

KIC 010678817

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010678817-01 | OBS | No | 2.999534 | 132.299189 | 55.6 | 10.422 | 13.2 | 11.4 | 1.04 | 6463 | 0.91 | 974.17 |
| 010678817-02 | OBS | No | 276.886161 | 172.085594 | 261.4 | 7.905 | 19.7 | 4.8 | 1.04 | 6463 | 1.85 | 2.33 |
| 010678817-03 | OBS | No | 3.000171 | 133.416659 | 35.3 | 14.837 | 10.3 | 9.1 | 1.04 | 6463 | 0.64 | 973.90 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010678817-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010678817-02 | 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_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010678817-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD |

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

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

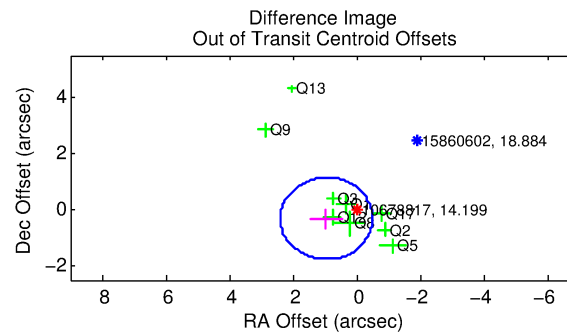
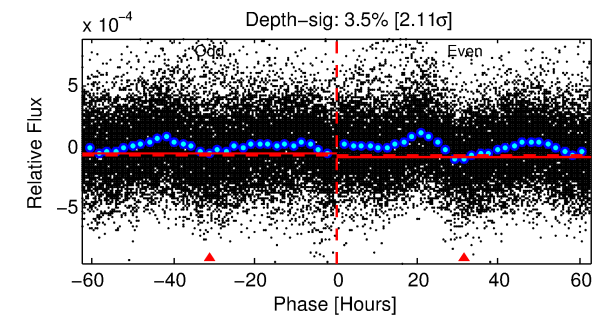
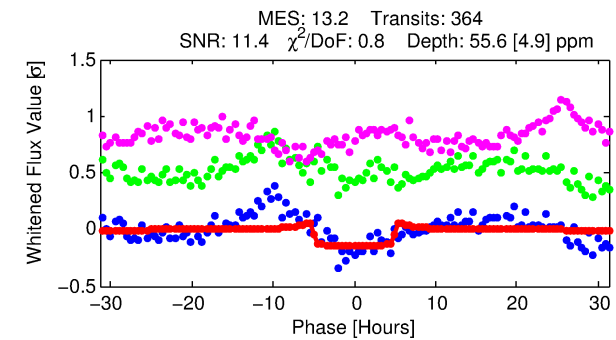
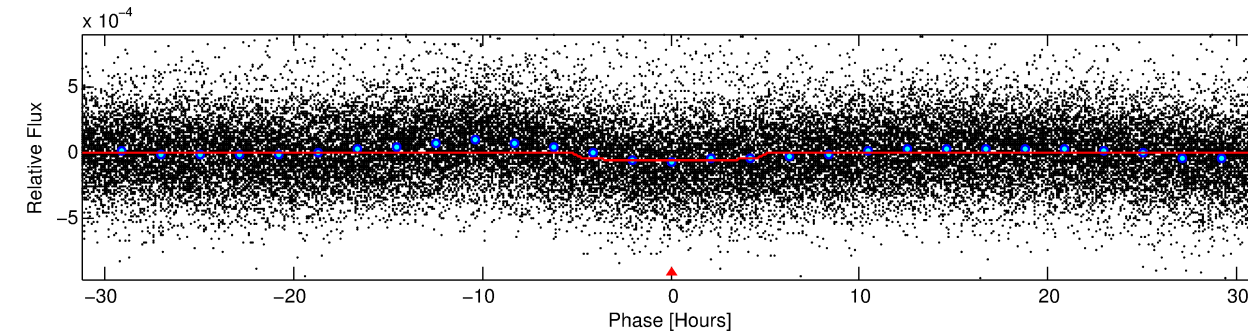
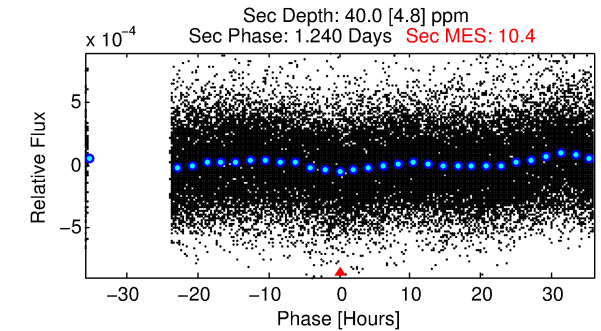
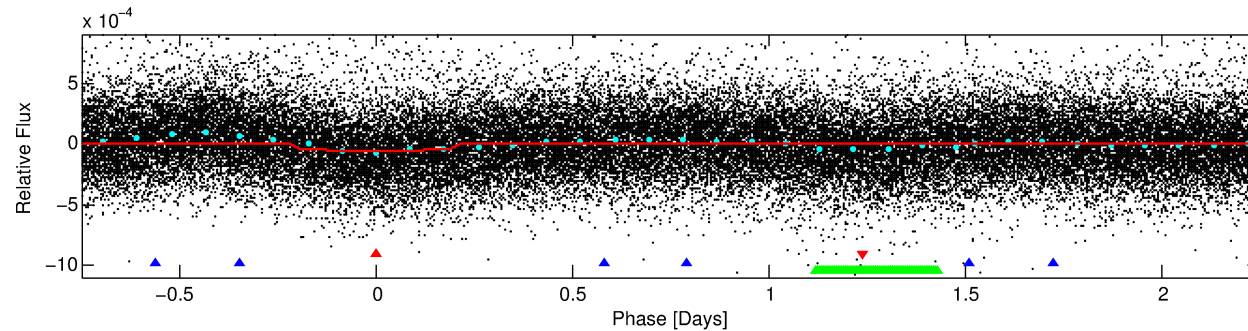
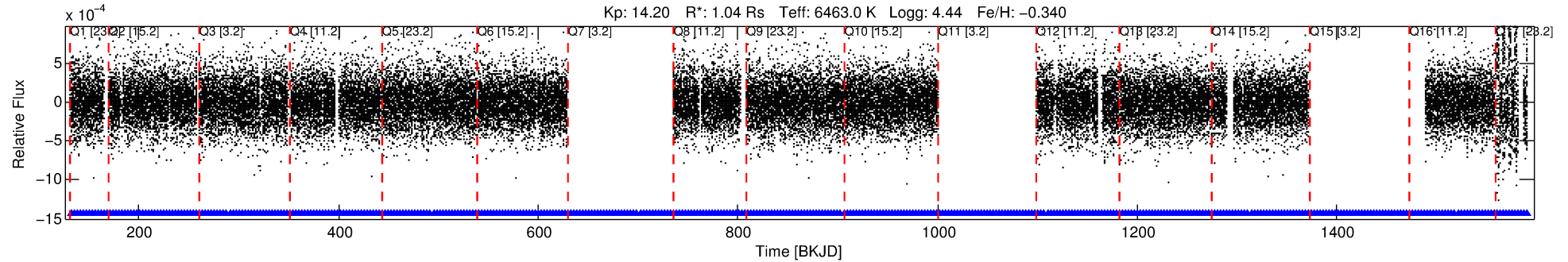
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678817-01

No Significant Match Found

DV One-Page Summary

KIC: 10678817 Candidate: 1 of 3 Period: 3.000 d



DV Fit Results:

Period = 2.99953 [0.00003] d
Epoch = 132.2992 [0.0064] BKJD
Rp/R* = 0.0080 [0.0011]
a/R* = 1.37 [0.49]
b = 0.90 [0.16]
Seff = 974.17 [341.84]
Teq = 1425 [125] K
Rp = 0.91 [0.28] Re
a = 0.0419 [0.0095] AU
Ag = 46.59 [20.92] [2.18σ]
Teffp = 5754 [471] K [8.88σ]

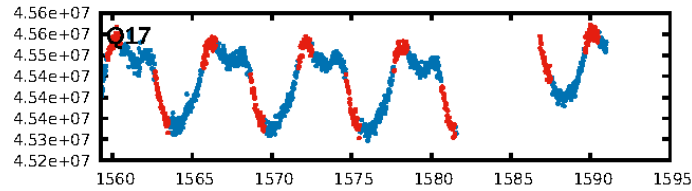
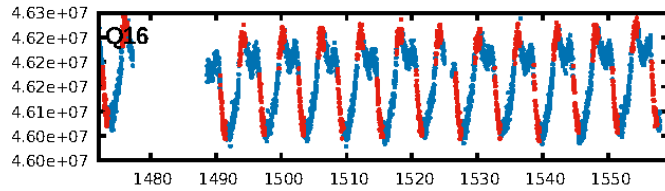
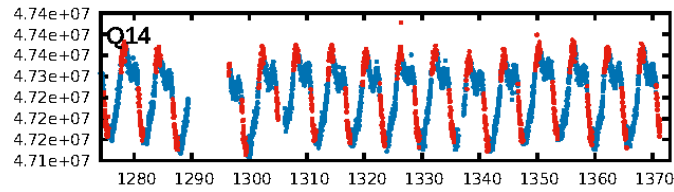
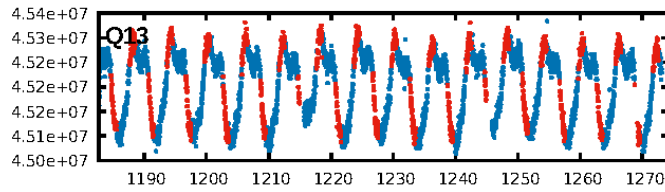
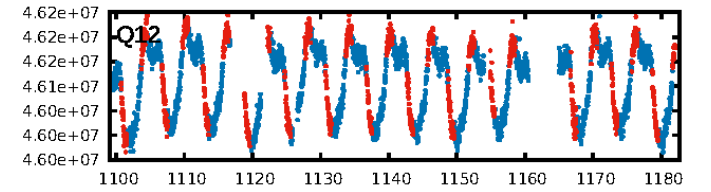
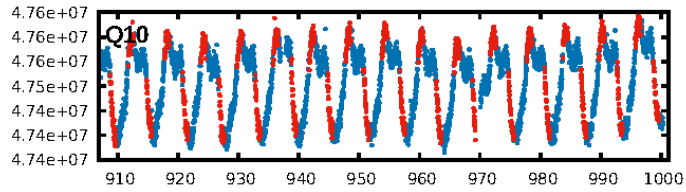
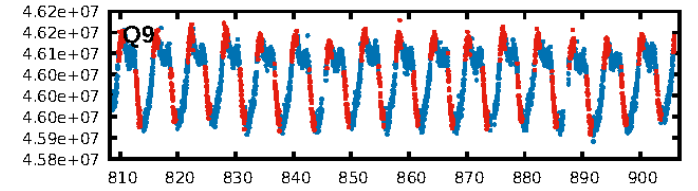
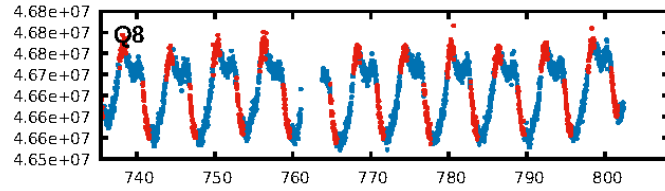
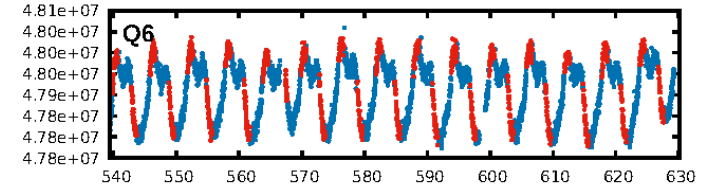
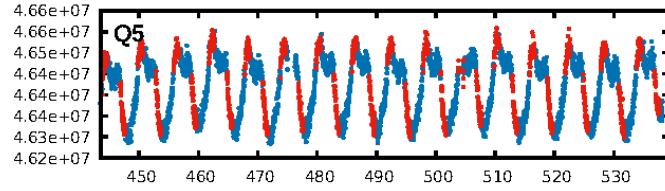
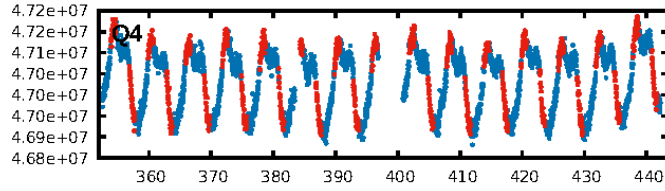
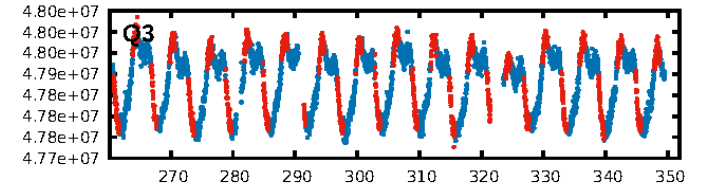
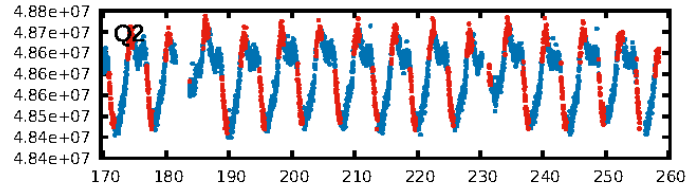
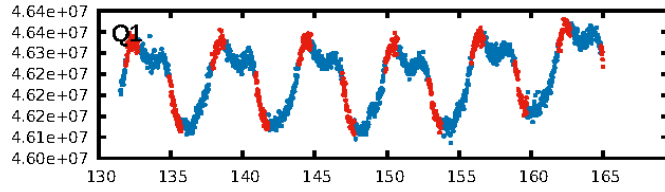
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [343/343]
GhostDiagnostic-chr: 6.438
Centroid-sig: 0.3%
Centroid-so: 1.708 arcsec [2.05σ]
OotOffset-rm: 0.996 arcsec [2.05σ]
OotOffset-st: 1/1/2/5 [9]
KicOffset-rm: 0.875 arcsec [1.88σ]
KicOffset-st: 1/1/2/5 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 1.00 [14/14]

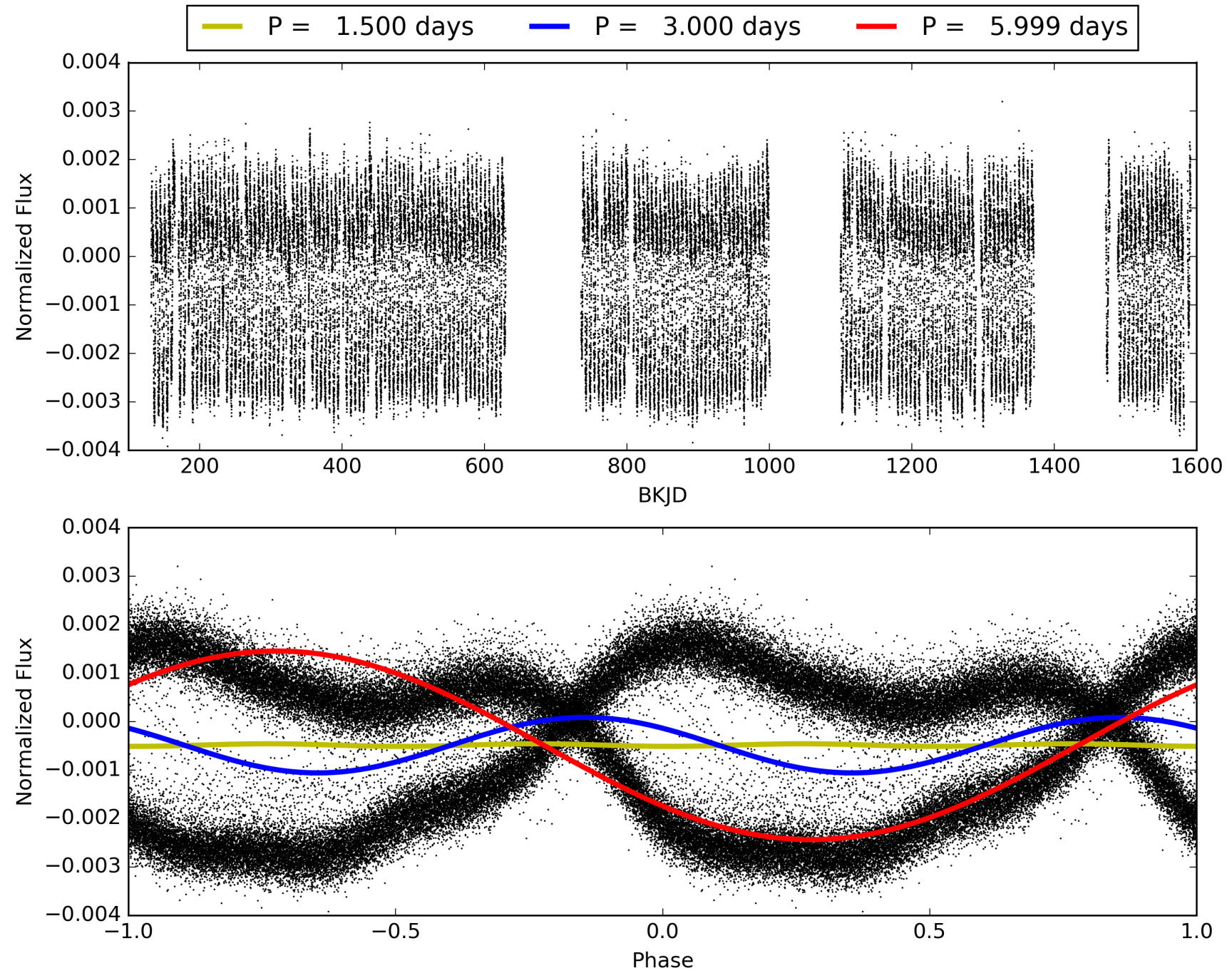
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:16:20 Z

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

TCE 010678817-01, PDC Light Curves

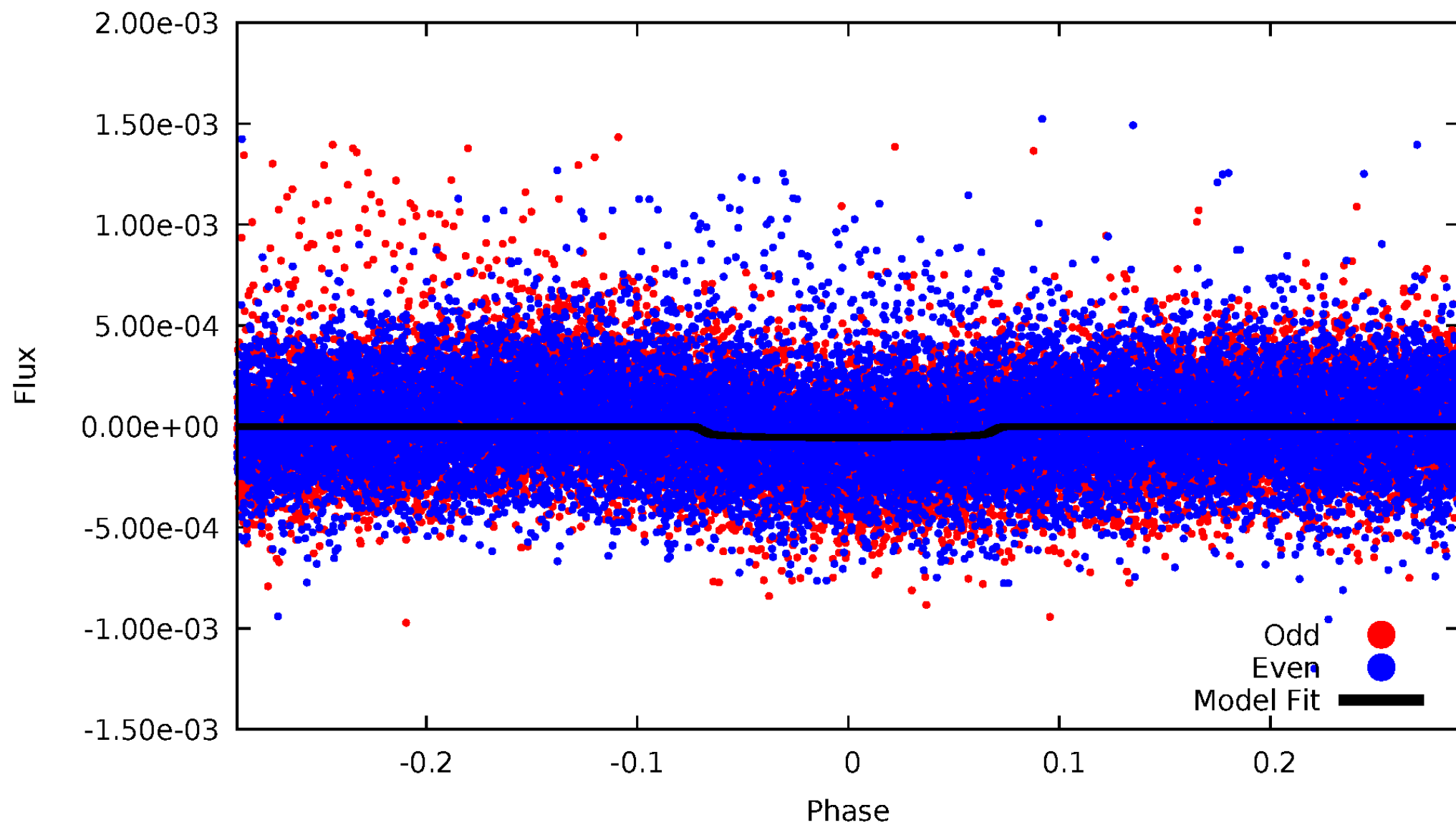


TCE 010678817-01



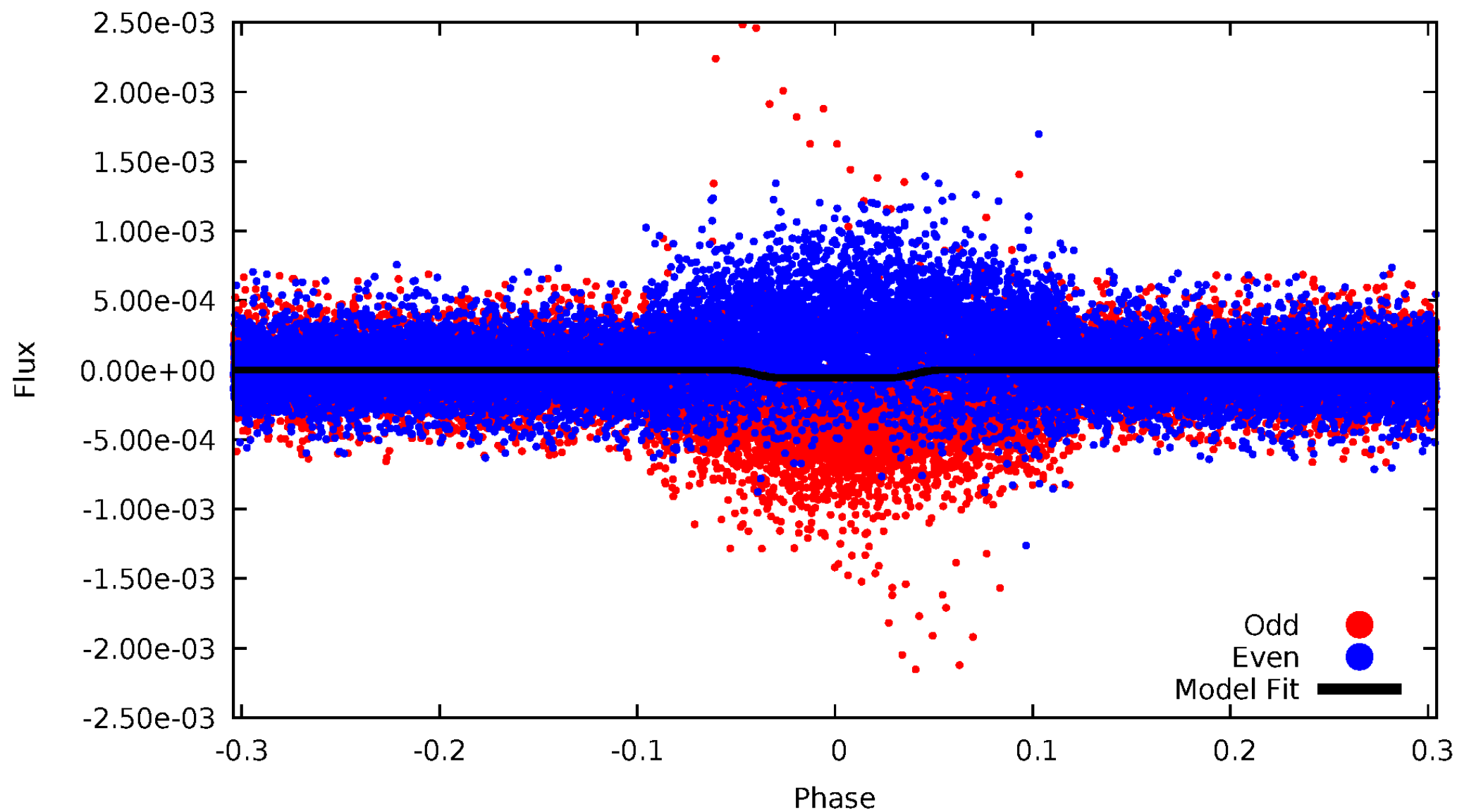
DV Odd/Even

TCE 010678817-01



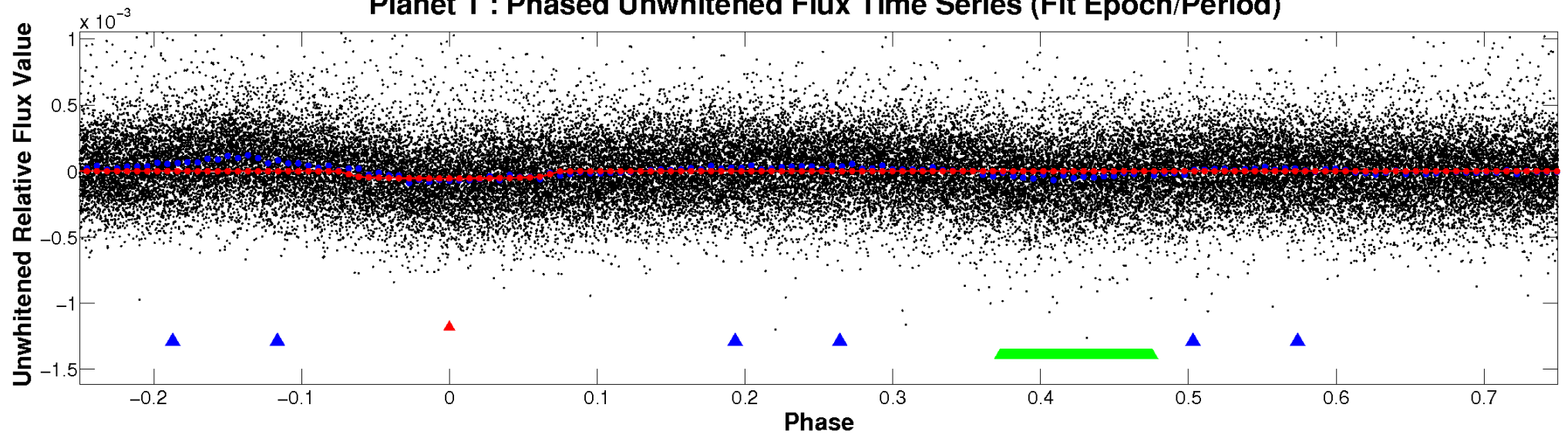
ALT Odd/Even

TCE 010678817-01

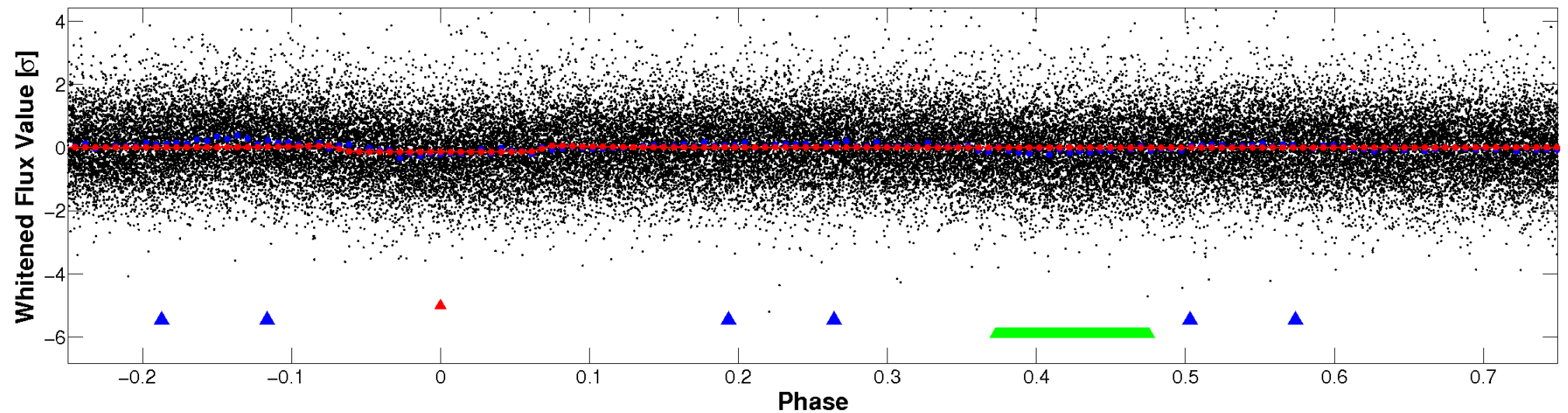


Non-Whitened Vs. Whitened Light Curve

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

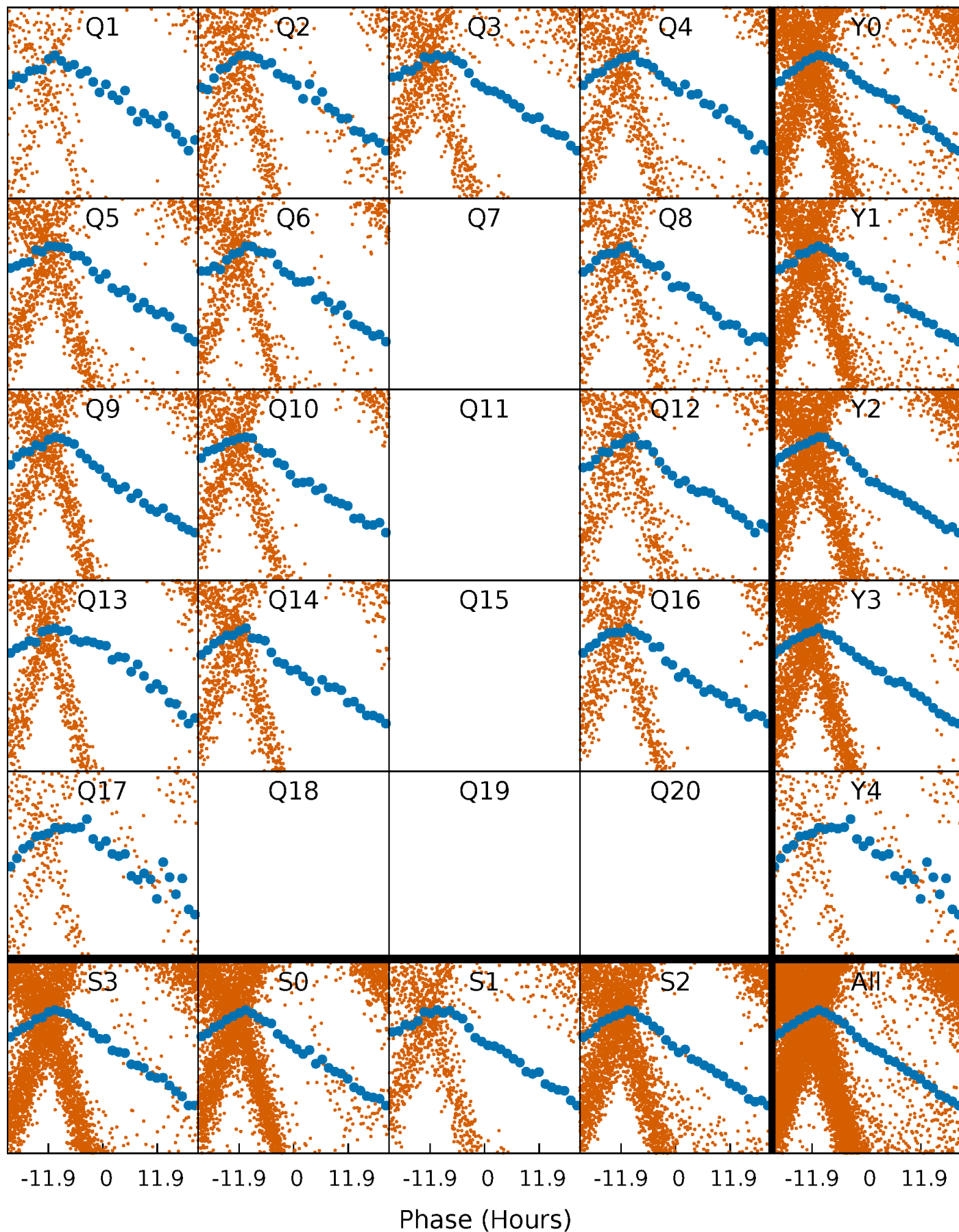


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



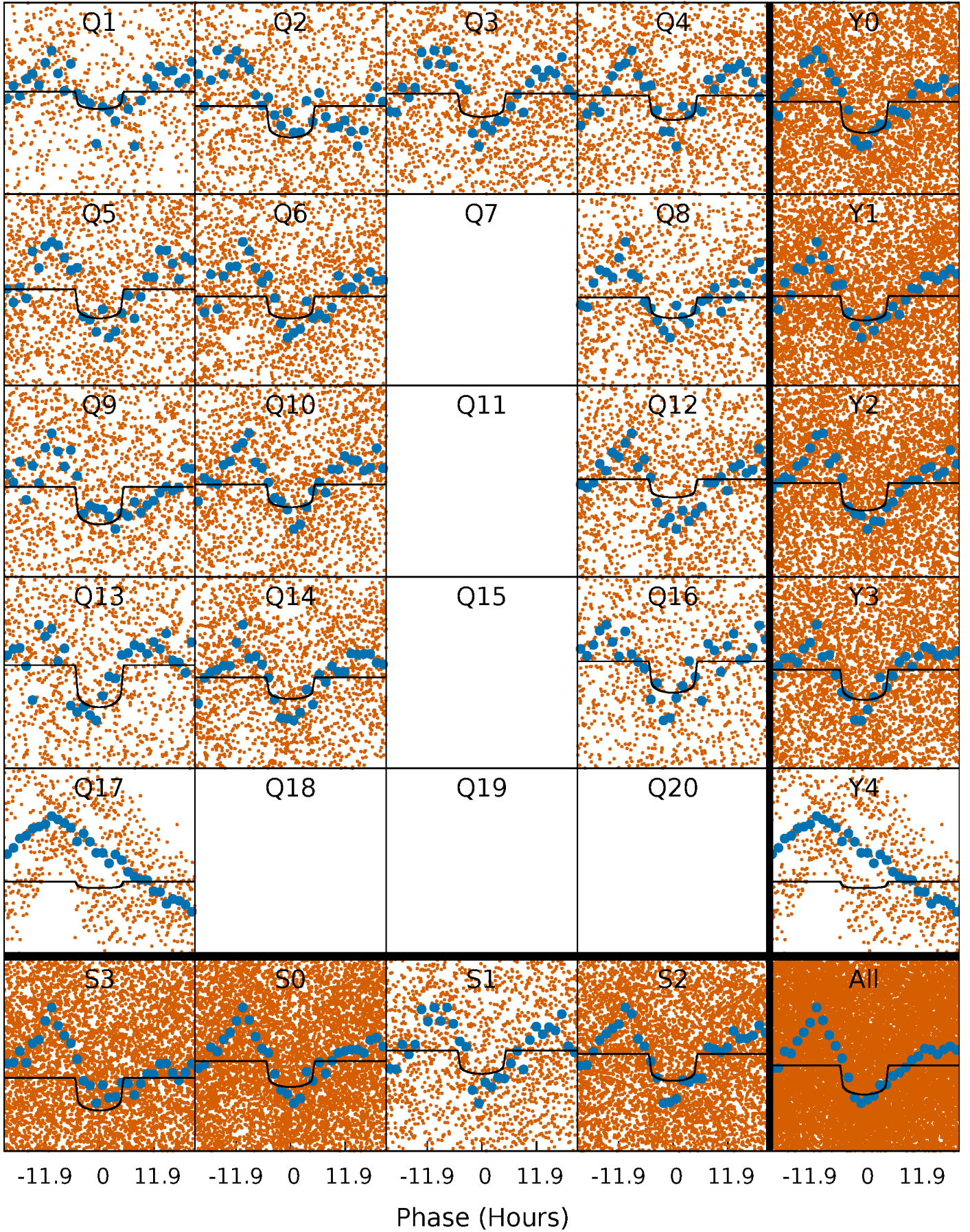
PDC Quarter-Phased Transit Curves

TCE 010678817-01 P= 2.999534 Days $T_0=132.299189$ (BKJD)



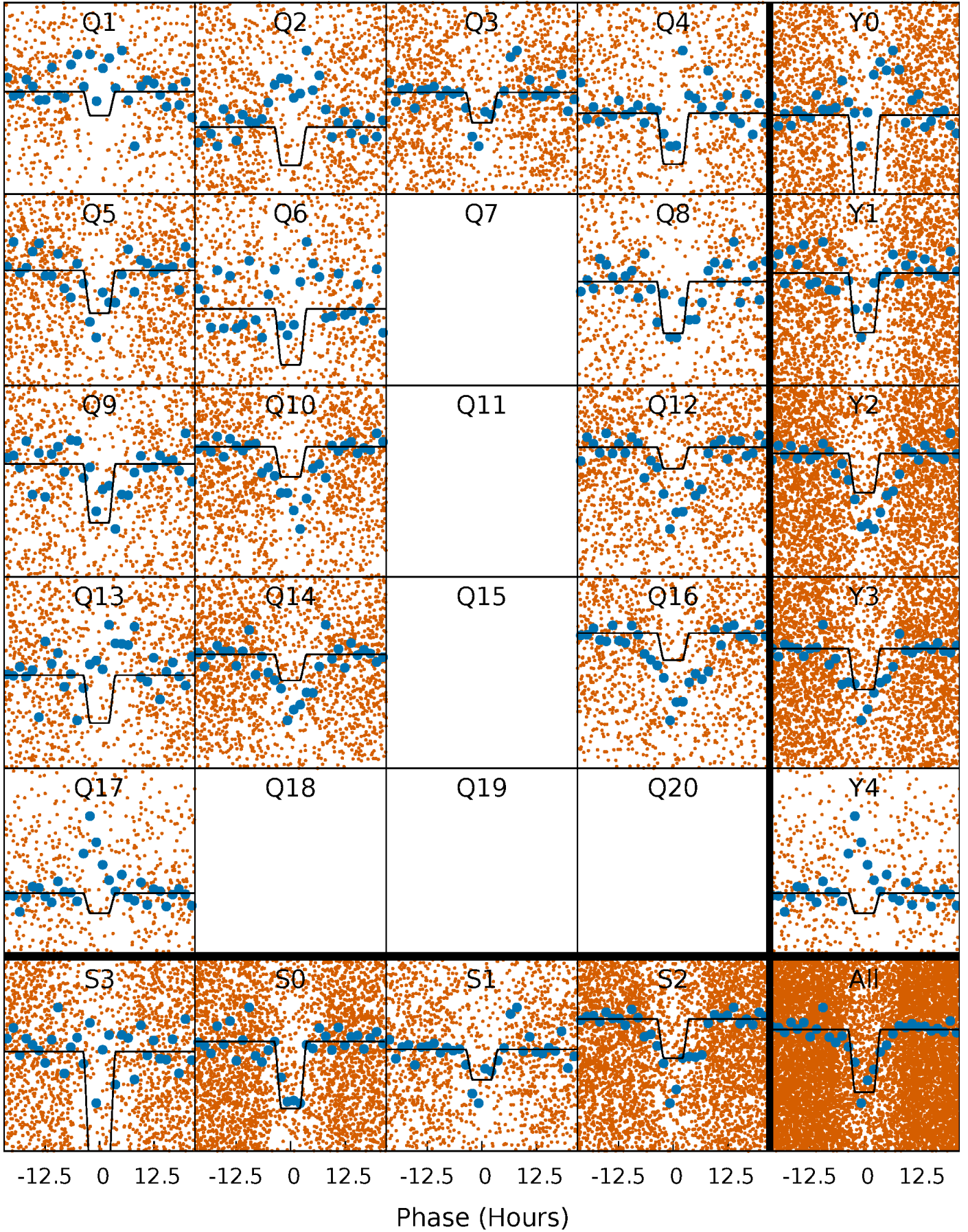
DV Quarter-Phased Transit Curves

TCE 010678817-01 P= 2.999534 Days $T_0=132.299189$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

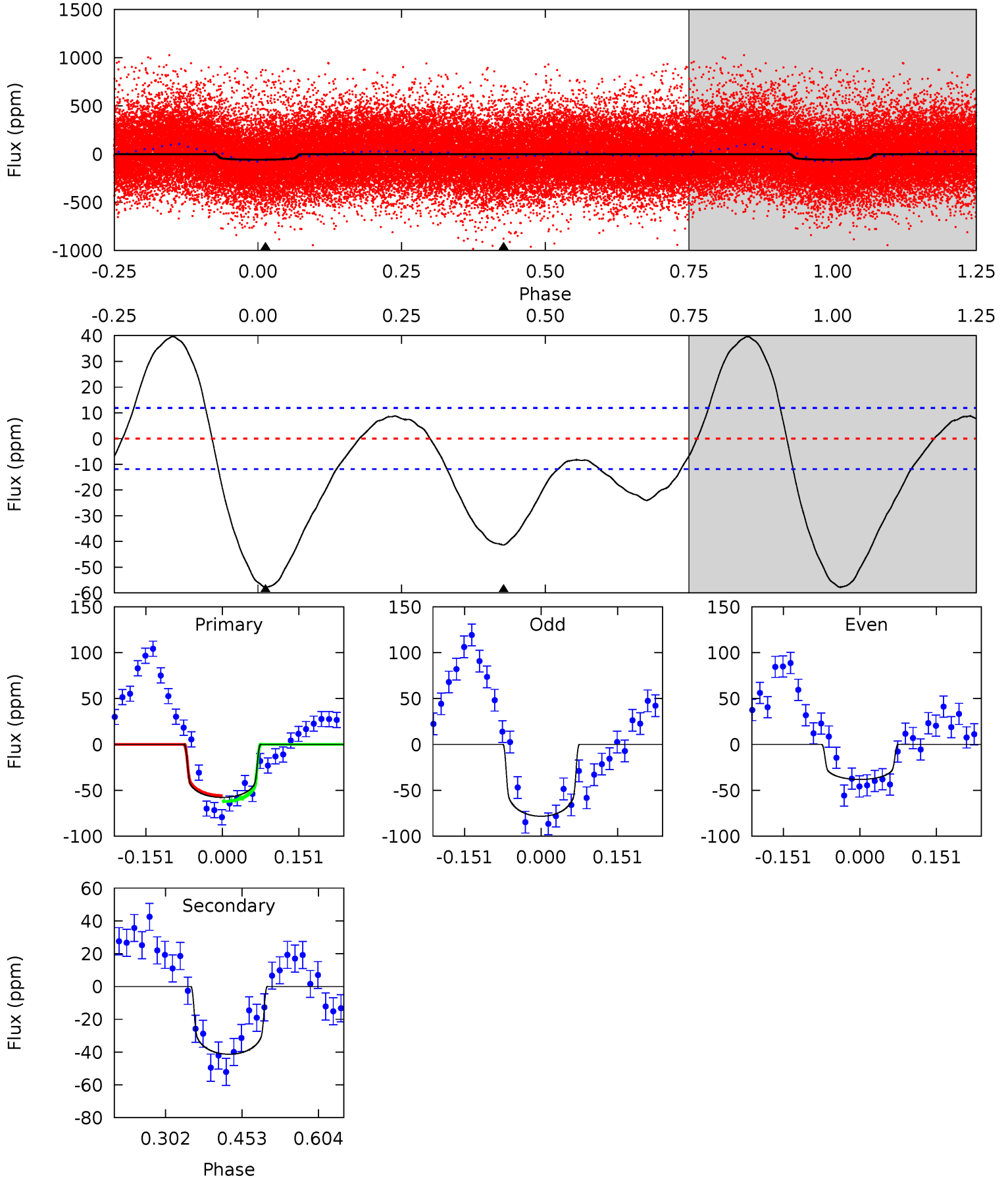
TCE 010678817-01 P= 2.999468 Days $T_0=132.291793$ (BKJD)



DV Model-Shift Uniqueness Test

010678817-01, P = 2.999534 Days, E = 129.299655 Days

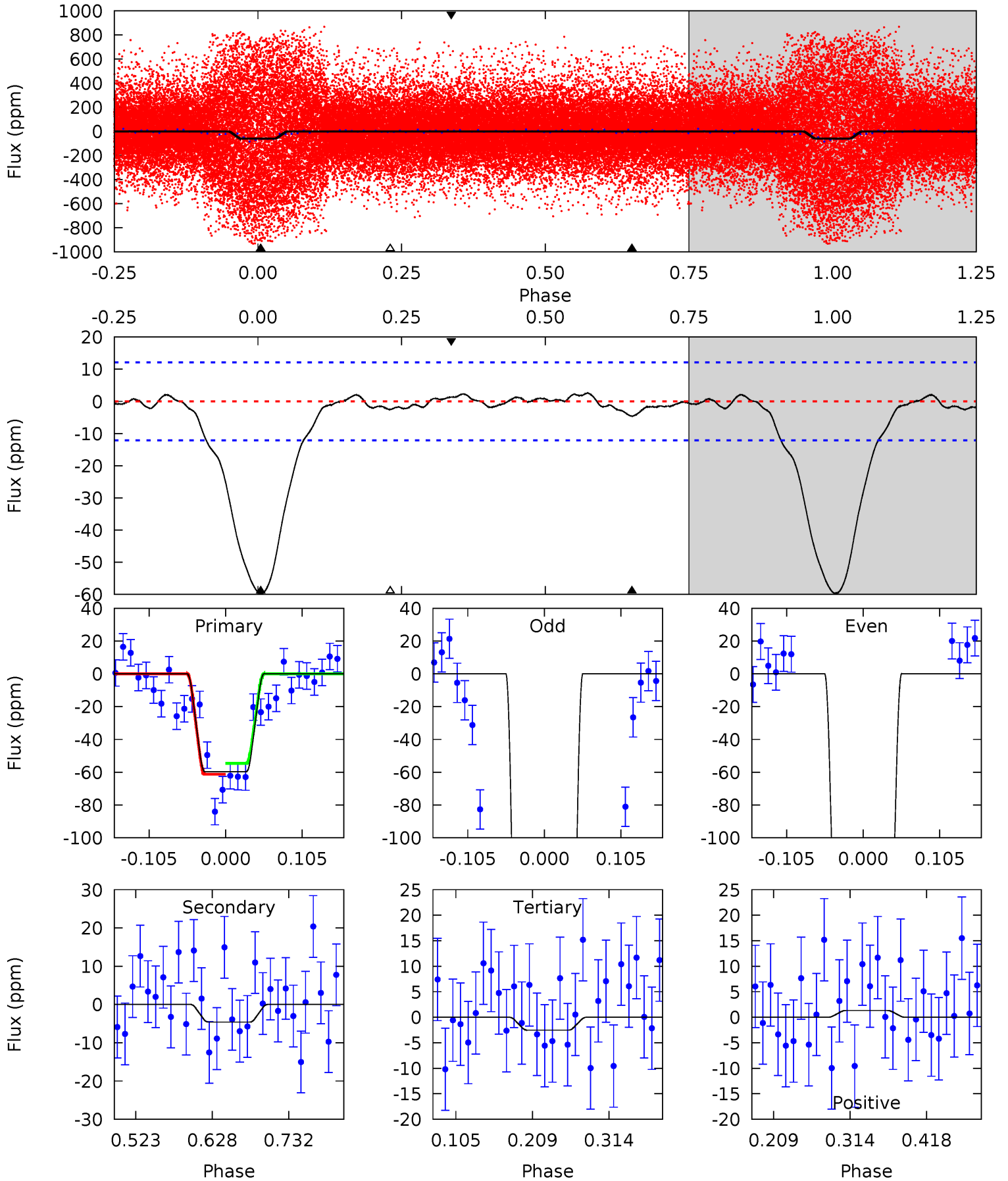
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.7 | 15.6 | 0 | 0 | 4.48 | 1.44 | 7.15 | 21.7 | 21.7 | 15.6 | 15.6 | 7.54 | 0.83 | 0.41 | 1.23 |



Alt Model-Shift Uniqueness Test

010678817-01, P = 2.999468 Days, E = 129.292325 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 22.5 | 1.73 | 0.95 | 0.50 | 4.56 | 1.62 | 0.55 | 21.5 | 22.0 | 0.78 | 1.23 | 20.0 | 0.77 | 0.04 | 1.24 |



Stellar Parameters For KIC 010678817

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6463^{+155}_{-194} | $4.436^{+0.060}_{-0.180}$ | $-0.340^{+0.250}_{-0.300}$ | $1.045^{+0.282}_{-0.121}$ | $1.086^{+0.146}_{-0.132}$ | $1.340^{+0.351}_{-0.644}$ |
| | +2%/-3% | +1%/-4% | +74%/-88% | +27%/-12% | +13%/-12% | +26%/-48% |
| 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 010678817-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -41 ± 3 | $0.93^{+0.18}_{-0.14}$ | 2018^{+127}_{-90} | 5831^{+437}_{-450} | 46^{+17}_{-14} |
| Alt. | -5 ± 3 | $0.88^{+0.16}_{-0.15}$ | 2021^{+132}_{-98} | 3788^{+448}_{-593} | $5.395^{+4.743}_{-3.422}$ |

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

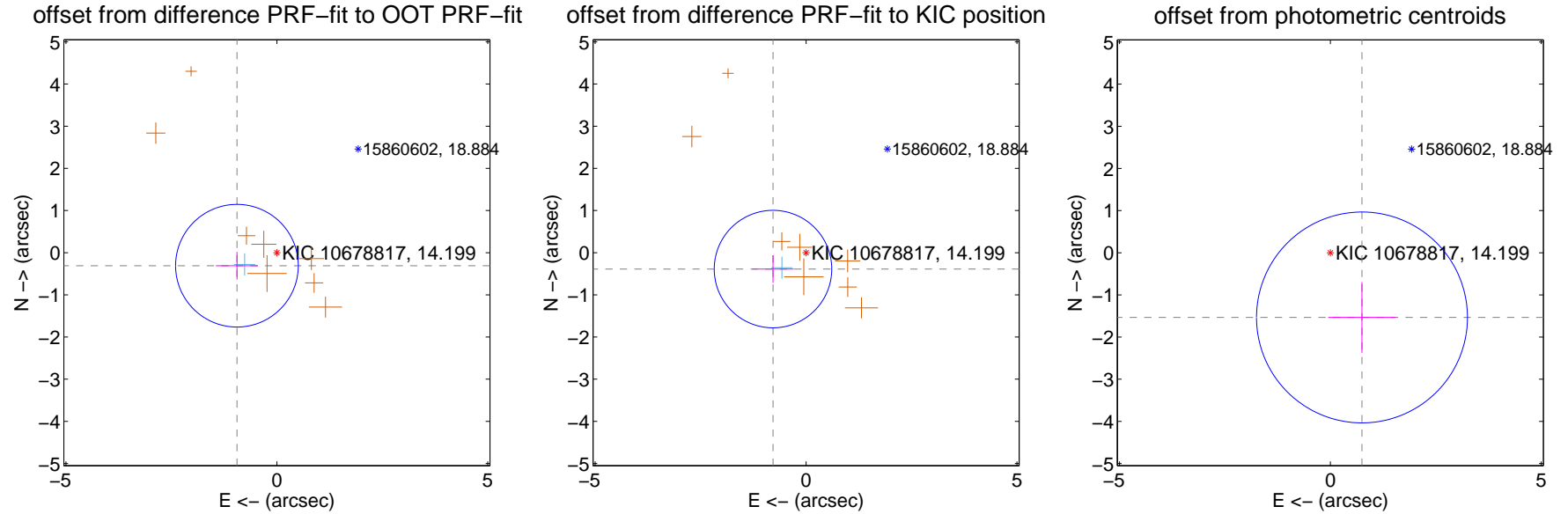
DV Centroid Data

Supplemental centroid analysis for 010678817-01. Kepler magnitude: 14.20. Transit SNR 11.40

There are 1 quarters with good PRF difference image offsets

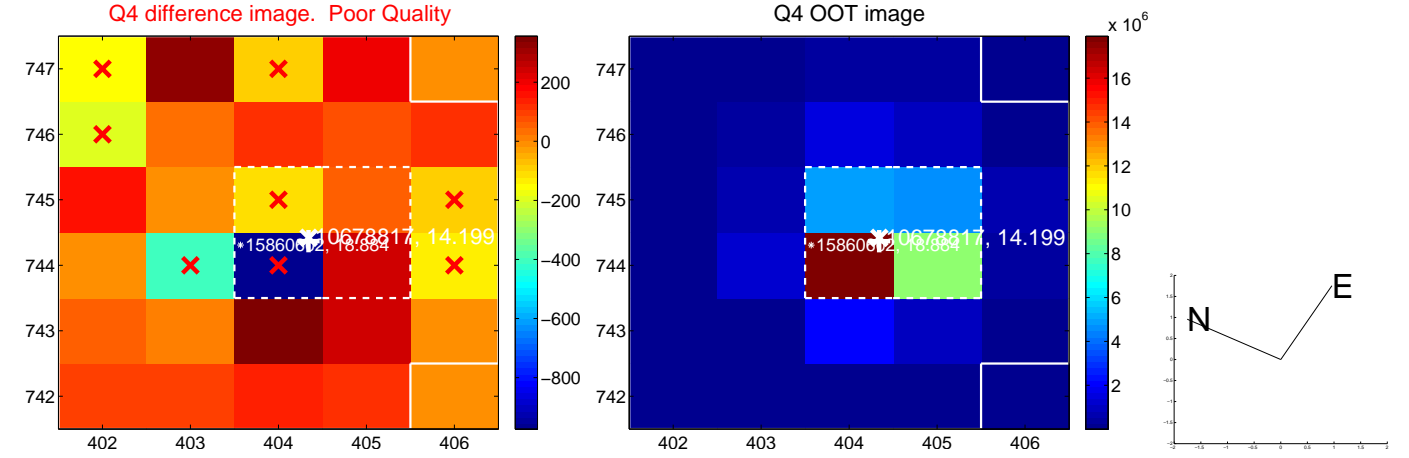
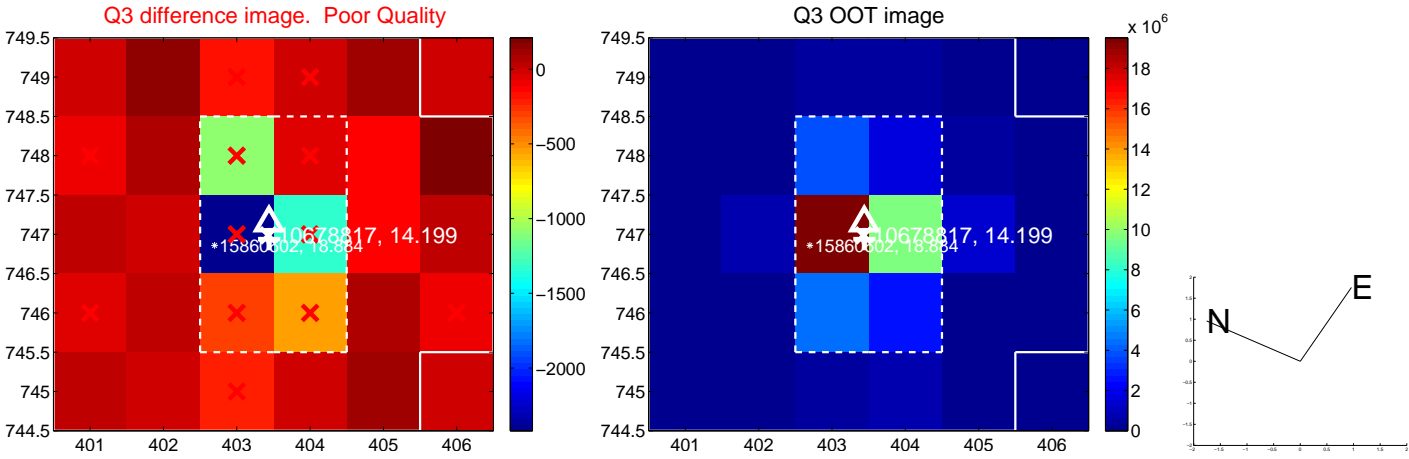
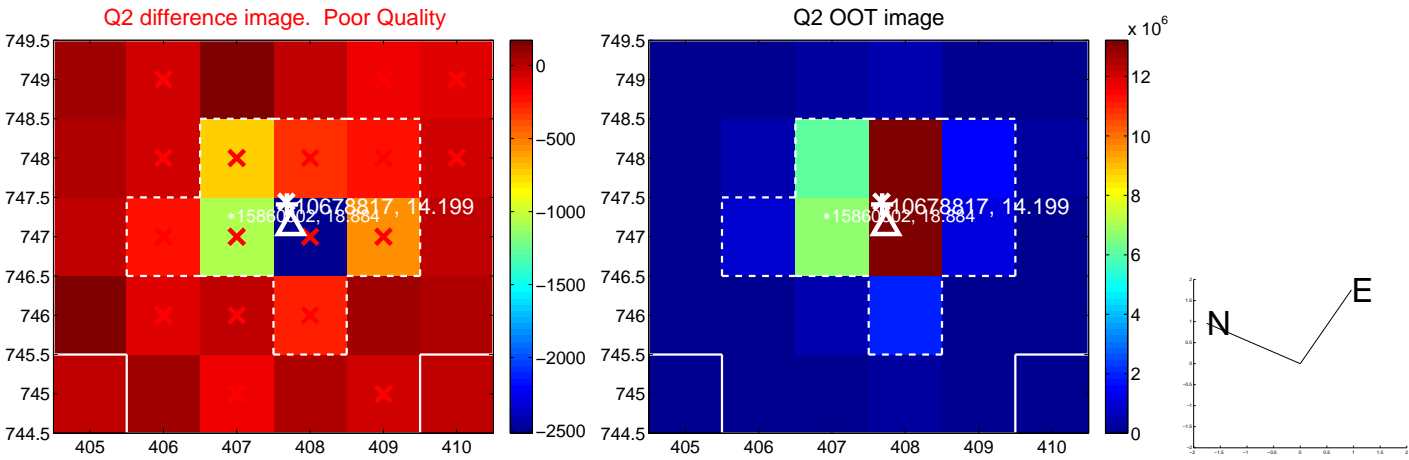
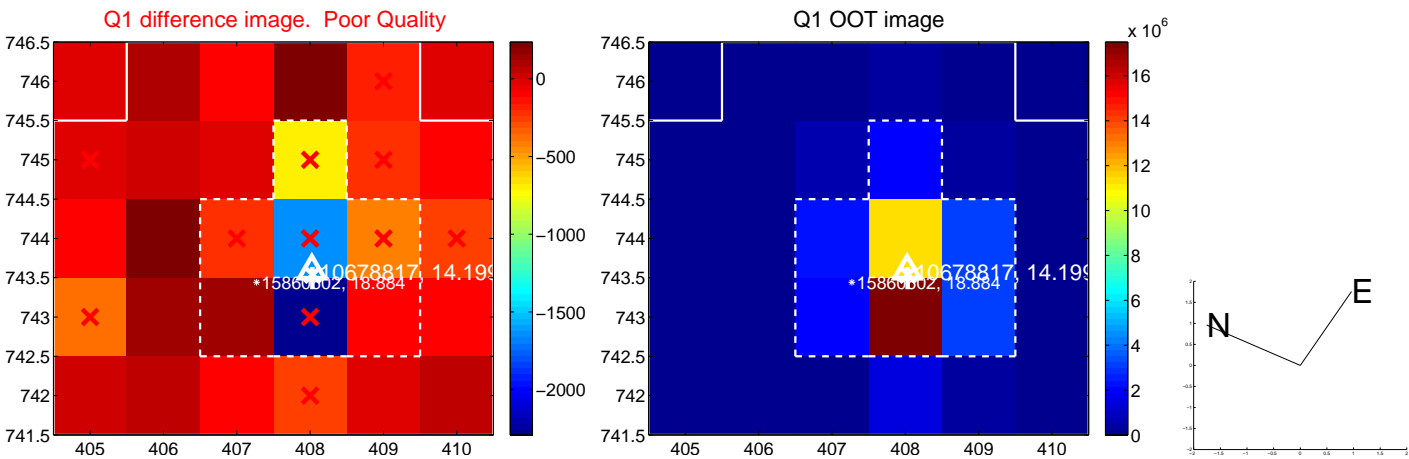
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.996 ± 0.485 | 2.05 | 0.946 ± 0.499 | -0.309 ± 0.327 |
| PRF-fit source offset from KIC position | 0.875 ± 0.464 | 1.88 | 0.784 ± 0.492 | -0.389 ± 0.328 |
| photometric centroid source offset | 1.71 ± 0.83 | 2.05 | -0.75 ± 0.80 | -1.53 ± 0.84 |

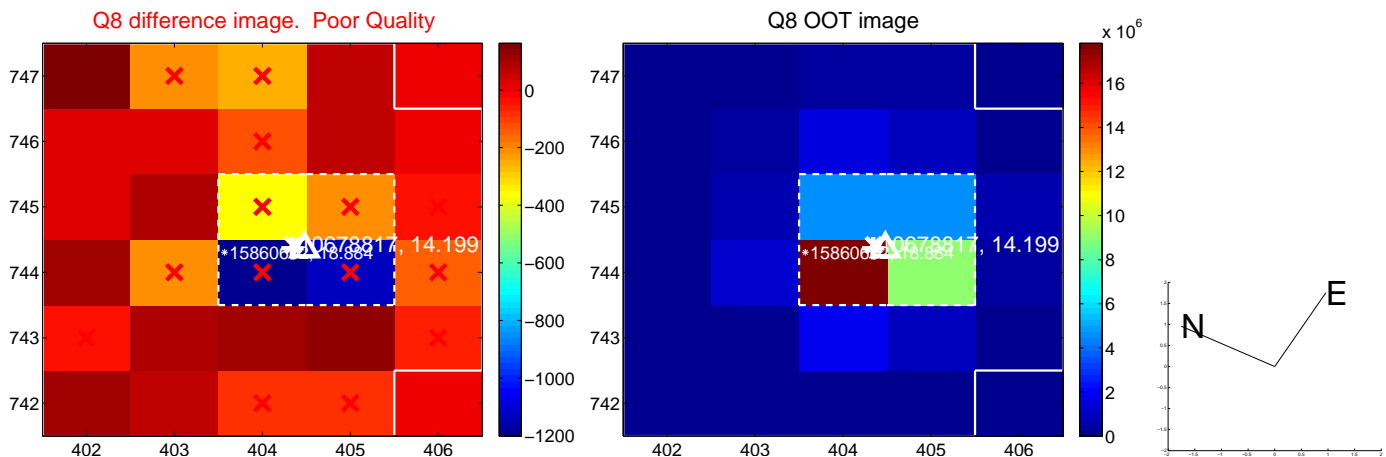
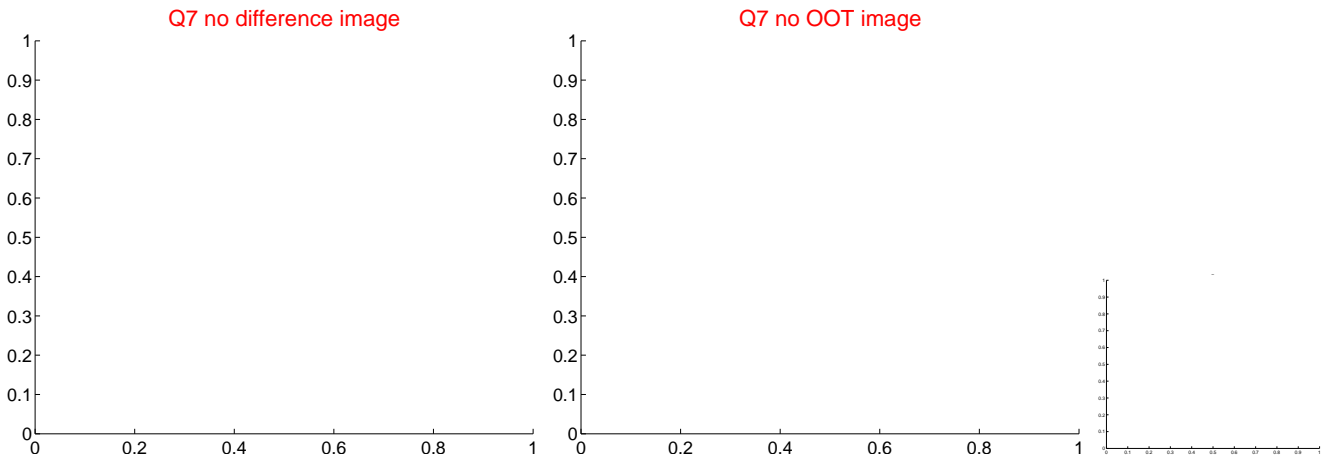
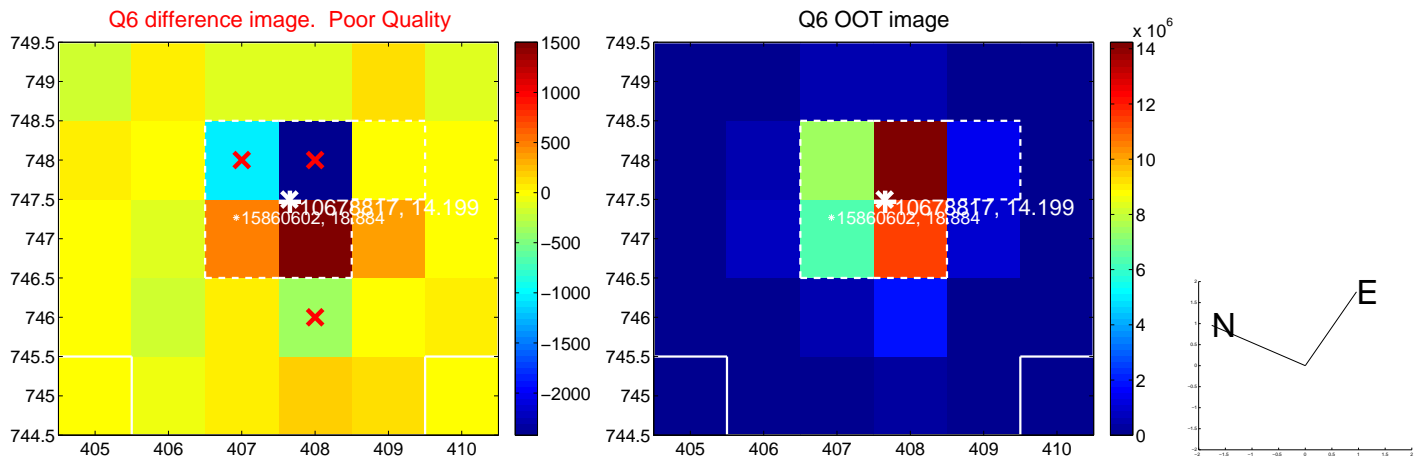
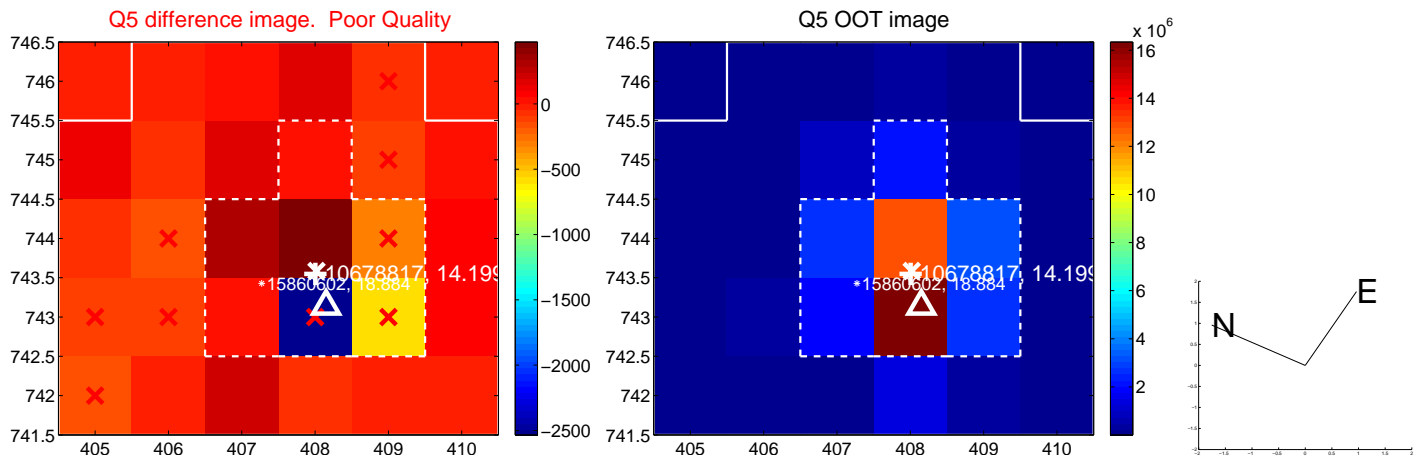


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

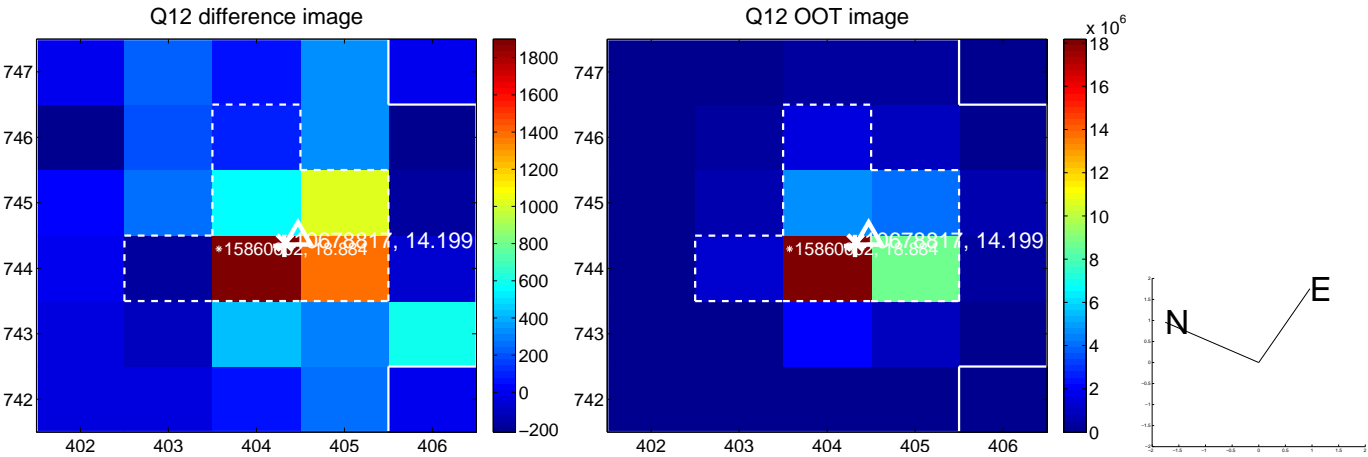
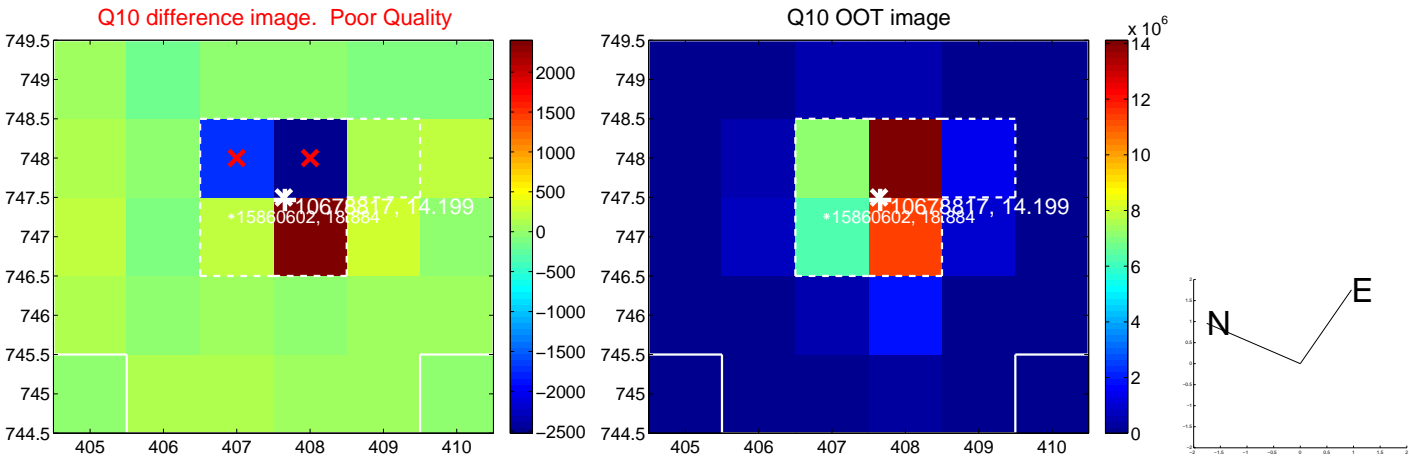
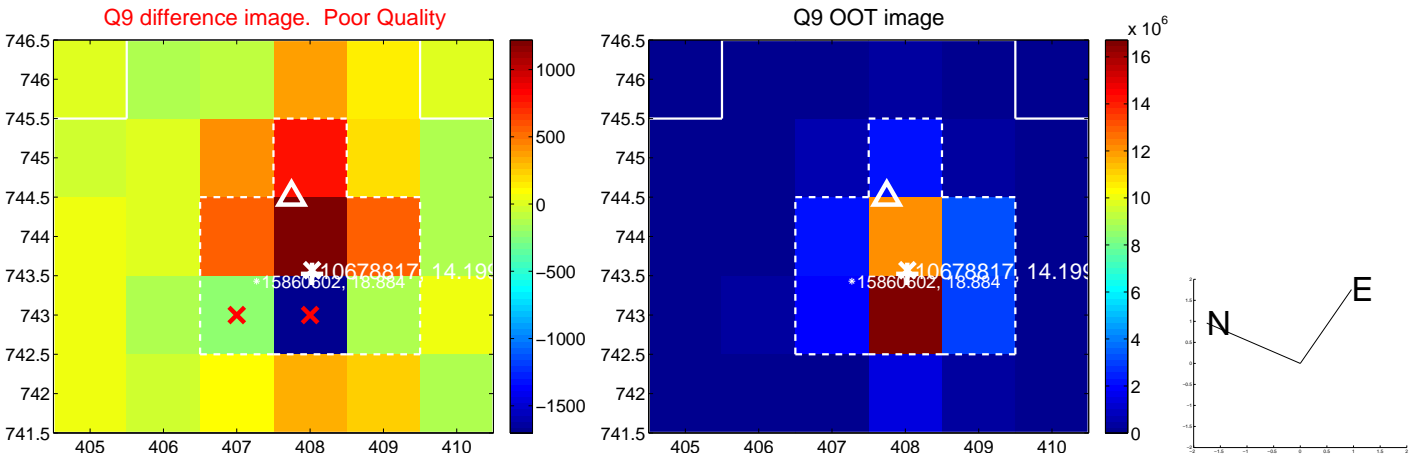
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



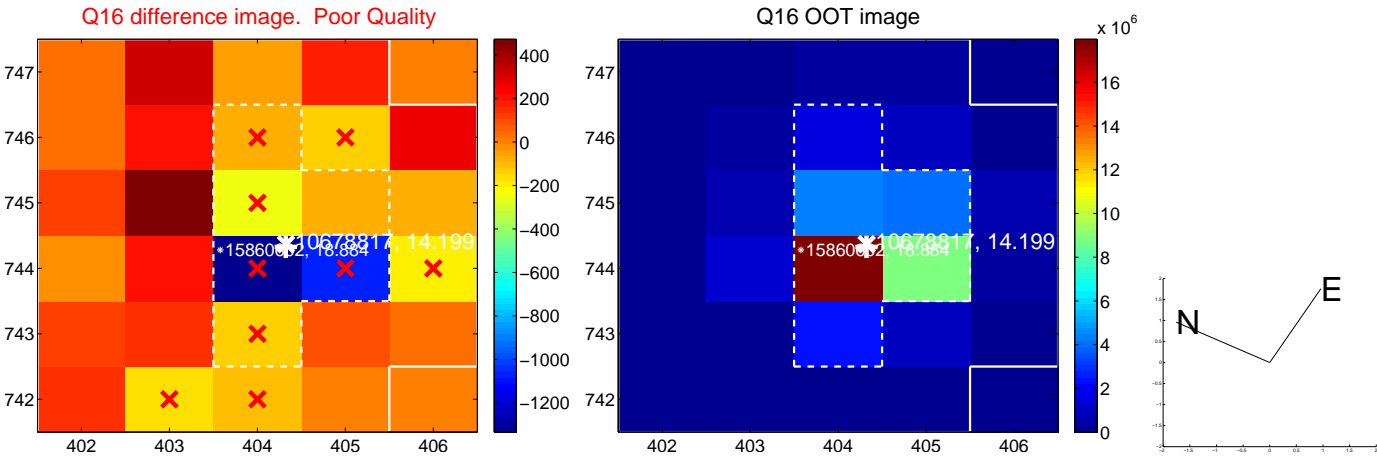
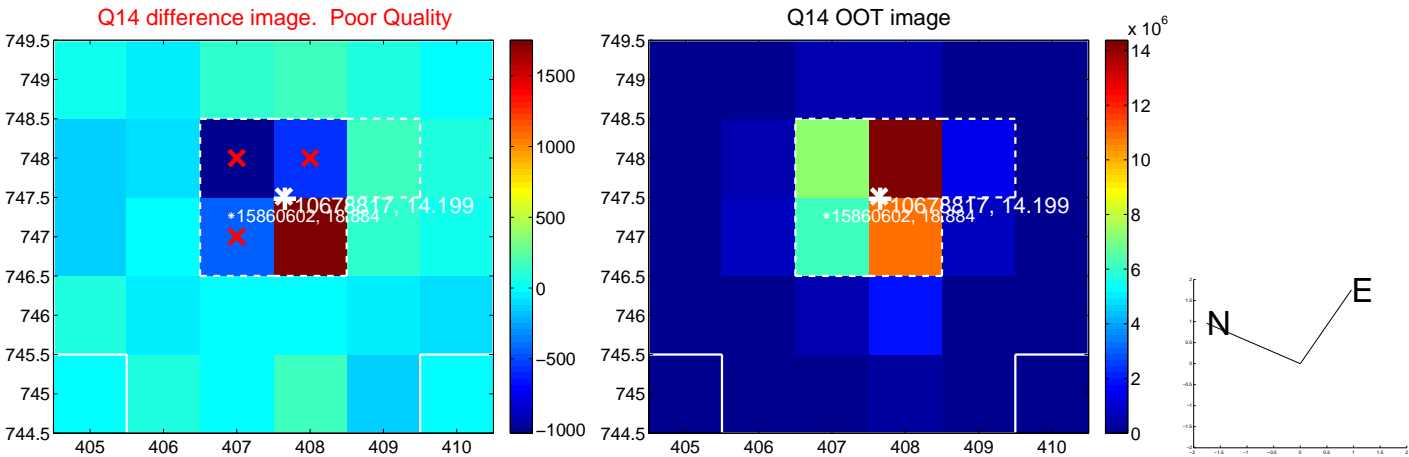
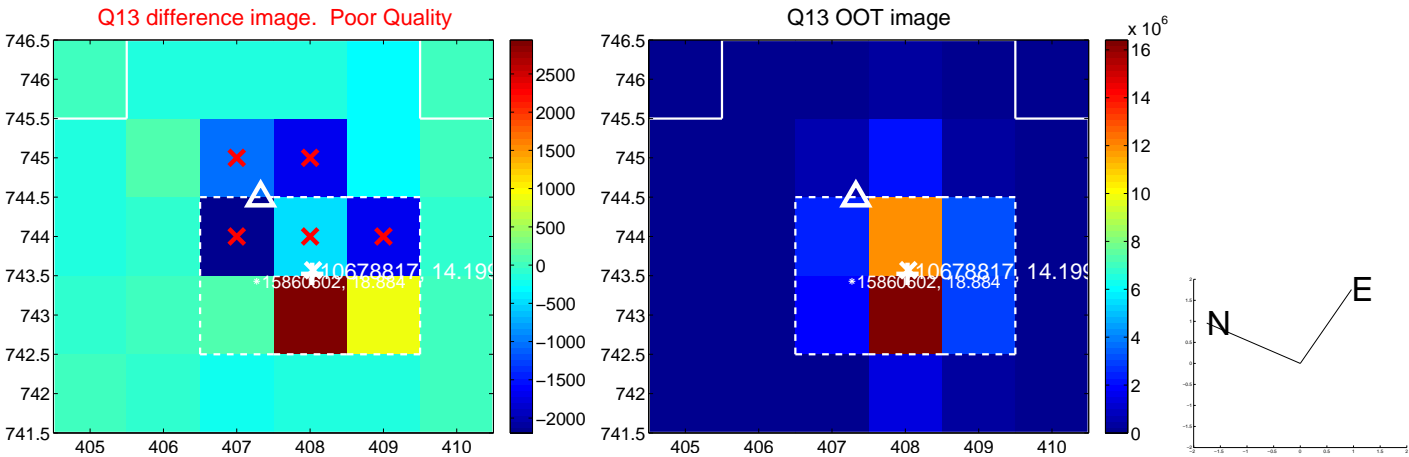
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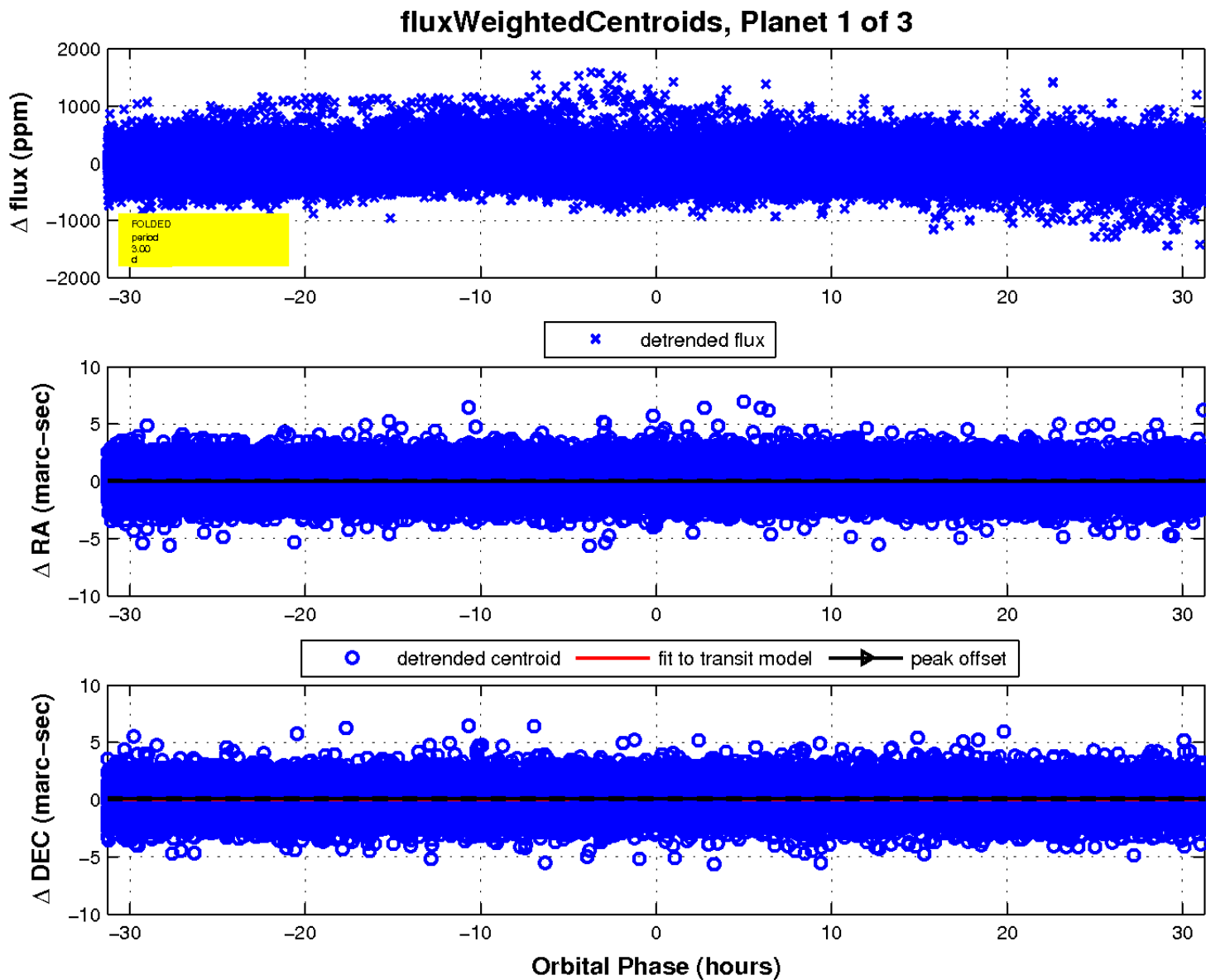
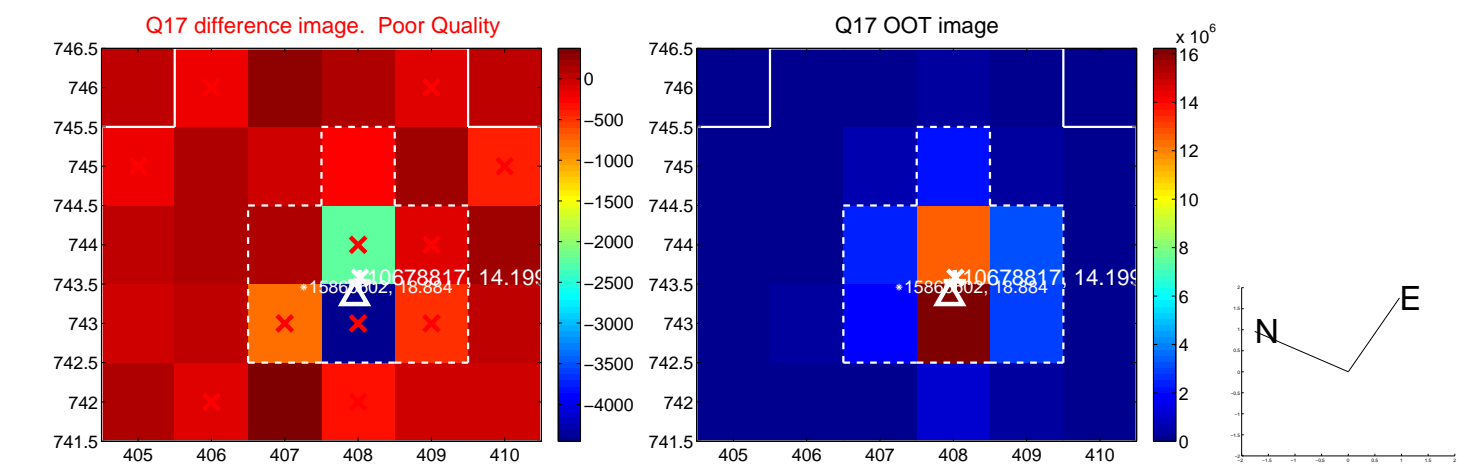
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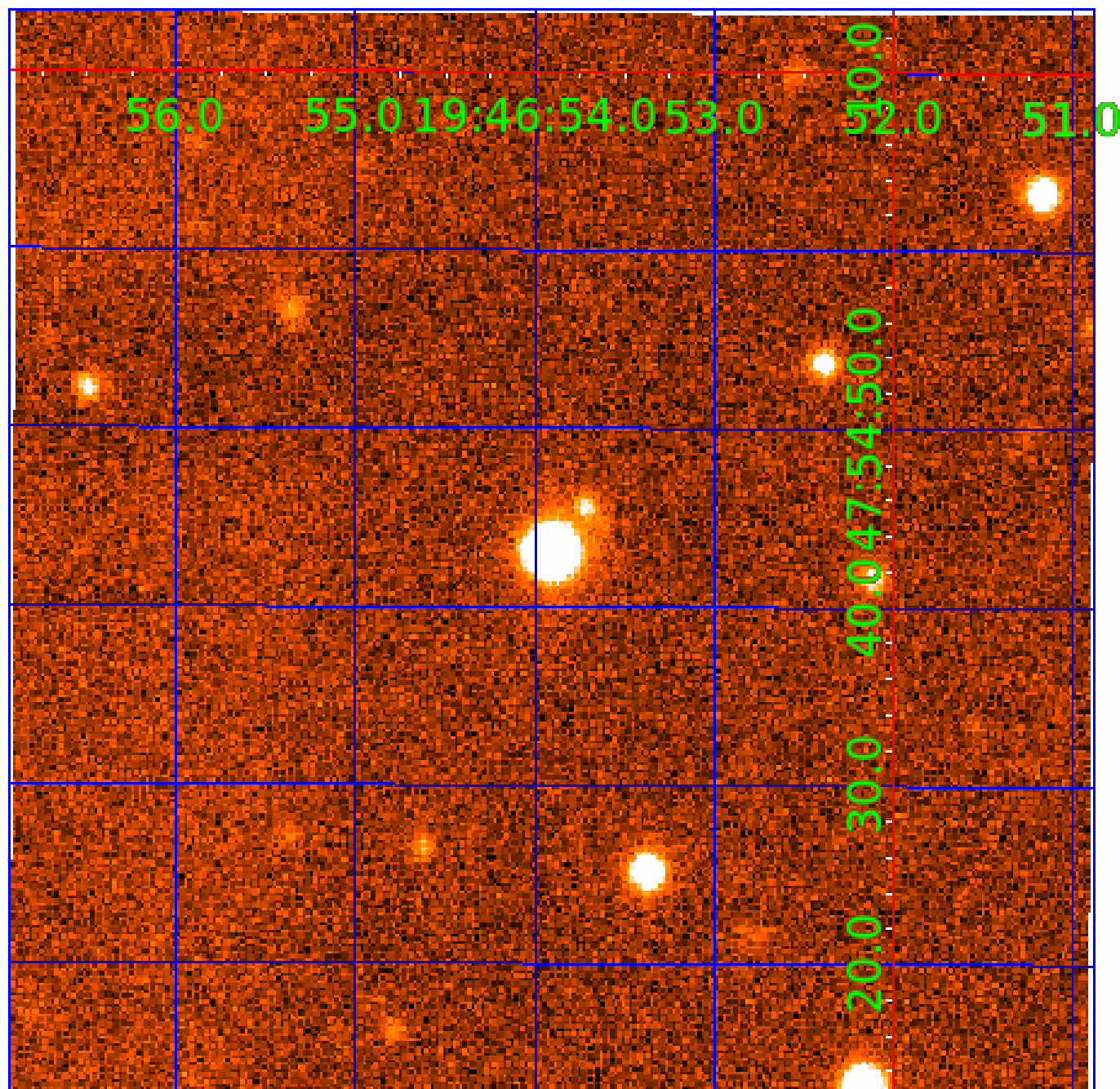


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678817

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 |
|--------------|----------|------|-------|---|---|---|---|---|
| 010678817-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010678817-02 | 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_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010678817-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD |

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

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

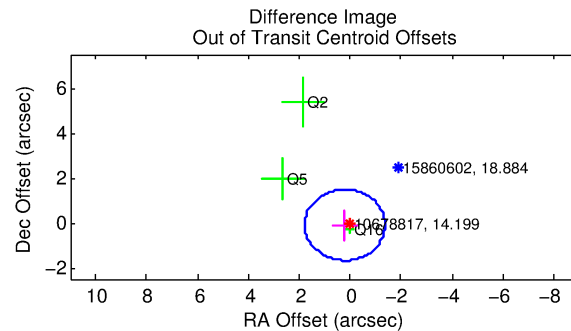
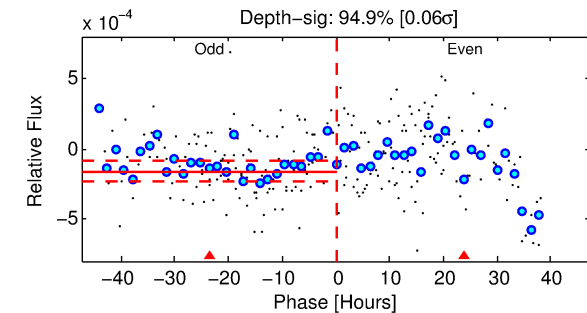
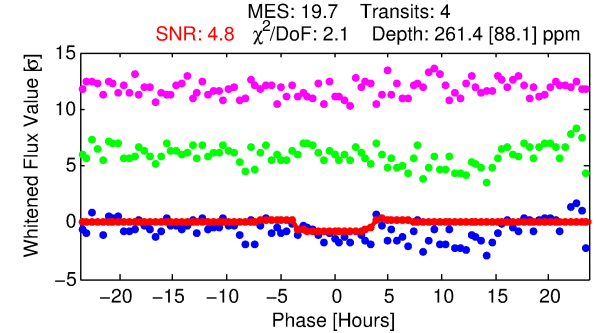
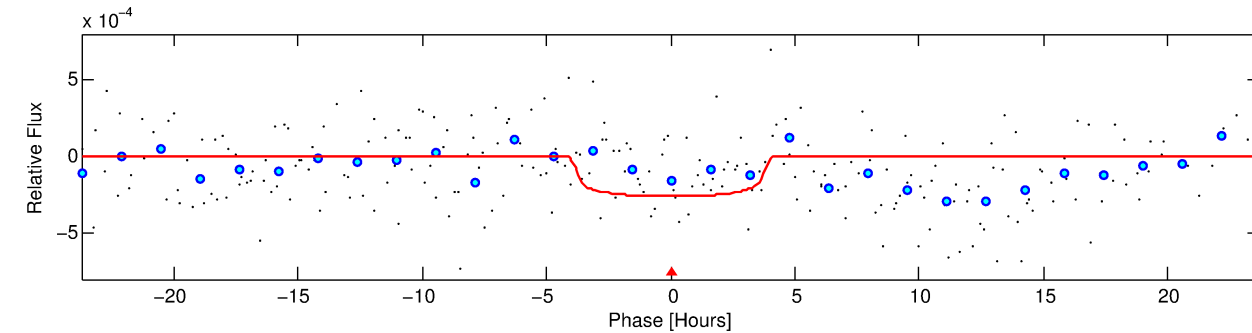
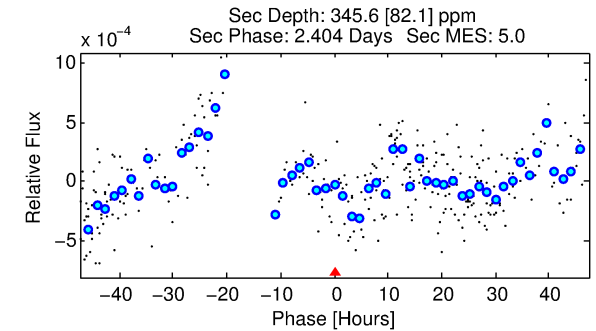
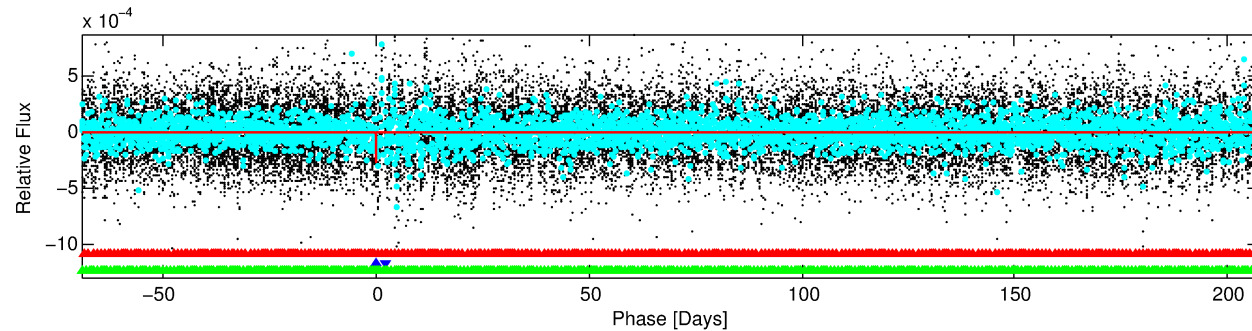
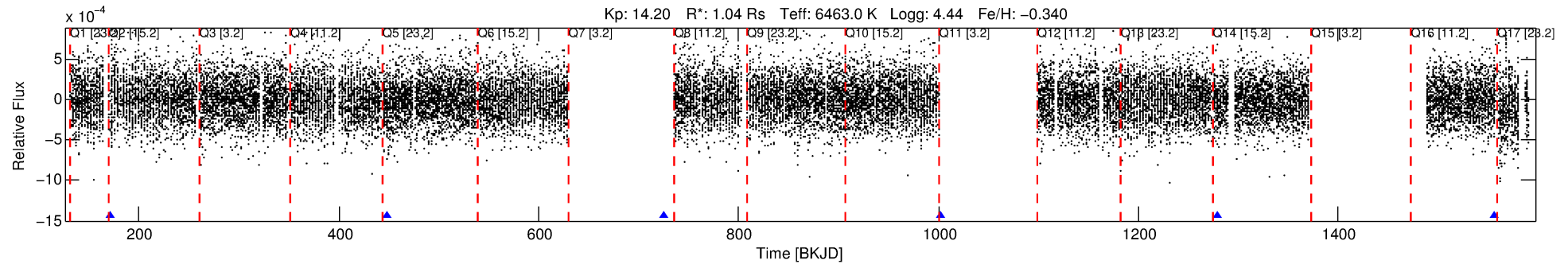
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678817-02

No Significant Match Found

DV One-Page Summary

KIC: 10678817 Candidate: 2 of 3 Period: 276.886 d



DV Fit Results:

Period = 276.88616 [0.01087] d
Epoch = 172.0856 [0.0346] BKJD
Rp/R* = 0.0162 [0.0163]
a/R* = 177.19 [978.34]
b = 0.77 [2.89]
Seff = 2.34 [0.82]
Teq = 315 [28] K
Rp = 1.85 [1.92] Re
a = 0.8550 [0.1939] AU
Ag = 40790.40 [83706.93] [0.49 σ]
Teffp = 6926 [3513] K [1.88 σ]

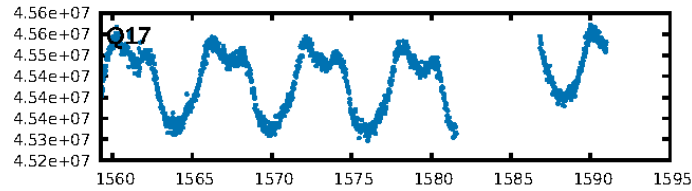
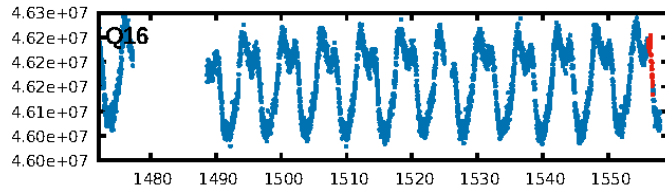
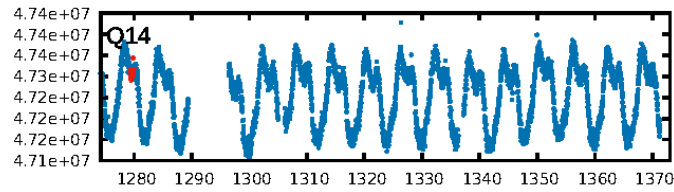
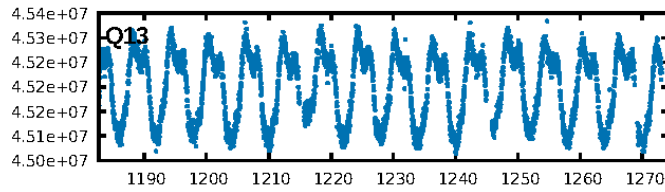
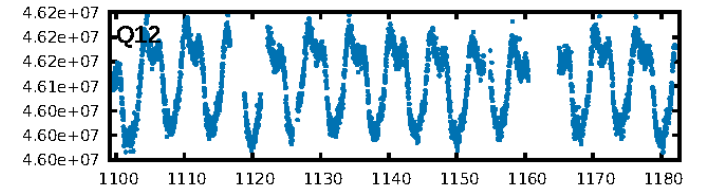
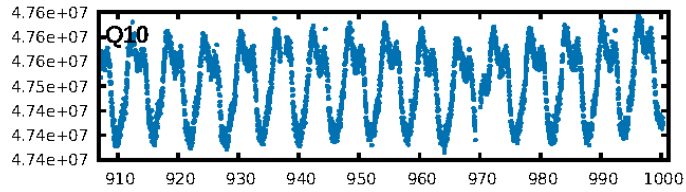
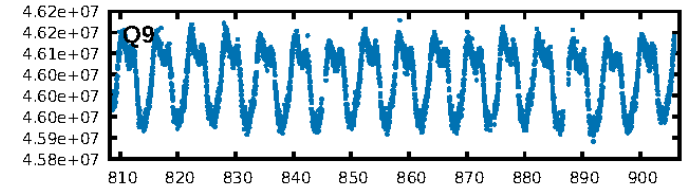
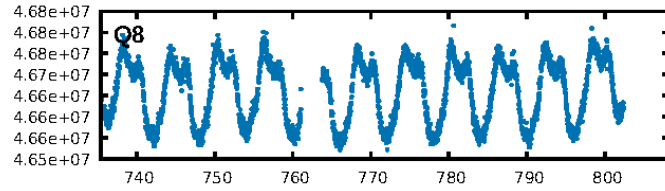
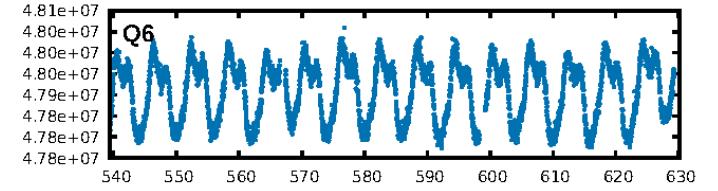
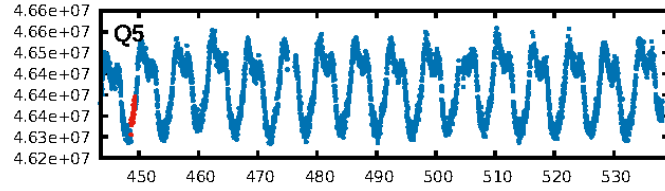
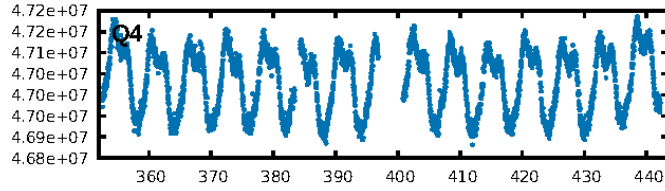
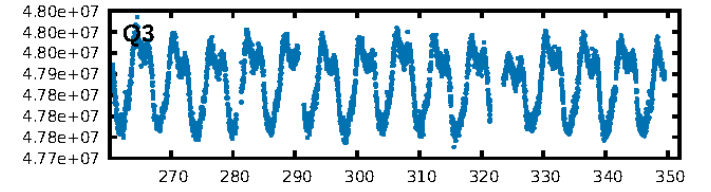
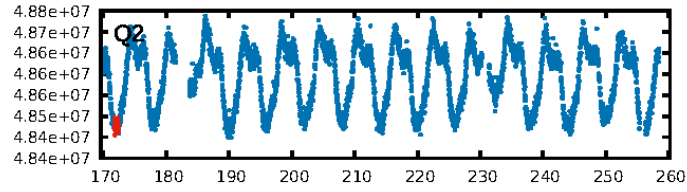
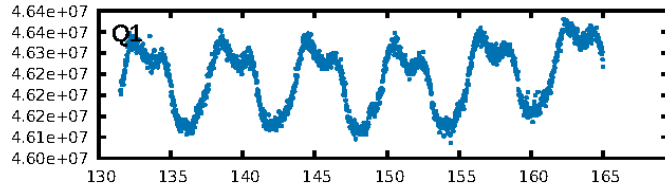
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [391.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 54.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.257
Centroid-sig: 72.5%
Centroid-so: 0.860 arcsec [0.43 σ]
OotOffset-rm: 0.232 arcsec [0.44 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.191 arcsec [0.18 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.00 [0/3]

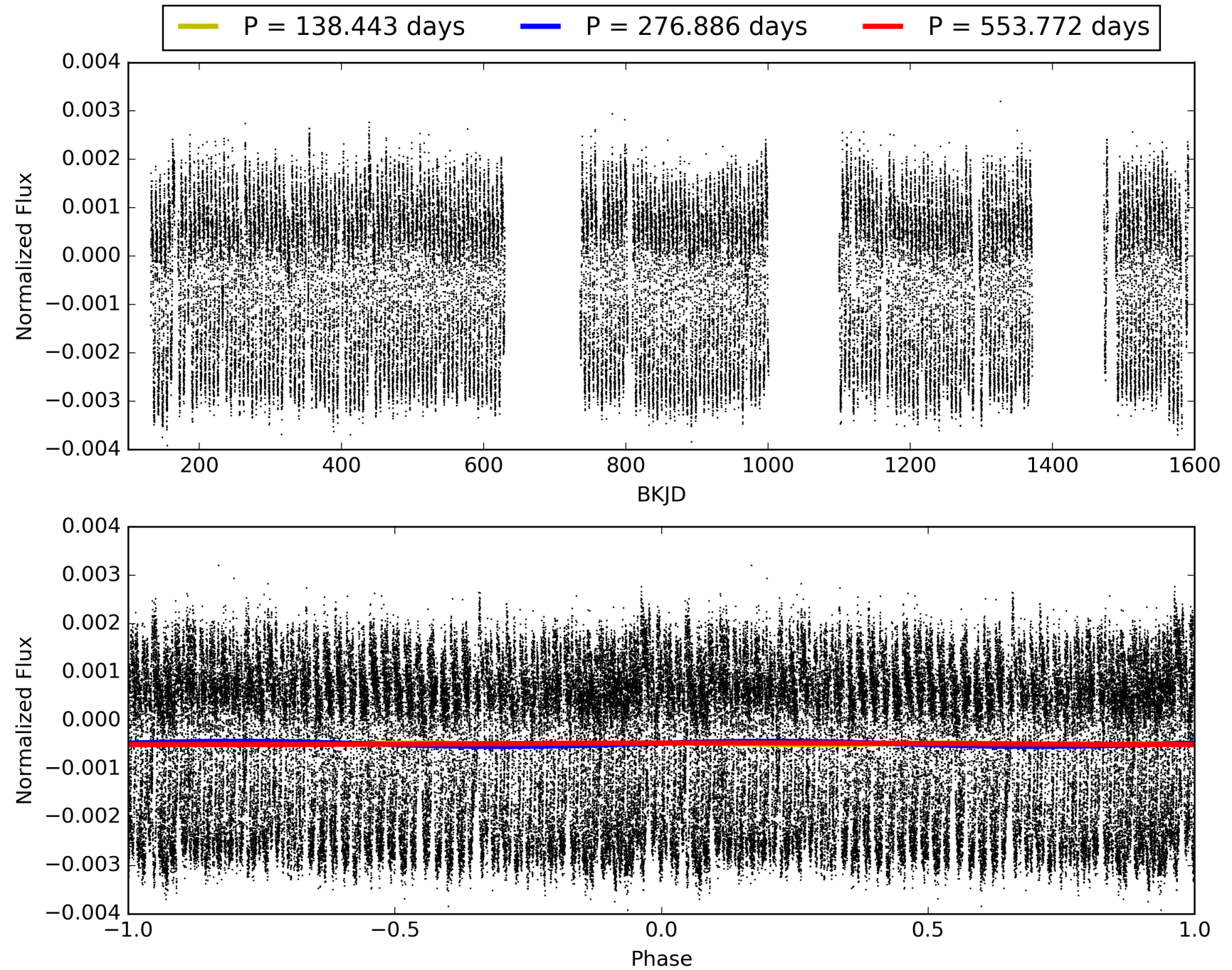
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:16:30 Z

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

TCE 010678817-02, PDC Light Curves

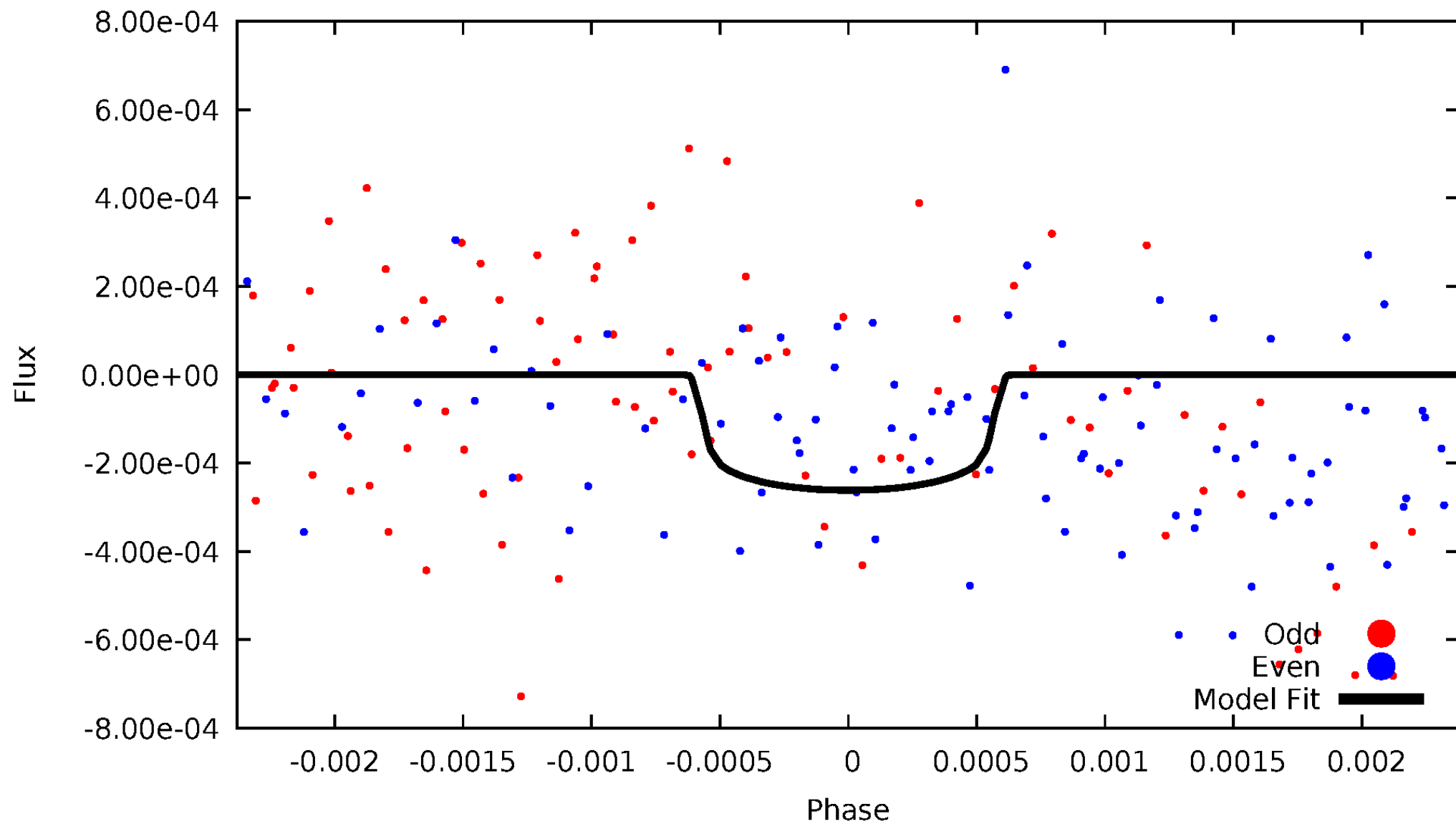


TCE 010678817-02



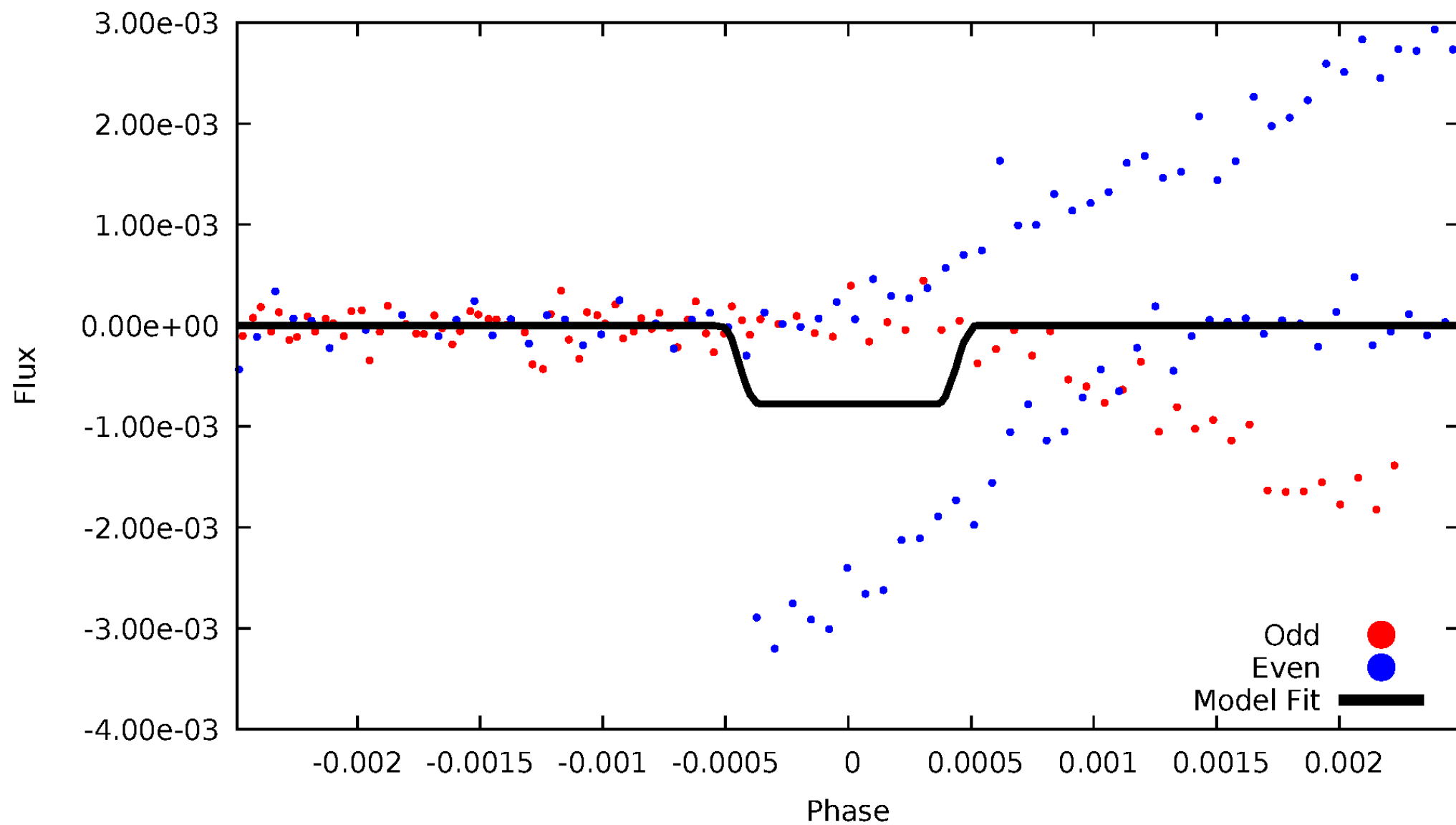
DV Odd/Even

TCE 010678817-02



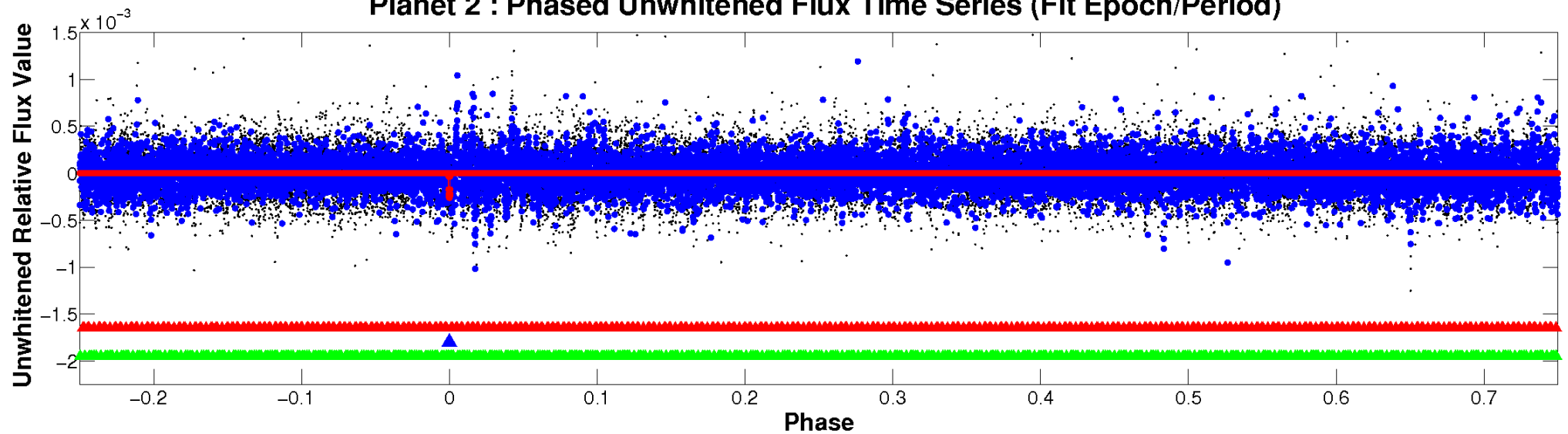
ALT Odd/Even

TCE 010678817-02

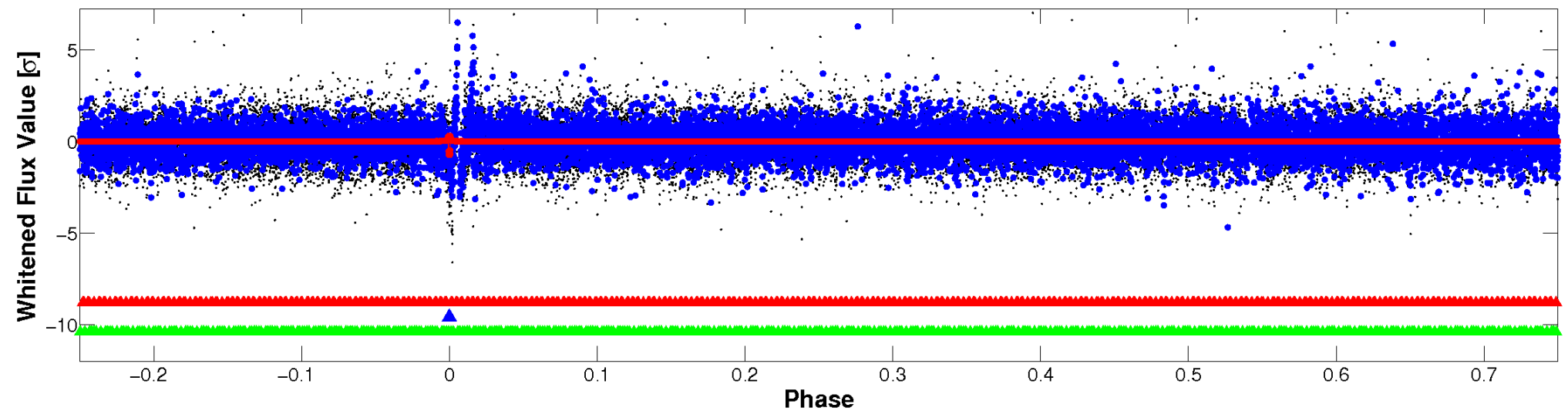


Non-Whitened Vs. Whitened Light Curve

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

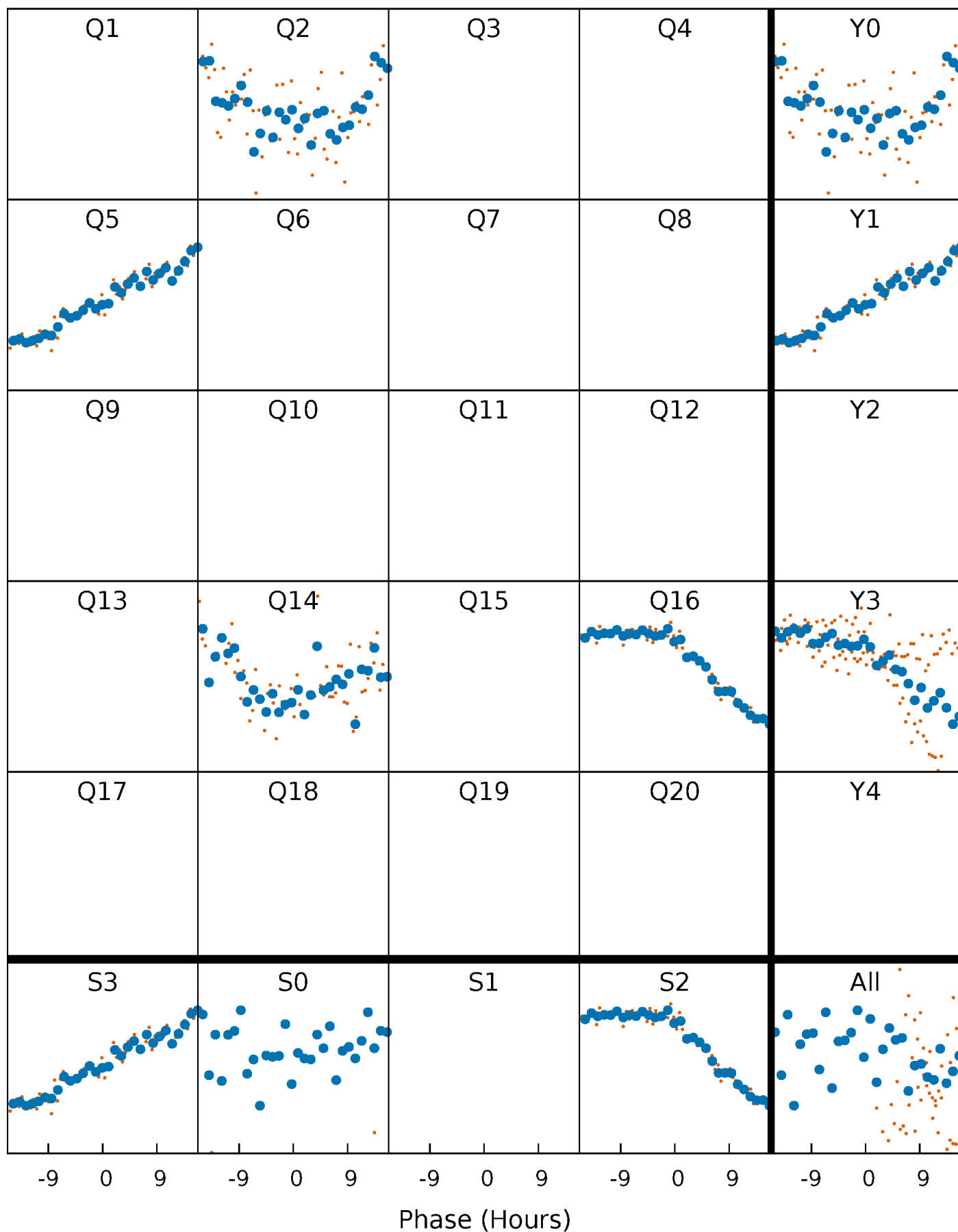


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



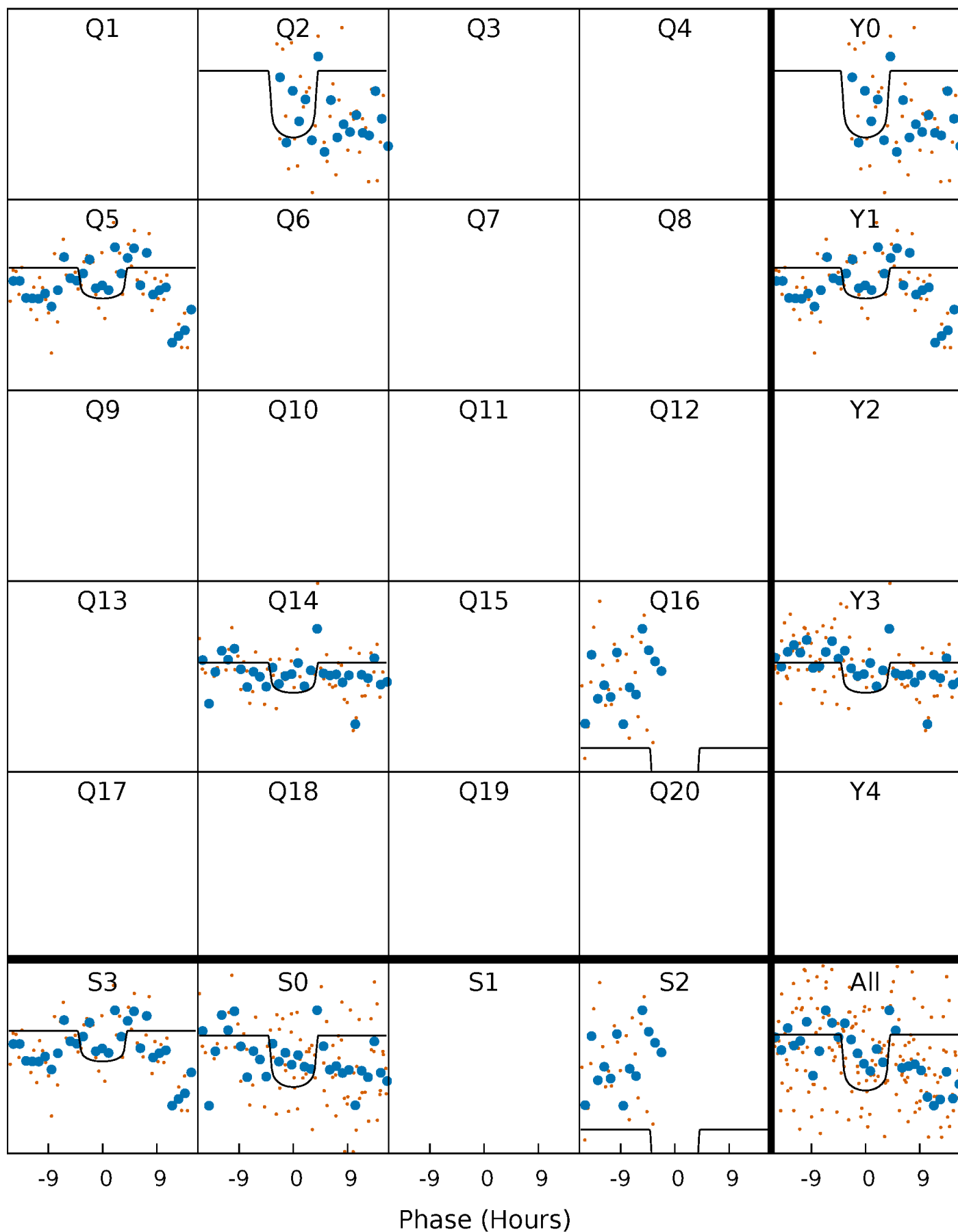
PDC Quarter-Phased Transit Curves

TCE 010678817-02 P=276.886161 Days $T_0=172.085594$ (BKJD)



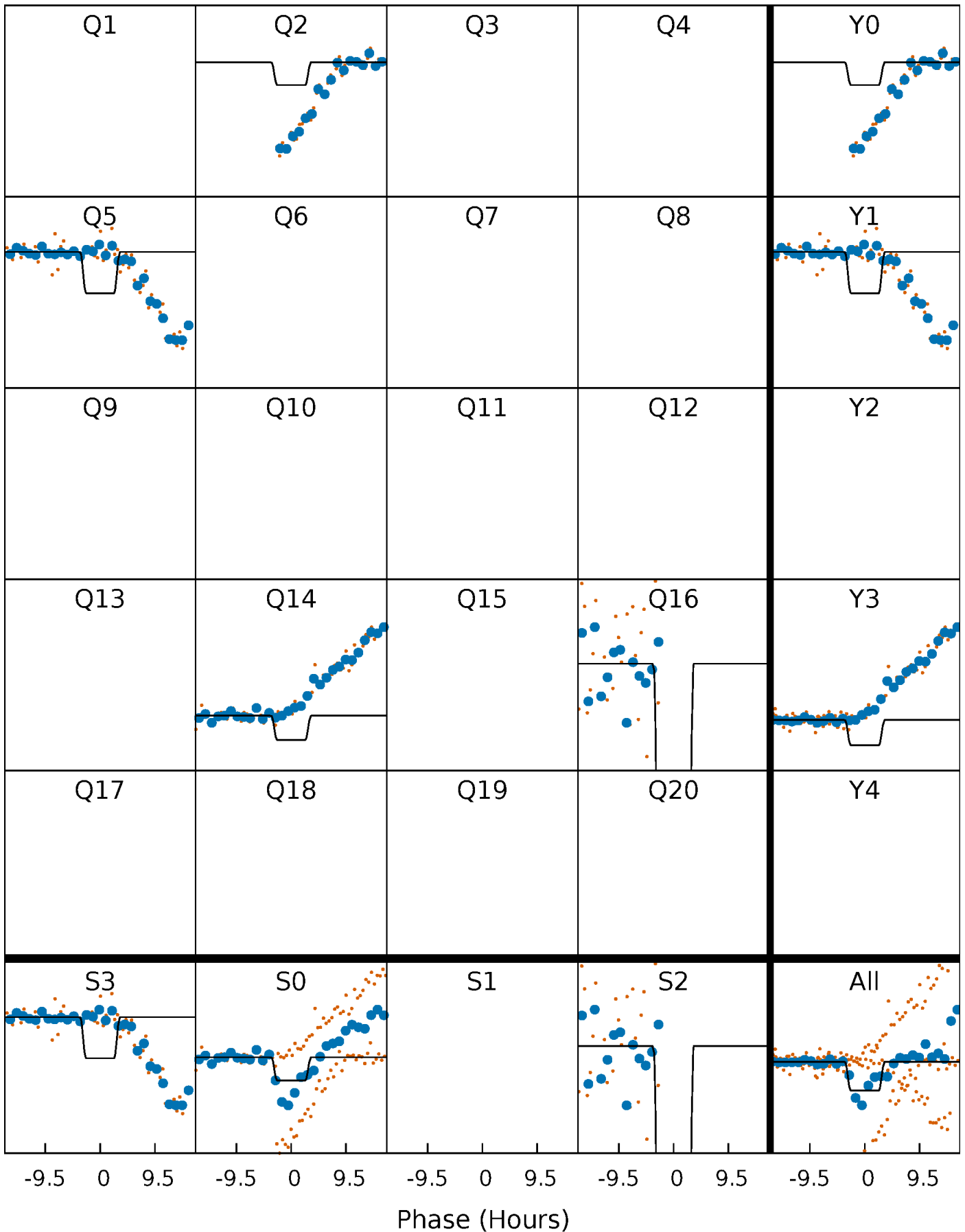
DV Quarter-Phased Transit Curves

TCE 010678817-02 P=276.886161 Days $T_0=172.085594$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

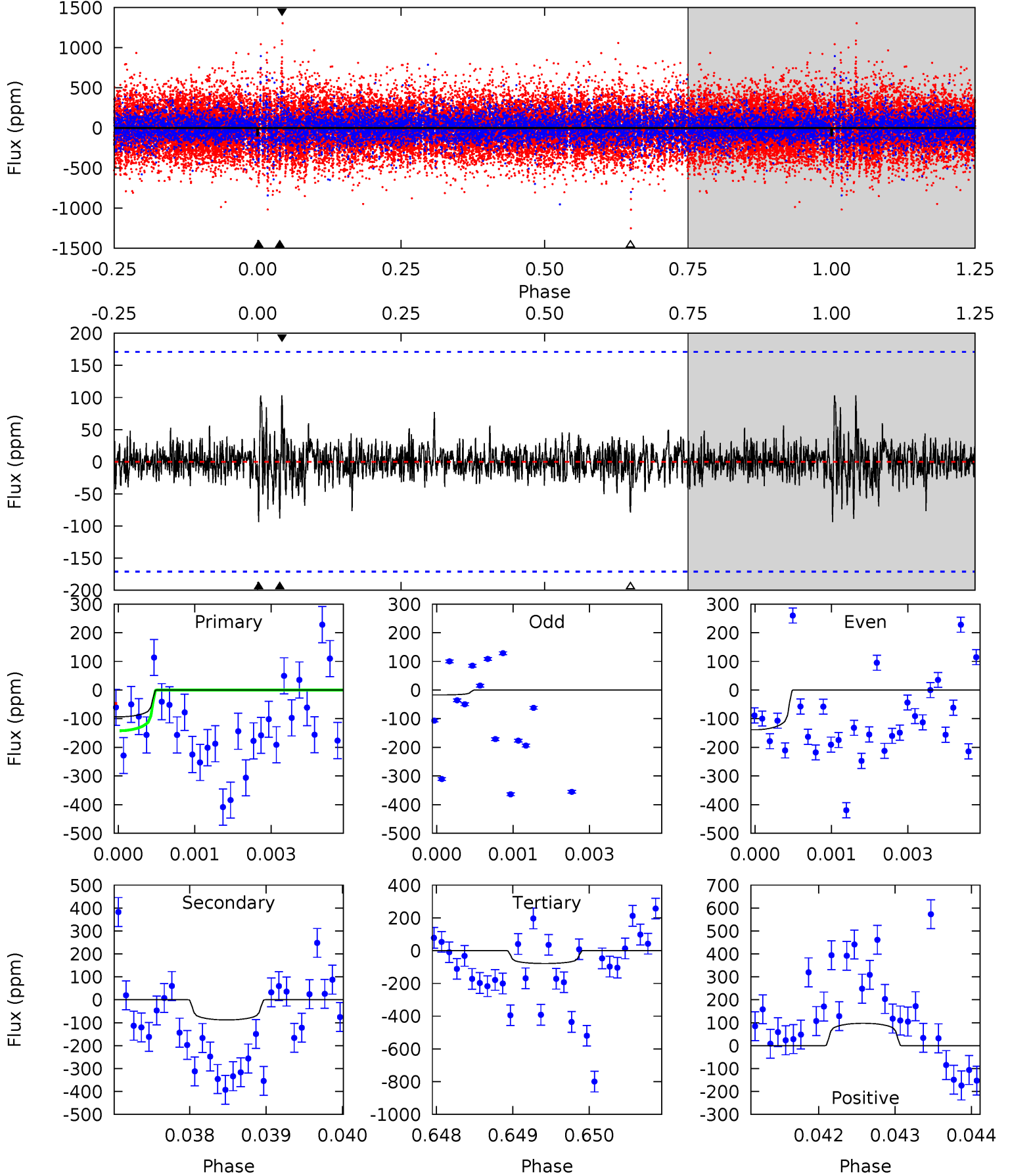
TCE 010678817-02 $P=276.888360$ Days $T_0=172.075088$ (BKJD)



DV Model-Shift Uniqueness Test

010678817-02, P = 276.886161 Days, E = 172.085594 Days

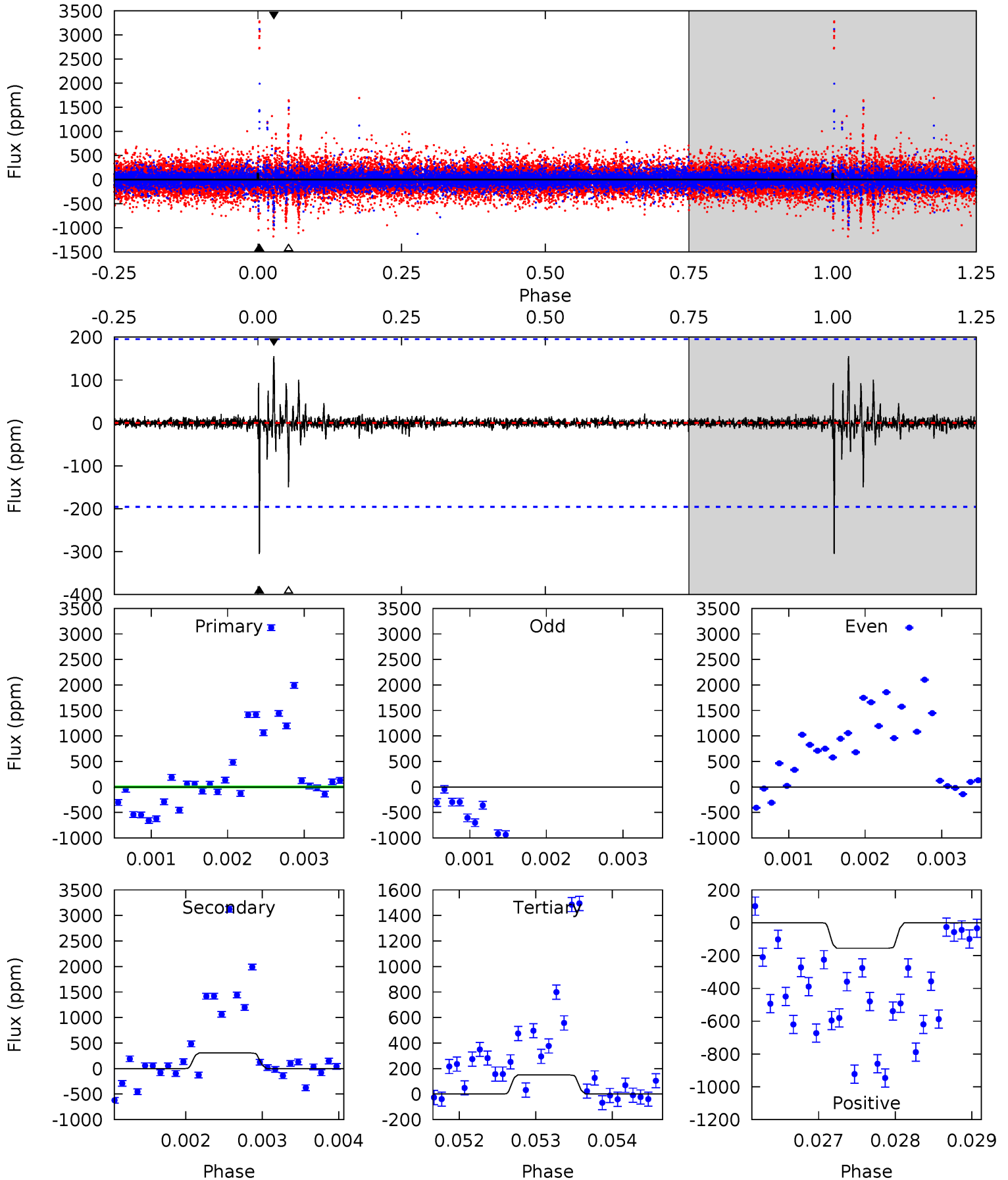
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.96 | 2.78 | 2.49 | 3.08 | 5.41 | 3.22 | 0.59 | 0.47 | -0.12 | 0.29 | -0.30 | 1.87 | 0.02 | 0.52 | 1.51 |



Alt Model-Shift Uniqueness Test

010678817-02, P = 276.888360 Days, E = 172.075088 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|-----|
| 3.46 | 8.51 | 4.18 | 4.34 | 5.45 | 3.29 | 0.31 | -0.72 | -0.88 | 4.33 | 4.17 | 17.1 | -1796 | 0.34 | 0 |



Stellar Parameters For KIC 010678817

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6463^{+155}_{-194} | $4.436^{+0.060}_{-0.180}$ | $-0.340^{+0.250}_{-0.300}$ | $1.045^{+0.282}_{-0.121}$ | $1.086^{+0.146}_{-0.132}$ | $1.340^{+0.351}_{-0.644}$ |
| | +2%/-3% | +1%/-4% | +74%/-88% | +27%/-12% | +13%/-12% | +26%/-48% |
| 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 010678817-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|--------------------------|
| DV | -88 ± 32 | $2.33^{+1.73}_{-1.45}$ | 447^{+25}_{-20} | 4557^{+2881}_{-882} | 6274^{+40522}_{-4364} |
| Alt. | -305 ± 36 | $3.40^{+2.02}_{-1.87}$ | 448^{+30}_{-21} | 5190^{+2418}_{-927} | 10905^{+38636}_{-6804} |

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

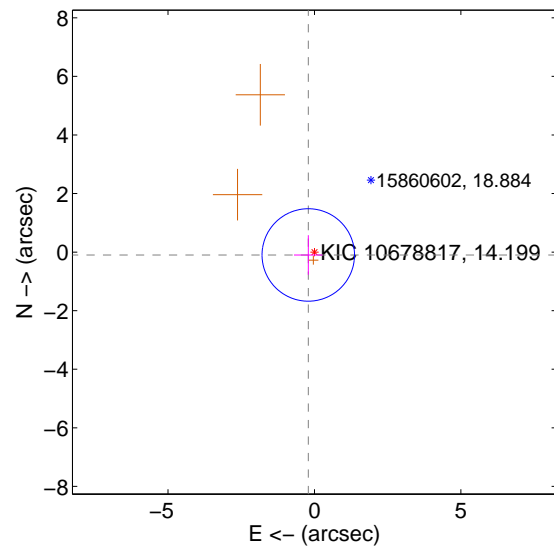
Supplemental centroid analysis for 010678817-02. Kepler magnitude: 14.20. Transit SNR 4.84

There are 0 quarters with good PRF difference image offsets

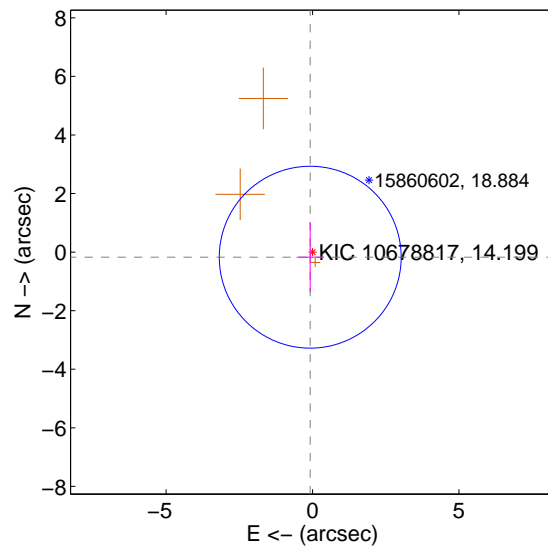
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.232 ± 0.526 | 0.44 | 0.210 ± 0.489 | -0.098 ± 0.673 |
| PRF-fit source offset from KIC position | 0.191 ± 1.035 | 0.18 | 0.078 ± 0.465 | -0.174 ± 1.194 |
| photometric centroid source offset | 0.86 ± 2.01 | 0.43 | -0.46 ± 1.93 | 0.72 ± 2.04 |

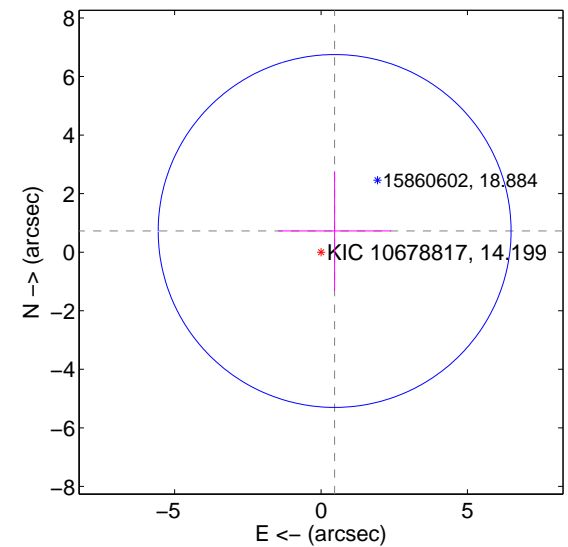
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

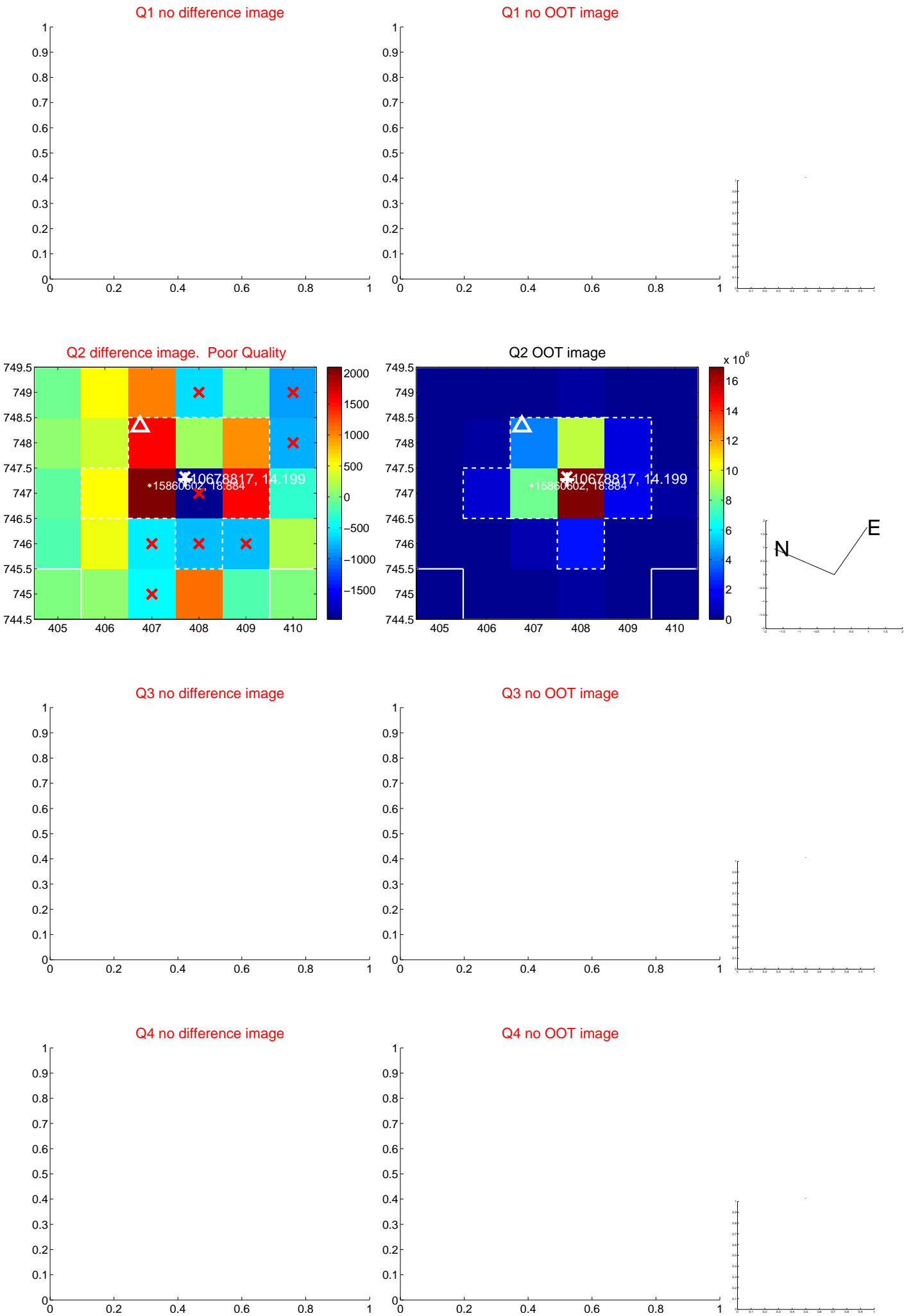


offset from photometric centroids

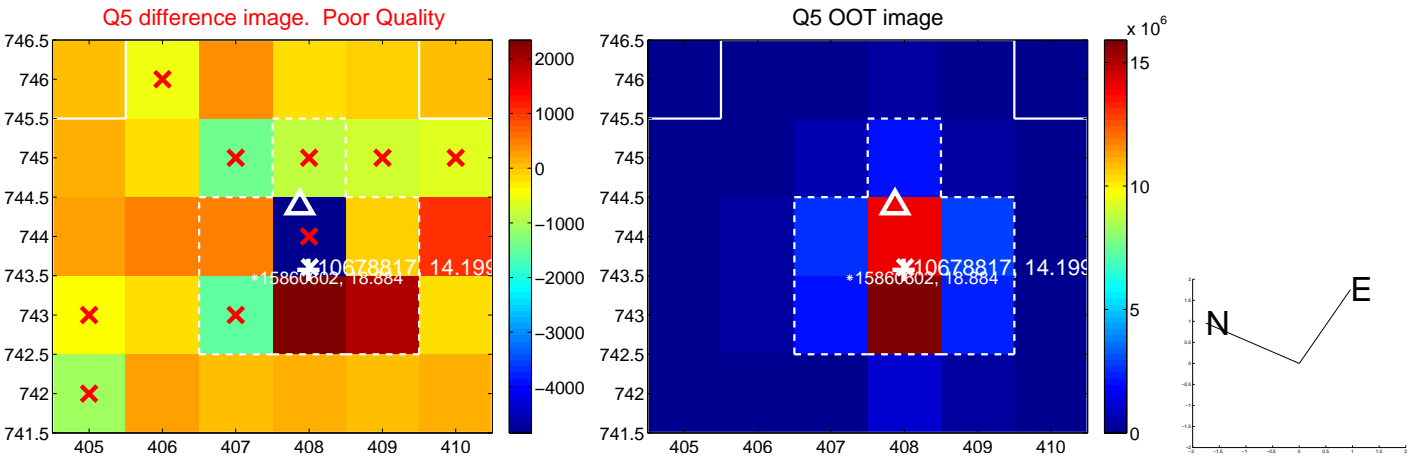


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



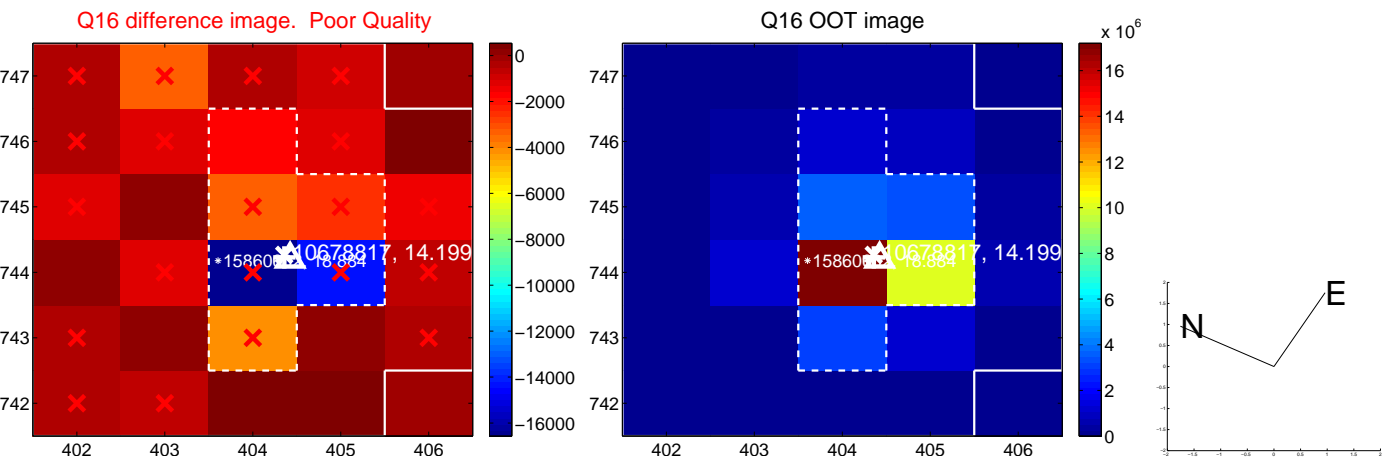
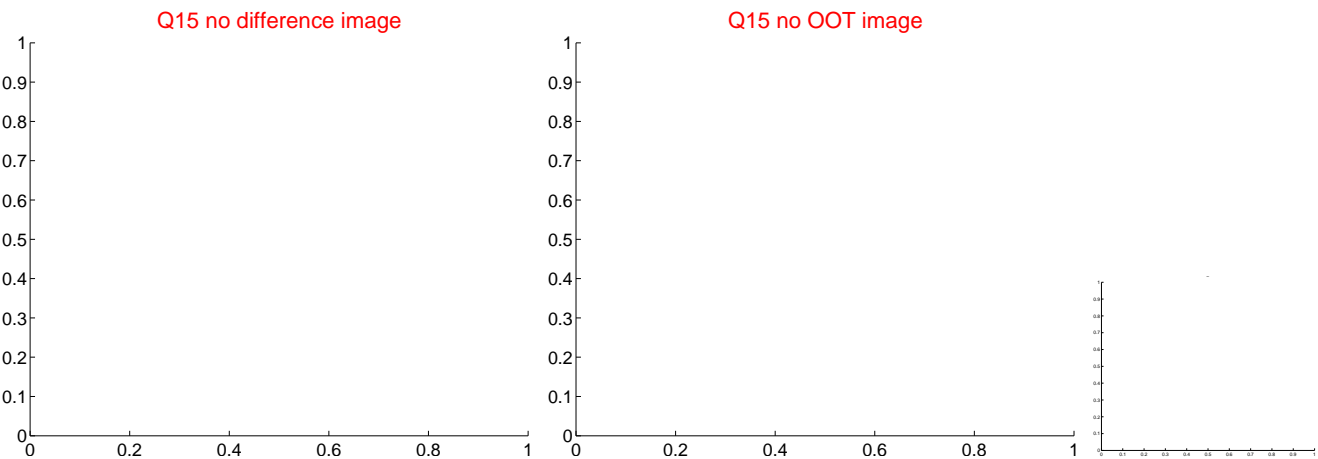
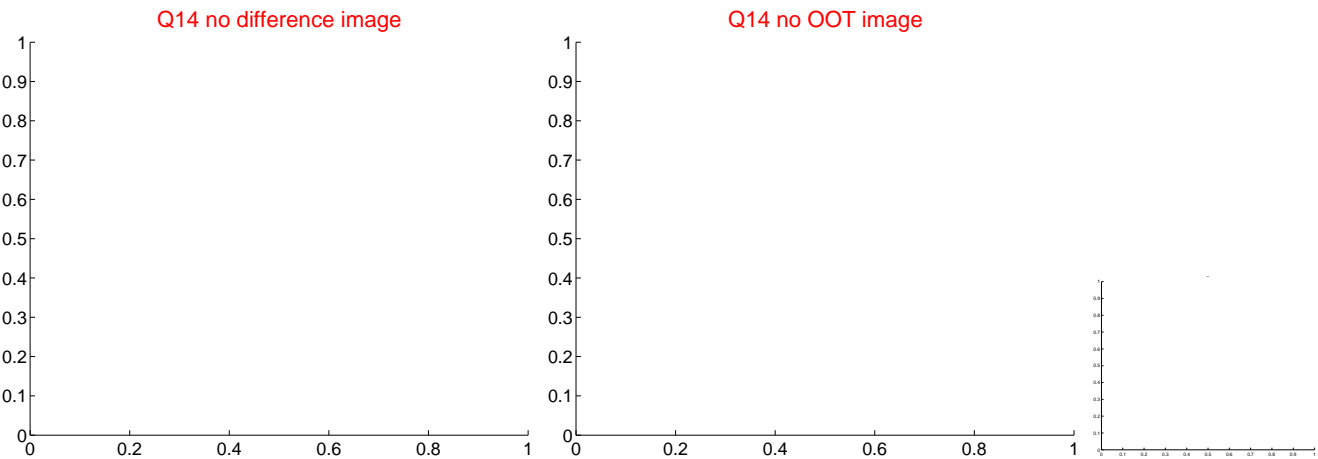
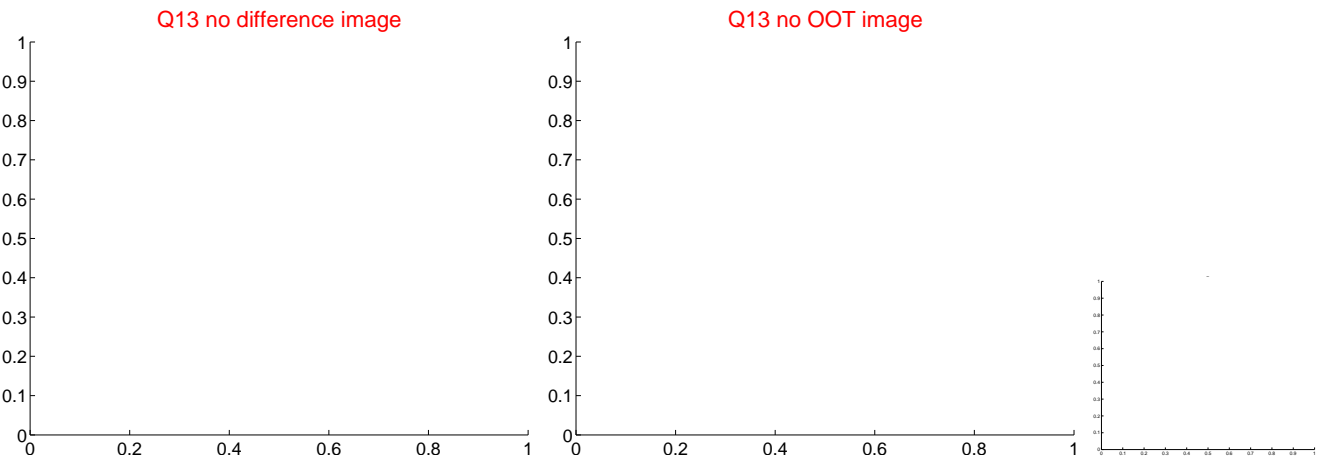
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



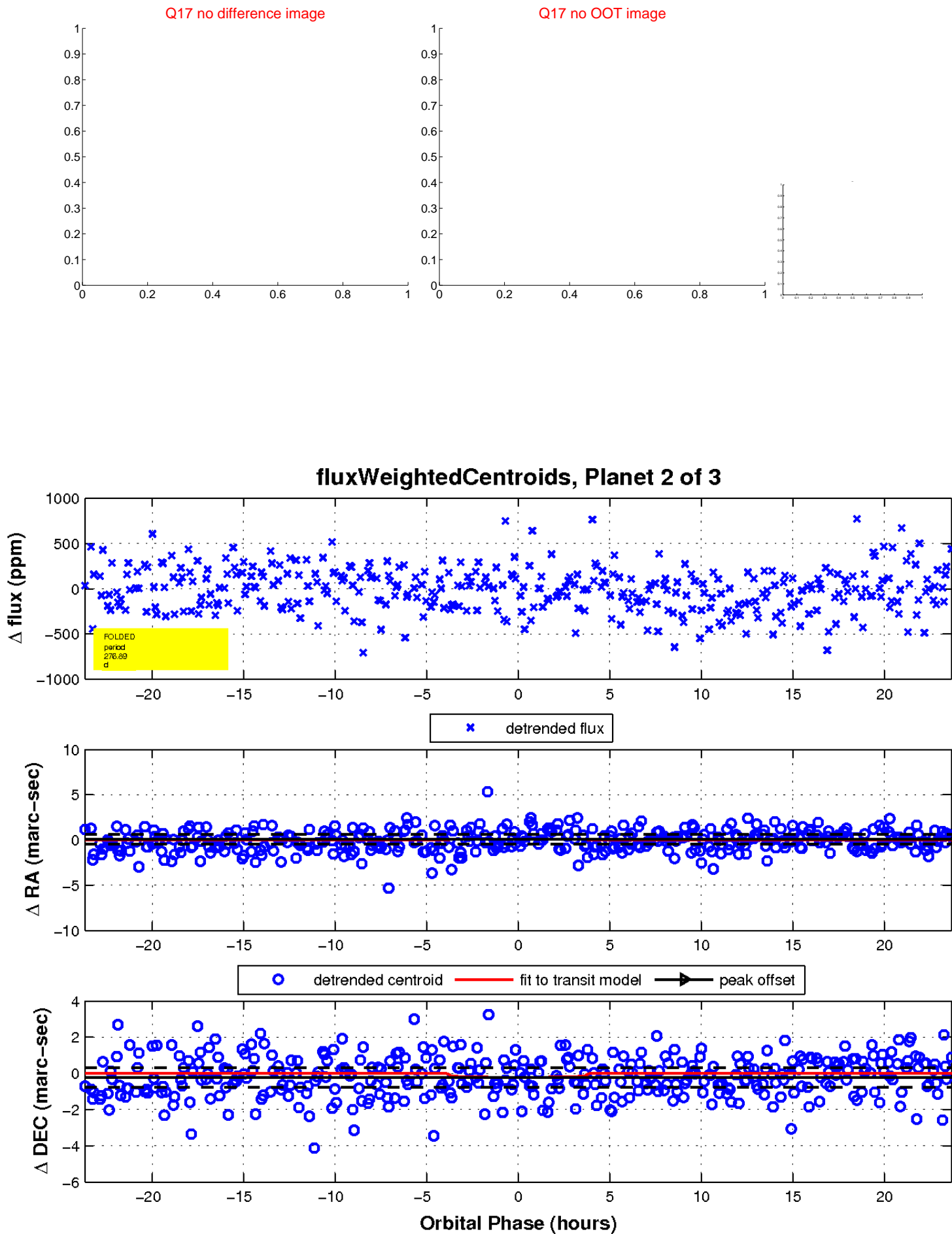
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

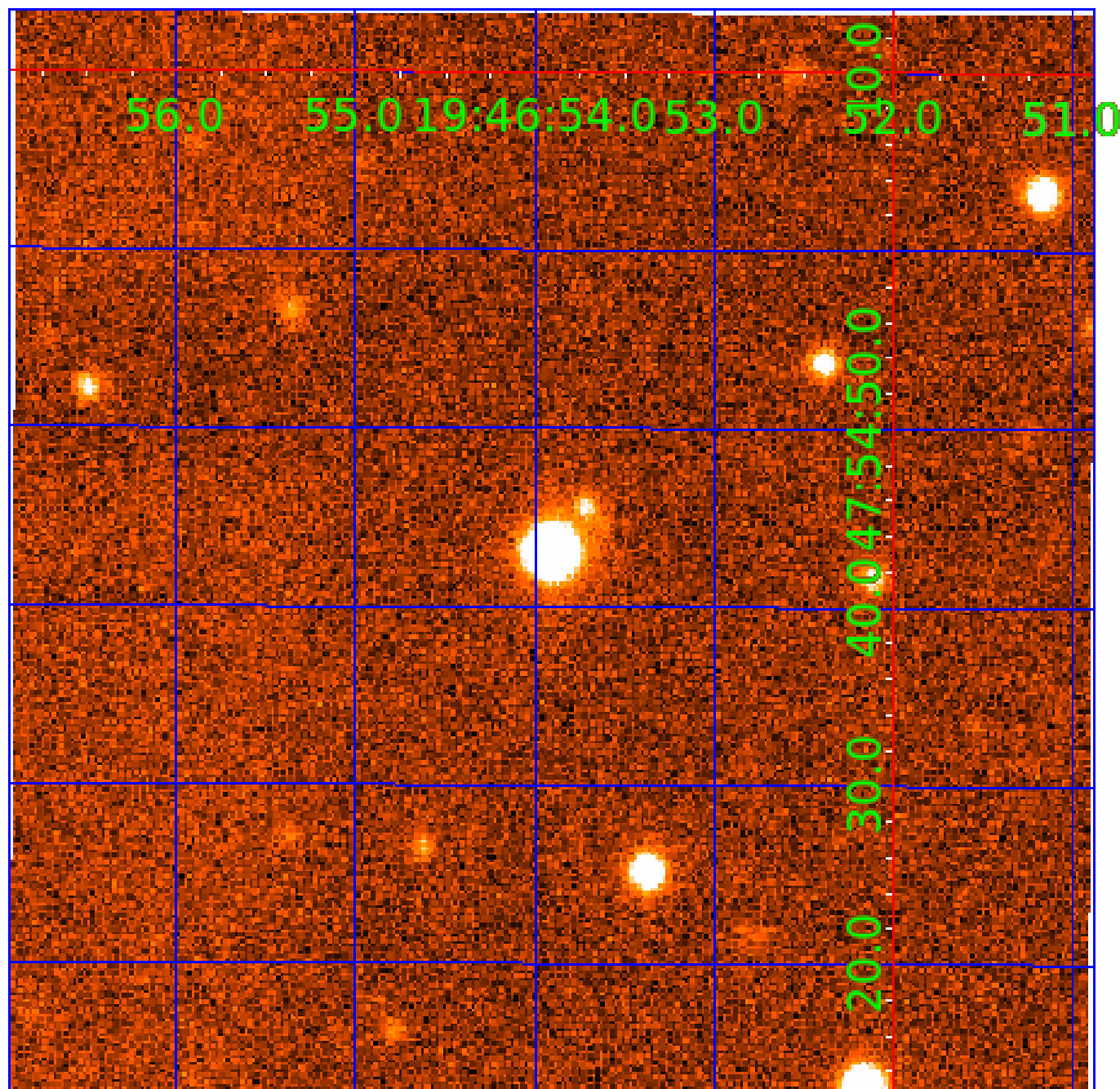


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010678817

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010678817-01 | OBS | No | 2.999534 | 132.299189 | 55.6 | 10.422 | 13.2 | 11.4 | 1.04 | 6463 | 0.91 | 974.17 |
| 010678817-02 | OBS | No | 276.886161 | 172.085594 | 261.4 | 7.905 | 19.7 | 4.8 | 1.04 | 6463 | 1.85 | 2.33 |
| 010678817-03 | OBS | No | 3.000171 | 133.416659 | 35.3 | 14.837 | 10.3 | 9.1 | 1.04 | 6463 | 0.64 | 973.90 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010678817-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010678817-02 | 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_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 010678817-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD |

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

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

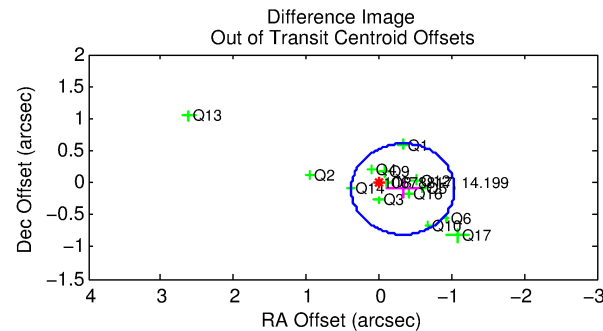
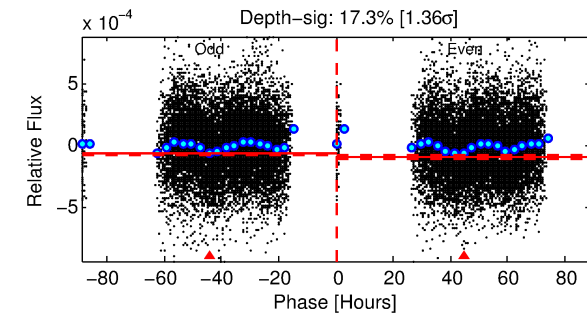
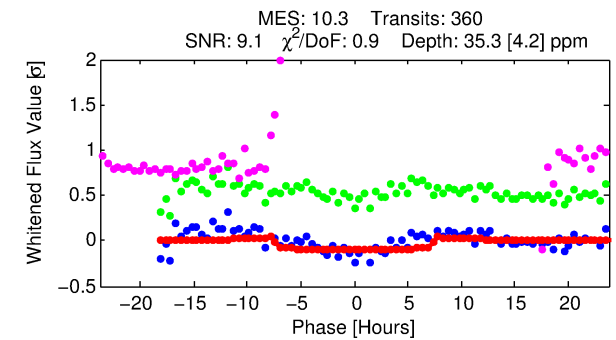
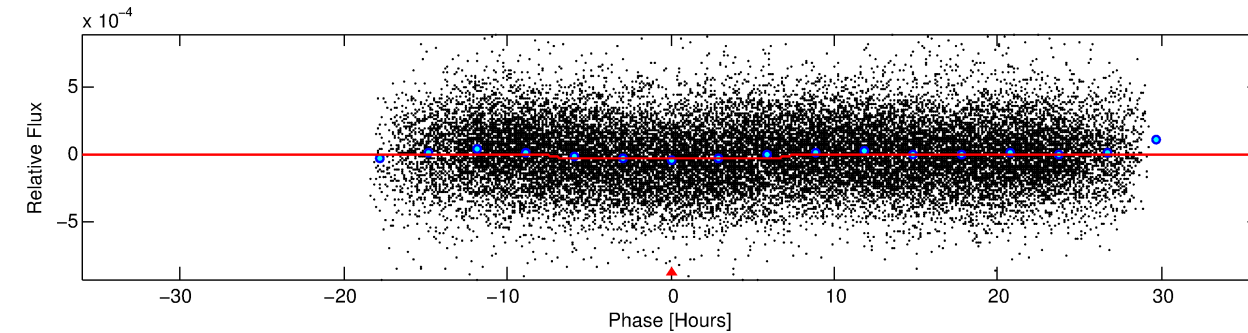
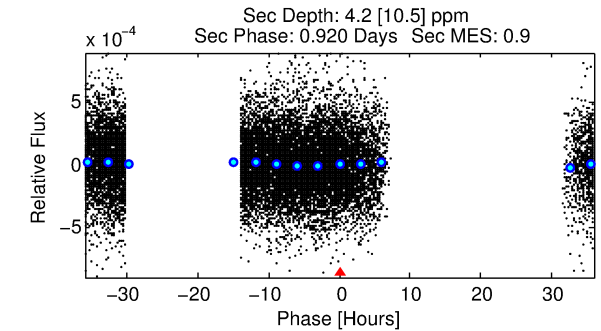
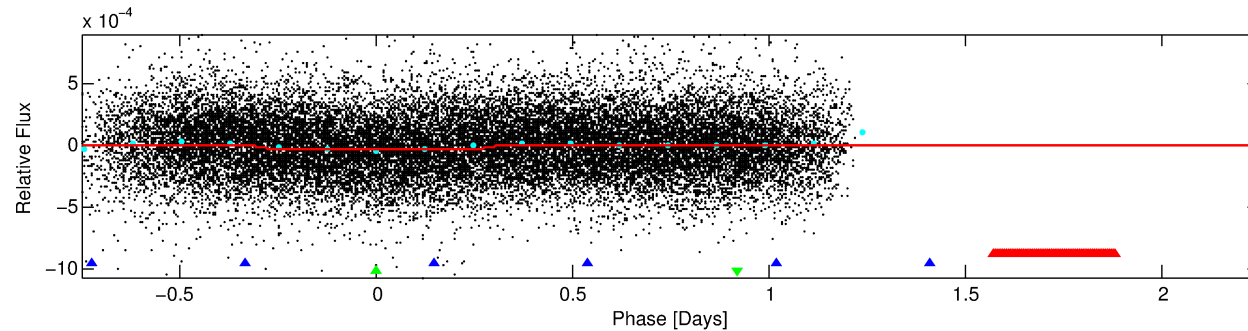
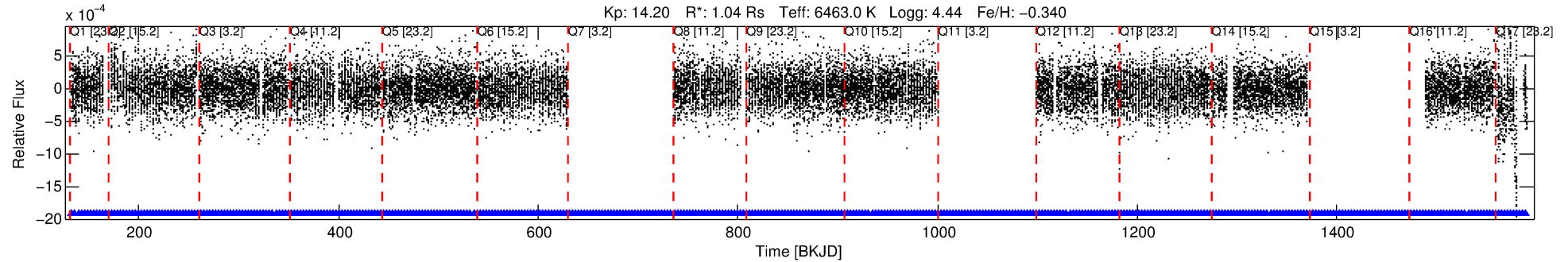
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010678817-03

No Significant Match Found

DV One-Page Summary

KIC: 10678817 Candidate: 3 of 3 Period: 3.000 d



DV Fit Results:

Period = 3.00017 [0.00005] d
Epoch = 133.4167 [0.0102] BKJD
Rp/R* = 0.0056 [0.0029]
a/R* = 1.51 [2.39]
b = 0.53 [3.85]
Seff = 973.90 [341.74]
Teq = 1424 [125] K
Rp = 0.64 [0.37] Re
a = 0.0419 [0.0095] AU
Ag = 9.79 [26.53] [0.33σ]
Teffp = 3896 [2622] K [0.94σ]

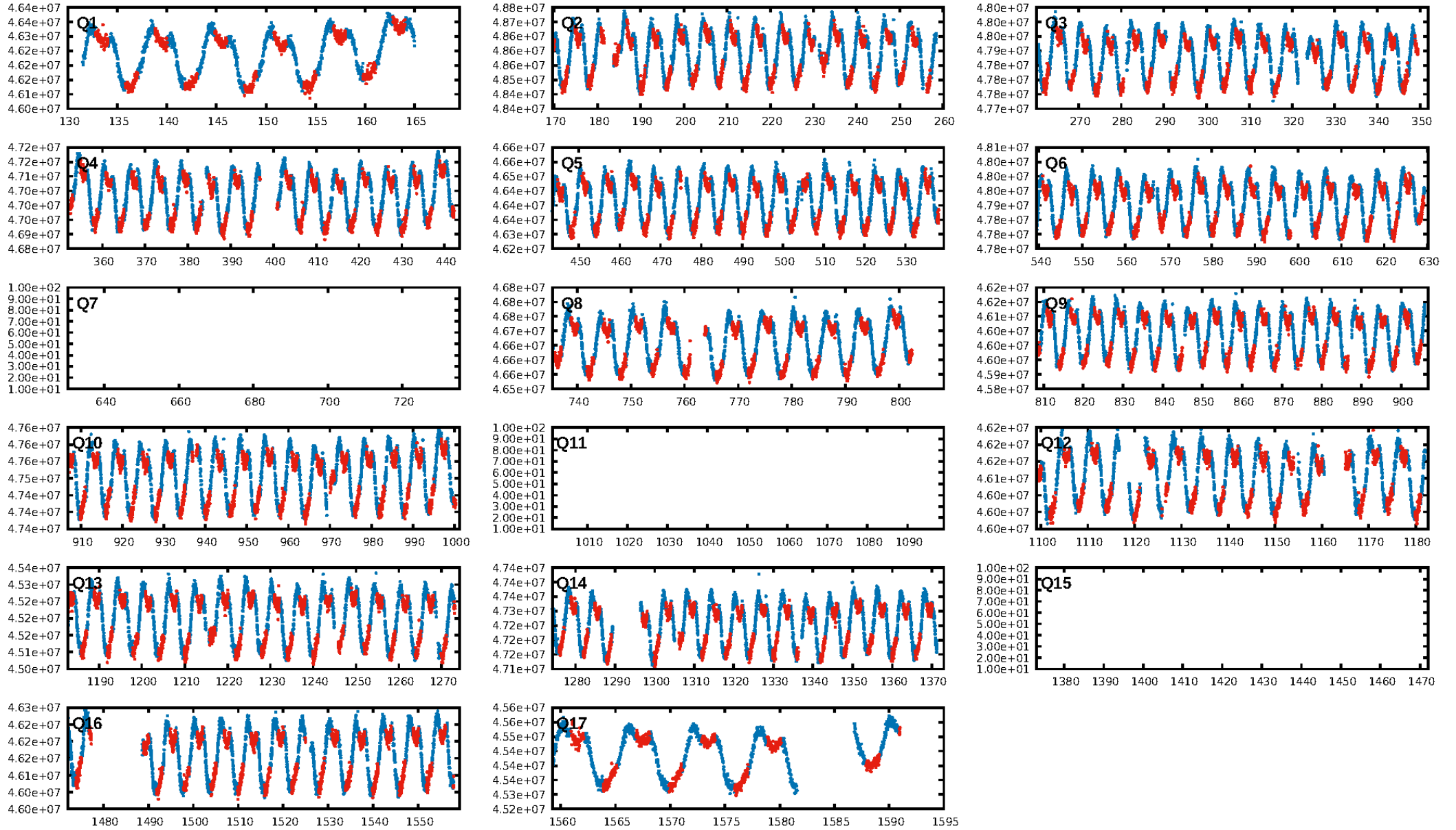
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: 100.0% [391.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [341/341]
GhostDiagnostic-chr: 1.156
Centroid-sig: 23.4%
Centroid-so: 1.519 arcsec [1.37σ]
OotOffset-rm: 0.341 arcsec [1.44σ]
KicOffset-rm: 0.512 arcsec [1.88σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.50 [7/14]

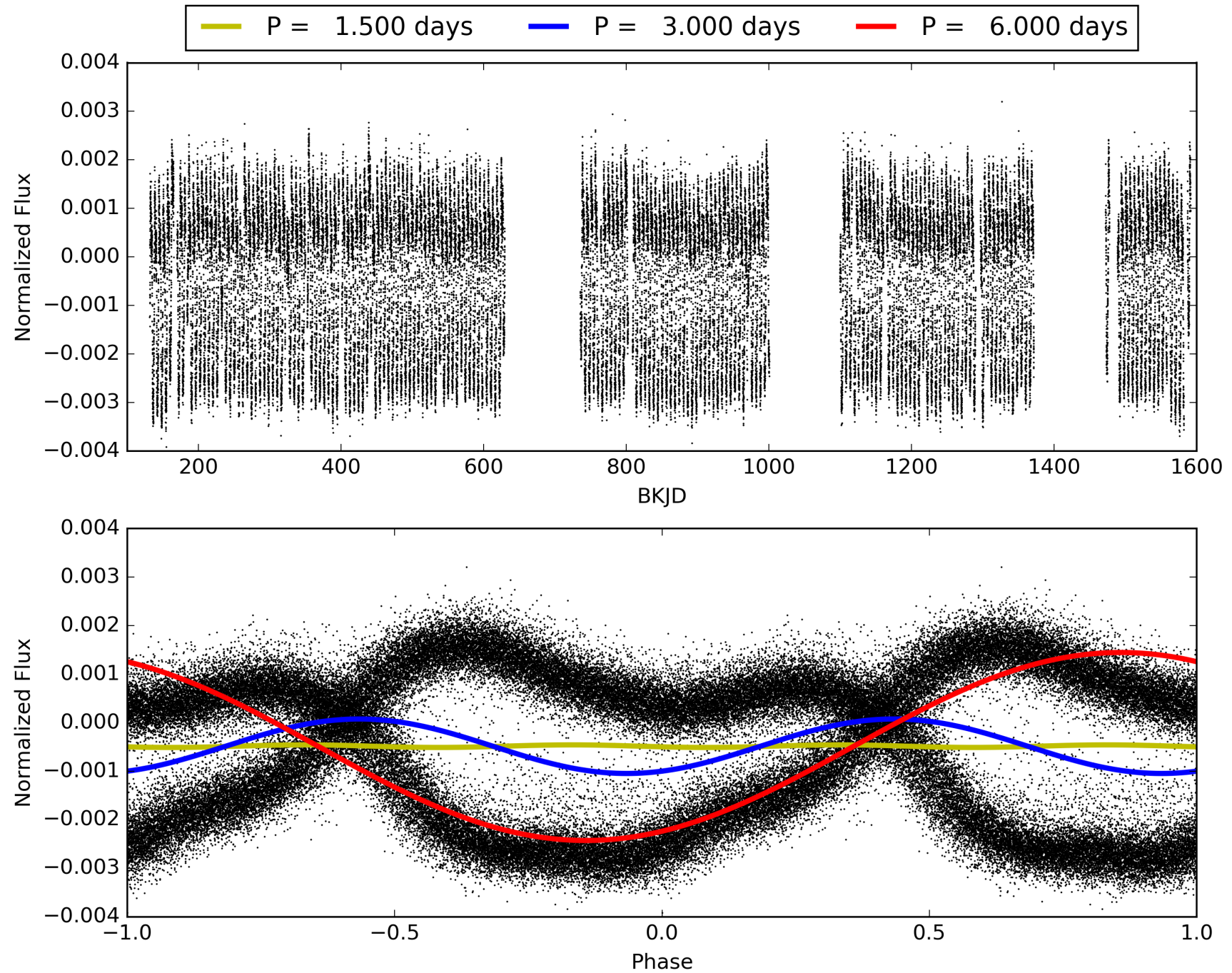
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:16:37 Z

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

TCE 010678817-03, PDC Light Curves

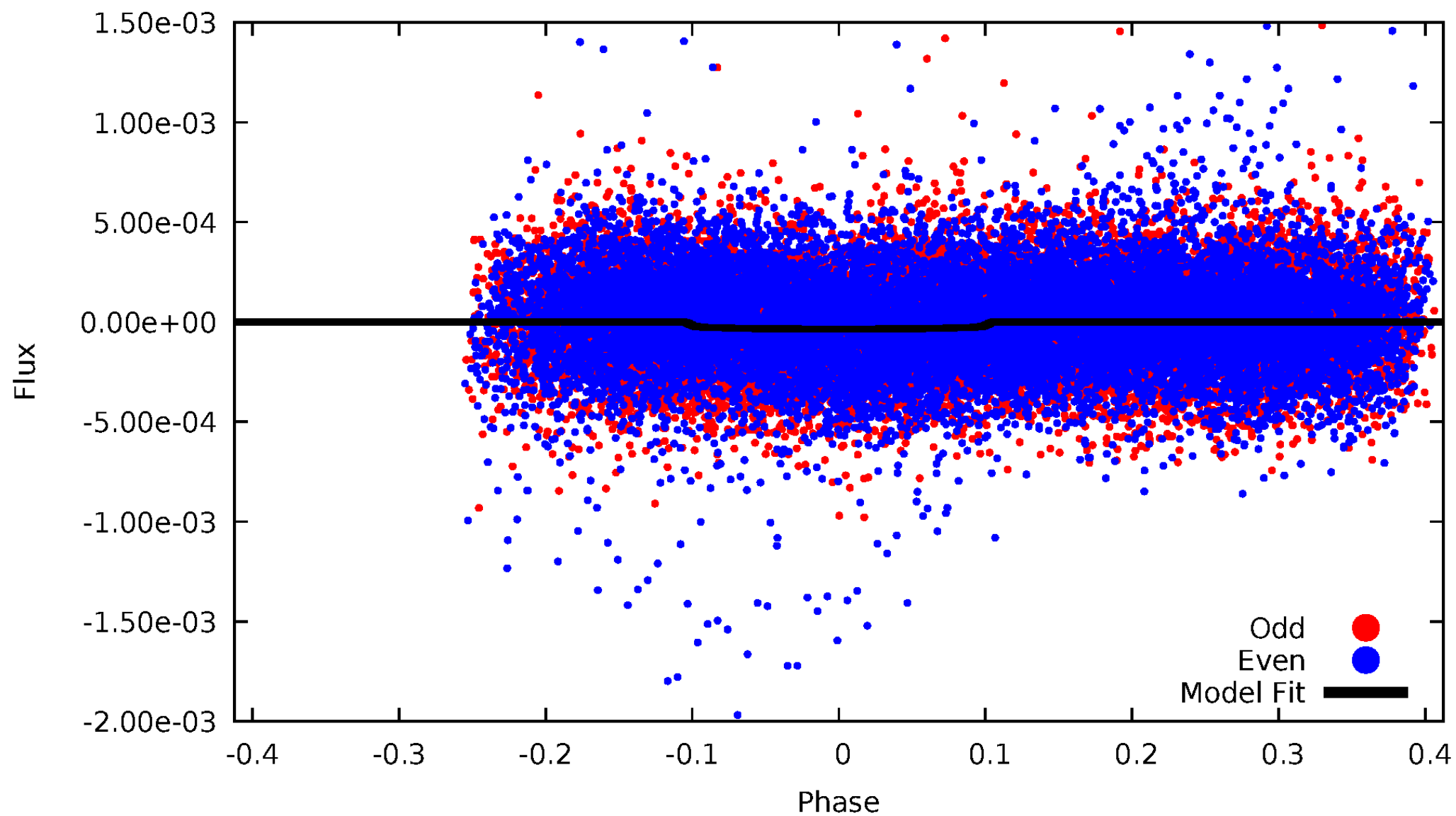


TCE 010678817-03



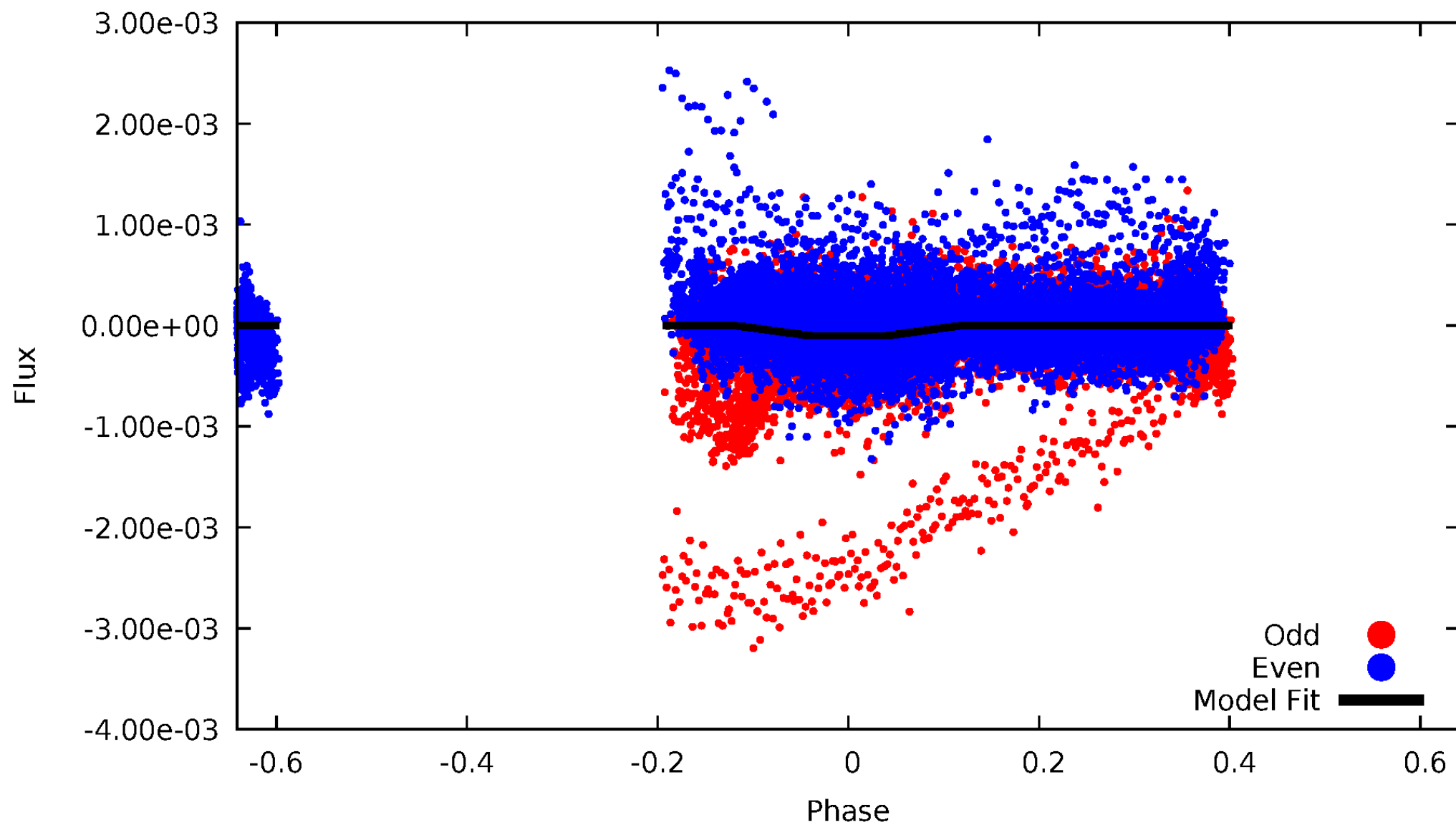
DV Odd/Even

TCE 010678817-03

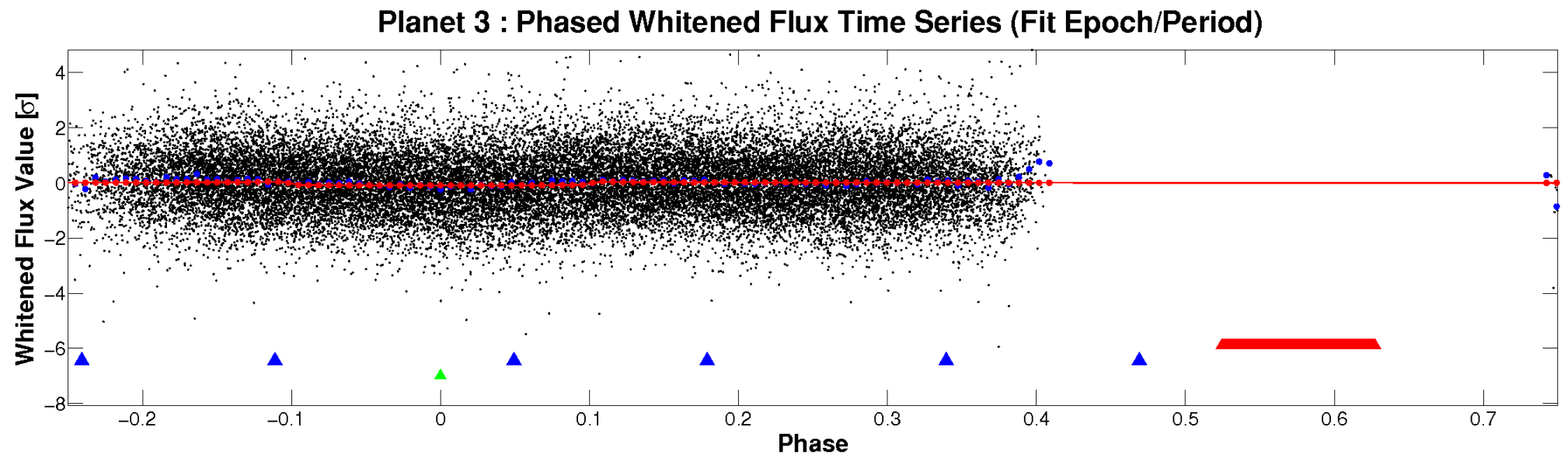
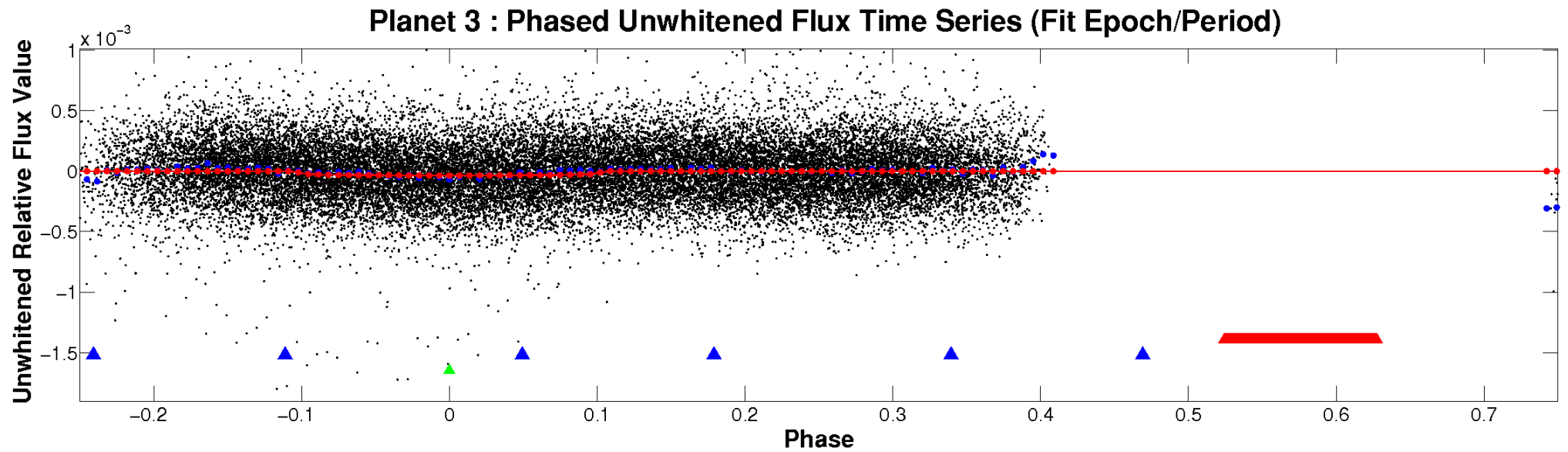


ALT Odd/Even

TCE 010678817-03

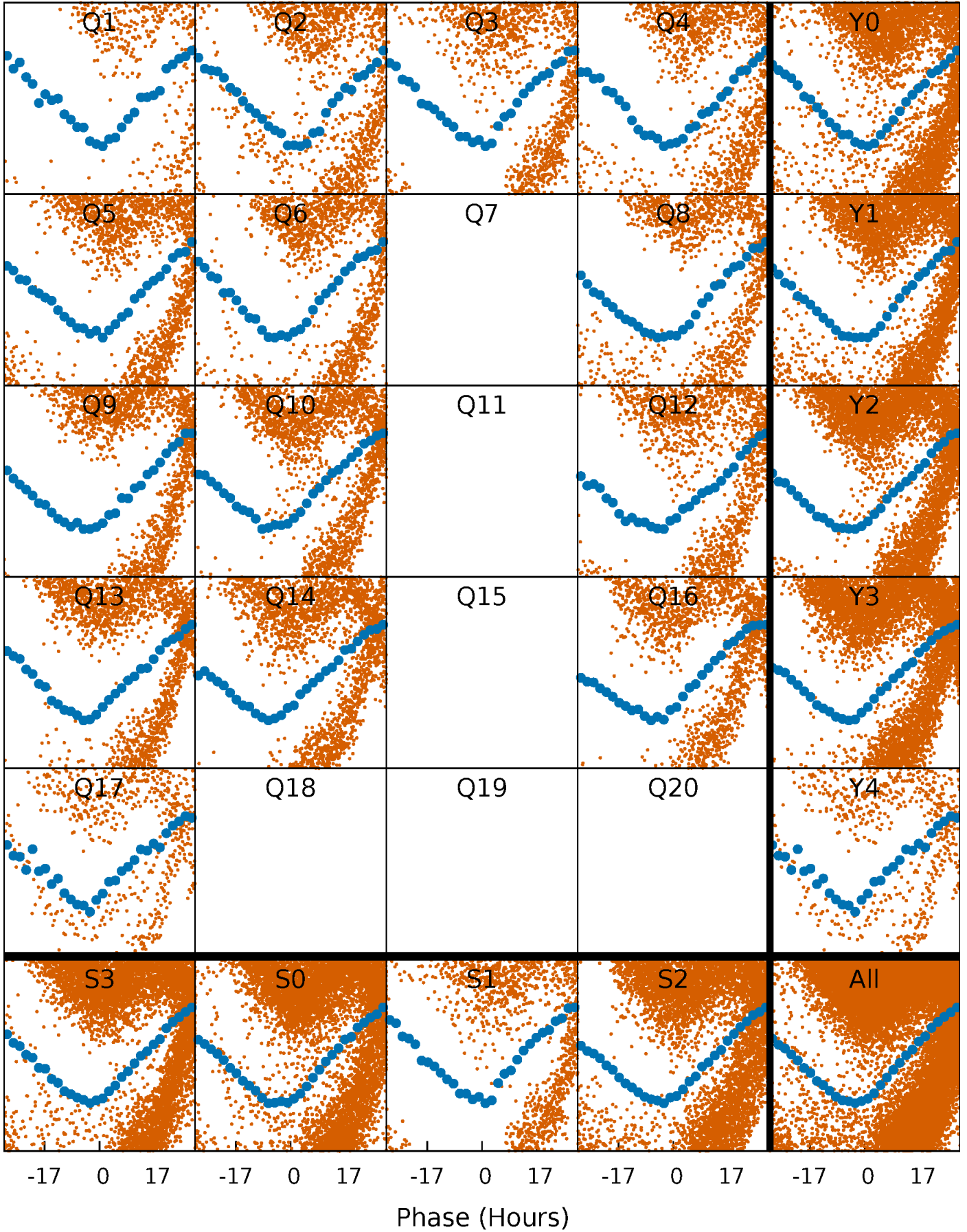


Non-Whitened Vs. Whitened Light Curve



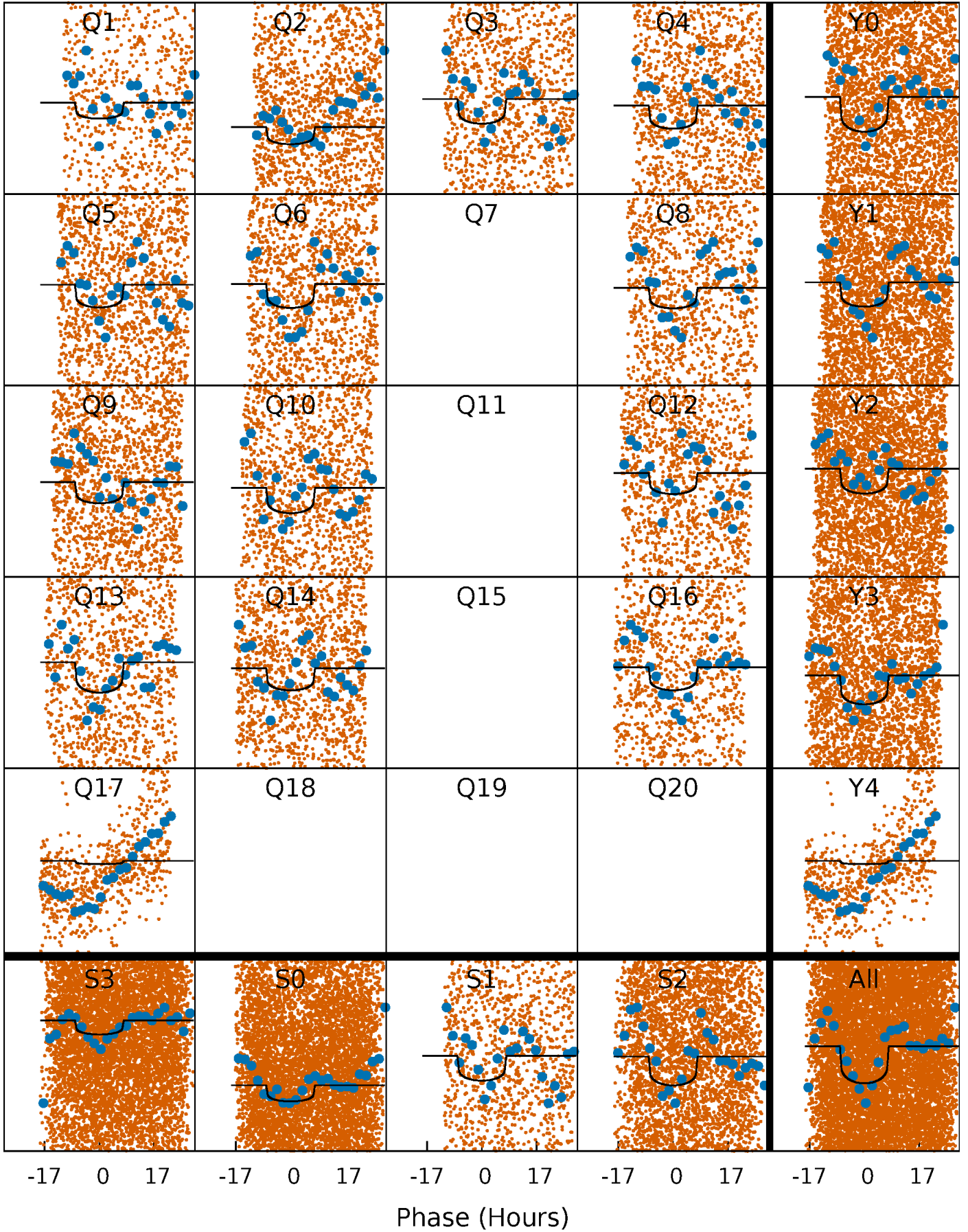
PDC Quarter-Phased Transit Curves

TCE 010678817-03 P= 3.000172 Days $T_0=133.416659$ (BKJD)



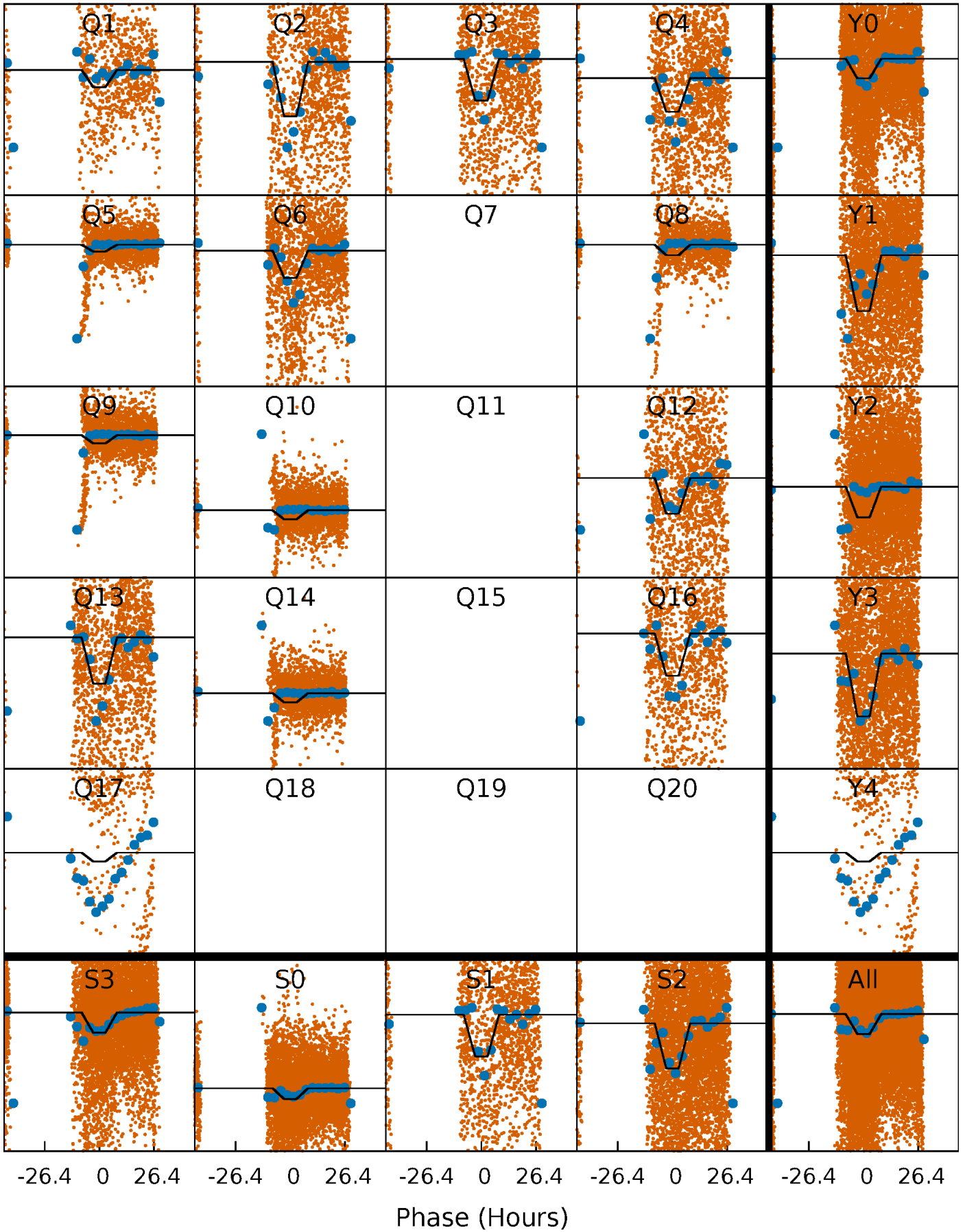
DV Quarter-Phased Transit Curves

TCE 010678817-03 P= 3.000172 Days $T_0=133.416659$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

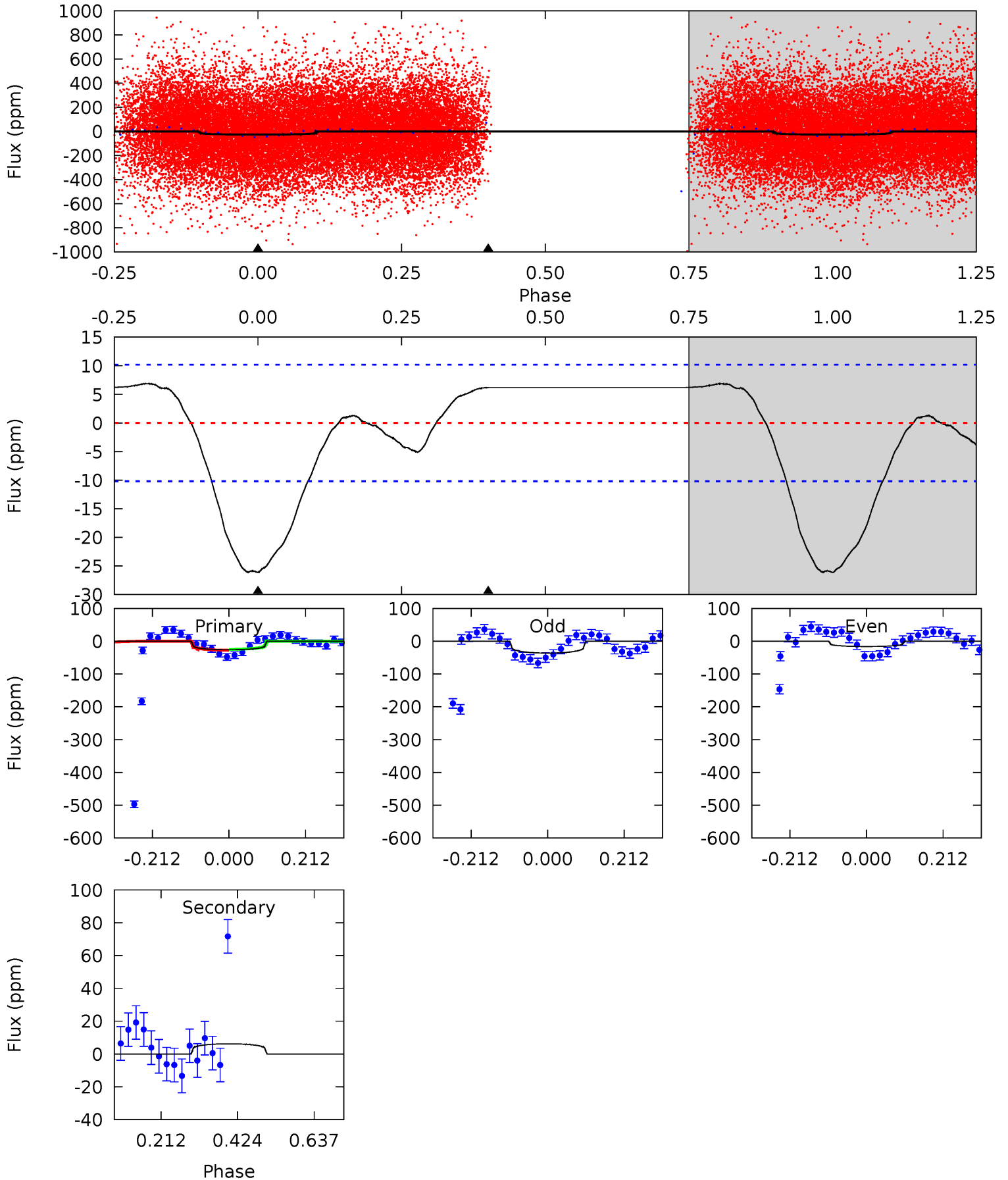
TCE 010678817-03 P= 2.999781 Days $T_0=133.425824$ (BKJD)



DV Model-Shift Uniqueness Test

010678817-03, P = 3.000172 Days, E = 130.416487 Days

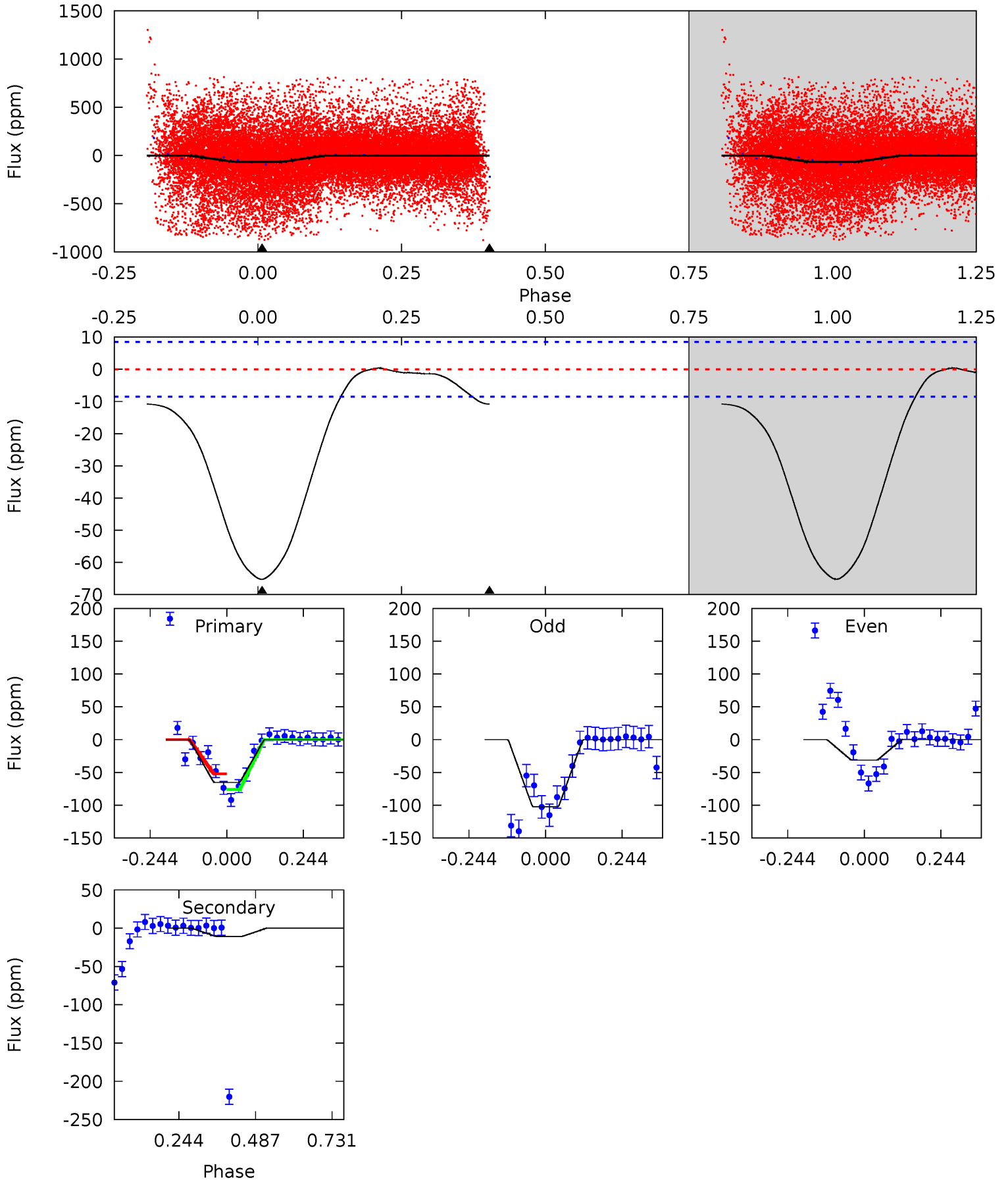
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.3 | -2.68 | 0 | 0 | 4.40 | 1.25 | 1.51 | 11.3 | 11.3 | -2.68 | -2.68 | 4.38 | 1.36 | 0.21 | 0.59 |



Alt Model-Shift Uniqueness Test

010678817-03, P = 2.999781 Days, E = 130.426043 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 33.6 | 5.56 | 0 | 0 | 4.37 | 1.17 | 1.33 | 33.6 | 33.6 | 5.56 | 5.56 | 19.4 | 3.66 | 0.01 | 4.45 |



Stellar Parameters For KIC 010678817

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6463^{+155}_{-194} | $4.436^{+0.060}_{-0.180}$ | $-0.340^{+0.250}_{-0.300}$ | $1.045^{+0.282}_{-0.121}$ | $1.086^{+0.146}_{-0.132}$ | $1.340^{+0.351}_{-0.644}$ |
| | +2%/-3% | +1%/-4% | +74%/-88% | +27%/-12% | +13%/-12% | +26%/-48% |
| 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 010678817-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|------------------------------|
| DV | 6 ± 2 | $0.70^{+0.33}_{-0.34}$ | 2021^{+128}_{-88} | -4417^{+657}_{-1471} | $-12.073^{+7.325}_{-35.200}$ |
| Alt. | -11 ± 2 | $1.17^{+0.35}_{-0.35}$ | 2021^{+130}_{-92} | 3982^{+581}_{-364} | $7.256^{+7.563}_{-3.079}$ |

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

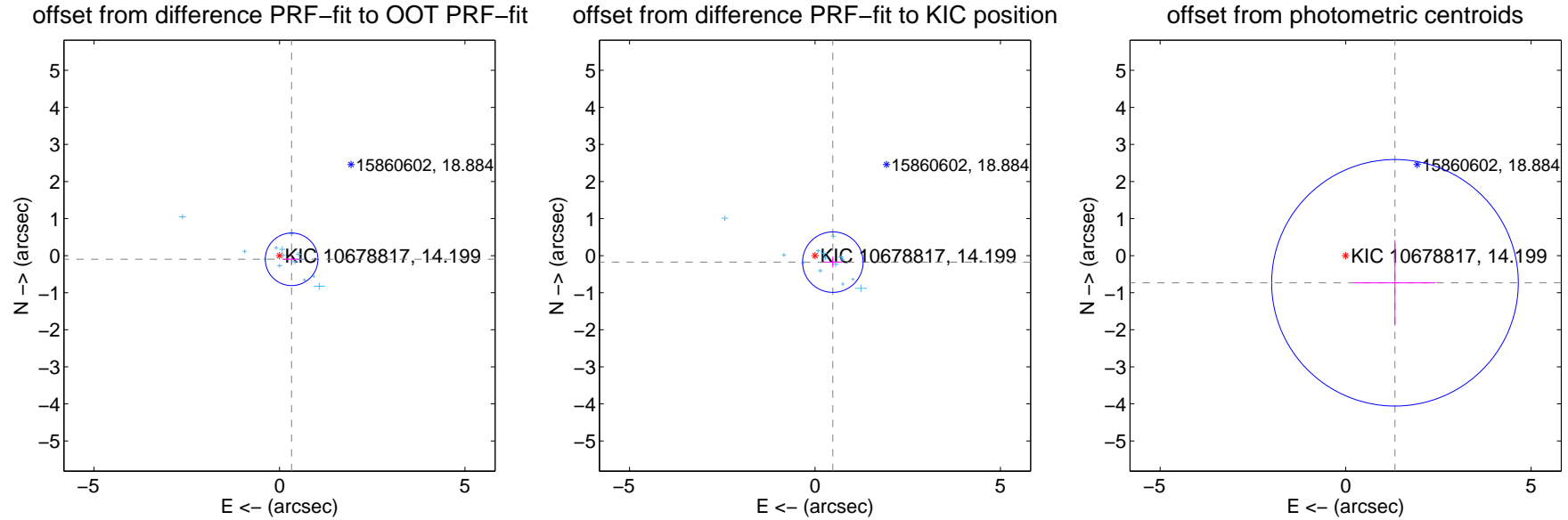
DV Centroid Data

Supplemental centroid analysis for 010678817-03. Kepler magnitude: 14.20. Transit SNR 9.09

There are 14 quarters with good PRF difference image offsets

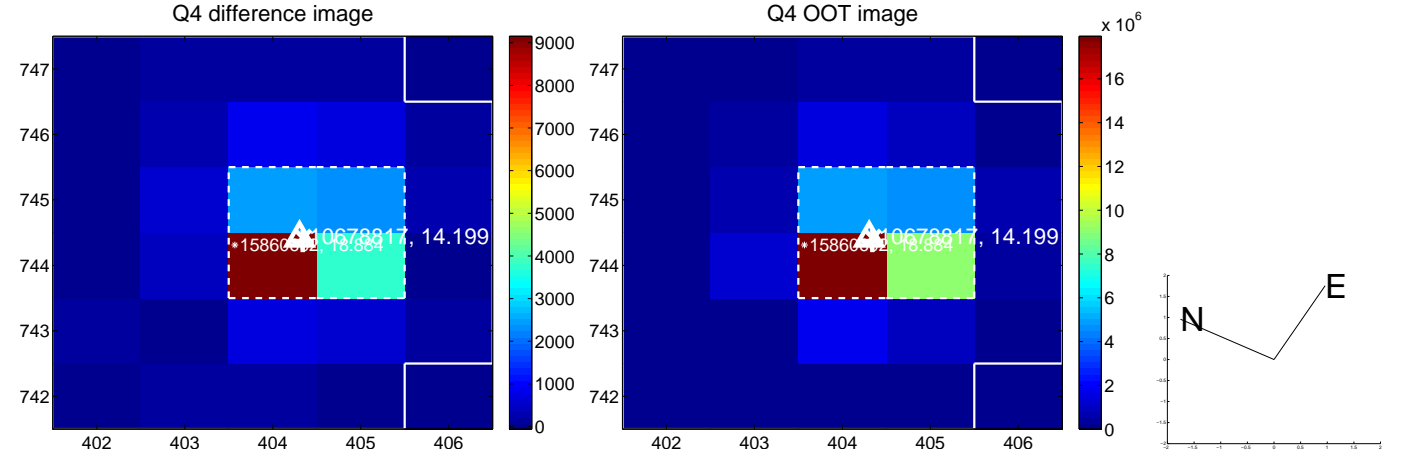
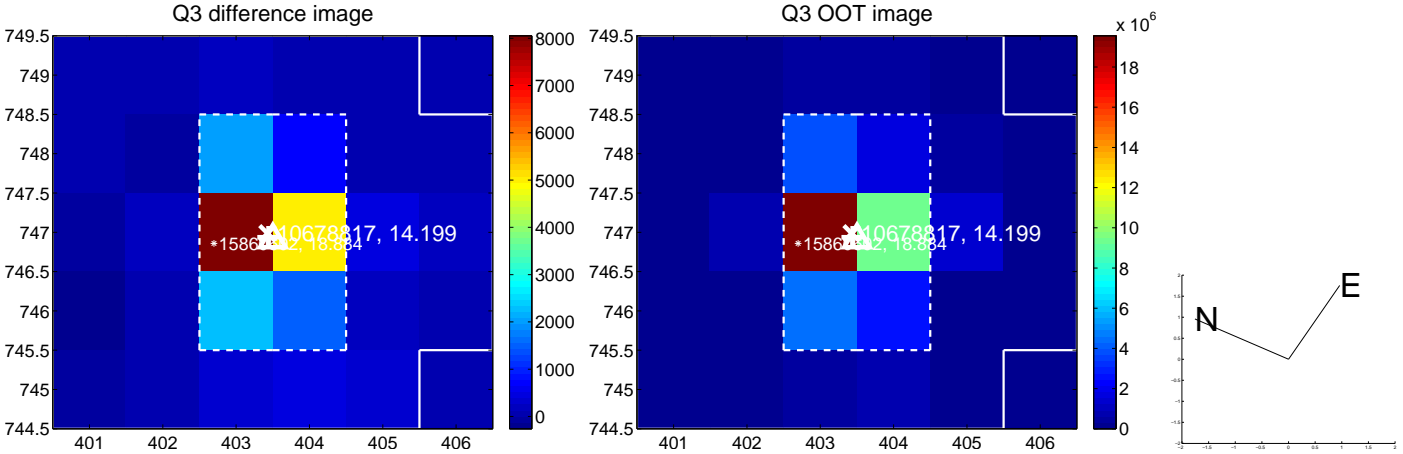
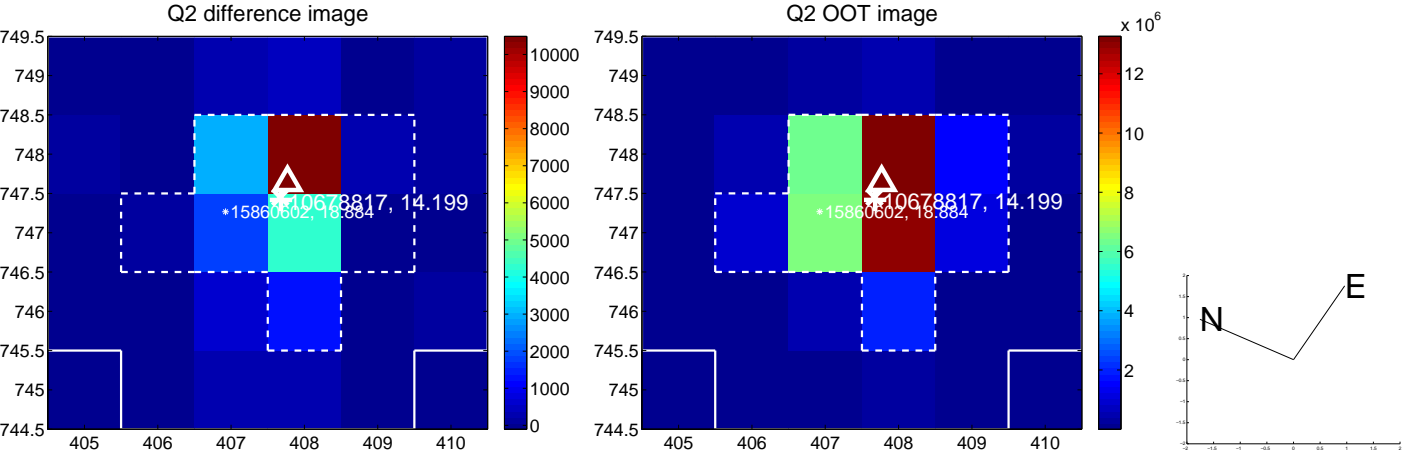
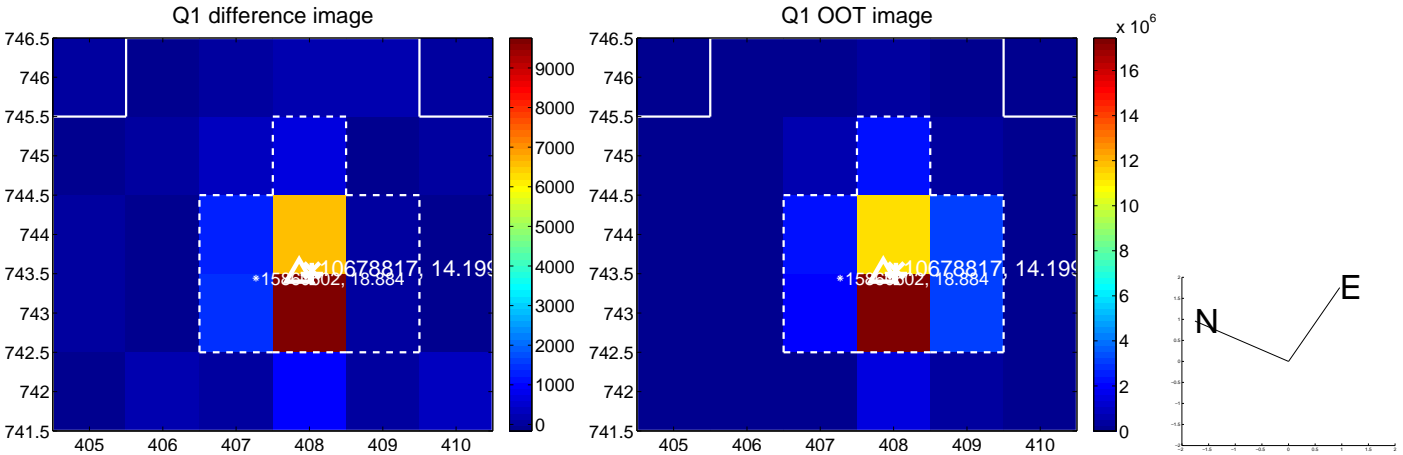
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.341 ± 0.236 | 1.44 | -0.327 ± 0.220 | -0.099 ± 0.138 |
| PRF-fit source offset from KIC position | 0.512 ± 0.272 | 1.88 | -0.481 ± 0.250 | -0.175 ± 0.149 |
| photometric centroid source offset | 1.52 ± 1.11 | 1.37 | -1.33 ± 1.10 | -0.73 ± 1.15 |

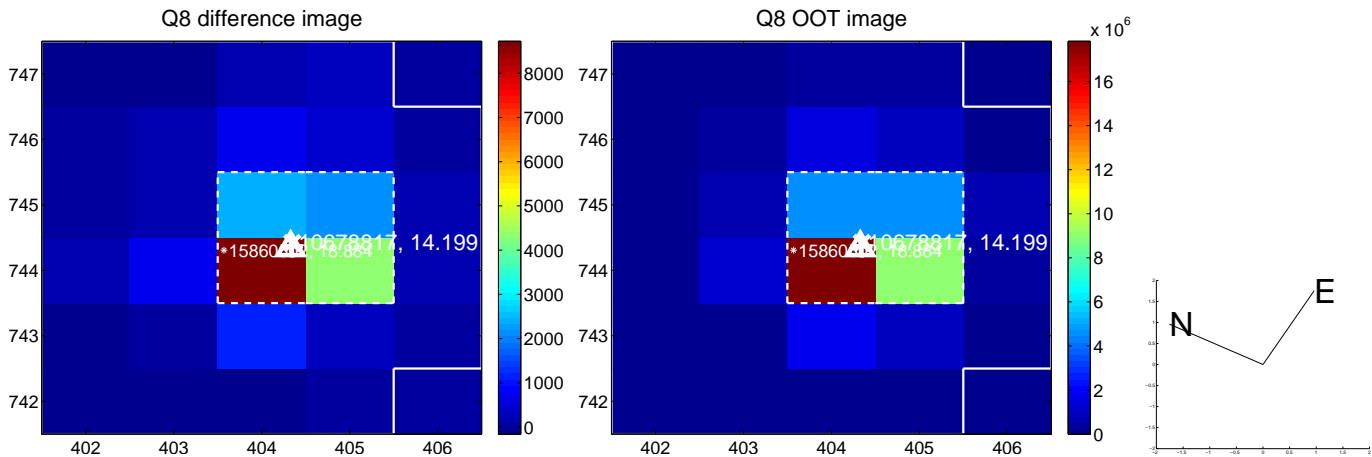
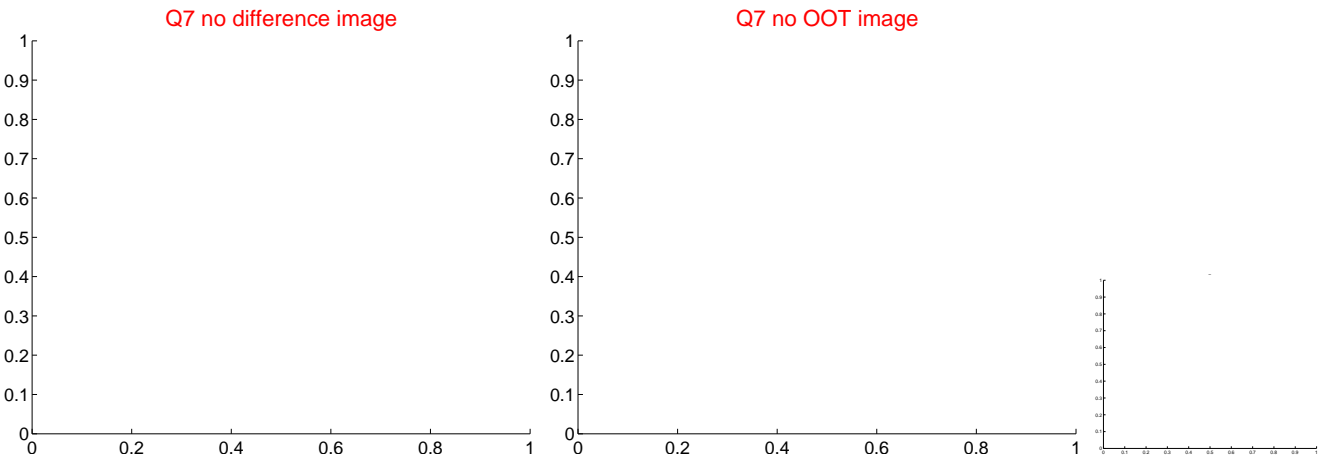
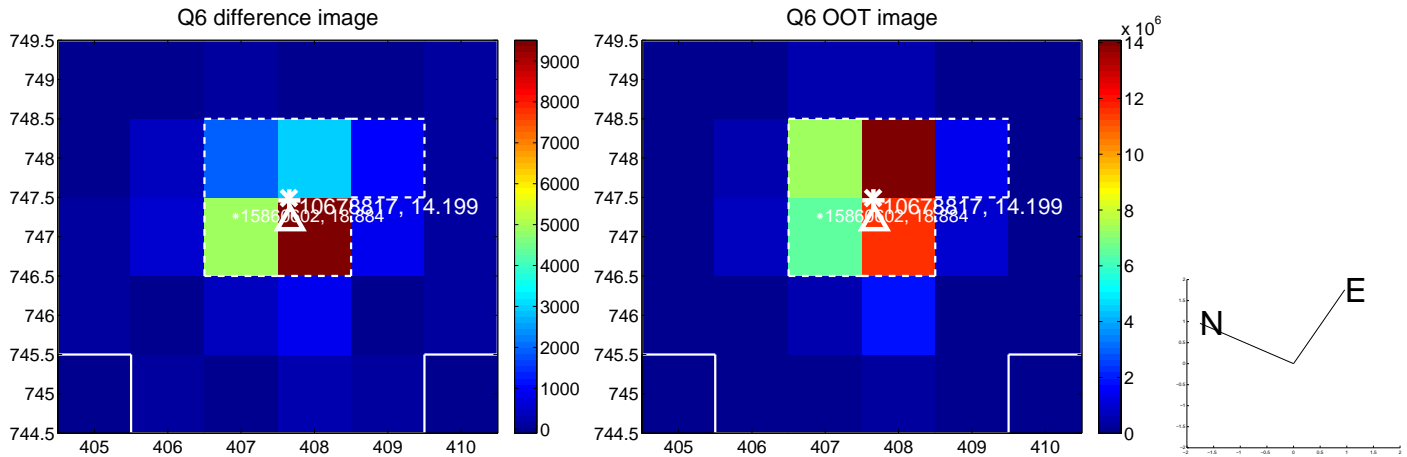
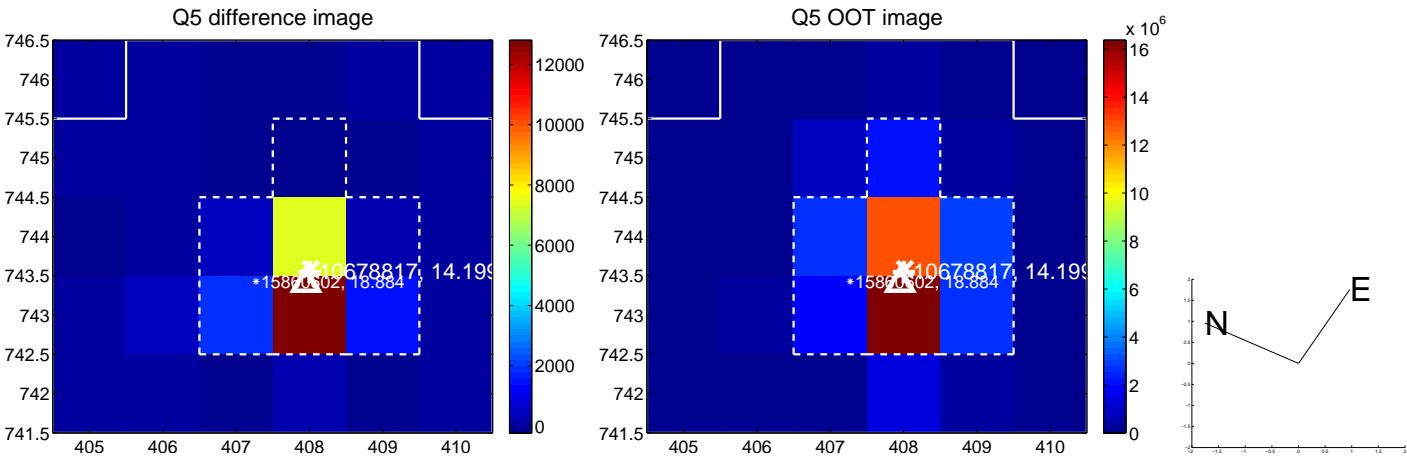


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

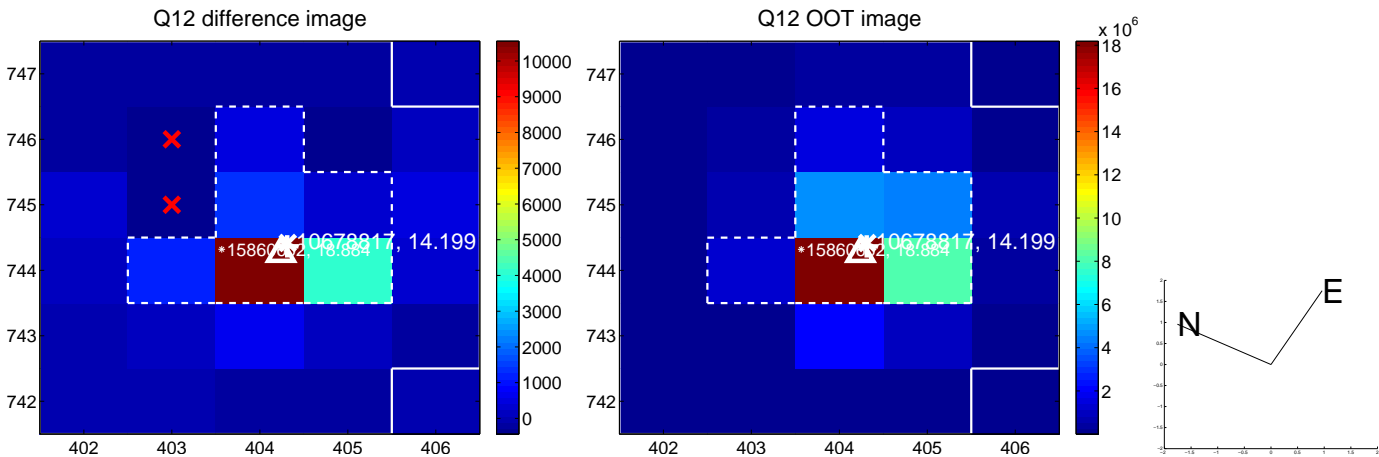
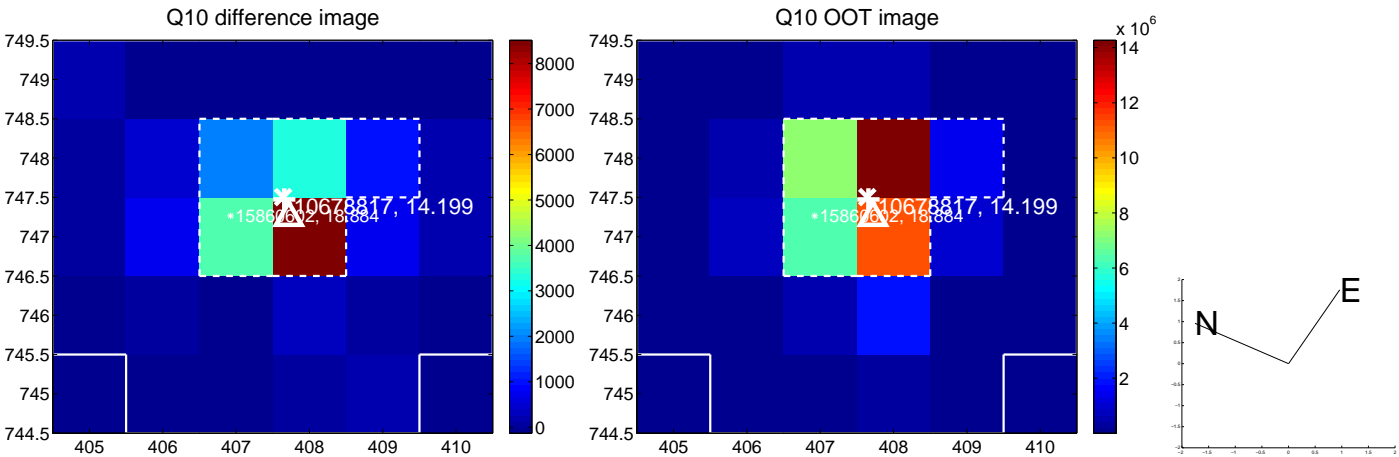
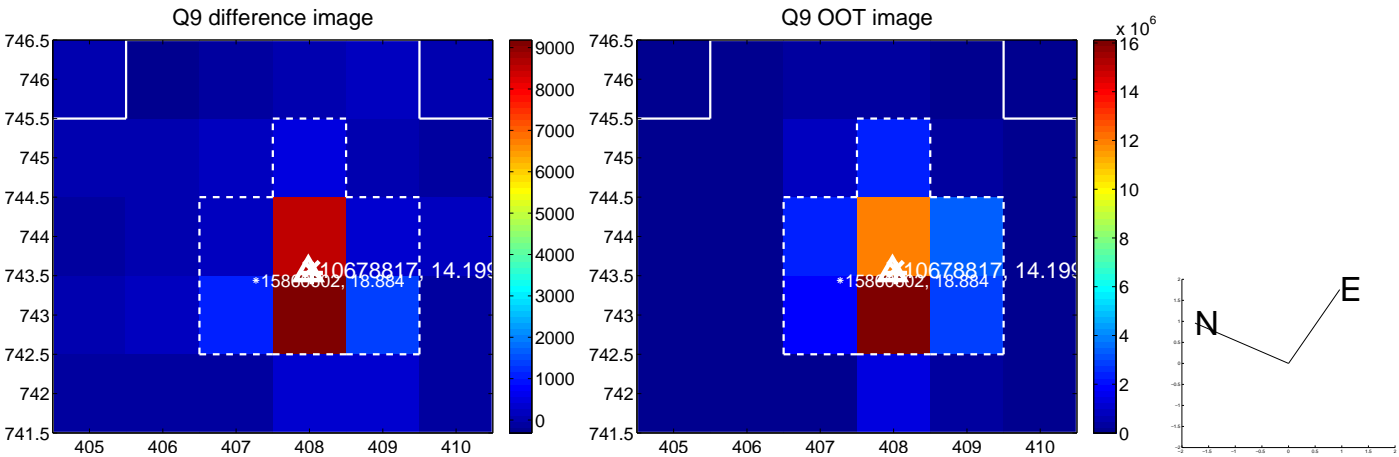
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



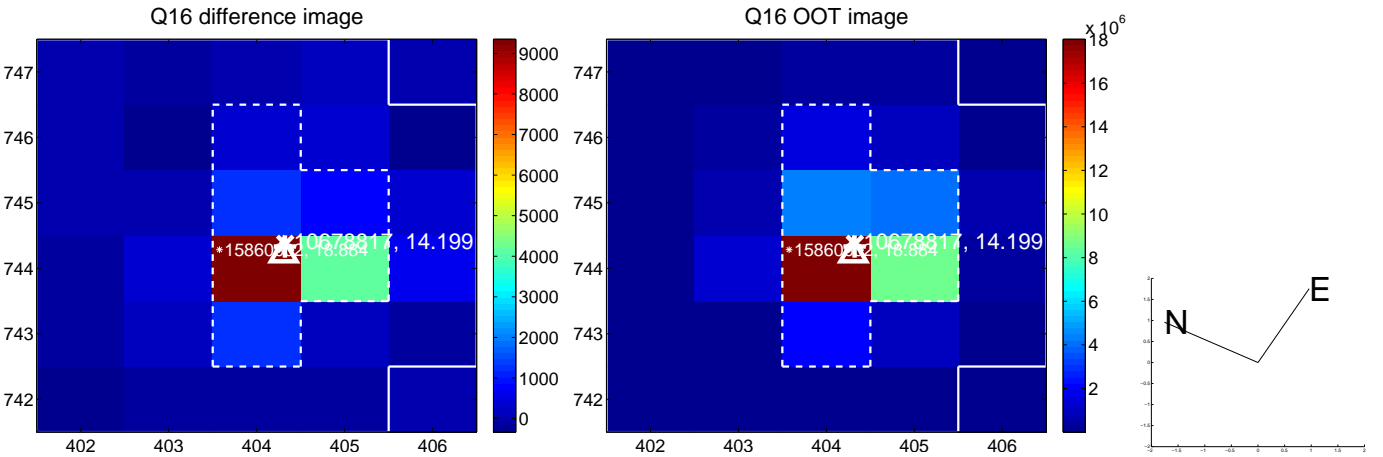
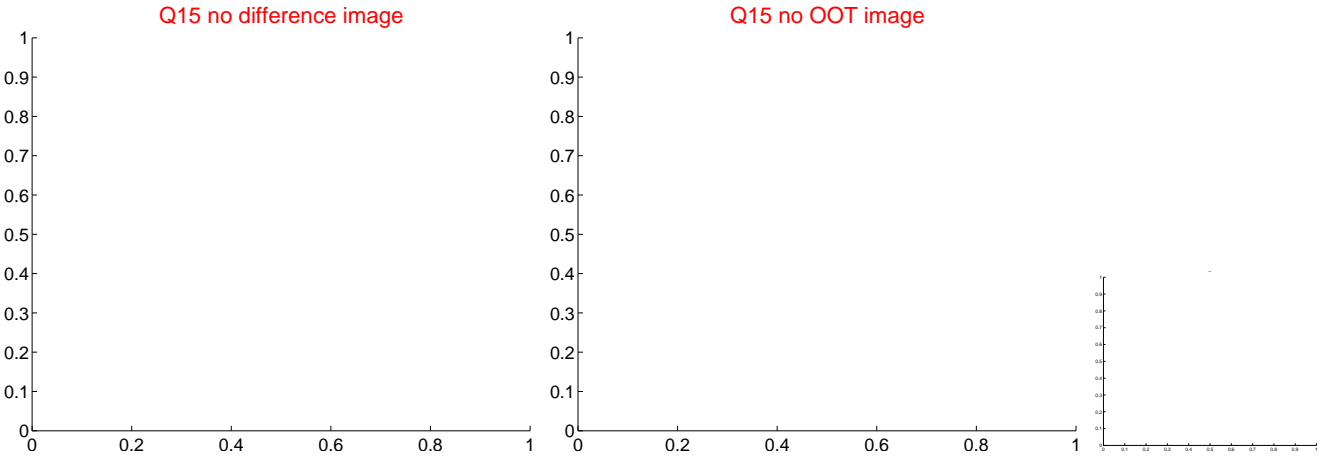
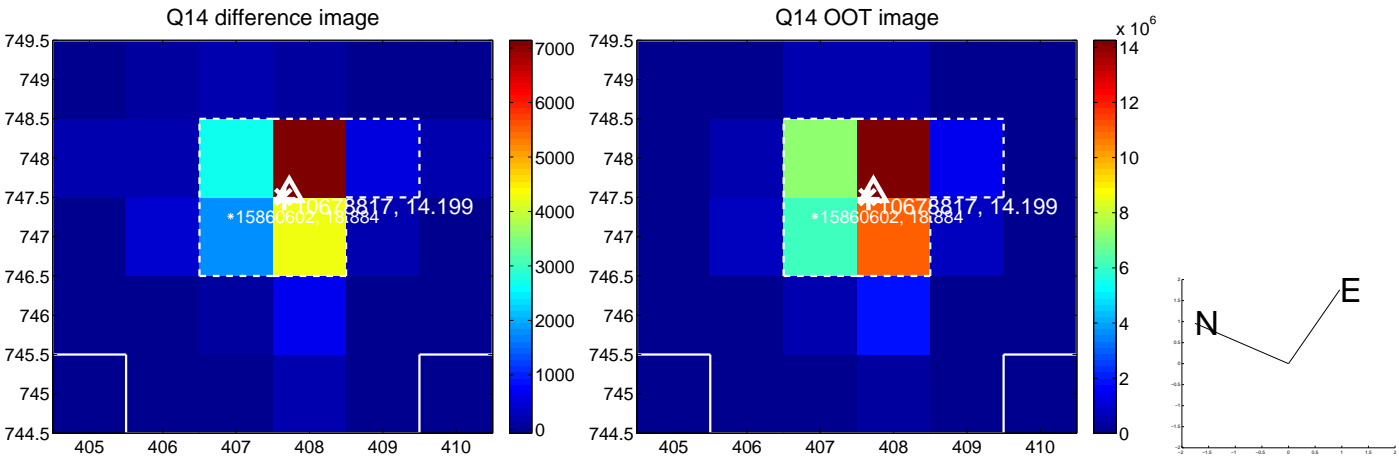
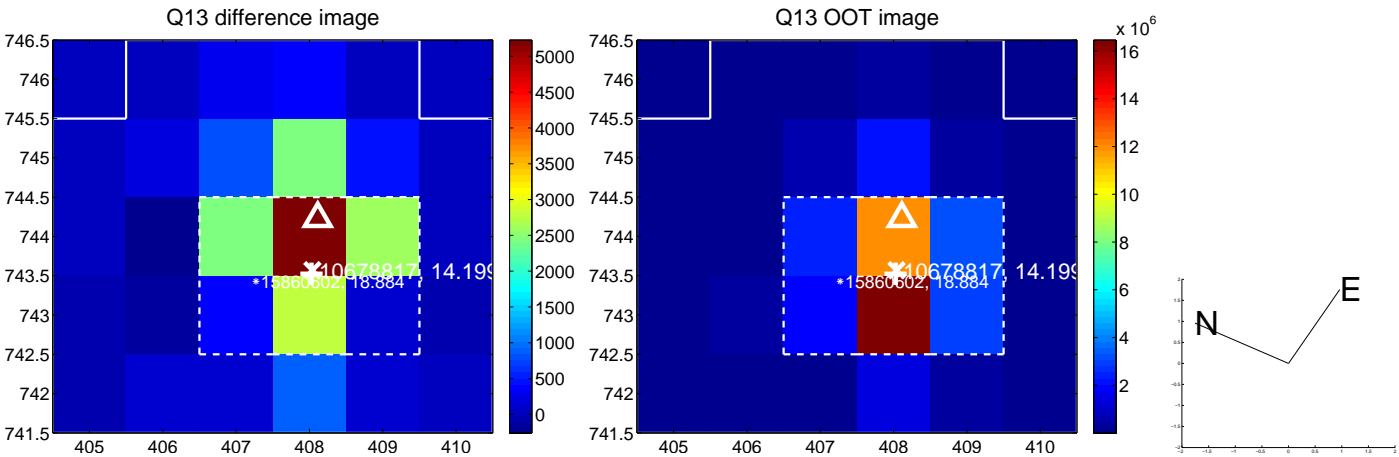
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



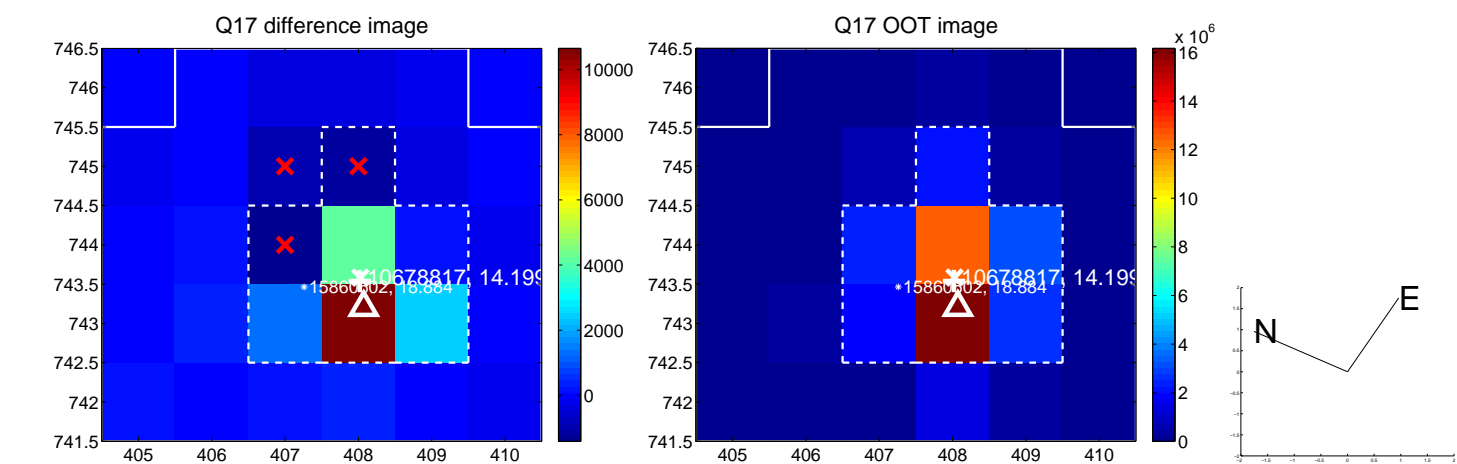
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



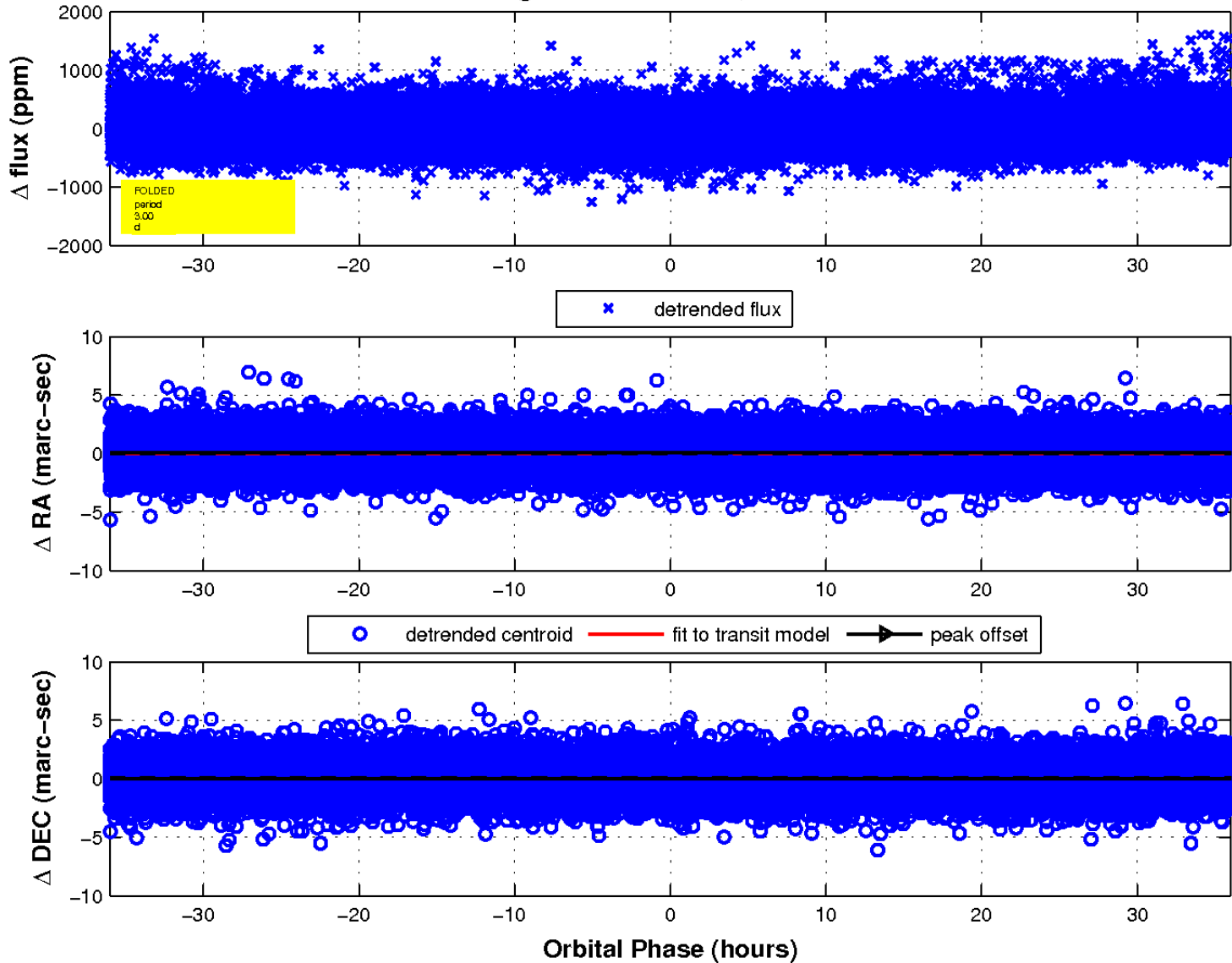
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

