

KIC 004174461

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 004174461-01 | OBS | No | 253.239457 | 219.731594 | 963.0 | 10.254 | 12.5 | 8.5 | 0.62 | 4356 | 2.04 | 0.28 |
| 004174461-02 | OBS | No | 372.380135 | 322.794313 | 929.1 | 6.521 | 11.8 | 6.7 | 0.62 | 4356 | 1.95 | 0.17 |
| 004174461-03 | OBS | No | 326.521255 | 263.038319 | 895.4 | 6.998 | 13.2 | 7.7 | 0.62 | 4356 | 2.08 | 0.20 |
| 004174461-04 | OBS | No | 310.989740 | 299.043687 | 1069.1 | 4.485 | 9.4 | 8.2 | 0.62 | 4356 | 2.24 | 0.21 |
| 004174461-05 | OBS | No | 425.785636 | 273.290437 | 1069.1 | 8.657 | 9.4 | 9.9 | 0.62 | 4356 | 2.26 | 0.14 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 004174461-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004174461-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

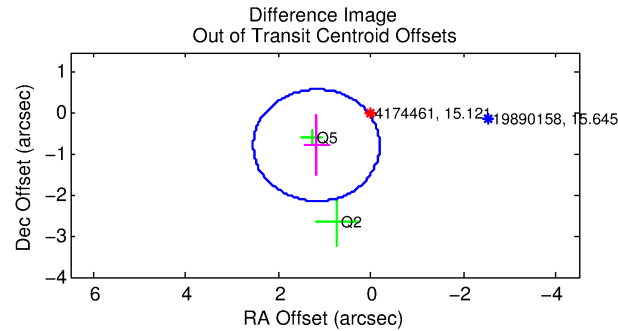
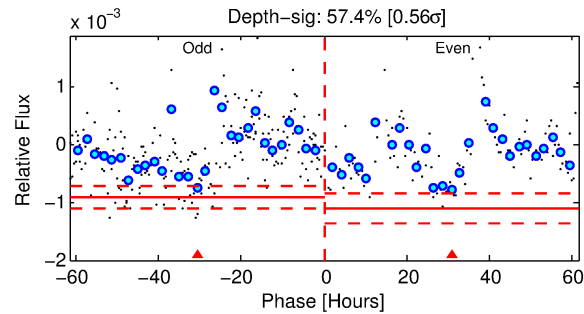
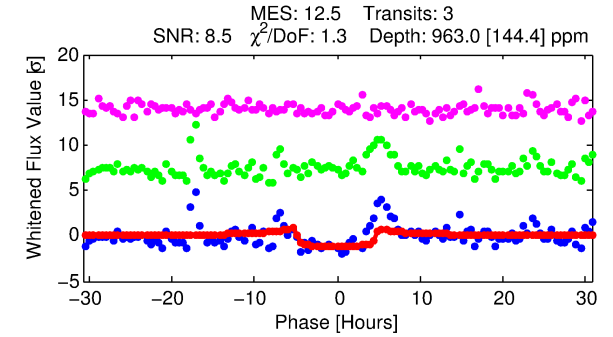
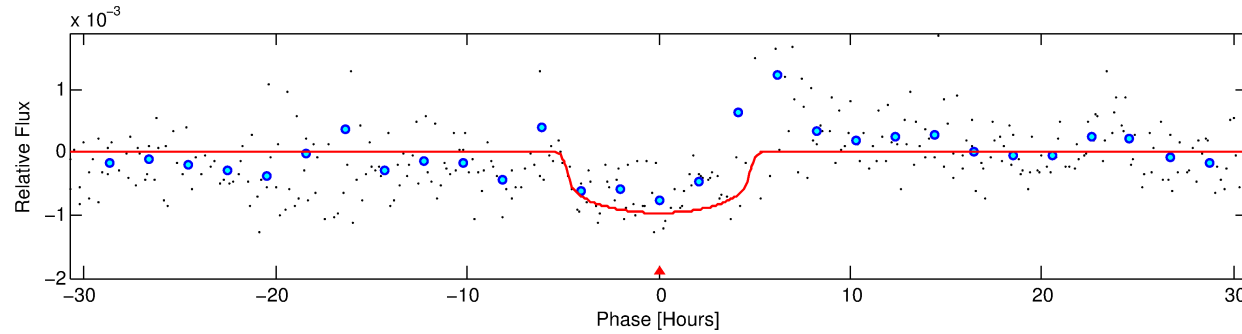
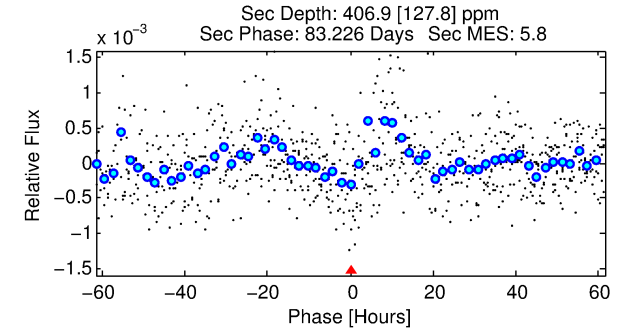
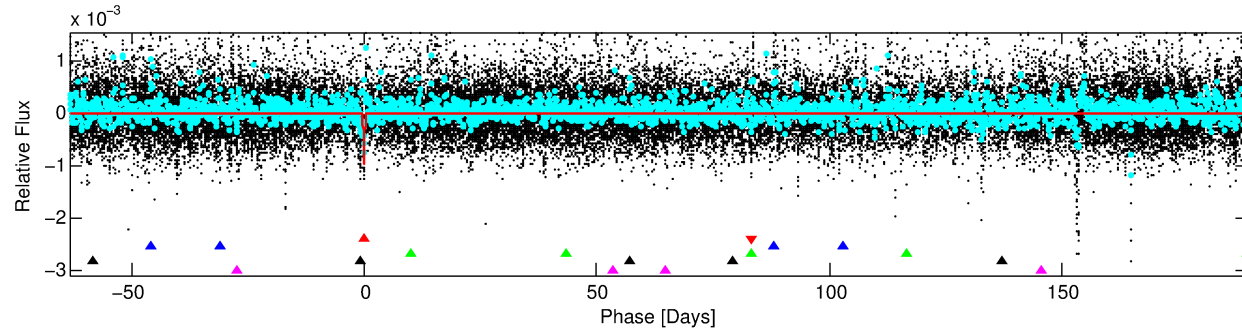
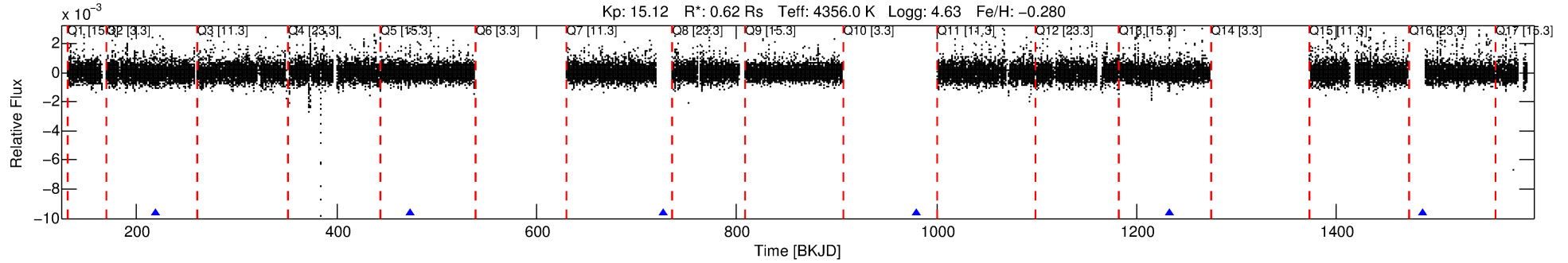
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004174461-01

No Significant Match Found

DV One-Page Summary

KIC: 4174461 Candidate: 1 of 5 Period: 253.239 d



DV Fit Results:

Period = 253.23946 [0.00530] d
Epoch = 219.7316 [0.0119] BKJD
Rp/R* = 0.0301 [0.0113]
a/R* = 146.02 [182.39]
b = 0.68 [1.00]
Seff = 0.28 [0.05]
Teq = 186 [7] K
Rp = 2.04 [0.79] Re
a = 0.6636 [0.0490] AU
Ag = 23605.70 [19407.91] [1.22σ]
Teffp = 3565 [735] K [4.60σ]

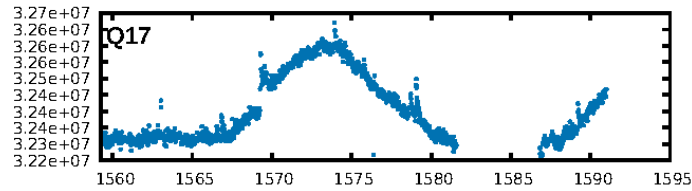
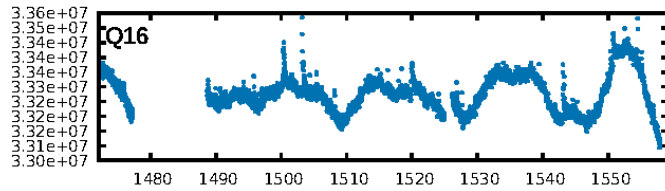
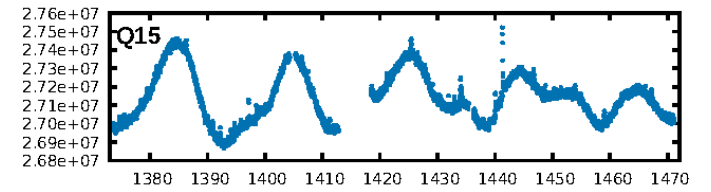
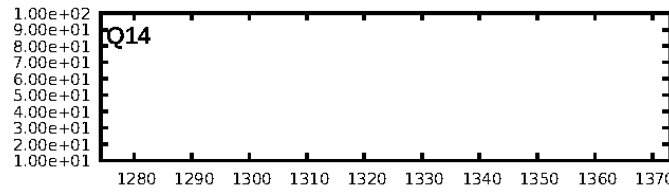
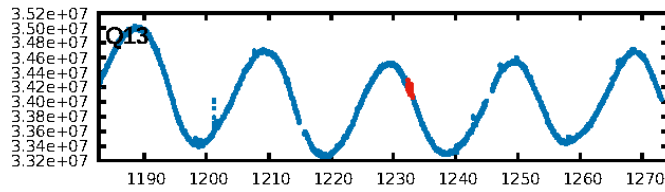
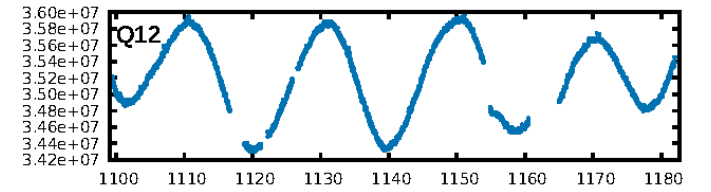
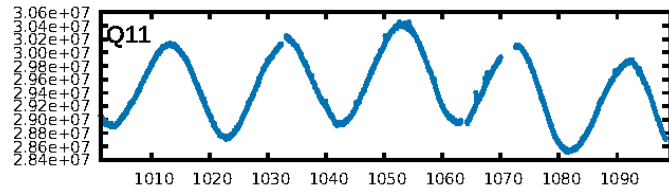
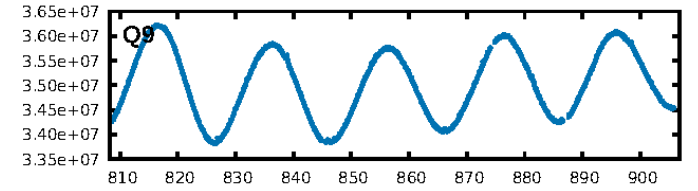
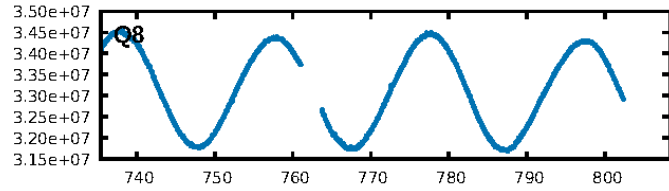
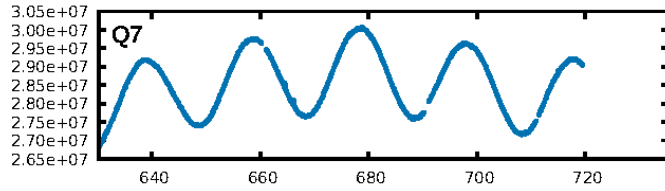
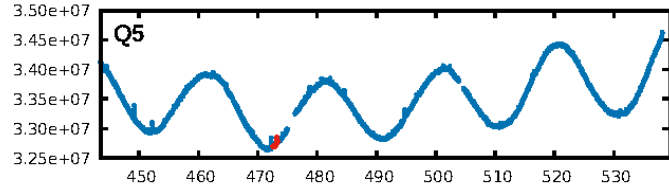
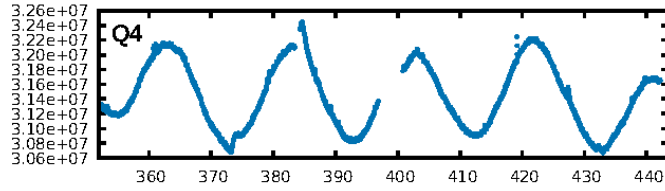
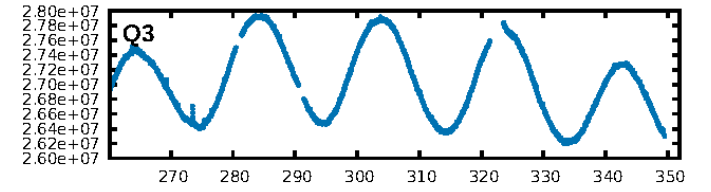
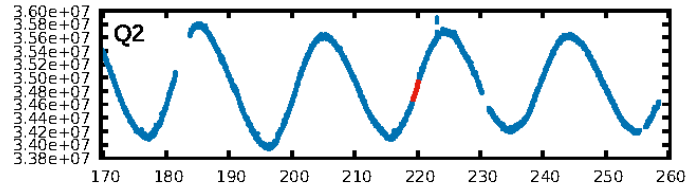
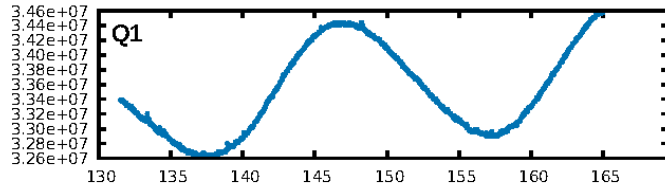
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [123.84σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 92.6%
Bootstrap-pfa: 7.70e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.7506
Centroid-sig: N/A
Centroid-so: 1.083 arcsec [0.62σ]
OotOffset-rm: 1.409 arcsec [3.09σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 0.823 arcsec [1.20σ]
OotOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.67 [2/3]

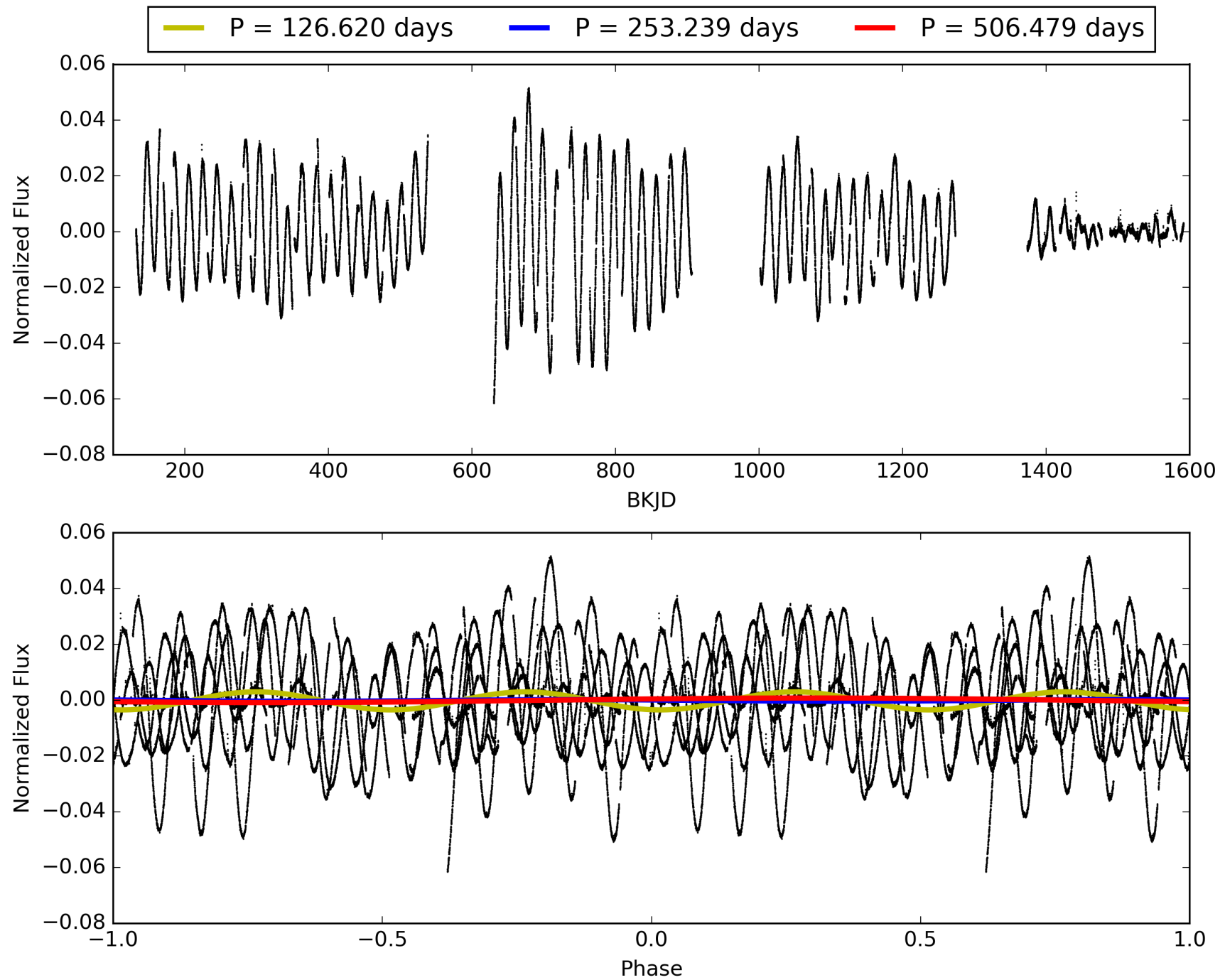
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:21:09 Z

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

TCE 004174461-01, PDC Light Curves

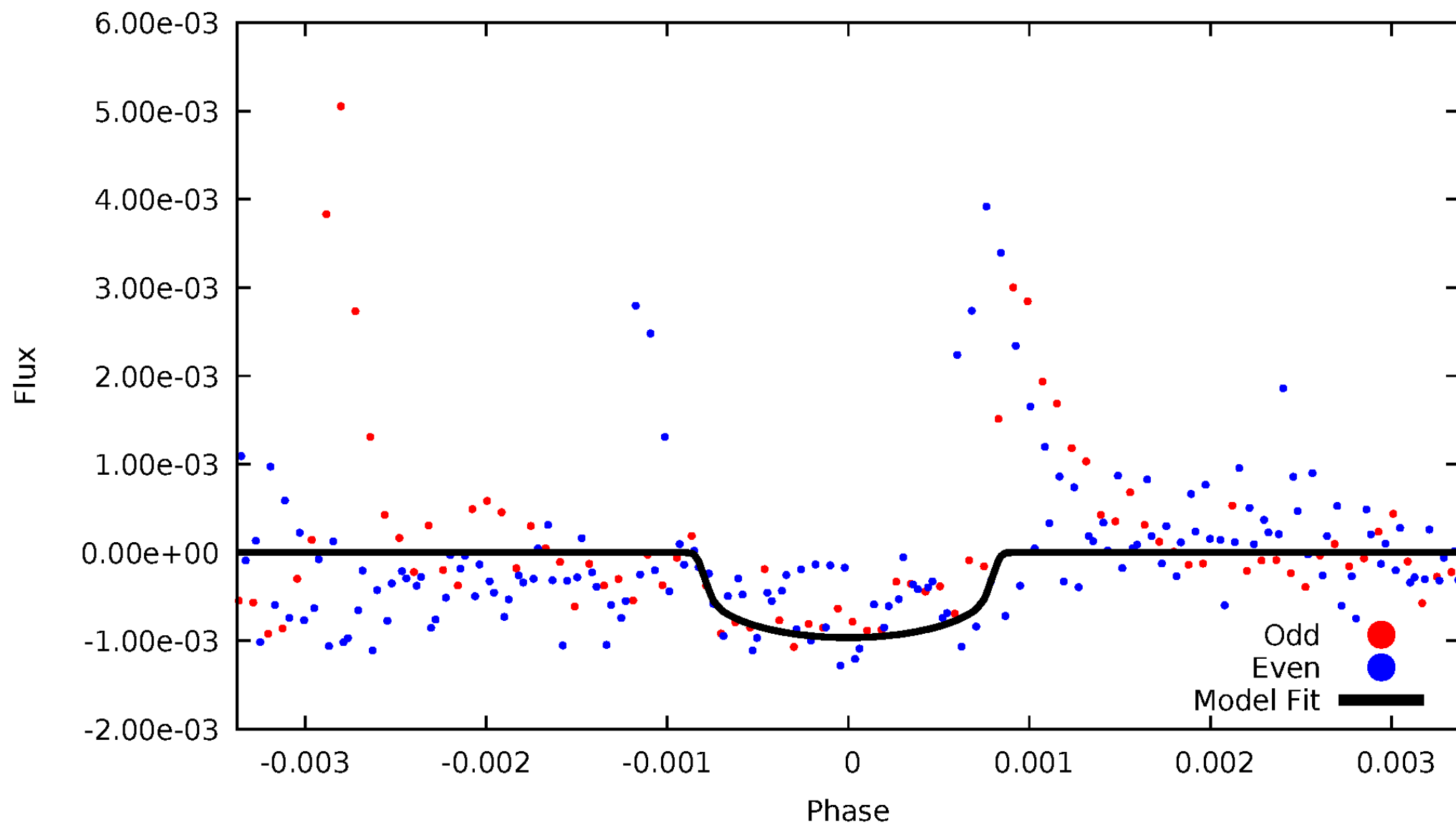


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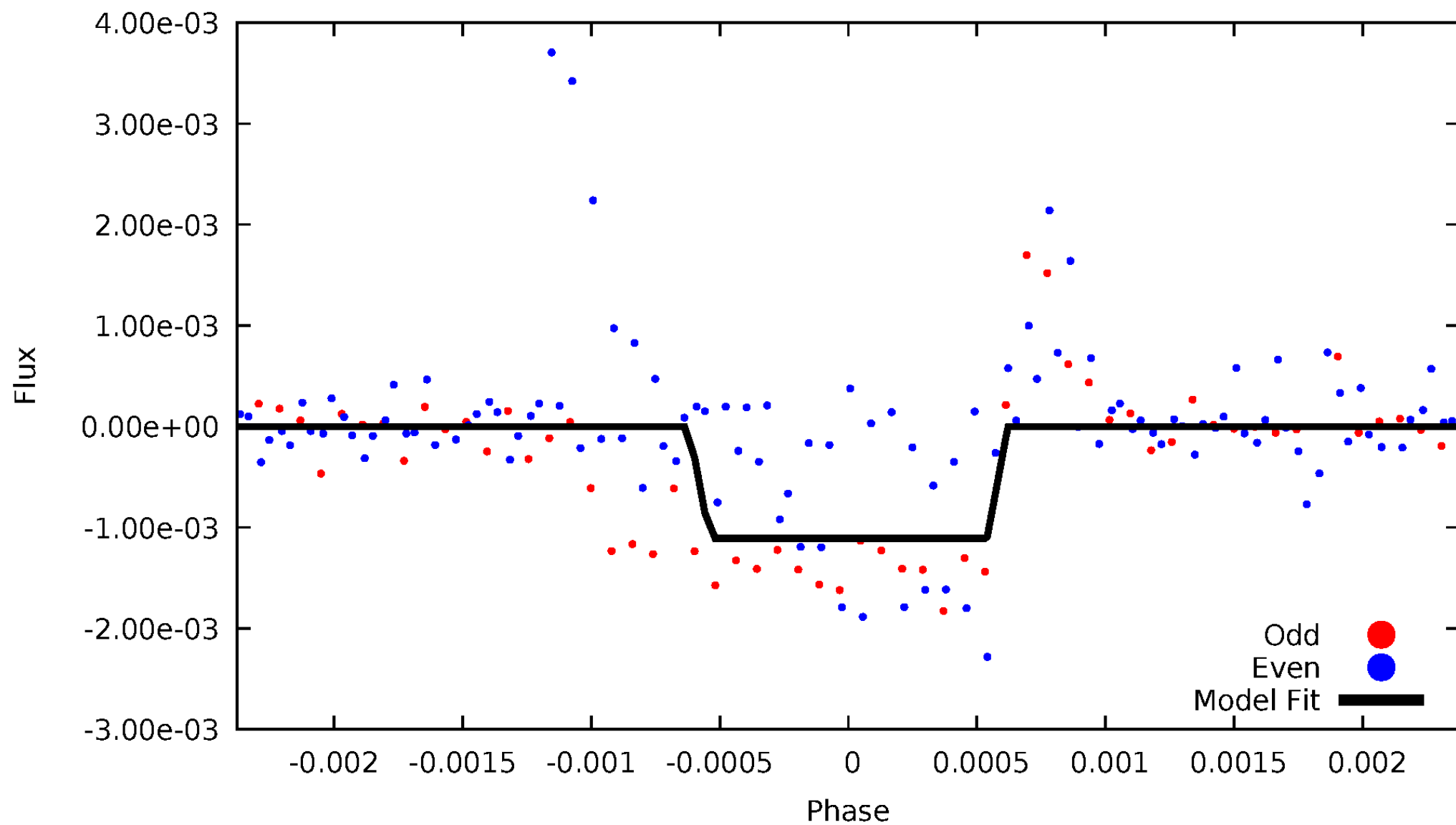
DV Odd/Even

TCE 004174461-01



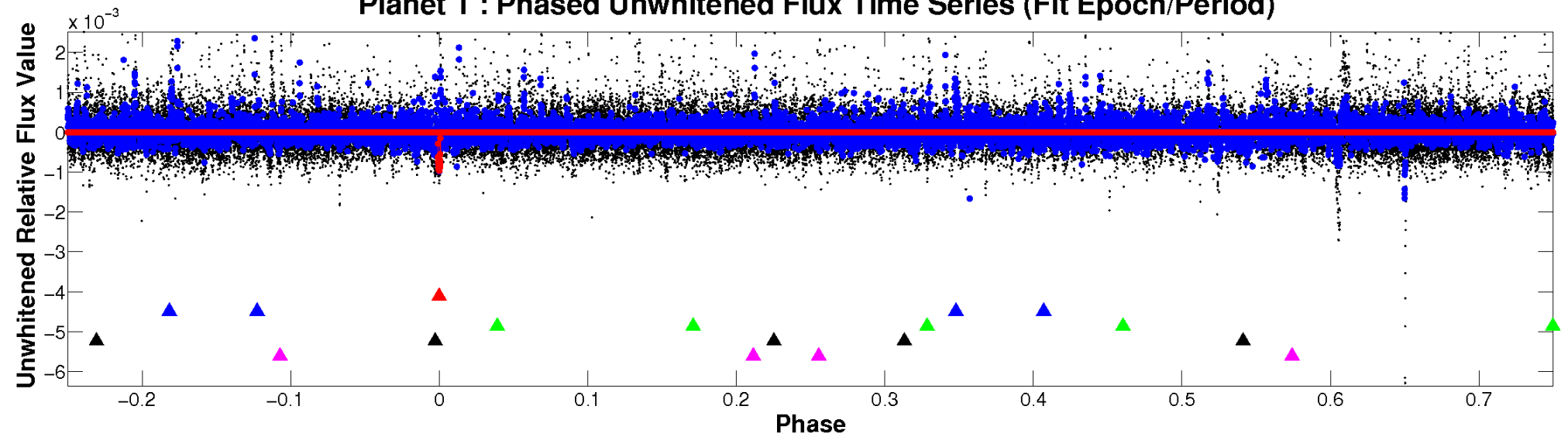
ALT Odd/Even

TCE 004174461-01

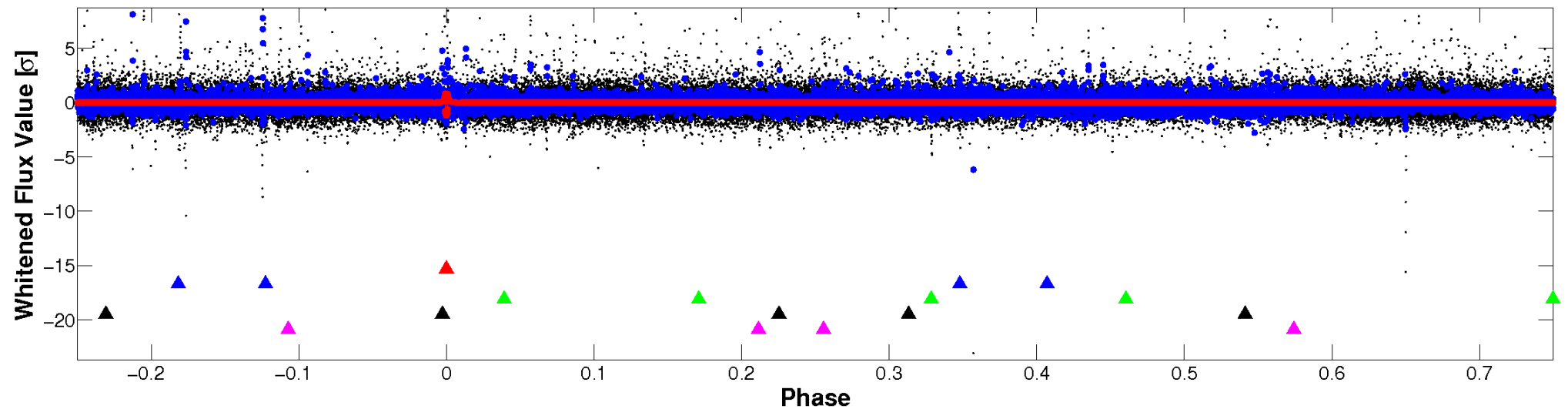


Non-Whitened Vs. Whitened Light Curve

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

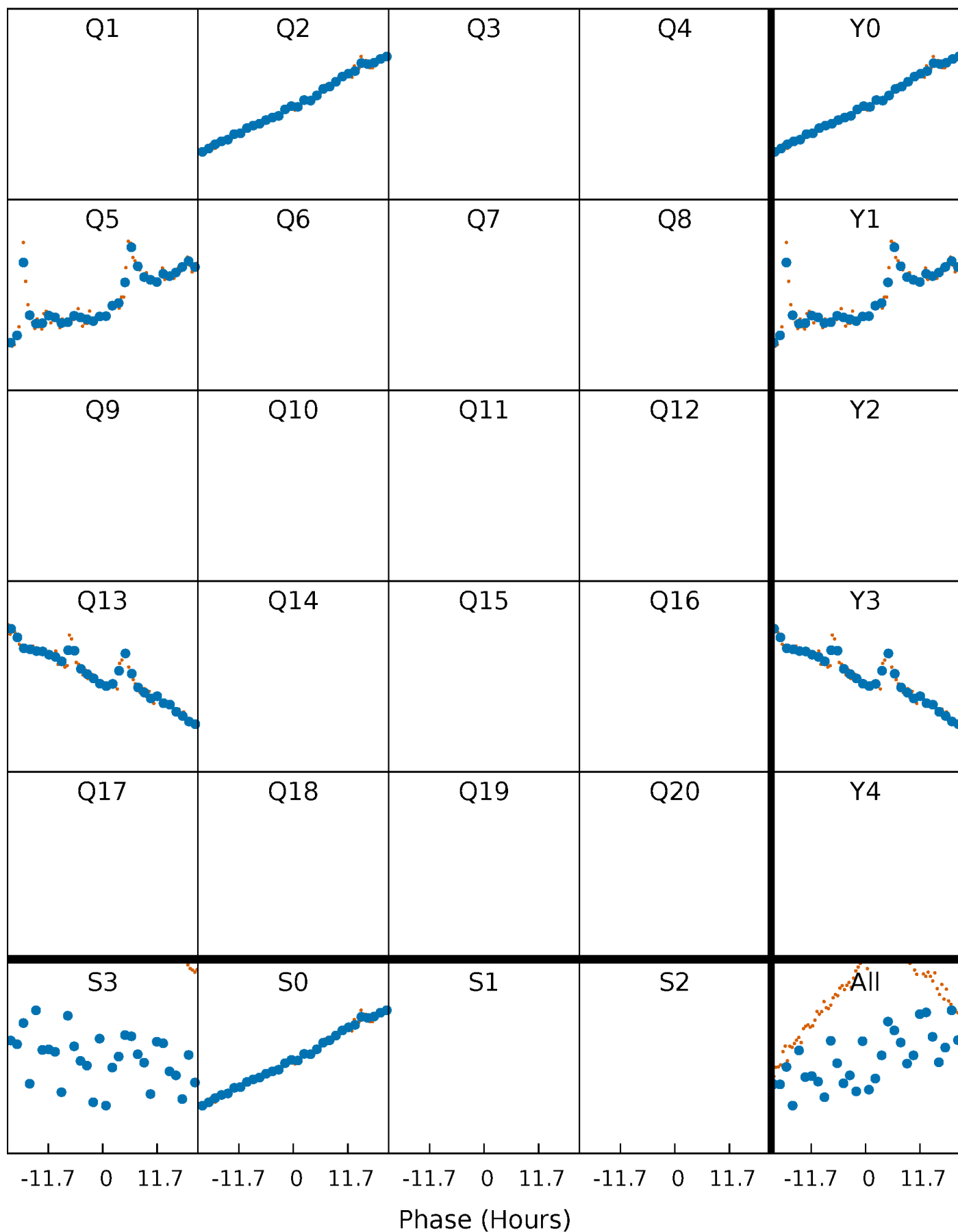


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



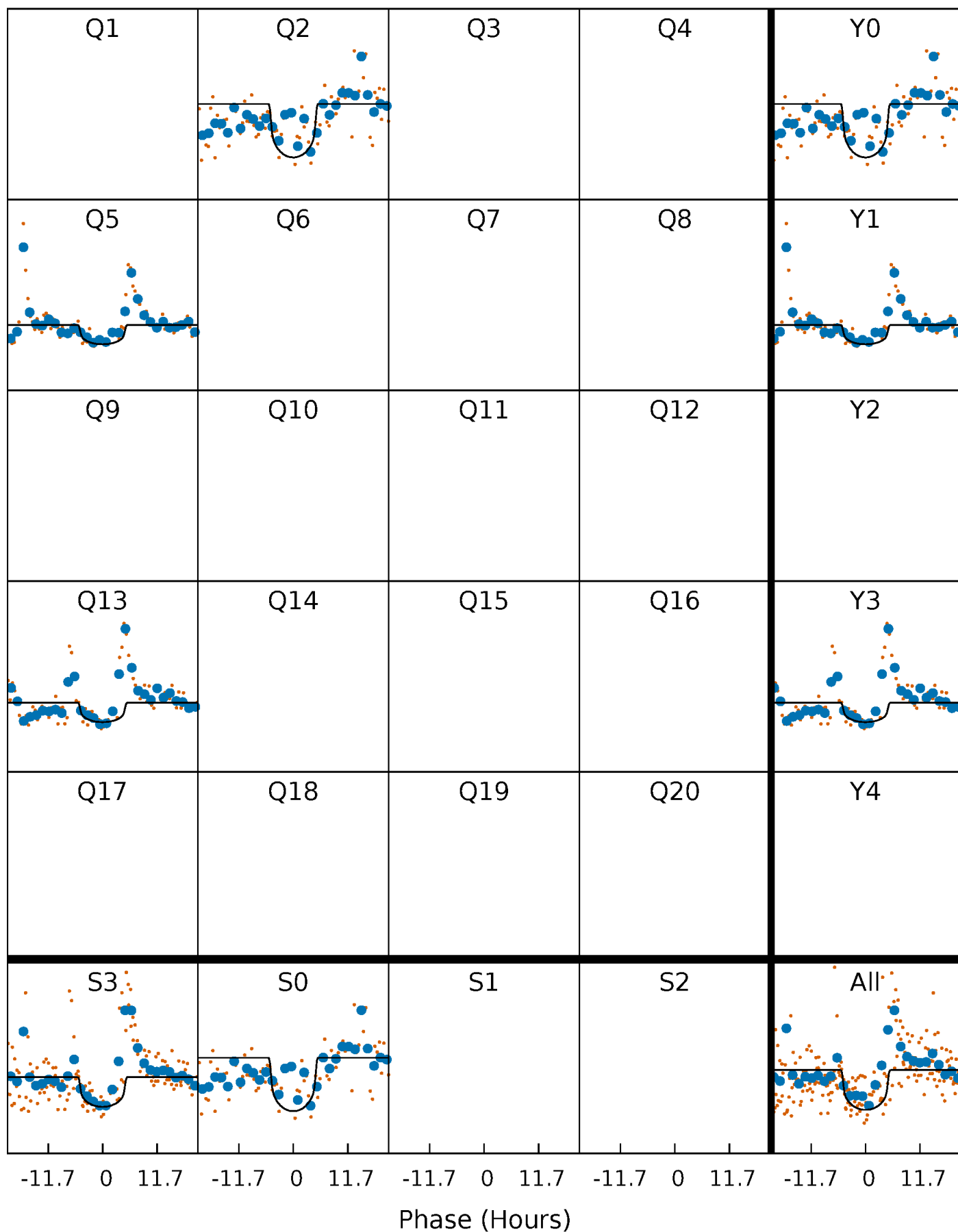
PDC Quarter-Phased Transit Curves

TCE 004174461-01 P=253.239457 Days $T_0=219.731594$ (BKJD)



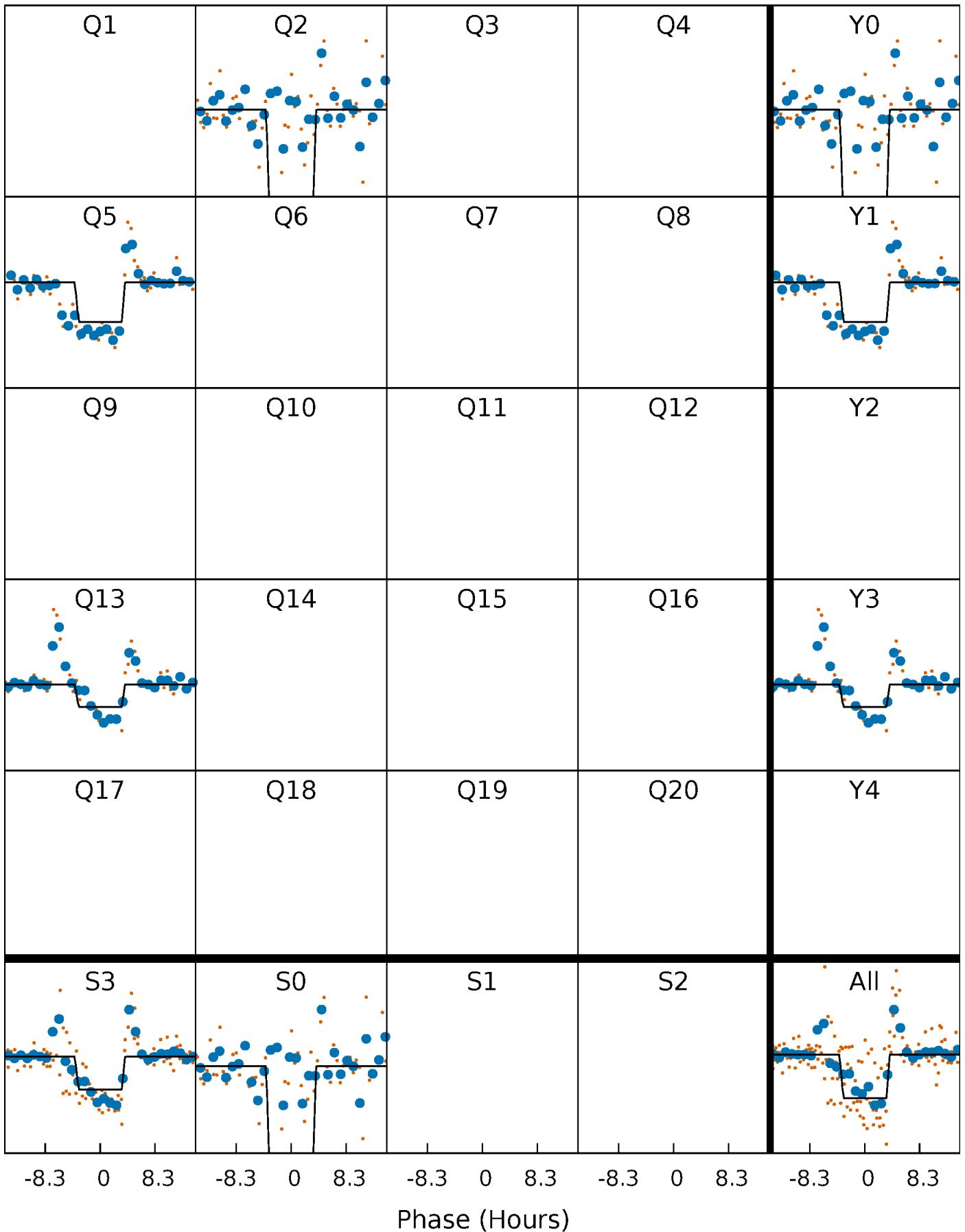
DV Quarter-Phased Transit Curves

TCE 004174461-01 P=253.239457 Days $T_0=219.731594$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

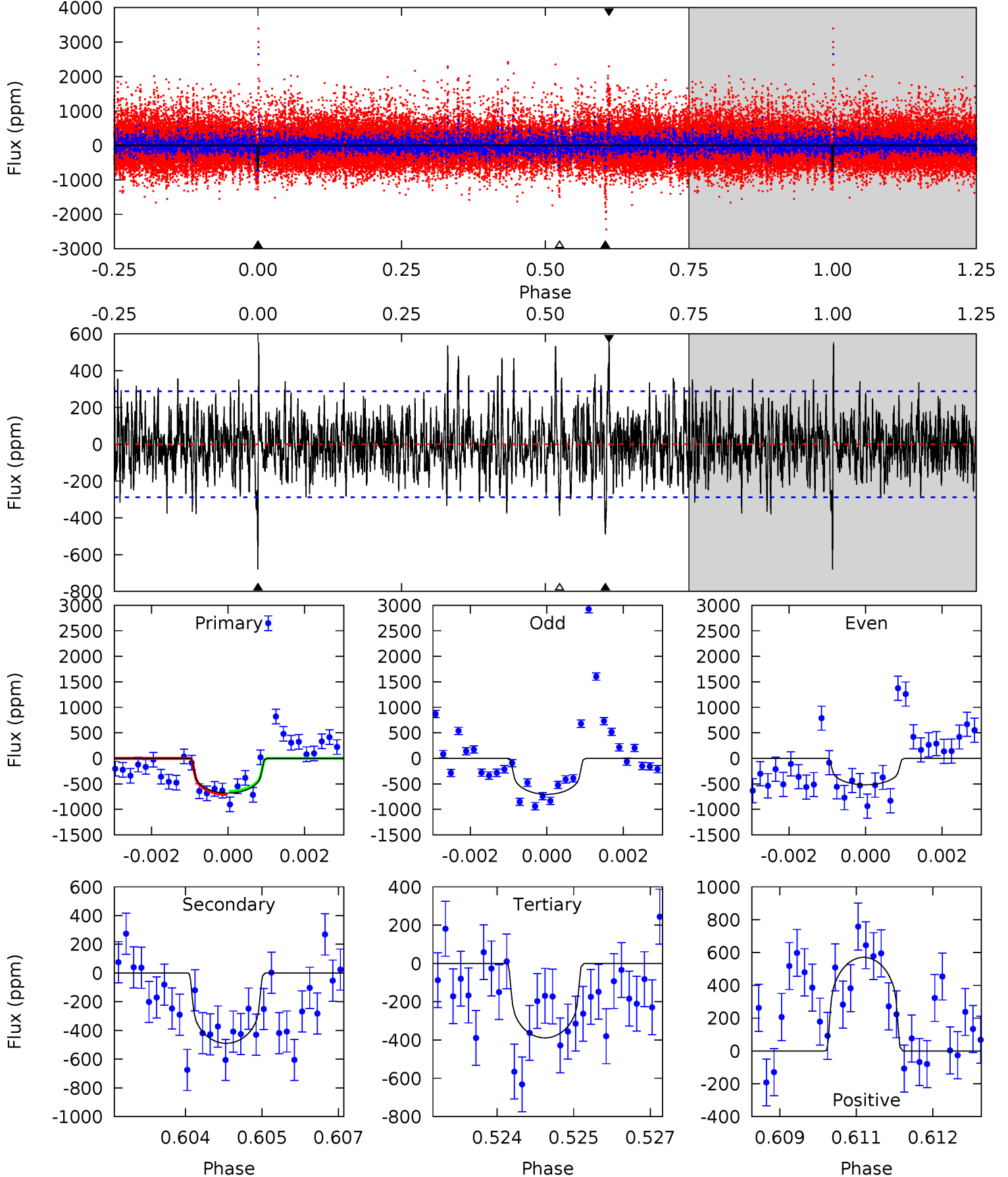
TCE 004174461-01 P=253.219487 Days $T_0=219.806489$ (BKJD)



DV Model-Shift Uniqueness Test

004174461-01, P = 253.239457 Days, E = 219.731594 Days

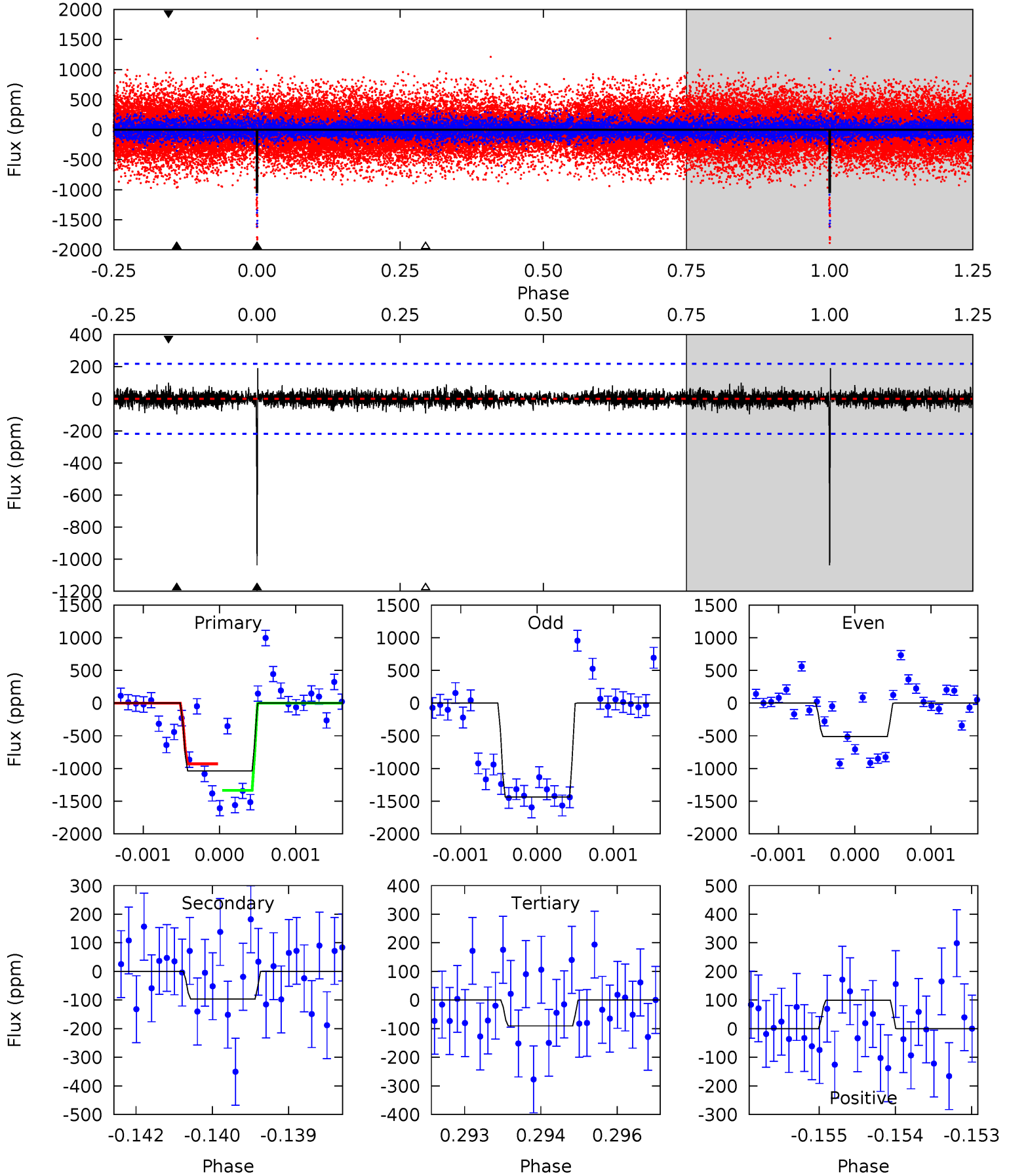
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.6 | 9.08 | 7.22 | 10.6 | 5.35 | 3.13 | 2.35 | 5.41 | 2.04 | 1.87 | -1.51 | 1.54 | 0.97 | 0.46 | 0.59 |



Alt Model-Shift Uniqueness Test

004174461-01, P = 253.219487 Days, E = 219.806489 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 25.8 | 2.39 | 2.24 | 2.47 | 5.41 | 3.23 | 0.55 | 23.5 | 23.3 | 0.14 | -0.09 | 11.7 | 0.71 | 0.16 | 4.93 |



Stellar Parameters For KIC 004174461

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4356^{+117}_{-130} | $4.634^{+0.056}_{-0.021}$ | $-0.280^{+0.300}_{-0.300}$ | $0.622^{+0.044}_{-0.056}$ | $0.608^{+0.066}_{-0.050}$ | $3.558^{+0.828}_{-0.379}$ |
| | +3%/-3% | +1%/-0% | +107%/-107% | +7%/-9% | +11%/-8% | +23%/-11% |
| 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 004174461-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|----------------------|---------------------------|
| DV | -489 ± 54 | $2.02^{+0.81}_{-0.75}$ | 258^{+8}_{-9} | 3898^{+729}_{-406} | 29429^{+42097}_{-14578} |
| Alt. | -96 ± 40 | $2.24^{+0.79}_{-0.79}$ | 257^{+8}_{-8} | 2930^{+445}_{-281} | 4563^{+6929}_{-2369} |

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

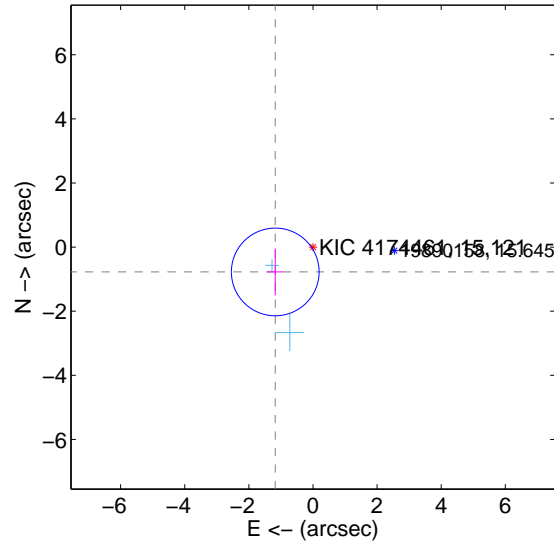
Supplemental centroid analysis for 004174461-01. Kepler magnitude: 15.12. Transit SNR 8.53

There are 2 quarters with good PRF difference image offsets

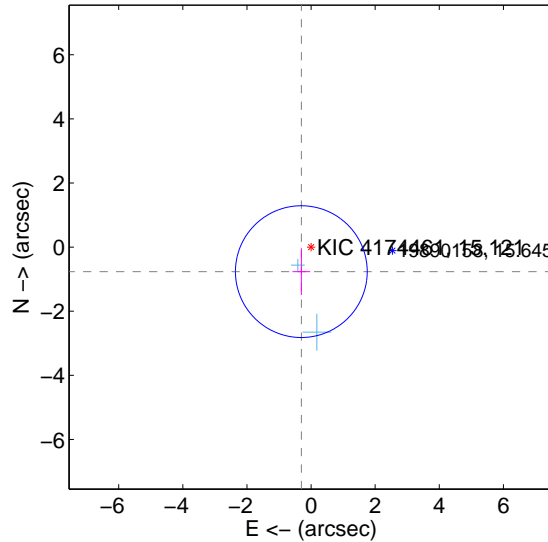
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.409 ± 0.456 | 3.09 | 1.176 ± 0.258 | -0.775 ± 0.730 |
| PRF-fit source offset from KIC position | 0.823 ± 0.685 | 1.20 | 0.303 ± 0.276 | -0.765 ± 0.729 |
| photometric centroid source offset | 1.08 ± 1.74 | 0.62 | 0.83 ± 2.15 | -0.69 ± 0.82 |

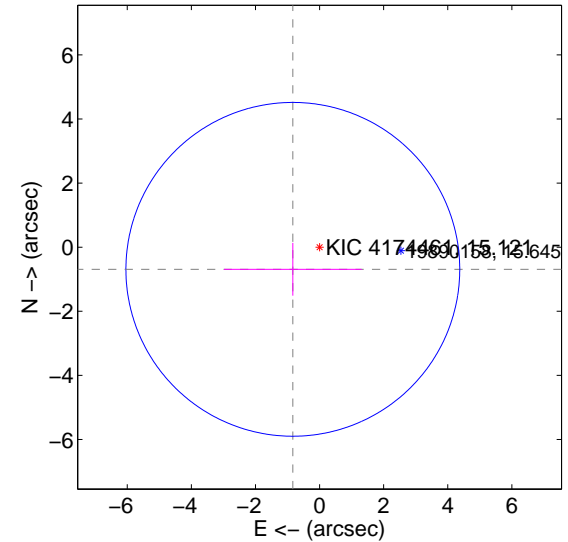
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

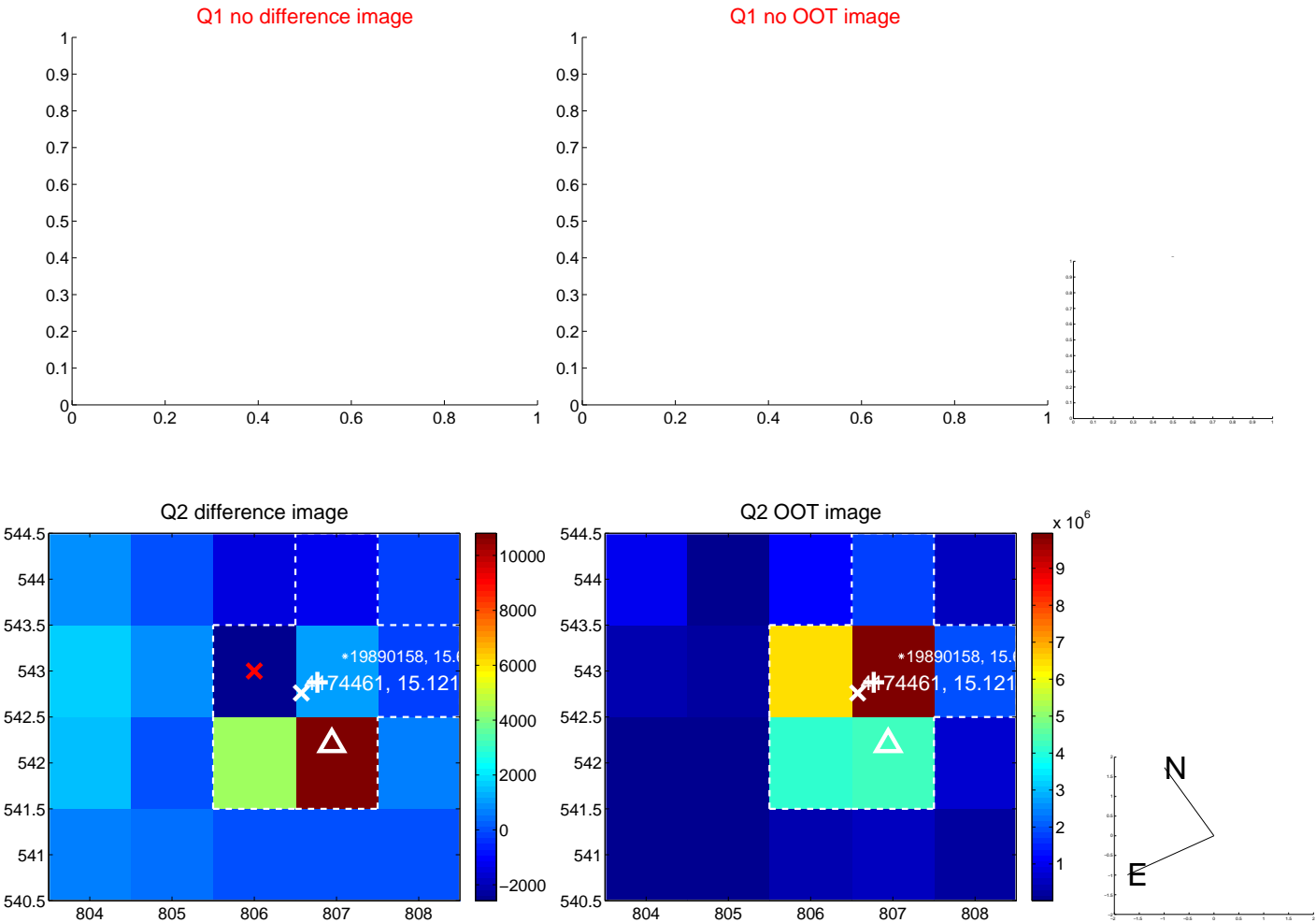


offset from photometric centroids

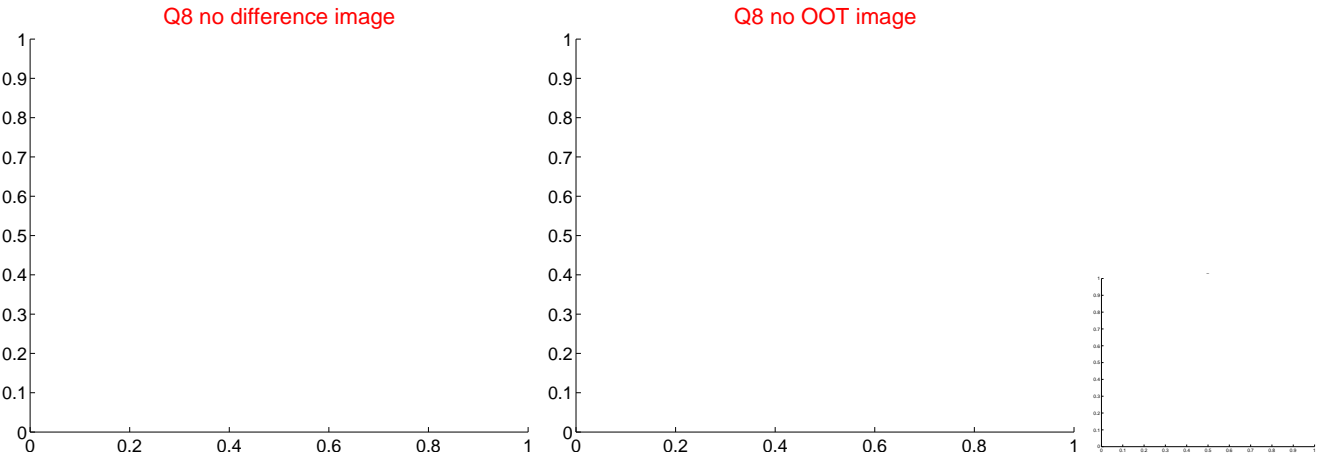
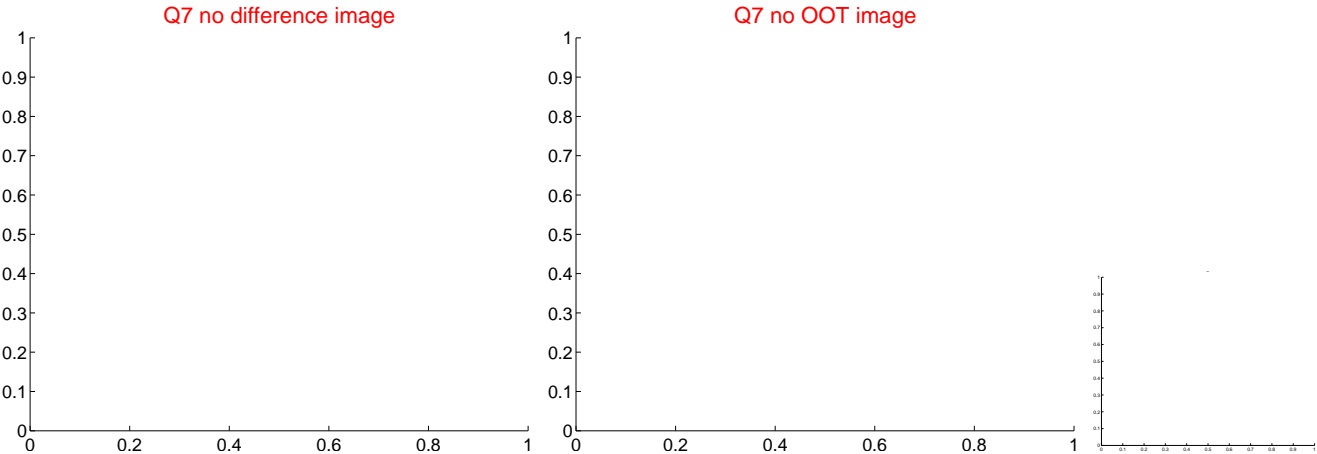
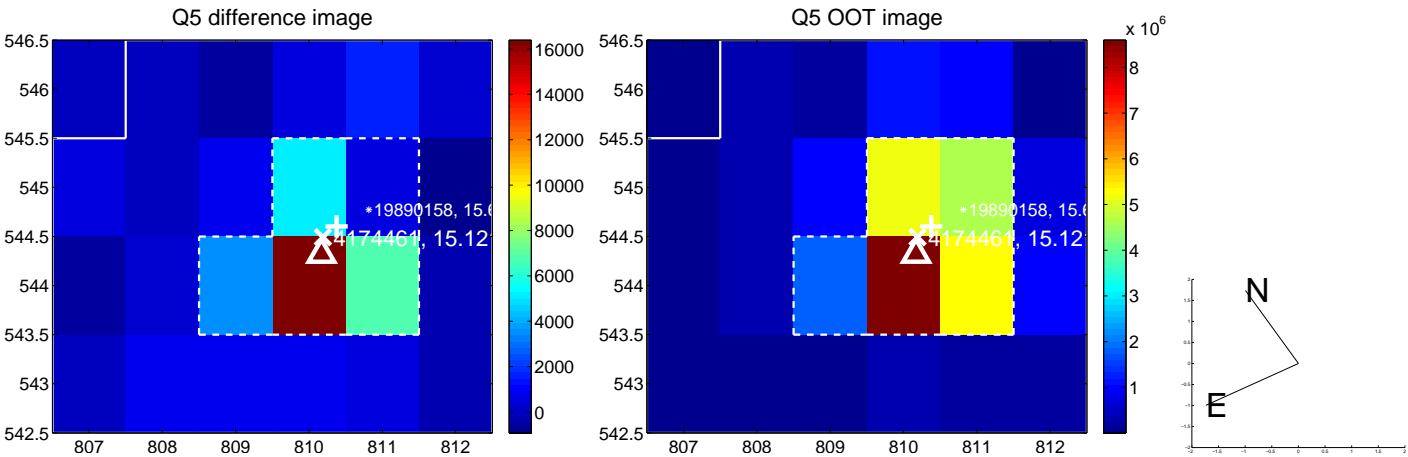


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



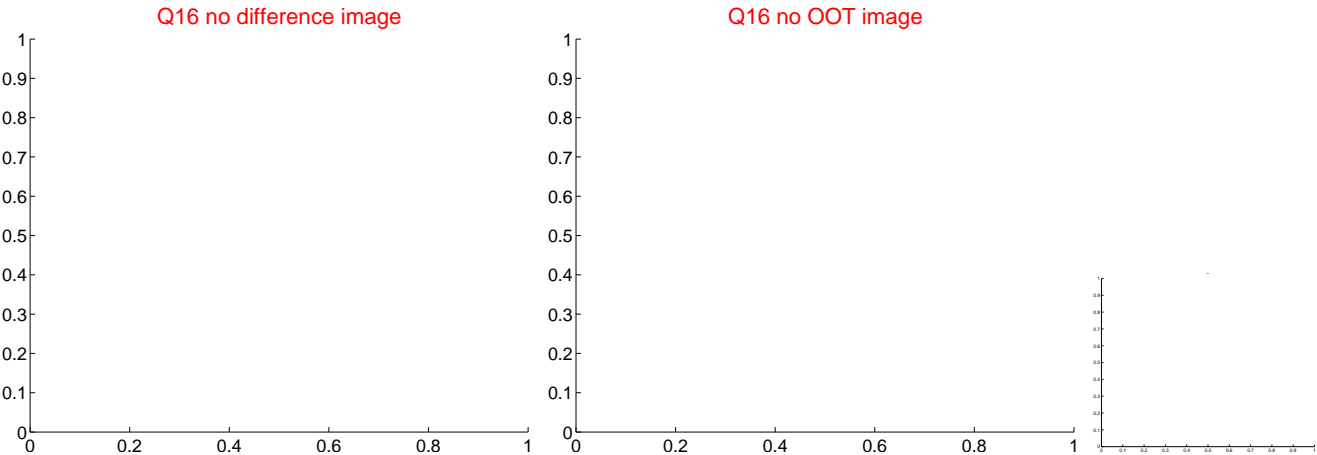
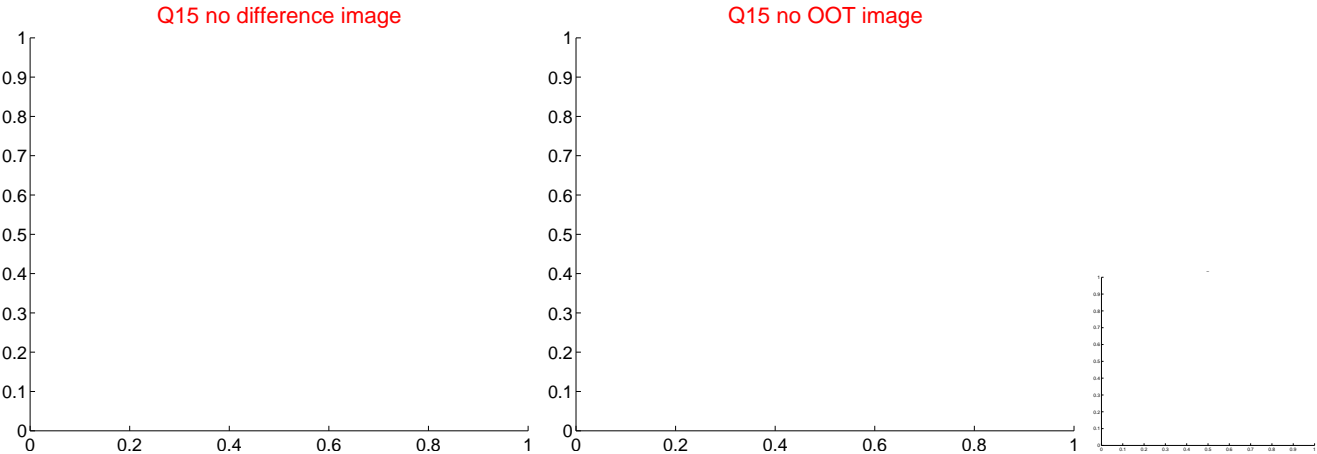
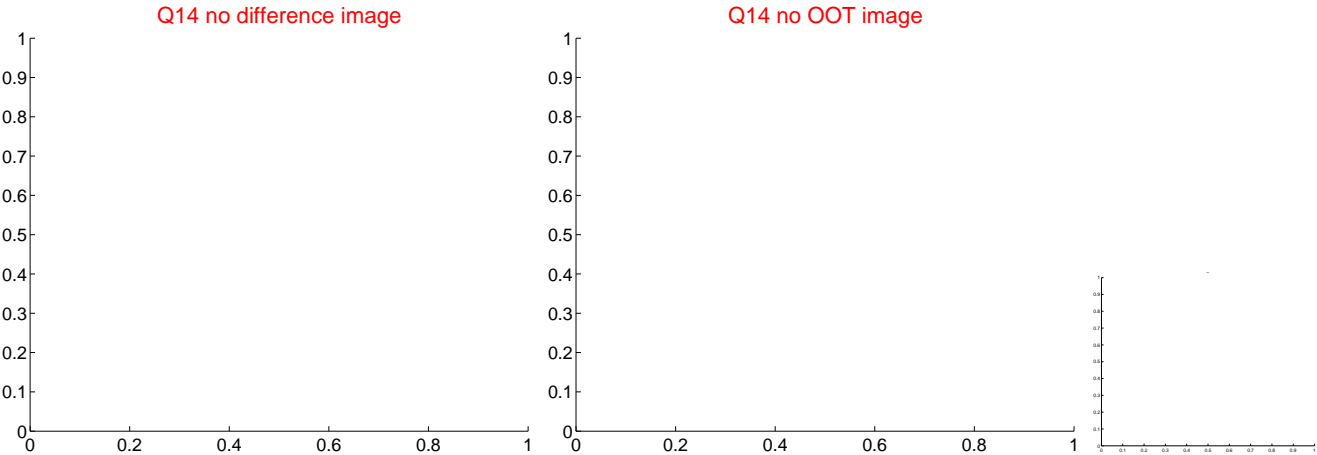
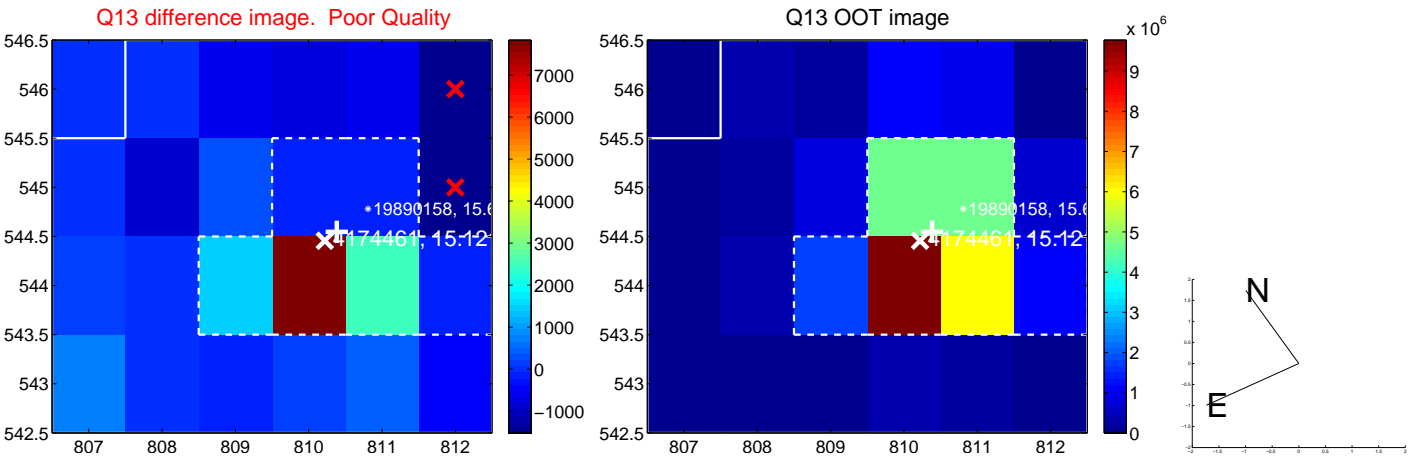
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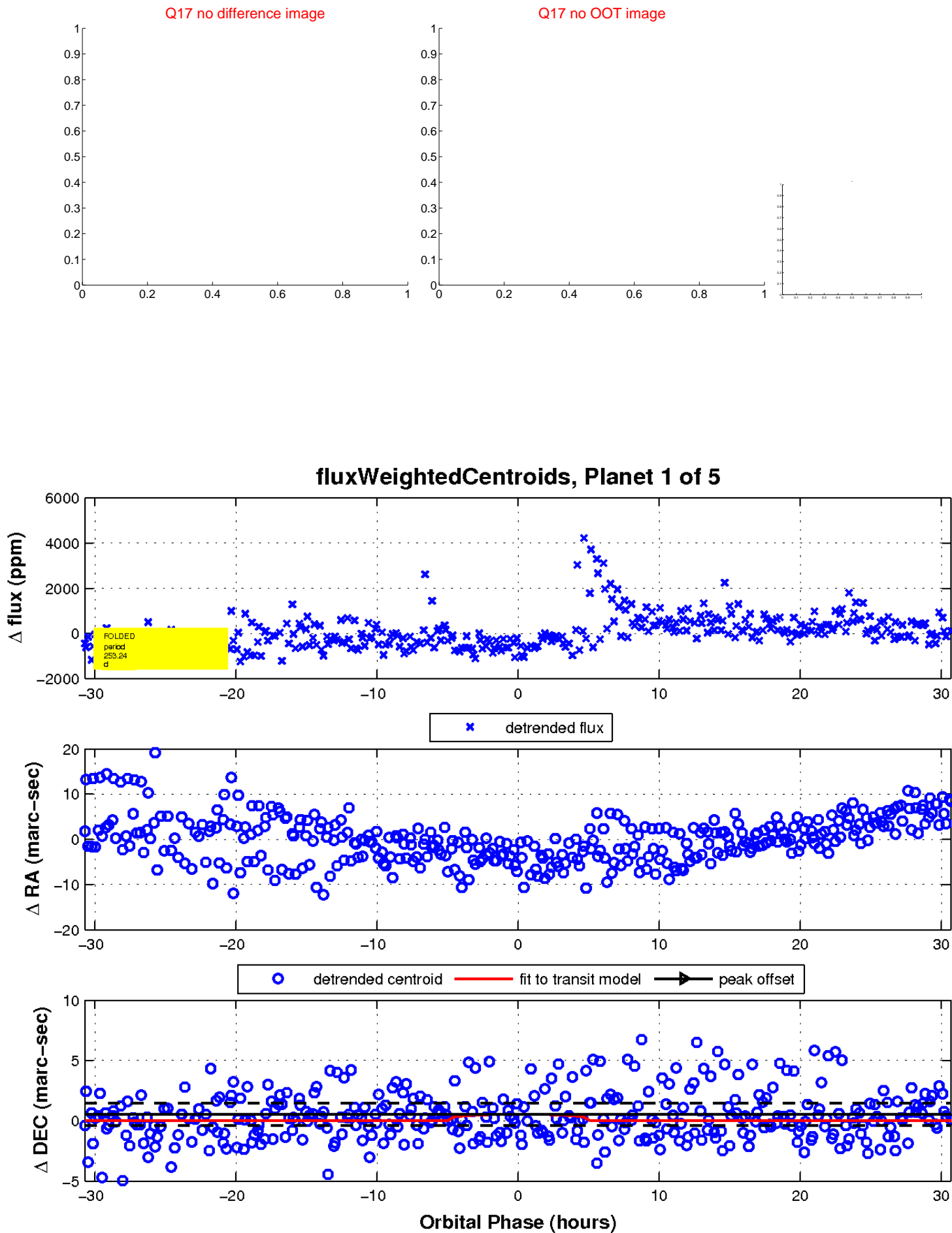
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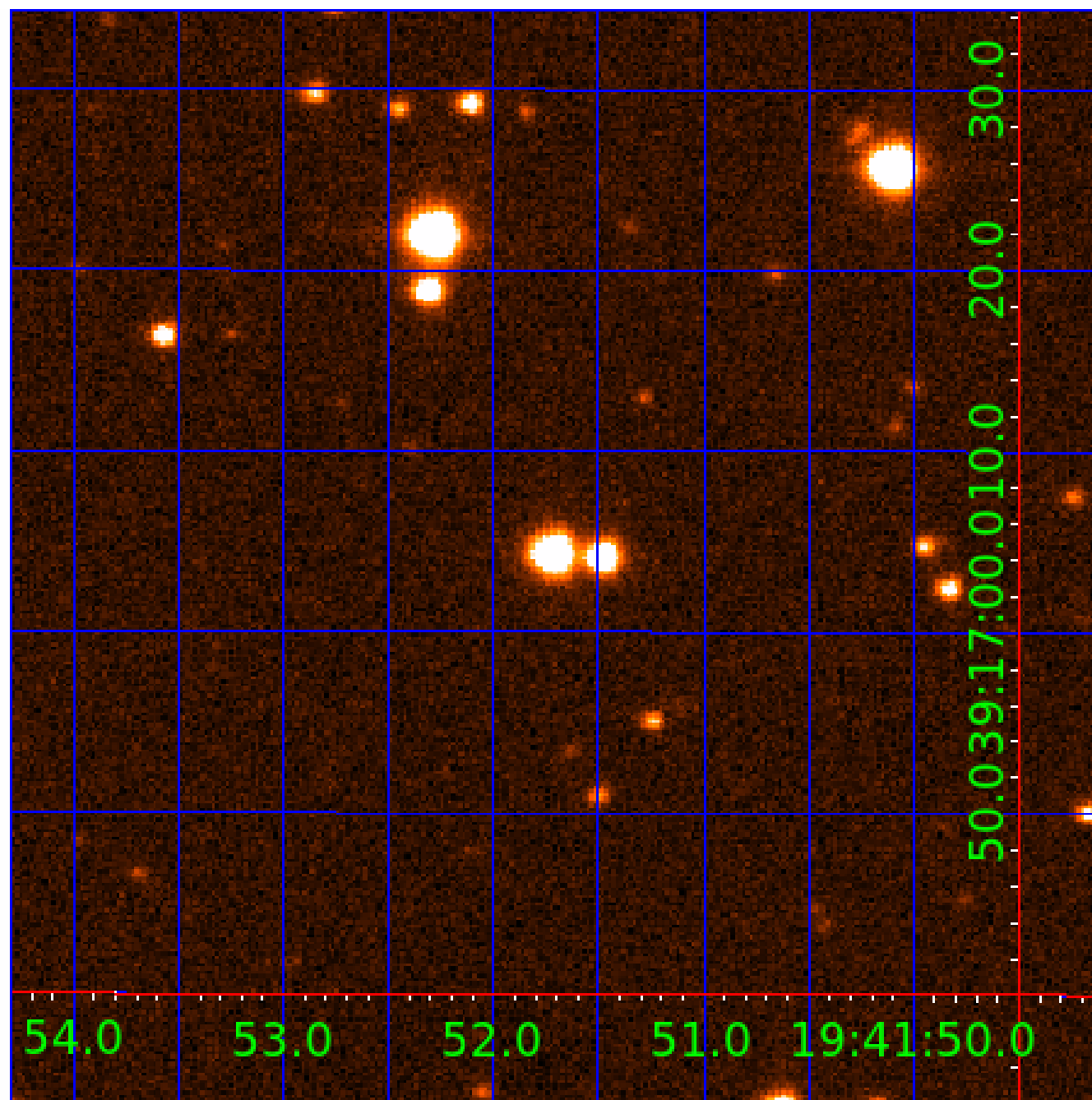


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UKIRT Image

Declination



KIC 004174461

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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| 004174461-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004174461-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

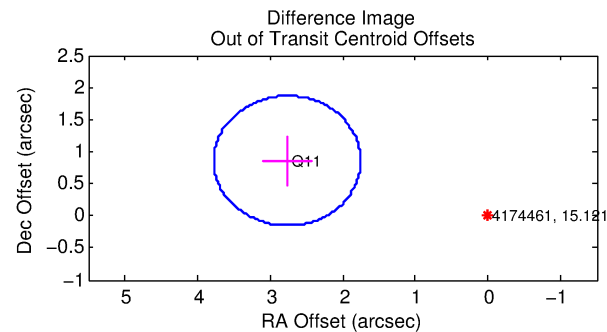
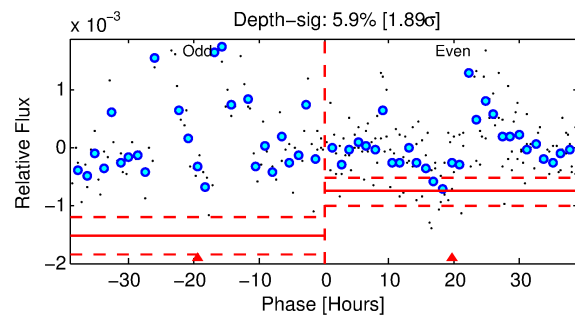
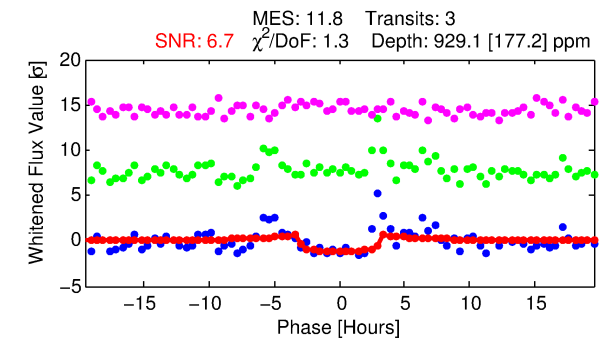
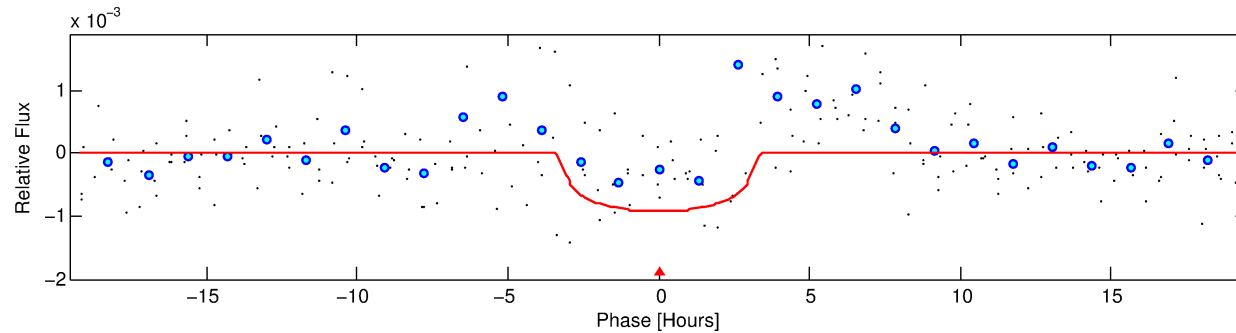
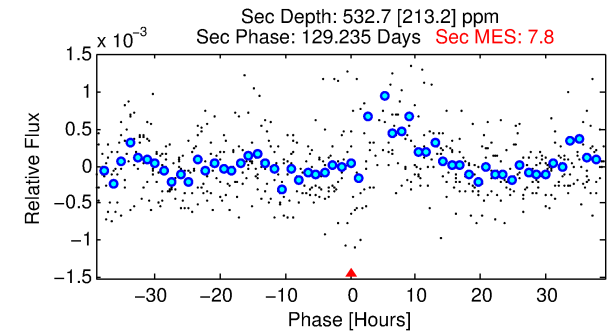
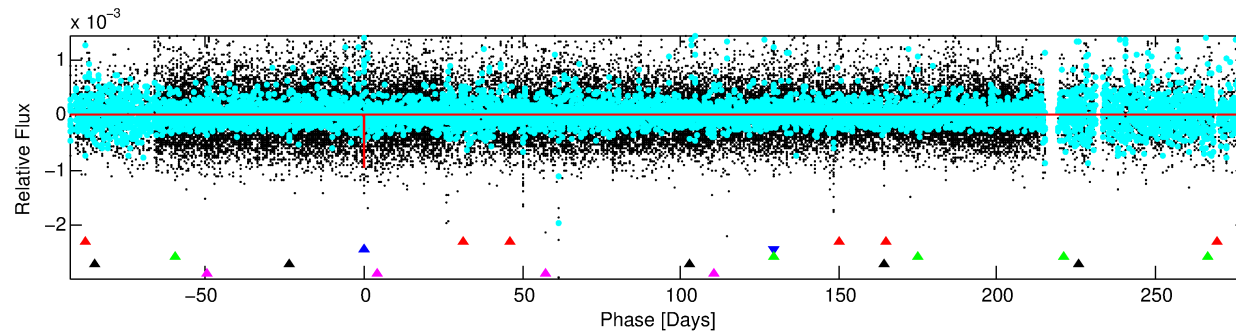
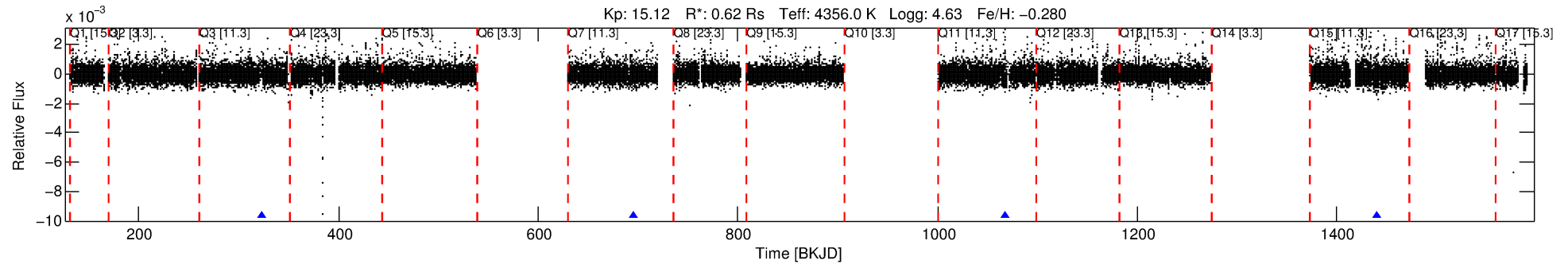
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004174461-02

No Significant Match Found

DV One-Page Summary

KIC: 4174461 Candidate: 2 of 5 Period: 372.380 d



DV Fit Results:

Period = 372.38013 [0.00964] d
Epoch = 322.7943 [0.0223] BKJD
Rp/R* = 0.0287 [0.0315]
a/R* = 370.53 [1342.66]
b = 0.58 [4.21]
Seff = 0.17 [0.03]
Teq = 164 [6] K
Rp = 1.95 [2.14] Re
a = 0.8581 [0.0633] AU
Ag = 57016.58 [127423.35] [0.45σ]
Teffp = 3909 [2185] K [1.71σ]

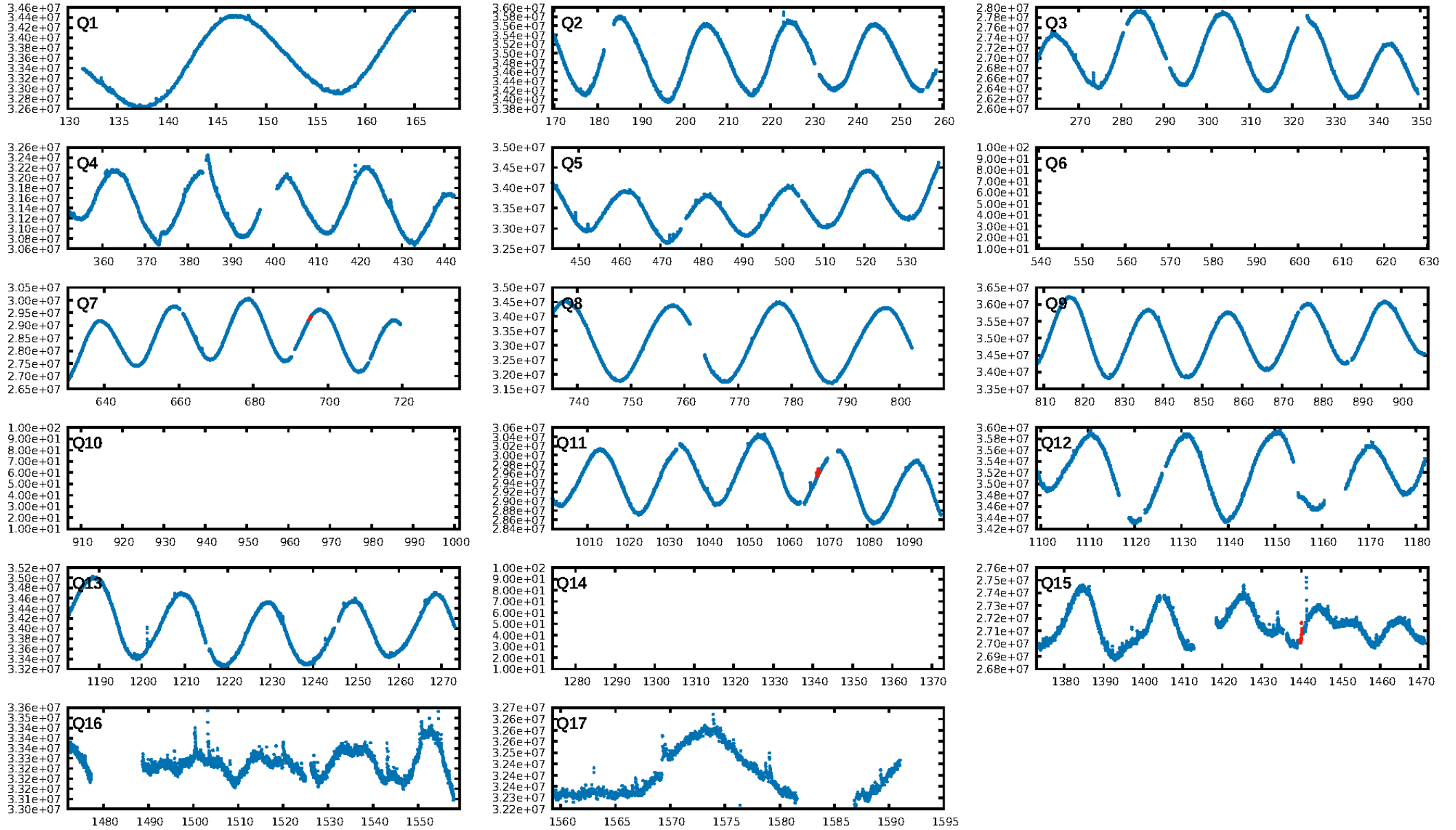
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [115.06σ]
LongPeriod-sig: 100.0% [118.26σ]
ModelChiSquare2-sig: 1.1%
ModelChiSquareGof-sig: 87.0%
Bootstrap-pfa: 7.30e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -9.194
Centroid-sig: N/A
Centroid-so: 0.949 arcsec [0.62σ]
OotOffset-rm: 2.893 arcsec [8.59σ]
KicOffset-rm: 1.920 arcsec [5.63σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

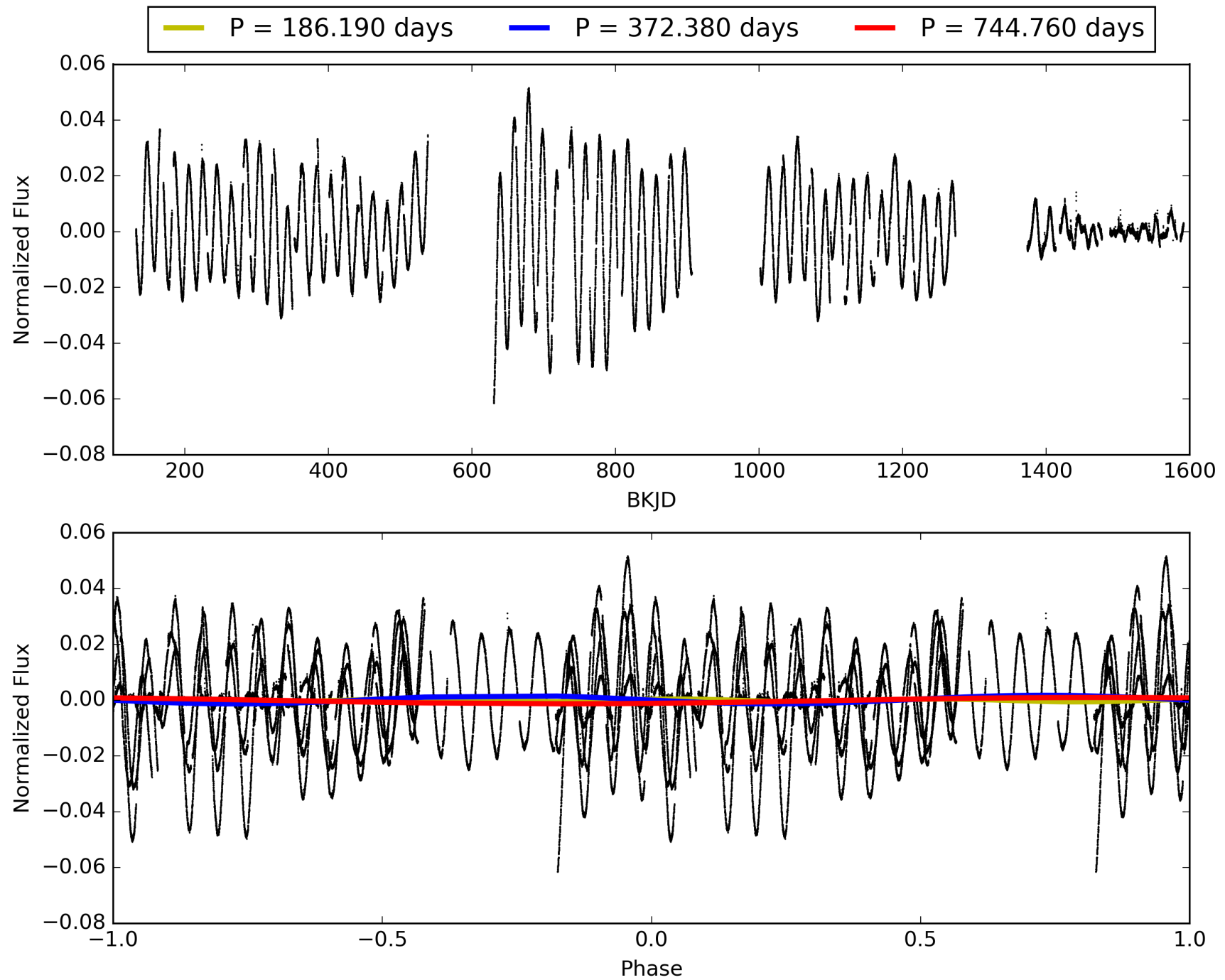
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:21:19 Z

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

TCE 004174461-02, PDC Light Curves

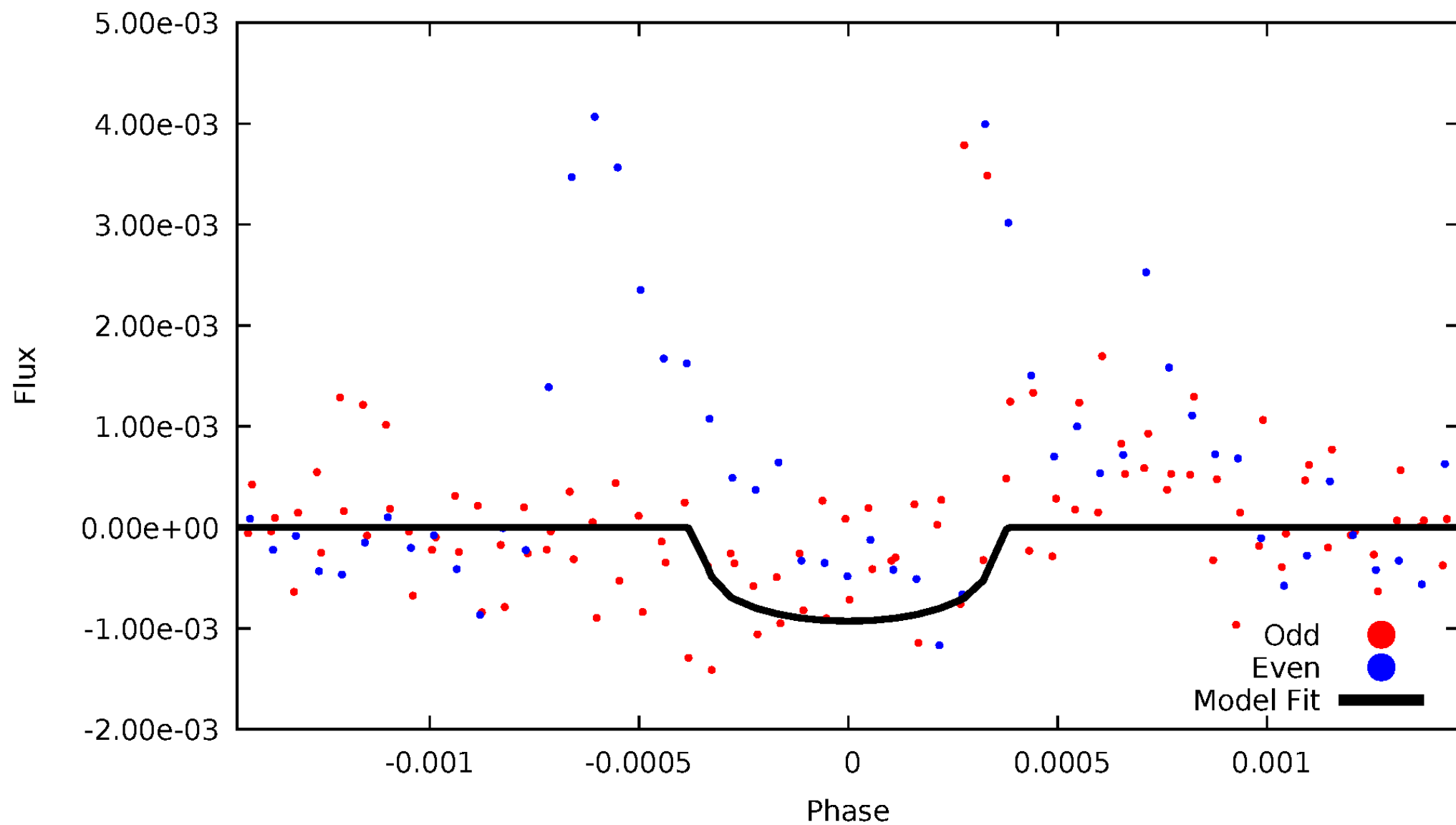


TCE 004174461-02



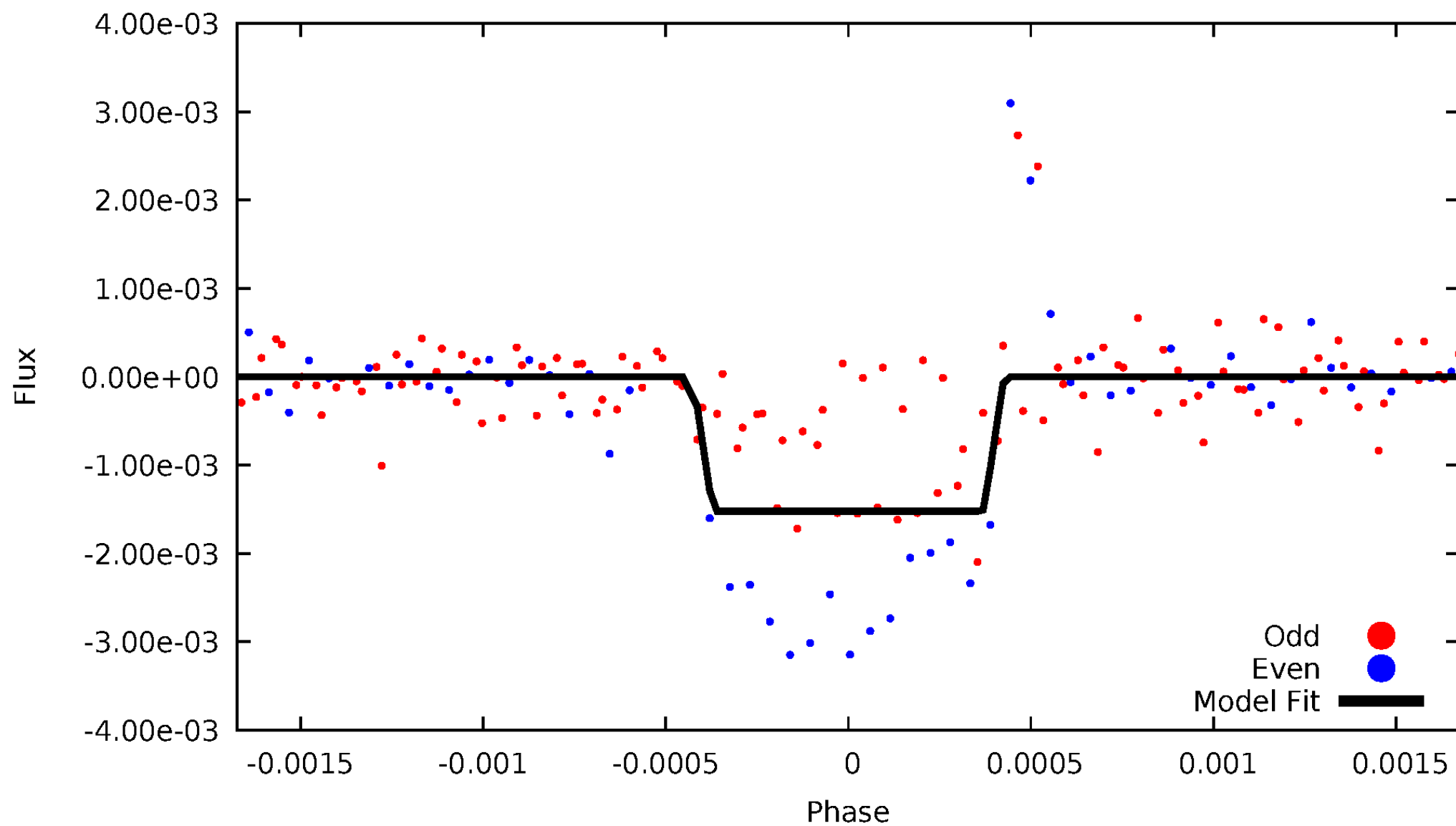
DV Odd/Even

TCE 004174461-02



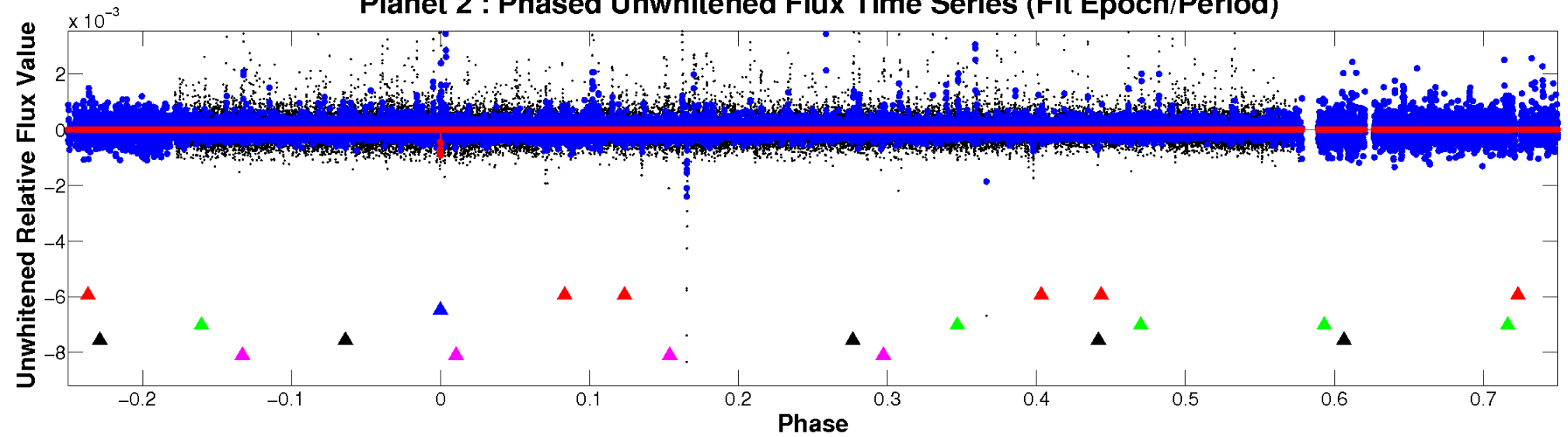
ALT Odd/Even

TCE 004174461-02

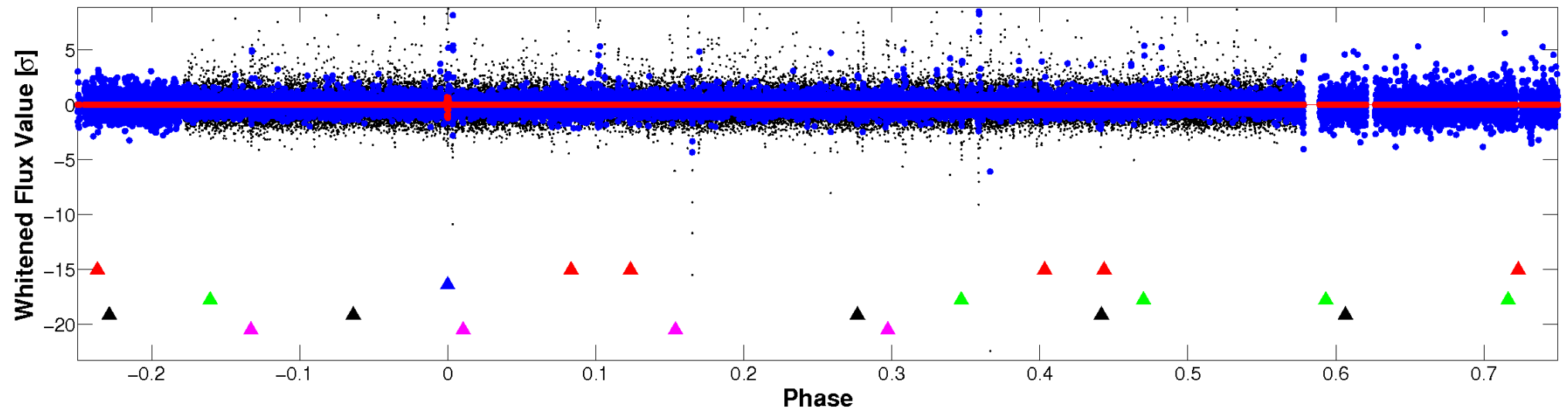


Non-Whitened Vs. Whitened Light Curve

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

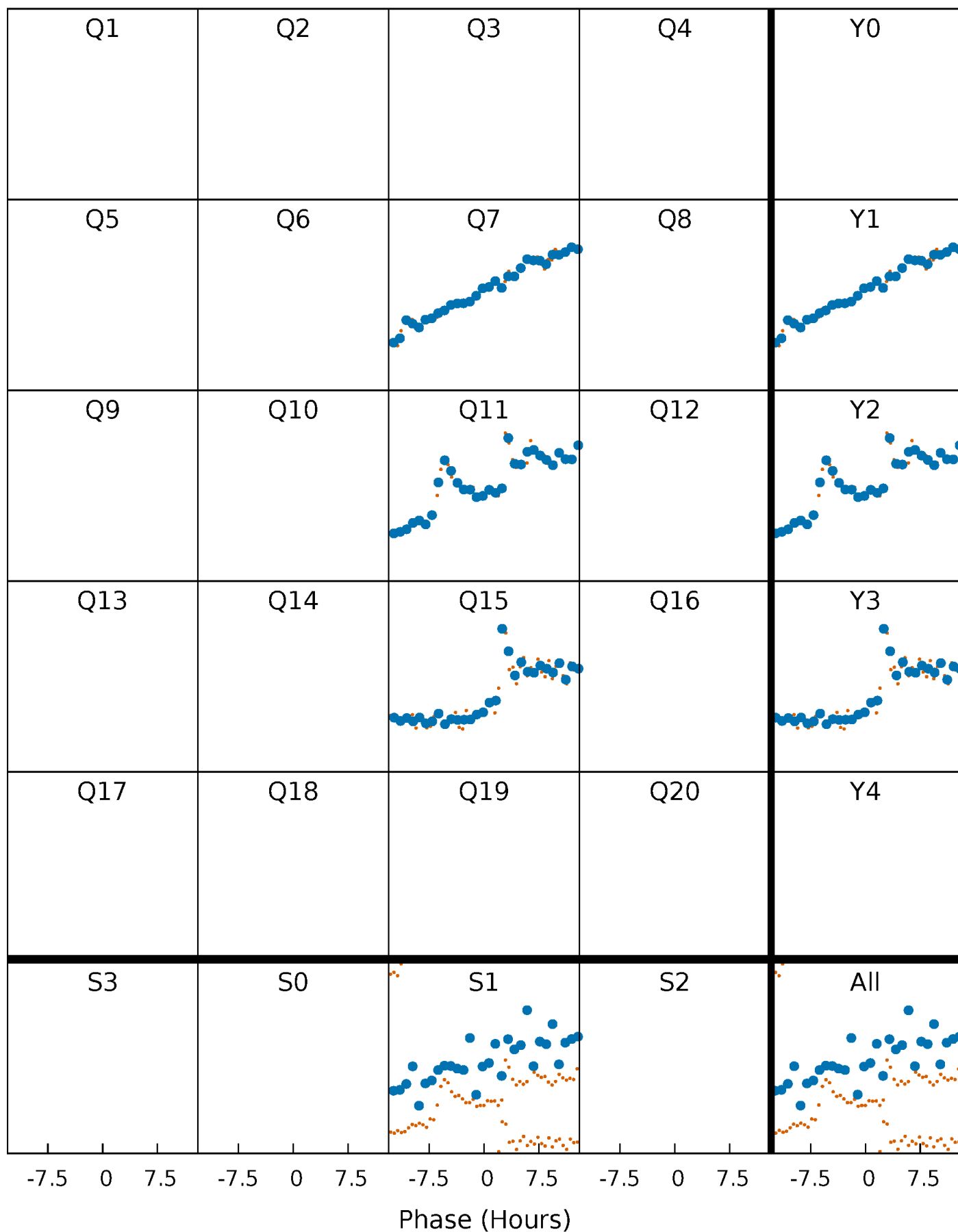


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



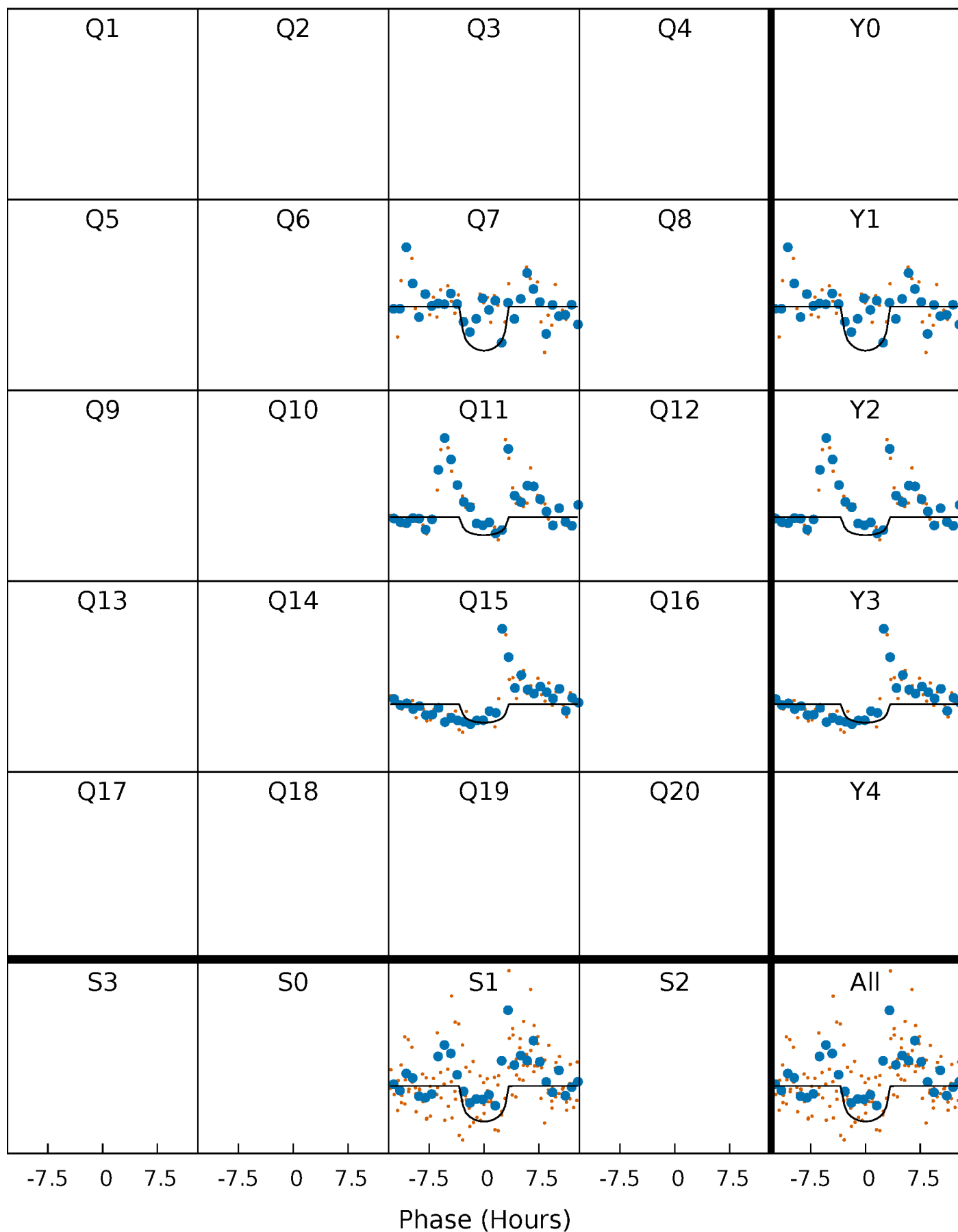
PDC Quarter-Phased Transit Curves

TCE 004174461-02 $P=372.380135$ Days $T_0=322.794313$ (BKJD)



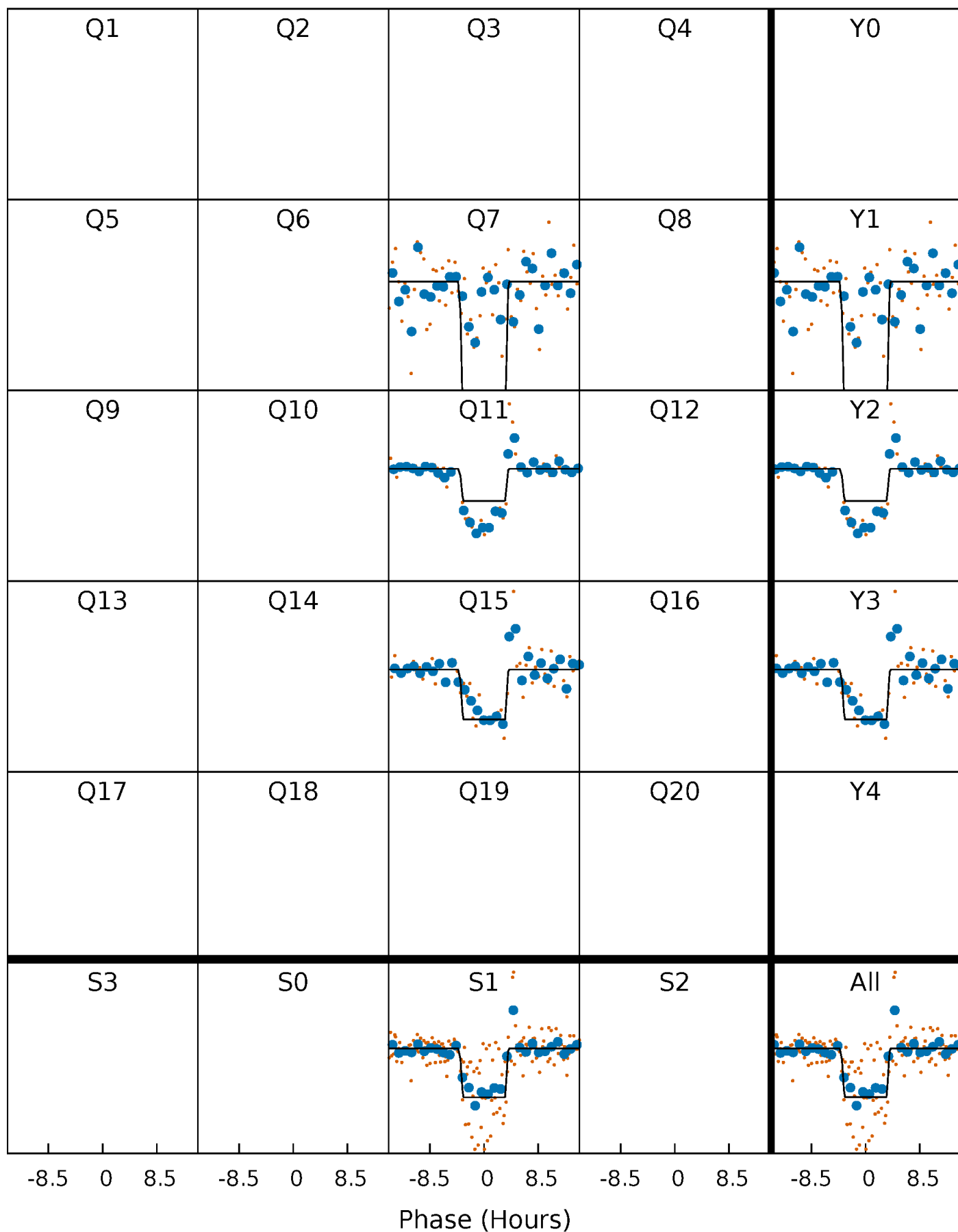
DV Quarter-Phased Transit Curves

TCE 004174461-02 $P=372.380135$ Days $T_0=322.794313$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

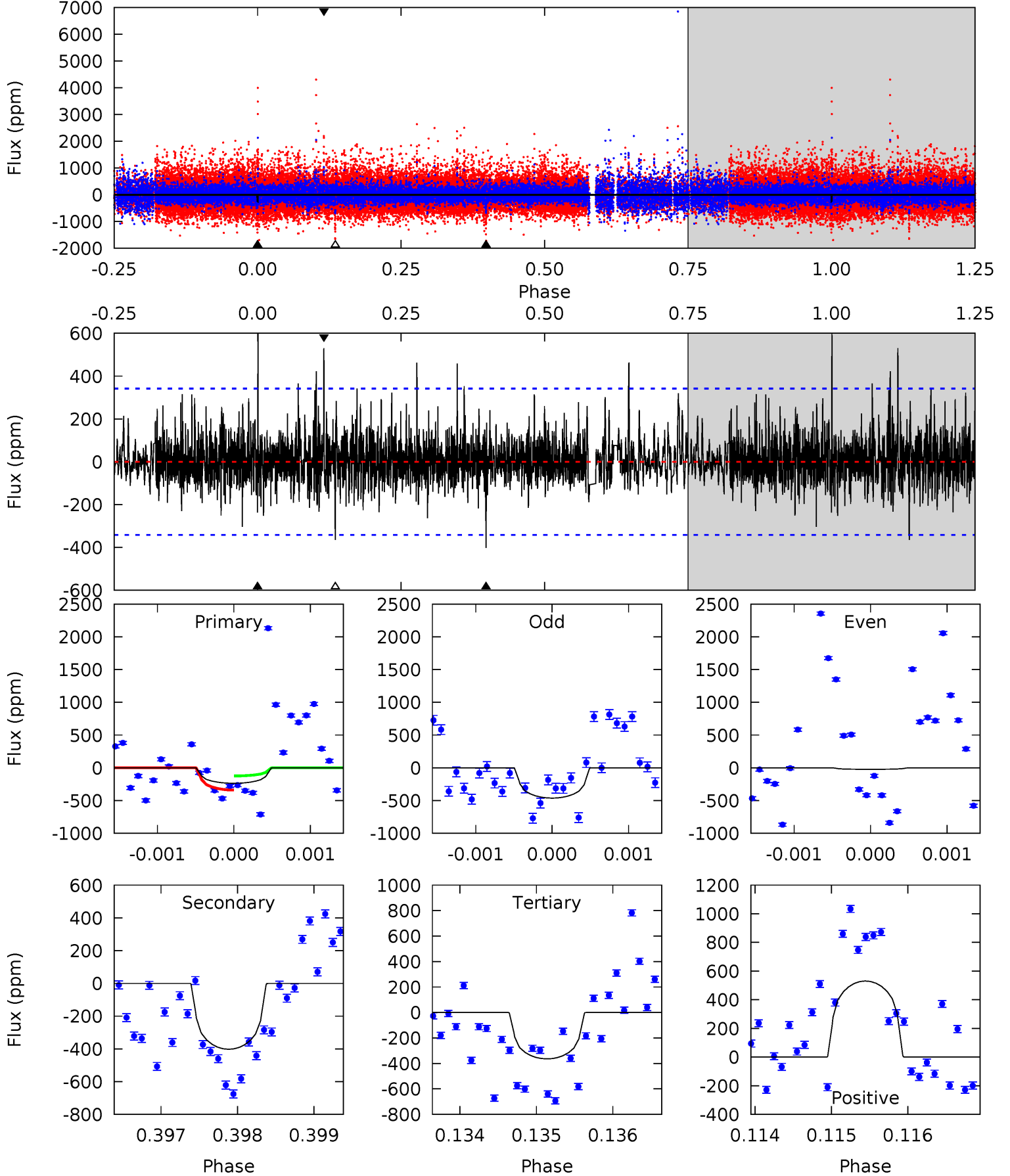
TCE 004174461-02 $P=372.353953$ Days $T_0=322.803208$ (BKJD)



DV Model-Shift Uniqueness Test

004174461-02, P = 372.380135 Days, E = 322.794313 Days

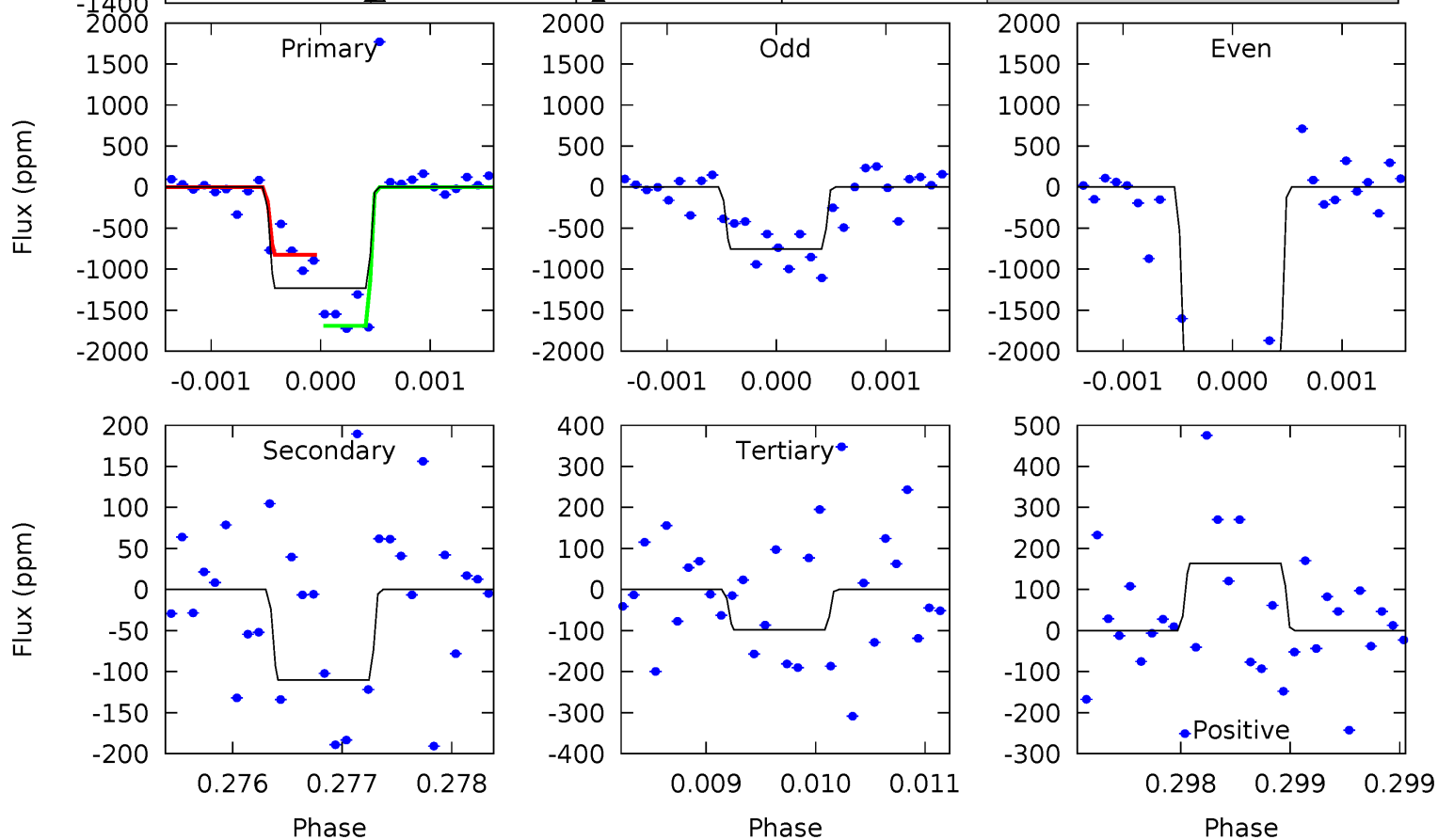
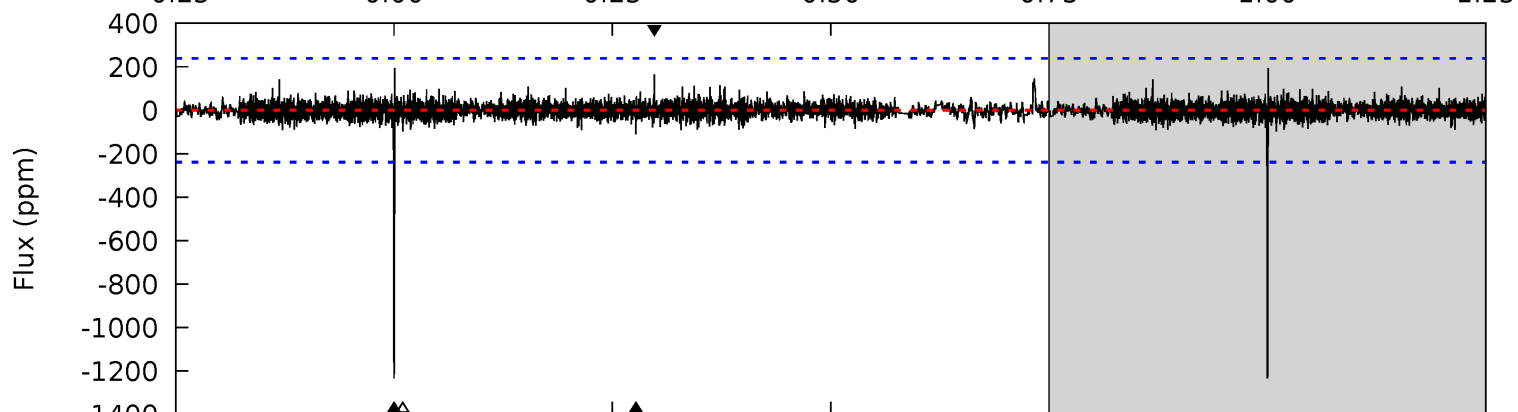
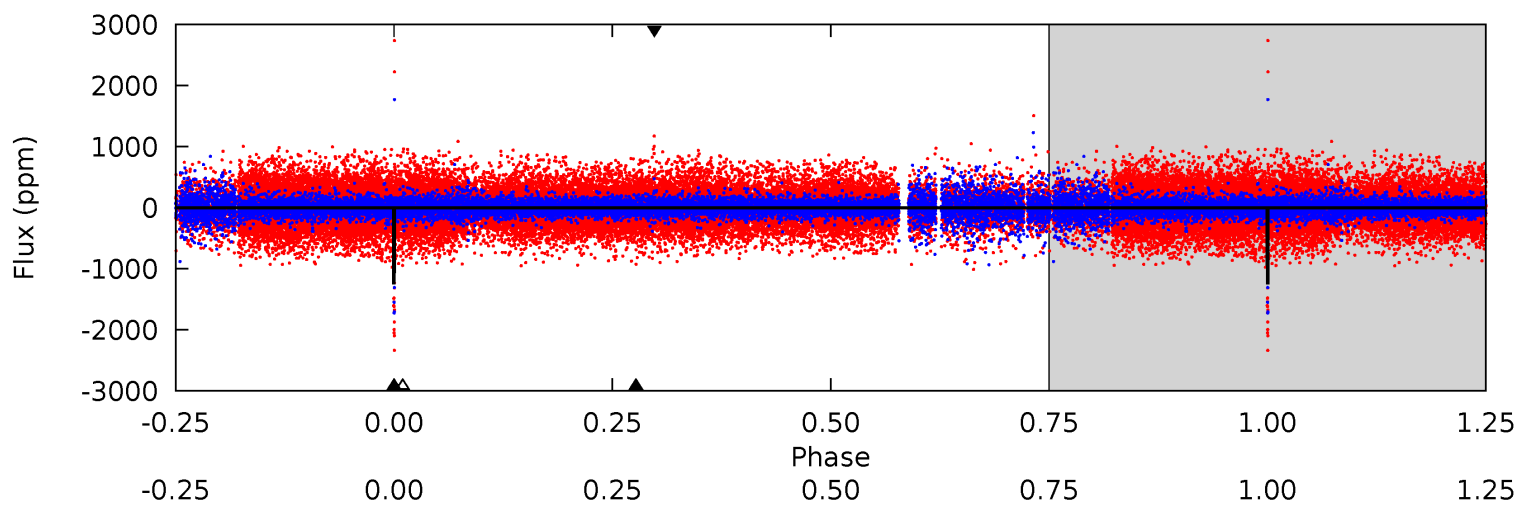
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.80 | 6.47 | 5.86 | 8.54 | 5.50 | 3.36 | 1.39 | -2.05 | -4.73 | 0.61 | -2.07 | 3.10 | 0.70 | 0.60 | 1.71 |



Alt Model-Shift Uniqueness Test

004174461-02, P = 372.353953 Days, E = 322.803208 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 28.3 | 2.53 | 2.25 | 3.75 | 5.48 | 3.33 | 0.56 | 26.1 | 24.6 | 0.28 | -1.22 | 23.8 | 1.05 | 0.14 | 0 |



Stellar Parameters For KIC 004174461

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4356^{+117}_{-130} | $4.634^{+0.056}_{-0.021}$ | $-0.280^{+0.300}_{-0.300}$ | $0.622^{+0.044}_{-0.056}$ | $0.608^{+0.066}_{-0.050}$ | $3.558^{+0.828}_{-0.379}$ |
| | +3%/-3% | +1%/-0% | +107%/-107% | +7%/-9% | +11%/-8% | +23%/-11% |
| 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 004174461-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -402 ± 62 | $2.44^{+1.93}_{-1.51}$ | 227^{+7}_{-8} | 3530^{+1467}_{-572} | $27225^{+165396}_{-18777}$ |
| Alt. | -110 ± 44 | $2.96^{+1.87}_{-1.79}$ | 227^{+8}_{-7} | 2748^{+843}_{-347} | 4904^{+26077}_{-3342} |

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 $A_{obs} \gg 1.0$

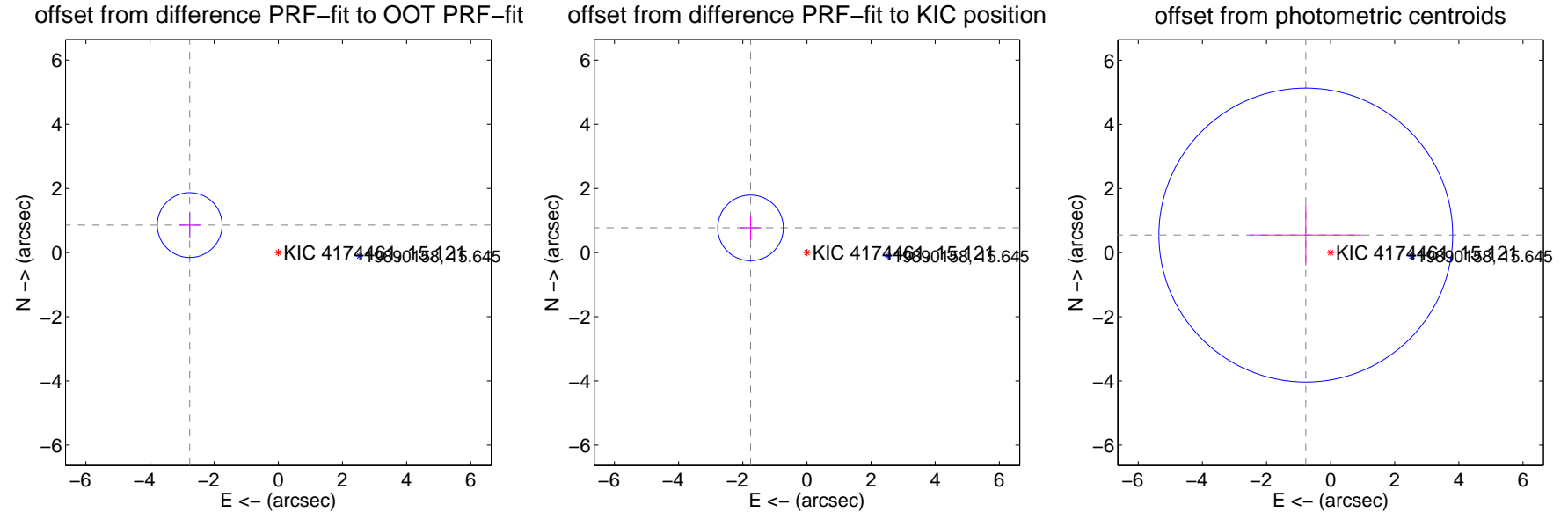
DV Centroid Data

Supplemental centroid analysis for 004174461-02. Kepler magnitude: 15.12. Transit SNR 6.72

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.01 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 2.893 ± 0.337 | 8.59 | 2.763 ± 0.332 | 0.857 ± 0.385 |
| PRF-fit source offset from KIC position | 1.920 ± 0.341 | 5.63 | 1.759 ± 0.332 | 0.770 ± 0.385 |
| photometric centroid source offset | 0.95 ± 1.53 | 0.62 | 0.77 ± 1.75 | 0.55 ± 0.95 |

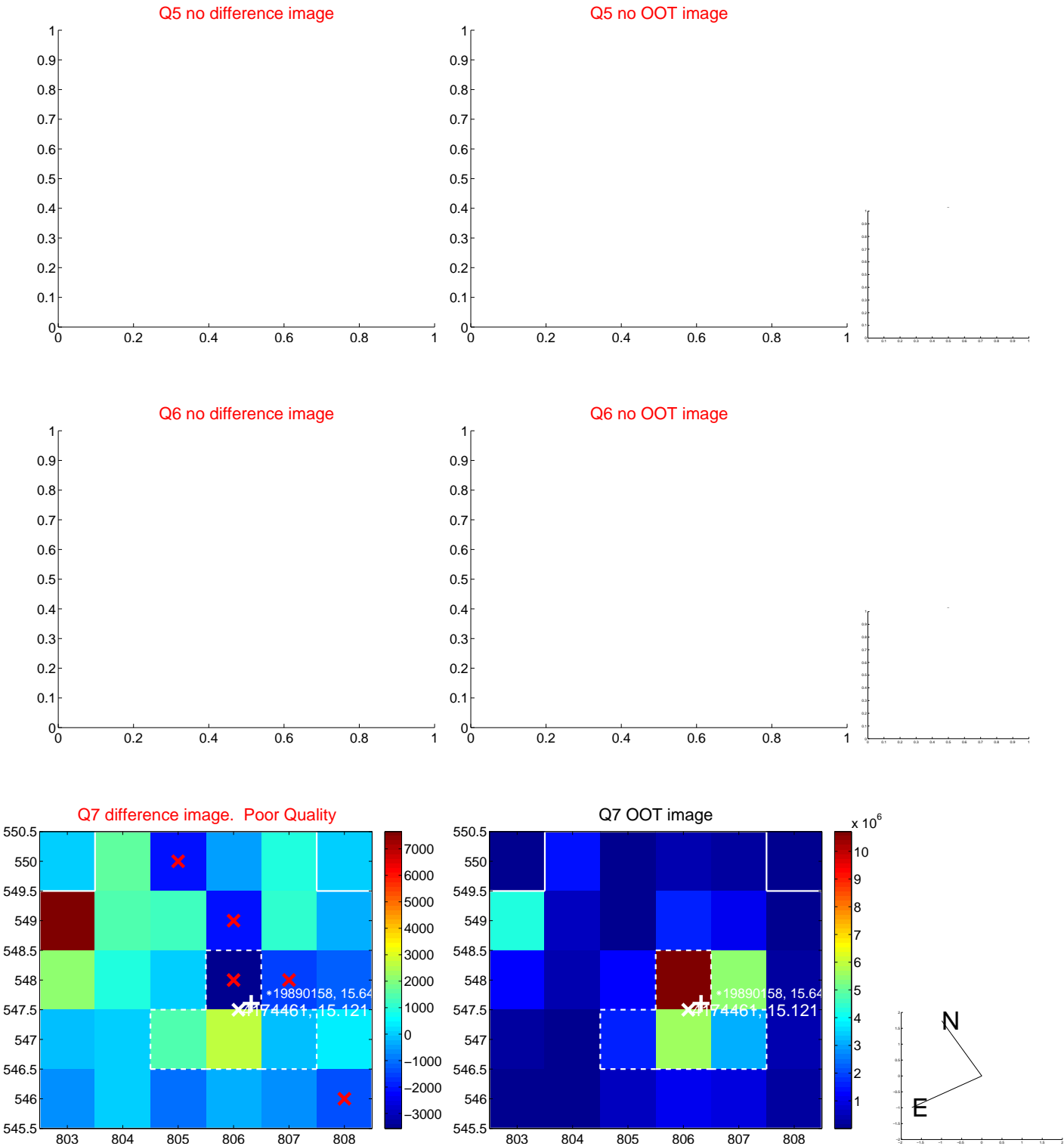


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

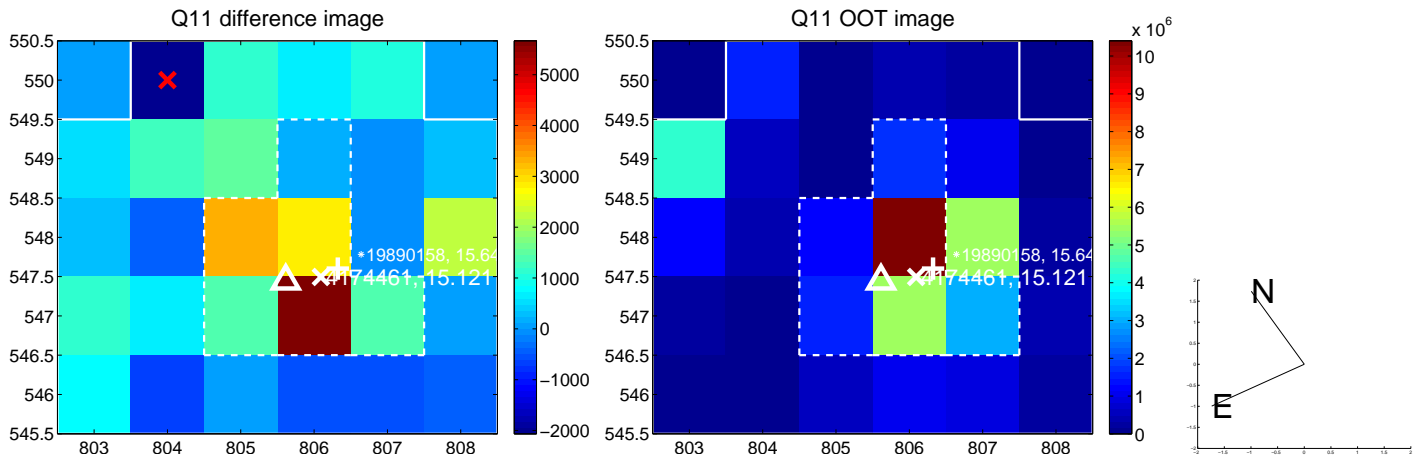
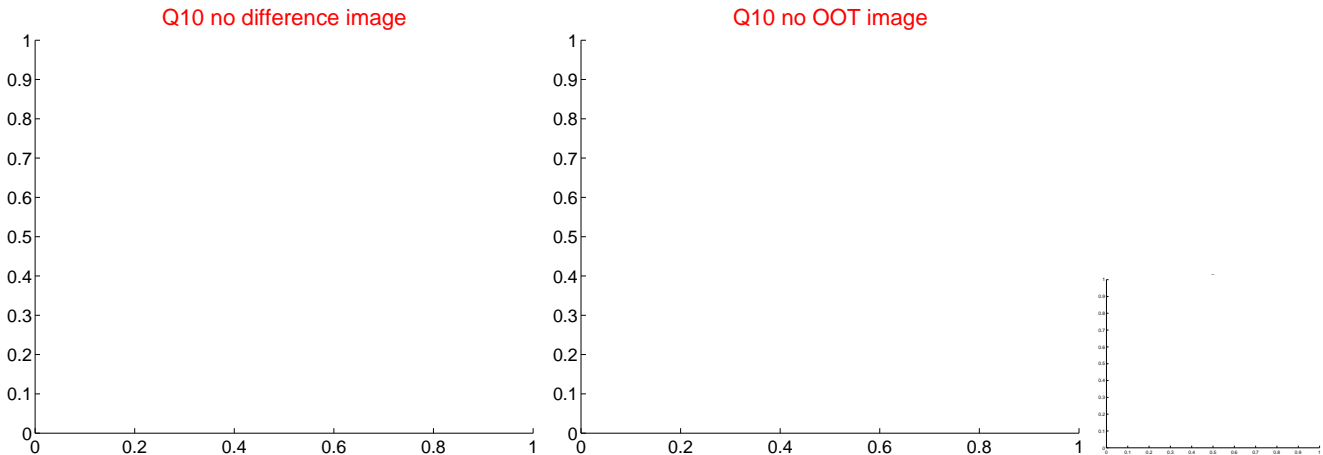
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



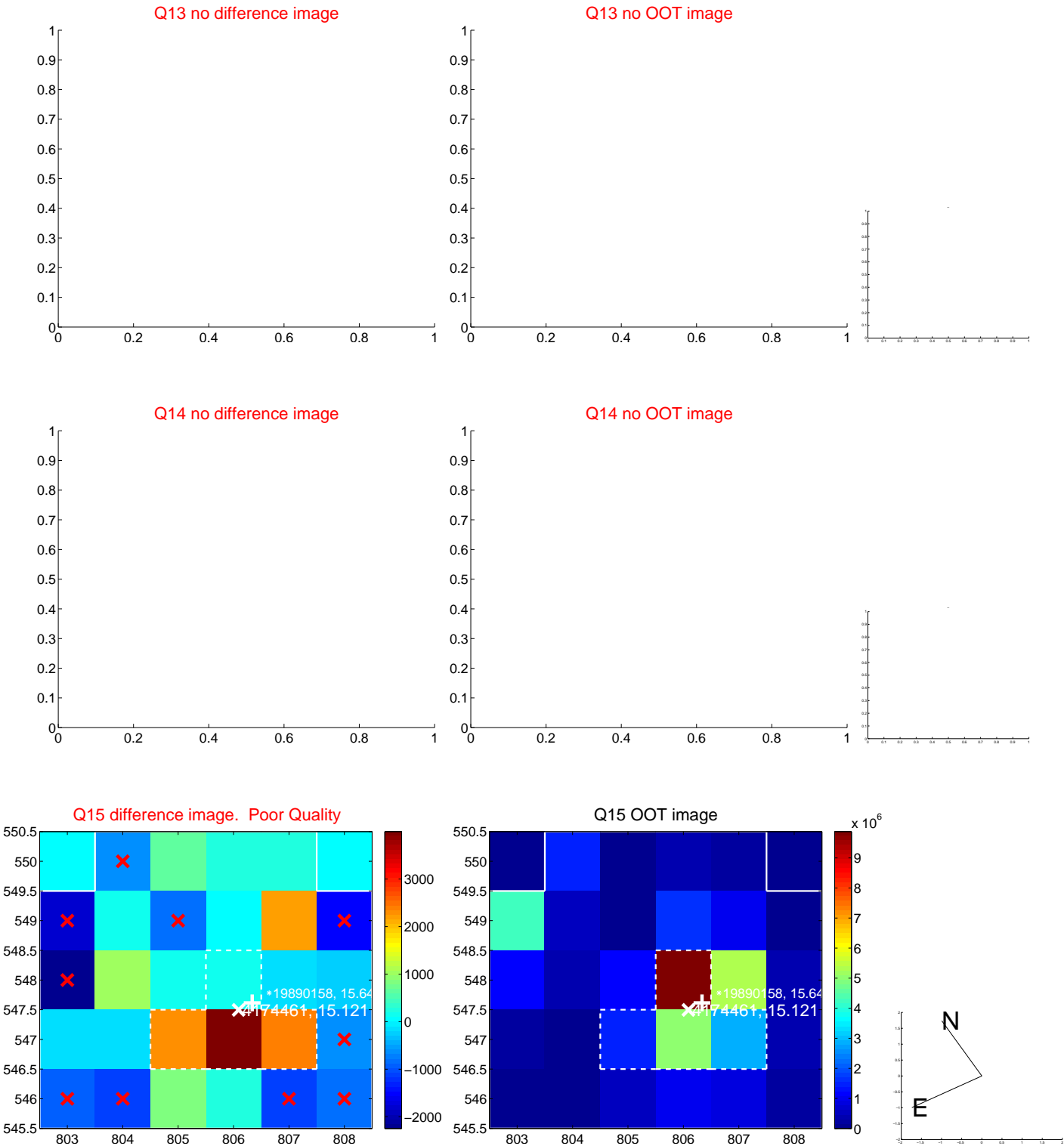
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



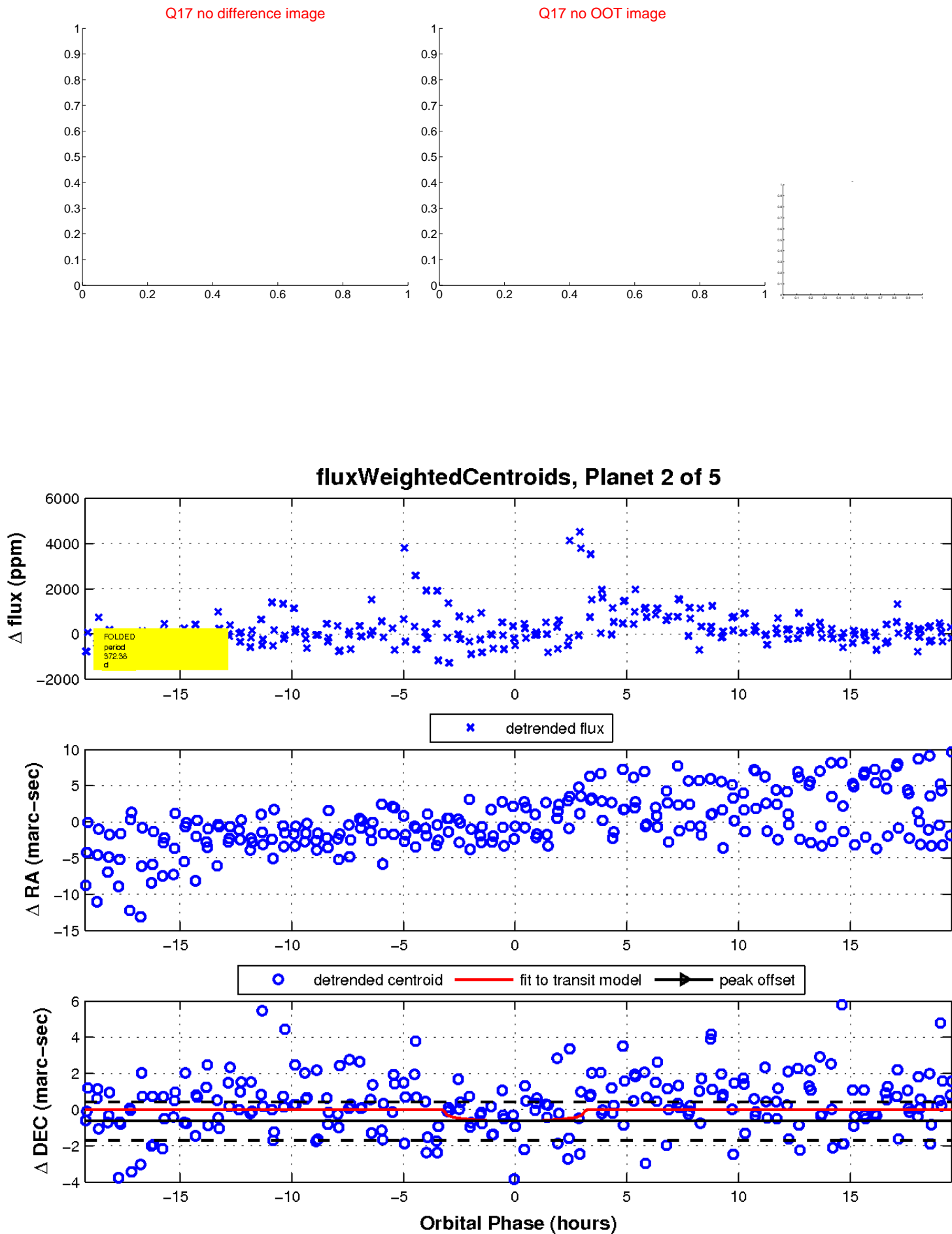
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

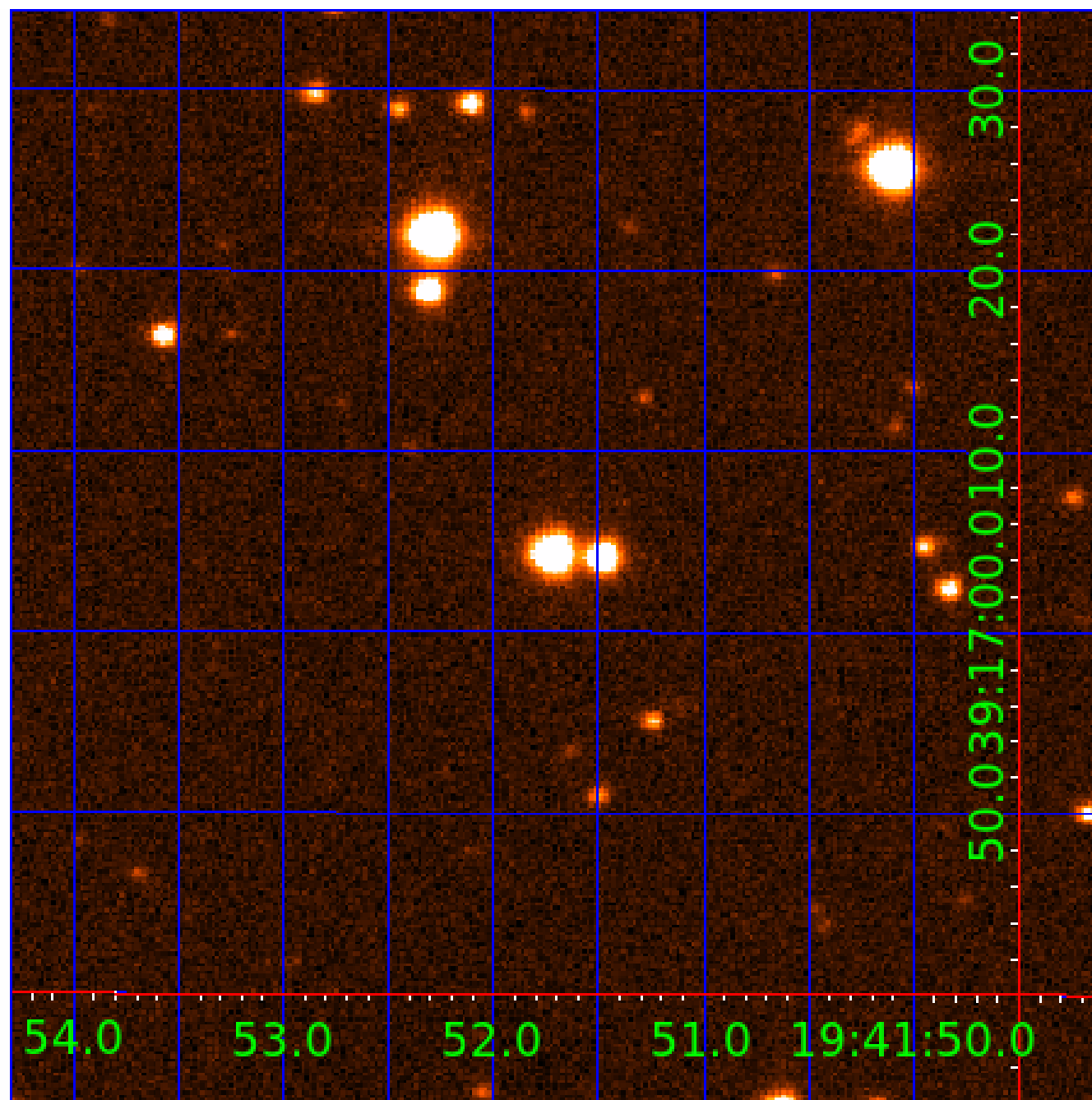


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004174461

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 004174461-01 | OBS | No | 253.239457 | 219.731594 | 963.0 | 10.254 | 12.5 | 8.5 | 0.62 | 4356 | 2.04 | 0.28 |
| 004174461-02 | OBS | No | 372.380135 | 322.794313 | 929.1 | 6.521 | 11.8 | 6.7 | 0.62 | 4356 | 1.95 | 0.17 |
| 004174461-03 | OBS | No | 326.521255 | 263.038319 | 895.4 | 6.998 | 13.2 | 7.7 | 0.62 | 4356 | 2.08 | 0.20 |
| 004174461-04 | OBS | No | 310.989740 | 299.043687 | 1069.1 | 4.485 | 9.4 | 8.2 | 0.62 | 4356 | 2.24 | 0.21 |
| 004174461-05 | OBS | No | 425.785636 | 273.290437 | 1069.1 | 8.657 | 9.4 | 9.9 | 0.62 | 4356 | 2.26 | 0.14 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 004174461-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004174461-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

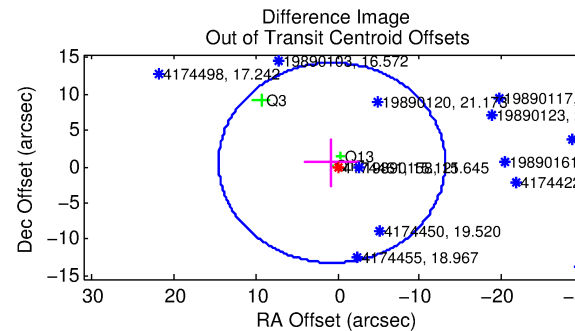
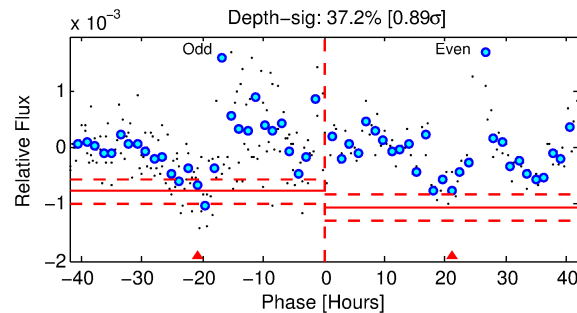
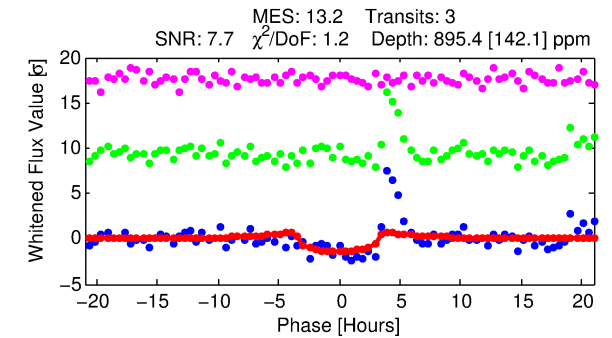
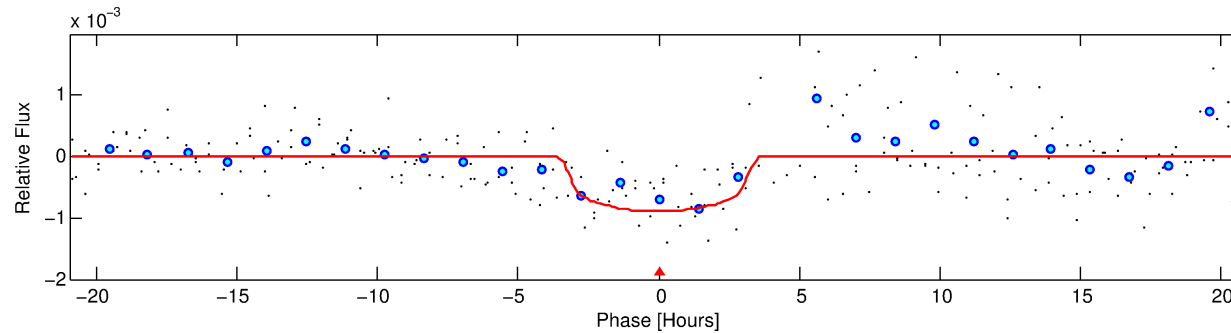
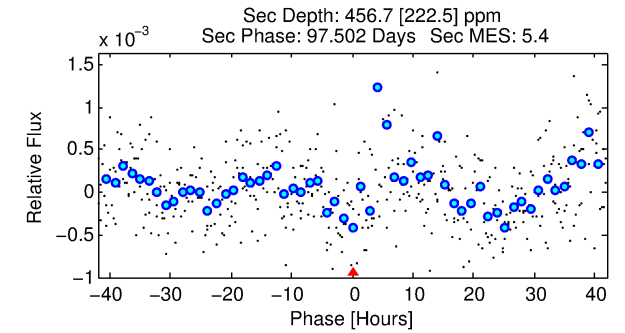
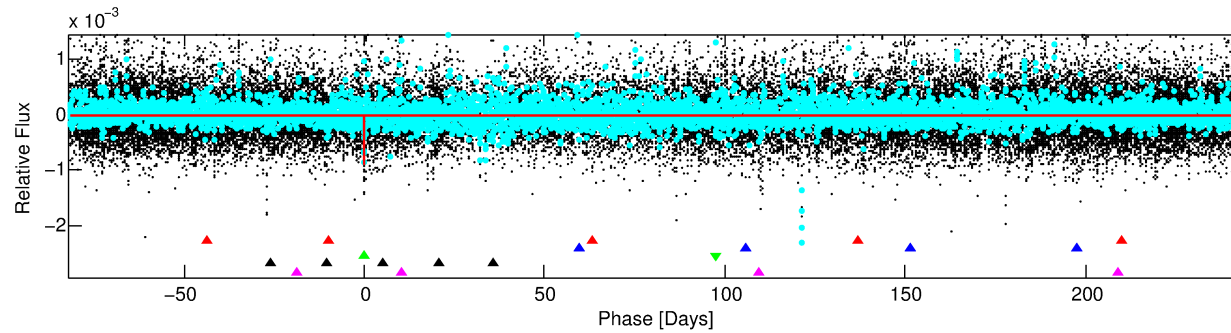
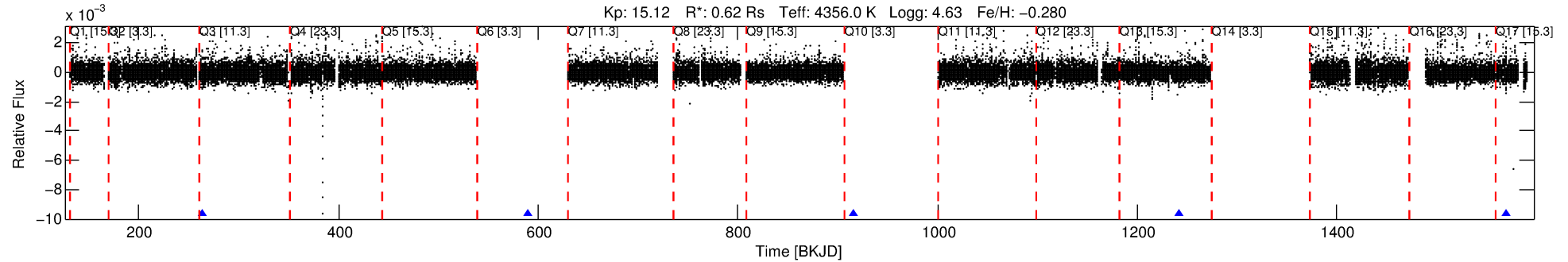
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004174461-03

No Significant Match Found

DV One-Page Summary

KIC: 4174461 Candidate: 3 of 5 Period: 326.521 d



DV Fit Results:

Period = 326.52125 [0.00502] d
Epoch = 263.0383 [0.0157] BKJD
Rp/R* = 0.0306 [0.0194]
a/R* = 234.56 [522.27]
b = 0.79 [1.06]
Seff = 0.20 [0.03]
Teq = 171 [7] K
Rp = 2.08 [1.33] Re
a = 0.7861 [0.0580] AU
Ag = 35915.52 [48894.62] [0.73σ]
Teffp = 3638 [1239] K [2.80σ]

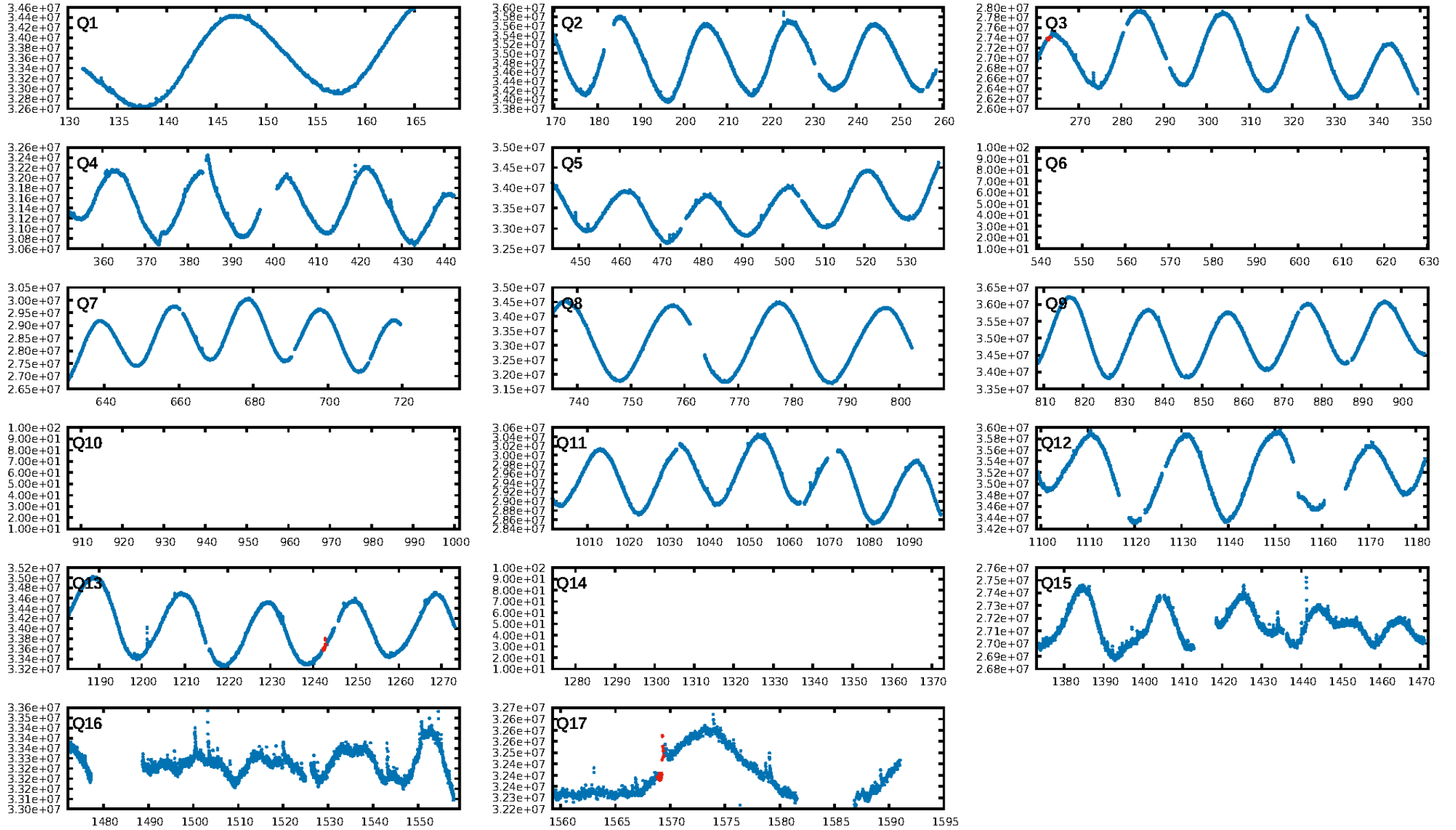
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [44.84σ]
LongPeriod-sig: 100.0% [115.06σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 63.1%
Bootstrap-pfa: 1.89e-13
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.1002
Centroid-sig: N/A
Centroid-so: 0.242 arcsec [0.17σ]
OotOffset-rm: 0.868 arcsec [0.19σ]
KicOffset-rm: 0.585 arcsec [0.43σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

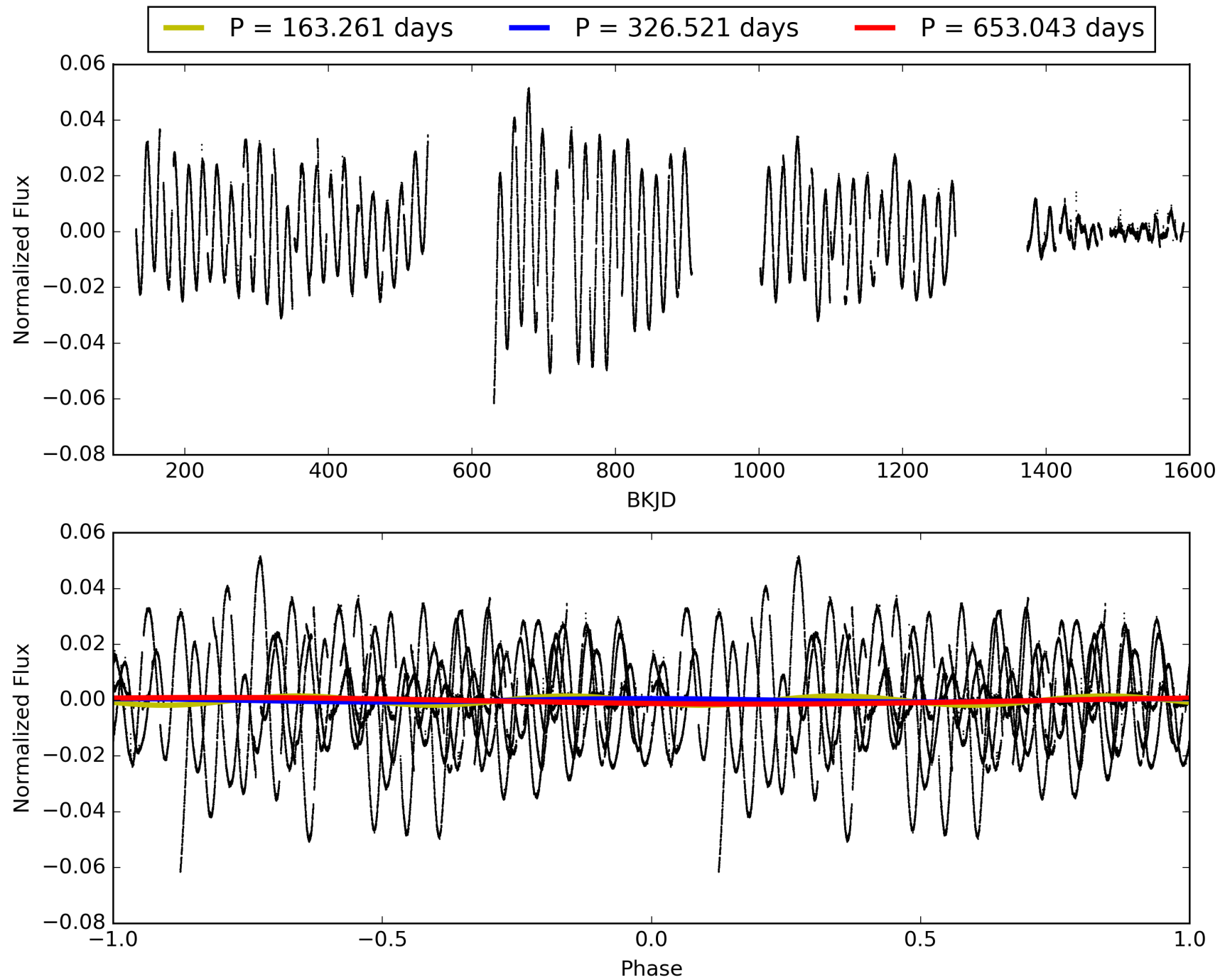
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:21:28 Z

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

TCE 004174461-03, PDC Light Curves

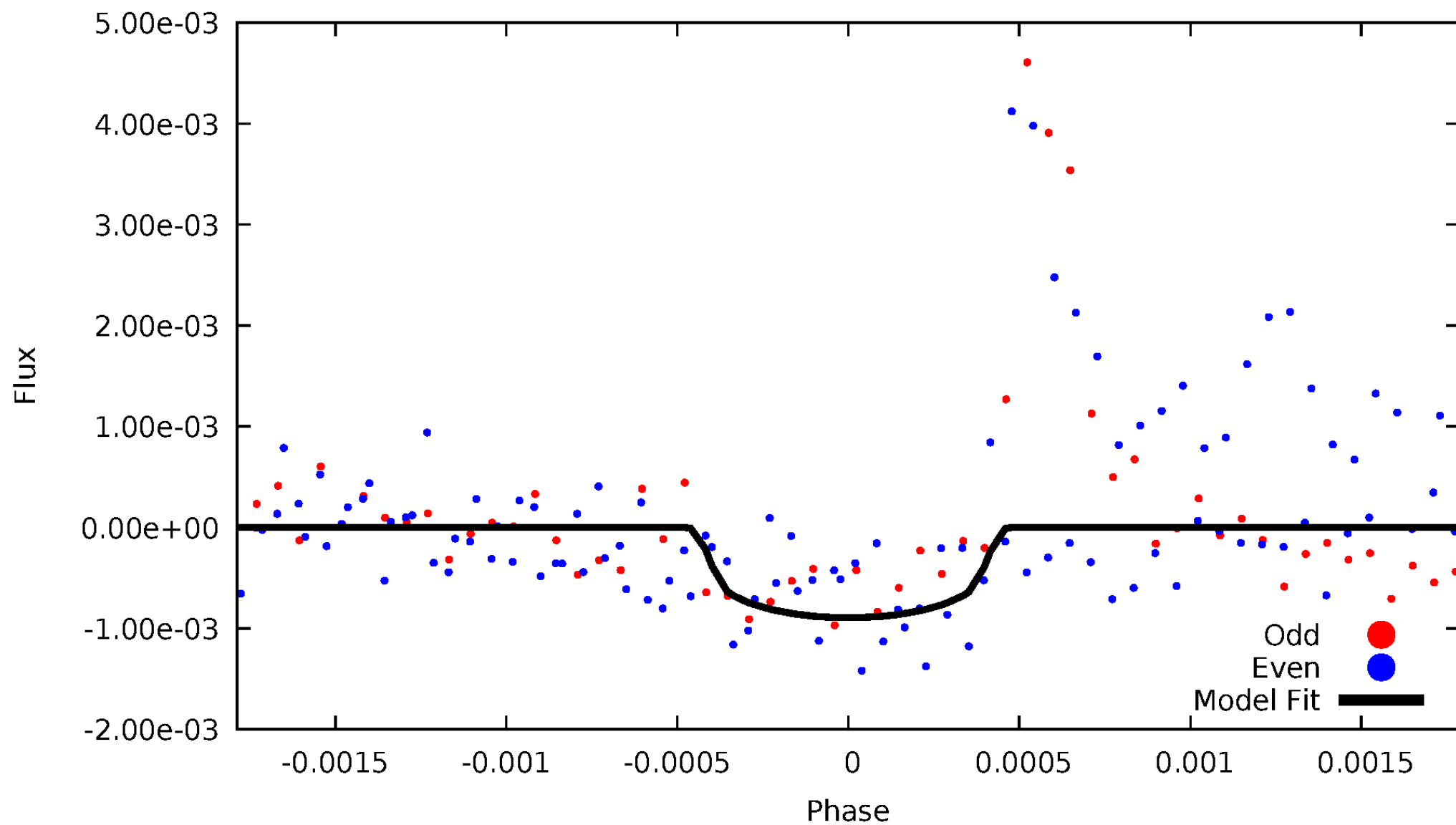


TCE 004174461-03



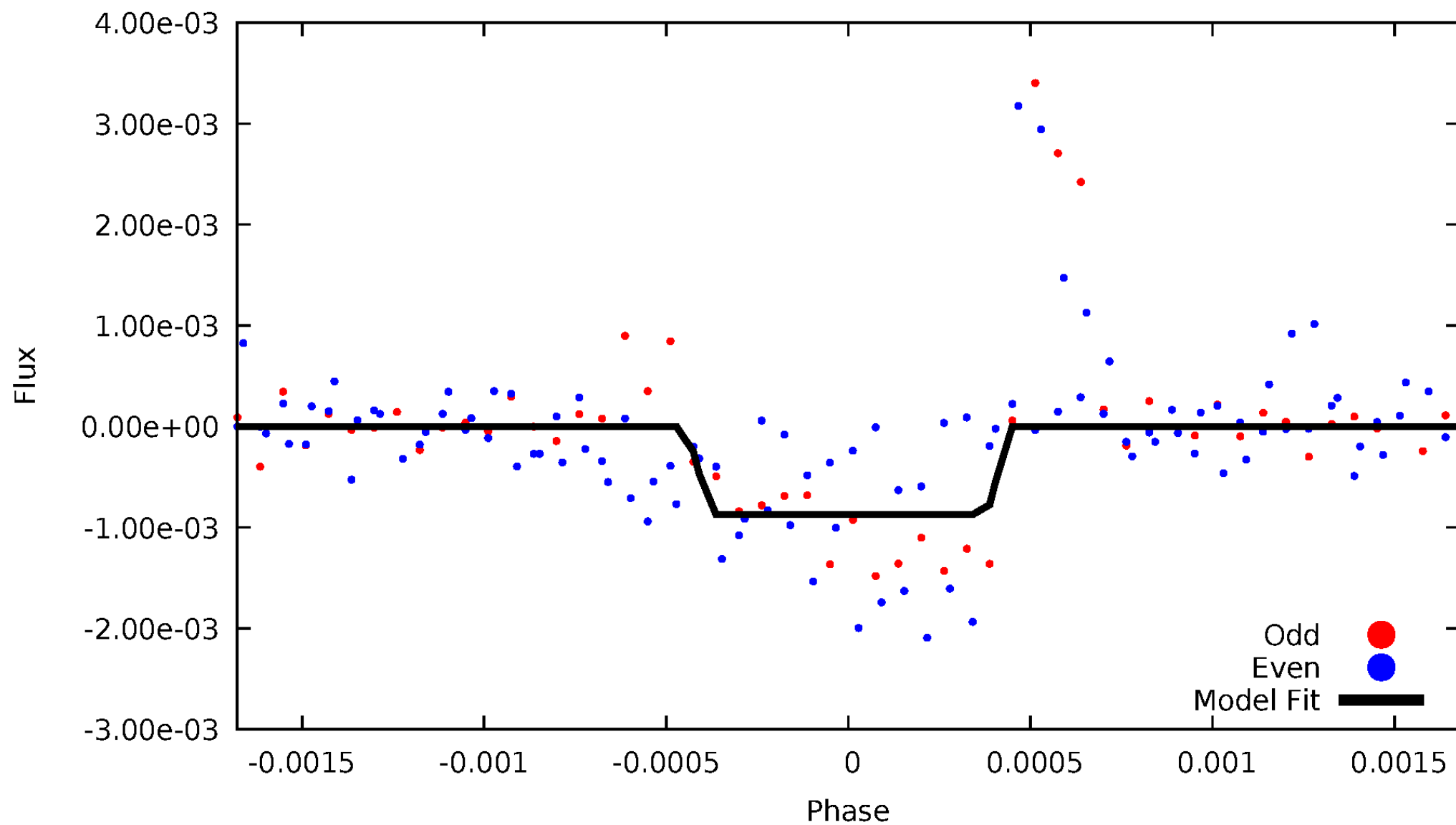
DV Odd/Even

TCE 004174461-03

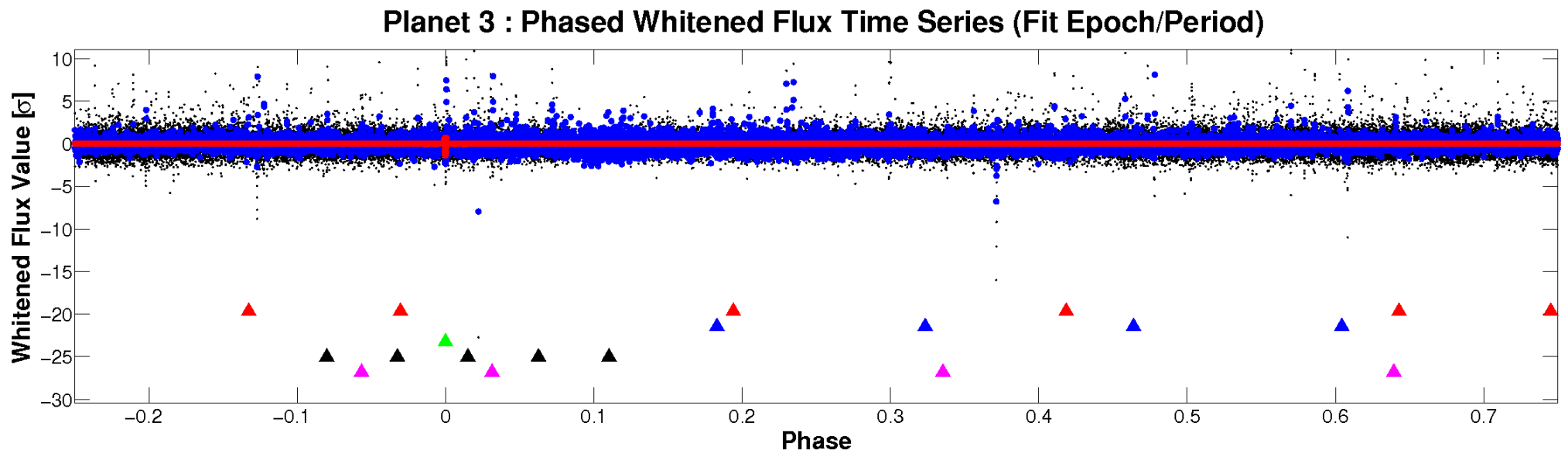
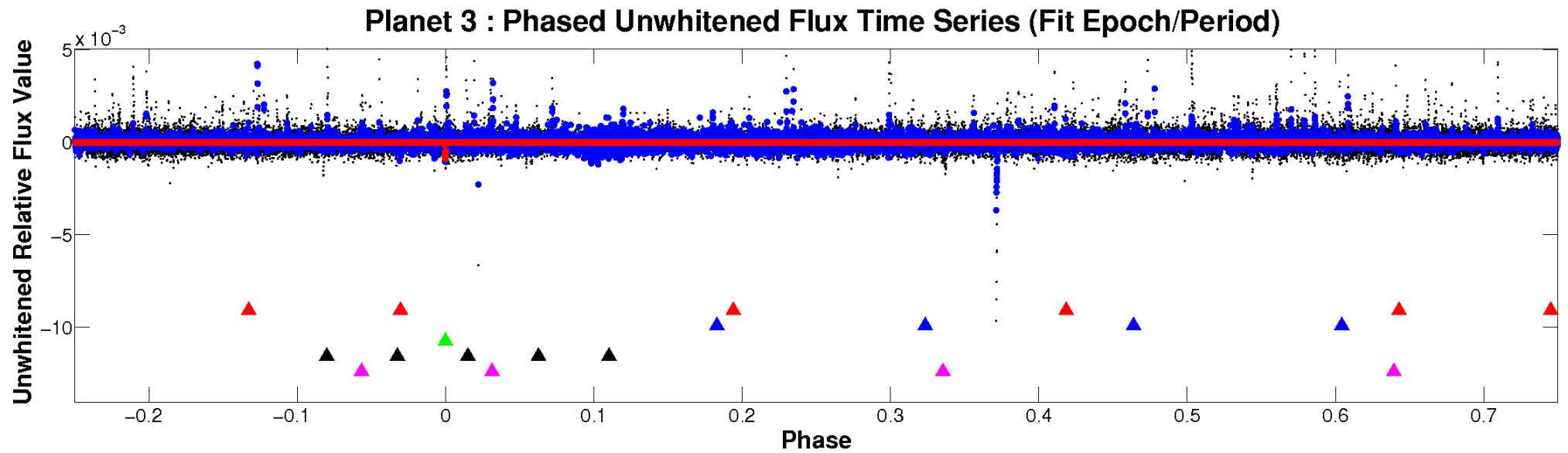


ALT Odd/Even

TCE 004174461-03

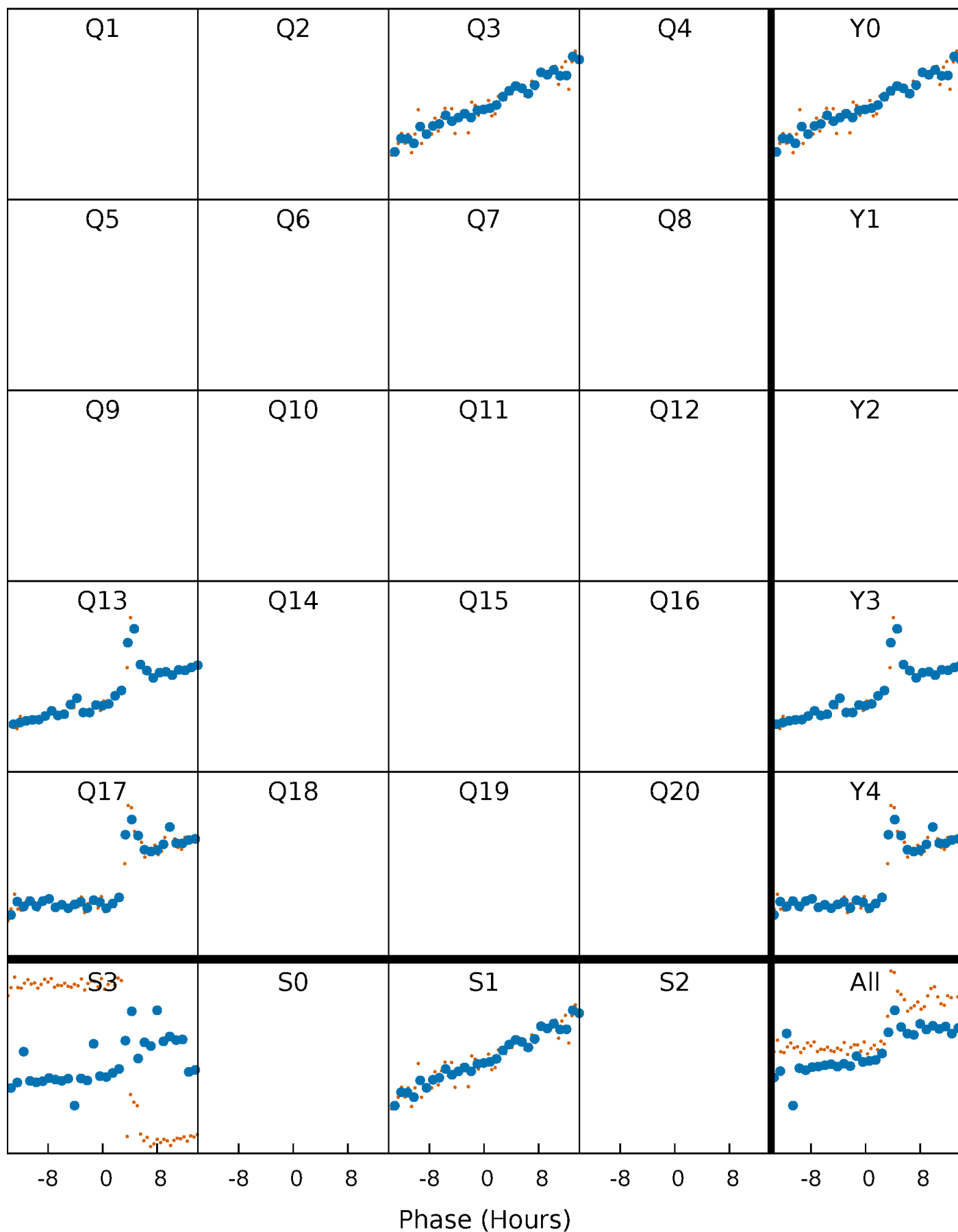


Non-Whitened Vs. Whitened Light Curve



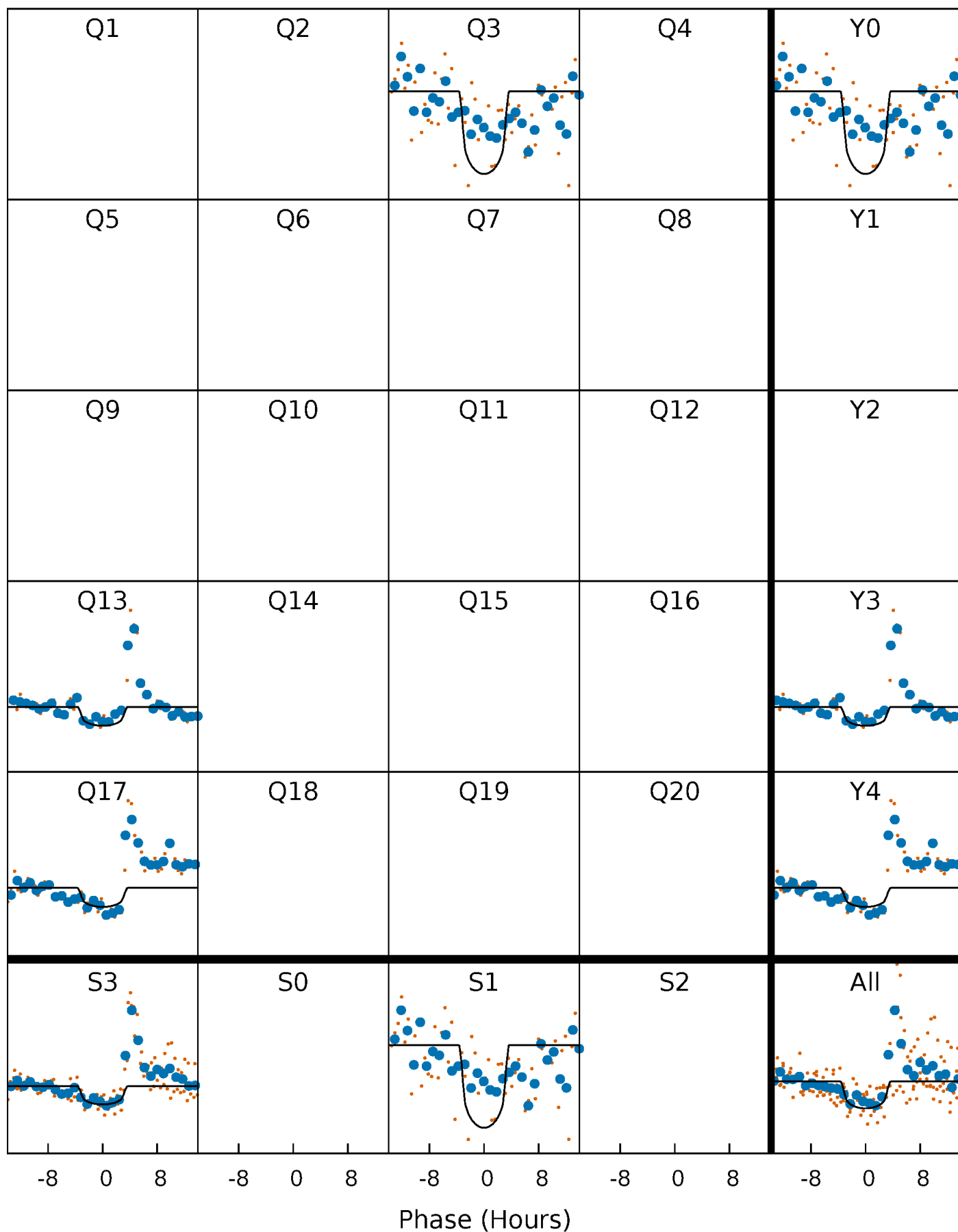
PDC Quarter-Phased Transit Curves

TCE 004174461-03 P=326.521255 Days $T_0=263.038319$ (BKJD)



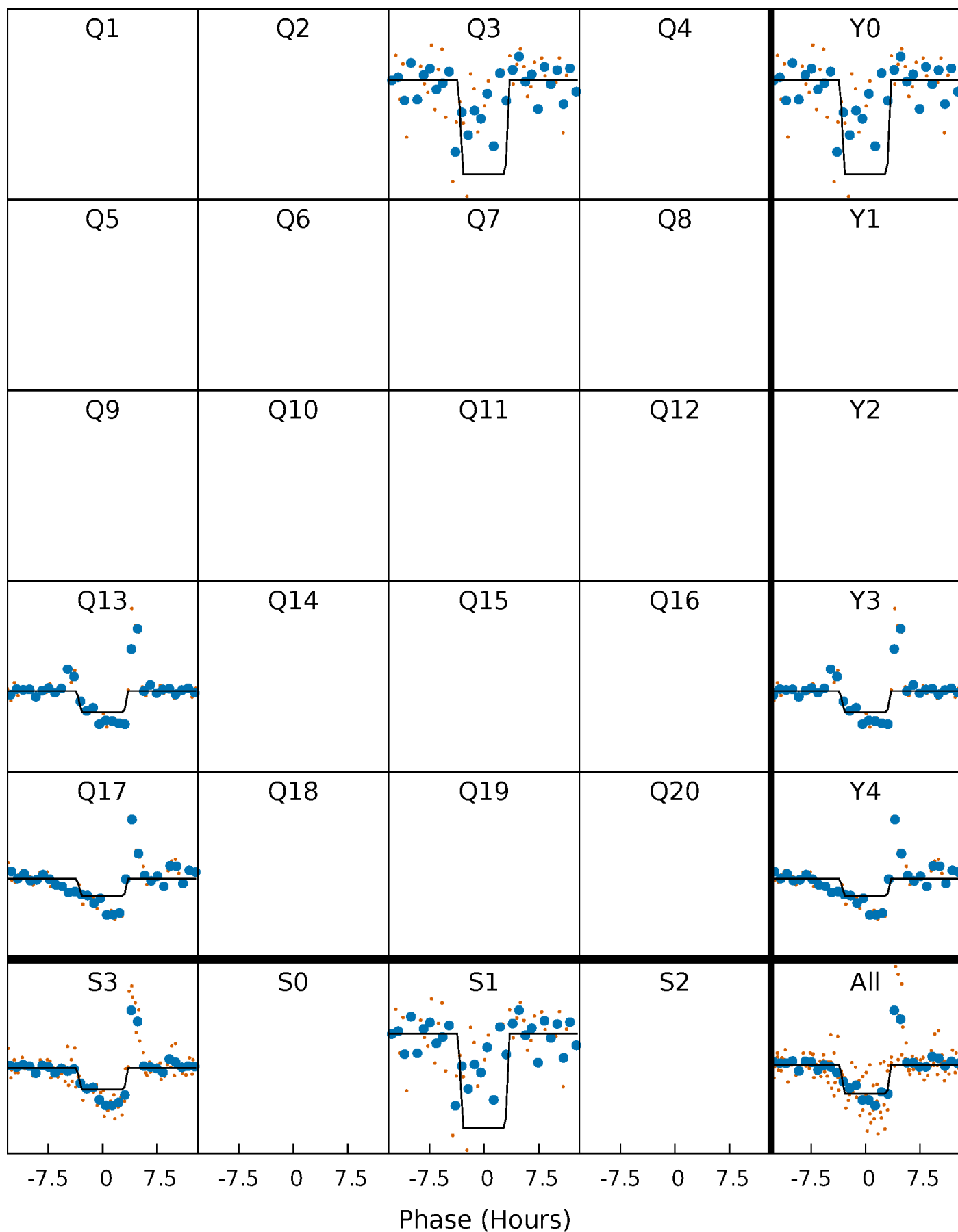
DV Quarter-Phased Transit Curves

TCE 004174461-03 $P=326.521255$ Days $T_0=263.038319$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

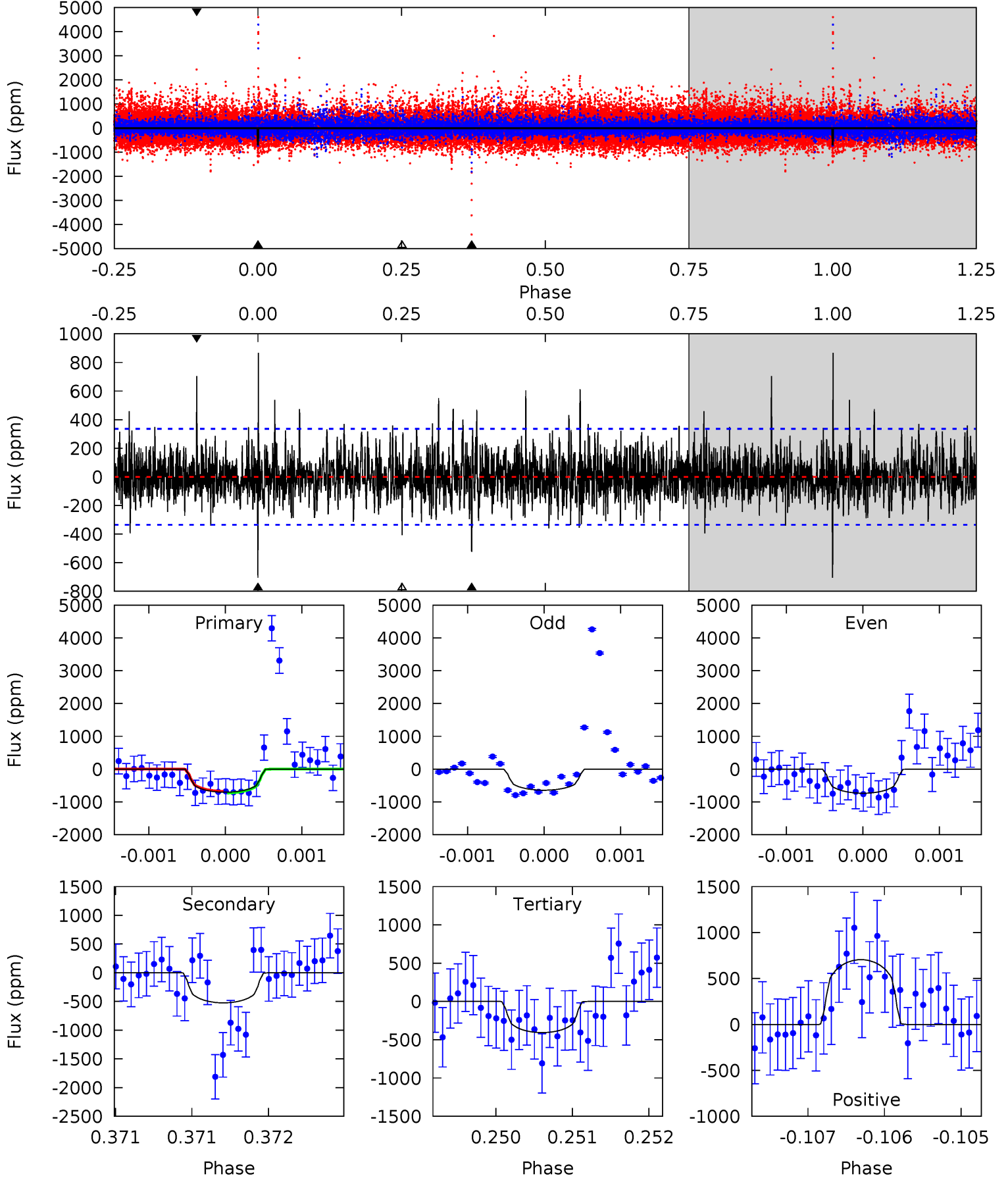
TCE 004174461-03 $P=326.521478$ Days $T_0=263.040970$ (BKJD)



DV Model-Shift Uniqueness Test

004174461-03, P = 326.521255 Days, E = 263.038319 Days

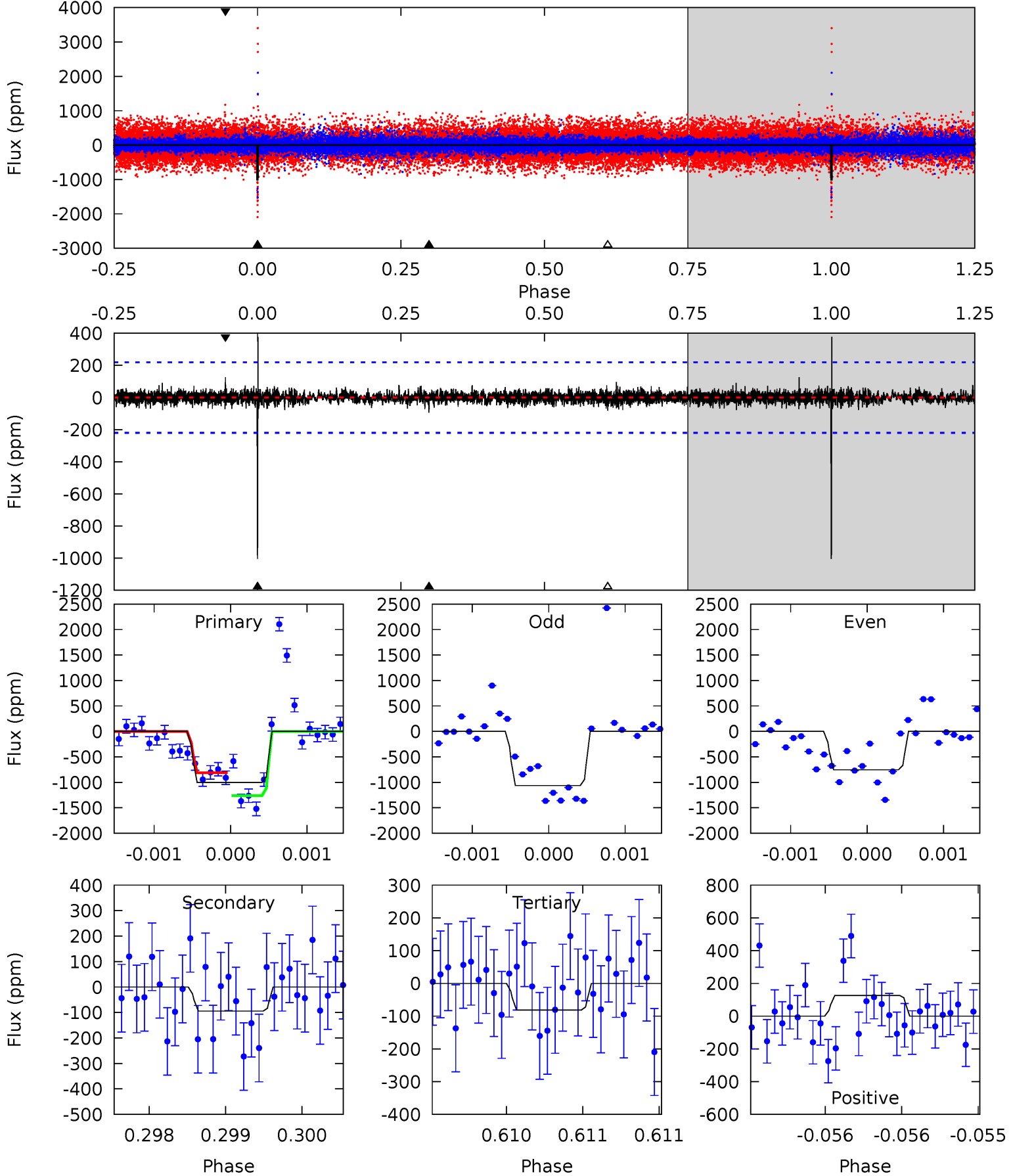
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.5 | 8.56 | 6.64 | 11.5 | 5.47 | 3.33 | 1.98 | 4.87 | 0.01 | 1.92 | -2.95 | 0.65 | 1.10 | 0.55 | 0.38 |



Alt Model-Shift Uniqueness Test

004174461-03, P = 326.521478 Days, E = 263.040970 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 25.1 | 2.35 | 2.03 | 3.15 | 5.48 | 3.34 | 0.52 | 23.0 | 21.9 | 0.32 | -0.80 | 4.00 | 0.87 | 0.27 | 5.65 |



Stellar Parameters For KIC 004174461

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4356^{+117}_{-130} | $4.634^{+0.056}_{-0.021}$ | $-0.280^{+0.300}_{-0.300}$ | $0.622^{+0.044}_{-0.056}$ | $0.608^{+0.066}_{-0.050}$ | $3.558^{+0.828}_{-0.379}$ |
| | +3%/-3% | +1%/-0% | +107%/-107% | +7%/-9% | +11%/-8% | +23%/-11% |
| 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 004174461-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -524 ± 61 | $2.15^{+1.26}_{-1.10}$ | 237^{+7}_{-8} | 3869^{+1301}_{-562} | $40118^{+126457}_{-24826}$ |
| Alt. | -94 ± 40 | $2.15^{+1.36}_{-1.21}$ | 237^{+7}_{-8} | 2955^{+864}_{-407} | 6781^{+32432}_{-4508} |

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 $A_{obs} \gg 1.0$

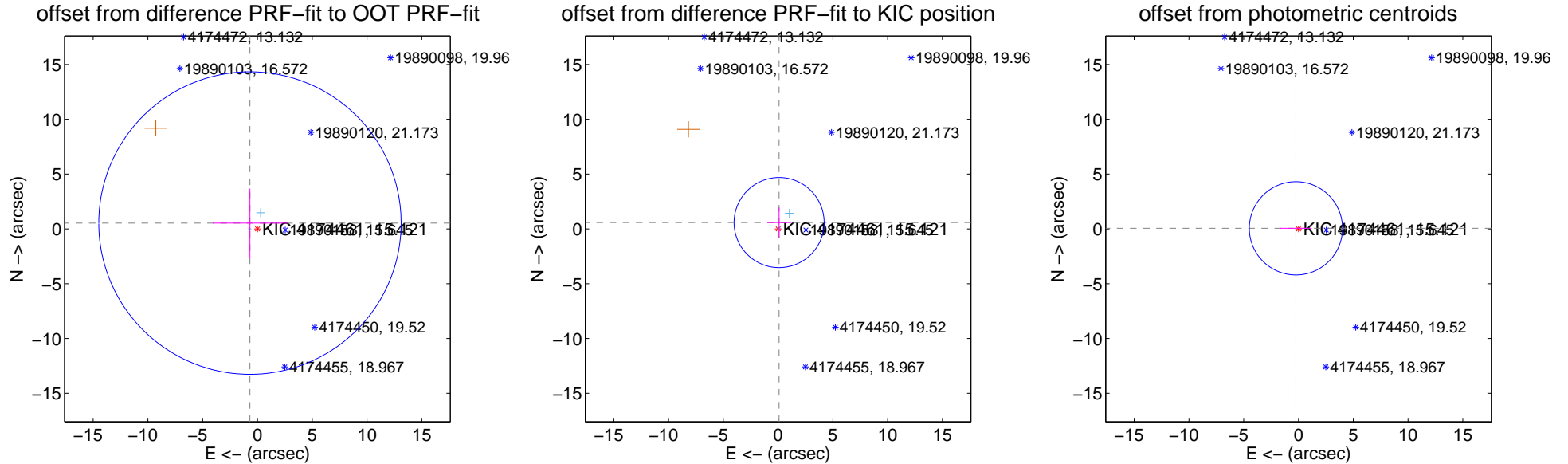
DV Centroid Data

Supplemental centroid analysis for 004174461-03. Kepler magnitude: 15.12. Transit SNR 7.67

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.78 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.868 ± 4.599 | 0.19 | 0.685 ± 3.397 | 0.533 ± 3.144 |
| PRF-fit source offset from KIC position | 0.585 ± 1.370 | 0.43 | -0.090 ± 1.081 | 0.578 ± 1.376 |
| photometric centroid source offset | 0.24 ± 1.42 | 0.17 | 0.24 ± 1.44 | 0.05 ± 0.88 |



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.

Q1 no difference image



Q1 no OOT image



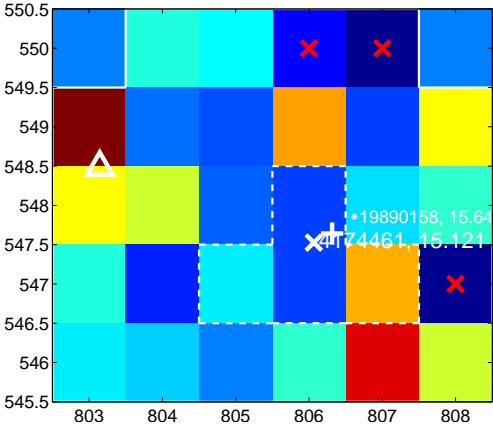
Q2 no difference image



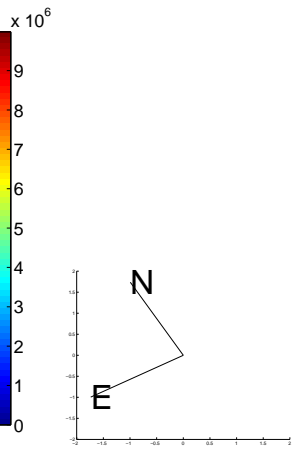
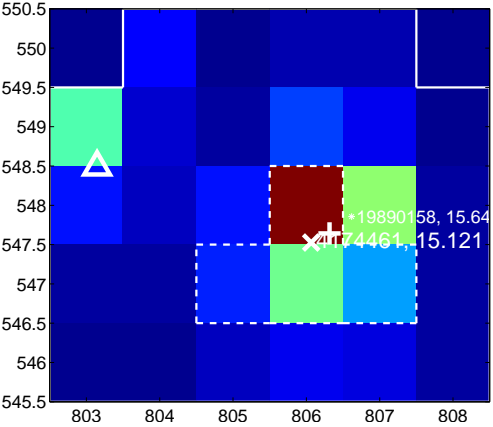
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



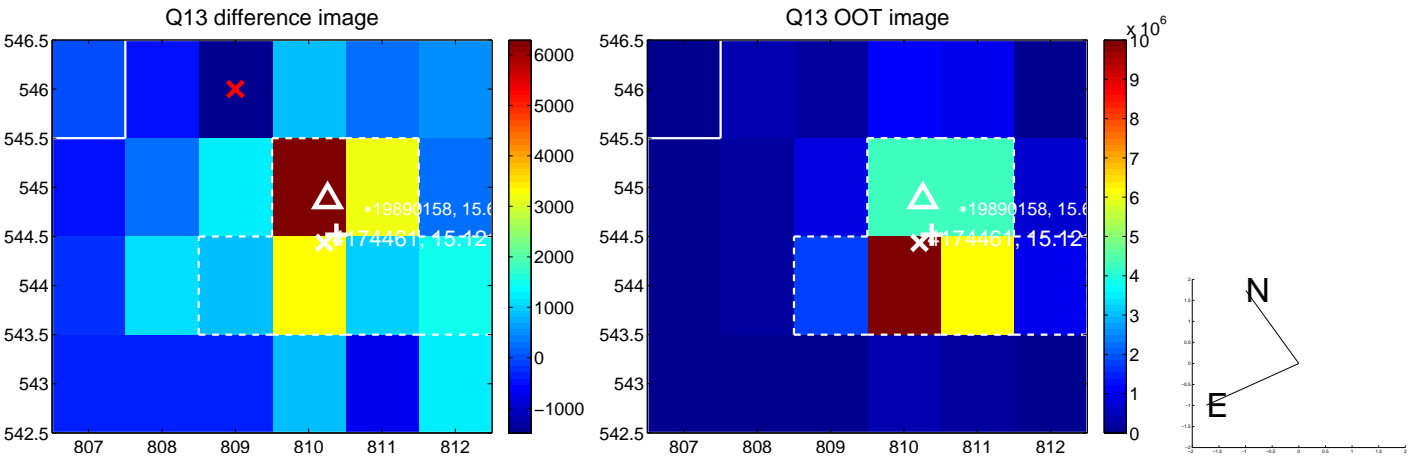
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



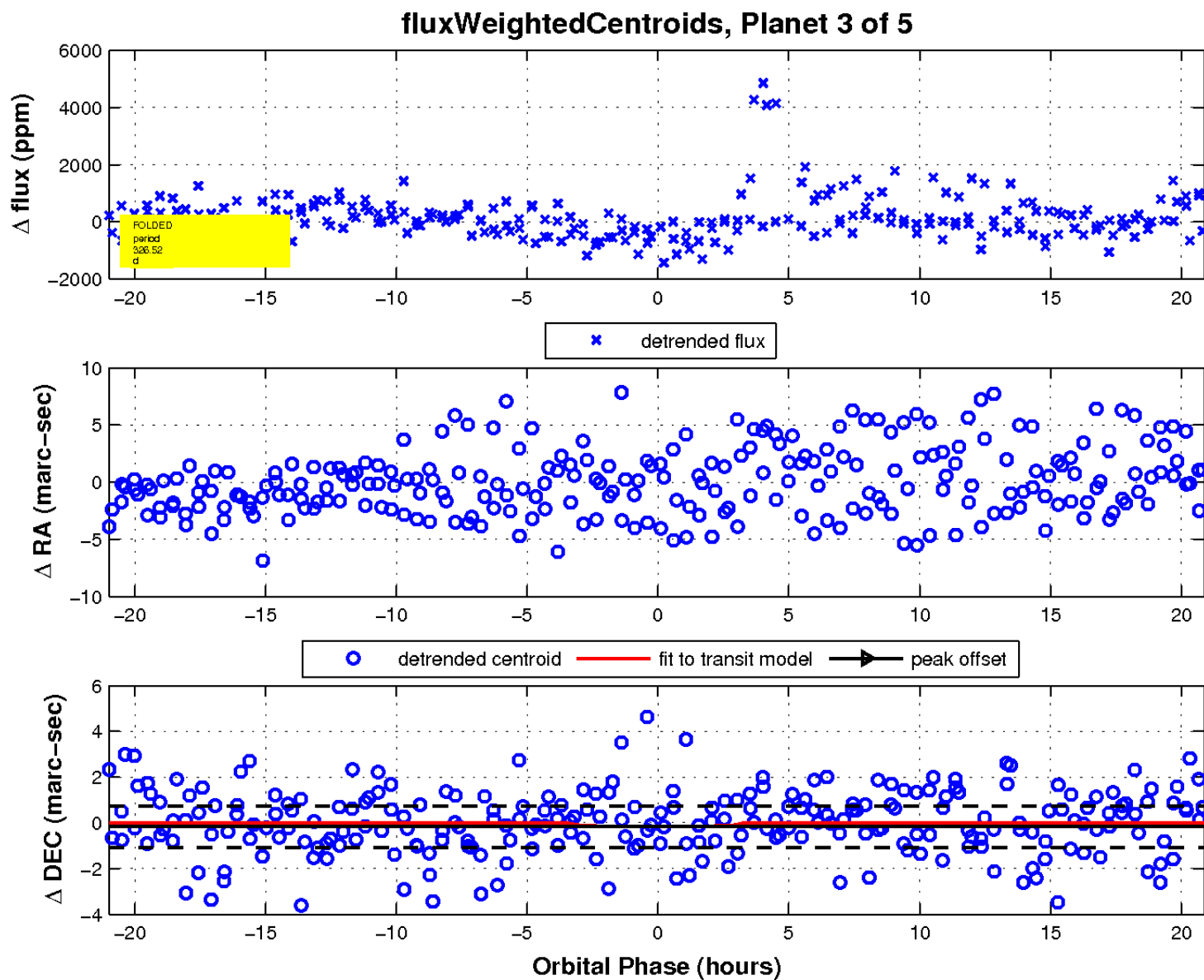
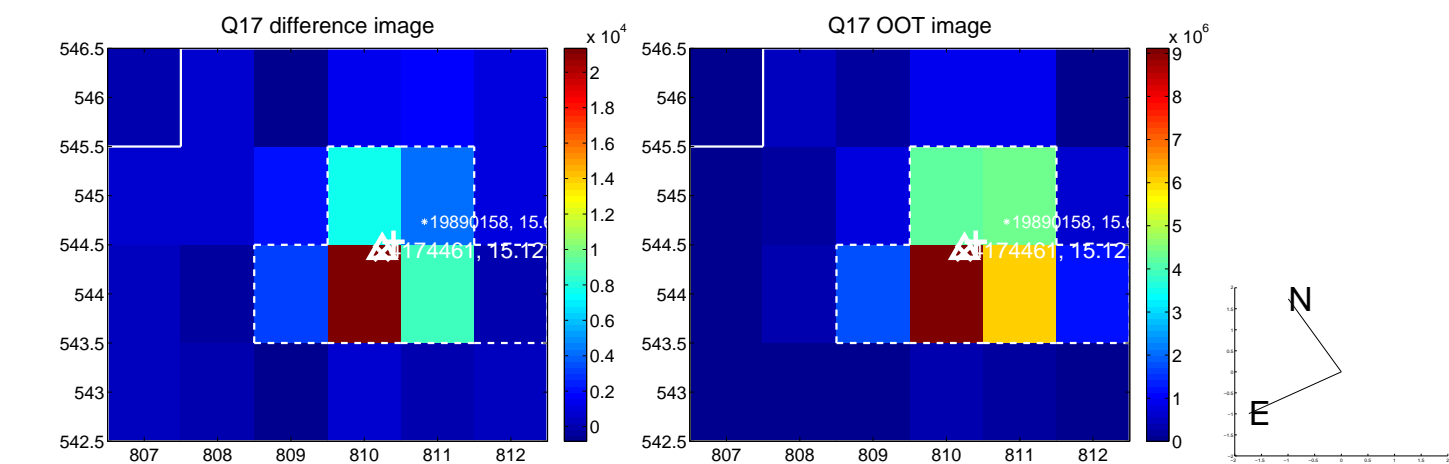
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

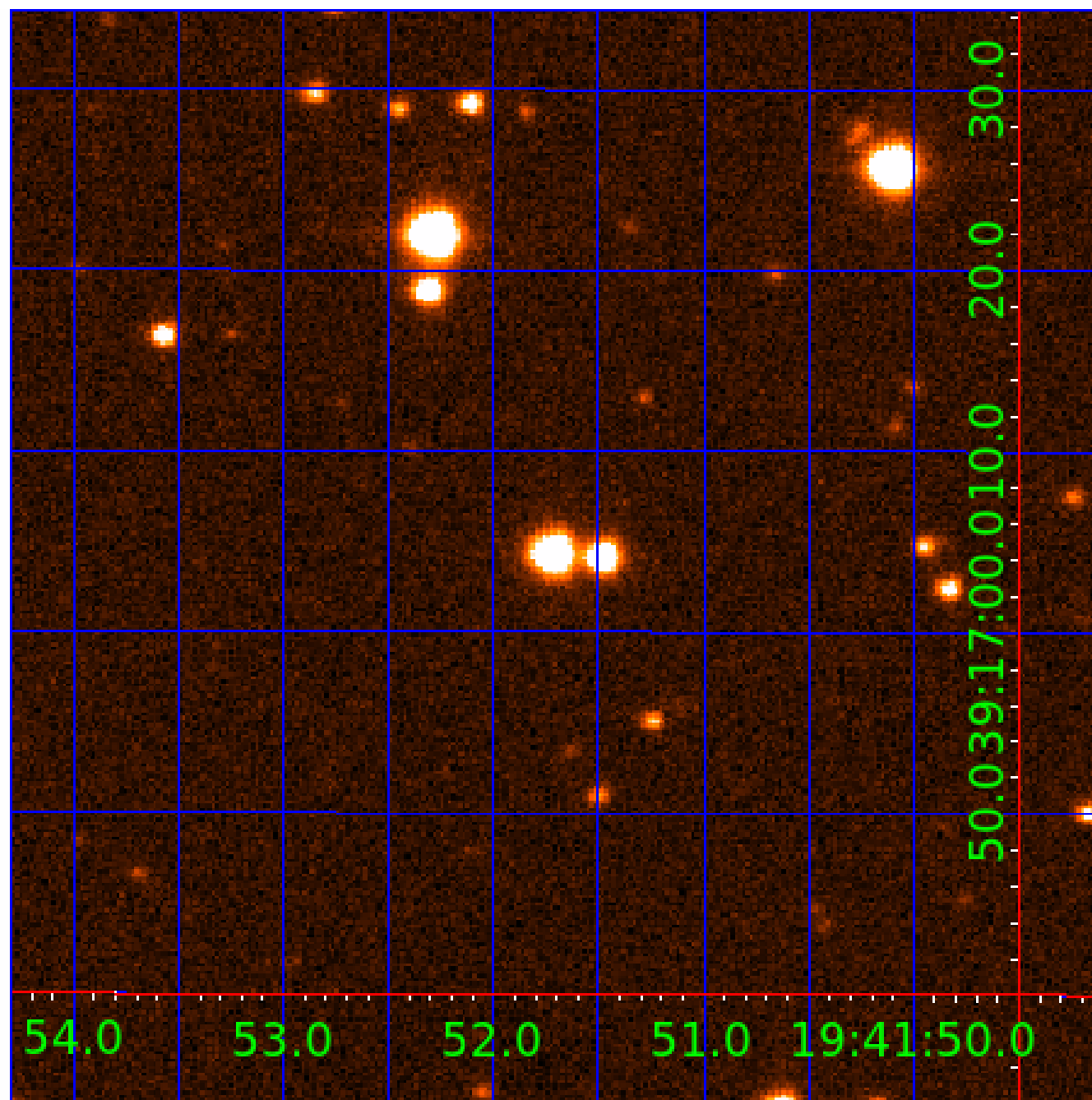


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004174461

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 004174461-01 | OBS | No | 253.239457 | 219.731594 | 963.0 | 10.254 | 12.5 | 8.5 | 0.62 | 4356 | 2.04 | 0.28 |
| 004174461-02 | OBS | No | 372.380135 | 322.794313 | 929.1 | 6.521 | 11.8 | 6.7 | 0.62 | 4356 | 1.95 | 0.17 |
| 004174461-03 | OBS | No | 326.521255 | 263.038319 | 895.4 | 6.998 | 13.2 | 7.7 | 0.62 | 4356 | 2.08 | 0.20 |
| 004174461-04 | OBS | No | 310.989740 | 299.043687 | 1069.1 | 4.485 | 9.4 | 8.2 | 0.62 | 4356 | 2.24 | 0.21 |
| 004174461-05 | OBS | No | 425.785636 | 273.290437 | 1069.1 | 8.657 | 9.4 | 9.9 | 0.62 | 4356 | 2.26 | 0.14 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 004174461-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004174461-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

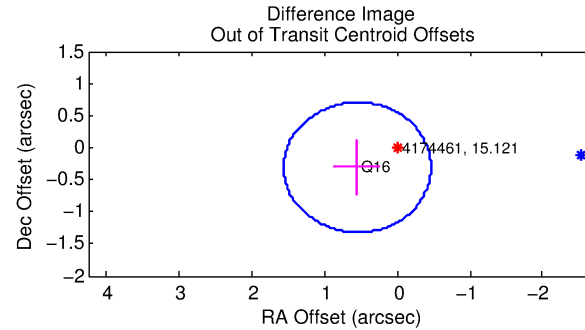
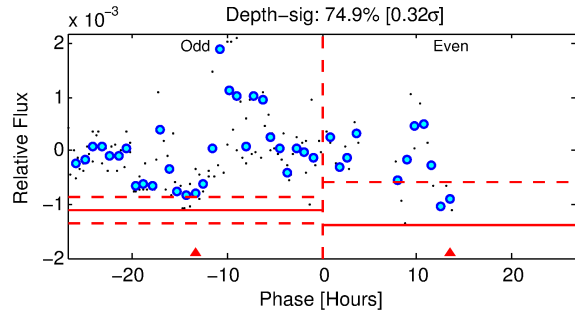
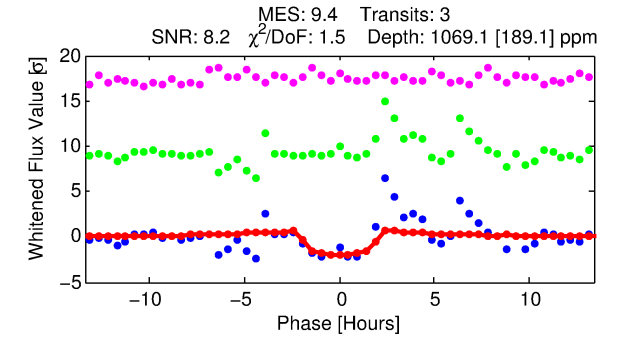
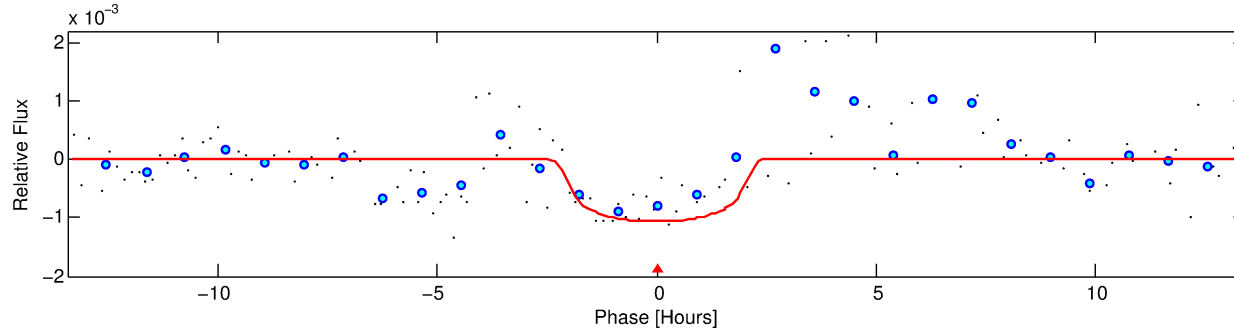
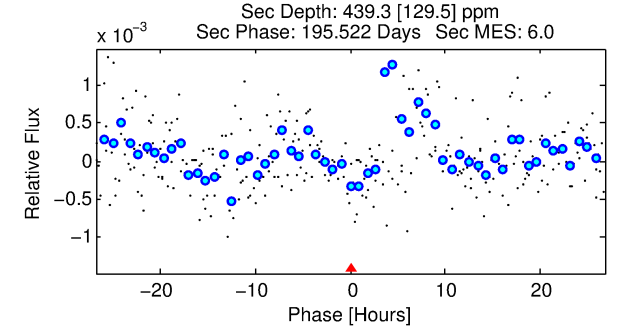
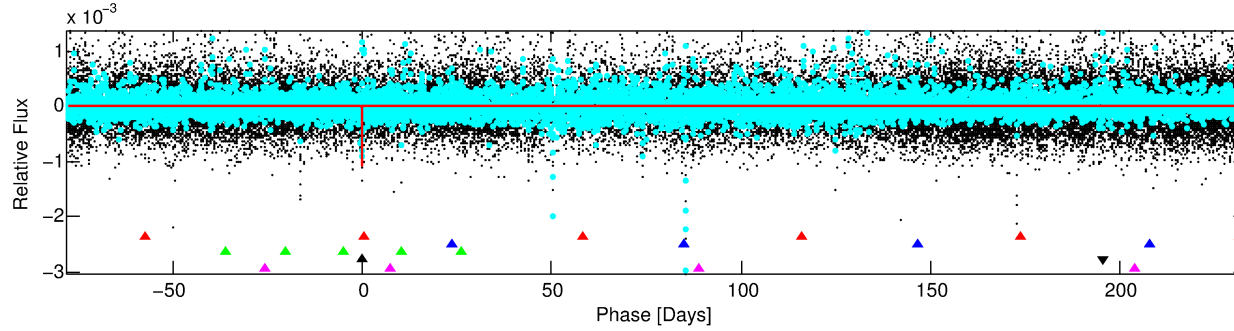
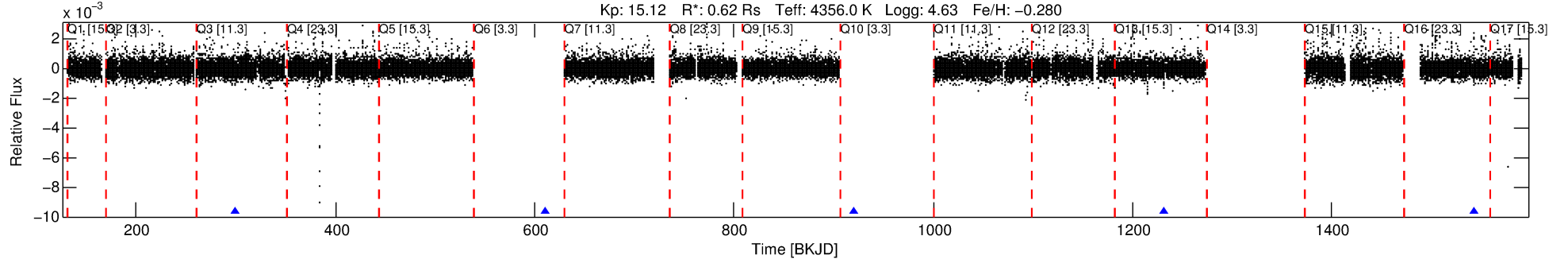
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004174461-04

No Significant Match Found

DV One-Page Summary

KIC: 4174461 Candidate: 4 of 5 Period: 310.990 d



DV Fit Results:

Period = 310.98974 [0.00390] d
Epoch = 299.0437 [0.0120] BKJD
Rp/R* = 0.0330 [0.0346]
a/R* = 367.92 [1349.99]
b = 0.76 [2.03]
Seff = 0.22 [0.03]
Teq = 174 [7] K
Rp = 2.24 [2.35] Re
a = 0.7610 [0.0562] AU
Ag = 27968.94 [59300.44] [0.47σ]
Teffp = 3474 [1842] K [1.79σ]

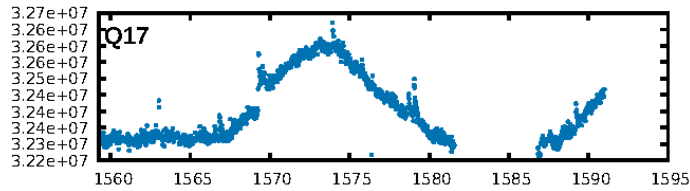
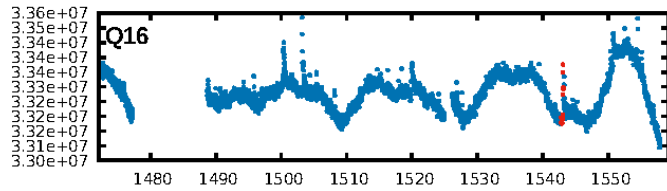
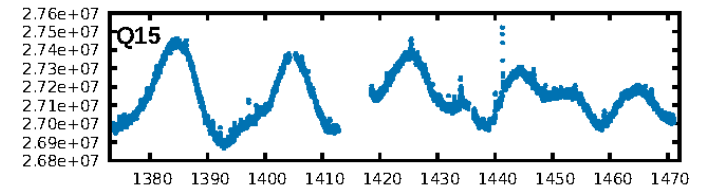
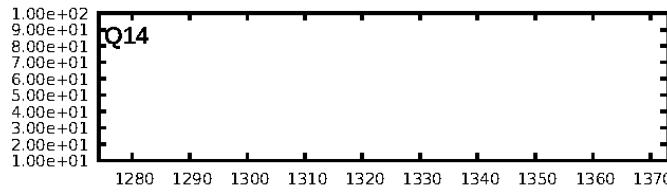
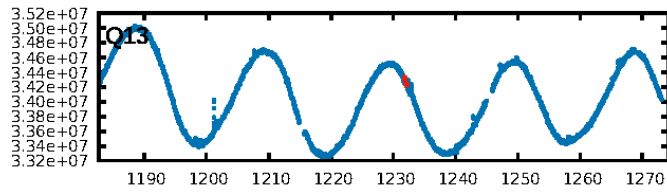
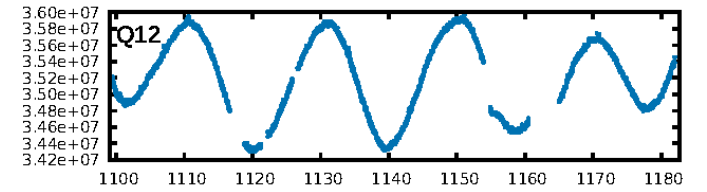
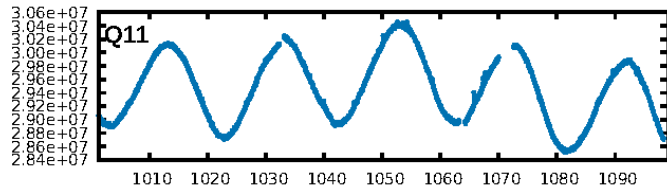
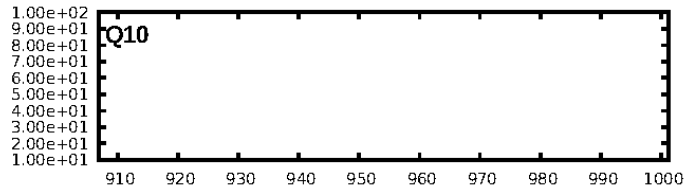
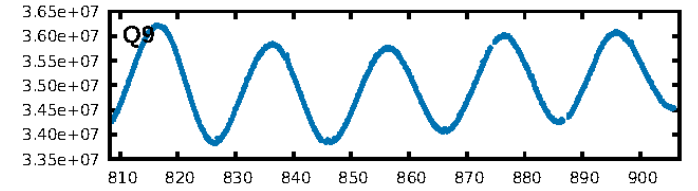
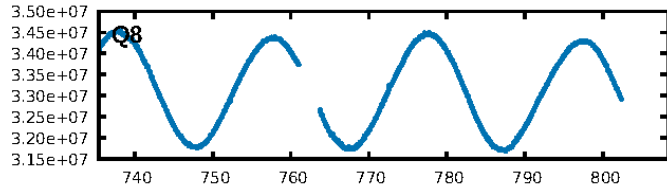
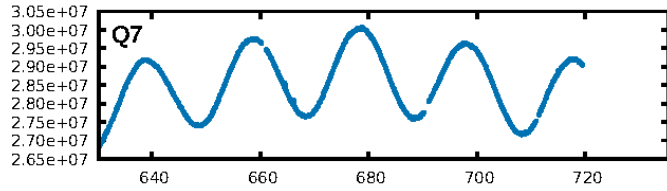
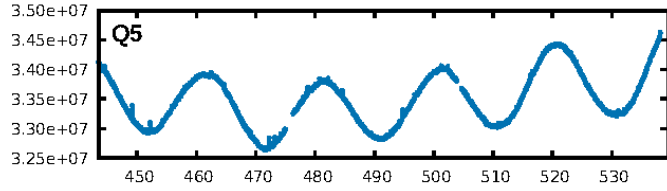
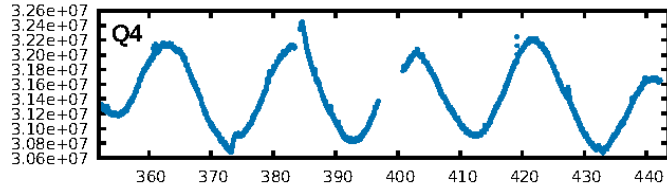
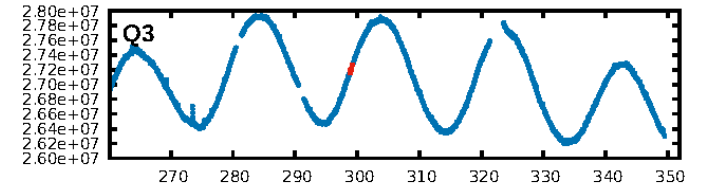
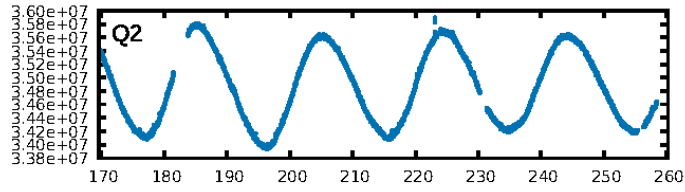
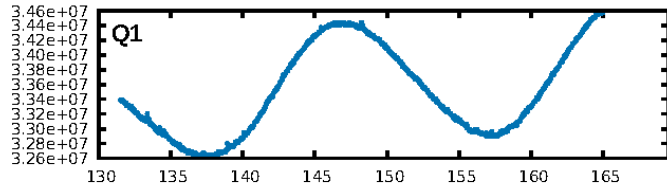
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [123.84σ]
LongPeriod-sig: 100.0% [44.84σ]
ModelChiSquare2-sig: 4.4%
ModelChiSquareGof-sig: 97.5%
Bootstrap-pfa: 2.25e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 119.9
Centroid-sig: N/A
Centroid-so: 0.975 arcsec [0.93σ]
OotOffset-rm: 0.629 arcsec [1.86σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-rm: 0.581 arcsec [1.60σ]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

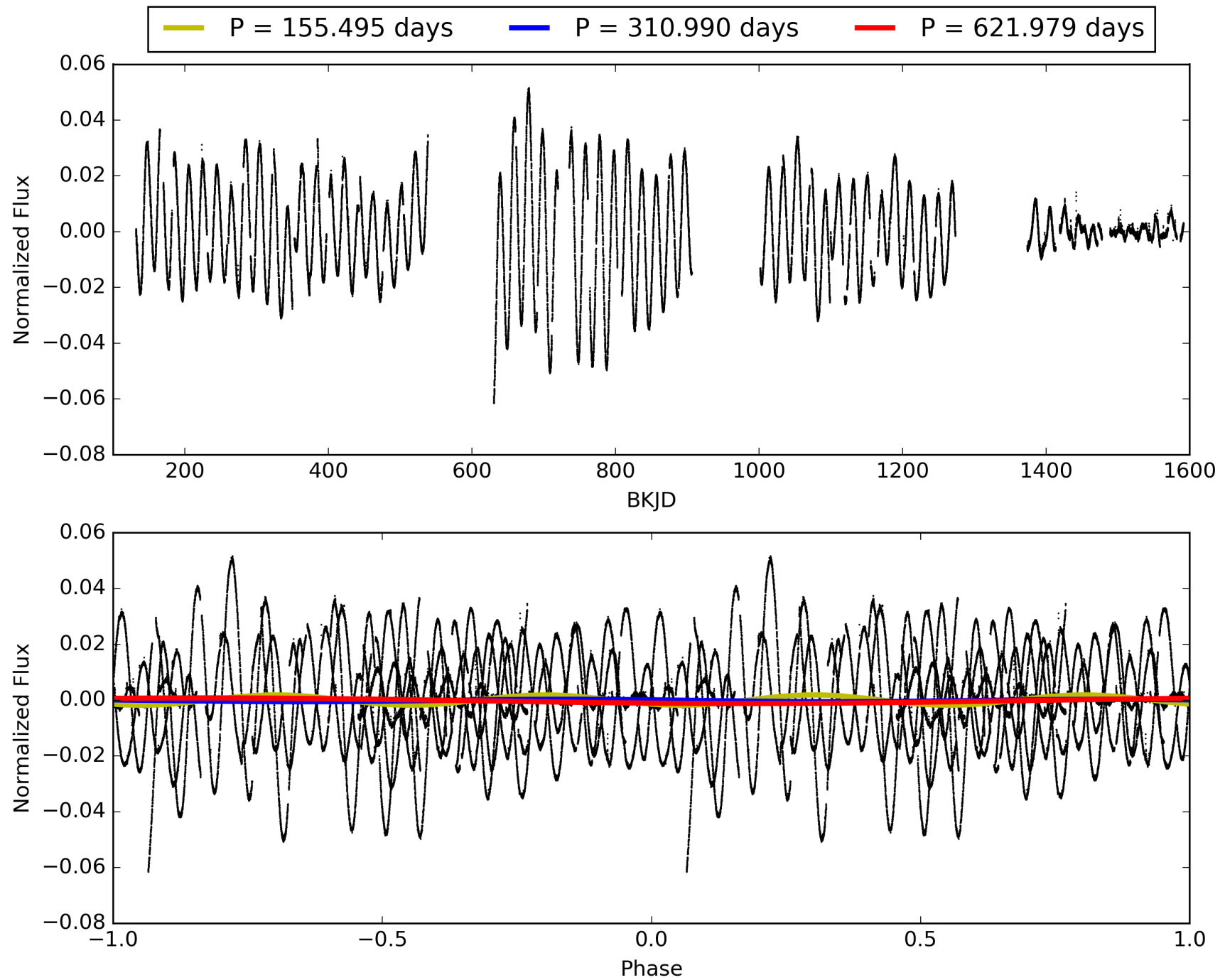
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:21:38 Z

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

TCE 004174461-04, PDC Light Curves

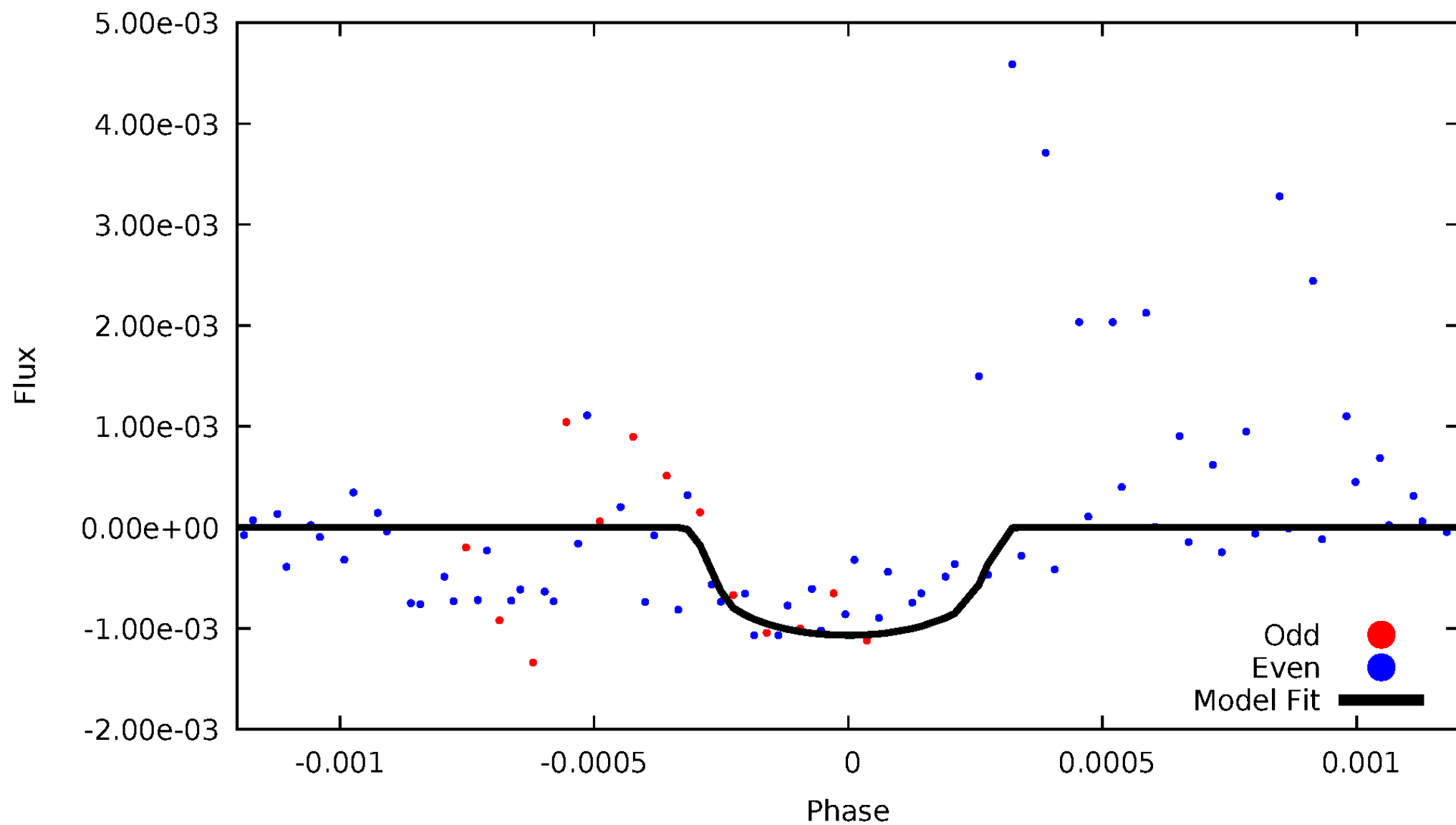


TCE 004174461-04



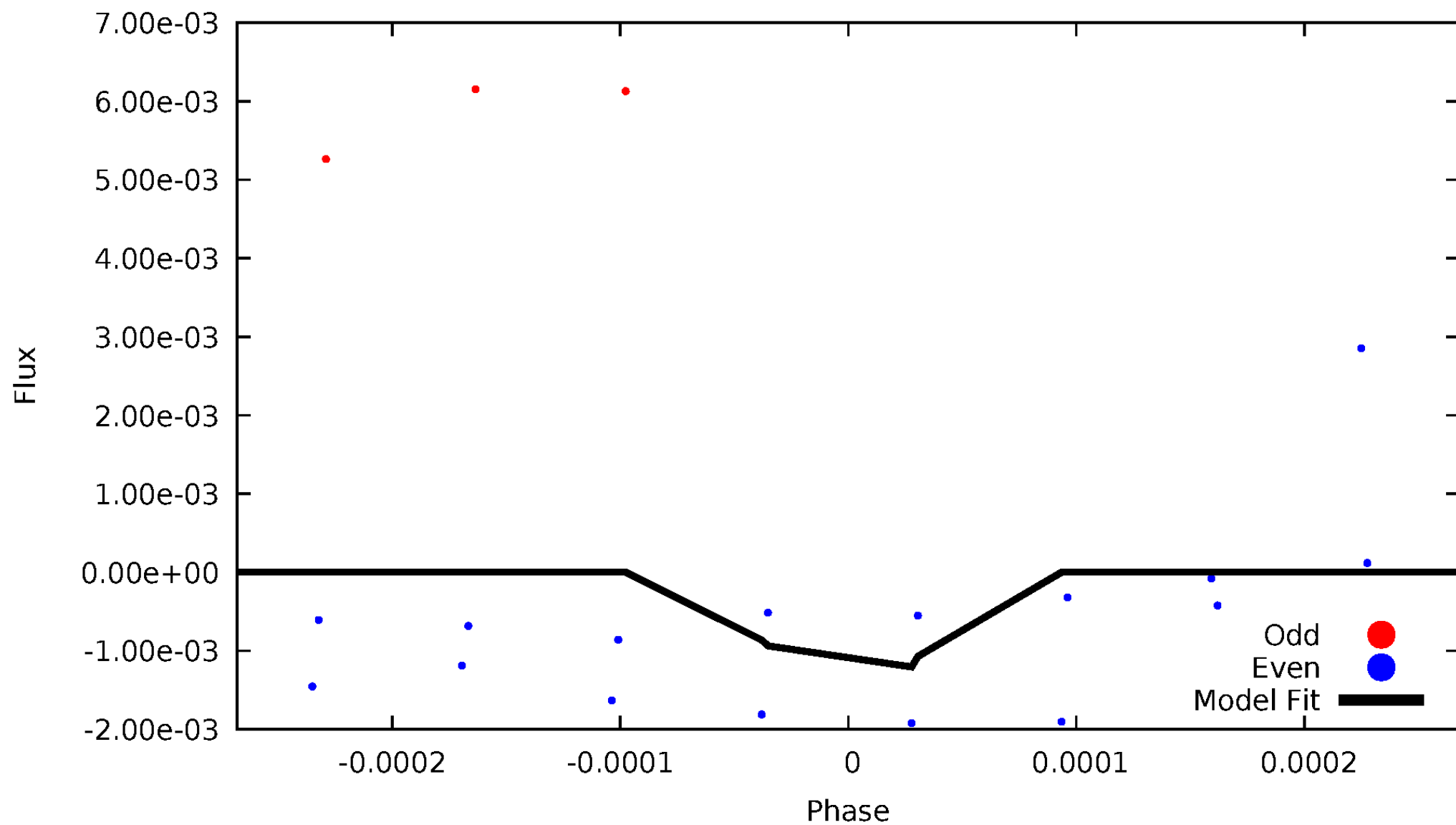
DV Odd/Even

TCE 004174461-04



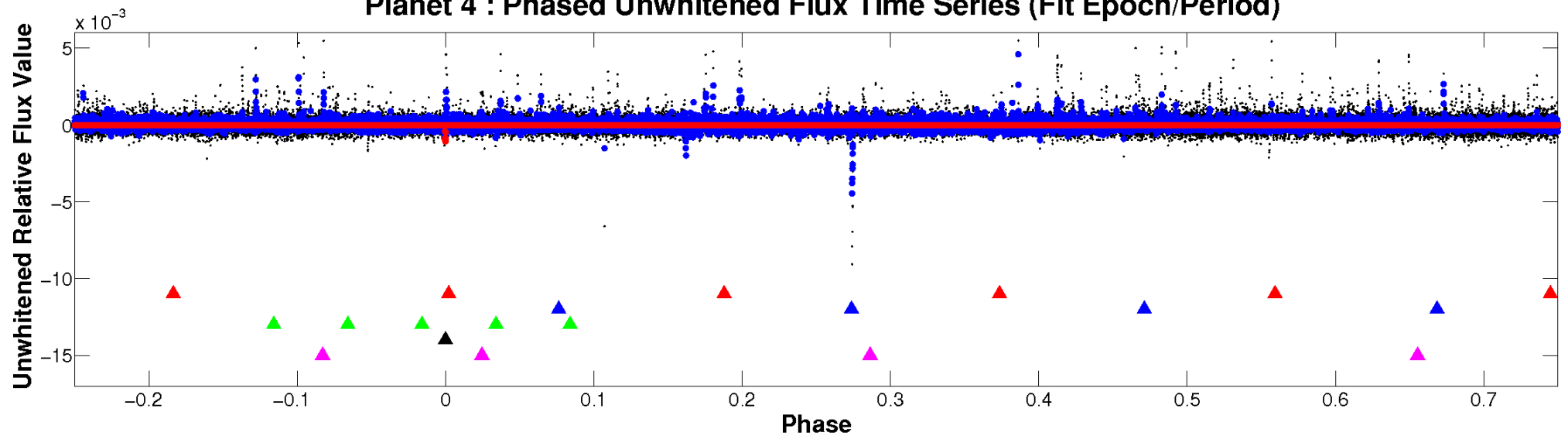
ALT Odd/Even

TCE 004174461-04

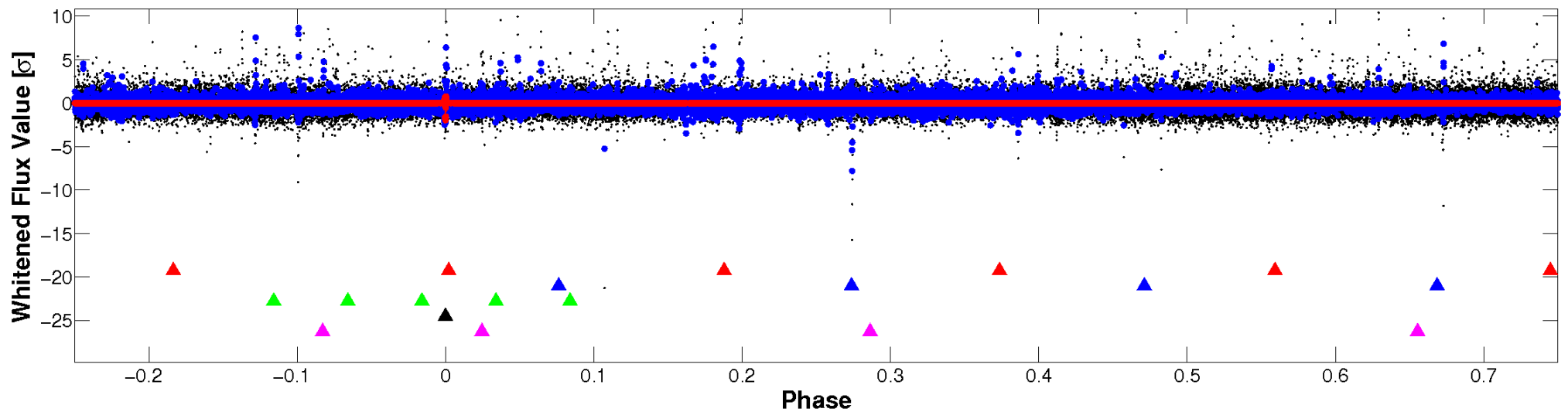


Non-Whitened Vs. Whitened Light Curve

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

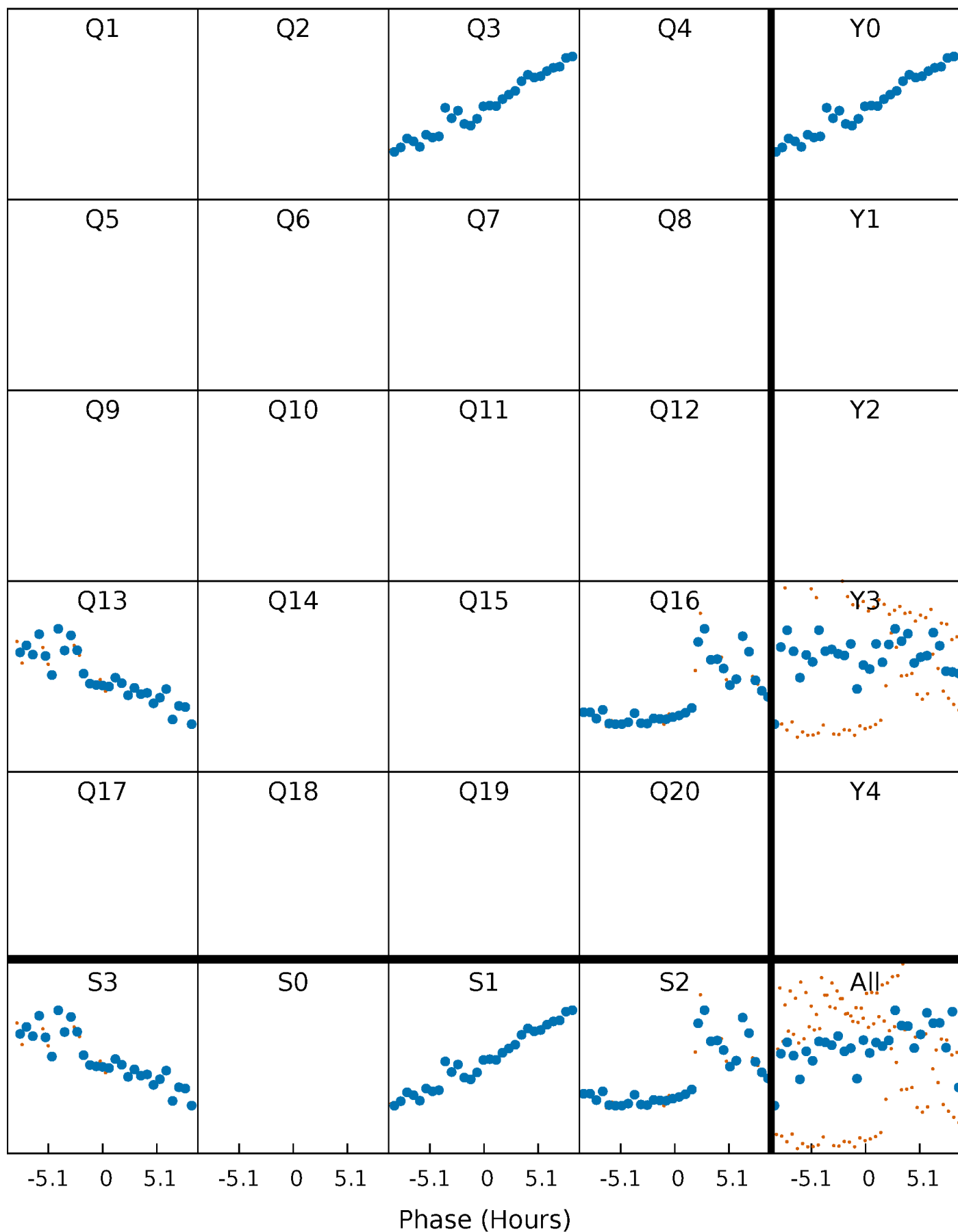


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



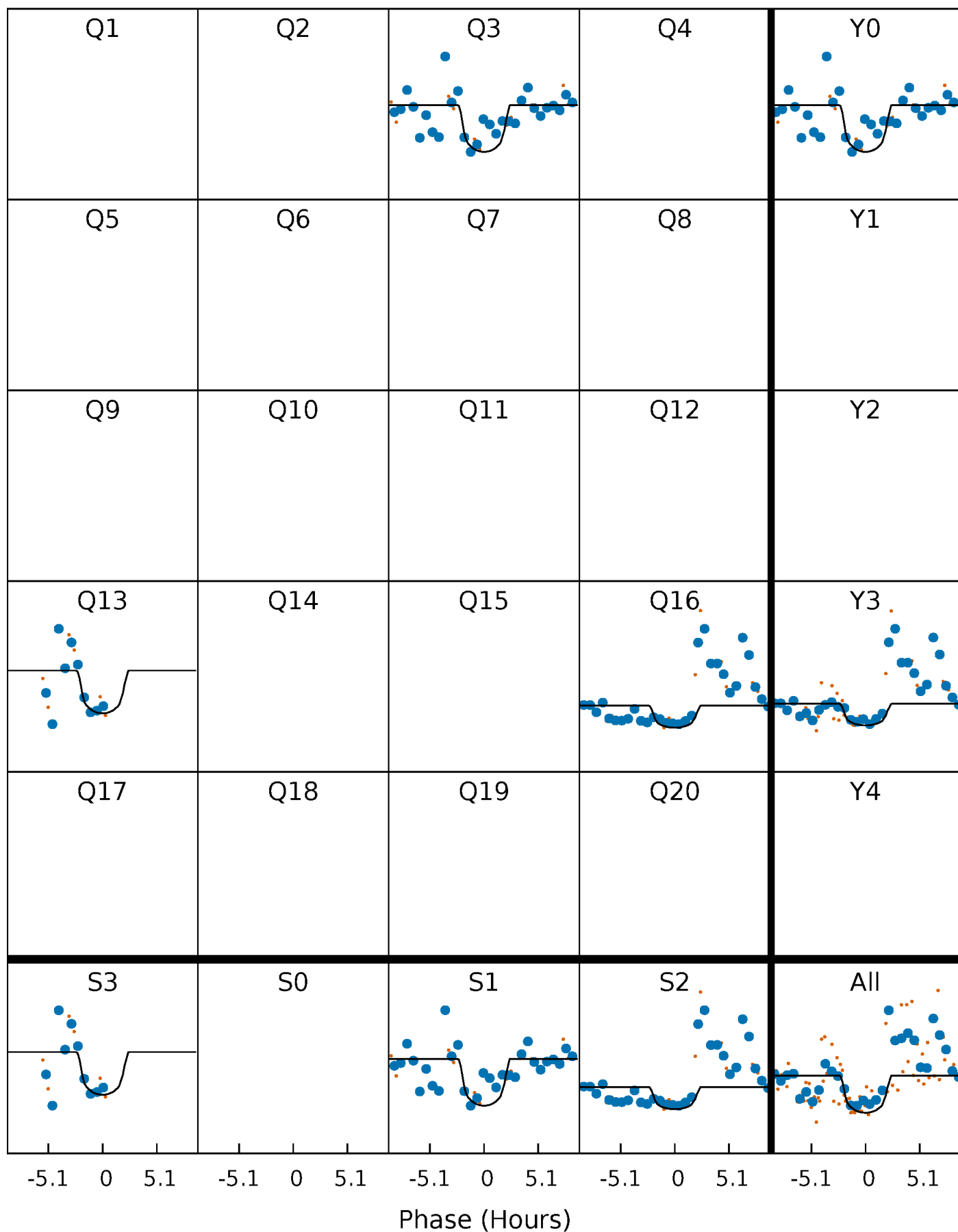
PDC Quarter-Phased Transit Curves

TCE 004174461-04 $P=310.989740$ Days $T_0=299.043687$ (BKJD)



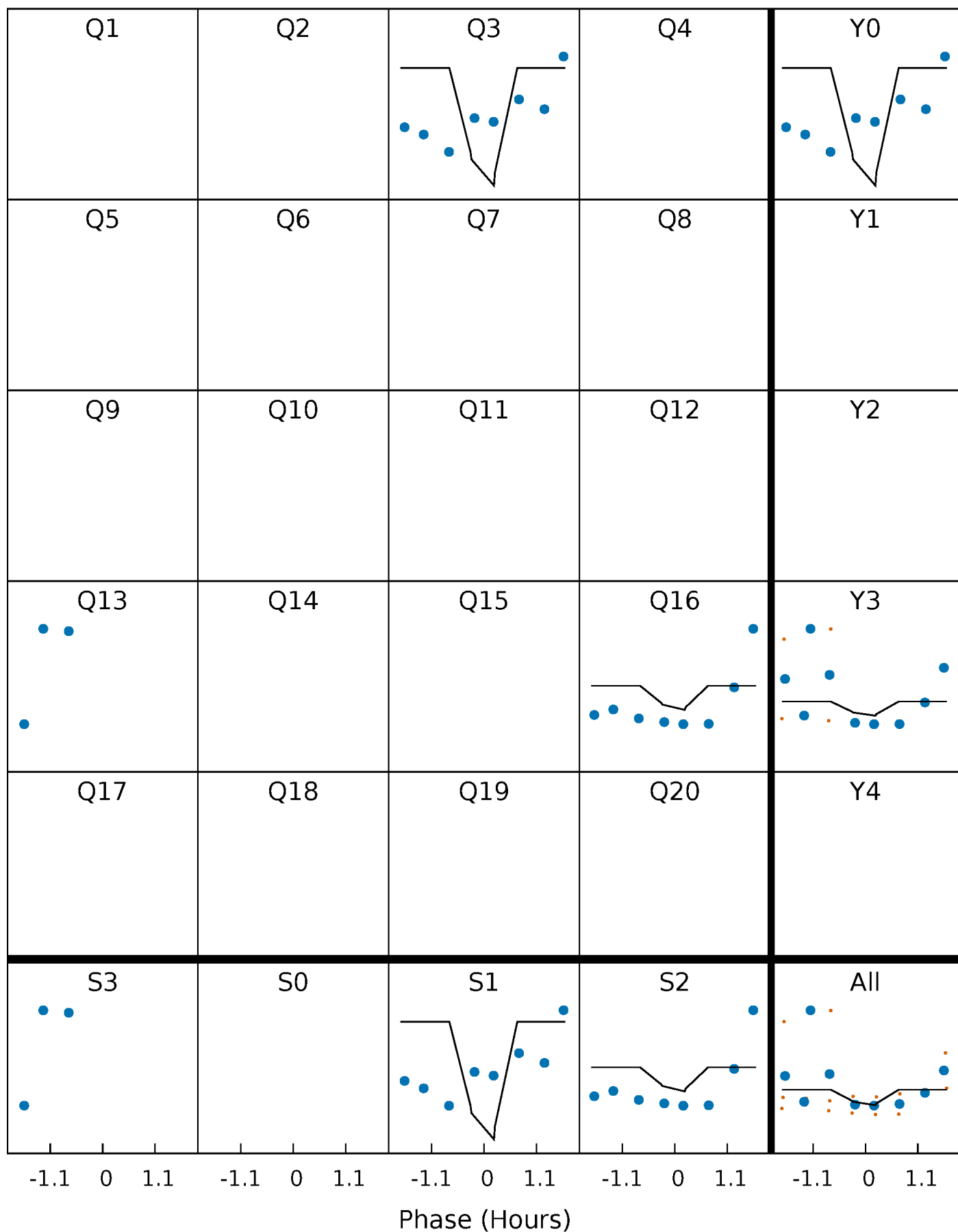
DV Quarter-Phased Transit Curves

TCE 004174461-04 $P=310.989740$ Days $T_0=299.043687$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

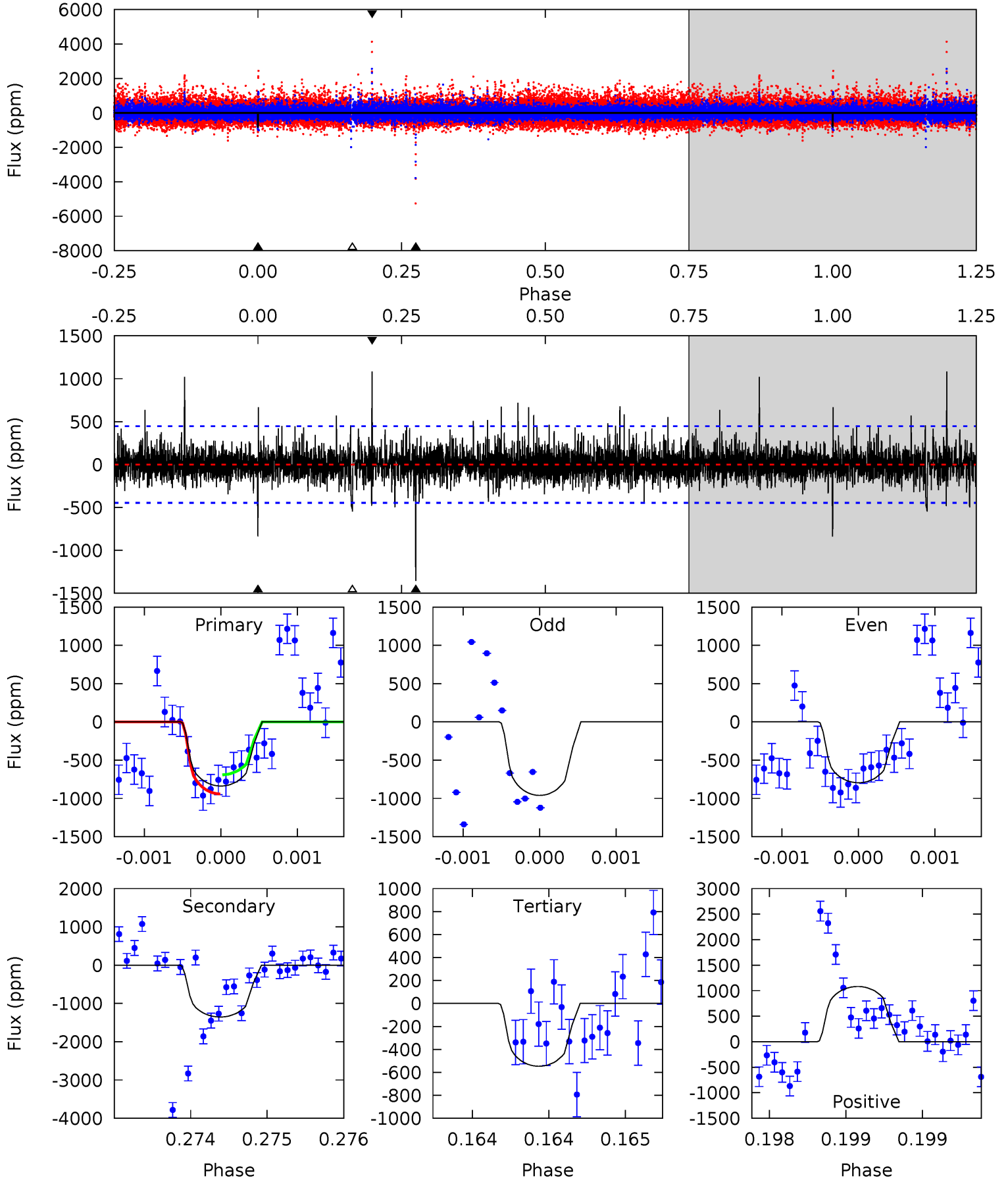
TCE 004174461-04 P=310.978350 Days $T_0=299.119664$ (BKJD)



DV Model-Shift Uniqueness Test

004174461-04, P = 310.989740 Days, E = 299.043687 Days

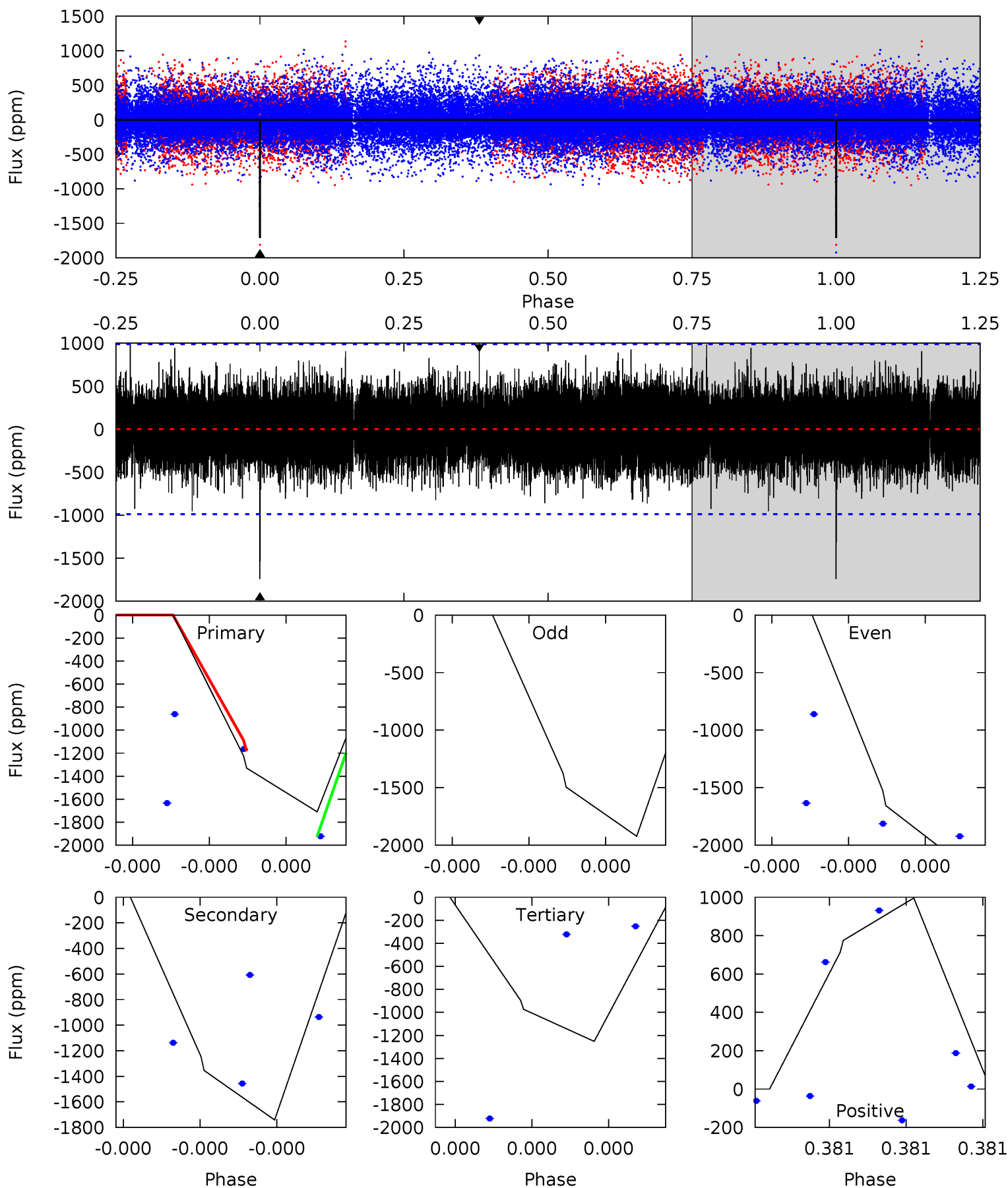
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.4 | 16.8 | 6.77 | 13.4 | 5.53 | 3.42 | 1.59 | 3.60 | -3.02 | 9.99 | 3.37 | 0.79 | 1.06 | 0.44 | 1.52 |



Alt Model-Shift Uniqueness Test

004174461-04, P = 310.978350 Days, E = 299.119664 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.2 | 10.4 | 7.49 | 5.96 | 5.91 | 3.98 | 1.24 | 2.74 | 4.27 | 2.93 | 4.46 | 0.60 | 1.00 | 0.36 | 2.22 |



Stellar Parameters For KIC 004174461

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4356^{+117}_{-130} | $4.634^{+0.056}_{-0.021}$ | $-0.280^{+0.300}_{-0.300}$ | $0.622^{+0.044}_{-0.056}$ | $0.608^{+0.066}_{-0.050}$ | $3.558^{+0.828}_{-0.379}$ |
| | +3%/-3% | +1%/-0% | +107%/-107% | +7%/-9% | +11%/-8% | +23%/-11% |
| 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 004174461-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -1354 ± 81 | $2.75^{+2.24}_{-1.78}$ | 241^{+7}_{-8} | 4166^{+2336}_{-747} | $57516^{+384938}_{-40236}$ |
| Alt. | -1741 ± 167 | $3.15^{+2.32}_{-1.85}$ | 241^{+8}_{-9} | 4110^{+1927}_{-646} | $55185^{+279239}_{-36336}$ |

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 $A_{obs} \gg 1.0$

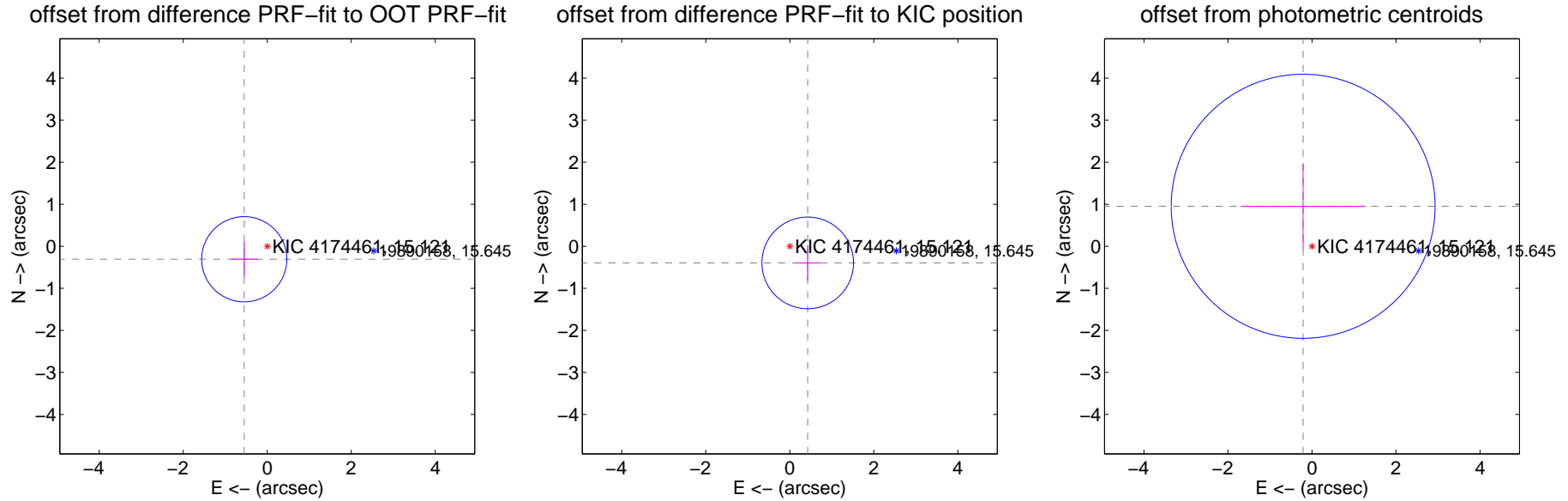
DV Centroid Data

Supplemental centroid analysis for 004174461-04. Kepler magnitude: 15.12. Transit SNR 8.15

There are 1 quarters with good PRF difference image offsets

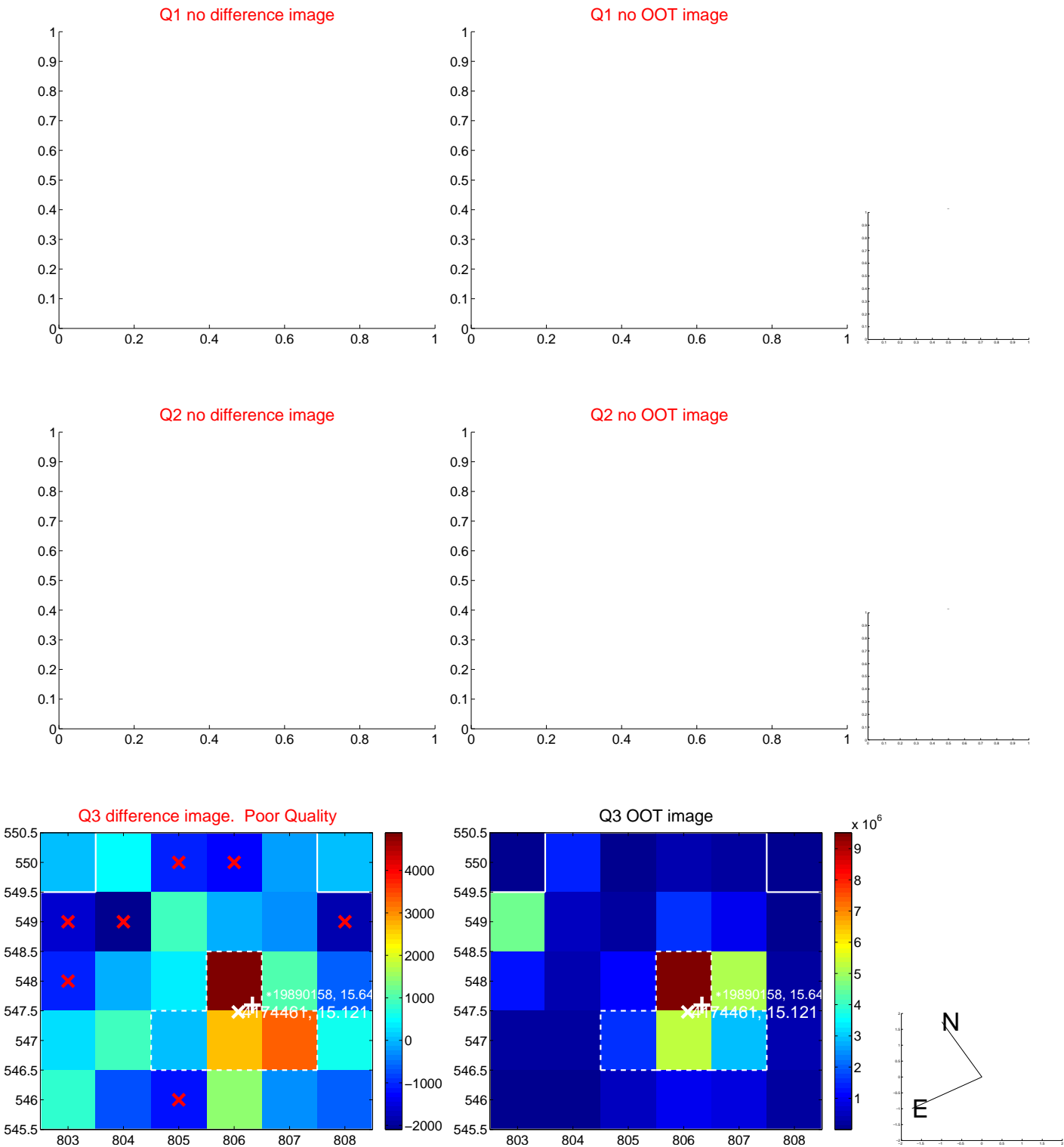
The direct PRF centroid is offset from the target star catalog position by about 0.98 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.629 ± 0.338 | 1.86 | 0.548 ± 0.307 | -0.308 ± 0.419 |
| PRF-fit source offset from KIC position | 0.581 ± 0.363 | 1.60 | -0.427 ± 0.307 | -0.395 ± 0.419 |
| photometric centroid source offset | 0.97 ± 1.05 | 0.93 | 0.21 ± 1.49 | 0.95 ± 1.02 |



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.



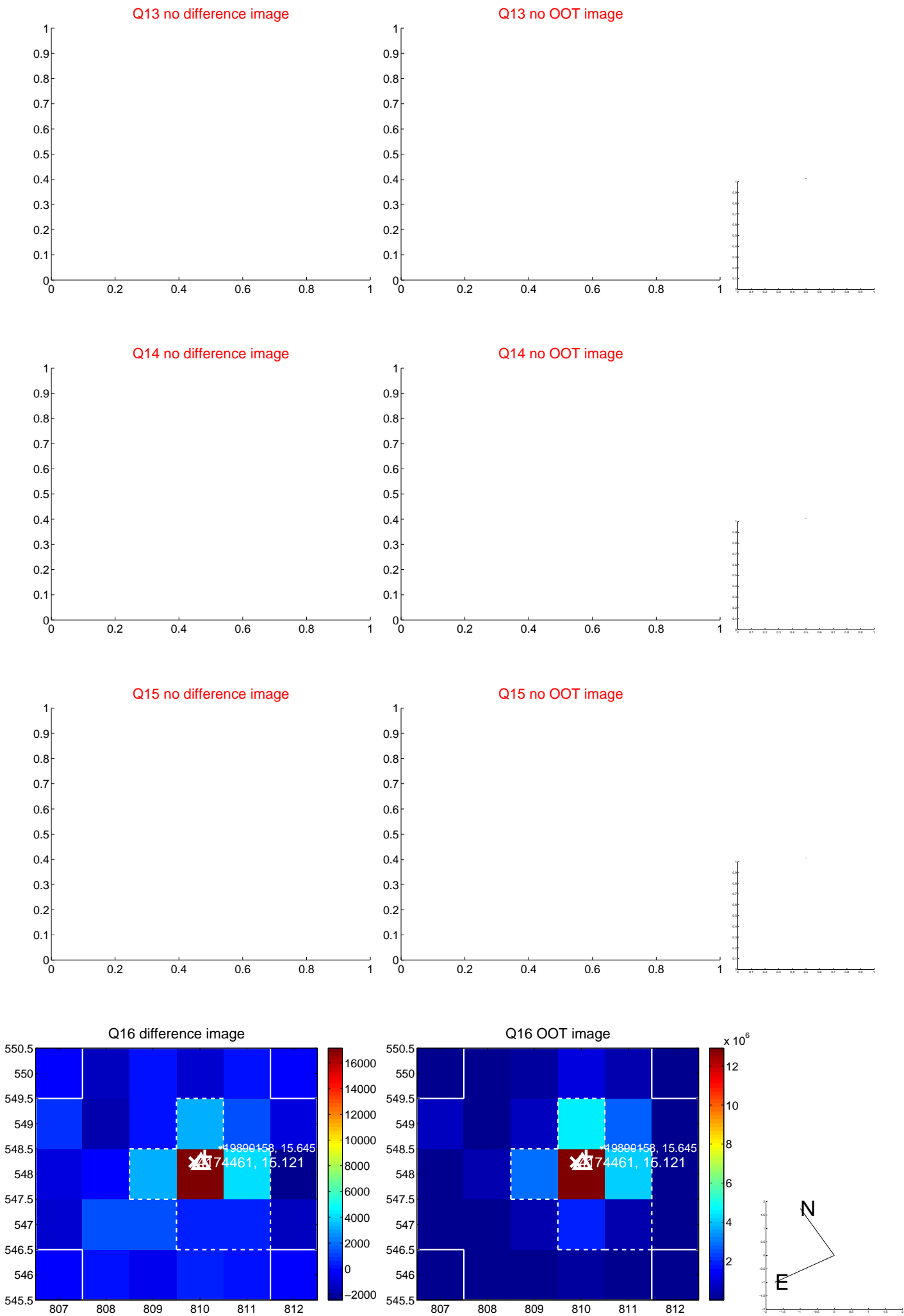
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



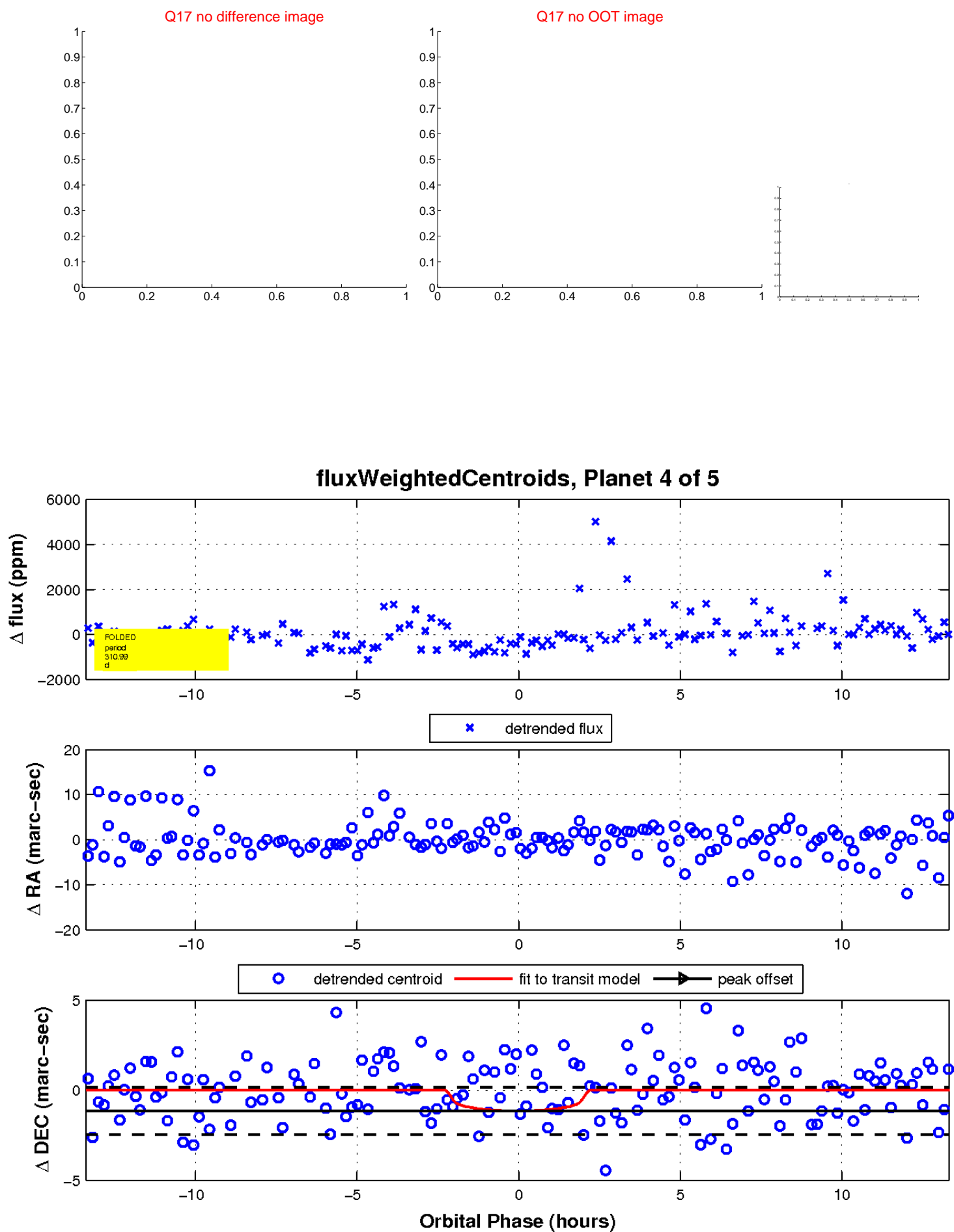
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

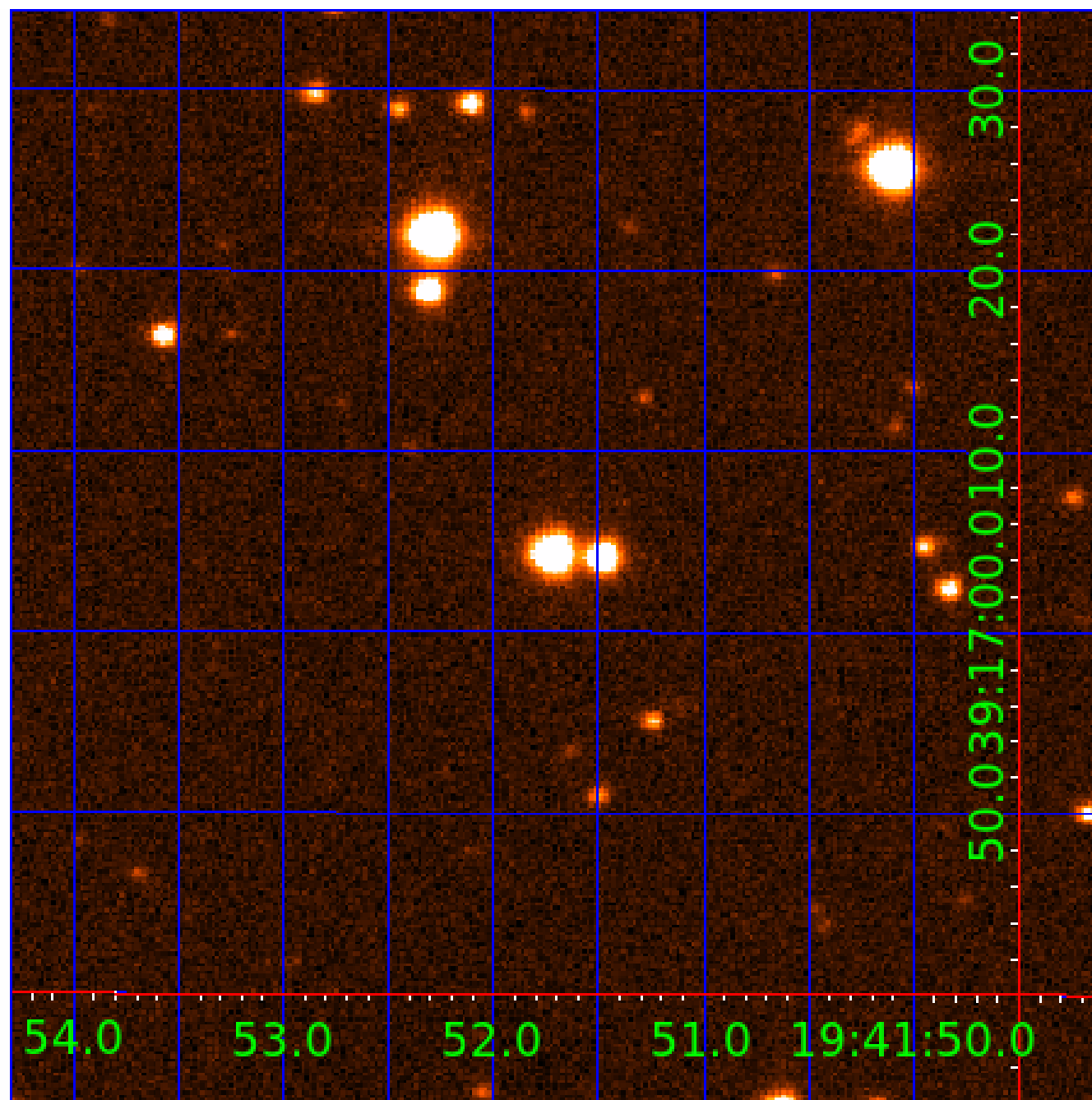


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004174461

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 004174461-01 | OBS | No | 253.239457 | 219.731594 | 963.0 | 10.254 | 12.5 | 8.5 | 0.62 | 4356 | 2.04 | 0.28 |
| 004174461-02 | OBS | No | 372.380135 | 322.794313 | 929.1 | 6.521 | 11.8 | 6.7 | 0.62 | 4356 | 1.95 | 0.17 |
| 004174461-03 | OBS | No | 326.521255 | 263.038319 | 895.4 | 6.998 | 13.2 | 7.7 | 0.62 | 4356 | 2.08 | 0.20 |
| 004174461-04 | OBS | No | 310.989740 | 299.043687 | 1069.1 | 4.485 | 9.4 | 8.2 | 0.62 | 4356 | 2.24 | 0.21 |
| 004174461-05 | OBS | No | 425.785636 | 273.290437 | 1069.1 | 8.657 | 9.4 | 9.9 | 0.62 | 4356 | 2.26 | 0.14 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004174461-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQU_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004174461-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004174461-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

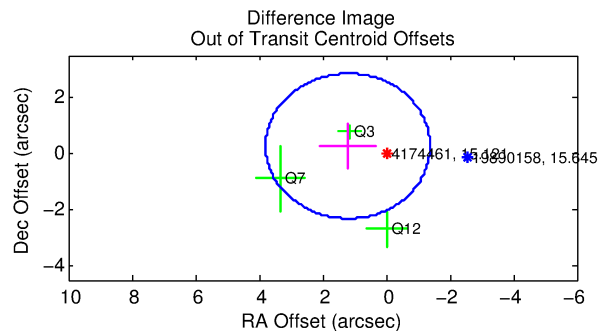
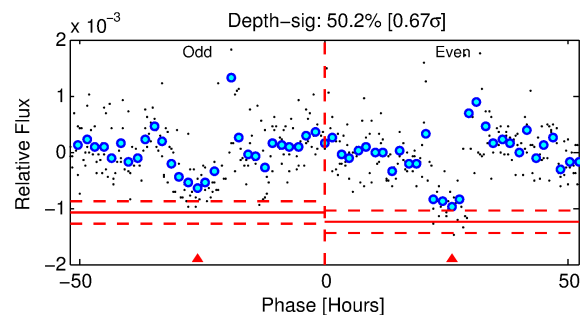
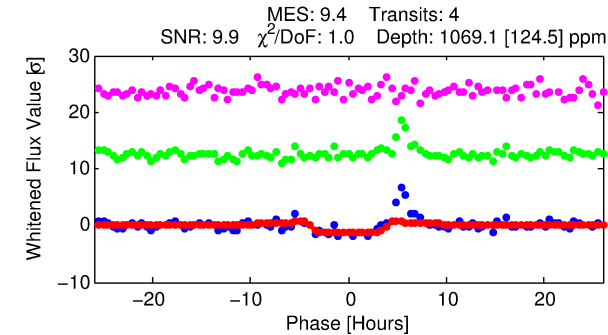
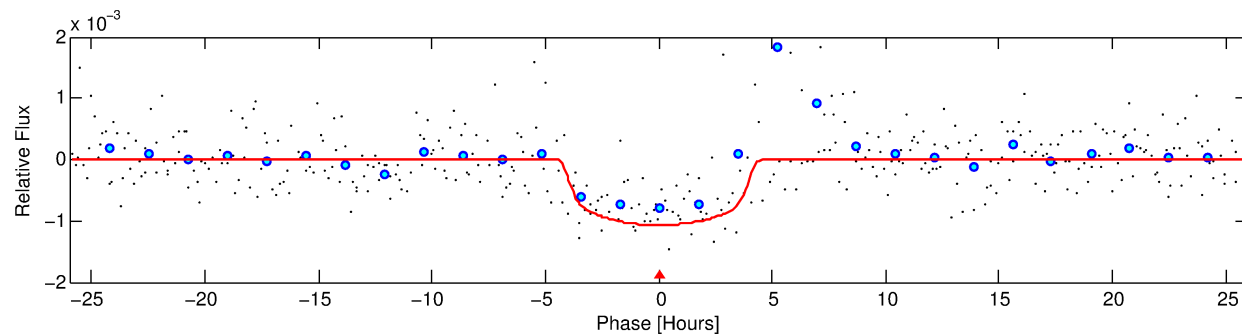
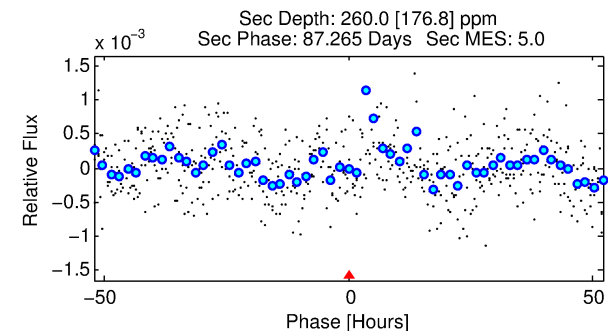
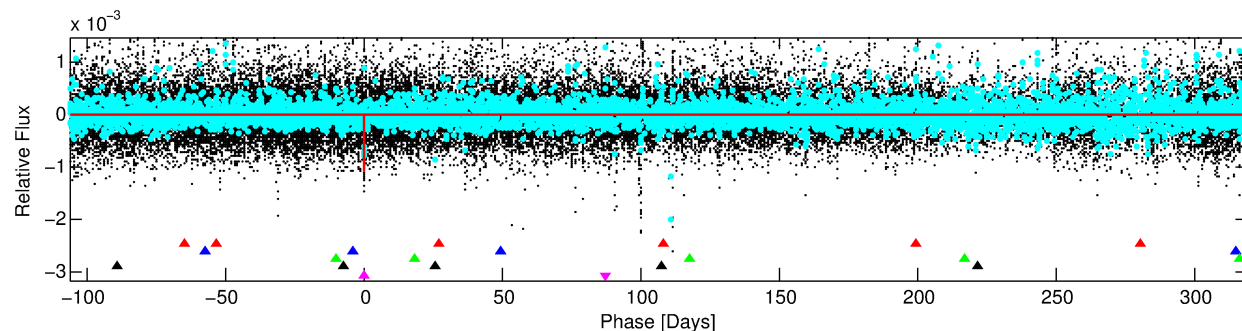
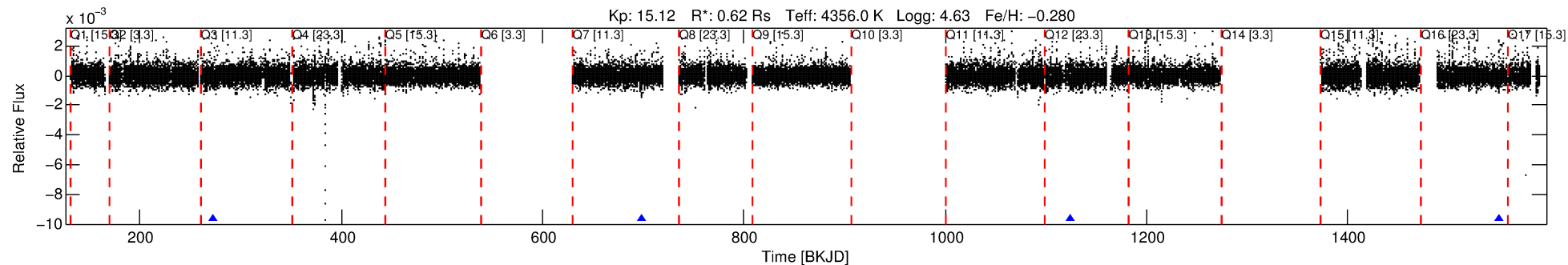
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004174461-05

No Significant Match Found

DV One-Page Summary

KIC: 4174461 Candidate: 5 of 5 Period: 425.786 d



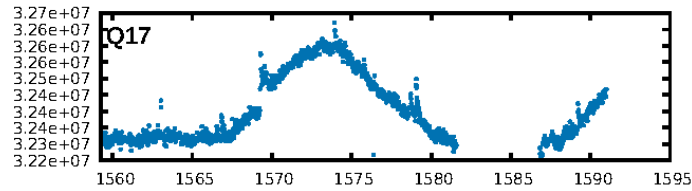
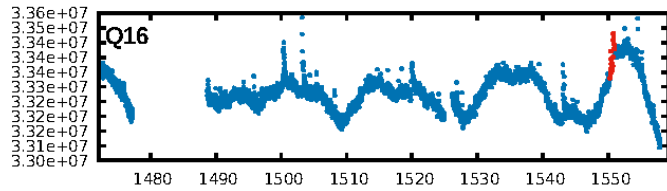
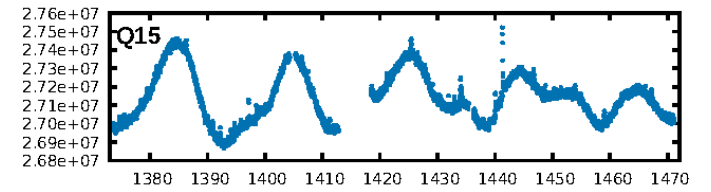
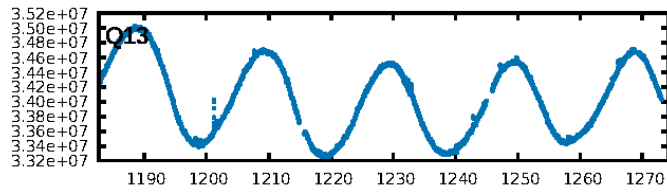
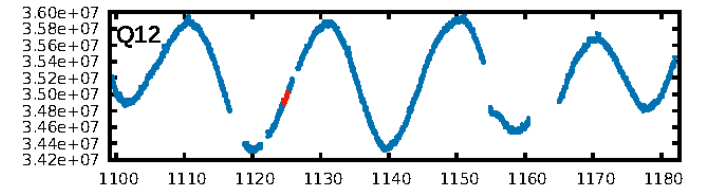
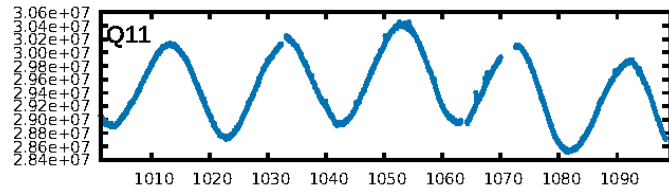
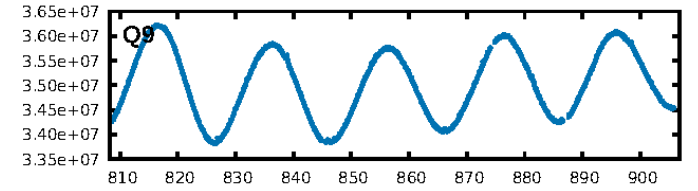
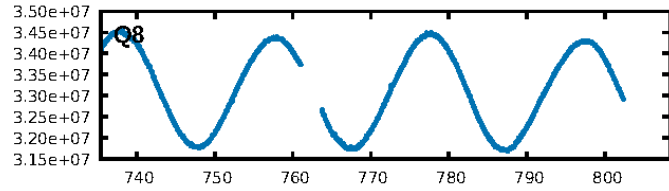
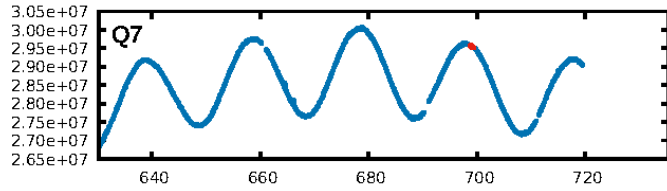
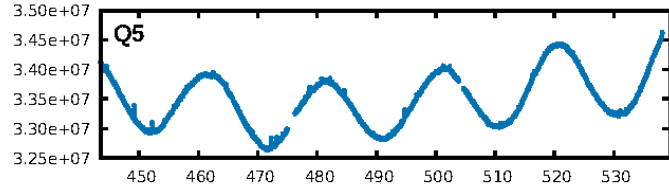
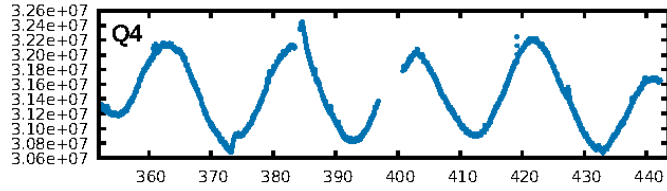
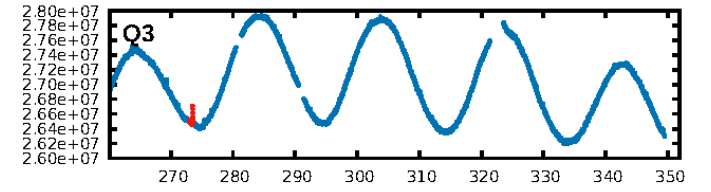
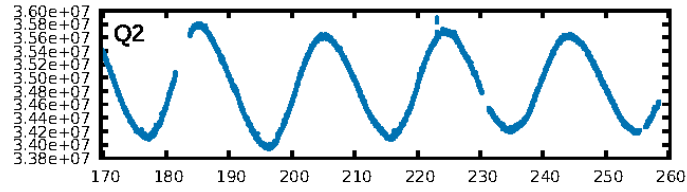
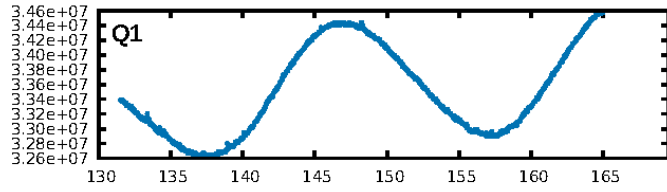
DV Fit Results:

Period = 425.78564 [0.00522] d
Epoch = 273.2904 [0.0102] BKJD
Rp/R* = 0.0334 [0.0071]
a/R* = 251.39 [178.68]
b = 0.79 [0.35]
Seff = 0.14 [0.02]
Teq = 156 [6] K
Rp = 2.26 [0.52] Re
a = 0.9383 [0.0693] AU
Ag = 24560.25 [19861.33] [1.24 σ]
Teffp = 3028 [614] K [4.68 σ]

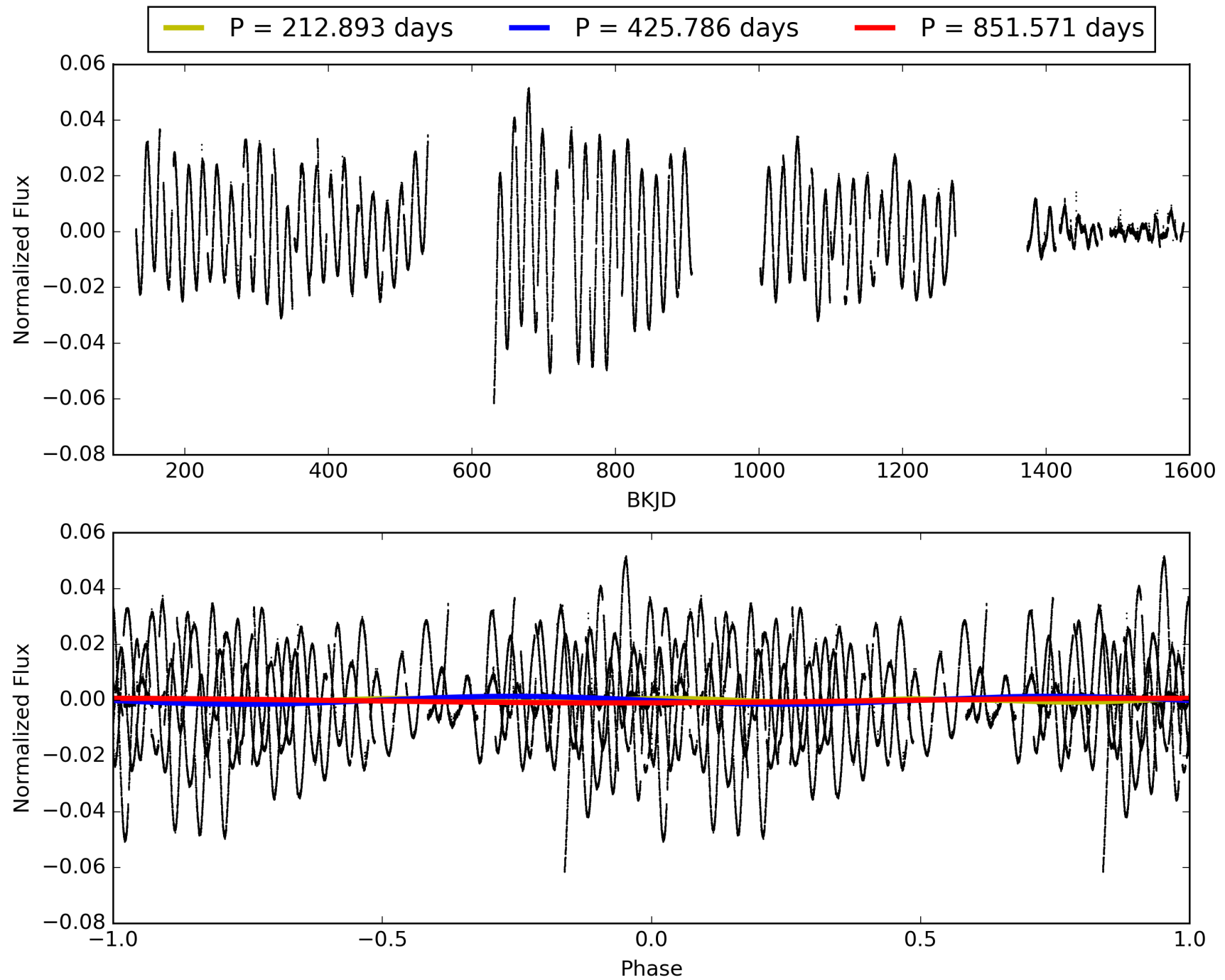
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [118.26 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.7%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.48e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 3.929
Centroid-sig: N/A
Centroid-so: 0.289 arcsec [0.31 σ]
OotOffset-rm: 1.236 arcsec [1.44 σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-rm: 0.195 arcsec [0.23 σ]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 004174461-05, PDC Light Curves

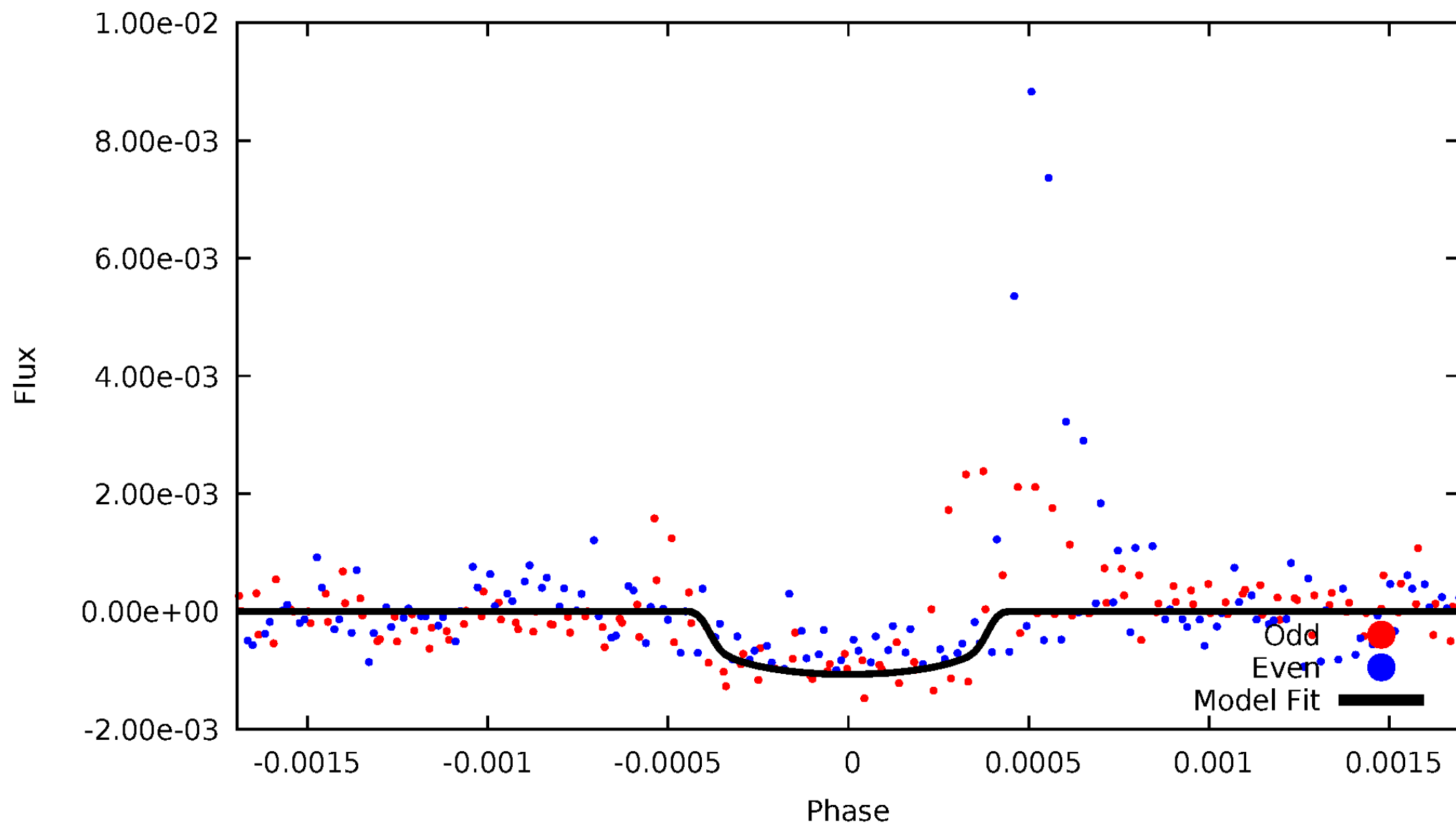


TCE 004174461-05



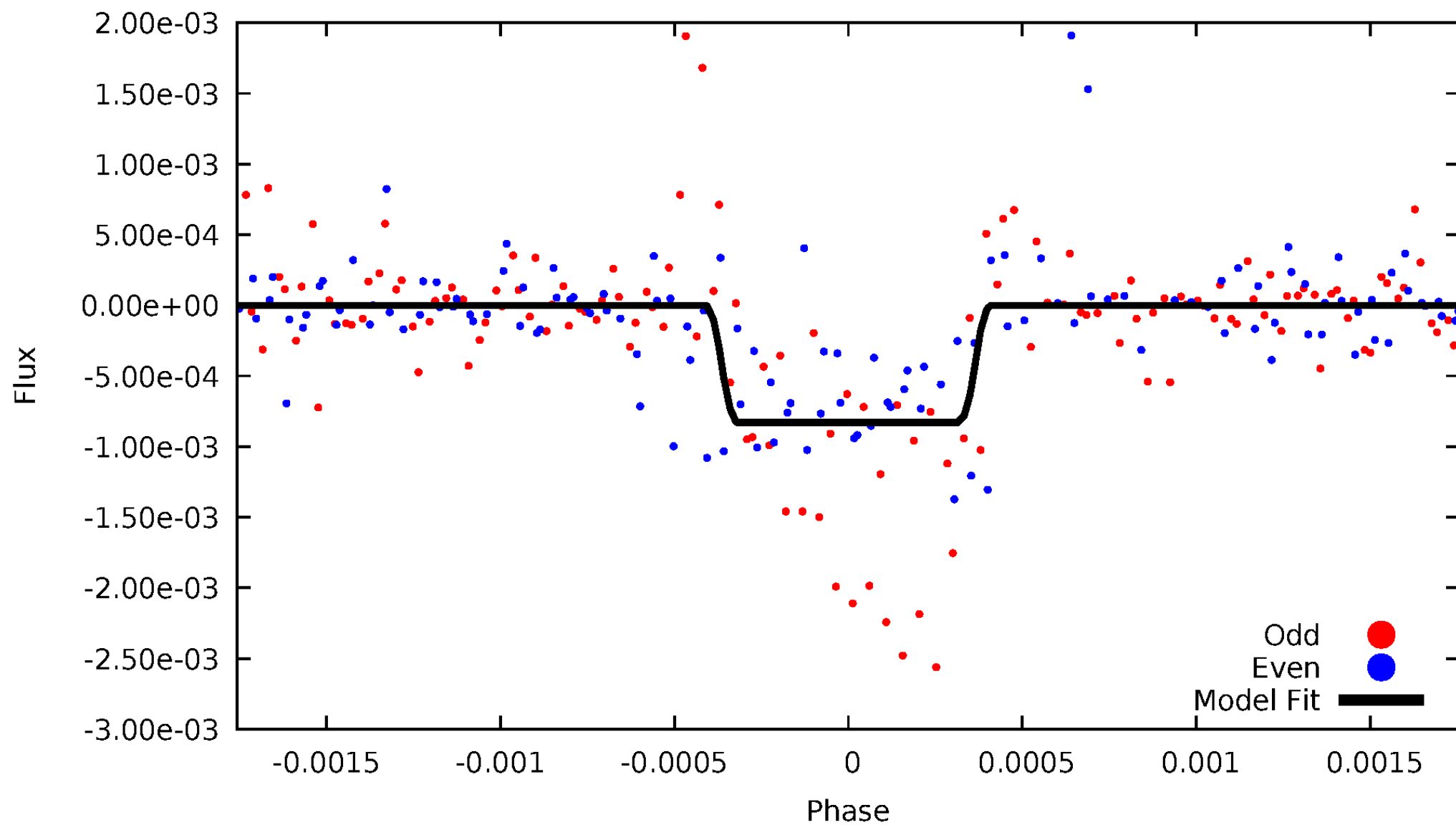
DV Odd/Even

TCE 004174461-05



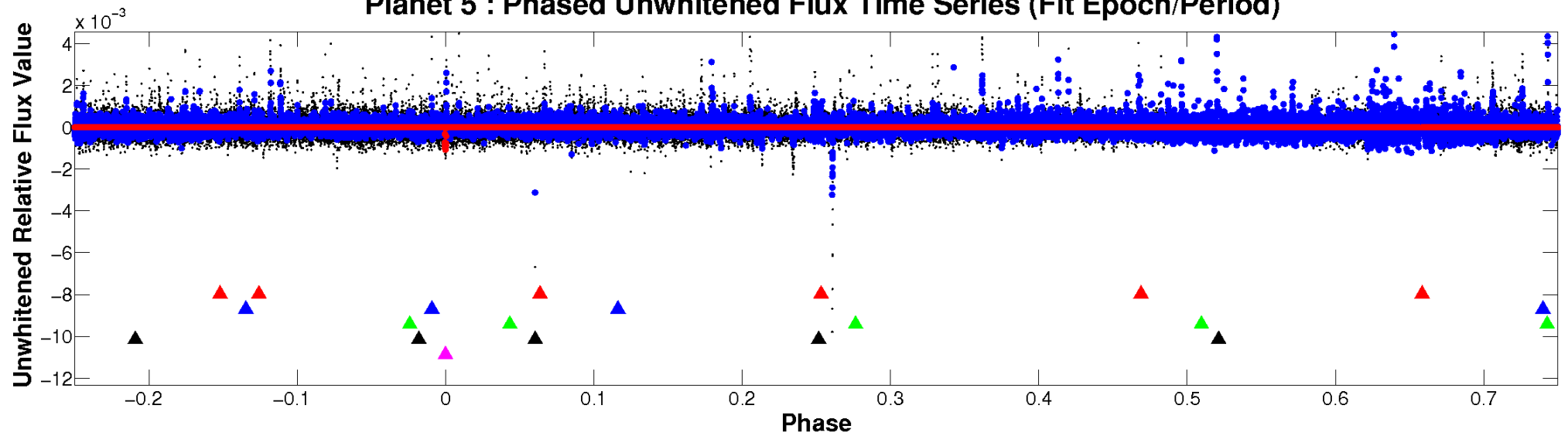
ALT Odd/Even

TCE 004174461-05

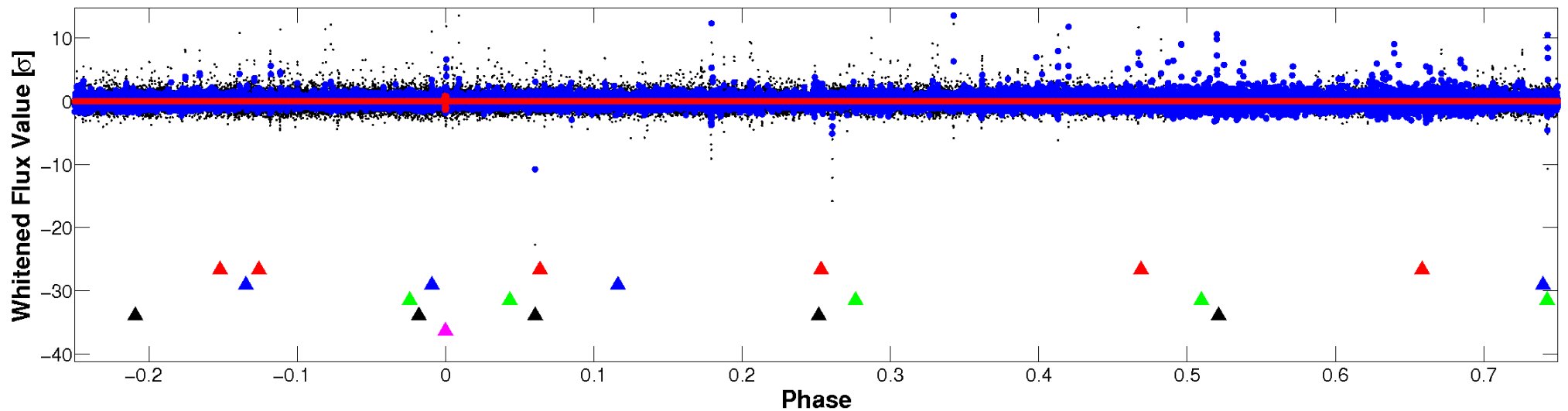


Non-Whitened Vs. Whitened Light Curve

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

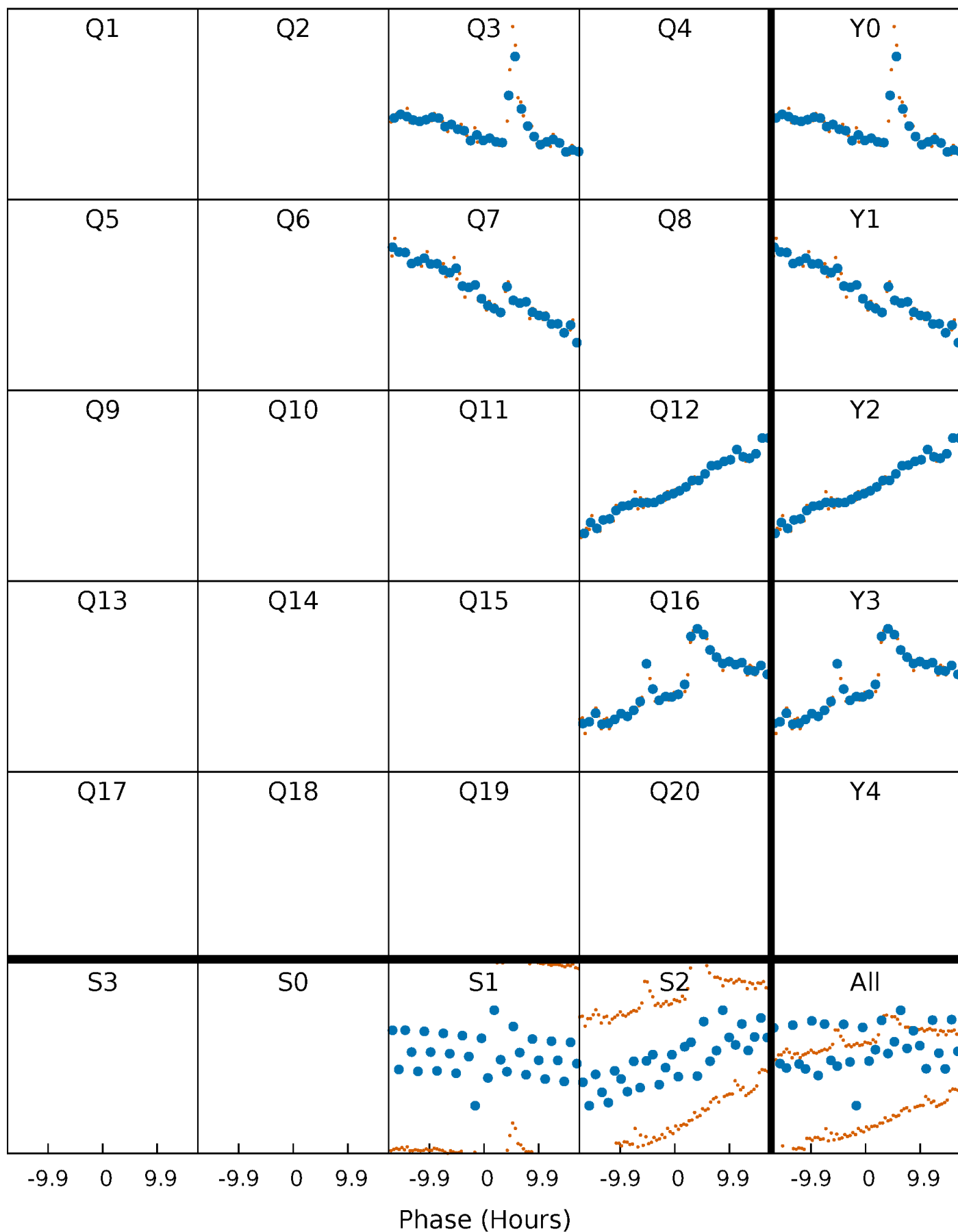


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



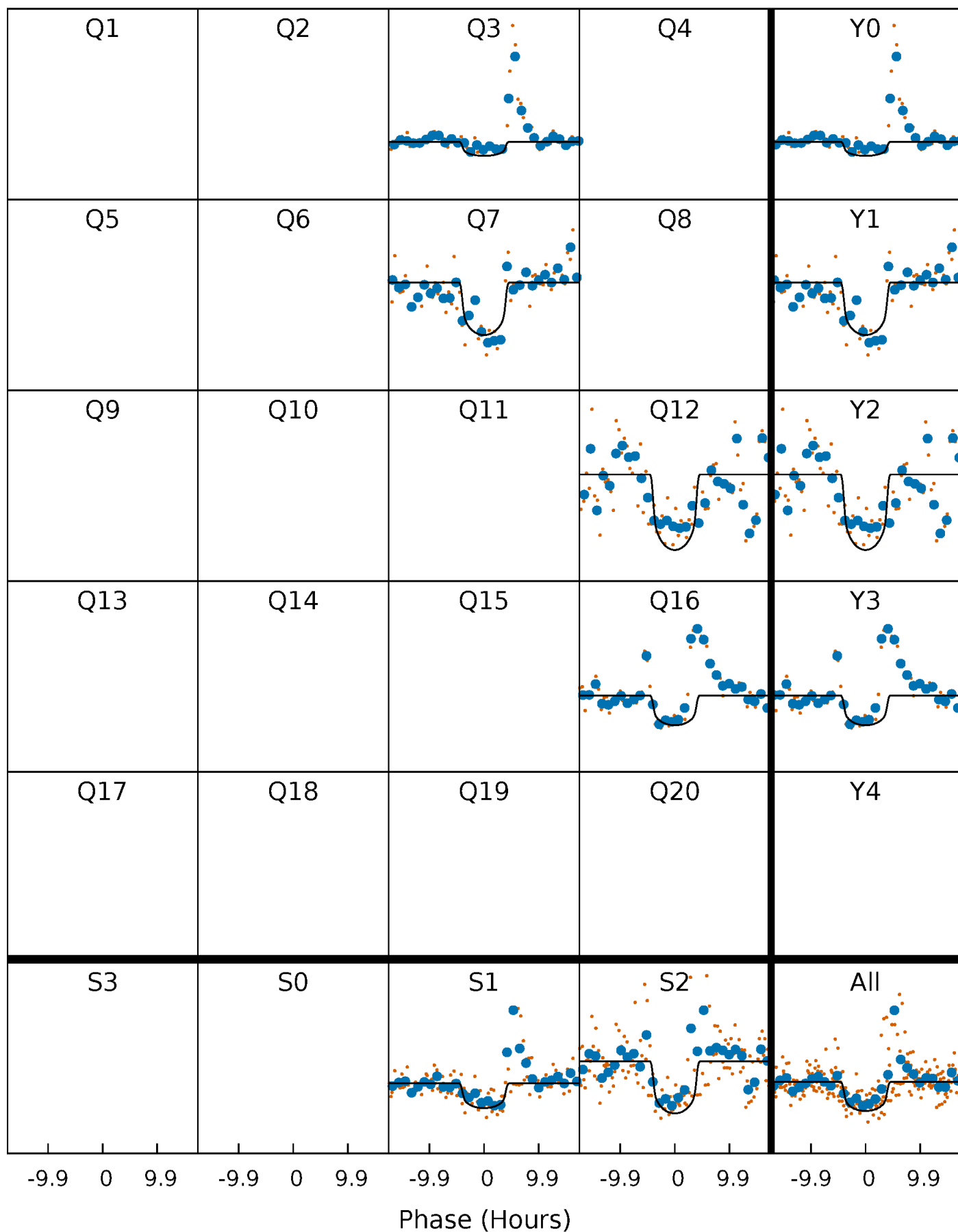
PDC Quarter-Phased Transit Curves

TCE 004174461-05 $P=425.785637$ Days $T_0=273.290437$ (BKJD)



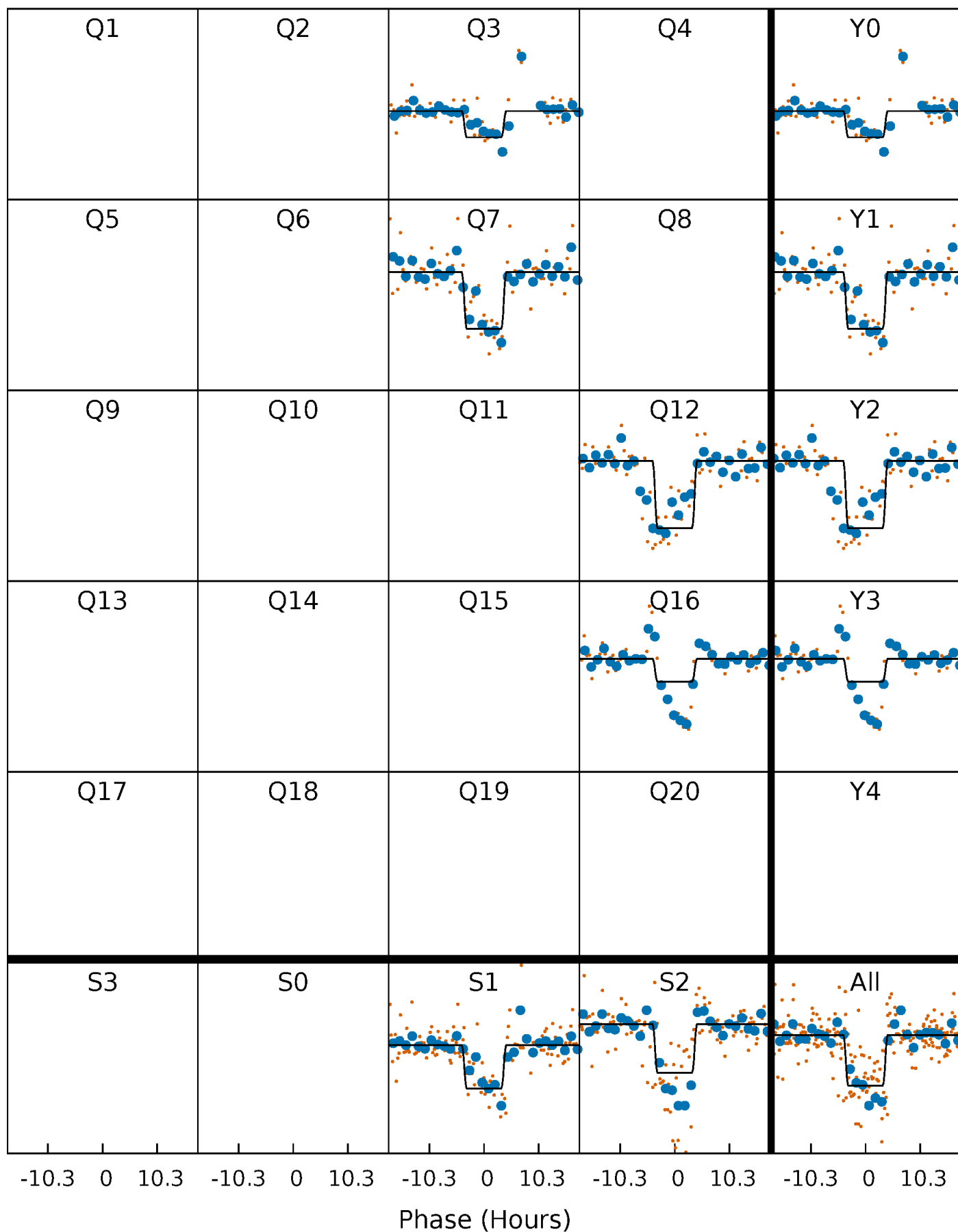
DV Quarter-Phased Transit Curves

TCE 004174461-05 $P=425.785637$ Days $T_0=273.290437$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

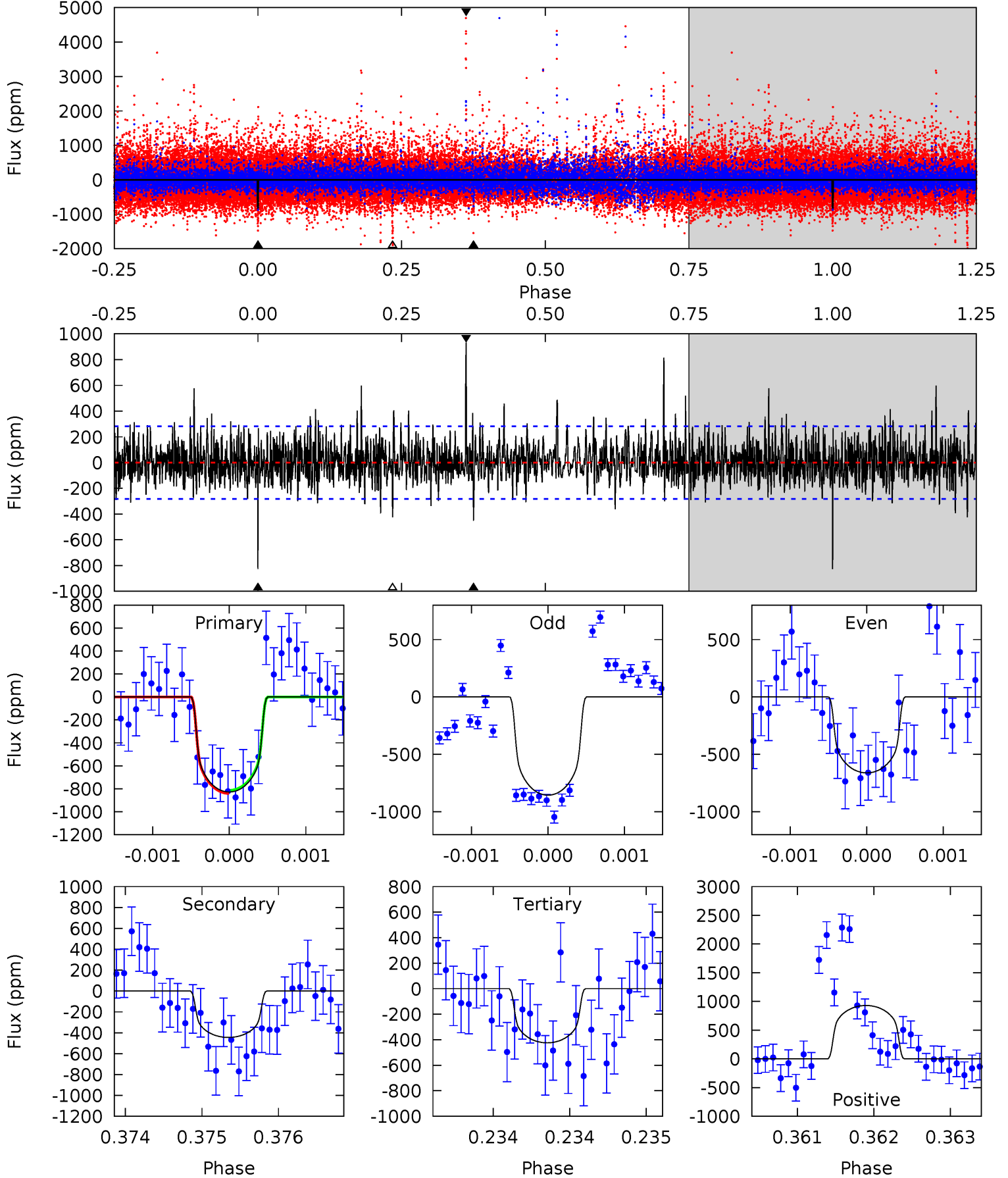
TCE 004174461-05 $P=425.780901$ Days $T_0=273.274716$ (BKJD)



DV Model-Shift Uniqueness Test

004174461-05, P = 425.785637 Days, E = 273.290437 Days

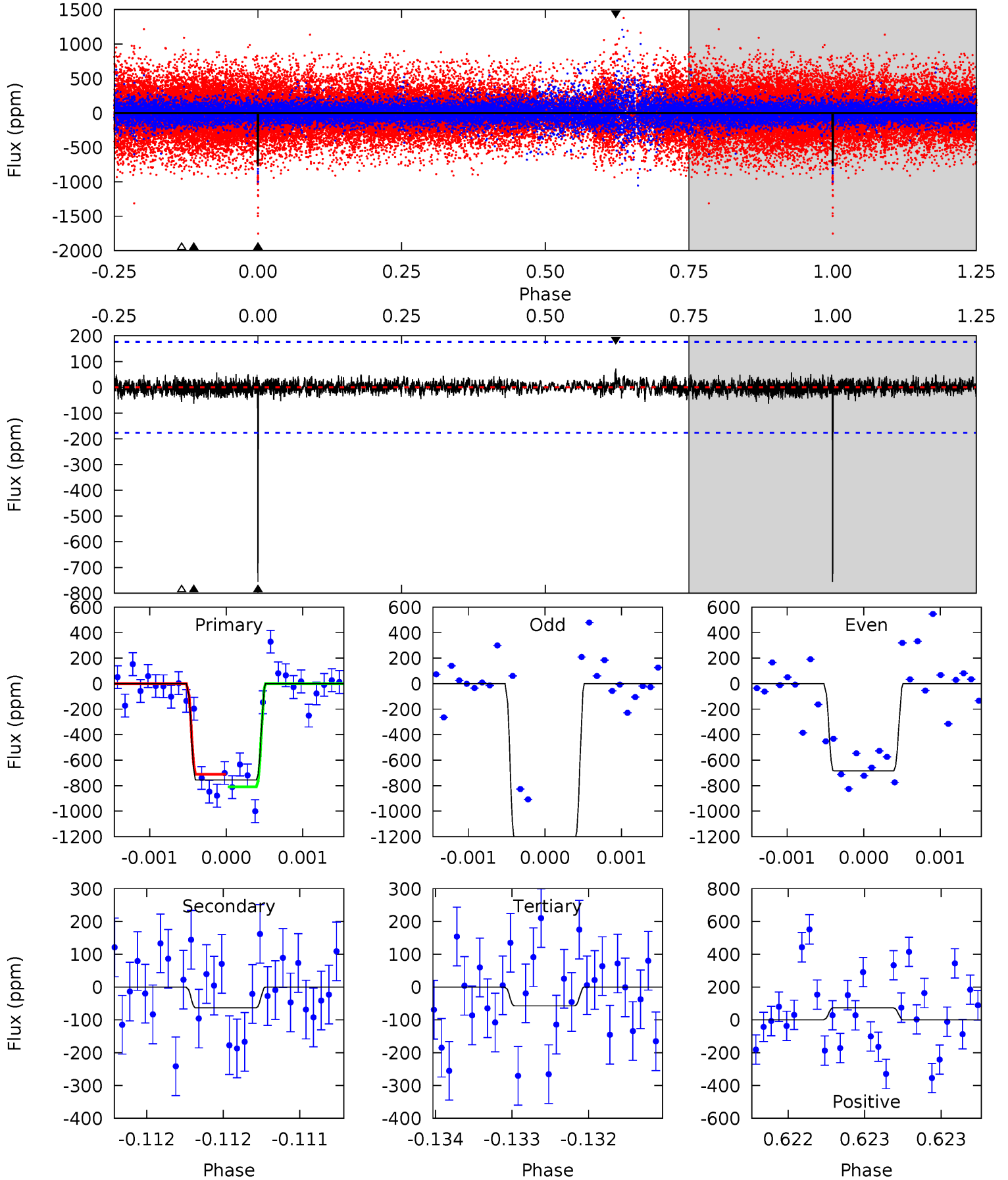
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.1 | 8.62 | 8.23 | 18.0 | 5.47 | 3.32 | 2.41 | 7.83 | -1.98 | 0.40 | -9.41 | 1.74 | 1.10 | 0.53 | 0.26 |



Alt Model-Shift Uniqueness Test

004174461-05, P = 425.780901 Days, E = 273.274716 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.5 | 1.97 | 1.78 | 2.26 | 5.49 | 3.35 | 0.46 | 21.7 | 21.2 | 0.19 | -0.29 | 8.75 | 1.27 | 0.09 | 1.53 |



Stellar Parameters For KIC 004174461

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4356^{+117}_{-130} | $4.634^{+0.056}_{-0.021}$ | $-0.280^{+0.300}_{-0.300}$ | $0.622^{+0.044}_{-0.056}$ | $0.608^{+0.066}_{-0.050}$ | $3.558^{+0.828}_{-0.379}$ |
| | +3%/-3% | +1%/-0% | +107%/-107% | +7%/-9% | +11%/-8% | +23%/-11% |
| 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 004174461-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|----------------------|---------------------------|
| DV | -445 ± 52 | $2.23^{+0.52}_{-0.50}$ | 216^{+7}_{-7} | 3693^{+362}_{-264} | 42860^{+30581}_{-14740} |
| Alt. | -63 ± 32 | $1.92^{+0.48}_{-0.44}$ | 217^{+6}_{-7} | 2884^{+294}_{-318} | 8180^{+8790}_{-4776} |

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 $A_{obs} \gg 1.0$

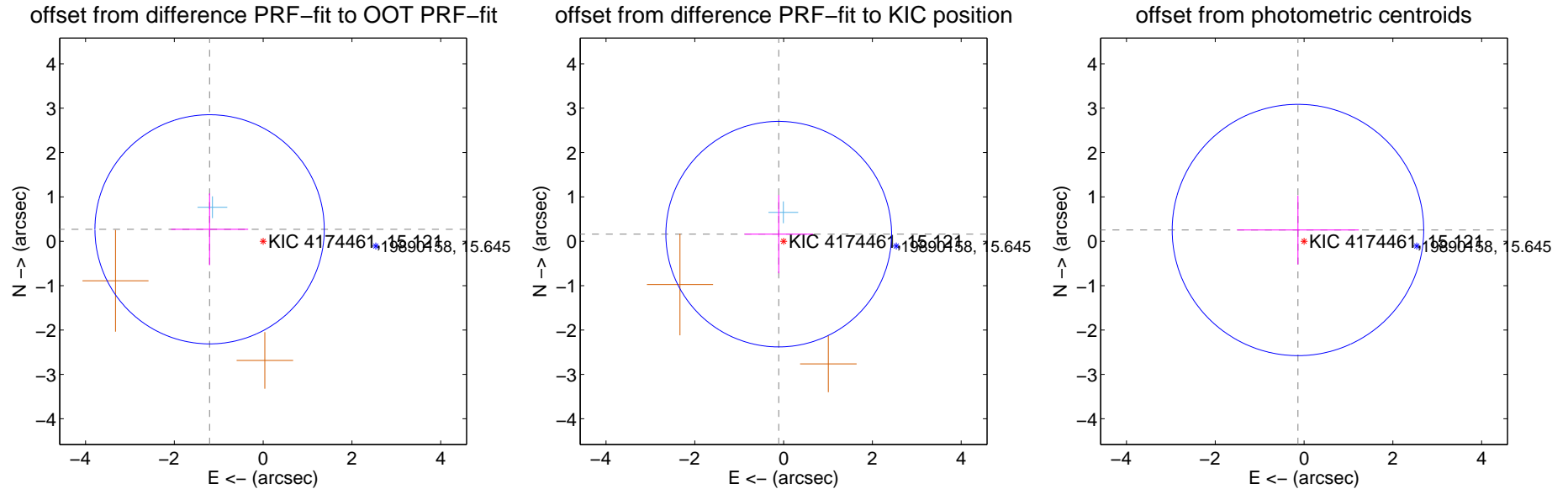
DV Centroid Data

Supplemental centroid analysis for 004174461-05. Kepler magnitude: 15.12. Transit SNR 9.94

There are 1 quarters with good PRF difference image offsets

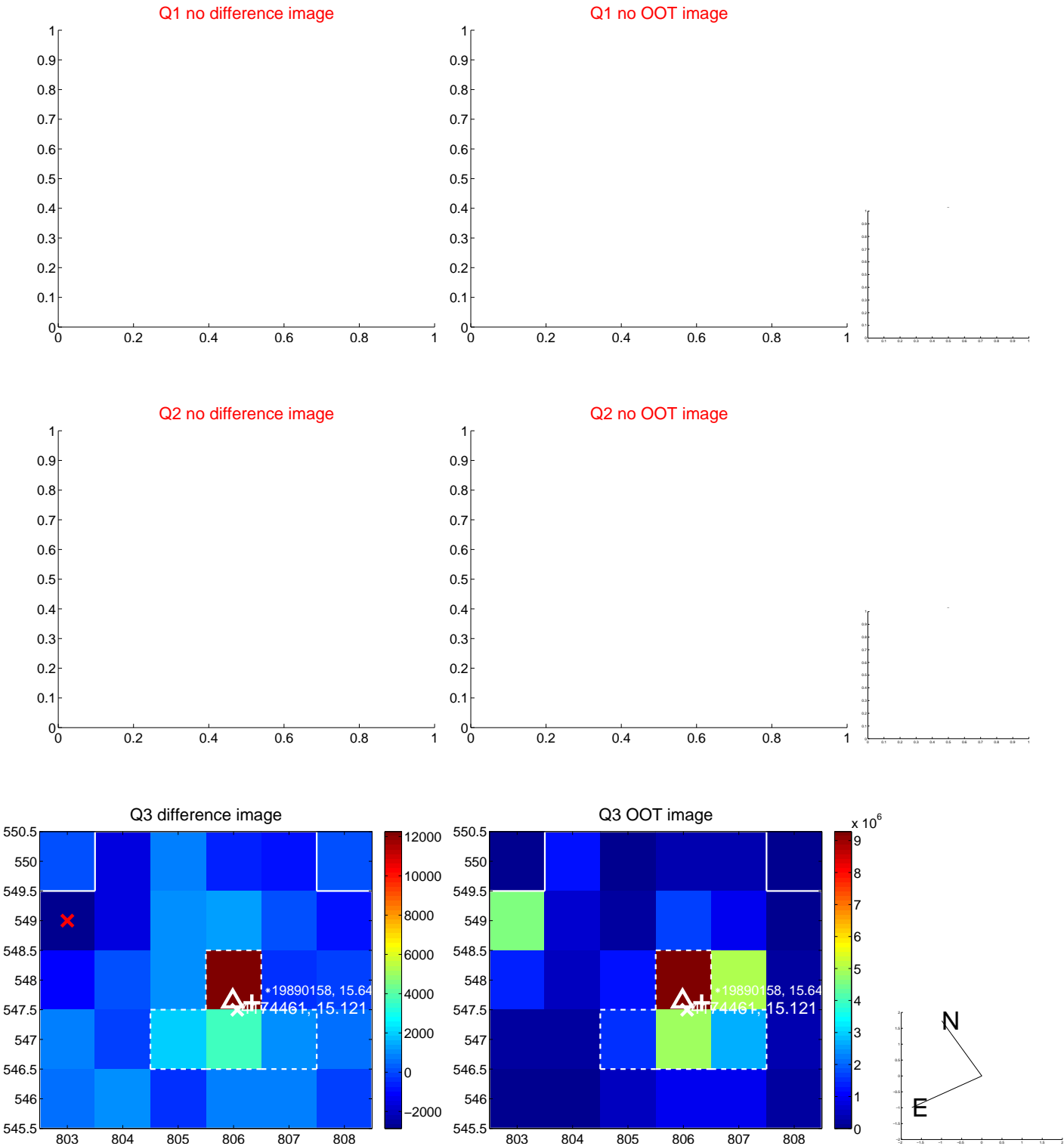
The direct PRF centroid is offset from the target star catalog position by about 0.97 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.236 ± 0.861 | 1.44 | 1.206 ± 0.869 | 0.270 ± 0.809 |
| PRF-fit source offset from KIC position | 0.195 ± 0.847 | 0.23 | 0.110 ± 0.772 | 0.161 ± 0.880 |
| photometric centroid source offset | 0.29 ± 0.94 | 0.31 | 0.14 ± 1.37 | 0.25 ± 0.78 |

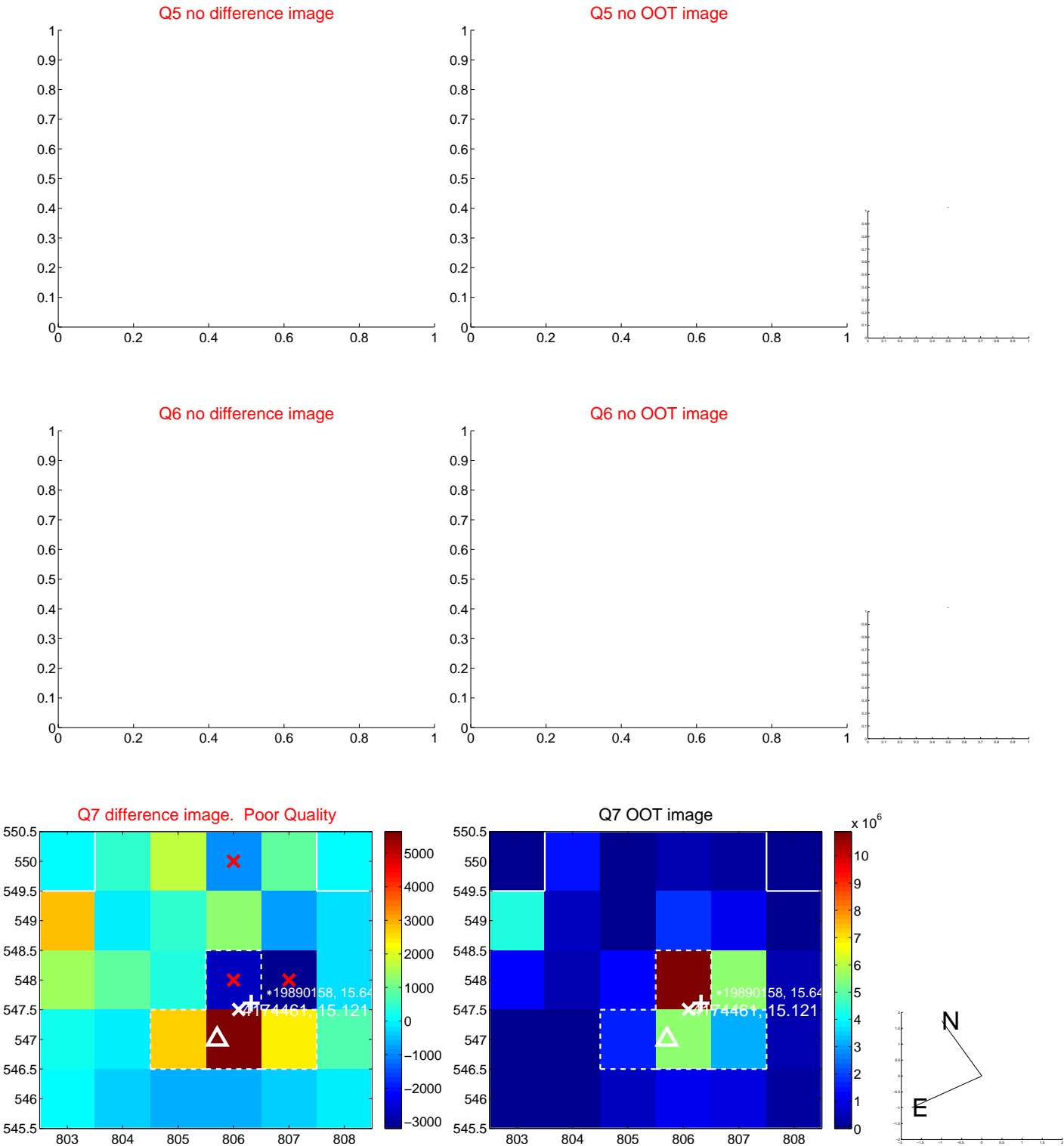


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

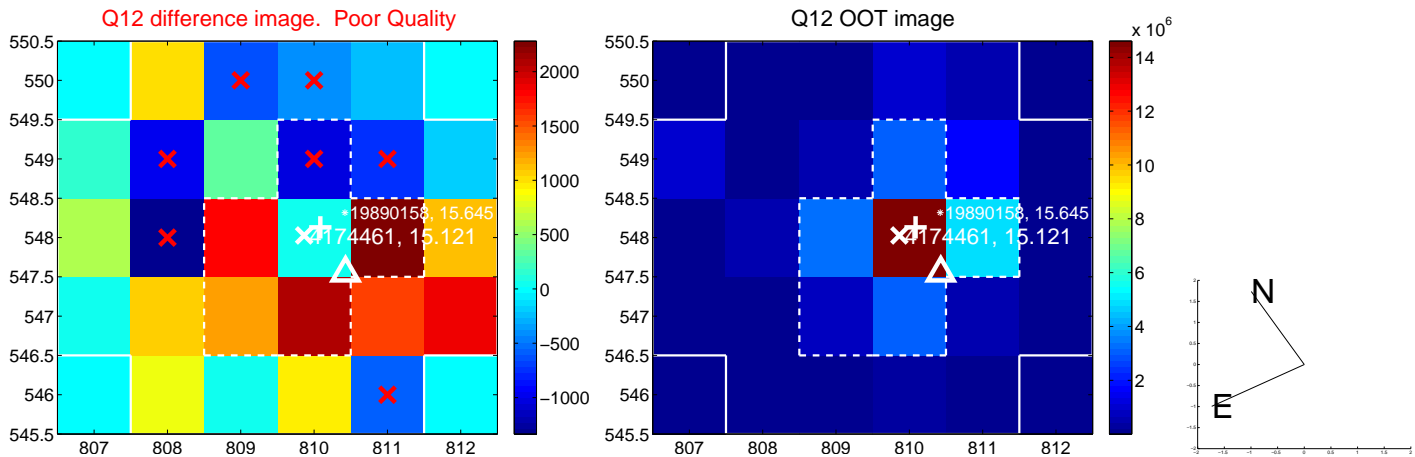
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



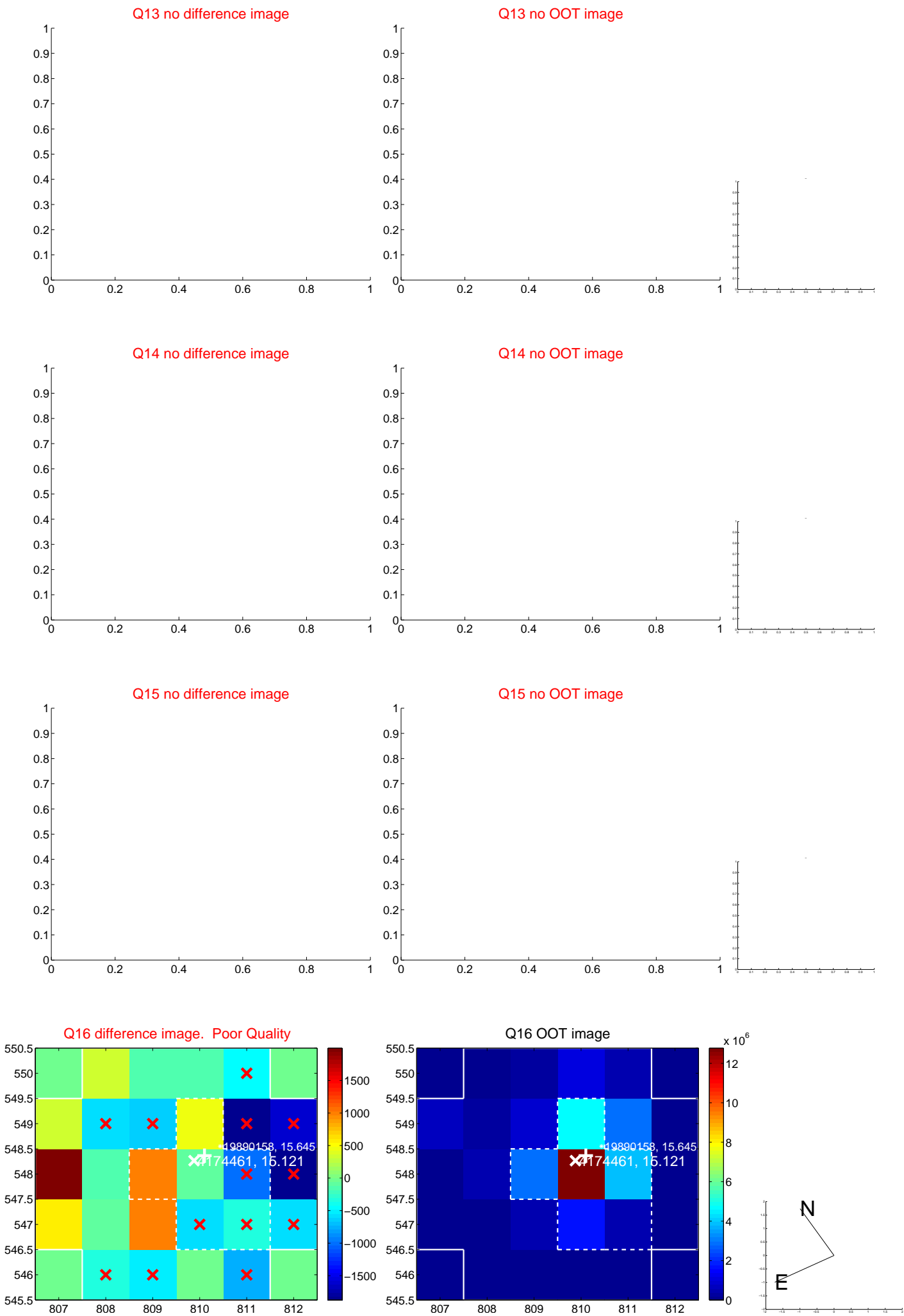
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



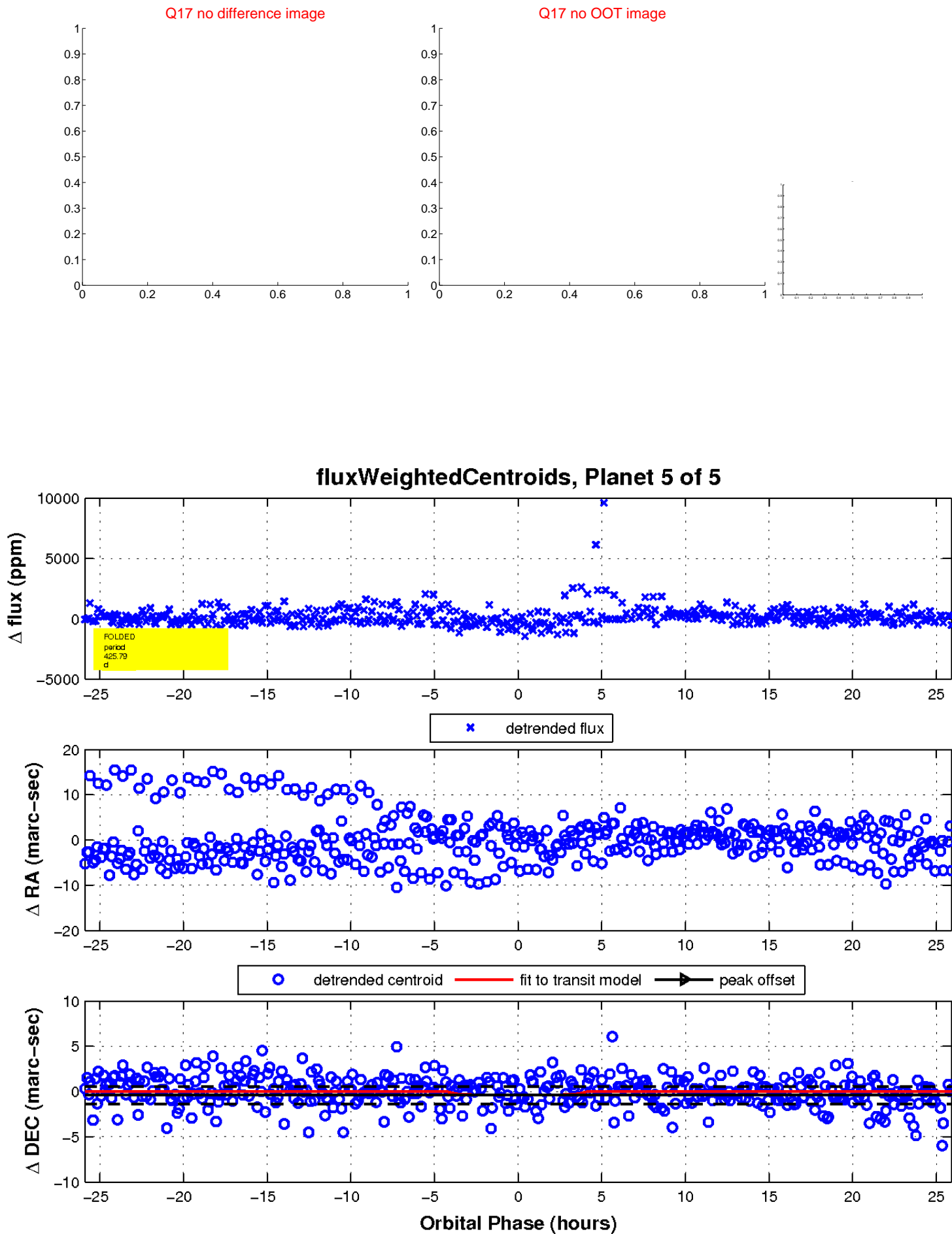
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image

Declination

