

KIC 010486425

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|--------|--------|-----------------------------|-----------------|------------------------|------------------------|
| 010486425-01 | OBS | 7334.01 | 5.274826 | 136.708082 | 107593.4 | 4.685 | 2020.3 | 1393.7 | 1.83 | 7247 | 100.12 | 1738.53 |
| 010486425-02 | OBS | No | 5.274832 | 134.070230 | 31286.6 | 4.620 | 575.7 | 594.4 | 1.83 | 7247 | 55.41 | 1738.53 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010486425-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 010486425-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

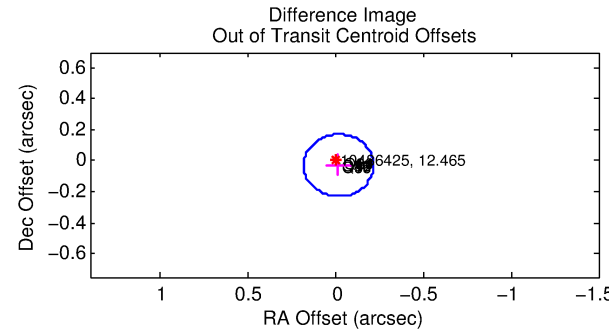
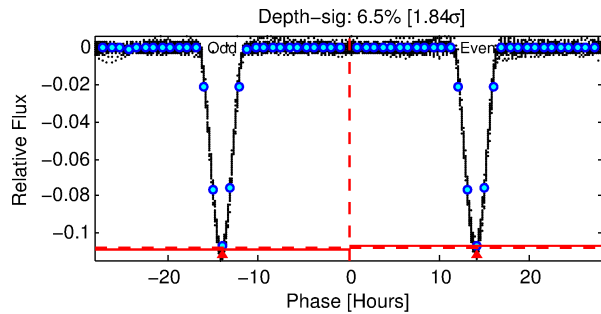
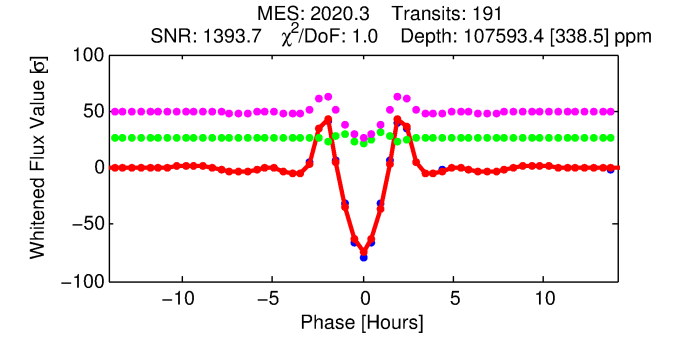
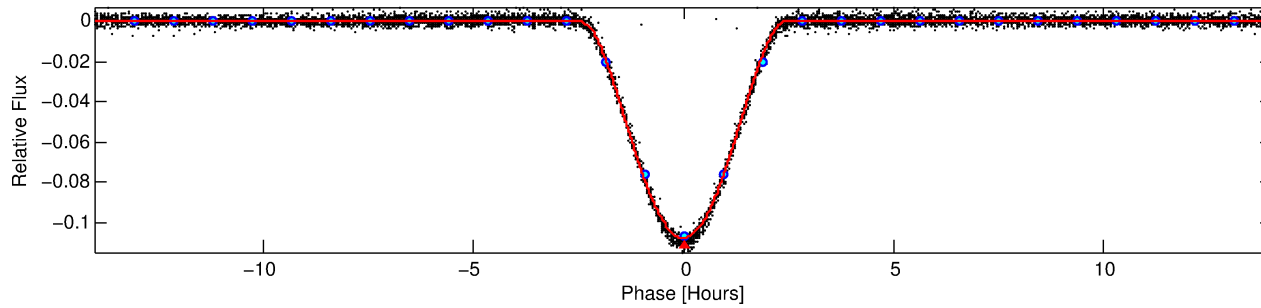
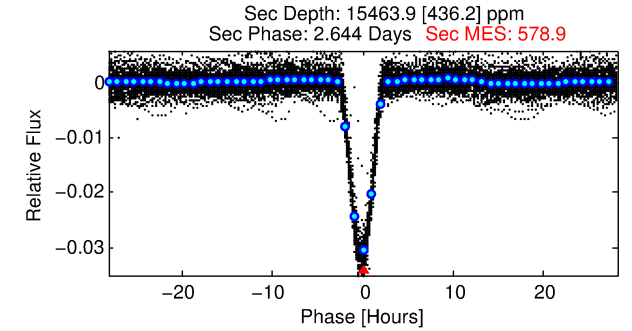
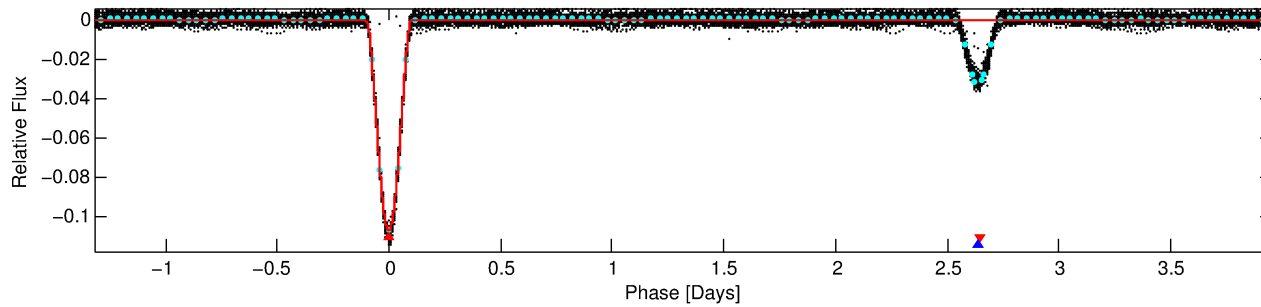
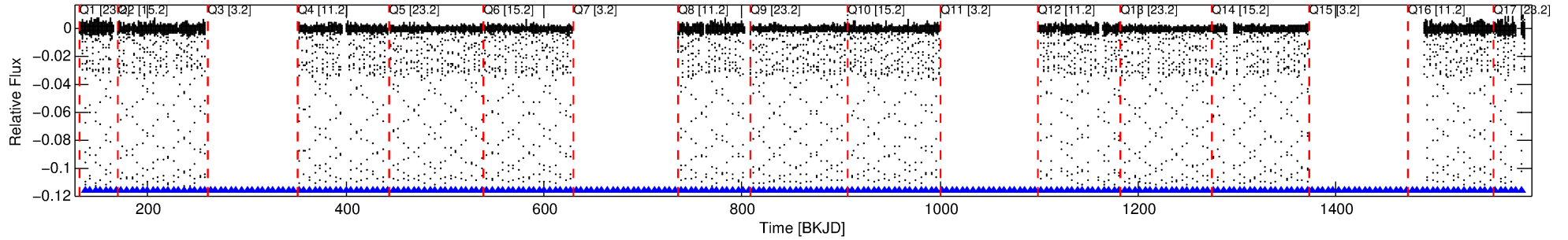
Ephemeris Match Information For 010486425-01

No Significant Match Found

DV One-Page Summary

KIC: 10486425 Candidate: 1 of 2 Period: 5.275 d
KOI: K07334.01 Corr: 0.997

Kp: 12.47 R*: 1.83 Rs Teff: 7247.0 K Logg: 4.11 Fe/H: 0.040



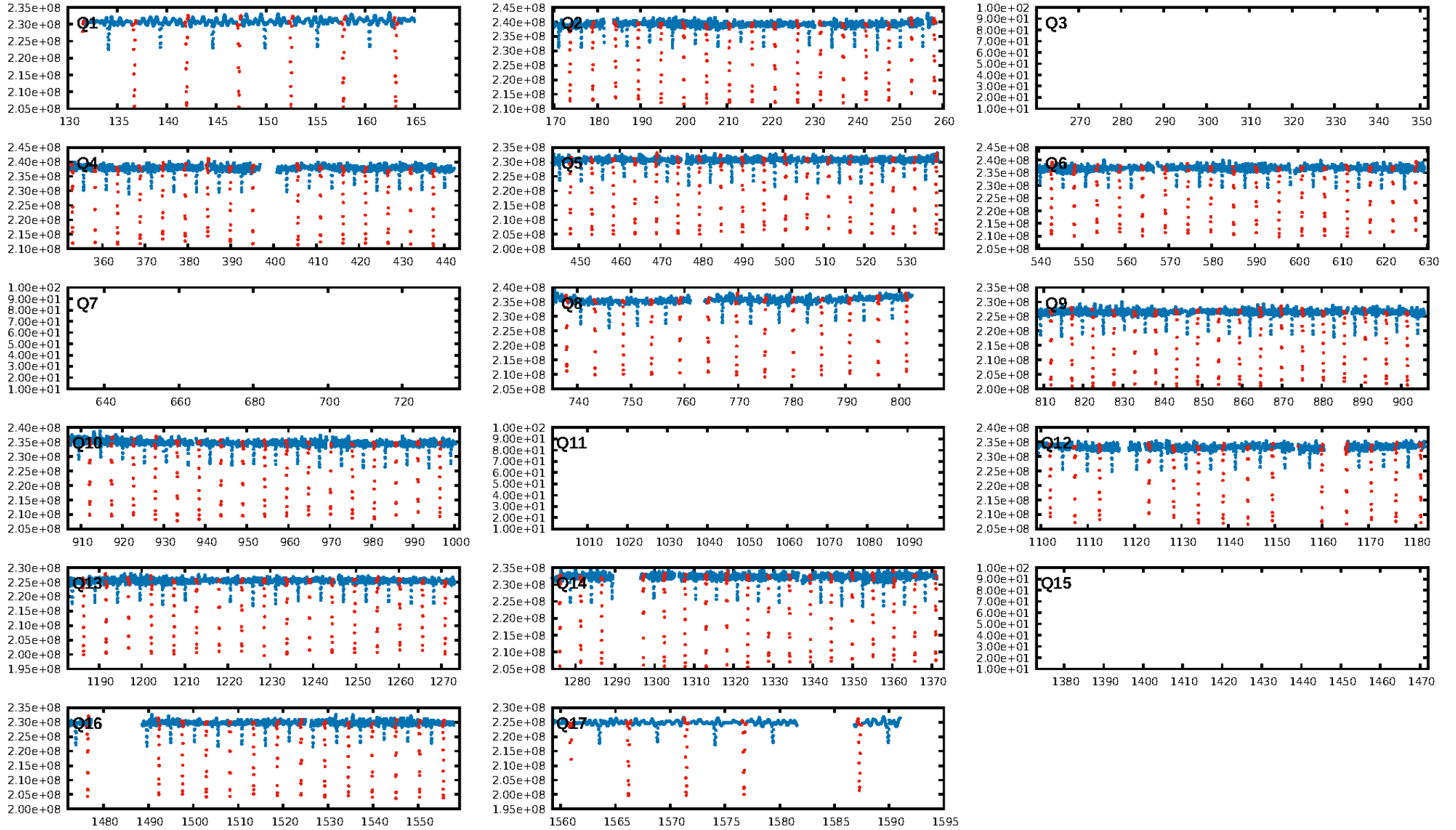
DV Fit Results:

Period = 5.27483 [0.00000] d
Epoch = 136.7081 [0.0000] BKJD
Rp/R* = 0.5003 [0.0586]
a/R* = 9.77 [0.09]
b = 0.99 [0.08]
Seff = 1738.53 [688.01]
Teq = 1647 [163] K
Rp = 100.12 [31.98] Re
a = 0.0691 [0.0169] AU
Ag = 4.06 [1.70] [1.79σ]
Teffp = 3613 [273] K [6.18σ]

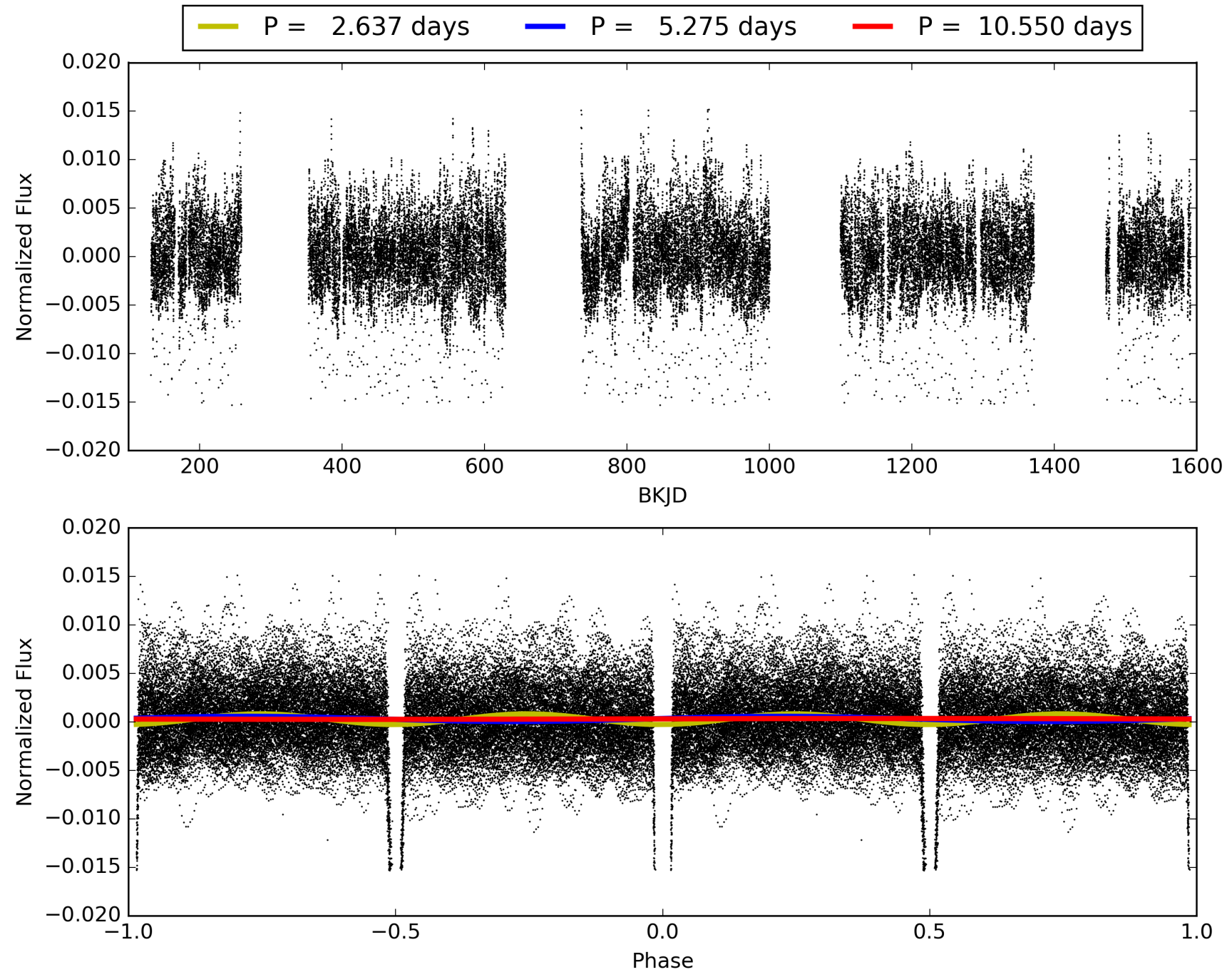
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 44.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [179/179]
GhostDiagnostic-chr: 1.887
Centroid-sig: 0.0%
Centroid-so: 0.127 arcsec [183.05σ]
OotOffset-rm: 0.034 arcsec [0.50σ]
KicOffset-rm: 0.136 arcsec [2.00σ]
OotOffset-st: 4/0/4/5 [13]
KicOffset-st: 4/0/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 010486425-01, PDC Light Curves

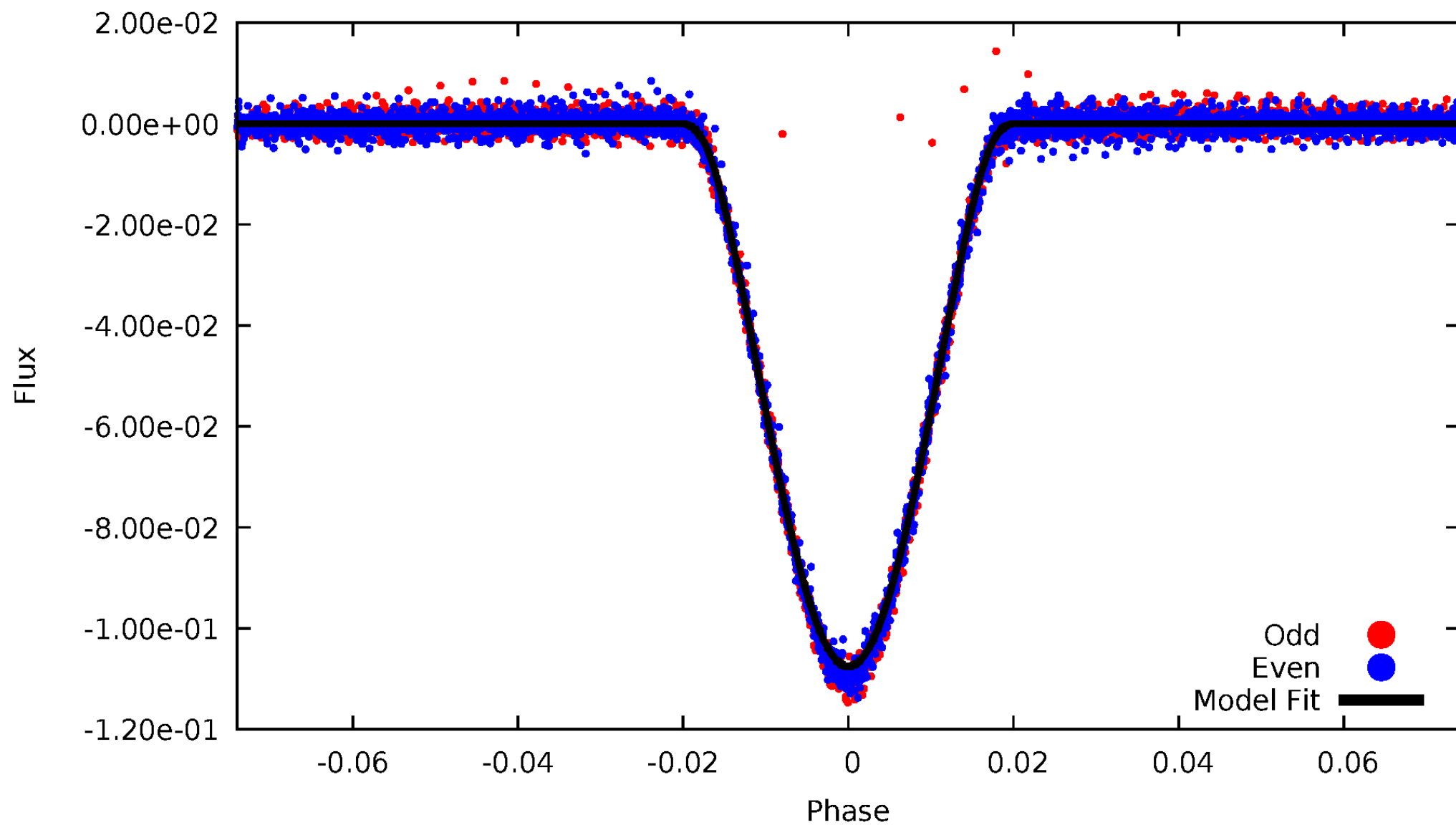


TCE 010486425-01



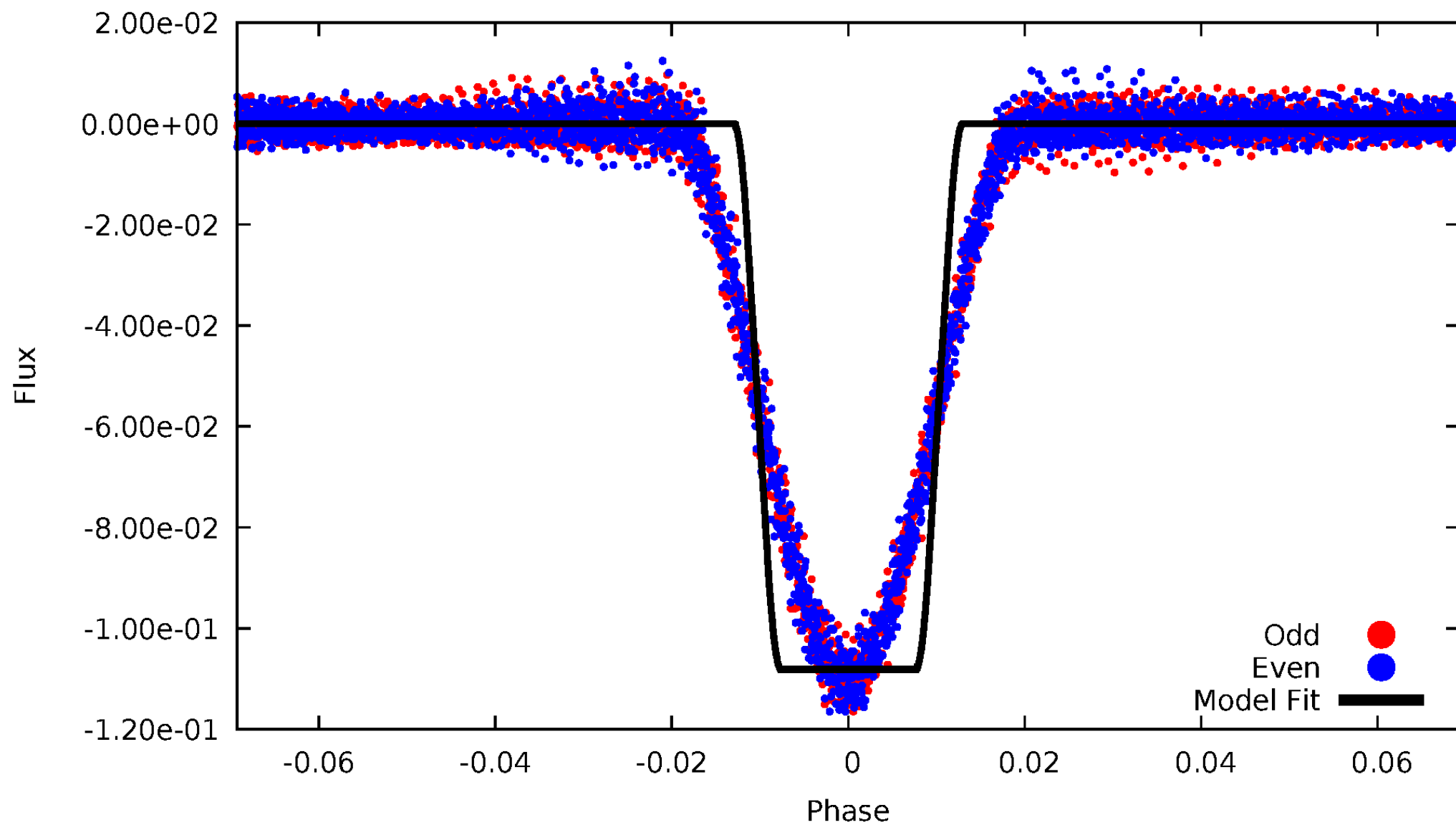
DV Odd/Even

TCE 010486425-01



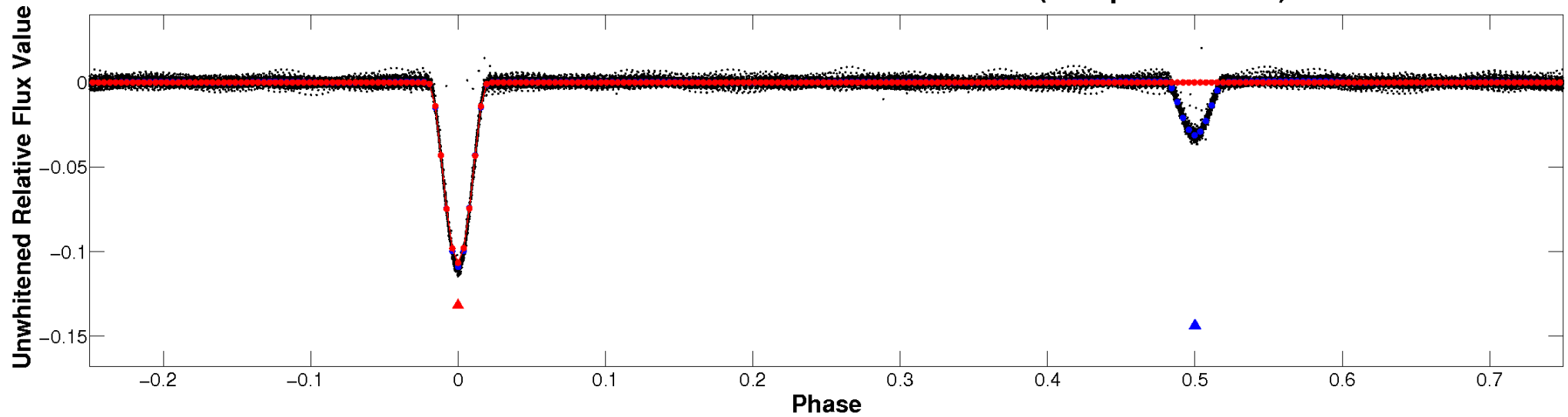
ALT Odd/Even

TCE 010486425-01

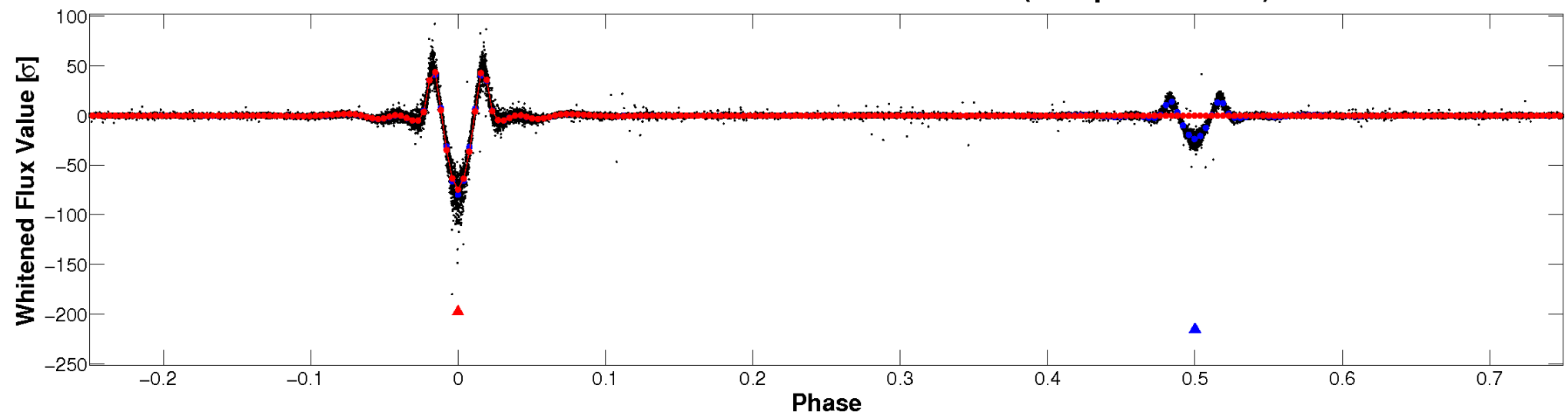


Non-Whitened Vs. Whitened Light Curve

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

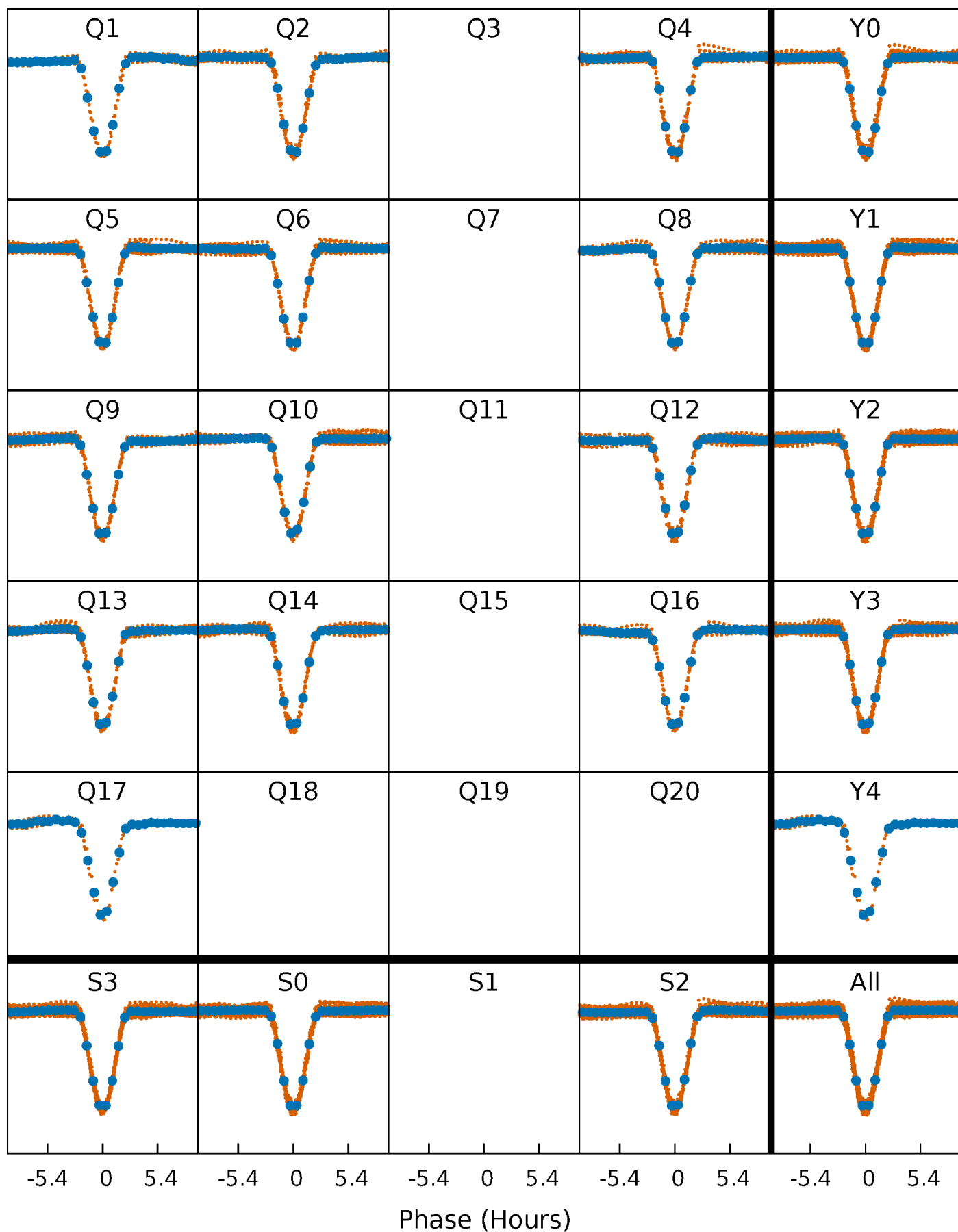


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



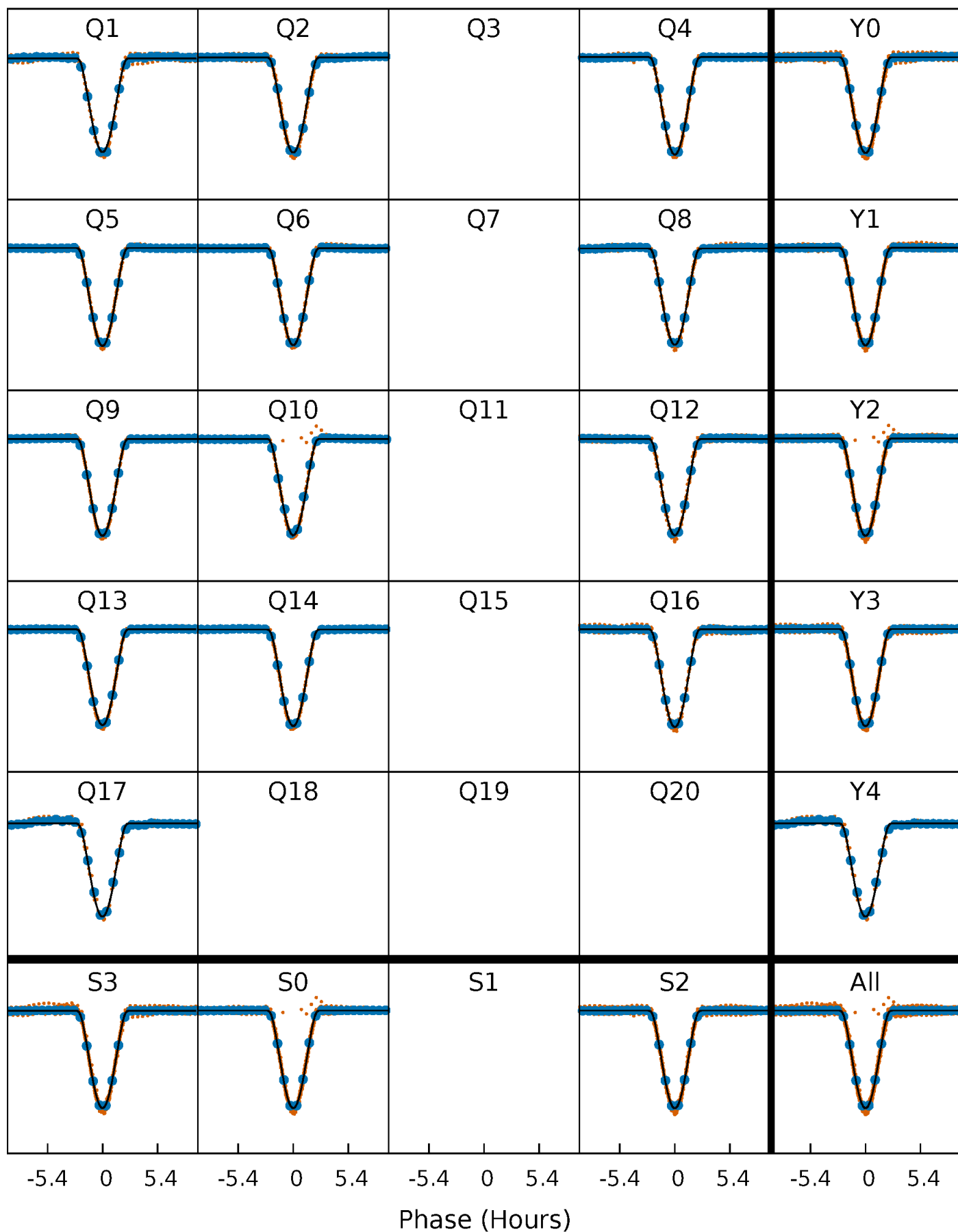
PDC Quarter-Phased Transit Curves

TCE 010486425-01 P= 5.274826 Days $T_0=136.708082$ (BKJD)



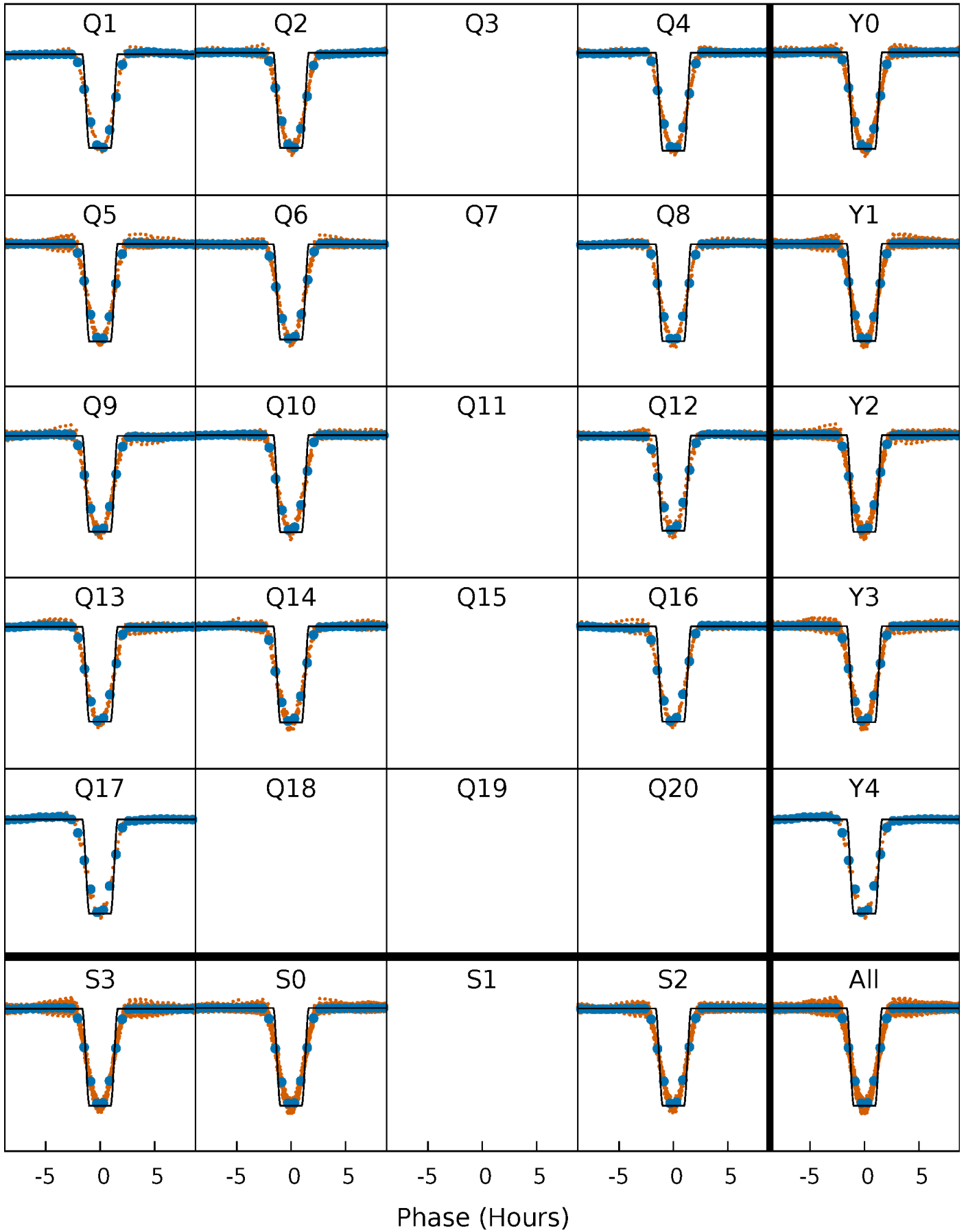
DV Quarter-Phased Transit Curves

TCE 010486425-01 P= 5.274826 Days $T_0=136.708082$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

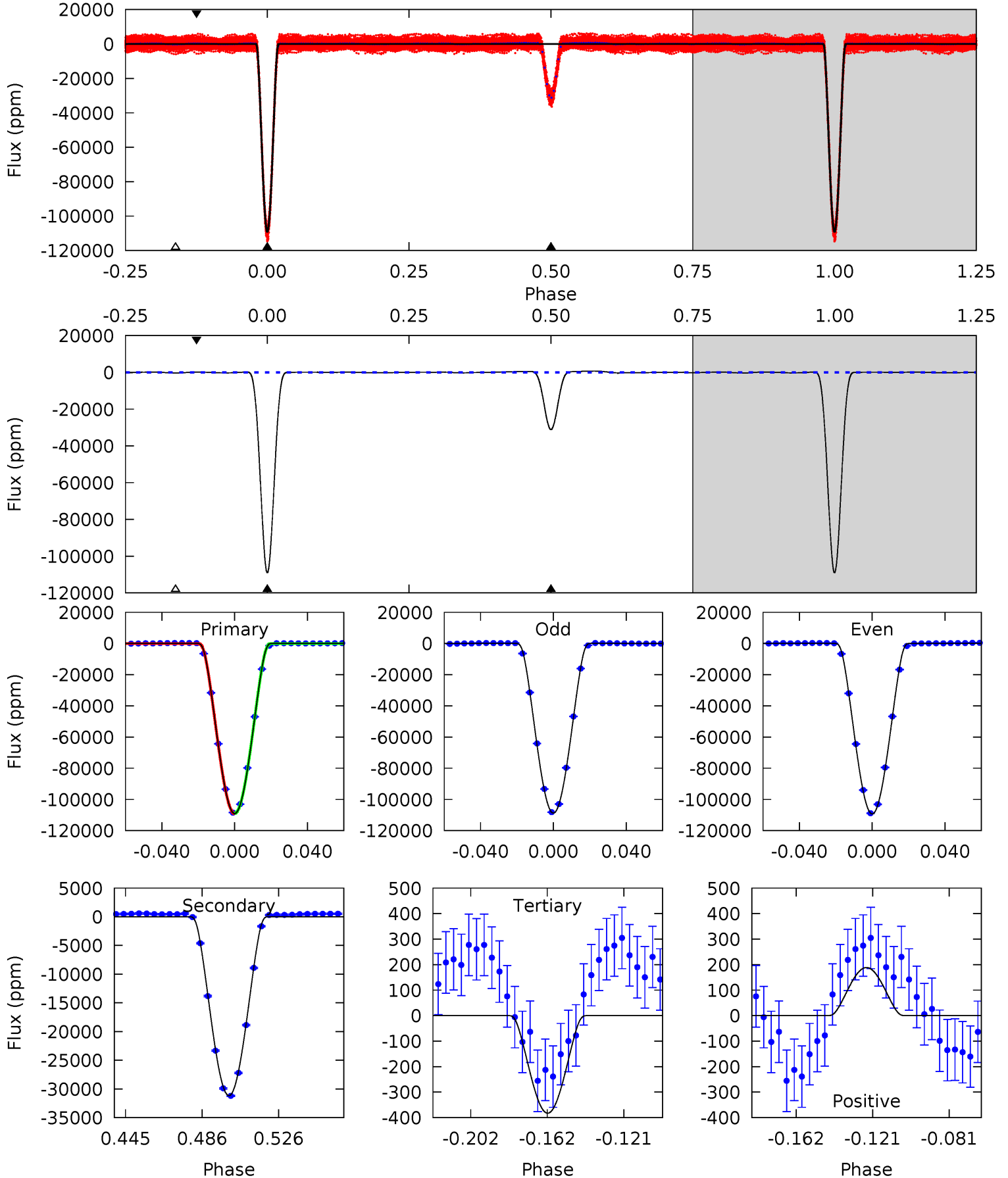
TCE 010486425-01 P= 5.274841 Days $T_0=136.706166$ (BKJD)



DV Model-Shift Uniqueness Test

010486425-01, P = 5.274826 Days, E = 131.433256 Days

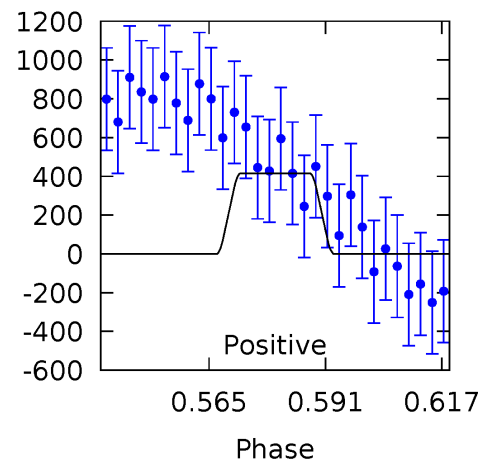
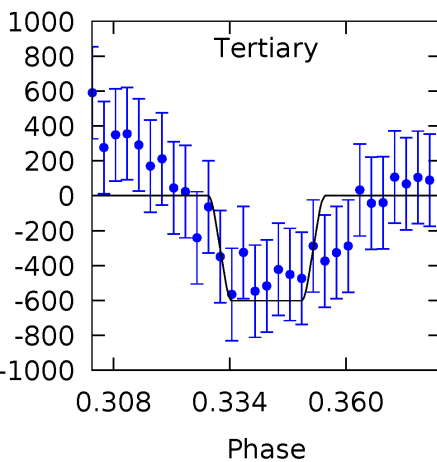
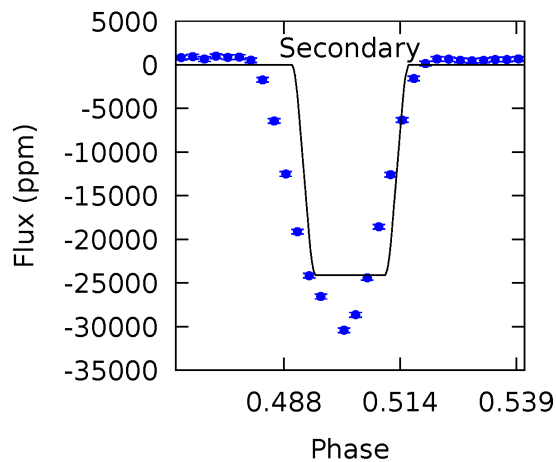
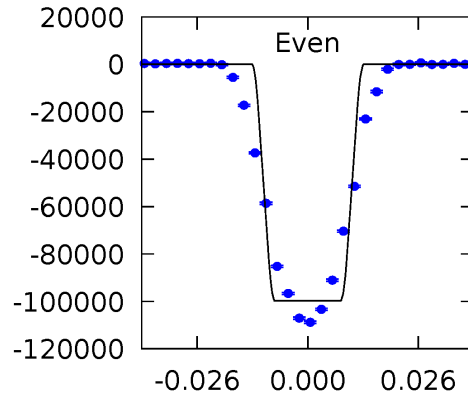
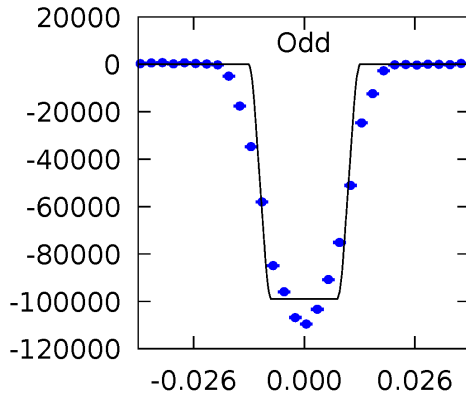
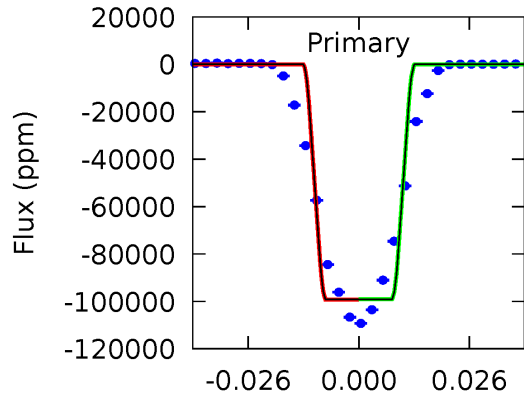
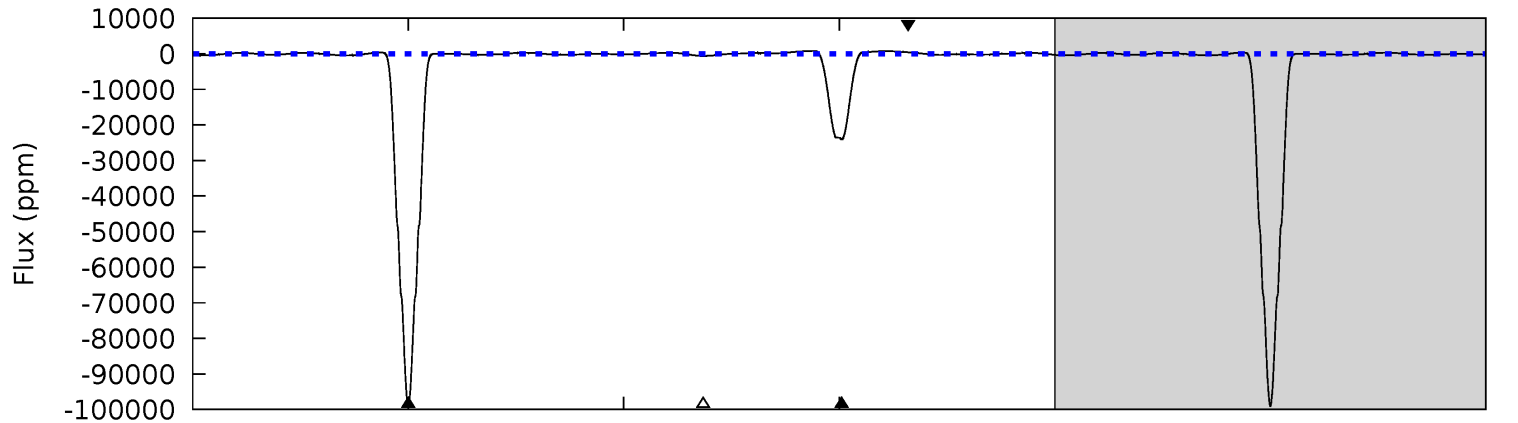
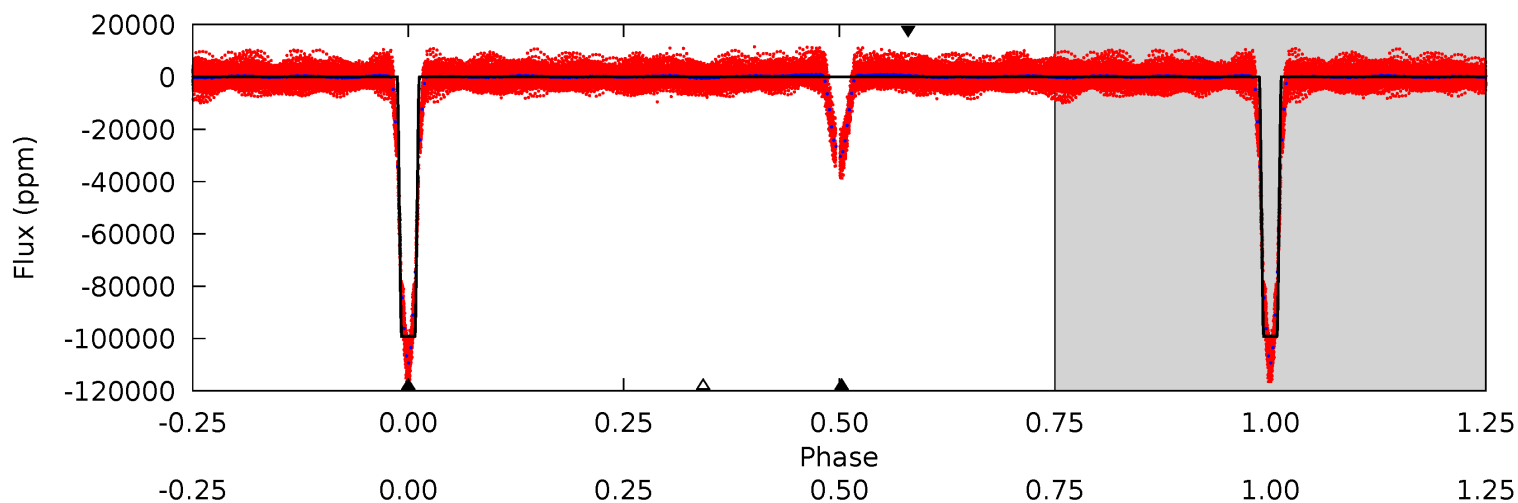
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3157 | 902.2 | 11.1 | 5.46 | 4.75 | 2.05 | 6.57 | 3146 | 3151 | 891.1 | 896.7 | 7.97 | 0.99 | 0.01 | 2.92 |



Alt Model-Shift Uniqueness Test

010486425-01, P = 5.274841 Days, E = 131.431325 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1199 | 291.2 | 7.28 | 5.03 | 4.84 | 2.23 | 3.53 | 1191 | 1194 | 283.9 | 286.2 | 4.65 | 1.00 | 0.01 | 1.09 |



Stellar Parameters For KIC 010486425

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 7247^{+200}_{-343} | $4.111^{+0.124}_{-0.186}$ | $0.040^{+0.200}_{-0.350}$ | $1.834^{+0.545}_{-0.363}$ | $1.584^{+0.204}_{-0.249}$ | $0.361^{+0.259}_{-0.175}$ |
| | +3%/-5% | +3%/-5% | +500%/-875% | +30%/-20% | +13%/-16% | +72%/-48% |
| 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 010486425-01 / KOI 7334.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|----------------------------|----------------------|----------------------|---------------------------|
| DV | -31163 ± 35 | $102.11^{+21.39}_{-18.35}$ | 2308^{+176}_{-148} | 4425^{+269}_{-241} | $7.972^{+3.573}_{-2.449}$ |
| Alt. | -24081 ± 83 | $67.13^{+15.05}_{-13.84}$ | 2306^{+179}_{-153} | 4972^{+509}_{-369} | 14^{+8}_{-5} |

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 $A_{obs} \gg 1.0$

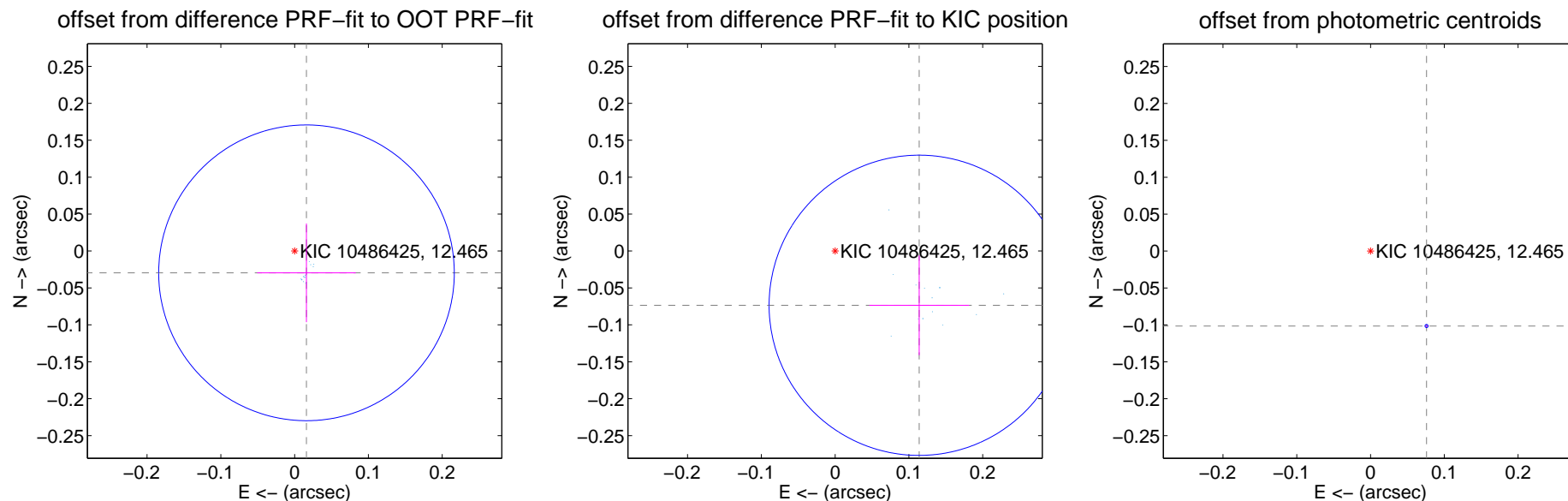
DV Centroid Data

Supplemental centroid analysis for 010486425-01. Kepler magnitude: 12.46. Transit SNR 1393.66

There are 13 quarters with good PRF difference image offsets

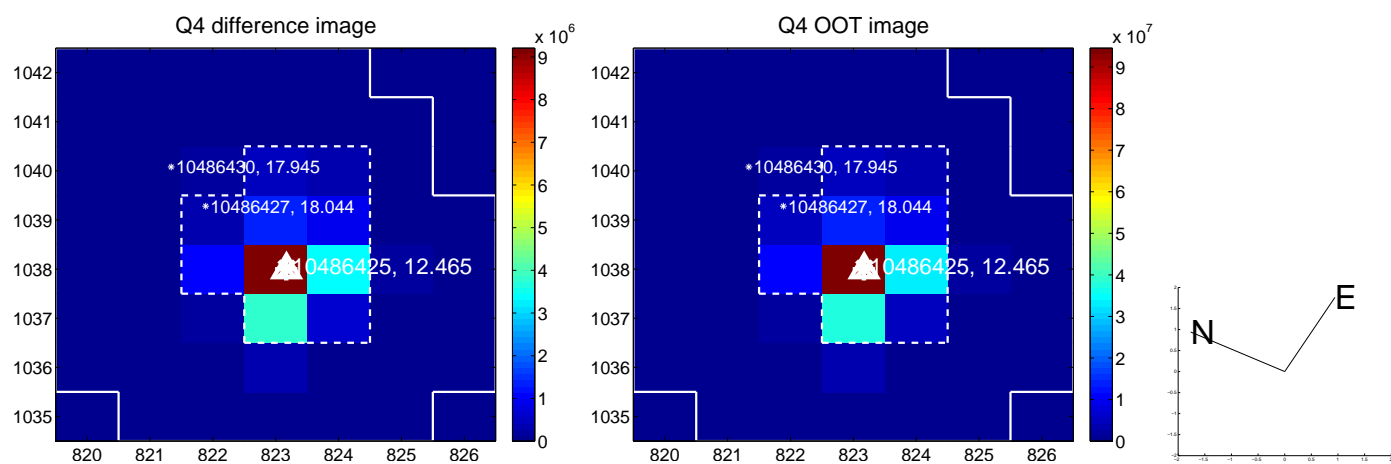
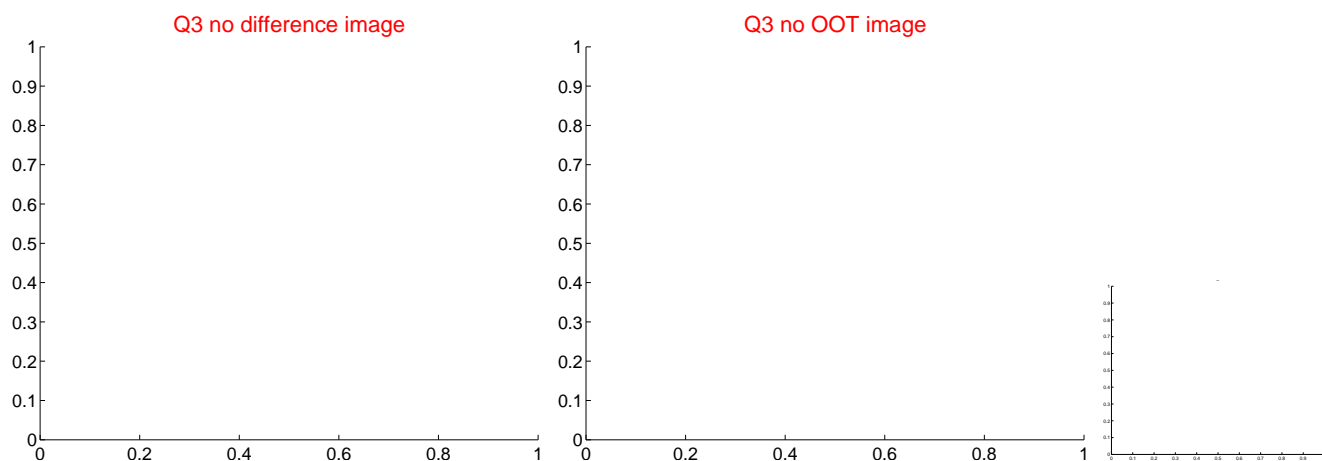
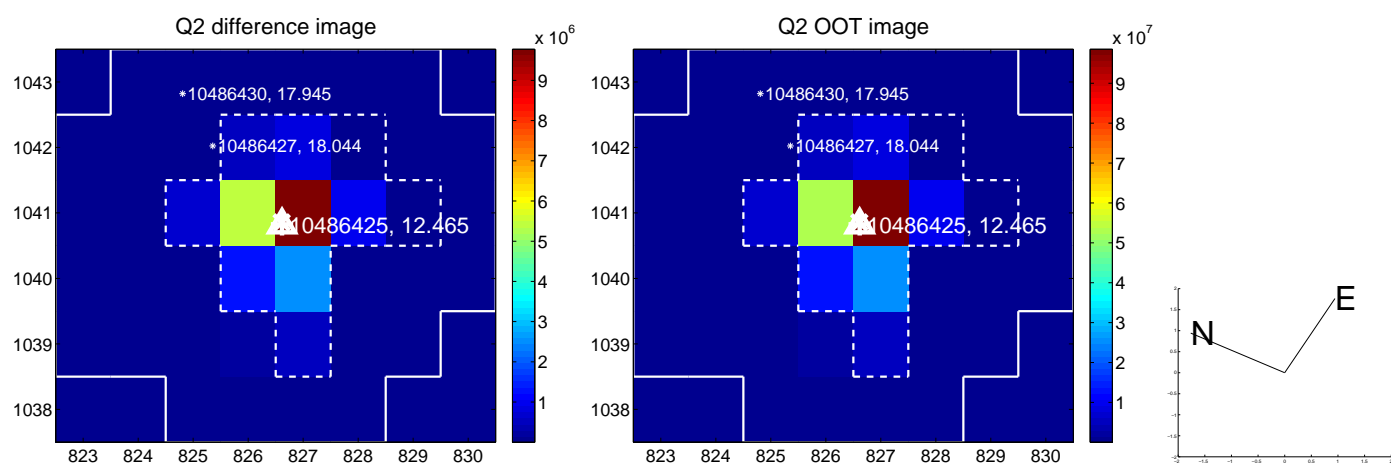
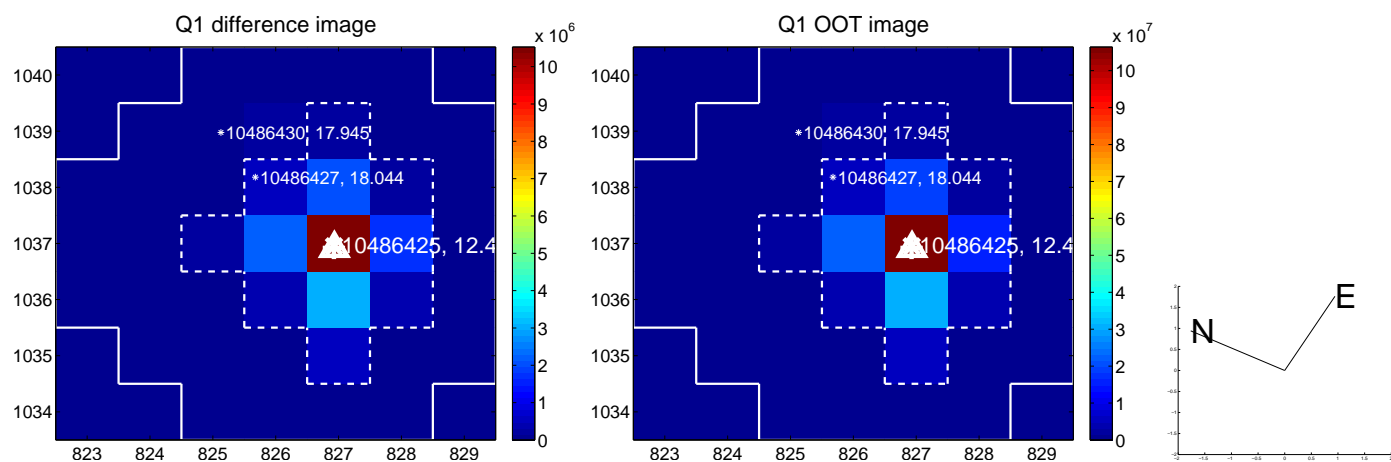
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.034 ± 0.067 | 0.50 | -0.016 ± 0.067 | -0.030 ± 0.067 |
| PRF-fit source offset from KIC position | 0.136 ± 0.068 | 2.00 | -0.114 ± 0.068 | -0.074 ± 0.068 |
| photometric centroid source offset | 0.13 ± 0.00 | 183.05 | -0.08 ± 0.00 | -0.10 ± 0.00 |

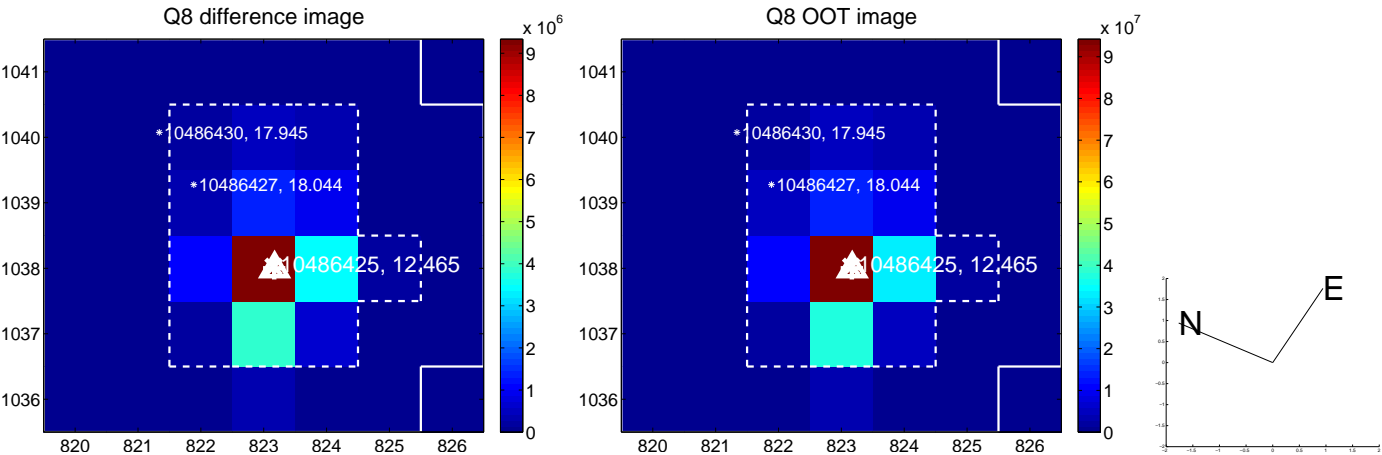
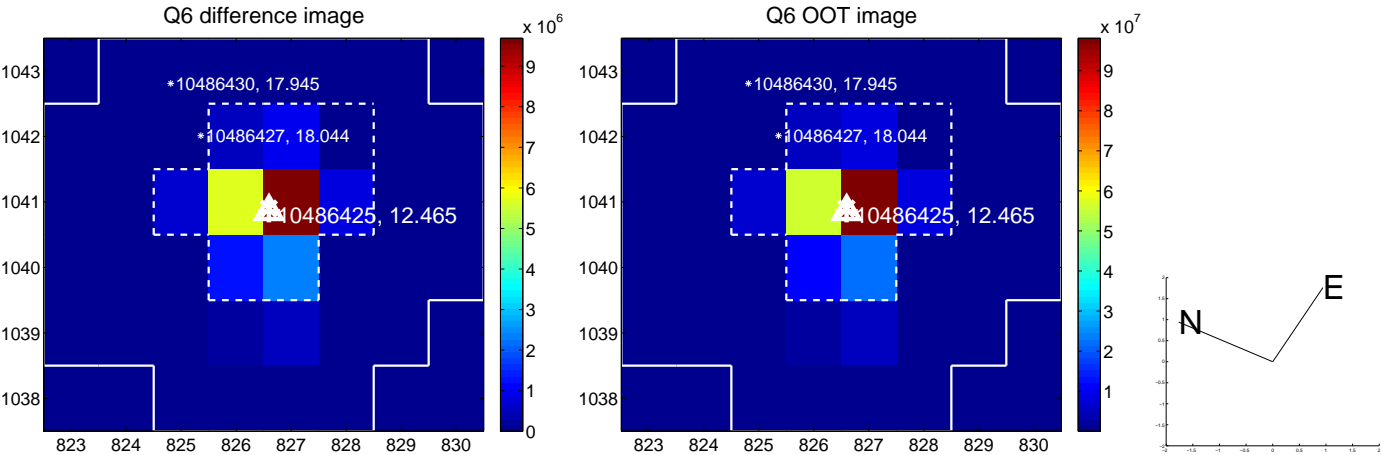
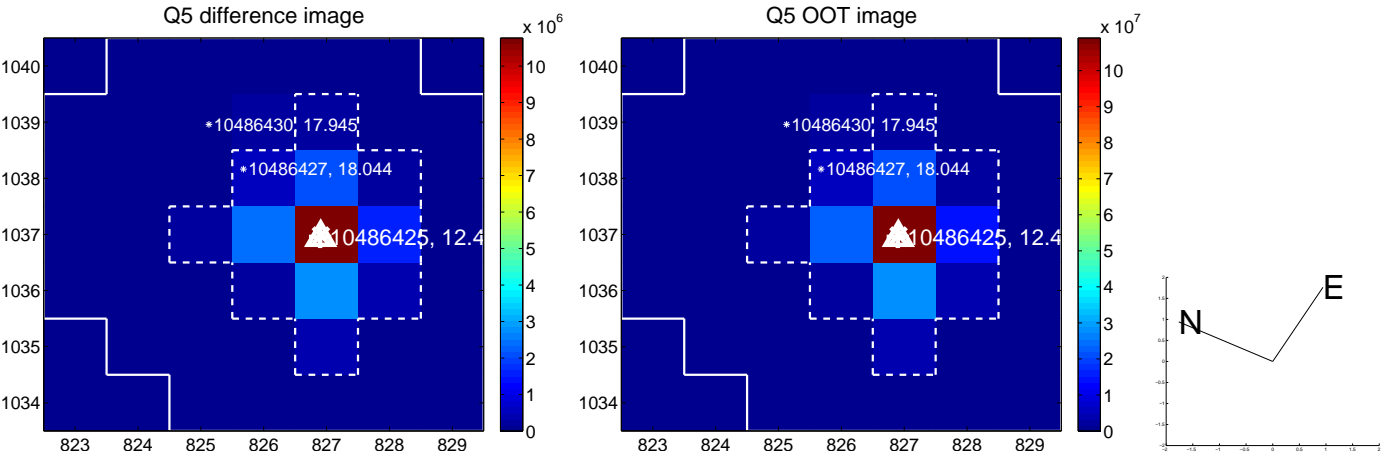


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

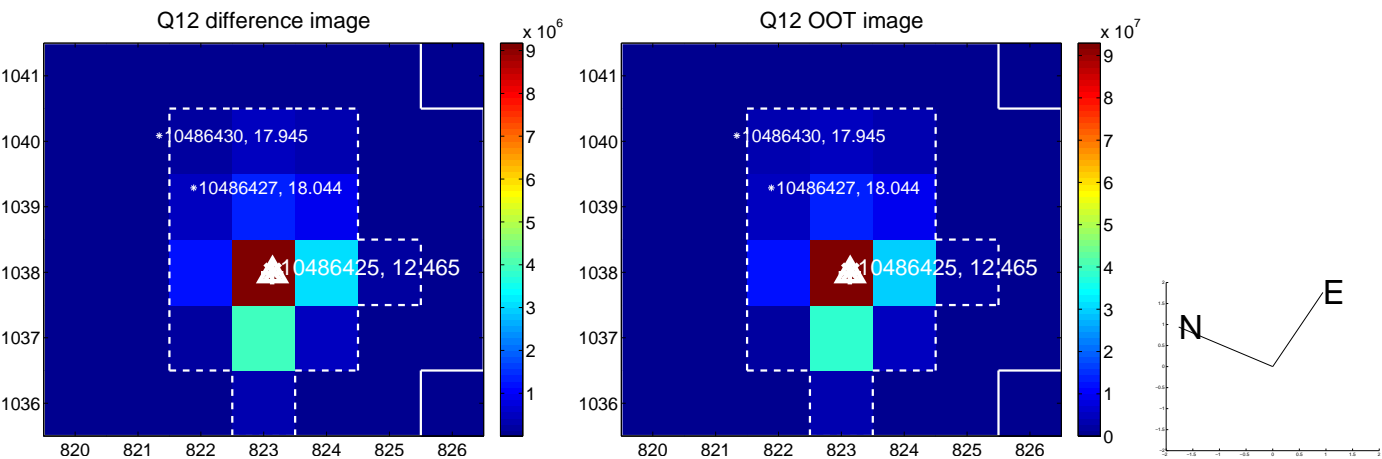
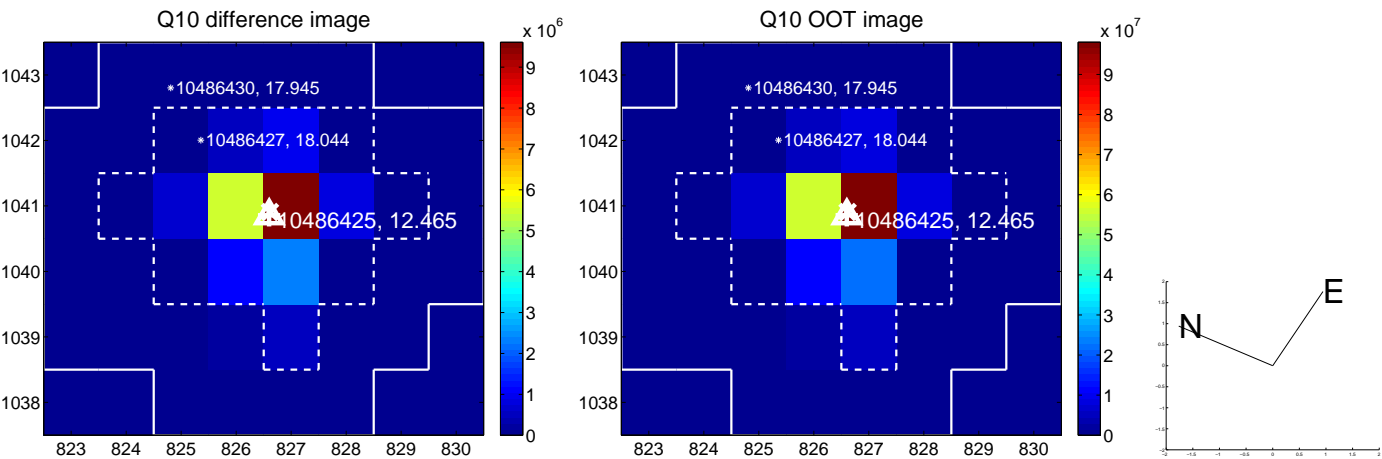
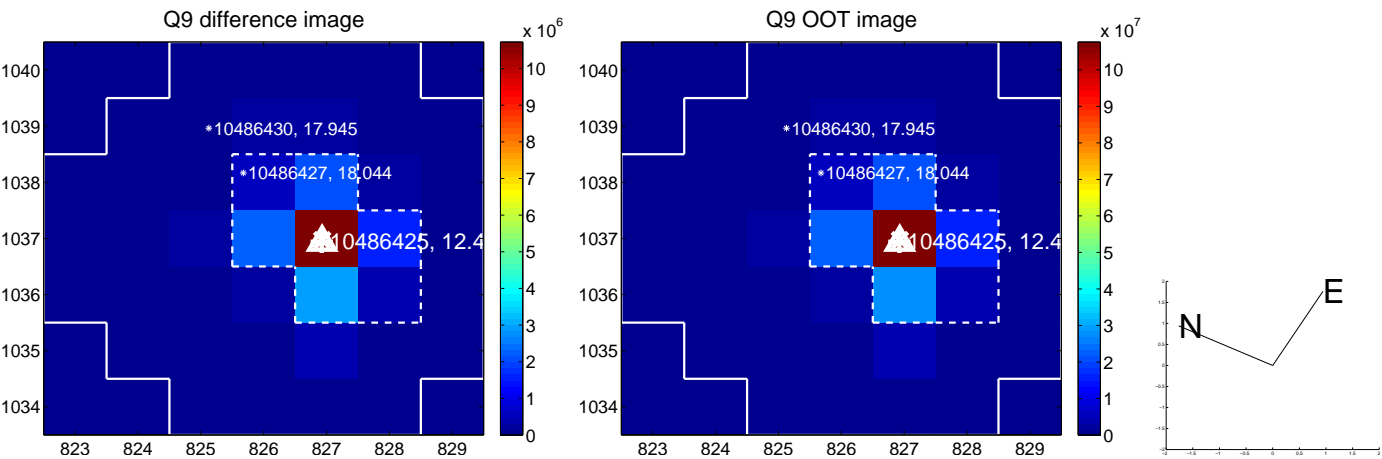
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



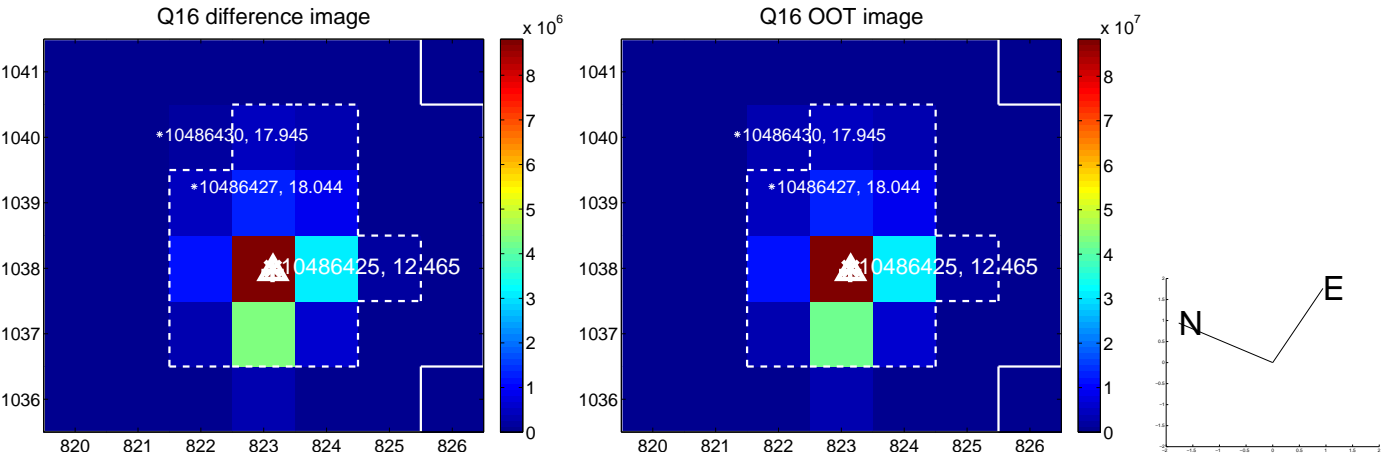
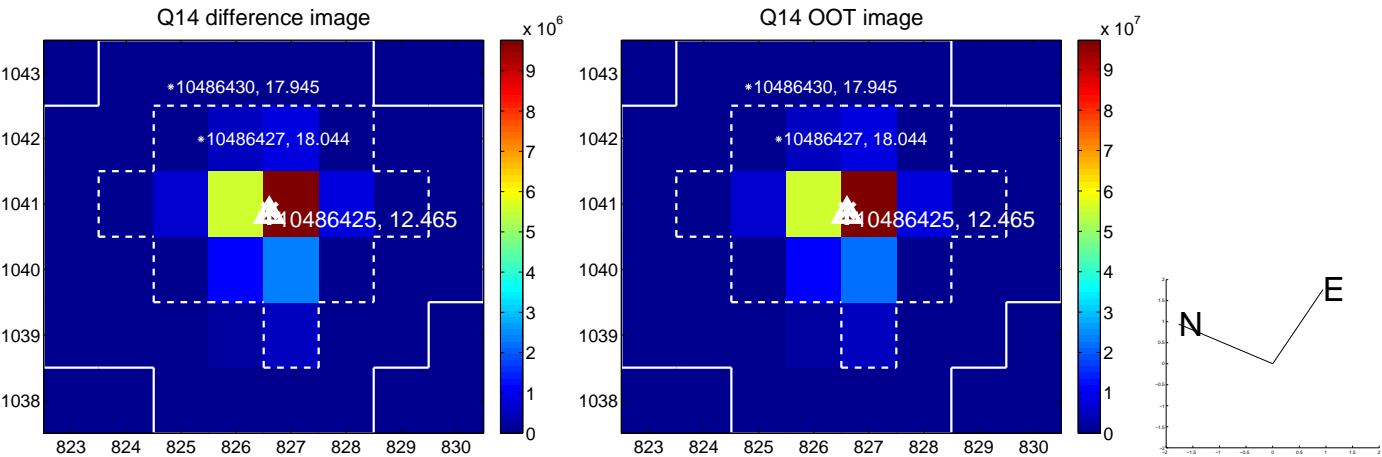
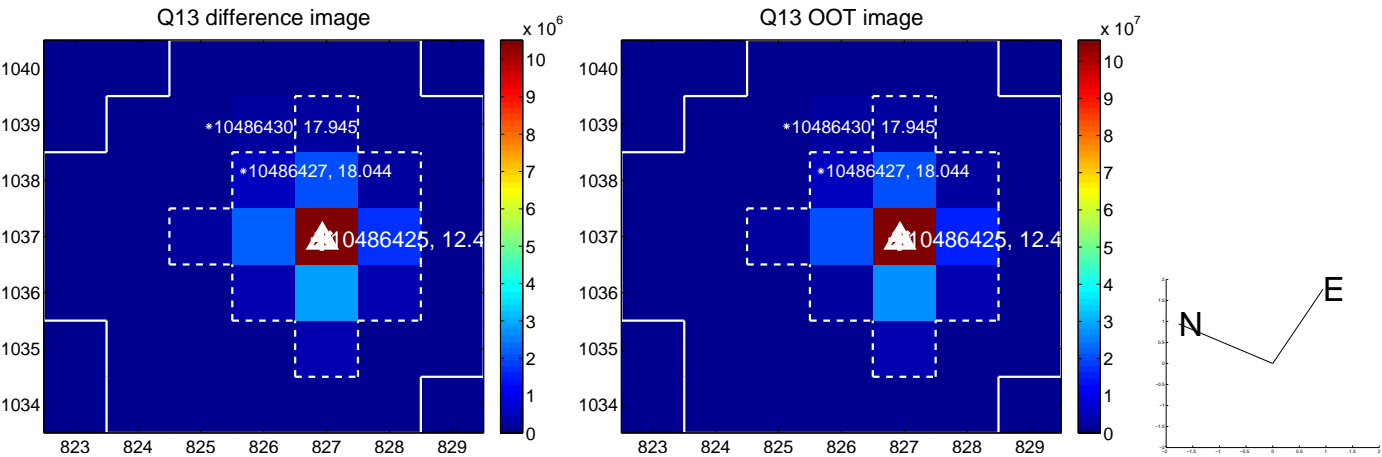
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



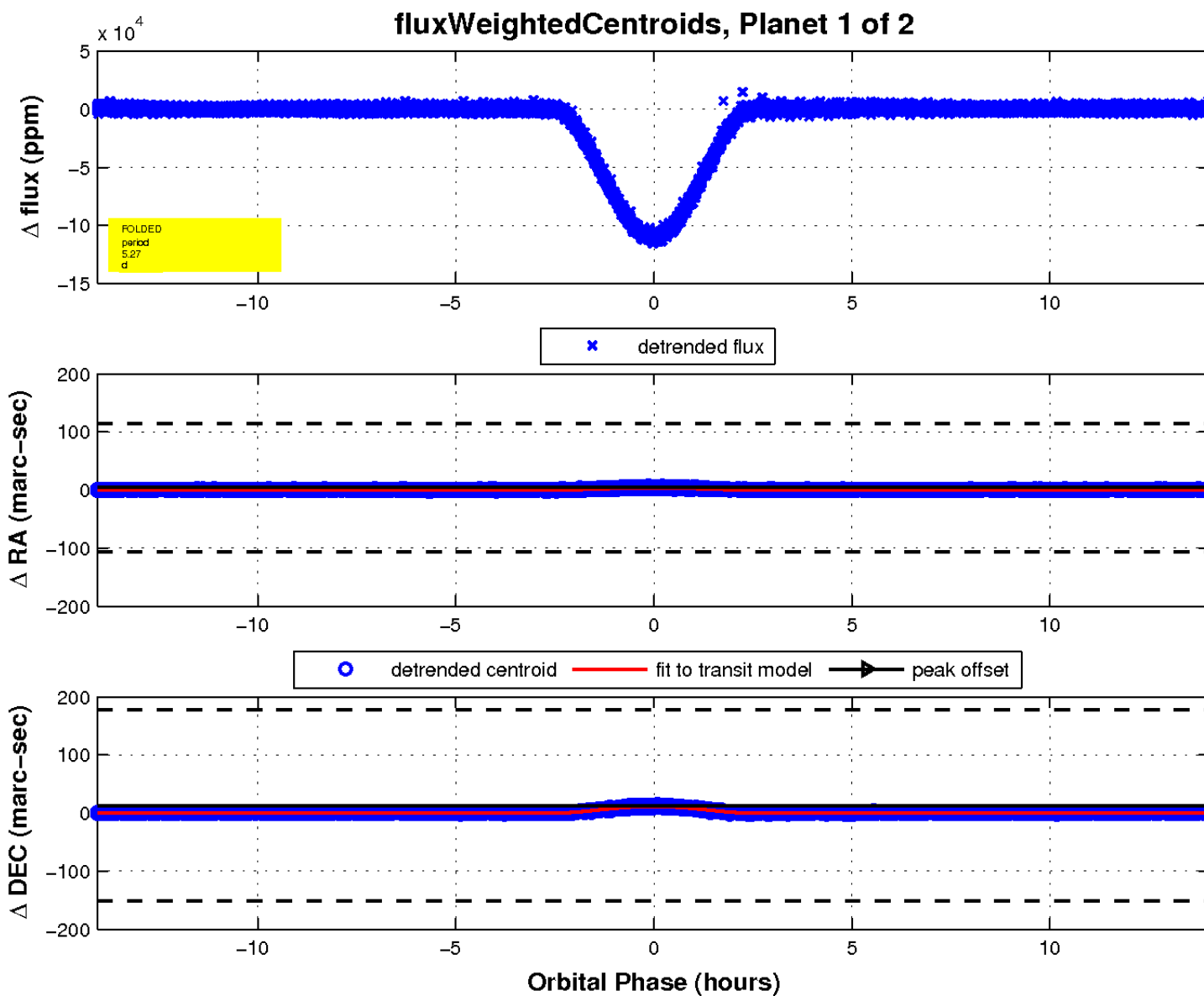
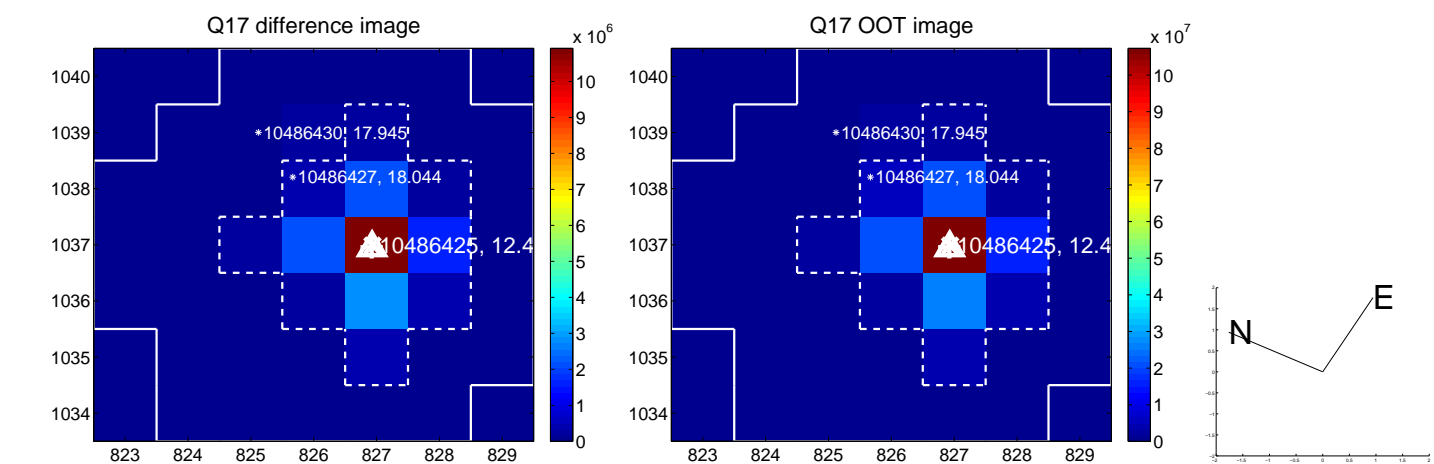
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

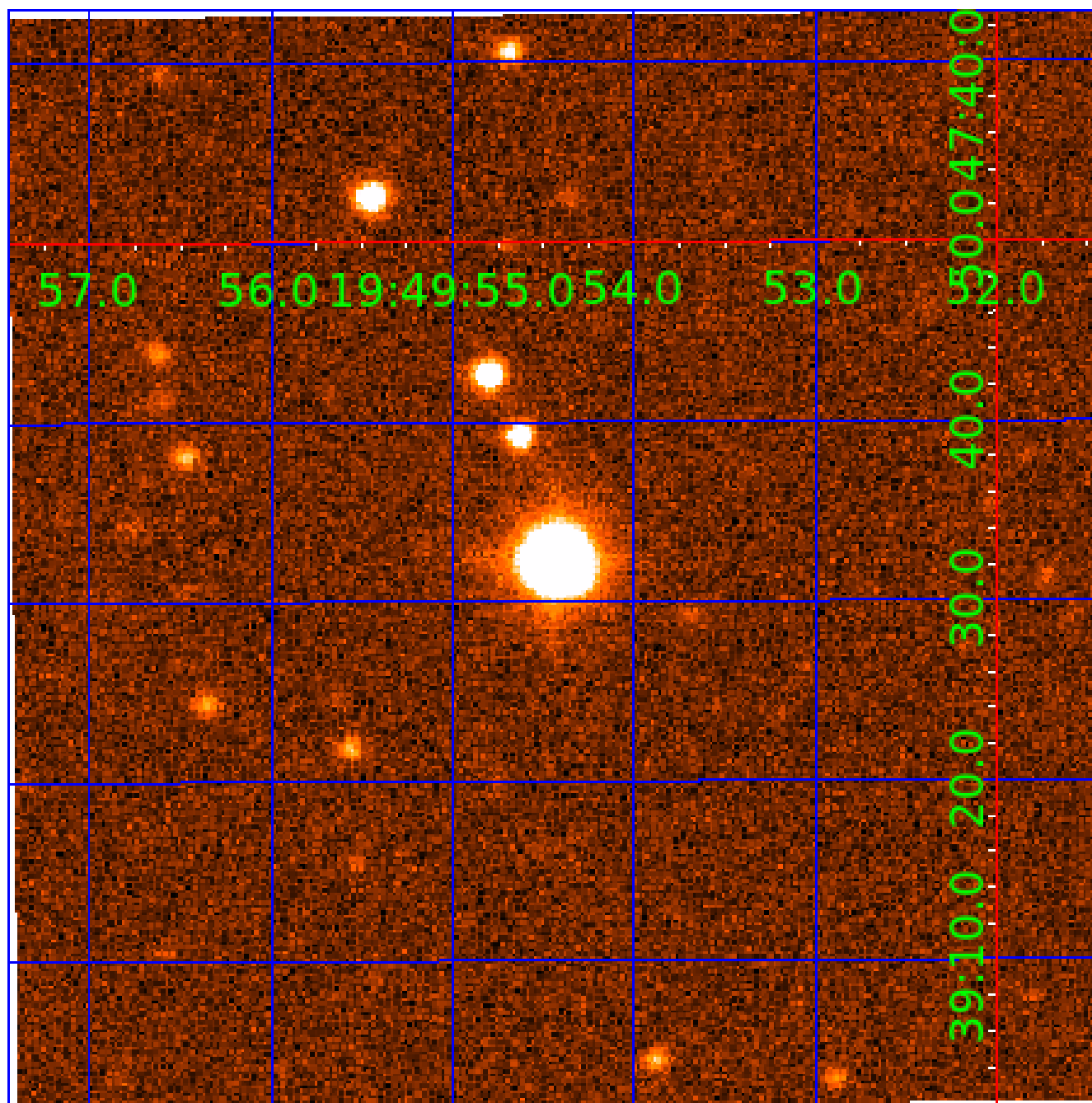


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010486425

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|--------|--------|-----------------------------|-----------------|------------------------|------------------------|
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| 010486425-02 | OBS | No | 5.274832 | 134.070230 | 31286.6 | 4.620 | 575.7 | 594.4 | 1.83 | 7247 | 55.41 | 1738.53 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010486425-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 010486425-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

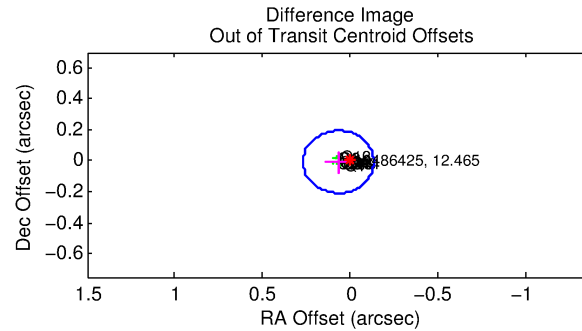
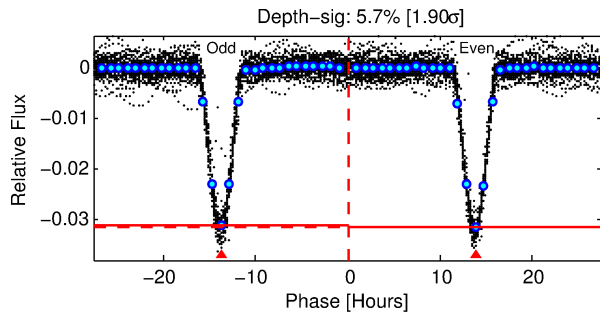
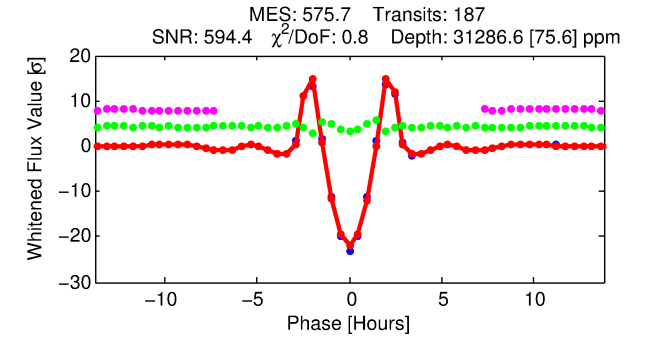
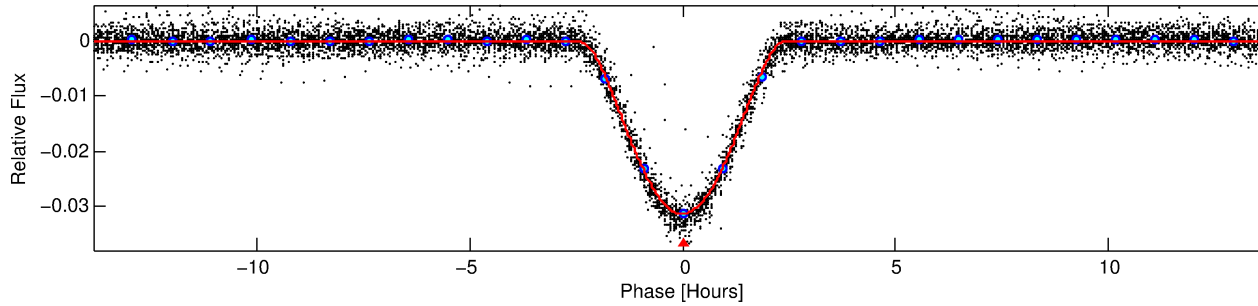
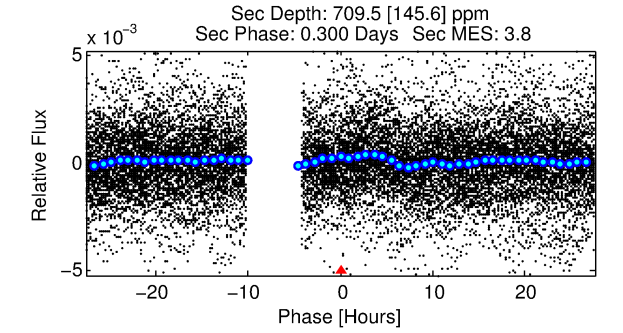
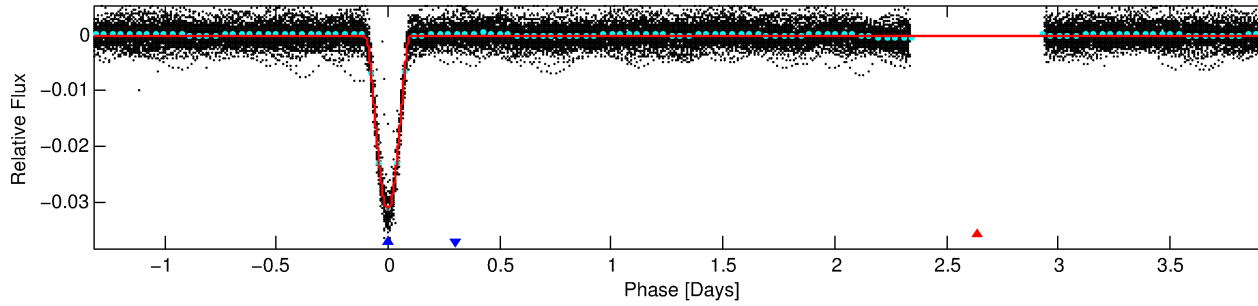
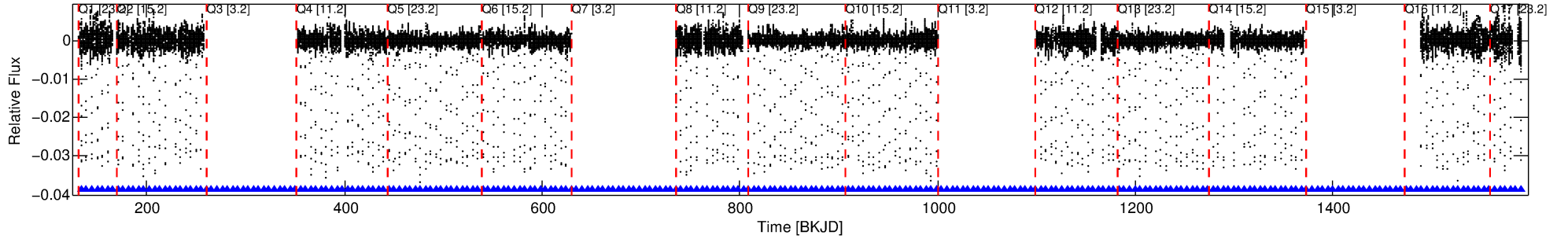
Ephemeris Match Information For 010486425-02

No Significant Match Found

DV One-Page Summary

KIC: 10486425 Candidate: 2 of 2 Period: 5.275 d
KOI: K07334 Corr: No Ephemeris Match

Kp: 12.47 R*: 1.83 Rs Teff: 7247.0 K Logg: 4.11 Fe/H: 0.040



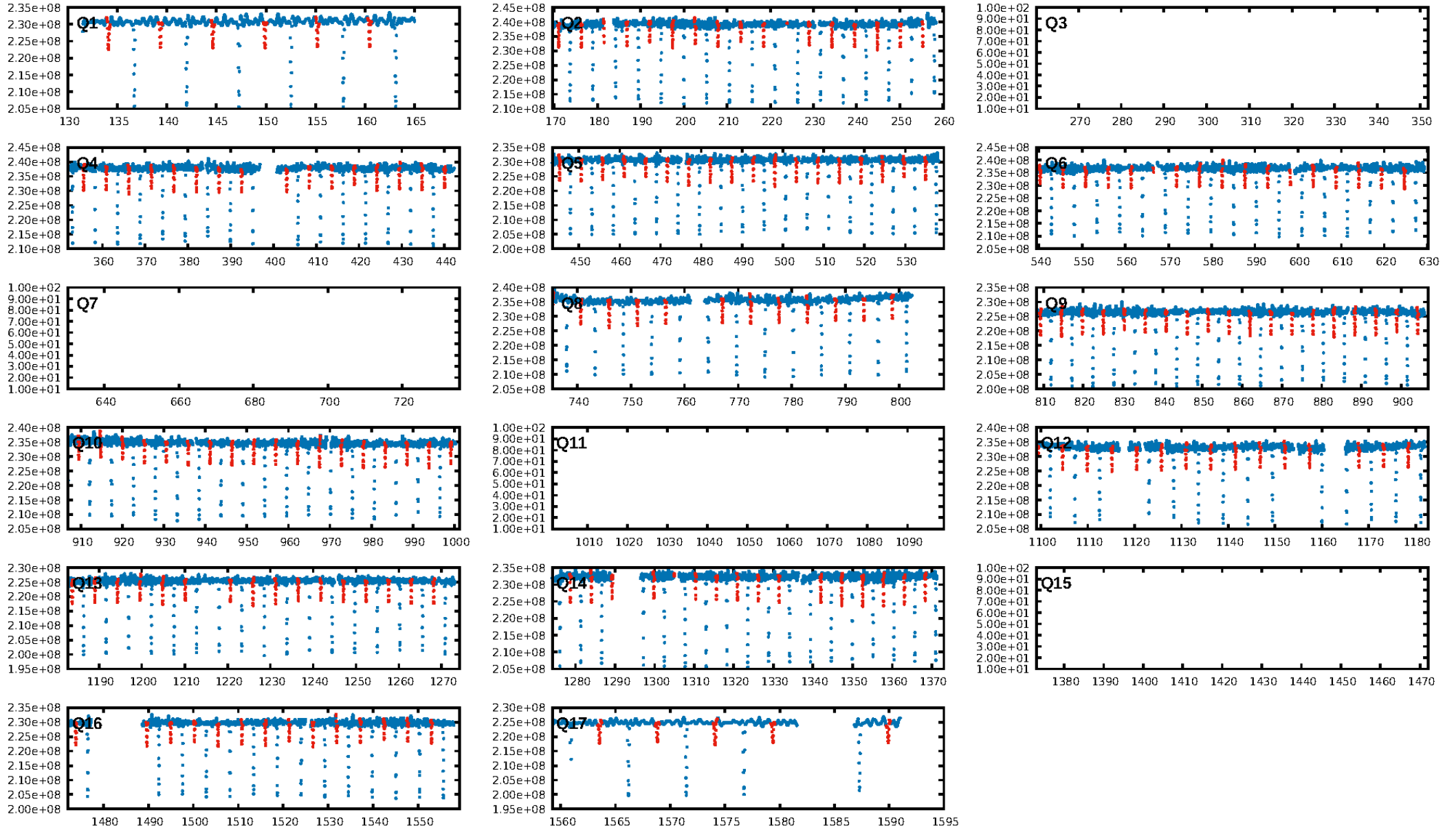
DV Fit Results:

Period = 5.27483 [0.00000] d
Epoch = 134.0702 [0.0001] BKJD
Rp/R* = 0.2768 [0.0058]
a/R* = 7.01 [0.01]
b = 1.00 [0.01]
Seff = 1738.53 [688.01]
Teff = 1647 [163] K
Rp = 55.41 [16.51] Re
a = 0.0691 [0.0169] AU
Ag = 0.61 [0.25] [-1.59 σ]
Teffp = 2248 [159] K [2.64 σ]

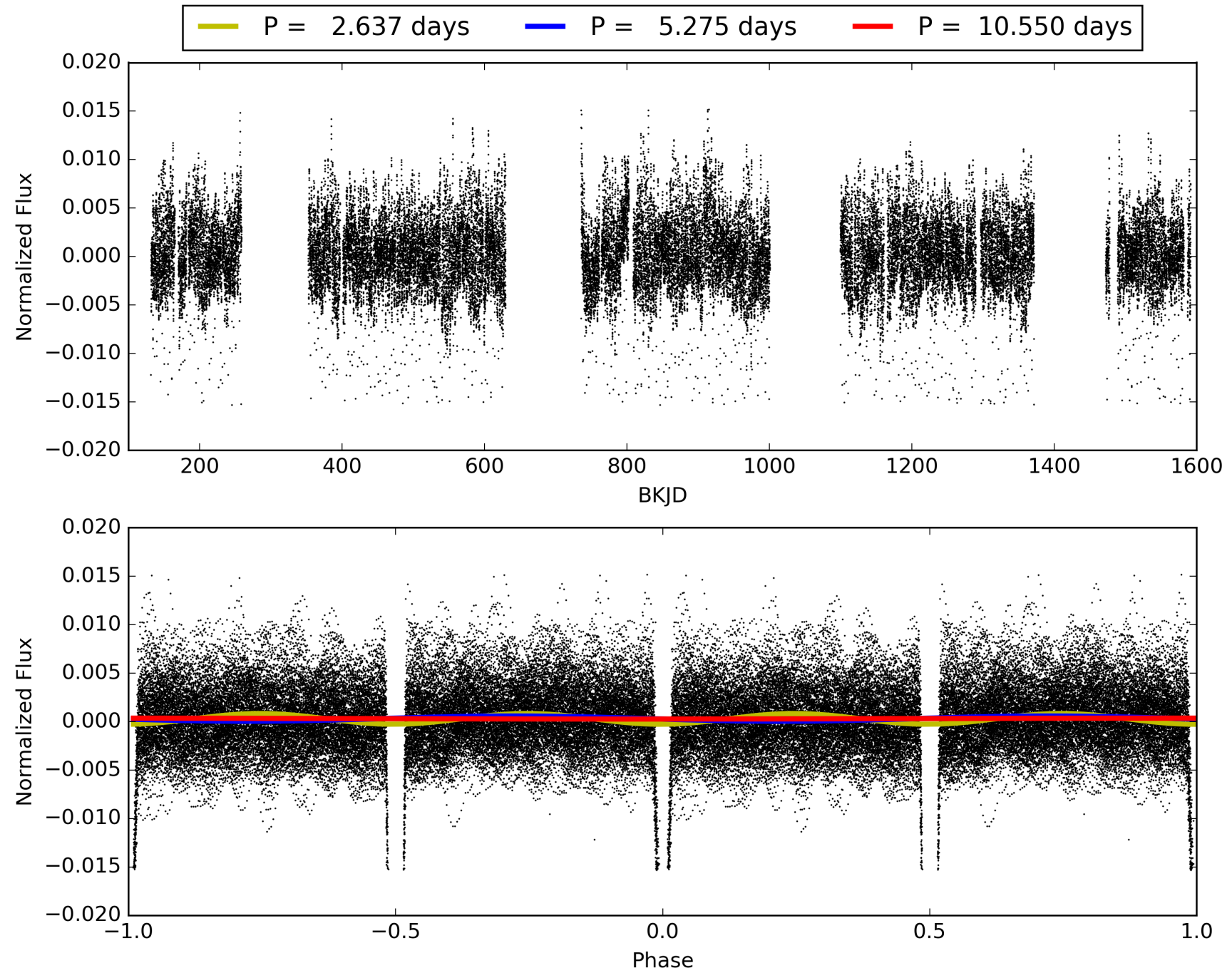
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [176/176]
GhostDiagnostic-chr: 2.079
Centroid-sig: 0.0%
Centroid-so: 0.068 arcsec [28.33 σ]
OotOffset-rm: 0.069 arcsec [1.03 σ]
KicOffset-rm: 0.050 arcsec [0.73 σ]
OotOffset-st: 4/0/4/5 [13]
KicOffset-st: 4/0/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 010486425-02, PDC Light Curves

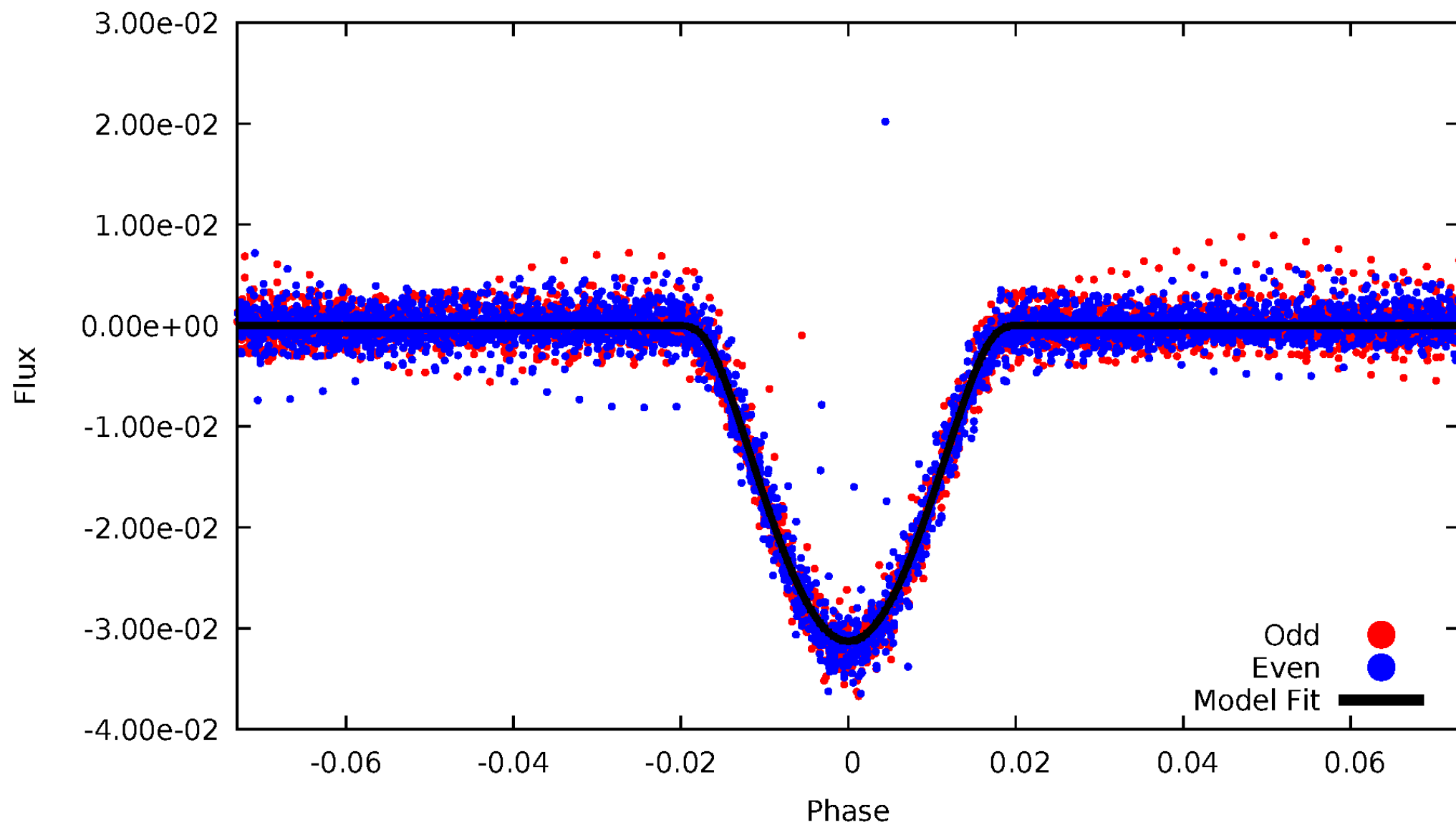


TCE 010486425-02



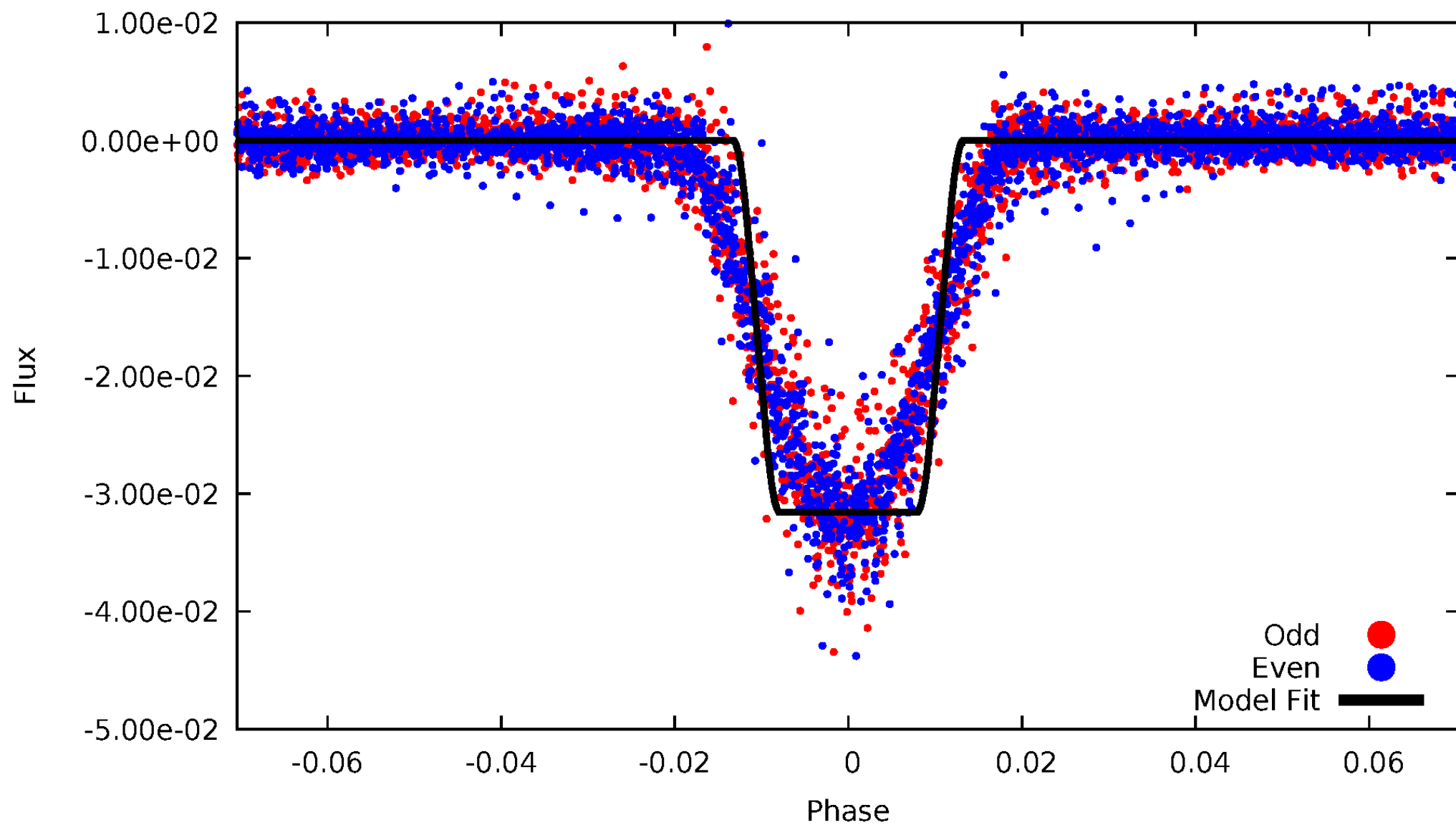
DV Odd/Even

TCE 010486425-02



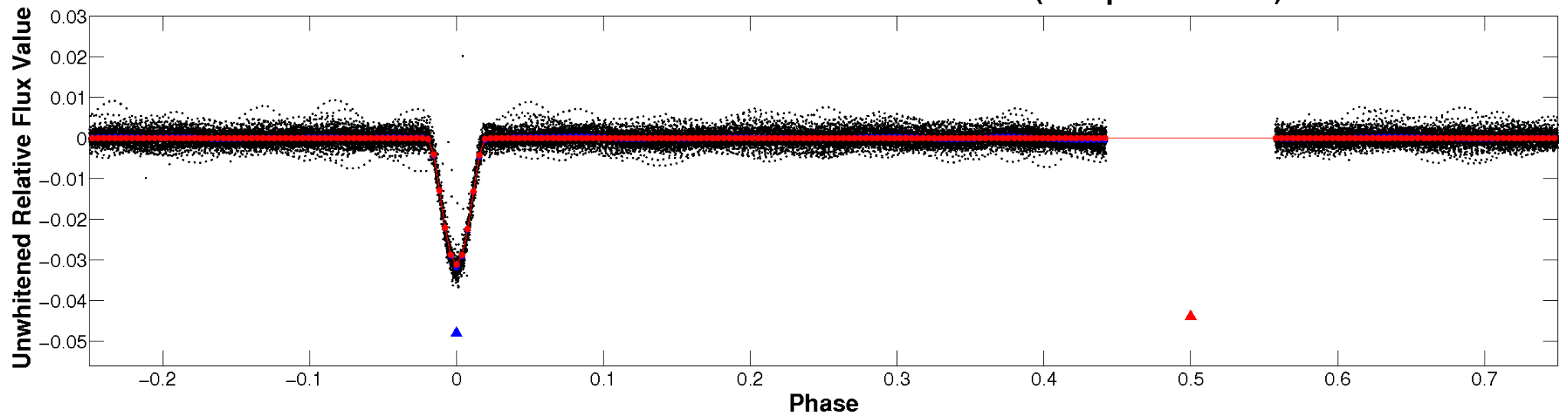
ALT Odd/Even

TCE 010486425-02

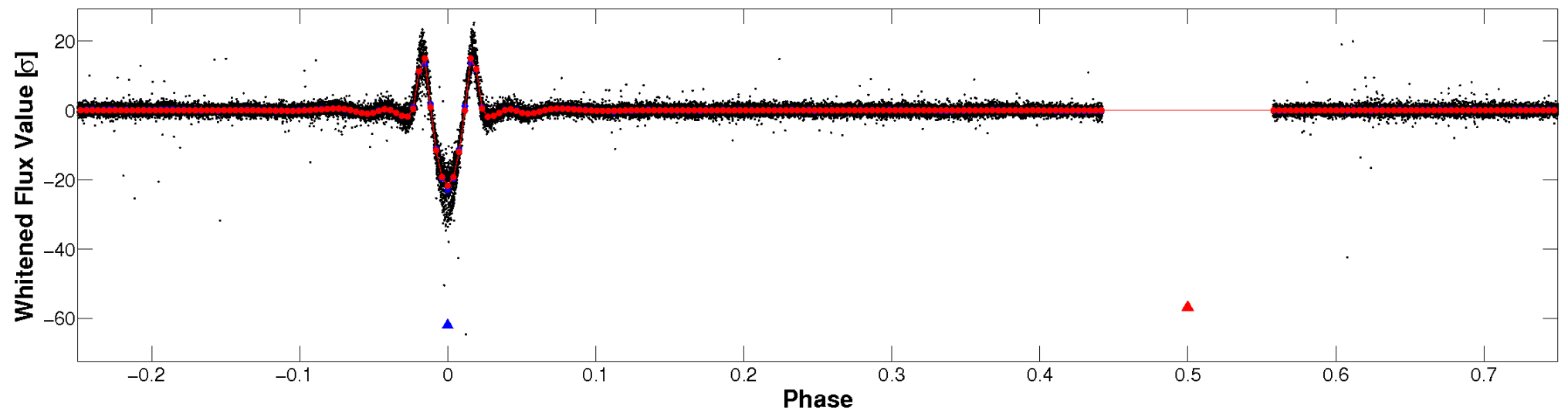


Non-Whitened Vs. Whitened Light Curve

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

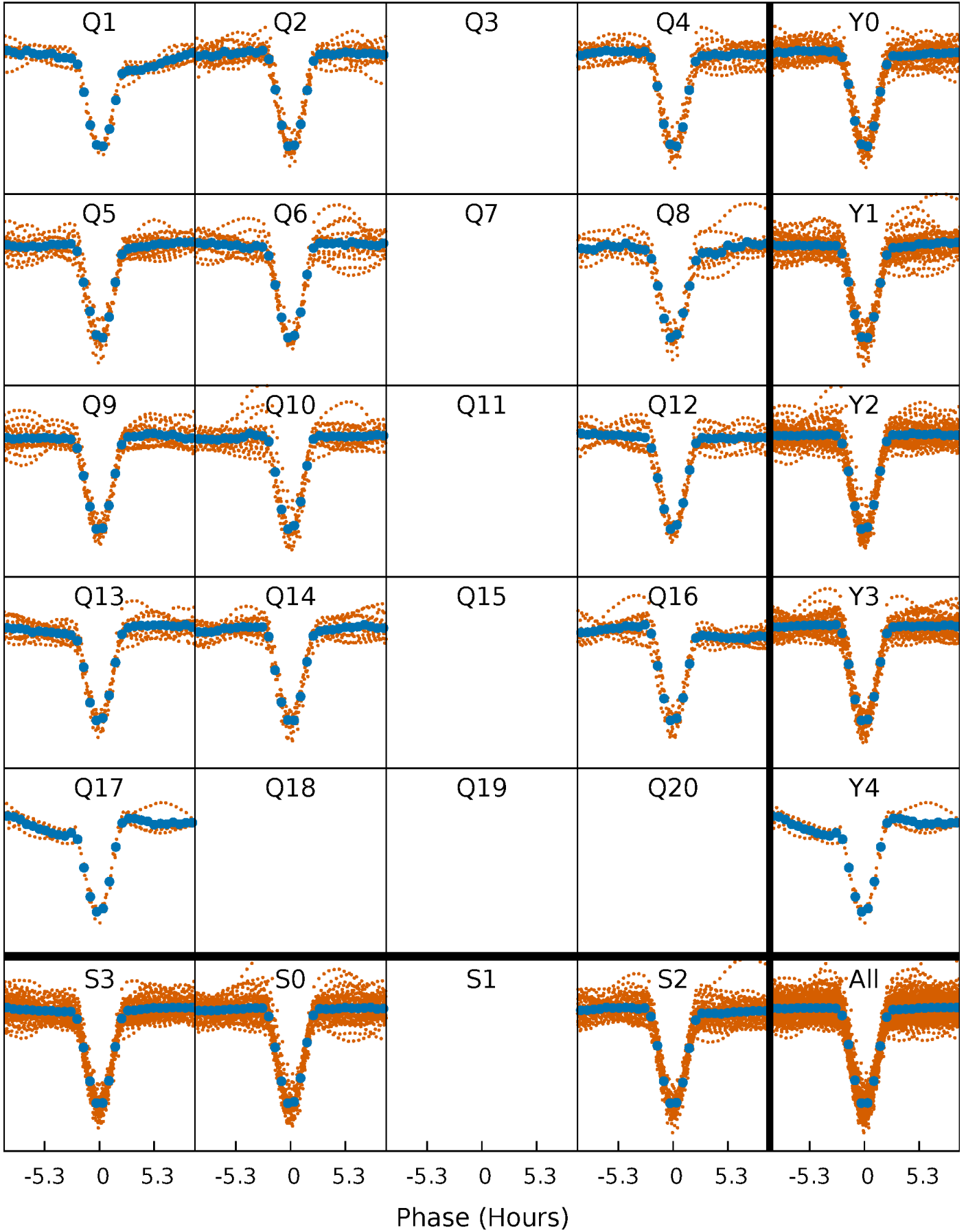


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



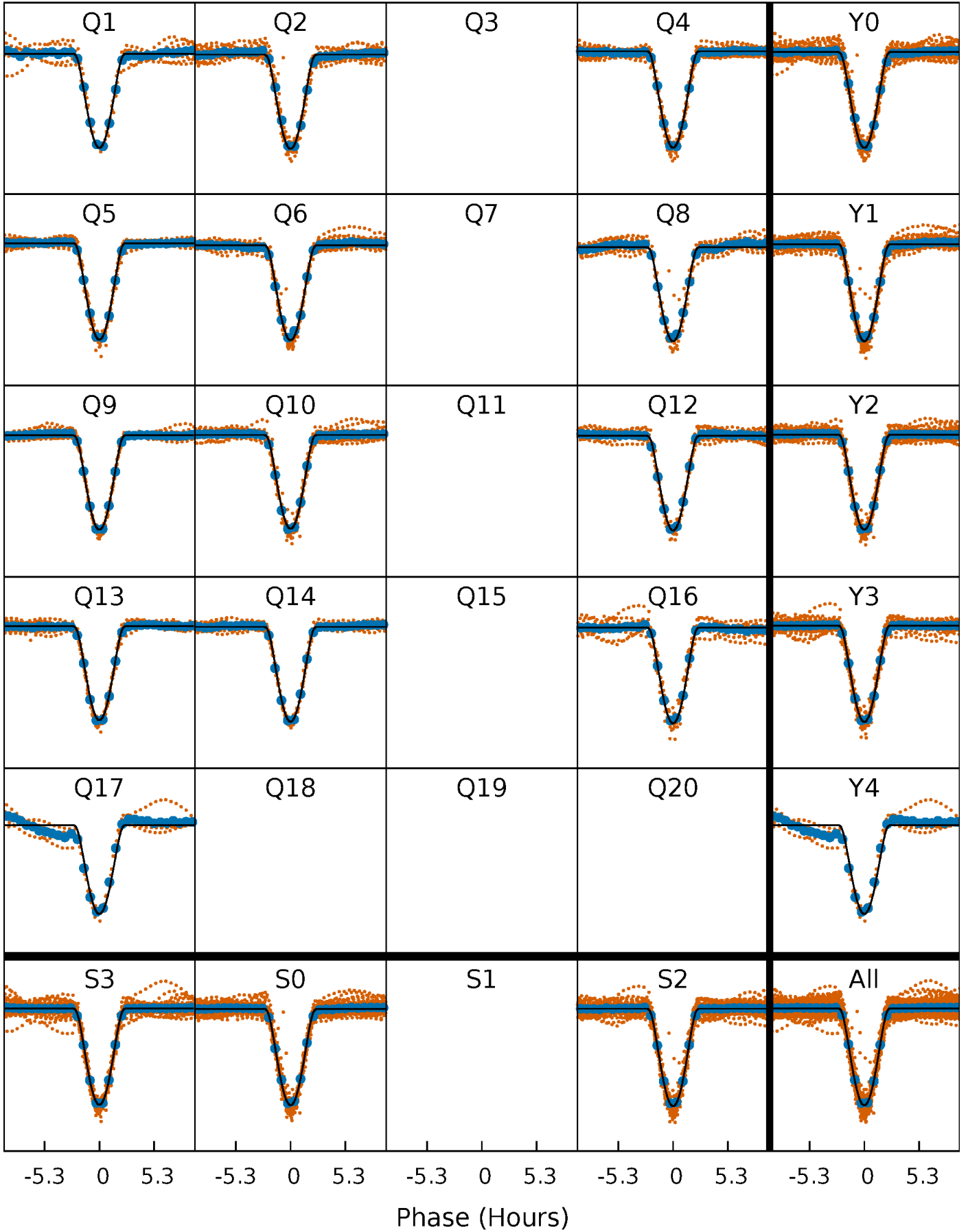
PDC Quarter-Phased Transit Curves

TCE 010486425-02 P= 5.274832 Days $T_0=134.070230$ (BKJD)



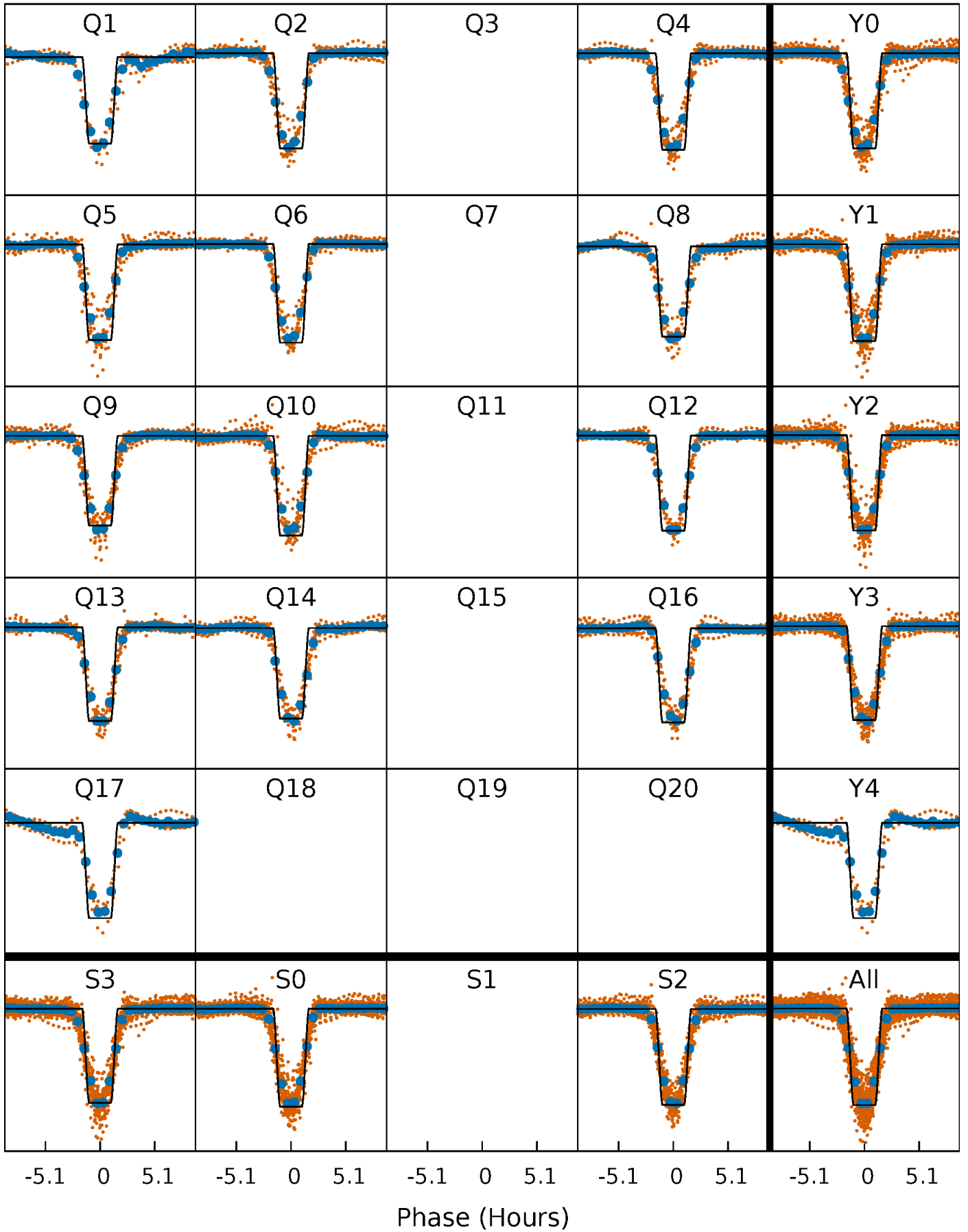
DV Quarter-Phased Transit Curves

TCE 010486425-02 P= 5.274832 Days $T_0=134.070230$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

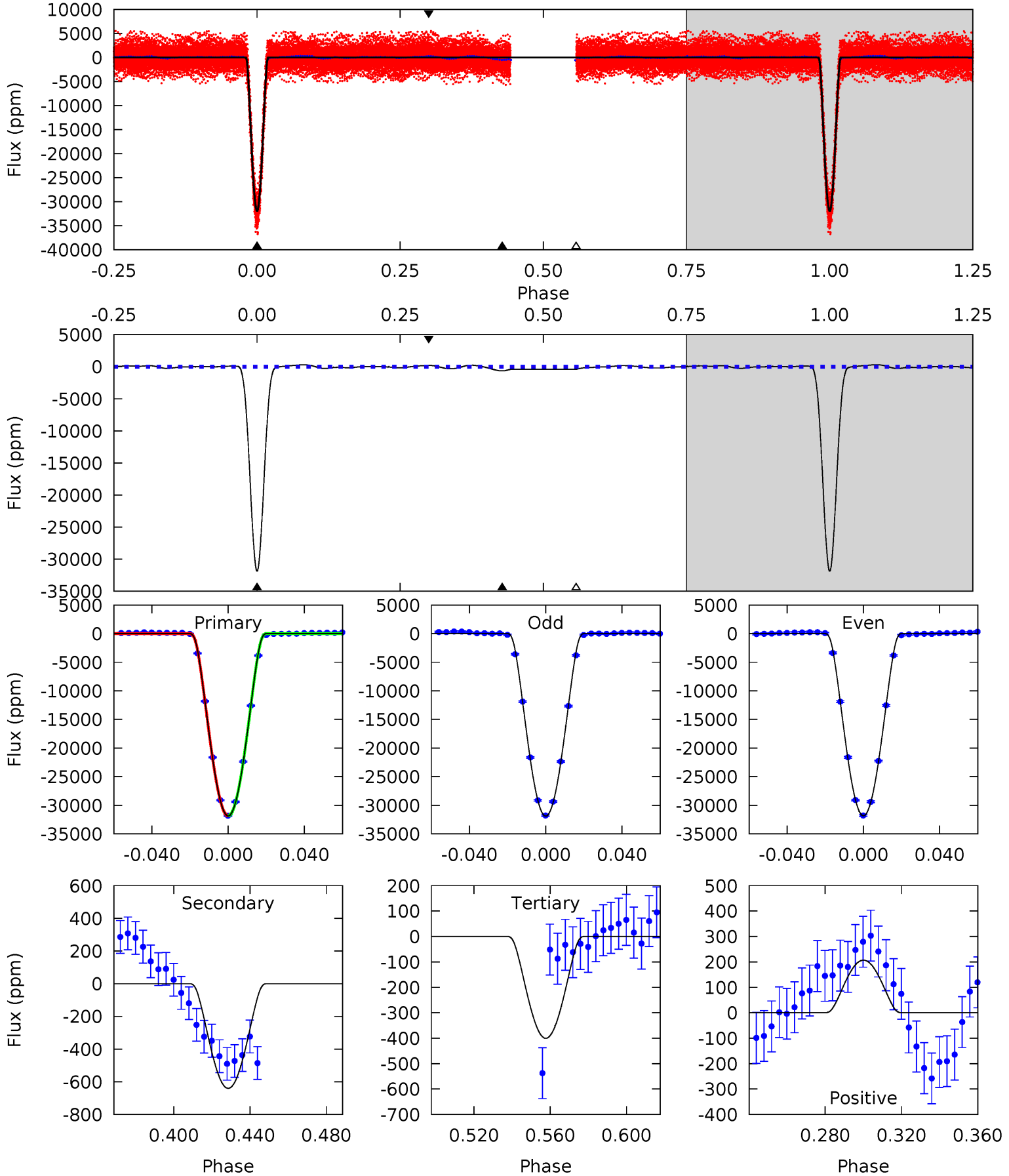
TCE 010486425-02 P= 5.274770 Days $T_0=134.078807$ (BKJD)



DV Model-Shift Uniqueness Test

010486425-02, P = 5.274832 Days, E = 128.795398 Days

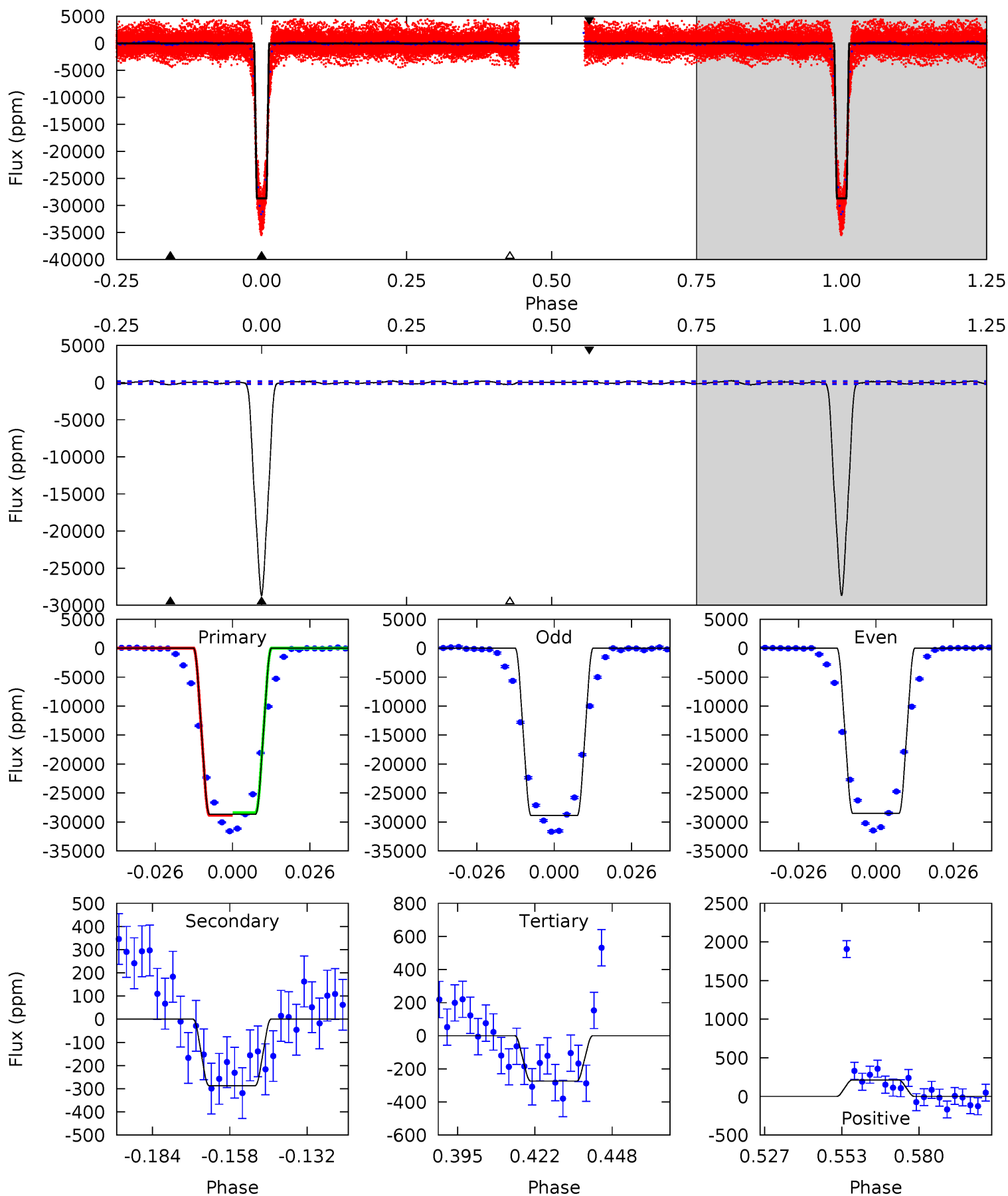
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 913.2 | 18.3 | 11.5 | 5.92 | 4.75 | 2.05 | 4.00 | 901.7 | 907.3 | 6.87 | 12.4 | 0.92 | 0.99 | 0.01 | 0.15 |



Alt Model-Shift Uniqueness Test

010486425-02, P = 5.274770 Days, E = 128.804037 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 729.4 | 7.29 | 6.97 | 5.41 | 4.84 | 2.22 | 2.96 | 722.4 | 724.0 | 0.33 | 1.88 | 4.38 | 0.99 | 0.01 | 5.96 |



Stellar Parameters For KIC 010486425

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 7247^{+200}_{-343} | $4.111^{+0.124}_{-0.186}$ | $0.040^{+0.200}_{-0.350}$ | $1.834^{+0.545}_{-0.363}$ | $1.584^{+0.204}_{-0.249}$ | $0.361^{+0.259}_{-0.175}$ |
| | +3%/-5% | +3%/-5% | +500%/-875% | +30%/-20% | +13%/-16% | +72%/-48% |
| 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 010486425-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|-------------------------|----------------------|----------------------|---------------------------|
| DV | -640 ± 35 | $55.93^{+9.07}_{-6.34}$ | 2309^{+172}_{-146} | 2572^{+107}_{-163} | $0.536^{+0.125}_{-0.126}$ |
| Alt. | -287 ± 39 | $36.08^{+5.86}_{-4.13}$ | 2309^{+176}_{-157} | 2622^{+139}_{-188} | $0.570^{+0.172}_{-0.150}$ |

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 $A_{obs} \gg 1.0$

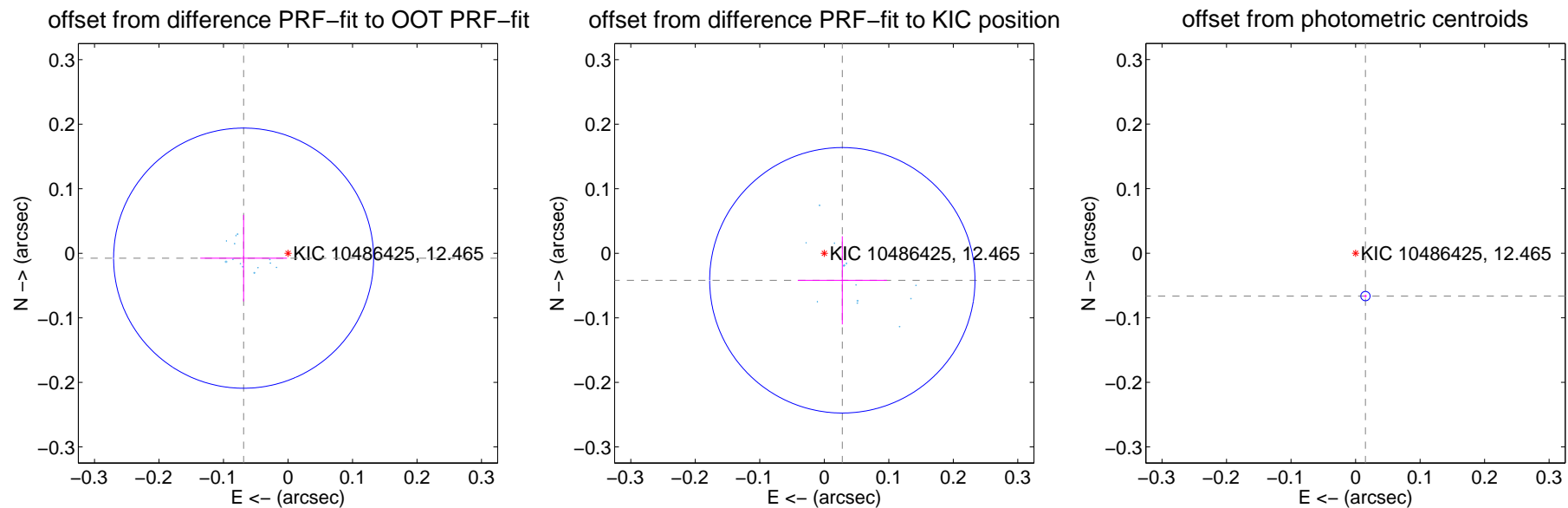
DV Centroid Data

Supplemental centroid analysis for 010486425-02. Kepler magnitude: 12.46. Transit SNR 594.42

There are 13 quarters with good PRF difference image offsets

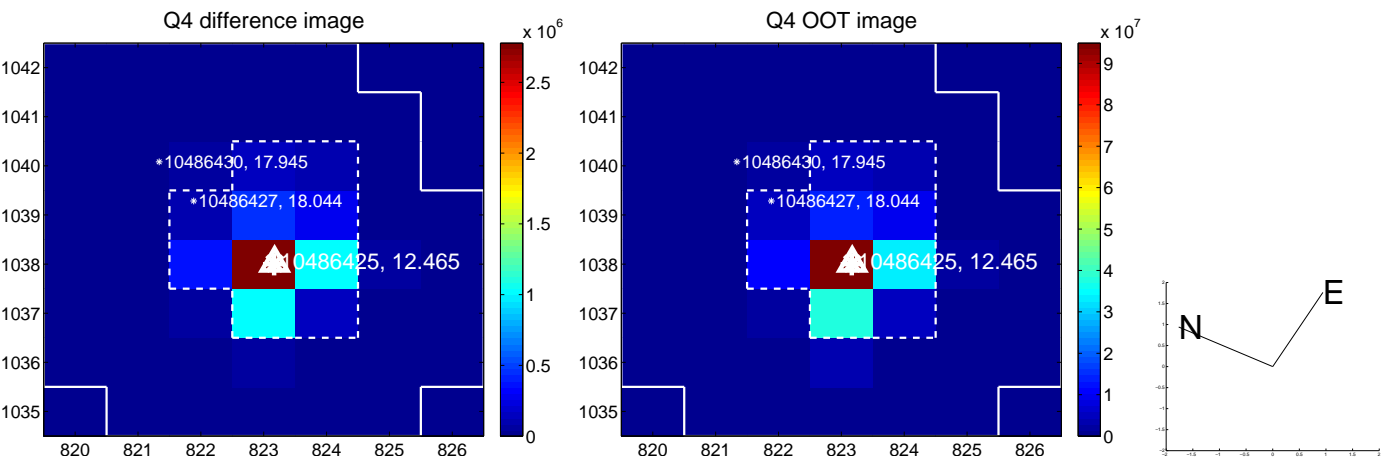
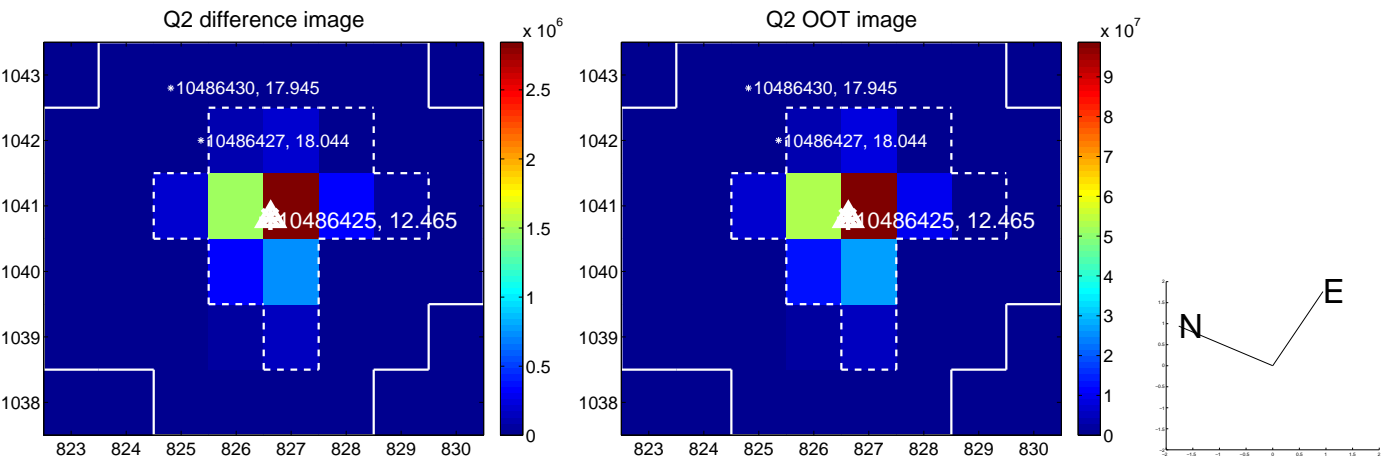
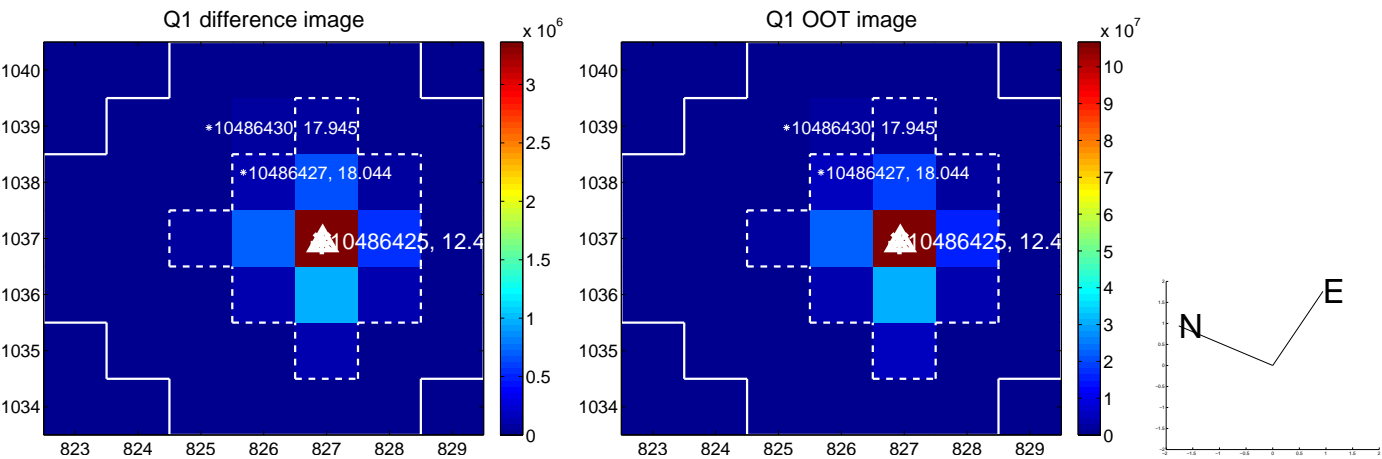
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.069 ± 0.067 | 1.03 | 0.069 ± 0.067 | -0.008 ± 0.067 |
| PRF-fit source offset from KIC position | 0.050 ± 0.069 | 0.73 | -0.028 ± 0.069 | -0.042 ± 0.068 |
| photometric centroid source offset | 0.07 ± 0.00 | 28.33 | -0.02 ± 0.00 | -0.07 ± 0.00 |

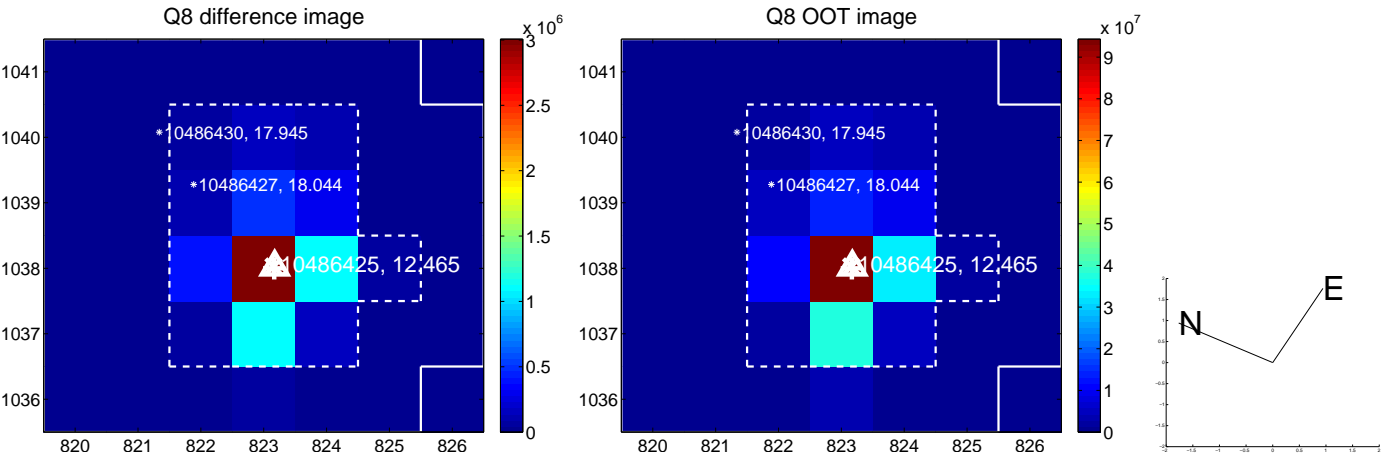
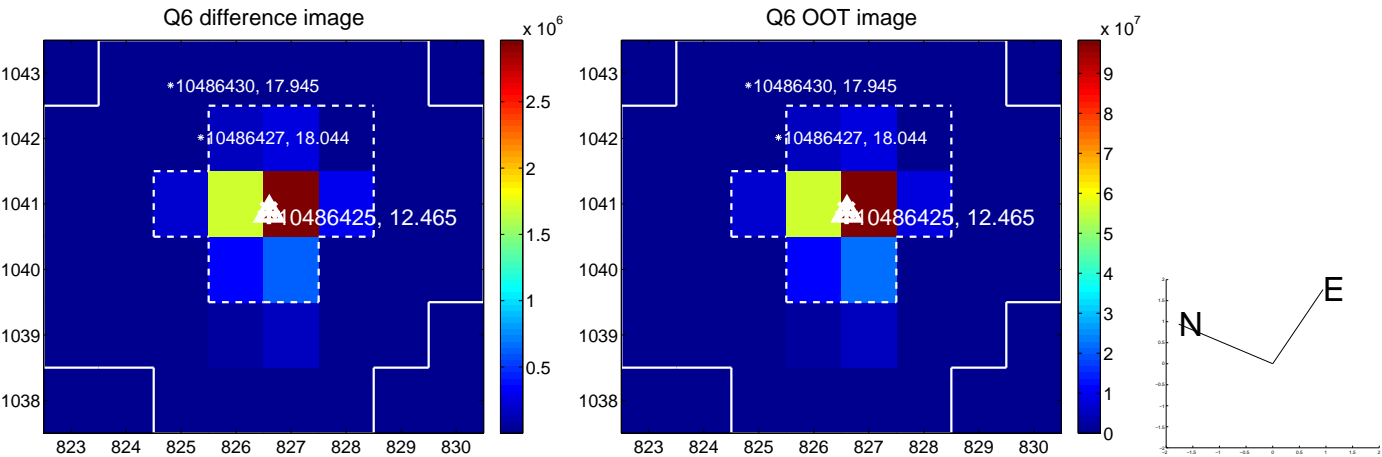
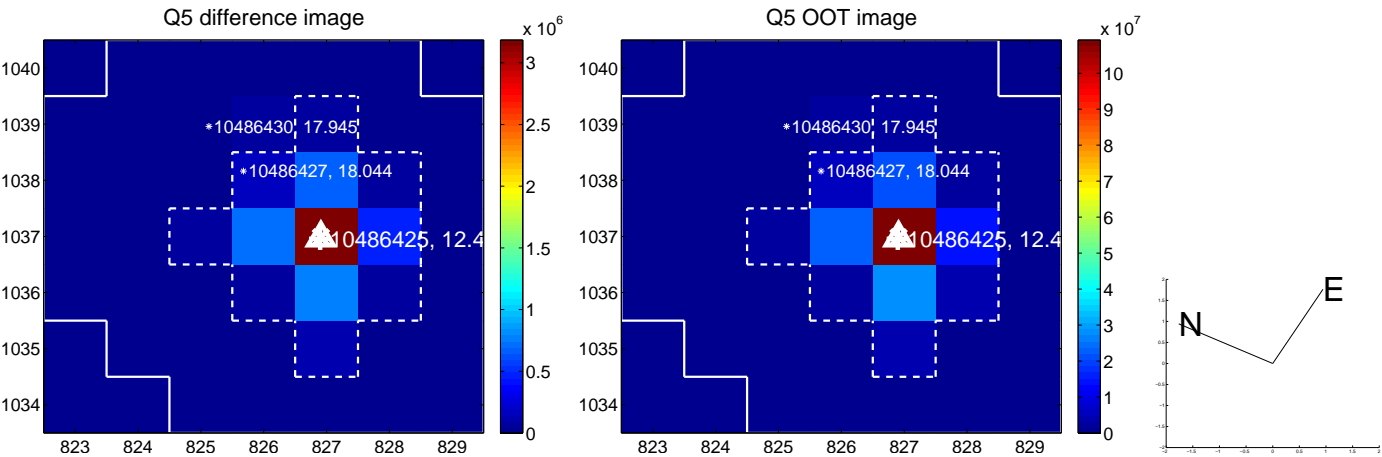


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

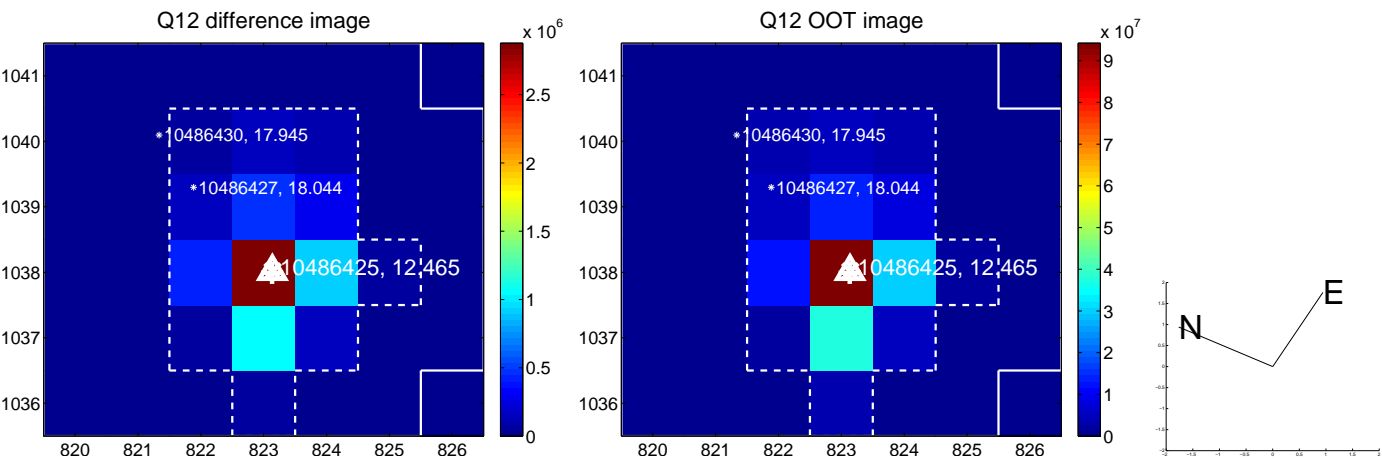
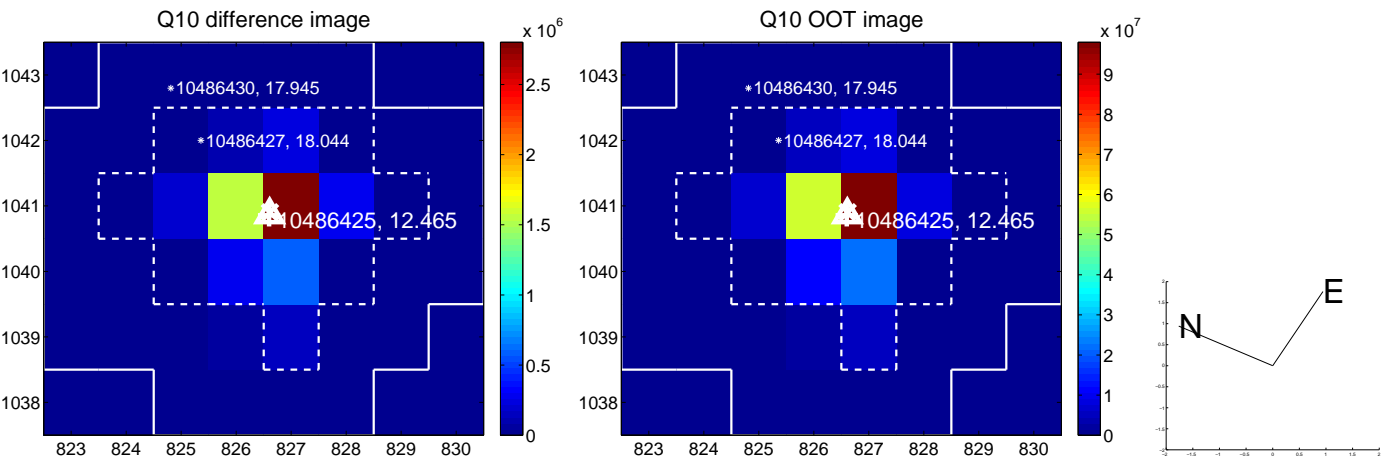
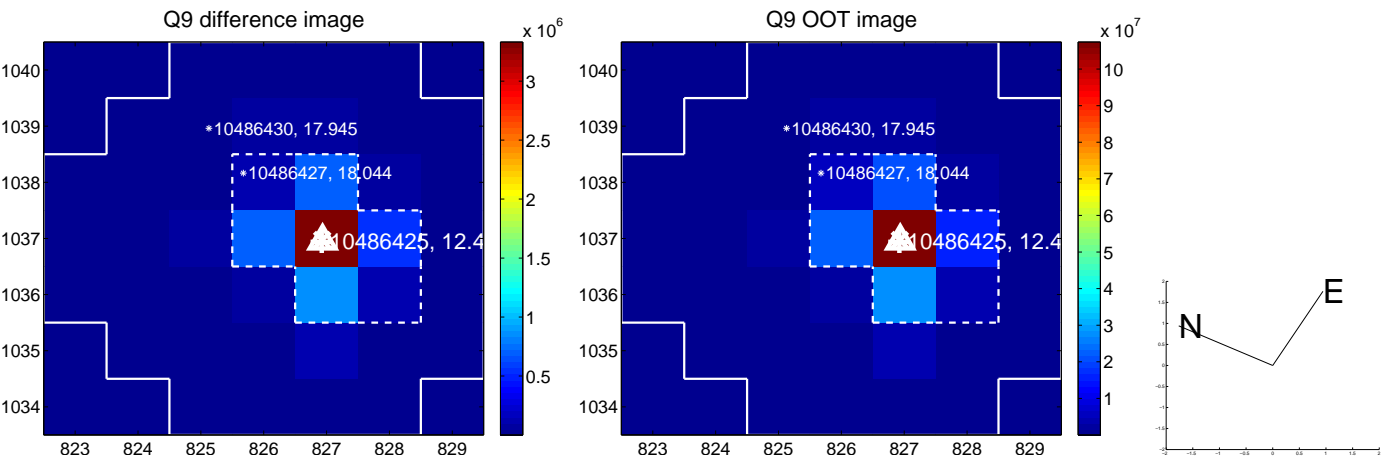
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



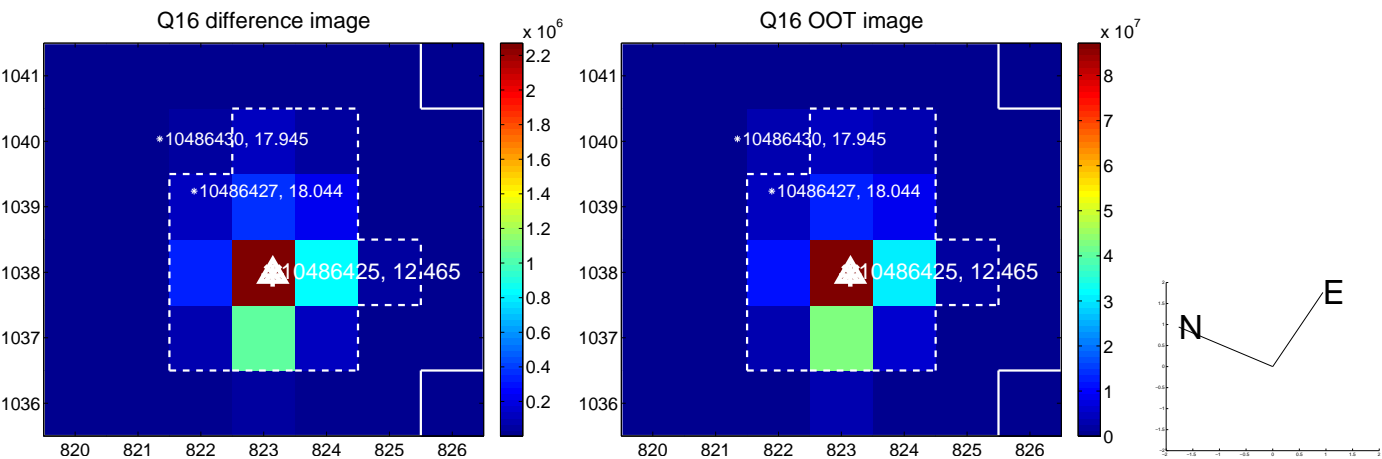
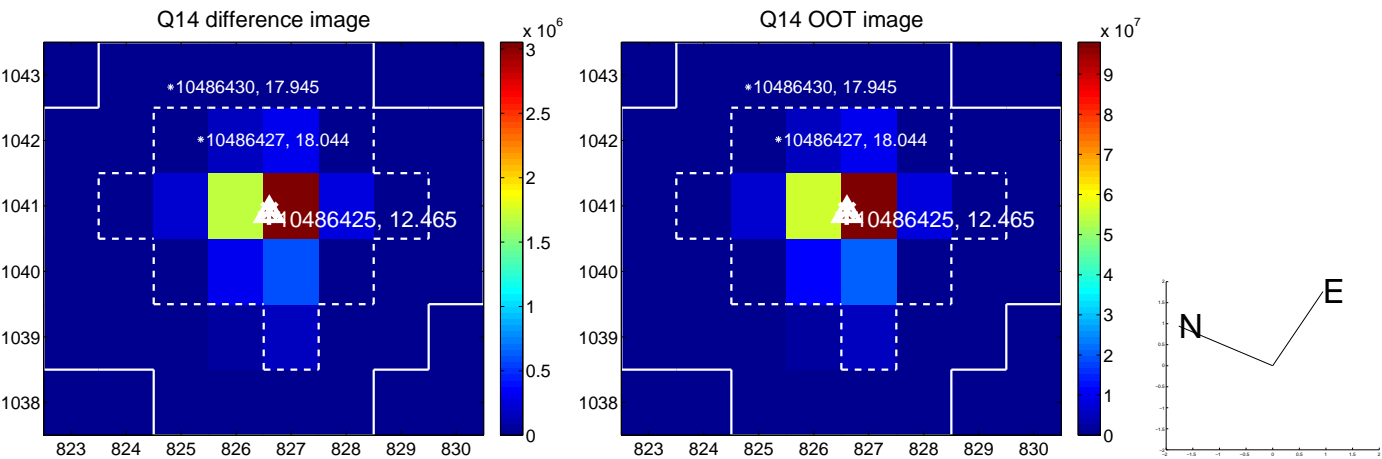
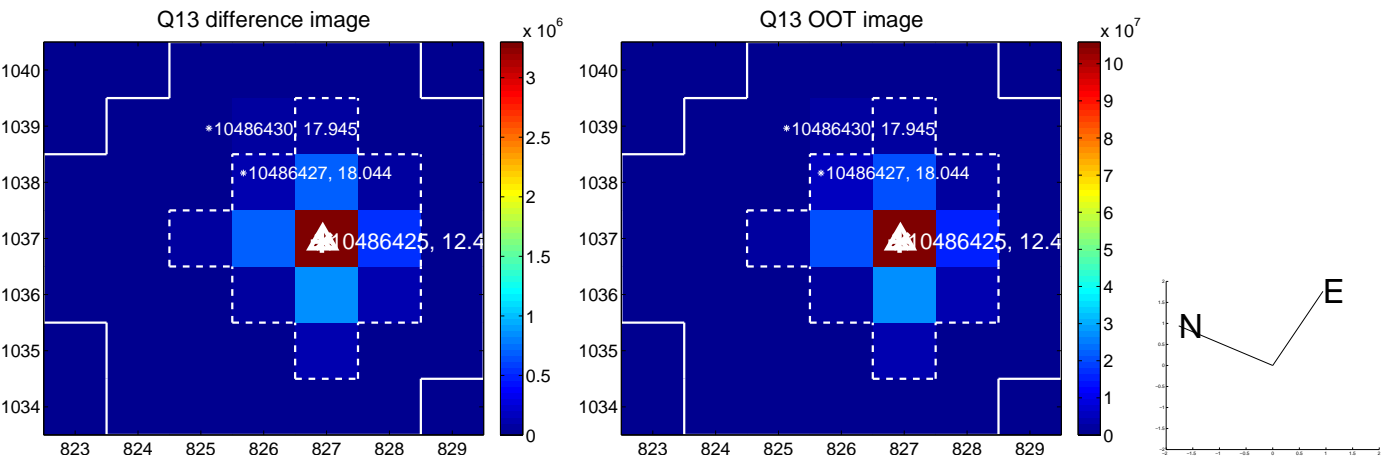
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



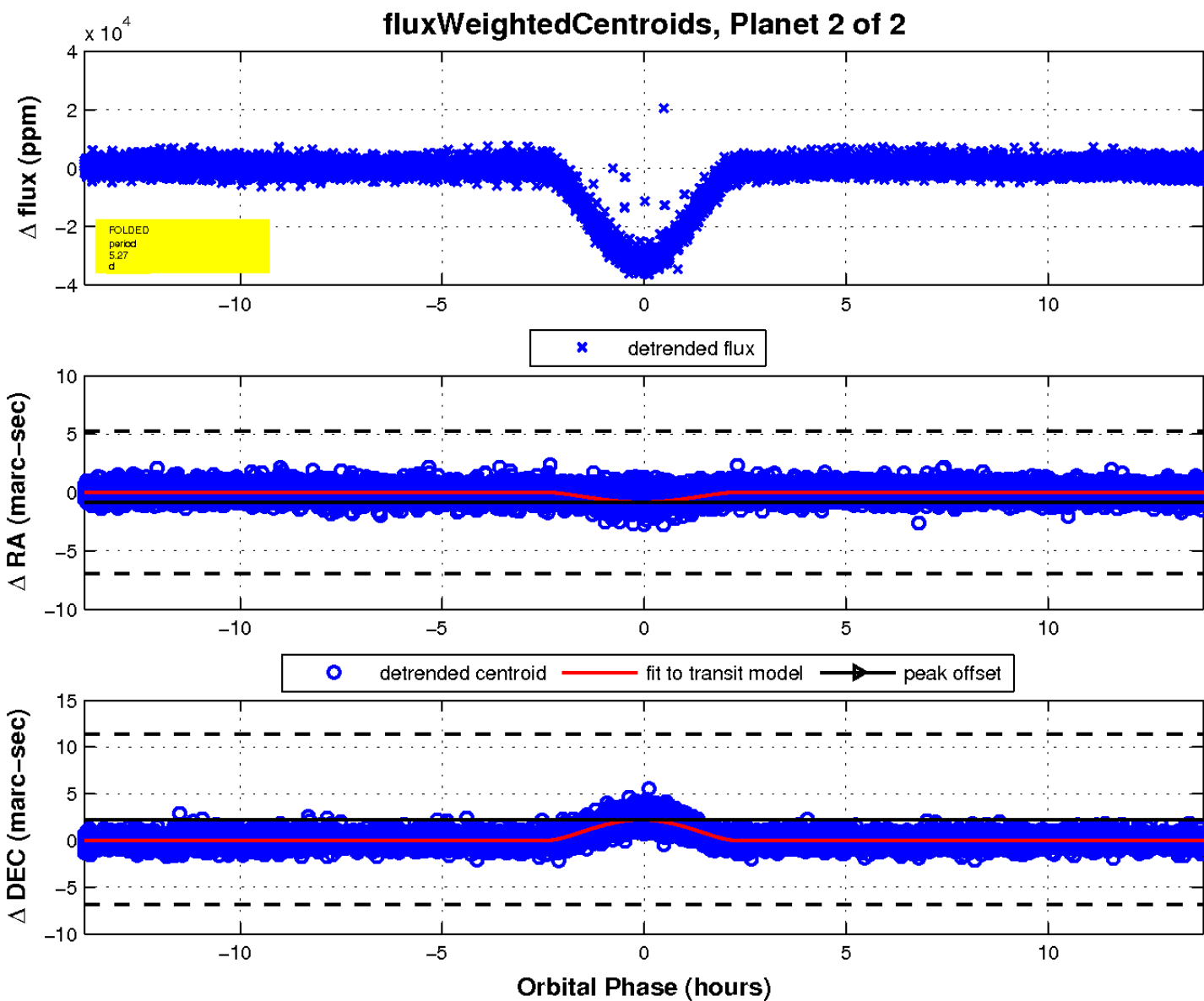
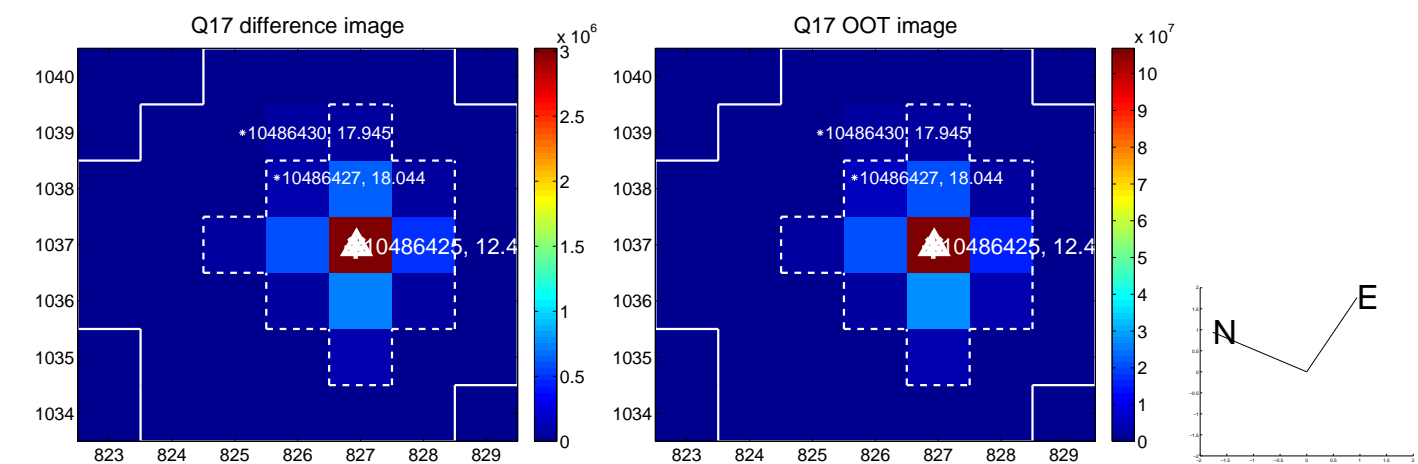
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

