

KIC 007375795

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007375795-01 | OBS | 1378.01 | 19.301053 | 133.359271 | 228.3 | 6.188 | 35.9 | 38.6 | 0.94 | 5687 | 1.68 | 47.57 |
| 007375795-02 | OBS | 1378.02 | 0.691659 | 131.800530 | 24.7 | 2.311 | 14.9 | 14.7 | 0.94 | 5687 | 0.56 | 4026.36 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---------------------------------|
| 007375795-01 | OBS | FP | 0.49 | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET |
| 007375795-02 | OBS | FP | 0.00 | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET—HALO_GHOST |

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 007375795-01

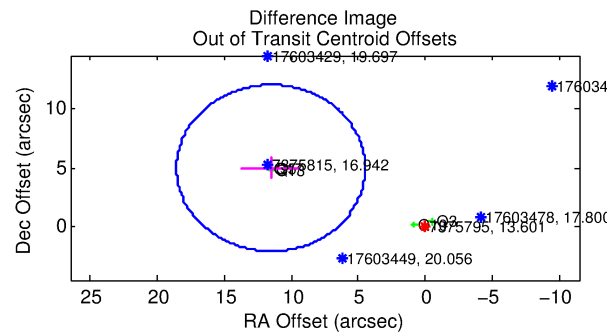
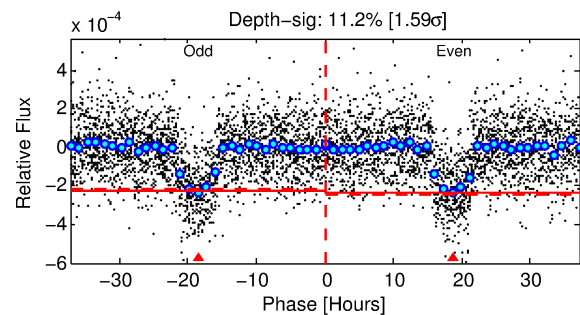
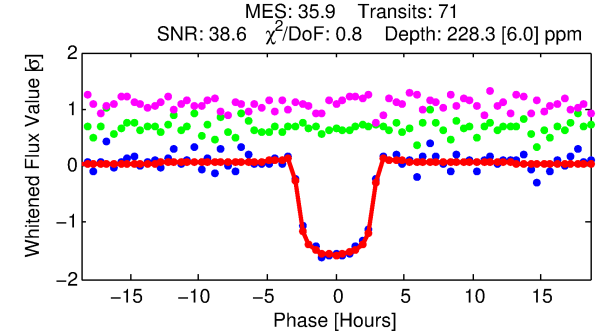
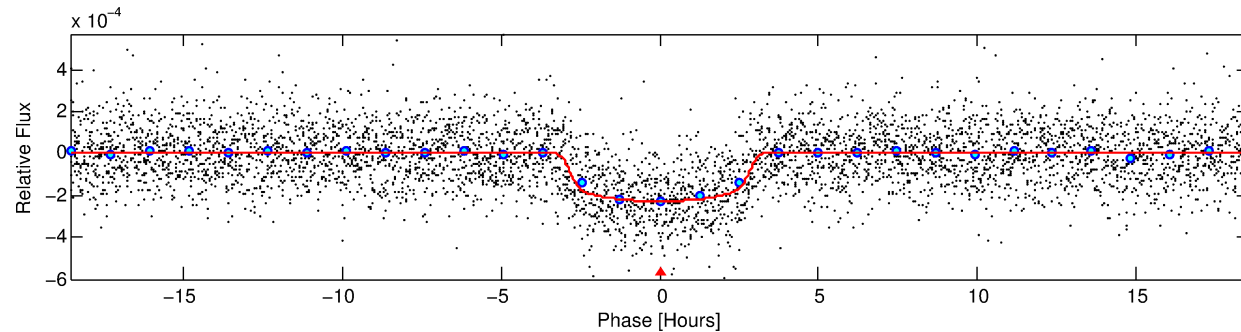
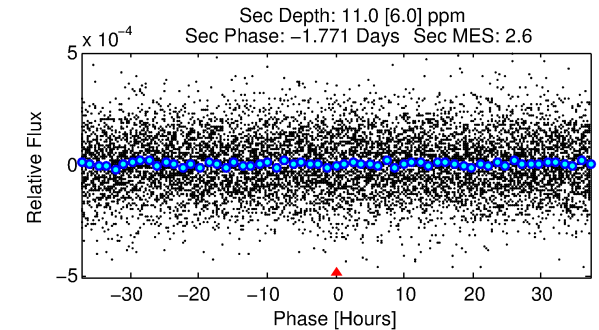
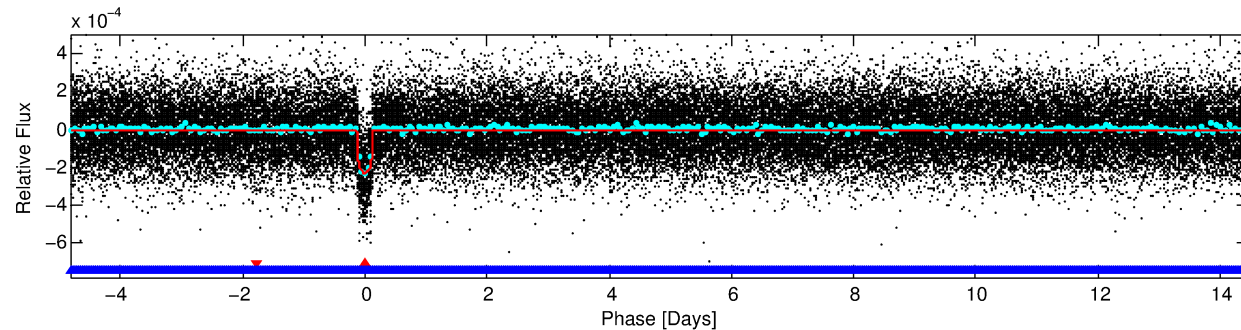
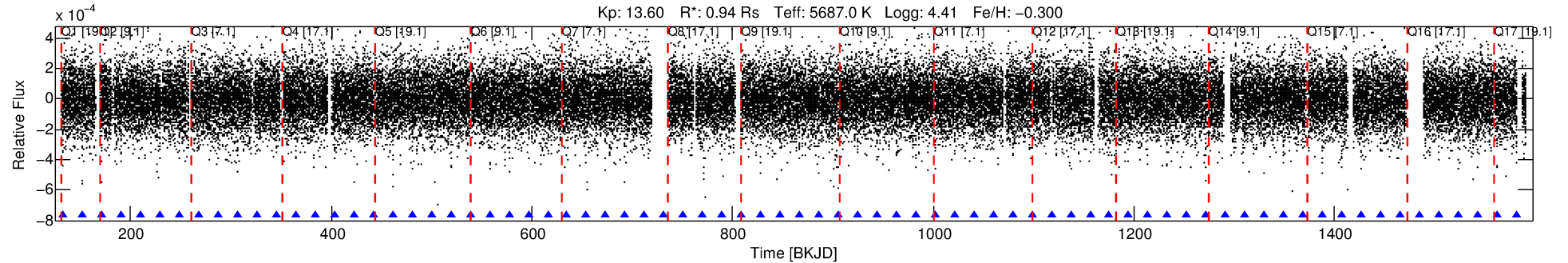
No Significant Match Found

DV One-Page Summary

KIC: 7375795 Candidate: 1 of 2 Period: 19.301 d

KOI: K01378.01 Corr: 0.977

Kp: 13.60 R*: 0.94 Rs Teff: 5687.0 K Logg: 4.41 Fe/H: -0.300



DV Fit Results:

Period = 19.30105 [0.00007] d
Epoch = 133.3593 [0.0030] BKJD
Rp/R* = 0.0164 [0.0011]
a/R* = 11.50 [3.56]
b = 0.90 [0.07]
Seff = 47.57 [9.79]
Teq = 670 [34] K
Rp = 1.68 [0.24] Re
a = 0.1324 [0.0160] AU
Ag = 37.48 [22.08] [1.65σ]
Teff = 2562 [361] K [5.22σ]

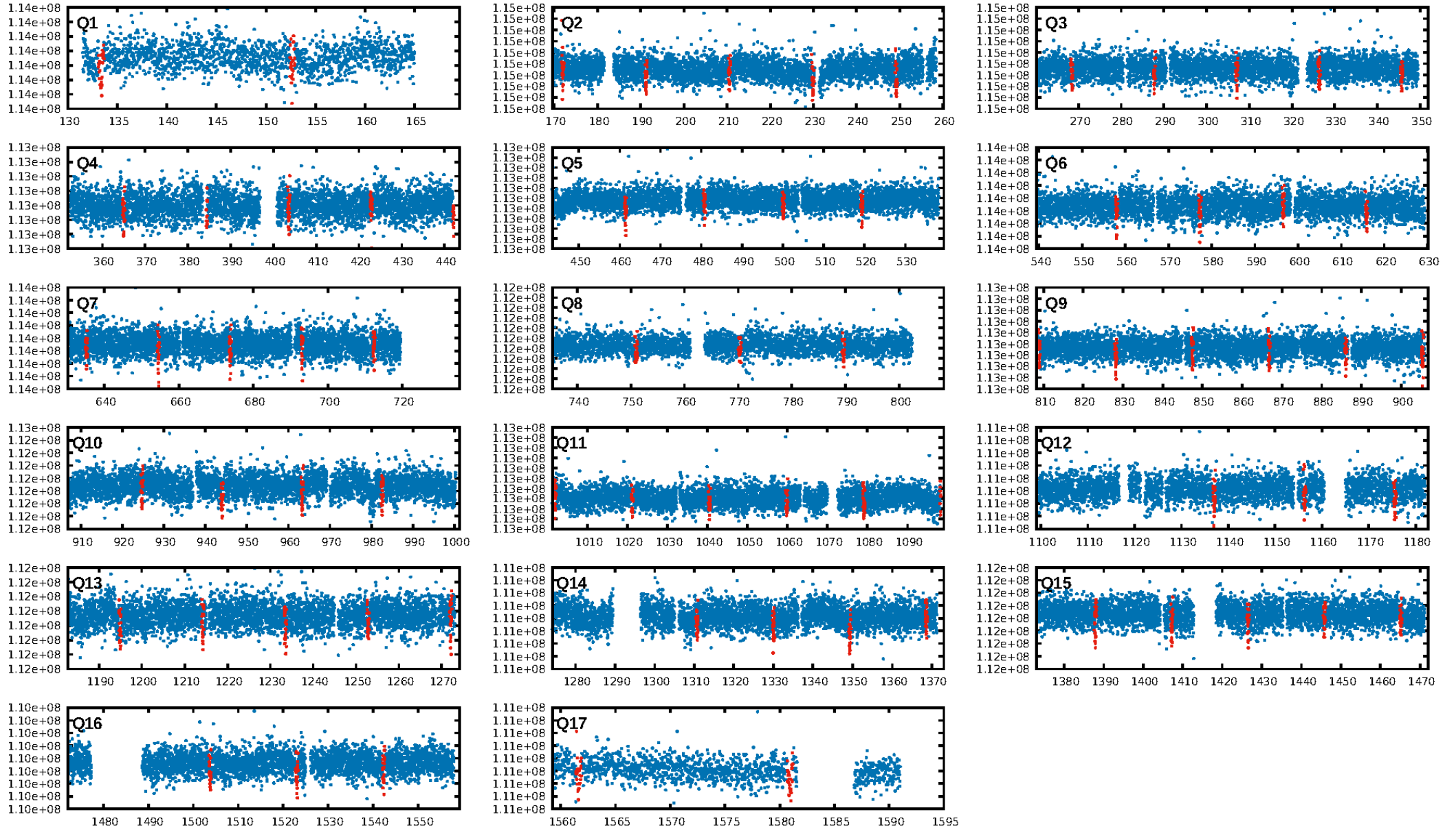
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.61σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 30.8%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 3.42e-226
RollingBand-fgt: 1.00 [67/67]
GhostDiagnostic-chr: 9.805
Centroid-sig: N/A
Centroid-so: 0.615 arcsec [1.56σ]
OotOffset-rm: 12.549 arcsec [5.35σ]
KicOffset-rm: 12.662 arcsec [5.66σ]
OotOffset-st: 1/1/0/4 [6]
KicOffset-st: 1/1/0/4 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 0.00 [0/17]

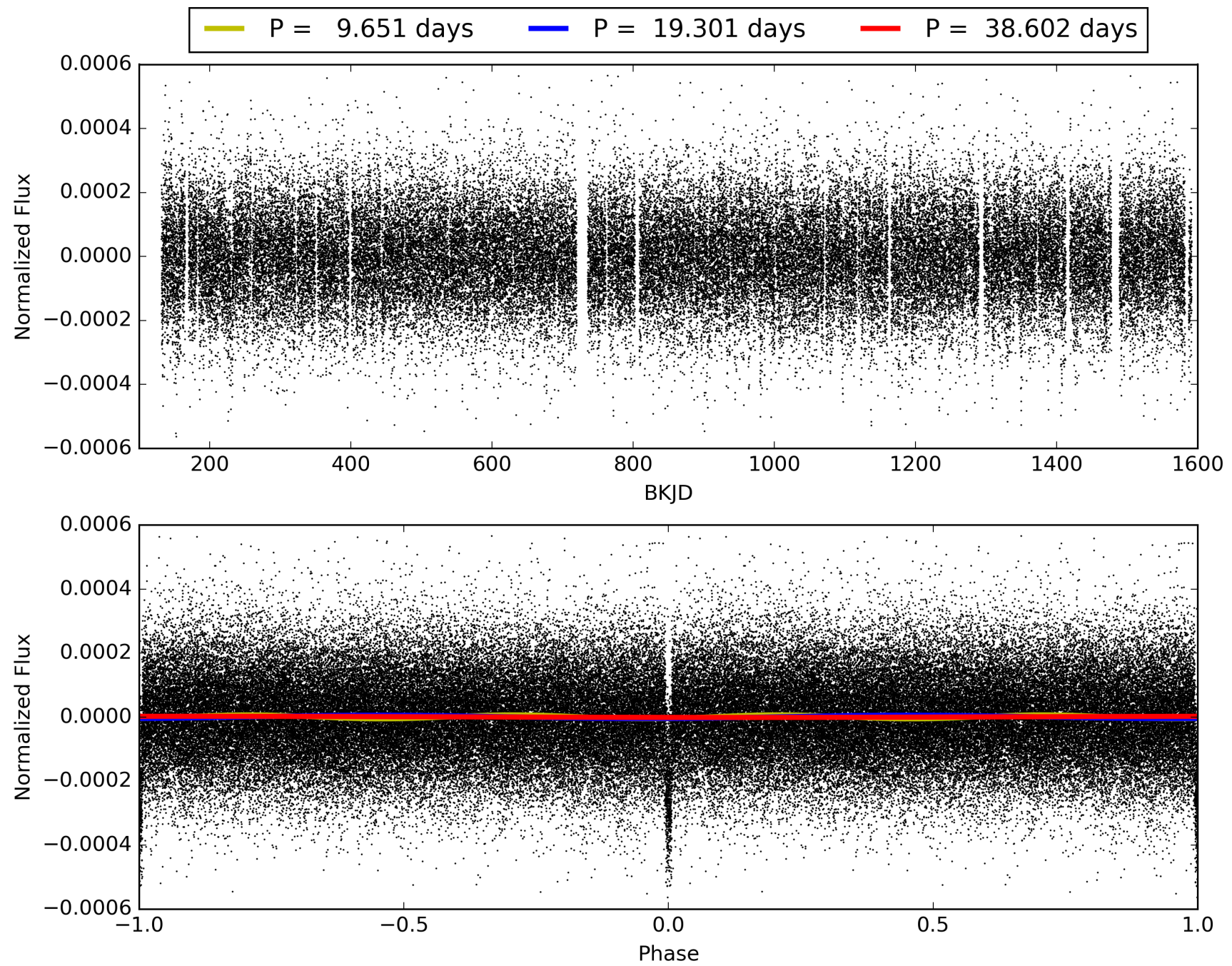
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:01:18 Z

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

TCE 007375795-01, PDC Light Curves

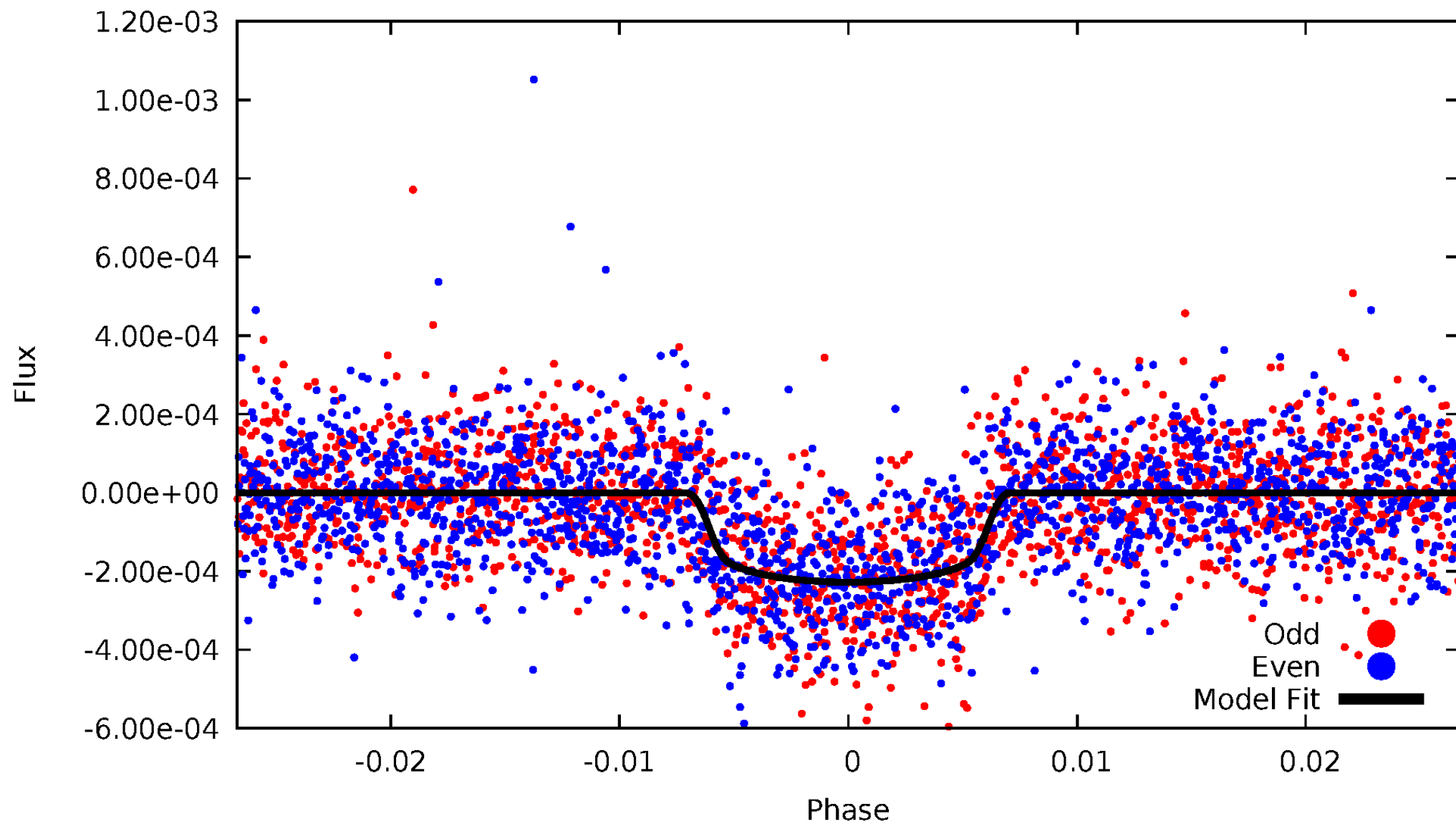


TCE 007375795-01



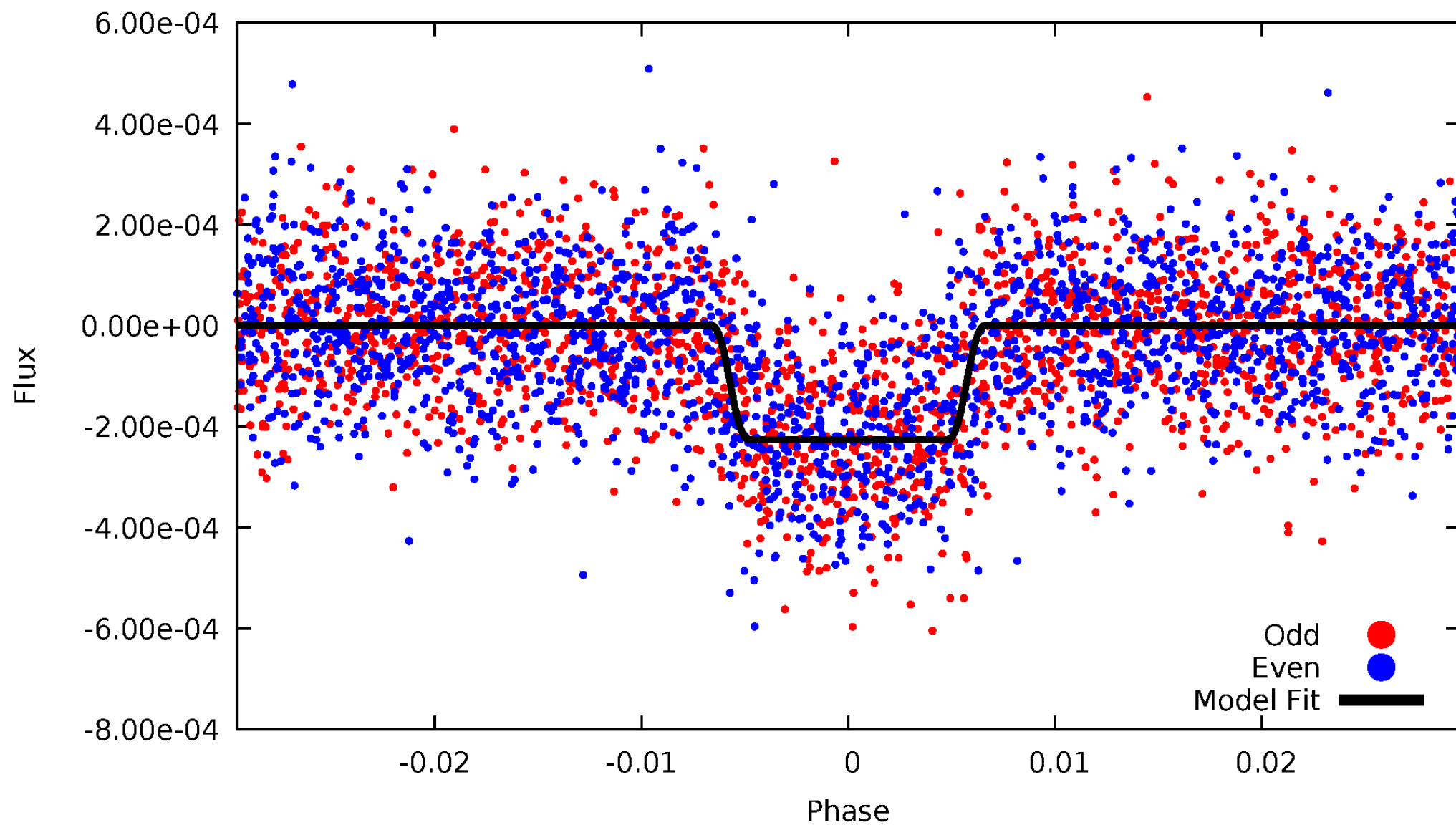
DV Odd/Even

TCE 007375795-01



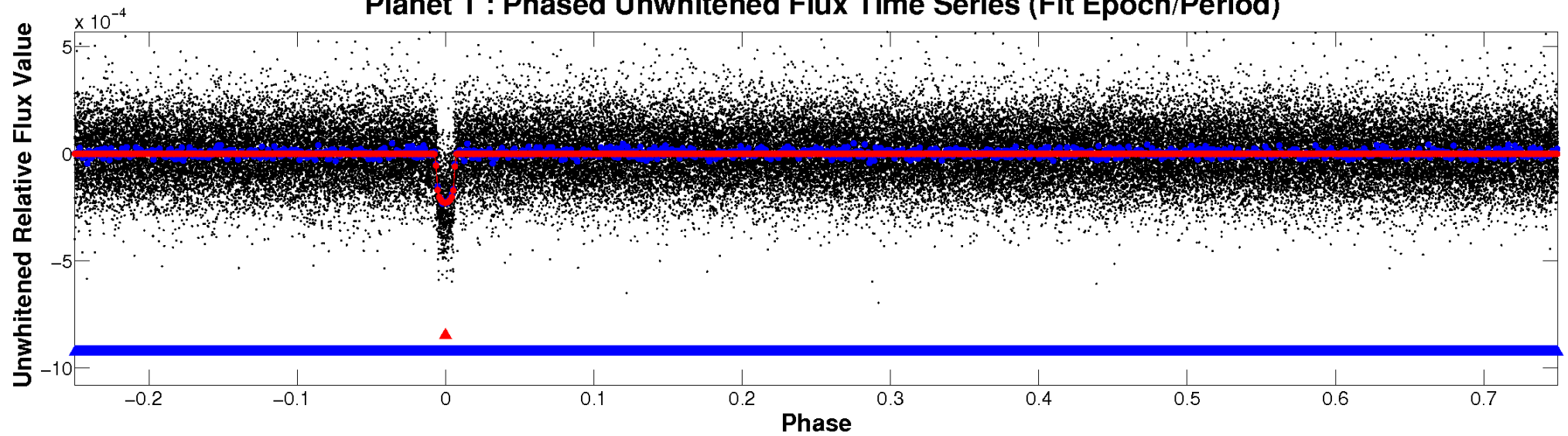
ALT Odd/Even

TCE 007375795-01

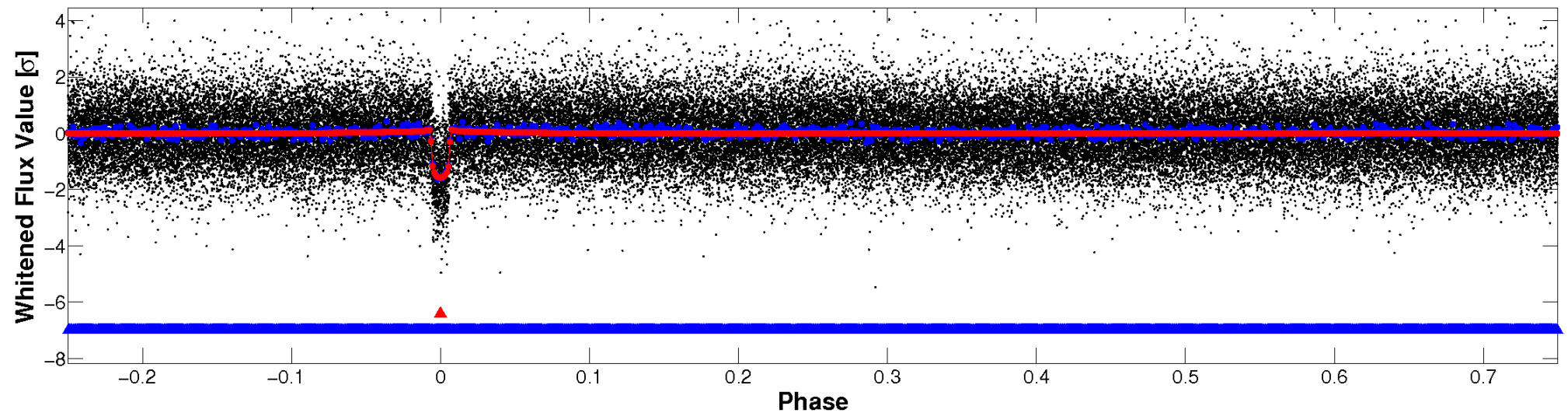


Non-Whitened Vs. Whitened Light Curve

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

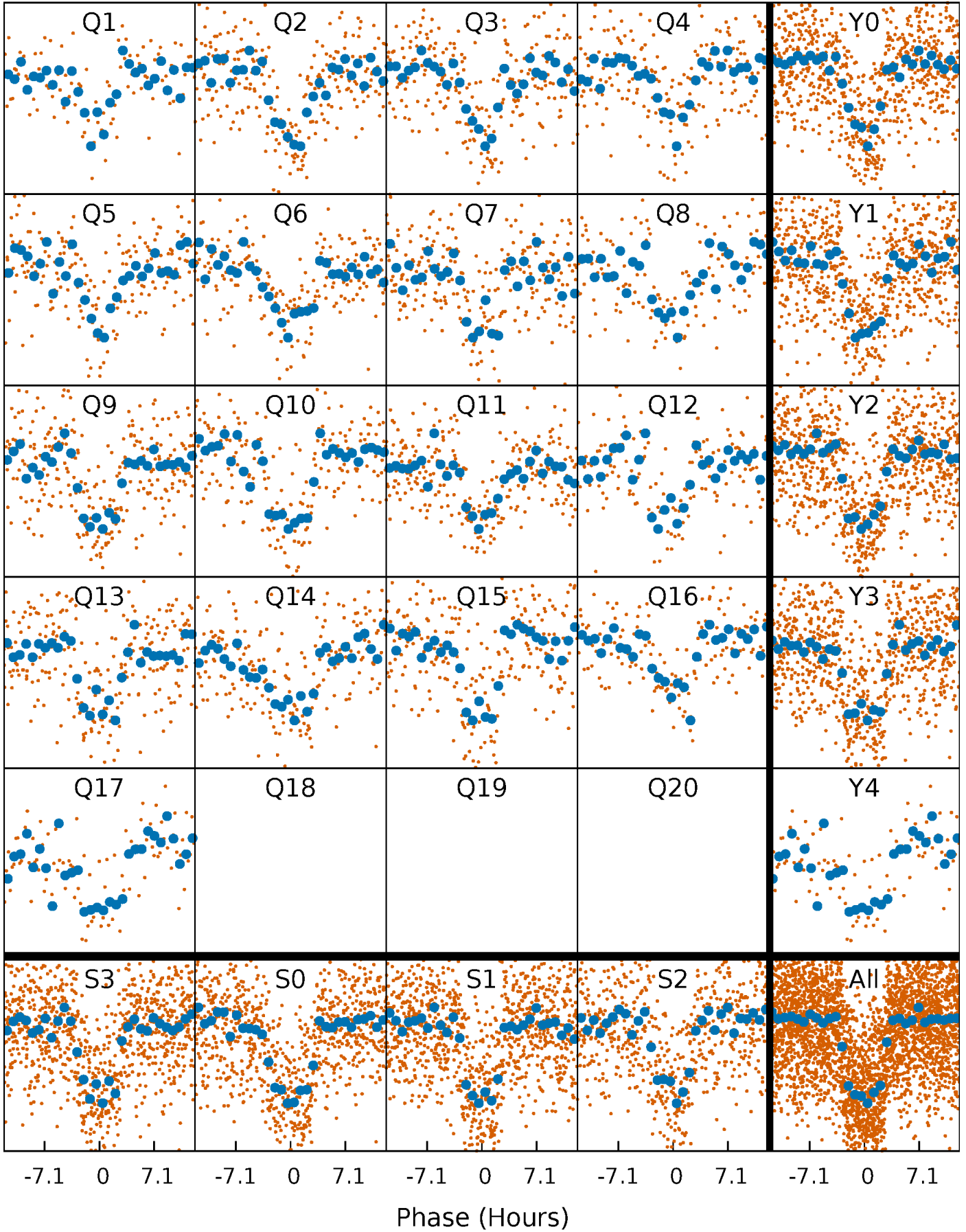


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



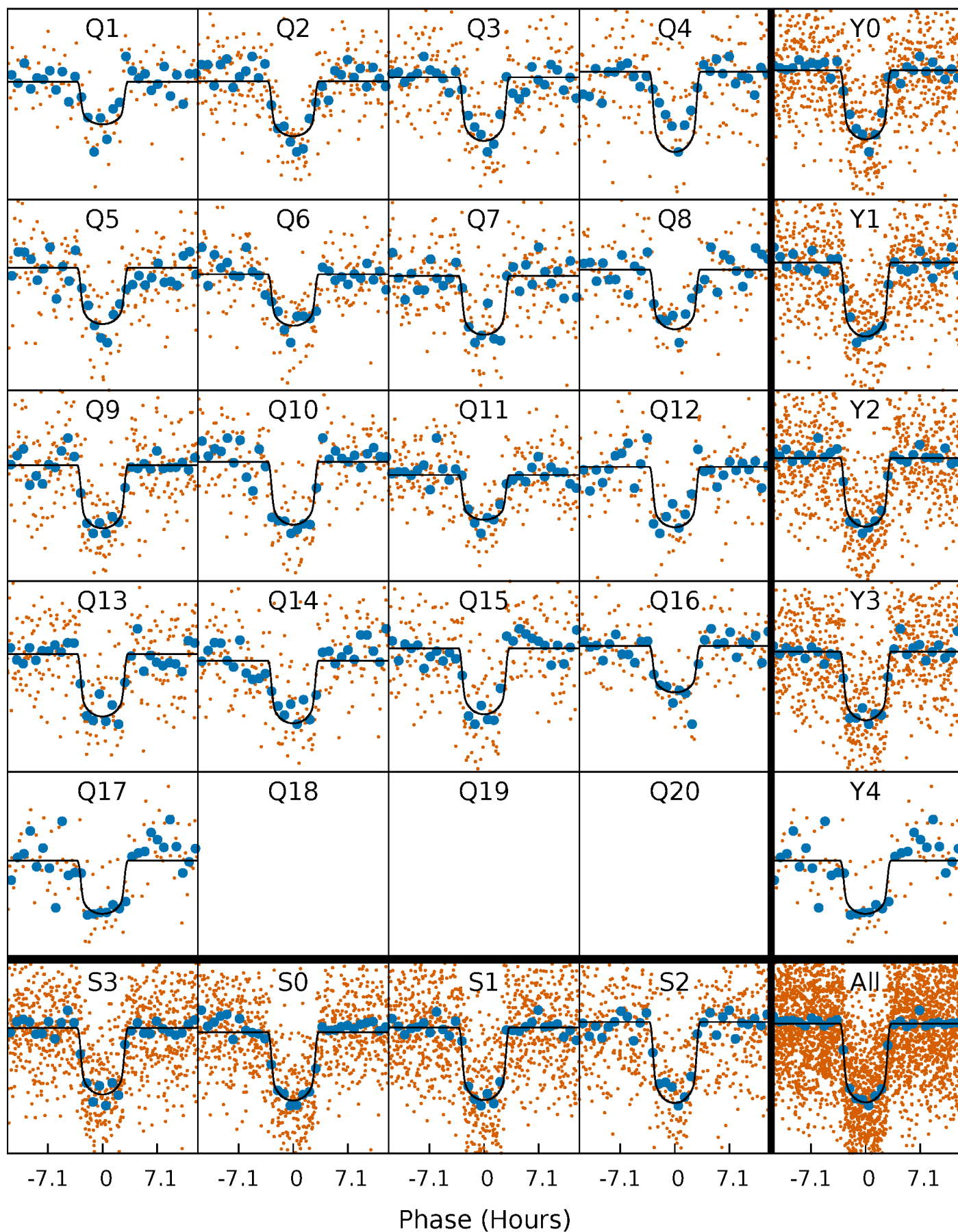
PDC Quarter-Phased Transit Curves

TCE 007375795-01 P= 19.301053 Days $T_0=133.359271$ (BKJD)



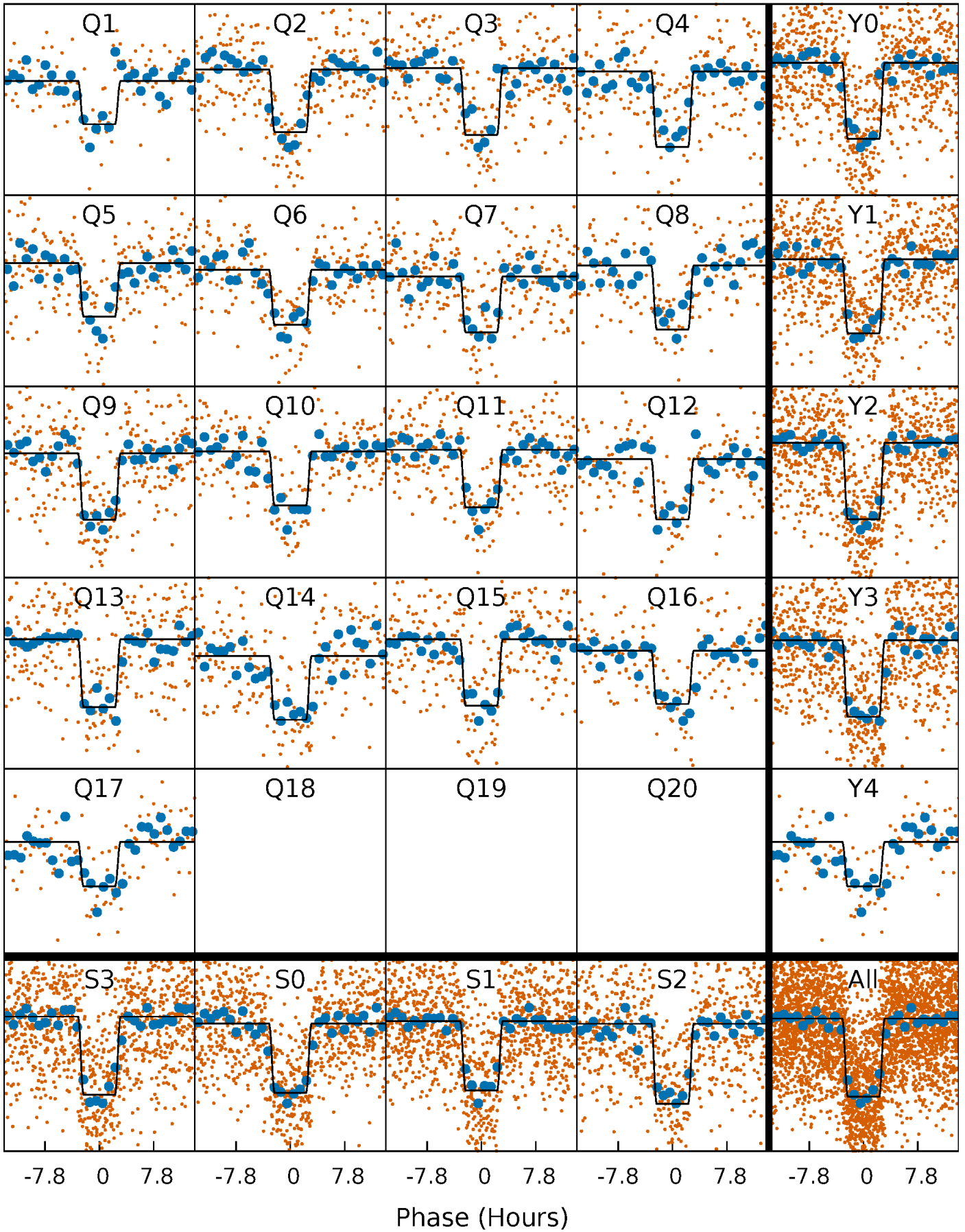
DV Quarter-Phased Transit Curves

TCE 007375795-01 P= 19.301053 Days $T_0=133.359271$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

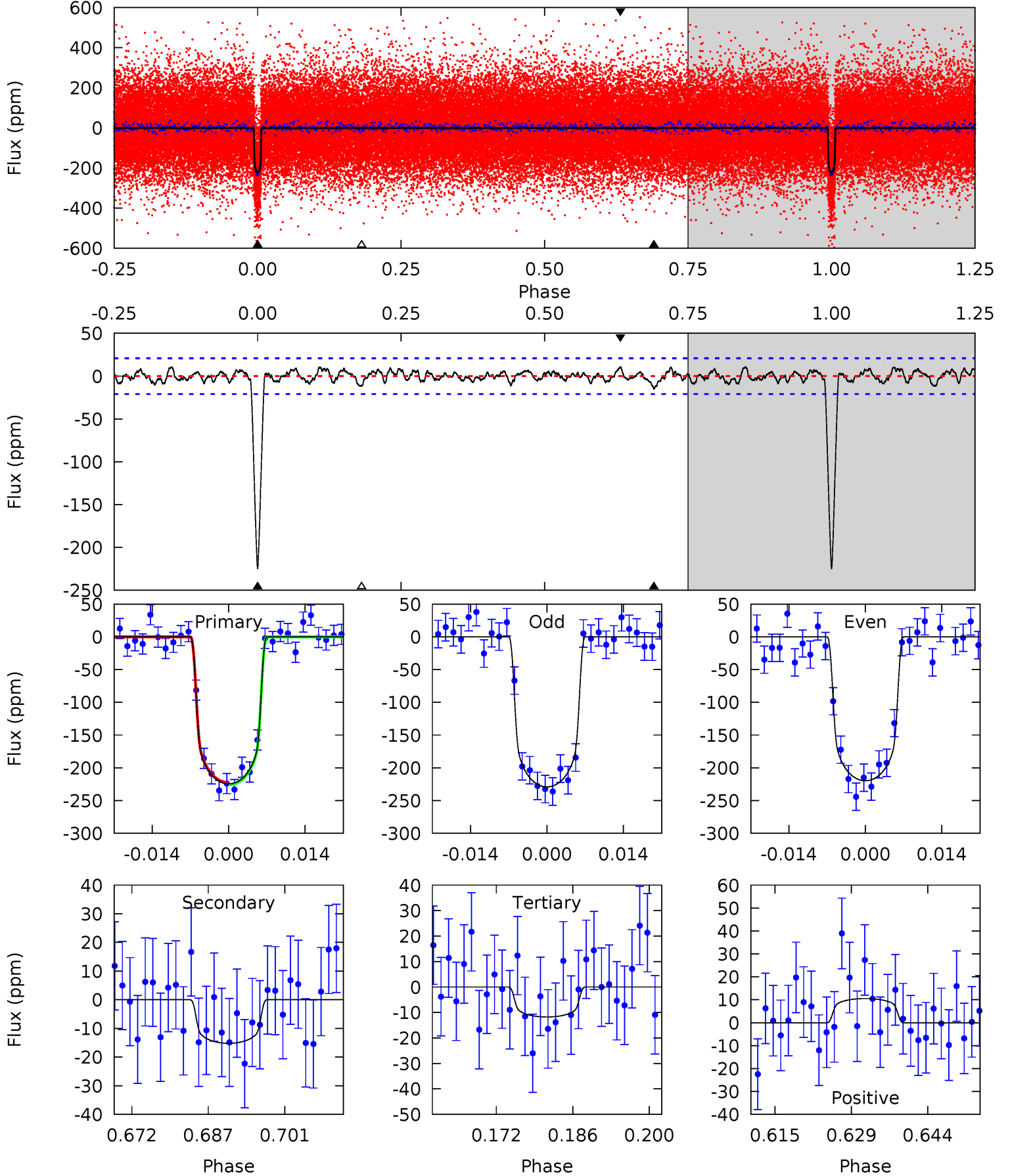
TCE 007375795-01 P= 19.300534 Days $T_0=133.379449$ (BKJD)



DV Model-Shift Uniqueness Test

007375795-01, P = 19.301053 Days, E = 114.058218 Days

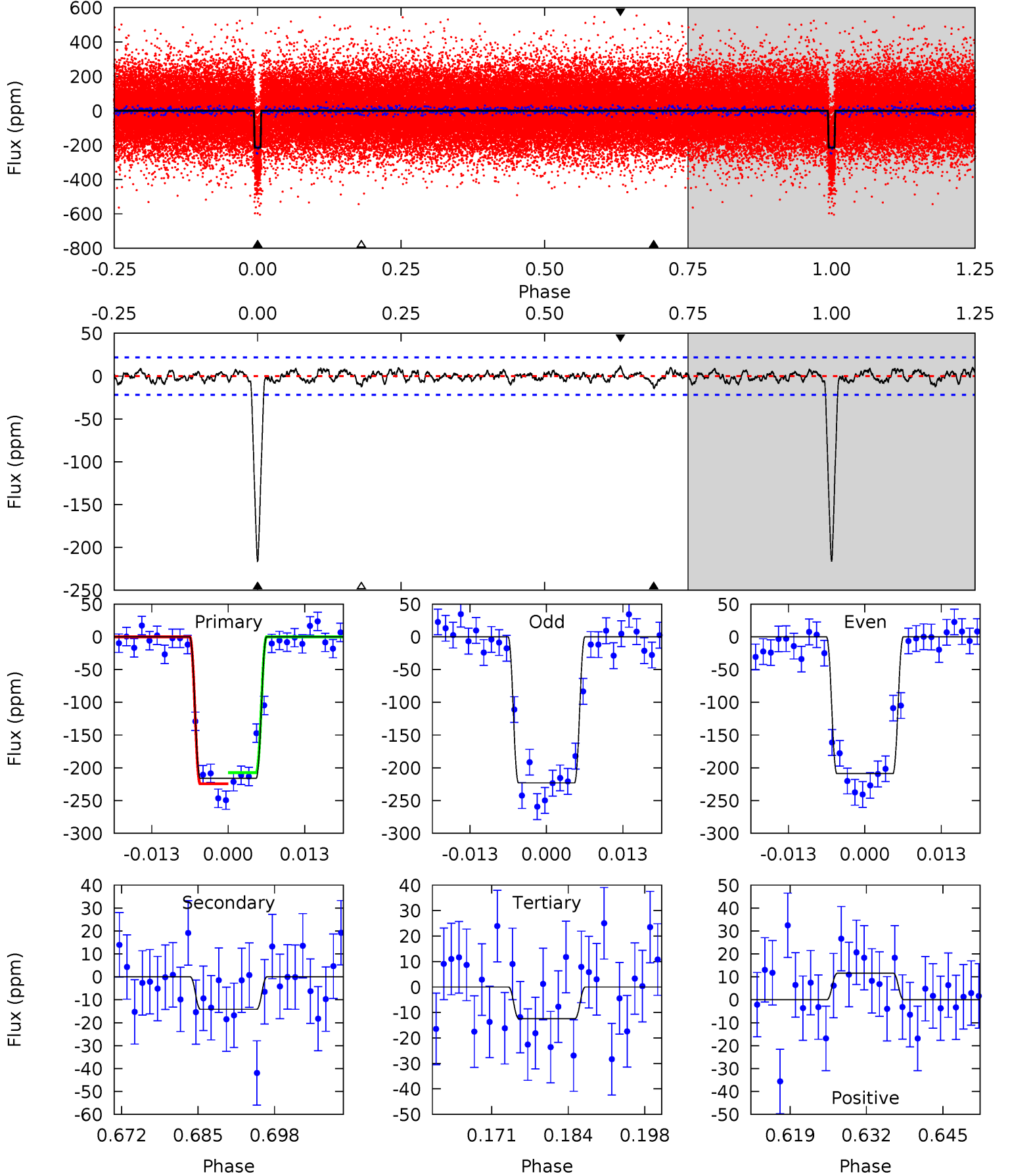
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 53.1 | 3.60 | 2.78 | 2.49 | 4.96 | 2.45 | 1.08 | 50.3 | 50.6 | 0.82 | 1.11 | 1.12 | 0.96 | 0.04 | 0.35 |



Alt Model-Shift Uniqueness Test

007375795-01, $P = 19.300534$ Days, $E = 114.078915$ 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 | 3.24 | 2.84 | 2.64 | 4.97 | 2.48 | 0.95 | 46.4 | 46.6 | 0.40 | 0.60 | 1.61 | 0.99 | 0.05 | 1.96 |



Stellar Parameters For KIC 007375795

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5687^{+114}_{-102} | $4.408^{+0.110}_{-0.099}$ | $-0.300^{+0.150}_{-0.150}$ | $0.943^{+0.122}_{-0.111}$ | $0.830^{+0.073}_{-0.037}$ | $1.395^{+0.686}_{-0.387}$ |
| | +2%/-2% | +2%/-2% | +50%/-50% | +13%/-12% | +9%/-4% | +49%/-28% |
| Source | SPE58 | SPE58 | SPE58 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 007375795-01 / KOI 1378.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|-------------------|----------------------|------------------|
| DV | -15 ± 4 | $1.68^{+0.18}_{-0.16}$ | 934^{+40}_{-35} | 3326^{+156}_{-169} | 52^{+20}_{-15} |
| Alt. | -14 ± 4 | $1.55^{+0.15}_{-0.16}$ | 936^{+35}_{-36} | 3363^{+190}_{-195} | 57^{+25}_{-20} |

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 $A_{obs} \gg 1.0$

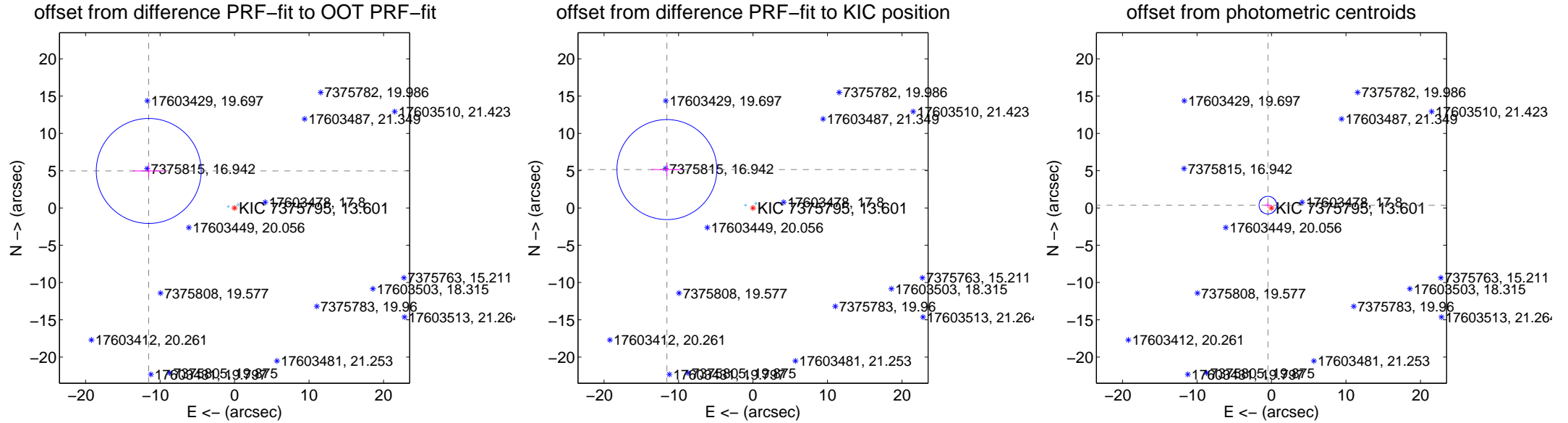
DV Centroid Data

Supplemental centroid analysis for 007375795-01. Kepler magnitude: 13.60. Transit SNR 38.62

There are 4 quarters with good PRF difference image offsets

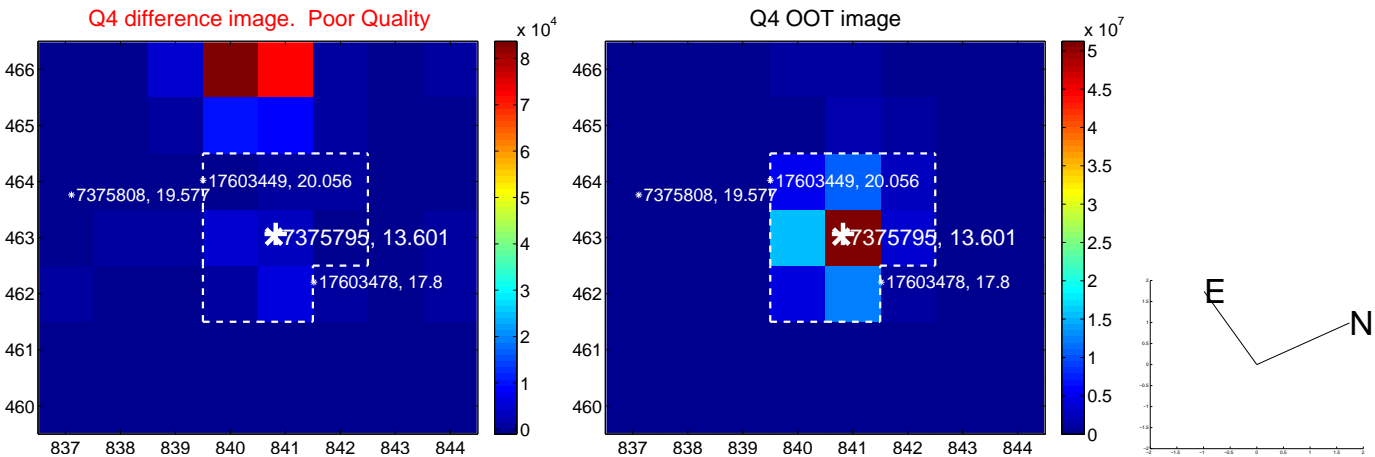
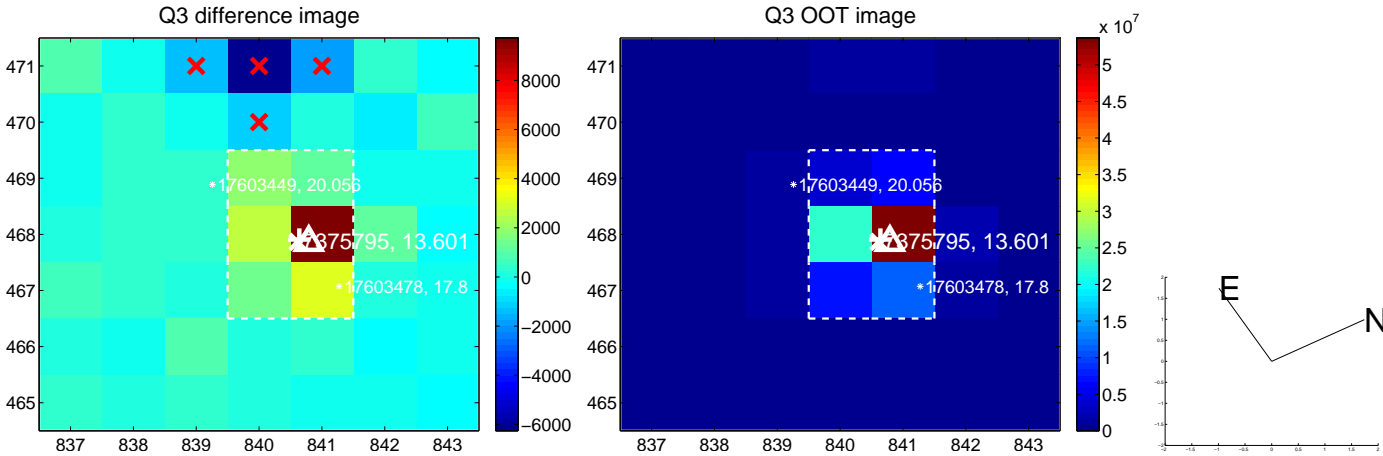
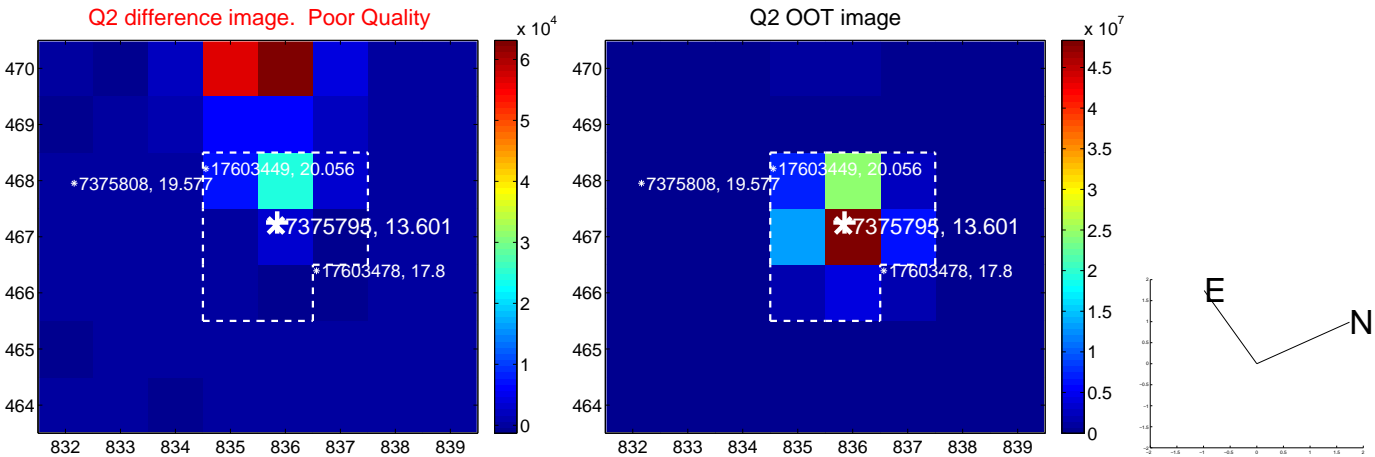
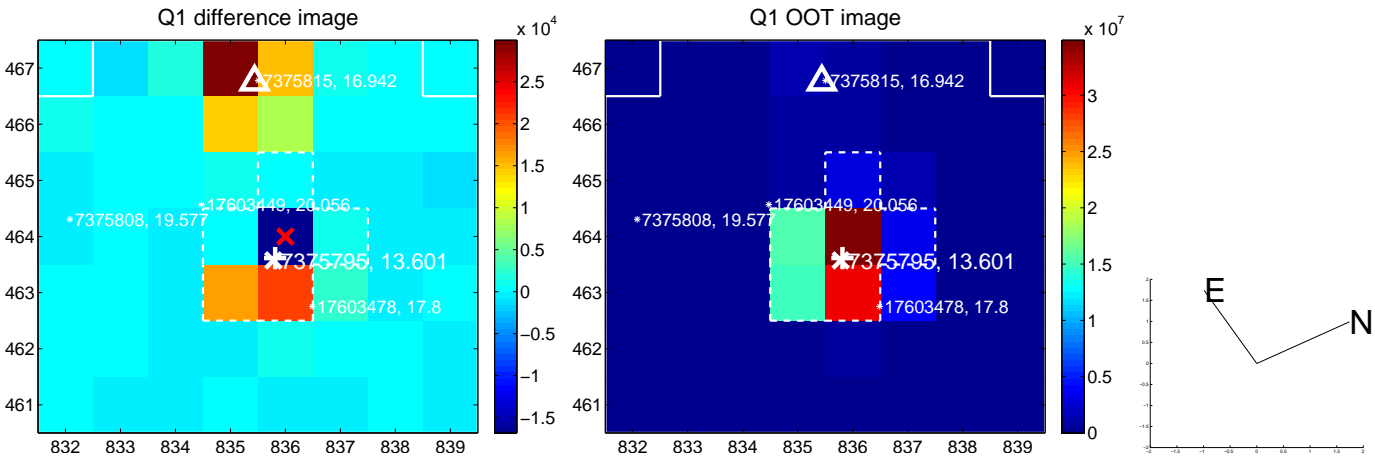
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 12.549 \pm 2.347 | 5.35 | 11.527 \pm 2.180 | 4.963 \pm 0.878 |
| PRF-fit source offset from KIC position | 12.662 \pm 2.236 | 5.66 | 11.569 \pm 2.076 | 5.147 \pm 0.842 |
| photometric centroid source offset | 0.62 \pm 0.39 | 1.56 | 0.49 \pm 0.43 | 0.37 \pm 0.33 |

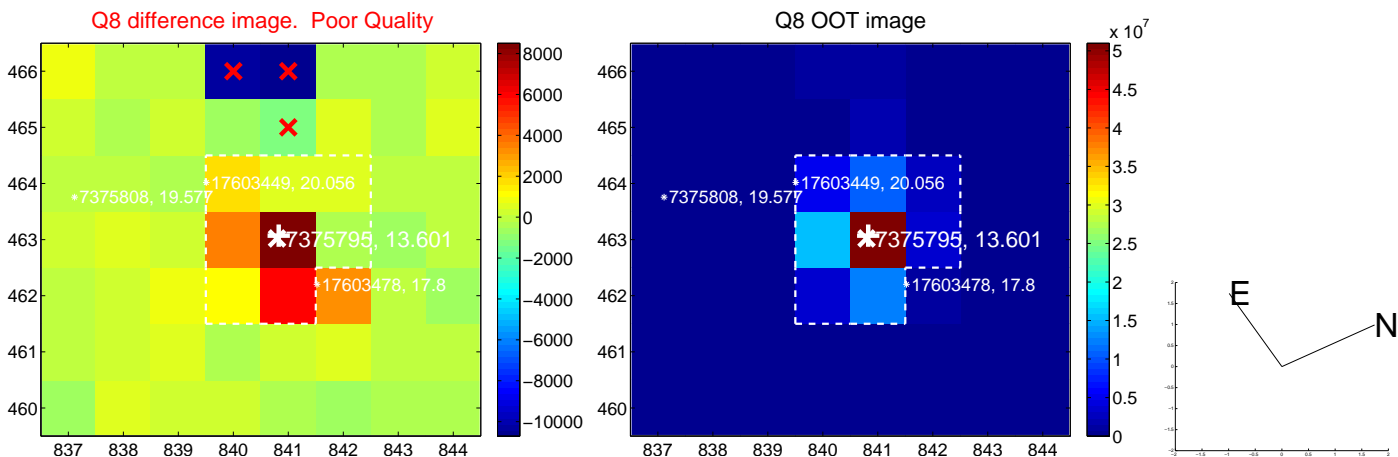
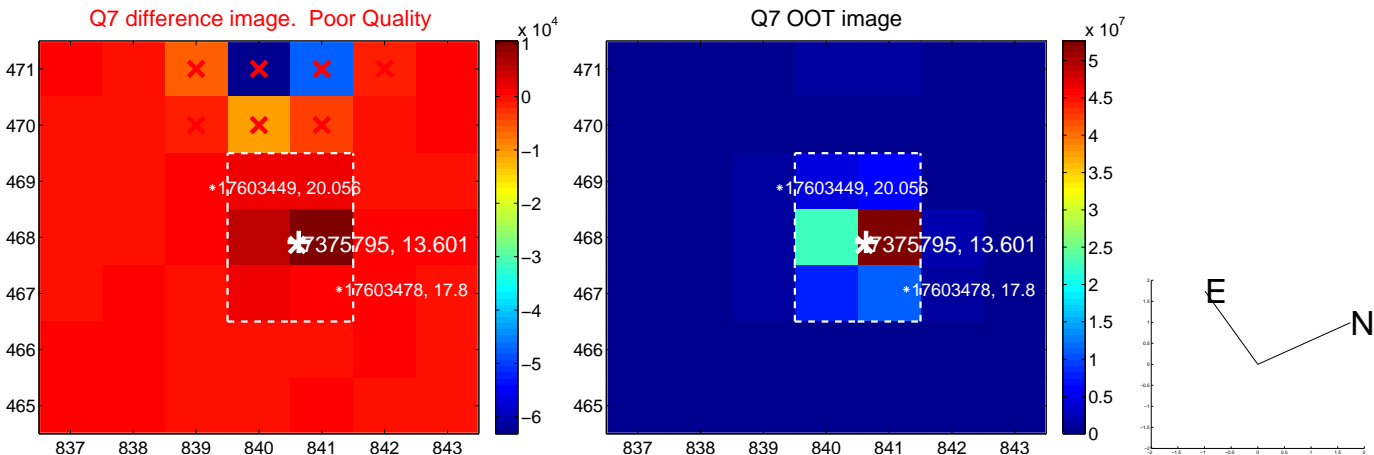
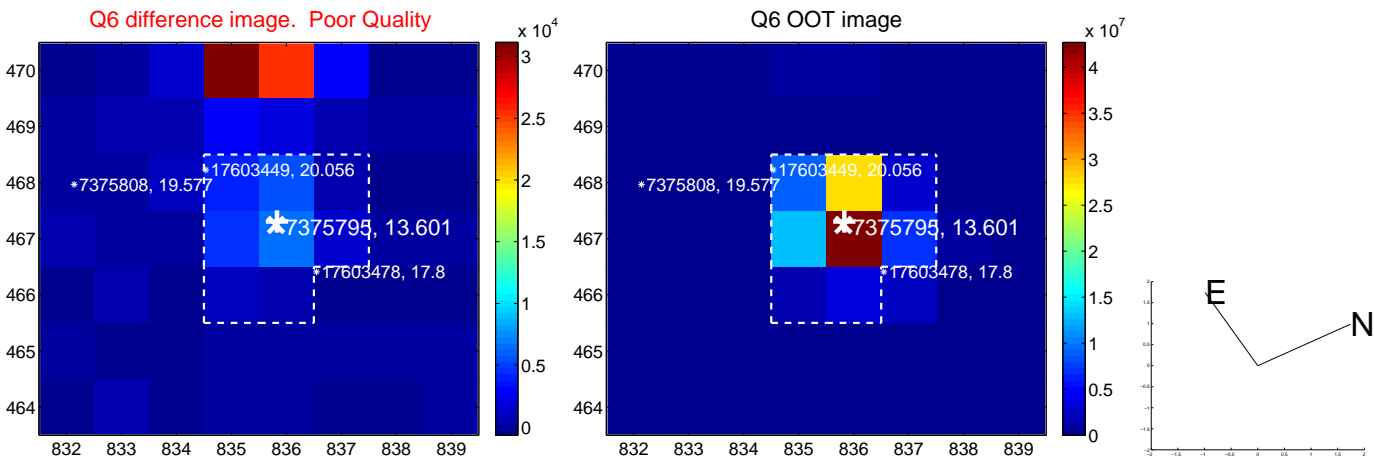
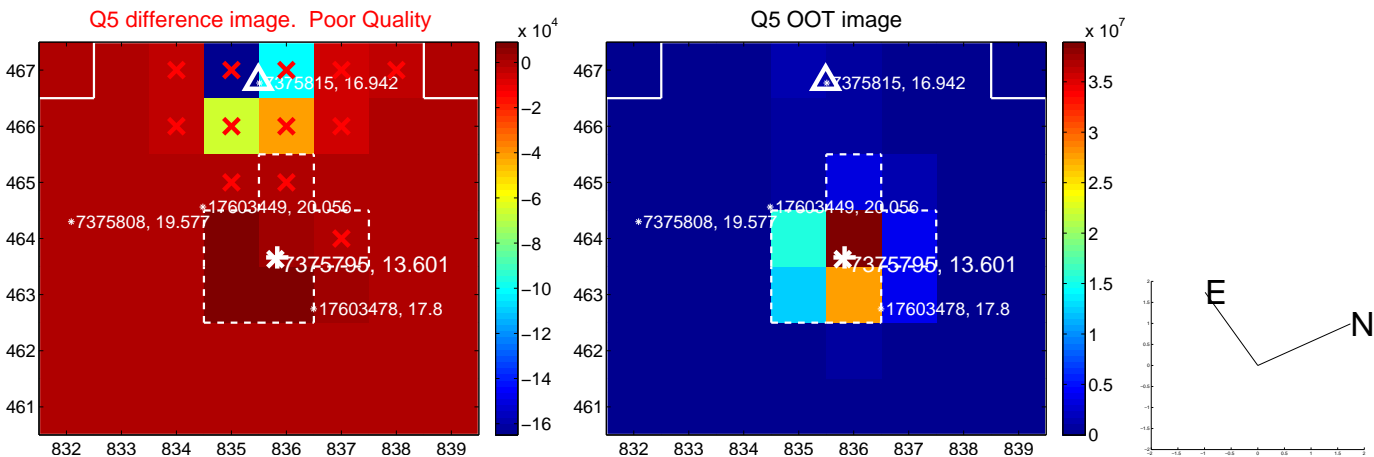


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

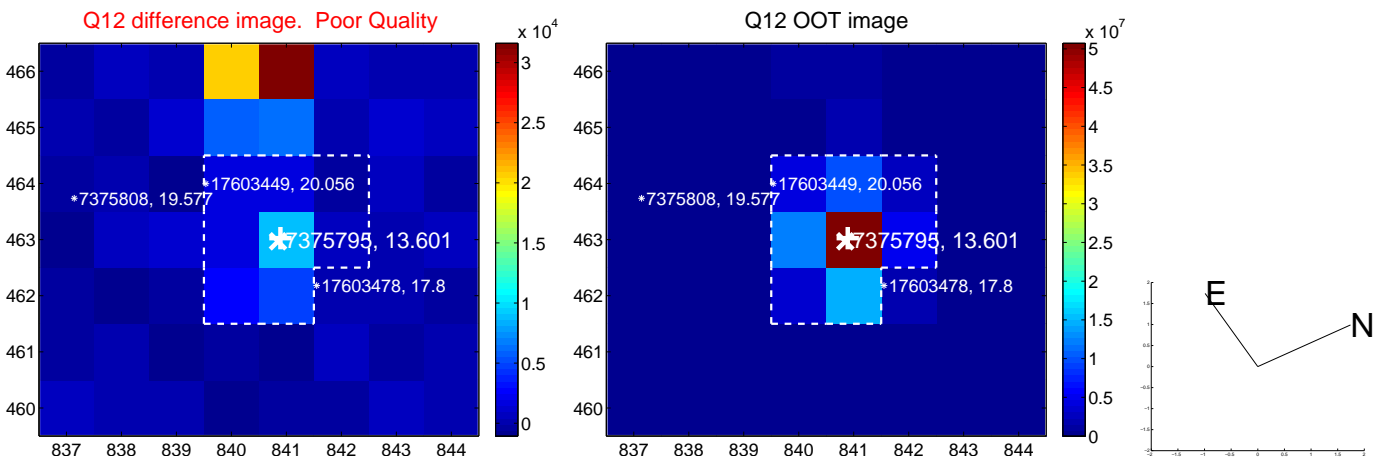
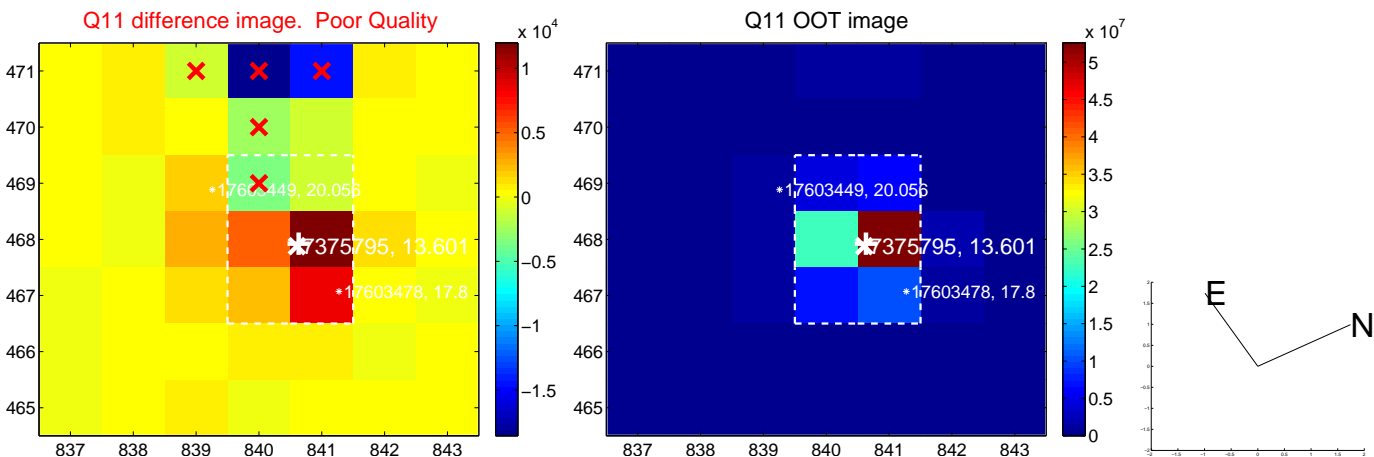
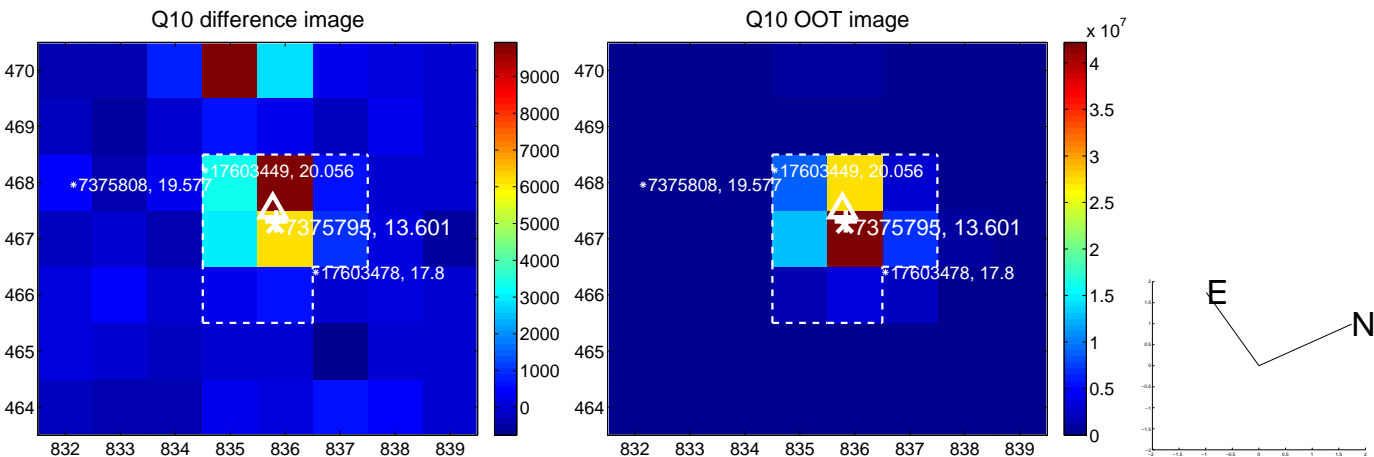
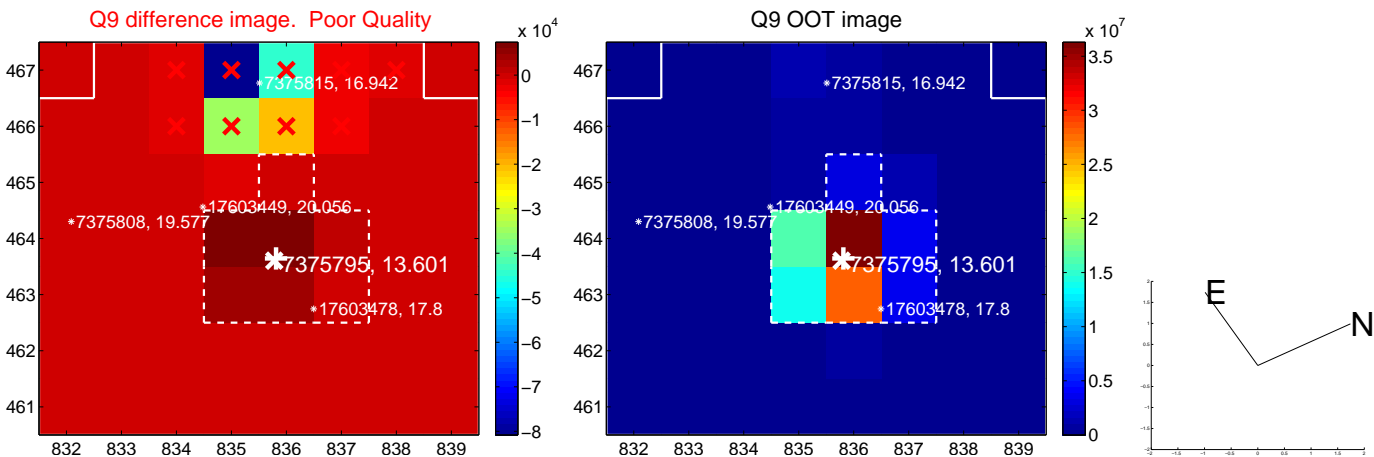
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



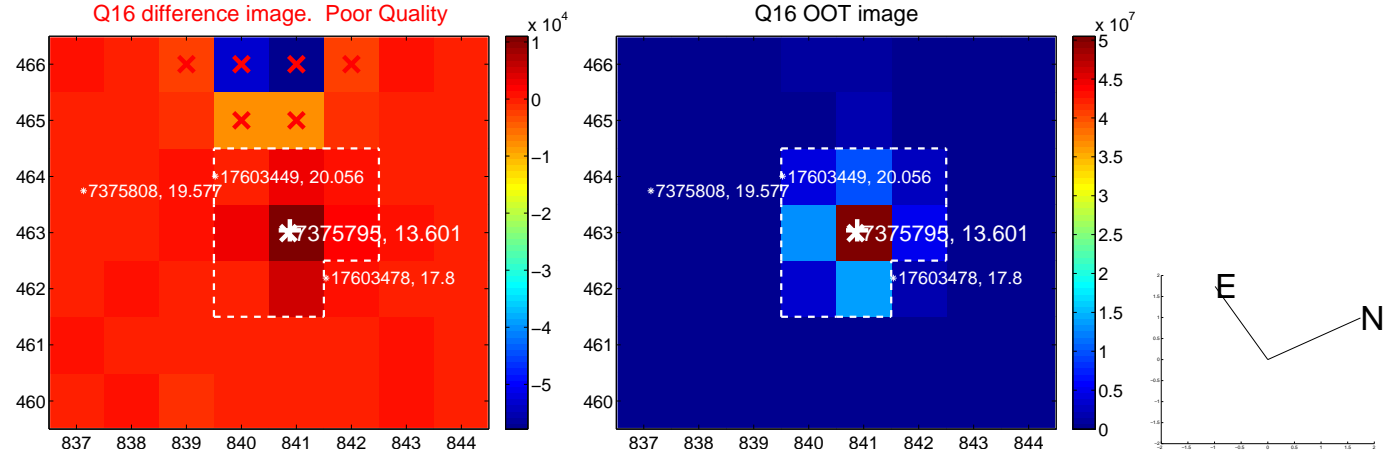
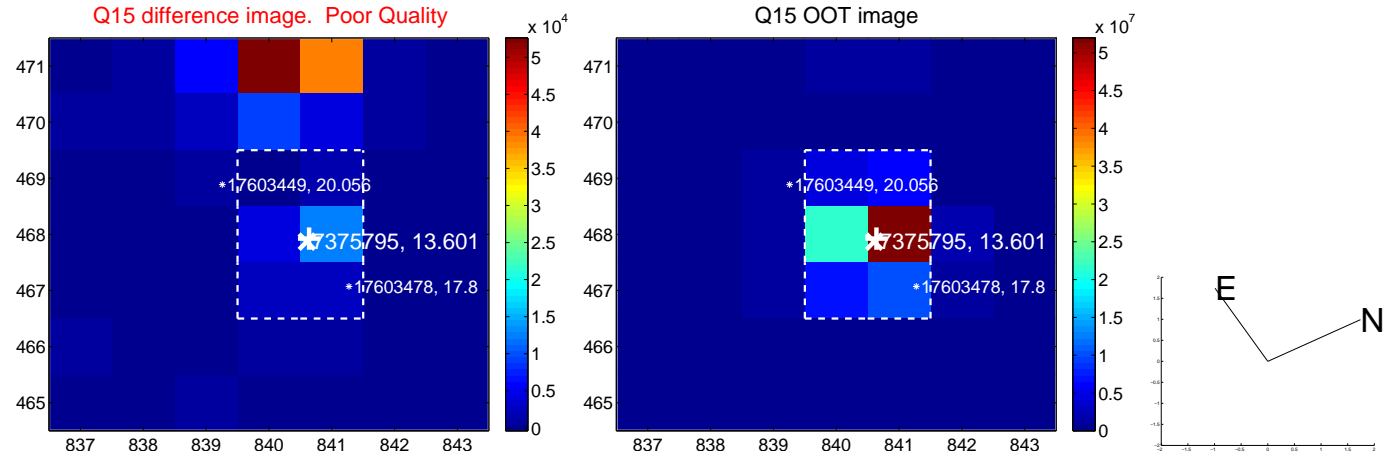
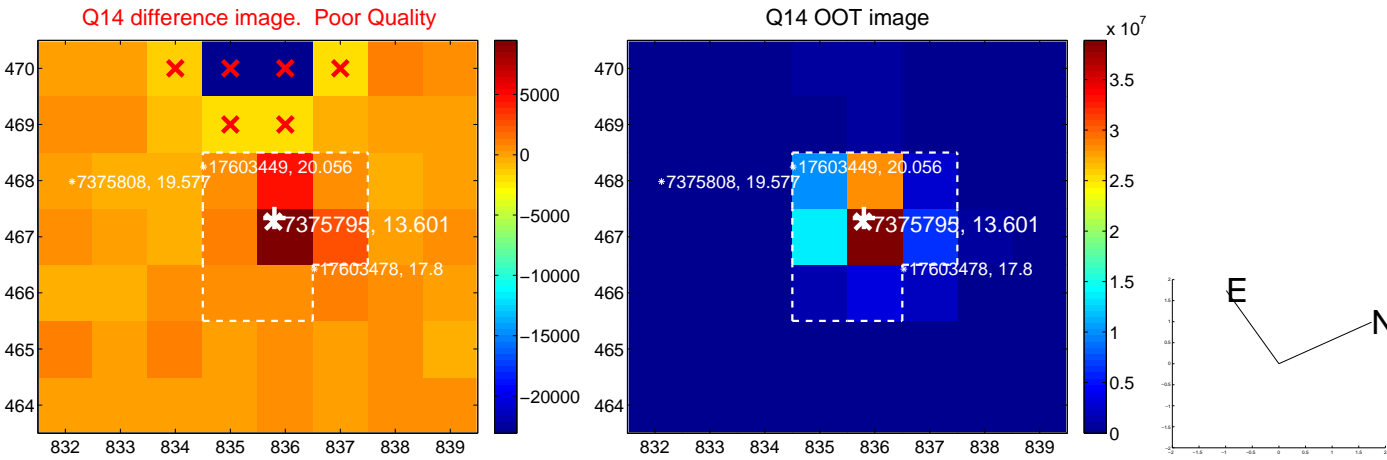
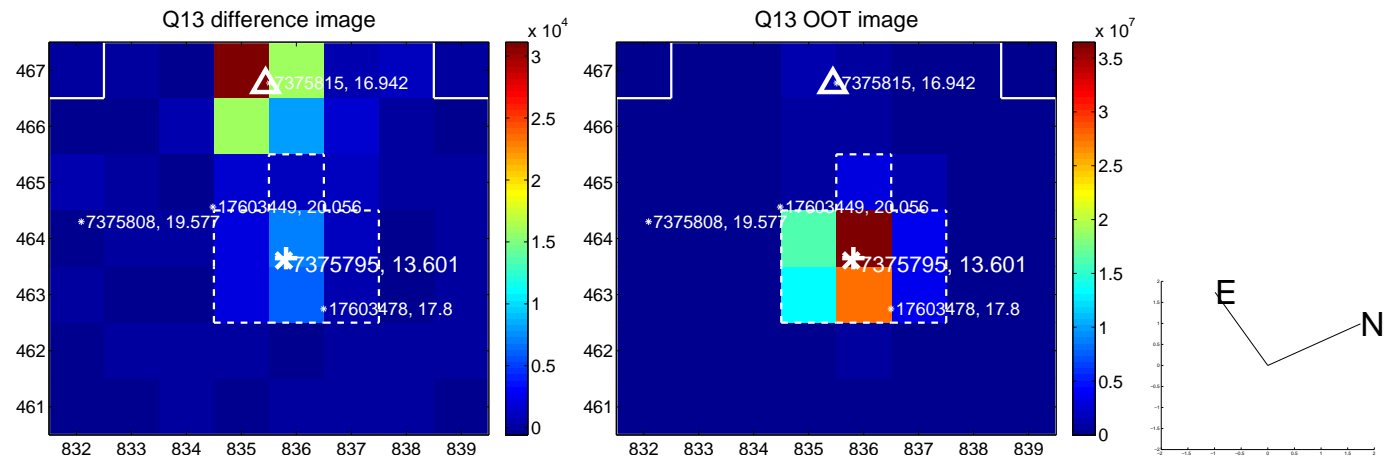
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



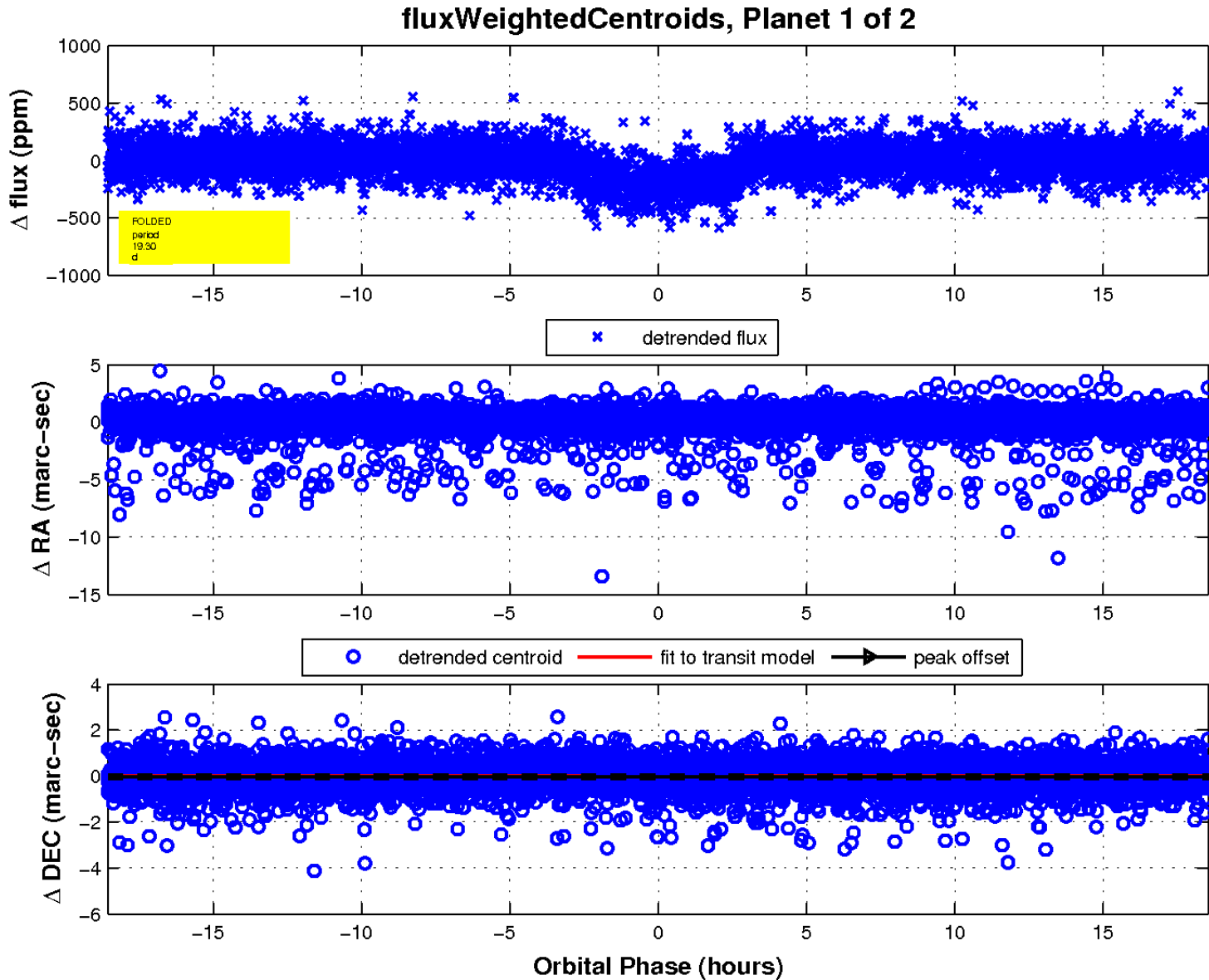
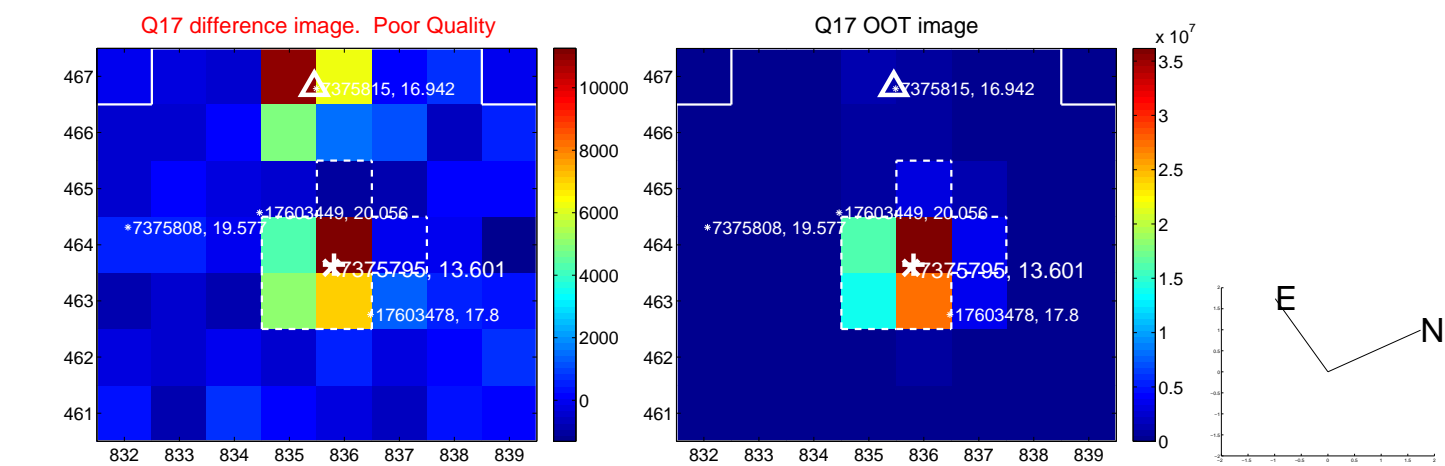
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

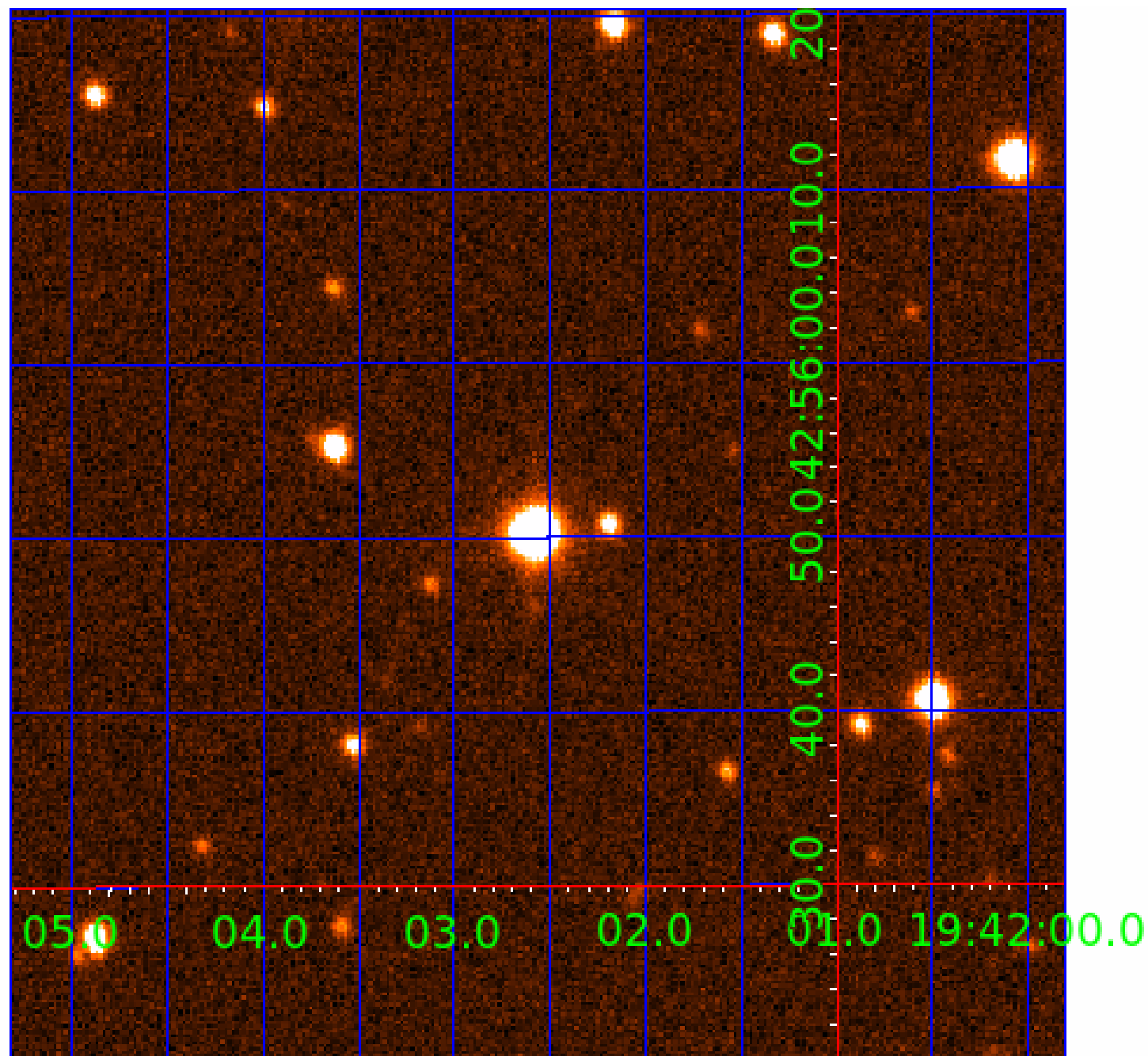


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007375795

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007375795-01 | OBS | 1378.01 | 19.301053 | 133.359271 | 228.3 | 6.188 | 35.9 | 38.6 | 0.94 | 5687 | 1.68 | 47.57 |
| 007375795-02 | OBS | 1378.02 | 0.691659 | 131.800530 | 24.7 | 2.311 | 14.9 | 14.7 | 0.94 | 5687 | 0.56 | 4026.36 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---------------------------------|
| 007375795-01 | OBS | FP | 0.49 | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET |
| 007375795-02 | OBS | FP | 0.00 | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET—HALO_GHOST |

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 007375795-02

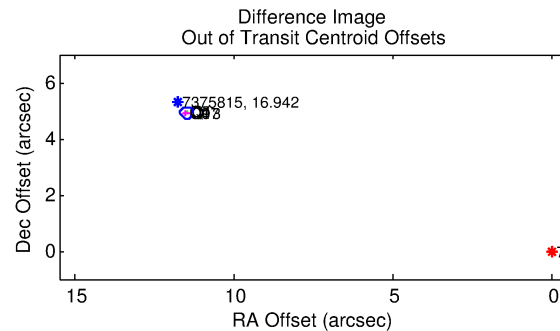
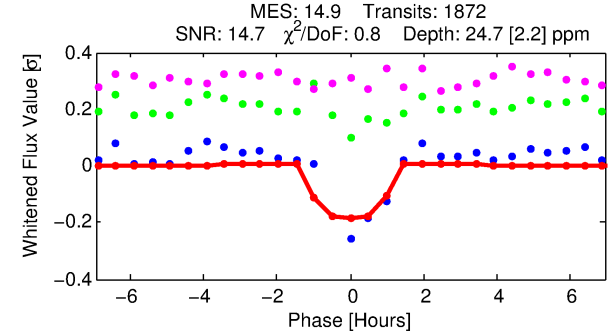
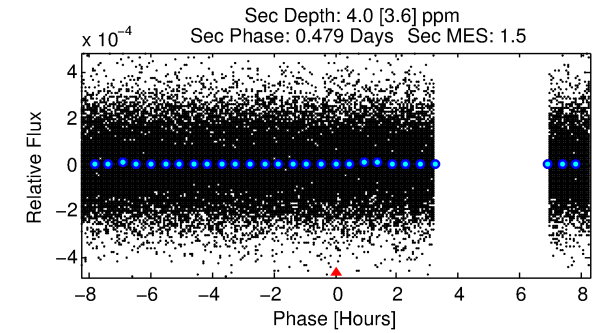
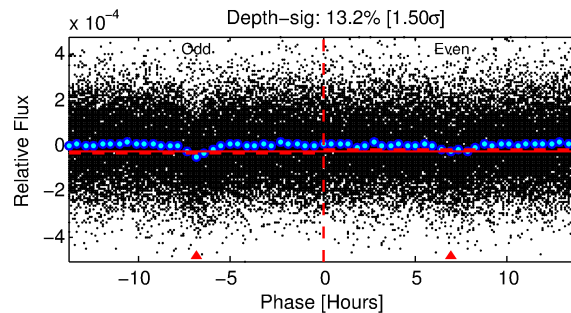
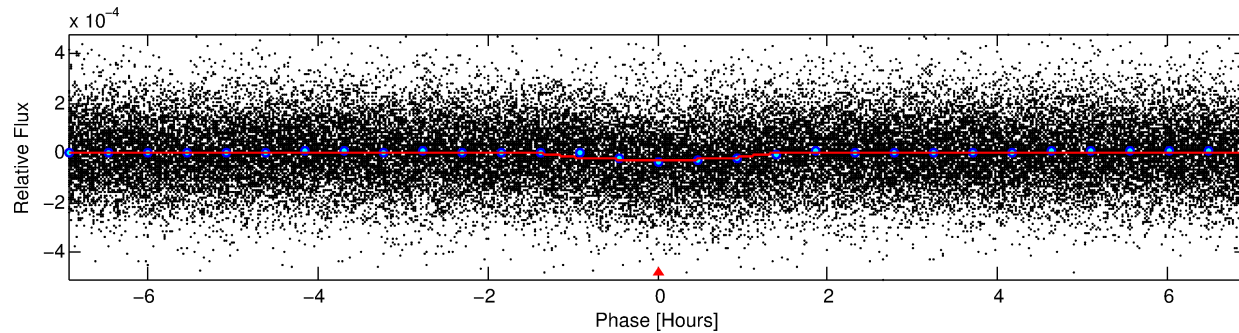
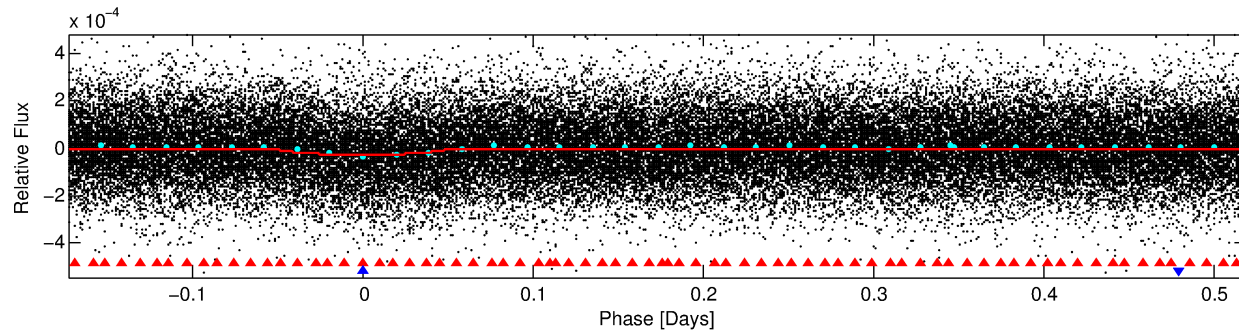
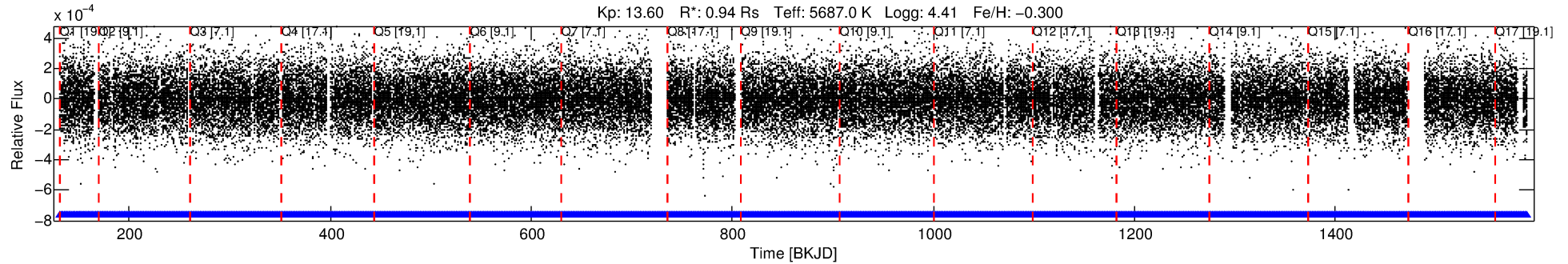
No Significant Match Found

DV One-Page Summary

KIC: 7375795 Candidate: 2 of 2 Period: 0.692 d

KOI: K01378.02 Corr: 0.909

Kp: 13.60 R*: 0.94 Rs Teff: 5687.0 K Logg: 4.41 Fe/H: -0.300



DV Fit Results:

Period = 0.69166 [0.00001] d
Epoch = 131.8005 [0.0021] BKJD
Rp/R* = 0.0054 [0.0021]
a/R* = 1.39 [1.24]
b = 0.90 [0.40]
Seff = 4026.36 [828.89]
Teq = 2031 [105] K
Rp = 0.56 [0.22] Re
a = 0.0144 [0.0017] AU
Ag = 1.47 [1.74] [0.27σ]
Teffp = 3455 [1015] K [1.39σ]

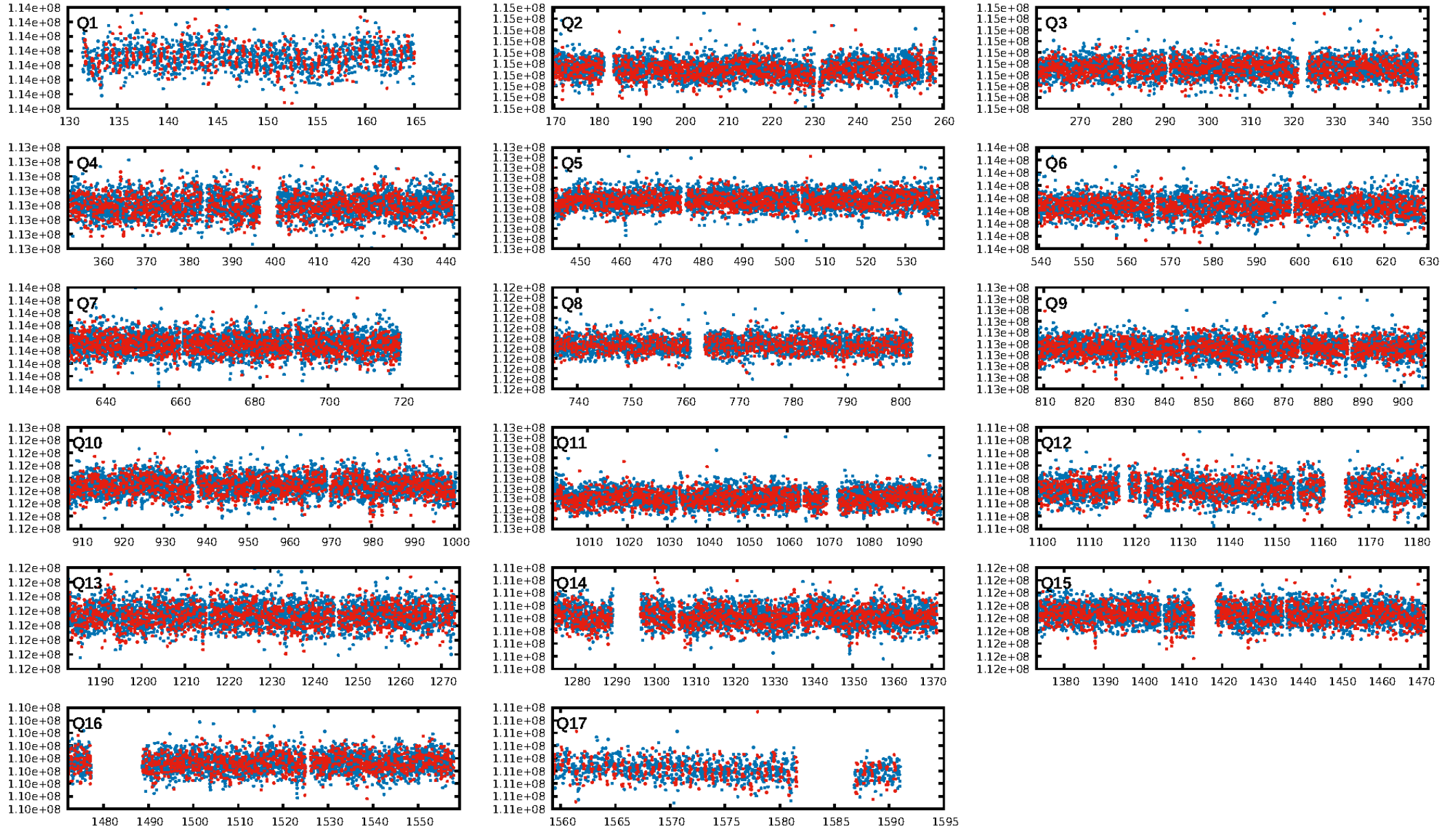
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [67.61σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.73e-42
RollingBand-fgt: 1.00 [1788/1788]
GhostDiagnostic-chr: -0.05748
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 12.511 arcsec [185.91σ]
KicOffset-rm: 12.657 arcsec [188.03σ]
OotOffset-st: 0/0/0/5 [5]
KicOffset-st: 0/0/0/5 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [17/17]

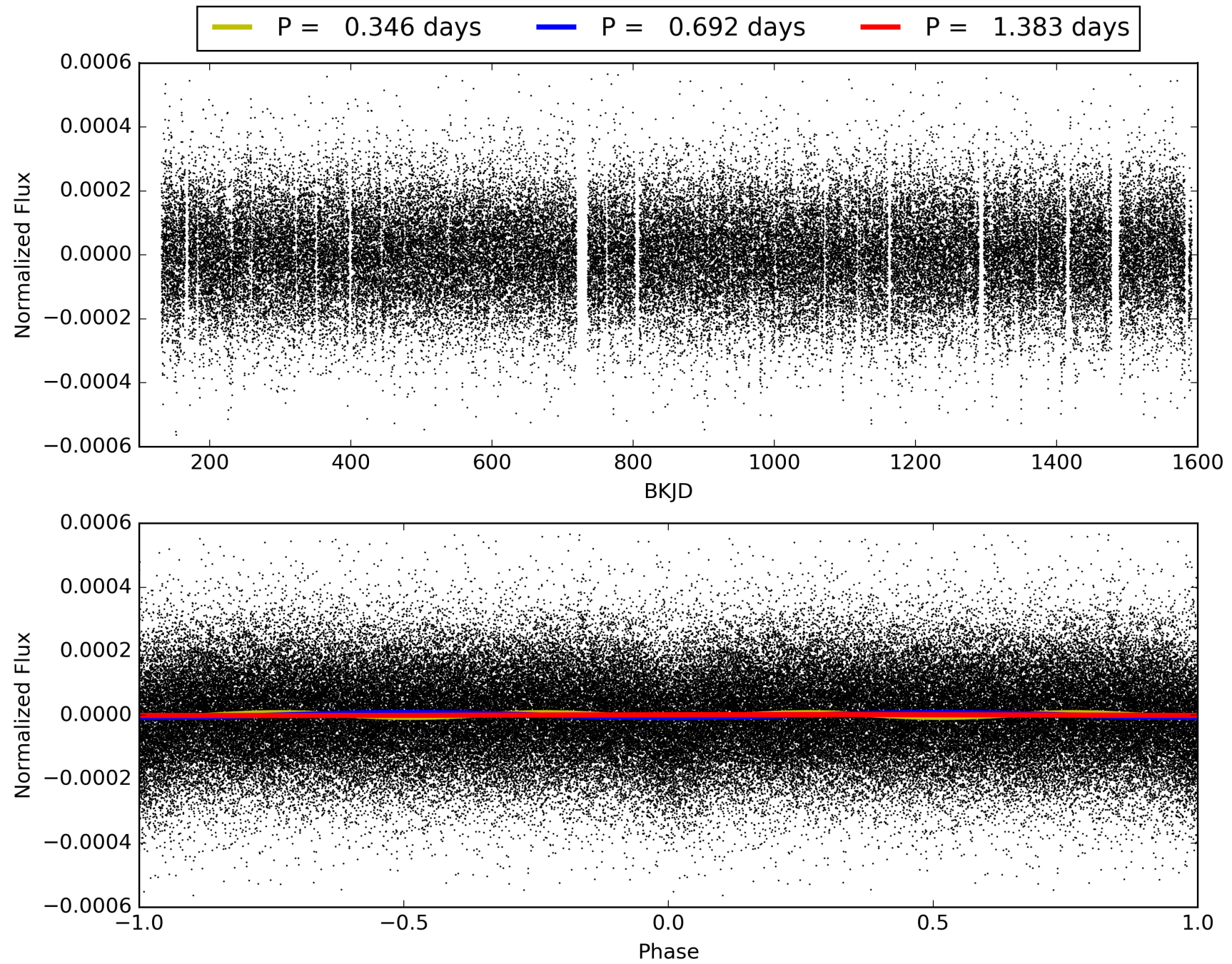
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:01:27 Z

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

TCE 007375795-02, PDC Light Curves

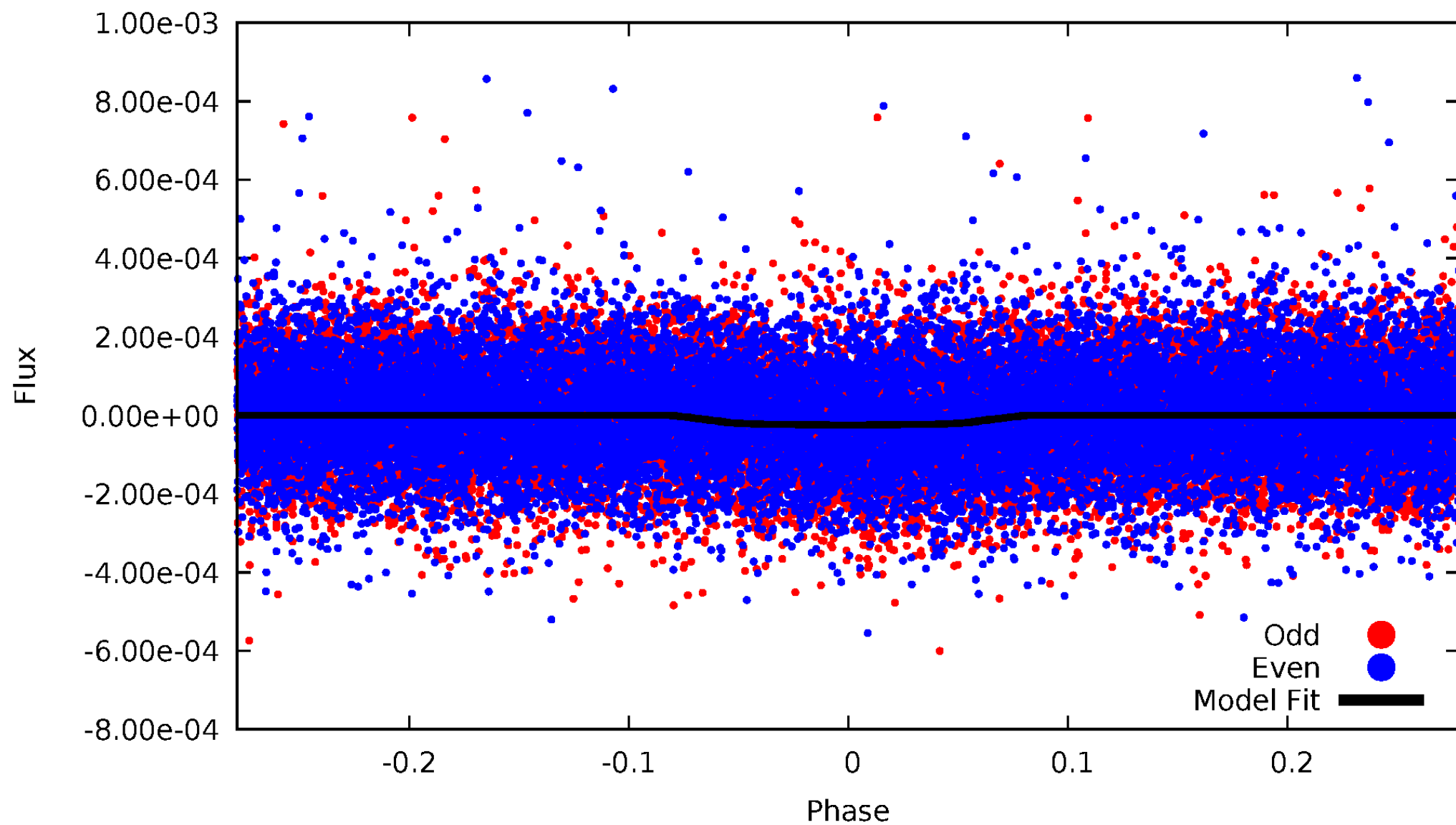


TCE 007375795-02



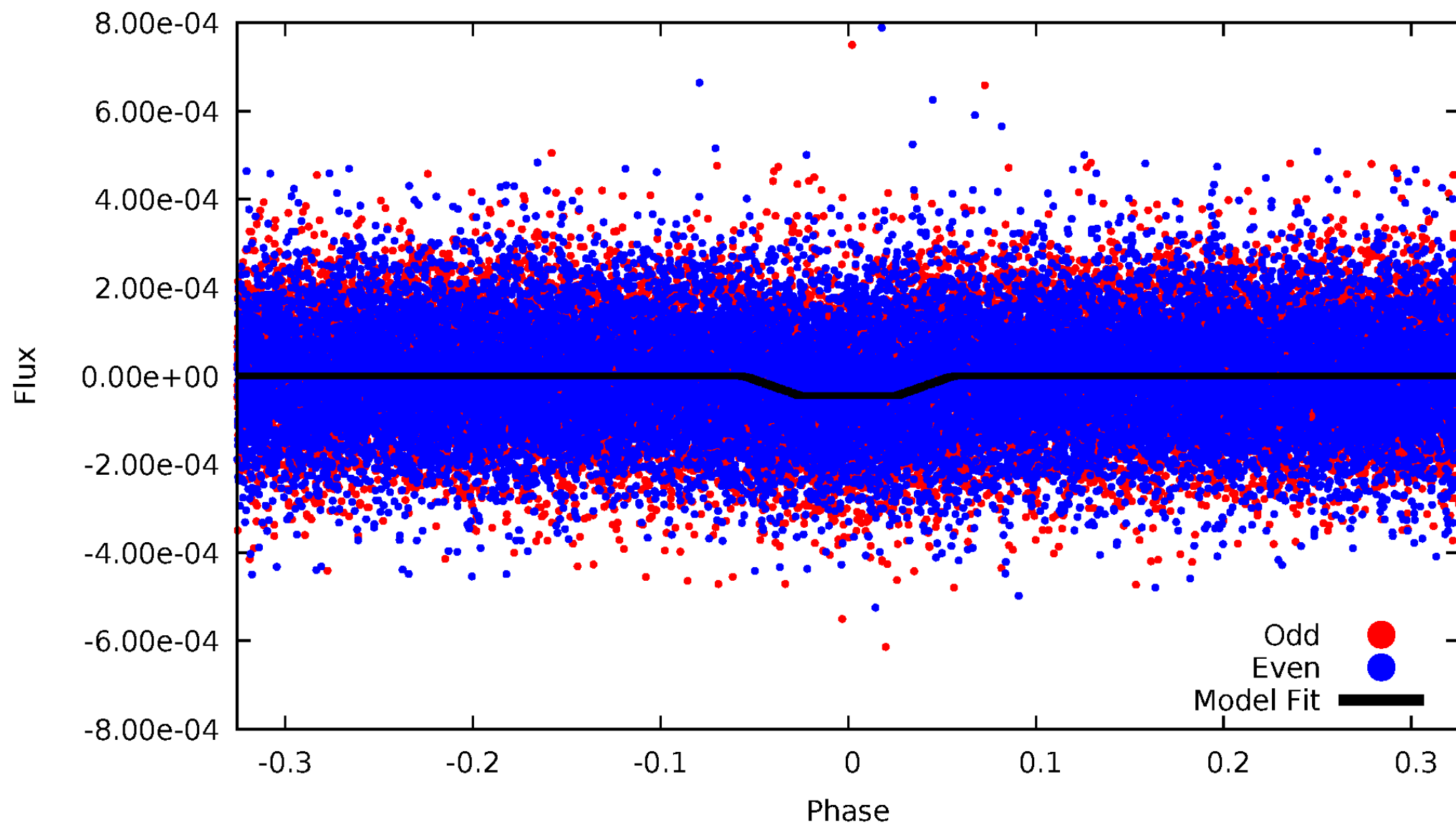
DV Odd/Even

TCE 007375795-02



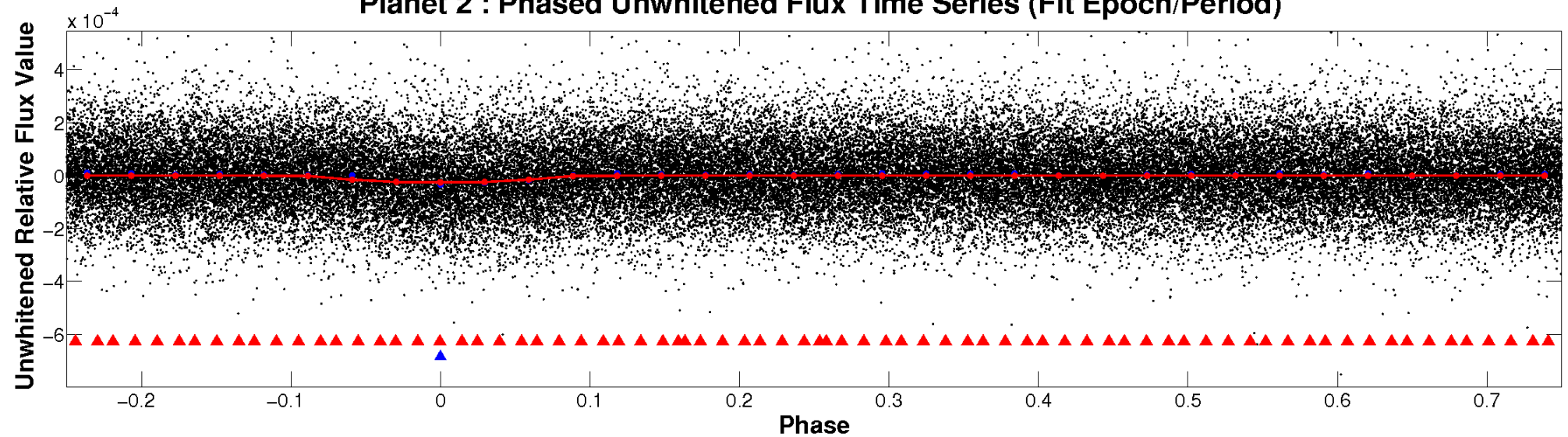
ALT Odd/Even

TCE 007375795-02

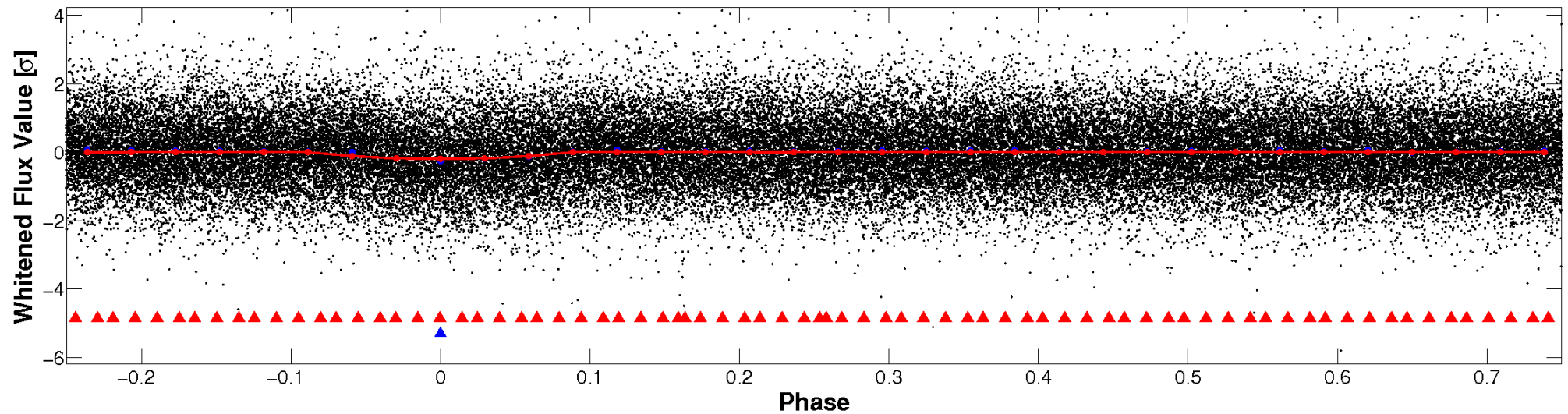


Non-Whitened Vs. Whitened Light Curve

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

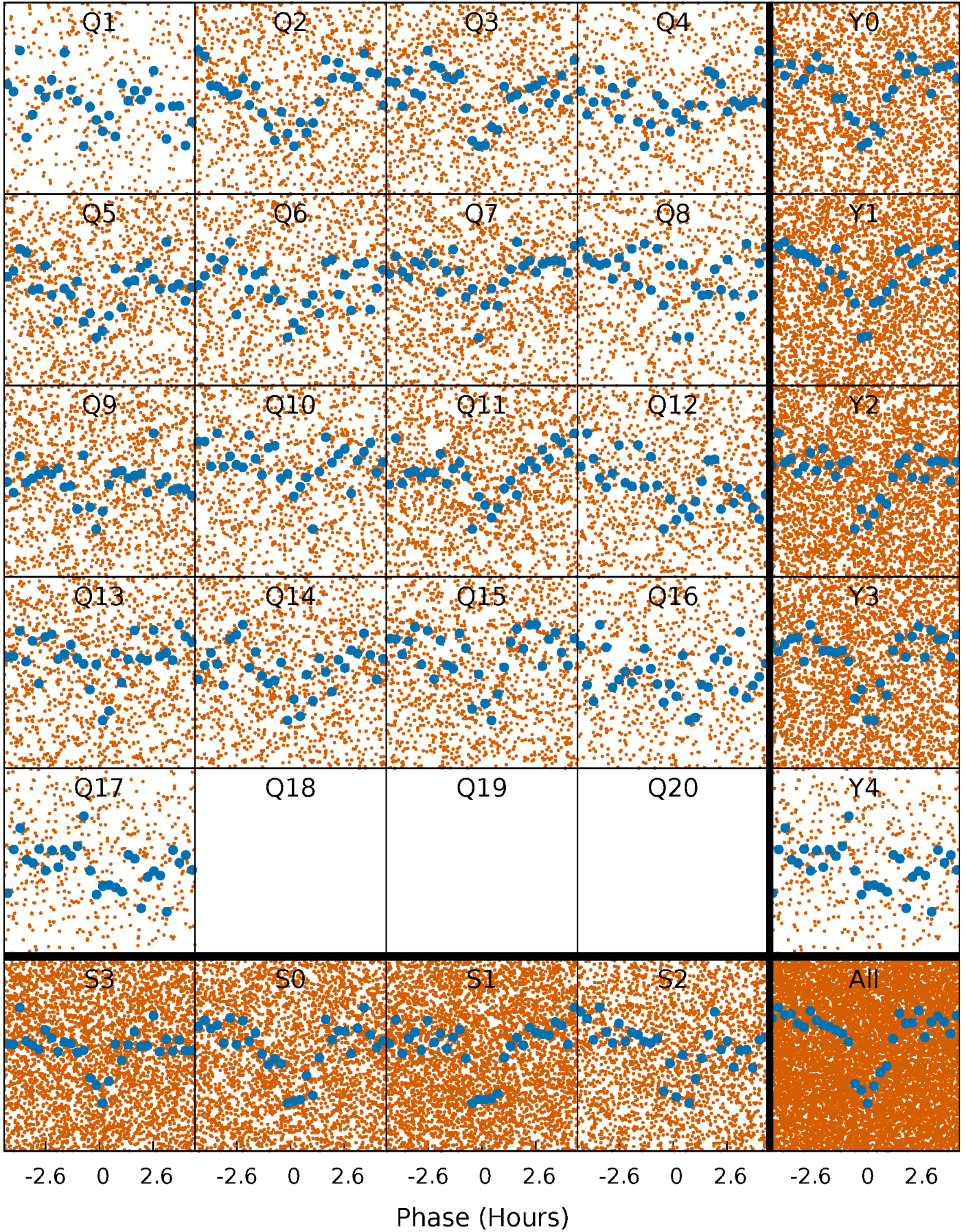


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



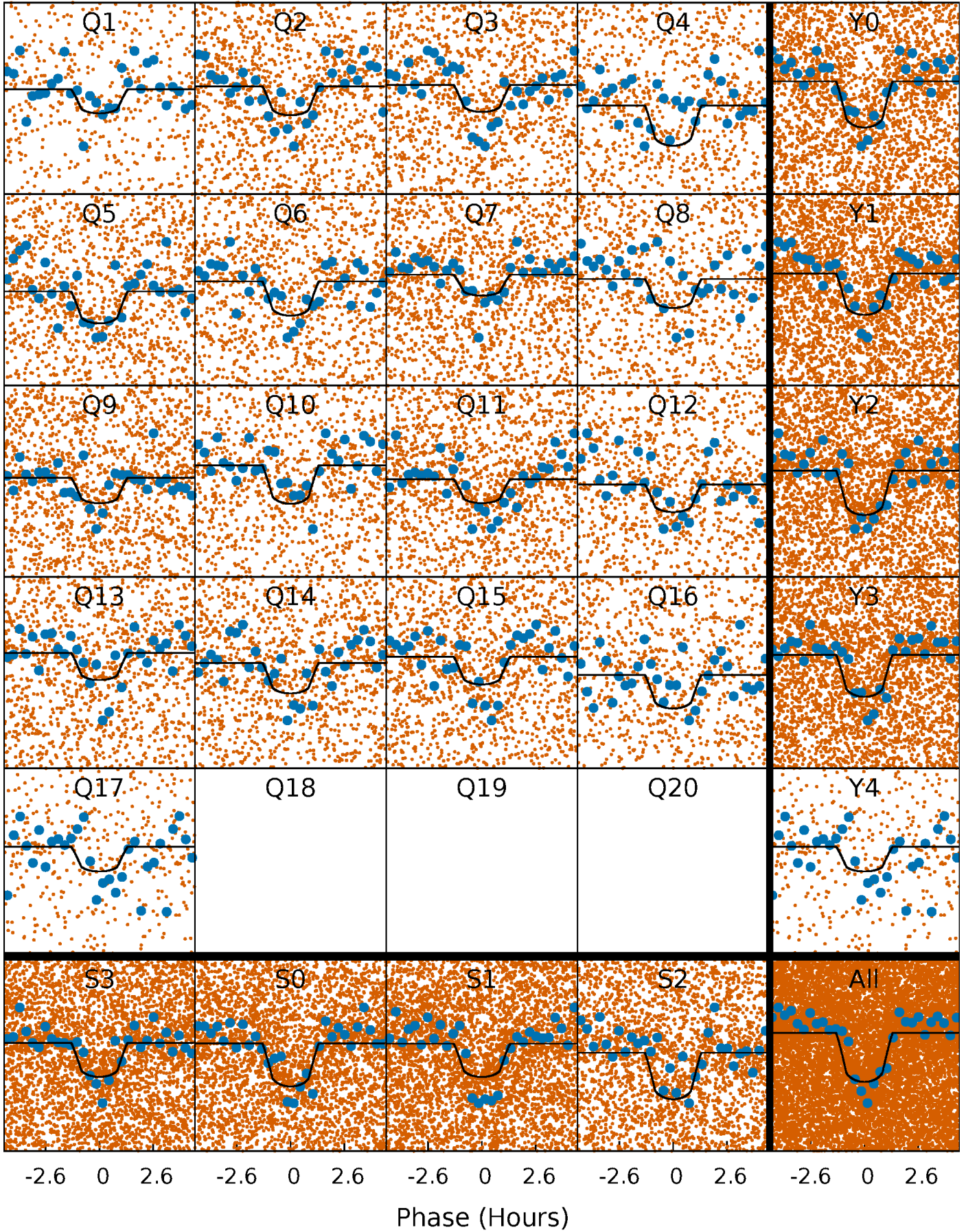
PDC Quarter-Phased Transit Curves

TCE 007375795-02 P= 0.691659 Days $T_0=131.800530$ (BKJD)



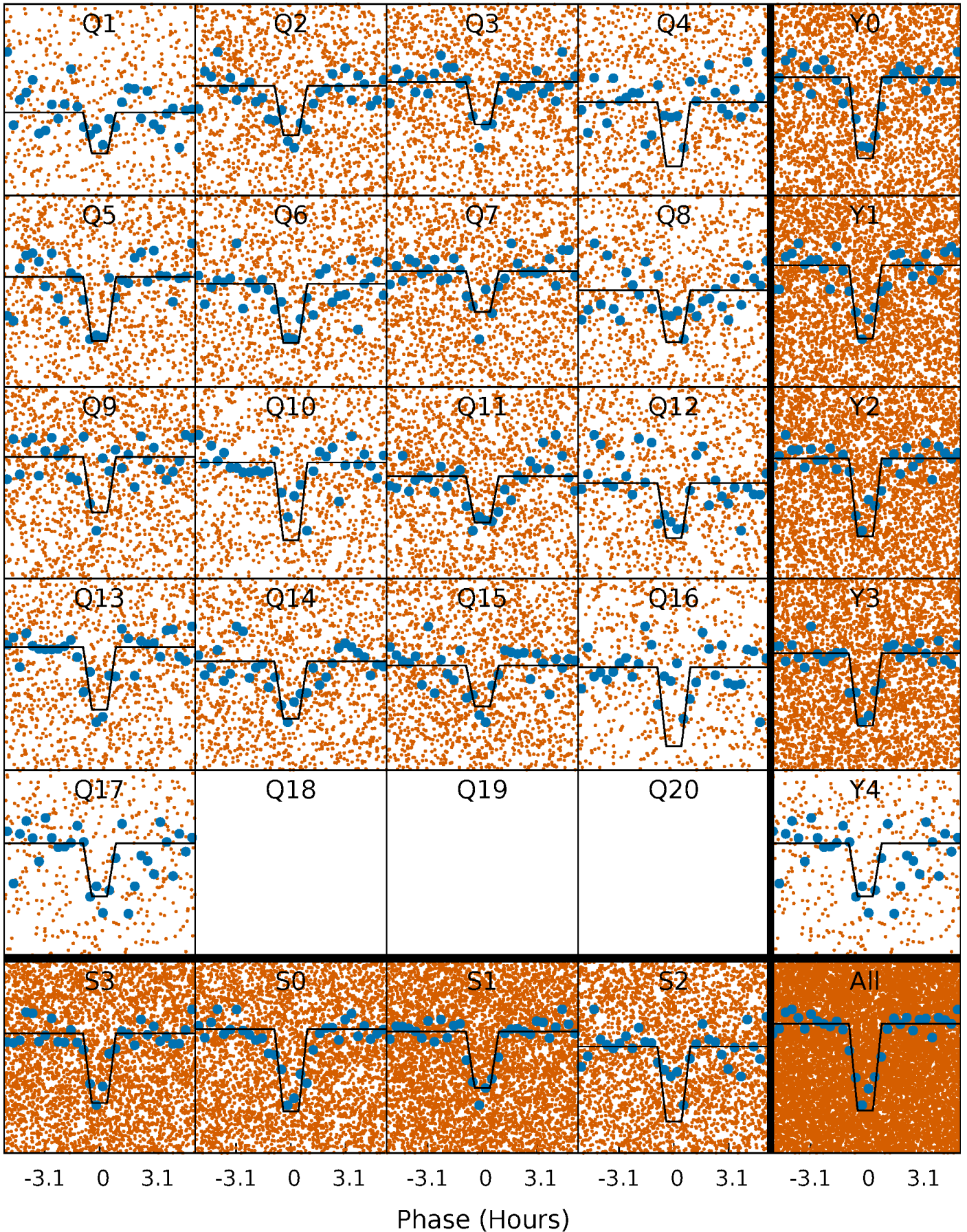
DV Quarter-Phased Transit Curves

TCE 007375795-02 P= 0.691659 Days $T_0=131.800530$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

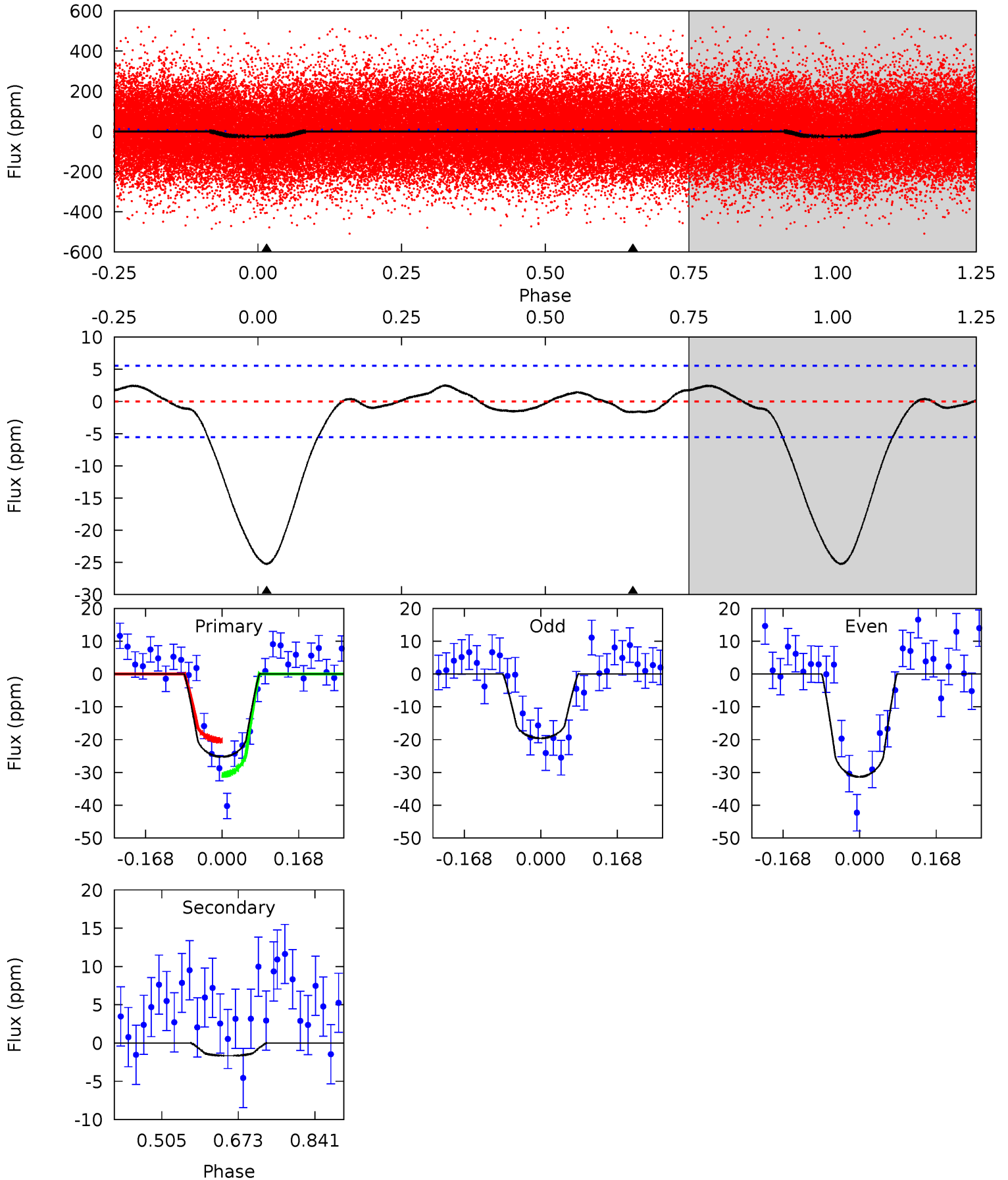
TCE 007375795-02 P= 0.691669 Days $T_0=131.796423$ (BKJD)



DV Model-Shift Uniqueness Test

007375795-02, P = 0.691659 Days, E = 131.108871 Days

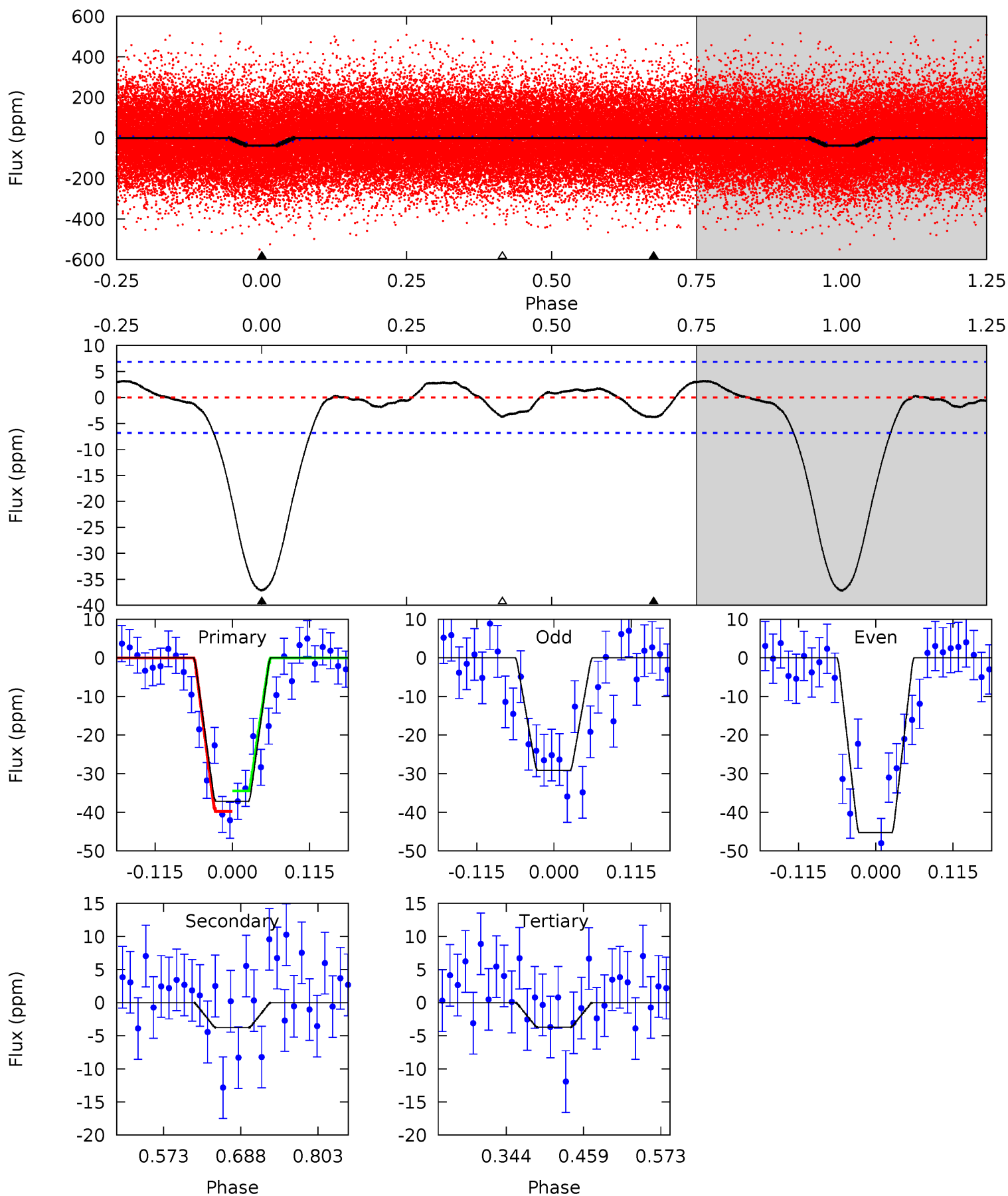
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 20.3 | 1.33 | 0 | 0 | 4.45 | 1.38 | 0.98 | 20.3 | 20.3 | 1.33 | 1.33 | 4.73 | 0.97 | 0.09 | 4.21 |



Alt Model-Shift Uniqueness Test

007375795-02, P = 0.691669 Days, E = 131.104754 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 24.6 | 2.50 | 2.46 | 0 | 4.54 | 1.58 | 1.12 | 22.1 | 24.6 | 0.04 | 2.50 | 5.34 | 1.07 | 0.08 | 1.75 |



Stellar Parameters For KIC 007375795

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5687^{+114}_{-102} | $4.408^{+0.110}_{-0.099}$ | $-0.300^{+0.150}_{-0.150}$ | $0.943^{+0.122}_{-0.111}$ | $0.830^{+0.073}_{-0.037}$ | $1.395^{+0.686}_{-0.387}$ |
| | +2%/-2% | +2%/-2% | +50%/-50% | +13%/-12% | +9%/-4% | +49%/-28% |
| Source | SPE58 | SPE58 | SPE58 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 007375795-02 / KOI 1378.02

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -2 ± 1 | $0.55^{+0.25}_{-0.21}$ | 2830^{+118}_{-107} | 2909^{+911}_{-5744} | $0.559^{+1.247}_{-0.469}$ |
| Alt. | -4 ± 2 | $0.69^{+0.21}_{-0.22}$ | 2836^{+117}_{-115} | 3293^{+656}_{-606} | $0.869^{+1.198}_{-0.441}$ |

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 $A_{obs} \gg 1.0$

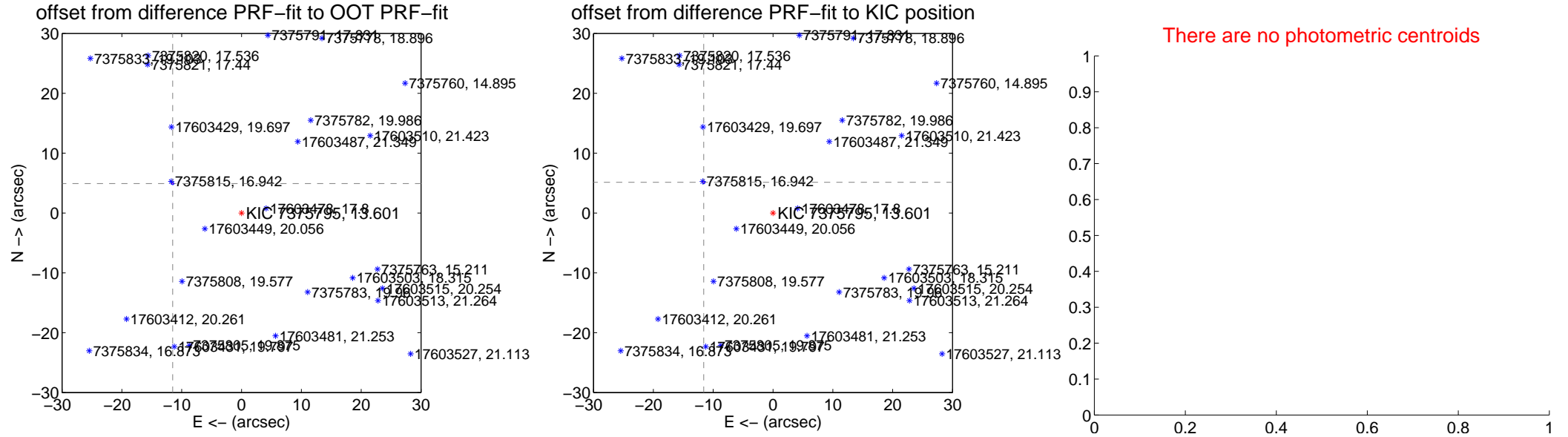
DV Centroid Data

Supplemental centroid analysis for 007375795-02. Kepler magnitude: 13.60. Transit SNR 14.71

There are 5 quarters with good PRF difference image offsets

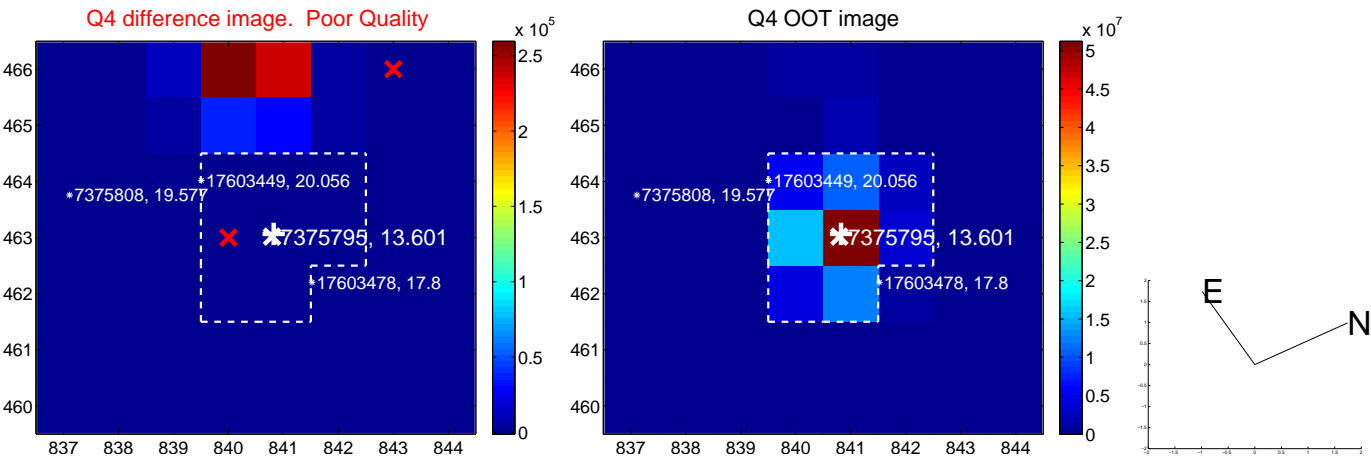
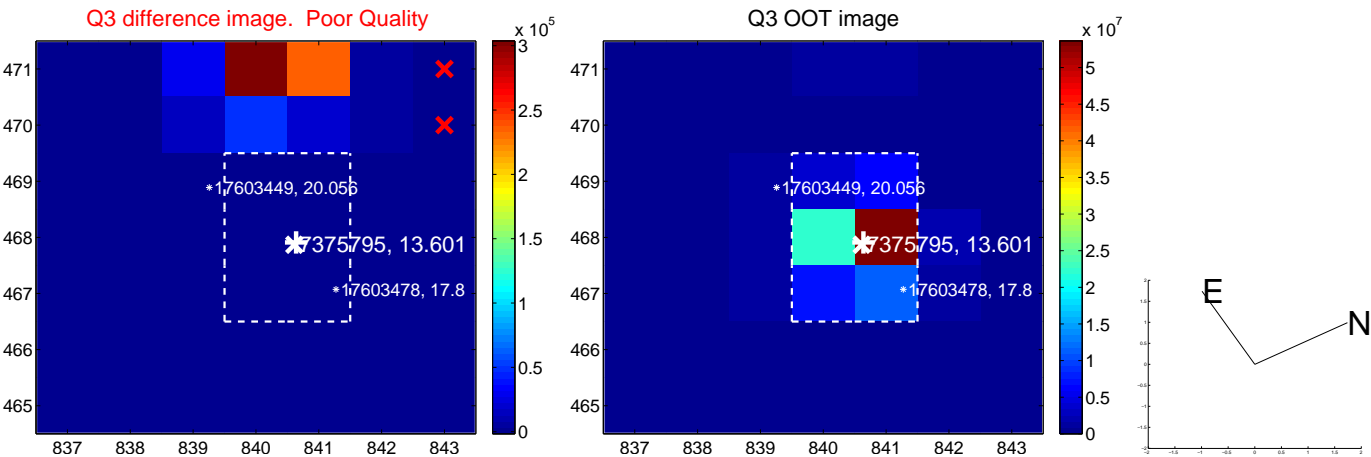
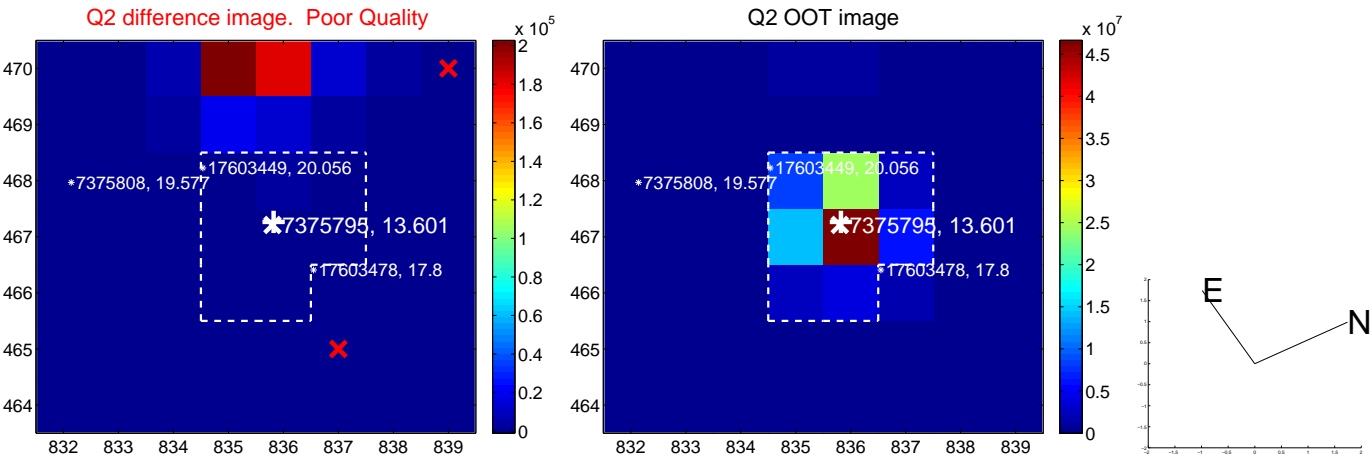
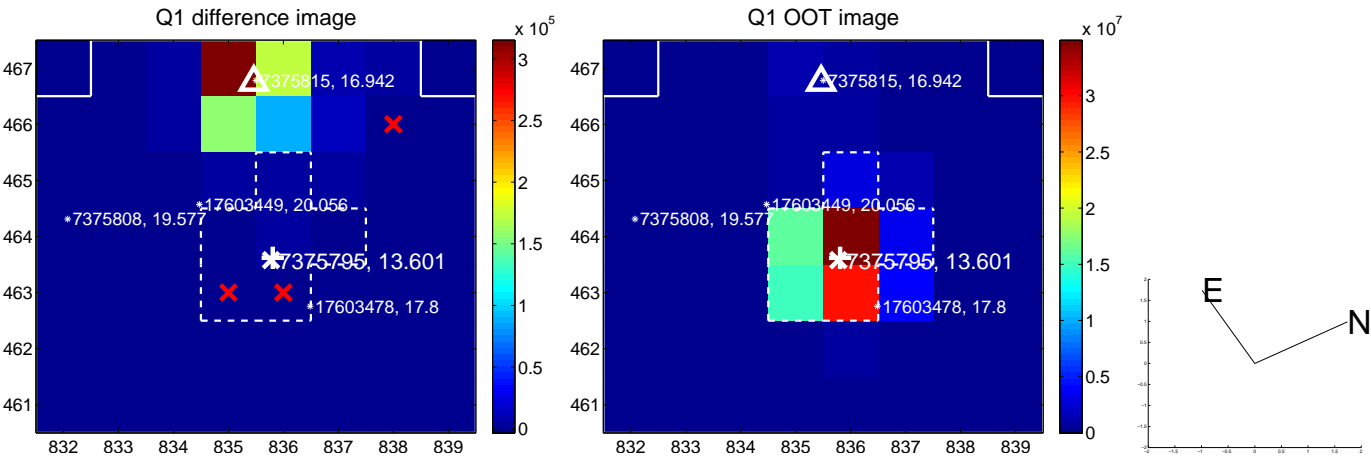
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 12.511 \pm 0.067 | 185.91 | 11.500 \pm 0.067 | 4.925 \pm 0.068 |
| PRF-fit source offset from KIC position | 12.657 \pm 0.067 | 188.03 | 11.571 \pm 0.067 | 5.128 \pm 0.068 |
| photometric centroid source offset | — | — | — | — |

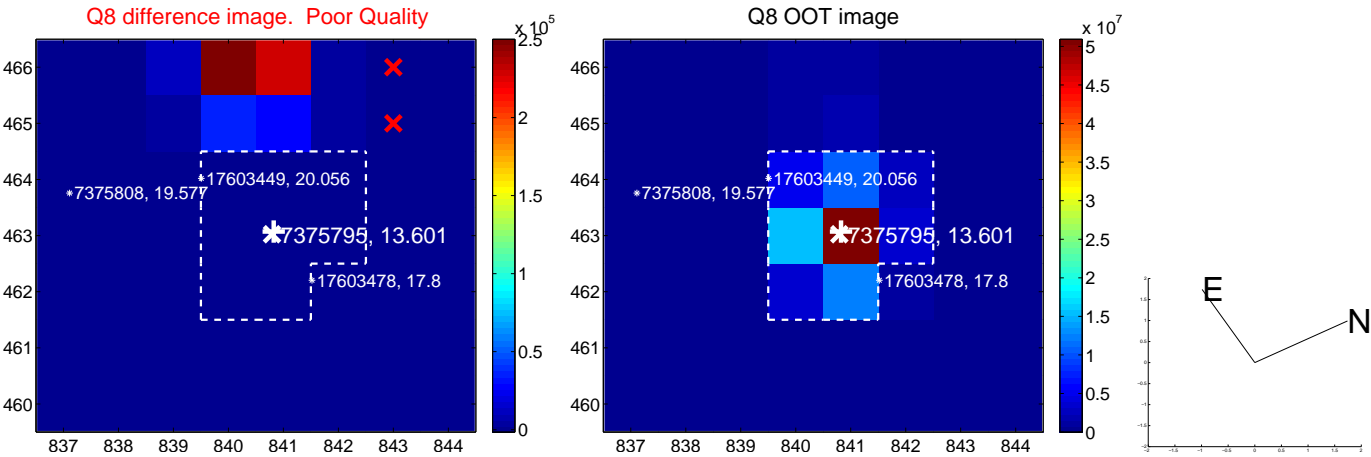
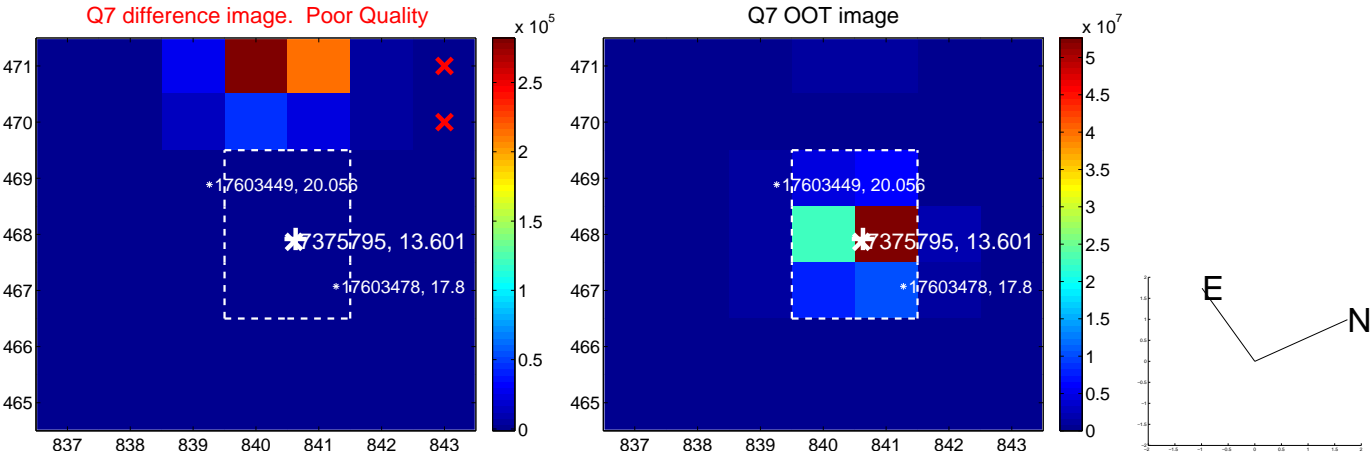
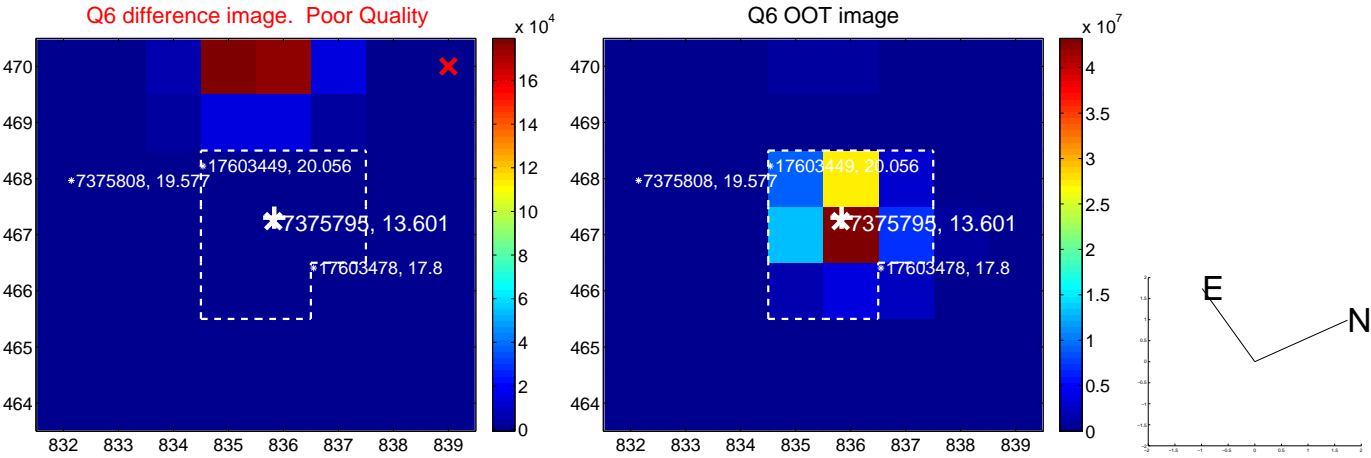
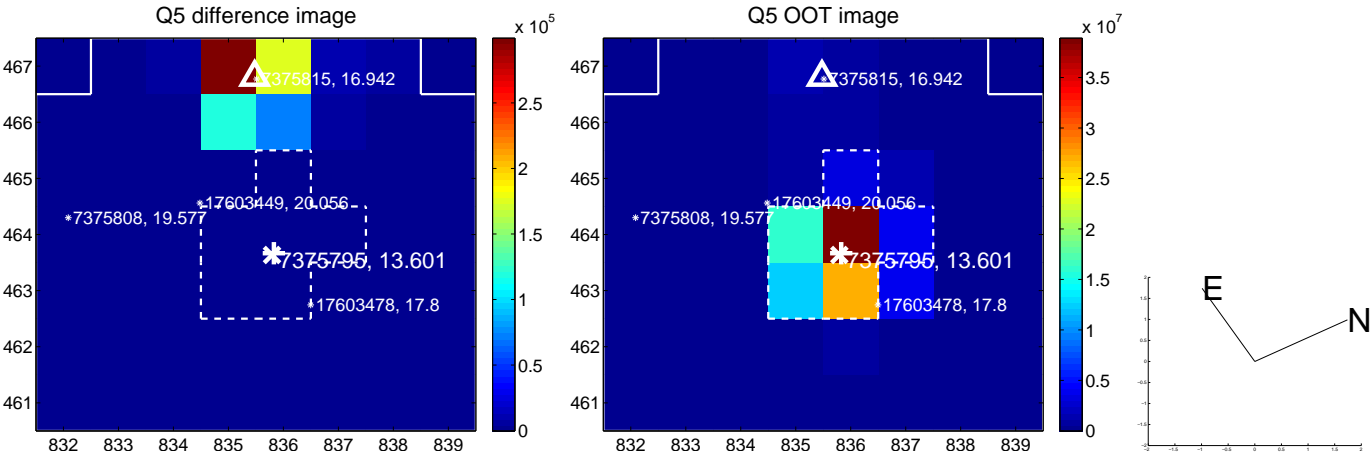


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

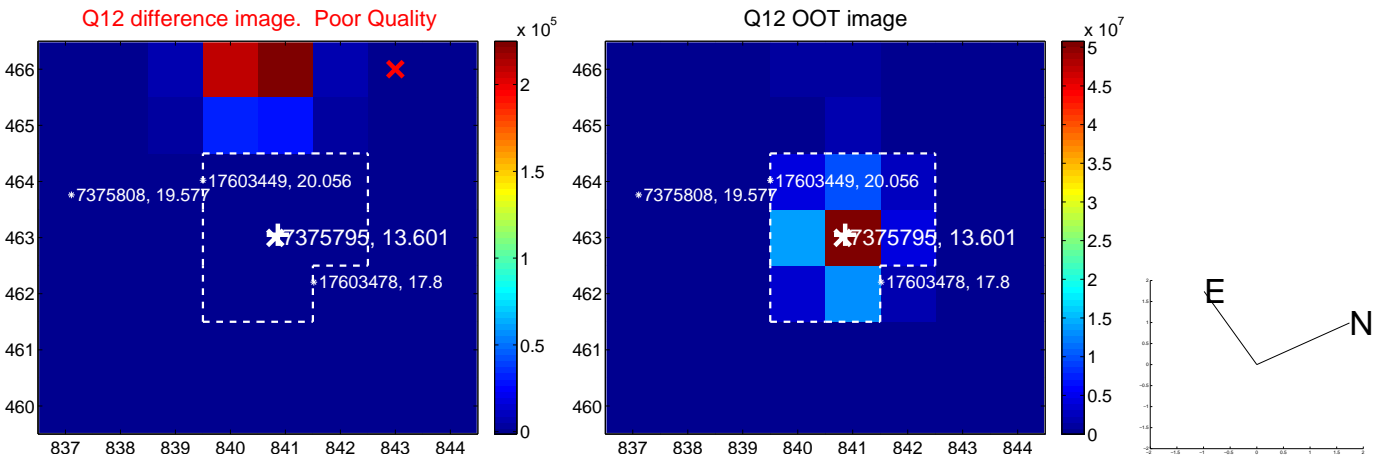
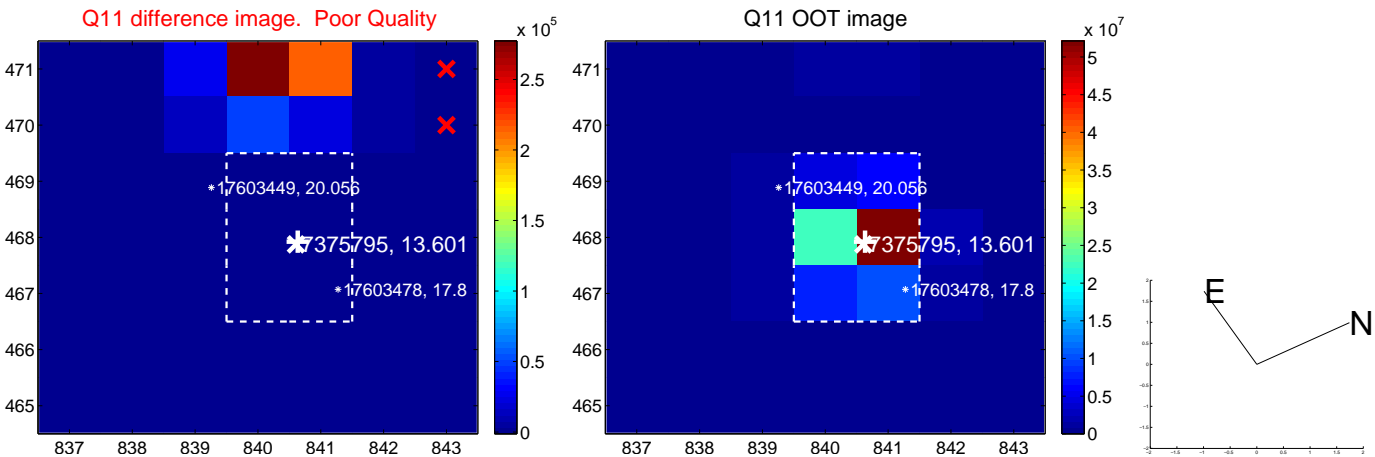
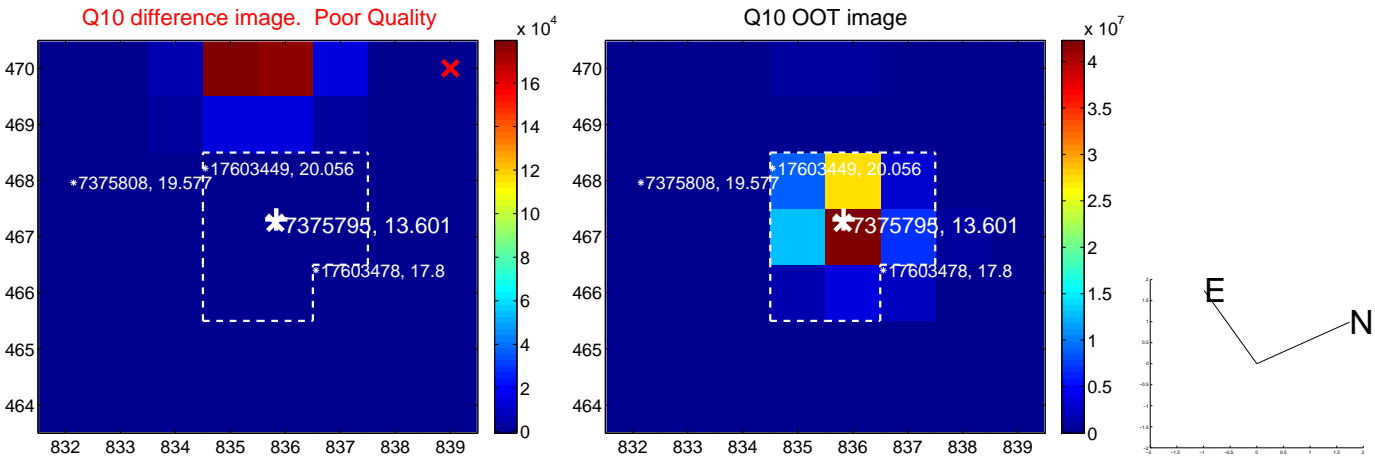
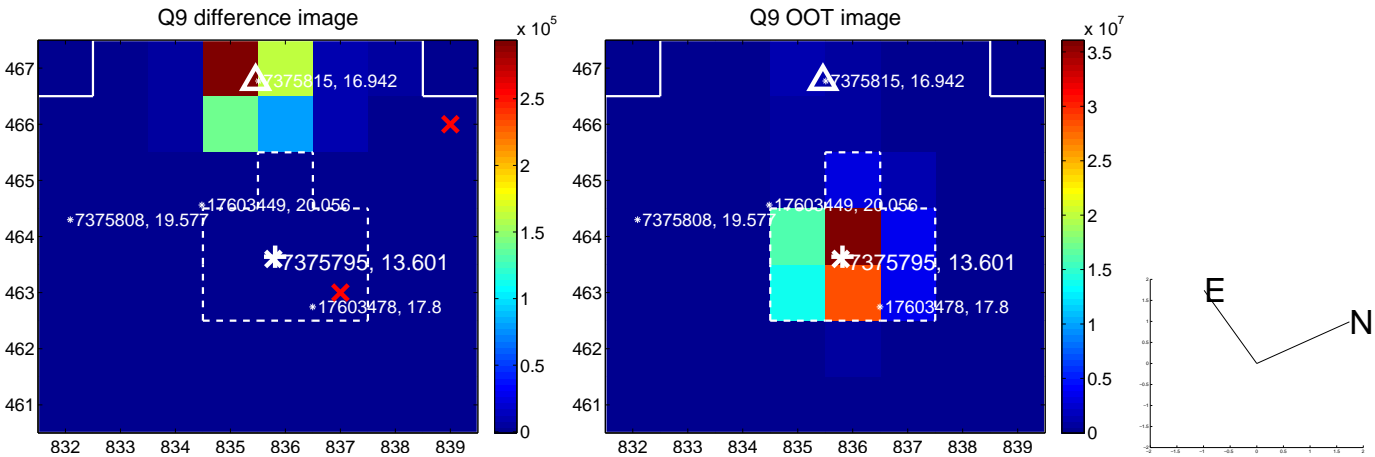
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



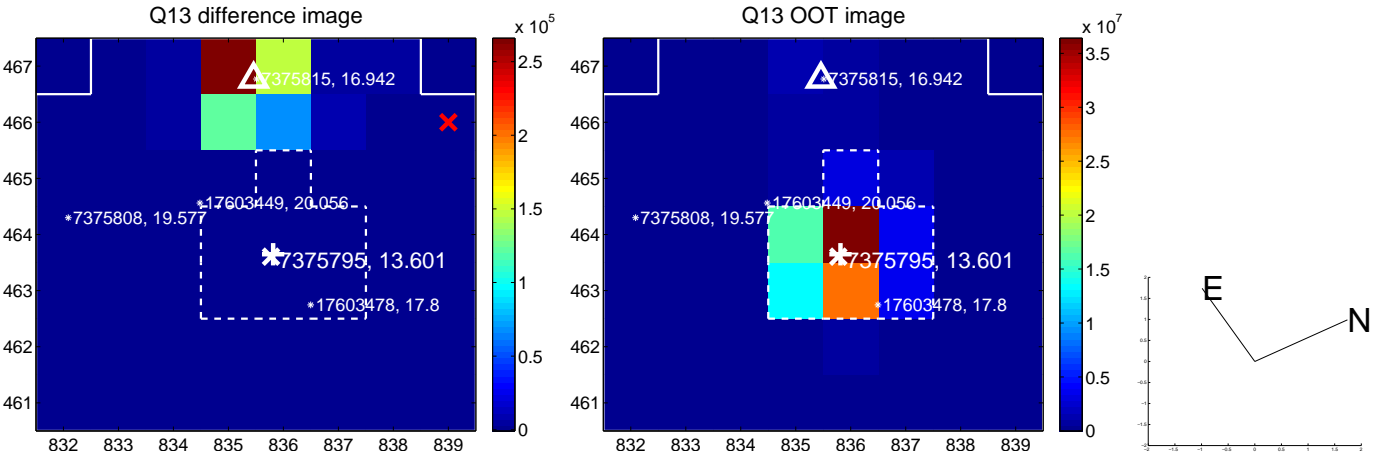
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



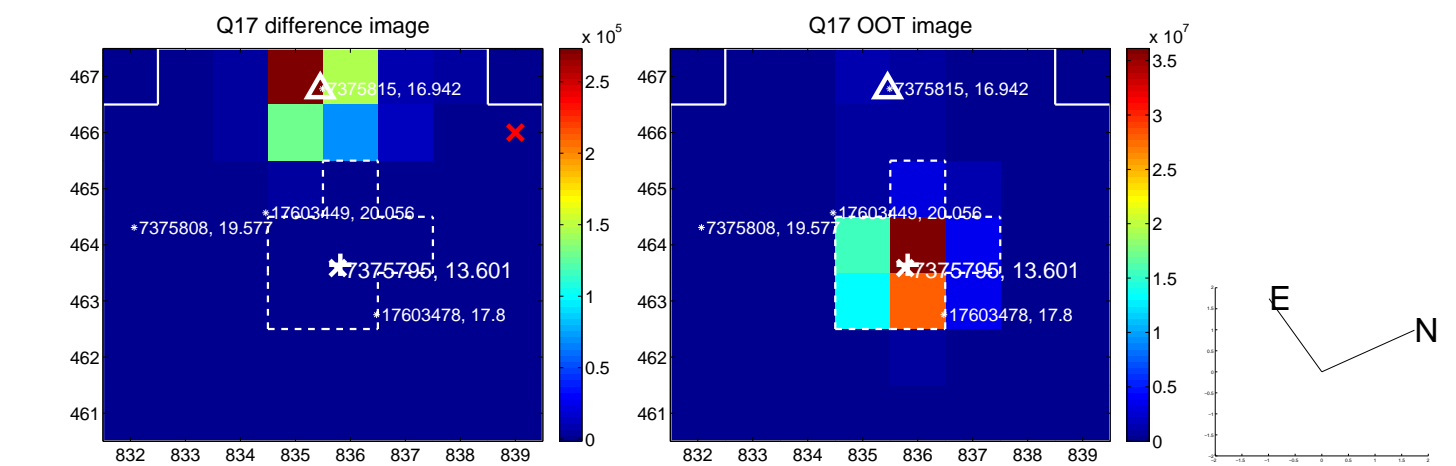
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



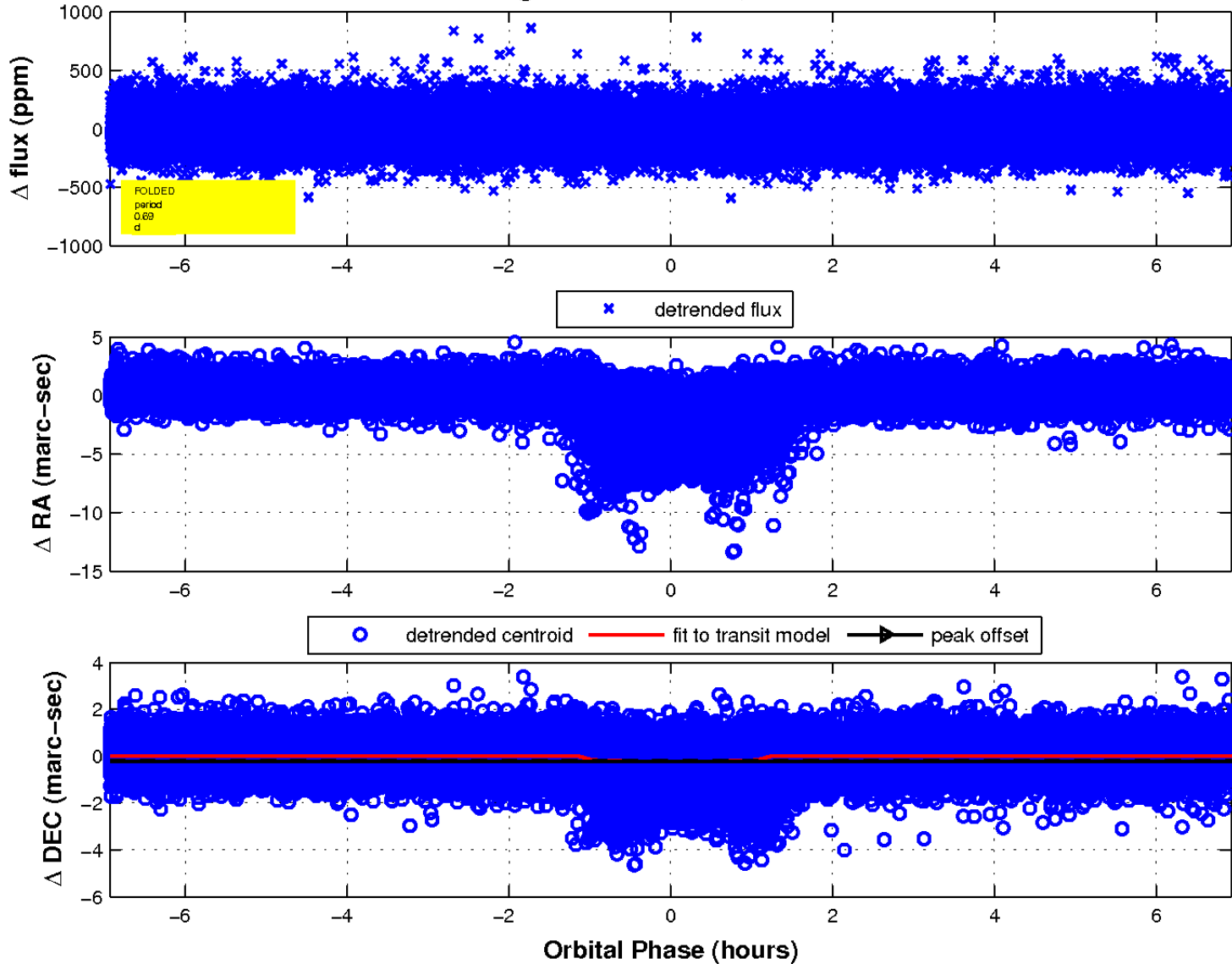
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

