

KIC 004852528

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004852528-01 | OBS | 0500.01 | 7.053535 | 134.152337 | 1425.8 | 2.725 | 68.1 | 72.3 | 0.57 | 4041 | 2.56 | 21.22 |
| 004852528-02 | OBS | 0500.02 | 9.521646 | 139.397872 | 1445.9 | 2.624 | 57.2 | 62.2 | 0.57 | 4041 | 2.53 | 14.22 |
| 004852528-03 | OBS | 0500.03 | 3.072143 | 134.030637 | 467.5 | 2.051 | 29.7 | 33.7 | 0.57 | 4041 | 1.47 | 64.27 |
| 004852528-04 | OBS | 0500.05 | 0.986783 | 132.183270 | 225.7 | 1.506 | 26.2 | 26.2 | 0.57 | 4041 | 1.02 | 292.15 |
| 004852528-05 | OBS | 0500.04 | 4.645379 | 134.590073 | 469.8 | 2.459 | 22.8 | 25.5 | 0.57 | 4041 | 1.60 | 37.03 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 004852528-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-03 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-04 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-05 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

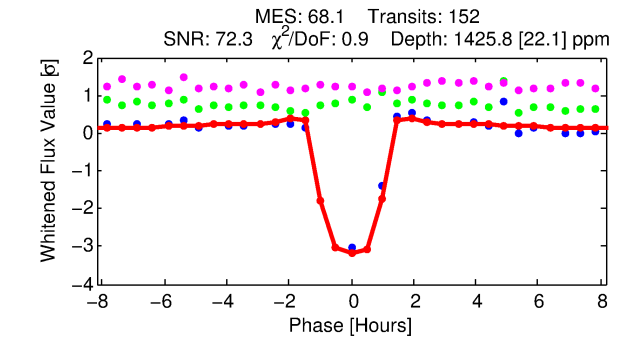
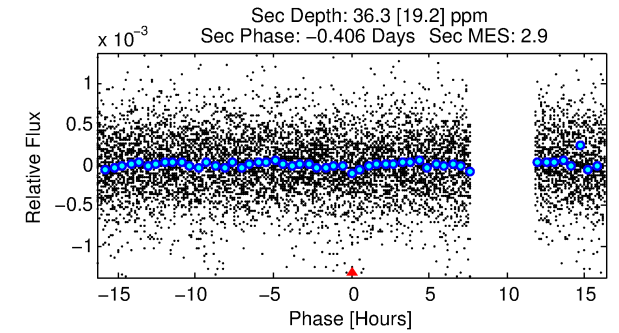
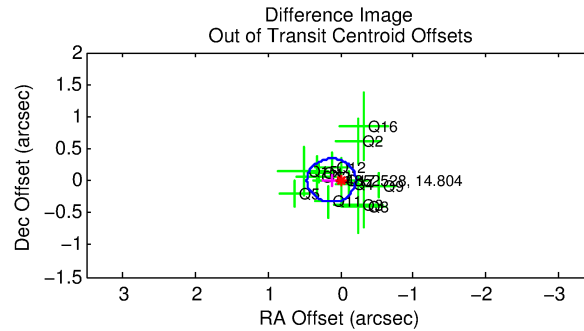
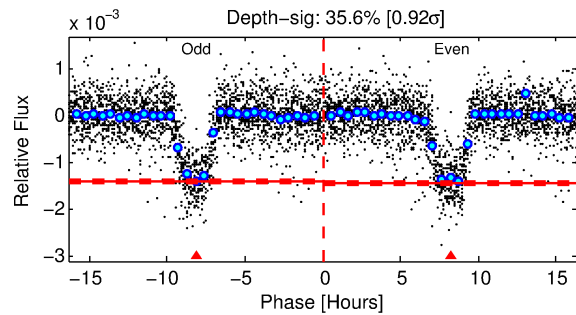
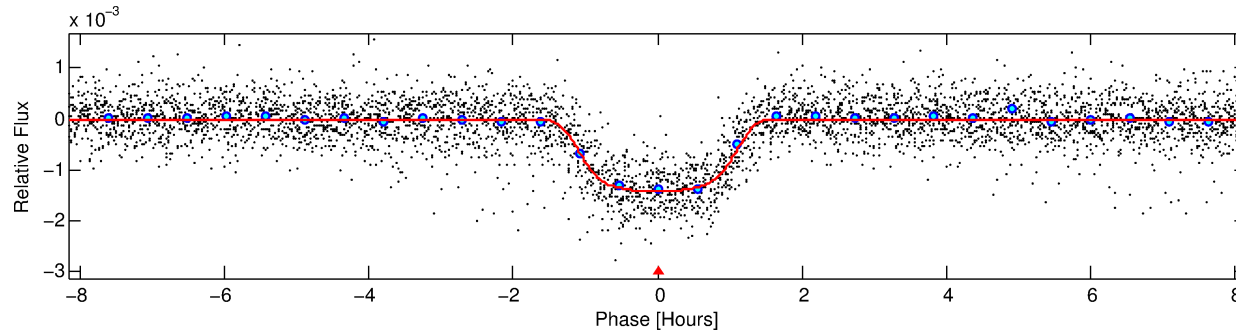
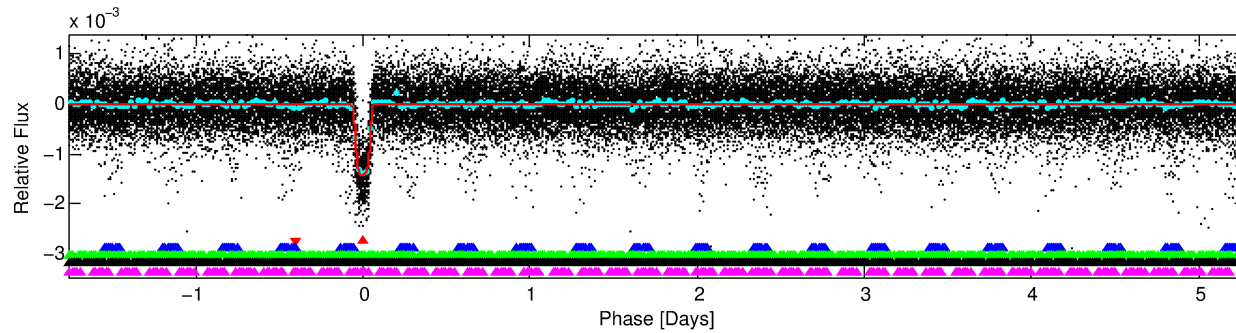
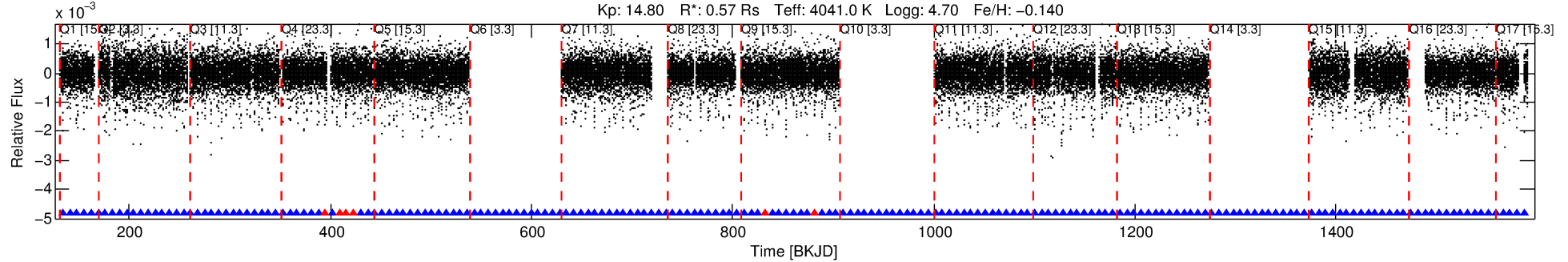
Ephemeris Match Information For 004852528-01

No Significant Match Found

DV One-Page Summary

KIC: 4852528 Candidate: 1 of 5 Period: 7.054 d
KOI: K00500.01 Name: Kepler-80b Corr: 0.945

Kp: 14.80 R*: 0.57 Rs Teff: 4041.0 K Logg: 4.70 Fe/H: -0.140



DV Fit Results:

Period = 7.05354 [0.00001] d
Epoch = 134.1523 [0.0007] BKJD
Rp/R* = 0.0413 [0.0011]
a/R* = 10.65 [1.10]
b = 0.89 [0.02]
Seff = 21.22 [2.19]
Teq = 547 [14] K
Rp = 2.56 [0.16] Re
a = 0.0602 [0.0025] AU
Ag = 11.09 [5.92] [1.71σ]
Teffp = 1544 [208] K [4.79σ]

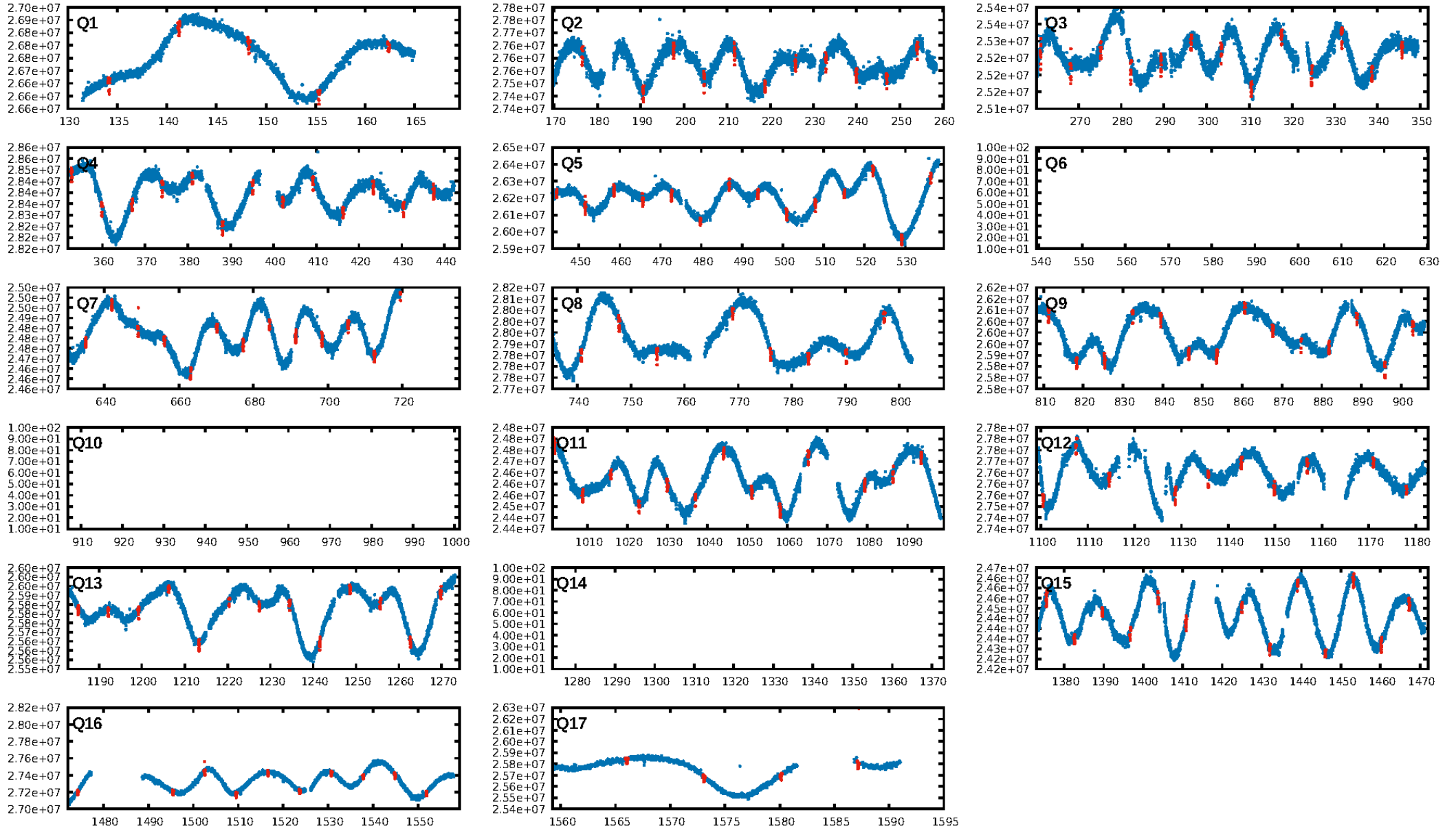
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.75σ]
LongPeriod-sig: 100.0% [15.66σ]
ModelChiSquare2-sig: 96.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [137/143]
GhostDiagnostic-chr: 6.881
Centroid-sig: N/A
Centroid-so: 0.190 arcsec [1.06σ]
OotOffset-rm: 0.128 arcsec [1.14σ]
KicOffset-rm: 0.193 arcsec [1.64σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.93 [13/14]

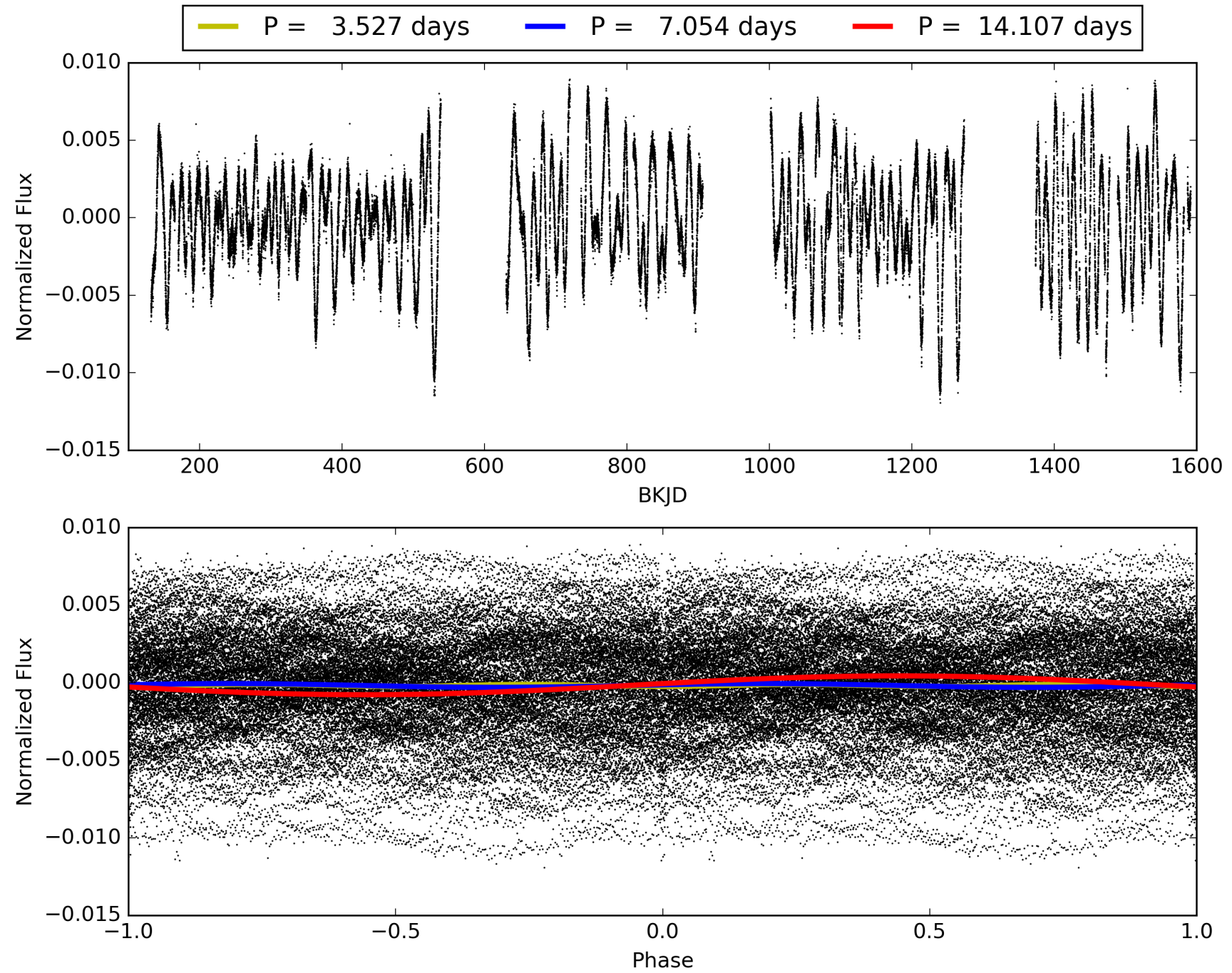
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:05:40 Z

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

TCE 004852528-01, PDC Light Curves

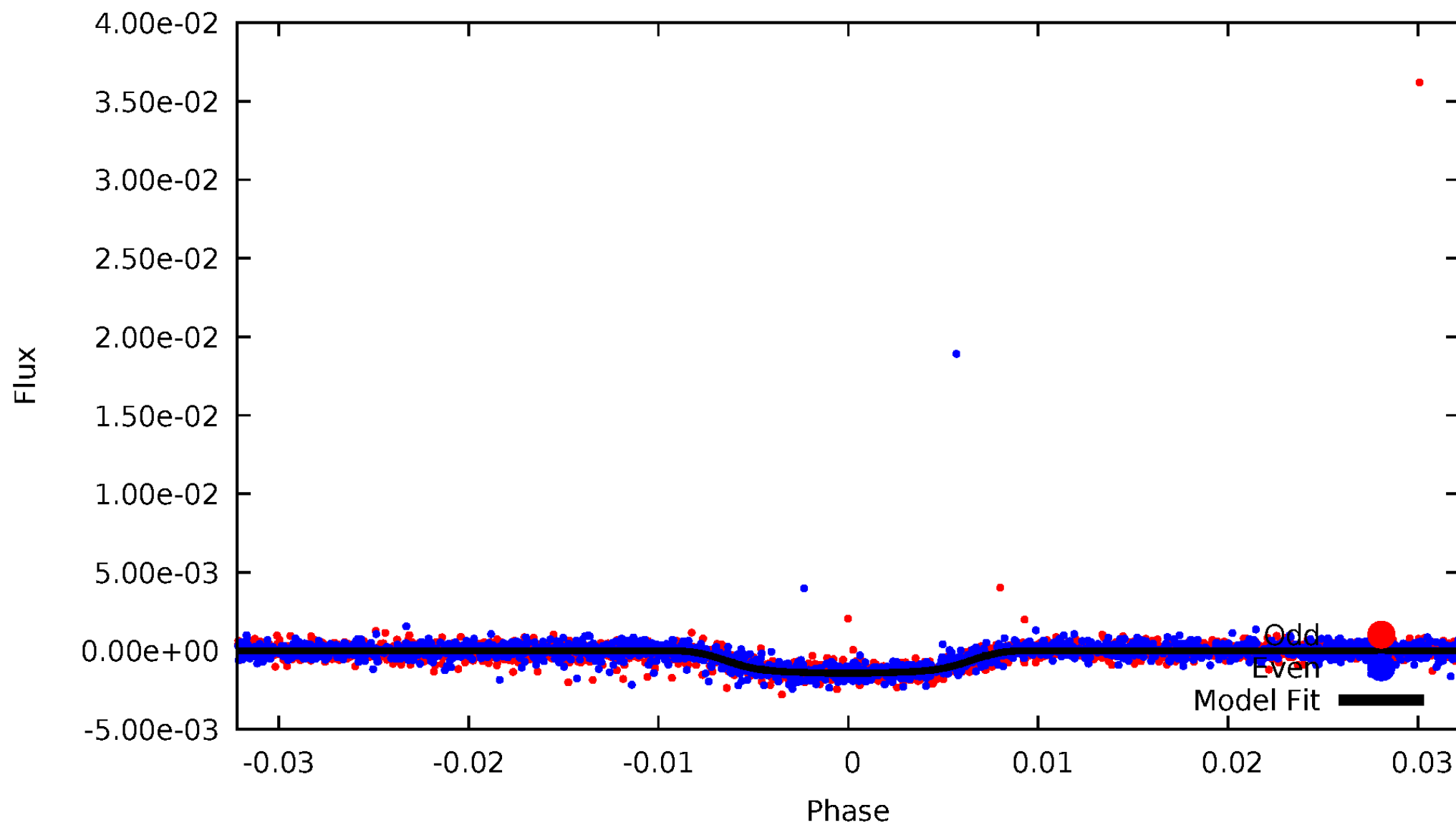


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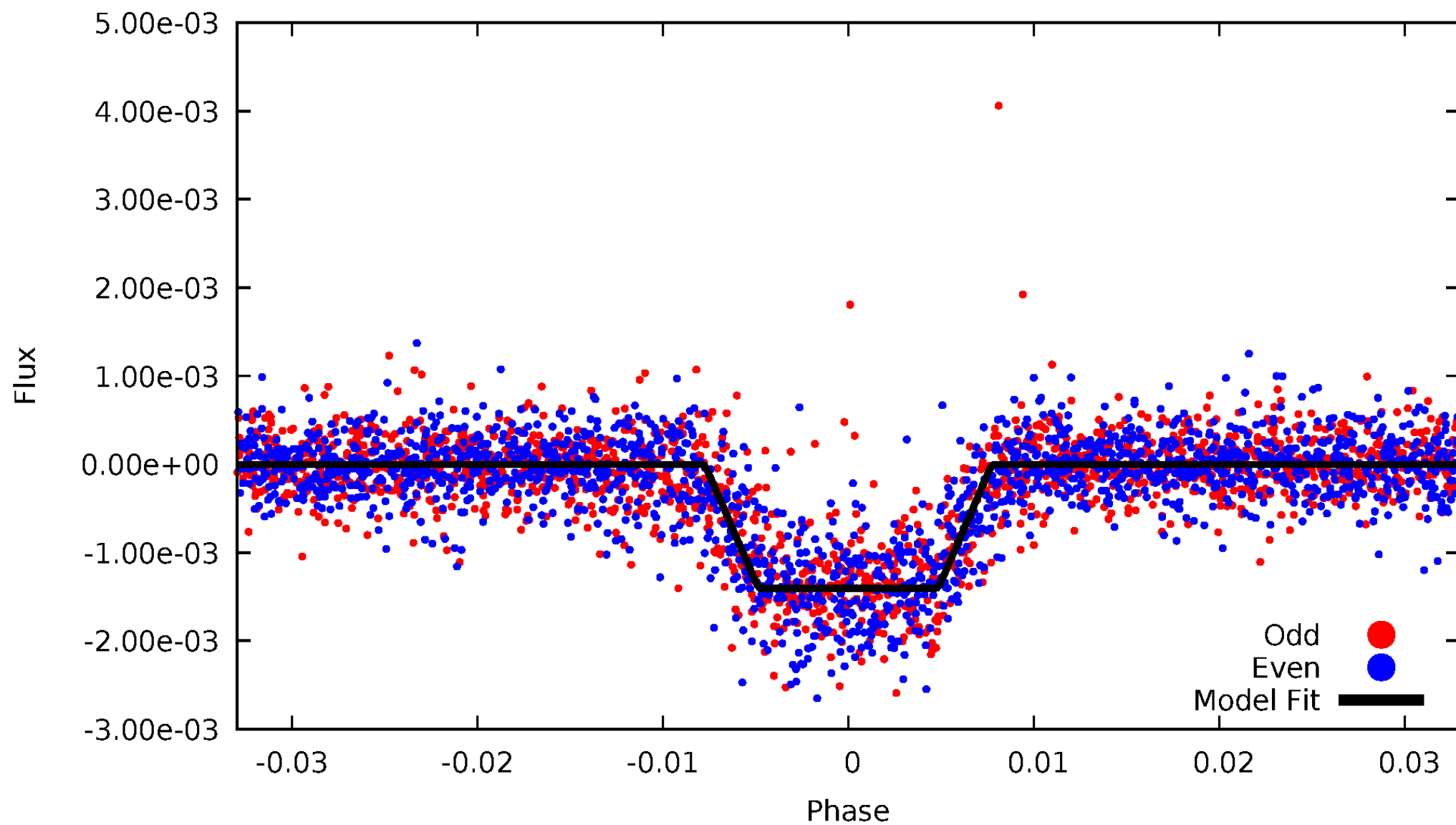
DV Odd/Even

TCE 004852528-01



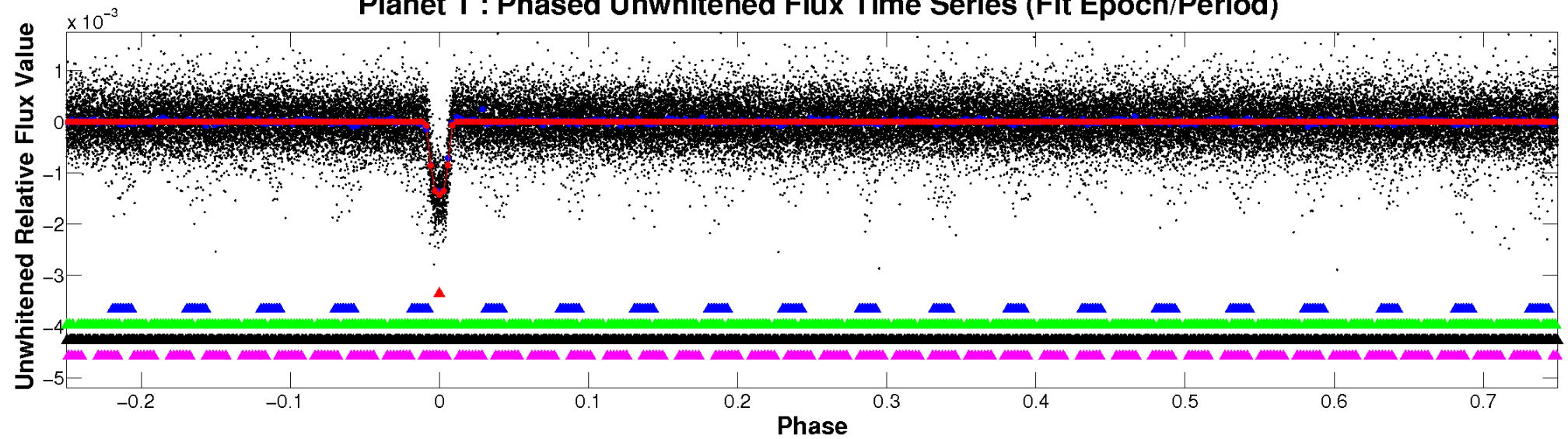
ALT Odd/Even

TCE 004852528-01

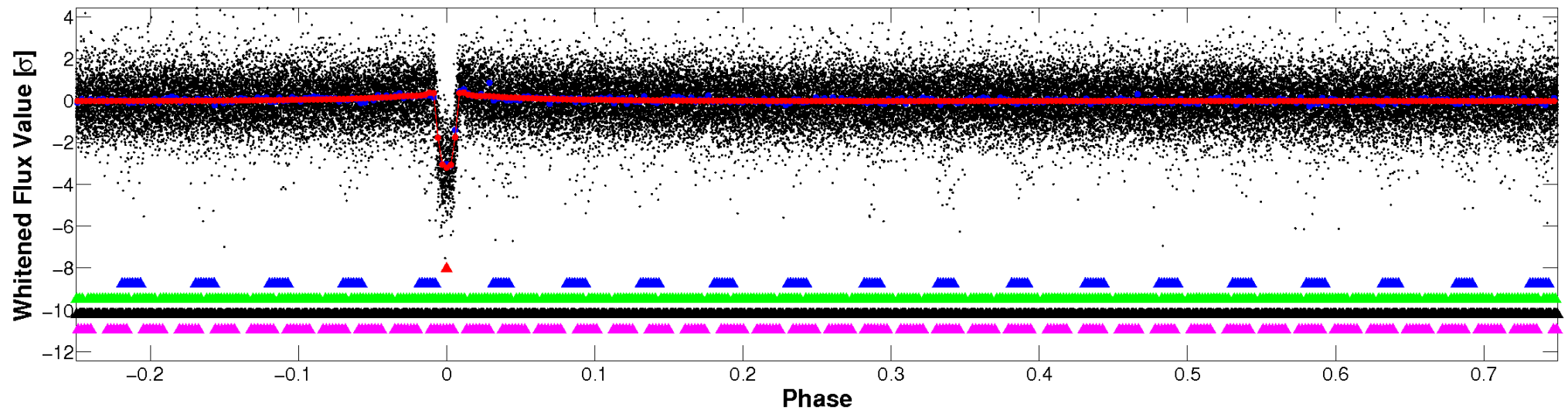


Non-Whitened Vs. Whitened Light Curve

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

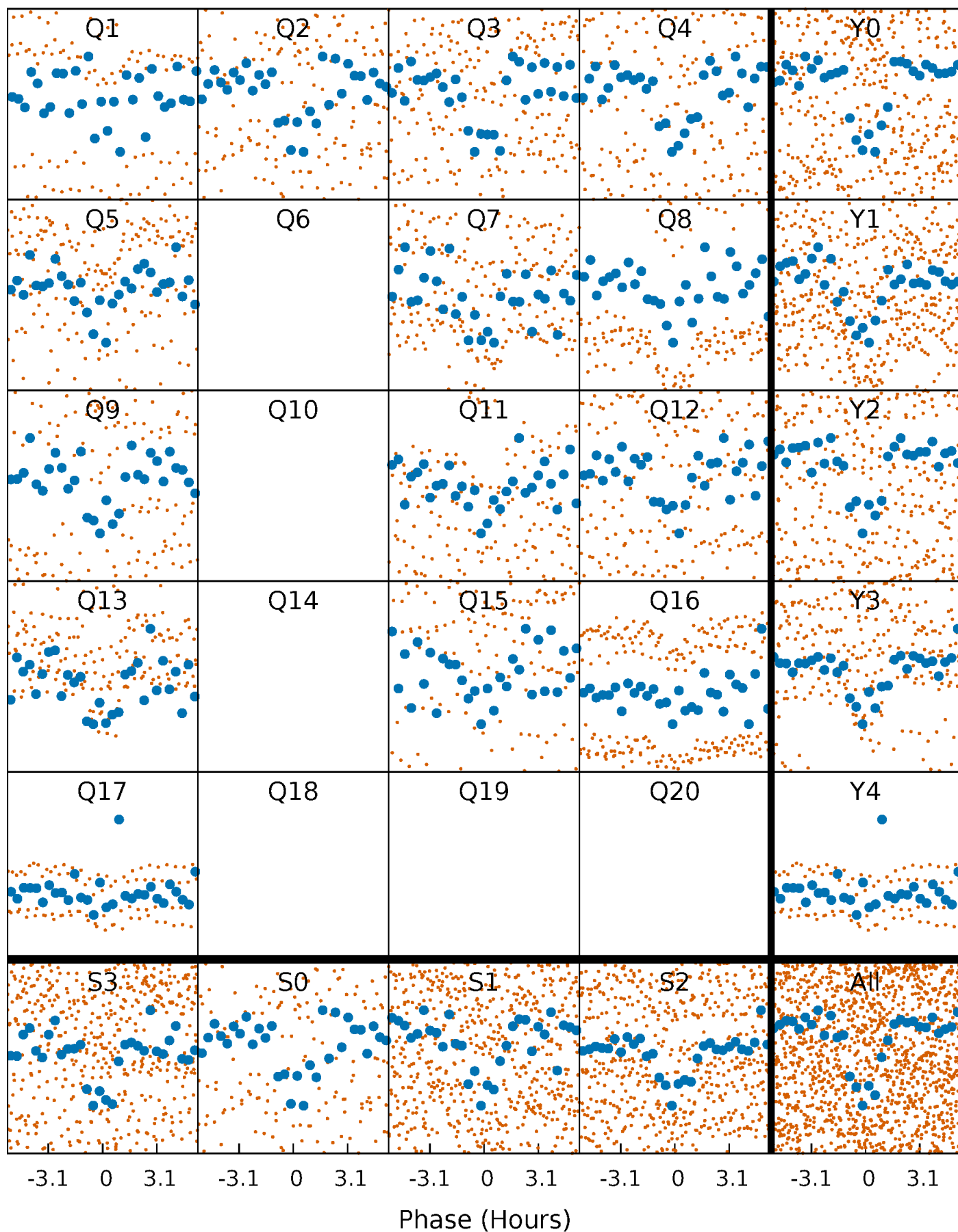


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



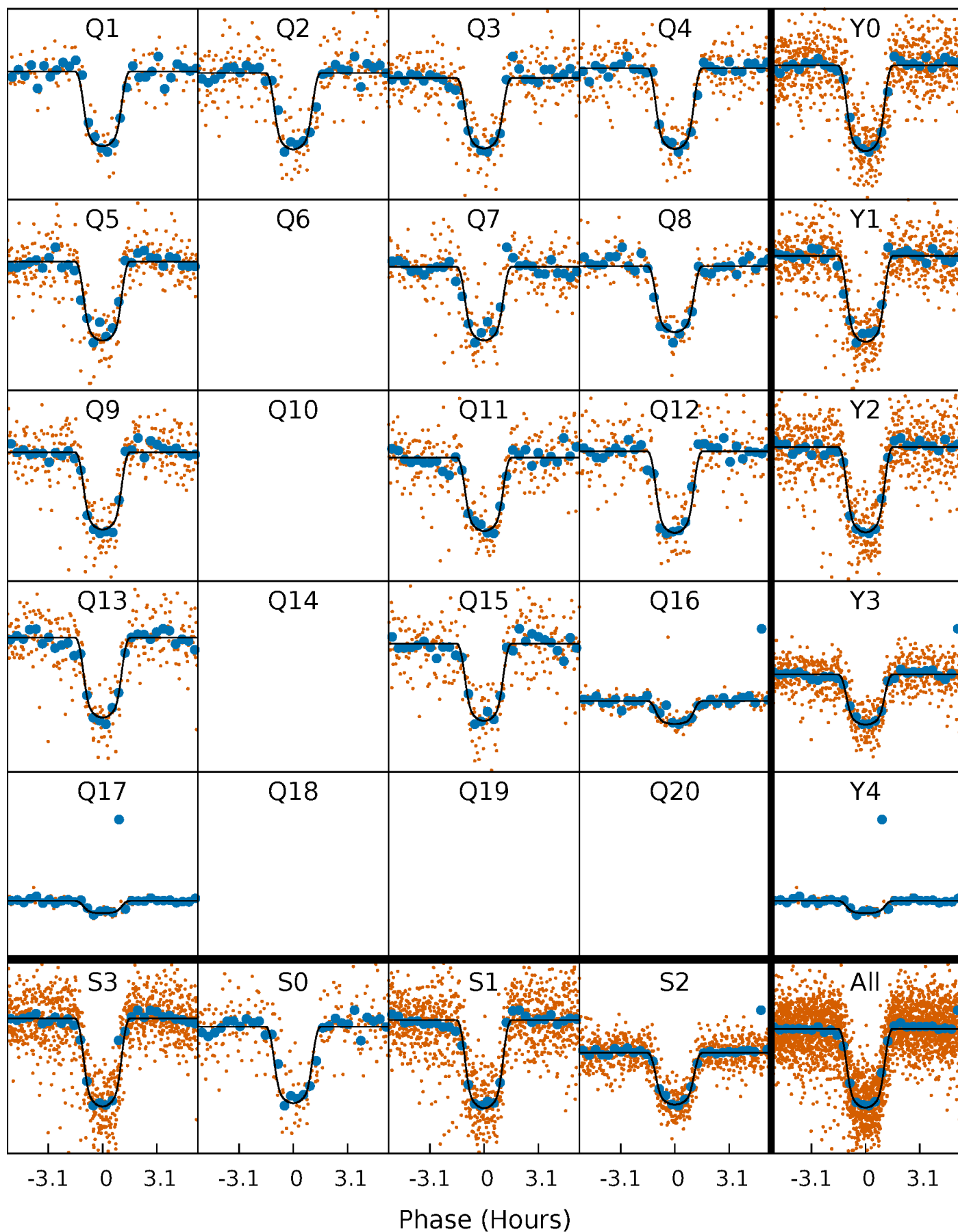
PDC Quarter-Phased Transit Curves

TCE 004852528-01 P= 7.053535 Days $T_0=134.152336$ (BKJD)



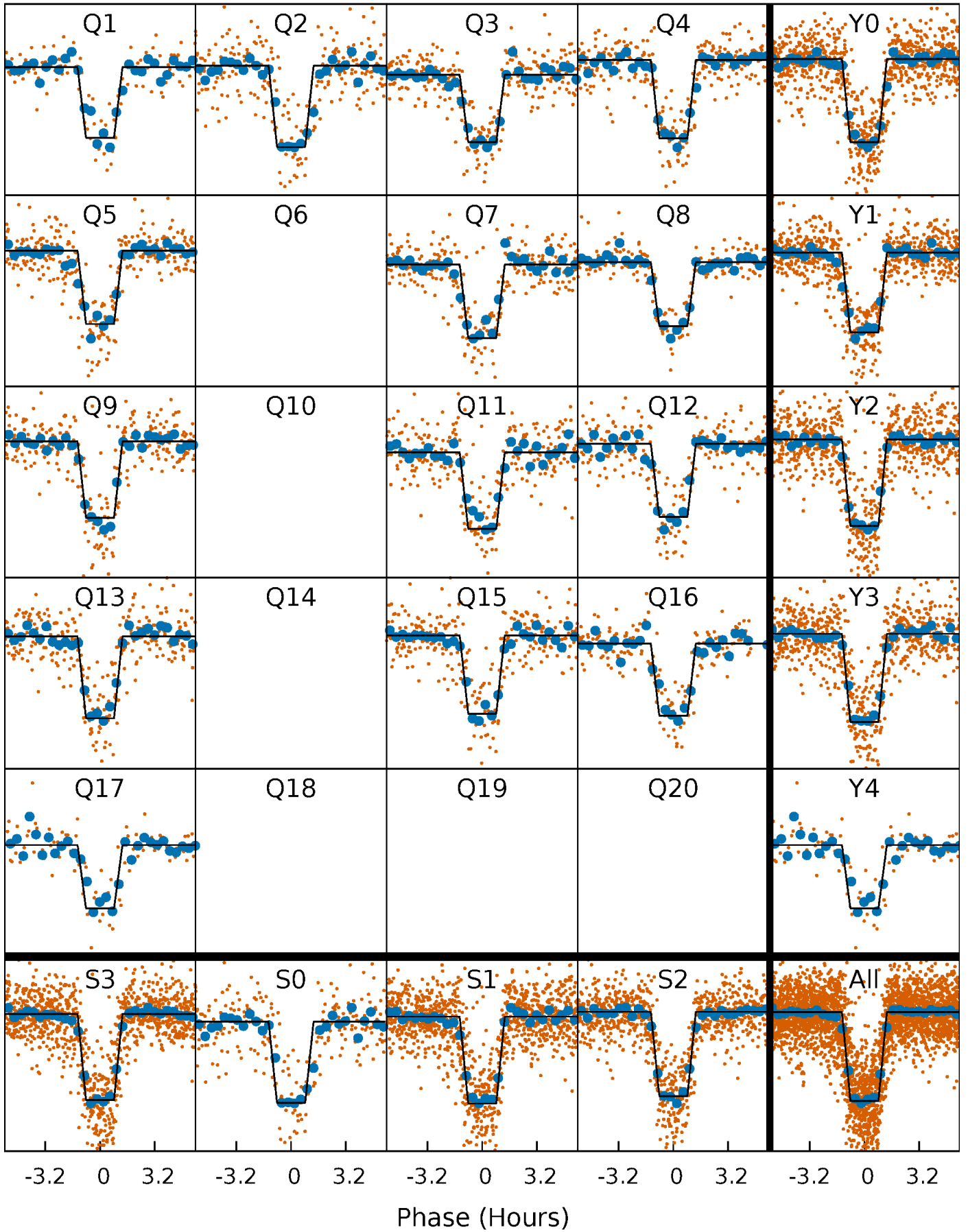
DV Quarter-Phased Transit Curves

TCE 004852528-01 P= 7.053535 Days $T_0=134.152336$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

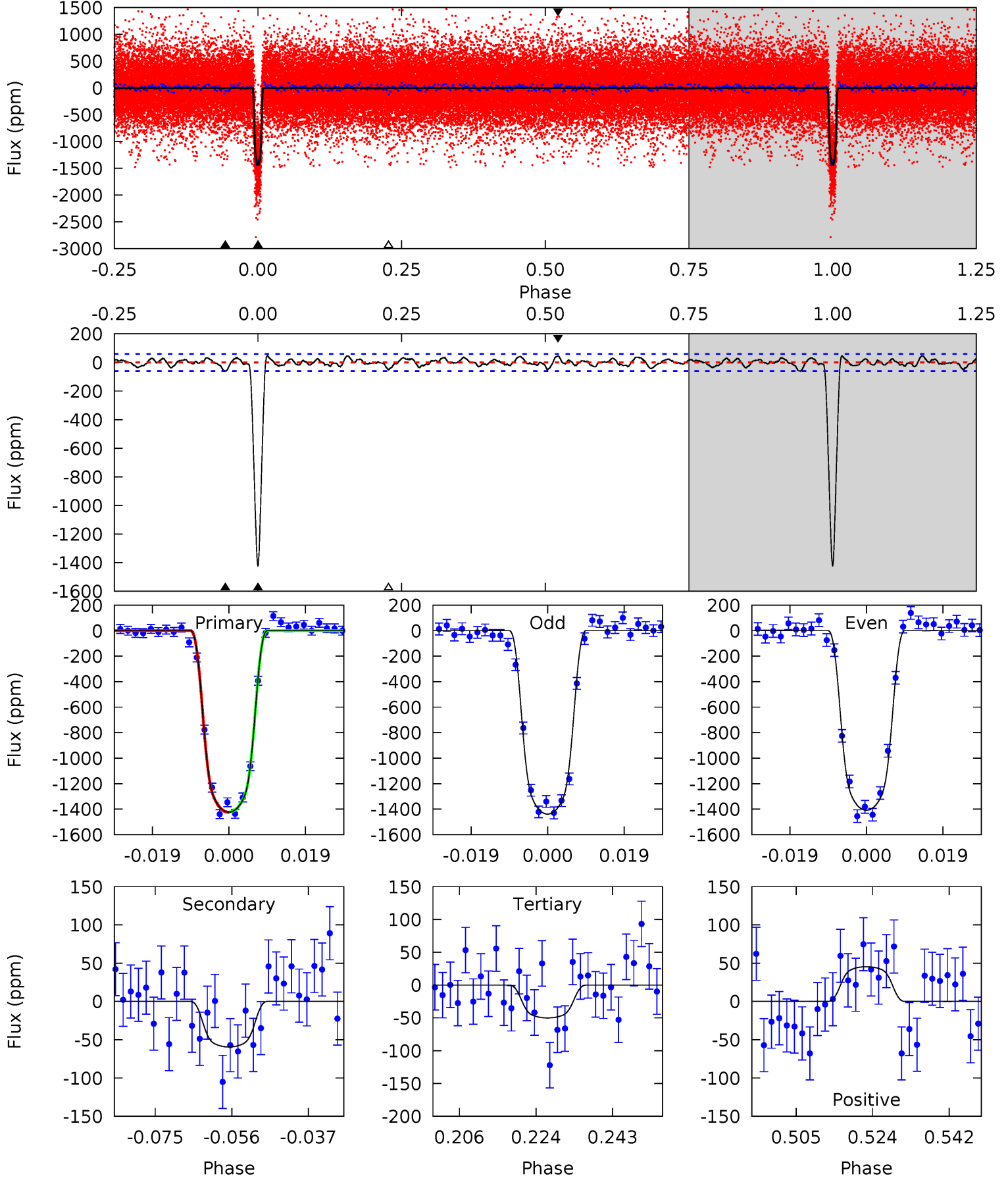
TCE 004852528-01 P= 7.053539 Days $T_0=134.151374$ (BKJD)



DV Model-Shift Uniqueness Test

004852528-01, P = 7.053535 Days, E = 127.098801 Days

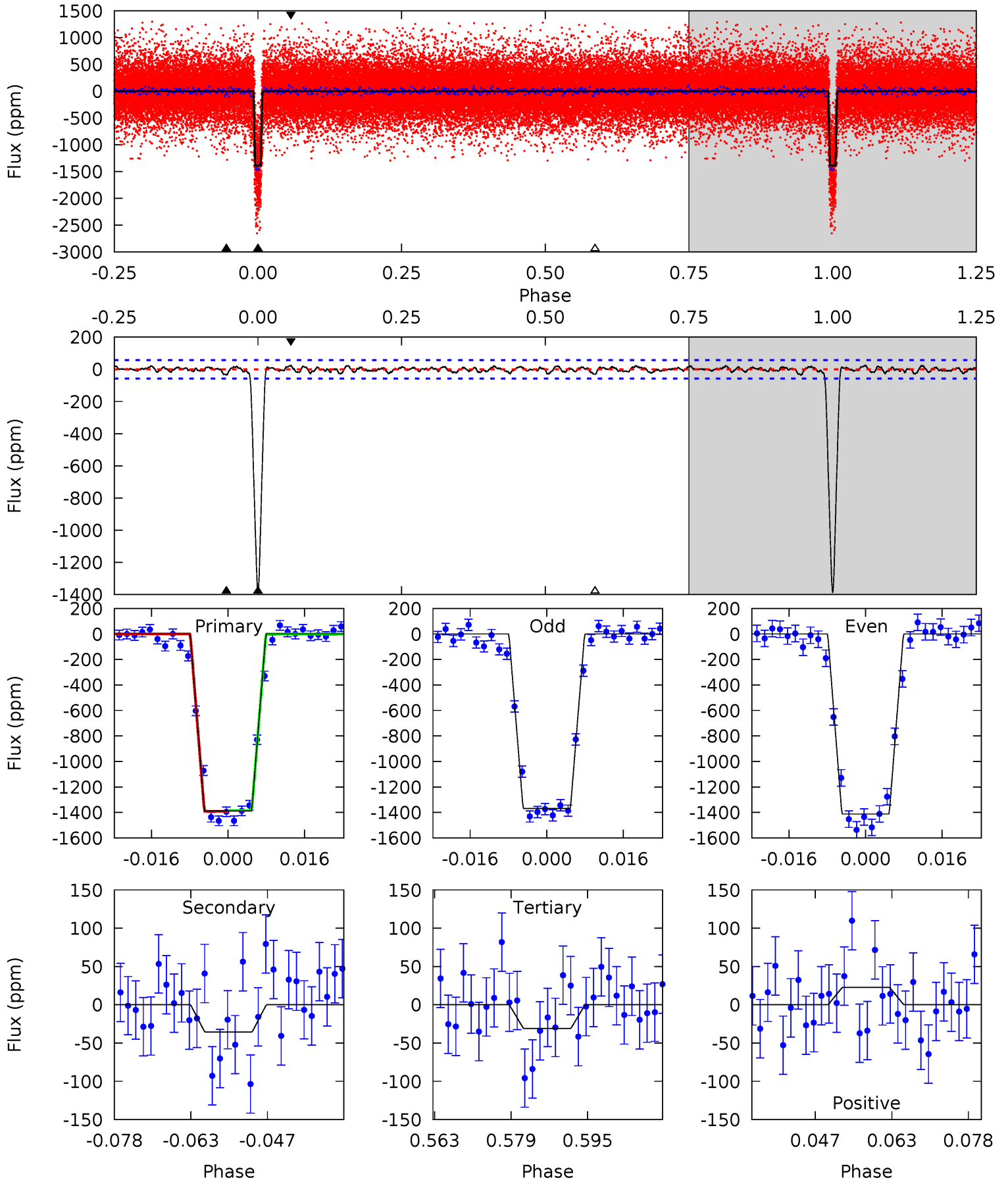
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 117.3 | 4.90 | 4.13 | 3.74 | 4.90 | 2.35 | 1.55 | 113.2 | 113.6 | 0.77 | 1.16 | 1.24 | 0.98 | 0.03 | 0.12 |



Alt Model-Shift Uniqueness Test

004852528-01, P = 7.053539 Days, E = 127.097835 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 119.6 | 3.07 | 2.68 | 1.96 | 4.94 | 2.42 | 0.93 | 116.9 | 117.6 | 0.40 | 1.12 | 1.92 | 0.99 | 0.02 | 0.33 |



Stellar Parameters For KIC 004852528

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4041^{+72}_{-88} | $4.697^{+0.024}_{-0.027}$ | $-0.140^{+0.150}_{-0.150}$ | $0.567^{+0.031}_{-0.031}$ | $0.584^{+0.029}_{-0.035}$ | $4.507^{+0.552}_{-0.492}$ |
| | +2%/-2% | +1%/-1% | +107%/-107% | +5%/-5% | +5%/-6% | +12%/-11% |
| Source | SPE5 | SPE5 | SPE5 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004852528-01 / KOI 0500.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -59 ± 12 | $2.57^{+0.10}_{-0.11}$ | 765^{+16}_{-17} | 2466^{+70}_{-67} | 18^{+4}_{-4} |
| Alt. | -36 ± 12 | $2.32^{+0.10}_{-0.10}$ | 764^{+17}_{-18} | 2371^{+100}_{-100} | 13^{+5}_{-4} |

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

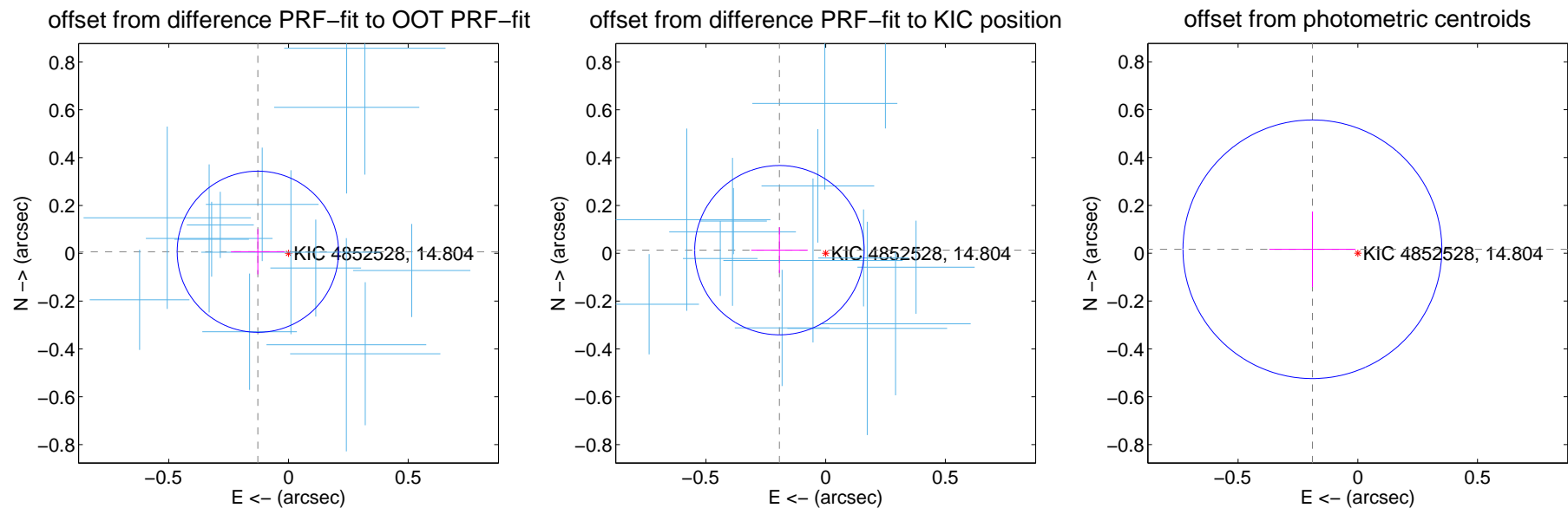
DV Centroid Data

Supplemental centroid analysis for 004852528-01. Kepler magnitude: 14.80. Transit SNR 72.29

There are 14 quarters with good PRF difference image offsets

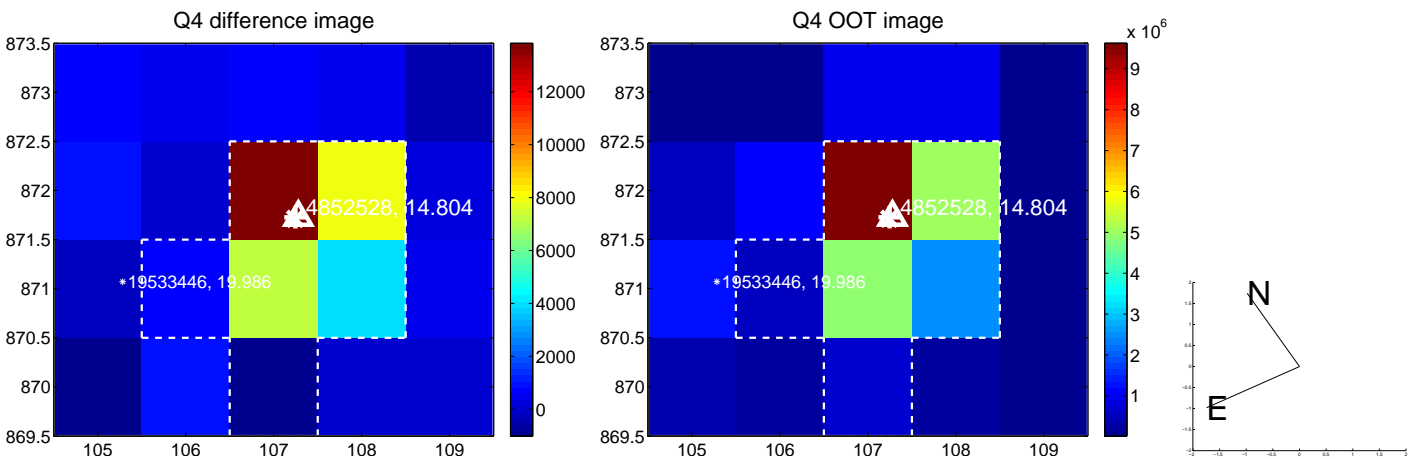
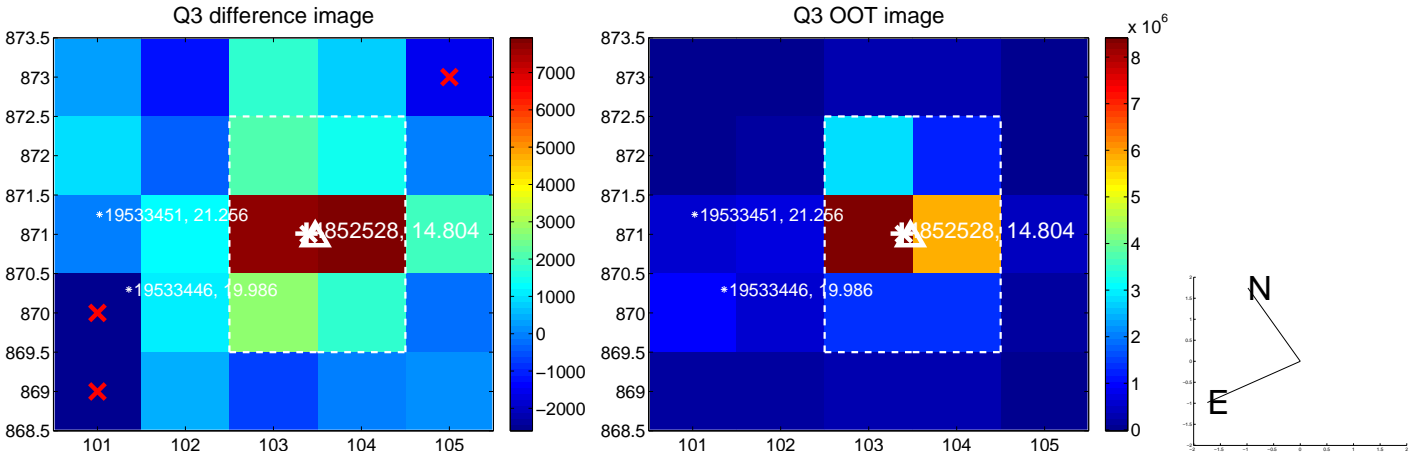
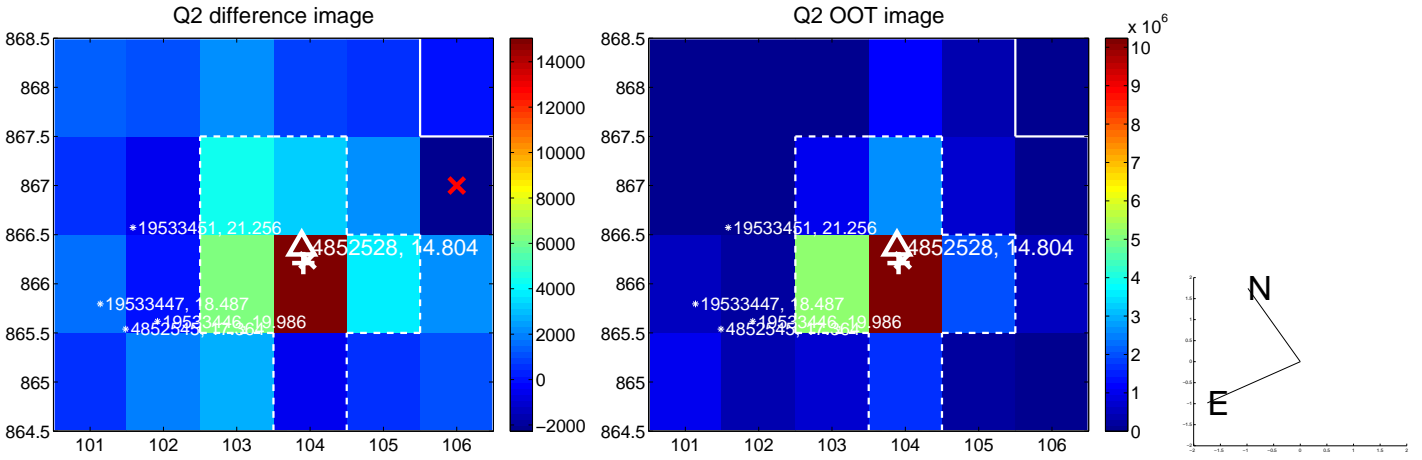
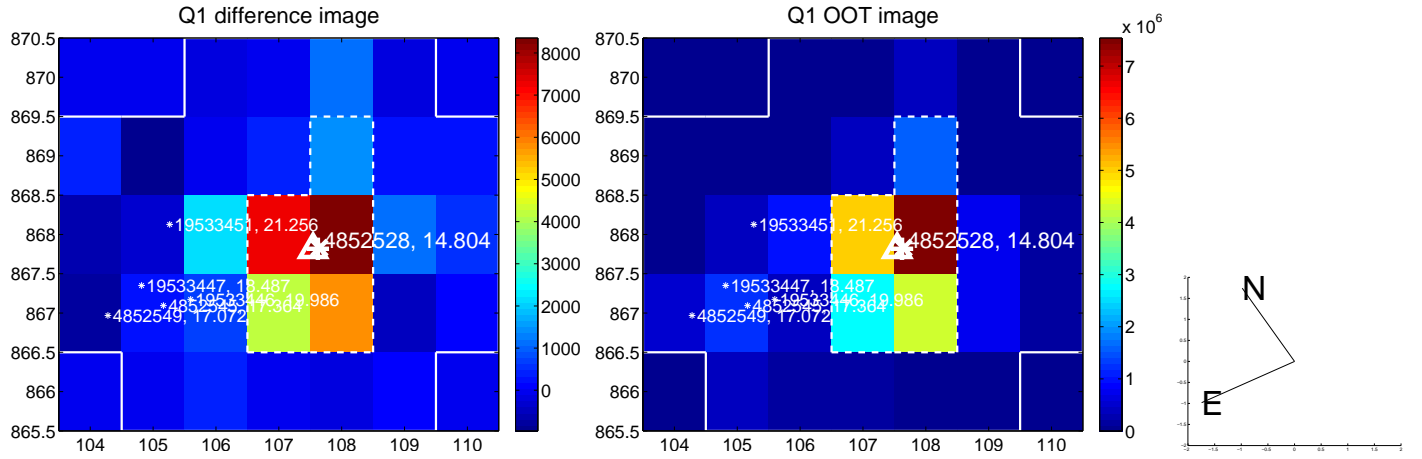
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.128 ± 0.112 | 1.14 | 0.128 ± 0.112 | 0.006 ± 0.094 |
| PRF-fit source offset from KIC position | 0.193 ± 0.118 | 1.64 | 0.193 ± 0.118 | 0.013 ± 0.096 |
| photometric centroid source offset | 0.19 ± 0.18 | 1.06 | 0.19 ± 0.18 | 0.02 ± 0.16 |

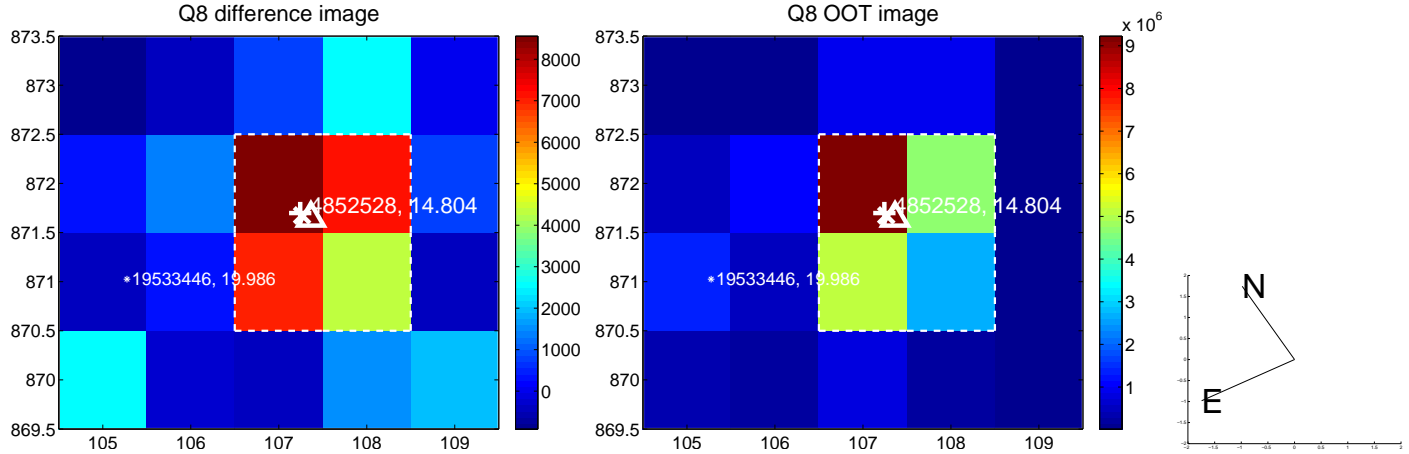
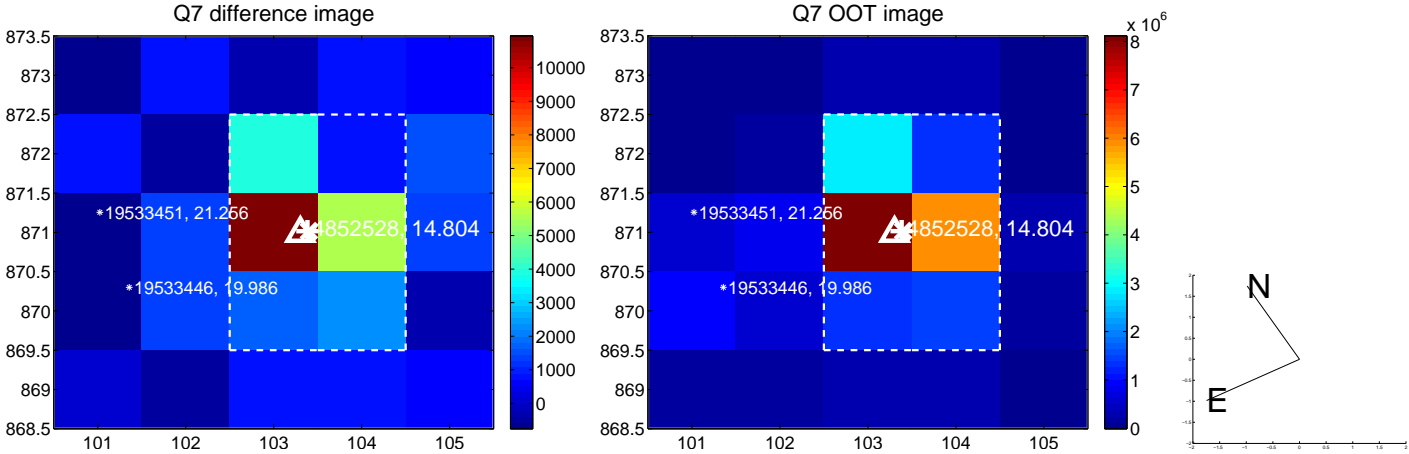
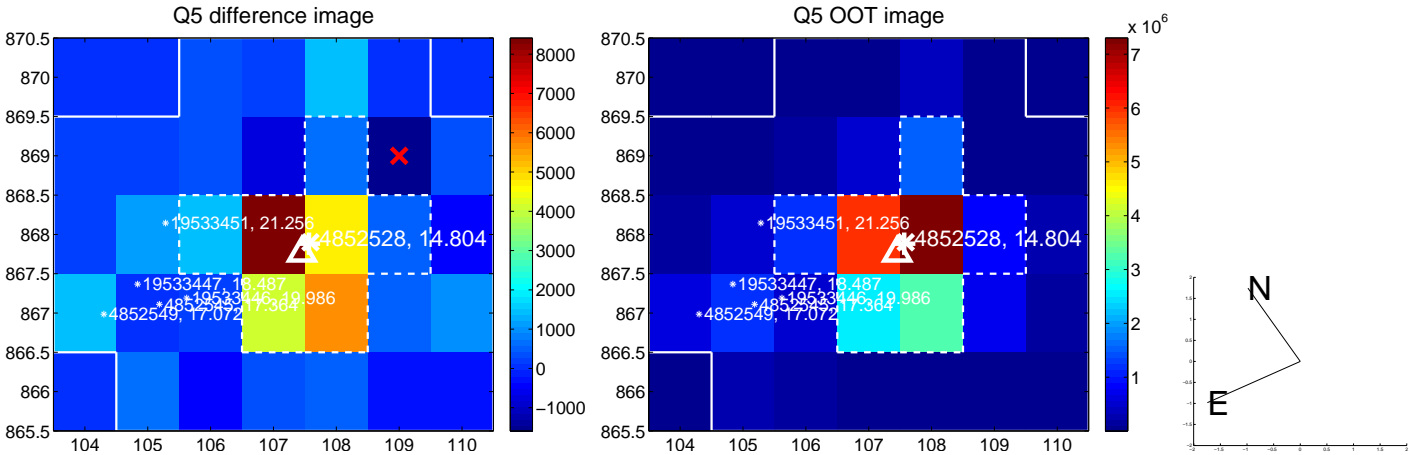


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

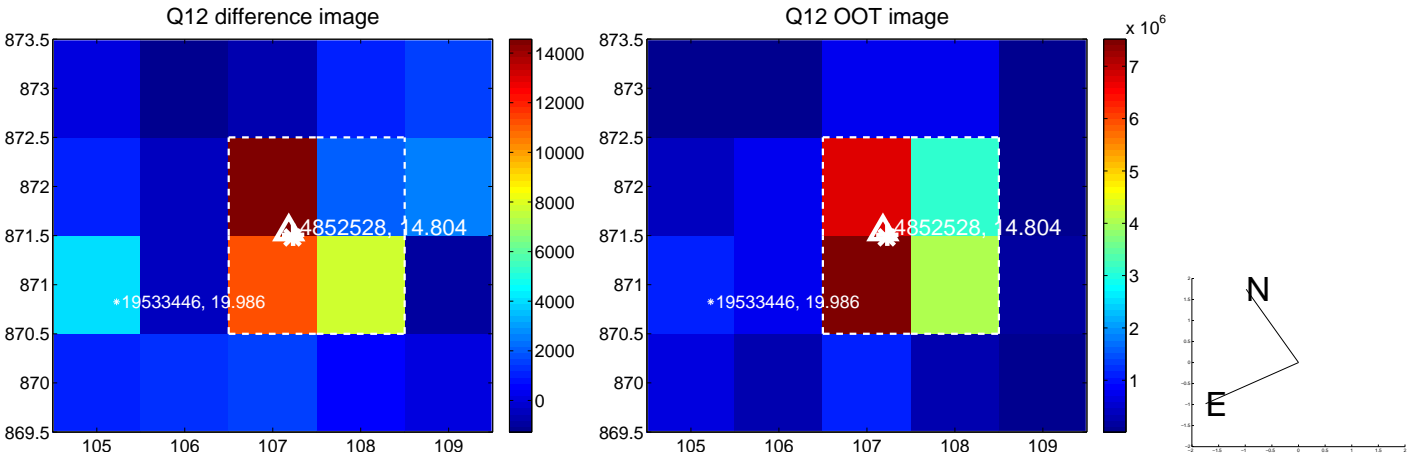
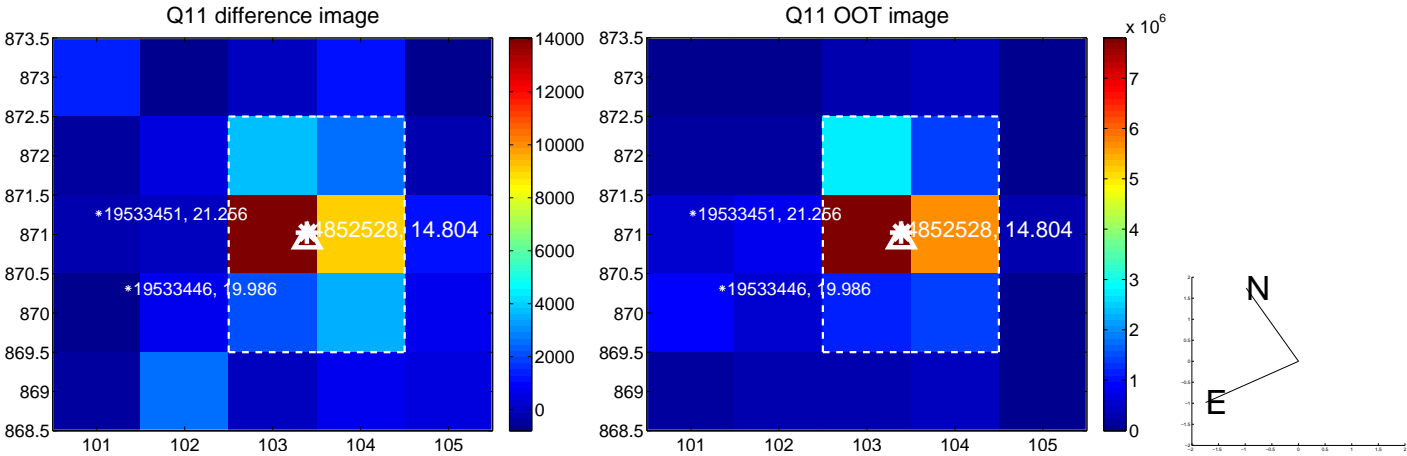
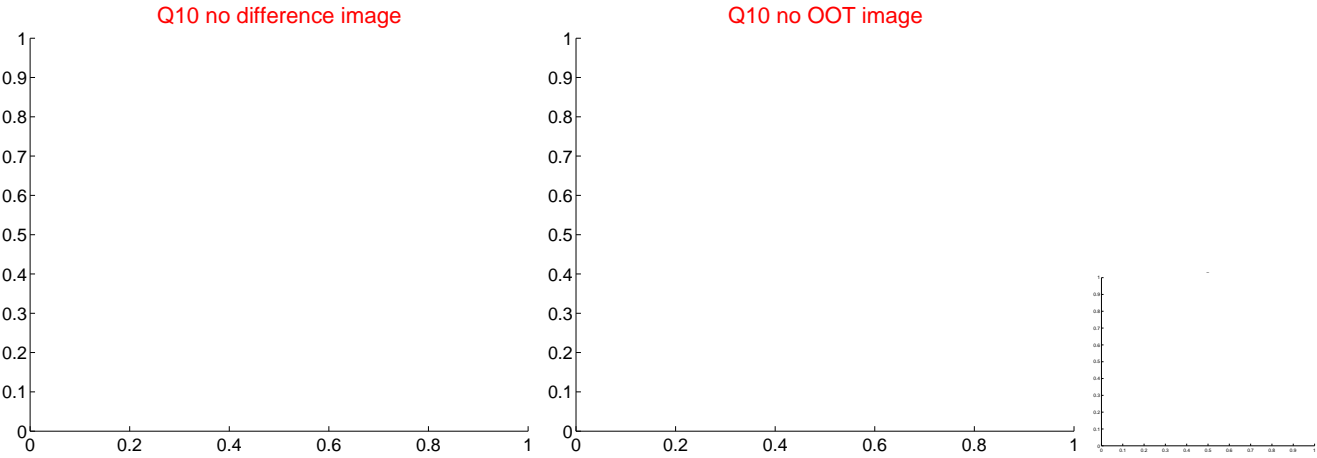
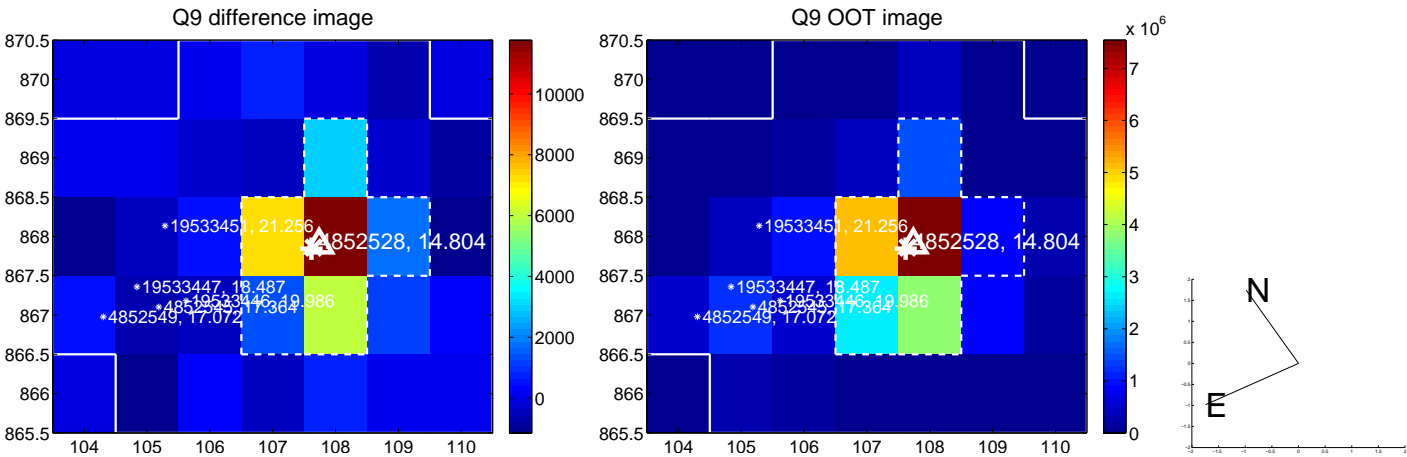
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



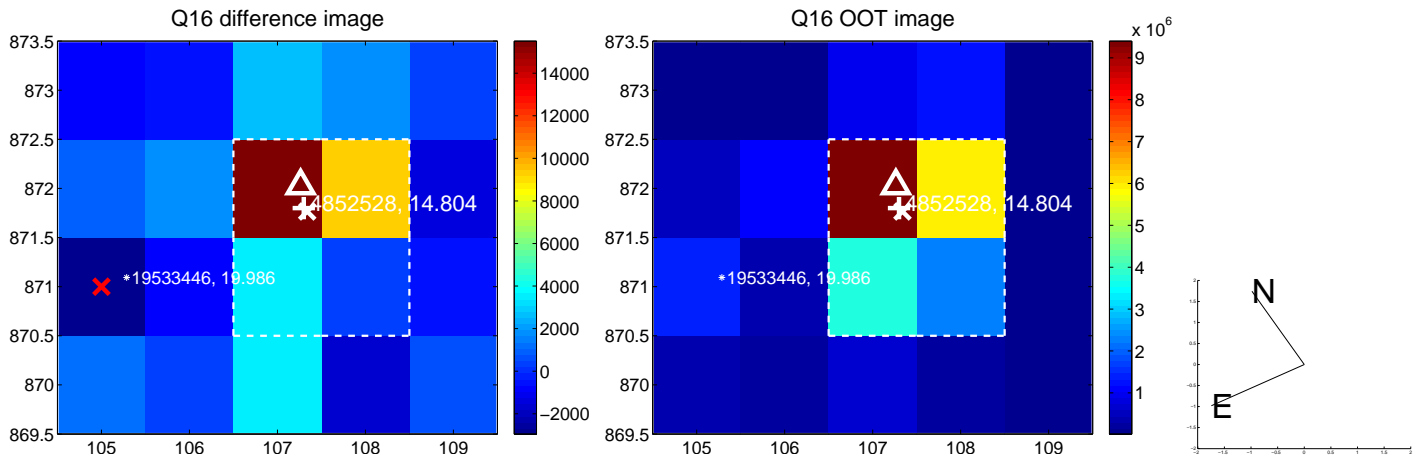
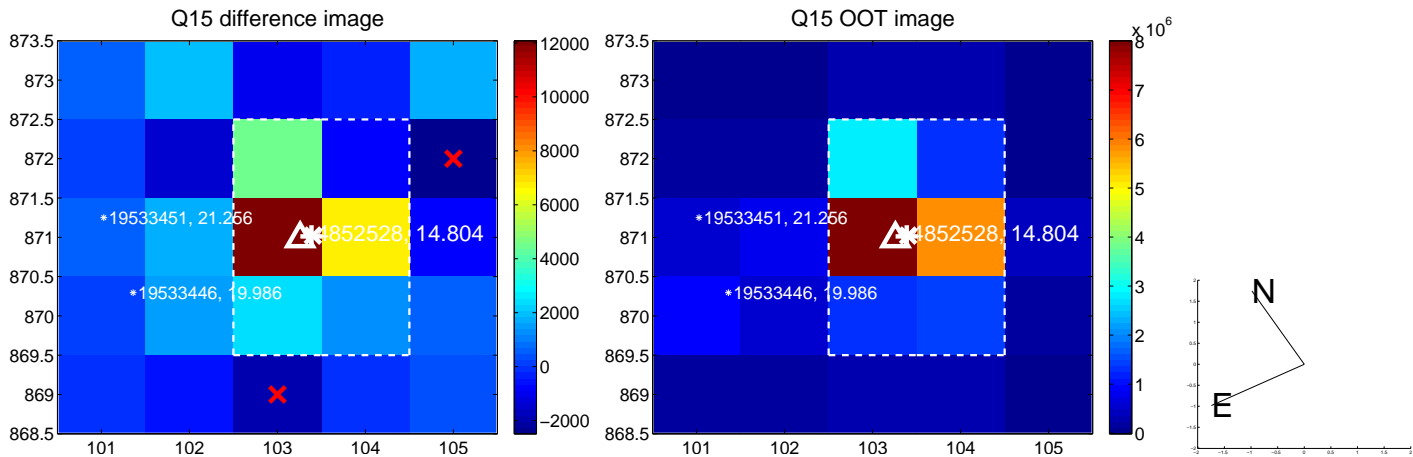
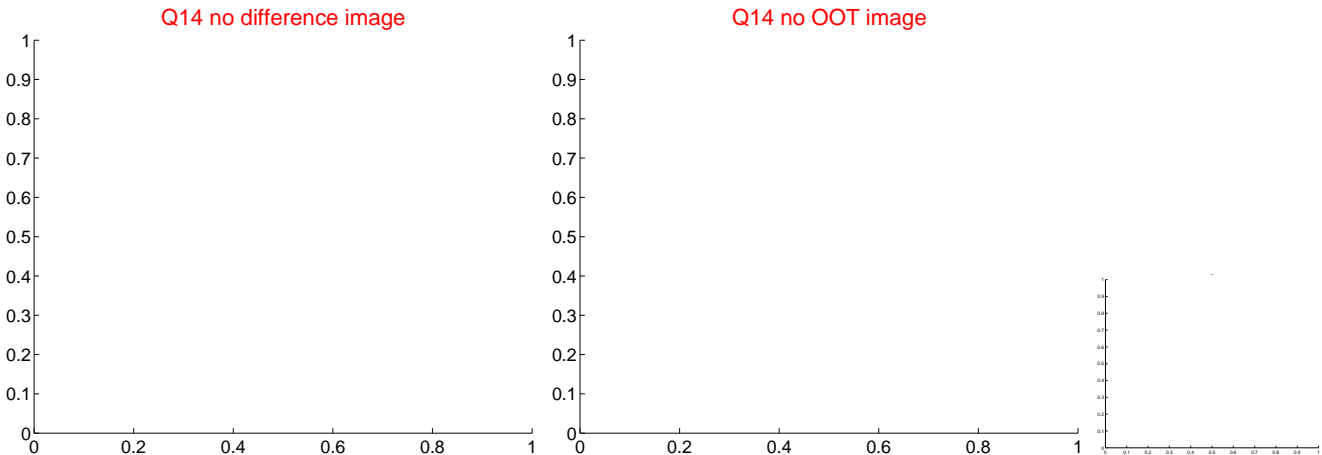
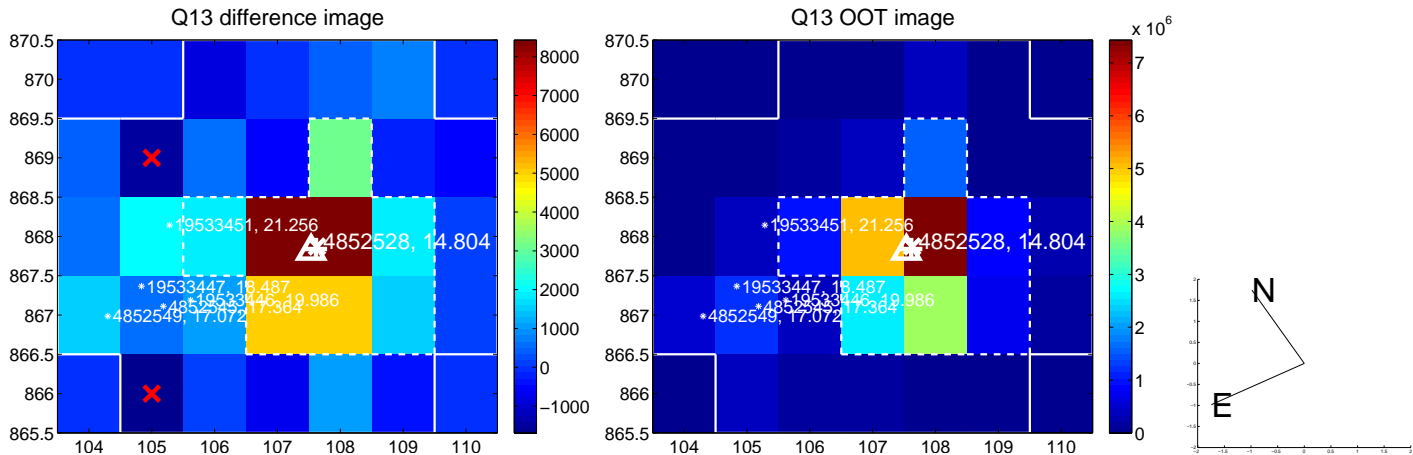
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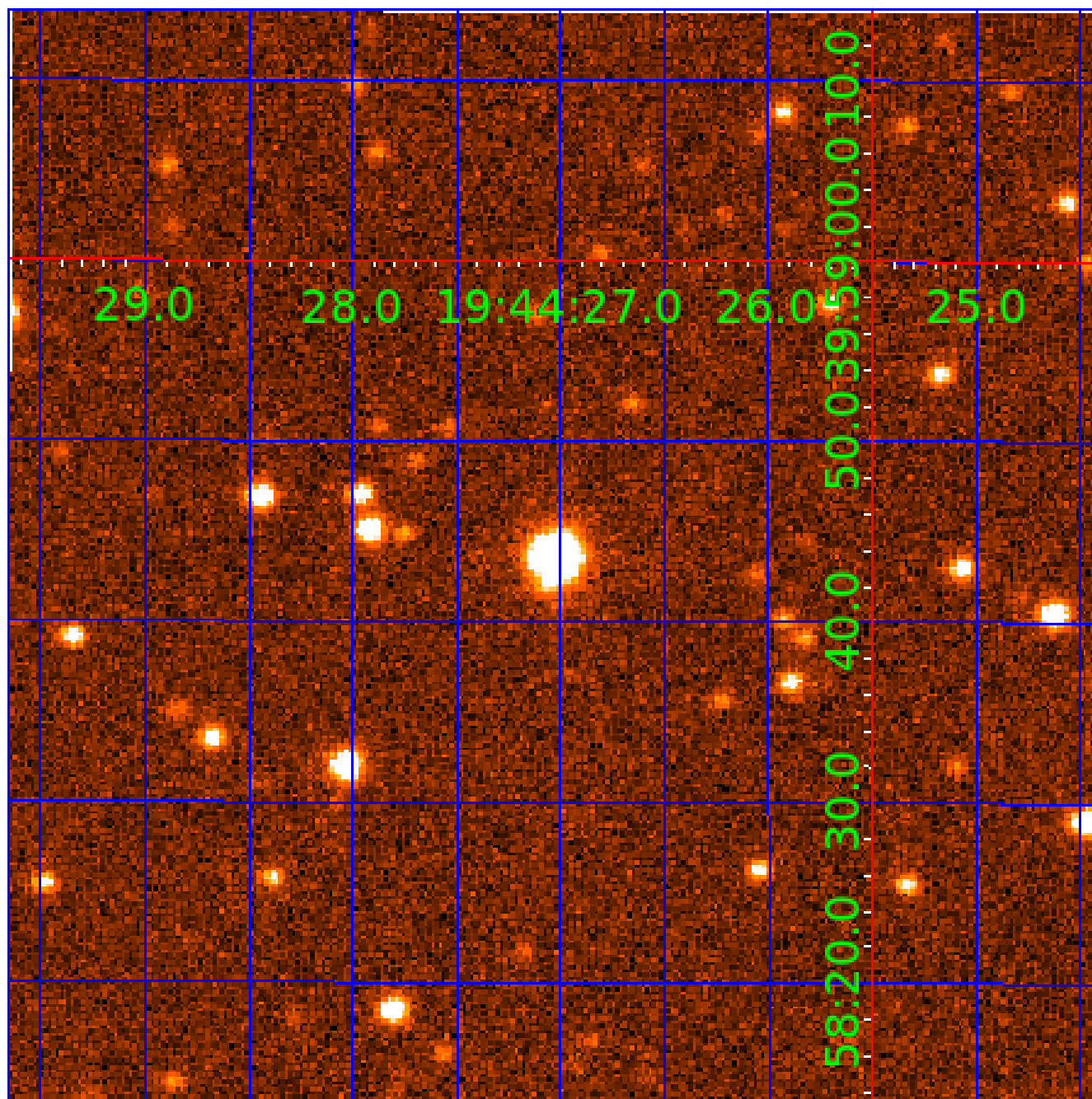


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004852528

Q1-17 DR25 TCE Parameters

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Robovetter Results

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|--------------|----------|------|-------|---|---|---|---|------------|
| 004852528-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-03 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-04 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-05 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

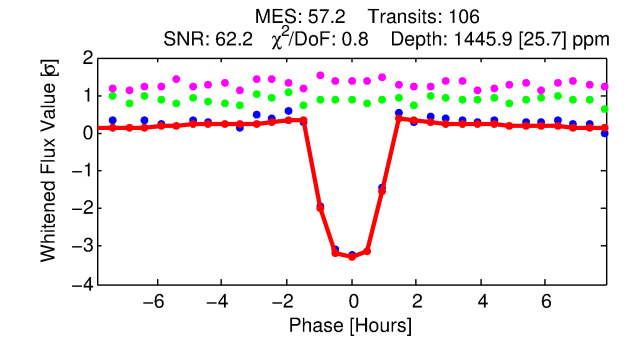
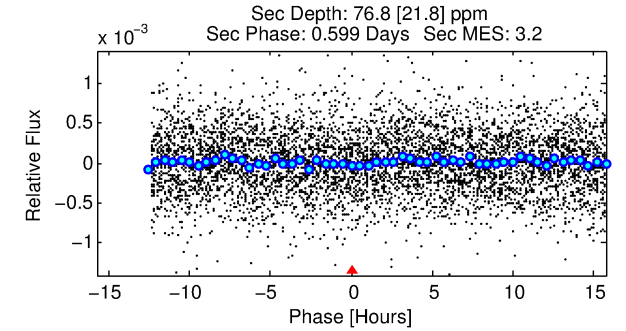
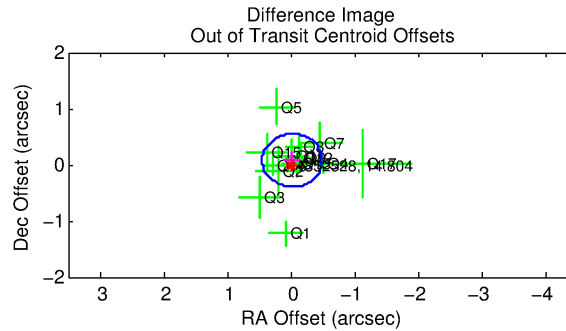
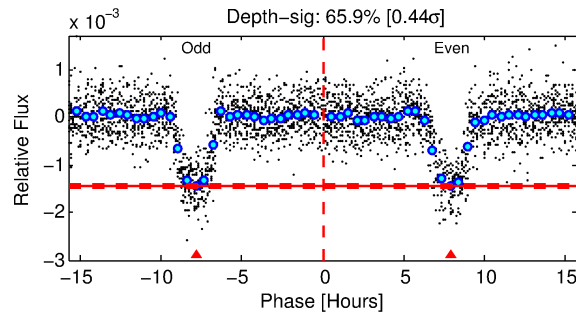
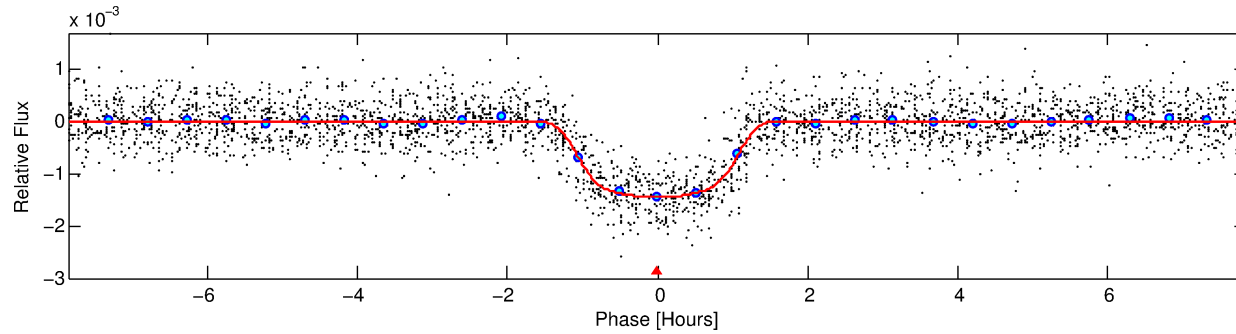
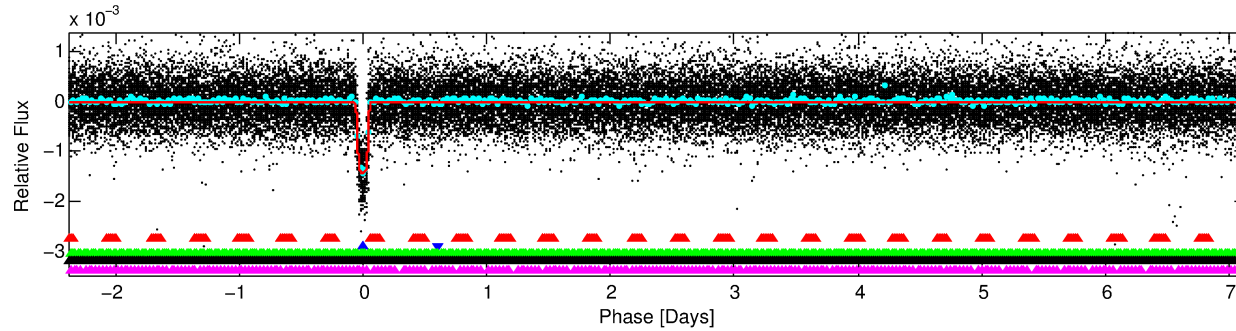
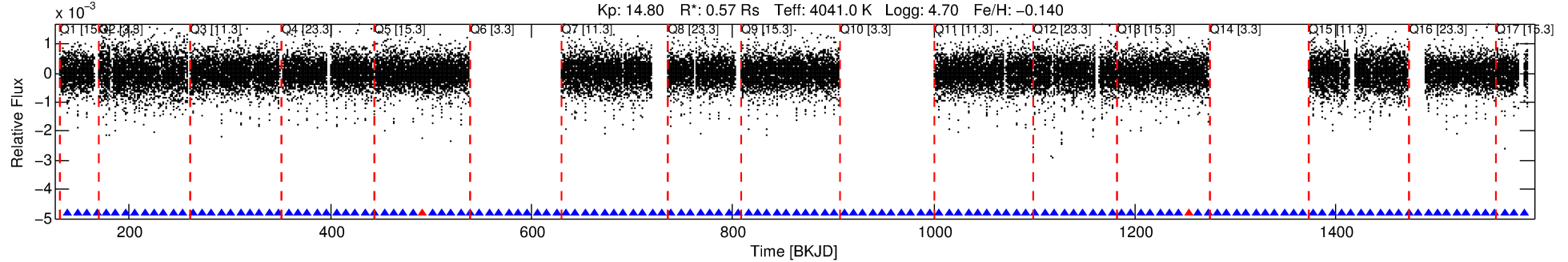
Ephemeris Match Information For 004852528-02

No Significant Match Found

DV One-Page Summary

KIC: 4852528 Candidate: 2 of 5 Period: 9.522 d
KOI: K00500.02 Name: Kepler-80c Corr: 0.946

Kp: 14.80 R*: 0.57 Rs Teff: 4041.0 K Logg: 4.70 Fe/H: -0.140



DV Fit Results:

Period = 9.52165 [0.00001] d
Epoch = 139.3979 [0.0008] BKJD
Rp/R* = 0.0409 [0.0016]
a/R* = 15.68 [2.41]
b = 0.87 [0.04]
Seff = 14.22 [1.47]
Teq = 495 [13] K
Rp = 2.53 [0.17] Re
a = 0.0735 [0.0031] AU
Ag = 35.65 [10.71] [3.23σ]
Teffp = 1871 [144] K [9.51σ]

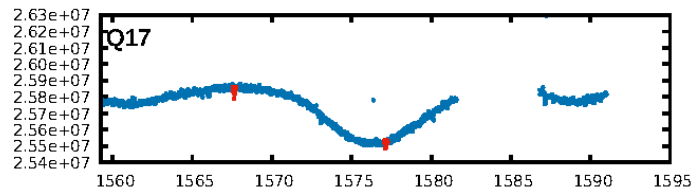
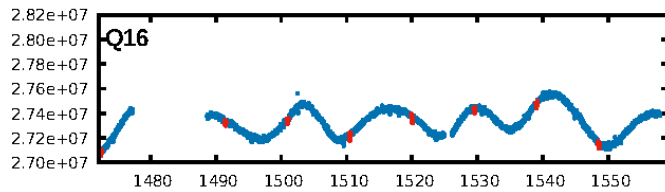
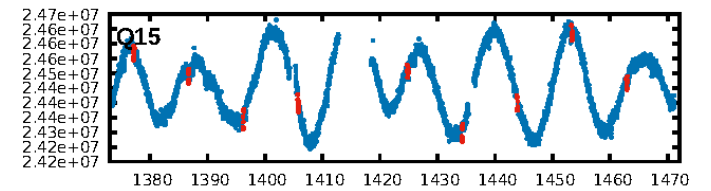
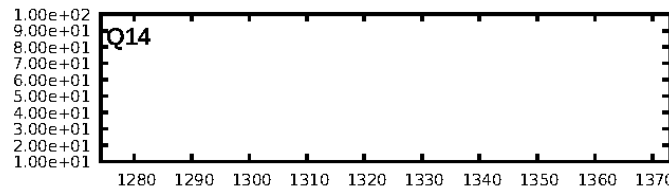
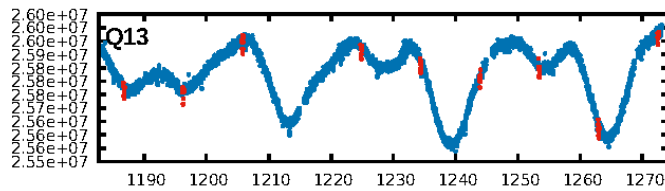
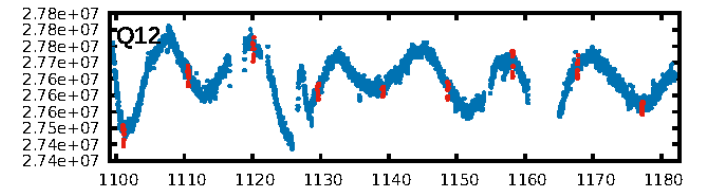
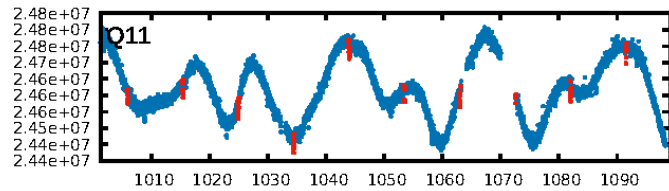
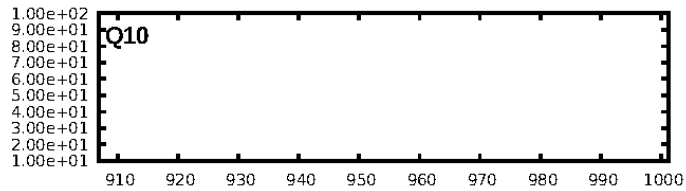
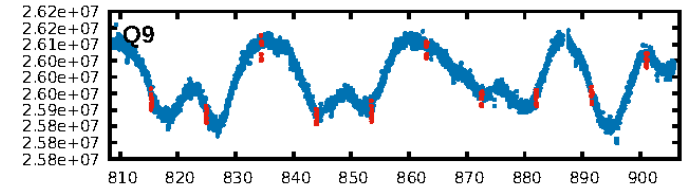
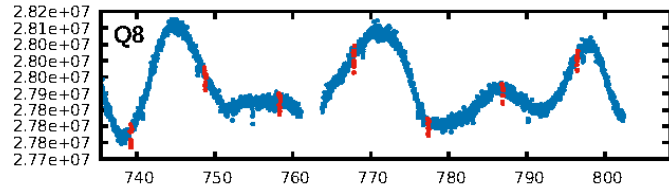
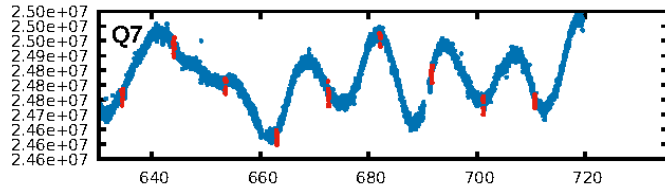
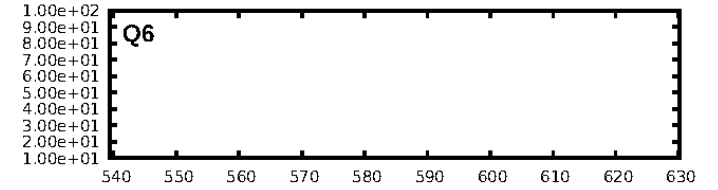
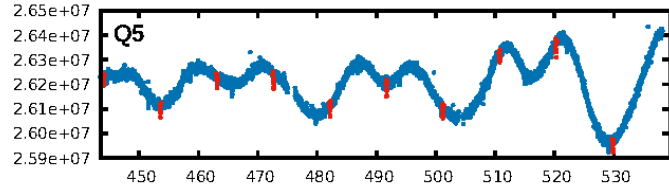
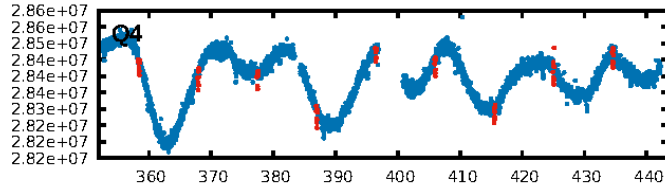
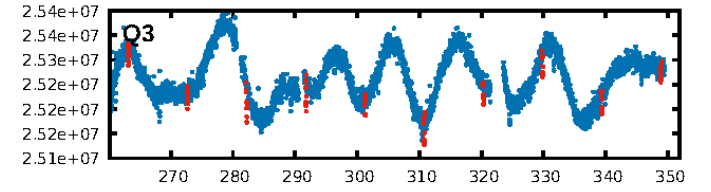
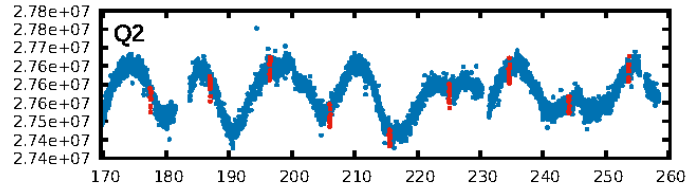
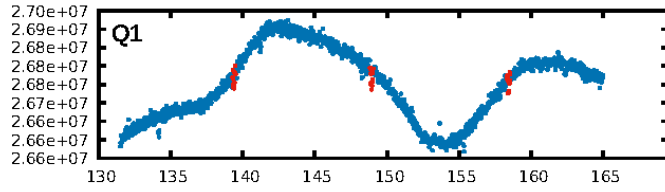
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.66σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 94.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [99/101]
GhostDiagnostic-chr: 5.999
Centroid-sig: N/A
Centroid-so: 0.339 arcsec [1.85σ]
OotOffset-rm: 0.079 arcsec [0.50σ]
KicOffset-rm: 0.141 arcsec [0.92σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.93 [13/14]

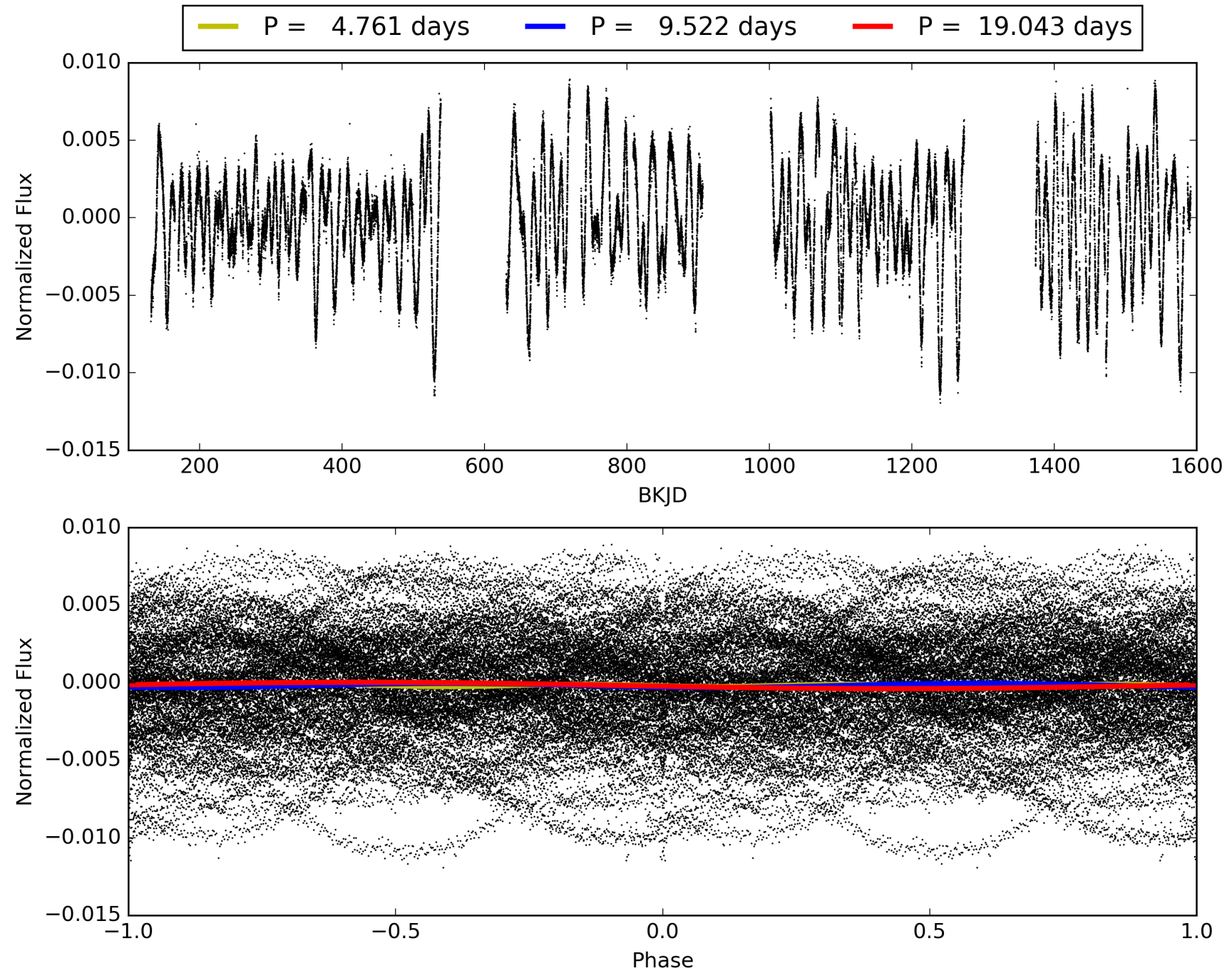
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:05:46 Z

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

TCE 004852528-02, PDC Light Curves

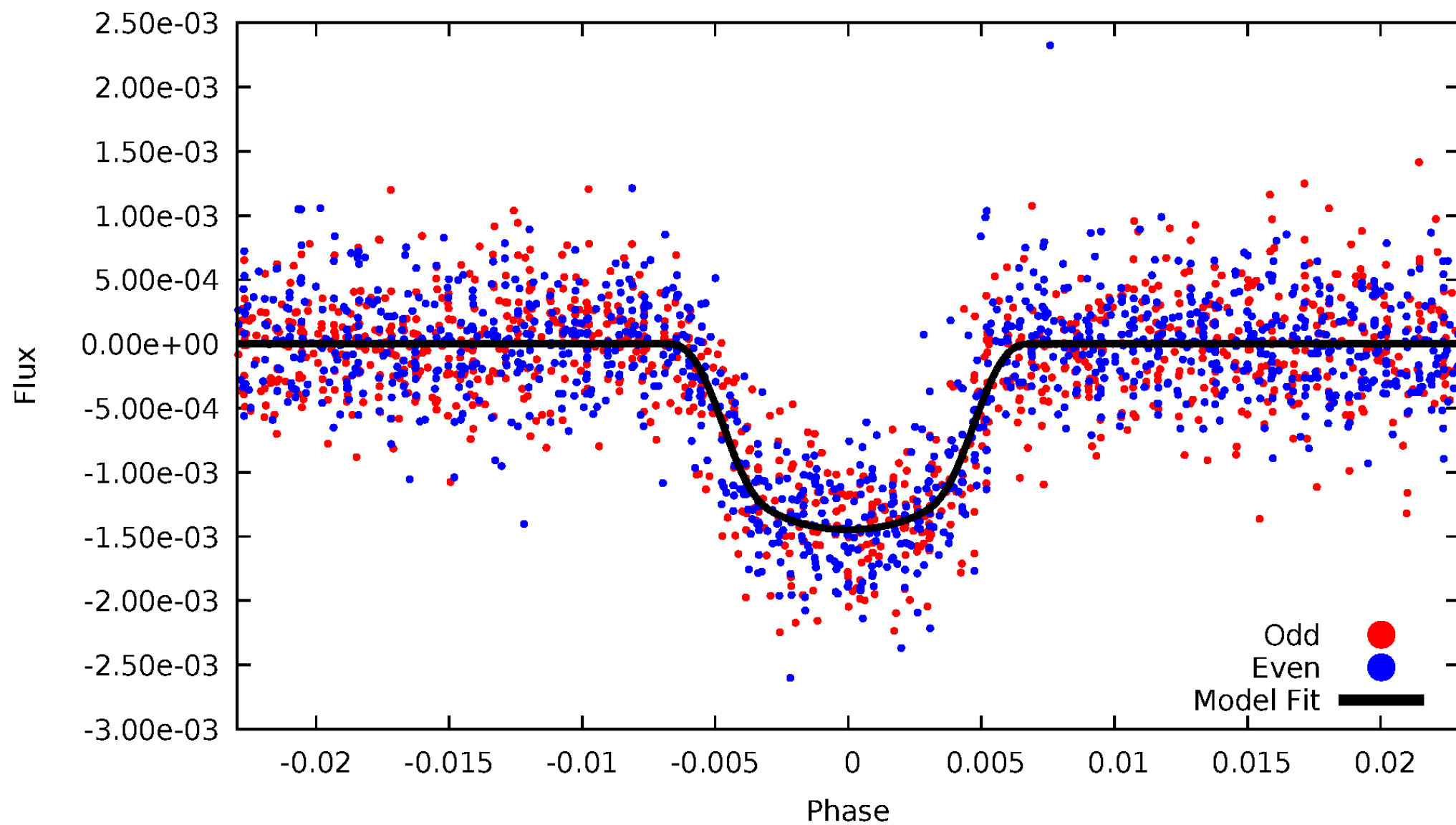


TCE 004852528-02



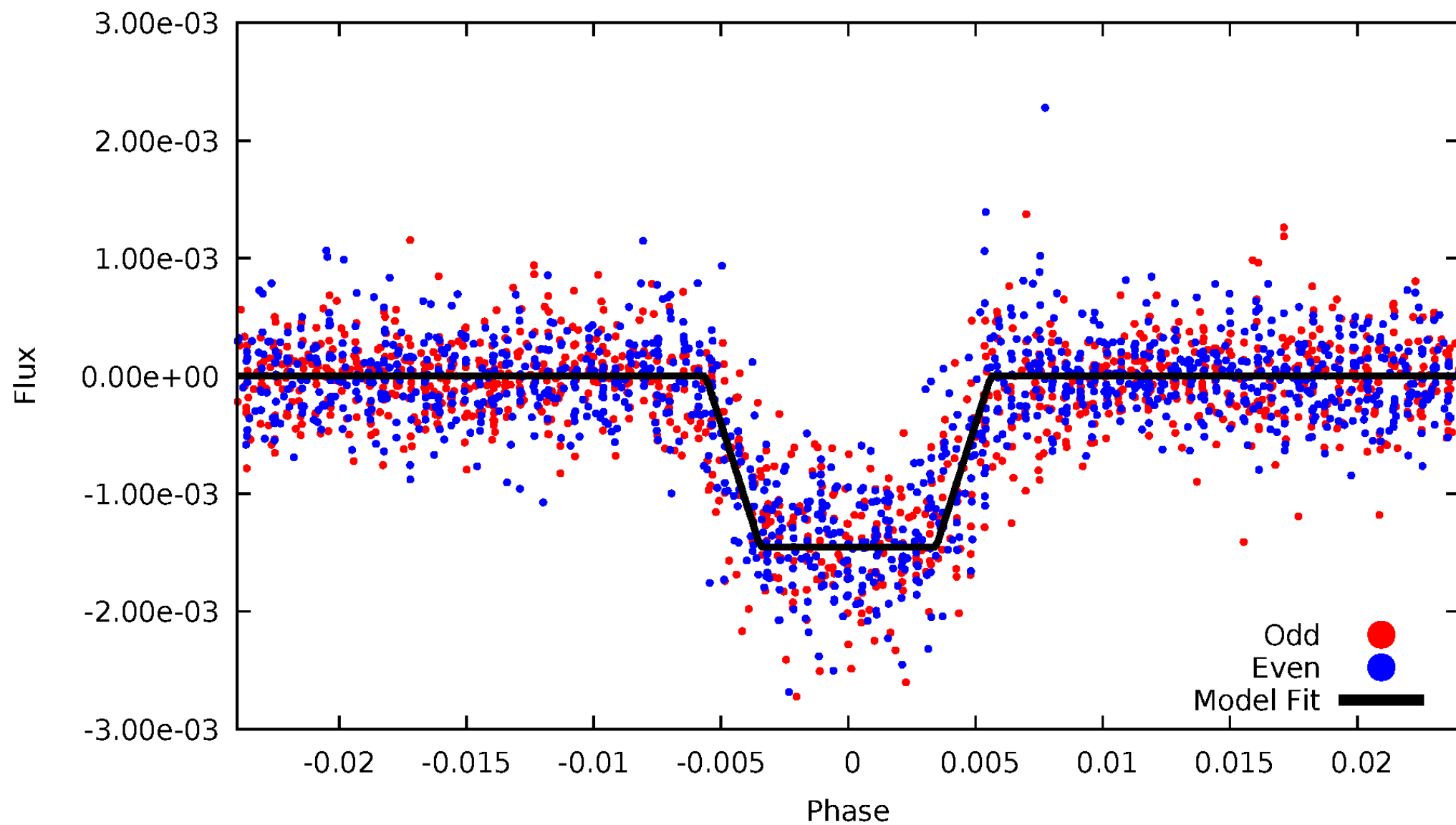
DV Odd/Even

TCE 004852528-02



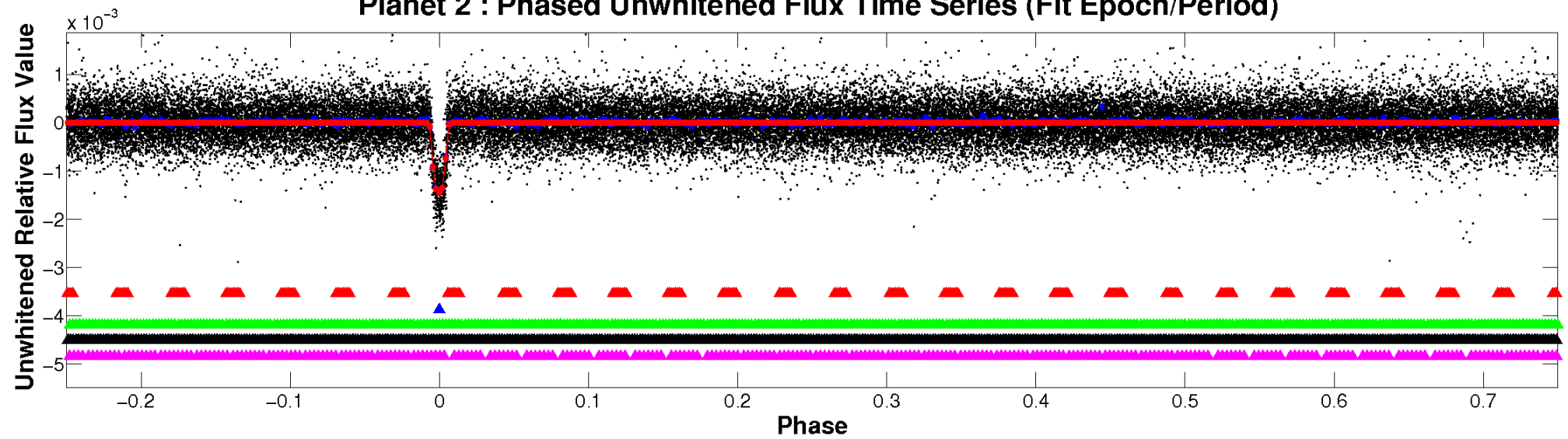
ALT Odd/Even

TCE 004852528-02

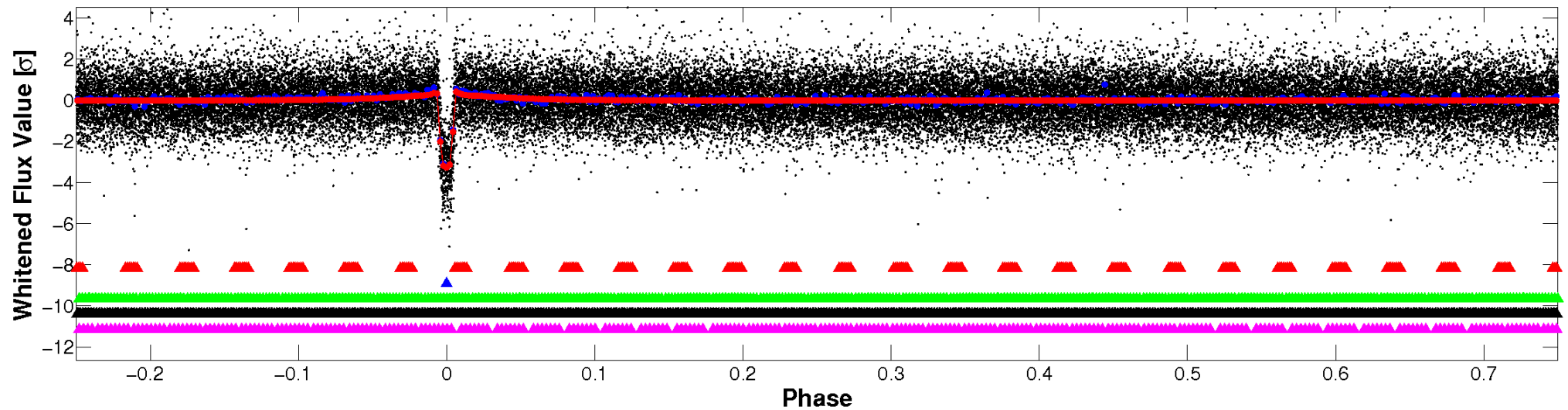


Non-Whitened Vs. Whitened Light Curve

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

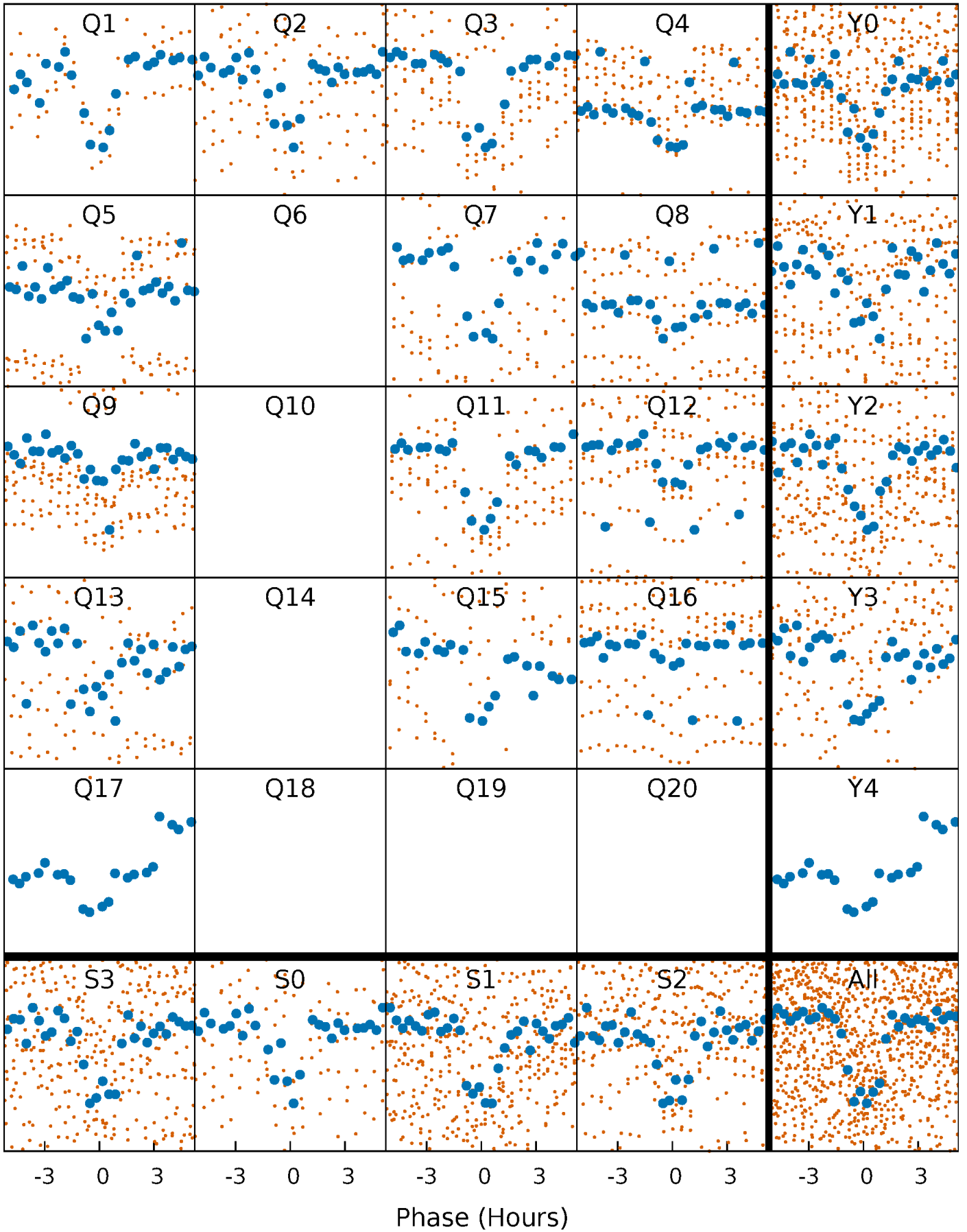


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



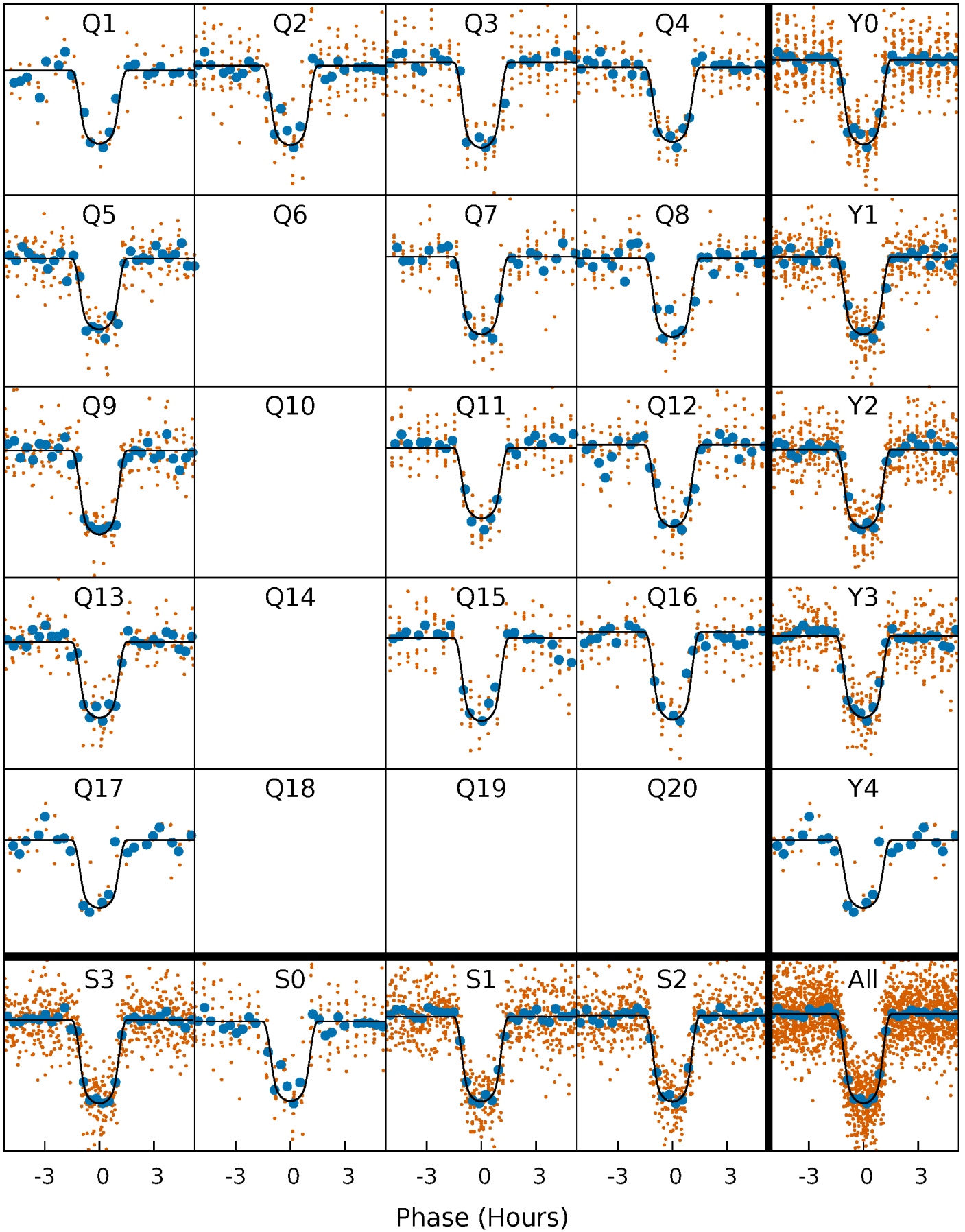
PDC Quarter-Phased Transit Curves

TCE 004852528-02 P= 9.521646 Days $T_0=139.397872$ (BKJD)



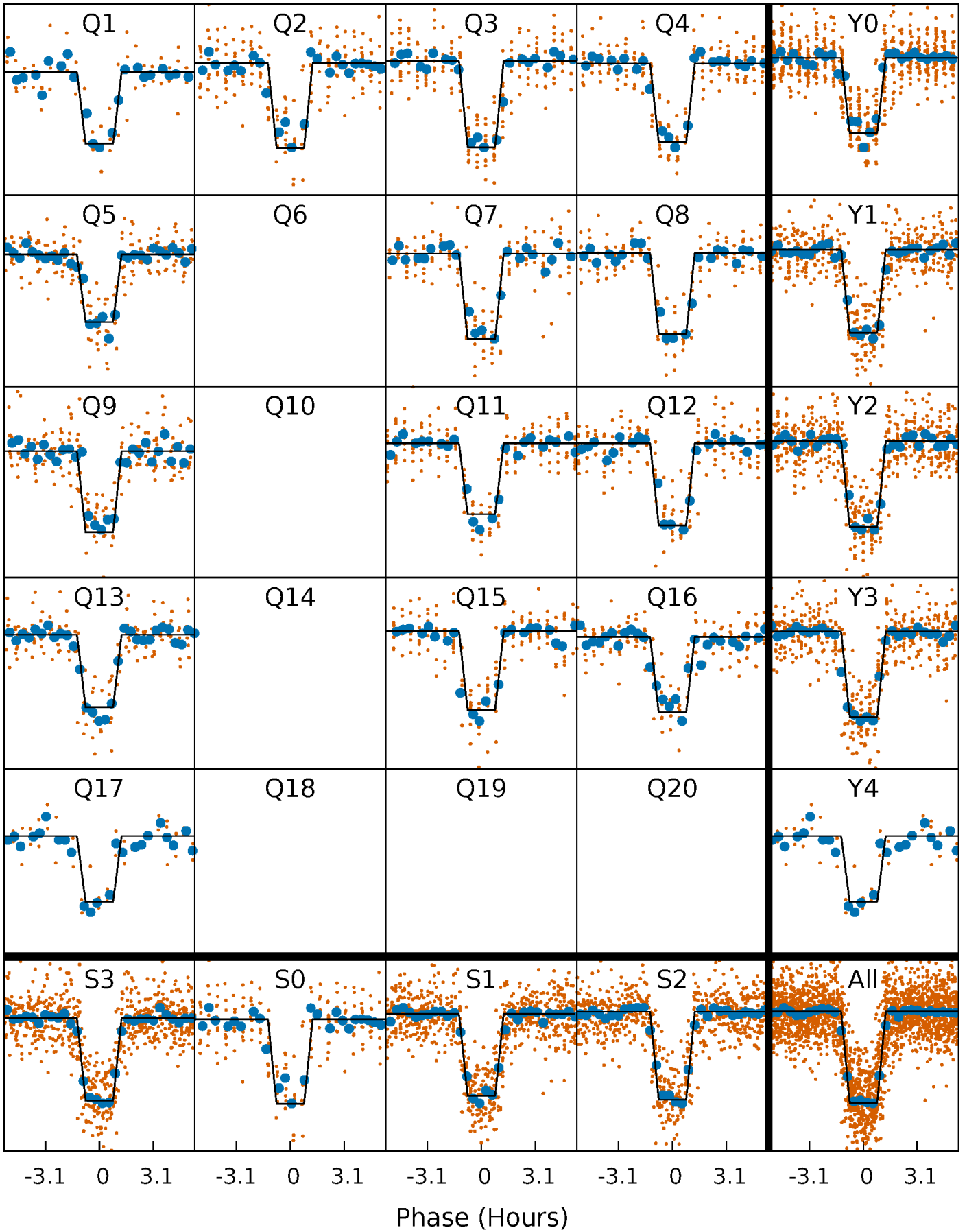
DV Quarter-Phased Transit Curves

TCE 004852528-02 P= 9.521646 Days $T_0=139.397872$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

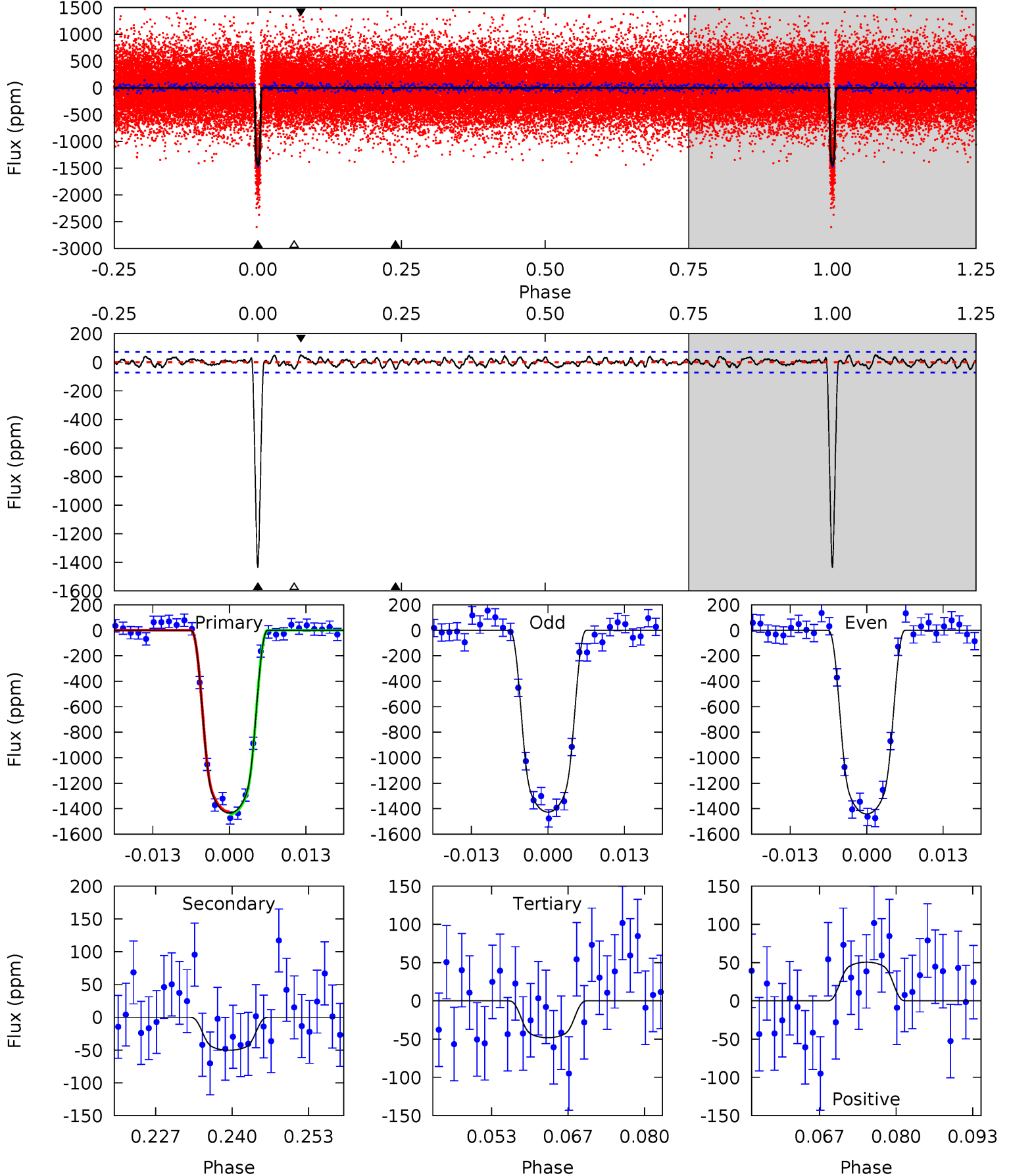
TCE 004852528-02 P= 9.521670 Days $T_0=139.395770$ (BKJD)



DV Model-Shift Uniqueness Test

004852528-02, P = 9.521646 Days, E = 129.876226 Days

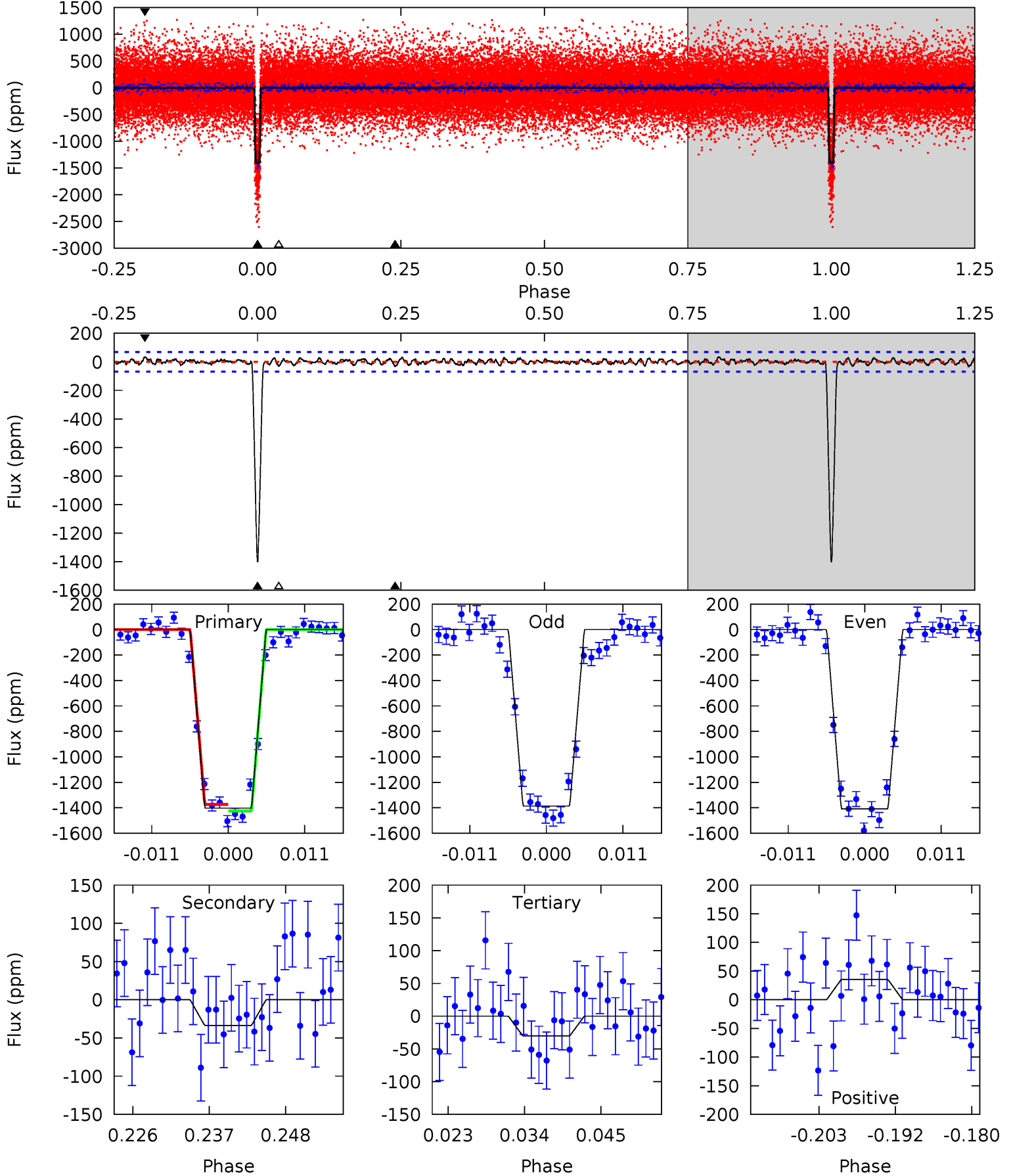
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 99.8 | 3.50 | 3.35 | 3.52 | 4.97 | 2.47 | 1.32 | 96.5 | 96.3 | 0.15 | -0.02 | 0.50 | 1.00 | 0.03 | 0.68 |



Alt Model-Shift Uniqueness Test

004852528-02, P = 9.521670 Days, E = 129.874100 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 102.0 | 2.44 | 2.21 | 2.57 | 5.00 | 2.53 | 0.88 | 99.8 | 99.5 | 0.24 | -0.12 | 0.80 | 1.01 | 0.02 | 1.88 |



Stellar Parameters For KIC 004852528

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4041^{+72}_{-88} | $4.697^{+0.024}_{-0.027}$ | $-0.140^{+0.150}_{-0.150}$ | $0.567^{+0.031}_{-0.031}$ | $0.584^{+0.029}_{-0.035}$ | $4.507^{+0.552}_{-0.492}$ |
| | +2%/-2% | +1%/-1% | +107%/-107% | +5%/-5% | +5%/-6% | +12%/-11% |
| Source | SPE5 | SPE5 | SPE5 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004852528-02 / KOI 0500.02

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -50 ± 14 | $2.54^{+0.12}_{-0.12}$ | 692^{+15}_{-16} | 2429^{+82}_{-109} | 23^{+7}_{-7} |
| Alt. | -34 ± 14 | $2.36^{+0.13}_{-0.12}$ | 692^{+16}_{-17} | 2355^{+109}_{-140} | 18^{+8}_{-7} |

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

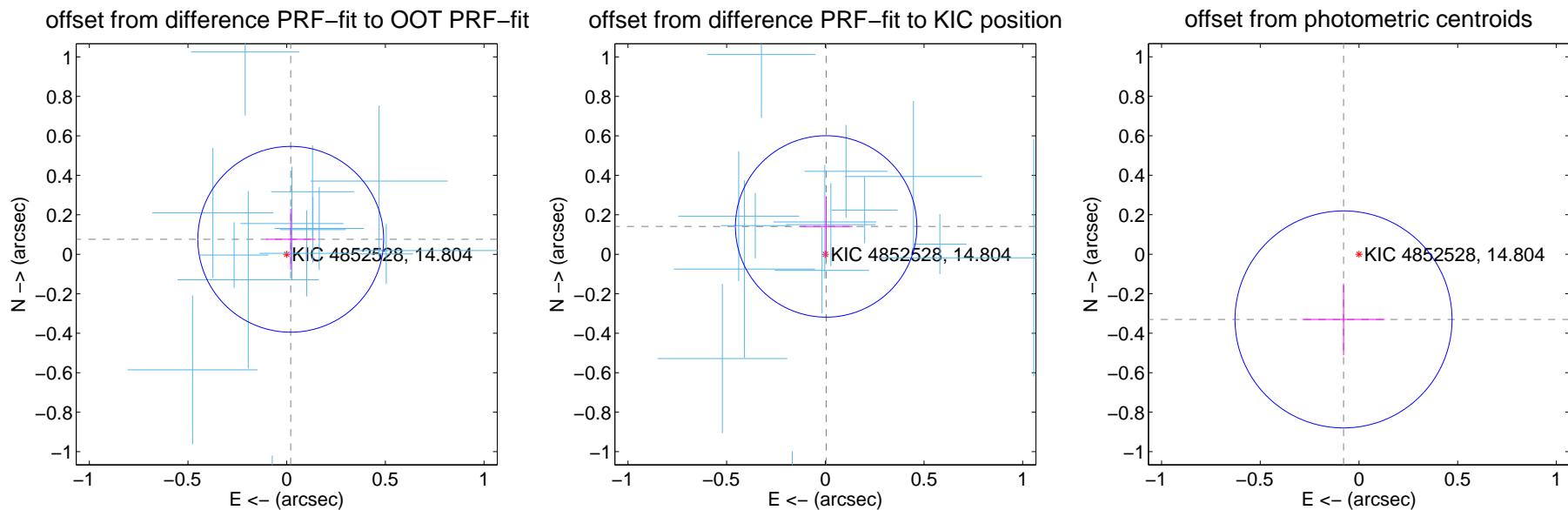
DV Centroid Data

Supplemental centroid analysis for 004852528-02. Kepler magnitude: 14.80. Transit SNR 62.17

There are 14 quarters with good PRF difference image offsets

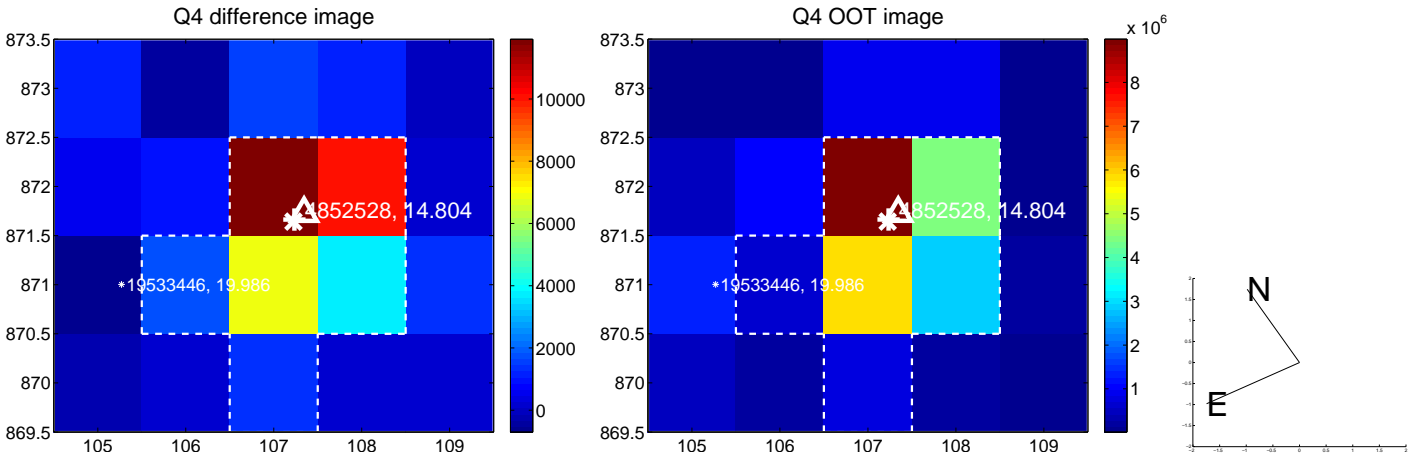
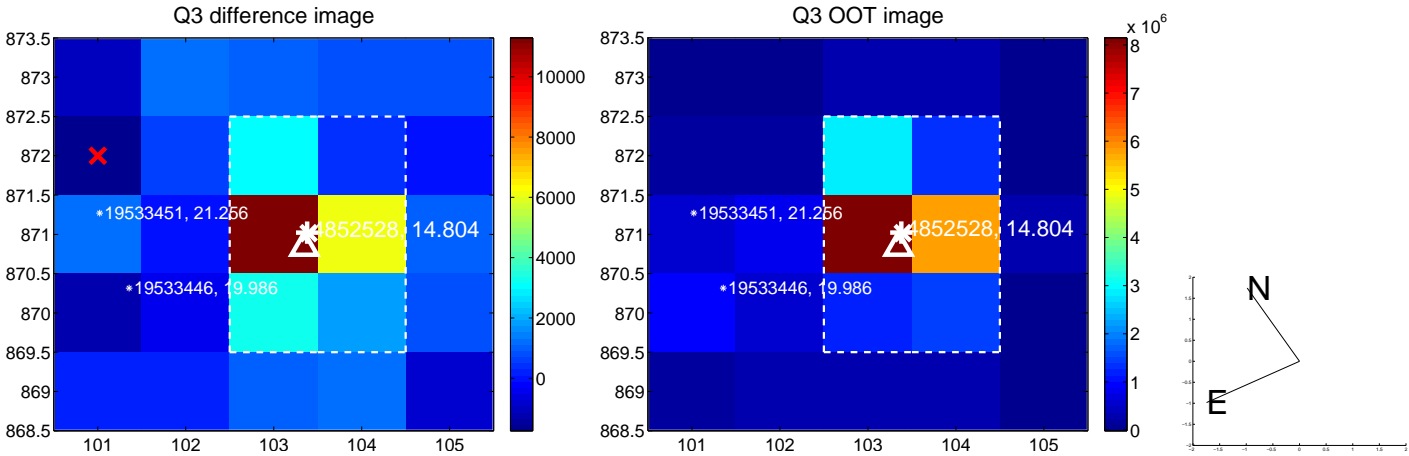
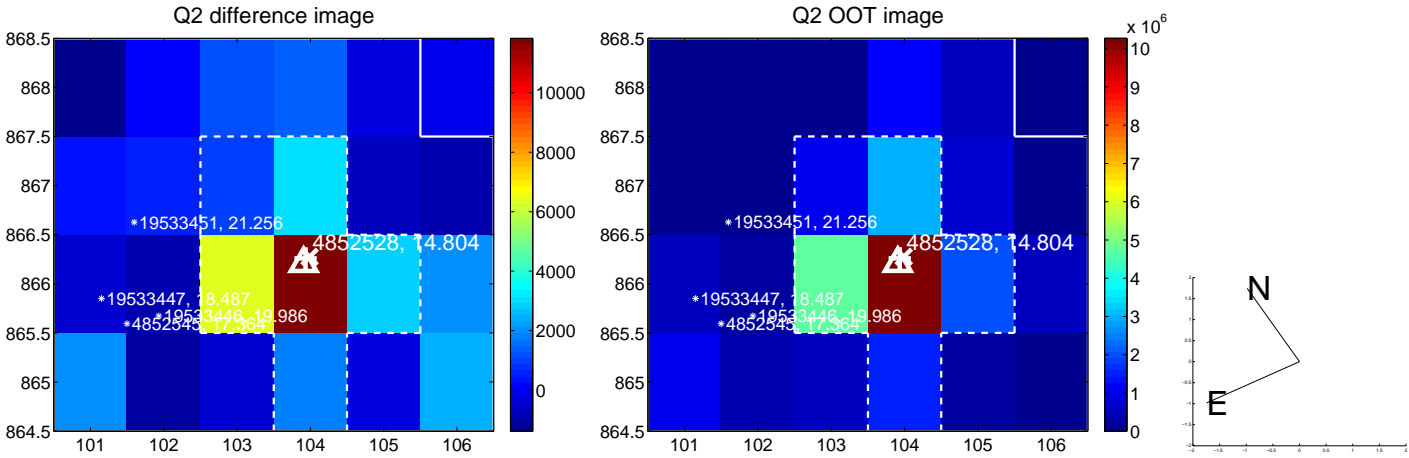
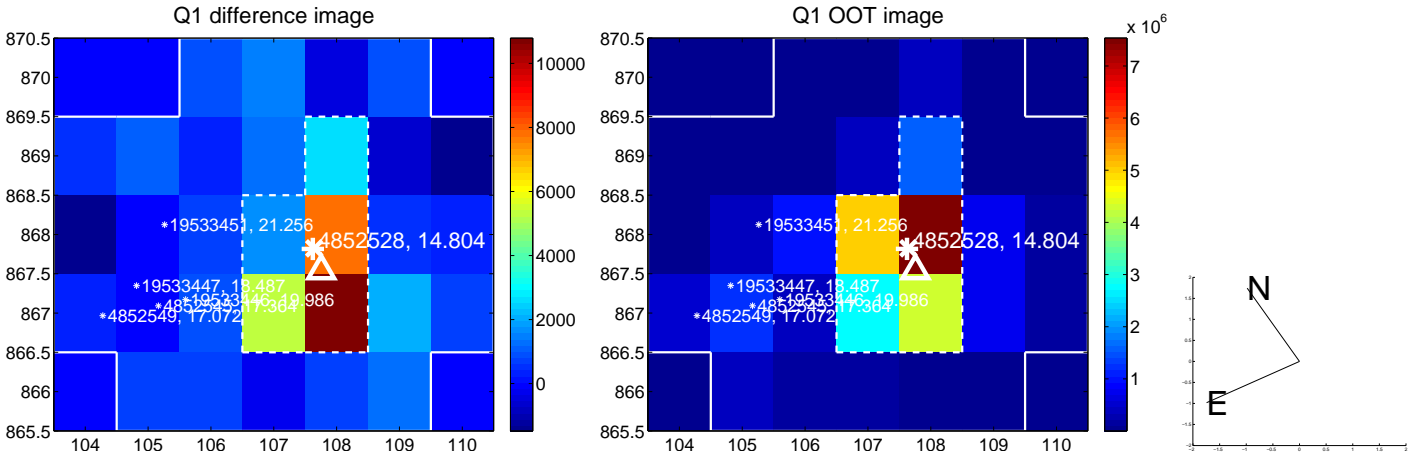
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.079 ± 0.157 | 0.50 | -0.021 ± 0.125 | 0.076 ± 0.156 |
| PRF-fit source offset from KIC position | 0.141 ± 0.153 | 0.92 | -0.004 ± 0.133 | 0.141 ± 0.153 |
| photometric centroid source offset | 0.34 ± 0.18 | 1.85 | 0.08 ± 0.21 | -0.33 ± 0.18 |

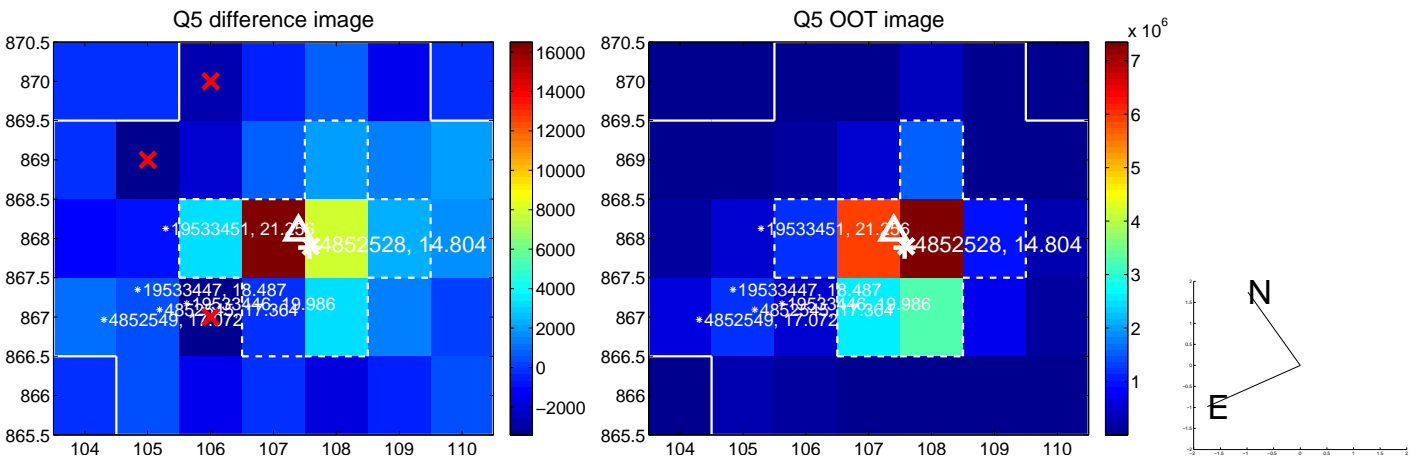


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

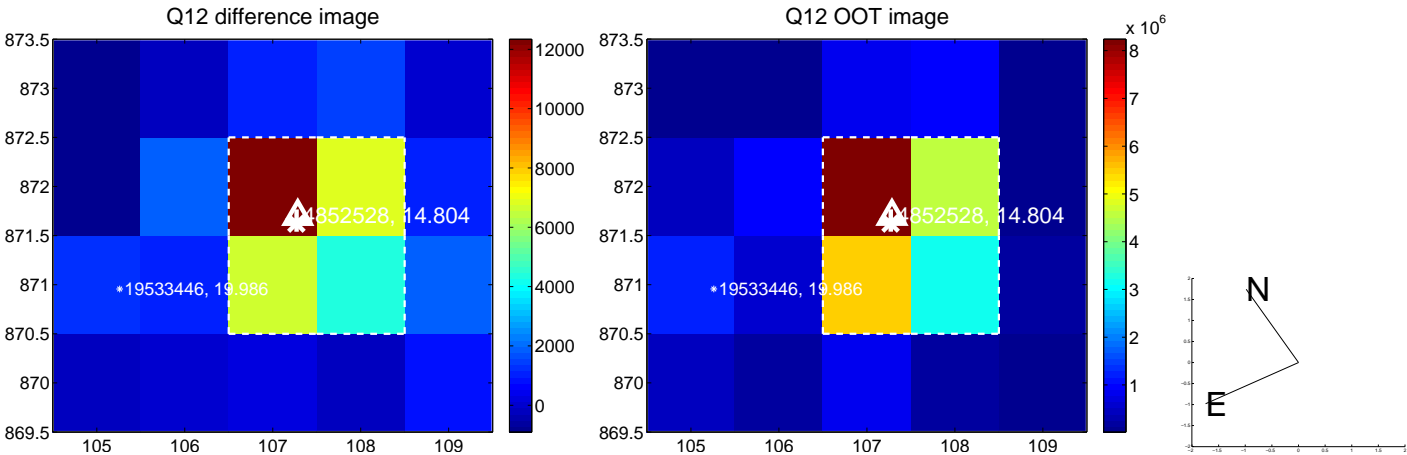
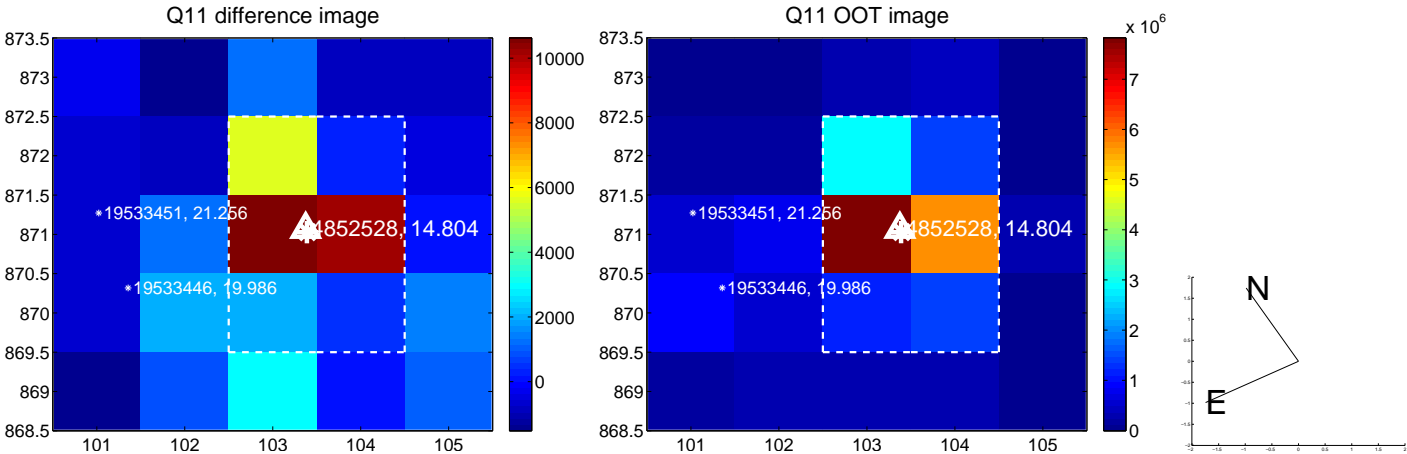
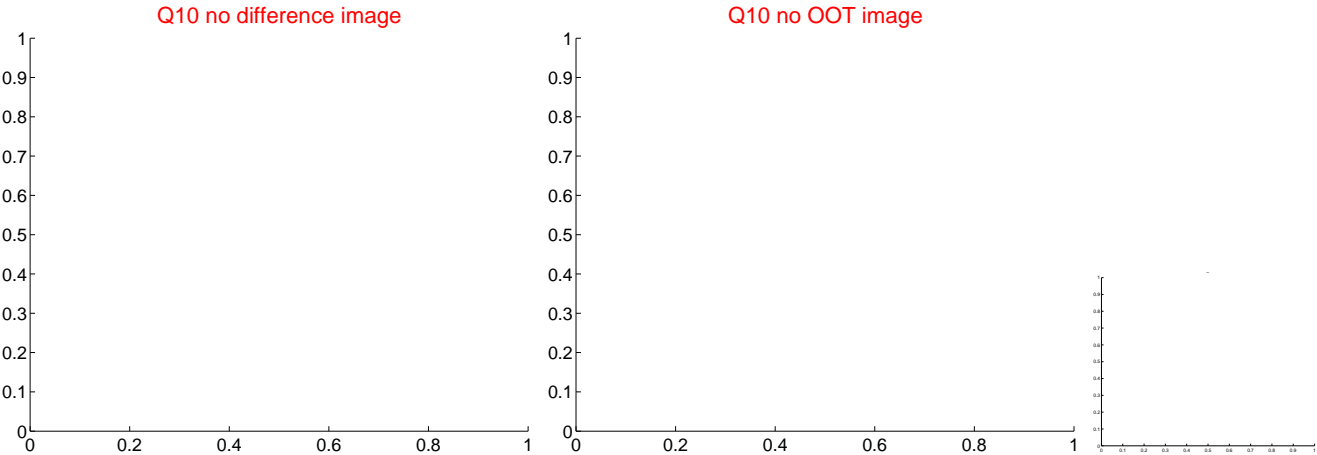
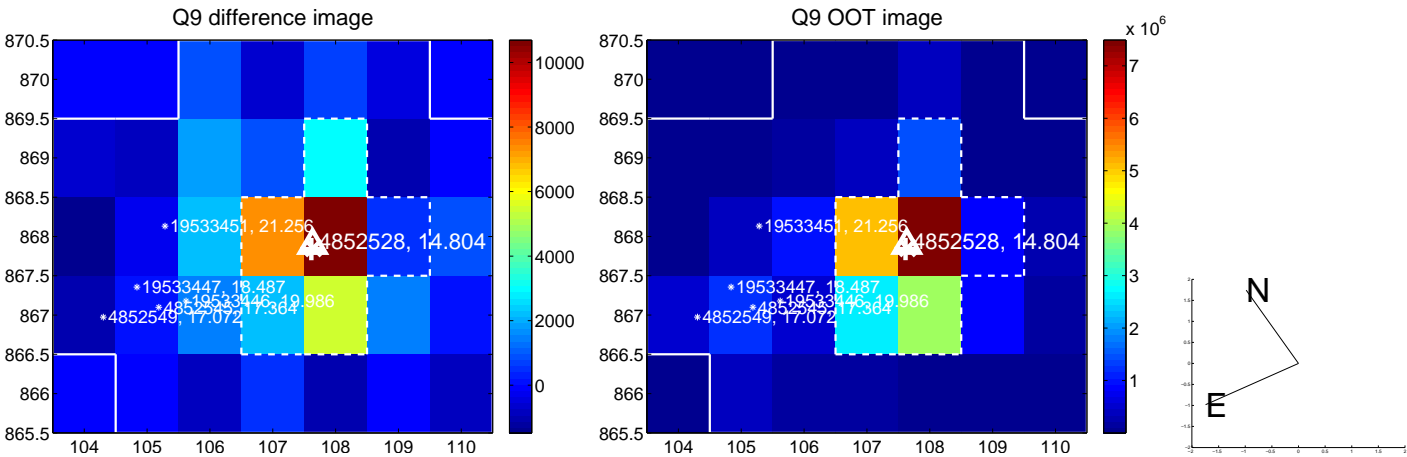
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



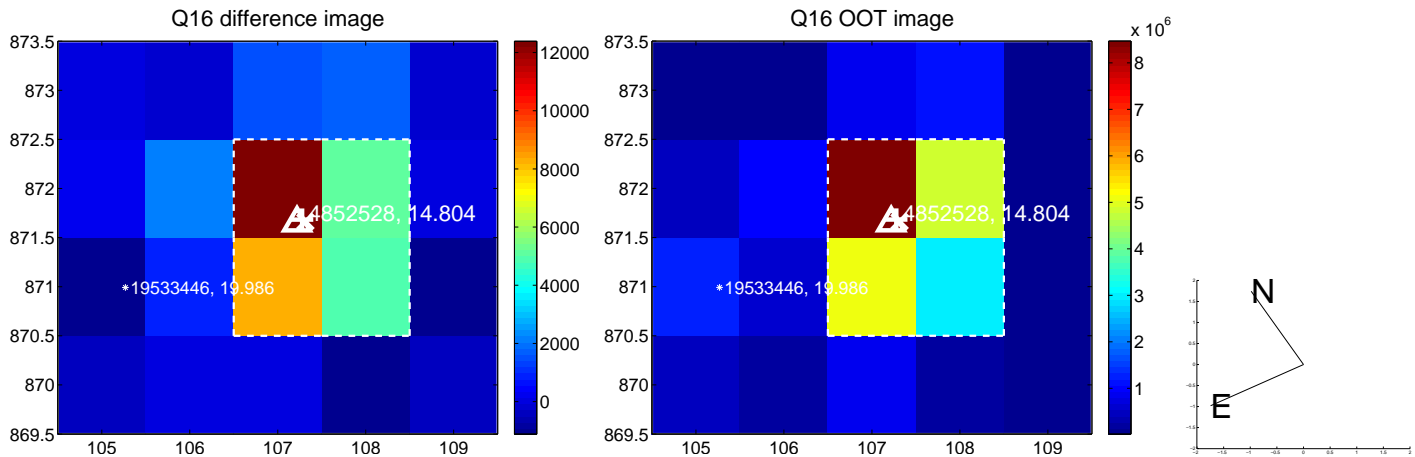
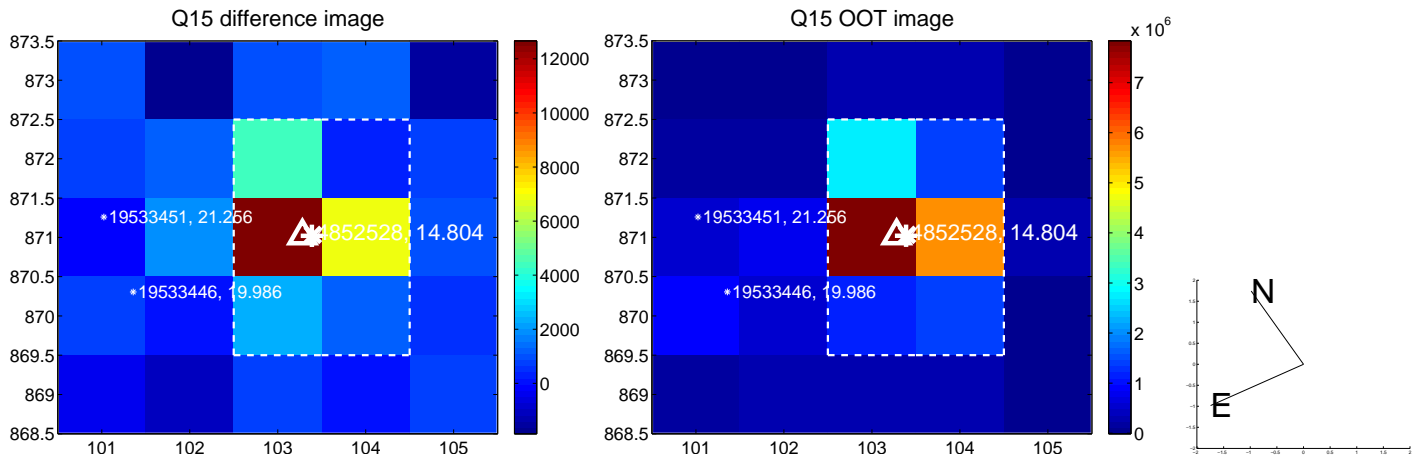
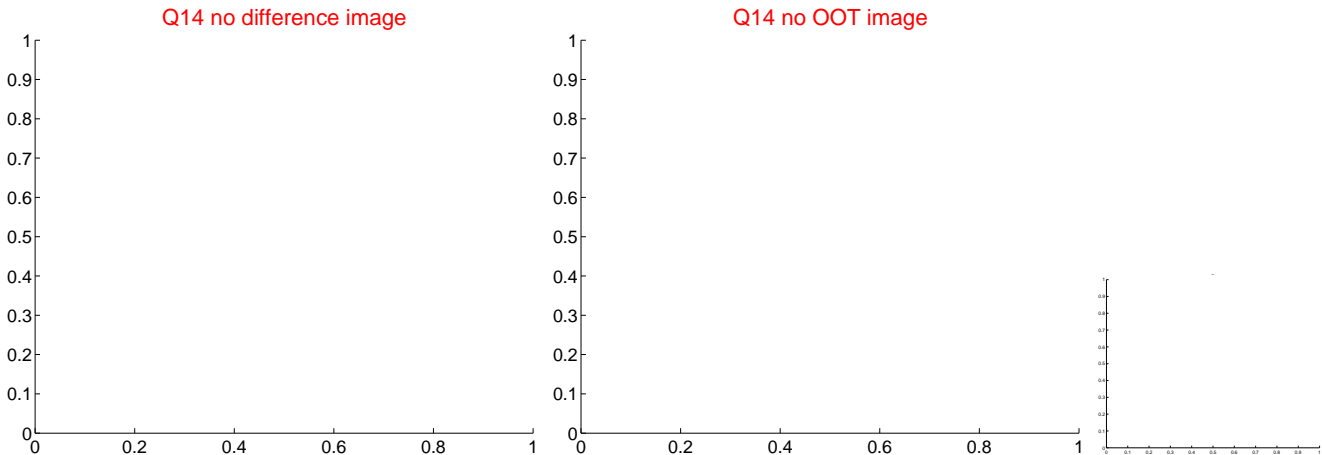
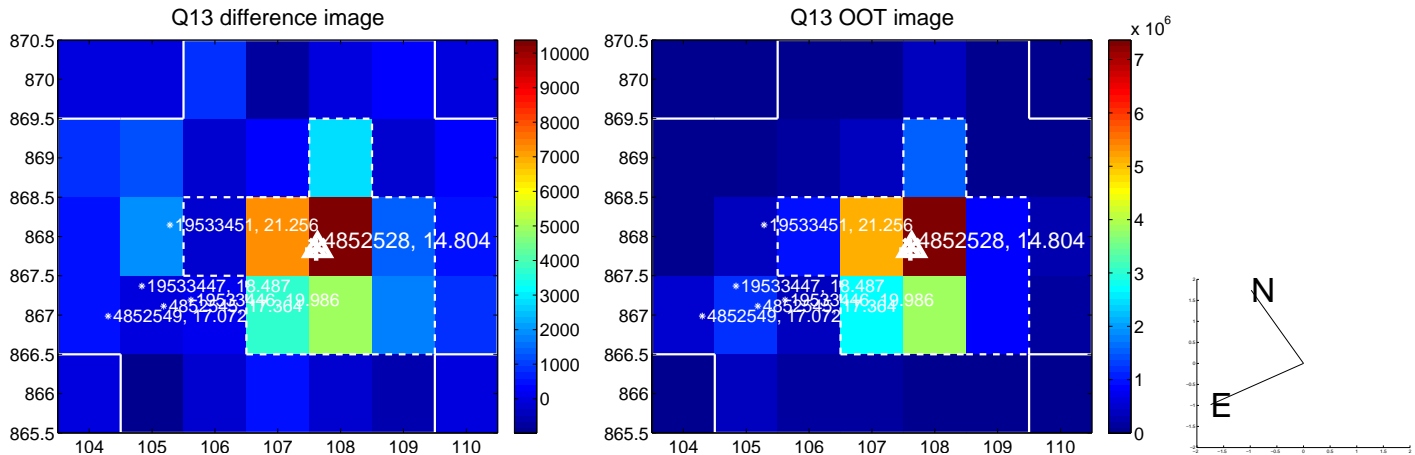
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



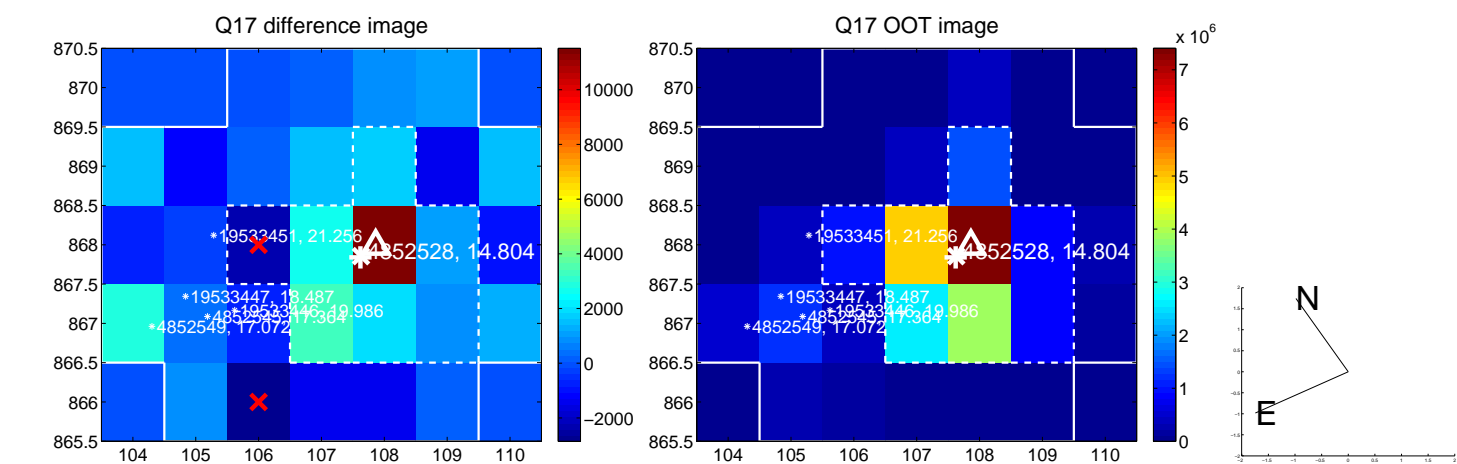
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



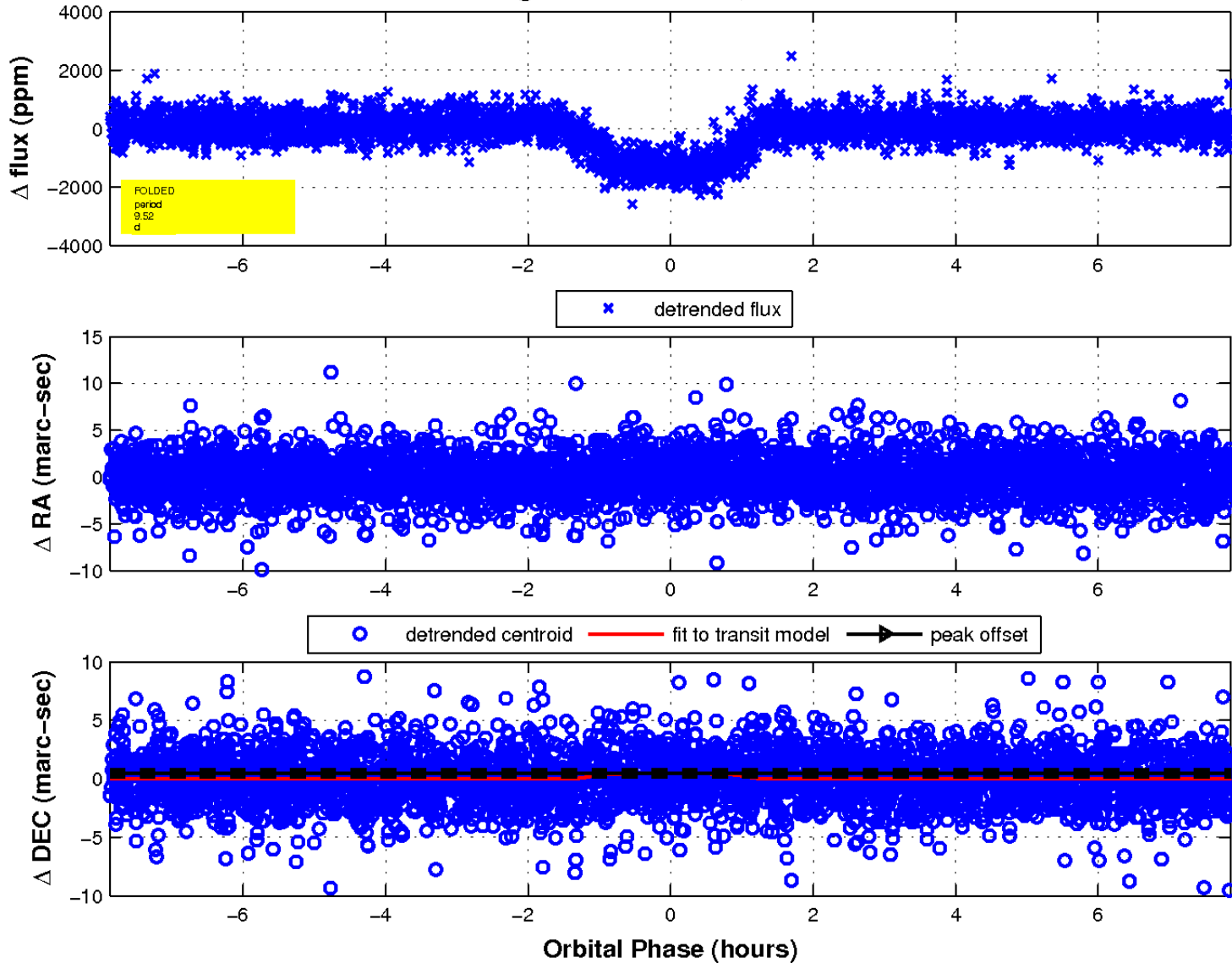
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

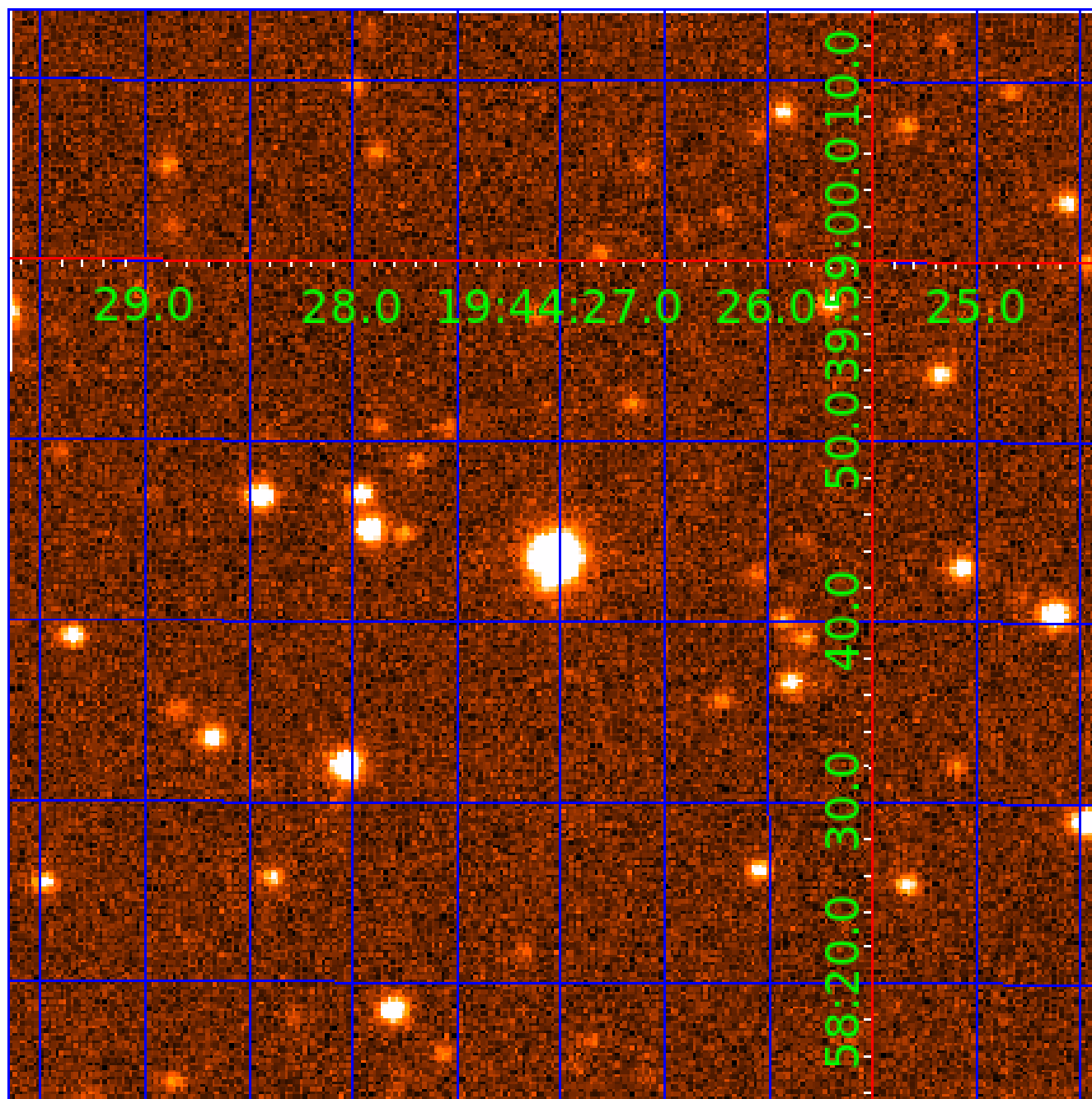


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 004852528

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004852528-01 | OBS | 0500.01 | 7.053535 | 134.152337 | 1425.8 | 2.725 | 68.1 | 72.3 | 0.57 | 4041 | 2.56 | 21.22 |
| 004852528-02 | OBS | 0500.02 | 9.521646 | 139.397872 | 1445.9 | 2.624 | 57.2 | 62.2 | 0.57 | 4041 | 2.53 | 14.22 |
| 004852528-03 | OBS | 0500.03 | 3.072143 | 134.030637 | 467.5 | 2.051 | 29.7 | 33.7 | 0.57 | 4041 | 1.47 | 64.27 |
| 004852528-04 | OBS | 0500.05 | 0.986783 | 132.183270 | 225.7 | 1.506 | 26.2 | 26.2 | 0.57 | 4041 | 1.02 | 292.15 |
| 004852528-05 | OBS | 0500.04 | 4.645379 | 134.590073 | 469.8 | 2.459 | 22.8 | 25.5 | 0.57 | 4041 | 1.60 | 37.03 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 004852528-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-03 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-04 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-05 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

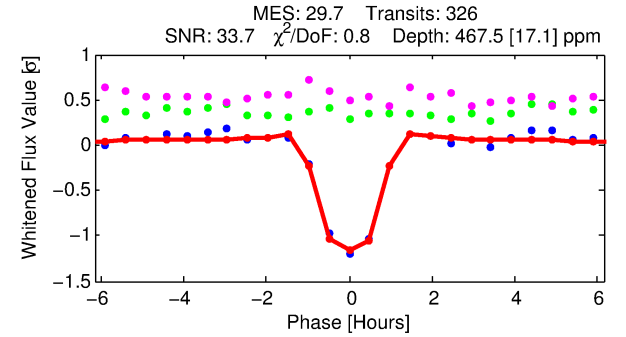
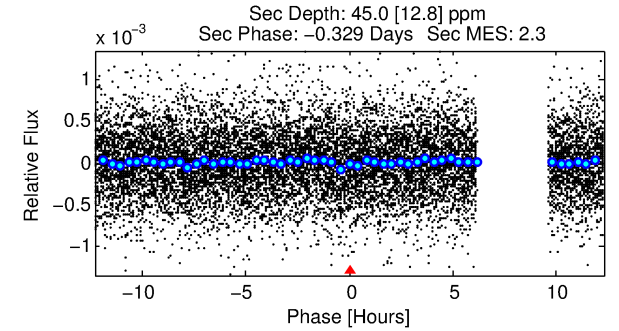
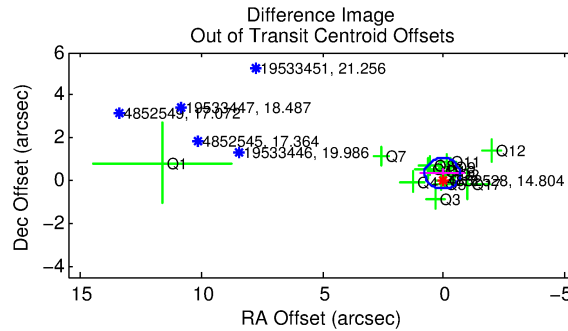
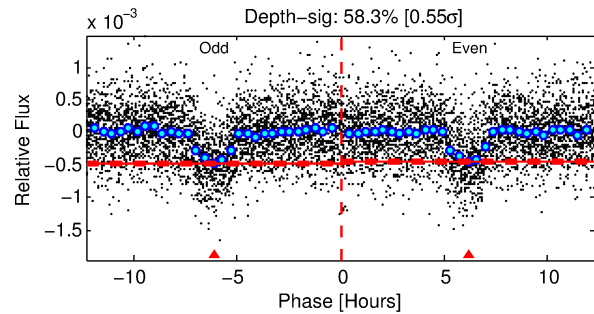
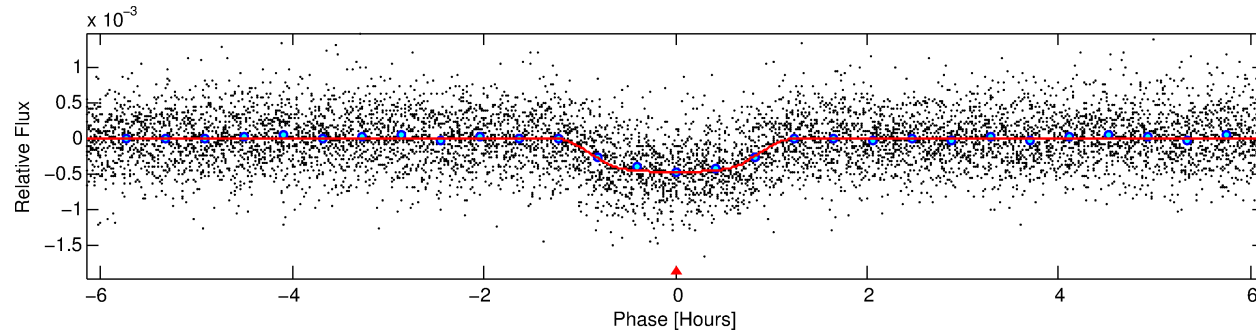
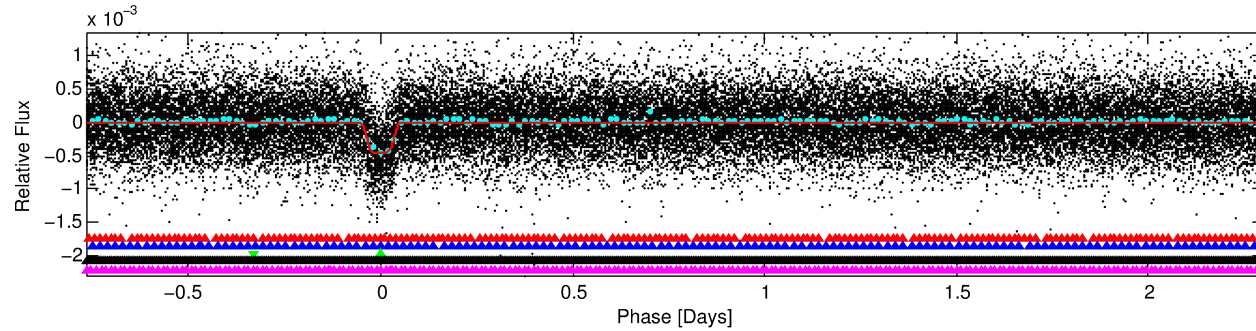
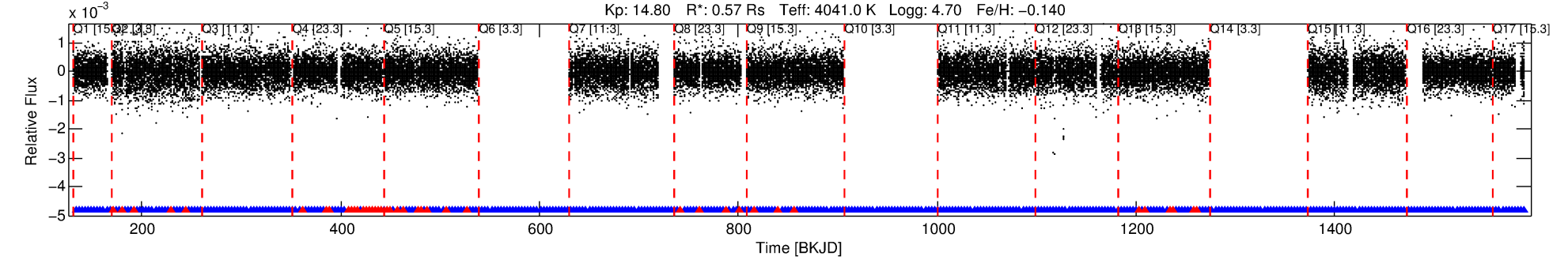
Ephemeris Match Information For 004852528-03

No Significant Match Found

DV One-Page Summary

KIC: 4852528 Candidate: 3 of 5 Period: 3.072 d
KOI: K00500.03 Name: Kepler-80d Corr: 0.985

Kp: 14.80 R*: 0.57 Rs Teff: 4041.0 K Logg: 4.70 Fe/H: -0.140



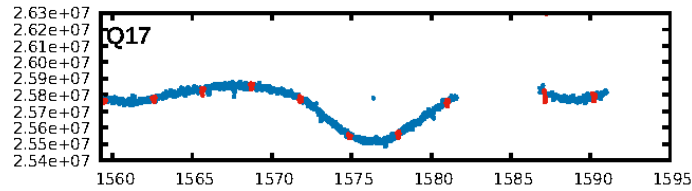
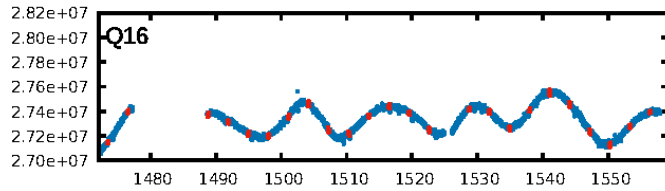
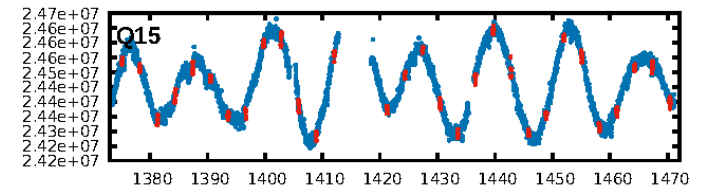
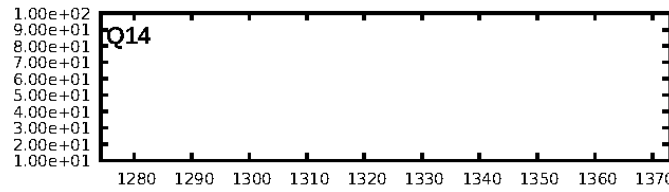
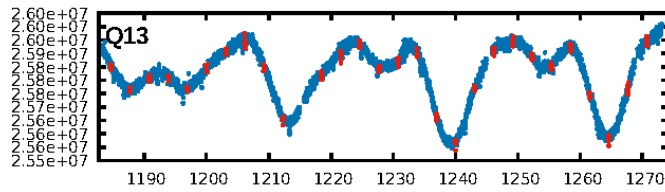
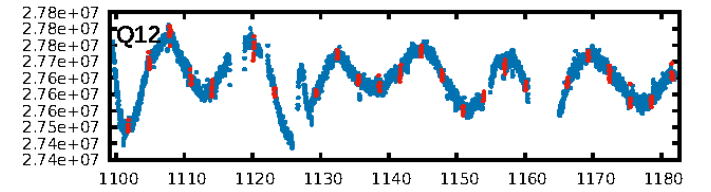
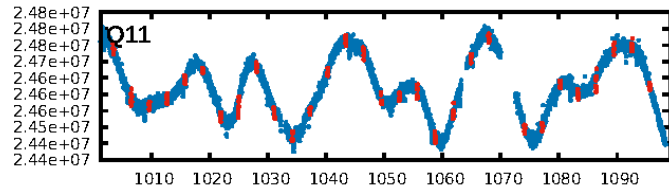
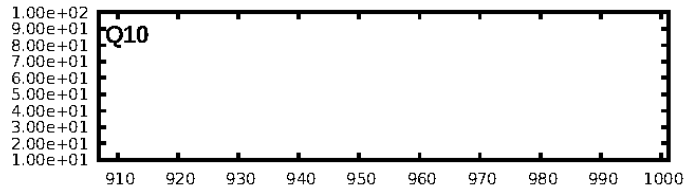
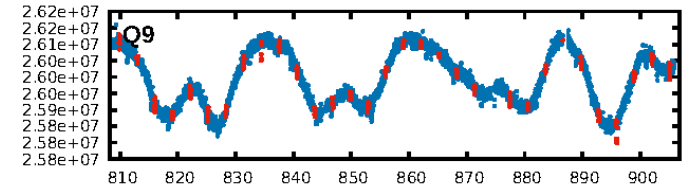
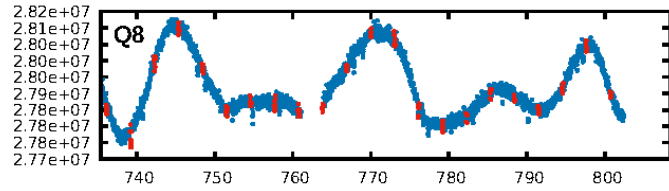
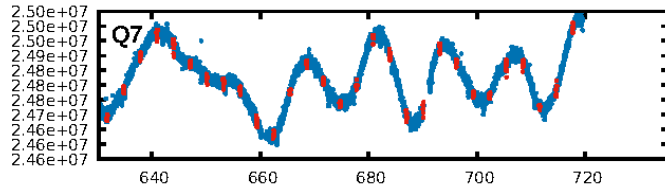
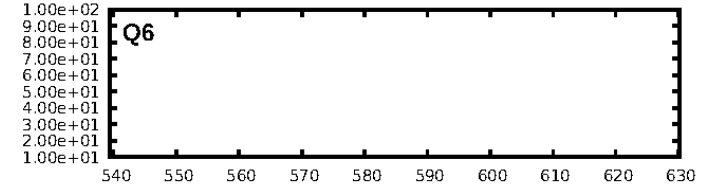
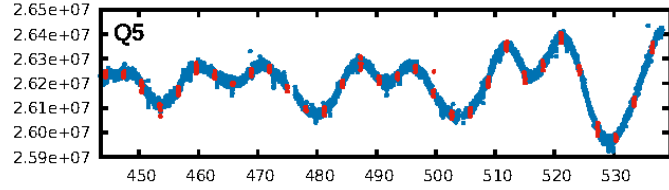
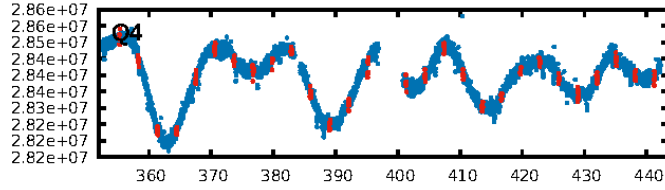
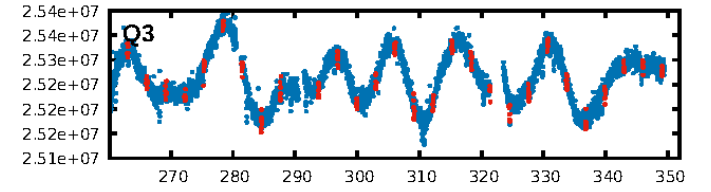
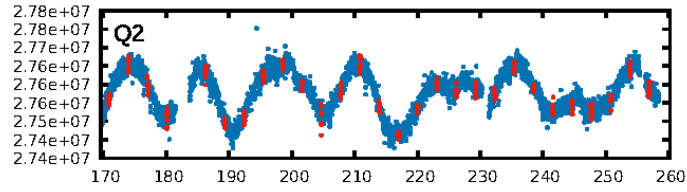
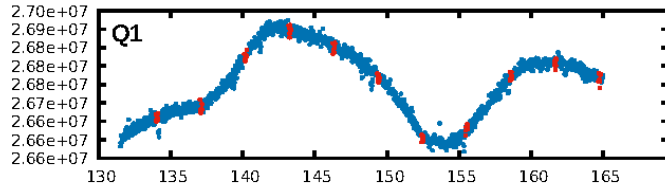
DV Fit Results:

Period = 3.07214 [0.00001] d
Epoch = 134.0306 [0.0009] BKJD
Rp/R* = 0.0237 [0.0036]
a/R* = 5.79 [3.59]
b = 0.89 [0.15]
Seff = 64.27 [6.63]
Teff = 722 [19] K
Rp = 1.46 [0.23] Re
a = 0.0346 [0.0014] AU
Ag = 13.78 [5.77] [2.22σ]
Teffp = 2151 [228] K [6.24σ]

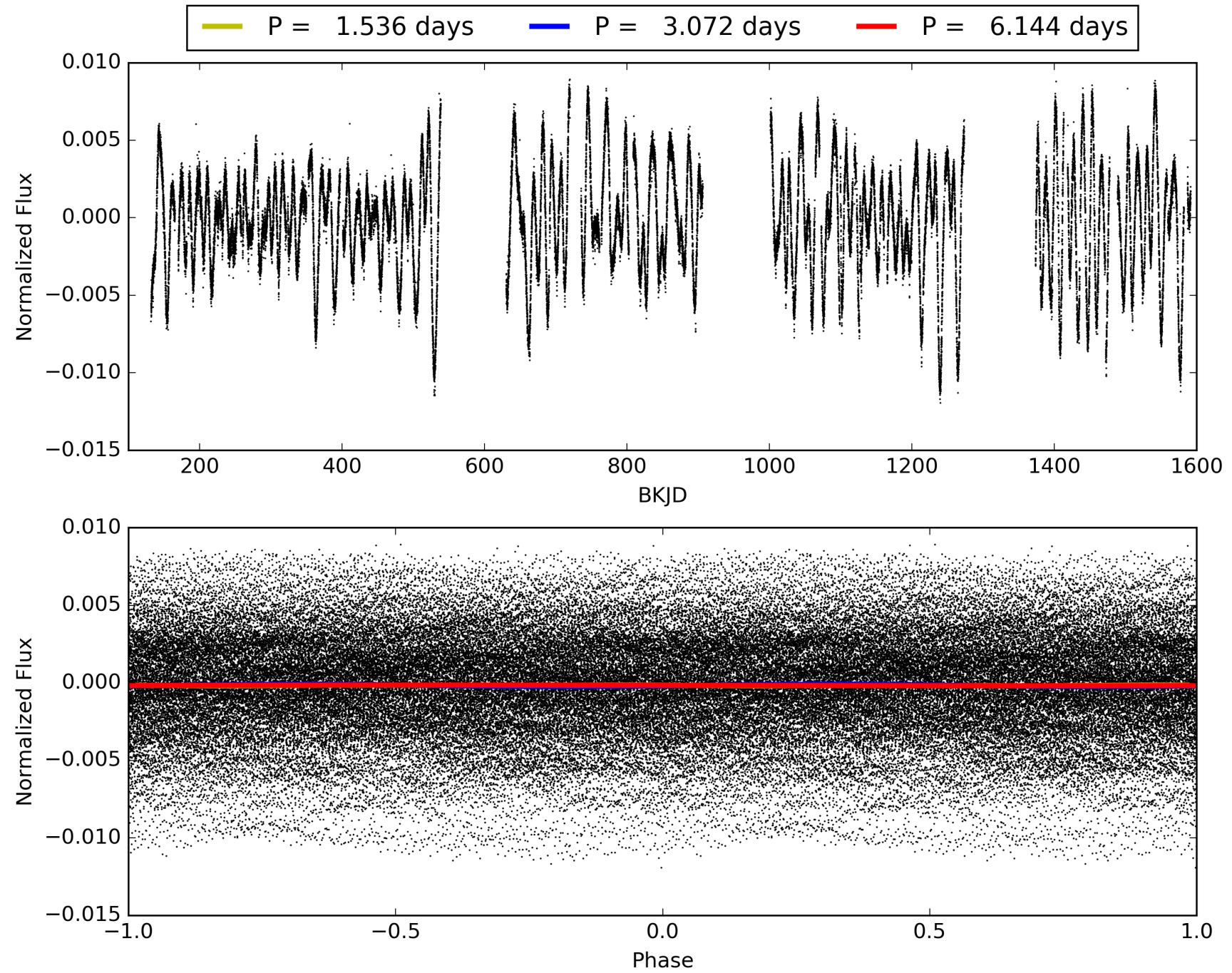
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.67σ]
LongPeriod-sig: 100.0% [11.79σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.01e-186
RollingBand-fgt: 0.87 [266/307]
GhostDiagnostic-chr: 9.234
Centroid-sig: N/A
Centroid-so: 0.365 arcsec [0.93σ]
OotOffset-rm: 0.341 arcsec [1.41σ]
KicOffset-rm: 0.406 arcsec [0.80σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004852528-03, PDC Light Curves

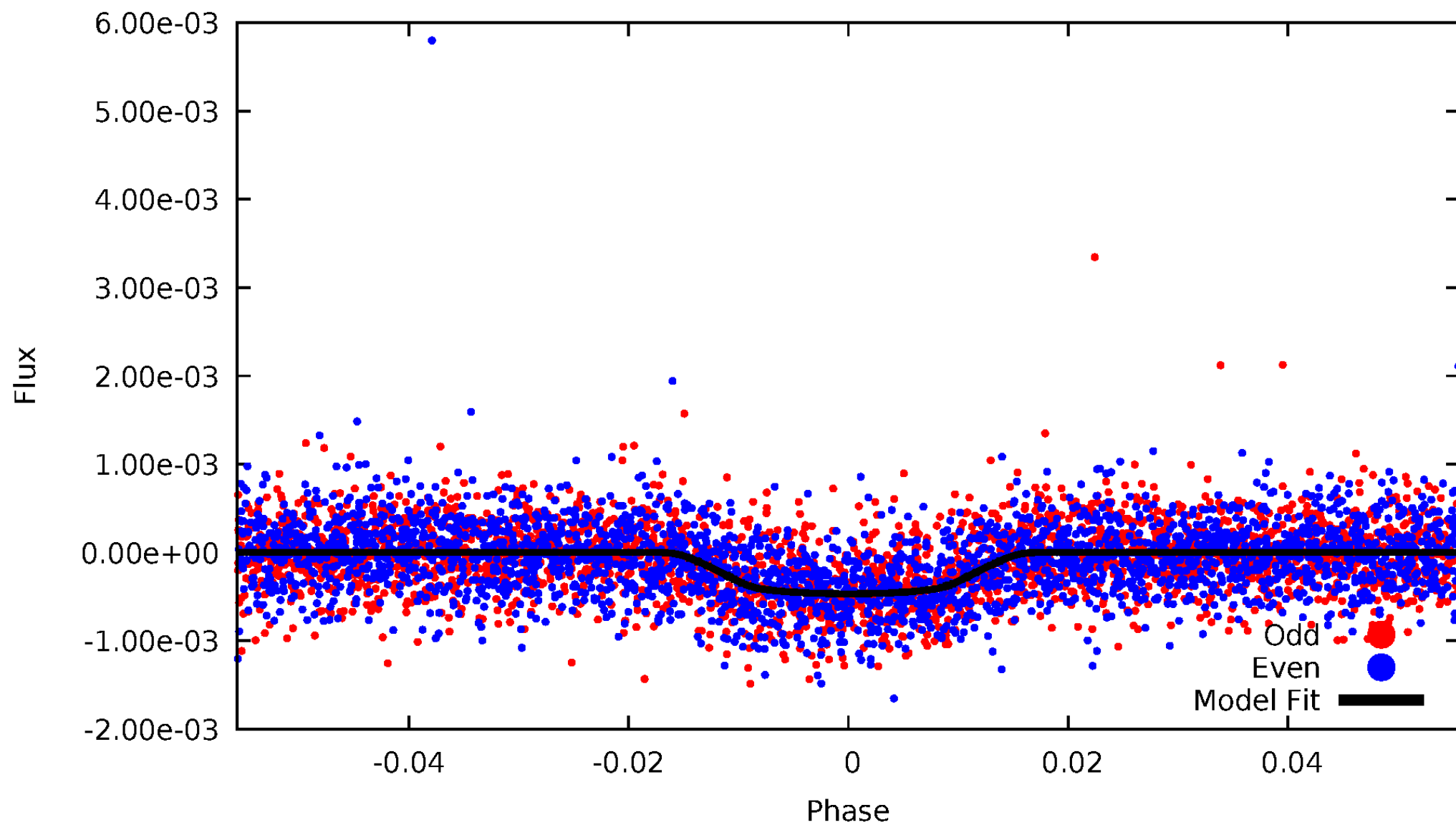


TCE 004852528-03



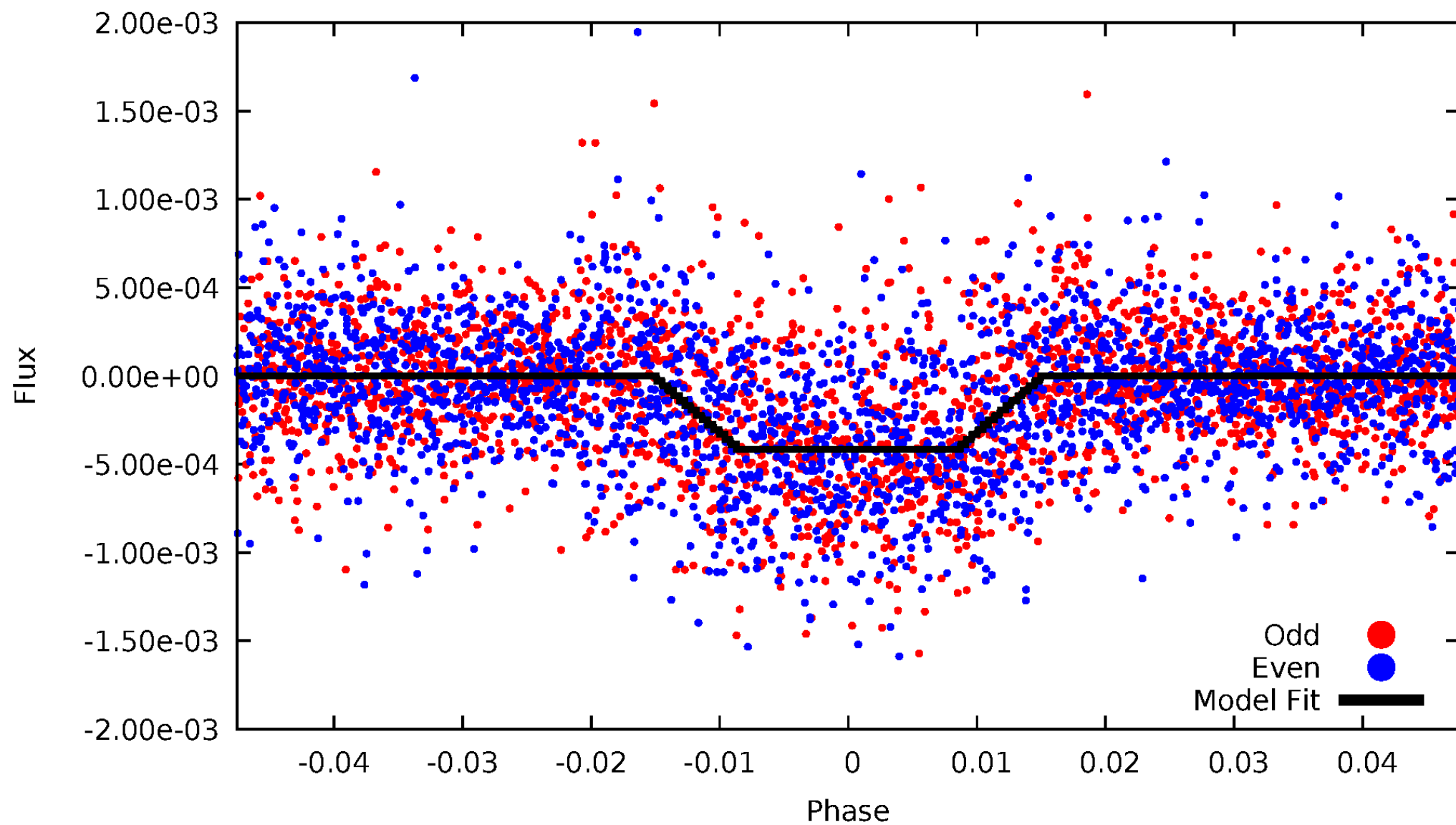
DV Odd/Even

TCE 004852528-03



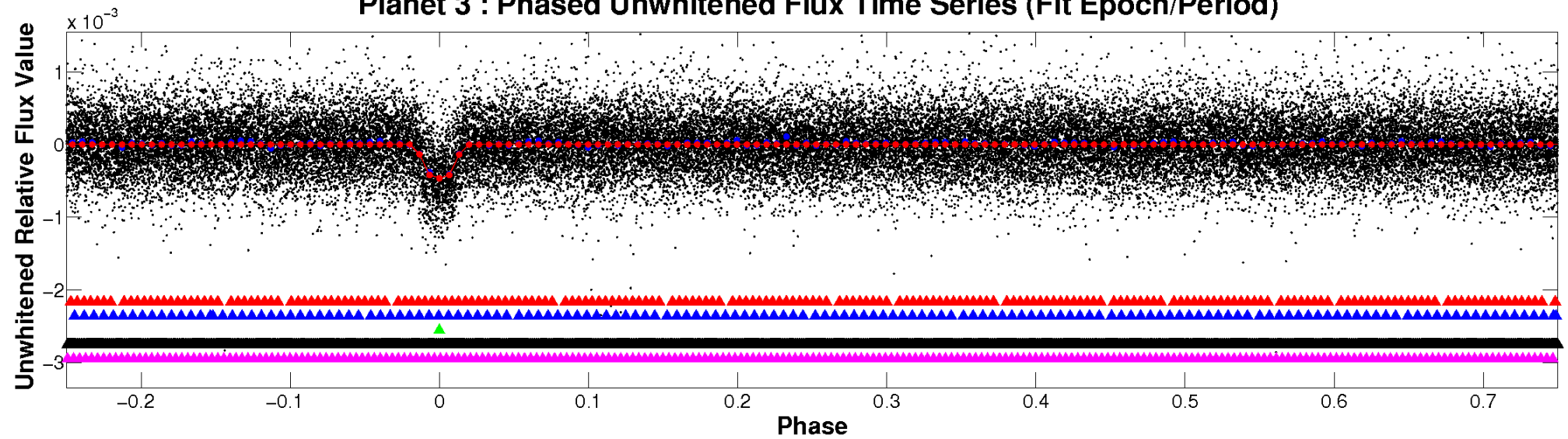
ALT Odd/Even

TCE 004852528-03

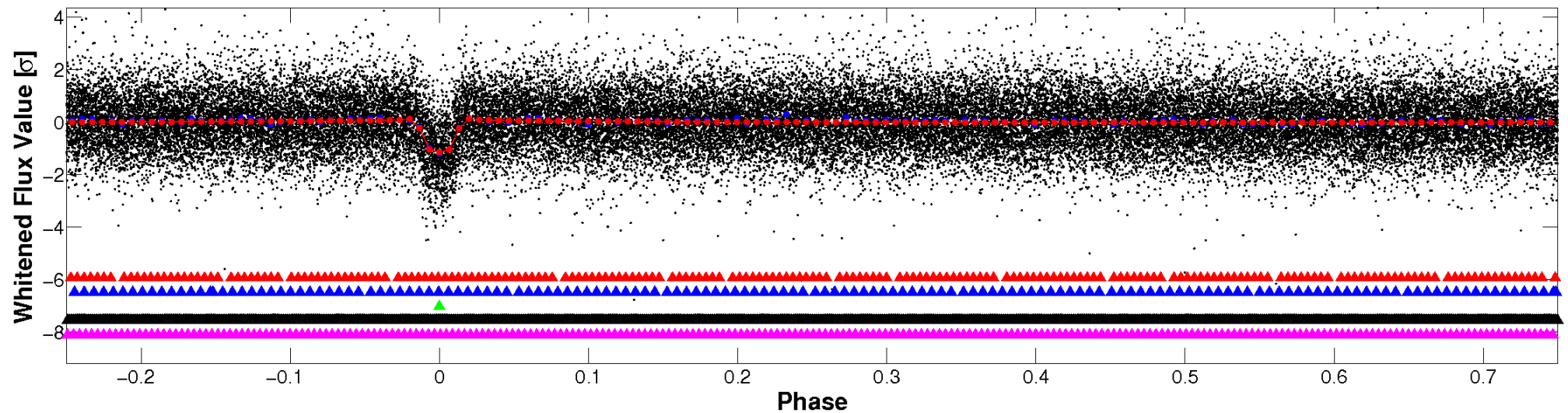


Non-Whitened Vs. Whitened Light Curve

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

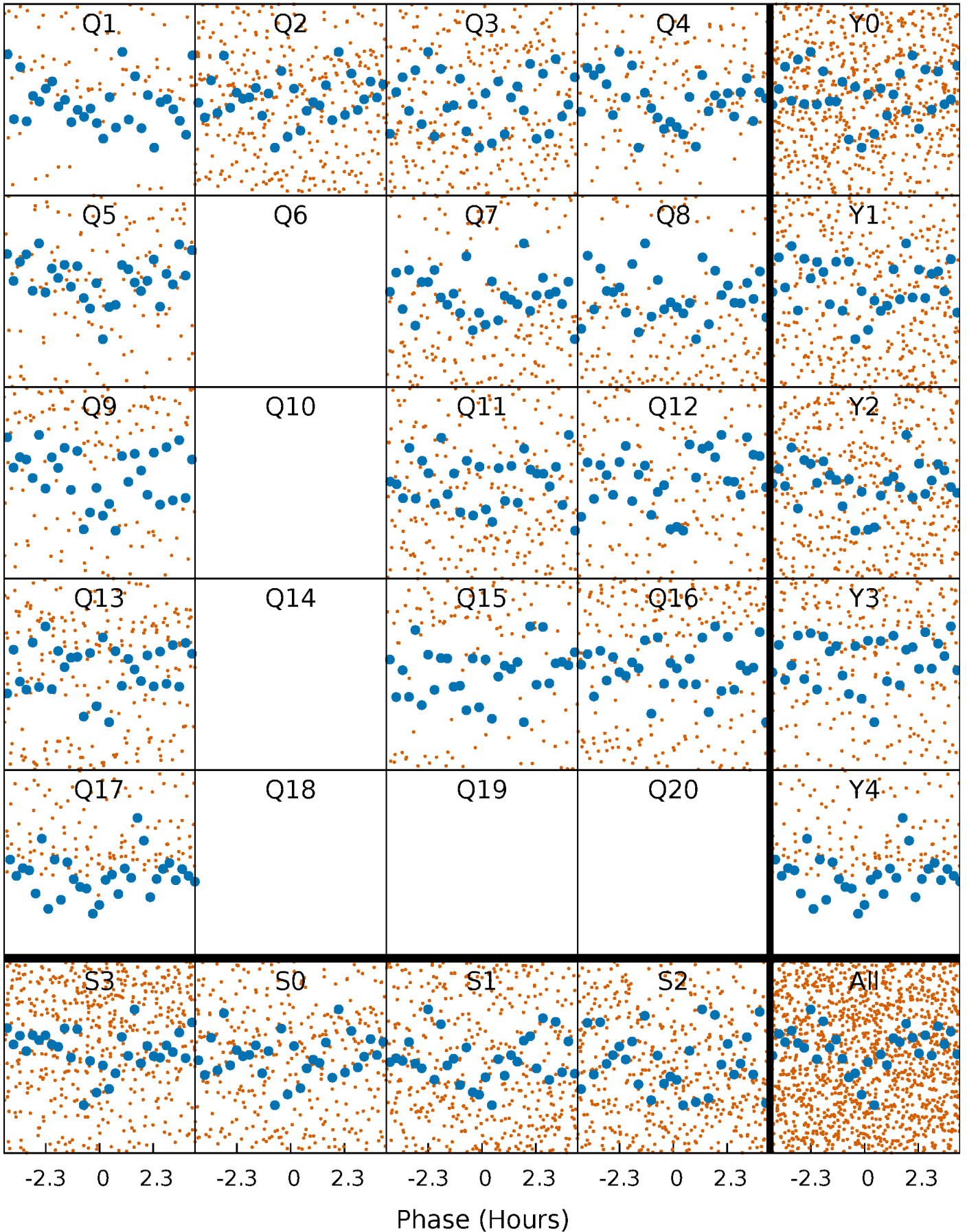


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



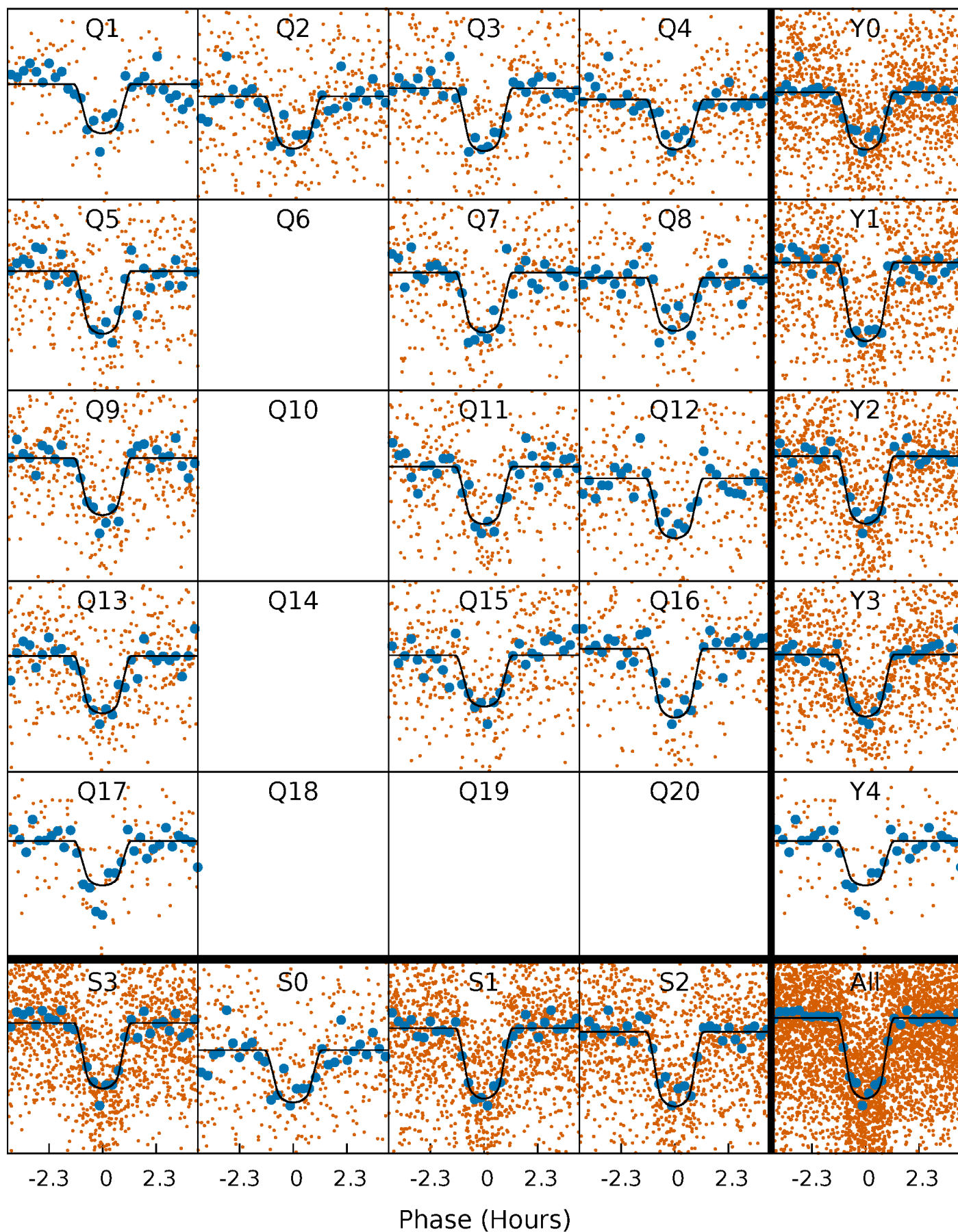
PDC Quarter-Phased Transit Curves

TCE 004852528-03 P= 3.072143 Days $T_0=134.030637$ (BKJD)



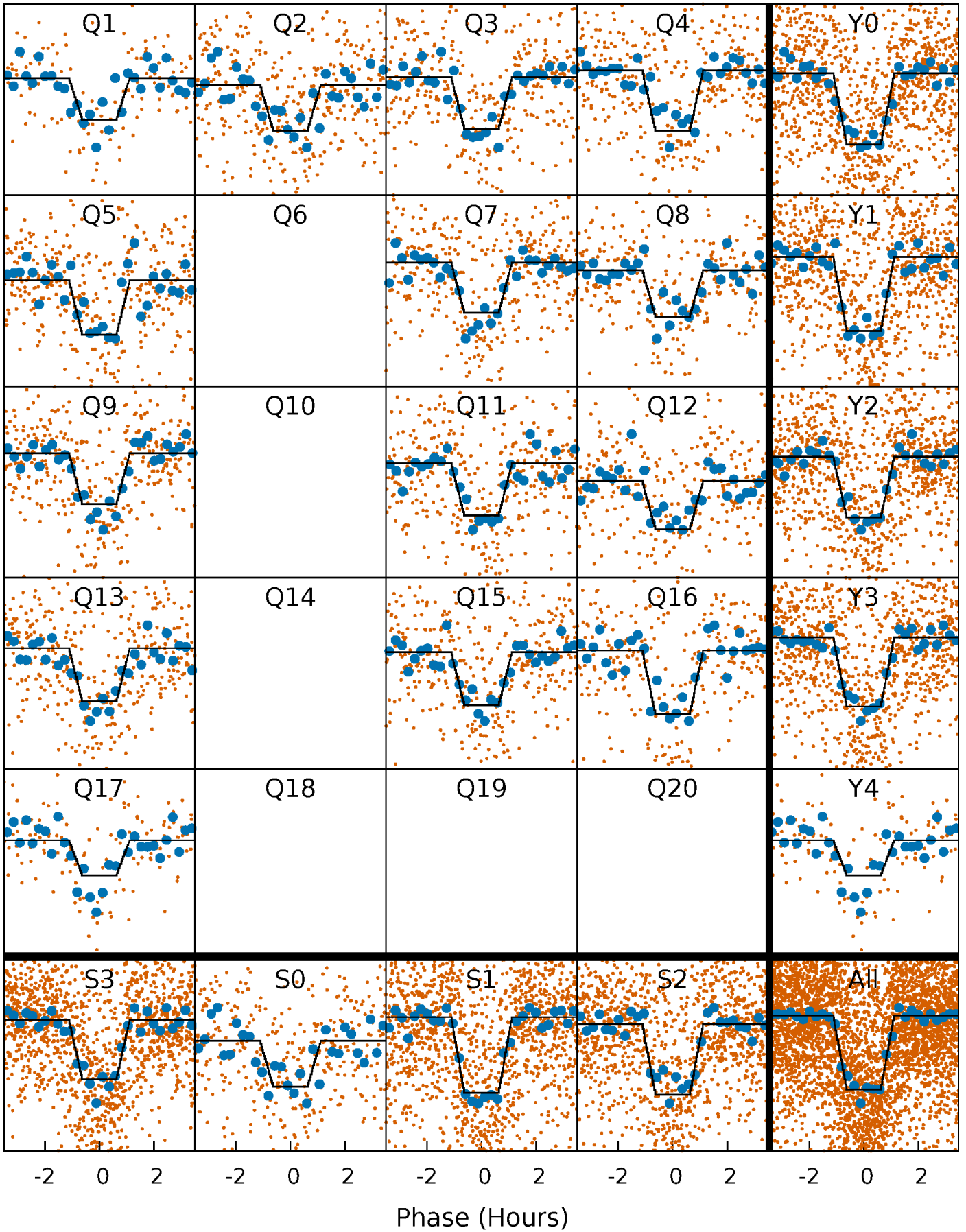
DV Quarter-Phased Transit Curves

TCE 004852528-03 P= 3.072143 Days $T_0=134.030637$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

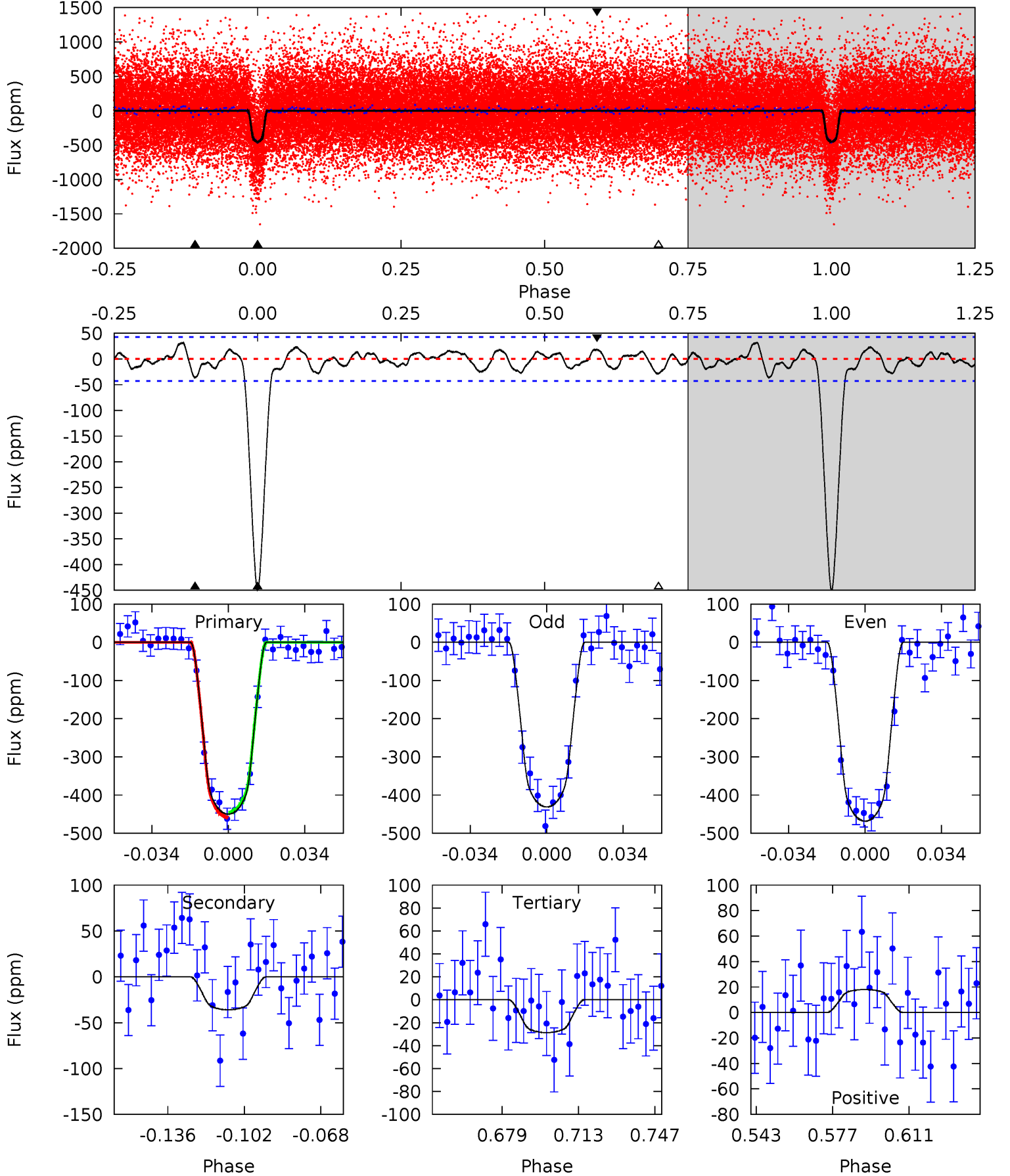
TCE 004852528-03 P= 3.072151 Days $T_0=134.028454$ (BKJD)



DV Model-Shift Uniqueness Test

004852528-03, P = 3.072143 Days, E = 130.958494 Days

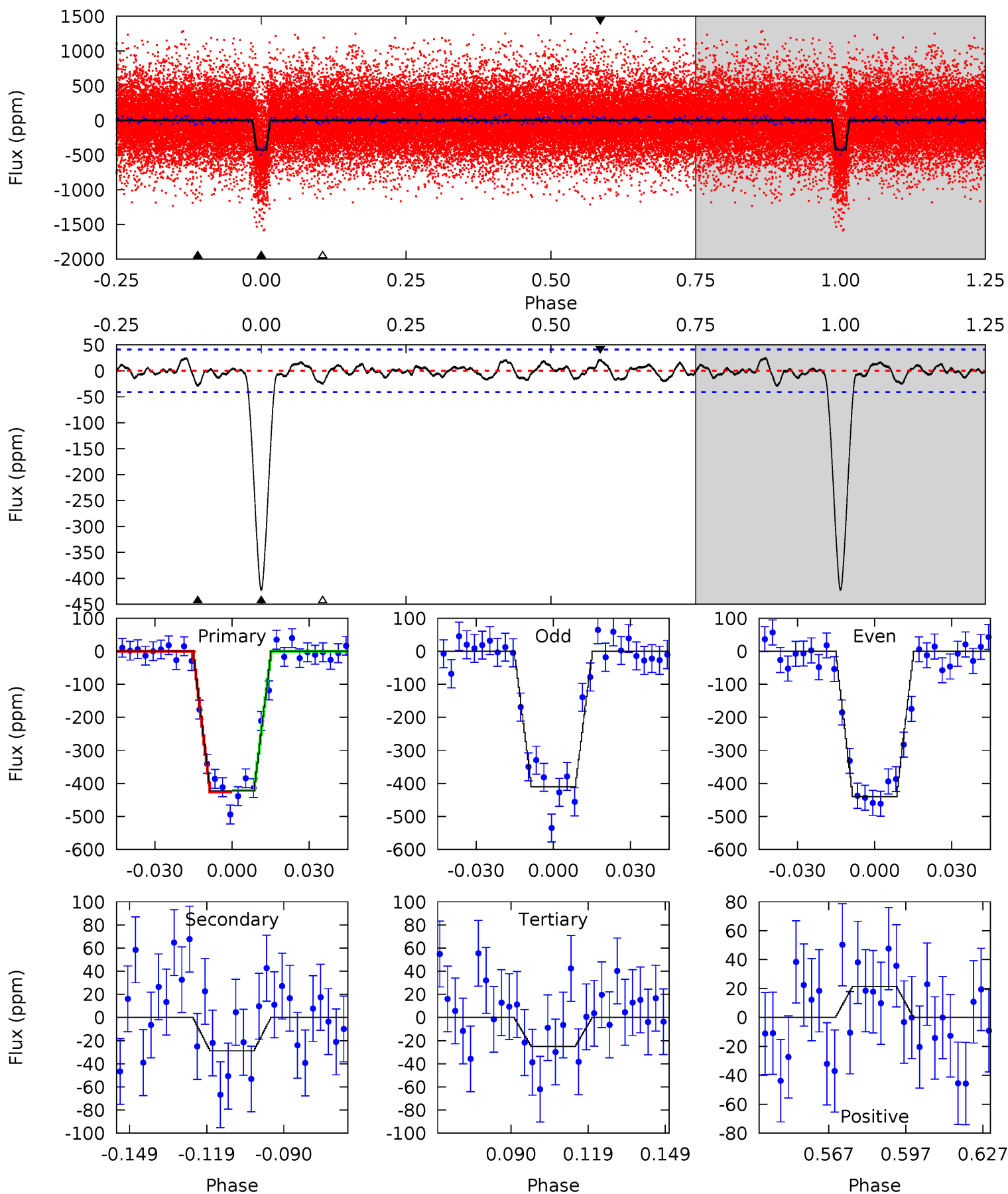
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 50.3 | 4.01 | 3.20 | 2.02 | 4.79 | 2.12 | 1.36 | 47.1 | 48.2 | 0.81 | 2.00 | 2.09 | 1.00 | 0.07 | 0.71 |



Alt Model-Shift Uniqueness Test

004852528-03, P = 3.072151 Days, E = 130.956303 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 49.3 | 3.36 | 2.93 | 2.50 | 4.81 | 2.17 | 1.08 | 46.4 | 46.8 | 0.44 | 0.86 | 1.74 | 0.96 | 0.05 | 0.31 |



Stellar Parameters For KIC 004852528

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4041^{+72}_{-88} | $4.697^{+0.024}_{-0.027}$ | $-0.140^{+0.150}_{-0.150}$ | $0.567^{+0.031}_{-0.031}$ | $0.584^{+0.029}_{-0.035}$ | $4.507^{+0.552}_{-0.492}$ |
| | +2%/-2% | +1%/-1% | +107%/-107% | +5%/-5% | +5%/-6% | +12%/-11% |
| Source | SPE5 | SPE5 | SPE5 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004852528-03 / KOI 0500.03

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|------------------|
| DV | -36 ± 9 | $1.47^{+0.23}_{-0.23}$ | 1007^{+23}_{-21} | 2662^{+146}_{-136} | 11^{+5}_{-3} |
| Alt. | -29 ± 9 | $1.25^{+0.21}_{-0.22}$ | 1010^{+21}_{-23} | 2691^{+174}_{-165} | 12^{+7}_{-4} |

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

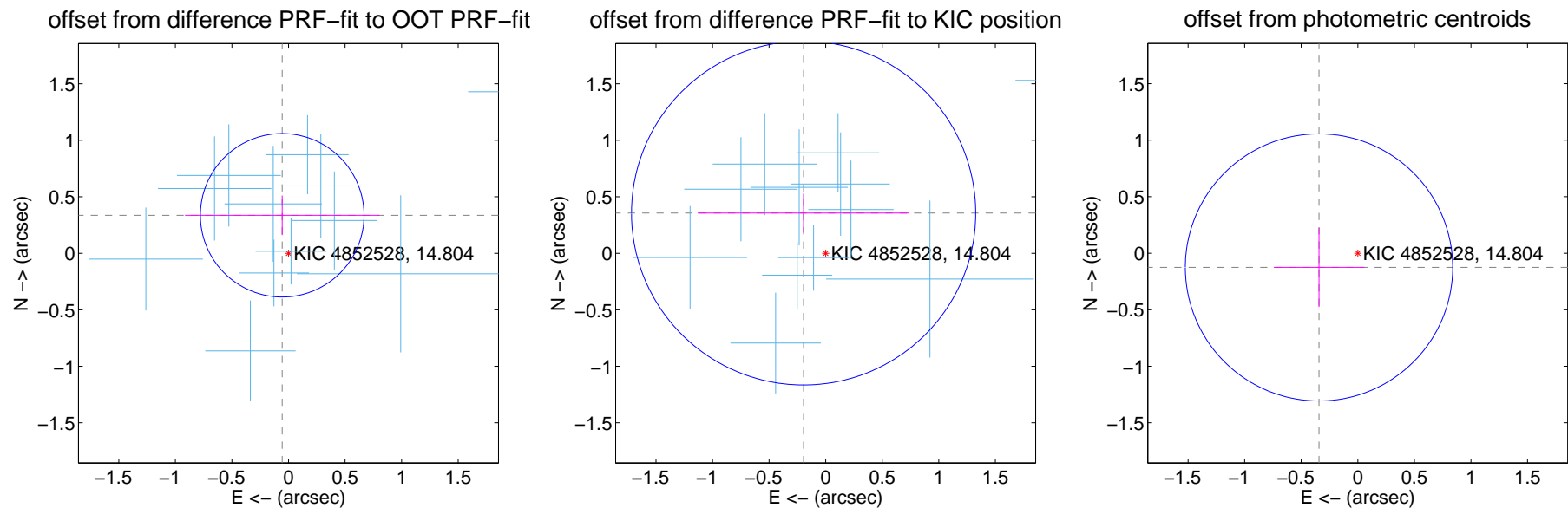
DV Centroid Data

Supplemental centroid analysis for 004852528-03. Kepler magnitude: 14.80. Transit SNR 33.69

There are 13 quarters with good PRF difference image offsets

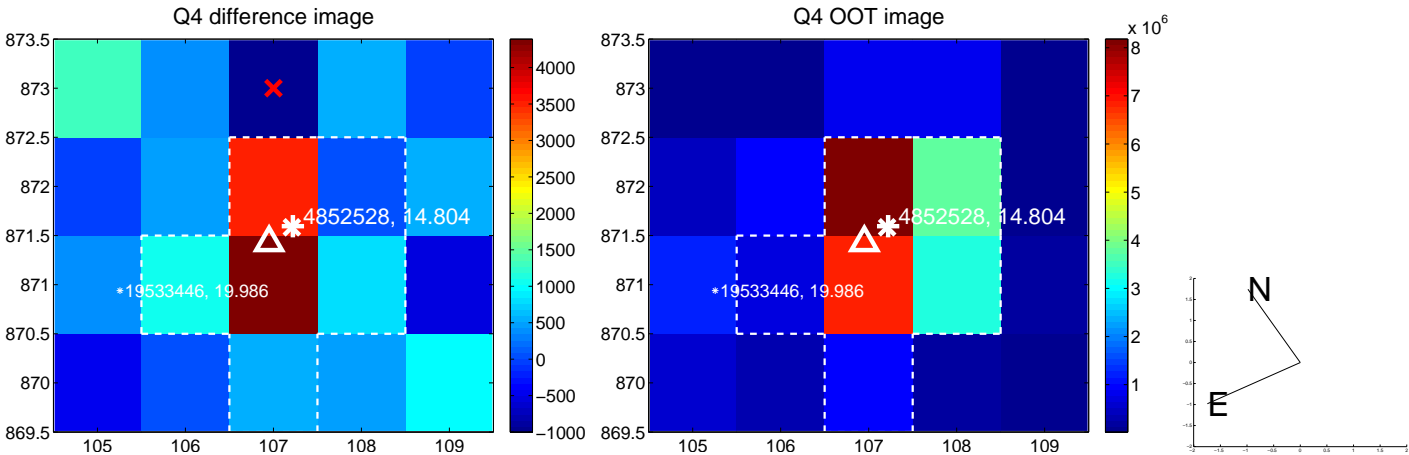
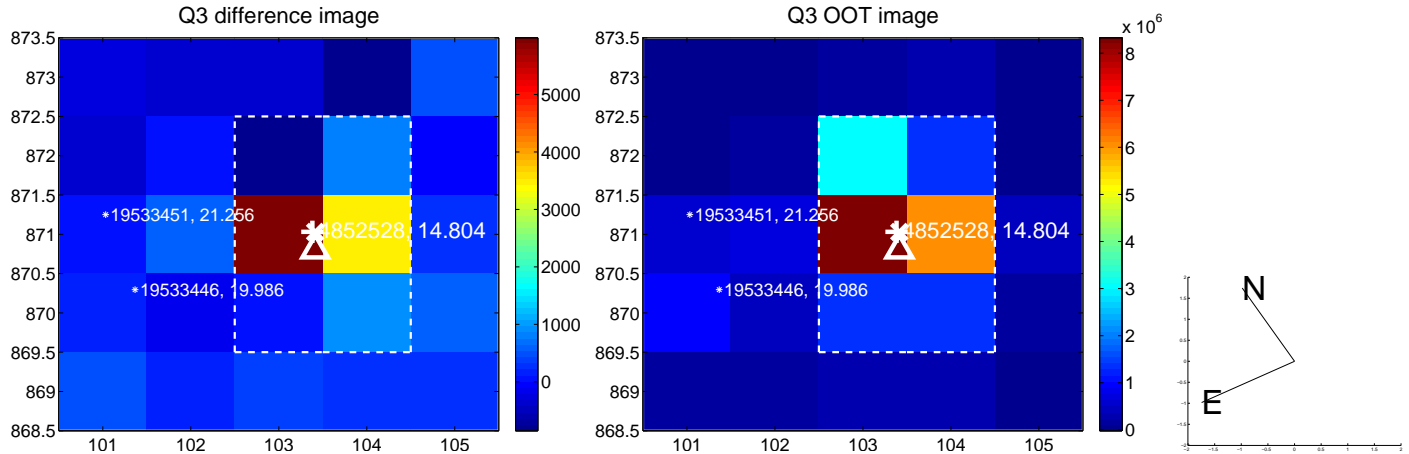
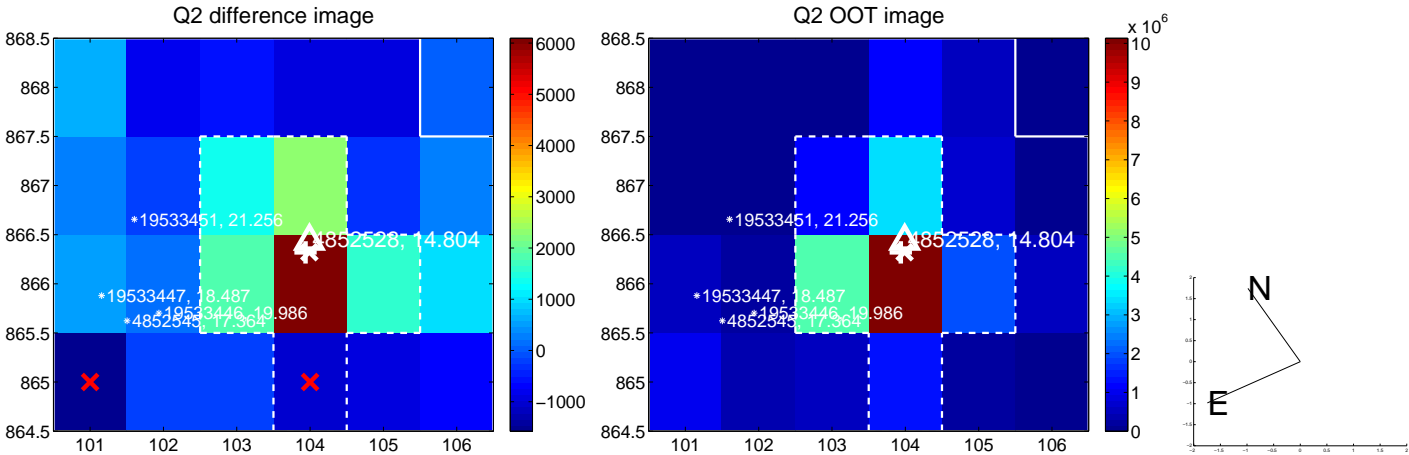
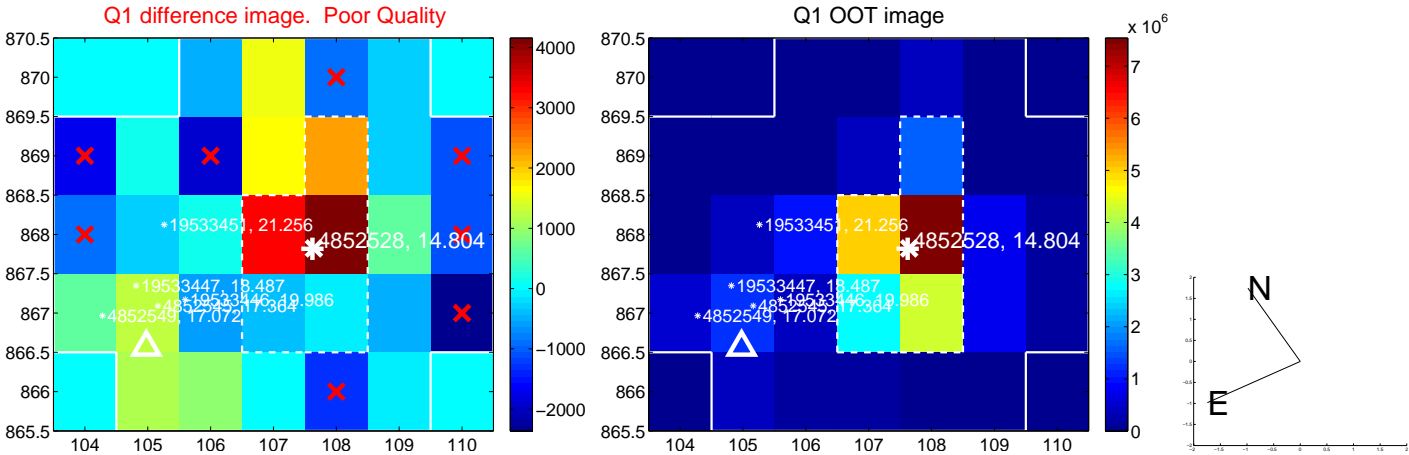
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.341 ± 0.241 | 1.41 | 0.056 ± 0.859 | 0.336 ± 0.175 |
| PRF-fit source offset from KIC position | 0.406 ± 0.507 | 0.80 | 0.195 ± 0.937 | 0.356 ± 0.173 |
| photometric centroid source offset | 0.37 ± 0.39 | 0.93 | 0.34 ± 0.40 | -0.13 ± 0.35 |

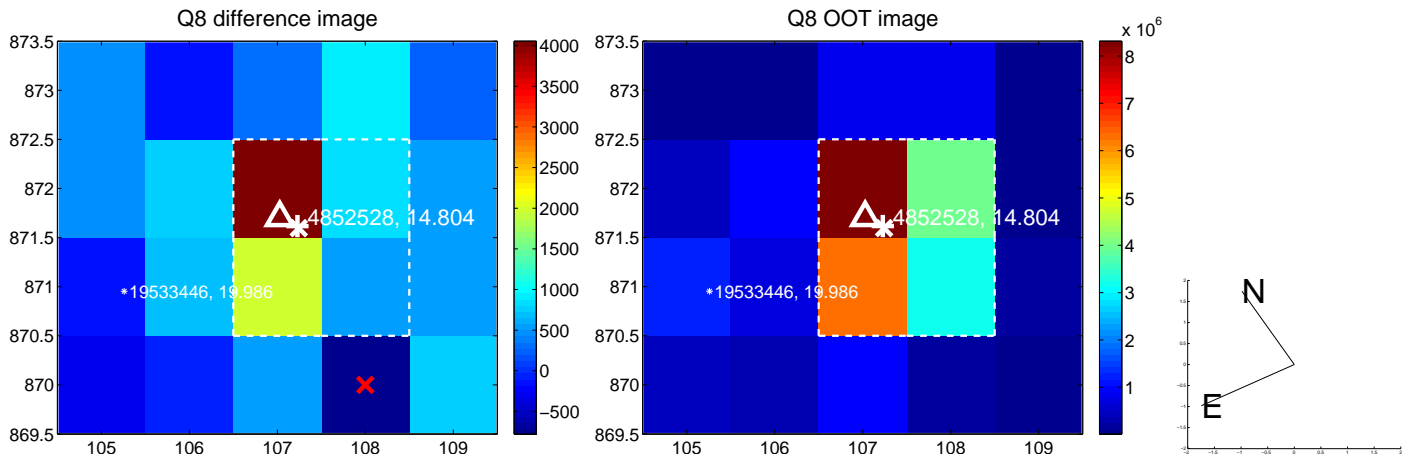
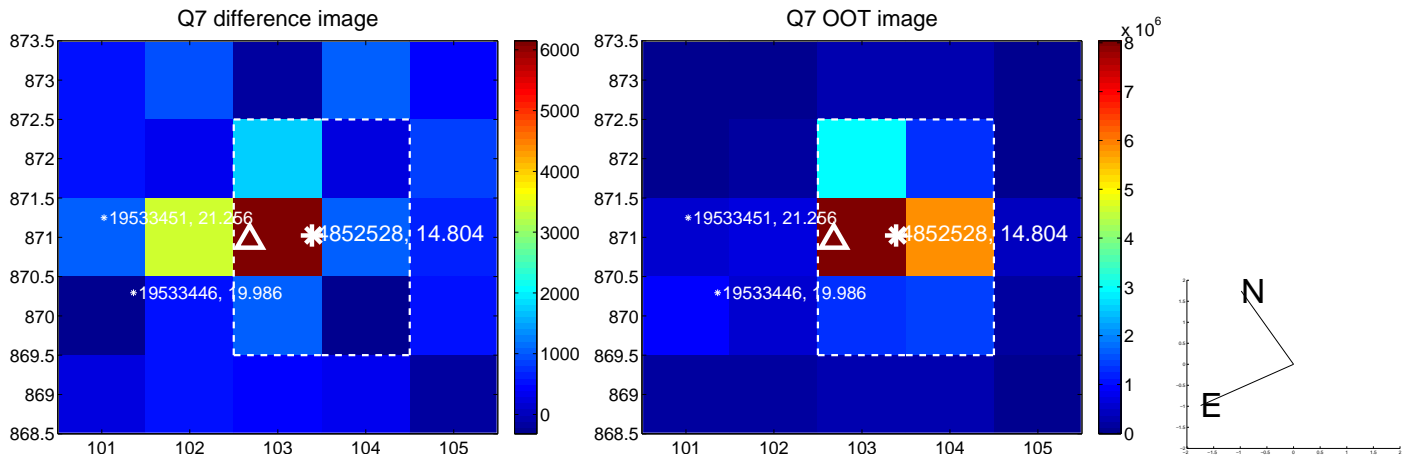
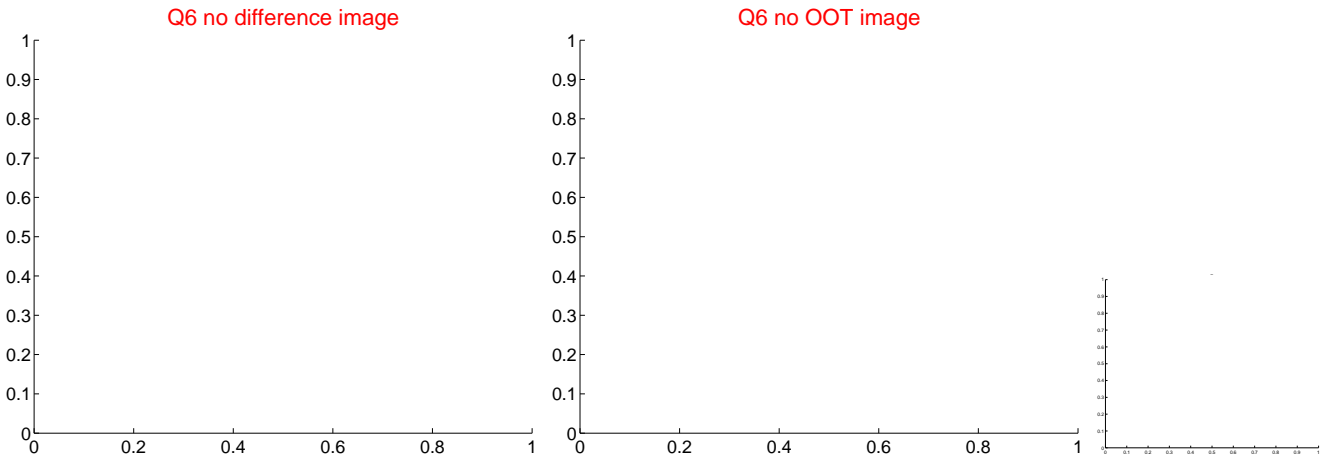
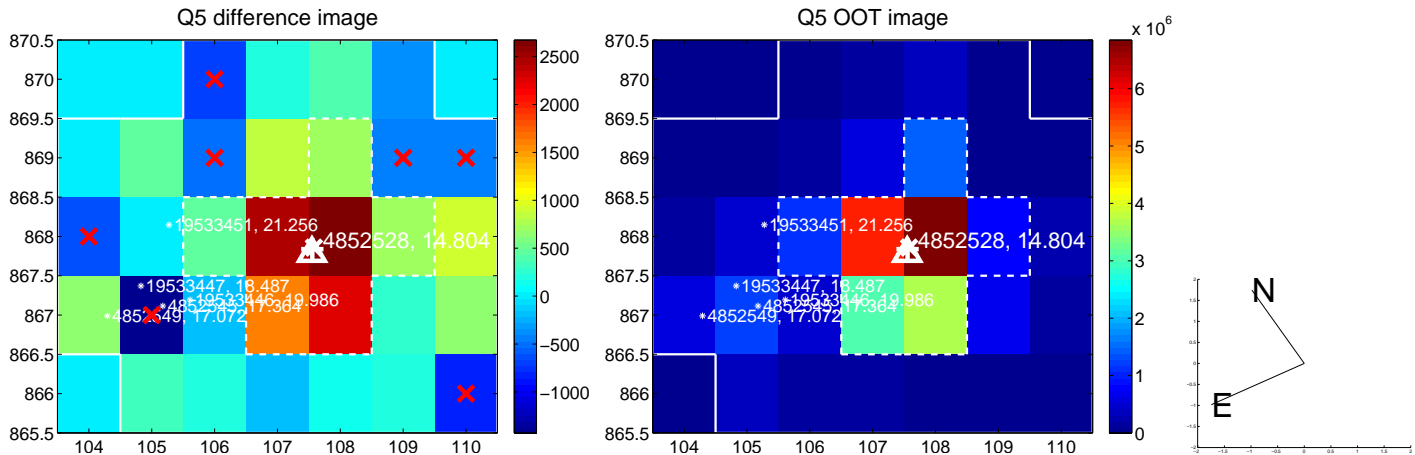


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

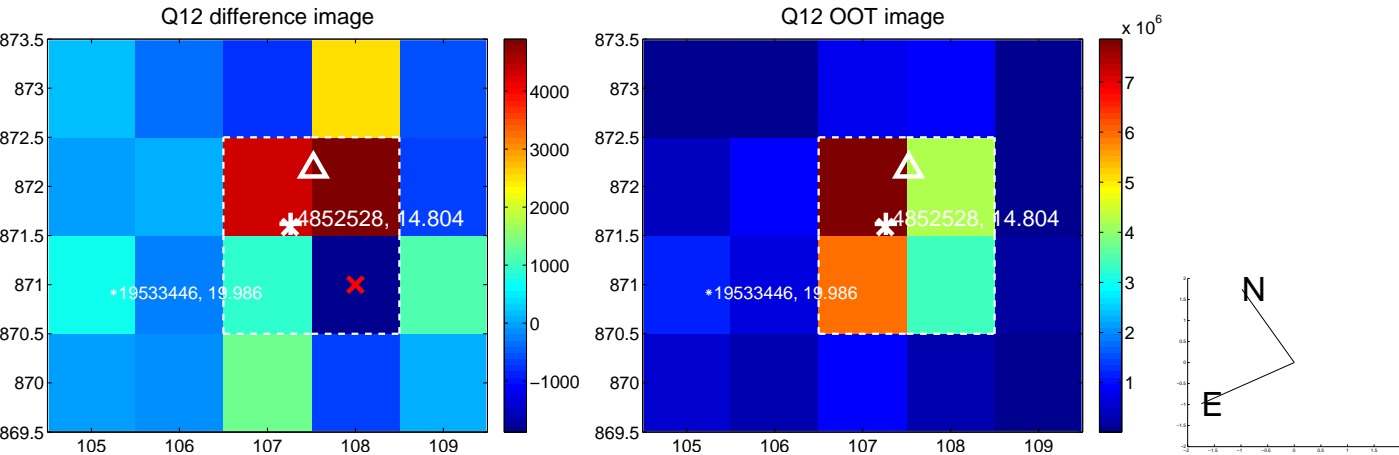
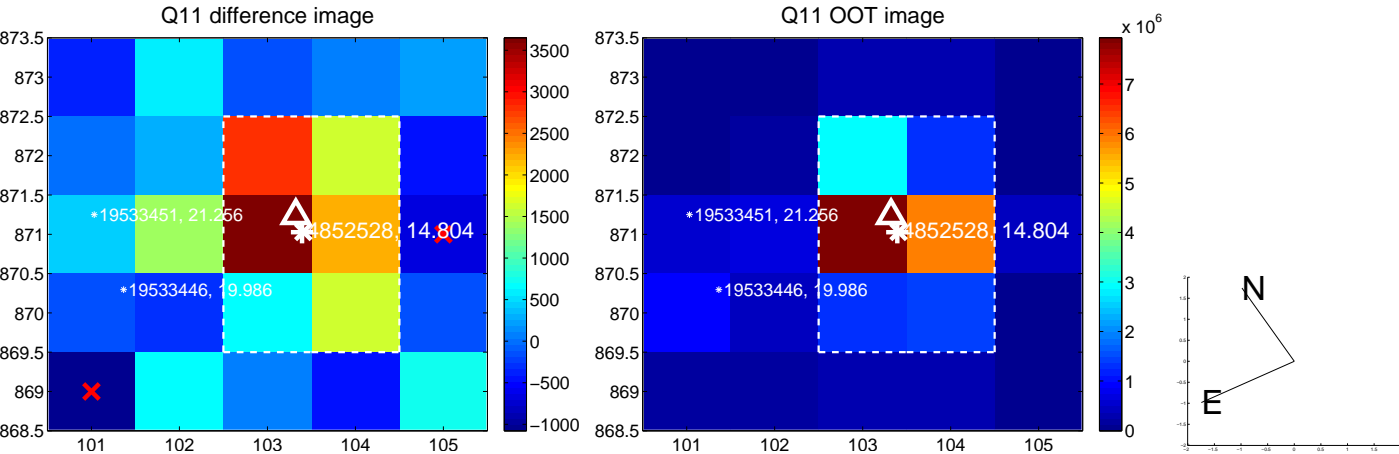
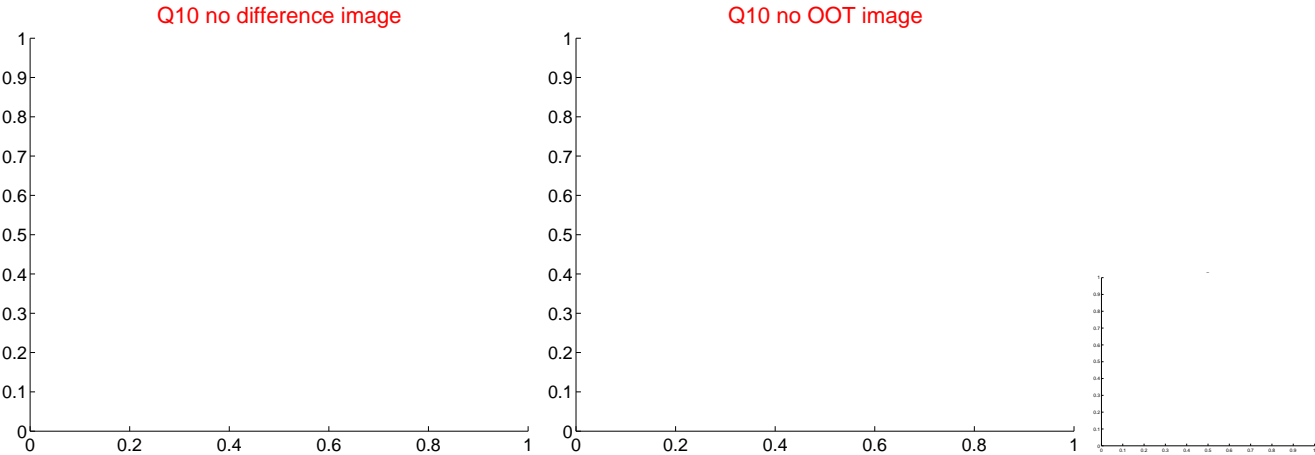
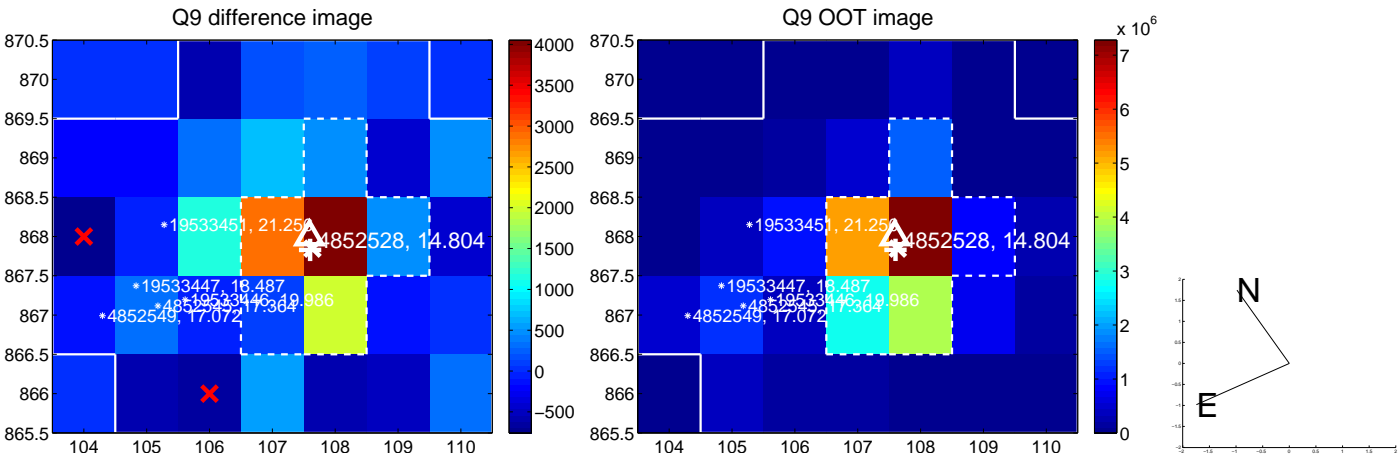
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



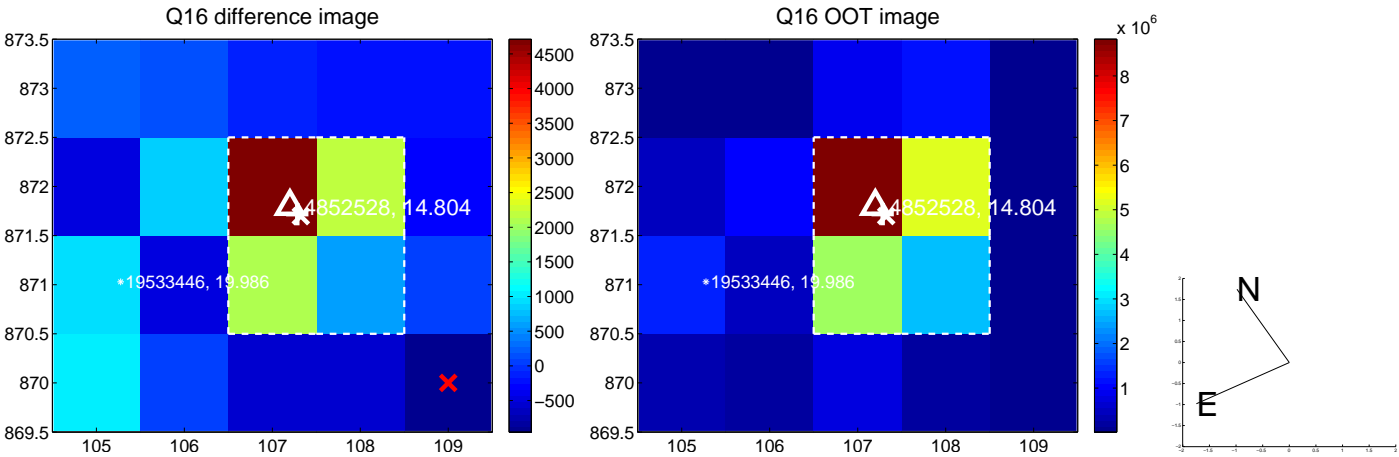
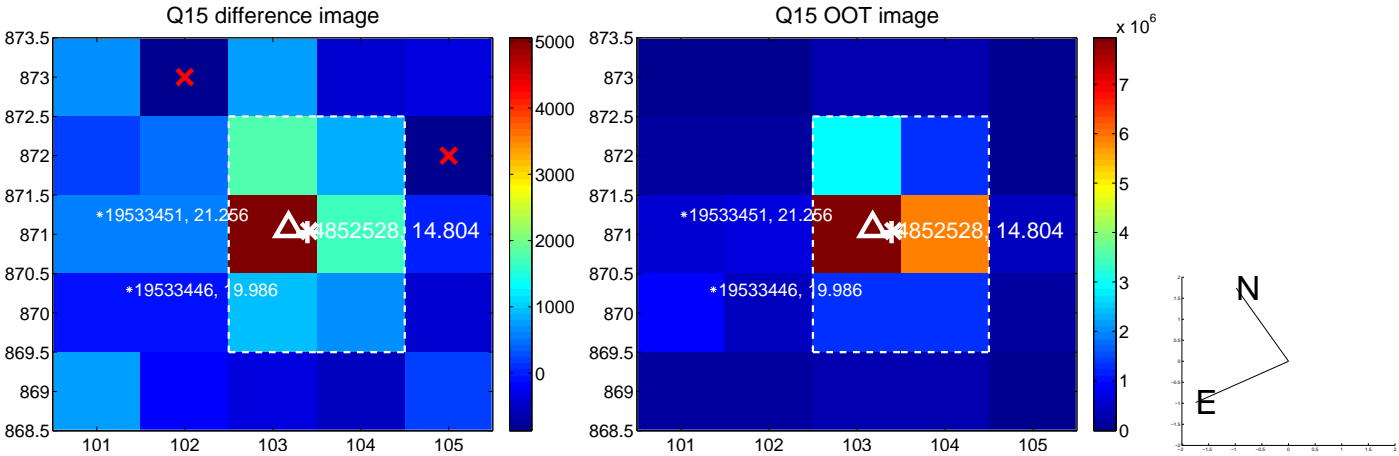
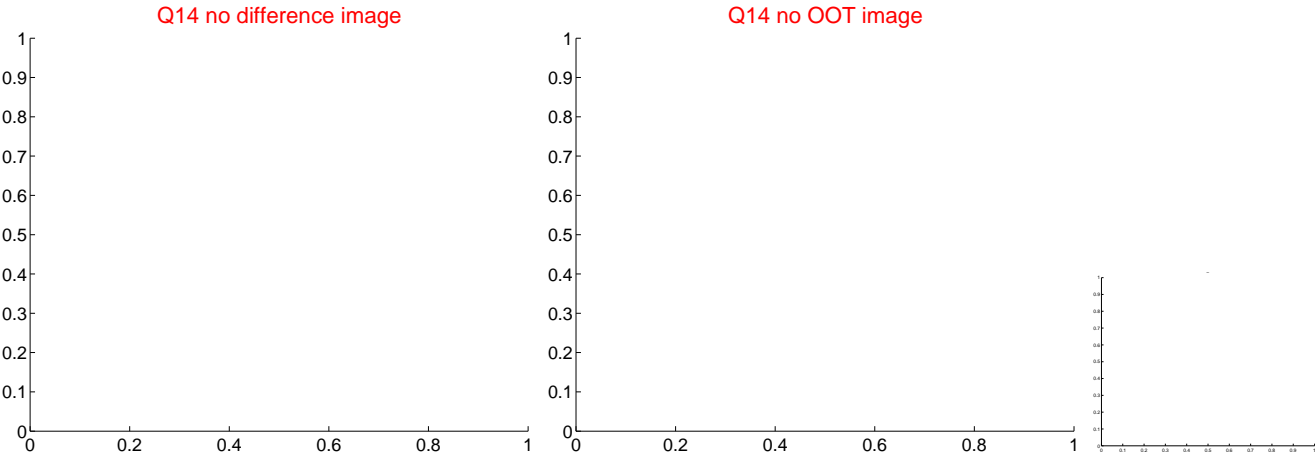
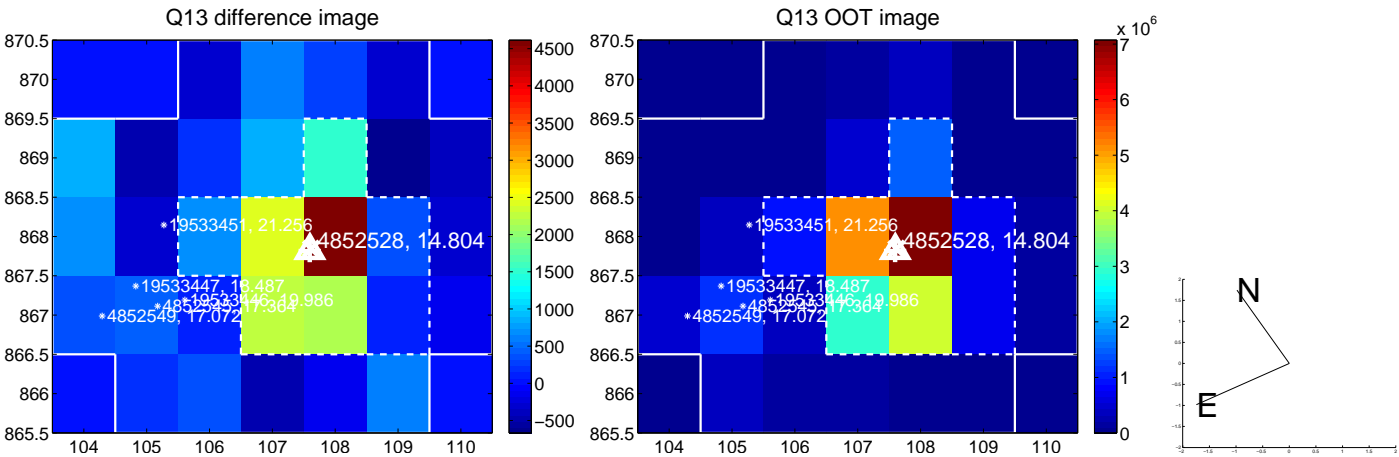
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

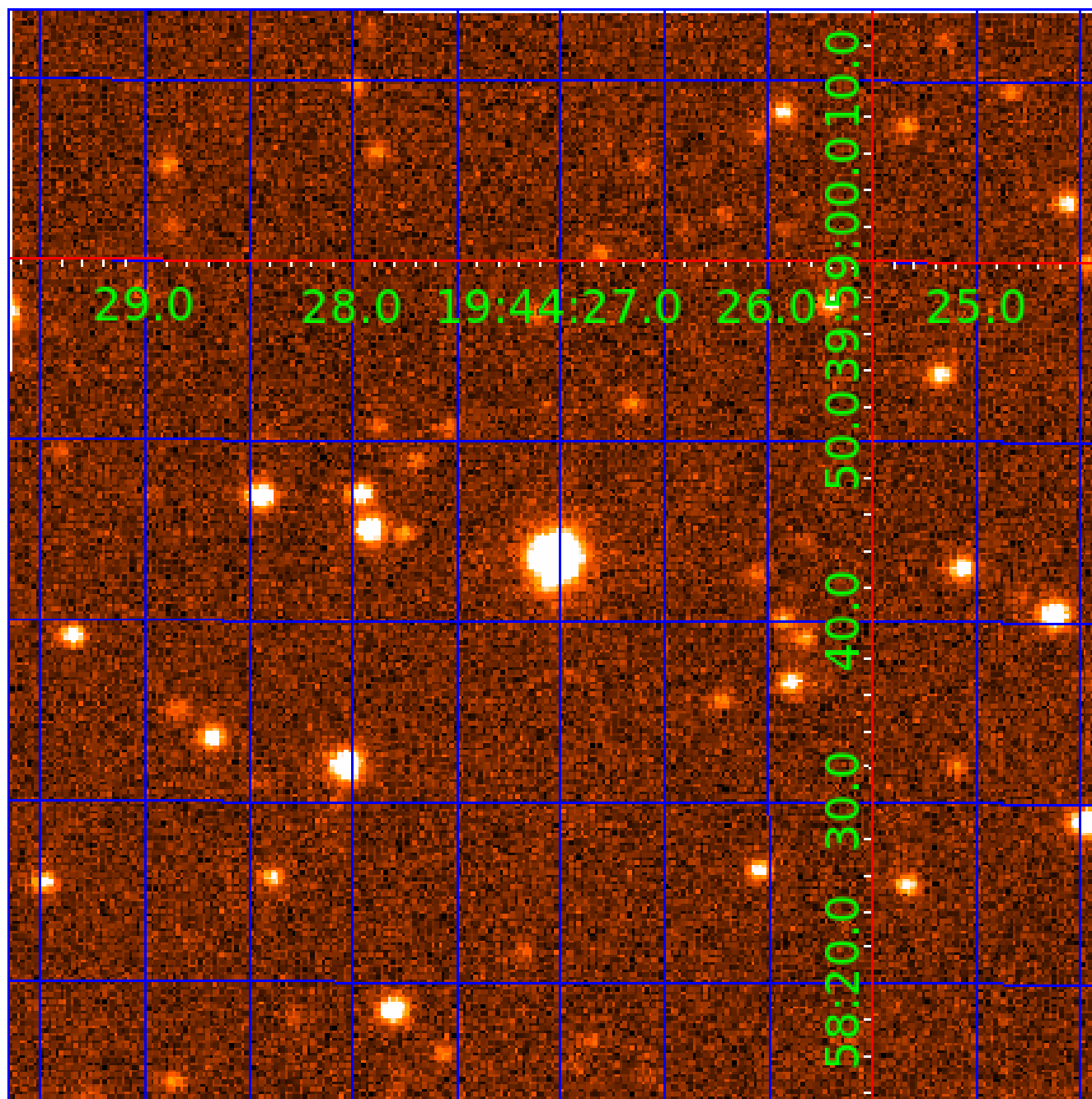


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004852528

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004852528-01 | OBS | 0500.01 | 7.053535 | 134.152337 | 1425.8 | 2.725 | 68.1 | 72.3 | 0.57 | 4041 | 2.56 | 21.22 |
| 004852528-02 | OBS | 0500.02 | 9.521646 | 139.397872 | 1445.9 | 2.624 | 57.2 | 62.2 | 0.57 | 4041 | 2.53 | 14.22 |
| 004852528-03 | OBS | 0500.03 | 3.072143 | 134.030637 | 467.5 | 2.051 | 29.7 | 33.7 | 0.57 | 4041 | 1.47 | 64.27 |
| 004852528-04 | OBS | 0500.05 | 0.986783 | 132.183270 | 225.7 | 1.506 | 26.2 | 26.2 | 0.57 | 4041 | 1.02 | 292.15 |
| 004852528-05 | OBS | 0500.04 | 4.645379 | 134.590073 | 469.8 | 2.459 | 22.8 | 25.5 | 0.57 | 4041 | 1.60 | 37.03 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 004852528-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-03 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-04 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-05 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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

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

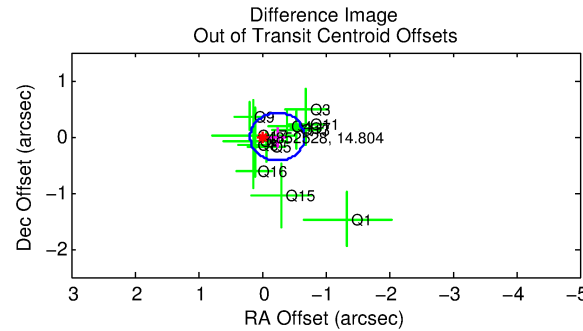
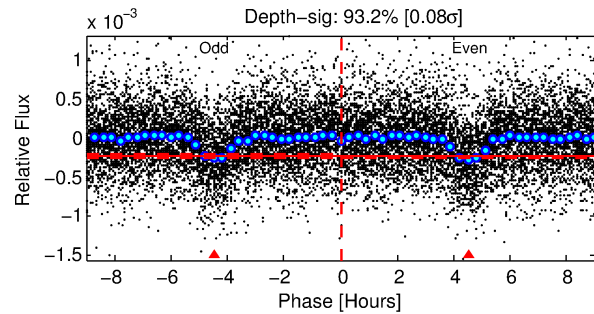
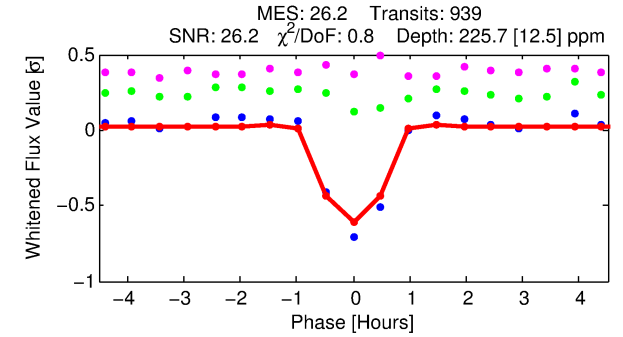
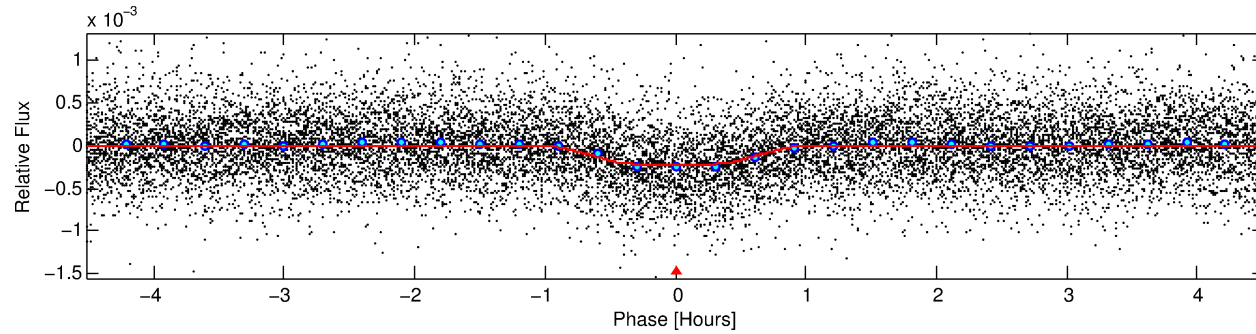
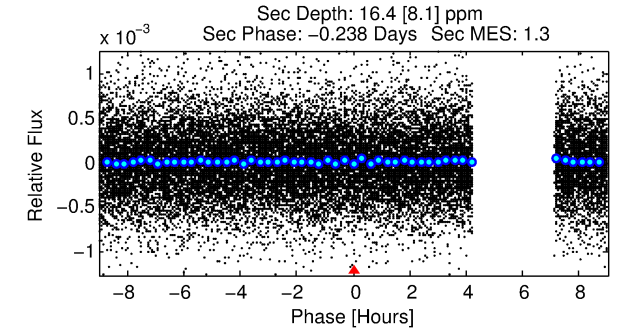
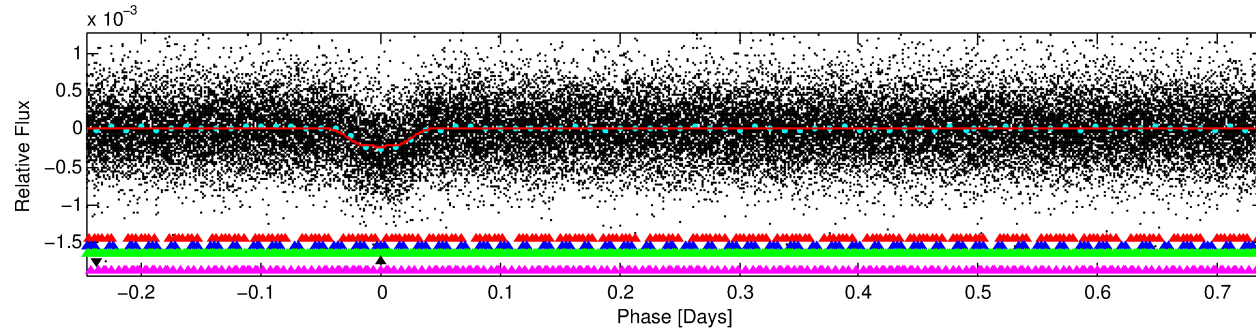
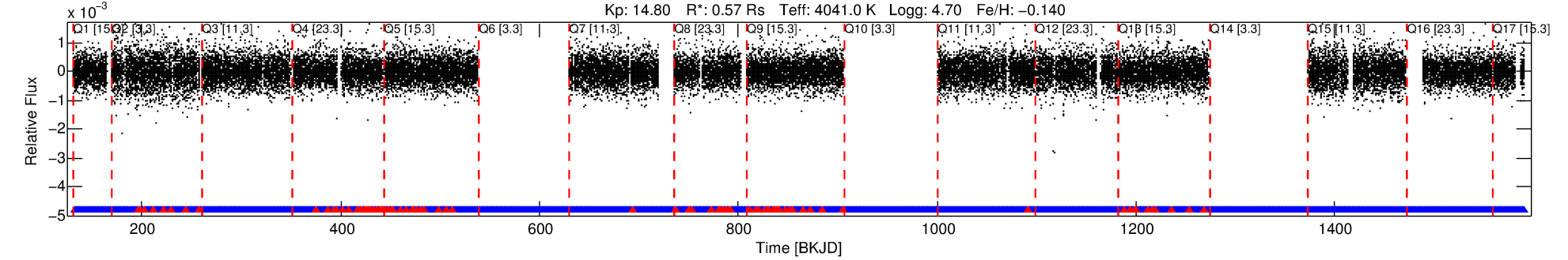
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004852528-04

No Significant Match Found

DV One-Page Summary

KIC: 4852528 Candidate: 4 of 5 Period: 0.987 d
KOI: K00500.05 Corr: 0.946



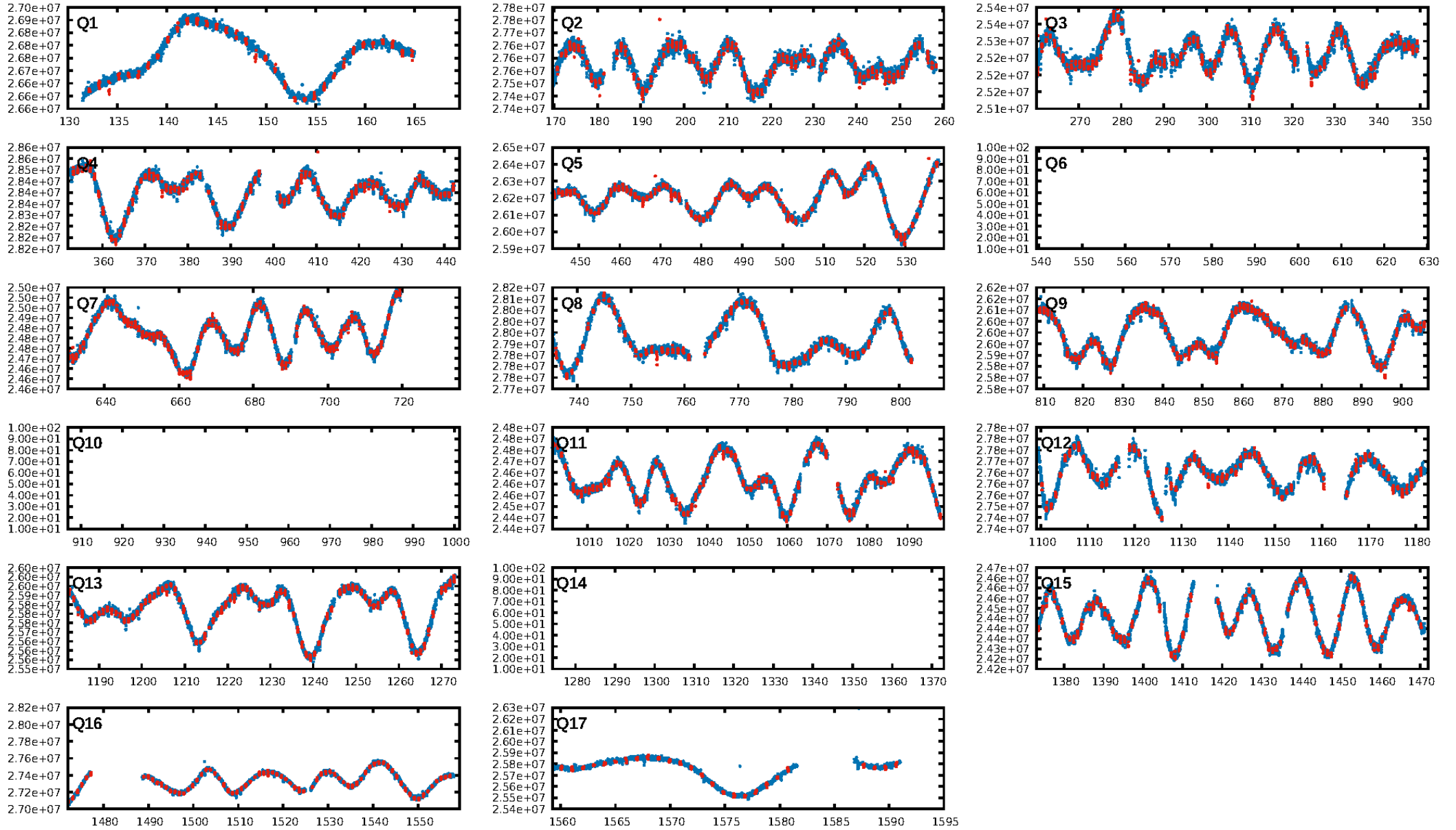
DV Fit Results:

Period = 0.98678 [0.00000] d
Epoch = 132.1833 [0.0008] BKJD
Rp/R* = 0.0166 [0.0057]
a/R* = 2.56 [3.25]
b = 0.90 [0.33]
Seff = 292.15 [30.13]
Teff = 1054 [27] K
Rp = 1.02 [0.36] Re
a = 0.0162 [0.0007] AU
Ag = 2.26 [1.92] [0.66σ]
Teffp = 1999 [426] K [2.22σ]

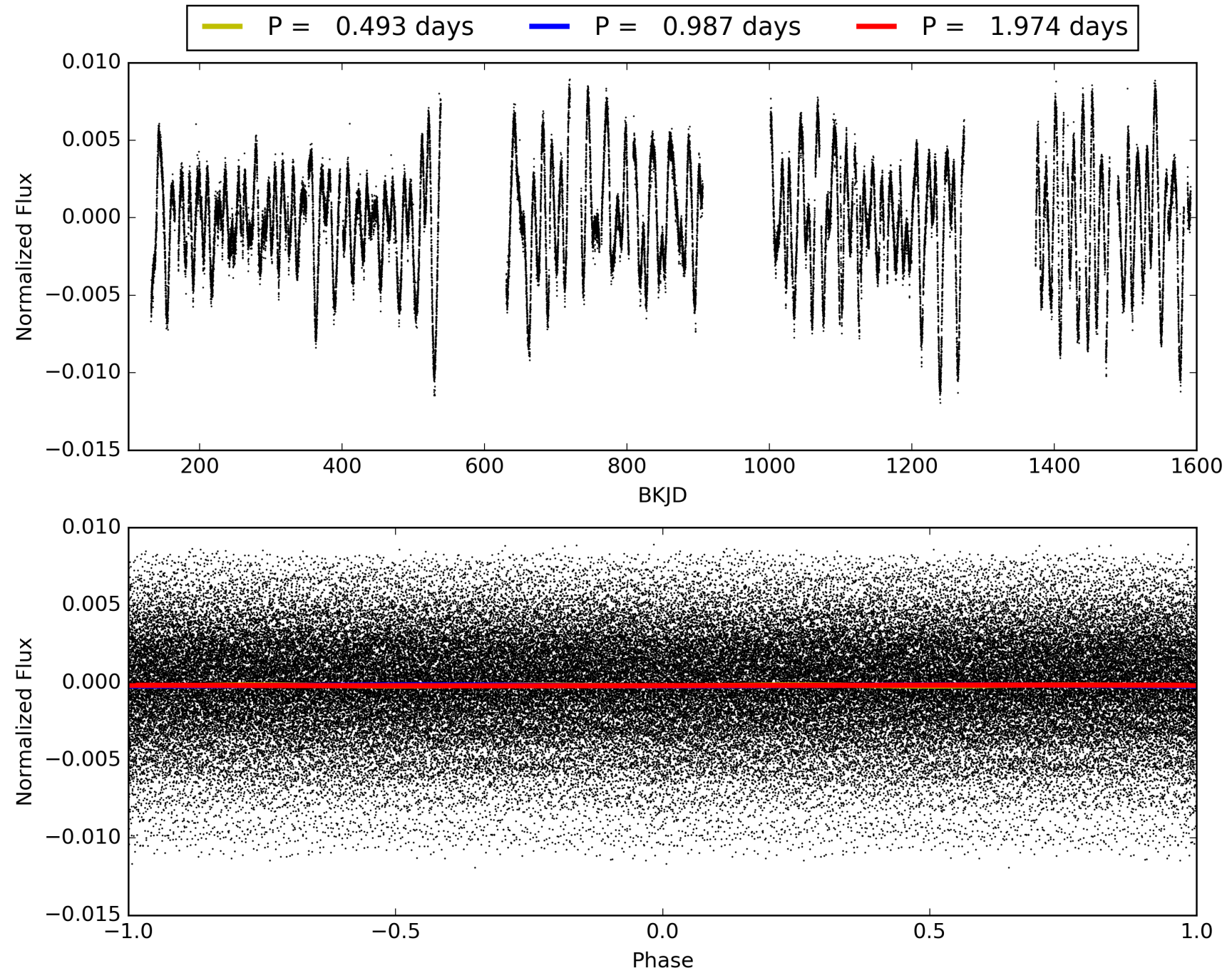
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [19.67σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.08e-144
RollingBand-fgt: 0.90 [803/888]
GhostDiagnostic-chr: 2.716
Centroid-sig: N/A
Centroid-so: 0.422 arcsec [0.81σ]
OotOffset-rm: 0.240 arcsec [1.69σ]
KicOffset-rm: 0.175 arcsec [1.21σ]
OotOffset-st: 1/4/3/5 [13]
KicOffset-st: 1/4/3/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004852528-04, PDC Light Curves

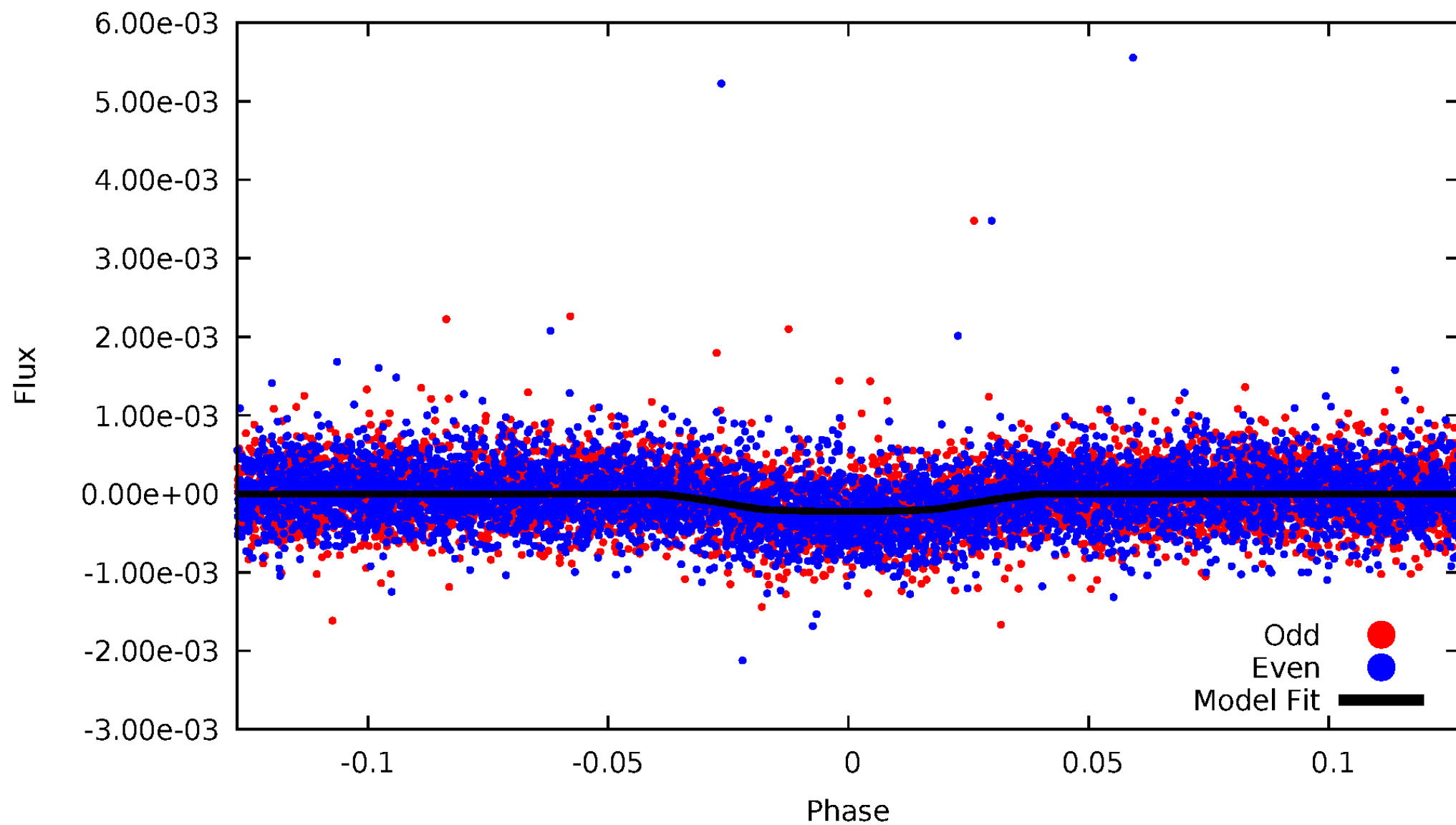


TCE 004852528-04



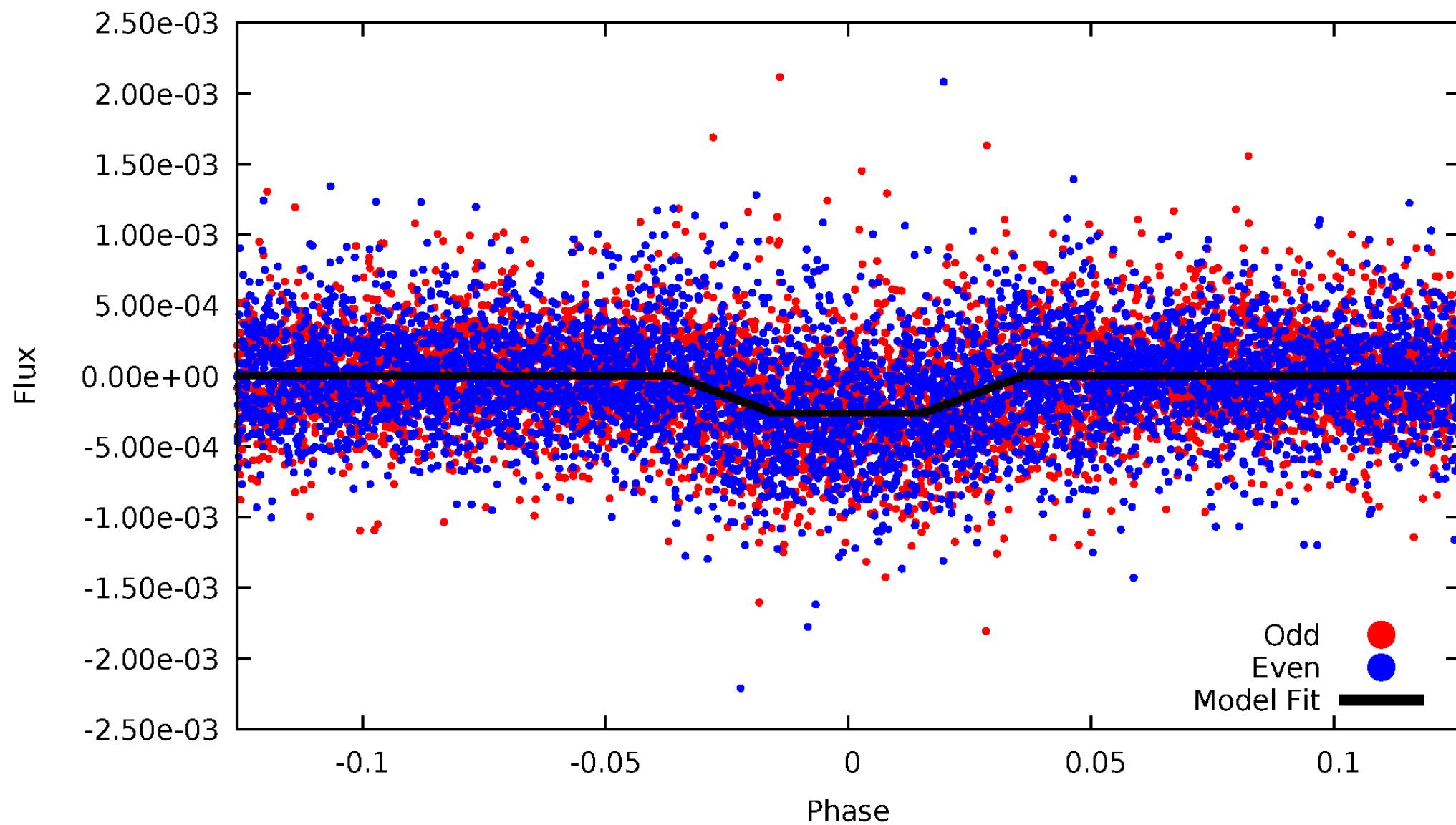
DV Odd/Even

TCE 004852528-04



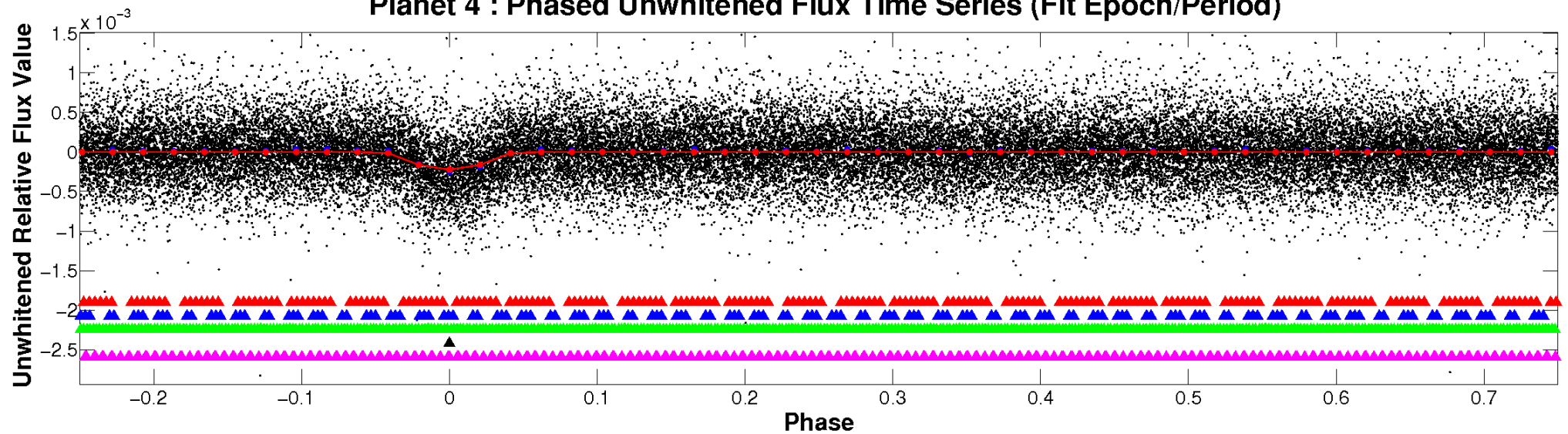
ALT Odd/Even

TCE 004852528-04

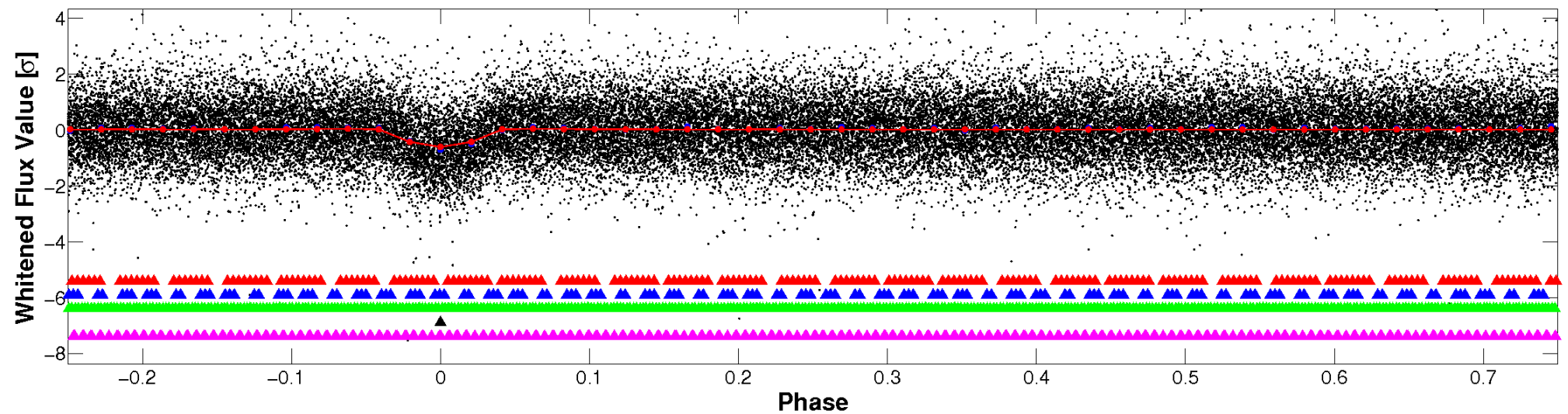


Non-Whitened Vs. Whitened Light Curve

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

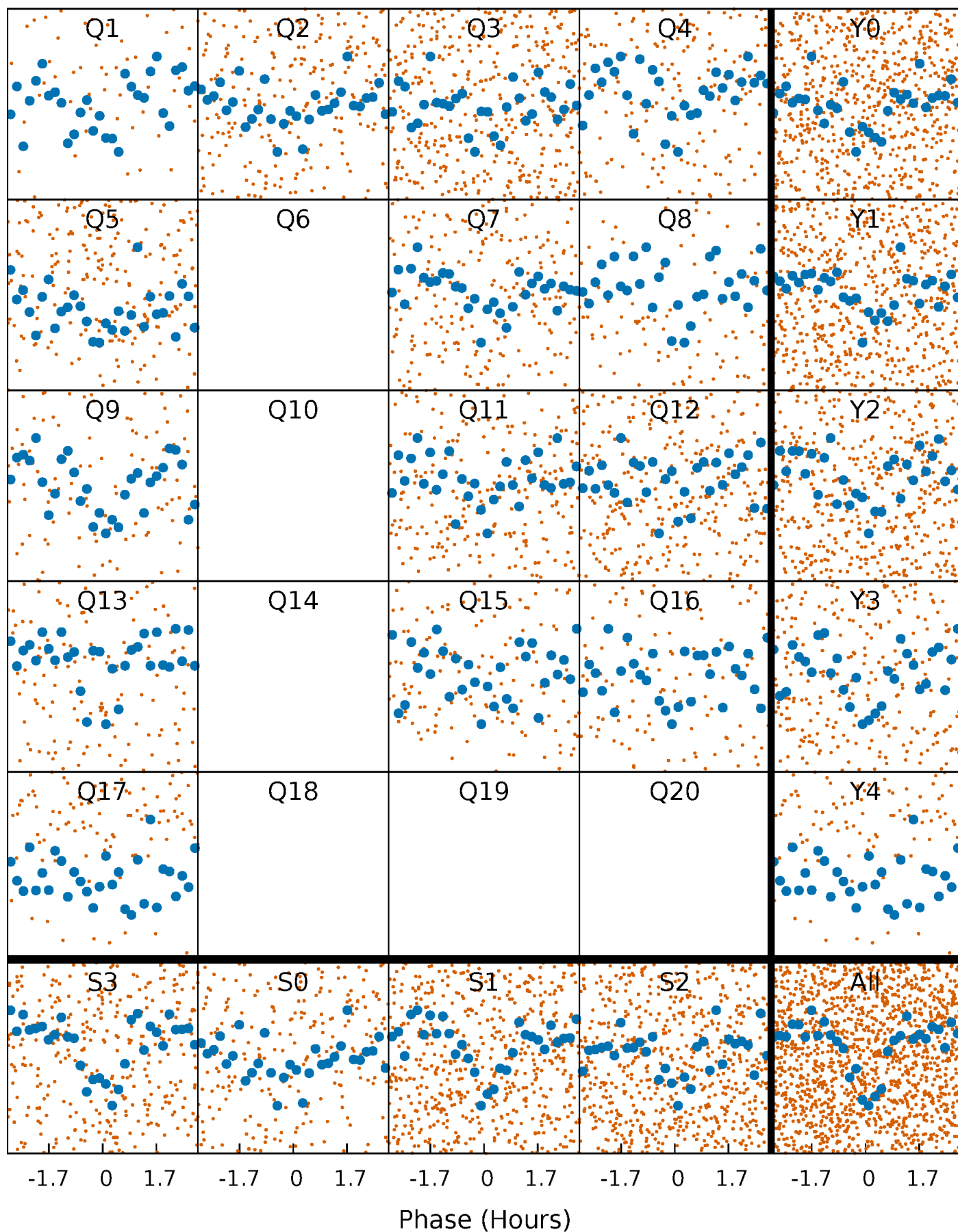


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



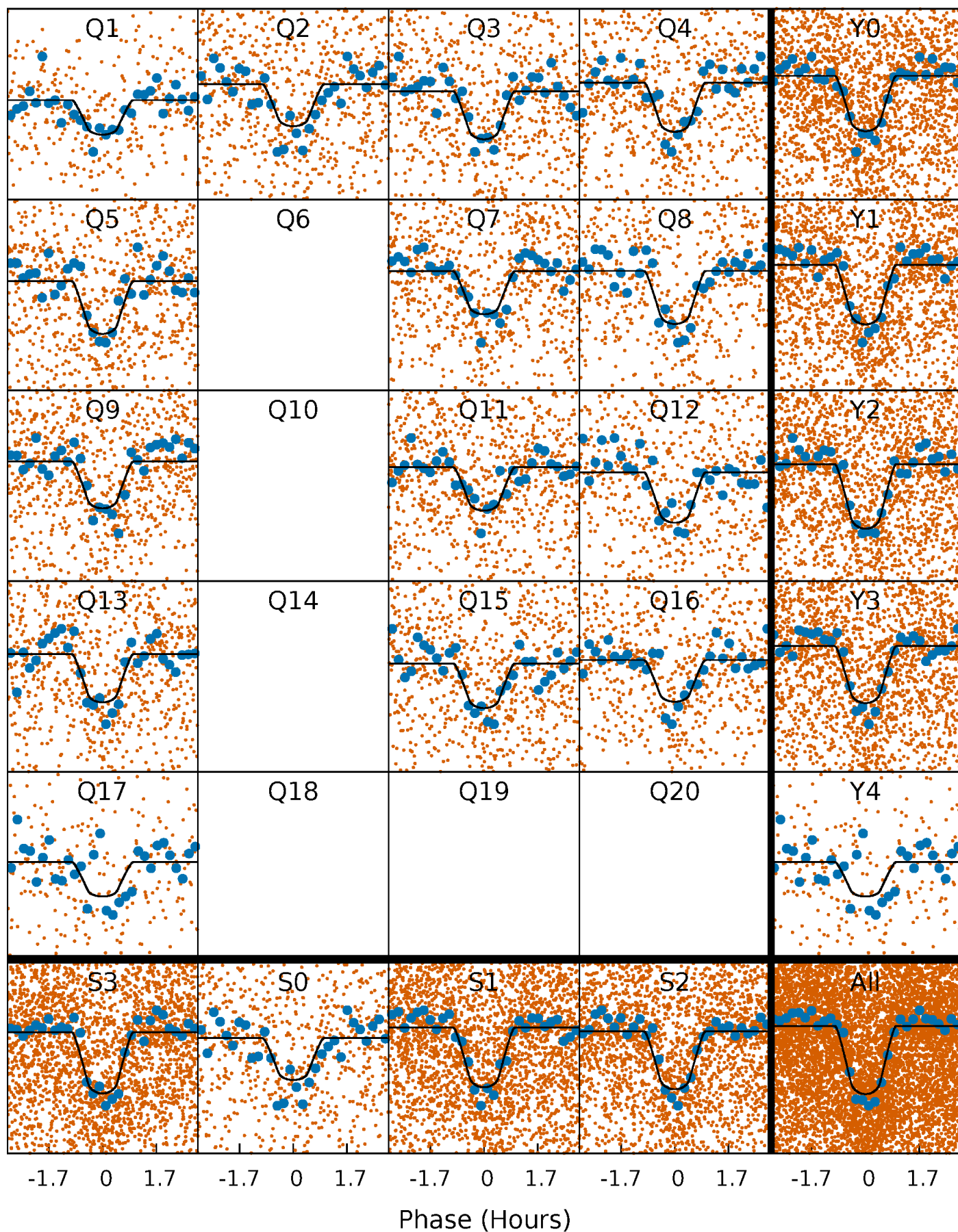
PDC Quarter-Phased Transit Curves

TCE 004852528-04 P= 0.986783 Days $T_0=132.183270$ (BKJD)



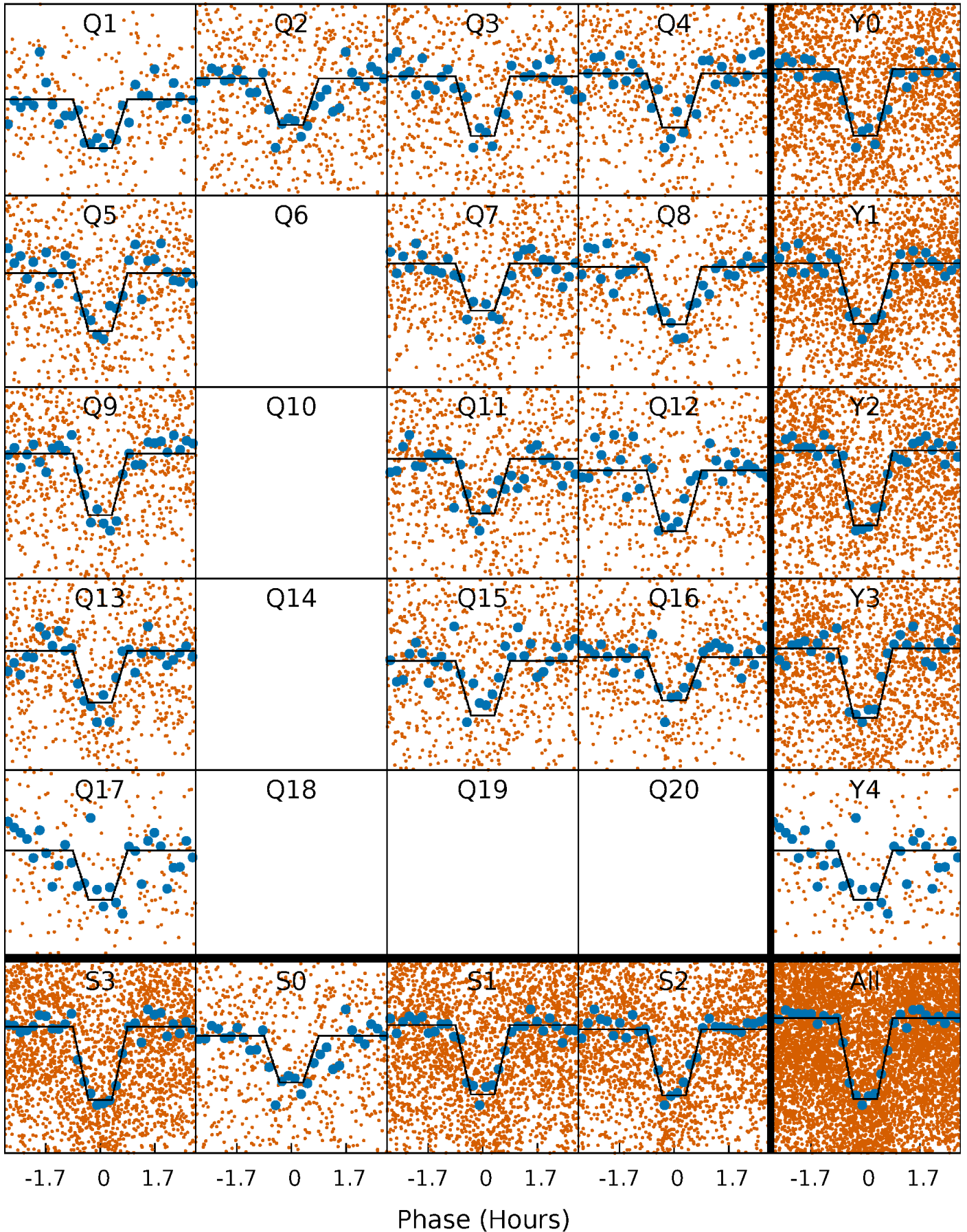
DV Quarter-Phased Transit Curves

TCE 004852528-04 $P = 0.986783$ Days $T_0 = 132.183270$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

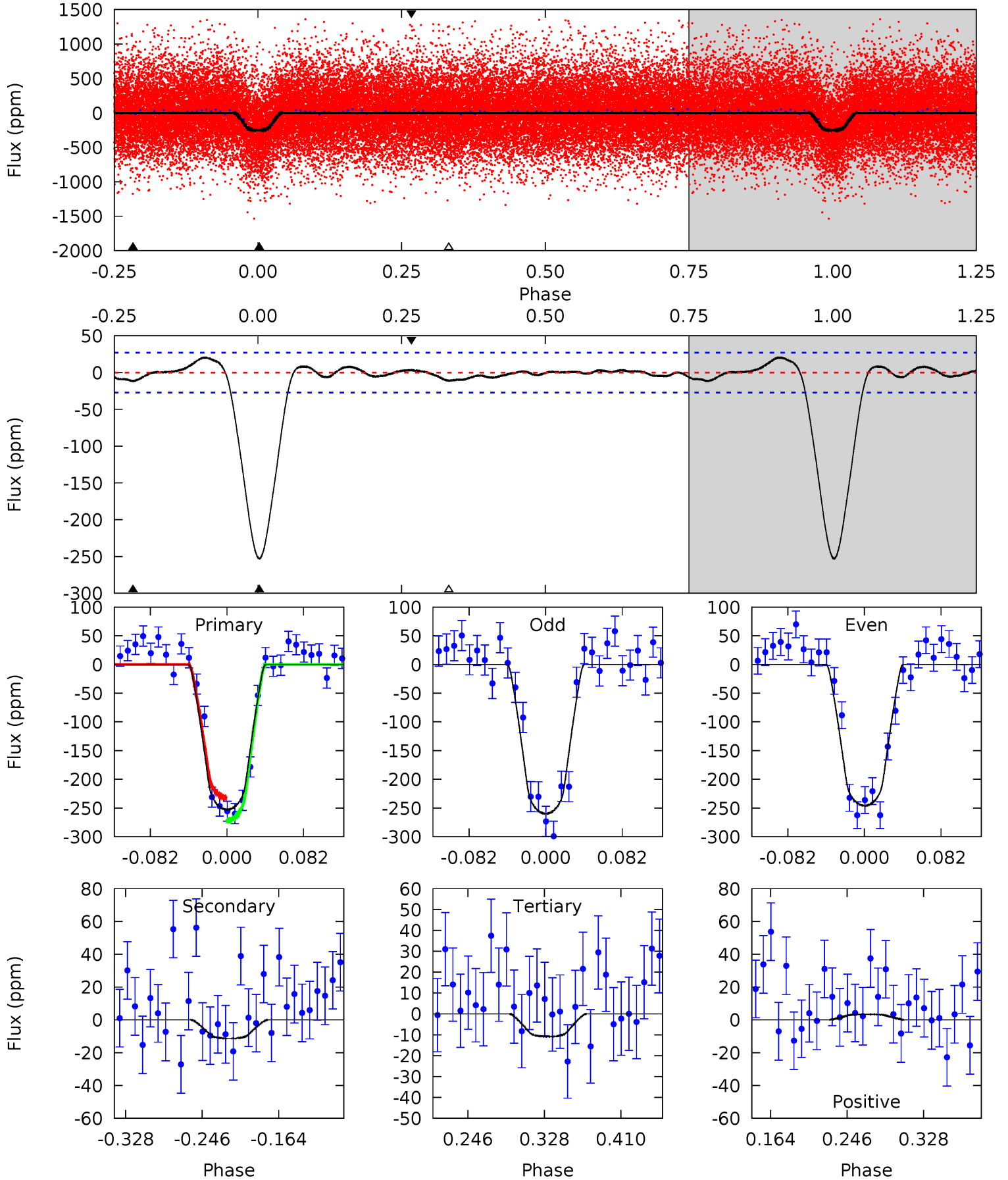
TCE 004852528-04 $P = 0.986787$ Days $T_0 = 132.183267$ (BKJD)



DV Model-Shift Uniqueness Test

004852528-04, P = 0.986783 Days, E = 131.196487 Days

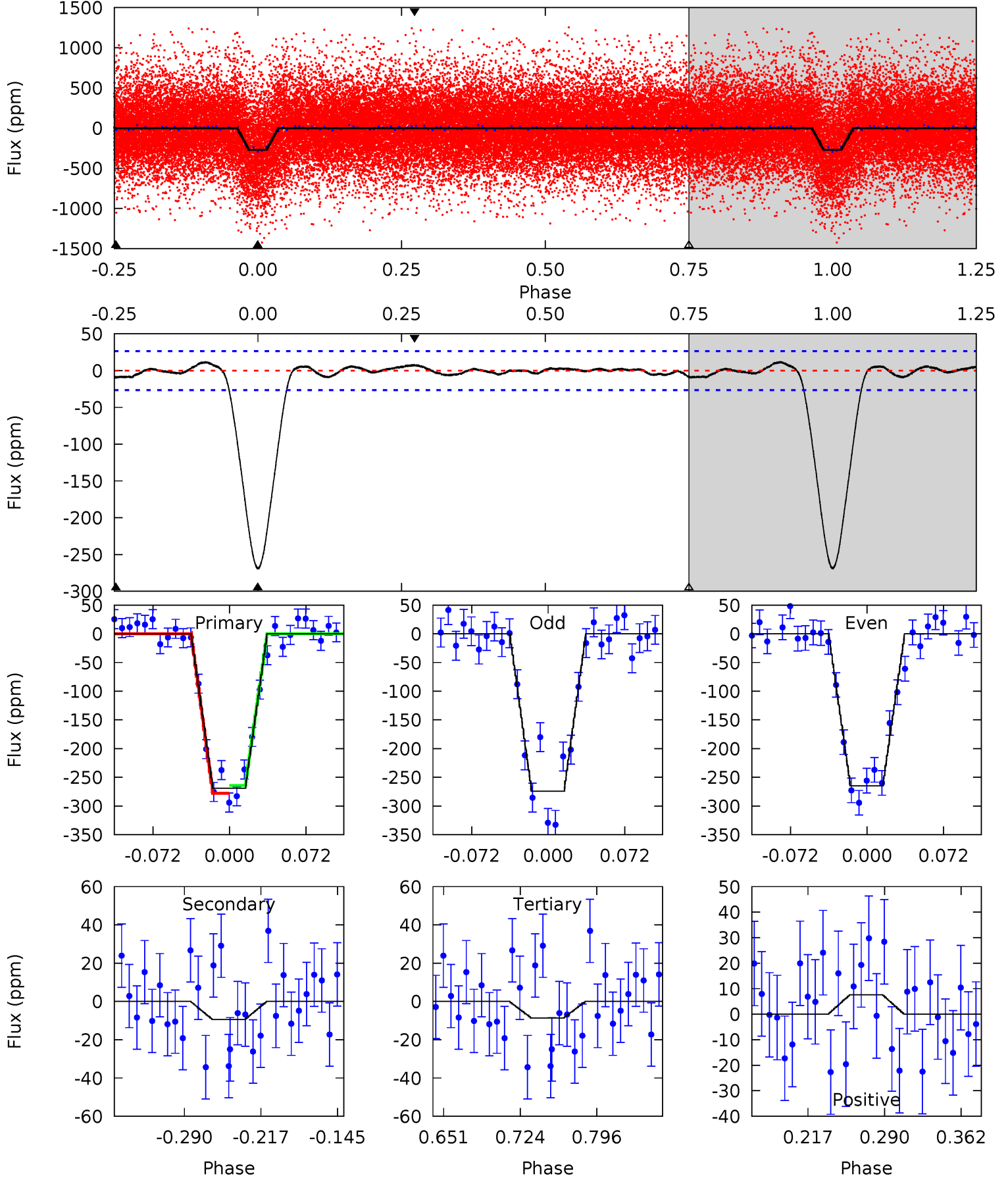
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 43.0 | 1.94 | 1.86 | 0.58 | 4.61 | 1.74 | 0.99 | 41.1 | 42.4 | 0.08 | 1.36 | 1.18 | 0.98 | 0.07 | 3.39 |



Alt Model-Shift Uniqueness Test

004852528-04, P = 0.986787 Days, E = 131.196480 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 47.0 | 1.64 | 1.50 | 1.33 | 4.63 | 1.80 | 0.70 | 45.5 | 45.6 | 0.15 | 0.31 | 0.83 | 0.93 | 0.04 | 1.20 |



Stellar Parameters For KIC 004852528

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4041^{+72}_{-88} | $4.697^{+0.024}_{-0.027}$ | $-0.140^{+0.150}_{-0.150}$ | $0.567^{+0.031}_{-0.031}$ | $0.584^{+0.029}_{-0.035}$ | $4.507^{+0.552}_{-0.492}$ |
| | +2%/-2% | +1%/-1% | +107%/-107% | +5%/-5% | +5%/-6% | +12%/-11% |
| Source | SPE5 | SPE5 | SPE5 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004852528-04 / KOI 0500.05

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -11 ± 6 | $1.04^{+0.39}_{-0.37}$ | 1472^{+30}_{-32} | 2456^{+356}_{-413} | $1.531^{+2.371}_{-0.988}$ |
| Alt. | -9 ± 6 | $0.99^{+0.36}_{-0.35}$ | 1475^{+30}_{-36} | 2380^{+399}_{-425} | $1.235^{+2.278}_{-0.789}$ |

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

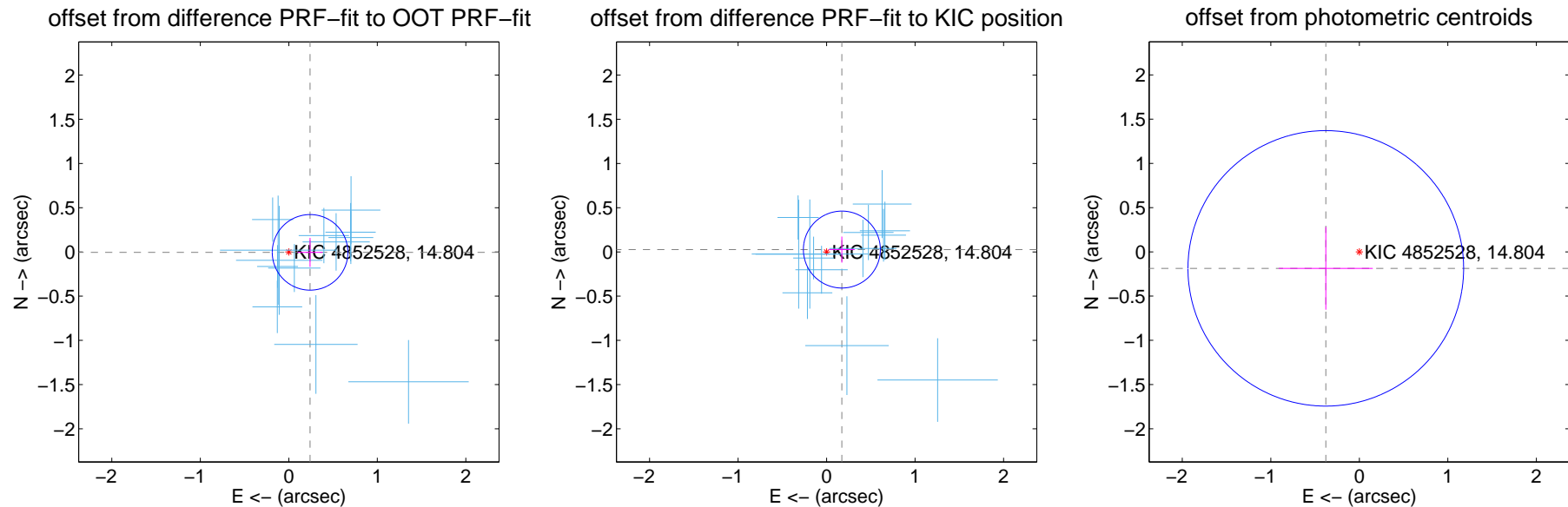
DV Centroid Data

Supplemental centroid analysis for 004852528-04. Kepler magnitude: 14.80. Transit SNR 26.18

There are 13 quarters with good PRF difference image offsets

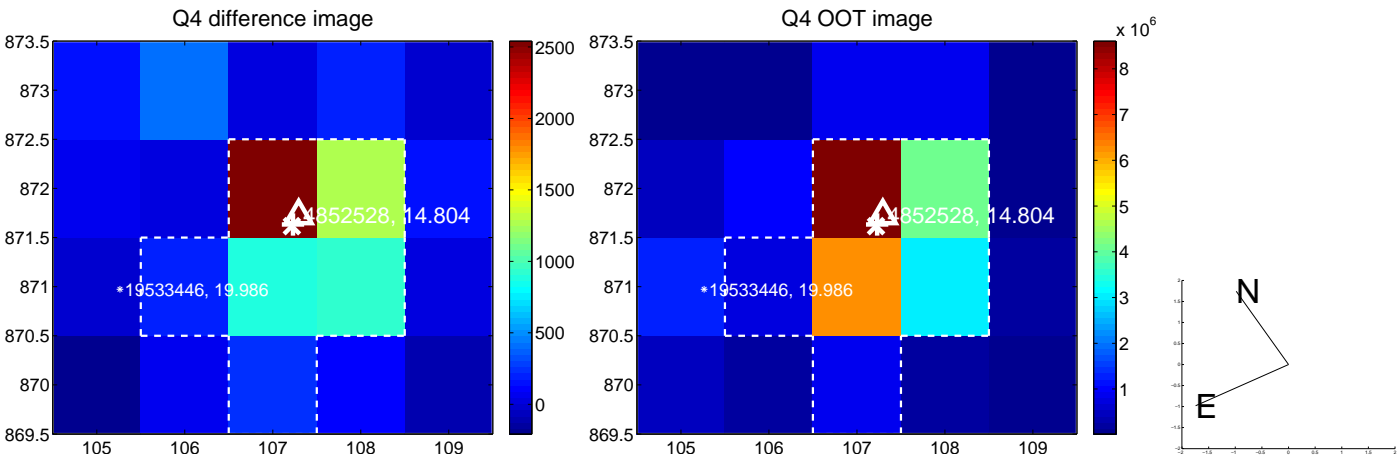
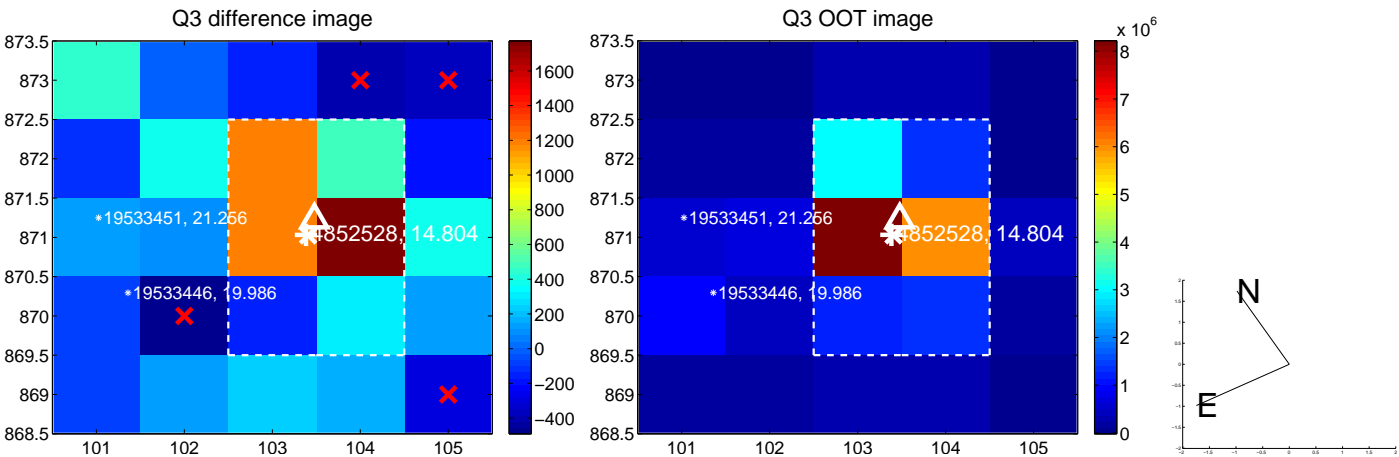
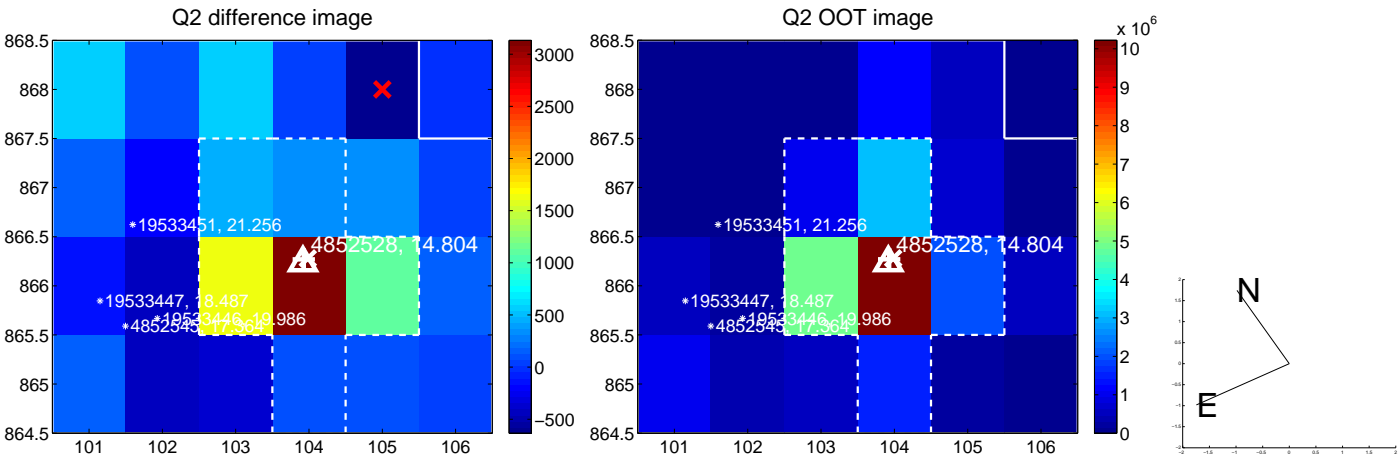
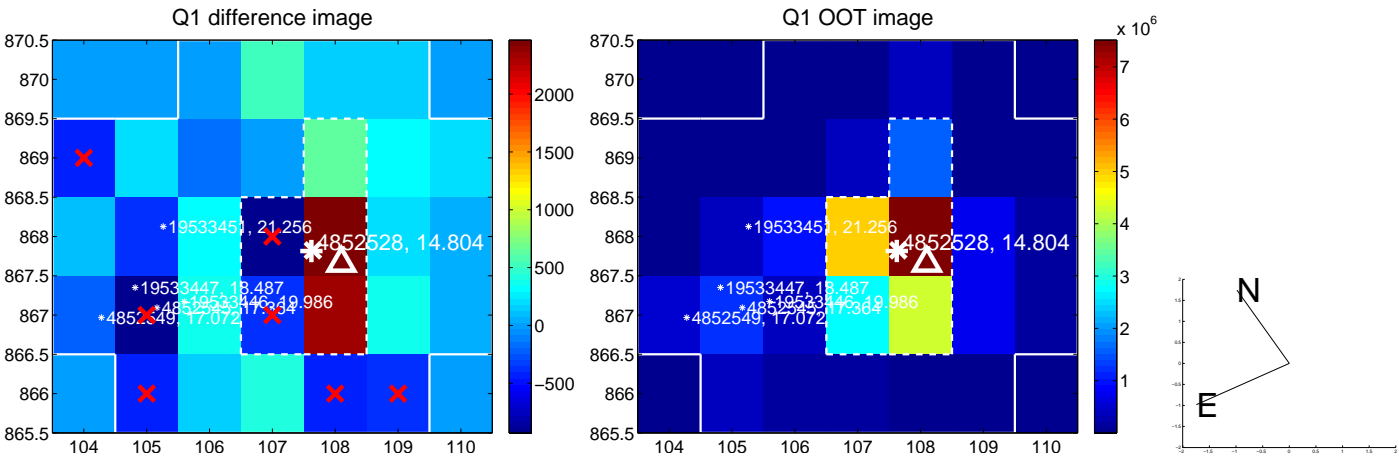
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.240 ± 0.142 | 1.69 | -0.240 ± 0.142 | -0.005 ± 0.164 |
| PRF-fit source offset from KIC position | 0.175 ± 0.145 | 1.21 | -0.173 ± 0.145 | 0.027 ± 0.148 |
| photometric centroid source offset | 0.42 ± 0.52 | 0.81 | 0.38 ± 0.53 | -0.19 ± 0.47 |

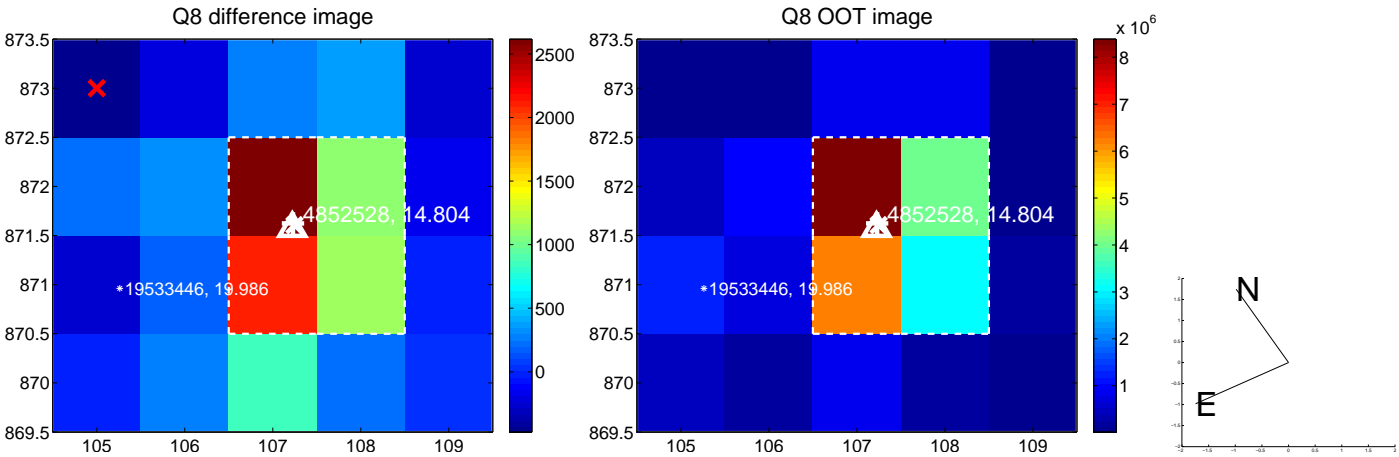
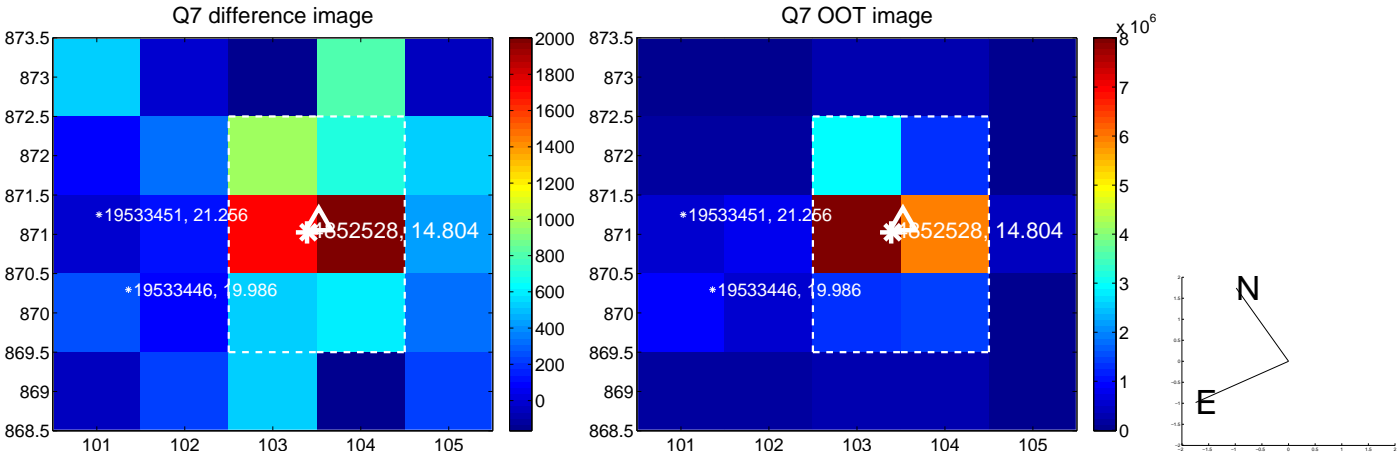
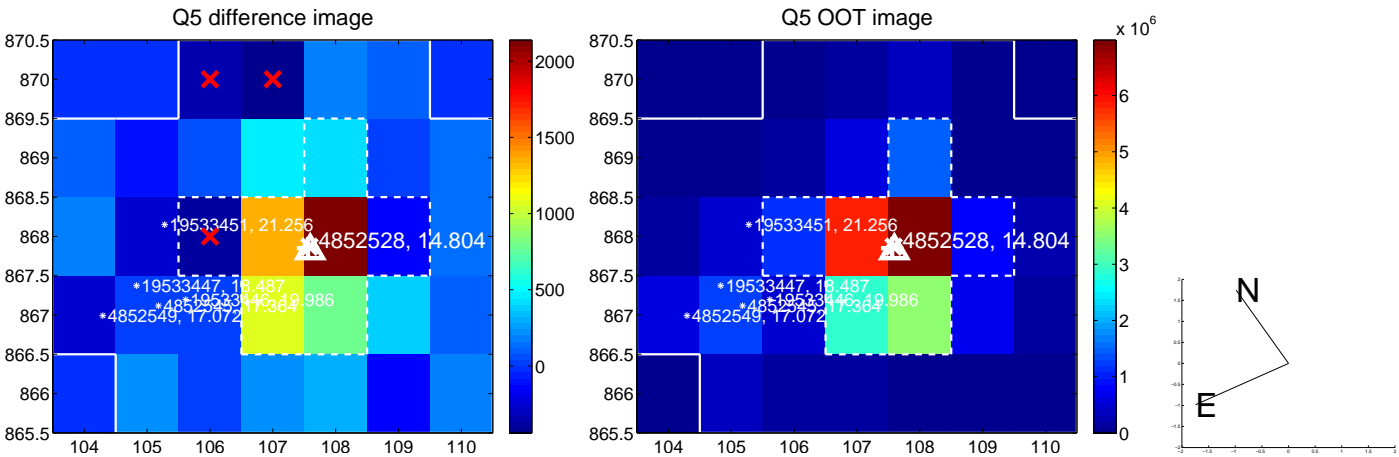


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

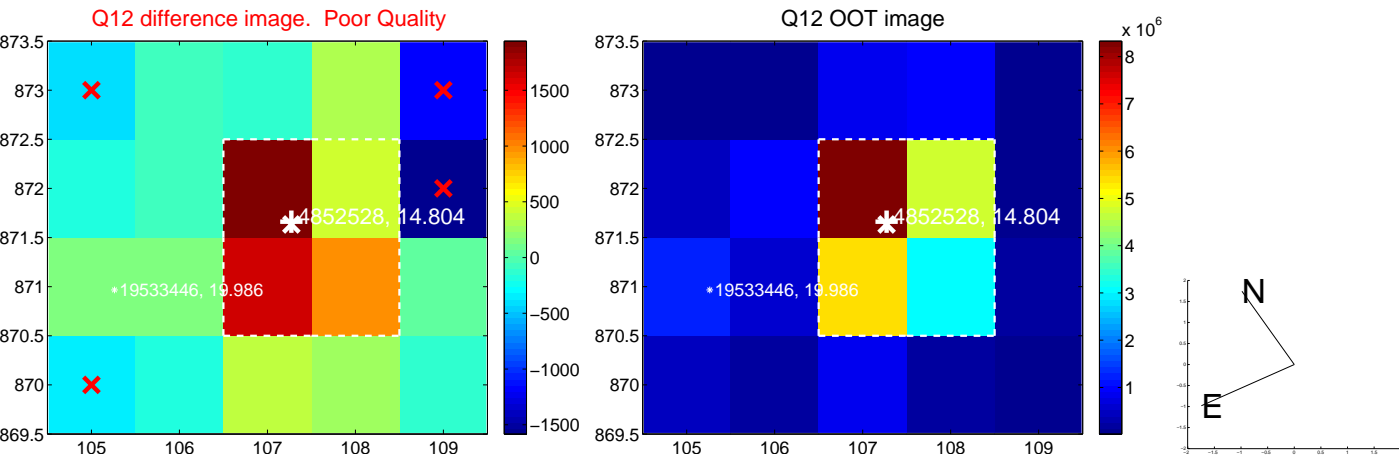
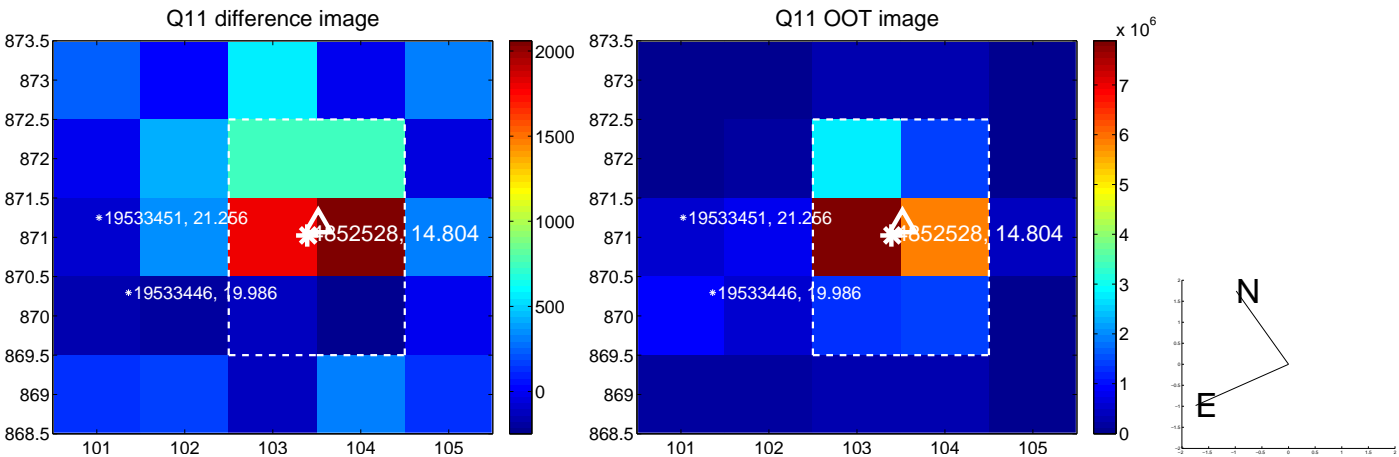
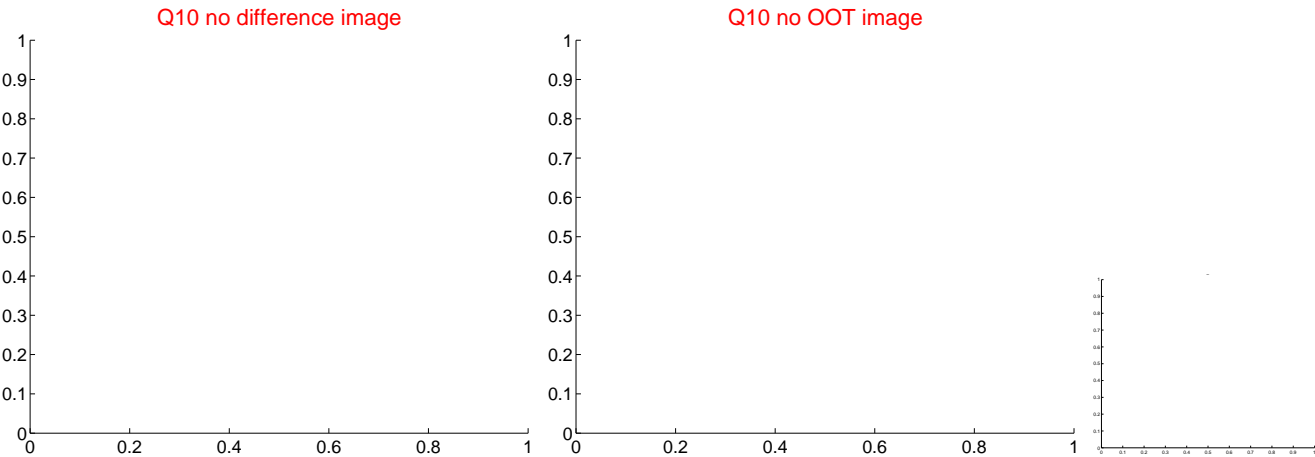
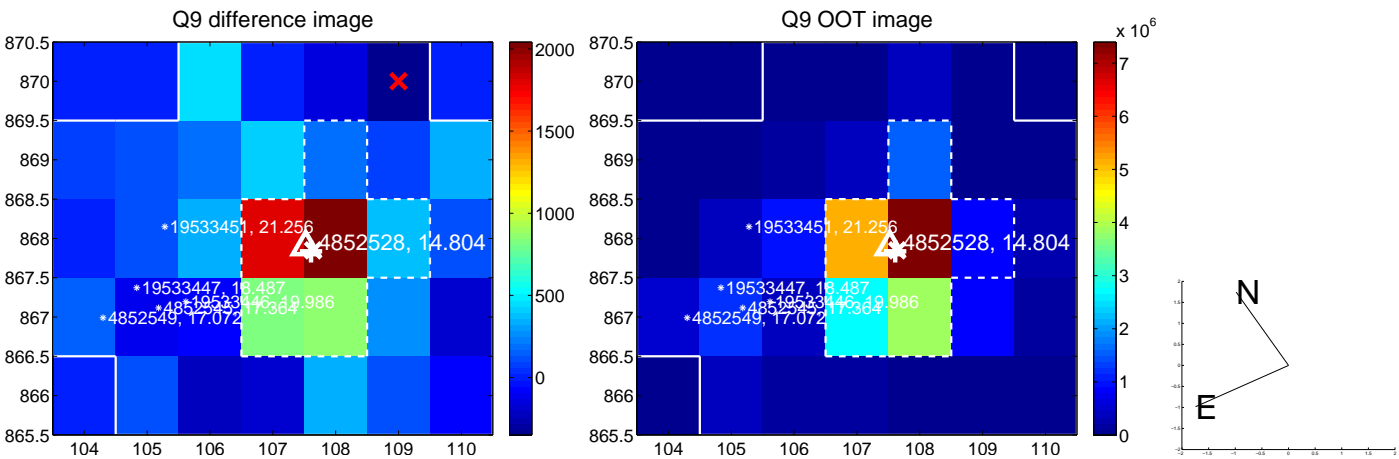
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



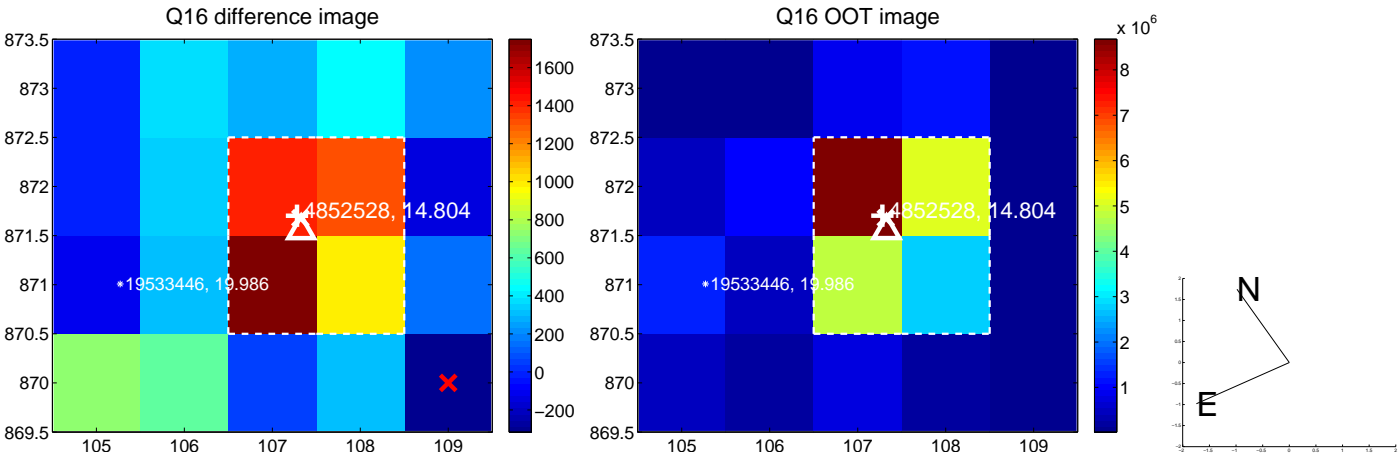
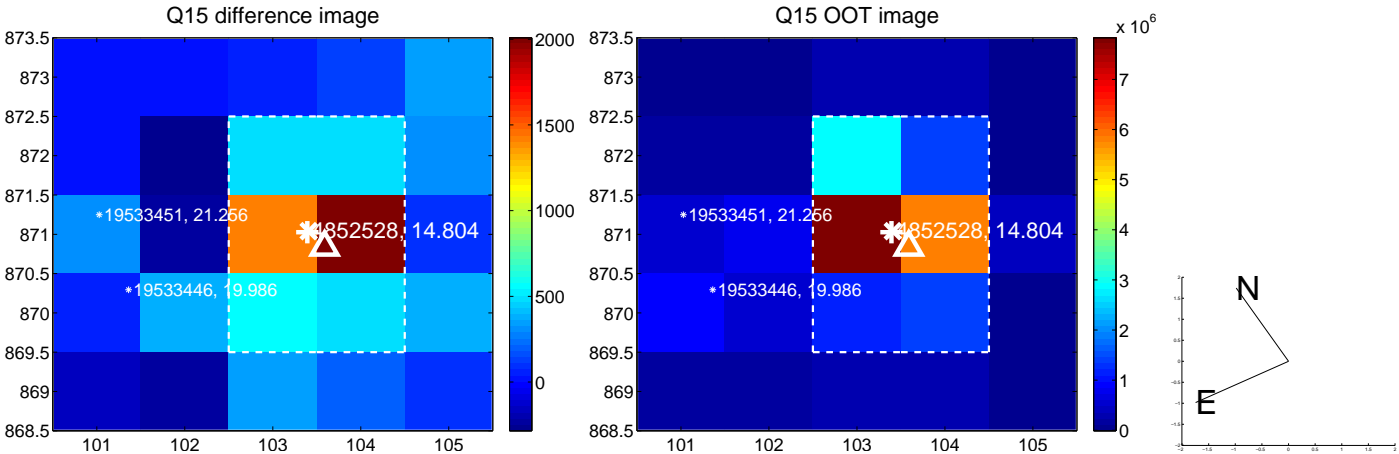
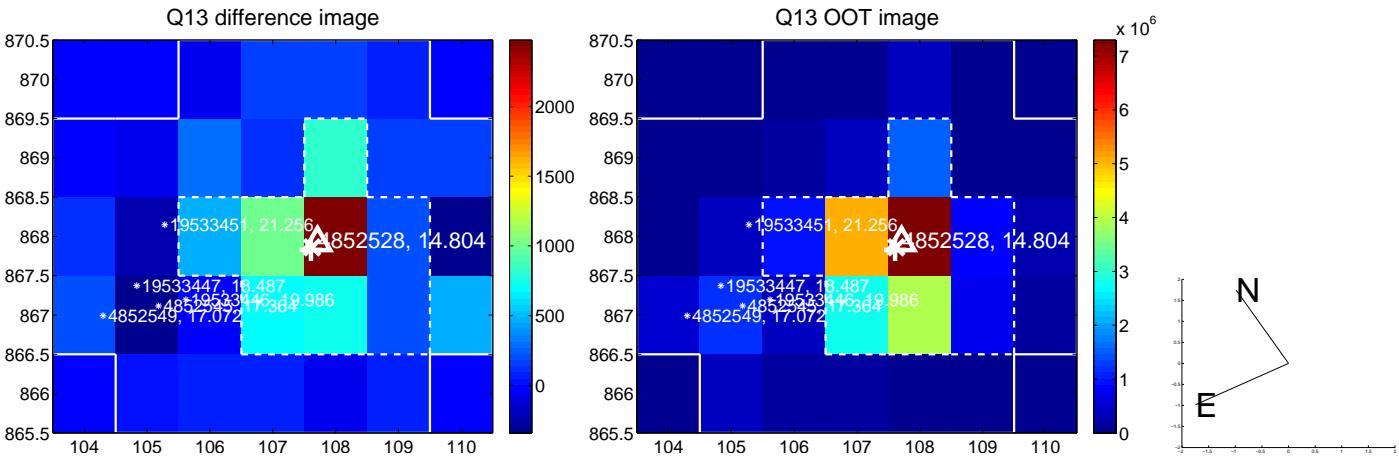
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



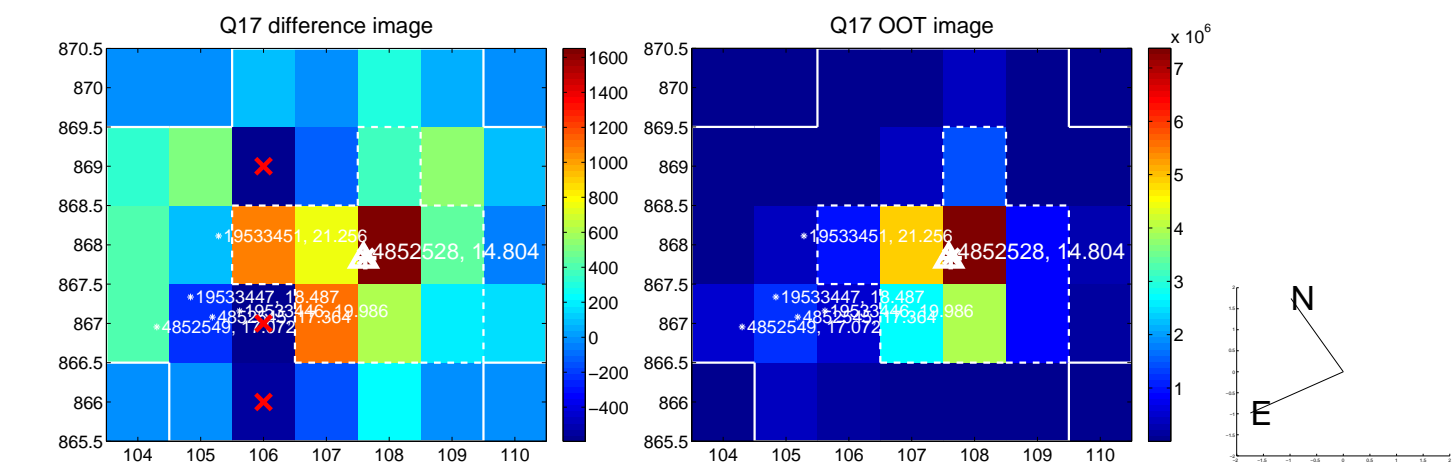
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



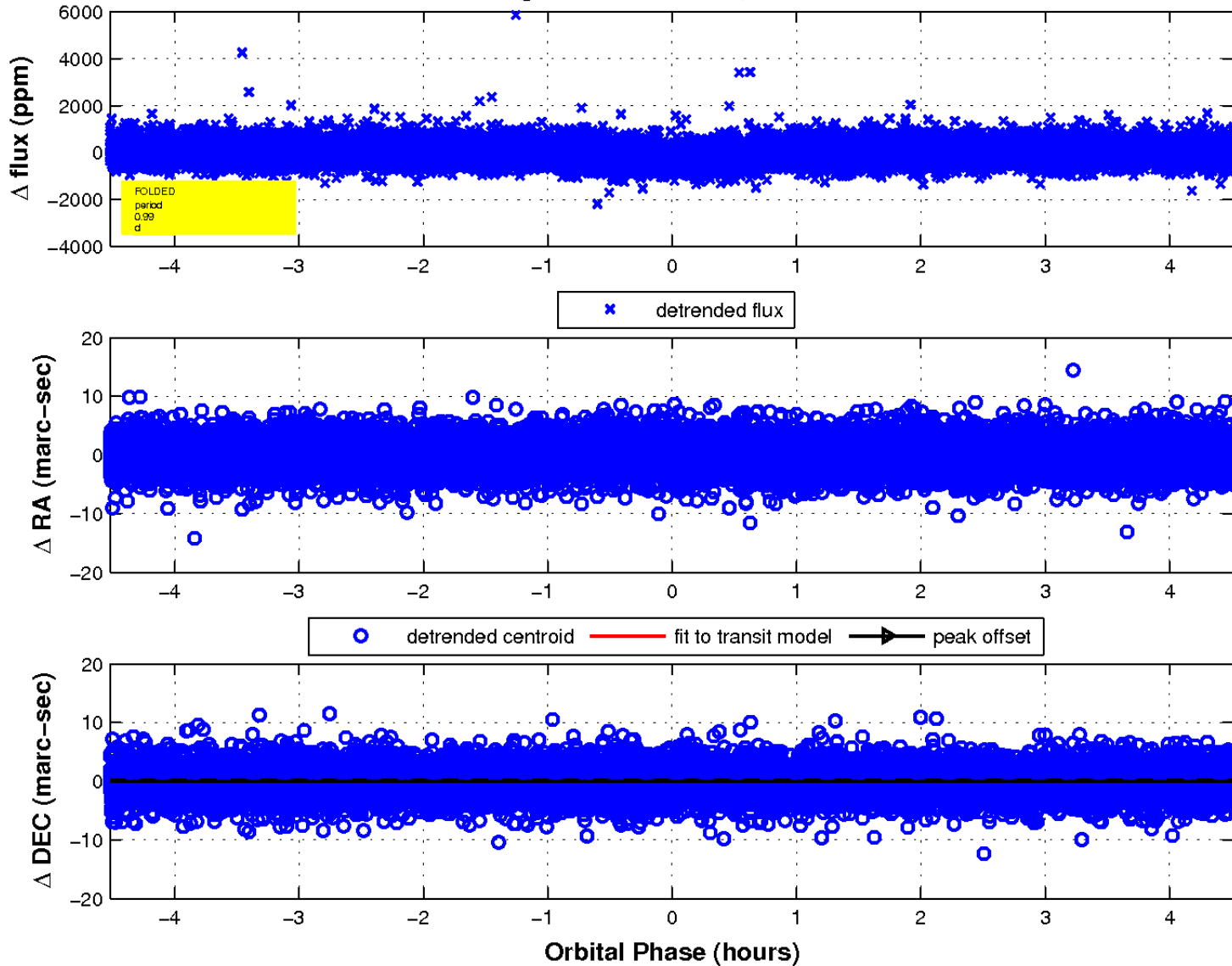
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

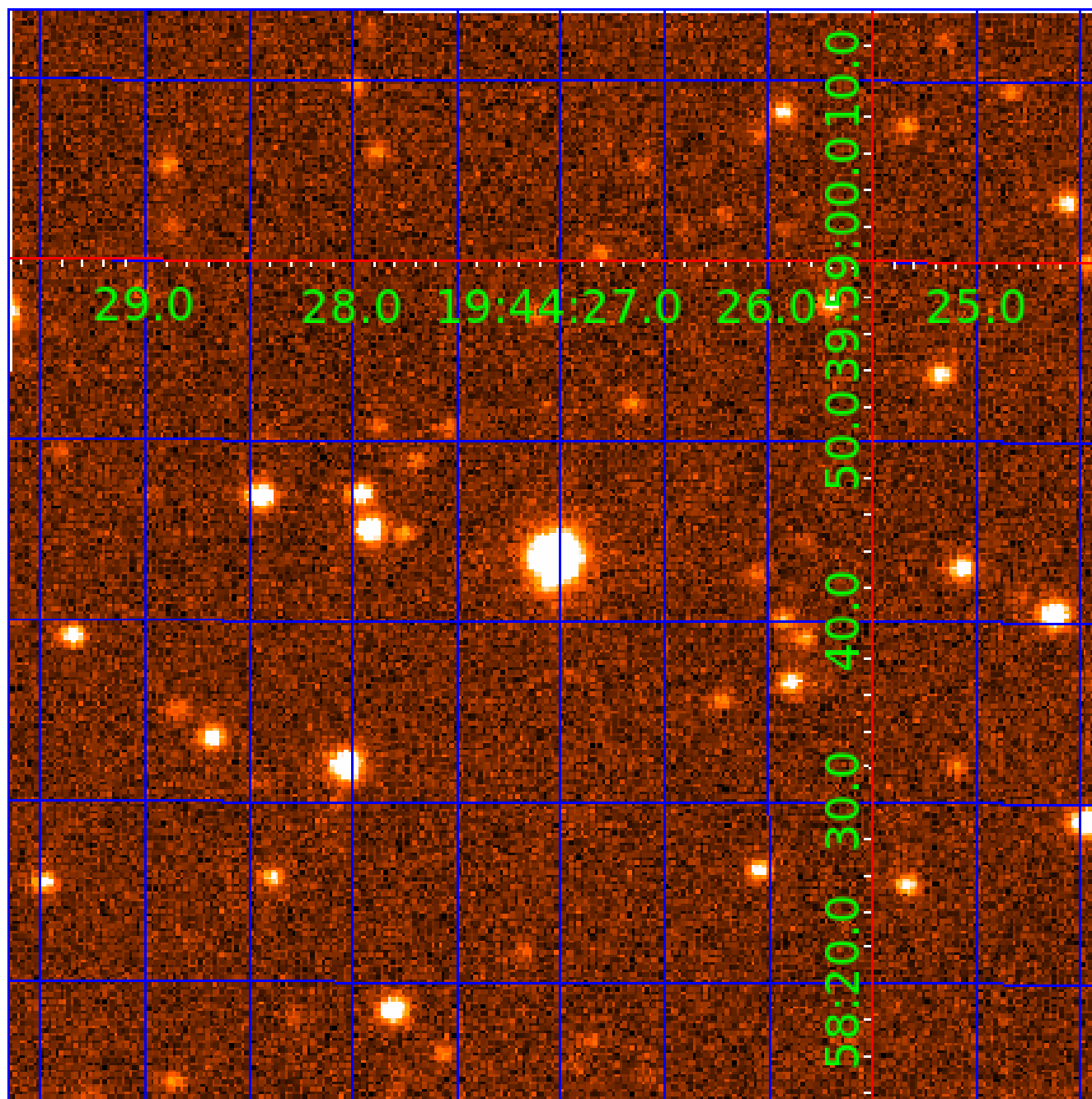


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



KIC 004852528

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004852528-01 | OBS | 0500.01 | 7.053535 | 134.152337 | 1425.8 | 2.725 | 68.1 | 72.3 | 0.57 | 4041 | 2.56 | 21.22 |
| 004852528-02 | OBS | 0500.02 | 9.521646 | 139.397872 | 1445.9 | 2.624 | 57.2 | 62.2 | 0.57 | 4041 | 2.53 | 14.22 |
| 004852528-03 | OBS | 0500.03 | 3.072143 | 134.030637 | 467.5 | 2.051 | 29.7 | 33.7 | 0.57 | 4041 | 1.47 | 64.27 |
| 004852528-04 | OBS | 0500.05 | 0.986783 | 132.183270 | 225.7 | 1.506 | 26.2 | 26.2 | 0.57 | 4041 | 1.02 | 292.15 |
| 004852528-05 | OBS | 0500.04 | 4.645379 | 134.590073 | 469.8 | 2.459 | 22.8 | 25.5 | 0.57 | 4041 | 1.60 | 37.03 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 004852528-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-03 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-04 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 004852528-05 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

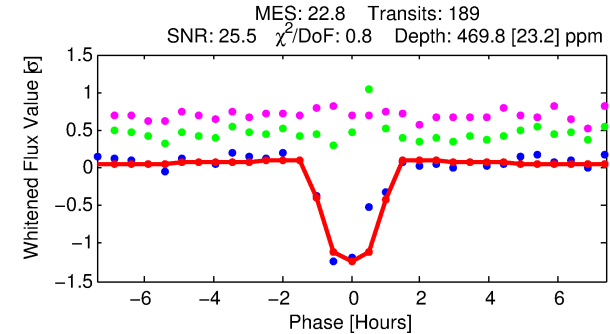
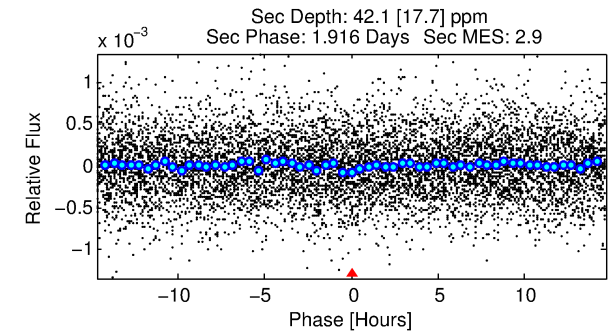
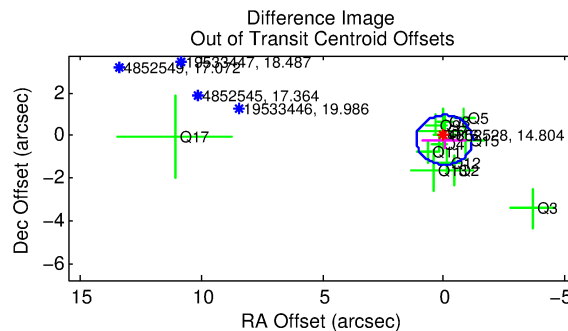
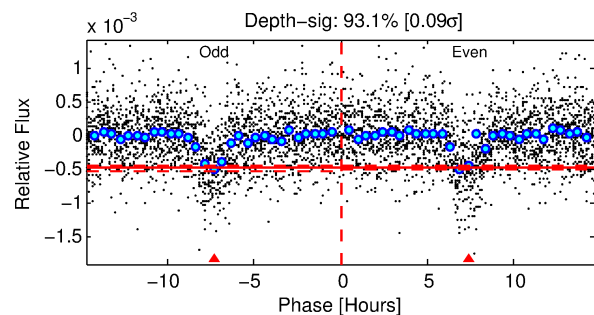
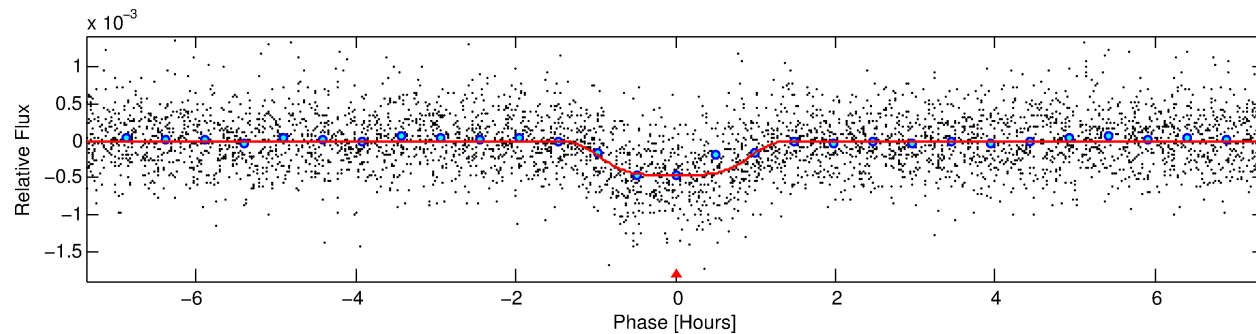
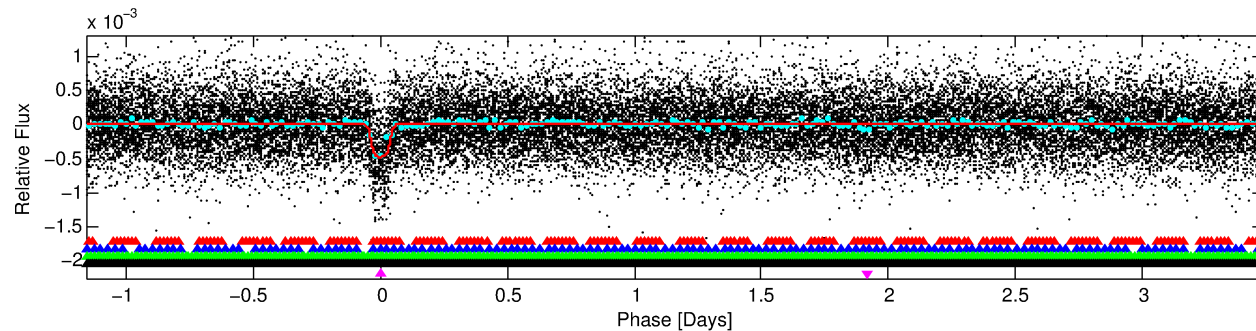
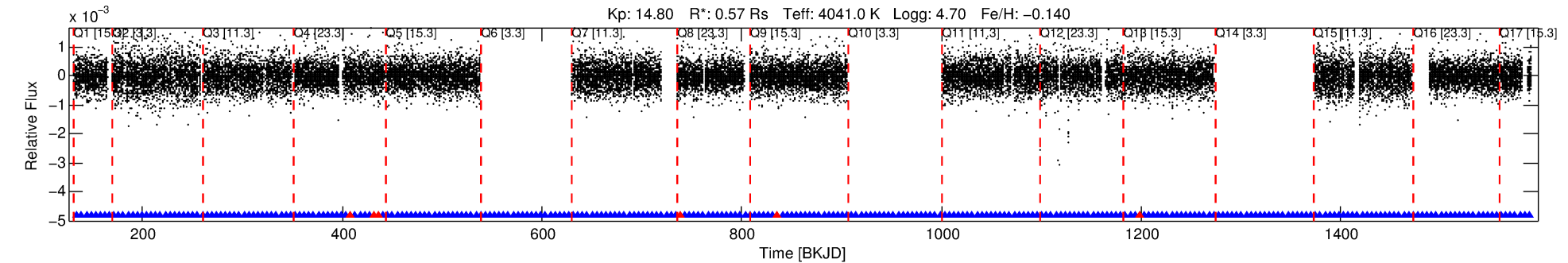
Ephemeris Match Information For 004852528-05

No Significant Match Found

DV One-Page Summary

KIC: 4852528 Candidate: 5 of 5 Period: 4.645 d
KOI: K00500.04 Name: Kepler-80e Corr: 0.918

Kp: 14.80 R*: 0.57 Rs Teff: 4041.0 K Logg: 4.70 Fe/H: -0.140



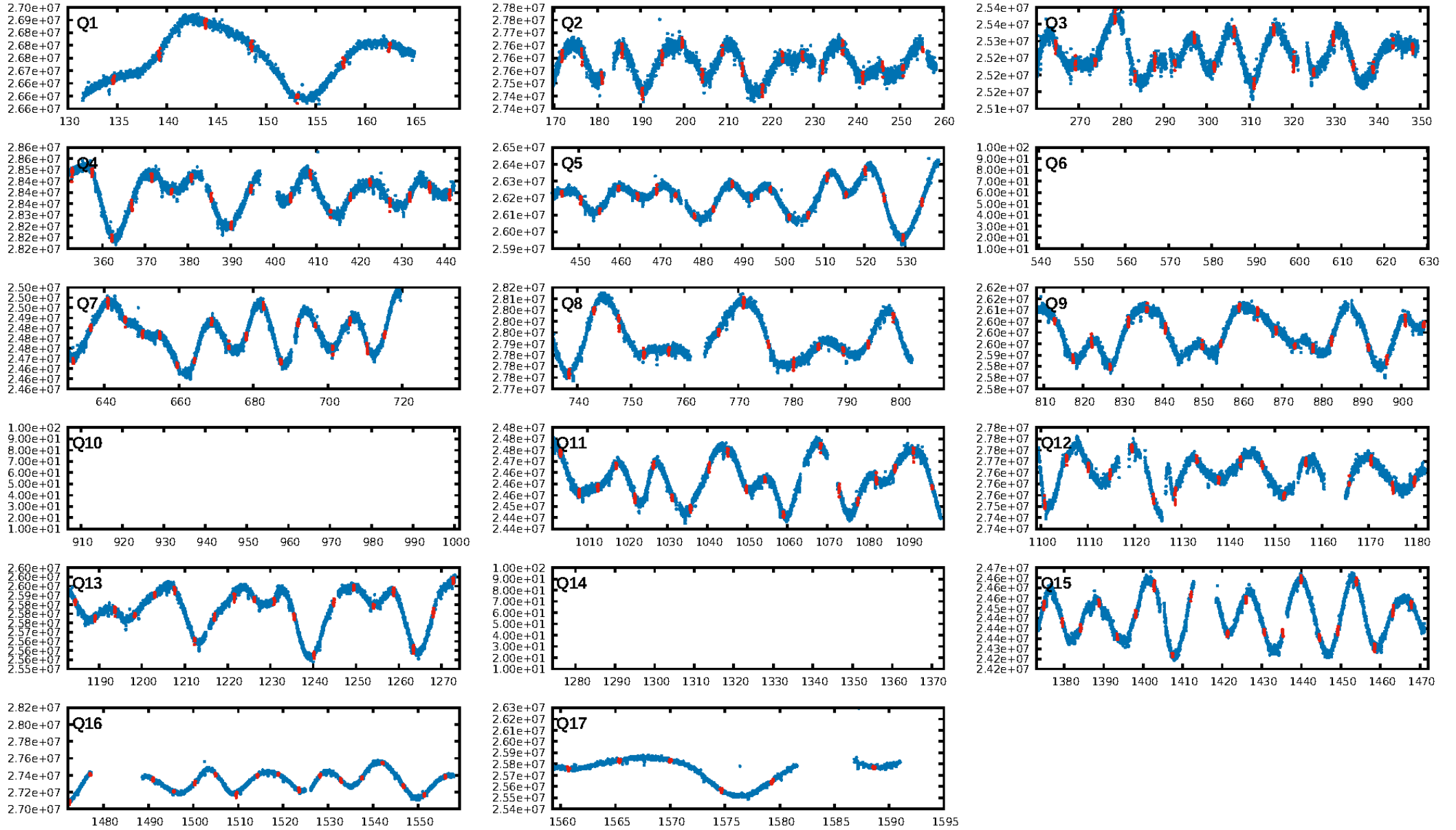
DV Fit Results:

Period = 4.64538 [0.00001] d
Epoch = 134.5901 [0.0018] BKJD
Rp/R* = 0.0258 [0.0016]
a/R* = 5.60 [1.22]
b = 0.95 [0.02]
Seff = 37.03 [3.82]
Teq = 629 [16] K
Rp = 1.60 [0.13] Re
a = 0.0455 [0.0019] AU
Ag = 18.86 [8.33] [2.14σ]
Teffp = 2027 [226] K [6.16σ]

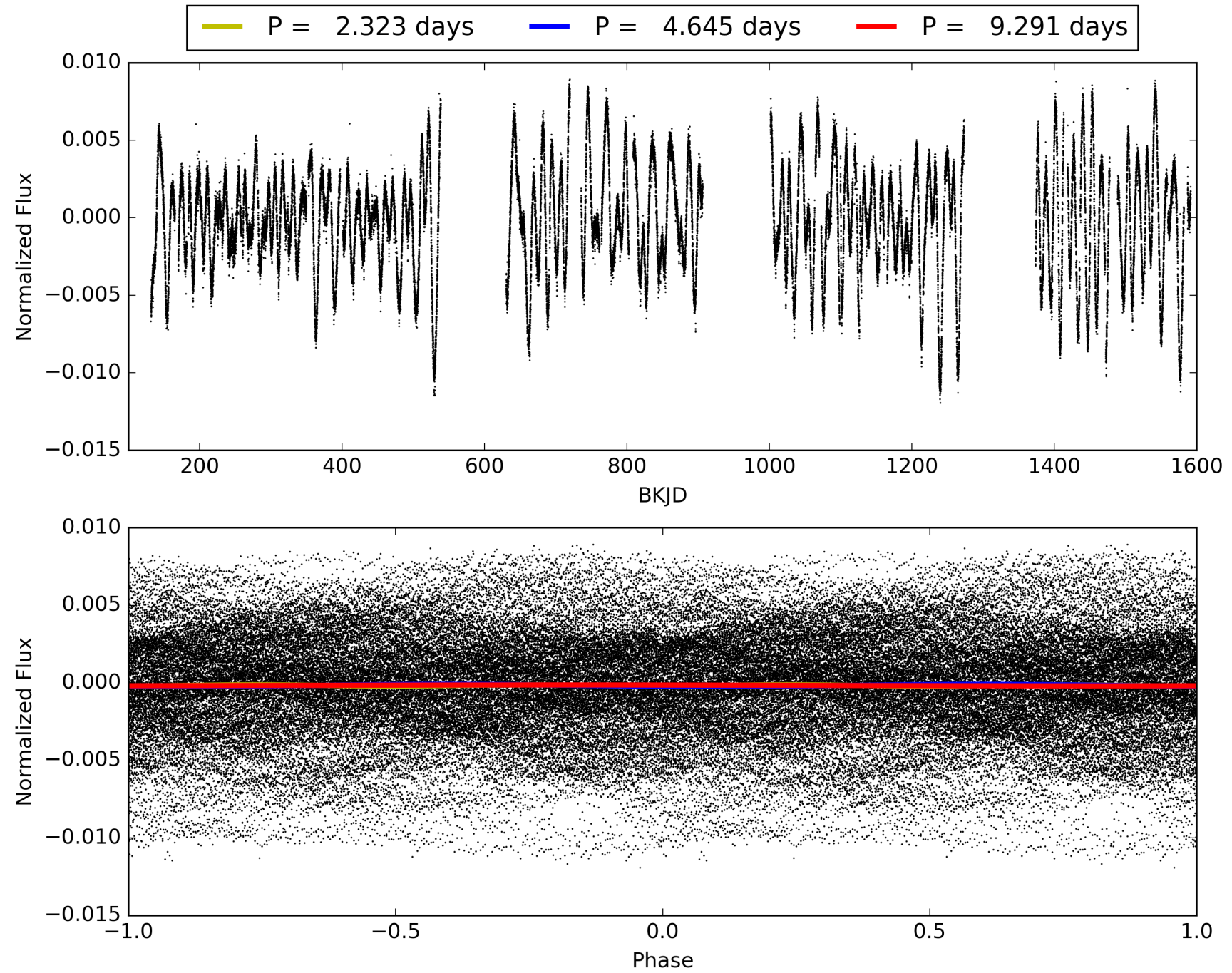
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.79σ]
LongPeriod-sig: 100.0% [15.75σ]
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.69e-111
RollingBand-fgt: 0.97 [172/178]
GhostDiagnostic-chr: 5.213
Centroid-sig: N/A
Centroid-so: 0.871 arcsec [2.10σ]
OotOffset-rm: 0.206 arcsec [0.53σ]
KicOffset-rm: 0.157 arcsec [0.51σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.77 [10/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004852528-05, PDC Light Curves

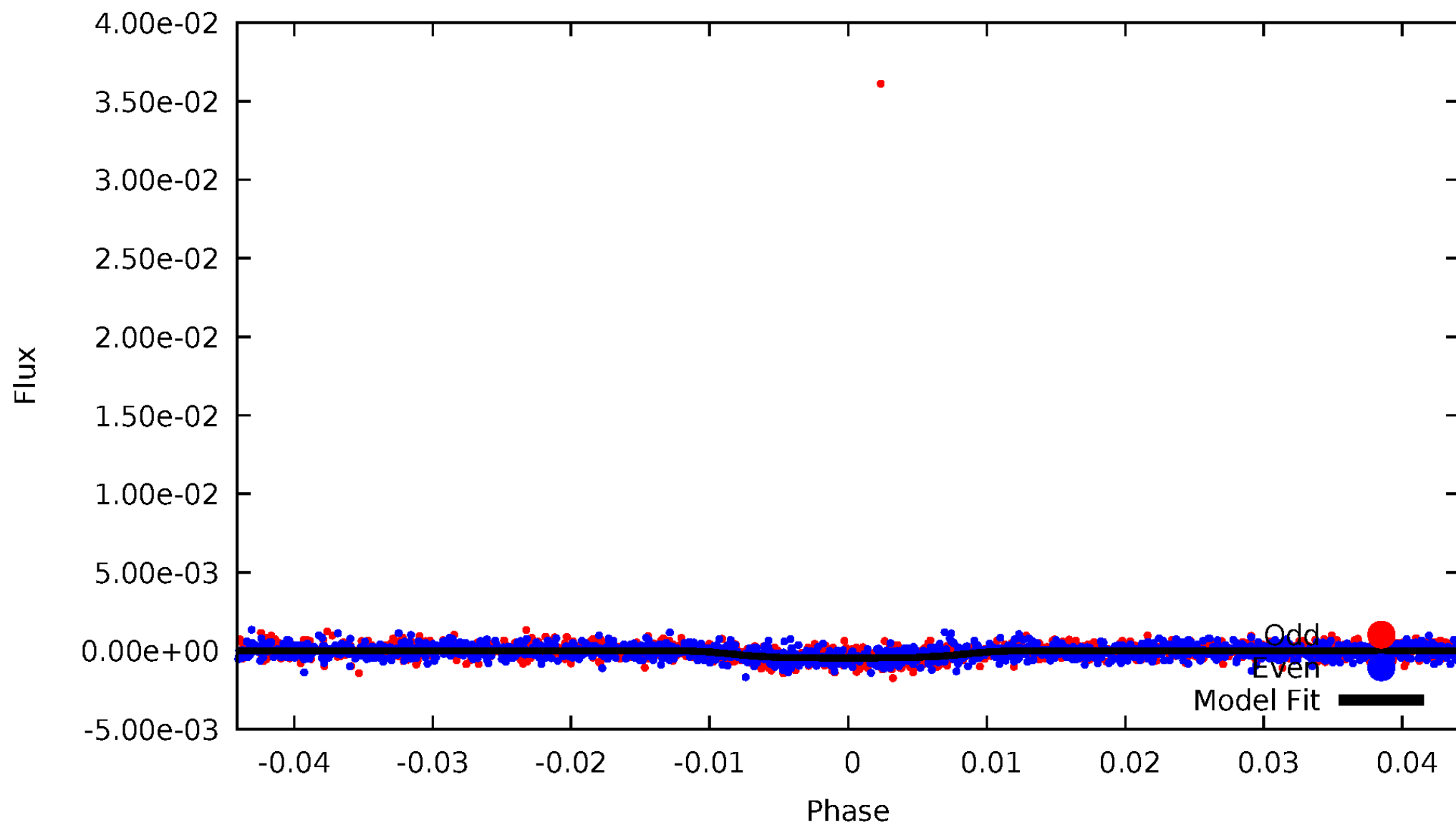


TCE 004852528-05



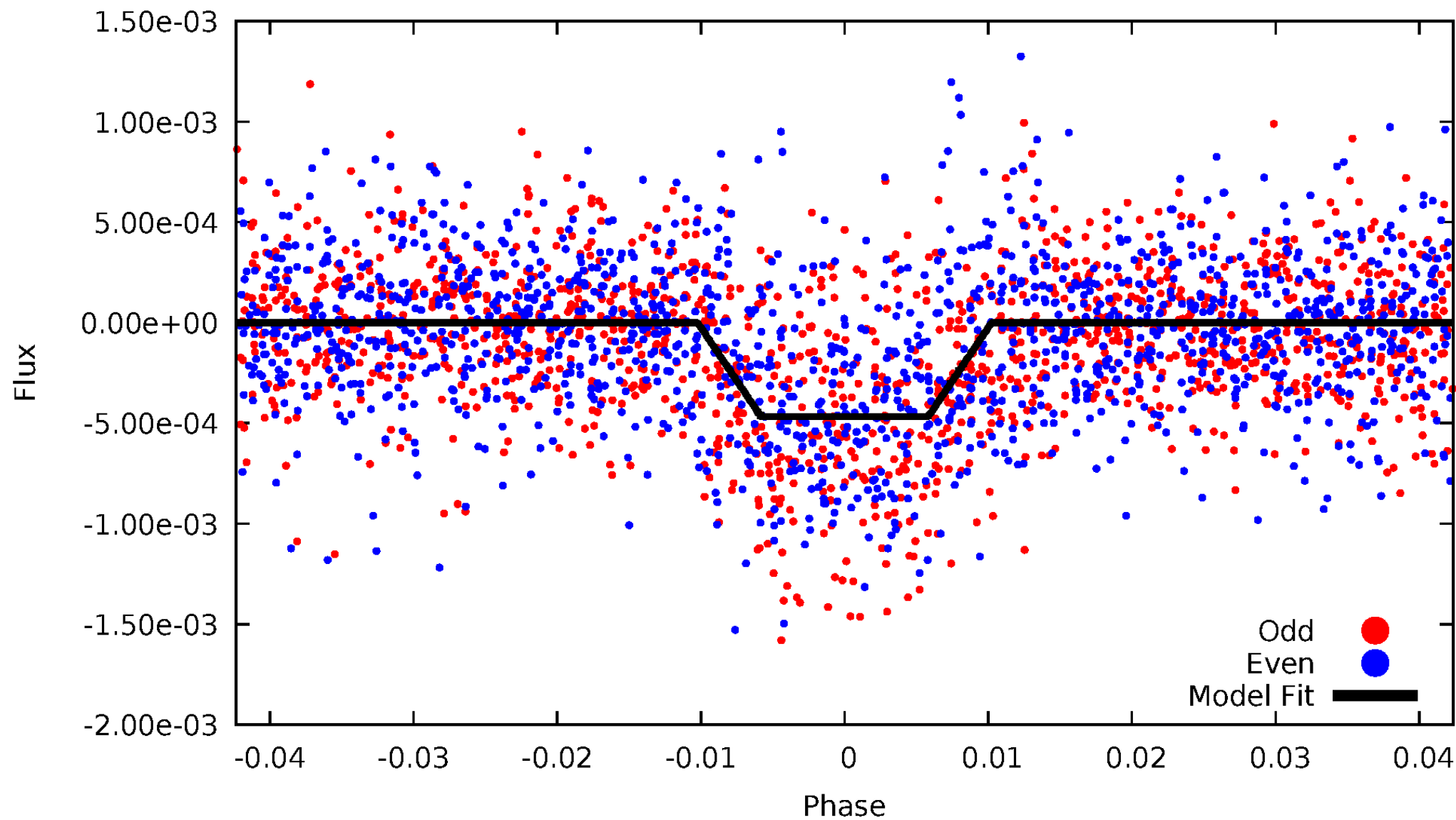
DV Odd/Even

TCE 004852528-05

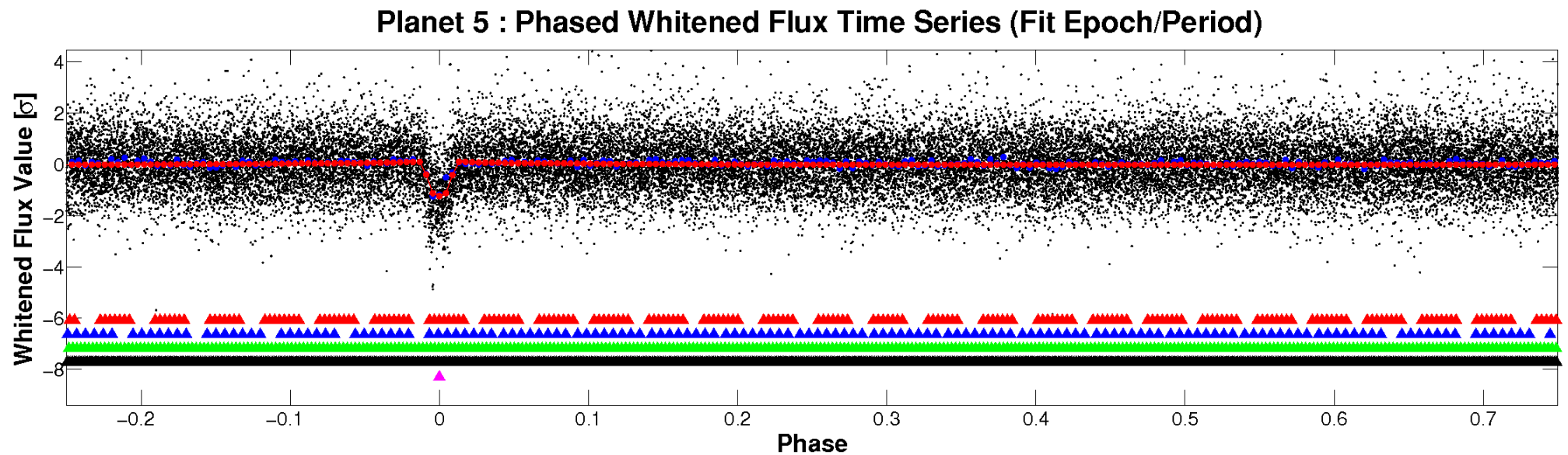
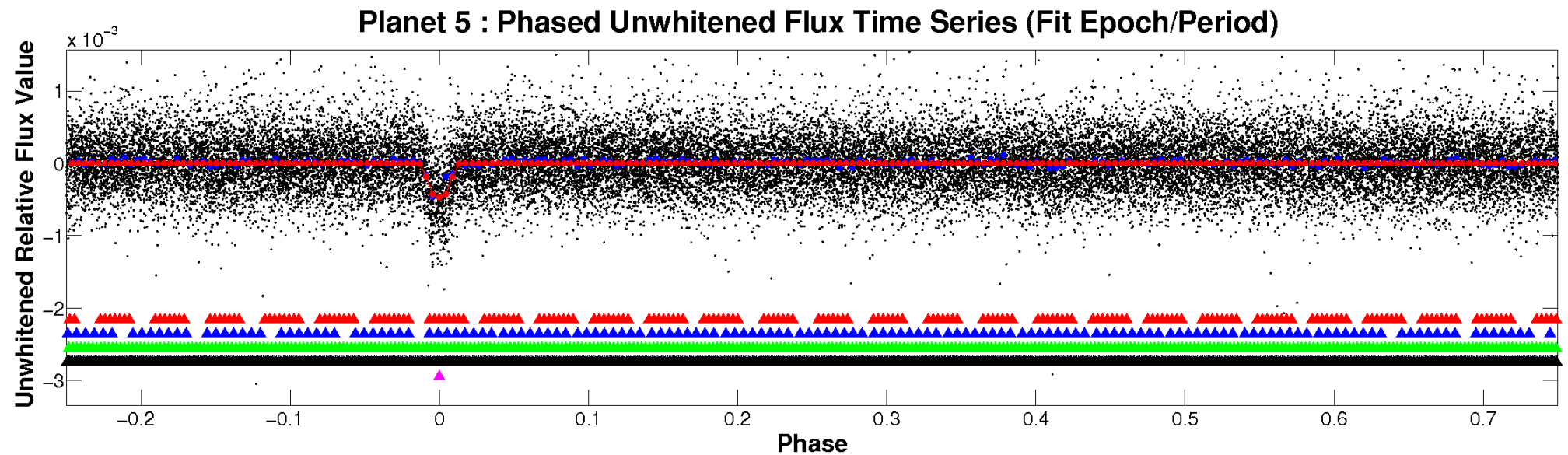


ALT Odd/Even

TCE 004852528-05

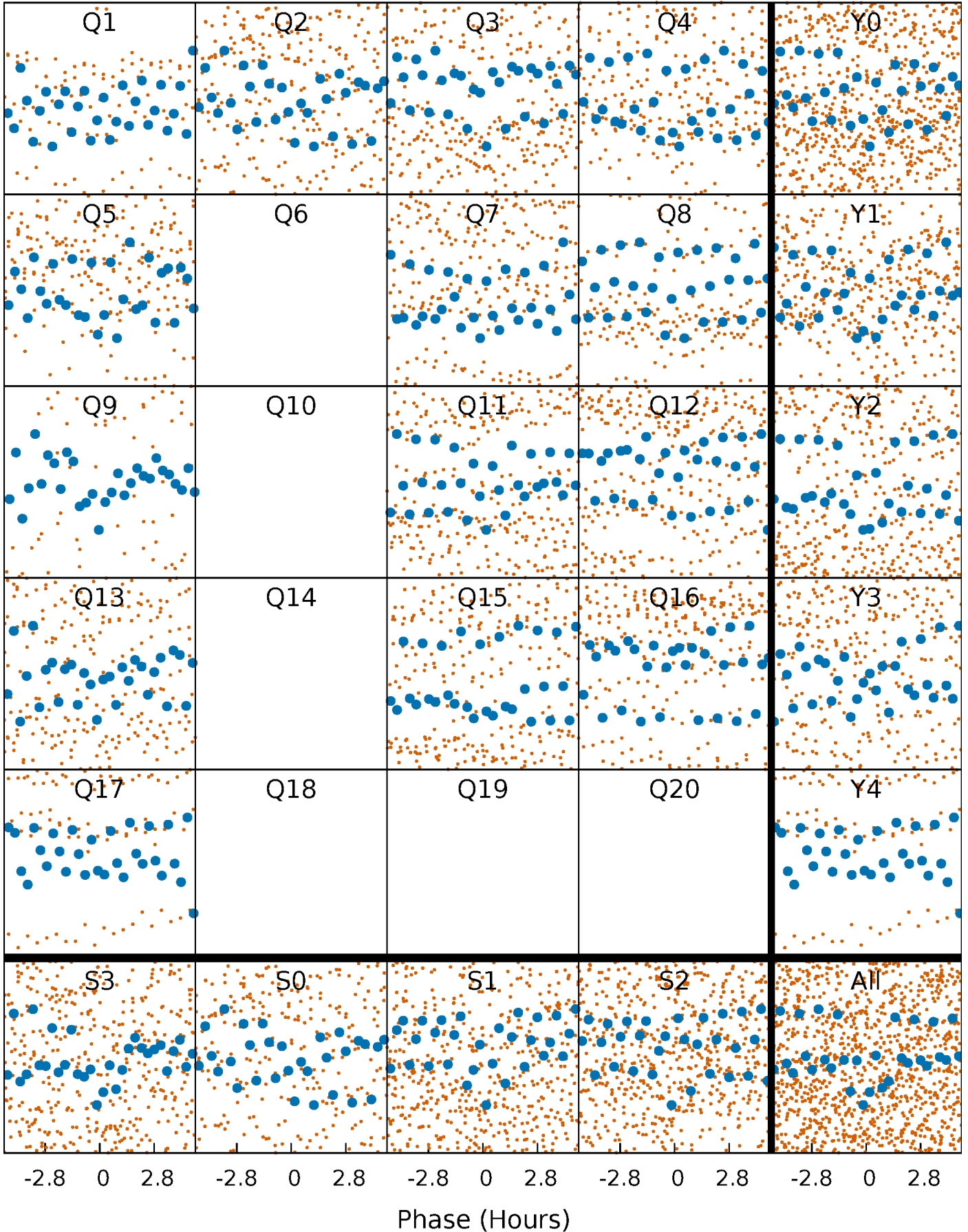


Non-Whitened Vs. Whitened Light Curve



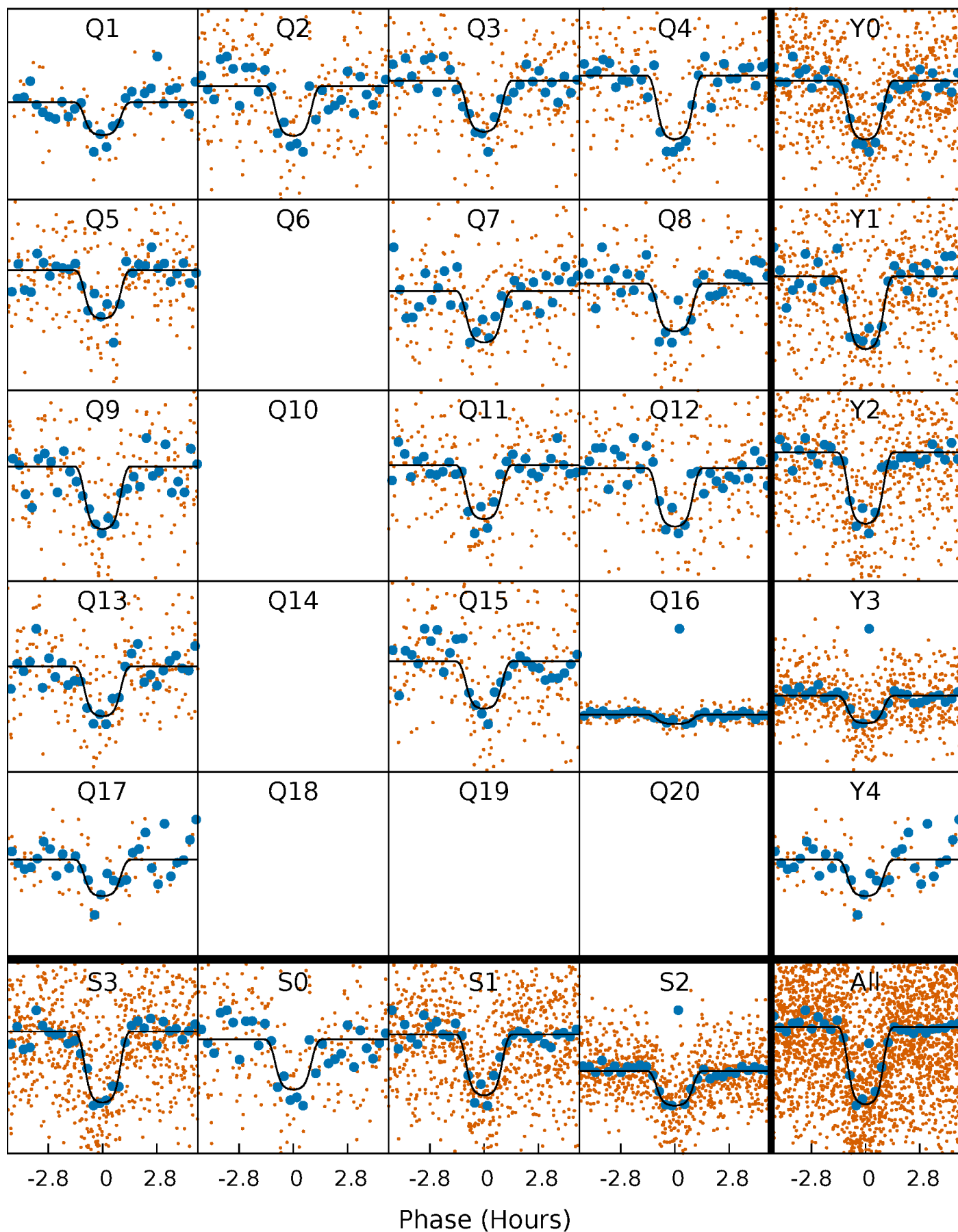
PDC Quarter-Phased Transit Curves

TCE 004852528-05 P= 4.645379 Days $T_0=134.590073$ (BKJD)



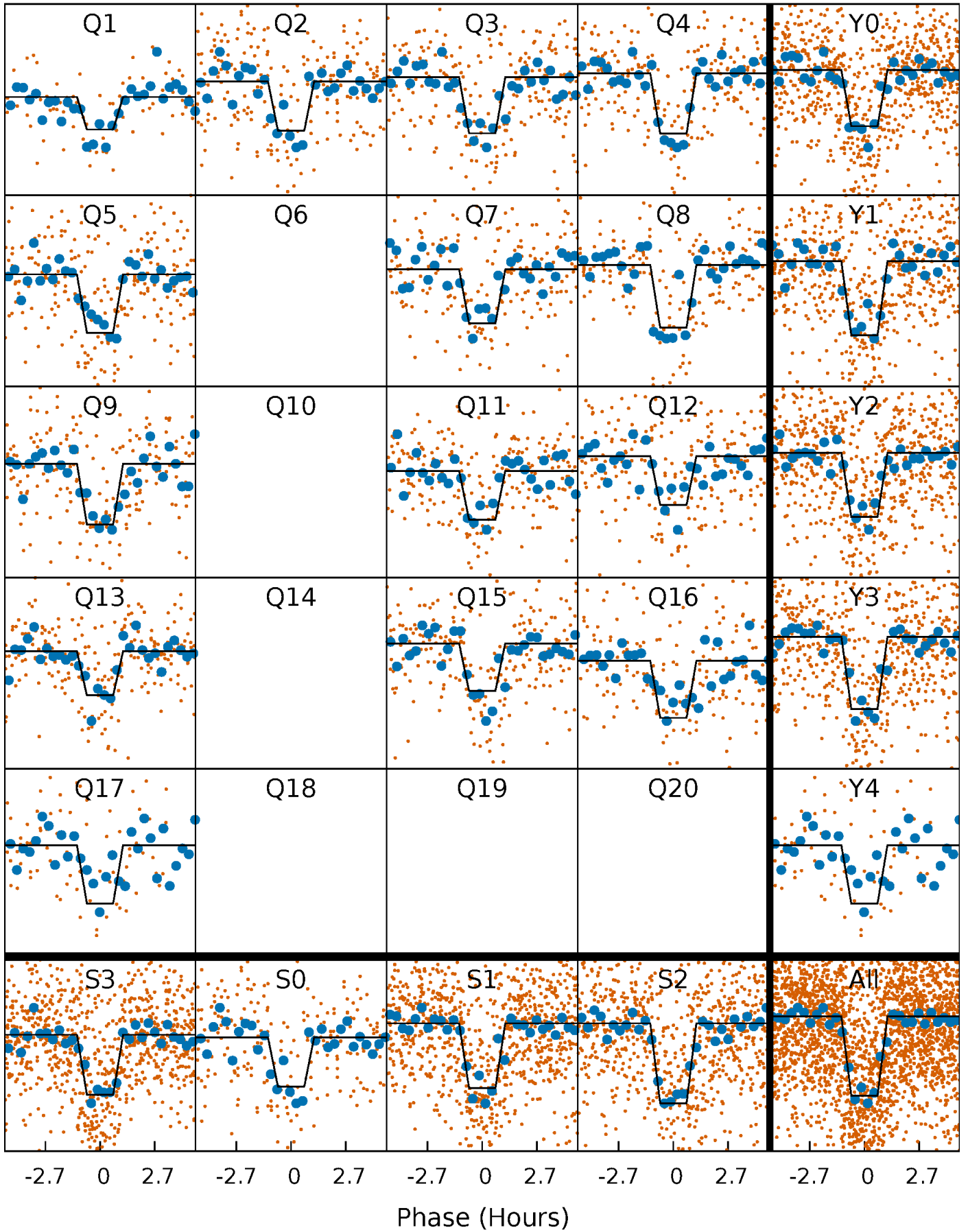
DV Quarter-Phased Transit Curves

TCE 004852528-05 $P = 4.645379$ Days $T_0 = 134.590073$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

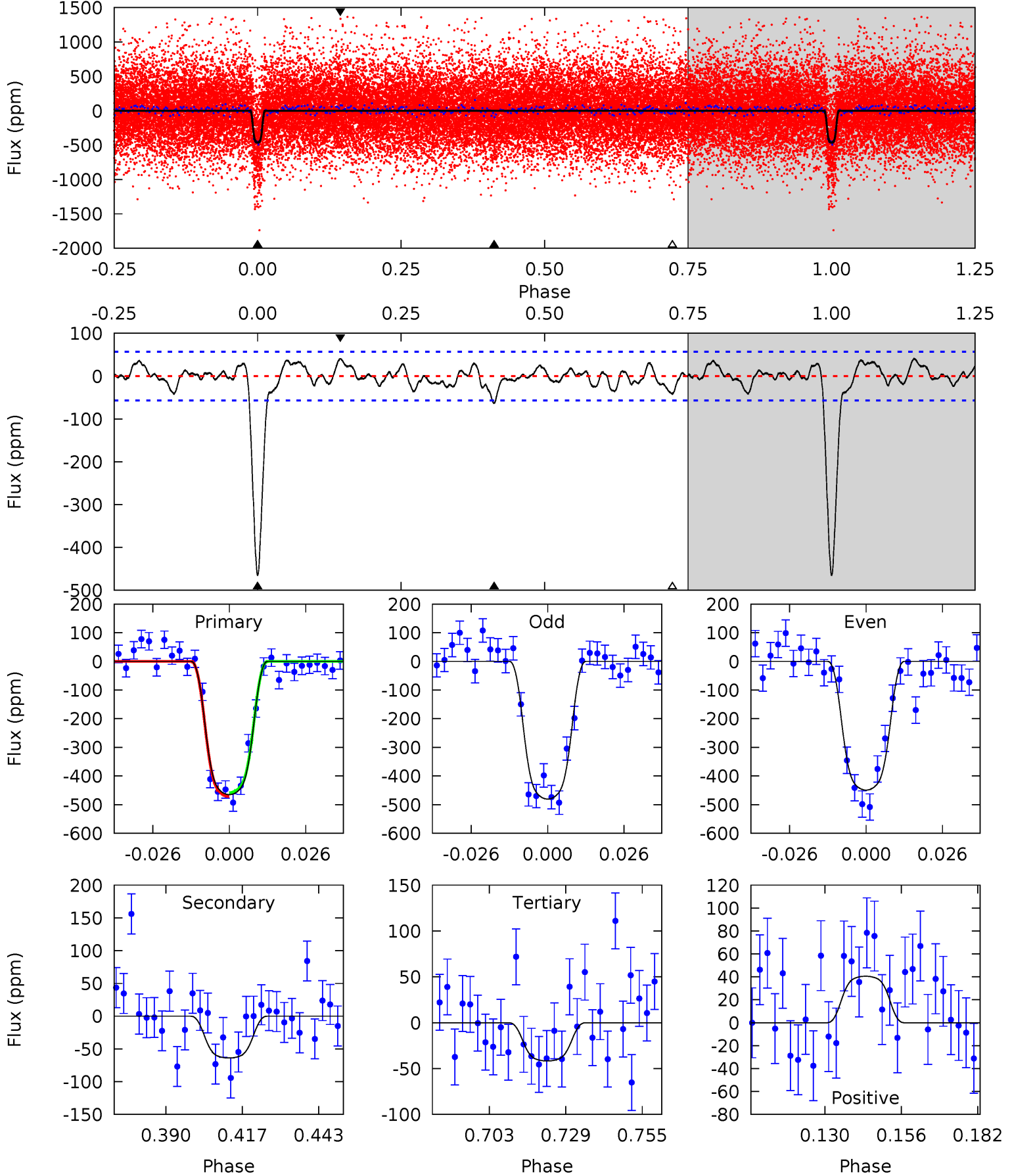
TCE 004852528-05 P= 4.645361 Days $T_0=134.591510$ (BKJD)



DV Model-Shift Uniqueness Test

004852528-05, P = 4.645379 Days, E = 129.944694 Days

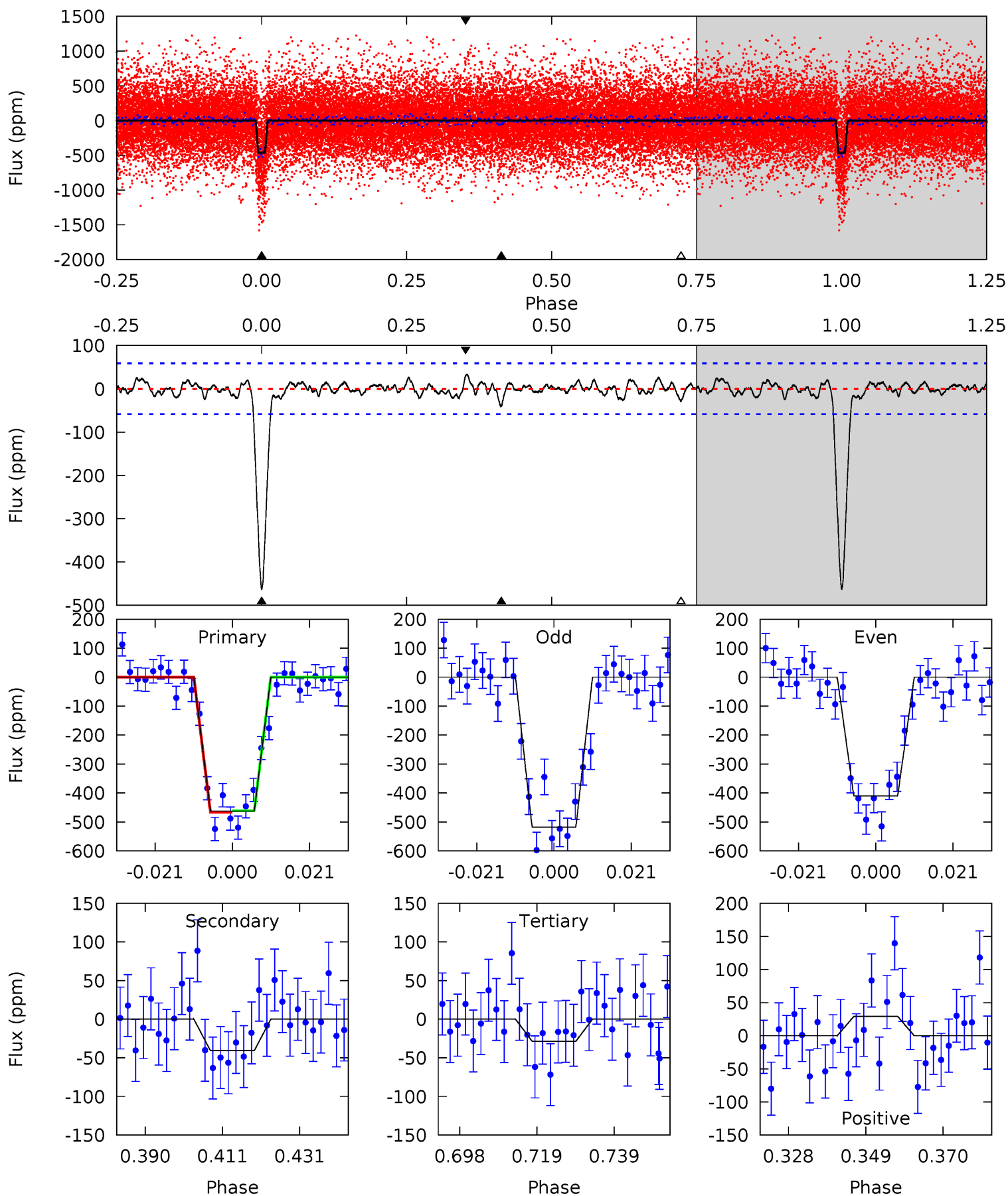
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 39.4 | 5.41 | 3.53 | 3.44 | 4.84 | 2.23 | 1.46 | 35.9 | 36.0 | 1.88 | 1.98 | 1.33 | 0.81 | 0.08 | 0.56 |



Alt Model-Shift Uniqueness Test

004852528-05, P = 4.645361 Days, E = 129.946149 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 38.5 | 3.39 | 2.37 | 2.43 | 4.89 | 2.32 | 0.92 | 36.1 | 36.1 | 1.02 | 0.96 | 4.46 | 1.00 | 0.07 | 0.22 |



Stellar Parameters For KIC 004852528

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4041^{+72}_{-88} | $4.697^{+0.024}_{-0.027}$ | $-0.140^{+0.150}_{-0.150}$ | $0.567^{+0.031}_{-0.031}$ | $0.584^{+0.029}_{-0.035}$ | $4.507^{+0.552}_{-0.492}$ |
| | +2%/-2% | +1%/-1% | +107%/-107% | +5%/-5% | +5%/-6% | +12%/-11% |
| Source | SPE5 | SPE5 | SPE5 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004852528-05 / KOI 0500.04

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|-------------------|----------------------|----------------|
| DV | -64 ± 12 | $1.60^{+0.10}_{-0.11}$ | 878^{+20}_{-21} | 2811^{+98}_{-108} | 29^{+7}_{-6} |
| Alt. | -41 ± 12 | $1.33^{+0.11}_{-0.11}$ | 878^{+21}_{-20} | 2779^{+123}_{-135} | 26^{+9}_{-8} |

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 $A_{obs} \gg 1.0$

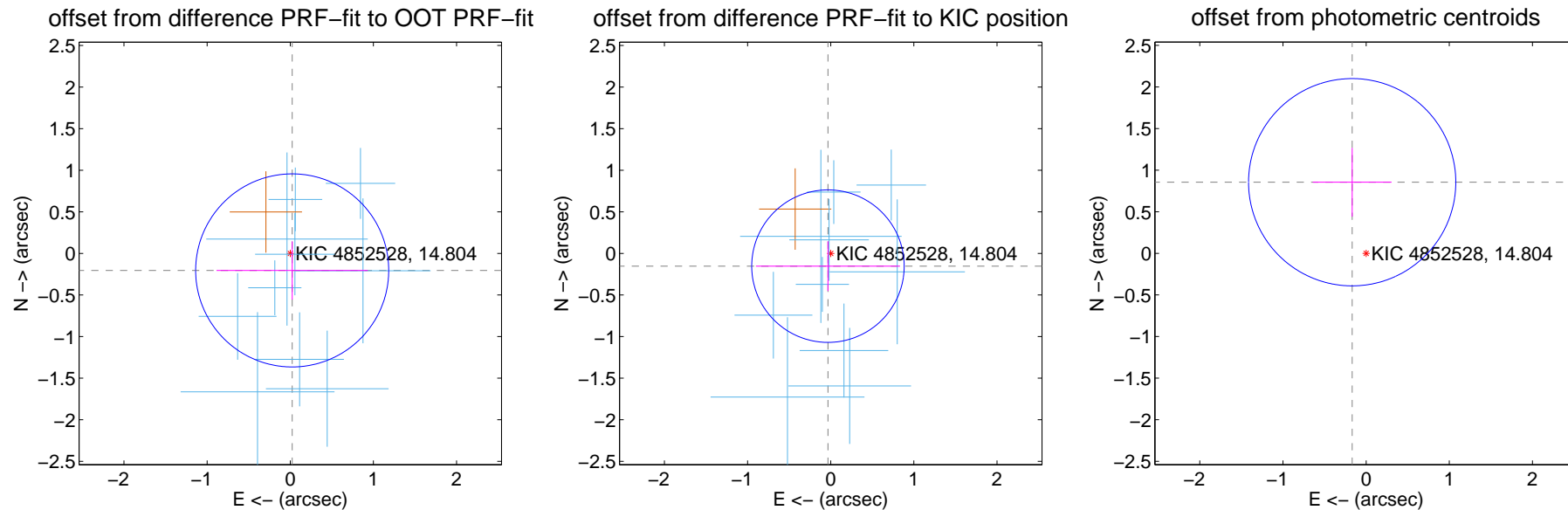
DV Centroid Data

Supplemental centroid analysis for 004852528-05. Kepler magnitude: 14.80. Transit SNR 25.48

There are 10 quarters with good PRF difference image offsets

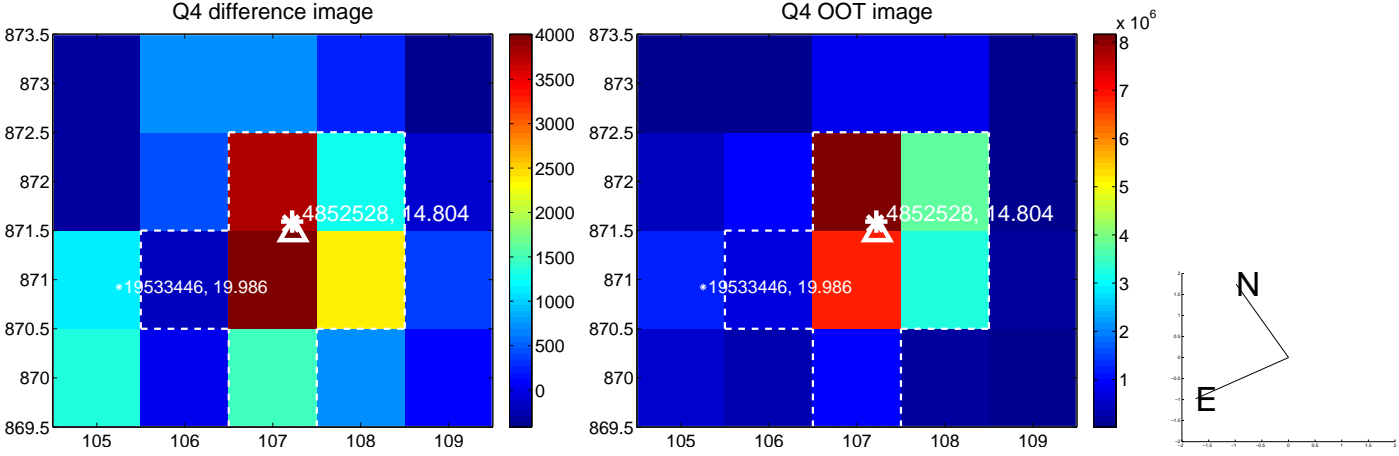
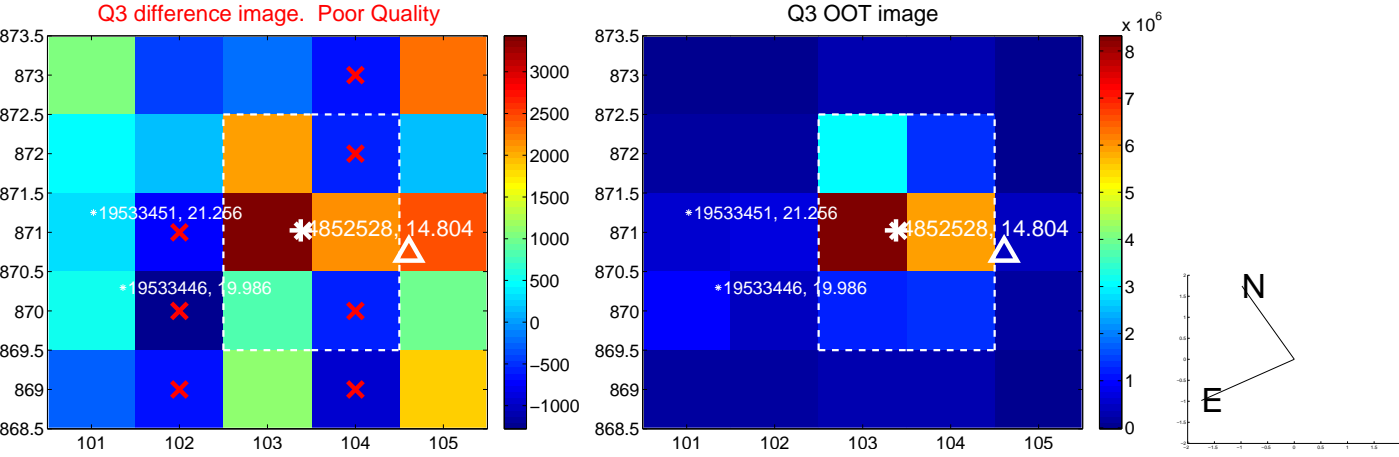
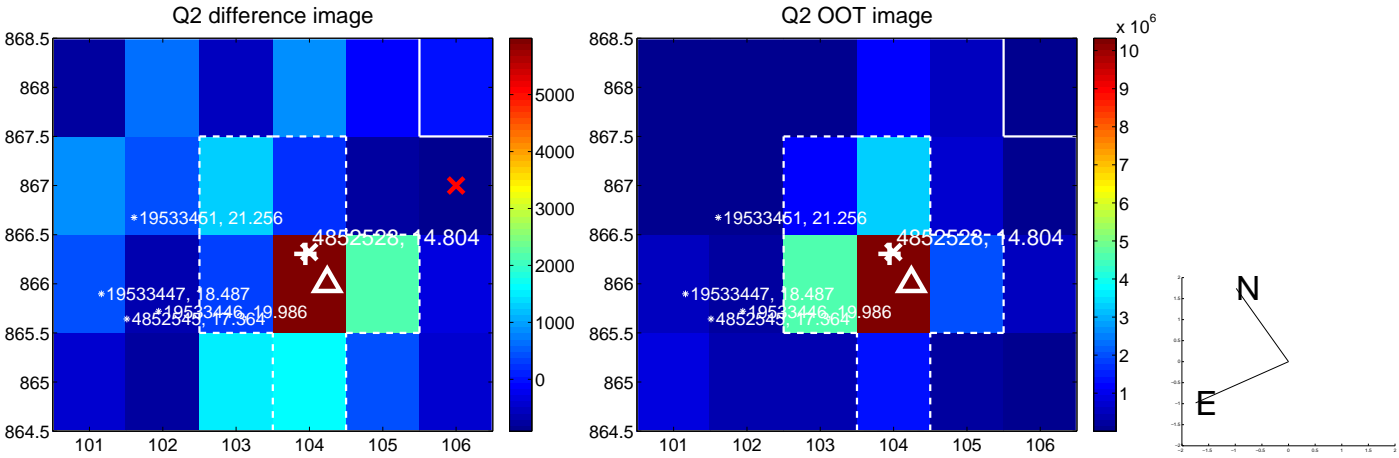
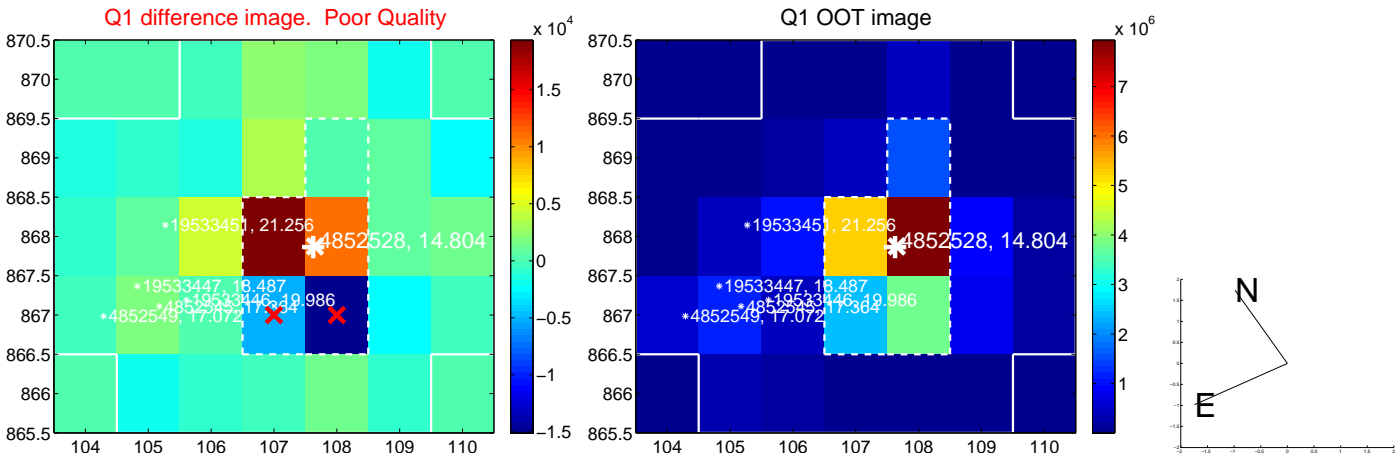
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.206 ± 0.387 | 0.53 | -0.023 ± 0.909 | -0.205 ± 0.350 |
| PRF-fit source offset from KIC position | 0.157 ± 0.306 | 0.51 | 0.033 ± 0.866 | -0.153 ± 0.299 |
| photometric centroid source offset | 0.87 ± 0.42 | 2.10 | 0.17 ± 0.47 | 0.85 ± 0.41 |

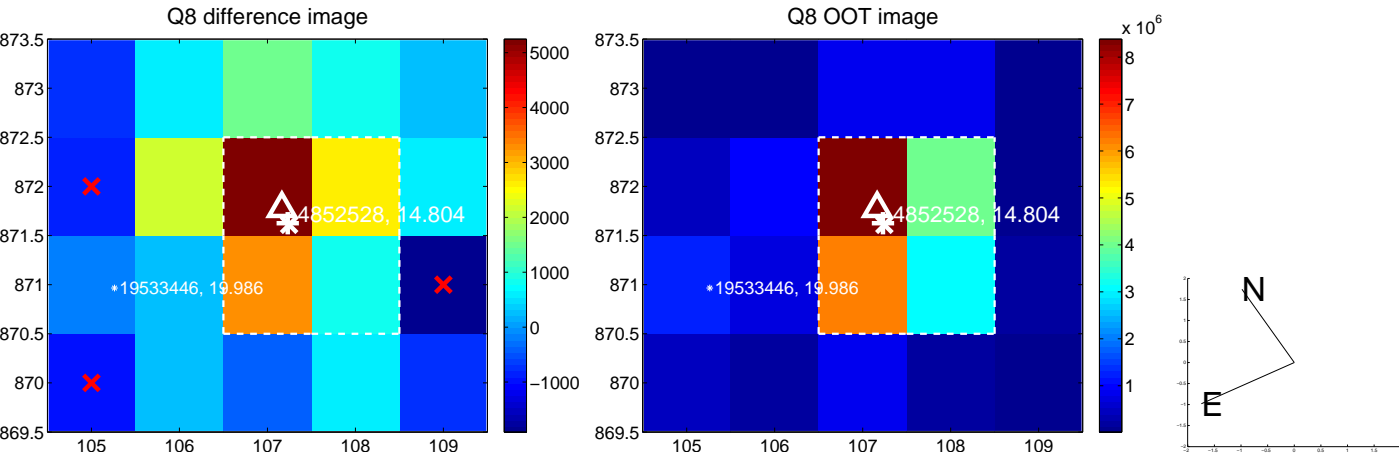
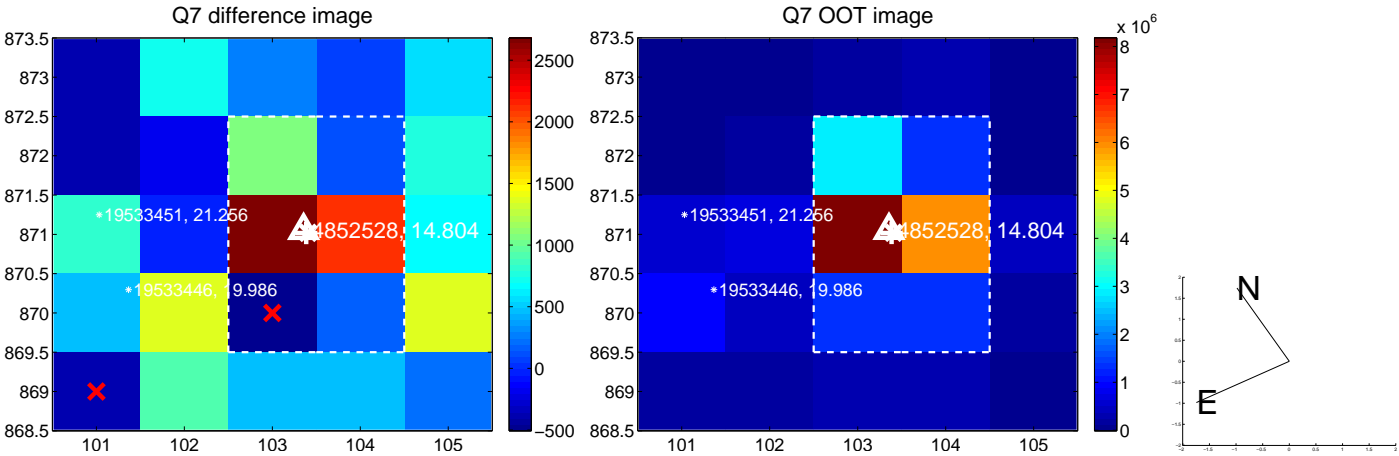
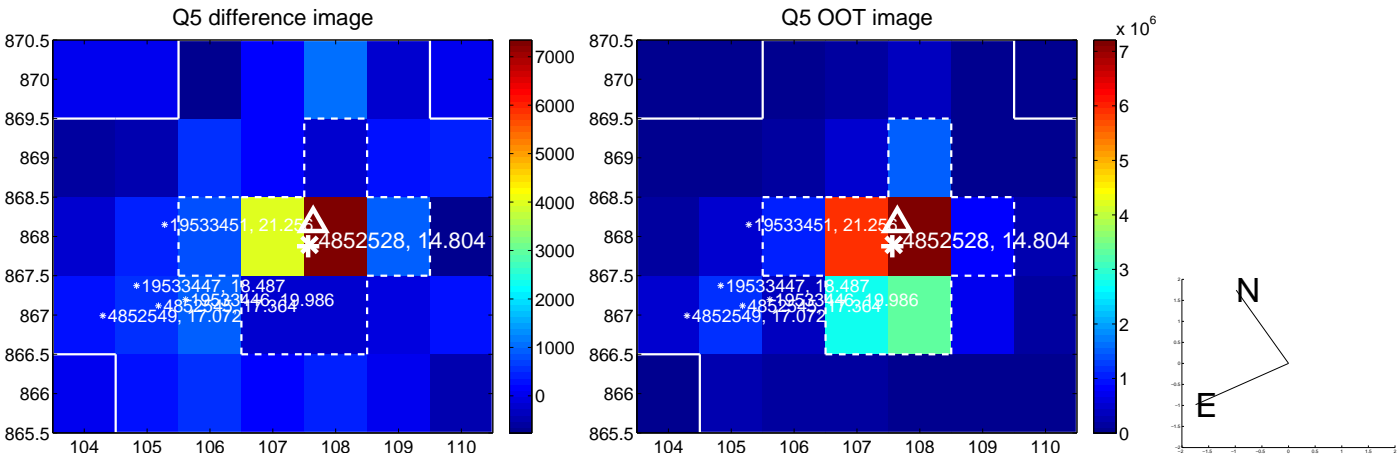


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

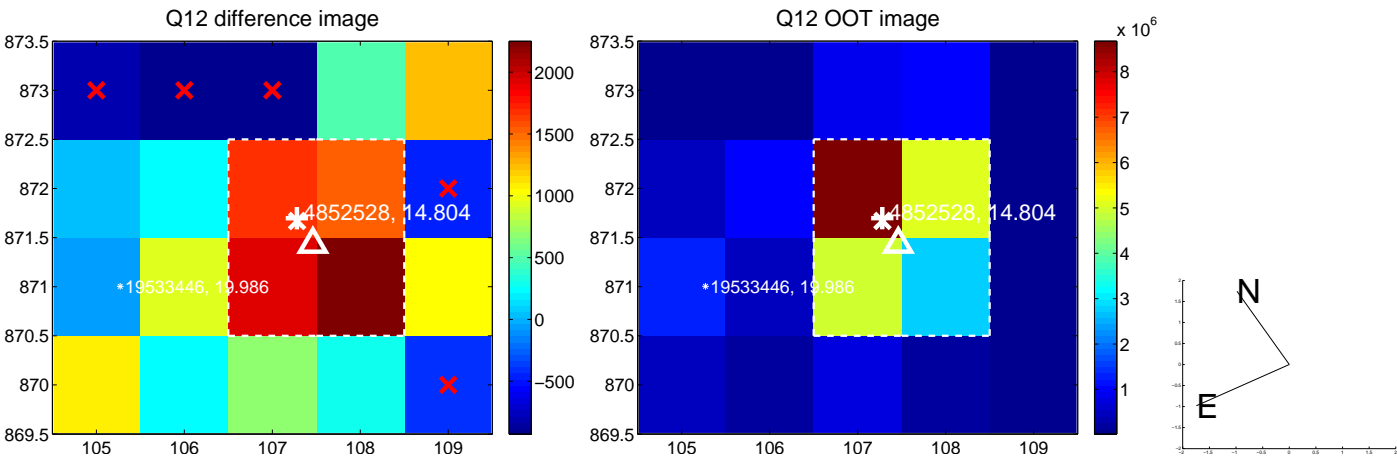
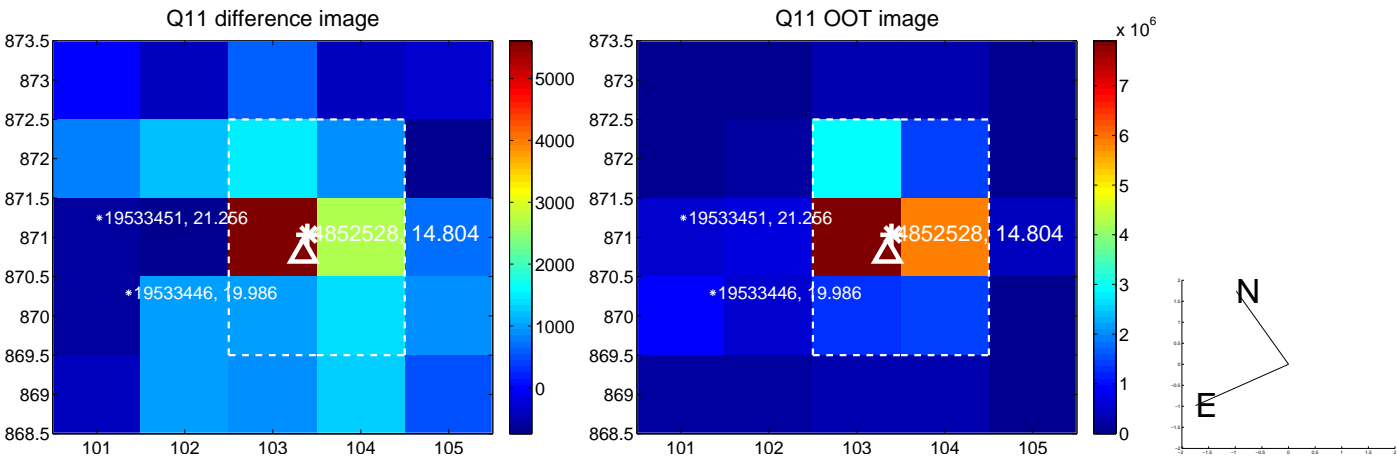
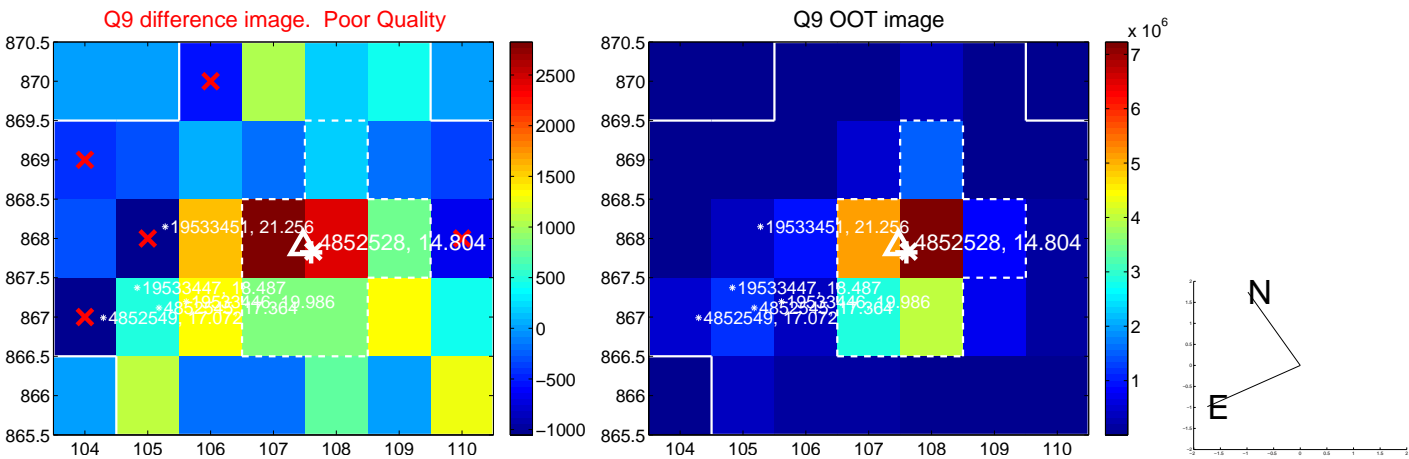
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



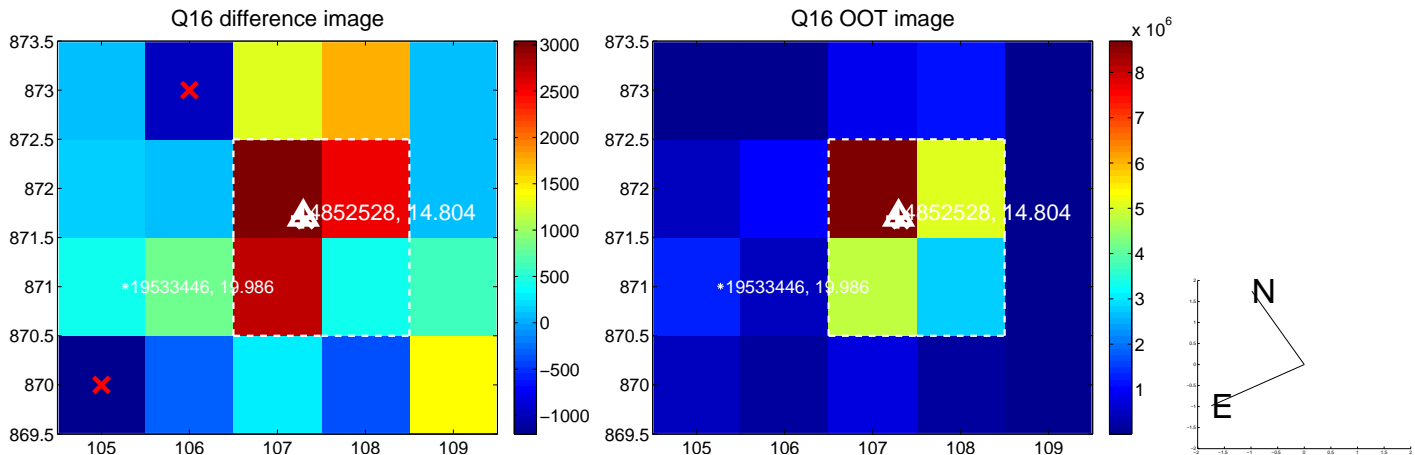
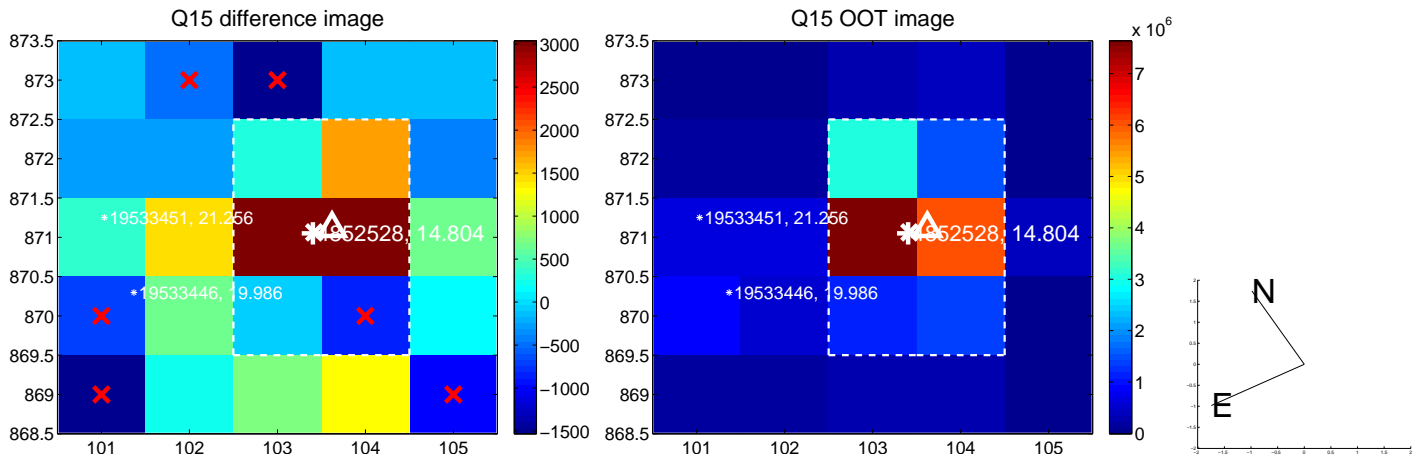
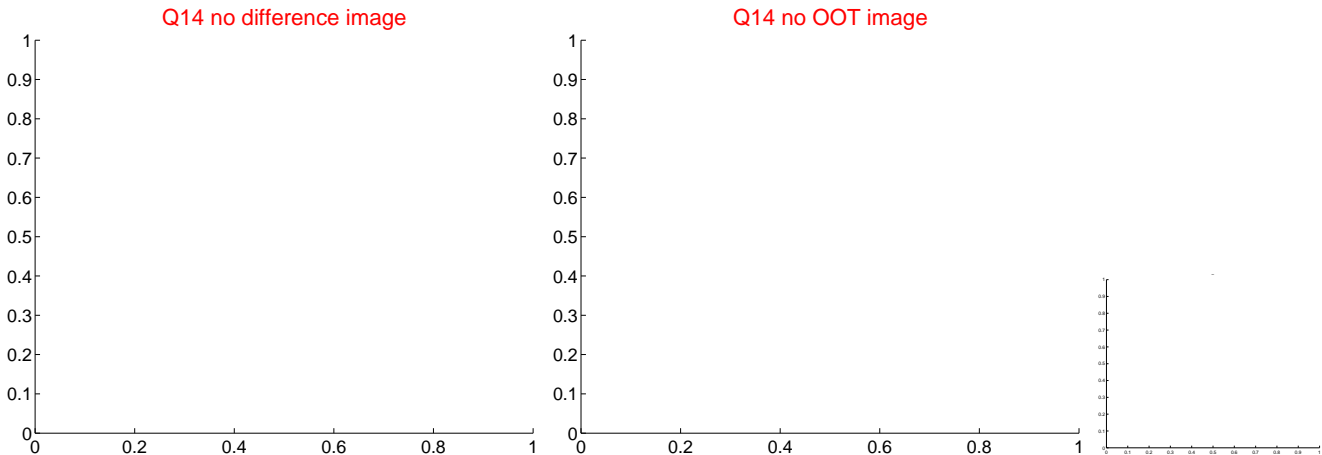
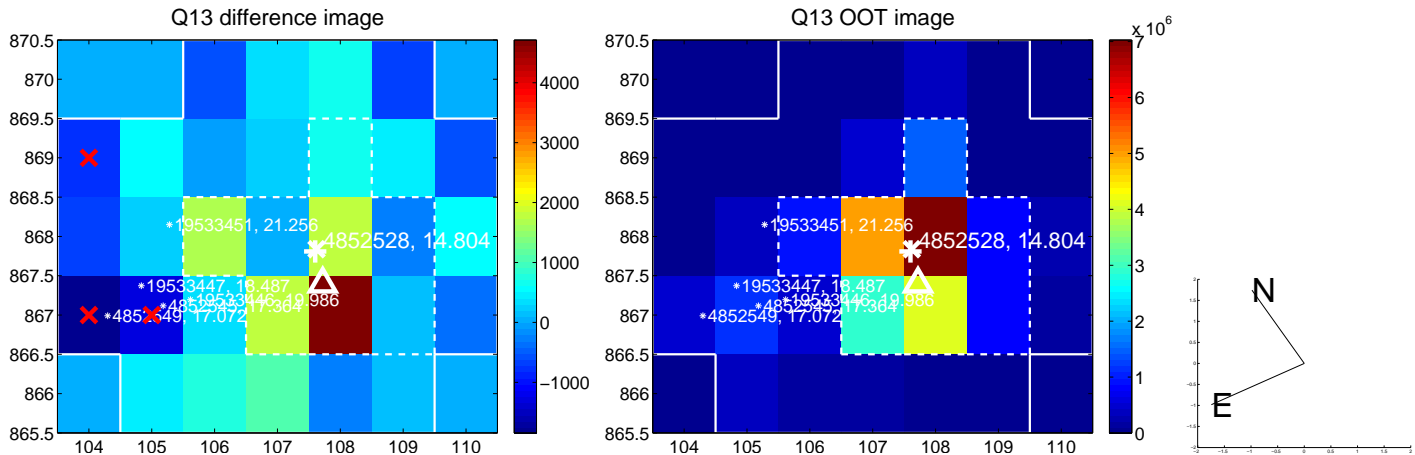
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



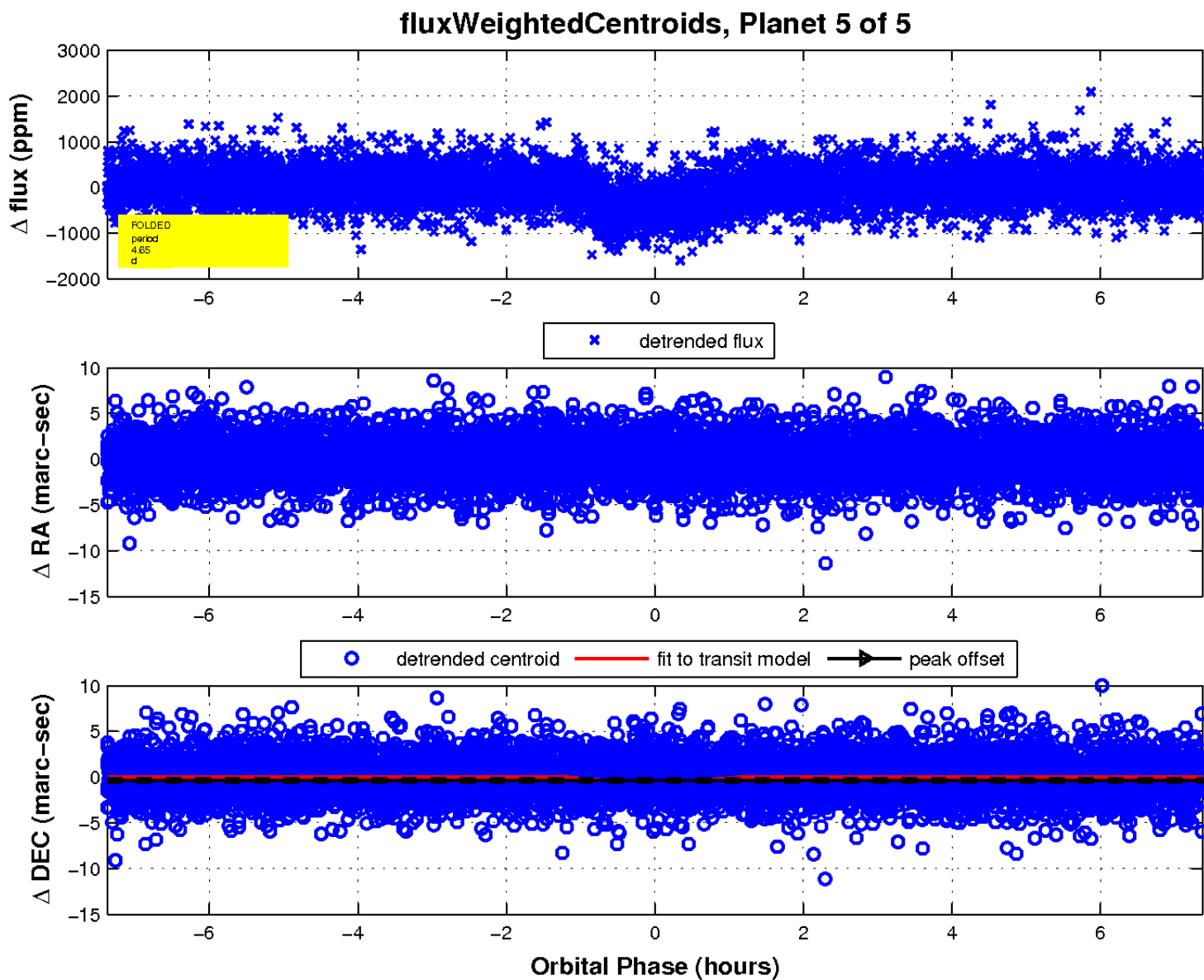
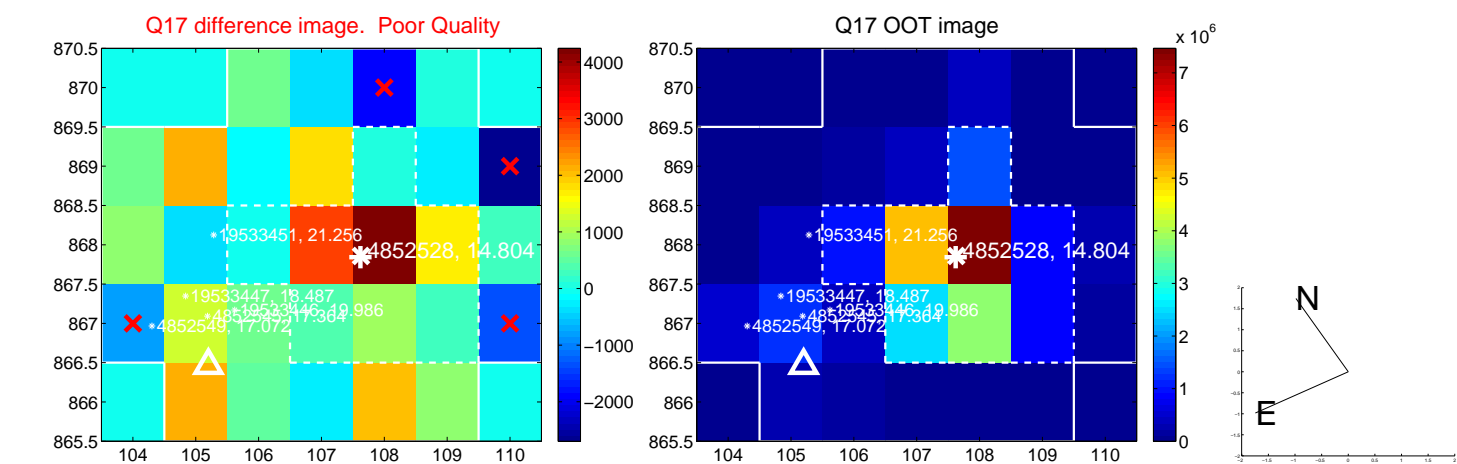
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

