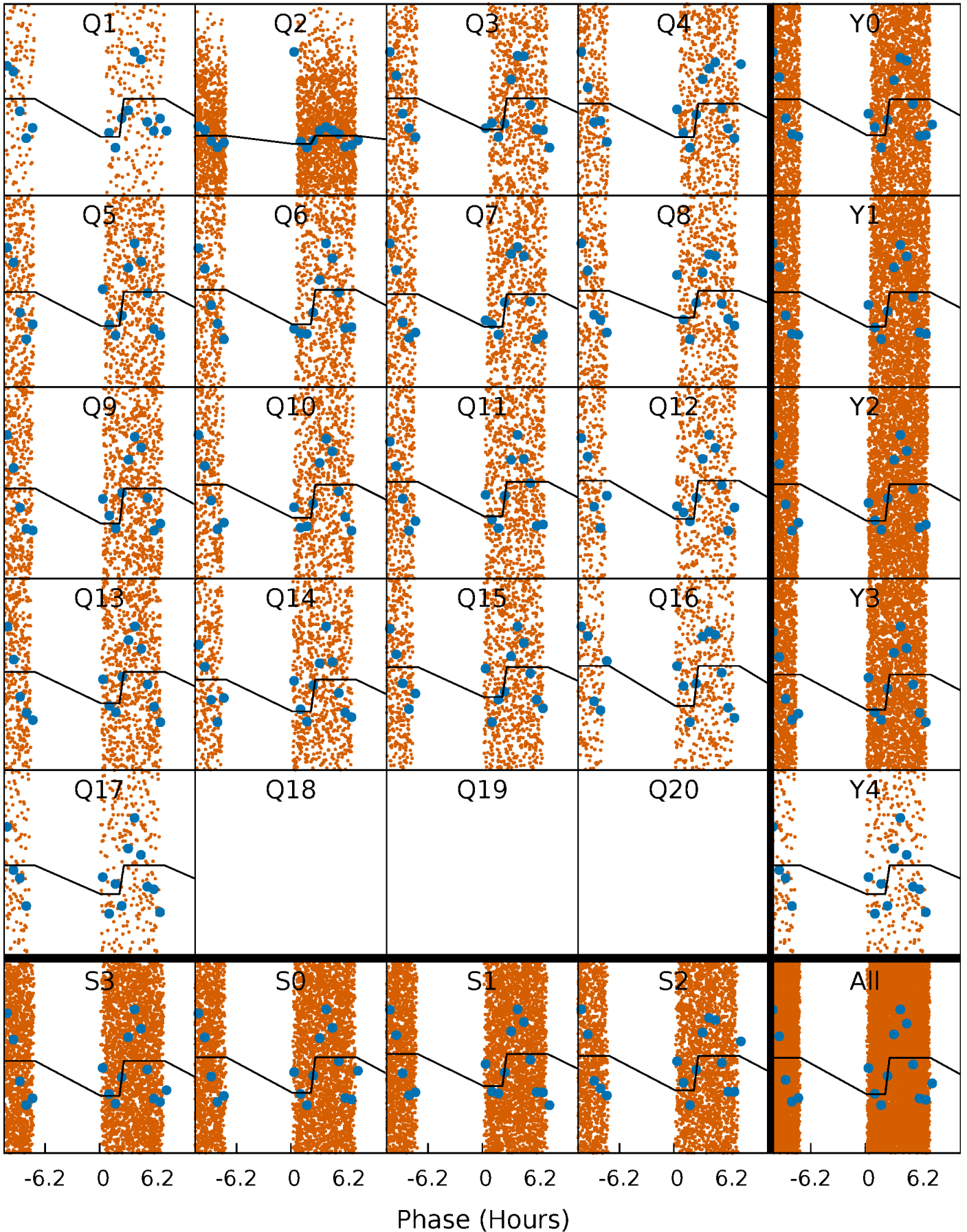
DV Quarter-Phased Transit Curves

TCE 010921894-02 P= 0.615041 Days $T_0=131.702733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

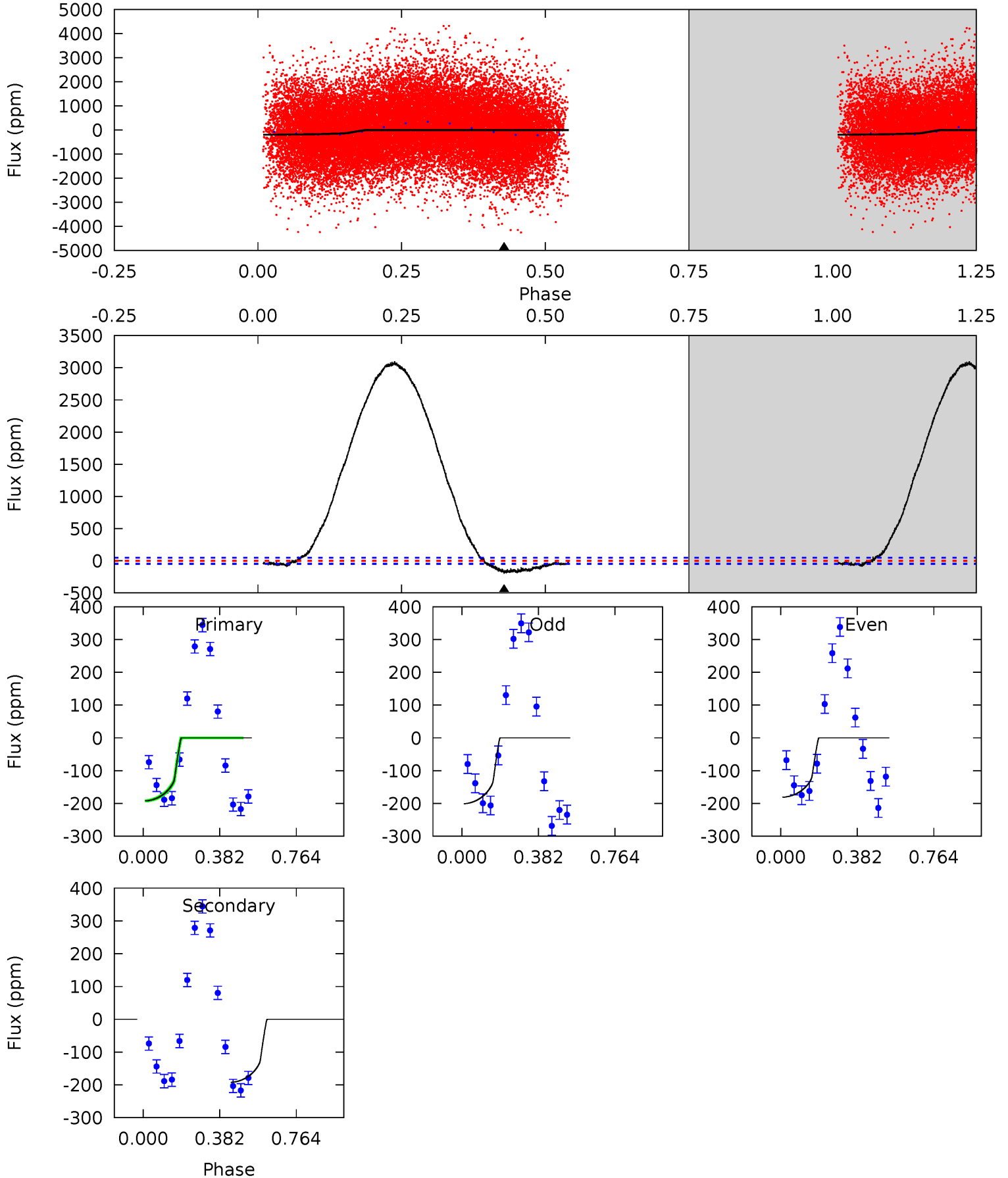
TCE 010921894-02 P= 0.615074 Days $T_0=131.674983$ (BKJD)



DV Model-Shift Uniqueness Test

010921894-02, P = 0.615041 Days, E = 131.702733 Days

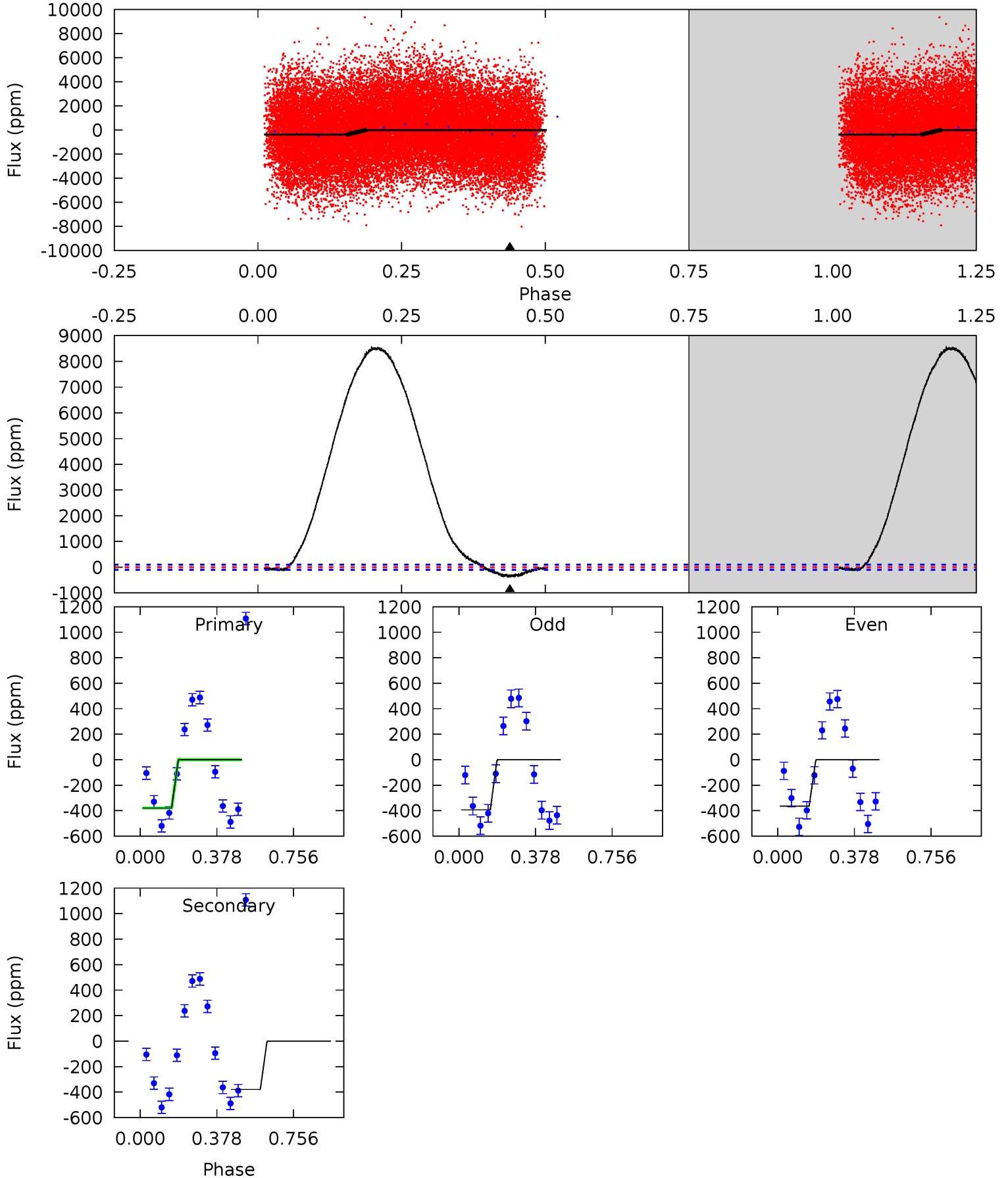
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 17.4 | 17.4 | 0 | 0 | 4.28 | 0.87 | 7.17 | 17.4 | 17.4 | 17.4 | 17.4 | 0.90 | 1.16 | 0.94 | 0 |



Alt Model-Shift Uniqueness Test

010921894-02, P = 0.615074 Days, E = 131.674983 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 16.6 | 16.6 | 0 | 0 | 4.28 | 0.88 | 12.1 | 16.6 | 16.6 | 16.6 | 16.6 | 0.63 | 1.05 | 0.96 | 0 |



Stellar Parameters For KIC 010921894

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7542^{+237}_{-316} | $4.036^{+0.204}_{-0.167}$ | $-0.220^{+0.250}_{-0.350}$ | $1.999^{+0.525}_{-0.525}$ | $1.582^{+0.187}_{-0.280}$ | $0.279^{+0.316}_{-0.129}$ |
| | +3%/-4% | +5%/-4% | +114%/-159% | +26%/-26% | +12%/-18% | +113%/-46% |
| Source | KIC0 | 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 010921894-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -192 ± 11 | $3.06^{+2.13}_{-1.80}$ | 5101^{+374}_{-413} | 7175^{+6983}_{-1883} | $3.105^{+14.480}_{-2.021}$ |
| Alt. | -379 ± 23 | $4.23^{+2.15}_{-2.06}$ | 5107^{+394}_{-384} | 7290^{+4459}_{-1589} | $3.185^{+8.562}_{-1.781}$ |

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

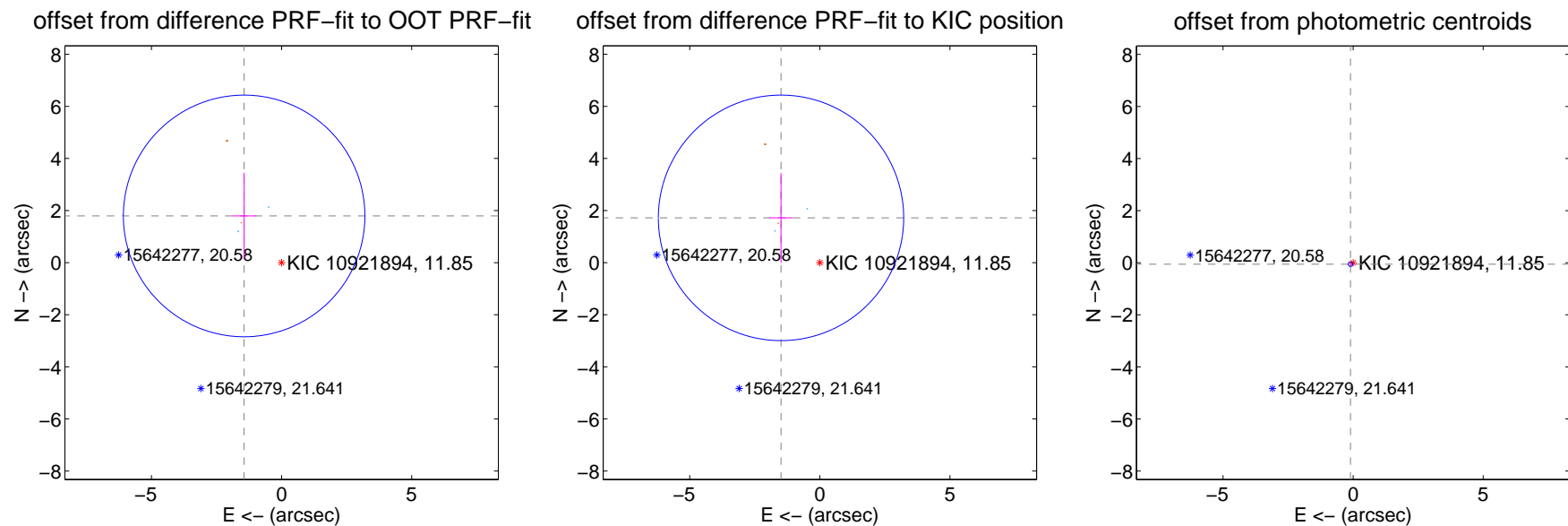
DV Centroid Data

Supplemental centroid analysis for 010921894-02. **Kepler magnitude: 11.85.** Transit SNR 10.86

There are 2 quarters with good PRF difference image offsets

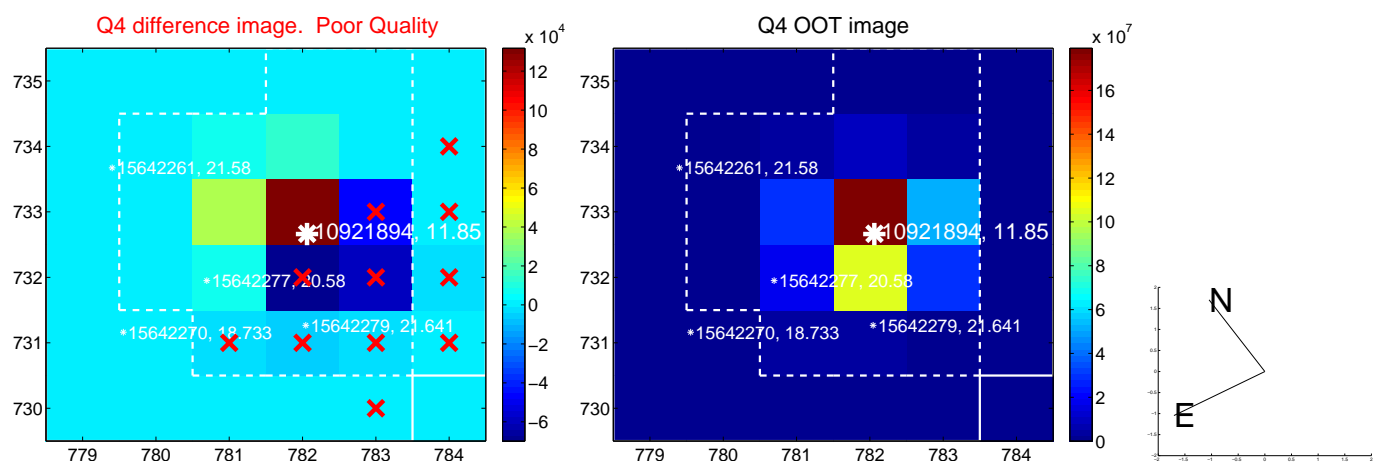
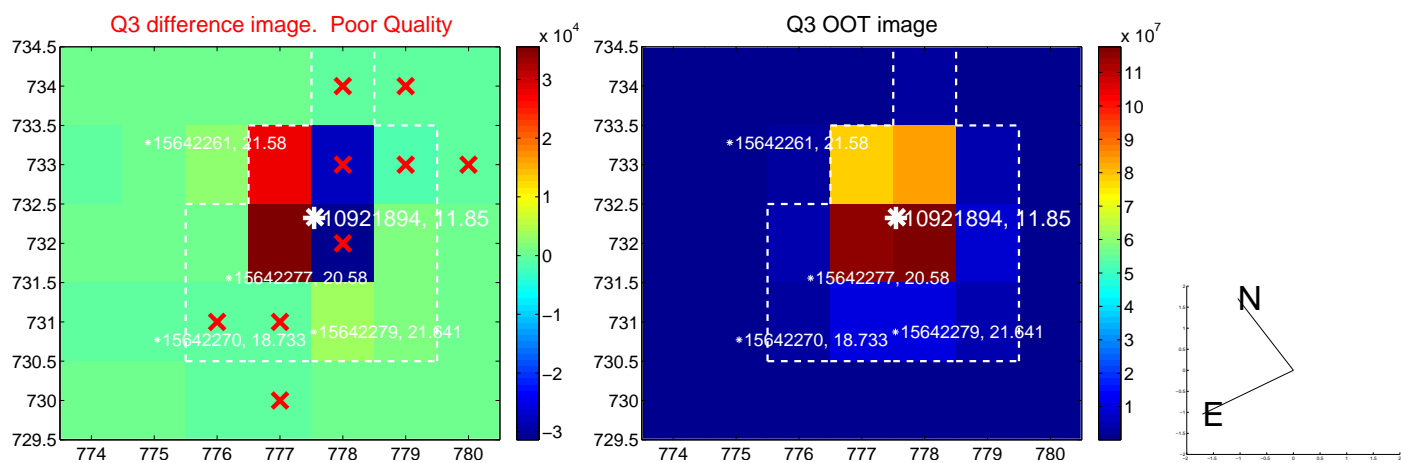
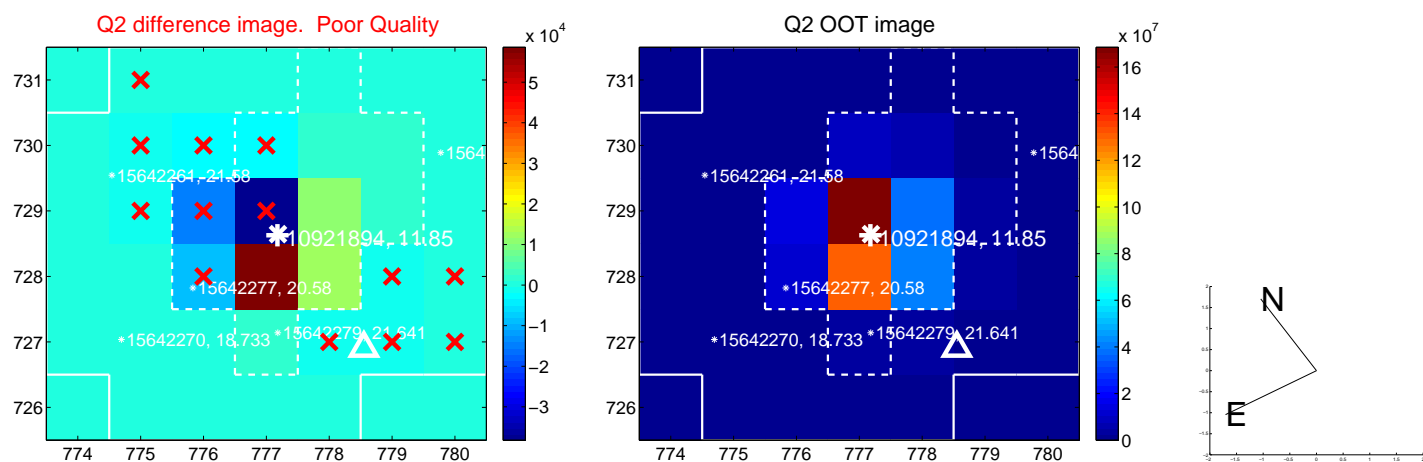
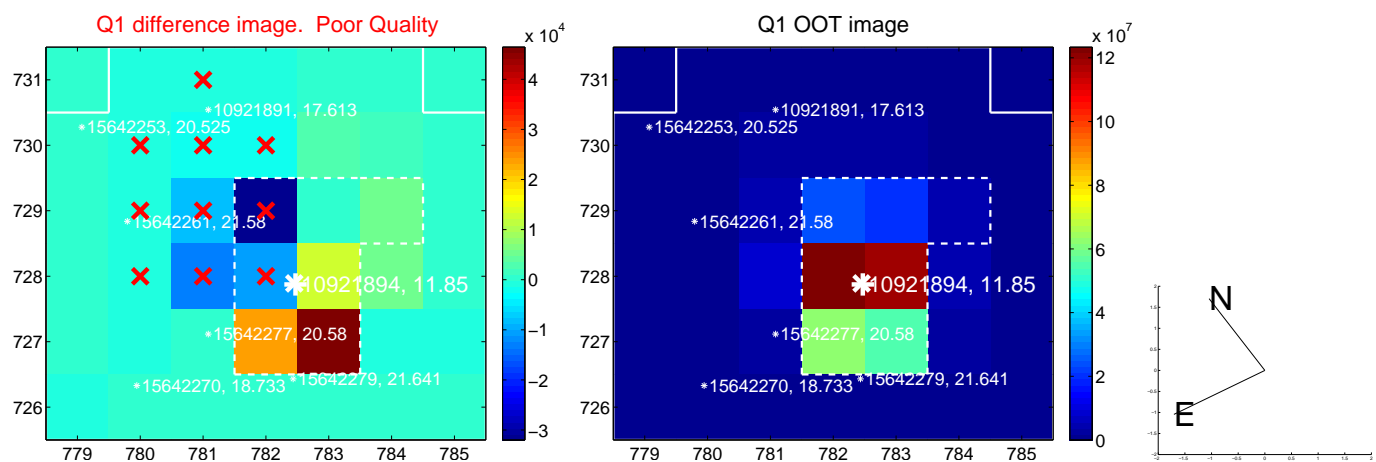
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 2.299 ± 1.546 | 1.49 | 1.439 ± 0.456 | 1.794 ± 1.657 |
| PRF-fit source offset from KIC position | 2.276 ± 1.571 | 1.45 | 1.492 ± 0.449 | 1.720 ± 1.720 |
| photometric centroid source offset | 0.11 ± 0.03 | 3.99 | 0.10 ± 0.03 | -0.06 ± 0.03 |

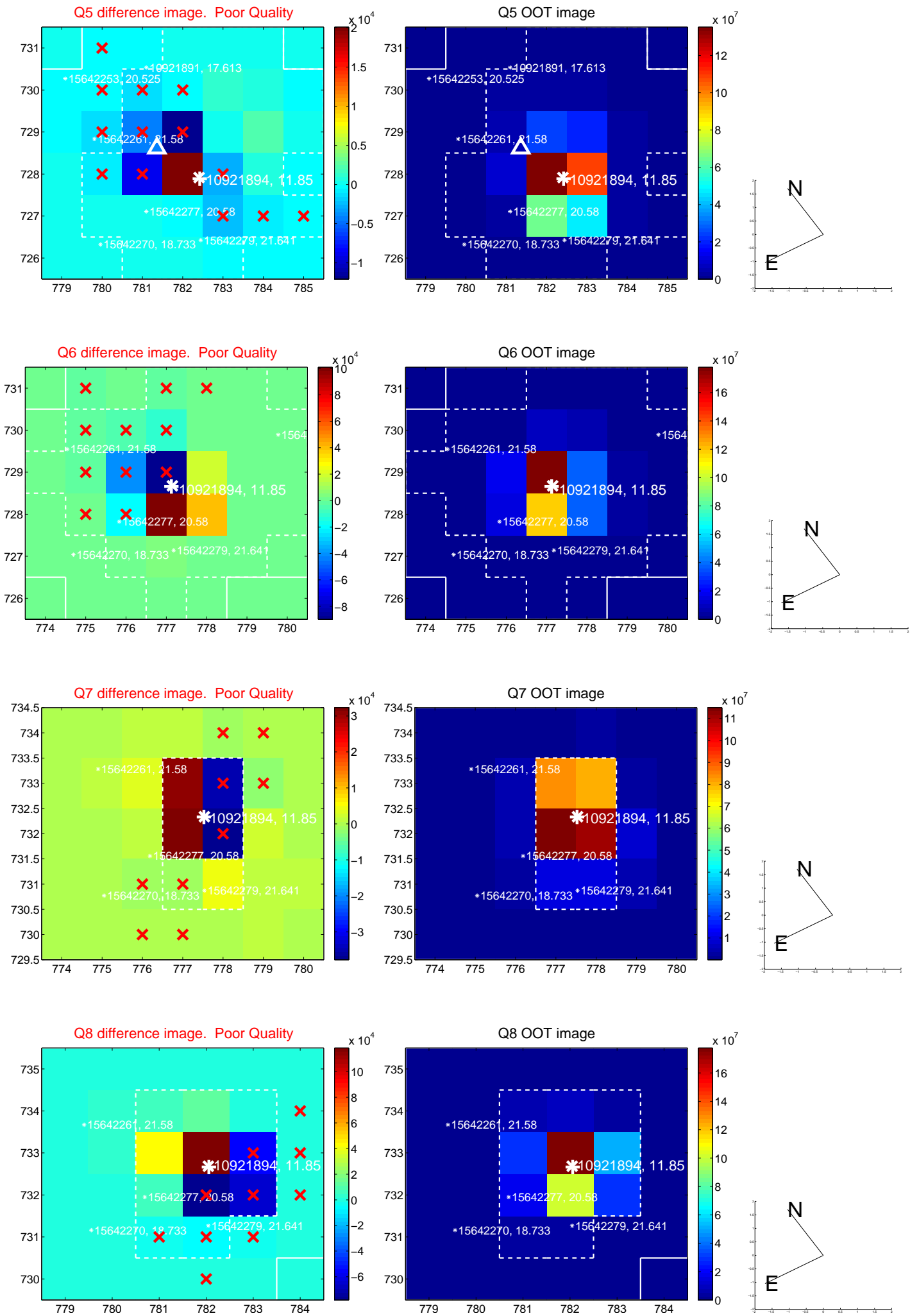


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

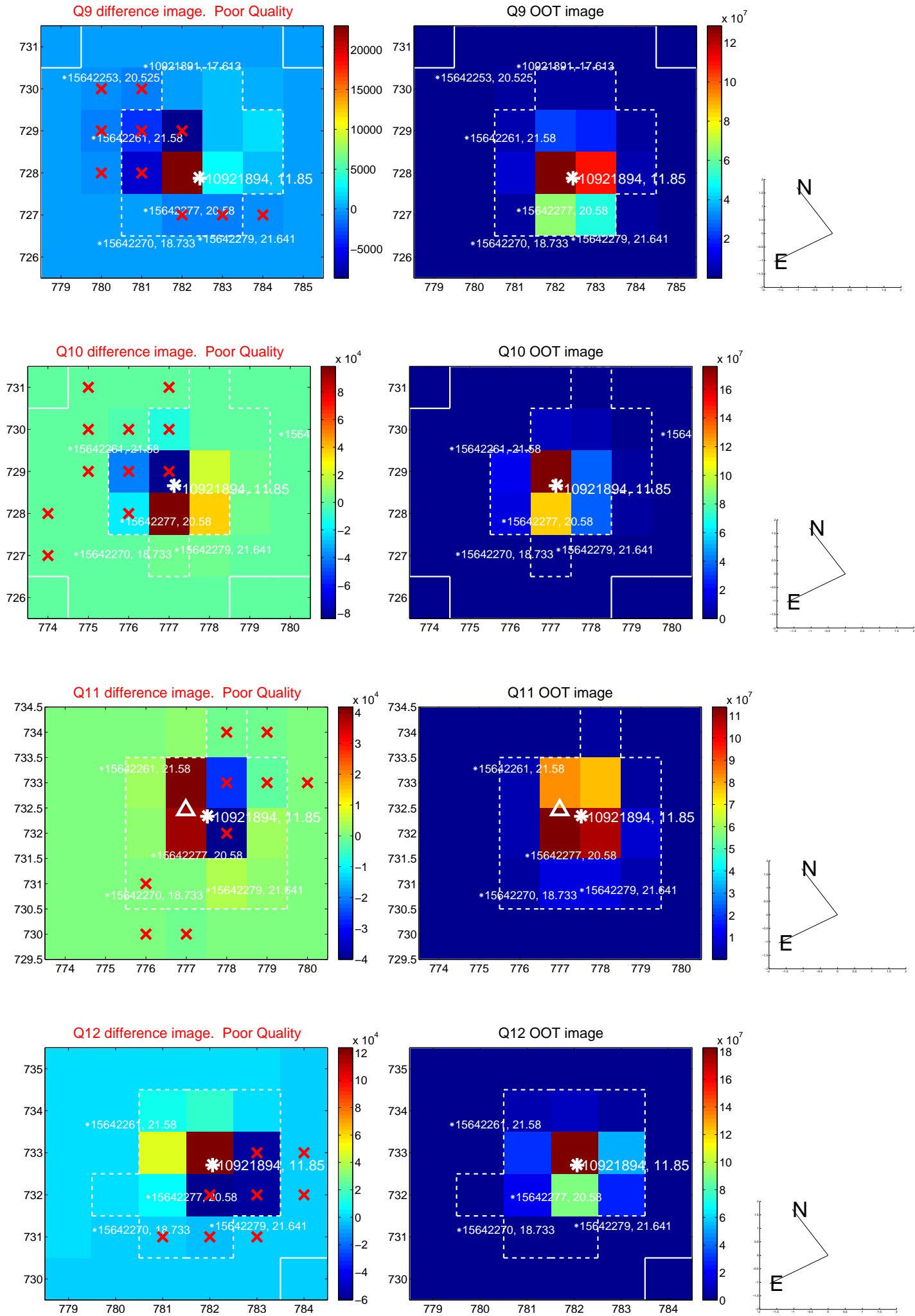
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



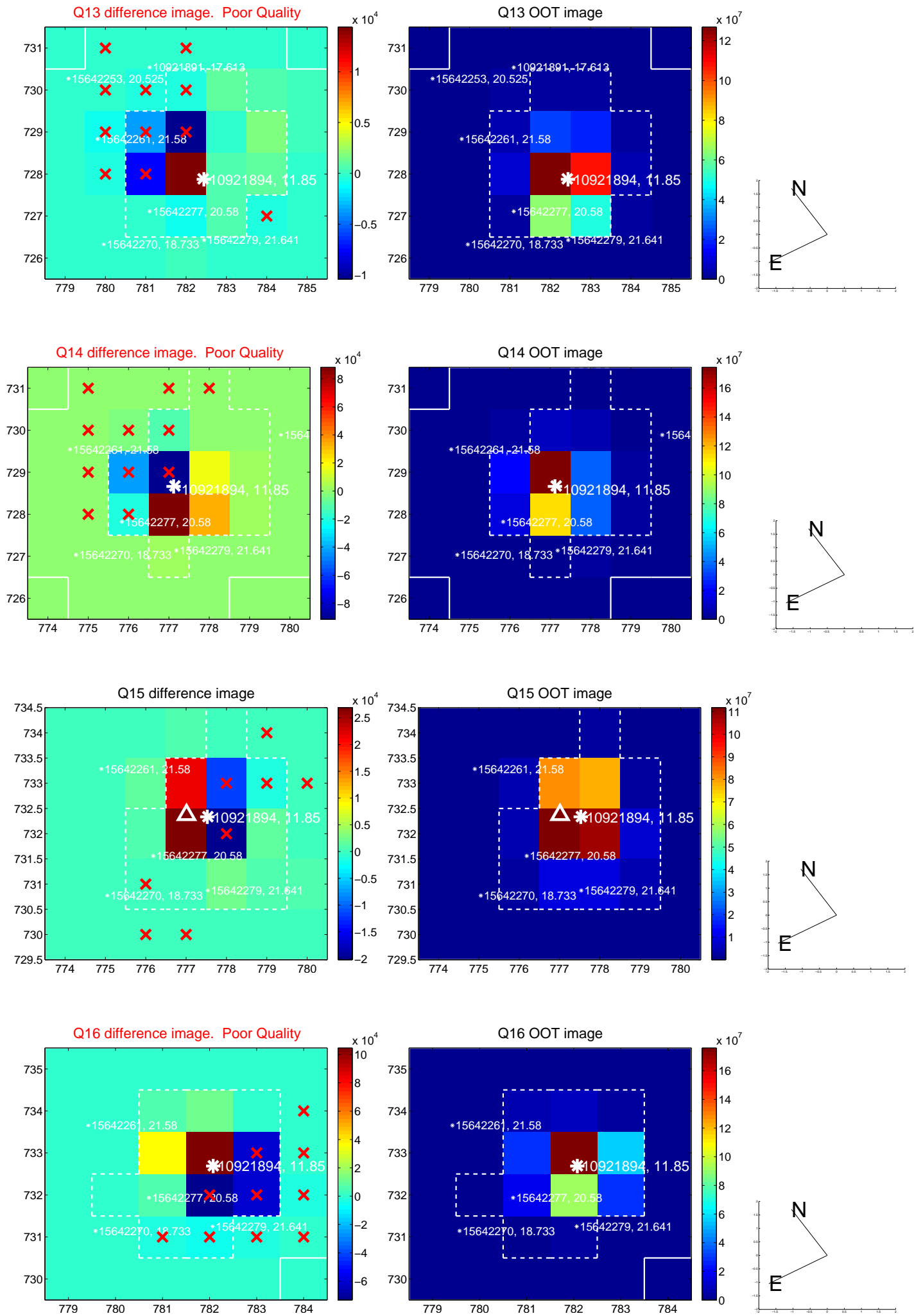
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

