

KIC 006374063

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006374063-01 | OBS | No | 2.115663 | 131.807319 | 37.2 | 4.022 | 12.0 | 7.9 | 1.62 | 6344 | 1.16 | 3033.64 |
| 006374063-02 | OBS | No | 2.115743 | 131.791503 | 146.4 | 25.389 | 8.8 | 16.0 | 1.62 | 6344 | 2.12 | 3033.49 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006374063-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST |
| 006374063-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST |

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

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

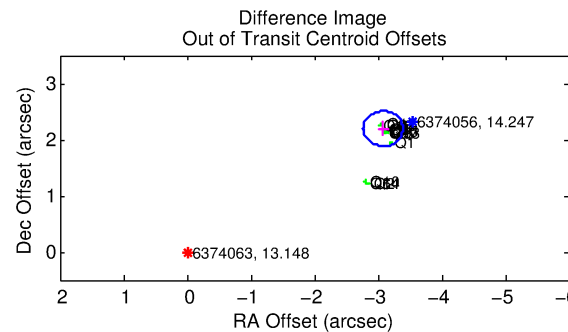
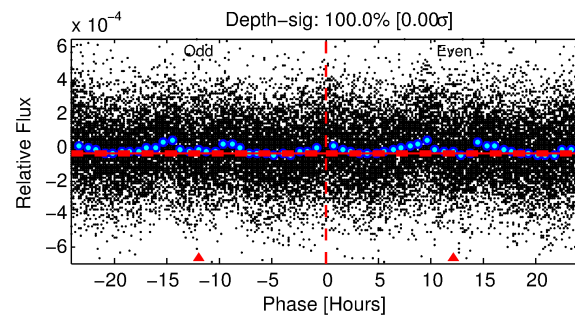
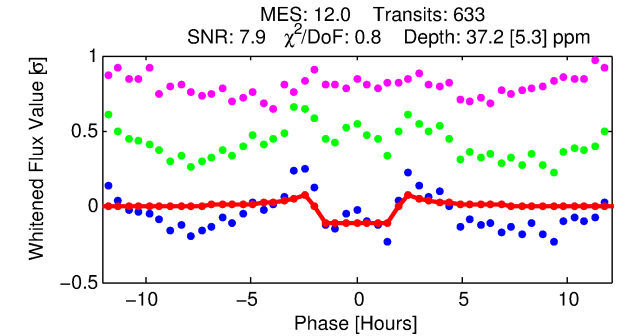
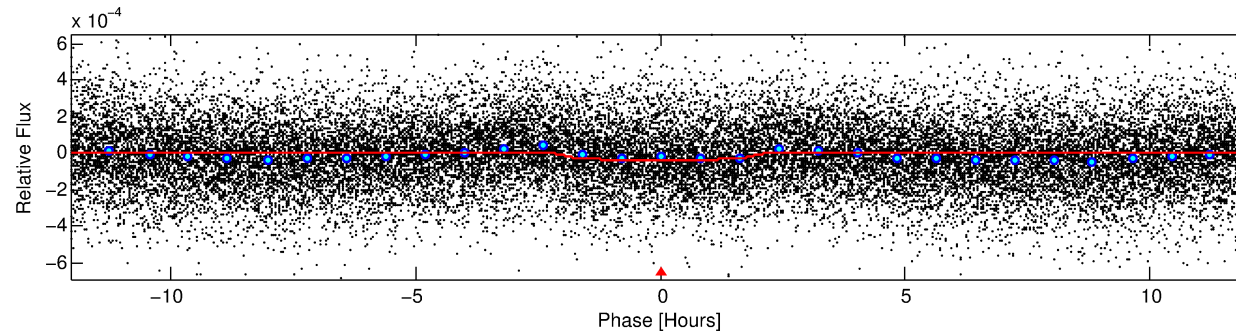
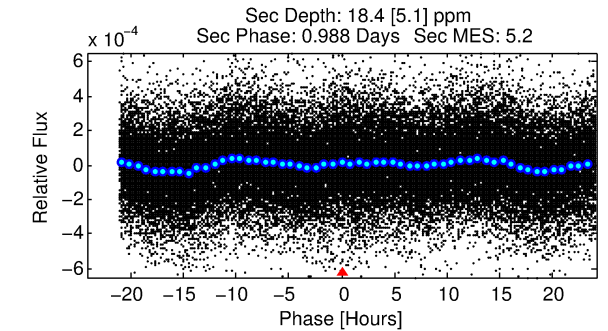
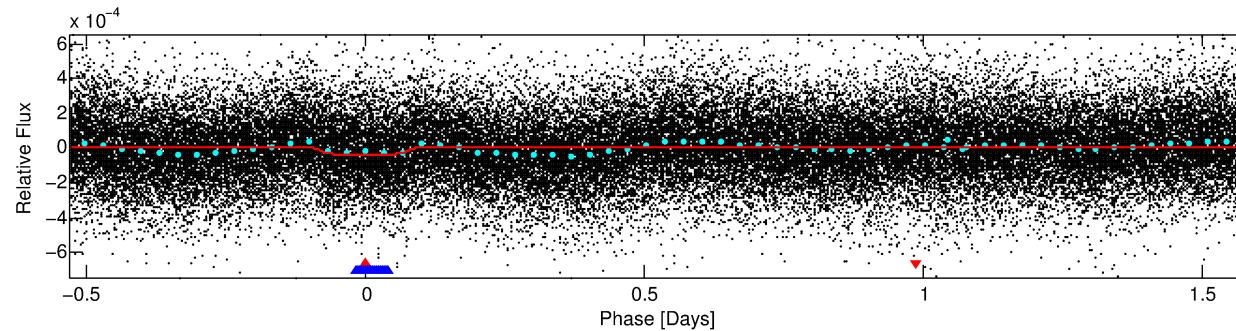
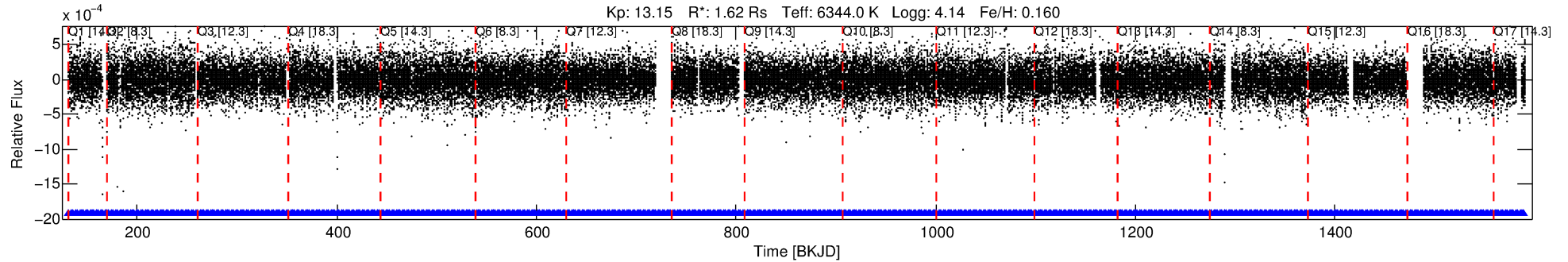
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006374063-01

No Significant Match Found

DV One-Page Summary

KIC: 6374063 Candidate: 1 of 2 Period: 2.116 d



DV Fit Results:

Period = 2.11566 [0.00002] d
Epoch = 131.8073 [0.0038] BKJD
Rp/R* = 0.0066 [0.0023]
a/R* = 2.04 [2.87]
b = 0.90 [0.40]
Seff = 3033.64 [779.64]
Teq = 1892 [122] K
Rp = 1.16 [0.46] Re
a = 0.0355 [0.0058] AU
Ag = 9.43 [7.42] [1.14σ]
Teffp = 5127 [959] K [3.35σ]

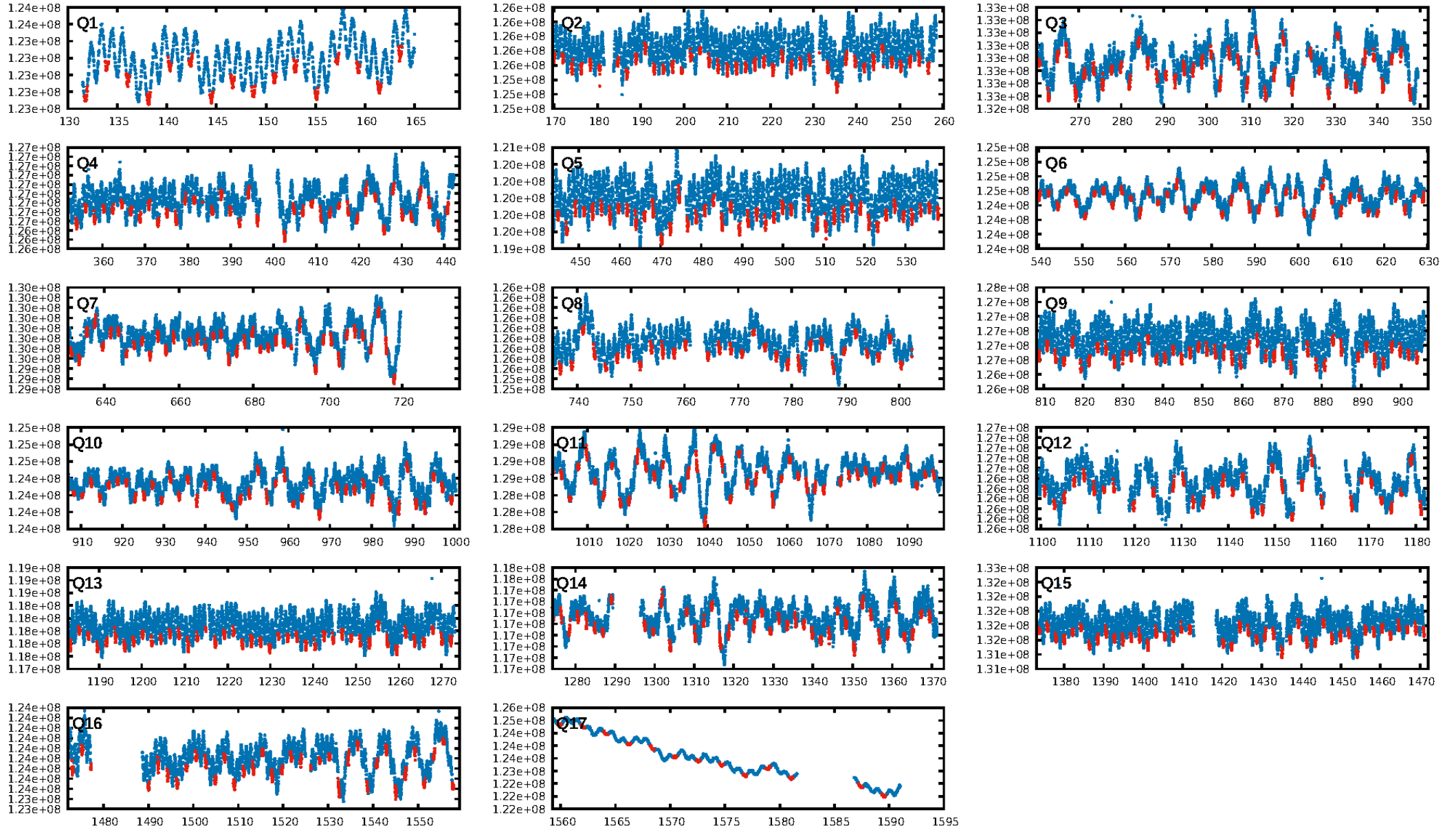
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [604/604]
GhostDiagnostic-chr: 0.1577
Centroid-sig: 0.0%
Centroid-so: 8.083 arcsec [8.53σ]
OotOffset-rm: 3.779 arcsec [36.33σ]
KicOffset-rm: 4.358 arcsec [57.70σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

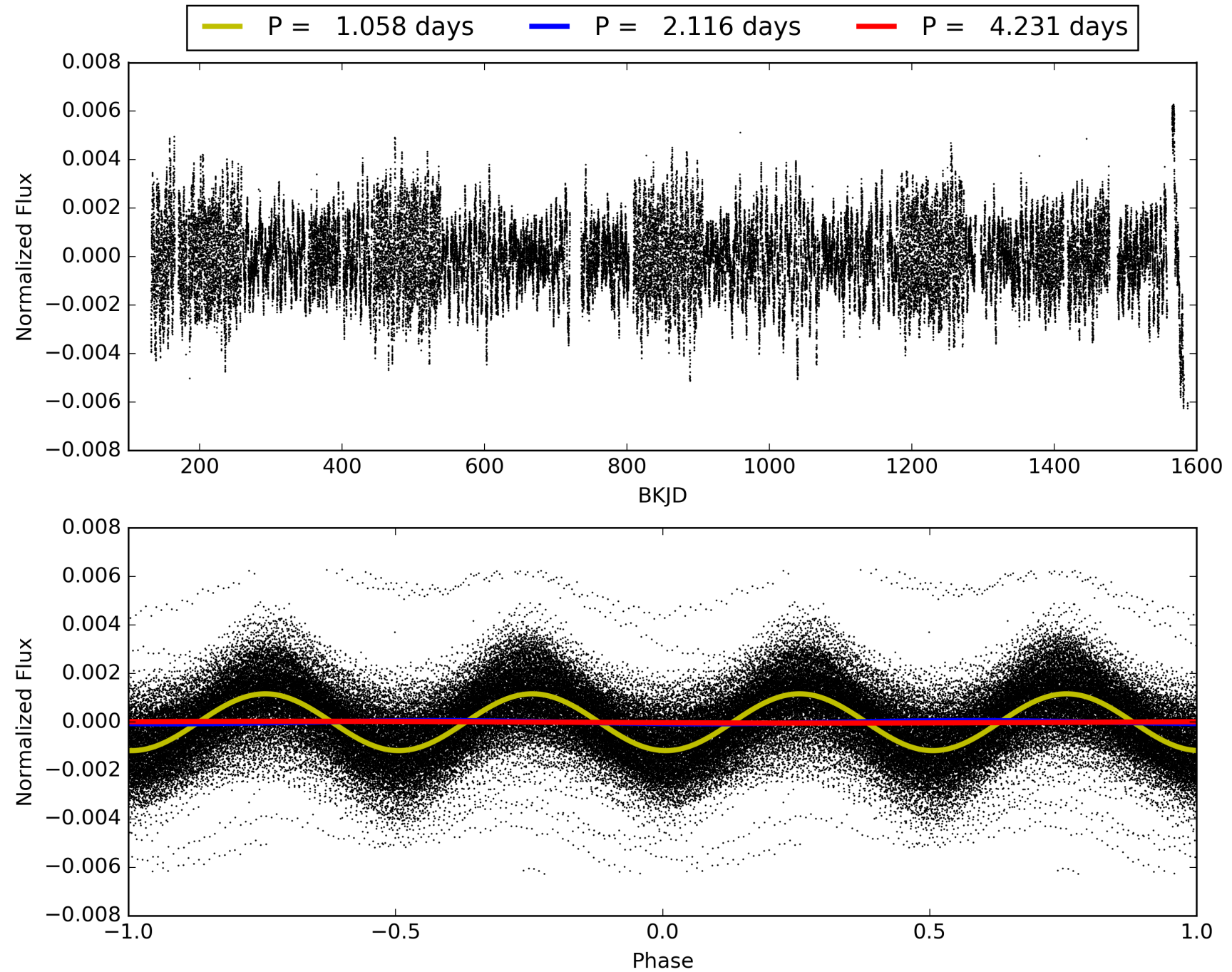
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:40:13 Z

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

TCE 006374063-01, PDC Light Curves

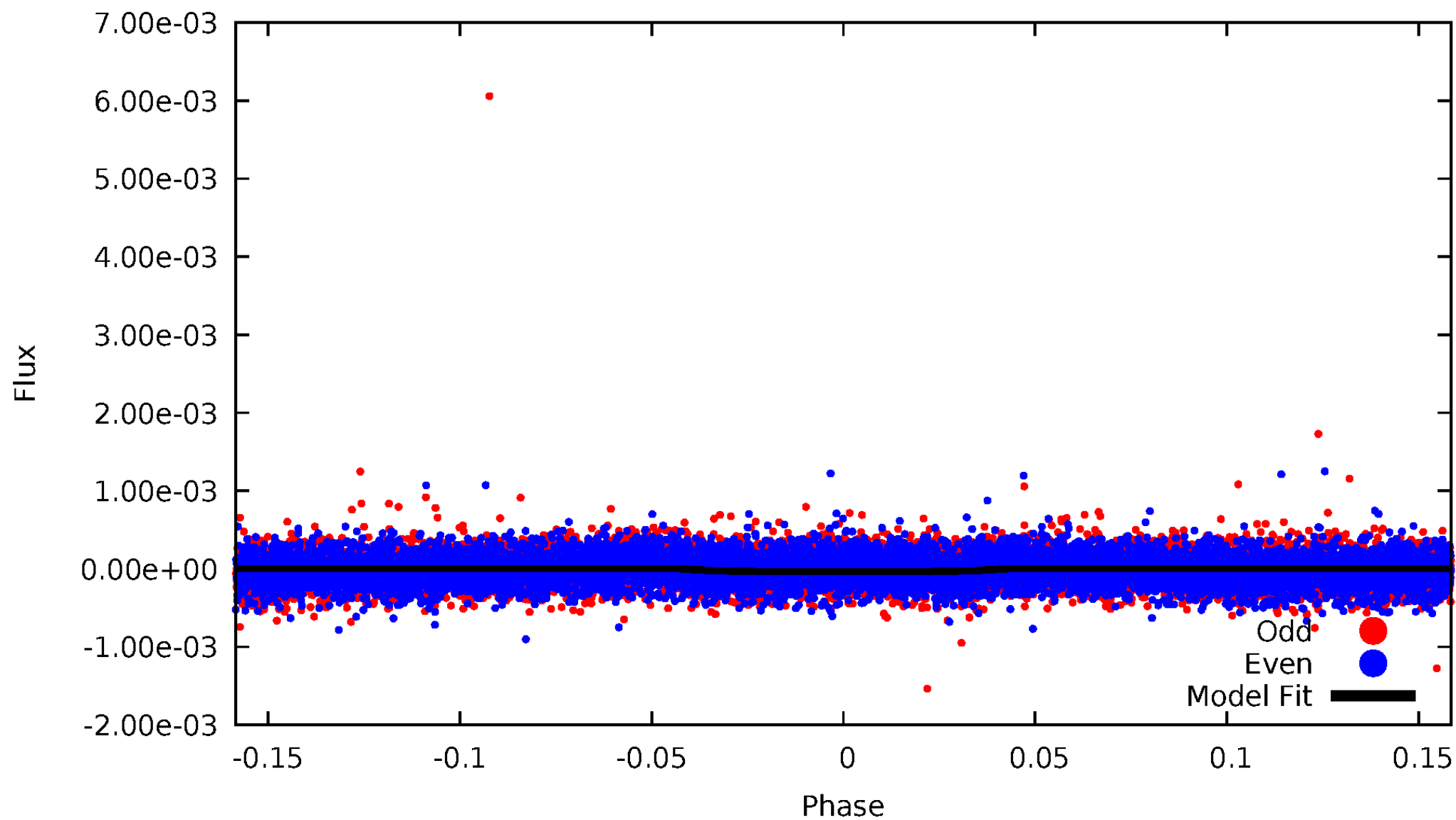


TCE 006374063-01



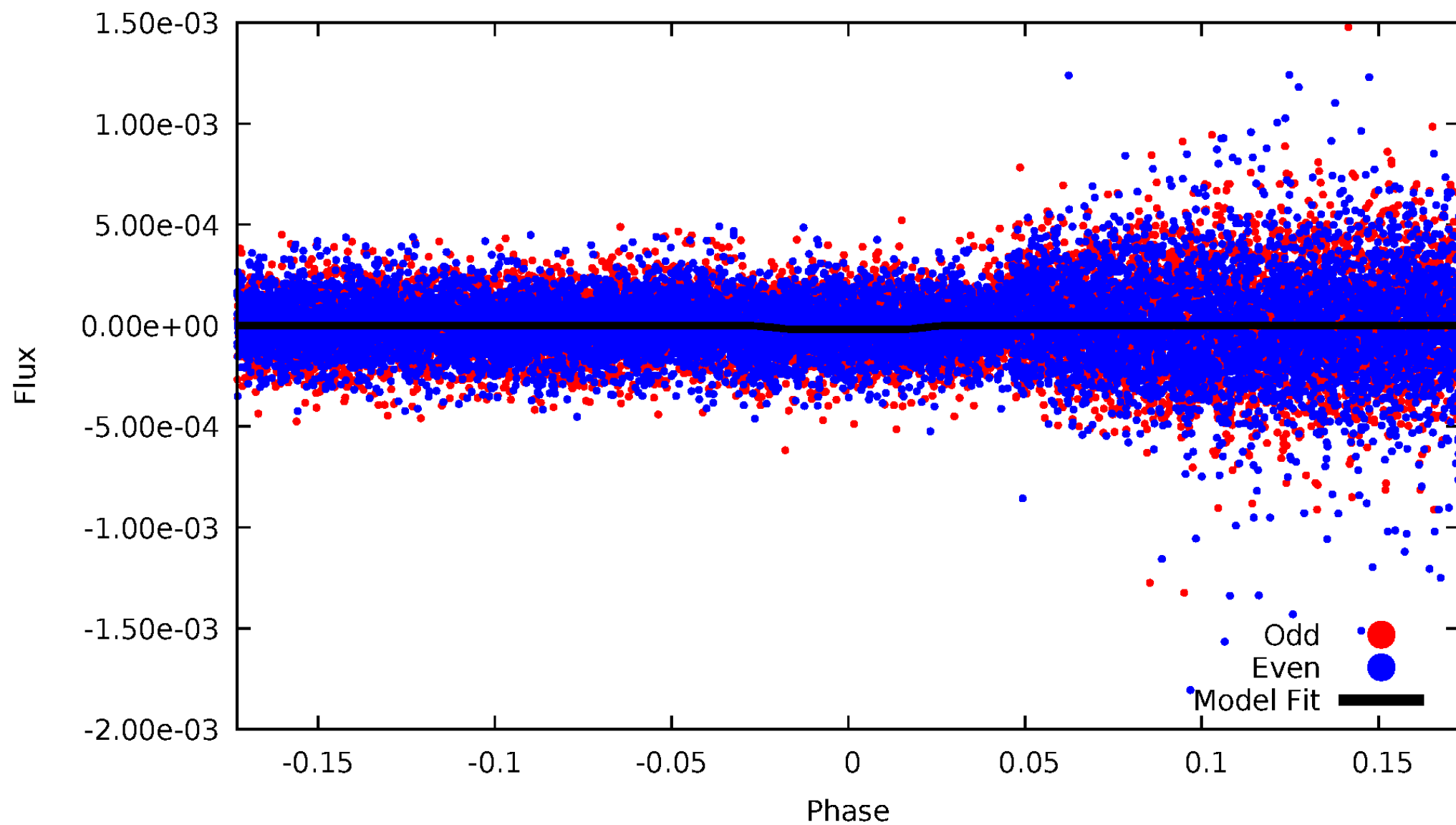
DV Odd/Even

TCE 006374063-01



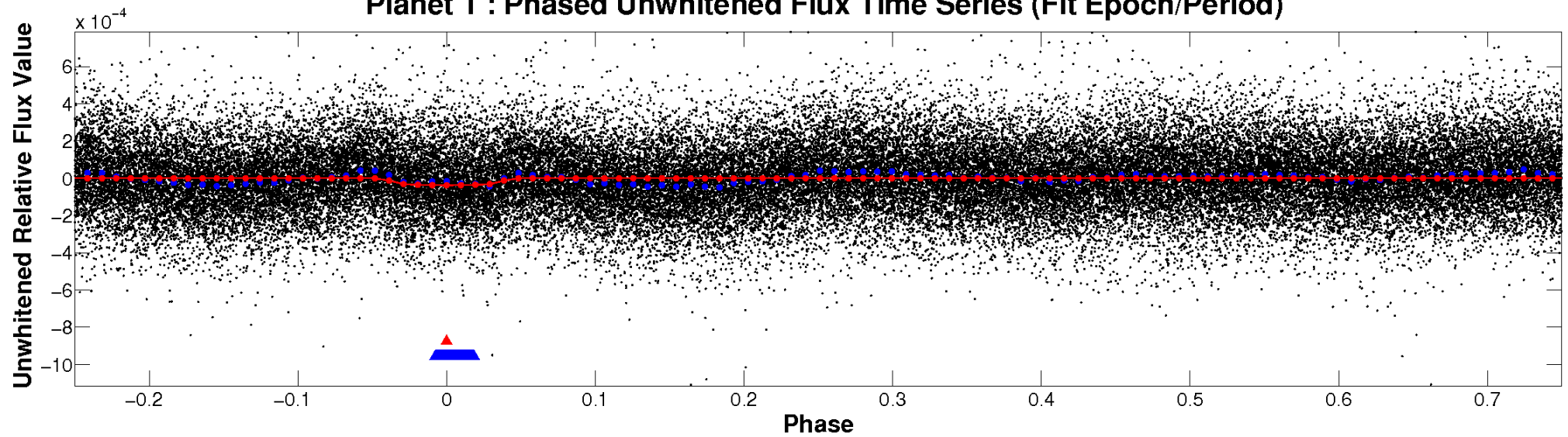
ALT Odd/Even

TCE 006374063-01

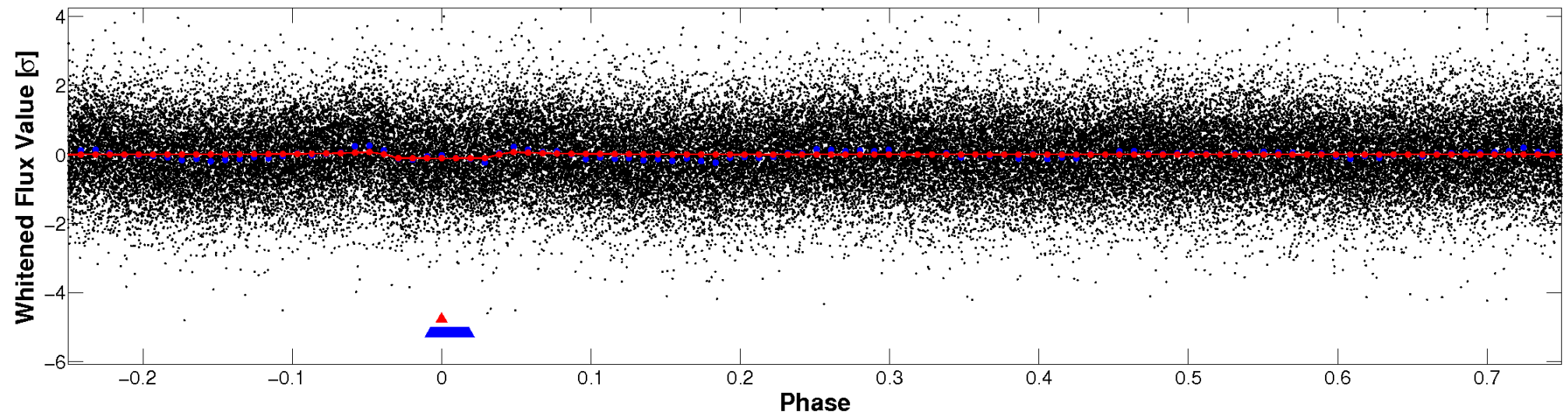


Non-Whitened Vs. Whitened Light Curve

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

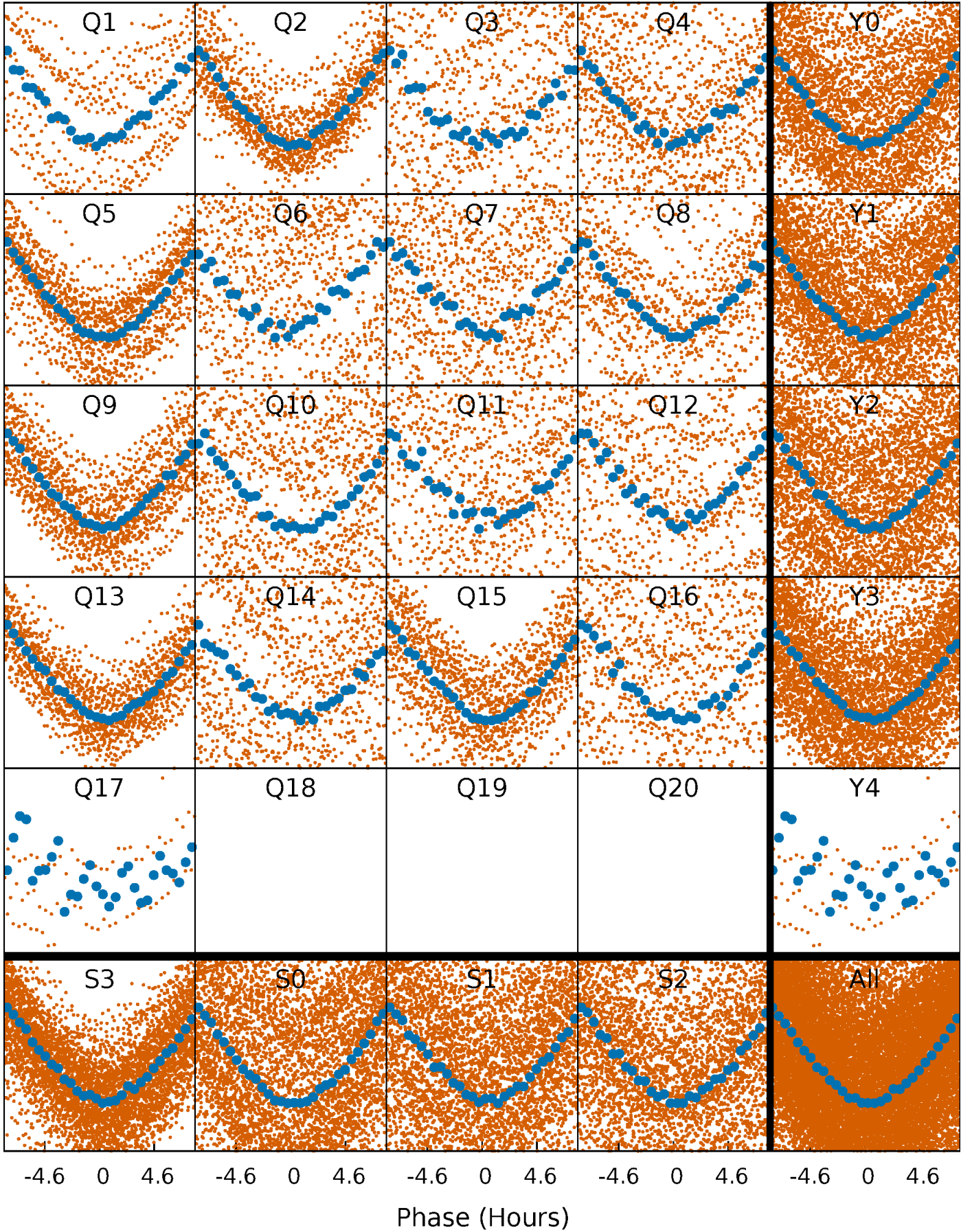


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



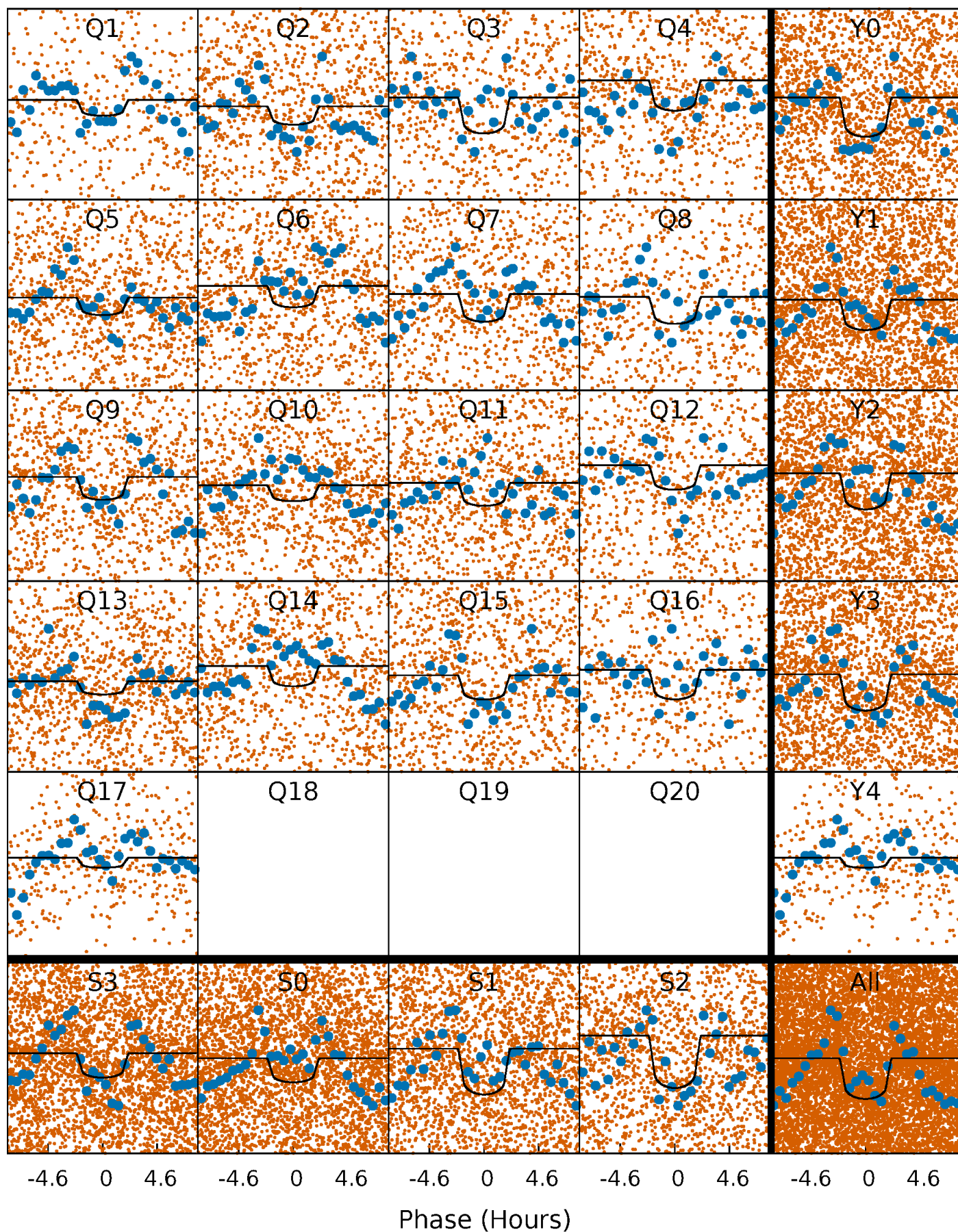
PDC Quarter-Phased Transit Curves

TCE 006374063-01 P= 2.115663 Days $T_0=131.807319$ (BKJD)



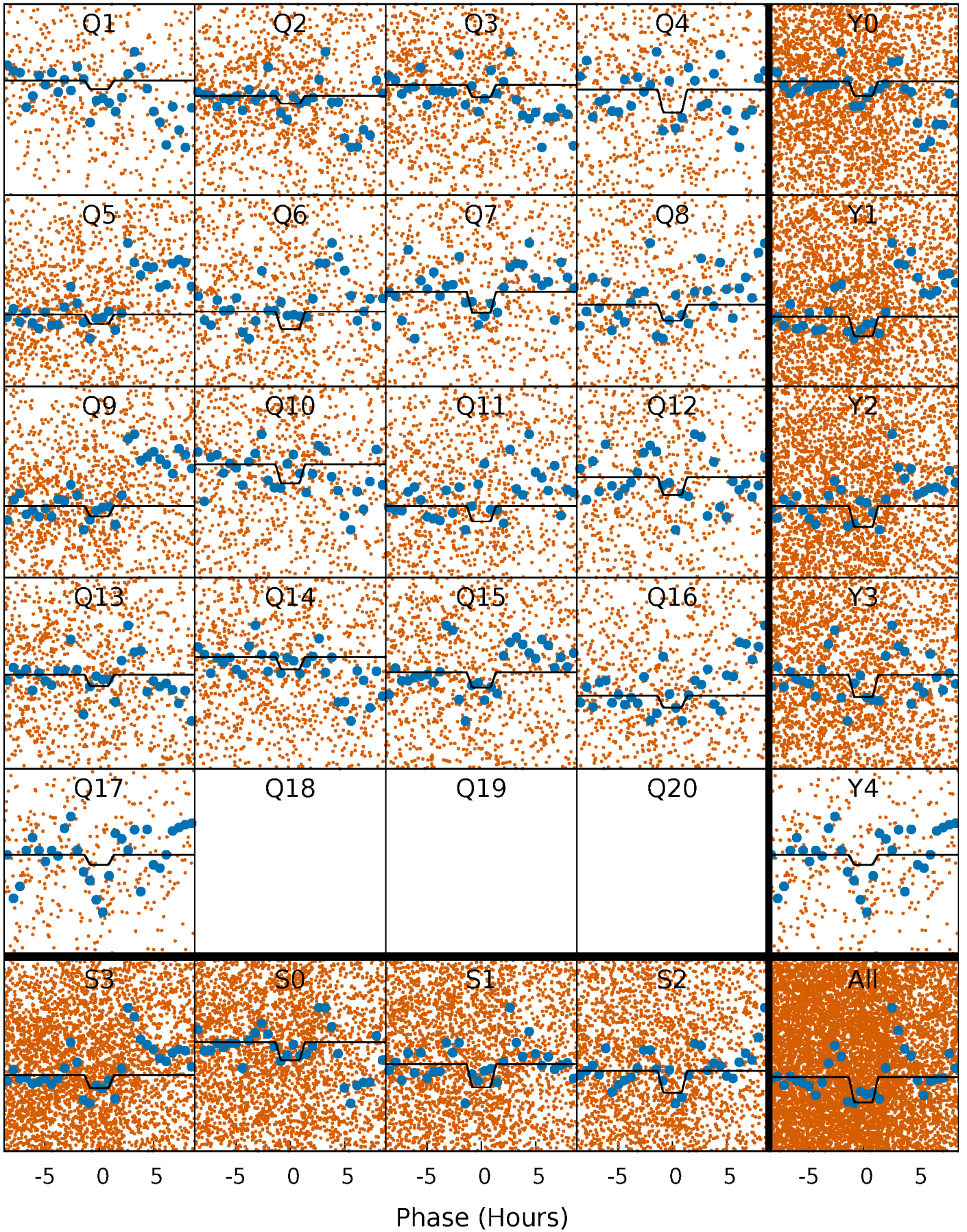
DV Quarter-Phased Transit Curves

TCE 006374063-01 P= 2.115663 Days $T_0=131.807319$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

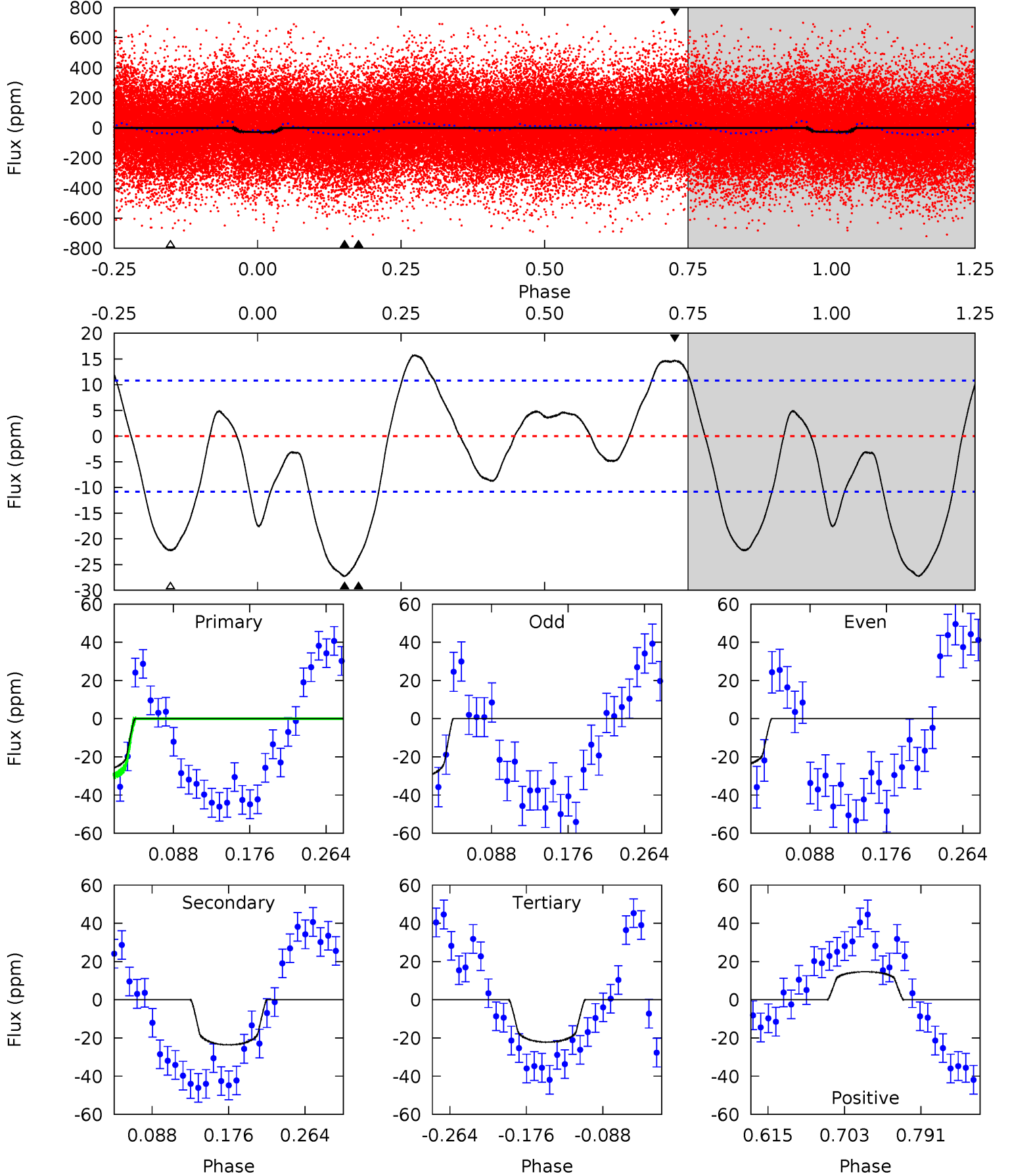
TCE 006374063-01 P= 2.115749 Days $T_0=131.773205$ (BKJD)



DV Model-Shift Uniqueness Test

006374063-01, P = 2.115663 Days, E = 129.691656 Days

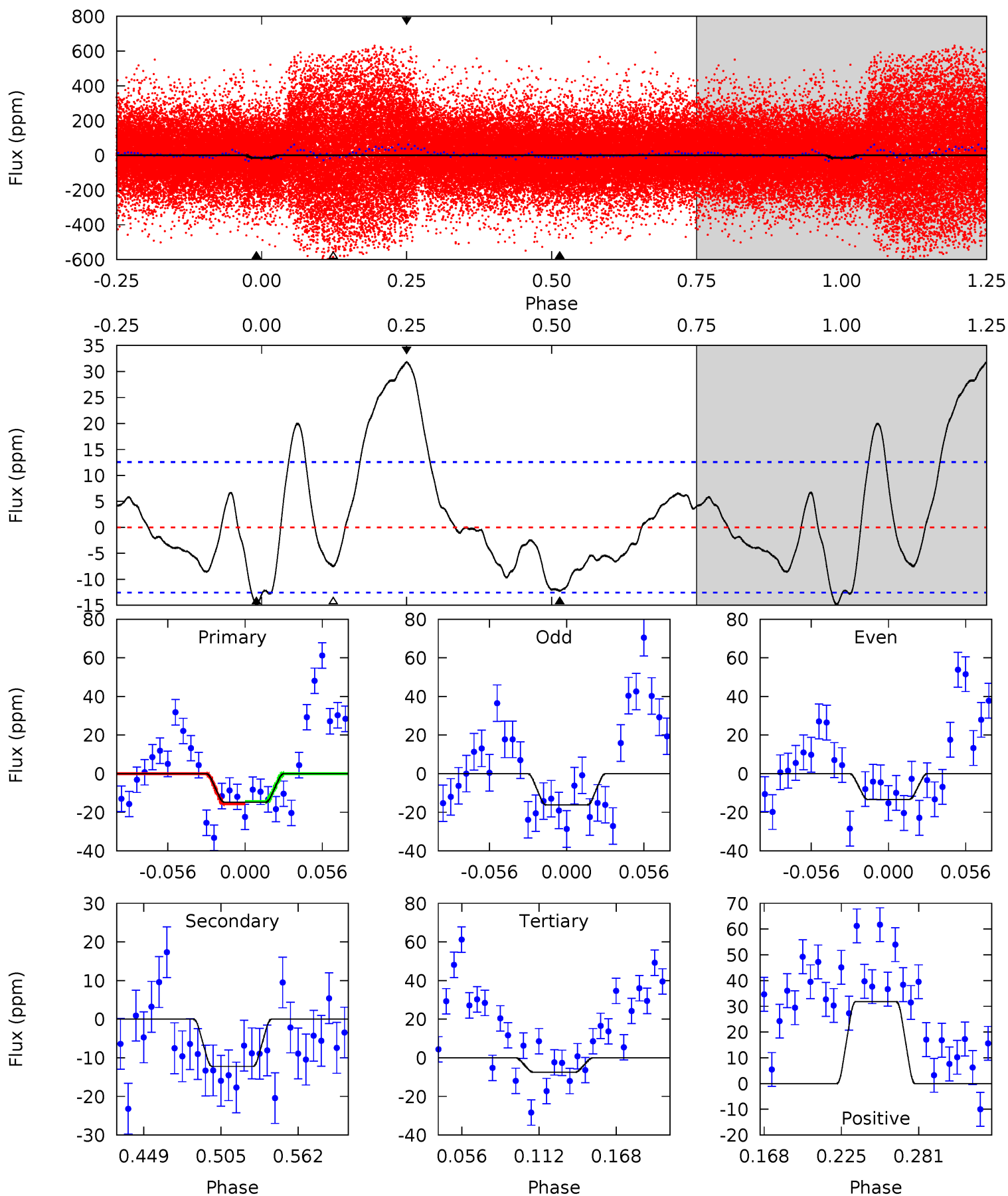
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.6 | 10.0 | 9.43 | 6.23 | 4.59 | 1.71 | 4.15 | 2.15 | 5.35 | 0.61 | 3.81 | 1.25 | 0.86 | 0.37 | 1.76 |



Alt Model-Shift Uniqueness Test

006374063-01, P = 2.115749 Days, E = 129.657456 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.53 | 4.57 | 2.80 | 11.9 | 4.68 | 1.91 | 4.07 | 2.73 | -6.33 | 1.77 | -7.30 | 0.55 | 1.20 | 0.68 | 0.22 |



Stellar Parameters For KIC 006374063

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6344^{+75}_{-88} | $4.142^{+0.143}_{-0.117}$ | $0.160^{+0.150}_{-0.200}$ | $1.623^{+0.296}_{-0.296}$ | $1.333^{+0.102}_{-0.125}$ | $0.439^{+0.315}_{-0.158}$ |
| | +1%/-1% | +3%/-3% | +94%/-125% | +18%/-18% | +8%/-9% | +72%/-36% |
| Source | SPE68 | SPE68 | SPE68 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 006374063-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|------------------|
| DV | -24 ± 2 | $1.16^{+0.40}_{-0.43}$ | 2637^{+138}_{-121} | 5438^{+1407}_{-672} | 12^{+18}_{-5} |
| Alt. | -12 ± 3 | $0.73^{+0.44}_{-0.36}$ | 2631^{+133}_{-125} | 5685^{+2623}_{-1043} | 15^{+43}_{-9} |

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

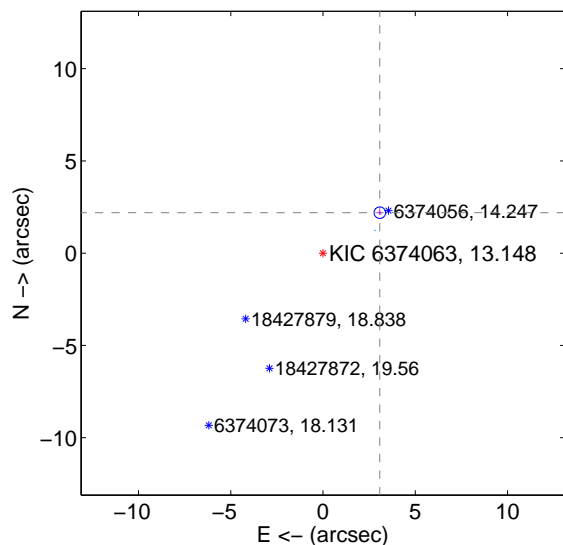
Supplemental centroid analysis for 006374063-01. Kepler magnitude: 13.15. Transit SNR 7.91

There are 17 quarters with good PRF difference image offsets

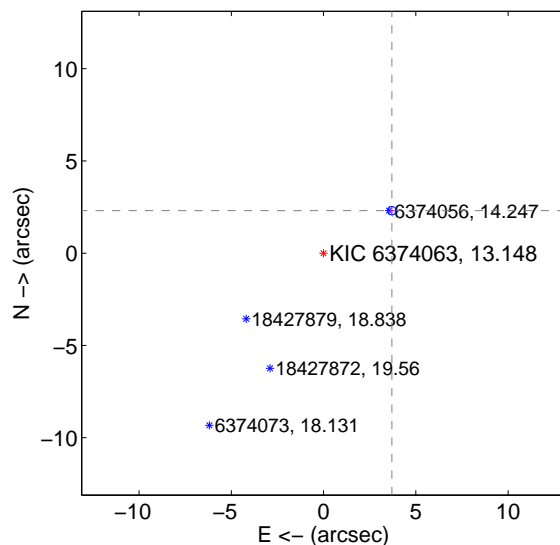
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 3.779 \pm 0.104 | 36.33 | -3.076 \pm 0.074 | 2.195 \pm 0.118 |
| PRF-fit source offset from KIC position | 4.358 \pm 0.076 | 57.70 | -3.700 \pm 0.076 | 2.303 \pm 0.074 |
| photometric centroid source offset | 8.08 \pm 0.95 | 8.53 | -7.10 \pm 1.00 | 3.86 \pm 0.74 |

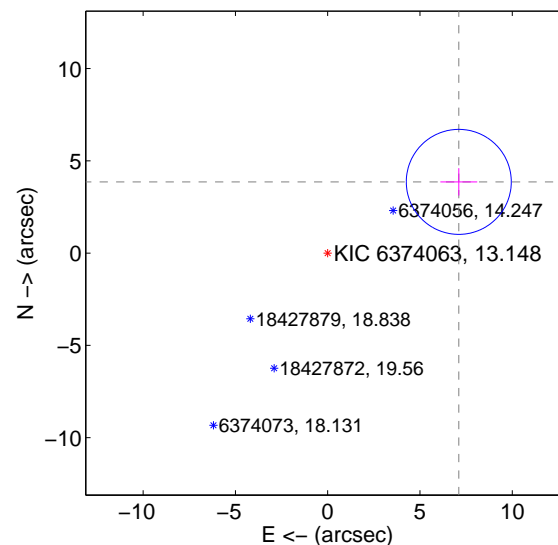
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

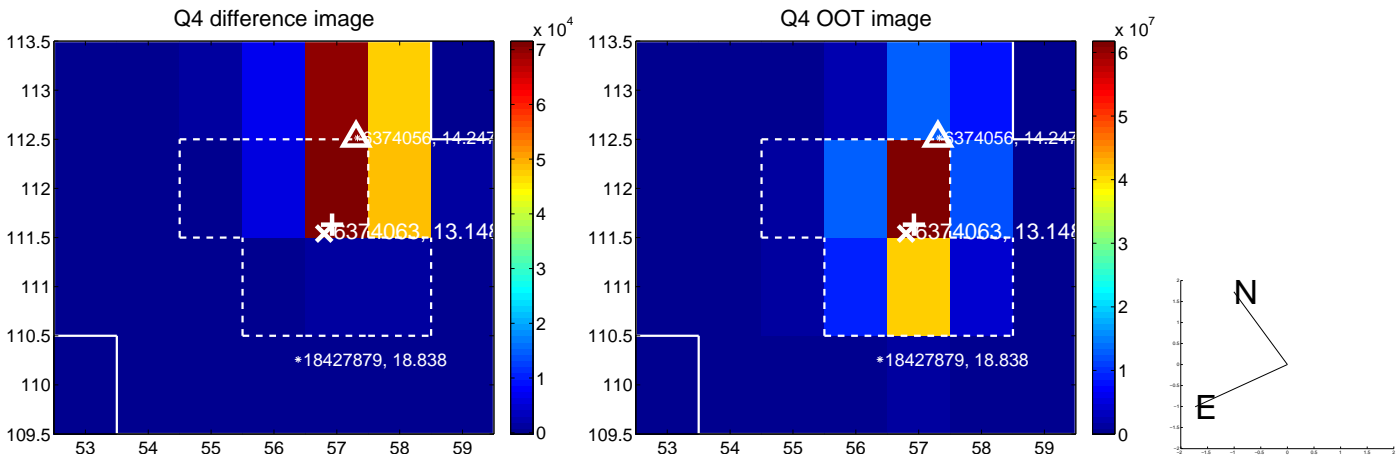
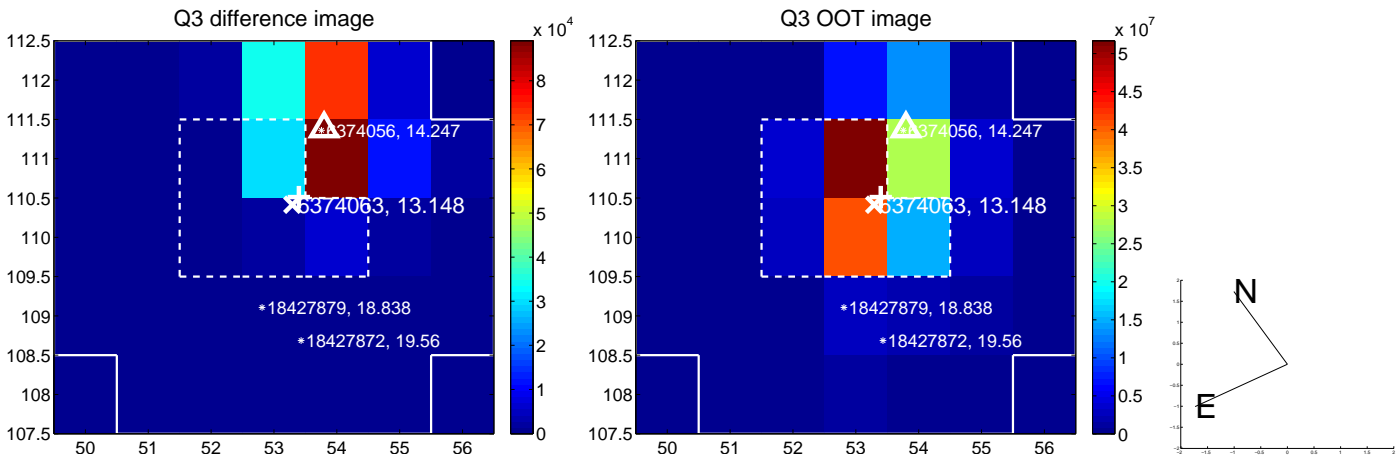
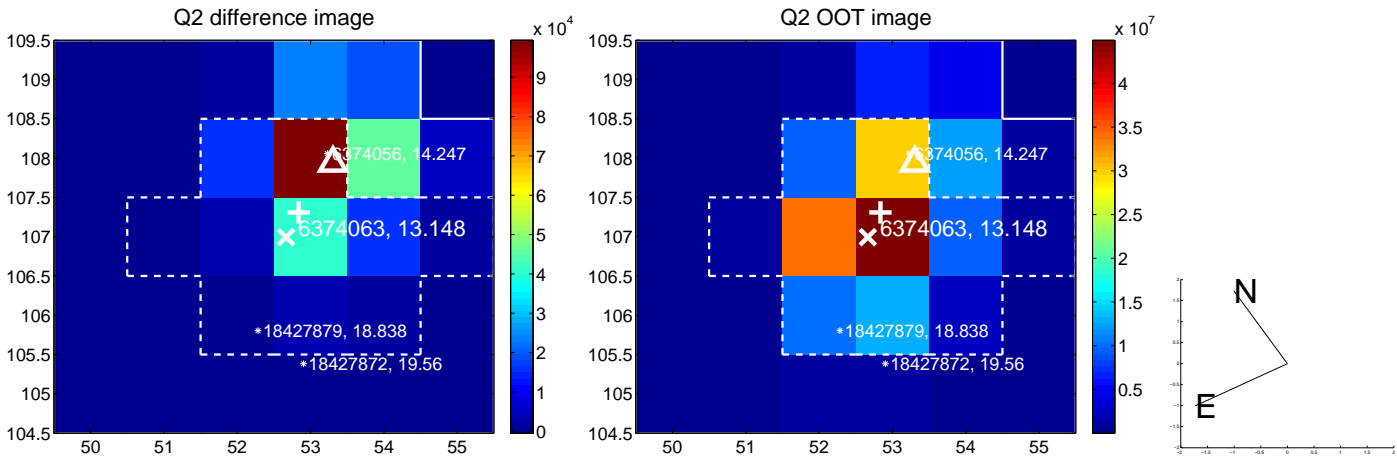
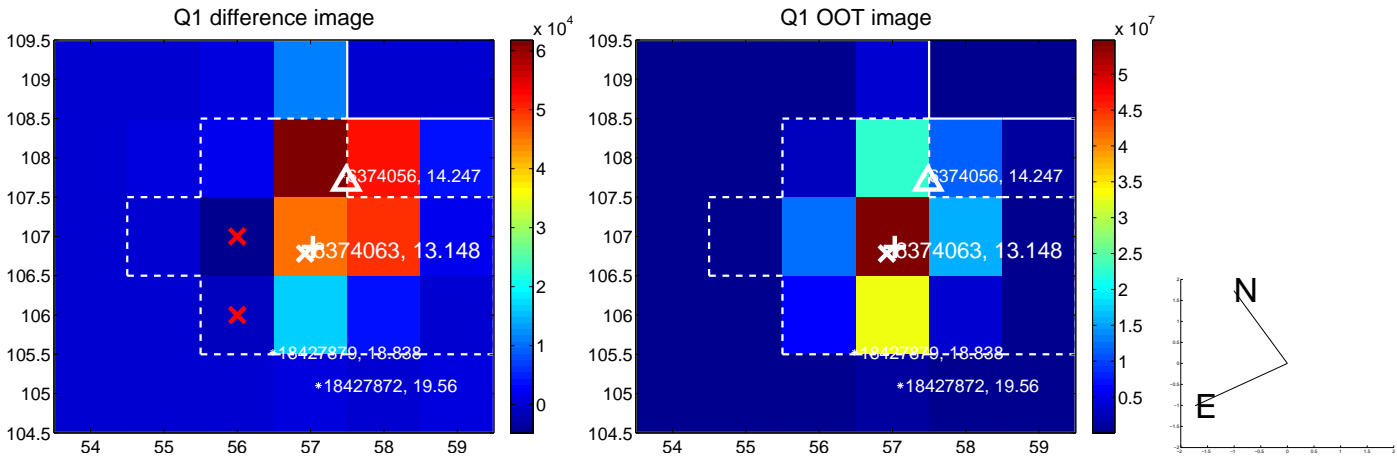


offset from photometric centroids

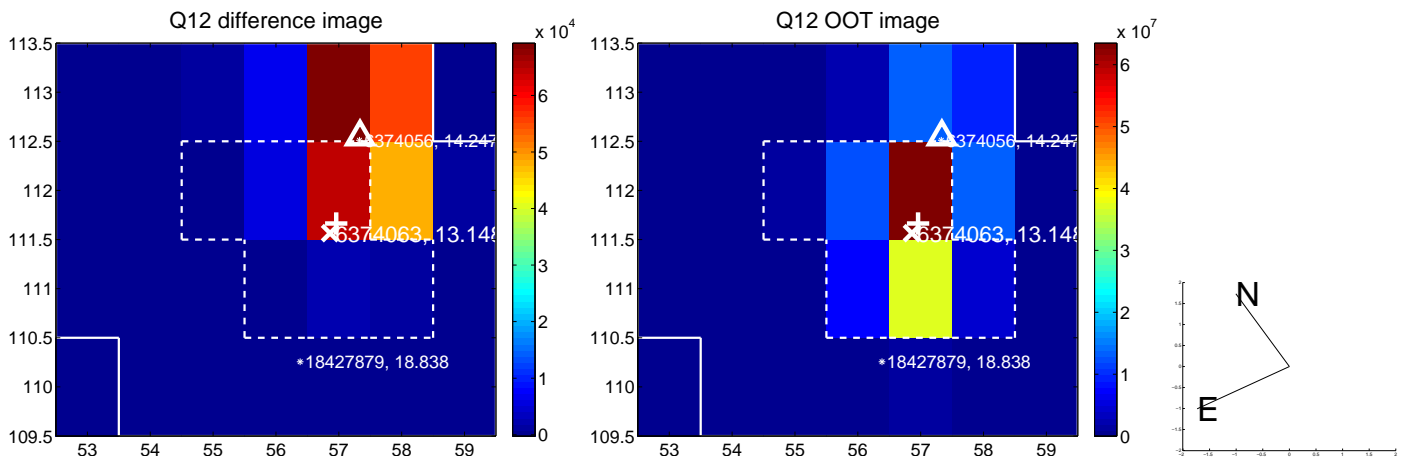
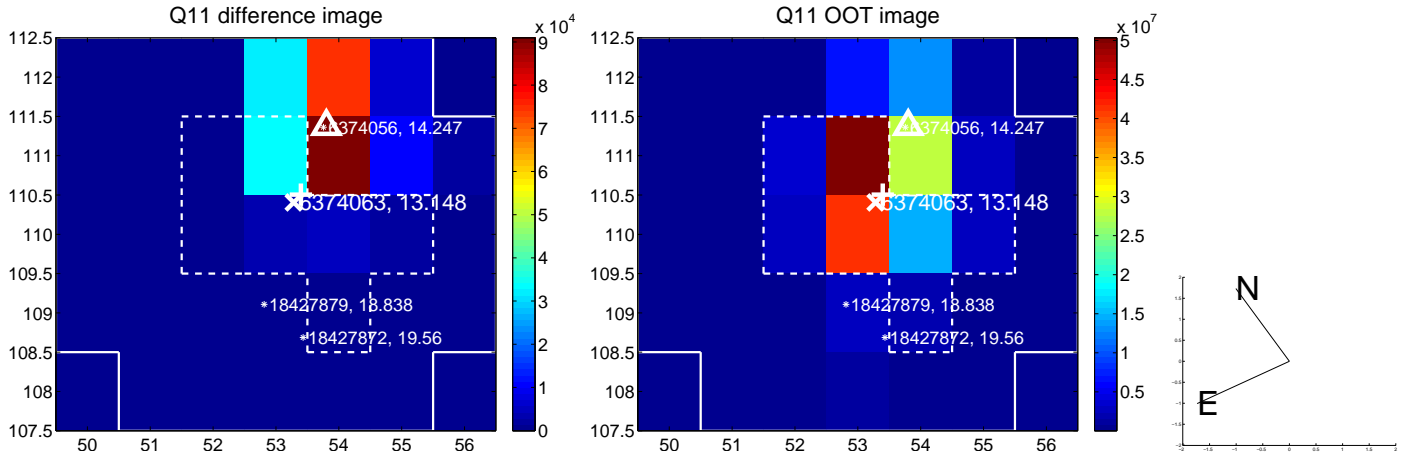
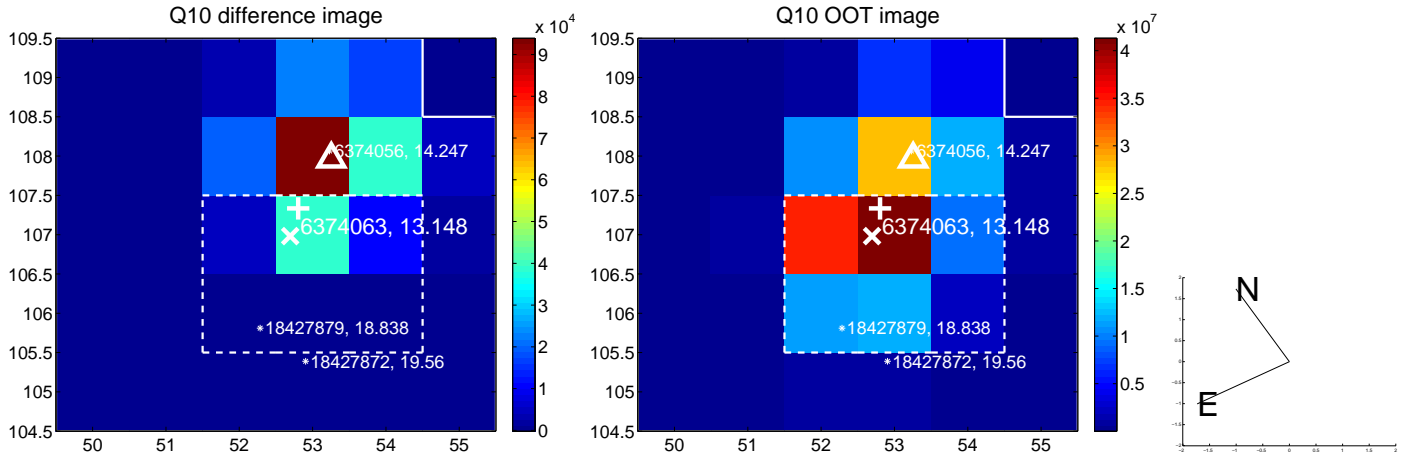
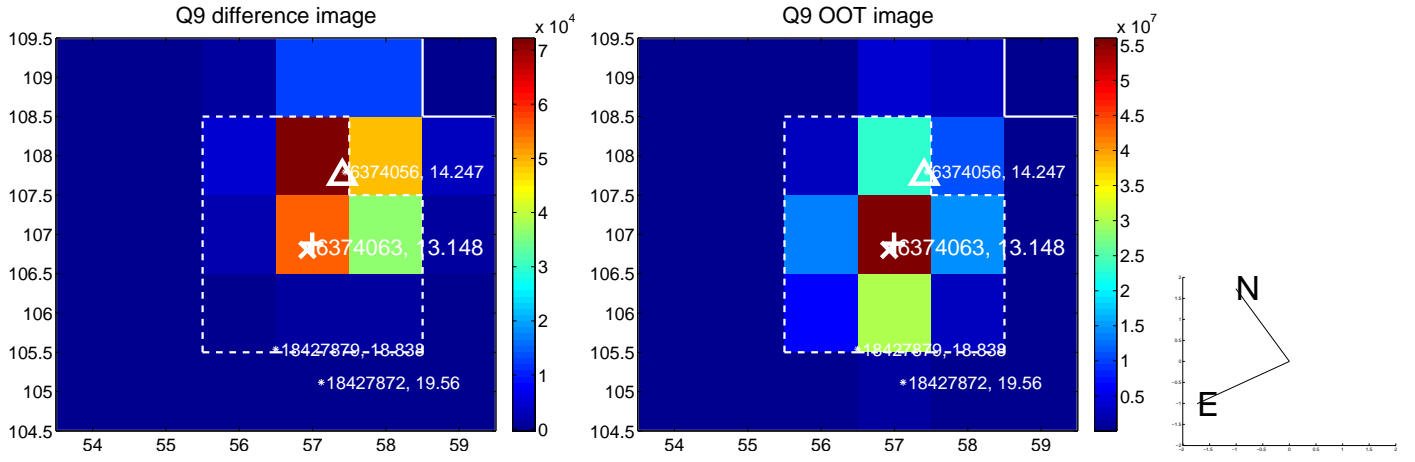


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

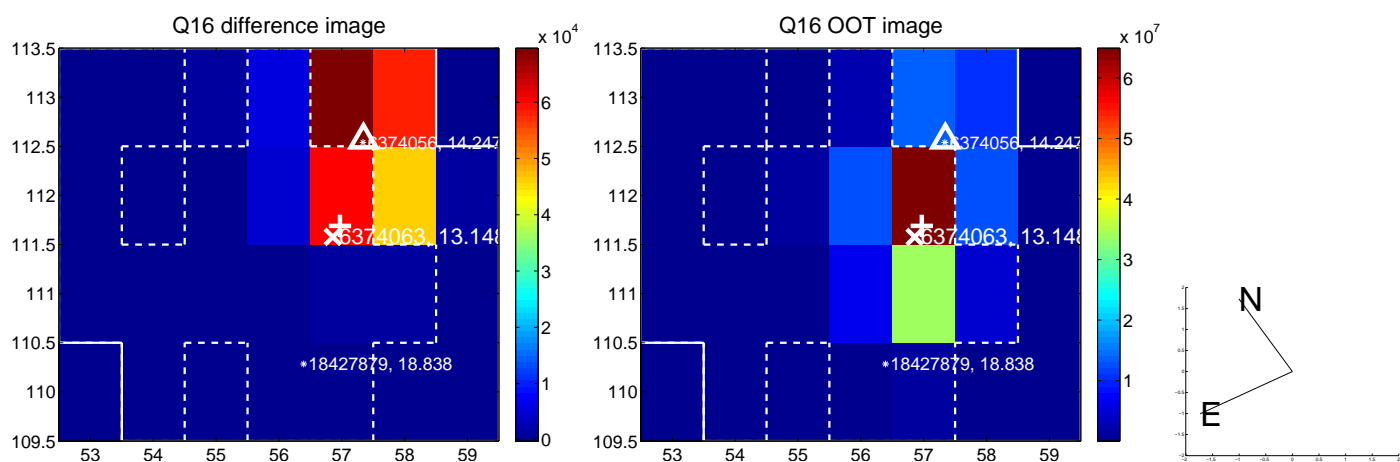
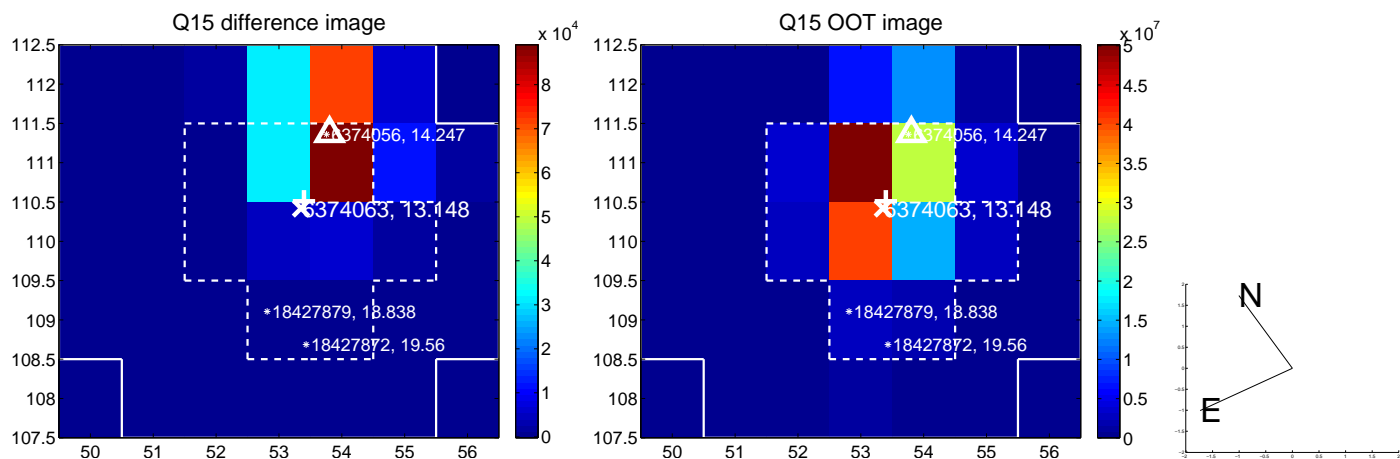
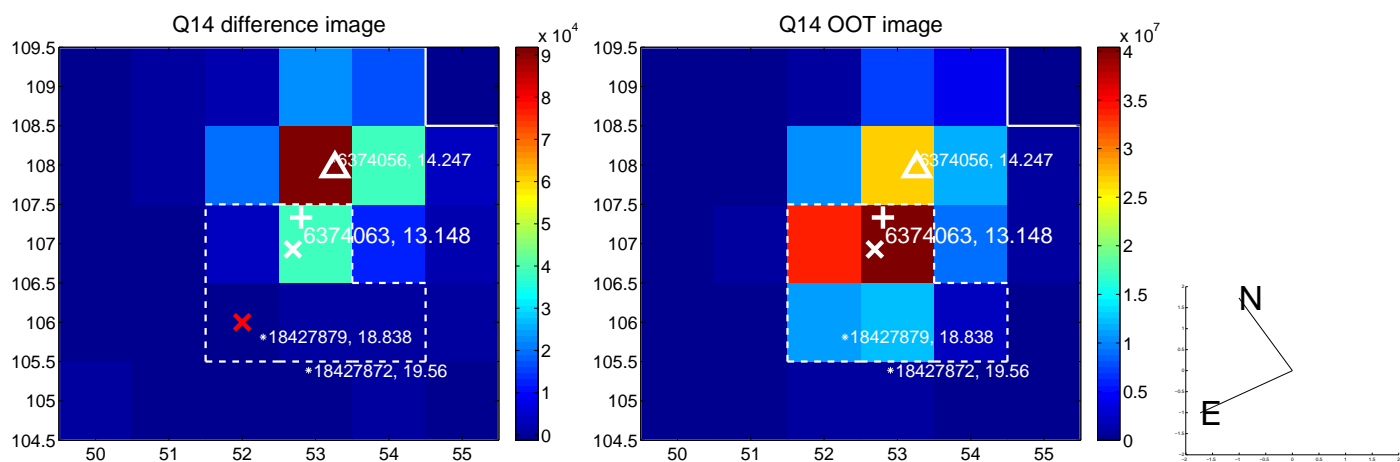
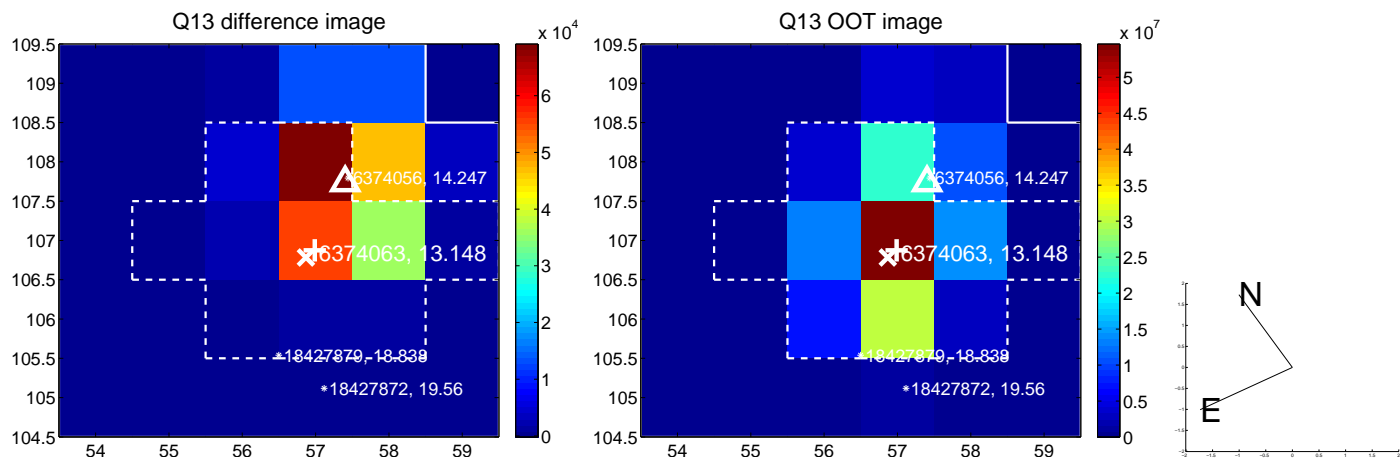
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



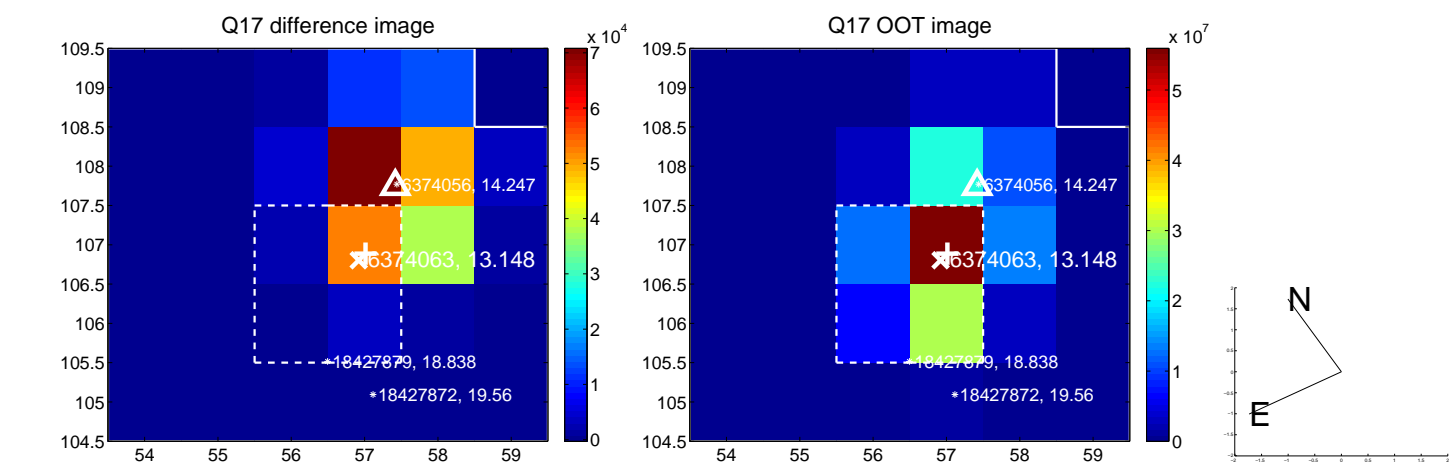
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



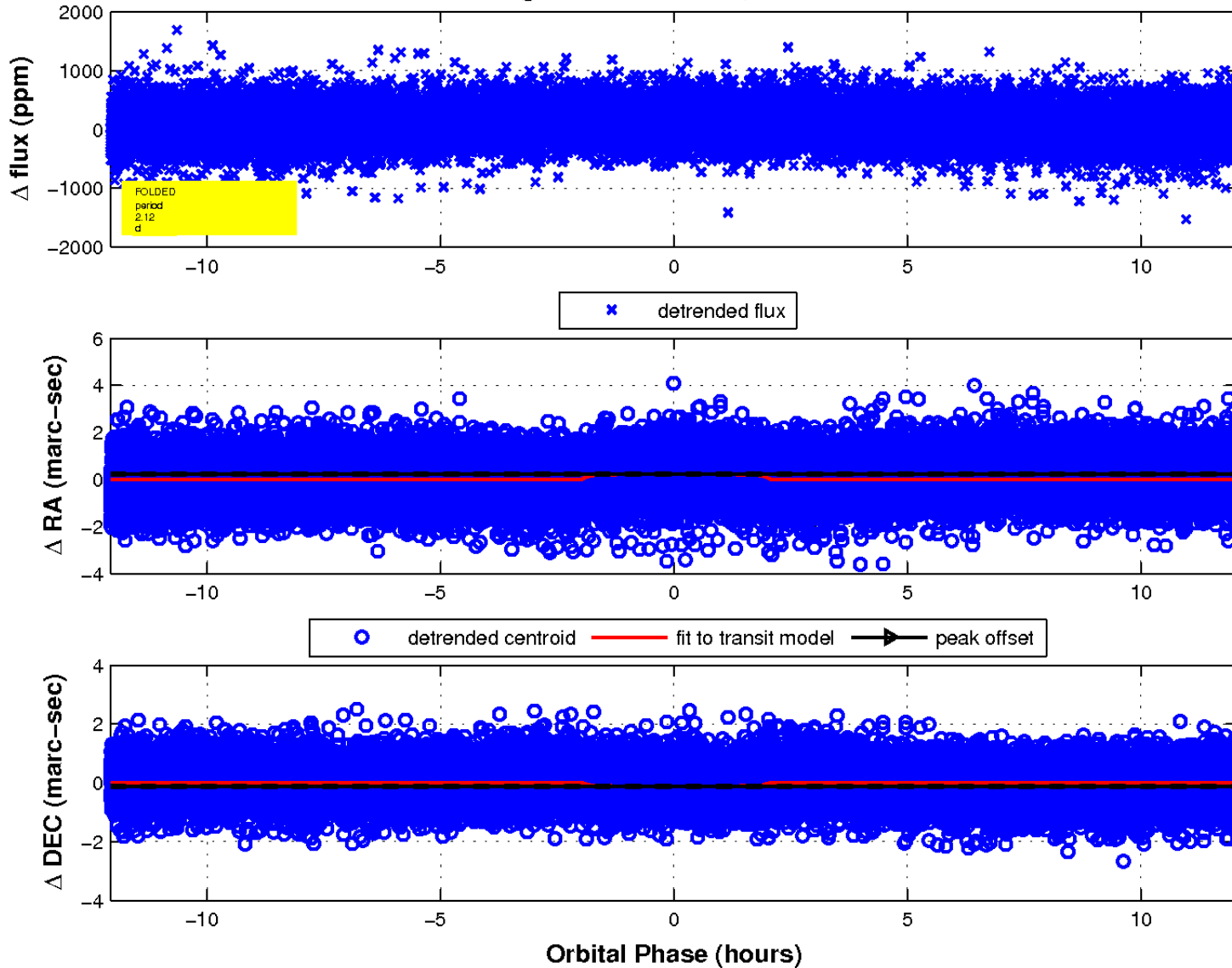
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

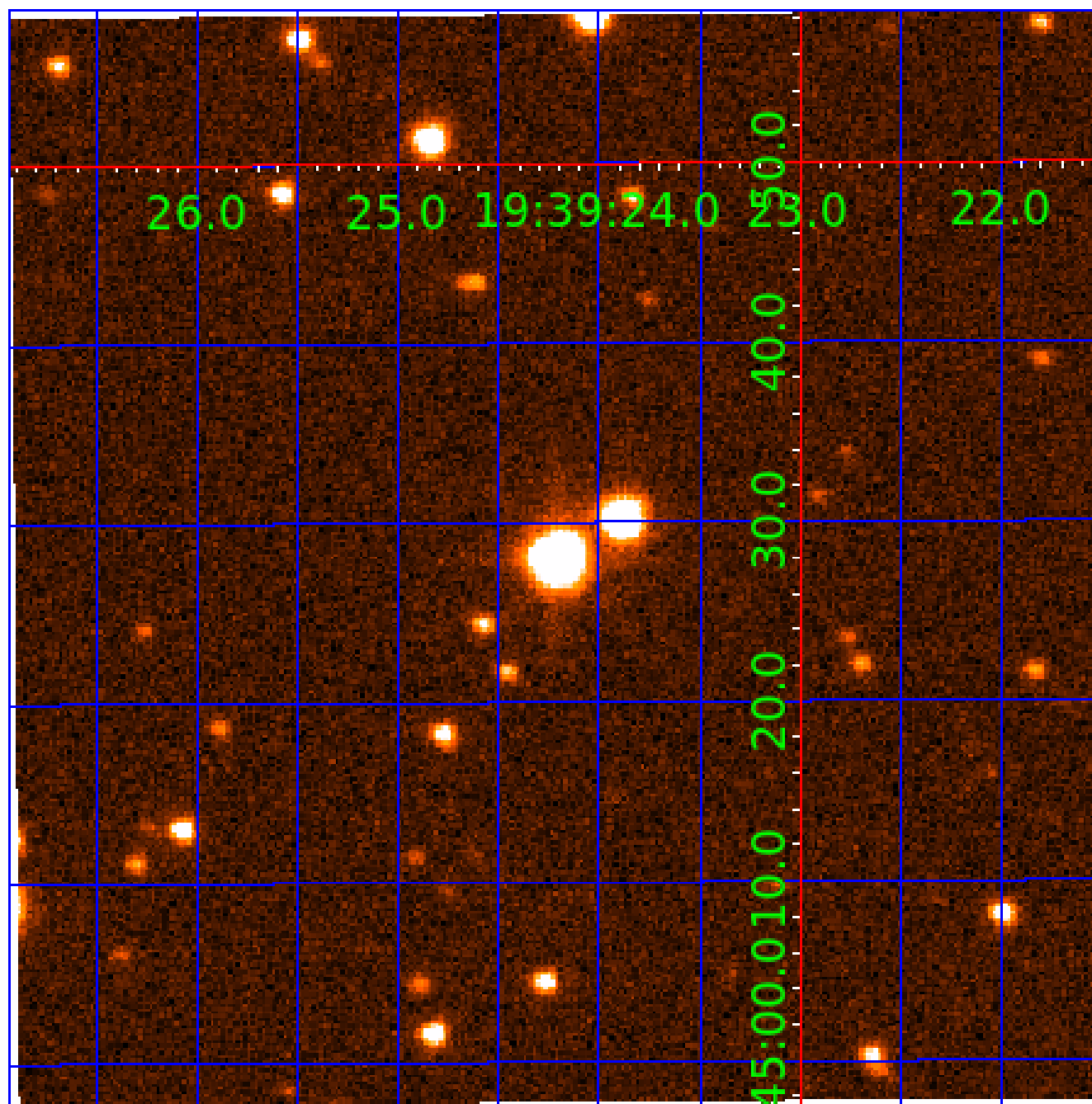


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 006374063

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006374063-01 | OBS | No | 2.115663 | 131.807319 | 37.2 | 4.022 | 12.0 | 7.9 | 1.62 | 6344 | 1.16 | 3033.64 |
| 006374063-02 | OBS | No | 2.115743 | 131.791503 | 146.4 | 25.389 | 8.8 | 16.0 | 1.62 | 6344 | 2.12 | 3033.49 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 006374063-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST |
| 006374063-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST |

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

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

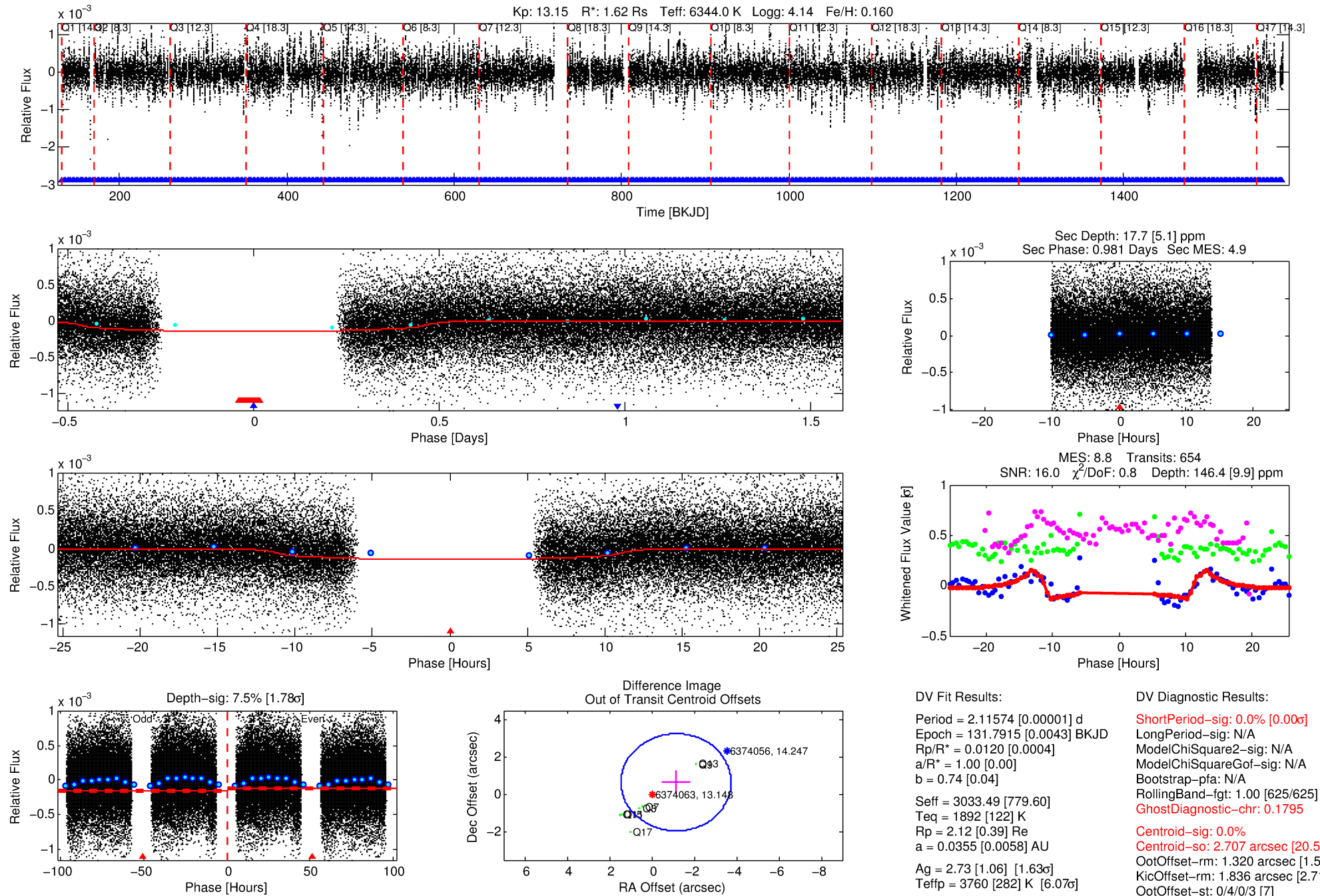
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006374063-02

No Significant Match Found

DV One-Page Summary

KIC: 6374063 Candidate: 2 of 2 Period: 2.116 d



DV Fit Results:

Period = 2.11574 [0.00001] d
Epoch = 131.7915 [0.0043] BKJD
Rp/R* = 0.0120 [0.0004]
a/R* = 1.00 [0.00]
b = 0.74 [0.04]
Seff = 3033.49 [779.60]
Teff = 1892 [122] K
Rp = 2.12 [0.39] Re
a = 0.0355 [0.0058] AU
Ag = 2.73 [1.06] [1.63 σ]
Teffp = 3760 [282] K [6.07 σ]

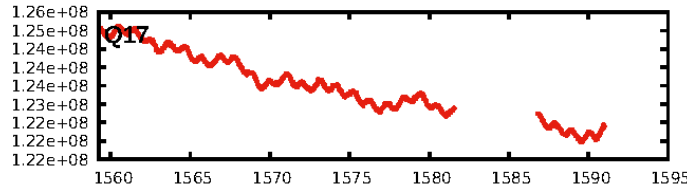
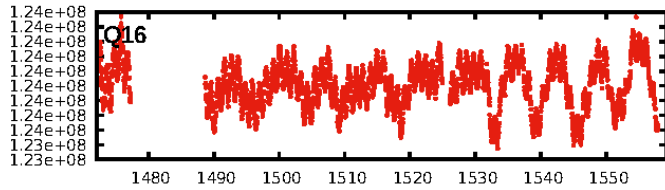
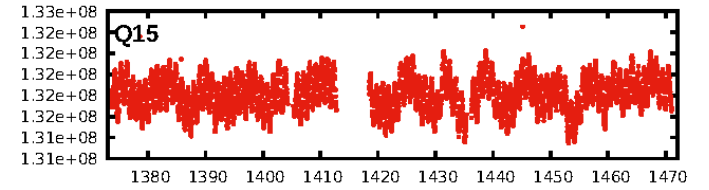
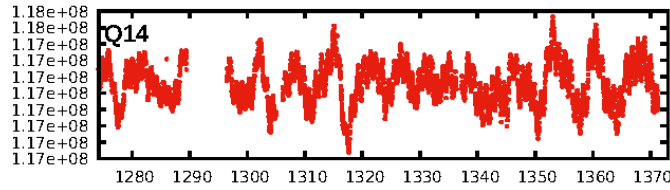
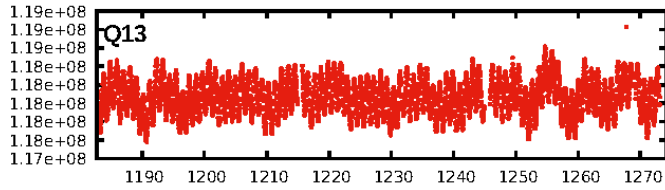
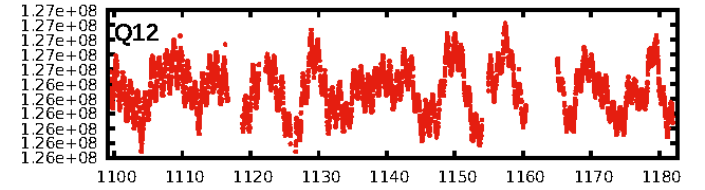
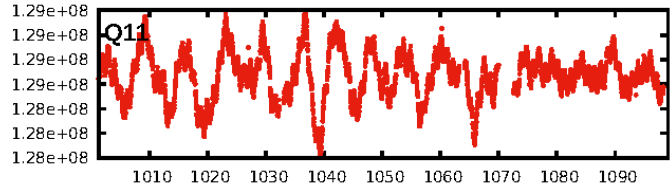
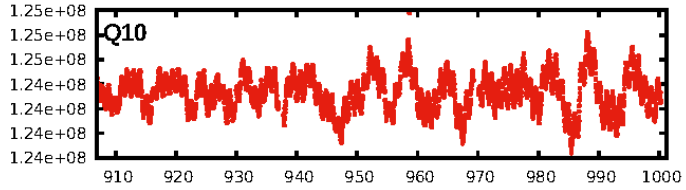
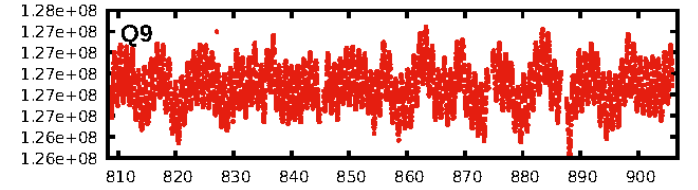
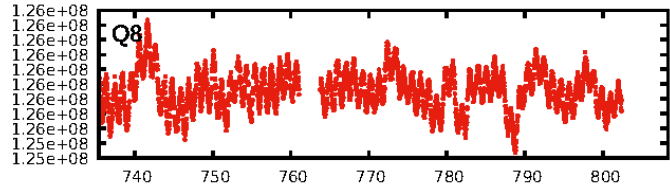
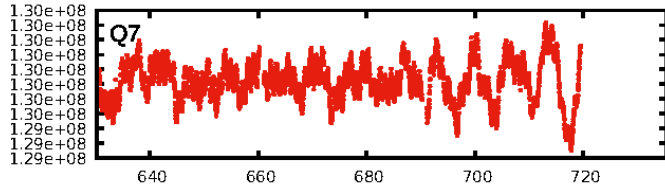
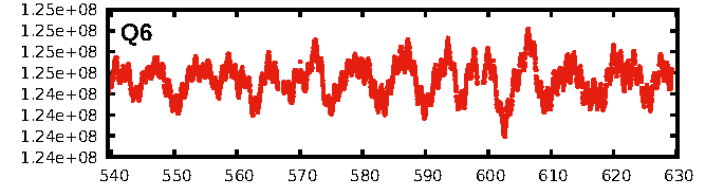
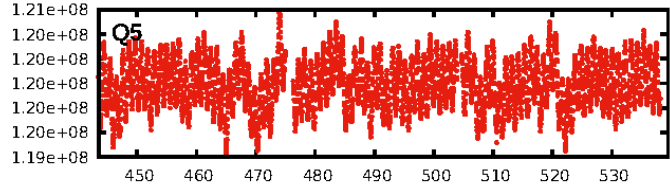
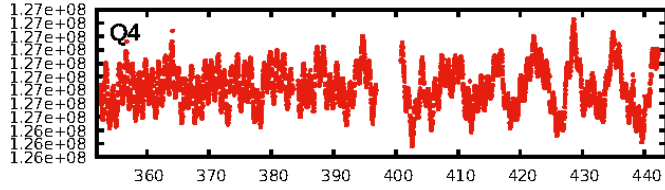
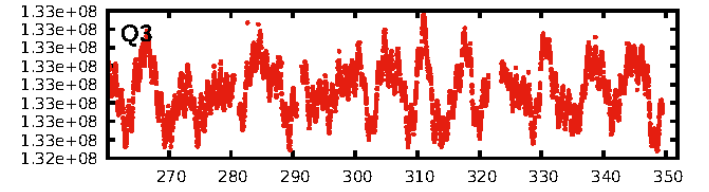
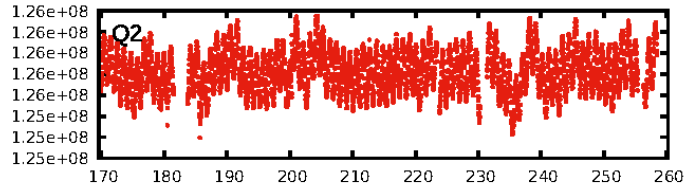
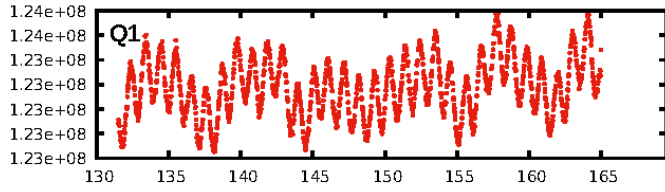
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [625/625]
GhostDiagnostic-chr: 0.1795
Centroid-sig: 0.0%
Centroid-so: 2.707 arcsec [20.50 σ]
OotOffset-rm: 1.320 arcsec [1.52 σ]
KicOffset-rm: 1.836 arcsec [2.71 σ]
OotOffset-st: 0/4/0/3 [7]
KicOffset-st: 0/4/0/3 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 0.00 [0/17]

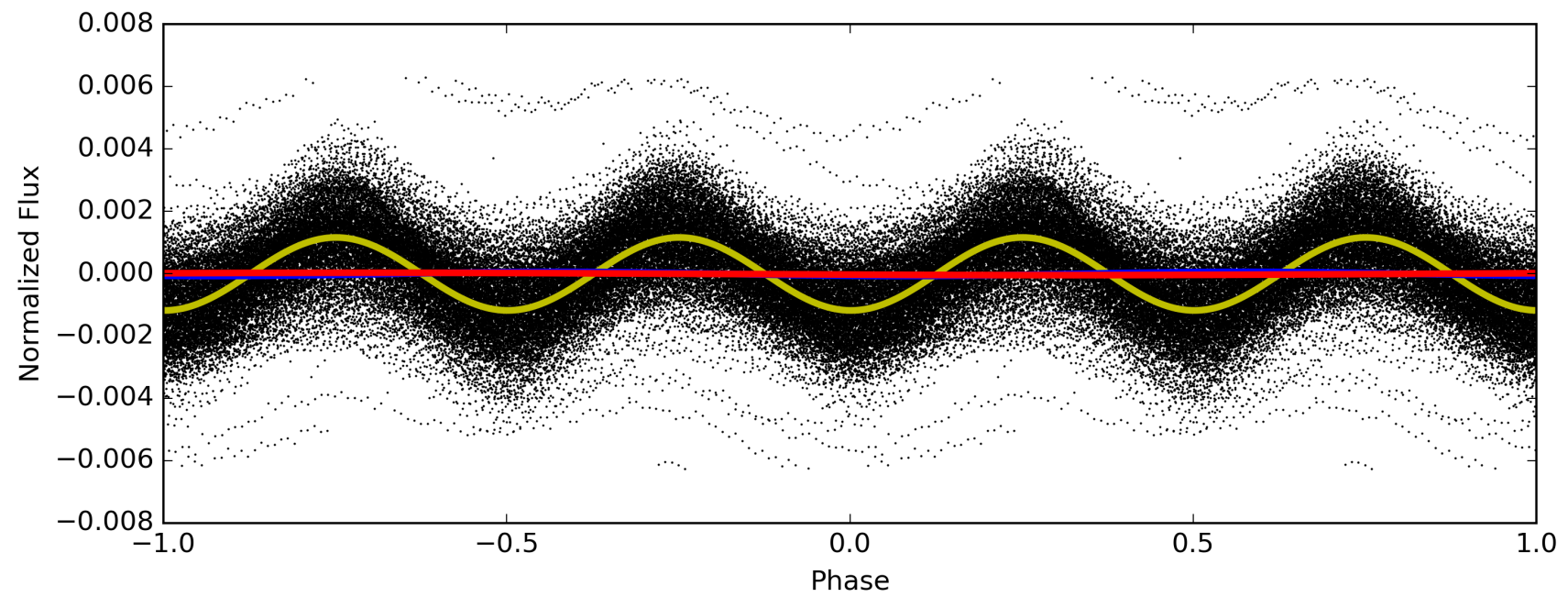
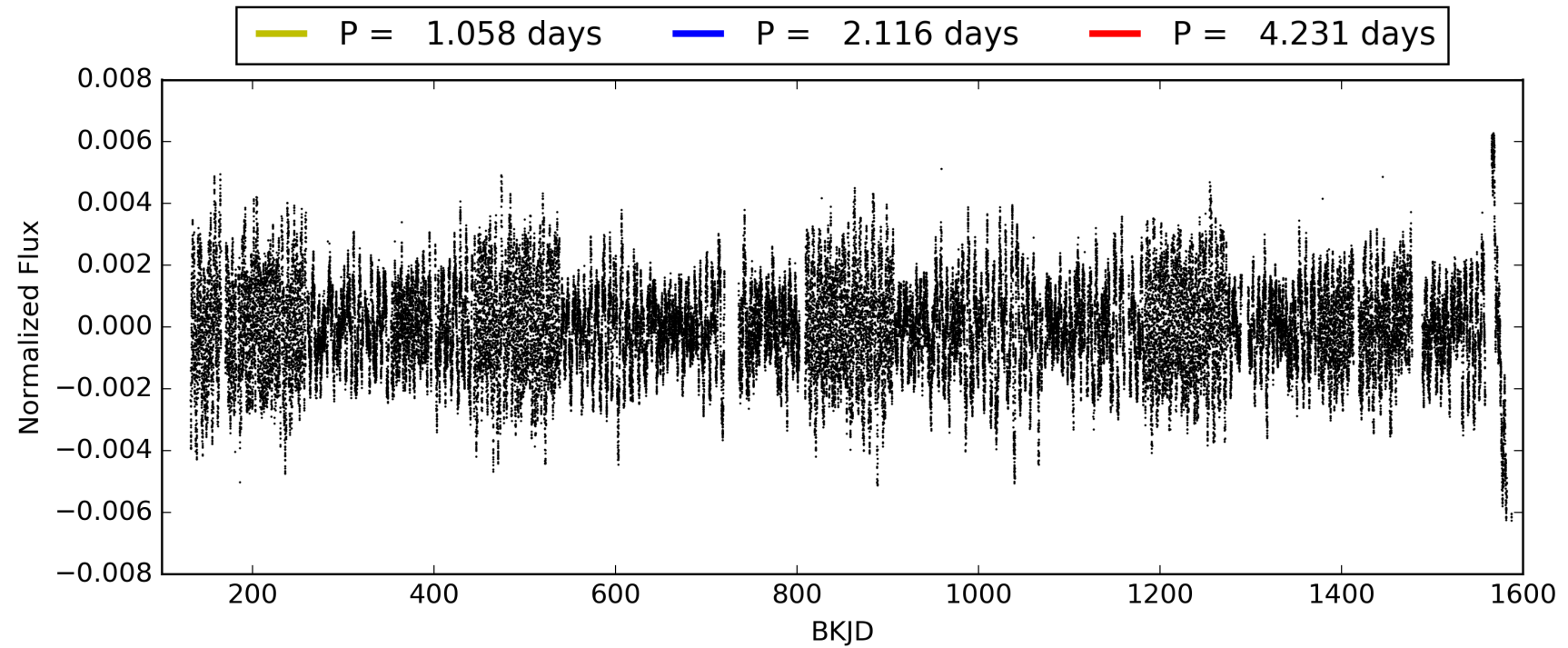
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:40:29 Z

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

TCE 006374063-02, PDC Light Curves

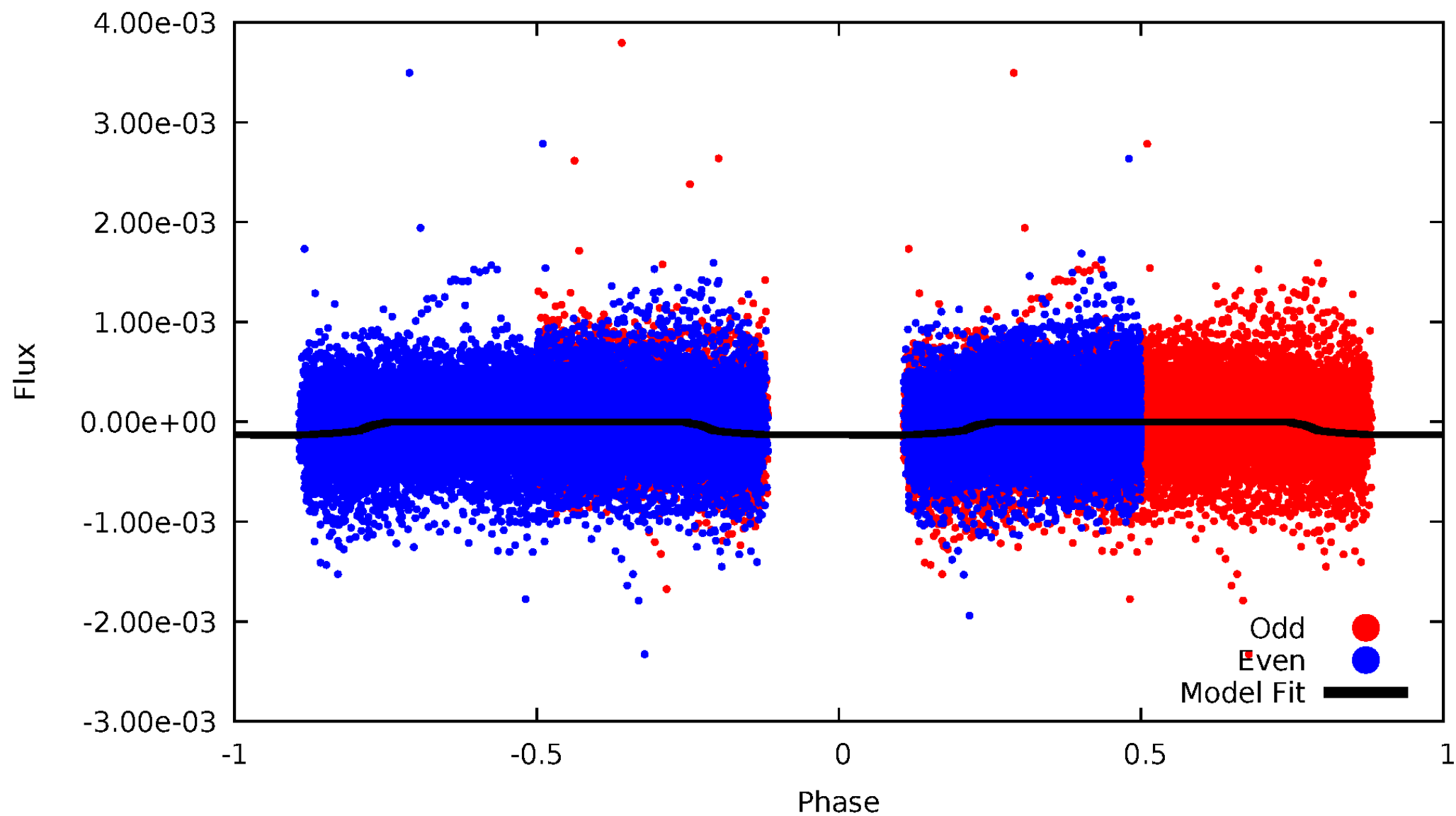


TCE 006374063-02



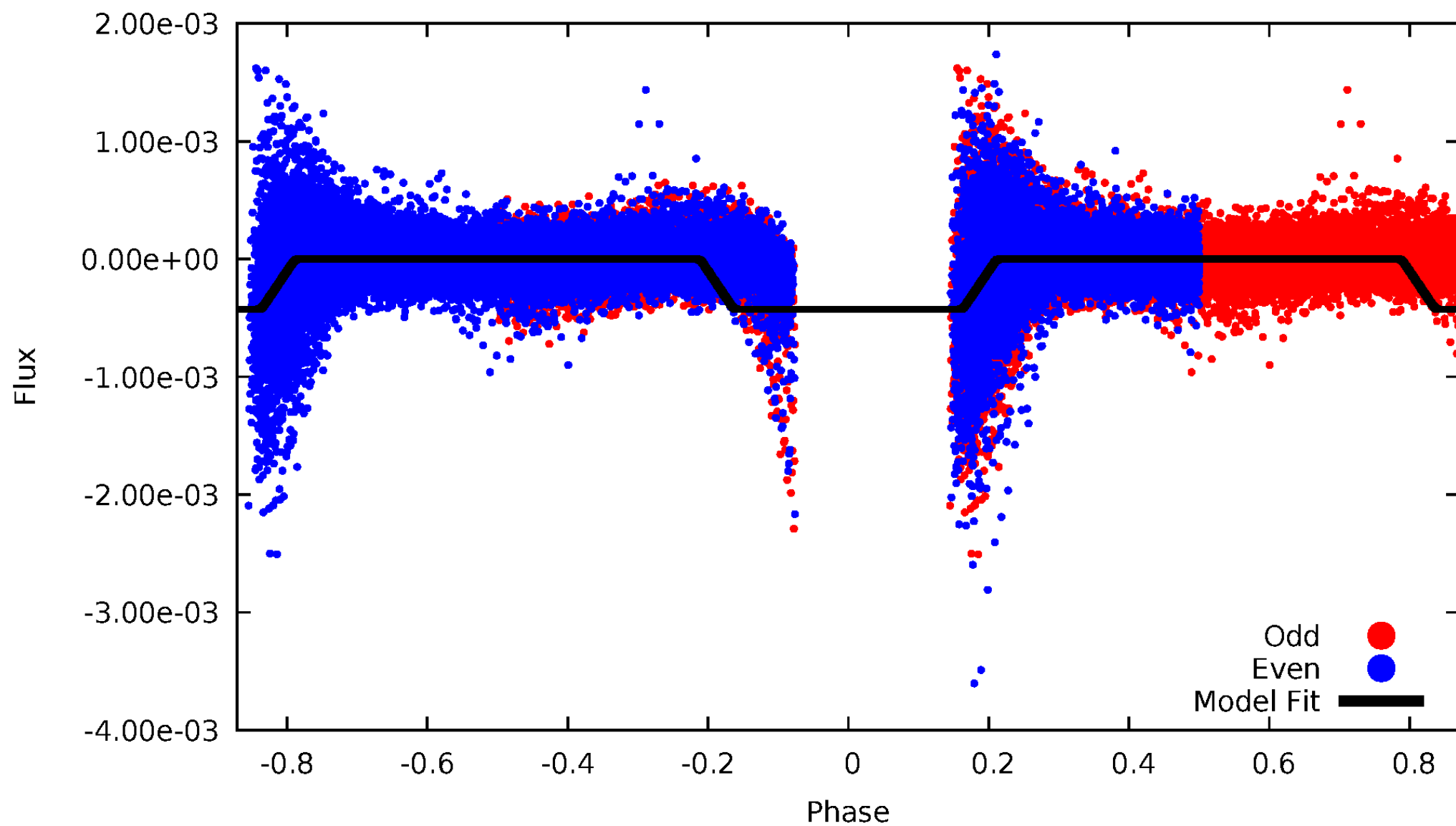
DV Odd/Even

TCE 006374063-02



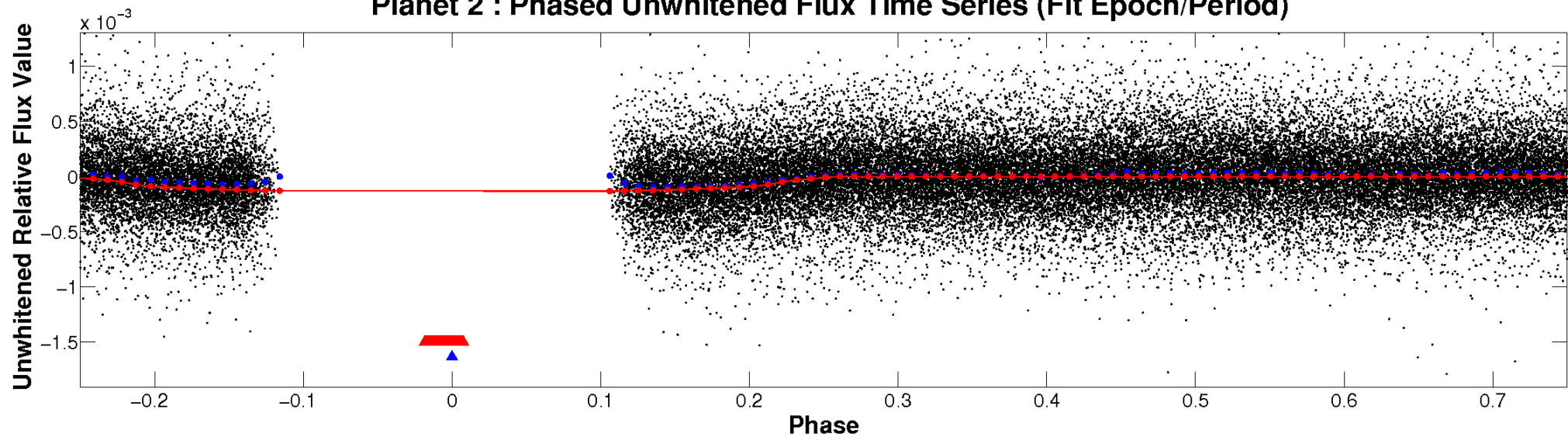
ALT Odd/Even

TCE 006374063-02

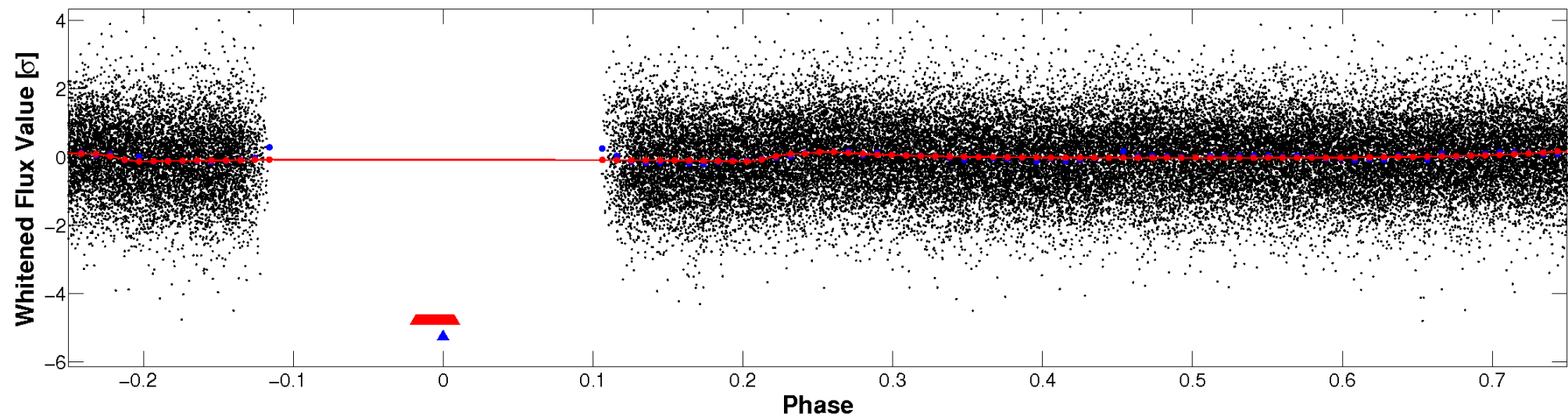


Non-Whitened Vs. Whitened Light Curve

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

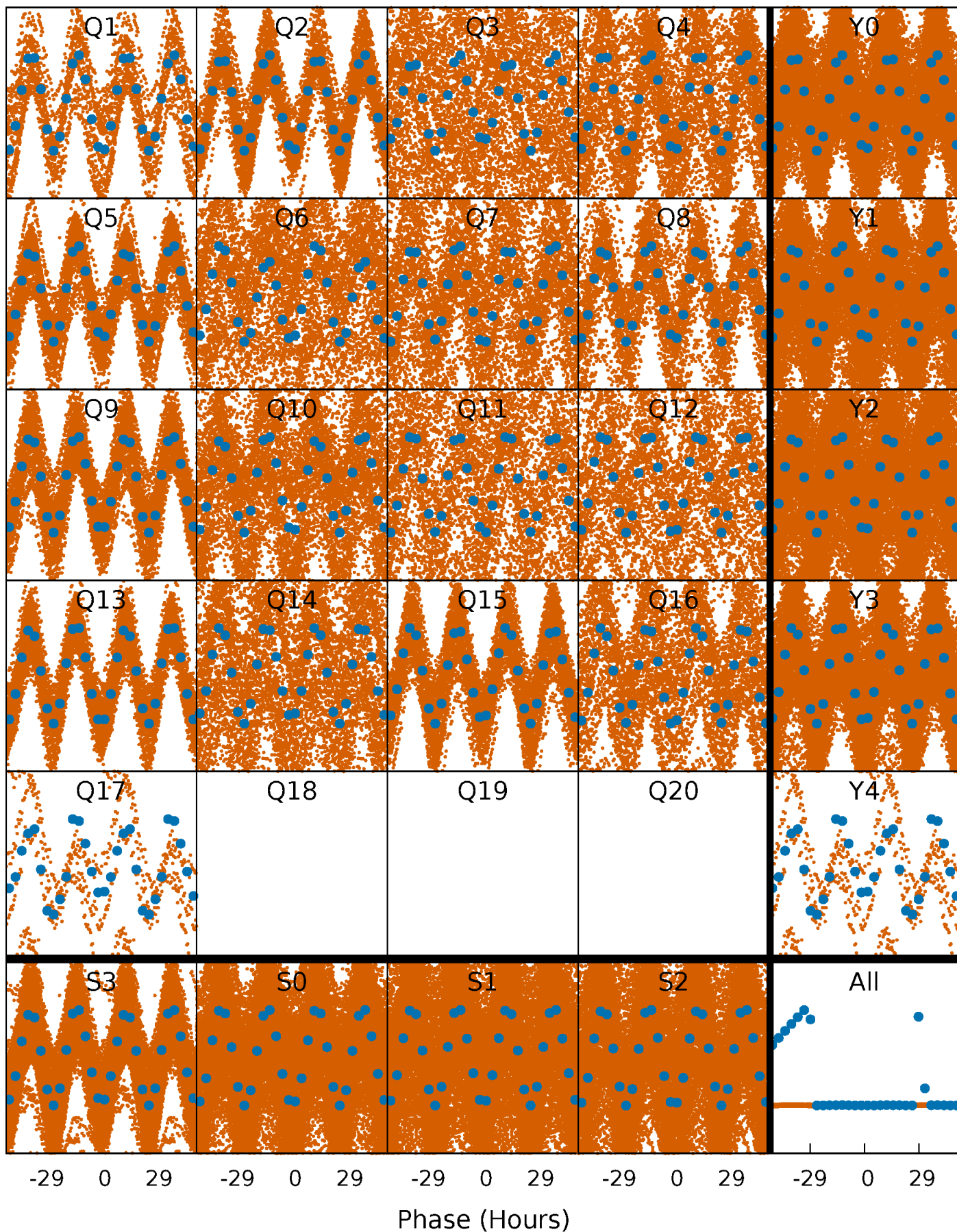


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



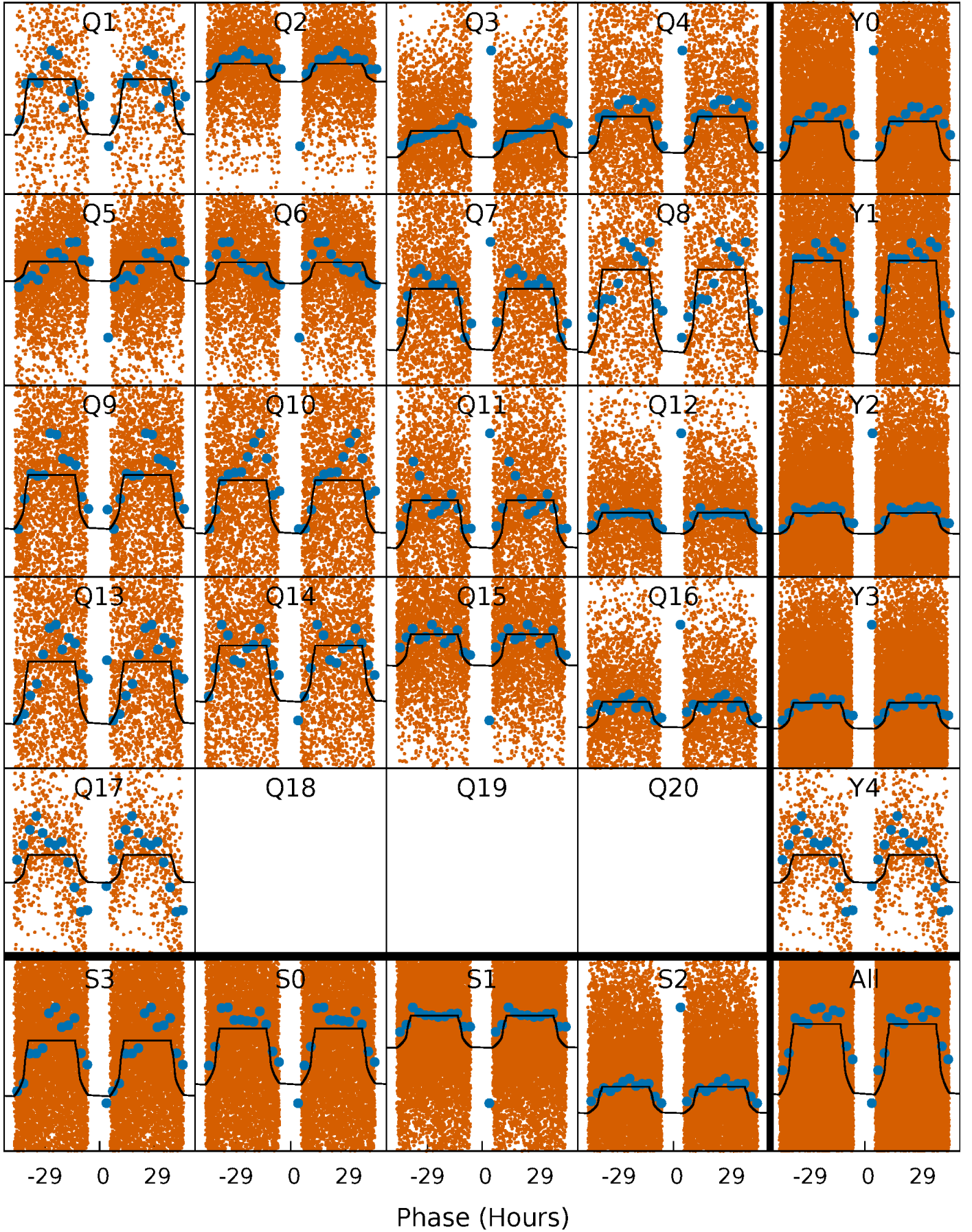
PDC Quarter-Phased Transit Curves

TCE 006374063-02 $P = 2.115743$ Days $T_0 = 131.791503$ (BKJD)



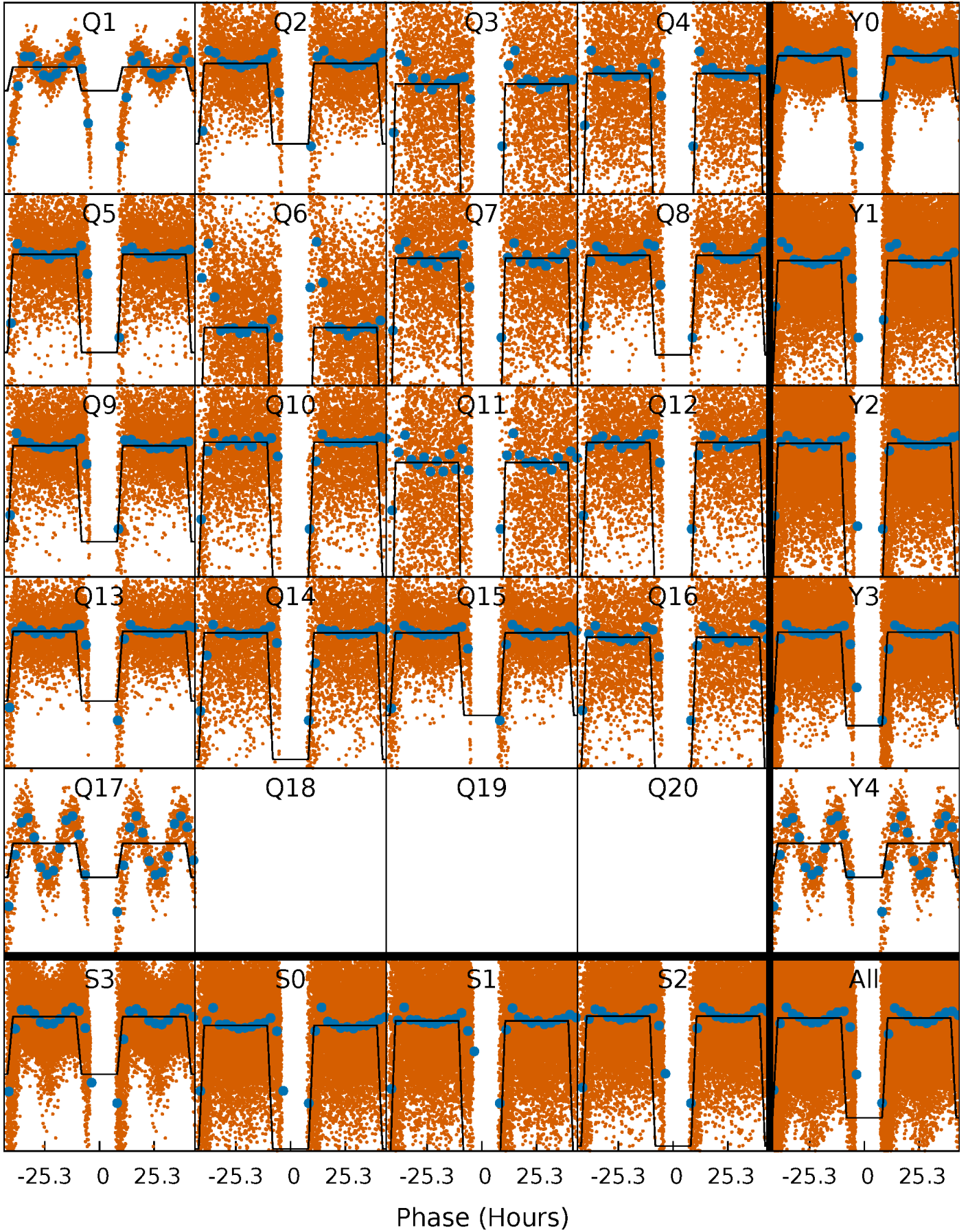
DV Quarter-Phased Transit Curves

TCE 006374063-02 P= 2.115743 Days $T_0=131.791503$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

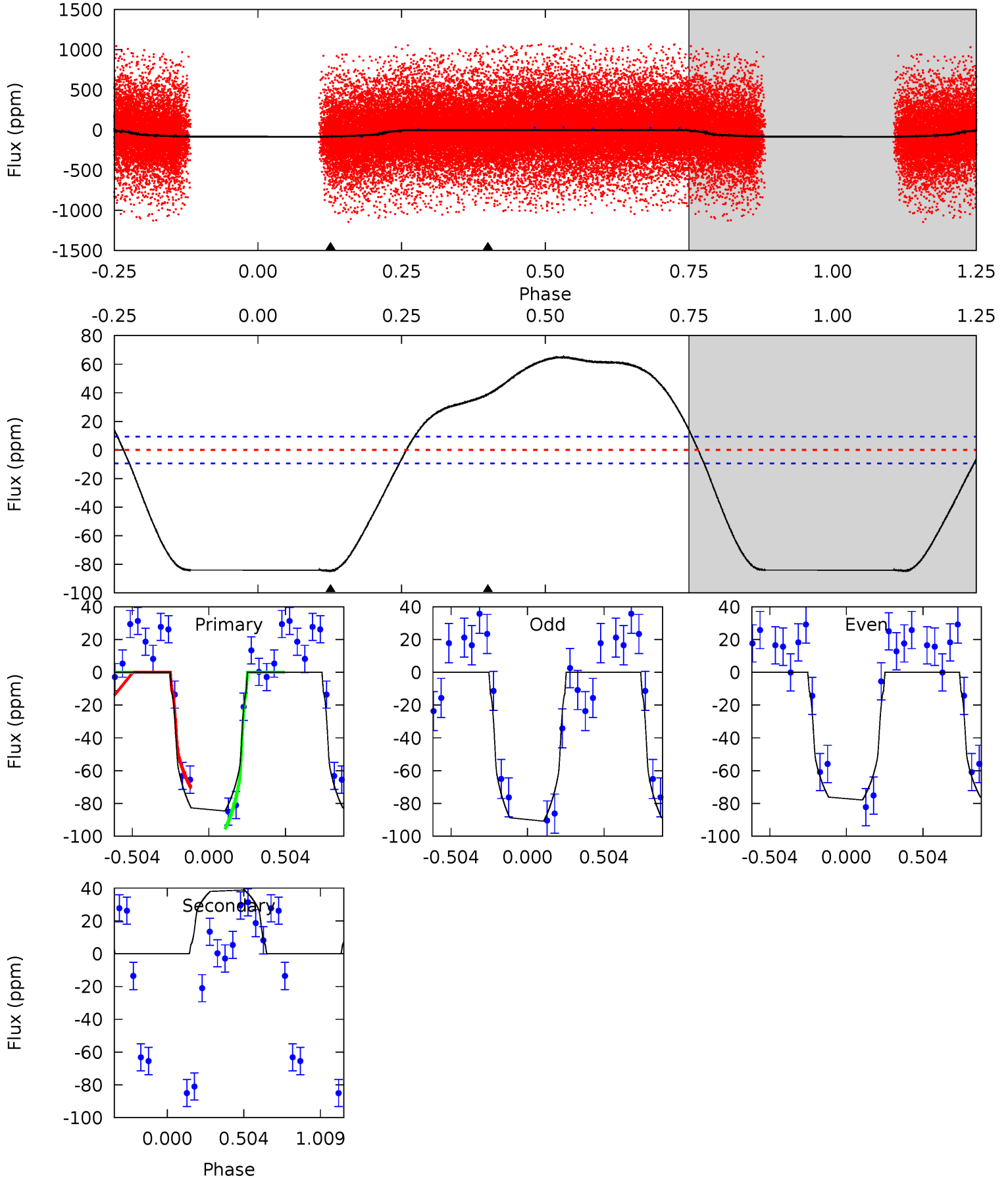
TCE 006374063-02 P= 2.115749 Days $T_0=131.704507$ (BKJD)



DV Model-Shift Uniqueness Test

006374063-02, P = 2.115743 Days, E = 129.675760 Days

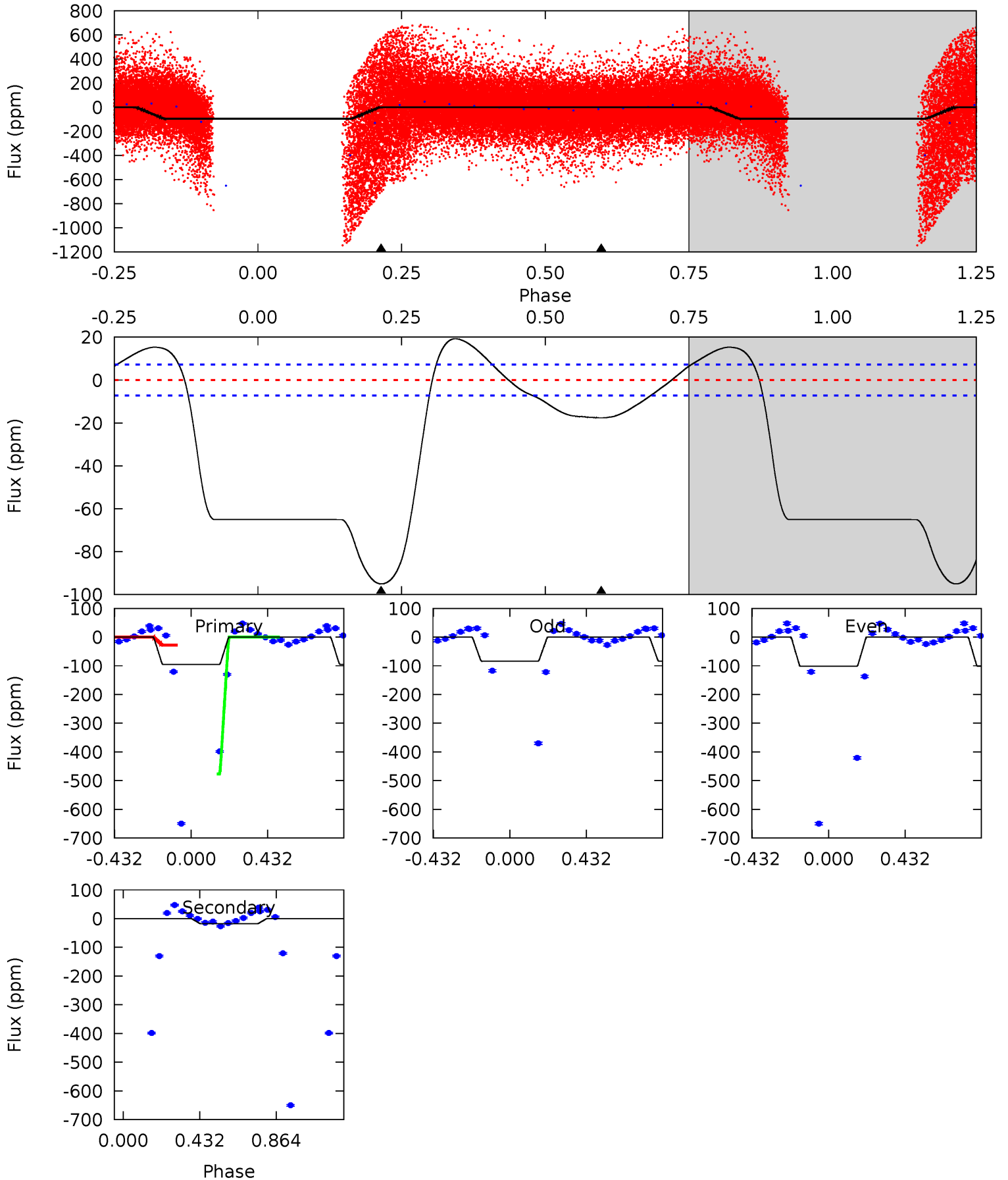
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 38.1 | -17.5 | 0 | 0 | 4.21 | 0.67 | 8.92 | 38.1 | 38.1 | -17.5 | -17.5 | 2.90 | 0.31 | 0.44 | 5.48 |



Alt Model-Shift Uniqueness Test

006374063-02, P = 2.115749 Days, E = 131.704507 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 55.6 | 10.3 | 0 | 0 | 4.25 | 0.79 | 14.2 | 55.6 | 55.6 | 10.3 | 10.3 | 5.33 | 1.49 | 0.17 | 0 |



Stellar Parameters For KIC 006374063

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6344^{+75}_{-88} | $4.142^{+0.143}_{-0.117}$ | $0.160^{+0.150}_{-0.200}$ | $1.623^{+0.296}_{-0.296}$ | $1.333^{+0.102}_{-0.125}$ | $0.439^{+0.315}_{-0.158}$ |
| | +1%/-1% | +3%/-3% | +94%/-125% | +18%/-18% | +8%/-9% | +72%/-36% |
| Source | SPE68 | SPE68 | SPE68 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 006374063-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|----------------------------|
| DV | 39 ± 2 | $2.12^{+0.22}_{-0.22}$ | 2634^{+136}_{-122} | -4764^{+97}_{-101} | $-6.075^{+1.155}_{-1.377}$ |
| Alt. | -18 ± 2 | $3.65^{+0.36}_{-0.38}$ | 2640^{+123}_{-125} | 3180^{+95}_{-90} | $0.916^{+0.230}_{-0.168}$ |

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

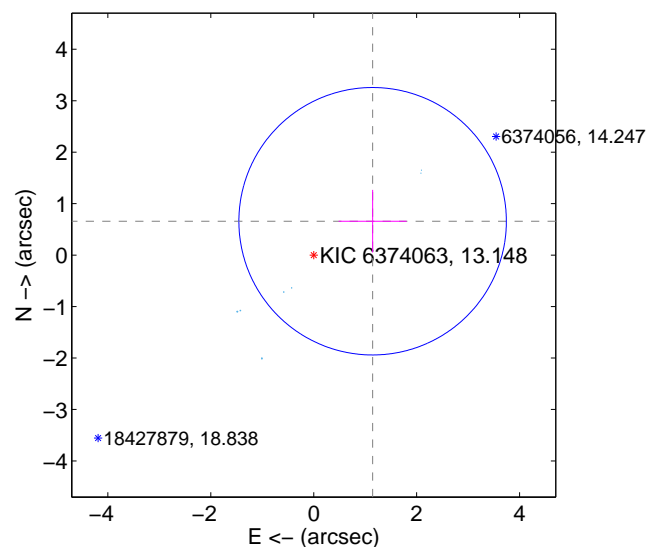
Supplemental centroid analysis for 006374063-02. Kepler magnitude: 13.15. Transit SNR 15.97

There are 7 quarters with good PRF difference image offsets

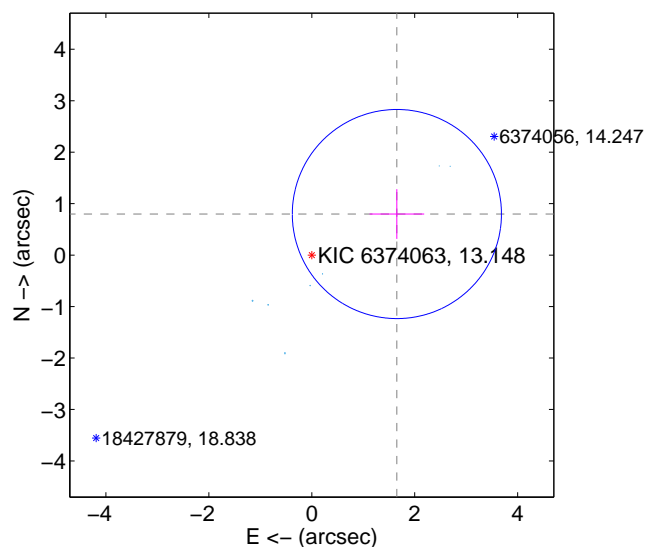
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 1.320 ± 0.866 | 1.52 | -1.145 ± 0.661 | 0.658 ± 0.609 |
| PRF-fit source offset from KIC position | 1.836 ± 0.677 | 2.71 | -1.654 ± 0.530 | 0.798 ± 0.482 |
| photometric centroid source offset | 2.71 ± 0.13 | 20.50 | -2.27 ± 0.14 | 1.47 ± 0.10 |

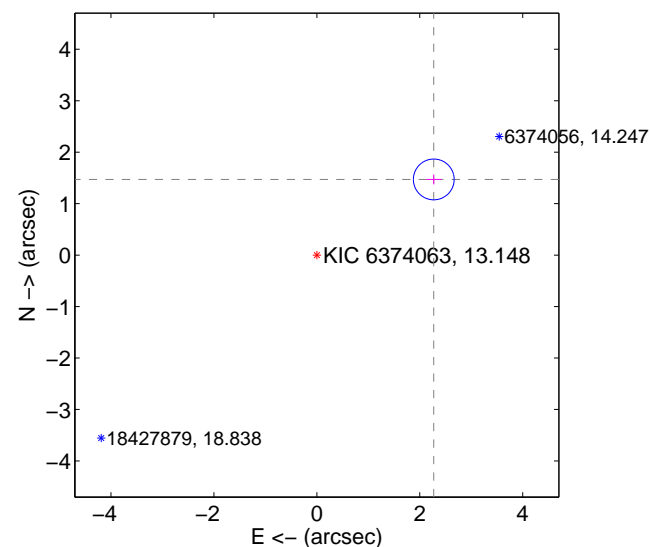
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

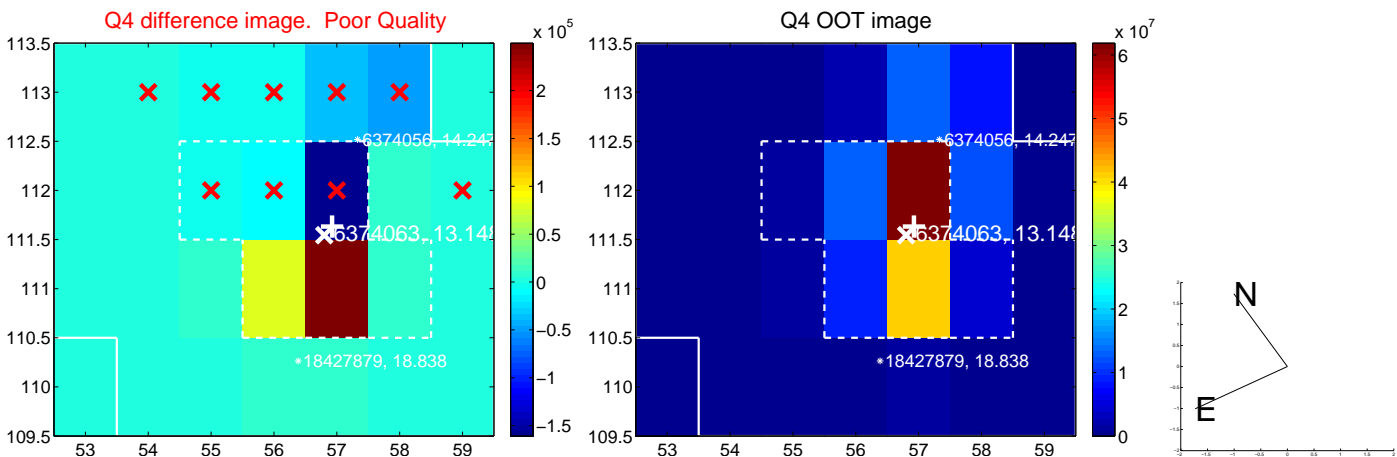
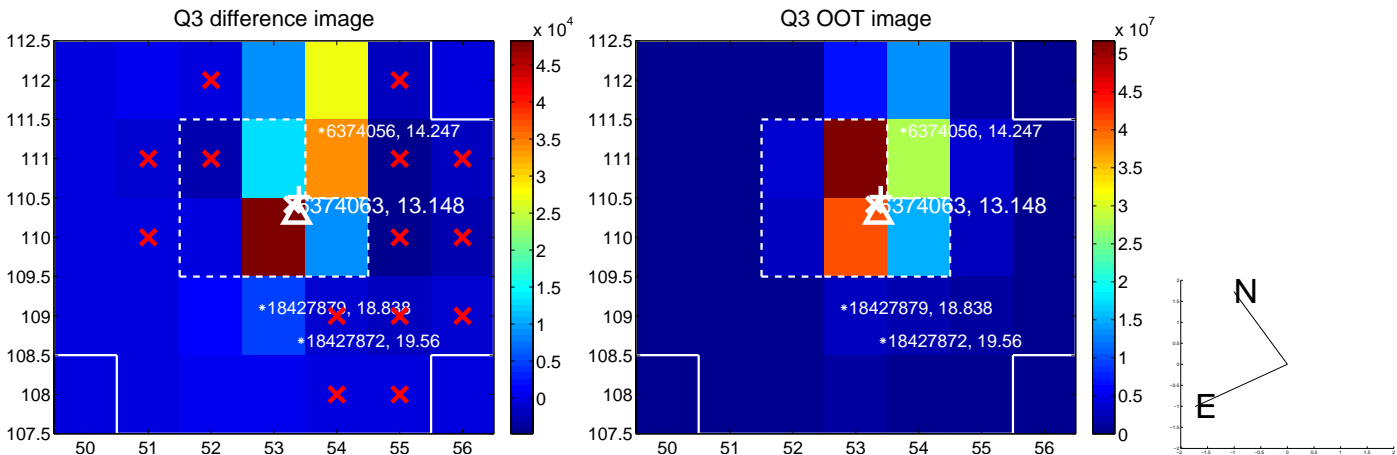
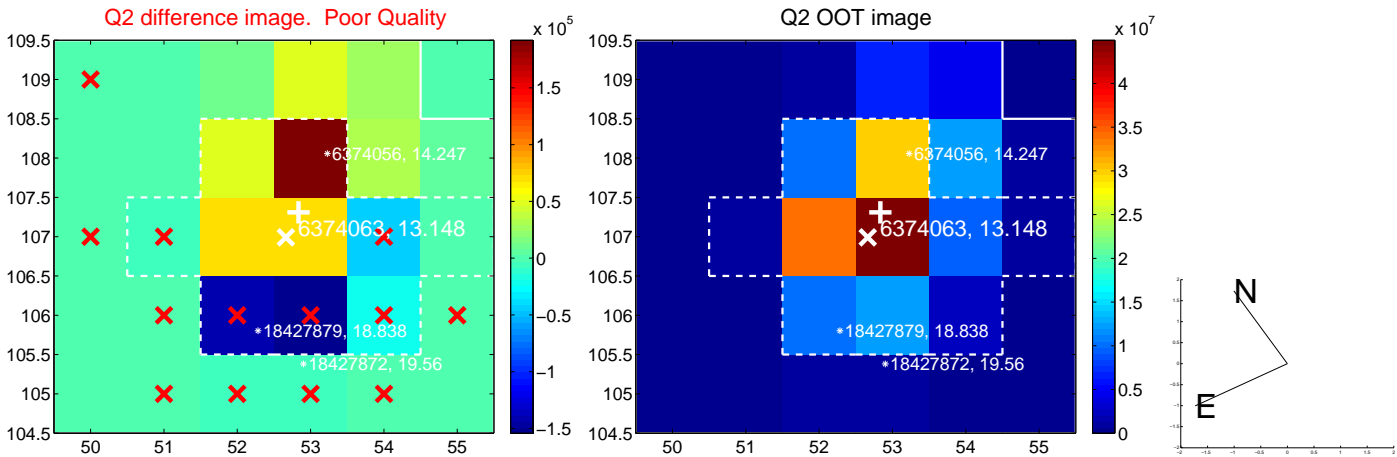
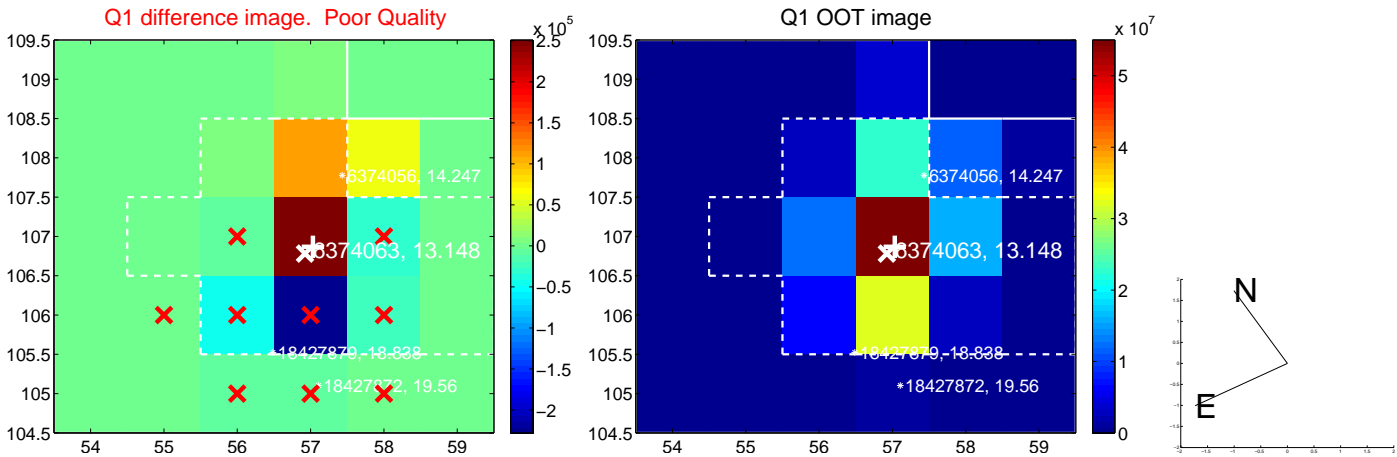


offset from photometric centroids

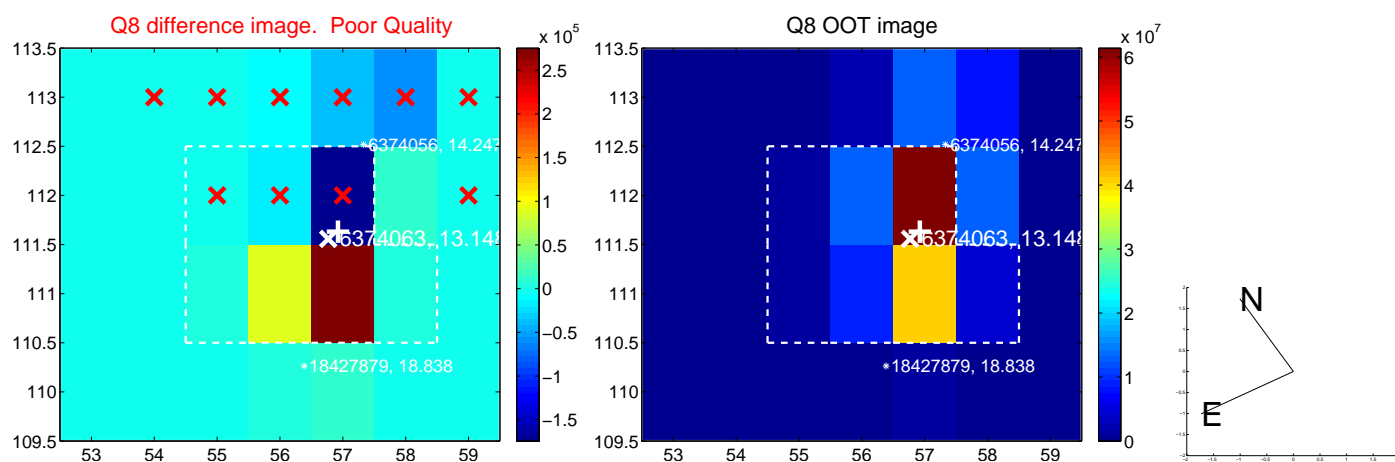
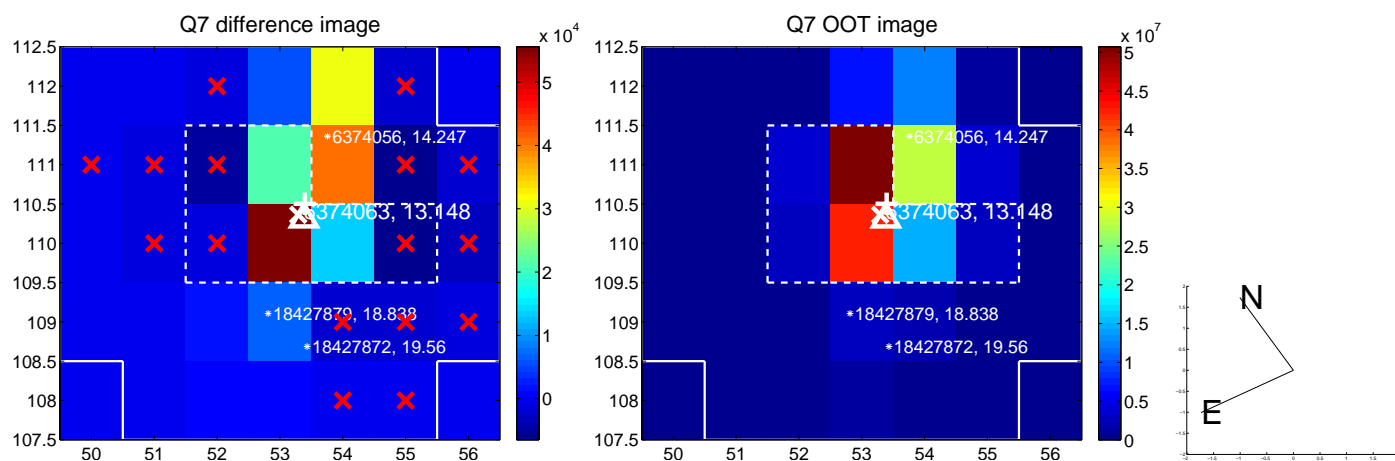
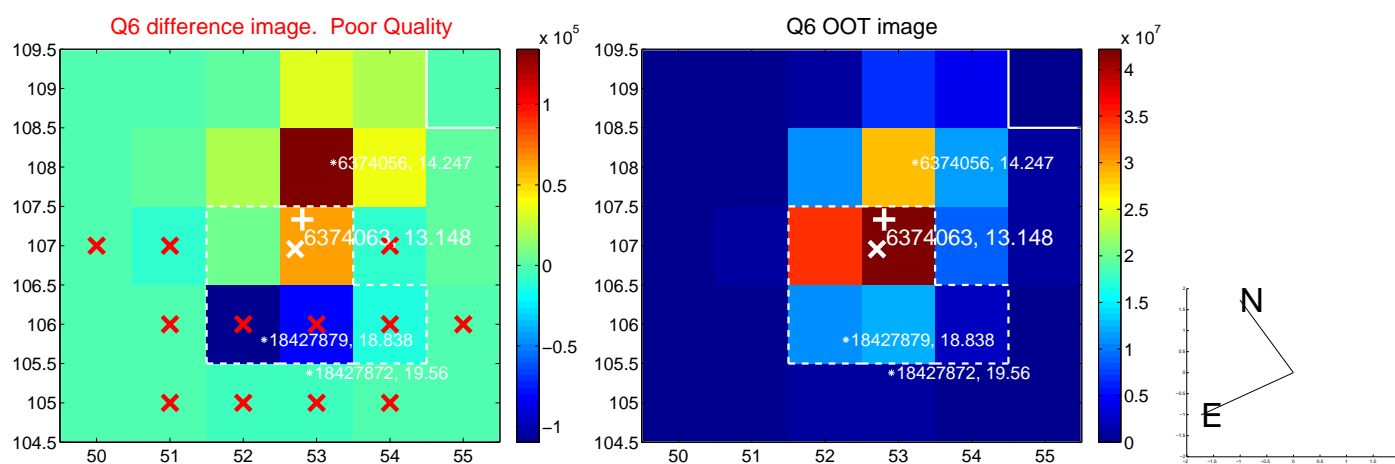
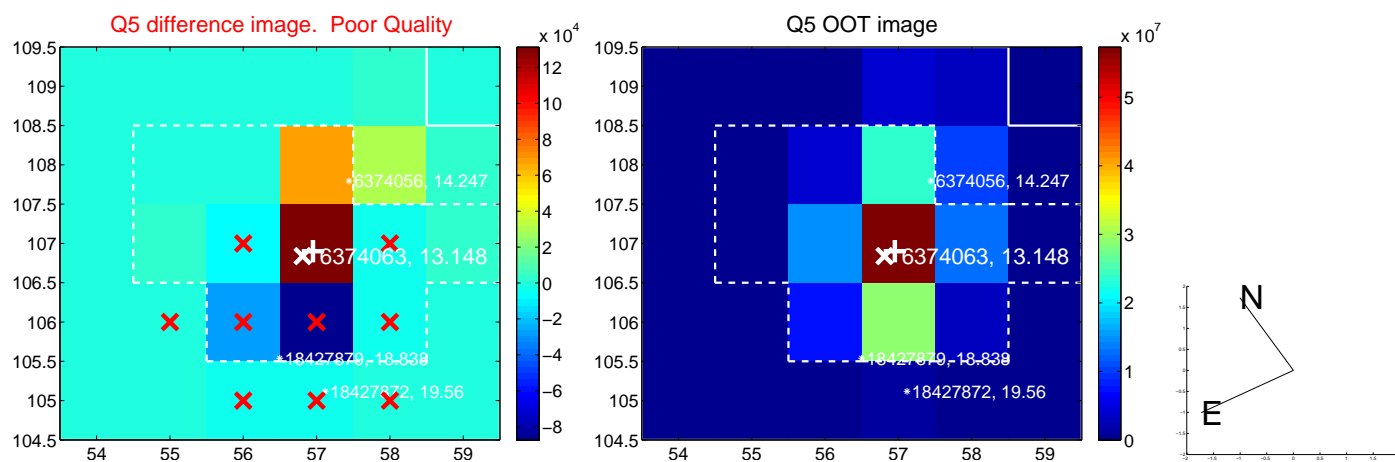


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

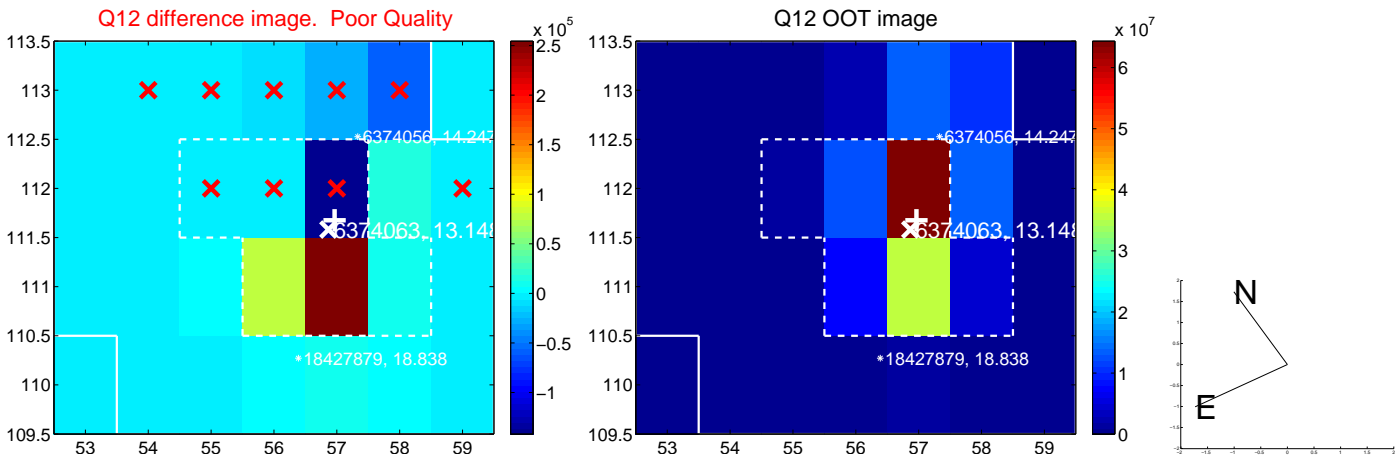
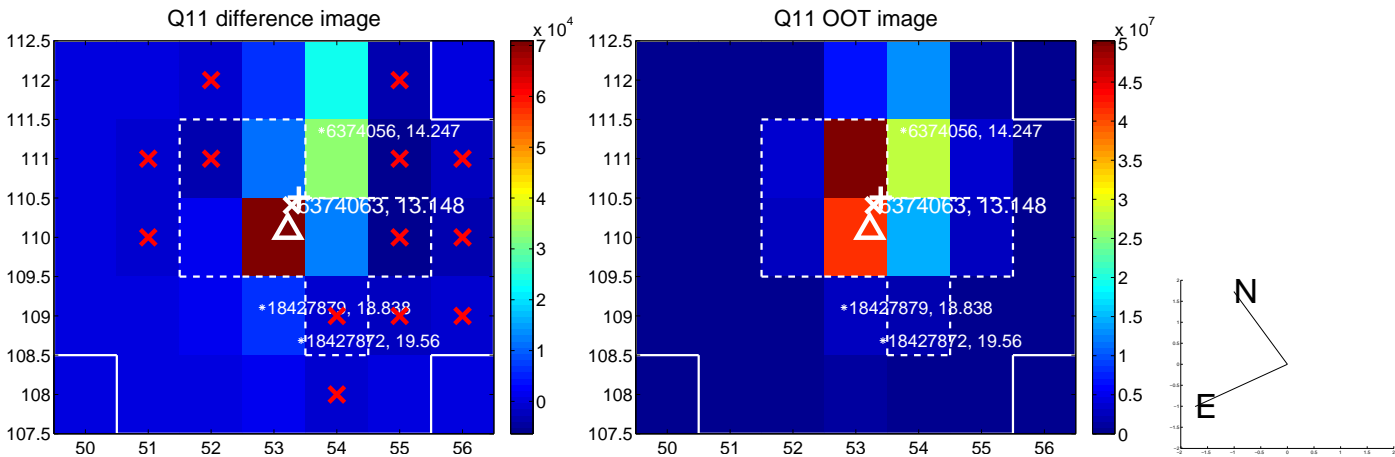
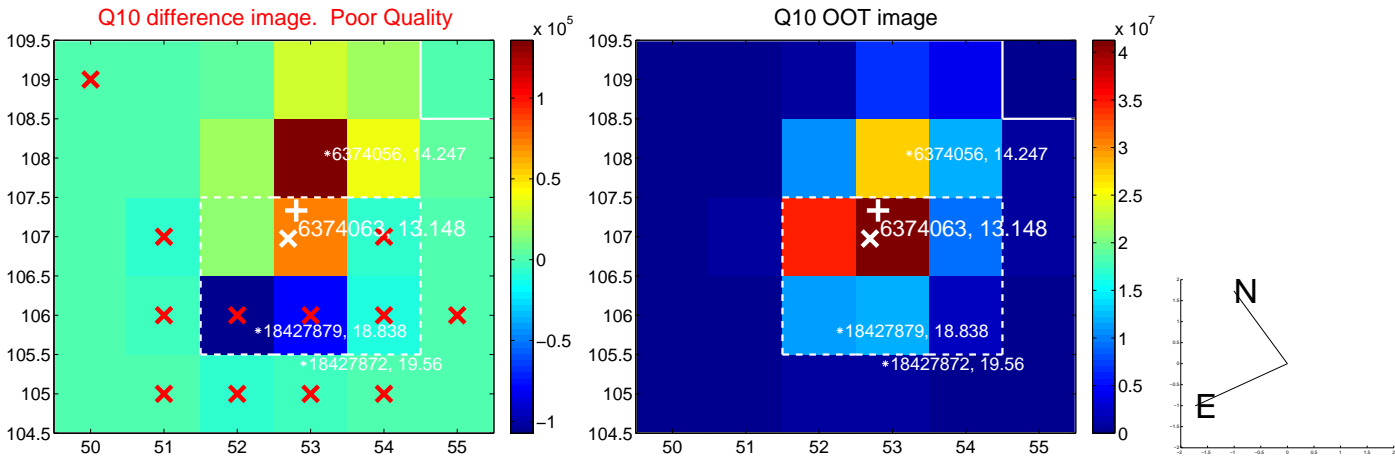
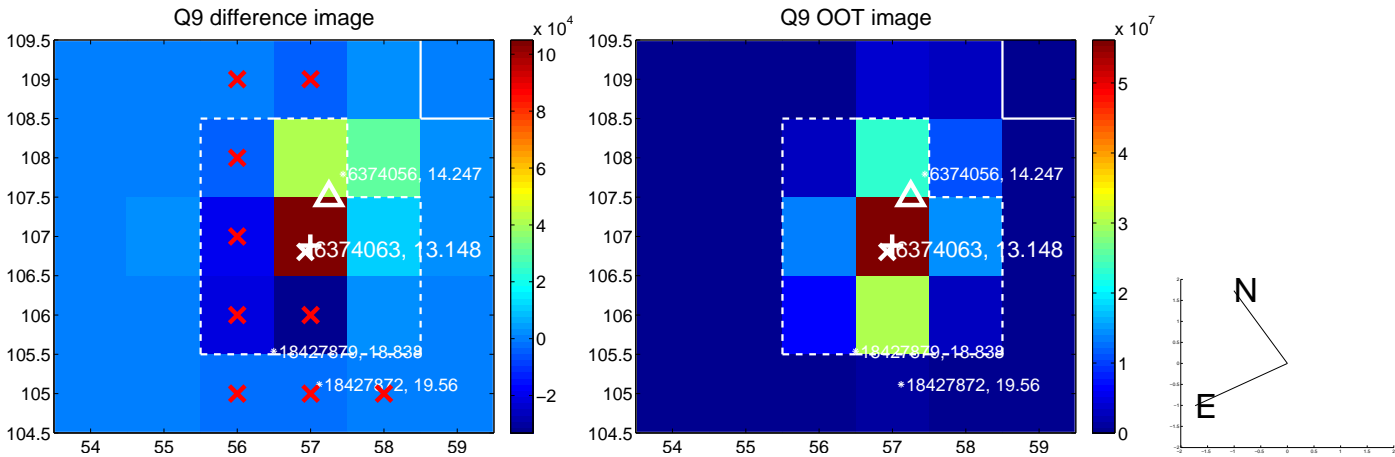
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



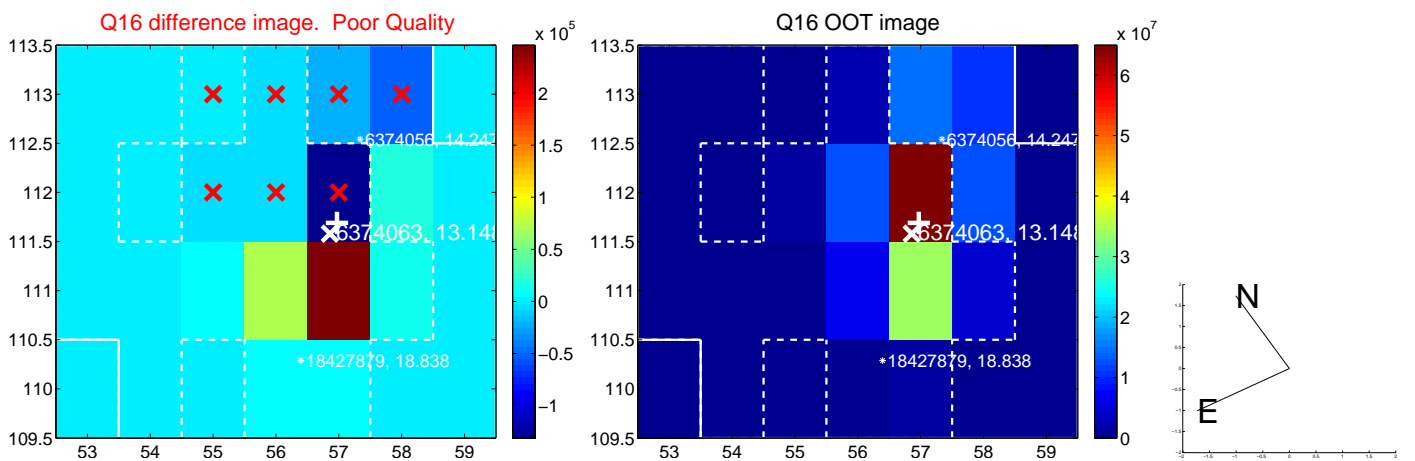
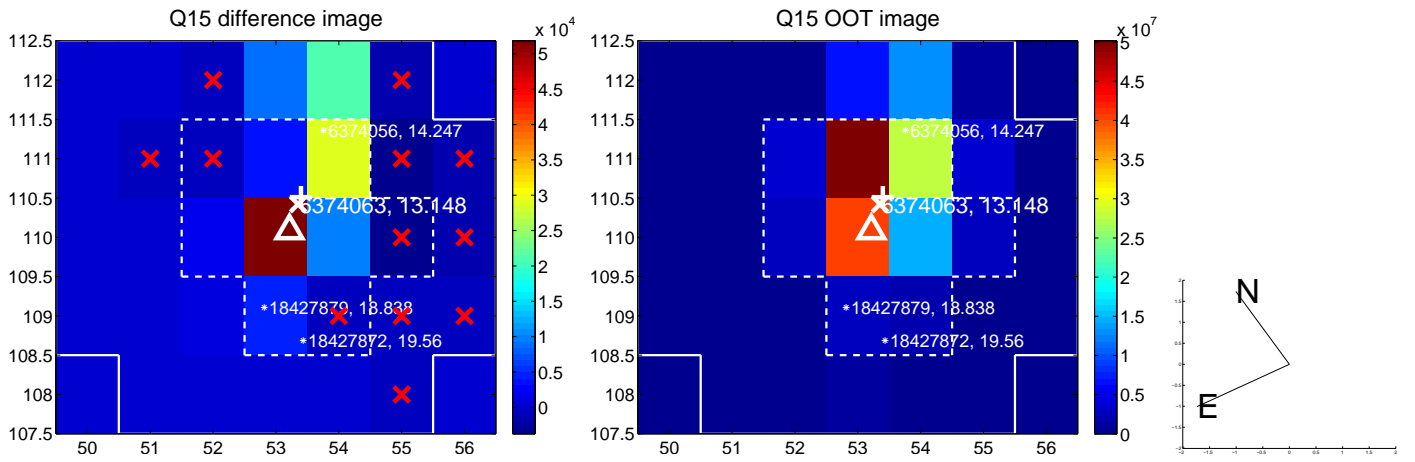
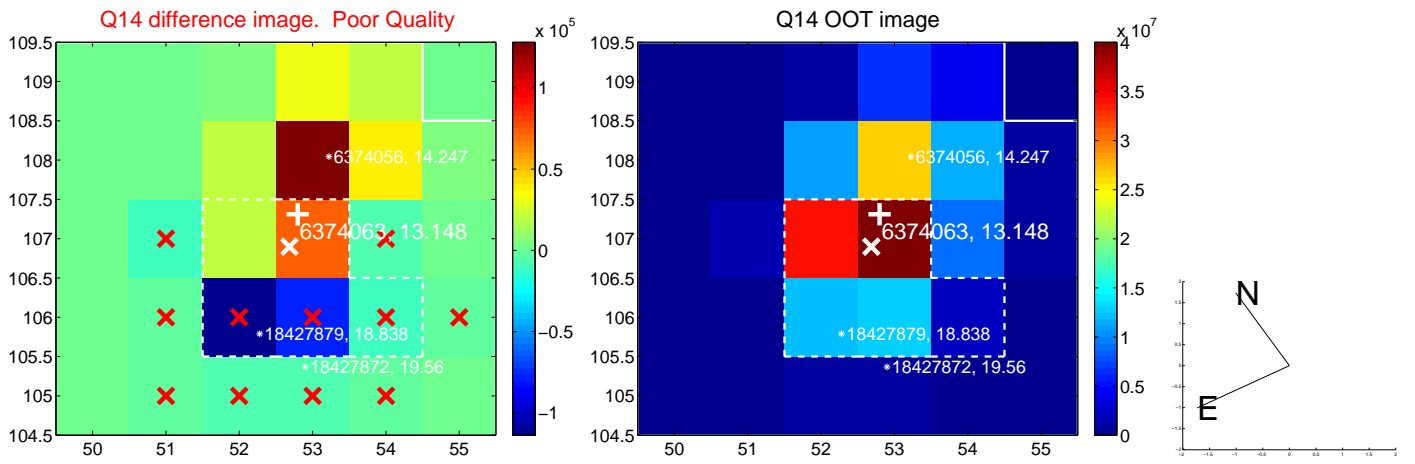
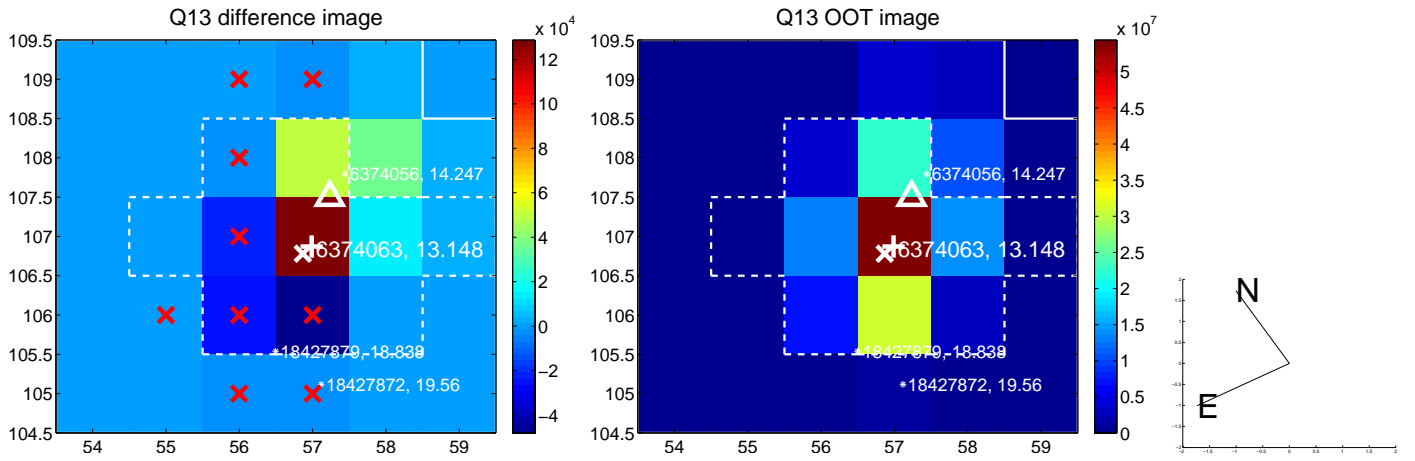
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



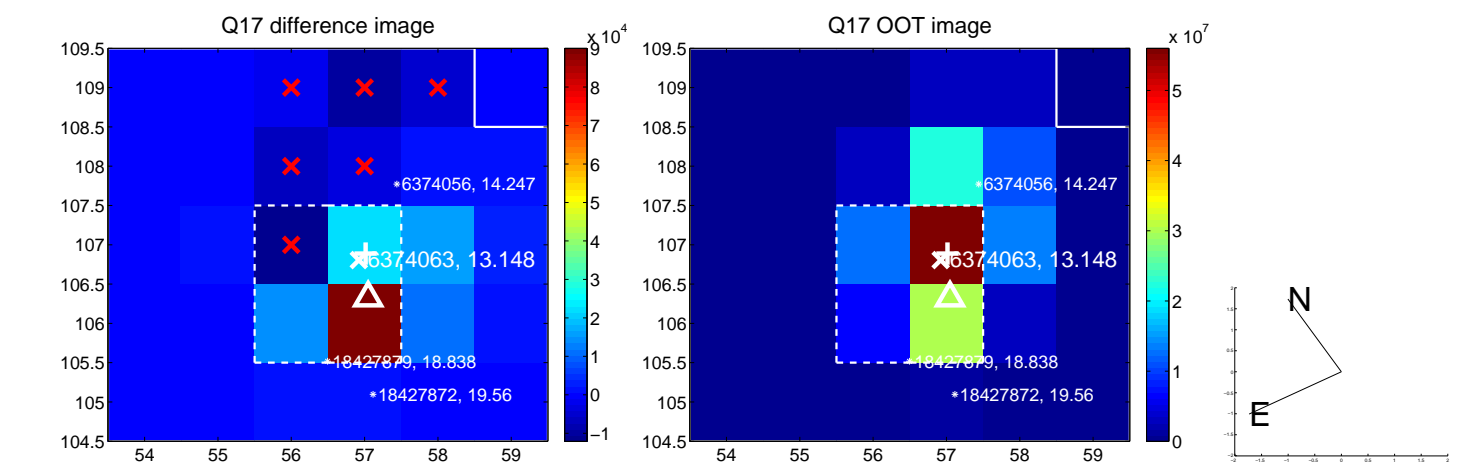
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



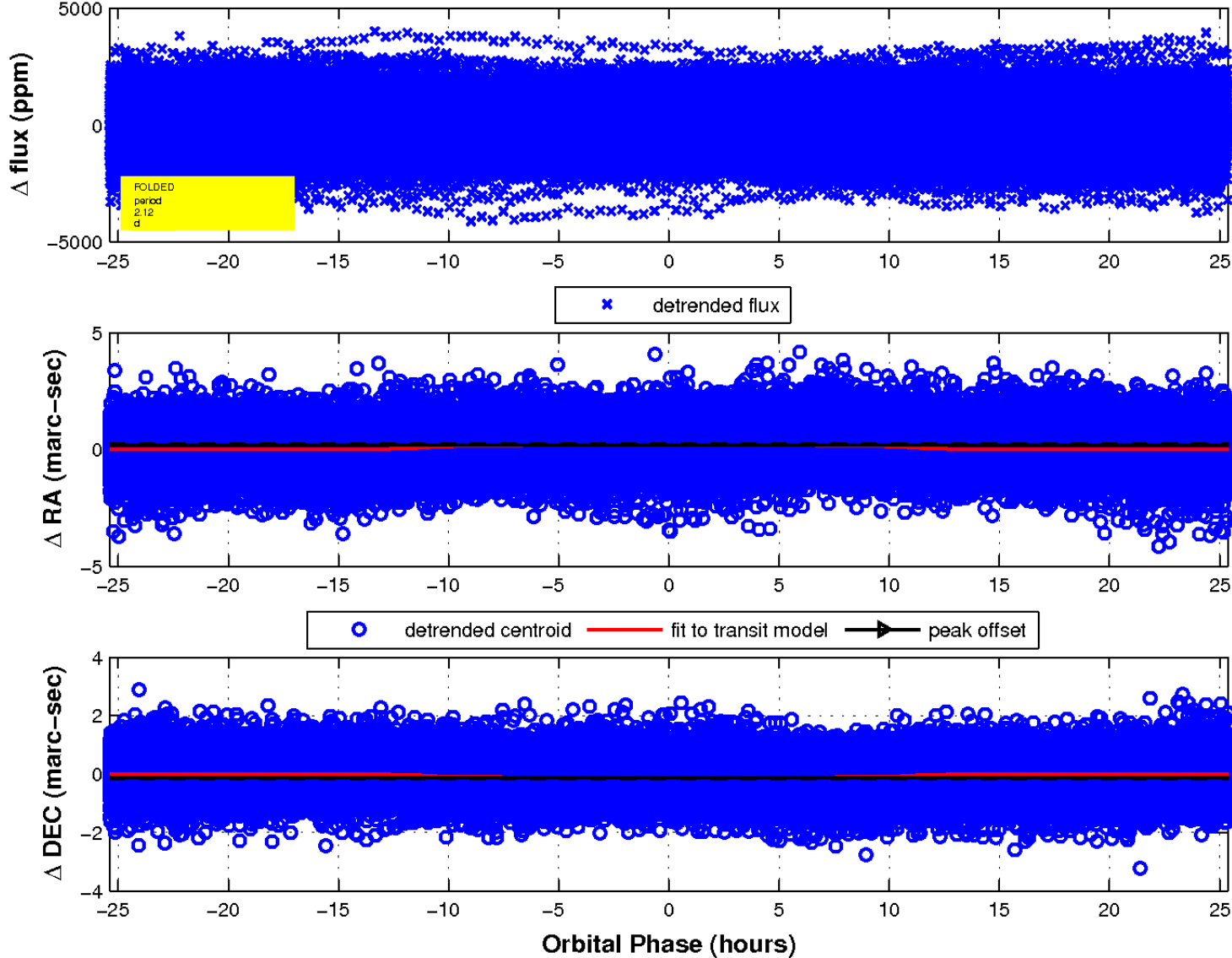
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

