

KIC 010661976

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010661976-01 | OBS | 7356.01 | 1.231350 | 131.815835 | 16.4 | 4.612 | 7.6 | 8.4 | 2.23 | 6619 | 1.07 | 13461.45 |
| 010661976-02 | OBS | No | 447.096407 | 447.381733 | 303.9 | 27.545 | 10.8 | 6.3 | 2.23 | 6619 | 4.28 | 5.20 |
| 010661976-03 | OBS | No | 272.476874 | 354.771553 | 321.7 | 0.719 | 15.0 | 2.0 | 2.23 | 6619 | 4.32 | 10.06 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010661976-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—HALO_GHOST—EPHEM_MATCH |
| 010661976-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010661976-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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 010661976-01

| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|----------|---------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 010661976-01 | 10661976 | 010661783-pri | 10661783 | 1:1 | 197.0 | 12 | 48 | 9.59 | 13.74 | 13612.00 | Direct-PRF | 0 | 0.93 | 0.72 |

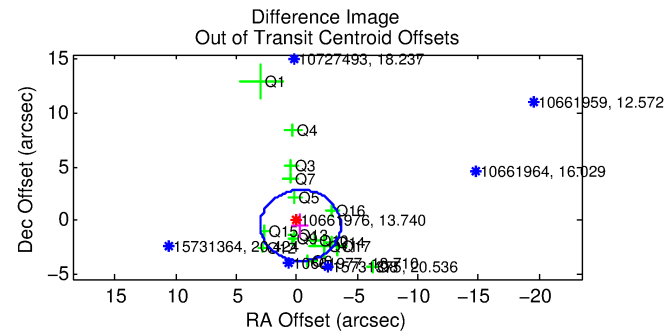
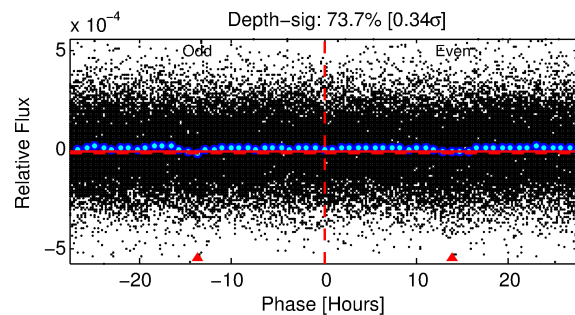
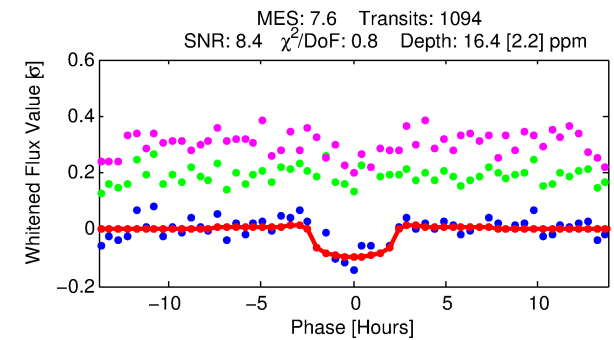
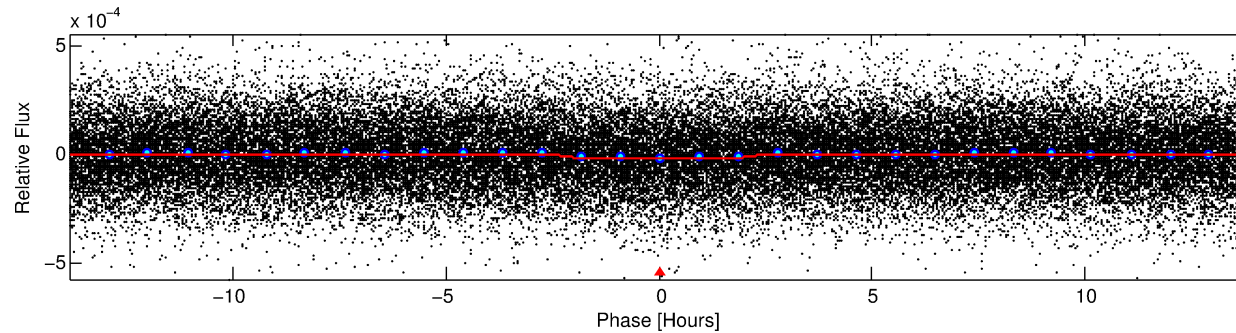
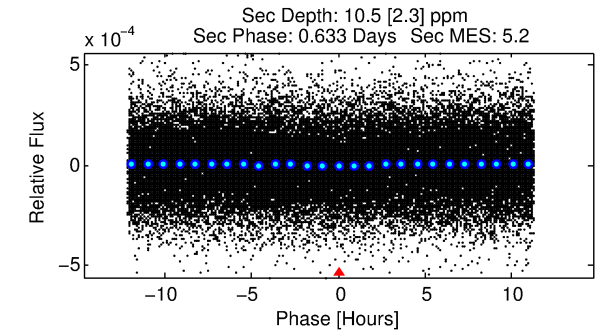
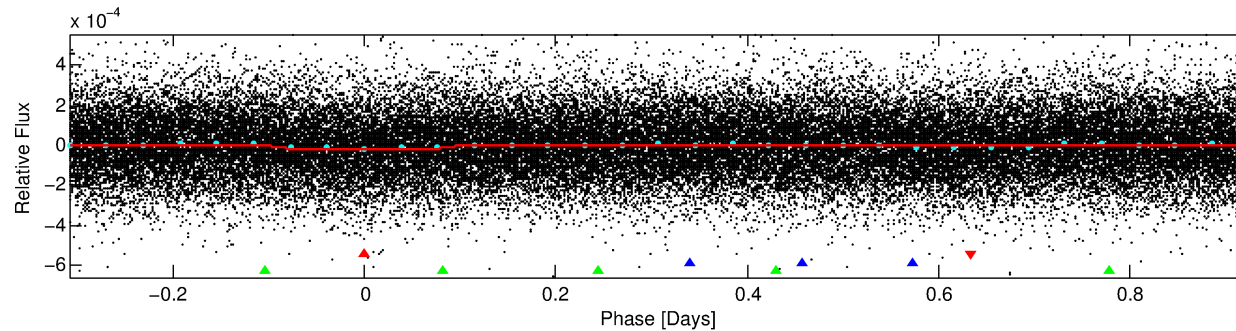
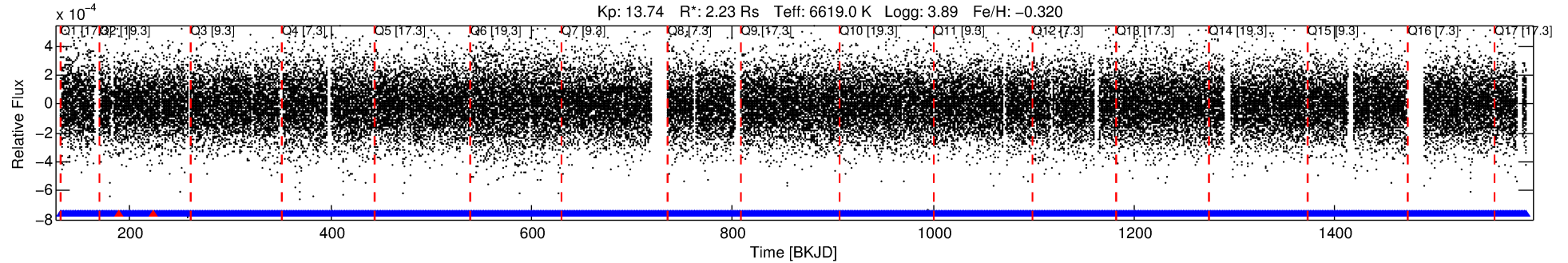
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10661976 Candidate: 1 of 3 Period: 1.231 d

KOI: K07356 Corr: No Ephemeris Match

Kp: 13.74 R*: 2.23 Rs Teff: 6619.0 K Logg: 3.89 Fe/H: -0.320



DV Fit Results:

Period = 1.23135 [0.00002] d
Epoch = 131.8158 [0.0057] BKJD
Rp/R* = 0.0044 [0.0016]
a/R* = 1.27 [1.07]
b = 0.92 [0.40]
Seff = 13461.45 [9910.11]
Teq = 2747 [506] K
Rp = 1.07 [0.64] Re
a = 0.0252 [0.0114] AU
Ag = 3.21 [3.40] [0.65σ]
Teffp = 5685 [1118] K [2.40σ]

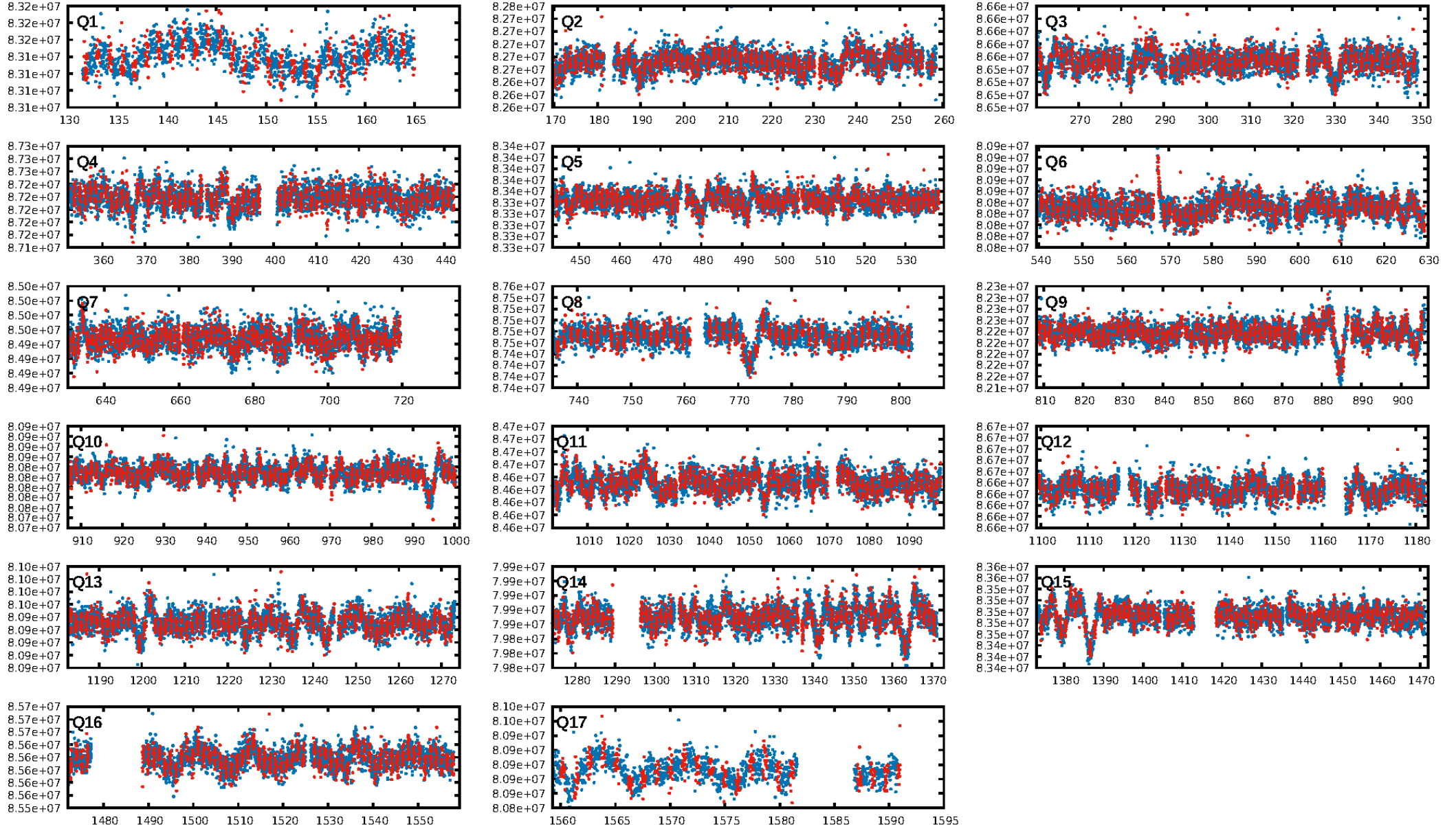
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1394.73σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.54e-12
RollingBand-fgt: 1.00 [1042/1044]
GhostDiagnostic-chr: -0.05219
Centroid-sig: 0.5%
Centroid-so: 2.393 arcsec [1.94σ]
OotOffset-rm: 0.585 arcsec [0.53σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-rm: 0.767 arcsec [0.65σ]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.06 [1/16]
DiffImageOverlap-fno: 1.00 [17/17]

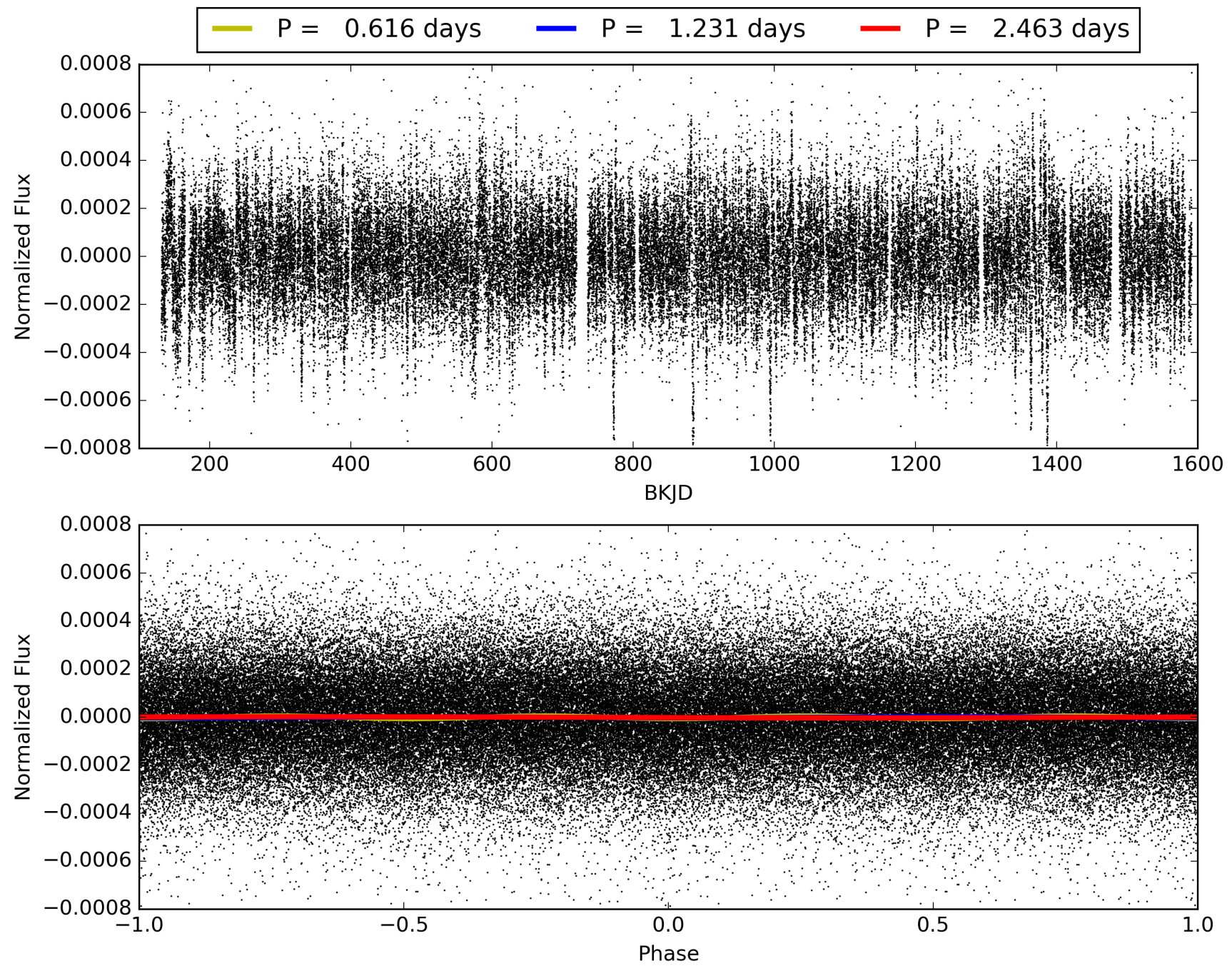
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:20:50 Z

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

TCE 010661976-01, PDC Light Curves

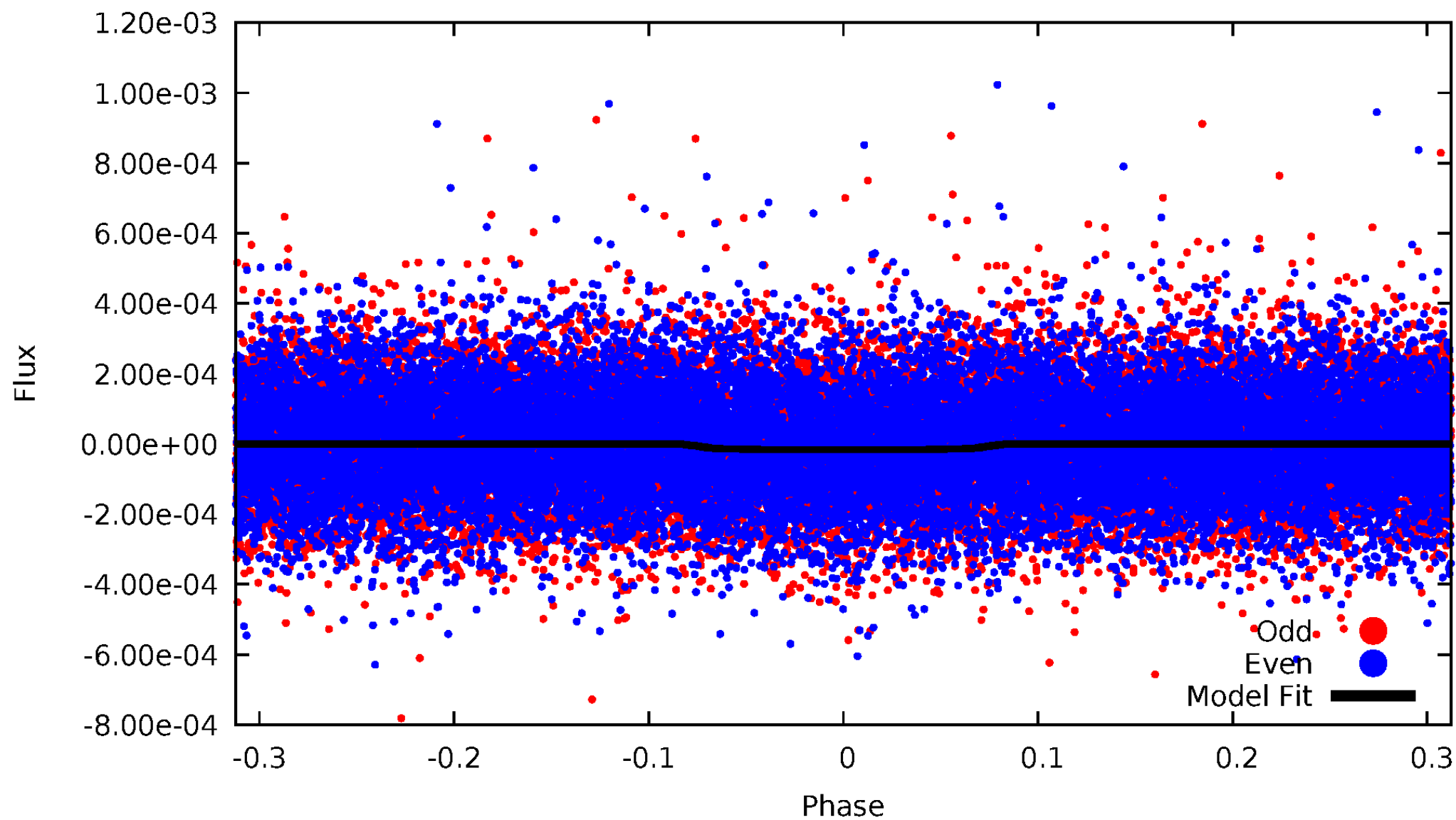


TCE 010661976-01



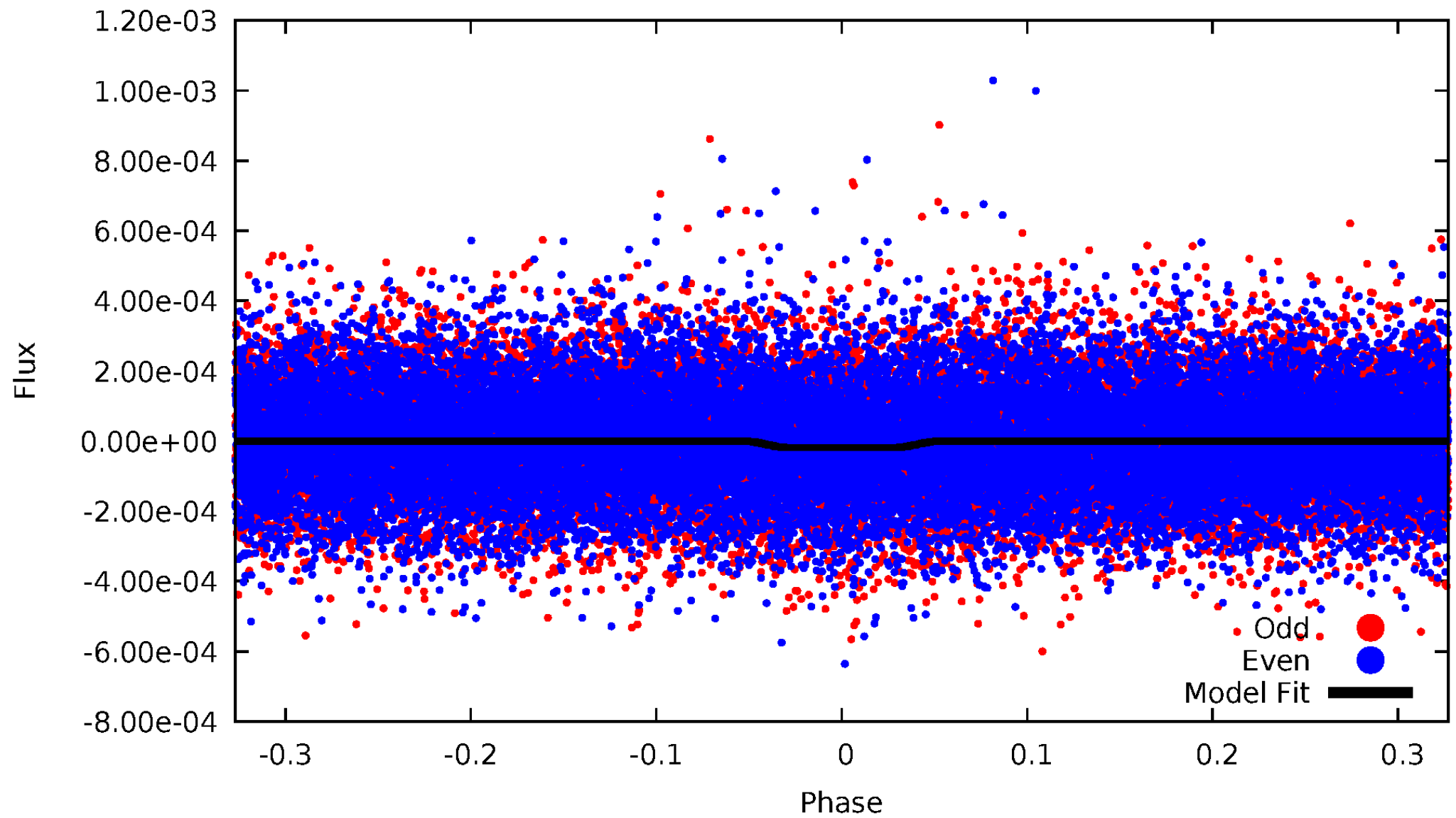
DV Odd/Even

TCE 010661976-01



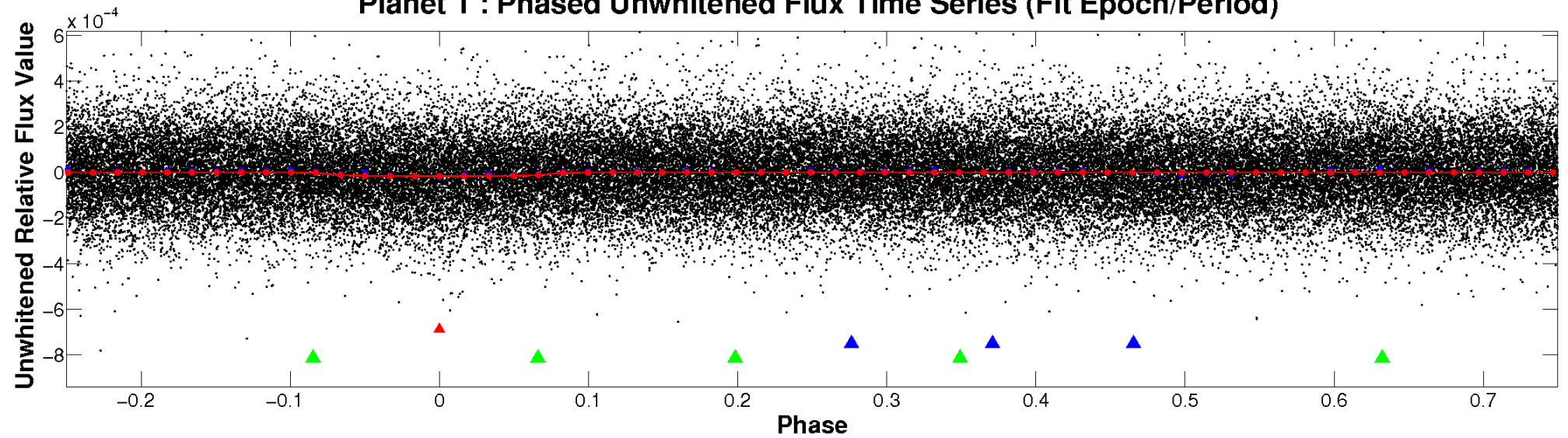
ALT Odd/Even

TCE 010661976-01

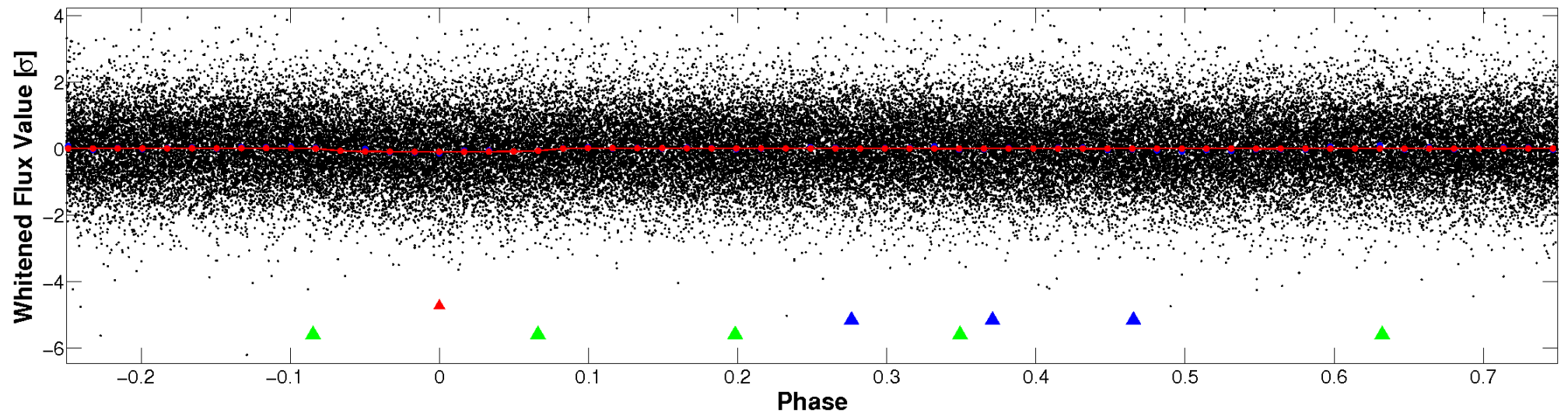


Non-Whitened Vs. Whitened Light Curve

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

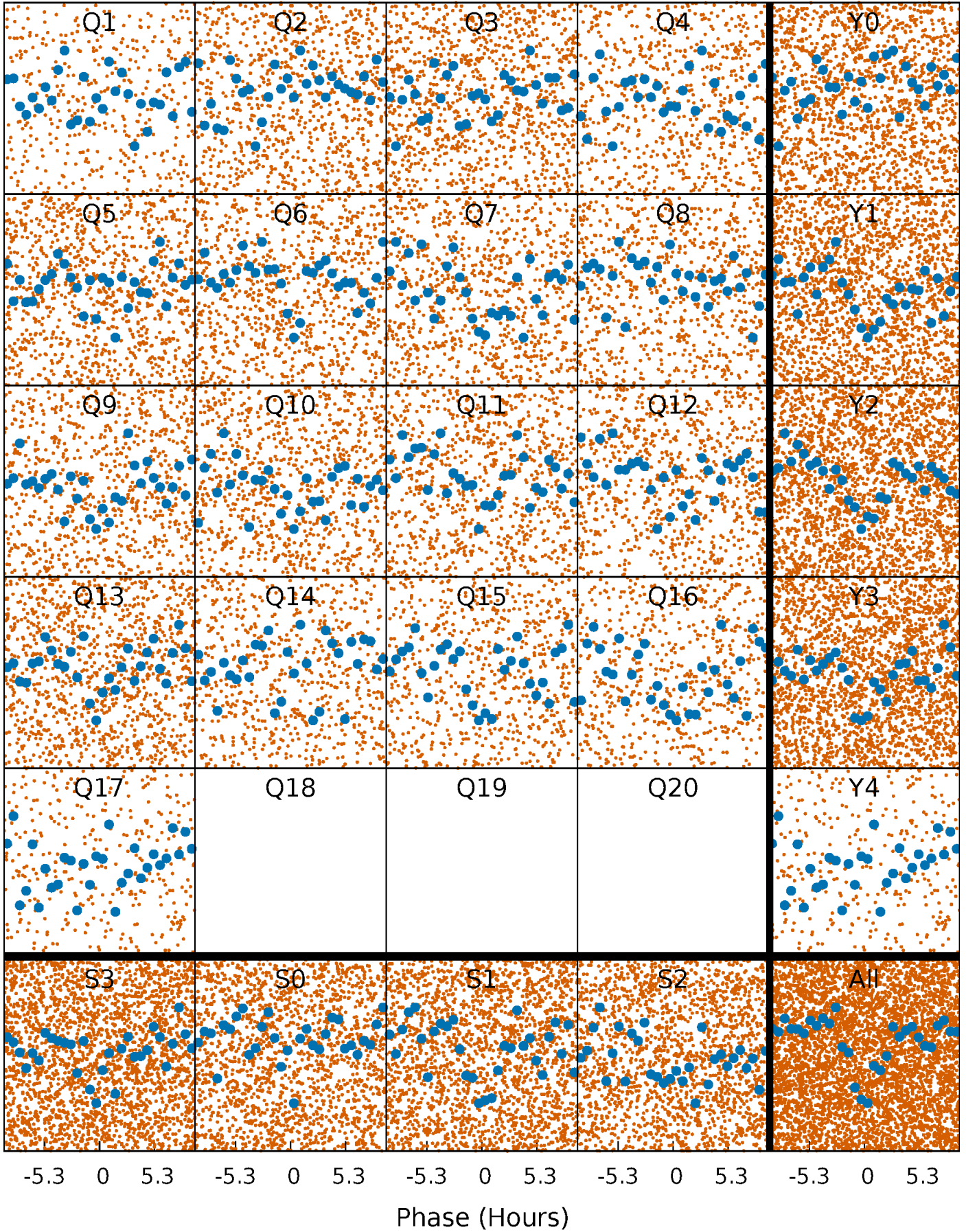


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



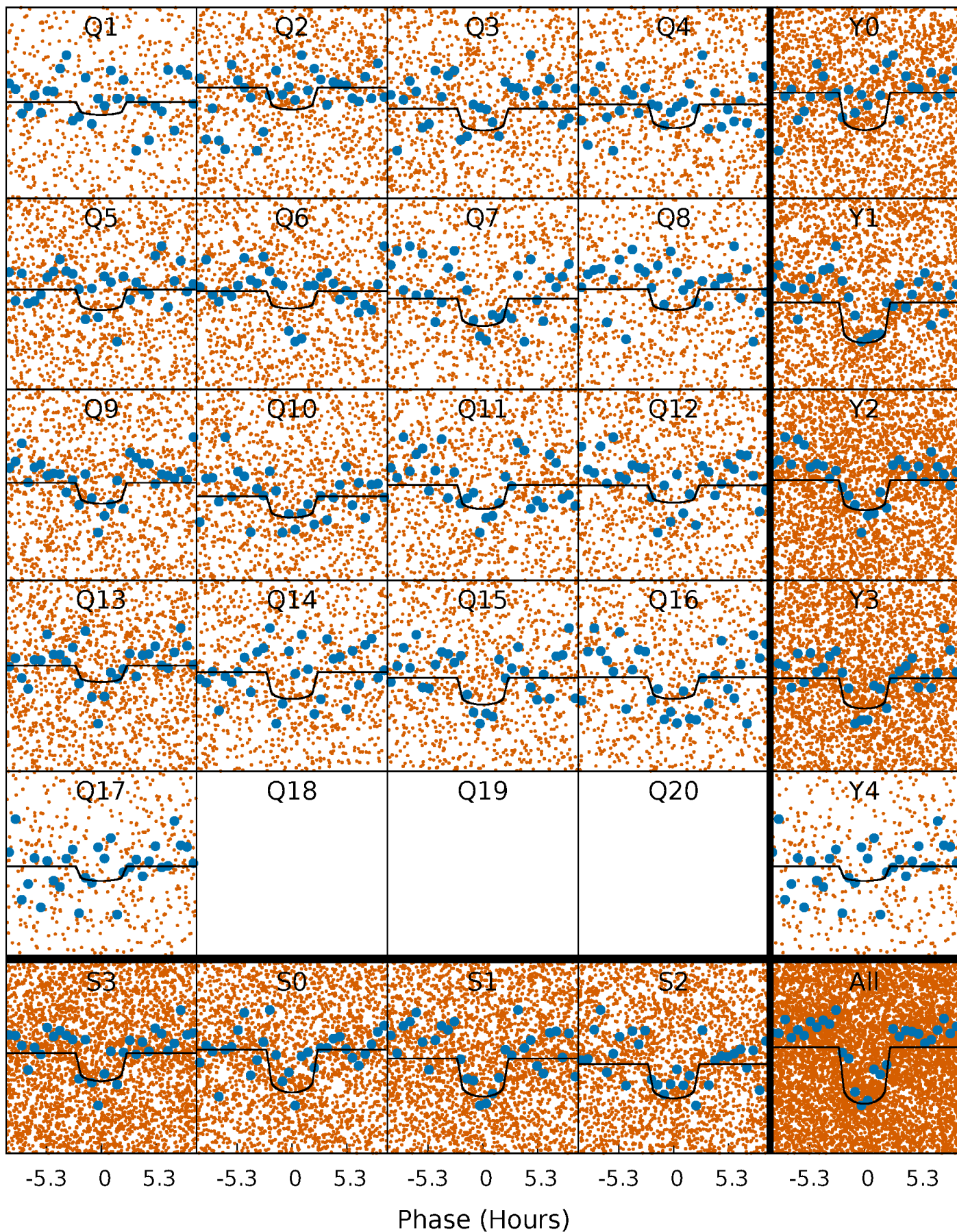
PDC Quarter-Phased Transit Curves

TCE 010661976-01 P= 1.231350 Days $T_0=131.815835$ (BKJD)



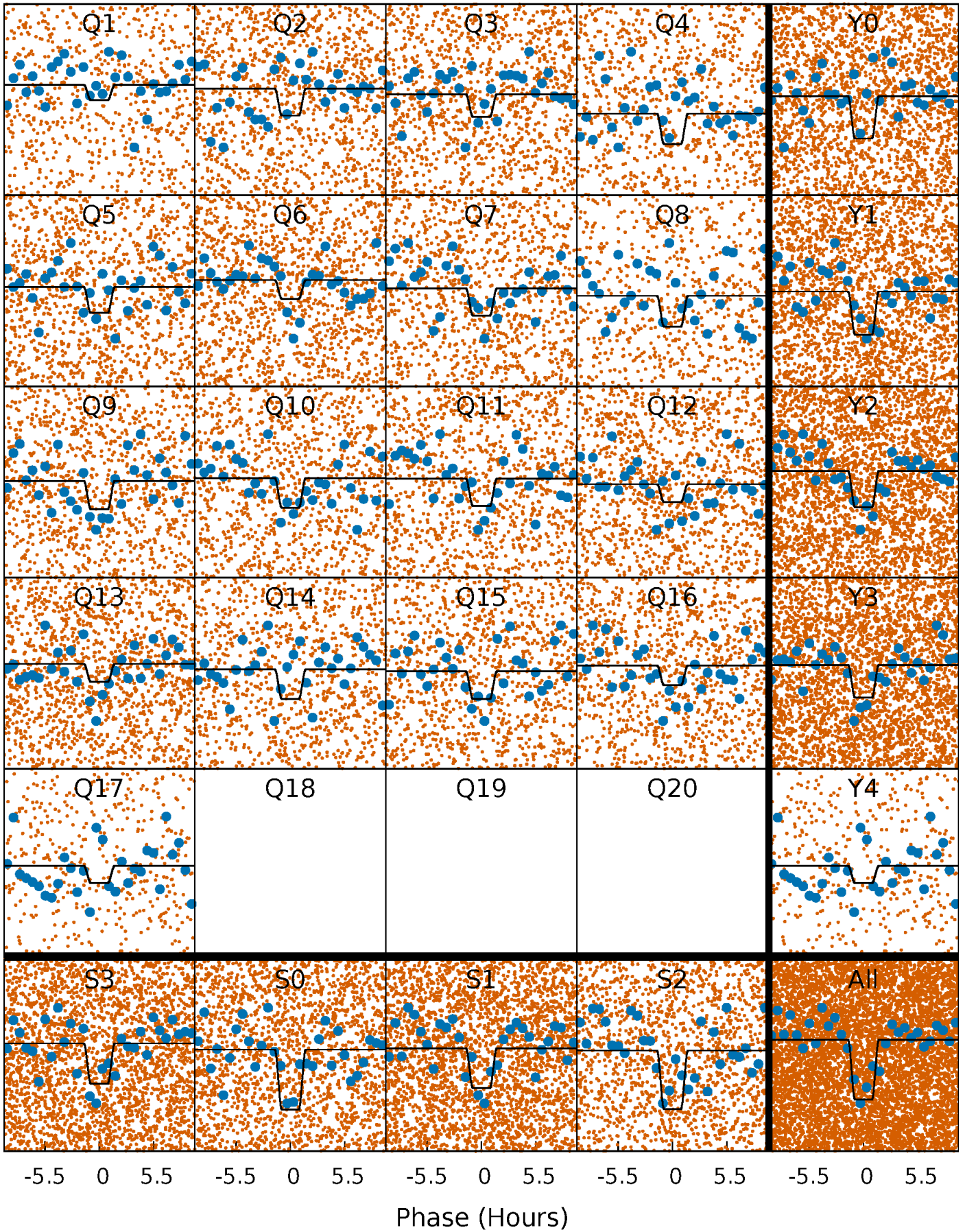
DV Quarter-Phased Transit Curves

TCE 010661976-01 P= 1.231350 Days $T_0=131.815835$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

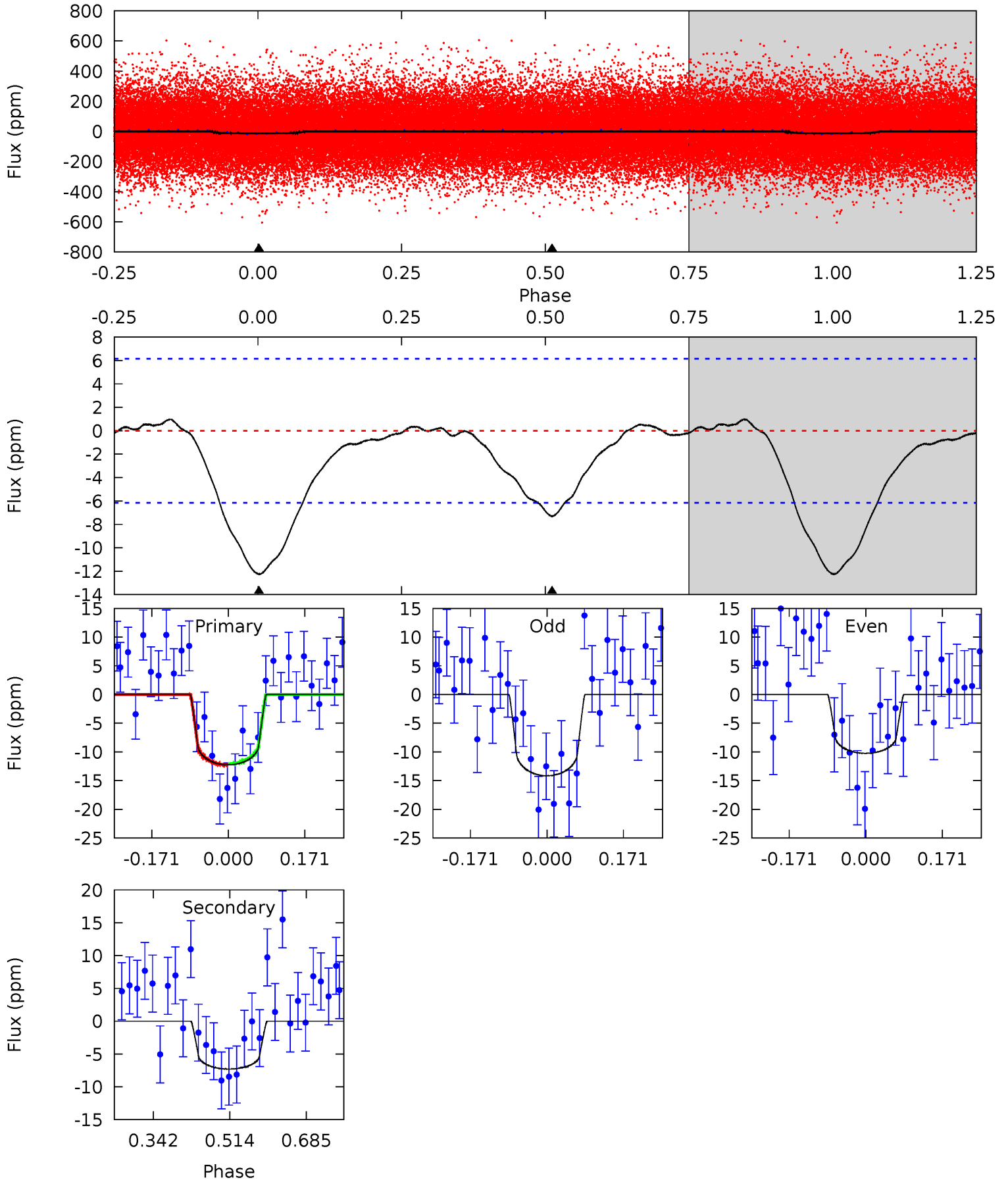
TCE 010661976-01 P= 1.231363 Days $T_0=131.808206$ (BKJD)



DV Model-Shift Uniqueness Test

010661976-01, P = 1.231350 Days, E = 130.584485 Days

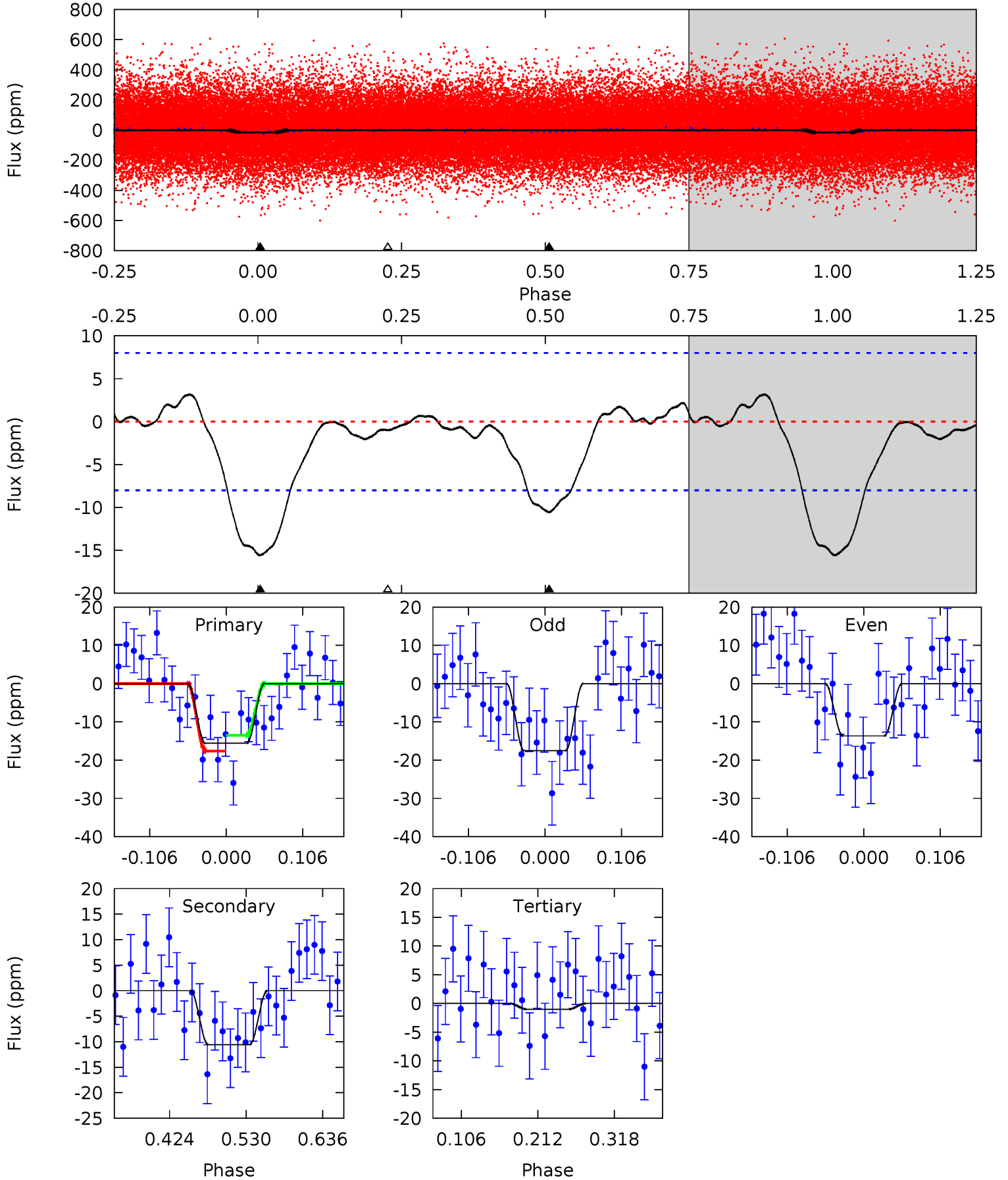
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.86 | 5.28 | 0 | 0 | 4.45 | 1.37 | 0.30 | 8.86 | 8.86 | 5.28 | 5.28 | 1.41 | 0.91 | 0.07 | 0.08 |



Alt Model-Shift Uniqueness Test

010661976-01, P = 1.231363 Days, E = 130.576843 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.87 | 6.02 | 0.57 | 0 | 4.55 | 1.62 | 0.70 | 8.29 | 8.87 | 5.45 | 6.02 | 1.10 | 0.82 | 0.17 | 1.17 |



Stellar Parameters For KIC 010661976

| | $T_{\text{eff}} (K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6619^{+187}_{-234} | $3.890^{+0.424}_{-0.133}$ | $-0.320^{+0.300}_{-0.300}$ | $2.230^{+0.525}_{-1.049}$ | $1.408^{+0.191}_{-0.356}$ | $0.179^{+0.629}_{-0.070}$ |
| | +3%/-4% | +11%/-3% | +94%/-94% | +24%/-47% | +14%/-25% | +352%/-39% |
| Source | PHO54 | PHO54 | PHO54 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010661976-01 / KOI 7356.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -7 ± 1 | $0.97^{+0.45}_{-0.39}$ | 3756^{+288}_{-439} | 5084^{+1288}_{-732} | $2.621^{+4.911}_{-1.328}$ |
| Alt. | -11 ± 2 | $0.94^{+0.48}_{-0.39}$ | 3766^{+289}_{-421} | 5660^{+1568}_{-906} | $4.152^{+7.613}_{-2.404}$ |

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 $A_{obs} \gg 1.0$

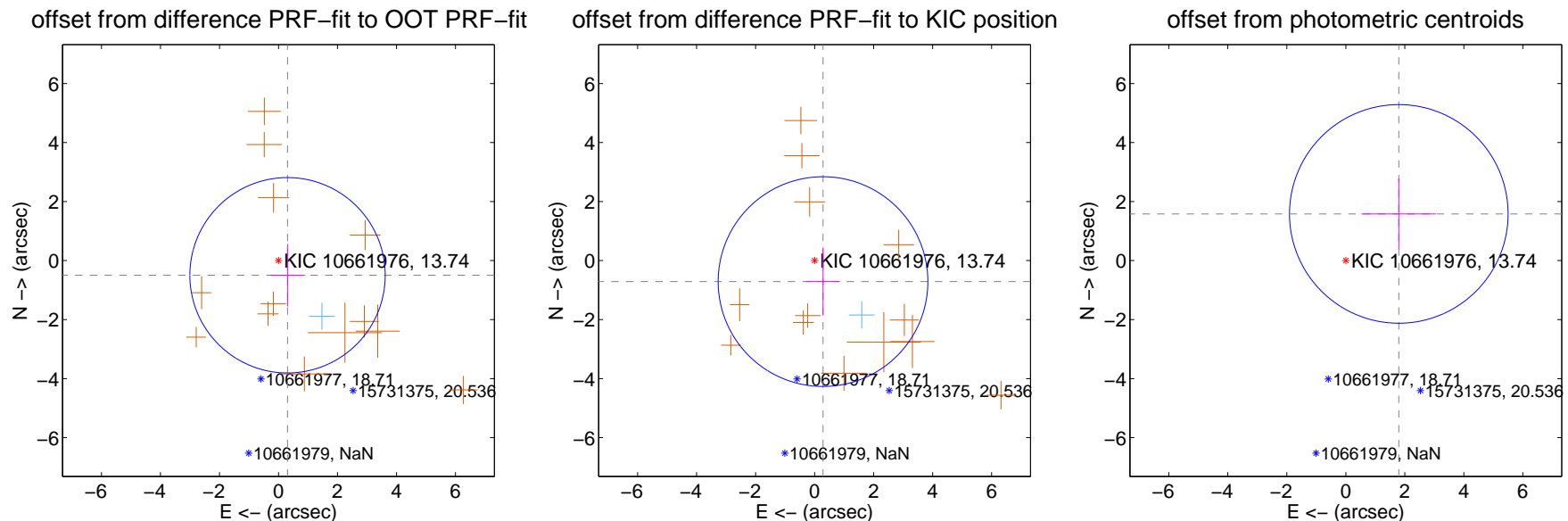
DV Centroid Data

Supplemental centroid analysis for 010661976-01. Kepler magnitude: 13.74. Transit SNR 8.43

There are 1 quarters with good PRF difference image offsets

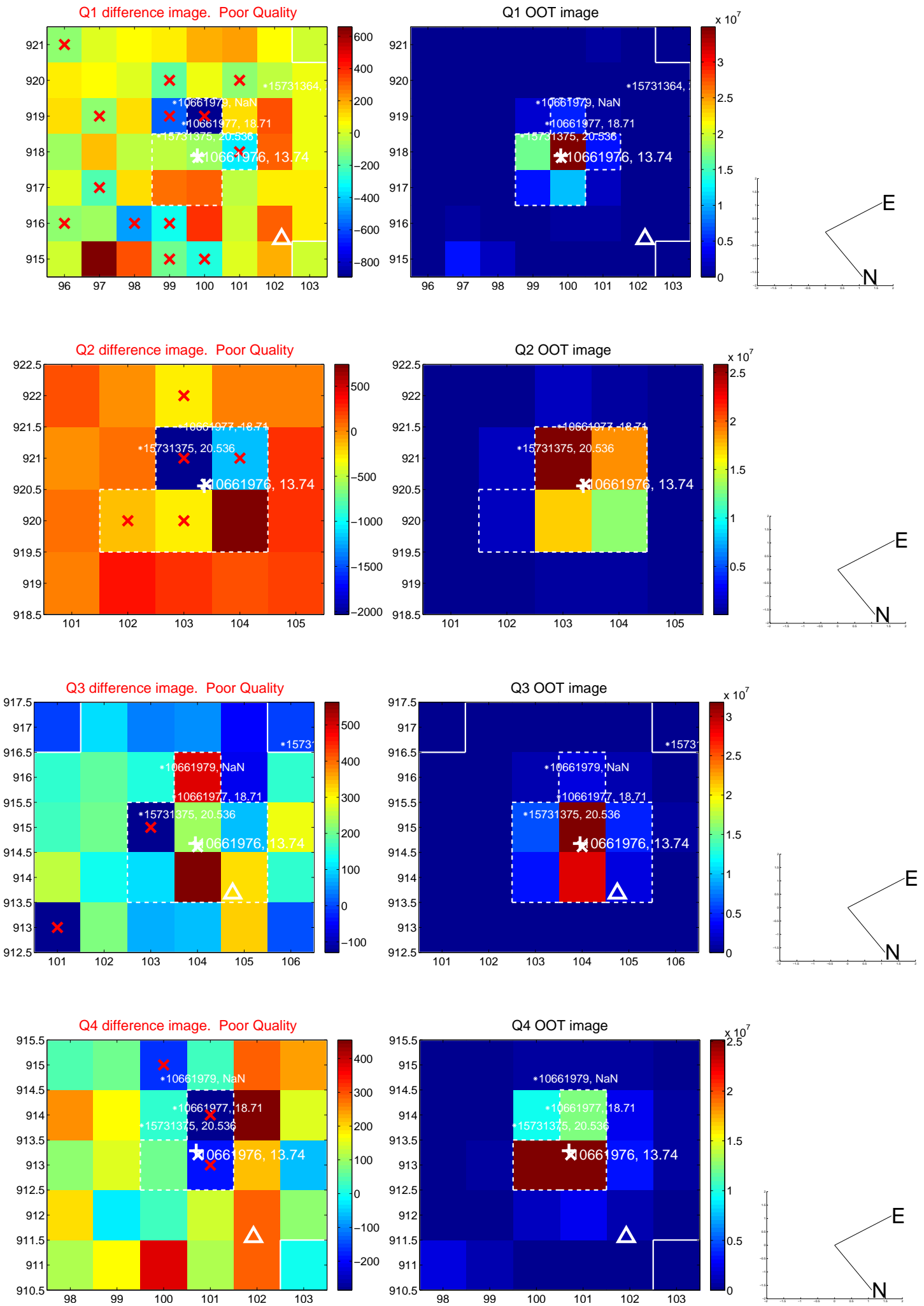
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.585 ± 1.104 | 0.53 | -0.307 ± 0.588 | -0.498 ± 1.060 |
| PRF-fit source offset from KIC position | 0.767 ± 1.185 | 0.65 | -0.285 ± 0.572 | -0.712 ± 1.152 |
| photometric centroid source offset | 2.39 ± 1.23 | 1.94 | -1.80 ± 1.26 | 1.58 ± 1.20 |

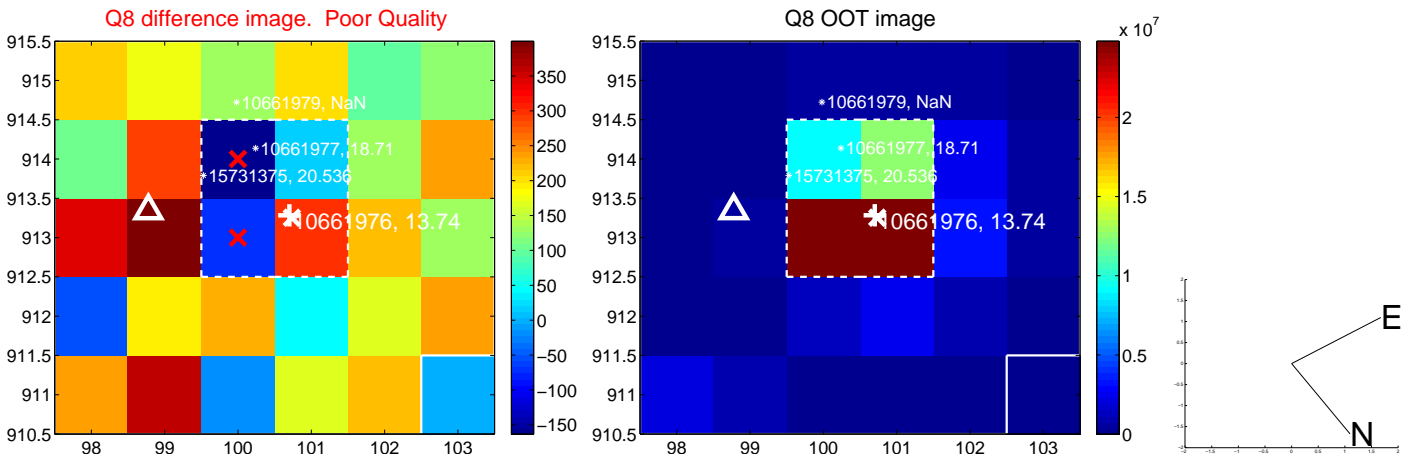
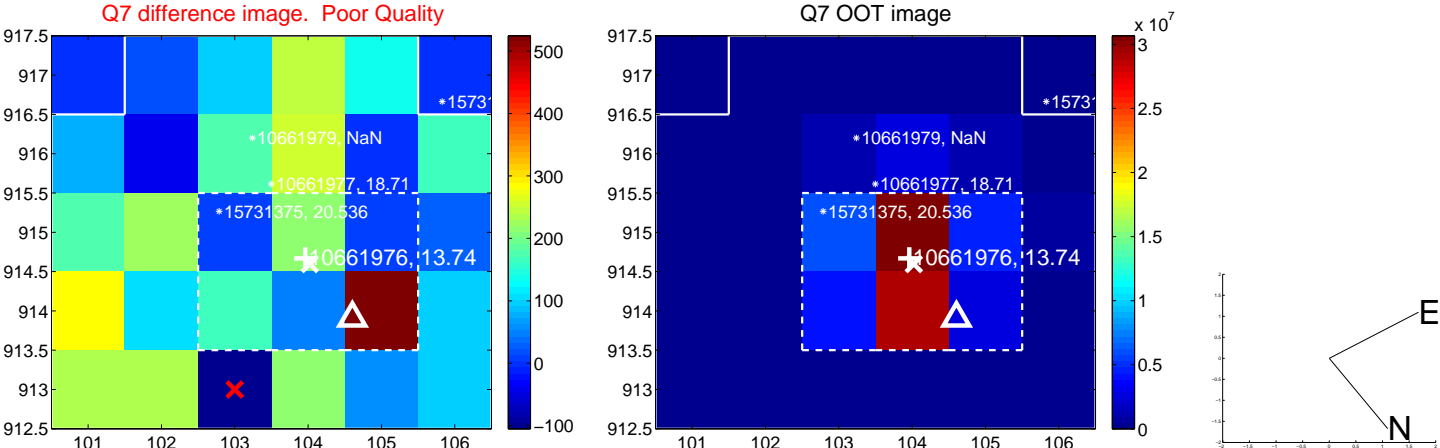
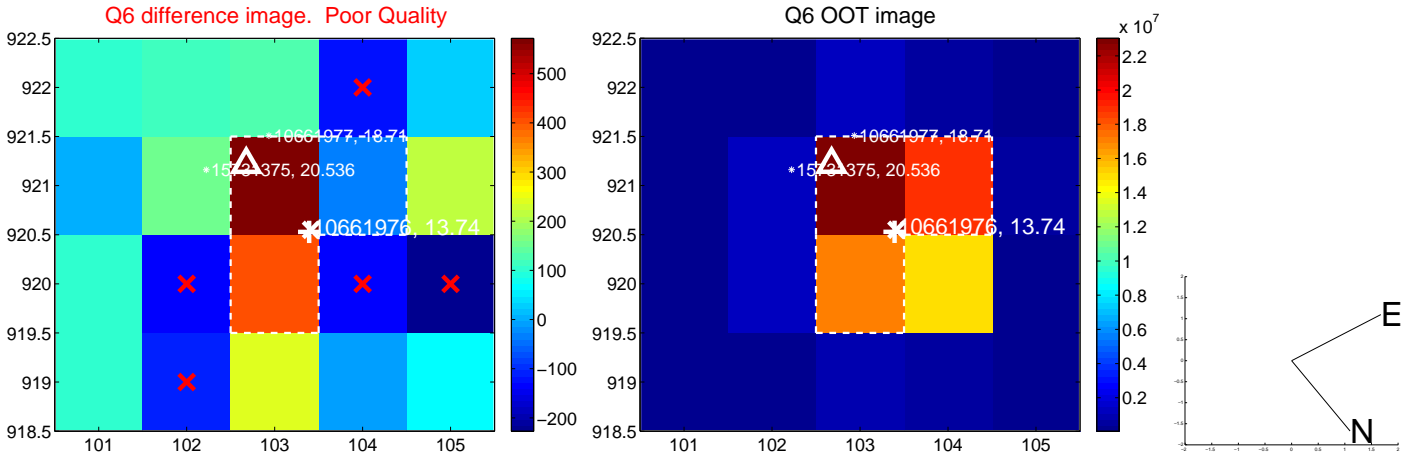
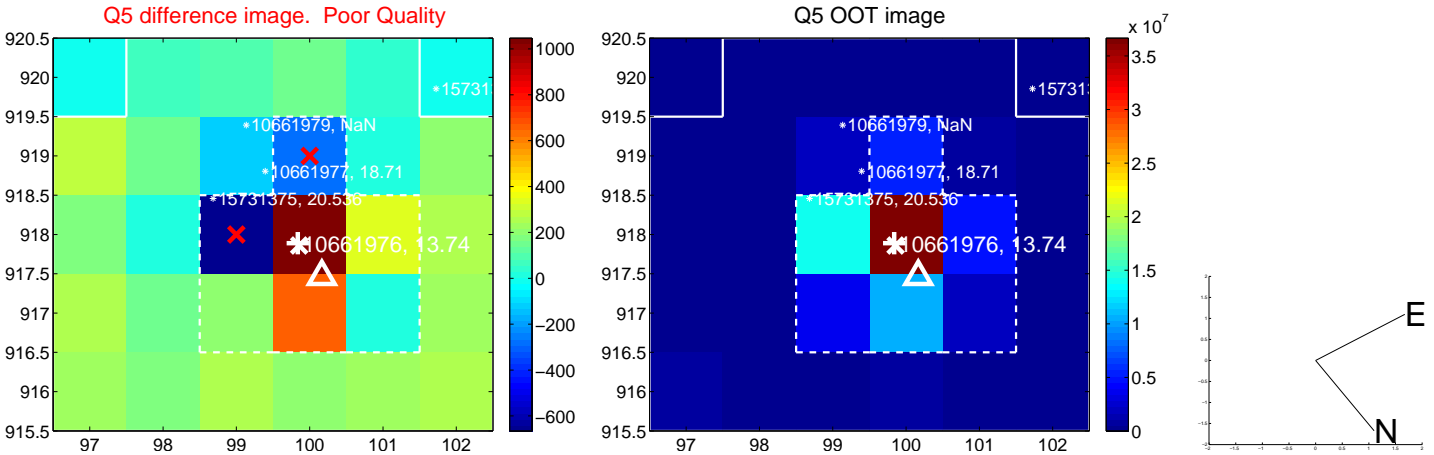


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

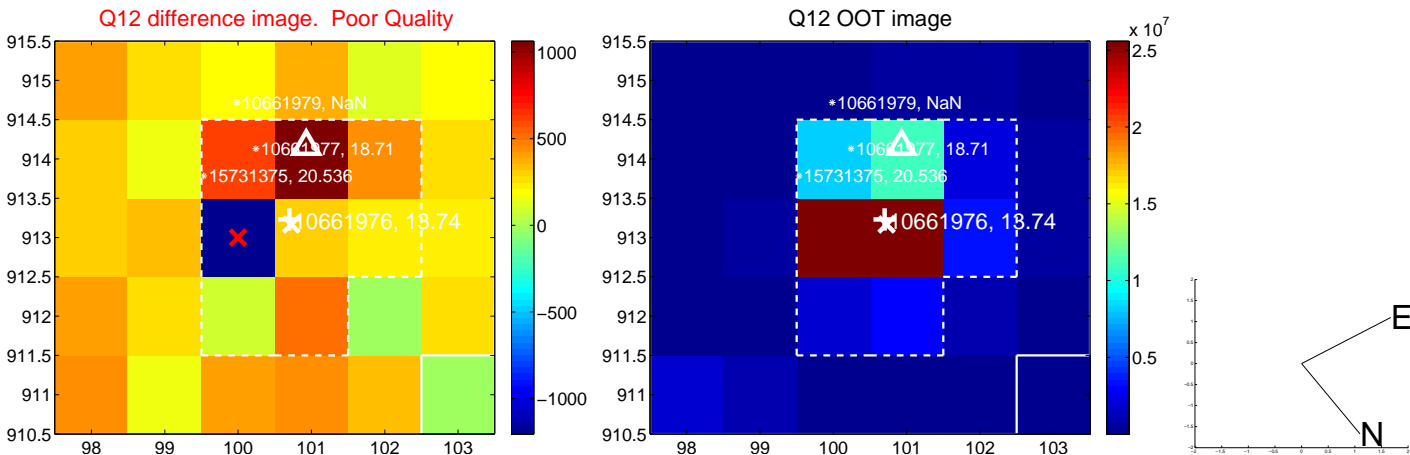
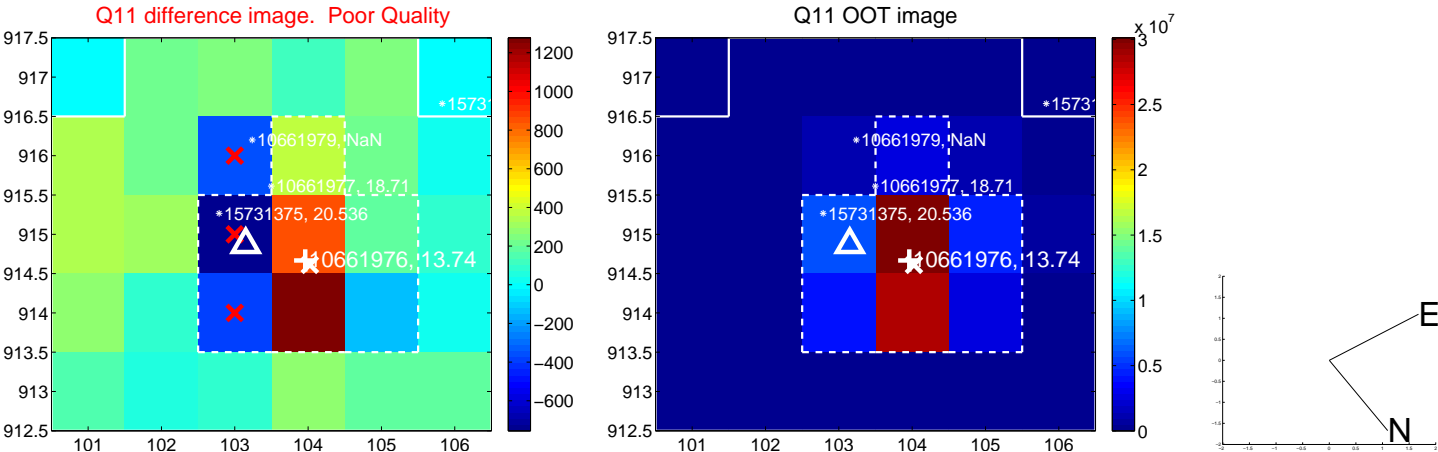
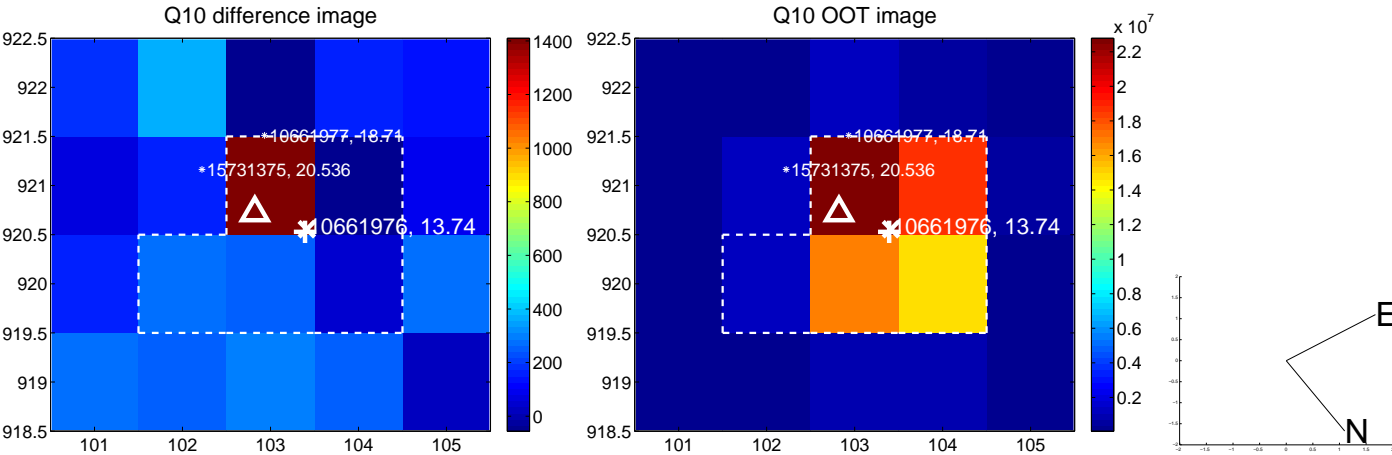
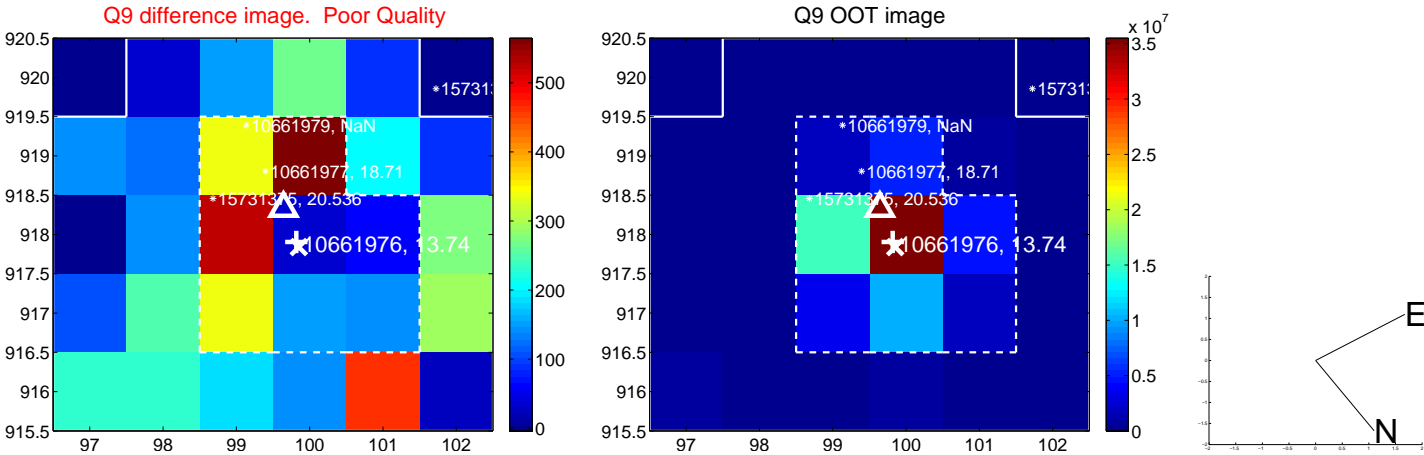
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



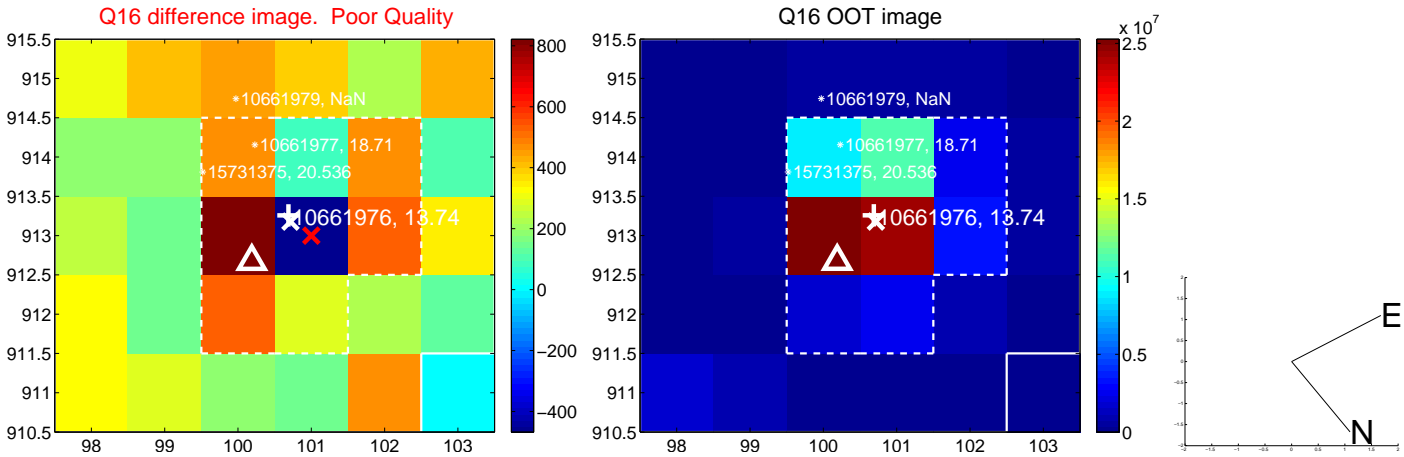
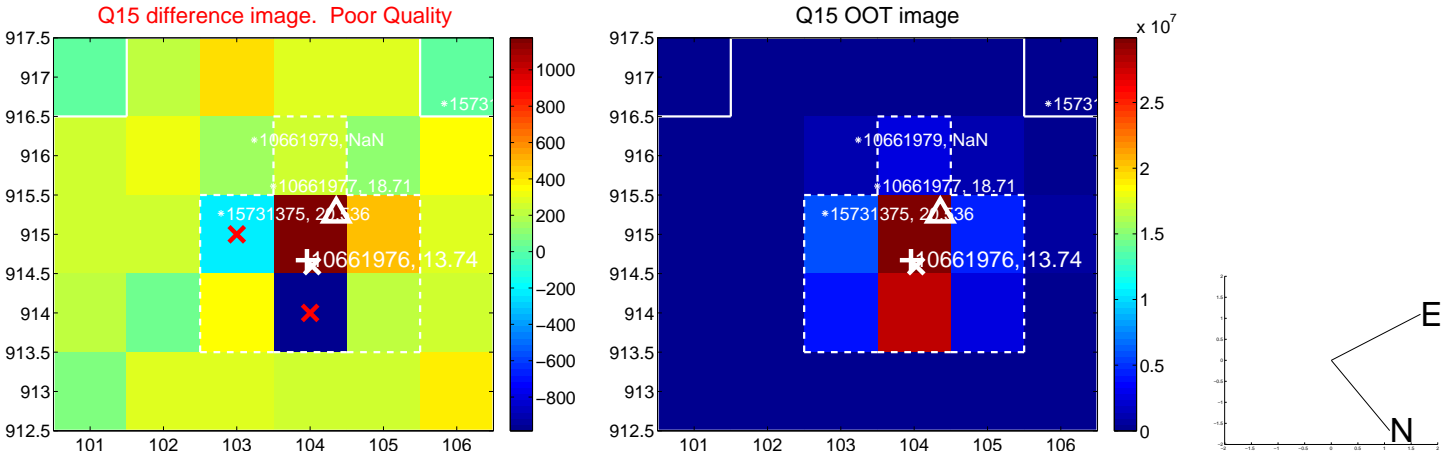
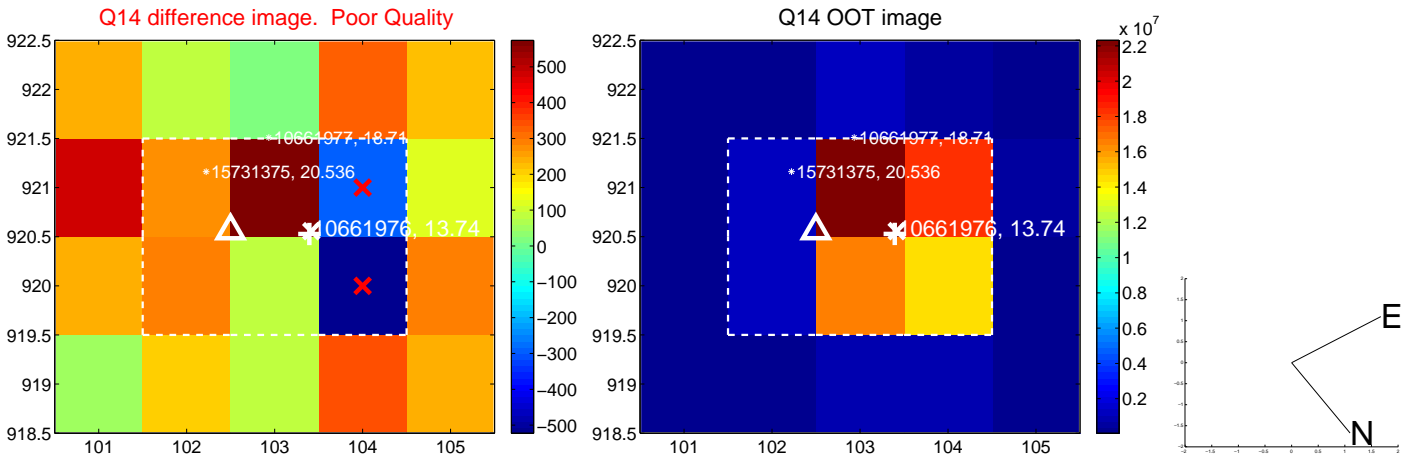
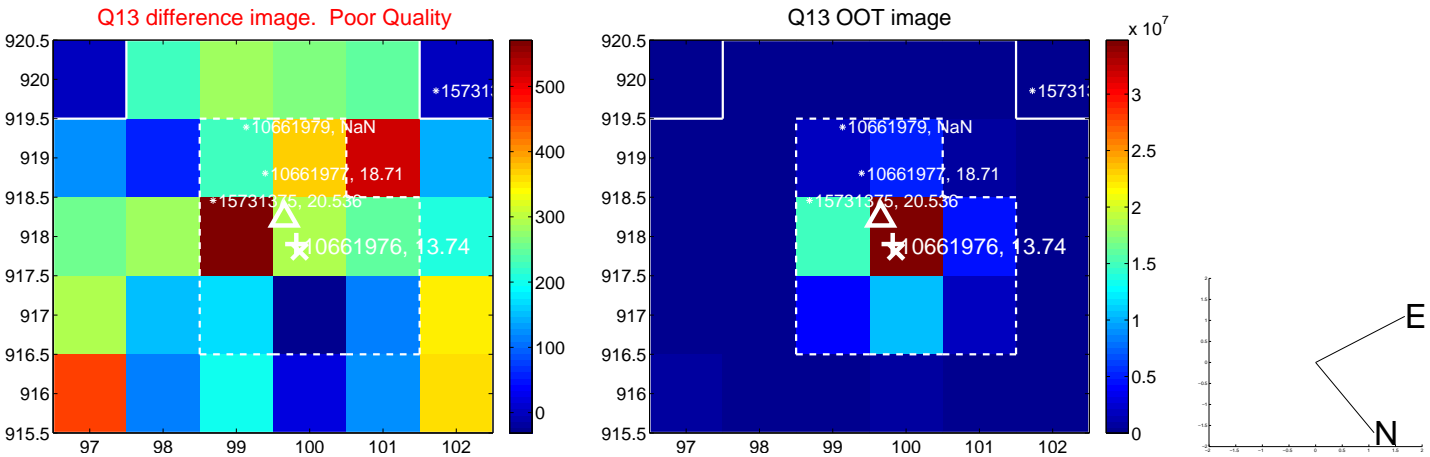
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



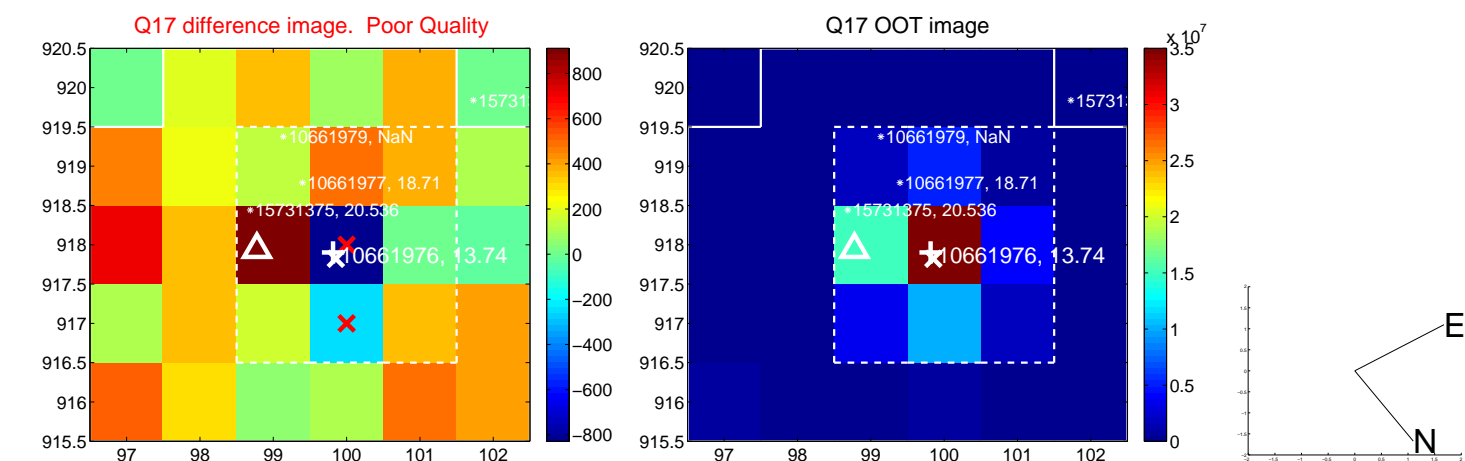
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



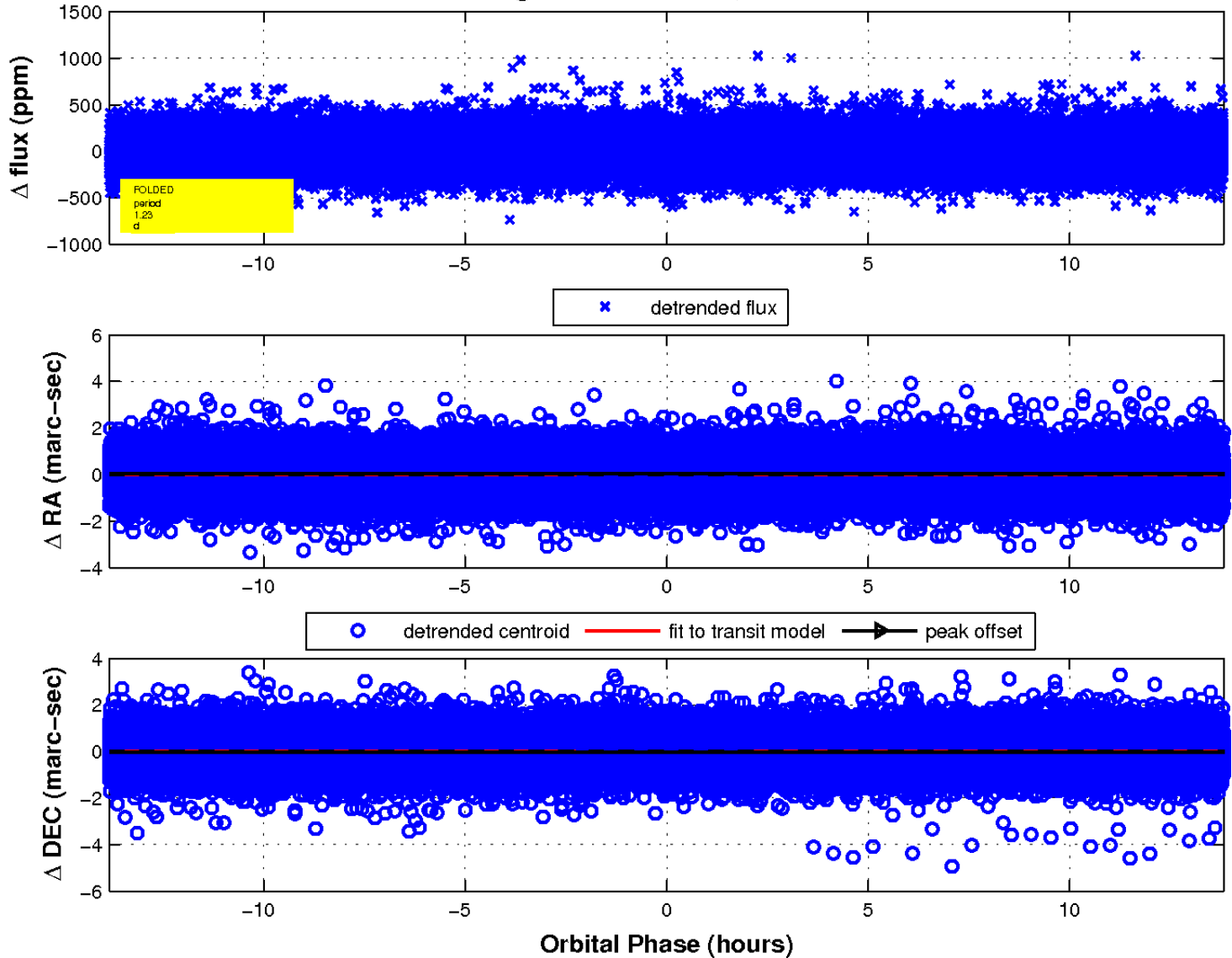
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

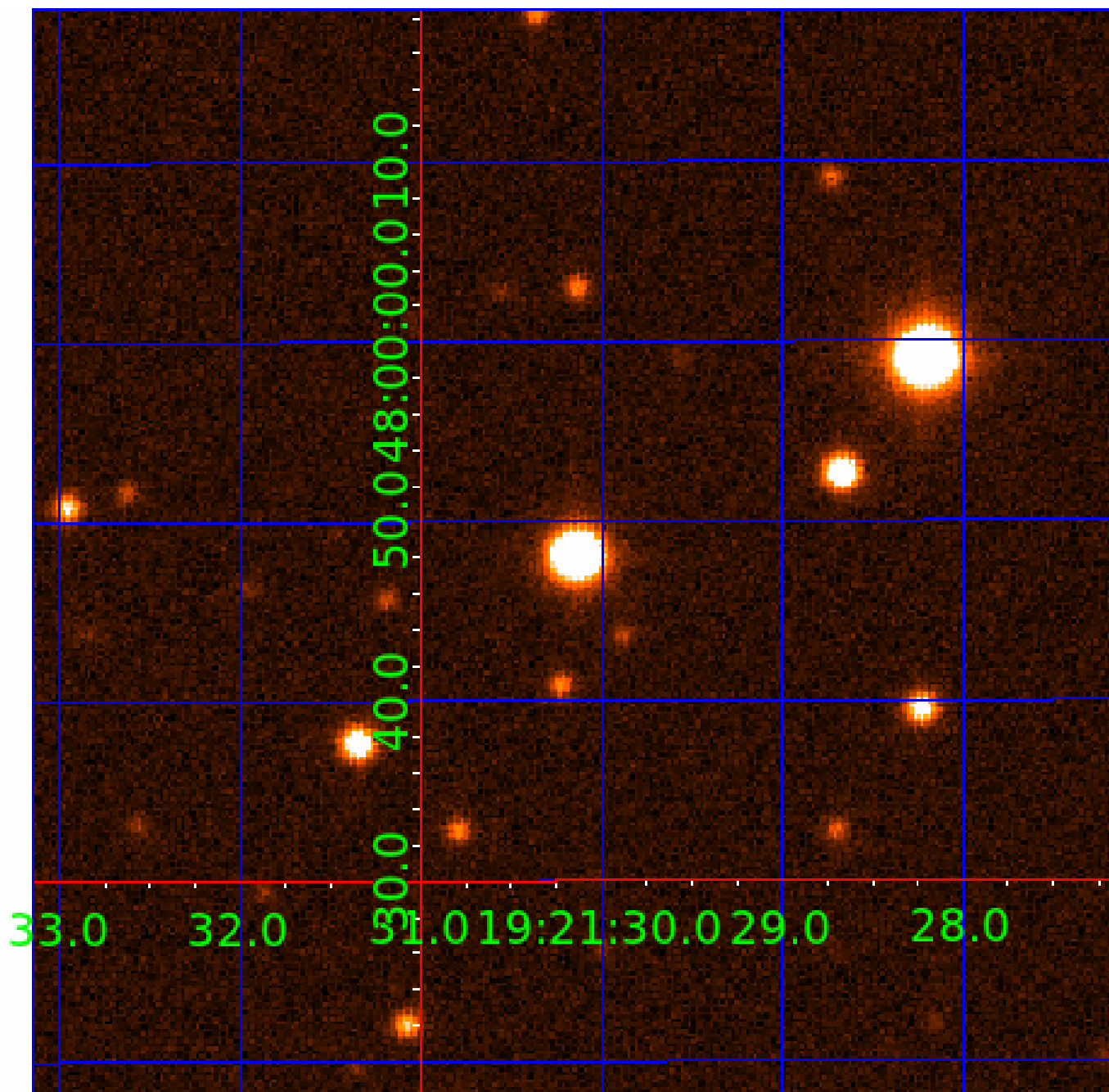


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 010661976

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010661976-01 | OBS | 7356.01 | 1.231350 | 131.815835 | 16.4 | 4.612 | 7.6 | 8.4 | 2.23 | 6619 | 1.07 | 13461.45 |
| 010661976-02 | OBS | No | 447.096407 | 447.381733 | 303.9 | 27.545 | 10.8 | 6.3 | 2.23 | 6619 | 4.28 | 5.20 |
| 010661976-03 | OBS | No | 272.476874 | 354.771553 | 321.7 | 0.719 | 15.0 | 2.0 | 2.23 | 6619 | 4.32 | 10.06 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010661976-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—HALO_GHOST—EPHEM_MATCH |
| 010661976-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010661976-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

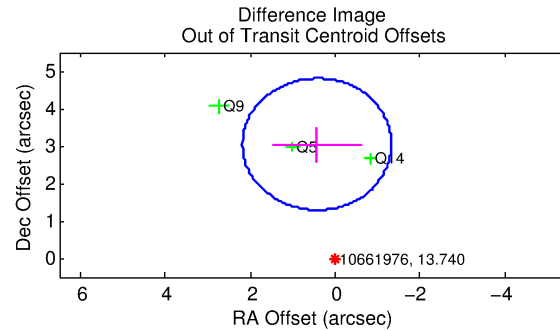
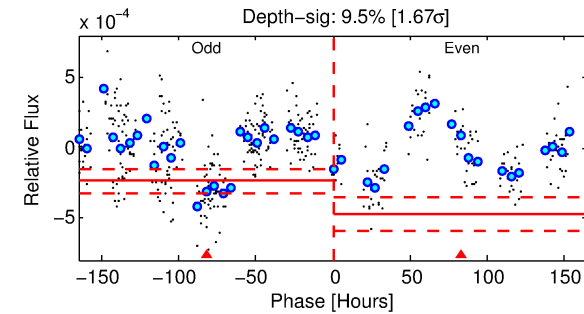
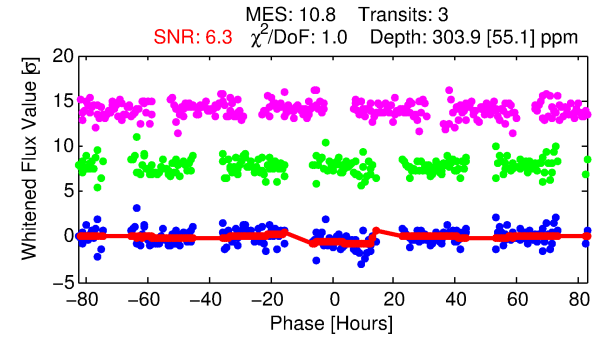
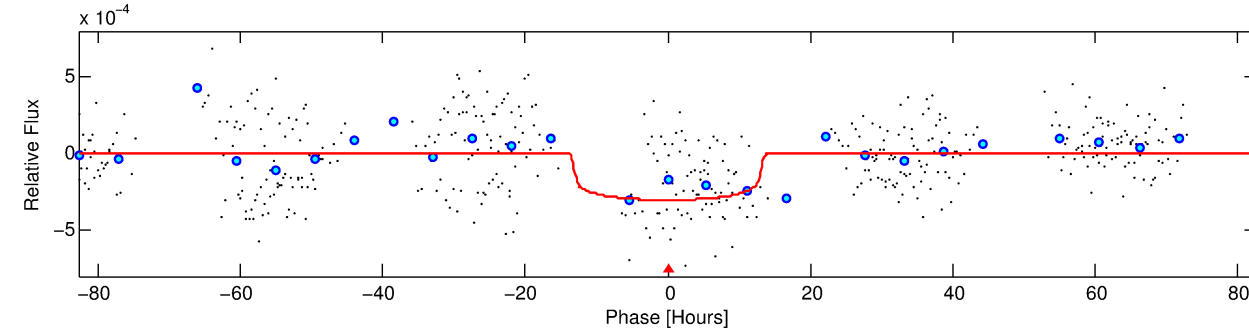
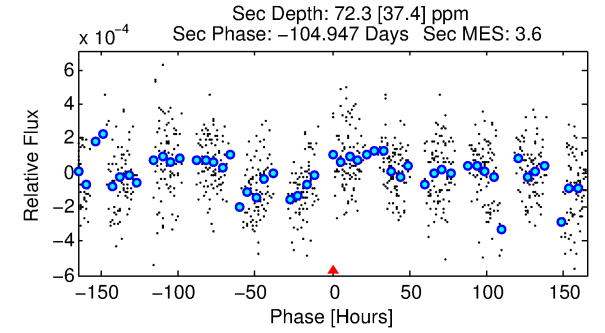
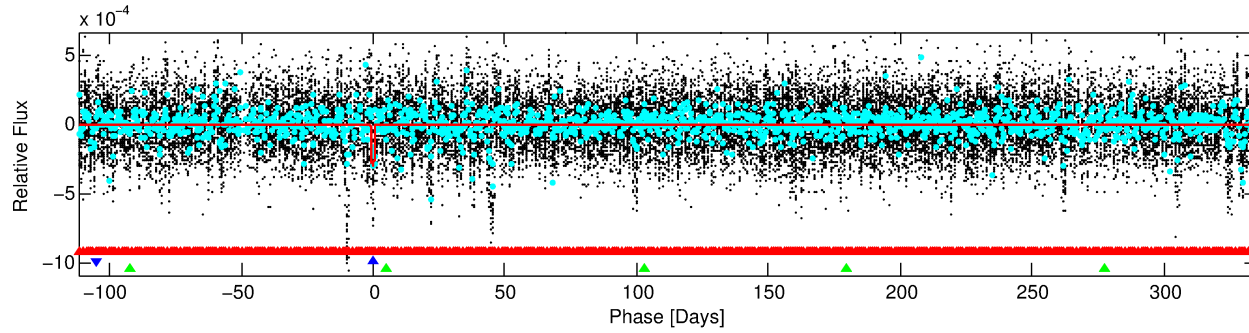
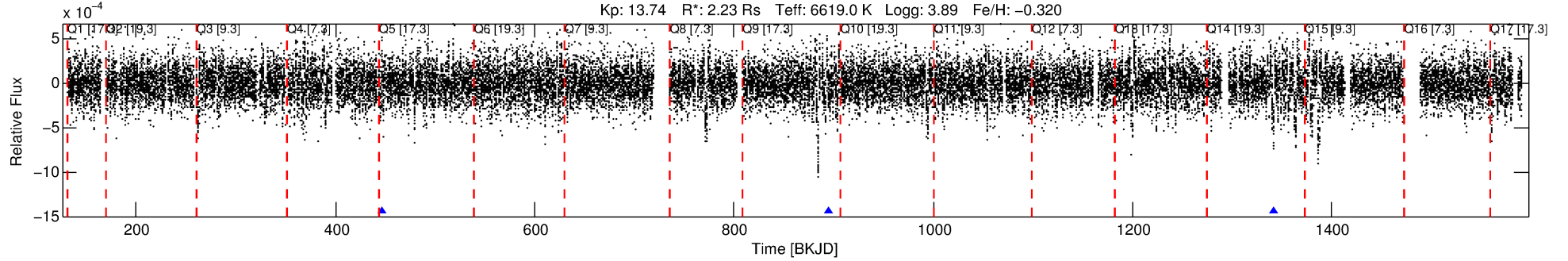
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010661976-02

No Significant Match Found

DV One-Page Summary

KIC: 10661976 Candidate: 2 of 3 Period: 447.096 d
KOI: K07356 Corr: No Ephemeris Match



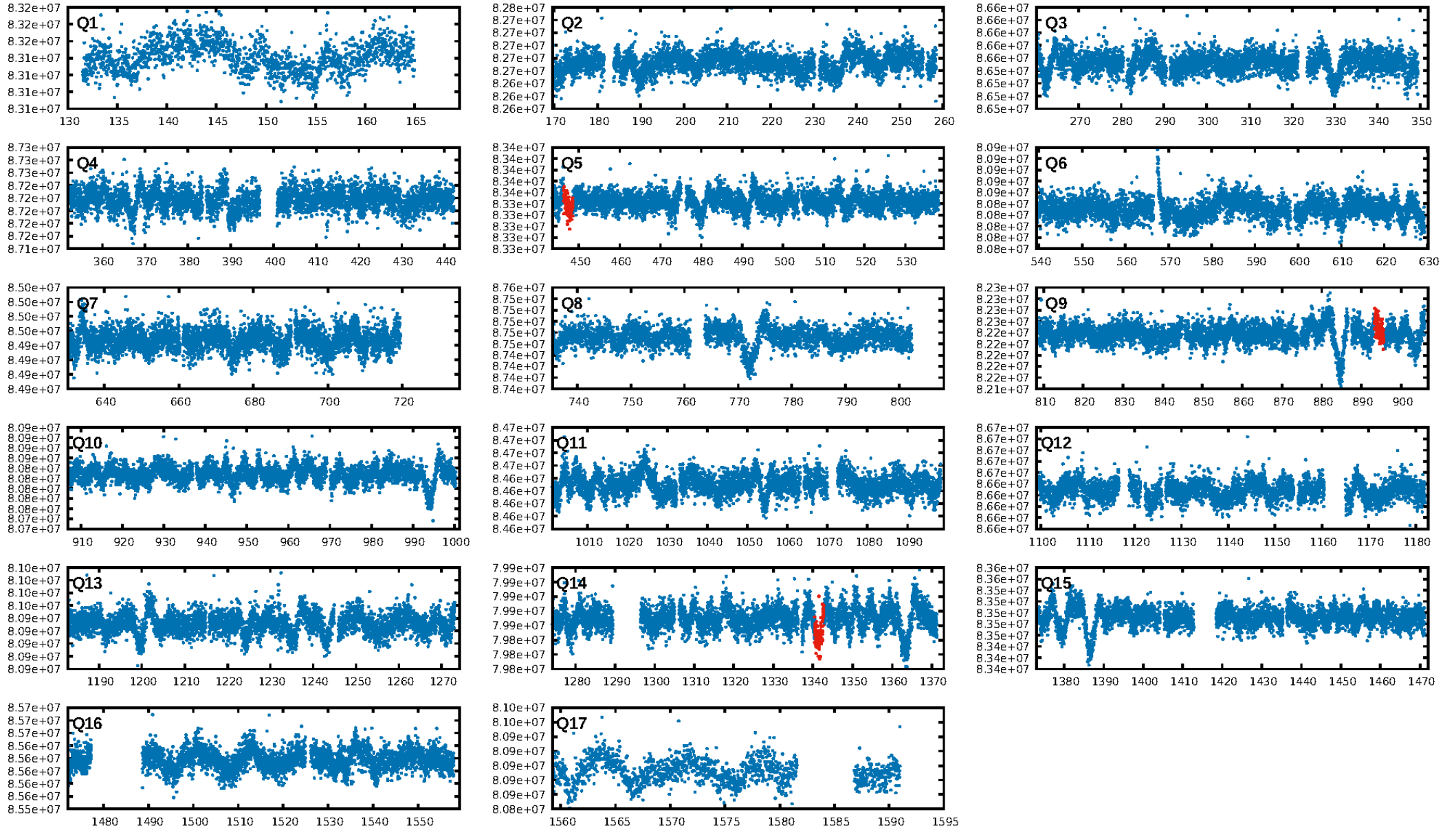
DV Fit Results:

Period = 447.09641 [0.14380] d
Epoch = 447.3817 [0.0937] BKJD
Rp/R* = 0.0176 [0.0060]
a/R* = 78.79 [146.02]
b = 0.79 [0.85]
Seff = 5.20 [3.83]
Teq = 385 [71] K
Rp = 4.28 [2.48] Re
a = 1.2828 [0.5798] AU
Ag = 3567.38 [3986.71] [0.89σ]
Teffp = 4600 [994] K [4.23σ]

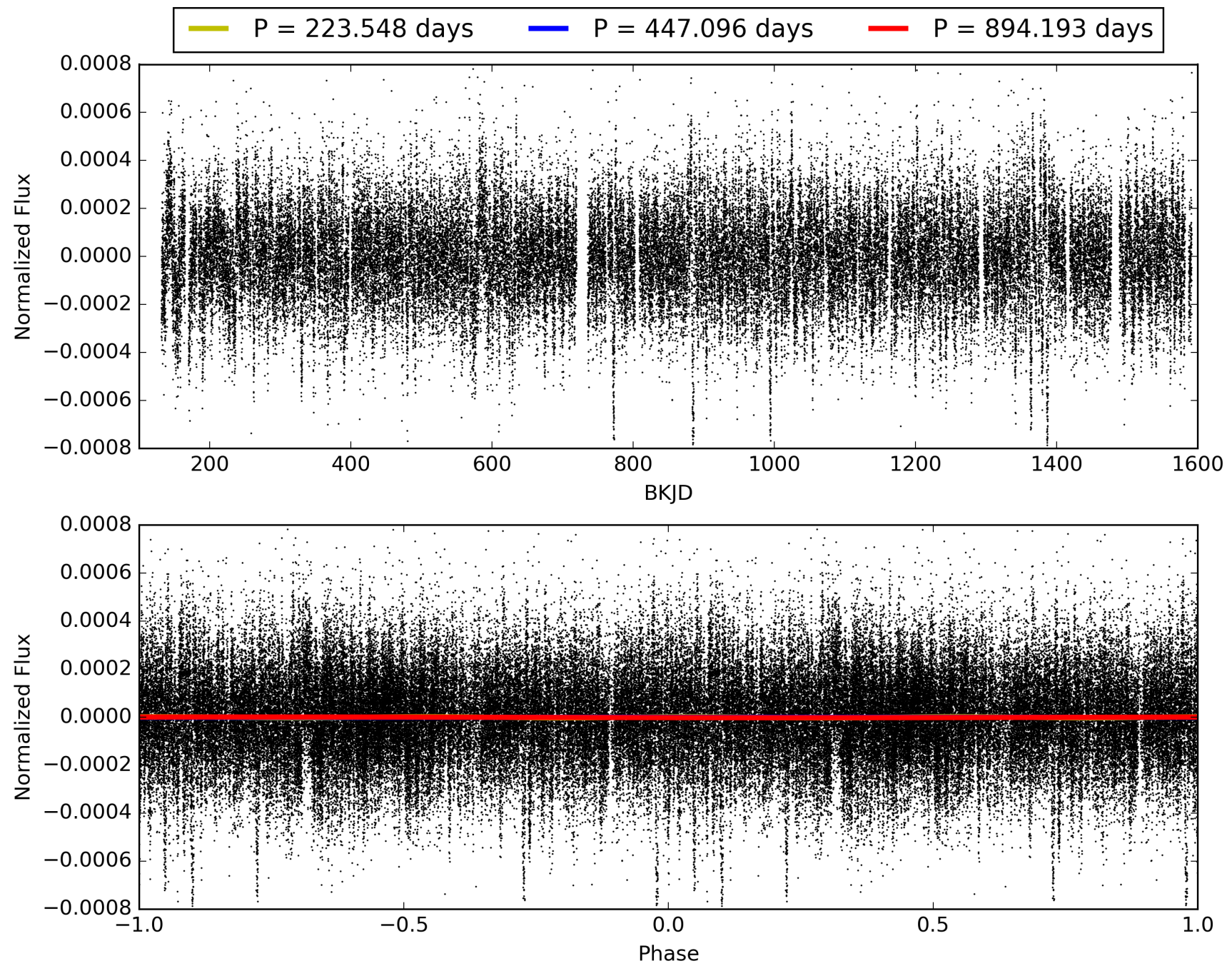
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [152.09σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.49e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -256.3
Centroid-sig: 47.9%
Centroid-so: 0.764 arcsec [1.21σ]
OotOffset-rm: 3.074 arcsec [5.24σ]
KicOffset-rm: 2.955 arcsec [6.77σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

TCE 010661976-02, PDC Light Curves

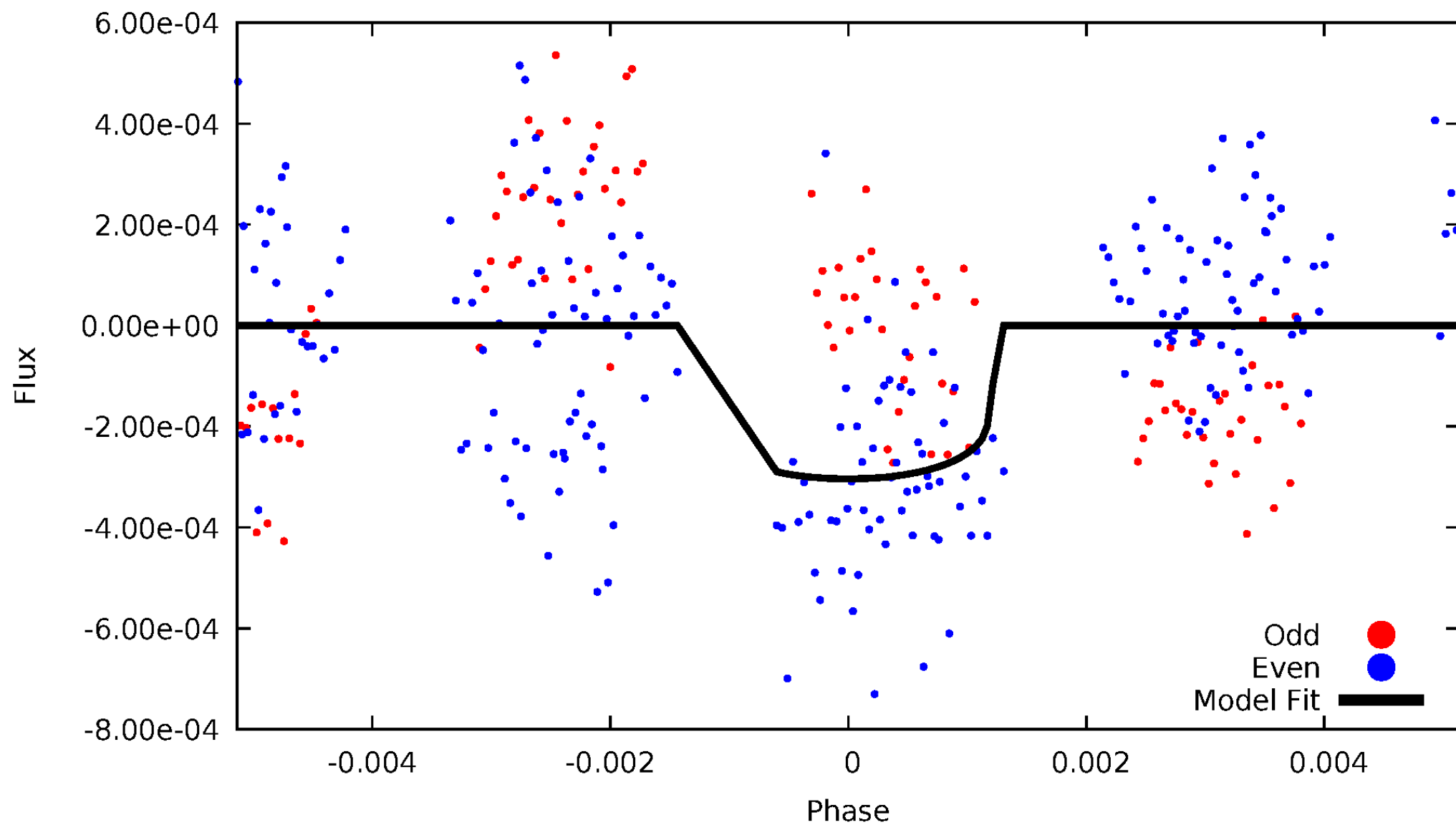


TCE 010661976-02



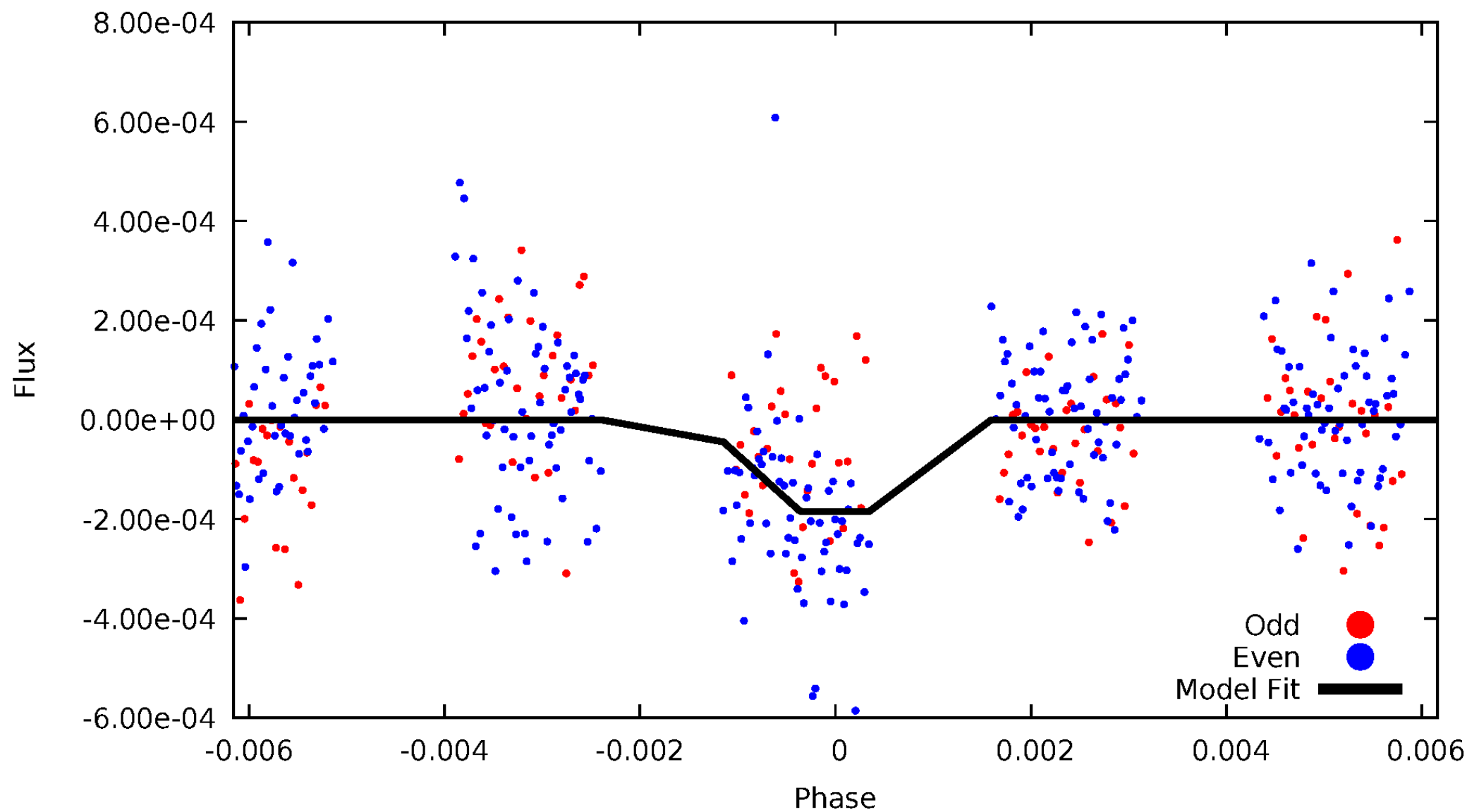
DV Odd/Even

TCE 010661976-02



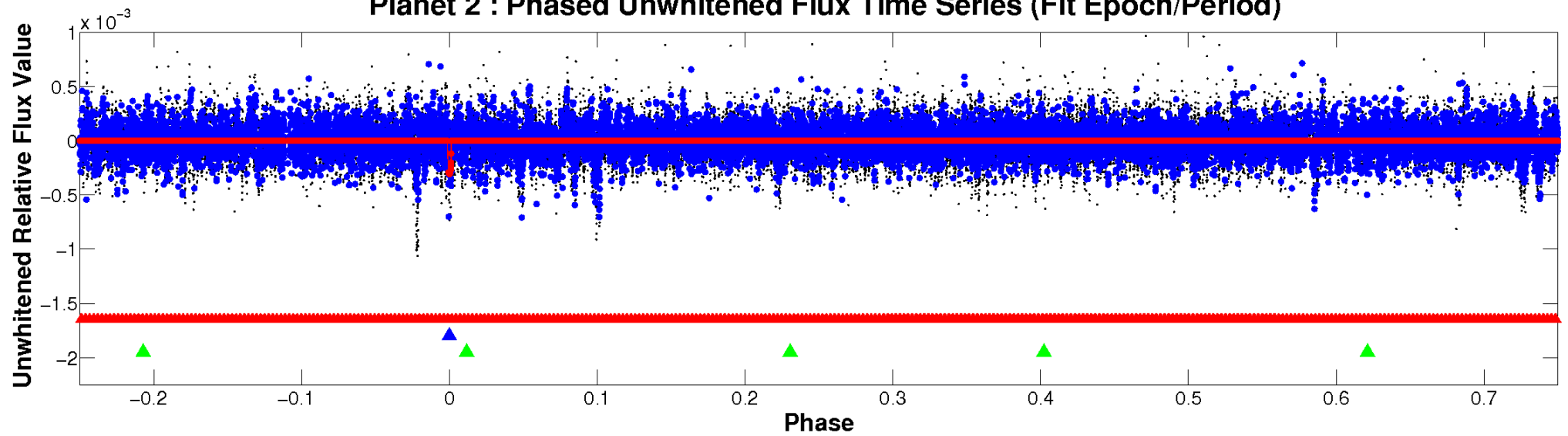
ALT Odd/Even

TCE 010661976-02

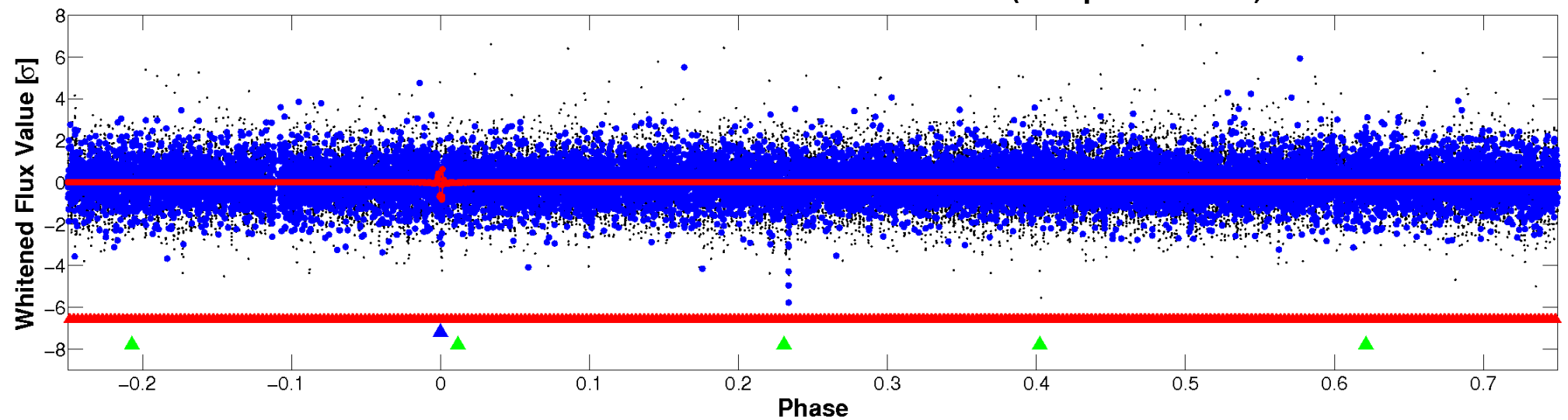


Non-Whitened Vs. Whitened Light Curve

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

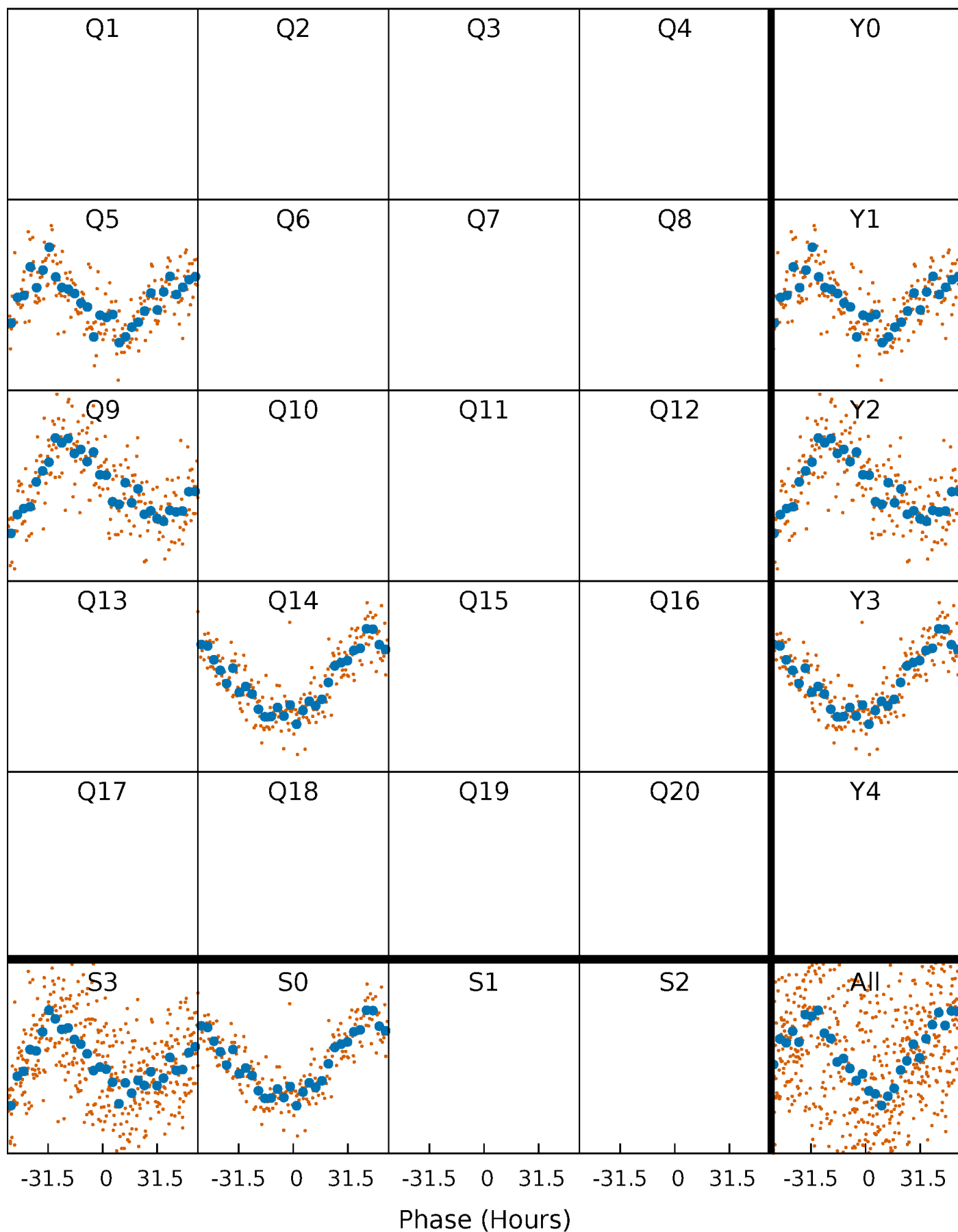


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



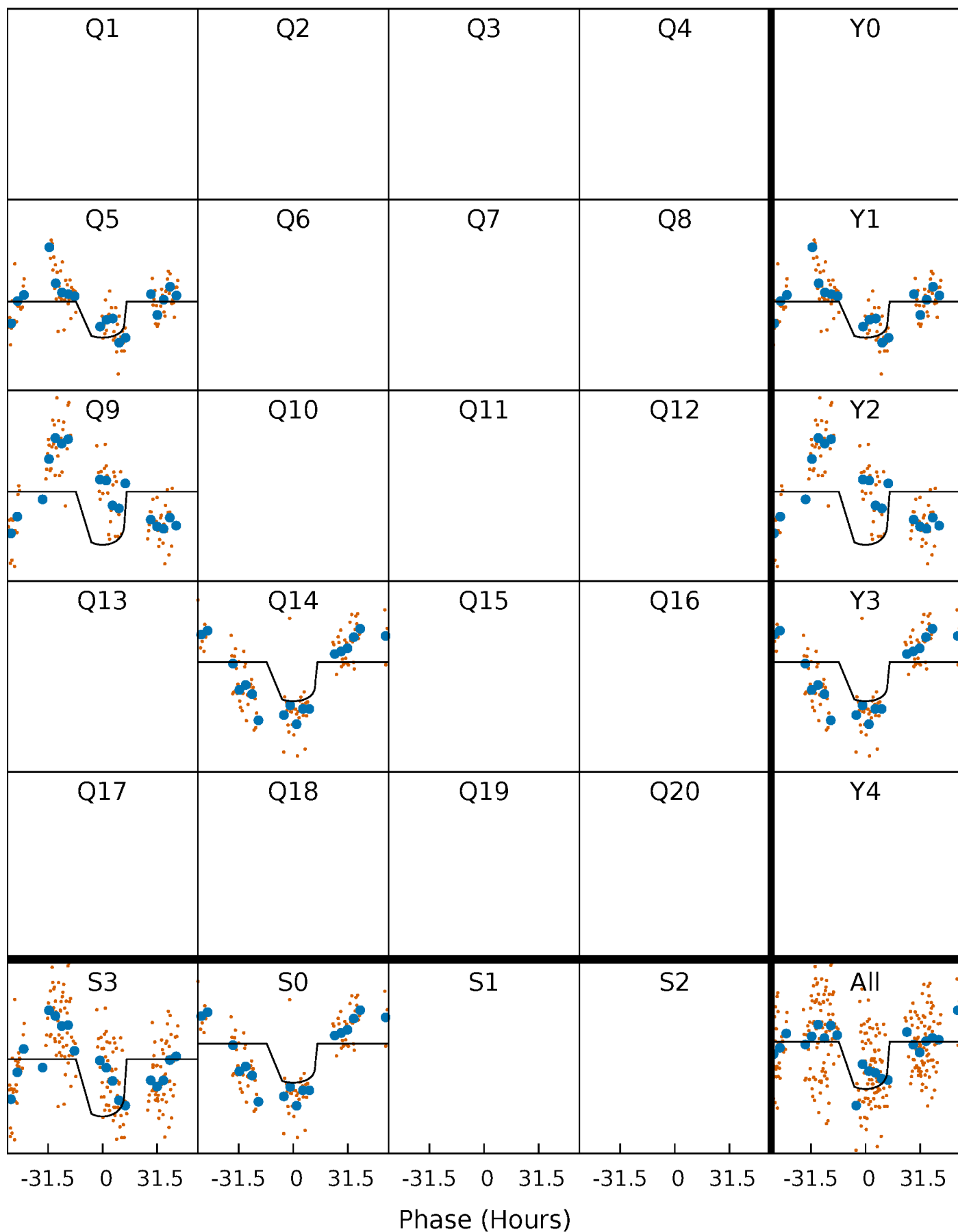
PDC Quarter-Phased Transit Curves

TCE 010661976-02 $P=447.096407$ Days $T_0=447.381733$ (BKJD)



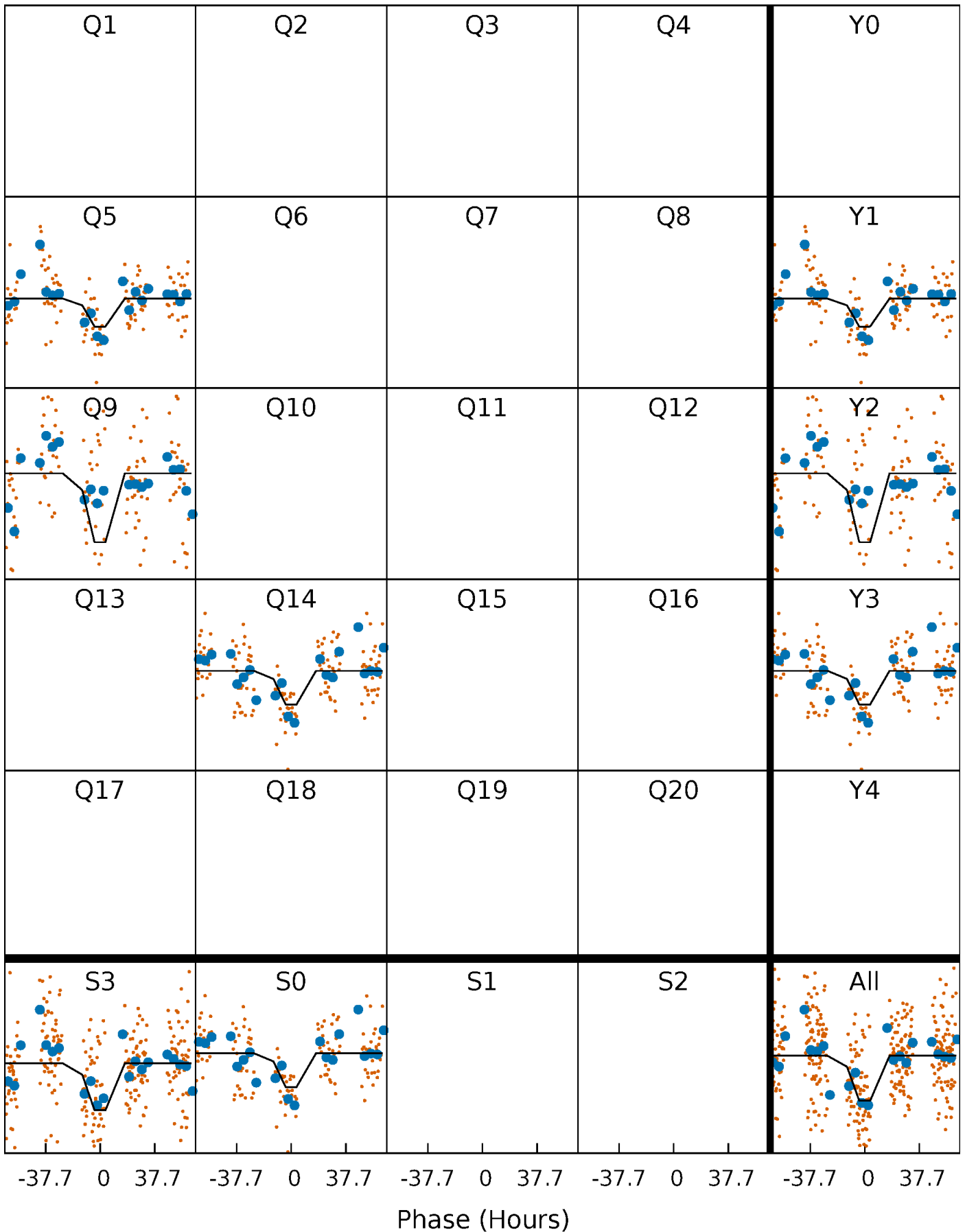
DV Quarter-Phased Transit Curves

TCE 010661976-02 $P=447.096407$ Days $T_0=447.381733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

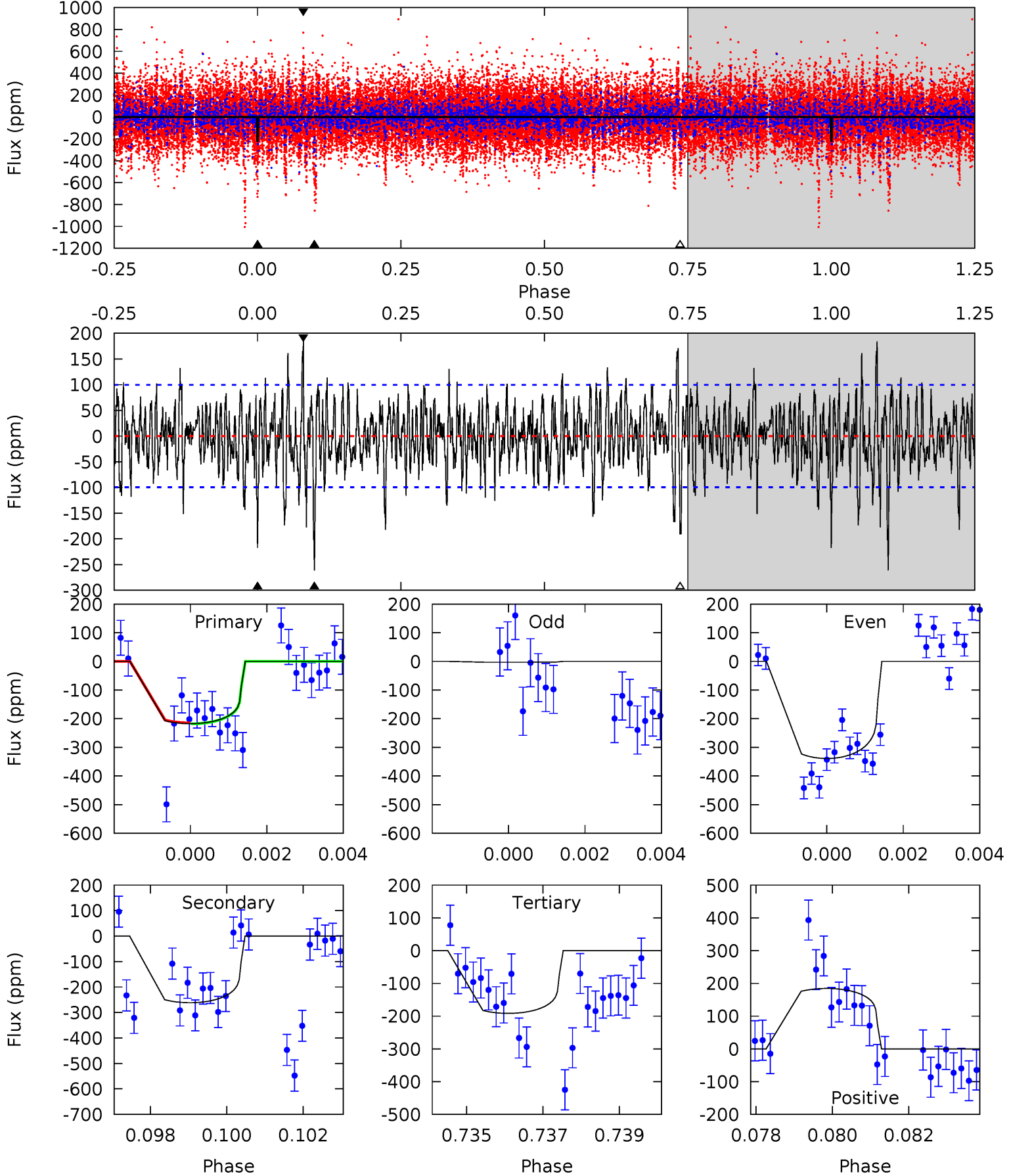
TCE 010661976-02 $P=446.950069$ Days $T_0=447.865177$ (BKJD)



DV Model-Shift Uniqueness Test

010661976-02, P = 447.096407 Days, E = 0.285326 Days

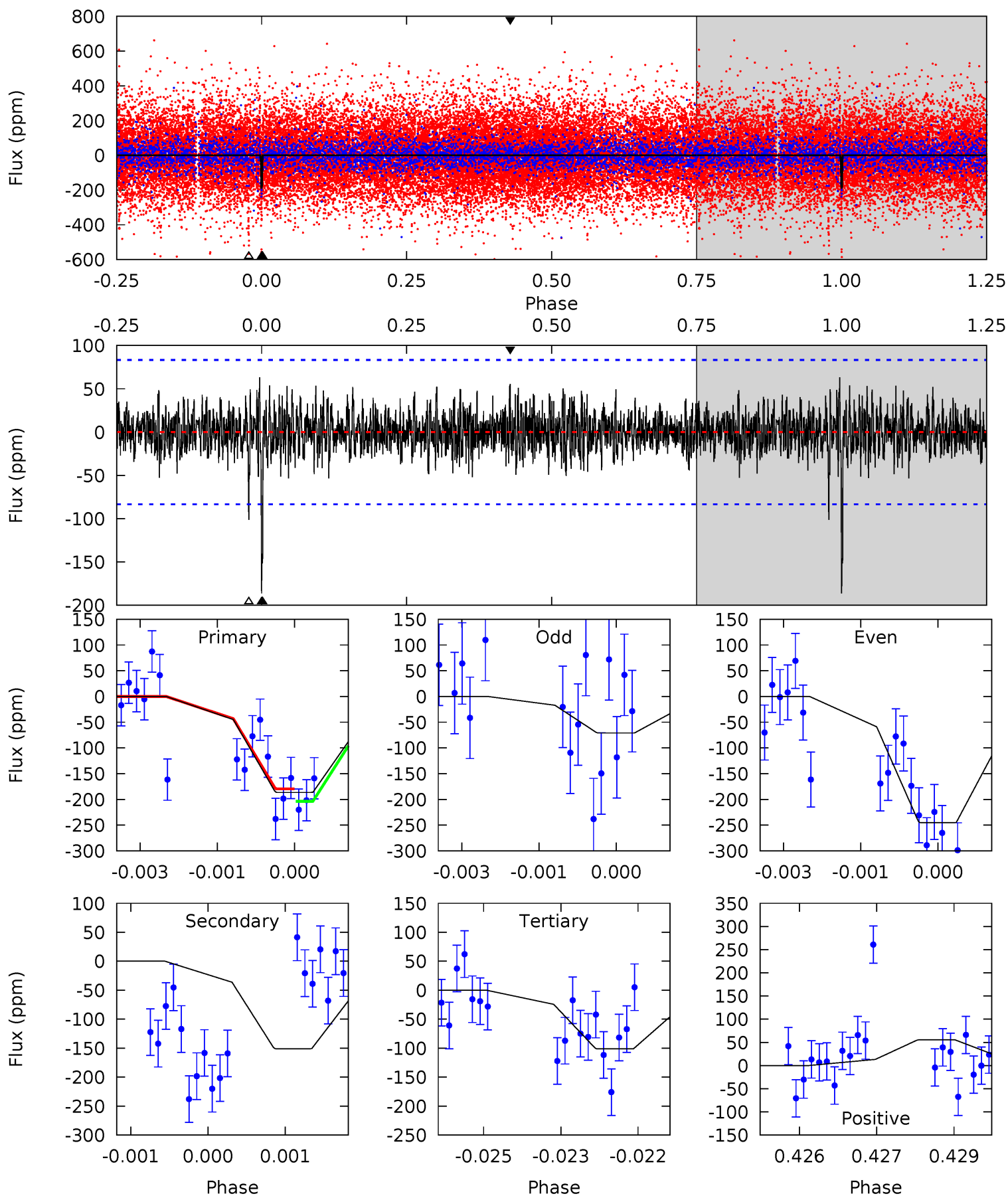
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.7 | 14.0 | 10.3 | 9.89 | 5.34 | 3.12 | 2.83 | 1.38 | 1.76 | 3.76 | 4.14 | 8.66 | 0.91 | 0.41 | 0.08 |



Alt Model-Shift Uniqueness Test

010661976-02, P = 446.950069 Days, E = 0.915108 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.0 | 9.75 | 6.54 | 3.58 | 5.39 | 3.19 | 1.12 | 5.49 | 8.46 | 3.21 | 6.17 | 5.41 | 0.77 | 0.25 | 0.62 |



Stellar Parameters For KIC 010661976

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6619^{+187}_{-234} | $3.890^{+0.424}_{-0.133}$ | $-0.320^{+0.300}_{-0.300}$ | $2.230^{+0.525}_{-1.049}$ | $1.408^{+0.191}_{-0.356}$ | $0.179^{+0.629}_{-0.070}$ |
| | +3%/-4% | +11%/-3% | +94%/-94% | +24%/-47% | +14%/-25% | +352%/-39% |
| Source | PHO54 | PHO54 | PHO54 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010661976-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|--------------------------|
| DV | -262 ± 19 | $3.93^{+1.66}_{-1.54}$ | 527^{+40}_{-67} | 6360^{+1687}_{-878} | 15424^{+24264}_{-7751} |
| Alt. | -151 ± 15 | $3.00^{+1.57}_{-1.48}$ | 527^{+41}_{-59} | 6291^{+2599}_{-981} | 14822^{+39151}_{-8279} |

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

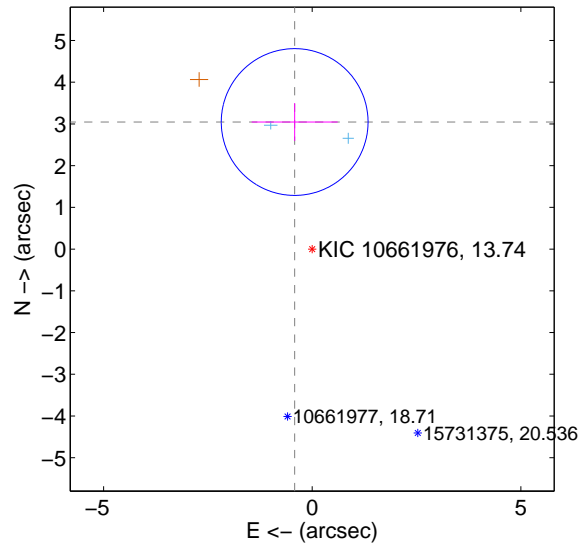
Supplemental centroid analysis for 010661976-02. Kepler magnitude: 13.74. Transit SNR 6.31

There are 2 quarters with good PRF difference image offsets

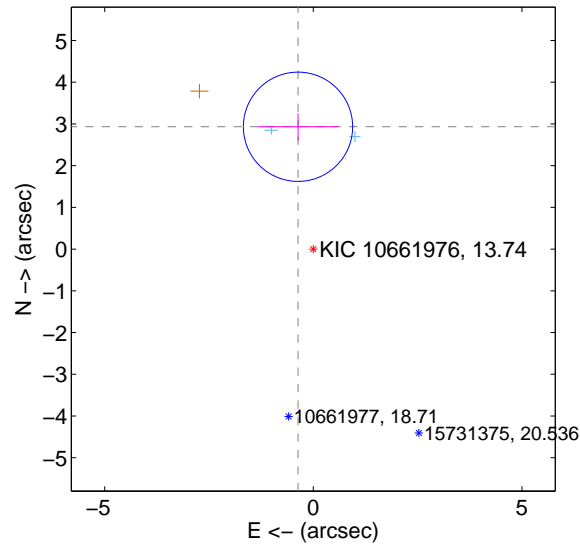
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 3.074 ± 0.586 | 5.24 | 0.421 ± 1.028 | 3.045 ± 0.454 |
| PRF-fit source offset from KIC position | 2.955 ± 0.436 | 6.77 | 0.367 ± 0.967 | 2.932 ± 0.325 |
| photometric centroid source offset | 0.76 ± 0.63 | 1.21 | -0.72 ± 0.64 | -0.24 ± 0.60 |

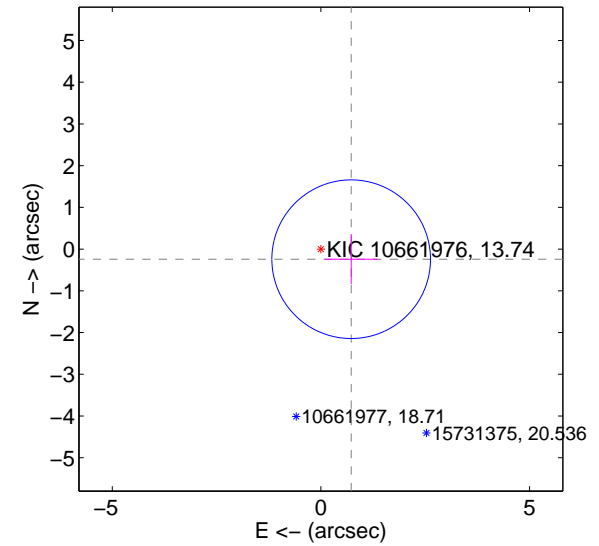
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

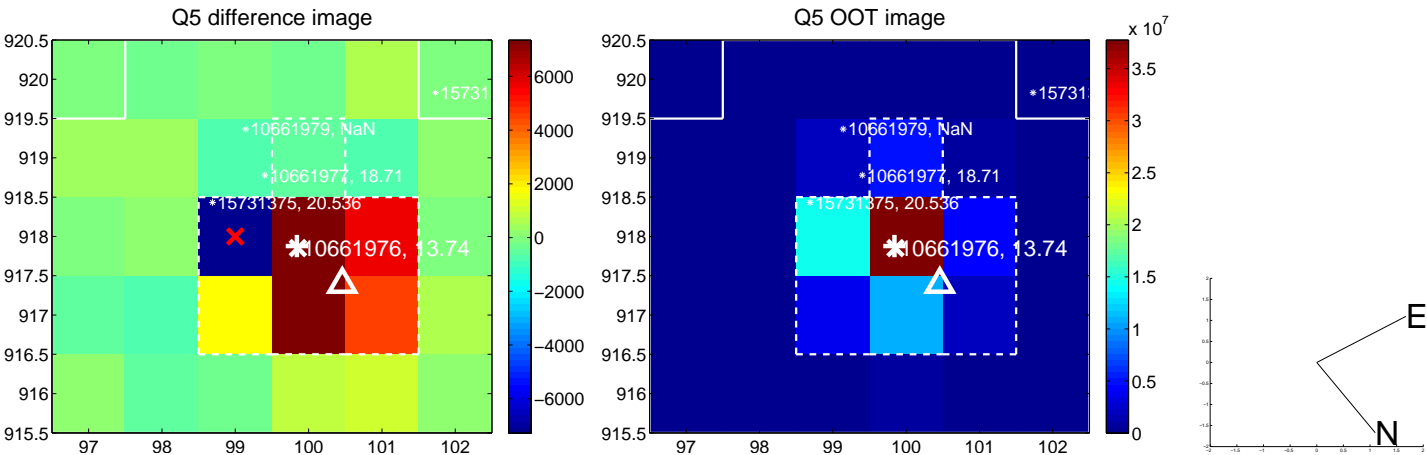


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

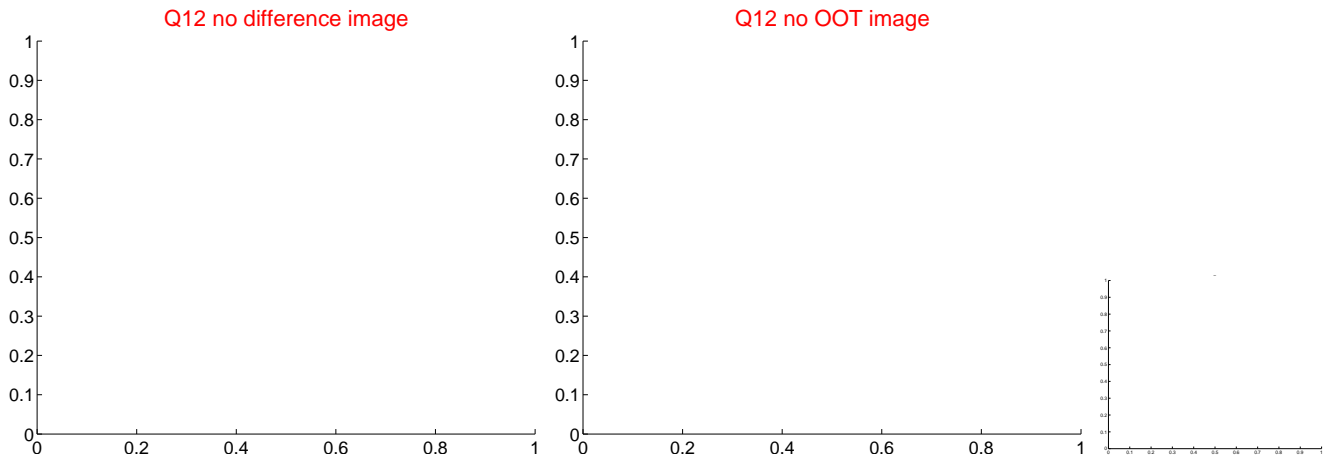
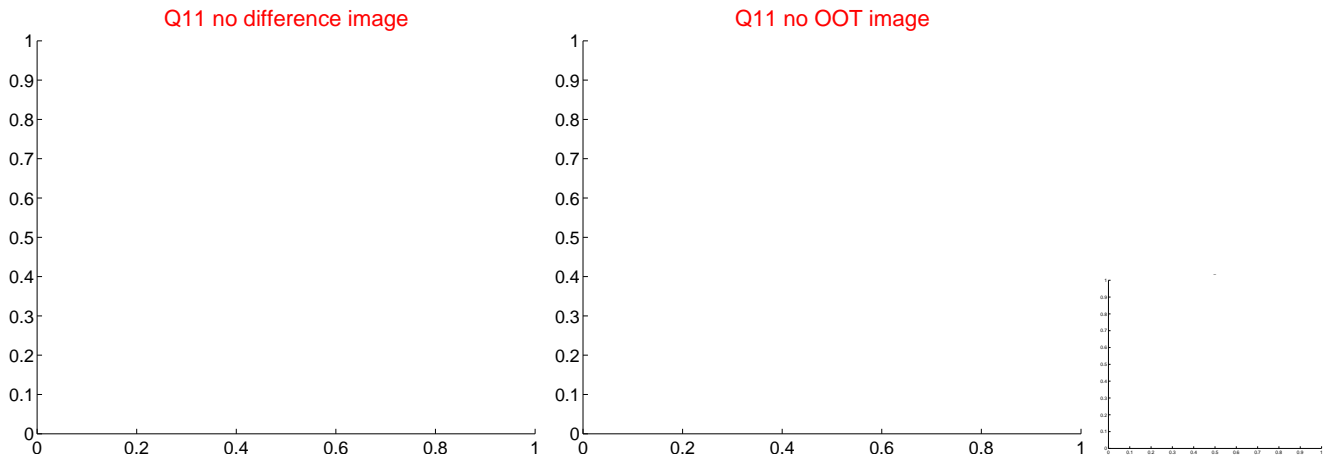
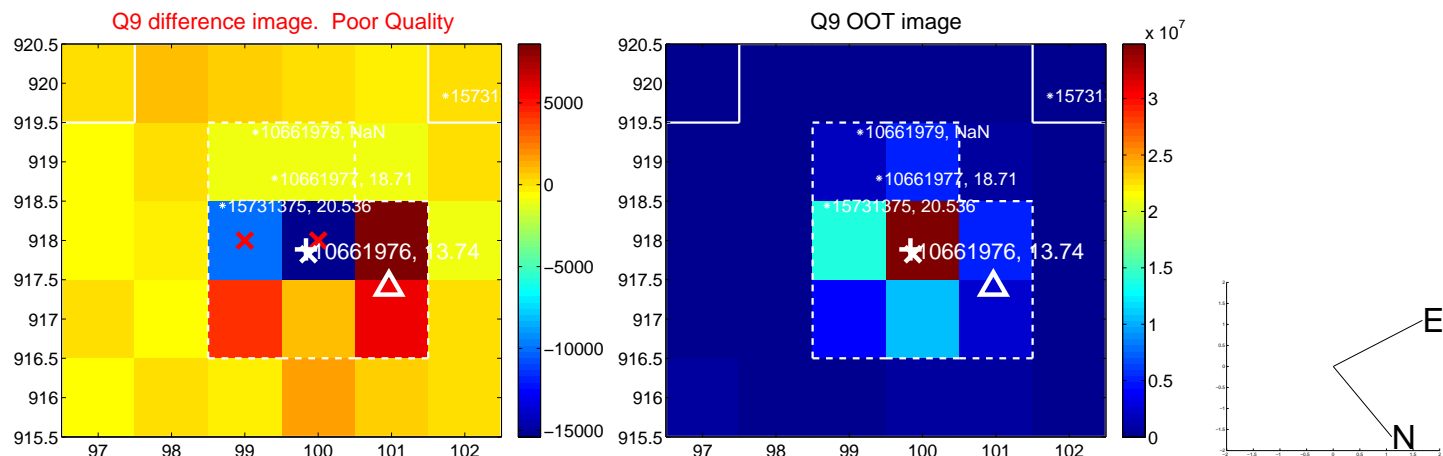
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



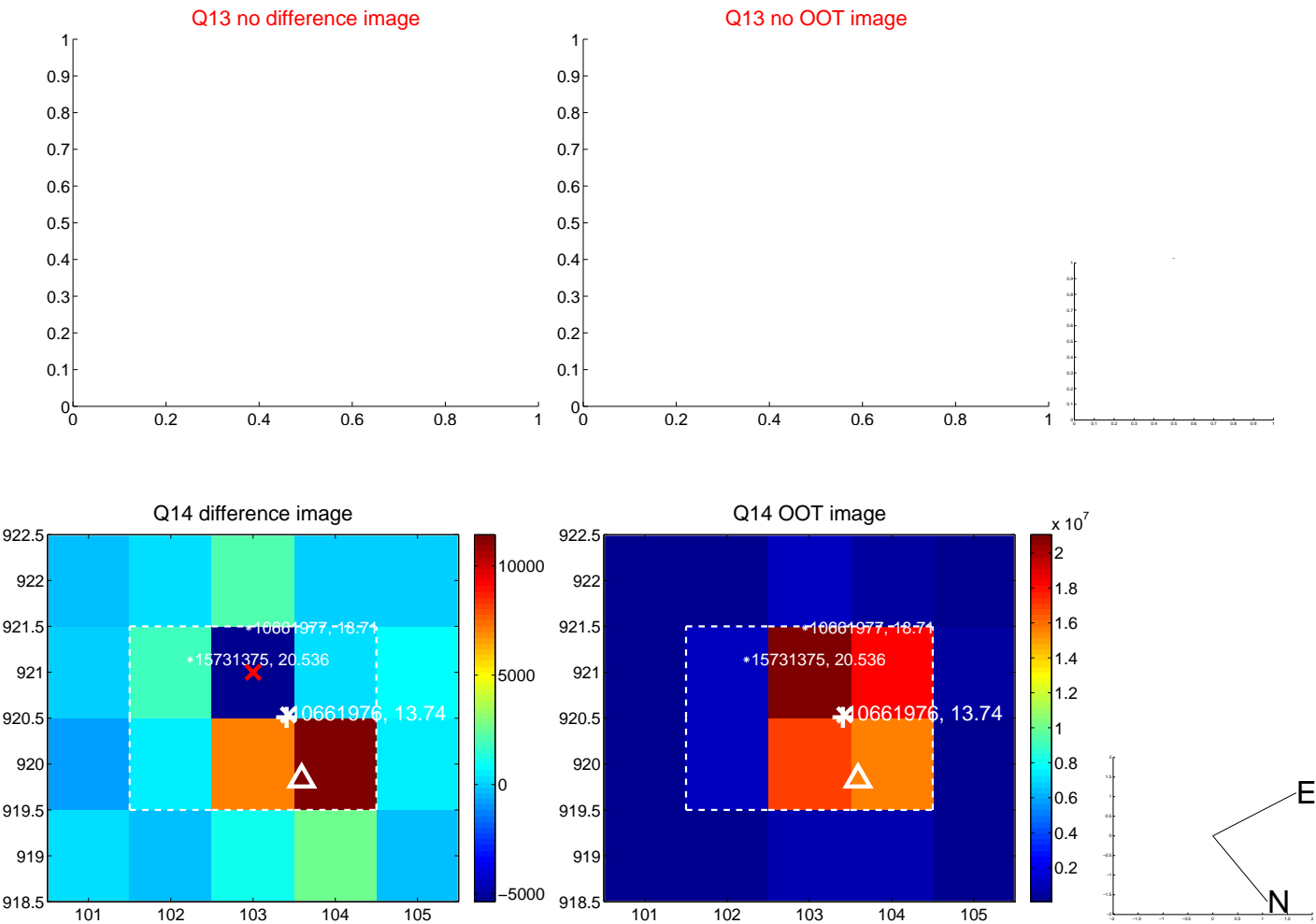
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



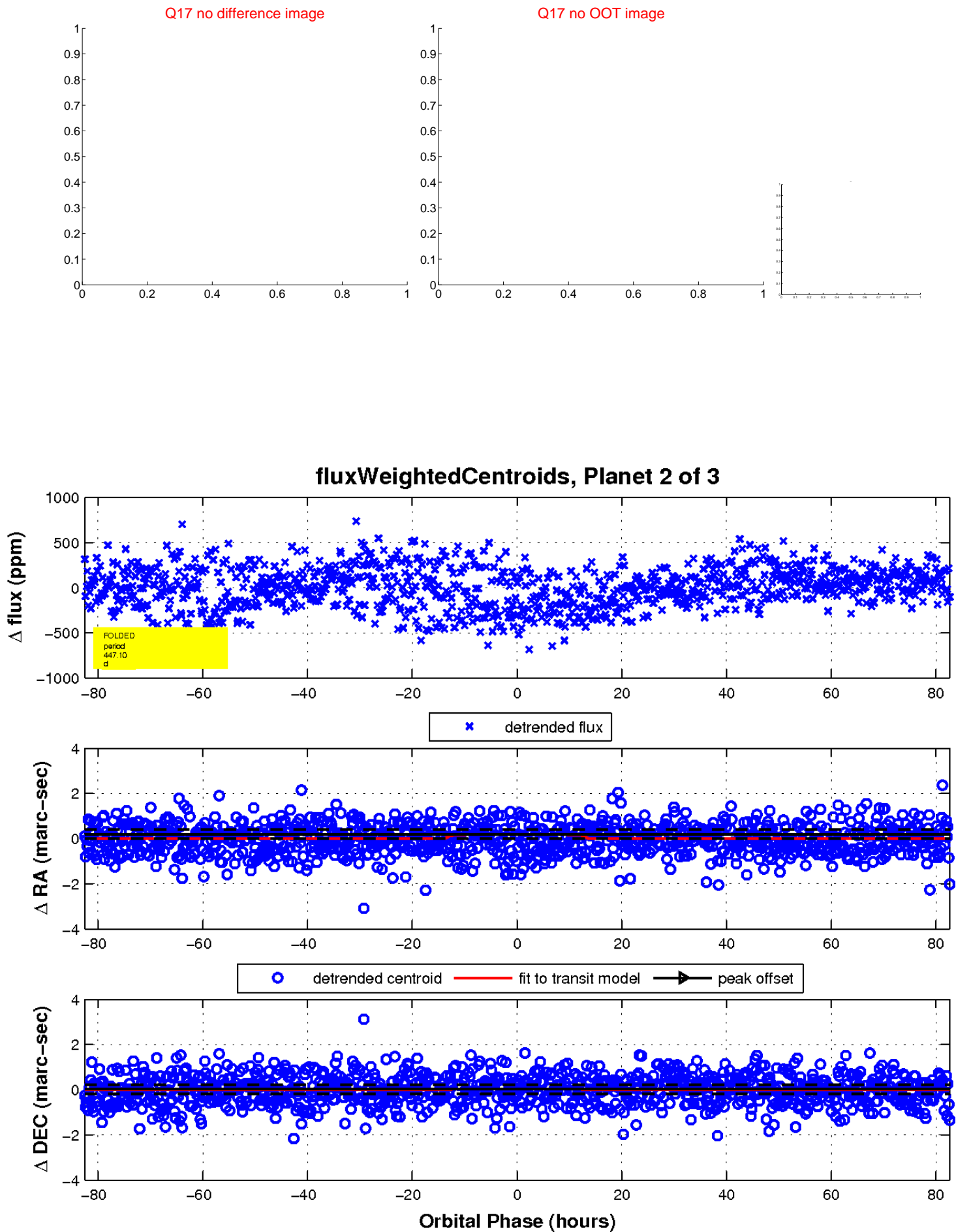
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



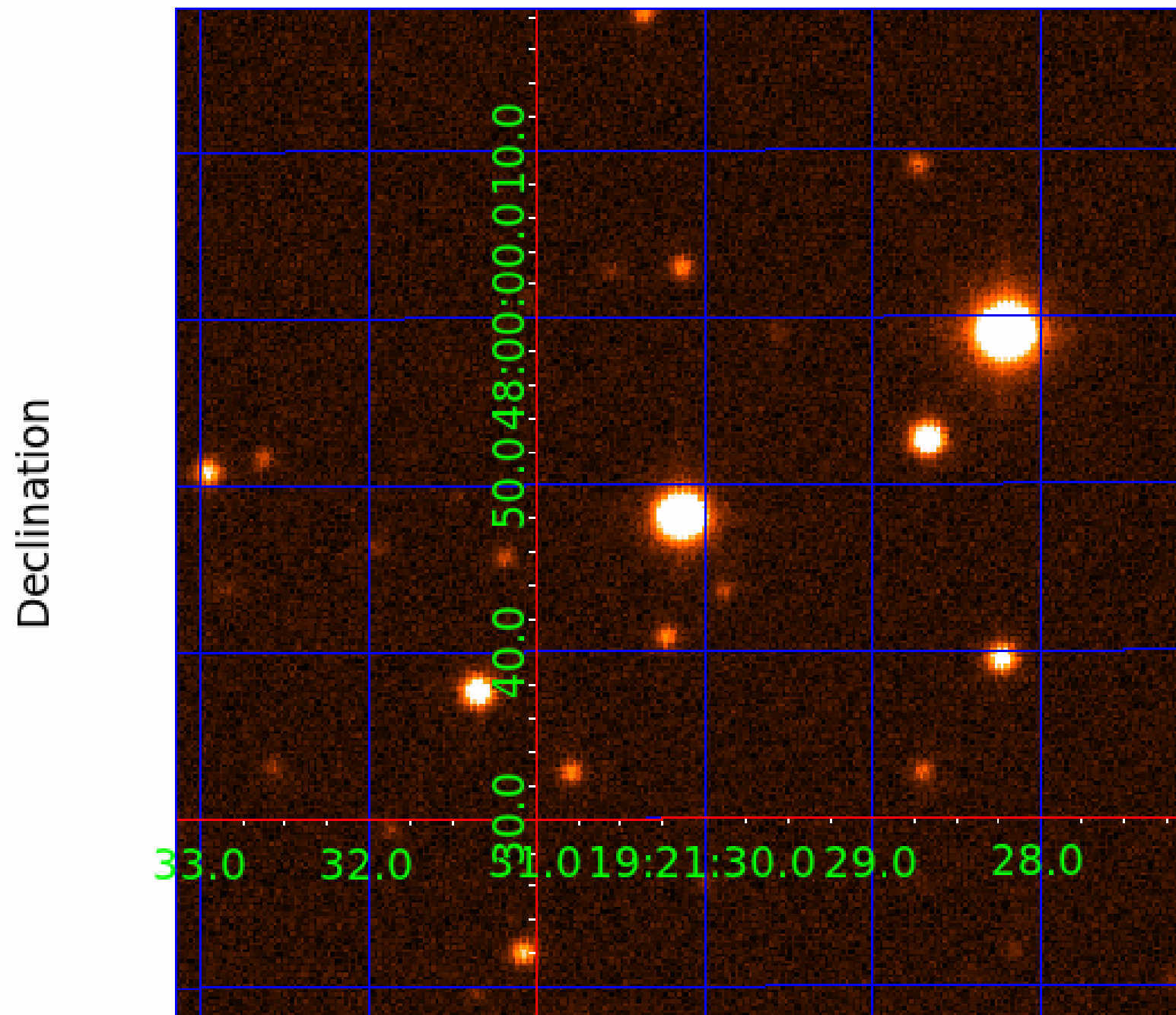
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010661976

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010661976-01 | OBS | 7356.01 | 1.231350 | 131.815835 | 16.4 | 4.612 | 7.6 | 8.4 | 2.23 | 6619 | 1.07 | 13461.45 |
| 010661976-02 | OBS | No | 447.096407 | 447.381733 | 303.9 | 27.545 | 10.8 | 6.3 | 2.23 | 6619 | 4.28 | 5.20 |
| 010661976-03 | OBS | No | 272.476874 | 354.771553 | 321.7 | 0.719 | 15.0 | 2.0 | 2.23 | 6619 | 4.32 | 10.06 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 010661976-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—HALO_GHOST—EPHEM_MATCH |
| 010661976-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010661976-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

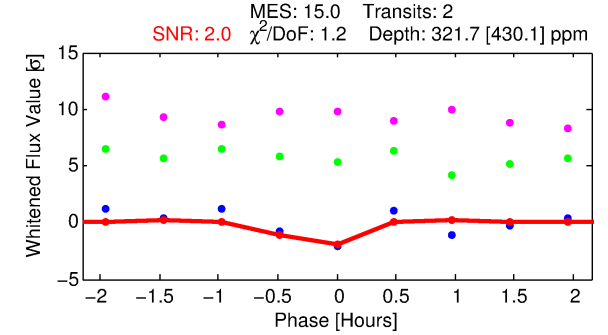
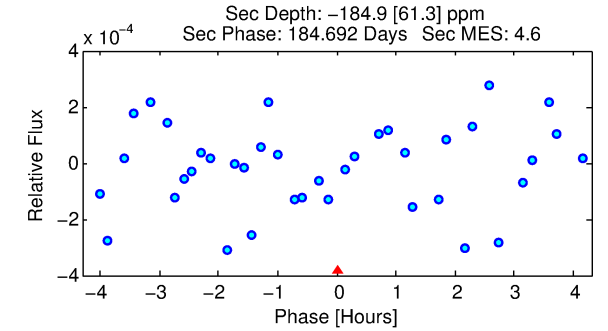
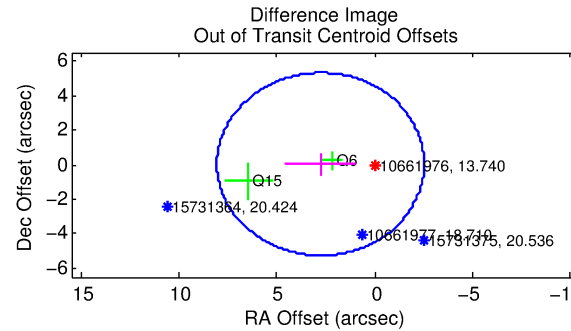
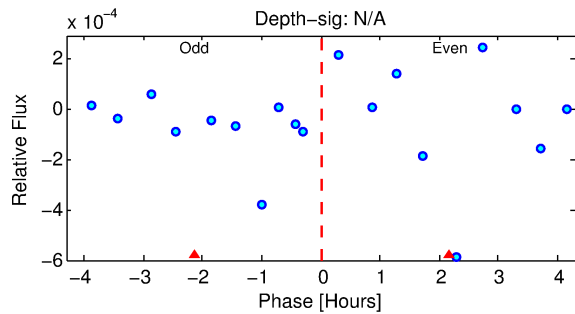
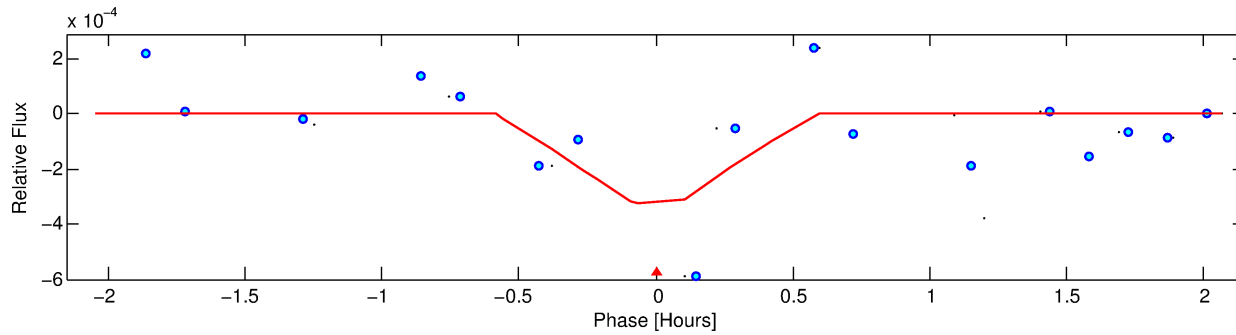
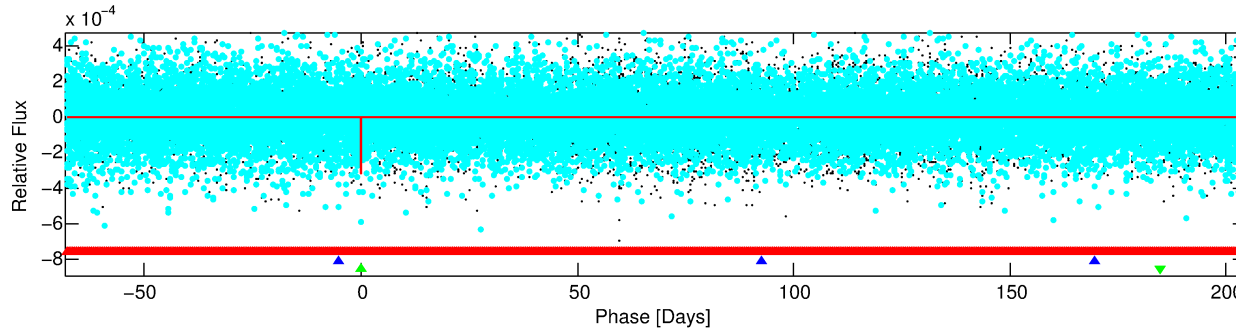
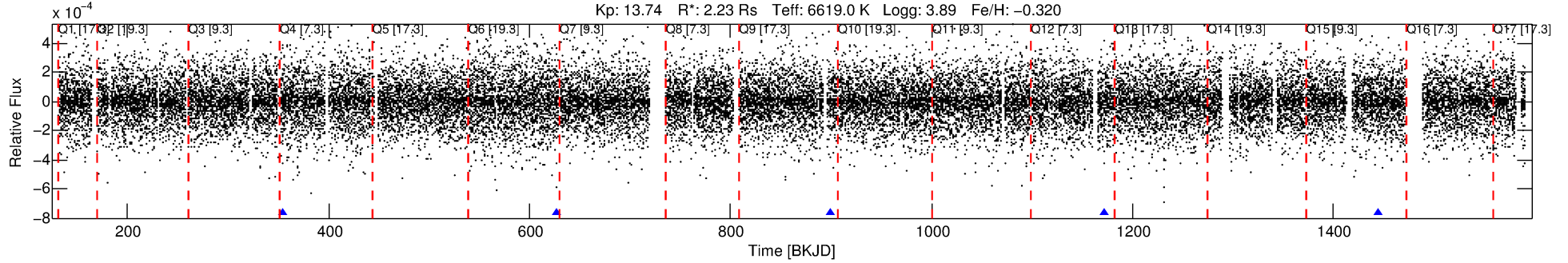
Ephemeris Match Information For 010661976-03

No Significant Match Found

DV One-Page Summary

KIC: 10661976 Candidate: 3 of 3 Period: 272.477 d
KOI: K07356 Corr: No Ephemeris Match

Kp: 13.74 R*: 2.23 Rs Teff: 6619.0 K Logg: 3.89 Fe/H: -0.320



DV Fit Results:

Period = 272.47687 [0.00819] d
Epoch = 354.7716 [0.0174] BKJD
Rp/R* = 0.0178 [0.1664]
a/R* = 2291.57 [105040.66]
b = 0.64 [45.71]
Seff = 10.06 [7.40]
Teq = 454 [84] K
Rp = 4.32 [40.55] Re
a = 0.9221 [0.4167] AU
Ag = N/A
Teffp = N/A

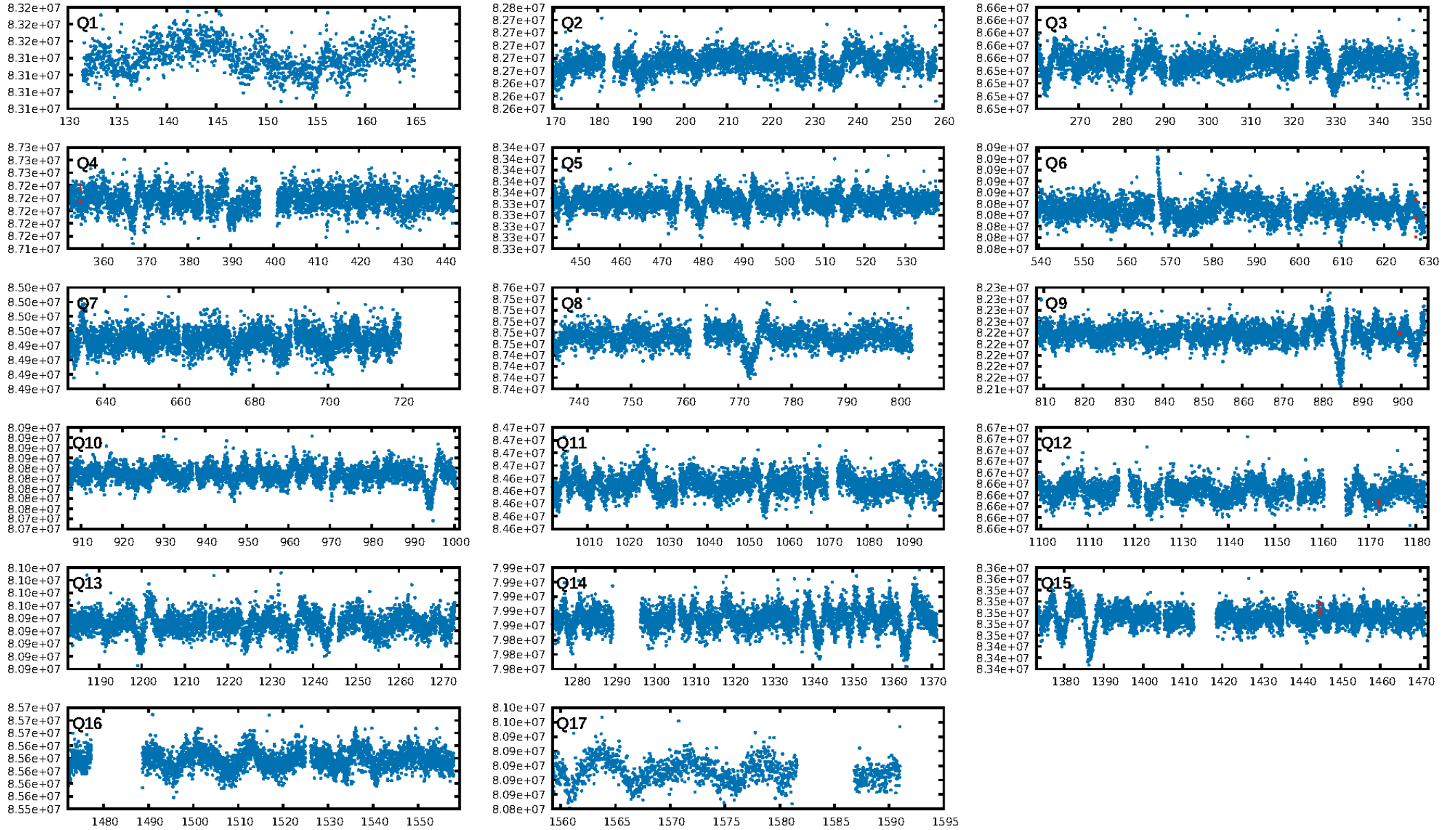
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1394.73σ]
LongPeriod-sig: 100.0% [152.09σ]
ModelChiSquare2-sig: 7.9%
ModelChiSquareGof-sig: 73.7%
Bootstrap-pfa: 2.05e-23
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.9597
Centroid-sig: 68.8%
Centroid-so: 1.257 arcsec [0.55σ]
OotOffset-rm: 2.772 arcsec [1.57σ]
KicOffset-rm: 2.667 arcsec [1.27σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.33 [1/3]

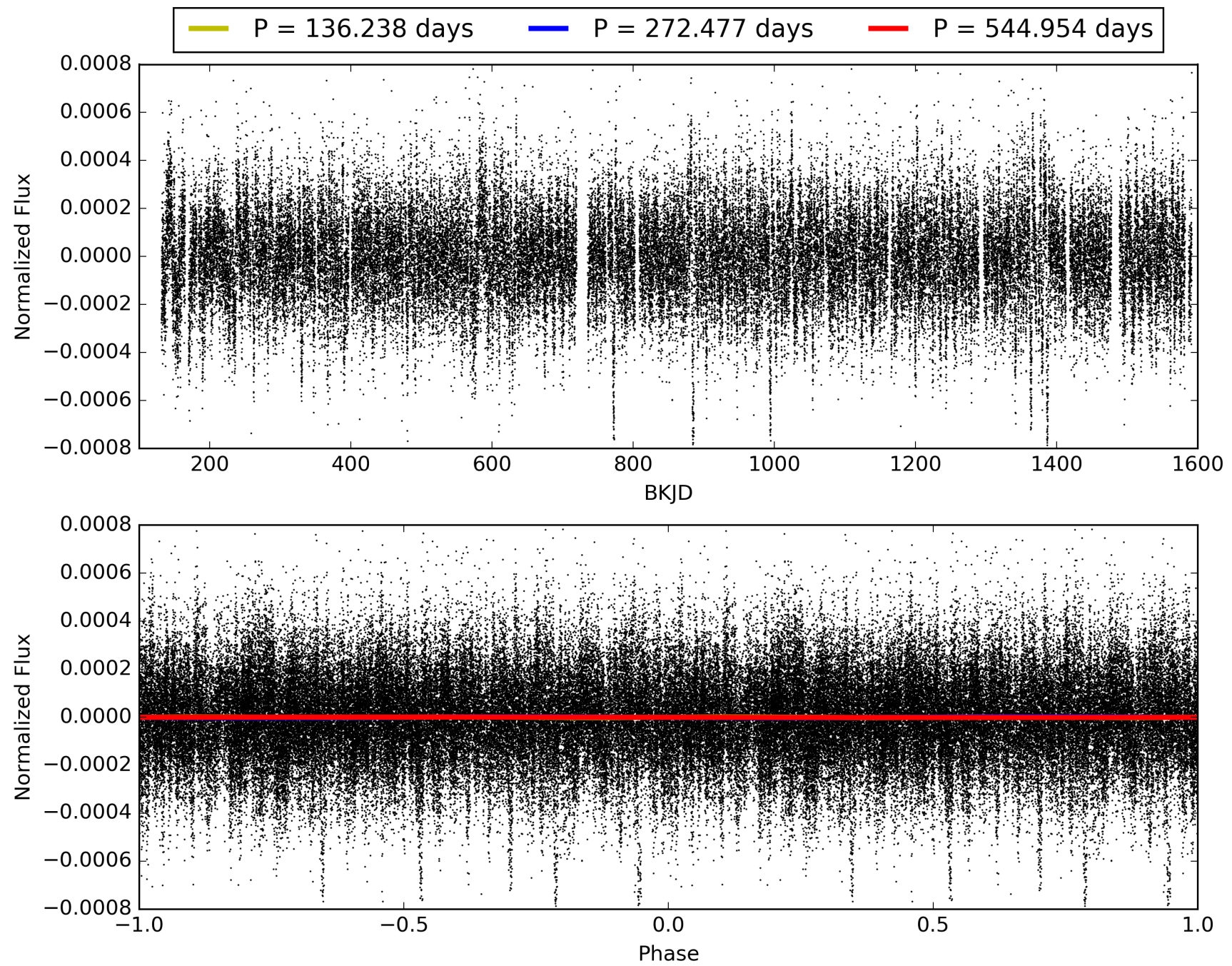
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:21:26 Z

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

TCE 010661976-03, PDC Light Curves

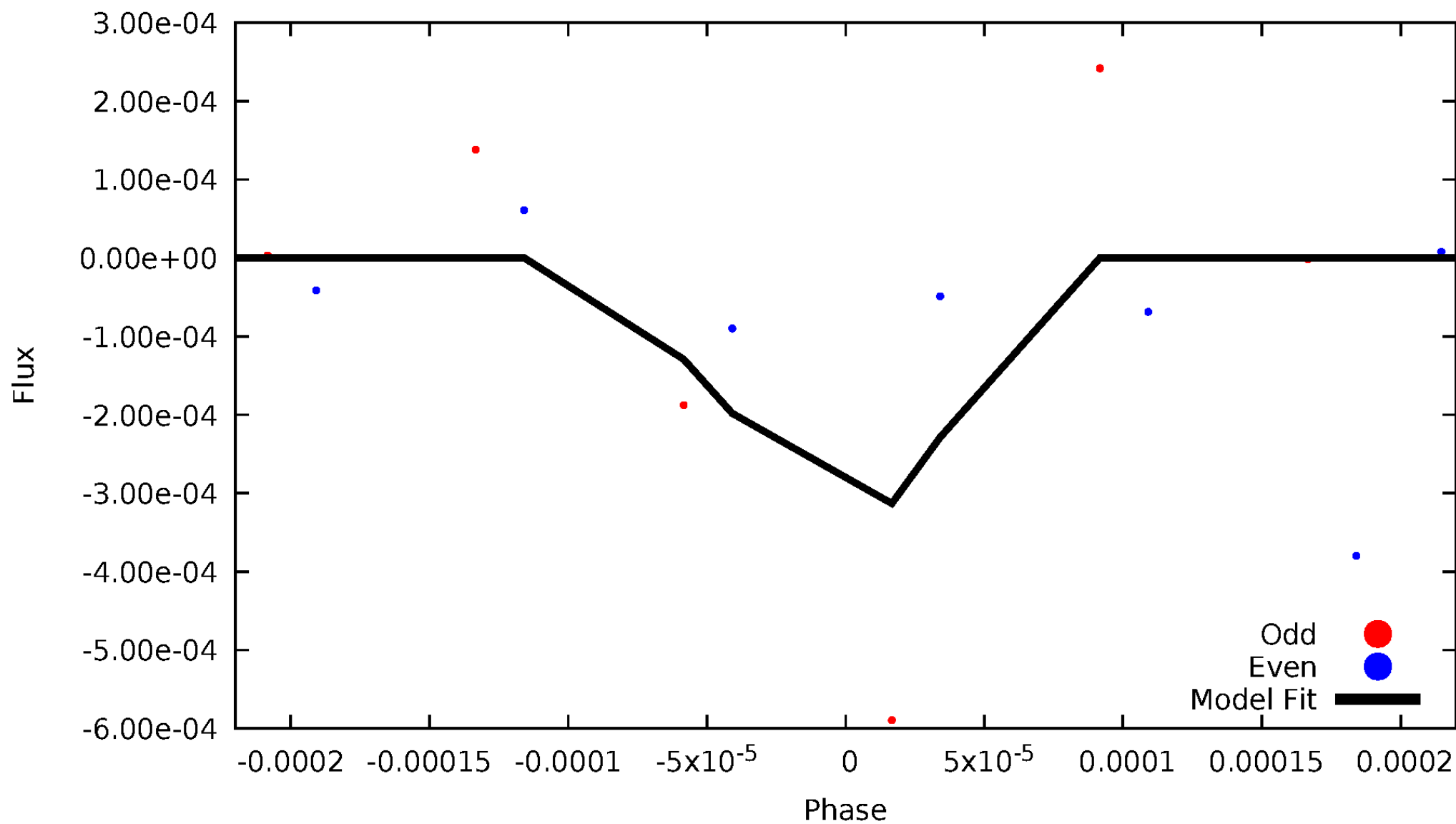


TCE 010661976-03



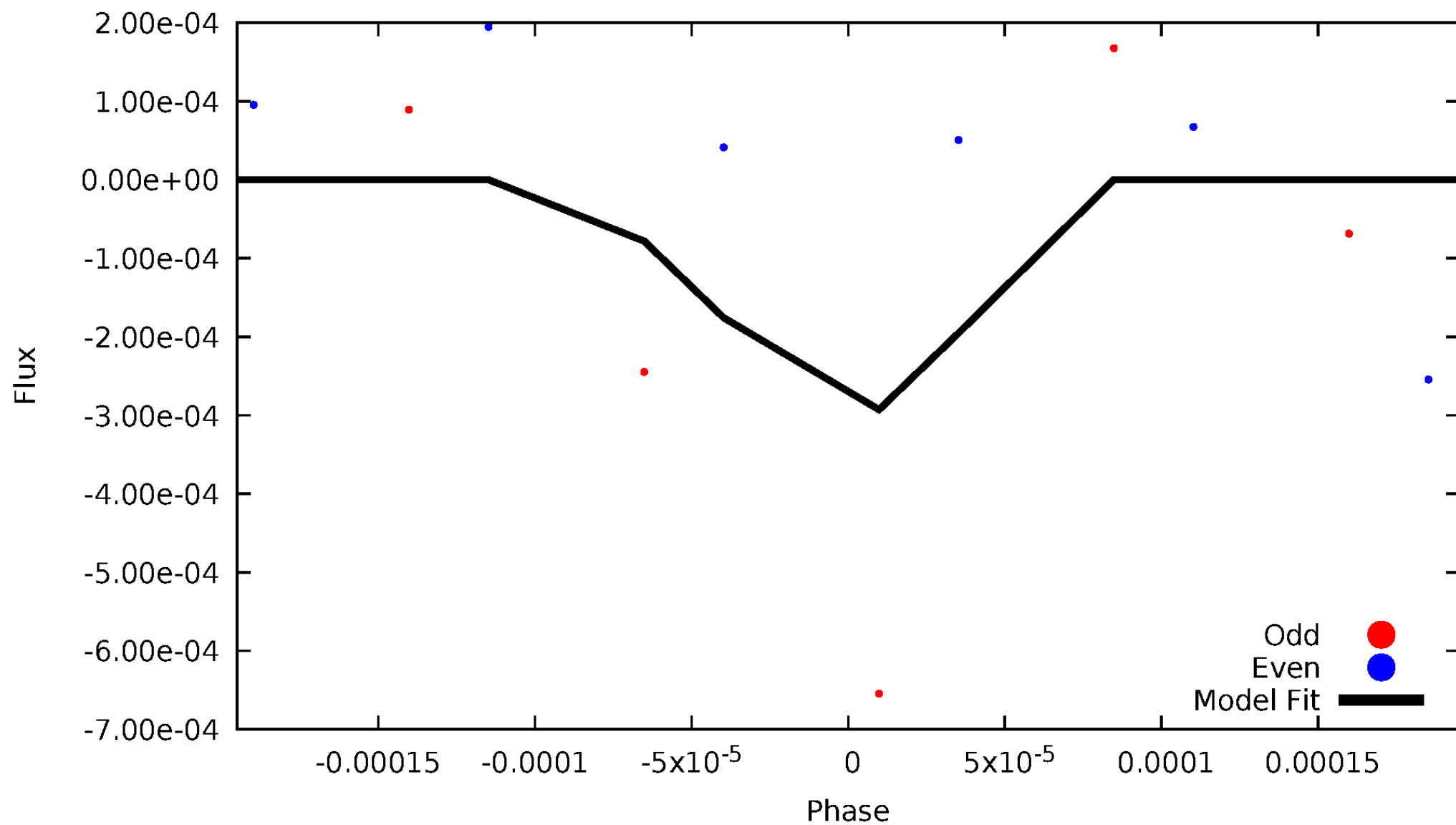
DV Odd/Even

TCE 010661976-03

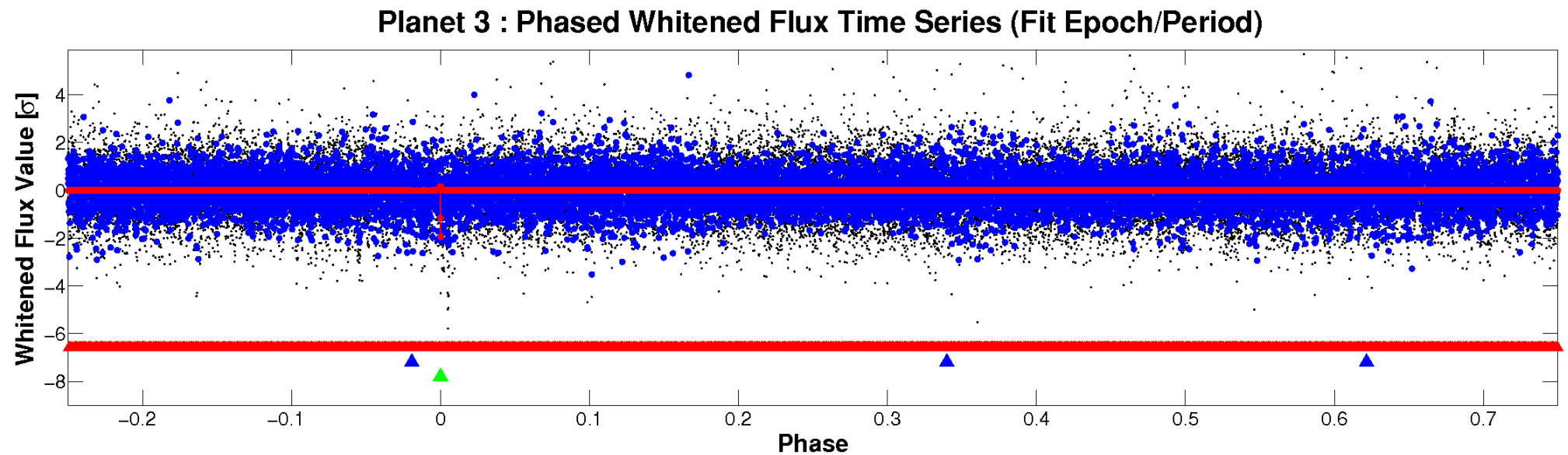
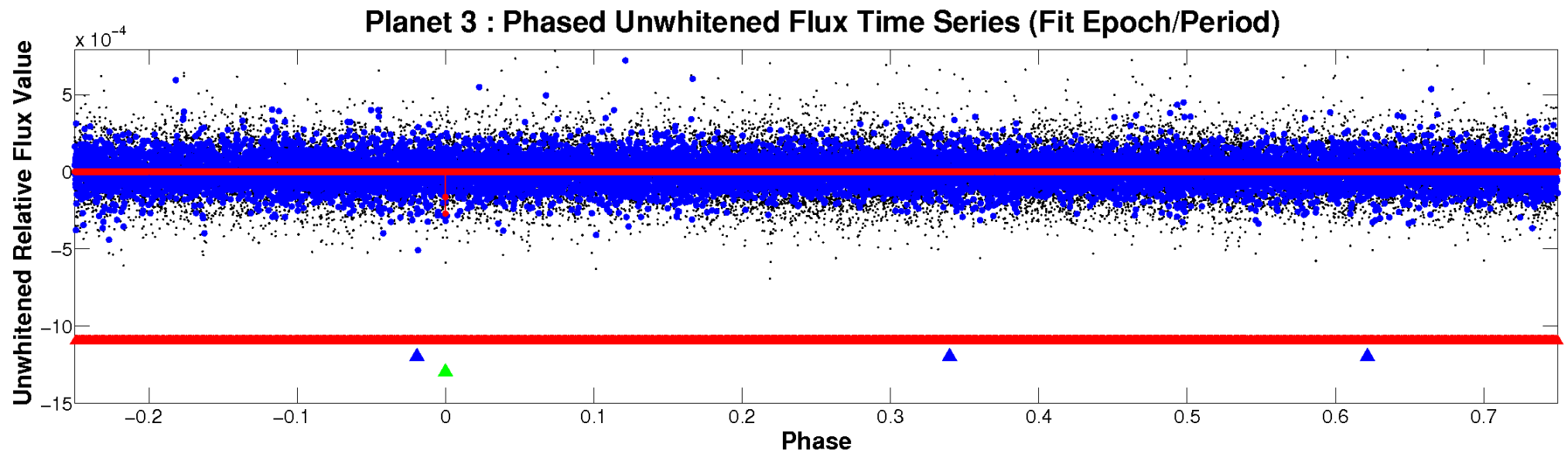


ALT Odd/Even

TCE 010661976-03

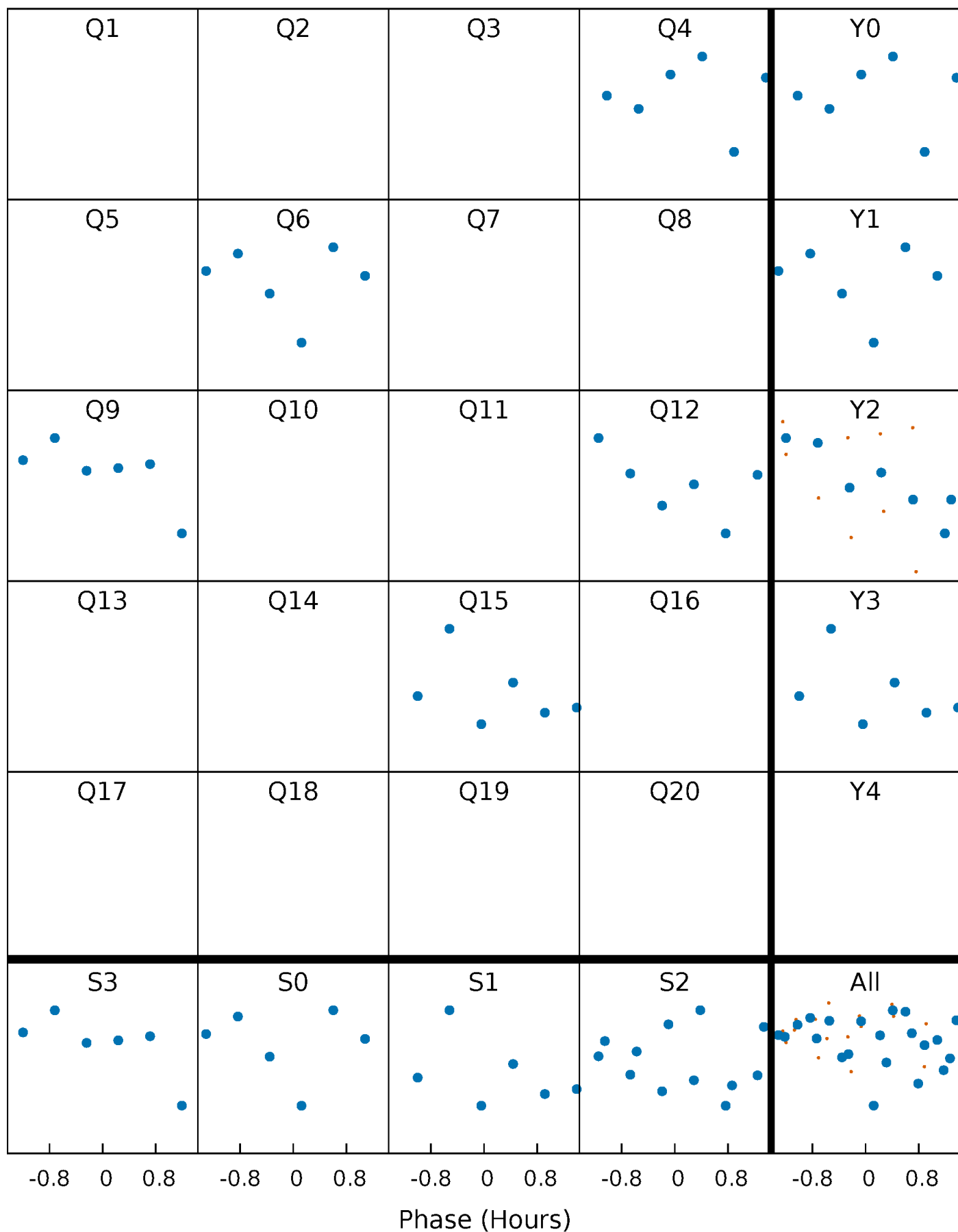


Non-Whitened Vs. Whitened Light Curve



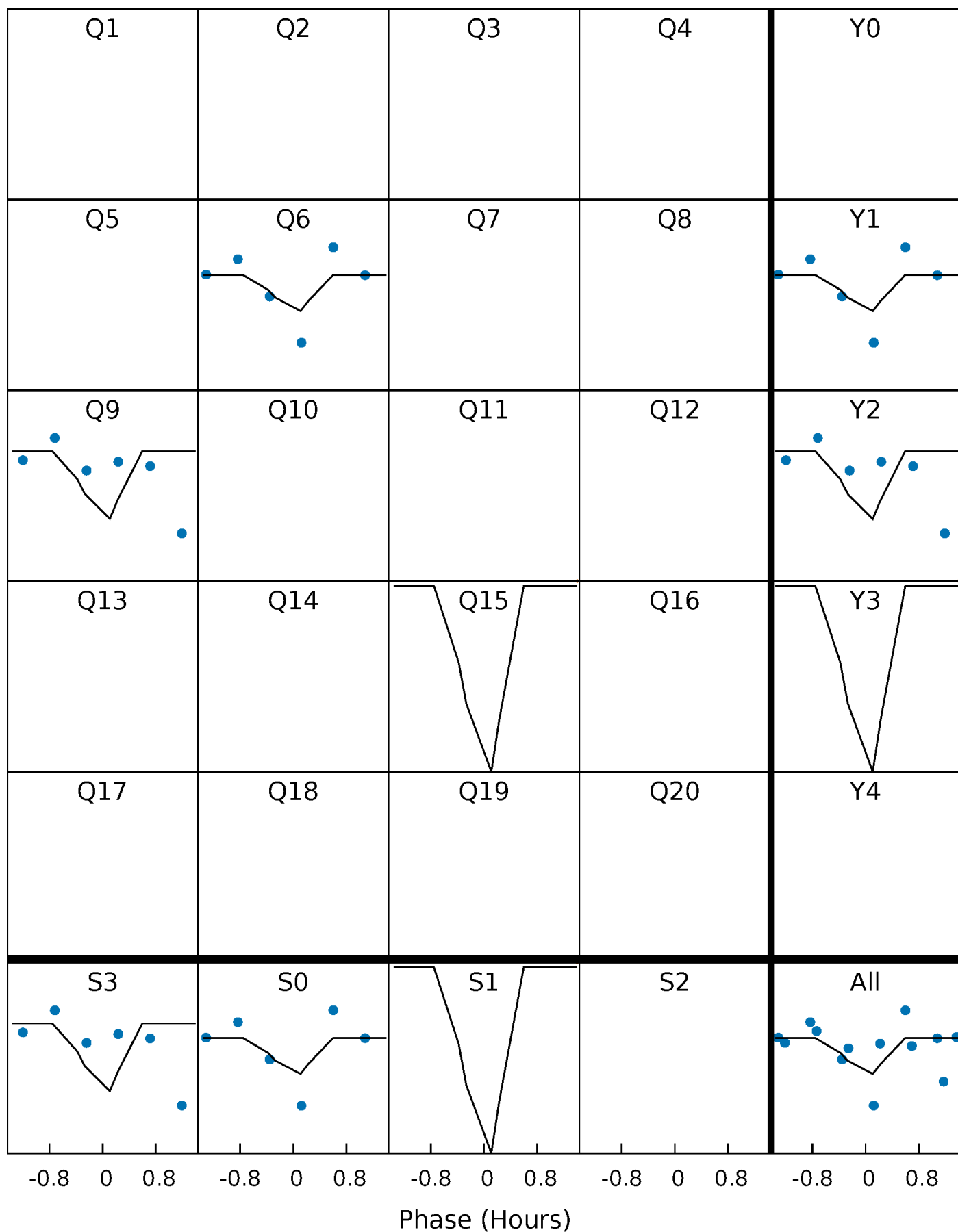
PDC Quarter-Phased Transit Curves

TCE 010661976-03 P=272.476874 Days $T_0=354.771553$ (BKJD)



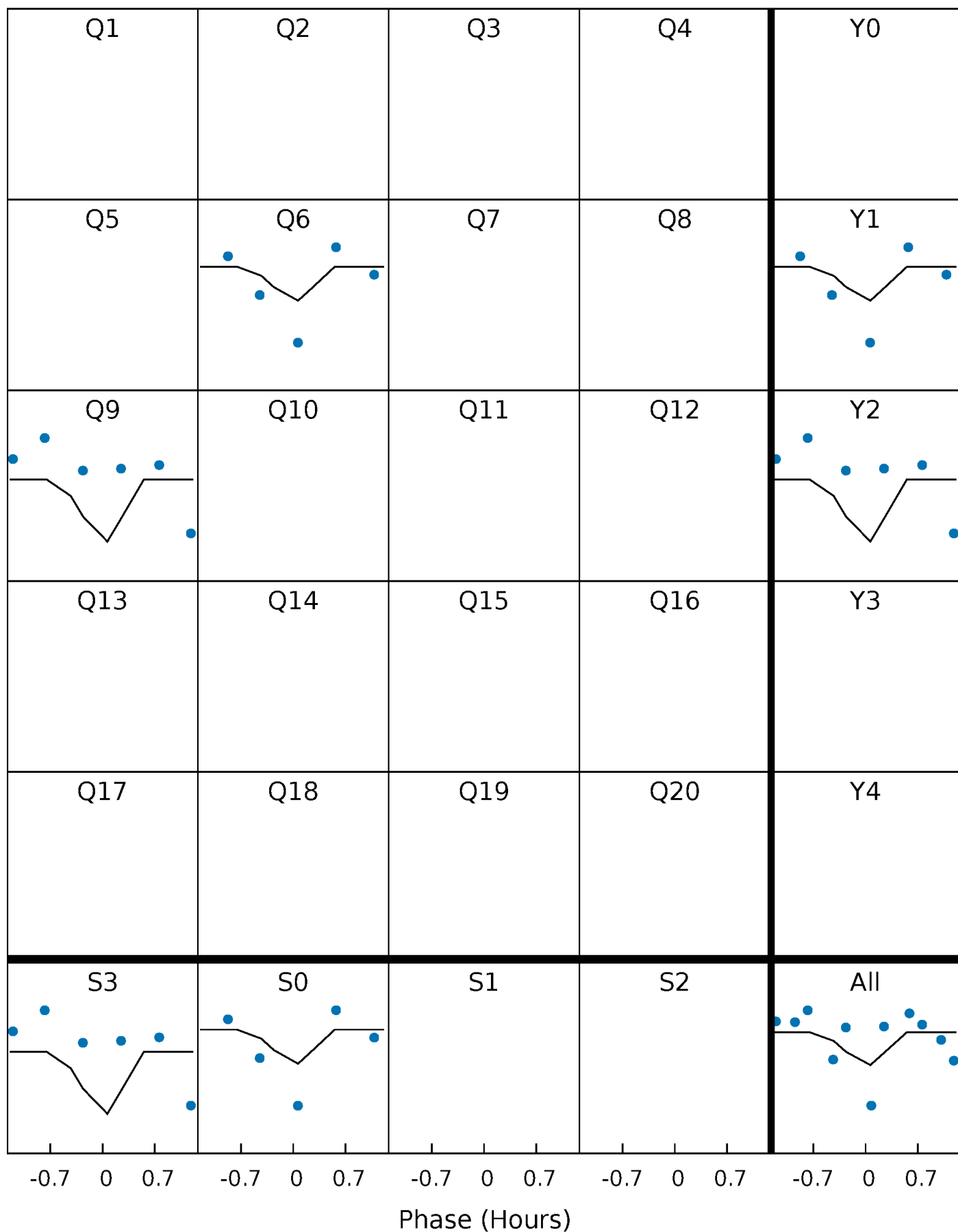
DV Quarter-Phased Transit Curves

TCE 010661976-03 P=272.476874 Days $T_0=354.771553$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

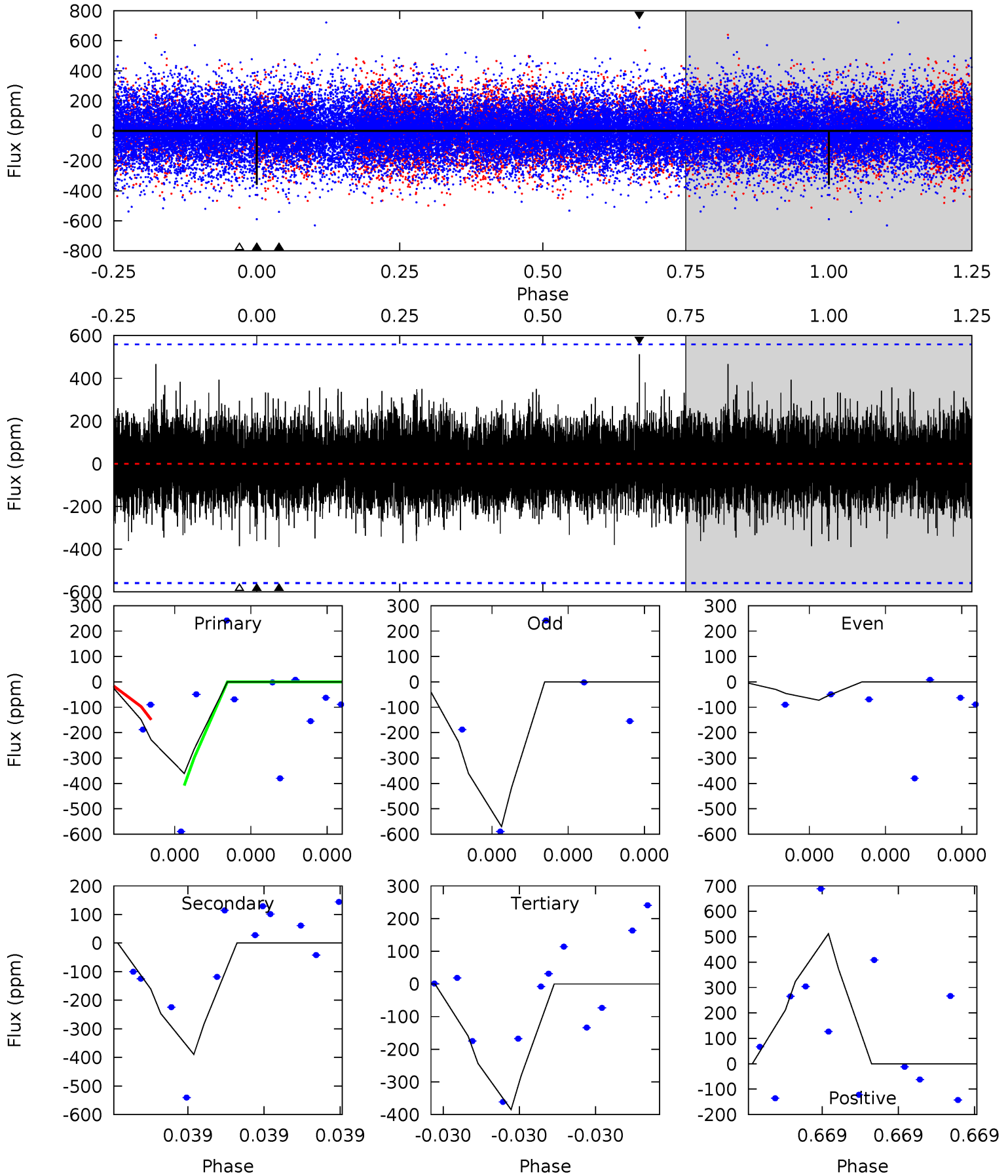
TCE 010661976-03 P=272.474711 Days $T_0=354.775584$ (BKJD)



DV Model-Shift Uniqueness Test

010661976-03, P = 272.476874 Days, E = 82.294679 Days

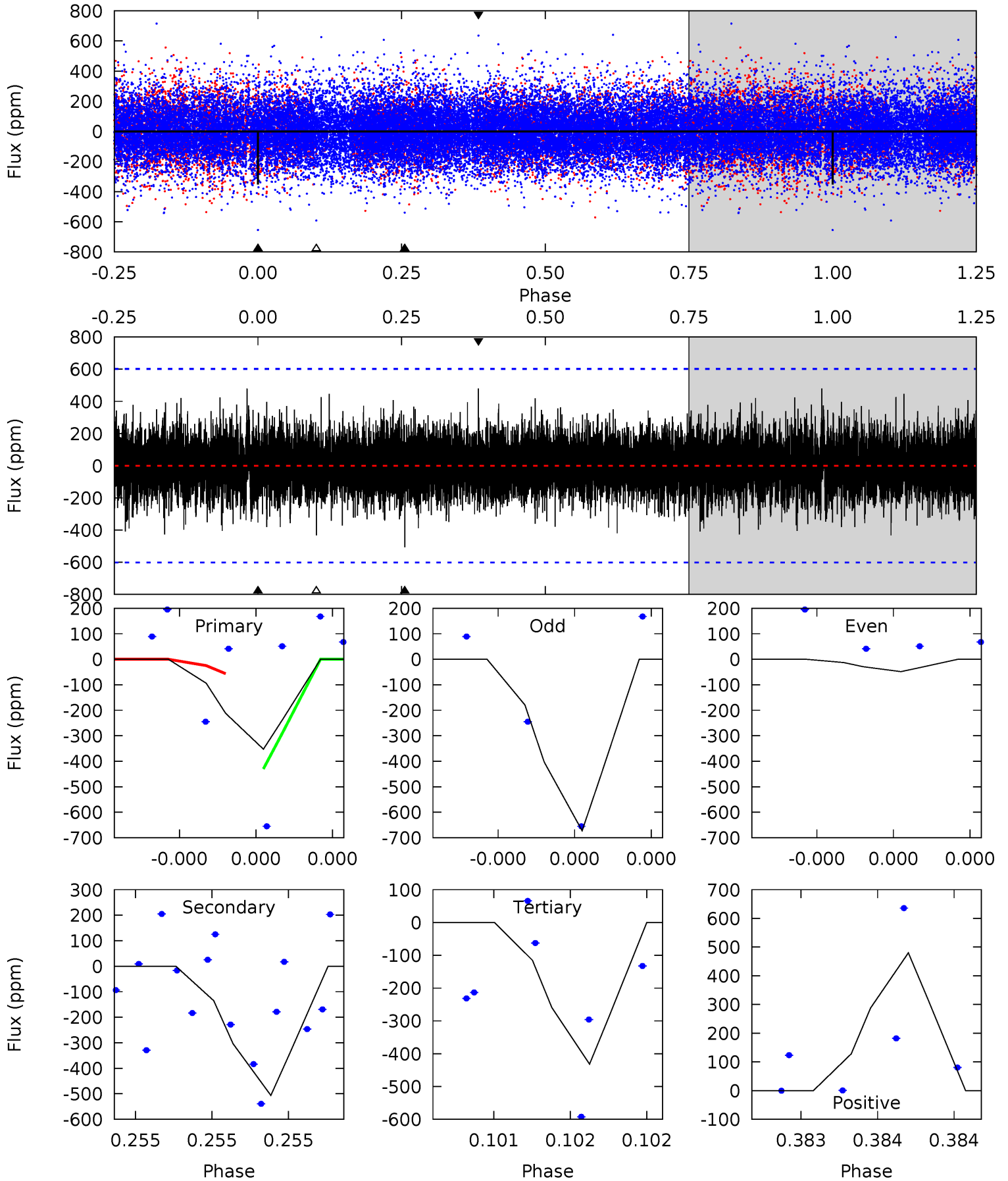
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.75 | 4.04 | 4.00 | 5.31 | 5.80 | 3.82 | 0.96 | -0.25 | -1.57 | 0.05 | -1.27 | 2.96 | 1.00 | 0.57 | 0.00 |



Alt Model-Shift Uniqueness Test

010661976-03, $P = 272.474711$ Days, $E = 82.300873$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.43 | 4.92 | 4.20 | 4.67 | 5.85 | 3.89 | 1.05 | -0.77 | -1.24 | 0.73 | 0.26 | 3.03 | 1.00 | 0.49 | 1.82 |



Stellar Parameters For KIC 010661976

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6619^{+187}_{-234} | $3.890^{+0.424}_{-0.133}$ | $-0.320^{+0.300}_{-0.300}$ | $2.230^{+0.525}_{-1.049}$ | $1.408^{+0.191}_{-0.356}$ | $0.179^{+0.629}_{-0.070}$ |
| | +3%/-4% | +11%/-3% | +94%/-94% | +24%/-47% | +14%/-25% | +352%/-39% |
| Source | PHO54 | PHO54 | PHO54 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 010661976-03 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|----------------|---------------------------|-------------------|-----------------------|----------------------|
| DV | -390 ± 96 | $26.93^{+29.25}_{-19.13}$ | 619^{+47}_{-70} | 3205^{+1689}_{-571} | 234^{+2599}_{-179} |
| Alt. | -507 ± 103 | $25.64^{+31.90}_{-18.51}$ | 622^{+48}_{-75} | 3415^{+2071}_{-686} | 353^{+4351}_{-284} |

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 $A_{obs} \gg 1.0$

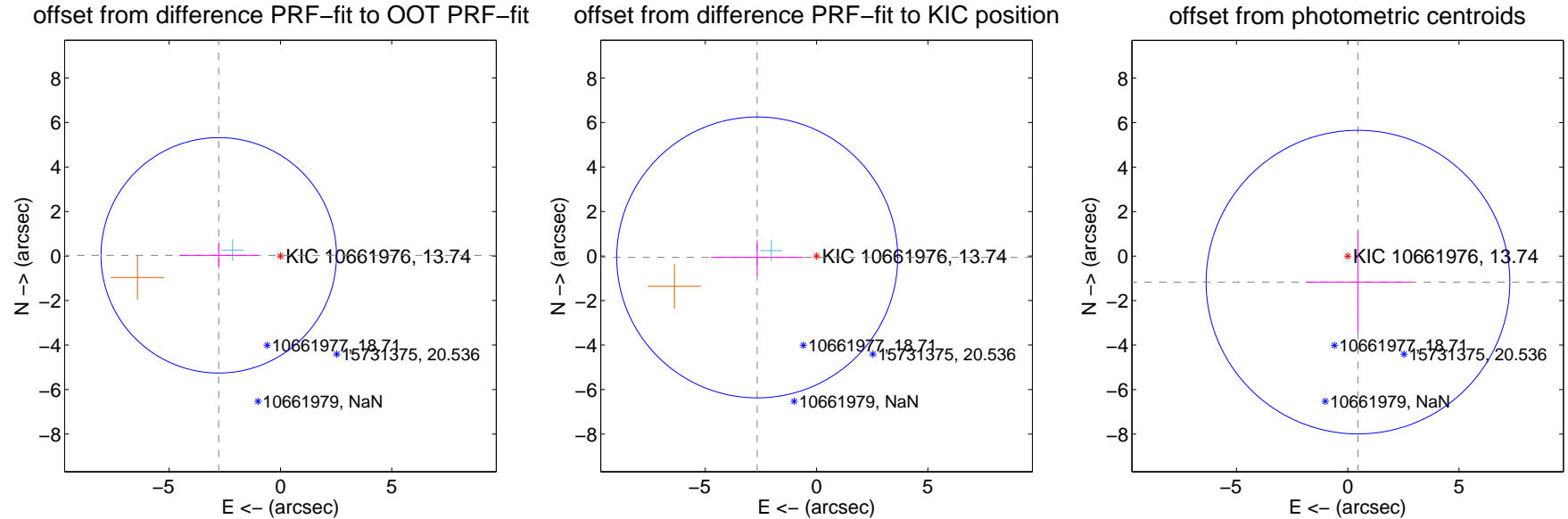
DV Centroid Data

Supplemental centroid analysis for 010661976-03. Kepler magnitude: 13.74. Transit SNR 1.98

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 2.772 ± 1.763 | 1.57 | 2.771 ± 1.763 | 0.030 ± 0.572 |
| PRF-fit source offset from KIC position | 2.667 ± 2.103 | 1.27 | 2.666 ± 2.086 | -0.063 ± 0.773 |
| photometric centroid source offset | 1.26 ± 2.27 | 0.55 | -0.46 ± 2.36 | -1.17 ± 2.26 |



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



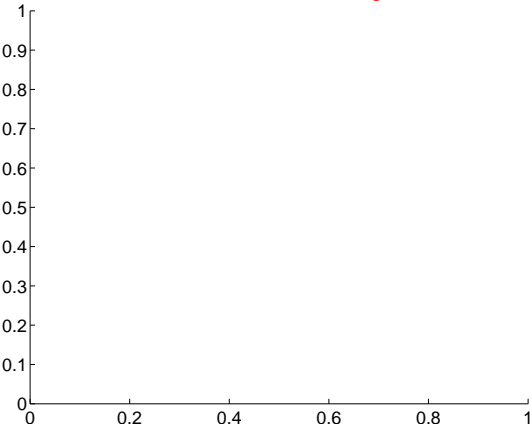
Q2 no difference image



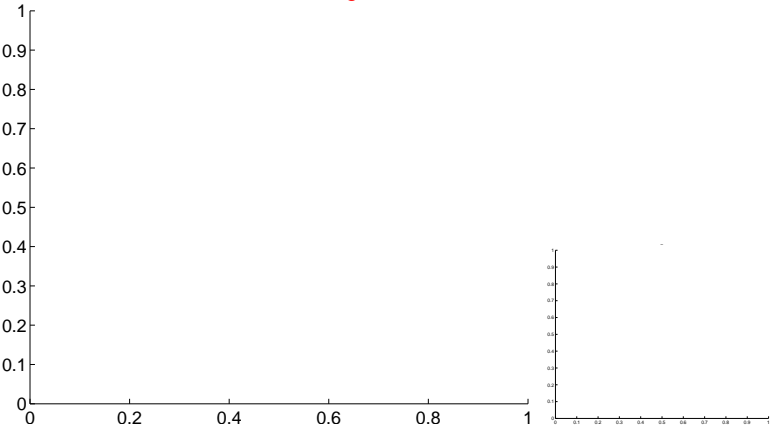
Q2 no OOT image



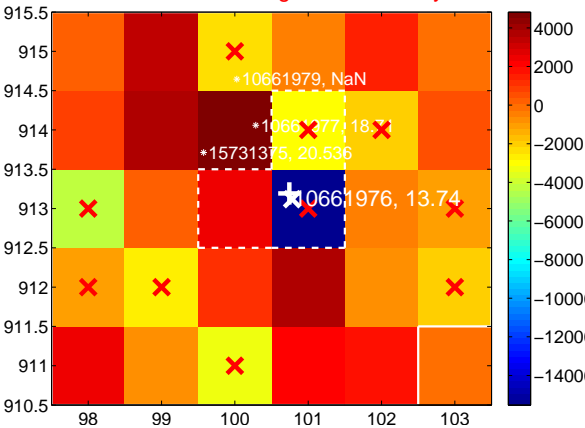
Q3 no difference image



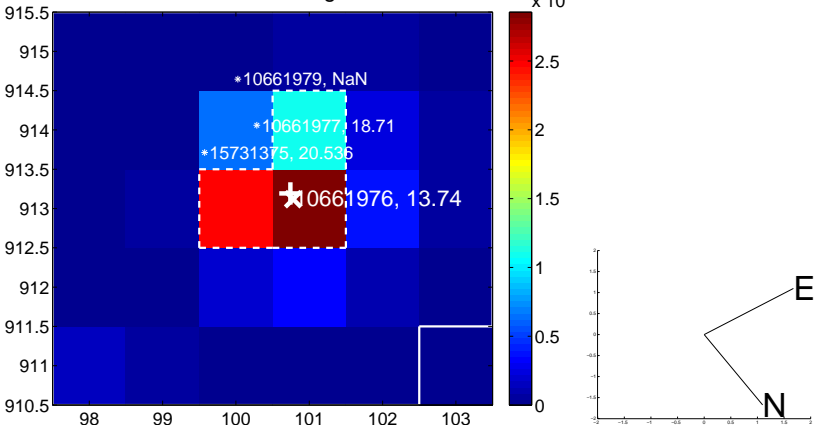
Q3 no OOT image



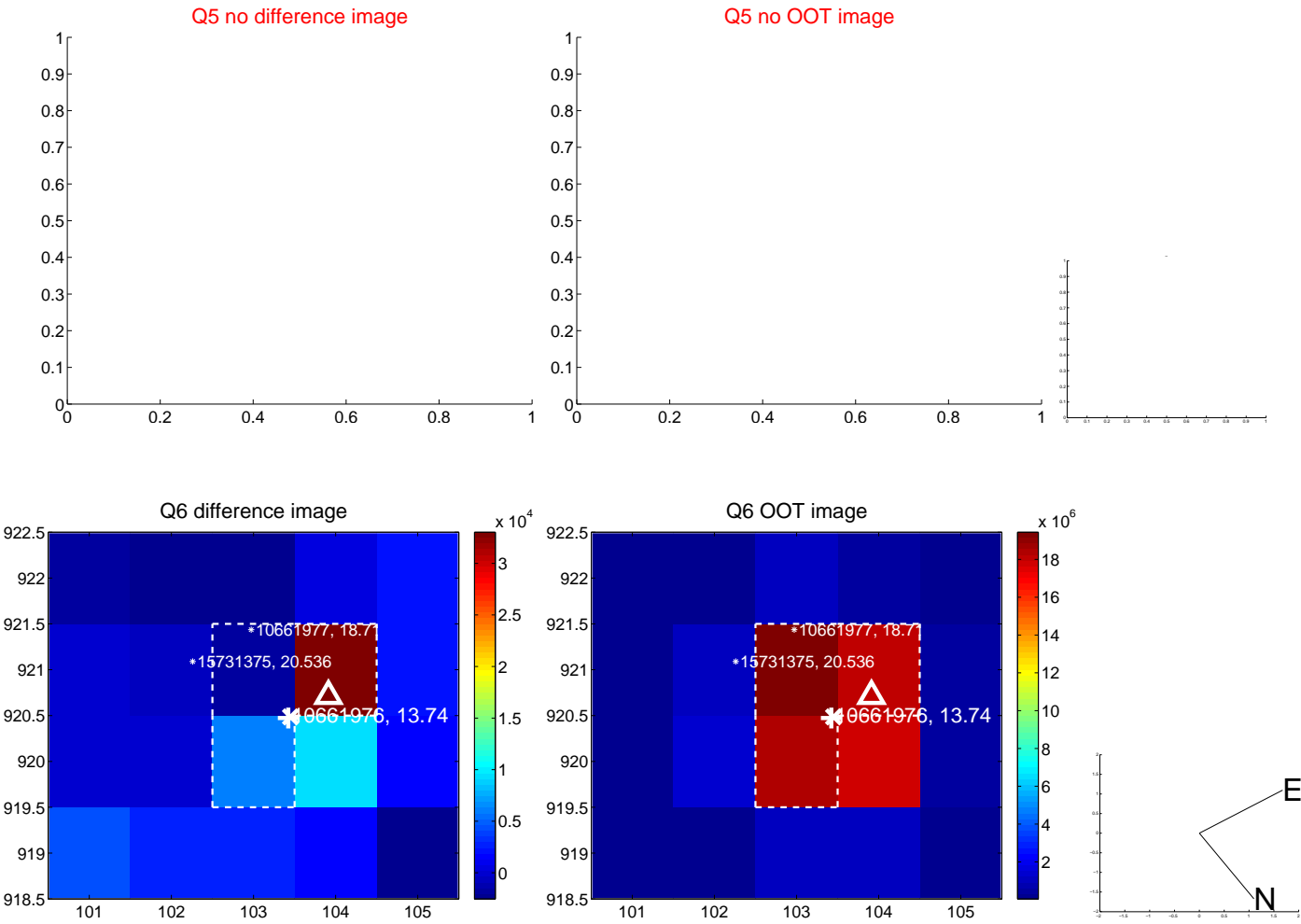
Q4 difference image. Poor Quality



Q4 OOT image



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

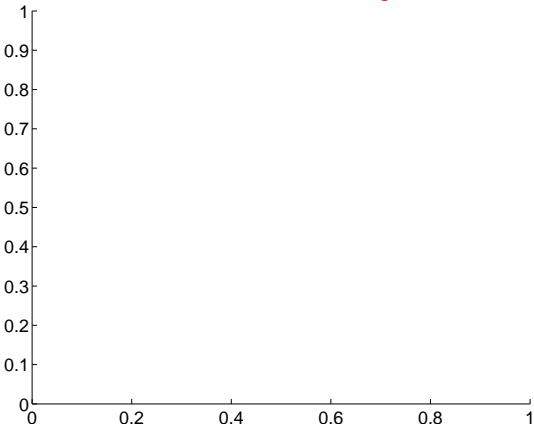


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

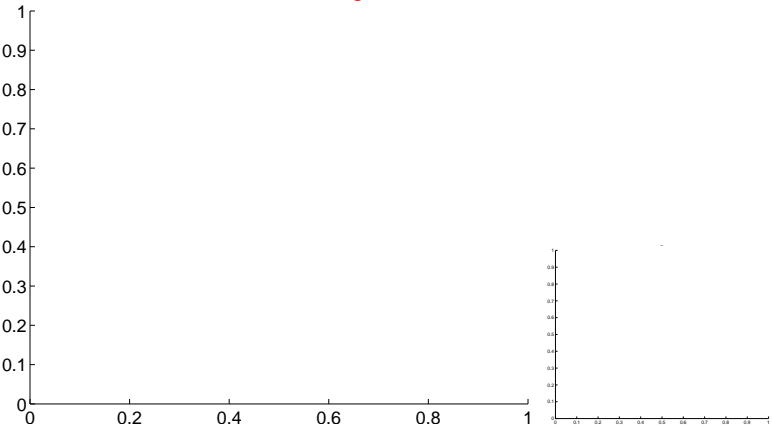


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



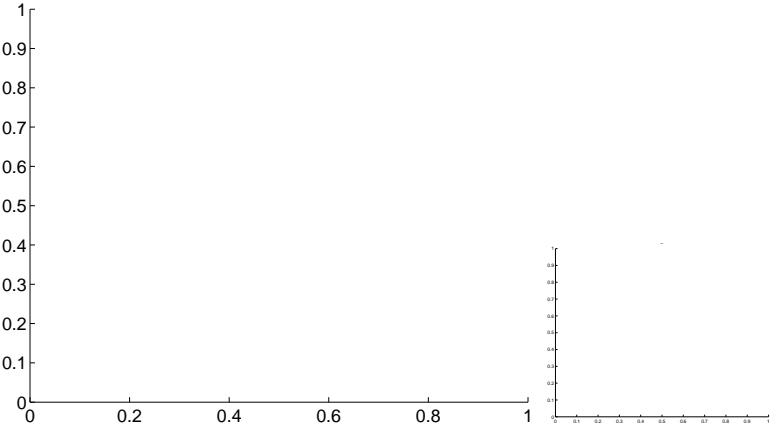
Q13 no OOT image



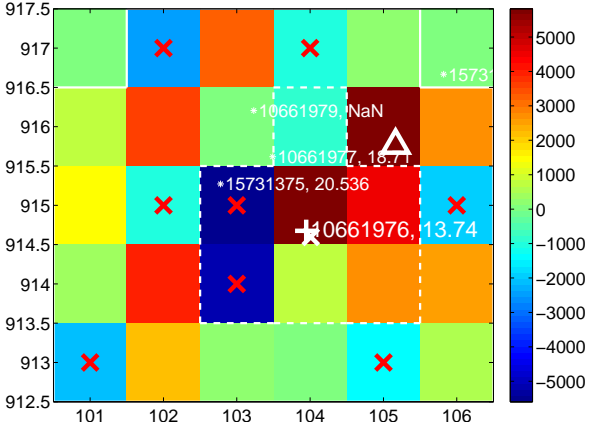
Q14 no difference image



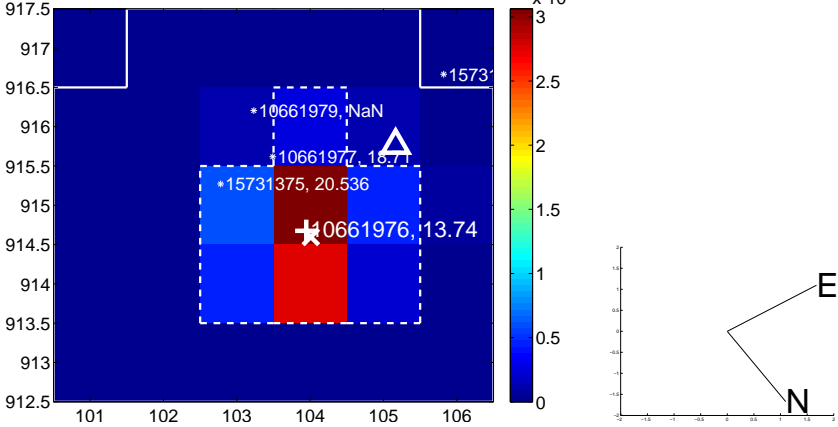
Q14 no OOT image



Q15 difference image. Poor Quality



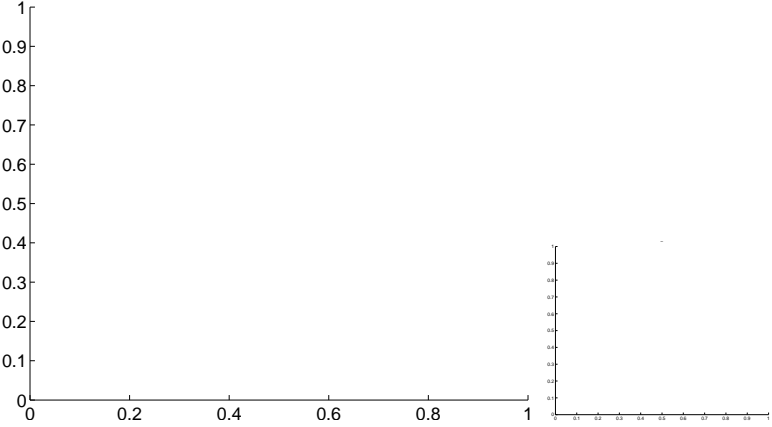
Q15 OOT image



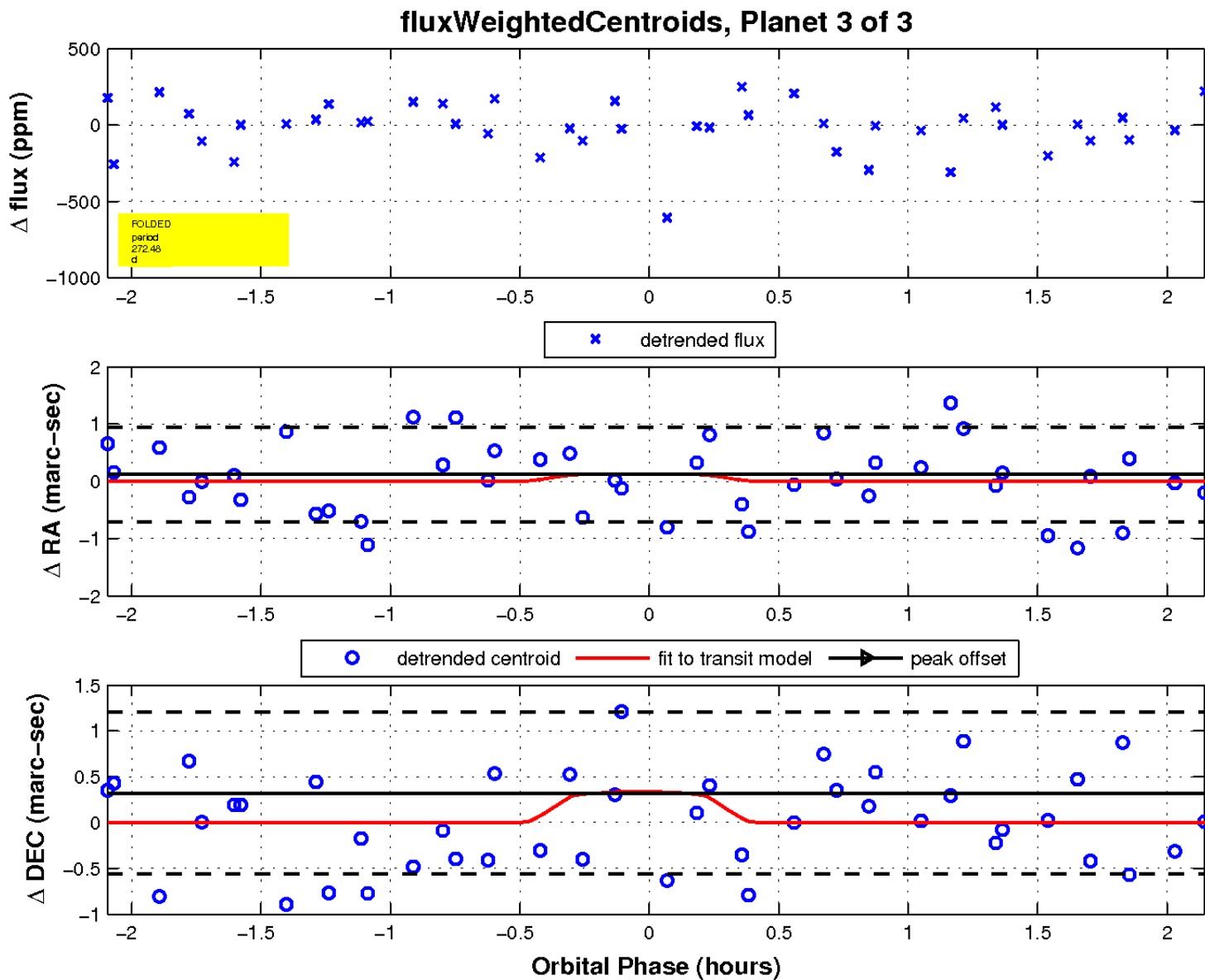
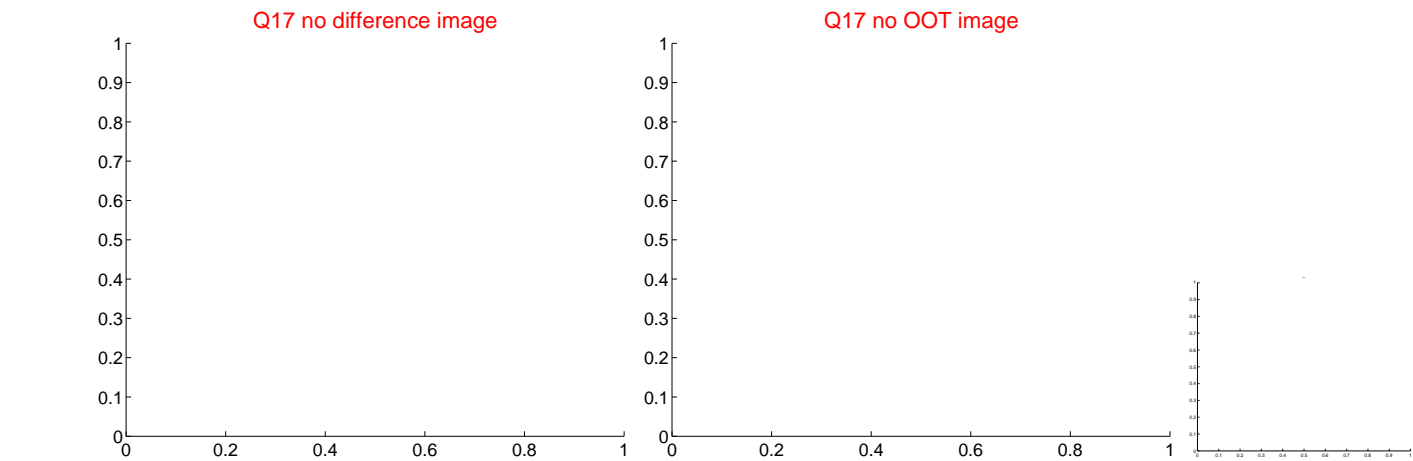
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

