

KIC 010166274

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010166274-01 | OBS | 1078.01 | 3.353715 | 131.518109 | 1211.6 | 1.772 | 38.8 | 44.4 | 0.46 | 3789 | 1.90 | 33.79 |
| 010166274-02 | OBS | 1078.02 | 6.877455 | 132.082447 | 1532.8 | 1.411 | 29.3 | 35.9 | 0.46 | 3789 | 2.01 | 12.97 |
| 010166274-03 | OBS | 1078.03 | 28.464587 | 158.040630 | 1603.5 | 2.867 | 22.2 | 25.9 | 0.46 | 3789 | 2.02 | 1.95 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 010166274-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-02 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-03 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |

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.

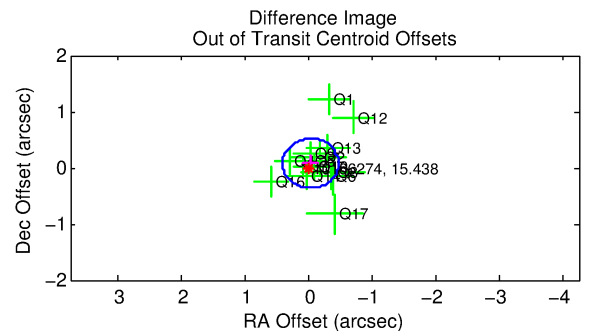
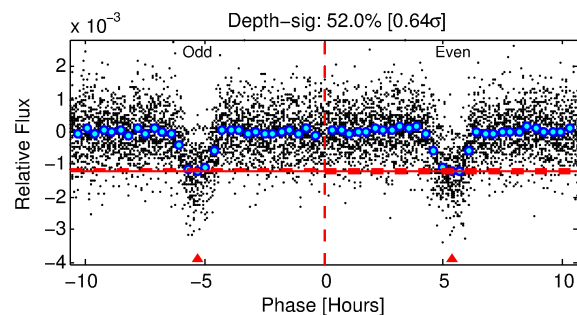
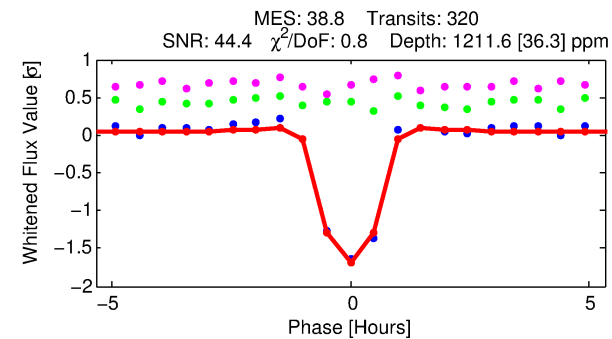
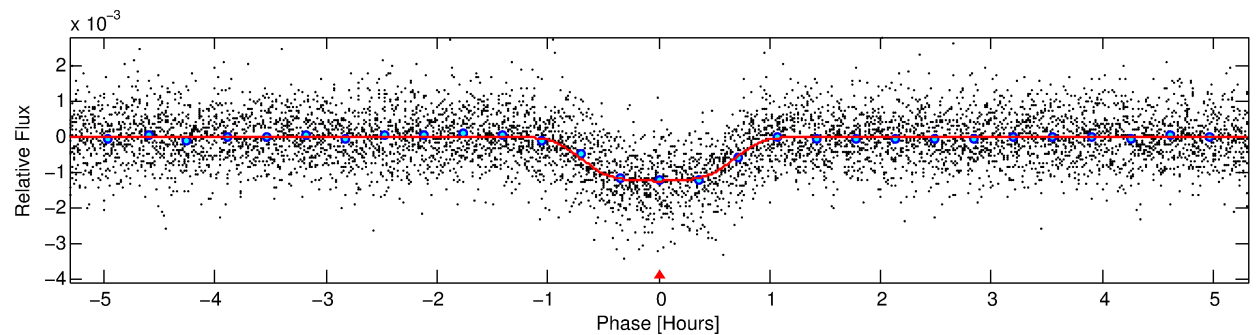
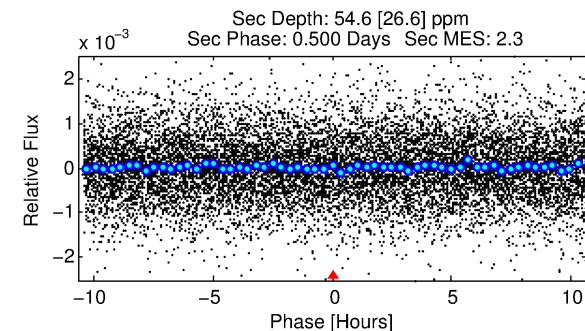
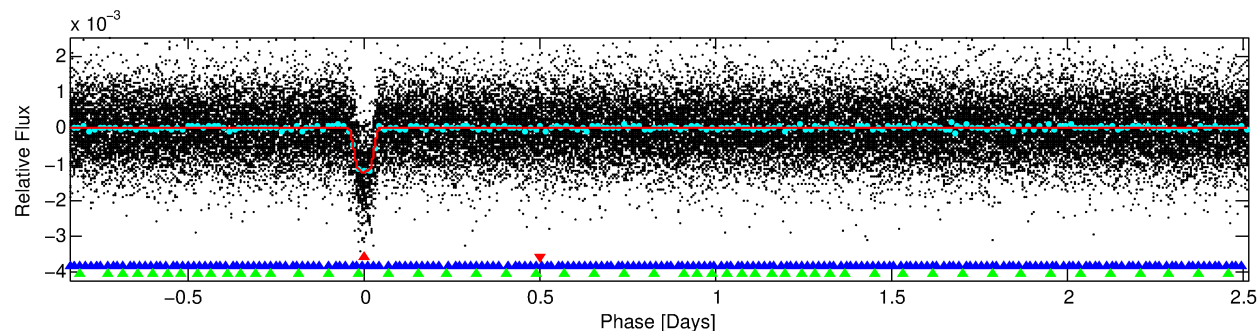
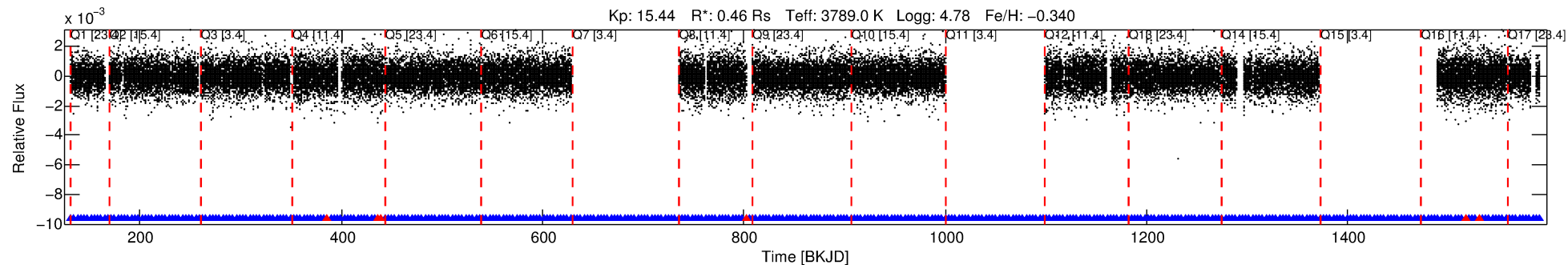
Ephemeris Match Information For 010166274-01

No Significant Match Found

DV One-Page Summary

KIC: 10166274 Candidate: 1 of 3 Period: 3.354 d
KOI: K01078.01 Name: Kepler-267b Corr: 0.973

Kp: 15.44 R*: 0.46 Rs Teff: 3789.0 K Logg: 4.78 Fe/H: -0.340



DV Fit Results:

Period = 3.35371 [0.00000] d
Epoch = 131.5181 [0.0007] BKJD
Rp/R* = 0.0378 [0.0022]
a/R* = 7.44 [1.86]
b = 0.90 [0.05]
Seff = 33.79 [5.10]
Teq = 615 [23] K
Rp = 1.90 [0.24] Re
a = 0.0340 [0.0031] AU
Ag = 9.65 [4.98] [1.74σ]
Teffp = 1675 [213] K [4.95σ]

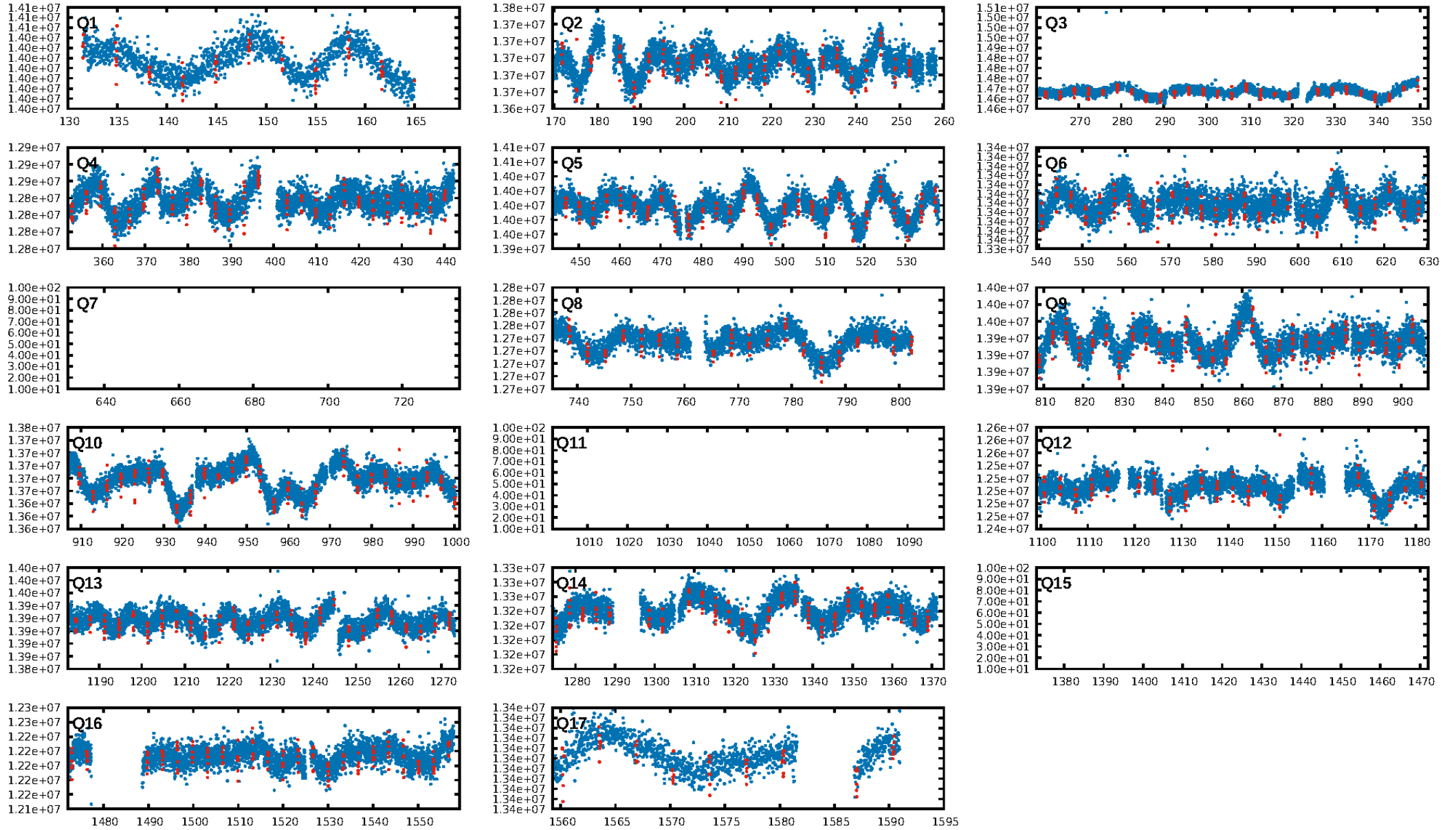
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [37.34σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [295/301]
GhostDiagnostic-chr: 2.125
Centroid-sig: 53.1%
Centroid-so: 1.114 arcsec [3.33σ]
OotOffset-rm: 0.082 arcsec [0.56σ]
KicOffset-rm: 0.572 arcsec [5.05σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

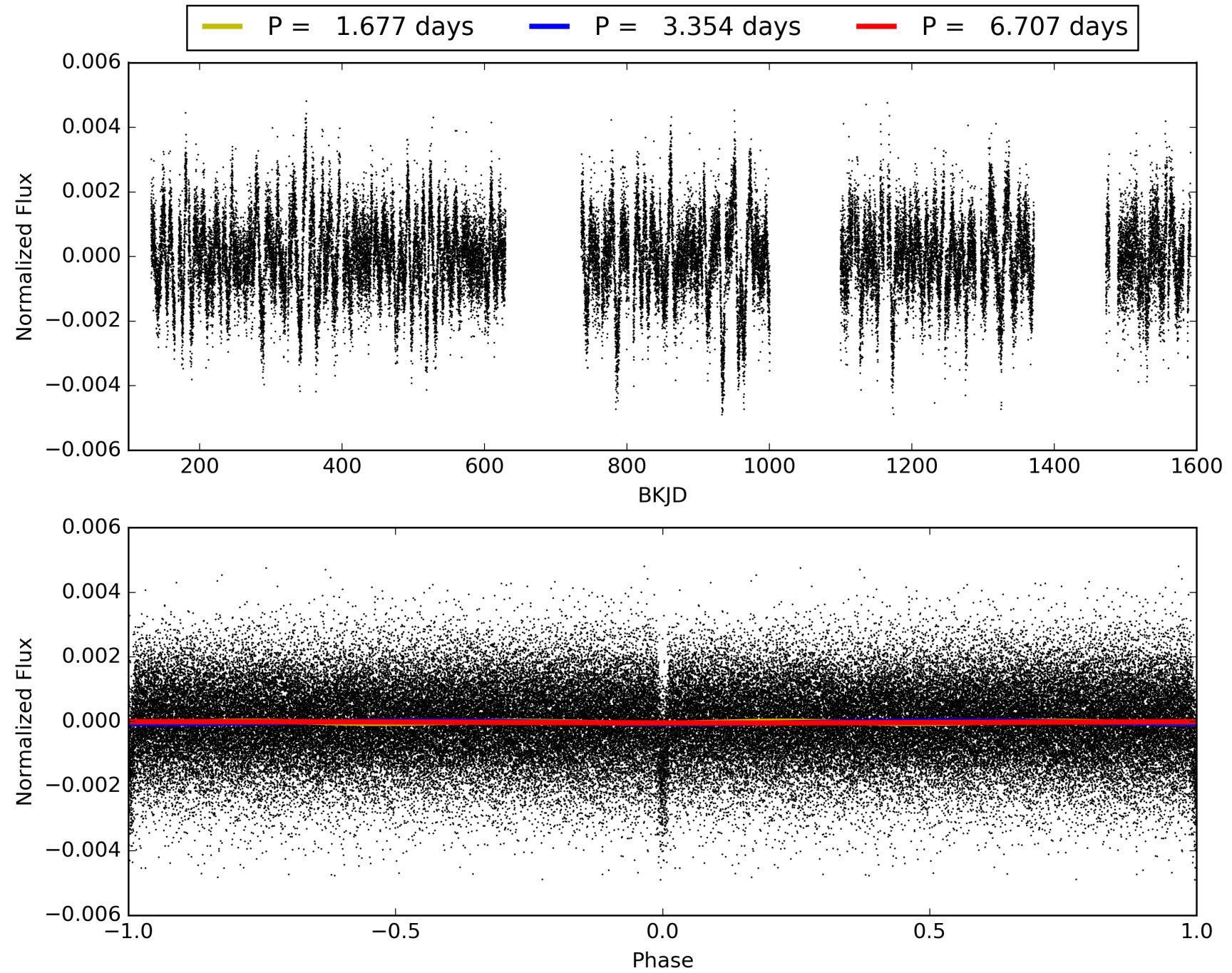
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:07:10 Z

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

TCE 010166274-01, PDC Light Curves

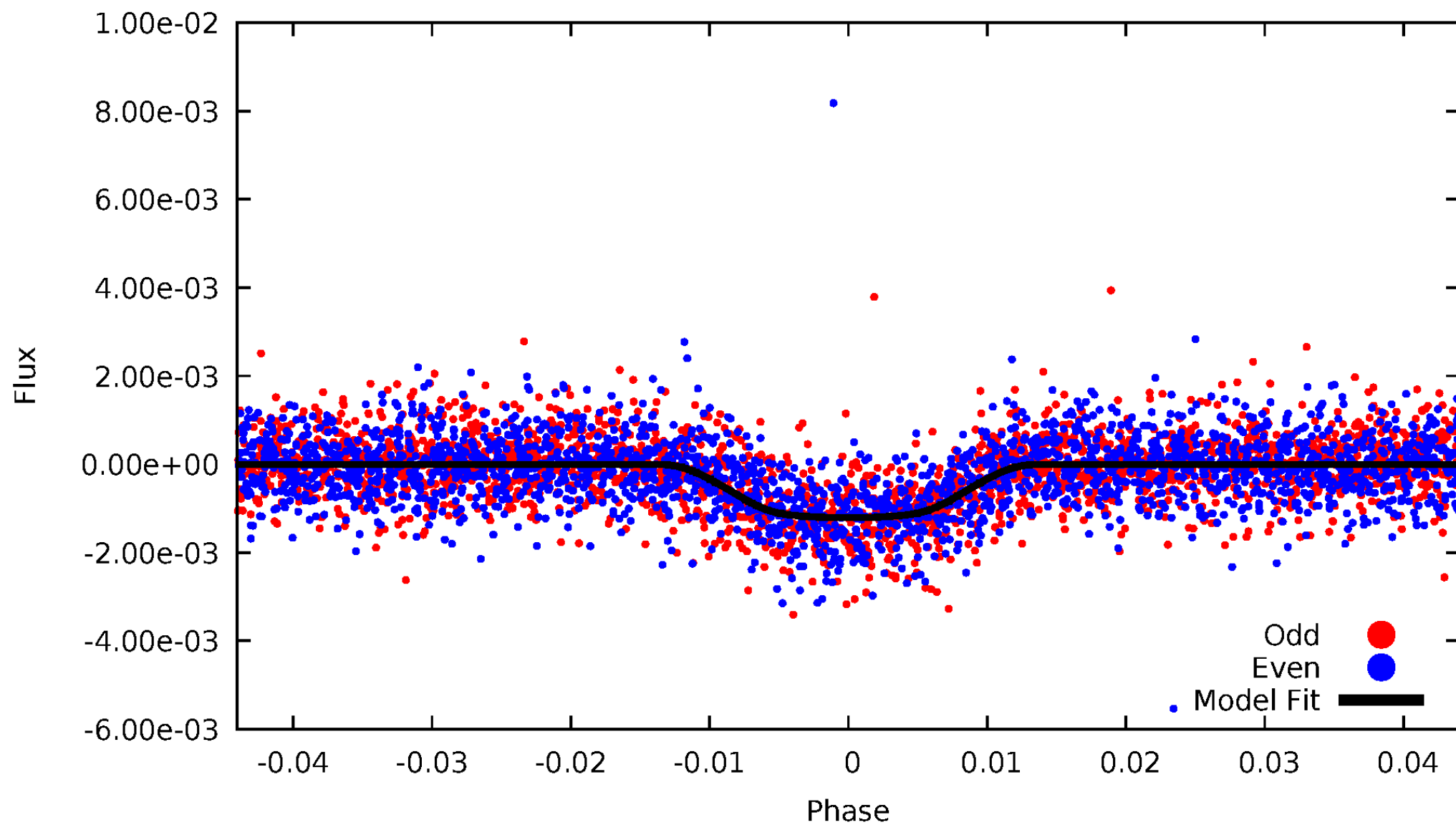


TCE 010166274-01



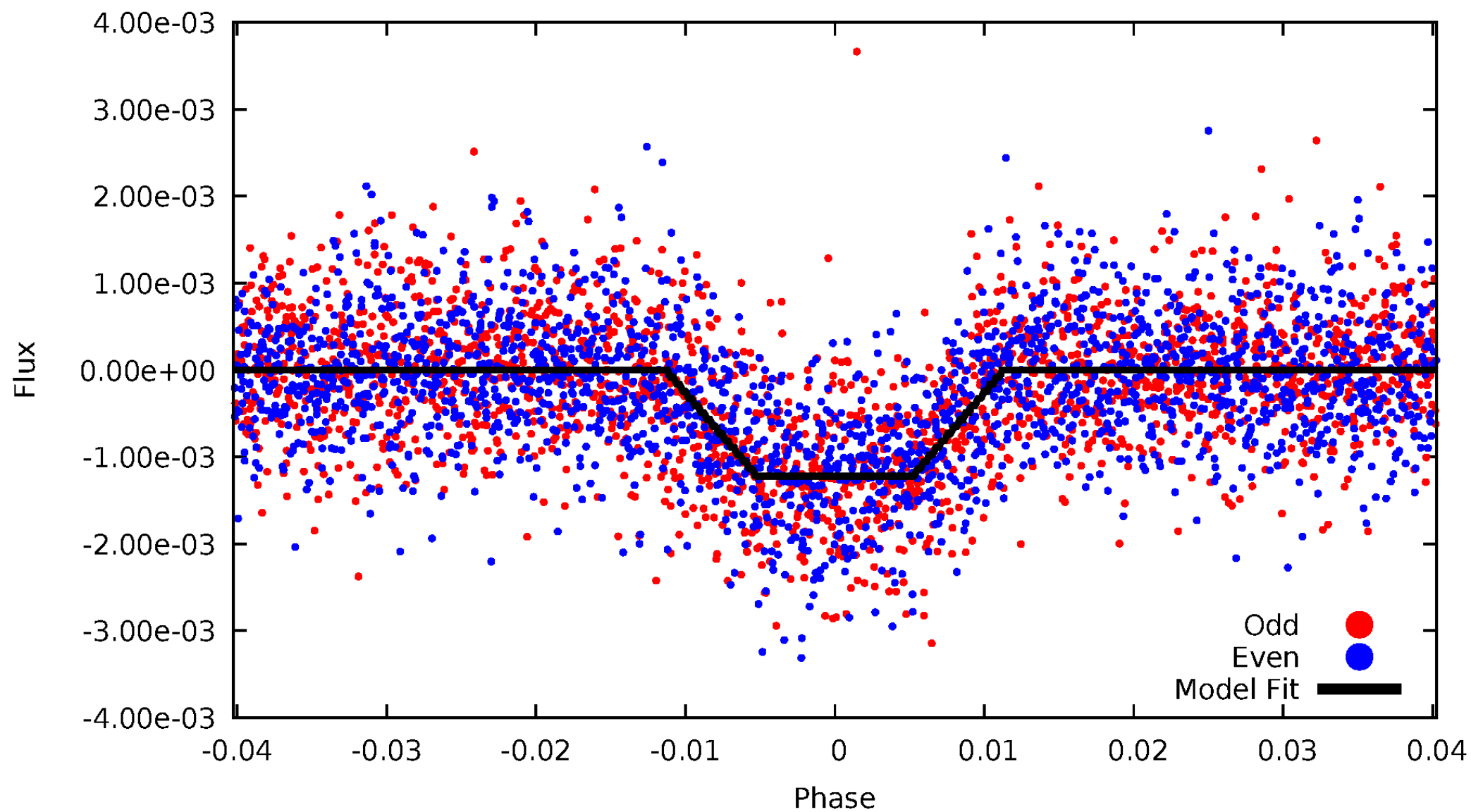
DV Odd/Even

TCE 010166274-01



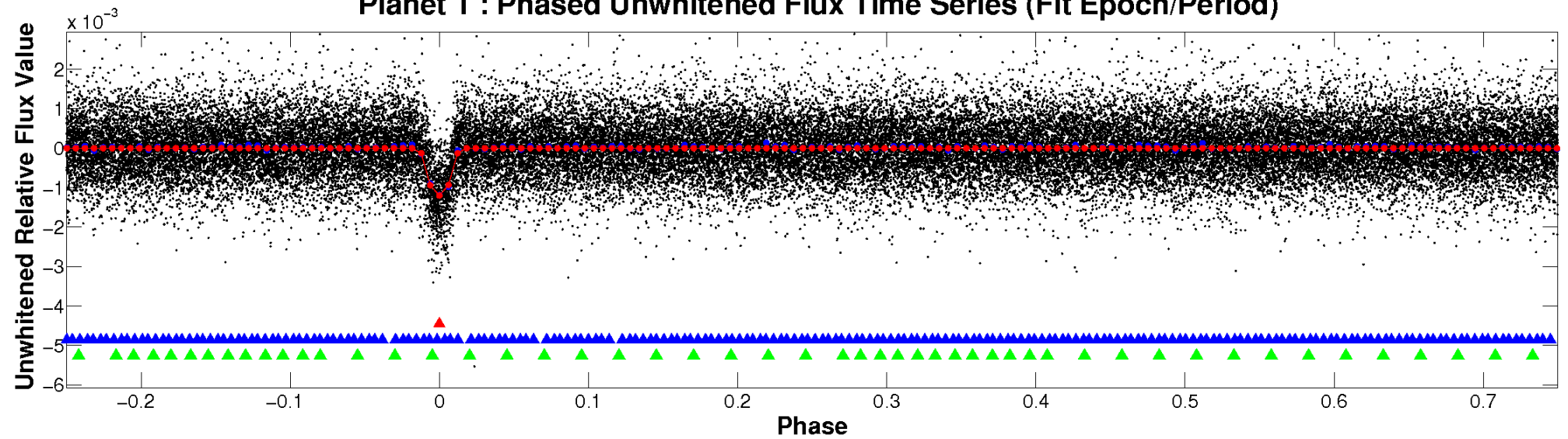
ALT Odd/Even

TCE 010166274-01

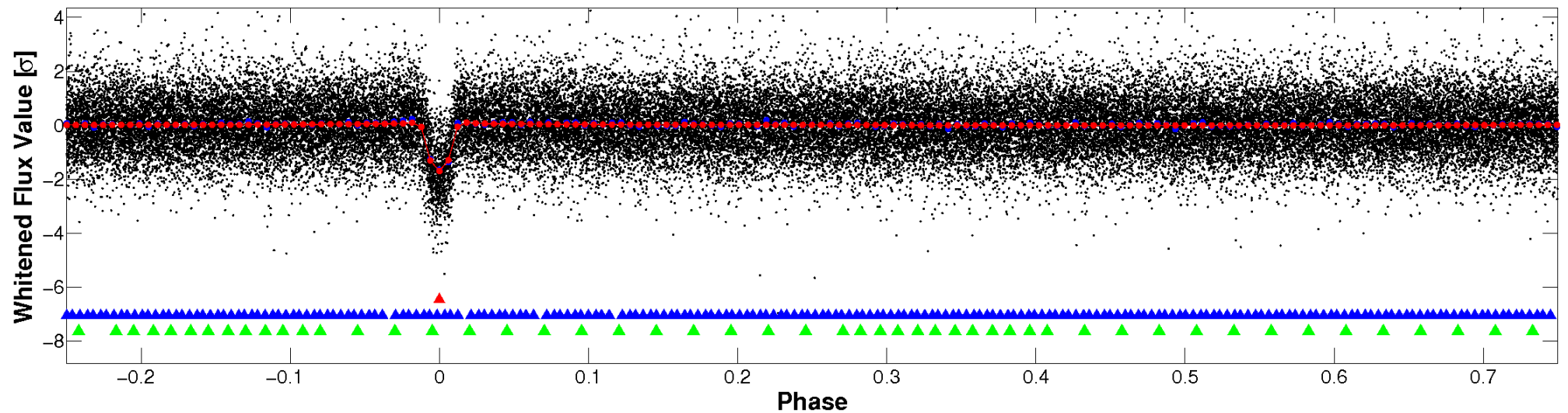


Non-Whitened Vs. Whitened Light Curve

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

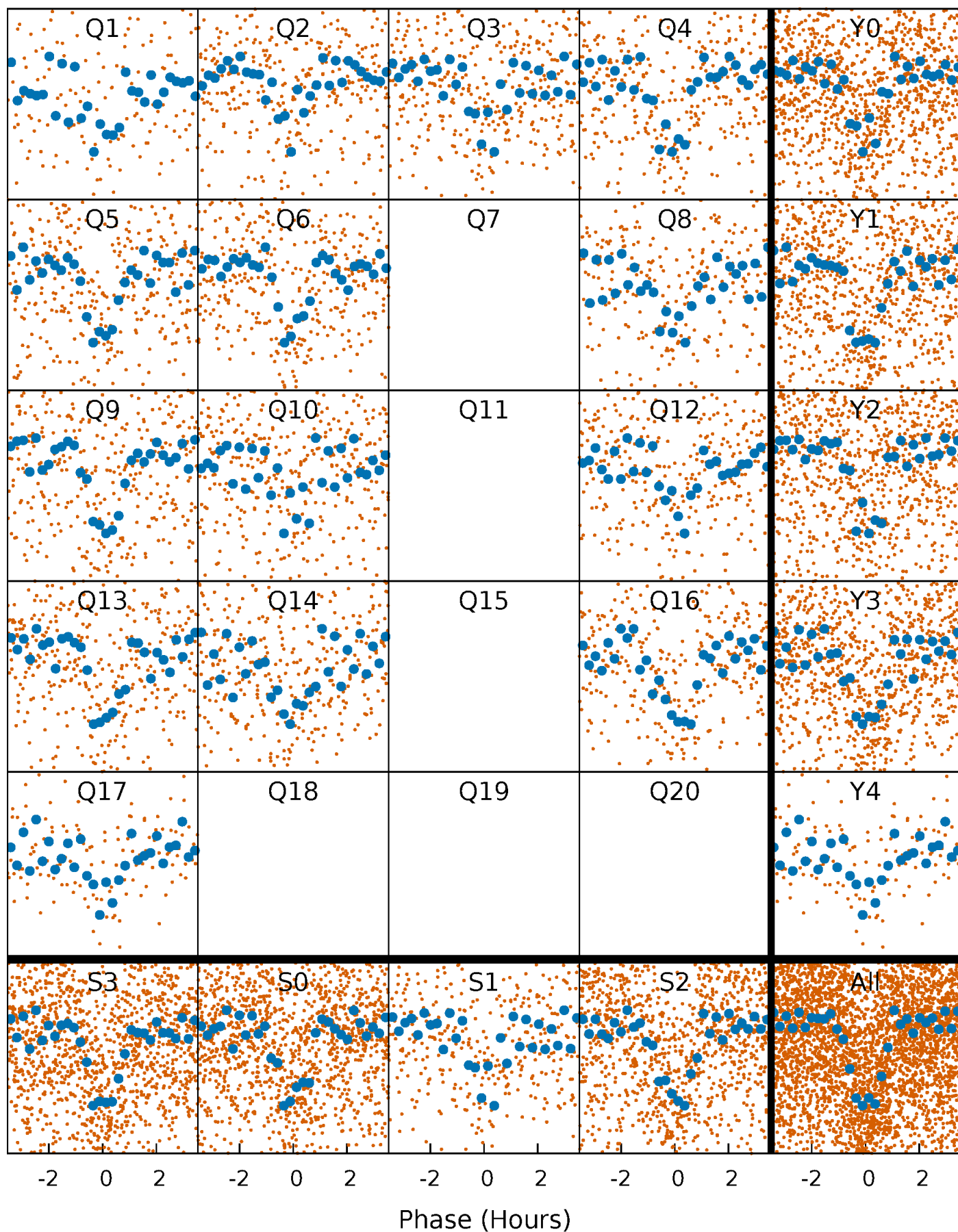


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



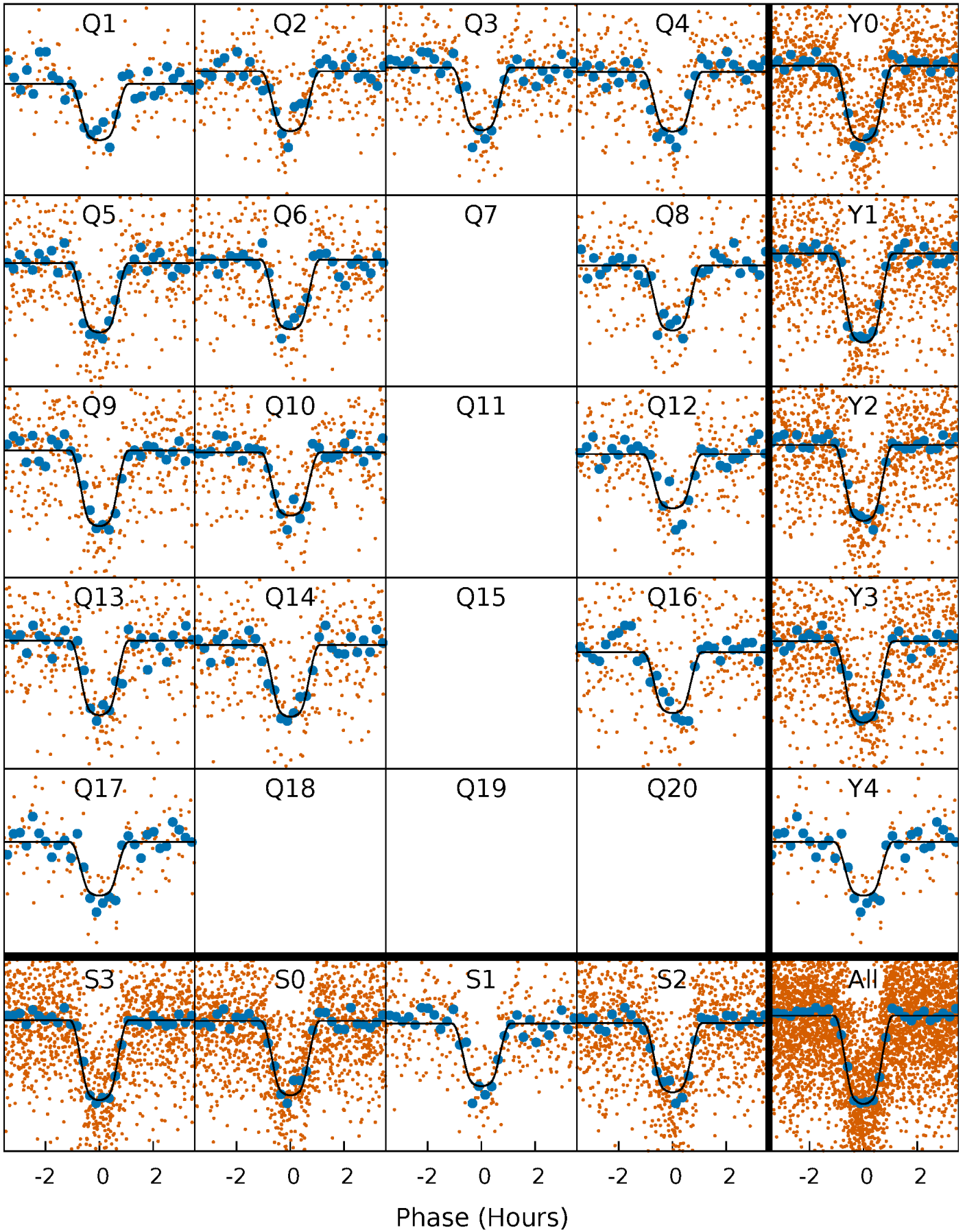
PDC Quarter-Phased Transit Curves

TCE 010166274-01 P= 3.353715 Days $T_0=131.518109$ (BKJD)



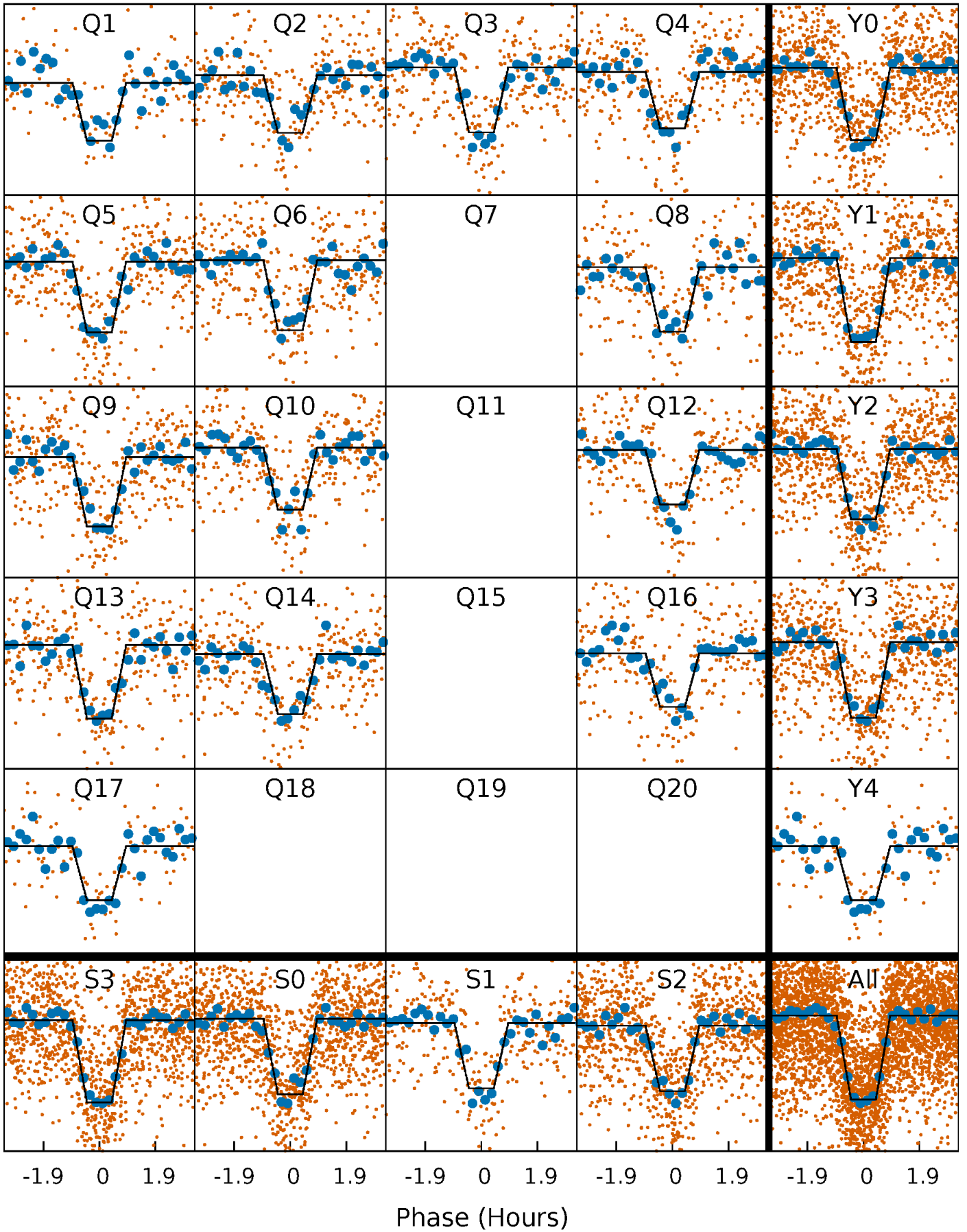
DV Quarter-Phased Transit Curves

TCE 010166274-01 P= 3.353715 Days $T_0=131.518109$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

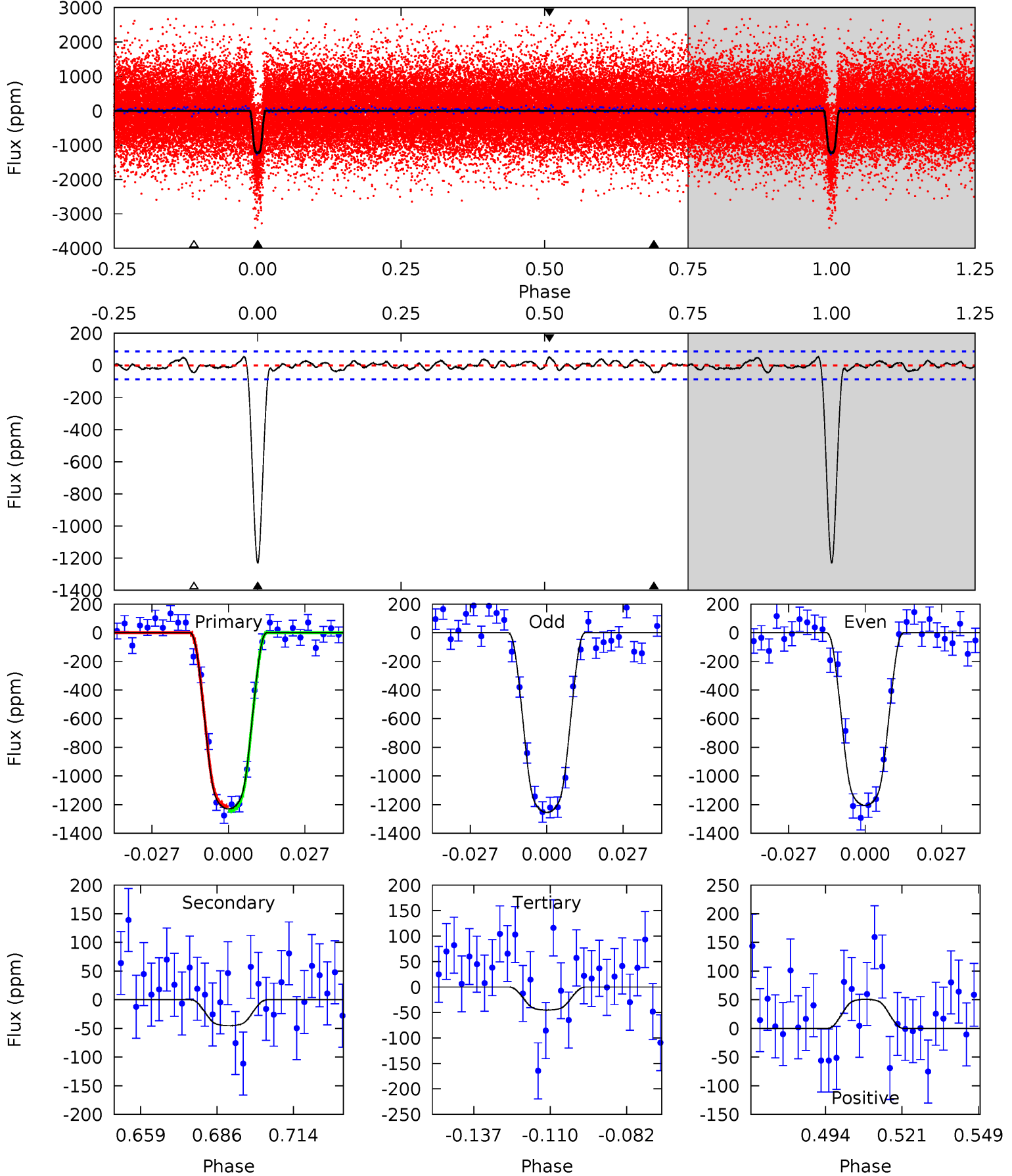
TCE 010166274-01 P= 3.353723 Days $T_0=131.517442$ (BKJD)



DV Model-Shift Uniqueness Test

010166274-01, P = 3.353715 Days, E = 128.164394 Days

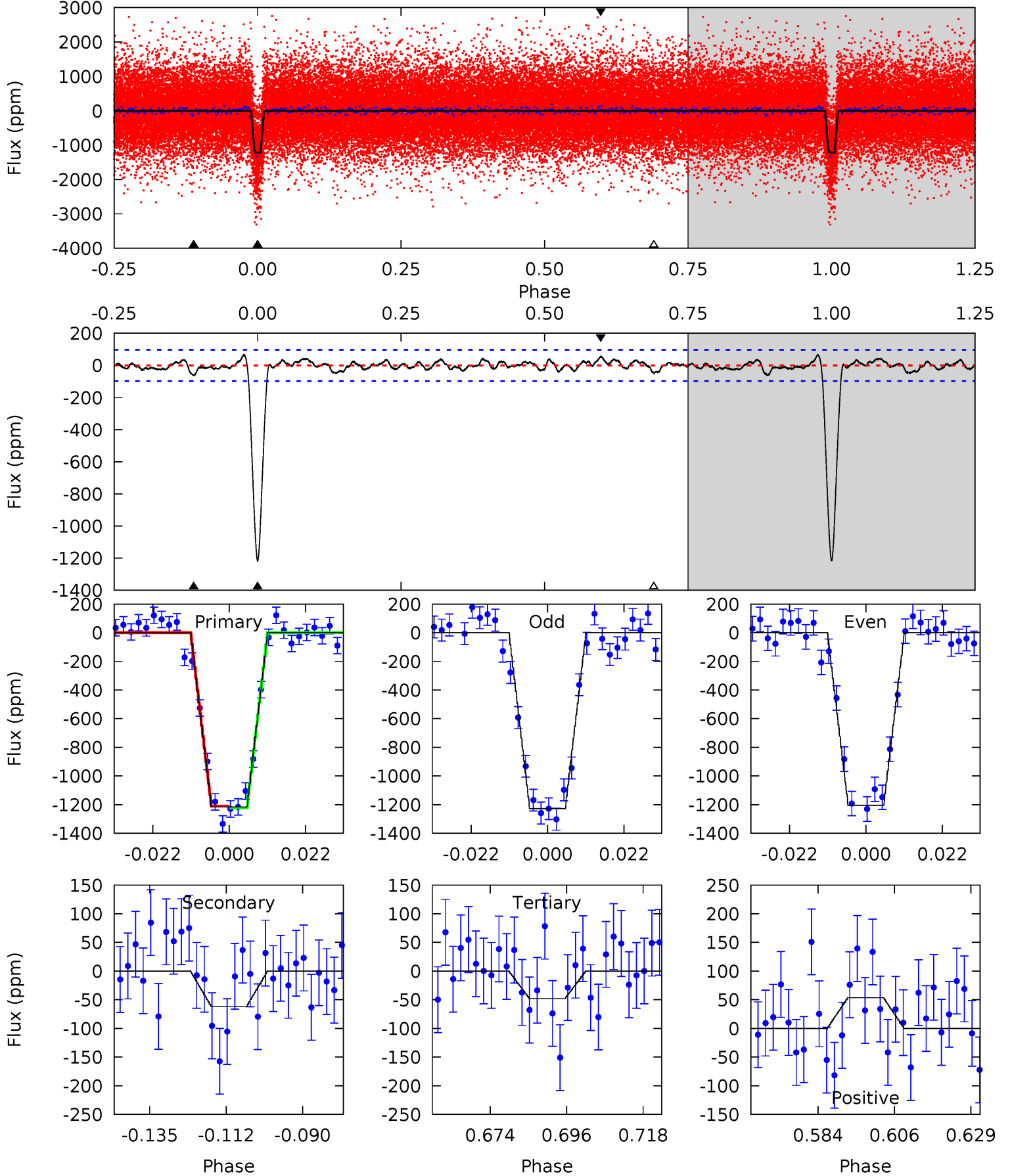
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 68.5 | 2.52 | 2.52 | 2.83 | 4.83 | 2.21 | 1.01 | 66.0 | 65.7 | 0.00 | -0.31 | 1.37 | 1.02 | 0.04 | 0.88 |



Alt Model-Shift Uniqueness Test

010166274-01, P = 3.353723 Days, E = 128.163719 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 61.2 | 3.10 | 2.42 | 2.70 | 4.87 | 2.28 | 1.02 | 58.8 | 58.5 | 0.68 | 0.40 | 0.58 | 1.01 | 0.05 | 0.31 |



Stellar Parameters For KIC 010166274

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3789^{+75}_{-82} | $4.781^{+0.063}_{-0.031}$ | $-0.340^{+0.150}_{-0.150}$ | $0.460^{+0.035}_{-0.053}$ | $0.467^{+0.038}_{-0.046}$ | $6.750^{+2.071}_{-0.905}$ |
| | +2%/-2% | +1%/-1% | +44%/-44% | +8%/-12% | +8%/-10% | +31%/-13% |
| Source | SPE70 | SPE60 | SPE70 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010166274-01 / KOI 1078.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|-------------------|----------------------|---------------------------|
| DV | -45 ± 18 | $1.88^{+0.15}_{-0.16}$ | 853^{+24}_{-24} | 2335^{+103}_{-143} | $8.341^{+3.260}_{-3.367}$ |
| Alt. | -62 ± 20 | $1.73^{+0.15}_{-0.14}$ | 852^{+25}_{-26} | 2461^{+107}_{-123} | 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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

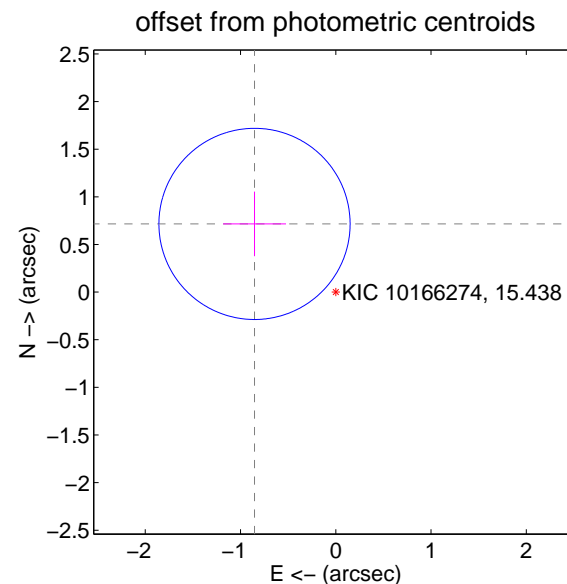
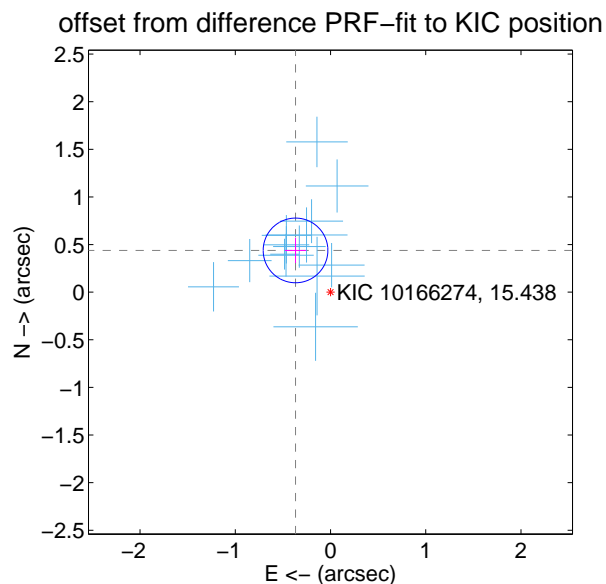
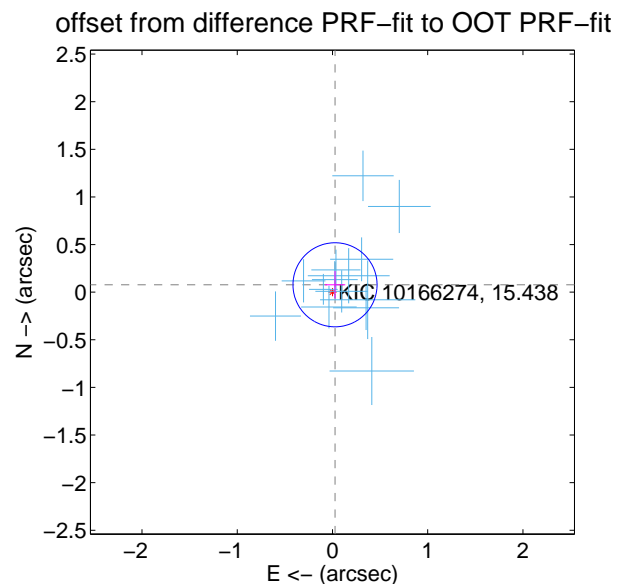
DV Centroid Data

Supplemental centroid analysis for 010166274-01. Kepler magnitude: 15.44. Transit SNR 44.43

There are 14 quarters with good PRF difference image offsets

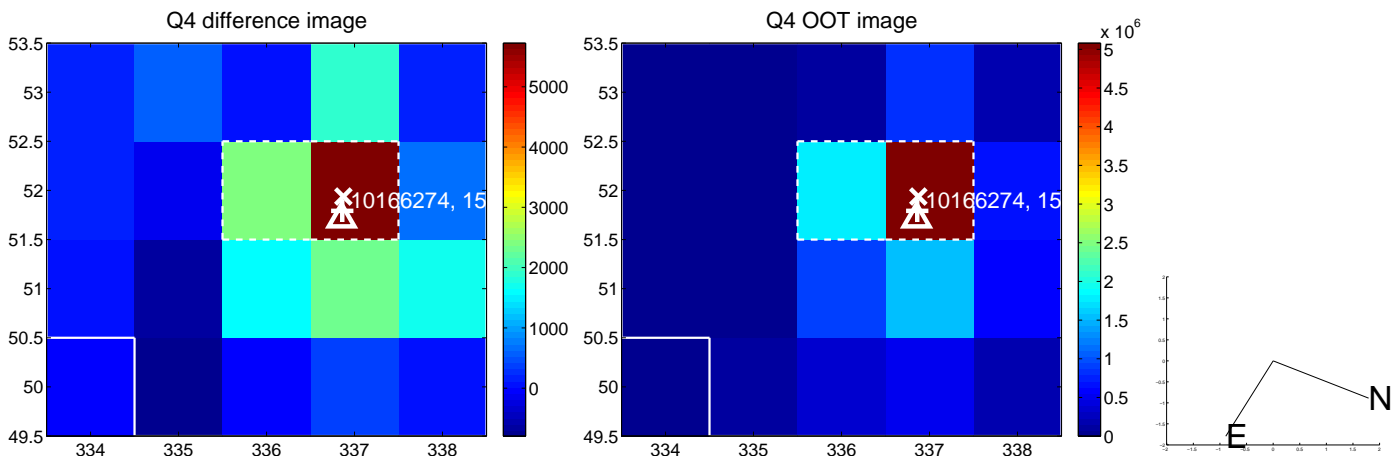
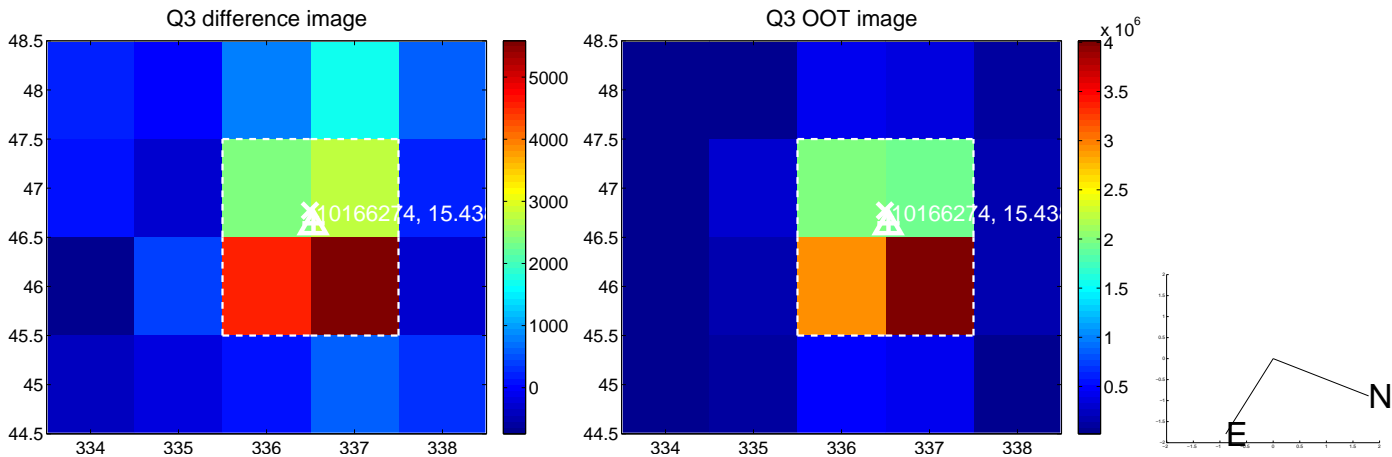
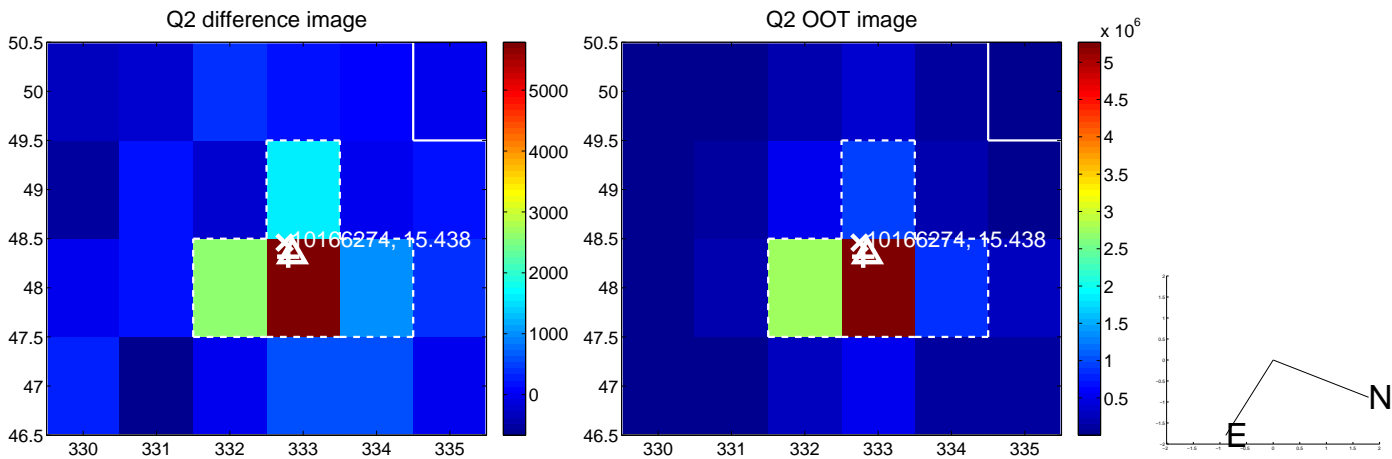
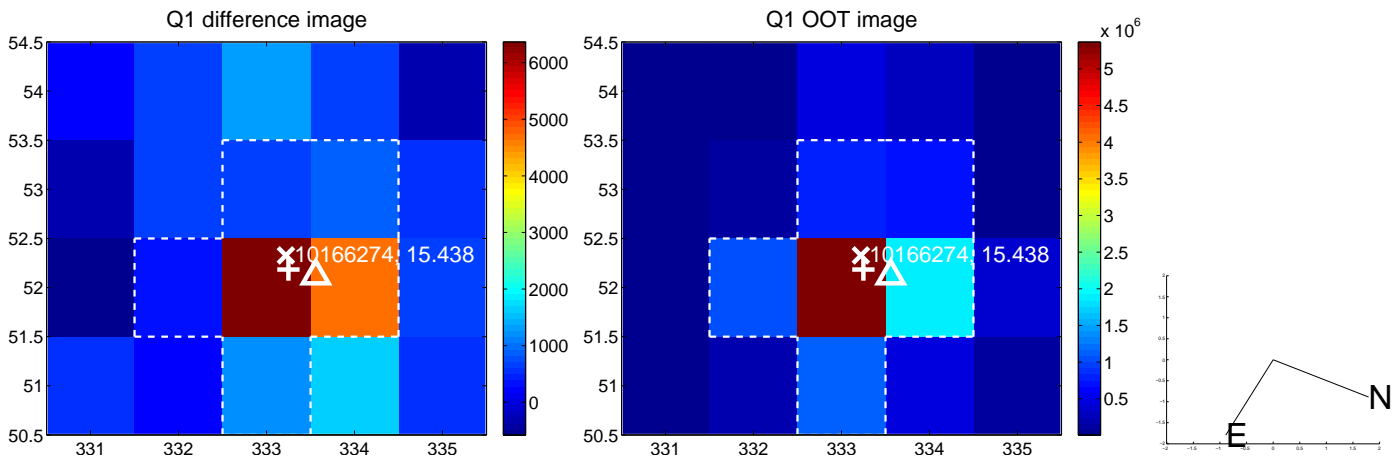
The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.082 ± 0.147 | 0.56 | -0.027 ± 0.107 | 0.078 ± 0.144 |
| PRF-fit source offset from KIC position | 0.572 ± 0.113 | 5.05 | 0.367 ± 0.112 | 0.438 ± 0.132 |
| photometric centroid source offset | 1.11 ± 0.33 | 3.33 | 0.85 ± 0.33 | 0.72 ± 0.34 |

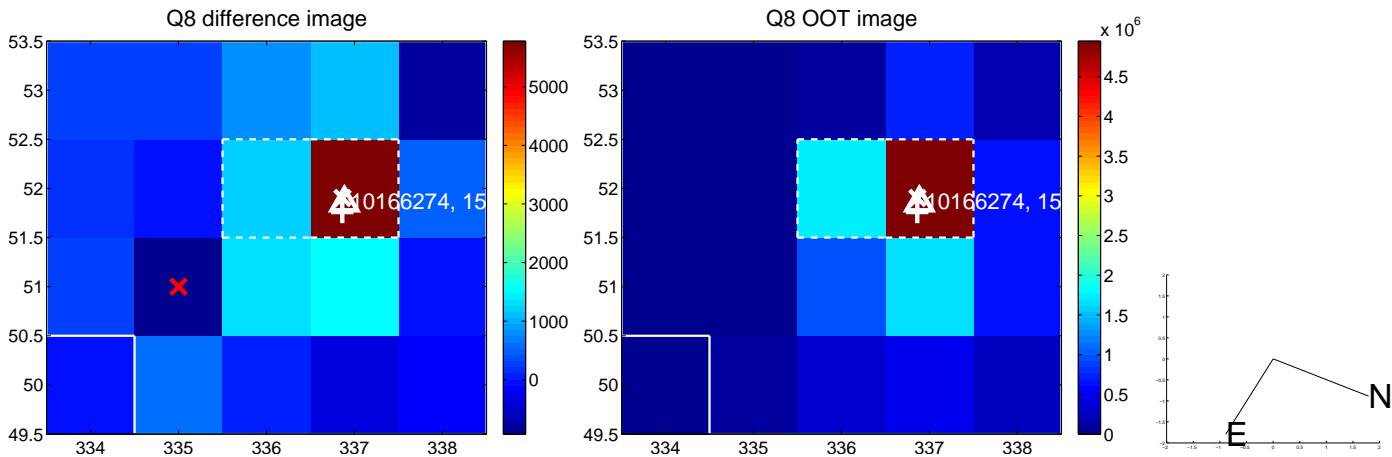
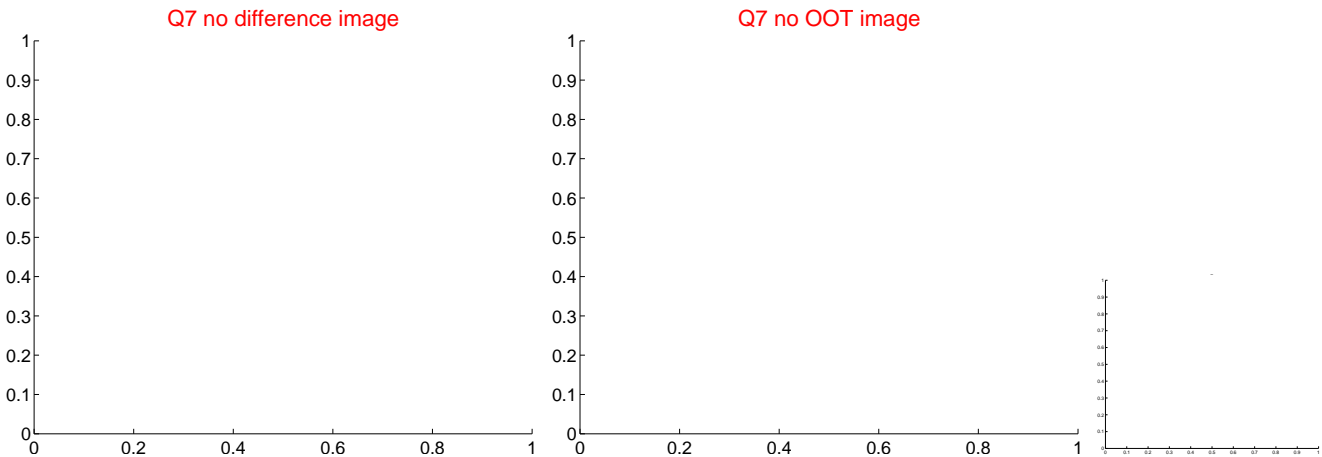
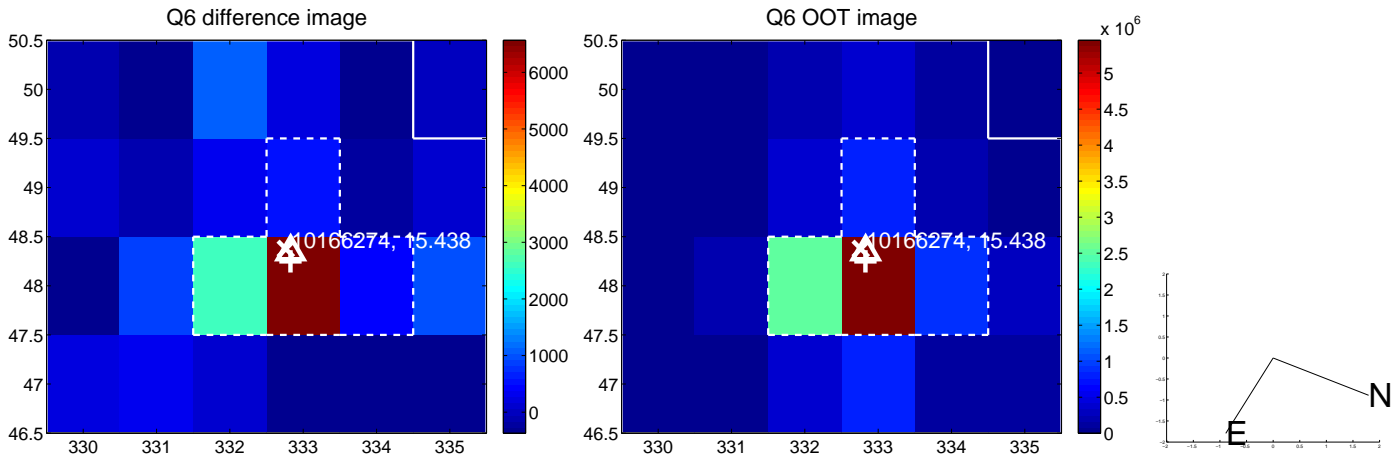
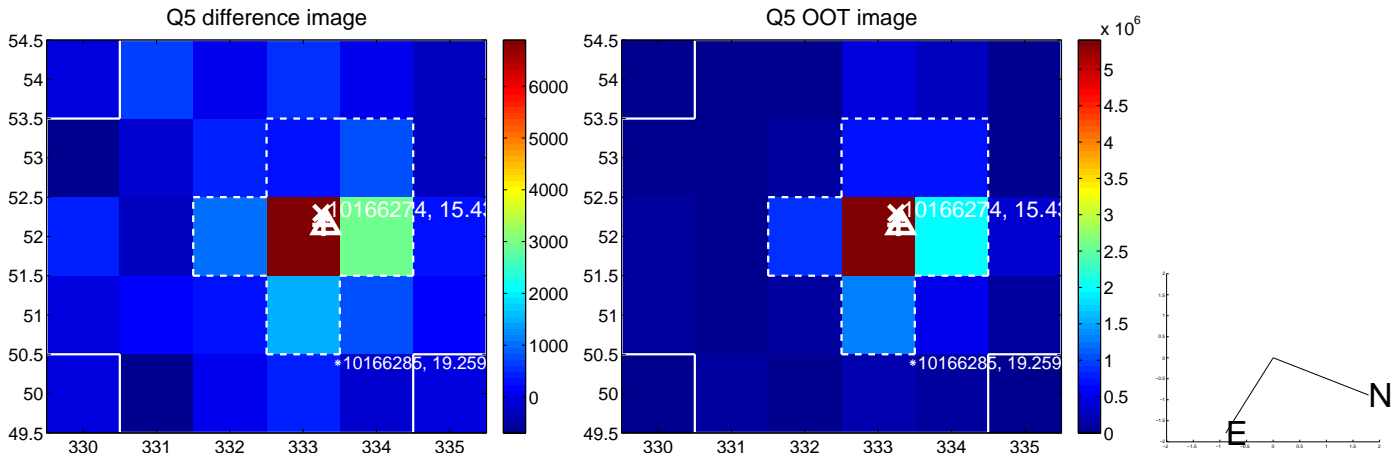


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

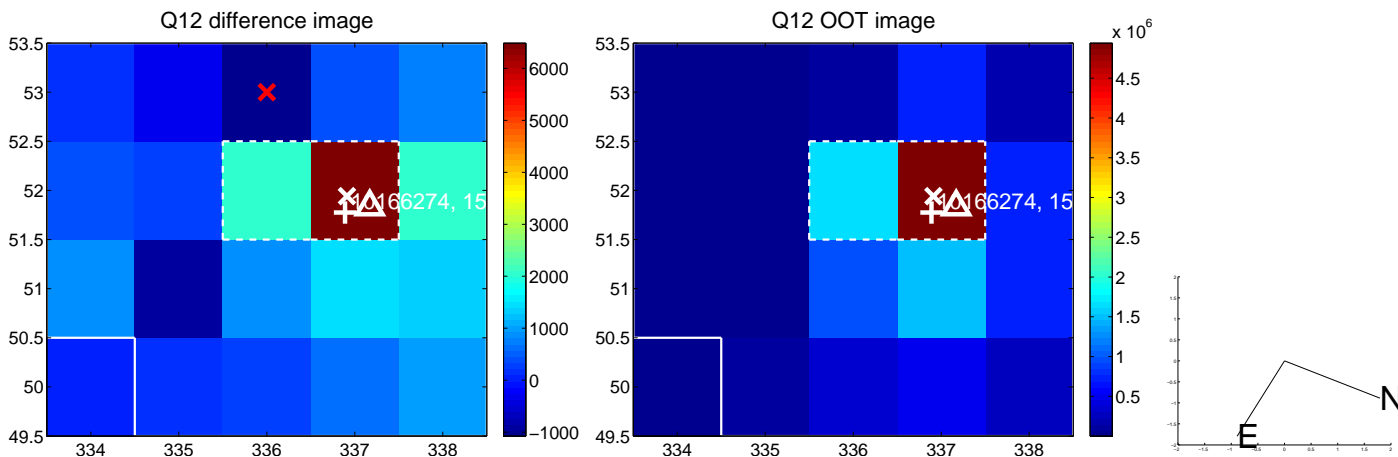
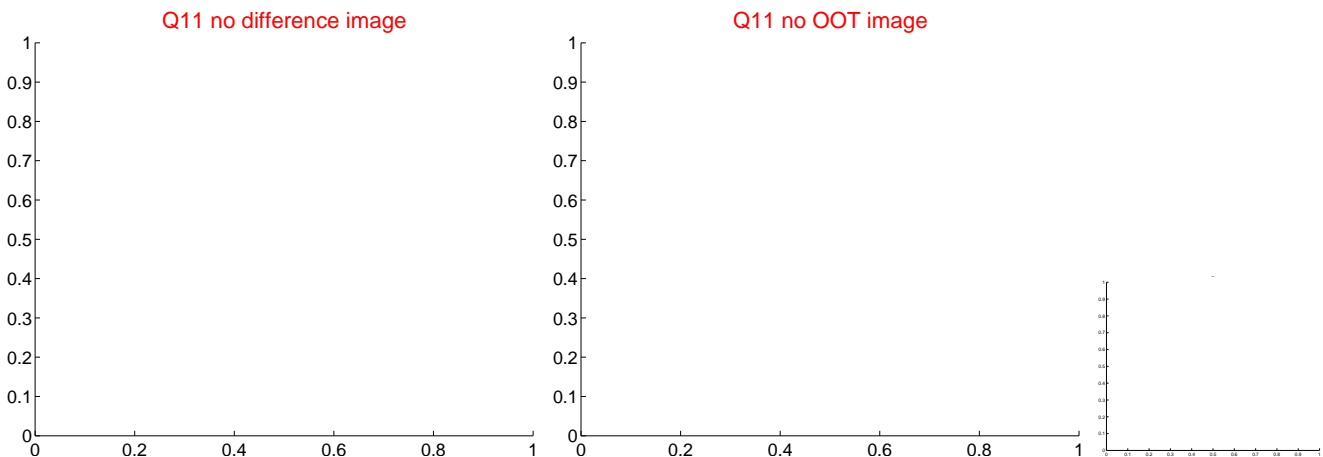
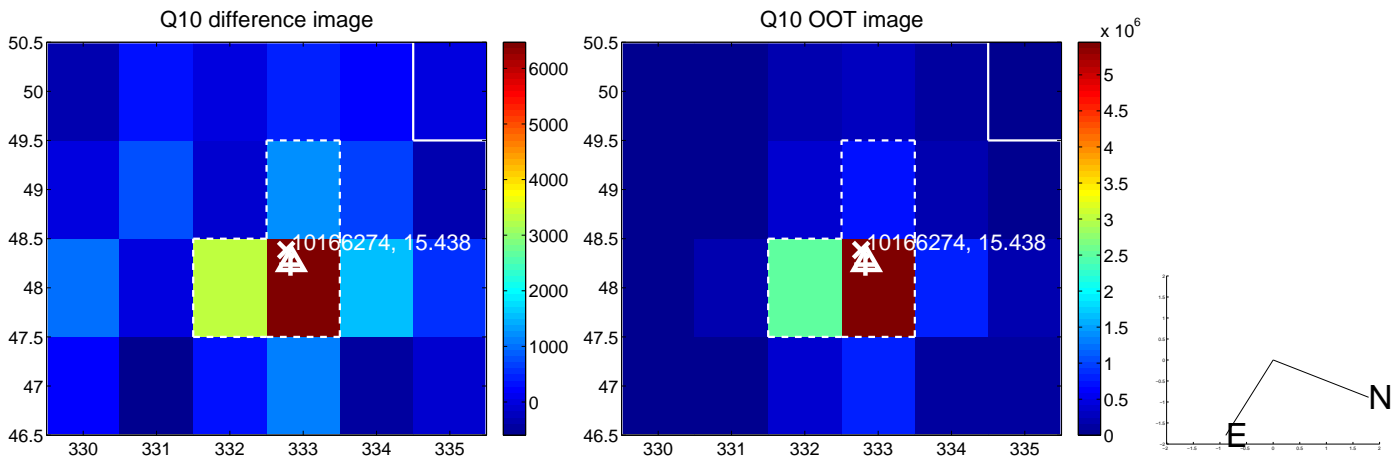
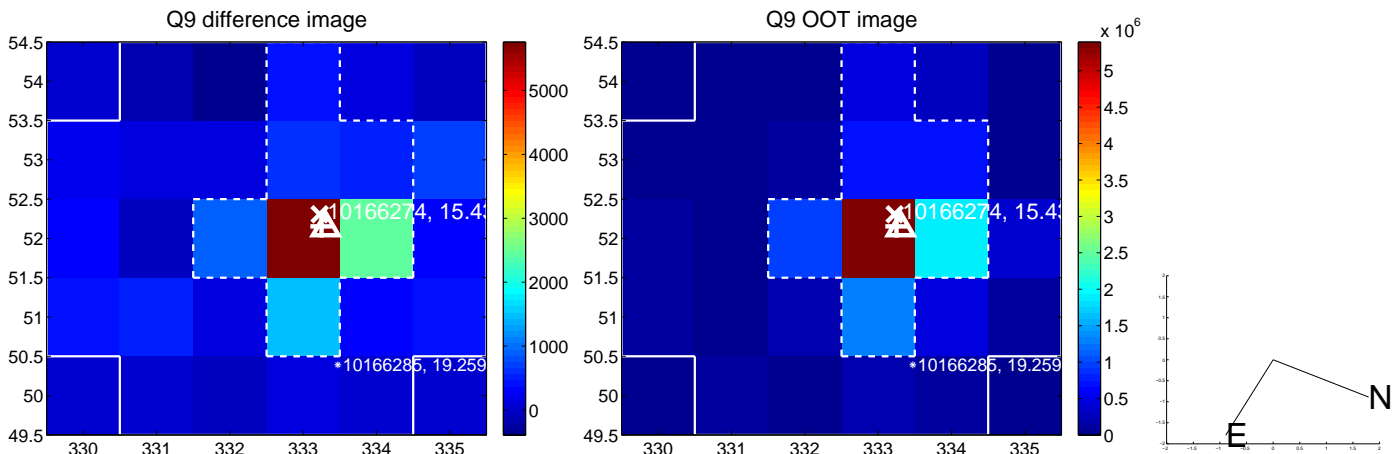
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



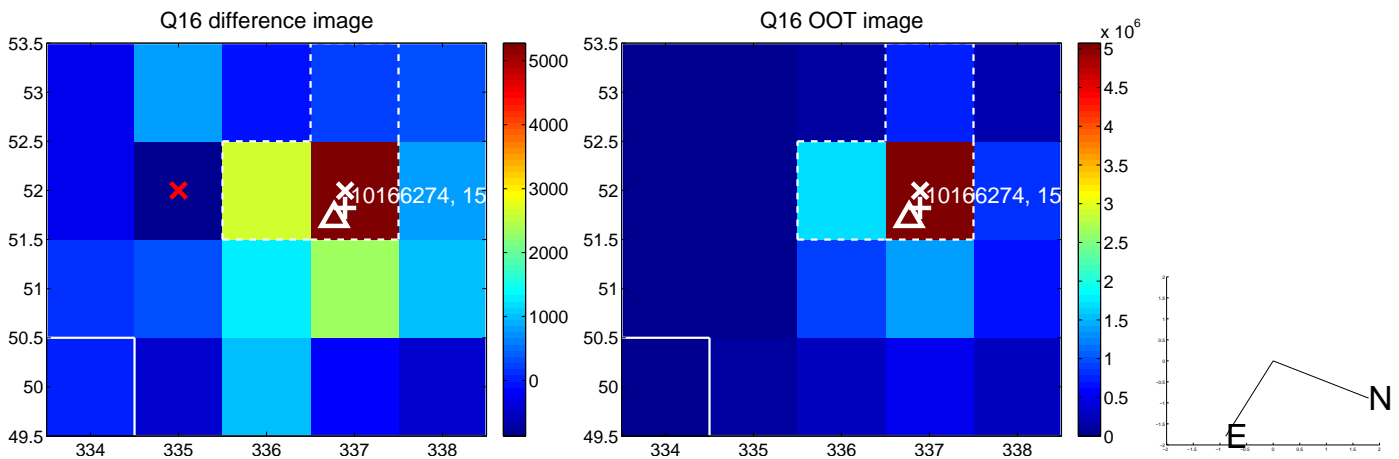
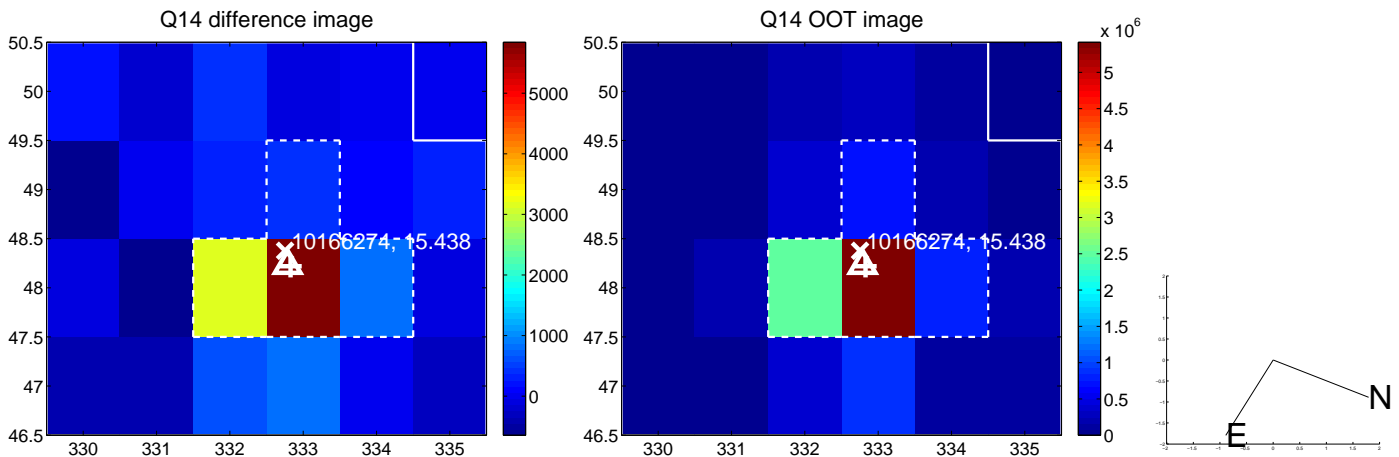
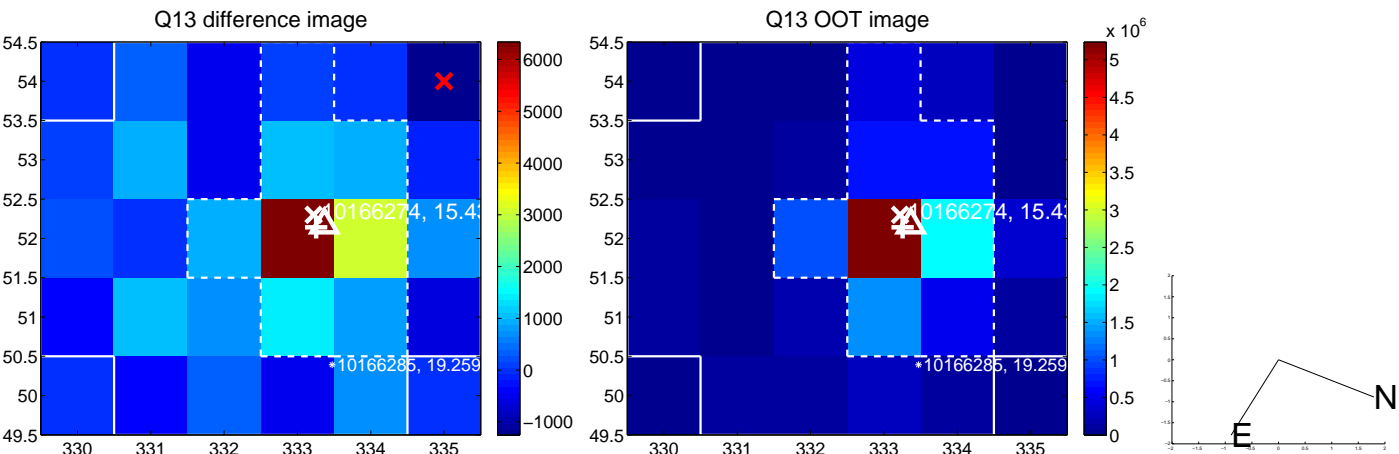
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



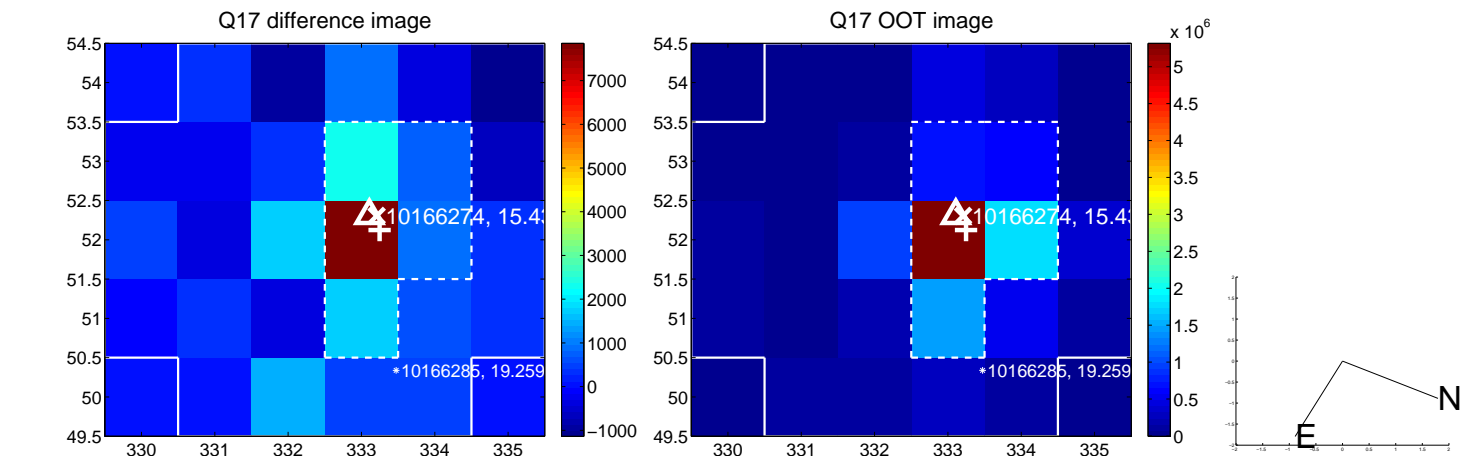
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



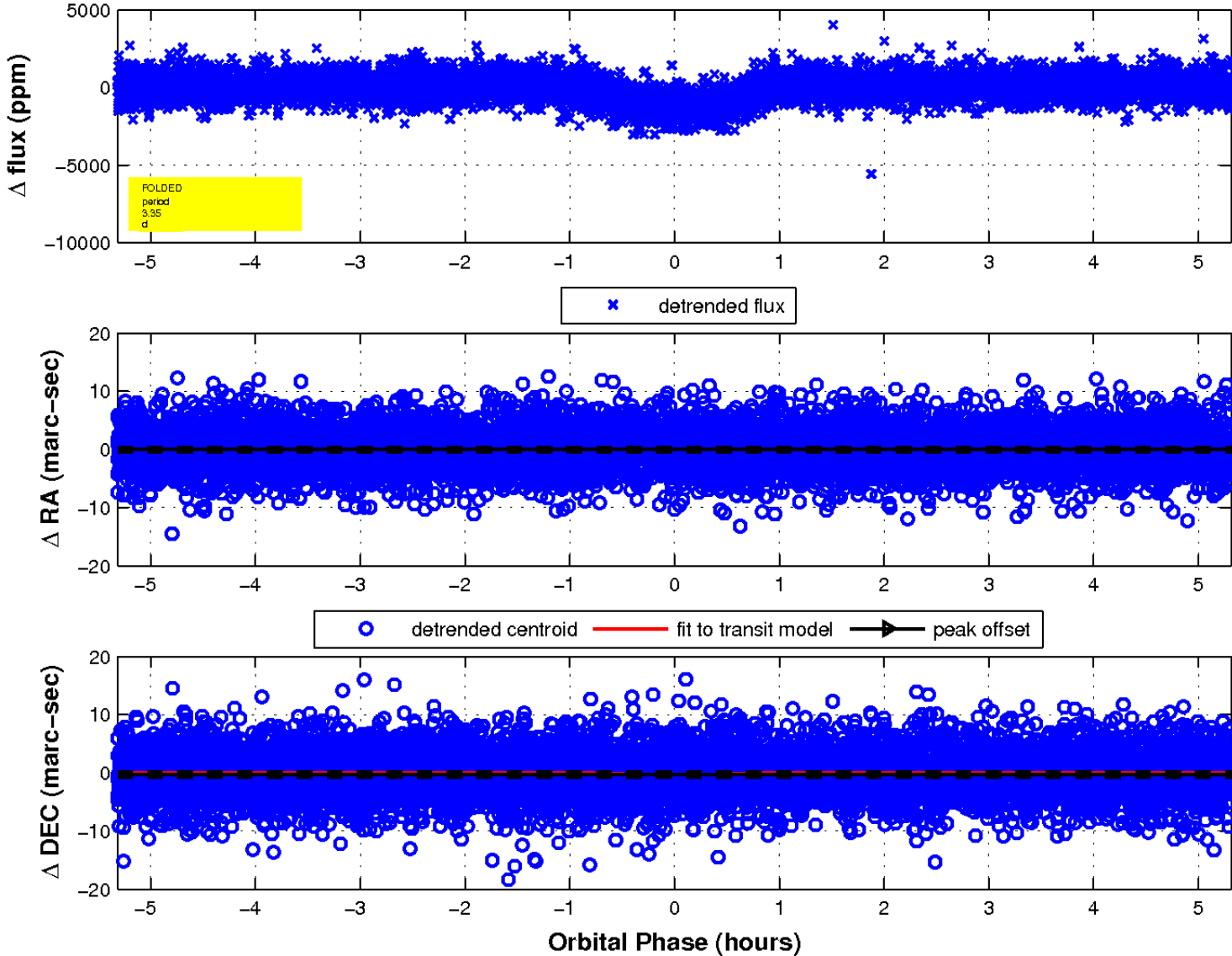
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

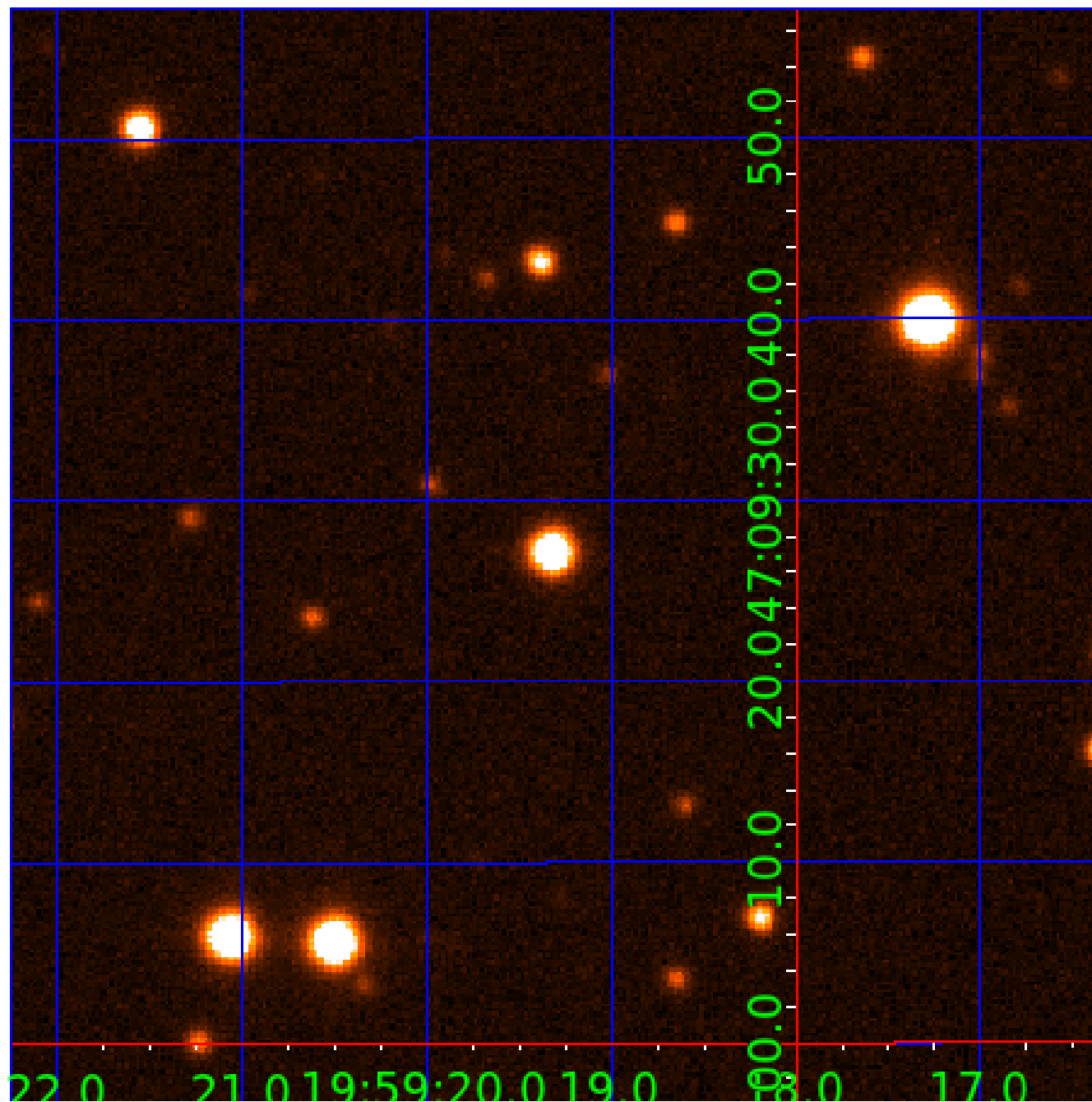


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 010166274

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010166274-01 | OBS | 1078.01 | 3.353715 | 131.518109 | 1211.6 | 1.772 | 38.8 | 44.4 | 0.46 | 3789 | 1.90 | 33.79 |
| 010166274-02 | OBS | 1078.02 | 6.877455 | 132.082447 | 1532.8 | 1.411 | 29.3 | 35.9 | 0.46 | 3789 | 2.01 | 12.97 |
| 010166274-03 | OBS | 1078.03 | 28.464587 | 158.040630 | 1603.5 | 2.867 | 22.2 | 25.9 | 0.46 | 3789 | 2.02 | 1.95 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 010166274-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-02 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-03 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |

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.

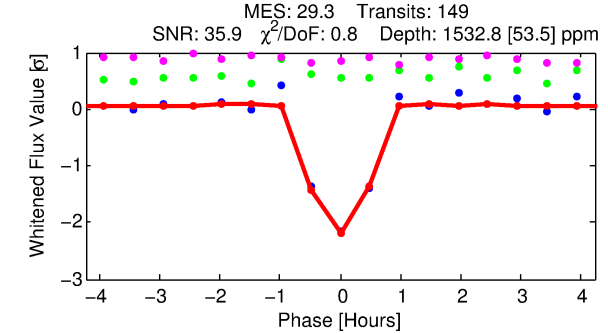
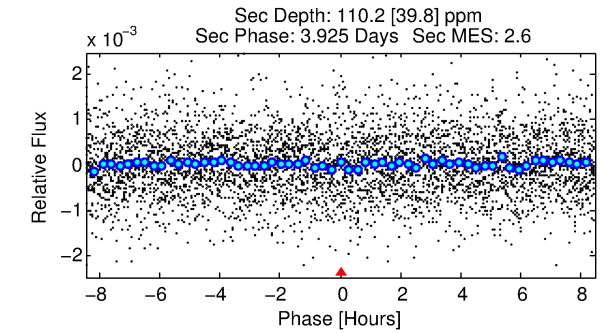
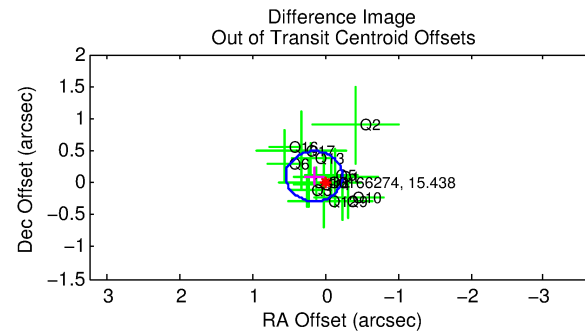
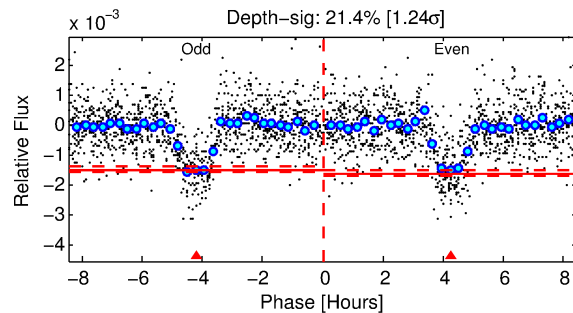
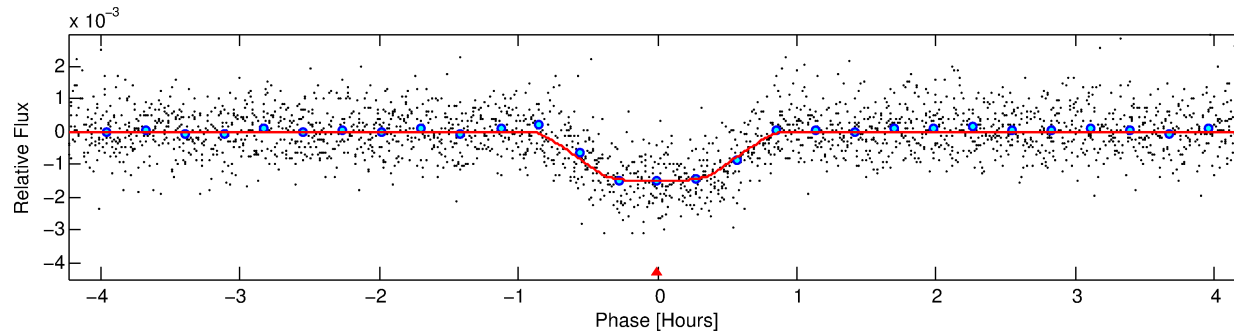
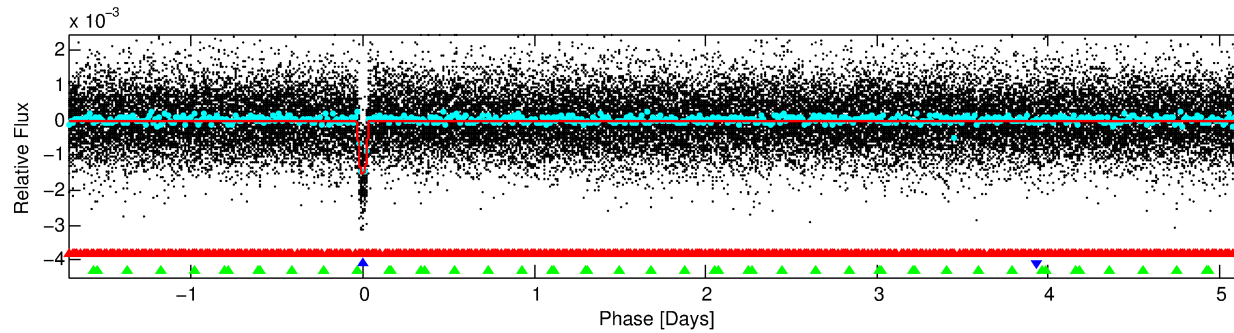
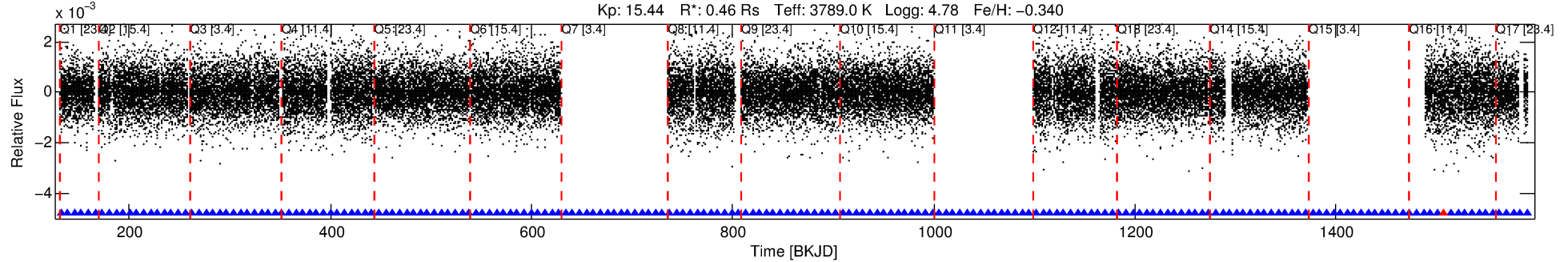
Ephemeris Match Information For 010166274-02

No Significant Match Found

DV One-Page Summary

KIC: 10166274 Candidate: 2 of 3 Period: 6.877 d
KOI: K01078.02 Name: Kepler-267c Corr: 0.974

Kp: 15.44 R*: 0.46 Rs Teff: 3789.0 K Logg: 4.78 Fe/H: -0.340



DV Fit Results:

Period = 6.87746 [0.00001] d
Epoch = 132.0824 [0.0009] BKJD
Rp/R* = 0.0400 [0.0070]
a/R* = 24.21 [20.44]
b = 0.81 [0.36]
Seff = 12.97 [1.96]
Teq = 484 [18] K
Rp = 2.01 [0.42] Re
a = 0.0549 [0.0050] AU
Ag = 45.21 [23.33] [1.90σ]
Teffp = 1940 [247] K [5.89σ]

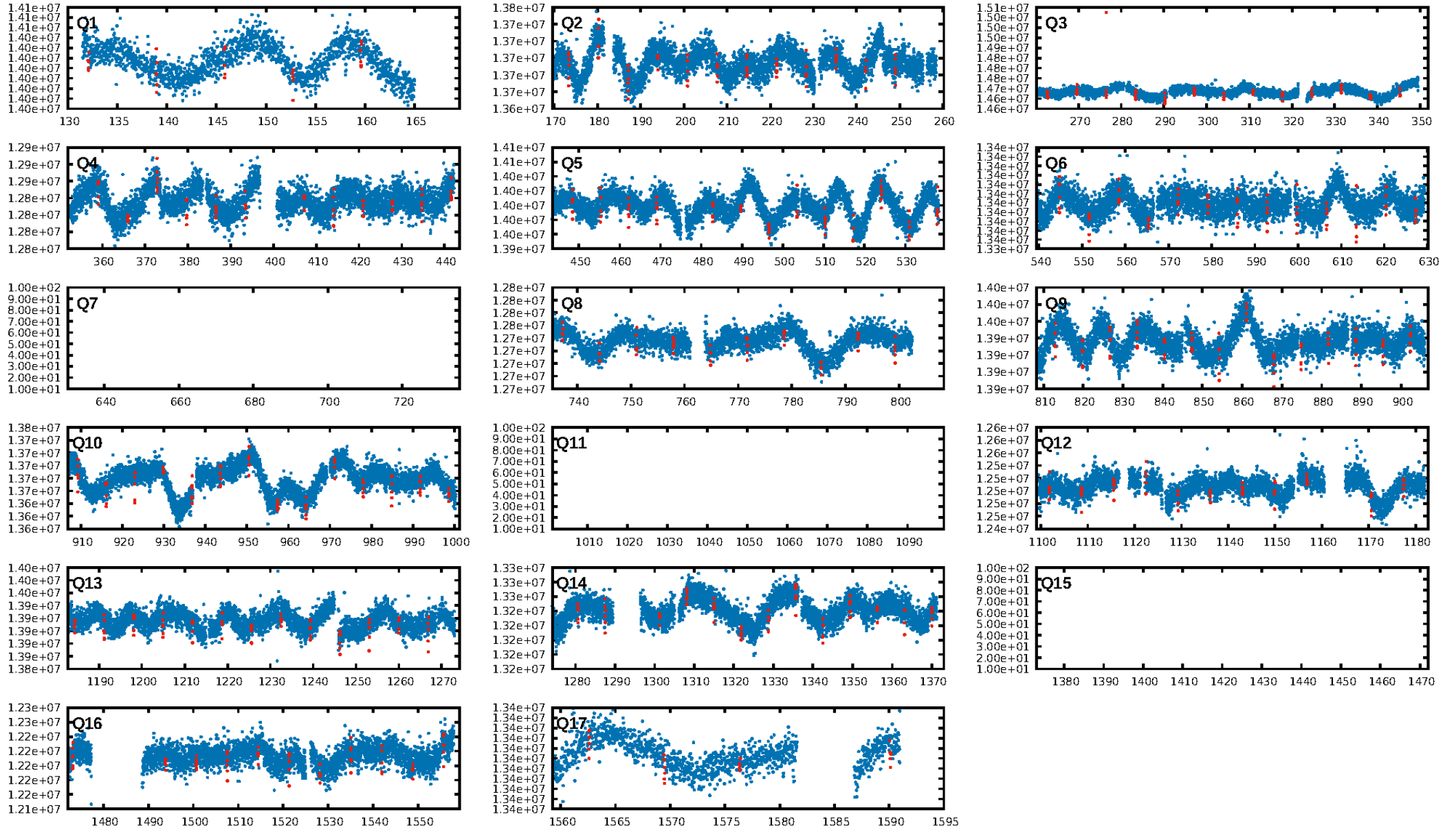
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.34σ]
LongPeriod-sig: 100.0% [162.16σ]
ModelChiSquare2-sig: 98.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.29e-182
RollingBand-fgt: 0.99 [139/140]
GhostDiagnostic-chr: 3.489
Centroid-sig: 0.0%
Centroid-so: 1.699 arcsec [4.16σ]
OotOffset-rm: 0.186 arcsec [1.44σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-rm: 0.783 arcsec [6.08σ]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

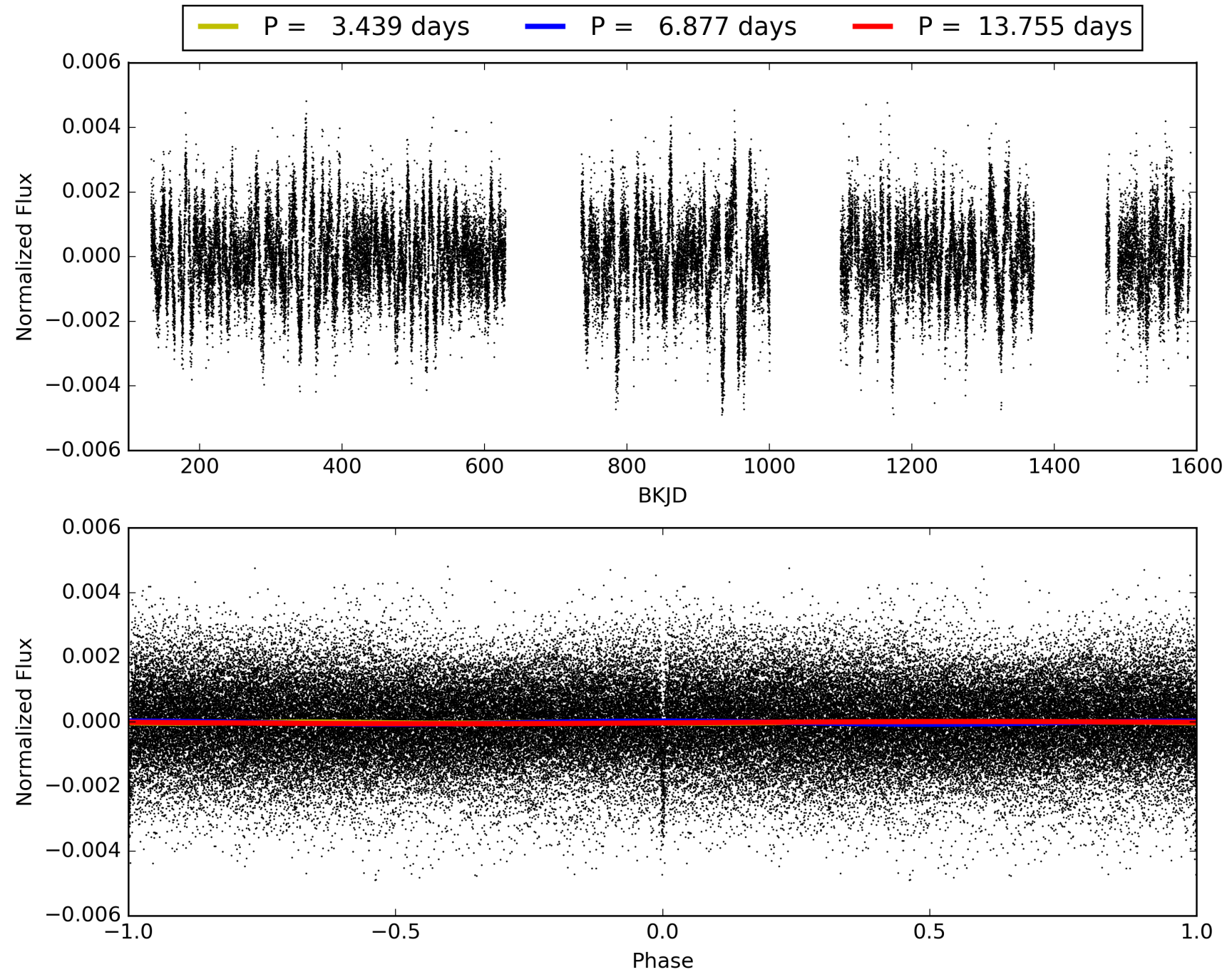
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010166274-02, PDC Light Curves

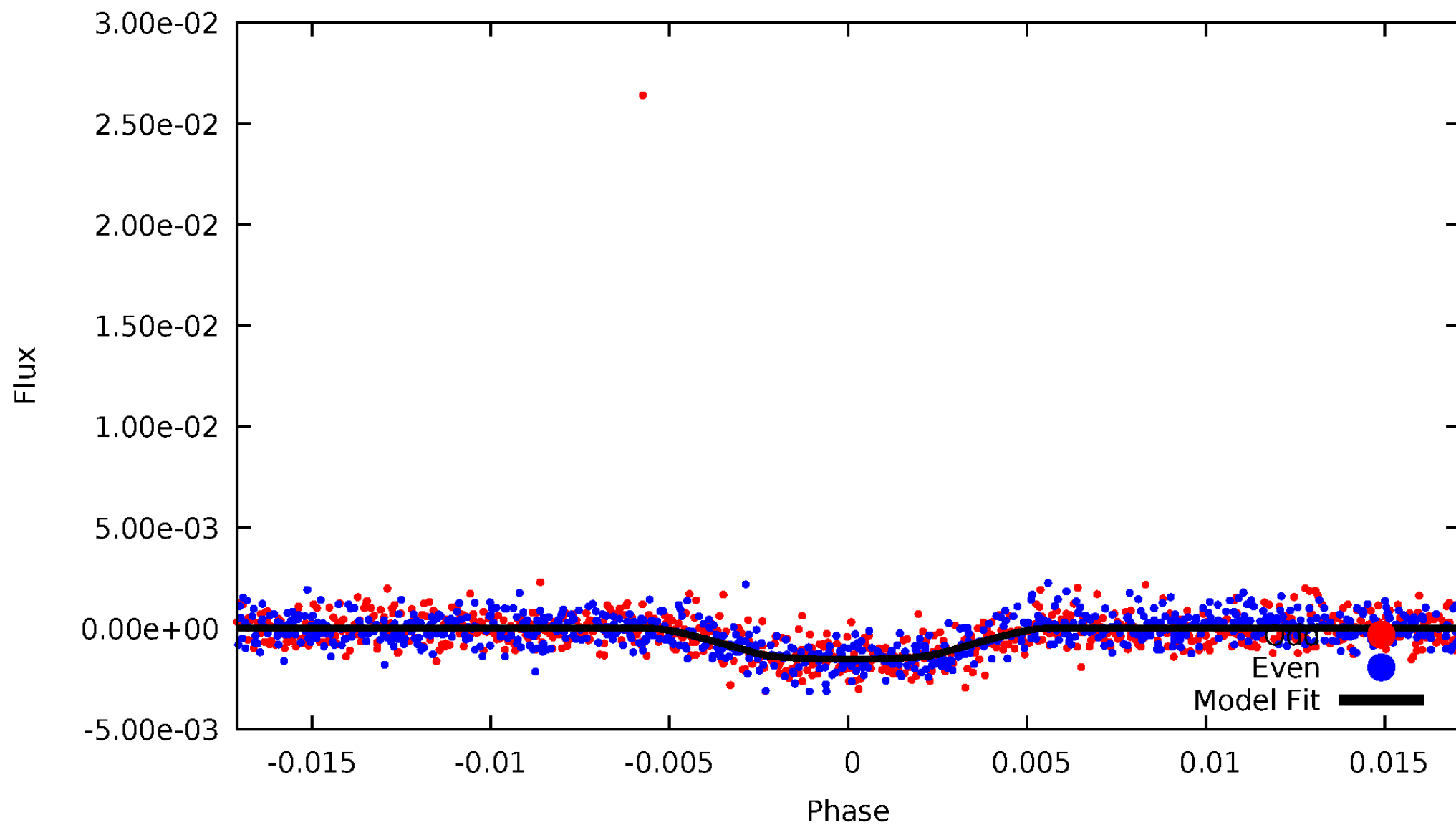


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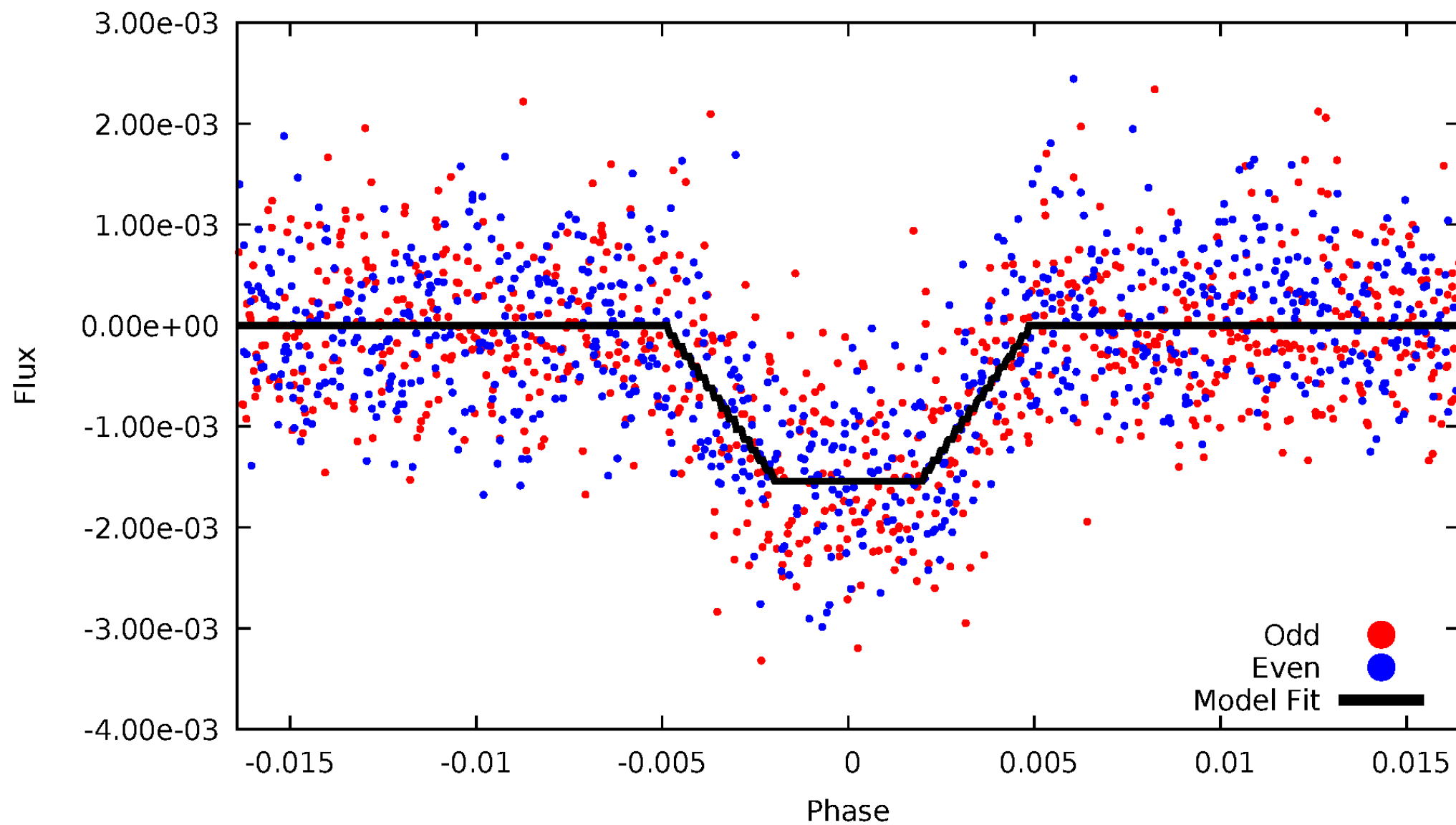
DV Odd/Even

TCE 010166274-02



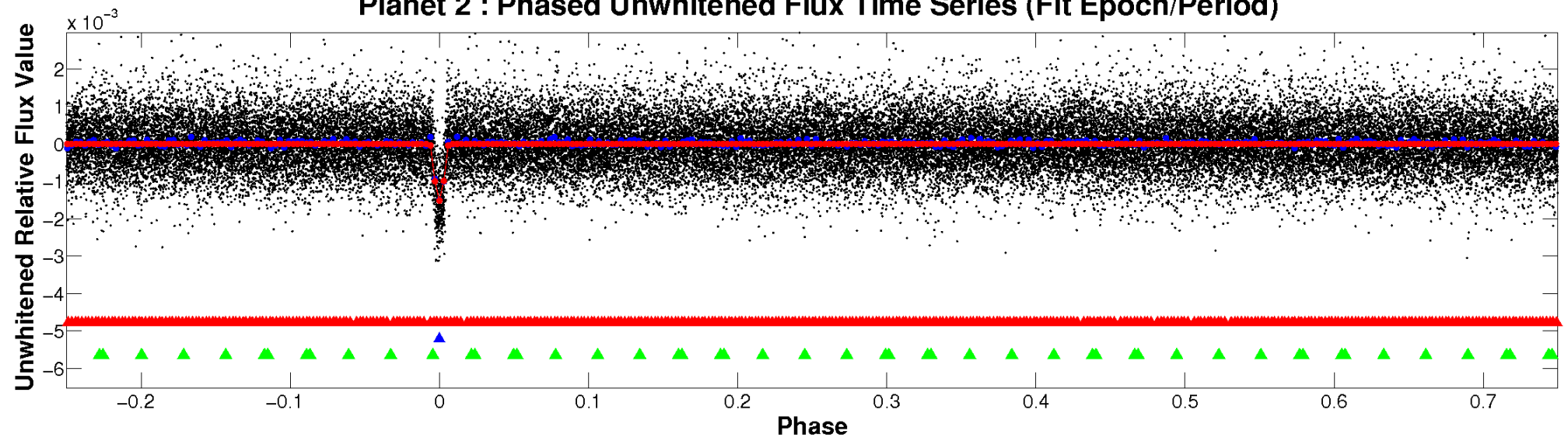
ALT Odd/Even

TCE 010166274-02

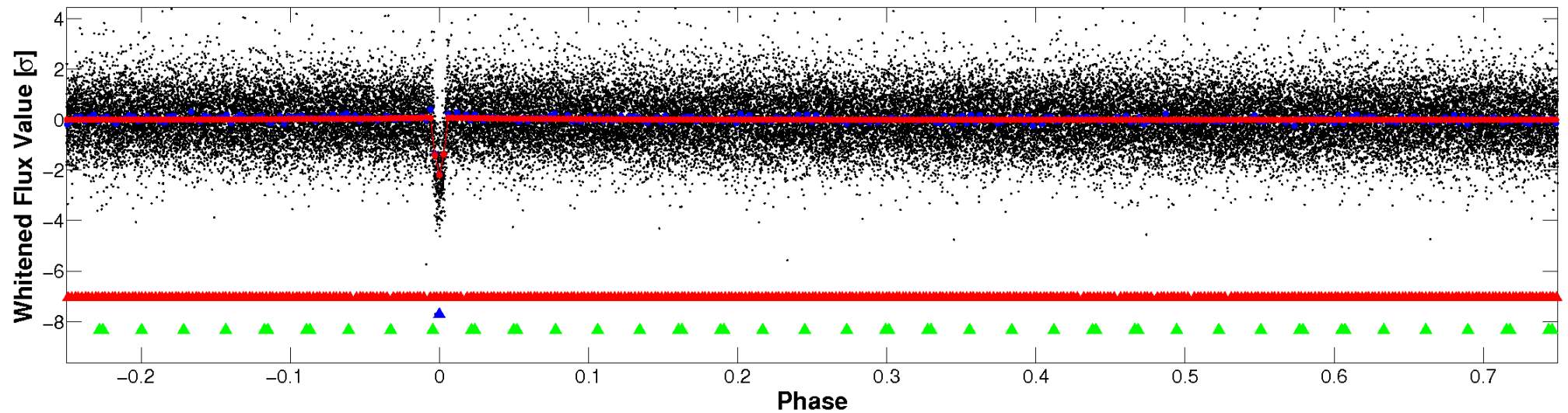


Non-Whitened Vs. Whitened Light Curve

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

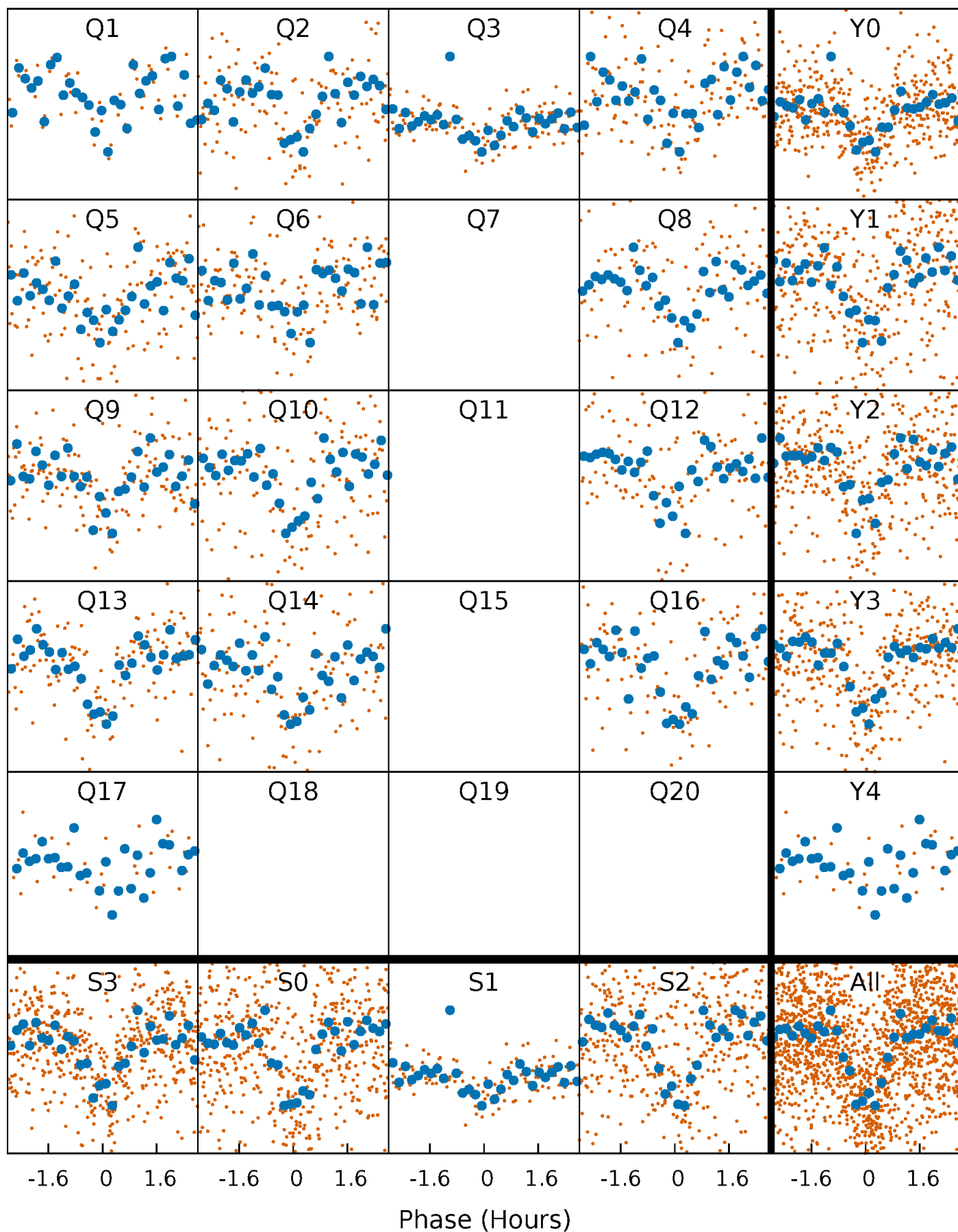


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



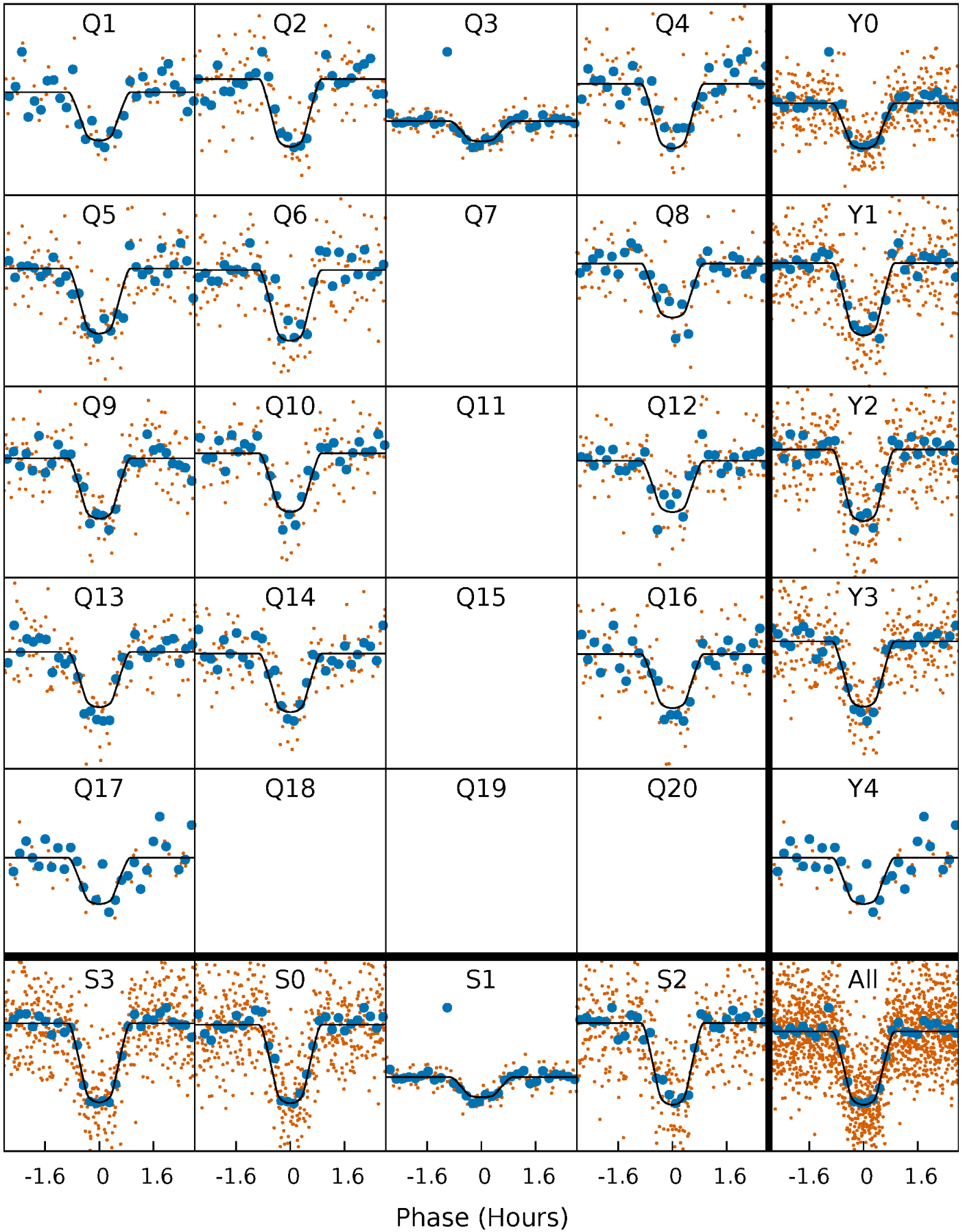
PDC Quarter-Phased Transit Curves

TCE 010166274-02 P= 6.877455 Days $T_0=132.082447$ (BKJD)



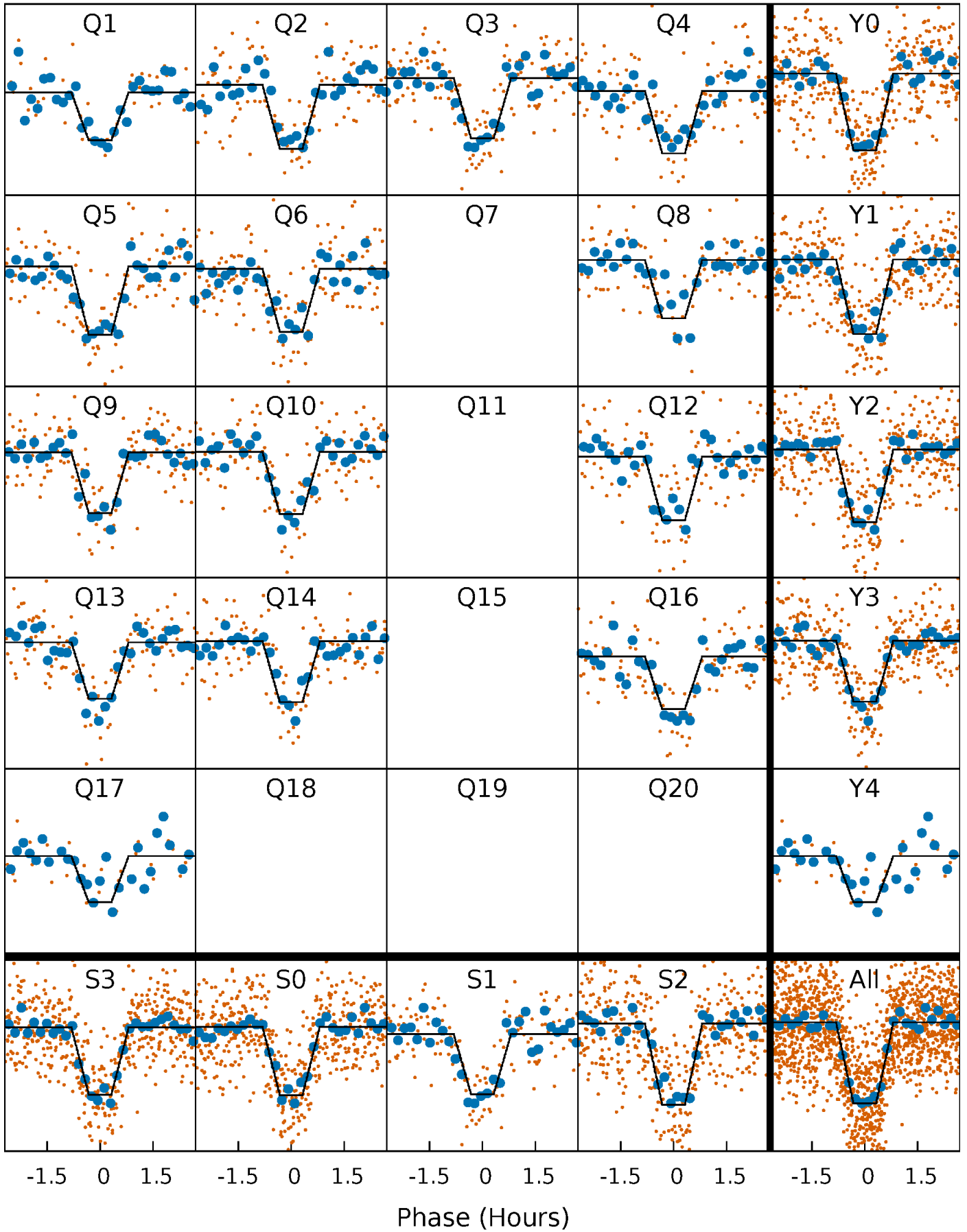
DV Quarter-Phased Transit Curves

TCE 010166274-02 P= 6.877455 Days $T_0=132.082447$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

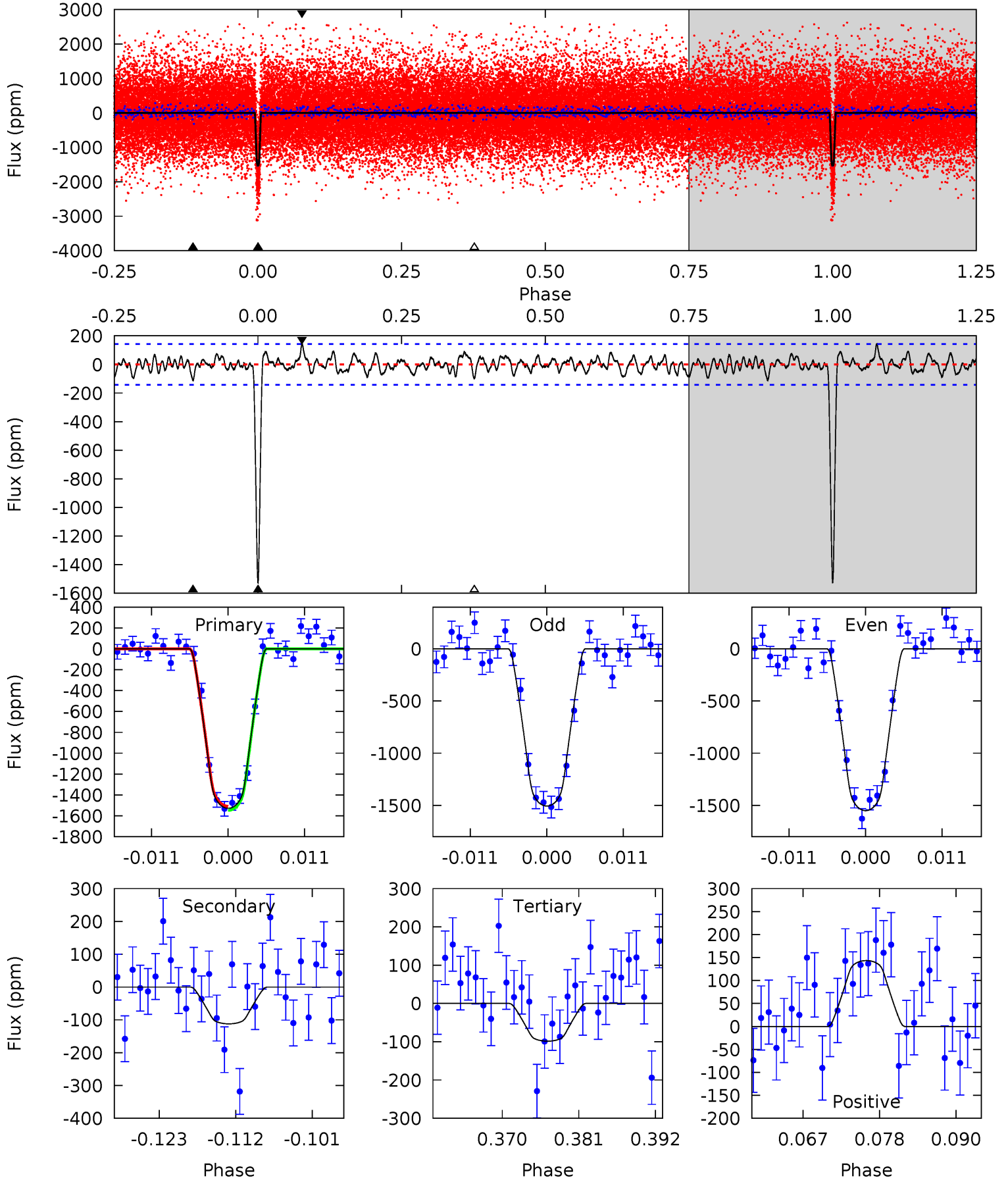
TCE 010166274-02 P= 6.877446 Days $T_0=132.084201$ (BKJD)



DV Model-Shift Uniqueness Test

010166274-02, P = 6.877455 Days, E = 125.204992 Days

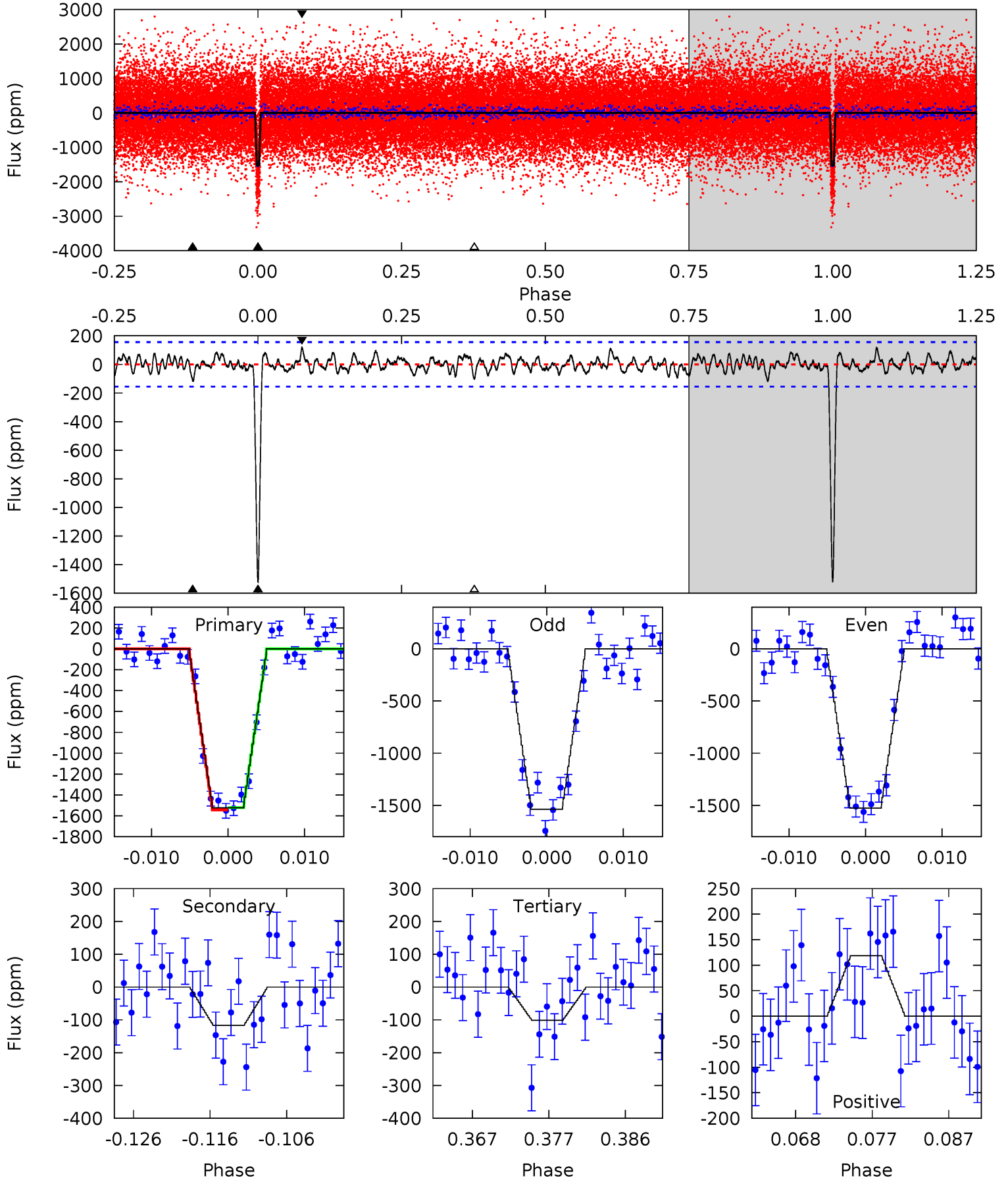
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 53.8 | 3.95 | 3.47 | 5.05 | 5.00 | 2.54 | 1.37 | 50.3 | 48.7 | 0.48 | -1.10 | 0.78 | 0.98 | 0.09 | 0.69 |



Alt Model-Shift Uniqueness Test

010166274-02, P = 6.877446 Days, E = 125.206755 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 49.2 | 3.77 | 3.28 | 3.82 | 5.03 | 2.59 | 1.24 | 45.9 | 45.4 | 0.49 | -0.06 | 0.19 | 1.00 | 0.07 | 0.36 |



Stellar Parameters For KIC 010166274

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3789^{+75}_{-82} | $4.781^{+0.063}_{-0.031}$ | $-0.340^{+0.150}_{-0.150}$ | $0.460^{+0.035}_{-0.053}$ | $0.467^{+0.038}_{-0.046}$ | $6.750^{+2.071}_{-0.905}$ |
| | +2%/-2% | +1%/-1% | +44%/-44% | +8%/-12% | +8%/-10% | +31%/-13% |
| Source | SPE70 | SPE60 | SPE70 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010166274-02 / KOI 1078.02

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|-------------------|----------------------|------------------|
| DV | -112 ± 28 | $1.97^{+0.40}_{-0.35}$ | 670^{+20}_{-19} | 2567^{+154}_{-146} | 47^{+25}_{-17} |
| Alt. | -117 ± 31 | $1.93^{+0.38}_{-0.35}$ | 673^{+19}_{-21} | 2597^{+171}_{-135} | 51^{+29}_{-19} |

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 $A_{obs} \gg 1.0$

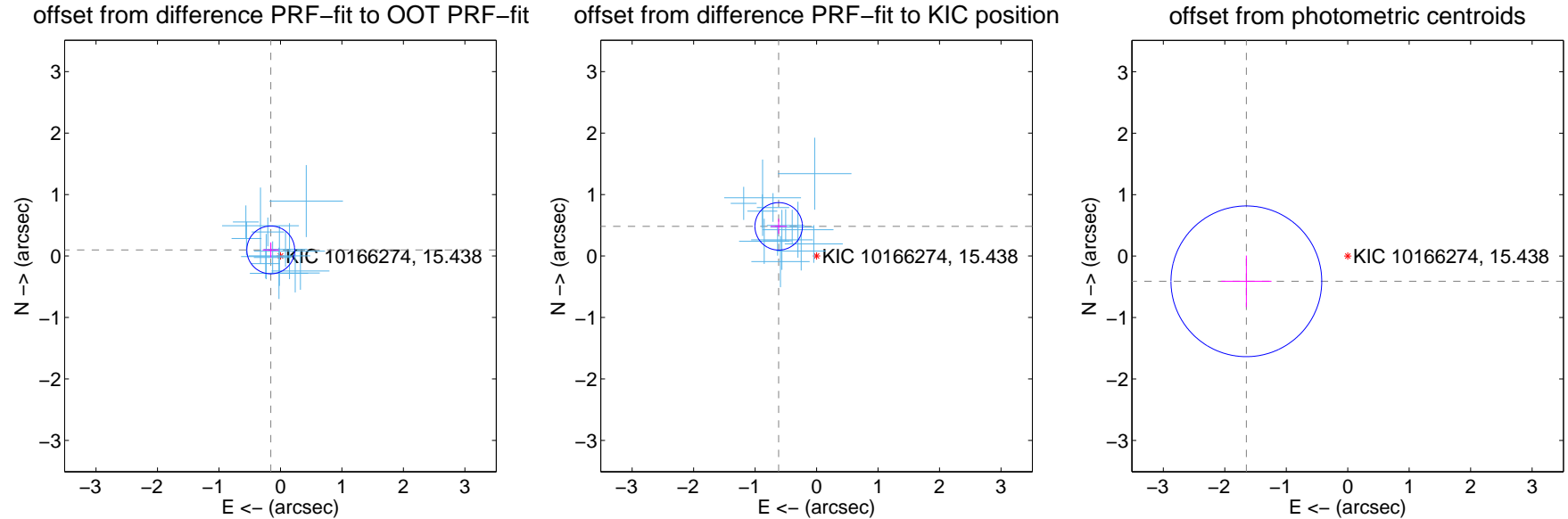
DV Centroid Data

Supplemental centroid analysis for 010166274-02. Kepler magnitude: 15.44. Transit SNR 35.94

There are 14 quarters with good PRF difference image offsets

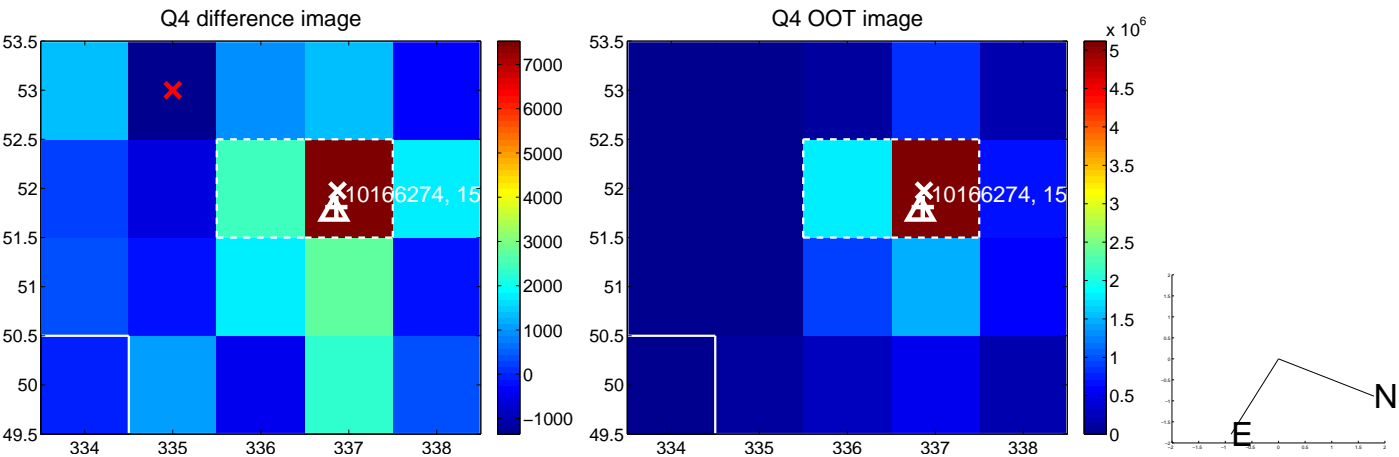
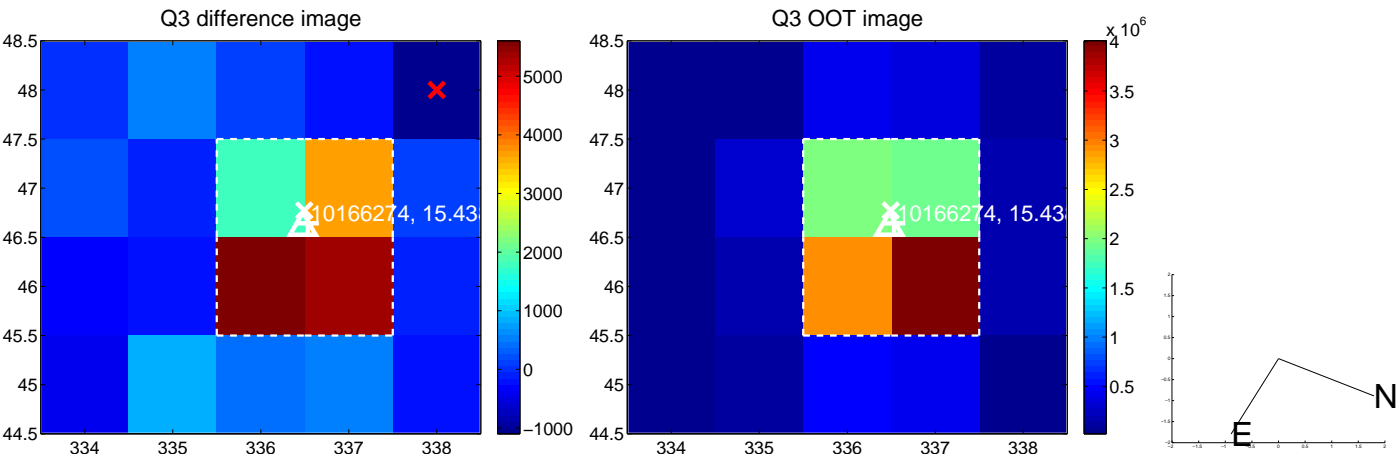
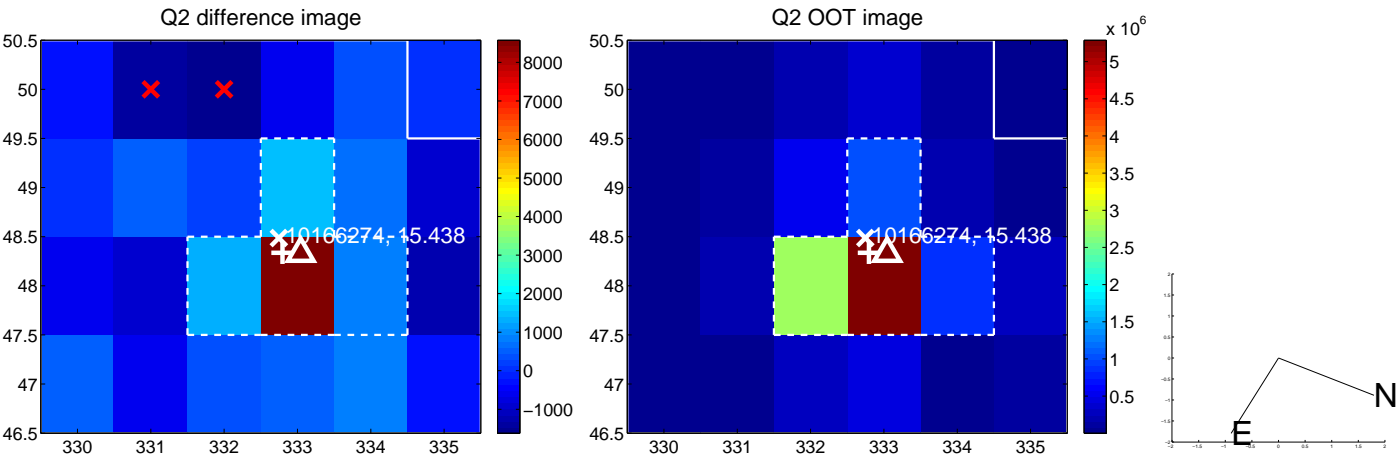
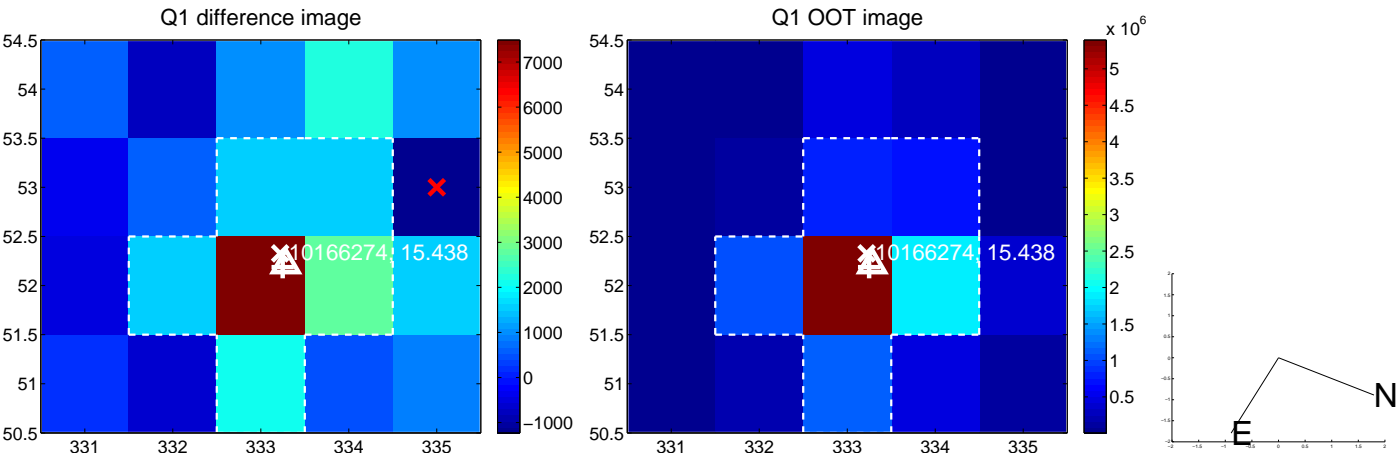
The direct PRF centroid is offset from the target star catalog position by about 0.72 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.186 ± 0.130 | 1.44 | 0.158 ± 0.132 | 0.099 ± 0.123 |
| PRF-fit source offset from KIC position | 0.783 \pm 0.129 | 6.08 | 0.616 ± 0.132 | 0.483 ± 0.123 |
| photometric centroid source offset | 1.70 \pm 0.41 | 4.16 | 1.65 ± 0.41 | -0.41 ± 0.42 |

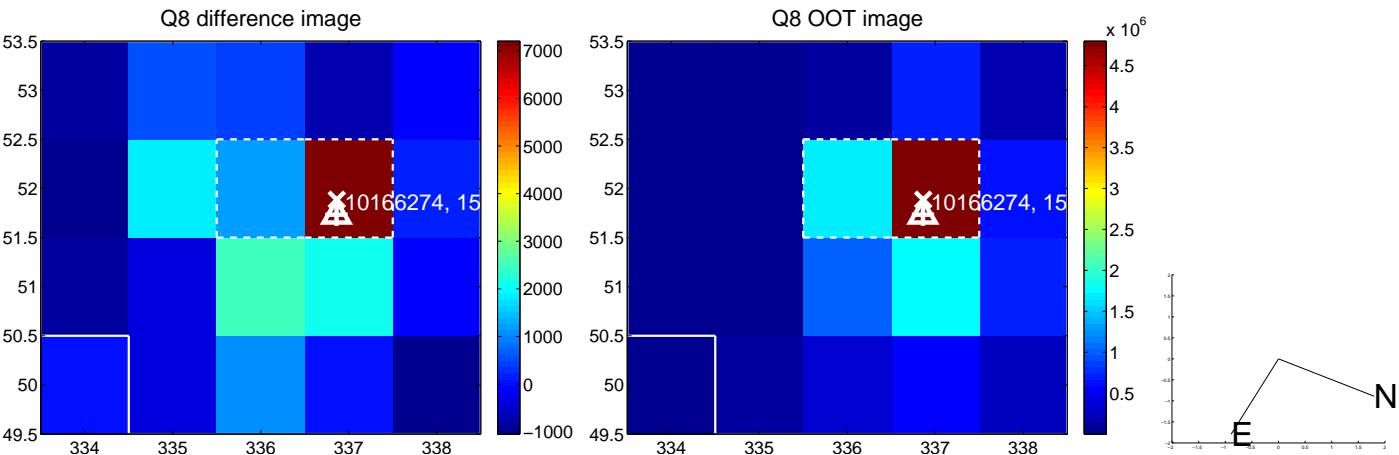
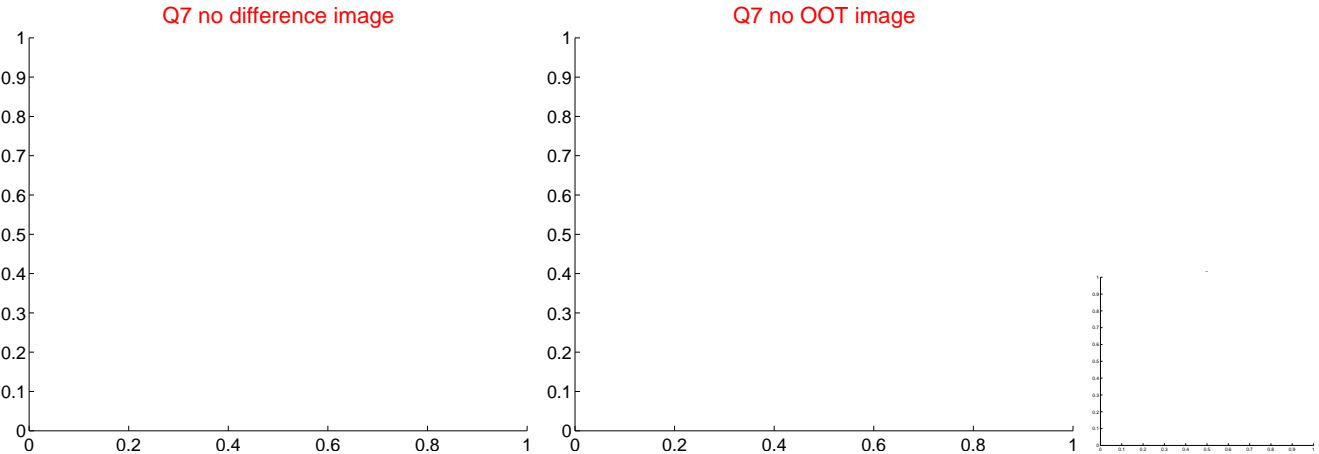
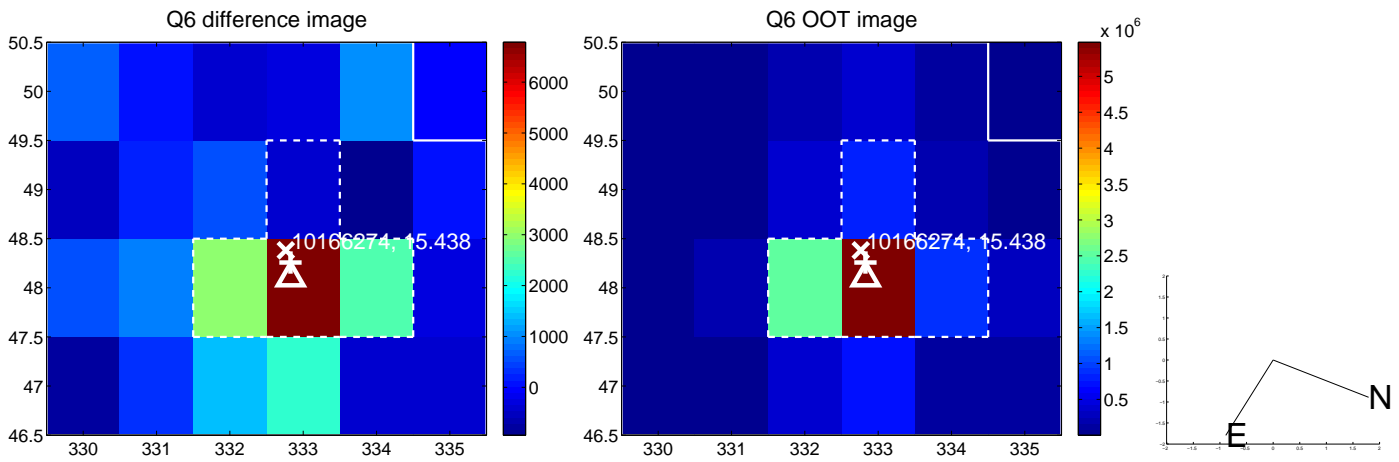
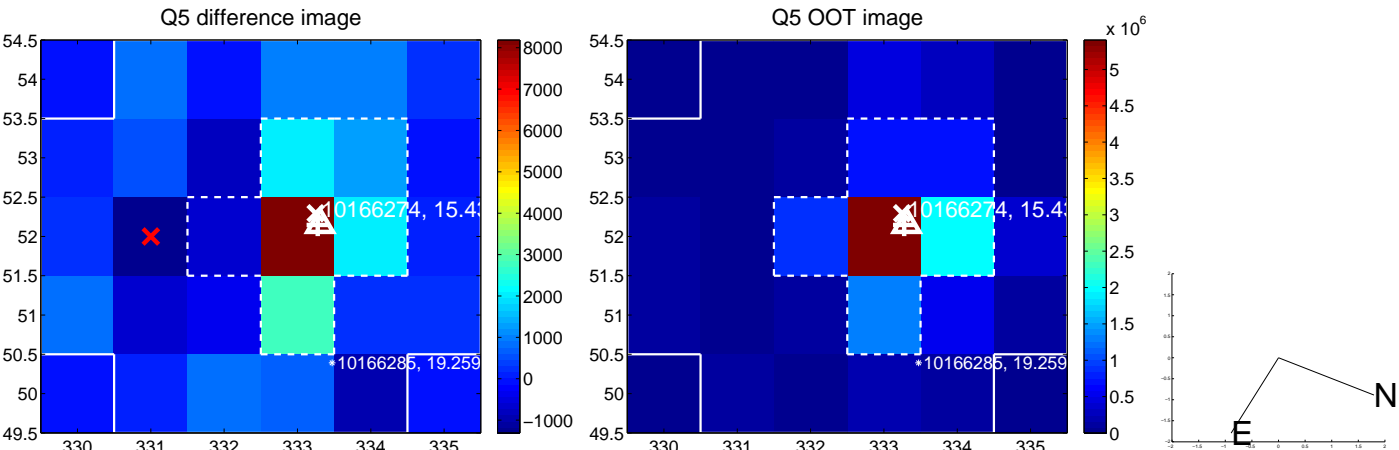


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

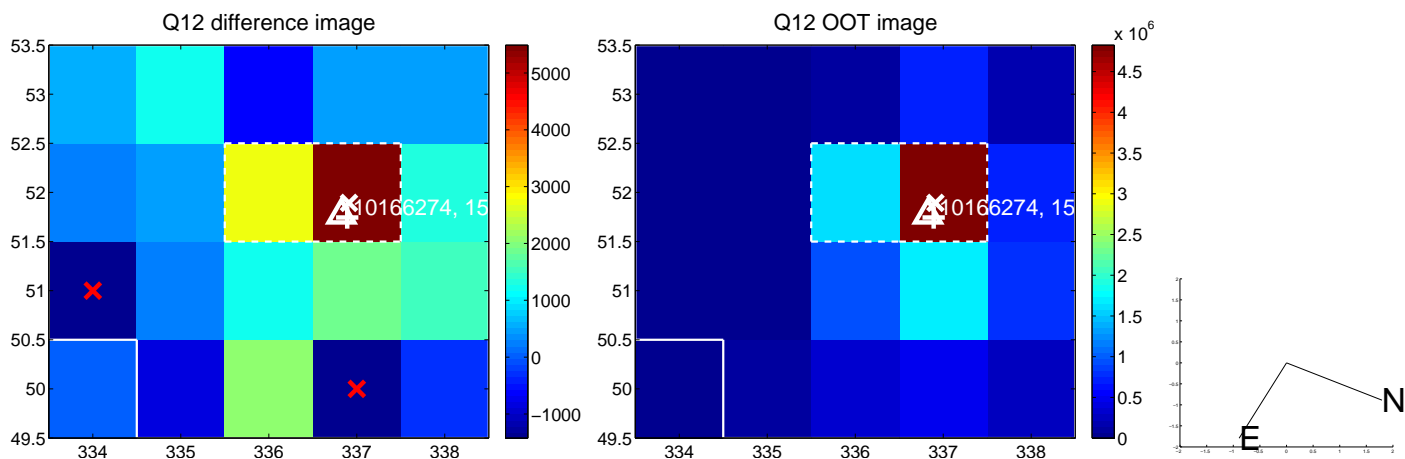
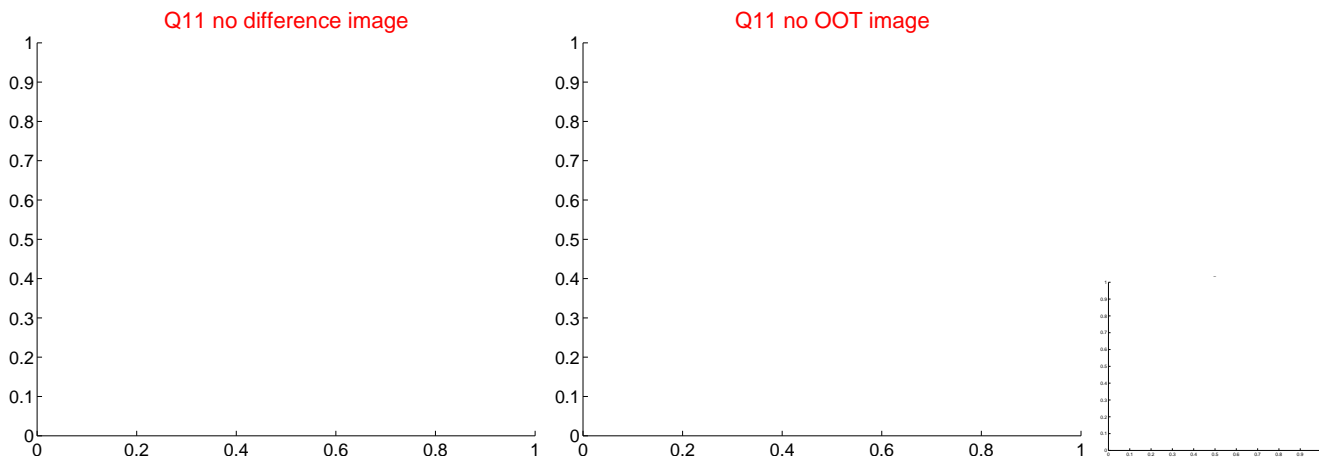
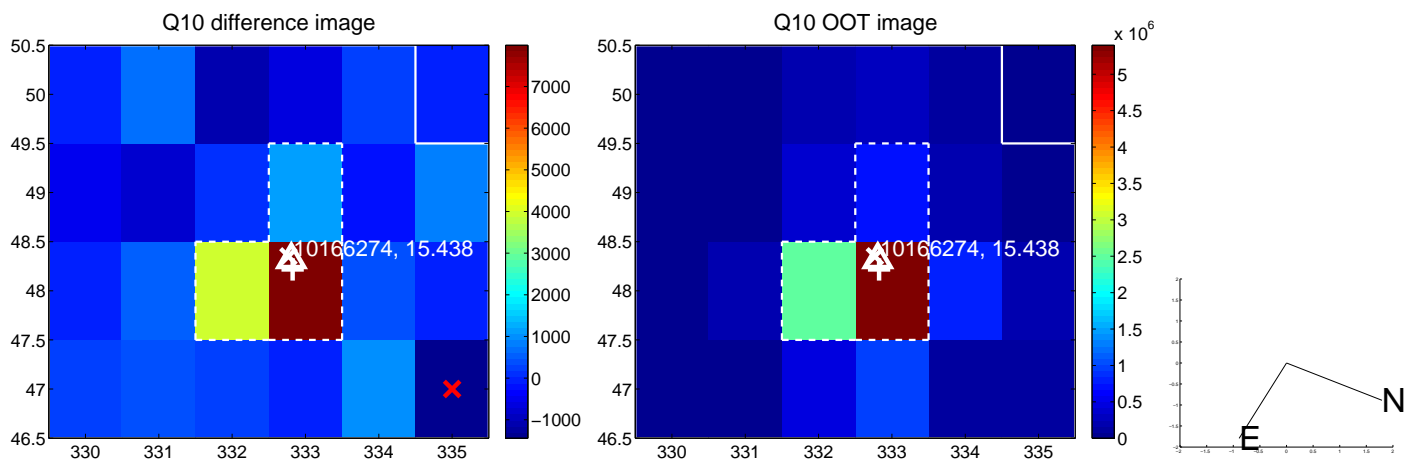
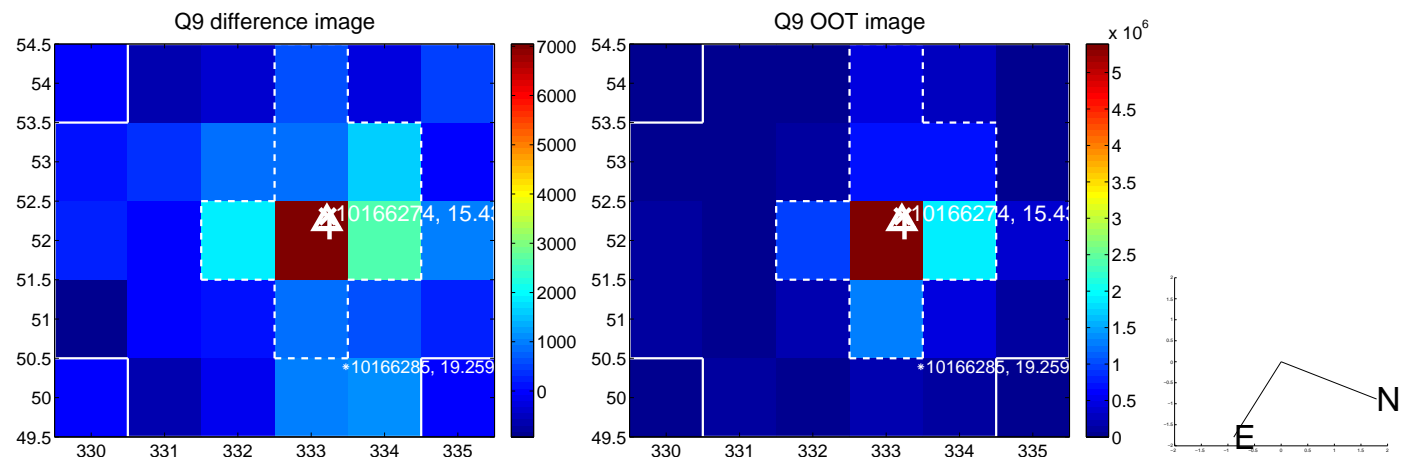
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



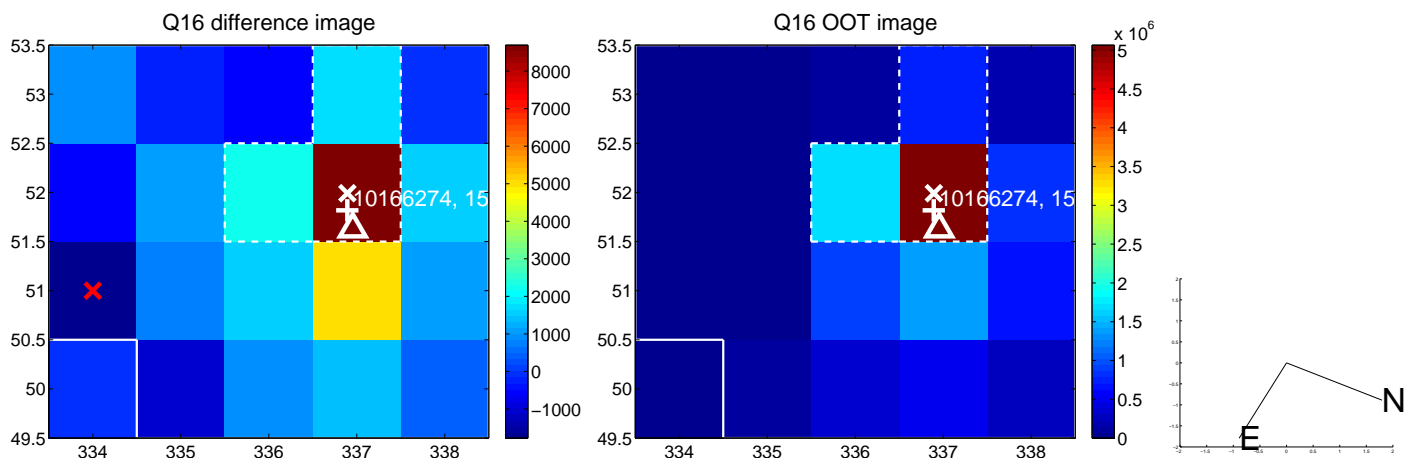
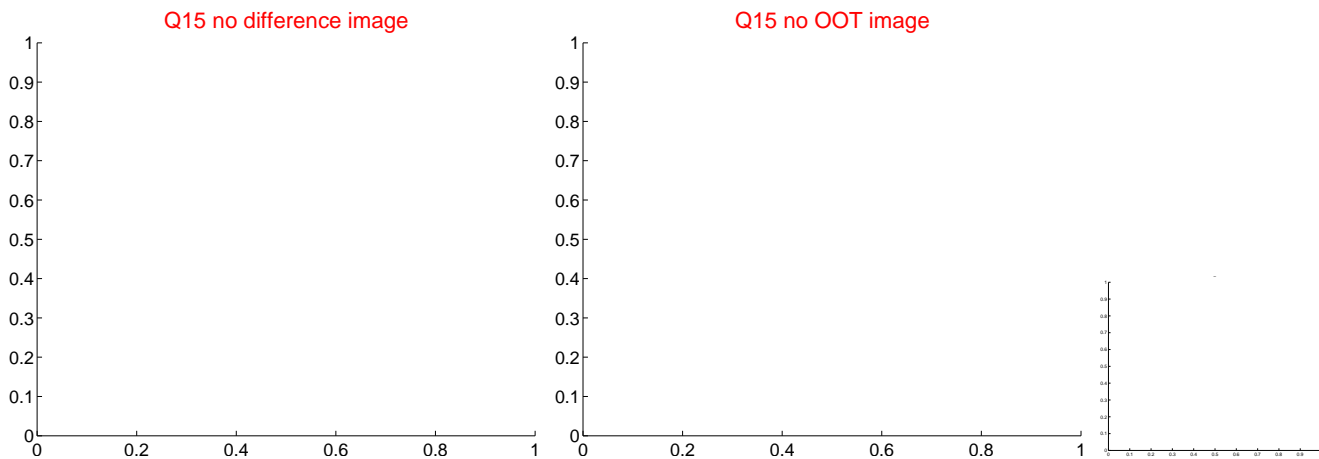
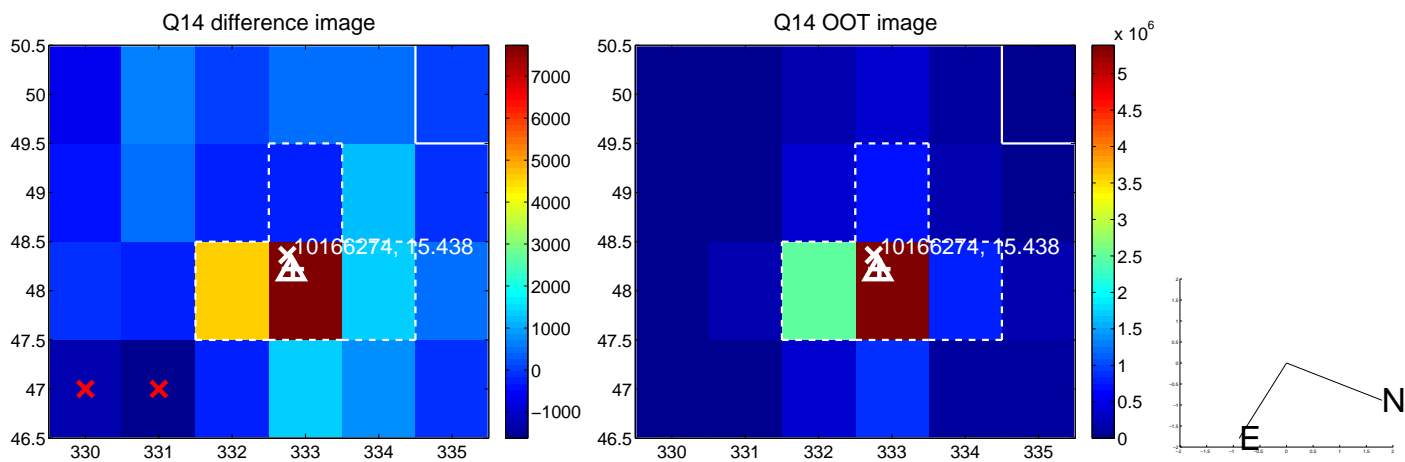
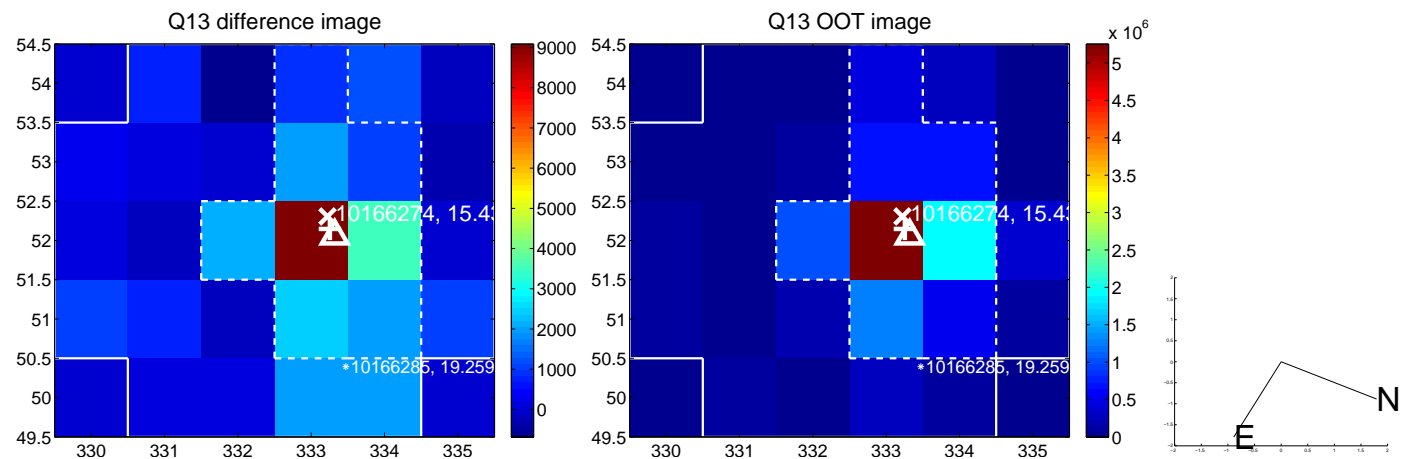
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



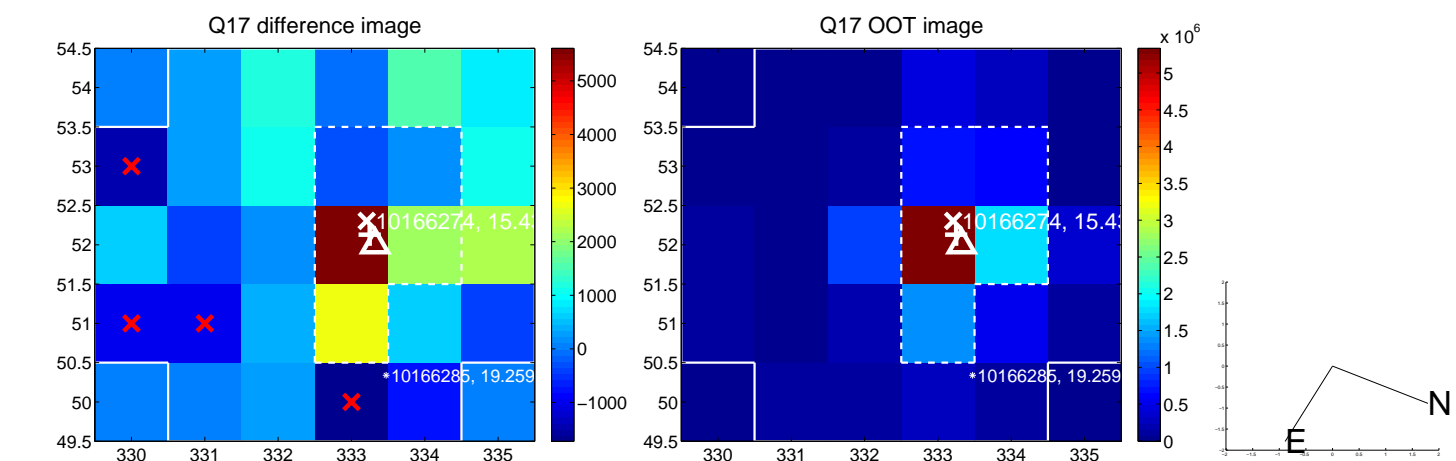
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



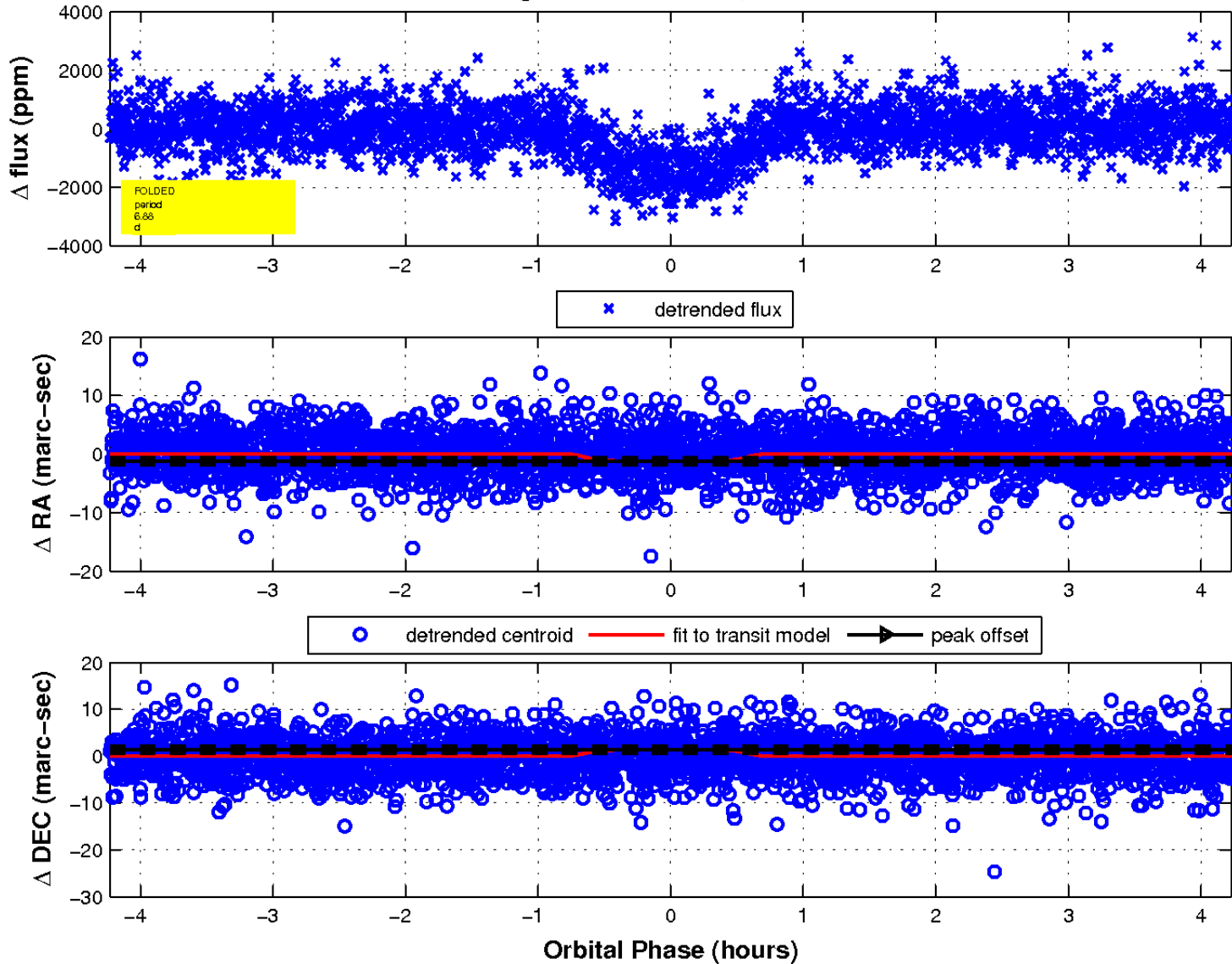
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

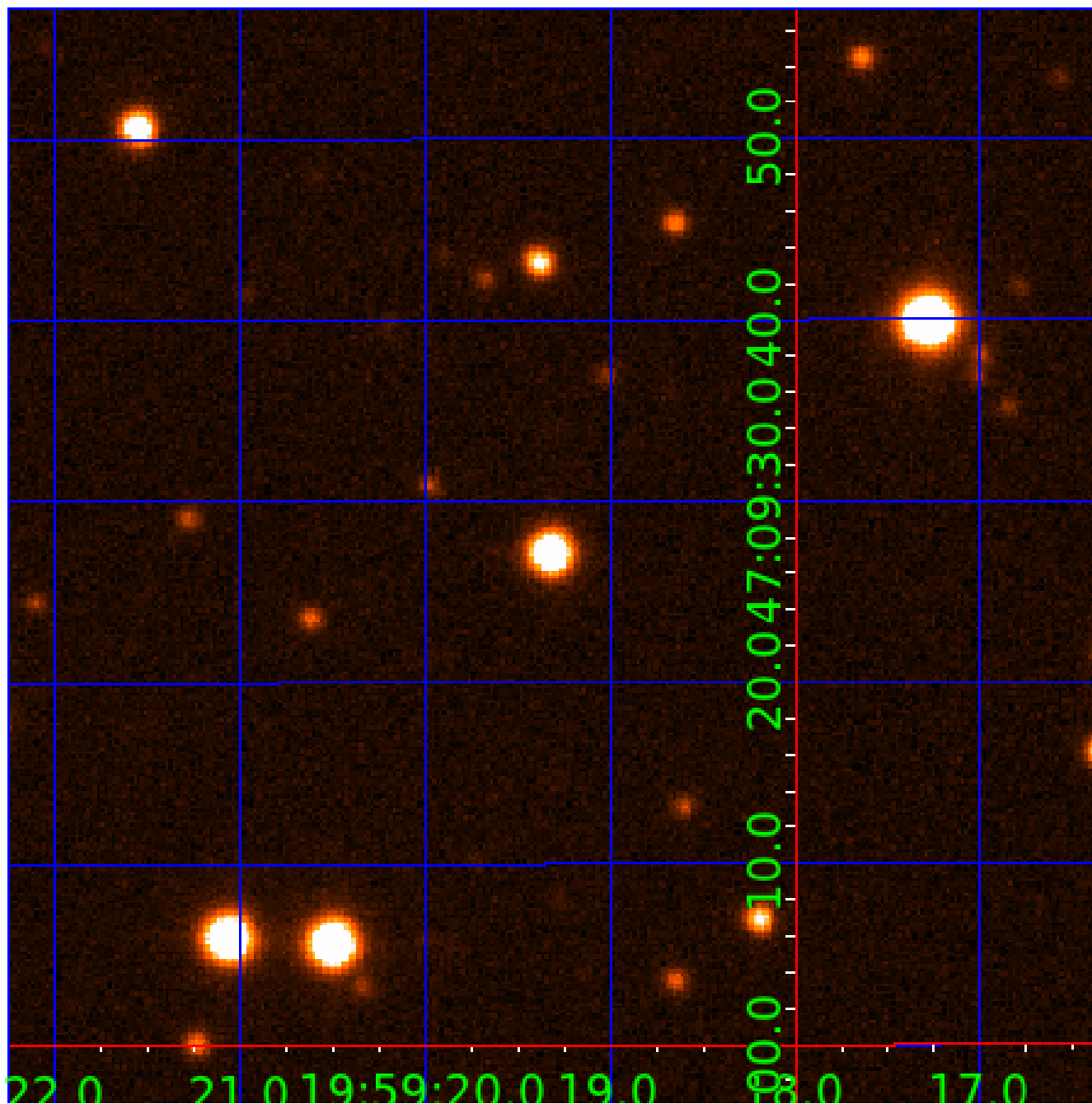


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 010166274

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010166274-01 | OBS | 1078.01 | 3.353715 | 131.518109 | 1211.6 | 1.772 | 38.8 | 44.4 | 0.46 | 3789 | 1.90 | 33.79 |
| 010166274-02 | OBS | 1078.02 | 6.877455 | 132.082447 | 1532.8 | 1.411 | 29.3 | 35.9 | 0.46 | 3789 | 2.01 | 12.97 |
| 010166274-03 | OBS | 1078.03 | 28.464587 | 158.040630 | 1603.5 | 2.867 | 22.2 | 25.9 | 0.46 | 3789 | 2.02 | 1.95 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 010166274-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-02 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010166274-03 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |

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.

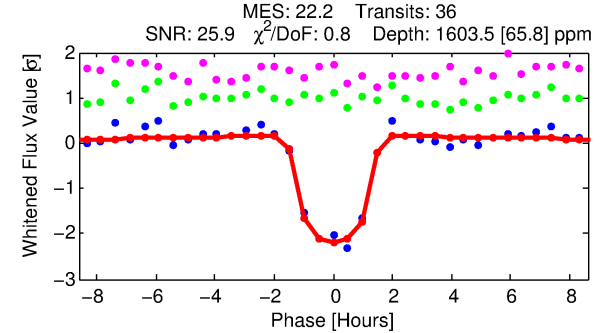
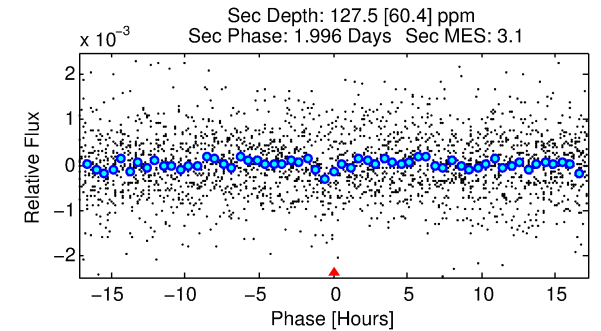
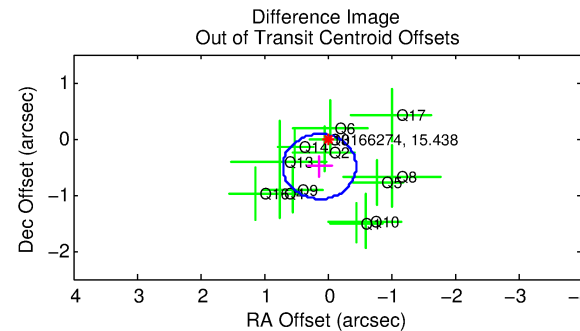
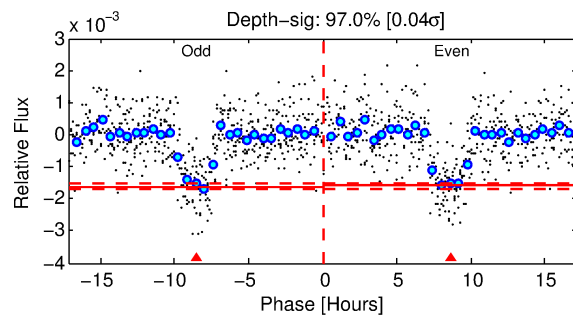
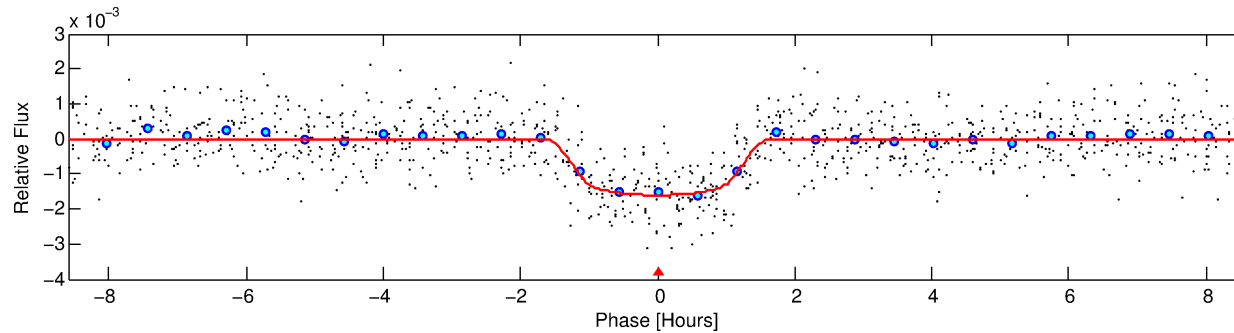
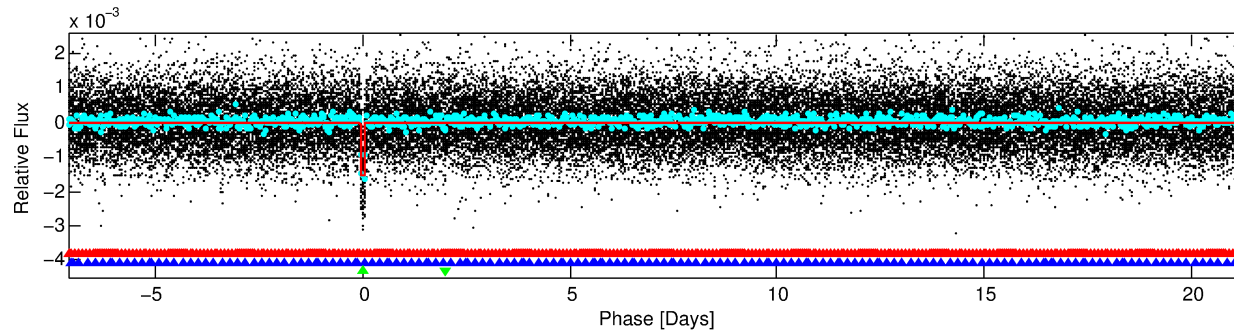
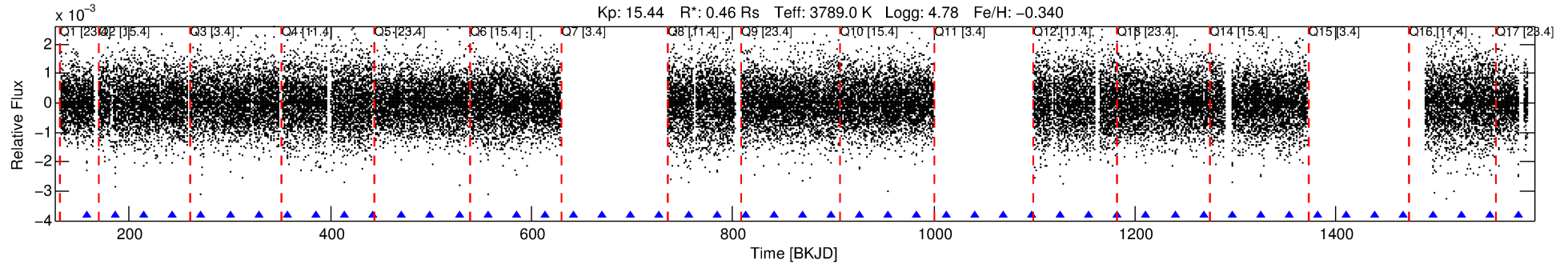
Ephemeris Match Information For 010166274-03

No Significant Match Found

DV One-Page Summary

KIC: 10166274 Candidate: 3 of 3 Period: 28.465 d
KOI: K01078.03 Name: Kepler-267d Corr: 0.980

Kp: 15.44 R*: 0.46 Rs Teff: 3789.0 K Logg: 4.78 Fe/H: -0.340



DV Fit Results:

Period = 28.46459 [0.00008] d
Epoch = 158.0406 [0.0023] BKJD
Rp/R* = 0.0402 [0.0065]
a/R* = 52.46 [40.72]
b = 0.78 [0.40]
Seff = 1.95 [0.29]
Teq = 301 [11] K
Rp = 2.02 [0.40] Re
a = 0.1415 [0.0128] AU
Ag = 345.25 [202.02] [1.70σ]
Teffp = 2009 [290] K [5.87σ]

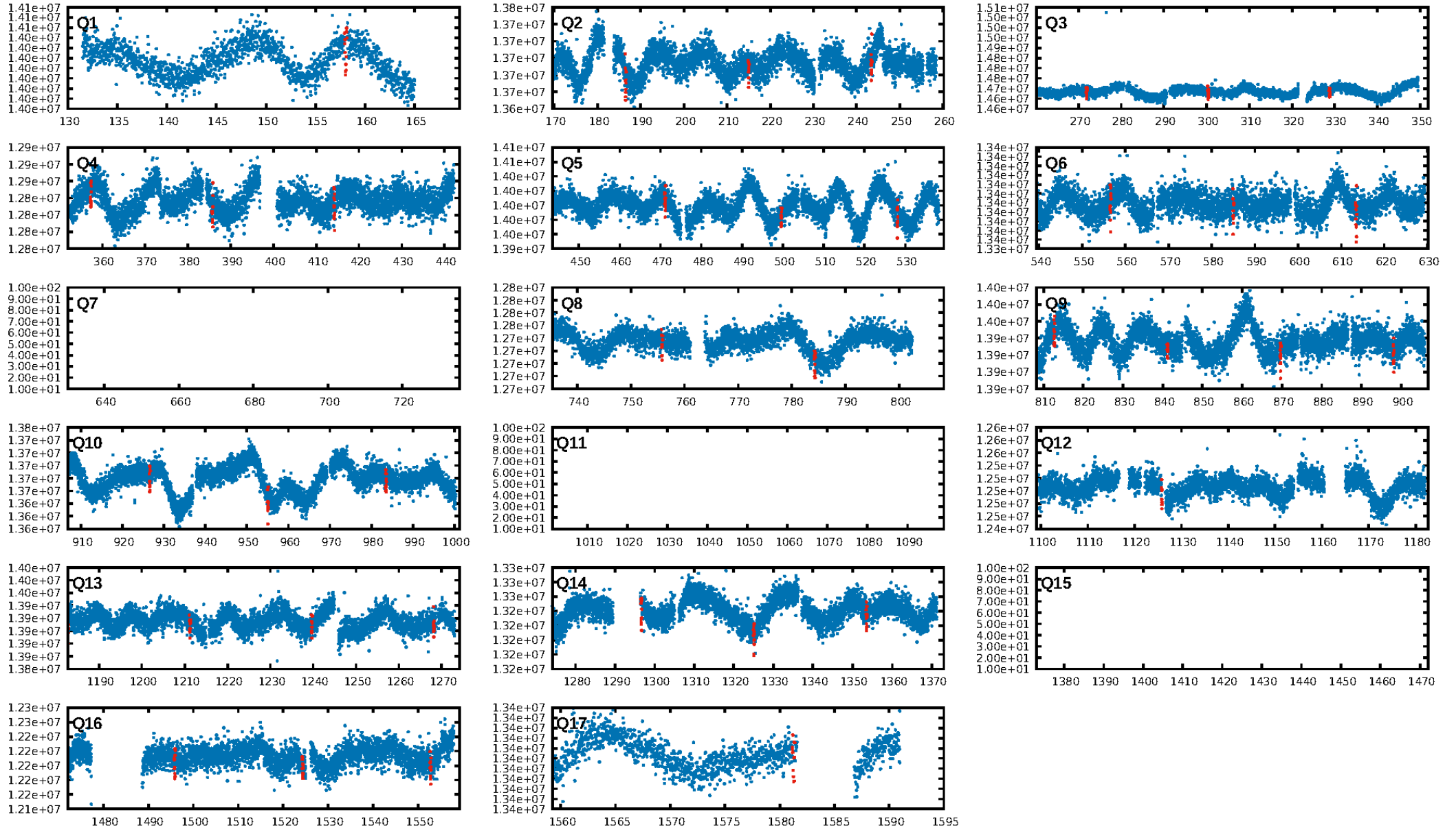
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [162.16σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 92.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.15e-107
RollingBand-fgt: 1.00 [34/34]
GhostDiagnostic-chr: 3.593
Centroid-sig: 7.0%
Centroid-so: 0.900 arcsec [1.65σ]
OotOffset-rm: 0.515 arcsec [2.68σ]
KicOffset-rm: 0.567 arcsec [2.85σ]
OotOffset-st: 4/1/3/5 [13]
KicOffset-st: 4/1/3/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.92 [12/13]

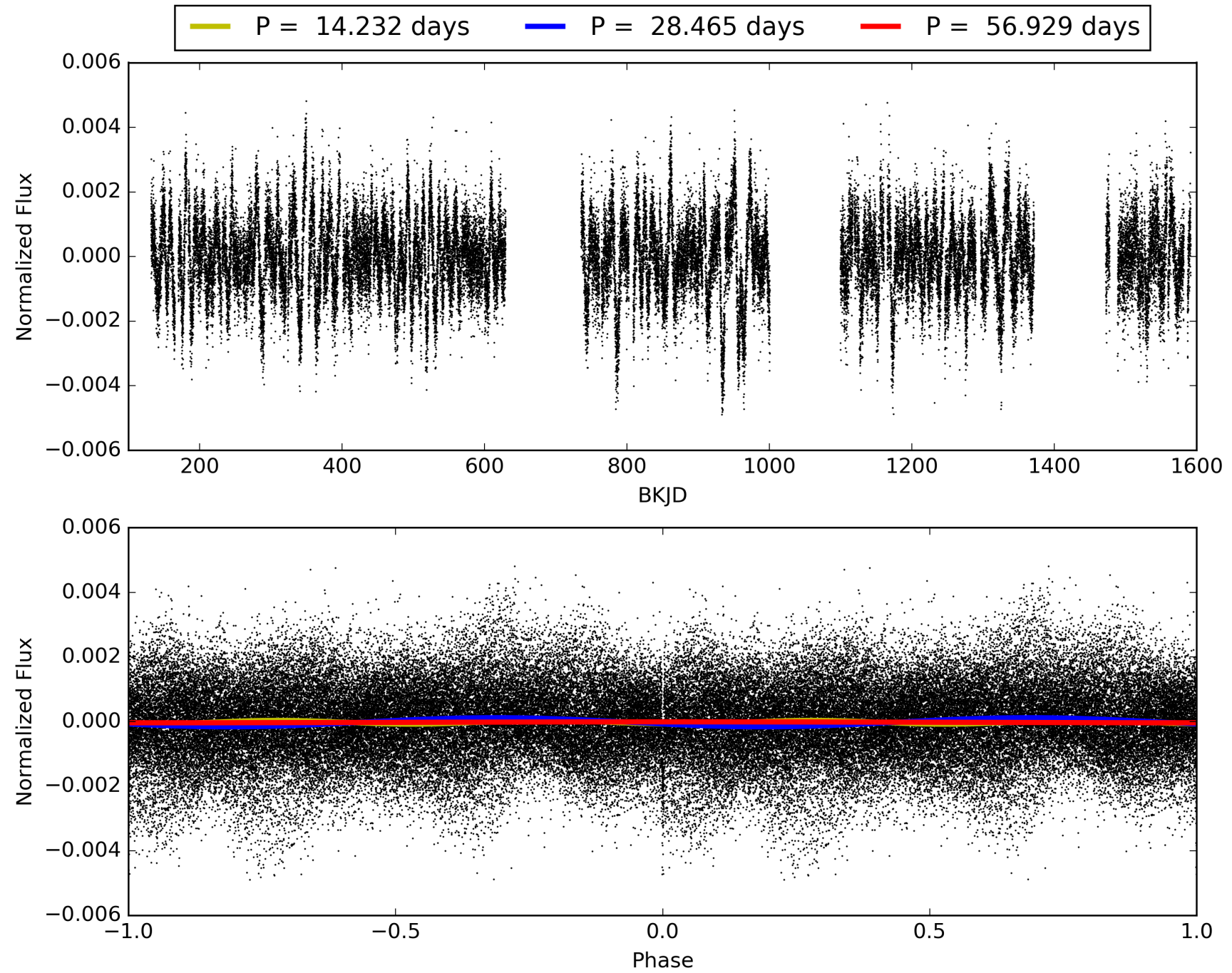
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:07:23 Z

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

TCE 010166274-03, PDC Light Curves

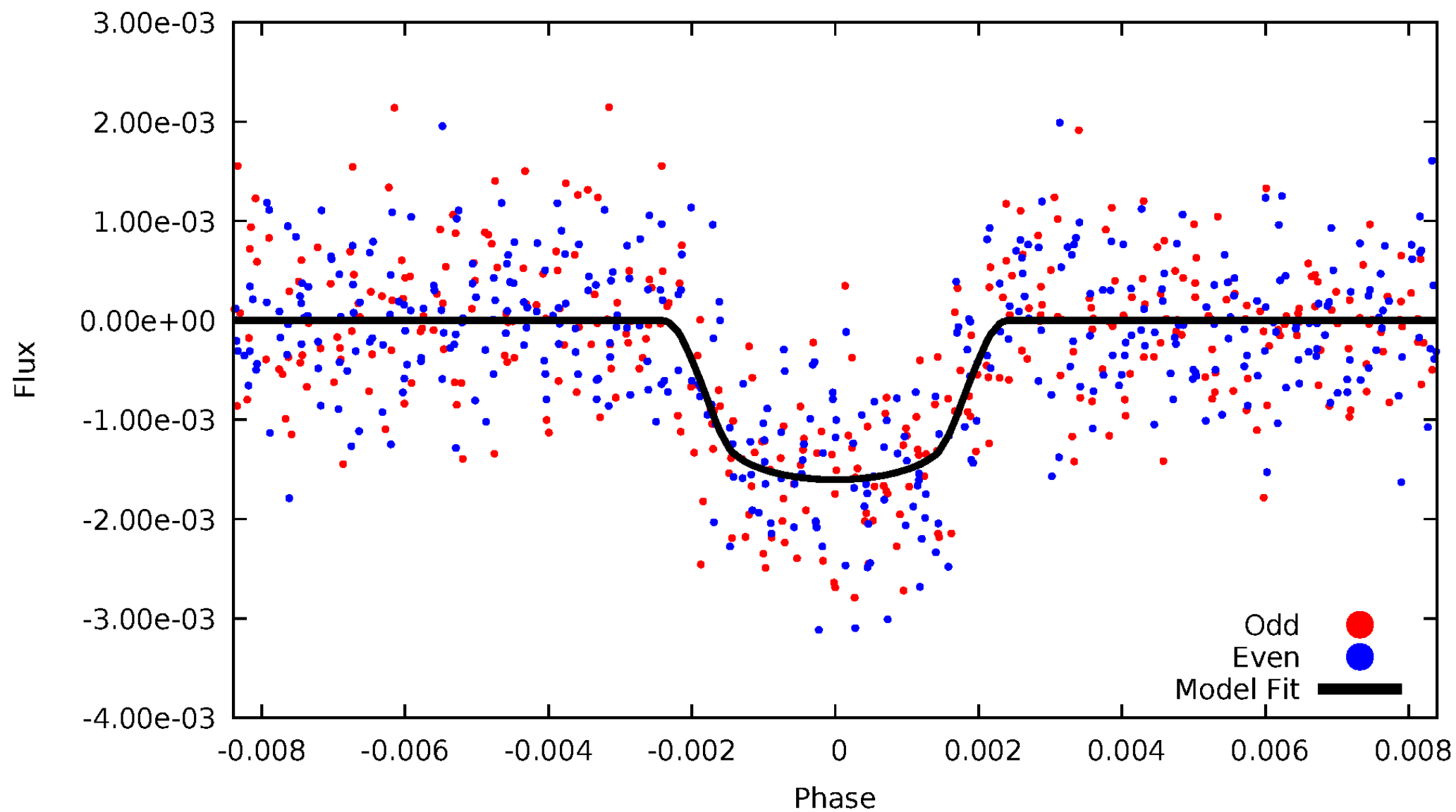


TCE 010166274-03



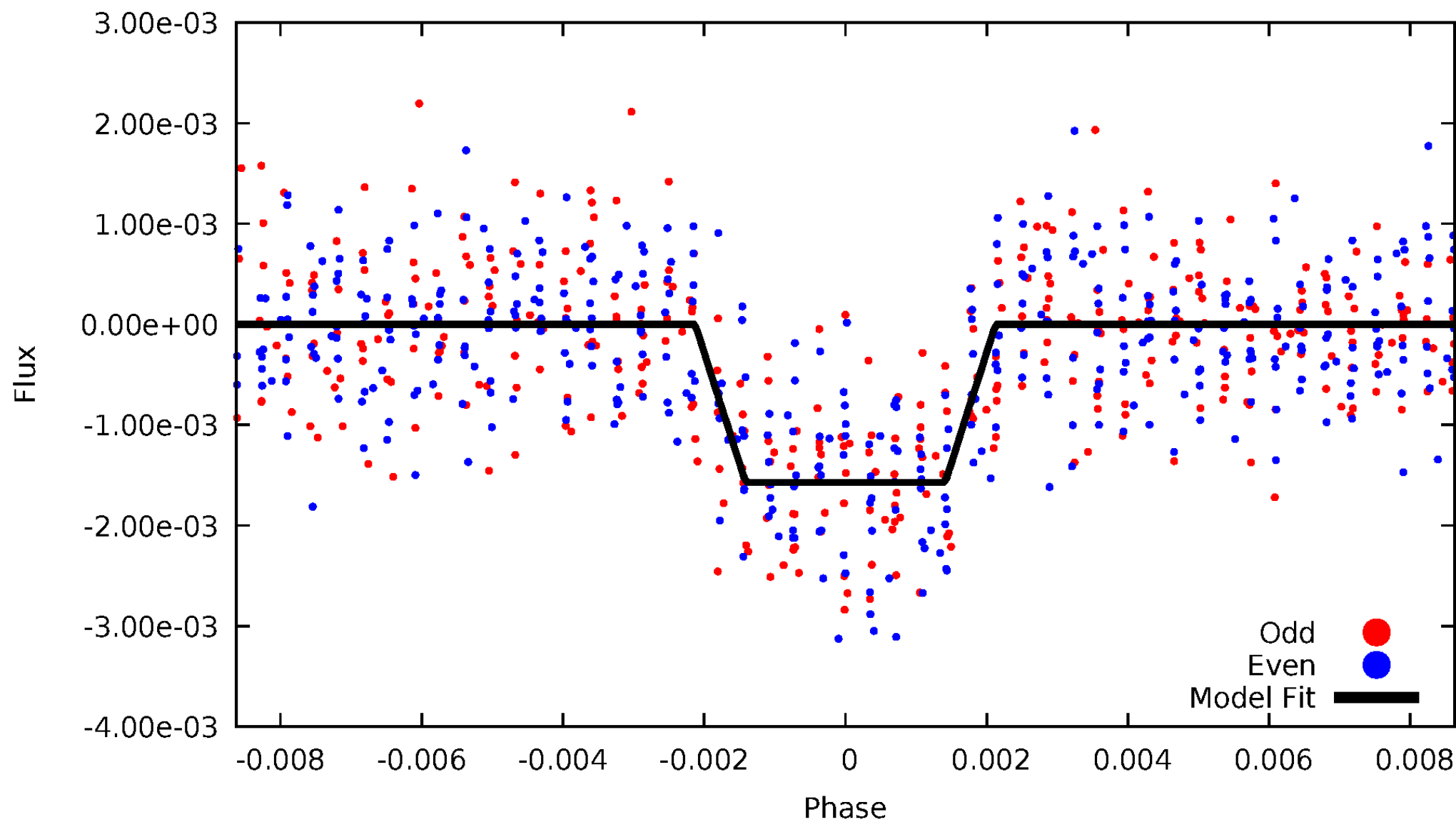
DV Odd/Even

TCE 010166274-03



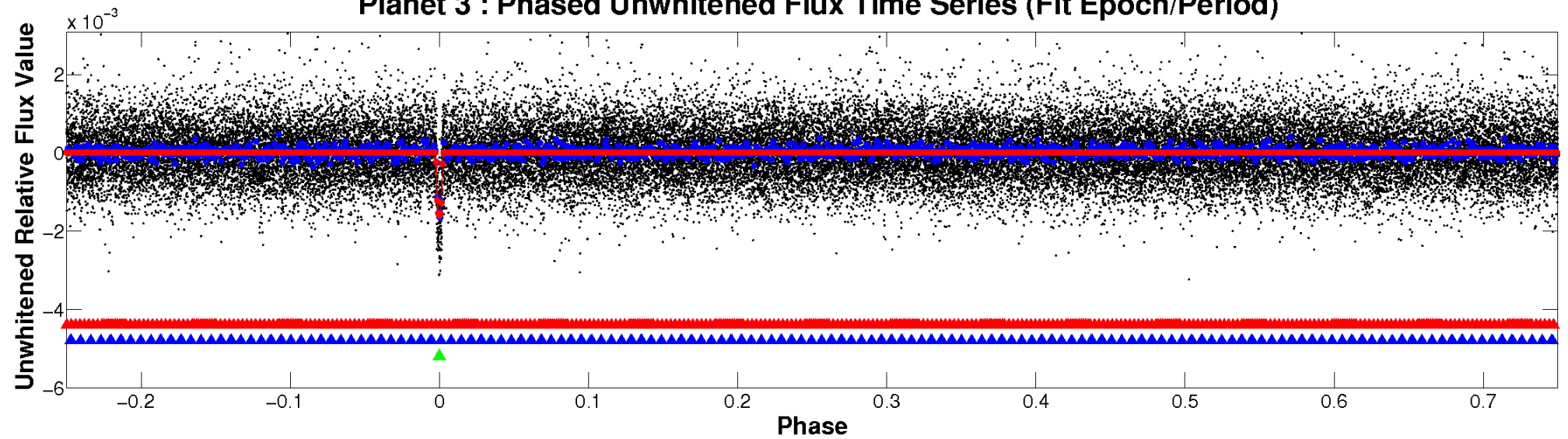
ALT Odd/Even

TCE 010166274-03

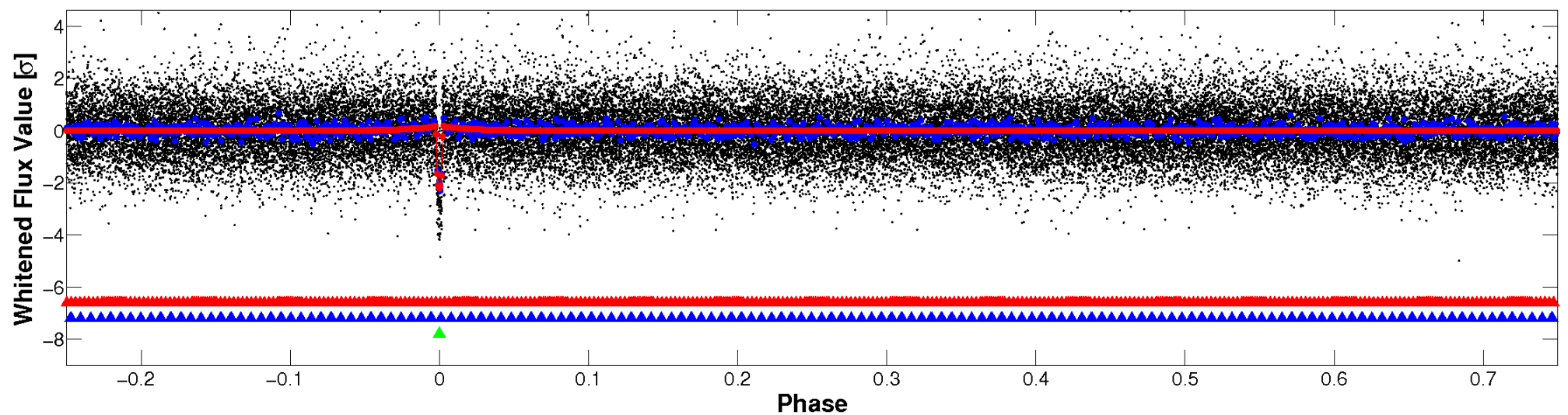


Non-Whitened Vs. Whitened Light Curve

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

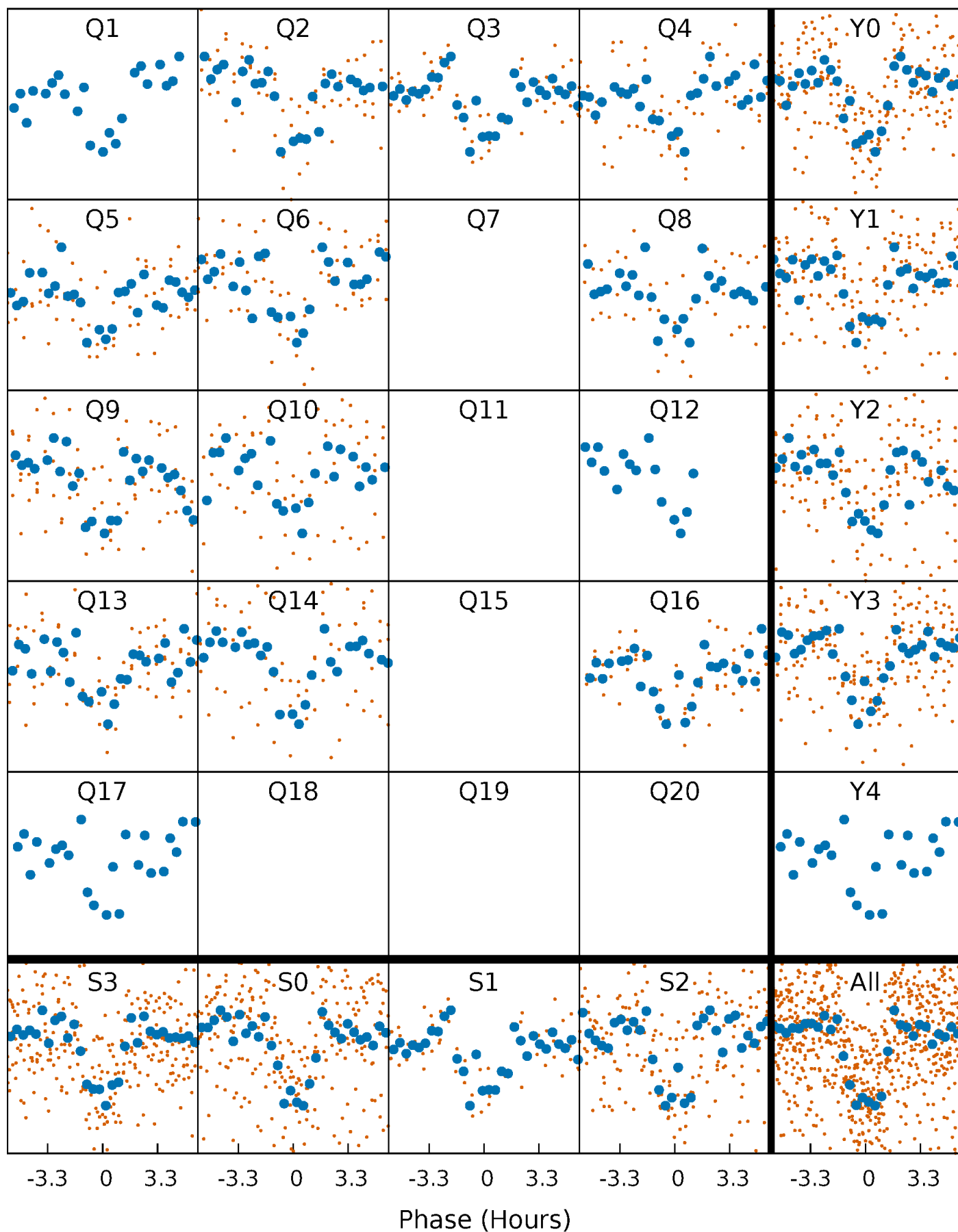


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



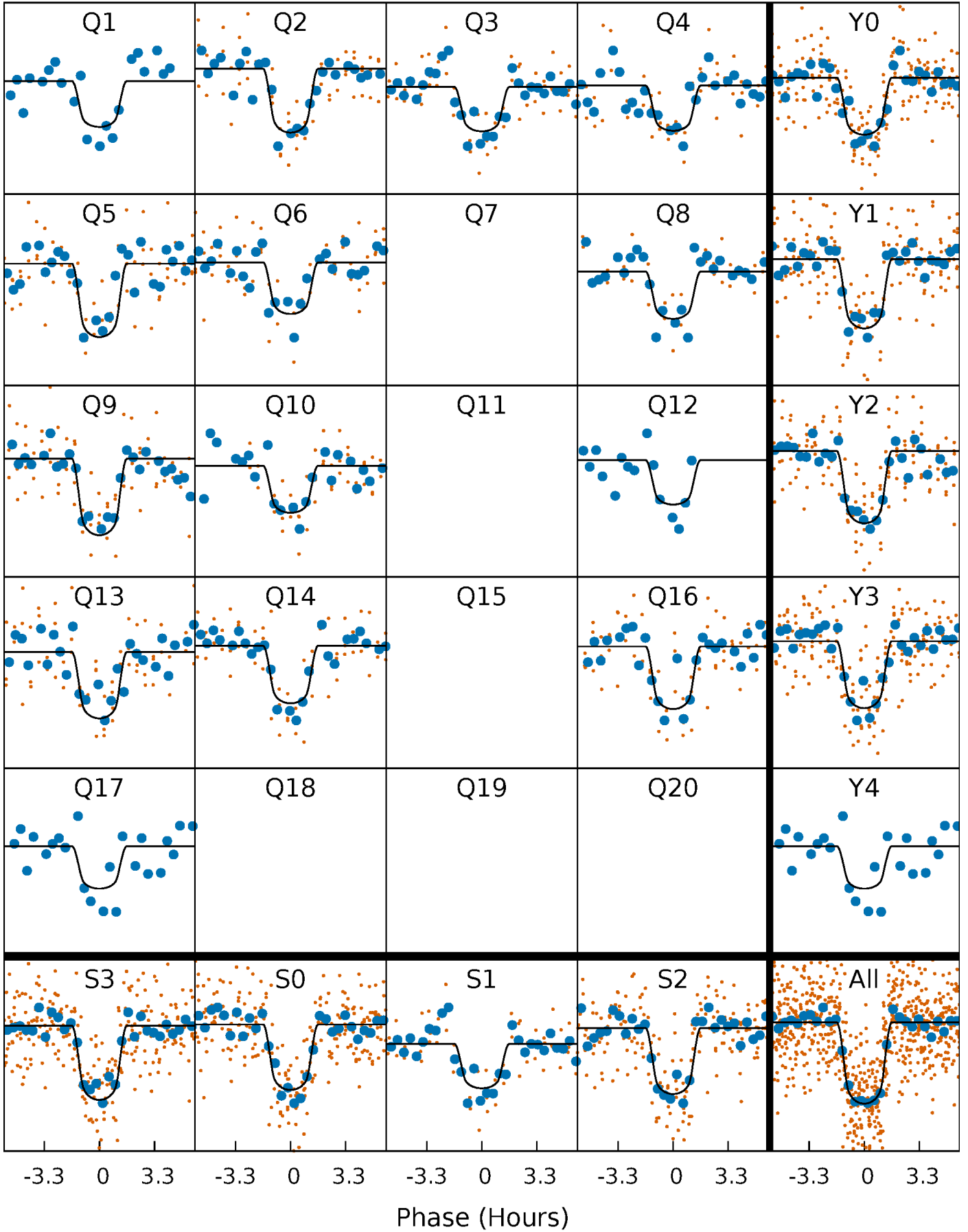
PDC Quarter-Phased Transit Curves

TCE 010166274-03 P= 28.464587 Days $T_0=158.040630$ (BKJD)



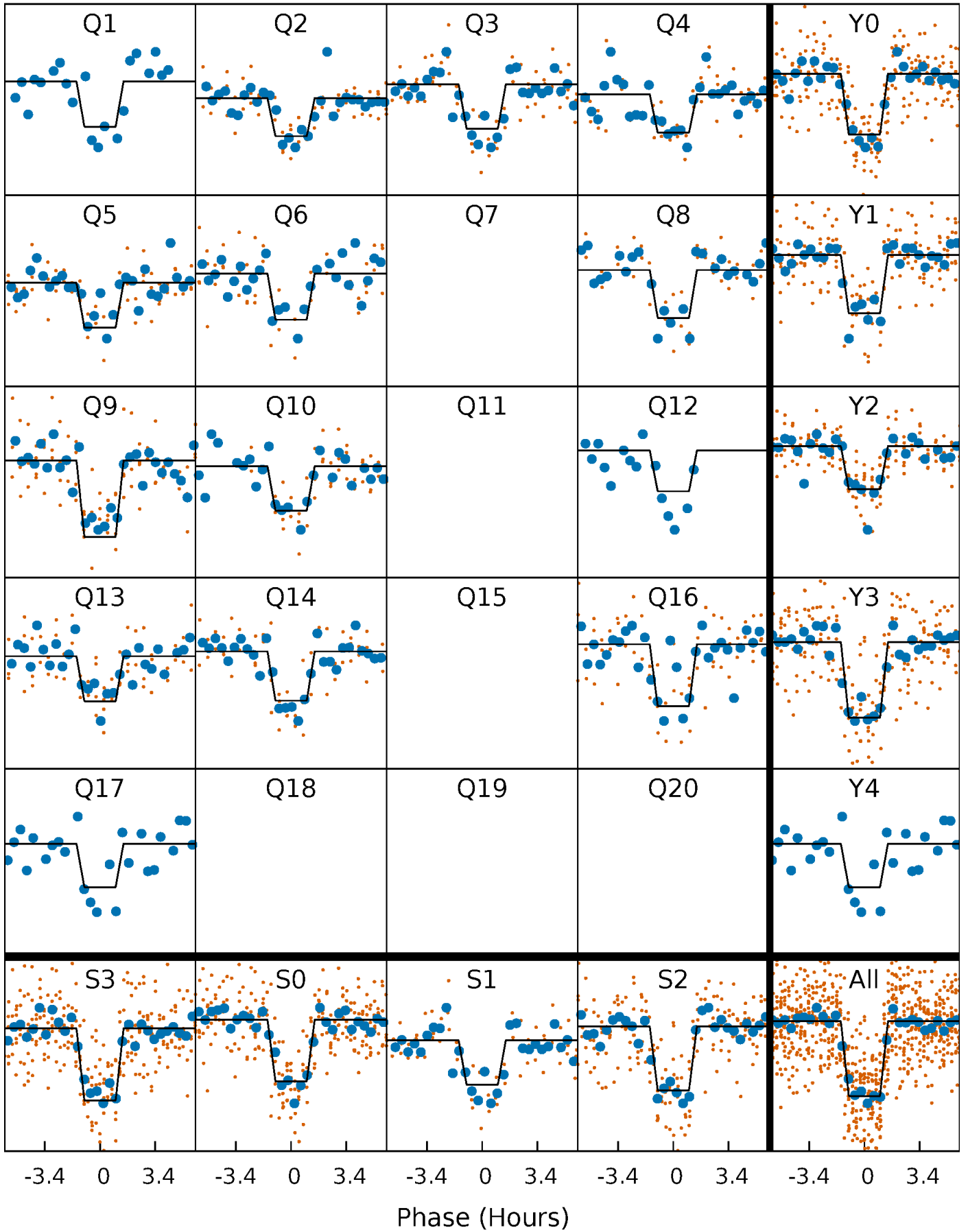
DV Quarter-Phased Transit Curves

TCE 010166274-03 $P = 28.464587$ Days $T_0 = 158.040630$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

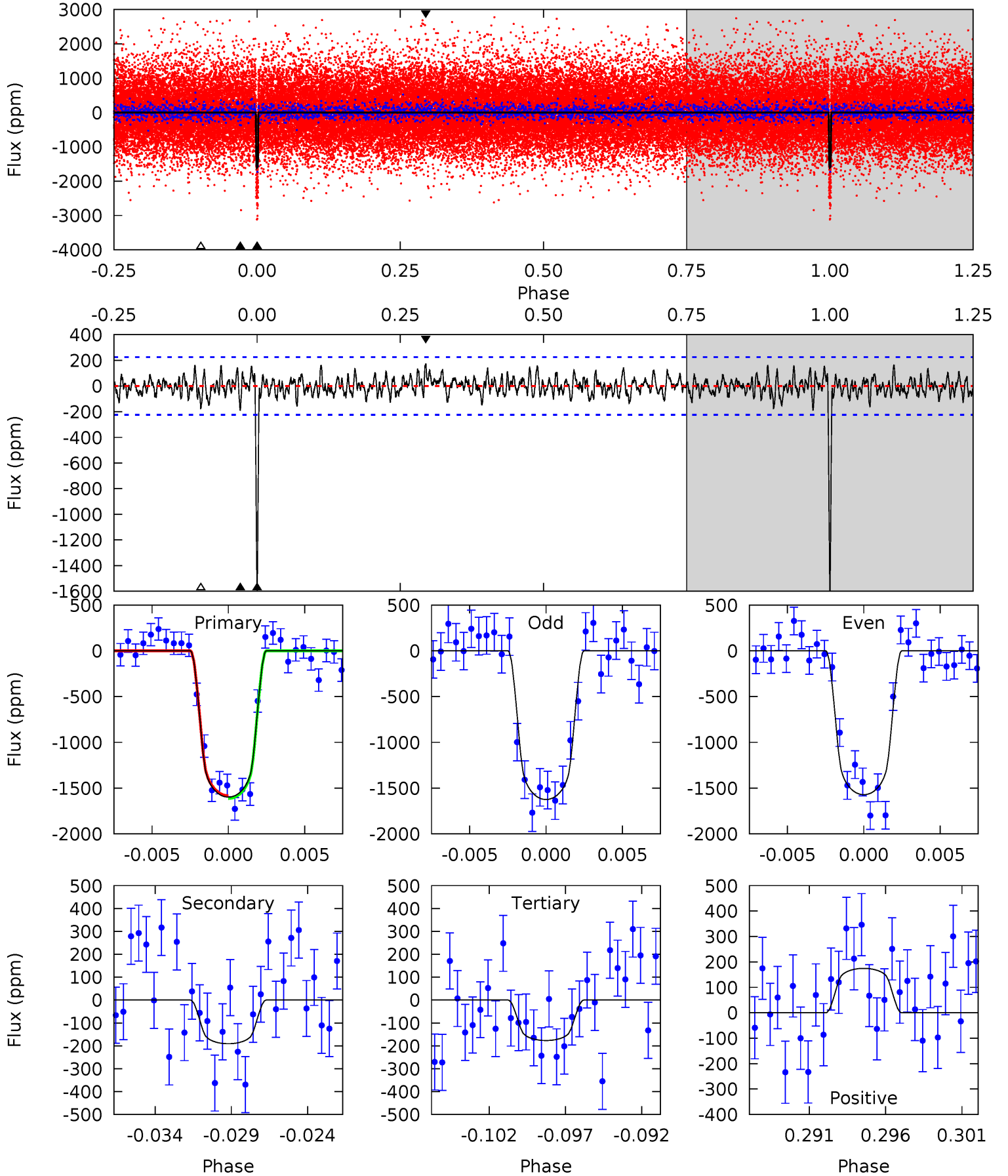
TCE 010166274-03 $P = 28.464758$ Days $T_0 = 158.036180$ (BKJD)



DV Model-Shift Uniqueness Test

010166274-03, P = 28.464587 Days, E = 129.576043 Days

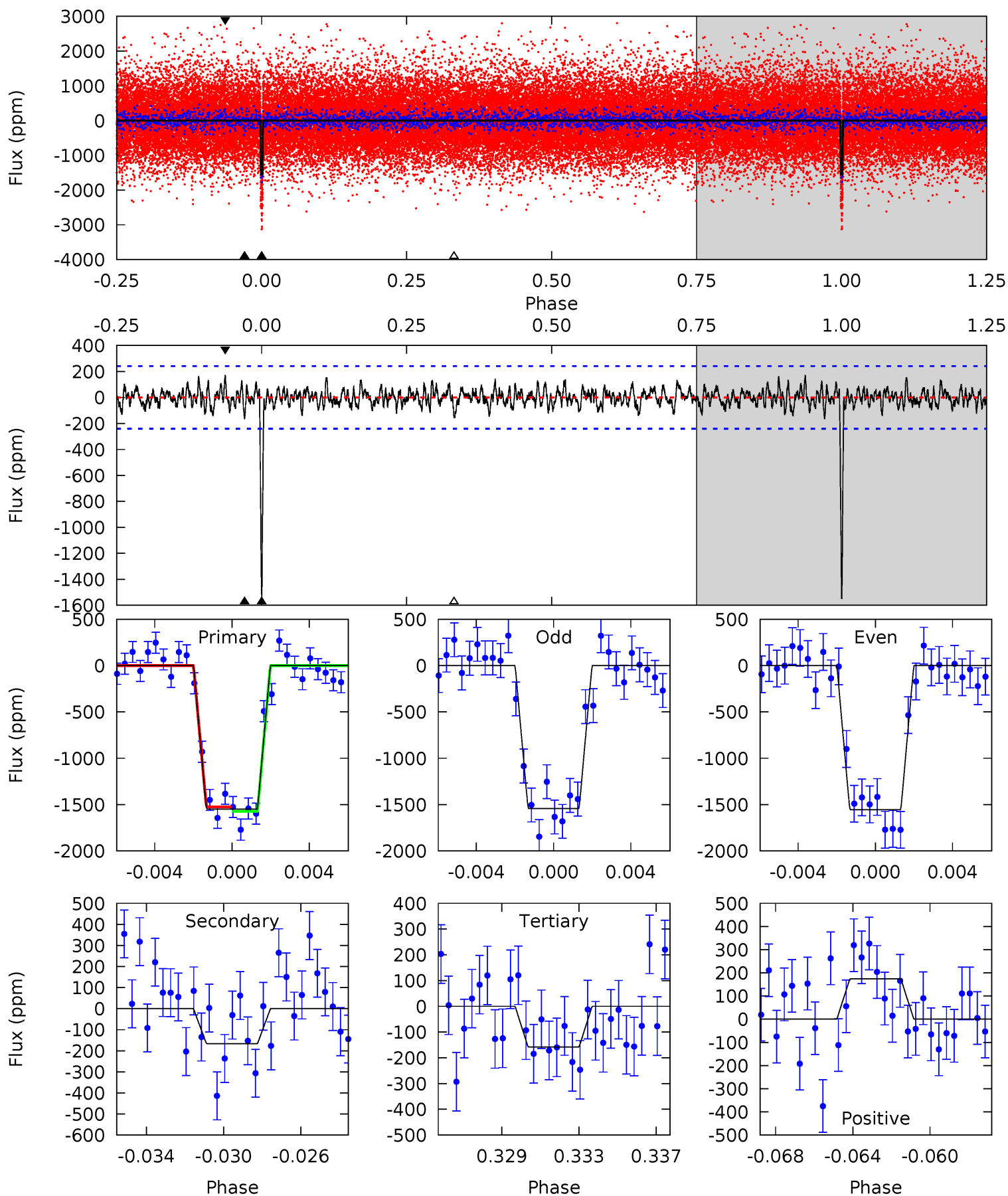
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 36.7 | 4.38 | 4.06 | 4.01 | 5.16 | 2.82 | 1.31 | 32.6 | 32.7 | 0.32 | 0.38 | 0.61 | 1.02 | 0.10 | 0.35 |



Alt Model-Shift Uniqueness Test

010166274-03, P = 28.464758 Days, E = 129.571422 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 33.3 | 3.58 | 3.40 | 3.74 | 5.19 | 2.86 | 1.13 | 29.9 | 29.6 | 0.18 | -0.16 | 0.14 | 0.99 | 0.10 | 0.53 |



Stellar Parameters For KIC 010166274

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3789^{+75}_{-82} | $4.781^{+0.063}_{-0.031}$ | $-0.340^{+0.150}_{-0.150}$ | $0.460^{+0.035}_{-0.053}$ | $0.467^{+0.038}_{-0.046}$ | $6.750^{+2.071}_{-0.905}$ |
| | +2%/-2% | +1%/-1% | +44%/-44% | +8%/-12% | +8%/-10% | +31%/-13% |
| Source | SPE70 | SPE60 | SPE70 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010166274-03 / KOI 1078.03

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|-------------------|----------------------|---------------------|
| DV | -191 ± 44 | $1.98^{+0.33}_{-0.30}$ | 419^{+11}_{-13} | 2765^{+144}_{-153} | 539^{+245}_{-185} |
| Alt. | -166 ± 46 | $1.95^{+0.37}_{-0.33}$ | 418^{+12}_{-12} | 2715^{+171}_{-155} | 480^{+251}_{-173} |

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 $A_{obs} \gg 1.0$

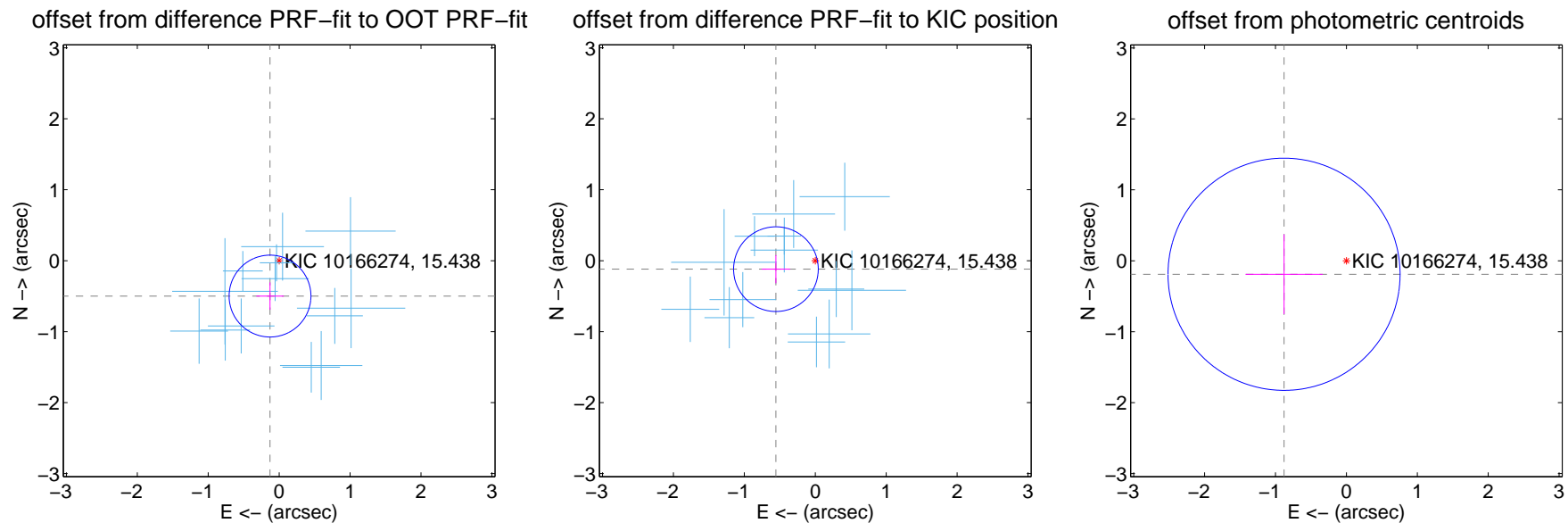
DV Centroid Data

Supplemental centroid analysis for 010166274-03. Kepler magnitude: 15.44. Transit SNR 25.92

There are 13 quarters with good PRF difference image offsets

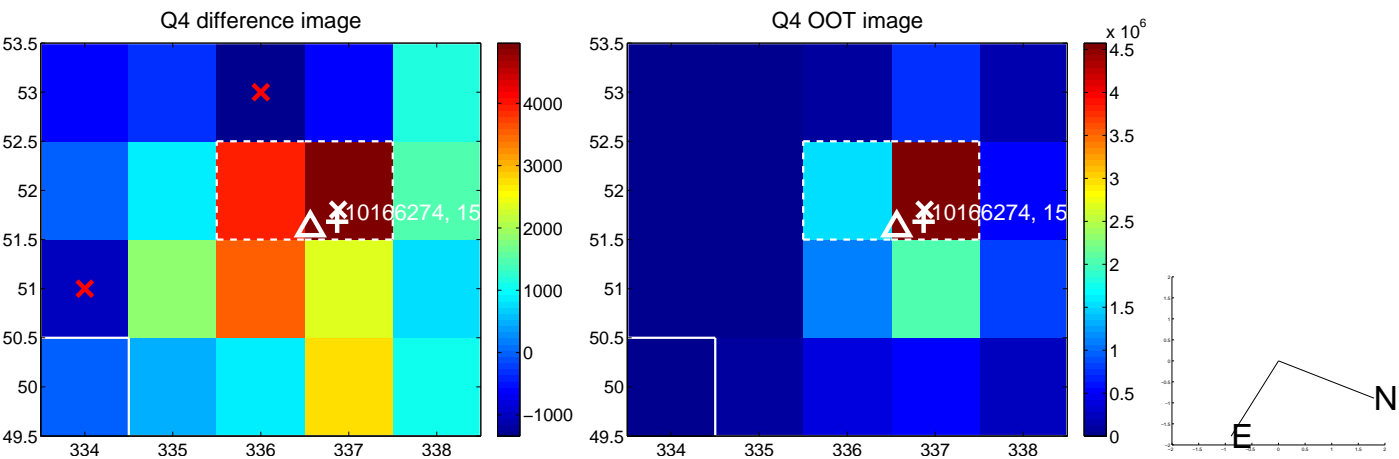
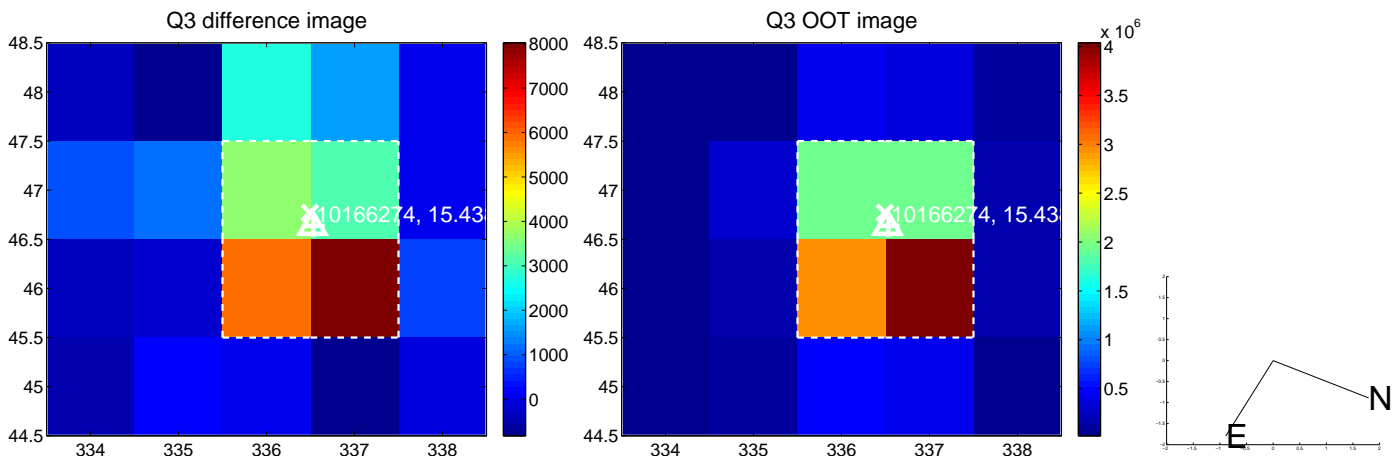
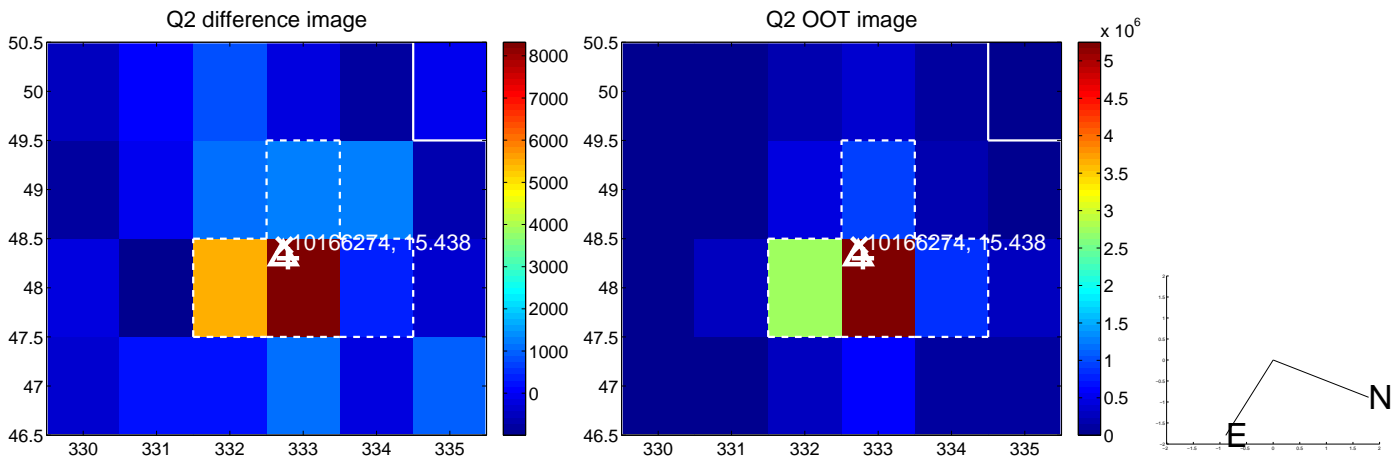
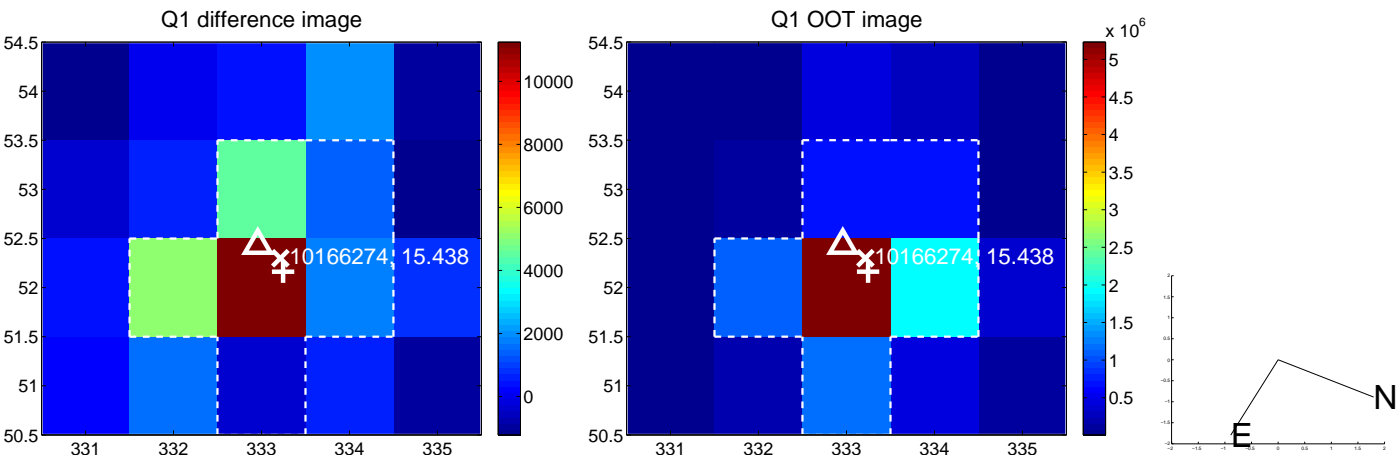
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.515 ± 0.192 | 2.68 | 0.129 ± 0.194 | -0.498 ± 0.192 |
| PRF-fit source offset from KIC position | 0.567 ± 0.199 | 2.85 | 0.555 ± 0.199 | -0.119 ± 0.198 |
| photometric centroid source offset | 0.90 ± 0.55 | 1.65 | 0.88 ± 0.54 | -0.19 ± 0.56 |

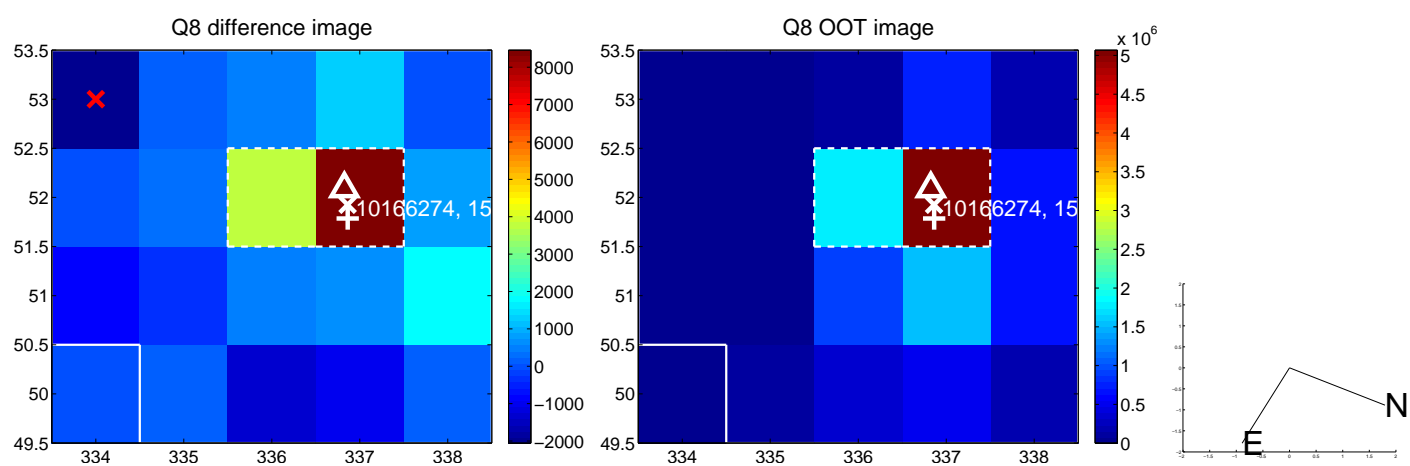
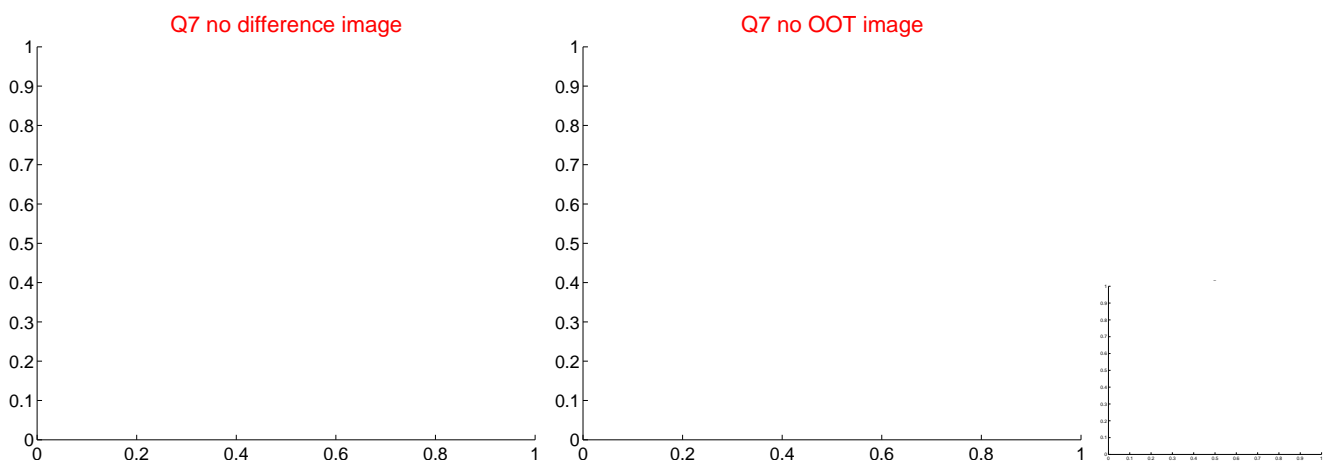
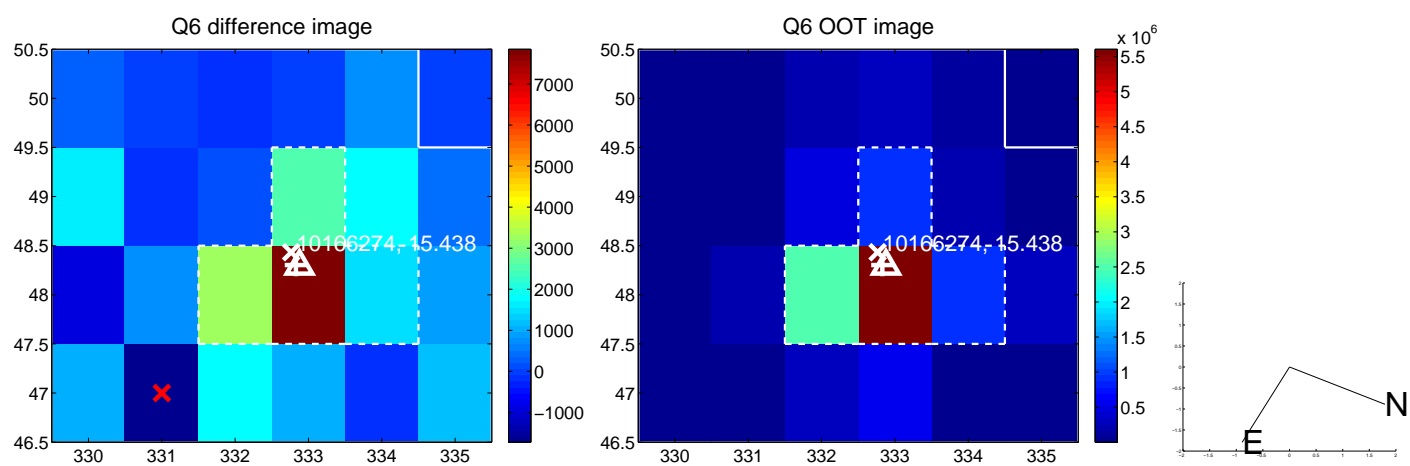
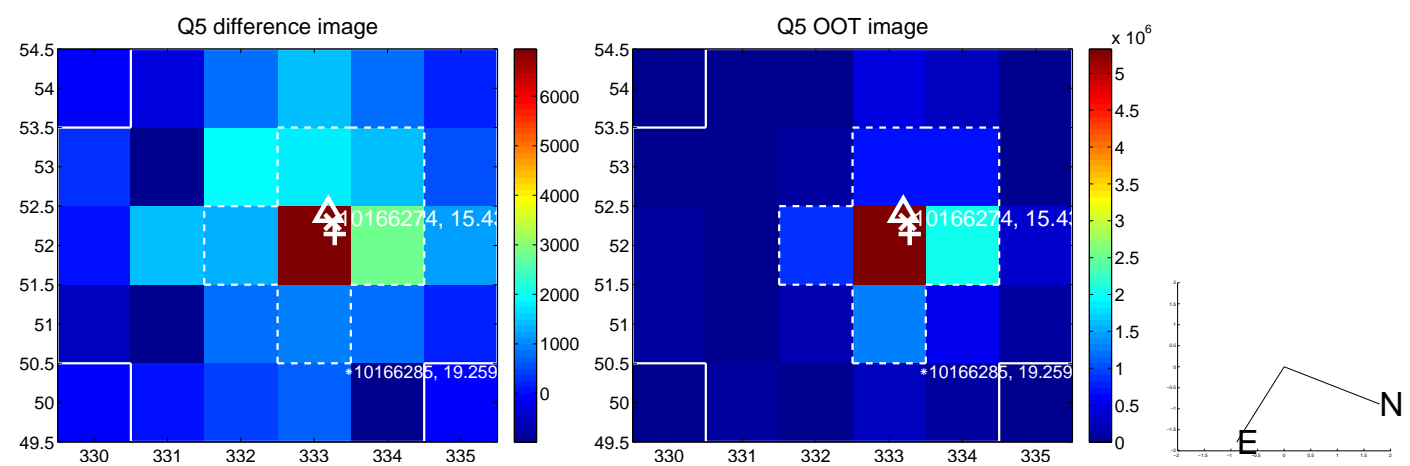


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

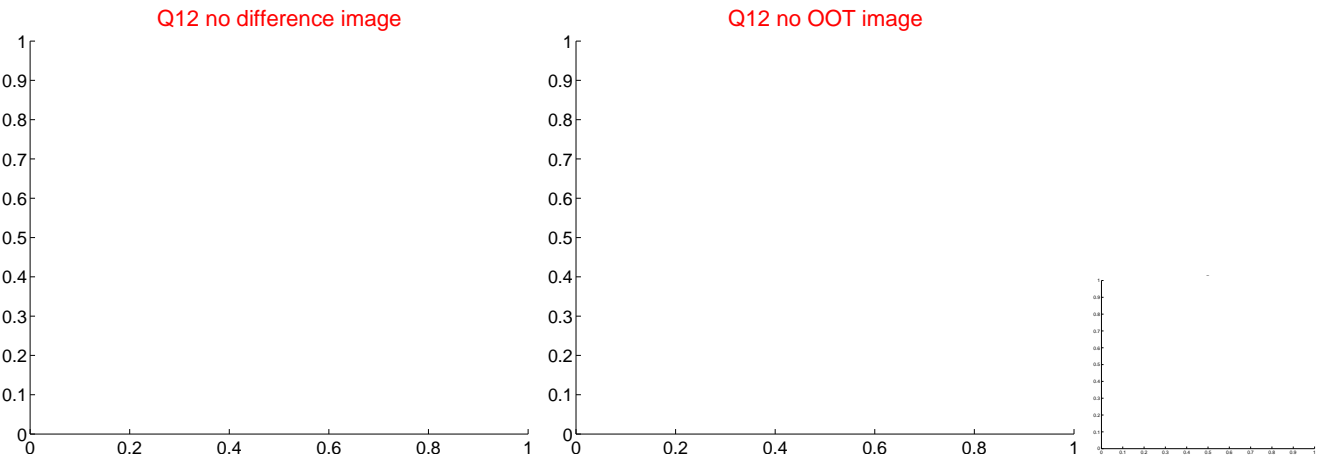
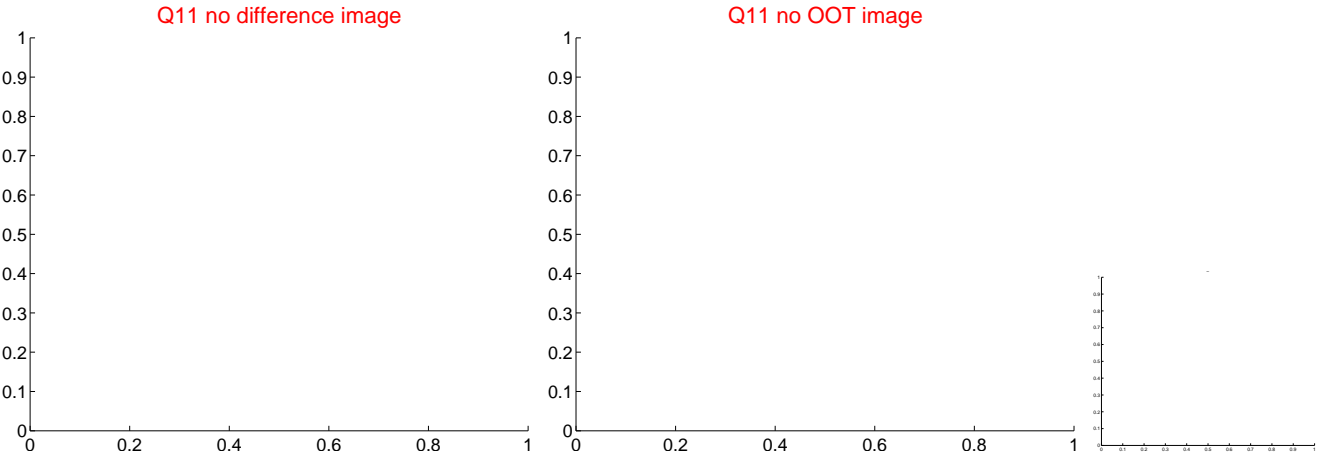
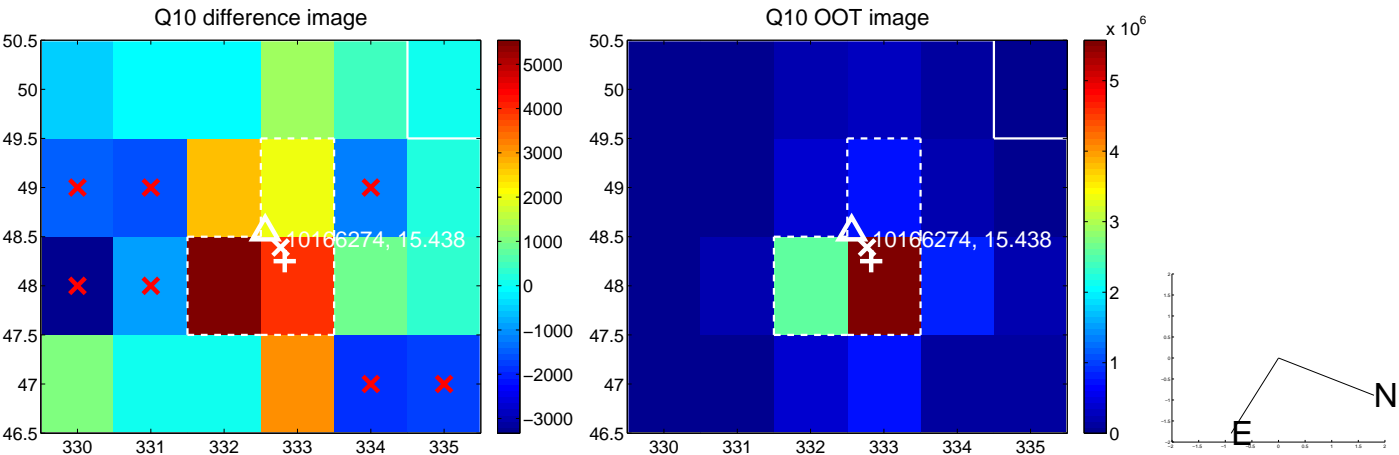
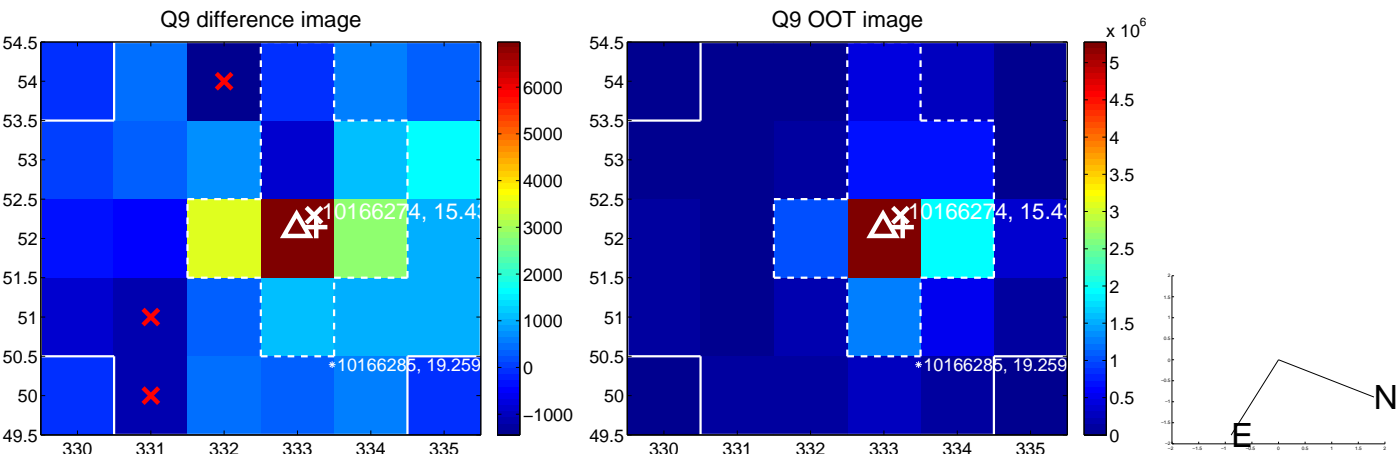
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



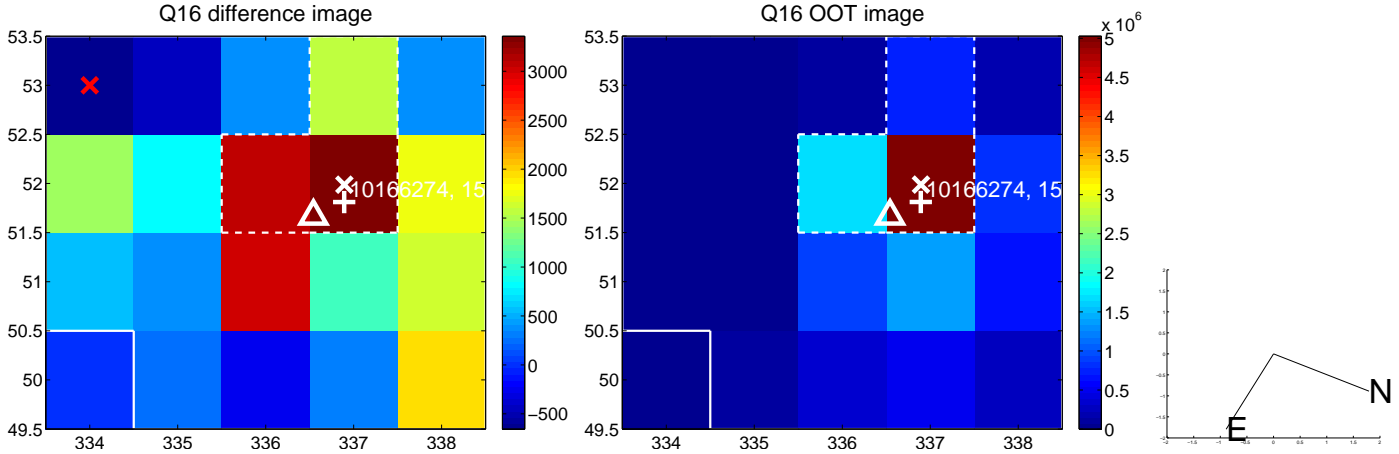
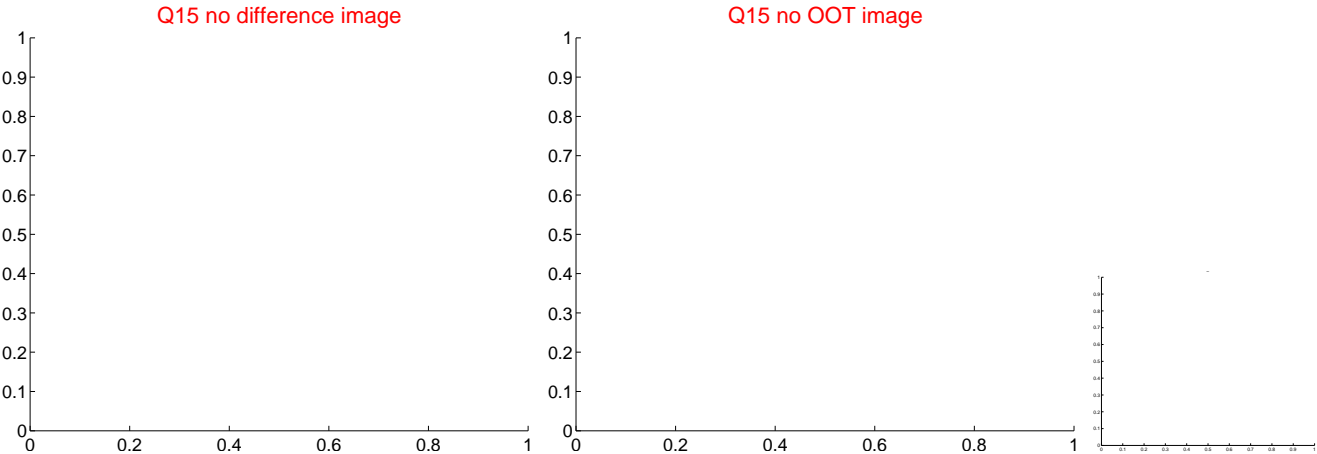
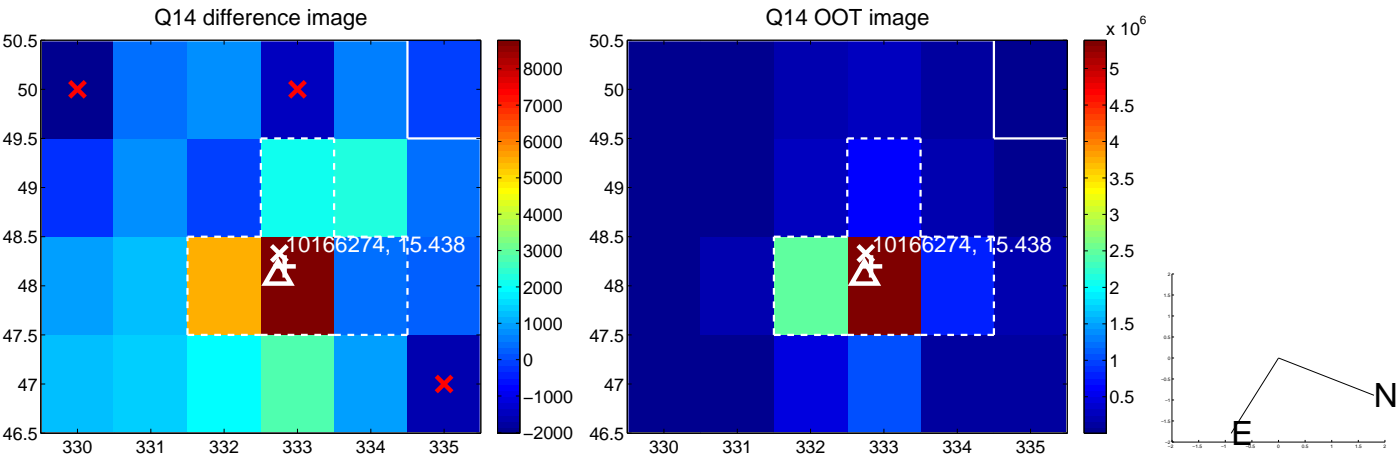
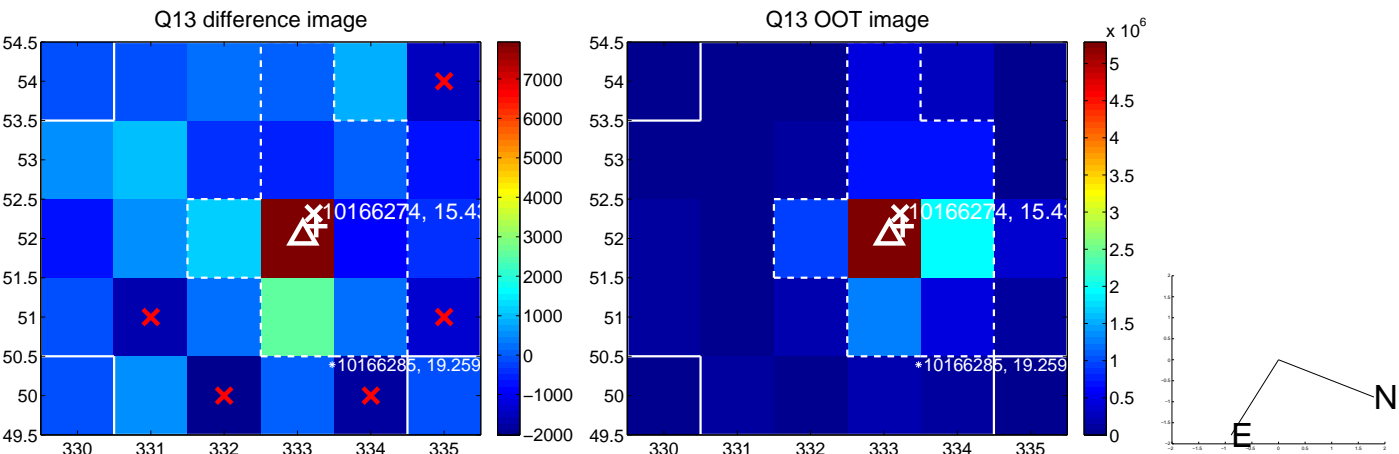
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



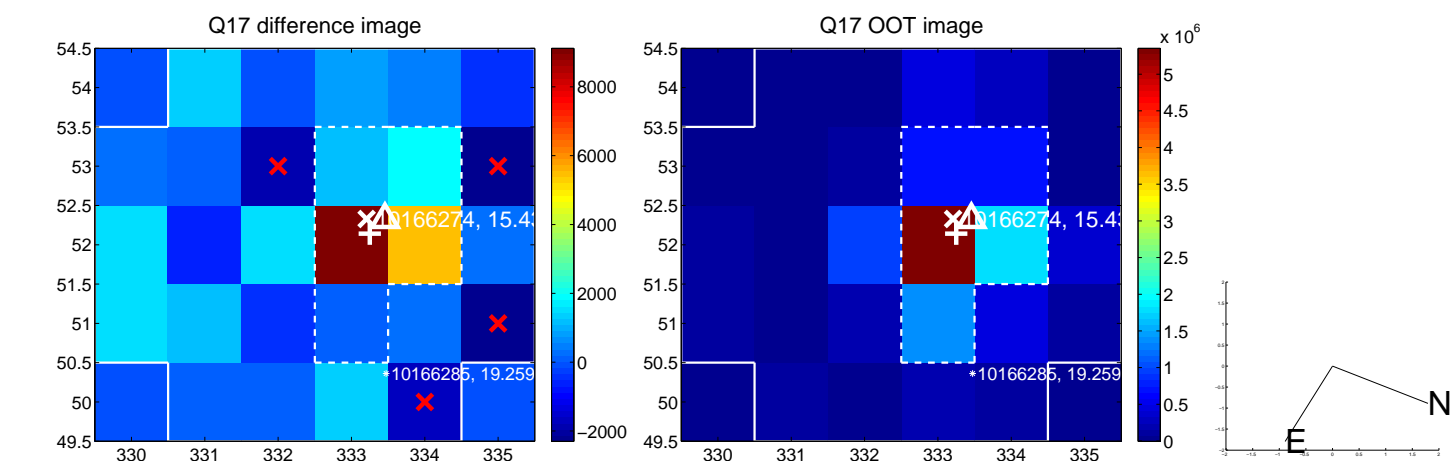
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



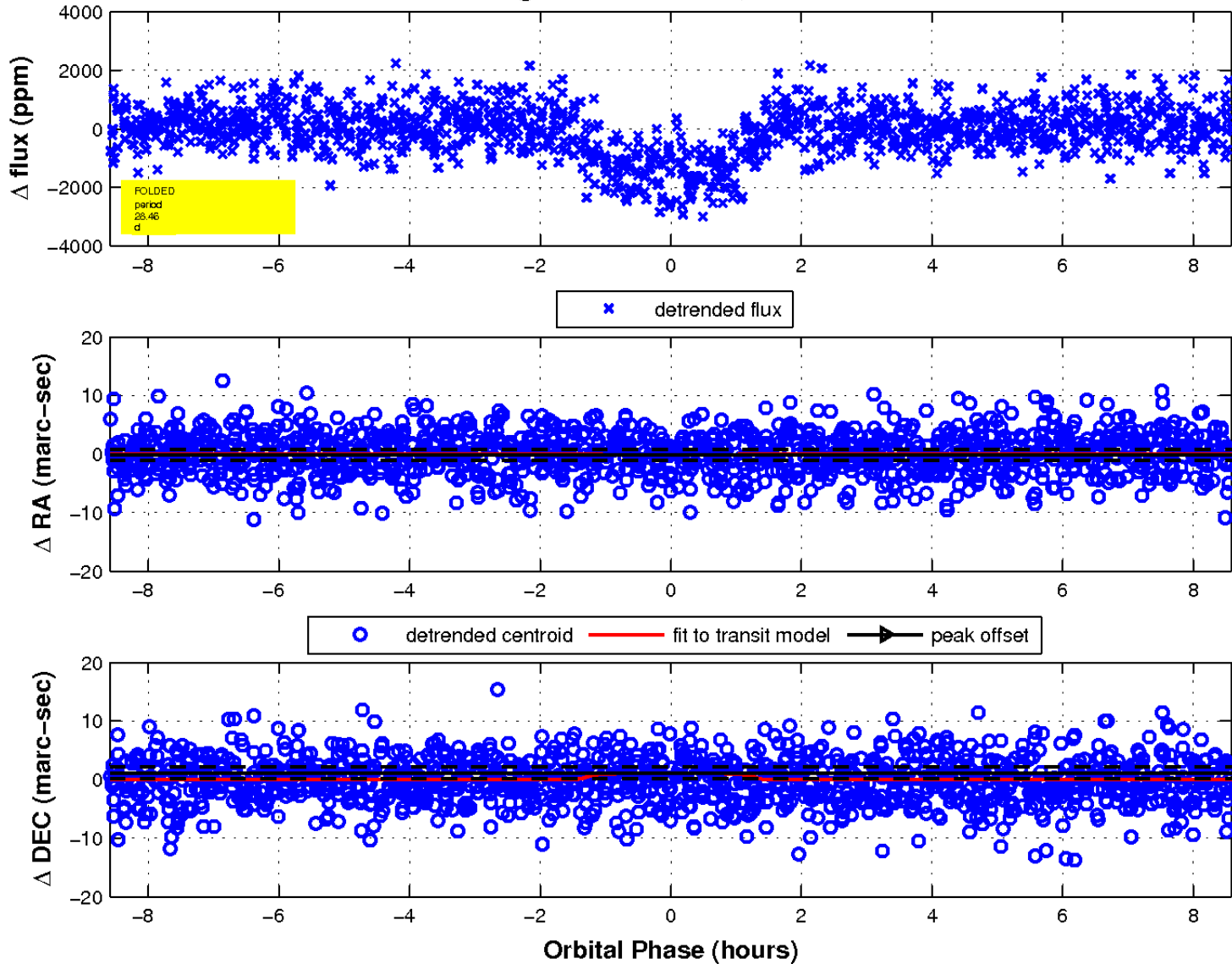
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

