

KIC 006463436

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006463436-01 | OBS | No | 0.993945 | 131.972466 | 303.2 | 4.535 | 12.3 | 12.4 | 1.95 | 6006 | 3.40 | 11338.45 |
| 006463436-02 | OBS | No | 0.537233 | 131.693258 | 574.3 | 0.548 | 10.0 | 9.0 | 1.95 | 6006 | 5.84 | 25752.55 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006463436-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 006463436-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |

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

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

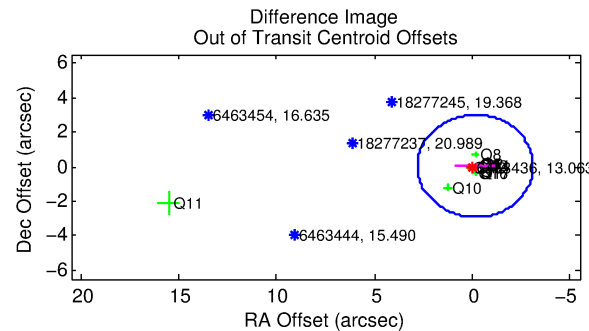
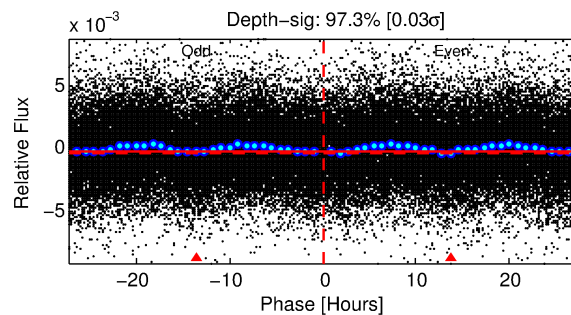
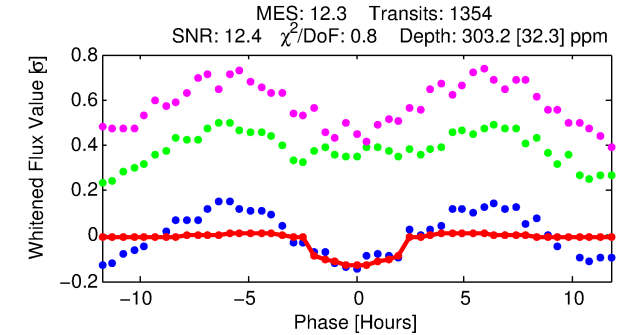
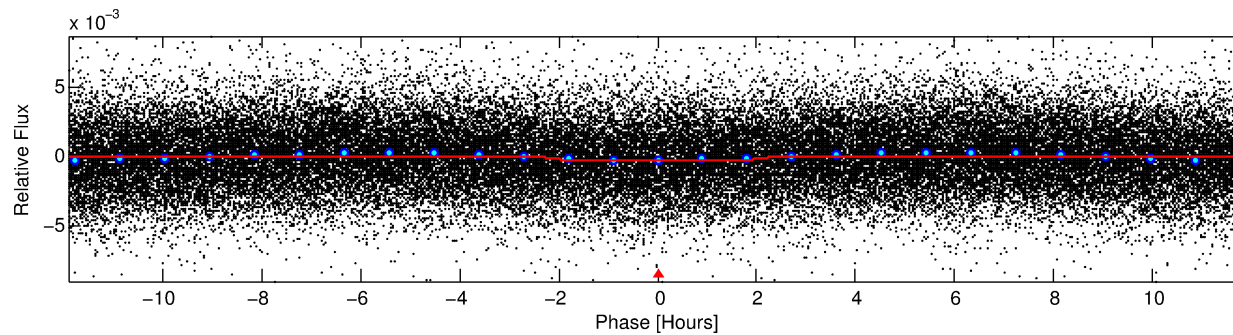
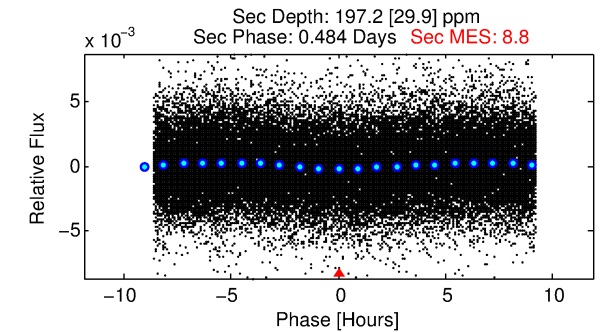
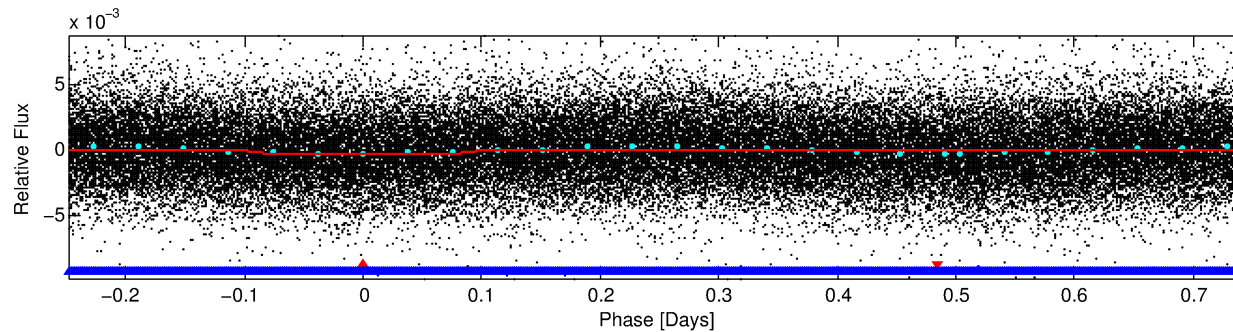
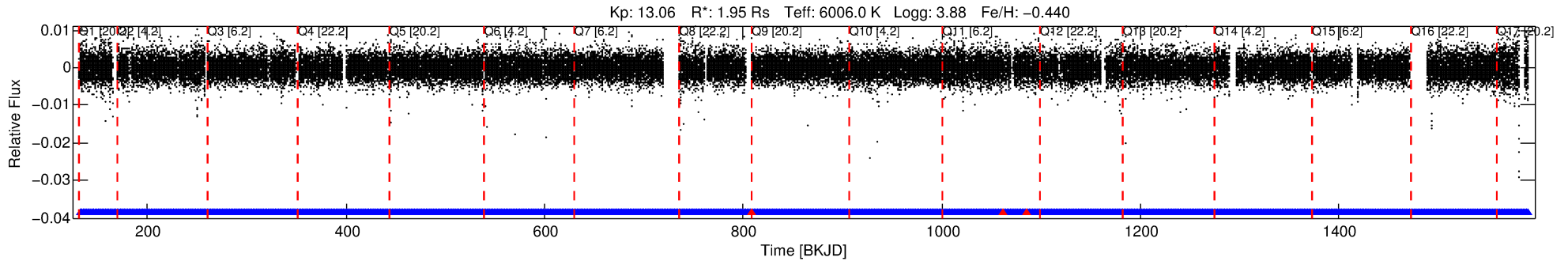
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006463436-01

No Significant Match Found

DV One-Page Summary

KIC: 6463436 Candidate: 1 of 2 Period: 0.994 d



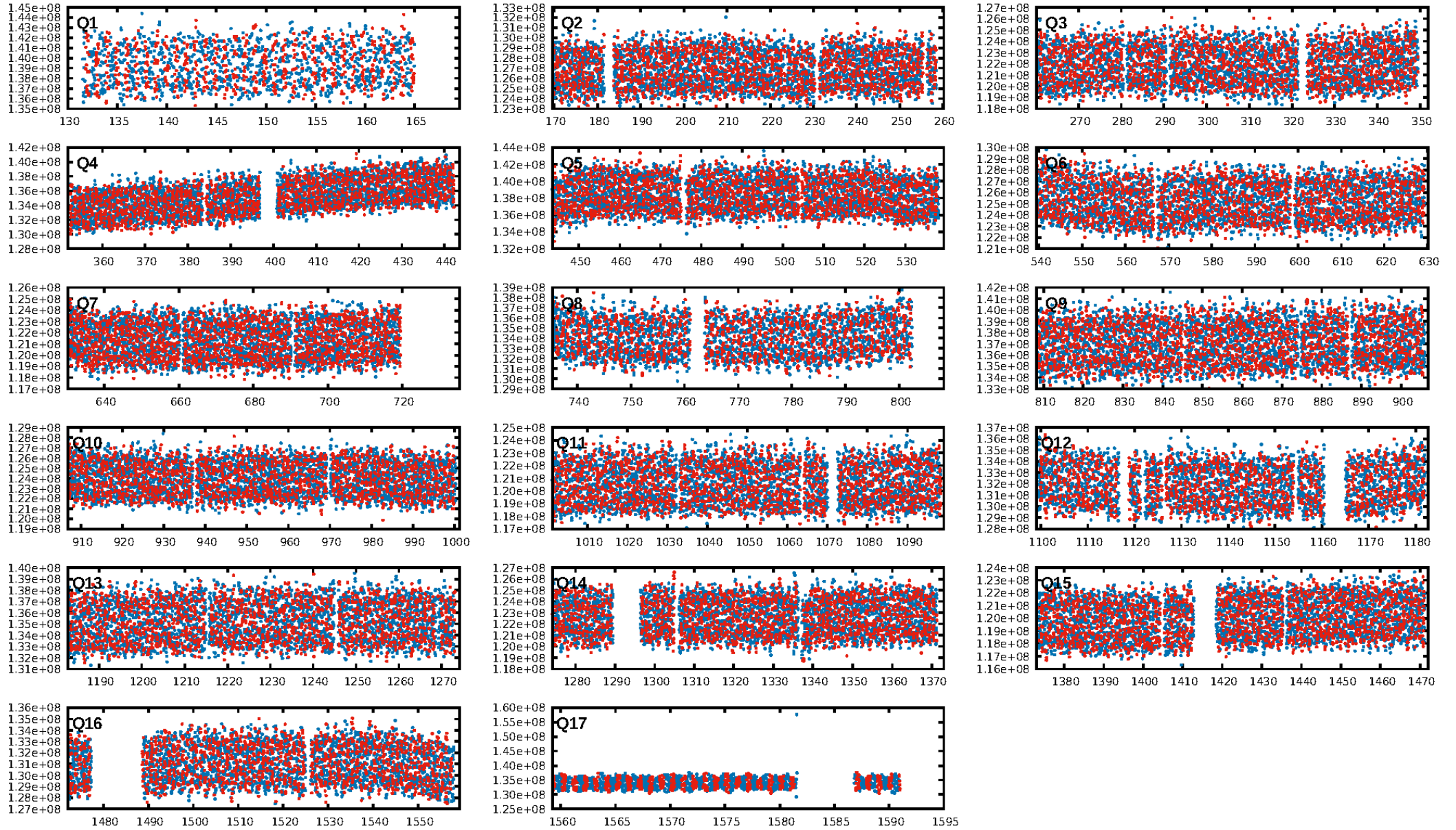
DV Fit Results:

Period = 0.99395 [0.00001] d
Epoch = 131.9725 [0.0034] BKJD
Rp/R* = 0.0160 [0.0205]
a/R* = 1.80 [7.90]
b = 0.06 [101.33]
Seff = 11338.46 [9825.06]
Teq = 2631 [570] K
Rp = 3.40 [4.67] Re
a = 0.0198 [0.0102] AU
Ag = 3.68 [9.97] [0.27σ]
Teffp = 5635 [3623] K [0.82σ]

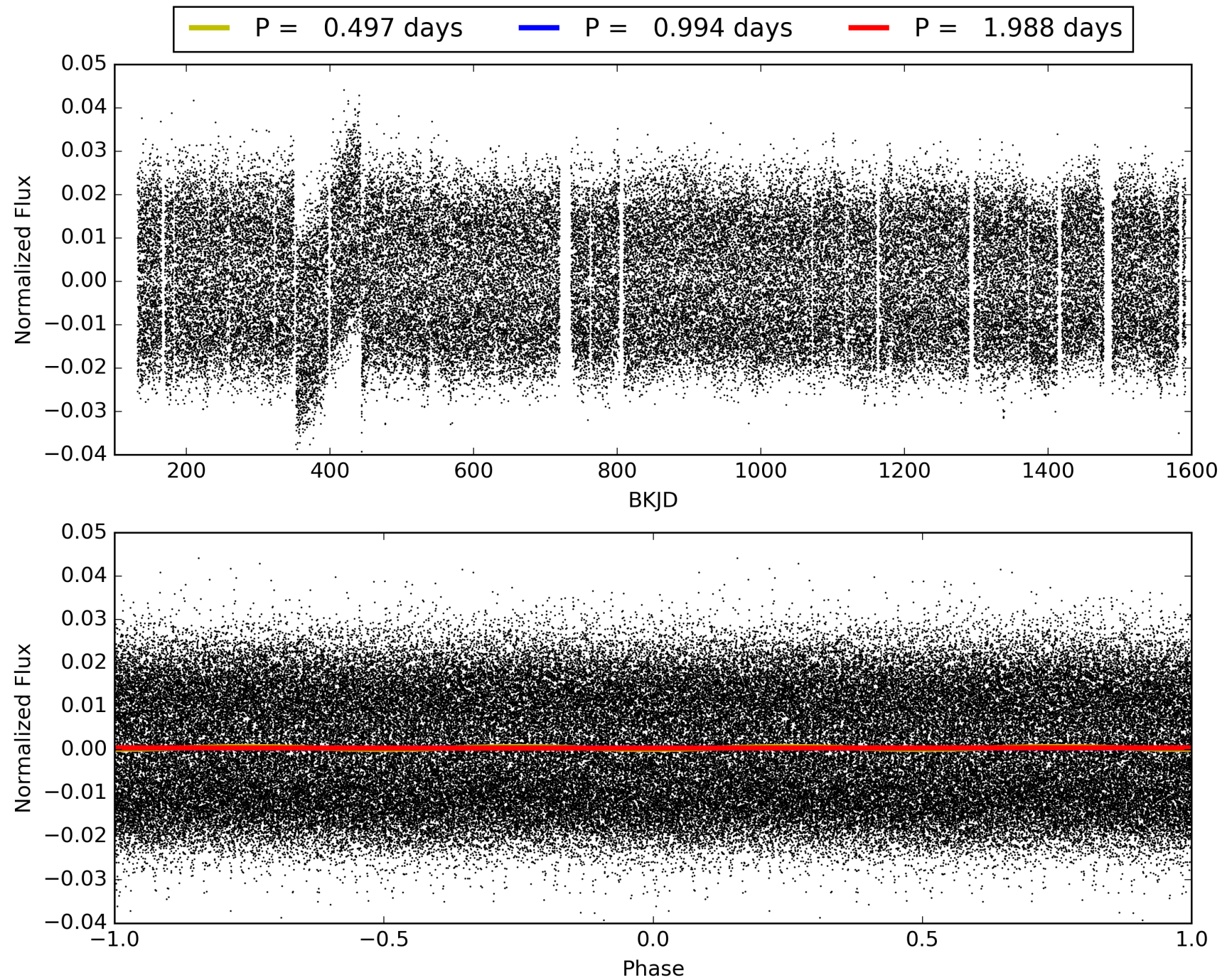
DV Diagnostic Results:

ShortPeriod-sig: 98.4% [2.40σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1289/1292]
GhostDiagnostic-chr: 1.254
Centroid-sig: 0.0%
Centroid-so: 0.160 arcsec [1.08σ]
OotOffset-rm: 0.153 arcsec [0.16σ]
KicOffset-rm: 0.200 arcsec [0.21σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 006463436-01, PDC Light Curves

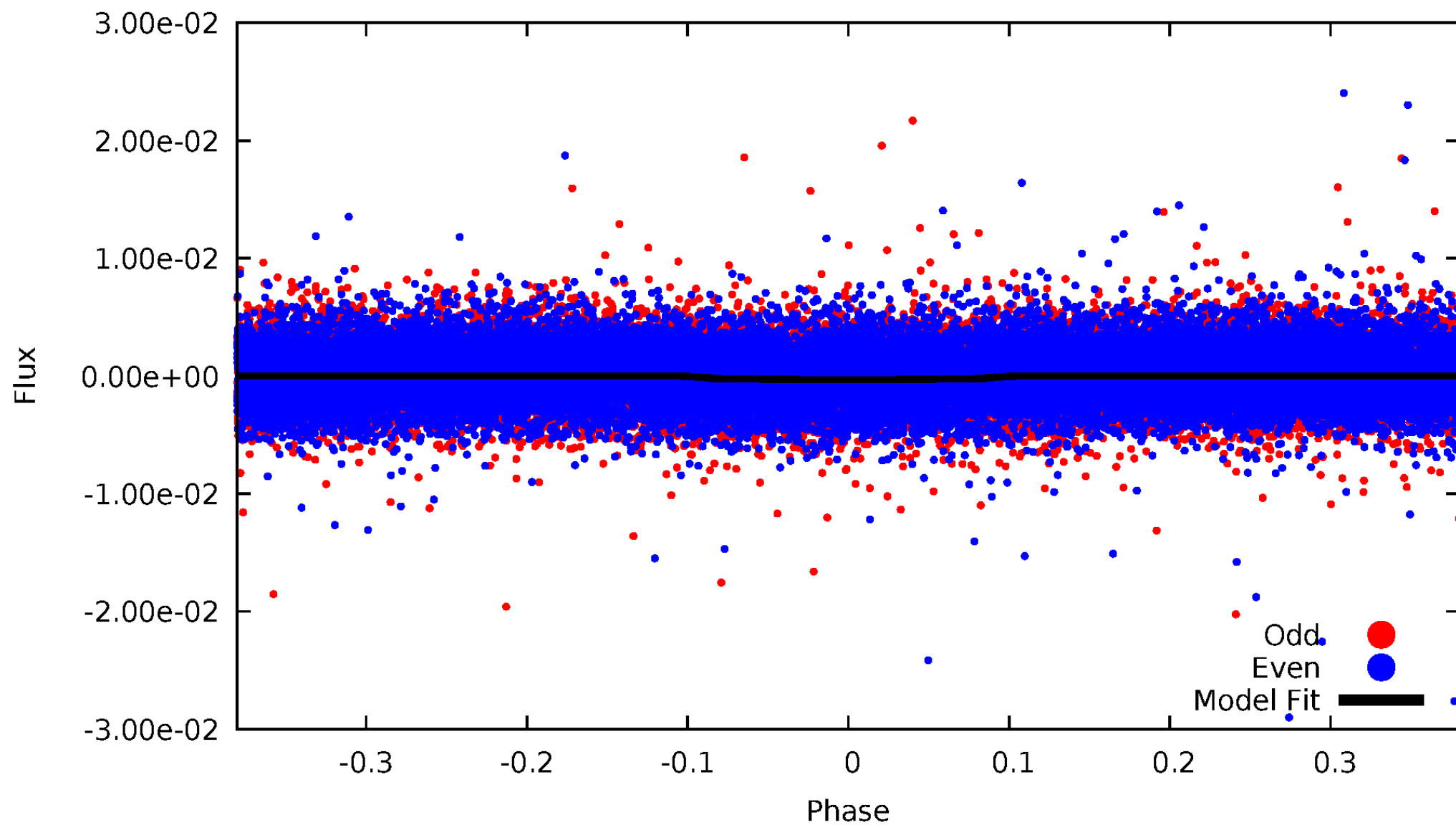


TCE 006463436-01



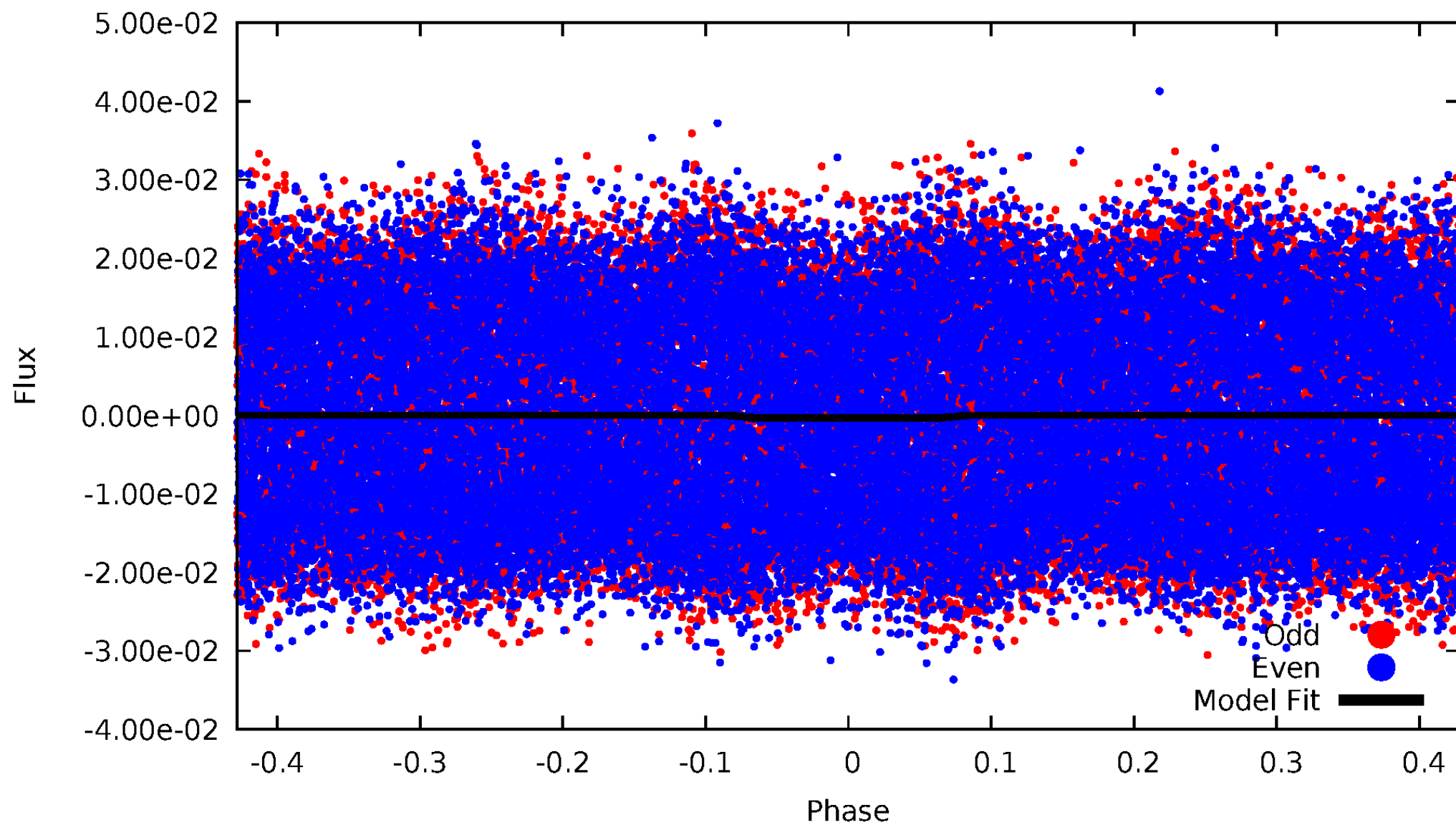
DV Odd/Even

TCE 006463436-01

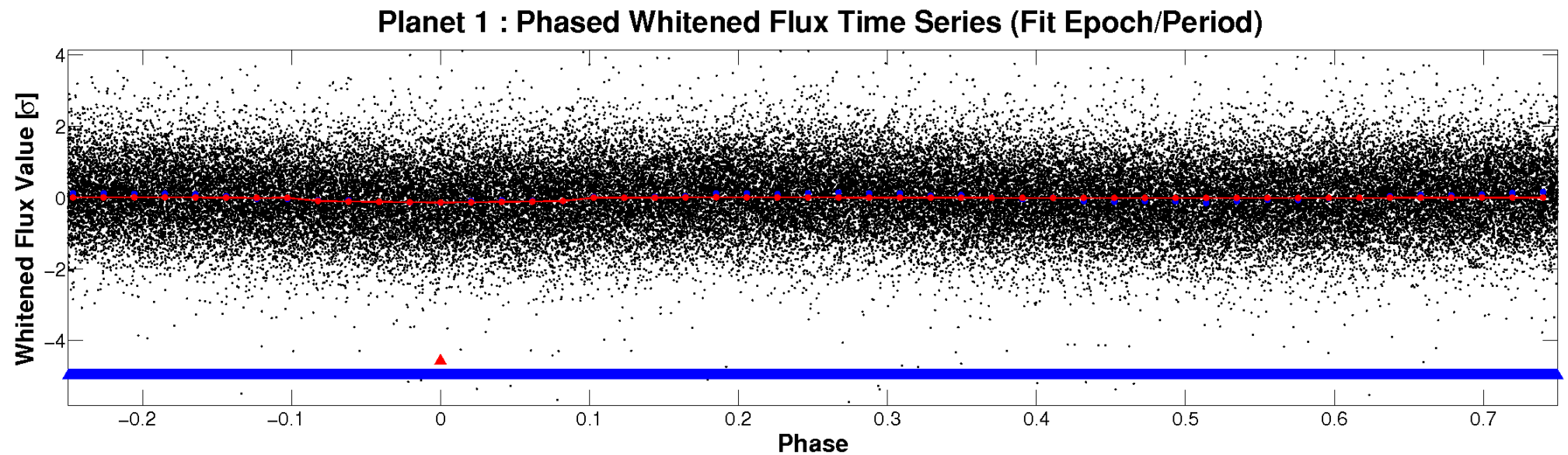
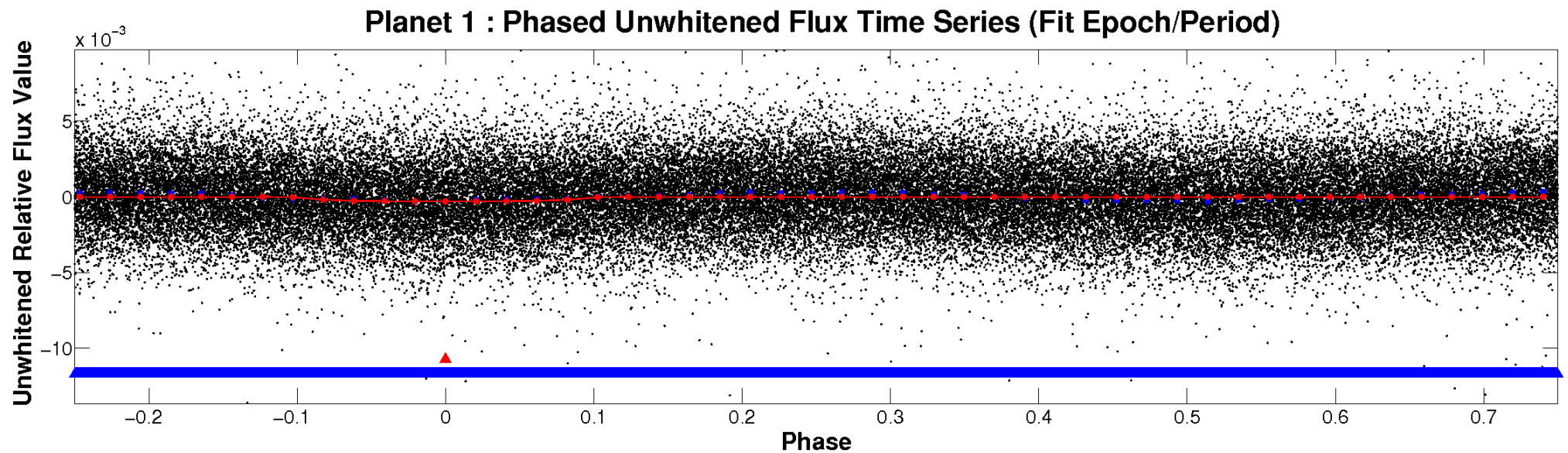


ALT Odd/Even

TCE 006463436-01

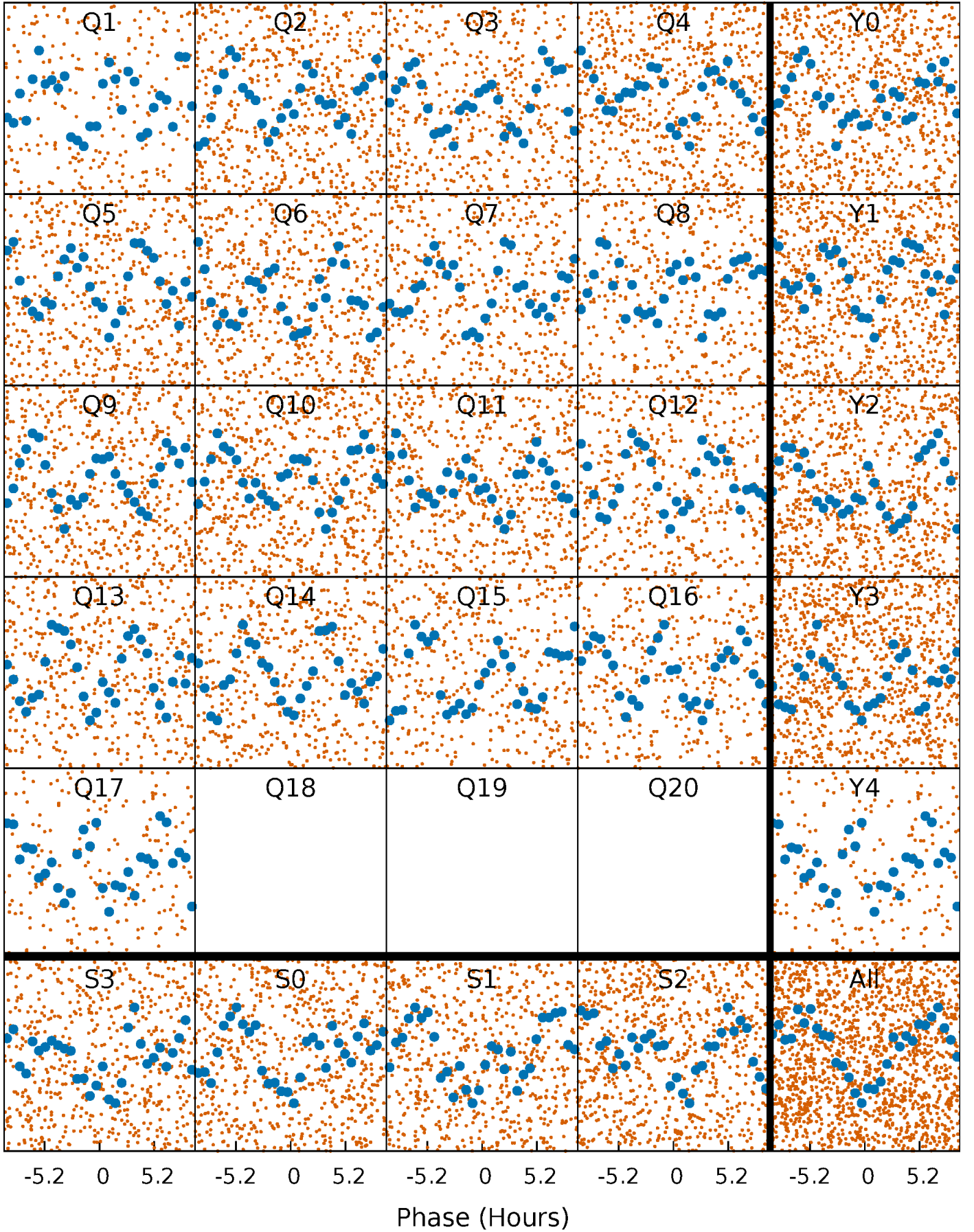


Non-Whitened Vs. Whitened Light Curve



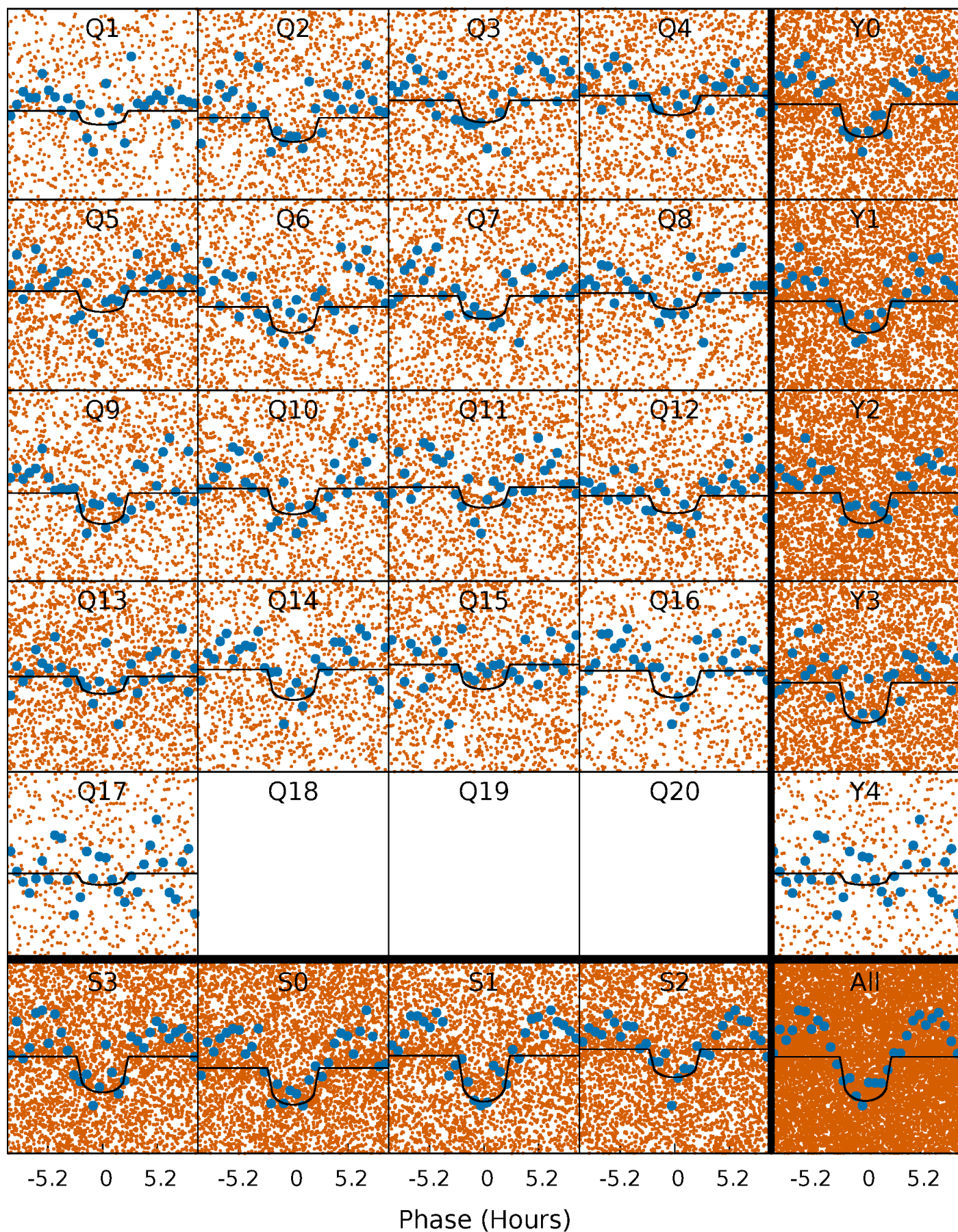
PDC Quarter-Phased Transit Curves

TCE 006463436-01 P= 0.993945 Days $T_0=131.972466$ (BKJD)



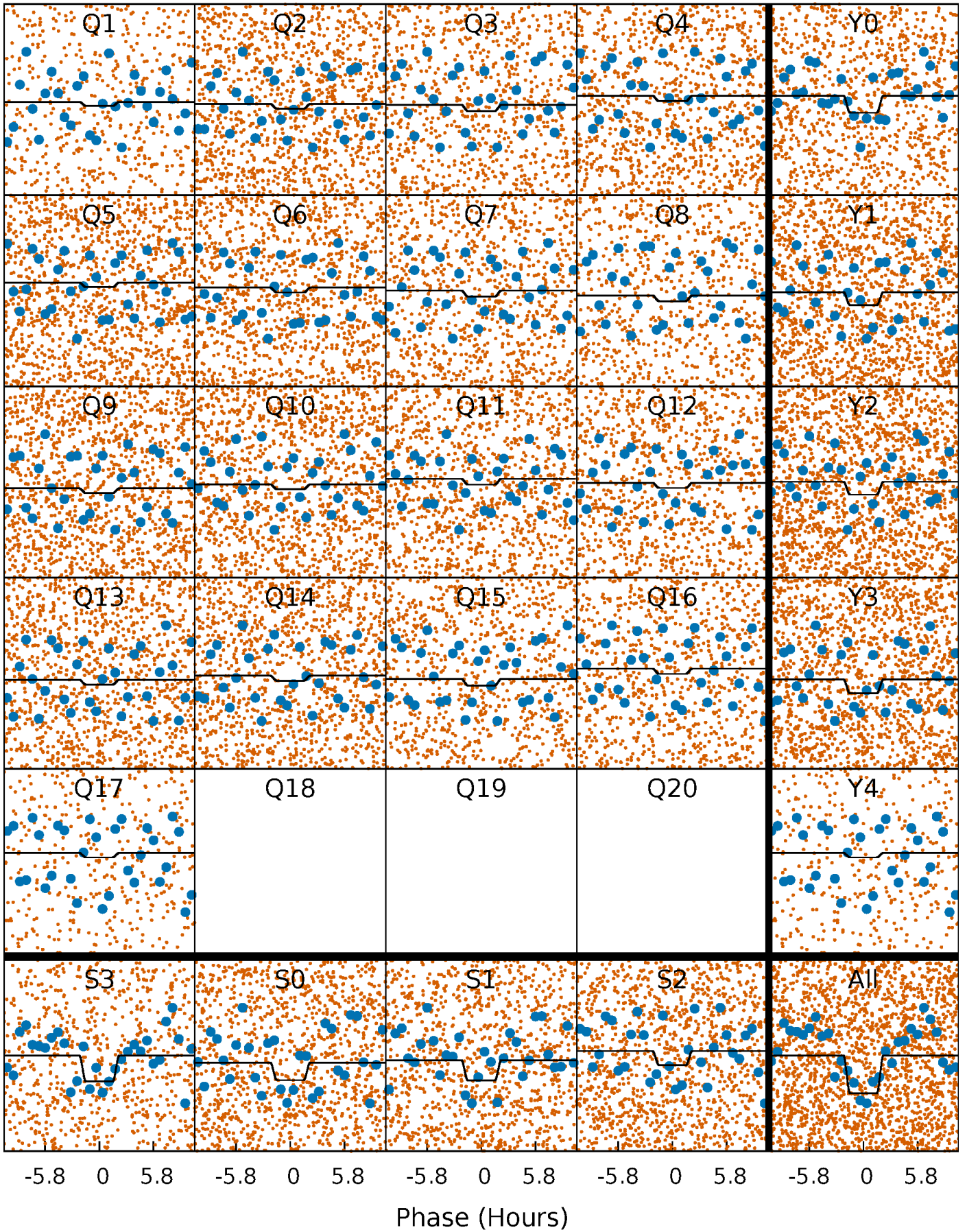
DV Quarter-Phased Transit Curves

TCE 006463436-01 P= 0.993945 Days $T_0=131.972466$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

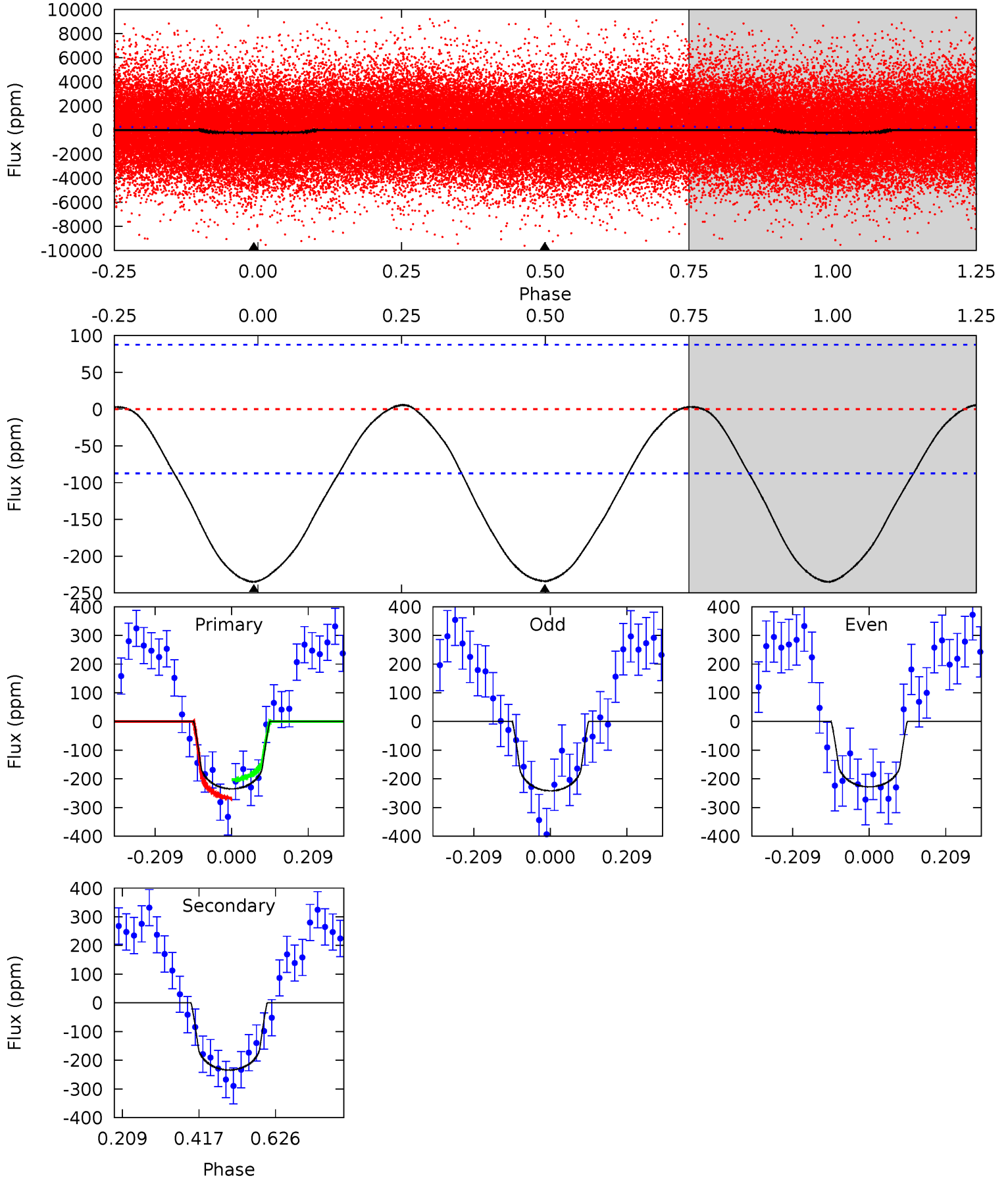
TCE 006463436-01 P= 0.993950 Days $T_0=131.969197$ (BKJD)



DV Model-Shift Uniqueness Test

006463436-01, P = 0.993945 Days, E = 130.978521 Days

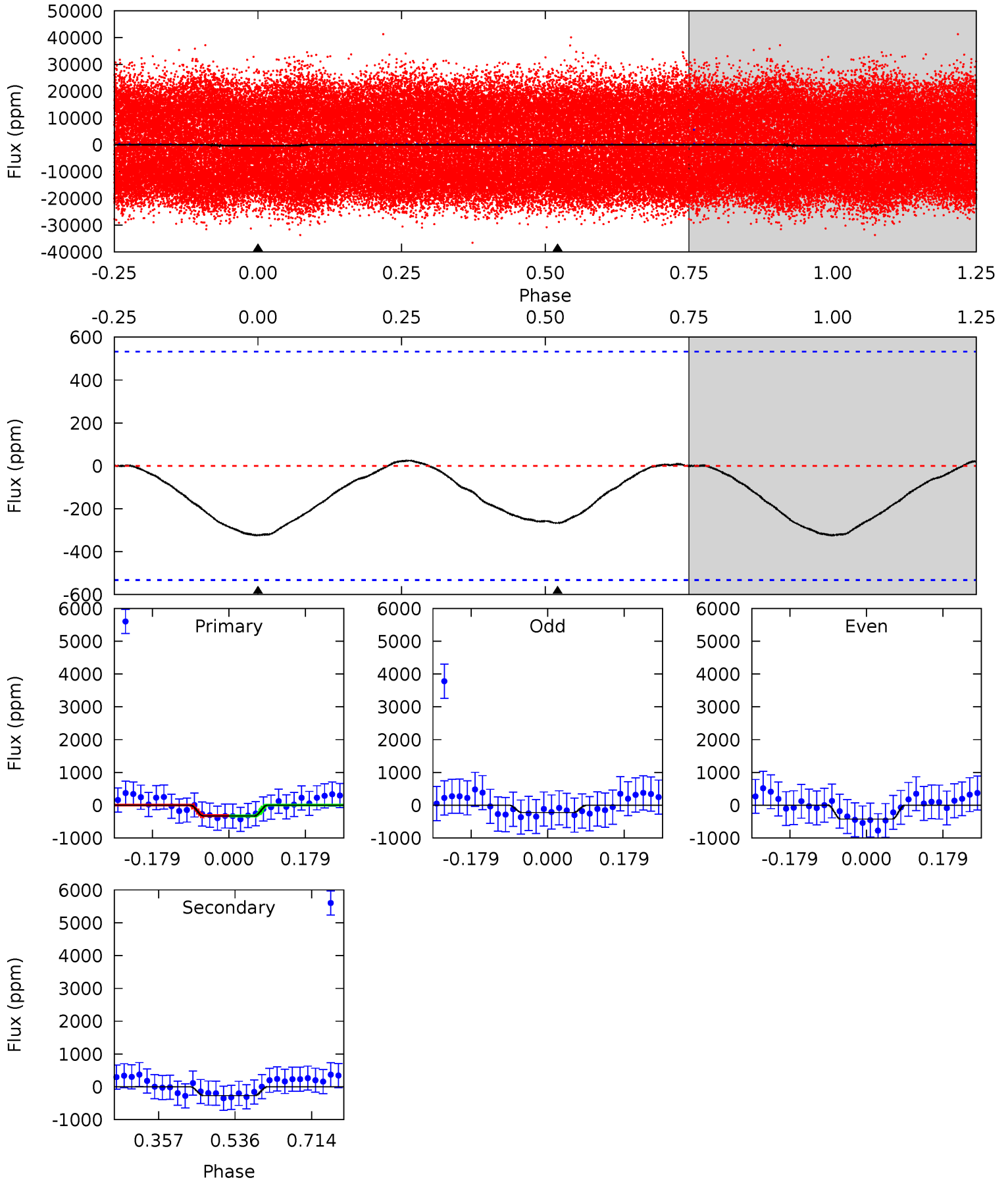
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.8 | 11.8 | 0 | 0 | 4.41 | 1.26 | 0.28 | 11.8 | 11.8 | 11.8 | 11.8 | 0.35 | 1.04 | 0.02 | 1.63 |



Alt Model-Shift Uniqueness Test

006463436-01, P = 0.993950 Days, E = 130.975247 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.70 | 2.22 | 0 | 0 | 4.44 | 1.35 | 0.20 | 2.70 | 2.70 | 2.22 | 2.22 | 0.84 | 1.03 | 0.07 | 0.03 |



Stellar Parameters For KIC 006463436

| | $T_{\text{eff}} (K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6006^{+181}_{-181} | $3.877^{+0.517}_{-0.138}$ | $-0.440^{+0.300}_{-0.250}$ | $1.953^{+0.515}_{-0.956}$ | $1.046^{+0.140}_{-0.193}$ | $0.198^{+1.132}_{-0.095}$ |
| | +3%/-3% | +13%/-4% | +68%/-57% | +26%/-49% | +13%/-18% | +572%/-48% |
| 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 006463436-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -234 ± 20 | $4.31^{+3.83}_{-2.81}$ | 3590^{+300}_{-467} | 4905^{+3743}_{-1175} | $2.737^{+18.676}_{-1.977}$ |
| Alt. | -267 ± 120 | $4.35^{+3.95}_{-2.81}$ | 3577^{+323}_{-480} | 4919^{+3646}_{-1367} | $2.838^{+18.948}_{-2.140}$ |

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 $A_{obs} \gg 1.0$

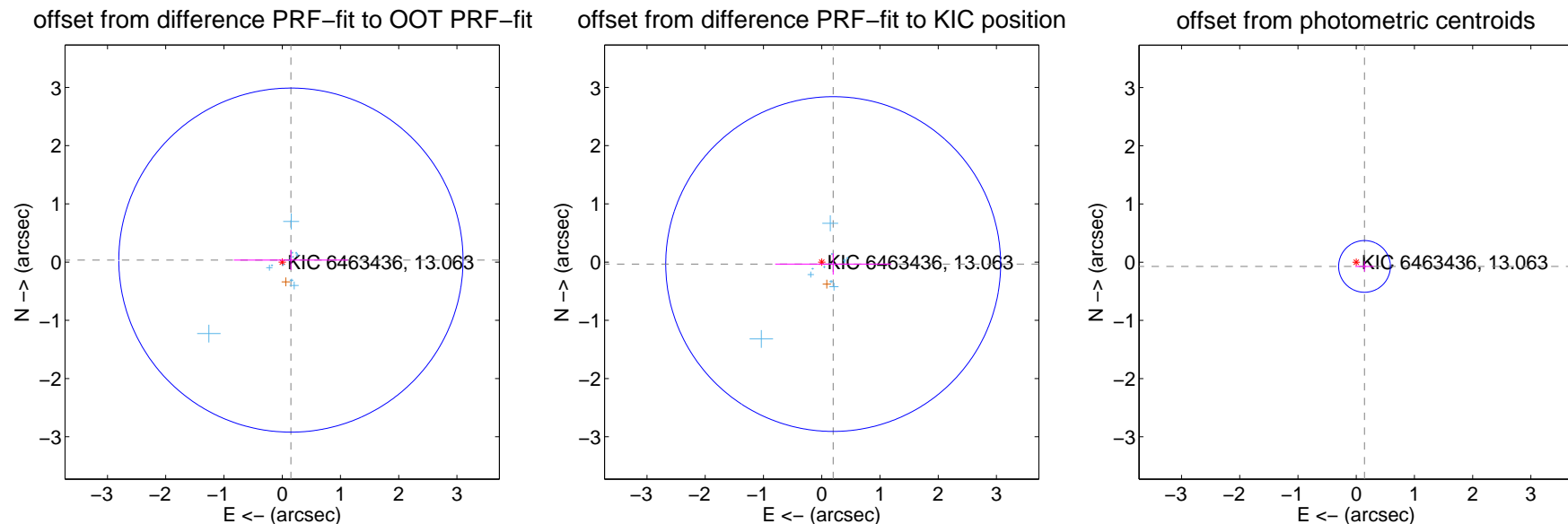
DV Centroid Data

Supplemental centroid analysis for 006463436-01. Kepler magnitude: 13.06. Transit SNR 12.43

There are 13 quarters with good PRF difference image offsets

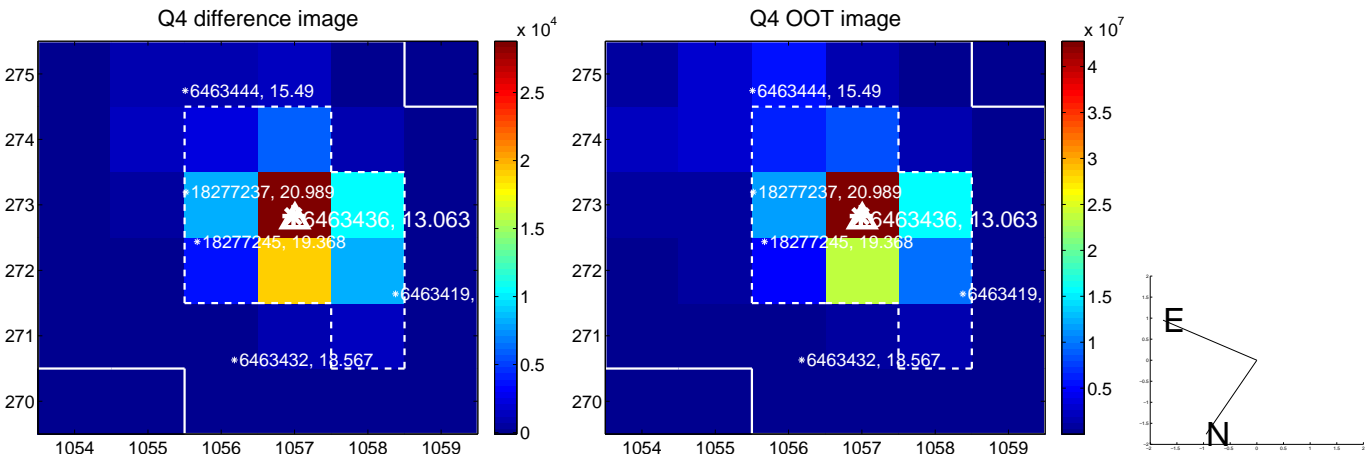
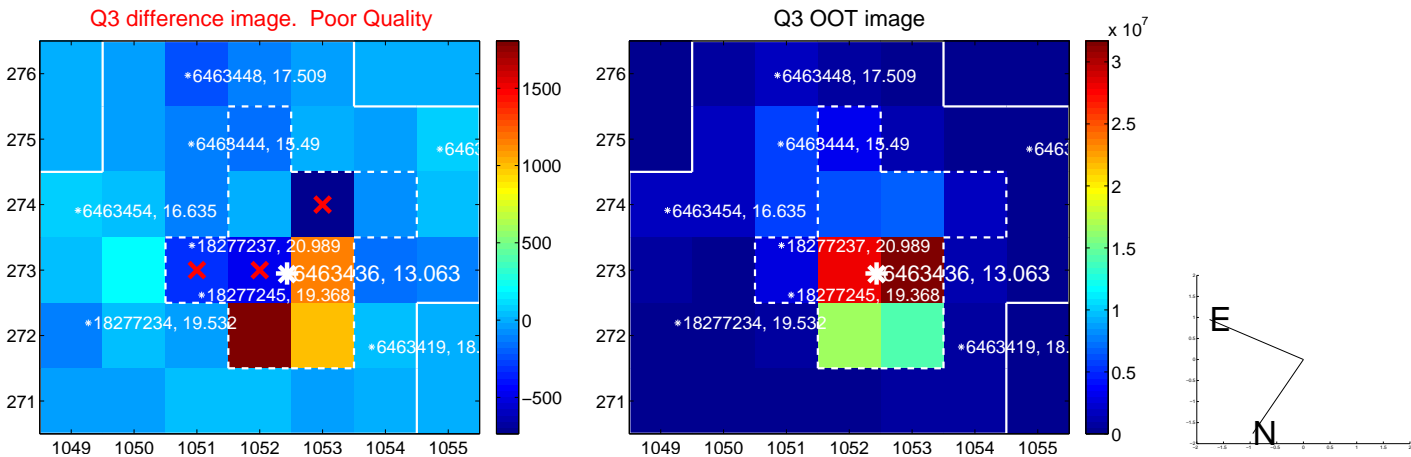
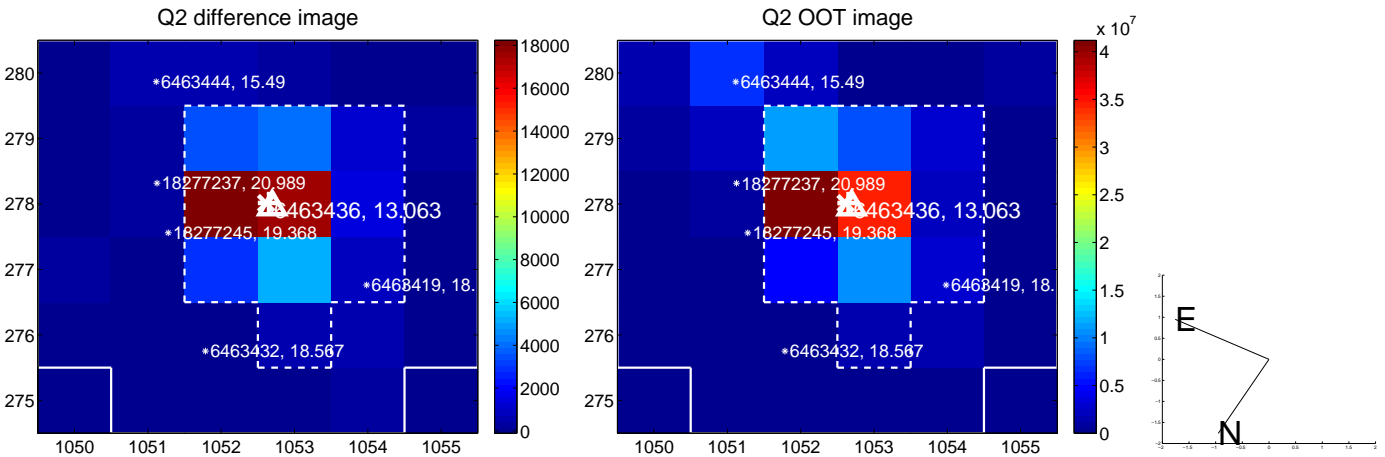
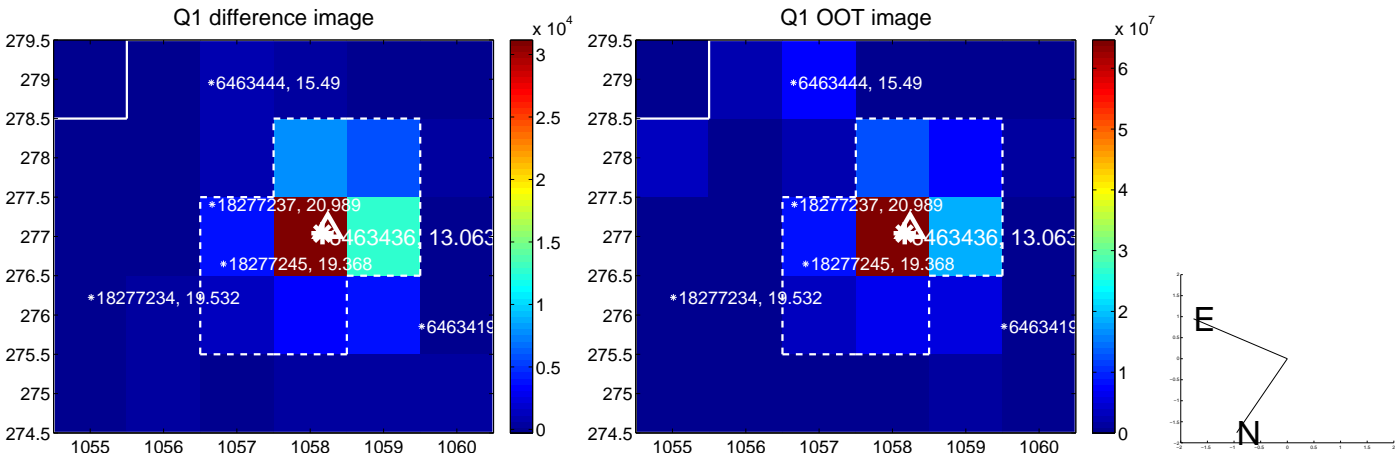
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.153 ± 0.985 | 0.16 | -0.149 ± 0.980 | 0.034 ± 0.172 |
| PRF-fit source offset from KIC position | 0.200 ± 0.958 | 0.21 | -0.197 ± 0.996 | -0.034 ± 0.182 |
| photometric centroid source offset | 0.16 ± 0.15 | 1.08 | -0.14 ± 0.16 | -0.07 ± 0.09 |

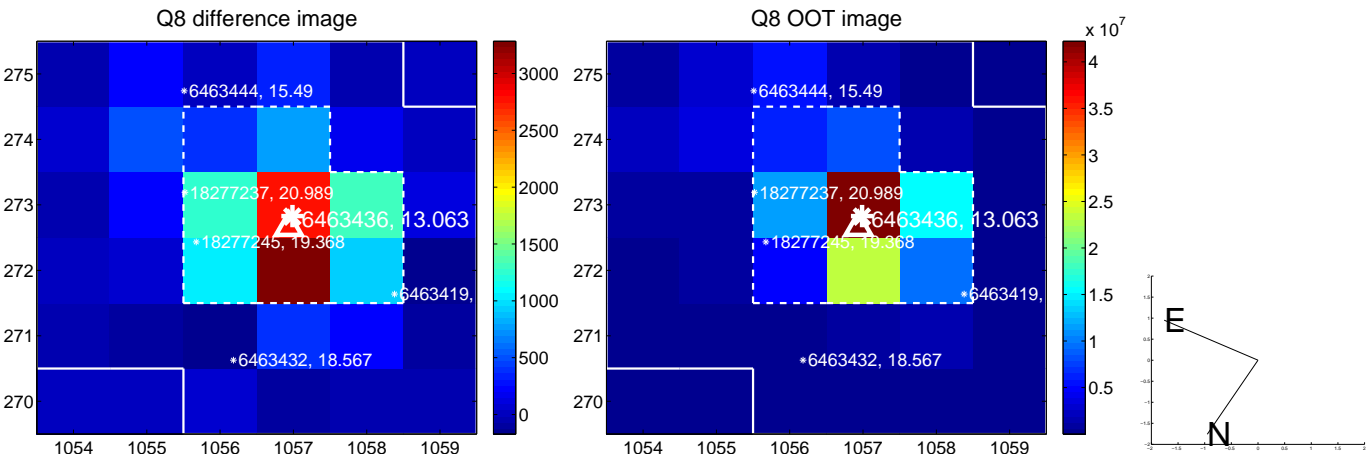
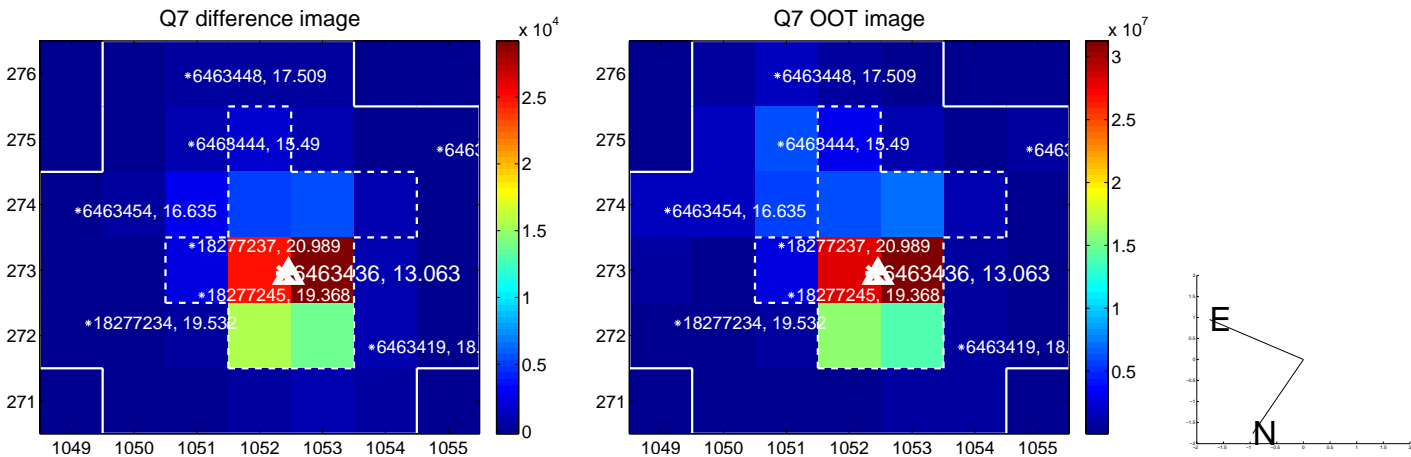
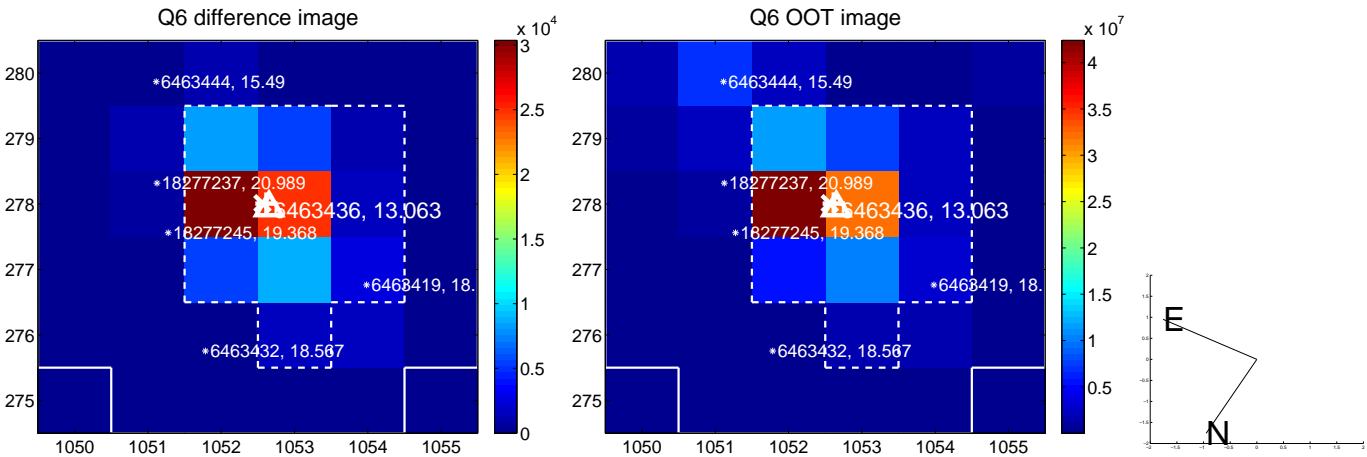
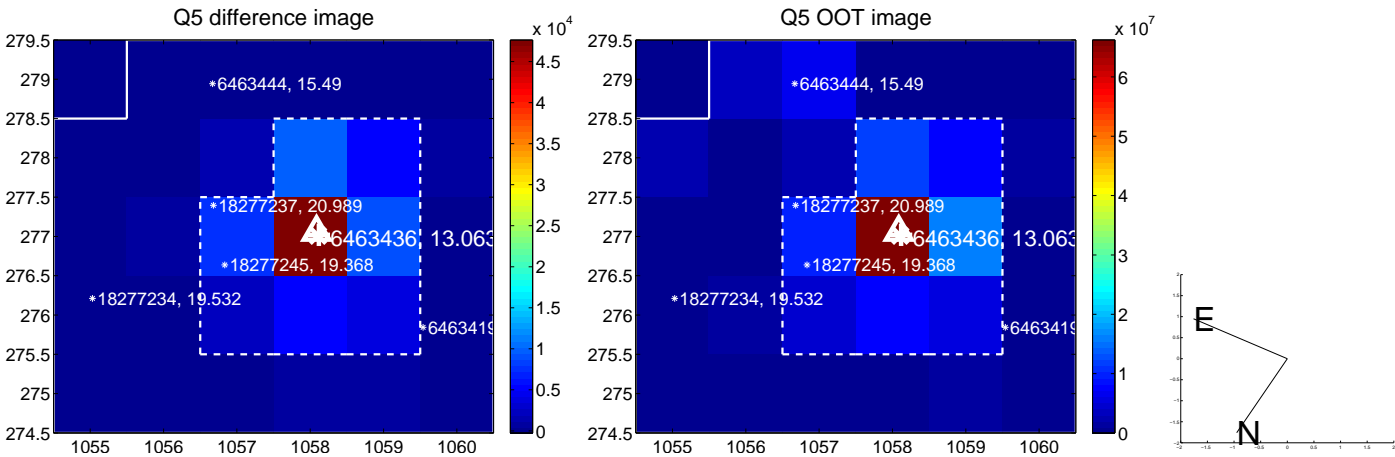


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

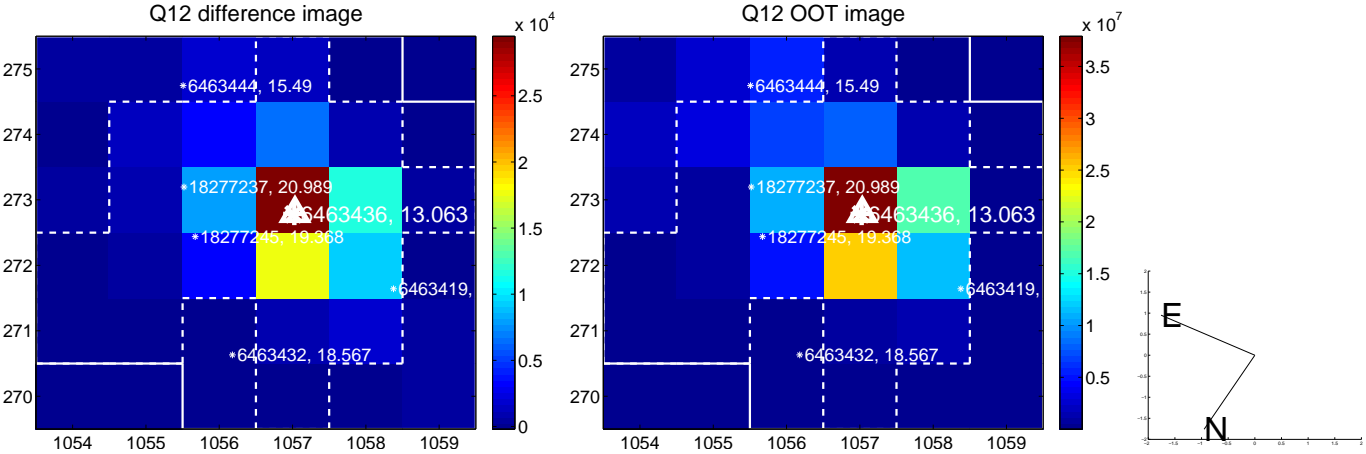
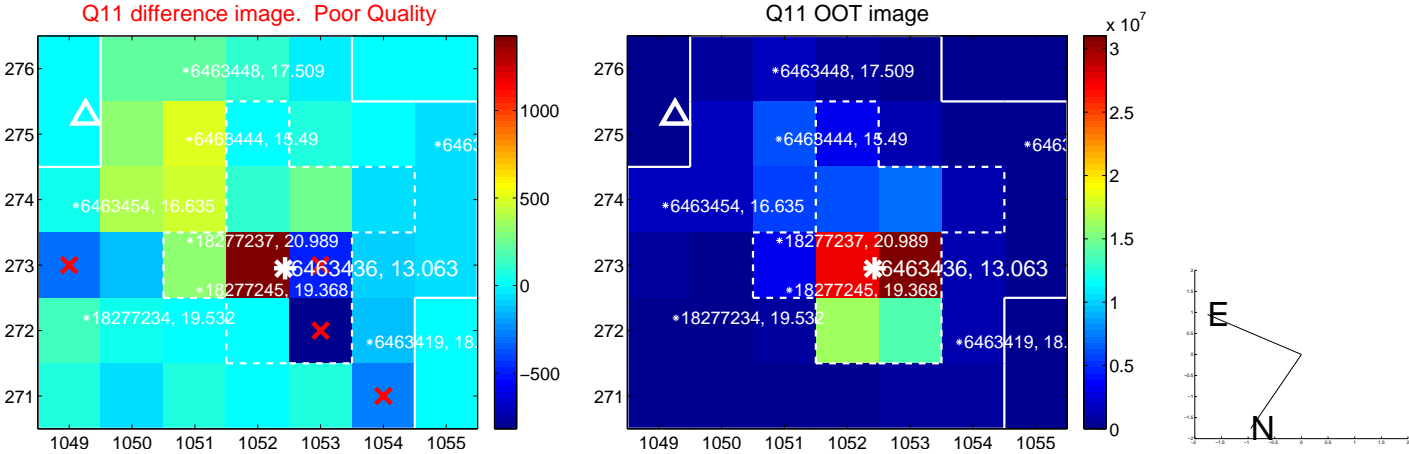
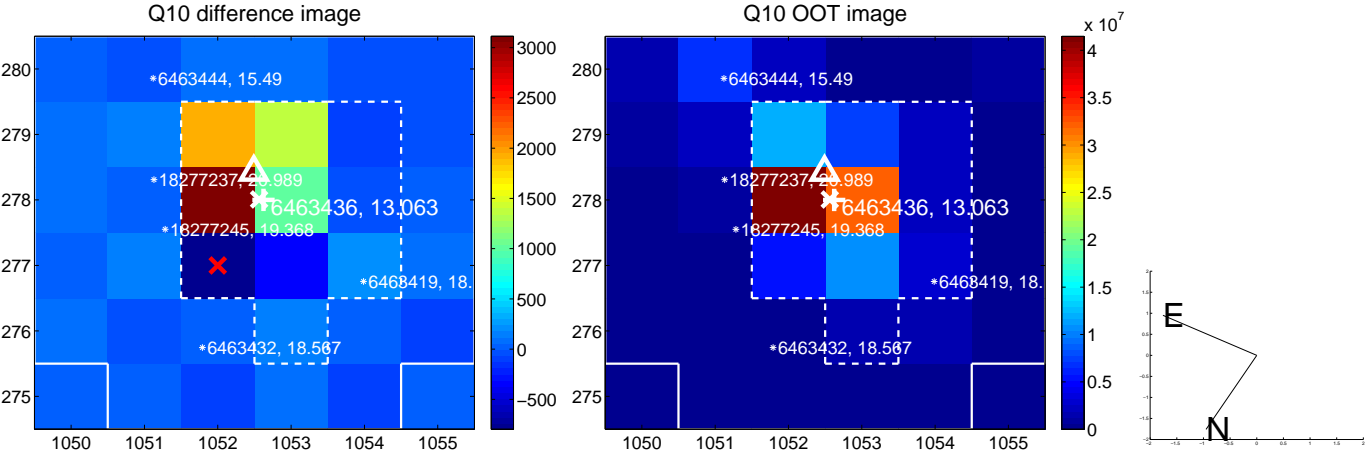
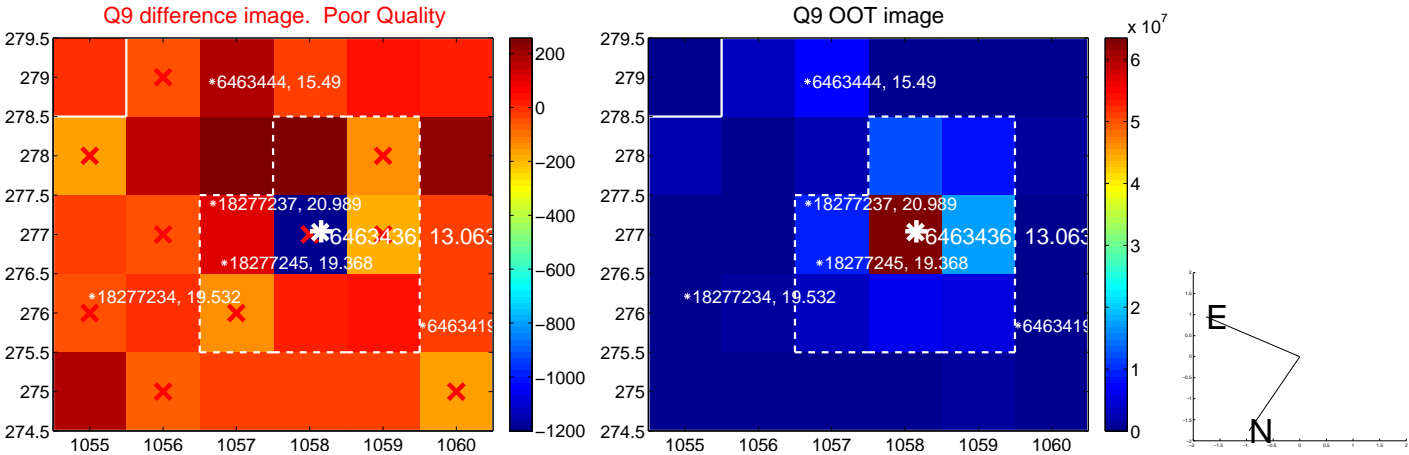
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



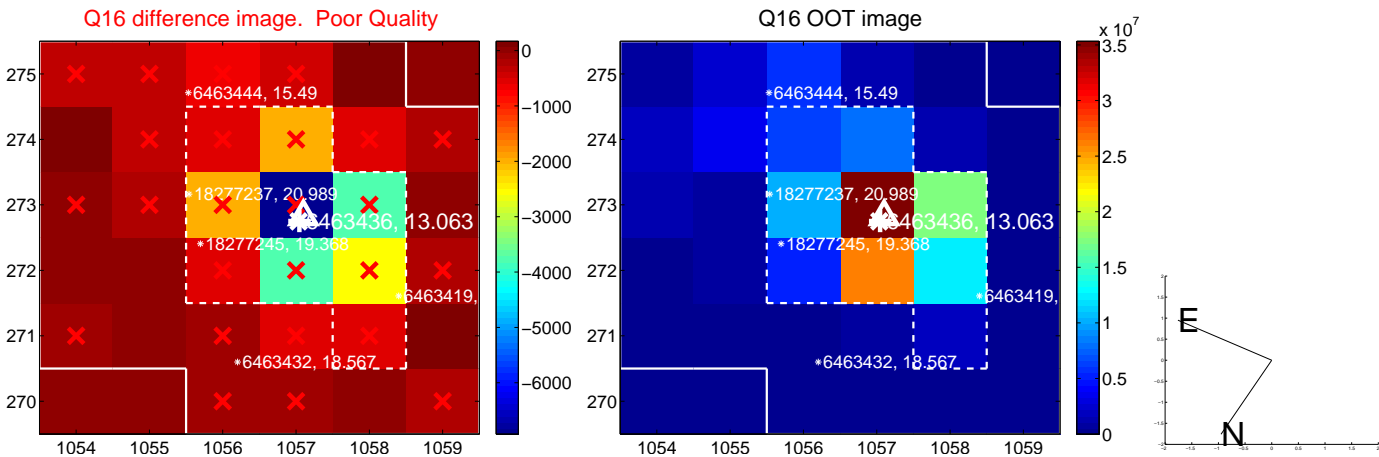
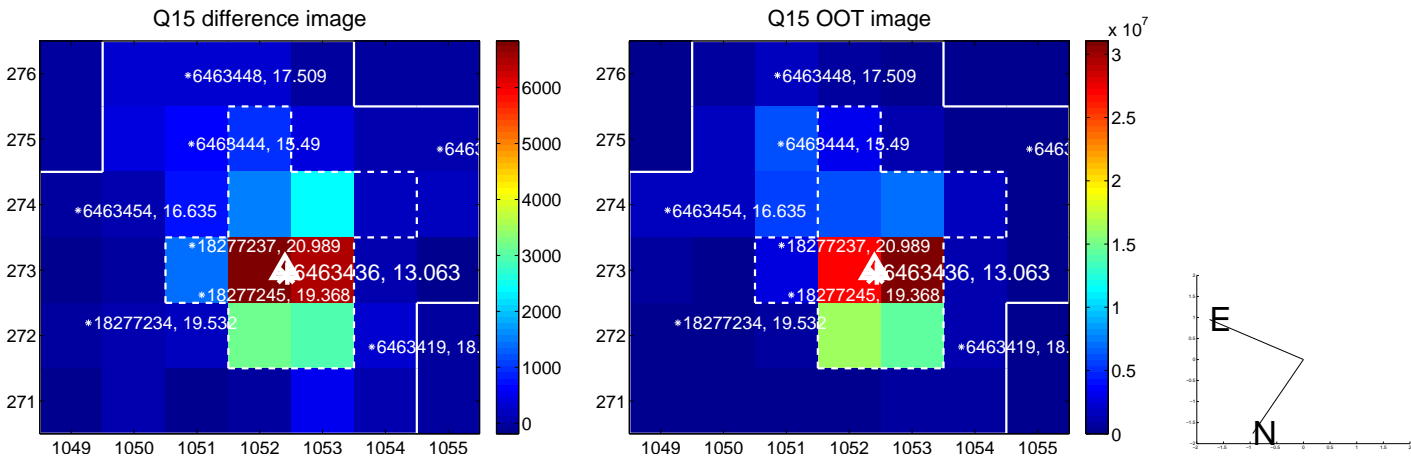
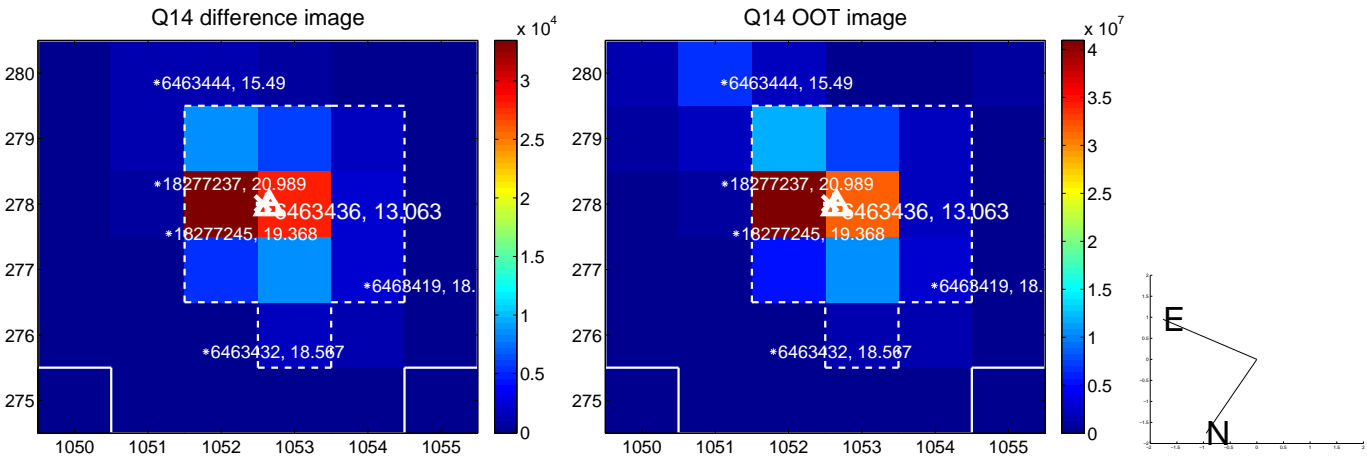
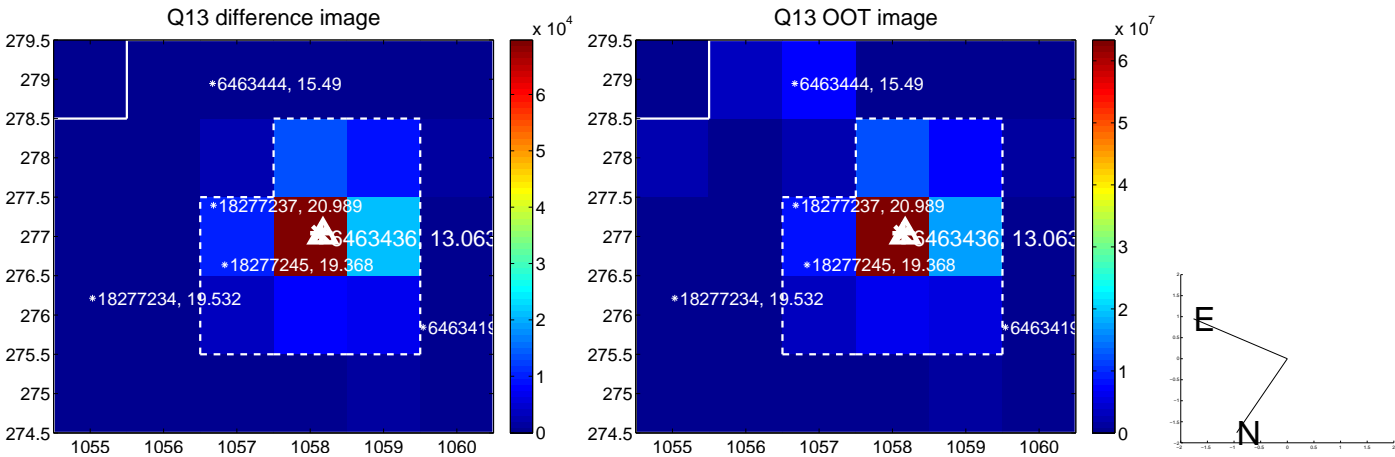
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



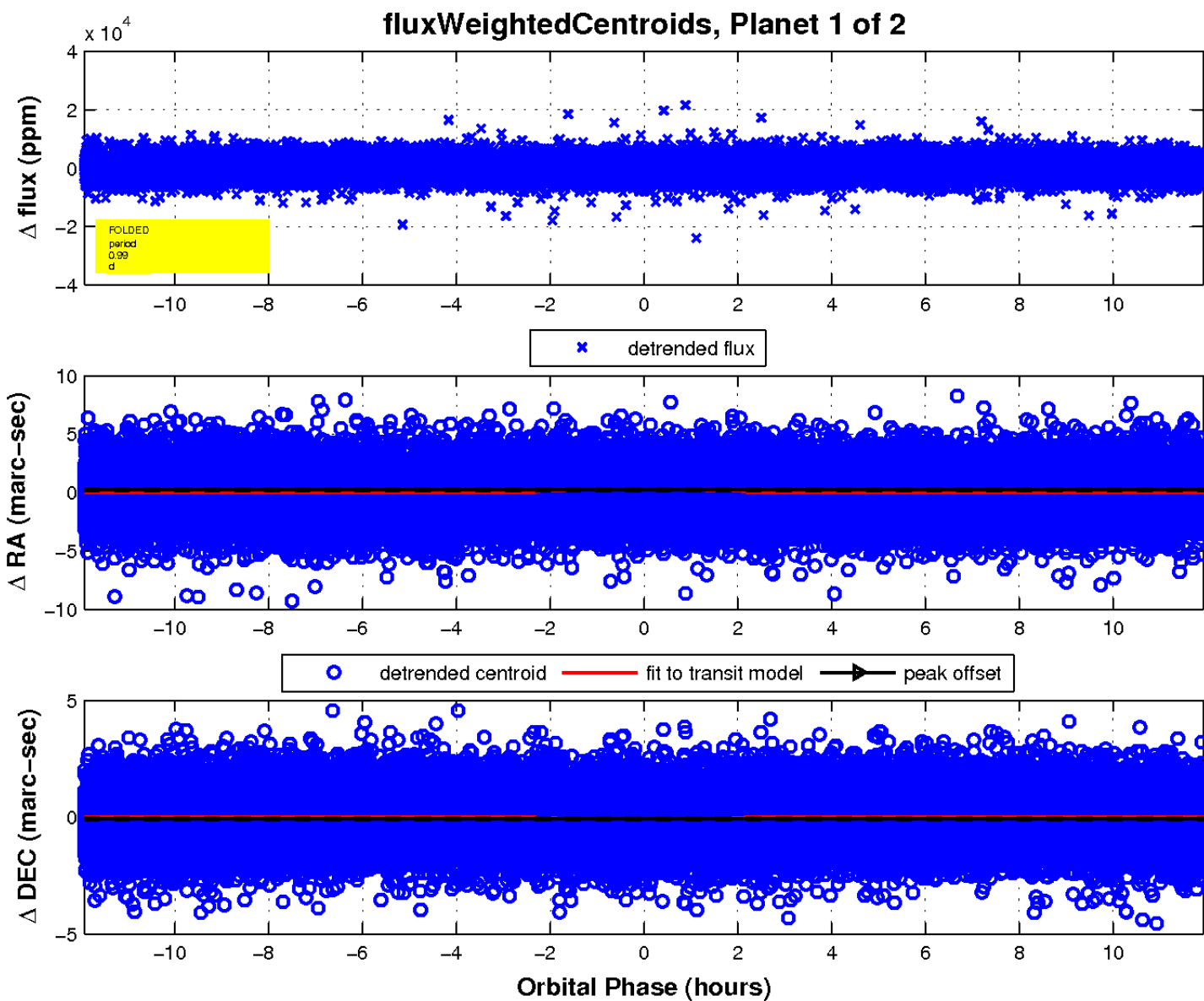
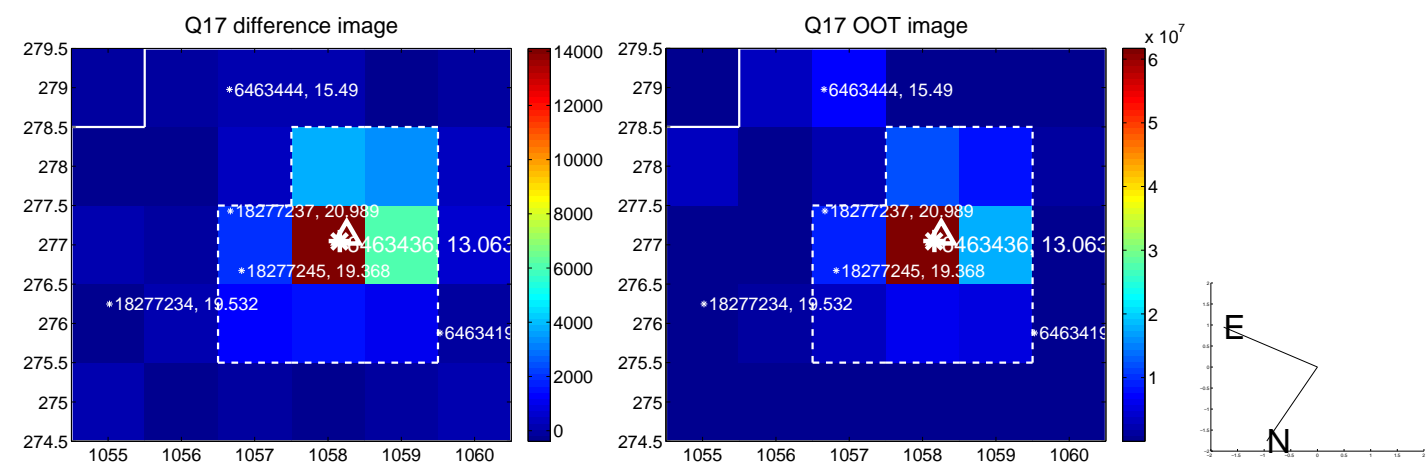
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

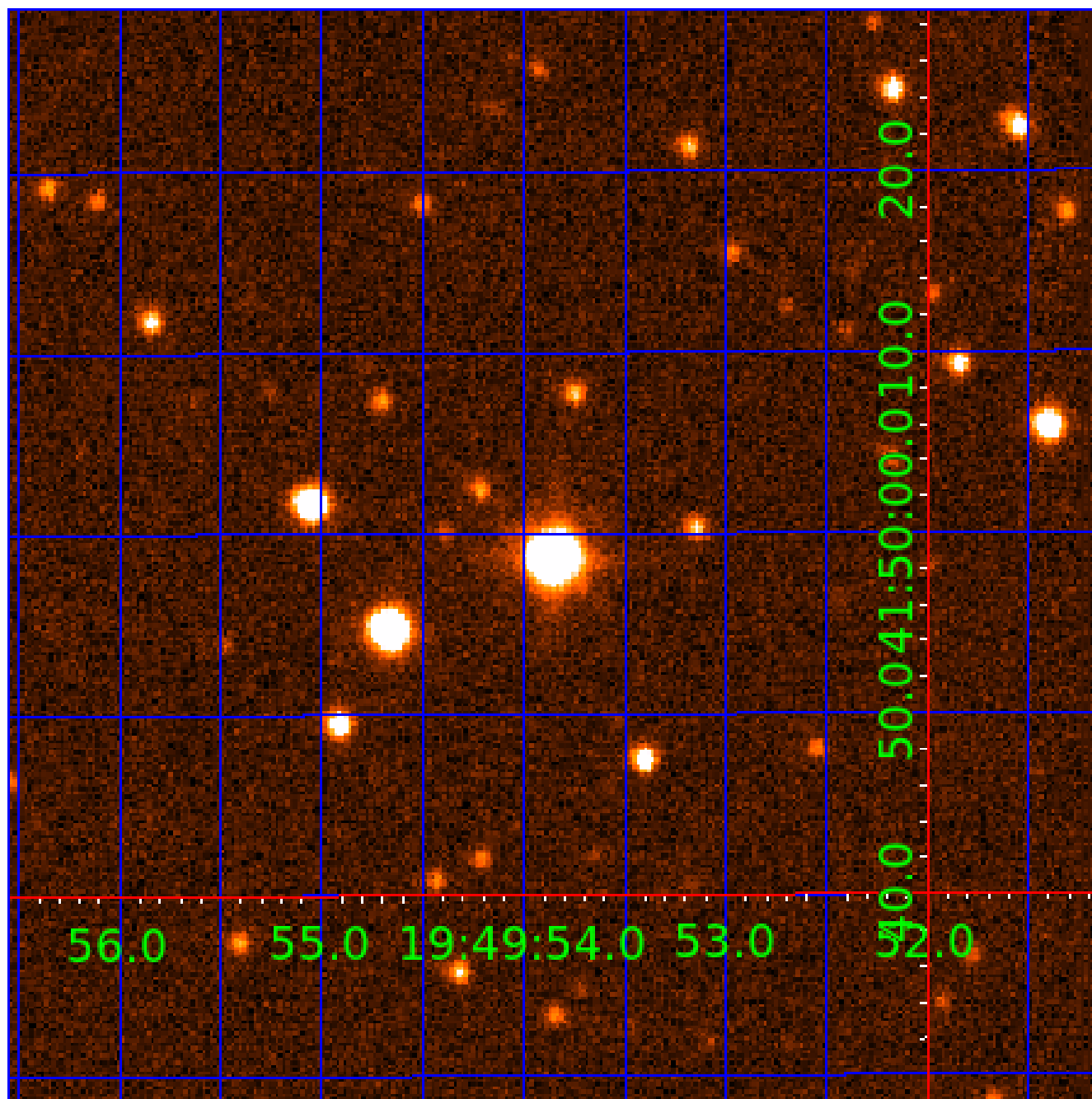


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006463436

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006463436-01 | OBS | No | 0.993945 | 131.972466 | 303.2 | 4.535 | 12.3 | 12.4 | 1.95 | 6006 | 3.40 | 11338.45 |
| 006463436-02 | OBS | No | 0.537233 | 131.693258 | 574.3 | 0.548 | 10.0 | 9.0 | 1.95 | 6006 | 5.84 | 25752.55 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006463436-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 006463436-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |

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

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

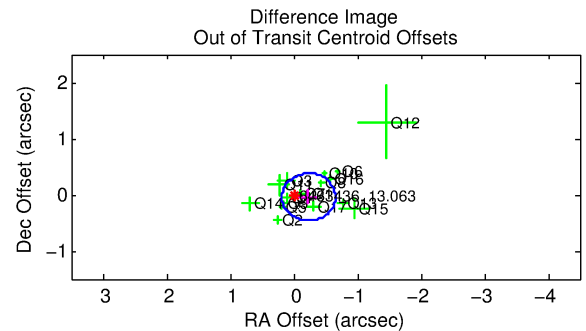
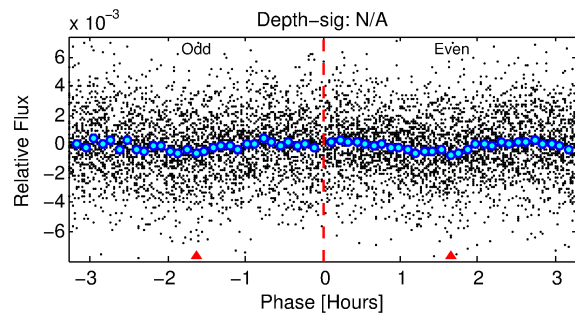
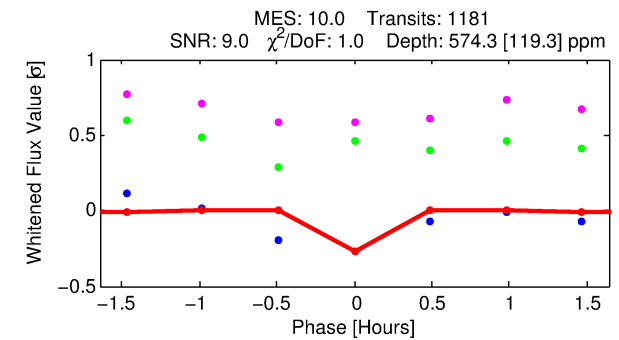
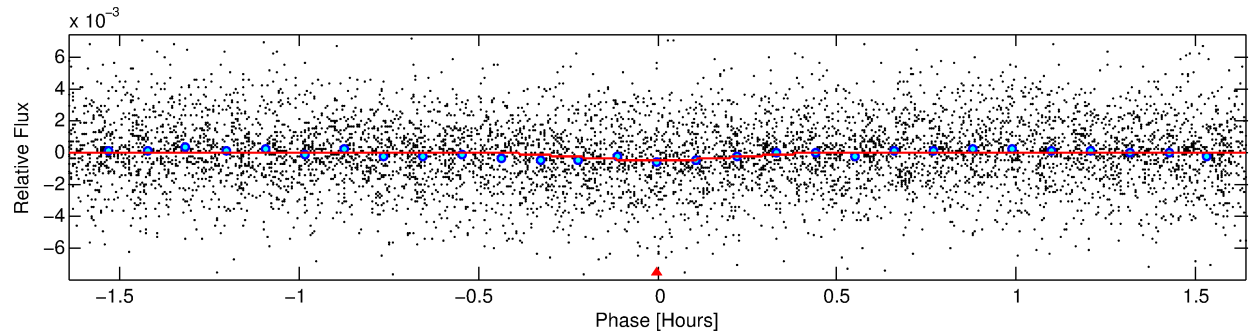
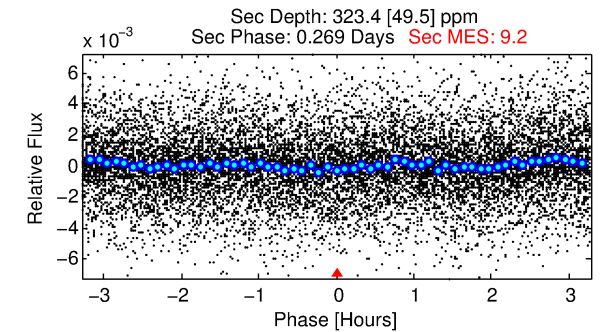
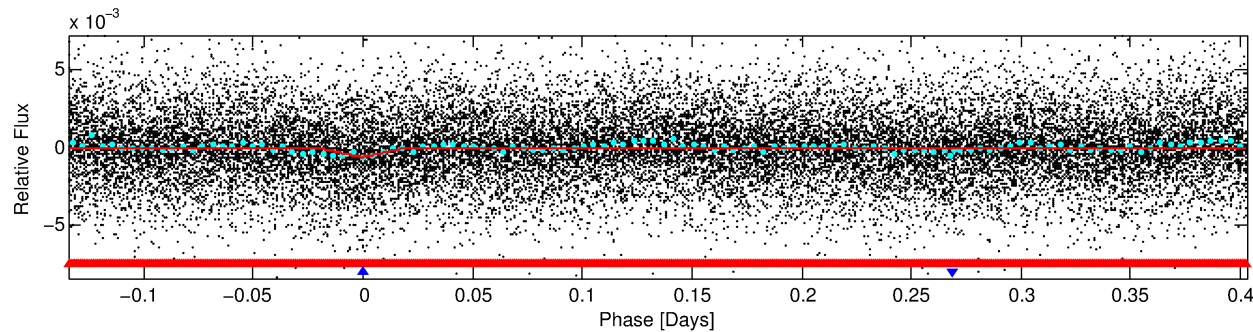
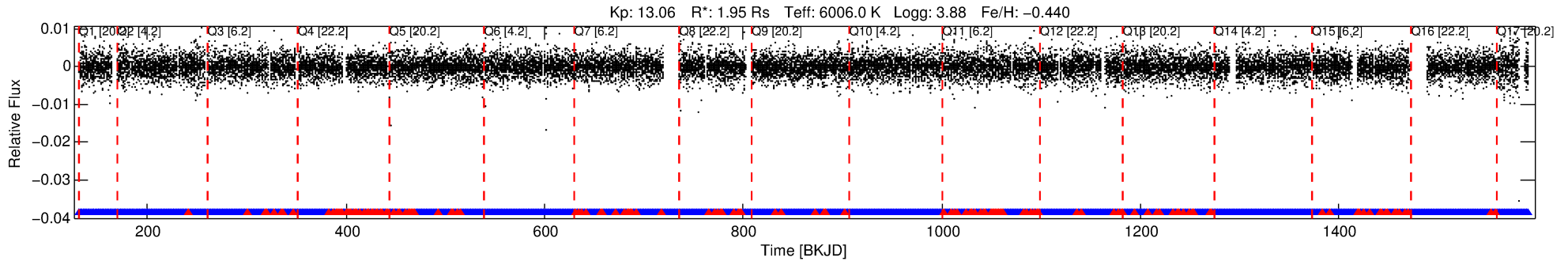
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006463436-02

No Significant Match Found

DV One-Page Summary

KIC: 6463436 Candidate: 2 of 2 Period: 0.537 d



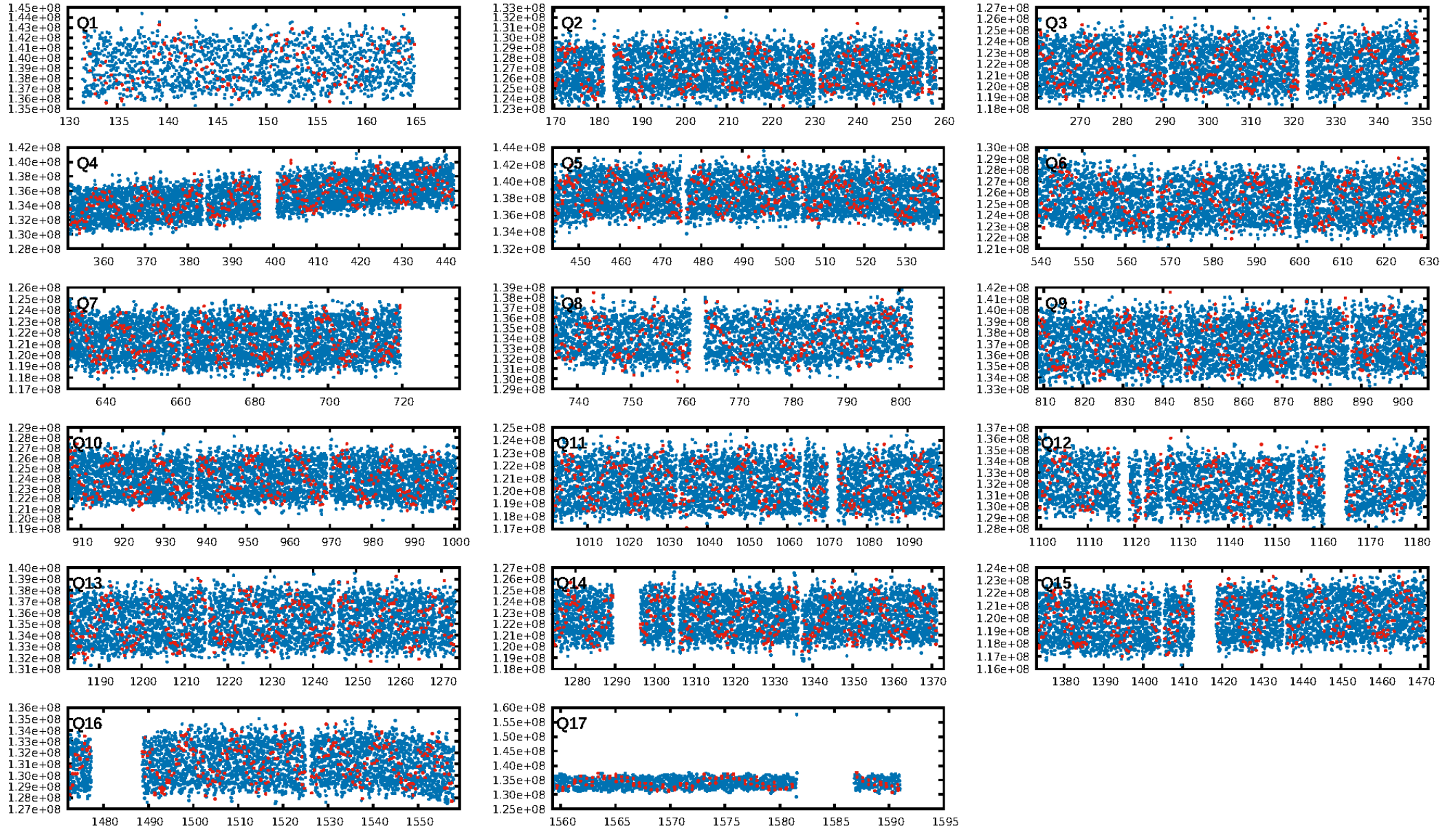
DV Fit Results:

Period = 0.53723 [0.00002] d
Epoch = 131.6933 [0.0012] BKJD
Rp/R* = 0.0274 [0.0195]
a/R* = 3.84 [12.64]
b = 0.90 [0.77]
Seff = 25752.55 [22315.23]
Teq = 3230 [700] K
Rp = 5.84 [5.04] Re
a = 0.0131 [0.0068] AU
Ag = 0.90 [1.50] [-0.07σ]
Teffp = 4865 [1747] K [0.87σ]

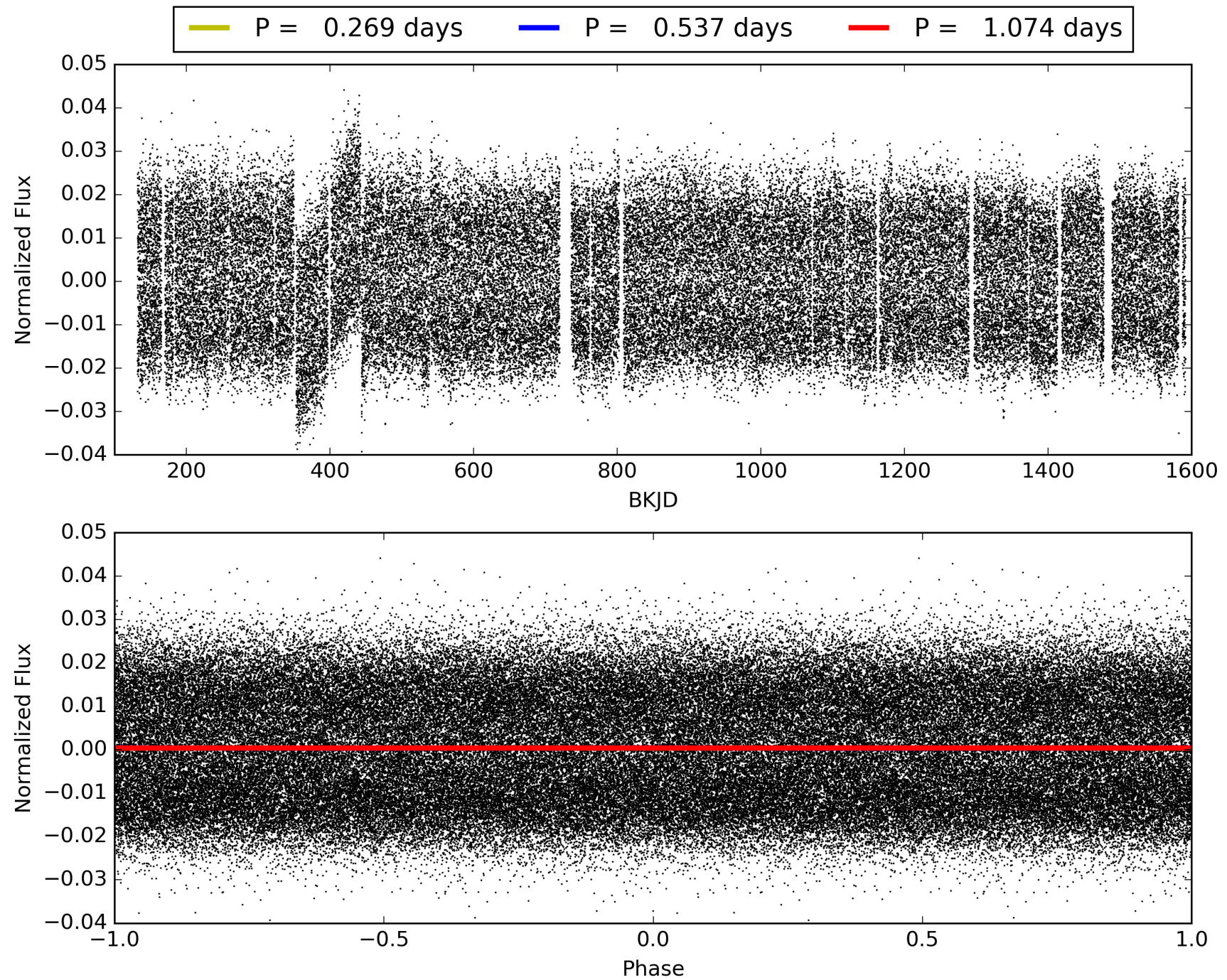
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 98.4% [2.40σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.87 [980/1129]
GhostDiagnostic-chr: -1.17
Centroid-sig: 2.4%
Centroid-so: 0.742 arcsec [4.34σ]
OotOffset-rm: 0.235 arcsec [1.68σ]
KicOffset-rm: 0.274 arcsec [2.02σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.82 [14/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006463436-02, PDC Light Curves

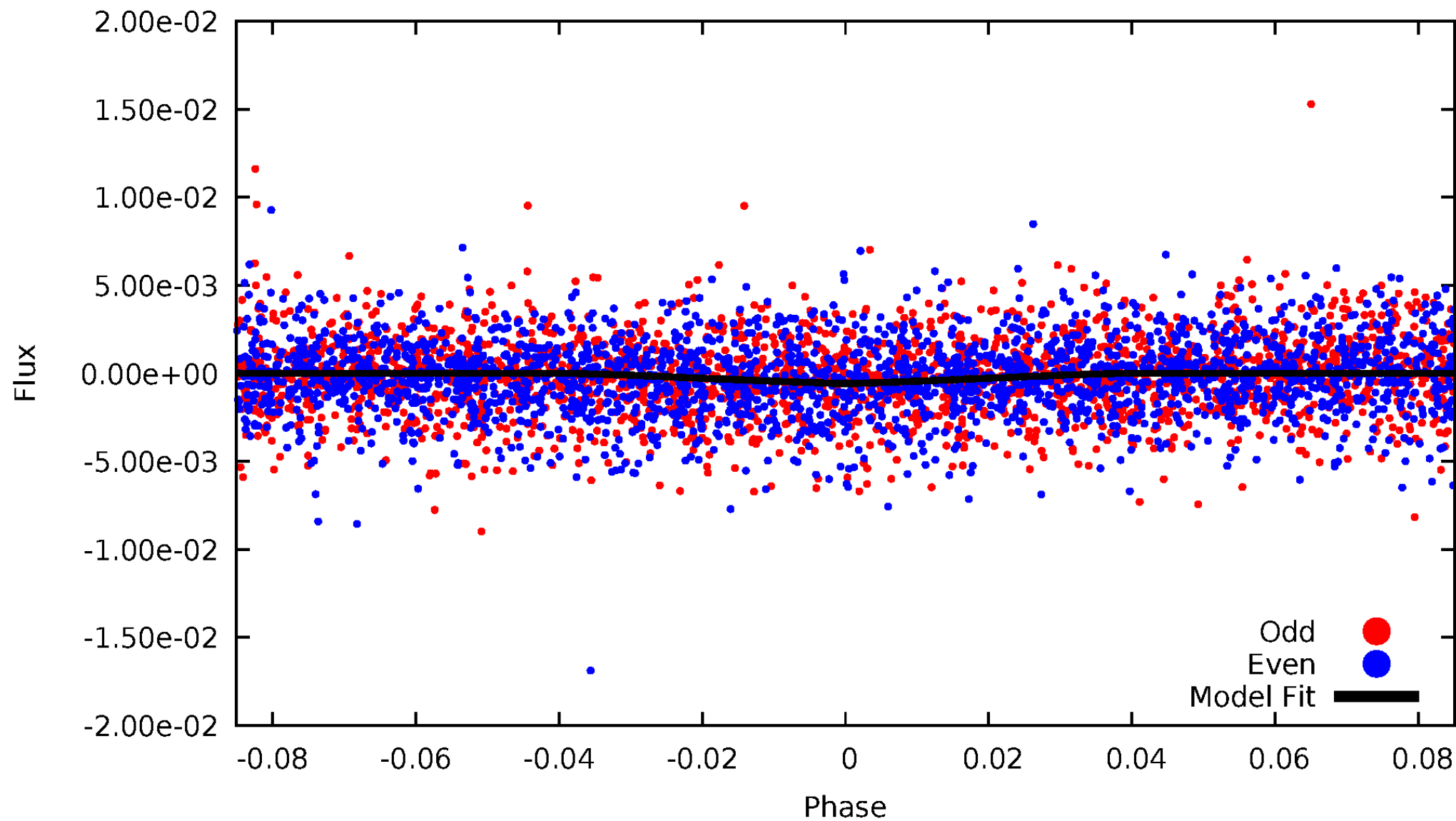


TCE 006463436-02



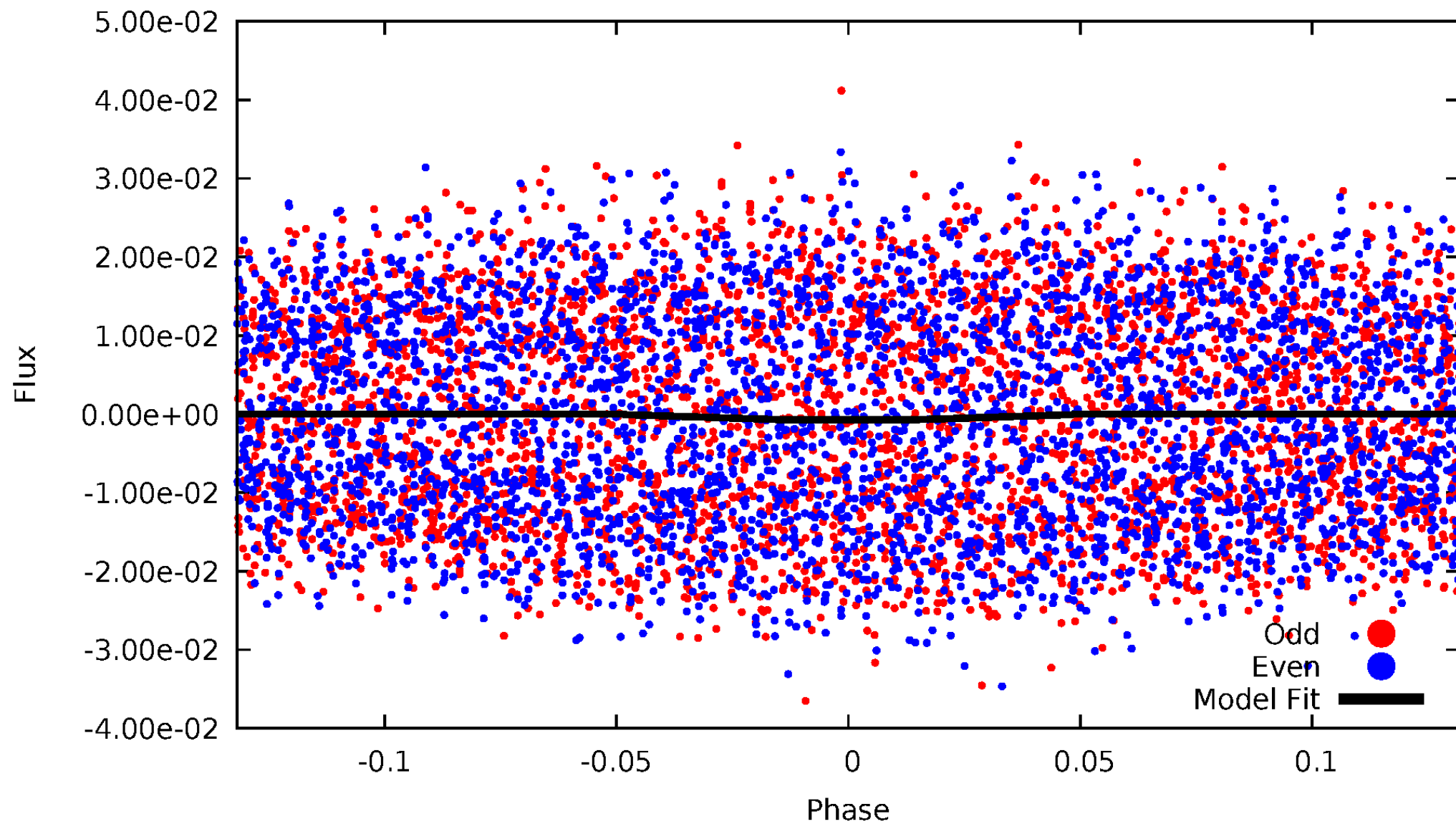
DV Odd/Even

TCE 006463436-02



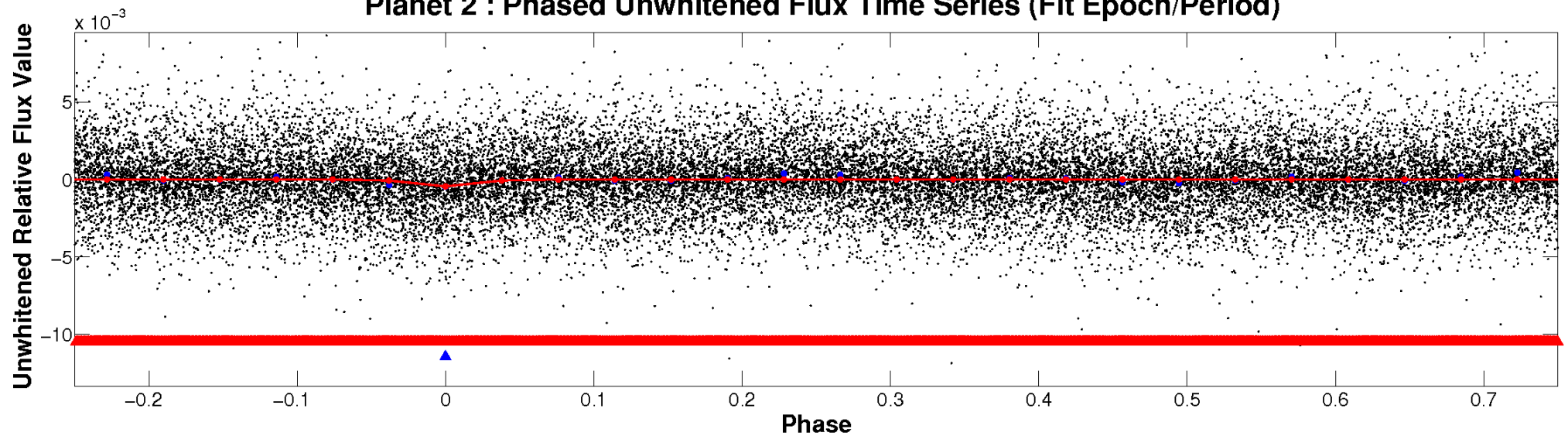
ALT Odd/Even

TCE 006463436-02

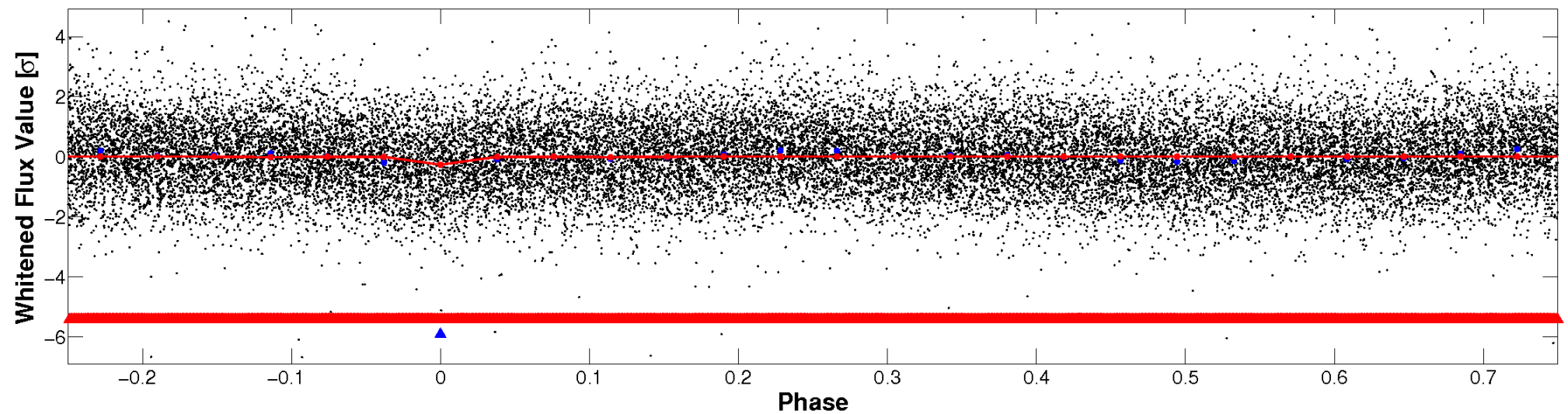


Non-Whitened Vs. Whitened Light Curve

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

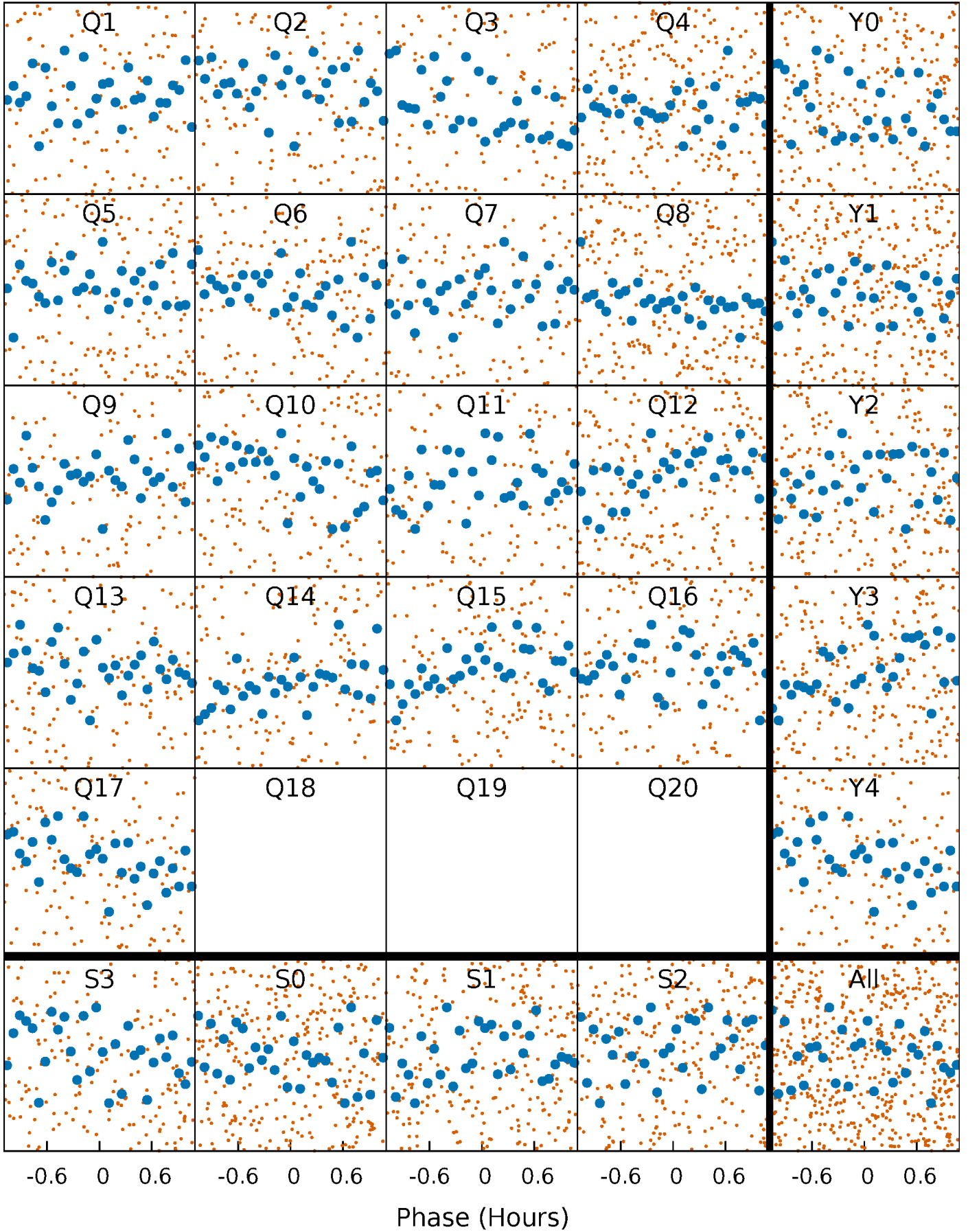


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



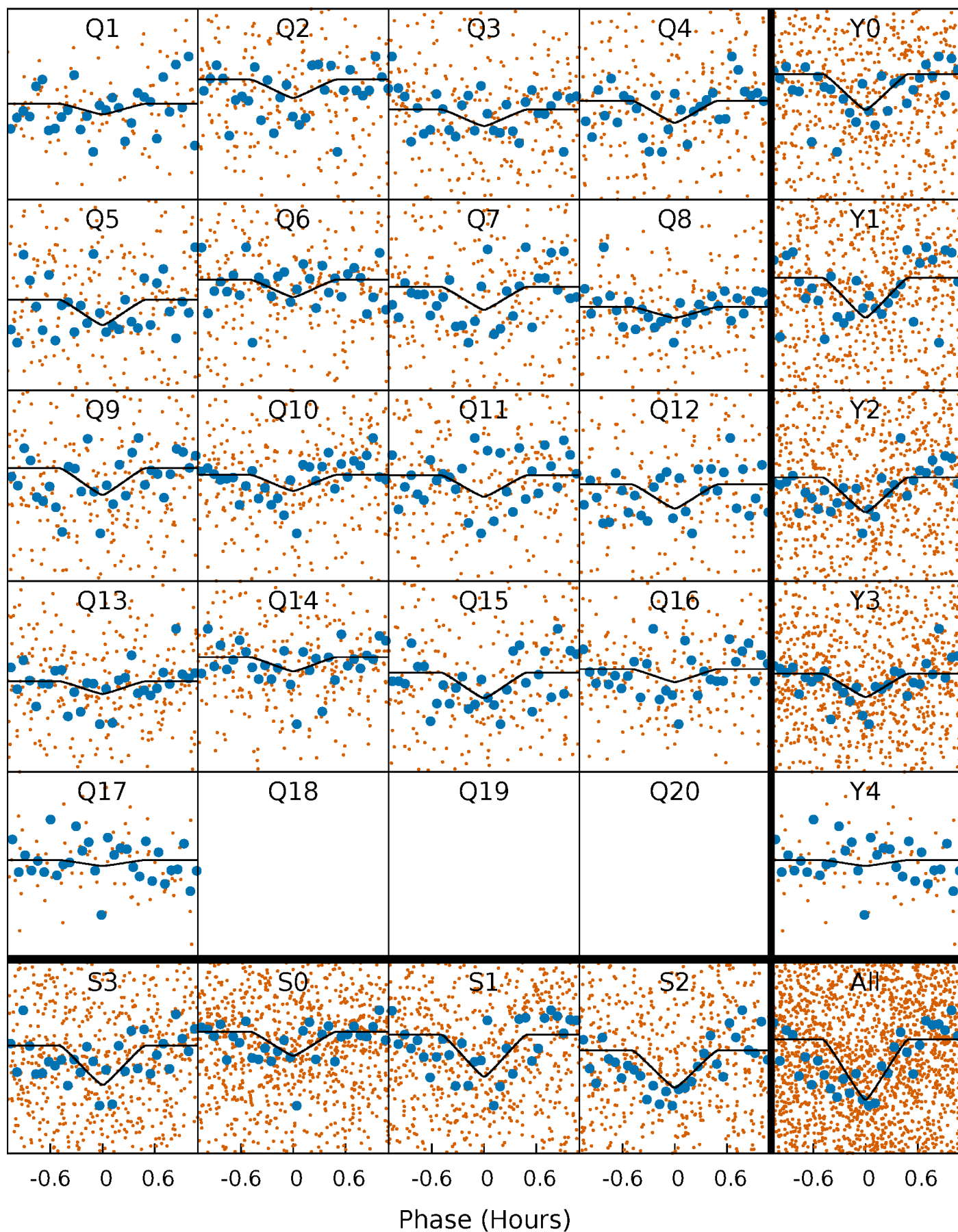
PDC Quarter-Phased Transit Curves

TCE 006463436-02 P= 0.537233 Days $T_0=131.693258$ (BKJD)



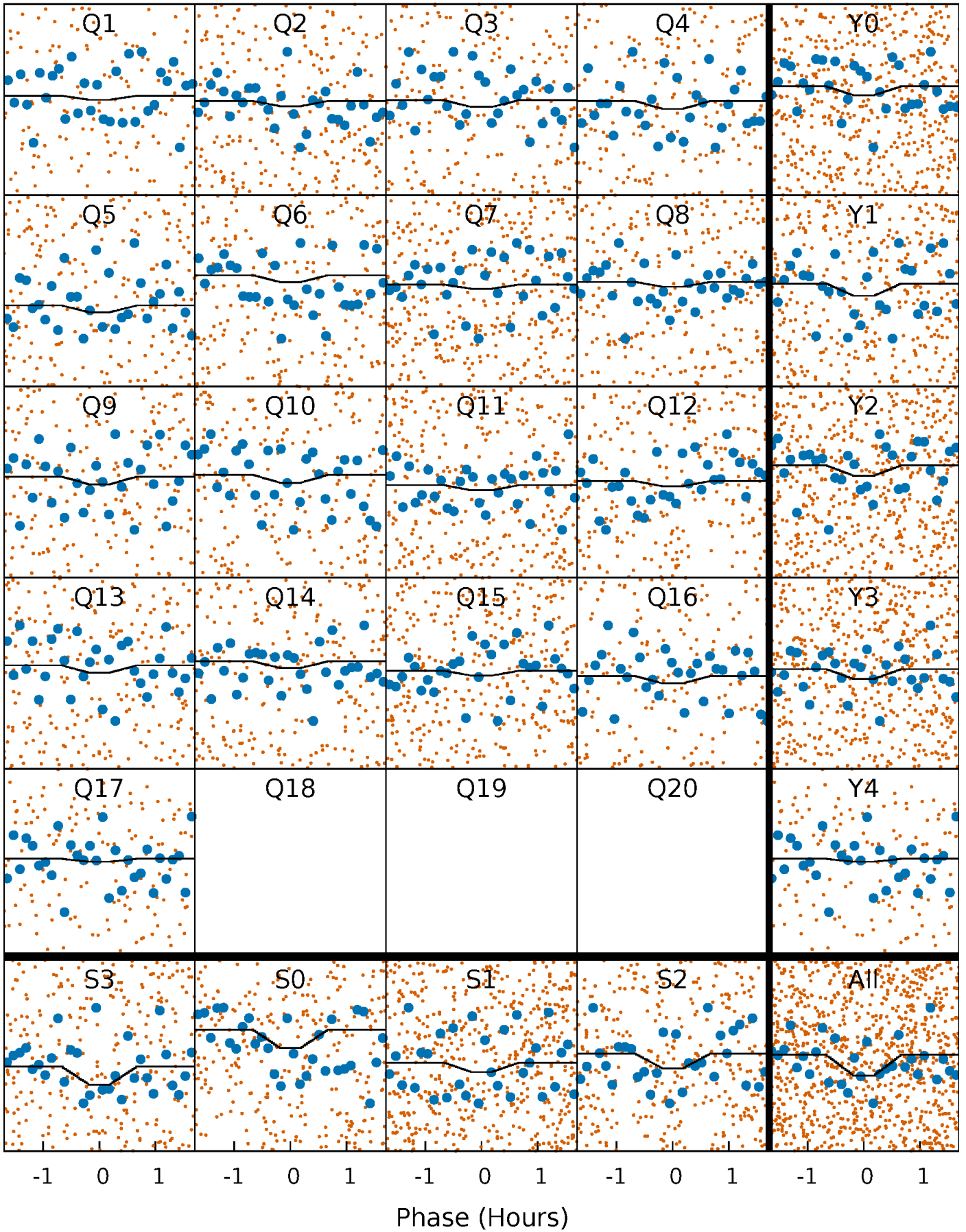
DV Quarter-Phased Transit Curves

TCE 006463436-02 P= 0.537233 Days $T_0=131.693258$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

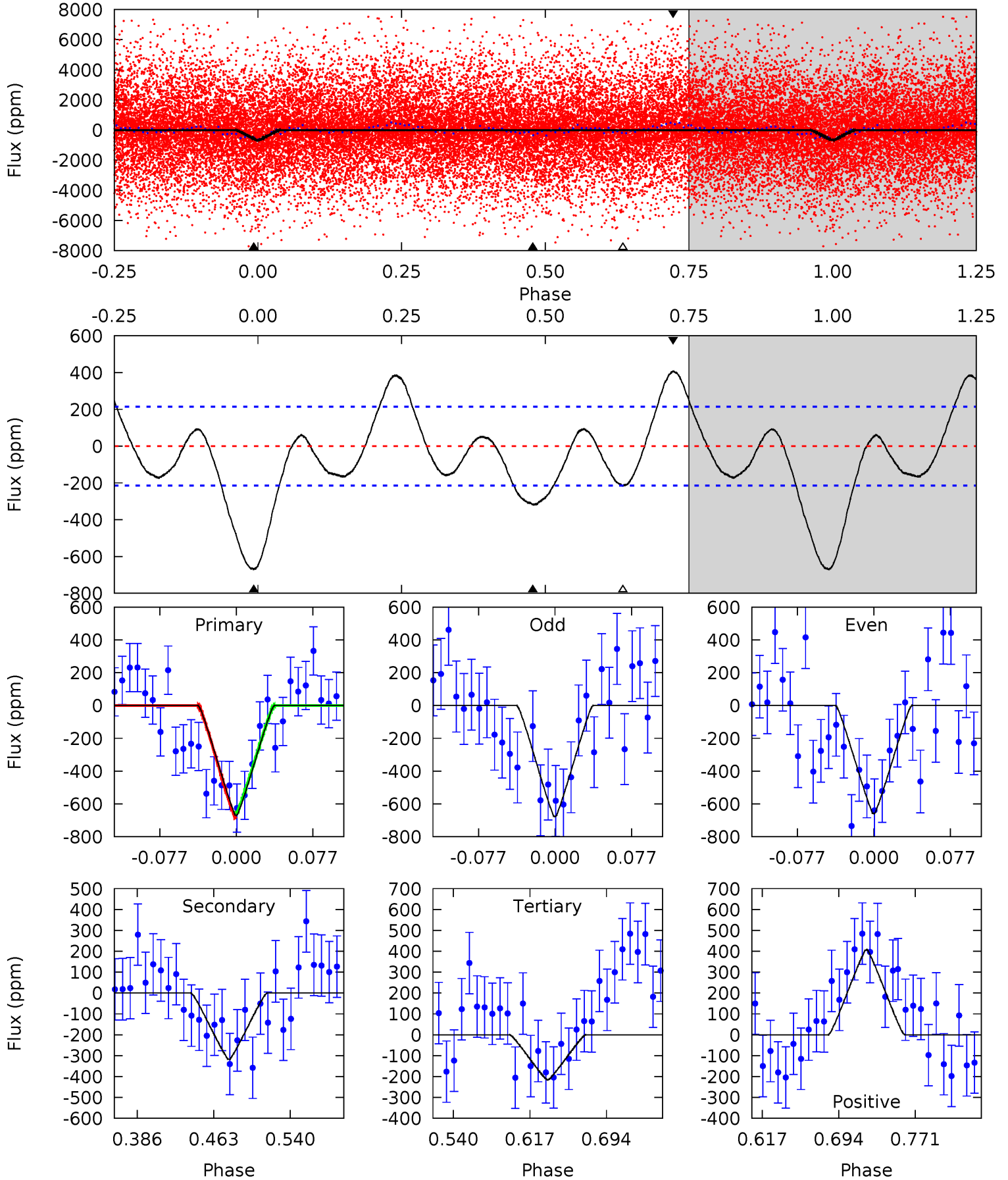
TCE 006463436-02 P= 0.537230 Days $T_0=131.692182$ (BKJD)



DV Model-Shift Uniqueness Test

006463436-02, P = 0.537233 Days, E = 131.156025 Days

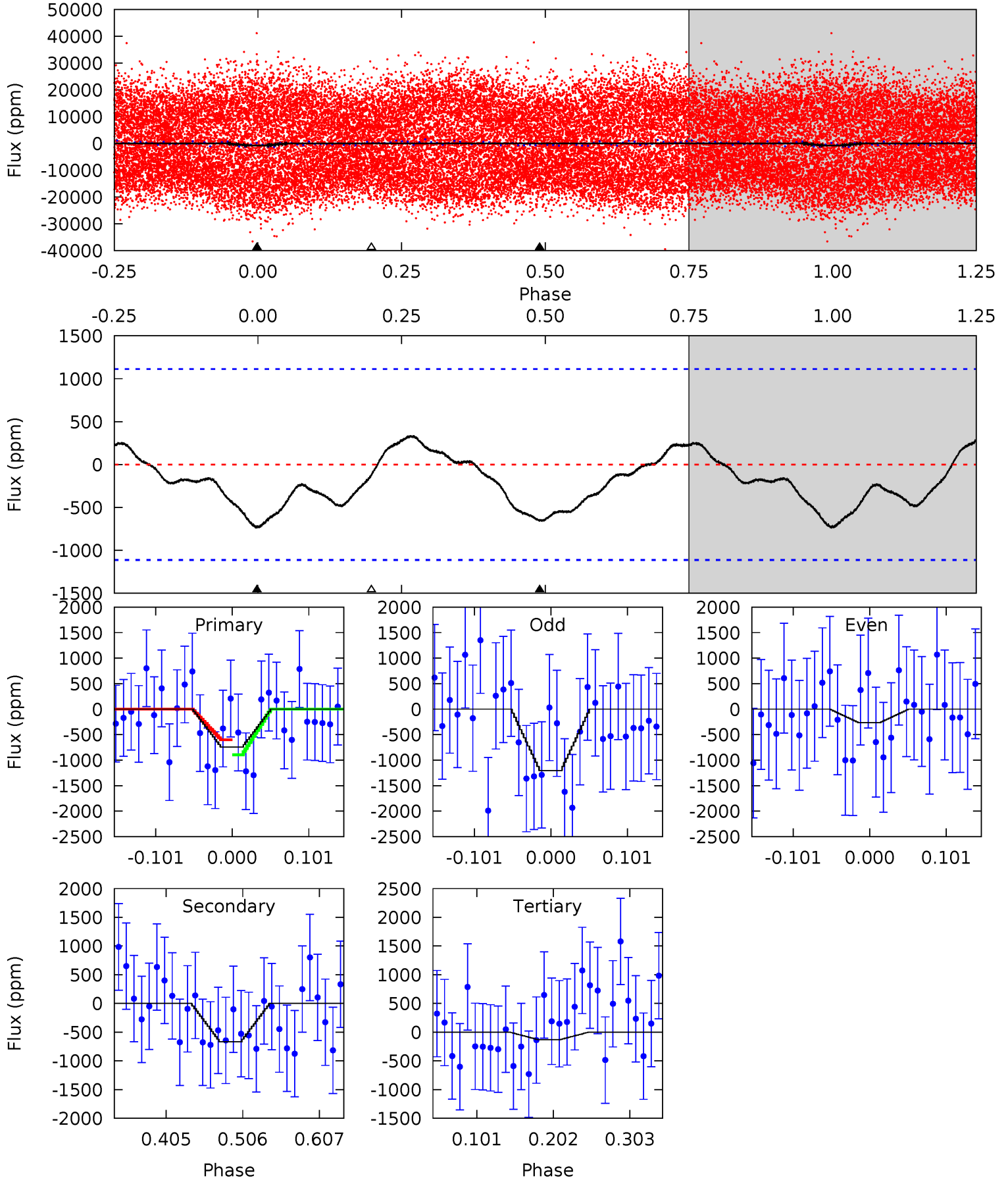
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.4 | 6.86 | 4.65 | 8.78 | 4.62 | 1.77 | 3.67 | 9.79 | 5.66 | 2.21 | -1.92 | 0.20 | 1.15 | 0.38 | 0.39 |



Alt Model-Shift Uniqueness Test

006463436-02, P = 0.537230 Days, E = 131.154952 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.04 | 2.73 | 0.54 | 0 | 4.56 | 1.64 | 0.88 | 2.50 | 3.04 | 2.19 | 2.73 | 1.88 | 0.60 | 0.32 | 0.61 |



Stellar Parameters For KIC 006463436

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6006^{+181}_{-181} | $3.877^{+0.517}_{-0.138}$ | $-0.440^{+0.300}_{-0.250}$ | $1.953^{+0.515}_{-0.956}$ | $1.046^{+0.140}_{-0.193}$ | $0.198^{+1.132}_{-0.095}$ |
| | +3%/-3% | +13%/-4% | +68%/-57% | +26%/-49% | +13%/-18% | +572%/-48% |
| 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 006463436-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -318 ± 46 | $5.47^{+4.20}_{-3.34}$ | 4386^{+377}_{-549} | 4430^{+2873}_{-1914} | $1.001^{+5.260}_{-0.687}$ |
| Alt. | -666 ± 244 | $5.50^{+4.27}_{-3.29}$ | 4388^{+371}_{-572} | 5417^{+3800}_{-1605} | $2.005^{+10.963}_{-1.452}$ |

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 $A_{obs} \gg 1.0$

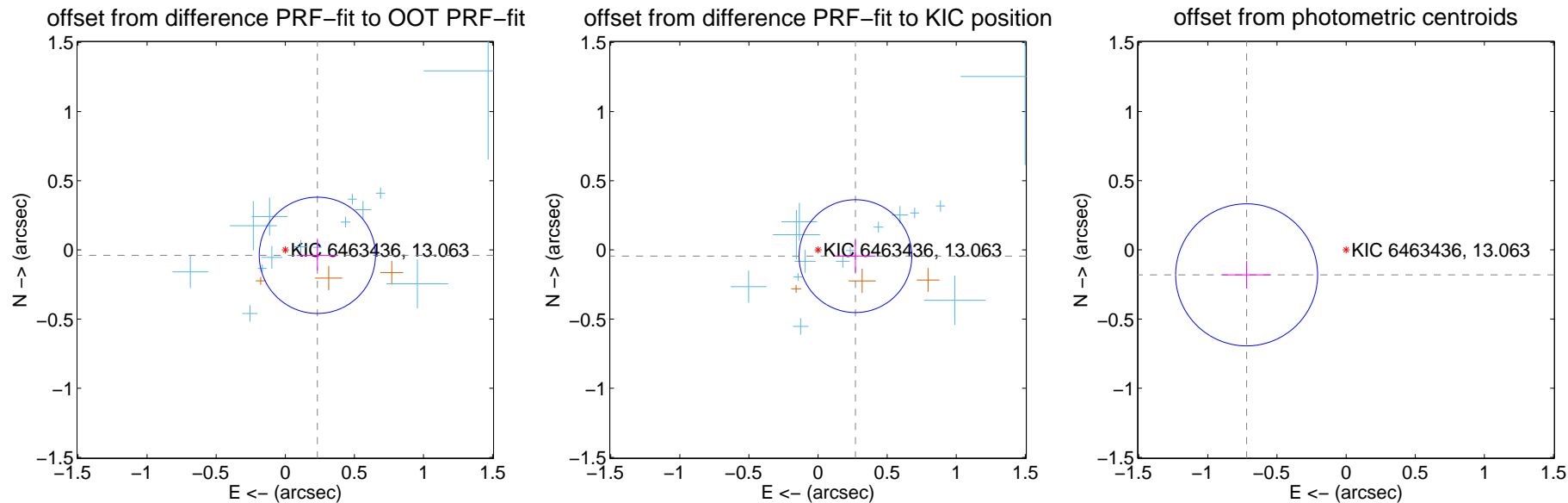
DV Centroid Data

Supplemental centroid analysis for 006463436-02. Kepler magnitude: 13.06. Transit SNR 9.02

There are 14 quarters with good PRF difference image offsets

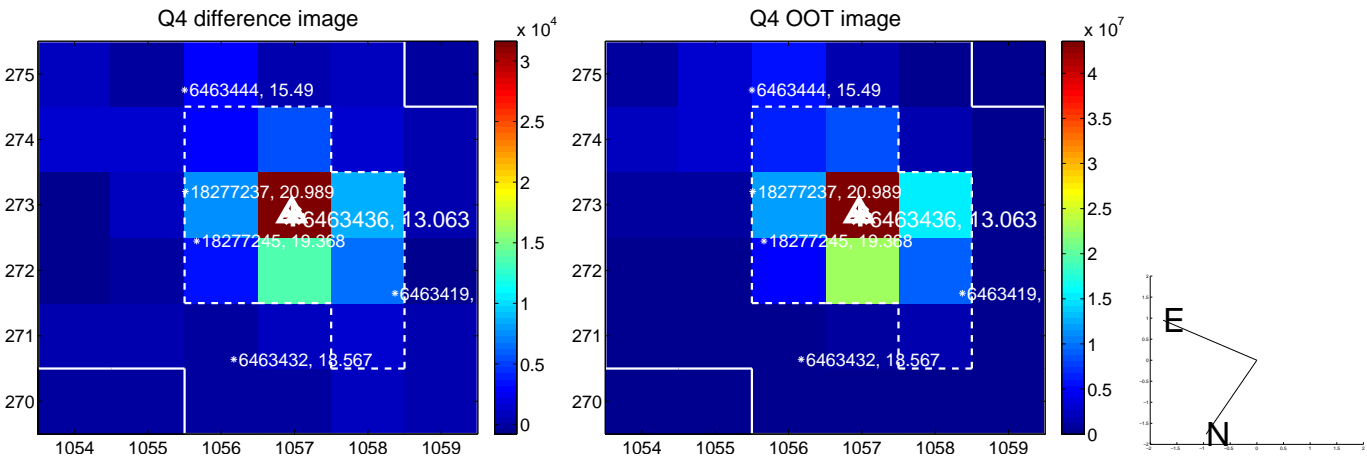
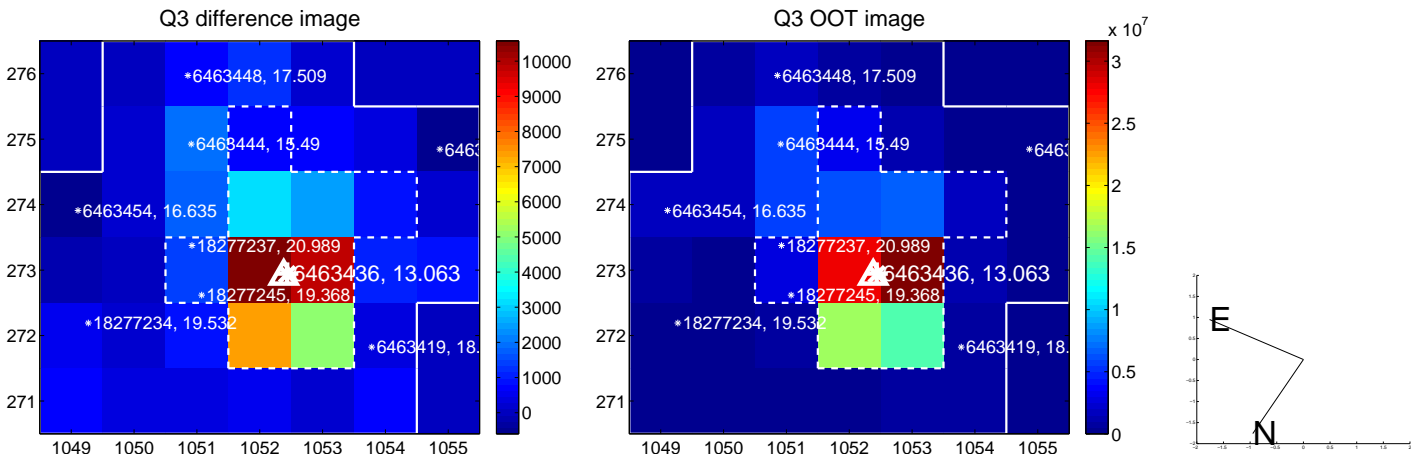
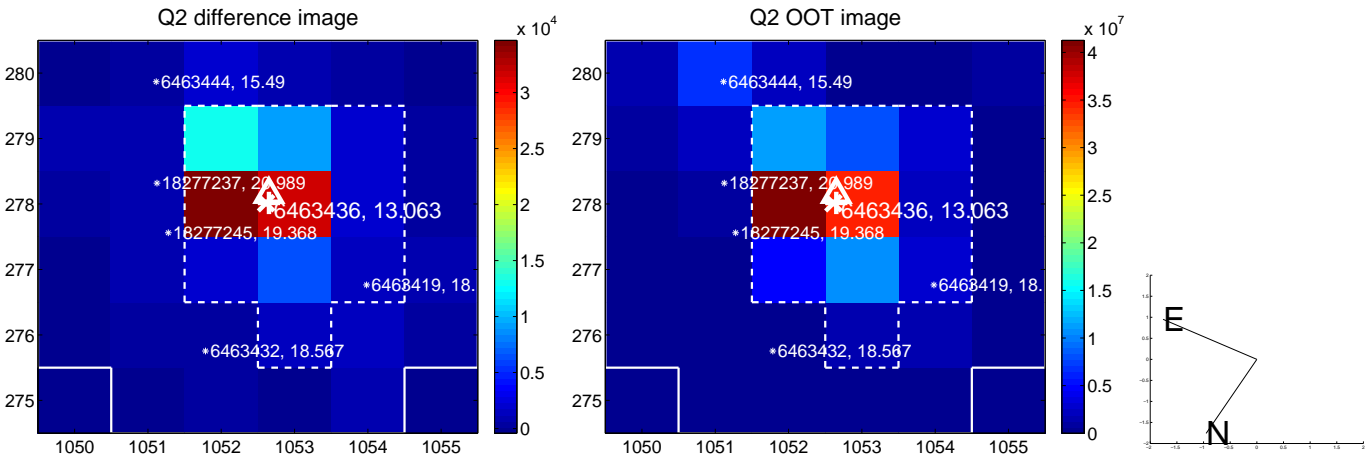
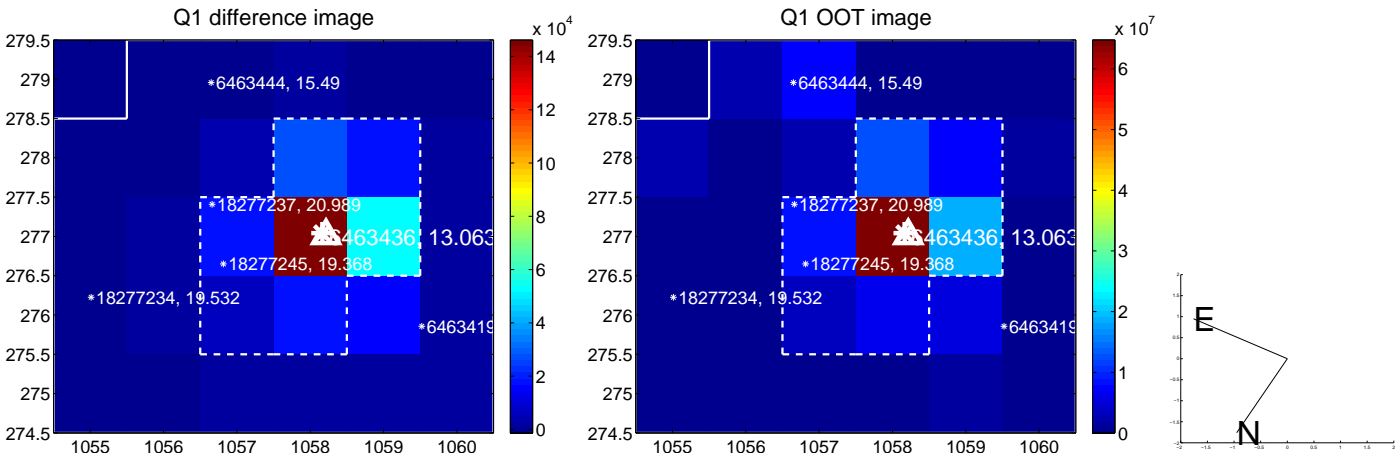
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.235 ± 0.140 | 1.68 | -0.232 ± 0.150 | -0.039 ± 0.111 |
| PRF-fit source offset from KIC position | 0.274 ± 0.136 | 2.02 | -0.271 ± 0.146 | -0.045 ± 0.117 |
| photometric centroid source offset | 0.74 ± 0.17 | 4.34 | 0.72 ± 0.17 | -0.18 ± 0.10 |

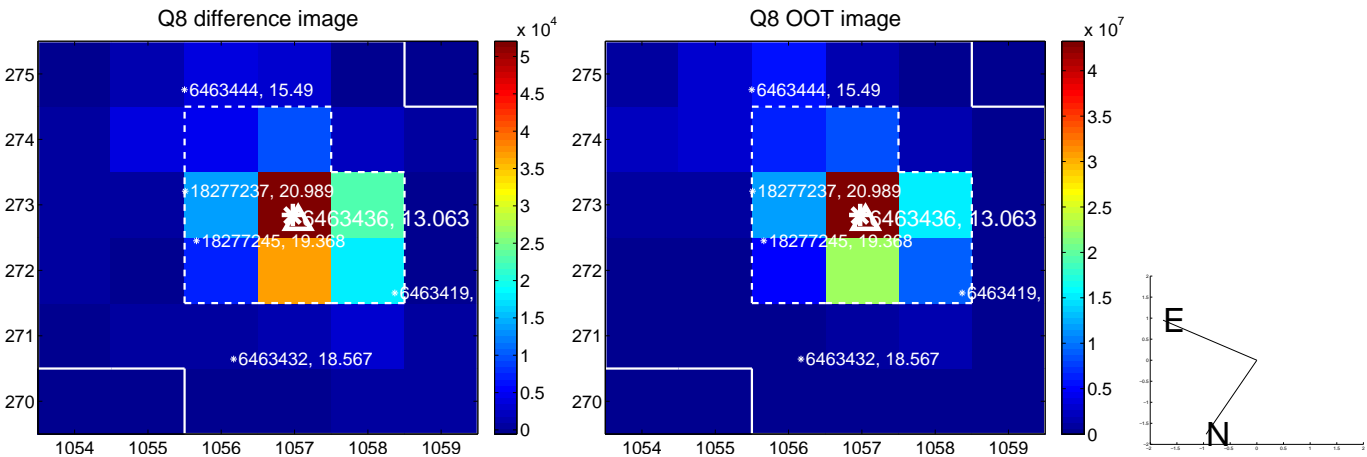
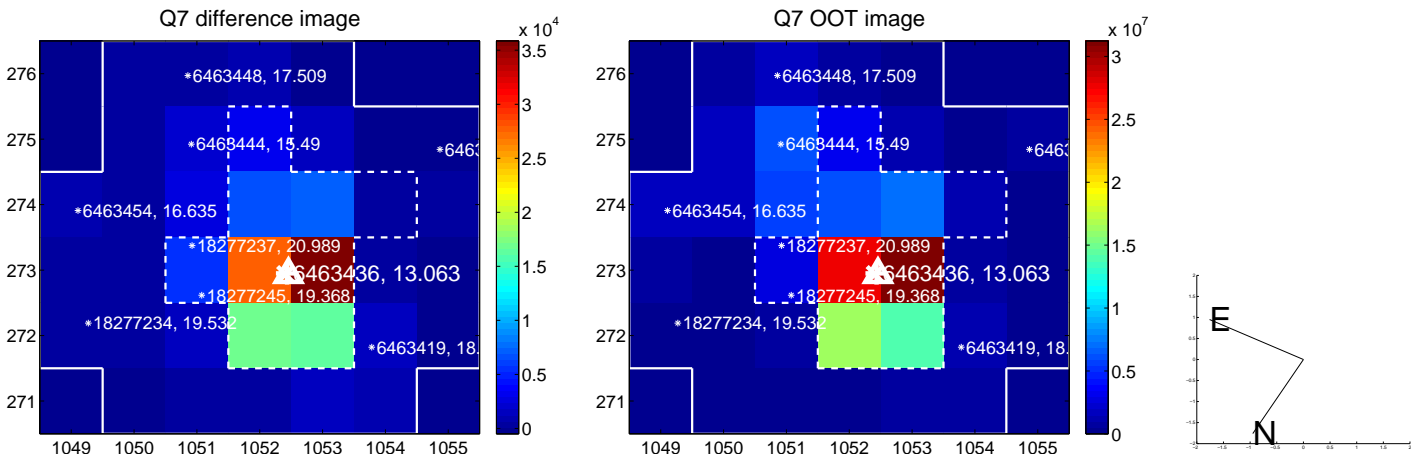
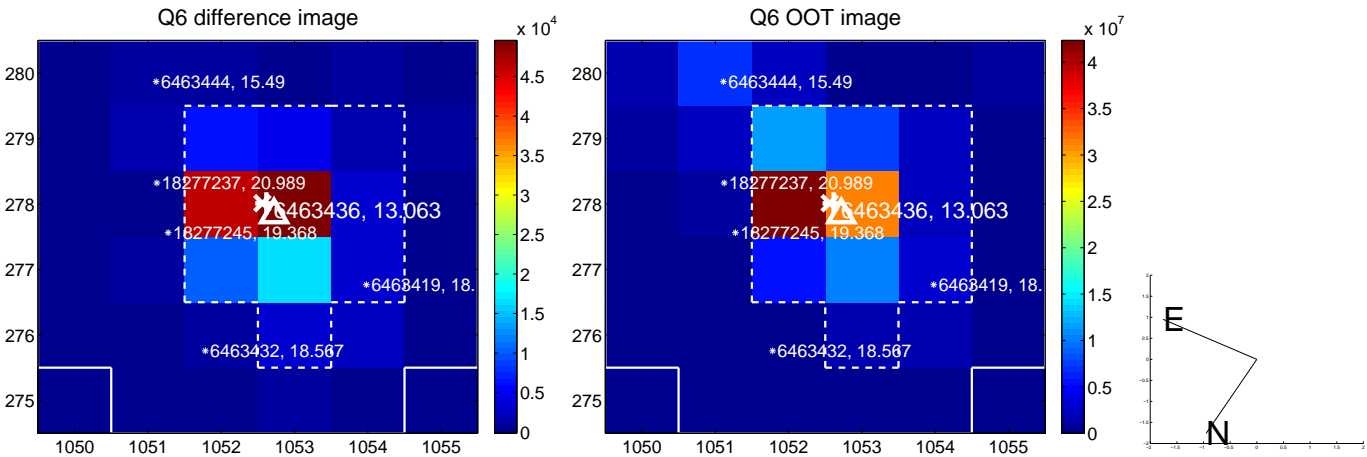
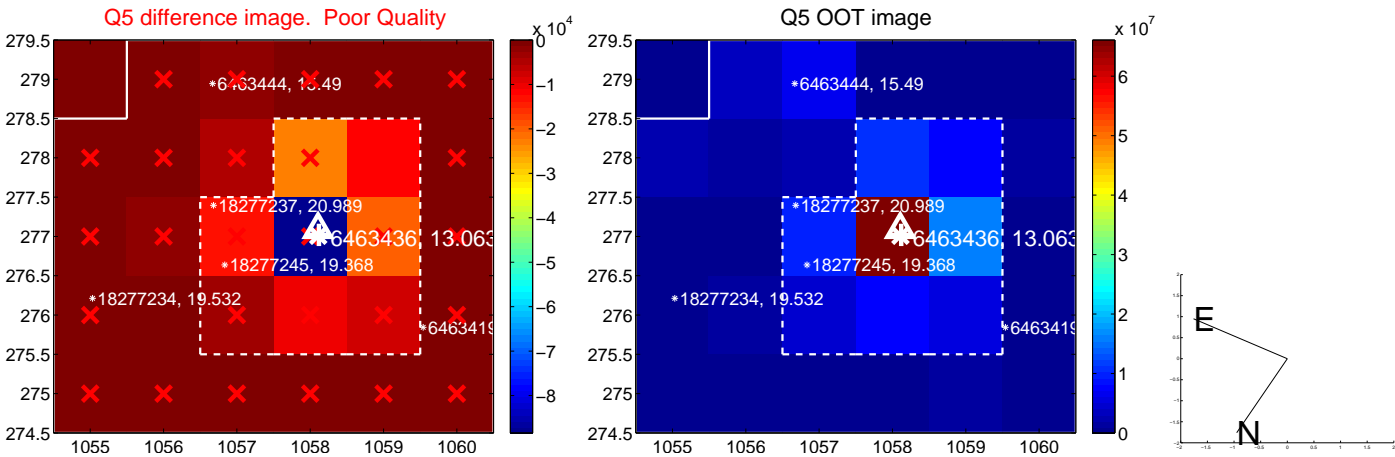


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

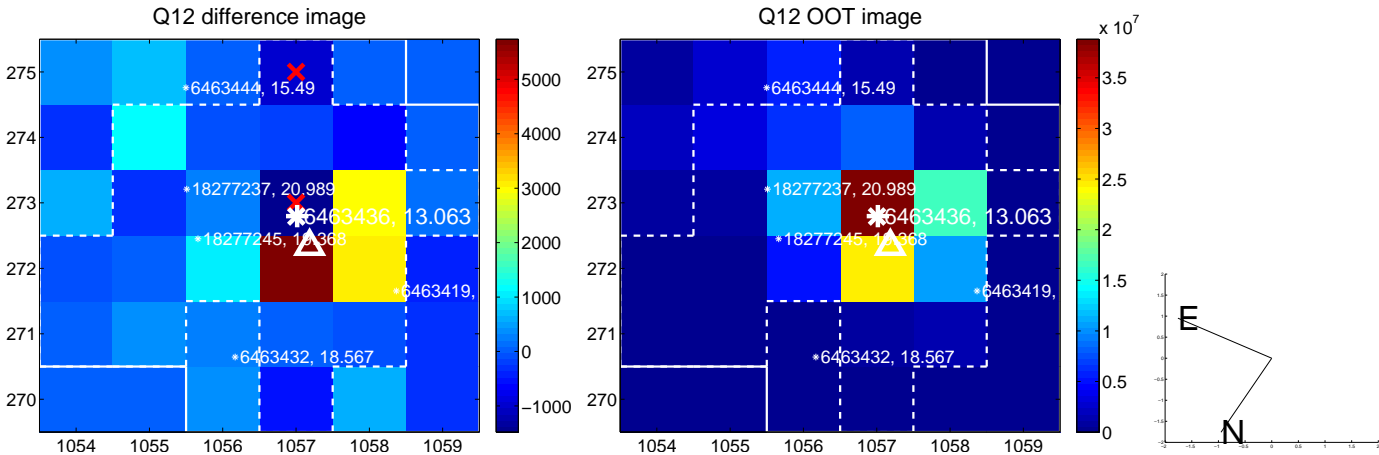
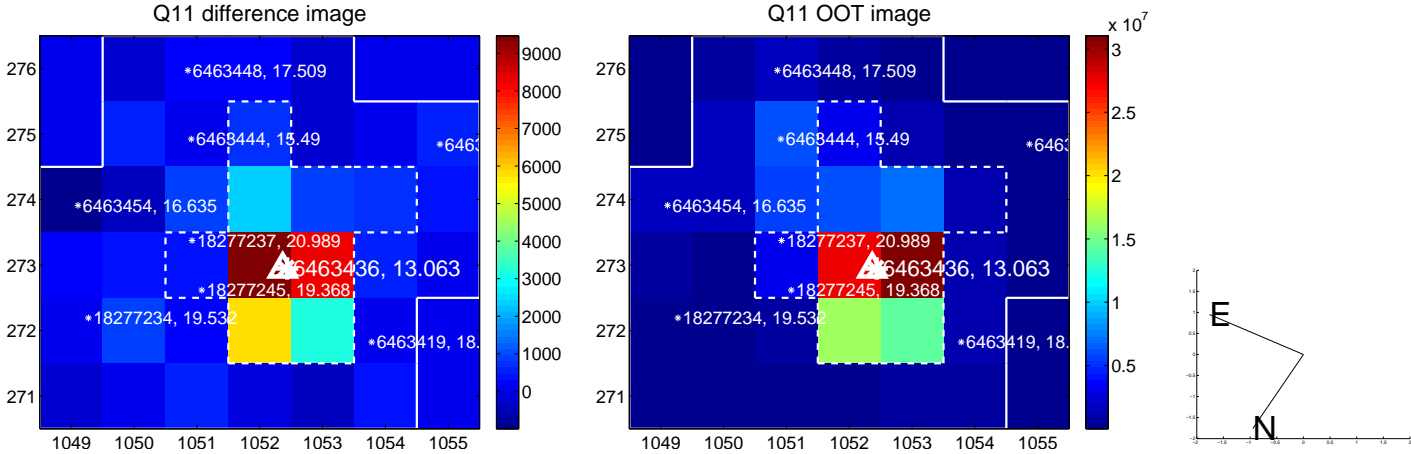
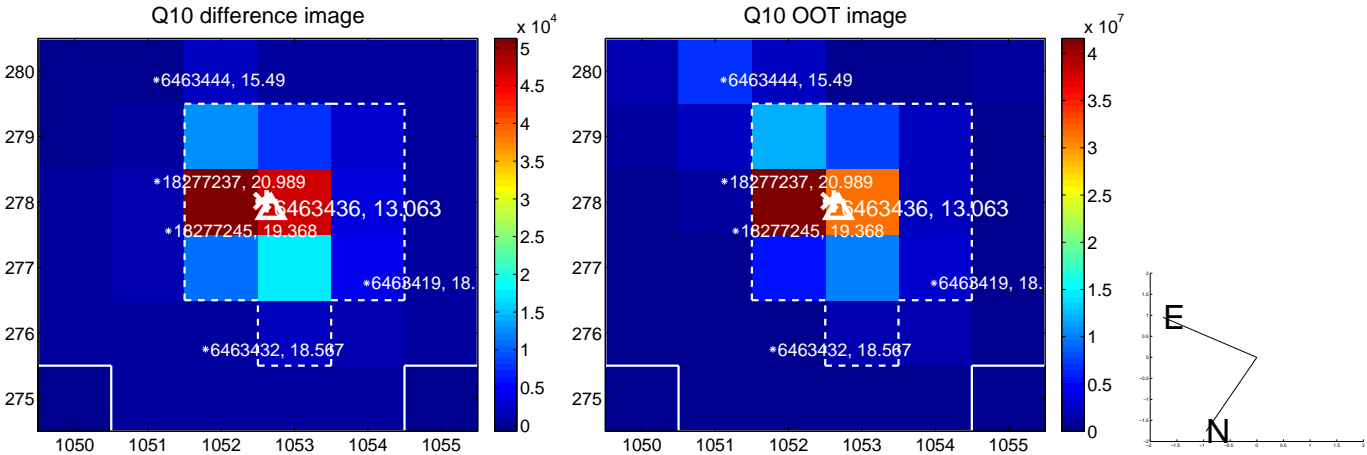
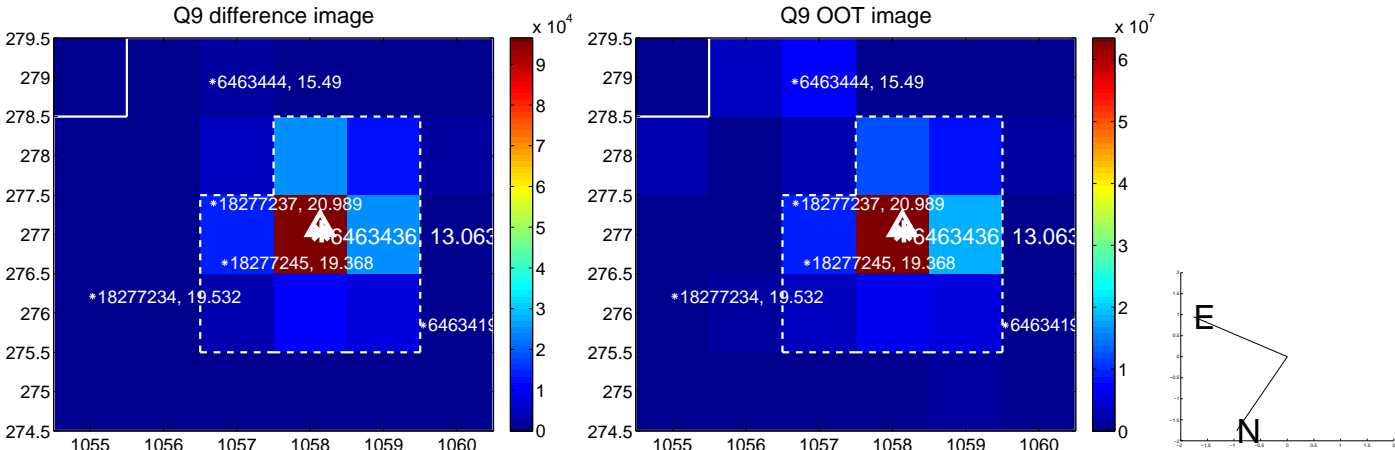
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



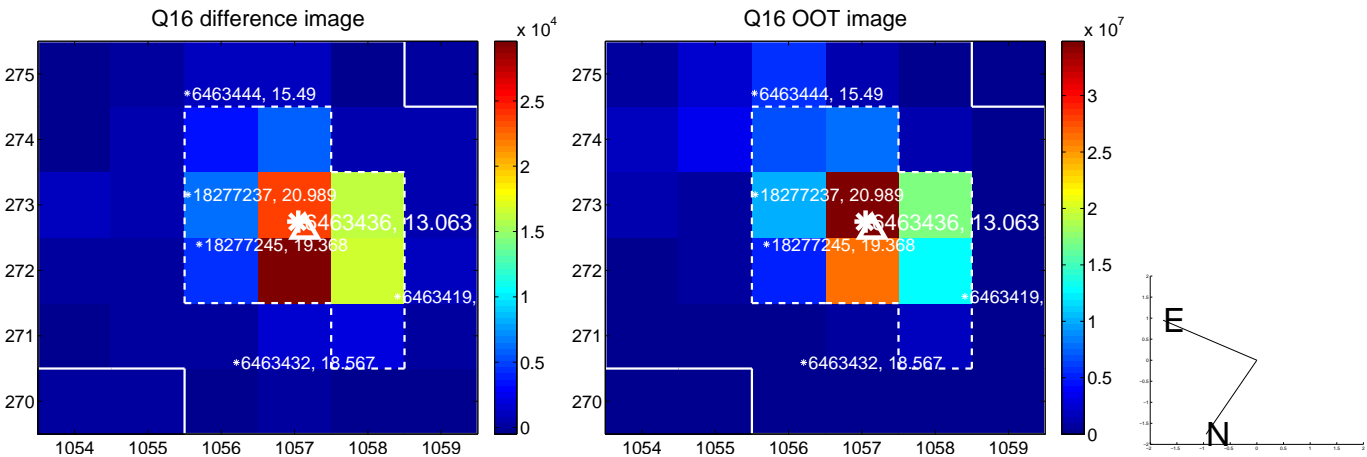
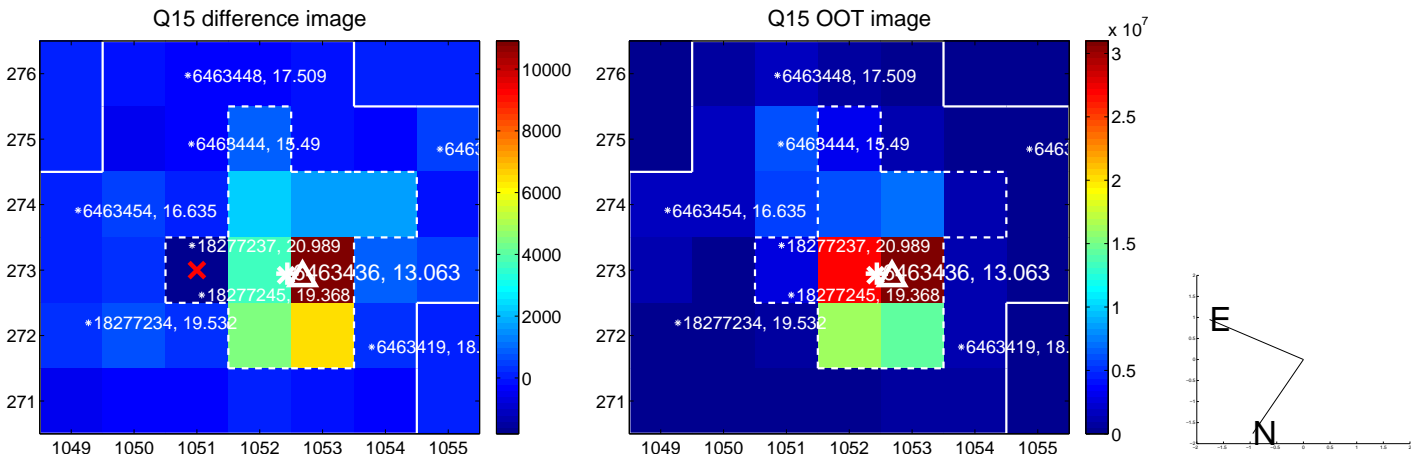
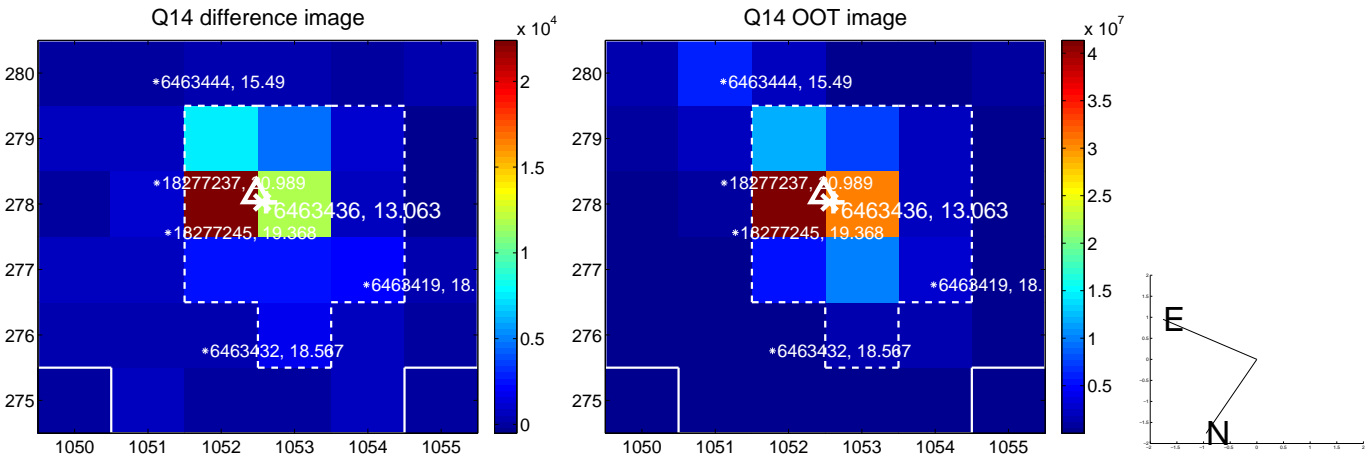
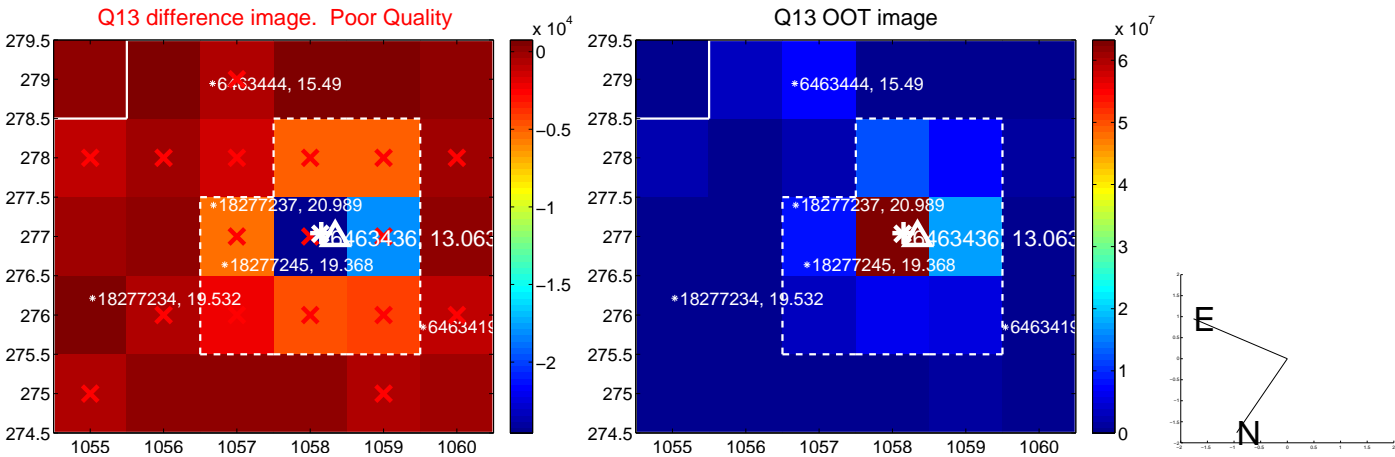
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



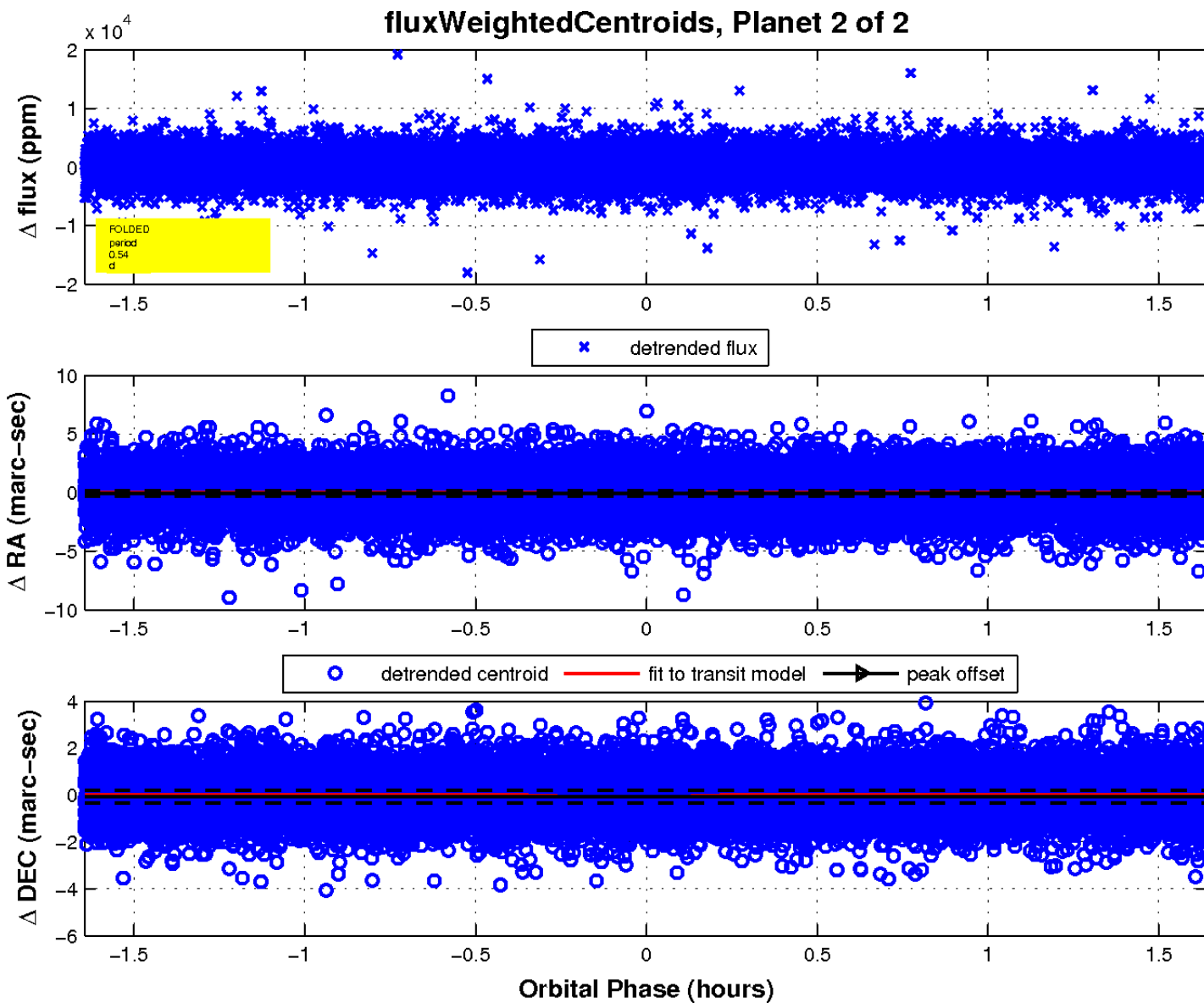
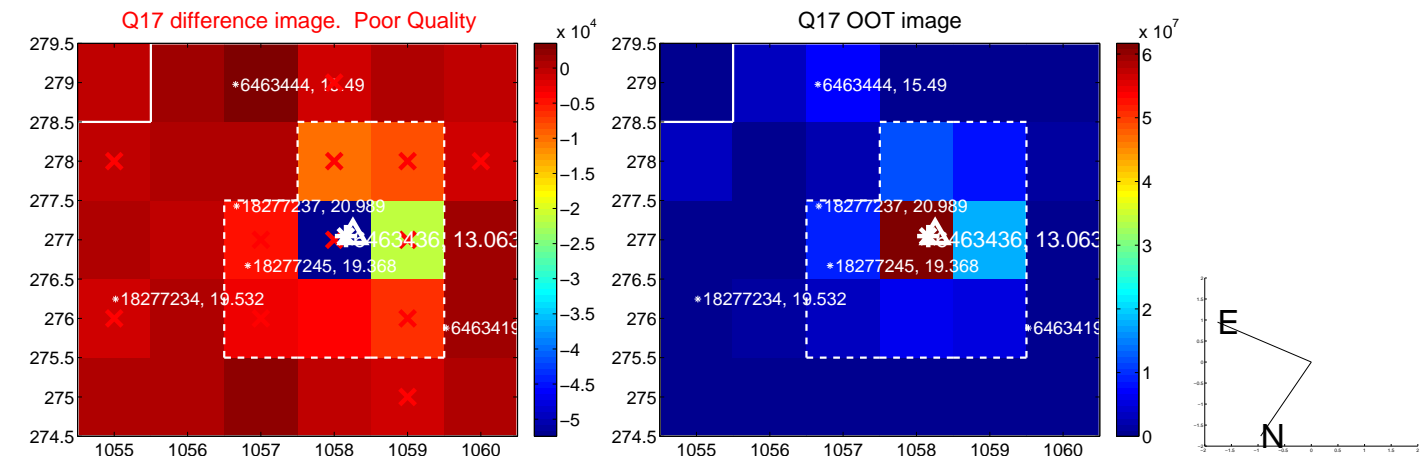
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

