

KIC 006590403

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006590403-01 | OBS | No | 0.514500 | 131.566994 | 376.4 | 1.260 | 12.6 | 14.5 | 2.25 | 7264 | 4.54 | 57612.24 |
| 006590403-02 | OBS | No | 0.514502 | 131.914073 | 94.9 | 1.441 | 10.6 | 3.5 | 2.25 | 7264 | 2.36 | 57611.92 |
| 006590403-03 | OBS | No | 0.907615 | 131.908536 | 695.5 | 2.578 | 11.2 | 11.8 | 2.25 | 7264 | 6.89 | 27028.79 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006590403-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED |
| 006590403-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED |
| 006590403-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

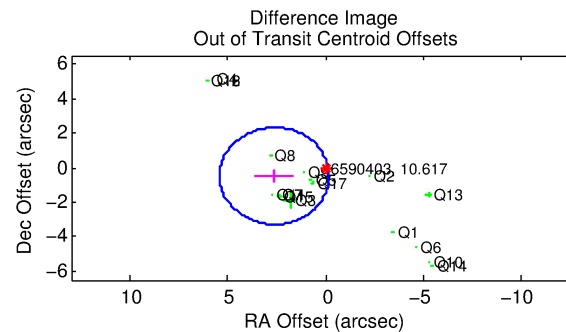
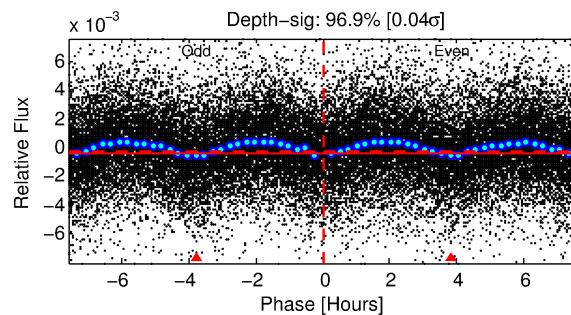
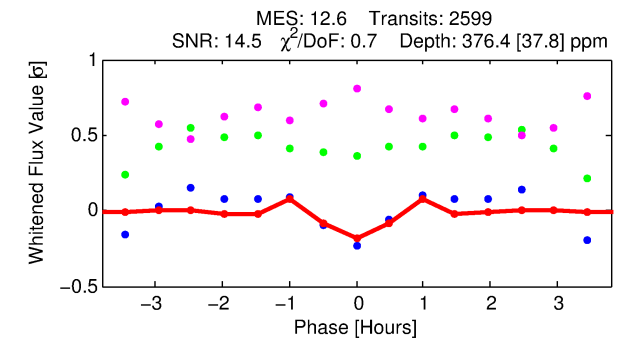
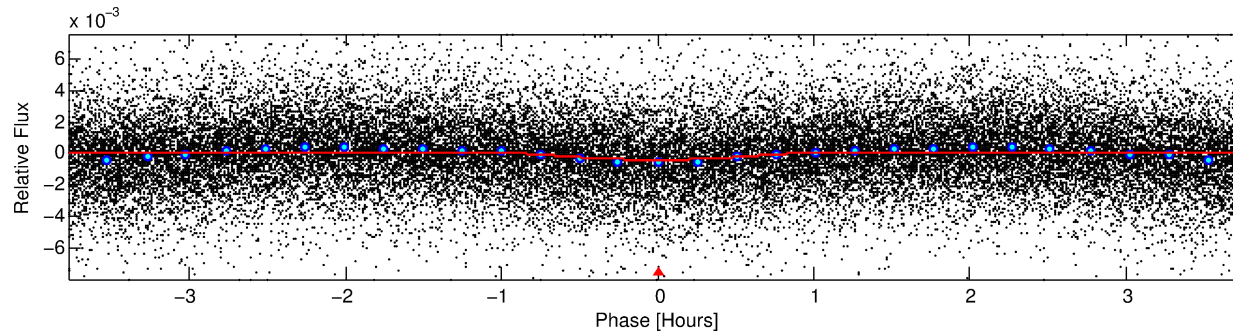
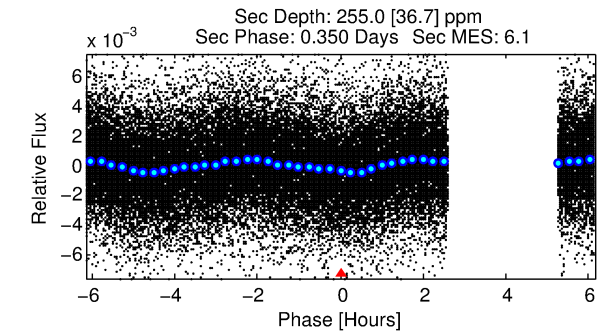
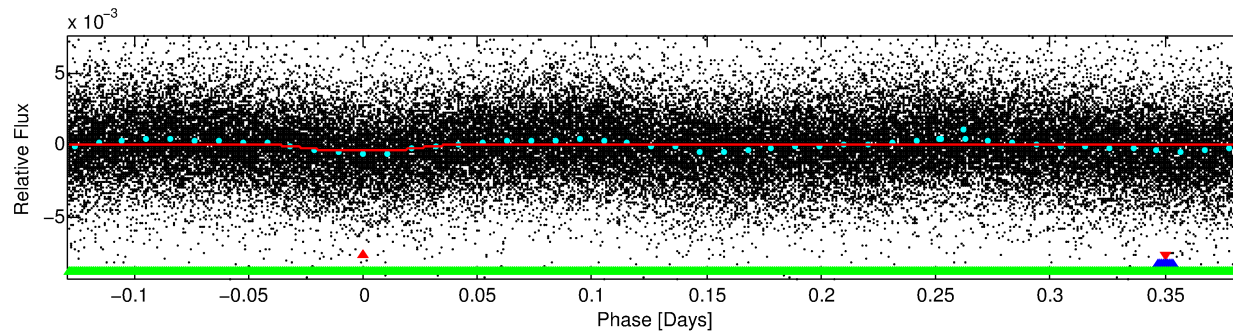
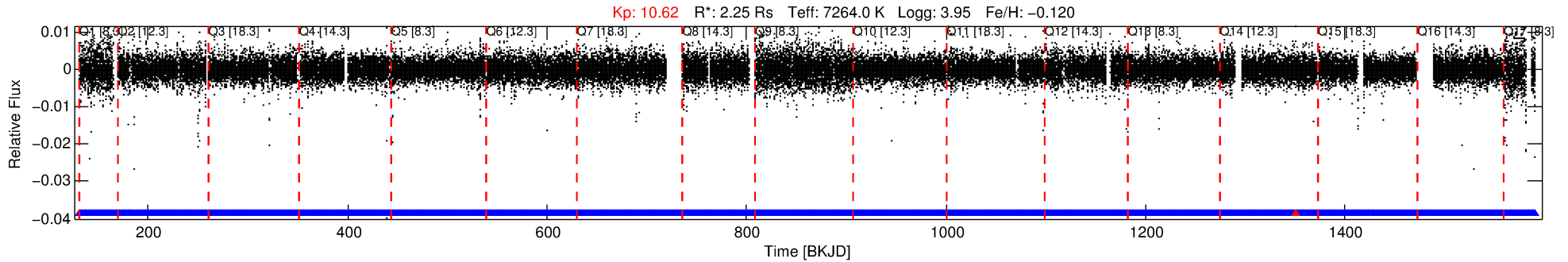
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006590403-01

No Significant Match Found

DV One-Page Summary

KIC: 6590403 Candidate: 1 of 3 Period: 0.515 d



DV Fit Results:

Period = 0.51450 [0.00001] d
Epoch = 131.5670 [0.0007] BKJD
Rp/R* = 0.0184 [0.0038]
a/R* = 2.92 [2.94]
b = 0.46 [1.97]
Seff = 57612.24 [27143.79]
Teff = 3951 [465] K
Rp = 4.54 [1.71] Re
a = 0.0148 [0.0043] AU
Ag = 1.50 [0.93] [0.54σ]
Teffp = 6762 [784] K [3.08σ]

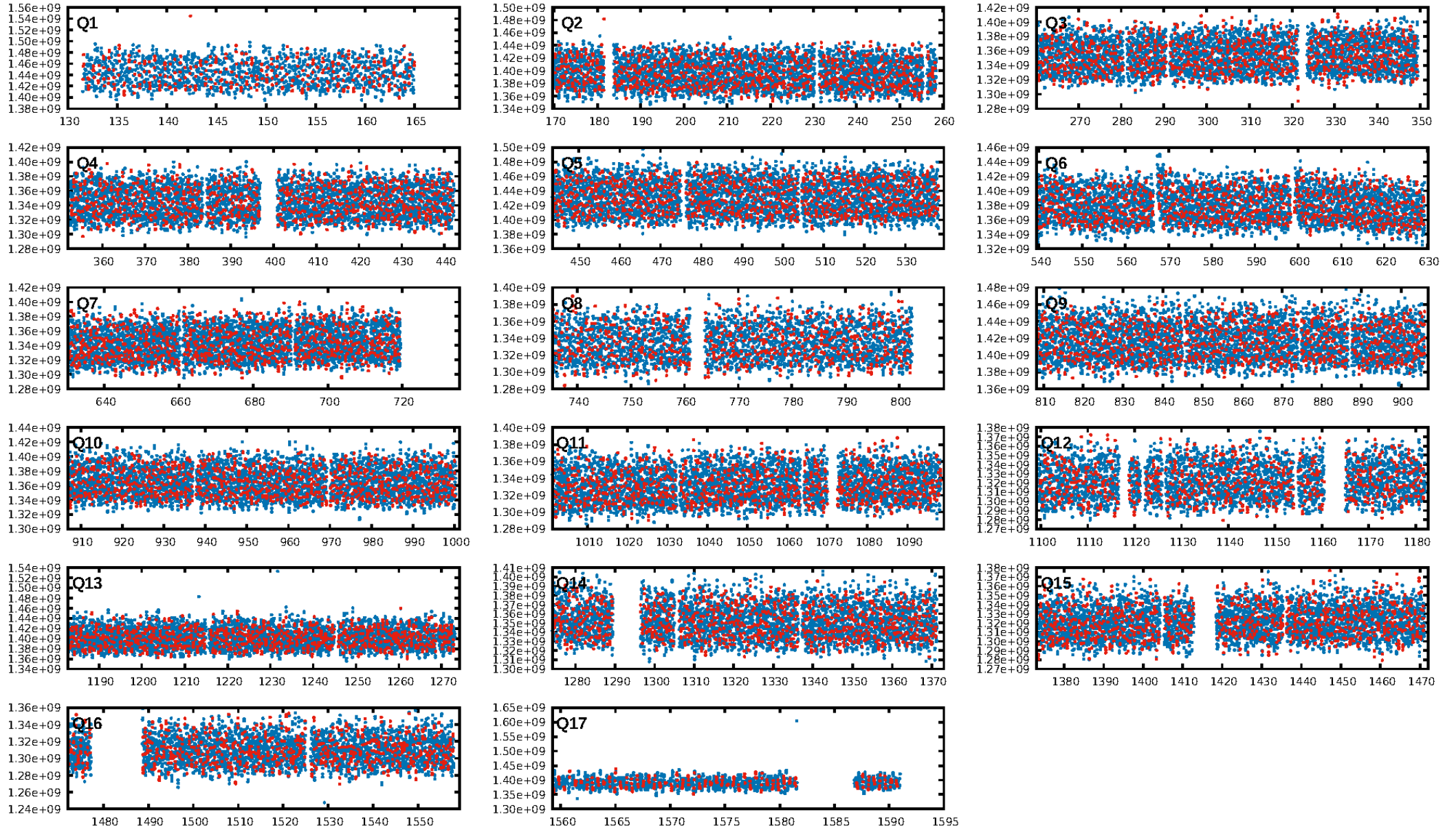
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.56e-16
RollingBand-fgt: 1.00 [2480/2481]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.286 arcsec [2.21σ]
OotOffset-rm: 2.665 arcsec [2.85σ]
KicOffset-rm: 2.761 arcsec [4.42σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

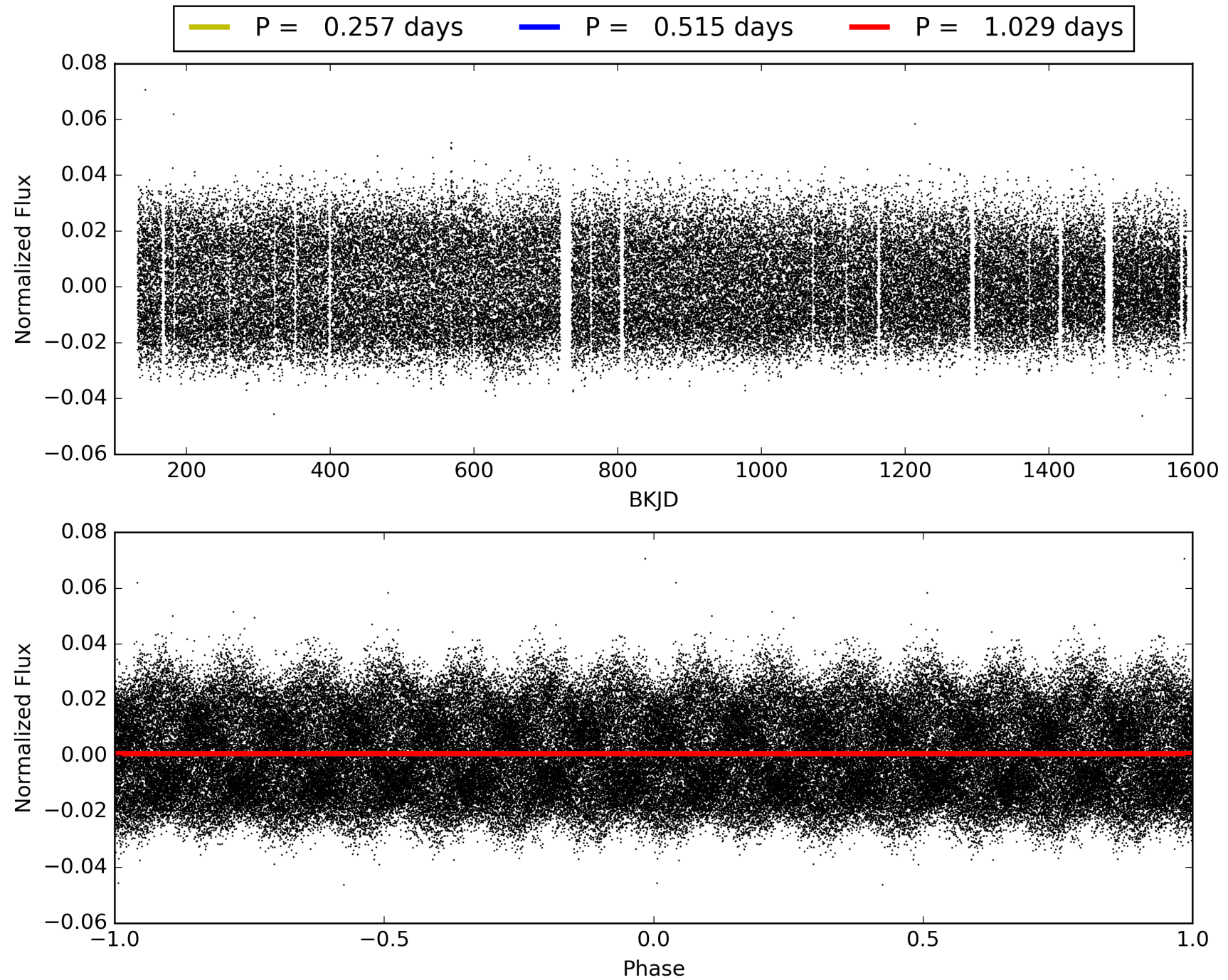
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:02:10 Z

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

TCE 006590403-01, PDC Light Curves

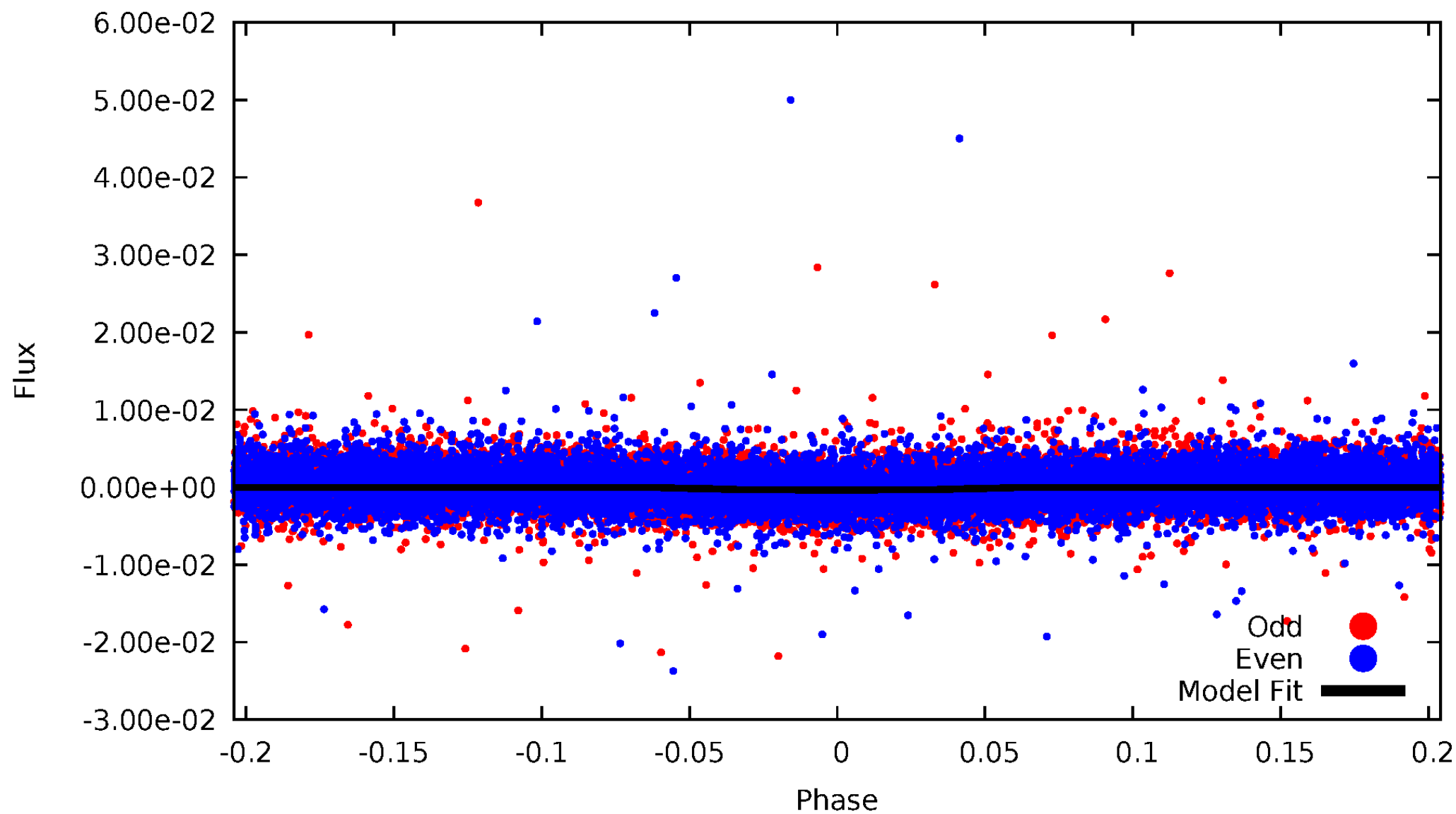


TCE 006590403-01



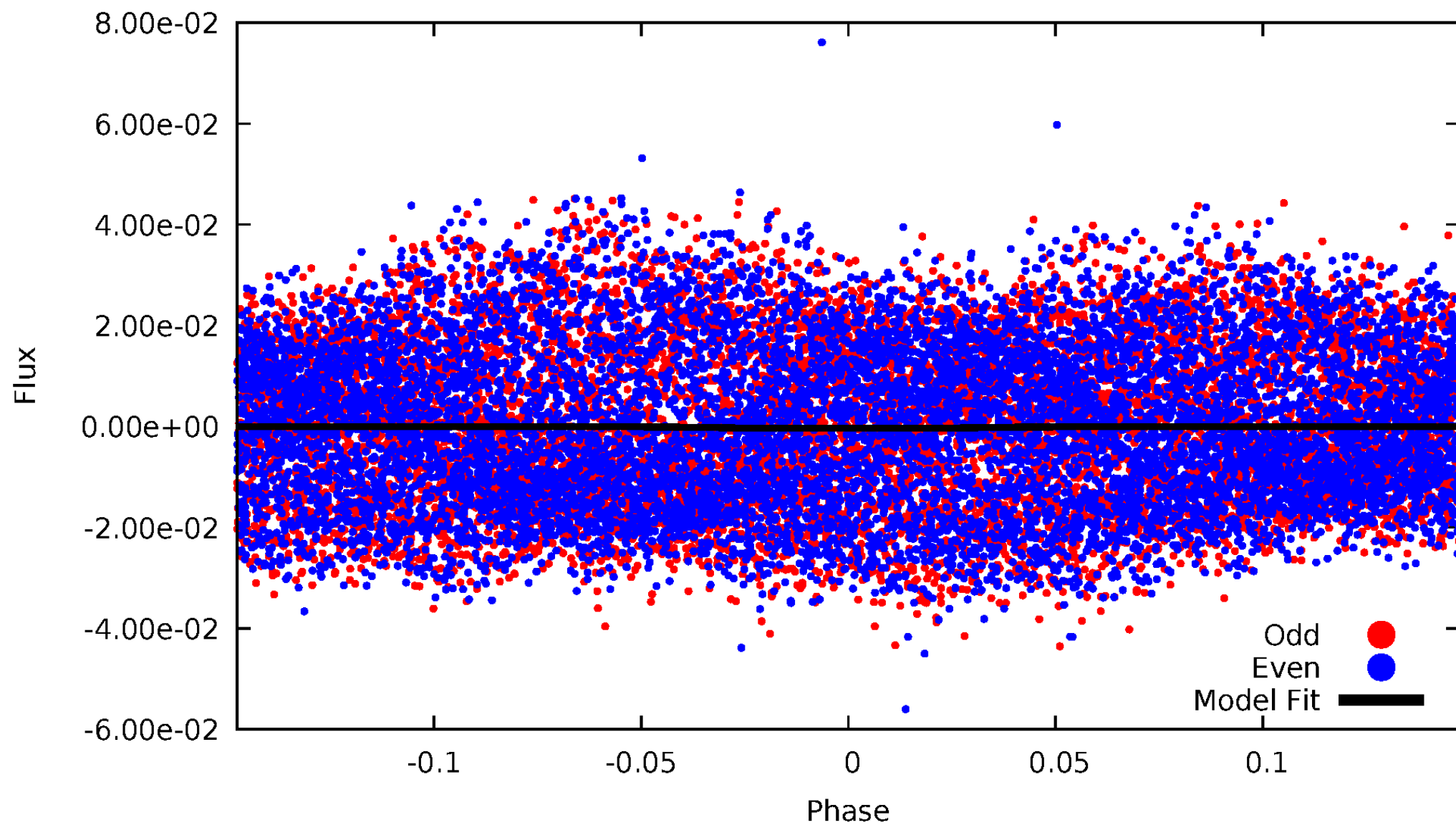
DV Odd/Even

TCE 006590403-01

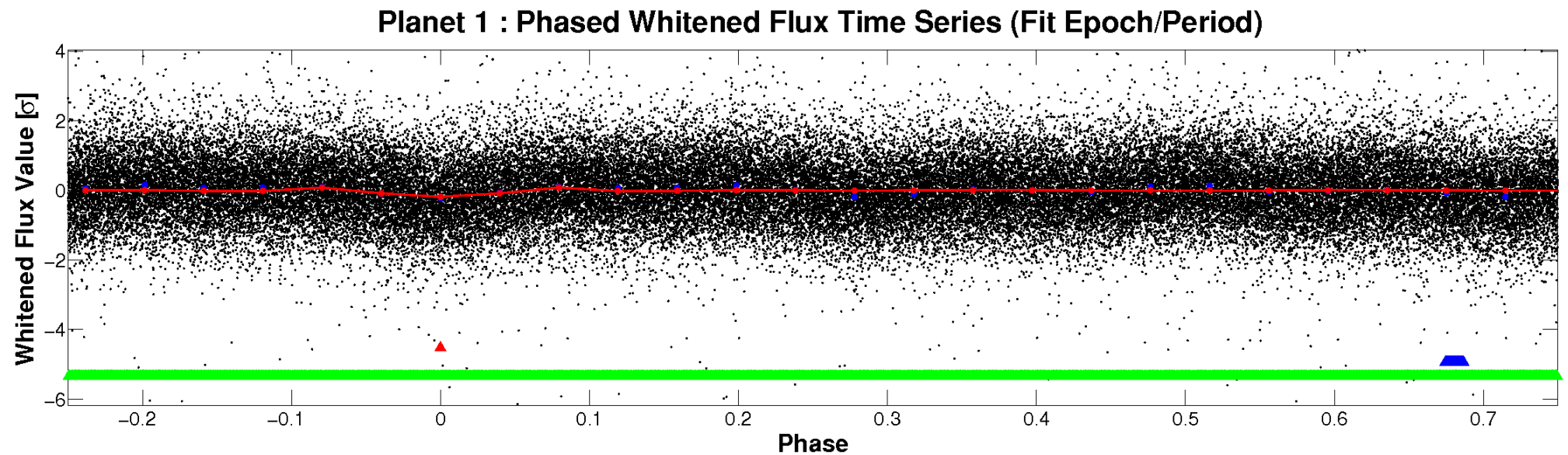
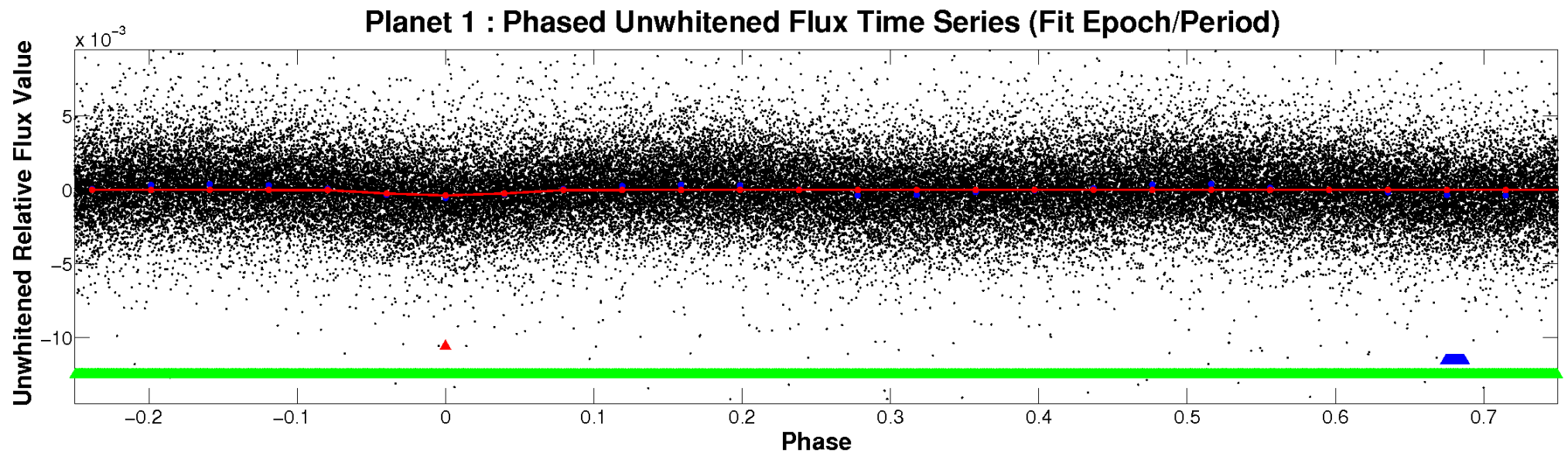


ALT Odd/Even

TCE 006590403-01

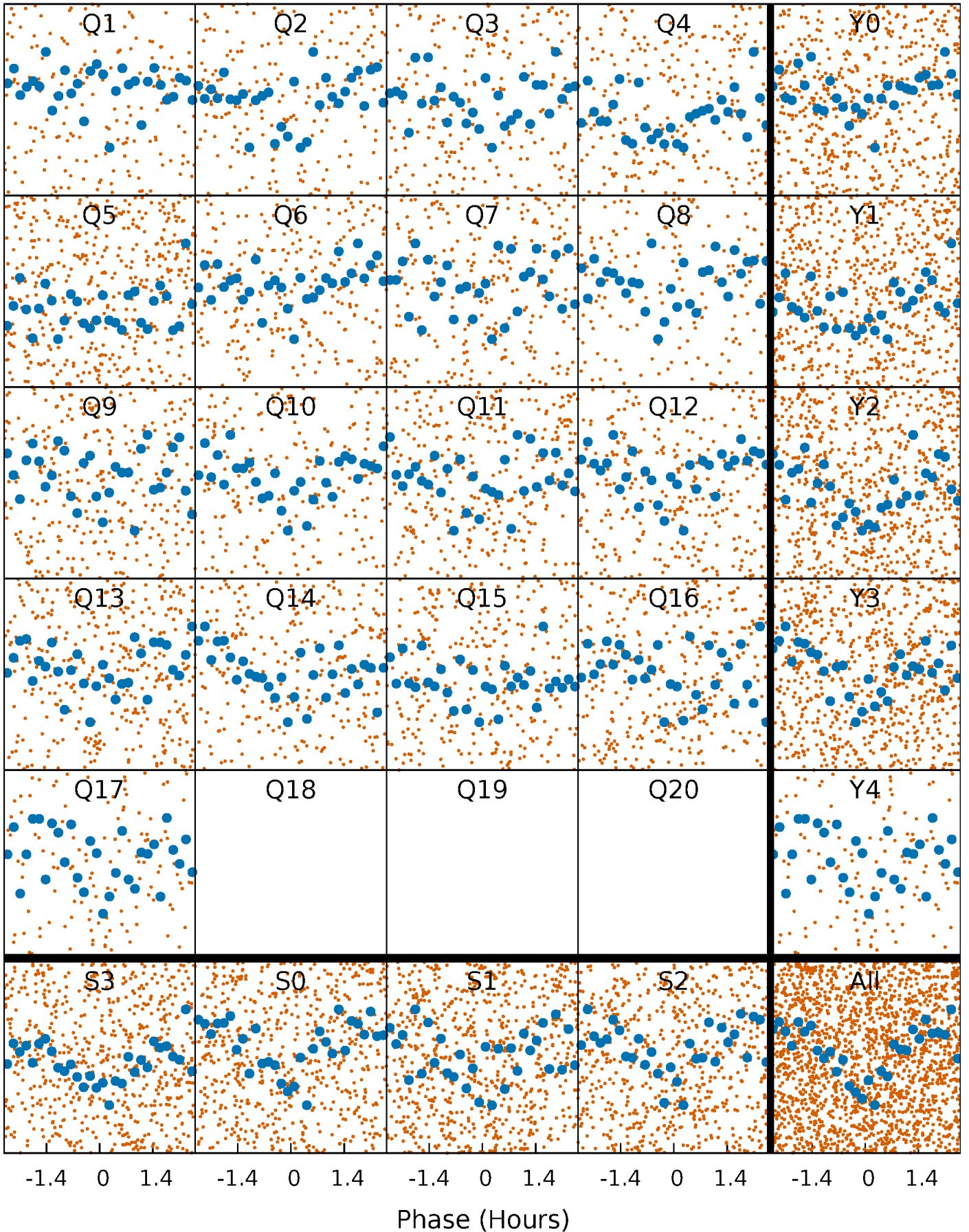


Non-Whitened Vs. Whitened Light Curve



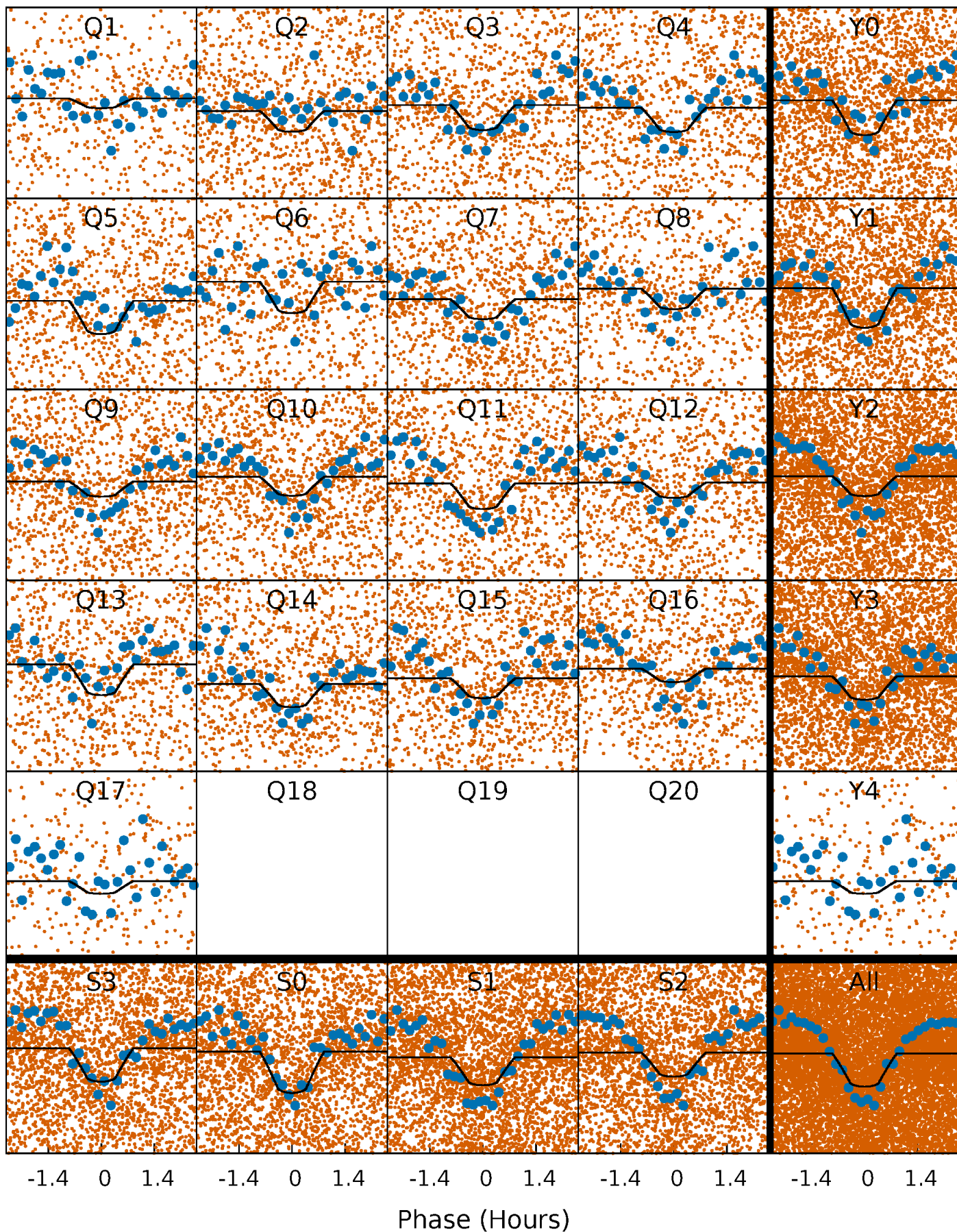
PDC Quarter-Phased Transit Curves

TCE 006590403-01 P= 0.514500 Days $T_0=131.566994$ (BKJD)



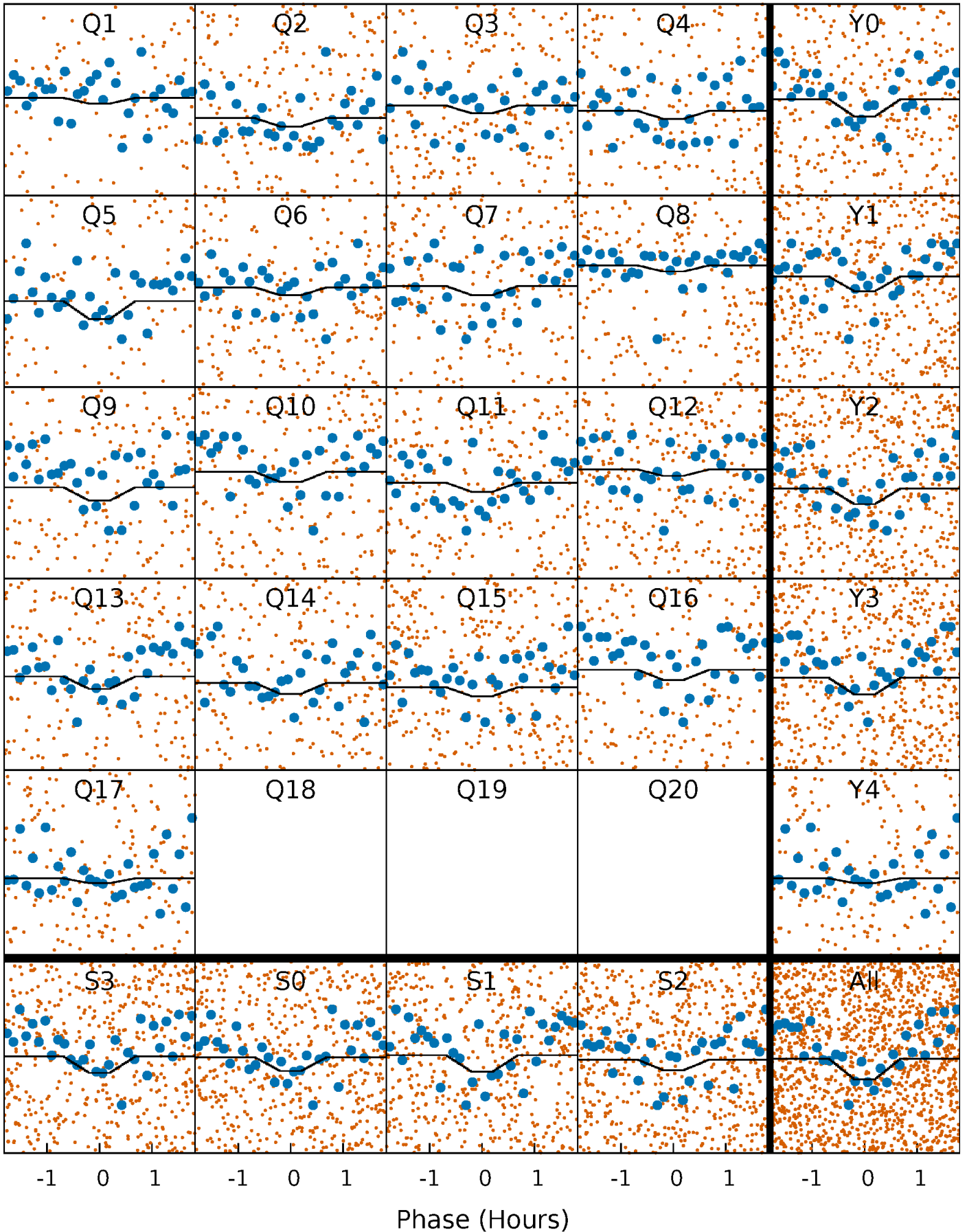
DV Quarter-Phased Transit Curves

TCE 006590403-01 P= 0.514500 Days $T_0=131.566994$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

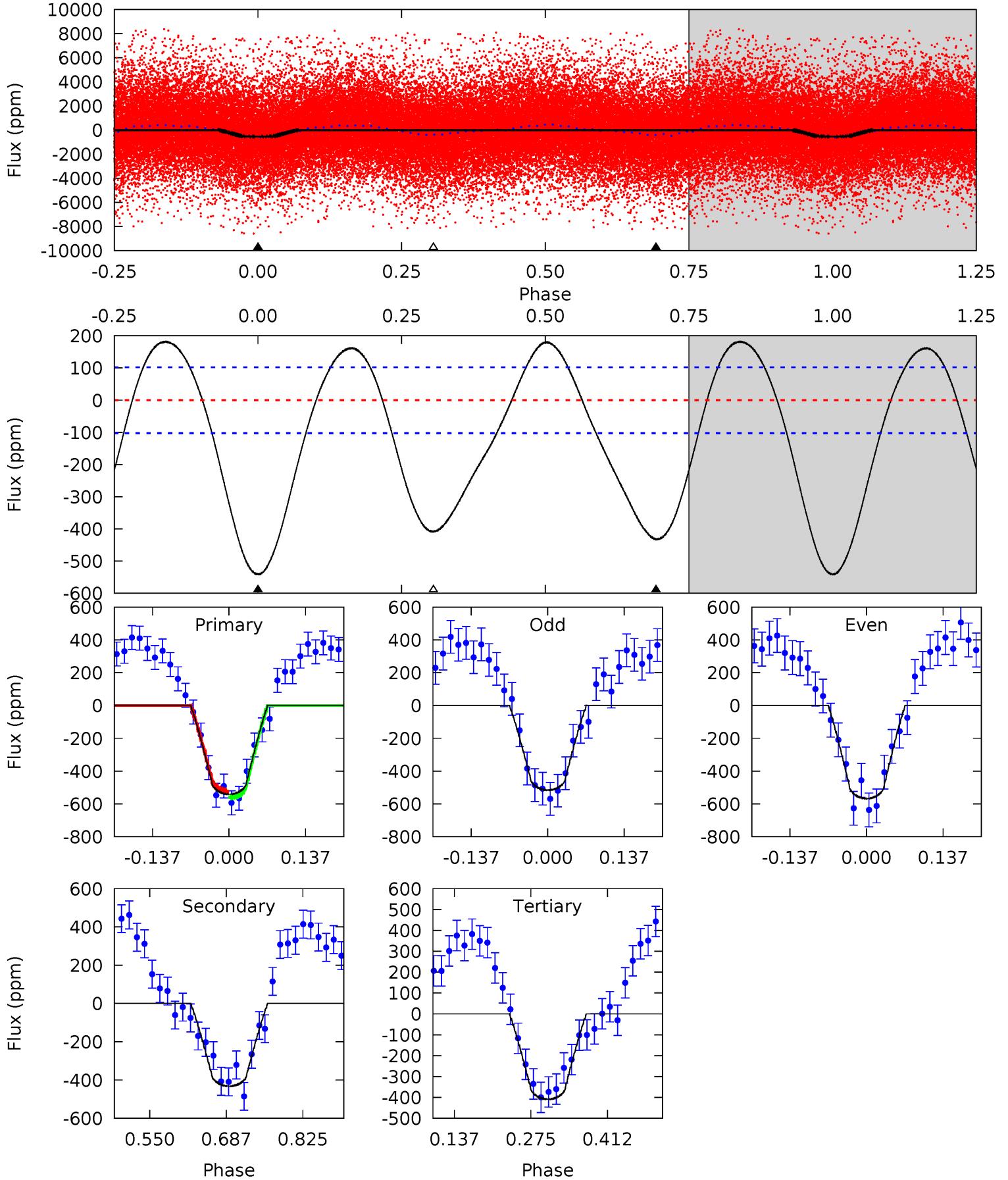
TCE 006590403-01 P= 0.514502 Days $T_0=131.562144$ (BKJD)



DV Model-Shift Uniqueness Test

006590403-01, P = 0.514500 Days, E = 131.052494 Days

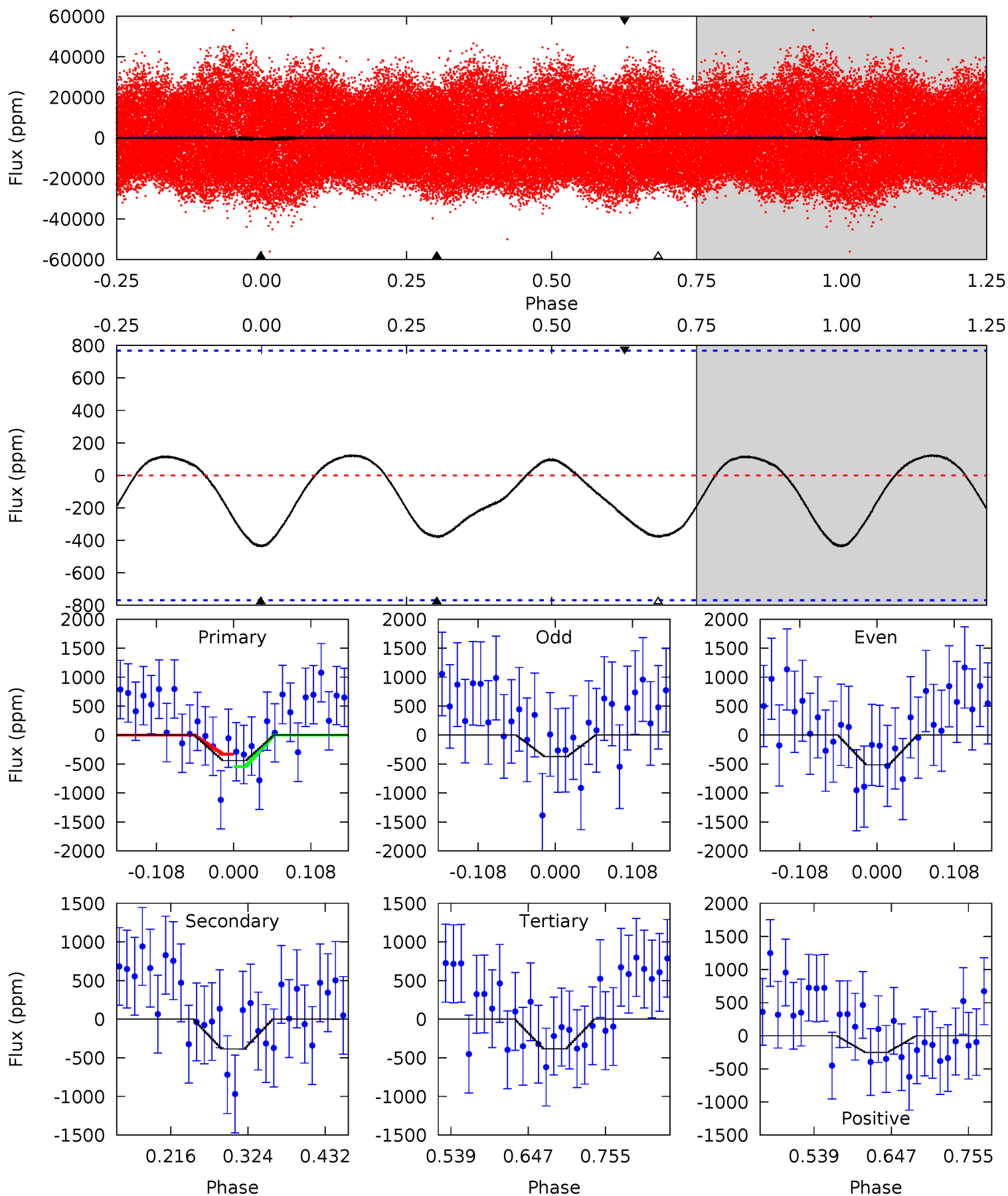
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.8 | 19.0 | 18.0 | 0 | 4.50 | 1.49 | 9.13 | 5.84 | 23.8 | 1.04 | 19.0 | 1.13 | 0.94 | 0.25 | 0.81 |



Alt Model-Shift Uniqueness Test

006590403-01, P = 0.514502 Days, E = 131.047642 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 2.61 | 2.28 | 2.27 | -1.48 | 4.55 | 1.61 | 0.99 | 0.34 | 4.09 | 0.01 | 3.76 | 0.42 | -0.58 | 0.23 | 0.63 |



Stellar Parameters For KIC 006590403

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7264^{+226}_{-302} | $3.948^{+0.252}_{-0.147}$ | $-0.120^{+0.250}_{-0.350}$ | $2.255^{+0.585}_{-0.715}$ | $1.644^{+0.186}_{-0.345}$ | $0.202^{+0.360}_{-0.086}$ |
| | +3%/-4% | +6%/-4% | +208%/-292% | +26%/-32% | +11%/-21% | +178%/-43% |
| 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 006590403-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|---------------------------|
| DV | -432 ± 23 | $4.41^{+1.23}_{-1.13}$ | 5483^{+388}_{-495} | 7493^{+1332}_{-903} | $2.711^{+2.012}_{-1.066}$ |
| Alt. | -386 ± 169 | $4.64^{+1.28}_{-1.12}$ | 5453^{+446}_{-488} | 6838^{+1425}_{-1366} | $1.969^{+2.127}_{-0.980}$ |

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

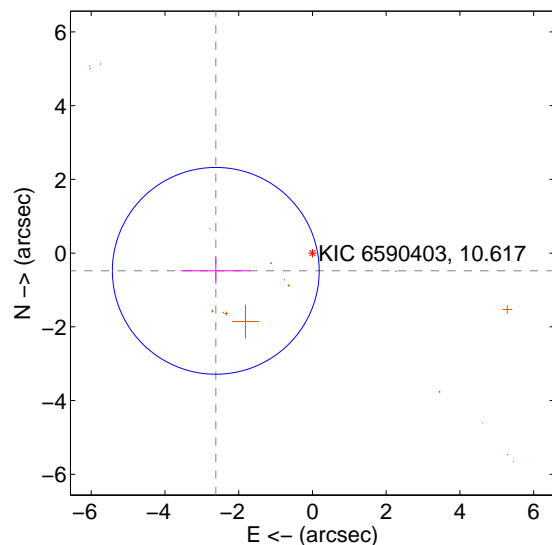
Supplemental centroid analysis for 006590403-01. **Kepler magnitude: 10.62.** Transit SNR 14.53

There are 0 quarters with good PRF difference image offsets

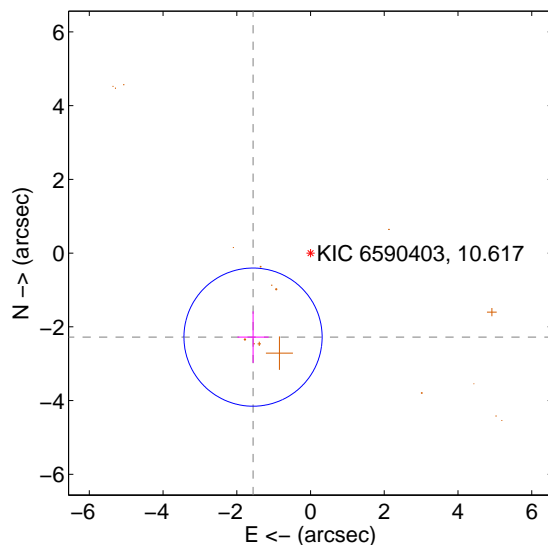
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 2.665 ± 0.935 | 2.85 | 2.621 ± 0.948 | -0.481 ± 0.354 |
| PRF-fit source offset from KIC position | 2.761 ± 0.625 | 4.42 | 1.559 ± 0.424 | -2.279 ± 0.699 |
| photometric centroid source offset | 0.29 ± 0.13 | 2.21 | -0.28 ± 0.13 | -0.03 ± 0.09 |

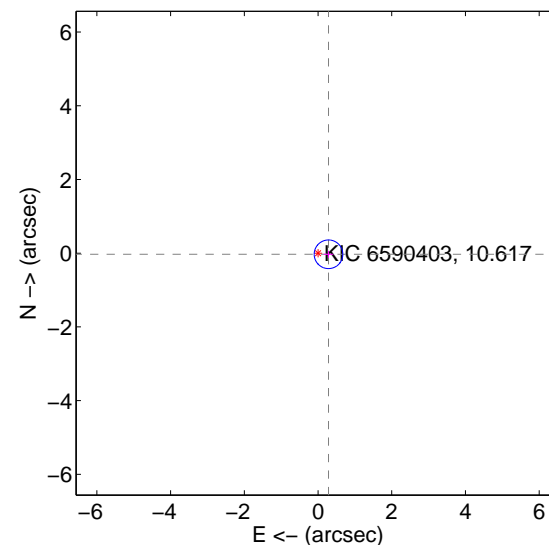
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

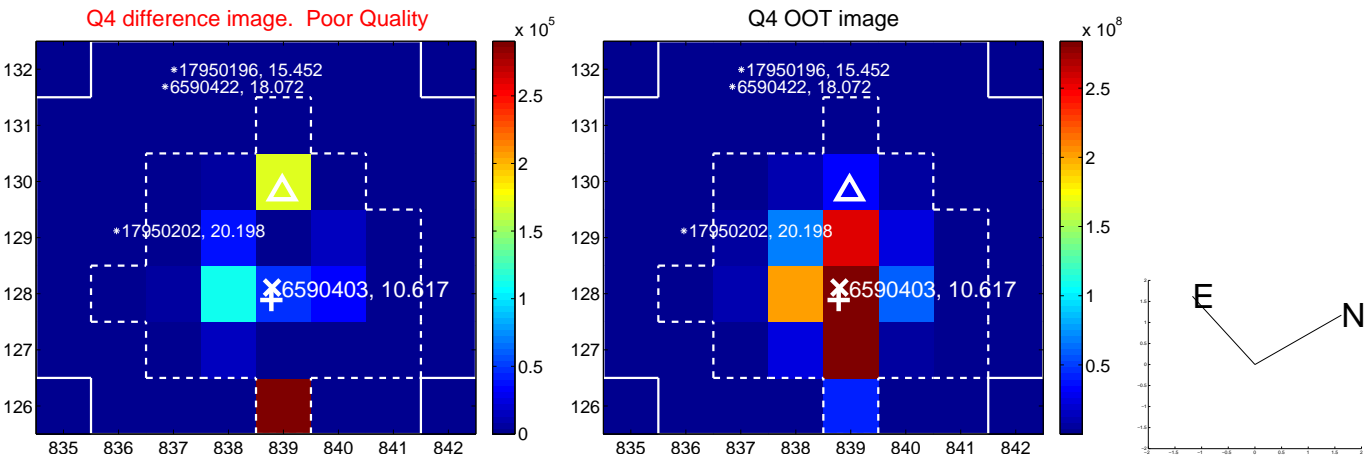
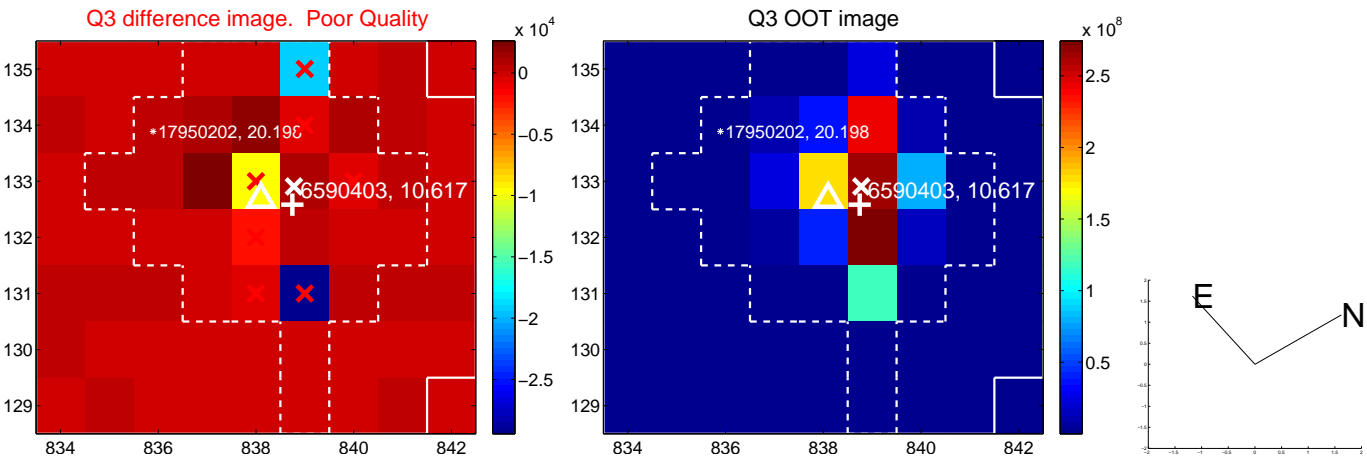
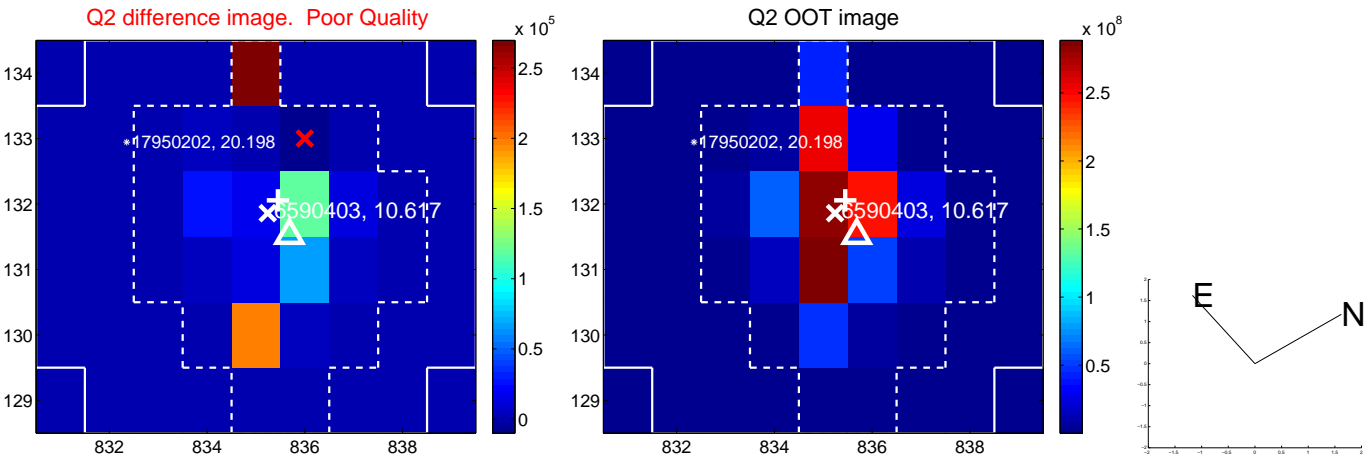
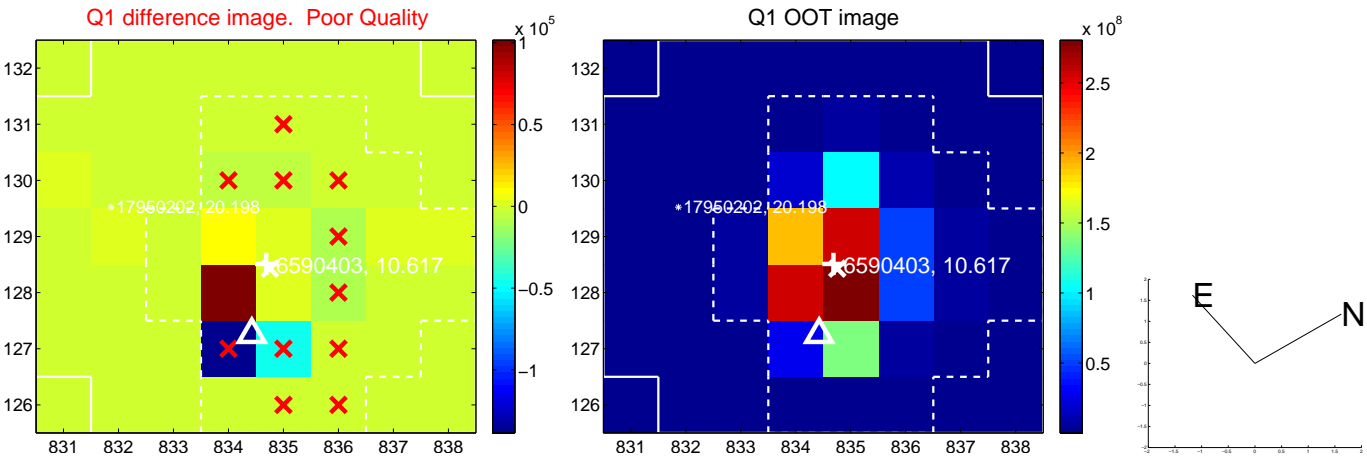


offset from photometric centroids

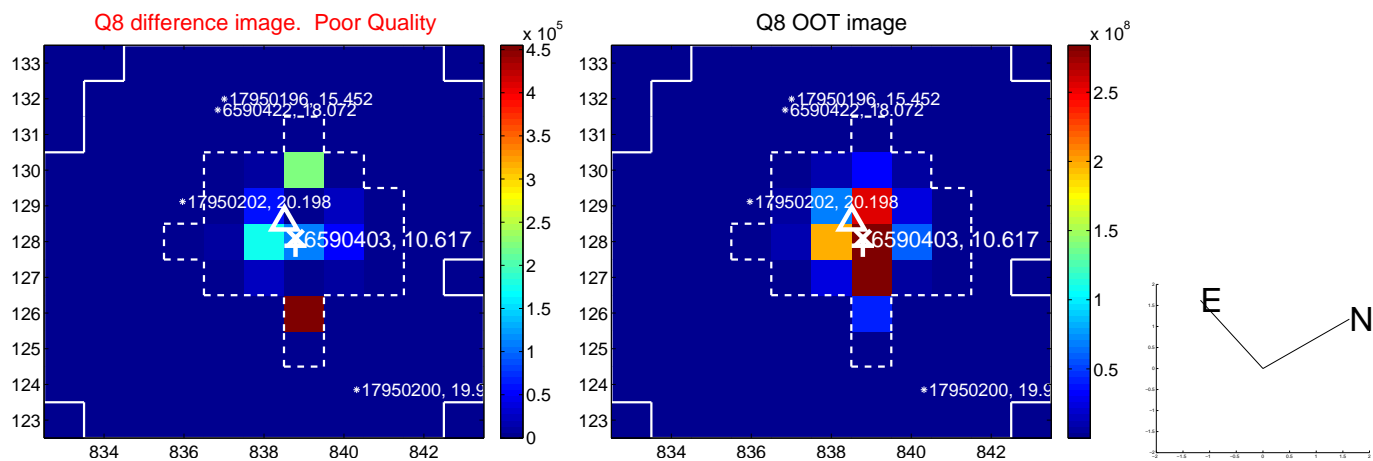
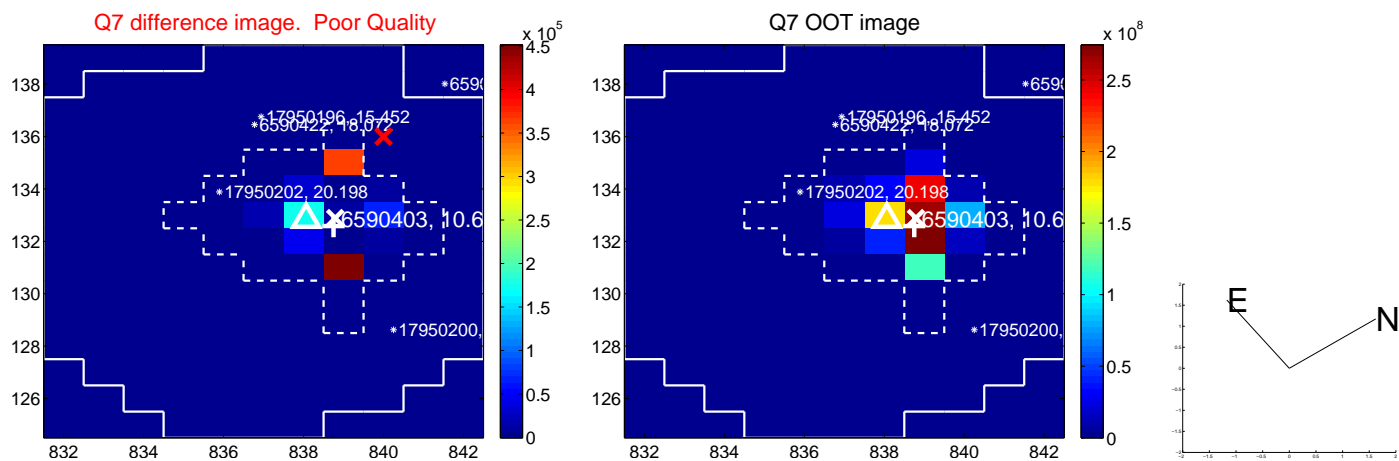
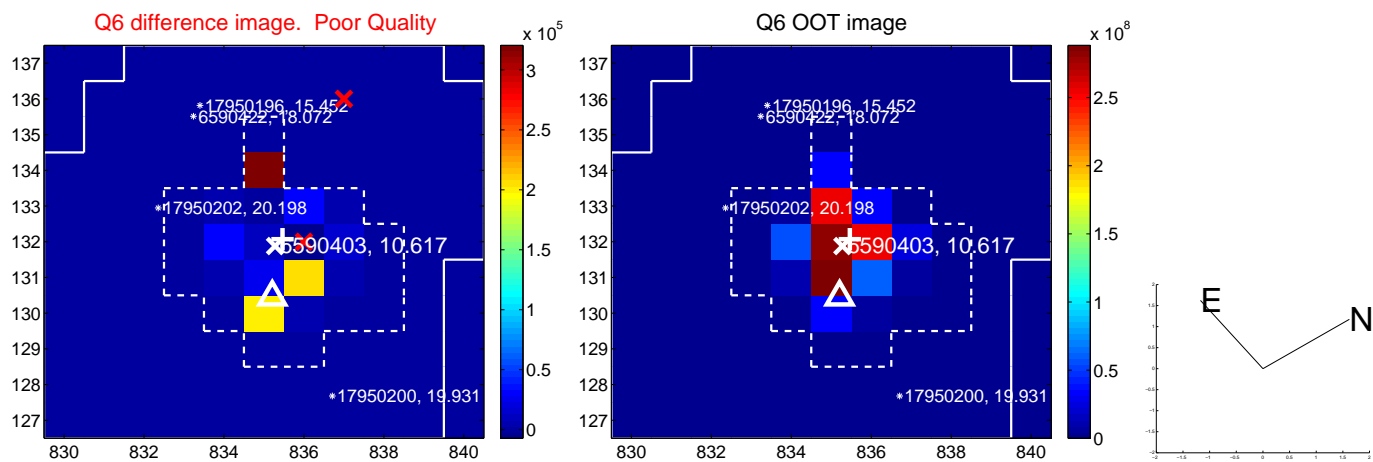
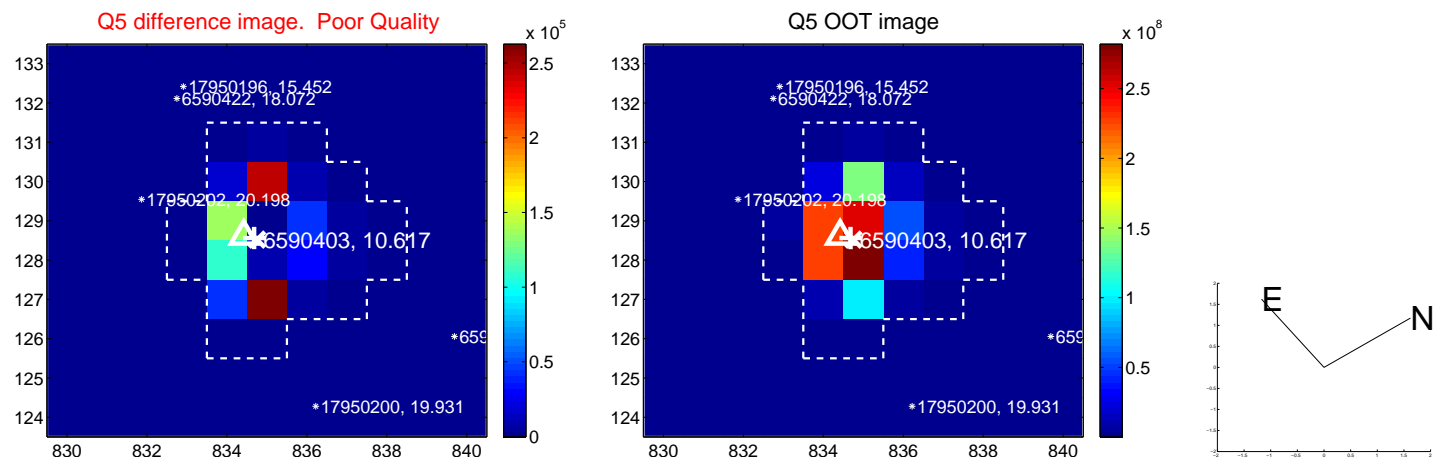


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

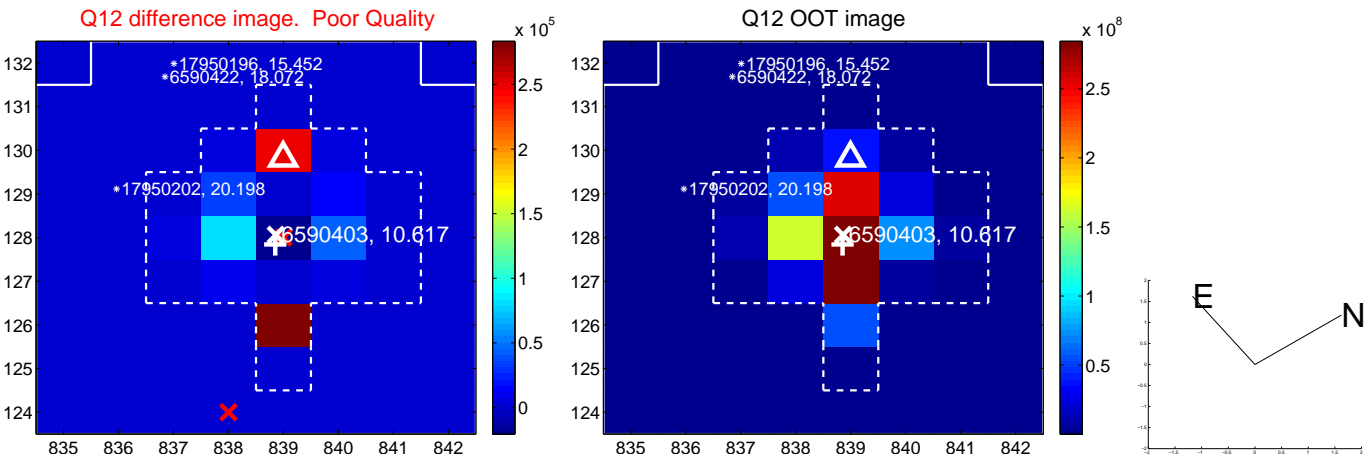
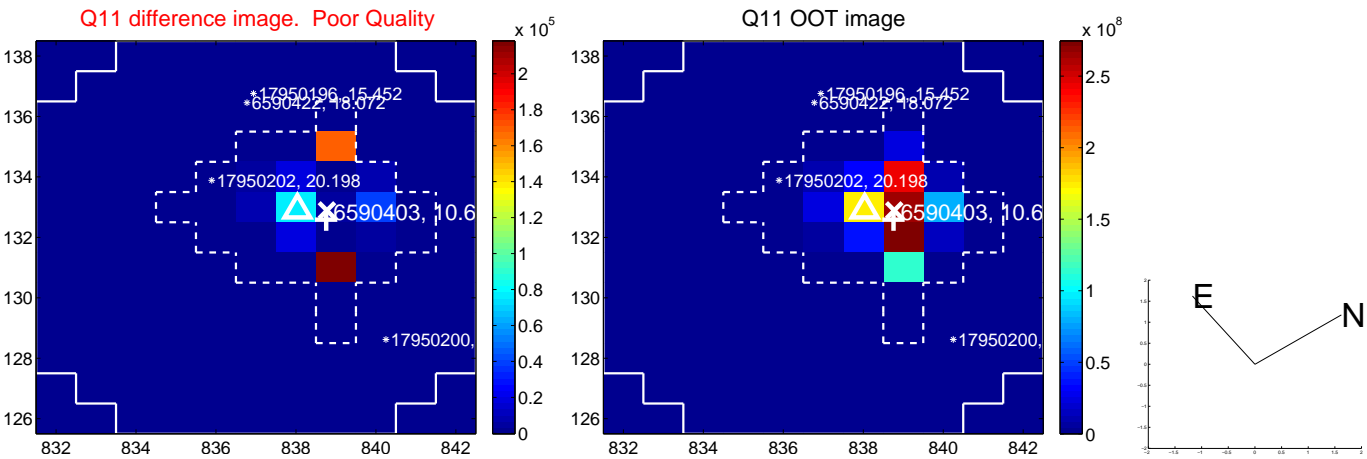
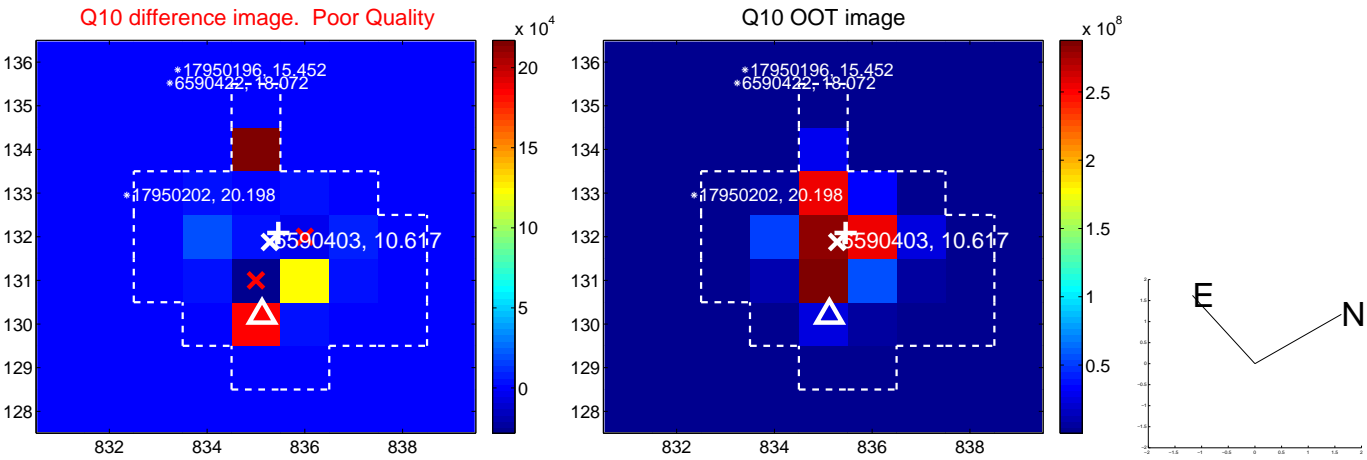
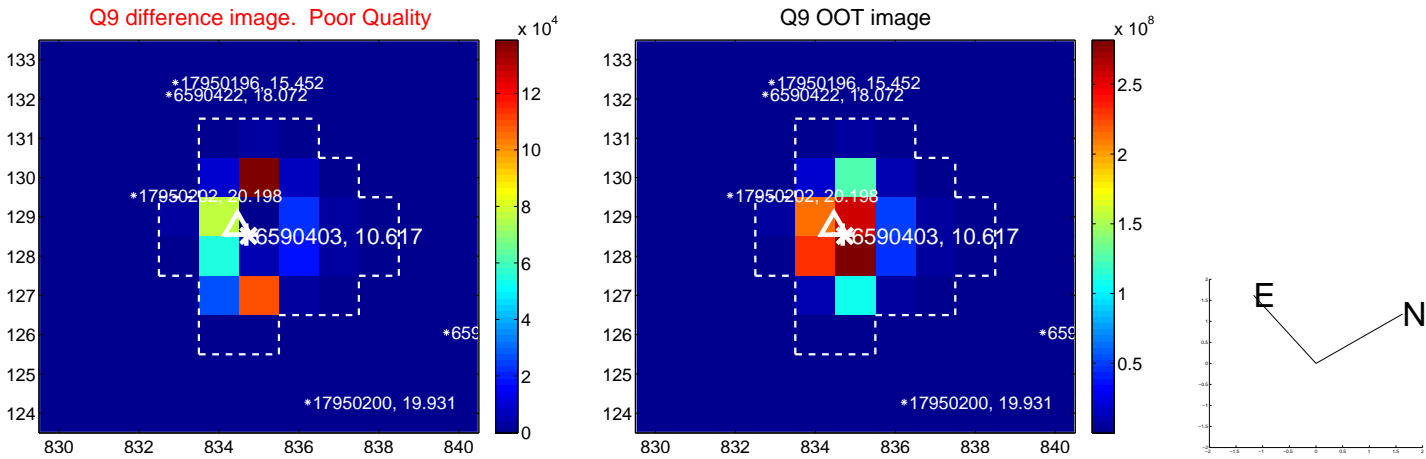
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



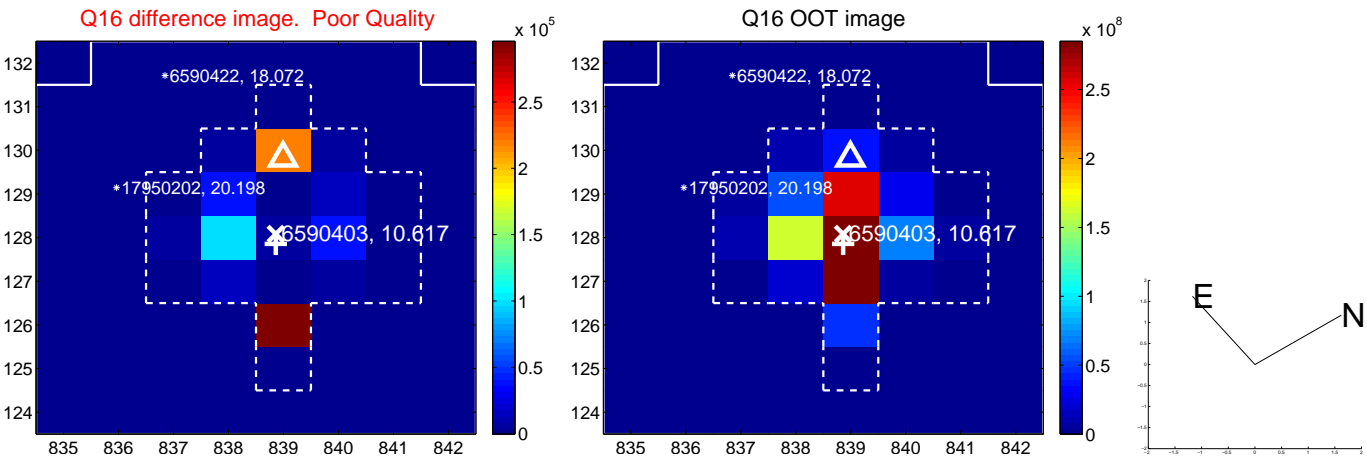
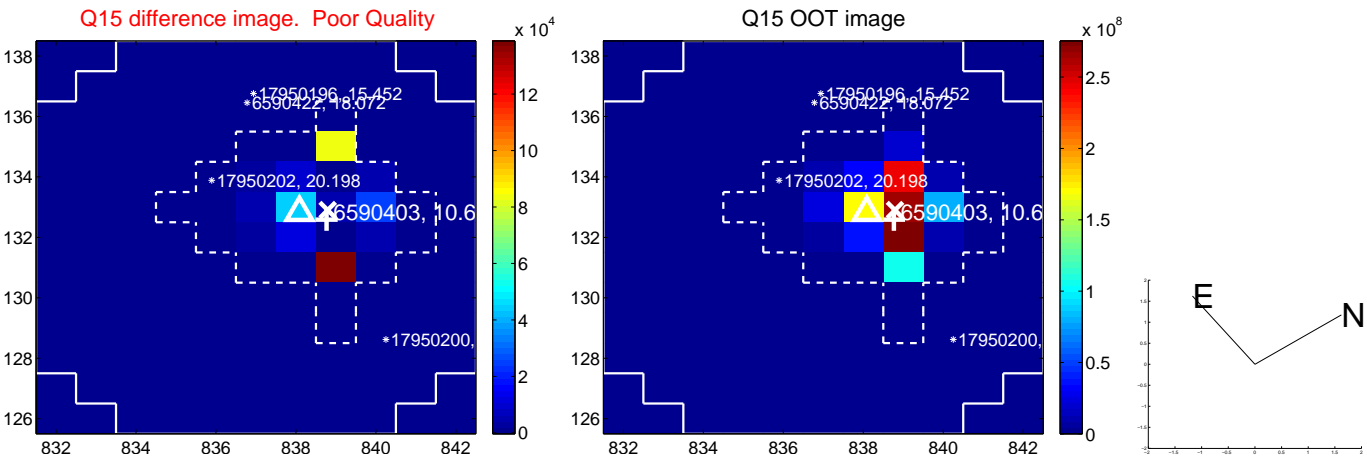
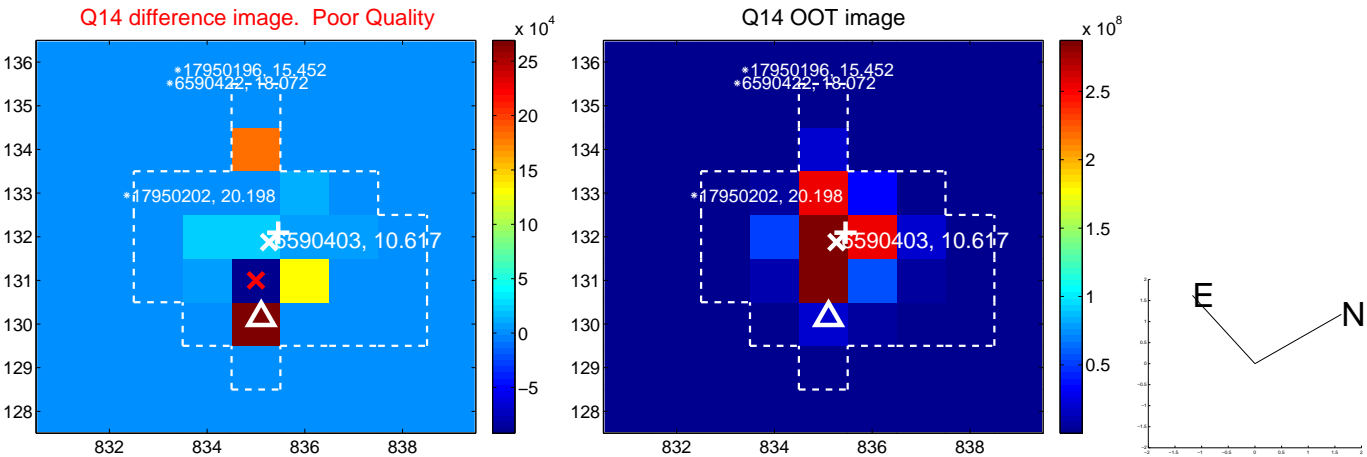
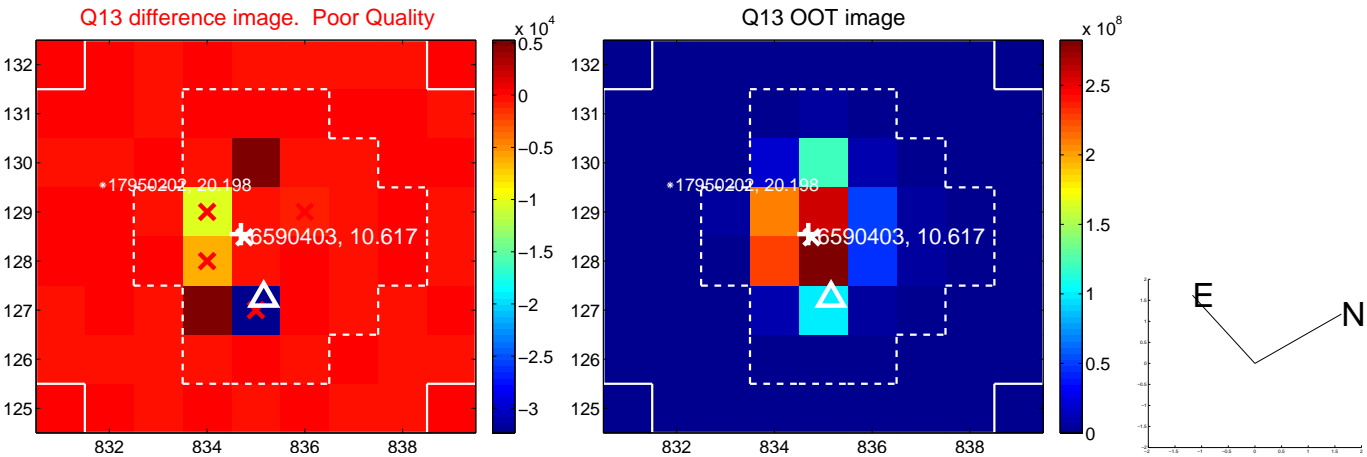
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



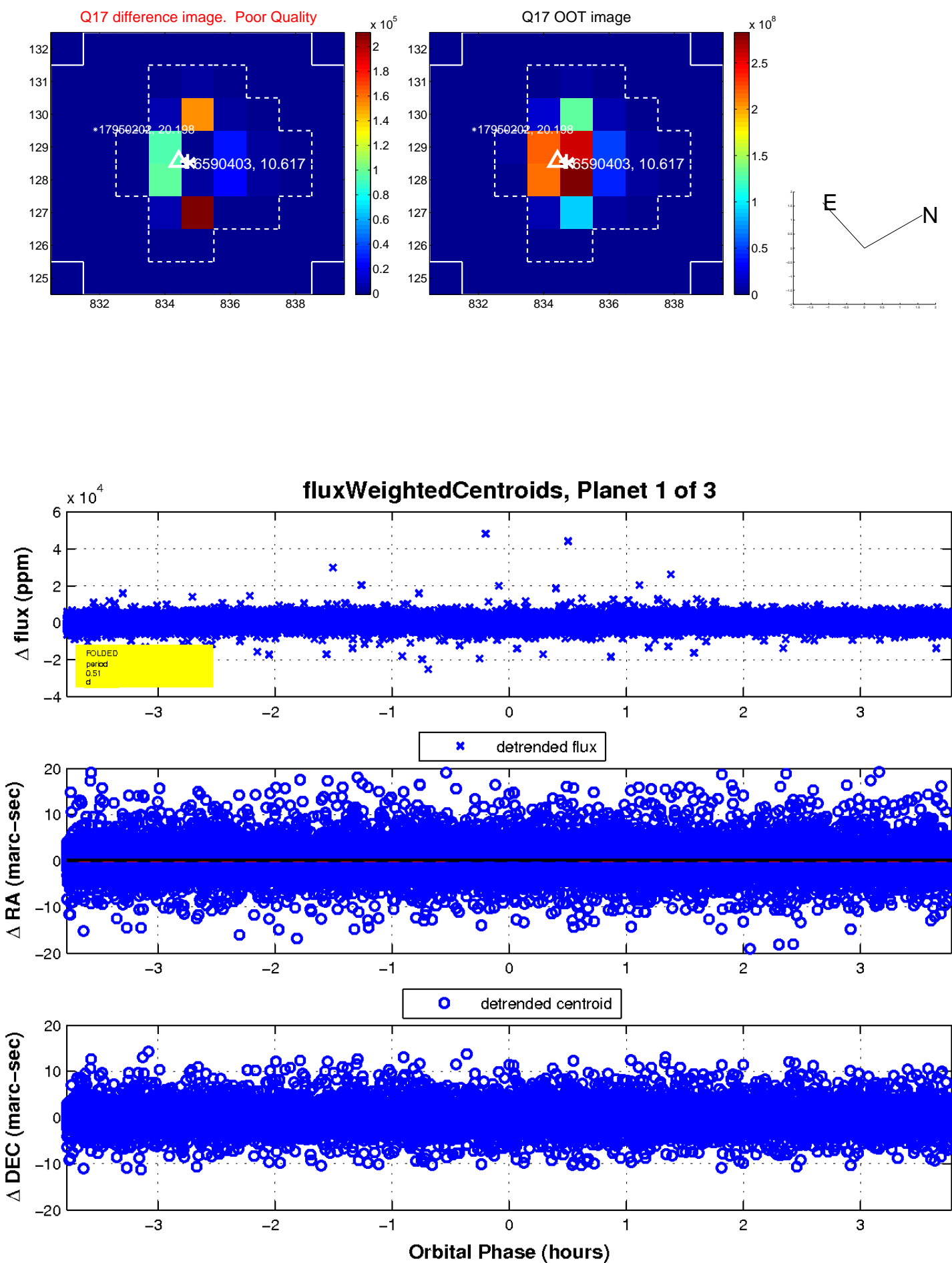
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



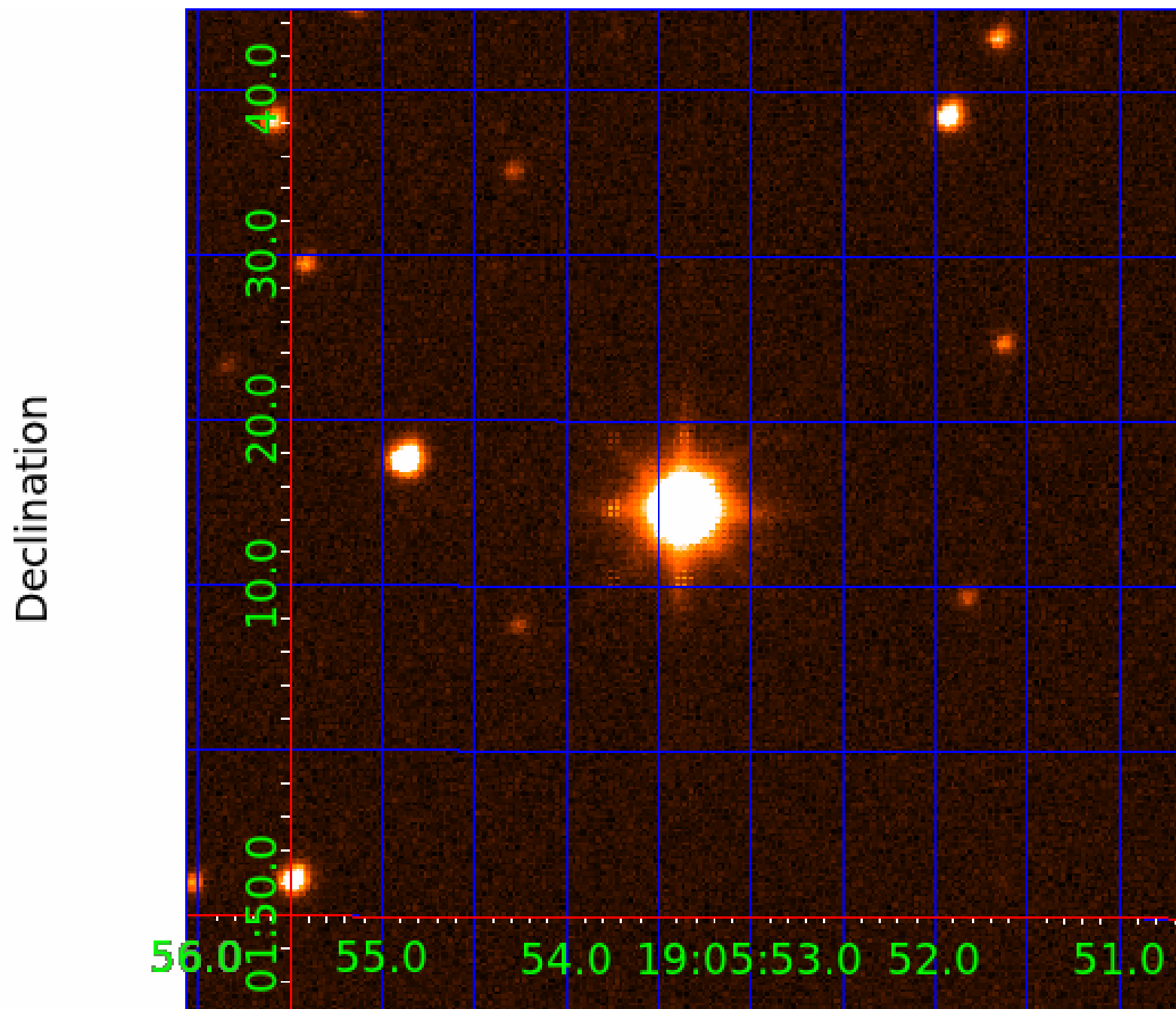
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006590403

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006590403-01 | OBS | No | 0.514500 | 131.566994 | 376.4 | 1.260 | 12.6 | 14.5 | 2.25 | 7264 | 4.54 | 57612.24 |
| 006590403-02 | OBS | No | 0.514502 | 131.914073 | 94.9 | 1.441 | 10.6 | 3.5 | 2.25 | 7264 | 2.36 | 57611.92 |
| 006590403-03 | OBS | No | 0.907615 | 131.908536 | 695.5 | 2.578 | 11.2 | 11.8 | 2.25 | 7264 | 6.89 | 27028.79 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006590403-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED |
| 006590403-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED |
| 006590403-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

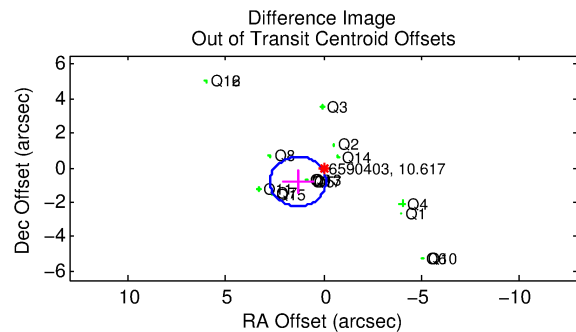
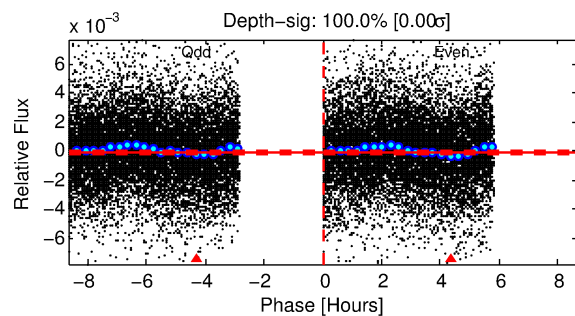
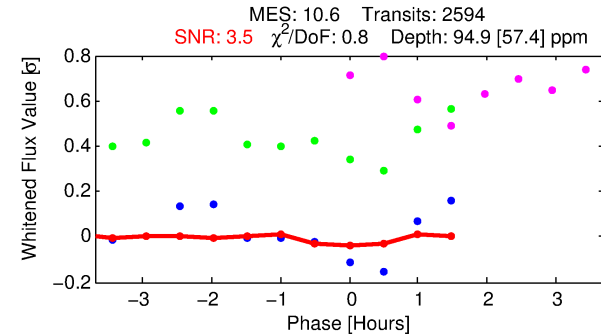
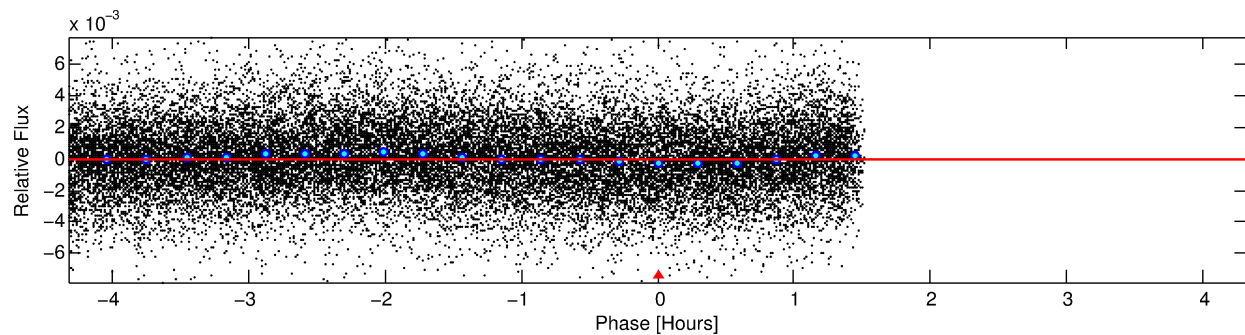
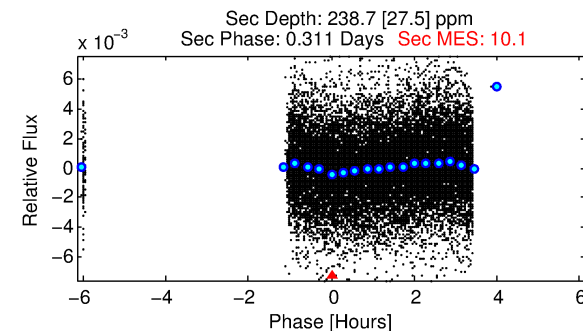
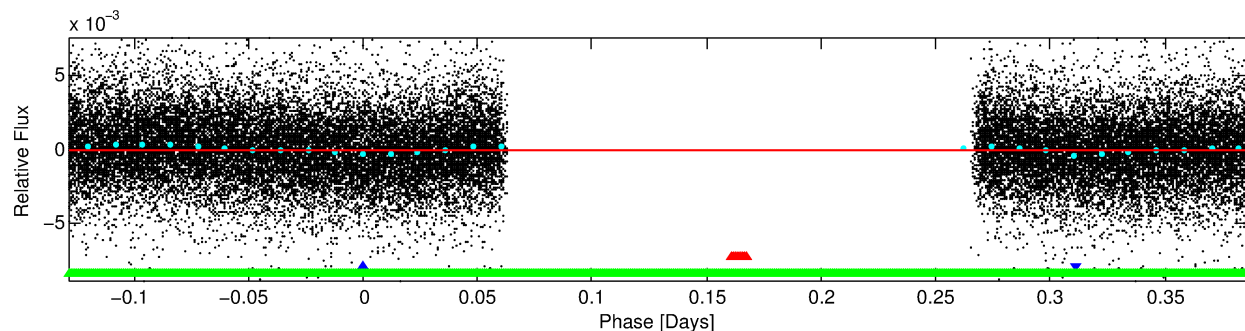
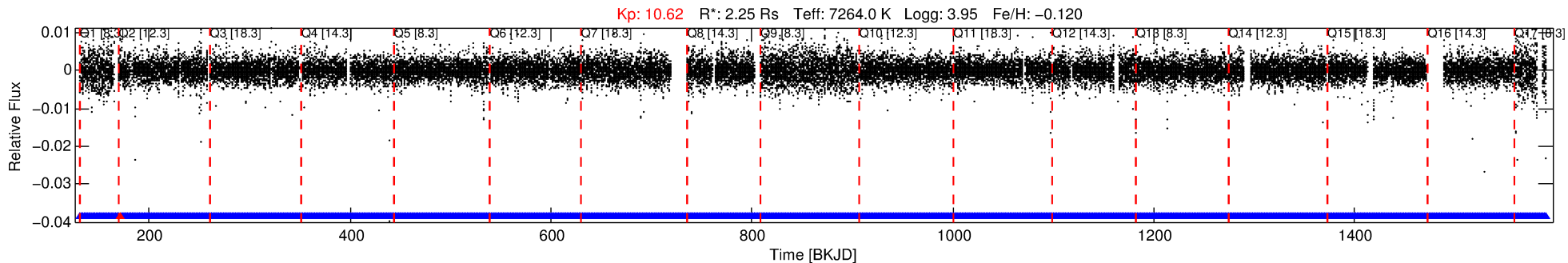
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006590403-02

No Significant Match Found

DV One-Page Summary

KIC: 6590403 Candidate: 2 of 3 Period: 0.515 d



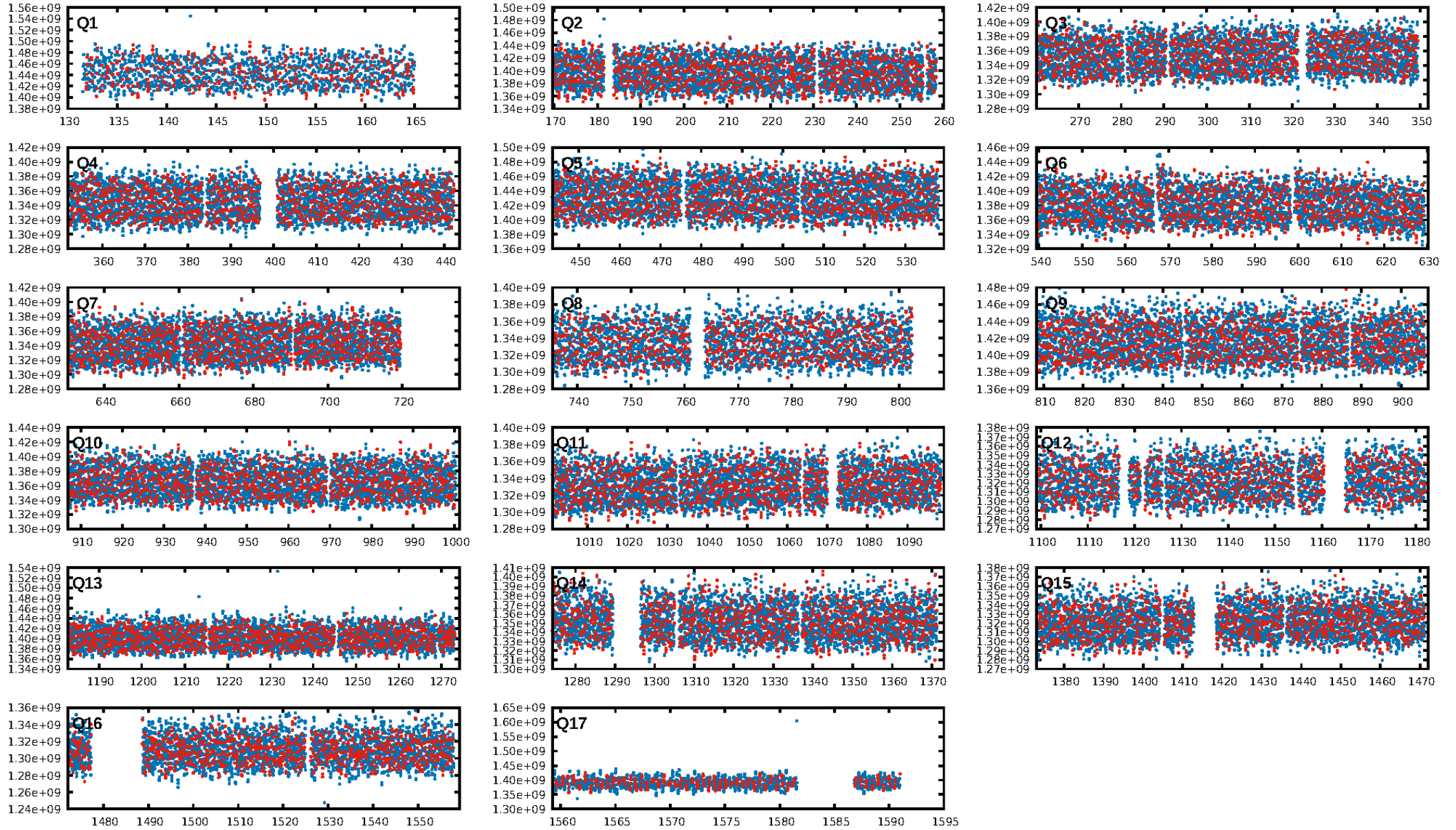
DV Fit Results:

Period = 0.51450 [0.00006] d
Epoch = 131.9141 [0.0039] BKJD
Rp/R* = 0.0096 [0.0060]
a/R* = 2.15 [5.49]
b = 0.70 [2.40]
Seff = 57611.92 [27143.63]
Teff = 3951 [465] K
Rp = 2.36 [1.66] Re
a = 0.0148 [0.0043] AU
Ag = 5.19 [6.94] [0.60 σ]
Teffp = 9217 [2937] K [1.77 σ]

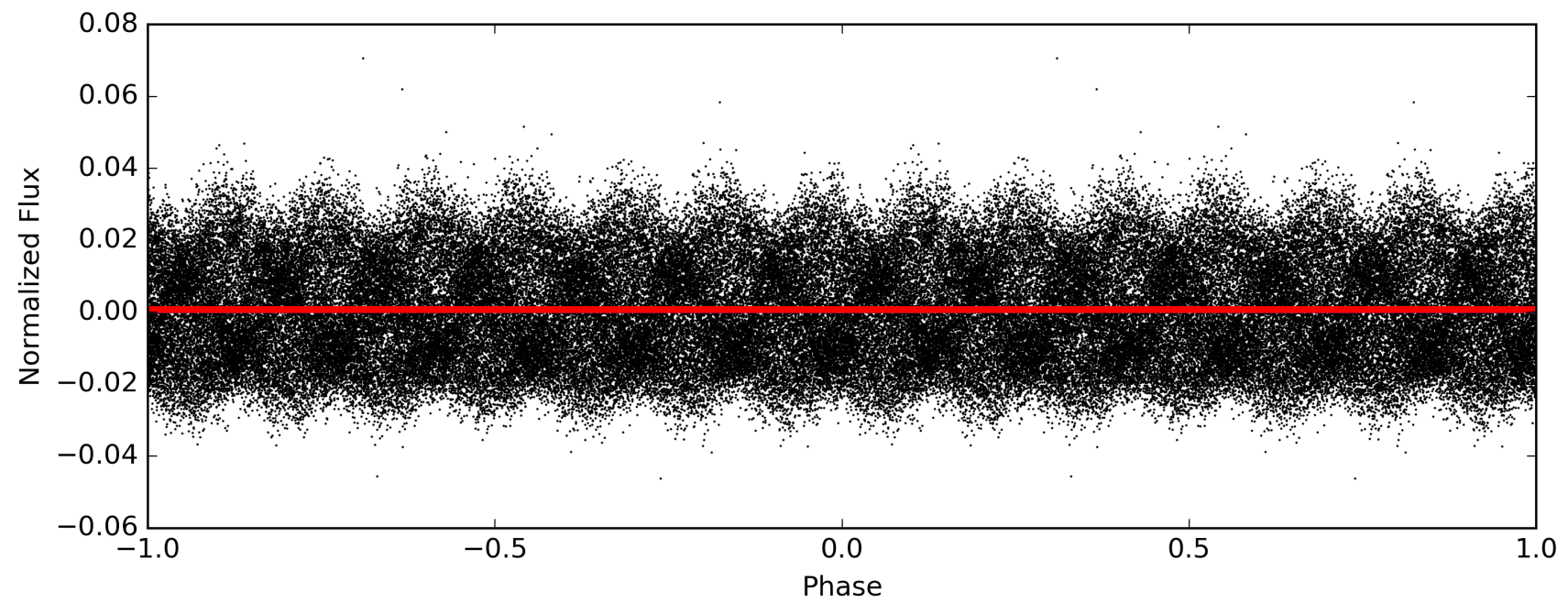
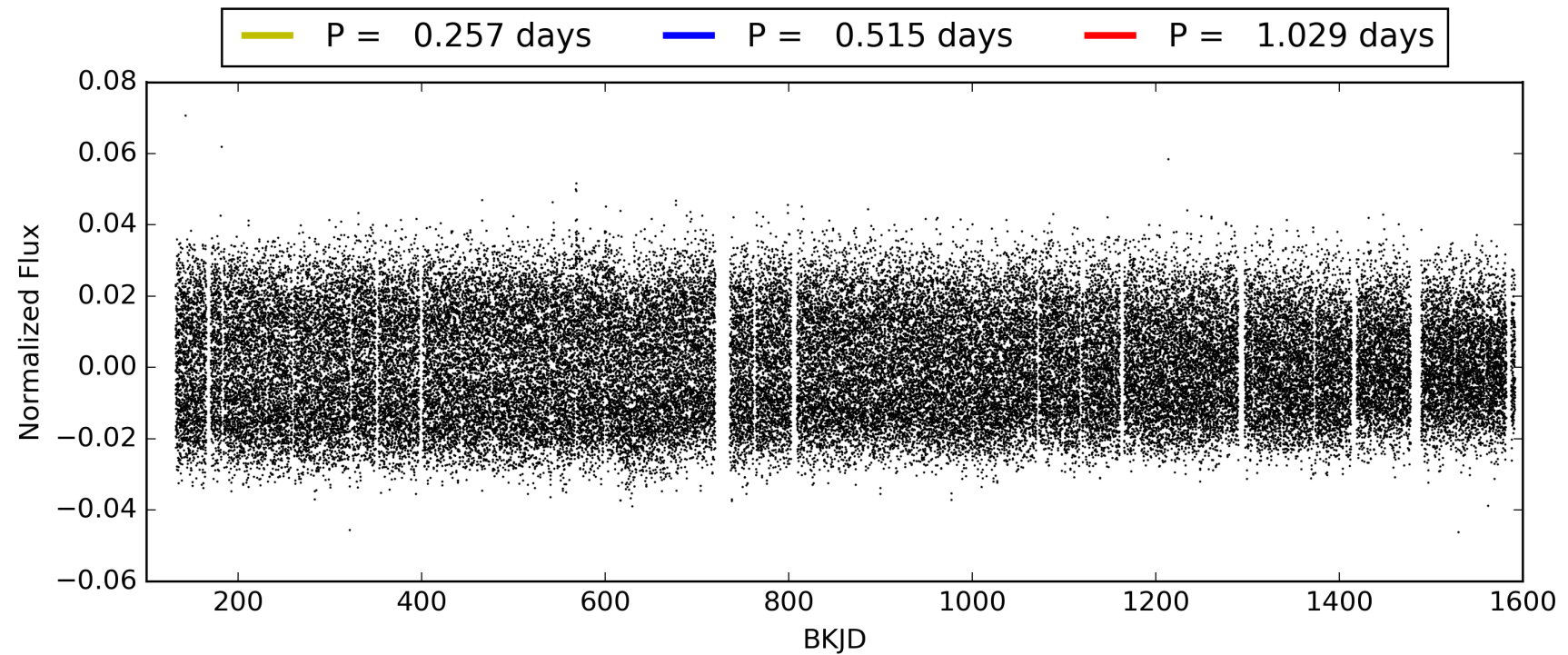
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 99.9% [3.19 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.96e-12
RollingBand-fgt: 1.00 [2476/2477]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.901 arcsec [2.18 σ]
OotOffset-rm: 1.549 arcsec [3.25 σ]
KicOffset-rm: 1.702 arcsec [4.32 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.06 [1/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 006590403-02, PDC Light Curves

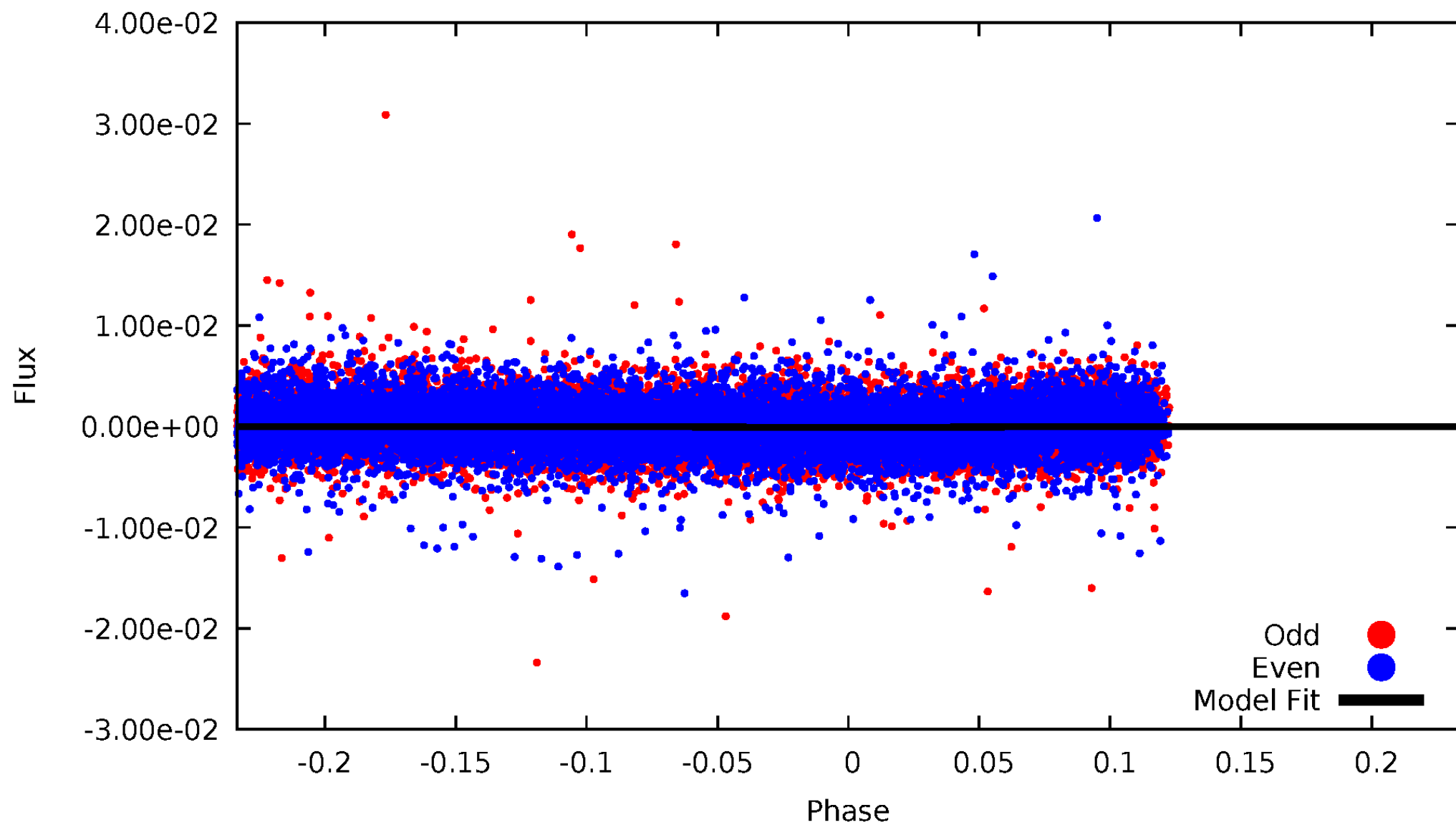


TCE 006590403-02



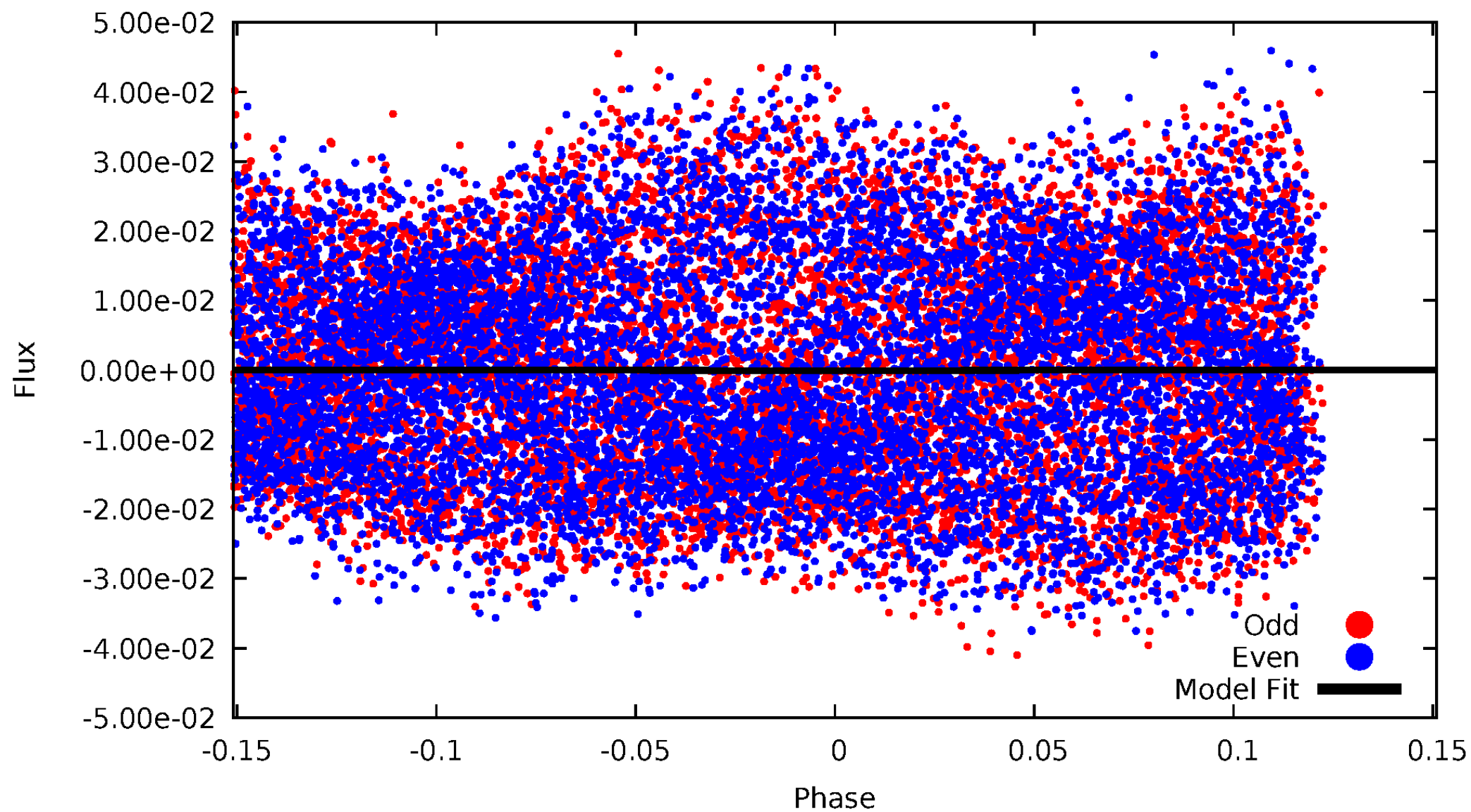
DV Odd/Even

TCE 006590403-02



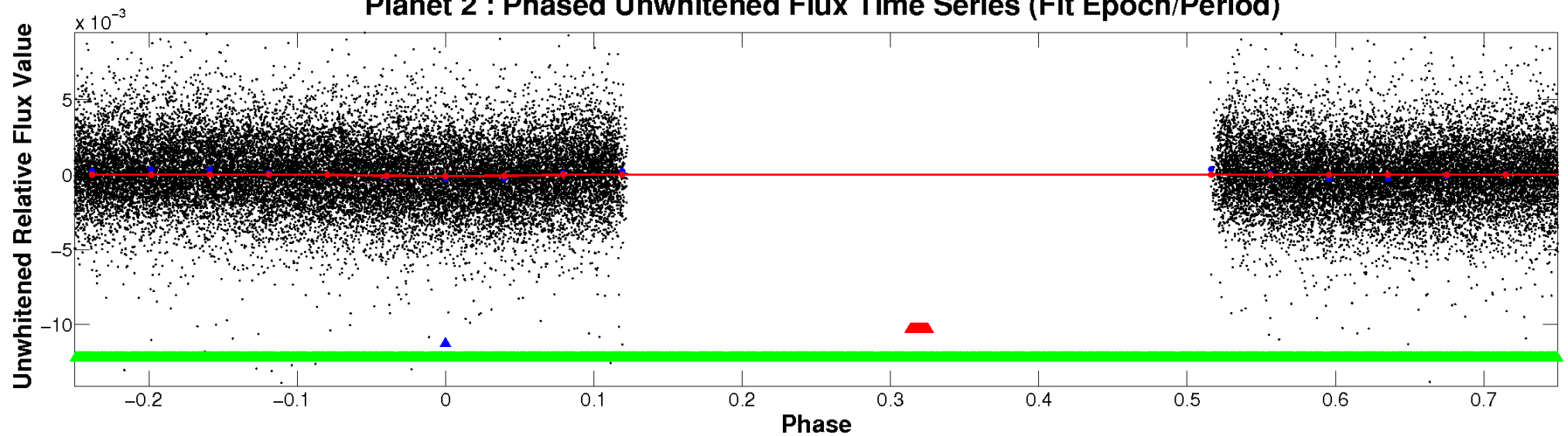
ALT Odd/Even

TCE 006590403-02

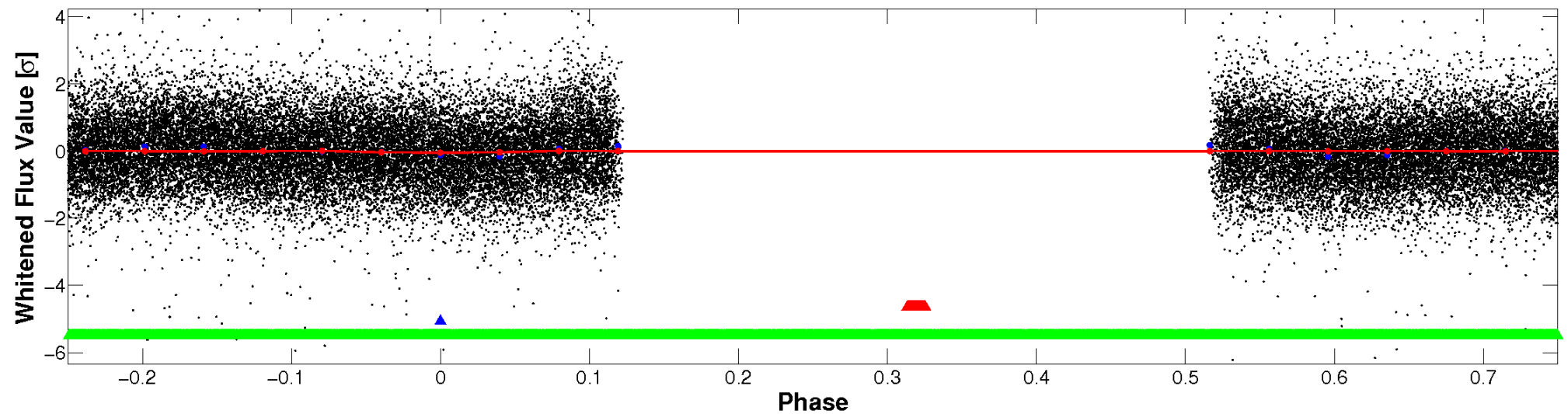


Non-Whitened Vs. Whitened Light Curve

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

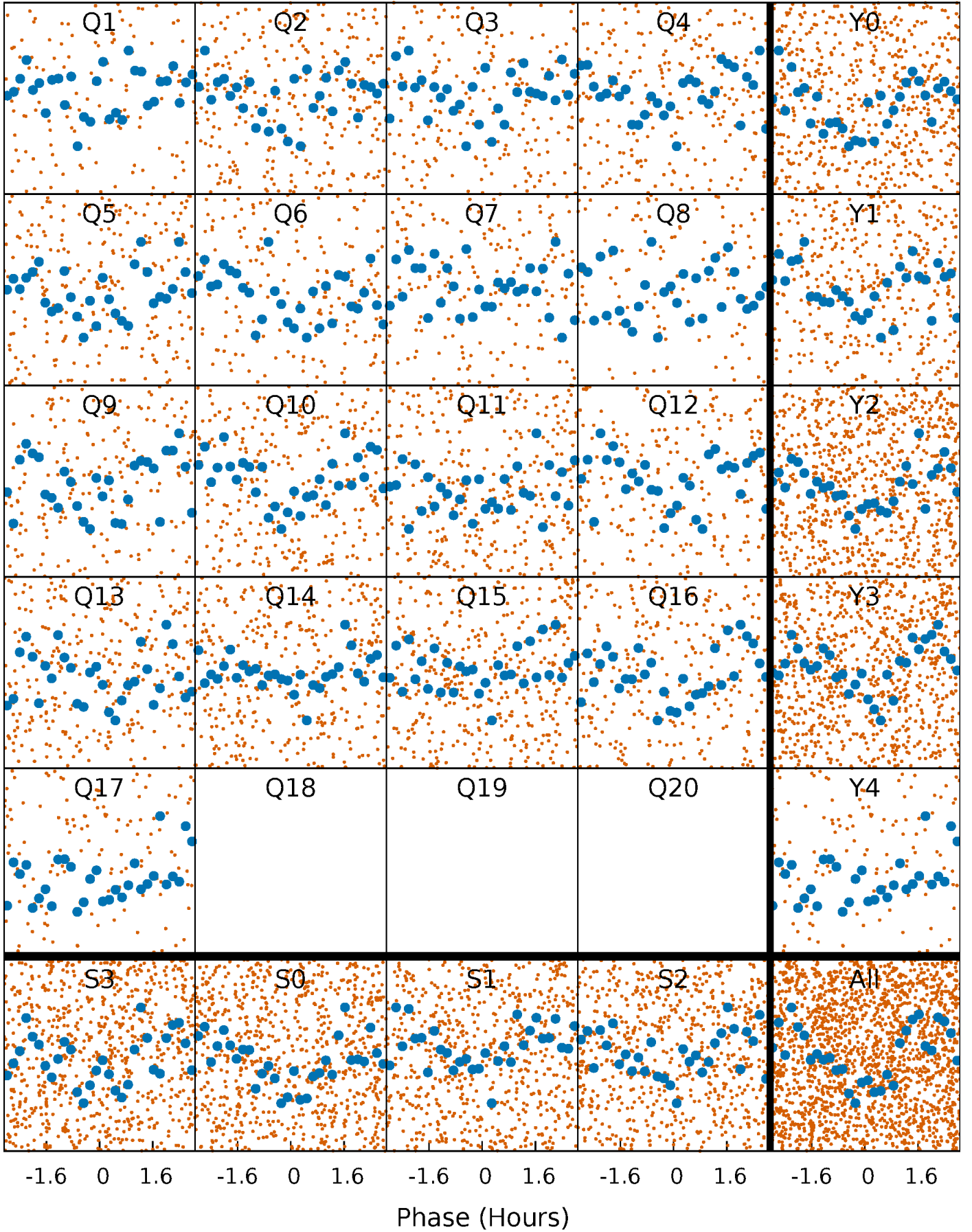


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



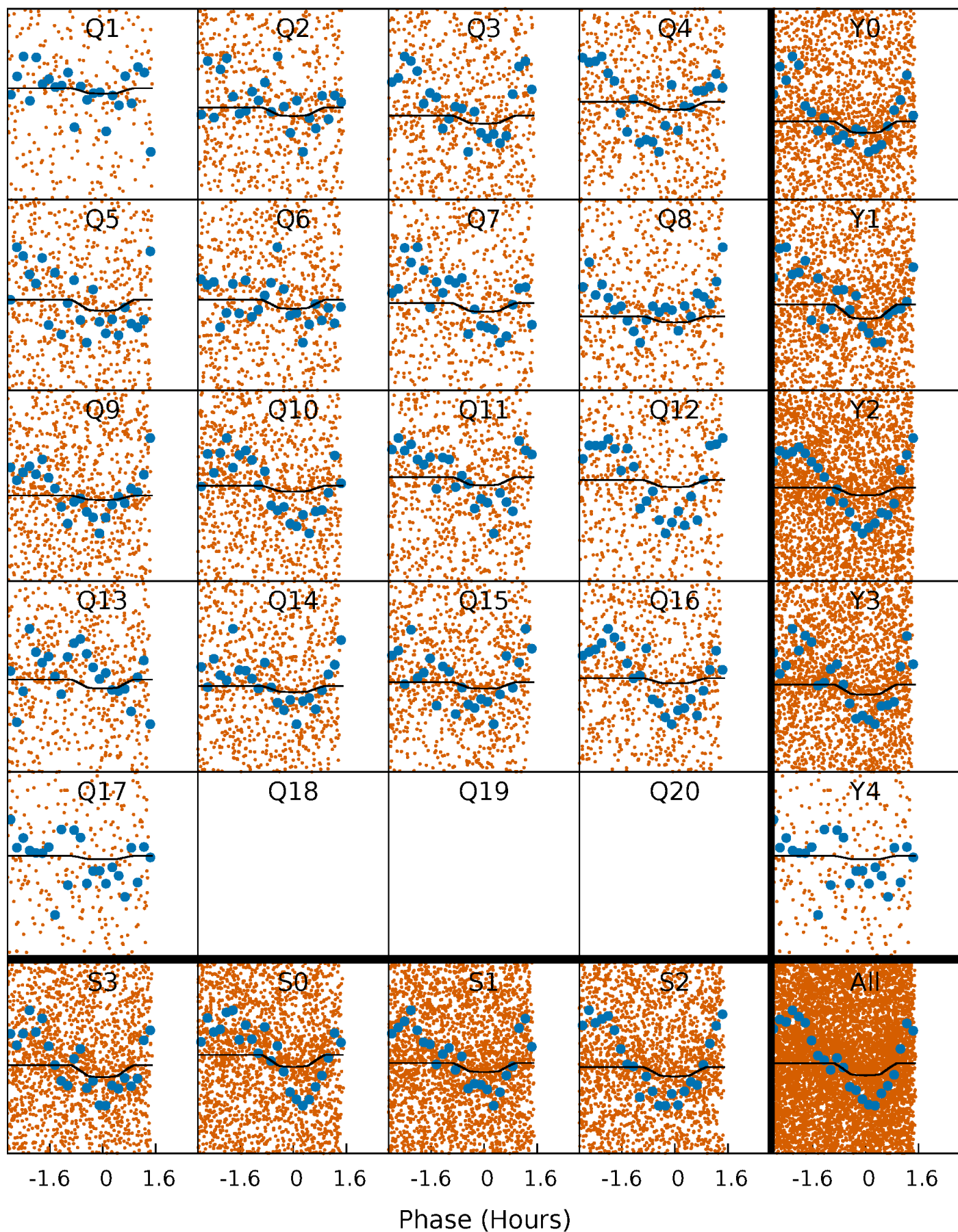
PDC Quarter-Phased Transit Curves

TCE 006590403-02 P= 0.514502 Days $T_0=131.914073$ (BKJD)



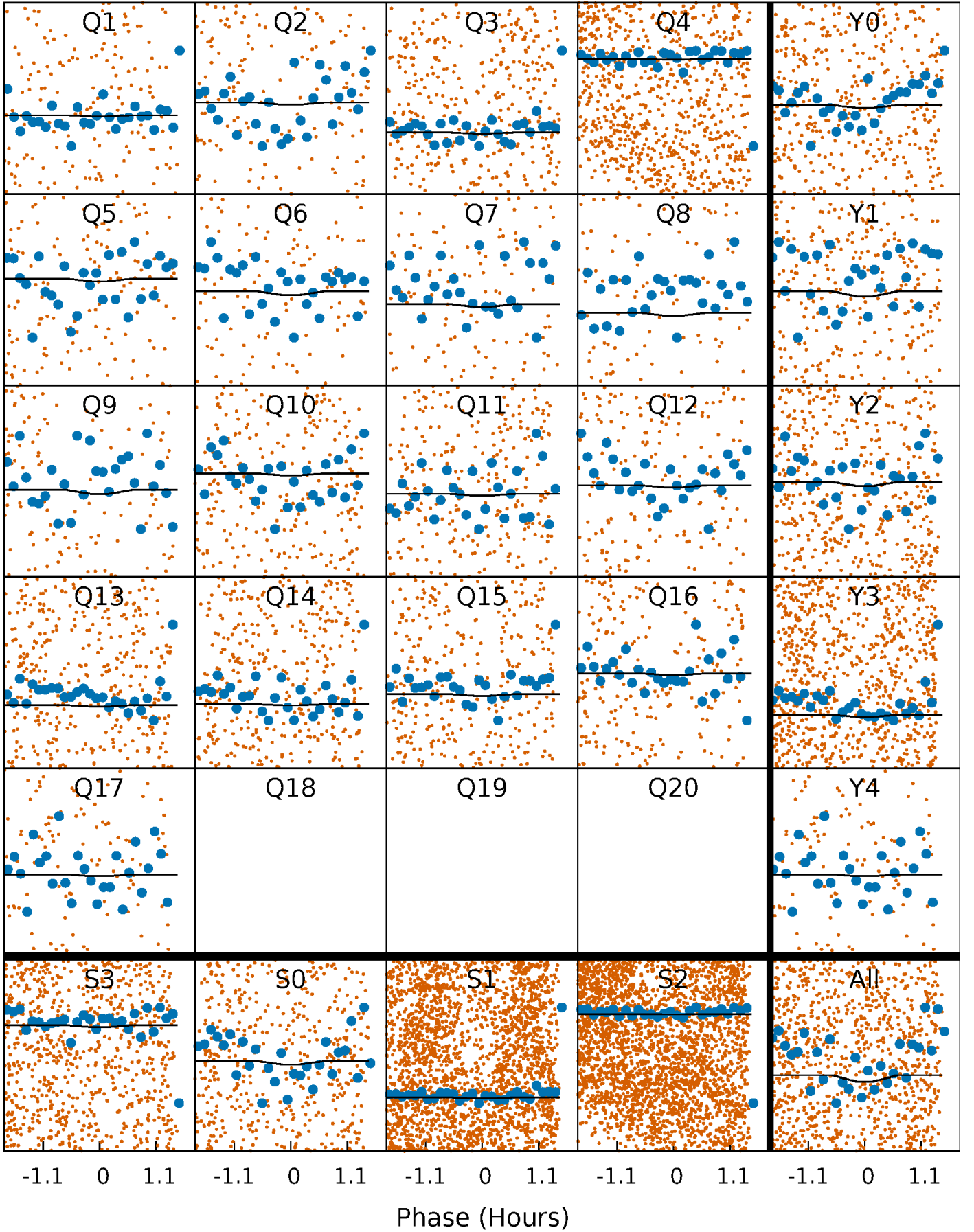
DV Quarter-Phased Transit Curves

TCE 006590403-02 P= 0.514502 Days $T_0=131.914073$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

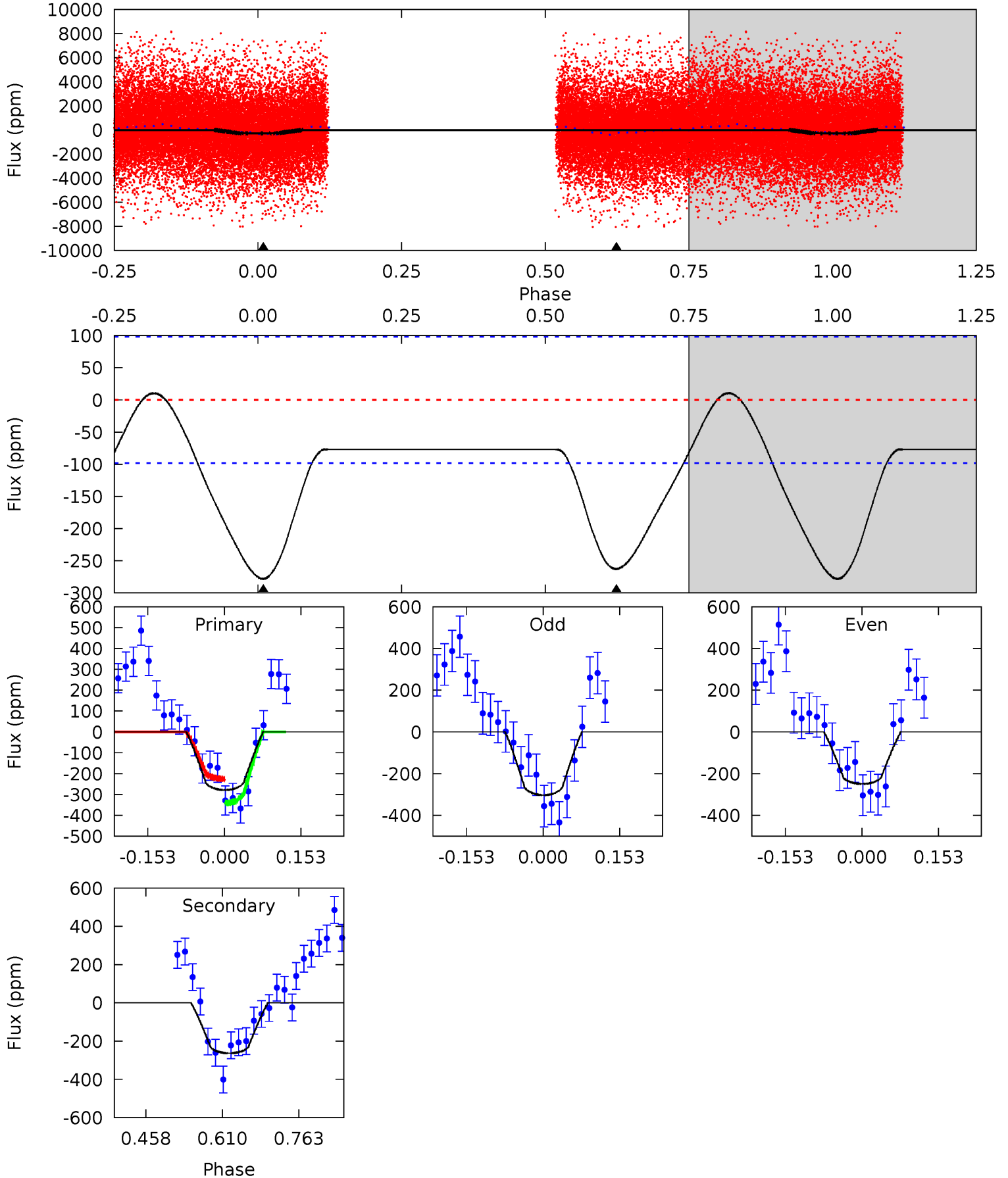
TCE 006590403-02 P= 0.514502 Days $T_0=131.914073$ (BKJD)



DV Model-Shift Uniqueness Test

006590403-02, P = 0.514502 Days, E = 131.399571 Days

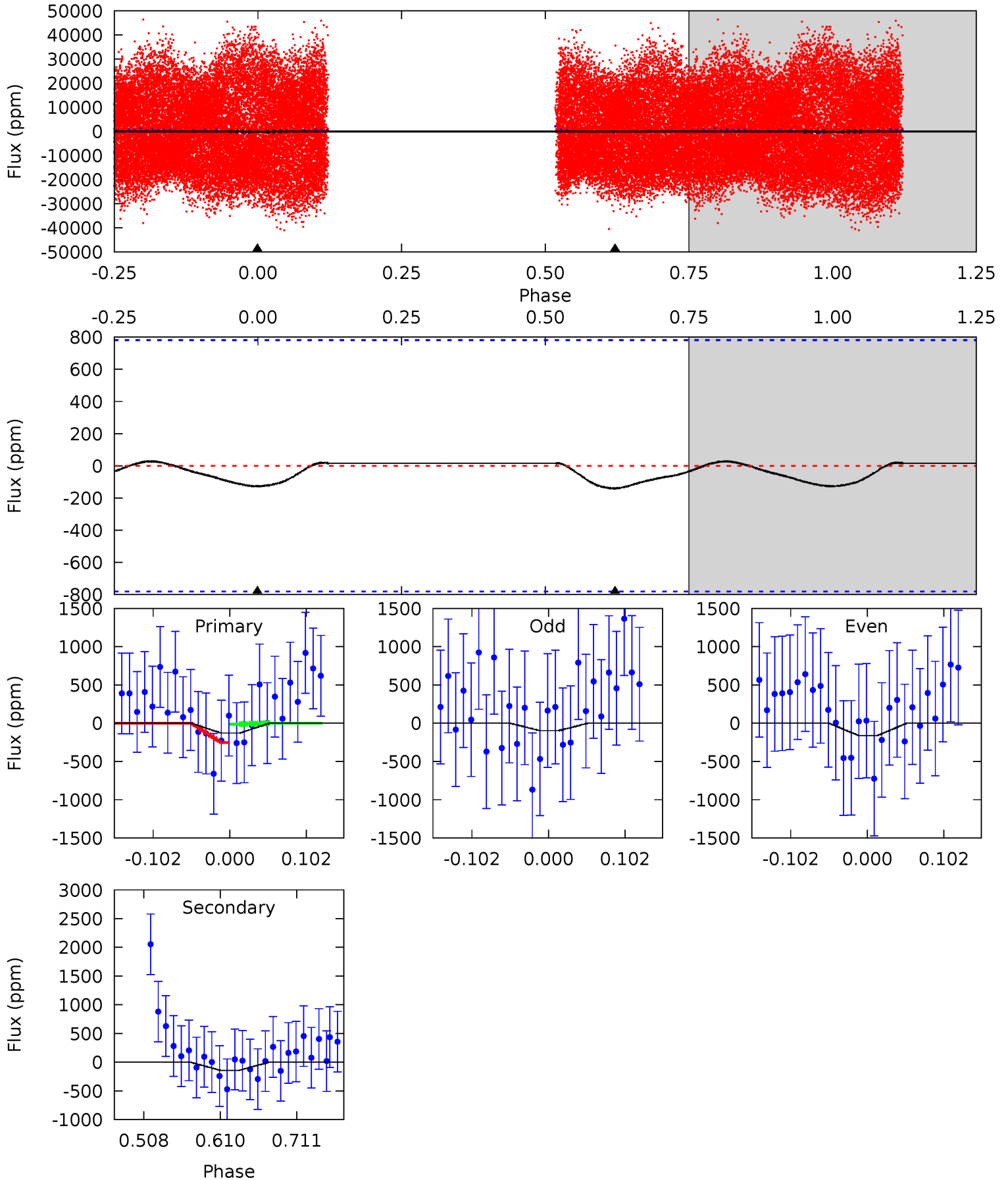
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.7 | 12.0 | 0 | 0 | 4.48 | 1.43 | 0.55 | 12.7 | 12.7 | 12.0 | 12.0 | 1.23 | 0.93 | 0.04 | 2.70 |



Alt Model-Shift Uniqueness Test

006590403-02, P = 0.514502 Days, E = 131.399571 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.76 | 0.83 | 0 | 0 | 4.56 | 1.64 | 0.16 | 0.76 | 0.76 | 0.83 | 0.83 | 0.19 | 0.04 | 0.18 | 0.67 |



Stellar Parameters For KIC 006590403

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7264^{+226}_{-302} | $3.948^{+0.252}_{-0.147}$ | $-0.120^{+0.250}_{-0.350}$ | $2.255^{+0.585}_{-0.715}$ | $1.644^{+0.186}_{-0.345}$ | $0.202^{+0.360}_{-0.086}$ |
| | +3%/-4% | +6%/-4% | +208%/-292% | +26%/-32% | +11%/-21% | +178%/-43% |
| 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 006590403-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|-------------------------|----------------------------|
| DV | -263 ± 22 | $2.36^{+1.53}_{-1.26}$ | 5467^{+390}_{-468} | 9613^{+10107}_{-2612} | $5.568^{+21.661}_{-3.476}$ |
| Alt. | -142 ± 171 | $2.43^{+1.45}_{-1.32}$ | 5463^{+423}_{-487} | 7277^{+6683}_{-12860} | $2.498^{+11.316}_{-2.851}$ |

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 $A_{obs} \gg 1.0$

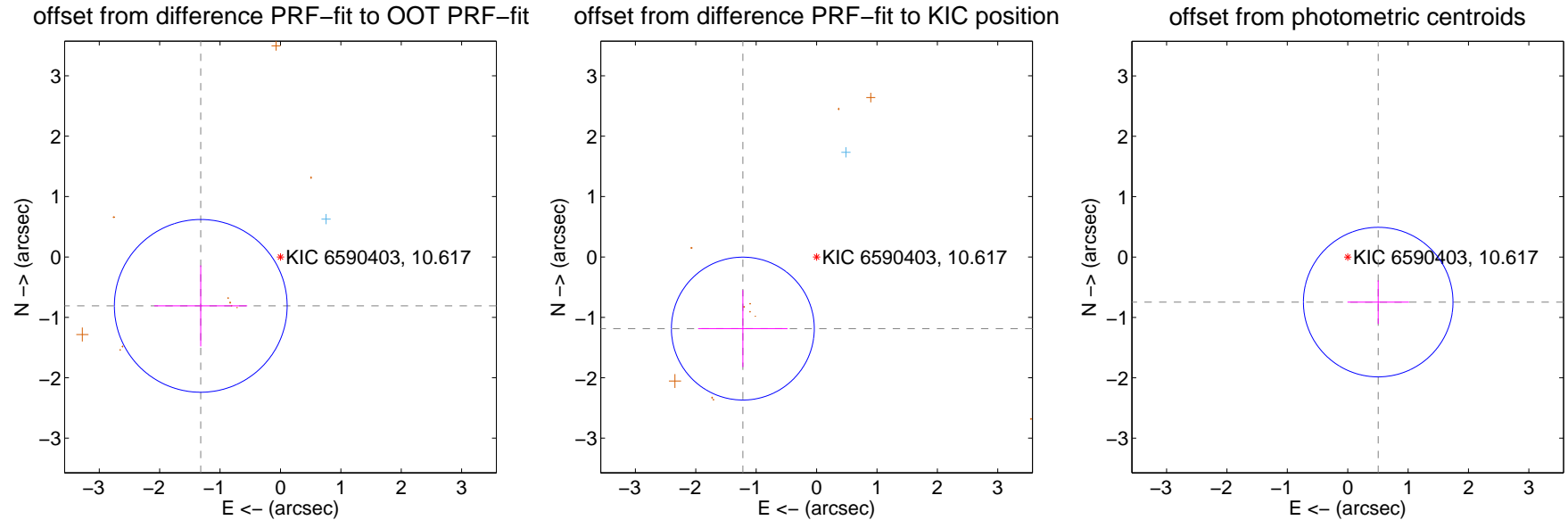
DV Centroid Data

Supplemental centroid analysis for 006590403-02. **Kepler magnitude: 10.62.** Transit SNR 3.48

There are 1 quarters with good PRF difference image offsets

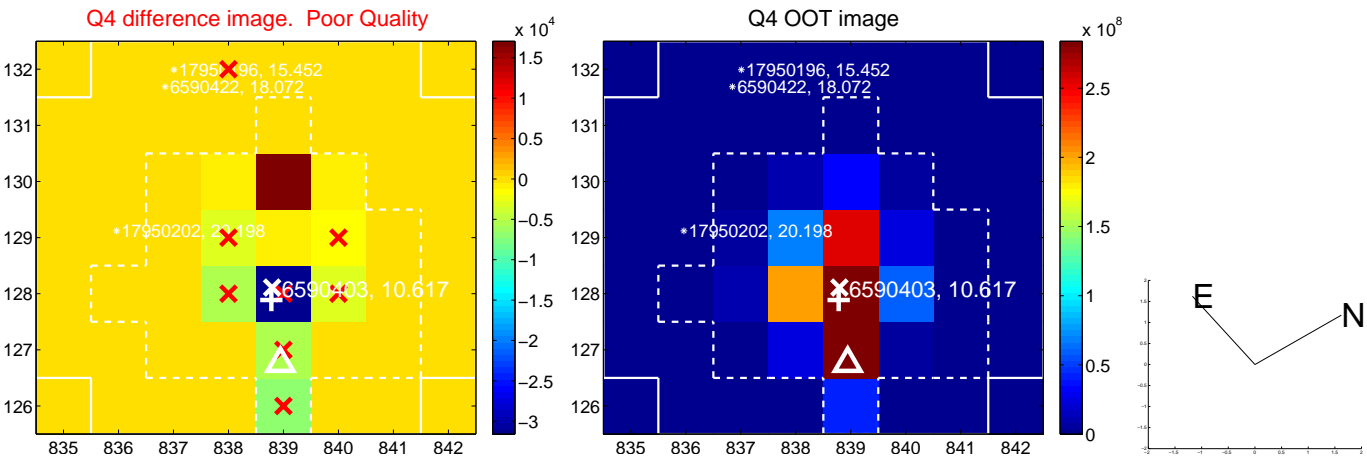
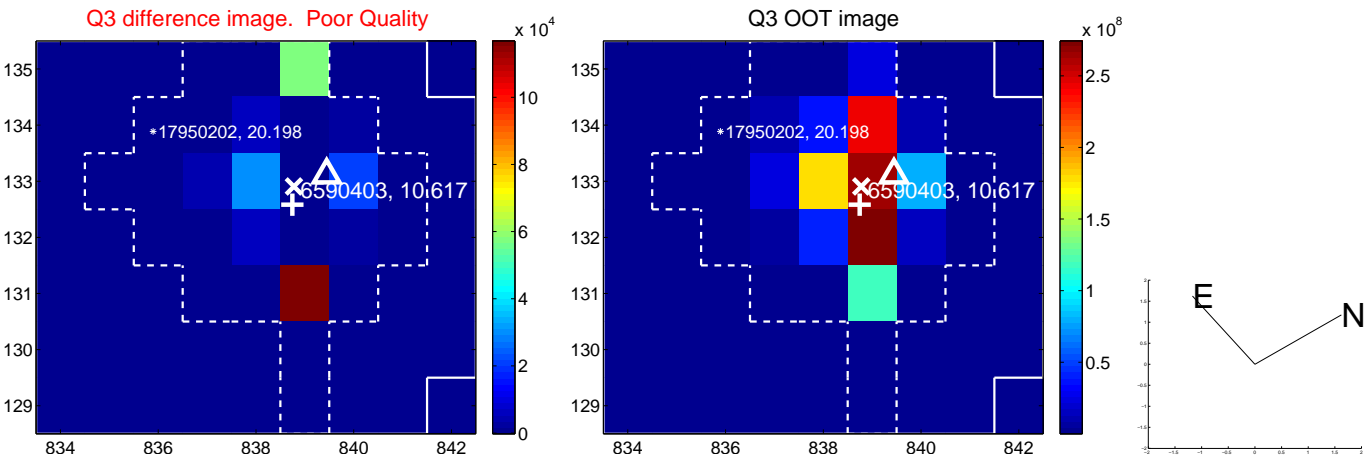
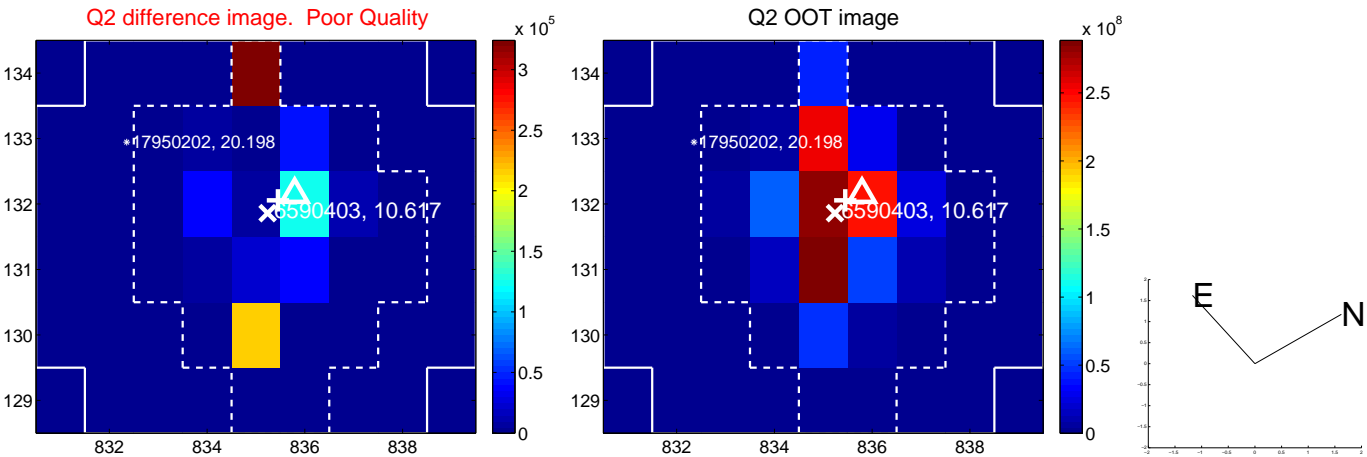
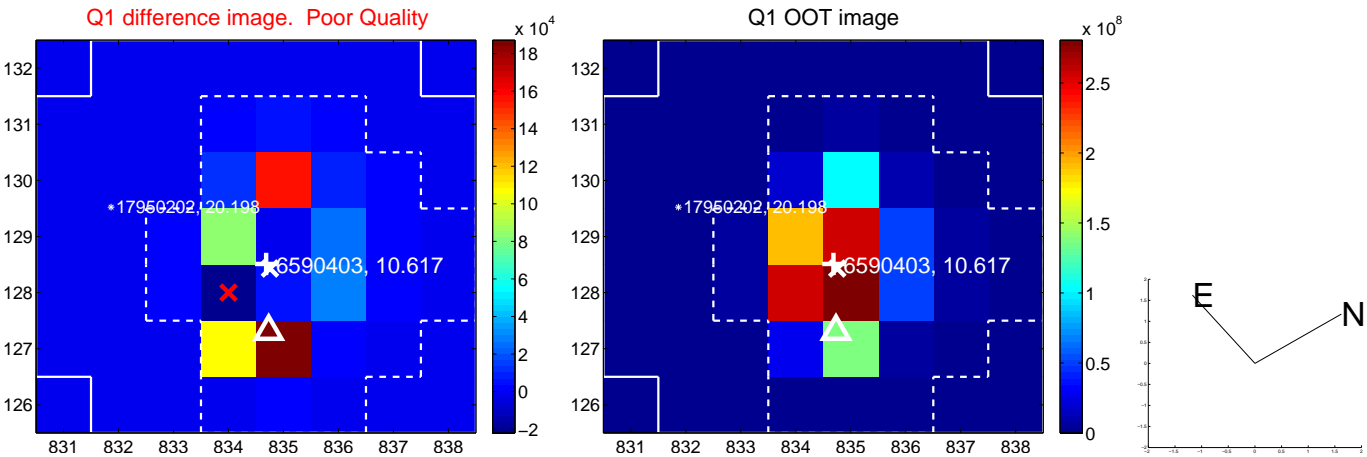
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.549 \pm 0.477 | 3.25 | 1.320 \pm 0.770 | -0.810 \pm 0.671 |
| PRF-fit source offset from KIC position | 1.702 \pm 0.394 | 4.32 | 1.221 \pm 0.740 | -1.186 \pm 0.637 |
| photometric centroid source offset | 0.90 \pm 0.41 | 2.18 | -0.51 \pm 0.51 | -0.75 \pm 0.36 |

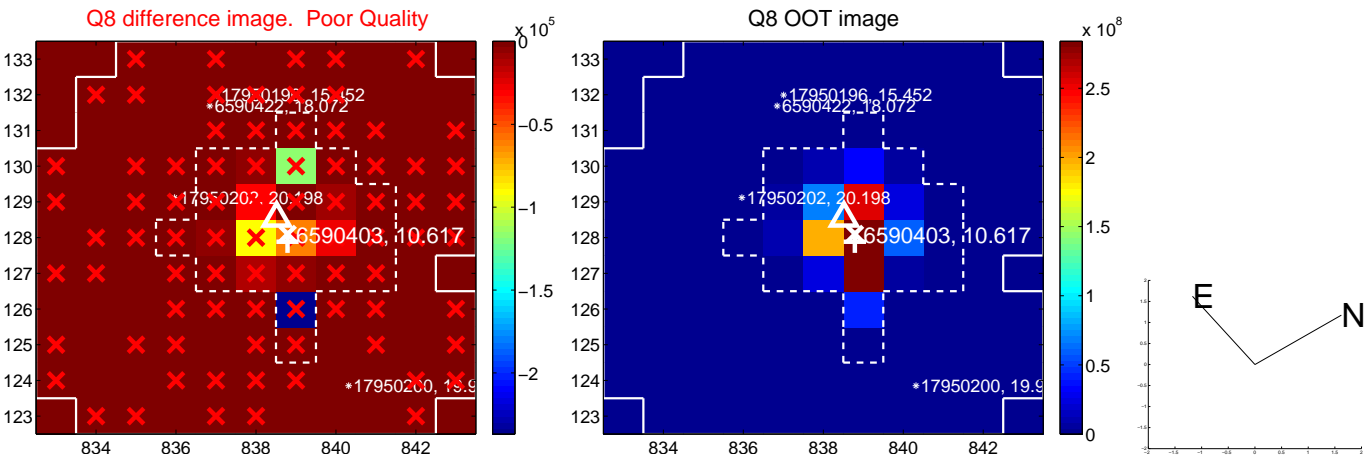
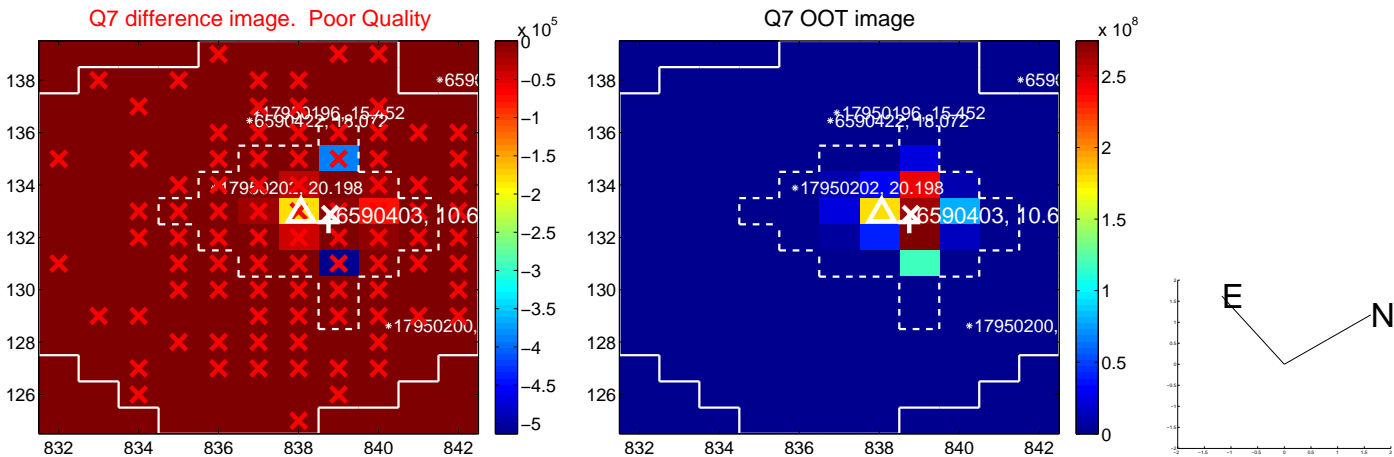
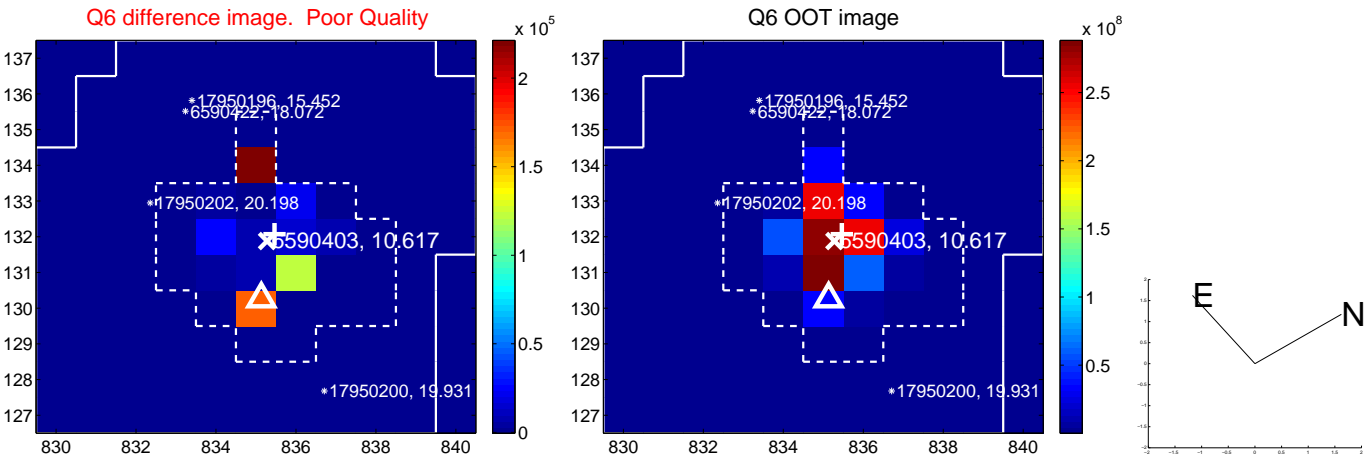
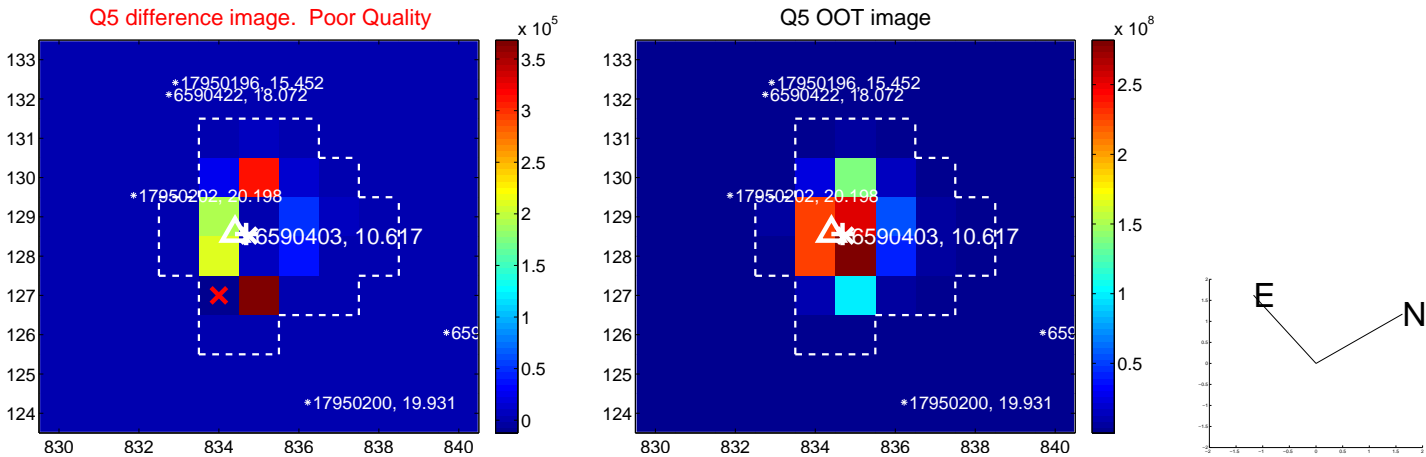


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

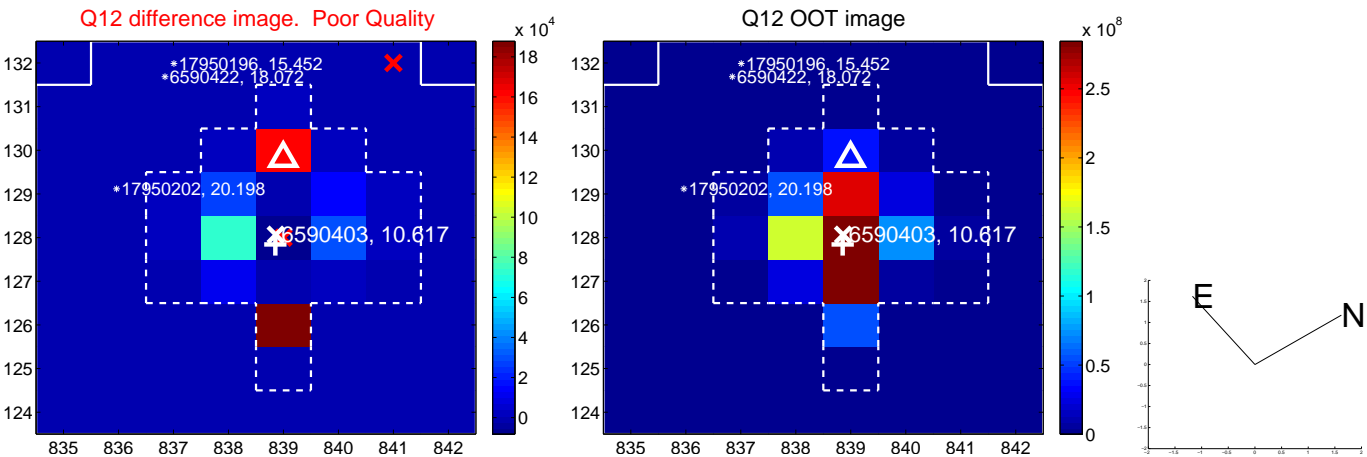
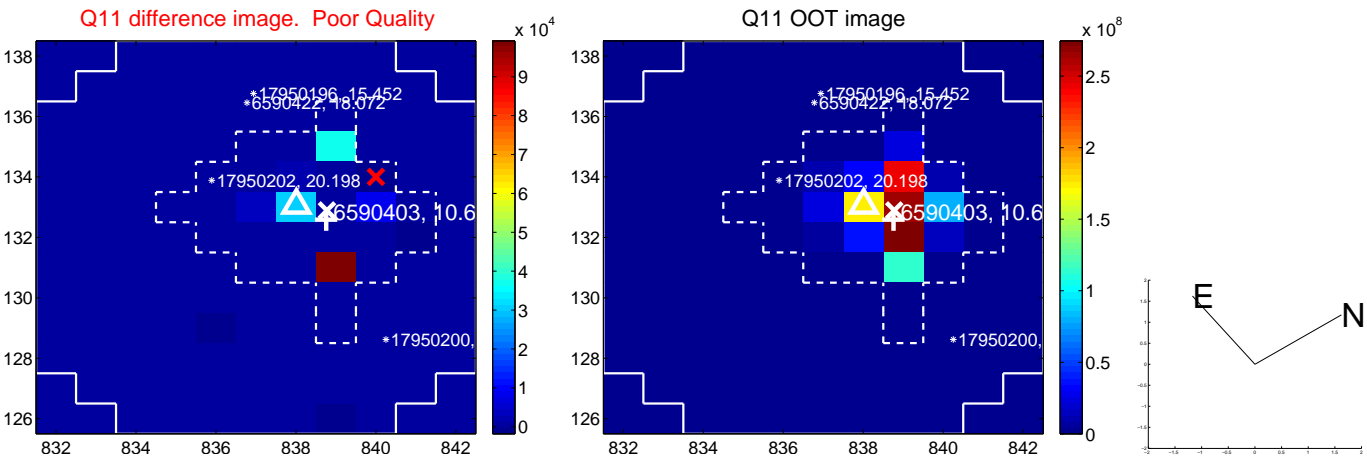
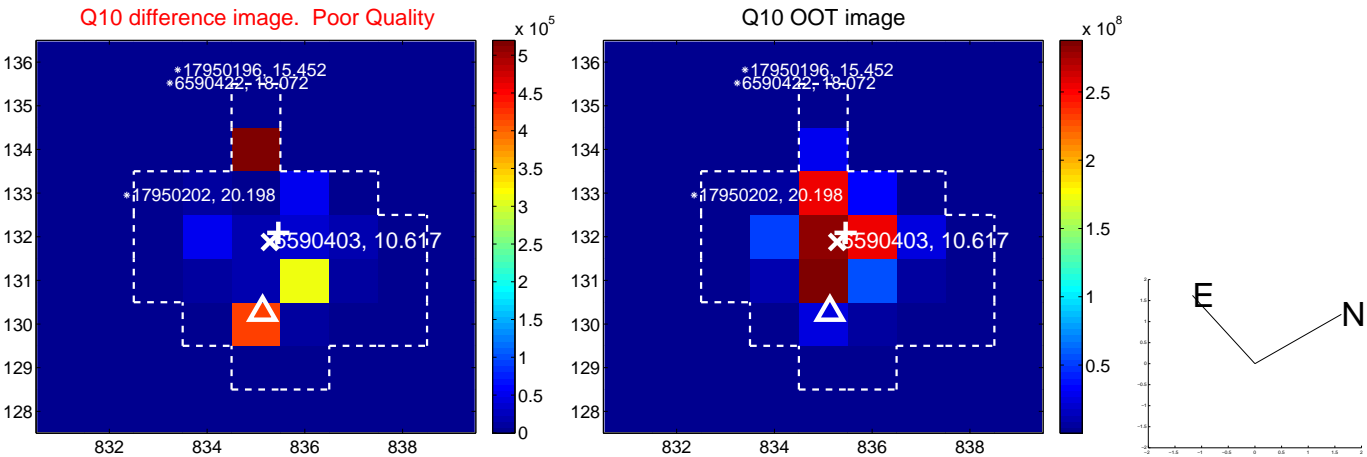
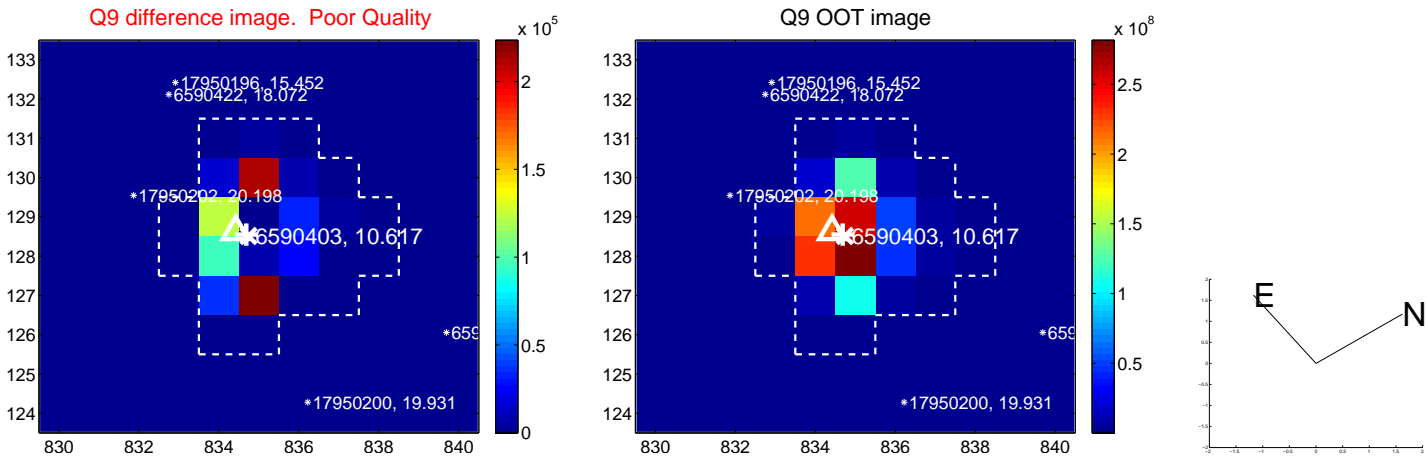
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



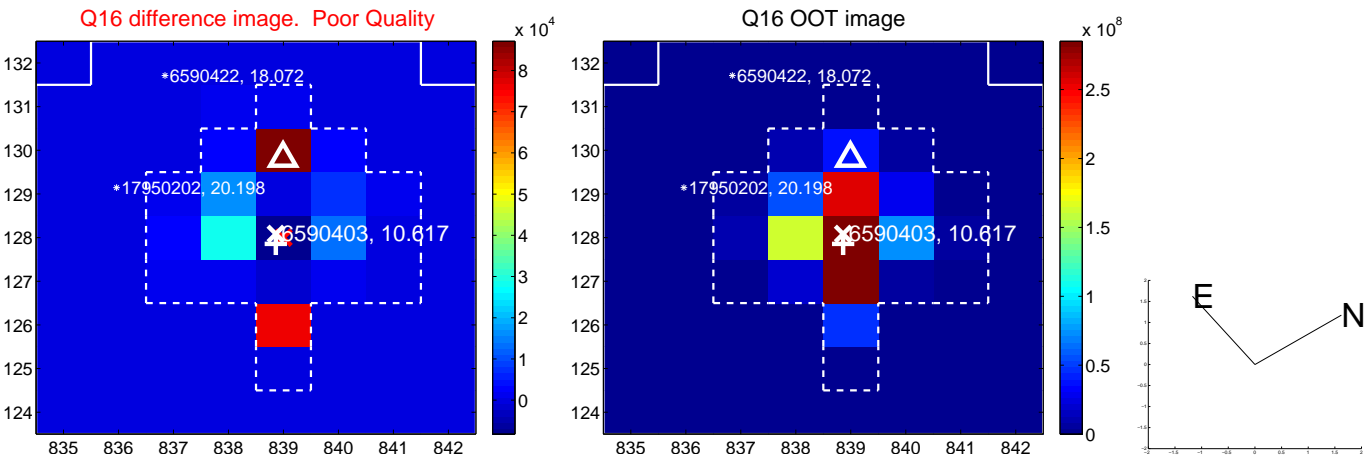
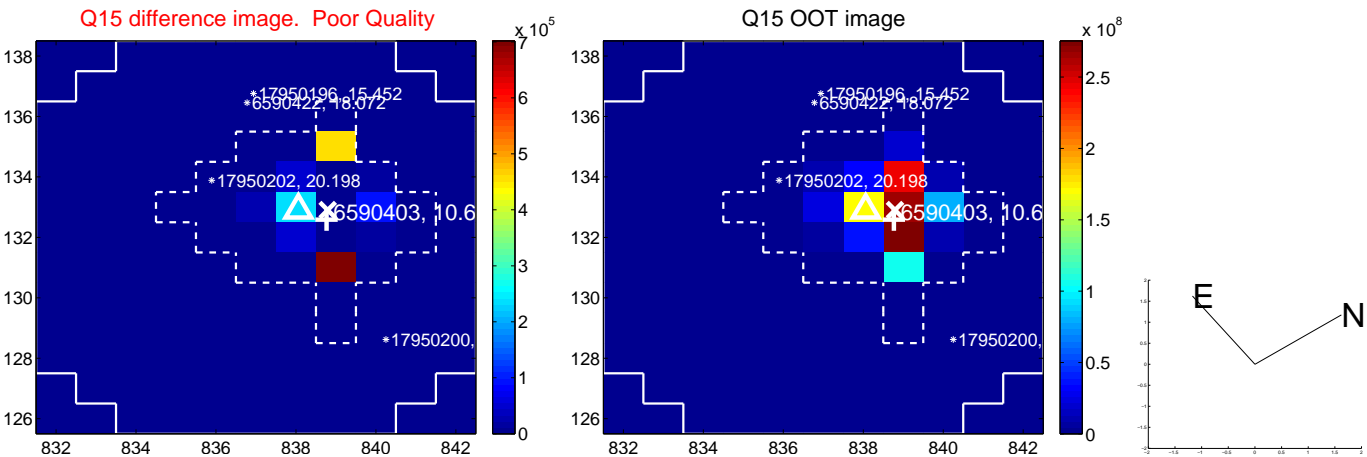
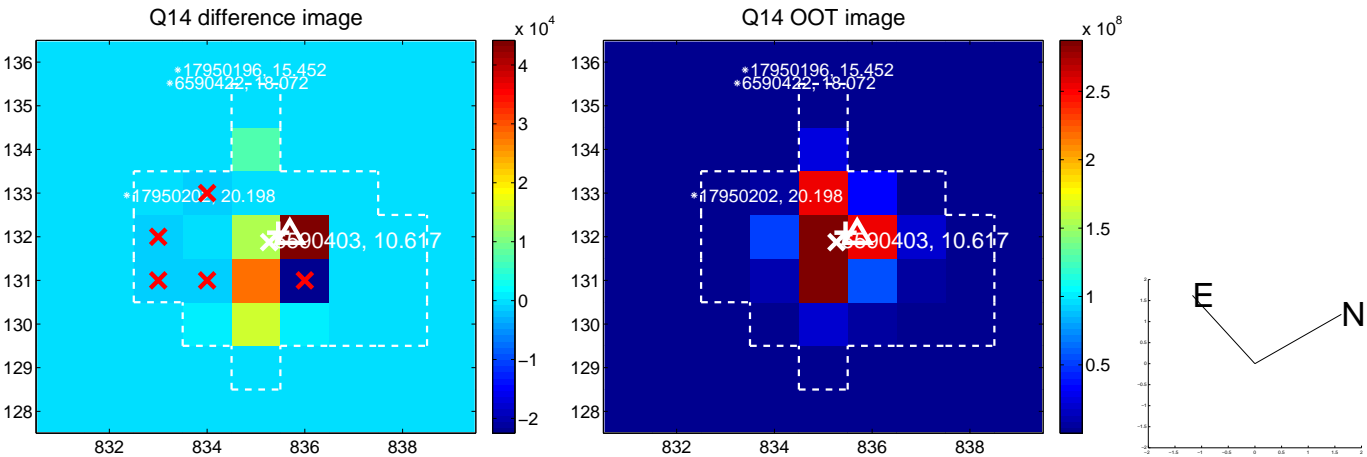
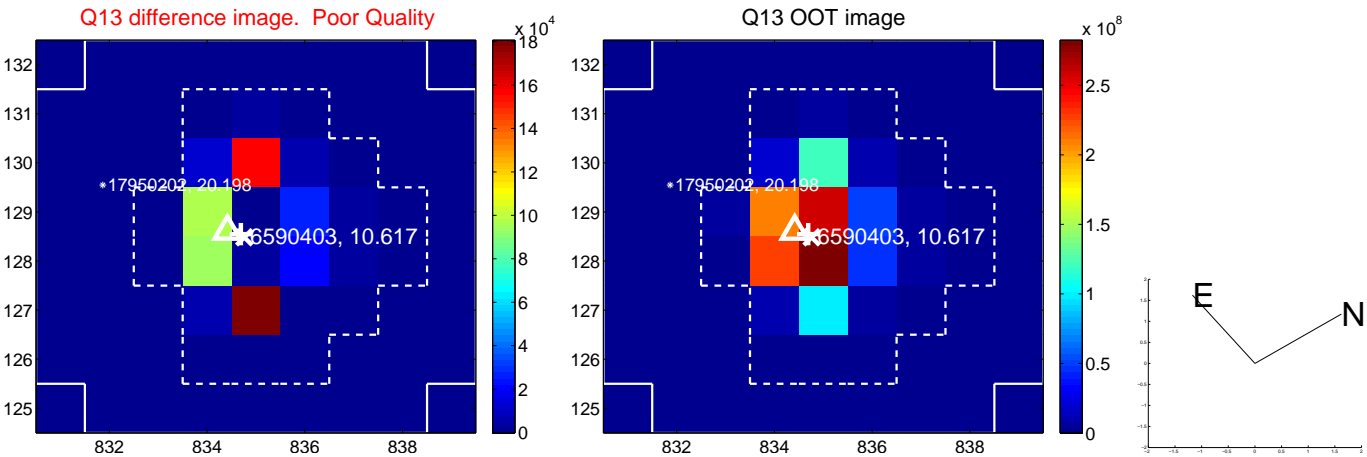
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



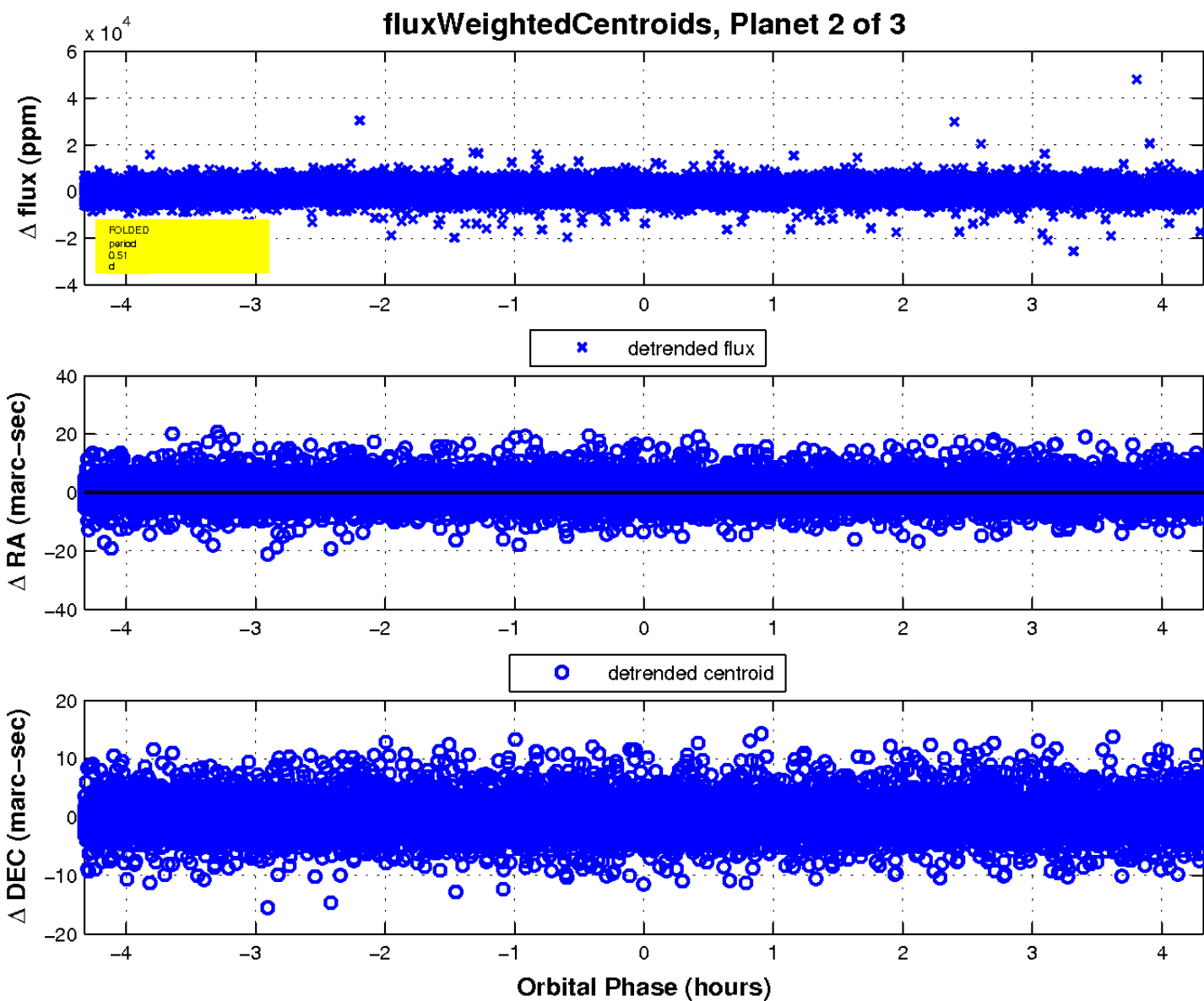
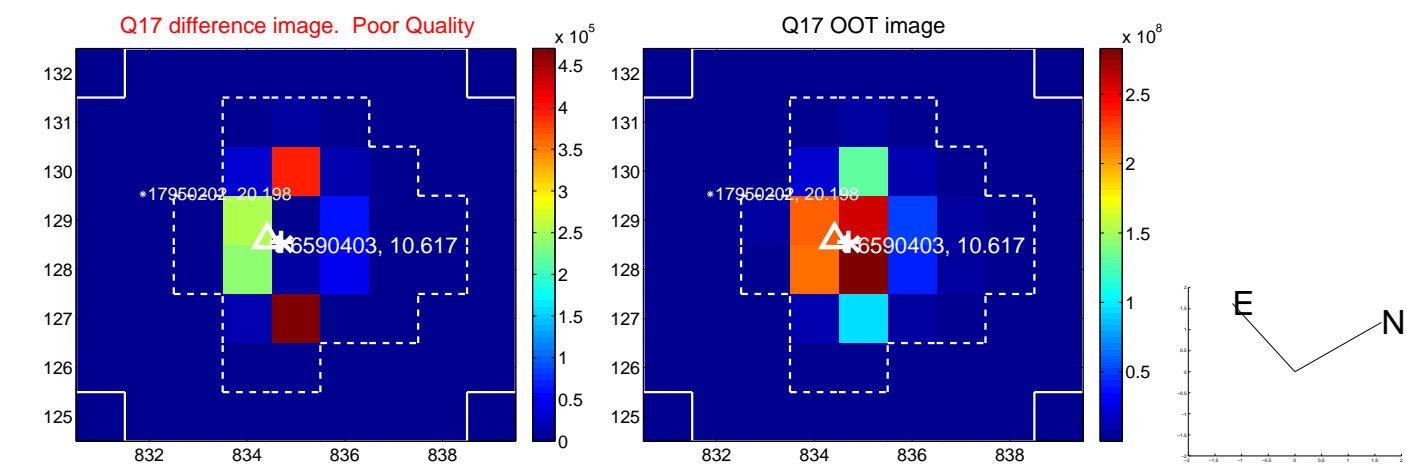
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



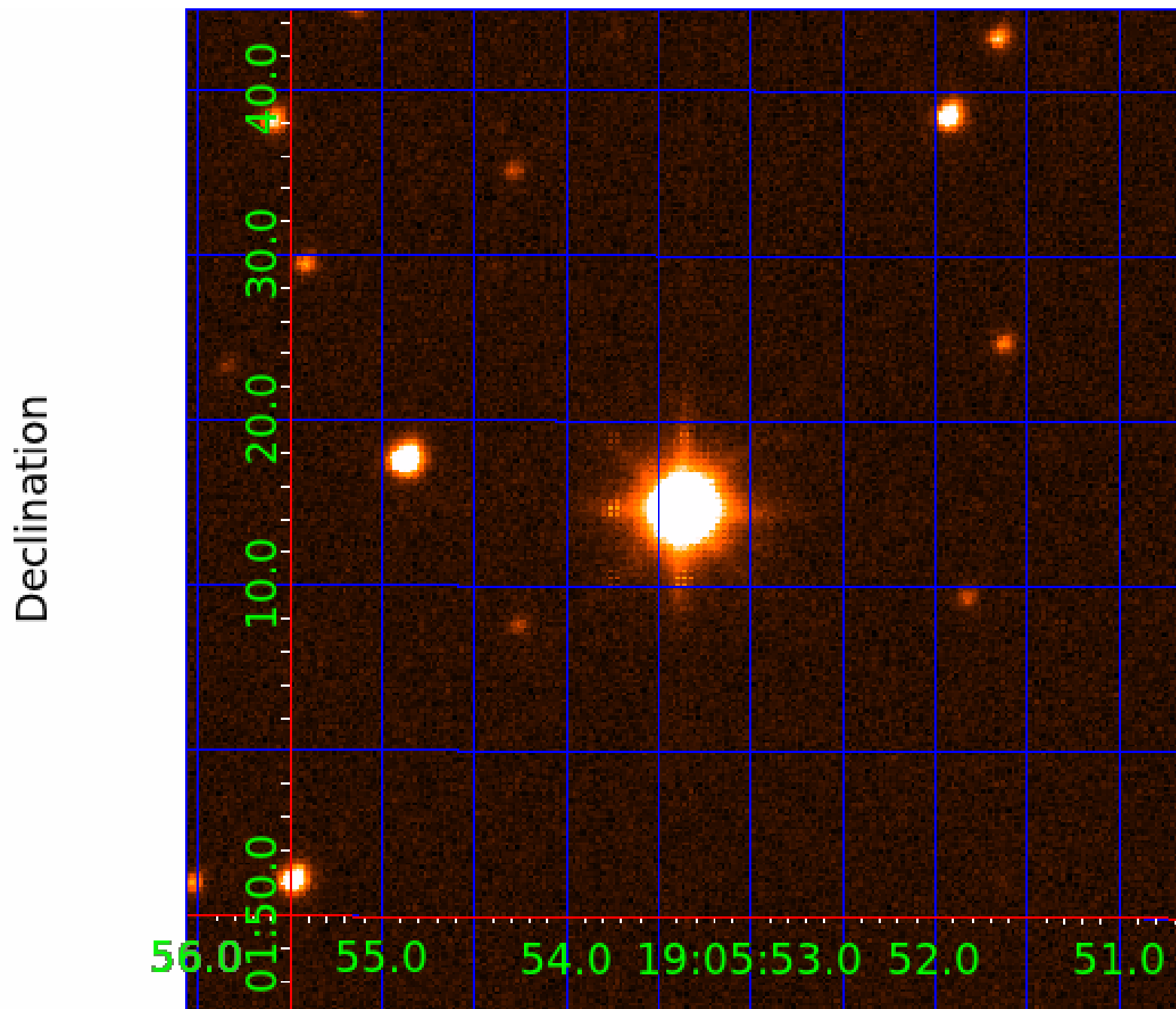
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006590403

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006590403-01 | OBS | No | 0.514500 | 131.566994 | 376.4 | 1.260 | 12.6 | 14.5 | 2.25 | 7264 | 4.54 | 57612.24 |
| 006590403-02 | OBS | No | 0.514502 | 131.914073 | 94.9 | 1.441 | 10.6 | 3.5 | 2.25 | 7264 | 2.36 | 57611.92 |
| 006590403-03 | OBS | No | 0.907615 | 131.908536 | 695.5 | 2.578 | 11.2 | 11.8 | 2.25 | 7264 | 6.89 | 27028.79 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006590403-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED |
| 006590403-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED |
| 006590403-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

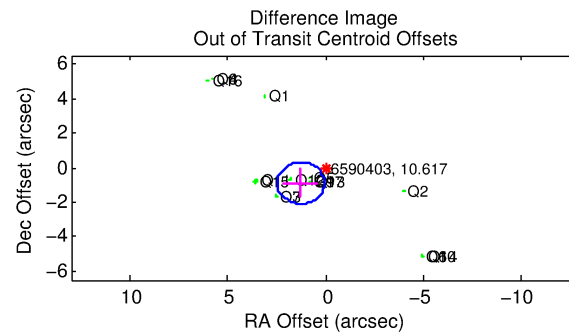
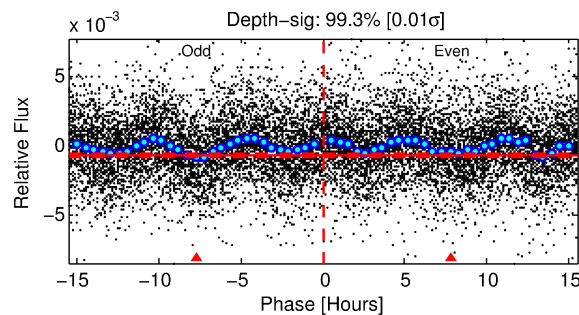
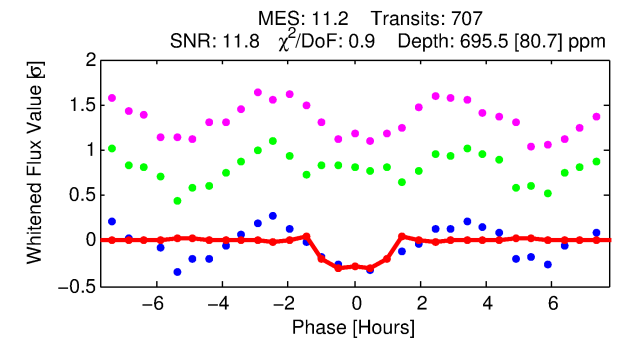
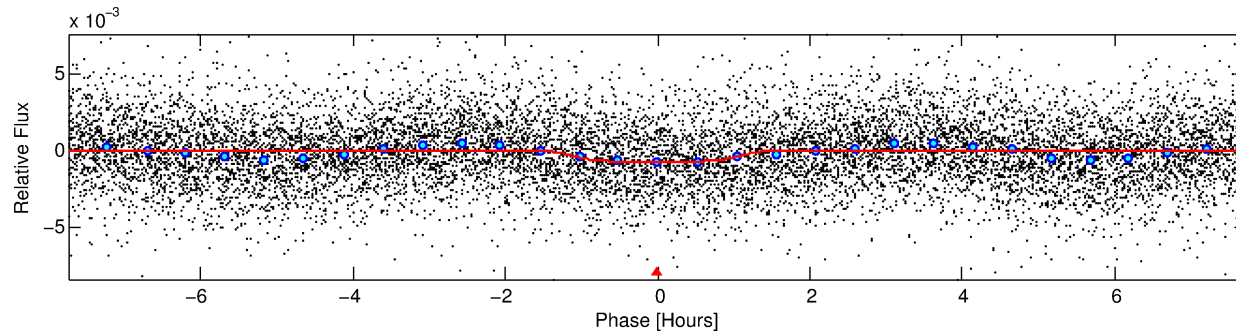
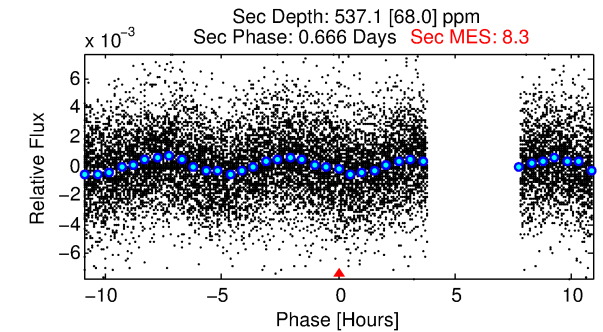
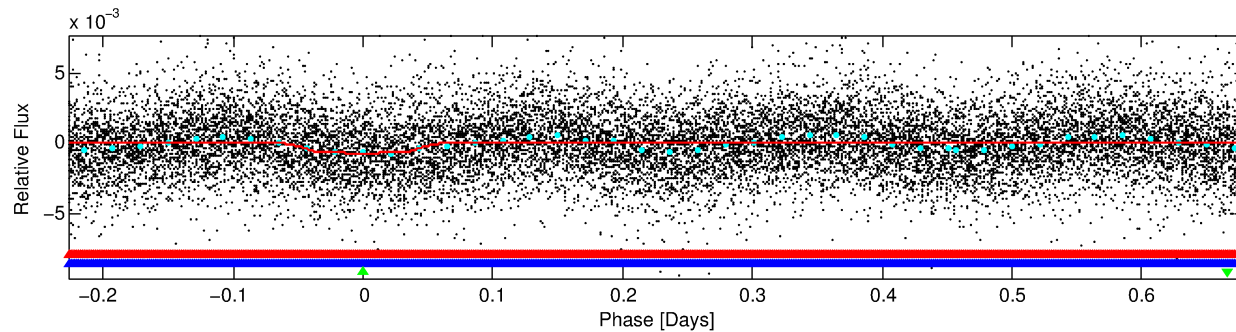
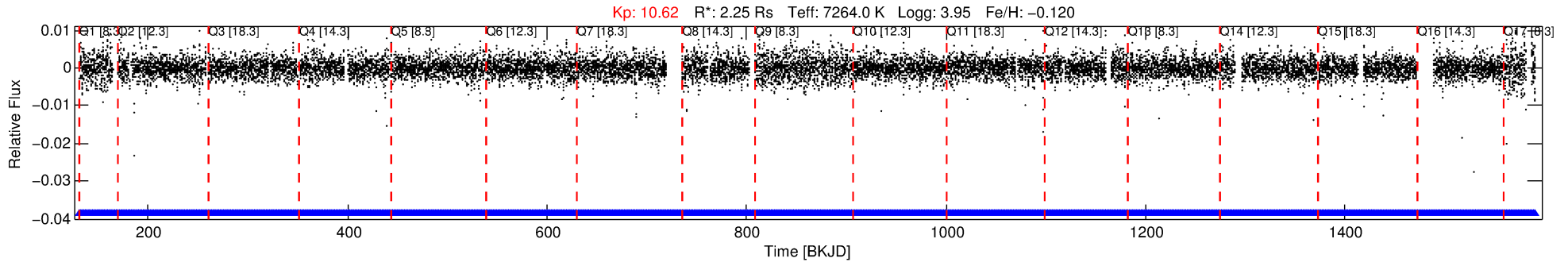
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006590403-03

No Significant Match Found

DV One-Page Summary

KIC: 6590403 Candidate: 3 of 3 Period: 0.908 d



DV Fit Results:

Period = 0.90761 [0.00001] d
Epoch = 131.9085 [0.0021] BKJD
Rp/R* = 0.0280 [0.0039]
a/R* = 1.66 [0.75]
b = 0.89 [0.16]
Seff = 27028.79 [12734.51]
Teq = 3270 [385] K
Rp = 6.89 [2.39] Re
a = 0.0217 [0.0062] AU
Ag = 2.92 [1.57] [1.22σ]
Teffp = 6607 [577] K [4.81σ]

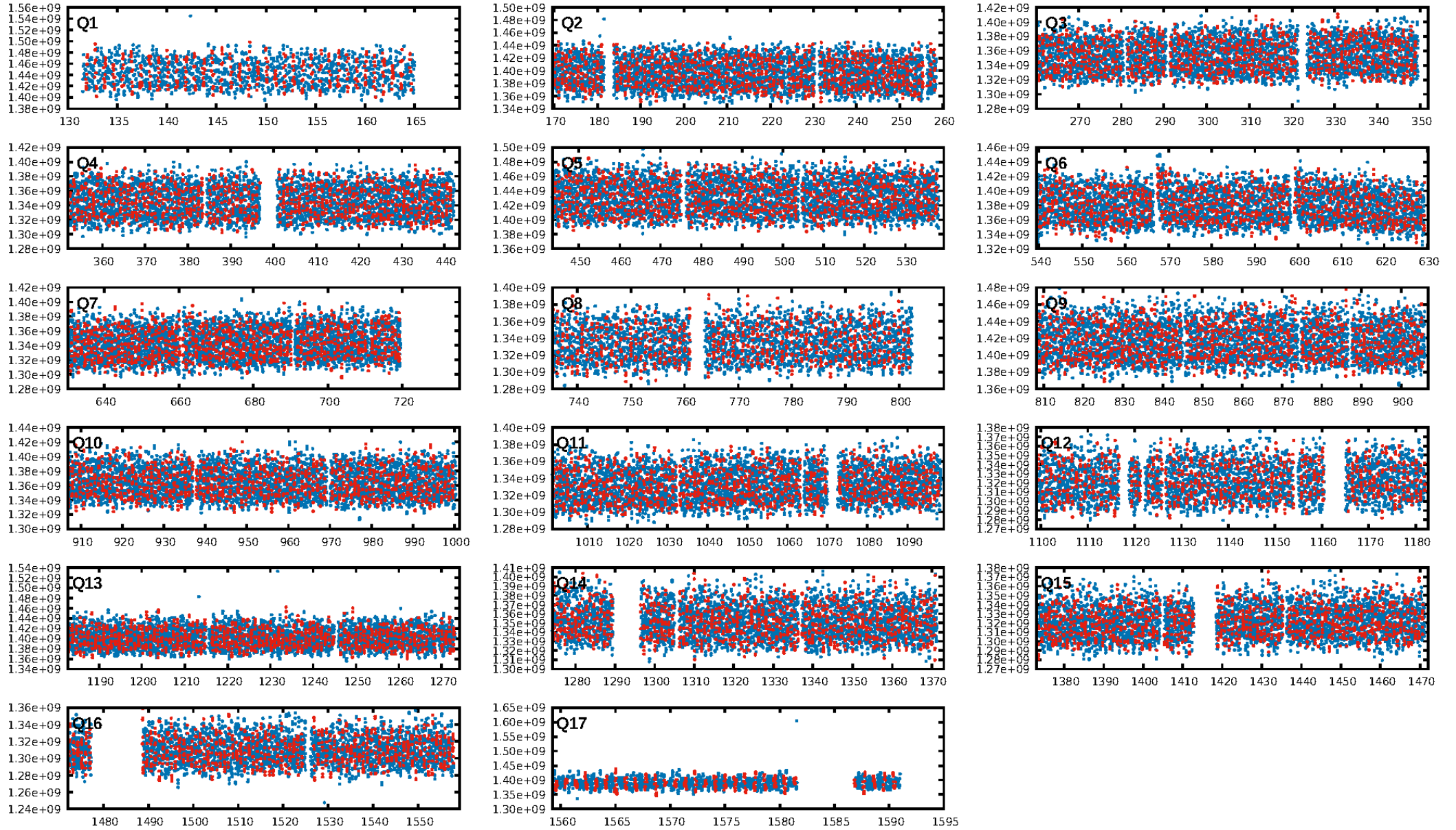
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.19σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.23e-12
RollingBand-fgt: 1.00 [674/674]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 0.105 arcsec [1.60σ]
OotOffset-rm: 1.549 arcsec [3.87σ]
KicOffset-rm: 1.671 arcsec [4.37σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

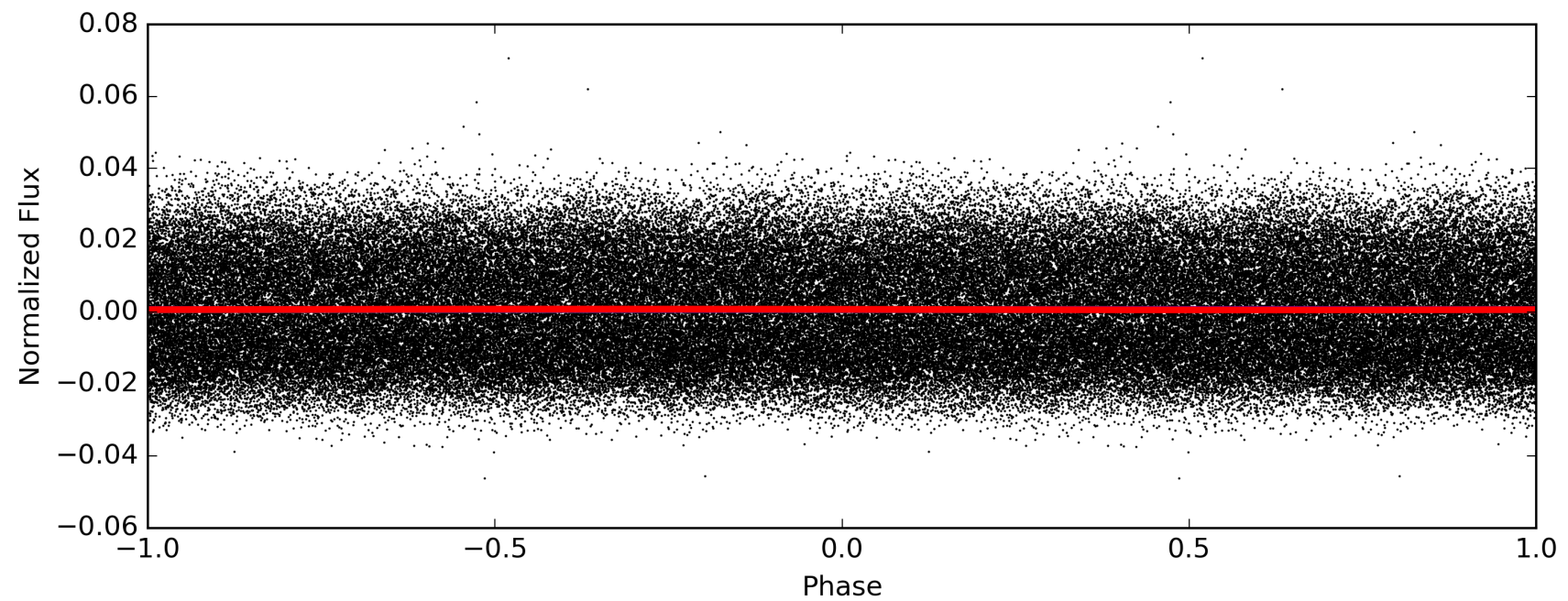
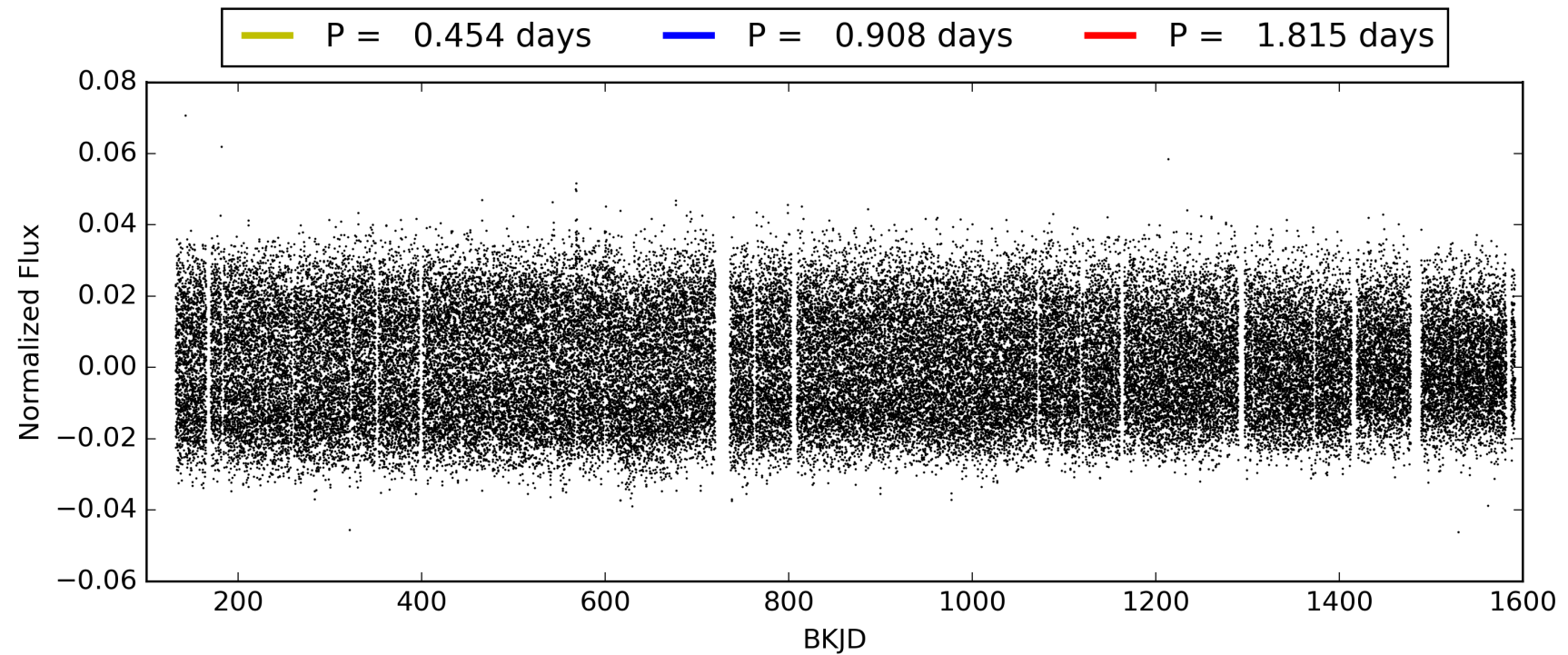
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:02:29 Z

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

TCE 006590403-03, PDC Light Curves

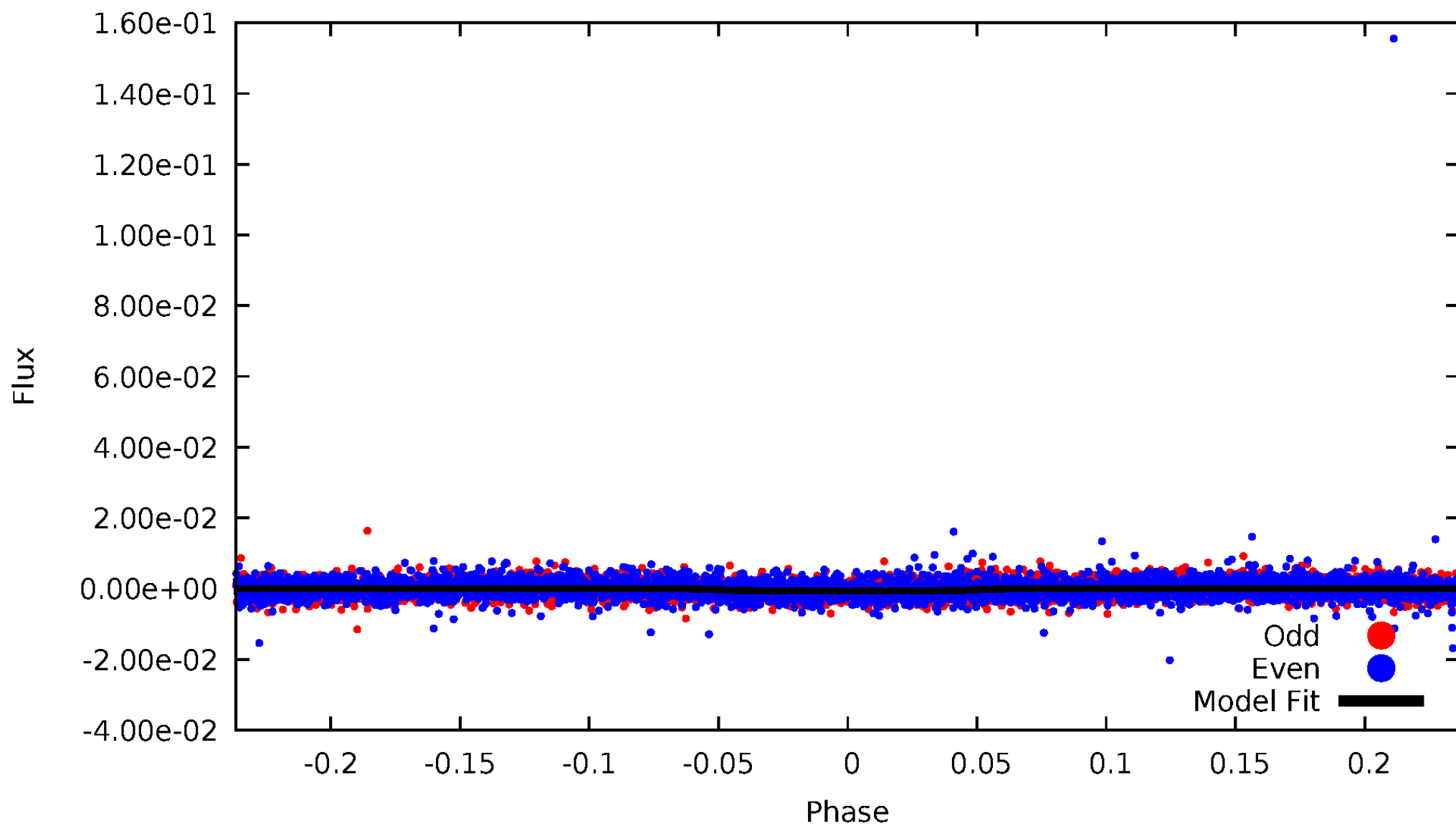


TCE 006590403-03



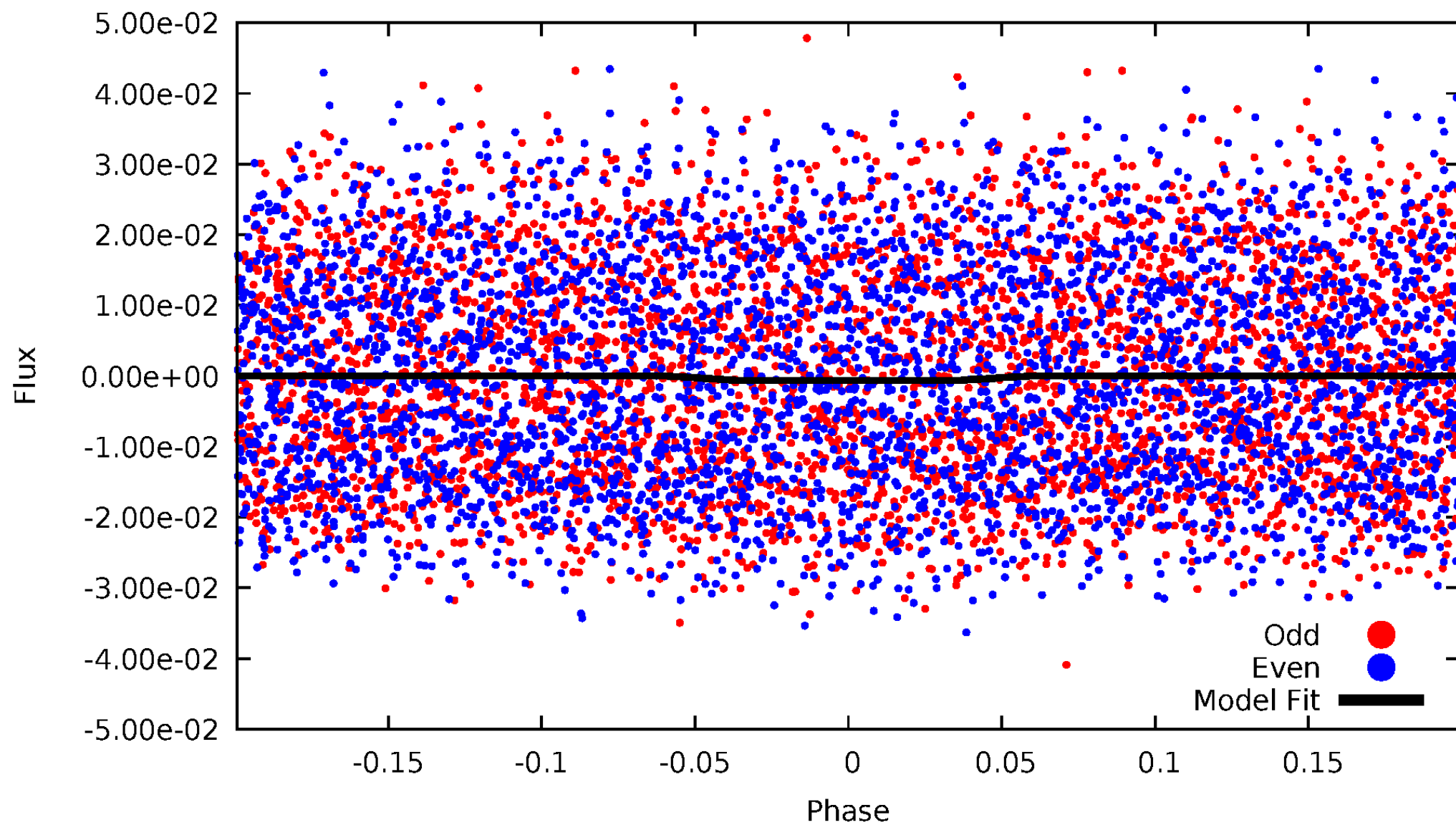
DV Odd/Even

TCE 006590403-03



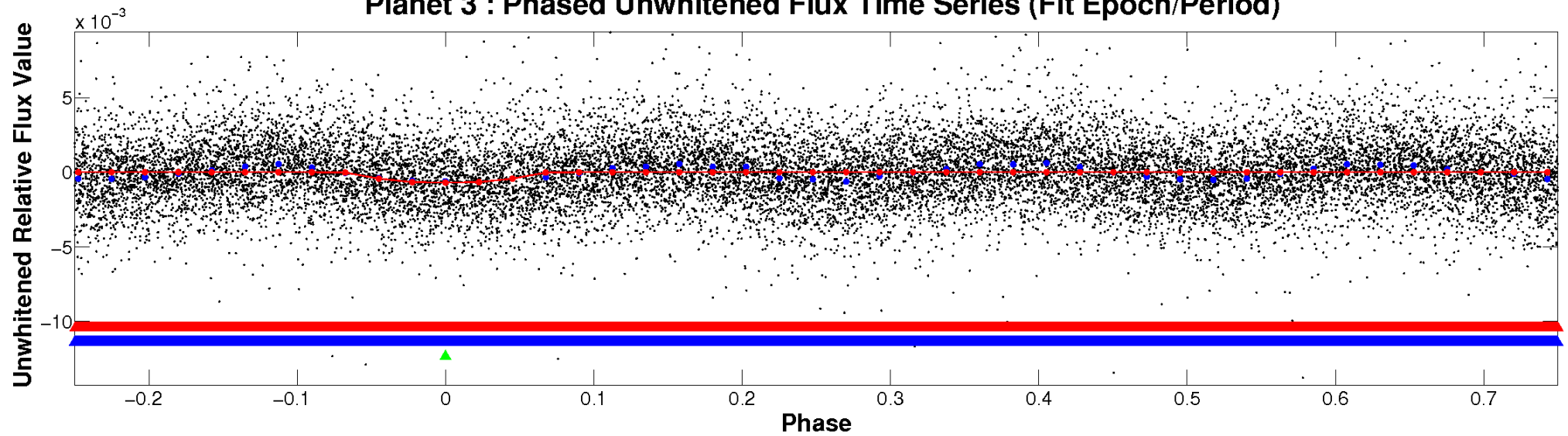
ALT Odd/Even

TCE 006590403-03

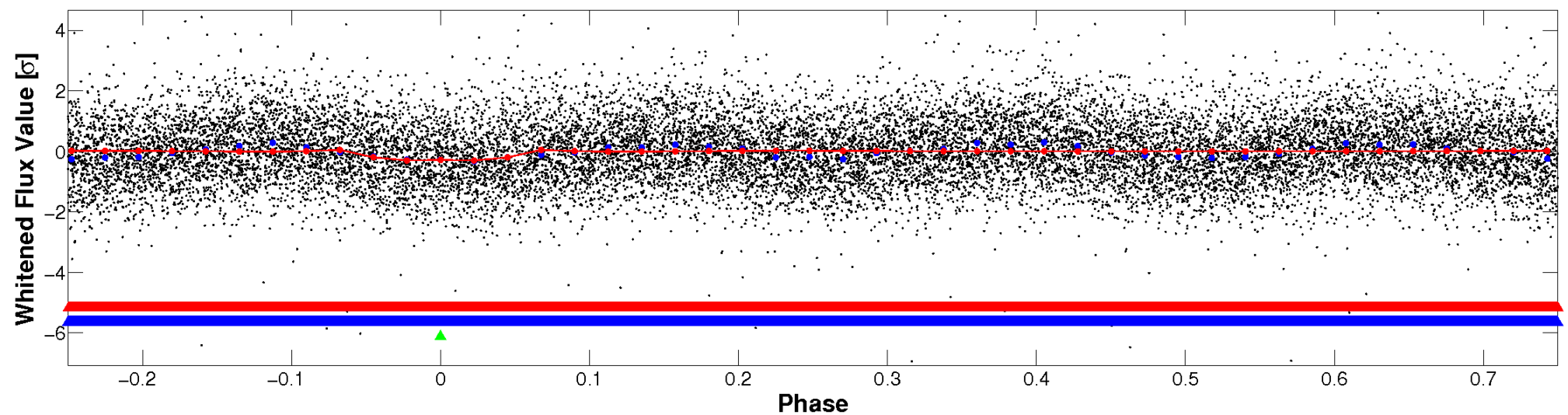


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

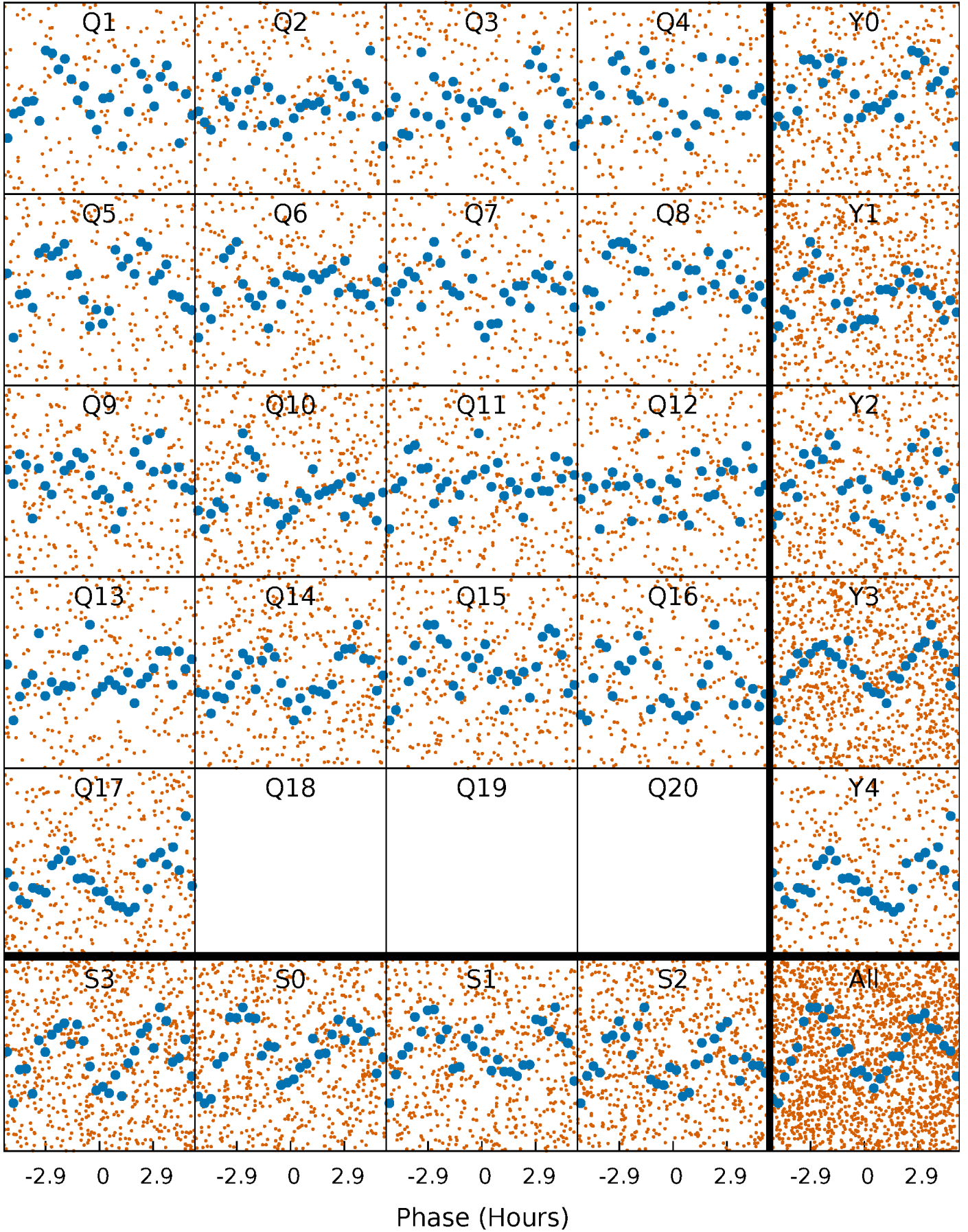


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



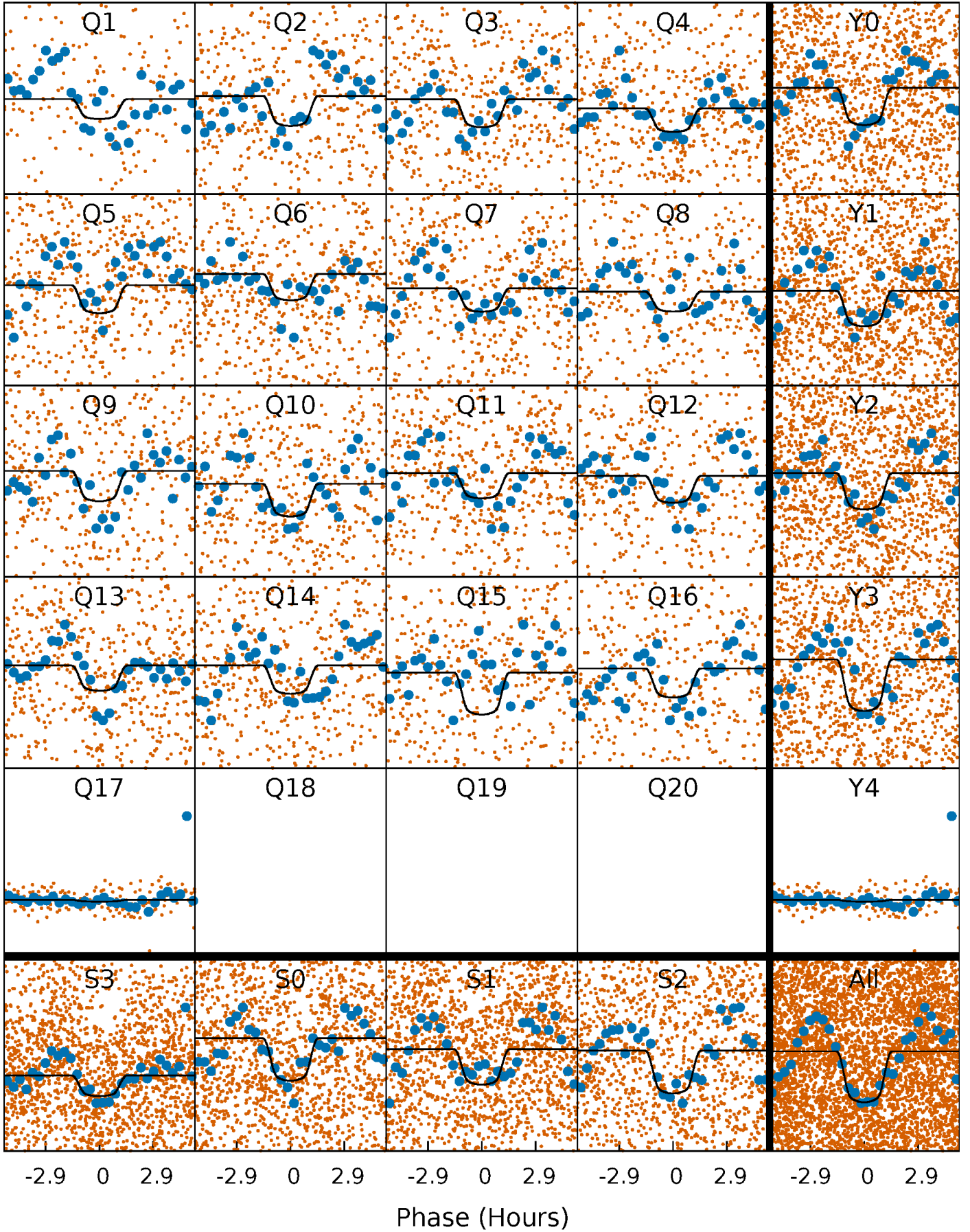
PDC Quarter-Phased Transit Curves

TCE 006590403-03 P= 0.907615 Days $T_0=131.908536$ (BKJD)



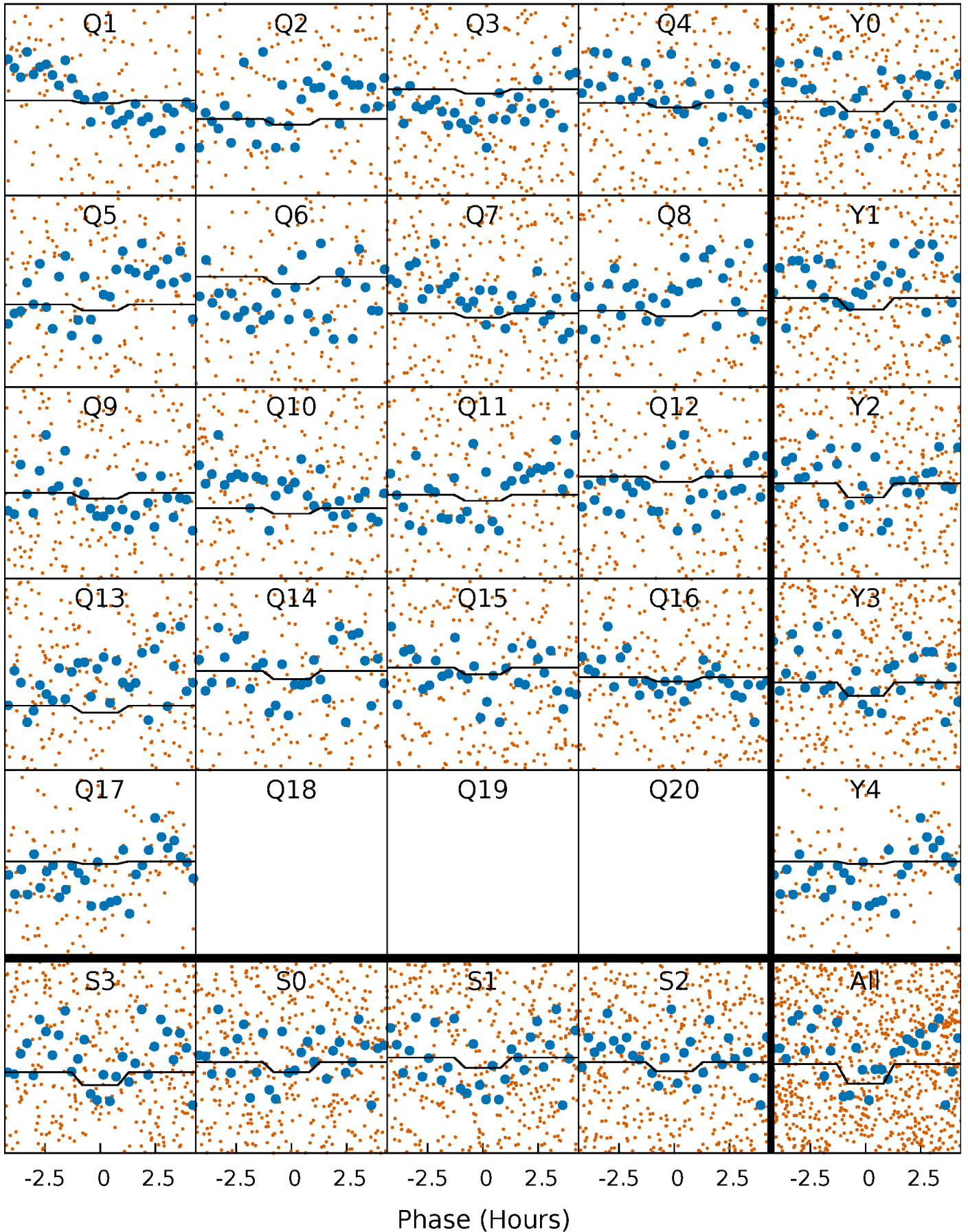
DV Quarter-Phased Transit Curves

TCE 006590403-03 $P = 0.907615$ Days $T_0 = 131.908536$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

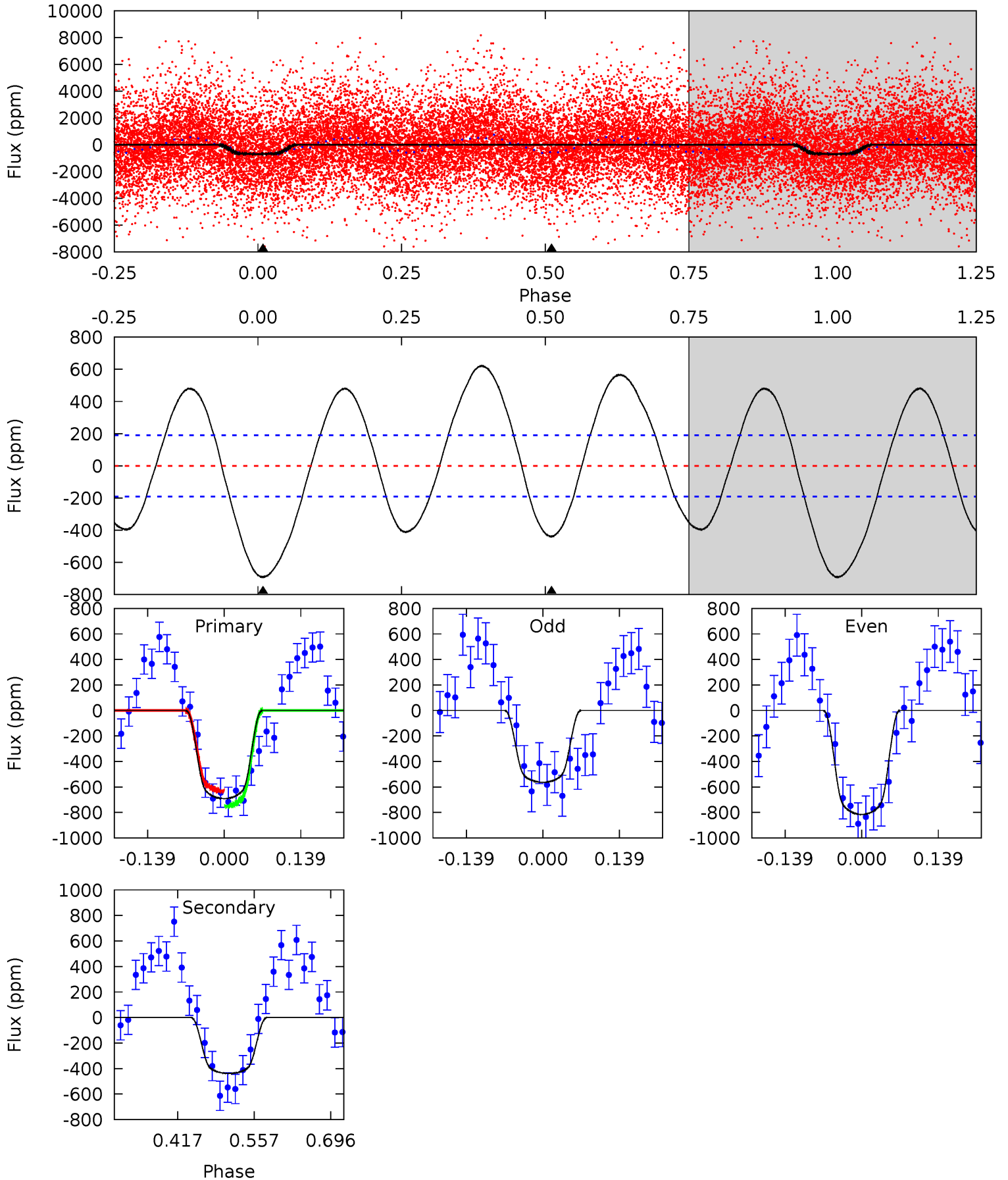
TCE 006590403-03 P= 0.907650 Days $T_0=131.902048$ (BKJD)



DV Model-Shift Uniqueness Test

006590403-03, P = 0.907615 Days, E = 131.000921 Days

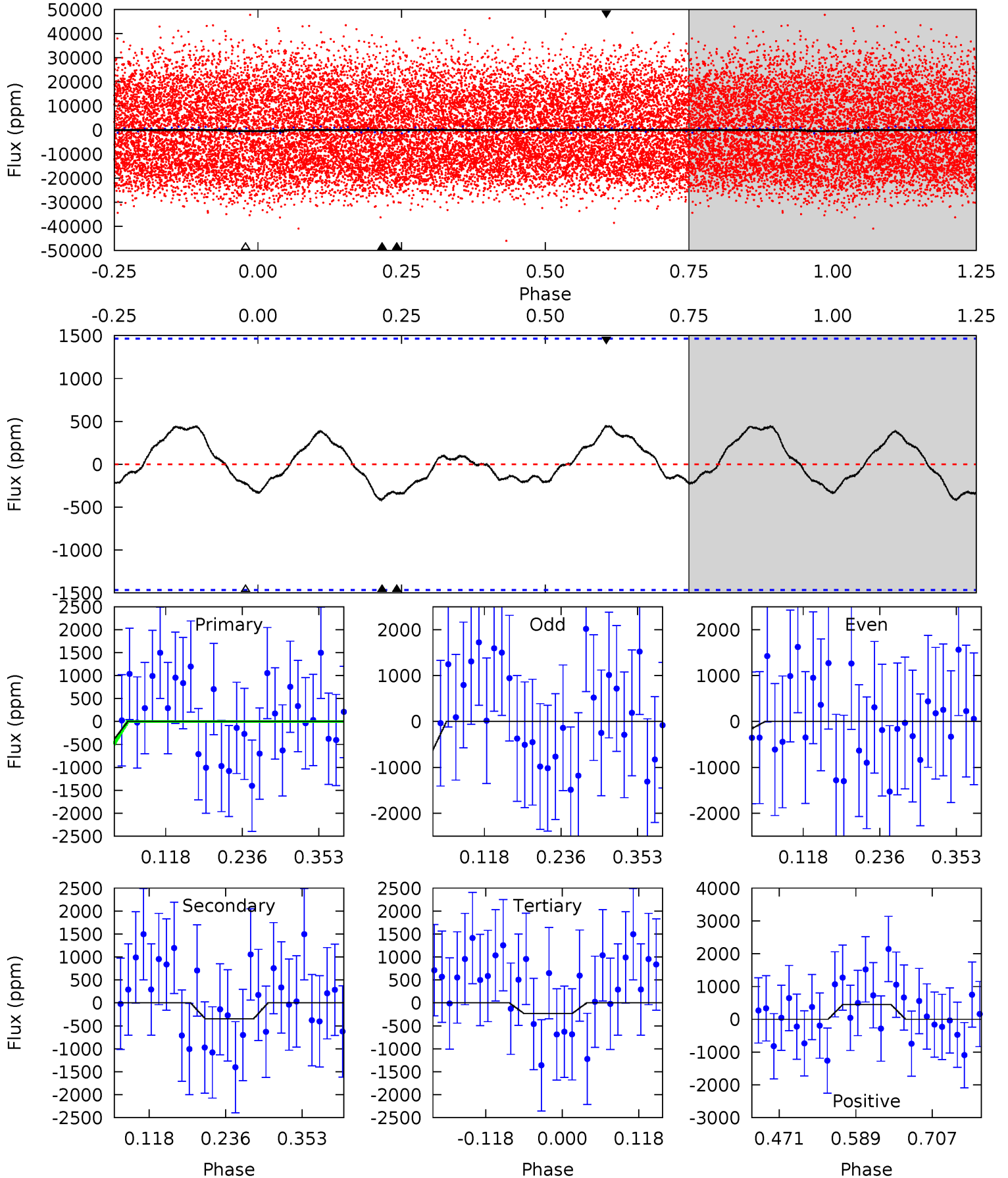
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.3 | 10.3 | 0 | 0 | 4.50 | 1.48 | 7.31 | 16.3 | 16.3 | 10.3 | 10.3 | 2.99 | 0.82 | 0.47 | 1.42 |



Alt Model-Shift Uniqueness Test

006590403-03, P = 0.907650 Days, E = 130.994398 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 1.29 | 1.08 | 0.71 | 1.39 | 4.53 | 1.56 | 0.67 | 0.57 | -0.10 | 0.36 | -0.31 | 0.76 | -0.22 | 0.52 | 0.34 |



Stellar Parameters For KIC 006590403

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7264^{+226}_{-302} | $3.948^{+0.252}_{-0.147}$ | $-0.120^{+0.250}_{-0.350}$ | $2.255^{+0.585}_{-0.715}$ | $1.644^{+0.186}_{-0.345}$ | $0.202^{+0.360}_{-0.086}$ |
| | +3%/-4% | +6%/-4% | +208%/-292% | +26%/-32% | +11%/-21% | +178%/-43% |
| 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 006590403-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|---------------------------|
| DV | -439 ± 42 | $6.67^{+1.32}_{-1.37}$ | 4501^{+326}_{-376} | 6006^{+559}_{-505} | $2.521^{+1.379}_{-0.792}$ |
| Alt. | -348 ± 324 | $5.59^{+1.51}_{-1.16}$ | 4498^{+346}_{-394} | 6133^{+1481}_{-3837} | $2.637^{+3.676}_{-2.329}$ |

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

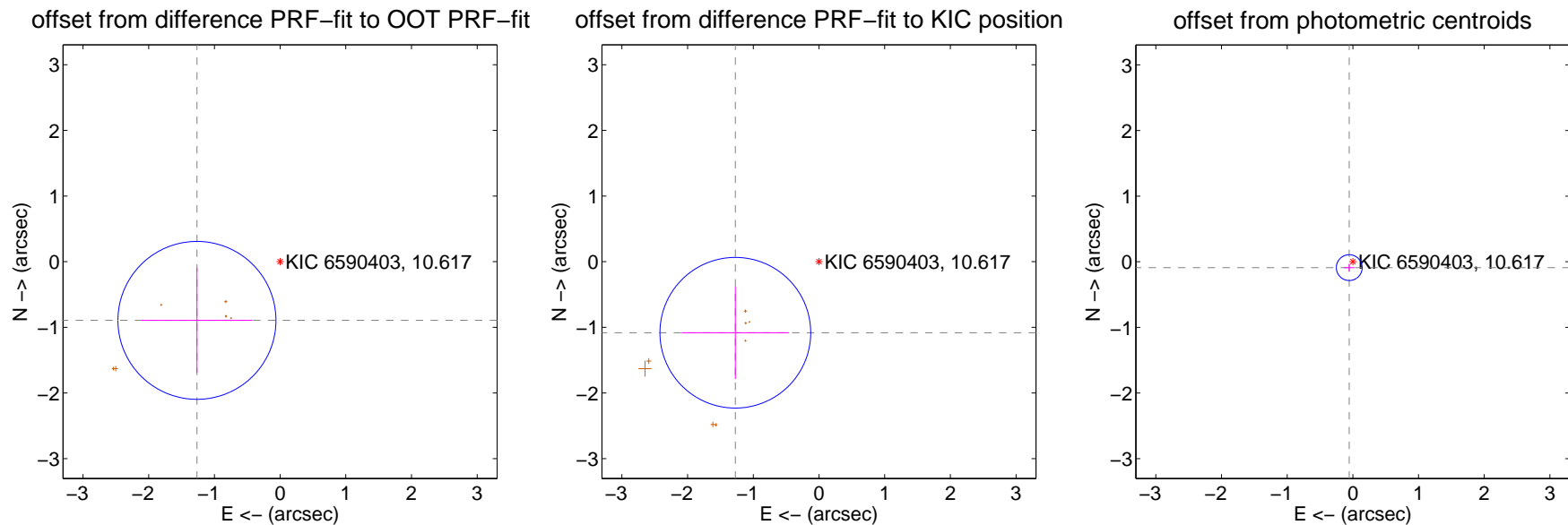
DV Centroid Data

Supplemental centroid analysis for 006590403-03. **Kepler magnitude: 10.62.** Transit SNR 11.76

There are 0 quarters with good PRF difference image offsets

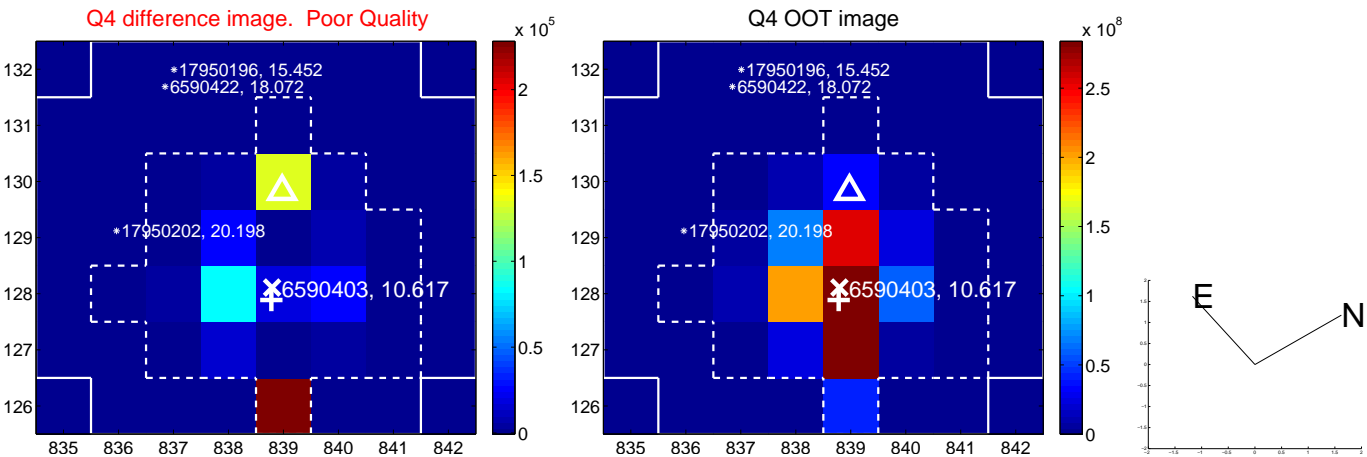
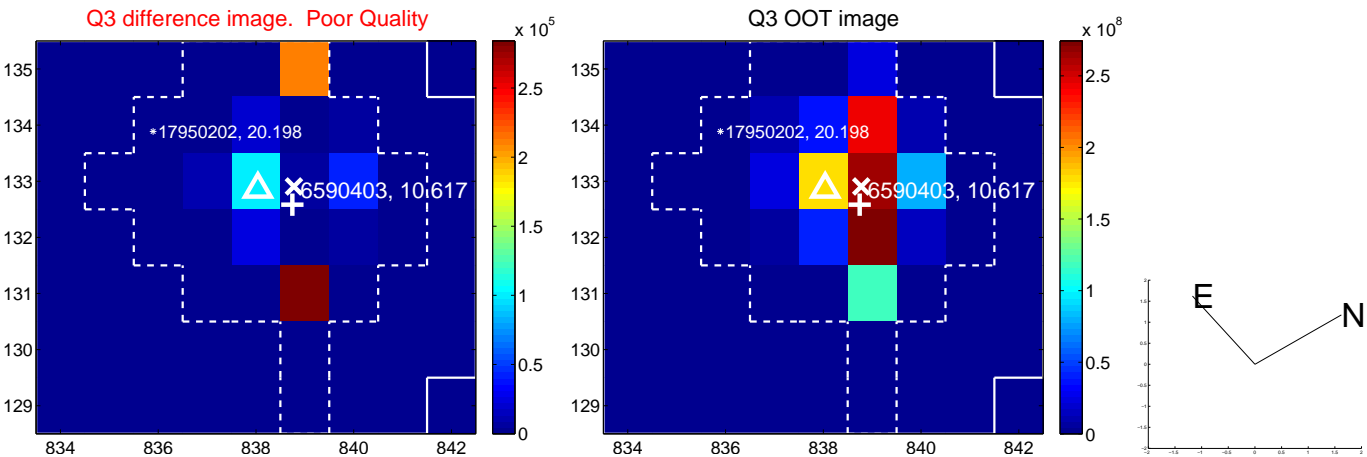
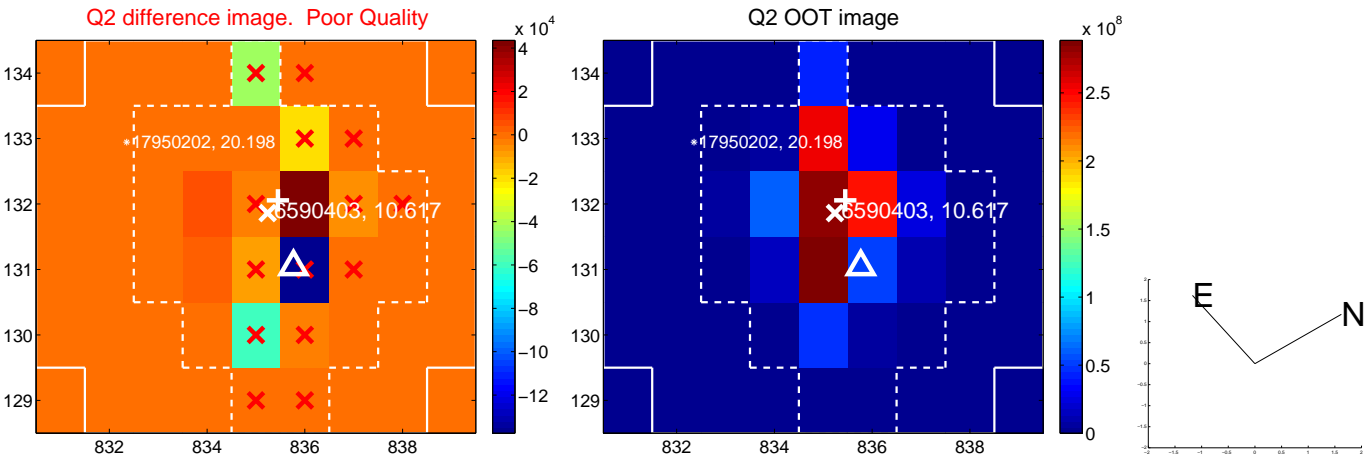
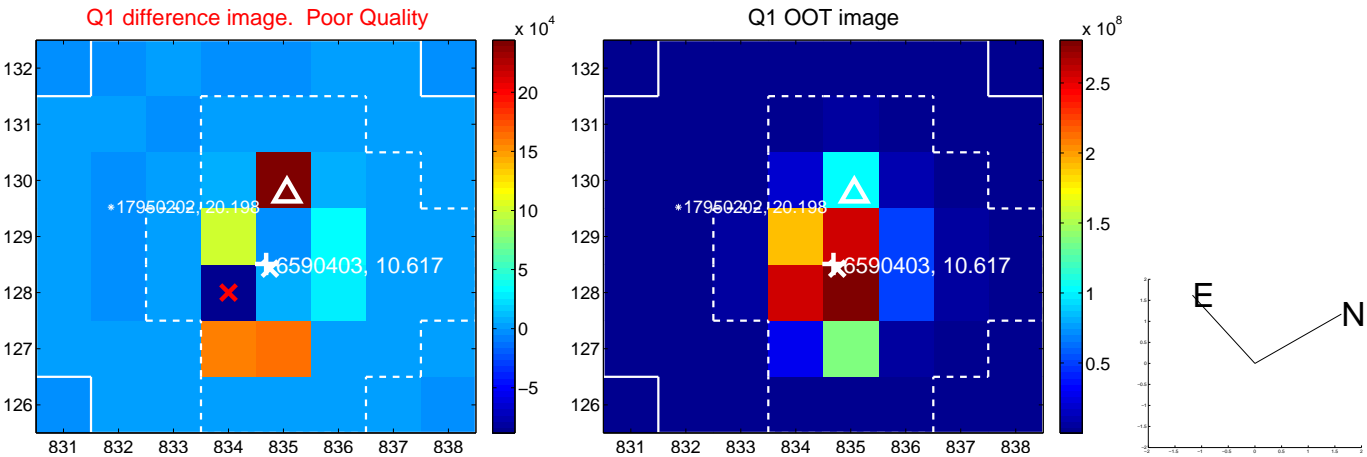
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.549 ± 0.401 | 3.87 | 1.266 ± 0.845 | -0.894 ± 0.797 |
| PRF-fit source offset from KIC position | 1.671 ± 0.382 | 4.37 | 1.273 ± 0.817 | -1.082 ± 0.705 |
| photometric centroid source offset | 0.10 ± 0.07 | 1.60 | 0.06 ± 0.08 | -0.09 ± 0.06 |

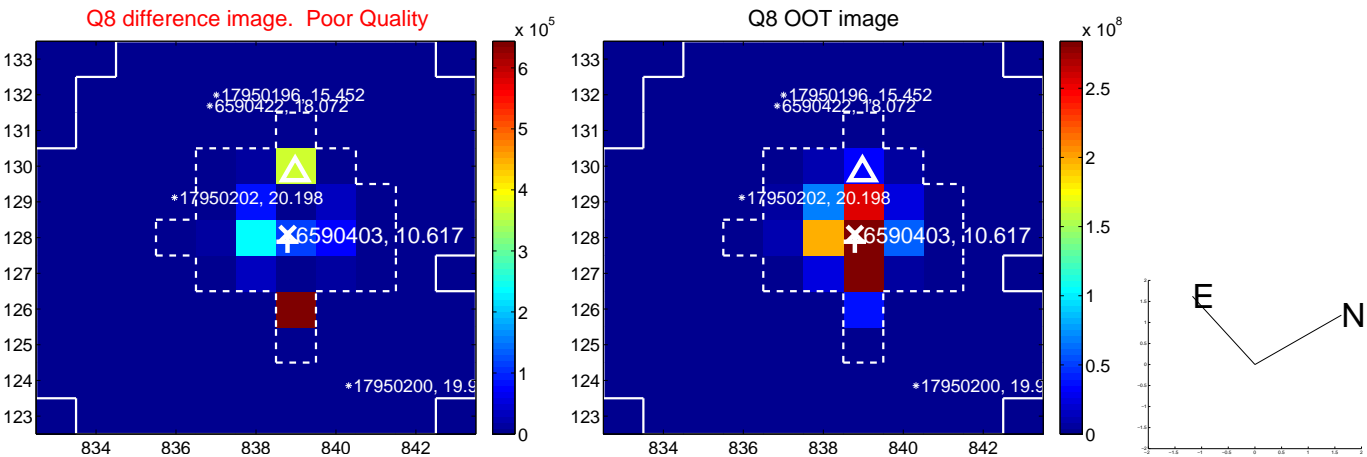
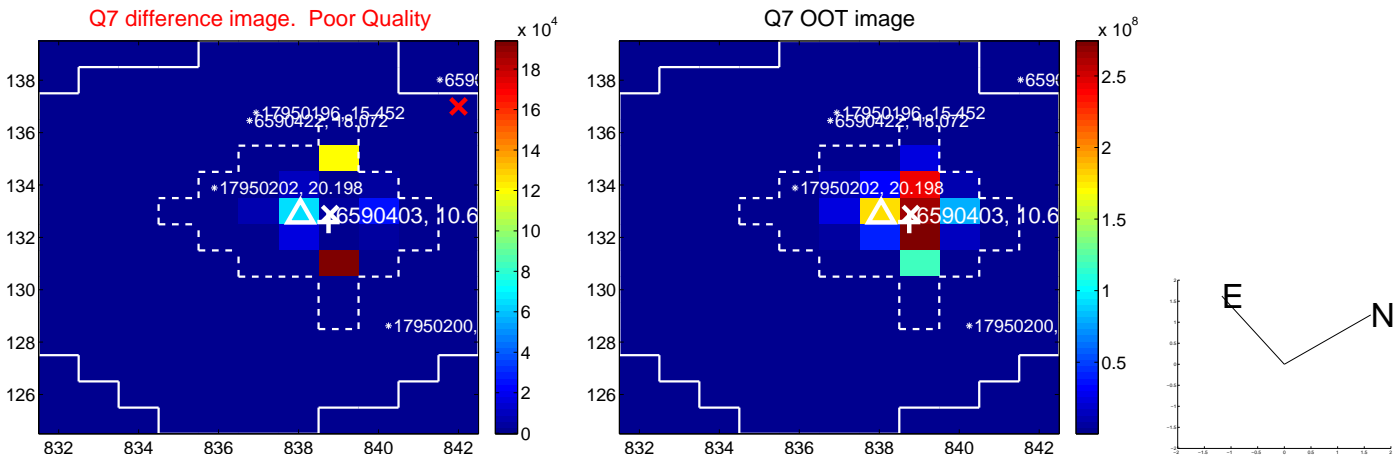
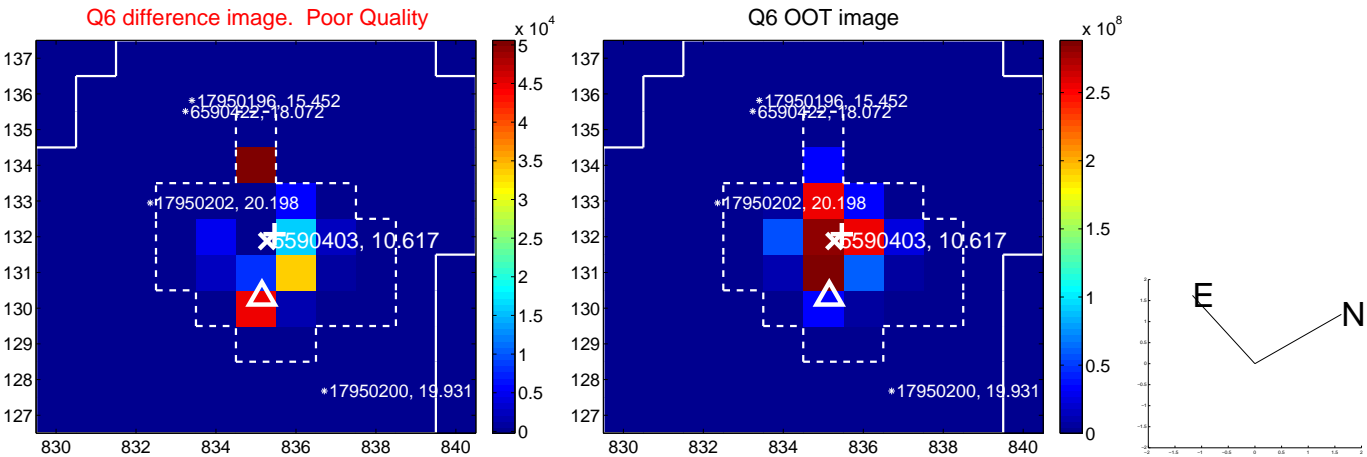
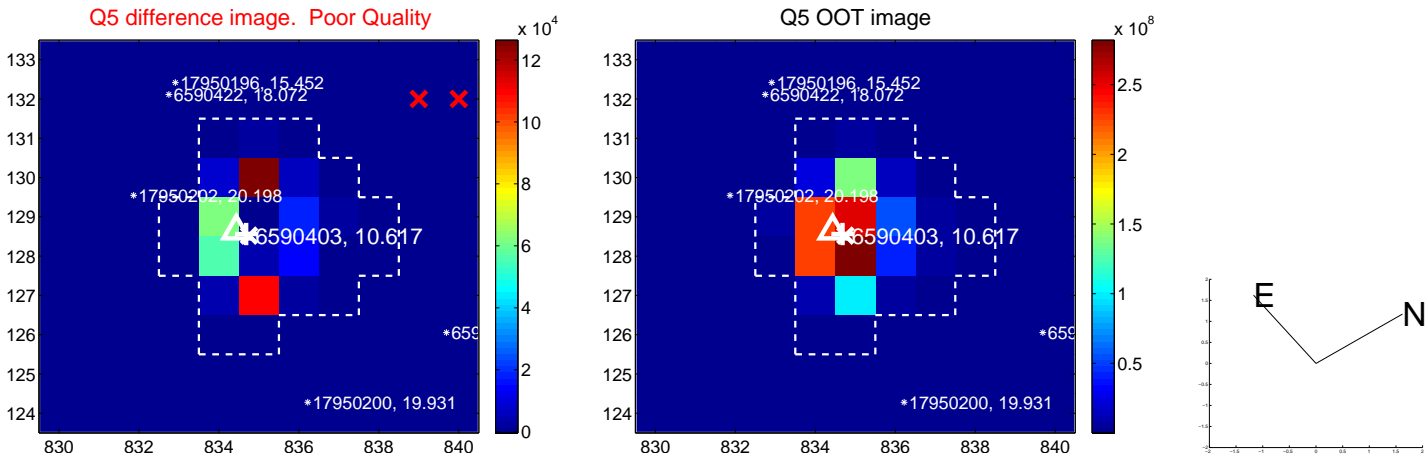


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

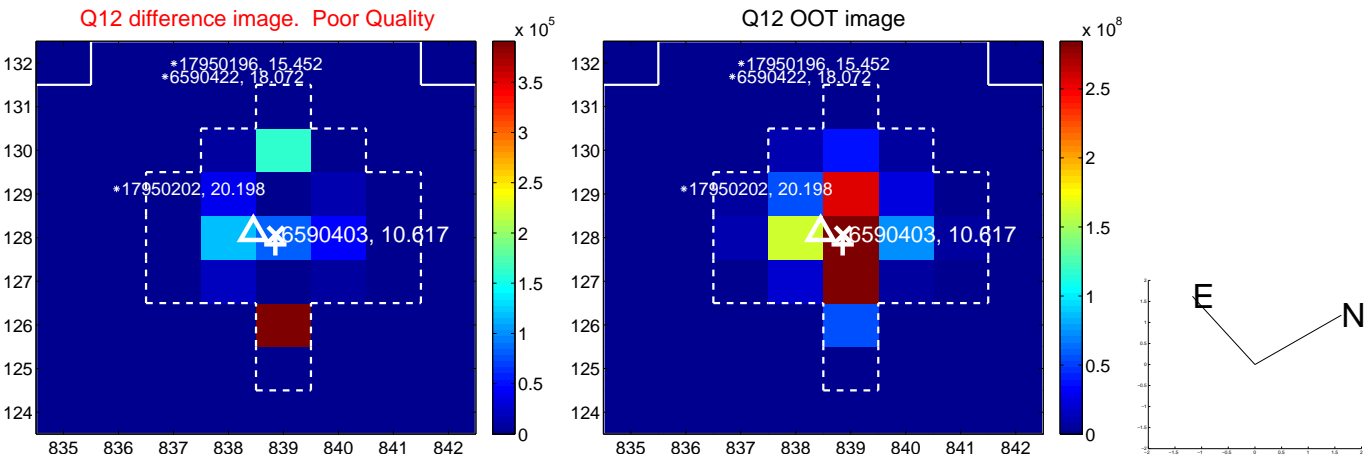
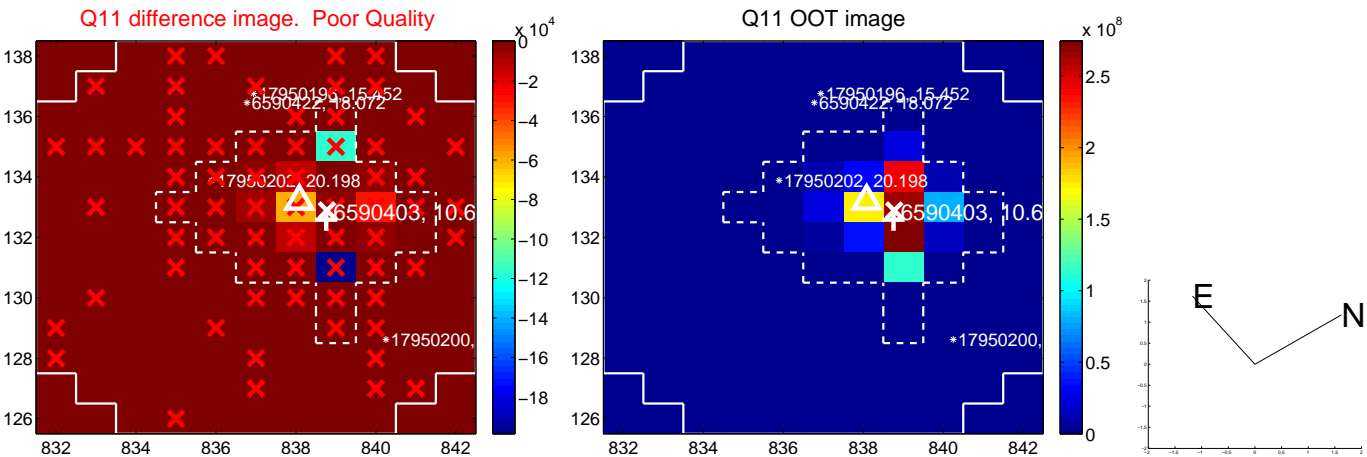
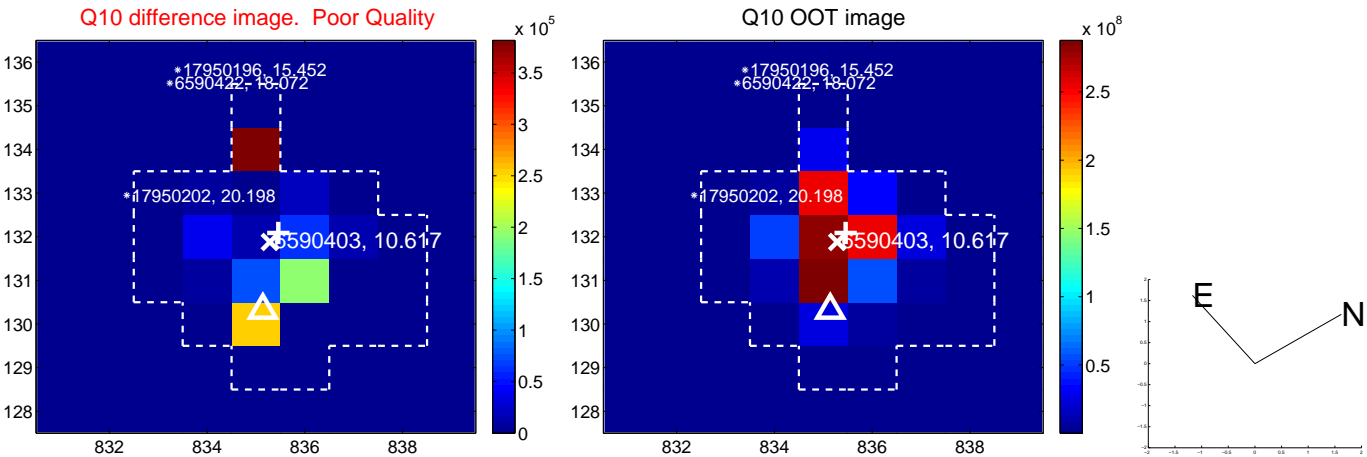
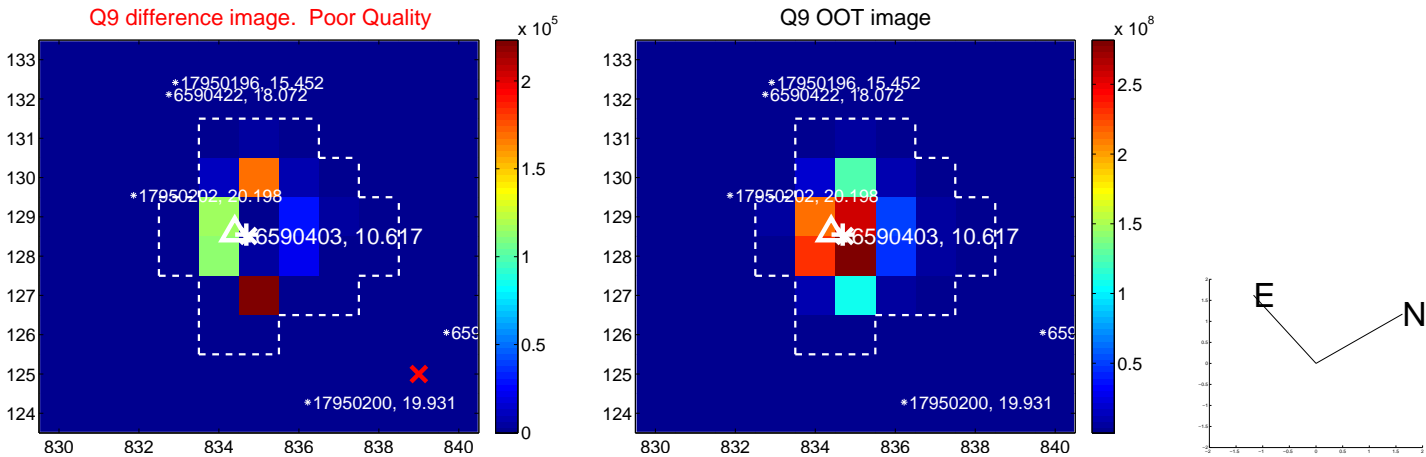
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



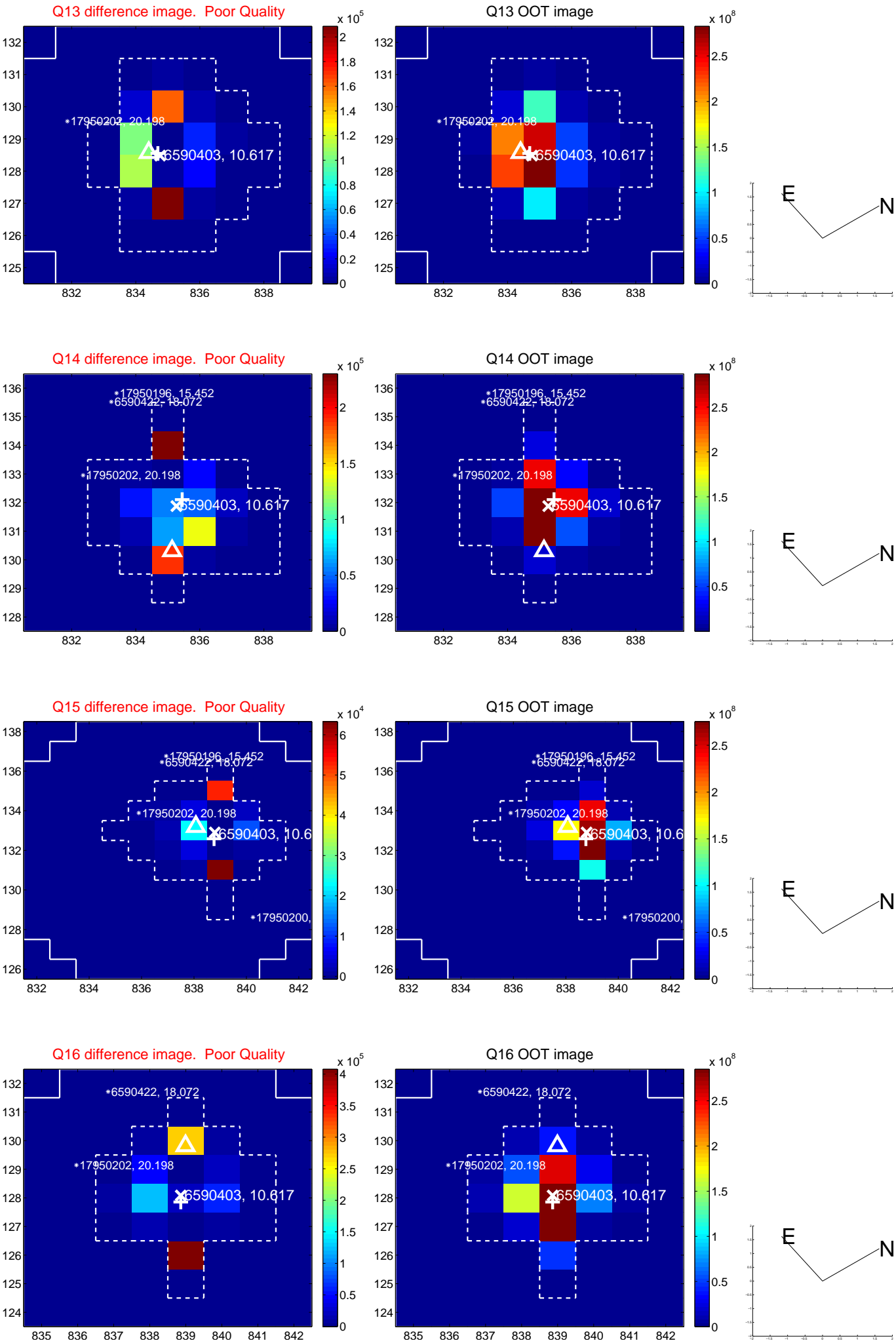
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



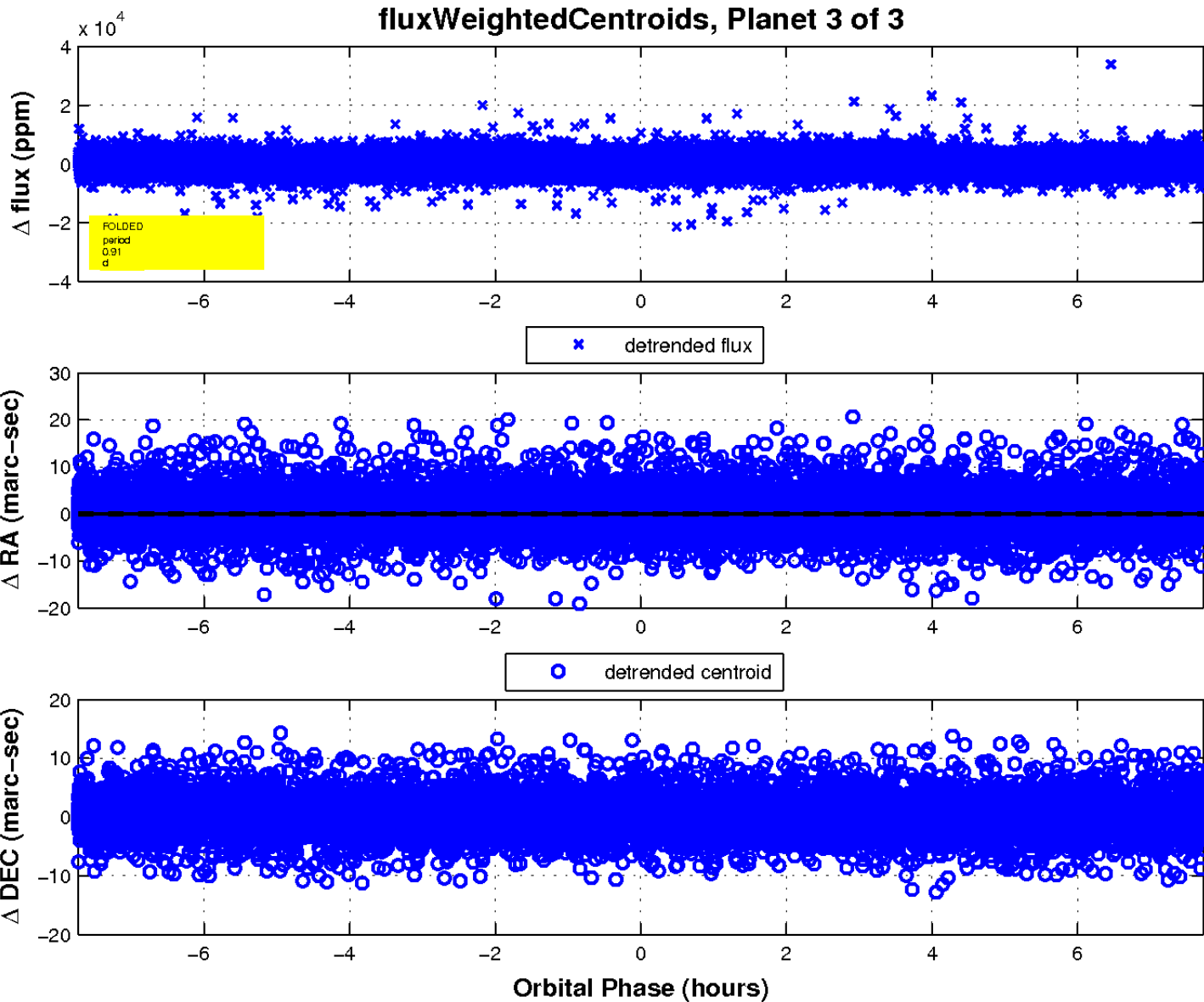
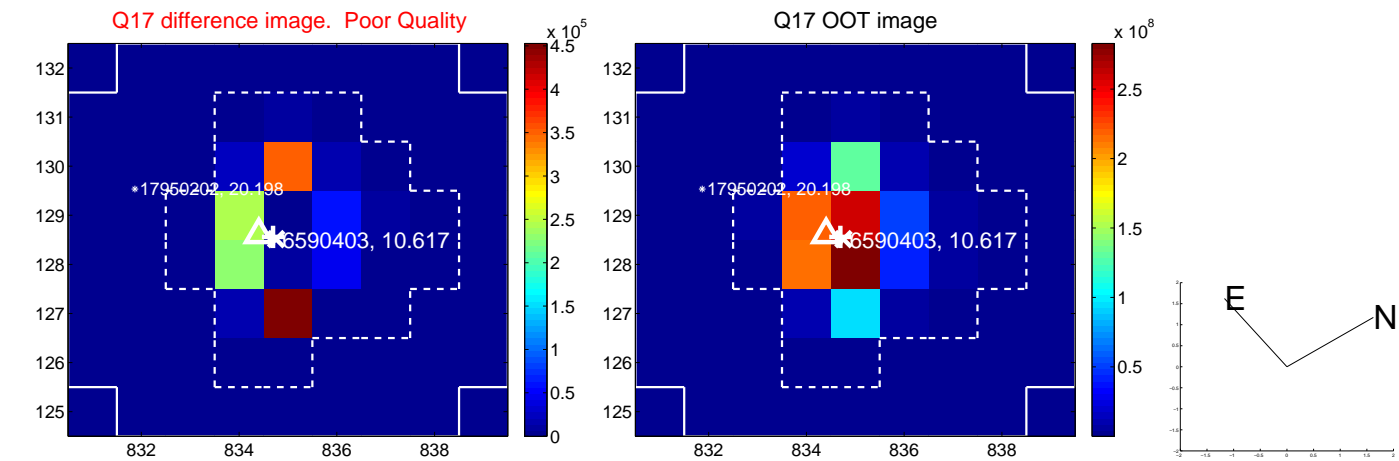
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

