

KIC 004932691

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 004932691-01 | OBS | 6474.01 | 18.112115 | 134.712621 | 116330.3 | 6.802 | 225.7 | 376.4 | 1.72 | 7323 | 92.90 | 307.88 |
| 004932691-02 | OBS | No | 18.112105 | 139.505949 | 34779.9 | 6.362 | 69.8 | 129.6 | 1.72 | 7323 | 54.69 | 307.88 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 004932691-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 004932691-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

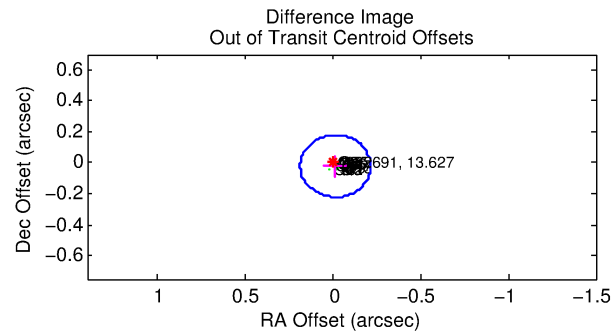
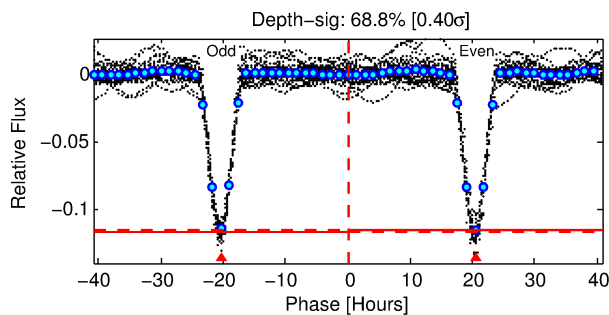
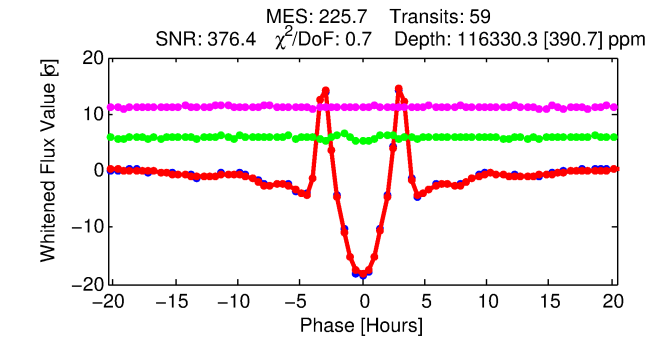
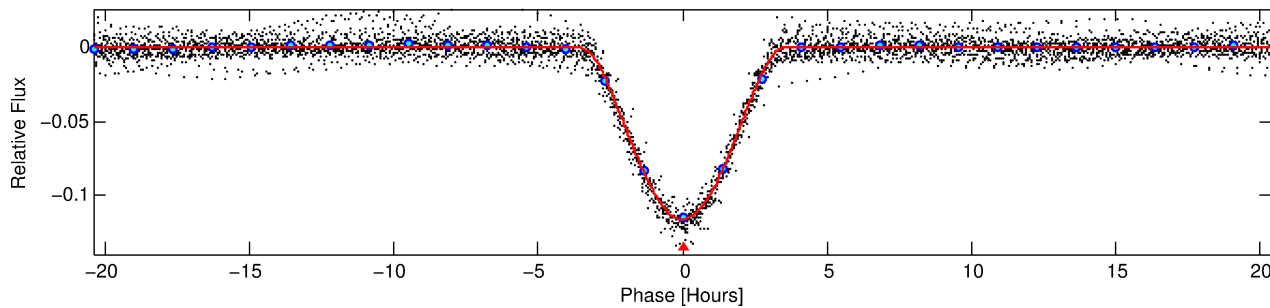
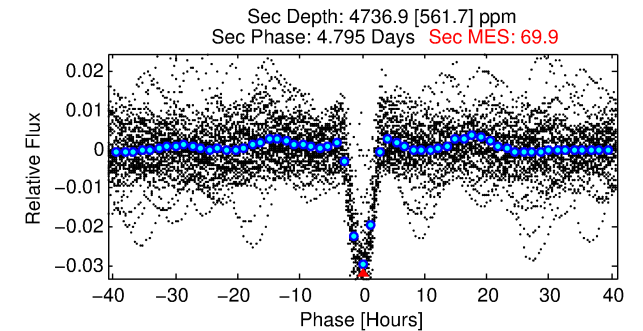
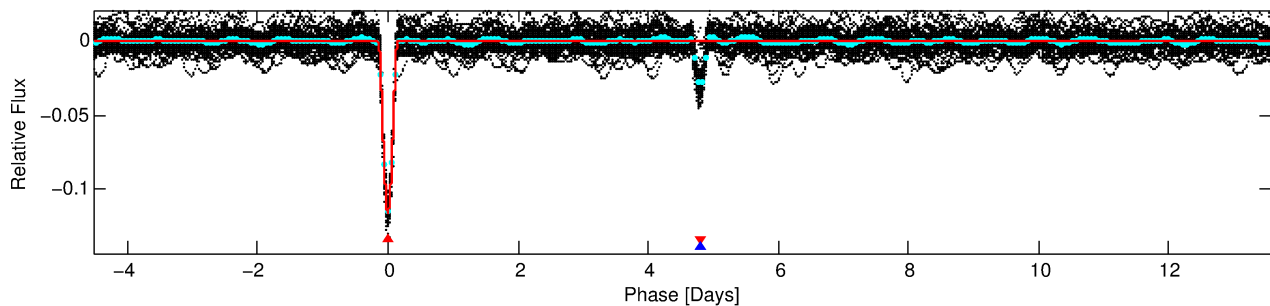
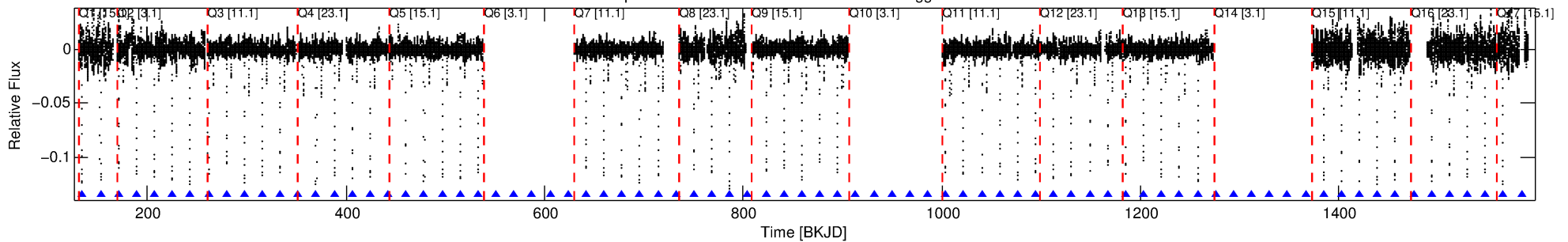
Ephemeris Match Information For 004932691-01

No Significant Match Found

DV One-Page Summary

KIC: 4932691 Candidate: 1 of 2 Period: 18.112 d
KOI: K06474.01 Corr: 0.998

Kp: 13.63 R*: 1.72 Rs Teff: 7323.0 K Logg: 4.17 Fe/H: 0.080



DV Fit Results:

Period = 18.11212 [0.00000] d
Epoch = 134.7126 [0.0001] BKJD
Rp/R* = 0.4944 [0.0705]
a/R* = 23.38 [0.25]
b = 0.96 [0.10]
Seff = 307.88 [131.21]
Teq = 1068 [114] K
Rp = 92.90 [33.09] Re
a = 0.1575 [0.0427] AU
Ag = 7.49 [3.72] [1.74σ]
Teffp = 2732 [242] K [6.22σ]

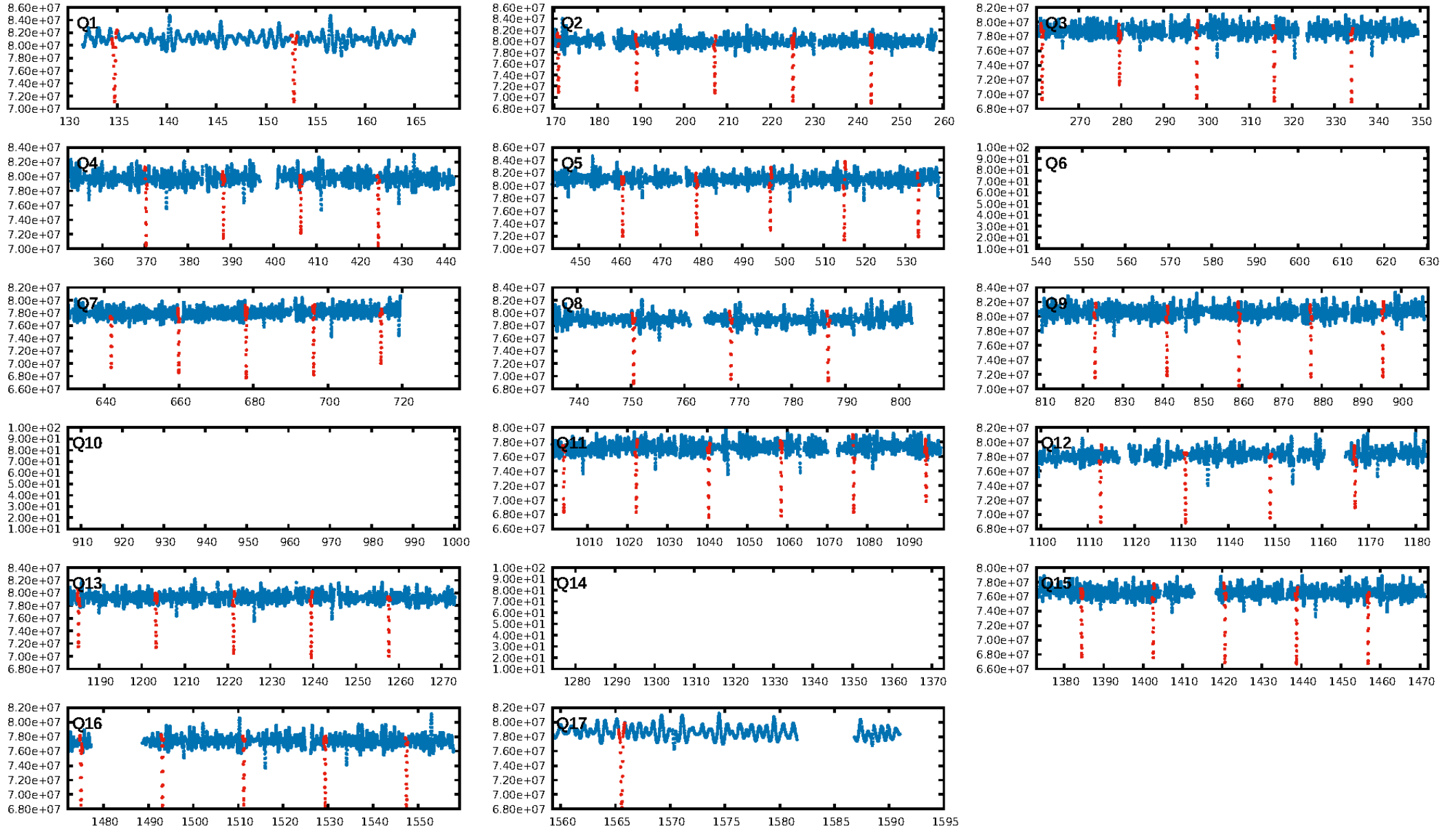
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [56/56]
GhostDiagnostic-chr: 1.24
Centroid-sig: 0.0%
Centroid-so: 0.081 arcsec [50.16σ]
OotOffset-rm: 0.026 arcsec [0.38σ]
KicOffset-rm: 0.015 arcsec [0.22σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

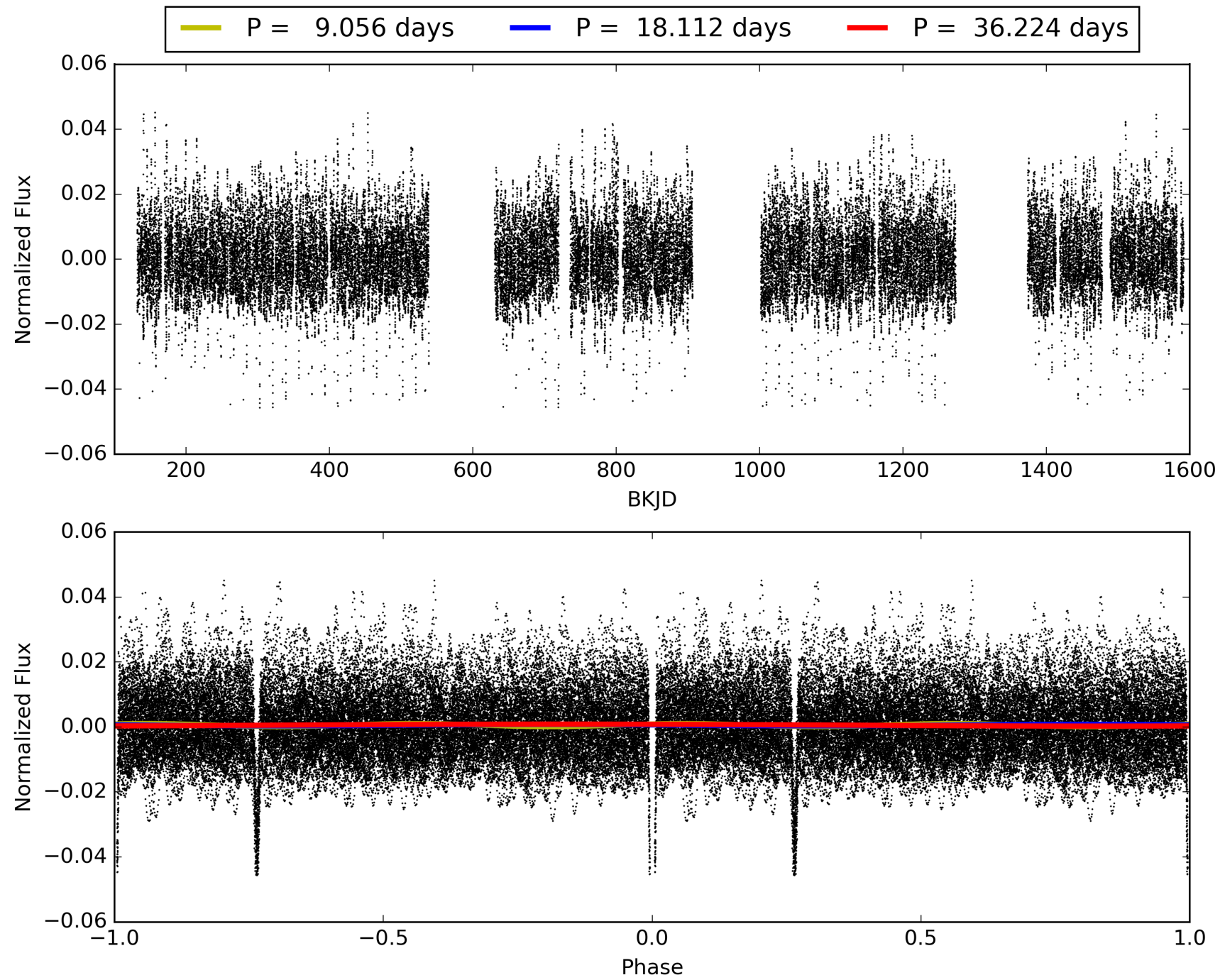
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:17 Z

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

TCE 004932691-01, PDC Light Curves

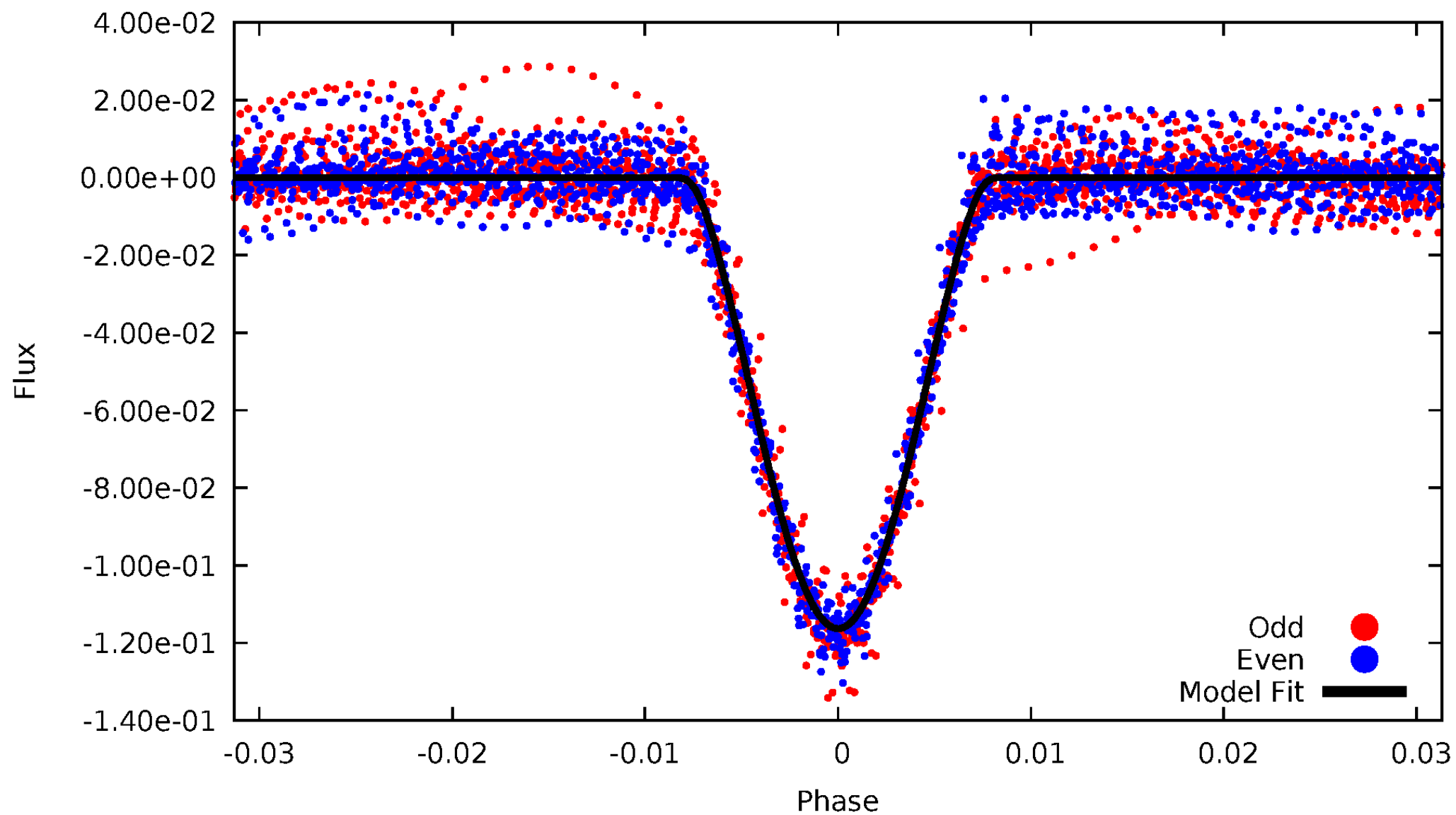


TCE 004932691-01



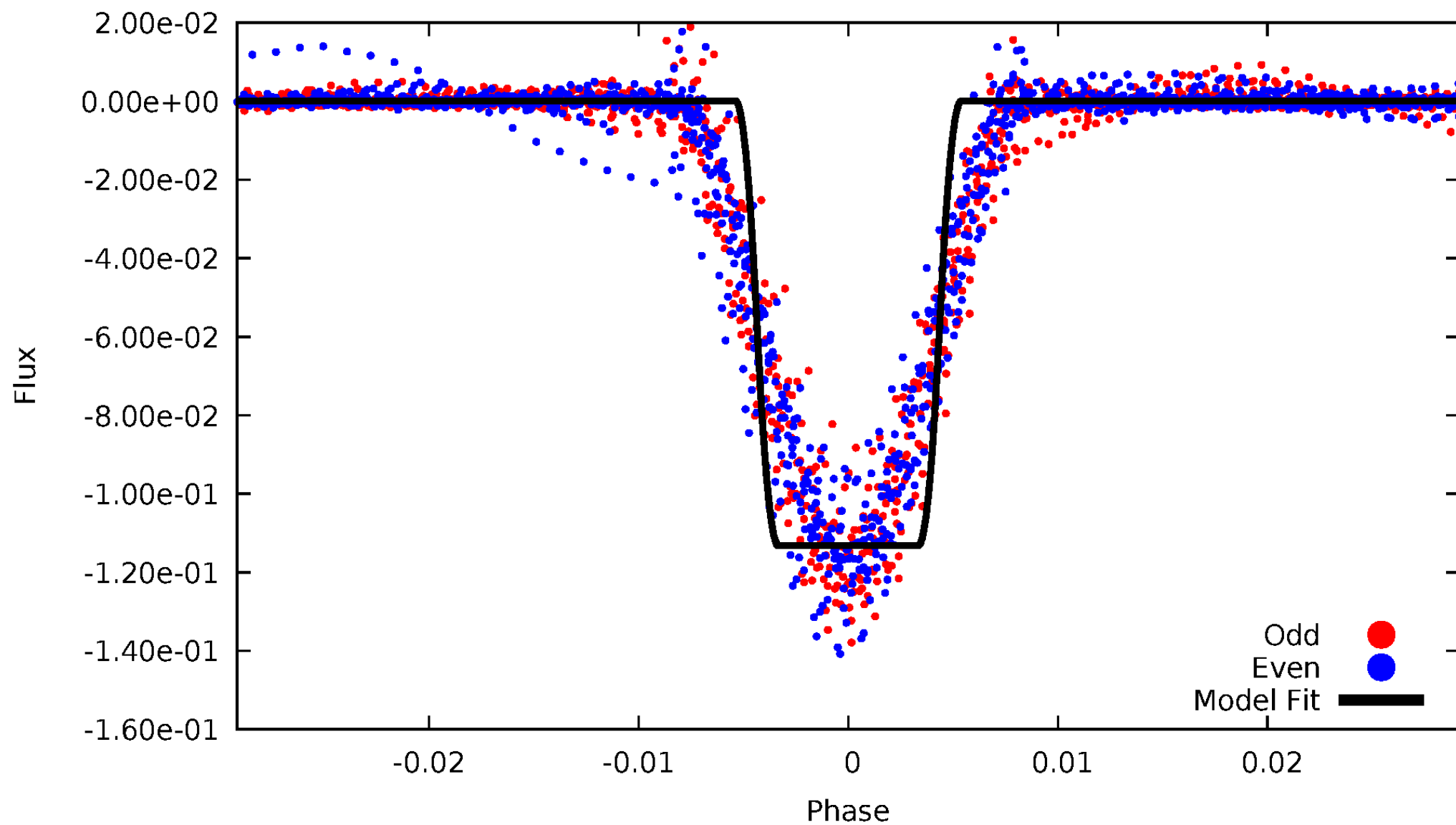
DV Odd/Even

TCE 004932691-01



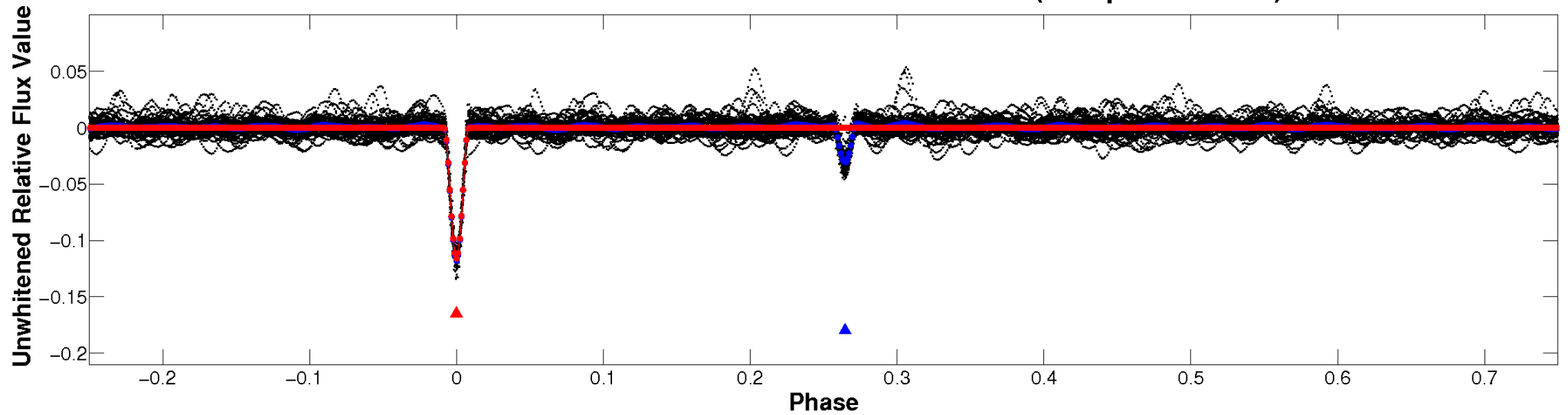
ALT Odd/Even

TCE 004932691-01

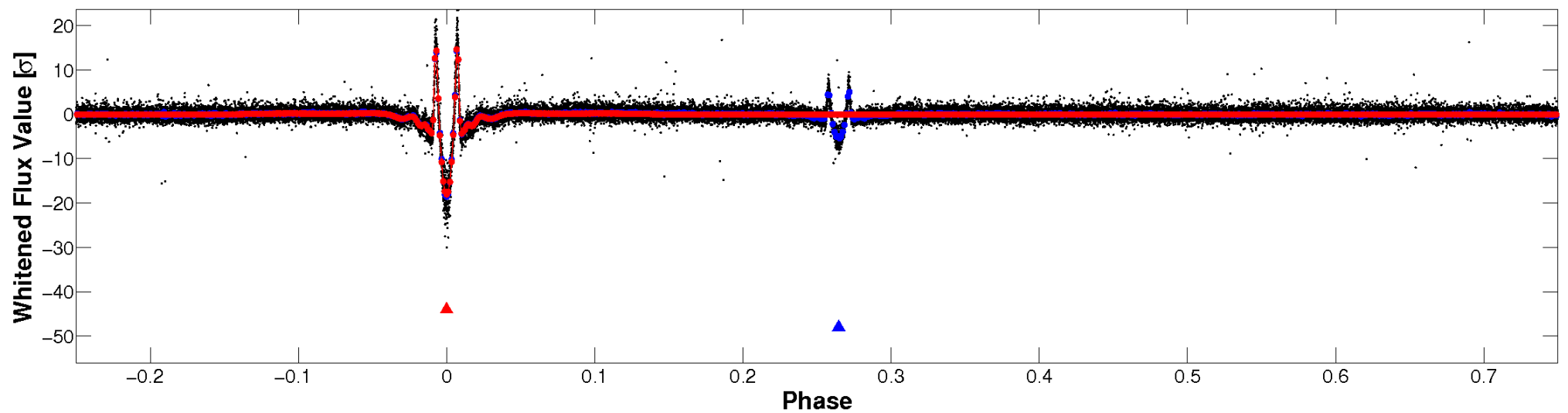


Non-Whitened Vs. Whitened Light Curve

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

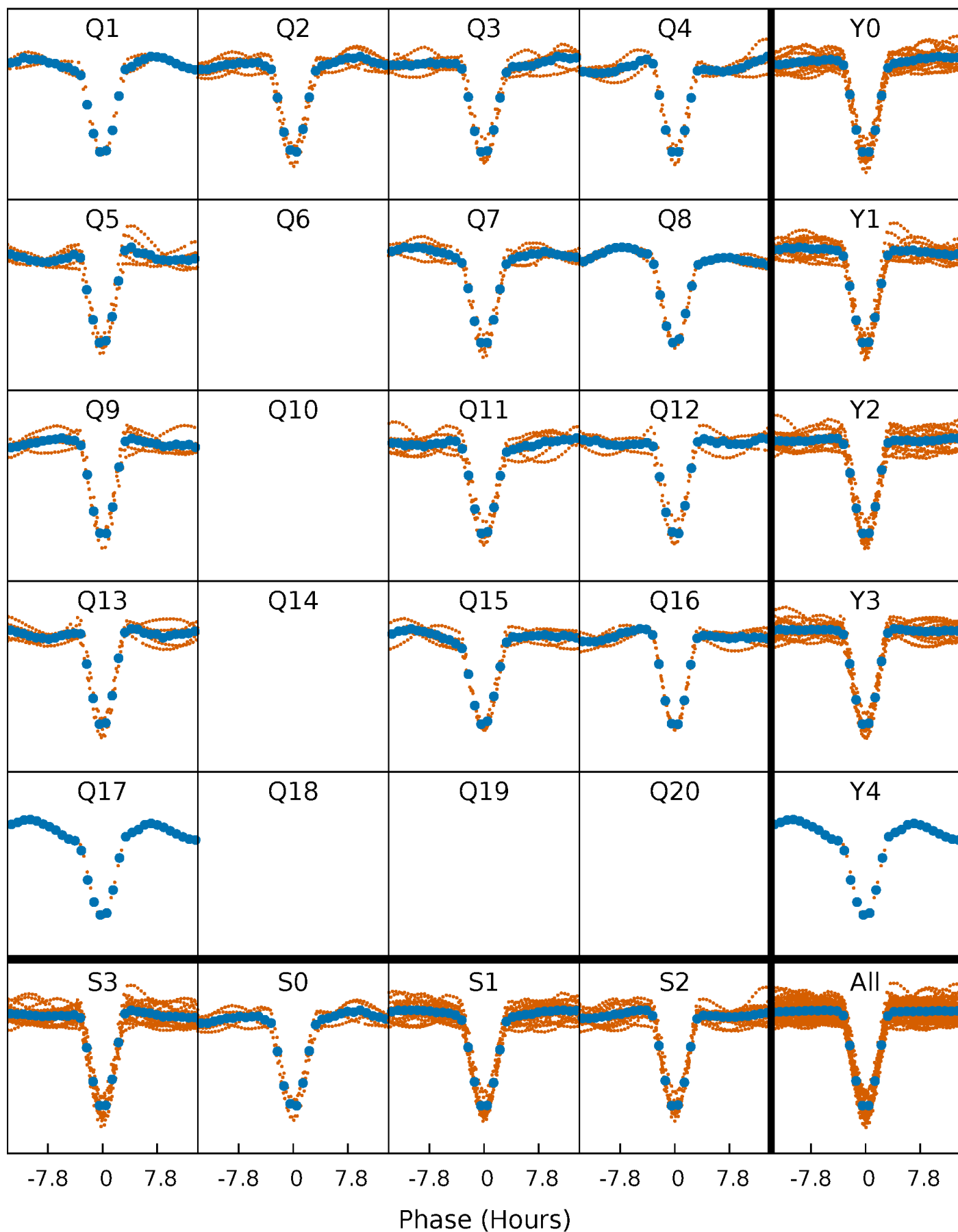


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



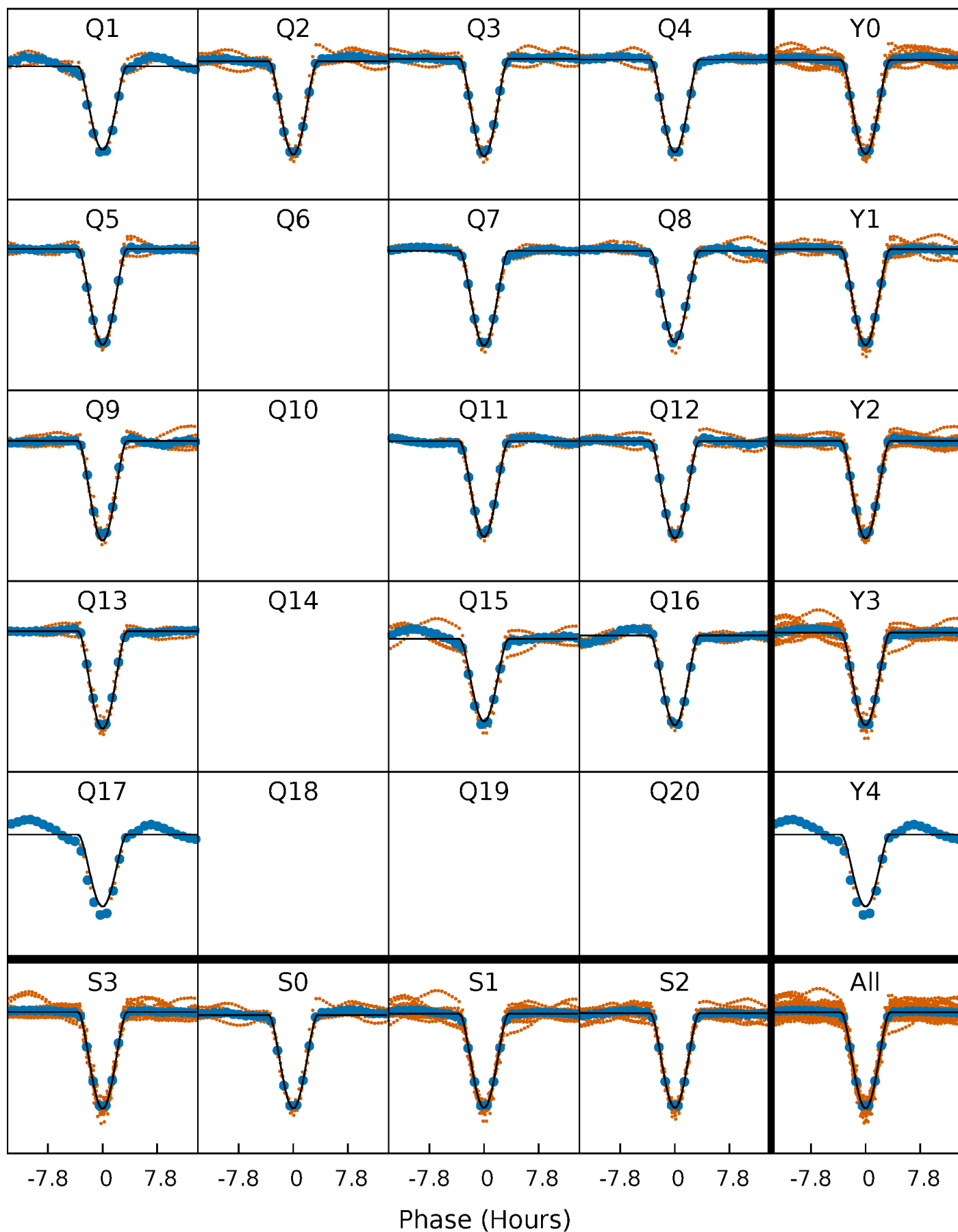
PDC Quarter-Phased Transit Curves

TCE 004932691-01 P= 18.112115 Days $T_0=134.712621$ (BKJD)



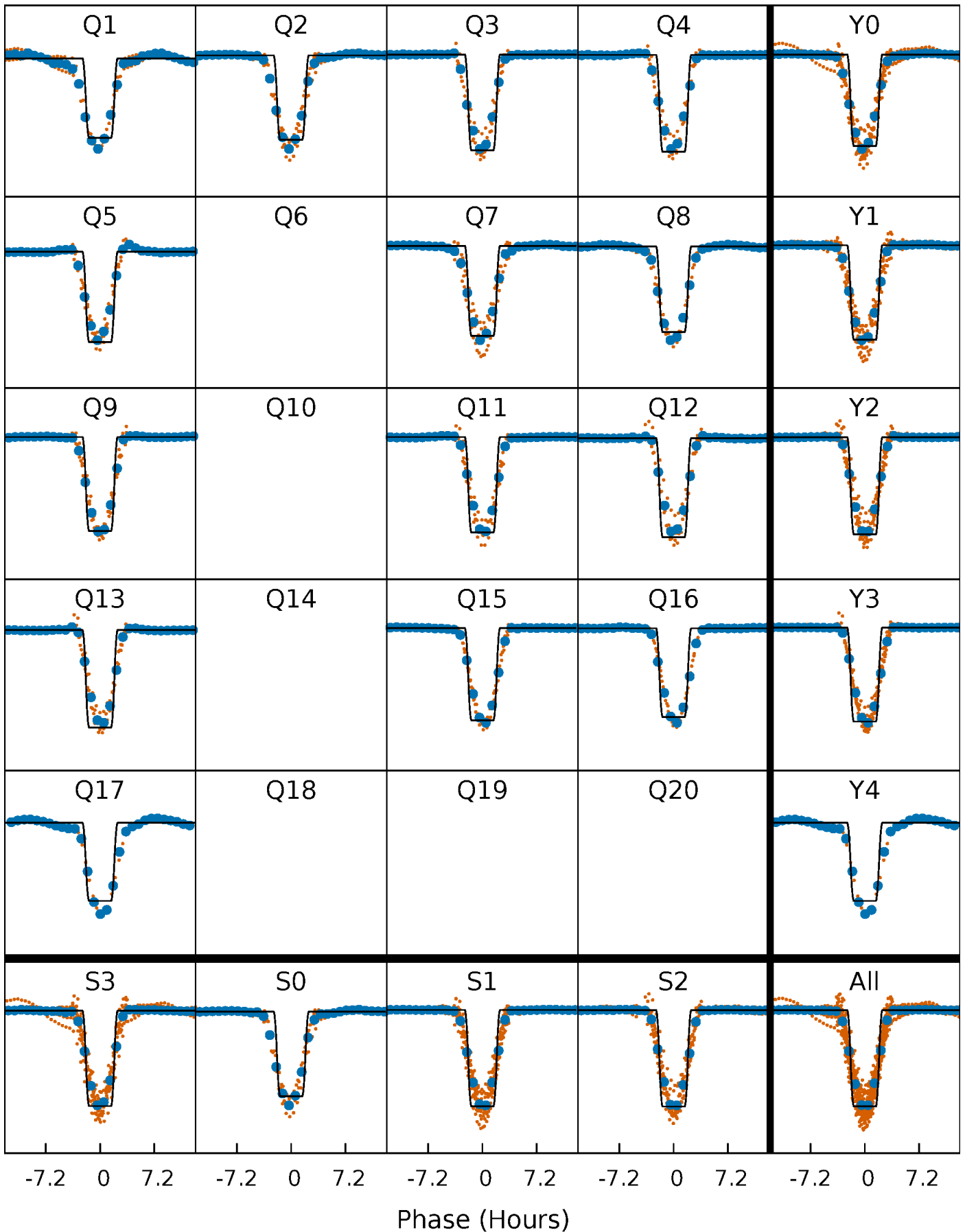
DV Quarter-Phased Transit Curves

TCE 004932691-01 P= 18.112115 Days $T_0=134.712621$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

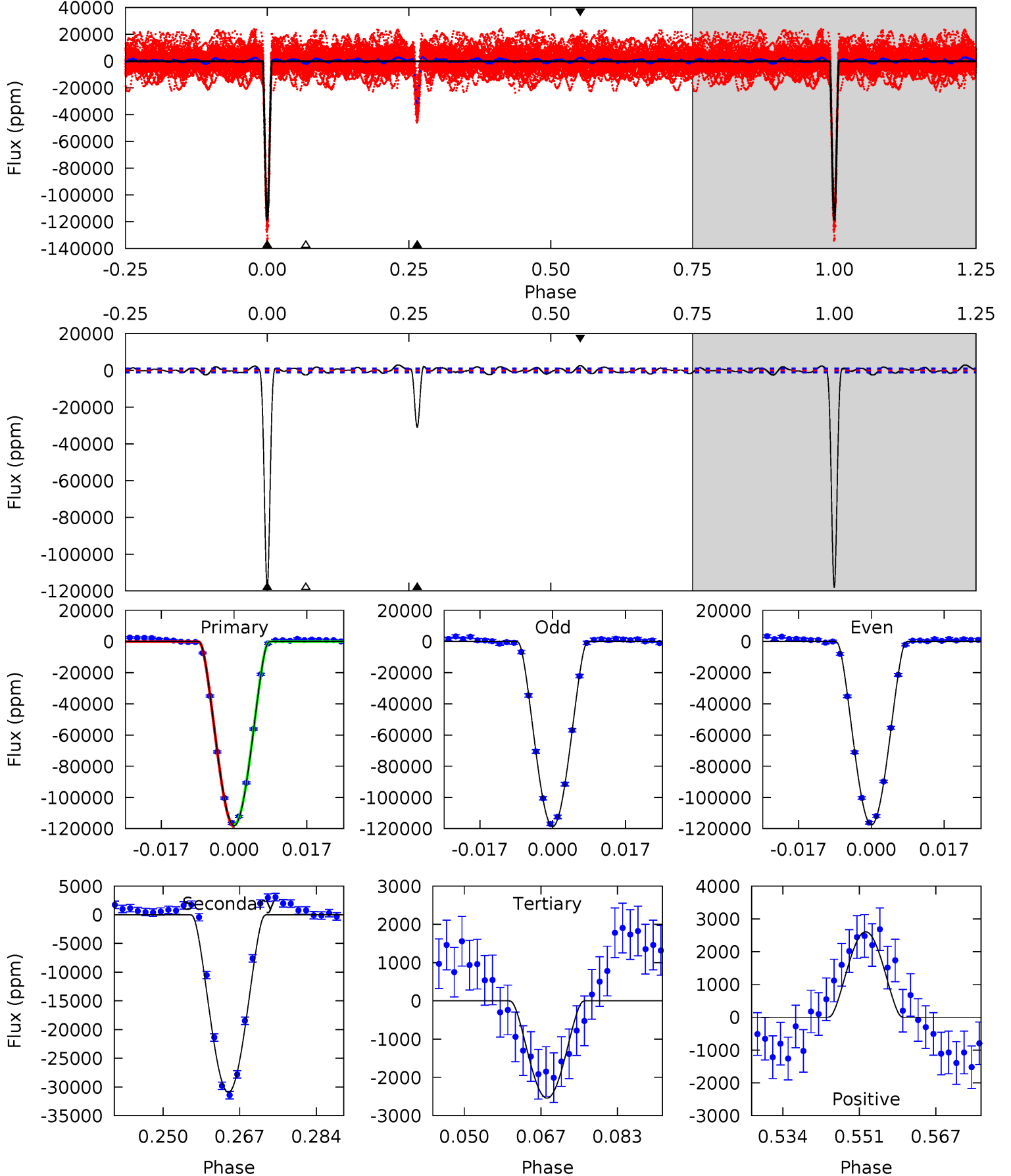
TCE 004932691-01 P= 18.111812 Days $T_0=134.724547$ (BKJD)



DV Model-Shift Uniqueness Test

004932691-01, P = 18.112115 Days, E = 116.600506 Days

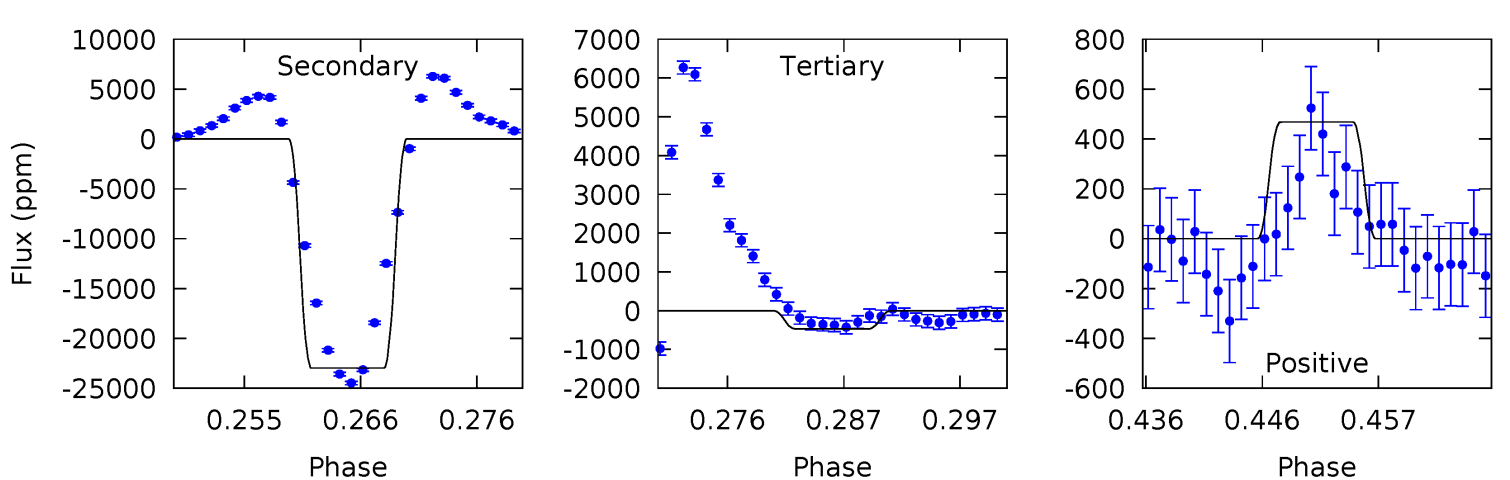
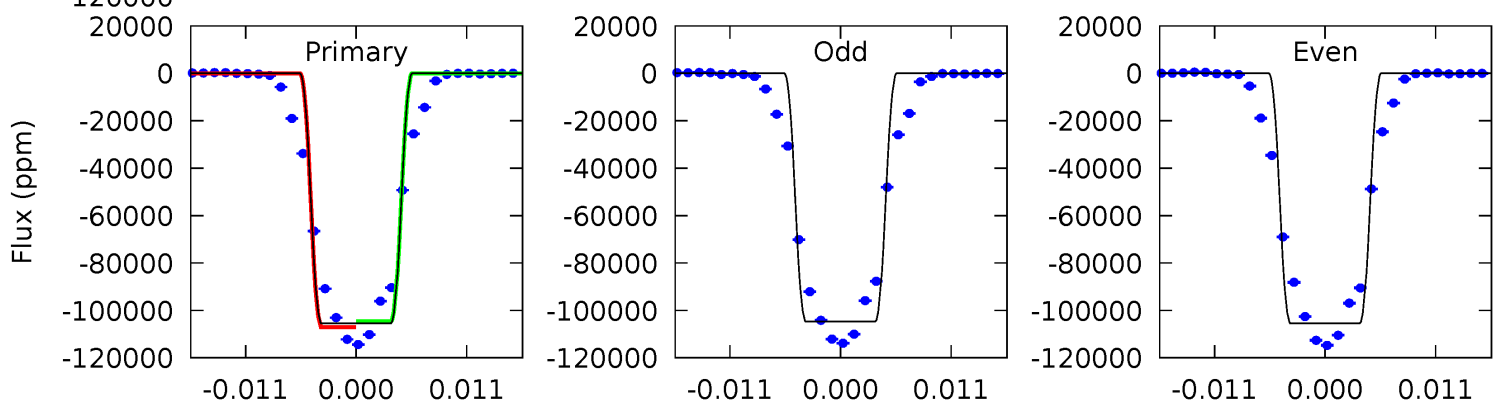
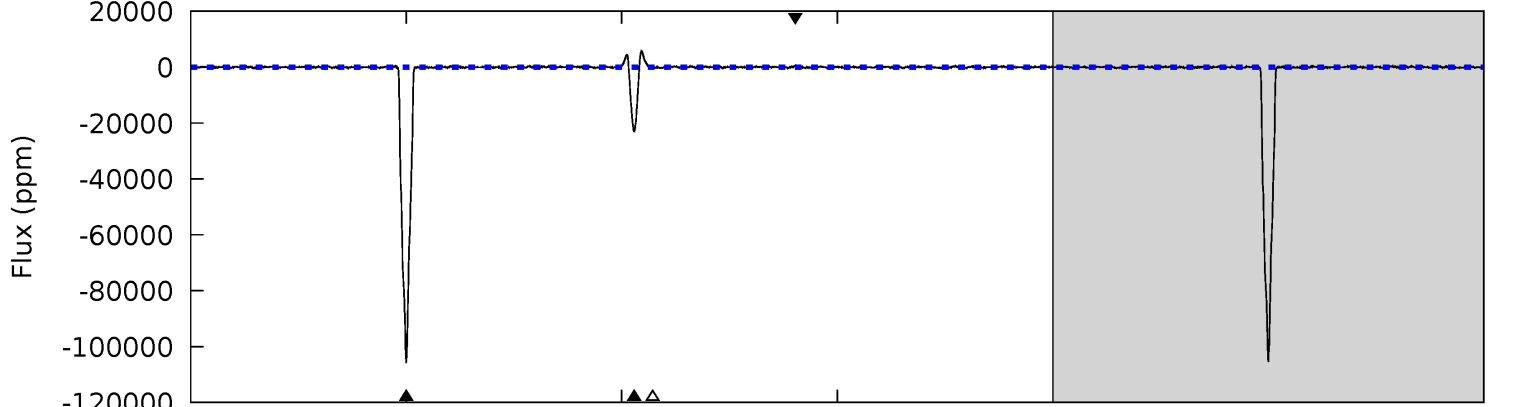
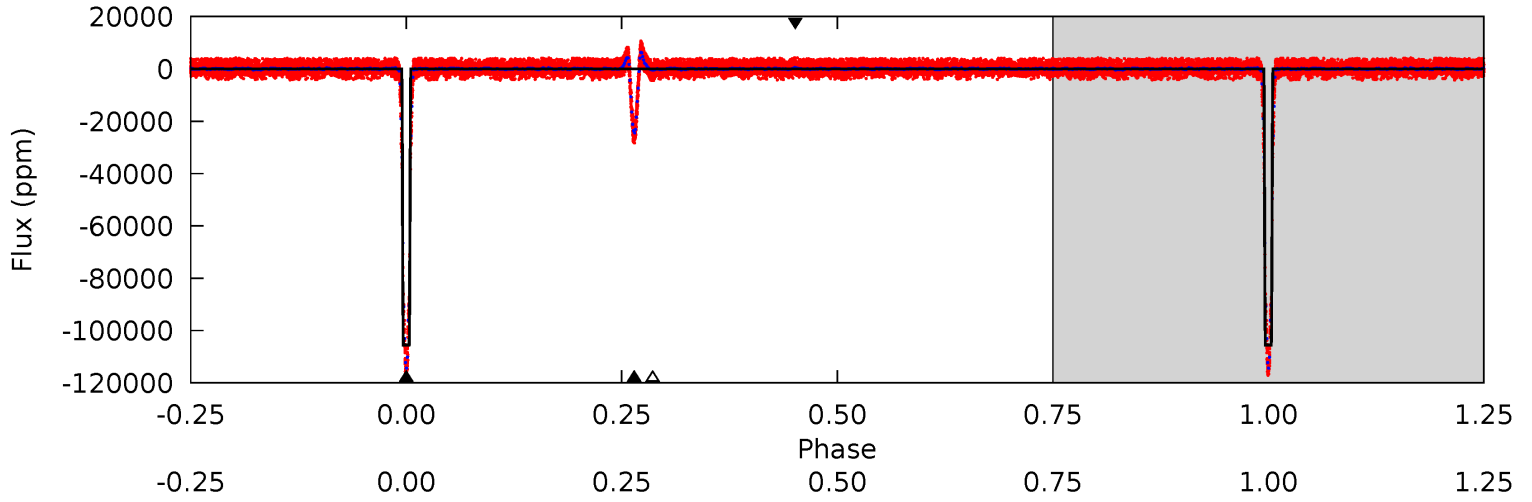
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 559.1 | 146.5 | 12.0 | 12.3 | 4.93 | 2.39 | 5.20 | 547.1 | 546.8 | 134.4 | 134.1 | 2.59 | 1.00 | 0.02 | 1.59 |



Alt Model-Shift Uniqueness Test

004932691-01, P = 18.111812 Days, E = 116.612735 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1048 | 228.3 | 4.67 | 4.65 | 5.01 | 2.55 | 2.22 | 1044 | 1044 | 223.7 | 223.7 | 3.72 | 1.00 | 0.05 | 8.16 |



Stellar Parameters For KIC 004932691

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 7323^{+203}_{-319} | $4.167^{+0.090}_{-0.210}$ | $0.080^{+0.200}_{-0.350}$ | $1.722^{+0.562}_{-0.259}$ | $1.587^{+0.203}_{-0.226}$ | $0.438^{+0.218}_{-0.231}$ |
| | +3%/-4% | +2%/-5% | +250%/-438% | +33%/-15% | +13%/-14% | +50%/-53% |
| Source | KIC0 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004932691-01 / KOI 6474.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|------------------|---------------------------|----------------------|----------------------|------------------|
| DV | -30931 ± 211 | $95.70^{+19.49}_{-16.24}$ | 1510^{+116}_{-99} | 4517^{+312}_{-264} | 47^{+20}_{-14} |
| Alt. | -22976 ± 101 | $63.52^{+17.93}_{-13.53}$ | 1504^{+116}_{-81} | 4992^{+529}_{-430} | 78^{+50}_{-29} |

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

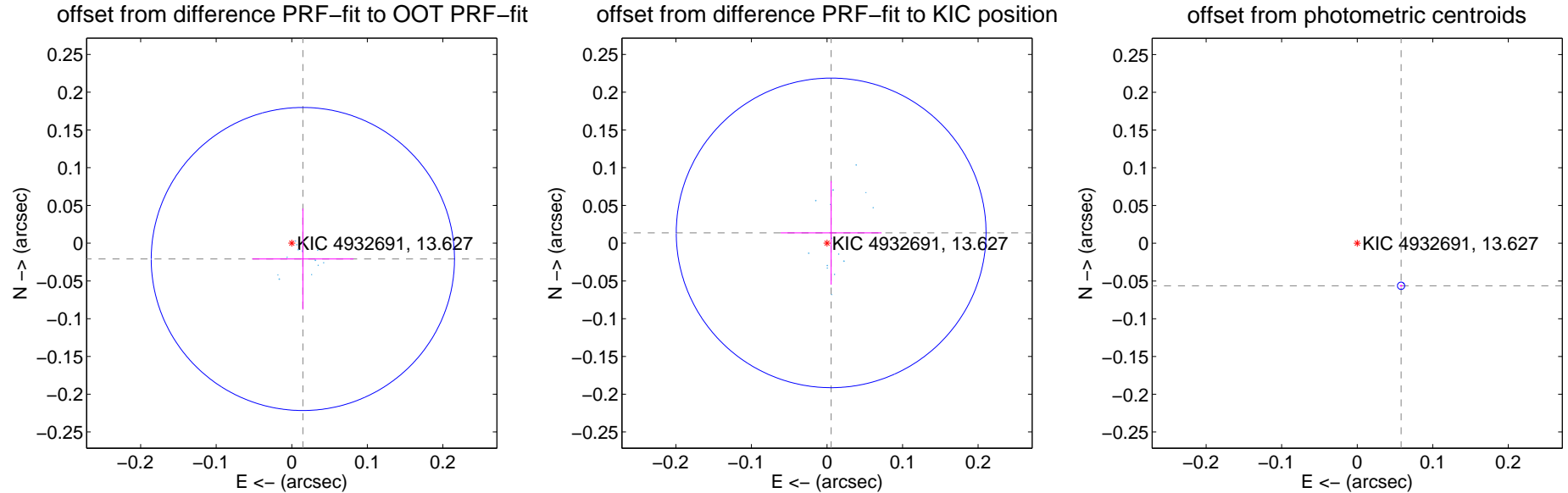
DV Centroid Data

Supplemental centroid analysis for 004932691-01. Kepler magnitude: 13.63. Transit SNR 376.42

There are 14 quarters with good PRF difference image offsets

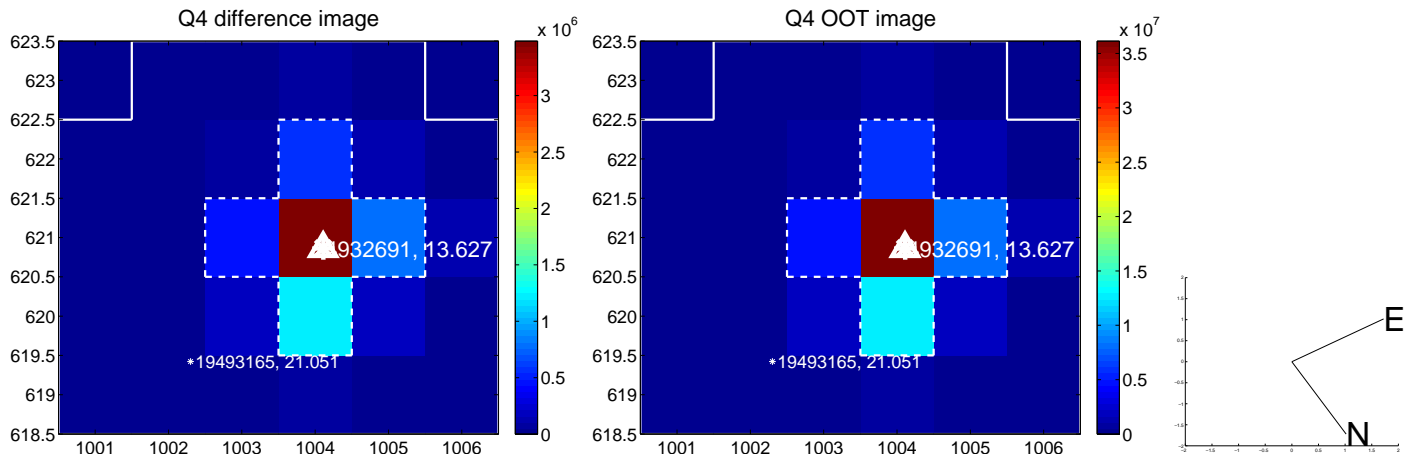
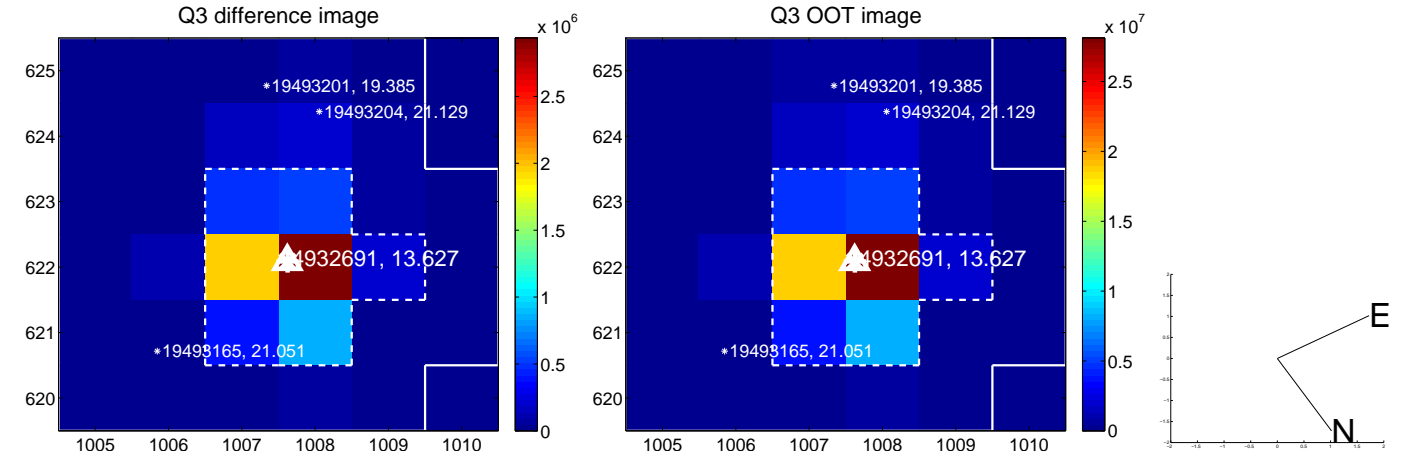
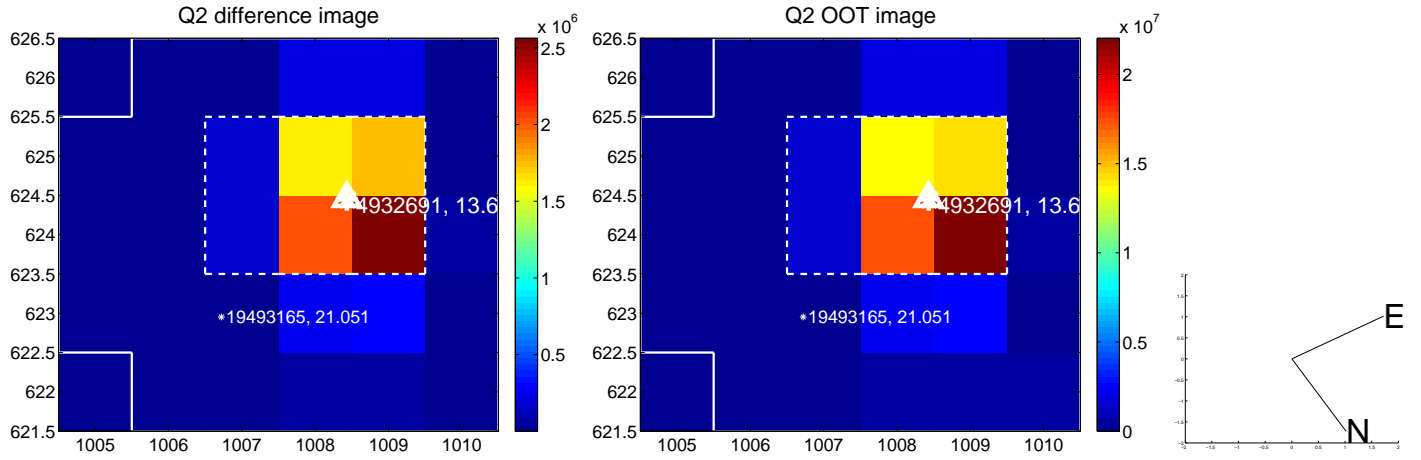
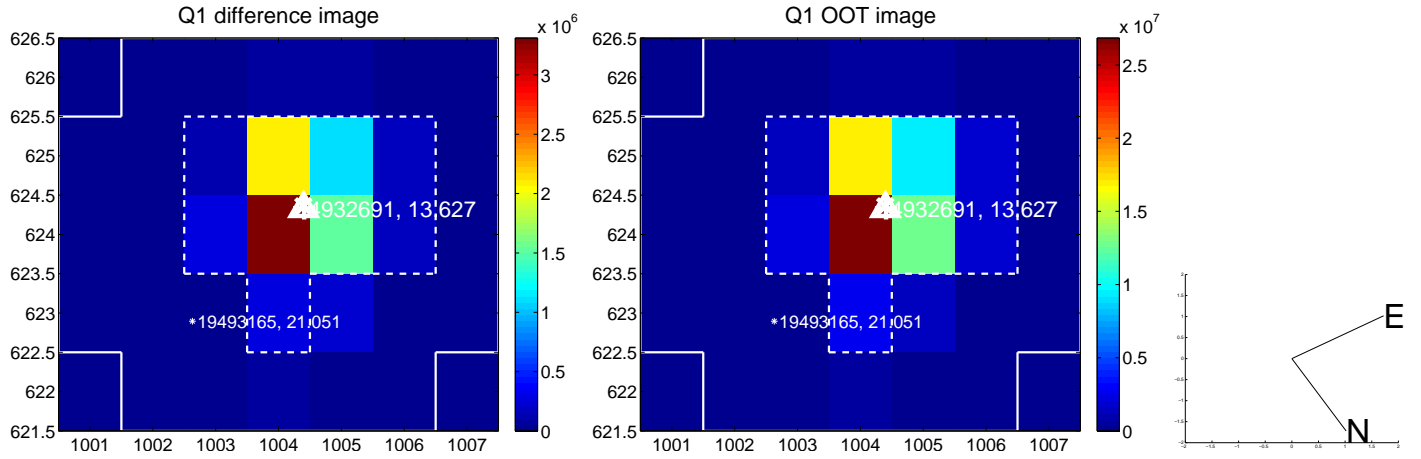
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.026 ± 0.067 | 0.38 | -0.015 ± 0.067 | -0.021 ± 0.067 |
| PRF-fit source offset from KIC position | 0.015 ± 0.068 | 0.22 | -0.005 ± 0.067 | 0.014 ± 0.069 |
| photometric centroid source offset | 0.08 ± 0.00 | 50.16 | -0.06 ± 0.00 | -0.06 ± 0.00 |

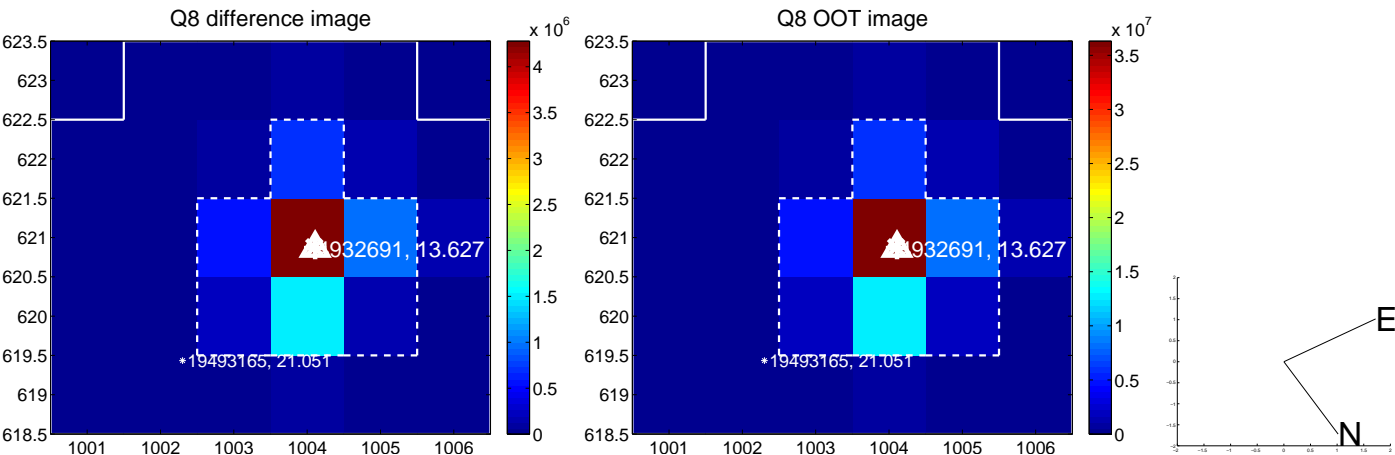
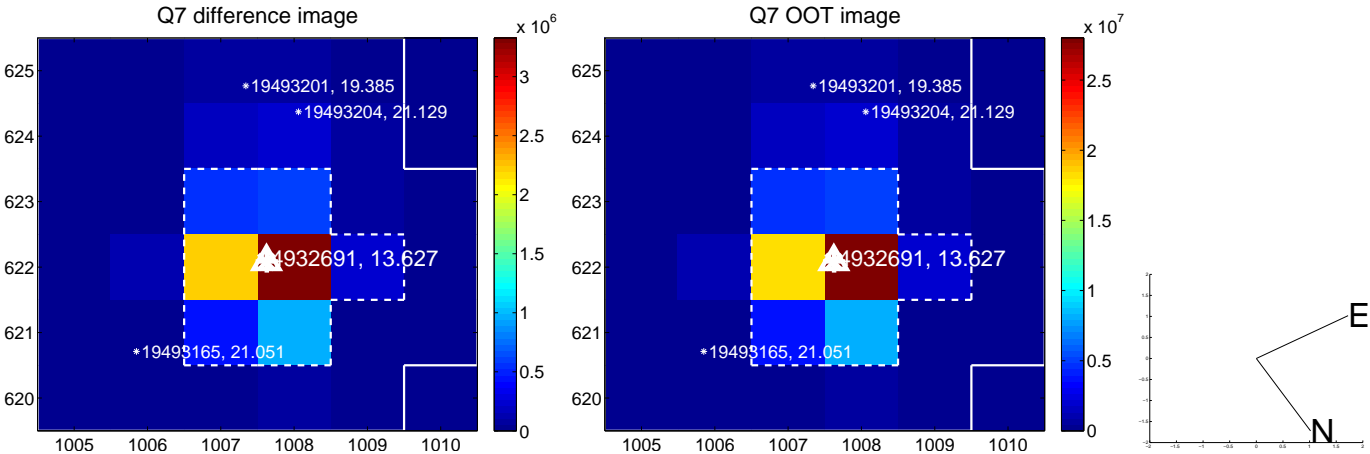
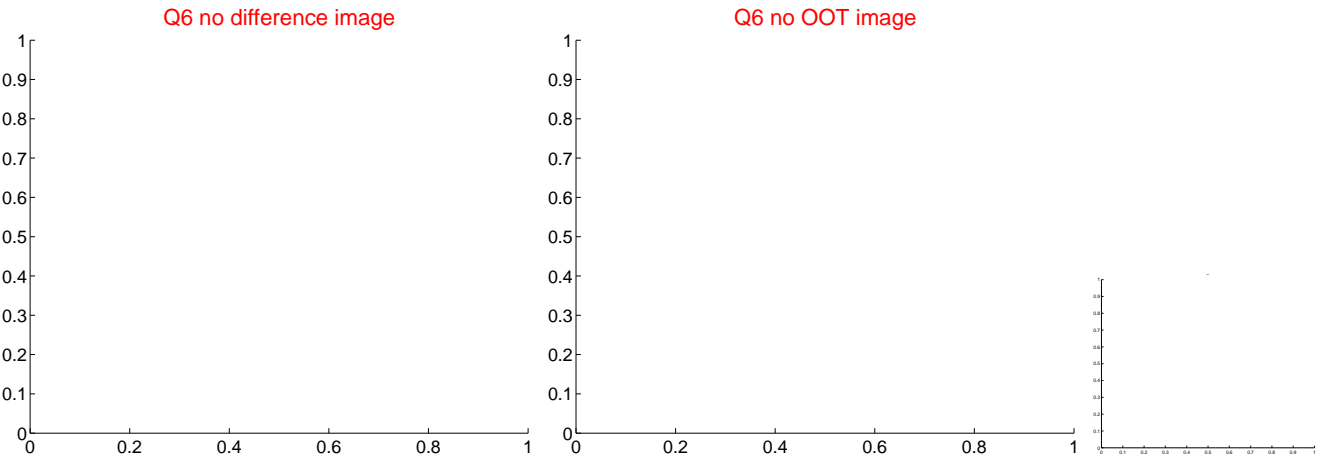
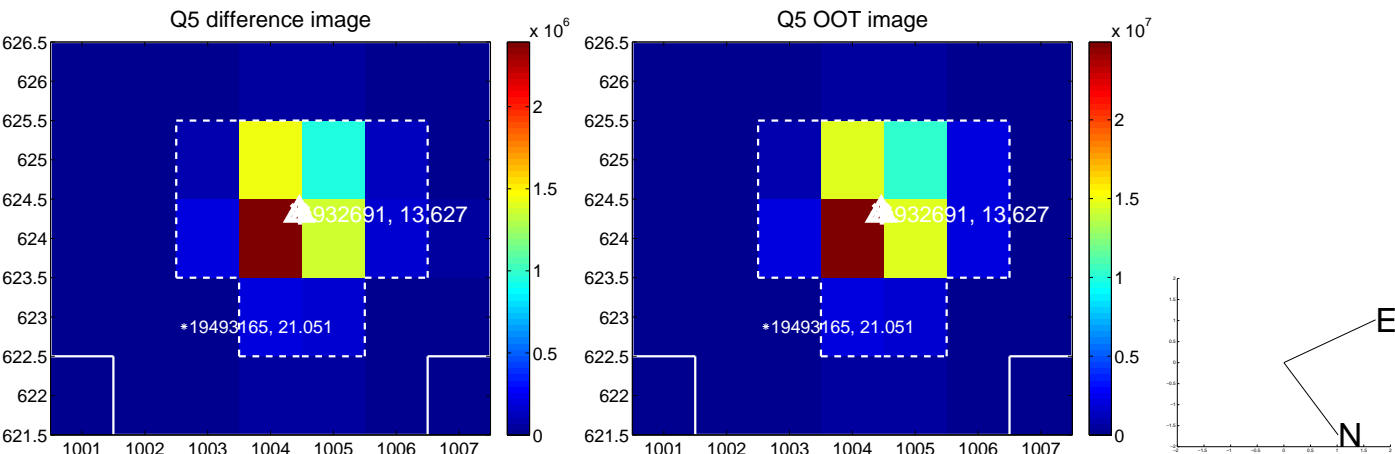


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

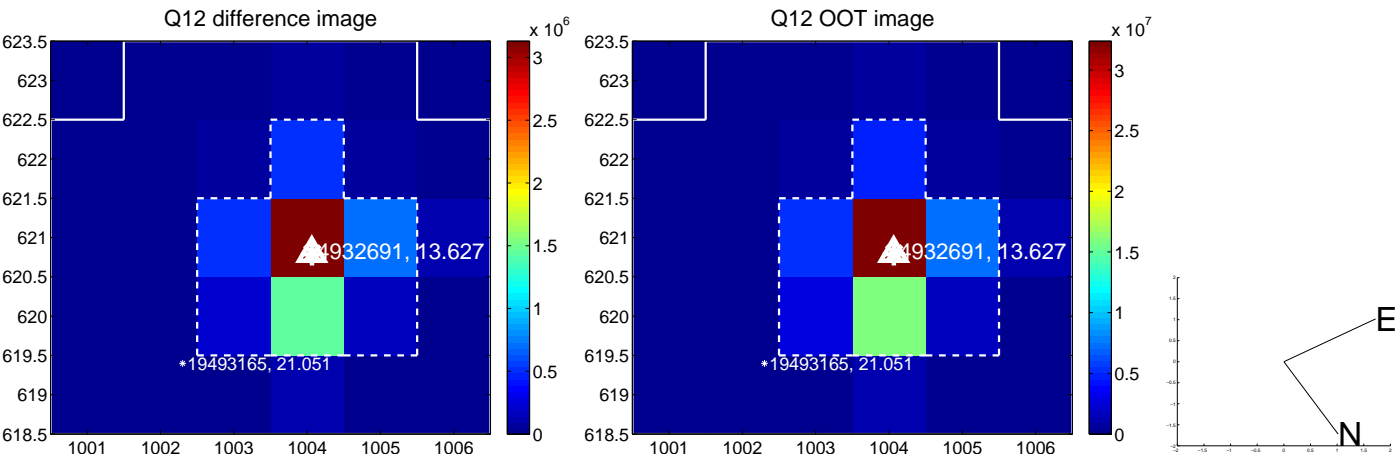
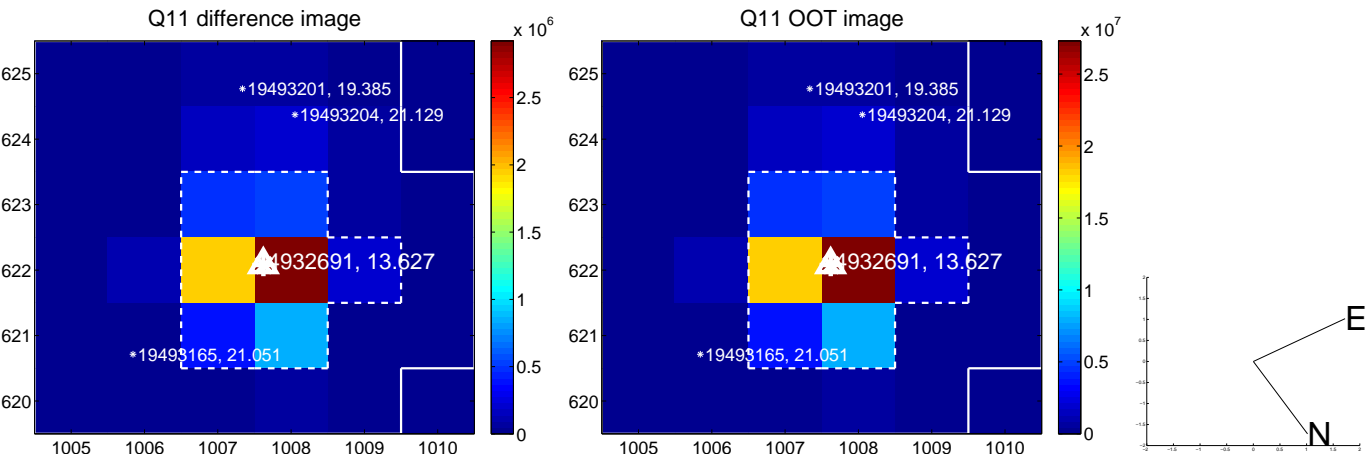
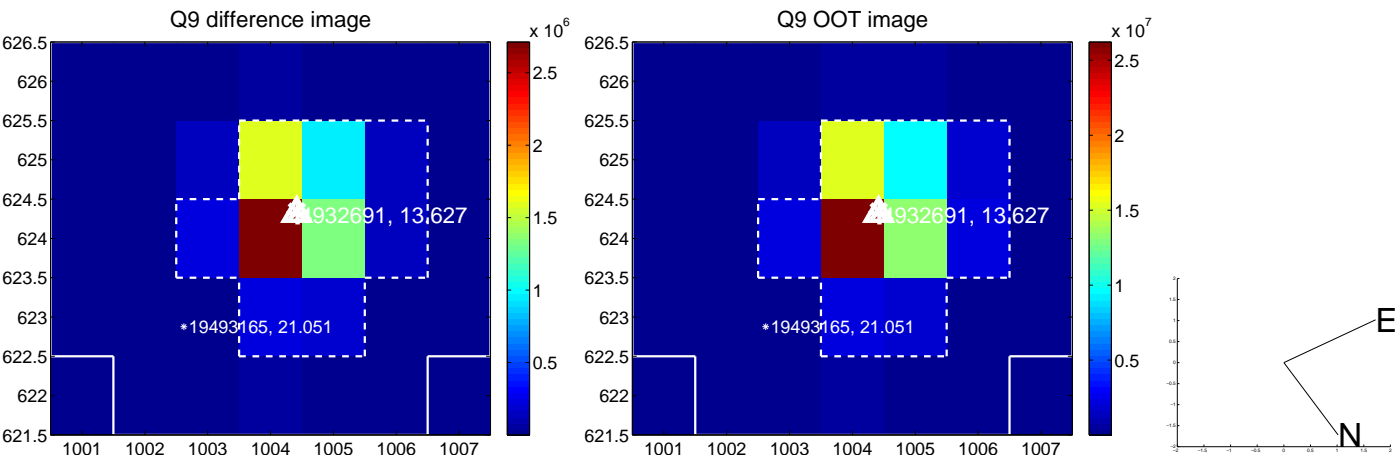
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



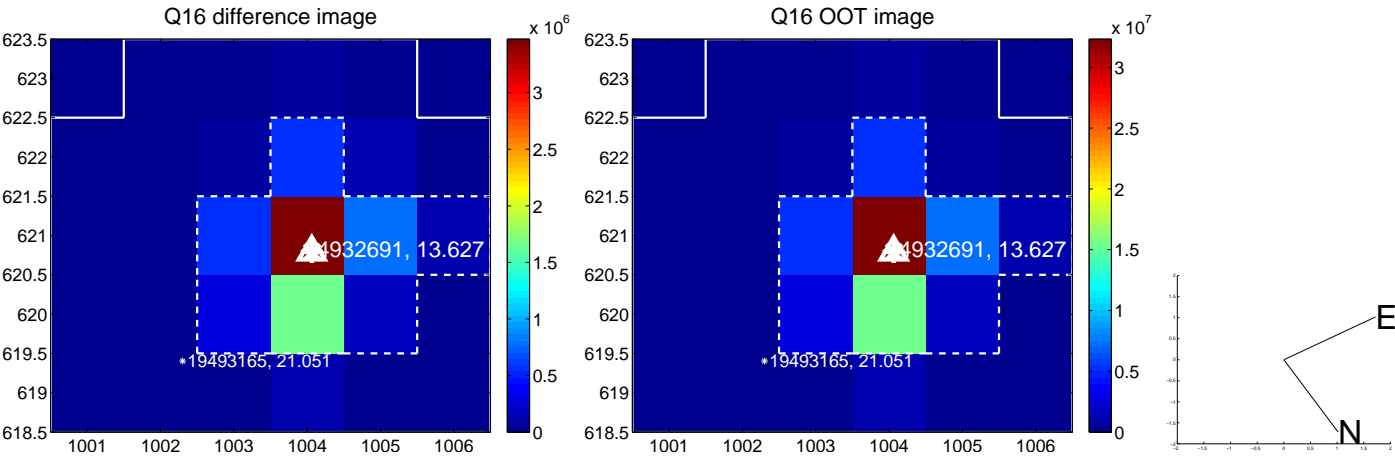
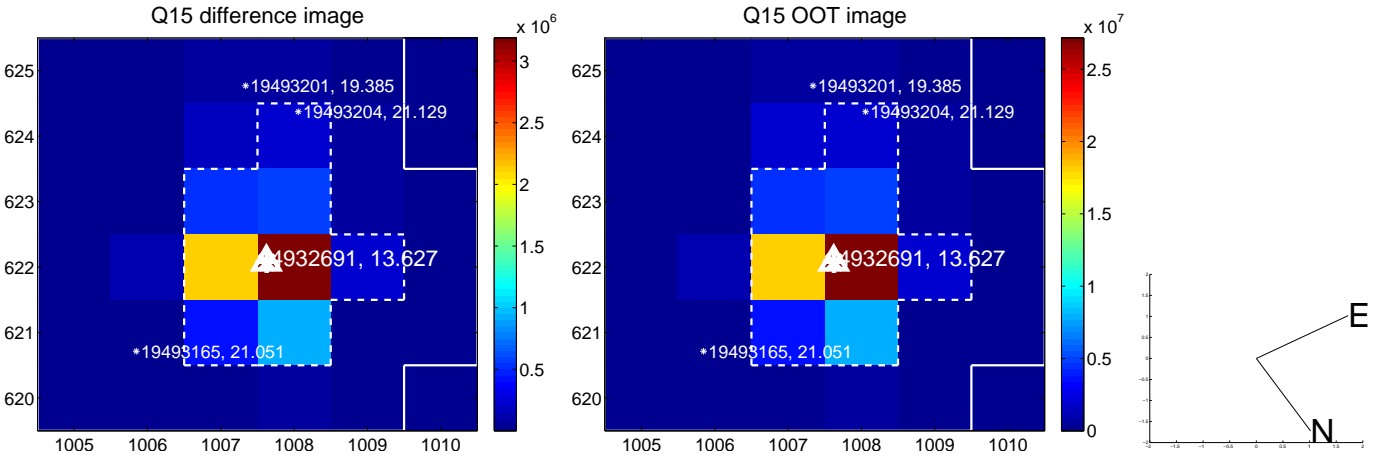
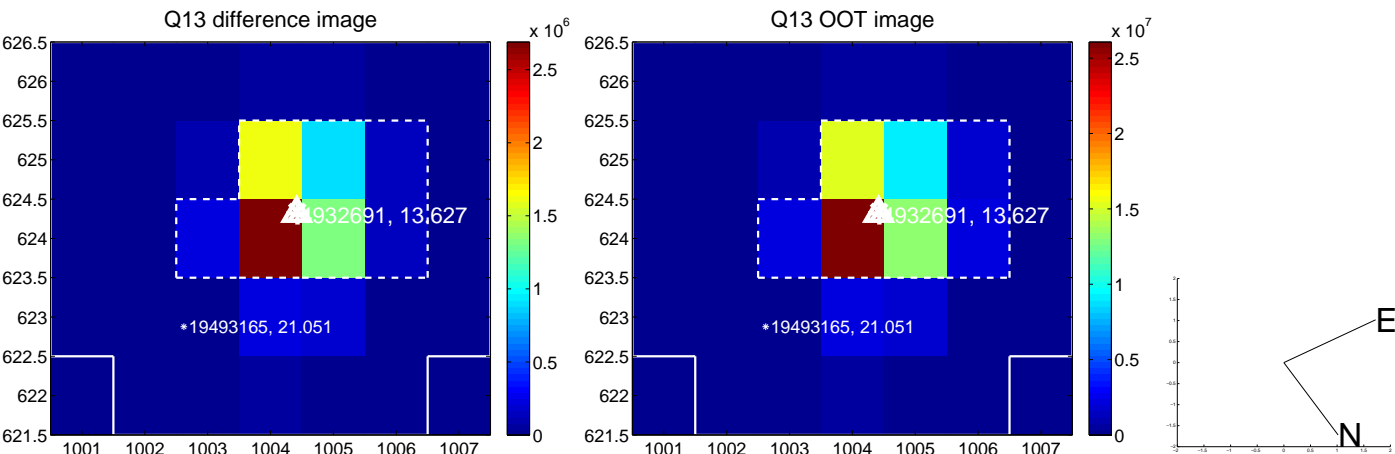
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



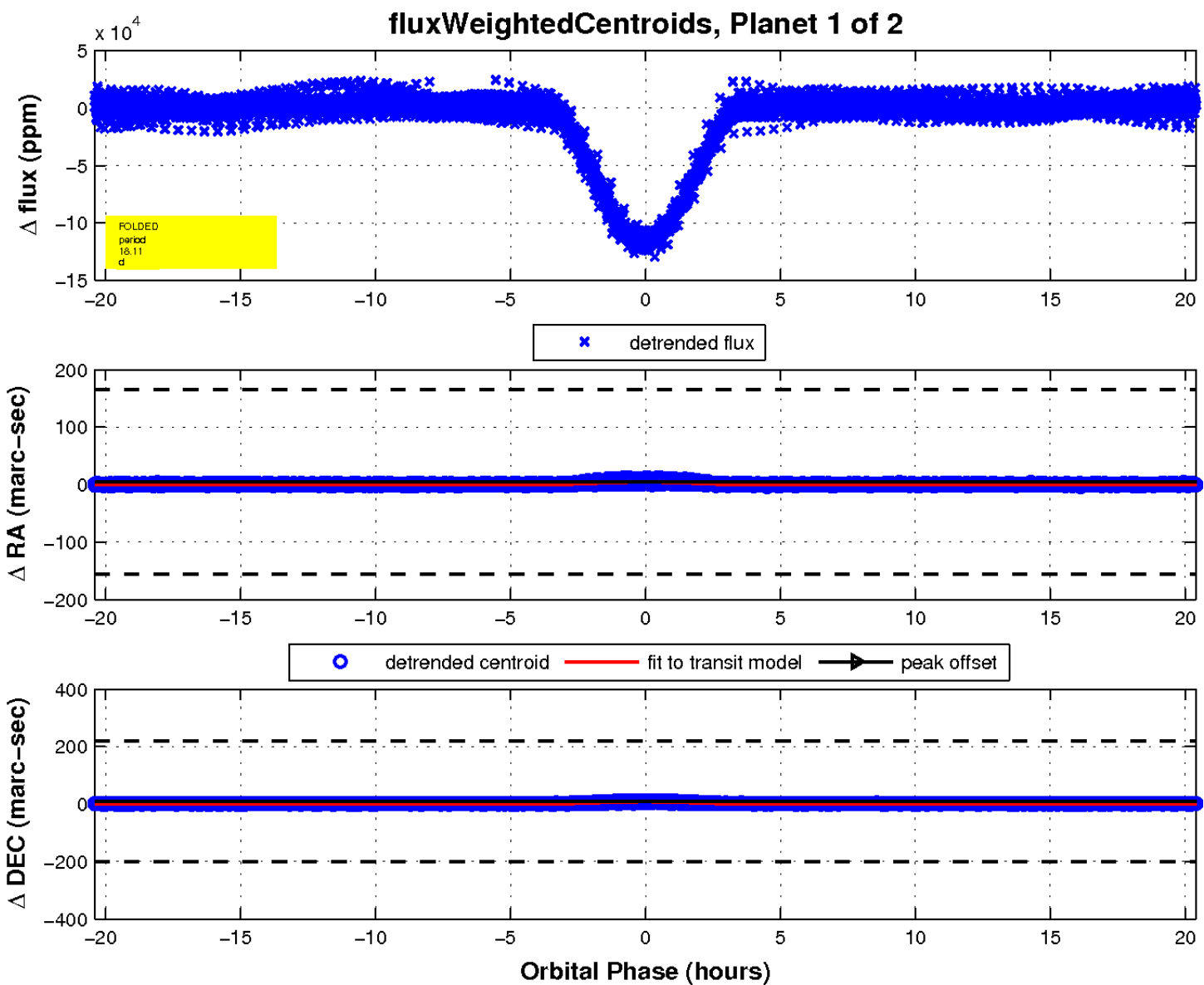
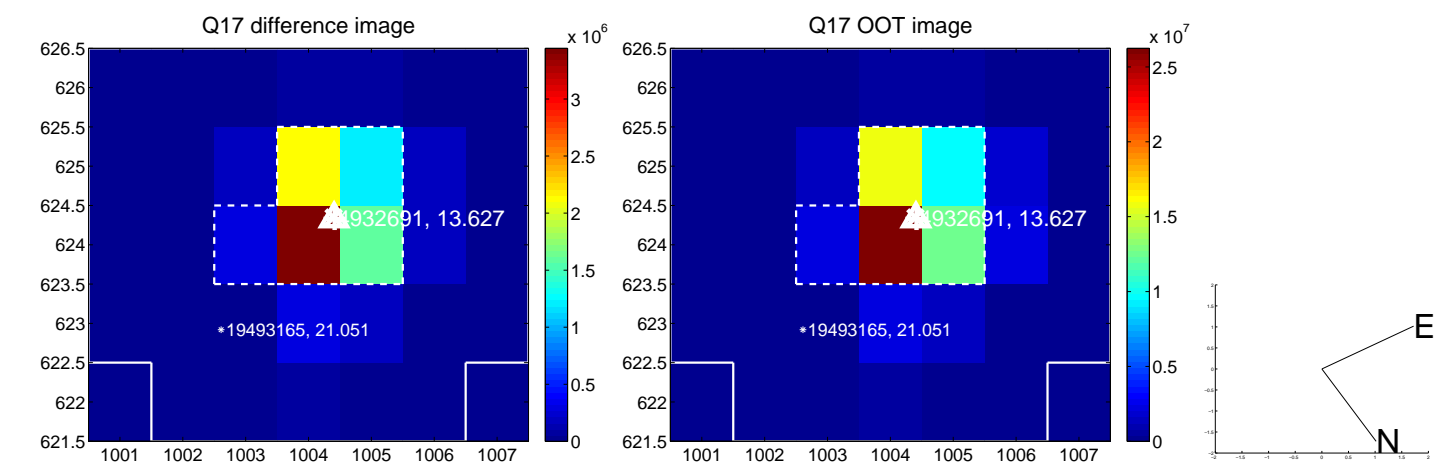
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

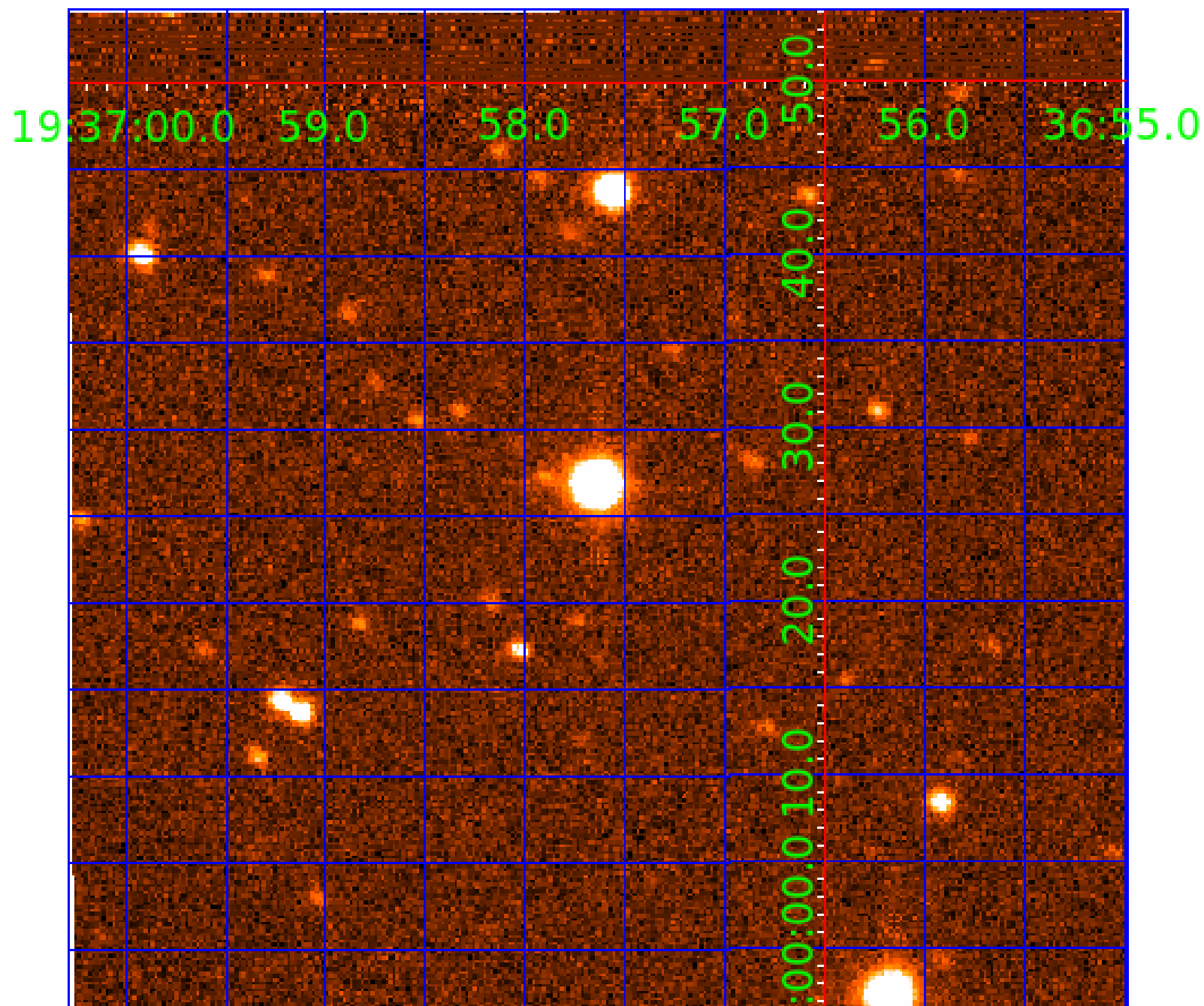


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004932691

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 004932691-01 | OBS | 6474.01 | 18.112115 | 134.712621 | 116330.3 | 6.802 | 225.7 | 376.4 | 1.72 | 7323 | 92.90 | 307.88 |
| 004932691-02 | OBS | No | 18.112105 | 139.505949 | 34779.9 | 6.362 | 69.8 | 129.6 | 1.72 | 7323 | 54.69 | 307.88 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 004932691-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 004932691-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

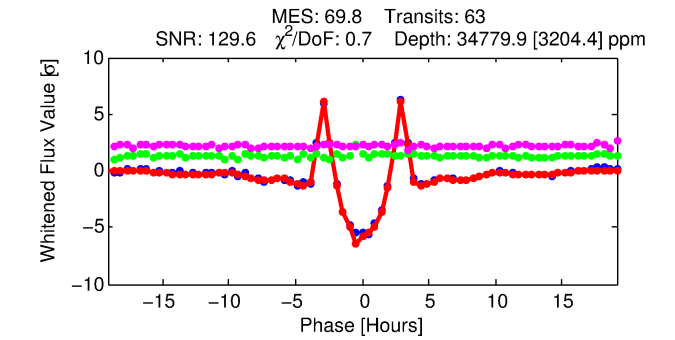
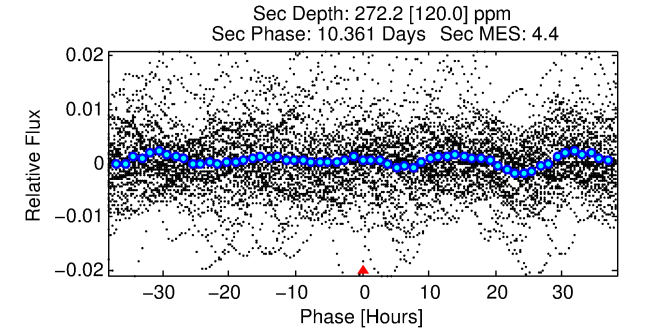
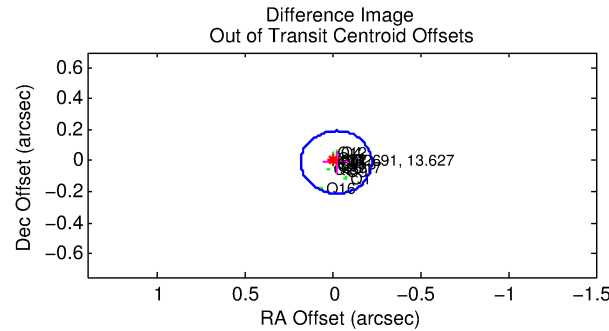
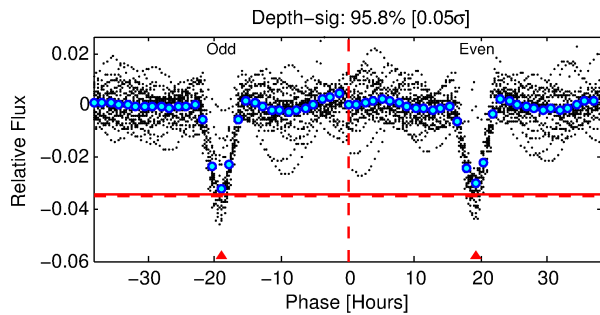
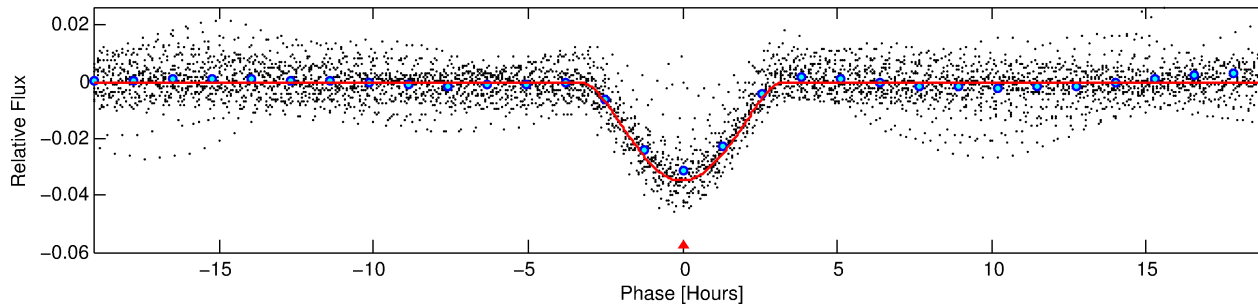
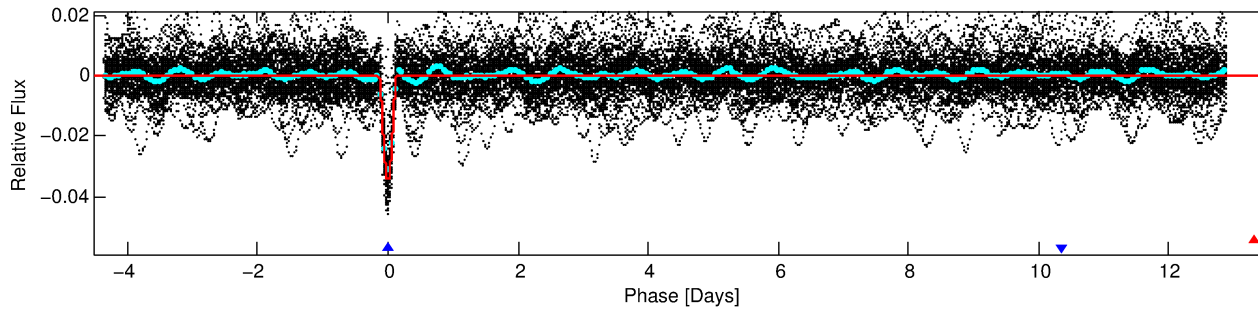
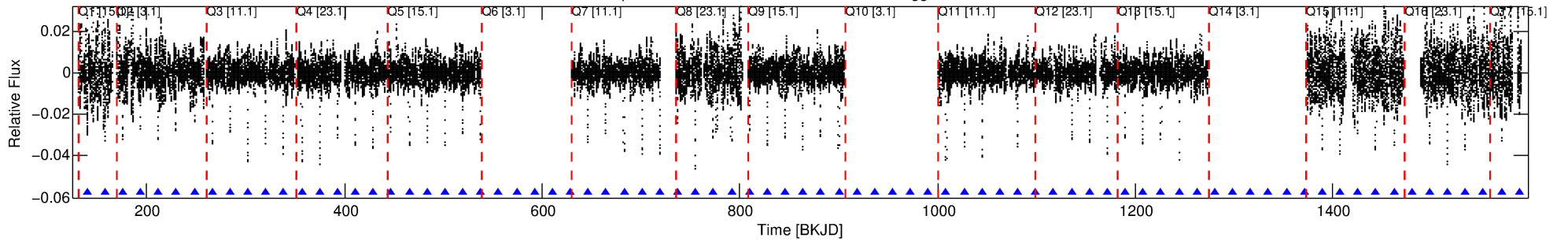
Ephemeris Match Information For 004932691-02

No Significant Match Found

DV One-Page Summary

KIC: 4932691 Candidate: 2 of 2 Period: 18.112 d
KOI: K06474 Corr: No Ephemeris Match

Kp: 13.63 R*: 1.72 Rs Teff: 7323.0 K Logg: 4.17 Fe/H: 0.080



DV Fit Results:

Period = 18.11210 [0.00001] d
Epoch = 139.5059 [0.0003] BKJD
Rp/R* = 0.2910 [0.0179]
a/R* = 17.79 [0.06]
b = 1.00 [0.04]
Seff = 307.88 [131.21]
Teq = 1068 [114] K
Rp = 54.69 [18.16] Re
a = 0.1575 [0.0427] AU
Ag = 1.24 [0.75] [0.32σ]
Teffp = 1744 [213] K [2.79σ]

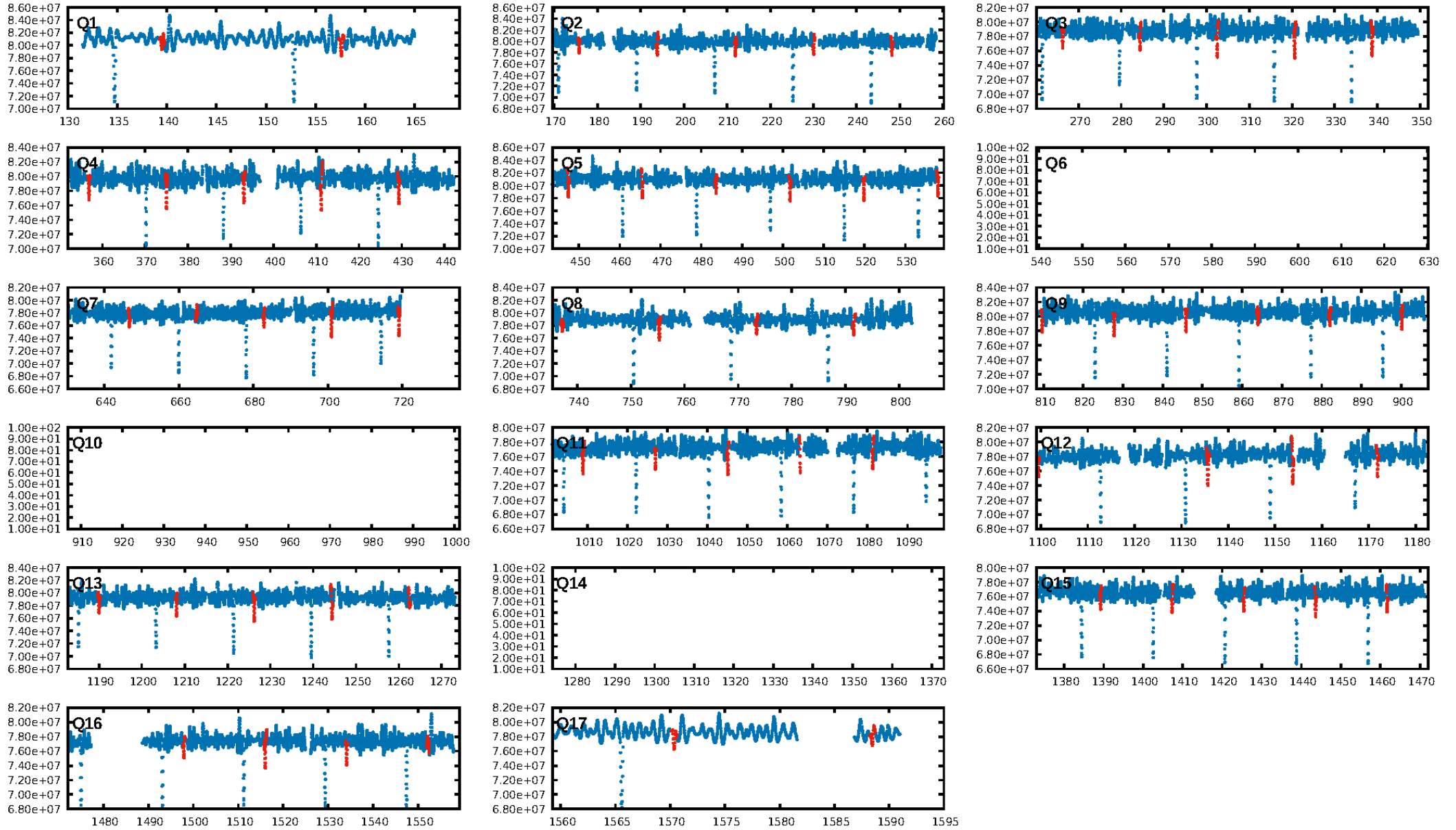
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 95.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [59/59]
GhostDiagnostic-chr: 1.164
Centroid-sig: 0.0%
Centroid-so: 0.072 arcsec [13.34σ]
OotOffset-rm: 0.022 arcsec [0.32σ]
KicOffset-rm: 0.033 arcsec [0.47σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

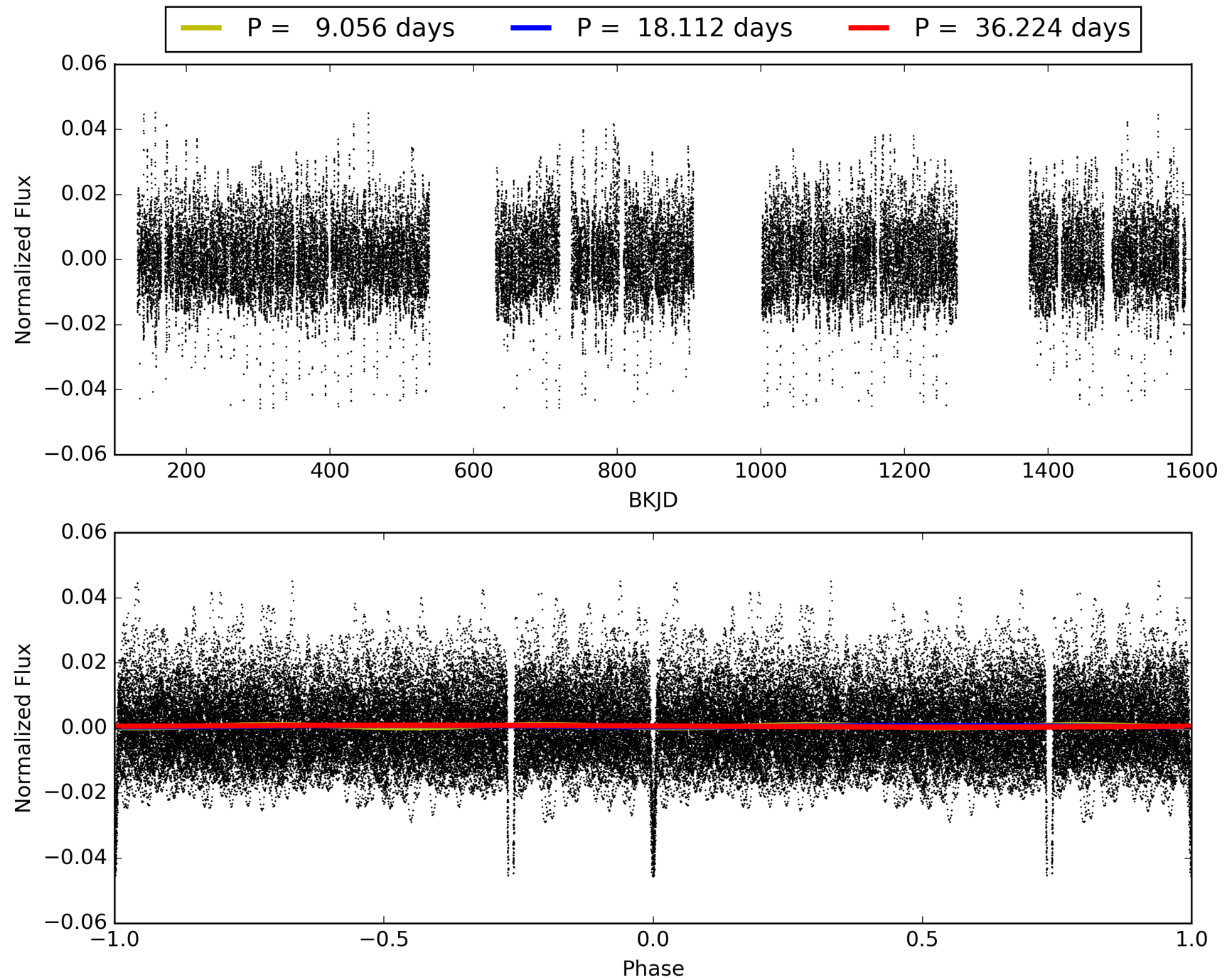
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:23 Z

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

TCE 004932691-02, PDC Light Curves

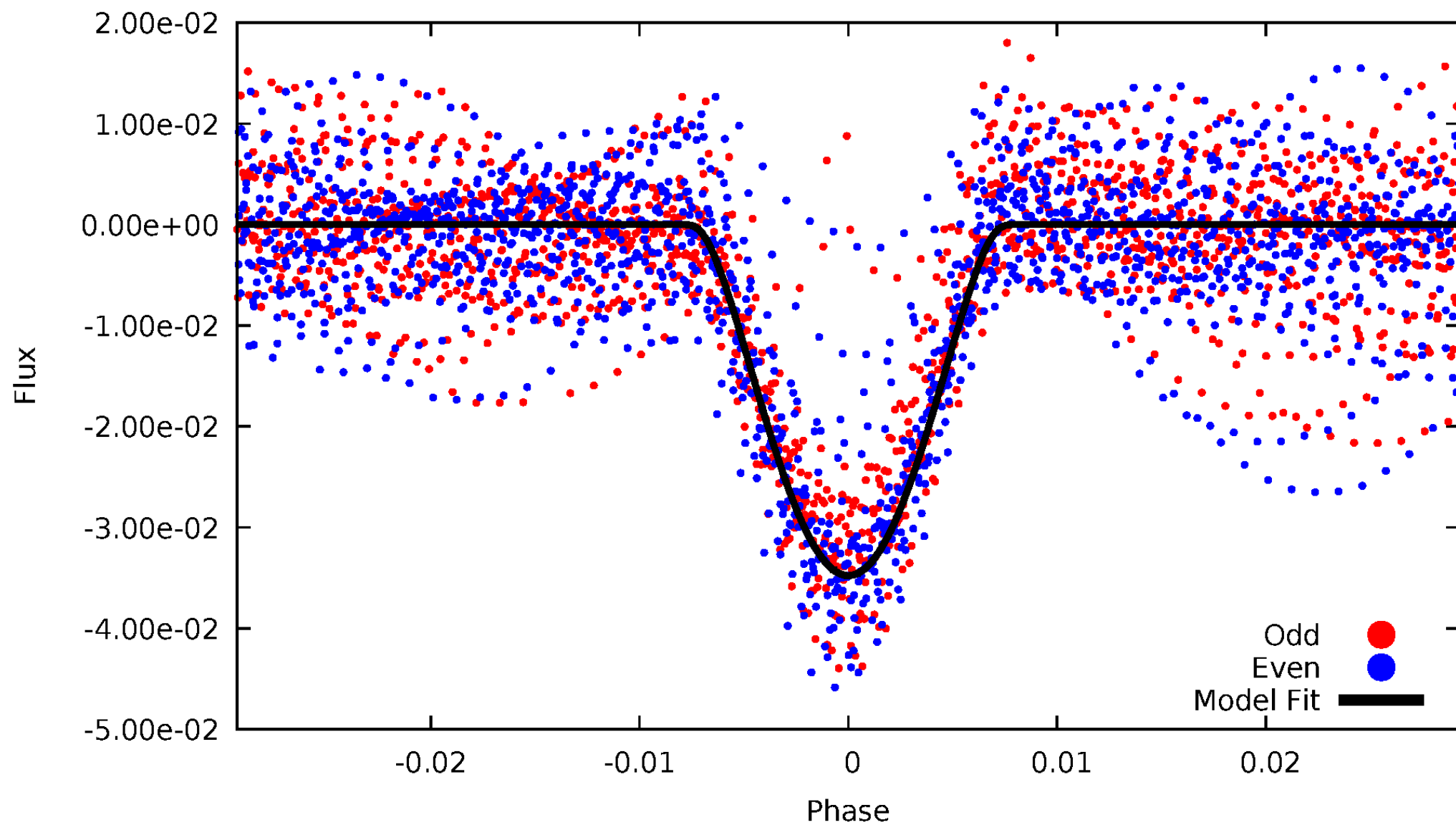


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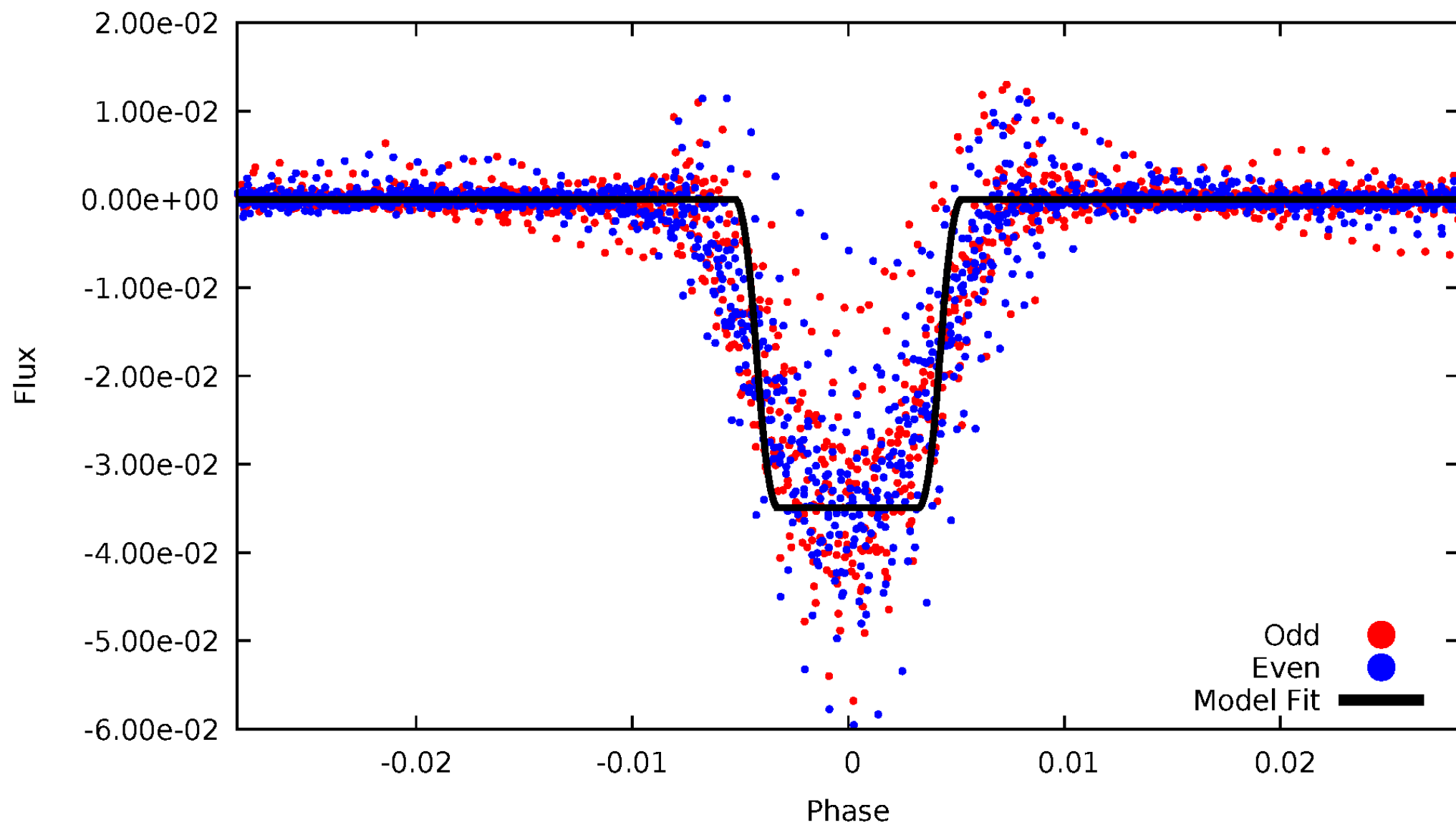
DV Odd/Even

TCE 004932691-02



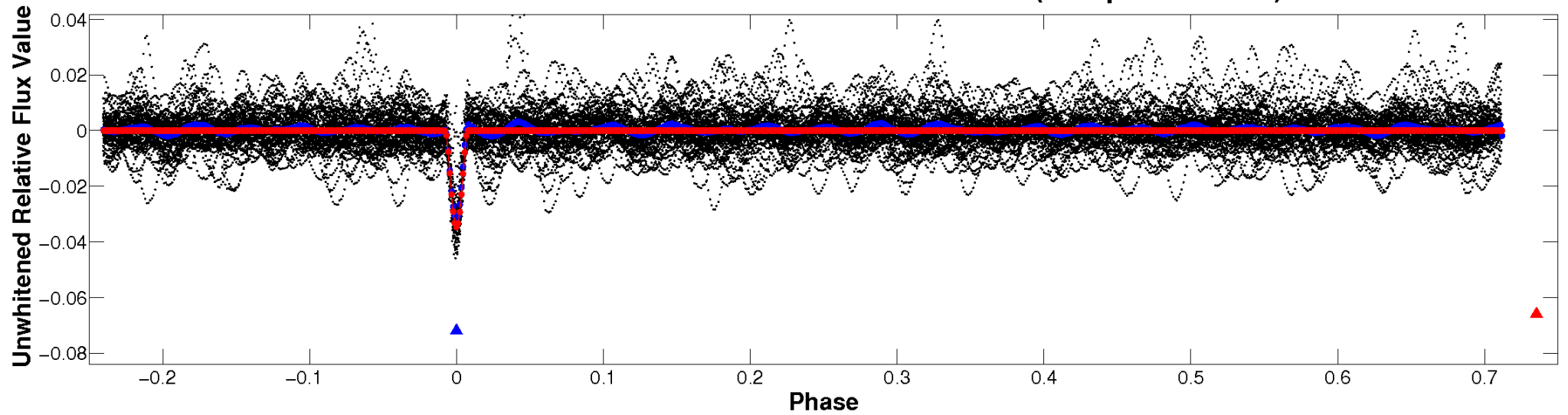
ALT Odd/Even

TCE 004932691-02

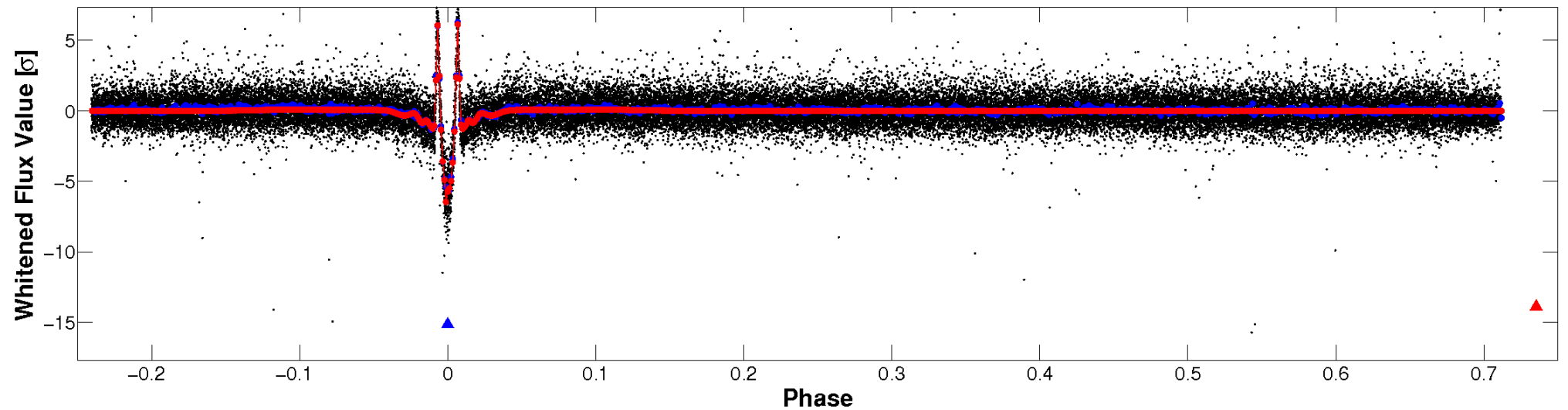


Non-Whitened Vs. Whitened Light Curve

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

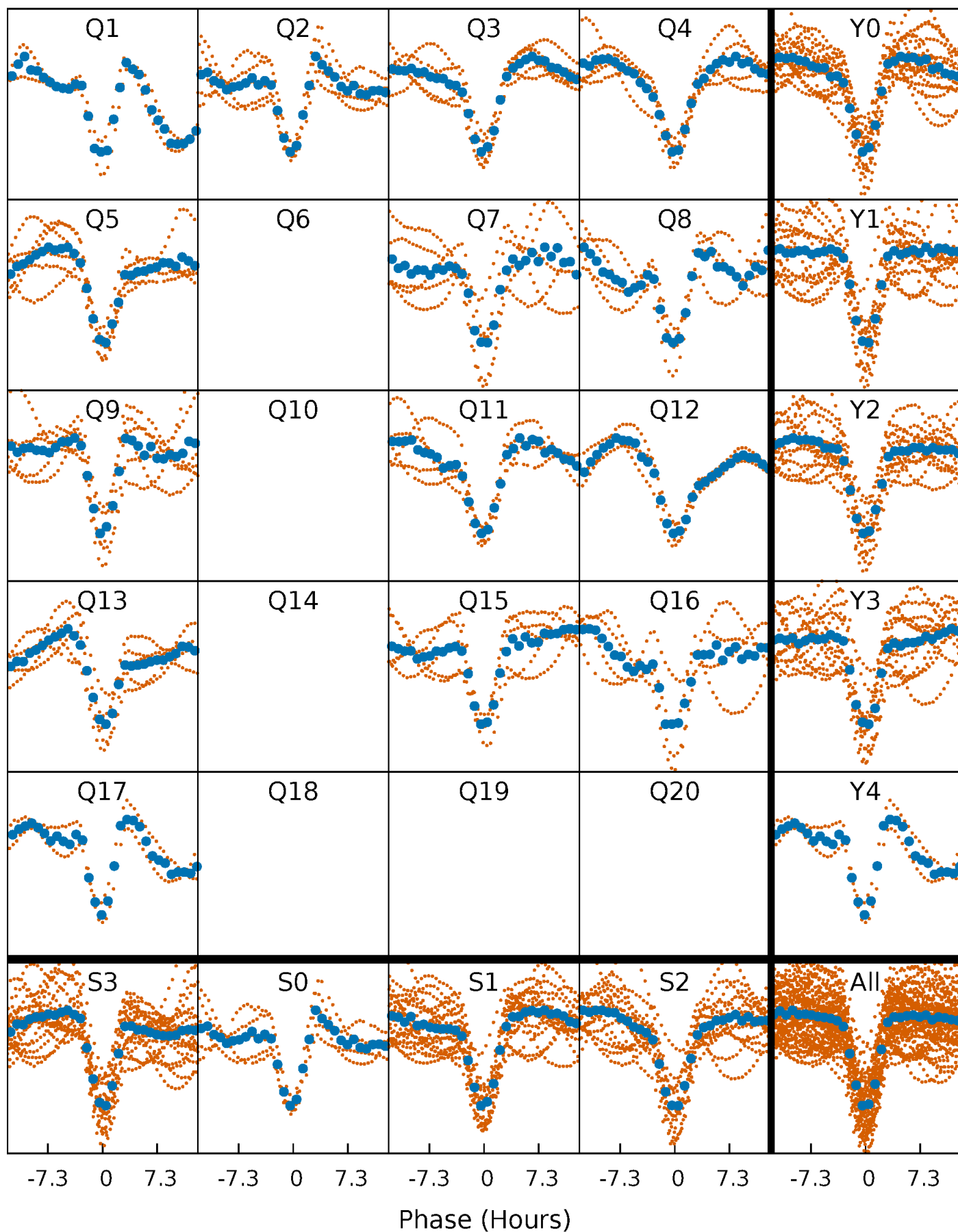


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



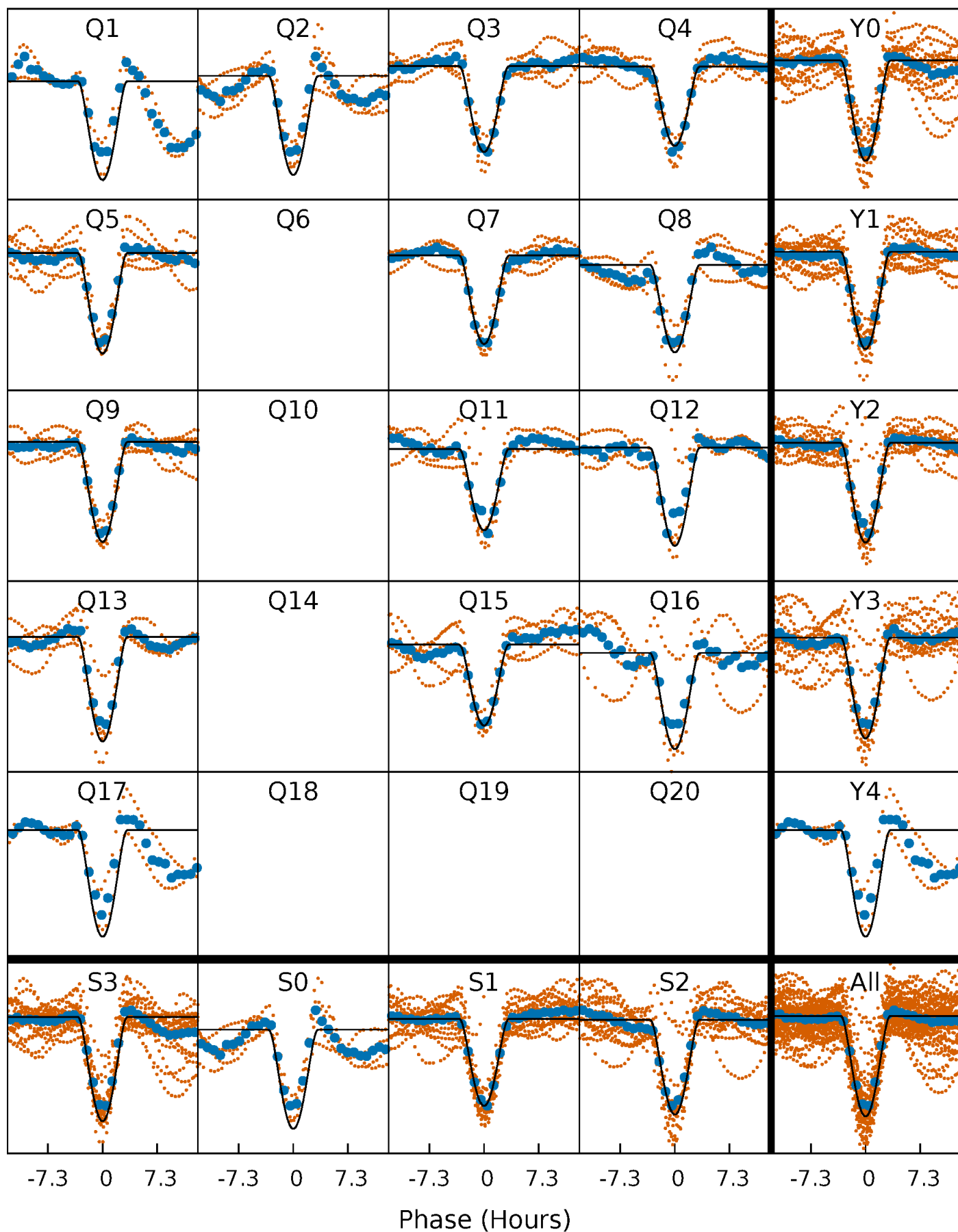
PDC Quarter-Phased Transit Curves

TCE 004932691-02 P= 18.112105 Days $T_0=139.505949$ (BKJD)



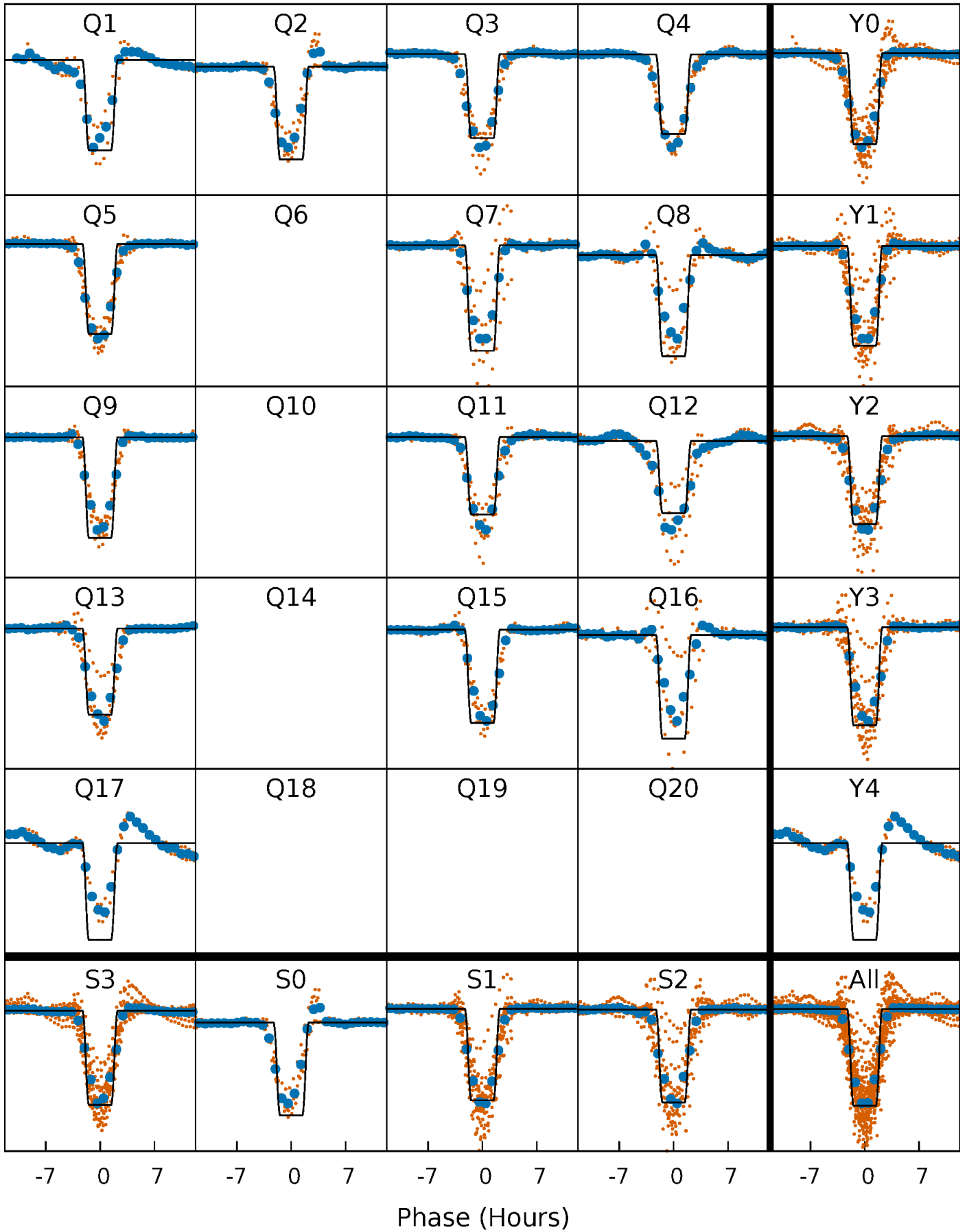
DV Quarter-Phased Transit Curves

TCE 004932691-02 P= 18.112105 Days $T_0=139.505949$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

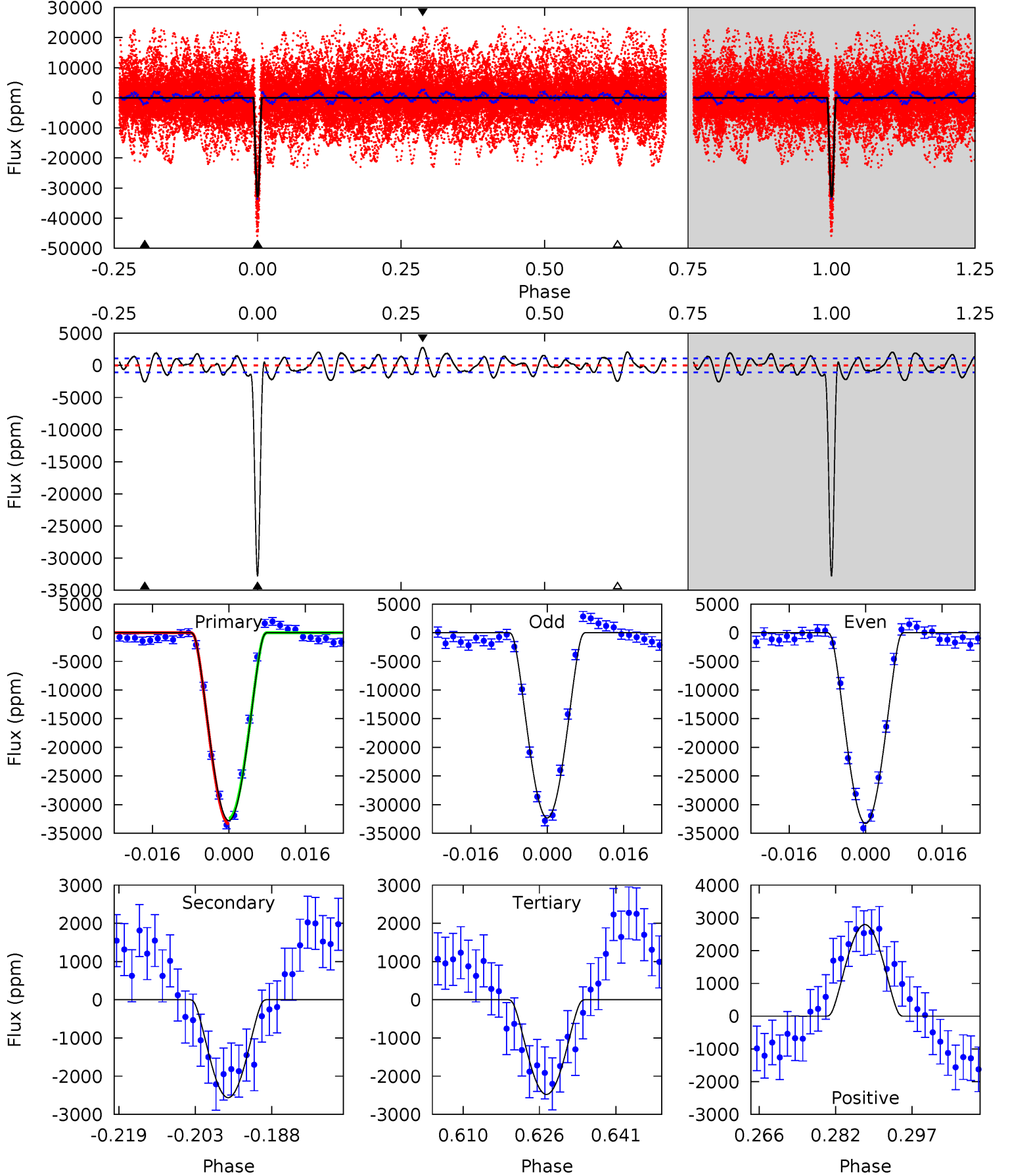
TCE 004932691-02 P= 18.111812 Days $T_0=139.515471$ (BKJD)



DV Model-Shift Uniqueness Test

004932691-02, P = 18.112105 Days, E = 121.393844 Days

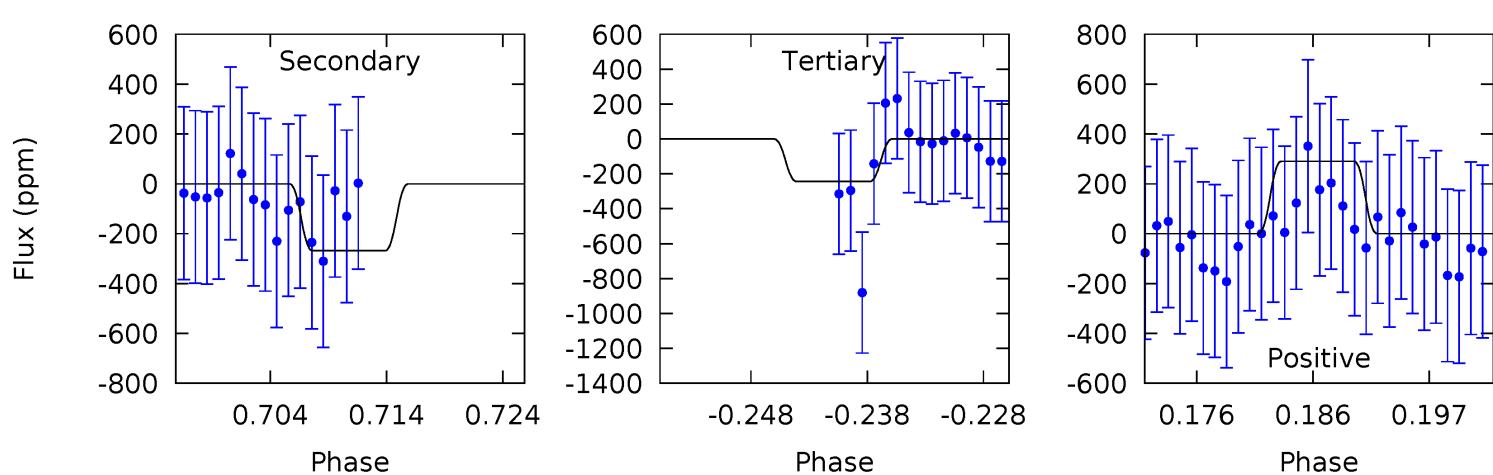
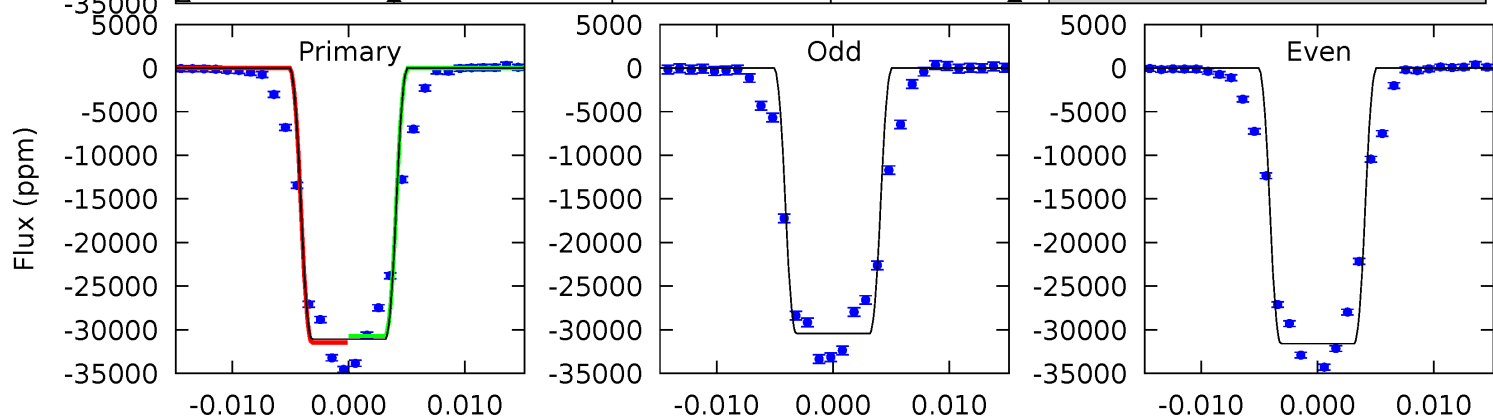
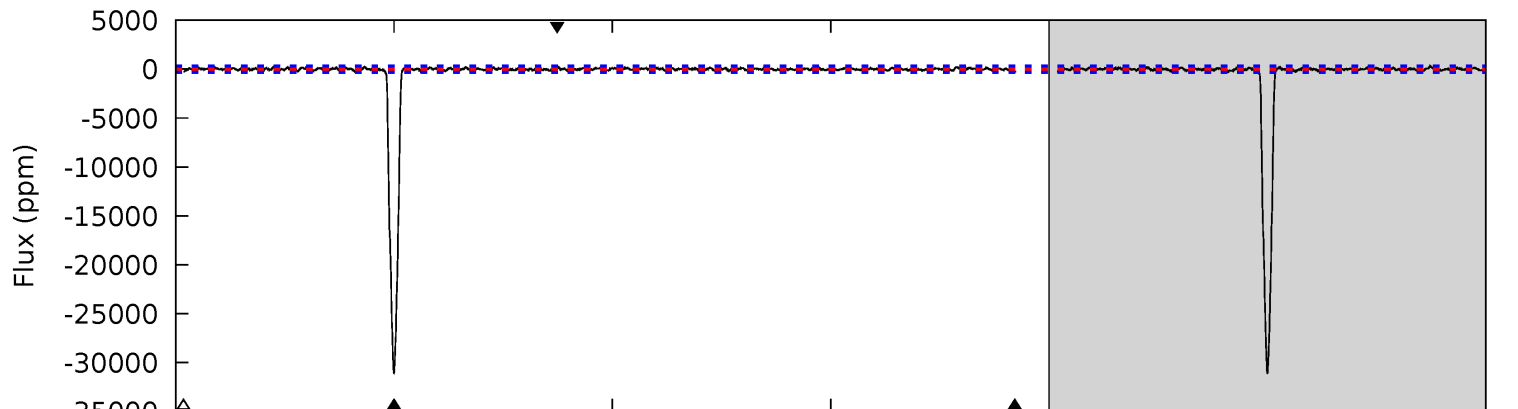
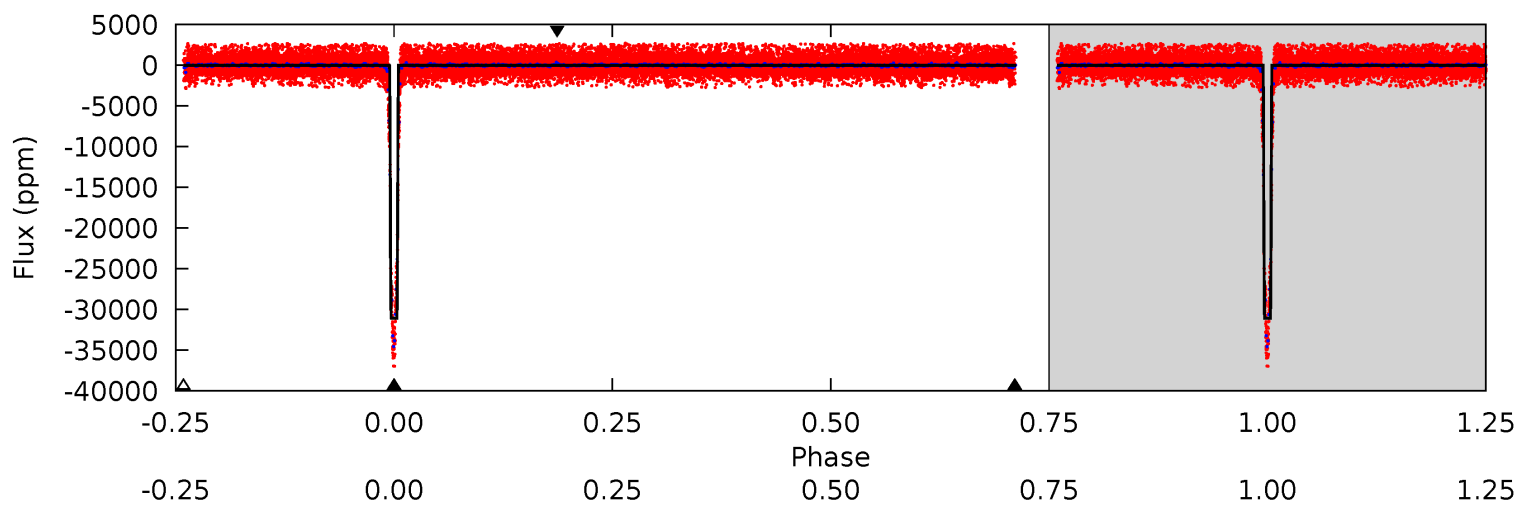
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 149.6 | 11.7 | 11.3 | 12.8 | 4.94 | 2.42 | 4.85 | 138.3 | 136.8 | 0.38 | -1.07 | 2.24 | 0.96 | 0.08 | 2.15 |



Alt Model-Shift Uniqueness Test

004932691-02, P = 18.111812 Days, E = 121.403659 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 497.2 | 4.29 | 3.91 | 4.65 | 5.02 | 2.56 | 1.28 | 493.3 | 492.5 | 0.38 | -0.35 | 9.25 | 0.97 | 0.01 | 0 |



Stellar Parameters For KIC 004932691

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
| | 7323^{+203}_{-319} | $4.167^{+0.090}_{-0.210}$ | $0.080^{+0.200}_{-0.350}$ | $1.722^{+0.562}_{-0.259}$ | $1.587^{+0.203}_{-0.226}$ | $0.438^{+0.218}_{-0.231}$ |
| | +3%/-4% | +2%/-5% | +250%/-438% | +33%/-15% | +13%/-14% | +50%/-53% |
| Source | KIC0 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004932691-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|-------------------------|----------------------|----------------------|---------------------------|
| DV | -2561 ± 219 | $56.11^{+9.87}_{-6.50}$ | 1512^{+114}_{-90} | 3474^{+108}_{-104} | 11^{+3}_{-3} |
| Alt. | -268 ± 63 | $35.85^{+7.00}_{-4.96}$ | 1503^{+118}_{-90} | 2808^{+142}_{-141} | $2.753^{+1.241}_{-0.949}$ |

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

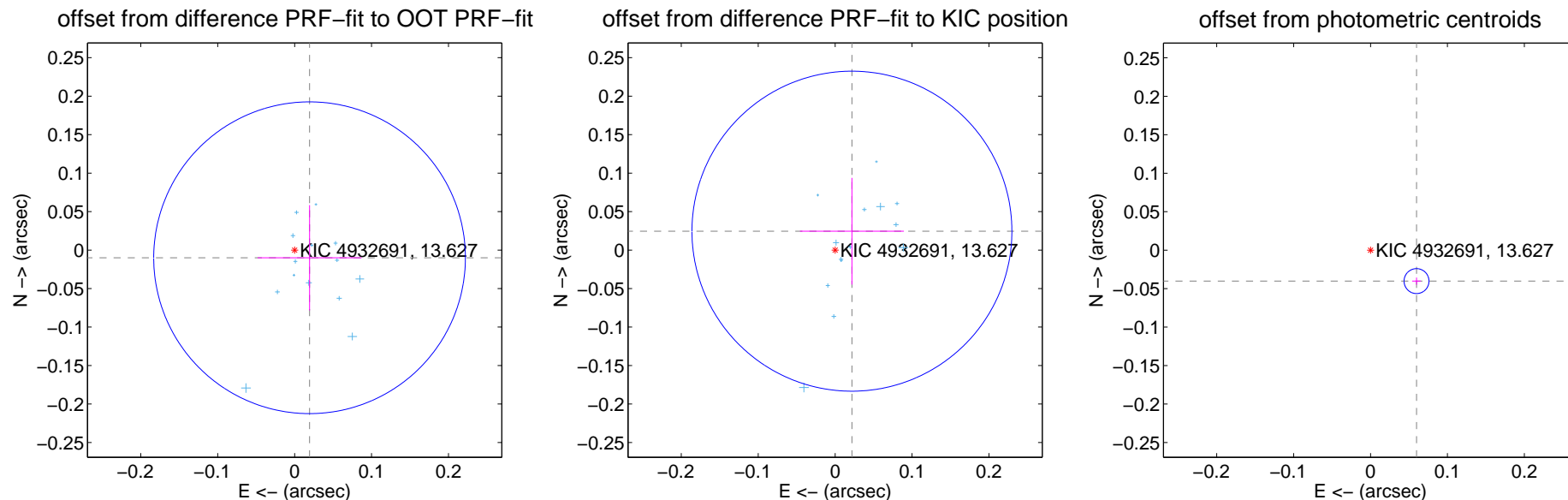
DV Centroid Data

Supplemental centroid analysis for 004932691-02. Kepler magnitude: 13.63. Transit SNR 129.63

There are 14 quarters with good PRF difference image offsets

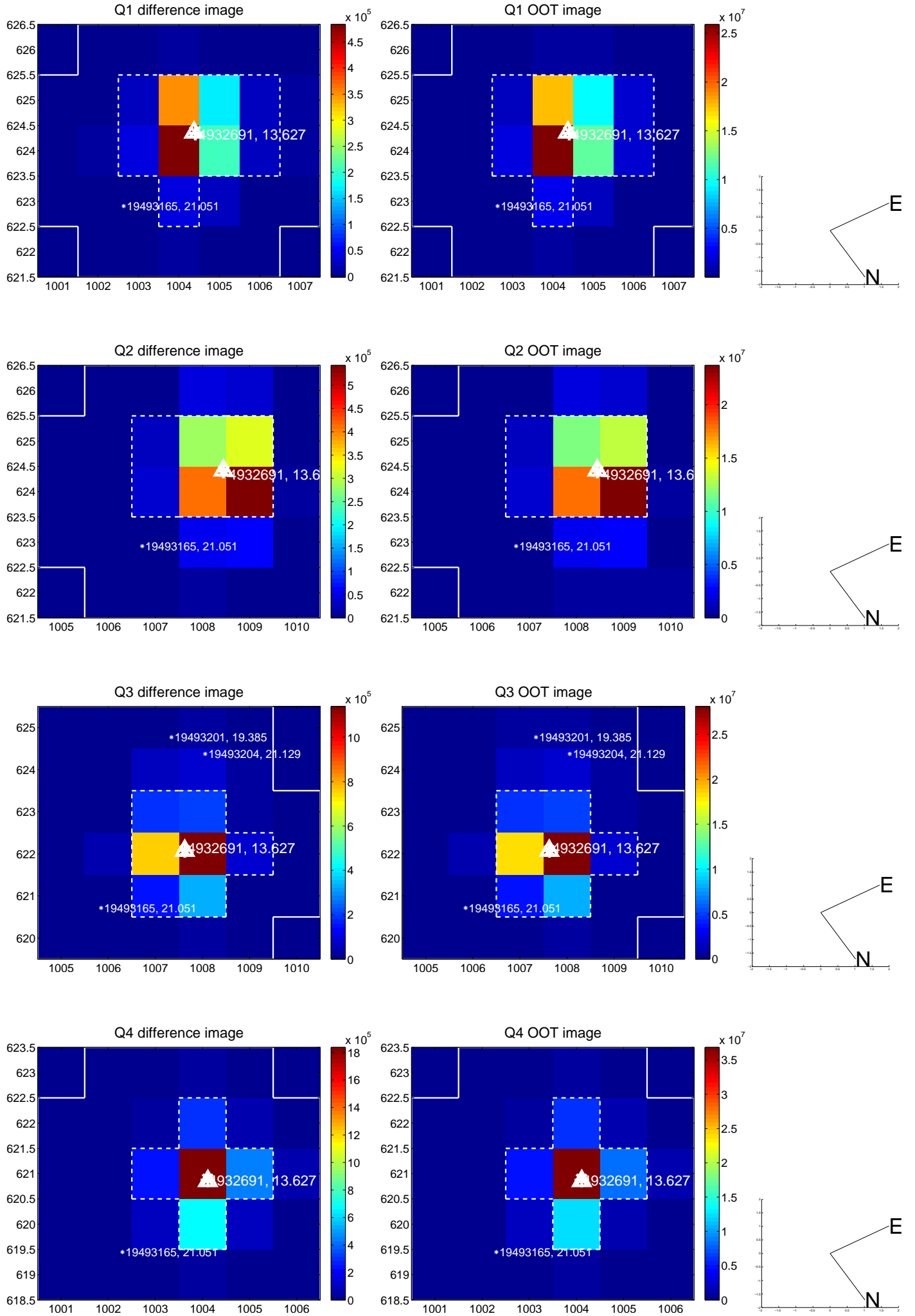
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.022 ± 0.068 | 0.32 | -0.019 ± 0.068 | -0.010 ± 0.068 |
| PRF-fit source offset from KIC position | 0.033 ± 0.069 | 0.47 | -0.022 ± 0.068 | 0.025 ± 0.069 |
| photometric centroid source offset | 0.07 ± 0.01 | 13.34 | -0.06 ± 0.01 | -0.04 ± 0.00 |

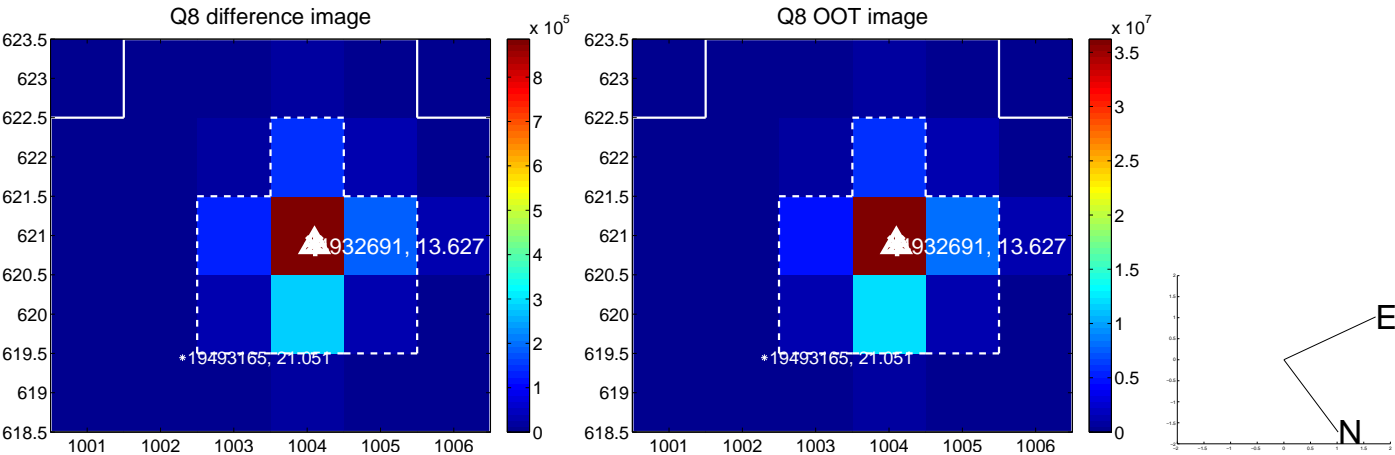
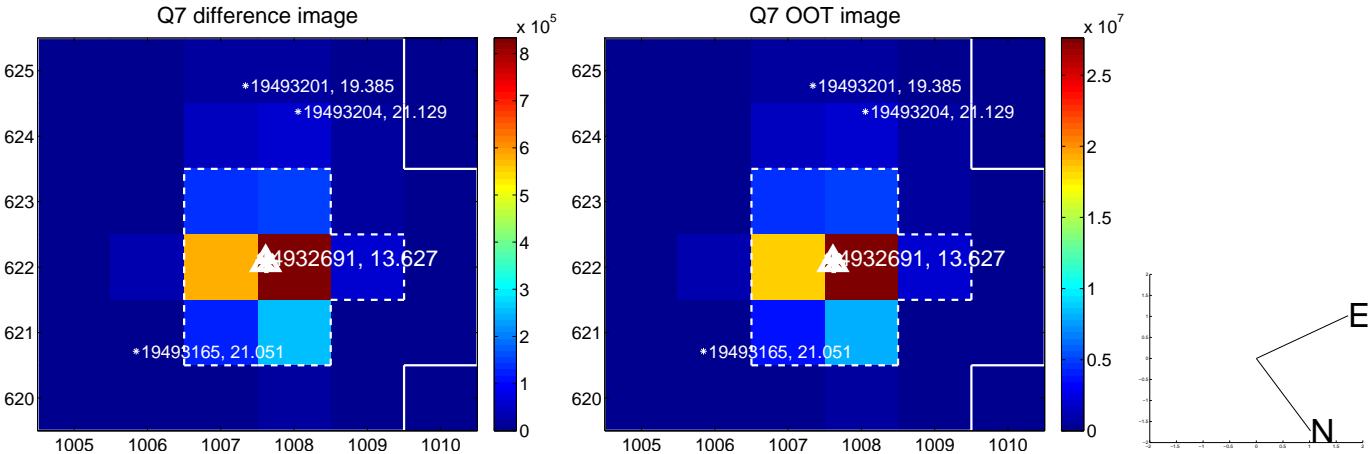
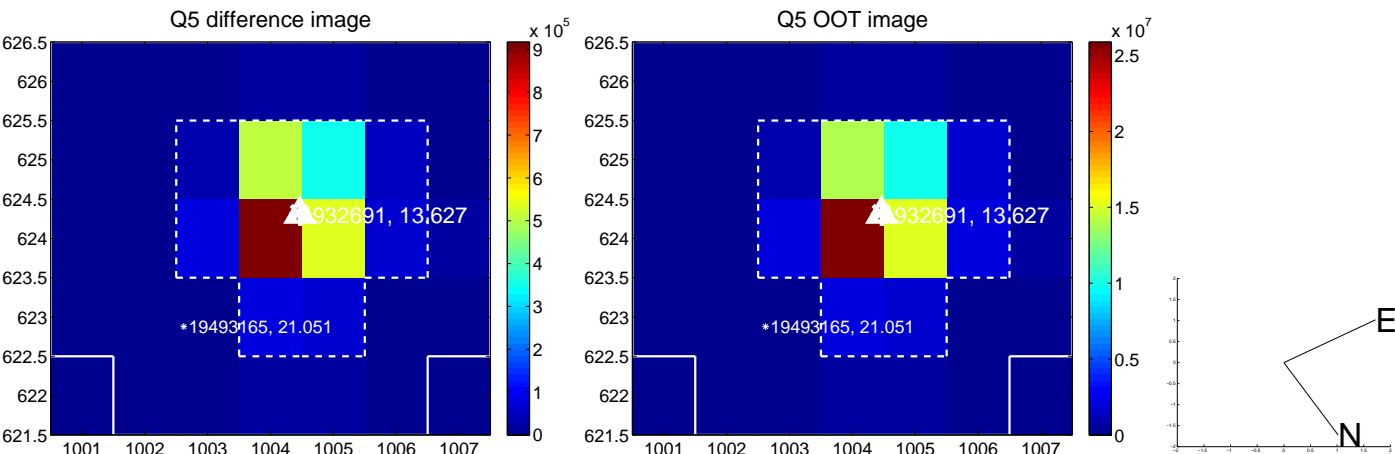


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

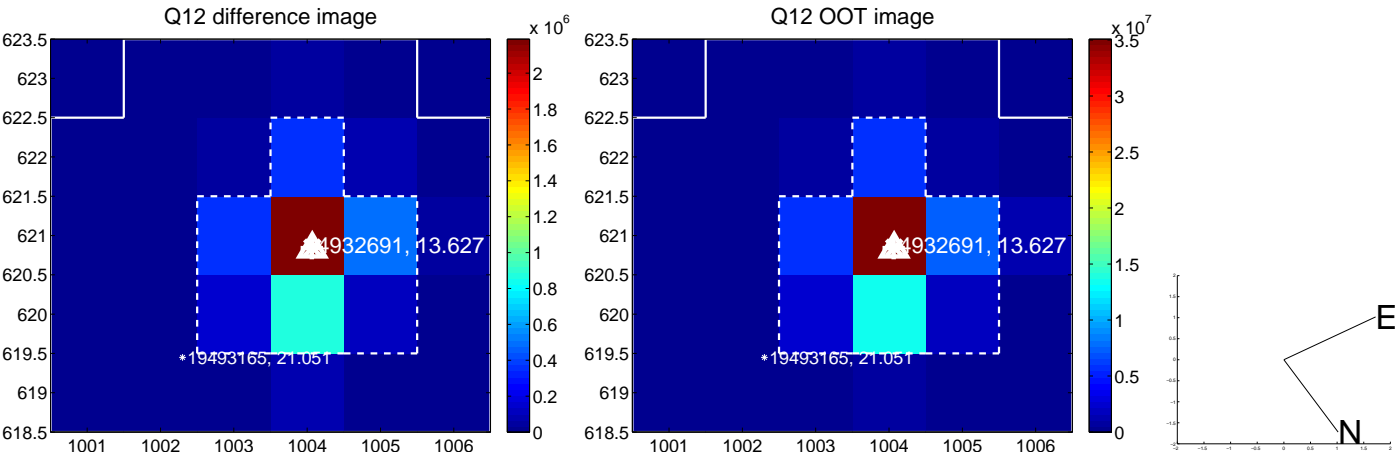
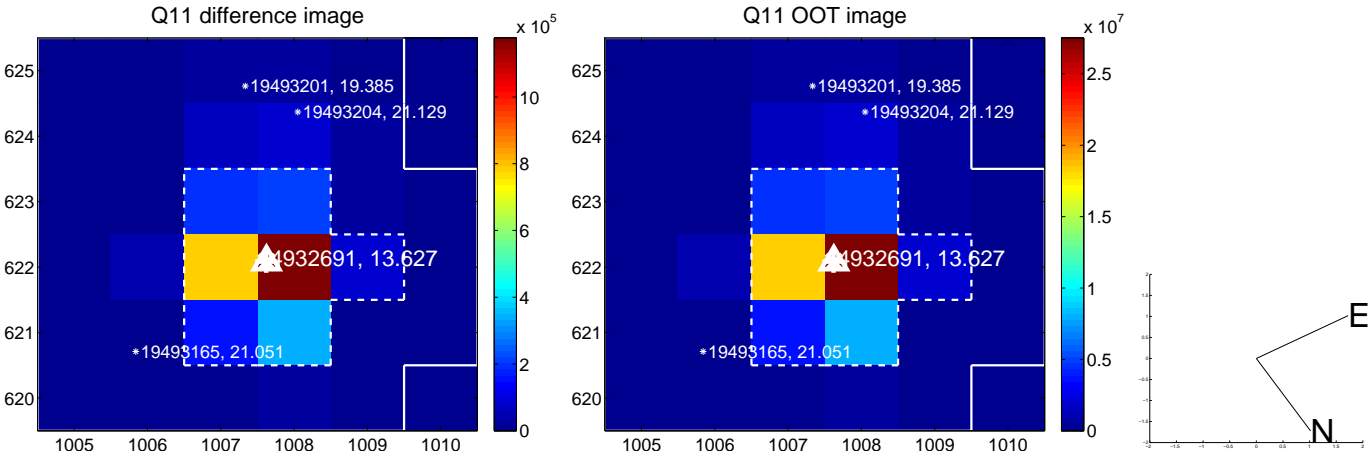
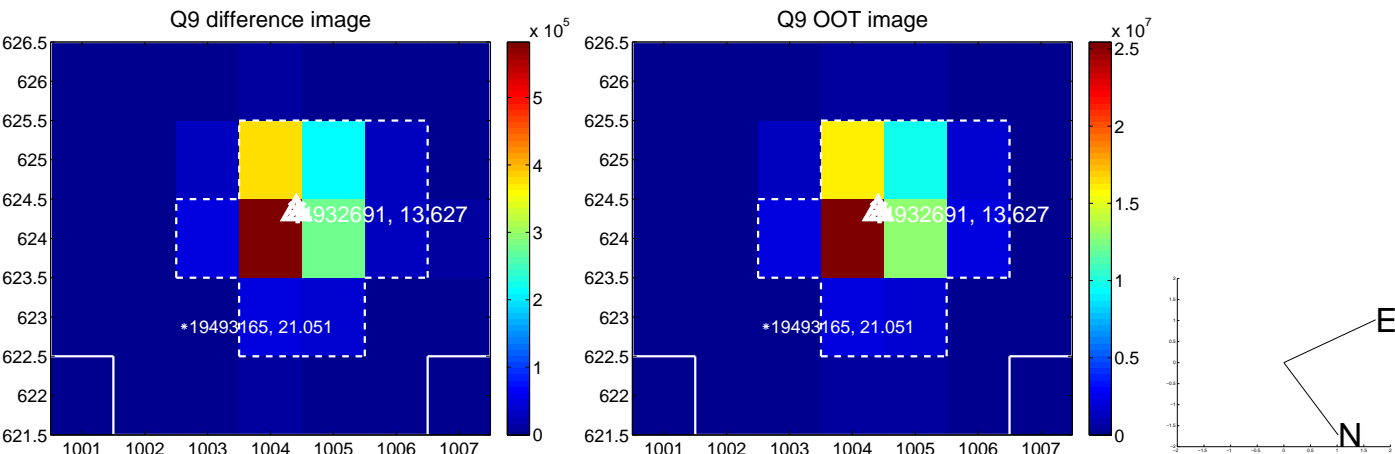
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



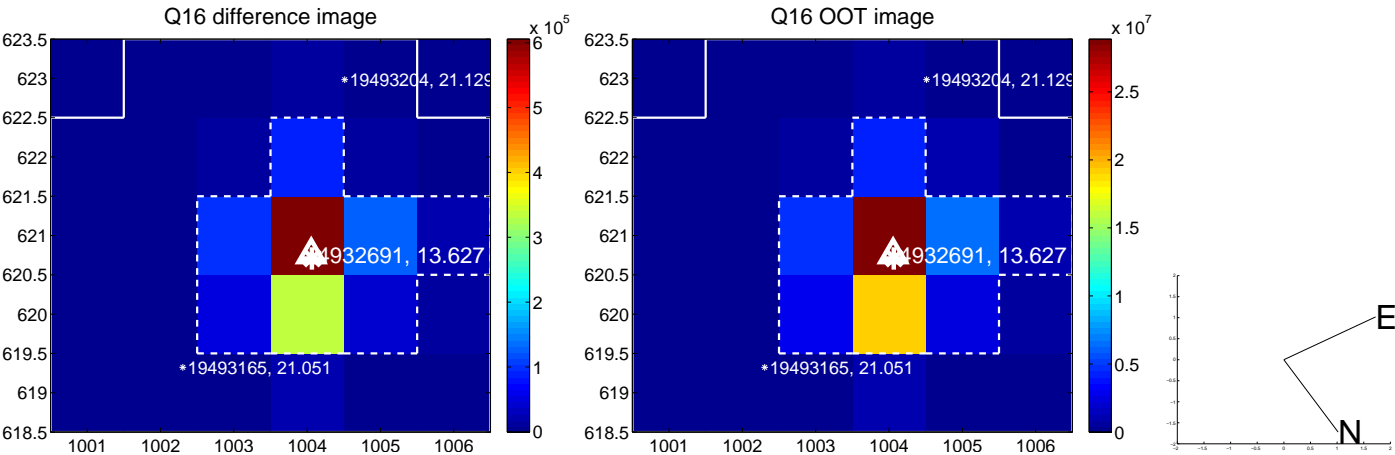
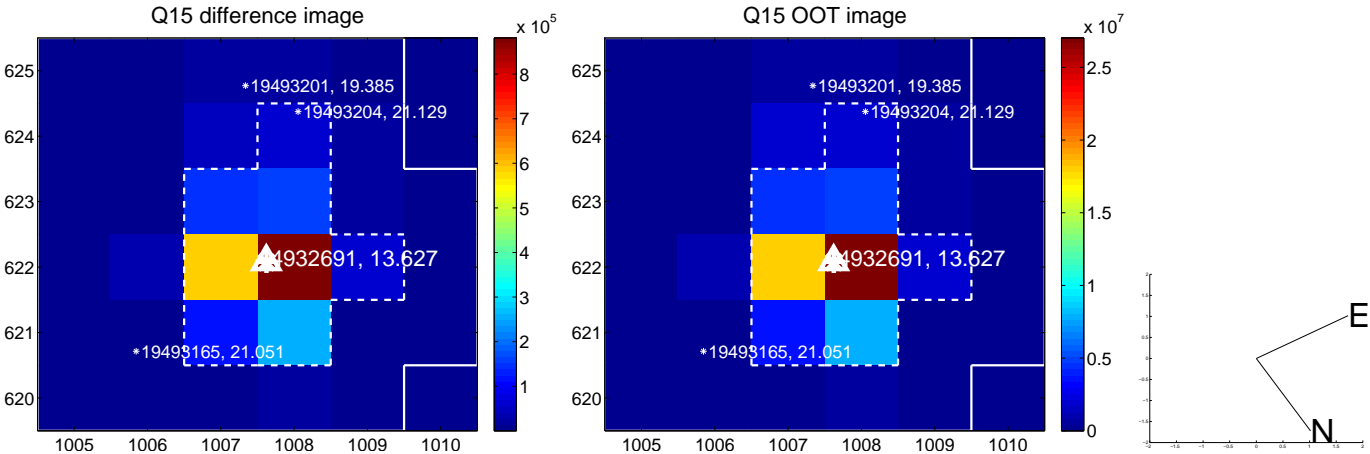
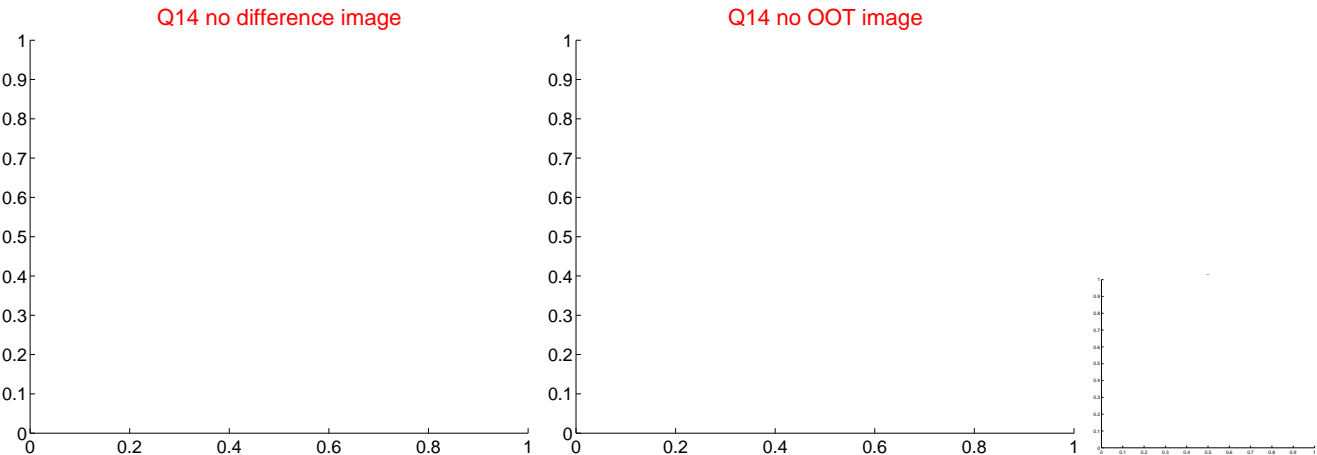
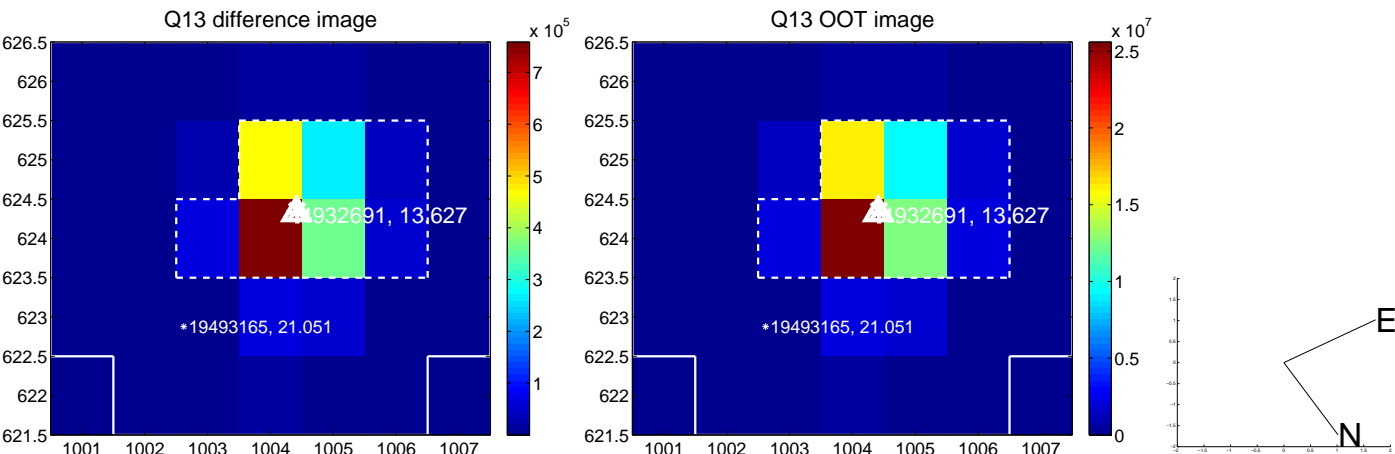
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



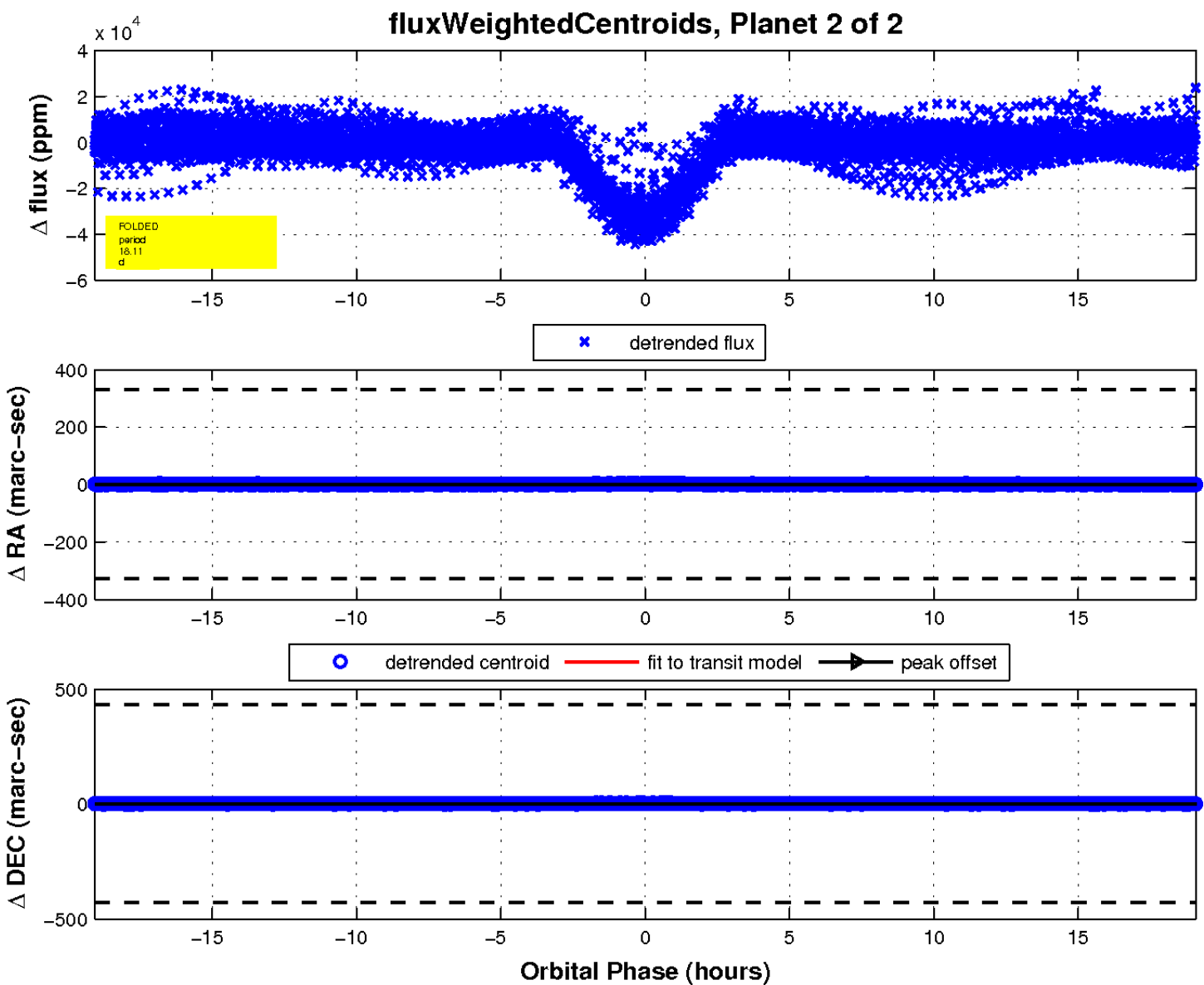
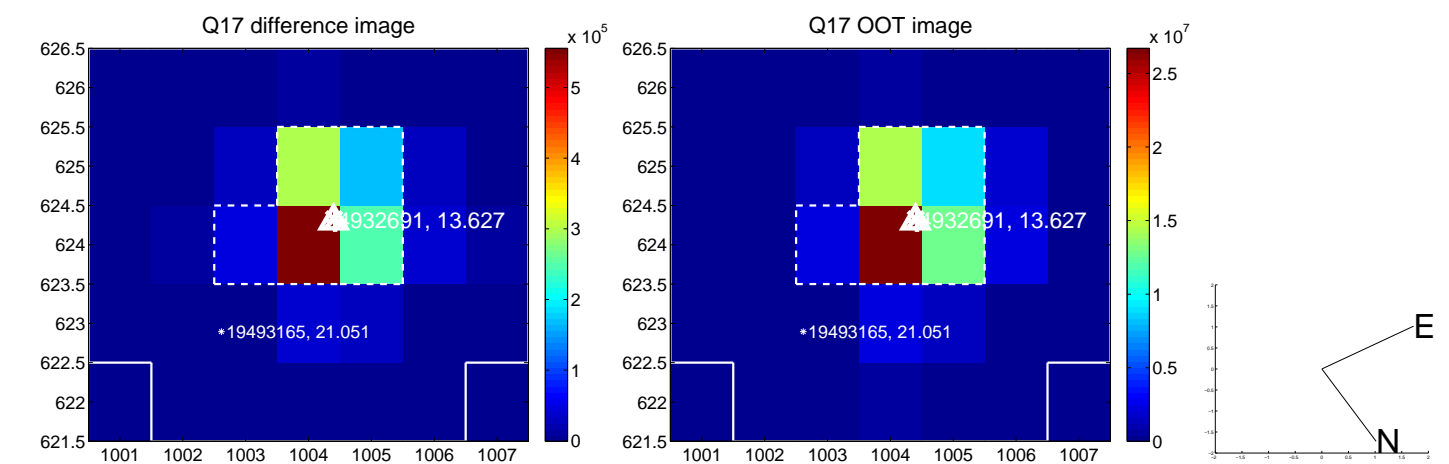
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

