

KIC 011856076

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011856076-02 | OBS | No | 195.273527 | 137.313982 | 1265.6 | 12.919 | 11.1 | 6.5 | 0.70 | 4270 | 2.55 | 0.43 |
| 011856076-03 | OBS | No | 292.339232 | 280.810114 | 1794.6 | 14.655 | 15.0 | 5.7 | 0.70 | 4270 | 3.68 | 0.25 |
| 011856076-04 | OBS | No | 295.447291 | 203.838375 | 1127.4 | 4.469 | 13.3 | 6.8 | 0.70 | 4270 | 2.57 | 0.25 |
| 011856076-05 | OBS | No | 566.377742 | 297.720726 | 1308.3 | 4.464 | 13.3 | 6.6 | 0.70 | 4270 | 2.68 | 0.10 |
| 011856076-06 | OBS | No | 69.730805 | 176.042272 | 393.4 | 3.185 | 10.5 | 4.7 | 0.70 | 4270 | 1.63 | 1.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011856076-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS |
| 011856076-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011856076-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS |

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

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

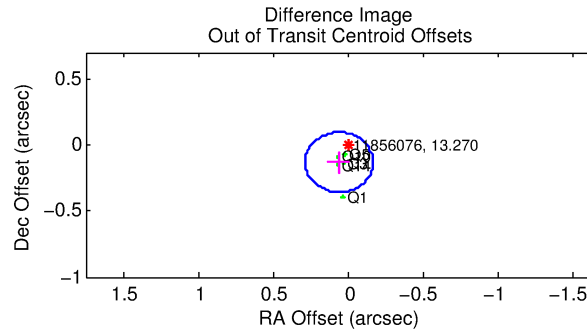
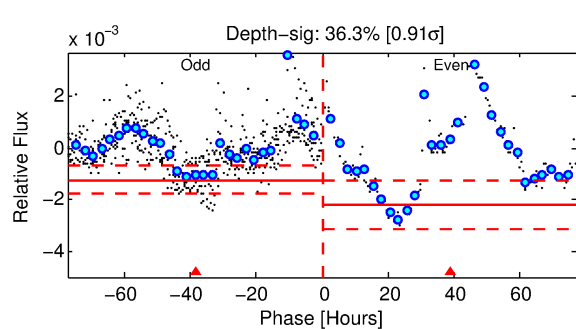
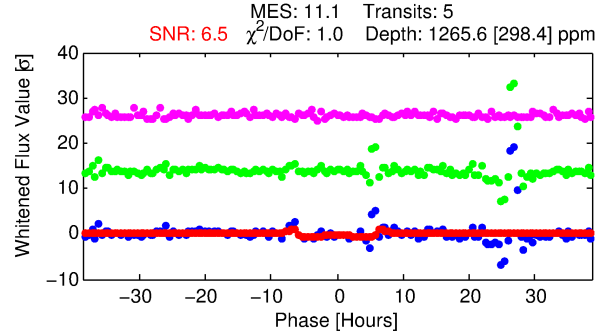
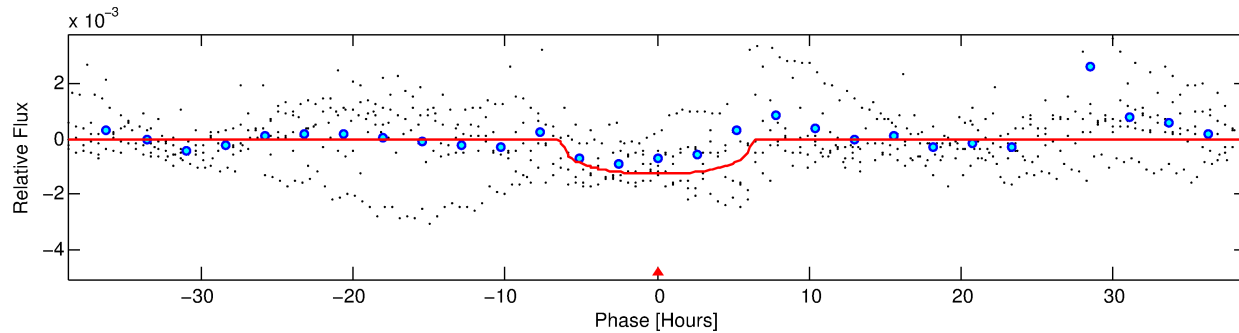
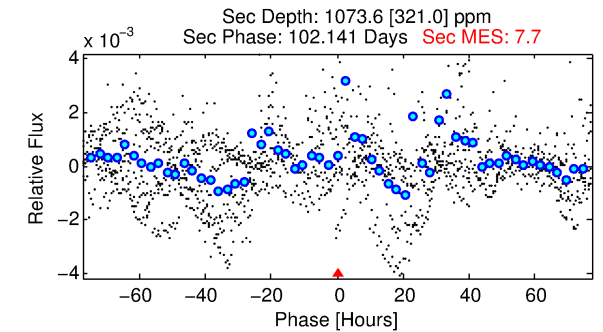
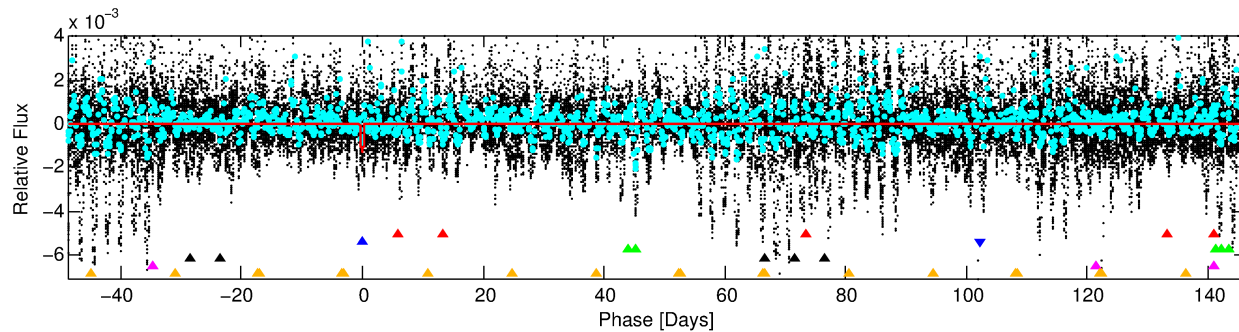
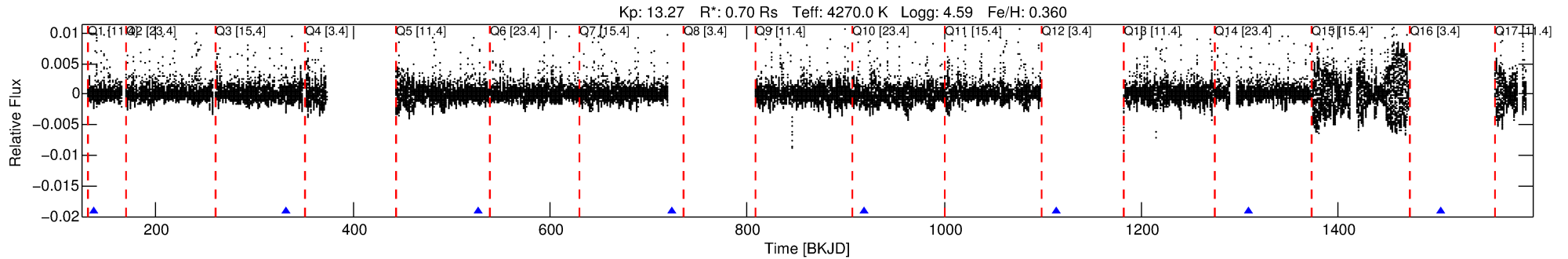
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011856076-02

No Significant Match Found

DV One-Page Summary

KIC: 11856076 Candidate: 2 of 6 Period: 195.274 d



DV Fit Results:

Period = 195.27353 [0.00352] d
Epoch = 137.3140 [0.0119] BKJD
Rp/R* = 0.0334 [0.0096]
a/R* = 97.19 [70.47]
b = 0.60 [0.78]
Seff = 0.43 [0.07]
Teq = 206 [9] K
Rp = 2.55 [0.77] Re
a = 0.5842 [0.0422] AU
Ag = 30886.13 [20264.09] [1.52σ]
Teffp = 4227 [700] K [5.74σ]

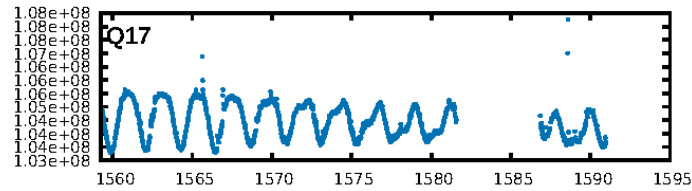
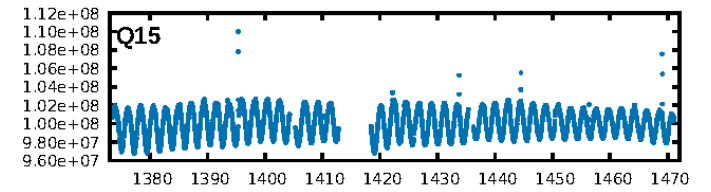
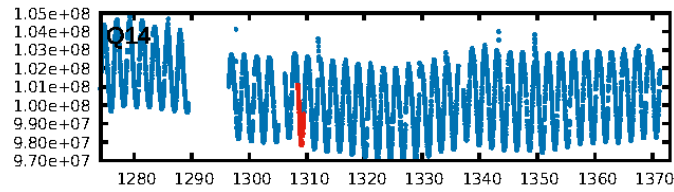
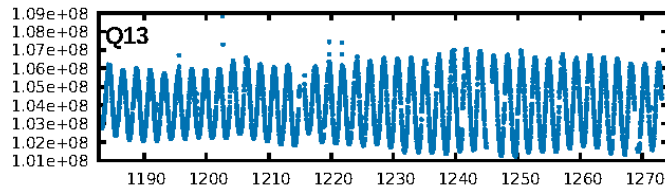
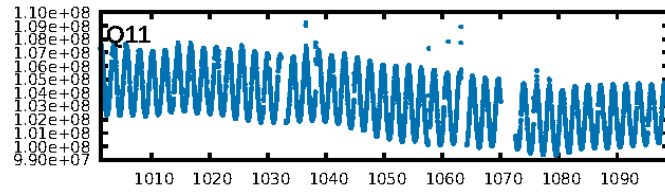
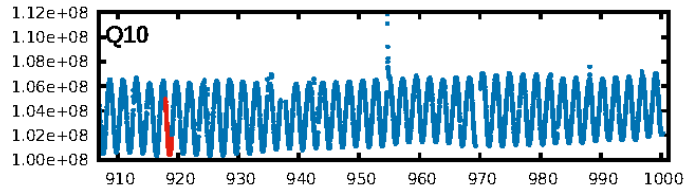
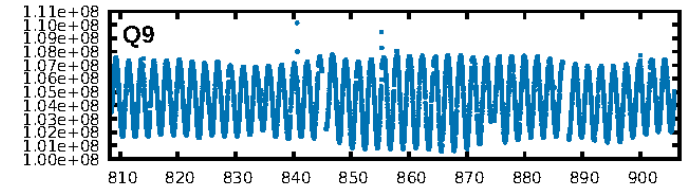
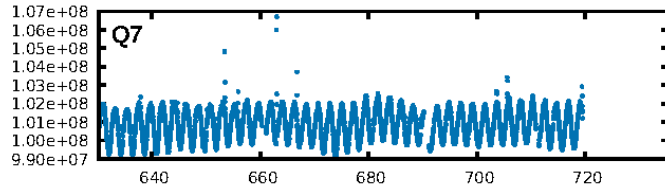
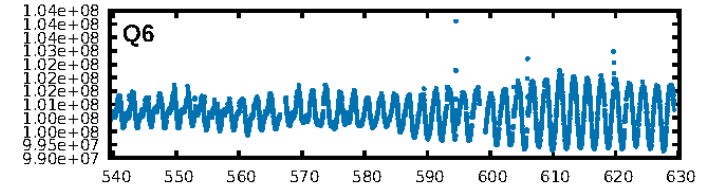
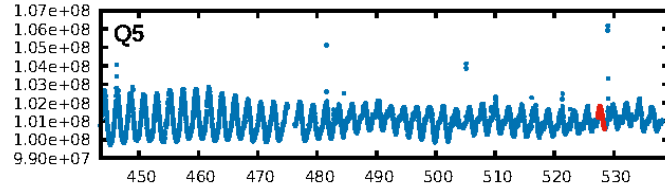
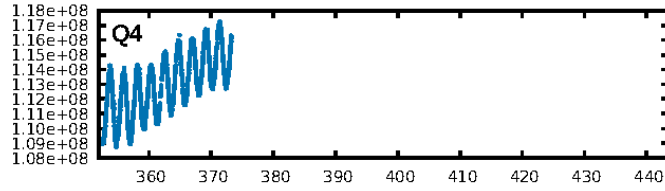
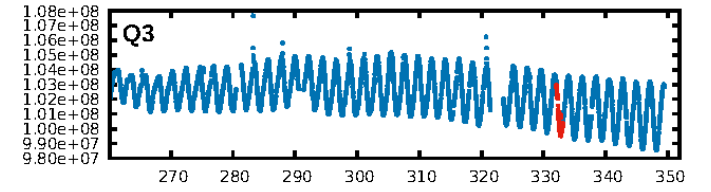
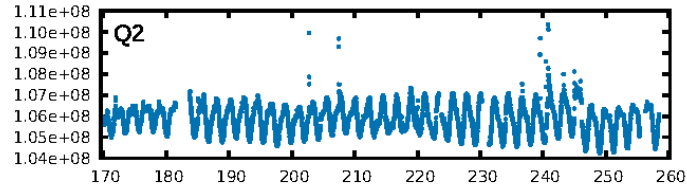
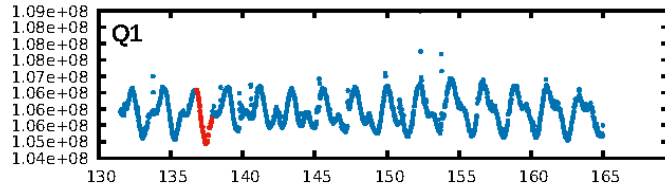
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [226.44σ]
LongPeriod-sig: 100.0% [119.24σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 3.933
Centroid-sig: 33.3%
Centroid-so: 0.217 arcsec [0.80σ]
OotOffset-rm: 0.144 arcsec [1.90σ]
OotOffset-st: 2/1/0/2 [5]
KicOffset-rm: **0.442 arcsec [5.92σ]**
KicOffset-st: 2/1/0/2 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 1.00 [5/5]

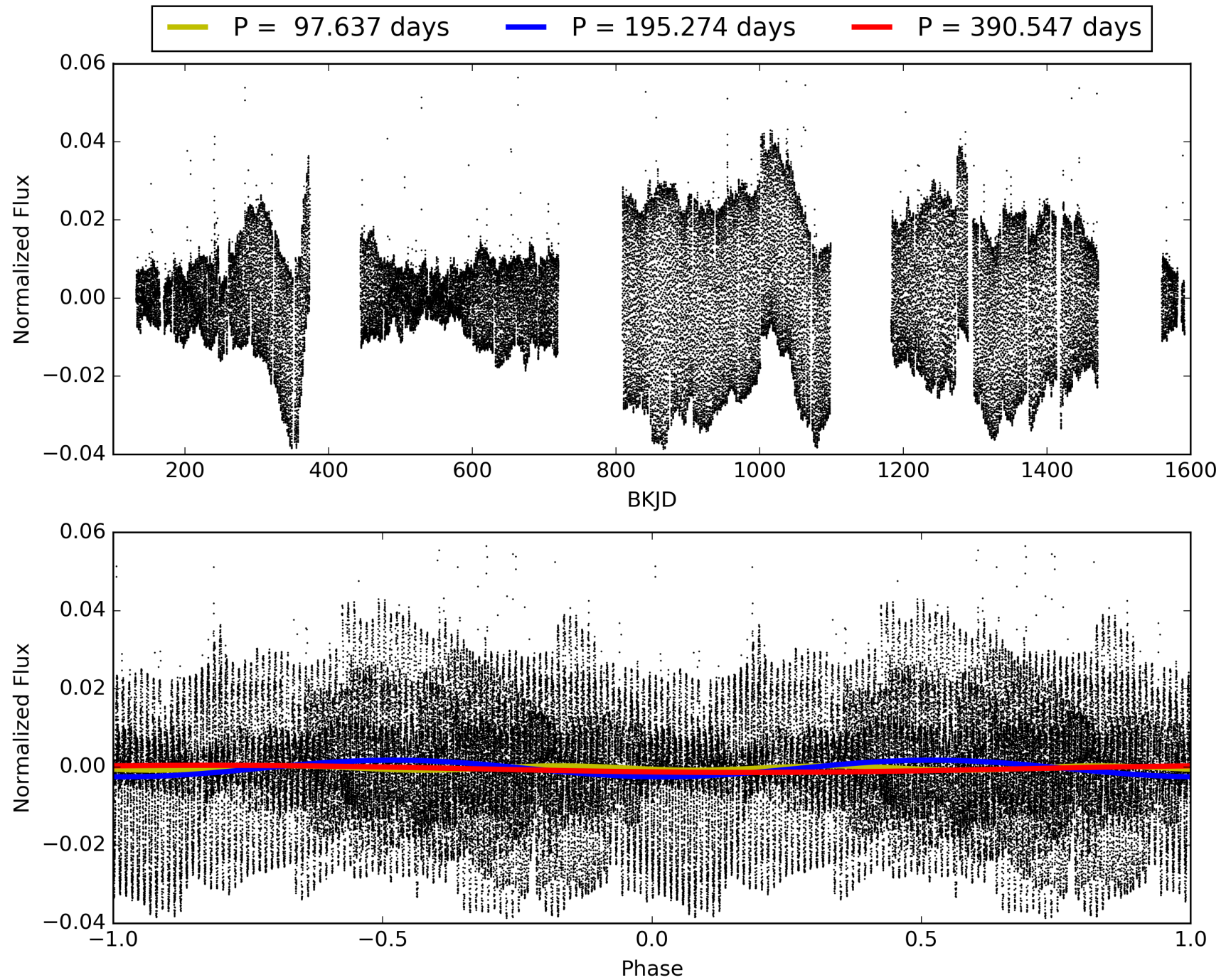
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:06:03 Z

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

TCE 011856076-02, PDC Light Curves

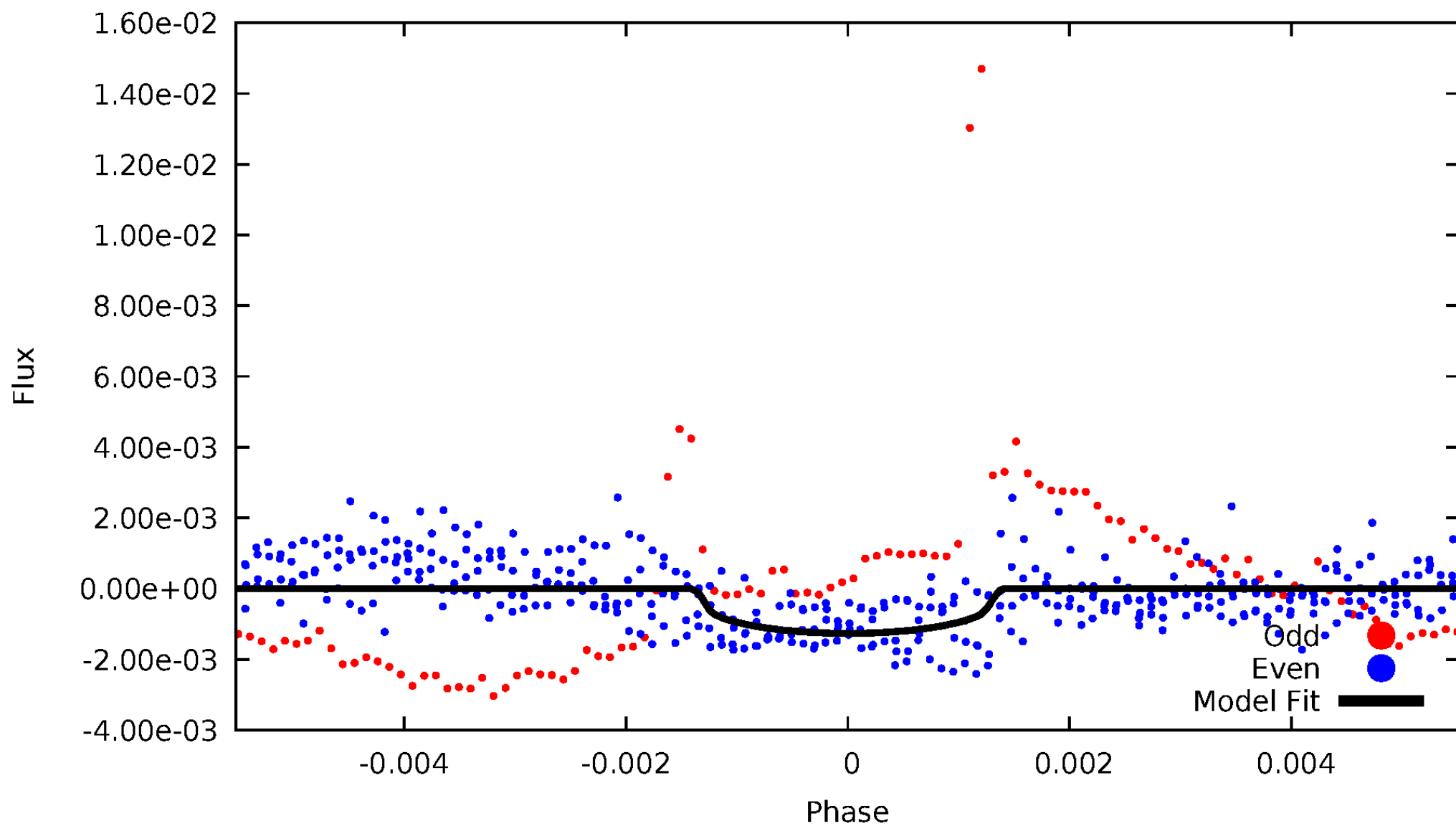


TCE 011856076-02



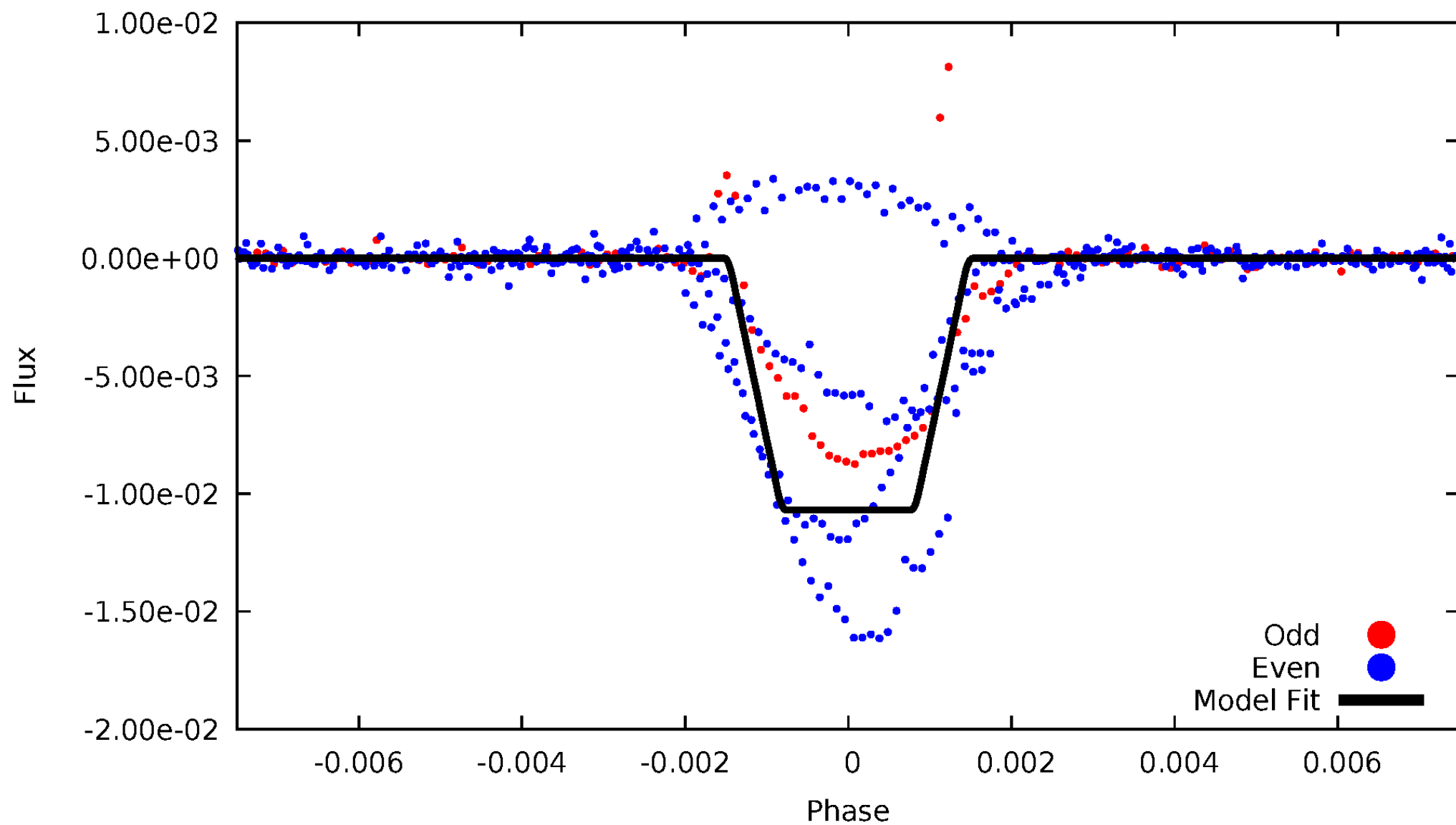
DV Odd/Even

TCE 011856076-02



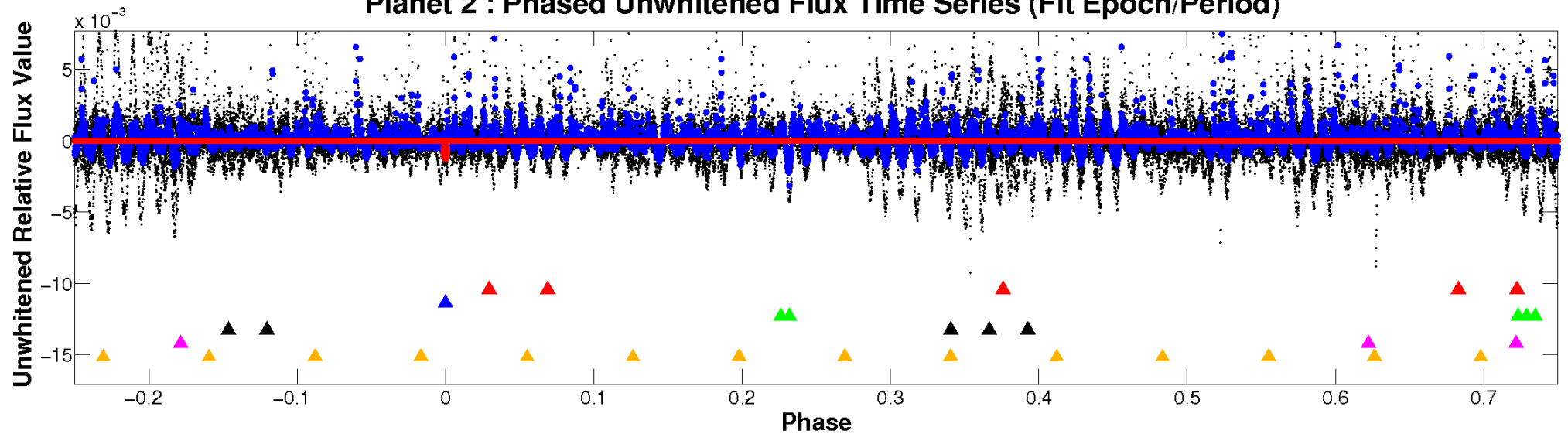
ALT Odd/Even

TCE 011856076-02

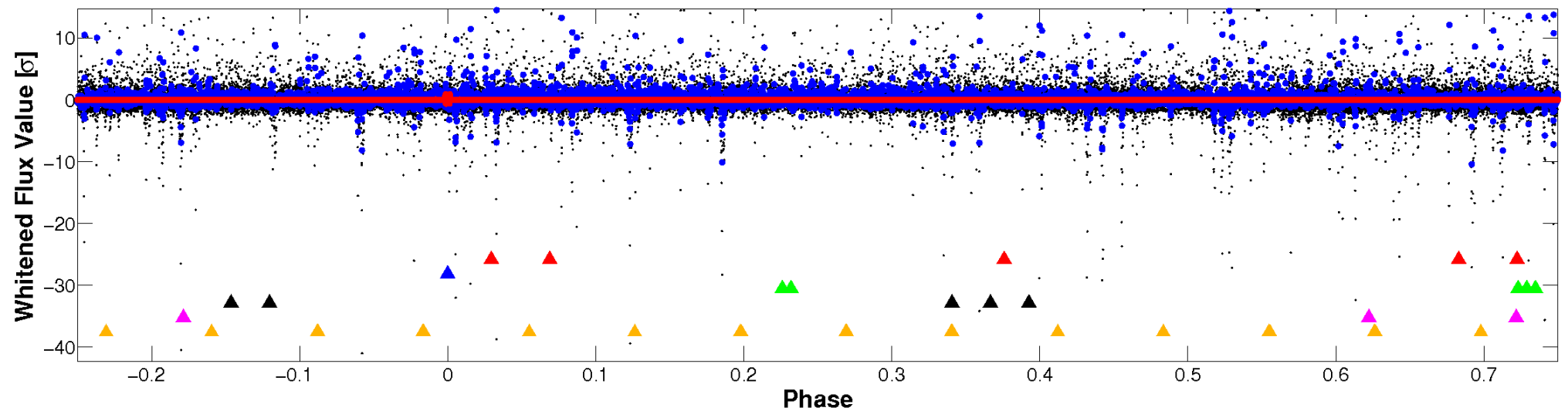


Non-Whitened Vs. Whitened Light Curve

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

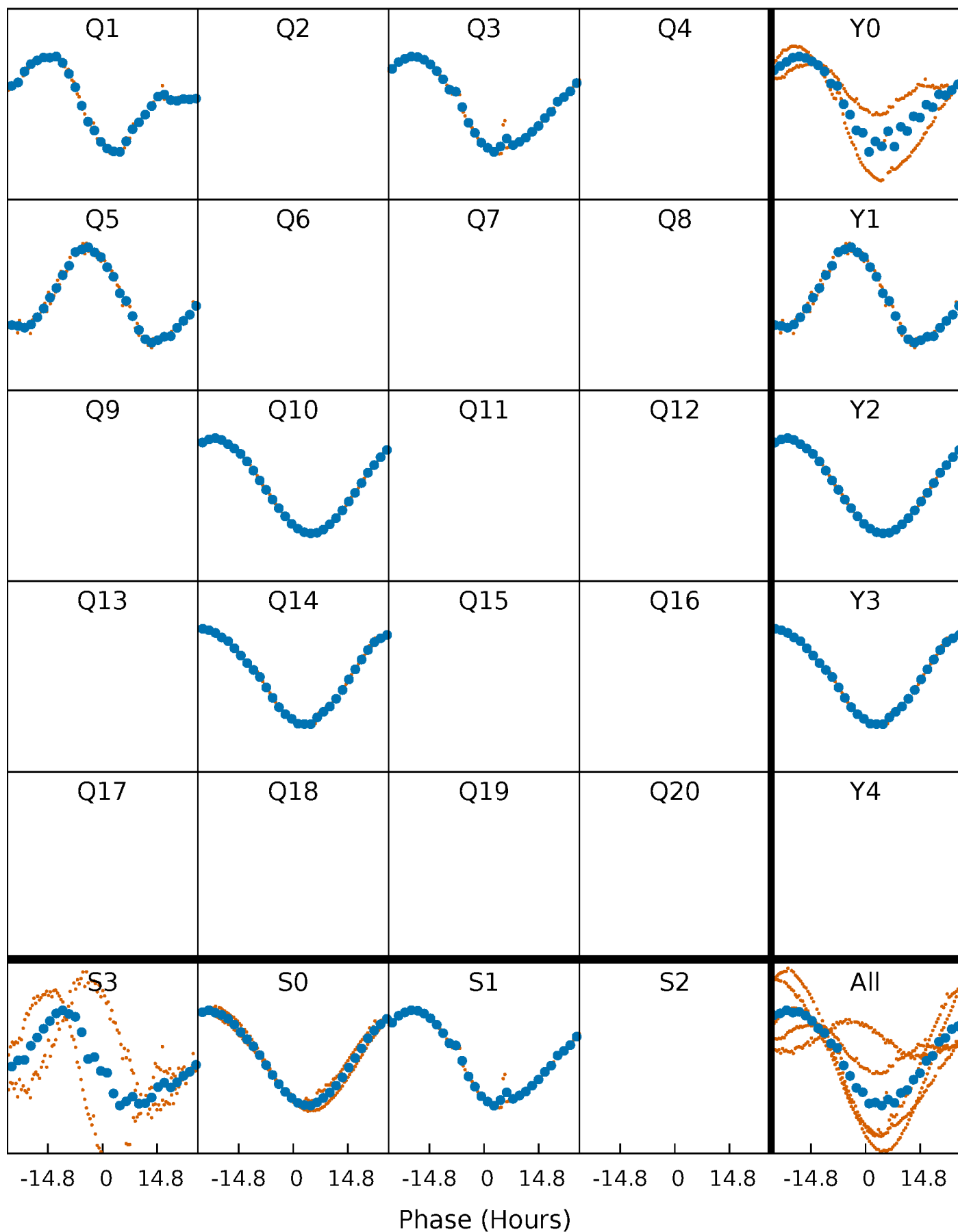


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



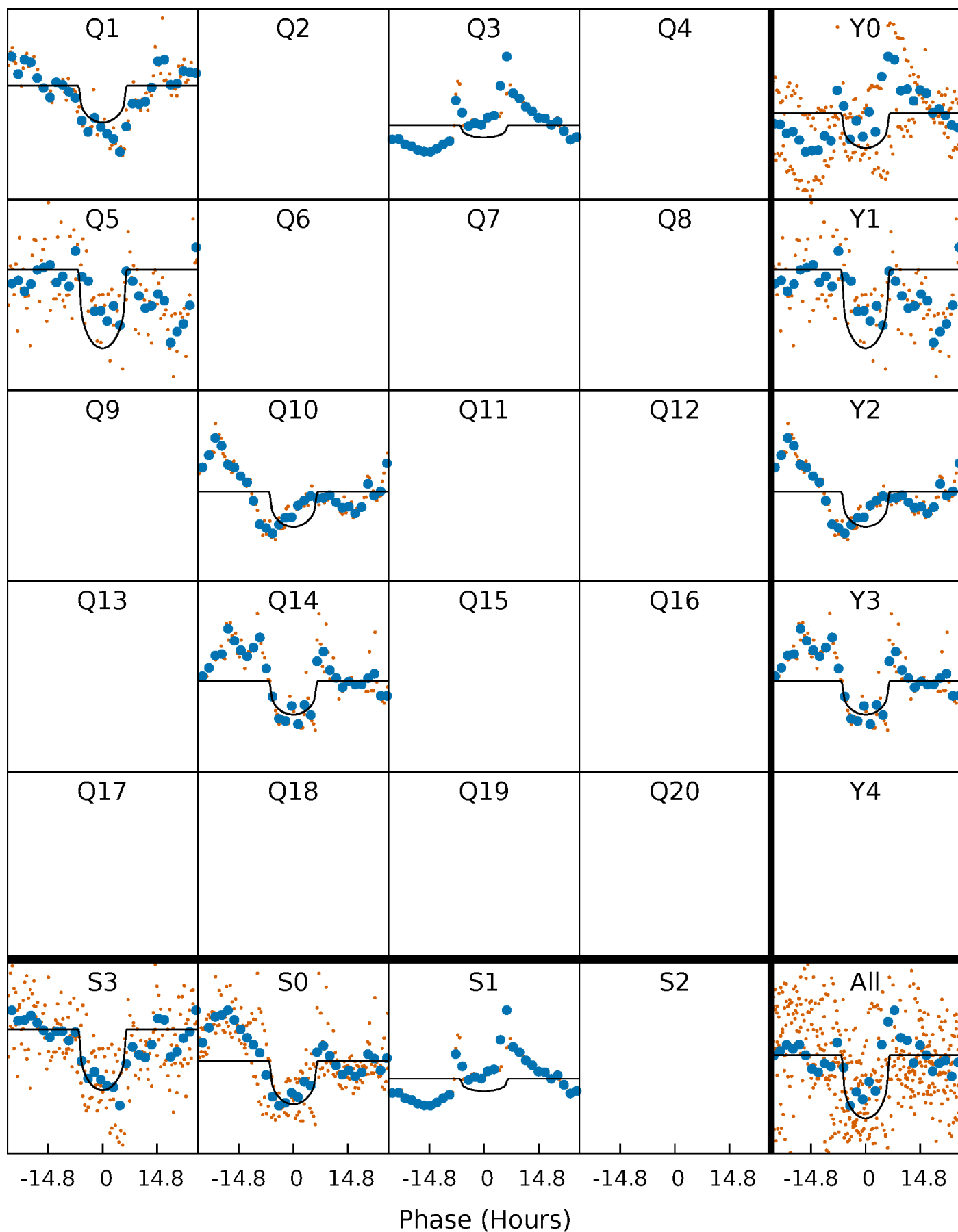
PDC Quarter-Phased Transit Curves

TCE 011856076-02 P=195.273527 Days $T_0=137.313982$ (BKJD)



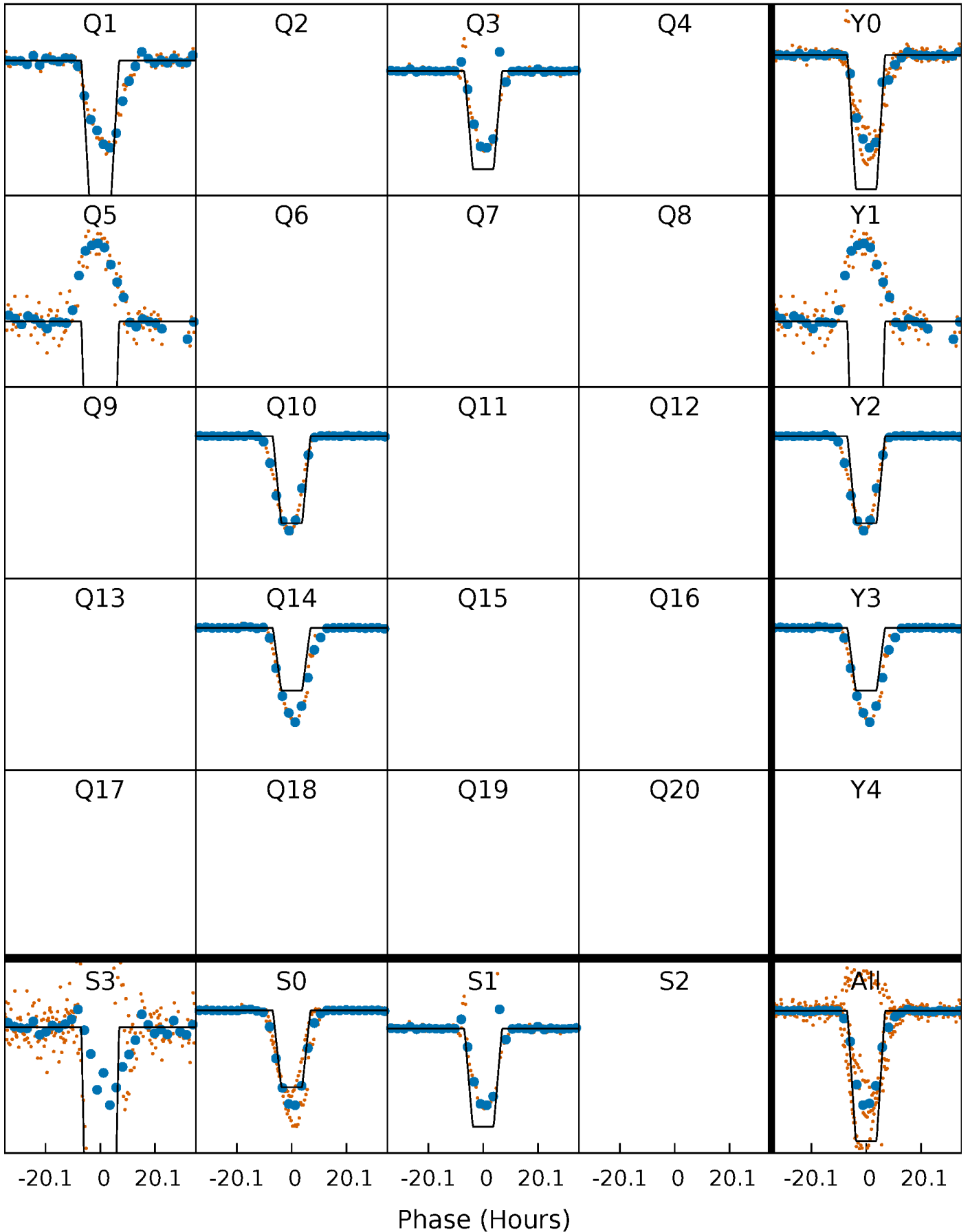
DV Quarter-Phased Transit Curves

TCE 011856076-02 P=195.273527 Days $T_0=137.313982$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

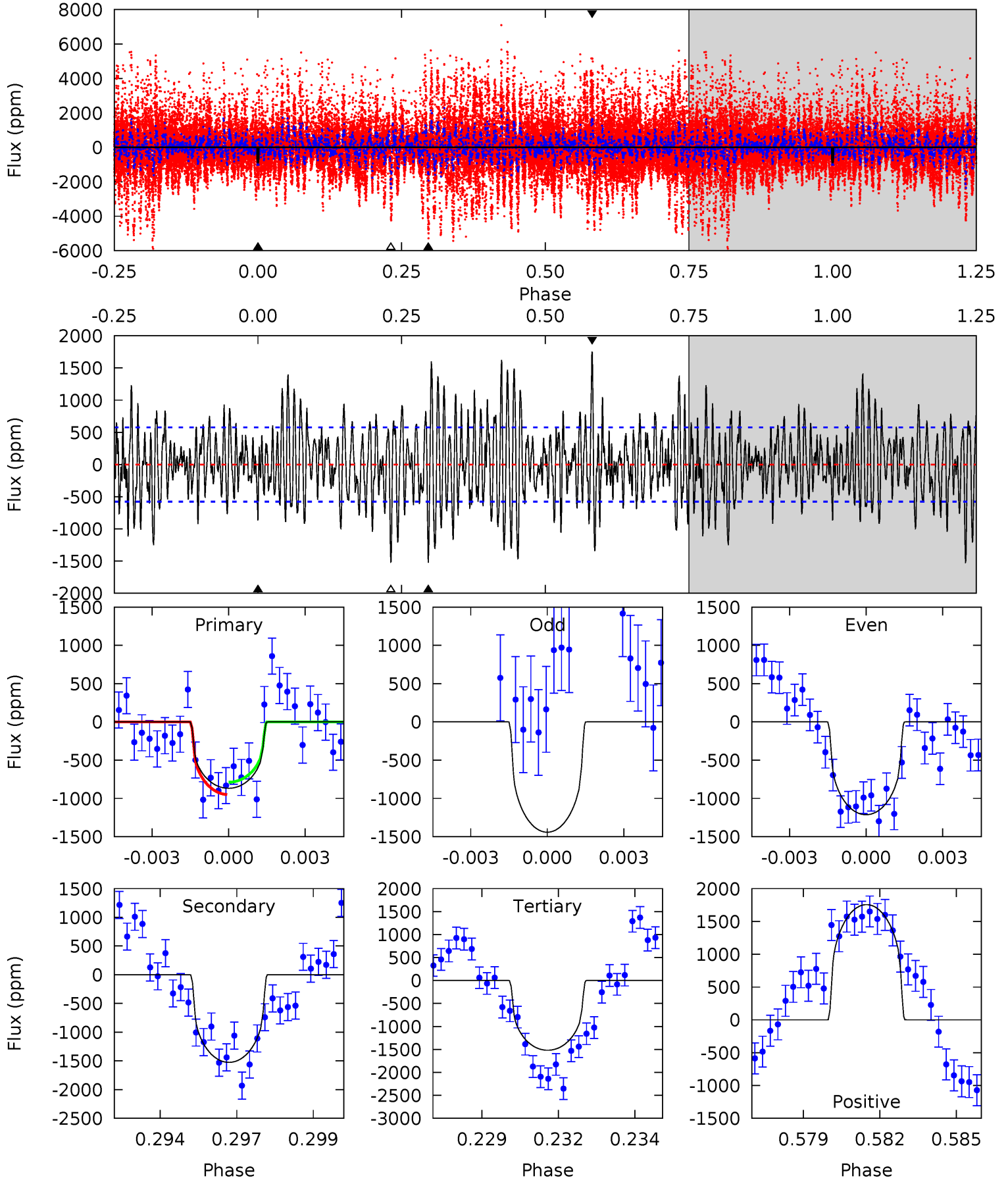
TCE 011856076-02 P=195.276722 Days $T_0=137.305842$ (BKJD)



DV Model-Shift Uniqueness Test

011856076-02, $P = 195.273527$ Days, $E = 137.313982$ Days

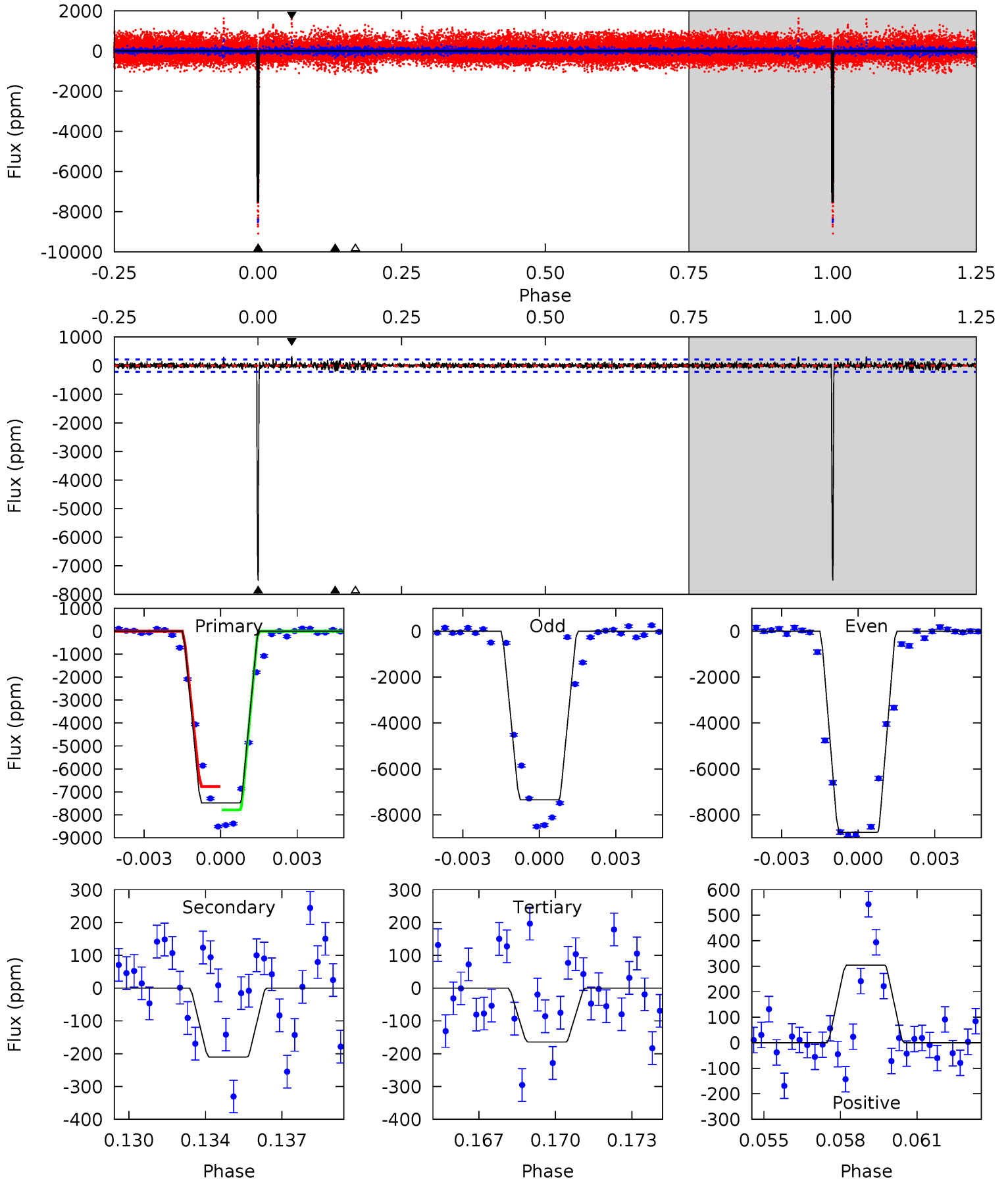
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.93 | 13.9 | 13.9 | 16.0 | 5.26 | 2.99 | 4.70 | -5.95 | -8.11 | 0.06 | -2.10 | 0.76 | 0.80 | 0.54 | 0.75 |



Alt Model-Shift Uniqueness Test

011856076-02, P = 195.276722 Days, E = 137.305842 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 178.8 | 5.02 | 3.93 | 7.27 | 5.25 | 2.96 | 1.03 | 174.8 | 171.5 | 1.09 | -2.25 | 20.6 | 0.98 | 0.04 | 0 |



Stellar Parameters For KIC 011856076

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4270^{+150}_{-150} | $4.591^{+0.056}_{-0.018}$ | $0.360^{+0.100}_{-0.300}$ | $0.700^{+0.024}_{-0.061}$ | $0.696^{+0.042}_{-0.052}$ | $2.859^{+0.663}_{-0.192}$ |
| | +4%/-4% | +1%/-0% | +28%/-83% | +3%/-9% | +6%/-7% | +23%/-7% |
| 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 011856076-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|------------------------|-------------------|----------------------|---------------------------|
| DV | -1526 ± 109 | $2.51^{+0.75}_{-0.72}$ | 286^{+11}_{-10} | 4550^{+704}_{-466} | 46187^{+43398}_{-18928} |
| Alt. | -210 ± 42 | $7.79^{+0.75}_{-0.78}$ | 287^{+11}_{-11} | 2403^{+90}_{-101} | 665^{+177}_{-177} |

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 $A_{obs} \gg 1.0$

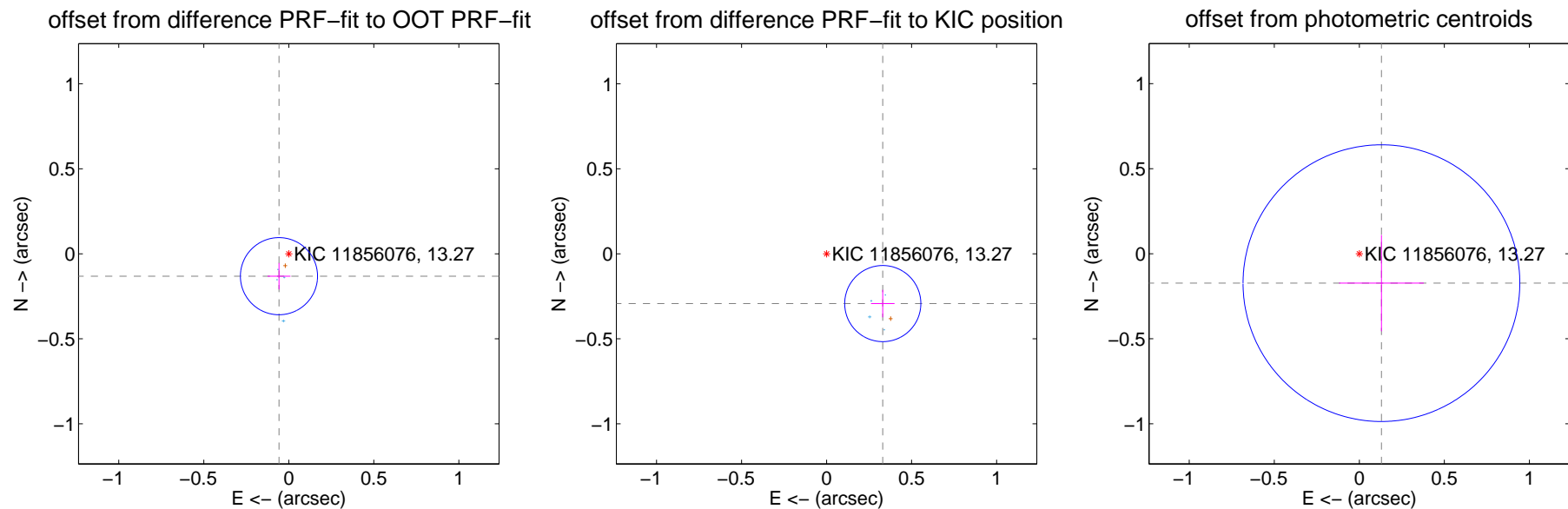
DV Centroid Data

Supplemental centroid analysis for 011856076-02. Kepler magnitude: 13.27. Transit SNR 6.54

There are 4 quarters with good PRF difference image offsets

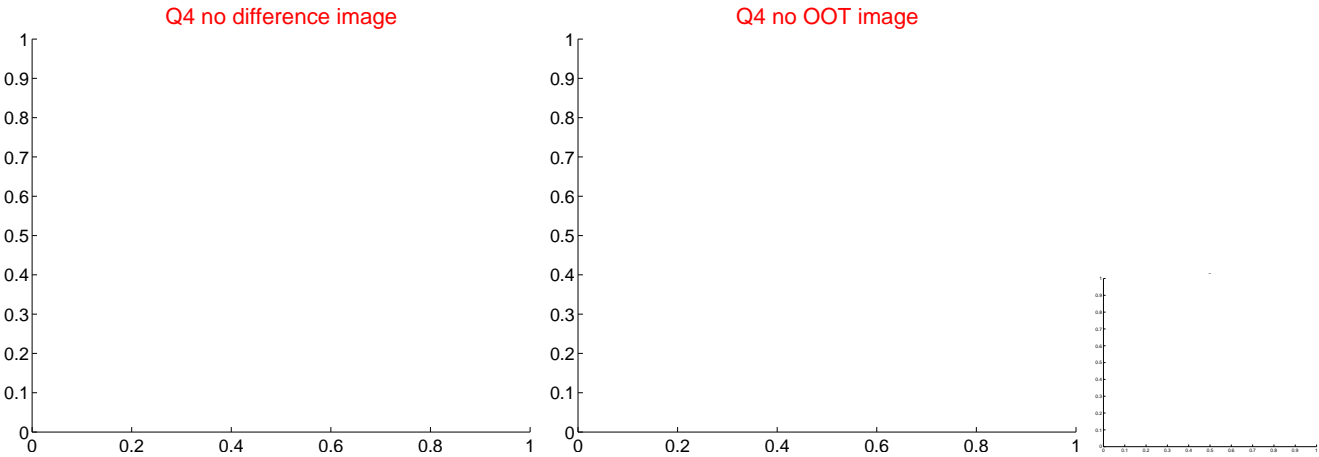
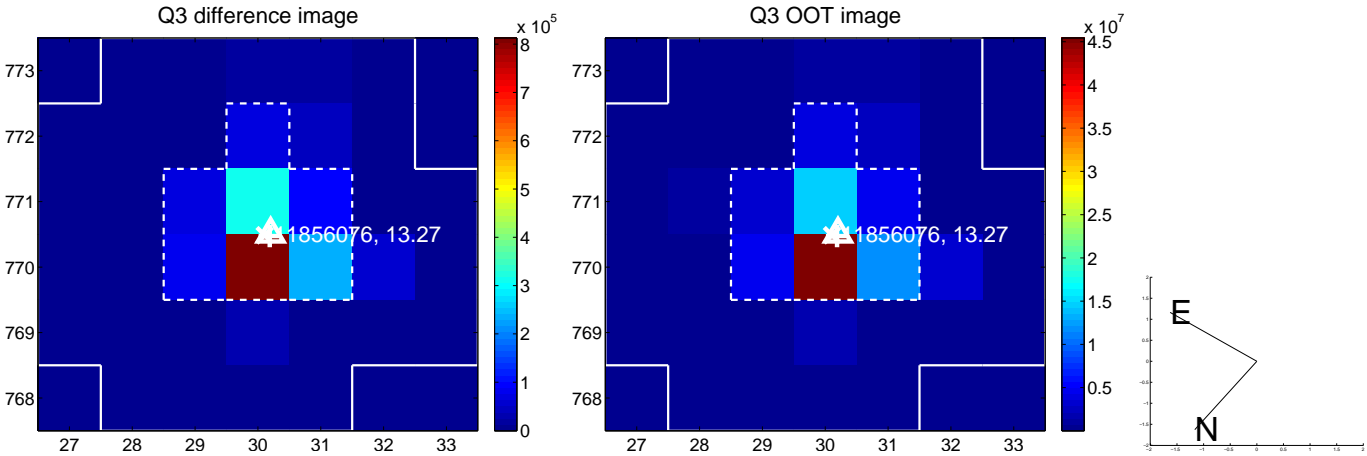
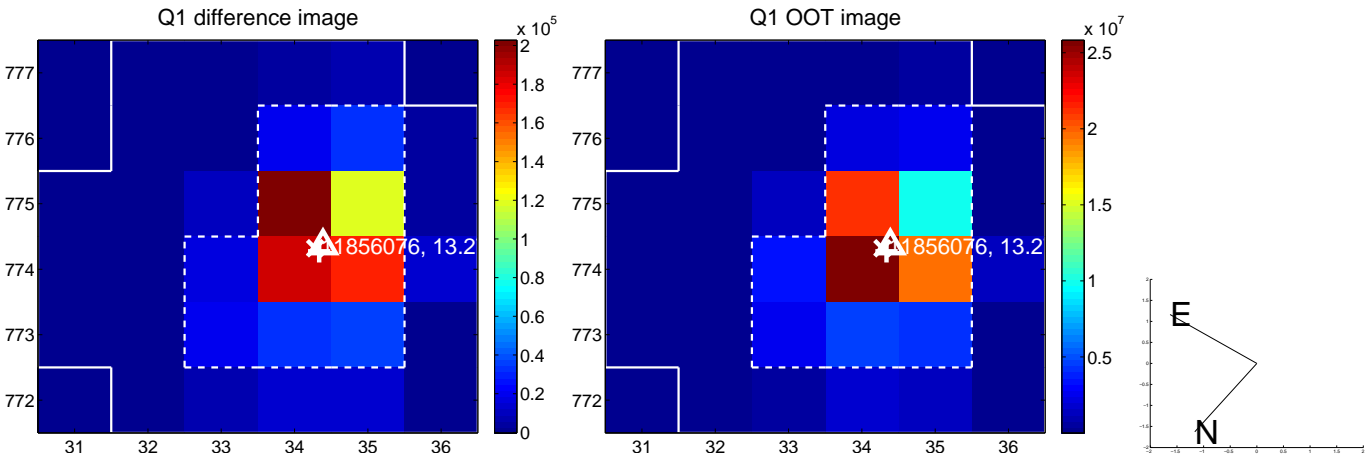
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.144 ± 0.076 | 1.90 | 0.058 ± 0.067 | -0.132 ± 0.078 |
| PRF-fit source offset from KIC position | 0.442 ± 0.075 | 5.92 | -0.330 ± 0.069 | -0.293 ± 0.081 |
| photometric centroid source offset | 0.22 ± 0.27 | 0.80 | -0.13 ± 0.25 | -0.17 ± 0.28 |

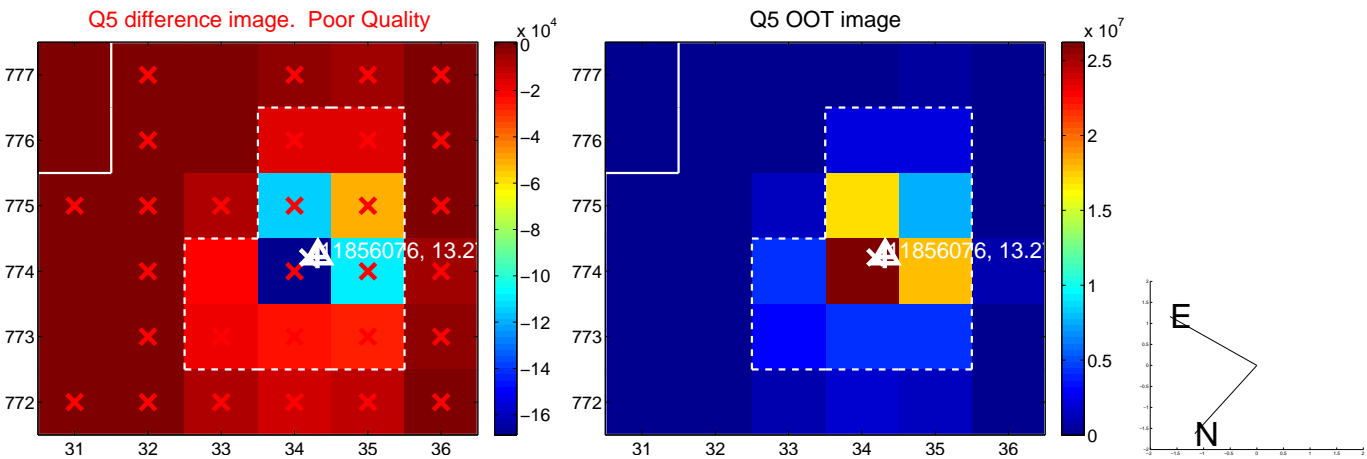


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

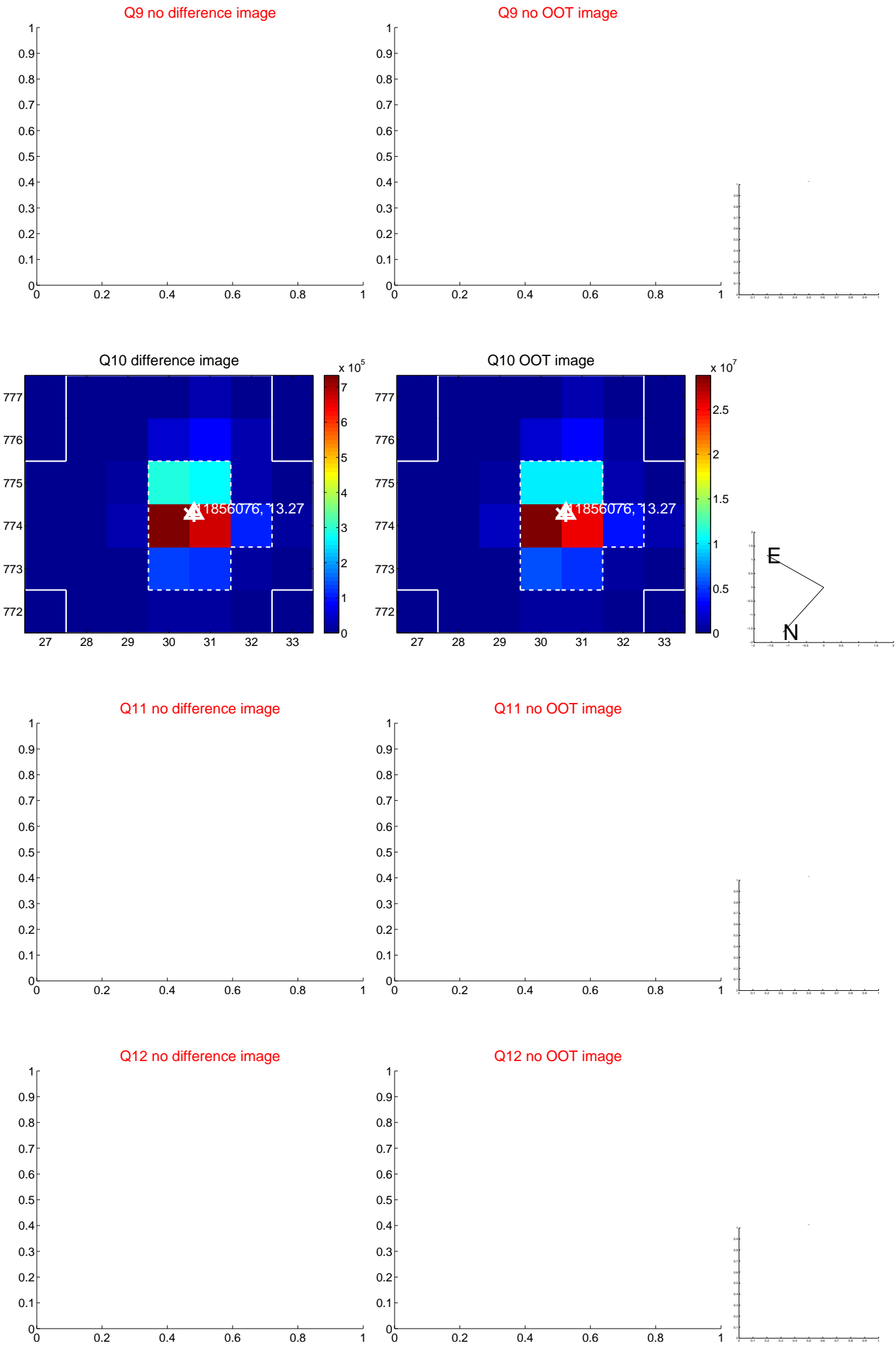
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



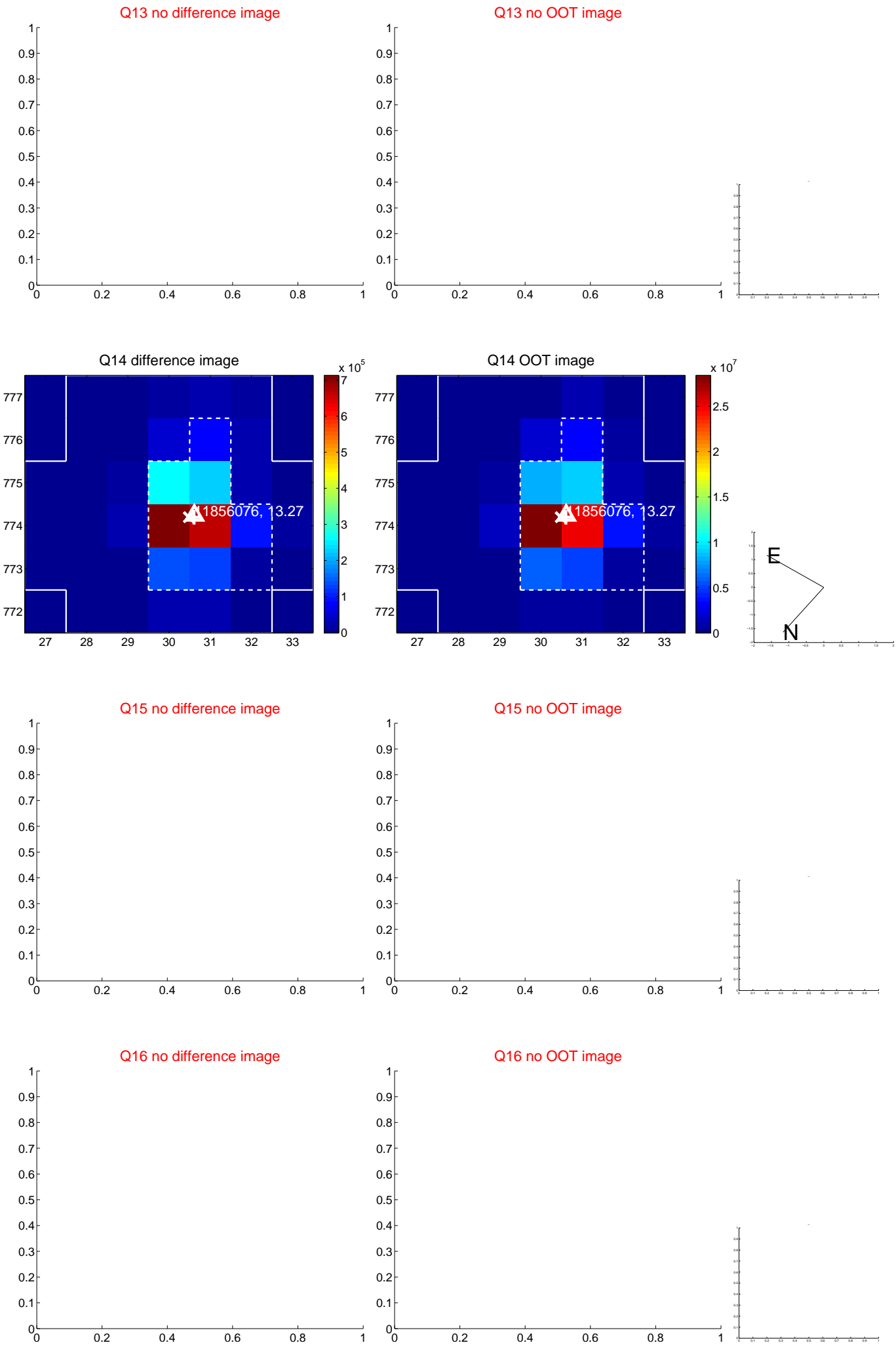
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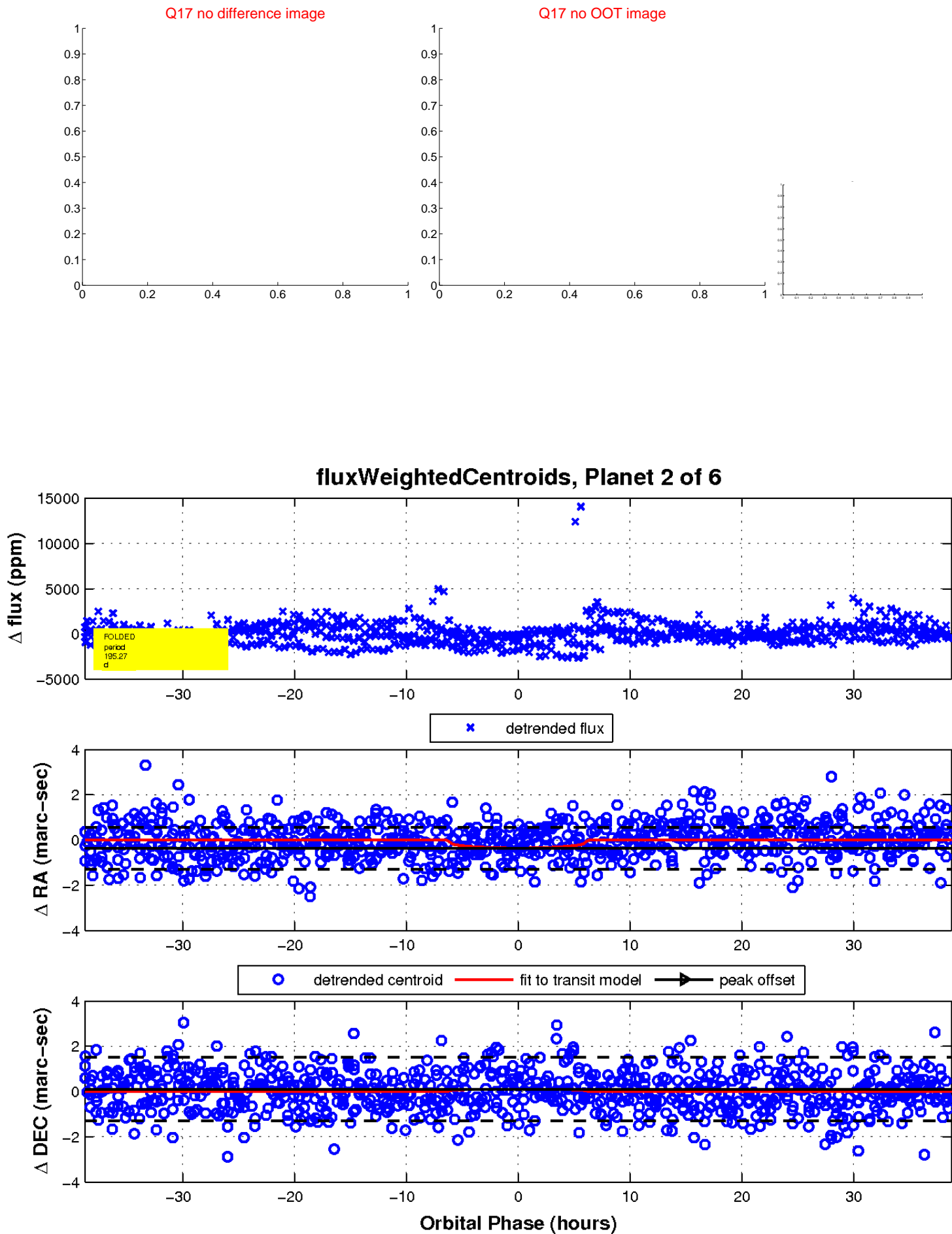
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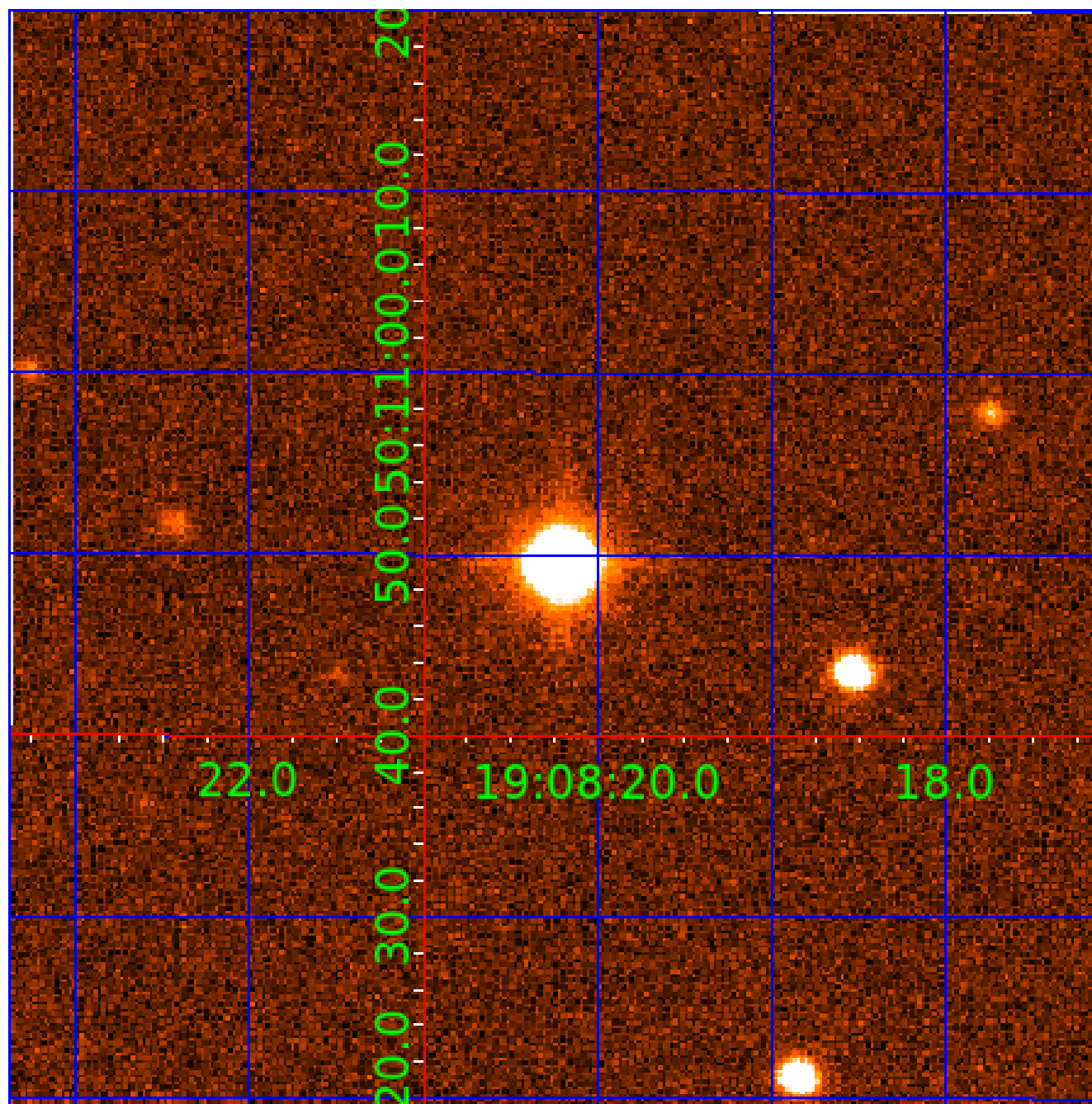


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011856076

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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Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
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| 011856076-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011856076-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS |

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

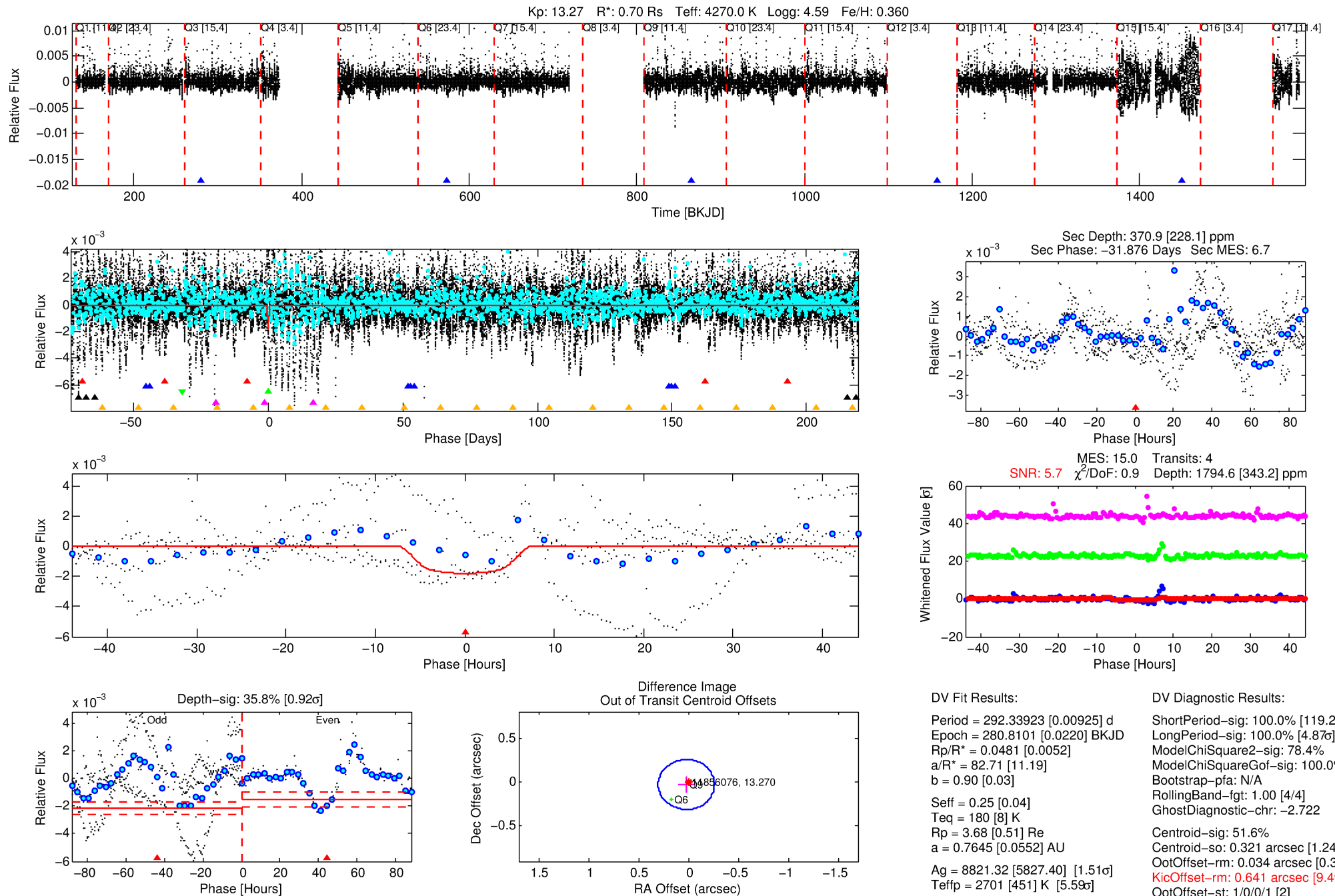
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011856076-03

No Significant Match Found

DV One-Page Summary

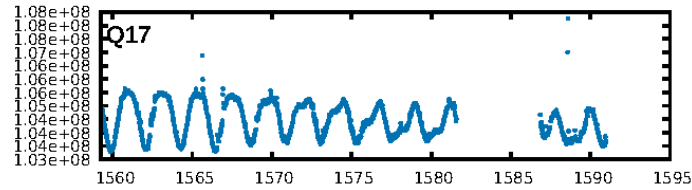
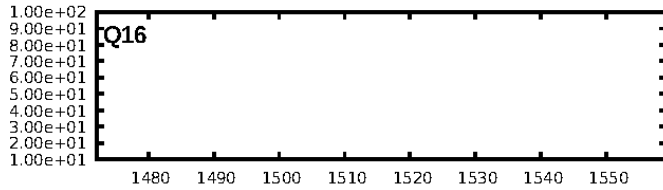
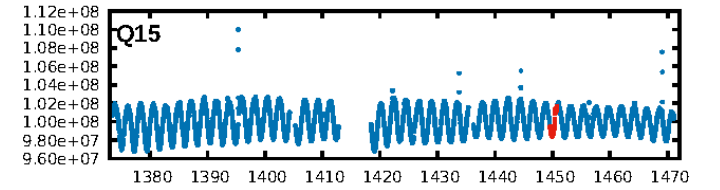
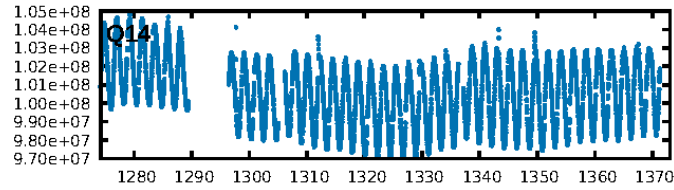
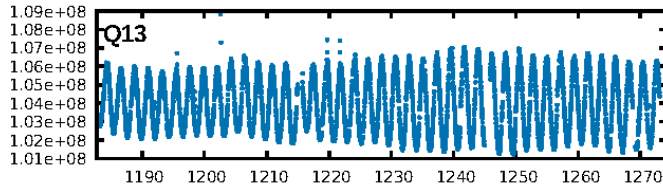
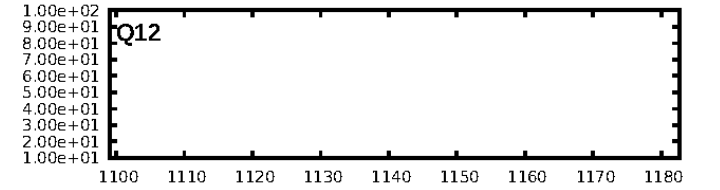
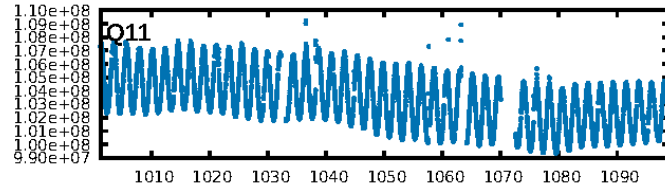
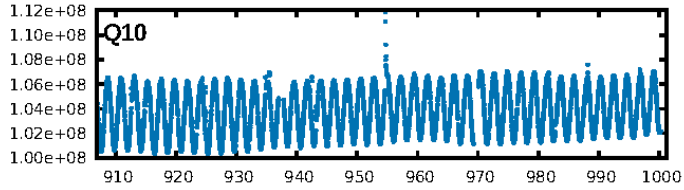
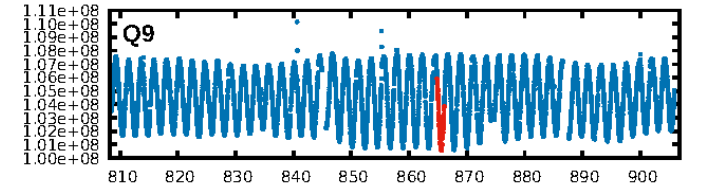
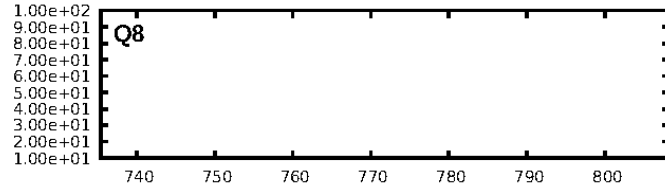
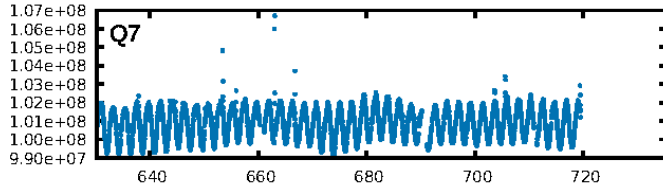
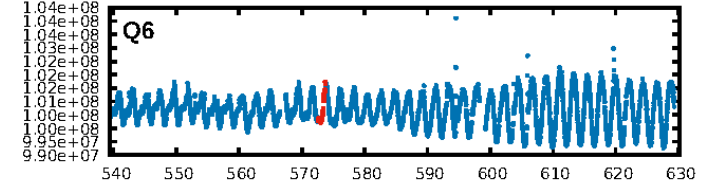
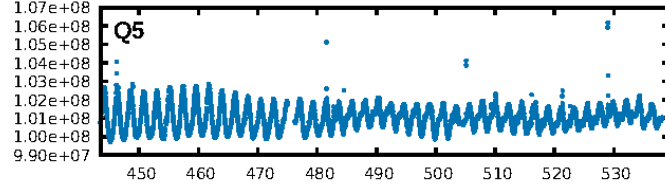
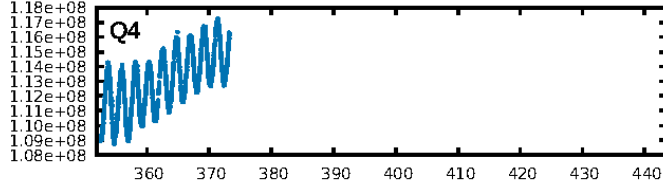
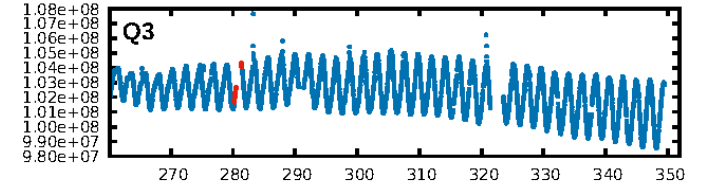
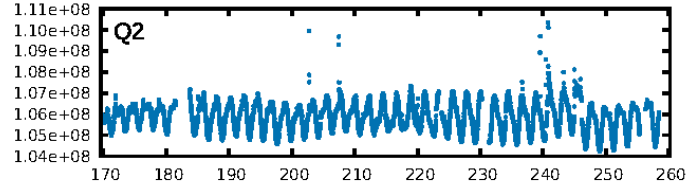
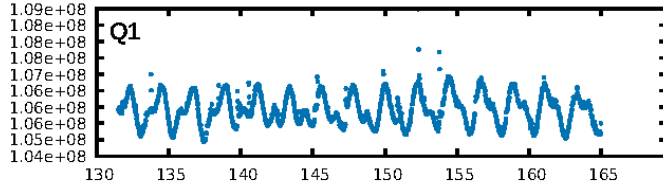
KIC: 11856076 Candidate: 3 of 6 Period: 292.339 d



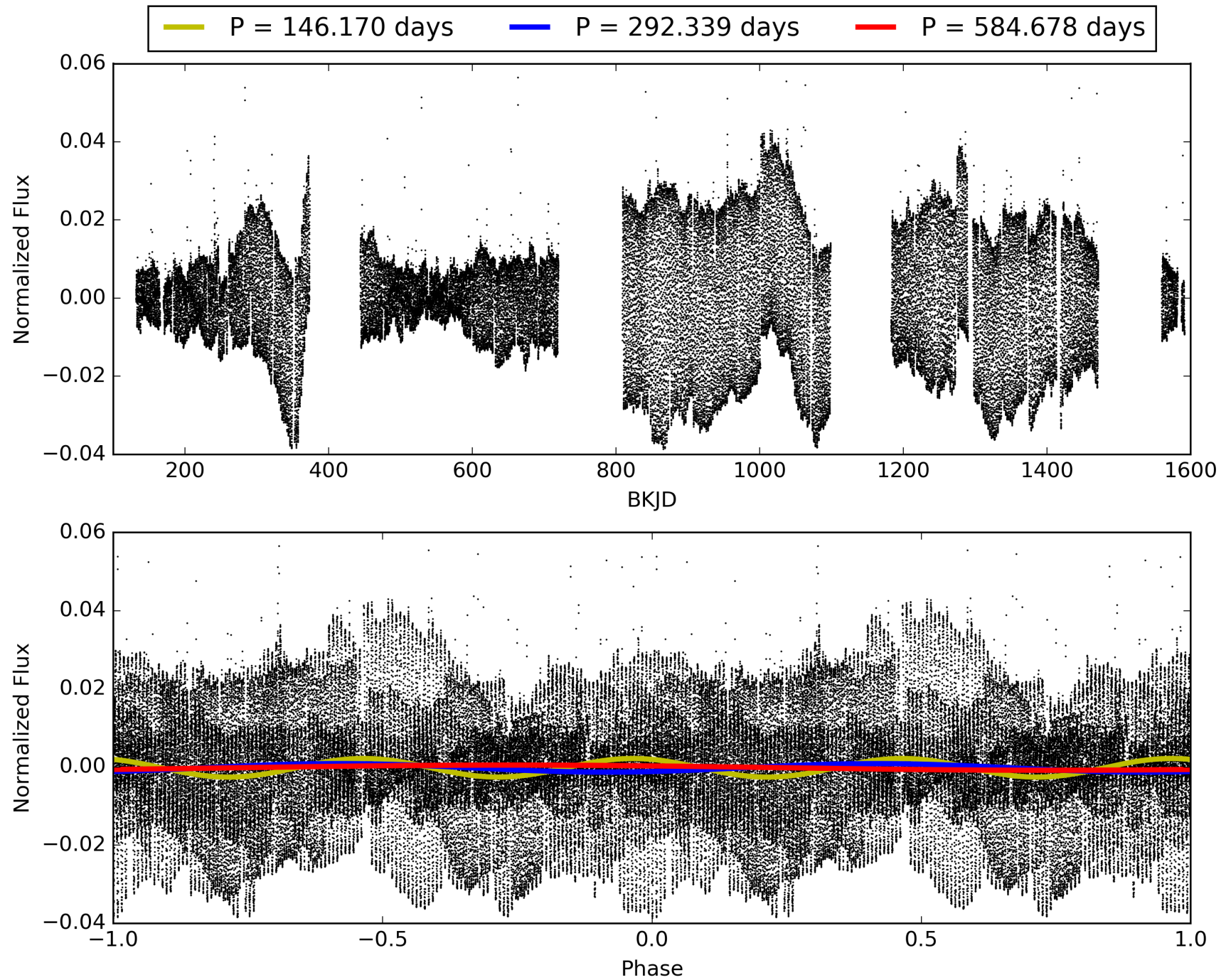
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:06:10 Z

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

TCE 011856076-03, PDC Light Curves

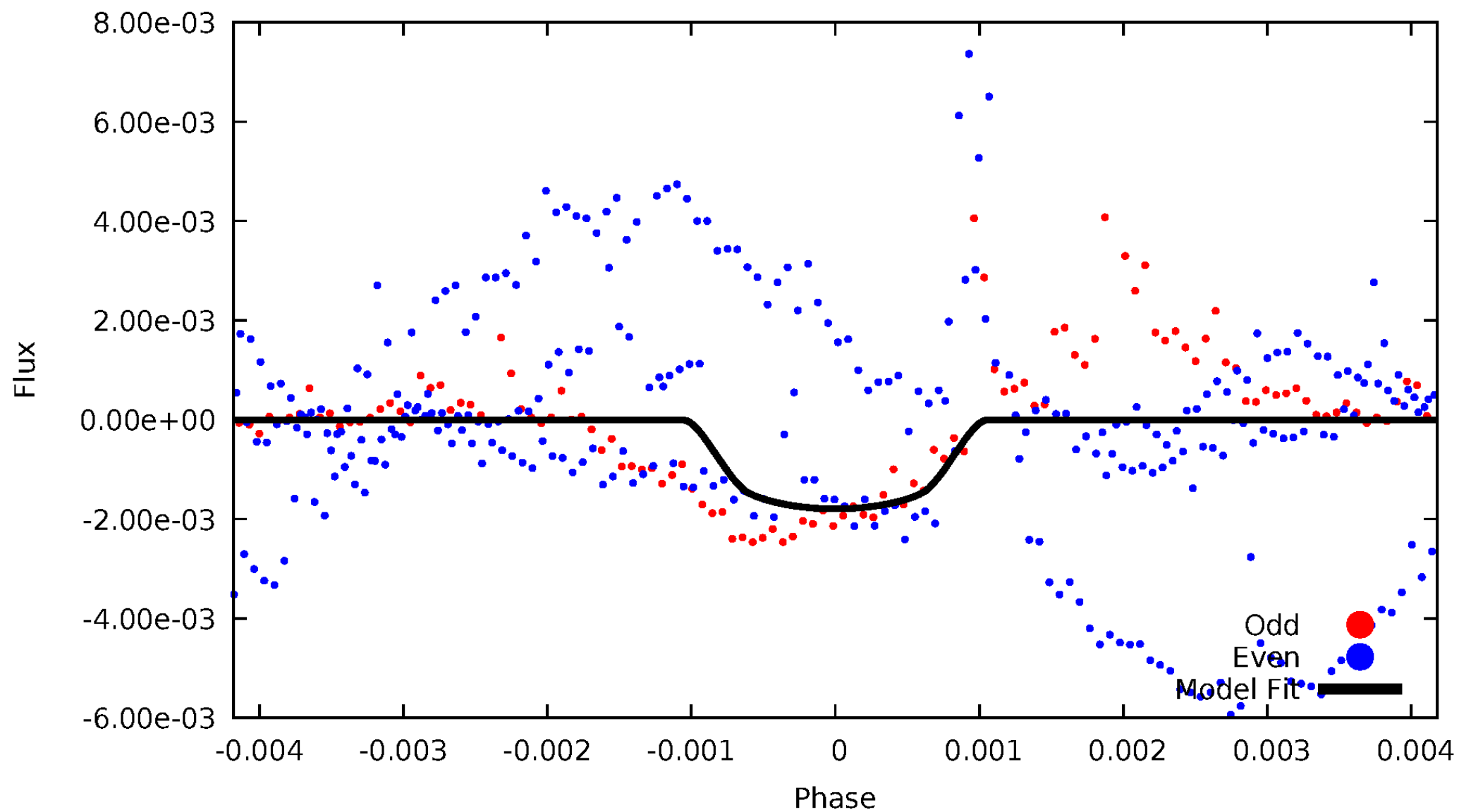


TCE 011856076-03



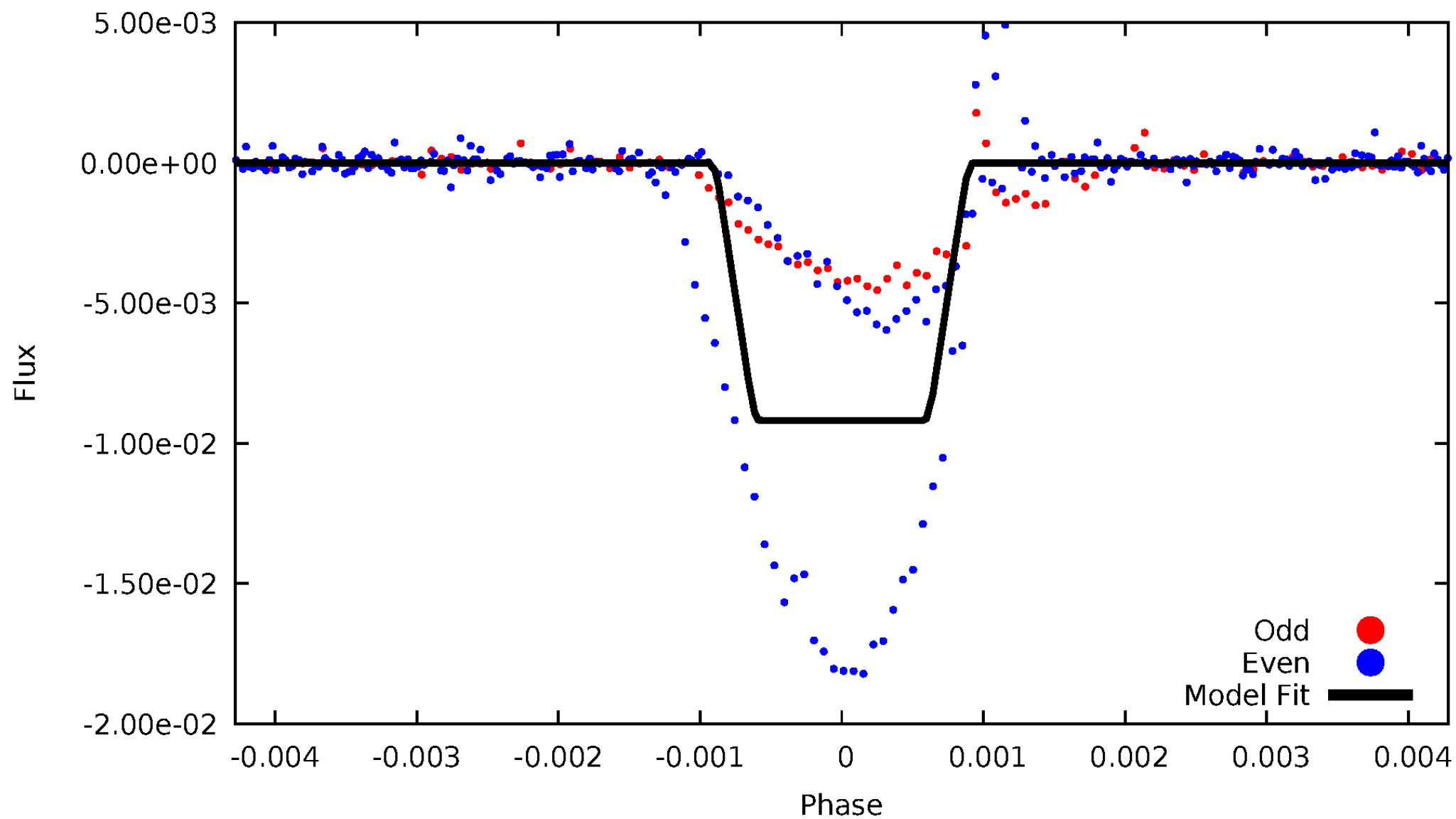
DV Odd/Even

TCE 011856076-03



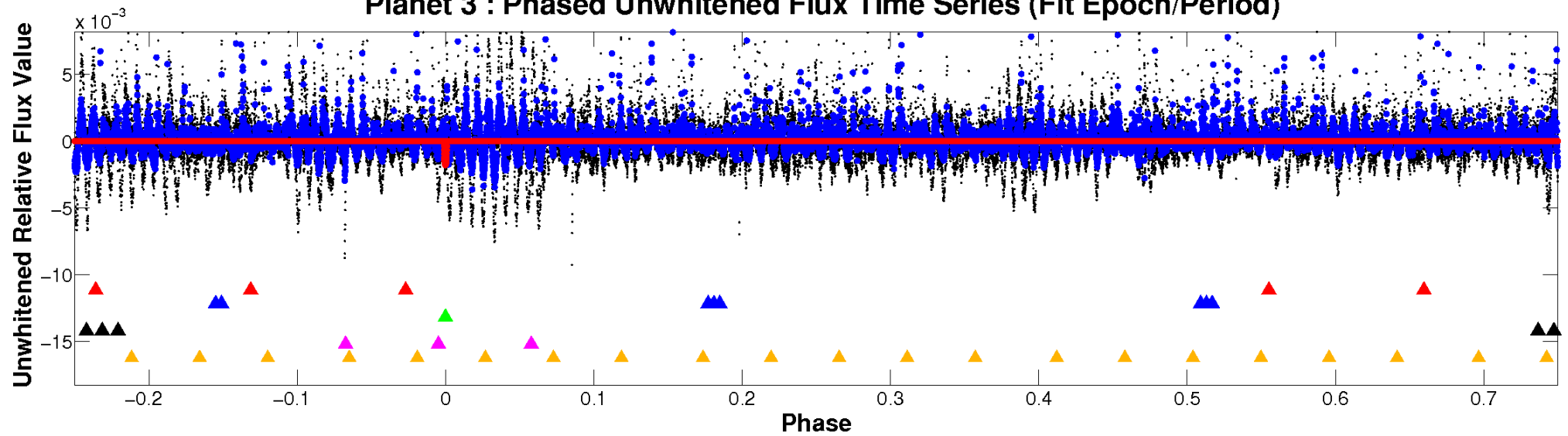
ALT Odd/Even

TCE 011856076-03

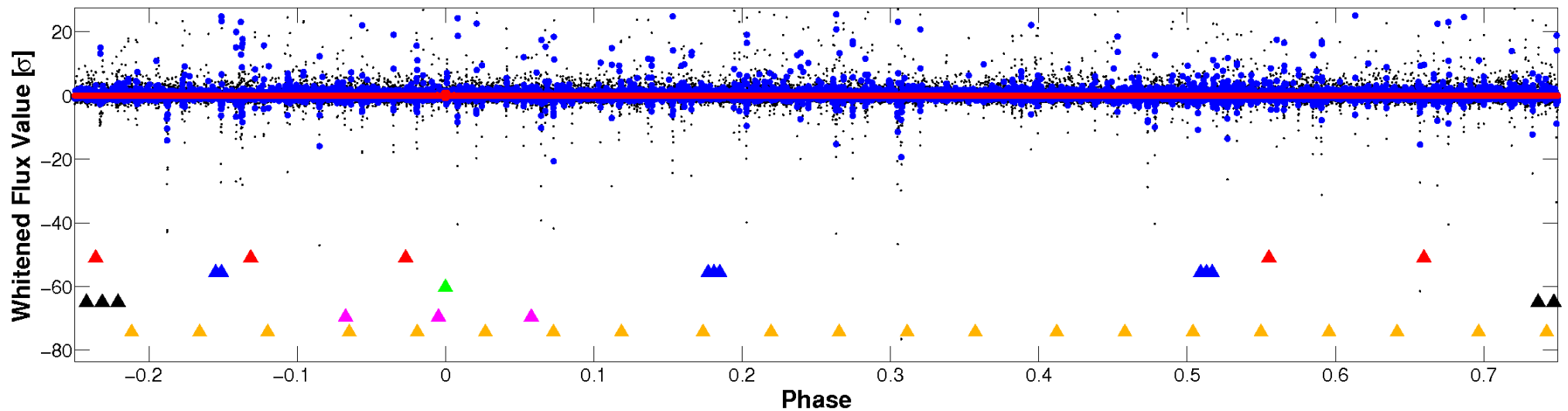


Non-Whitened Vs. Whitened Light Curve

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

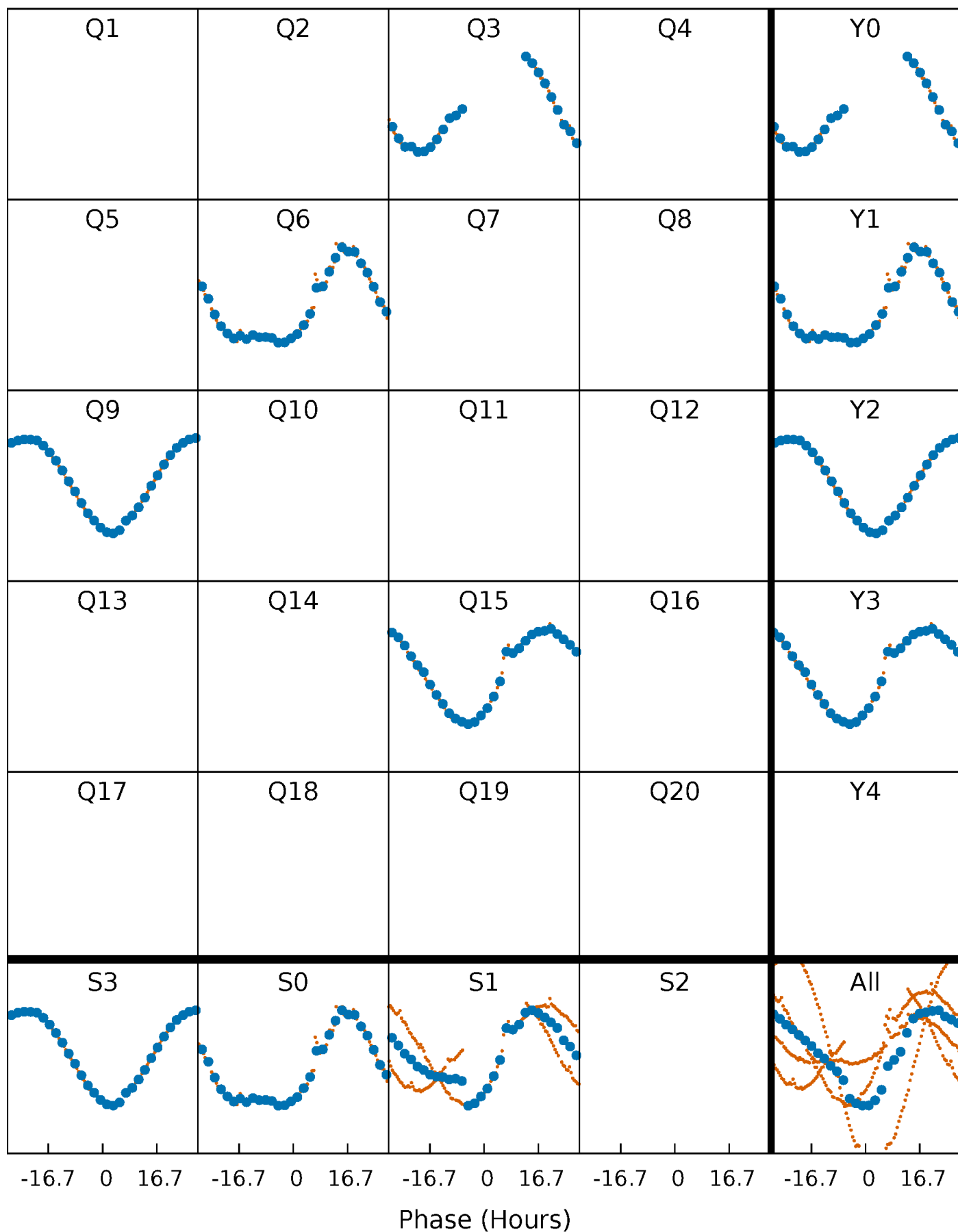


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



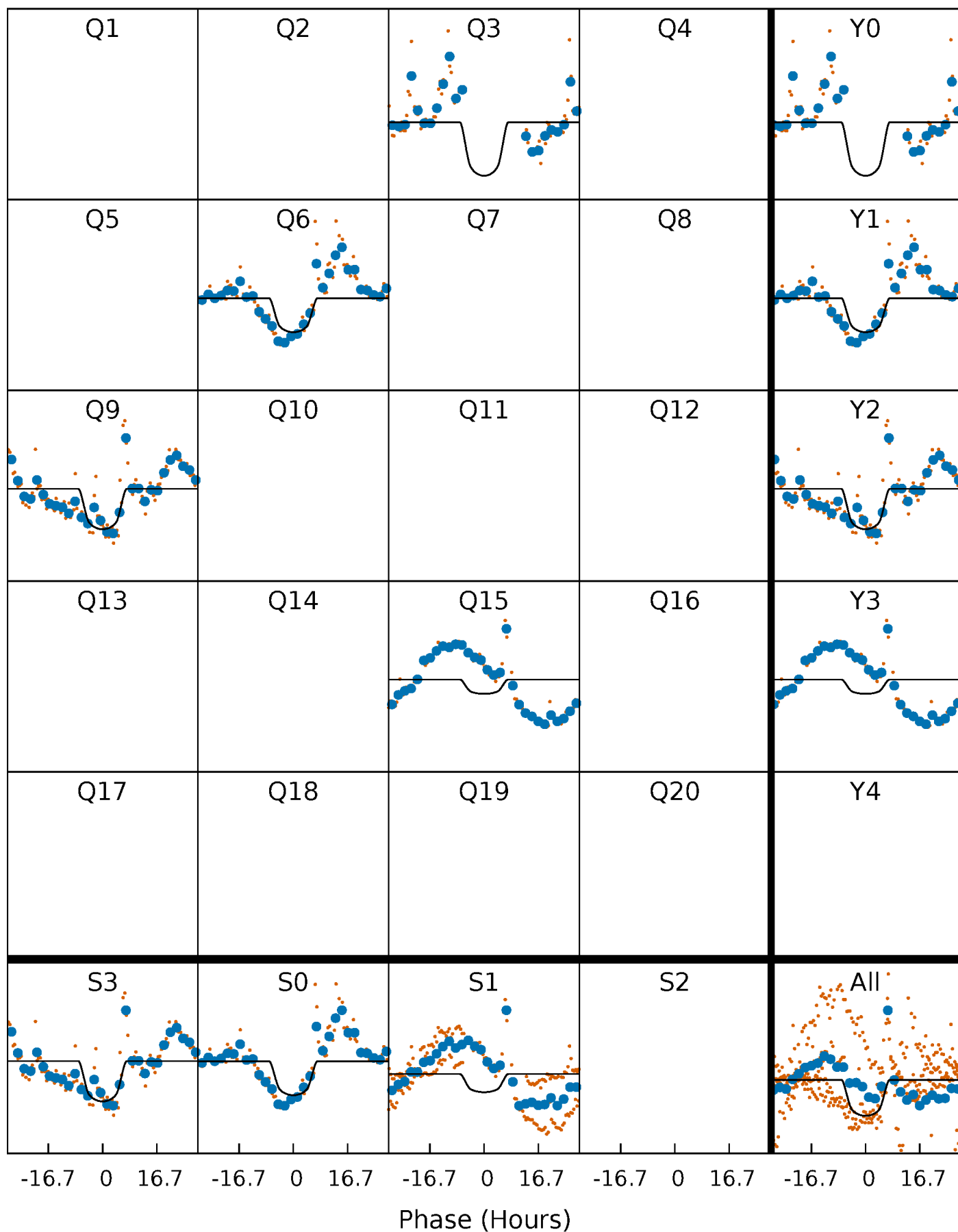
PDC Quarter-Phased Transit Curves

TCE 011856076-03 P=292.339231 Days $T_0=280.810114$ (BKJD)



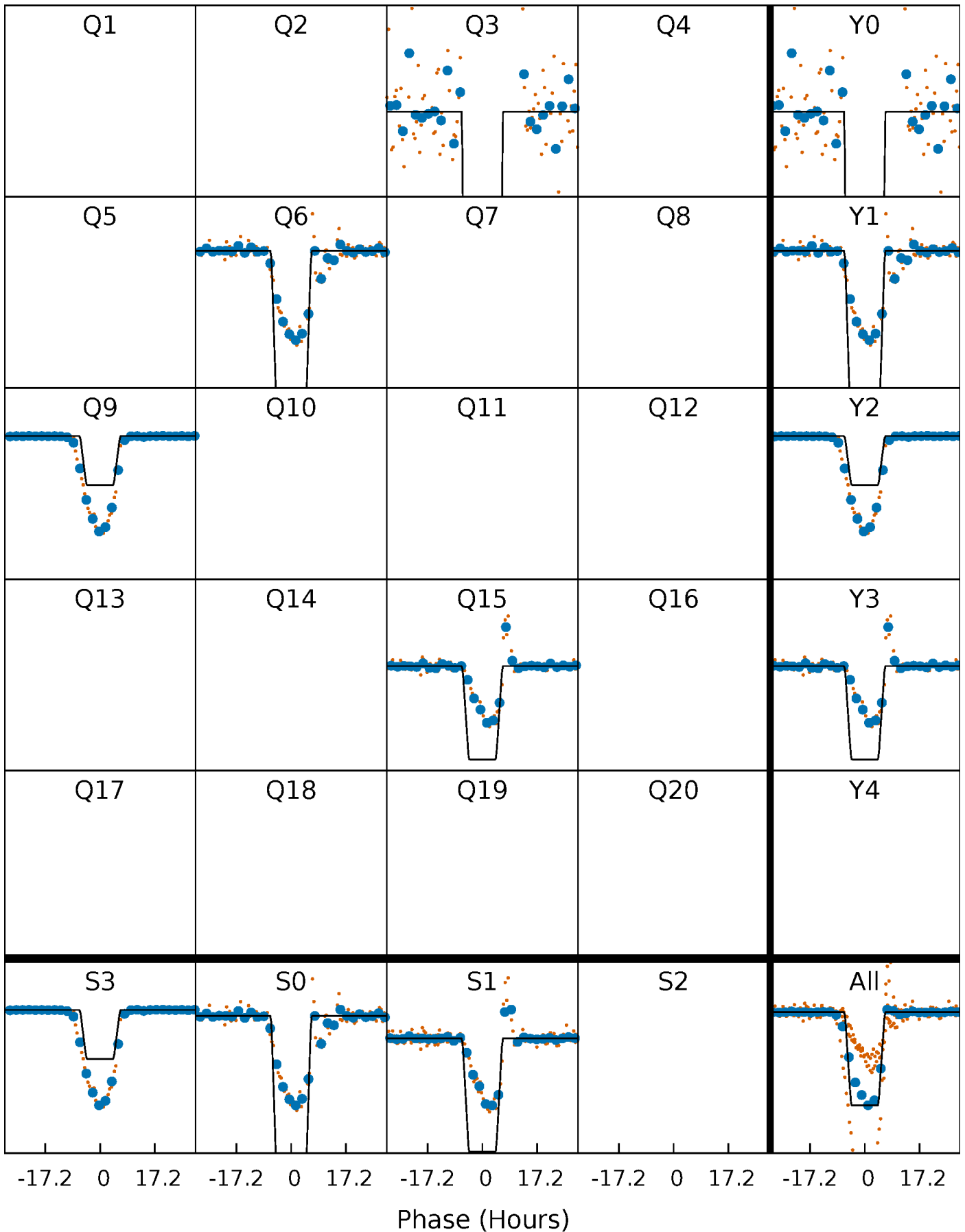
DV Quarter-Phased Transit Curves

TCE 011856076-03 P=292.339231 Days $T_0=280.810114$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

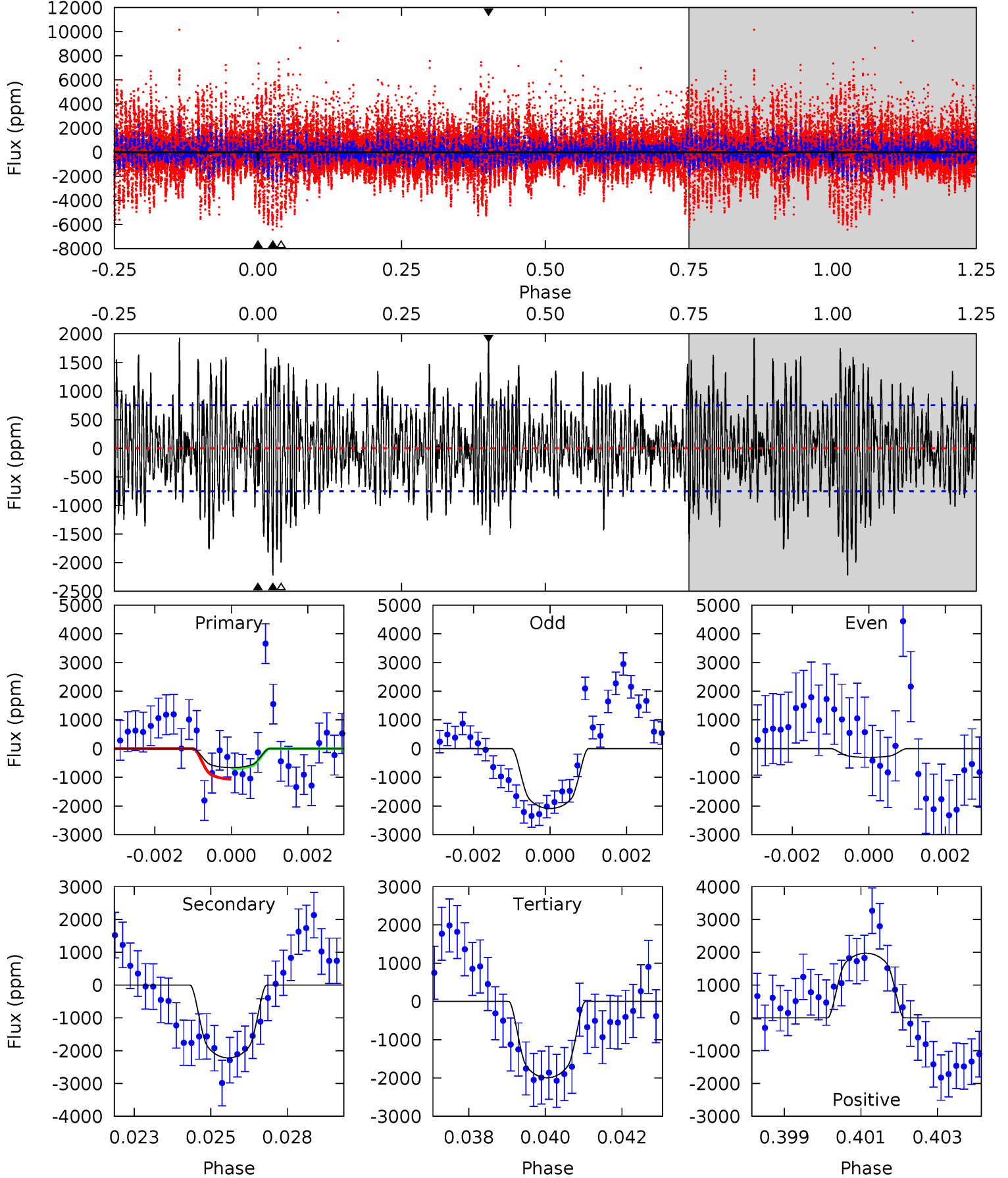
TCE 011856076-03 P=292.329320 Days $T_0=280.824189$ (BKJD)



DV Model-Shift Uniqueness Test

011856076-03, P = 292.339231 Days, E = 280.810114 Days

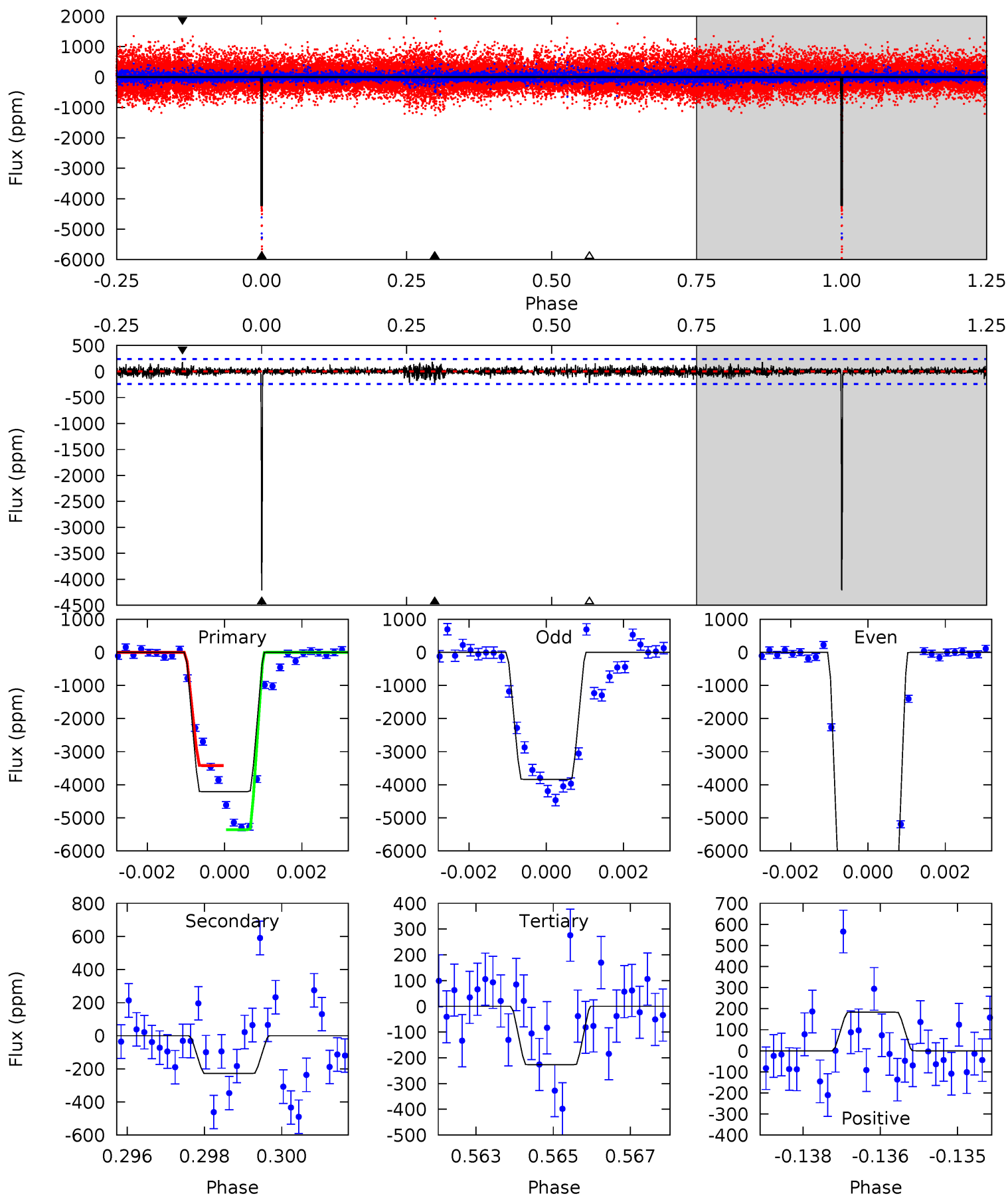
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.68 | 15.7 | 14.1 | 13.9 | 5.32 | 3.07 | 4.24 | -9.41 | -9.24 | 1.60 | 1.77 | 5.69 | 6.70 | 0.47 | 1.28 |



Alt Model-Shift Uniqueness Test

011856076-03, P = 292.329320 Days, E = 280.824189 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 93.8 | 5.07 | 5.05 | 4.07 | 5.35 | 3.12 | 0.85 | 88.8 | 89.7 | 0.03 | 1.00 | 68.2 | 1.86 | 0.04 | 21.1 |



Stellar Parameters For KIC 011856076

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4270^{+150}_{-150} | $4.591^{+0.056}_{-0.018}$ | $0.360^{+0.100}_{-0.300}$ | $0.700^{+0.024}_{-0.061}$ | $0.696^{+0.042}_{-0.052}$ | $2.859^{+0.663}_{-0.192}$ |
| | +4%/-4% | +1%/-0% | +28%/-83% | +3%/-9% | +6%/-7% | +23%/-7% |
| 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 011856076-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -2220 ± 142 | $3.63^{+0.41}_{-0.41}$ | 250^{+10}_{-9} | 4241^{+243}_{-204} | 54705^{+15302}_{-10864} |
| Alt. | -228 ± 45 | $7.25^{+0.46}_{-0.51}$ | 250^{+9}_{-10} | 2465^{+85}_{-97} | 1409^{+344}_{-306} |

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

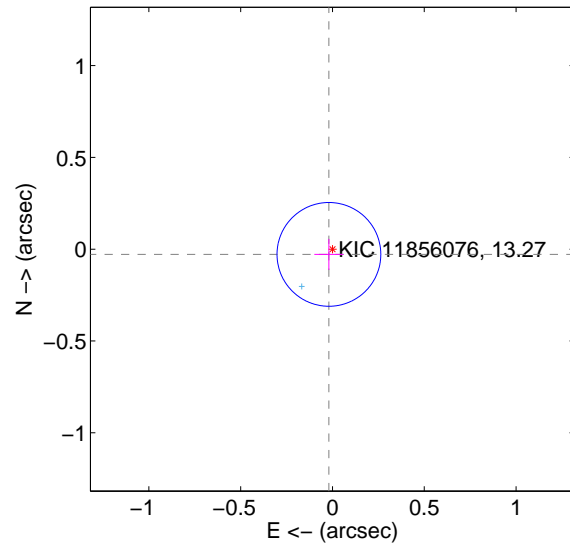
Supplemental centroid analysis for 011856076-03. Kepler magnitude: 13.27. Transit SNR 5.68

There are 2 quarters with good PRF difference image offsets

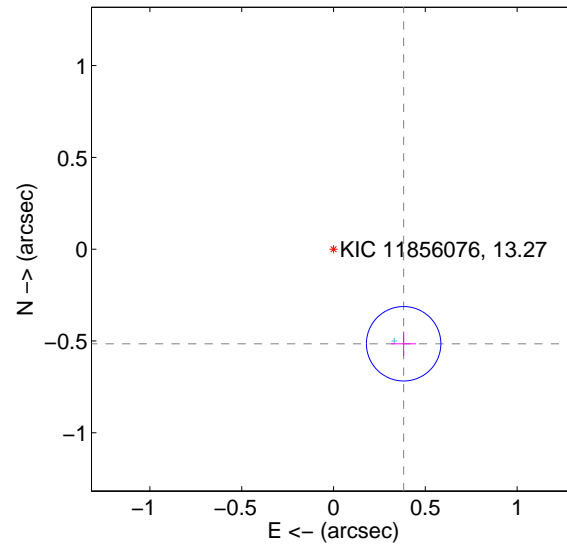
The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.034 ± 0.094 | 0.36 | 0.019 ± 0.079 | -0.028 ± 0.084 |
| PRF-fit source offset from KIC position | 0.641 ± 0.068 | 9.49 | -0.382 ± 0.068 | -0.515 ± 0.067 |
| photometric centroid source offset | 0.32 ± 0.26 | 1.24 | -0.25 ± 0.25 | -0.20 ± 0.27 |

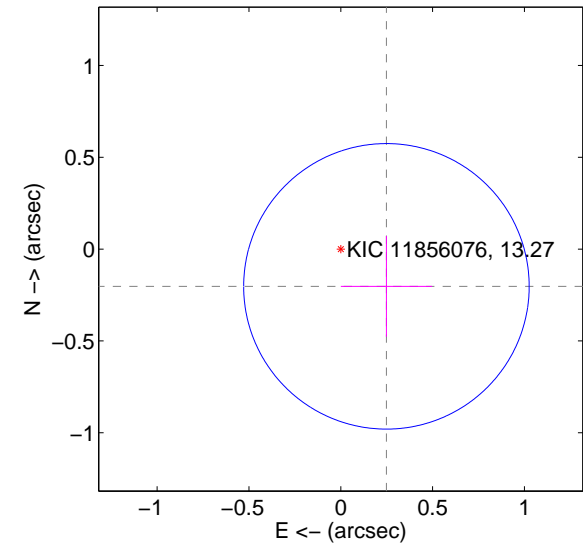
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

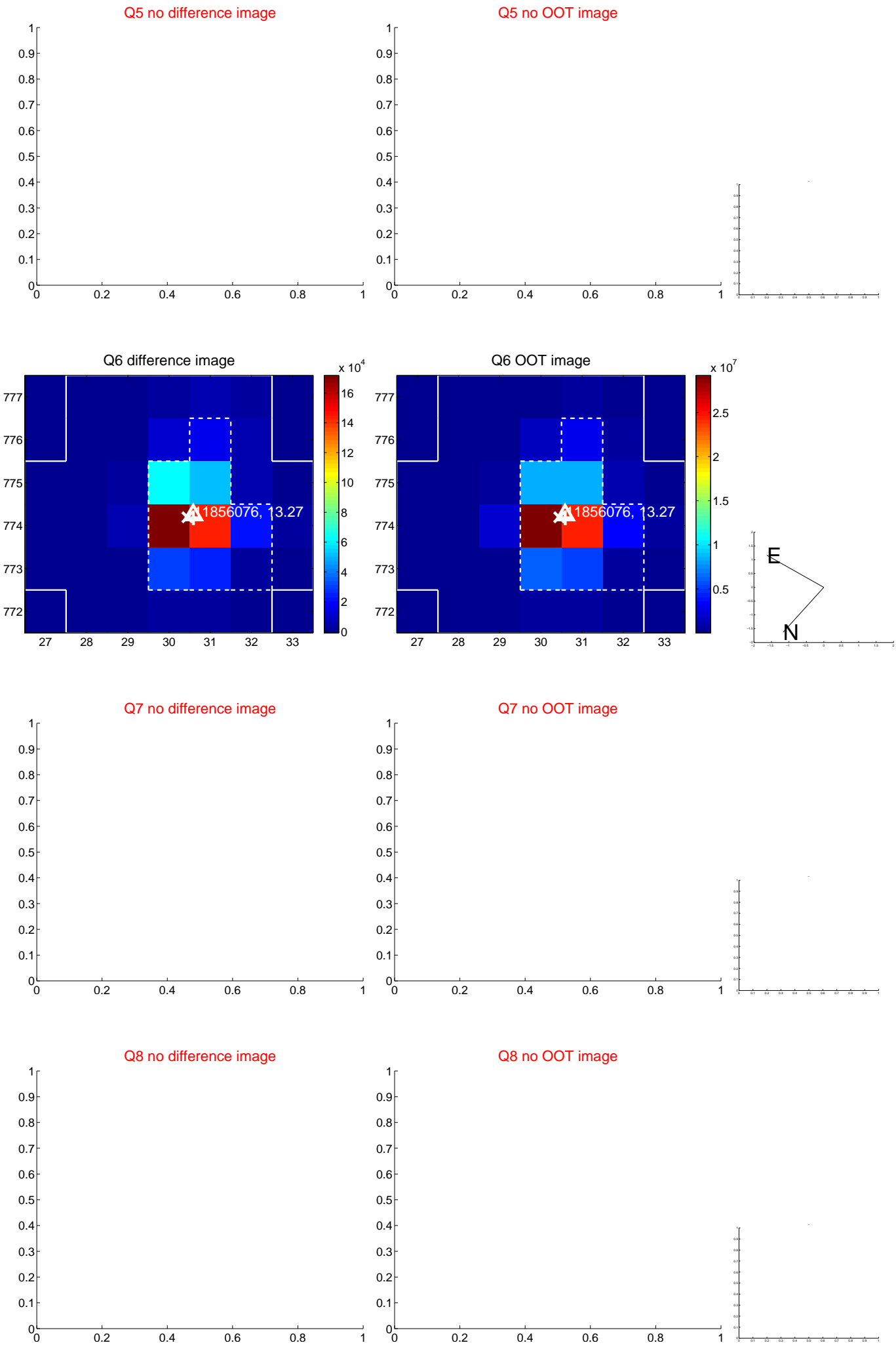


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

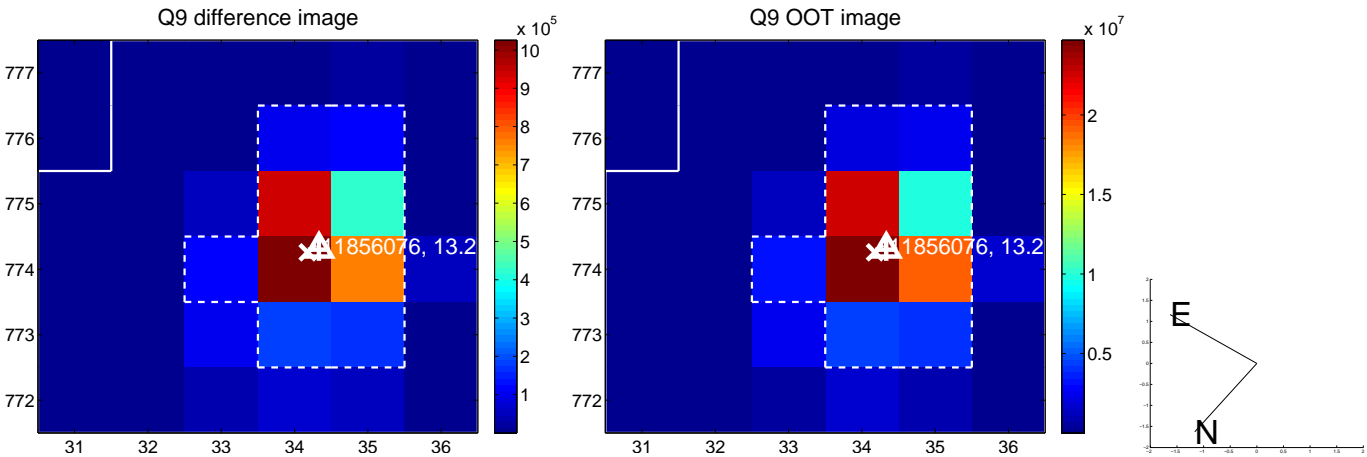
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



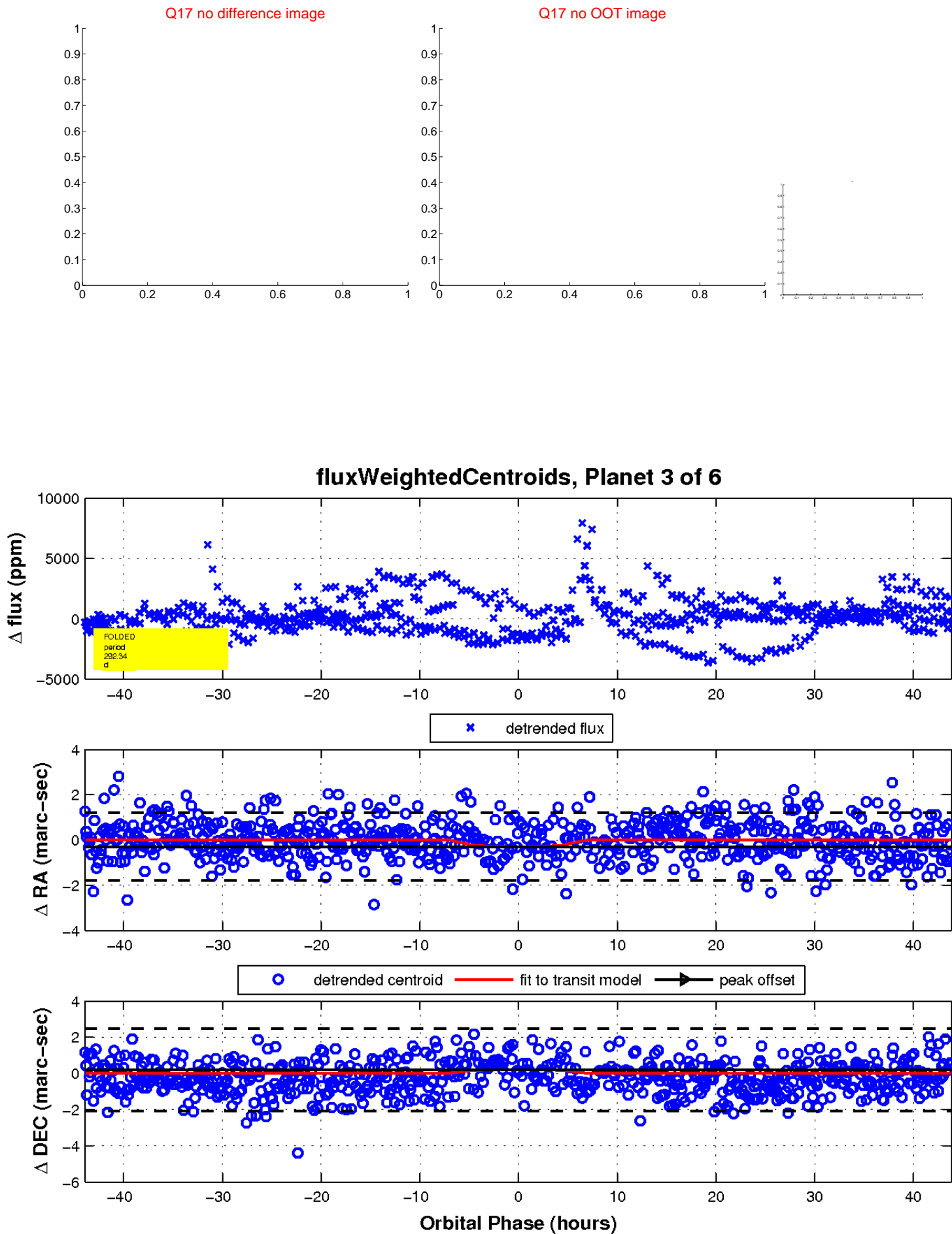
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

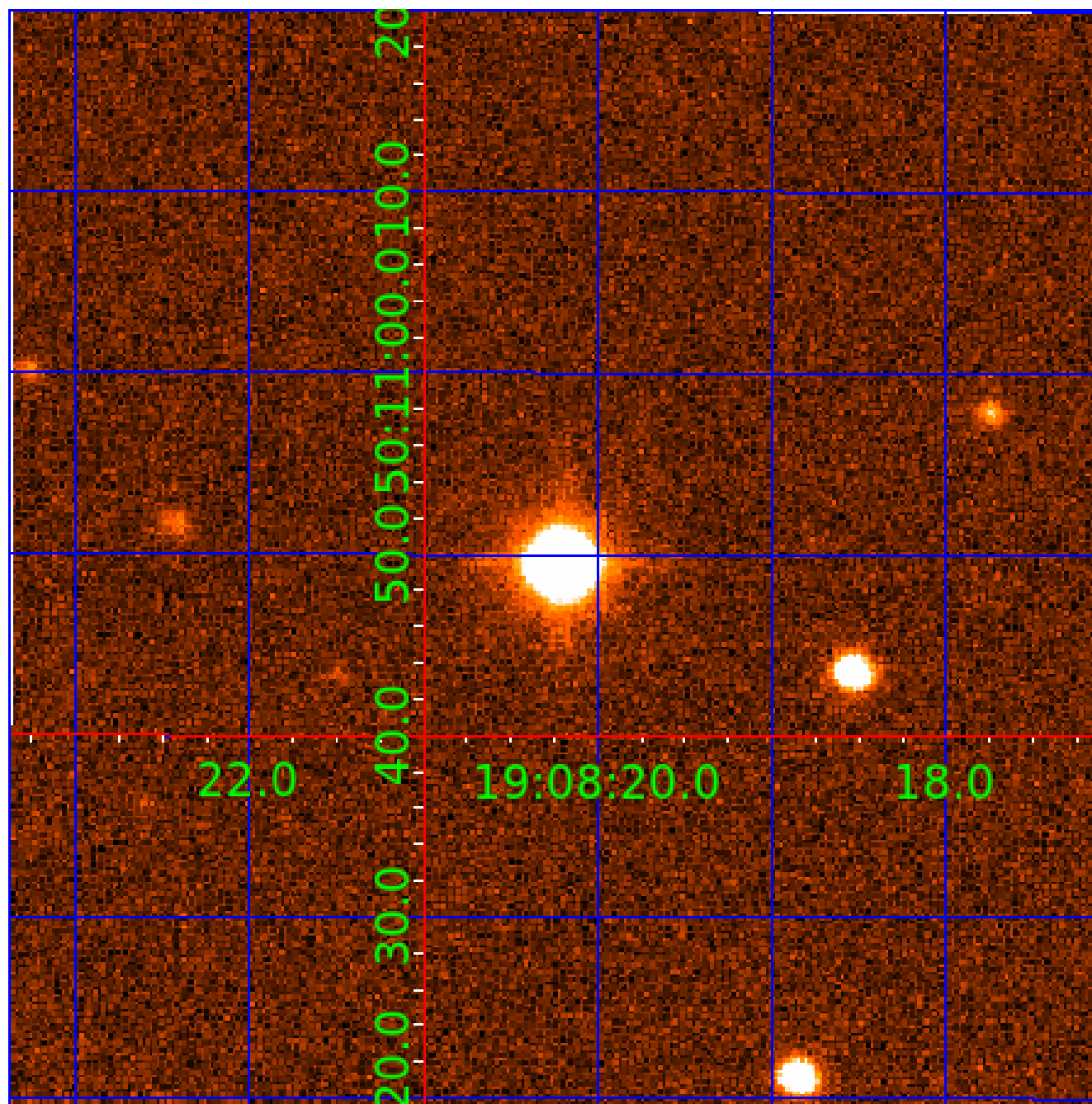


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011856076

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011856076-02 | OBS | No | 195.273527 | 137.313982 | 1265.6 | 12.919 | 11.1 | 6.5 | 0.70 | 4270 | 2.55 | 0.43 |
| 011856076-03 | OBS | No | 292.339232 | 280.810114 | 1794.6 | 14.655 | 15.0 | 5.7 | 0.70 | 4270 | 3.68 | 0.25 |
| 011856076-04 | OBS | No | 295.447291 | 203.838375 | 1127.4 | 4.469 | 13.3 | 6.8 | 0.70 | 4270 | 2.57 | 0.25 |
| 011856076-05 | OBS | No | 566.377742 | 297.720726 | 1308.3 | 4.464 | 13.3 | 6.6 | 0.70 | 4270 | 2.68 | 0.10 |
| 011856076-06 | OBS | No | 69.730805 | 176.042272 | 393.4 | 3.185 | 10.5 | 4.7 | 0.70 | 4270 | 1.63 | 1.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011856076-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS |
| 011856076-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011856076-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS |

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

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

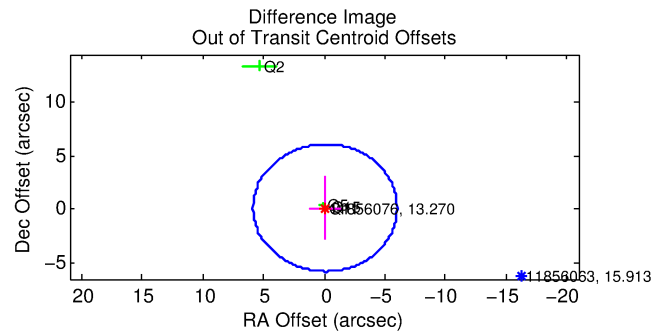
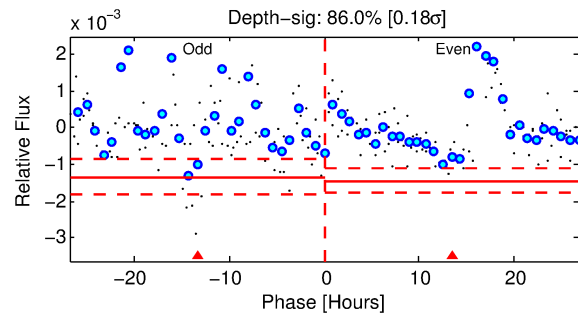
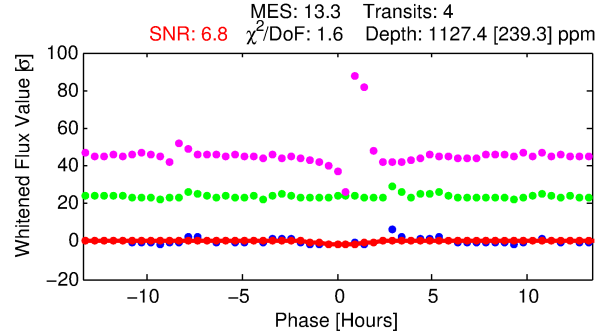
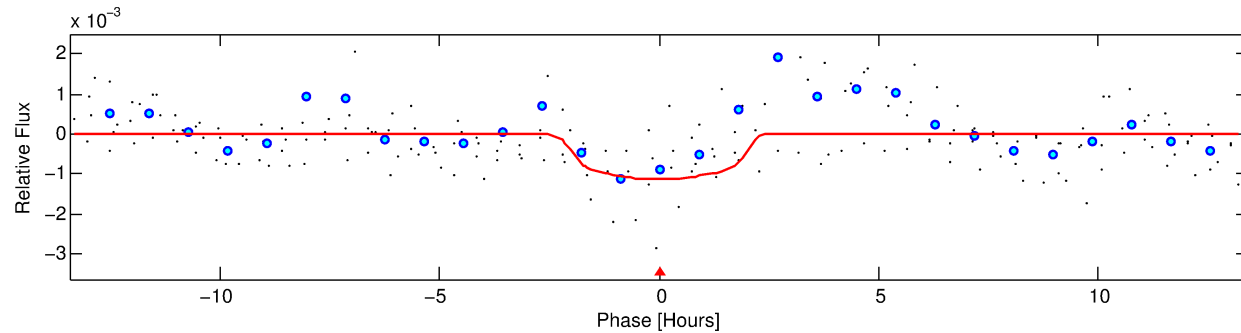
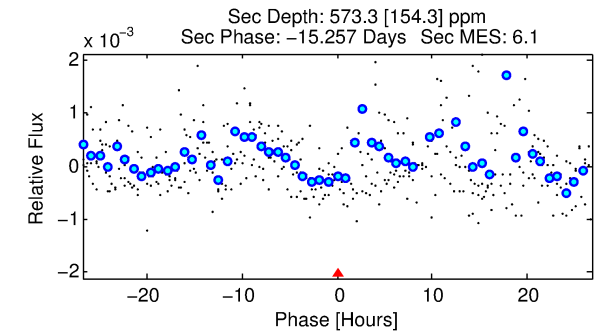
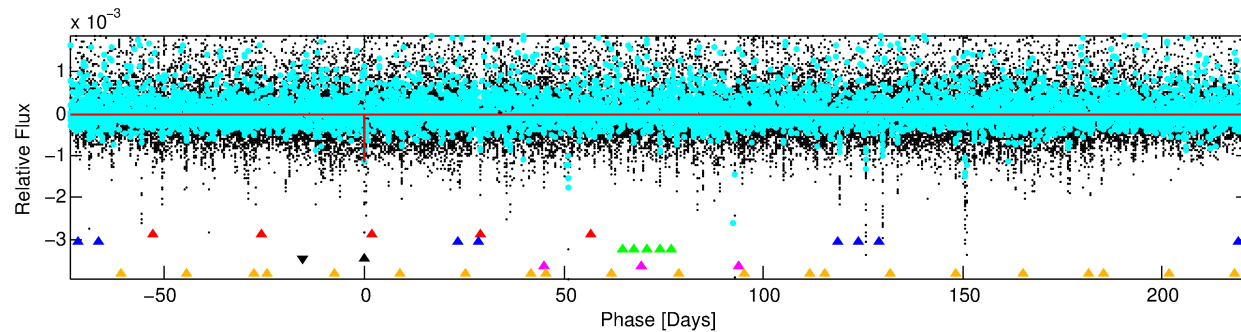
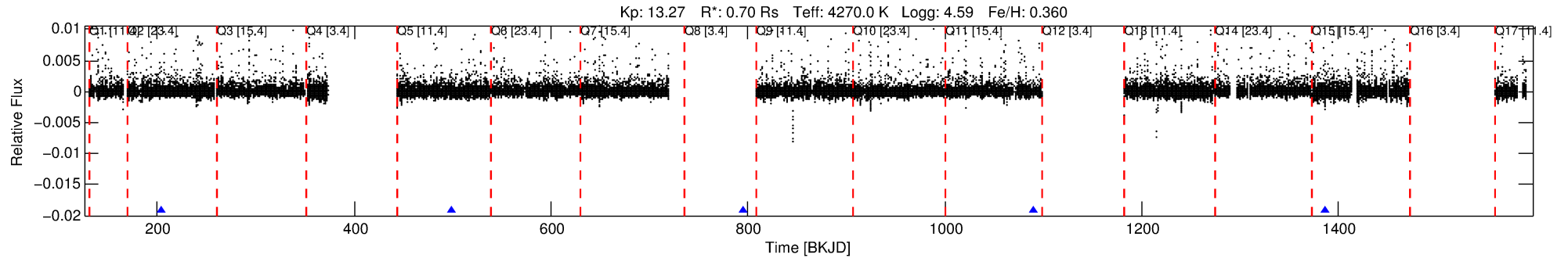
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011856076-04

No Significant Match Found

DV One-Page Summary

KIC: 11856076 Candidate: 4 of 6 Period: 295.447 d



DV Fit Results:

Period = 295.44729 [0.00428] d
Epoch = 203.8384 [0.0104] BKJD
Rp/R* = 0.0337 [0.0404]
a/R* = 360.61 [1283.38]
b = 0.75 [2.18]
Seff = 0.25 [0.04]
Teq = 180 [8] K
Rp = 2.57 [3.10] Re
a = 0.7699 [0.0556] AU
Ag = 28274.76 [68399.09] [0.41σ]
Teff = 3601 [2180] K [1.57σ]

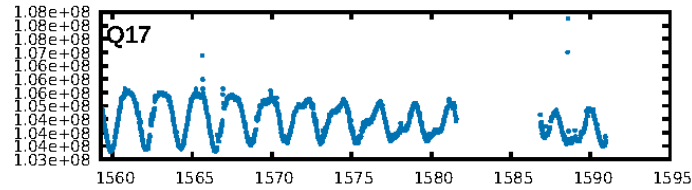
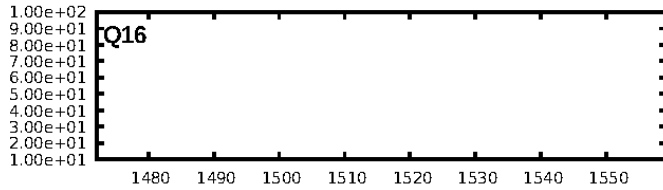
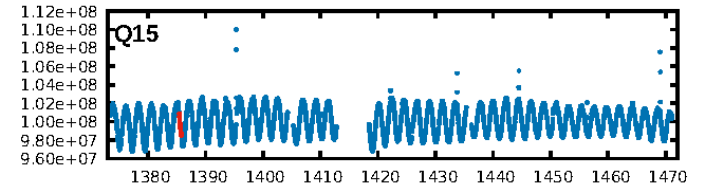
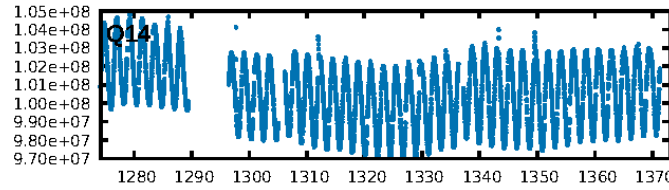
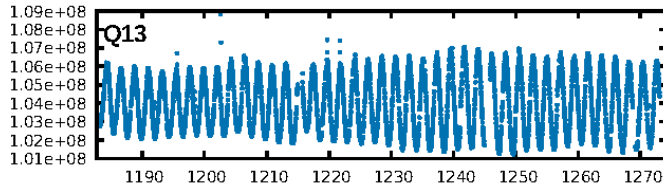
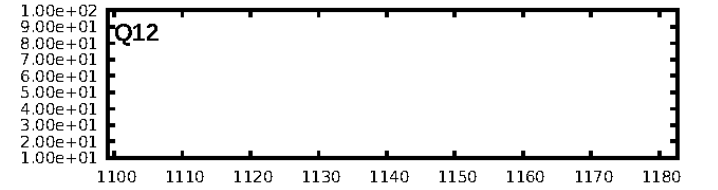
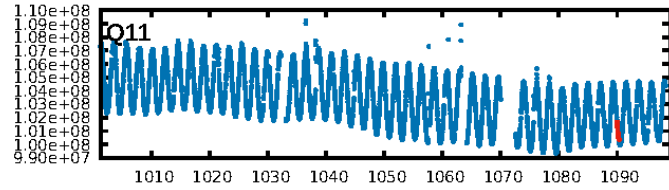
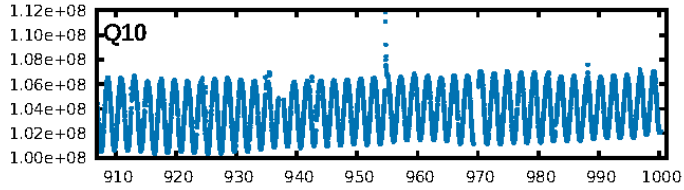
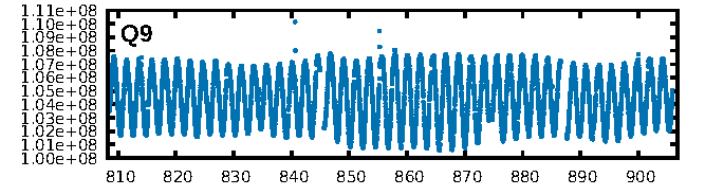
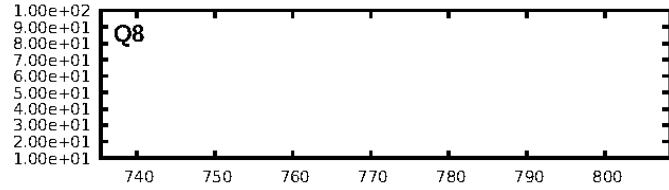
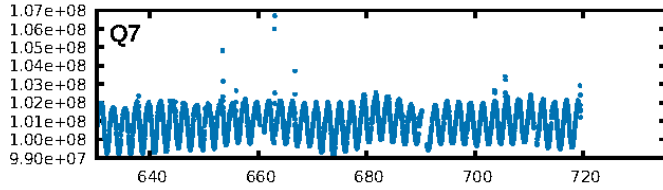
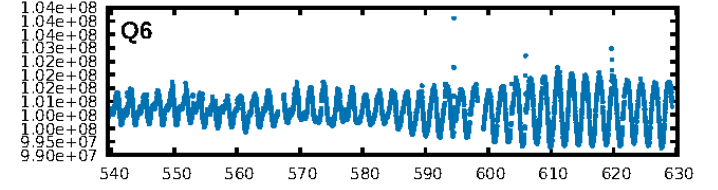
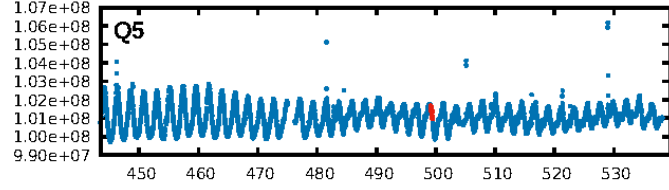
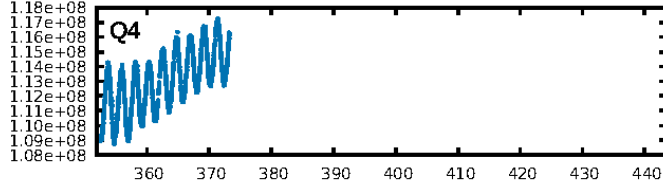
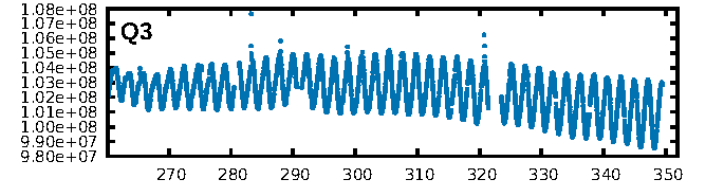
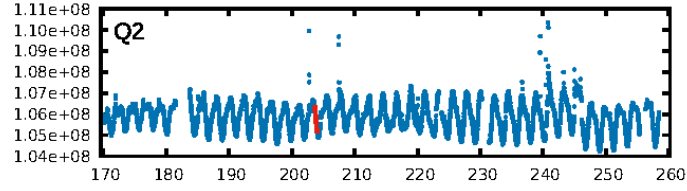
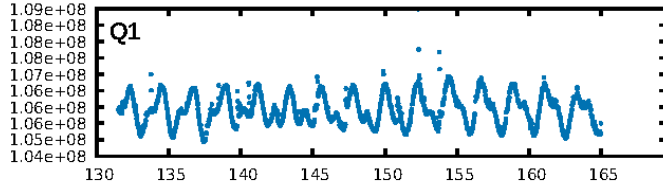
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.87σ]
LongPeriod-sig: 100.0% [86.70σ]
ModelChiSquare2-sig: 3.0%
ModelChiSquareGof-sig: 28.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.672
Centroid-sig: 4.5%
Centroid-so: 0.754 arcsec [1.54σ]
OotOffset-rm: 0.169 arcsec [0.09σ]
KicOffset-rm: 0.434 arcsec [0.29σ]
OotOffset-st: 1/2/0/1 [4]
KicOffset-st: 1/2/0/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

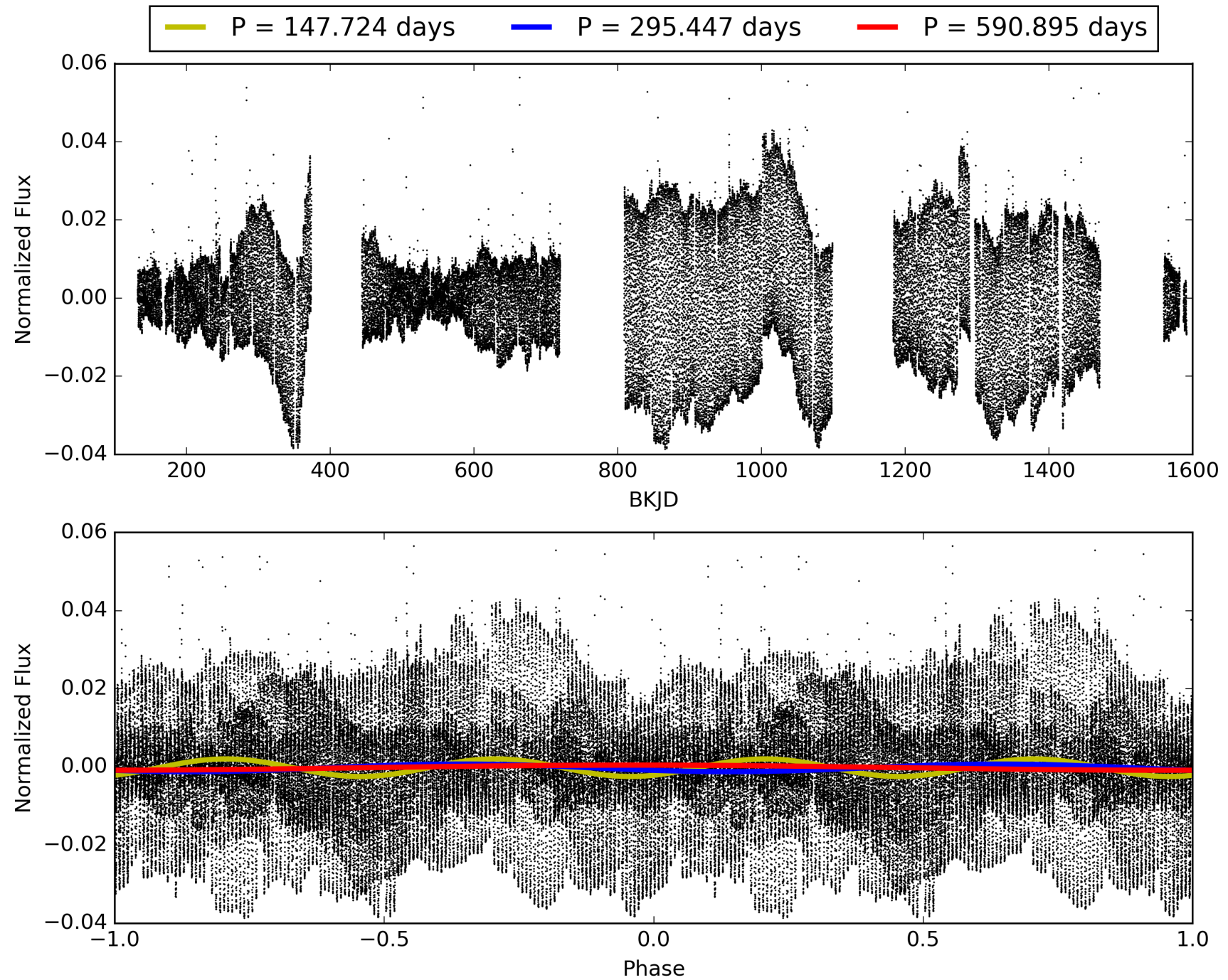
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:06:20 Z

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

TCE 011856076-04, PDC Light Curves

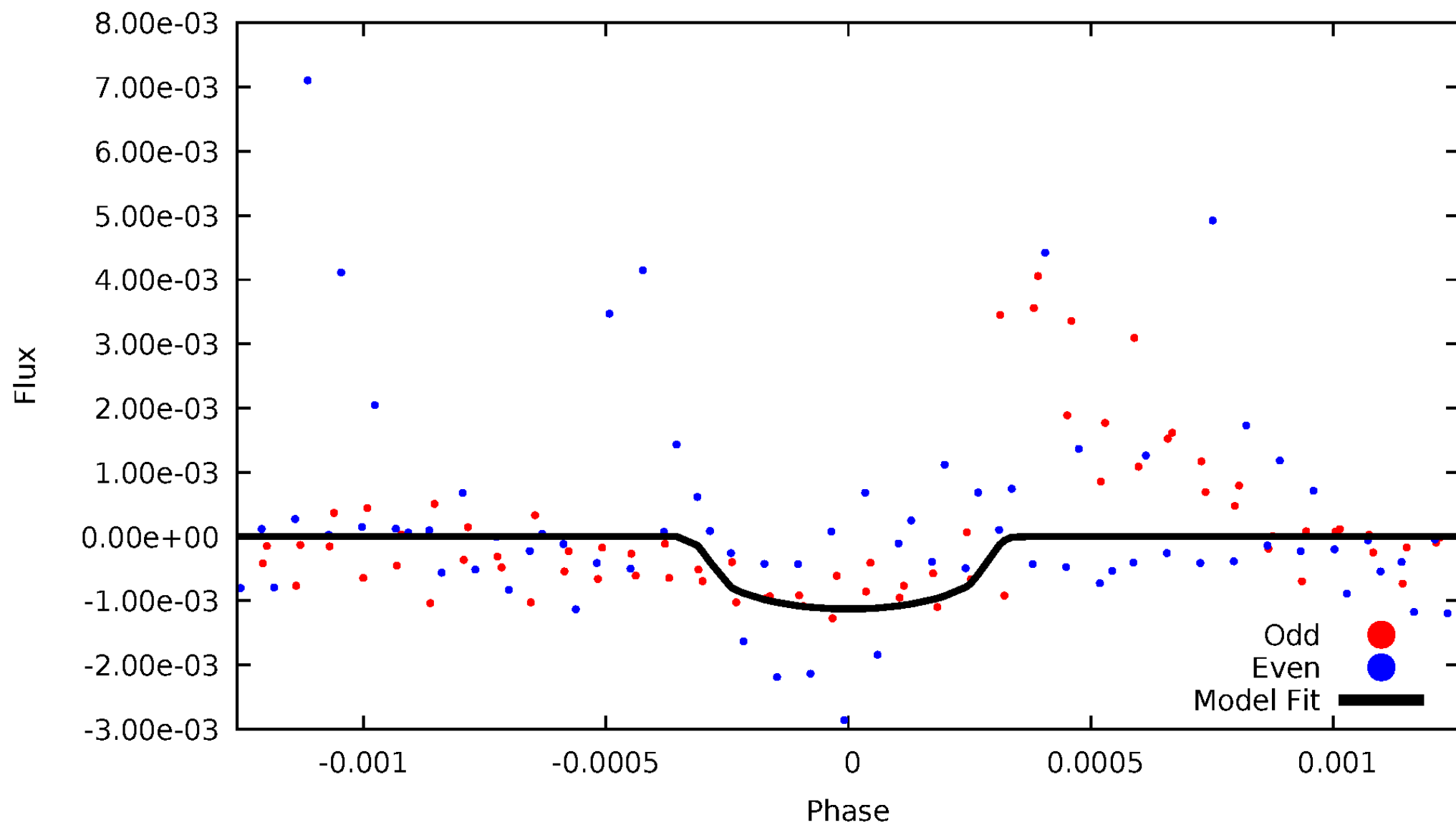


TCE 011856076-04



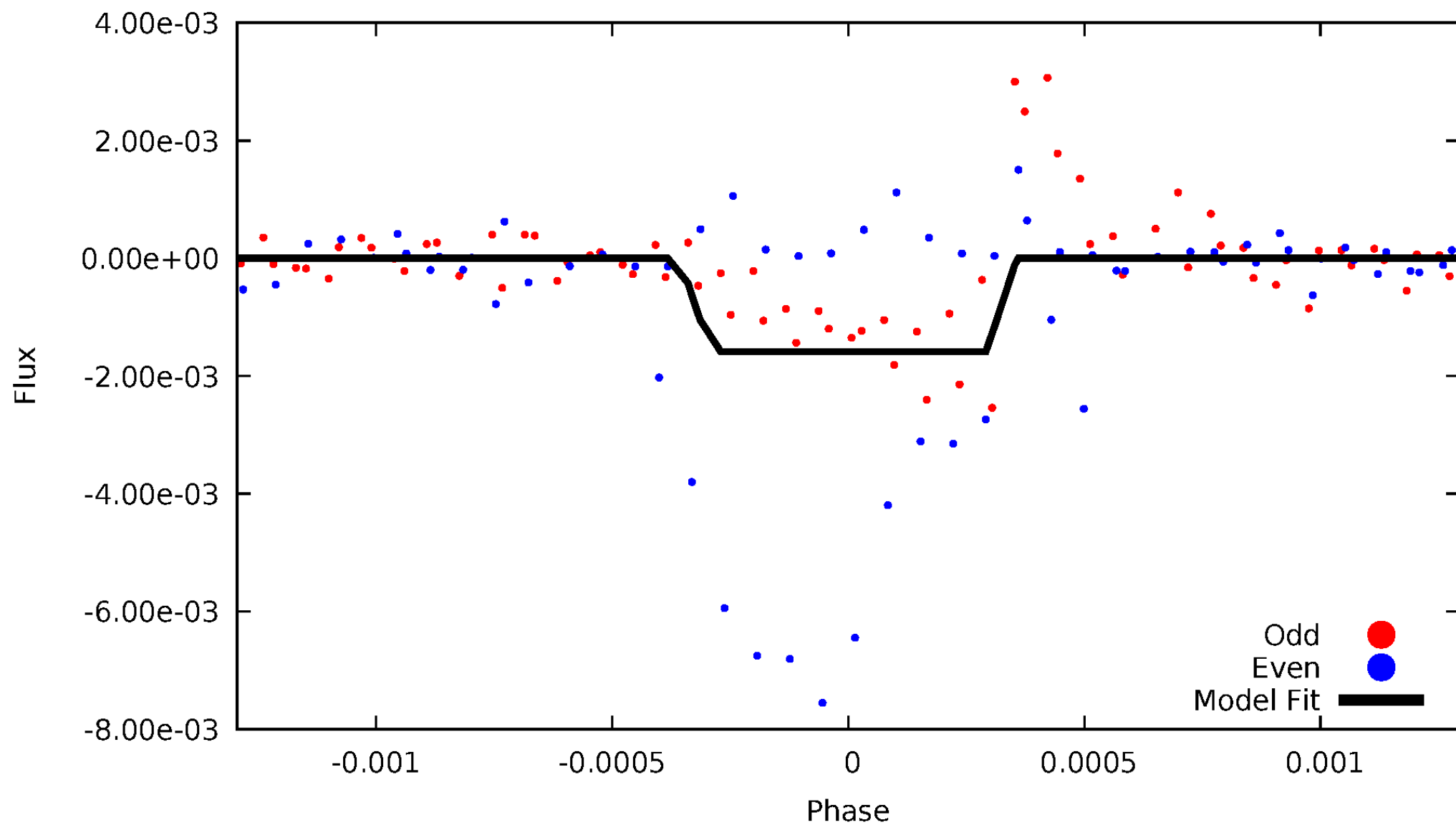
DV Odd/Even

TCE 011856076-04



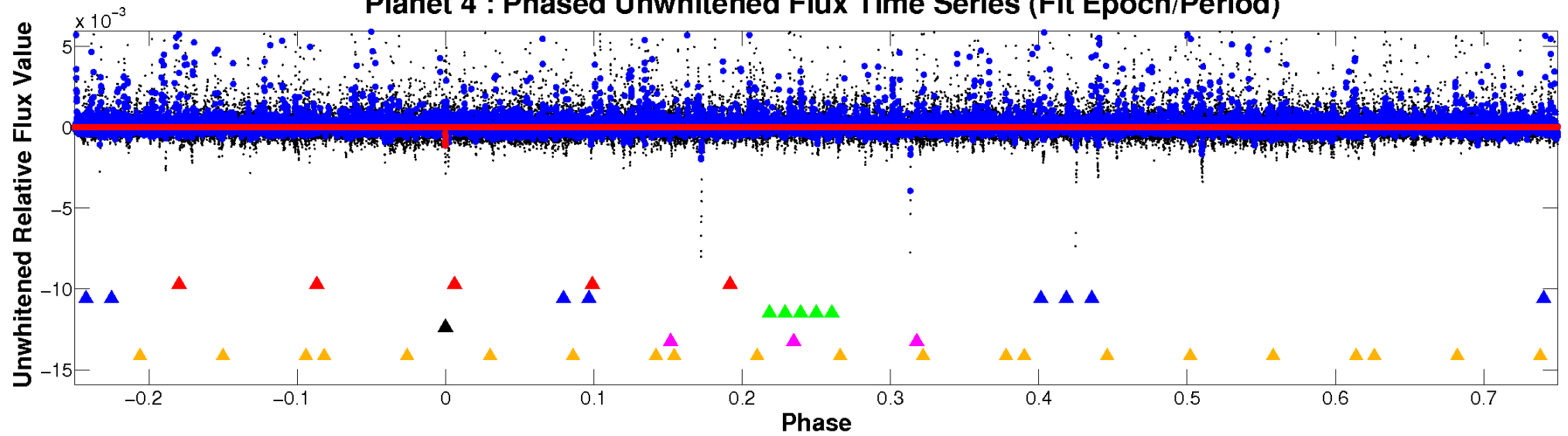
ALT Odd/Even

TCE 011856076-04

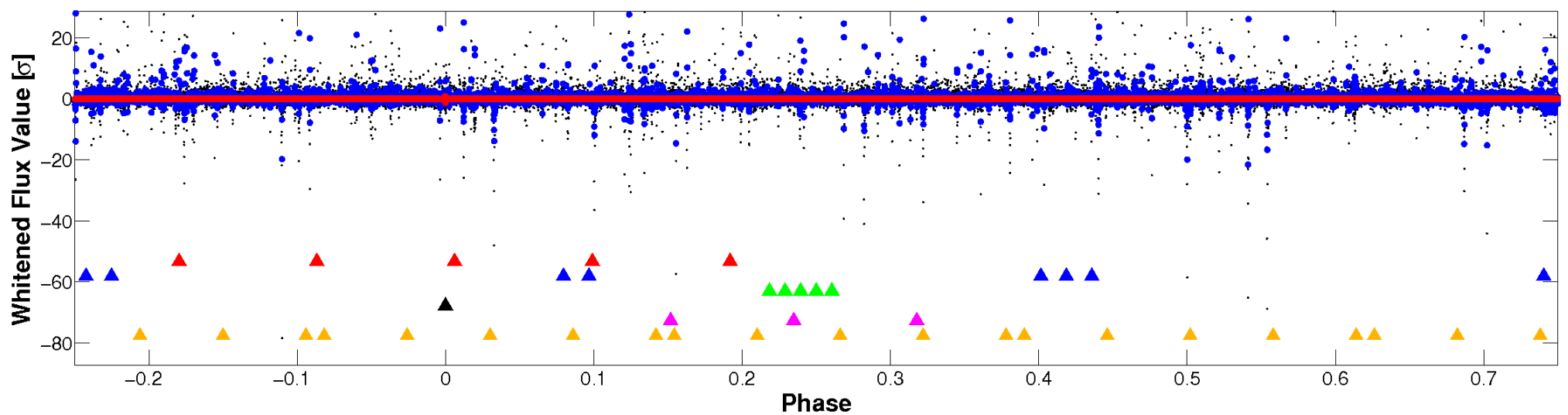


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

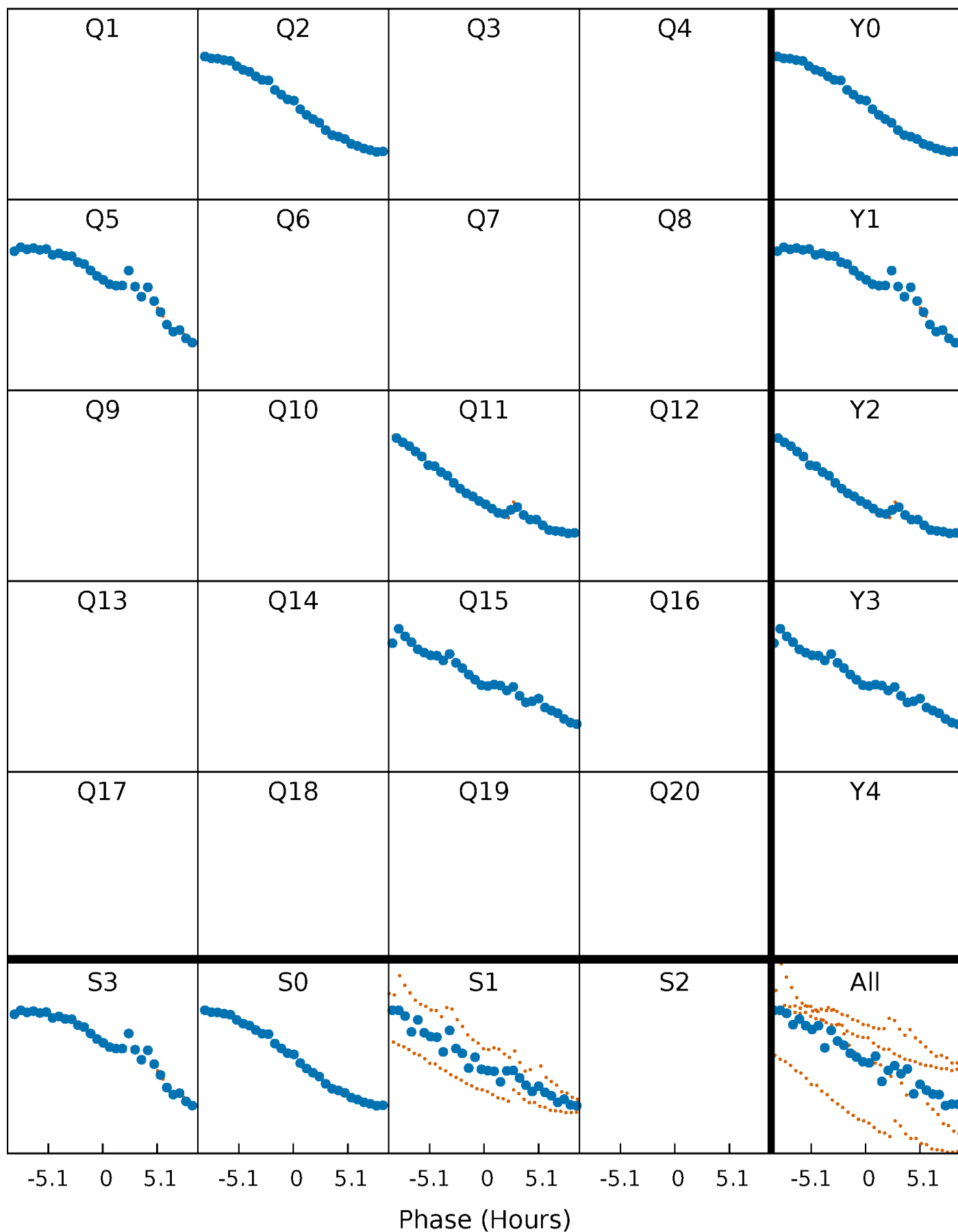


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



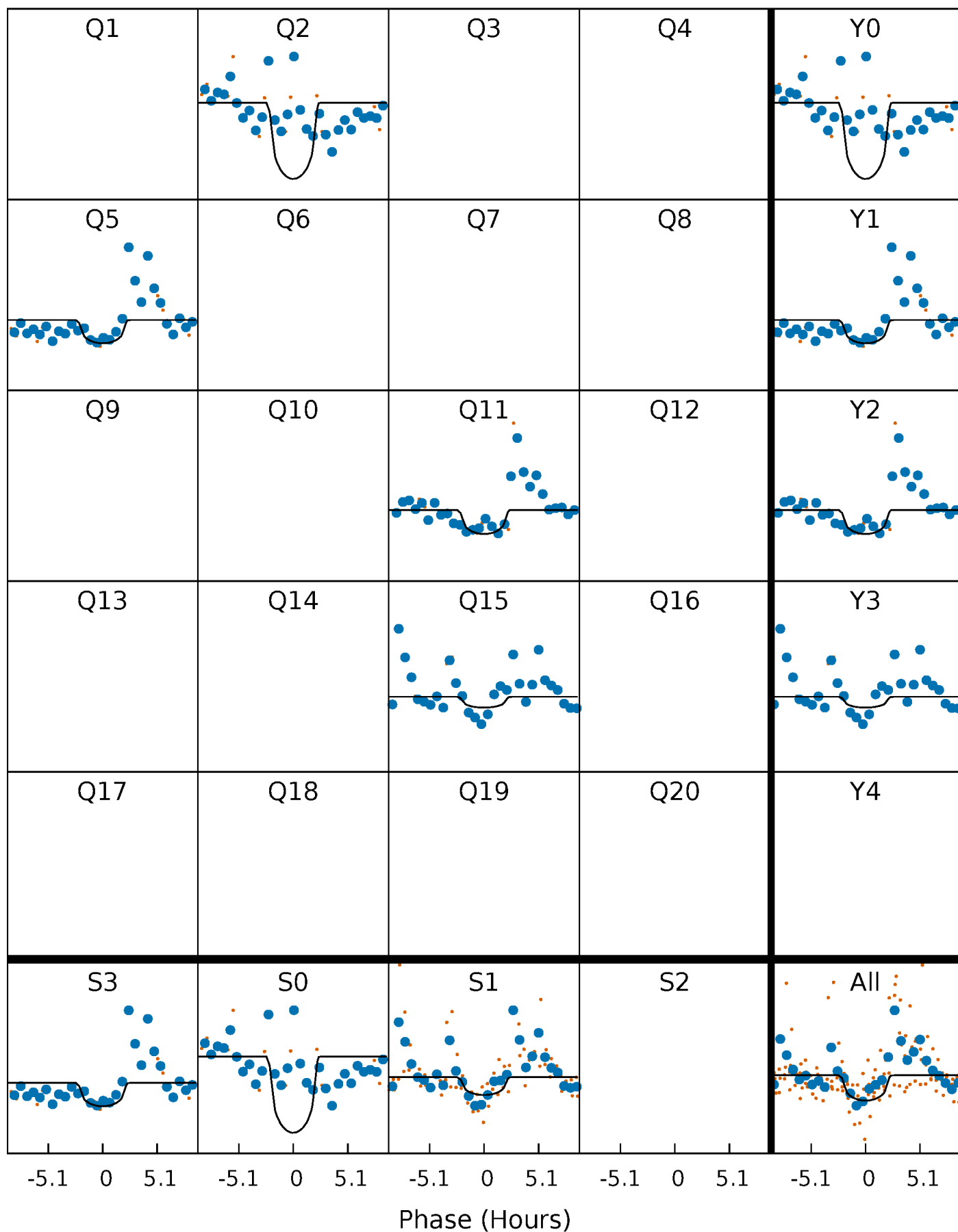
PDC Quarter-Phased Transit Curves

TCE 011856076-04 $P=295.447291$ Days $T_0=203.838375$ (BKJD)



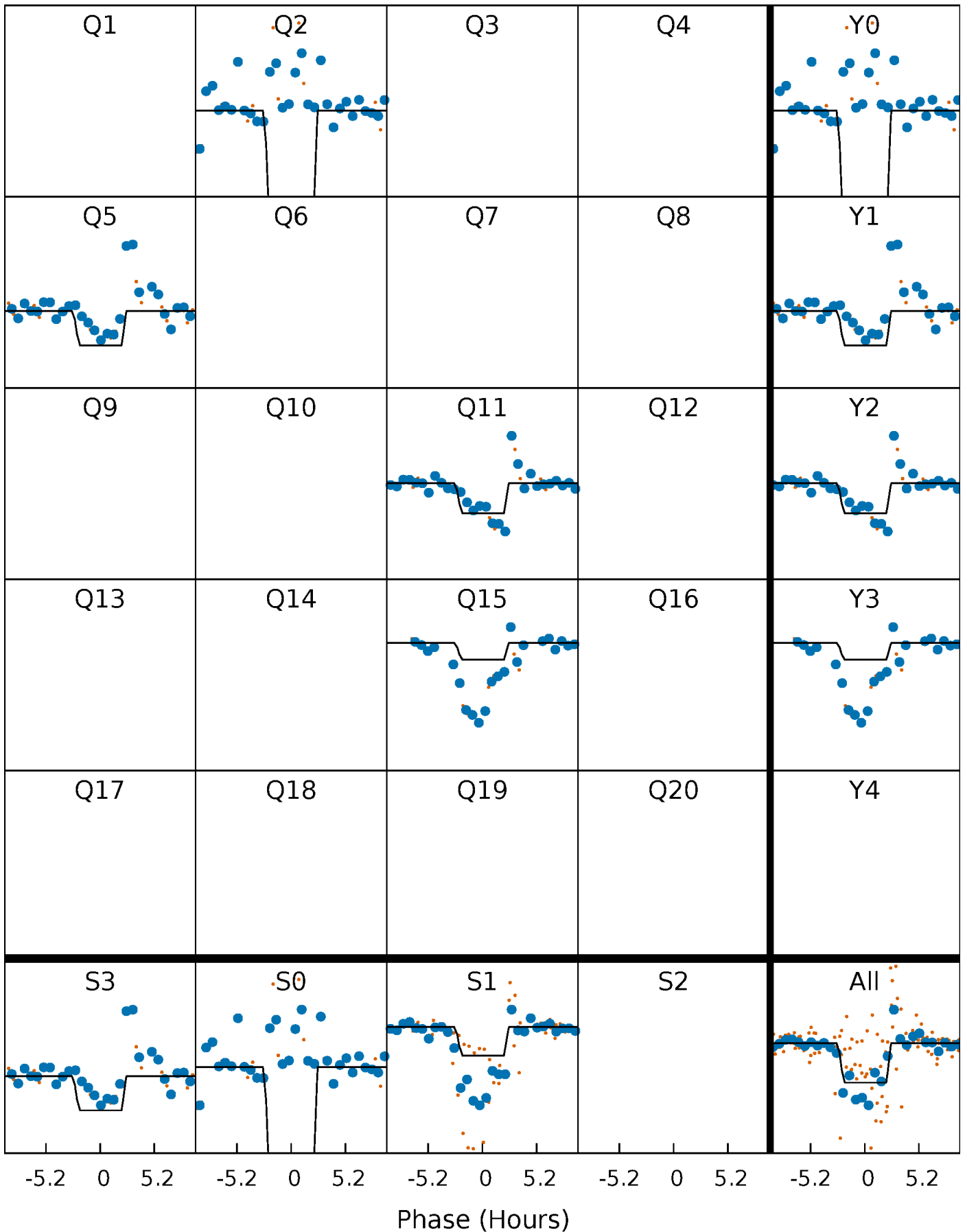
DV Quarter-Phased Transit Curves

TCE 011856076-04 $P=295.447291$ Days $T_0=203.838375$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

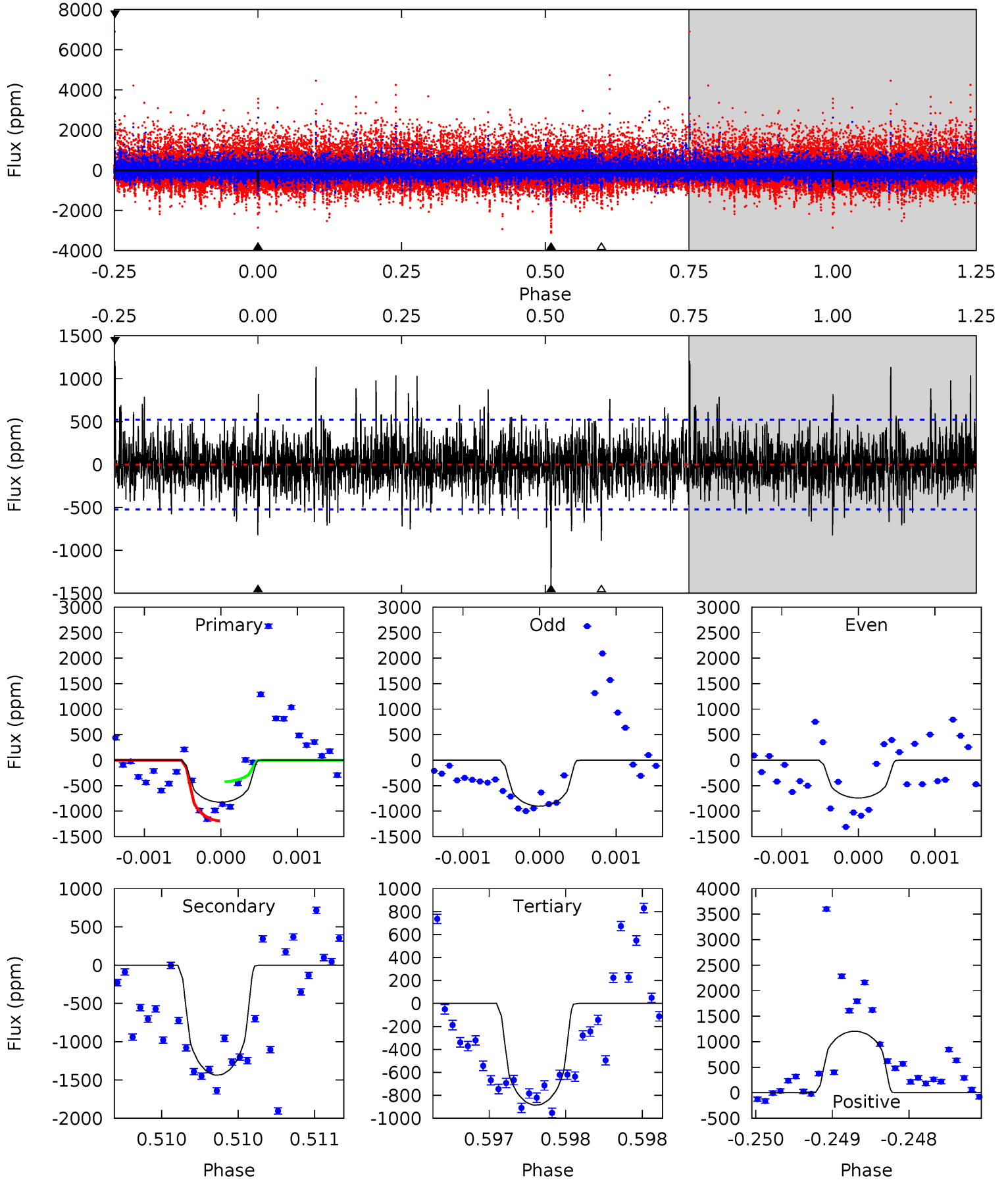
TCE 011856076-04 P=295.455655 Days $T_0=203.818468$ (BKJD)



DV Model-Shift Uniqueness Test

011856076-04, P = 295.447291 Days, E = 203.838375 Days

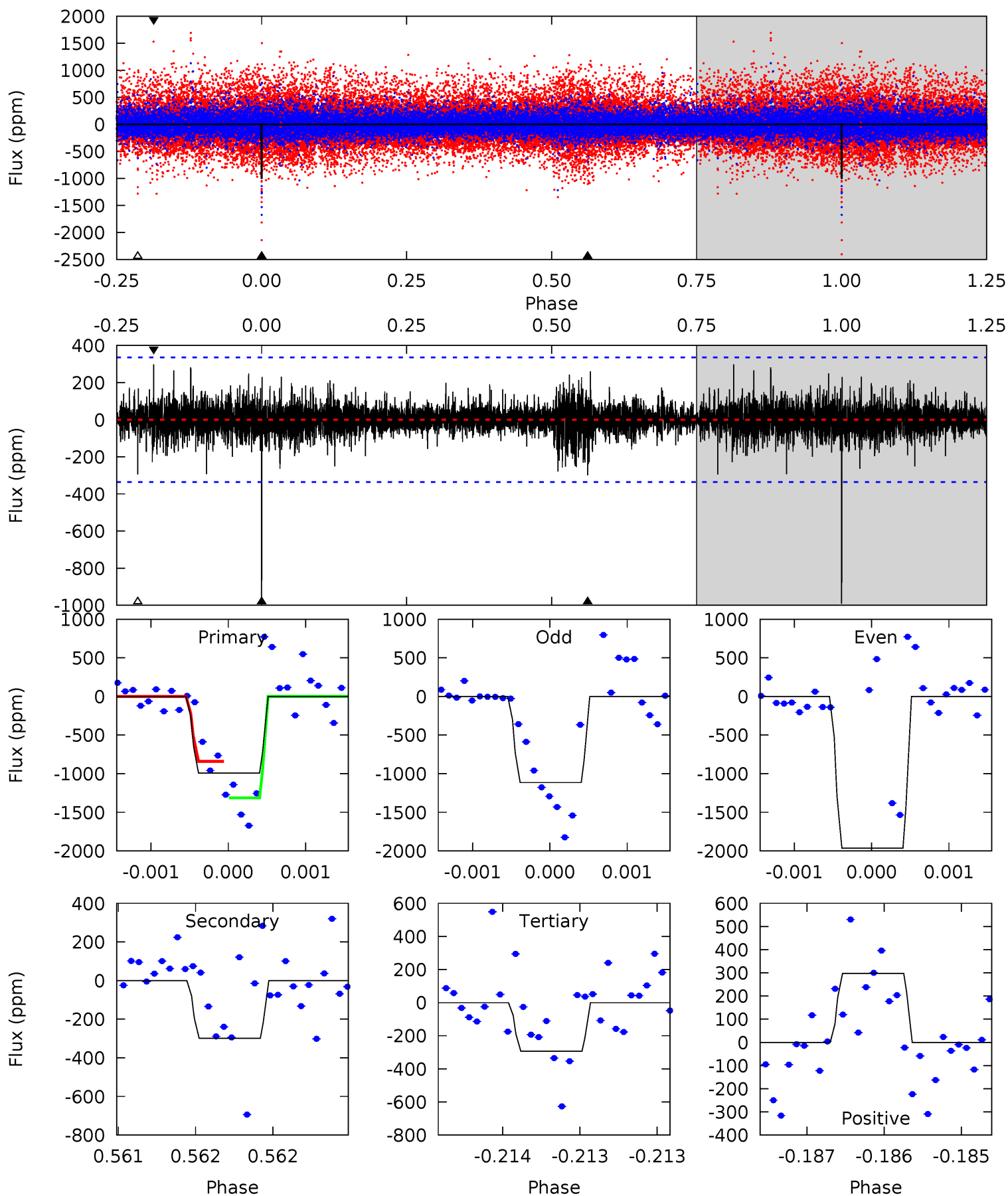
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.70 | 15.2 | 9.35 | 12.7 | 5.52 | 3.39 | 2.31 | -0.65 | -4.03 | 5.82 | 2.44 | 0.59 | 0.92 | 0.46 | 4.09 |



Alt Model-Shift Uniqueness Test

011856076-04, P = 295.455655 Days, E = 203.818468 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 | 4.91 | 4.83 | 4.89 | 5.51 | 3.39 | 0.92 | 11.5 | 11.4 | 0.08 | 0.02 | 8.18 | 1.52 | 0.23 | 0 |



Stellar Parameters For KIC 011856076

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4270^{+150}_{-150} | $4.591^{+0.056}_{-0.018}$ | $0.360^{+0.100}_{-0.300}$ | $0.700^{+0.024}_{-0.061}$ | $0.696^{+0.042}_{-0.052}$ | $2.859^{+0.663}_{-0.192}$ |
| | +4%/-4% | +1%/-0% | +28%/-83% | +3%/-9% | +6%/-7% | +23%/-7% |
| 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 011856076-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|------------------|-----------------------|----------------------------|
| DV | -1437 ± 95 | $3.34^{+2.55}_{-2.15}$ | 250^{+9}_{-9} | 4057^{+2204}_{-721} | $41893^{+289304}_{-28419}$ |
| Alt. | -299 ± 61 | $3.71^{+2.84}_{-2.29}$ | 250^{+9}_{-10} | 3041^{+1019}_{-454} | 6810^{+37260}_{-4640} |

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 $A_{obs} \gg 1.0$

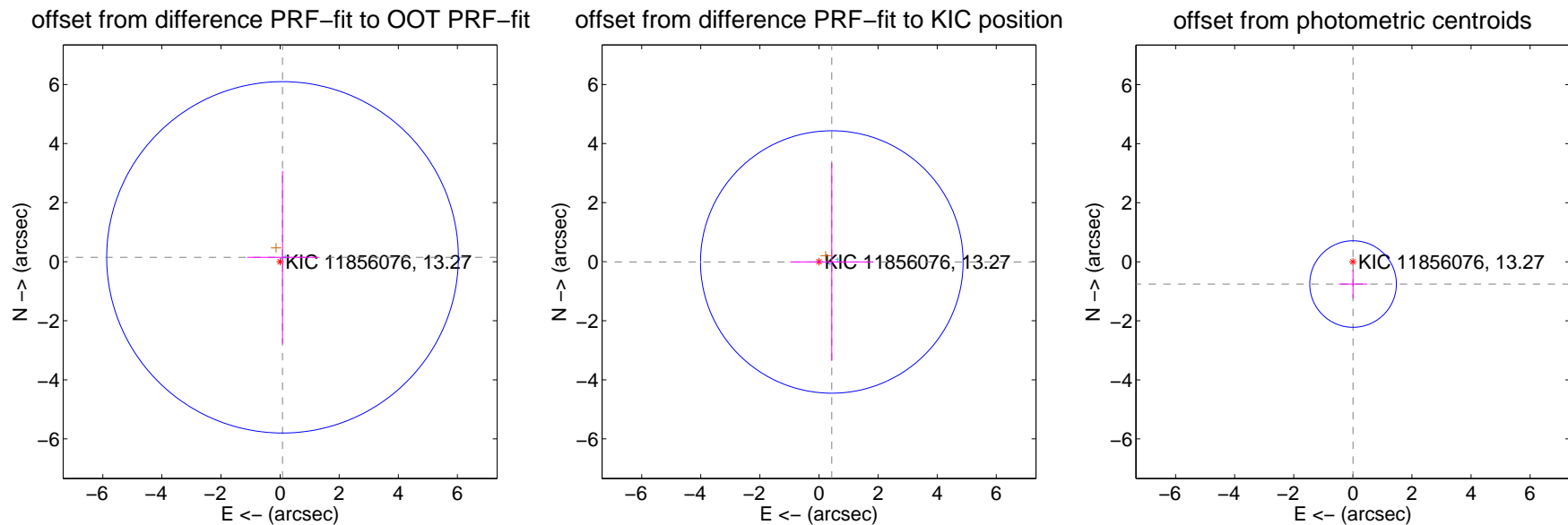
DV Centroid Data

Supplemental centroid analysis for 011856076-04. Kepler magnitude: 13.27. Transit SNR 6.80

There are 2 quarters with good PRF difference image offsets

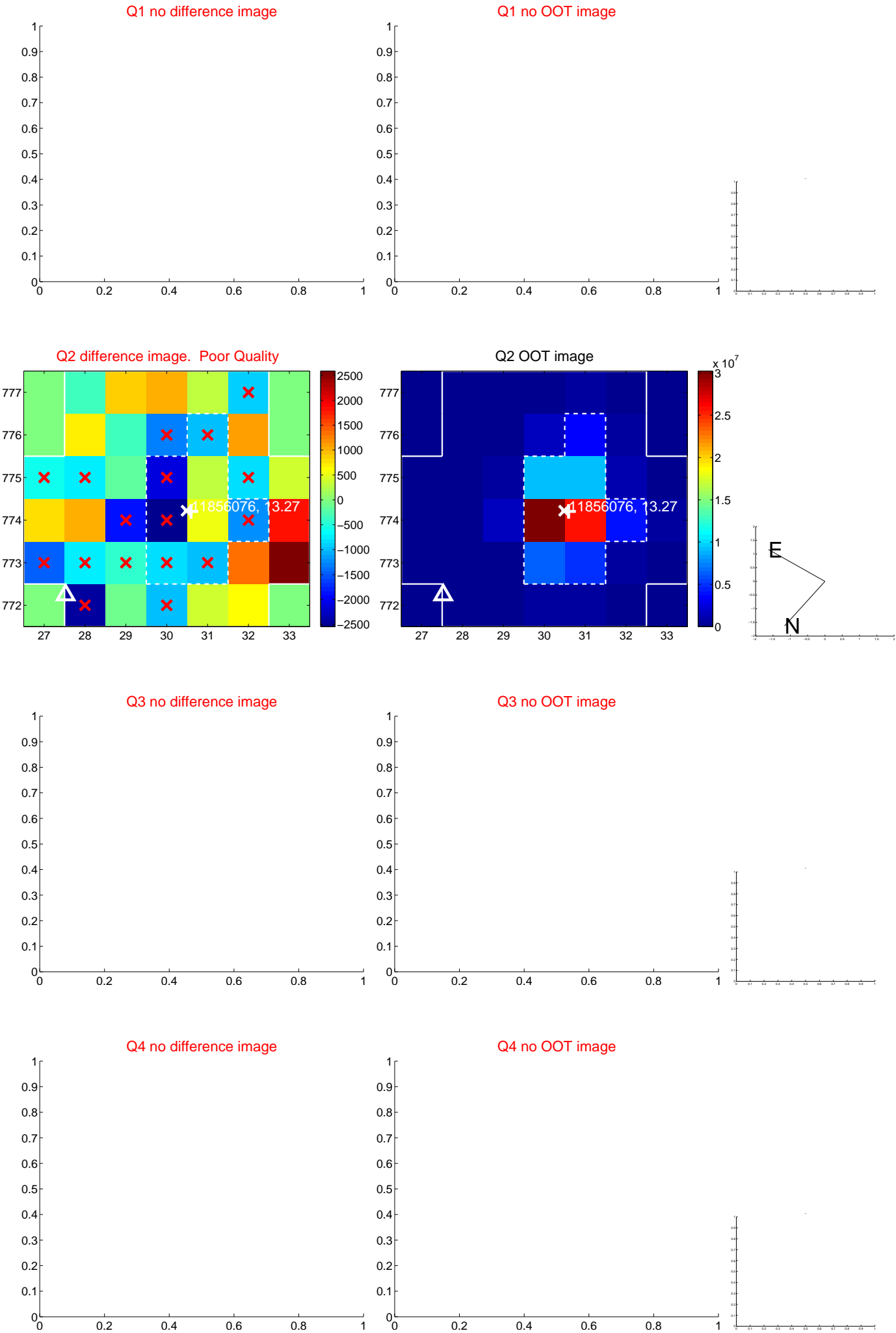
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.169 ± 1.983 | 0.09 | -0.082 ± 1.197 | 0.148 ± 2.927 |
| PRF-fit source offset from KIC position | 0.434 ± 1.481 | 0.29 | -0.434 ± 1.409 | -0.009 ± 3.350 |
| photometric centroid source offset | 0.75 ± 0.49 | 1.54 | -0.01 ± 0.48 | -0.75 ± 0.49 |

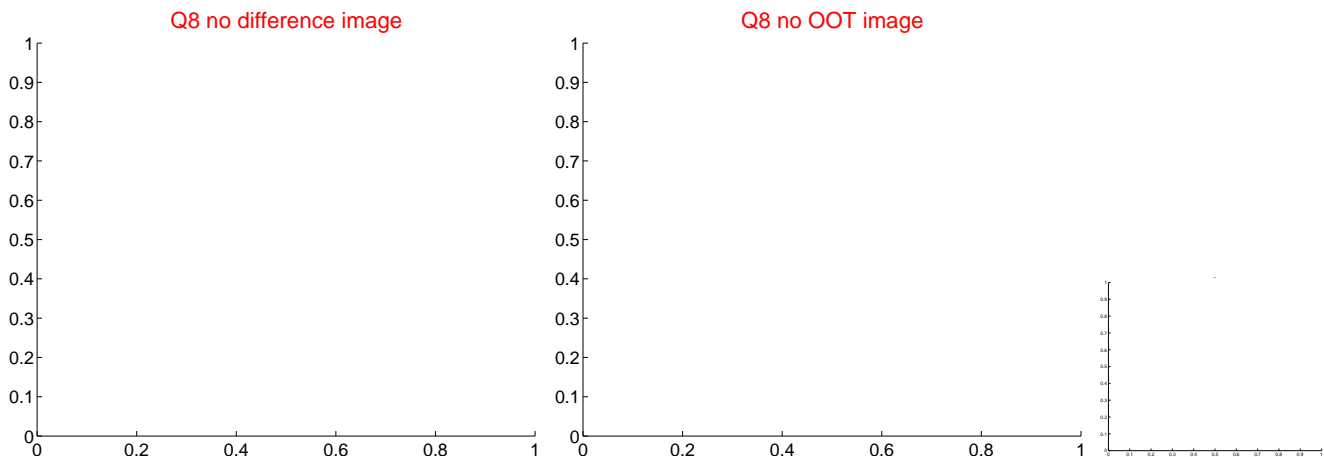
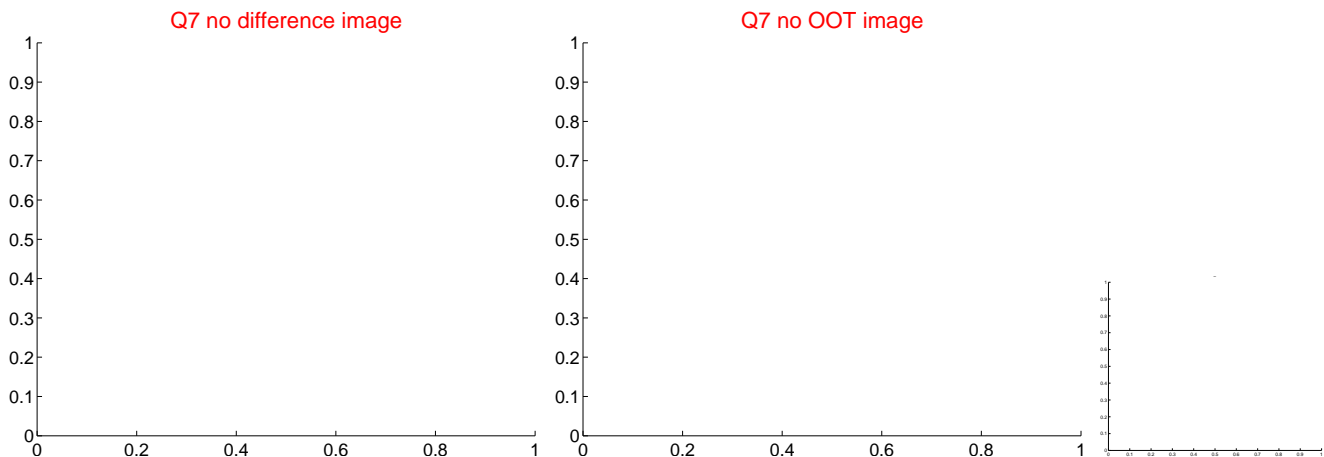
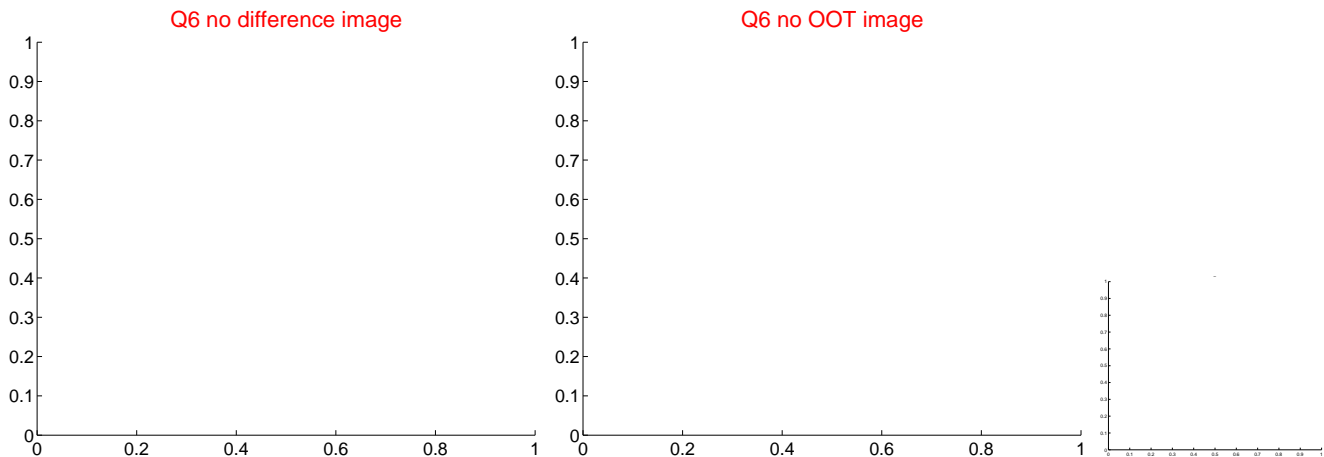
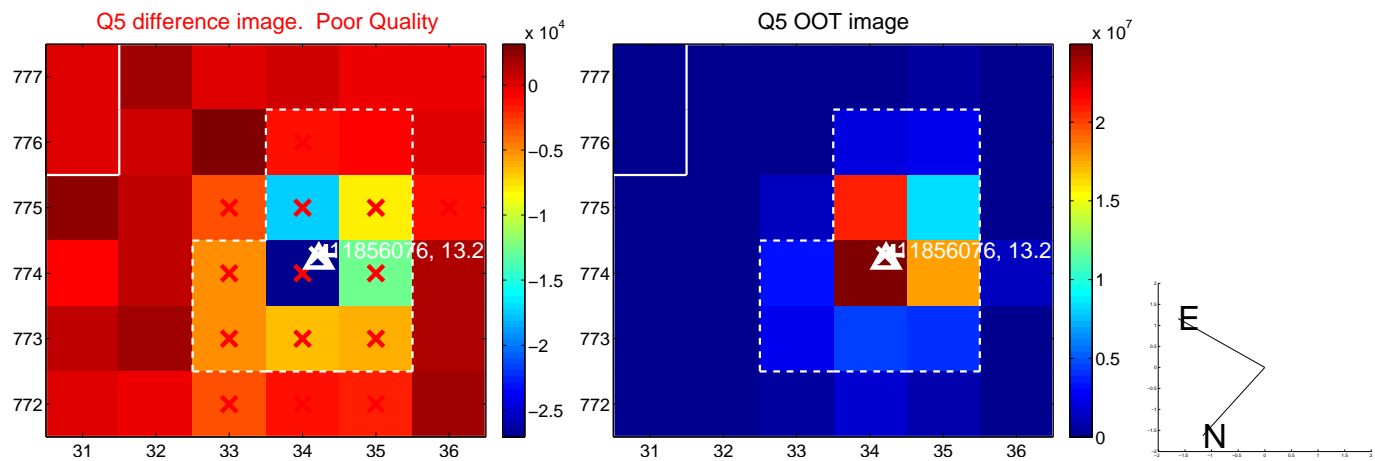


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

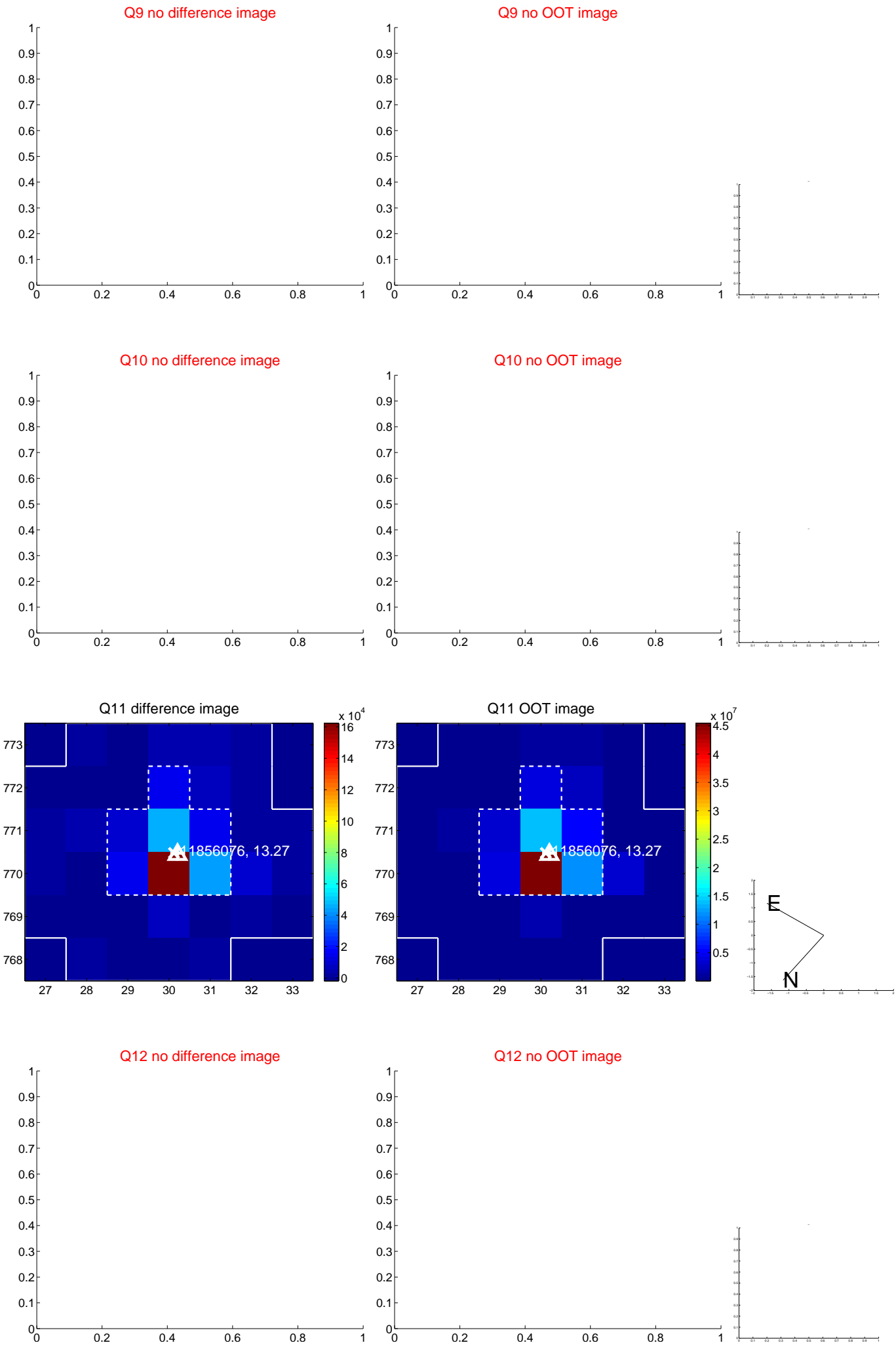
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



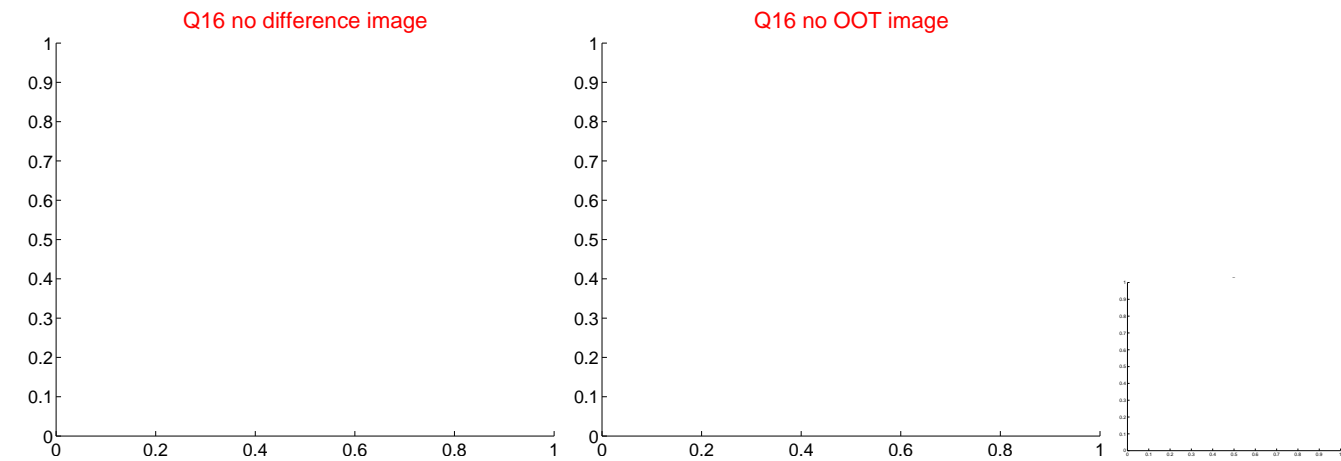
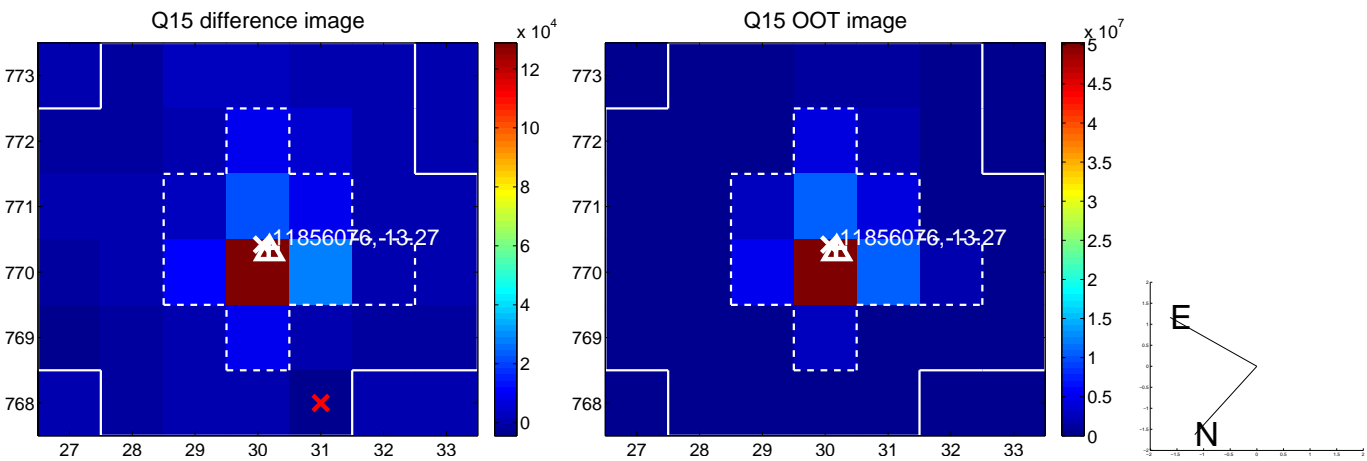
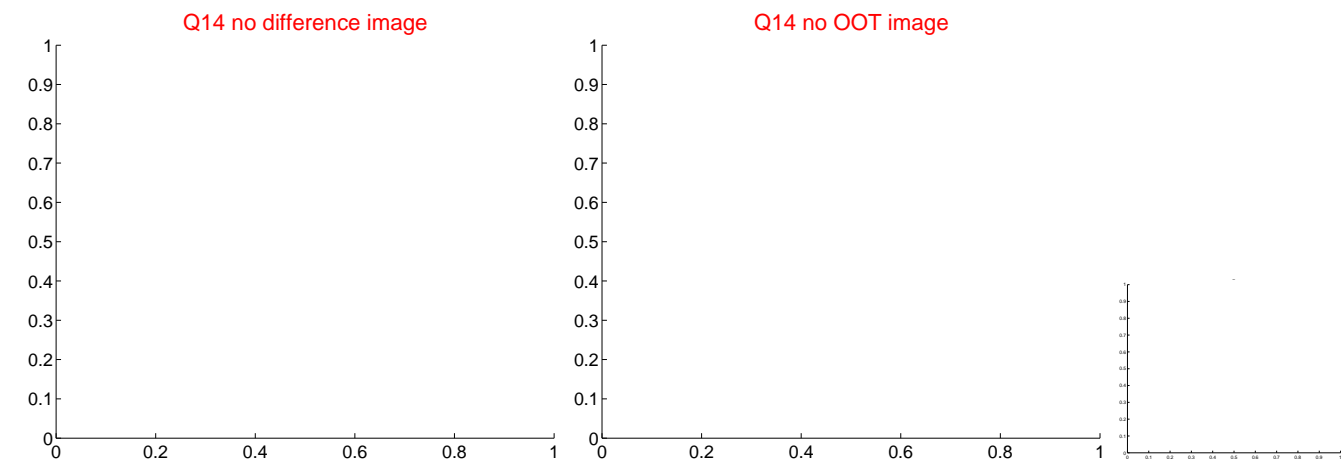
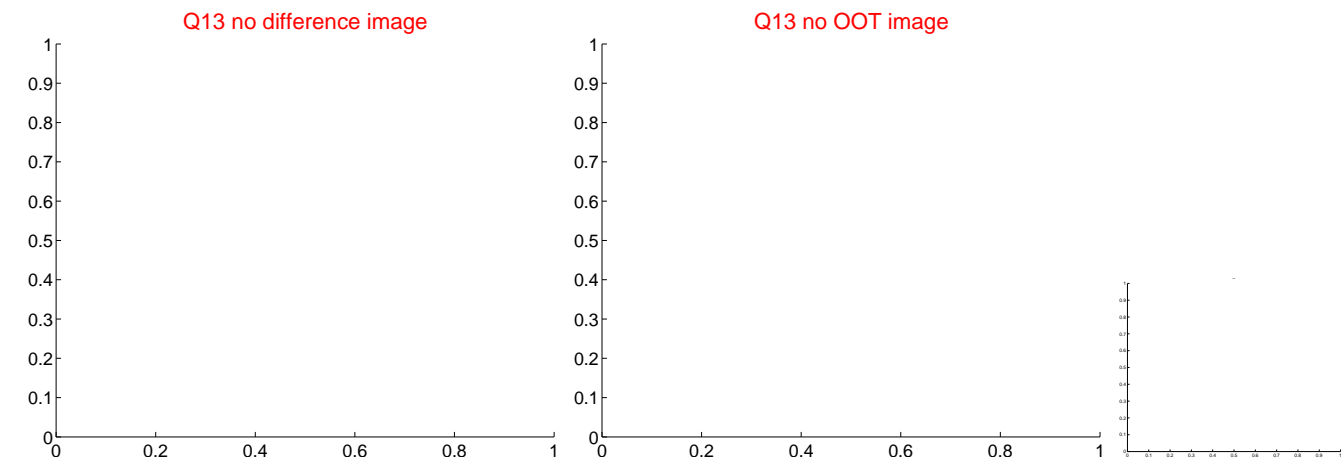
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



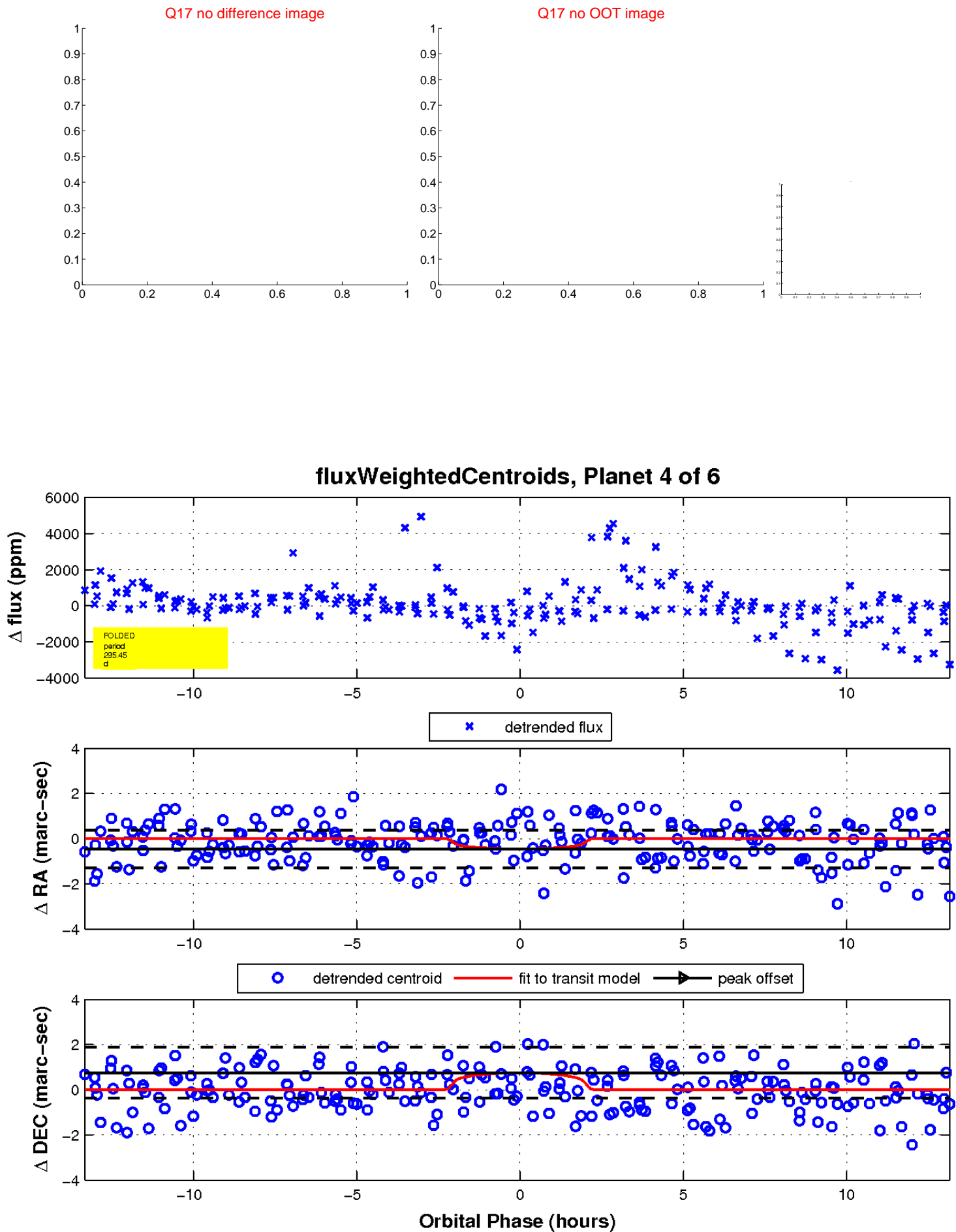
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

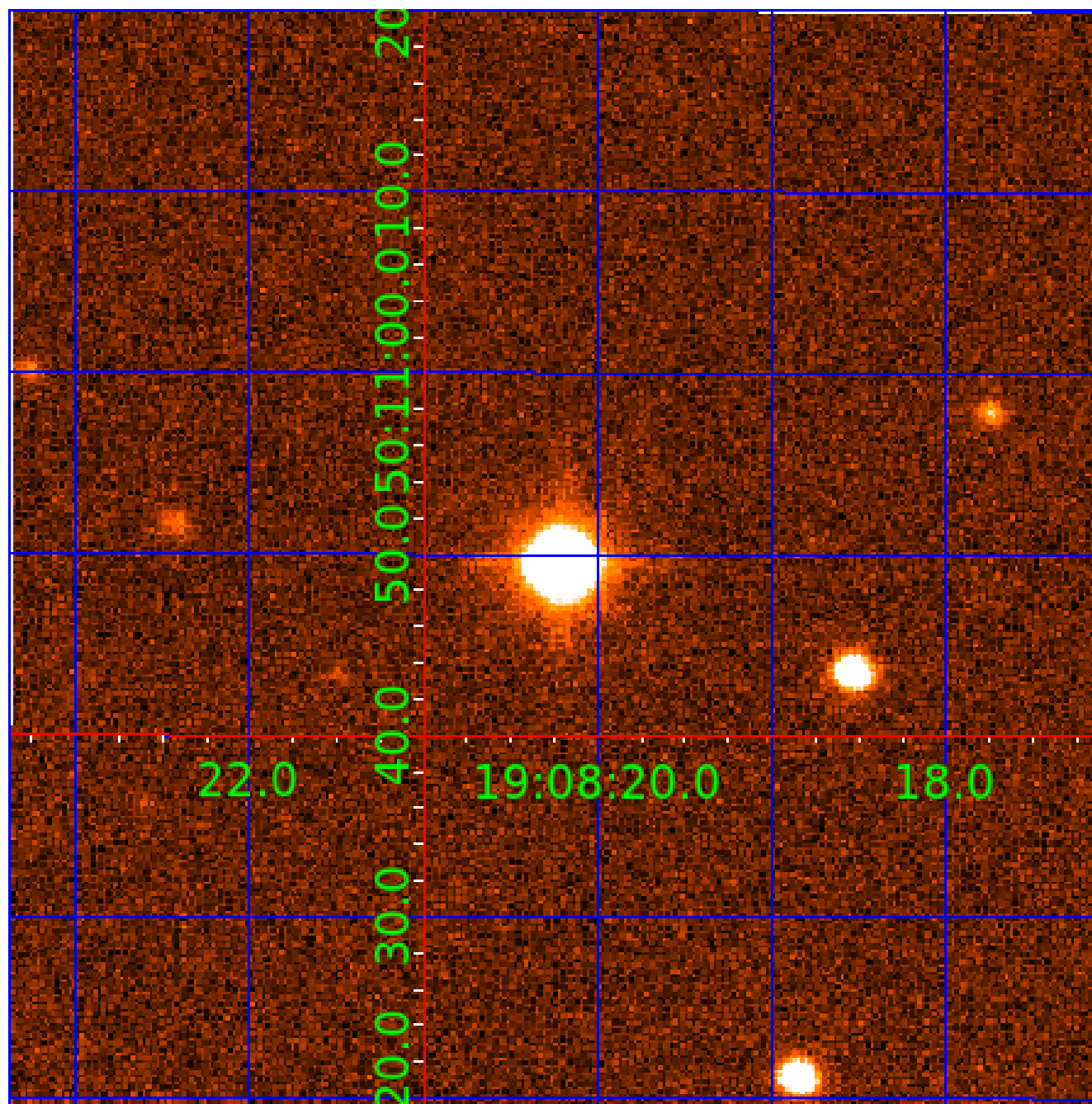


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011856076

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011856076-02 | OBS | No | 195.273527 | 137.313982 | 1265.6 | 12.919 | 11.1 | 6.5 | 0.70 | 4270 | 2.55 | 0.43 |
| 011856076-03 | OBS | No | 292.339232 | 280.810114 | 1794.6 | 14.655 | 15.0 | 5.7 | 0.70 | 4270 | 3.68 | 0.25 |
| 011856076-04 | OBS | No | 295.447291 | 203.838375 | 1127.4 | 4.469 | 13.3 | 6.8 | 0.70 | 4270 | 2.57 | 0.25 |
| 011856076-05 | OBS | No | 566.377742 | 297.720726 | 1308.3 | 4.464 | 13.3 | 6.6 | 0.70 | 4270 | 2.68 | 0.10 |
| 011856076-06 | OBS | No | 69.730805 | 176.042272 | 393.4 | 3.185 | 10.5 | 4.7 | 0.70 | 4270 | 1.63 | 1.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011856076-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS |
| 011856076-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011856076-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS |

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

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

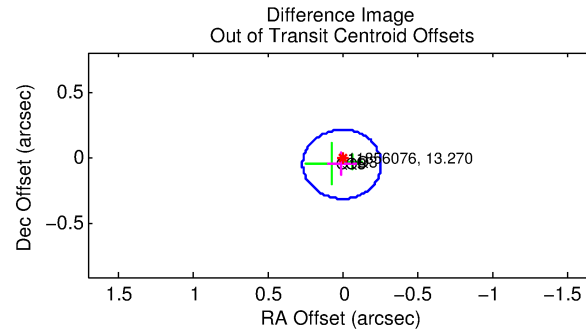
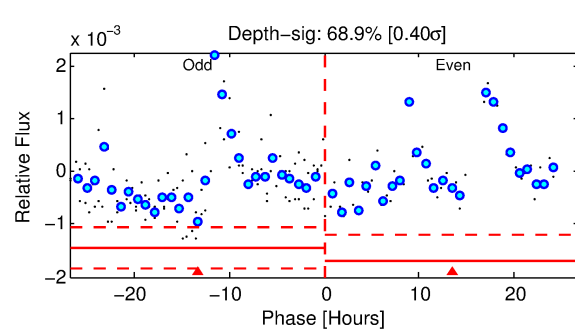
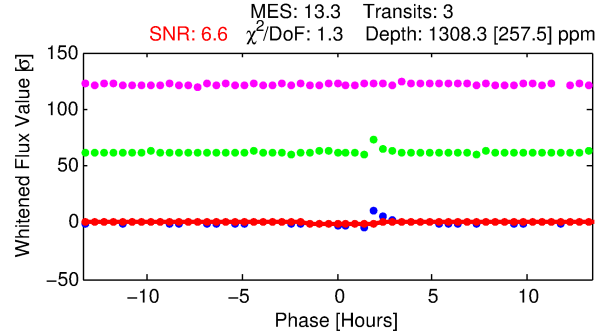
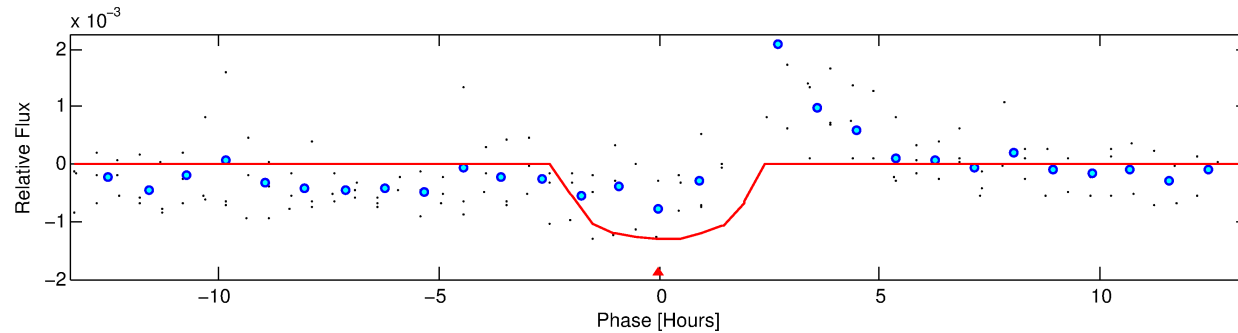
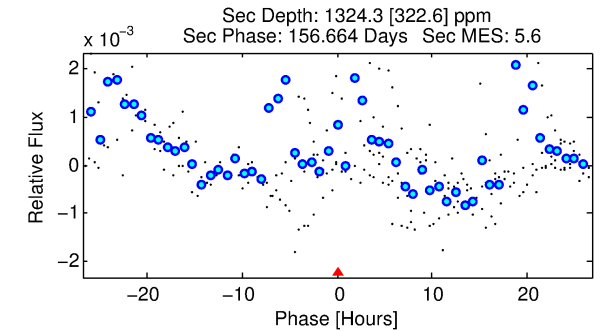
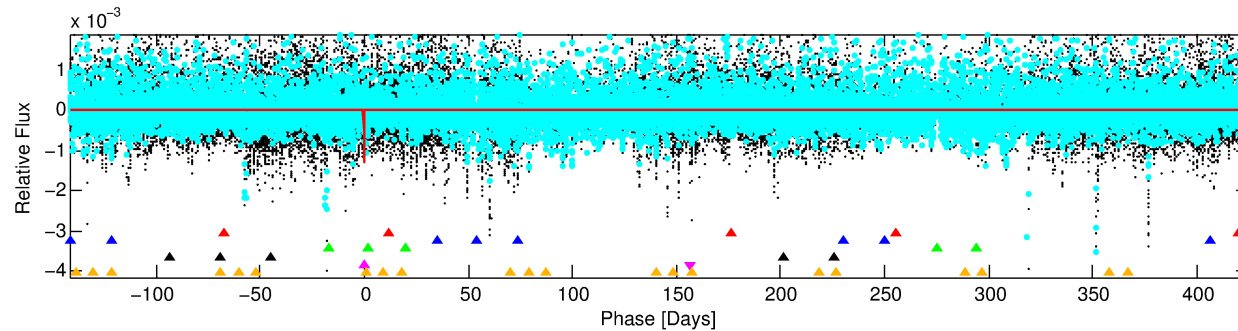
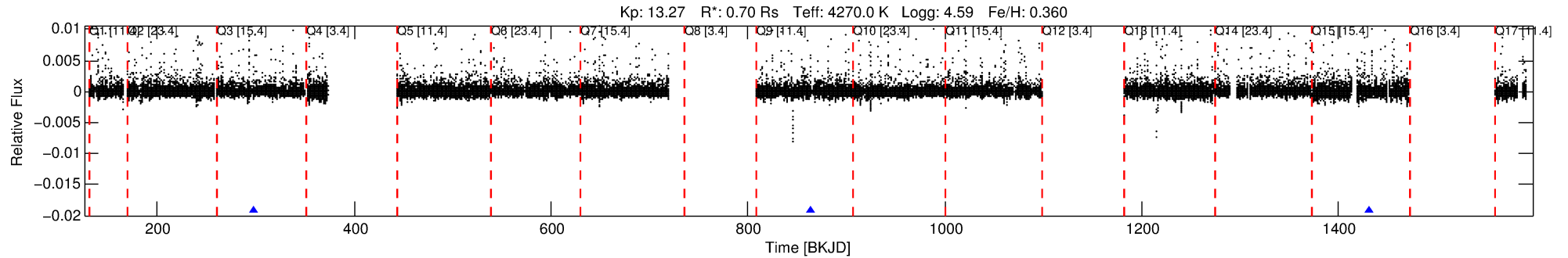
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011856076-05

No Significant Match Found

DV One-Page Summary

KIC: 11856076 Candidate: 5 of 6 Period: 566.378 d



DV Fit Results:

Period = 566.37774 [0.00603] d
Epoch = 297.7207 [0.0071] BKJD
Rp/R* = 0.0350 [0.0363]
a/R* = 757.74 [2273.77]
b = 0.68 [2.45]
Seff = 0.10 [0.02]
Teq = 145 [6] K
Rp = 2.68 [2.78] Re
a = 1.1880 [0.0859] AU
Ag = 143468.78 [299515.81] [0.48 σ]
Teff = 4351 [2273] K [1.85 σ]

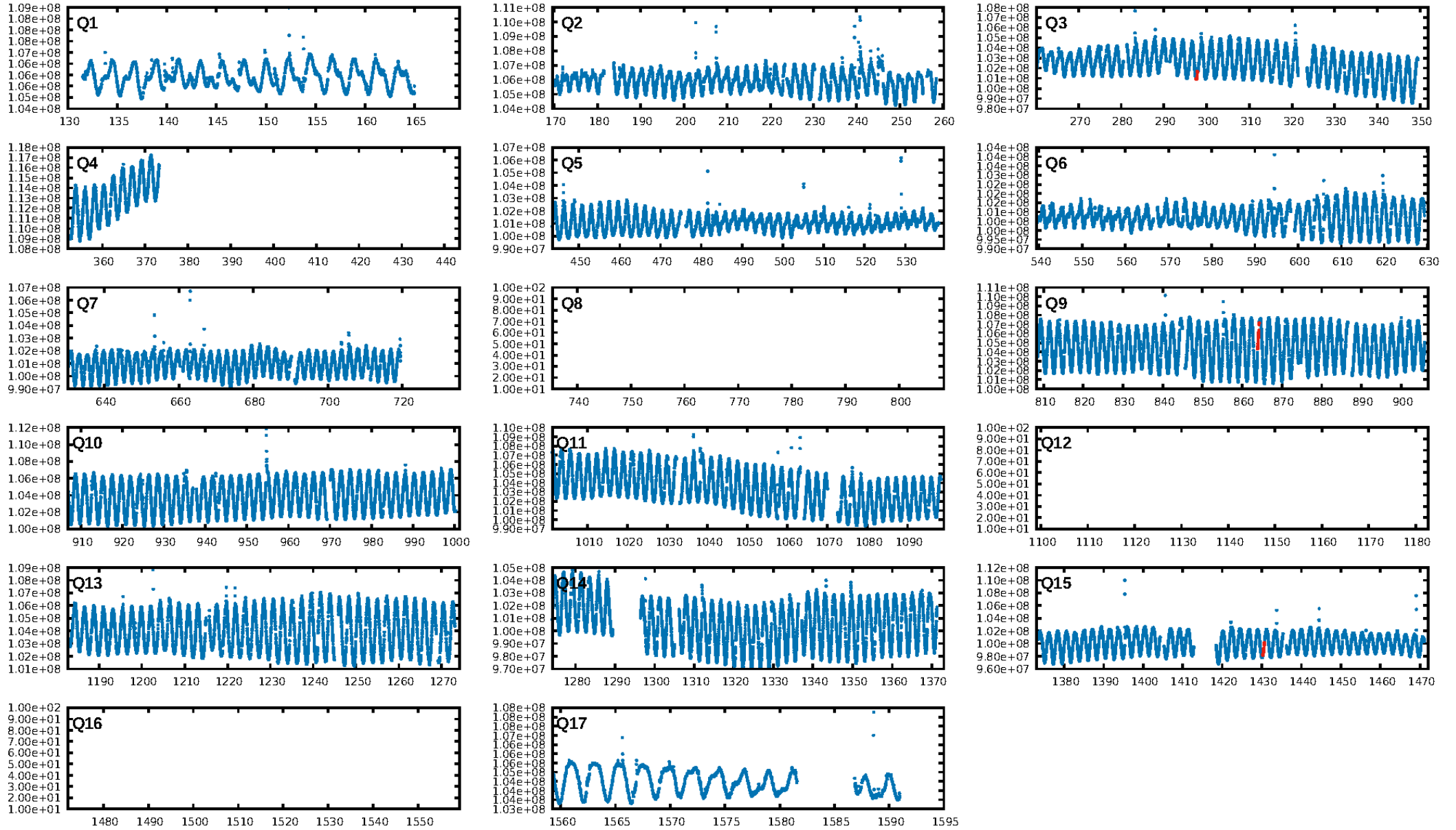
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [769.58 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 6.5%
ModelChiSquareGof-sig: 79.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.7384
Centroid-sig: 99.9%
Centroid-so: 0.429 arcsec [0.89 σ]
OotOffset-rm: 0.047 arcsec [0.54 σ]
KicOffset-st: 0.2/0/1 [3]
KicOffset-st: 0.2/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

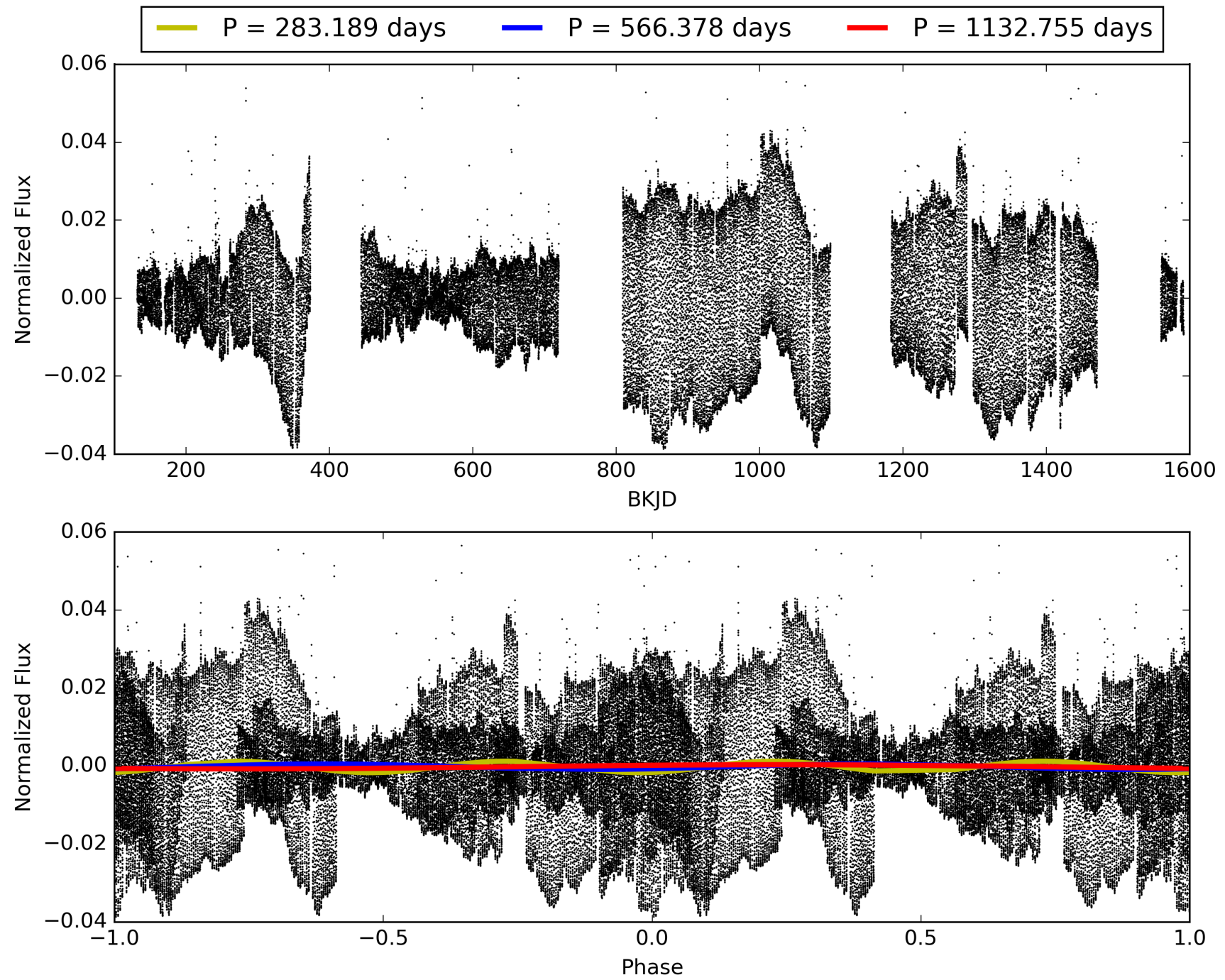
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:06:35 Z

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

TCE 011856076-05, PDC Light Curves

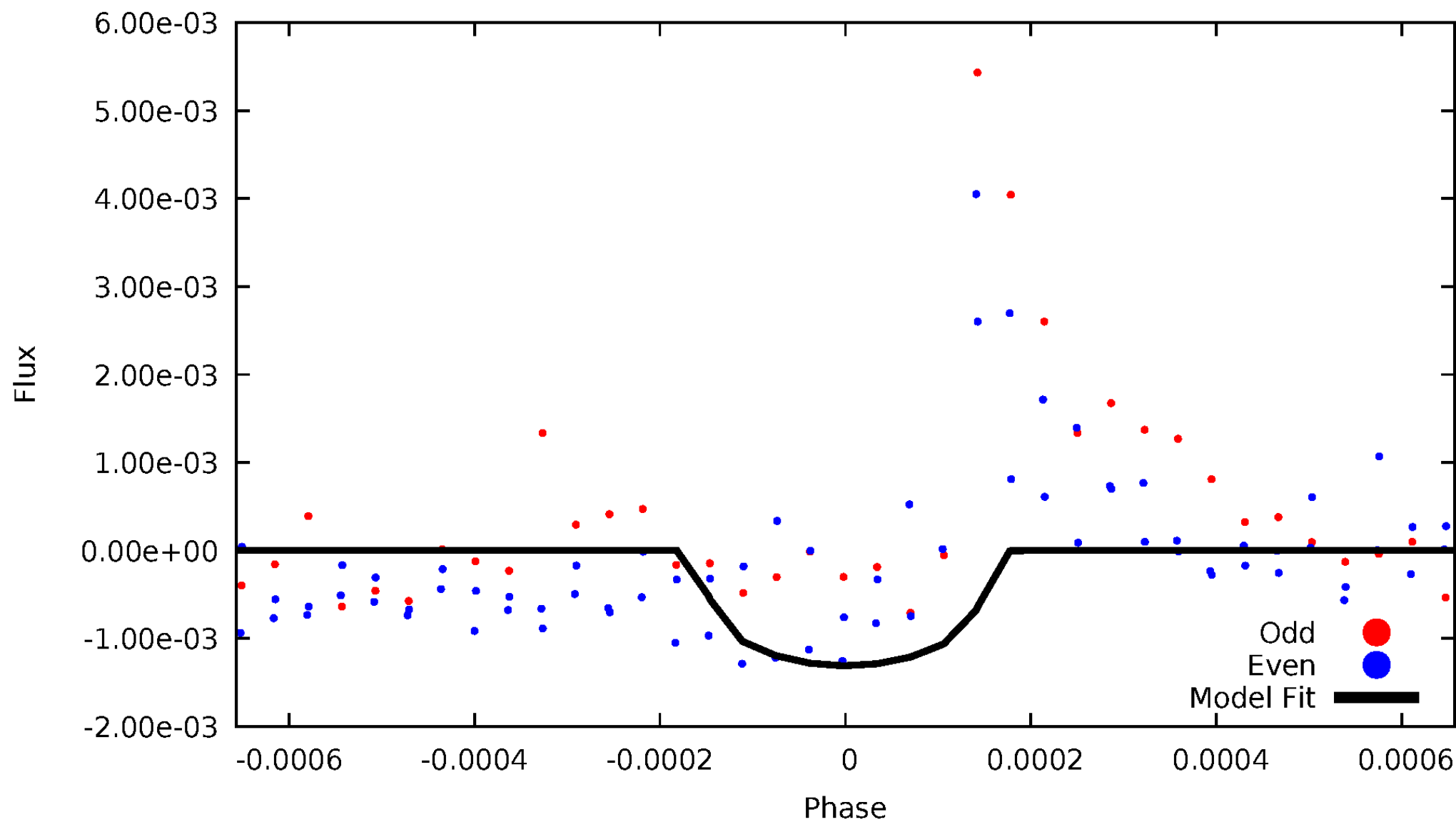


TCE 011856076-05



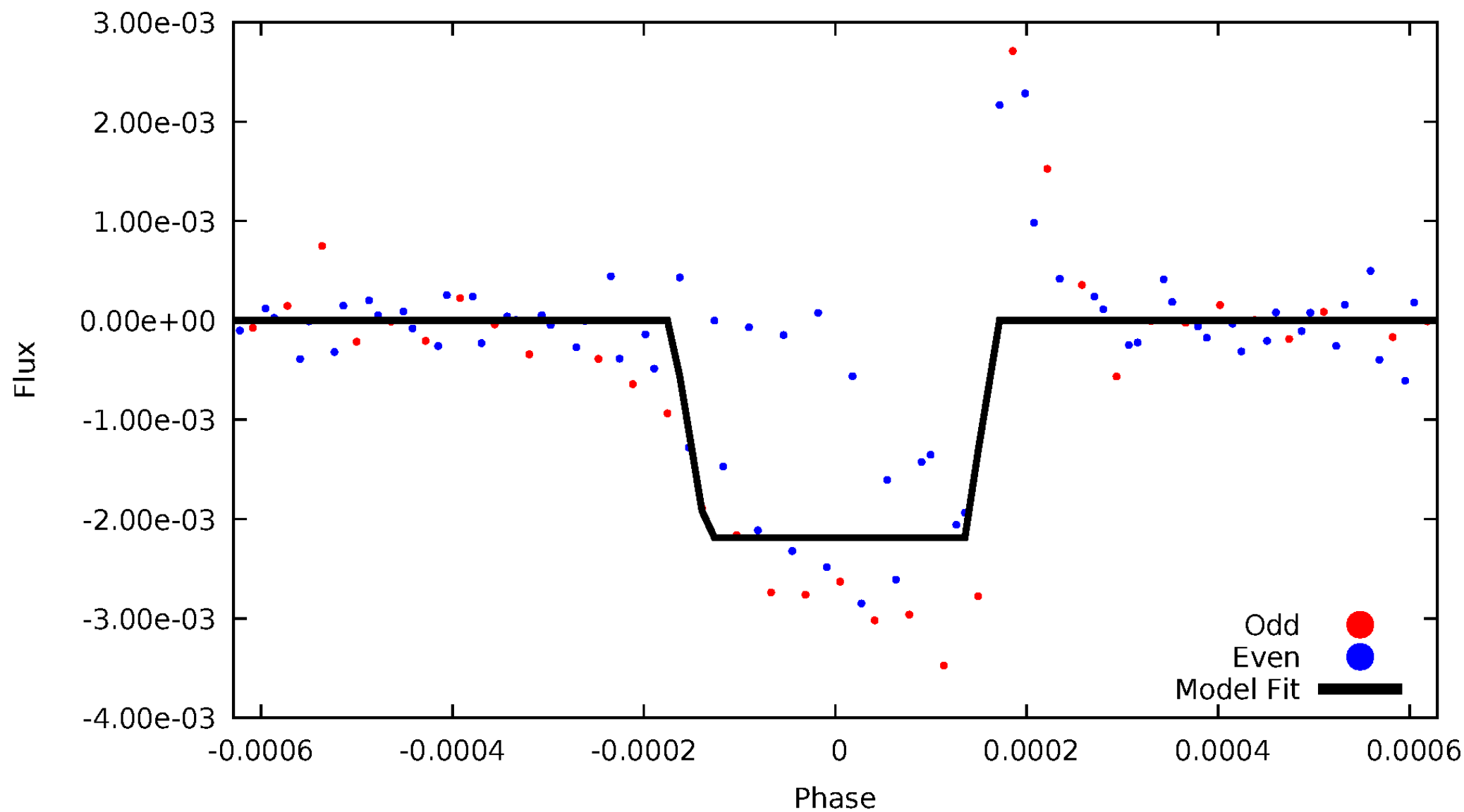
DV Odd/Even

TCE 011856076-05



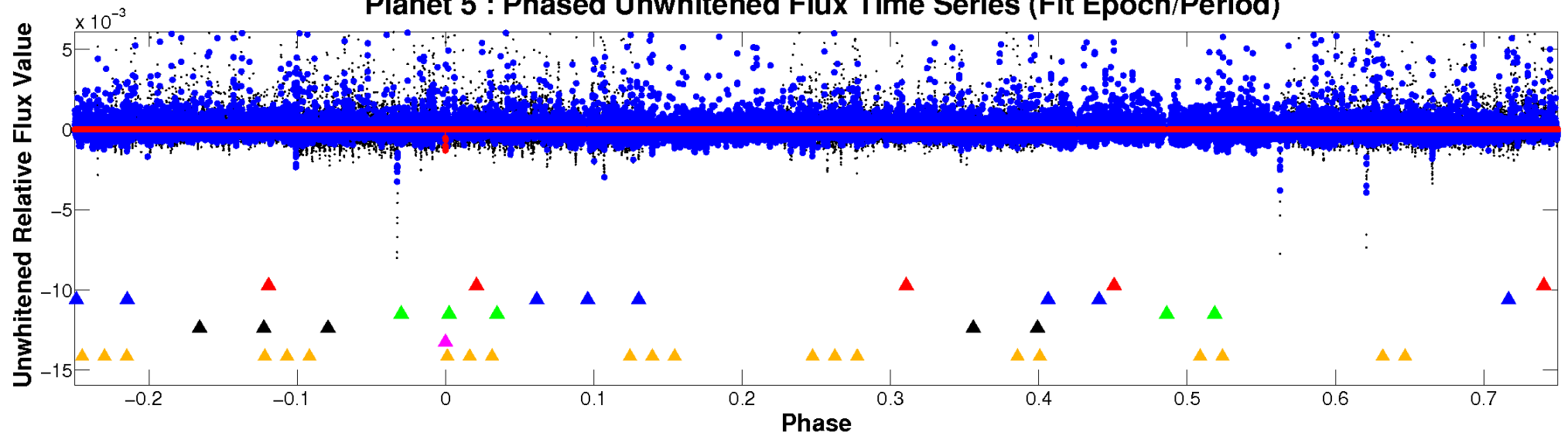
ALT Odd/Even

TCE 011856076-05

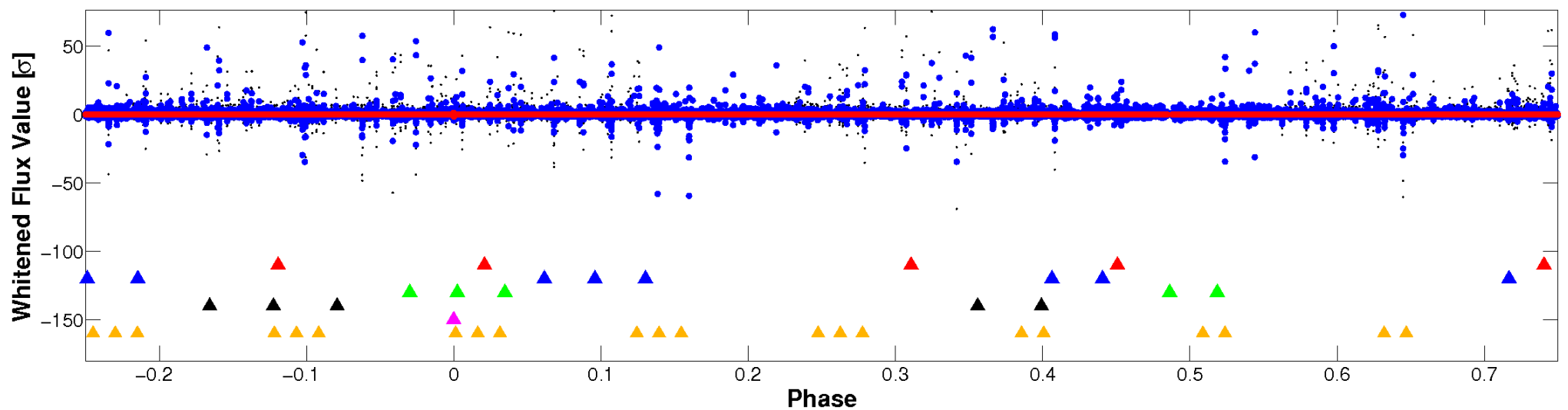


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

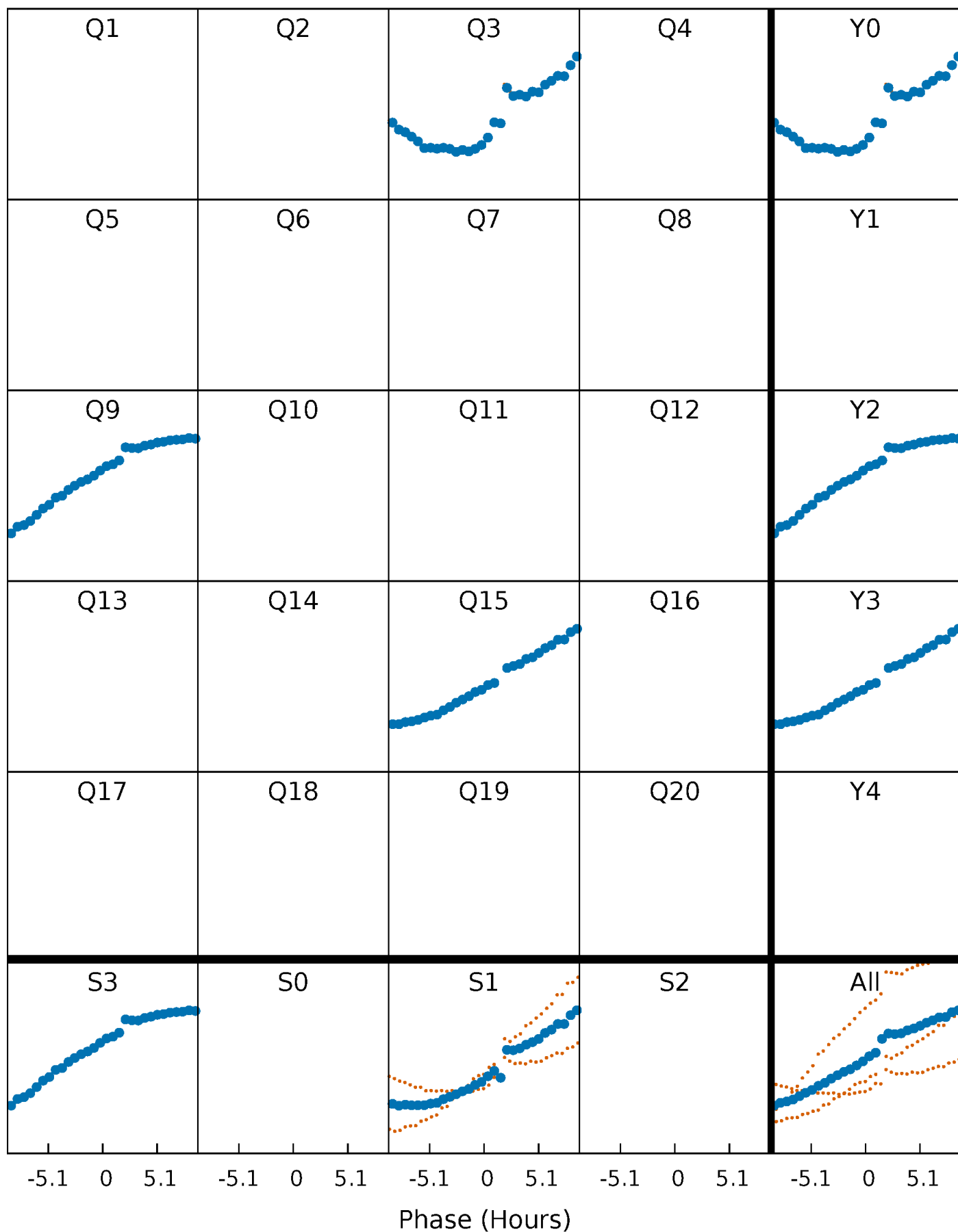


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



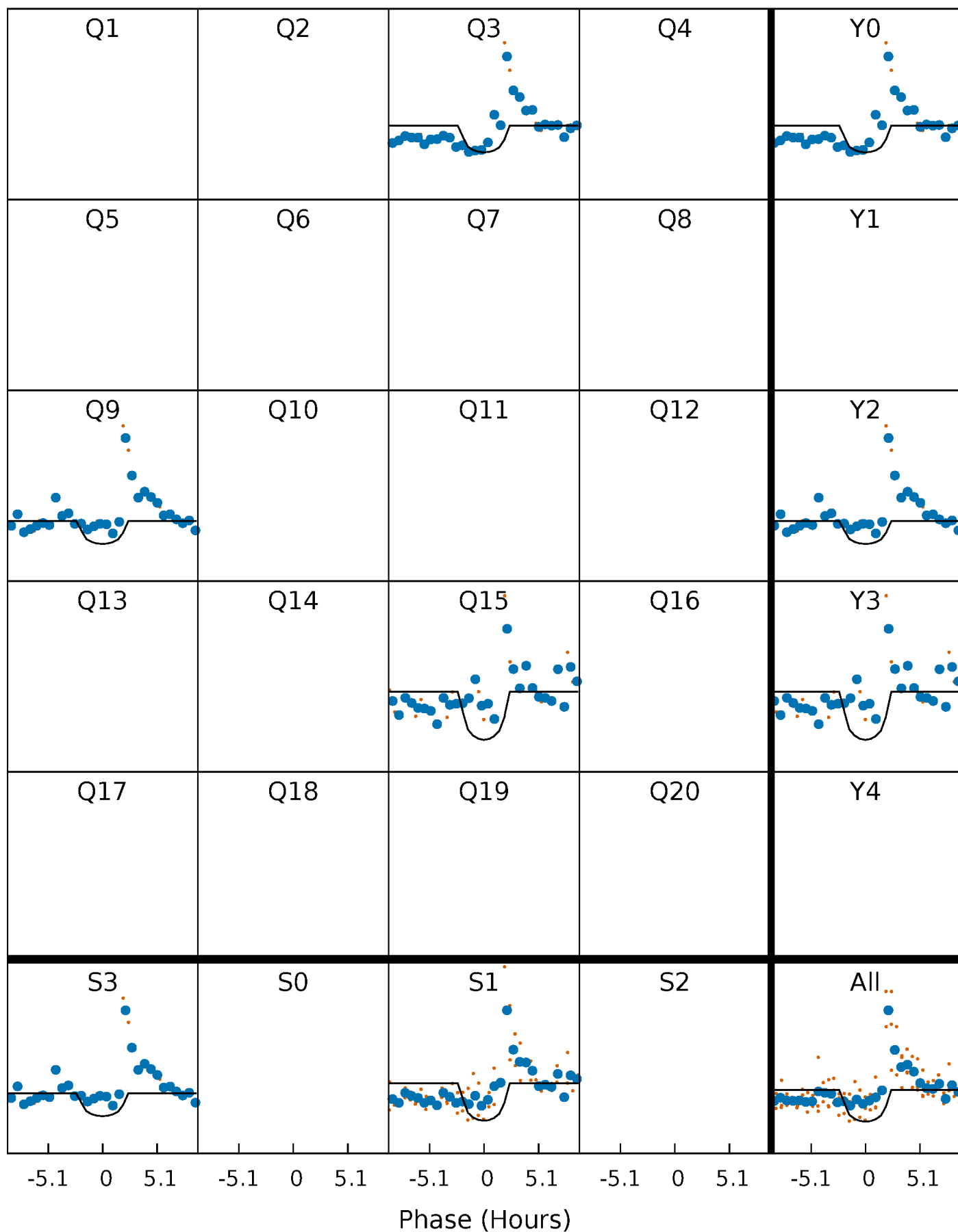
PDC Quarter-Phased Transit Curves

TCE 011856076-05 $P=566.377742$ Days $T_0=297.720726$ (BKJD)



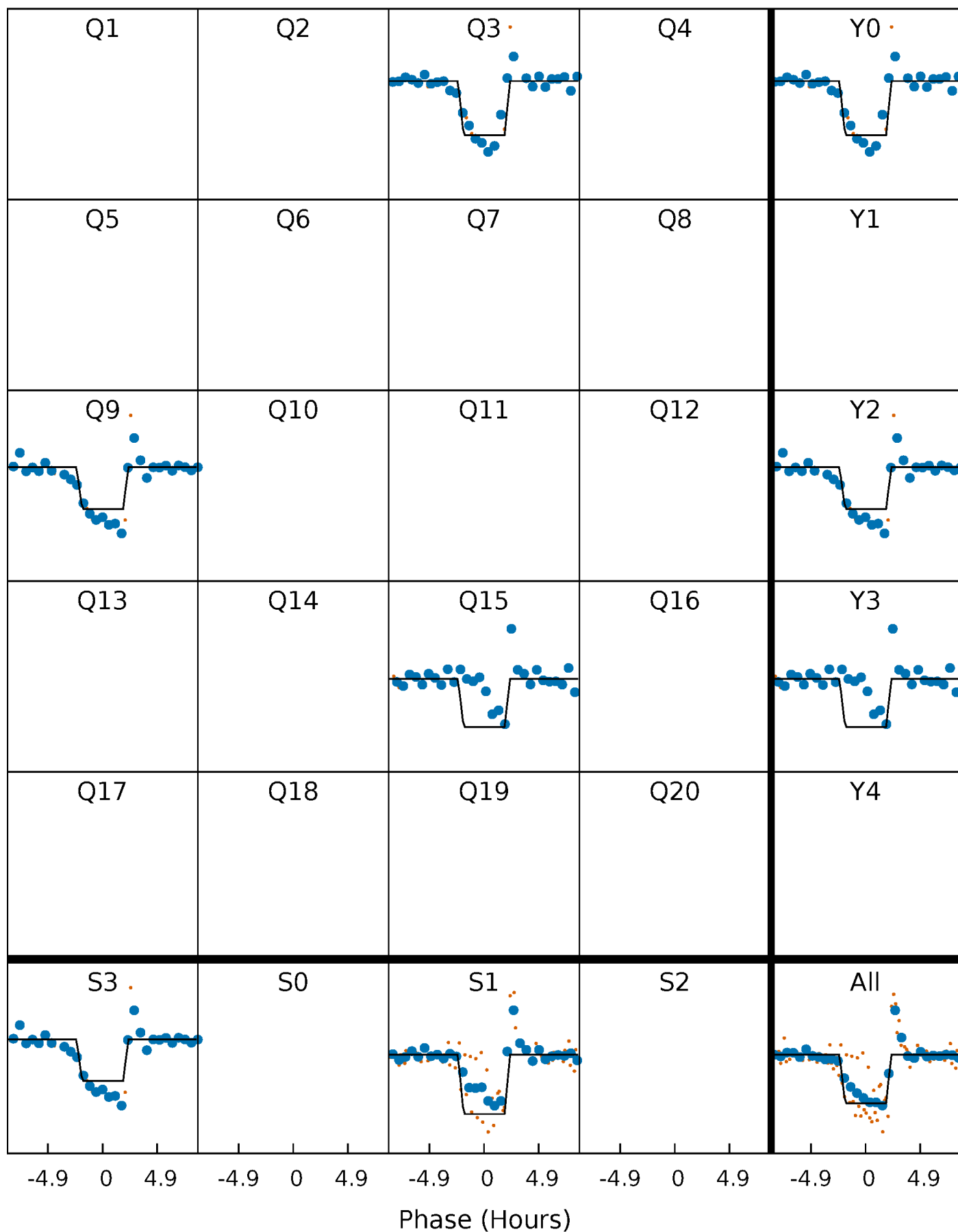
DV Quarter-Phased Transit Curves

TCE 011856076-05 $P=566.377742$ Days $T_0=297.720726$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

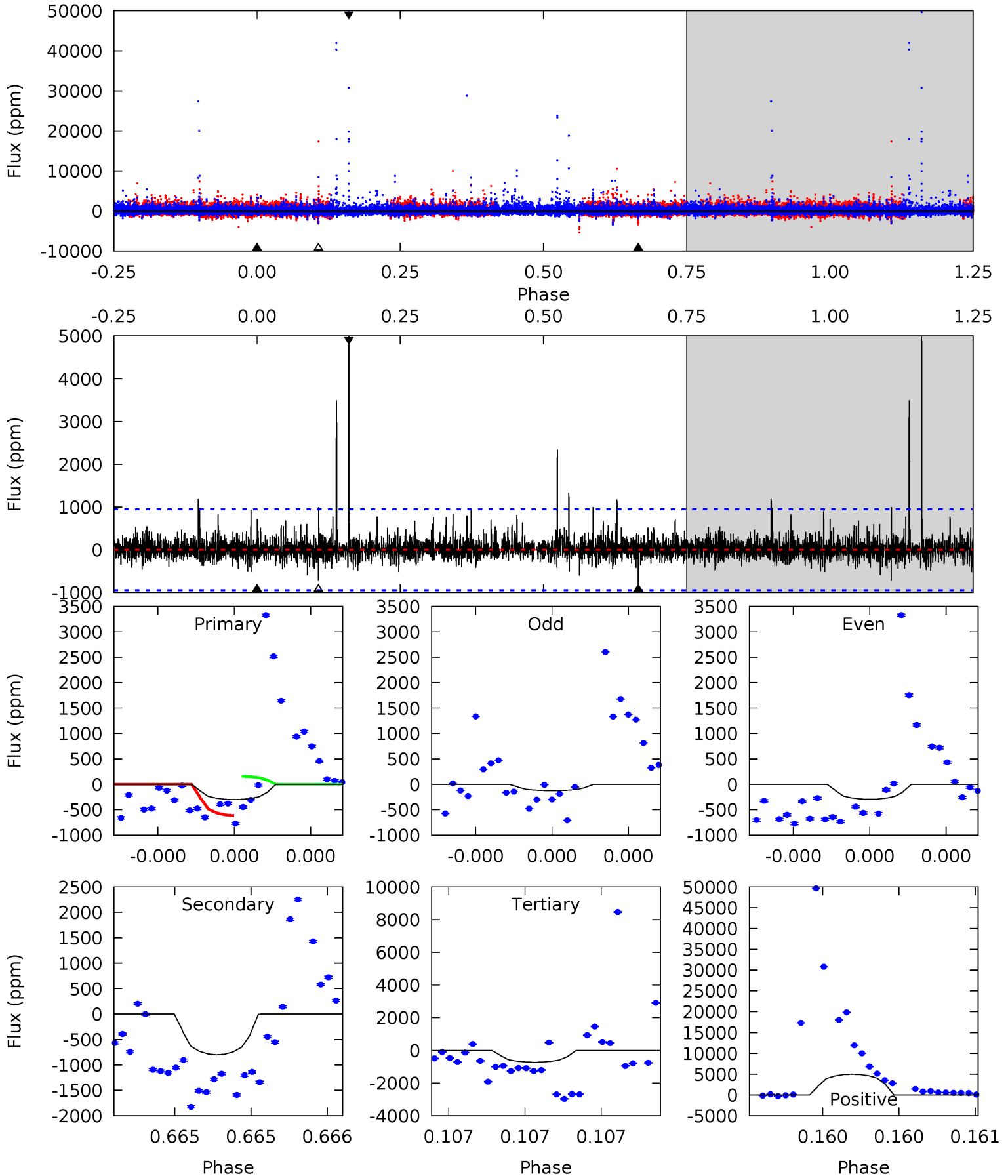
TCE 011856076-05 $P=566.370605$ Days $T_0=297.703444$ (BKJD)



DV Model-Shift Uniqueness Test

011856076-05, P = 566.377742 Days, E = 297.720726 Days

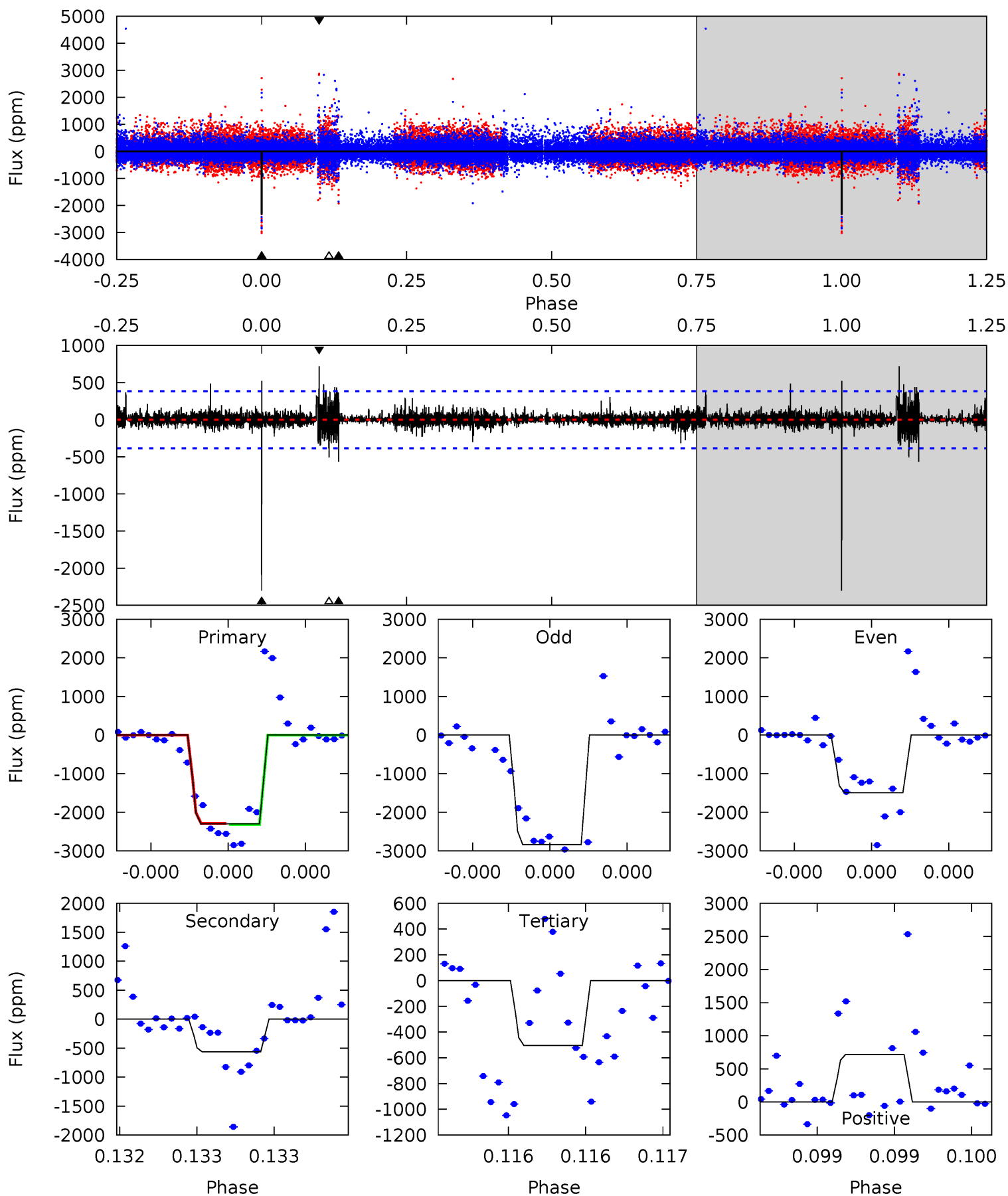
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1.79 | 4.78 | 4.32 | 29.8 | 5.65 | 3.59 | 1.24 | -2.52 | -28.0 | 0.46 | -25.0 | 0.34 | 1.77 | 0.86 | 1.46 |



Alt Model-Shift Uniqueness Test

011856076-05, P = 566.370605 Days, E = 297.703444 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 33.9 | 8.30 | 7.42 | 10.6 | 5.64 | 3.59 | 0.86 | 26.4 | 23.3 | 0.87 | -2.27 | 11.0 | 0.88 | 0.24 | 0.21 |



Stellar Parameters For KIC 011856076

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4270^{+150}_{-150} | $4.591^{+0.056}_{-0.018}$ | $0.360^{+0.100}_{-0.300}$ | $0.700^{+0.024}_{-0.061}$ | $0.696^{+0.042}_{-0.052}$ | $2.859^{+0.663}_{-0.192}$ |
| | +4%/-4% | +1%/-0% | +28%/-83% | +3%/-9% | +6%/-7% | +23%/-7% |
| 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 011856076-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | -801±168 | $3.09^{+2.45}_{-1.88}$ | 200^{+8}_{-7} | 3731^{+1674}_{-625} | $65224^{+359981}_{-45447}$ |
| Alt. | -564±68 | $3.91^{+2.56}_{-2.20}$ | 201^{+7}_{-8} | 3284^{+1054}_{-448} | $29298^{+128144}_{-18695}$ |

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

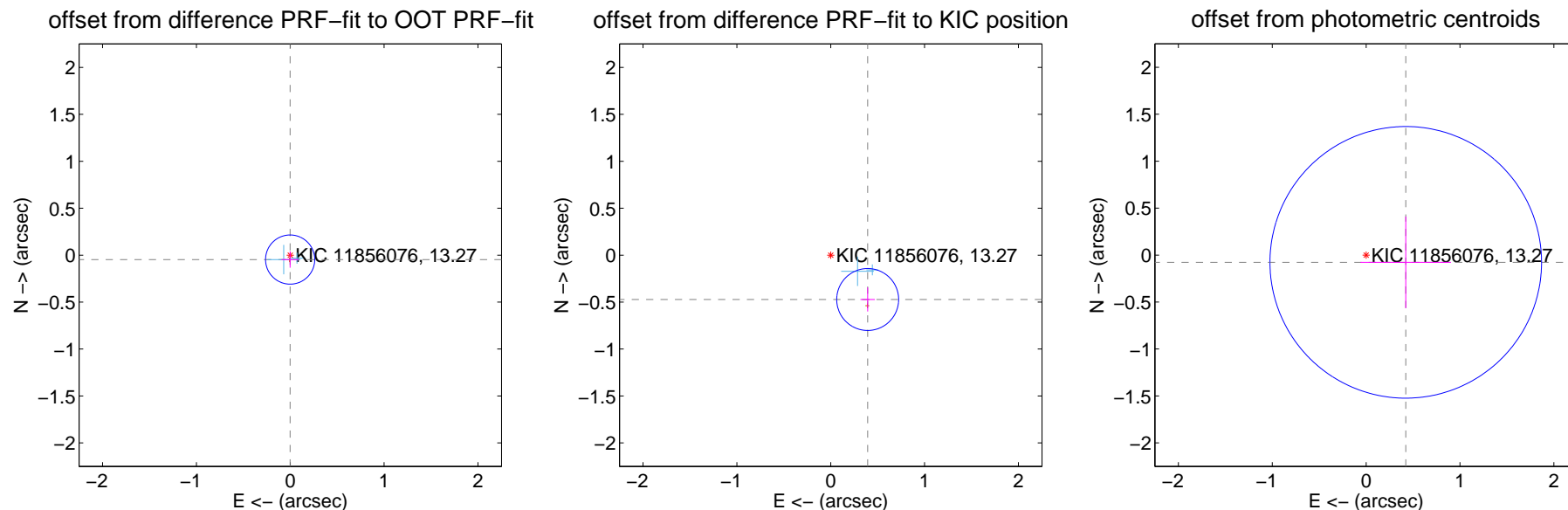
DV Centroid Data

Supplemental centroid analysis for 011856076-05. Kepler magnitude: 13.27. Transit SNR 6.59

There are 2 quarters with good PRF difference image offsets

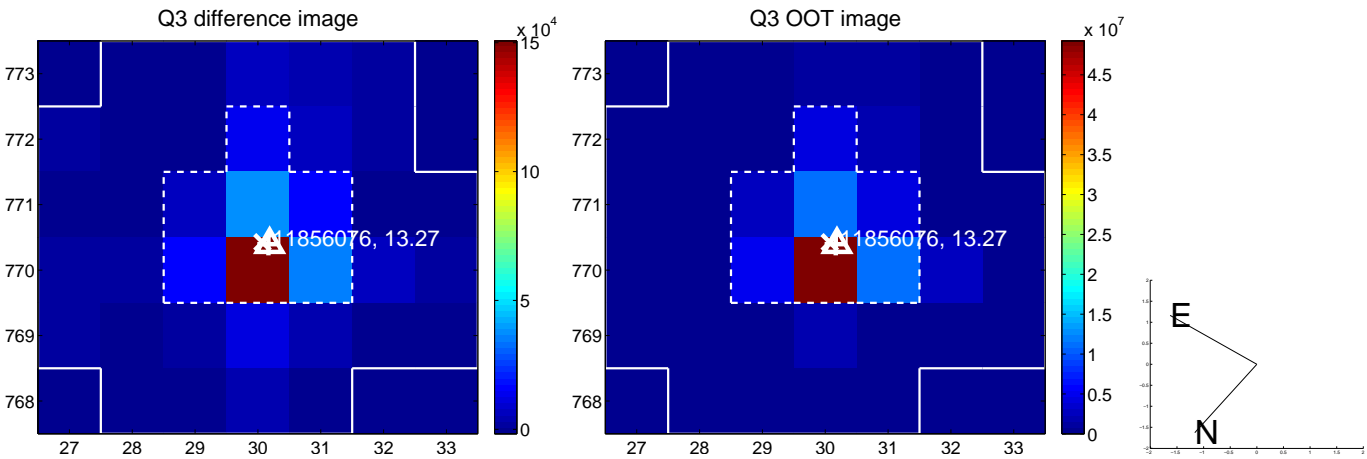
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.047 ± 0.087 | 0.54 | 0.001 ± 0.091 | -0.047 ± 0.087 |
| PRF-fit source offset from KIC position | 0.615 ± 0.110 | 5.59 | -0.394 ± 0.076 | -0.472 ± 0.127 |
| photometric centroid source offset | 0.43 ± 0.48 | 0.89 | -0.42 ± 0.48 | -0.08 ± 0.49 |



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.

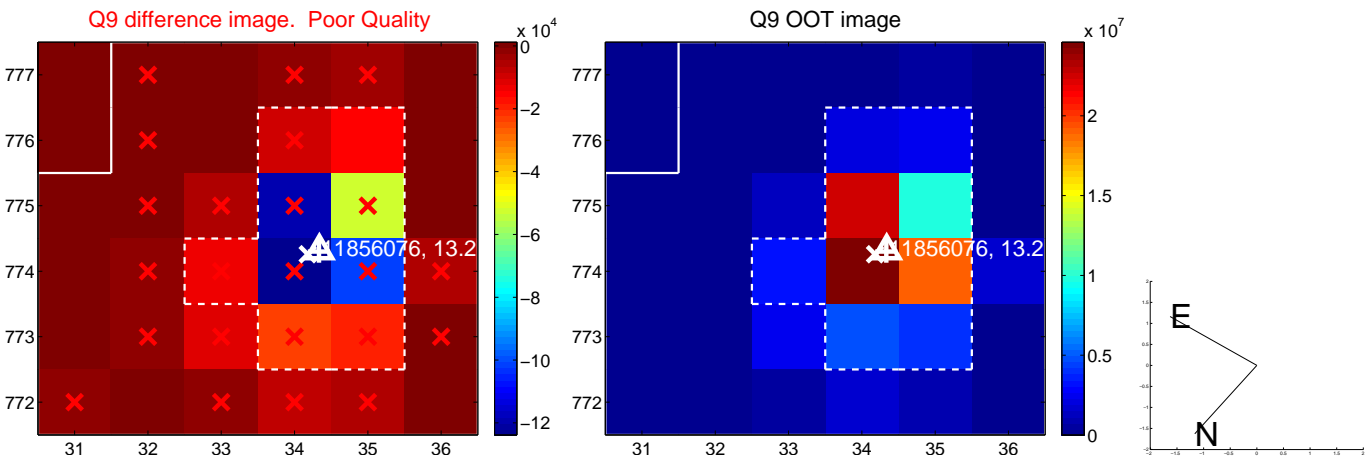
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



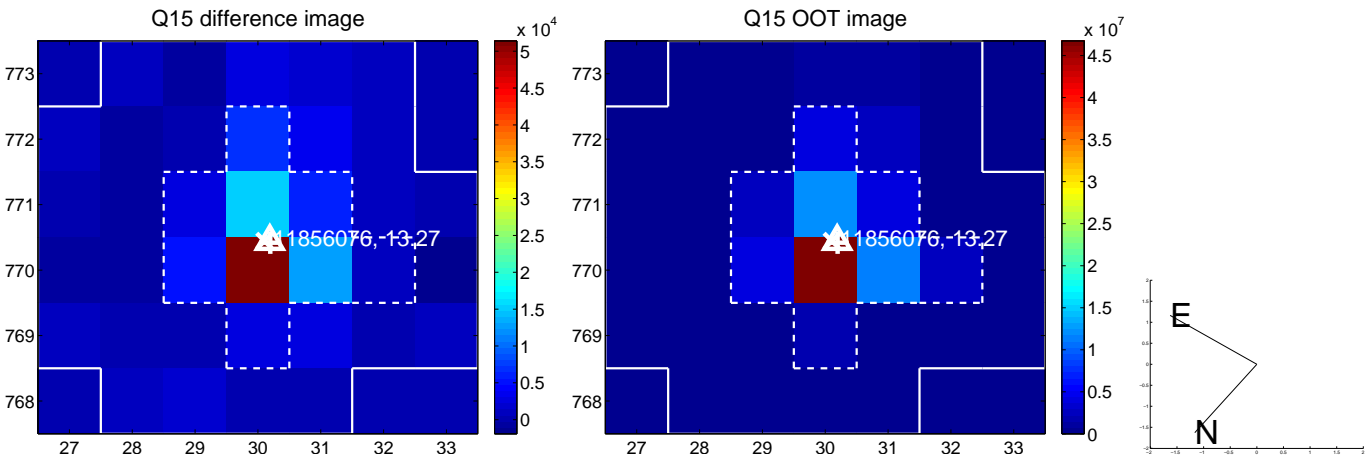
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



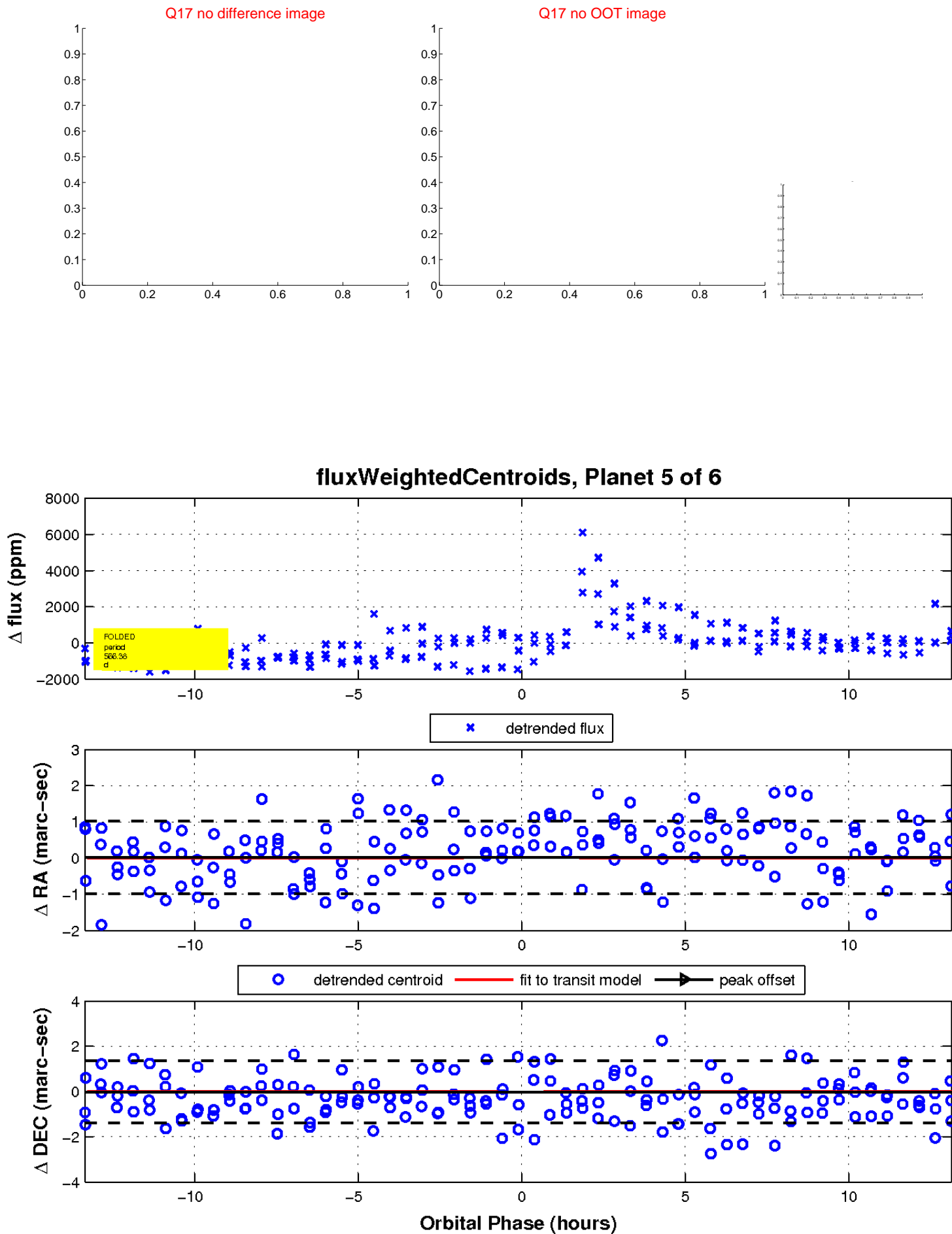
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

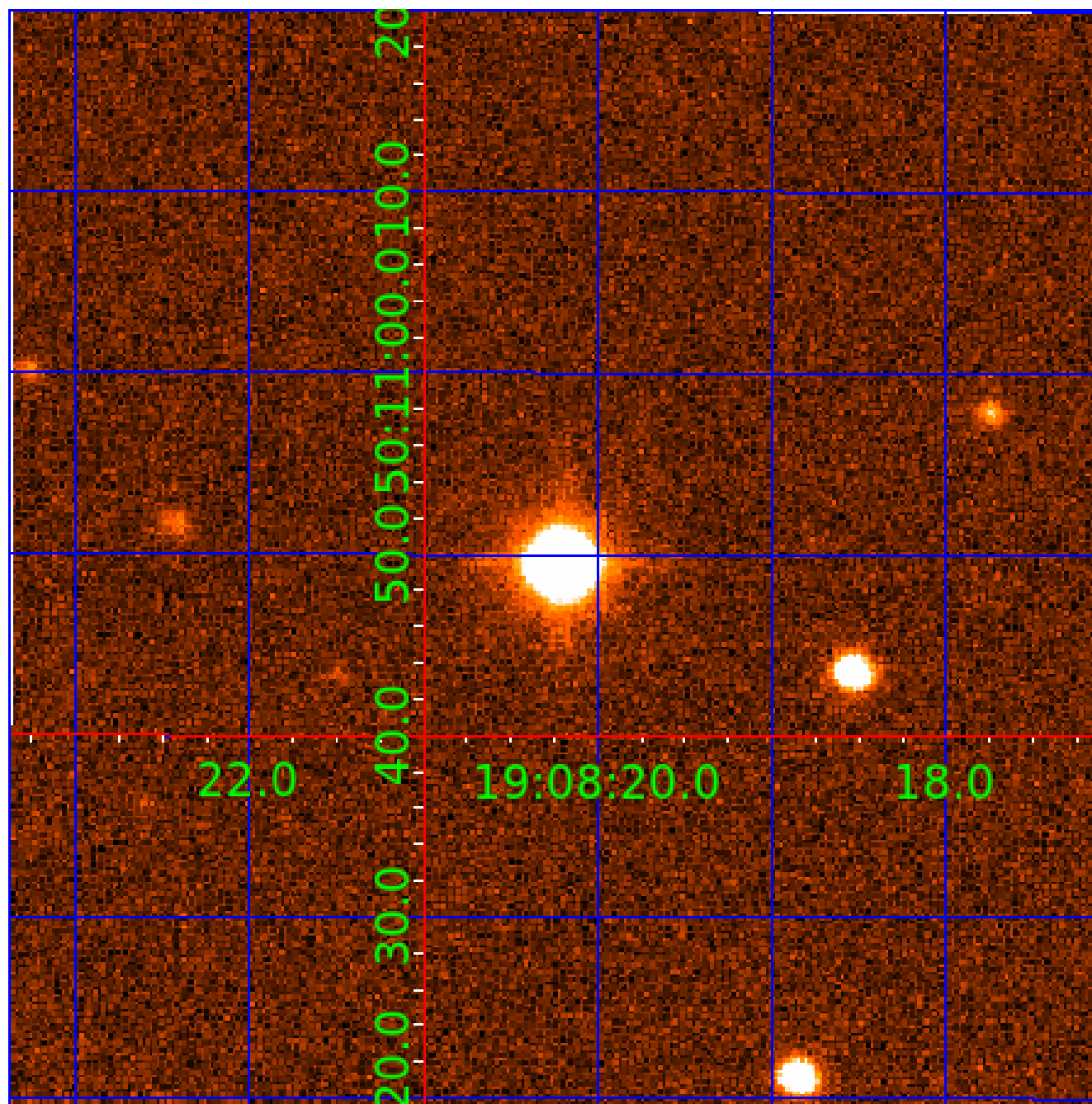


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011856076

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011856076-02 | OBS | No | 195.273527 | 137.313982 | 1265.6 | 12.919 | 11.1 | 6.5 | 0.70 | 4270 | 2.55 | 0.43 |
| 011856076-03 | OBS | No | 292.339232 | 280.810114 | 1794.6 | 14.655 | 15.0 | 5.7 | 0.70 | 4270 | 3.68 | 0.25 |
| 011856076-04 | OBS | No | 295.447291 | 203.838375 | 1127.4 | 4.469 | 13.3 | 6.8 | 0.70 | 4270 | 2.57 | 0.25 |
| 011856076-05 | OBS | No | 566.377742 | 297.720726 | 1308.3 | 4.464 | 13.3 | 6.6 | 0.70 | 4270 | 2.68 | 0.10 |
| 011856076-06 | OBS | No | 69.730805 | 176.042272 | 393.4 | 3.185 | 10.5 | 4.7 | 0.70 | 4270 | 1.63 | 1.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011856076-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS |
| 011856076-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011856076-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |
| 011856076-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS |

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

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

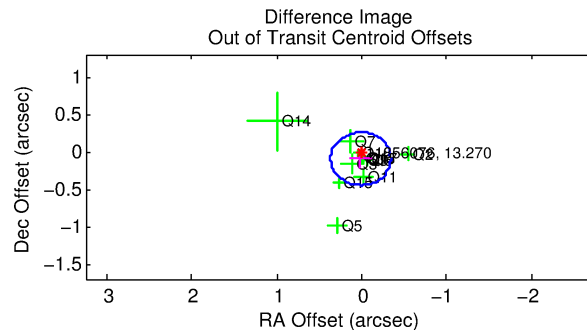
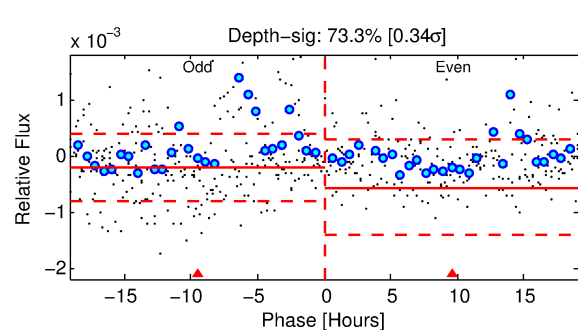
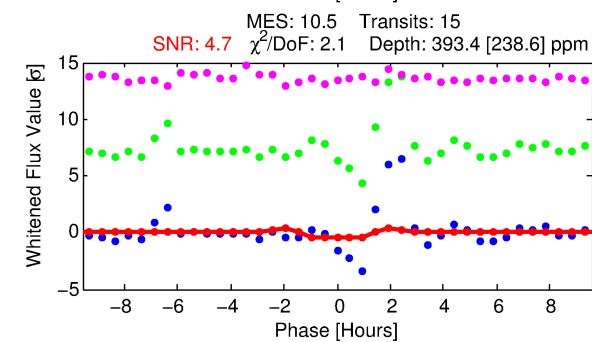
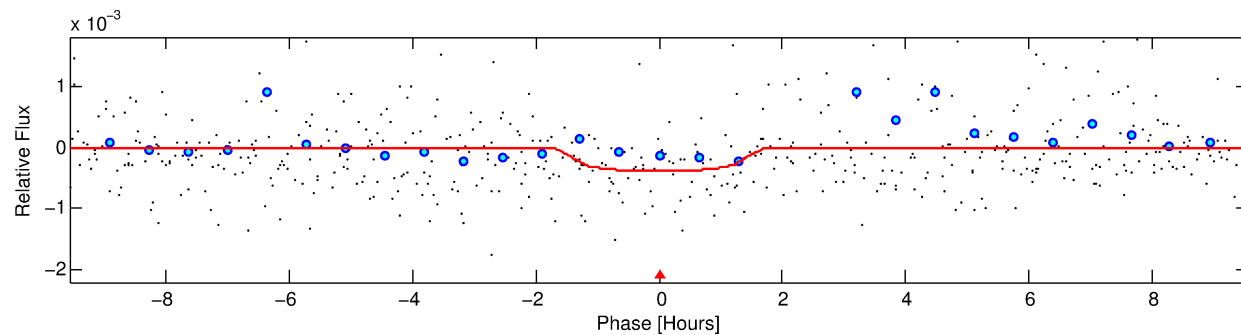
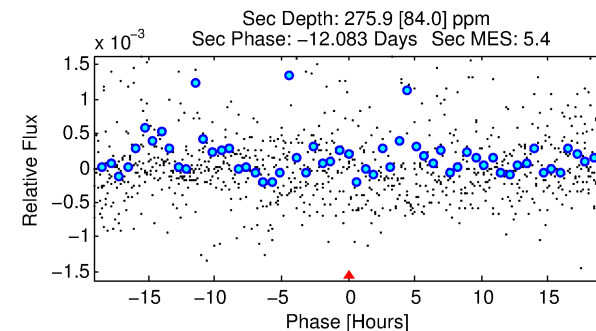
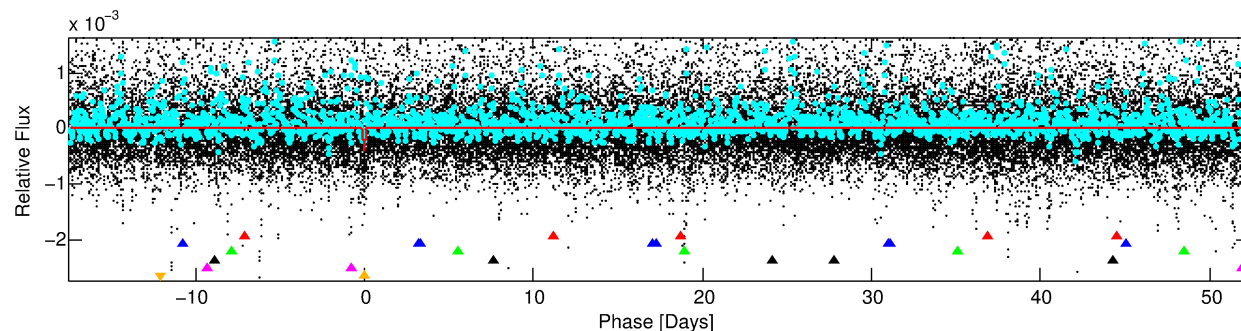
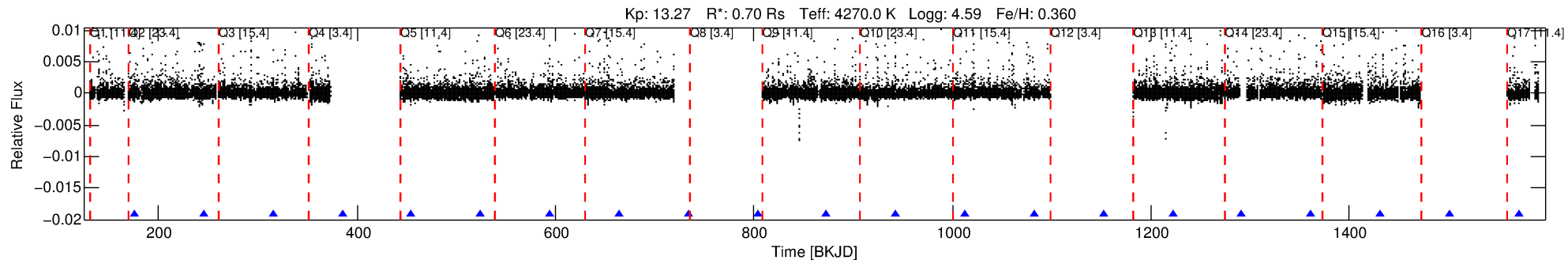
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011856076-06

No Significant Match Found

DV One-Page Summary

KIC: 11856076 Candidate: 6 of 6 Period: 69.731 d



DV Fit Results:

Period = 69.73081 [0.00233] d
Epoch = 176.0423 [0.0242] BKJD
Rp/R* = 0.0213 [0.0591]
a/R* = 95.51 [861.43]
b = 0.85 [3.11]
Seff = 1.69 [0.29]
Teq = 291 [13] K
Rp = 1.63 [4.52] Re
a = 0.2940 [0.0212] AU
Ag = 4934.99 [27389.80] [0.18σ]
Teff = 3767 [5227] K [0.66σ]

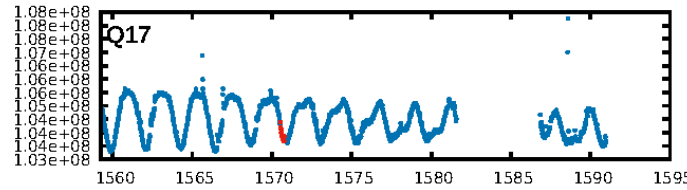
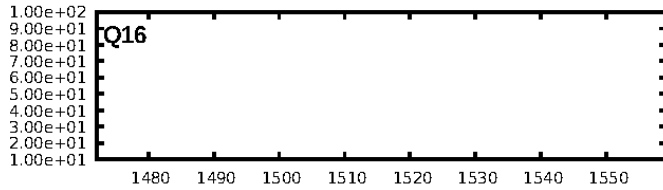
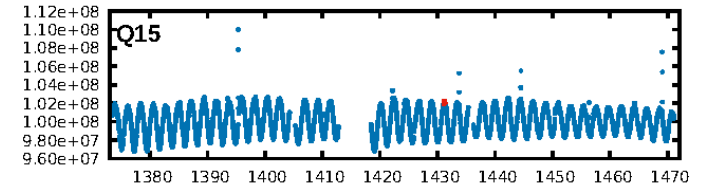
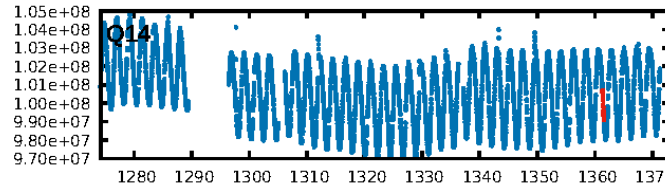
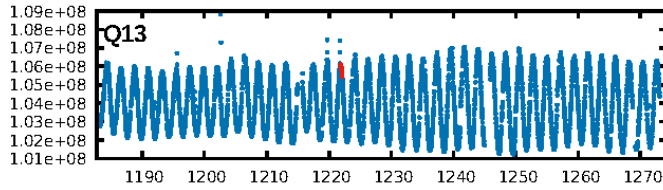
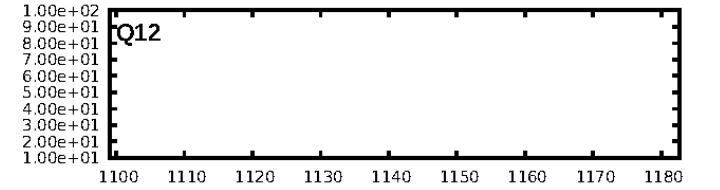
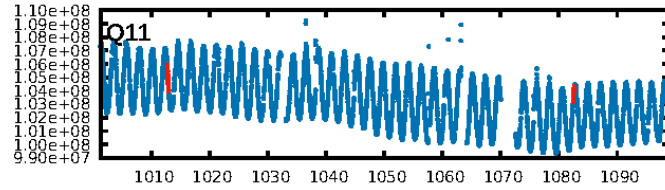
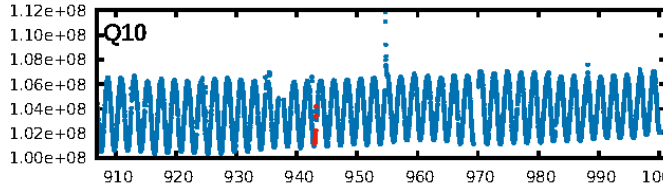
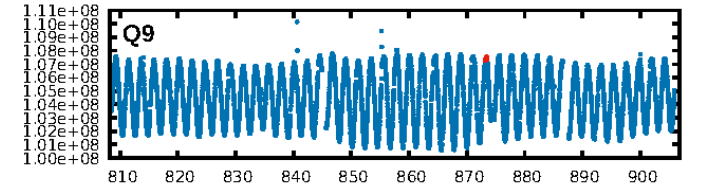
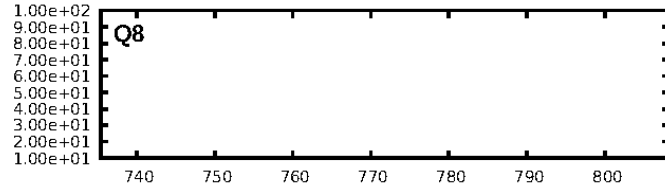
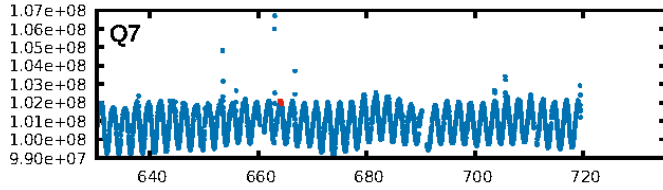
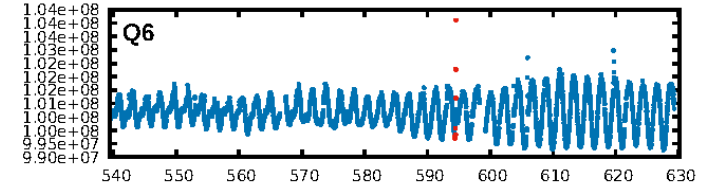
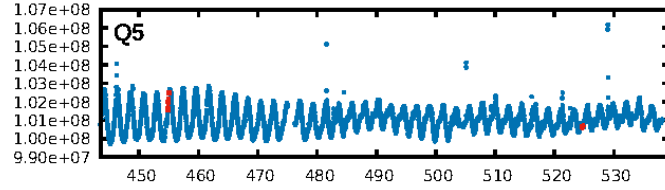
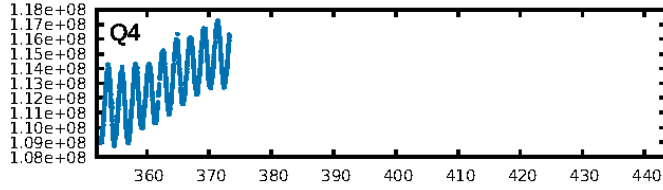
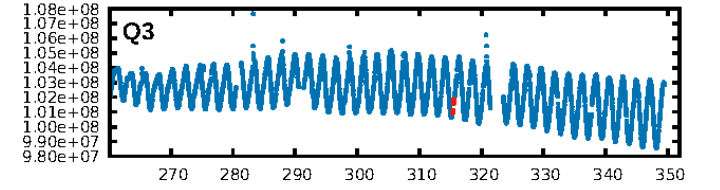
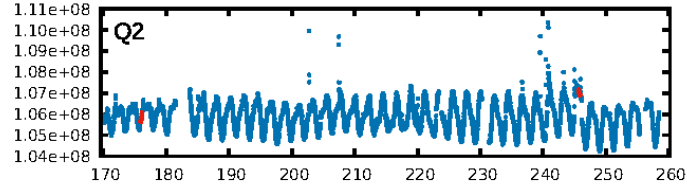
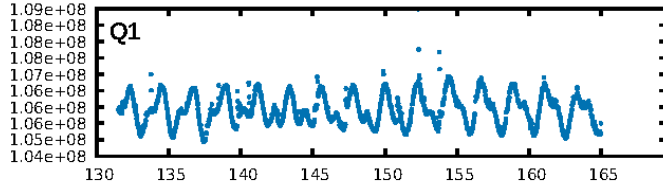
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [226.44σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 49.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: 1.042
Centroid-sig: 77.2%
Centroid-so: 0.265 arcsec [0.33σ]
OotOffset-rm: 0.096 arcsec [0.81σ]
OotOffset-st: 4/4/0/4 [12]
KicOffset-rm: 0.588 arcsec [4.63σ]
KicOffset-st: 4/4/0/4 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 1.00 [12/12]

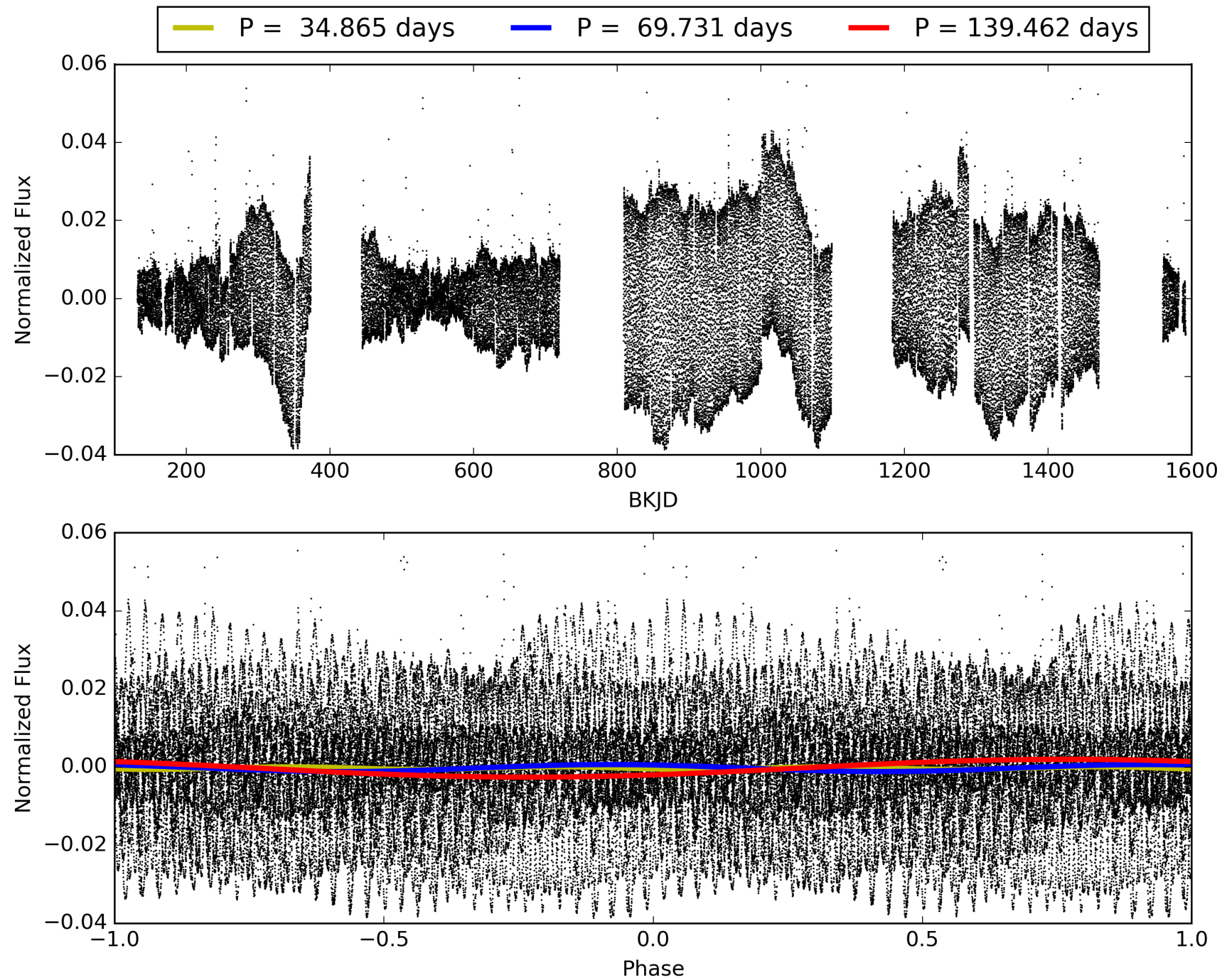
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:06:42 Z

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

TCE 011856076-06, PDC Light Curves

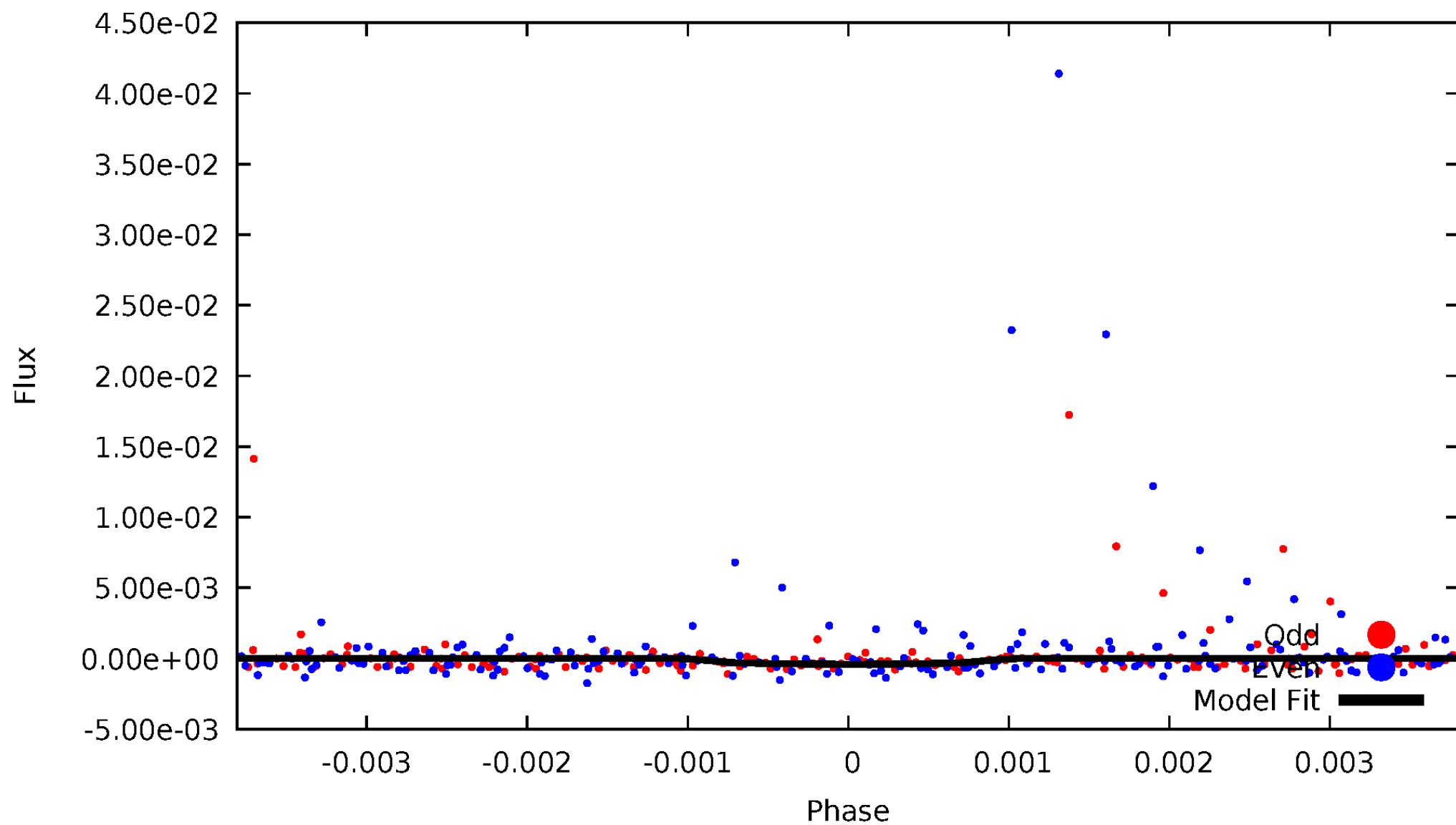


TCE 011856076-06



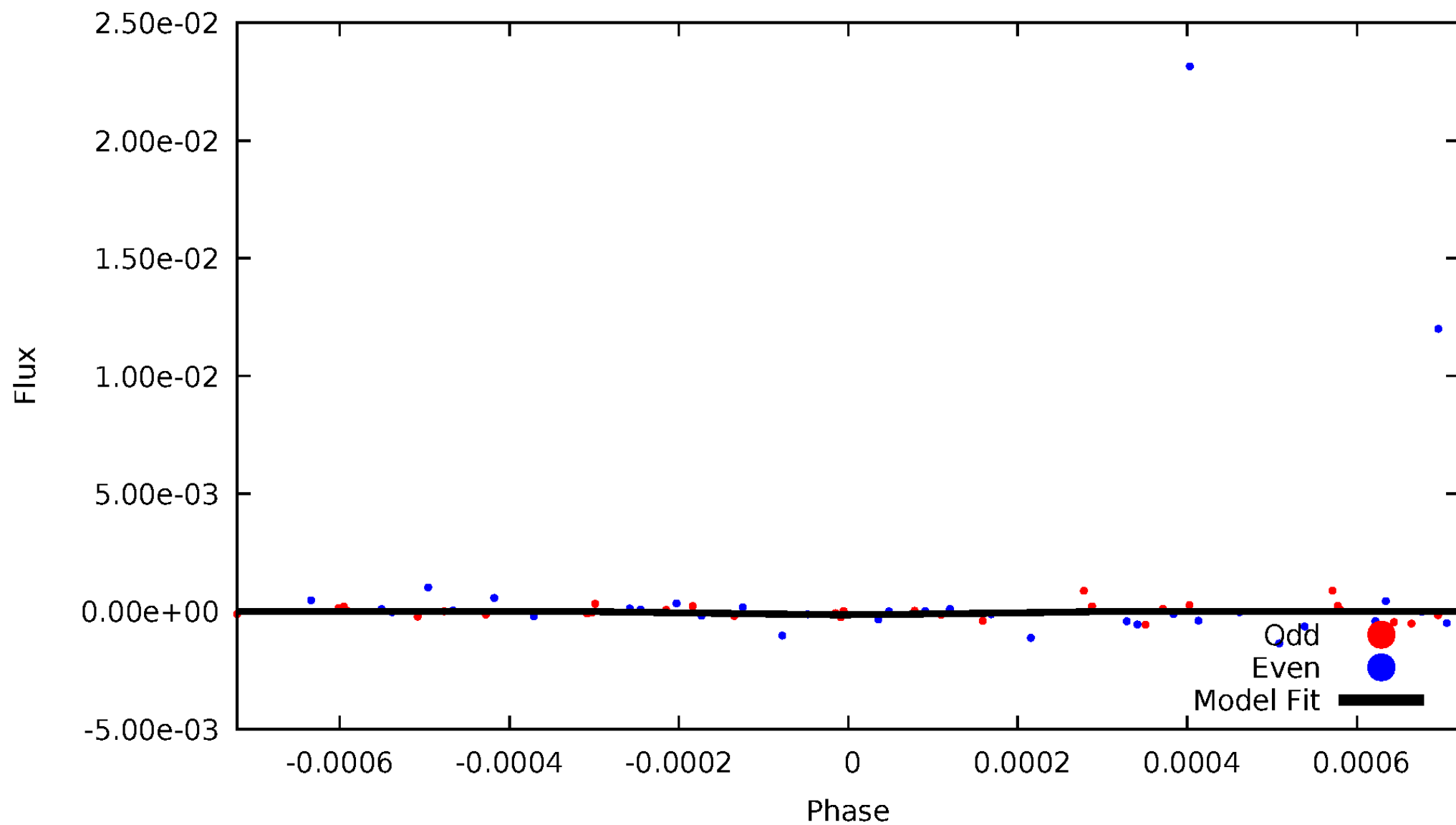
DV Odd/Even

TCE 011856076-06



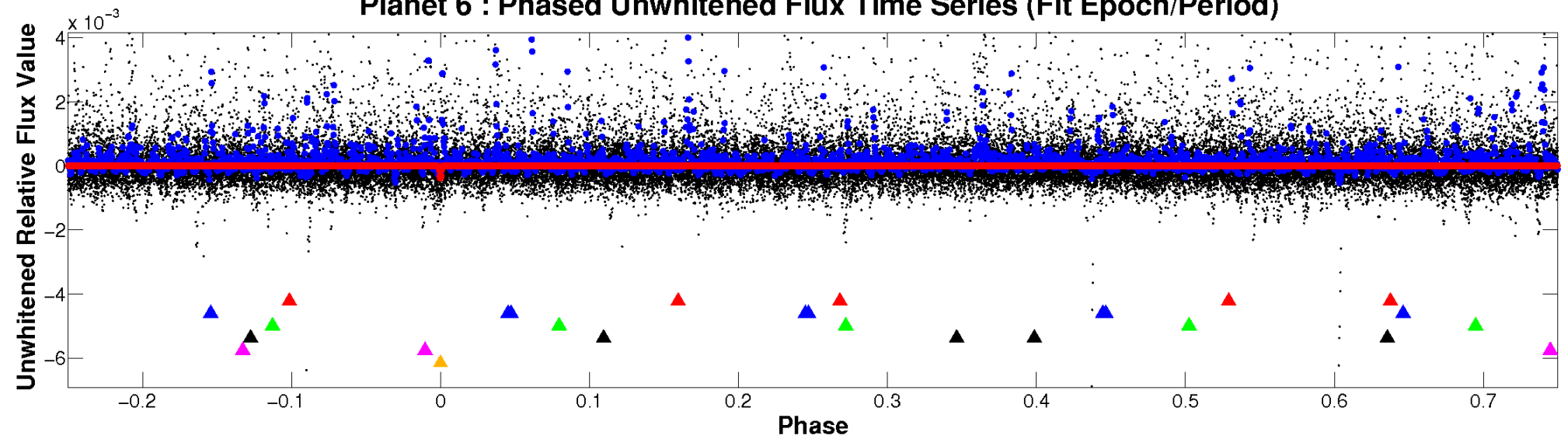
ALT Odd/Even

TCE 011856076-06

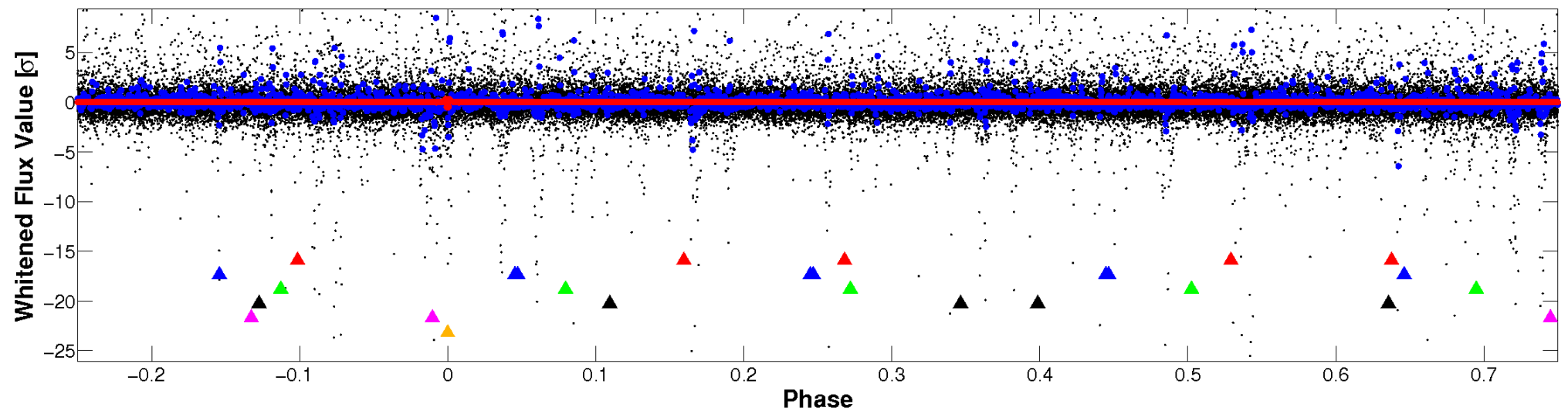


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

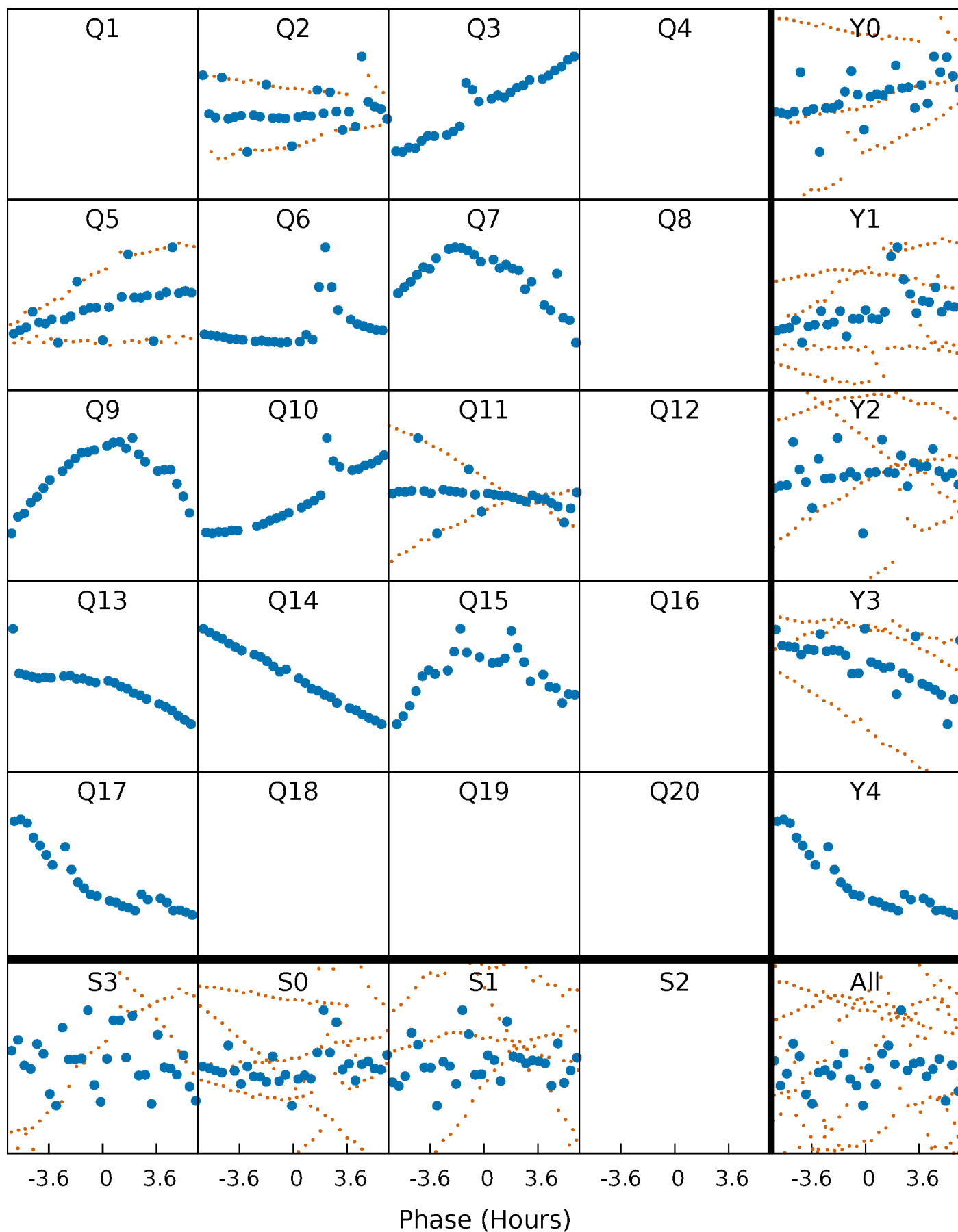


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



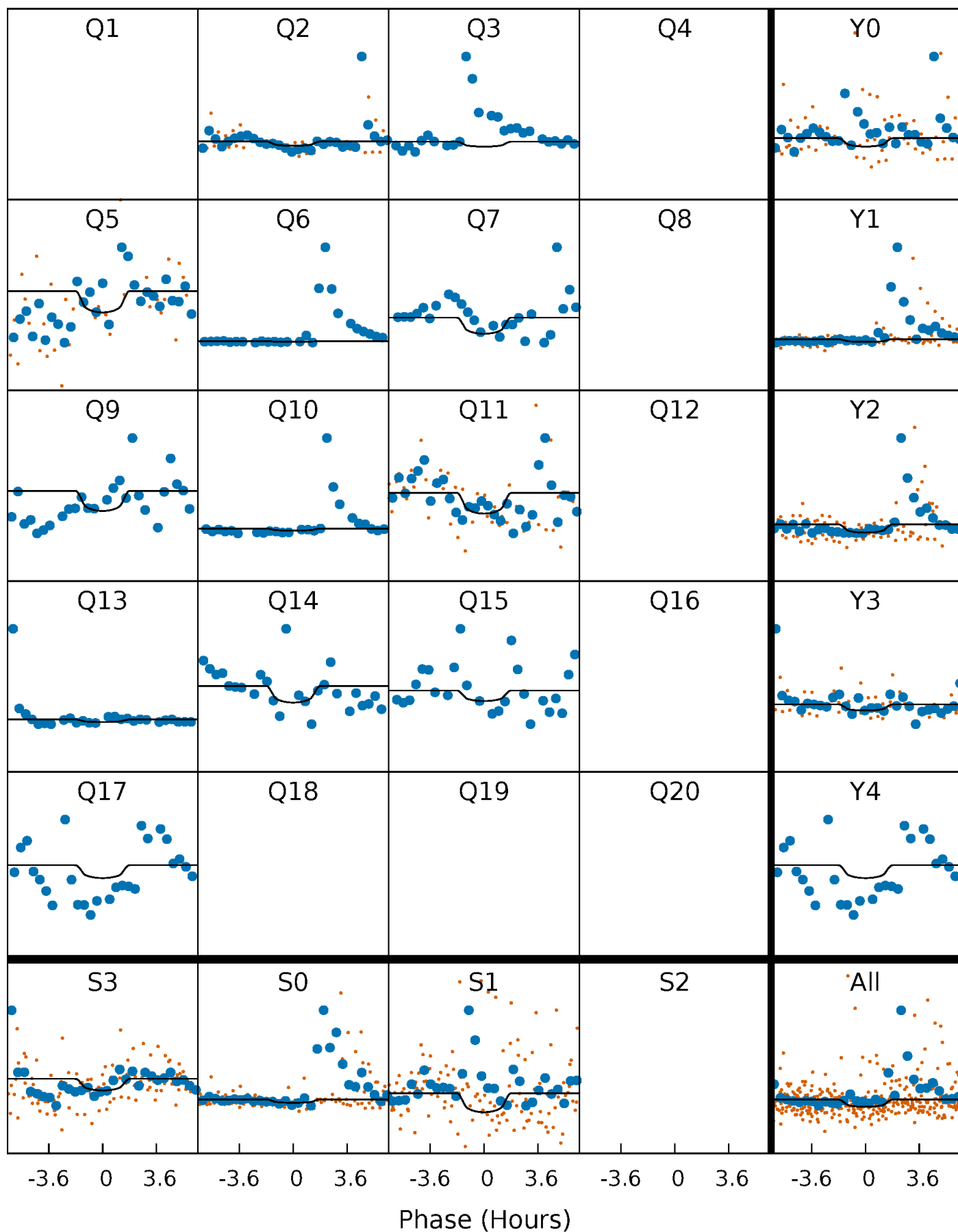
PDC Quarter-Phased Transit Curves

TCE 011856076-06 P= 69.730805 Days $T_0=176.042272$ (BKJD)



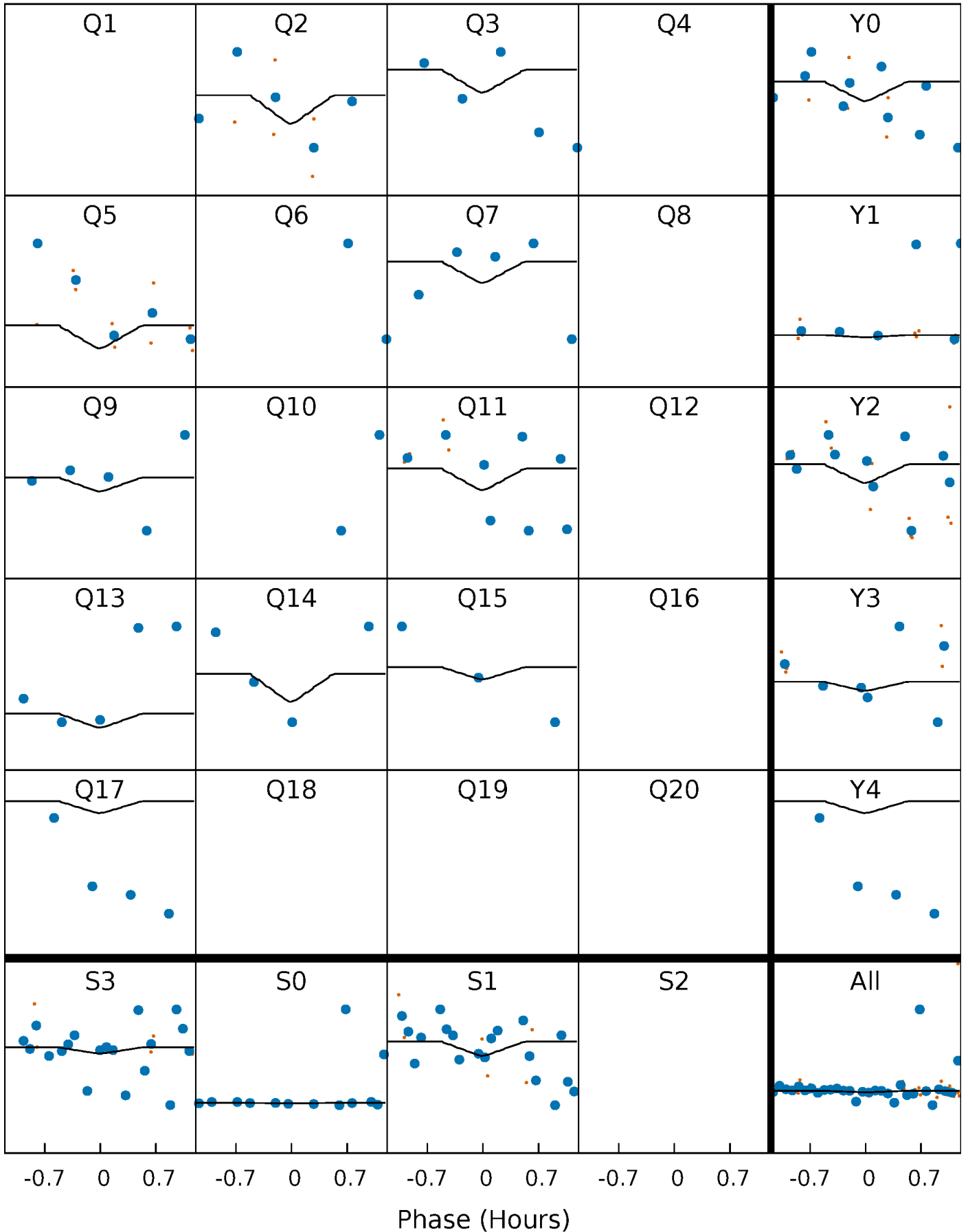
DV Quarter-Phased Transit Curves

TCE 011856076-06 P= 69.730805 Days $T_0=176.042272$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

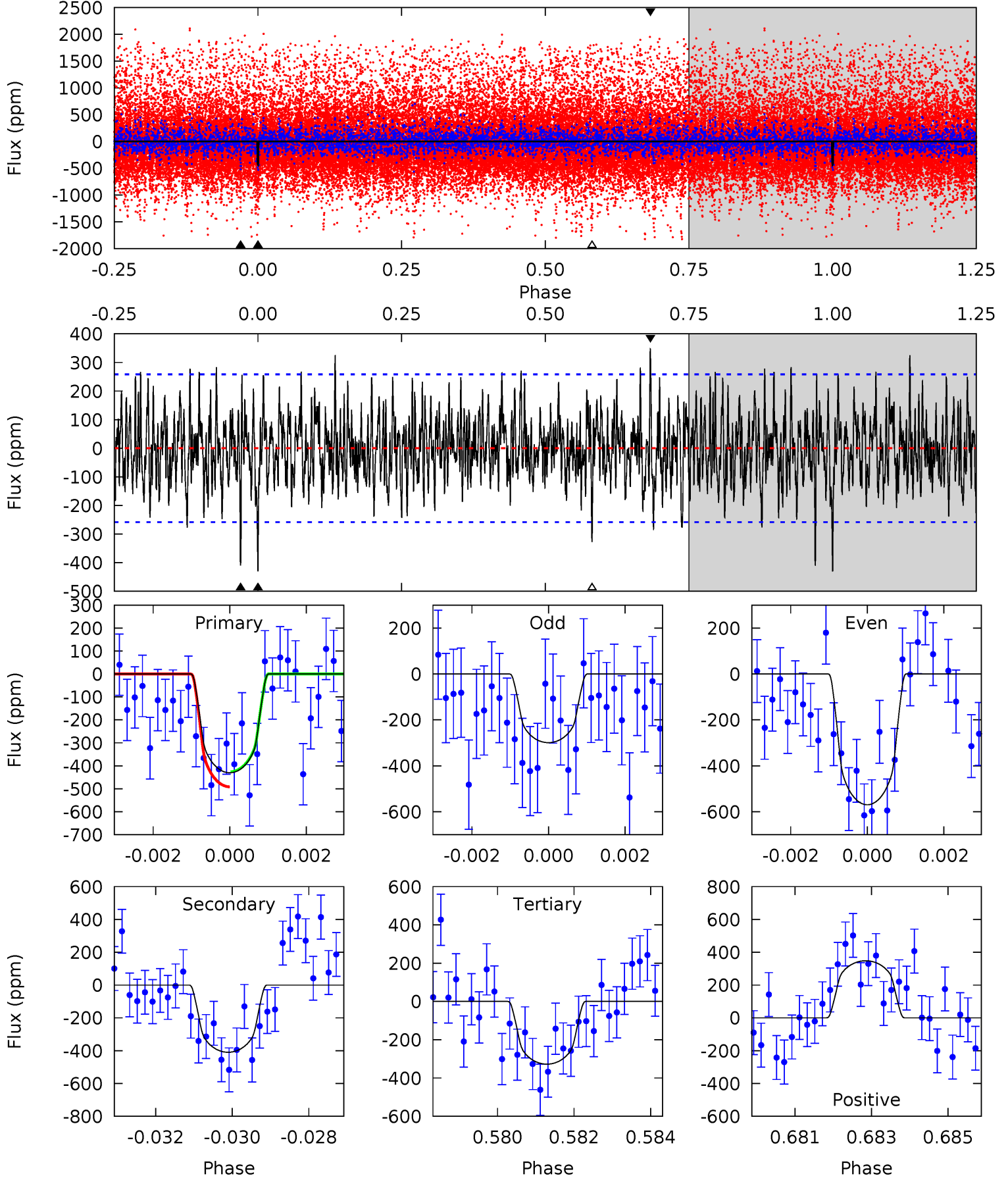
TCE 011856076-06 P= 69.720170 Days $T_0=176.189868$ (BKJD)



DV Model-Shift Uniqueness Test

011856076-06, P = 69.730805 Days, E = 106.311467 Days

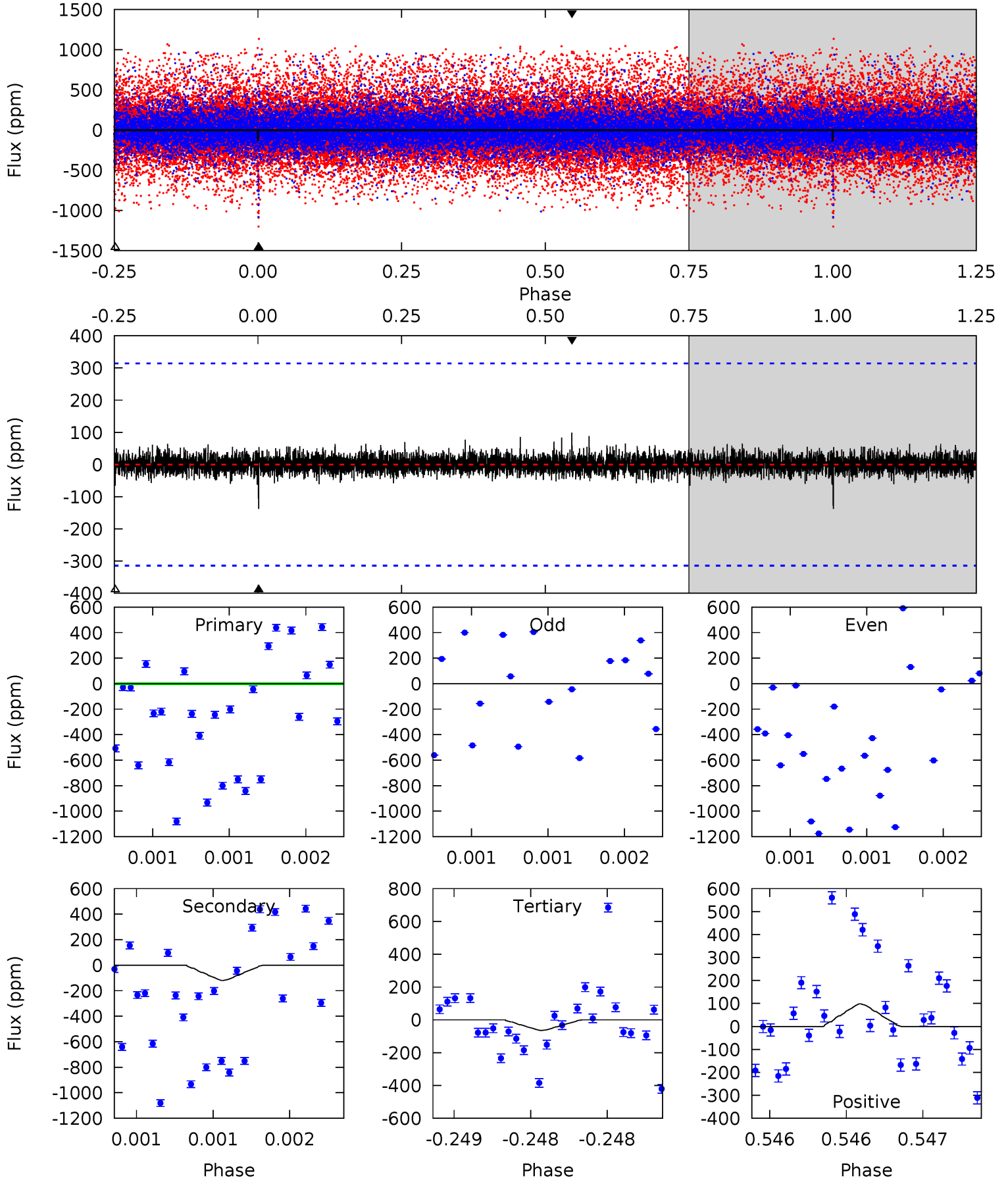
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.85 | 8.43 | 6.74 | 7.16 | 5.31 | 3.07 | 2.05 | 2.11 | 1.69 | 1.69 | 1.27 | 2.79 | 0.32 | 0.45 | 0.68 |



Alt Model-Shift Uniqueness Test

011856076-06, P = 69.720170 Days, E = 106.469698 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 2.42 | 2.12 | 1.14 | 1.74 | 5.53 | 3.42 | 0.34 | 1.28 | 0.68 | 0.98 | 0.38 | 0.36 | -7.94 | 0.42 | 0.79 |



Stellar Parameters For KIC 011856076

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4270^{+150}_{-150} | $4.591^{+0.056}_{-0.018}$ | $0.360^{+0.100}_{-0.300}$ | $0.700^{+0.024}_{-0.061}$ | $0.696^{+0.042}_{-0.052}$ | $2.859^{+0.663}_{-0.192}$ |
| | +4%/-4% | +1%/-0% | +28%/-83% | +3%/-9% | +6%/-7% | +23%/-7% |
| 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 011856076-06 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|-------------------------|
| DV | -410 ± 49 | $3.54^{+3.44}_{-2.49}$ | 404^{+15}_{-17} | 3249^{+1691}_{-581} | 1575^{+15555}_{-1170} |
| Alt. | -120 ± 57 | $3.21^{+3.39}_{-2.18}$ | 404^{+16}_{-15} | 2760^{+1120}_{-488} | 505^{+4273}_{-397} |

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

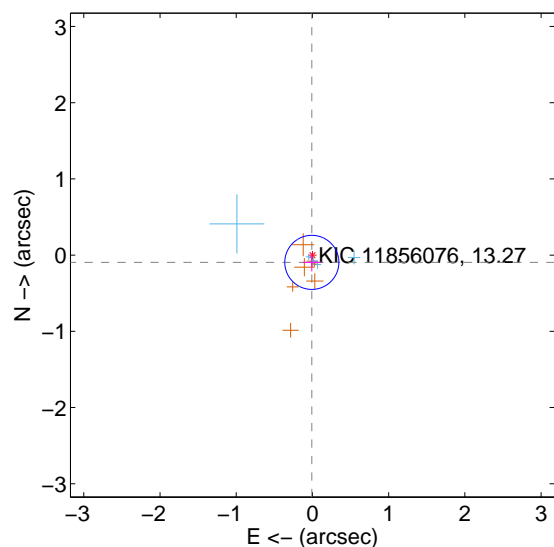
Supplemental centroid analysis for 011856076-06. Kepler magnitude: 13.27. Transit SNR 4.68

There are 5 quarters with good PRF difference image offsets

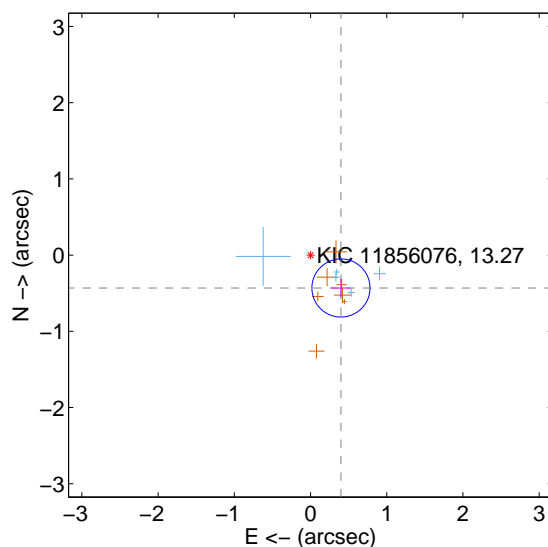
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.096 ± 0.118 | 0.81 | 0.008 ± 0.118 | -0.095 ± 0.119 |
| PRF-fit source offset from KIC position | 0.588 ± 0.127 | 4.63 | -0.399 ± 0.127 | -0.432 ± 0.120 |
| photometric centroid source offset | 0.26 ± 0.79 | 0.33 | -0.18 ± 0.79 | 0.19 ± 0.80 |

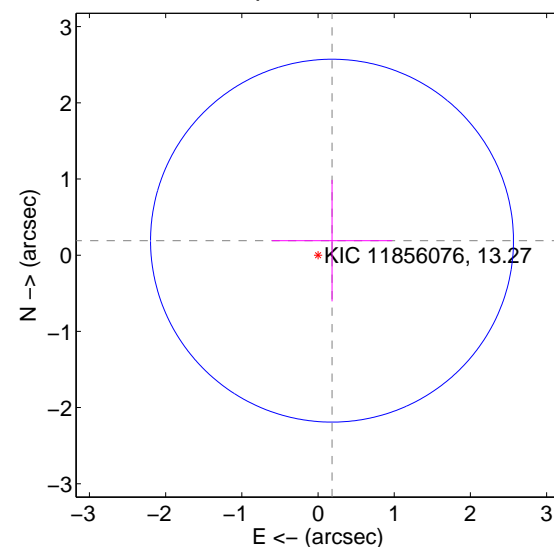
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

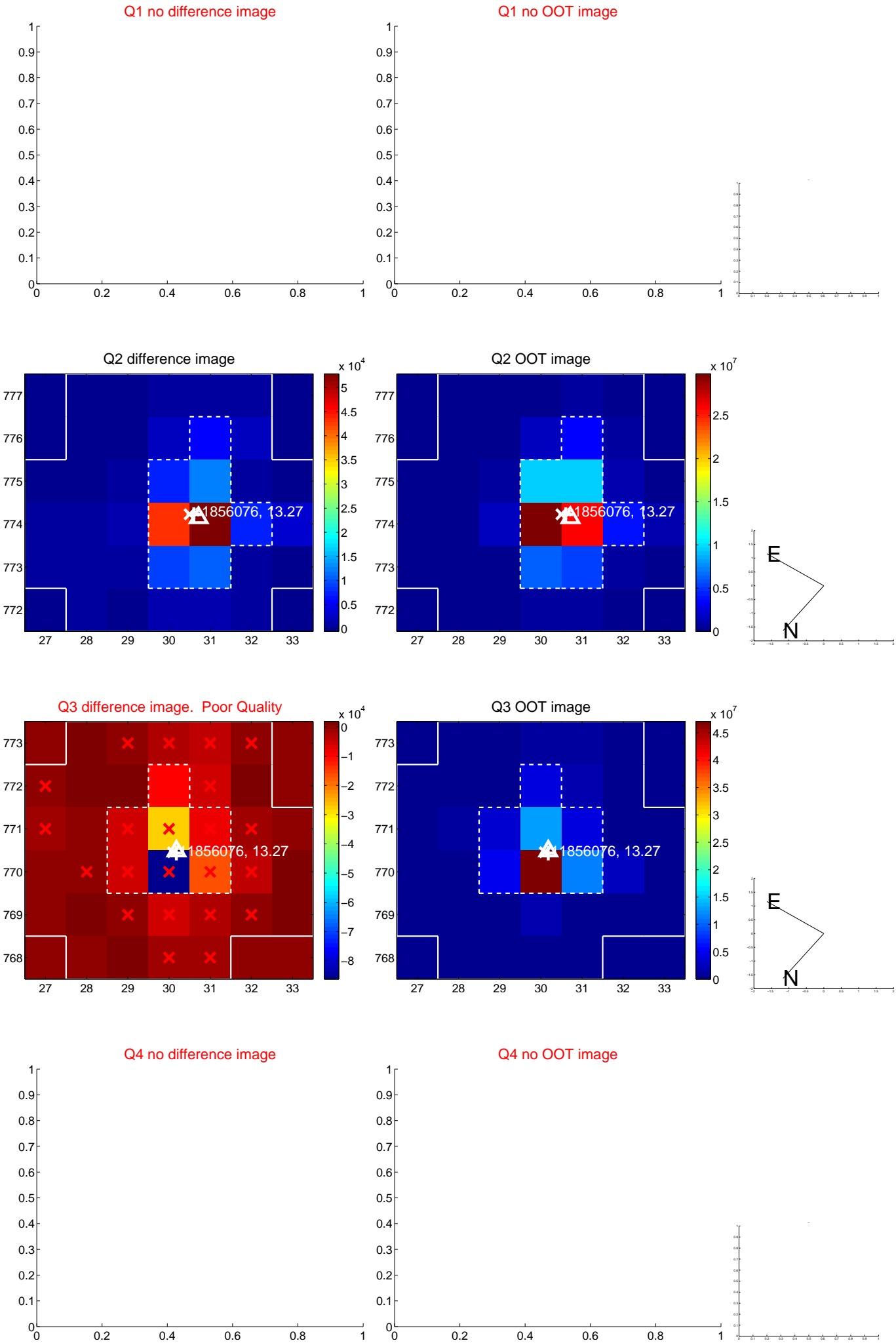


offset from photometric centroids

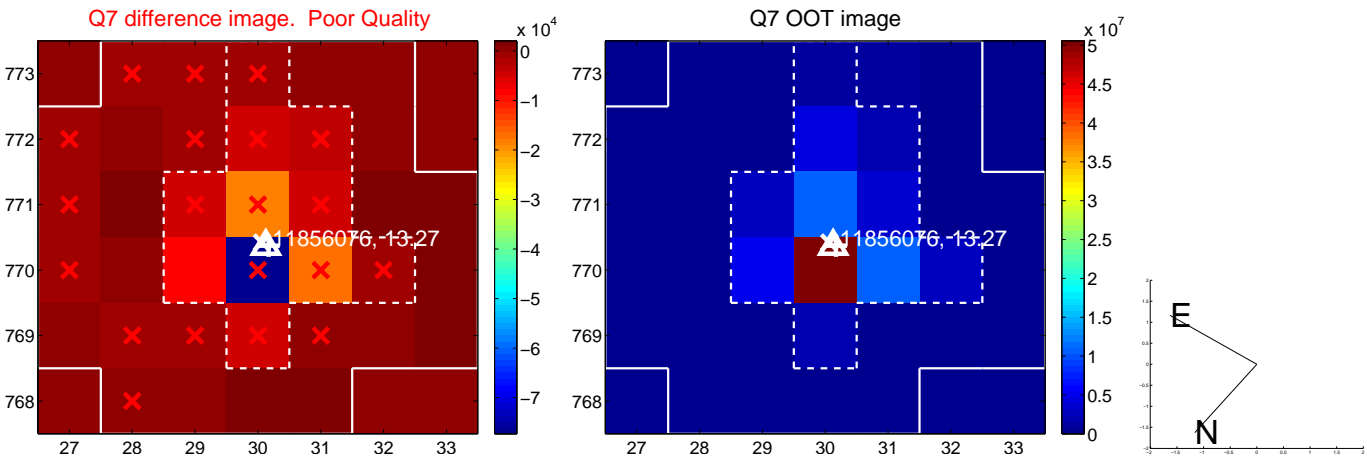
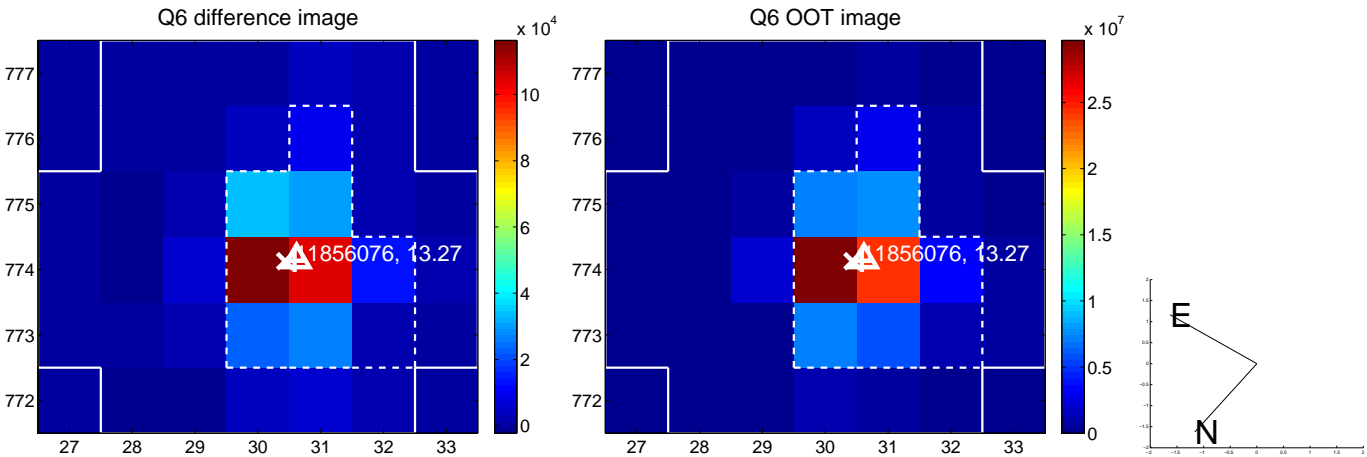
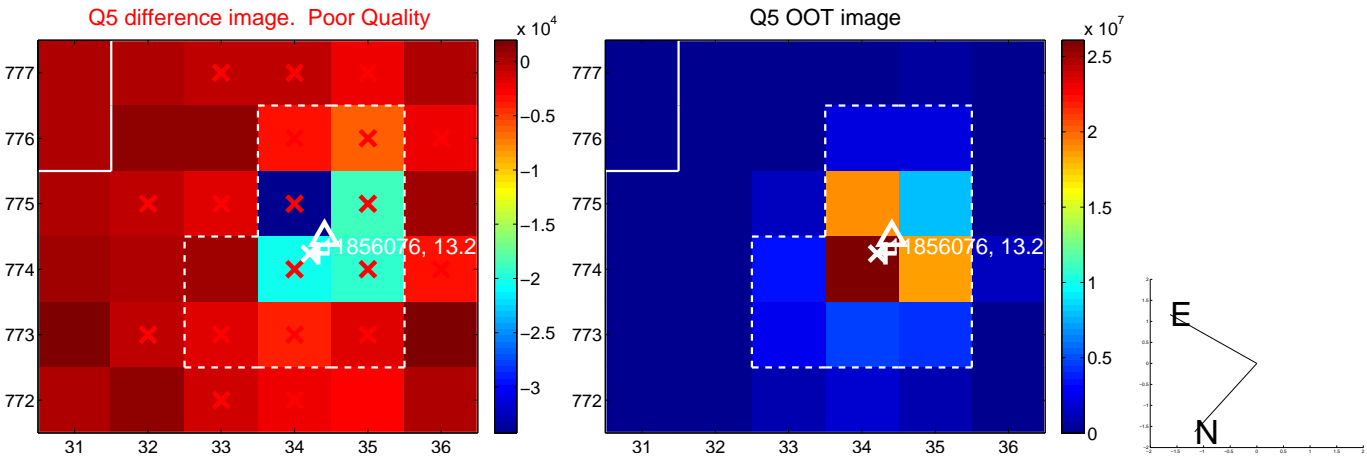


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

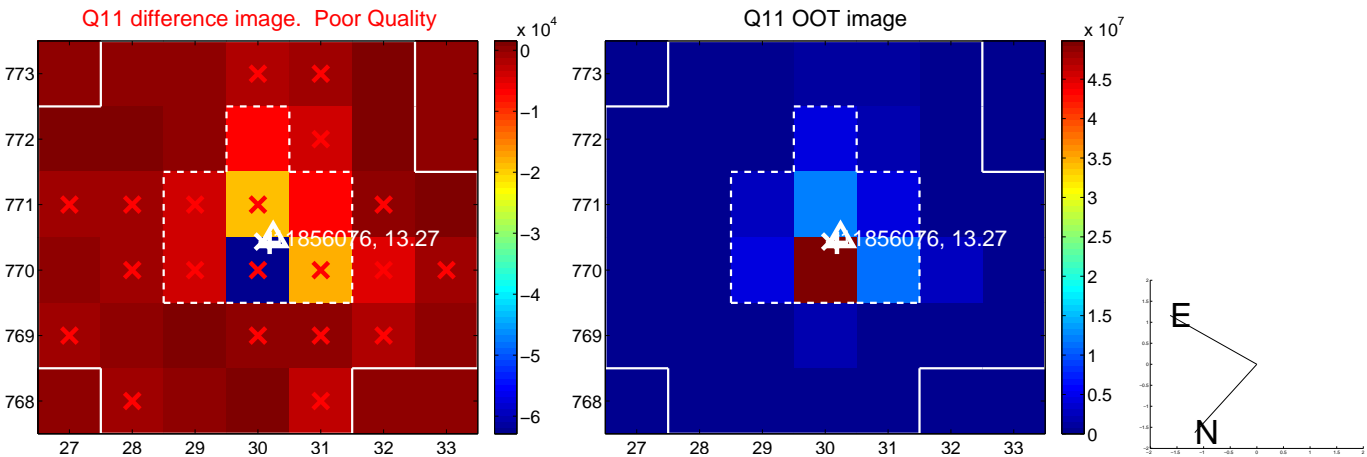
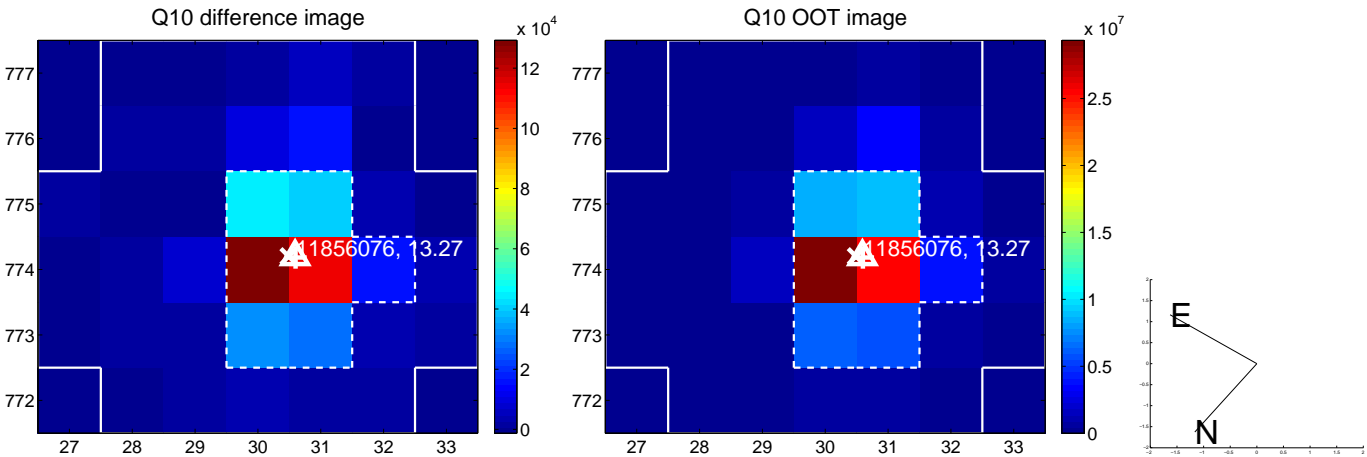
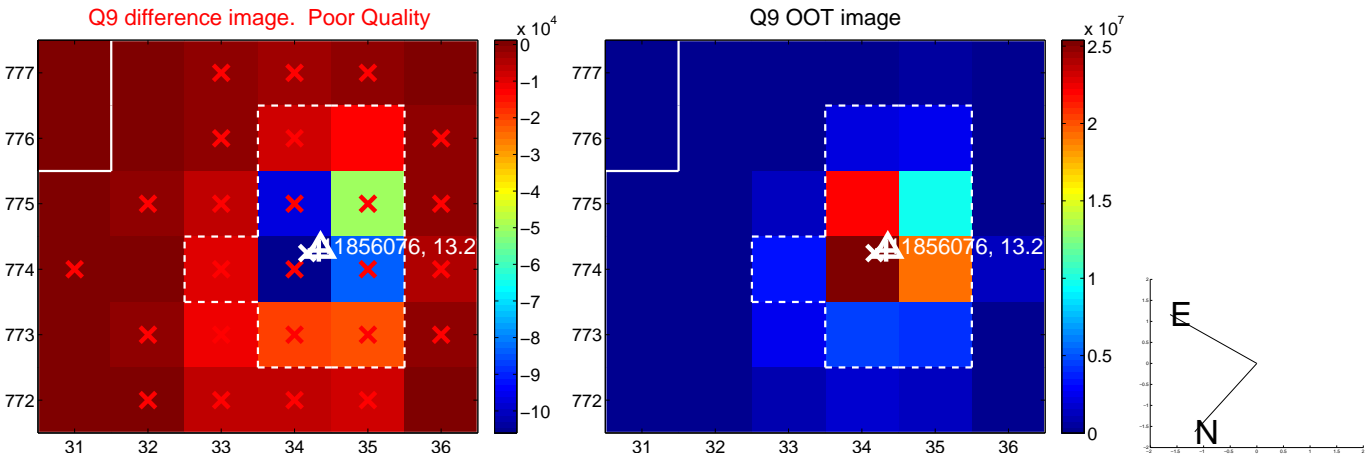
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



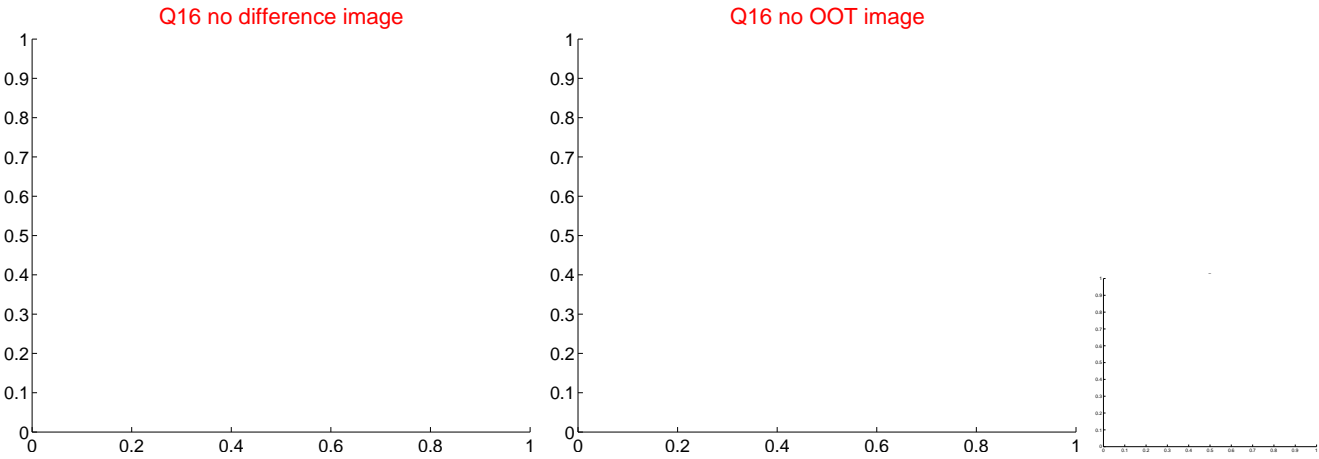
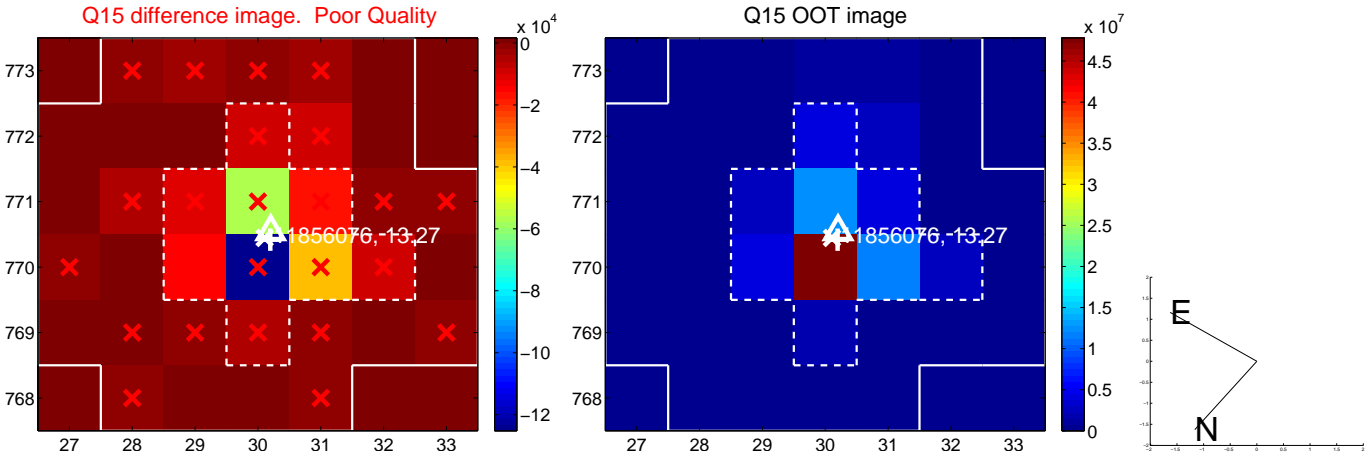
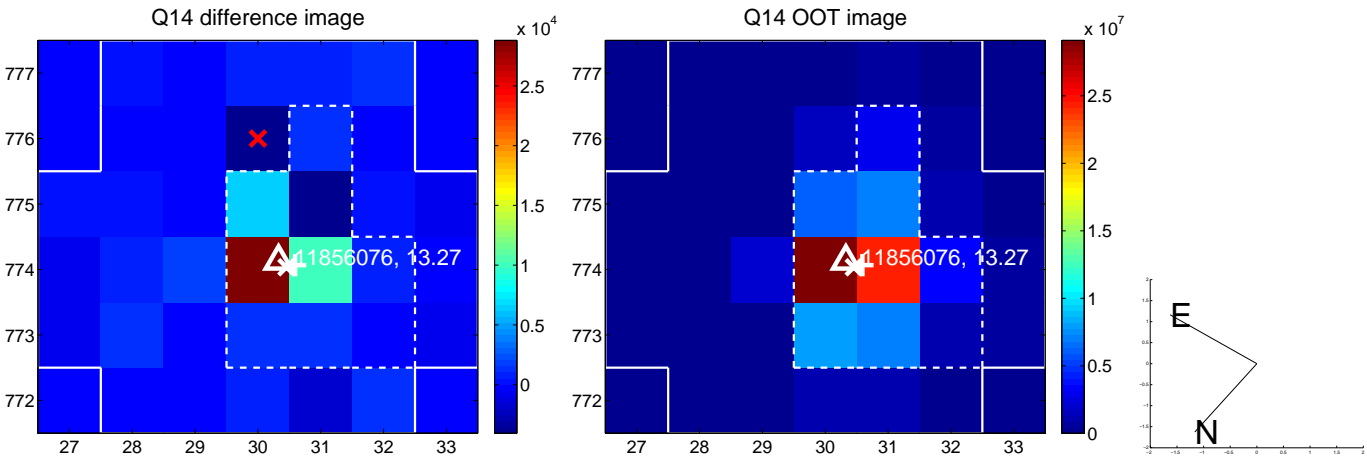
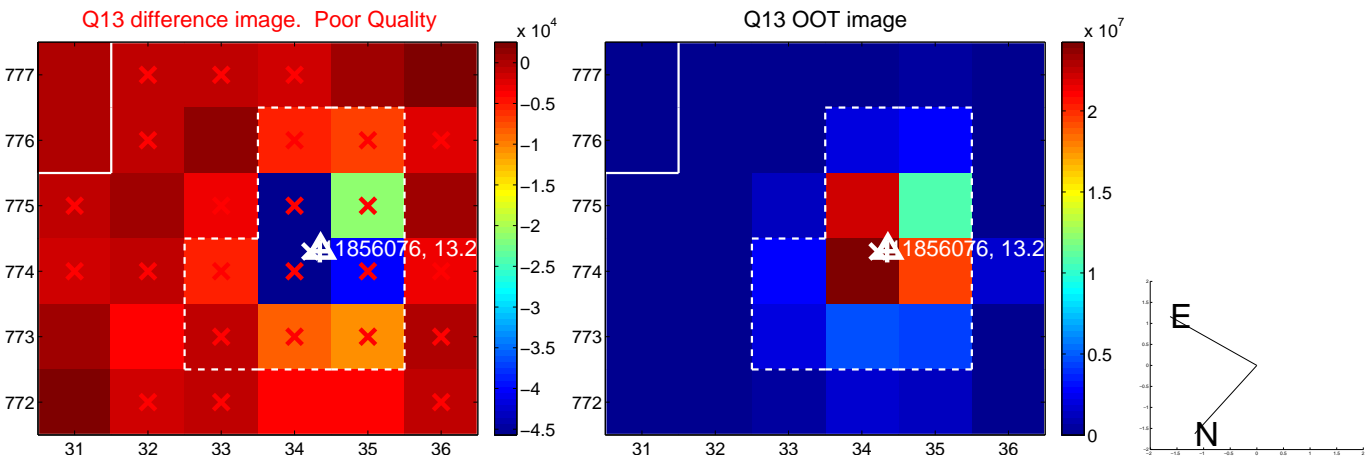
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



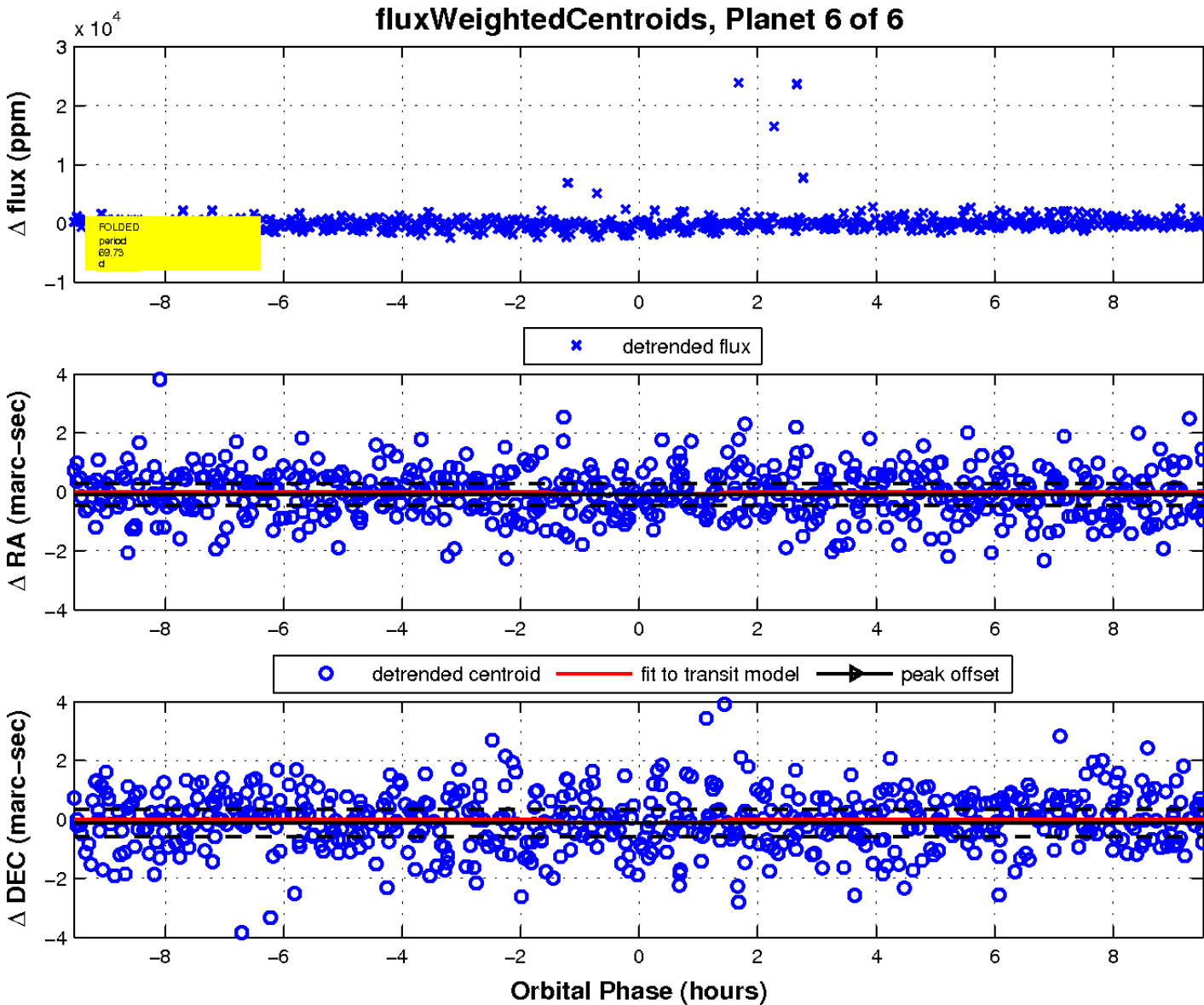
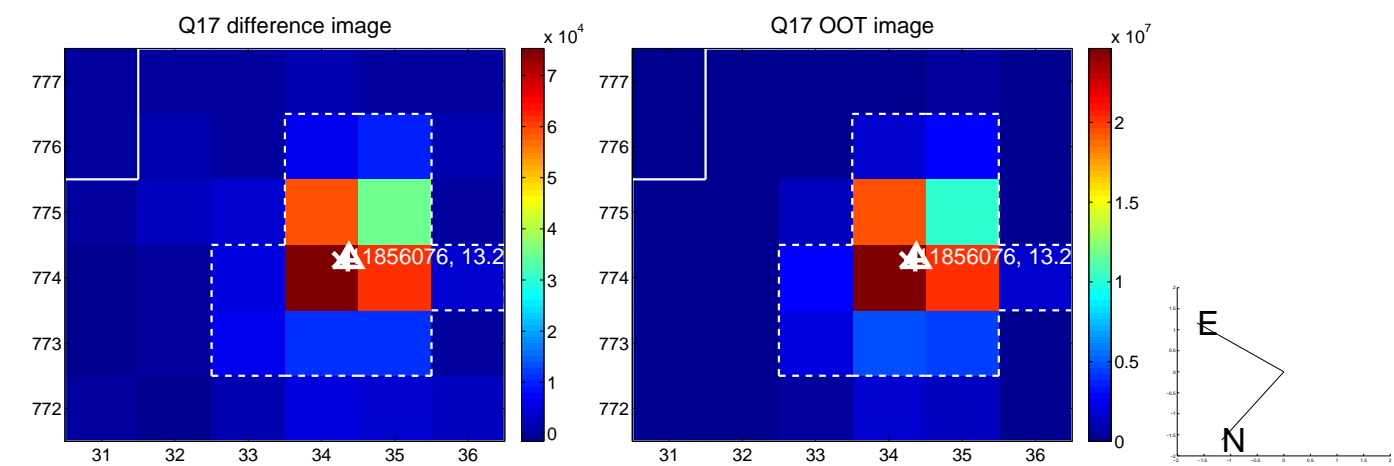
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

