

KIC 006187665

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006187665-01 | OBS | No | 0.519144 | 131.636274 | 472.6 | 1.096 | 12.0 | 13.3 | 1.33 | 6020 | 2.98 | 11603.26 |
| 006187665-02 | OBS | No | 0.519149 | 131.807030 | 620.6 | 0.800 | 10.3 | 15.8 | 1.33 | 6020 | 3.34 | 11603.11 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 006187665-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT |
| 006187665-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD |

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

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

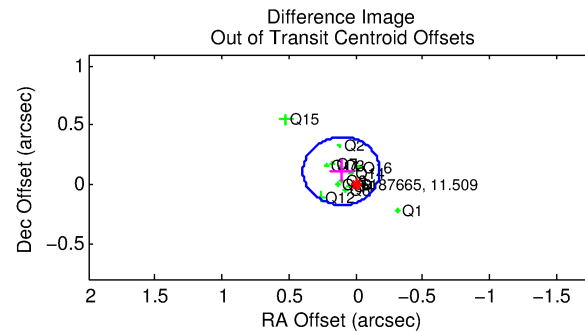
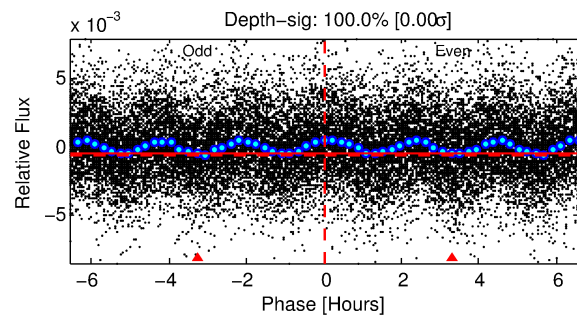
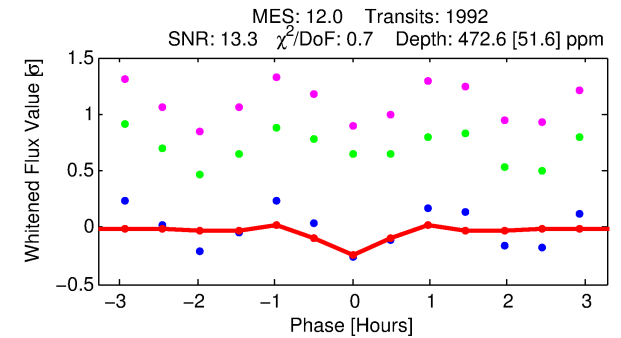
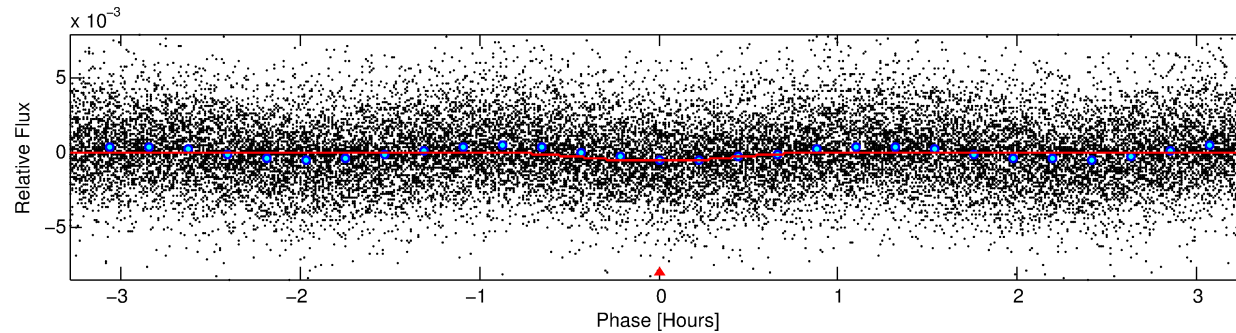
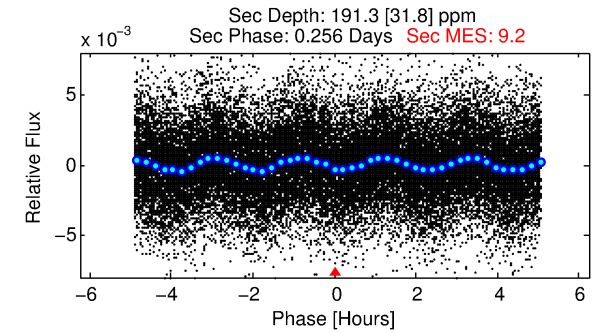
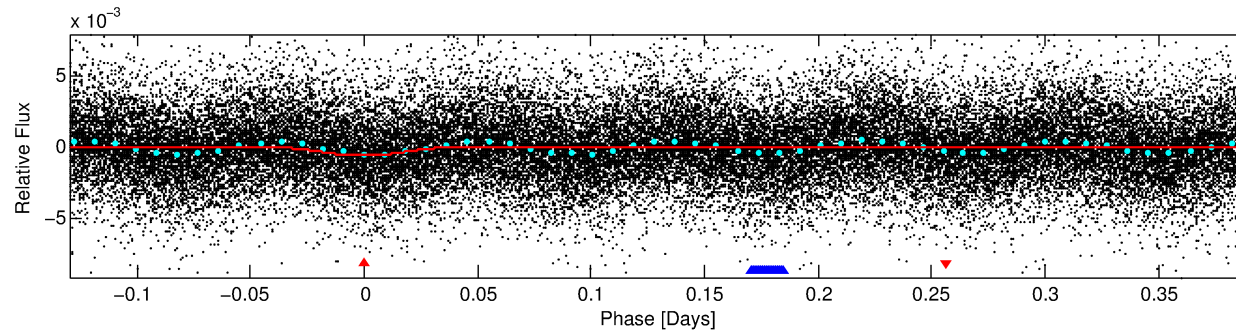
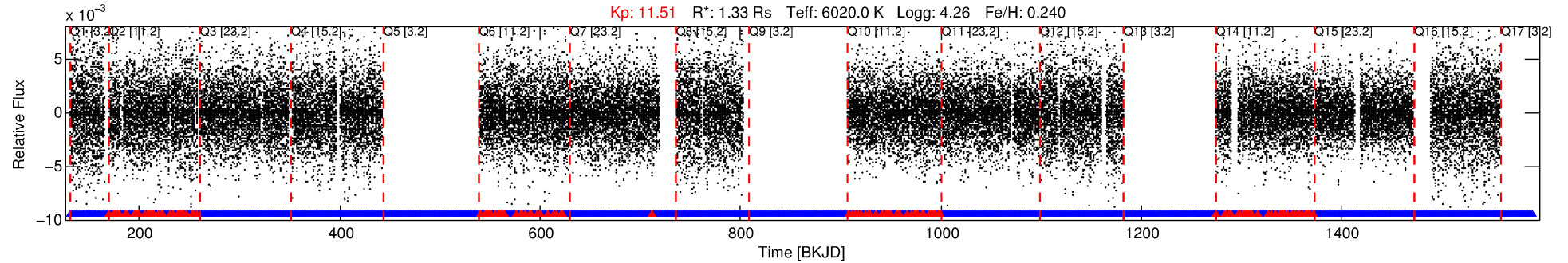
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006187665-01

No Significant Match Found

DV One-Page Summary

KIC: 6187665 Candidate: 1 of 2 Period: 0.519 d



DV Fit Results:

Period = 0.51914 [0.00001] d
Epoch = 131.6363 [0.0011] BKJD
Rp/R* = 0.0206 [0.0096]
a/R* = 3.30 [6.29]
b = 0.50 [3.18]
Seff = 11603.26 [2736.94]
Teff = 2646 [156] K
Rp = 2.98 [1.48] Re
a = 0.0134 [0.0020] AU
Ag = 2.12 [2.06] [0.54σ]
Teffp = 4937 [1173] K [1.94σ]

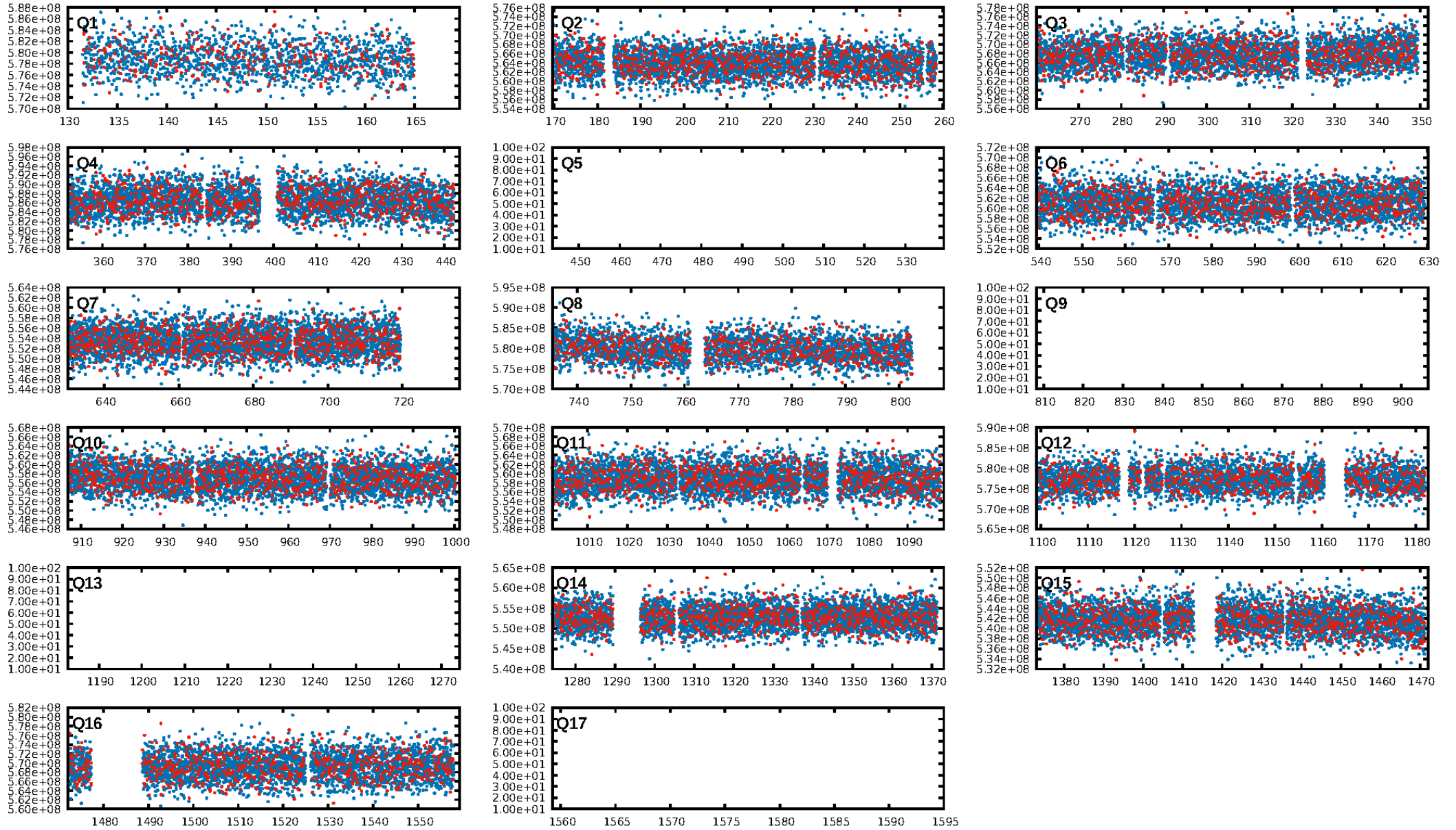
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.02e-29
RollingBand-fgt: 0.92 [1775/1927]
GhostDiagnostic-chr: 1.6
Centroid-sig: N/A
Centroid-so: 0.146 arcsec [5.85σ]
OotOffset-rm: 0.157 arcsec [1.64σ]
KicOffset-rm: 0.177 arcsec [1.91σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/13]

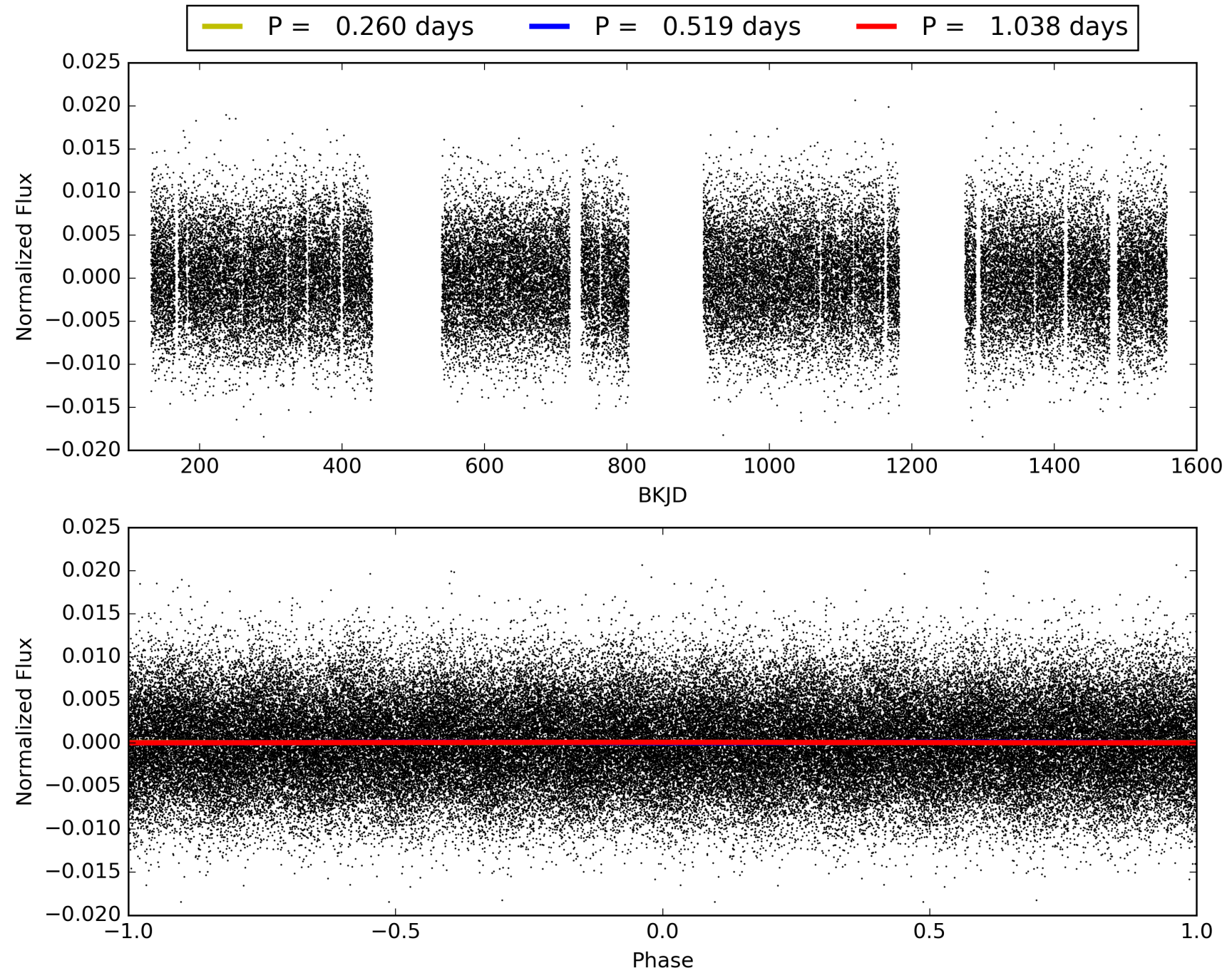
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:38:32 Z

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

TCE 006187665-01, PDC Light Curves

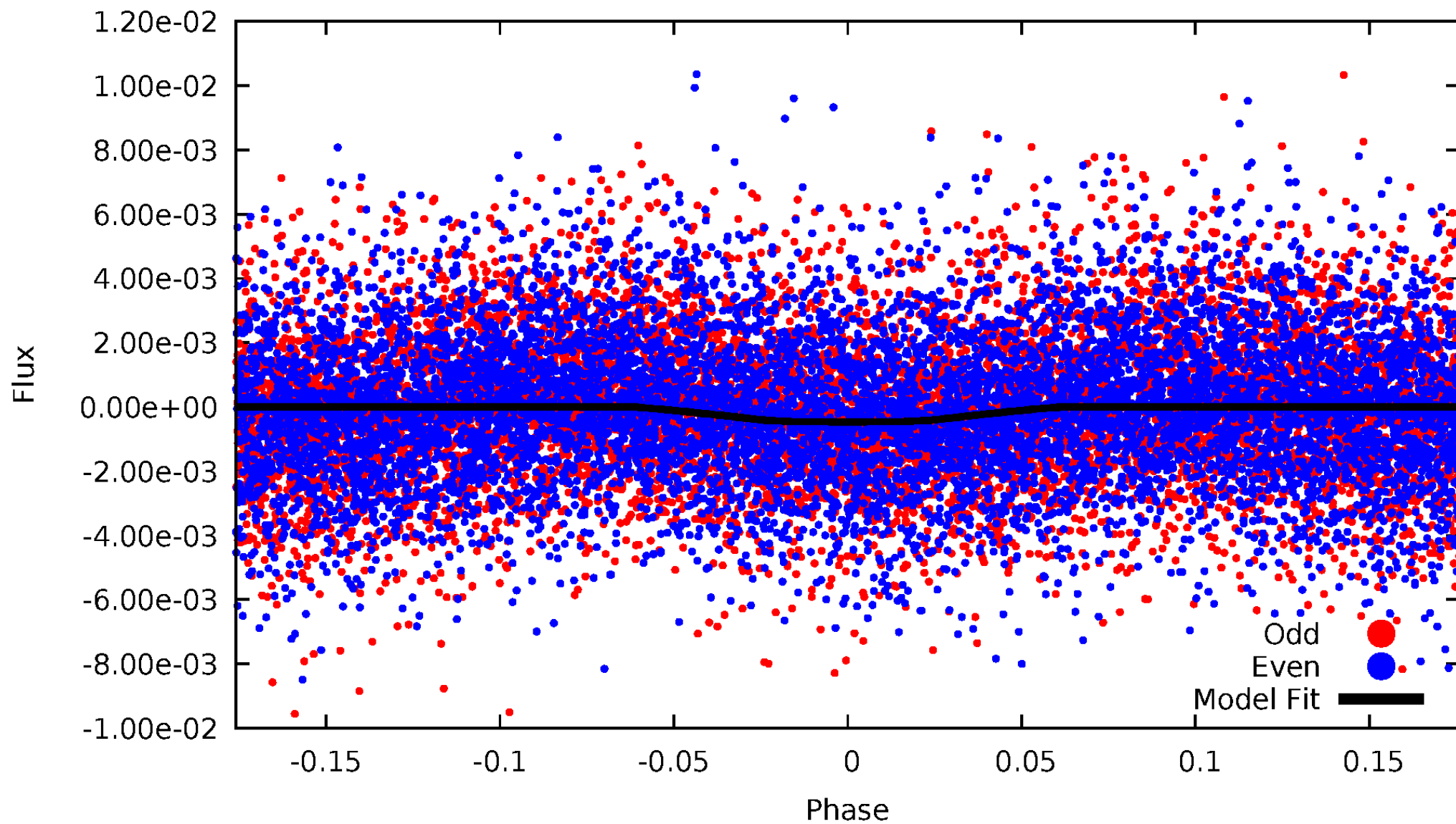


TCE 006187665-01



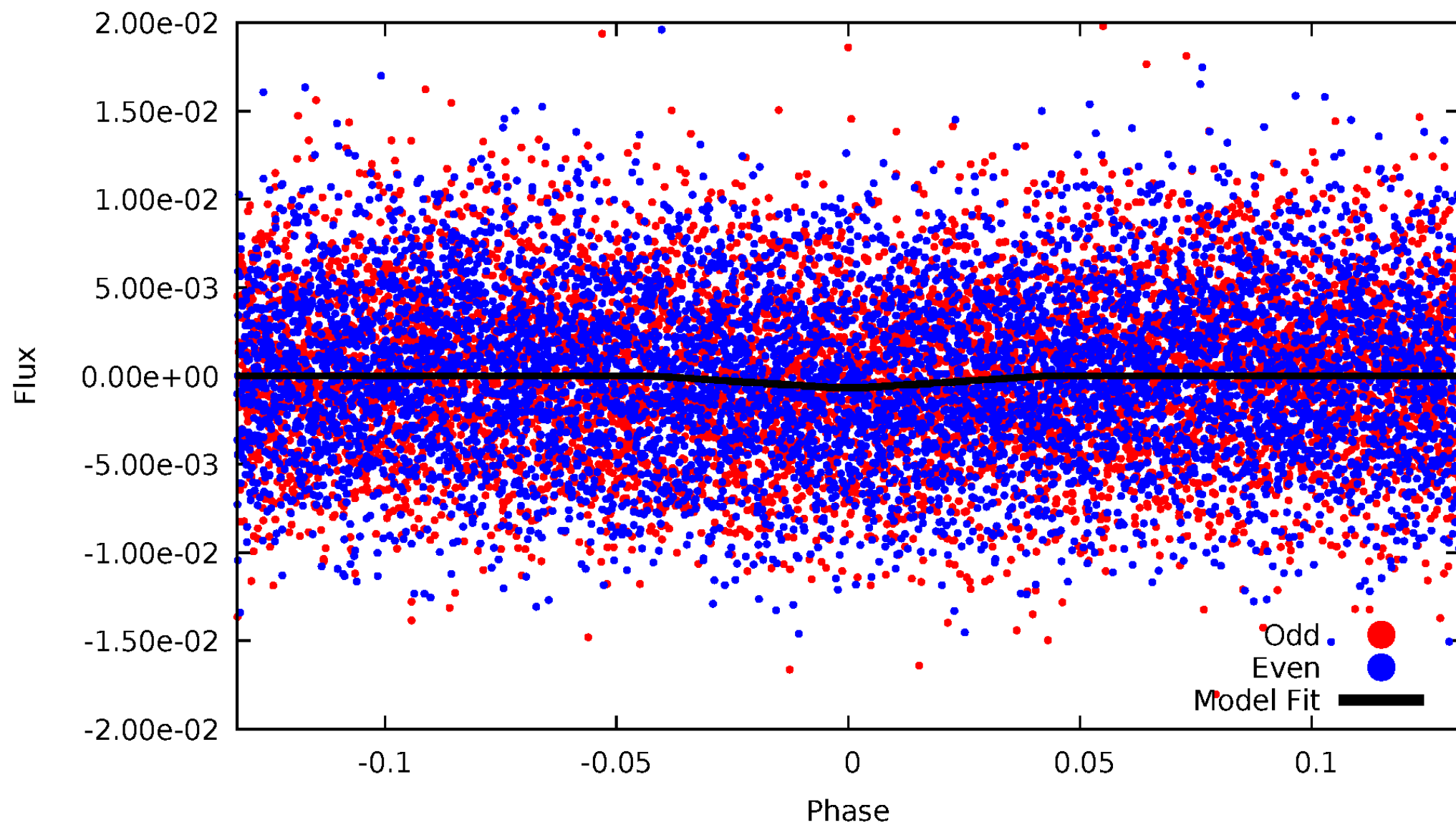
DV Odd/Even

TCE 006187665-01



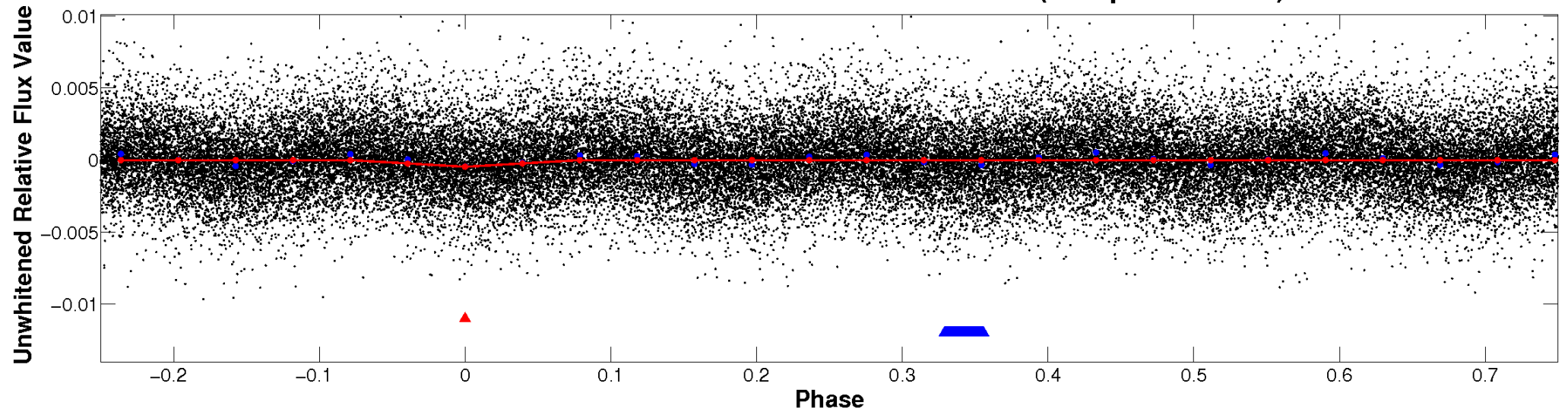
ALT Odd/Even

TCE 006187665-01

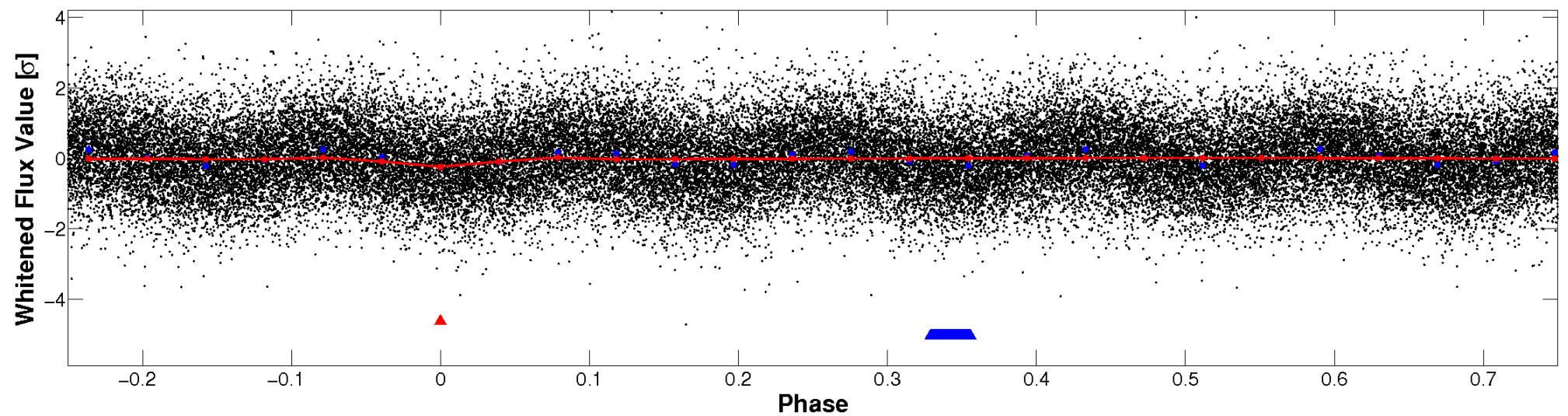


Non-Whitened Vs. Whitened Light Curve

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

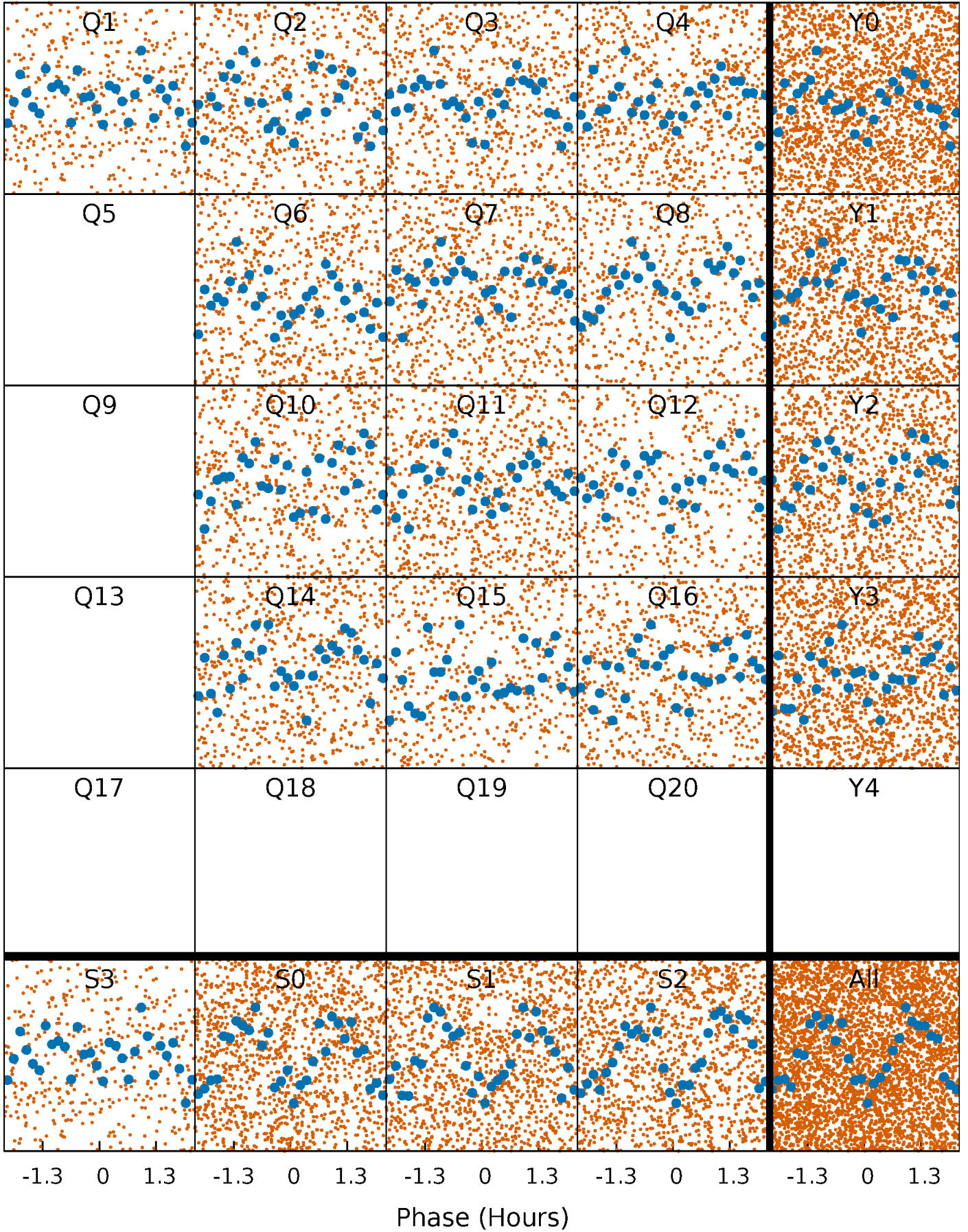


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



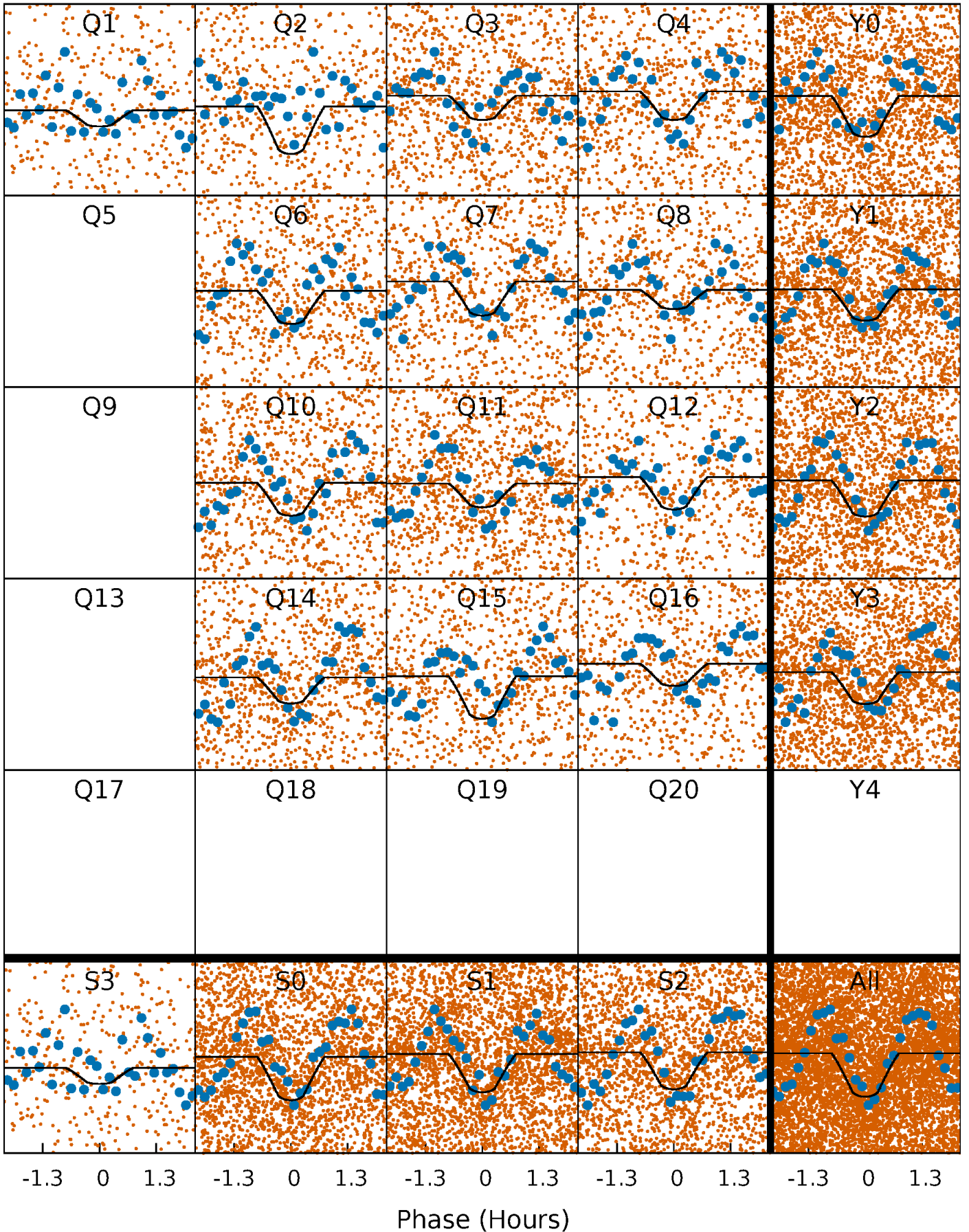
PDC Quarter-Phased Transit Curves

TCE 006187665-01 P= 0.519144 Days $T_0=131.636274$ (BKJD)



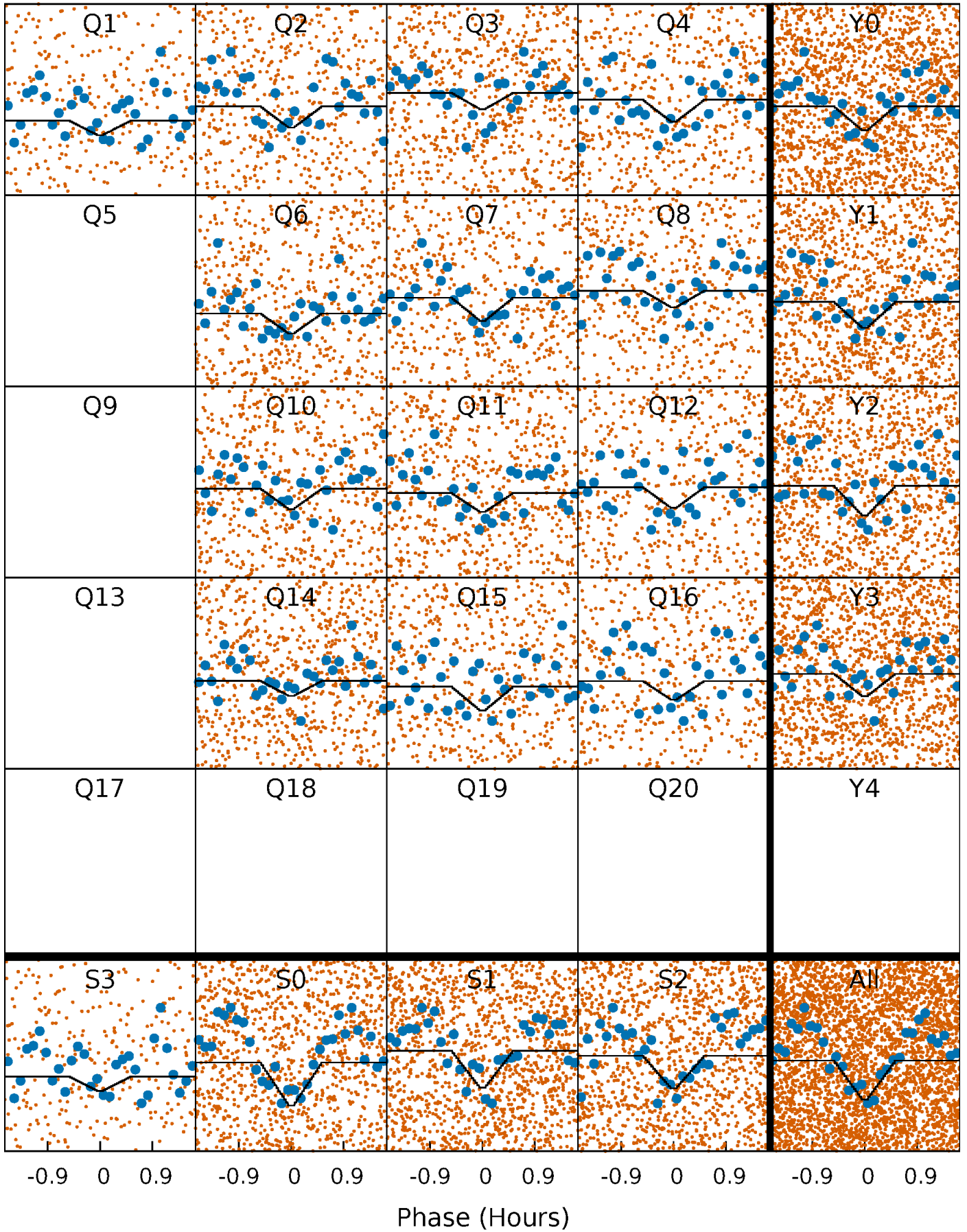
DV Quarter-Phased Transit Curves

TCE 006187665-01 P= 0.519144 Days $T_0=131.636274$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

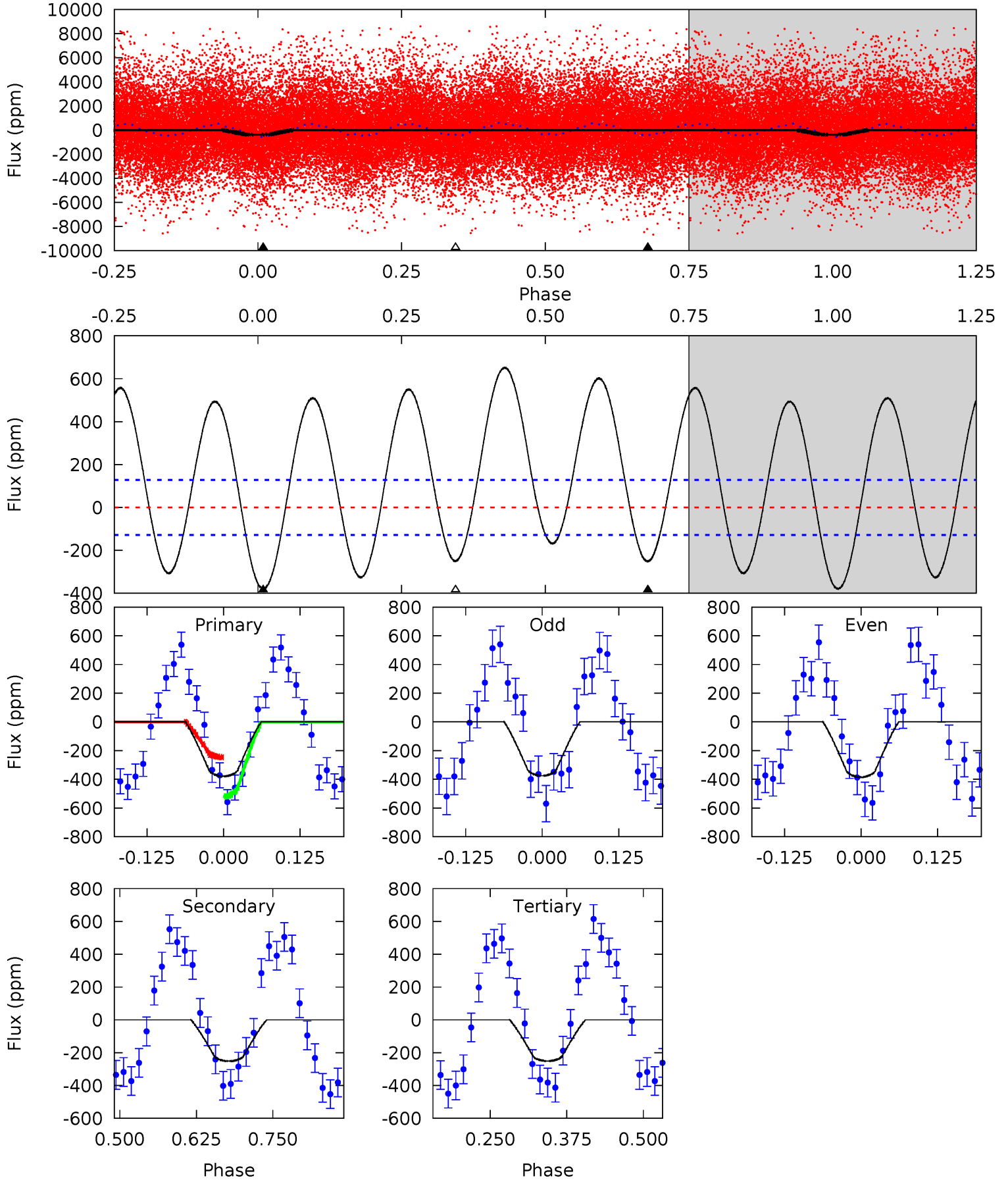
TCE 006187665-01 P= 0.519149 Days $T_0=131.633964$ (BKJD)



DV Model-Shift Uniqueness Test

006187665-01, P = 0.519144 Days, E = 131.117130 Days

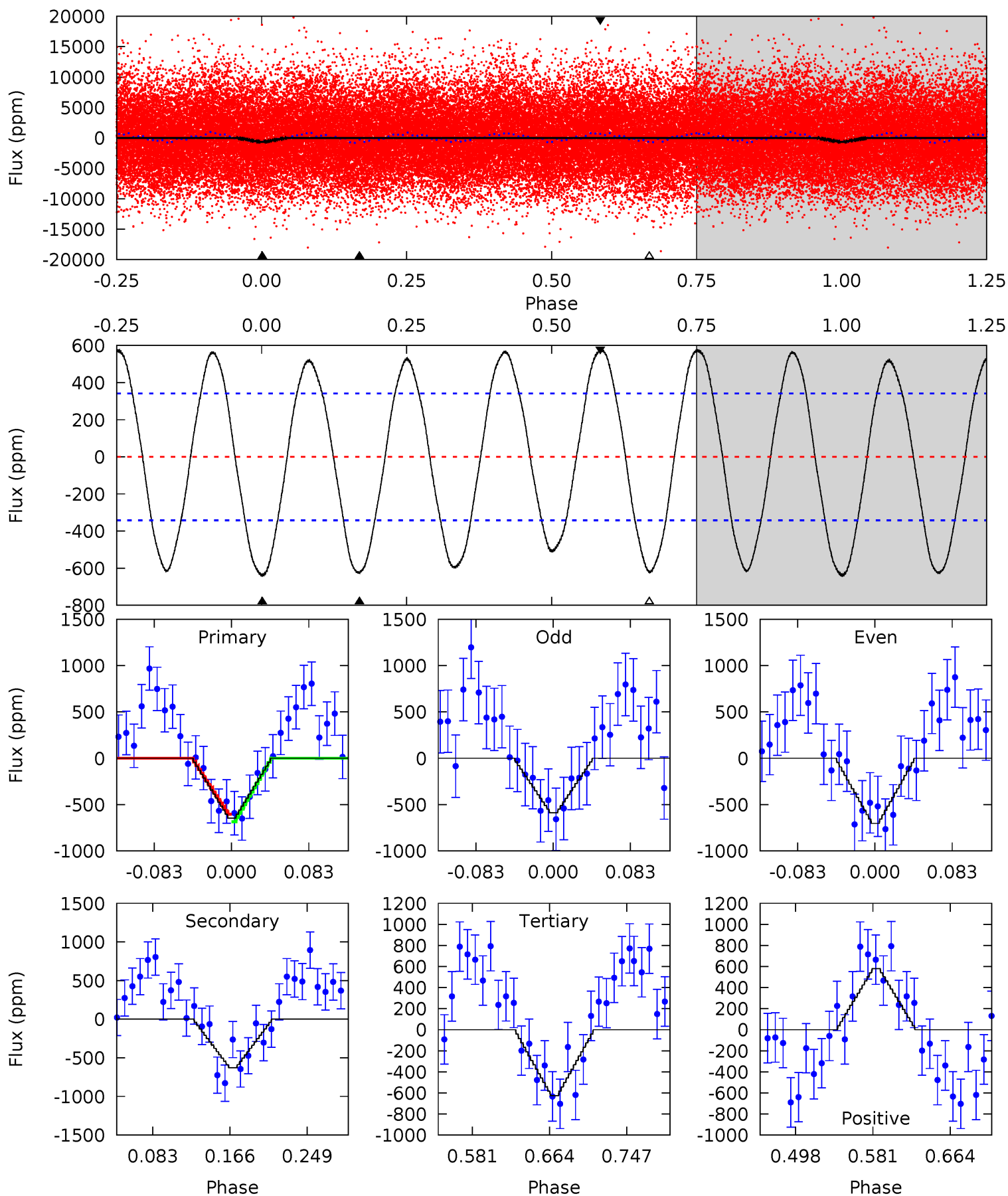
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.4 | 8.88 | 8.85 | 0 | 4.52 | 1.53 | 10.5 | 4.52 | 13.4 | 0.03 | 8.88 | 0.16 | 0.92 | 0.63 | 4.88 |



Alt Model-Shift Uniqueness Test

006187665-01, P = 0.519149 Days, E = 131.114815 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.70 | 8.49 | 8.43 | 7.80 | 4.60 | 1.73 | 5.46 | 0.28 | 0.90 | 0.06 | 0.68 | 0.77 | 1.06 | 0.47 | 0.55 |



Stellar Parameters For KIC 006187665

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6020^{+109}_{-134} | $4.265^{+0.108}_{-0.120}$ | $0.240^{+0.150}_{-0.150}$ | $1.329^{+0.234}_{-0.192}$ | $1.187^{+0.077}_{-0.094}$ | $0.712^{+0.377}_{-0.246}$ |
| | +2%/-2% | +3%/-3% | +62%/-62% | +18%/-14% | +6%/-8% | +53%/-35% |
| Source | SPE4 | SPE4 | SPE4 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 006187665-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -252 ± 28 | $3.01^{+1.39}_{-1.35}$ | 3705^{+176}_{-161} | 5183^{+1942}_{-902} | $2.738^{+6.335}_{-1.507}$ |
| Alt. | -630 ± 74 | $3.75^{+1.31}_{-1.42}$ | 3710^{+172}_{-182} | 5896^{+1584}_{-884} | $4.468^{+6.894}_{-2.121}$ |

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 $A_{obs} \gg 1.0$

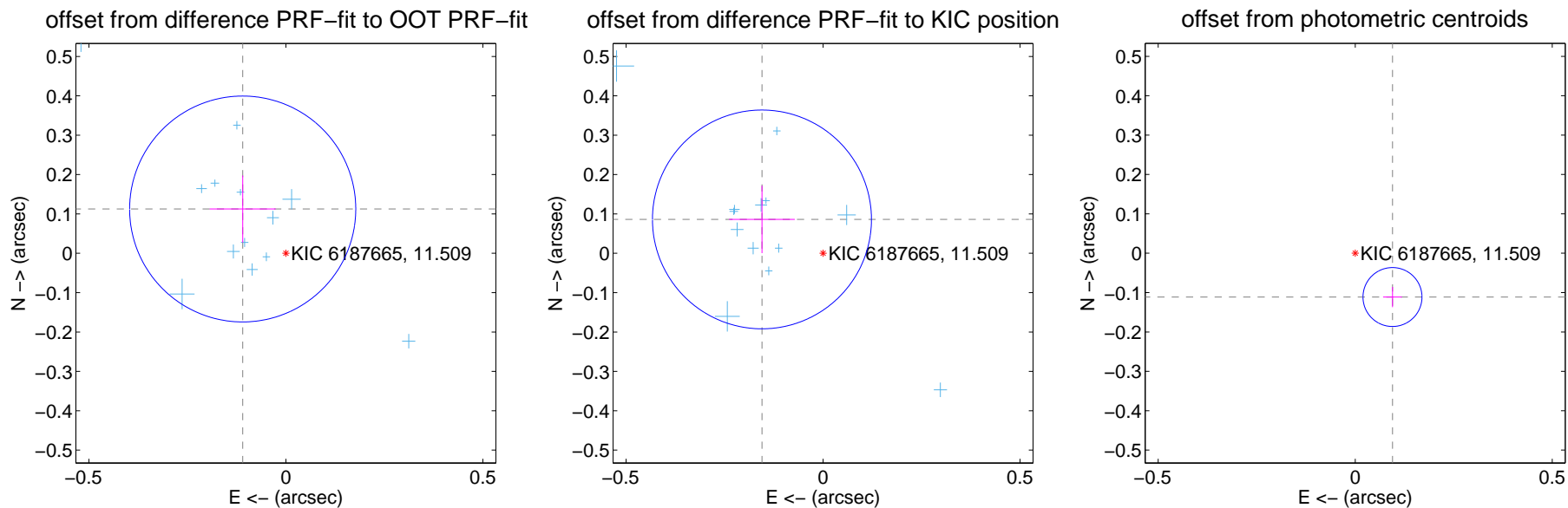
DV Centroid Data

Supplemental centroid analysis for 006187665-01. **Kepler magnitude: 11.51.** Transit SNR 13.27

There are 13 quarters with good PRF difference image offsets

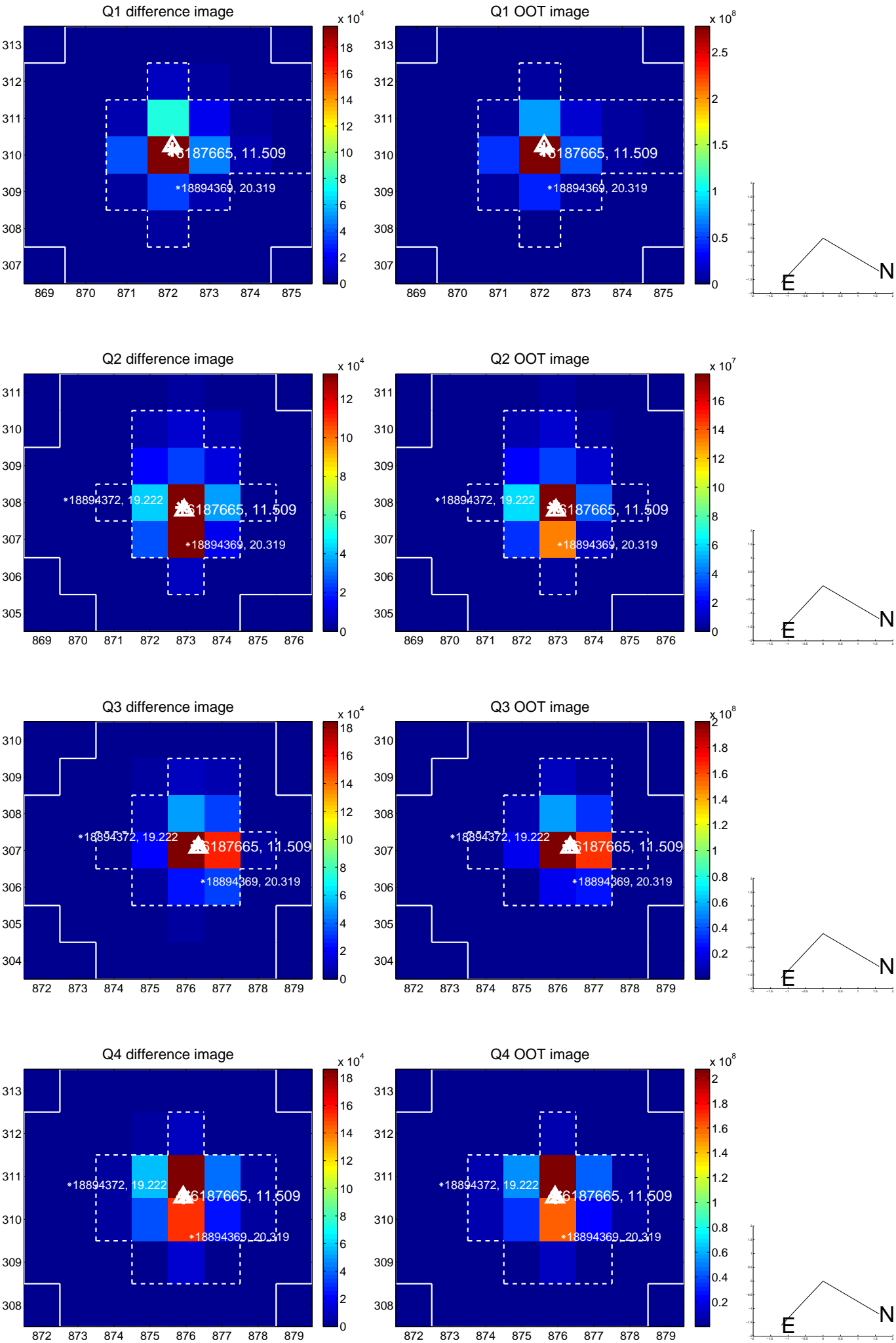
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.157 ± 0.096 | 1.64 | 0.110 ± 0.084 | 0.113 ± 0.085 |
| PRF-fit source offset from KIC position | 0.177 ± 0.093 | 1.91 | 0.155 ± 0.083 | 0.086 ± 0.086 |
| photometric centroid source offset | 0.15 ± 0.02 | 5.85 | -0.09 ± 0.02 | -0.11 ± 0.03 |

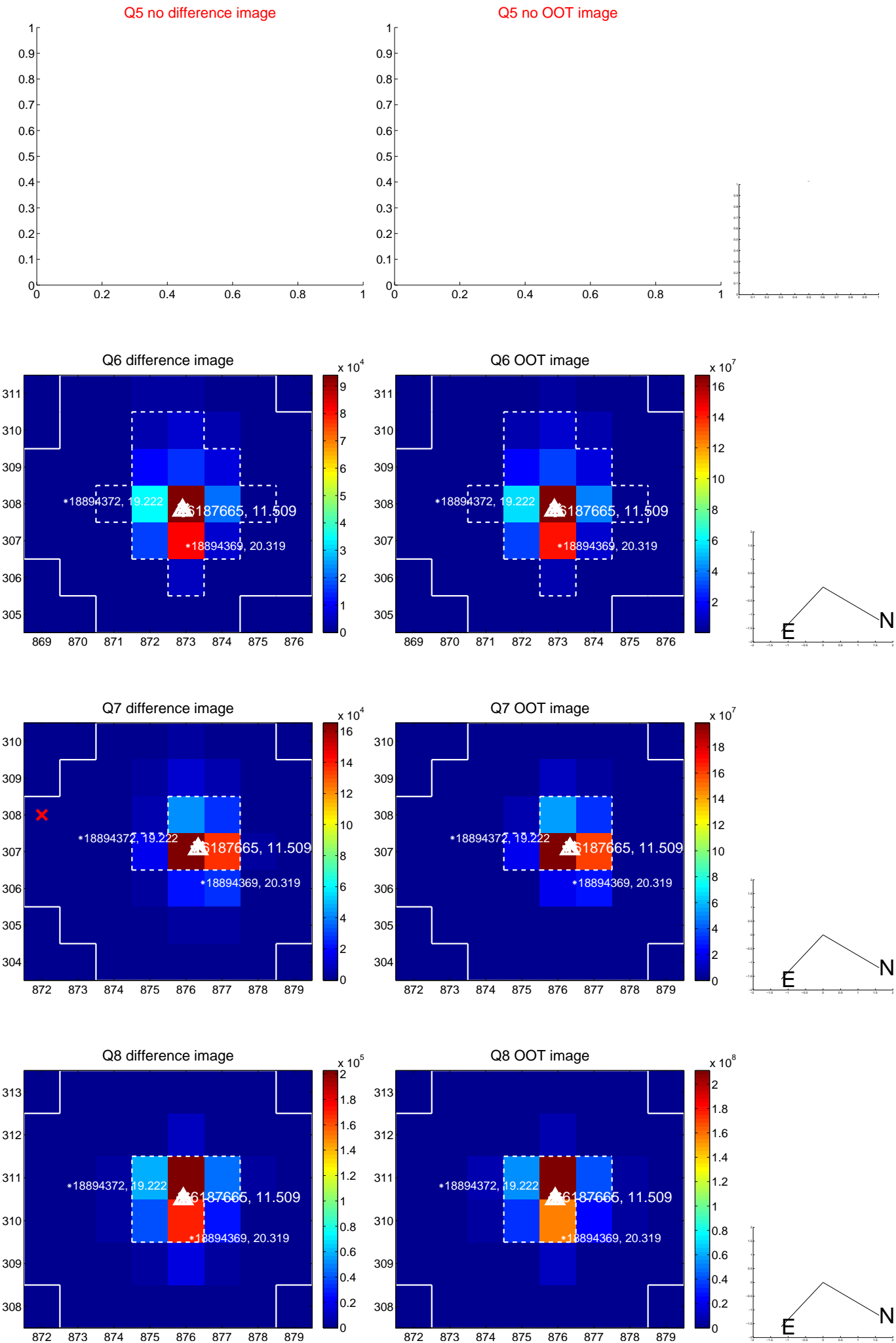


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

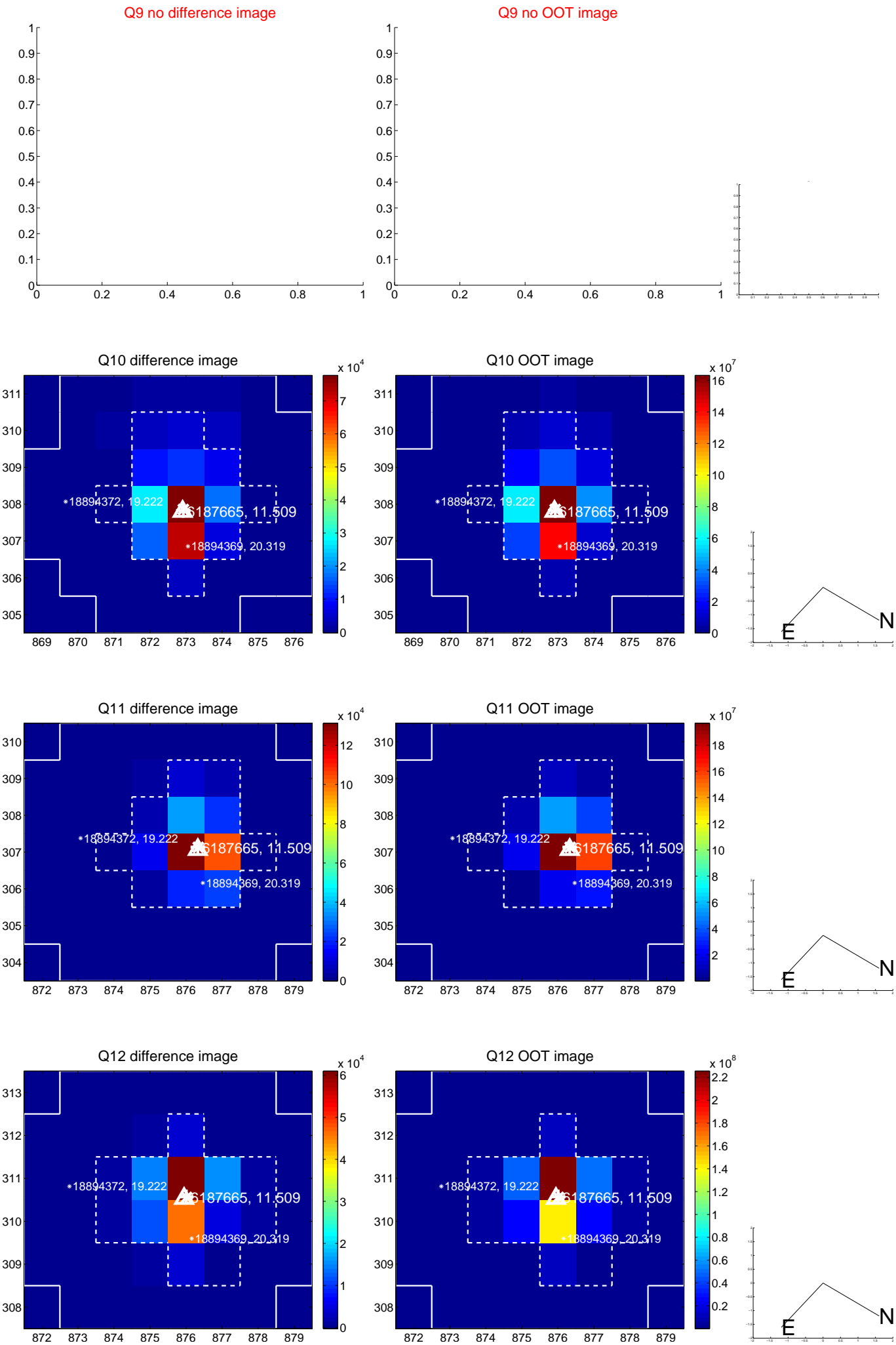
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



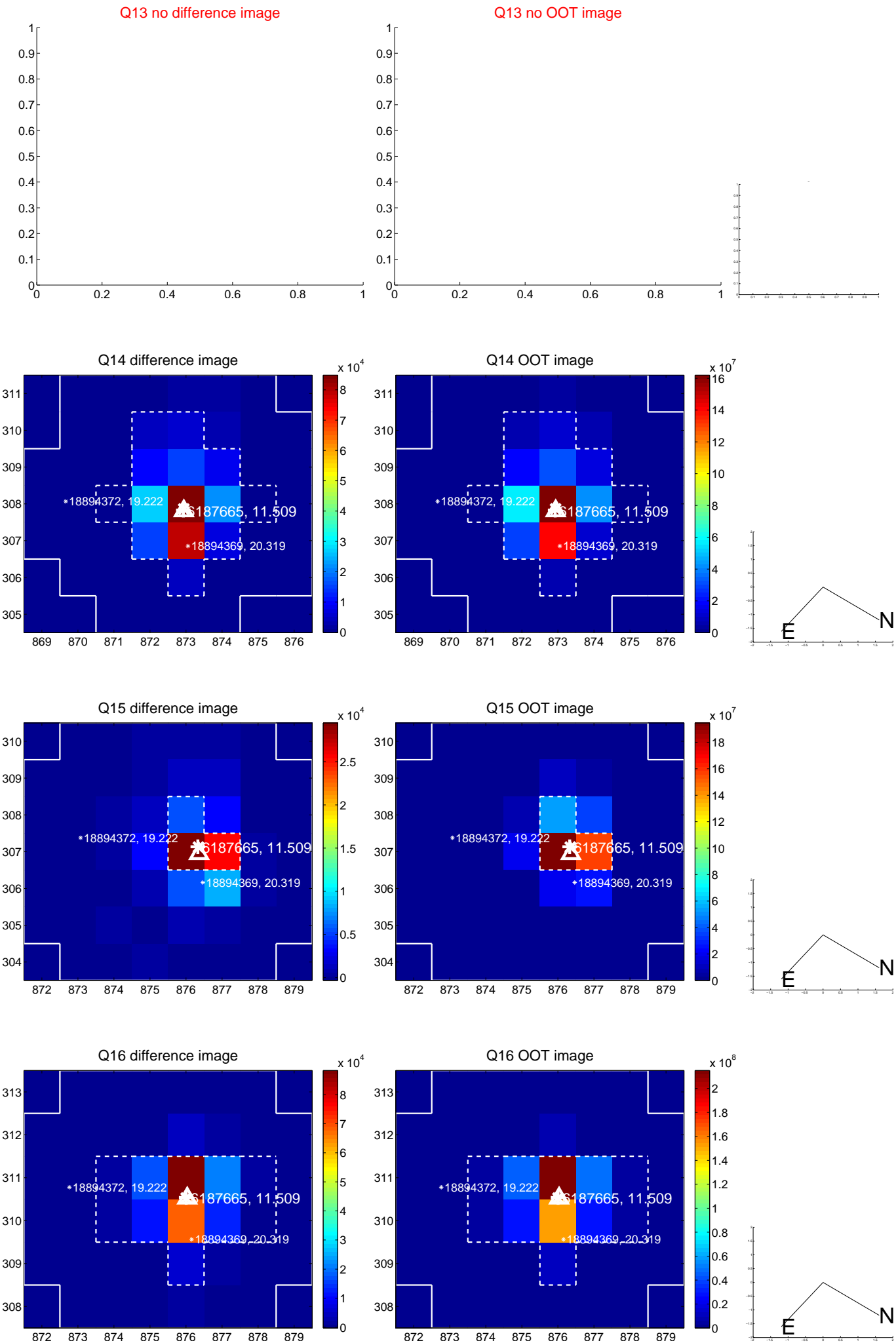
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



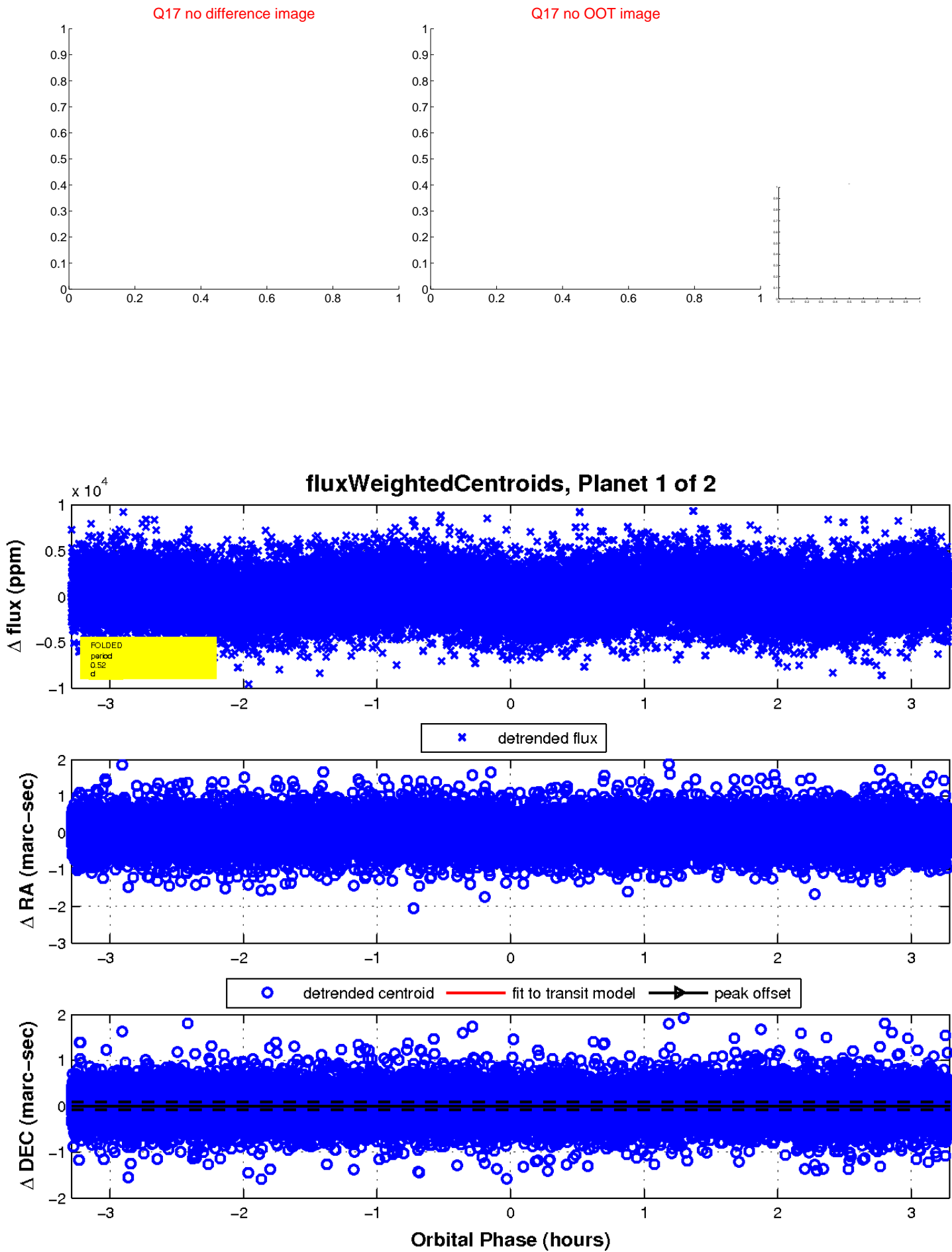
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

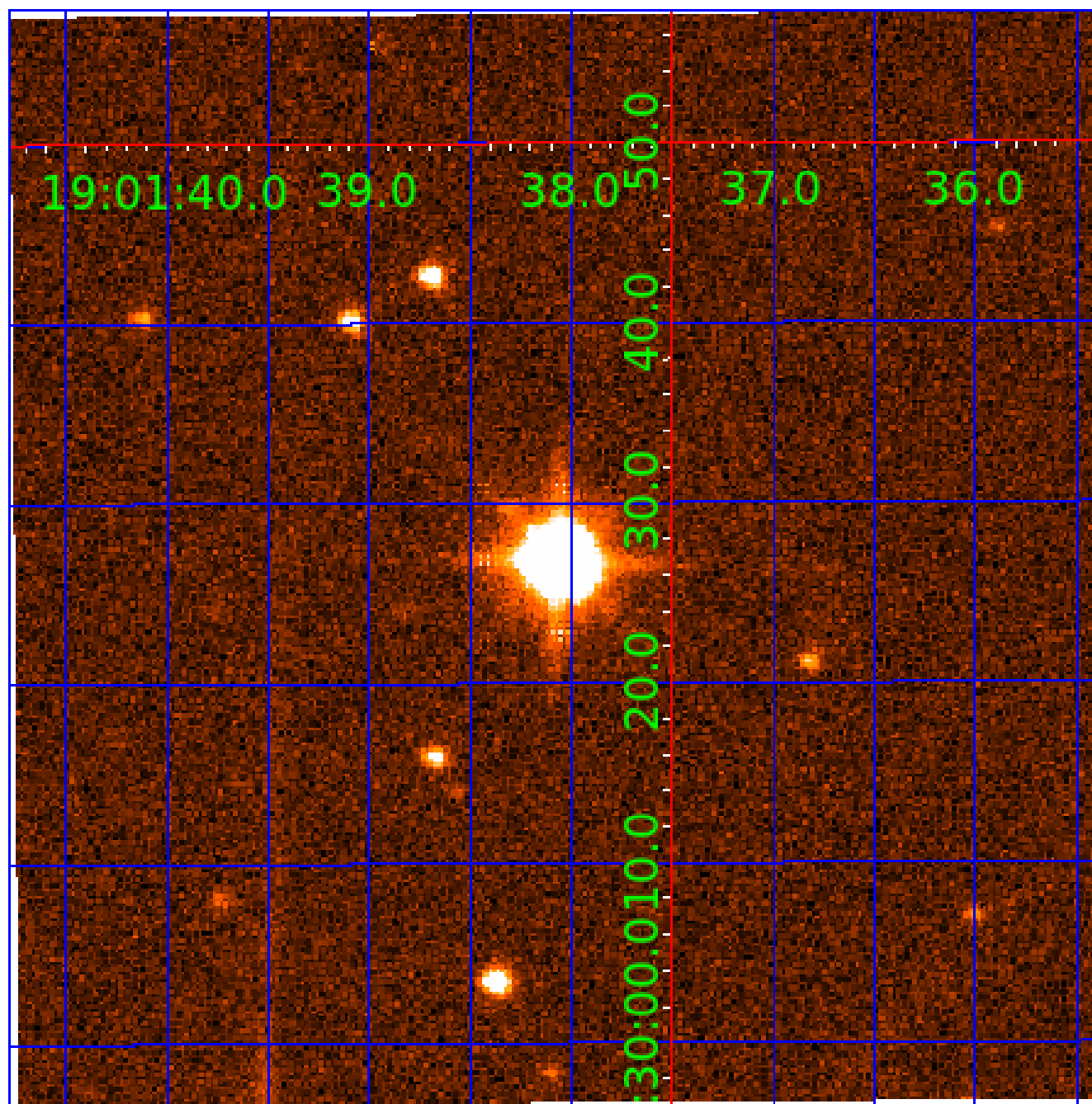


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006187665

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 006187665-01 | OBS | No | 0.519144 | 131.636274 | 472.6 | 1.096 | 12.0 | 13.3 | 1.33 | 6020 | 2.98 | 11603.26 |
| 006187665-02 | OBS | No | 0.519149 | 131.807030 | 620.6 | 0.800 | 10.3 | 15.8 | 1.33 | 6020 | 3.34 | 11603.11 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 006187665-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT |
| 006187665-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD |

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

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

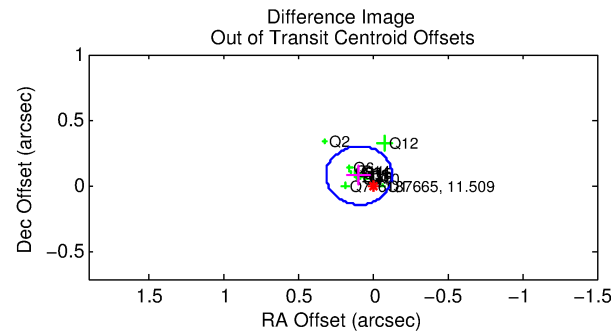
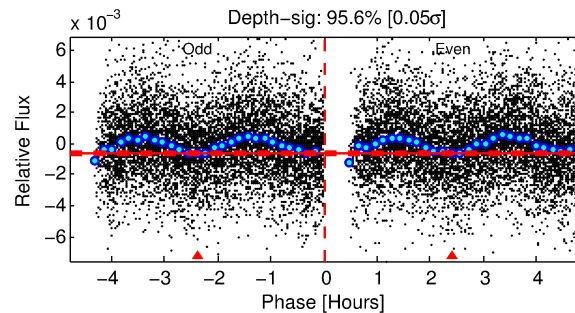
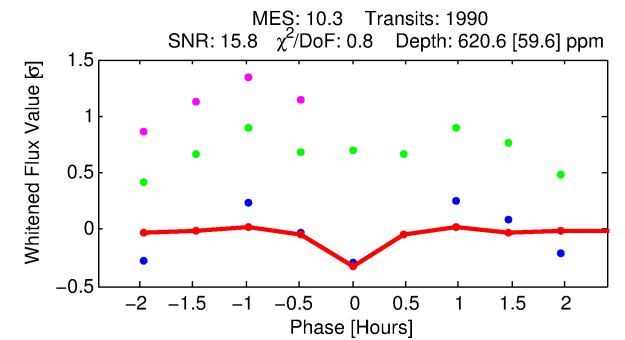
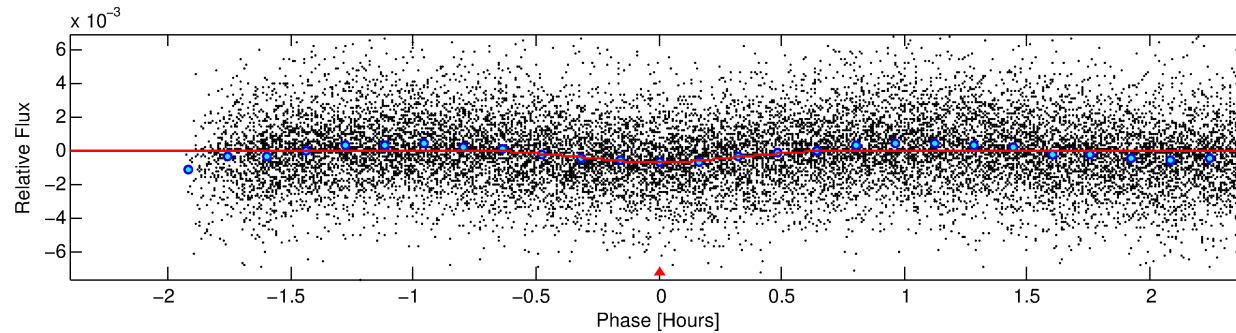
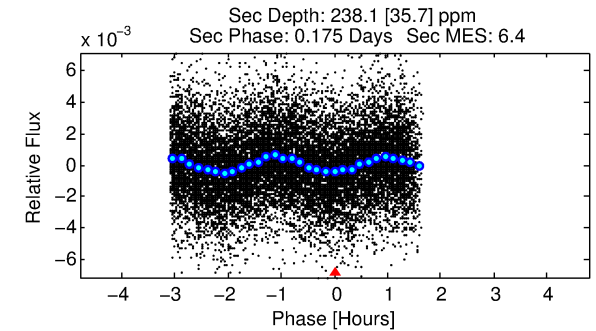
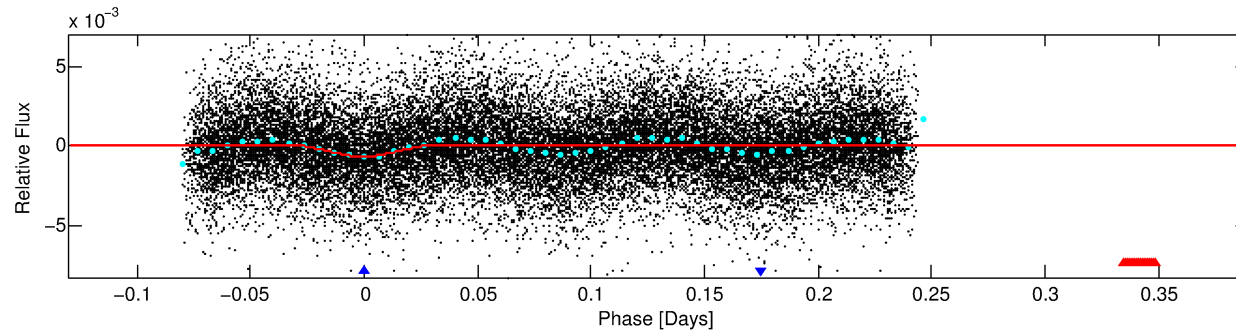
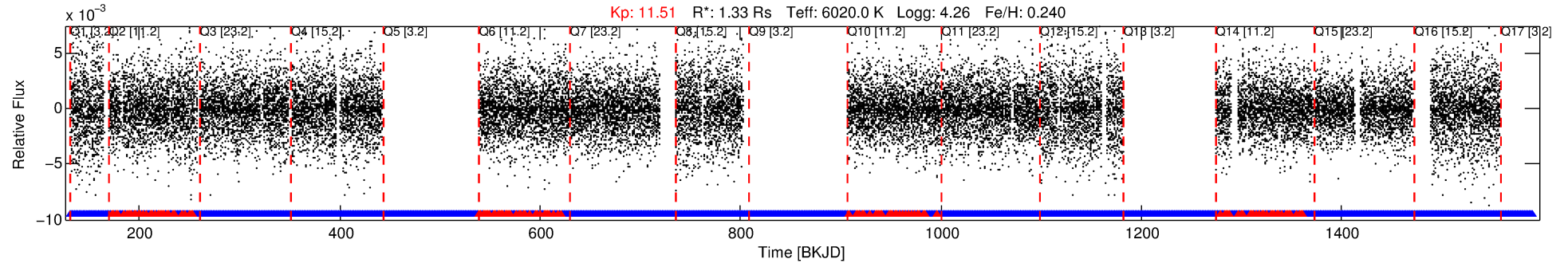
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006187665-02

No Significant Match Found

DV One-Page Summary

KIC: 6187665 Candidate: 2 of 2 Period: 0.519 d



DV Fit Results:

Period = 0.51915 [0.00001] d
Epoch = 131.8070 [0.0008] BKJD
Rp/R* = 0.0230 [0.0144]
a/R* = 5.10 [14.03]
b = 0.03 [87.62]
Seff = 11603.11 [2736.91]
Teq = 2646 [156] K
Rp = 3.34 [2.17] Re
a = 0.0134 [0.0020] AU
Ag = 2.10 [2.70] [0.41σ]
Teffp = 4928 [1560] K [1.46σ]

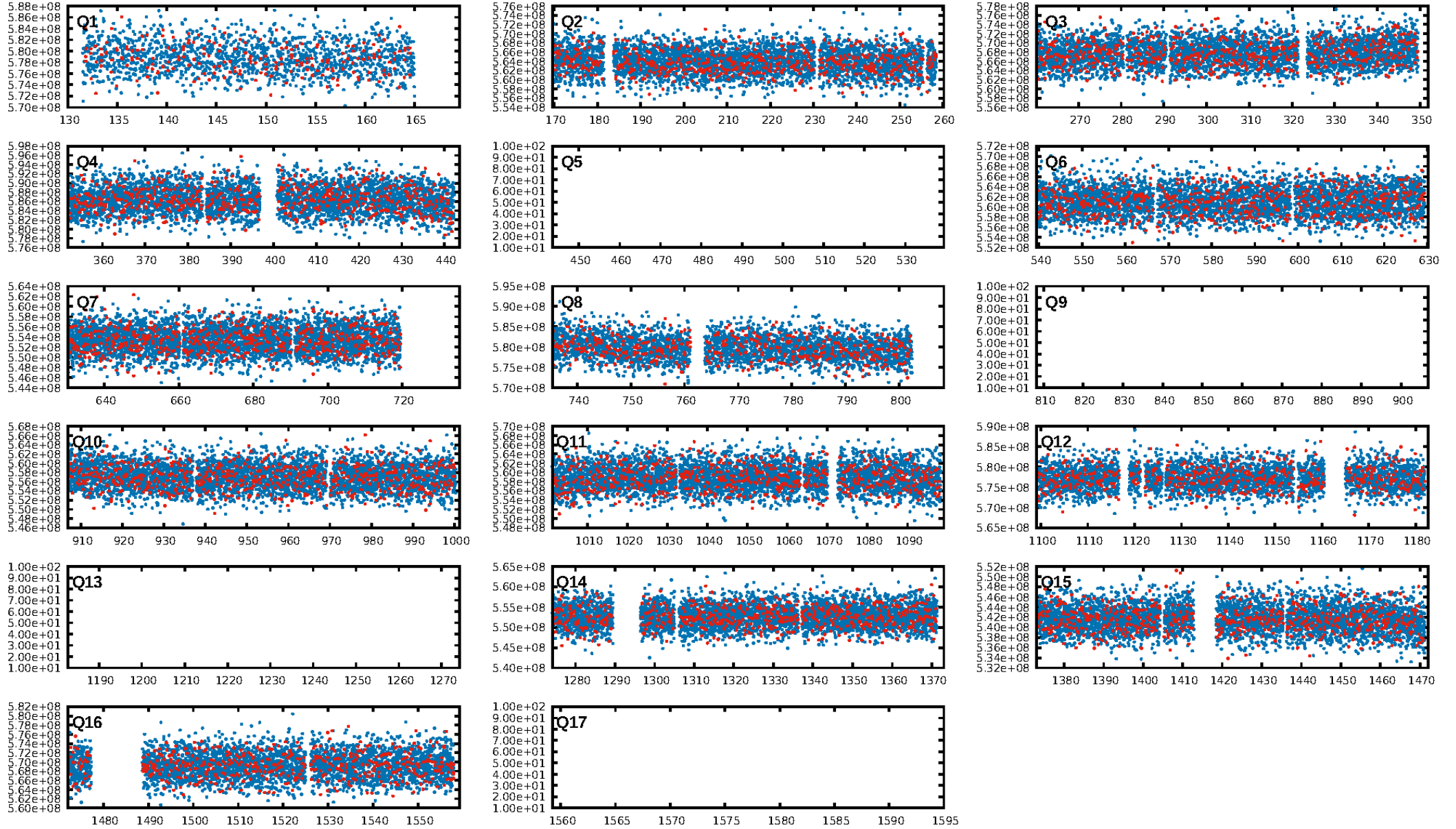
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.18e-23
RollingBand-fgt: 0.92 [1770/1926]
GhostDiagnostic-chr: 0.8349
Centroid-sig: N/A
Centroid-so: 0.115 arcsec [5.35σ]
OotOffset-rm: 0.123 arcsec [1.67σ]
KicOffset-rm: 0.169 arcsec [2.23σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/13]

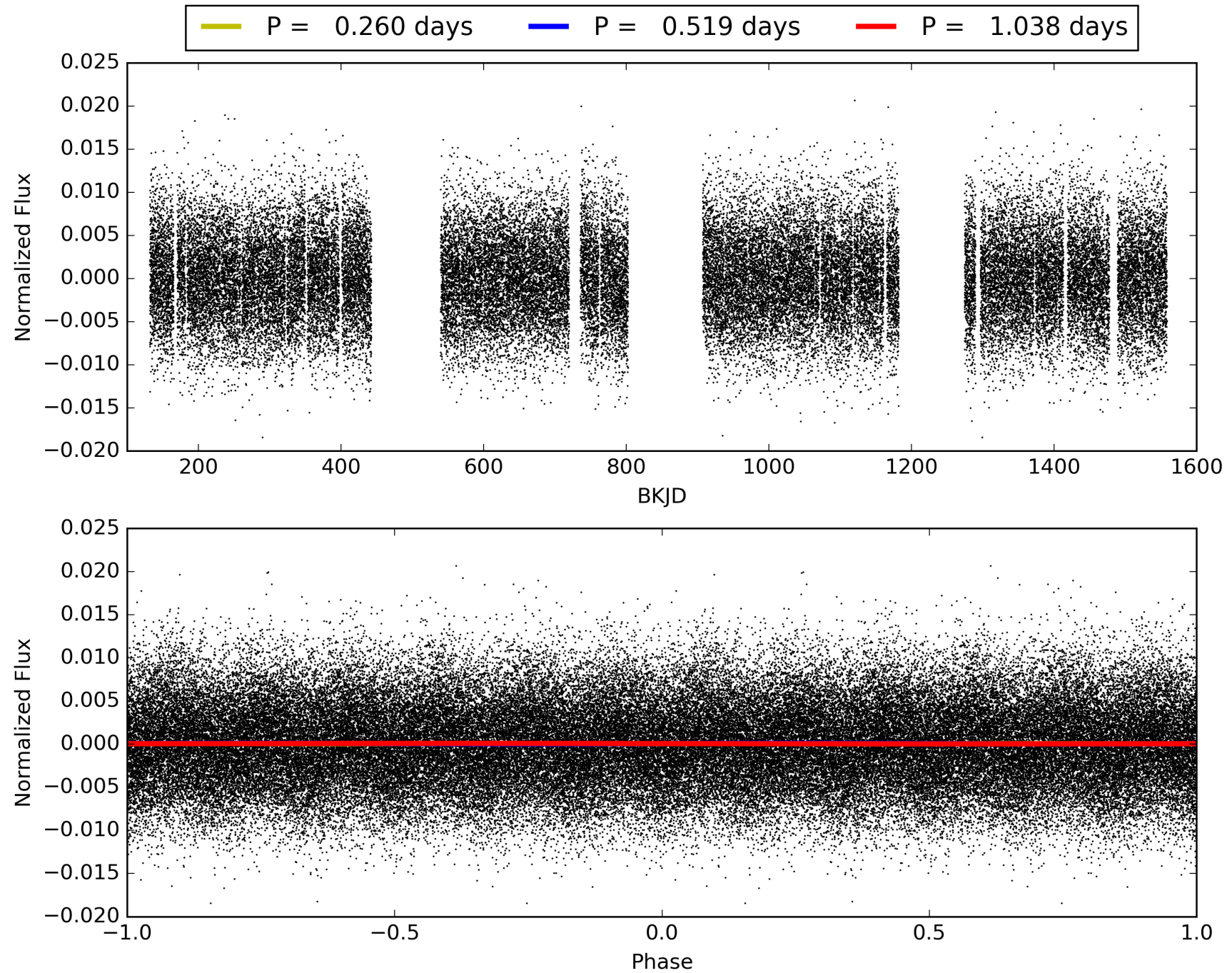
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:38:42 Z

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

TCE 006187665-02, PDC Light Curves

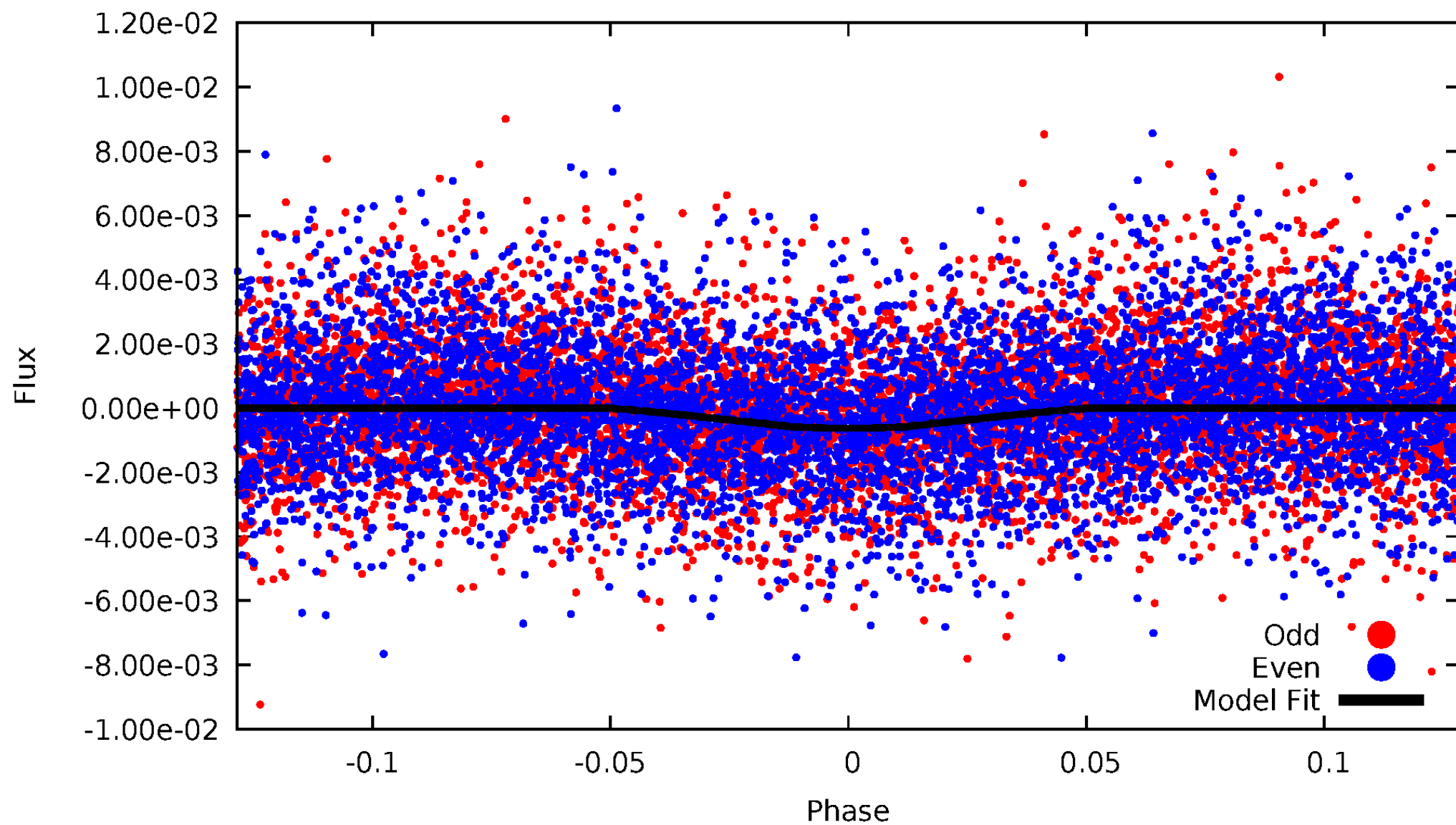


TCE 006187665-02



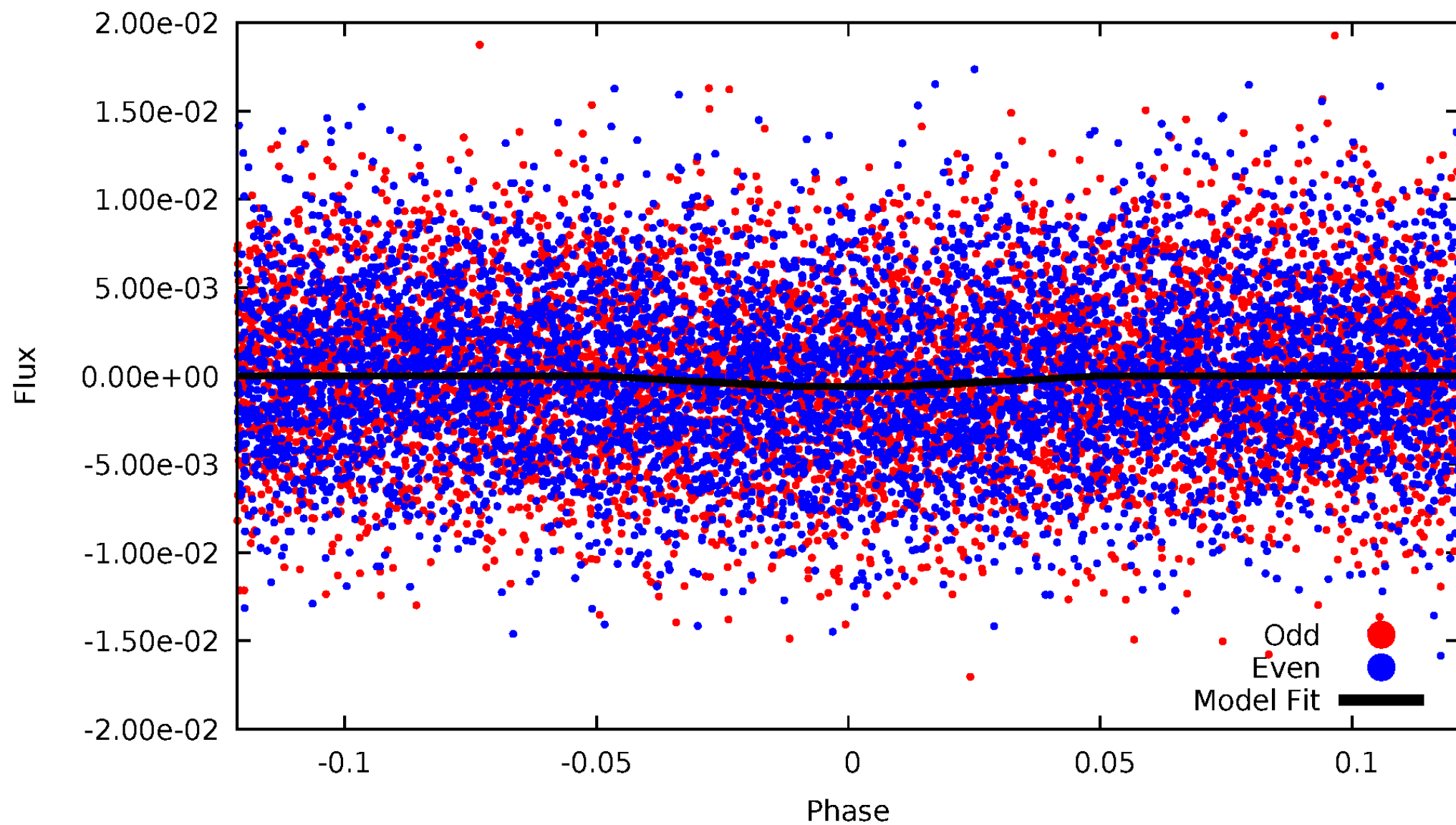
DV Odd/Even

TCE 006187665-02



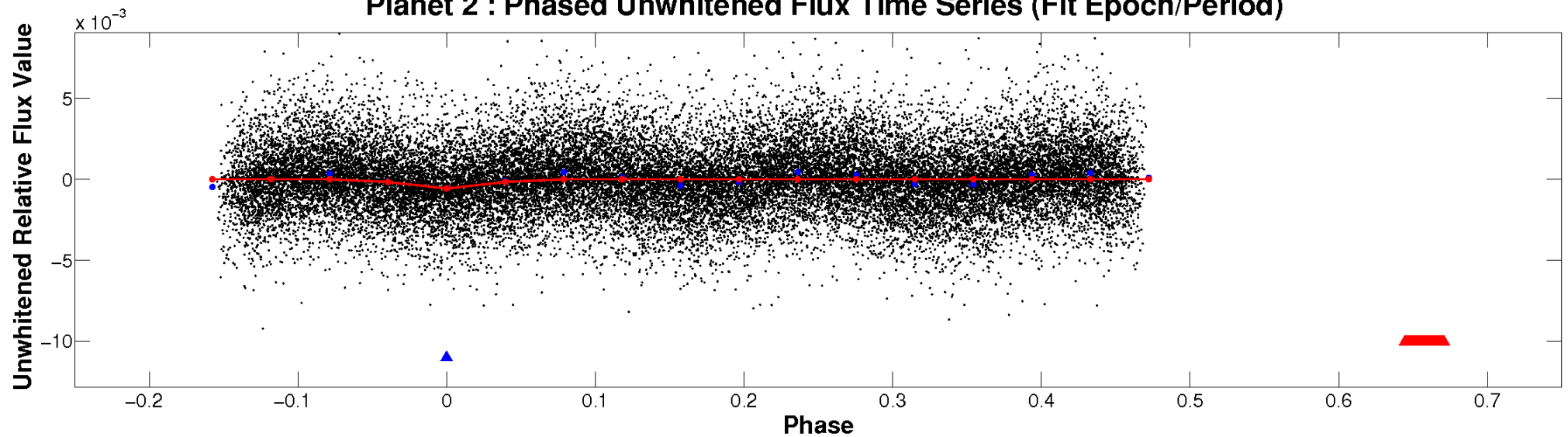
ALT Odd/Even

TCE 006187665-02

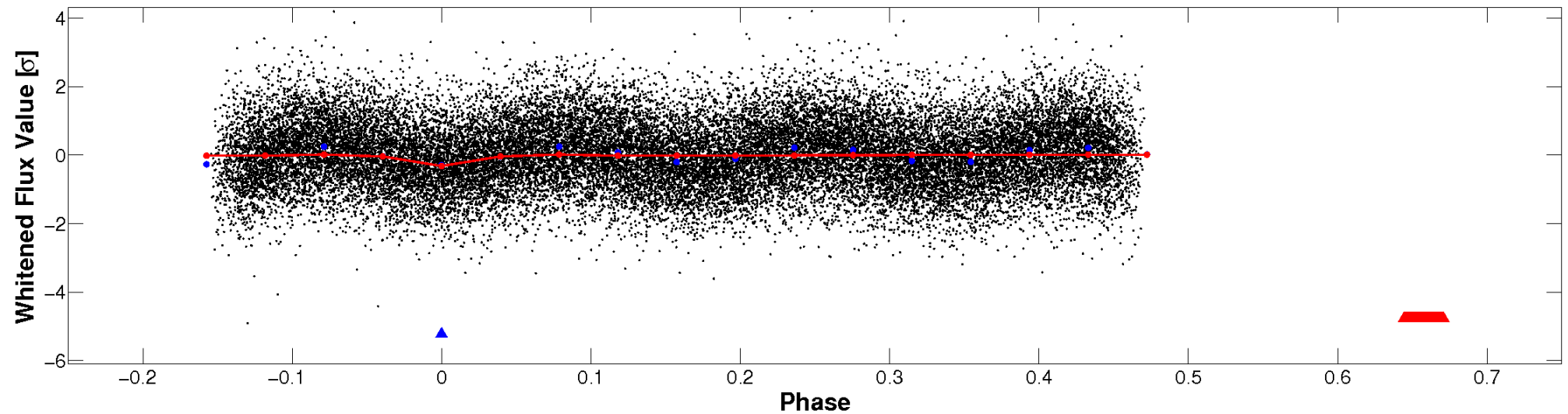


Non-Whitened Vs. Whitened Light Curve

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

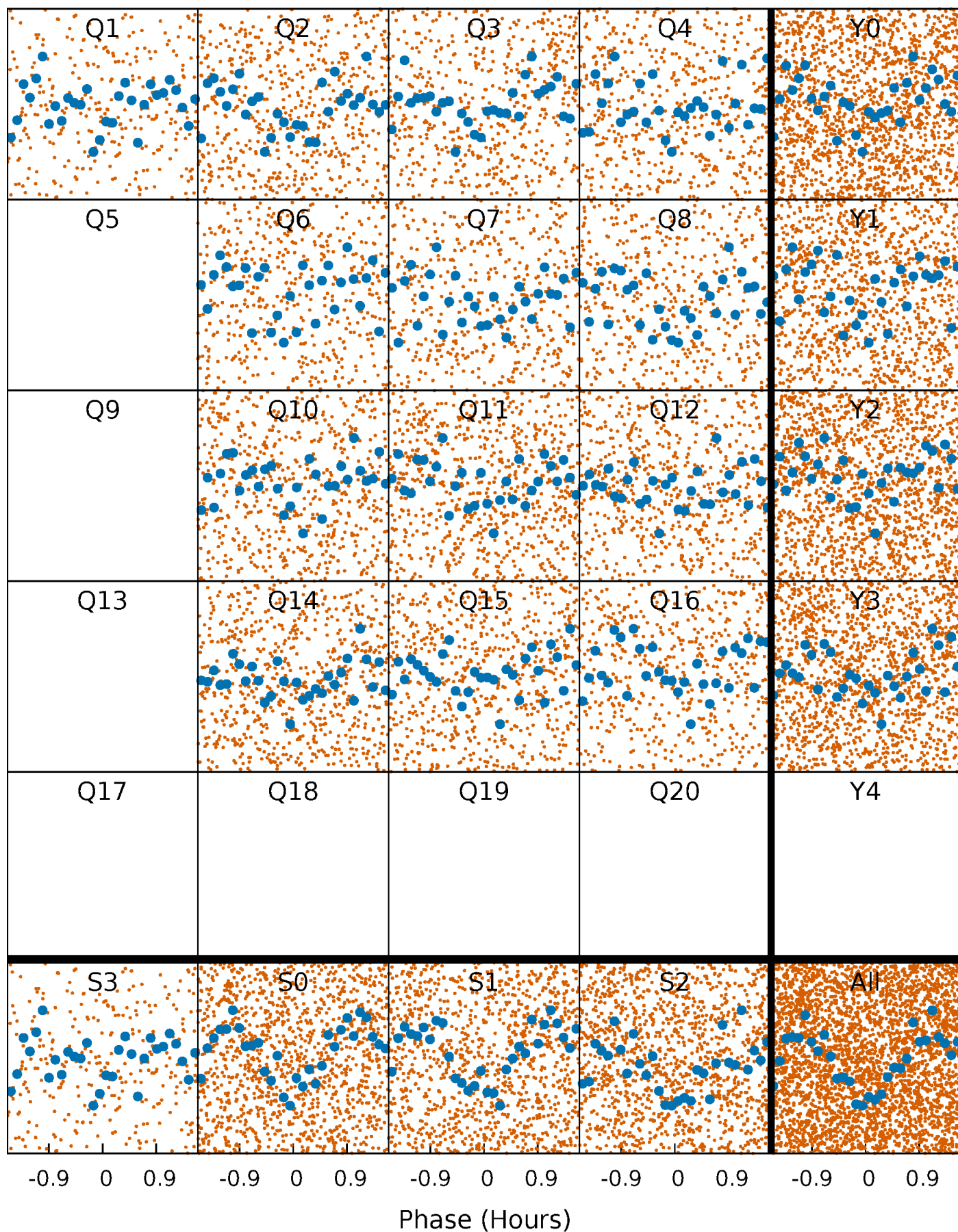


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



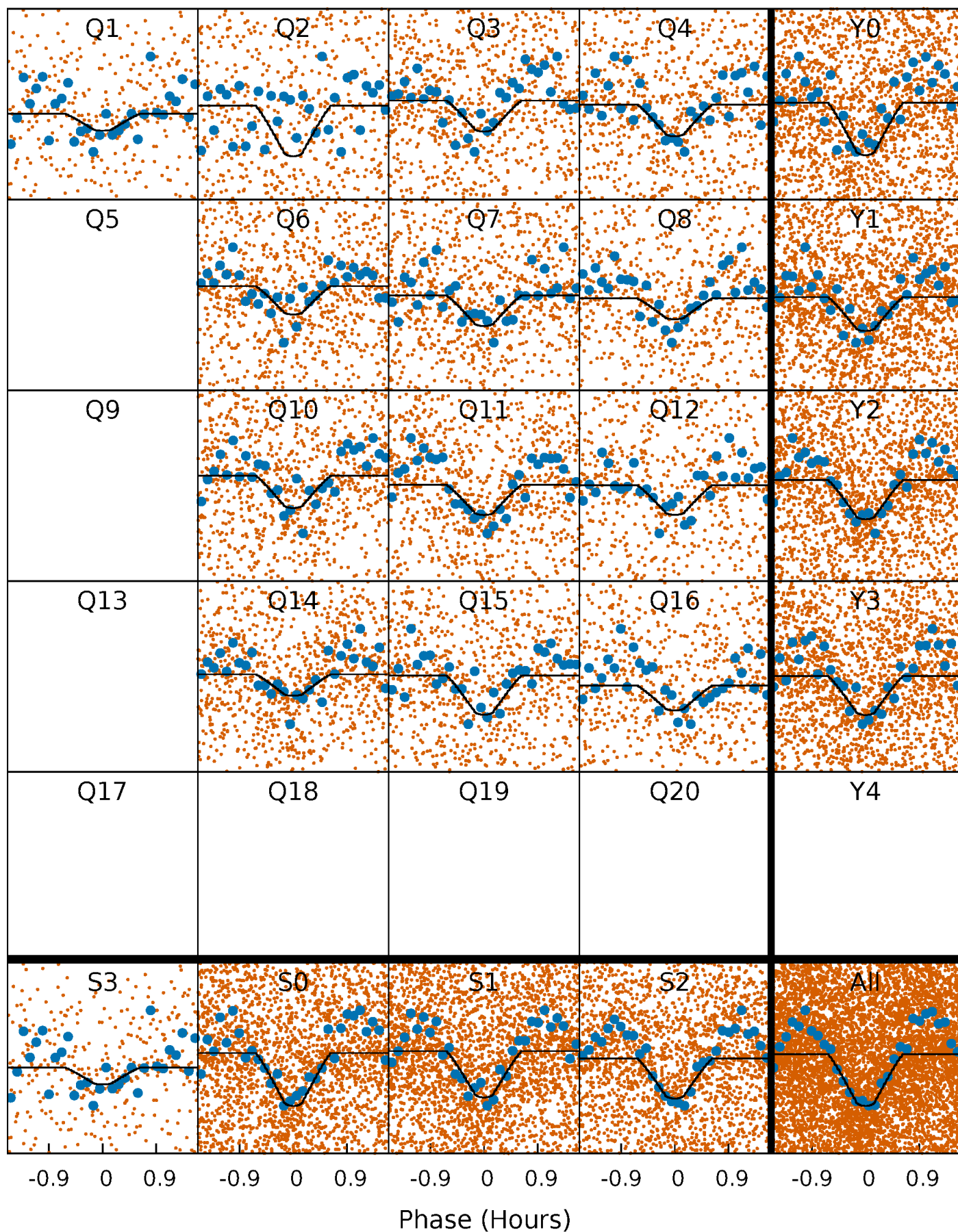
PDC Quarter-Phased Transit Curves

TCE 006187665-02 P= 0.519149 Days $T_0=131.807030$ (BKJD)



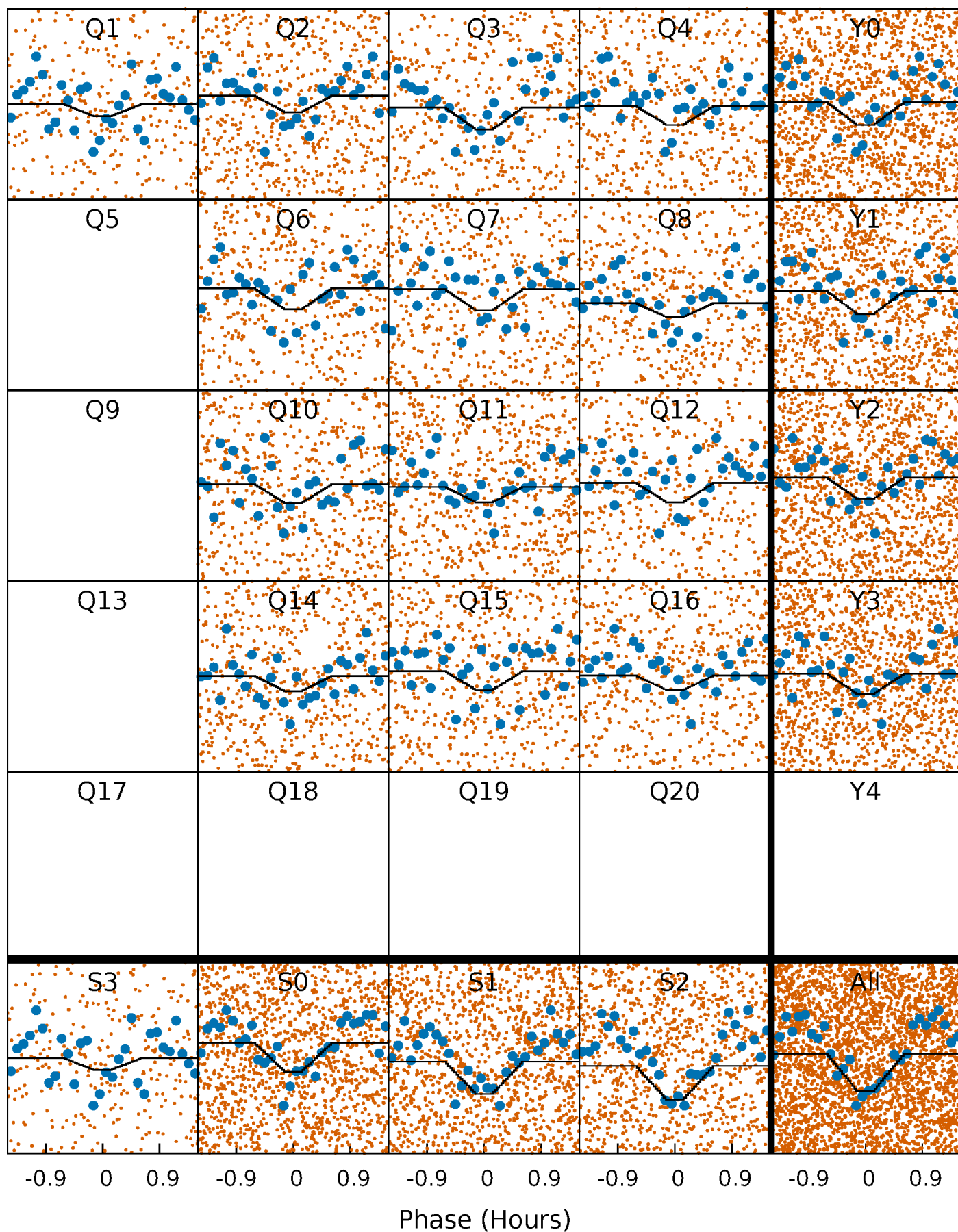
DV Quarter-Phased Transit Curves

TCE 006187665-02 P= 0.519149 Days $T_0=131.807030$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

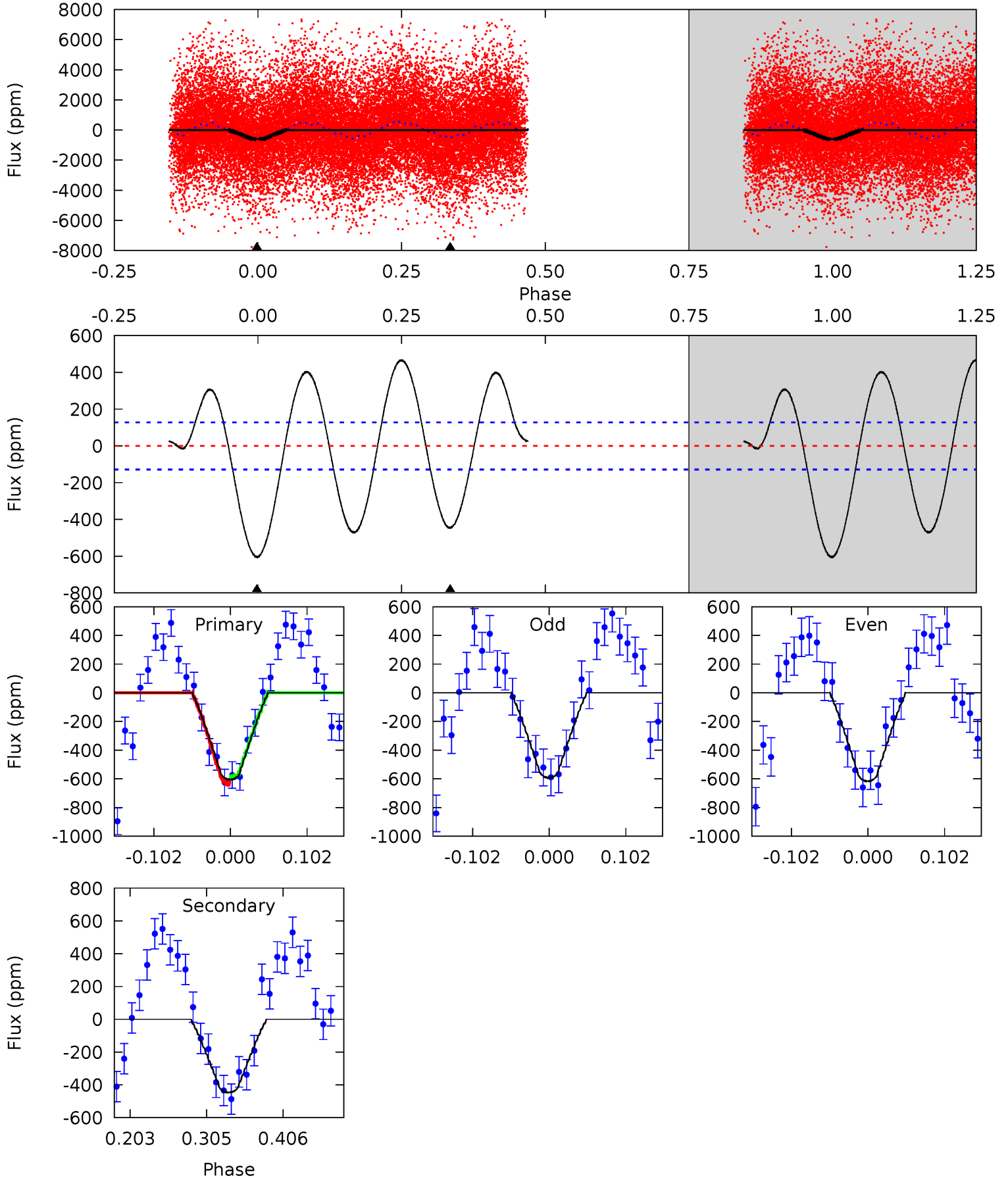
TCE 006187665-02 P= 0.519149 Days $T_0=131.806885$ (BKJD)



DV Model-Shift Uniqueness Test

006187665-02, P = 0.519149 Days, E = 131.287881 Days

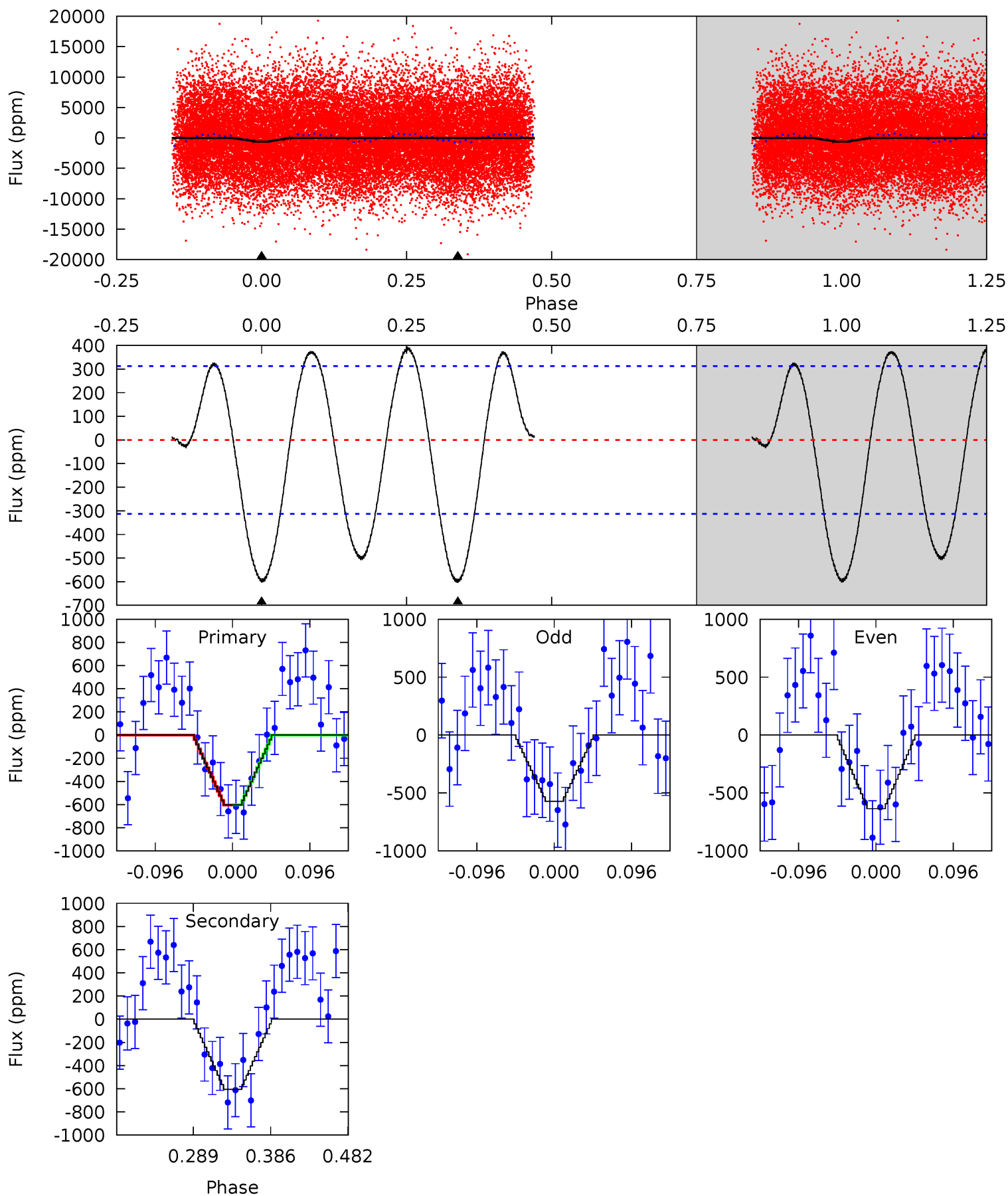
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.5 | 15.9 | 0 | 0 | 4.56 | 1.64 | 8.75 | 21.5 | 21.5 | 15.9 | 15.9 | 0.43 | 0.95 | 0.44 | 0.77 |



Alt Model-Shift Uniqueness Test

006187665-02, P = 0.519149 Days, E = 131.287736 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.82 | 8.84 | 0 | 0 | 4.57 | 1.66 | 3.76 | 8.82 | 8.82 | 8.84 | 8.84 | 0.47 | 0.95 | 0.39 | 0.02 |



Stellar Parameters For KIC 006187665

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6020^{+109}_{-134} | $4.265^{+0.108}_{-0.120}$ | $0.240^{+0.150}_{-0.150}$ | $1.329^{+0.234}_{-0.192}$ | $1.187^{+0.077}_{-0.094}$ | $0.712^{+0.377}_{-0.246}$ |
| | +2%/-2% | +3%/-3% | +62%/-62% | +18%/-14% | +6%/-8% | +53%/-35% |
| Source | SPE4 | SPE4 | SPE4 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 006187665-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -446 ± 28 | $3.58^{+2.07}_{-1.87}$ | 3692^{+186}_{-154} | 5532^{+2843}_{-1158} | $3.394^{+11.894}_{-1.990}$ |
| Alt. | -605 ± 68 | $3.68^{+2.02}_{-1.78}$ | 3691^{+172}_{-159} | 5798^{+2660}_{-1161} | $4.295^{+11.554}_{-2.519}$ |

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

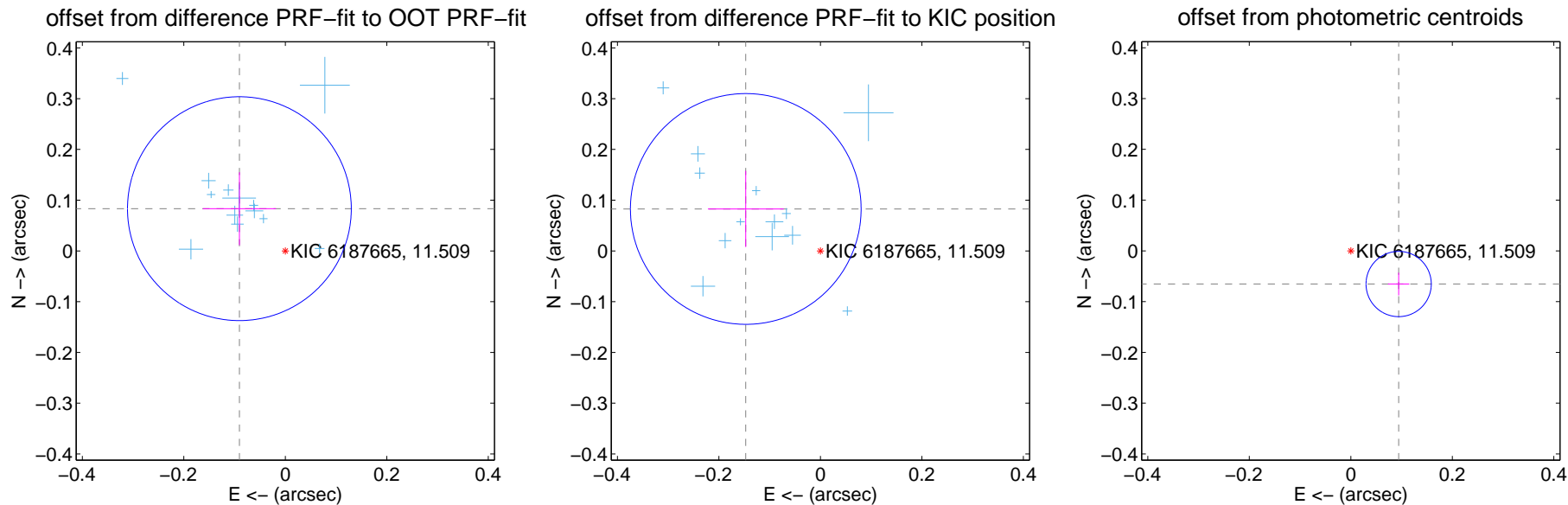
DV Centroid Data

Supplemental centroid analysis for 006187665-02. **Kepler magnitude: 11.51**. Transit SNR 15.76

There are 13 quarters with good PRF difference image offsets

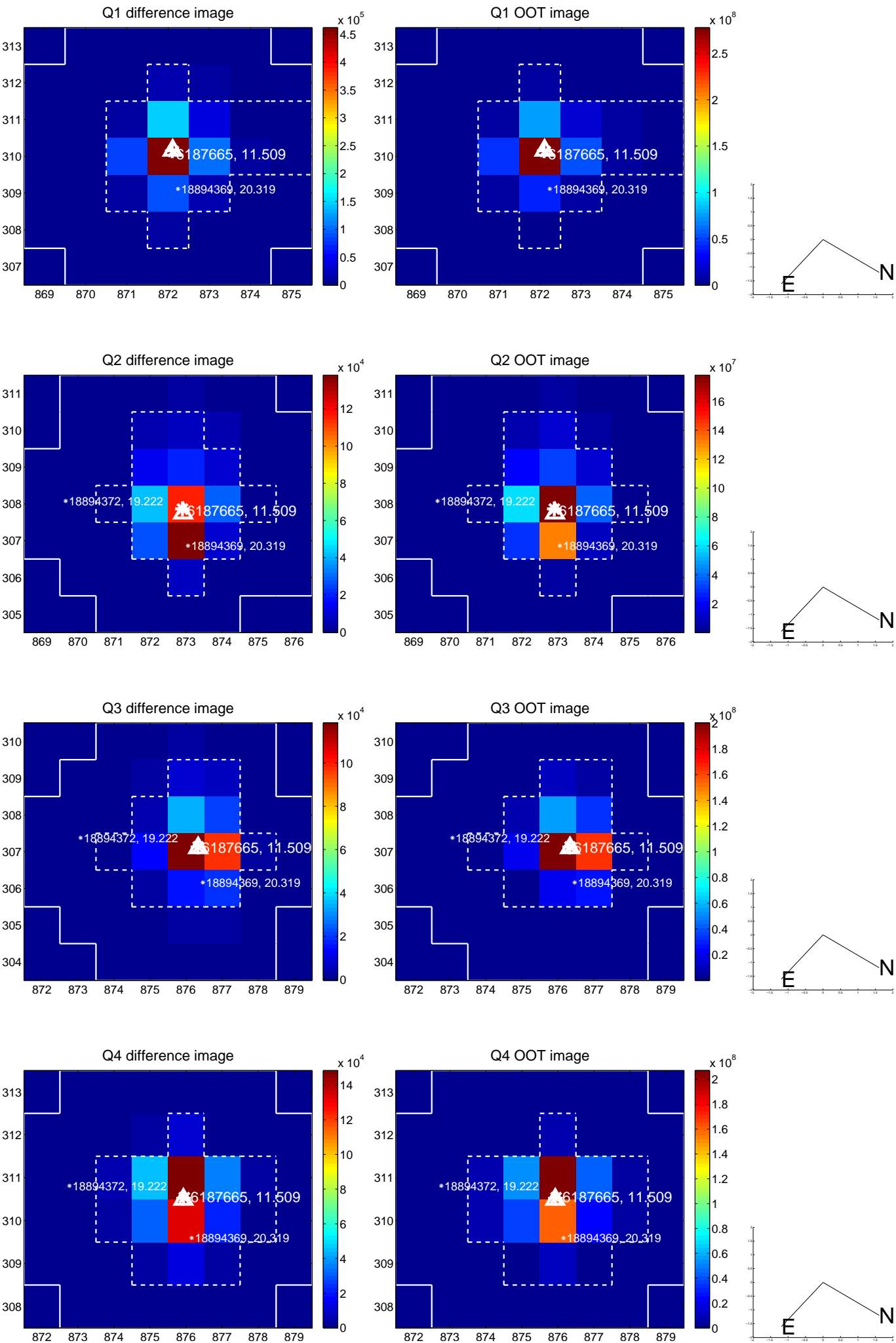
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-----------------------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.123 ± 0.074 | 1.67 | 0.090 ± 0.072 | 0.083 ± 0.072 |
| PRF-fit source offset from KIC position | 0.169 ± 0.076 | 2.23 | 0.147 ± 0.075 | 0.083 ± 0.075 |
| photometric centroid source offset | 0.11 ± 0.02 | 5.35 | -0.09 ± 0.02 | -0.07 ± 0.02 |

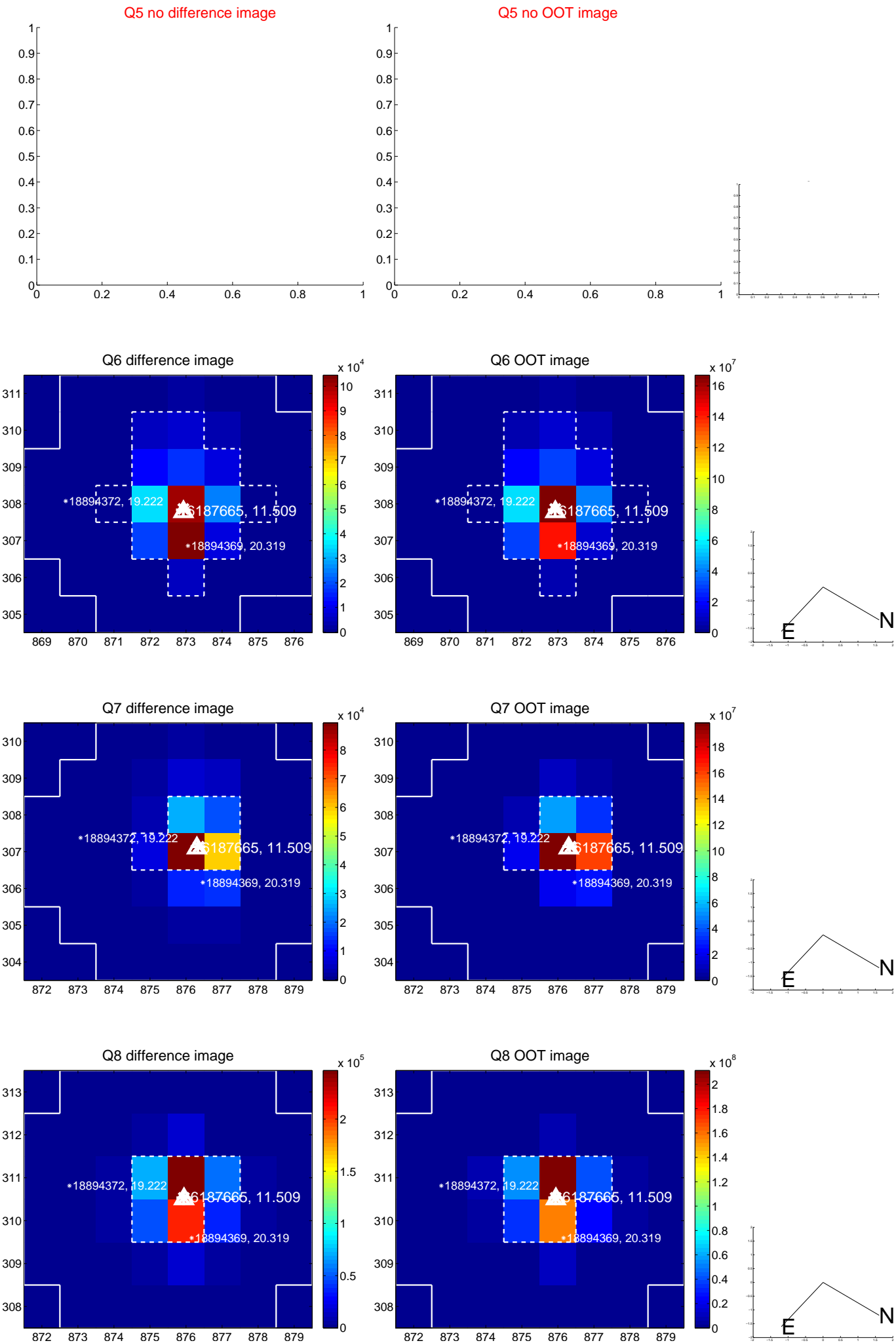


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

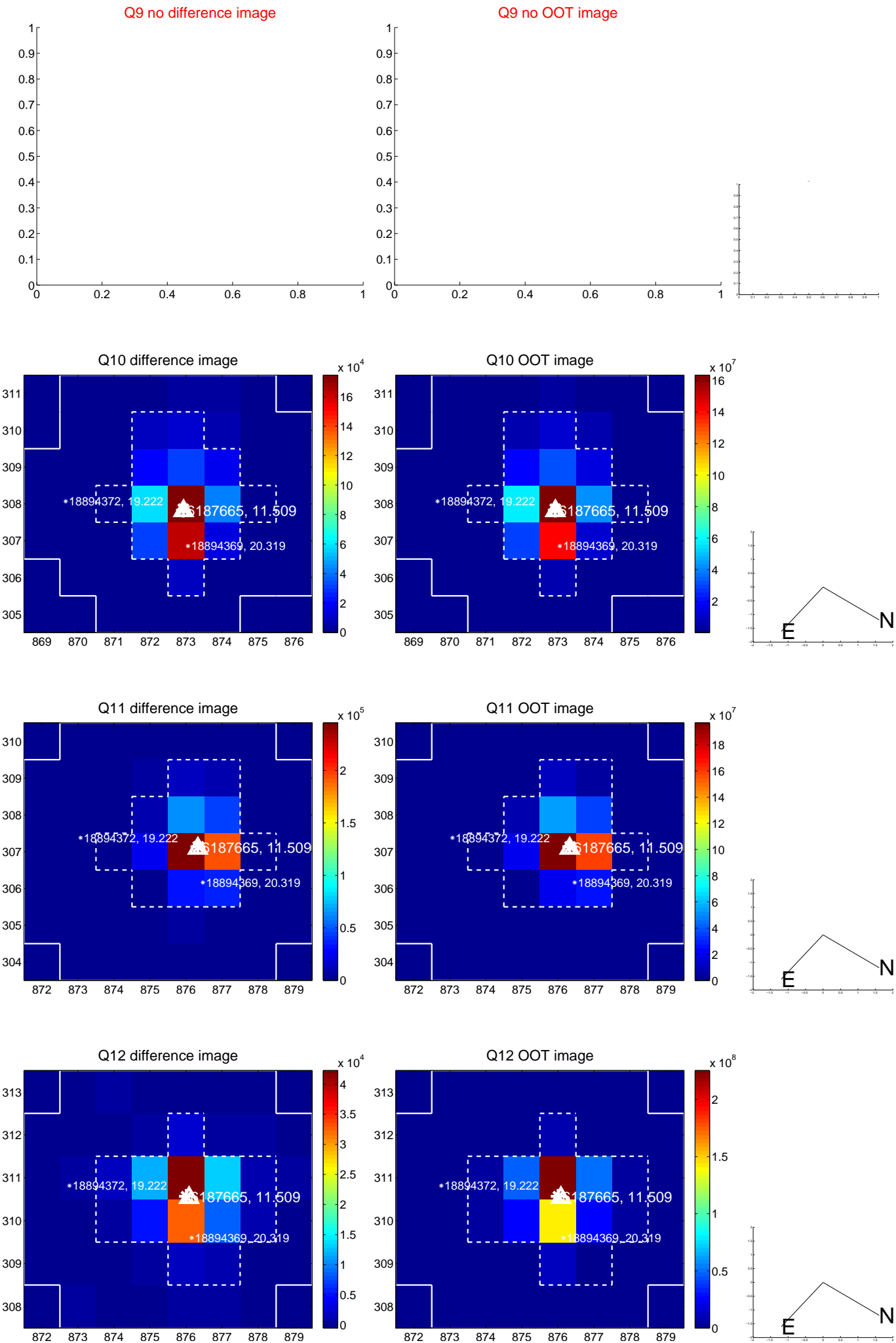
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



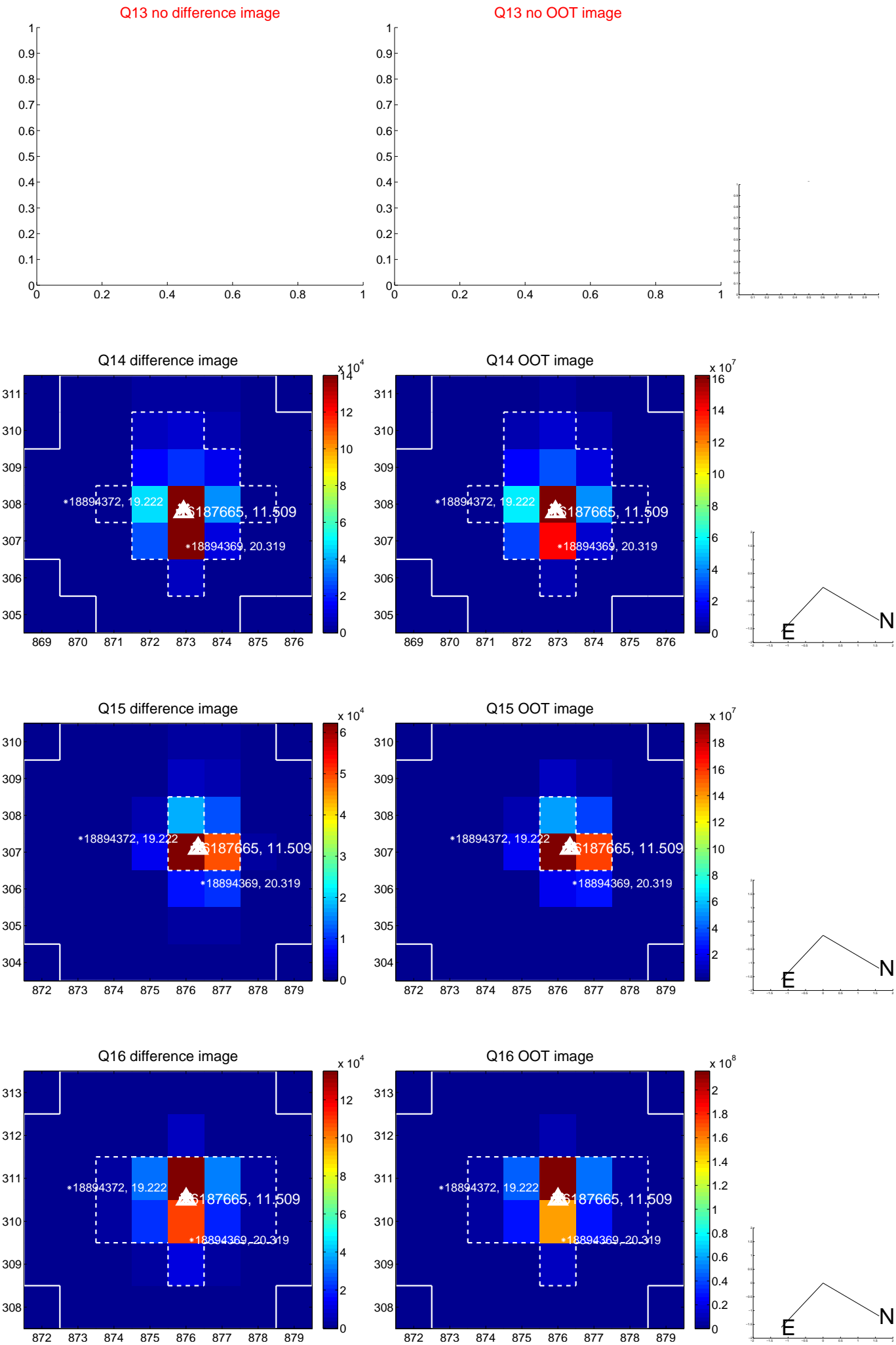
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



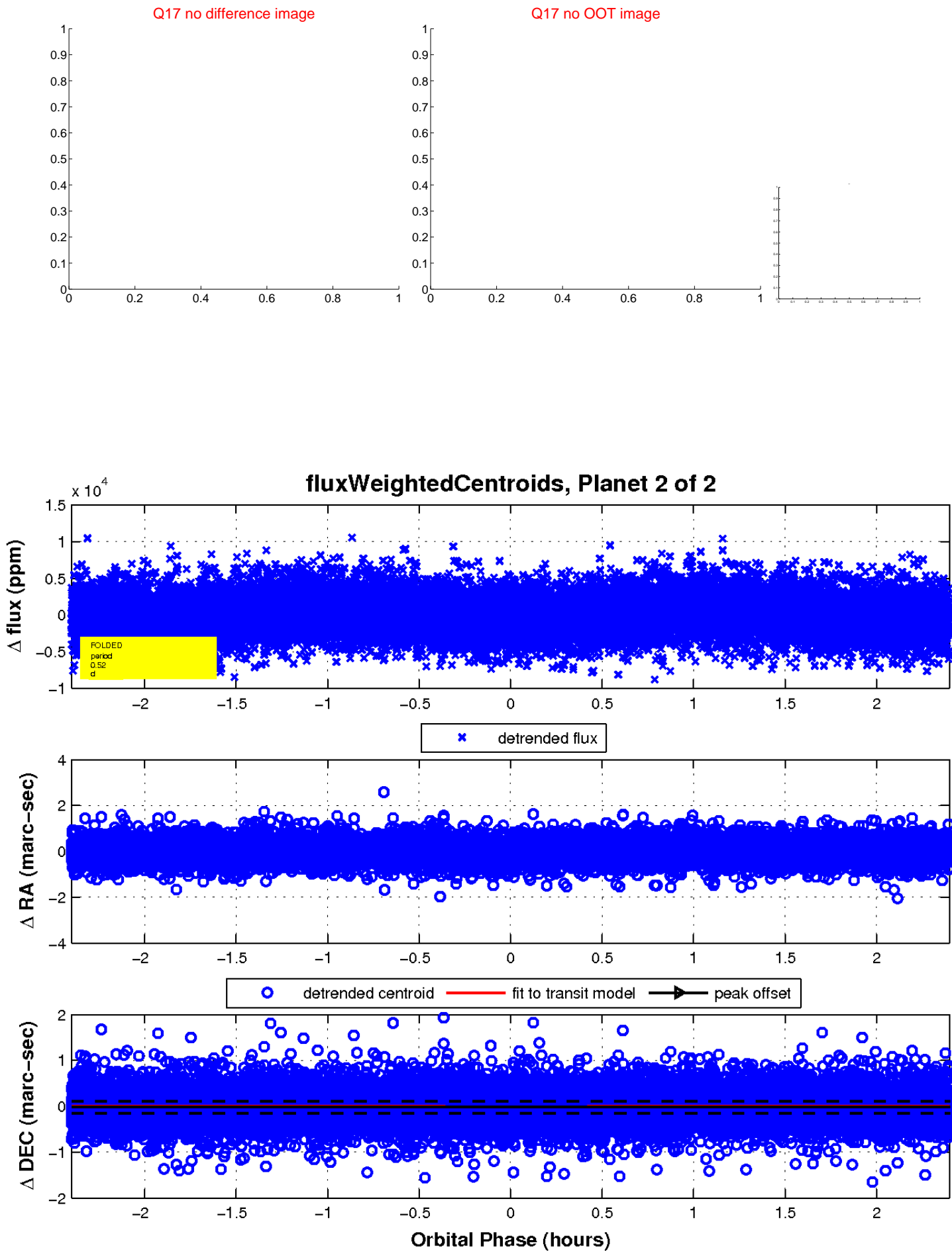
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

