

KIC 008087649

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008087649-01 | OBS | No | 0.959847 | 132.404744 | 477.6 | 1.500 | 14.2 | -1.0 | 1.80 | 7292 | 3.99 | 17049.45 |
| 008087649-02 | OBS | No | 0.959865 | 131.898470 | 0.8 | 1.542 | 13.9 | 0.0 | 1.80 | 7292 | 0.19 | 17049.01 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008087649-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_NOFITS |
| 008087649-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—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.

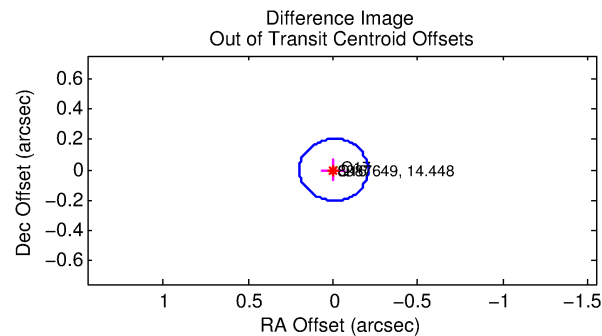
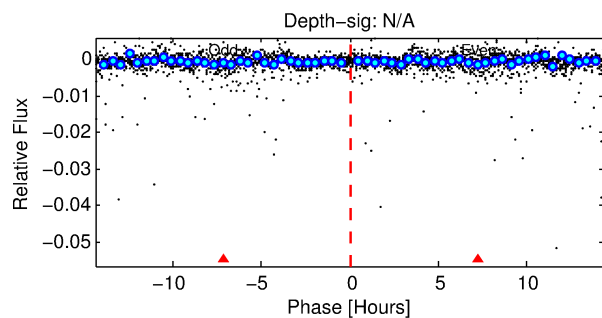
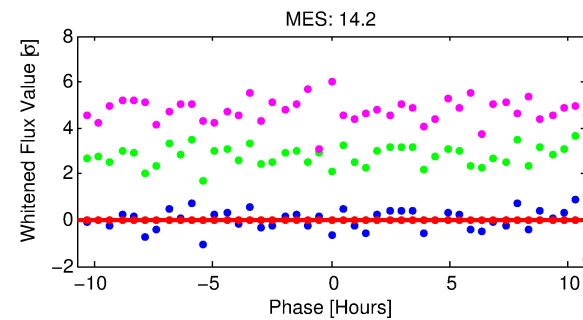
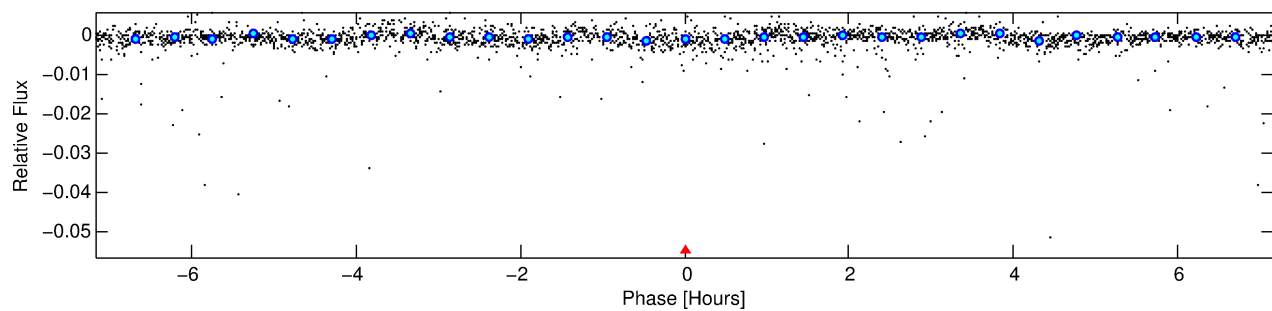
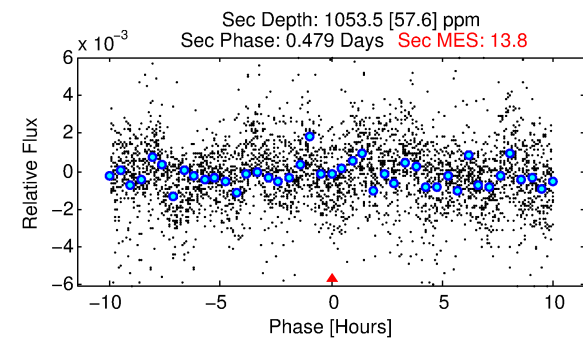
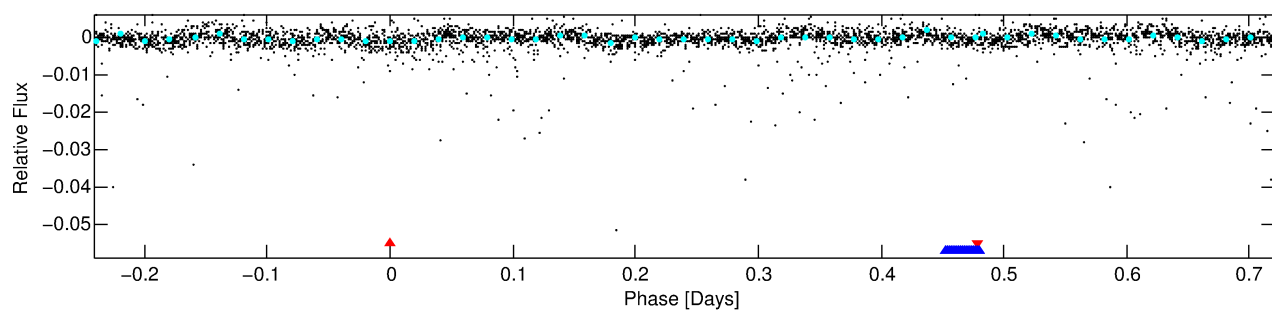
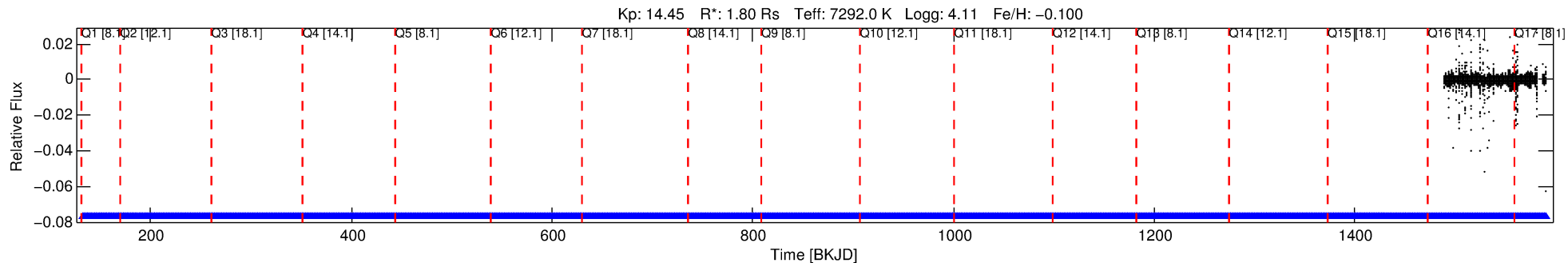
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008087649-01

No Significant Match Found

DV One-Page Summary

KIC: 8087649 Candidate: 1 of 2 Period: 0.960 d



TPS TCE Results:

Period = 0.95985 d
Epoch = 132.4047 BKJD

DV fit results are unavailable

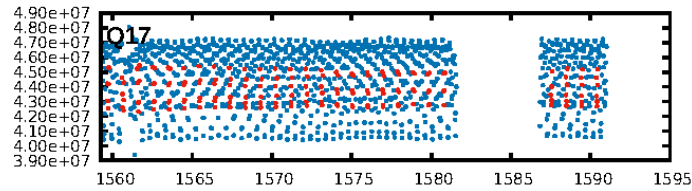
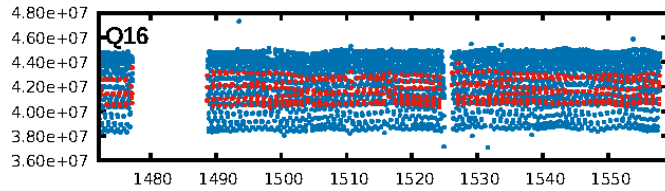
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.39e-33
RollingBand-fgt: 1.00 [72/72]
GhostDiagnostic-chr: 6.177
Centroid-sig: 15.9%
Centroid-so: 0.194 arcsec [55.70σ]
OotOffset-rm: 0.004 arcsec [0.05σ]
KicOffset-rm: 0.070 arcsec [1.03σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

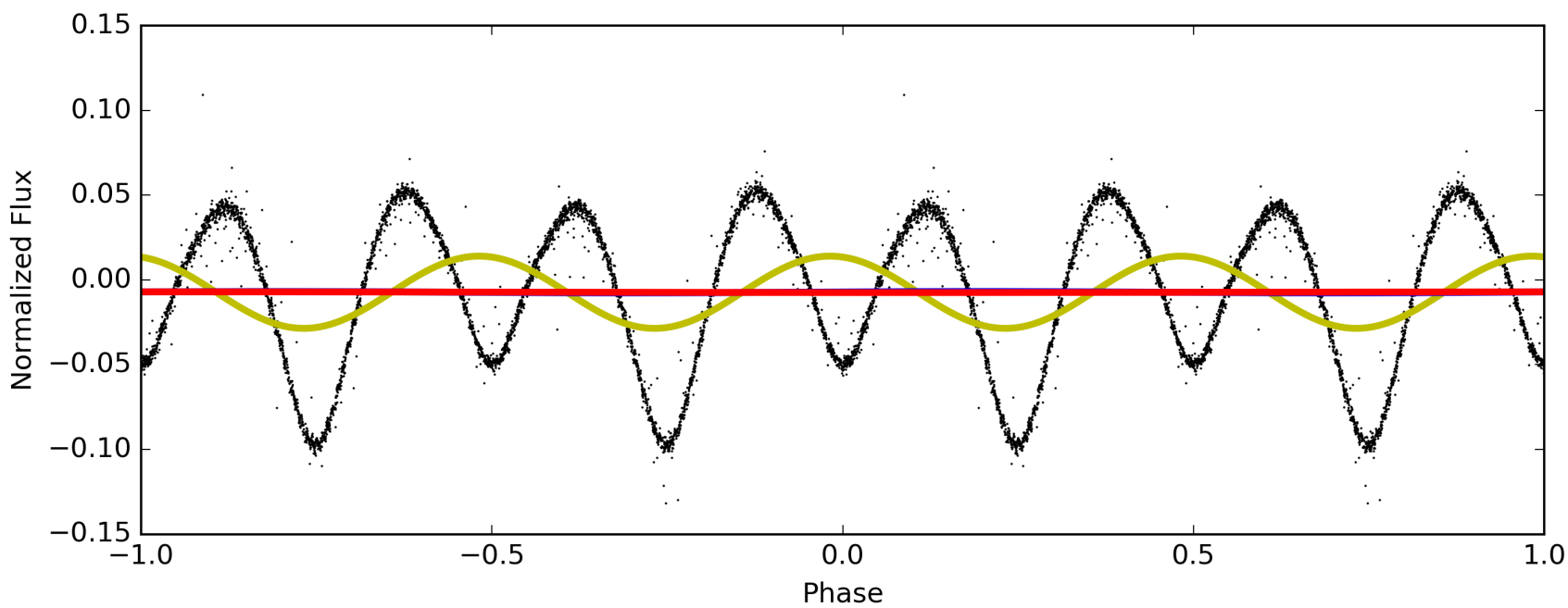
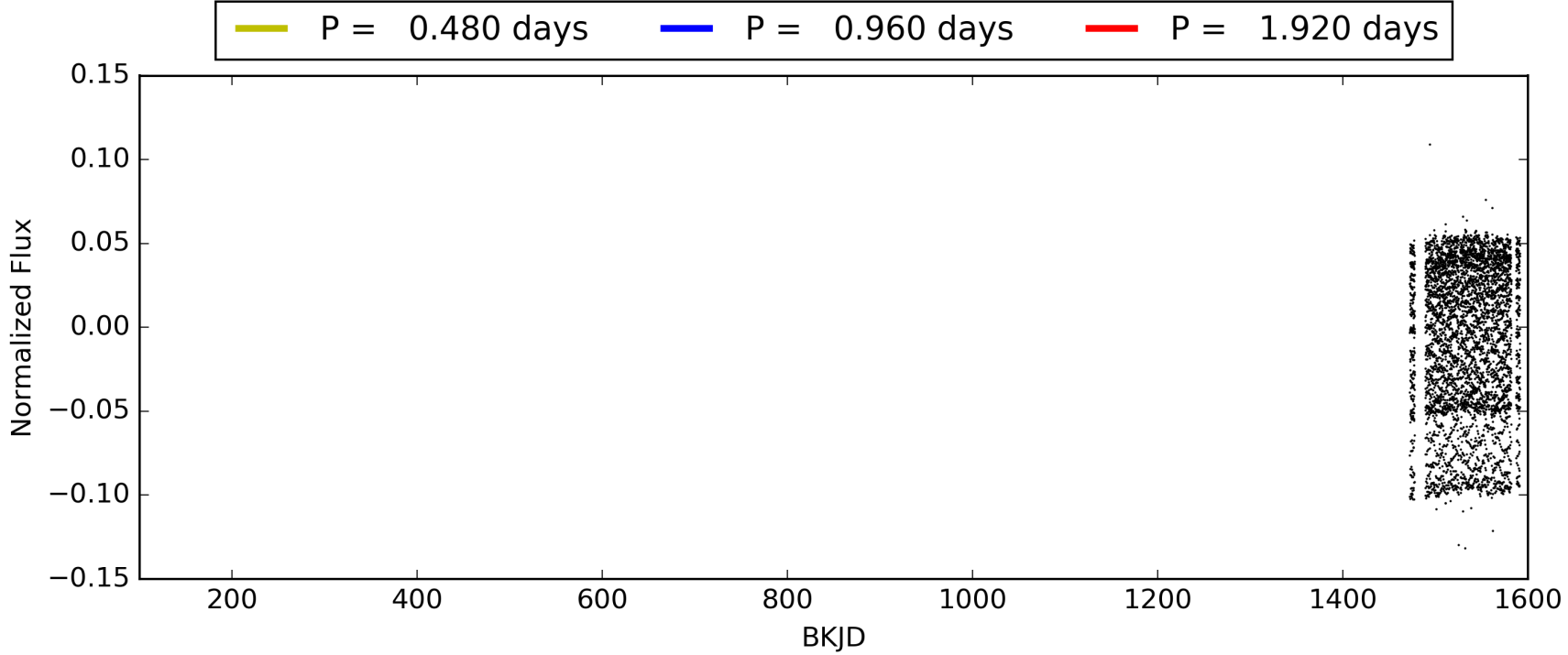
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:48:02 Z

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

TCE 008087649-01, PDC Light Curves

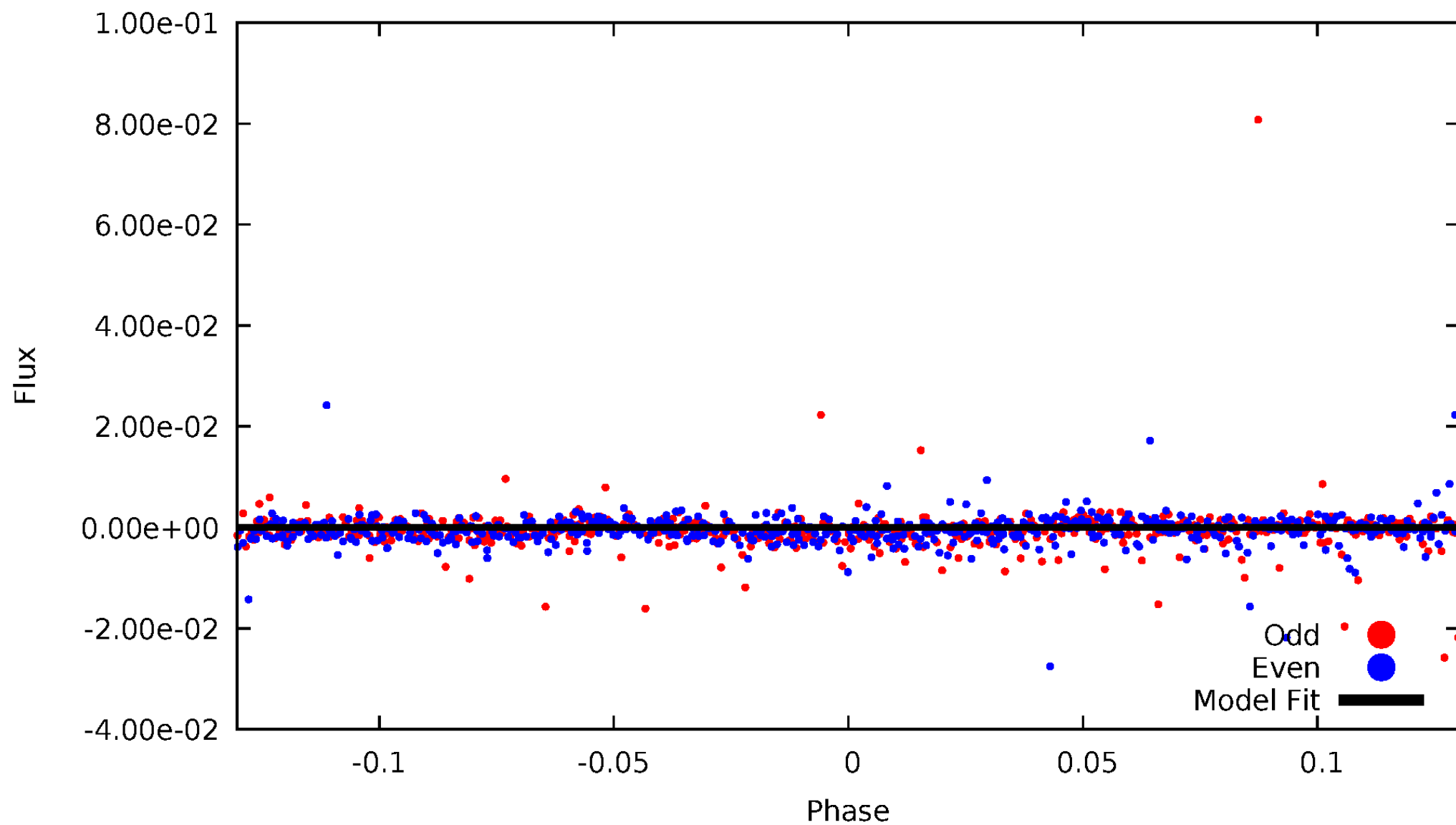


TCE 008087649-01



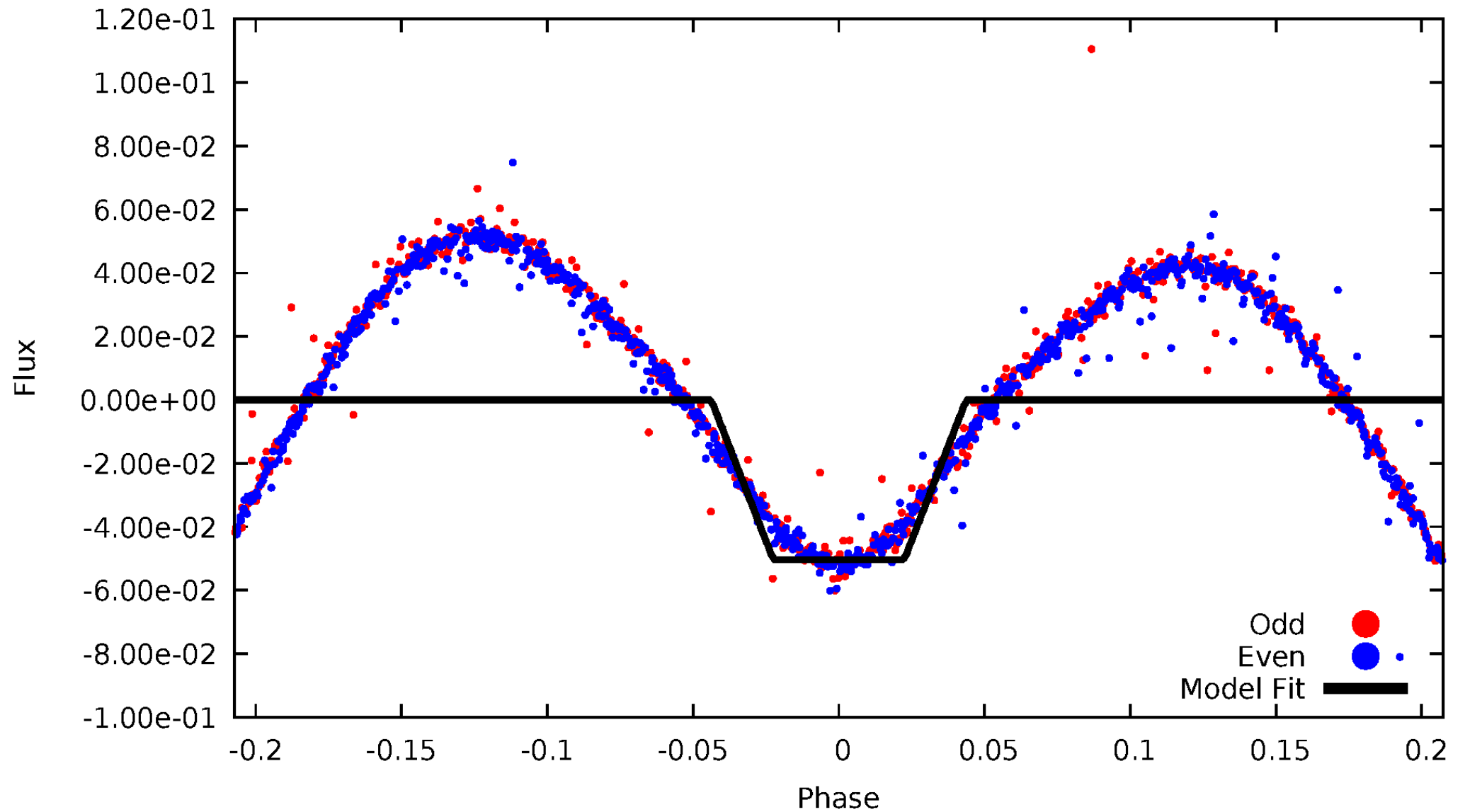
DV Odd/Even

TCE 008087649-01

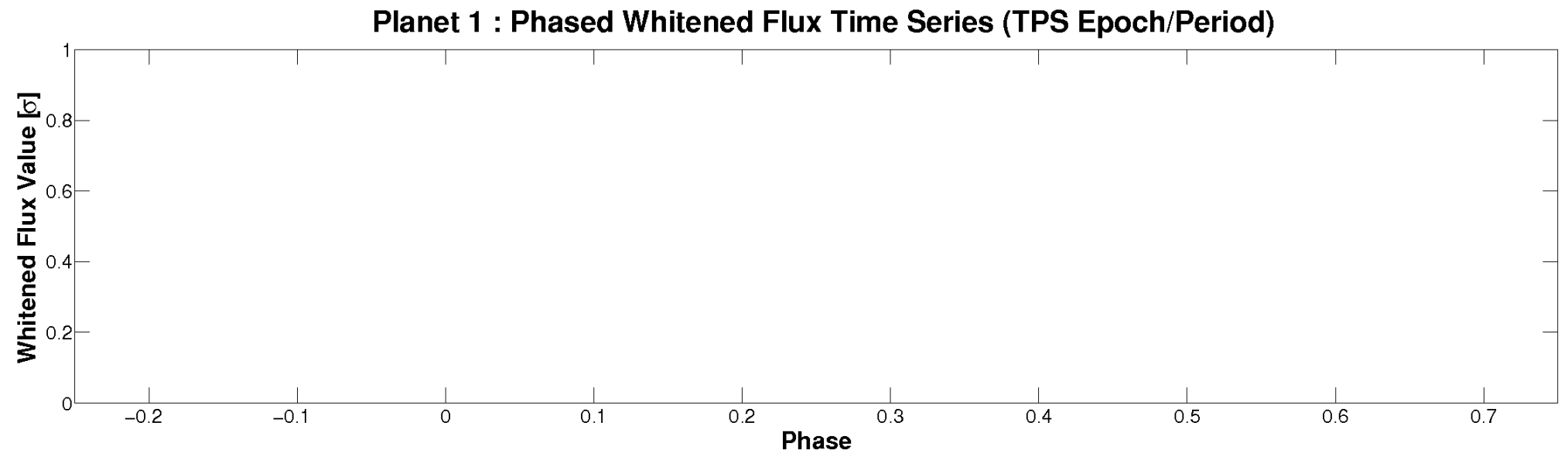
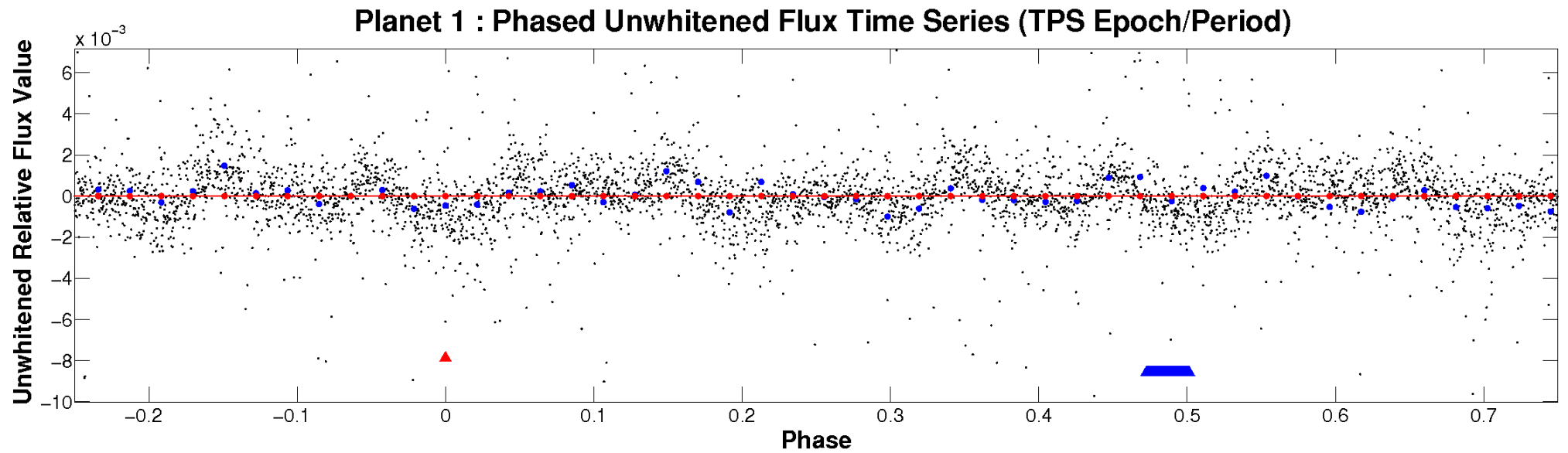


ALT Odd/Even

TCE 008087649-01

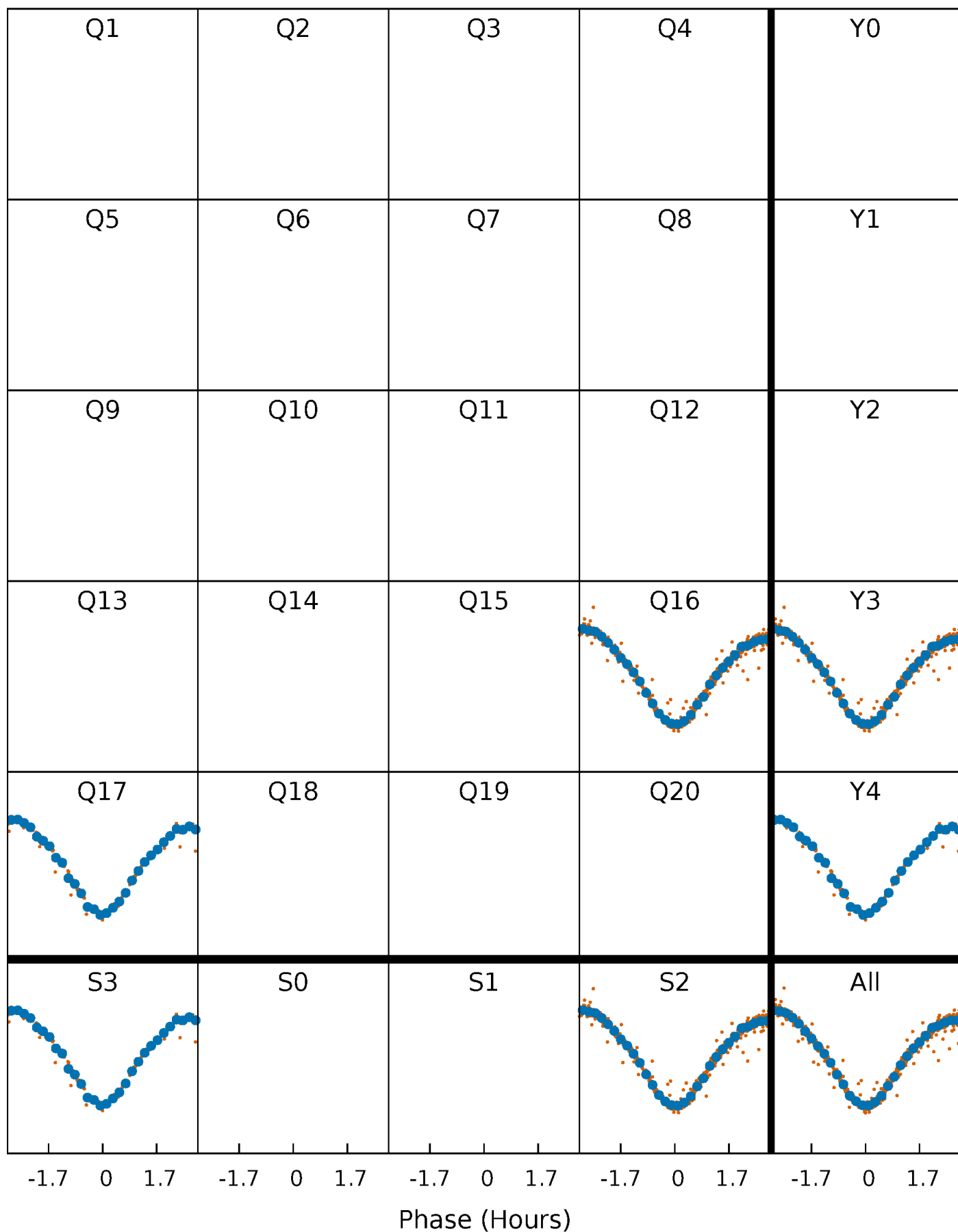


Non-Whitened Vs. Whitened Light Curve



PDC Quarter-Phased Transit Curves

TCE 008087649-01 P= 0.959847 Days $T_0=132.404744$ (BKJD)



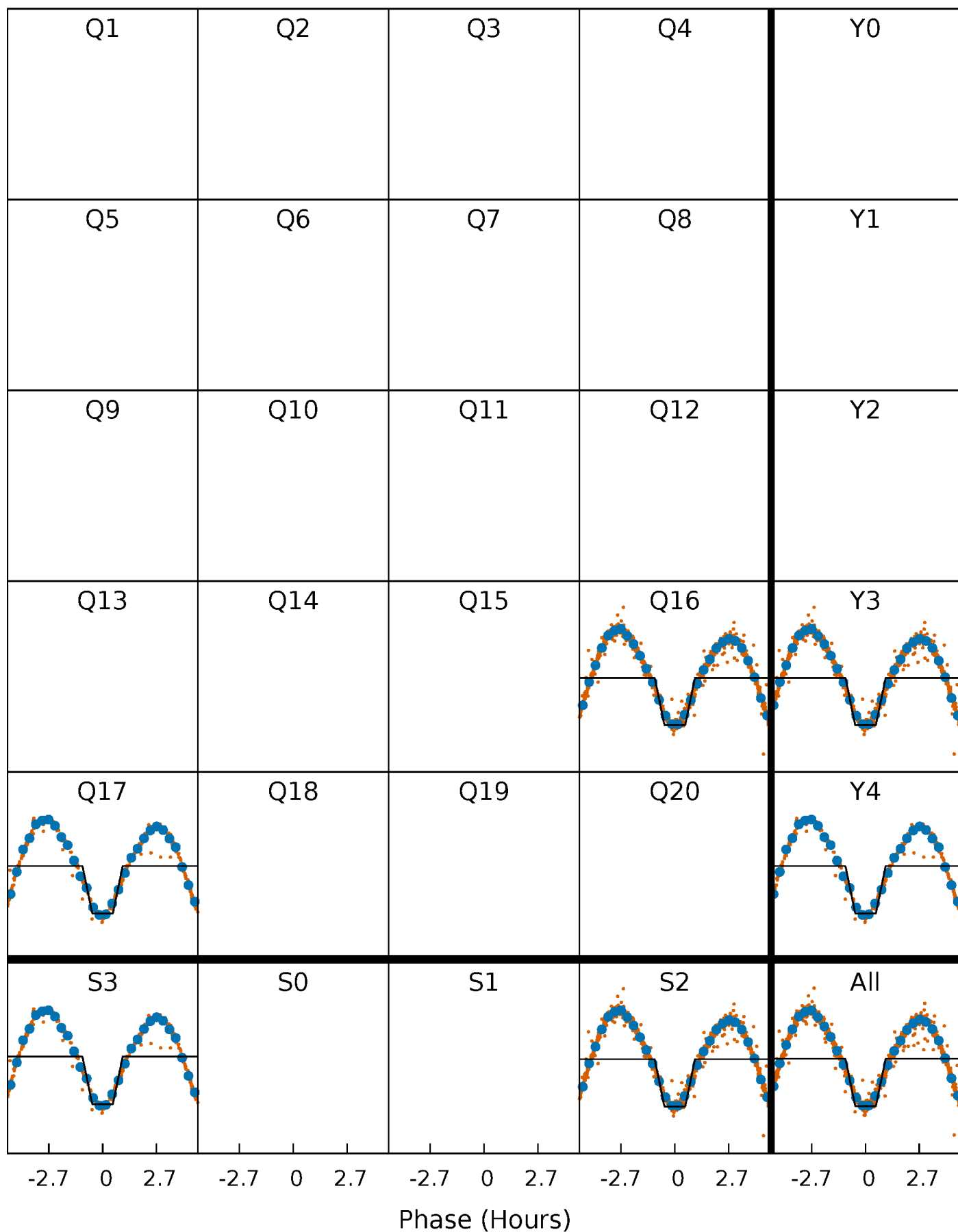
DV Quarter-Phased Transit Curves

TCE 008087649-01 P= 0.959847 Days $T_0=132.404744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

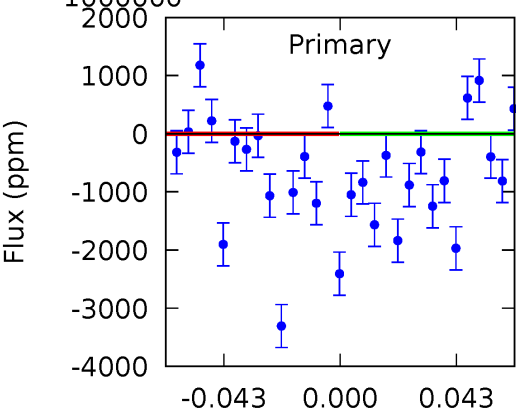
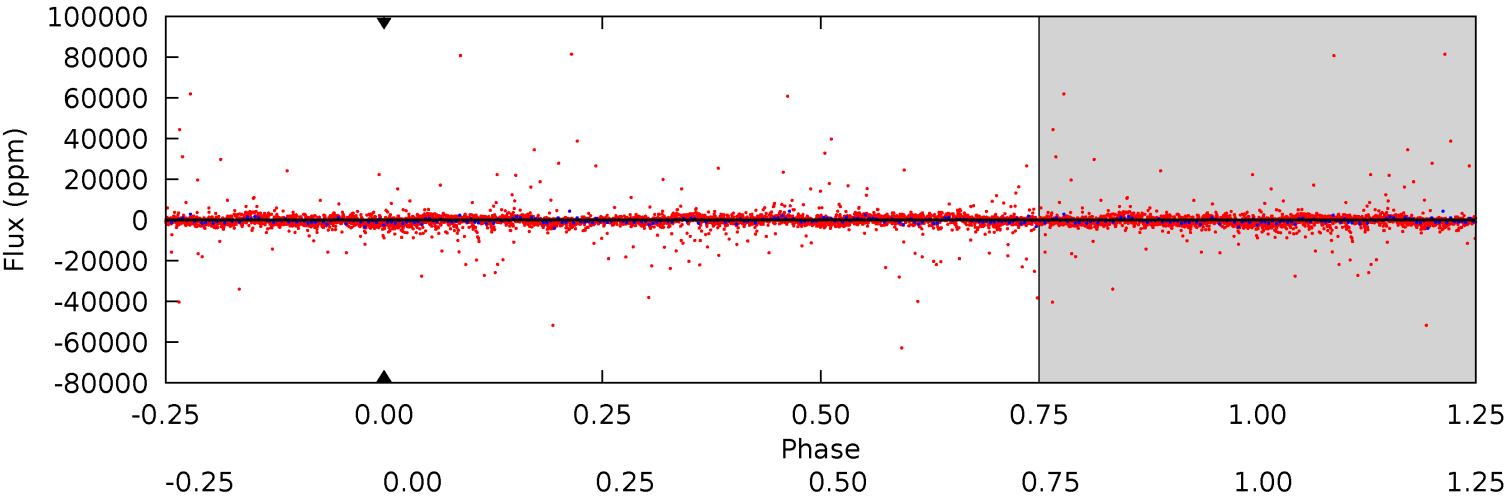
TCE 008087649-01 $P = 0.959847$ Days $T_0 = 132.405341$ (BKJD)



DV Model-Shift Uniqueness Test

008087649-01, P = 0.959847 Days, E = 132.404744 Days

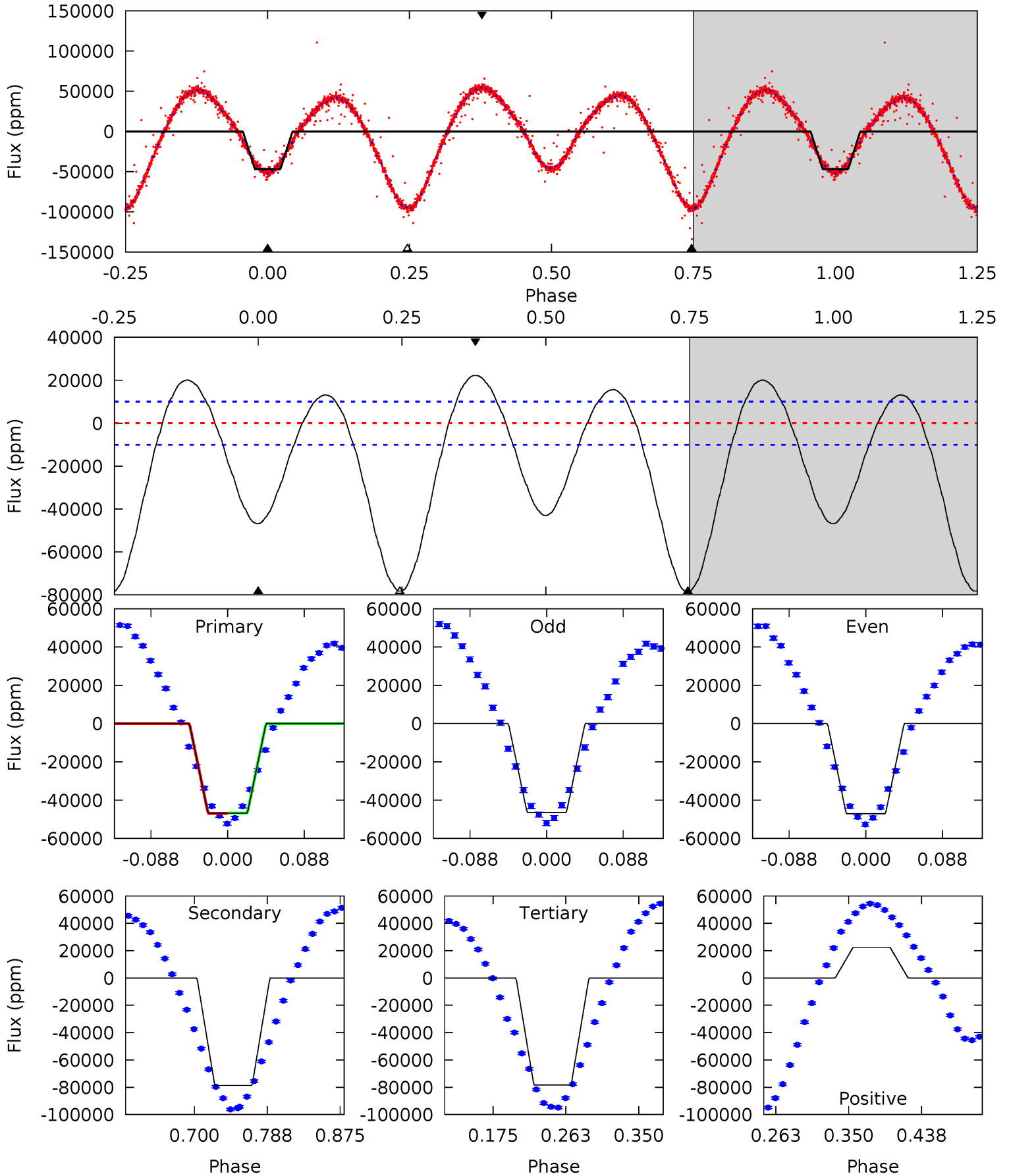
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Alt Model-Shift Uniqueness Test

008087649-01, P = 0.959847 Days, E = 132.405341 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.5 | 36.1 | 35.9 | 10.2 | 4.59 | 1.71 | 13.5 | -14.4 | 11.3 | 0.20 | 25.9 | 0.15 | 0.99 | 0.22 | 0.04 |



Stellar Parameters For KIC 008087649

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7292^{+228}_{-330} | $4.111^{+0.149}_{-0.182}$ | $-0.100^{+0.200}_{-0.350}$ | $1.797^{+0.555}_{-0.416}$ | $1.518^{+0.211}_{-0.257}$ | $0.369^{+0.295}_{-0.191}$ |
| | +3%/-5% | +4%/-4% | +200%/-350% | +31%/-23% | +14%/-17% | +80%/-52% |
| Source | KIC0 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 008087649-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------------|---------------------------|----------------------|--------------------------|-------------------------------|
| DV | 0 ± 1000000 | $15.06^{+14.64}_{-10.33}$ | 4091^{+307}_{-300} | 6176^{+35103}_{-35470} | $4.374^{+247.384}_{-159.879}$ |
| Alt. | -78675 ± 2178 | $46.15^{+21.90}_{-20.82}$ | 4076^{+342}_{-279} | 8196^{+4166}_{-1560} | 11^{+23}_{-6} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

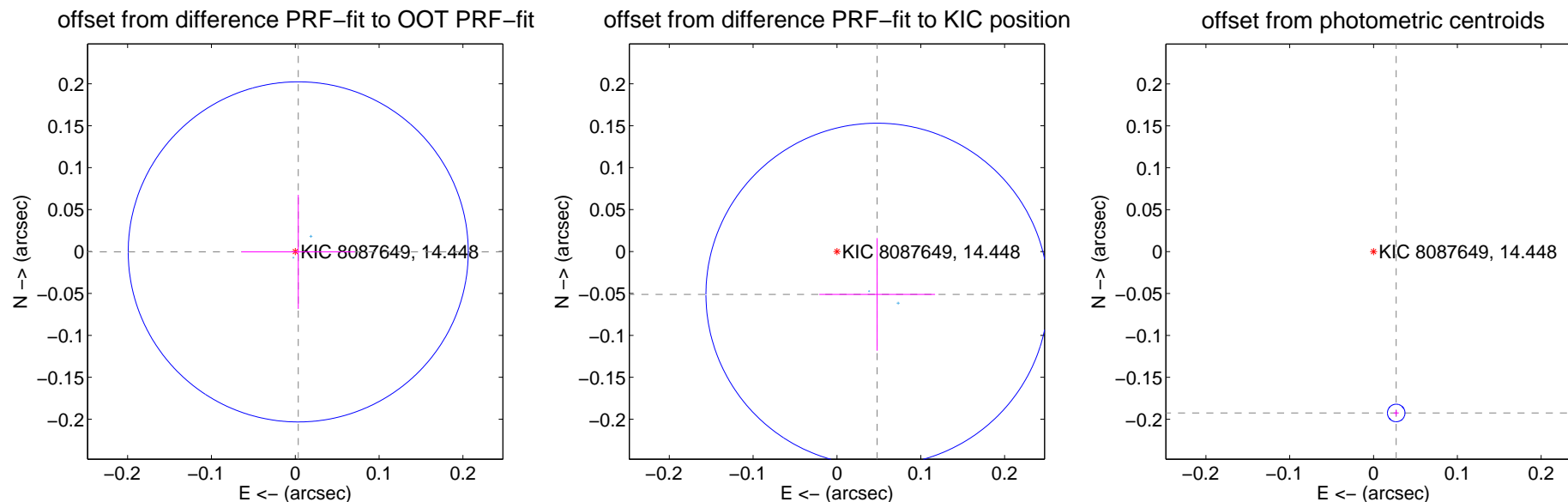
DV Centroid Data

Supplemental centroid analysis for 008087649-01. Kepler magnitude: 14.45. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.004 ± 0.068 | 0.05 | -0.004 ± 0.068 | -0.000 ± 0.068 |
| PRF-fit source offset from KIC position | 0.070 ± 0.068 | 1.03 | -0.048 ± 0.069 | -0.051 ± 0.067 |
| photometric centroid source offset | 0.19 ± 0.00 | 55.70 | -0.03 ± 0.00 | -0.19 ± 0.00 |



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

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



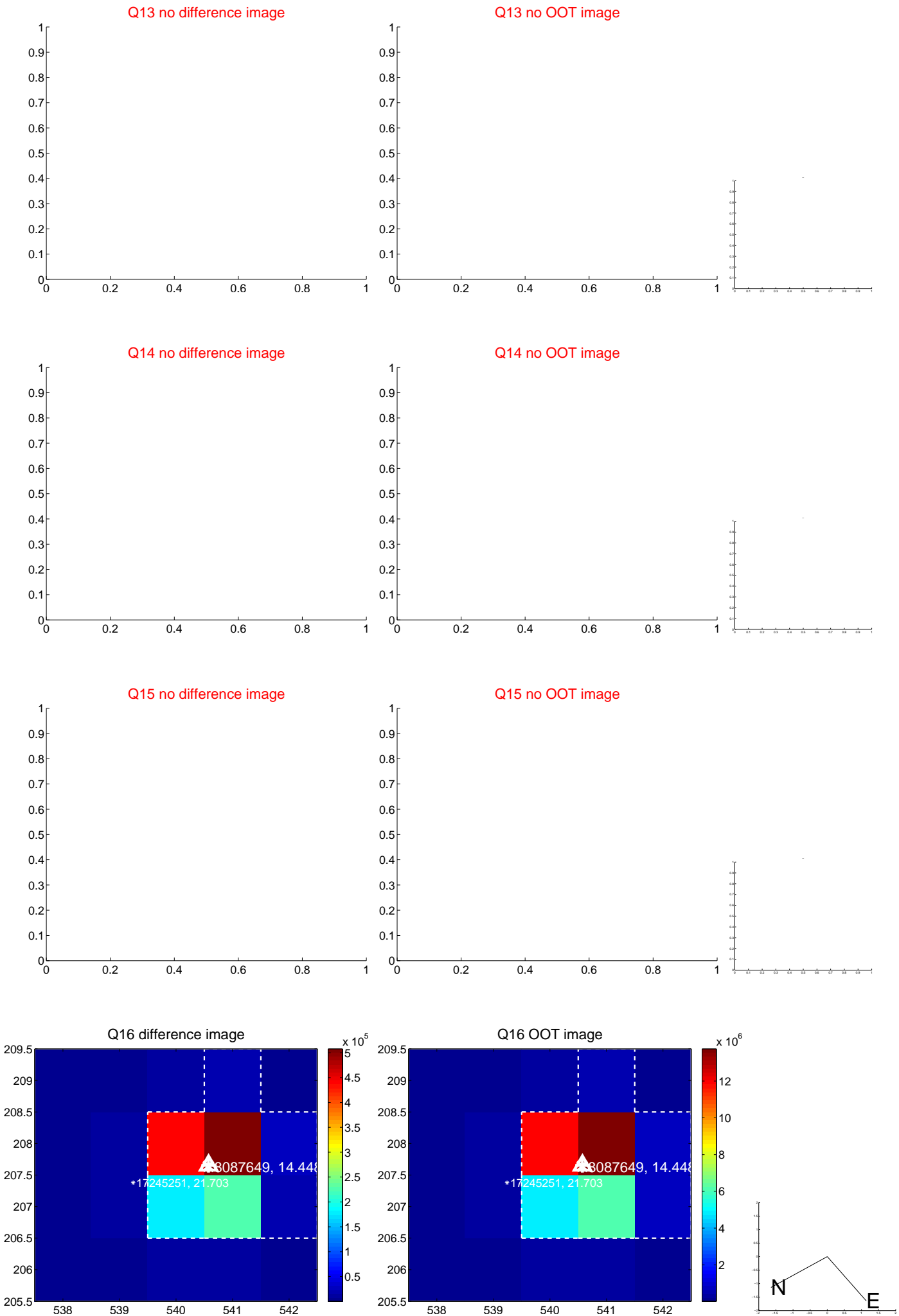
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



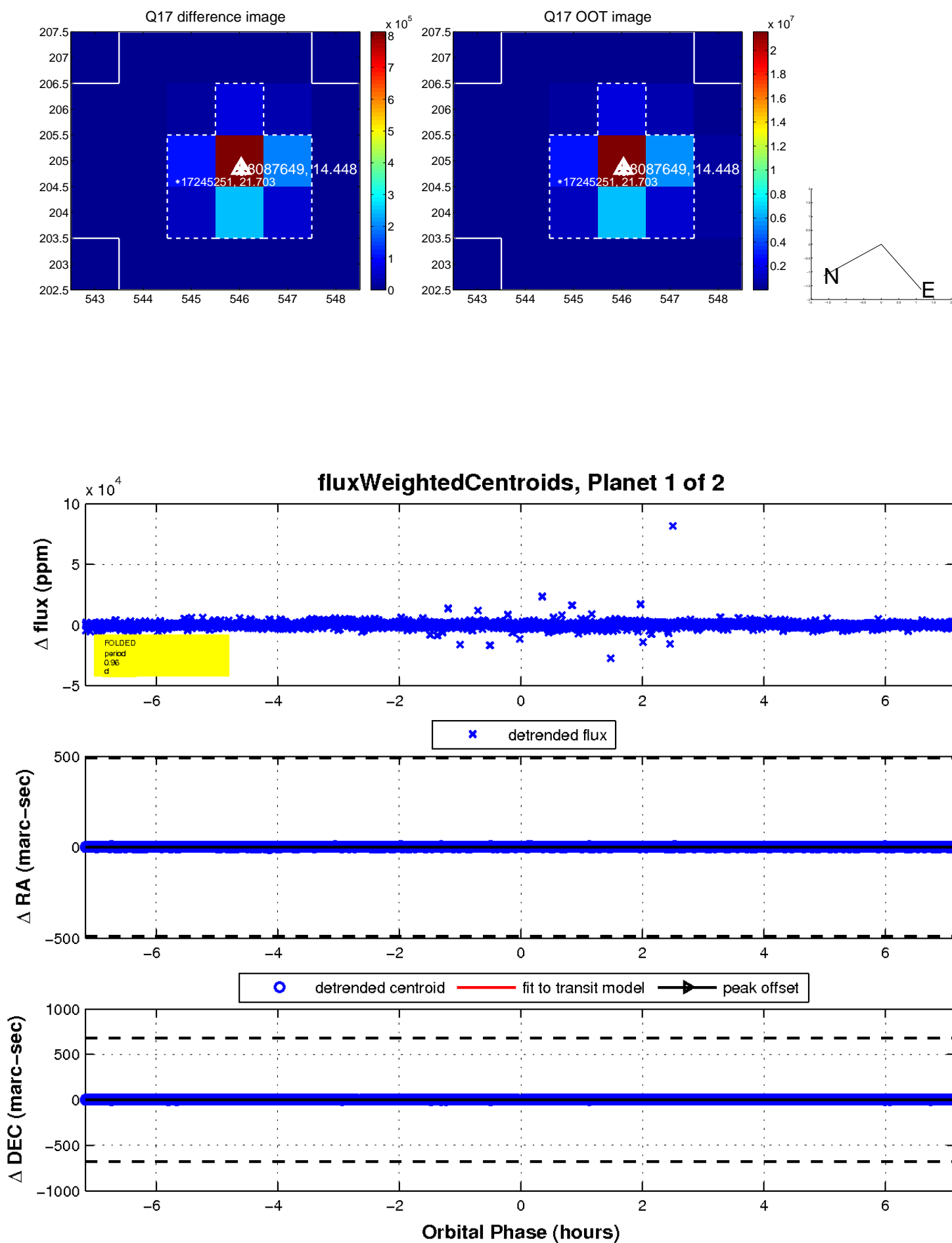
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



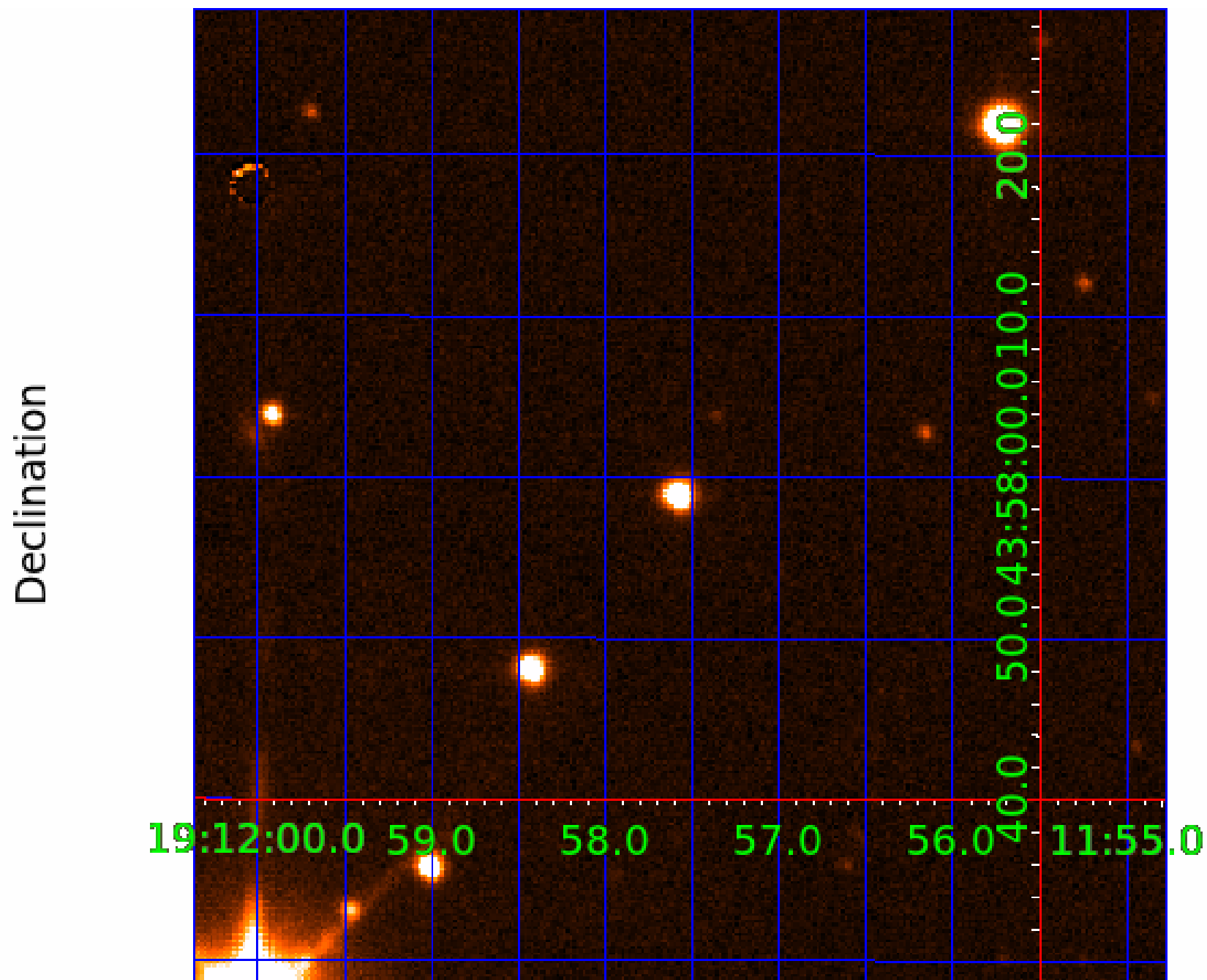
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



KIC 008087649

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008087649-01 | OBS | No | 0.959847 | 132.404744 | 477.6 | 1.500 | 14.2 | -1.0 | 1.80 | 7292 | 3.99 | 17049.45 |
| 008087649-02 | OBS | No | 0.959865 | 131.898470 | 0.8 | 1.542 | 13.9 | 0.0 | 1.80 | 7292 | 0.19 | 17049.01 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008087649-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_NOFITS |
| 008087649-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—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.

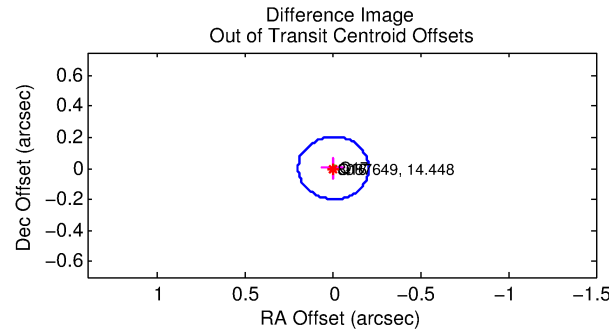
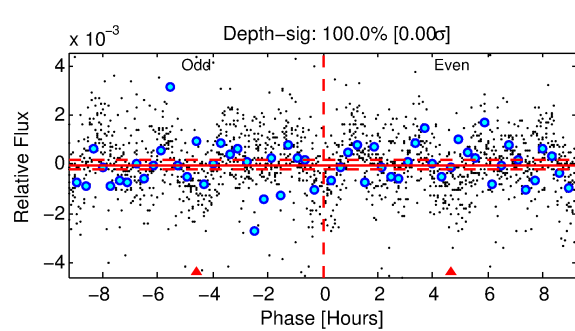
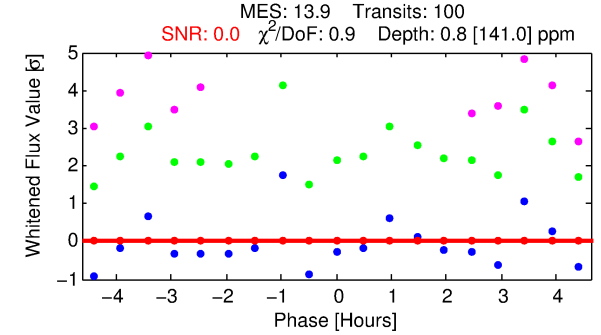
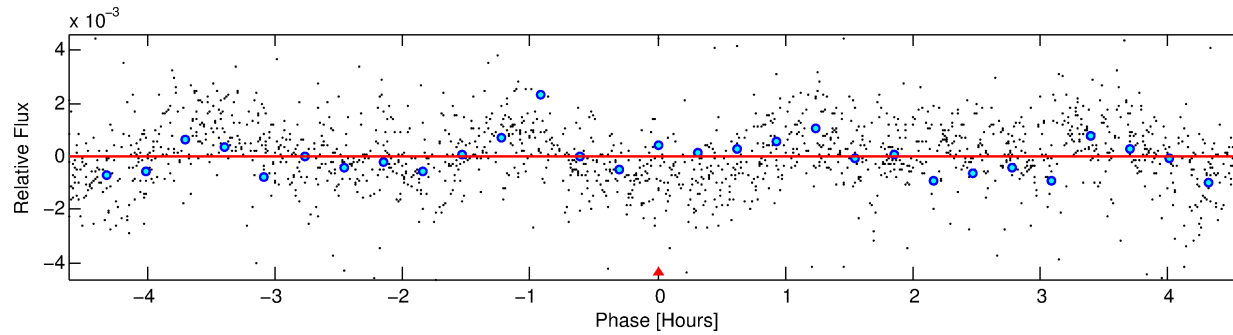
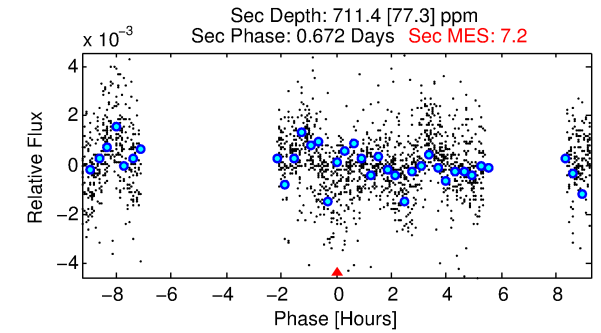
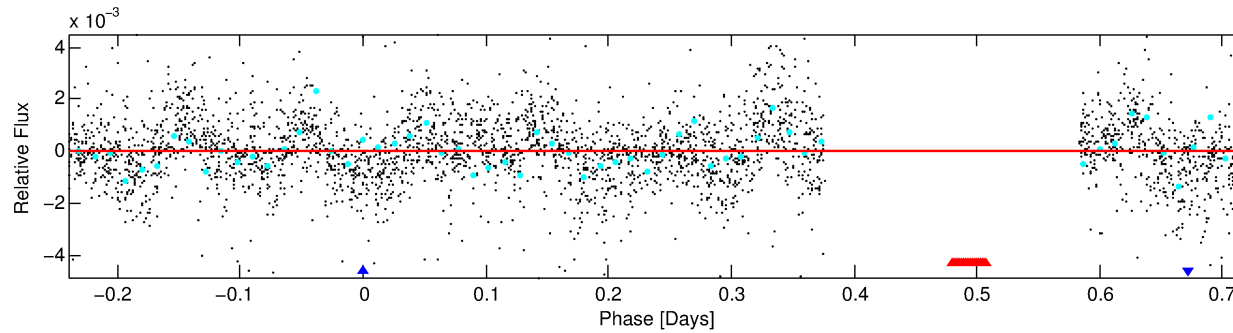
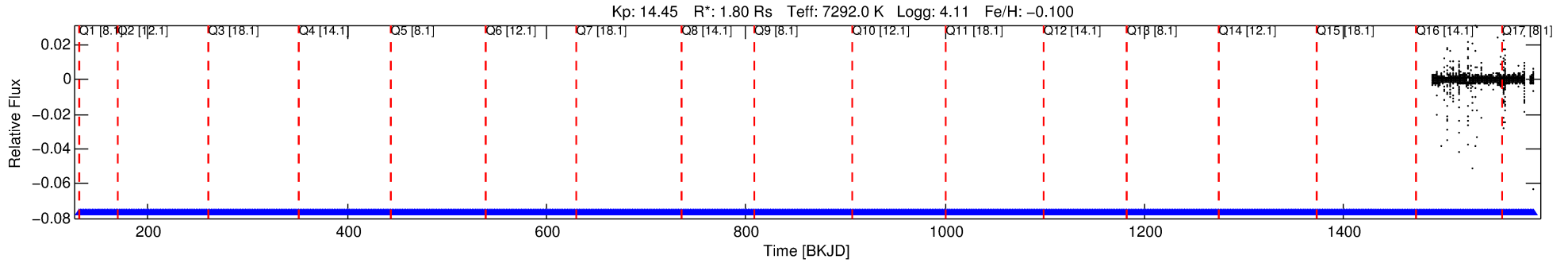
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008087649-02

No Significant Match Found

DV One-Page Summary

KIC: 8087649 Candidate: 2 of 2 Period: 0.960 d



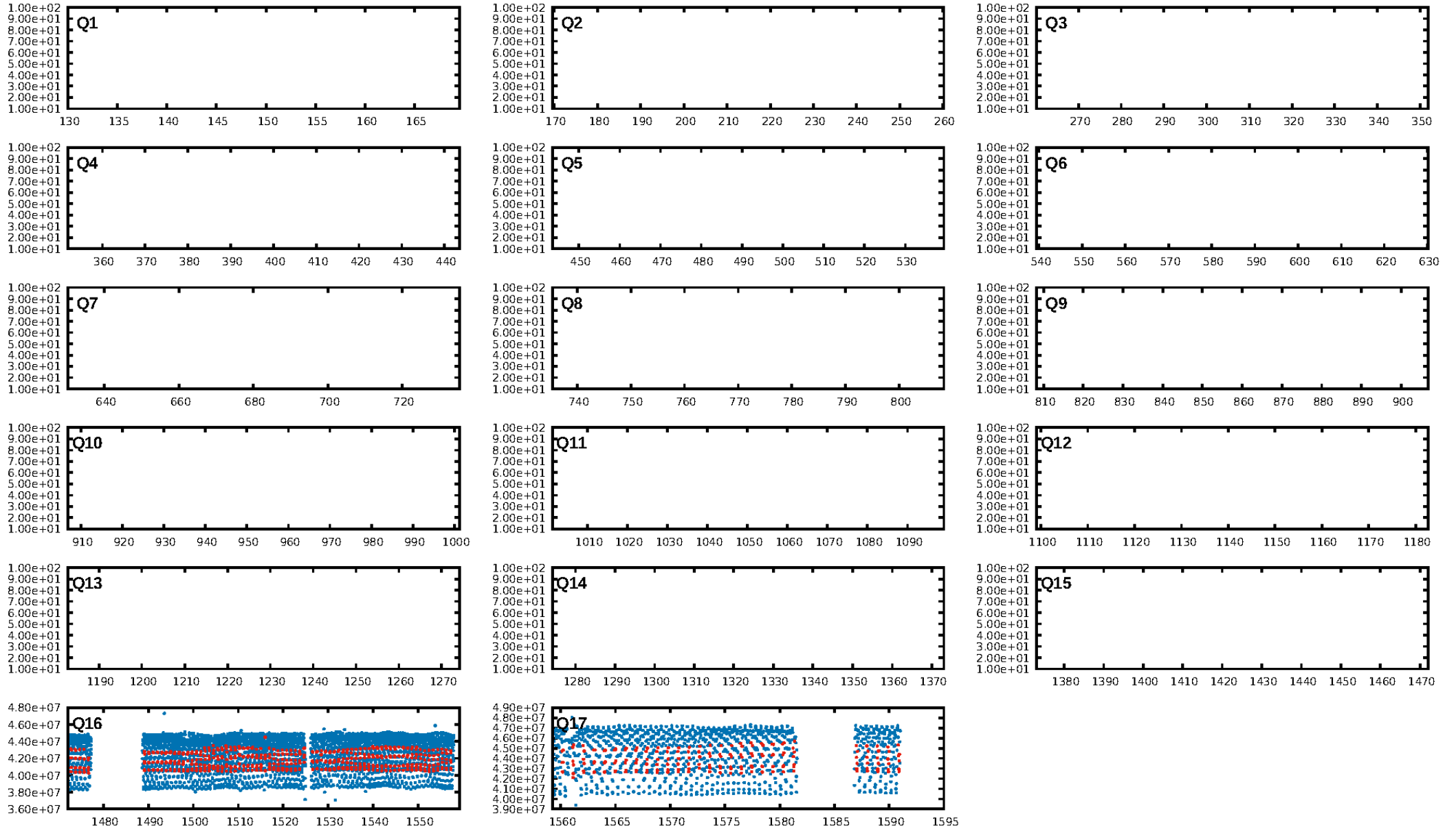
DV Fit Results:

Period = 0.95987 [0.01290] d
Epoch = 131.8985 [1.7026] BKJD
Rp/R* = 0.0010 [0.0846]
a/R* = 2.28 [233.16]
b = 0.90 [27.52]
Seff = 17049.02 [6680.46]
Teq = 2914 [285] K
Rp = 0.19 [16.60] Re
a = 0.0219 [0.0055] AU
Ag = 5256.59 [923164.55] [0.01σ]
Teffp = 38359 [1684275] K [0.02σ]

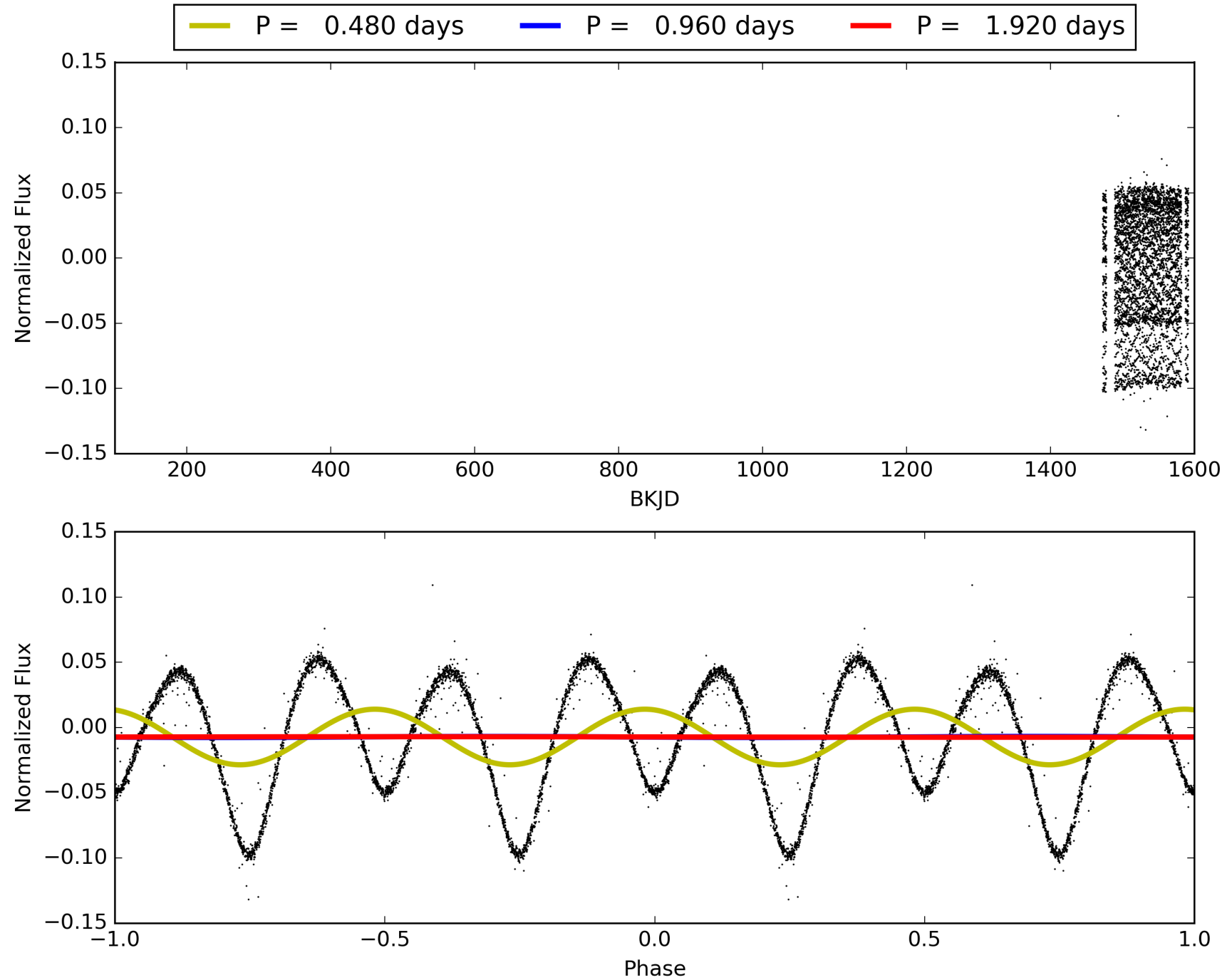
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.39e-32
RollingBand-fgt: 1.00 [71/71]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.005 arcsec [0.07σ]
KicOffset-rm: 0.070 arcsec [1.03σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 008087649-02, PDC Light Curves

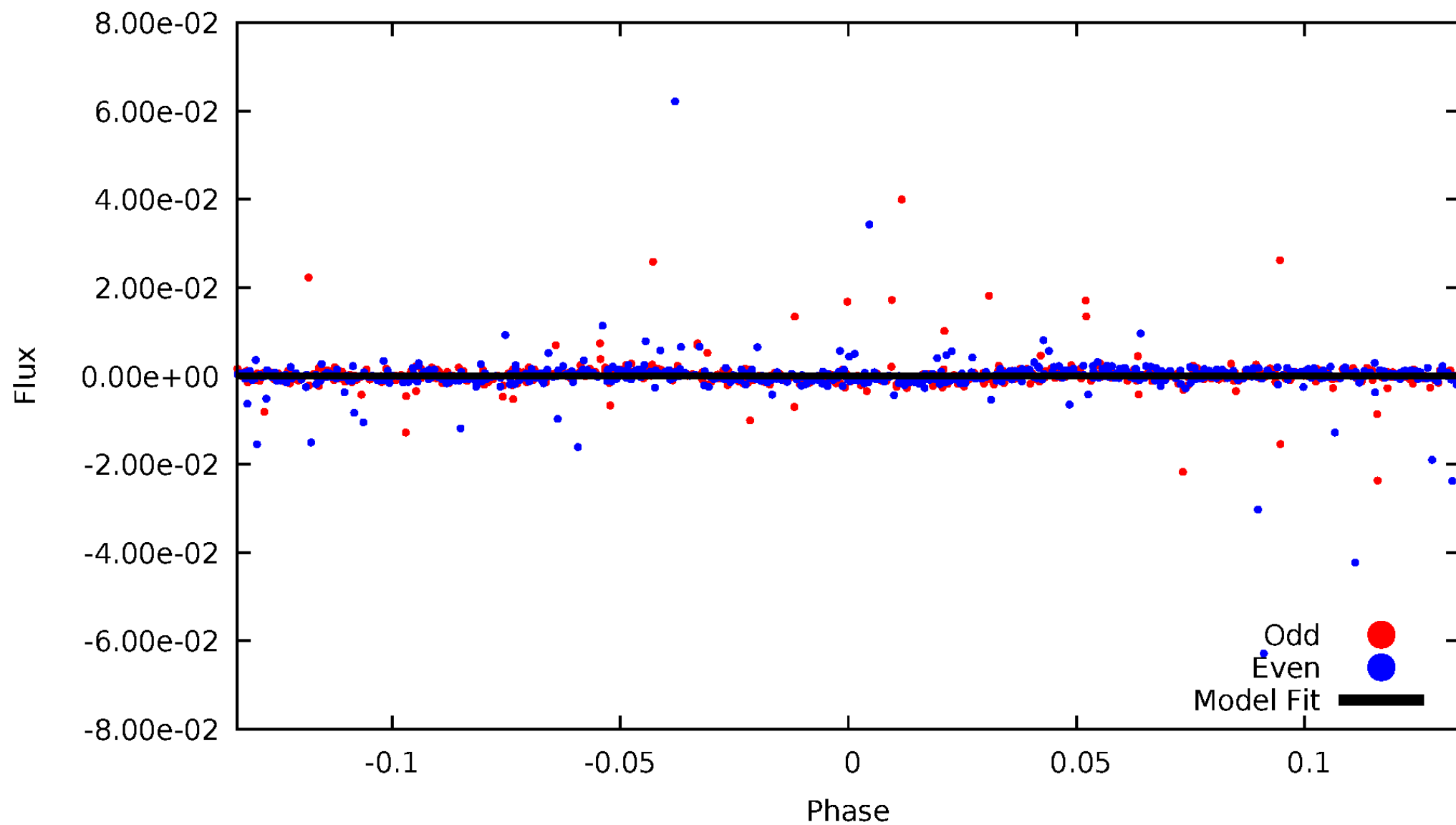


TCE 008087649-02



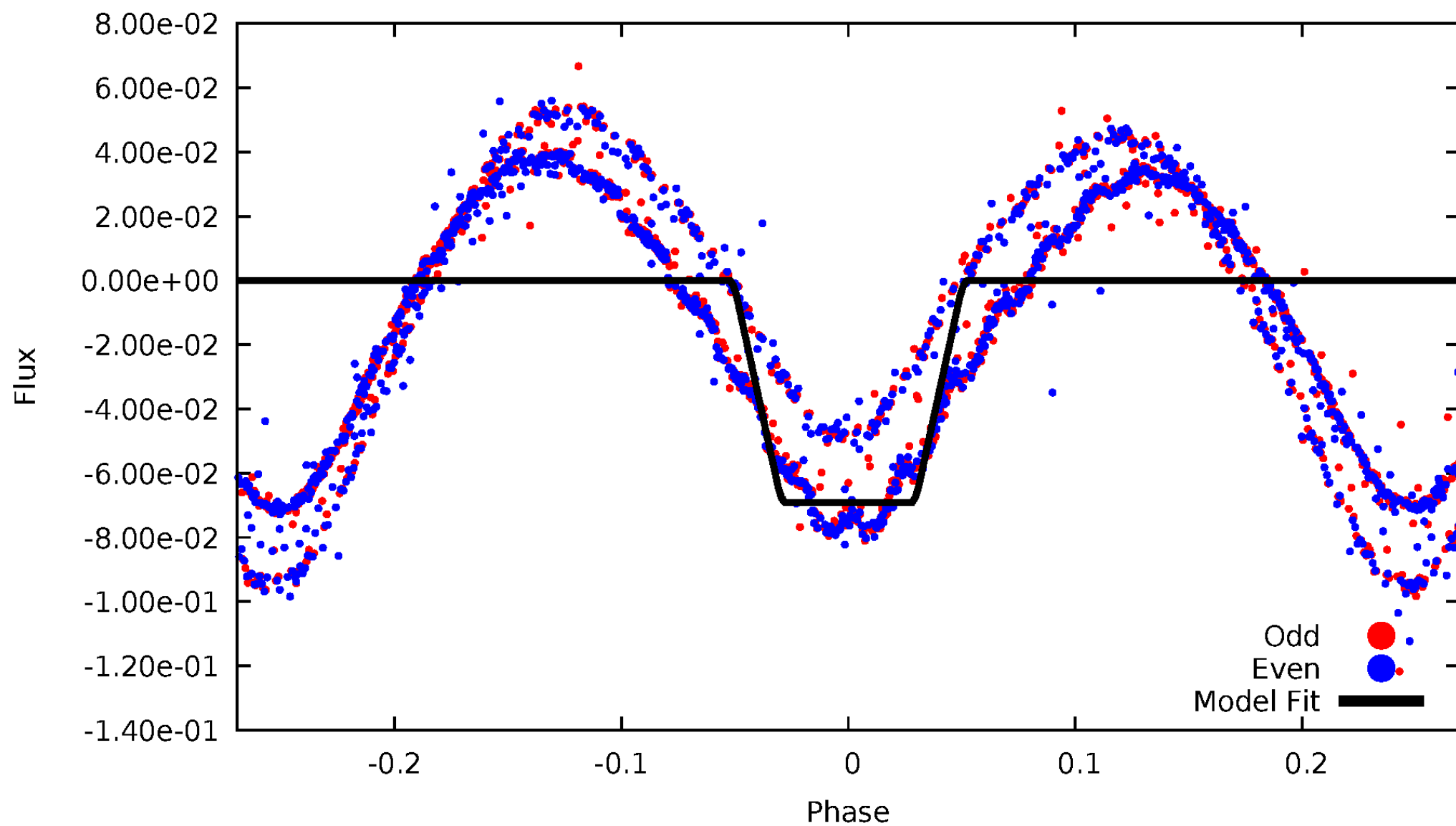
DV Odd/Even

TCE 008087649-02



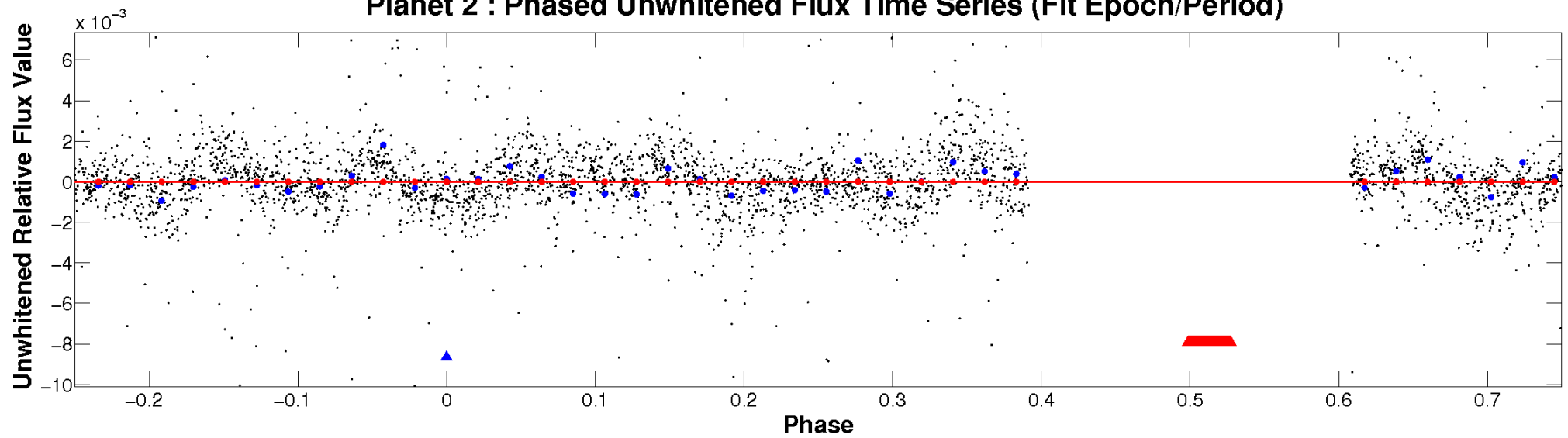
ALT Odd/Even

TCE 008087649-02

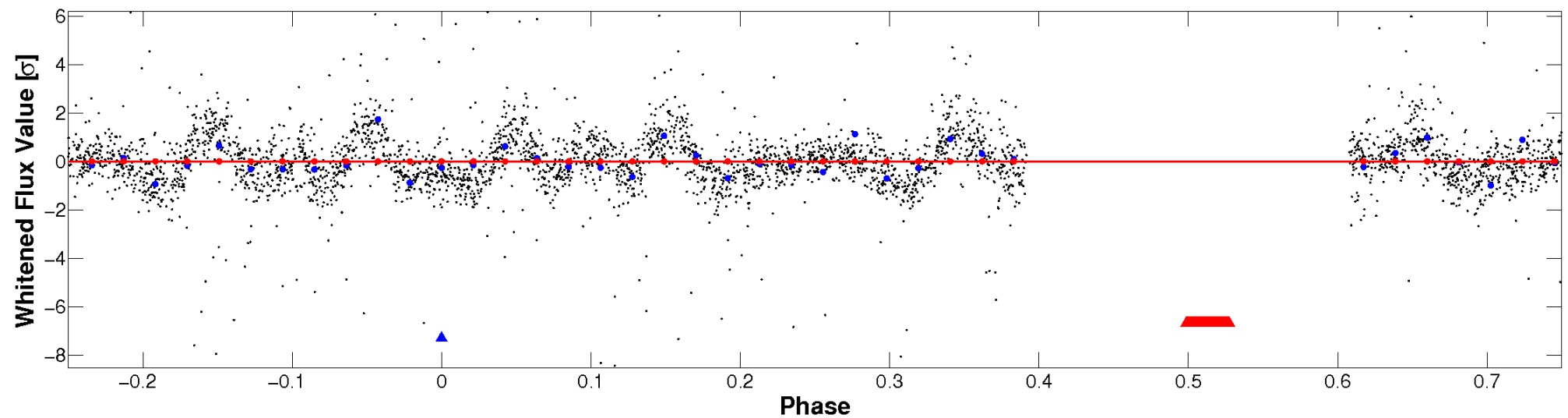


Non-Whitened Vs. Whitened Light Curve

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

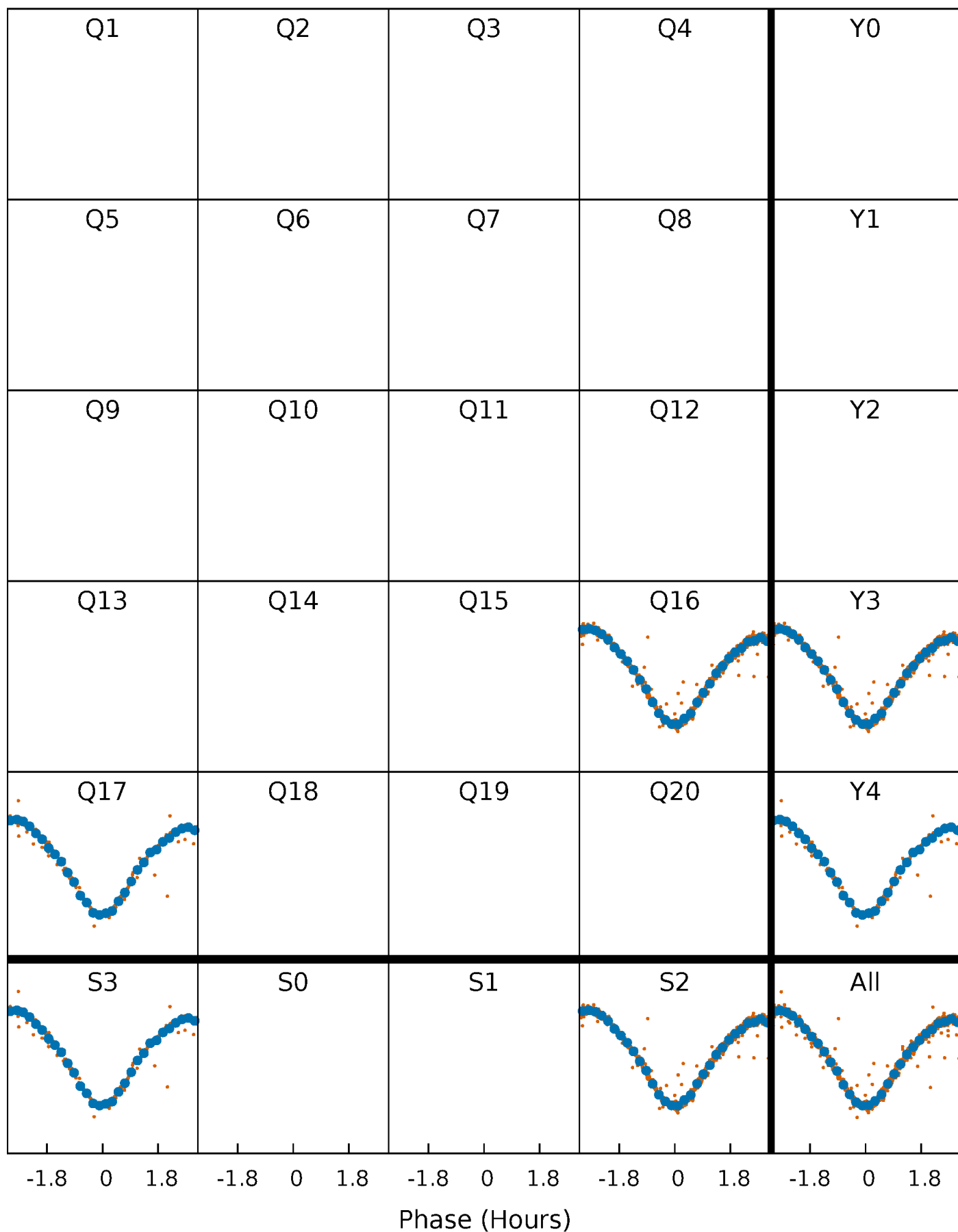


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



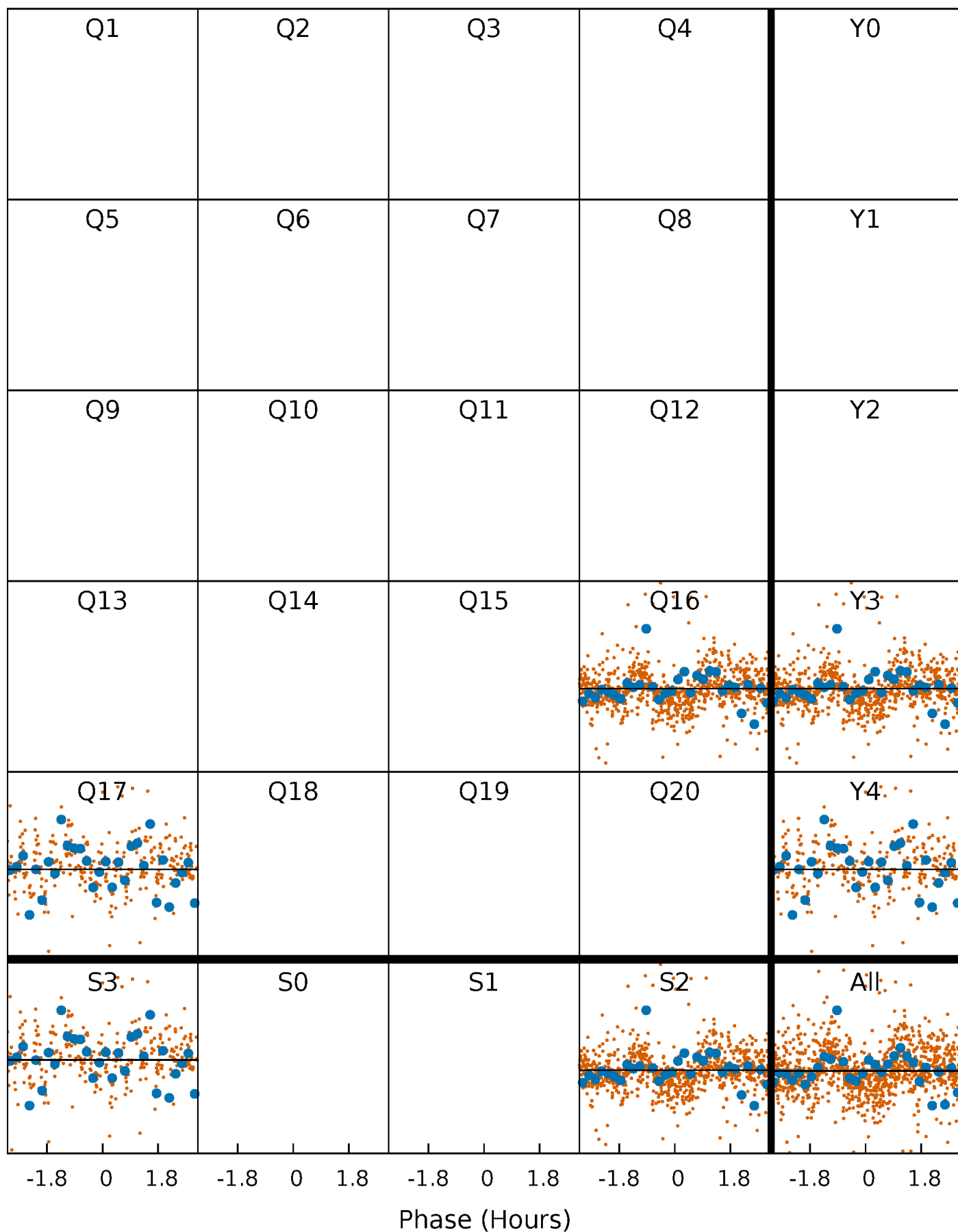
PDC Quarter-Phased Transit Curves

TCE 008087649-02 P= 0.959865 Days $T_0=131.898470$ (BKJD)



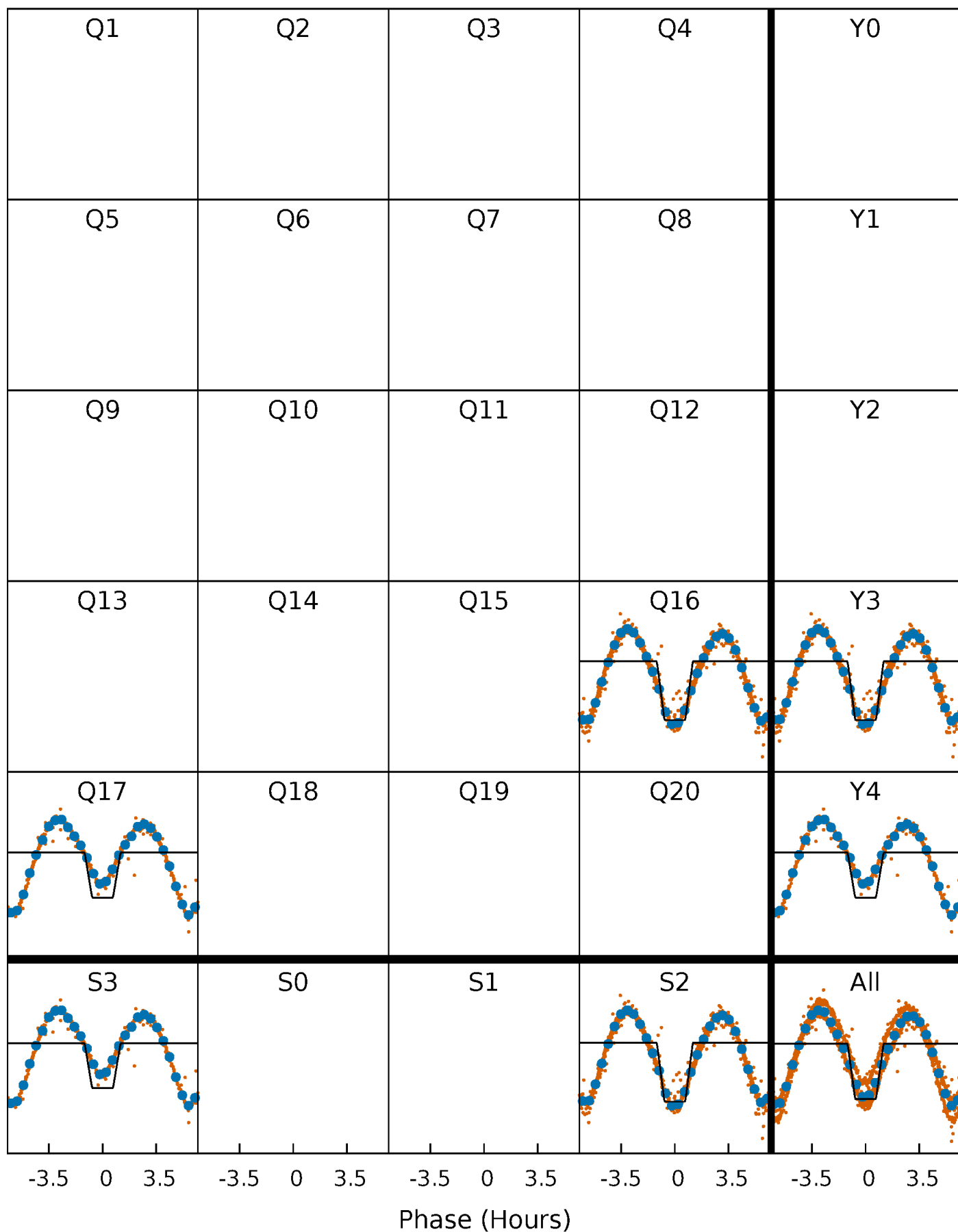
DV Quarter-Phased Transit Curves

TCE 008087649-02 $P = 0.959865$ Days $T_0 = 131.898470$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

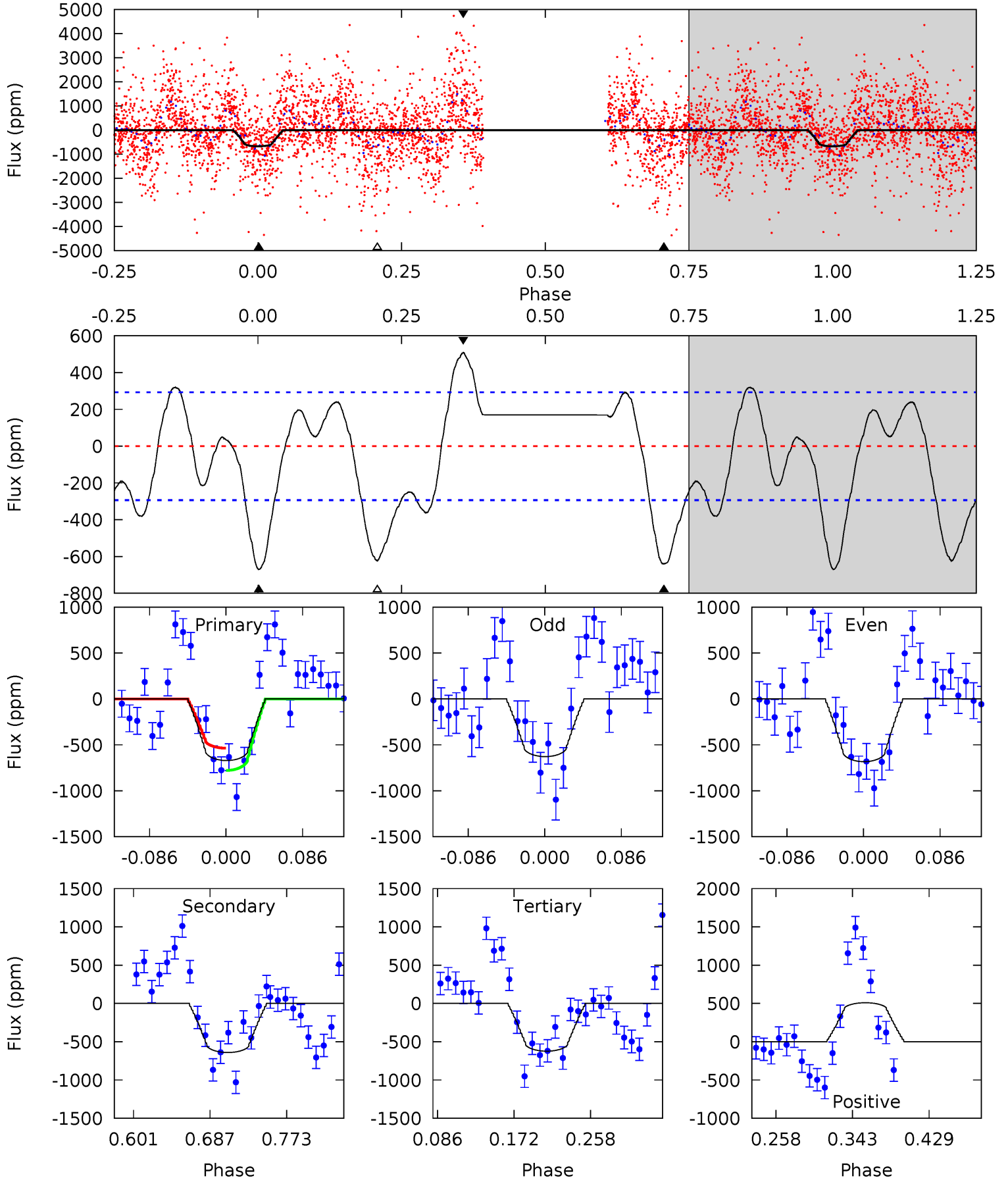
TCE 008087649-02 $P = 0.959880$ Days $T_0 = 131.877264$ (BKJD)



DV Model-Shift Uniqueness Test

008087649-02, P = 0.959865 Days, E = 131.898470 Days

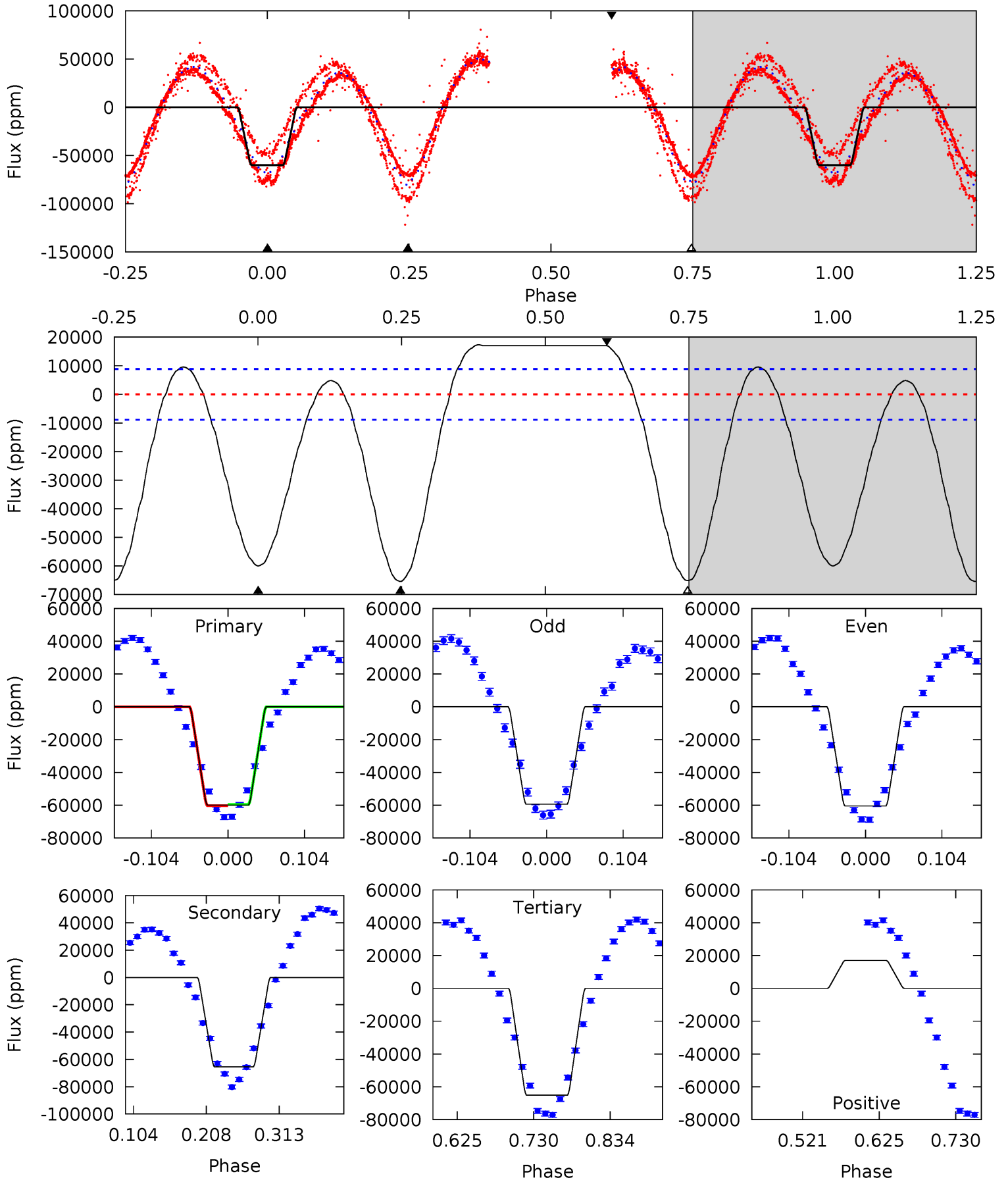
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 10.5 | 10.0 | 9.76 | 7.98 | 4.60 | 1.72 | 4.73 | 0.74 | 2.52 | 0.28 | 2.06 | 0.43 | -0.32 | 0.43 | 1.90 |



Alt Model-Shift Uniqueness Test

008087649-02, P = 0.959880 Days, E = 131.877264 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 30.8 | 33.6 | 33.5 | 8.75 | 4.56 | 1.62 | 14.2 | -2.65 | 22.1 | 0.16 | 24.9 | 0.28 | 0.88 | 0.21 | 0.28 |



Stellar Parameters For KIC 008087649

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7292^{+228}_{-330} | $4.111^{+0.149}_{-0.182}$ | $-0.100^{+0.200}_{-0.350}$ | $1.797^{+0.555}_{-0.416}$ | $1.518^{+0.211}_{-0.257}$ | $0.369^{+0.295}_{-0.191}$ |
| | +3%/-5% | +4%/-4% | +200%/-350% | +31%/-23% | +14%/-17% | +80%/-52% |
| Source | KIC0 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 008087649-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------------|---------------------------|----------------------|------------------------|----------------------------|
| DV | -641 ± 64 | $11.40^{+12.40}_{-8.59}$ | 4094^{+303}_{-305} | 4544^{+5366}_{-6795} | $1.200^{+19.108}_{-0.907}$ |
| Alt. | -65410 ± 1945 | $51.92^{+19.10}_{-17.83}$ | 4064^{+350}_{-274} | 7176^{+2203}_{-1078} | $6.836^{+9.022}_{-3.274}$ |

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

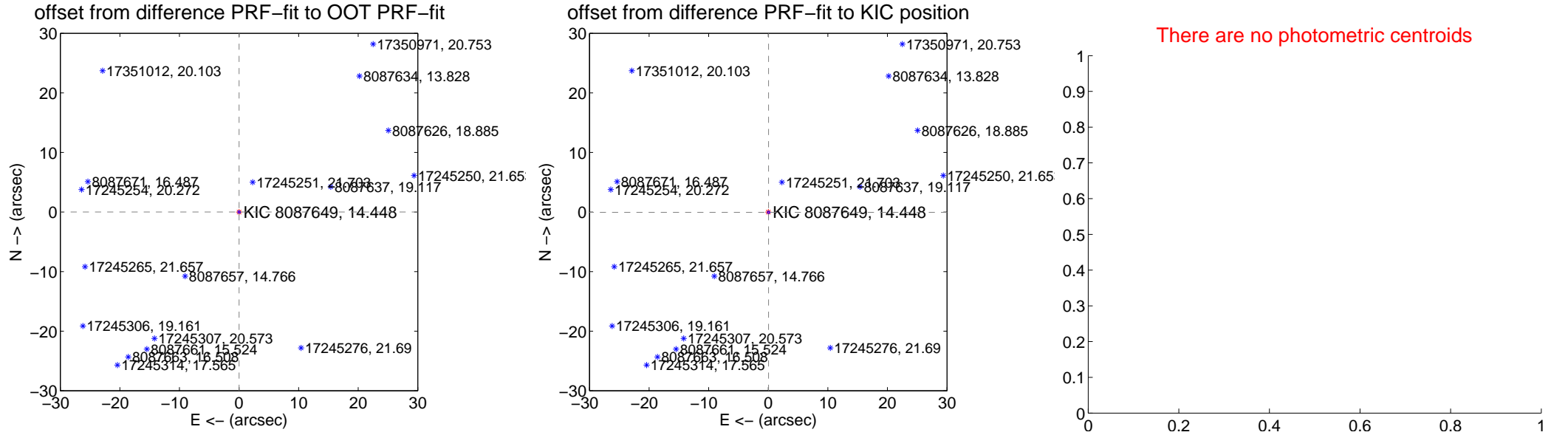
DV Centroid Data

Supplemental centroid analysis for 008087649-02. Kepler magnitude: 14.45. Transit SNR 0.01

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.005 ± 0.067 | 0.07 | -0.003 ± 0.067 | 0.003 ± 0.067 |
| PRF-fit source offset from KIC position | 0.070 ± 0.068 | 1.03 | -0.052 ± 0.068 | -0.047 ± 0.068 |
| photometric centroid source offset | — | — | — | — |



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.



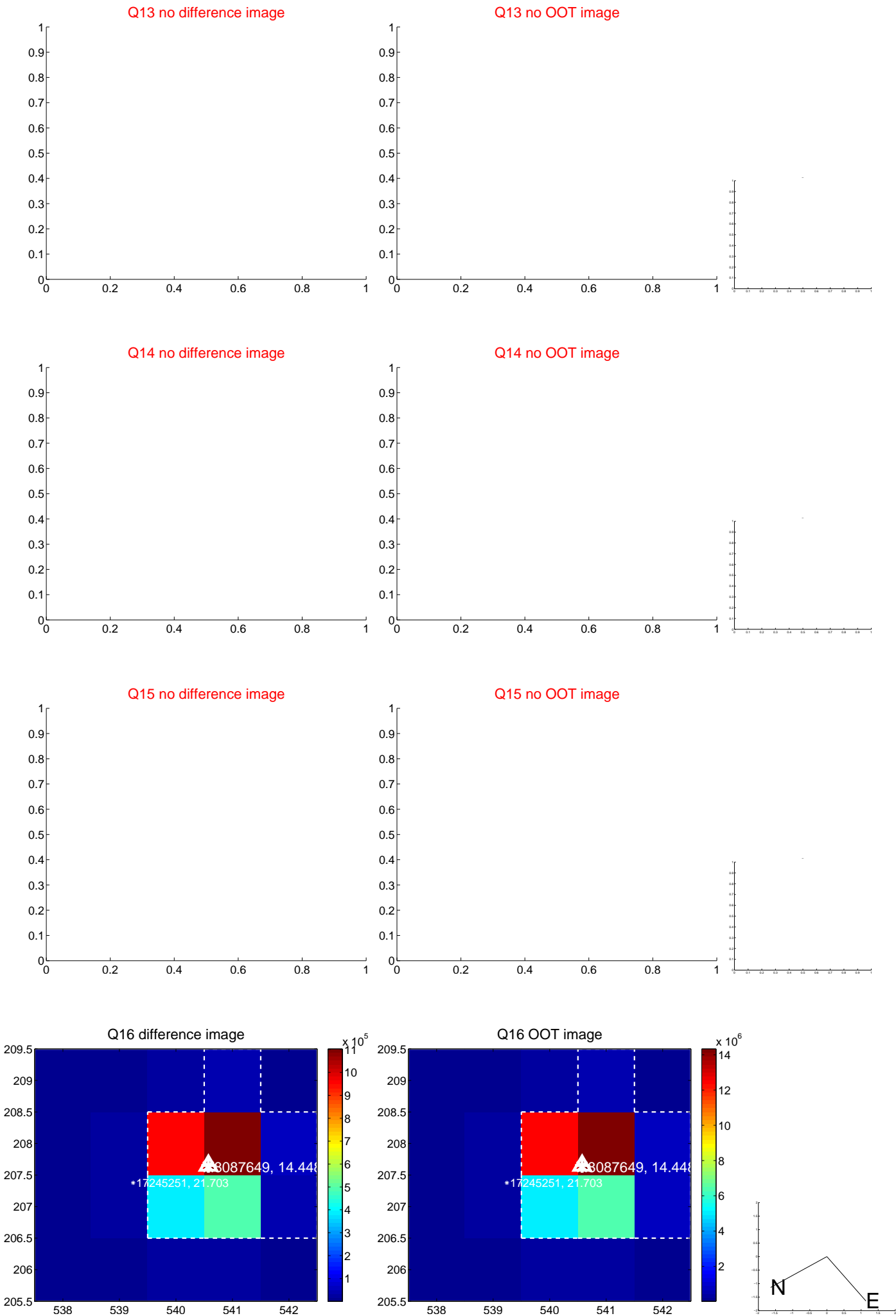
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



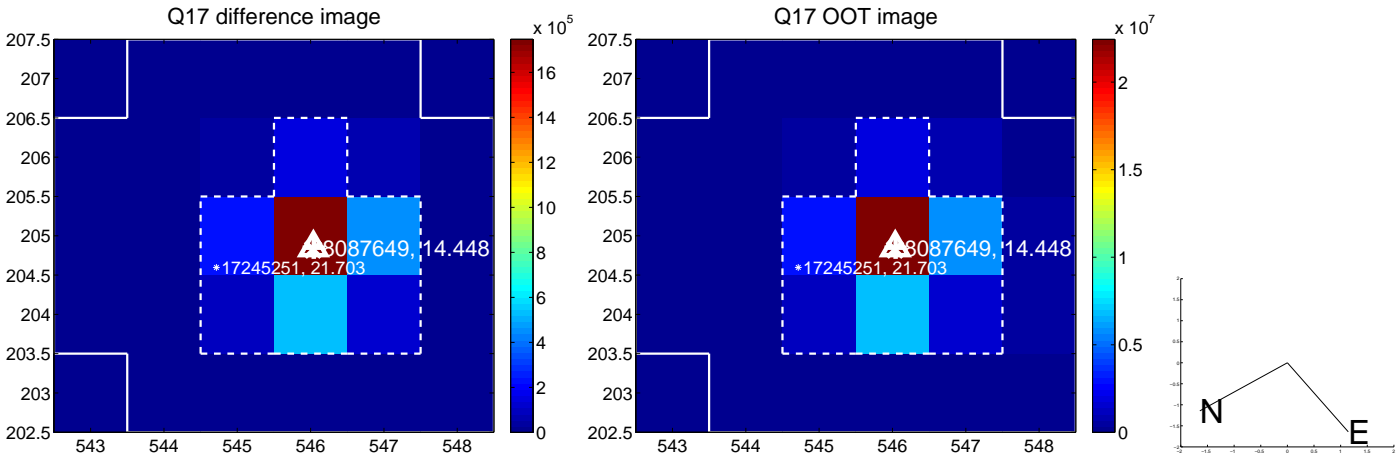
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

