

KIC 008297017

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008297017-01 | OBS | No | 2.321215 | 132.466789 | 18.3 | 6.234 | 7.4 | 4.8 | 3.81 | 7128 | 1.94 | 19611.19 |
| 008297017-02 | OBS | 7879.01 | 128.207009 | 230.199177 | 359.3 | 3.755 | 9.0 | 9.4 | 3.81 | 7128 | 9.62 | 93.23 |
| 008297017-03 | OBS | No | 333.643660 | 185.853323 | 292.0 | 10.378 | 7.7 | 6.8 | 3.81 | 7128 | 7.09 | 26.05 |
| 008297017-04 | OBS | No | 343.814367 | 165.471356 | 351.5 | 6.045 | 7.7 | 8.4 | 3.81 | 7128 | 7.66 | 25.02 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------------------------------------------------------|
| 008297017-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-02 | OBS | FP | 0.21 | 1 | 0 | 0 | 0 | MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |
| 008297017-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |

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

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

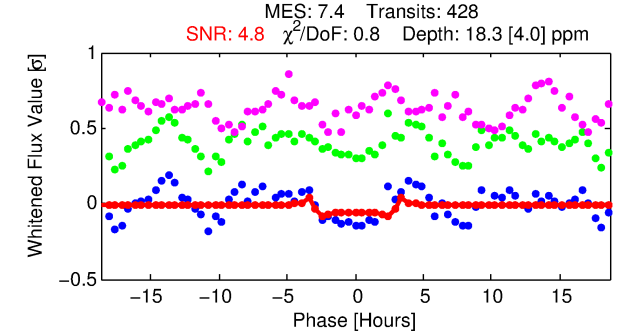
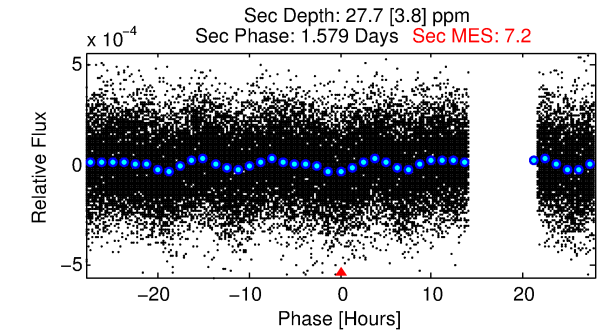
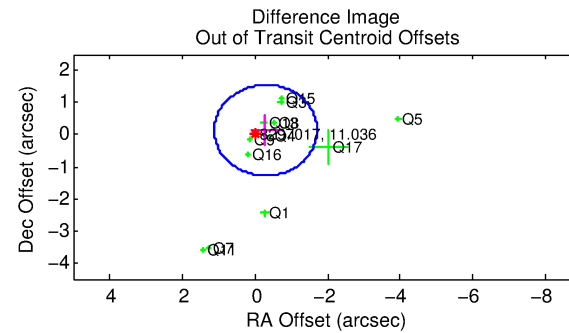
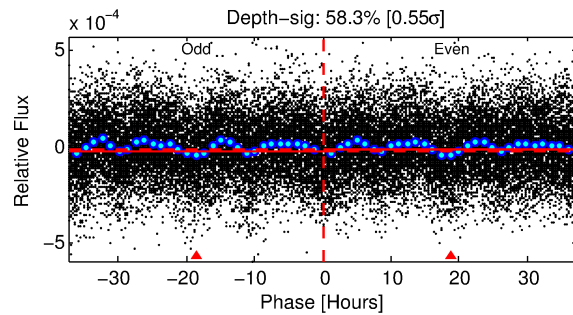
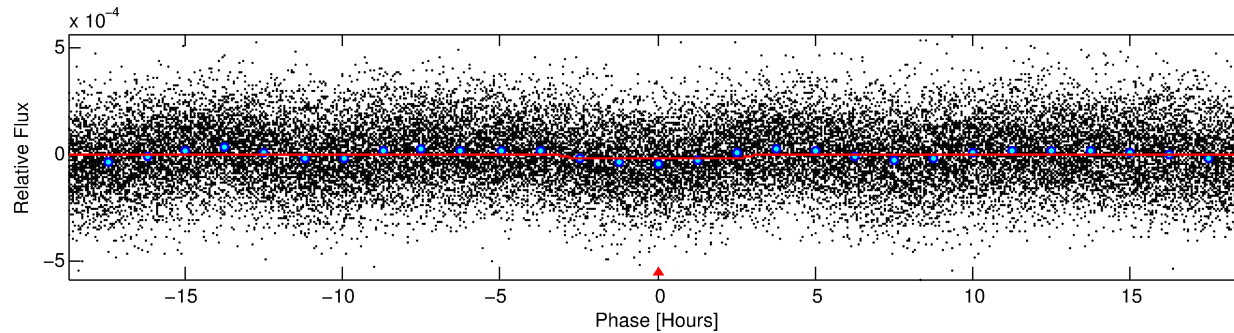
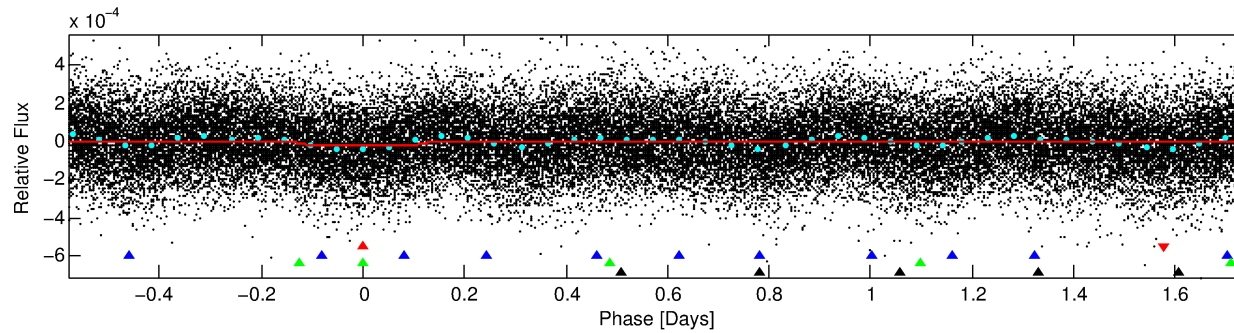
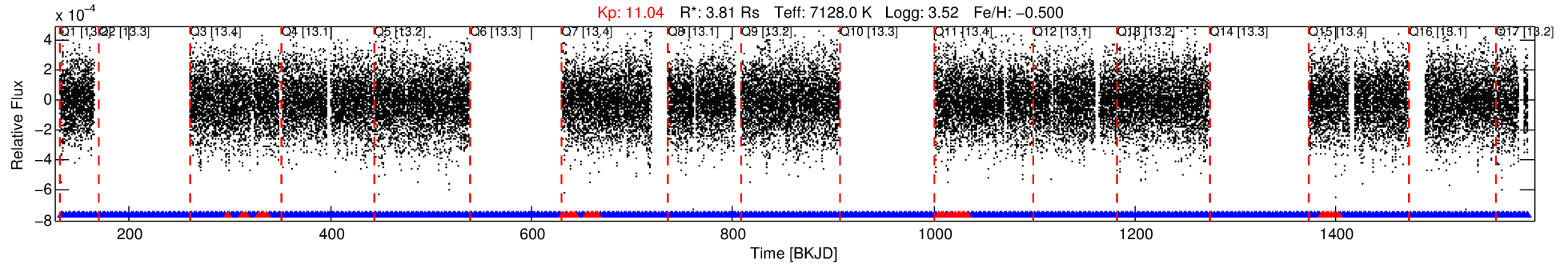
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008297017-01

No Significant Match Found

DV One-Page Summary

KIC: 8297017 Candidate: 1 of 4 Period: 2.321 d



DV Fit Results:

Period = 2.32122 [0.00003] d
Epoch = 132.4668 [0.0053] BKJD
Rp/R* = 0.0047 [0.0011]
a/R* = 1.46 [0.99]
b = 0.93 [0.20]
Seff = 19611.19 [12174.48]
Teq = 3018 [468] K
Rp = 1.94 [0.89] Re
a = 0.0414 [0.0156] AU
Ag = 6.97 [5.38] [1.11 σ]
Teffp = 7581 [962] K [4.27 σ]

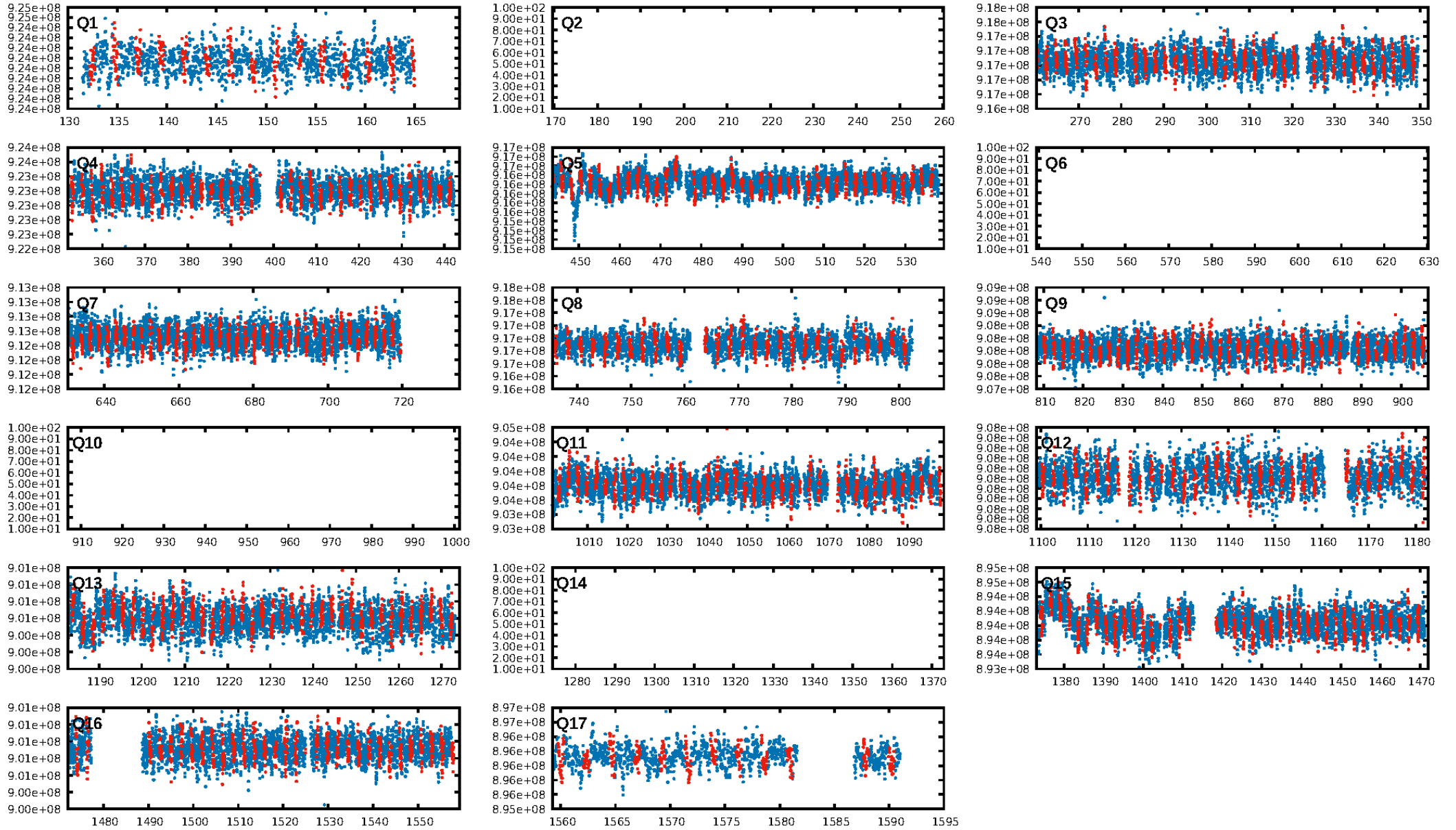
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [415.15 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.00e-10
RollingBand-fgt: 0.92 [367/401]
GhostDiagnostic-chr: 3.86
Centroid-sig: 36.6%
Centroid-so: 1.087 arcsec [1.18 σ]
OotOffset-rm: 0.323 arcsec [0.69 σ]
KicOffset-rm: 0.463 arcsec [0.78 σ]
OotOffset-st: 0/4/3/5 [12]
KicOffset-st: 0/4/3/5 [12]
DiffImageQuality-fgm: 0.58 [7/12]
DiffImageOverlap-fno: 1.00 [13/13]

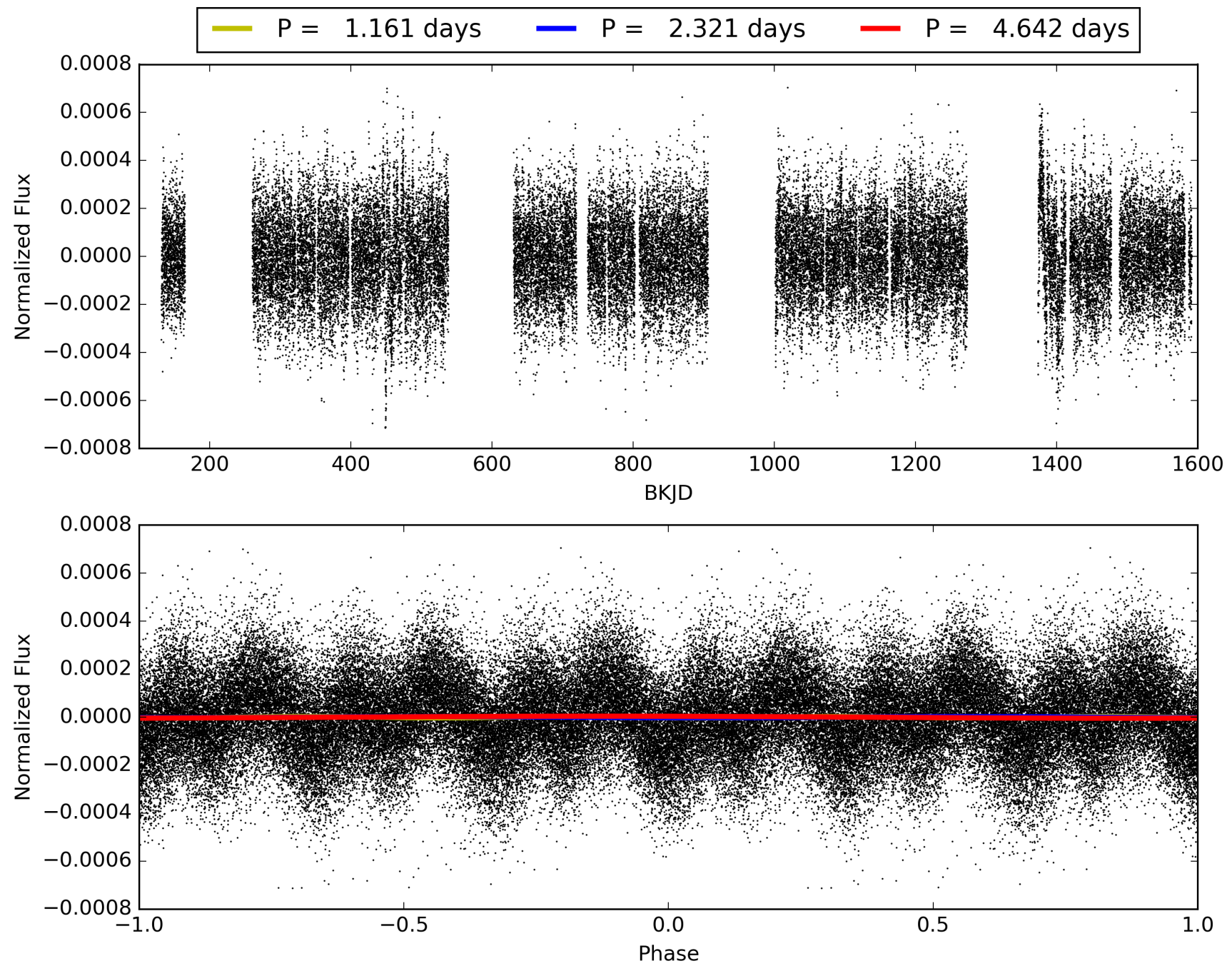
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:36:29 Z

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

TCE 008297017-01, PDC Light Curves

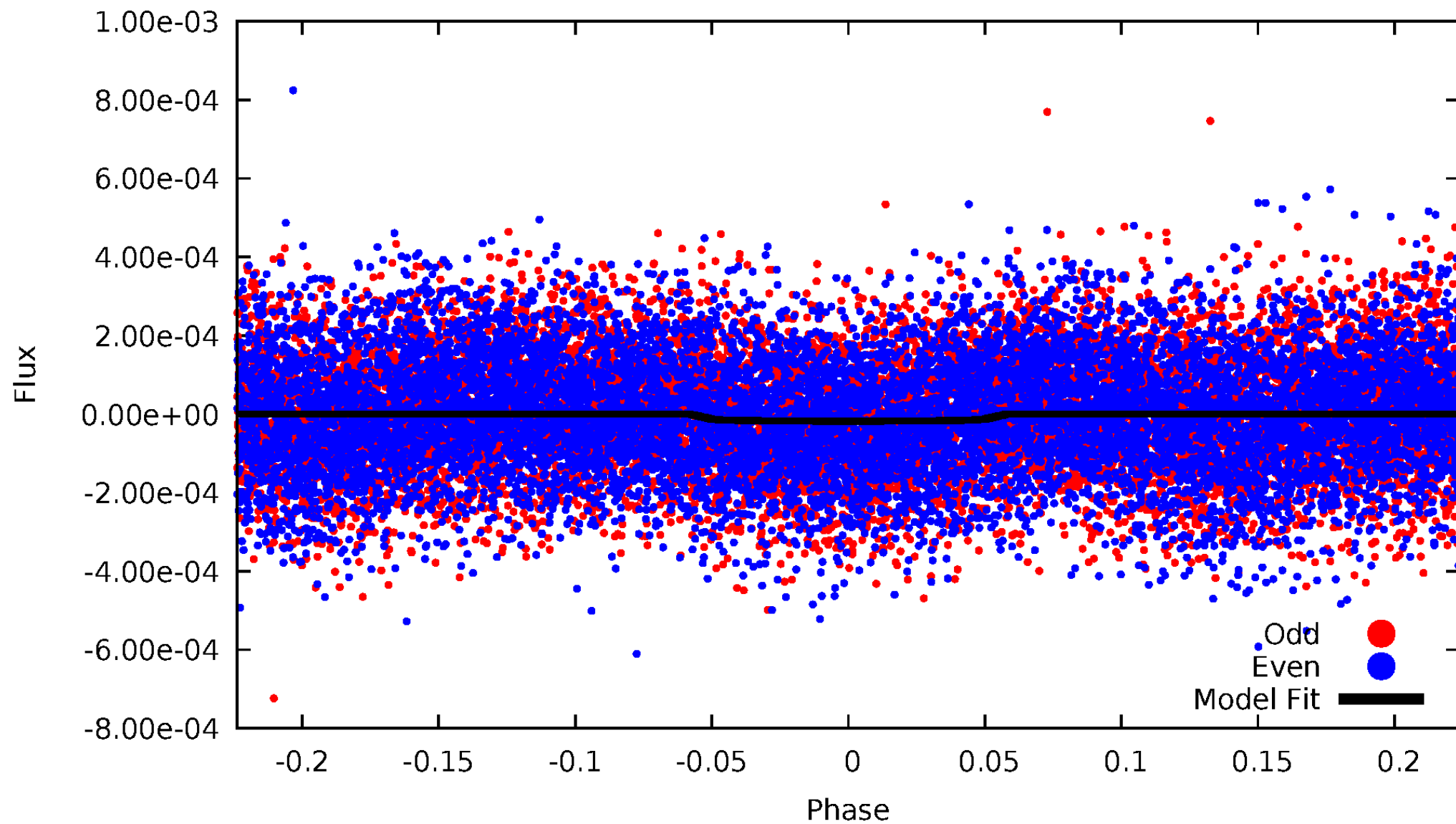


TCE 008297017-01



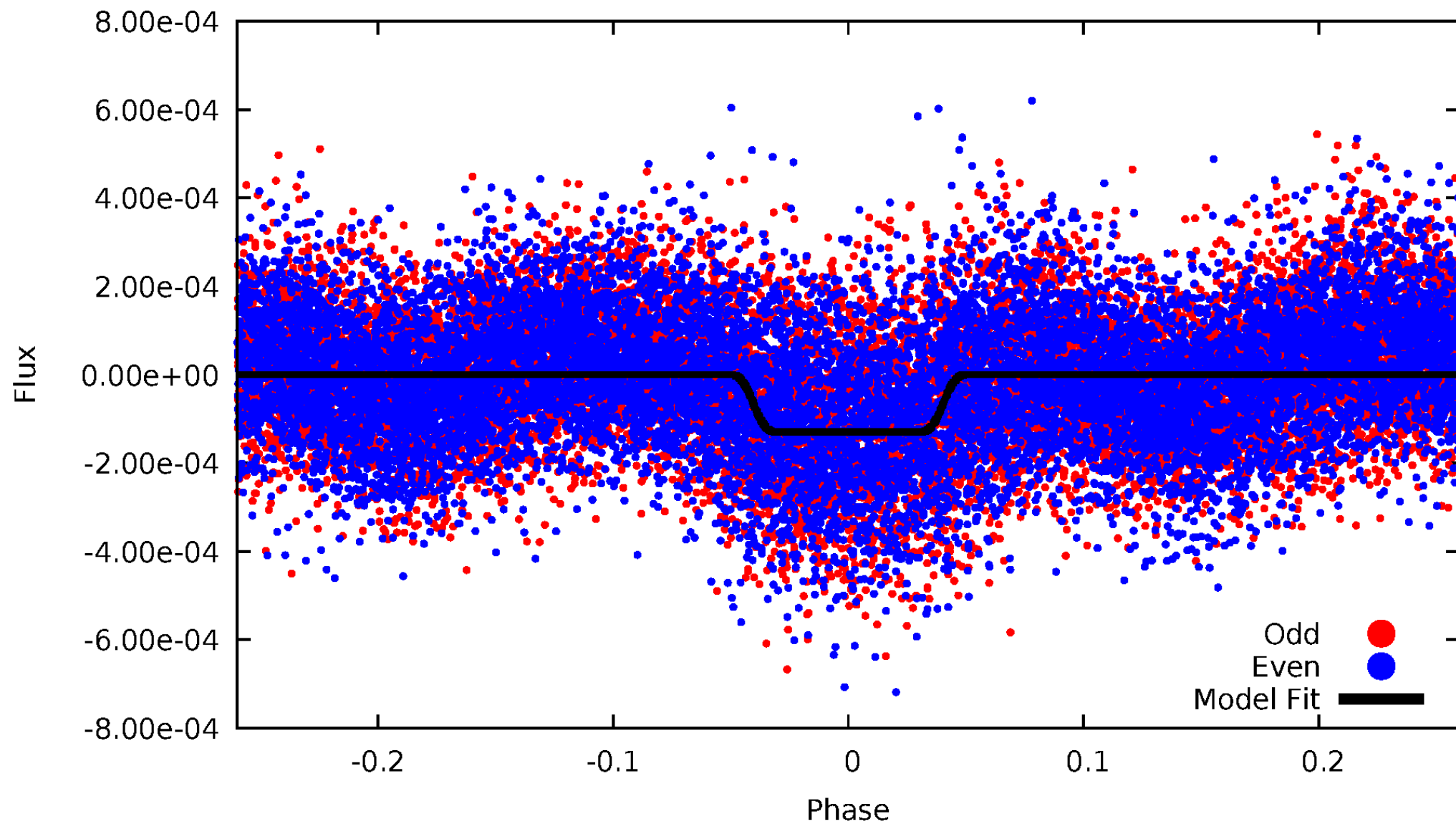
DV Odd/Even

TCE 008297017-01

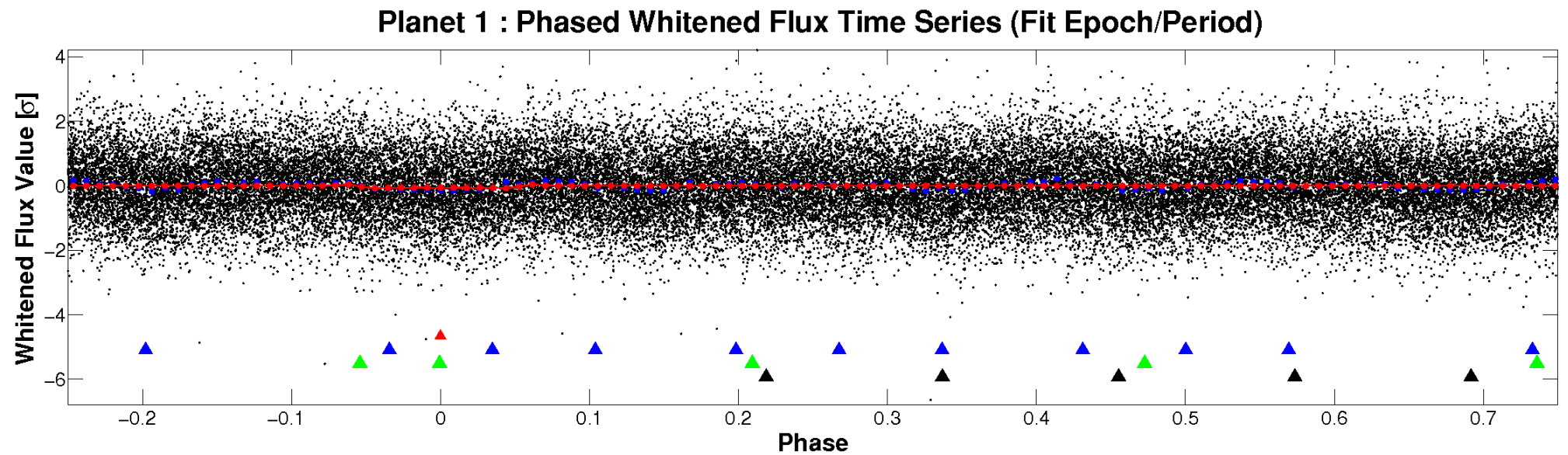
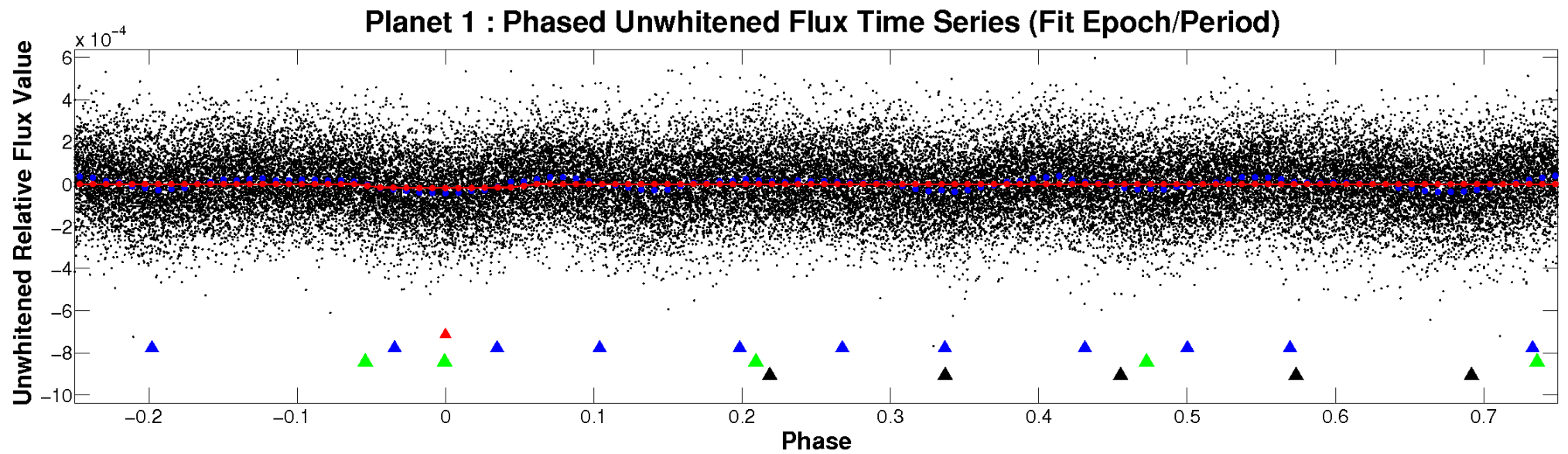


ALT Odd/Even

TCE 008297017-01

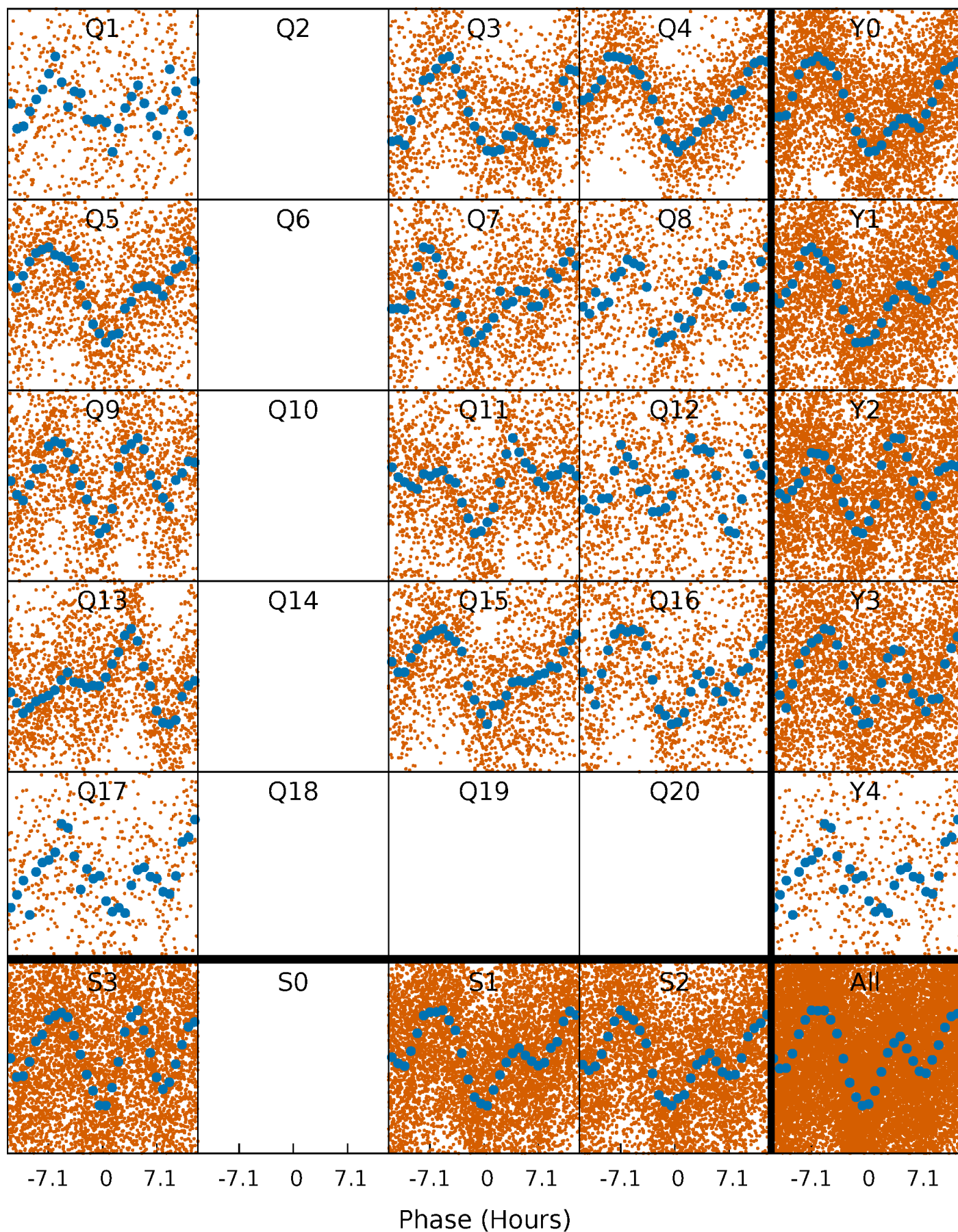


Non-Whitened Vs. Whitened Light Curve



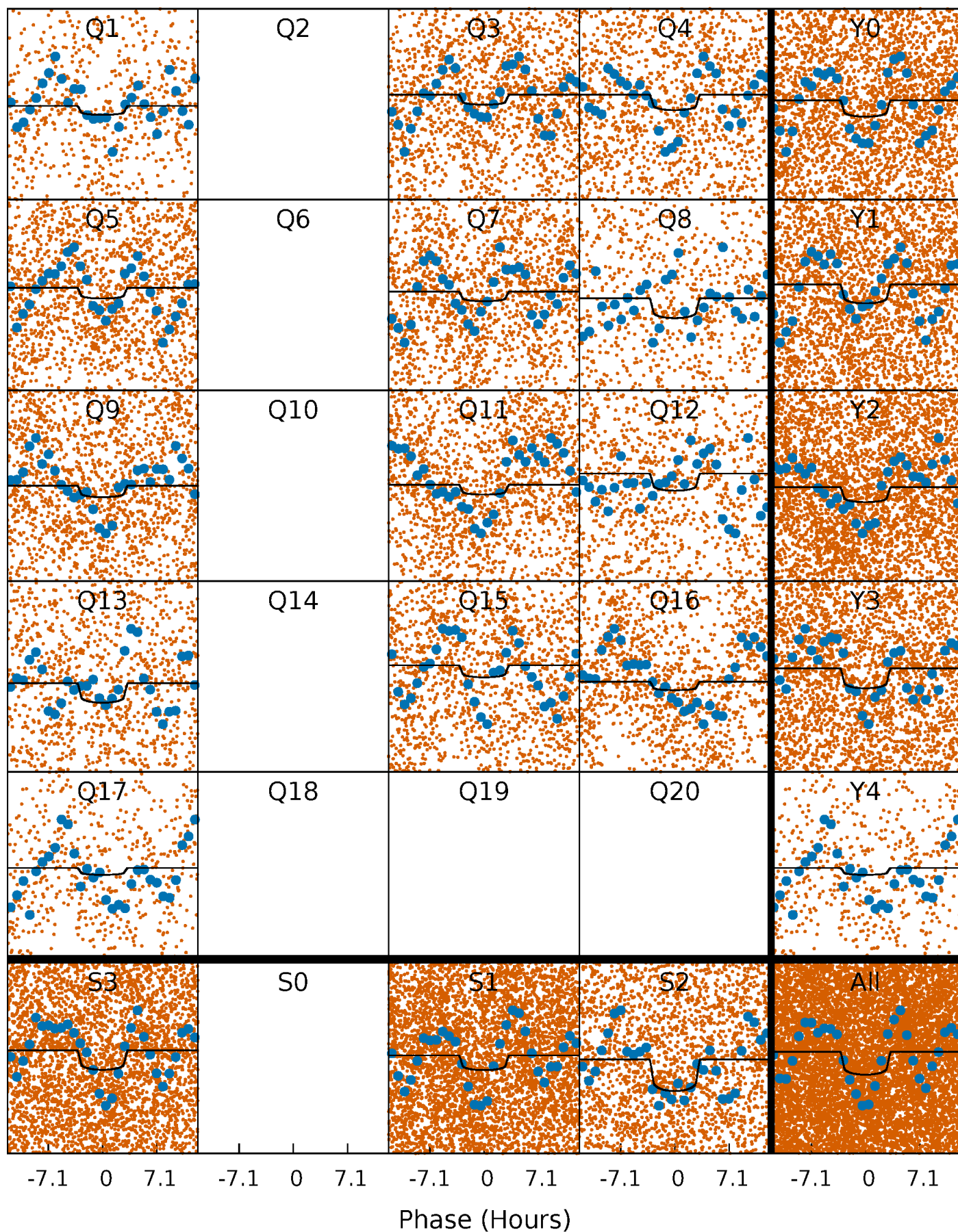
PDC Quarter-Phased Transit Curves

TCE 008297017-01 P= 2.321215 Days $T_0=132.466789$ (BKJD)



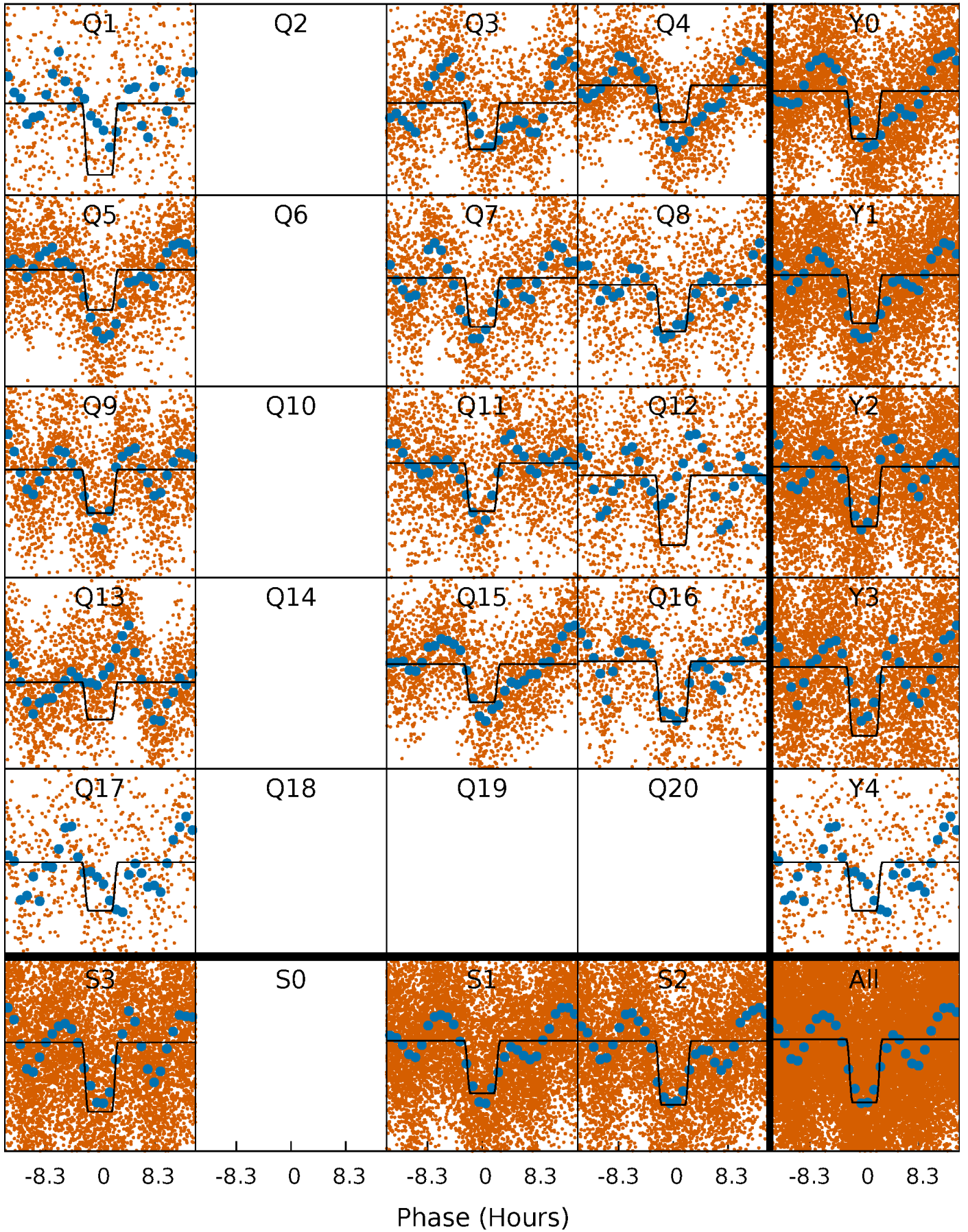
DV Quarter-Phased Transit Curves

TCE 008297017-01 P= 2.321215 Days $T_0=132.466789$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

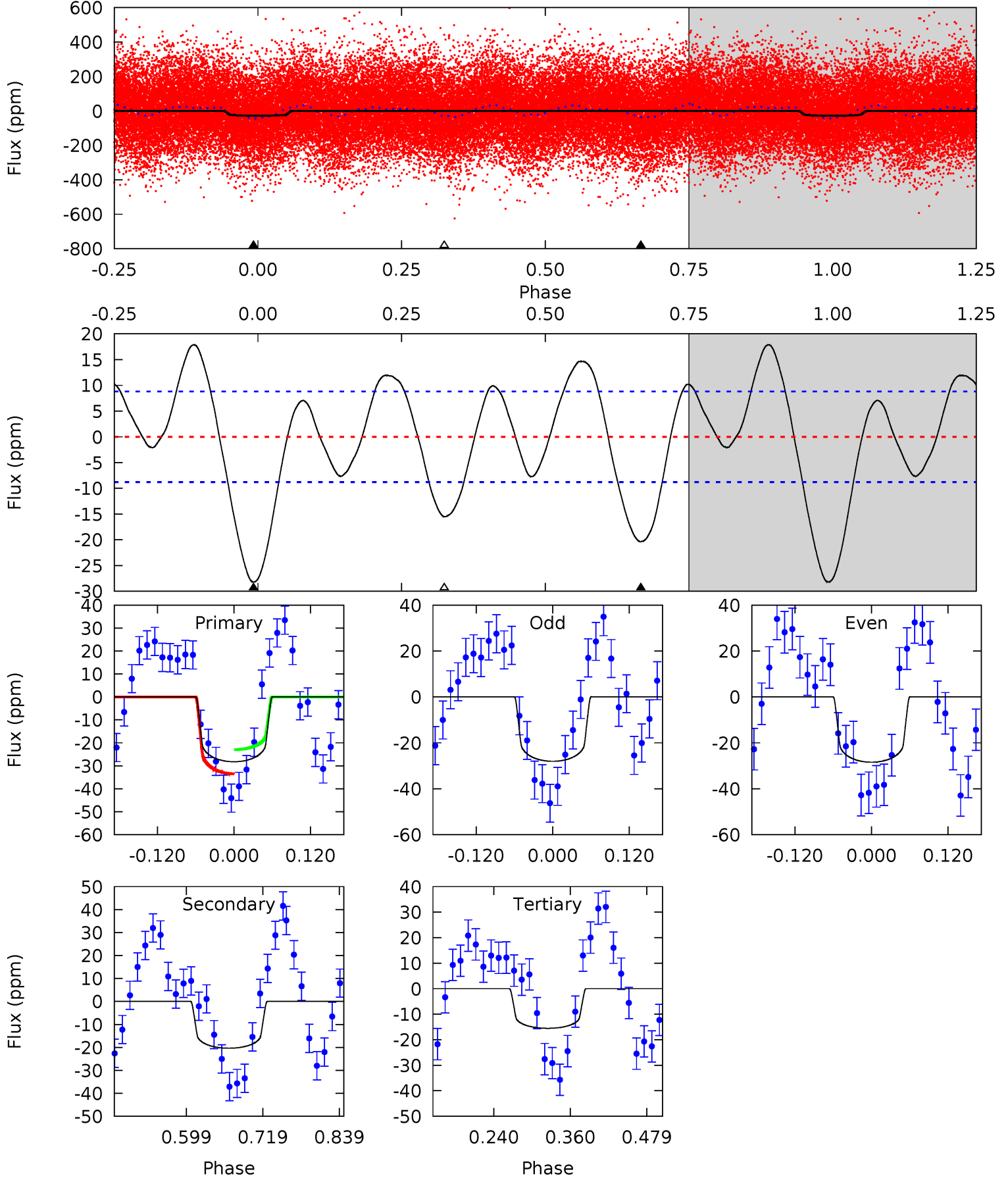
TCE 008297017-01 P= 2.321201 Days $T_0=132.461097$ (BKJD)



DV Model-Shift Uniqueness Test

008297017-01, P = 2.321215 Days, E = 130.145574 Days

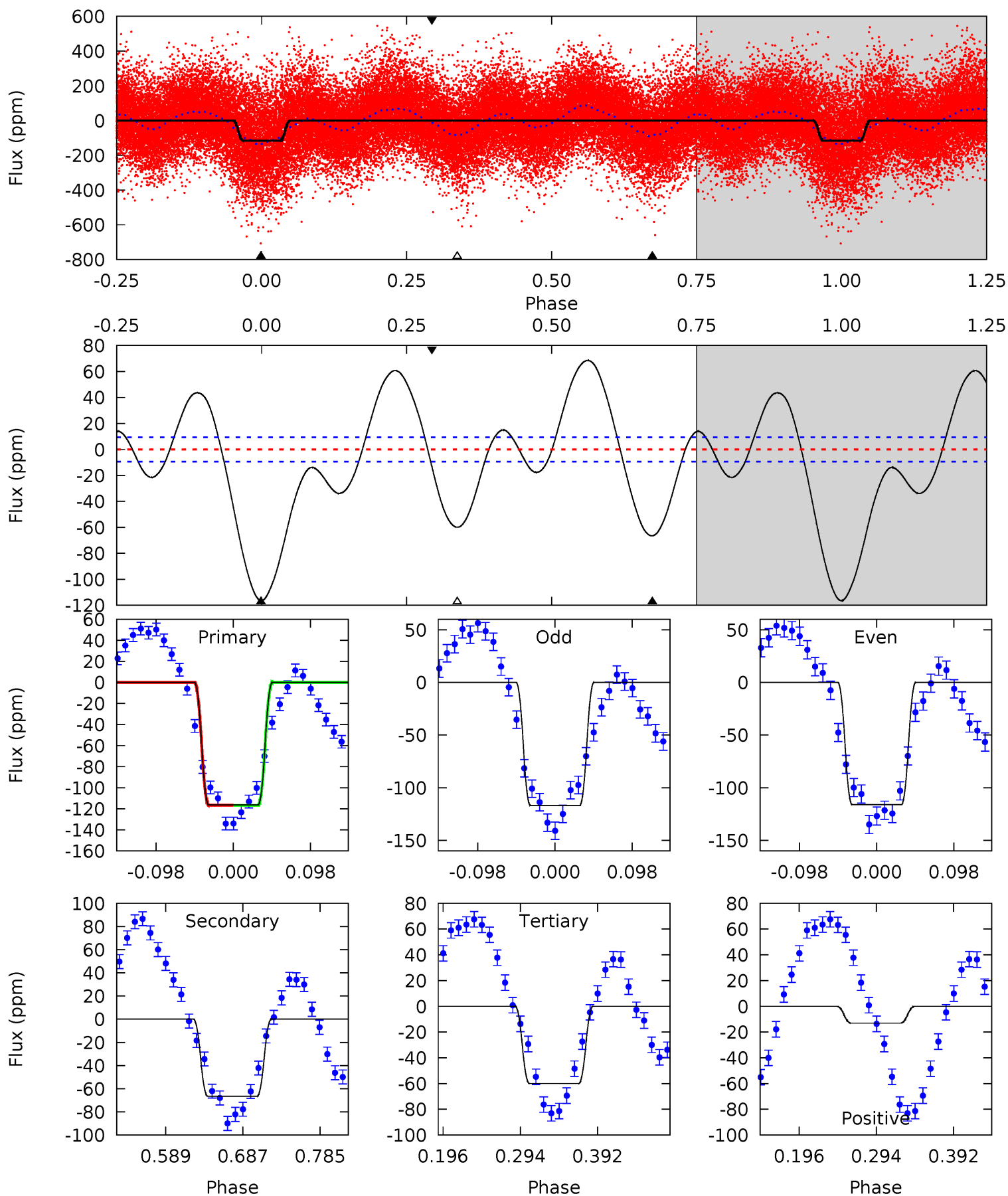
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.5 | 10.5 | 7.98 | 0 | 4.53 | 1.56 | 3.99 | 6.53 | 14.5 | 2.49 | 10.5 | 0.10 | 0.83 | 0.39 | 2.71 |



Alt Model-Shift Uniqueness Test

008297017-01, P = 2.321201 Days, E = 130.139896 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 56.7 | 32.4 | 29.2 | -6.36 | 4.57 | 1.65 | 16.8 | 27.5 | 63.1 | 3.21 | 38.8 | 0.19 | 0.98 | 0.37 | 0.06 |



Stellar Parameters For KIC 008297017

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 7128^{+224}_{-274} | $3.520^{+0.352}_{-0.088}$ | $-0.500^{+0.350}_{-0.250}$ | $3.811^{+0.403}_{-1.510}$ | $1.754^{+0.164}_{-0.383}$ | $0.045^{+0.122}_{-0.012}$ |
| | +3%/-4% | +10%/-2% | +70%/-50% | +11%/-40% | +9%/-22% | +274%/-28% |
| Source | KIC0 | FLK73 | 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 008297017-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -20 ± 2 | $1.80^{+0.56}_{-0.53}$ | 4136^{+231}_{-403} | 6909^{+1270}_{-848} | $5.865^{+5.639}_{-2.384}$ |
| Alt. | -67 ± 2 | $4.49^{+0.76}_{-0.96}$ | 4123^{+259}_{-398} | 5829^{+381}_{-329} | $3.072^{+1.728}_{-0.761}$ |

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

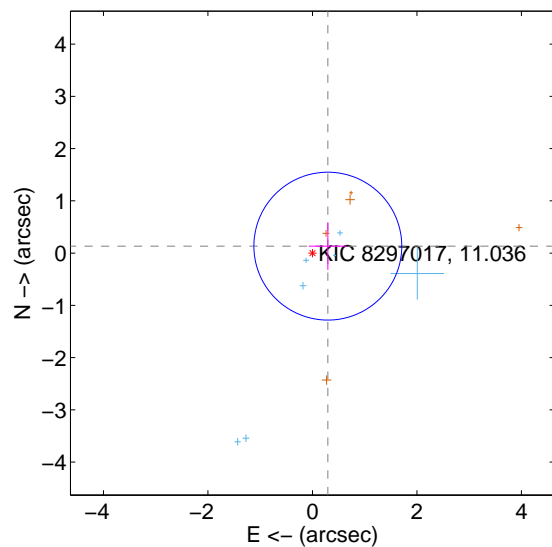
Supplemental centroid analysis for 008297017-01. **Kepler magnitude: 11.04.** Transit SNR 4.84

There are 7 quarters with good PRF difference image offsets

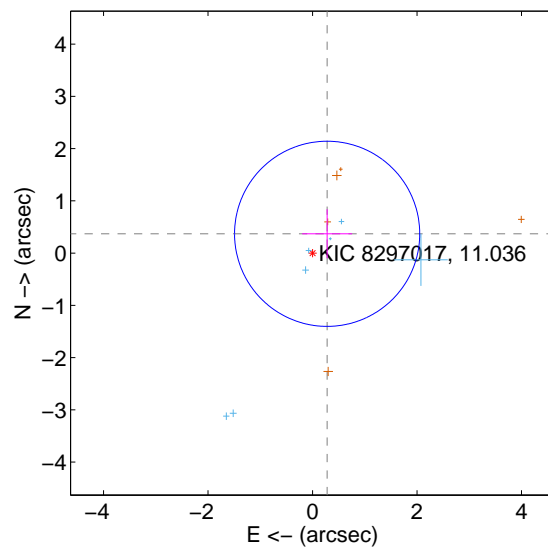
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.323 ± 0.472 | 0.69 | -0.295 ± 0.369 | 0.133 ± 0.455 |
| PRF-fit source offset from KIC position | 0.463 ± 0.591 | 0.78 | -0.280 ± 0.478 | 0.369 ± 0.469 |
| photometric centroid source offset | 1.09 ± 0.92 | 1.18 | 1.08 ± 0.92 | -0.13 ± 0.90 |

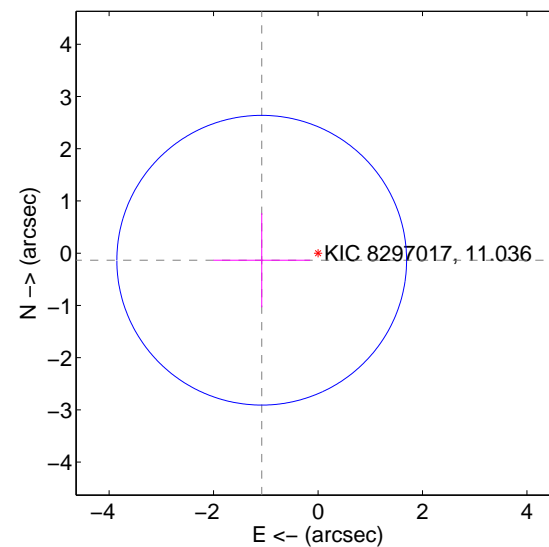
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

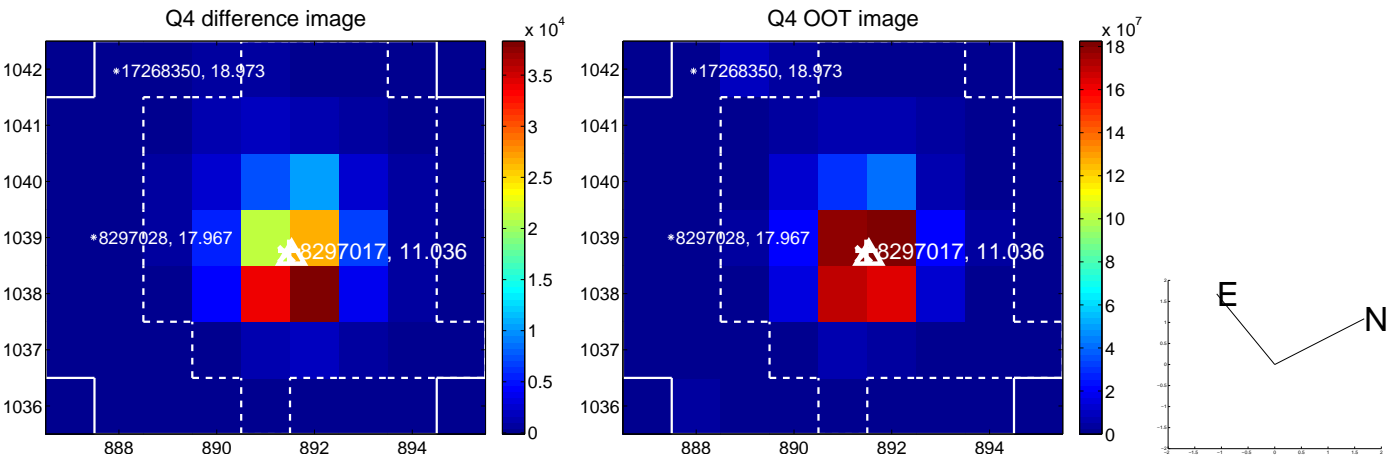
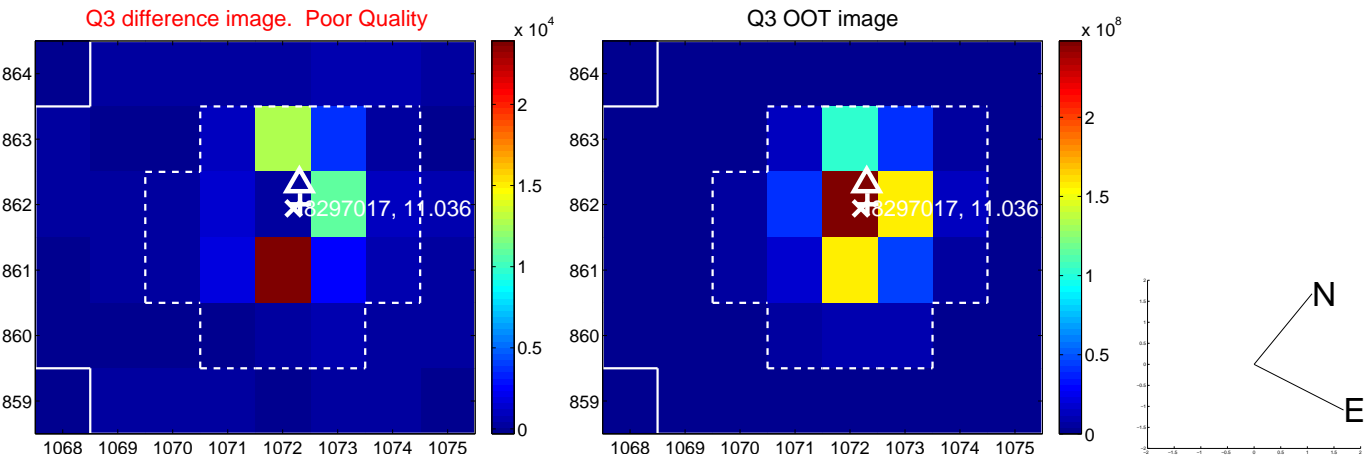
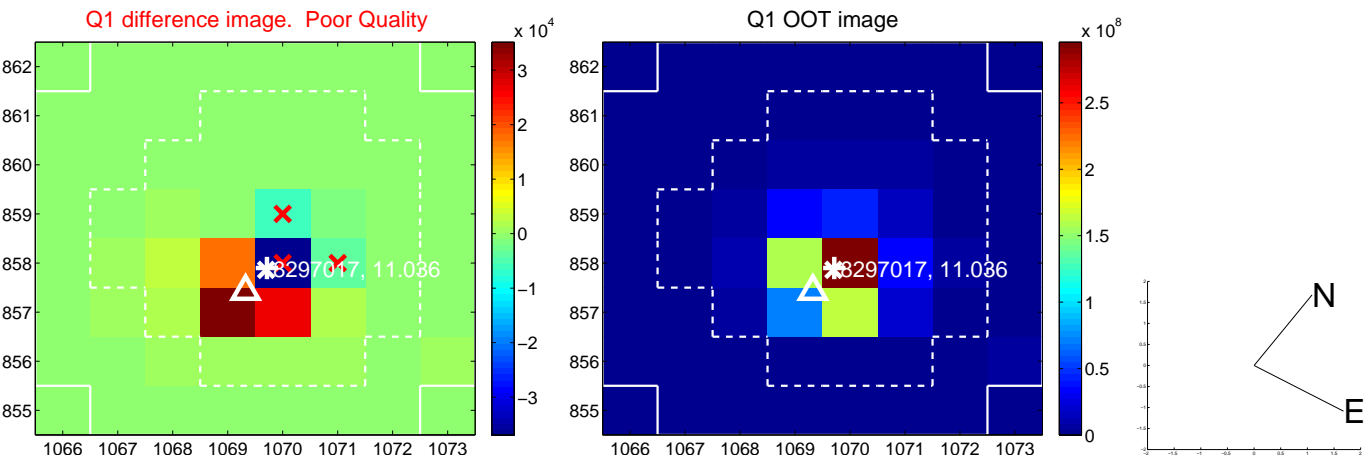


offset from photometric centroids

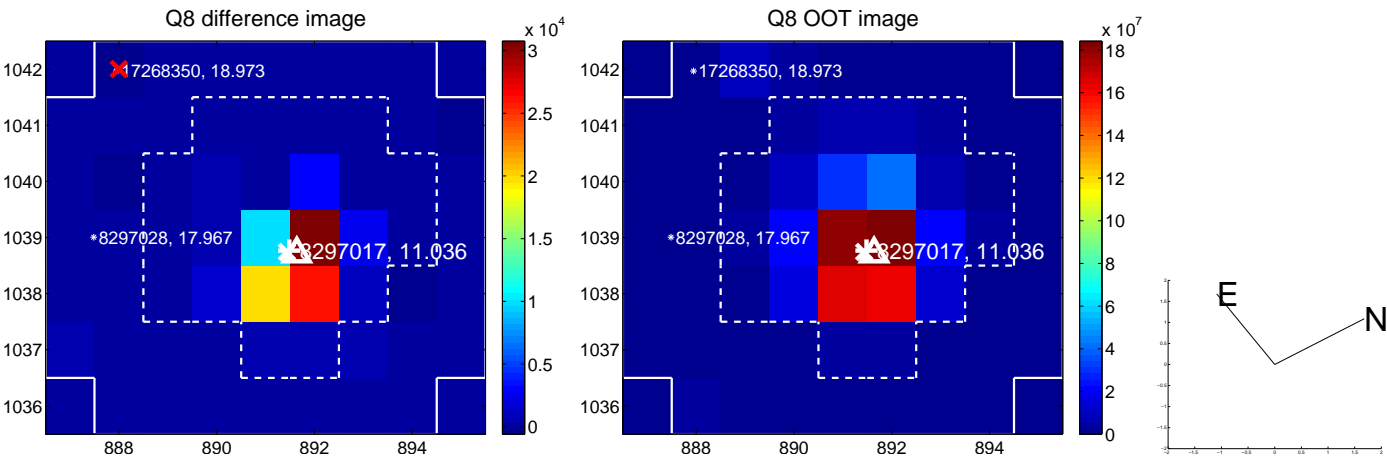
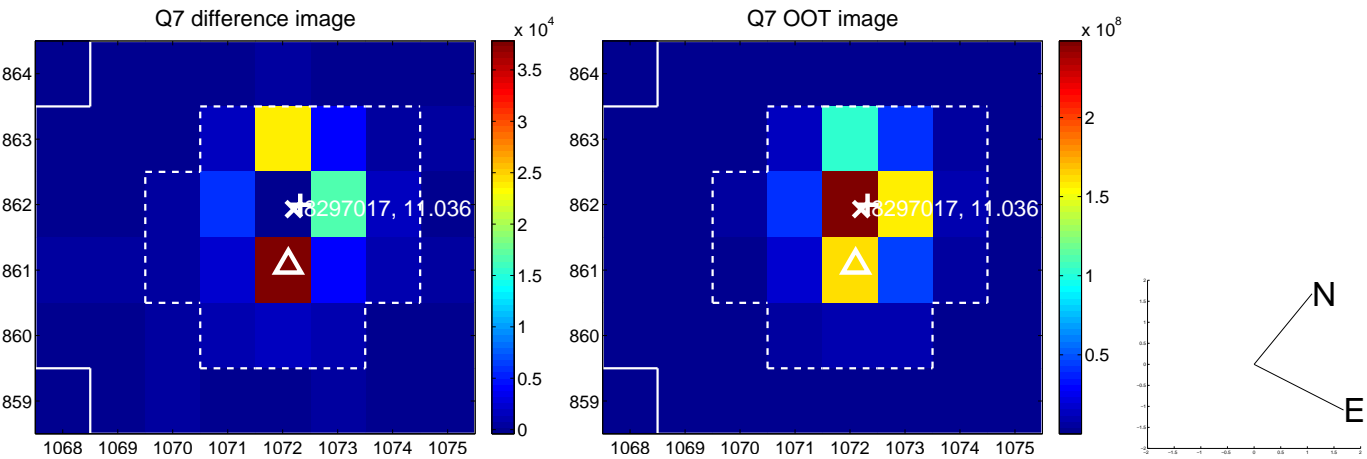
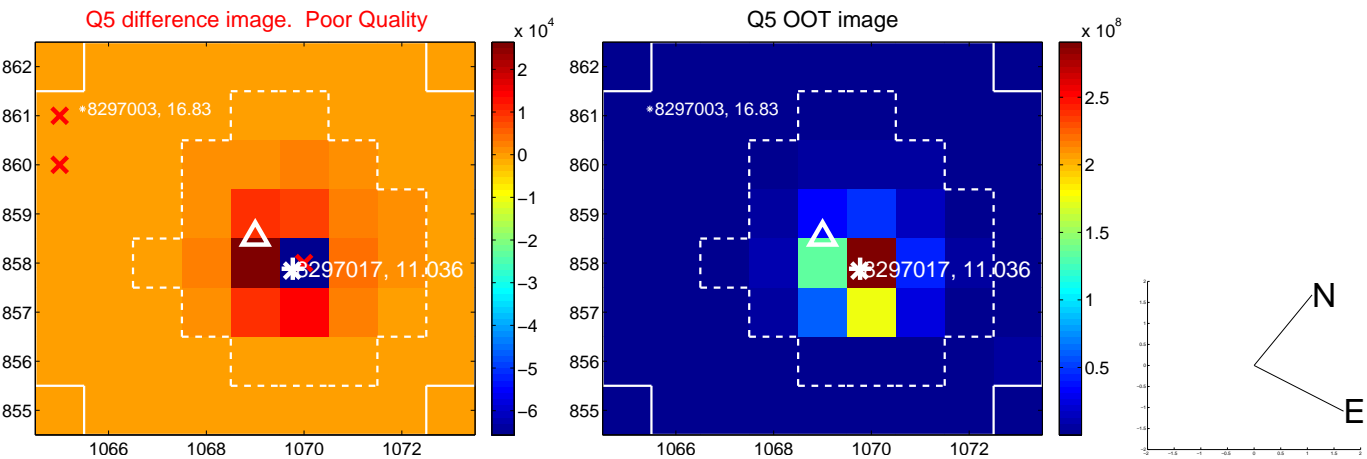


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

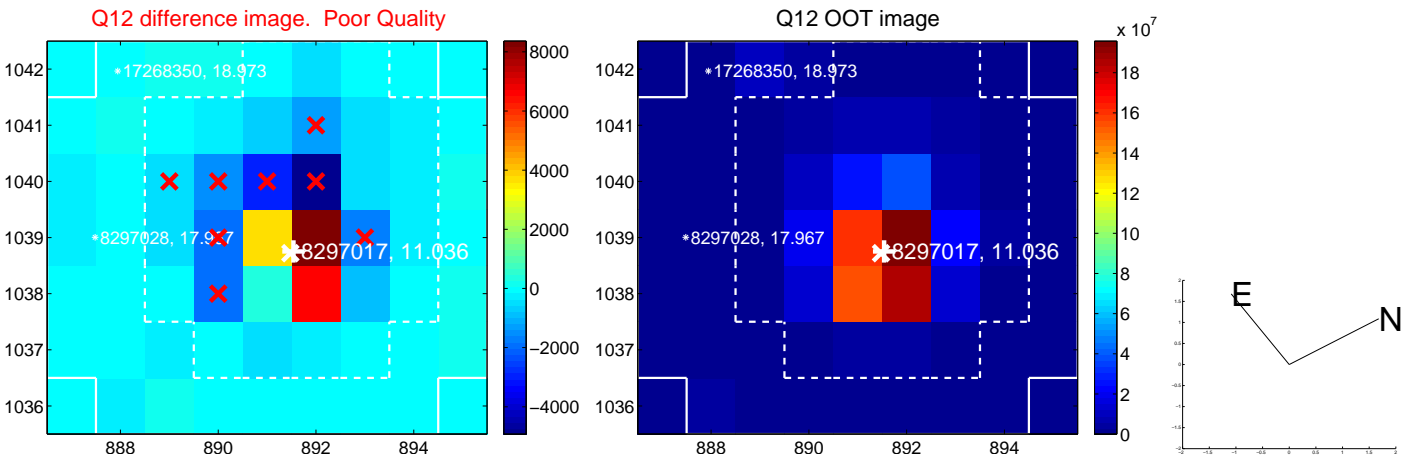
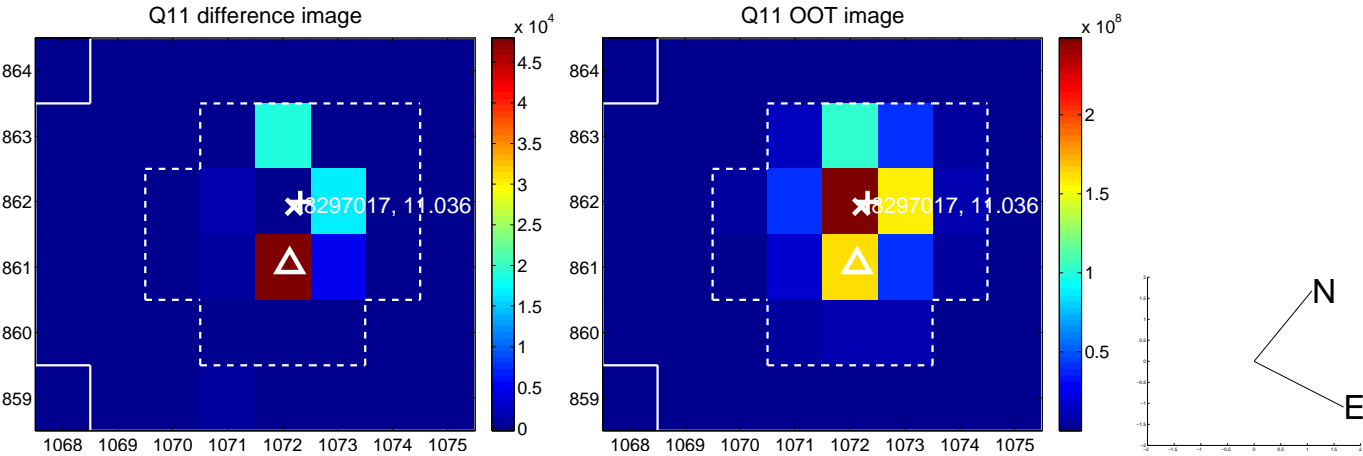
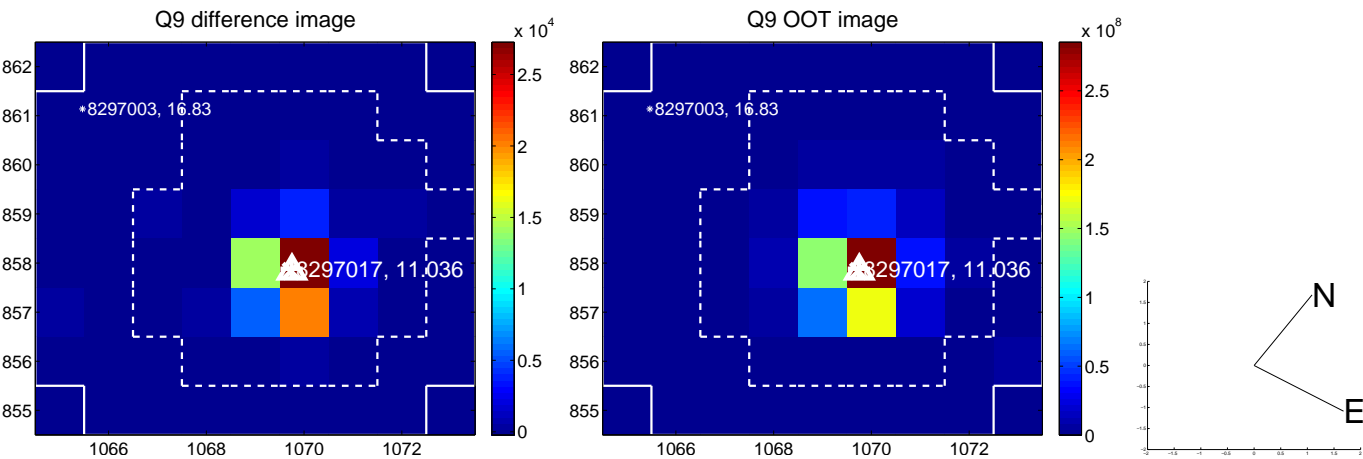
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



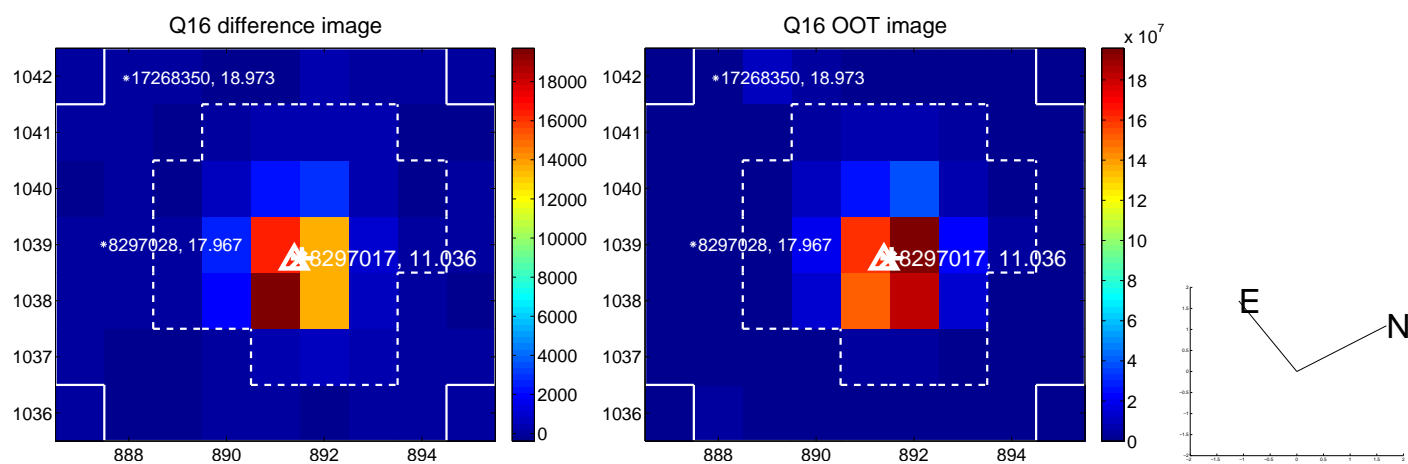
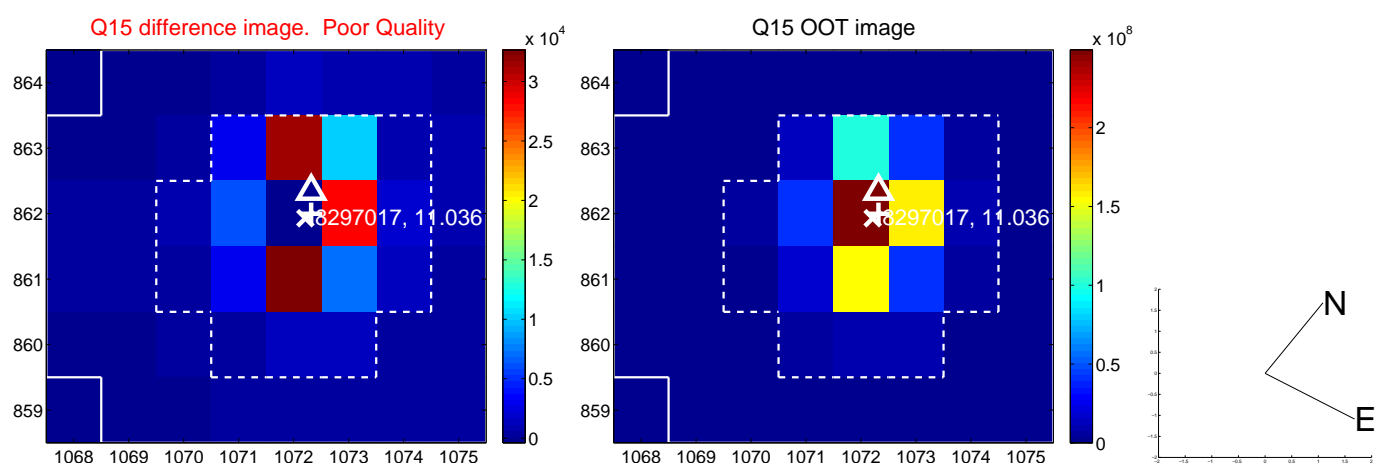
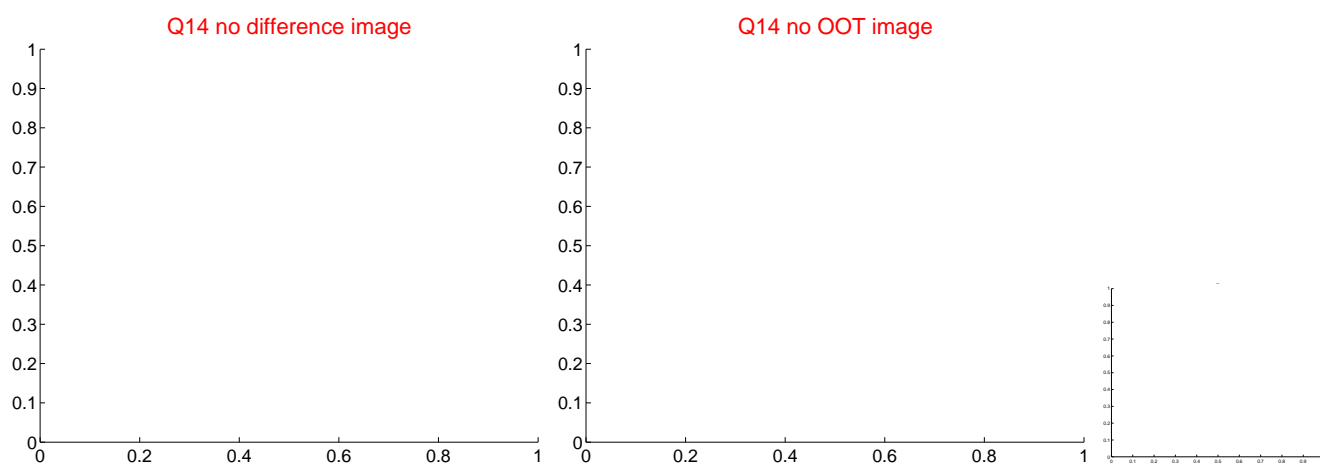
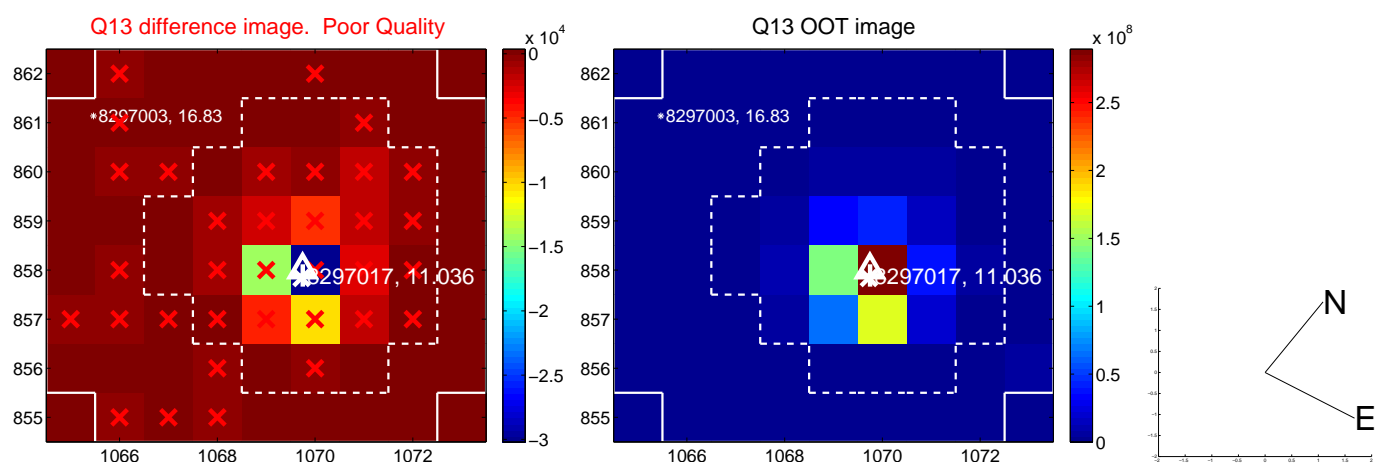
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



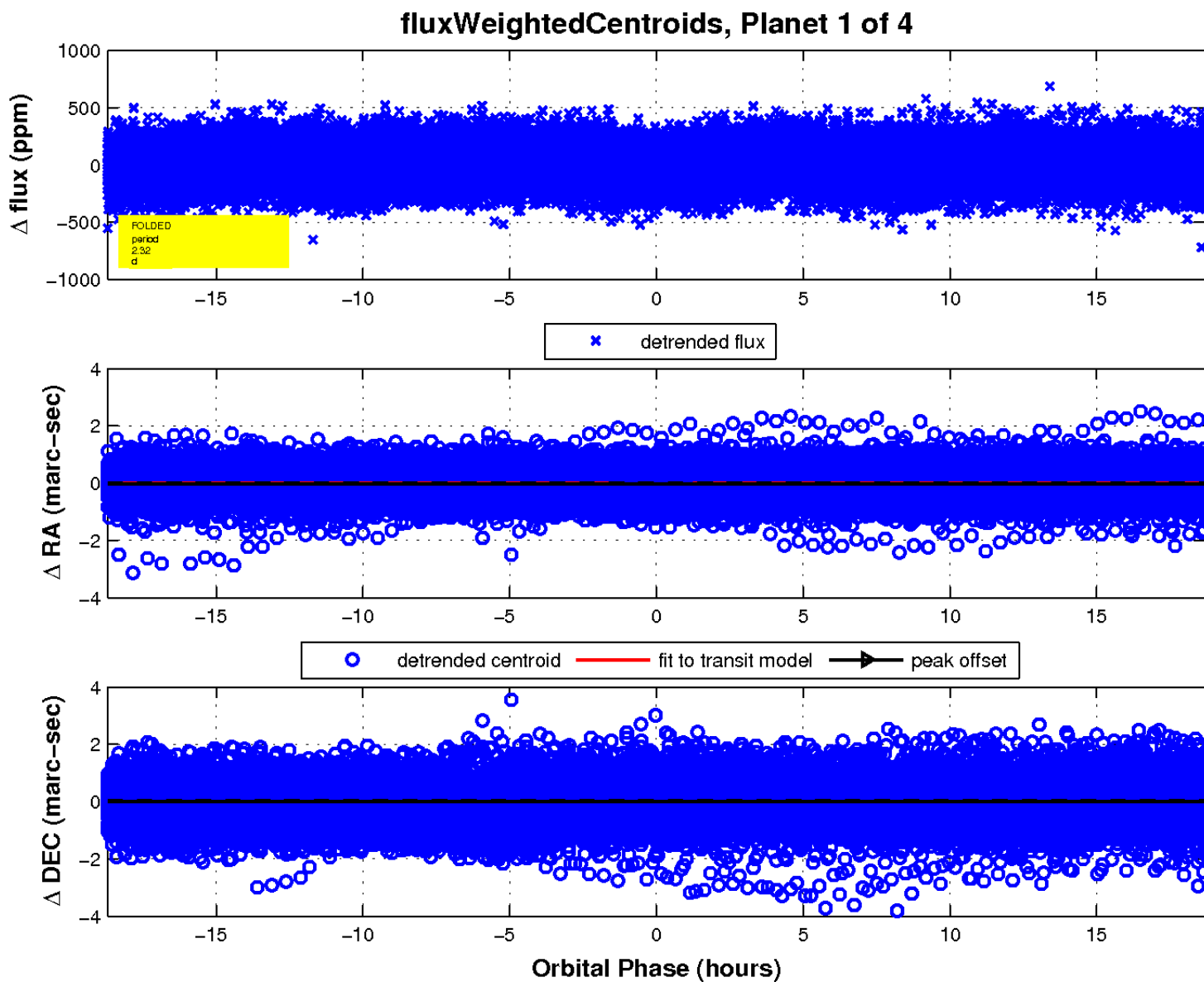
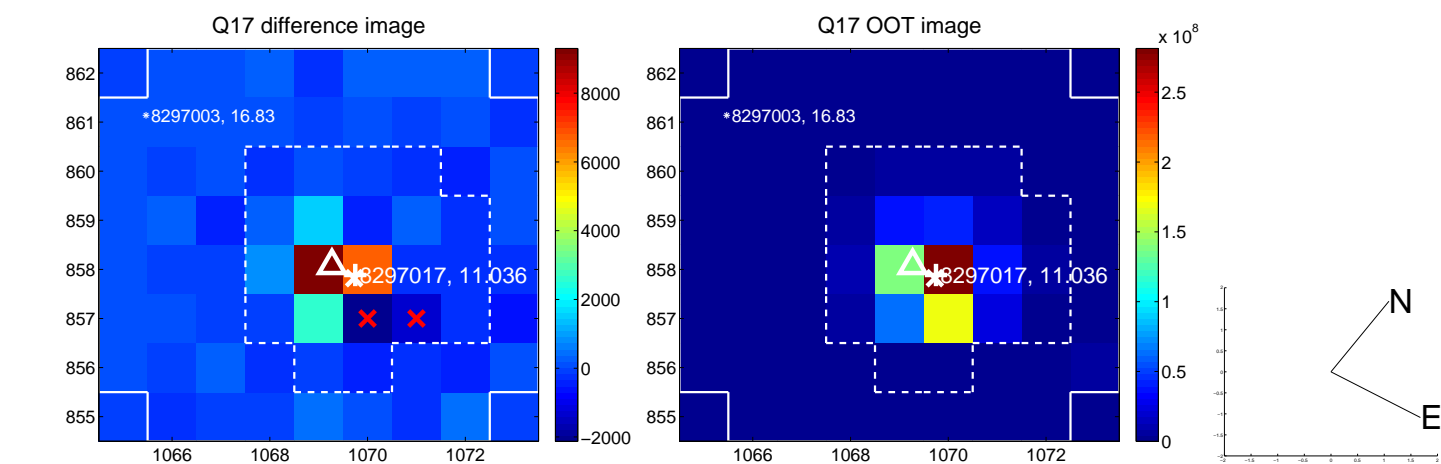
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

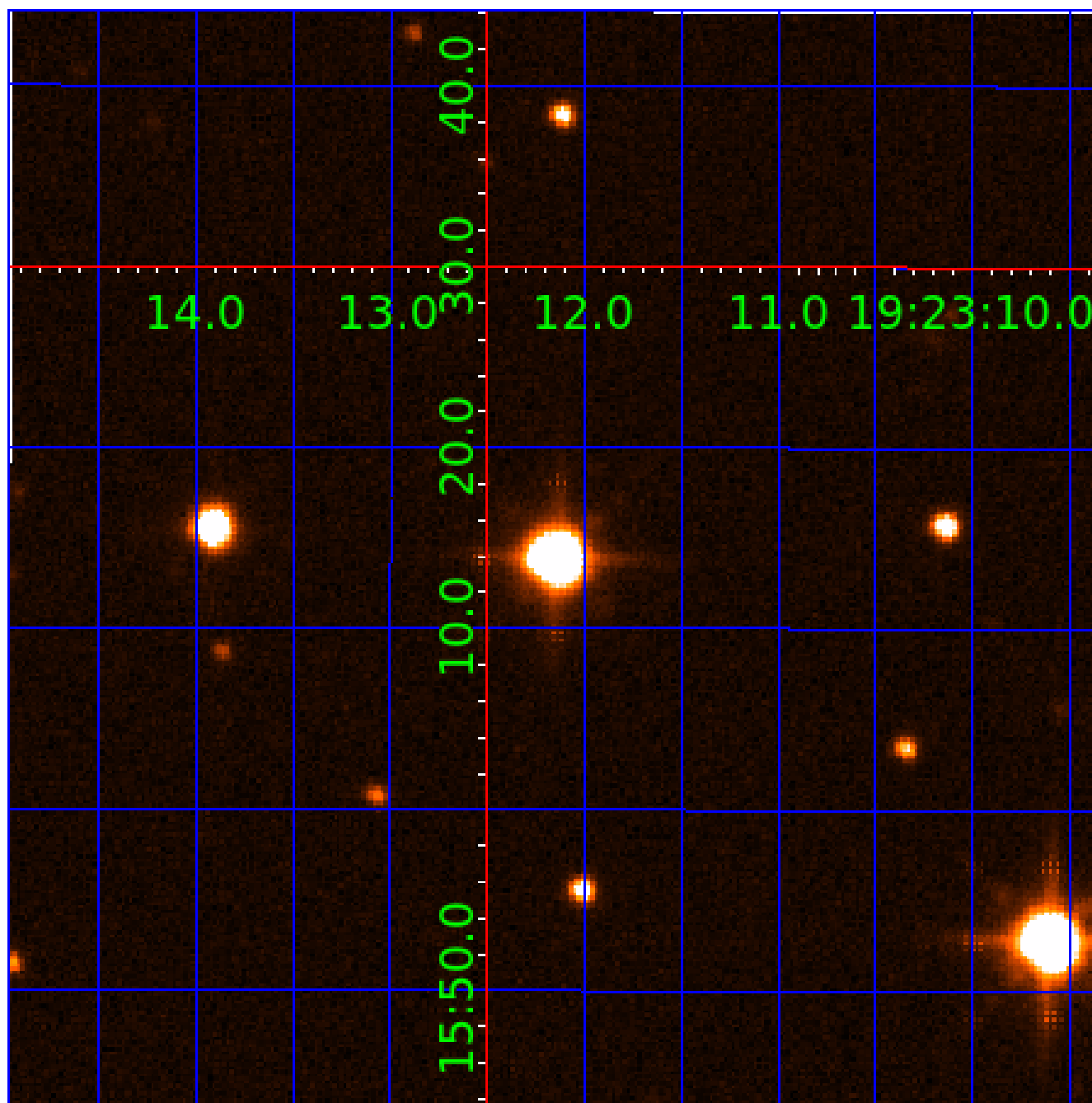


white \times : KIC target position; +: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008297017

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008297017-01 | OBS | No | 2.321215 | 132.466789 | 18.3 | 6.234 | 7.4 | 4.8 | 3.81 | 7128 | 1.94 | 19611.19 |
| 008297017-02 | OBS | 7879.01 | 128.207009 | 230.199177 | 359.3 | 3.755 | 9.0 | 9.4 | 3.81 | 7128 | 9.62 | 93.23 |
| 008297017-03 | OBS | No | 333.643660 | 185.853323 | 292.0 | 10.378 | 7.7 | 6.8 | 3.81 | 7128 | 7.09 | 26.05 |
| 008297017-04 | OBS | No | 343.814367 | 165.471356 | 351.5 | 6.045 | 7.7 | 8.4 | 3.81 | 7128 | 7.66 | 25.02 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------------------------------------------------------|
| 008297017-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-02 | OBS | FP | 0.21 | 1 | 0 | 0 | 0 | MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |
| 008297017-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |

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

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

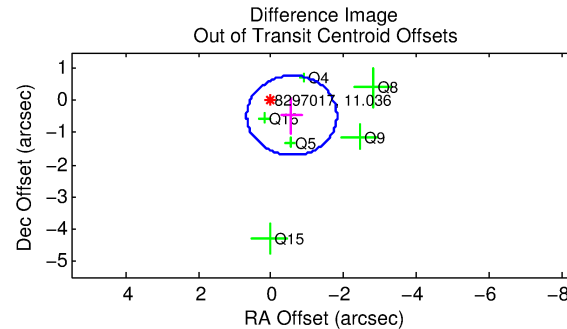
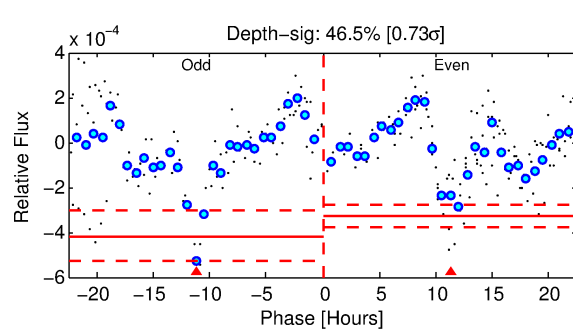
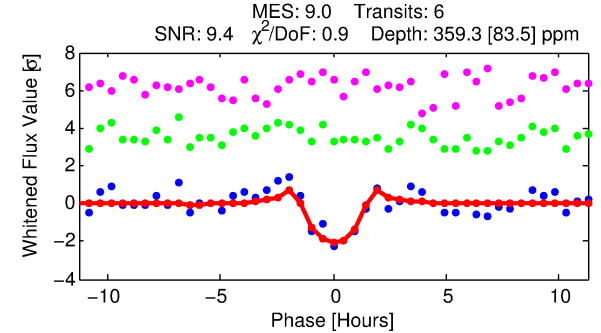
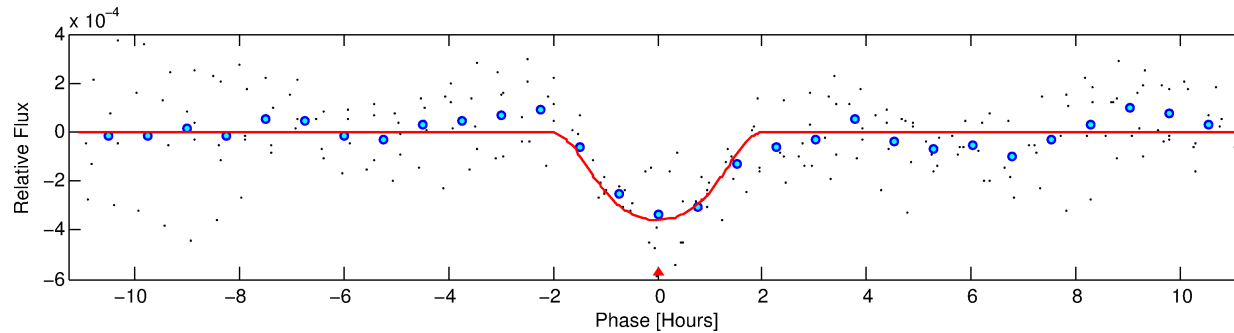
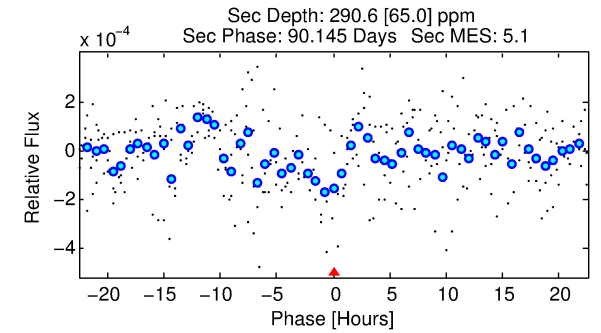
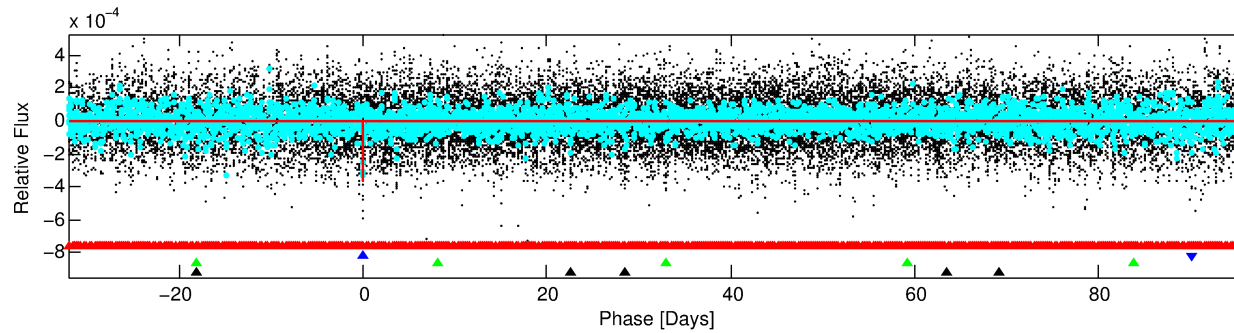
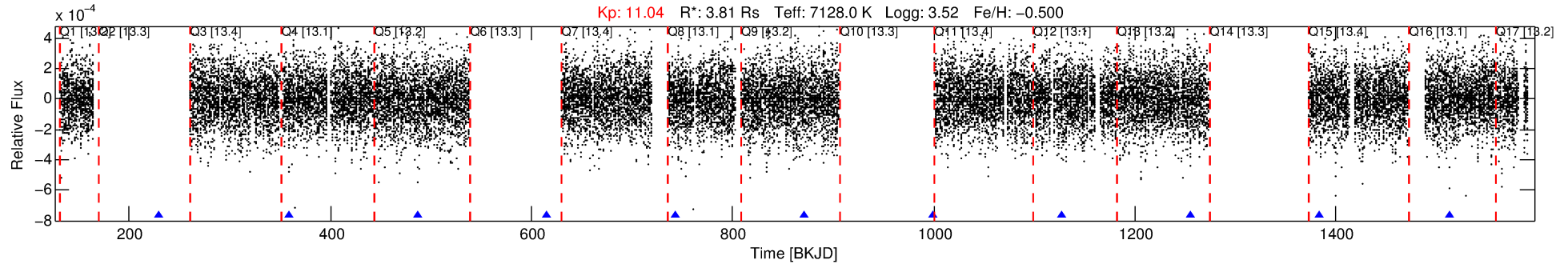
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008297017-02

No Significant Match Found

DV One-Page Summary

KIC: 8297017 Candidate: 2 of 4 Period: 128.207 d



DV Fit Results:

Period = 128.20701 [0.00107] d
Epoch = 230.1992 [0.0069] BKJD
Rp/R* = 0.0231 [0.0049]
a/R* = 76.84 [13.85]
b = 0.98 [0.01]
Seff = 93.23 [57.88]
Teq = 792 [123] K
Rp = 9.62 [4.31] Re
a = 0.6002 [0.2268] AU
Ag = 622.00 [476.80] [1.30 σ]
Teffp = 6118 [764] K [6.88 σ]

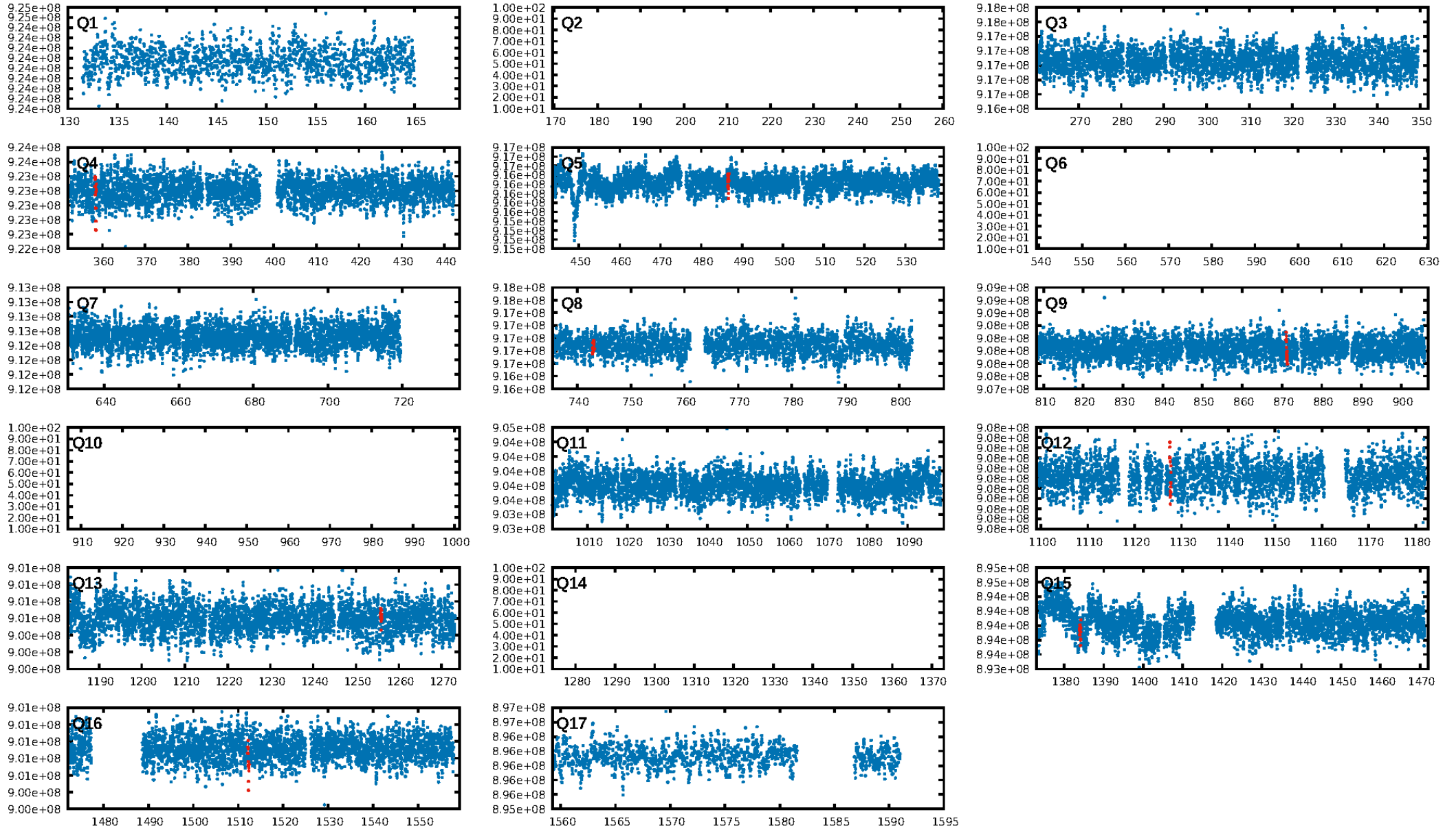
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [415.15 σ]
LongPeriod-sig: 100.0% [446.75 σ]
ModelChiSquare2-sig: 38.8%
ModelChiSquareGof-sig: 95.9%
Bootstrap-pfa: 4.56e-12
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -121.1
Centroid-sig: 19.3%
Centroid-so: 0.384 arcsec [0.81 σ]
OotOffset-rm: 0.739 arcsec [1.79 σ]
KicOffset-rm: 0.596 arcsec [1.36 σ]
OotOffset-st: 0/1/3/2 [6]
KicOffset-st: 0/1/3/2 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 0.57 [4/7]

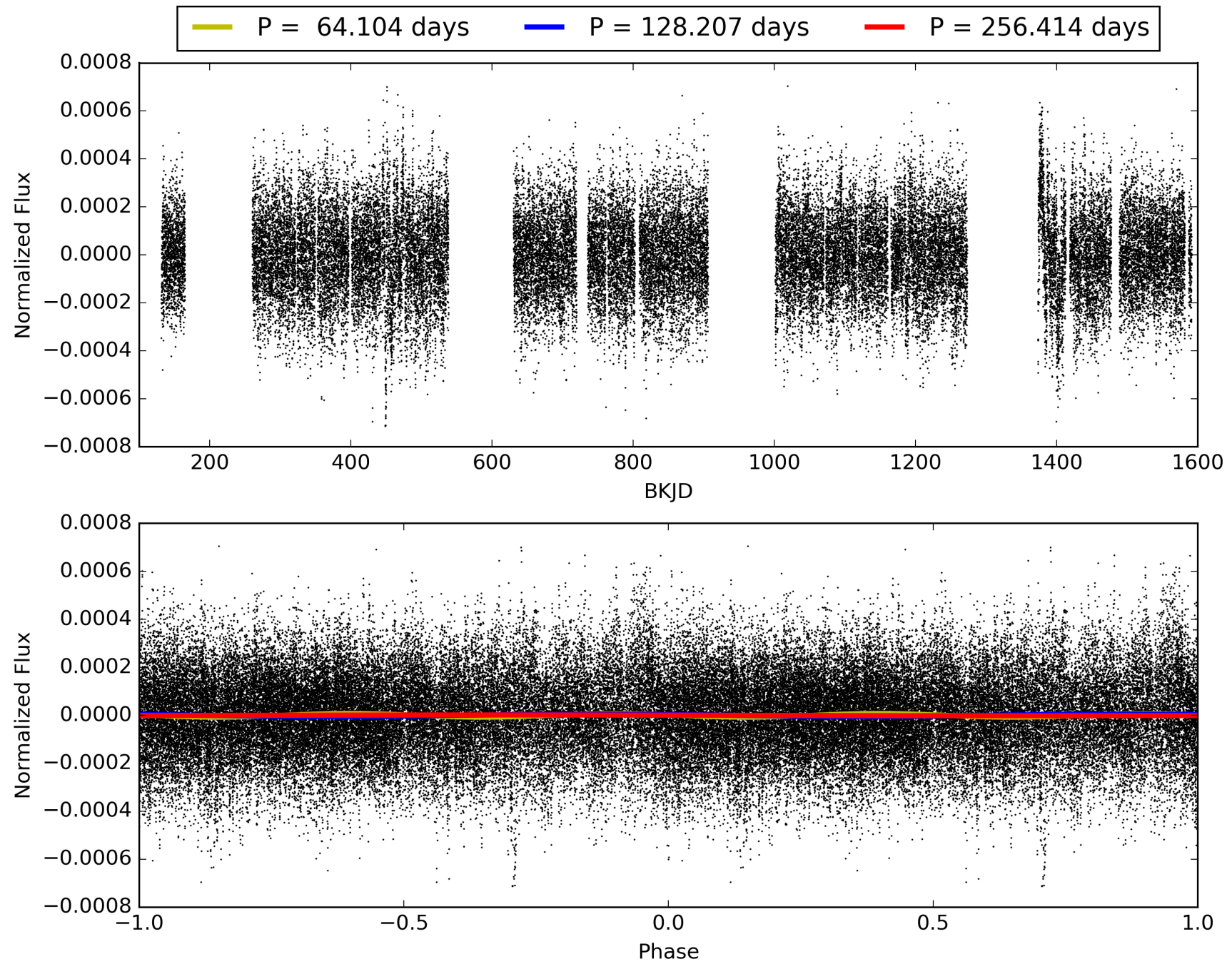
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:36:38 Z

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

TCE 008297017-02, PDC Light Curves

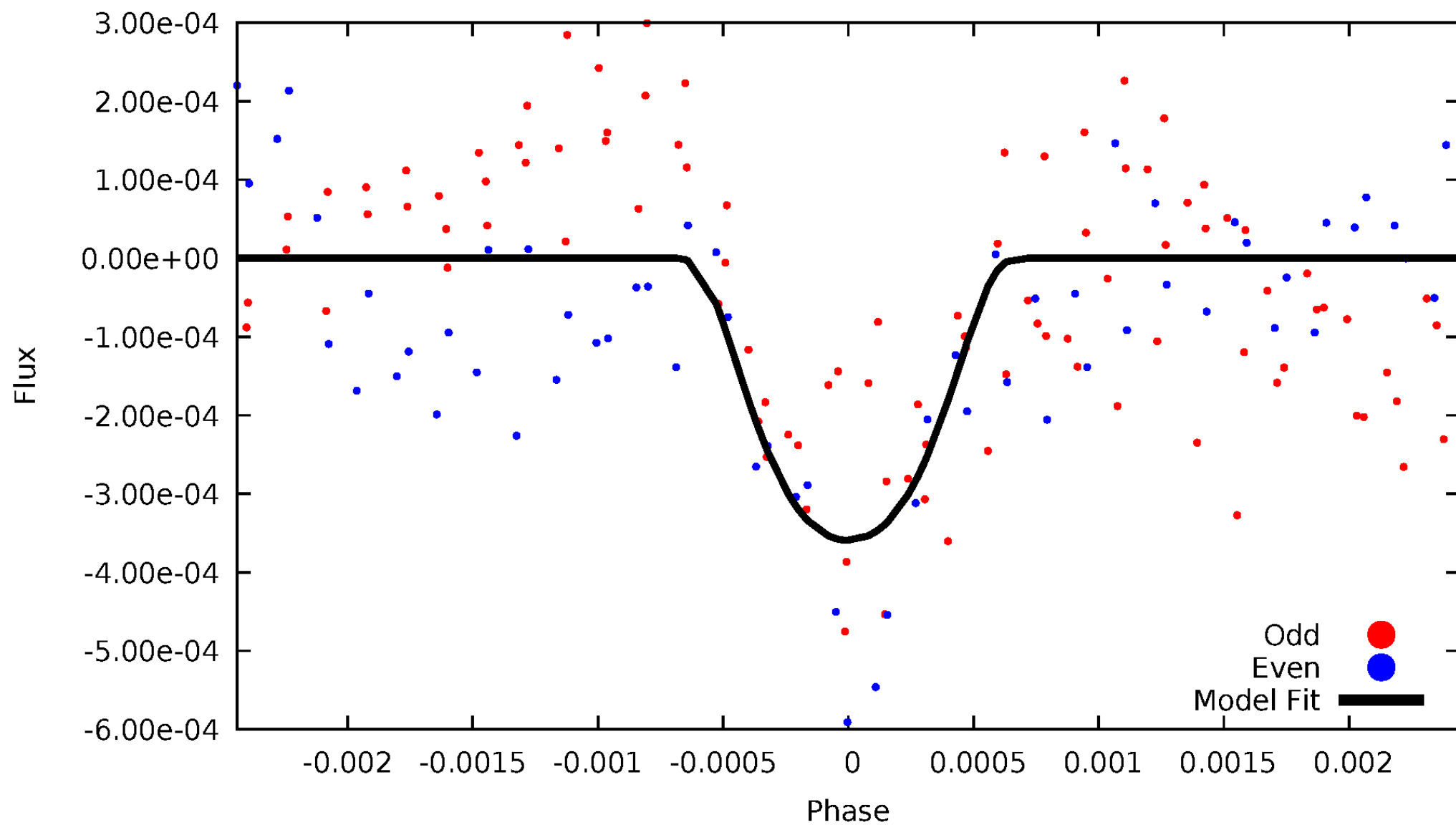


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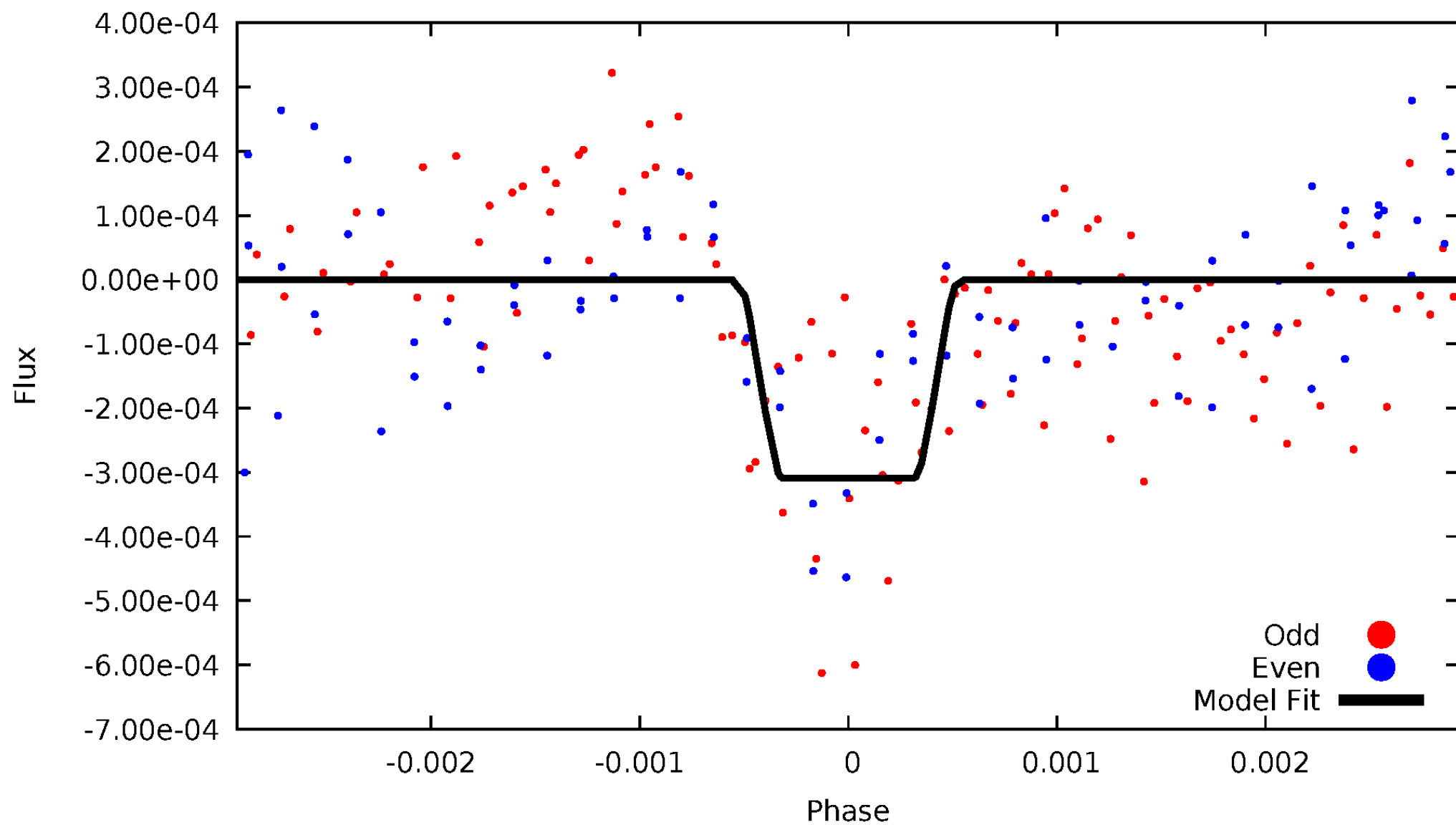
DV Odd/Even

TCE 008297017-02



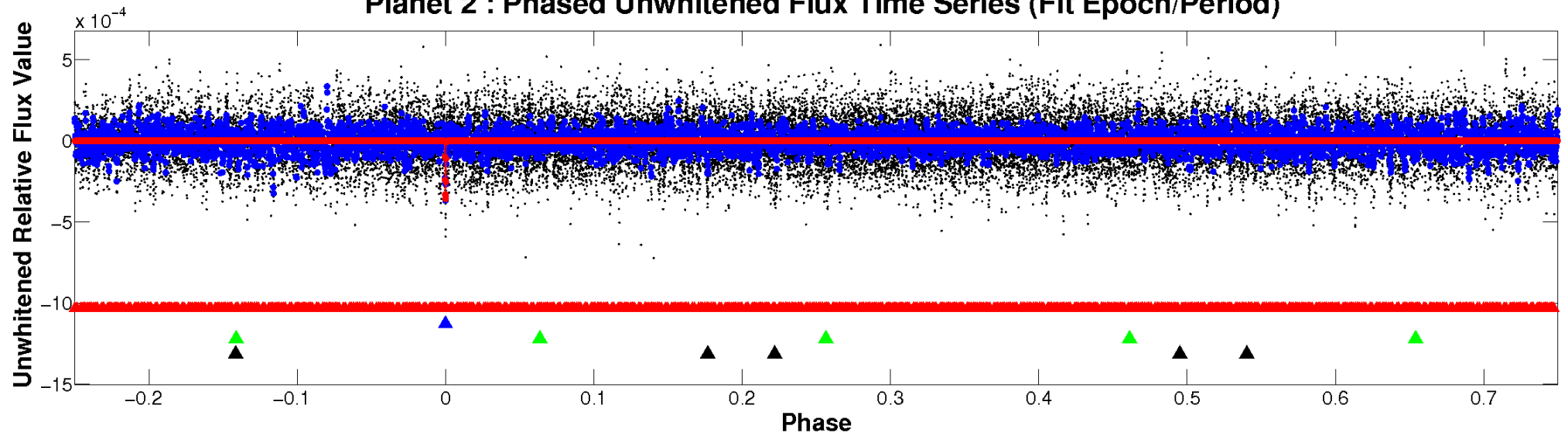
ALT Odd/Even

TCE 008297017-02

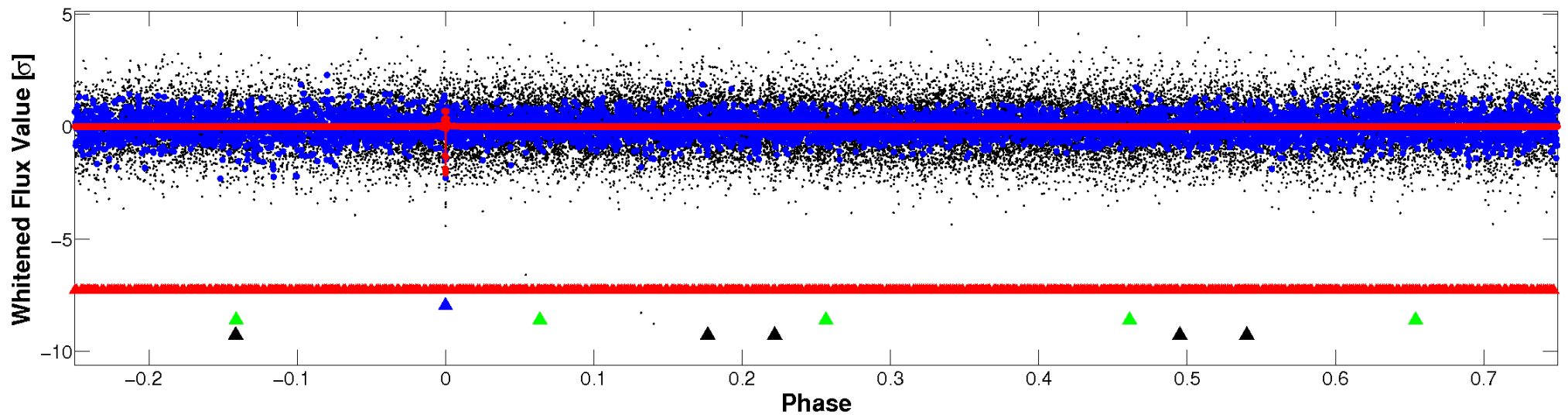


Non-Whitened Vs. Whitened Light Curve

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

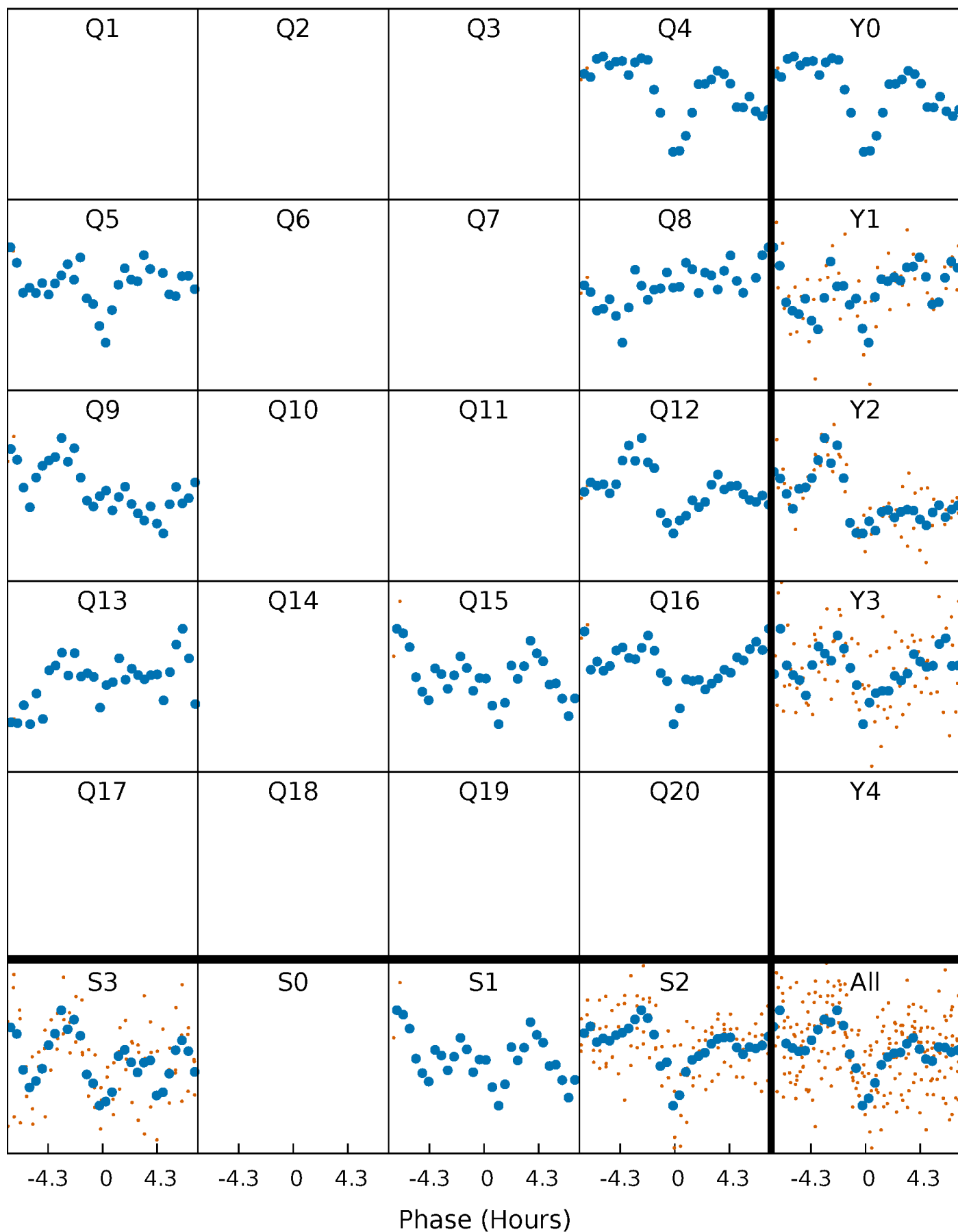


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



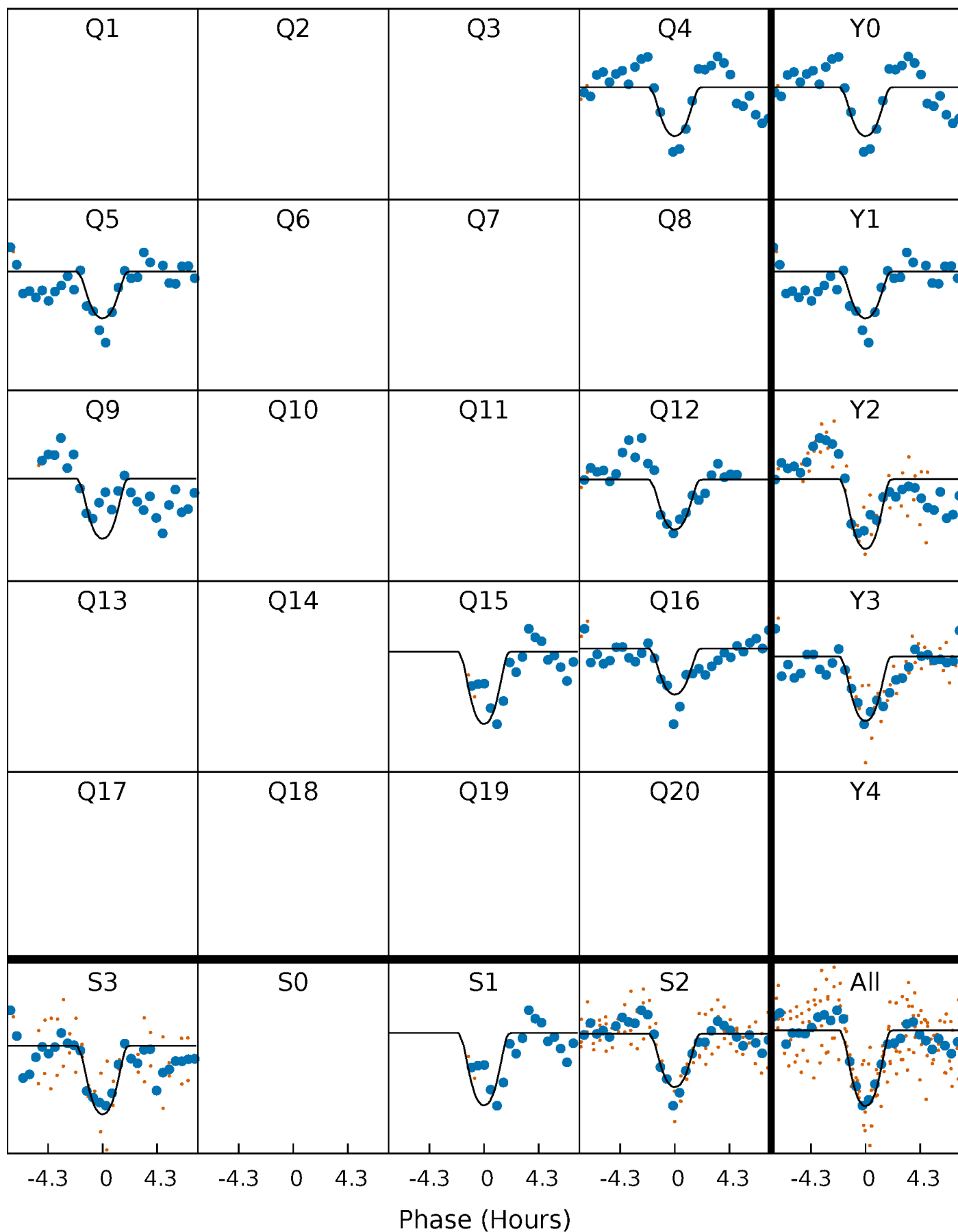
PDC Quarter-Phased Transit Curves

TCE 008297017-02 P=128.207009 Days $T_0=230.199177$ (BKJD)



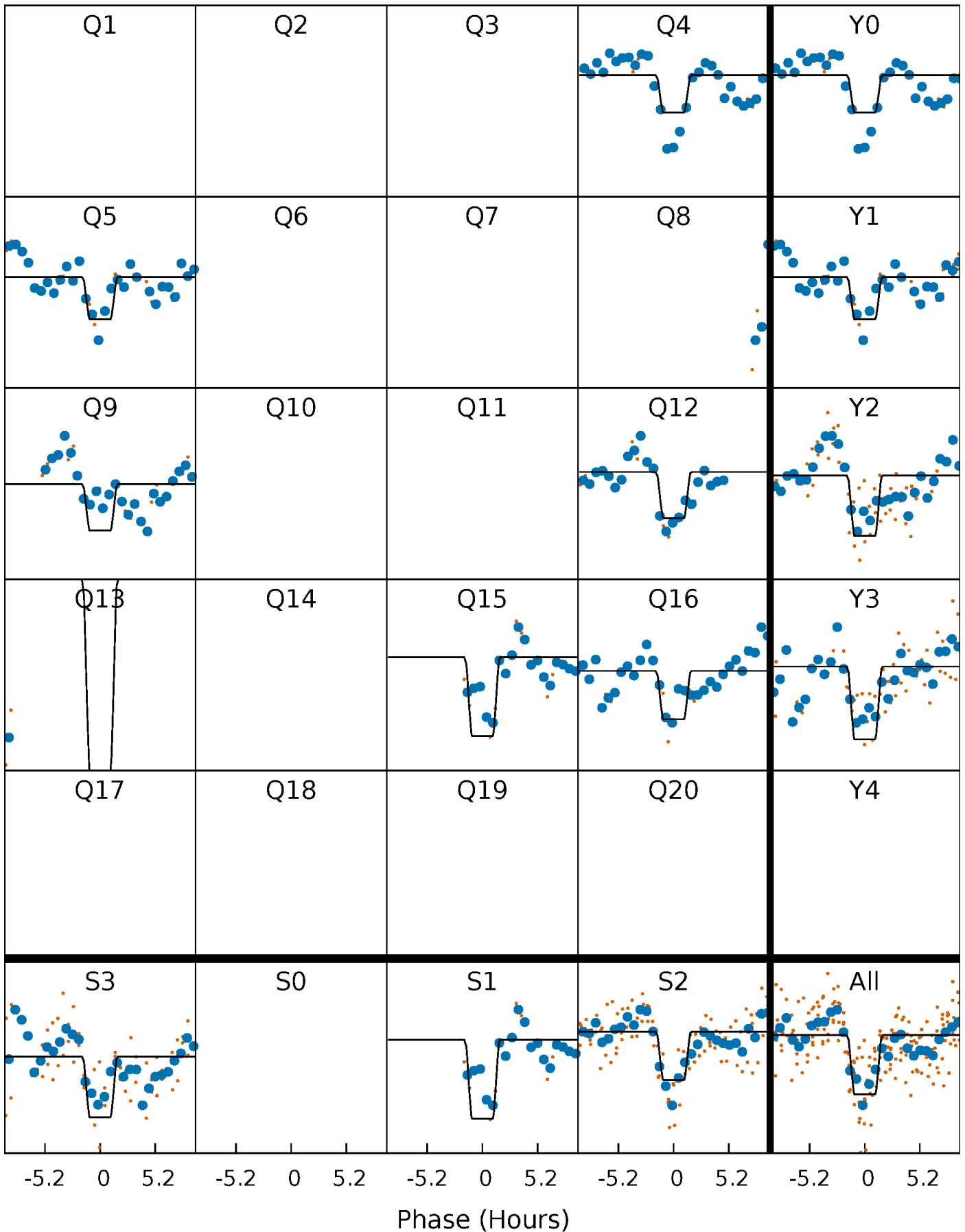
DV Quarter-Phased Transit Curves

TCE 008297017-02 P=128.207009 Days $T_0=230.199177$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

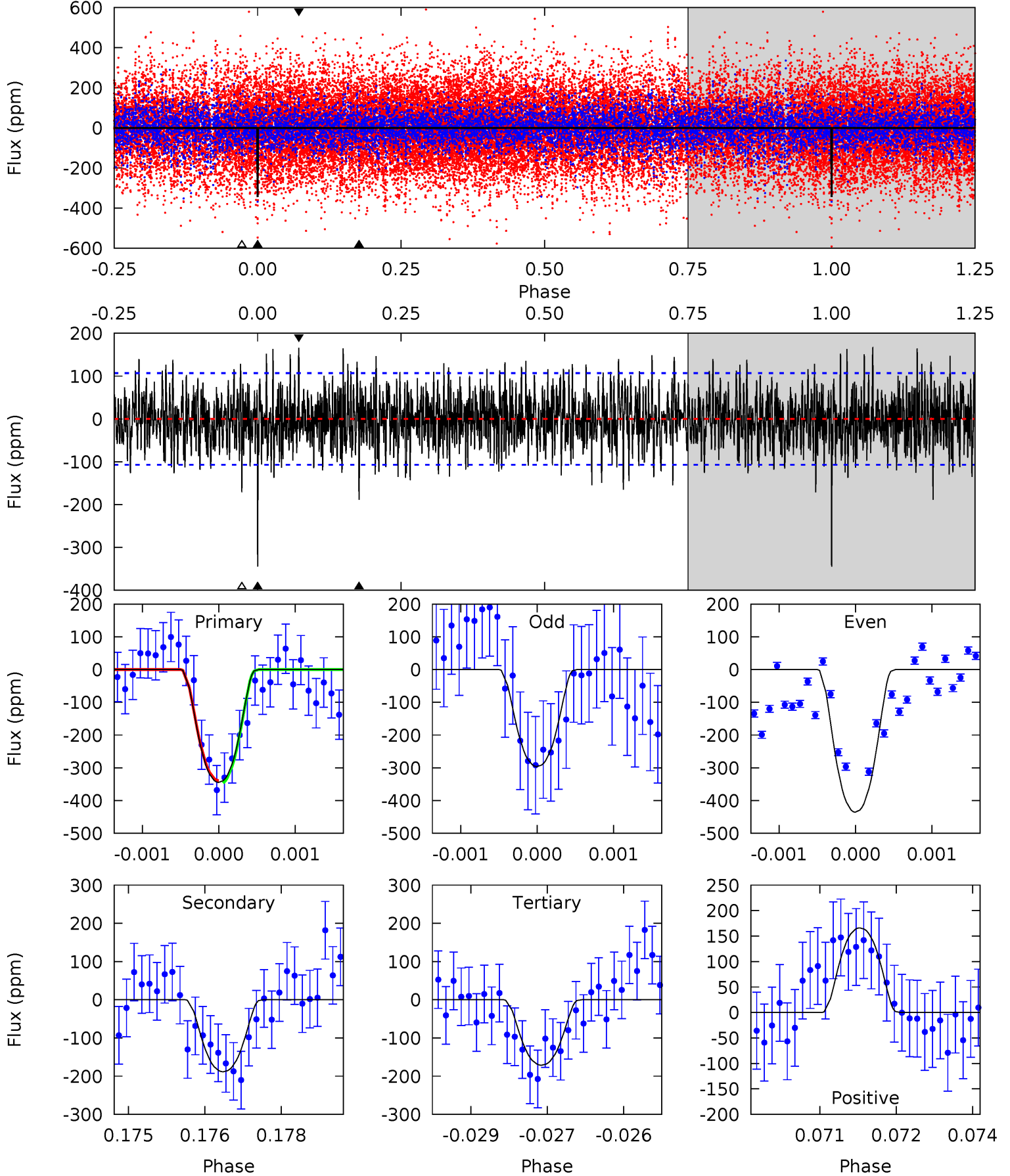
TCE 008297017-02 $P=128.207726$ Days $T_0=230.213020$ (BKJD)



DV Model-Shift Uniqueness Test

008297017-02, P = 128.207009 Days, E = 101.992168 Days

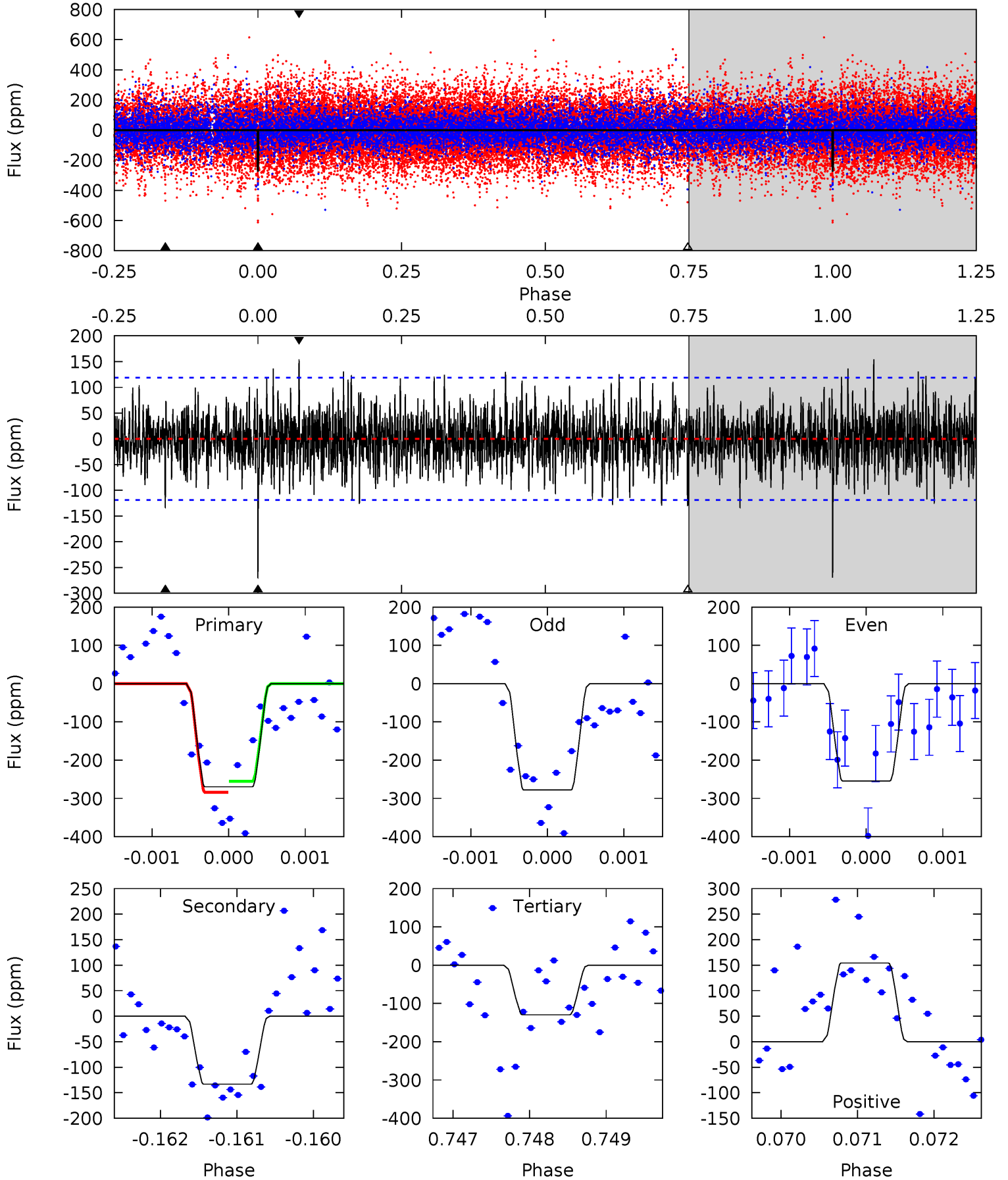
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.4 | 9.49 | 8.63 | 8.37 | 5.40 | 3.20 | 2.55 | 8.73 | 8.99 | 0.87 | 1.13 | 3.34 | 0.91 | 0.33 | 0.20 |



Alt Model-Shift Uniqueness Test

008297017-02, P = 128.207726 Days, E = 102.005294 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.4 | 6.11 | 5.94 | 7.07 | 5.45 | 3.29 | 1.82 | 6.43 | 5.30 | 0.17 | -0.96 | 0.52 | 1.09 | 0.36 | 0.66 |



Stellar Parameters For KIC 008297017

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 7128^{+224}_{-274} | $3.520^{+0.352}_{-0.088}$ | $-0.500^{+0.350}_{-0.250}$ | $3.811^{+0.403}_{-1.510}$ | $1.754^{+0.164}_{-0.383}$ | $0.045^{+0.122}_{-0.012}$ |
| | +3%/-4% | +10%/-2% | +70%/-50% | +11%/-40% | +9%/-22% | +274%/-28% |
| Source | KIC0 | FLK73 | 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 008297017-02 / KOI 7879.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|---------------------|
| DV | -189 ± 20 | $9.03^{+2.50}_{-2.38}$ | 1082^{+71}_{-107} | 5478^{+581}_{-495} | 455^{+381}_{-177} |
| Alt. | -133 ± 22 | $6.82^{+2.35}_{-2.24}$ | 1086^{+66}_{-109} | 5699^{+1081}_{-616} | 545^{+654}_{-236} |

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

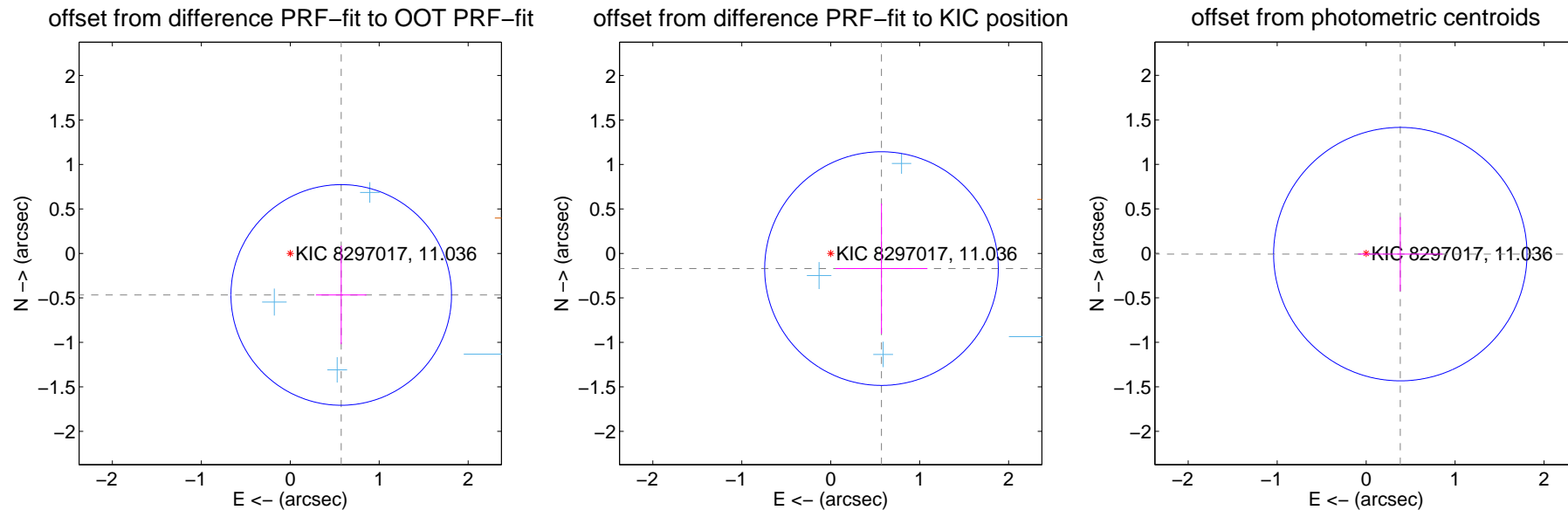
DV Centroid Data

Supplemental centroid analysis for 008297017-02. **Kepler magnitude: 11.04.** Transit SNR 9.43

There are 4 quarters with good PRF difference image offsets

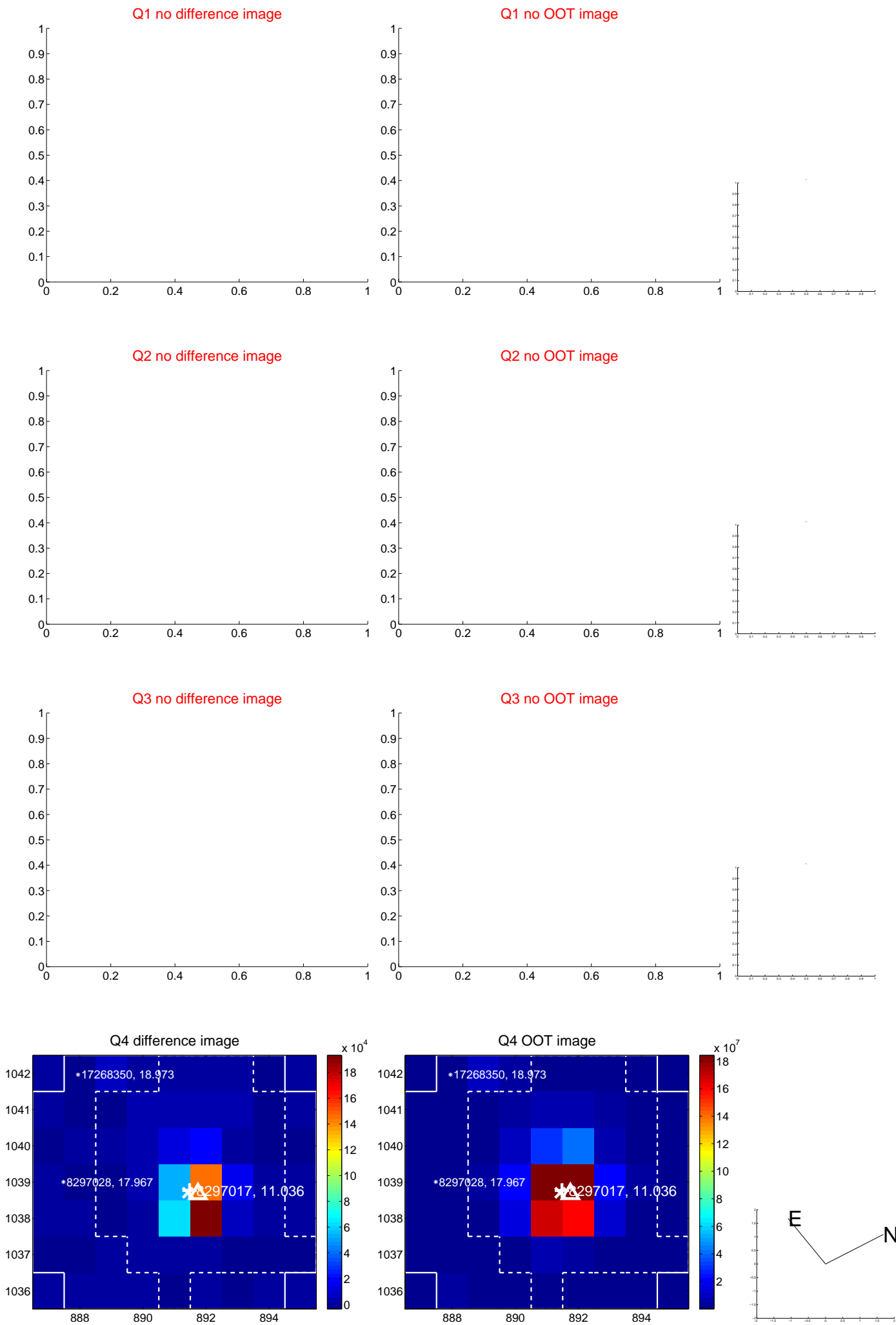
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.739 ± 0.413 | 1.79 | -0.573 ± 0.284 | -0.467 ± 0.553 |
| PRF-fit source offset from KIC position | 0.596 ± 0.438 | 1.36 | -0.571 ± 0.516 | -0.171 ± 0.732 |
| photometric centroid source offset | 0.38 ± 0.47 | 0.81 | -0.38 ± 0.47 | -0.01 ± 0.42 |

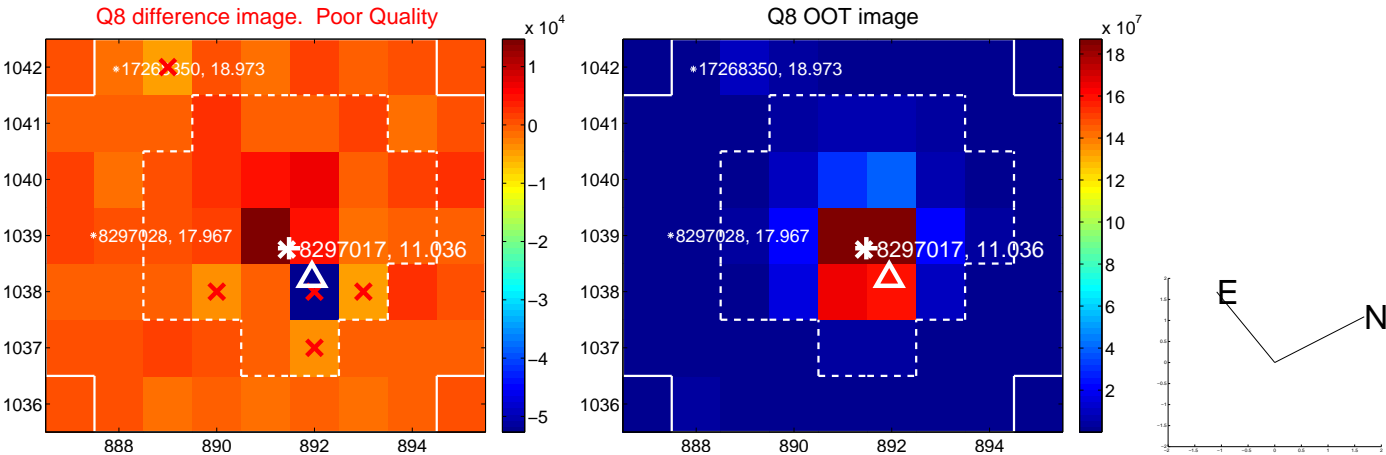
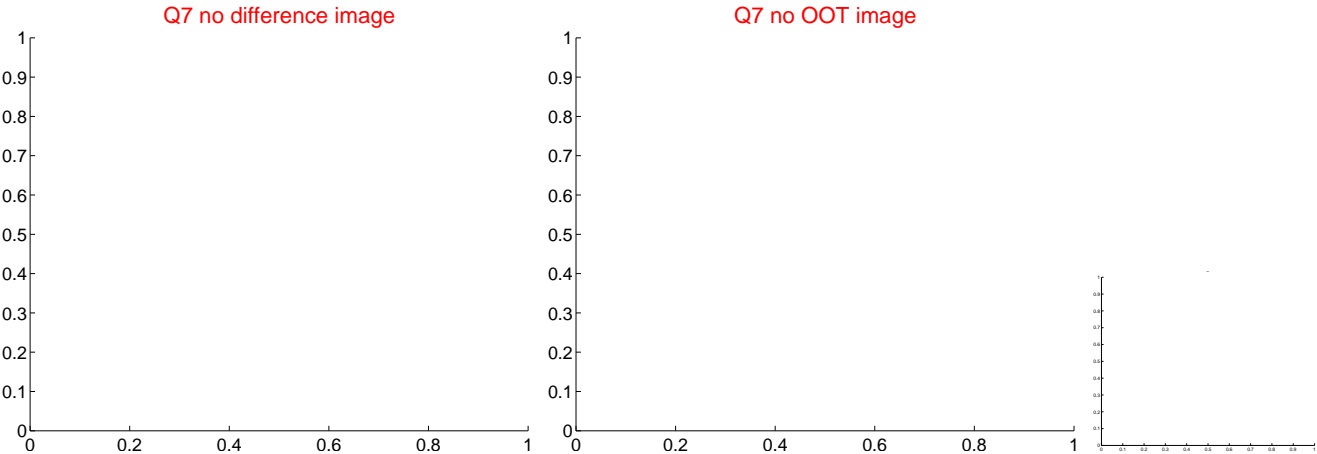
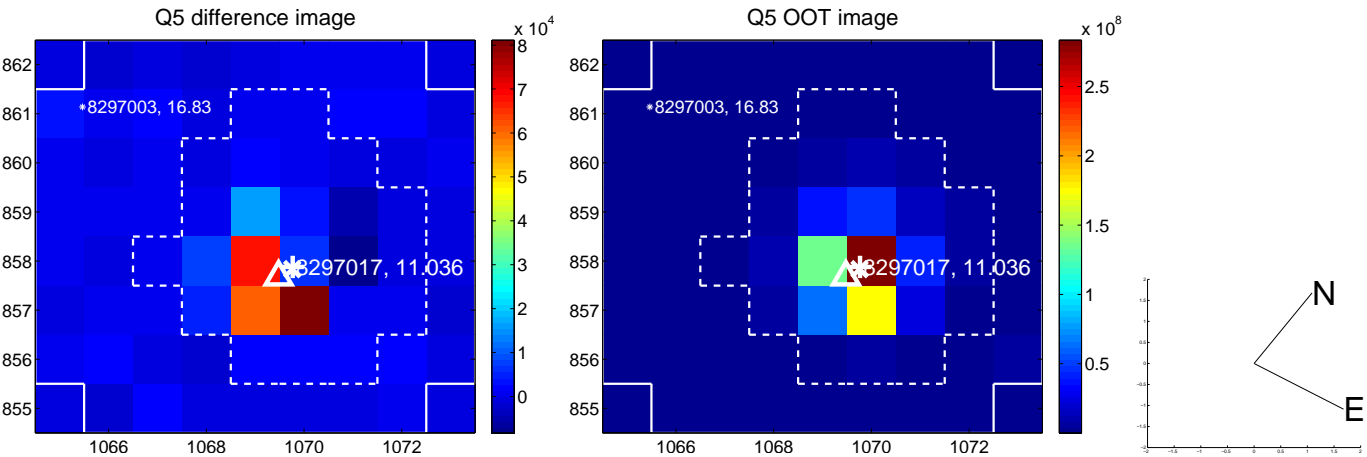


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

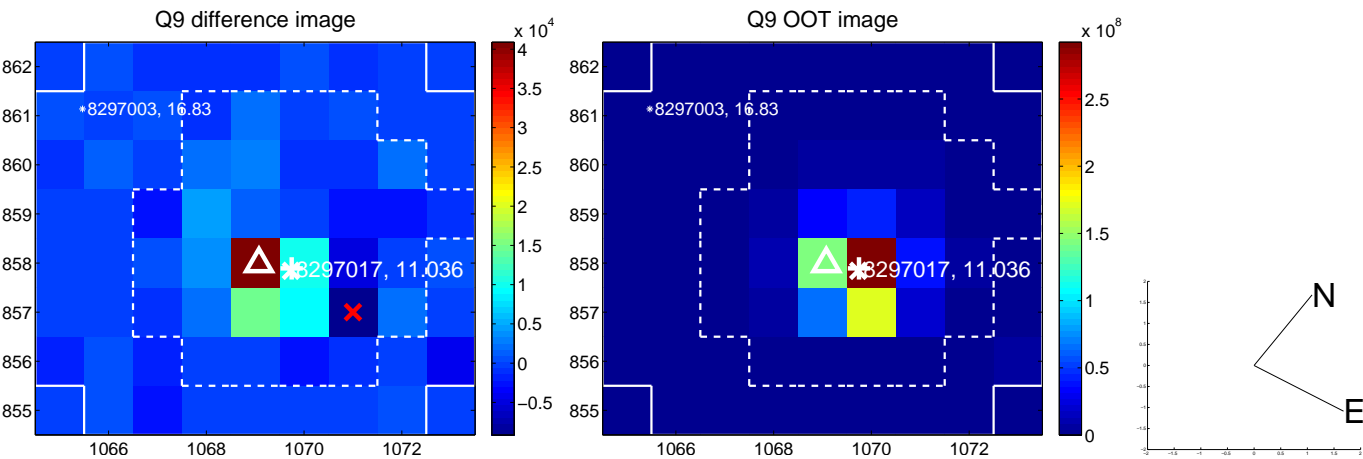
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



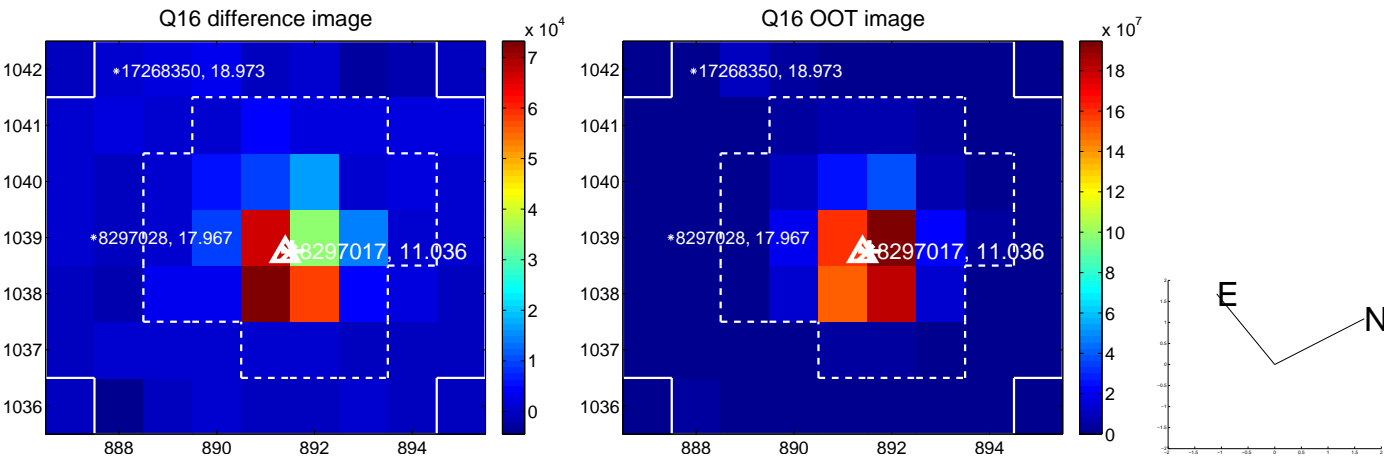
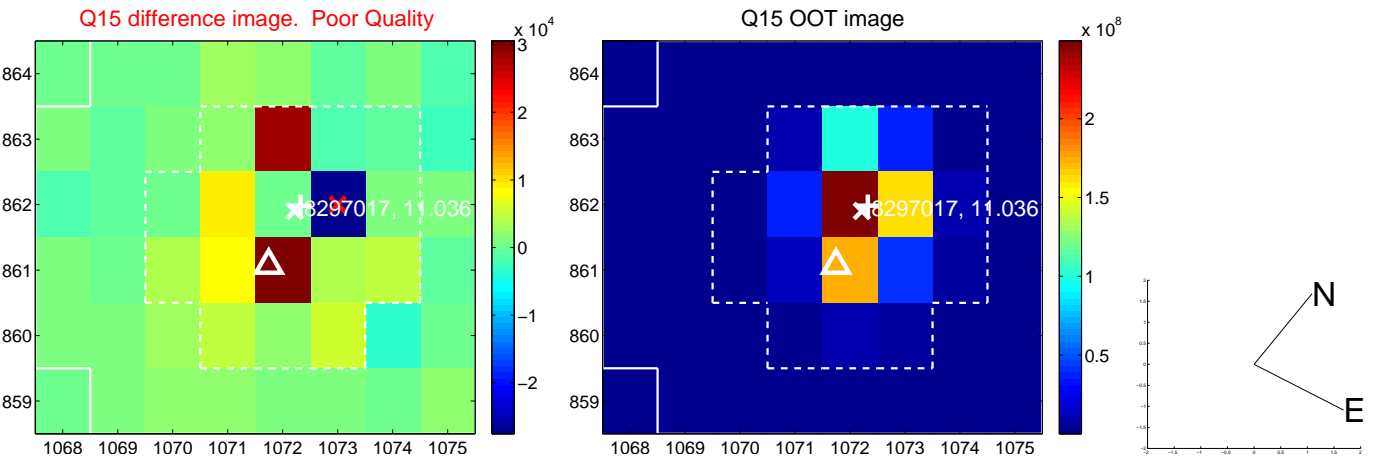
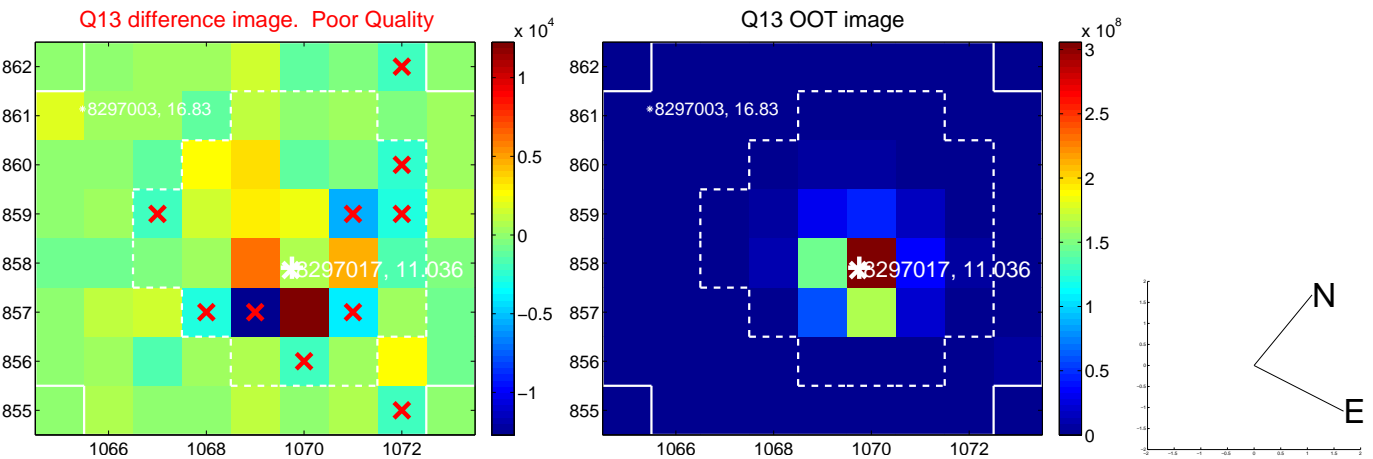
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



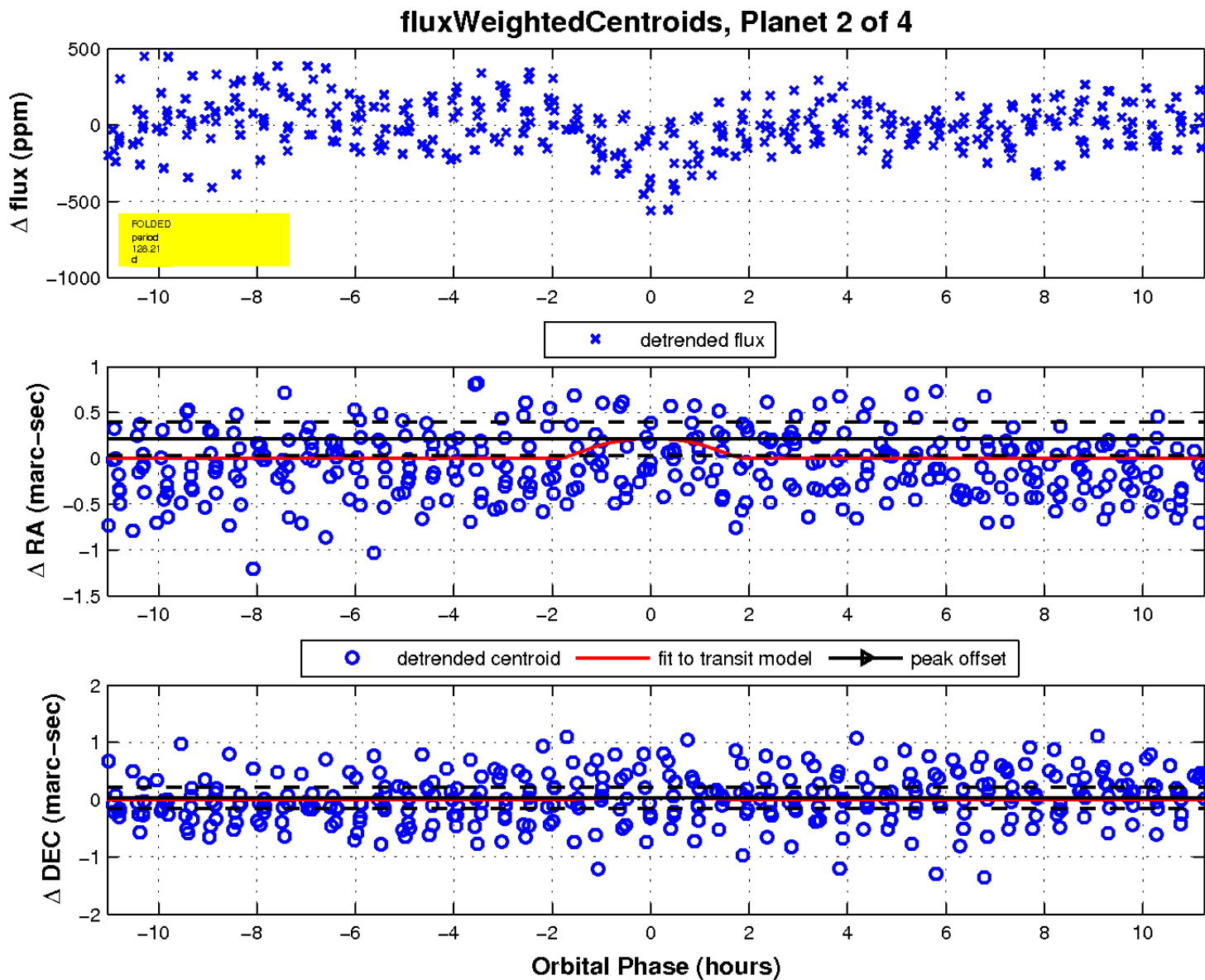
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

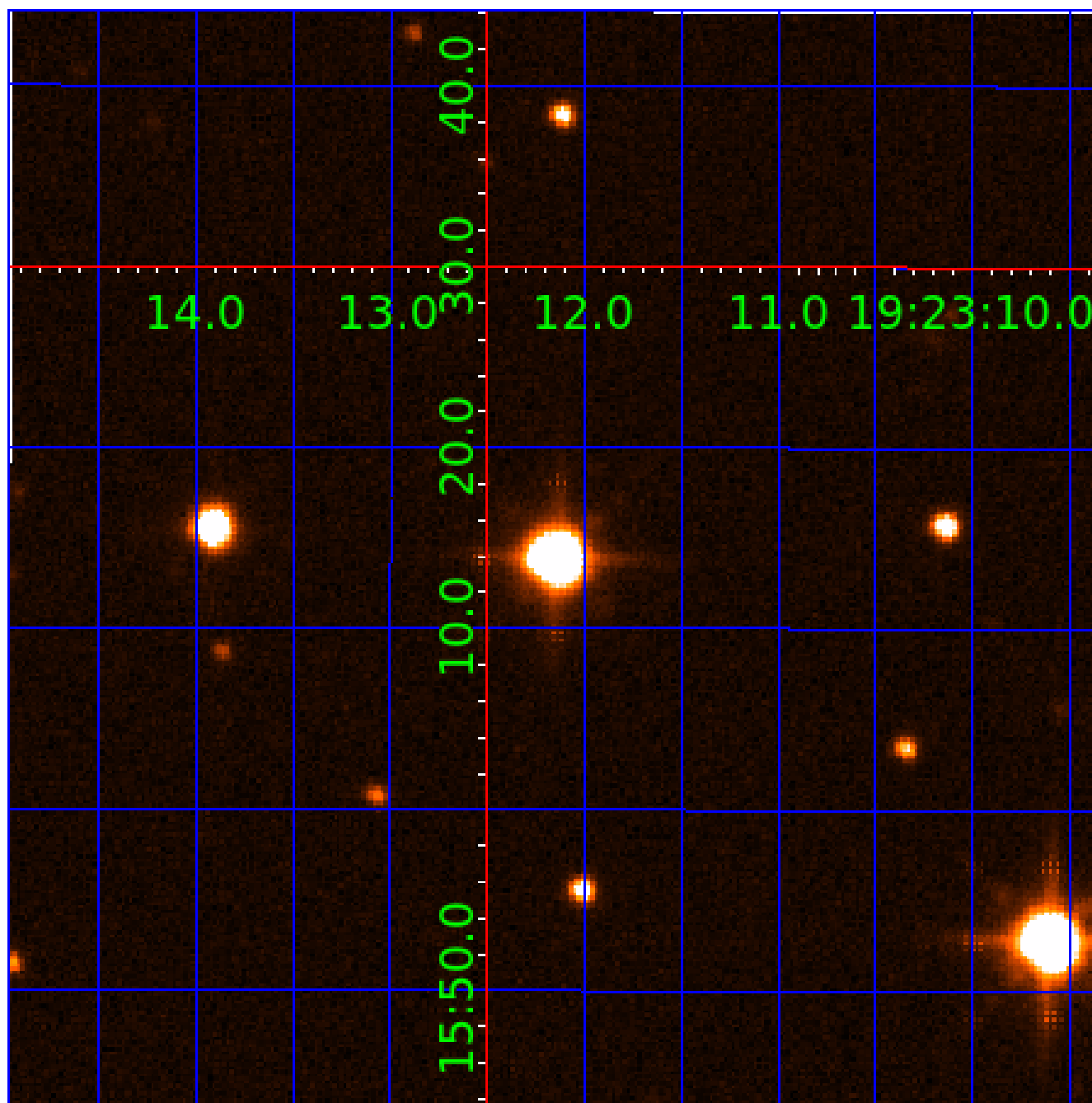


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008297017

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008297017-01 | OBS | No | 2.321215 | 132.466789 | 18.3 | 6.234 | 7.4 | 4.8 | 3.81 | 7128 | 1.94 | 19611.19 |
| 008297017-02 | OBS | 7879.01 | 128.207009 | 230.199177 | 359.3 | 3.755 | 9.0 | 9.4 | 3.81 | 7128 | 9.62 | 93.23 |
| 008297017-03 | OBS | No | 333.643660 | 185.853323 | 292.0 | 10.378 | 7.7 | 6.8 | 3.81 | 7128 | 7.09 | 26.05 |
| 008297017-04 | OBS | No | 343.814367 | 165.471356 | 351.5 | 6.045 | 7.7 | 8.4 | 3.81 | 7128 | 7.66 | 25.02 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------------------------------------------------------|
| 008297017-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-02 | OBS | FP | 0.21 | 1 | 0 | 0 | 0 | MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |
| 008297017-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |

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

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

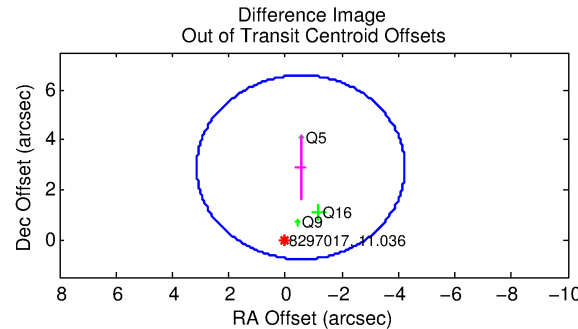
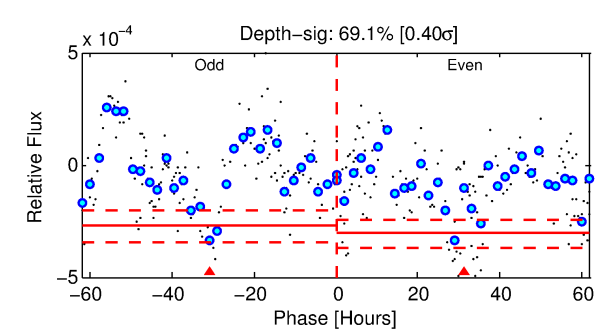
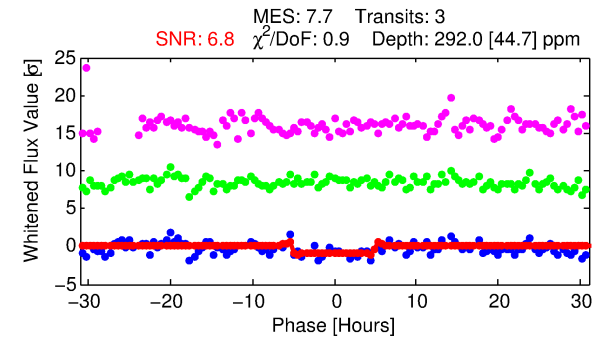
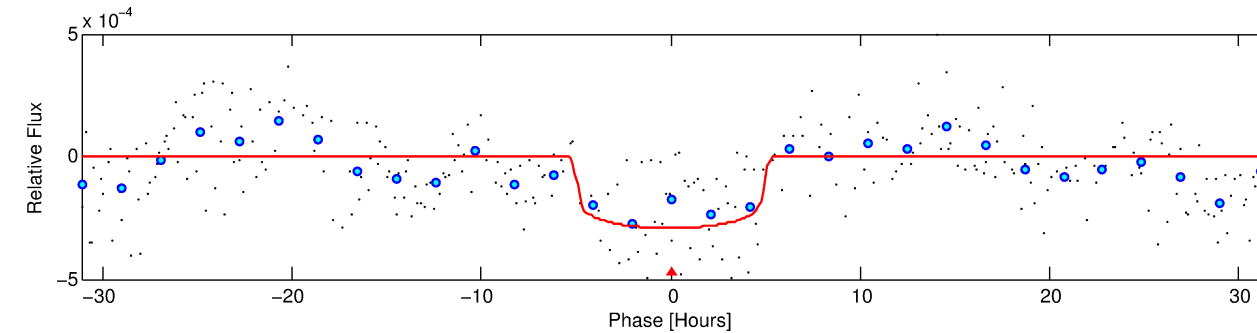
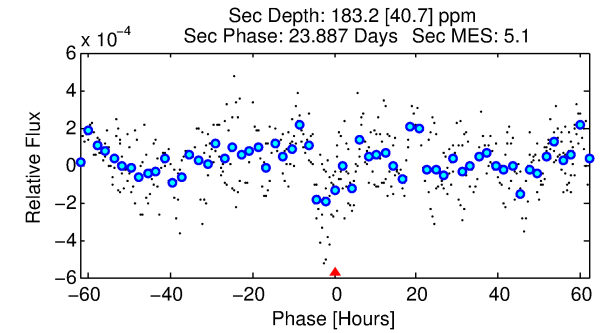
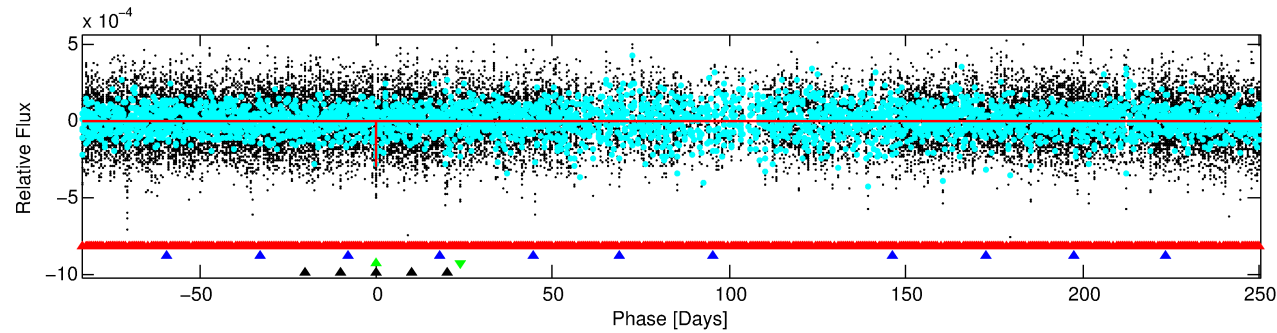
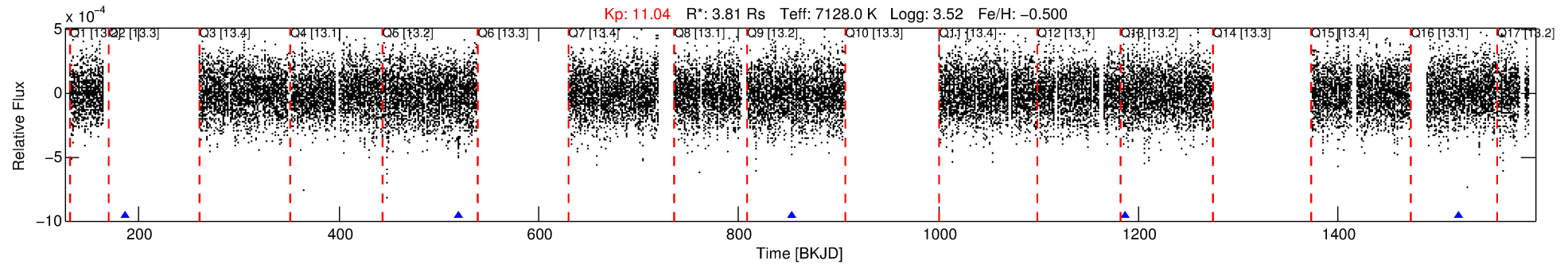
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008297017-03

No Significant Match Found

DV One-Page Summary

KIC: 8297017 Candidate: 3 of 4 Period: 333.644 d



DV Fit Results:

Period = 333.64366 [0.01133] d
Epoch = 185.8533 [0.0241] BKJD
Rp/R* = 0.0170 [0.0040]
a/R* = 165.52 [212.27]
b = 0.76 [0.71]
Seff = 26.05 [16.17]
Teq = 576 [89] K
Rp = 7.09 [3.26] Re
a = 1.1357 [0.4291] AU
Ag = 2585.46 [2047.55] [1.26σ]
Teffp = 6351 [854] K [6.73σ]

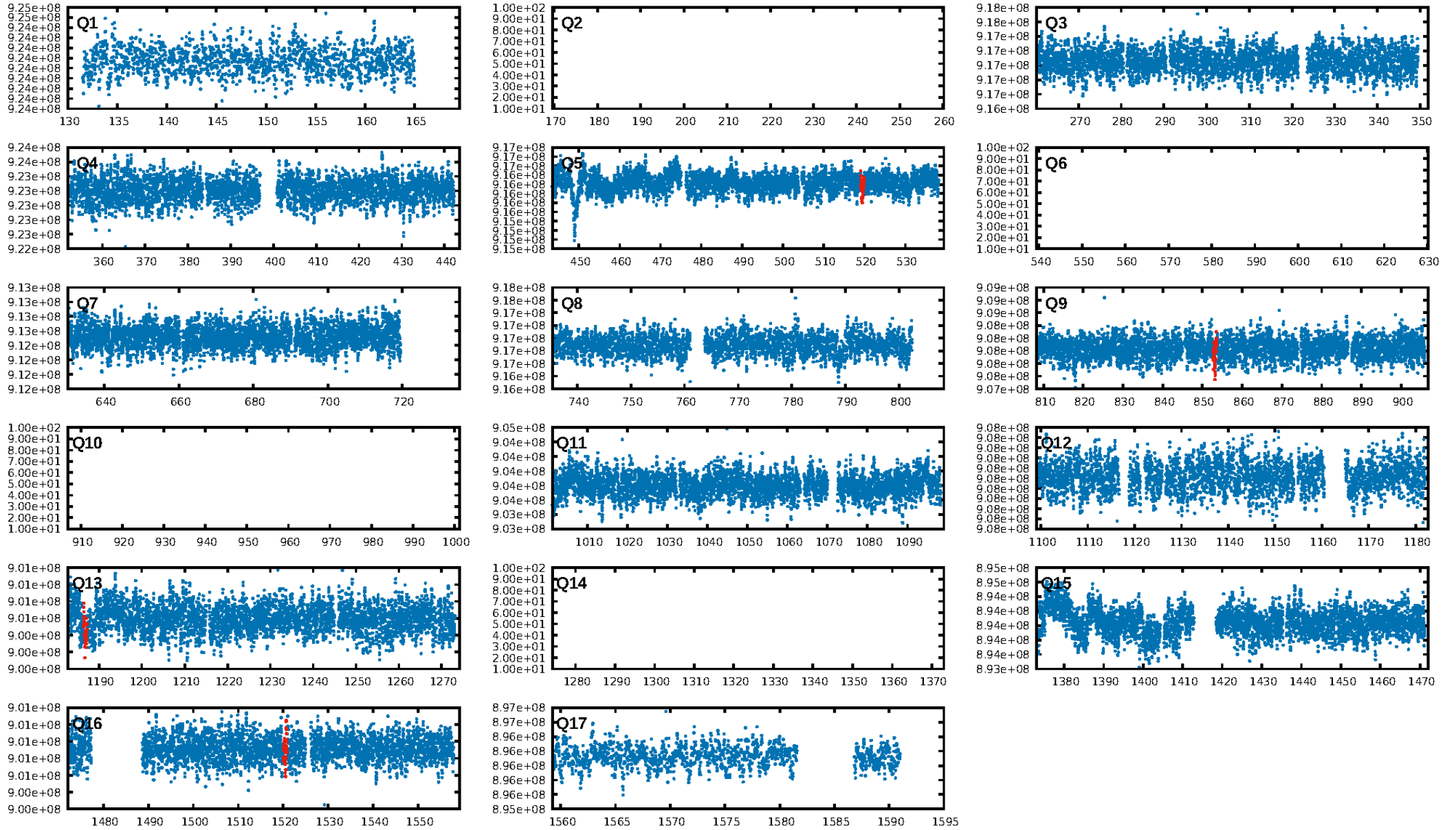
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [446.75σ]
LongPeriod-sig: 100.0% [20.32σ]
ModelChiSquare2-sig: 16.2%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 9.49e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.207
Centroid-sig: 8.5%
Centroid-so: 1.366 arcsec [1.93σ]
OotOffset-rm: 2.942 arcsec [2.40σ]
KicOffset-rm: 3.101 arcsec [2.59σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

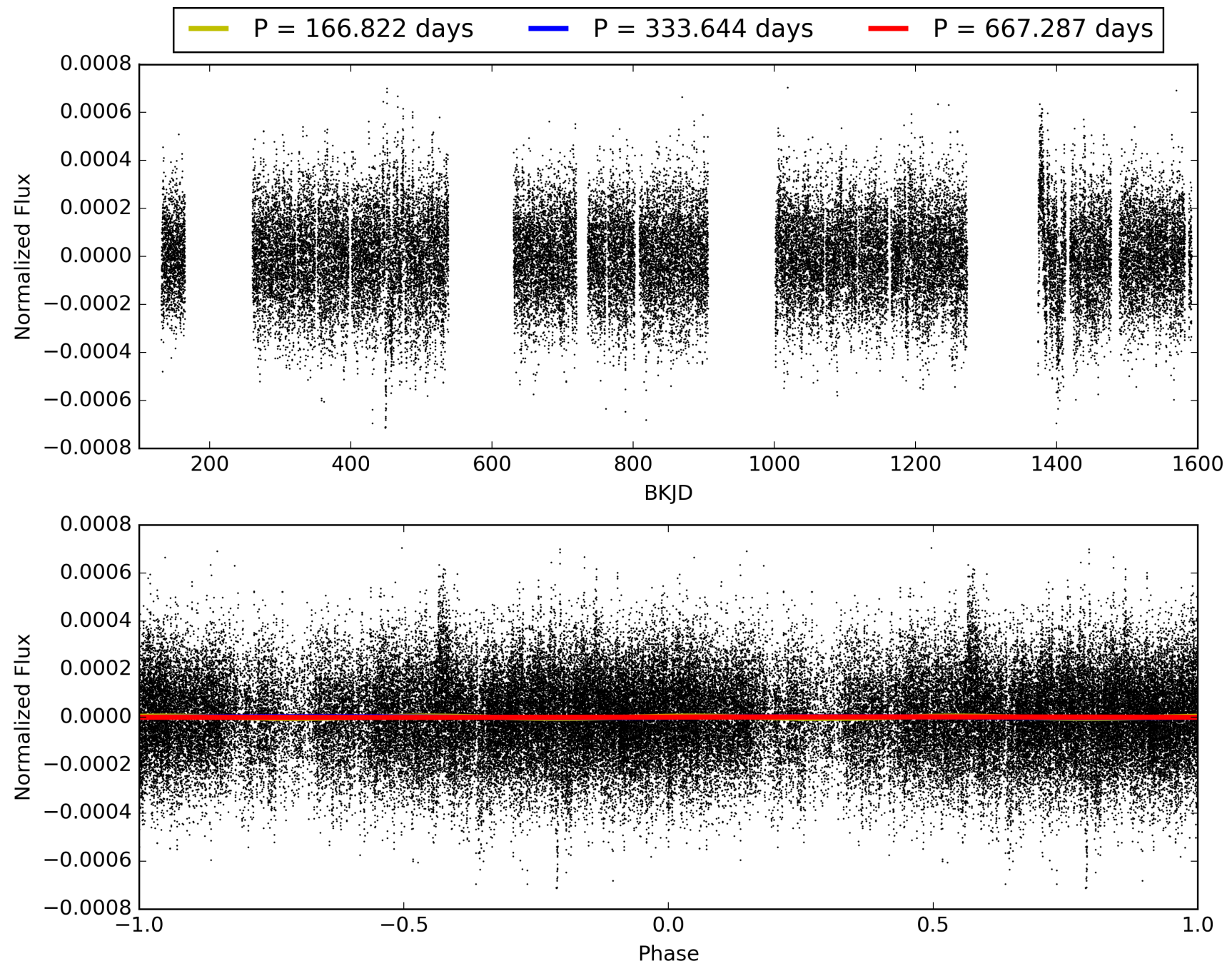
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:36:45 Z

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

TCE 008297017-03, PDC Light Curves

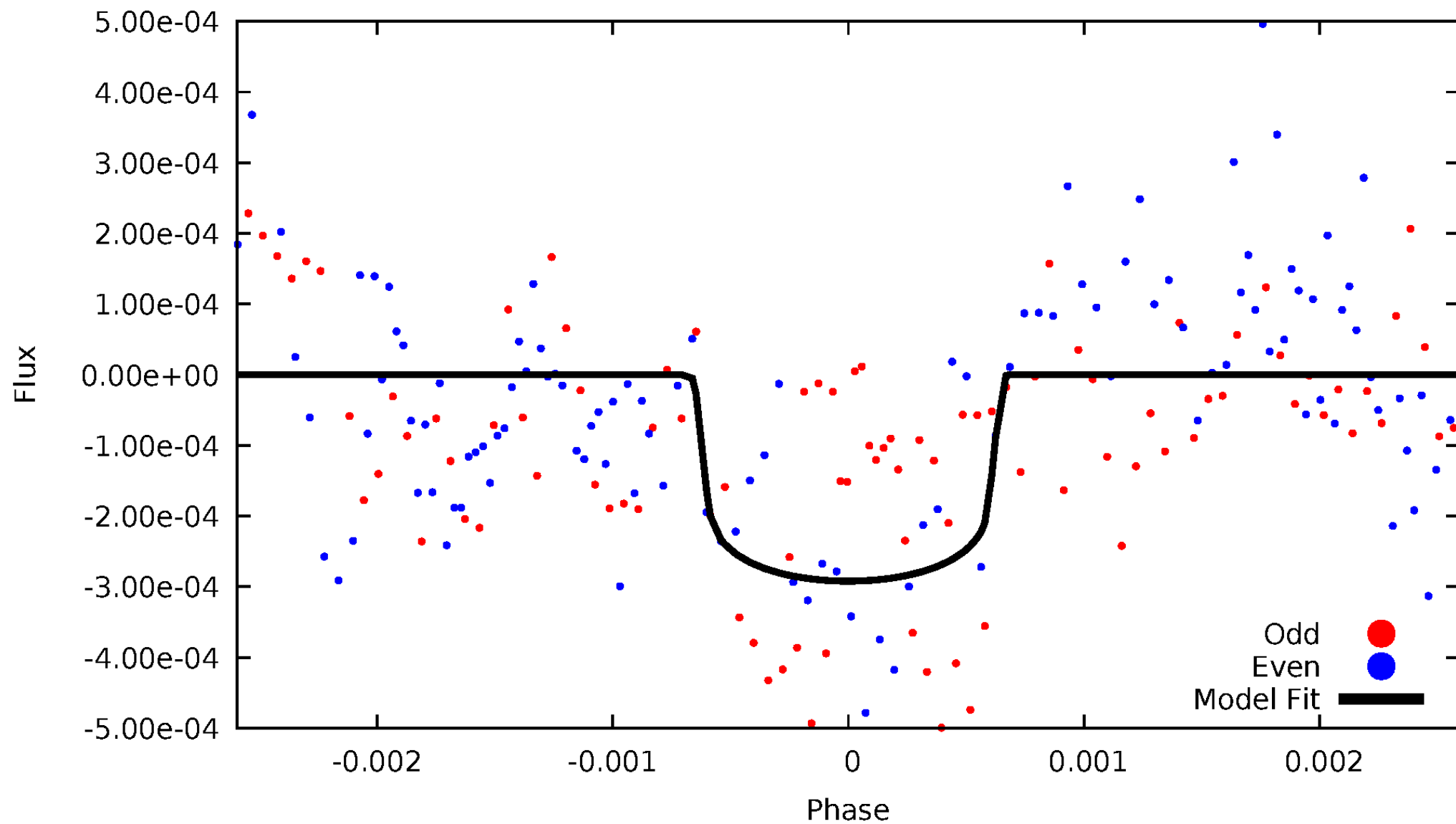


TCE 008297017-03



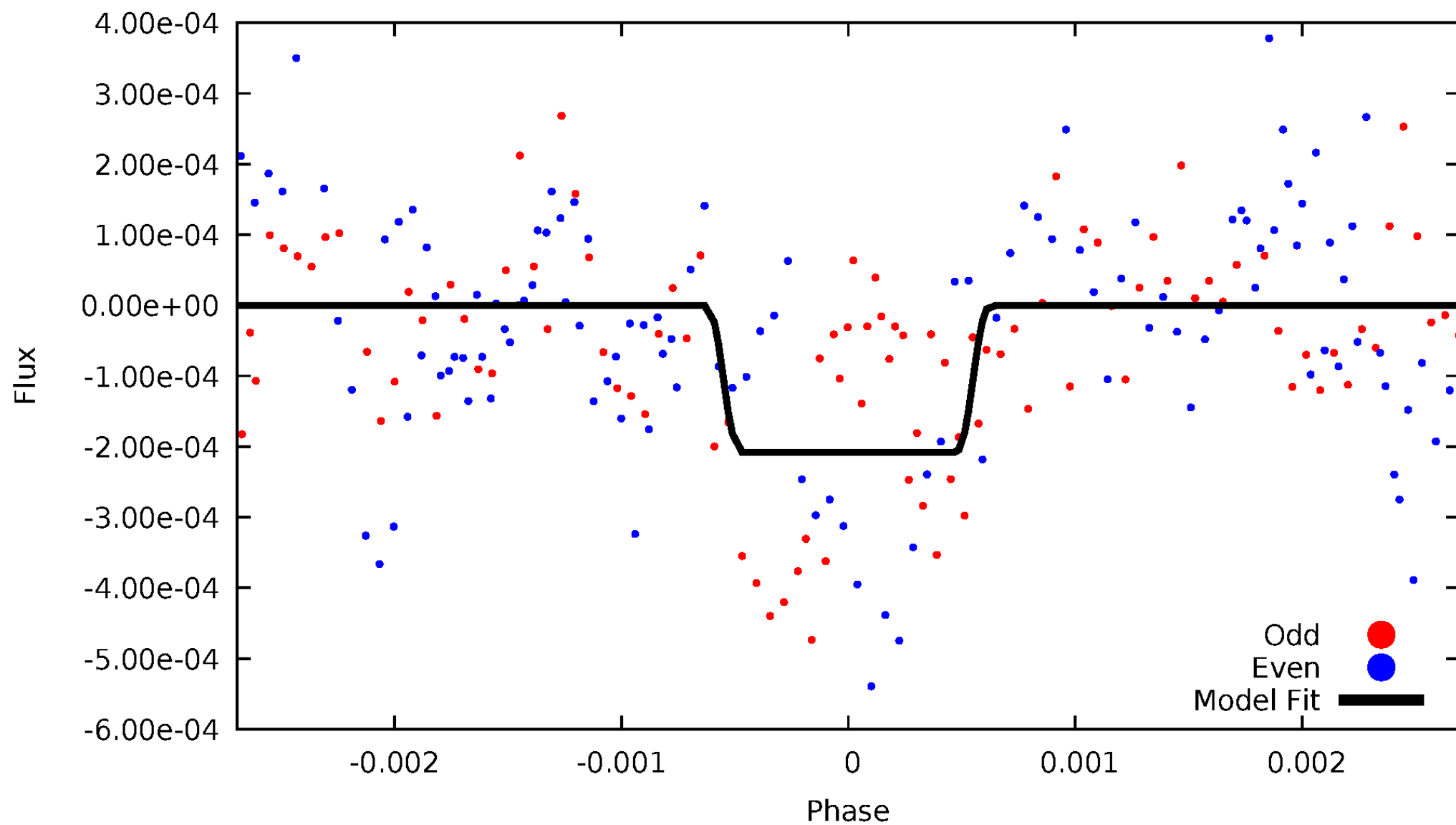
DV Odd/Even

TCE 008297017-03



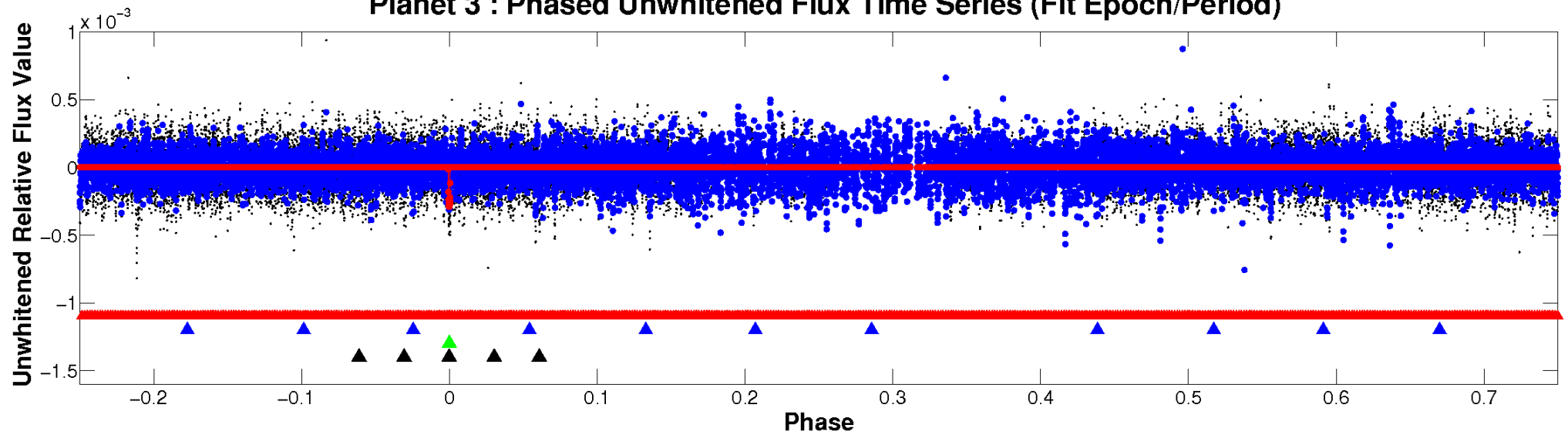
ALT Odd/Even

TCE 008297017-03

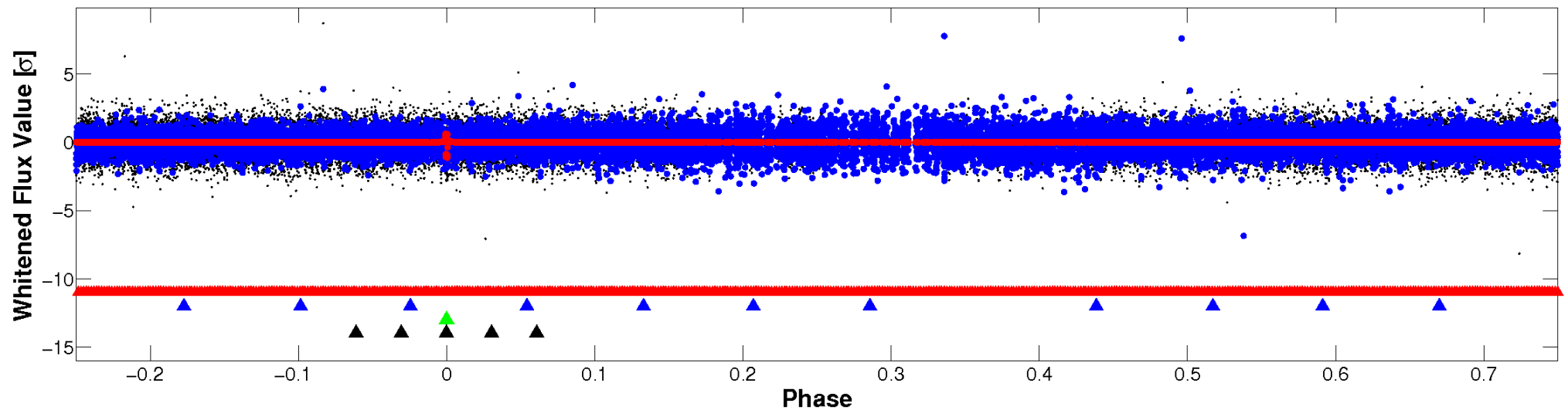


Non-Whitened Vs. Whitened Light Curve

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

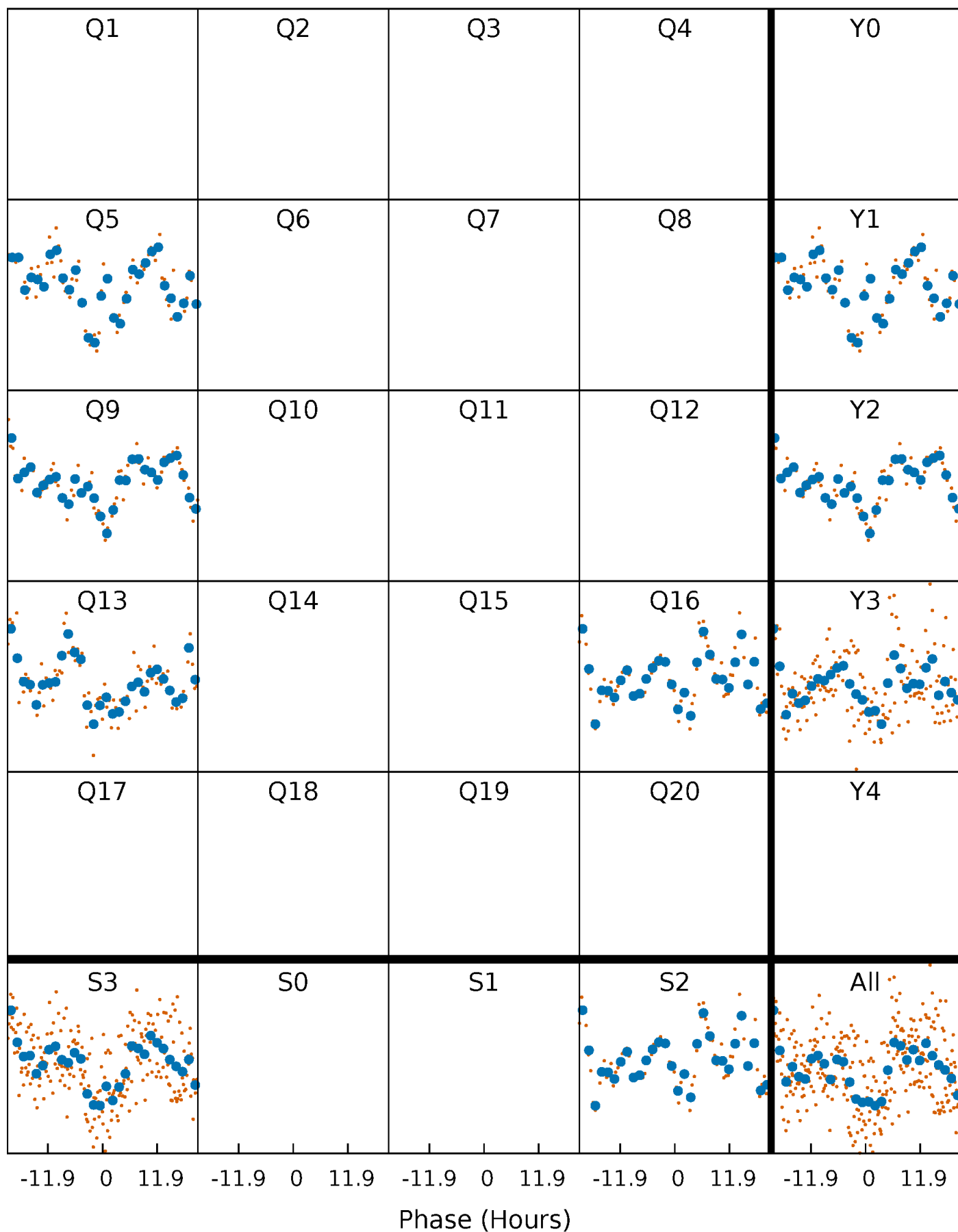


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



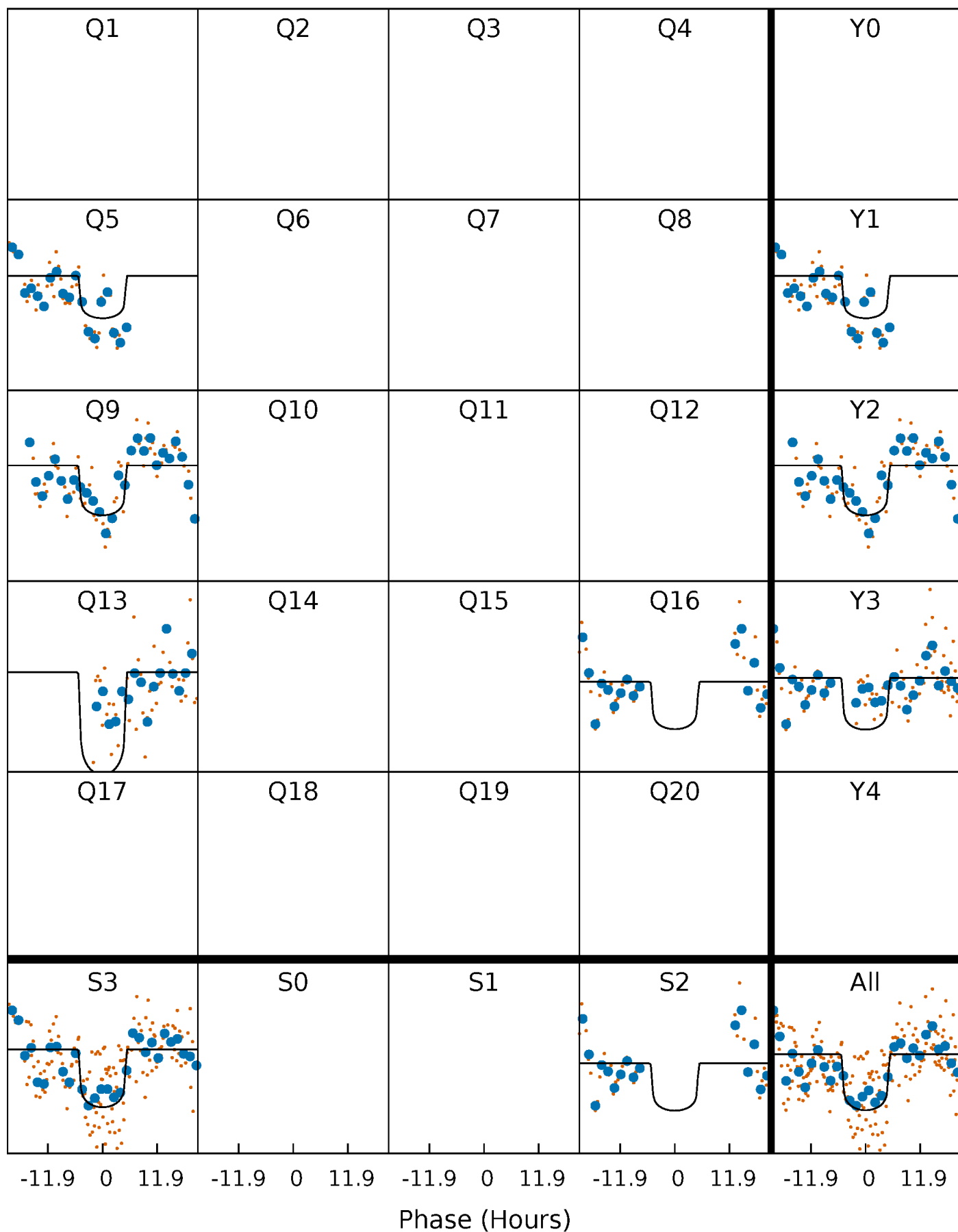
PDC Quarter-Phased Transit Curves

TCE 008297017-03 $P=333.643660$ Days $T_0=185.853323$ (BKJD)



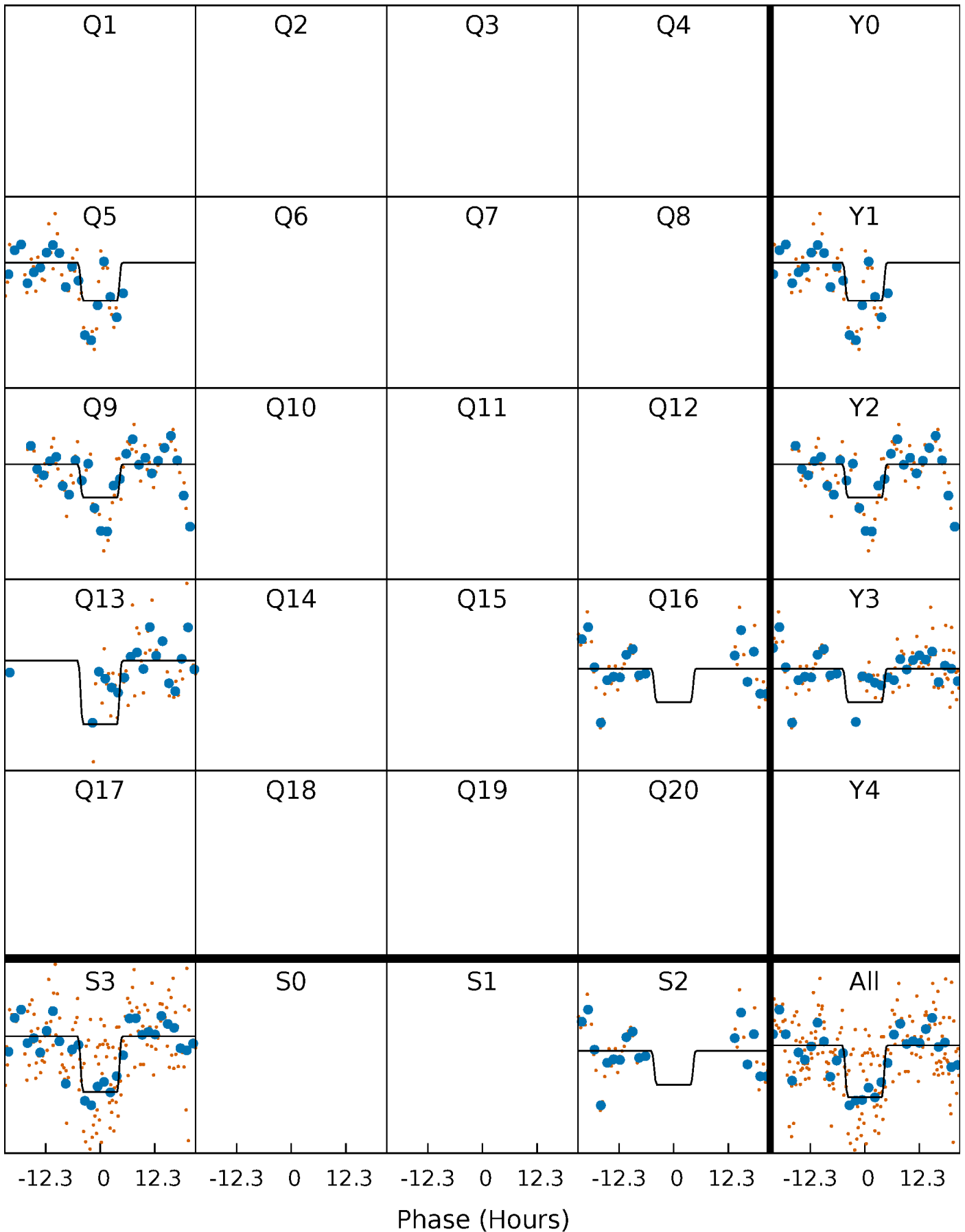
DV Quarter-Phased Transit Curves

TCE 008297017-03 P=333.643660 Days $T_0=185.853323$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

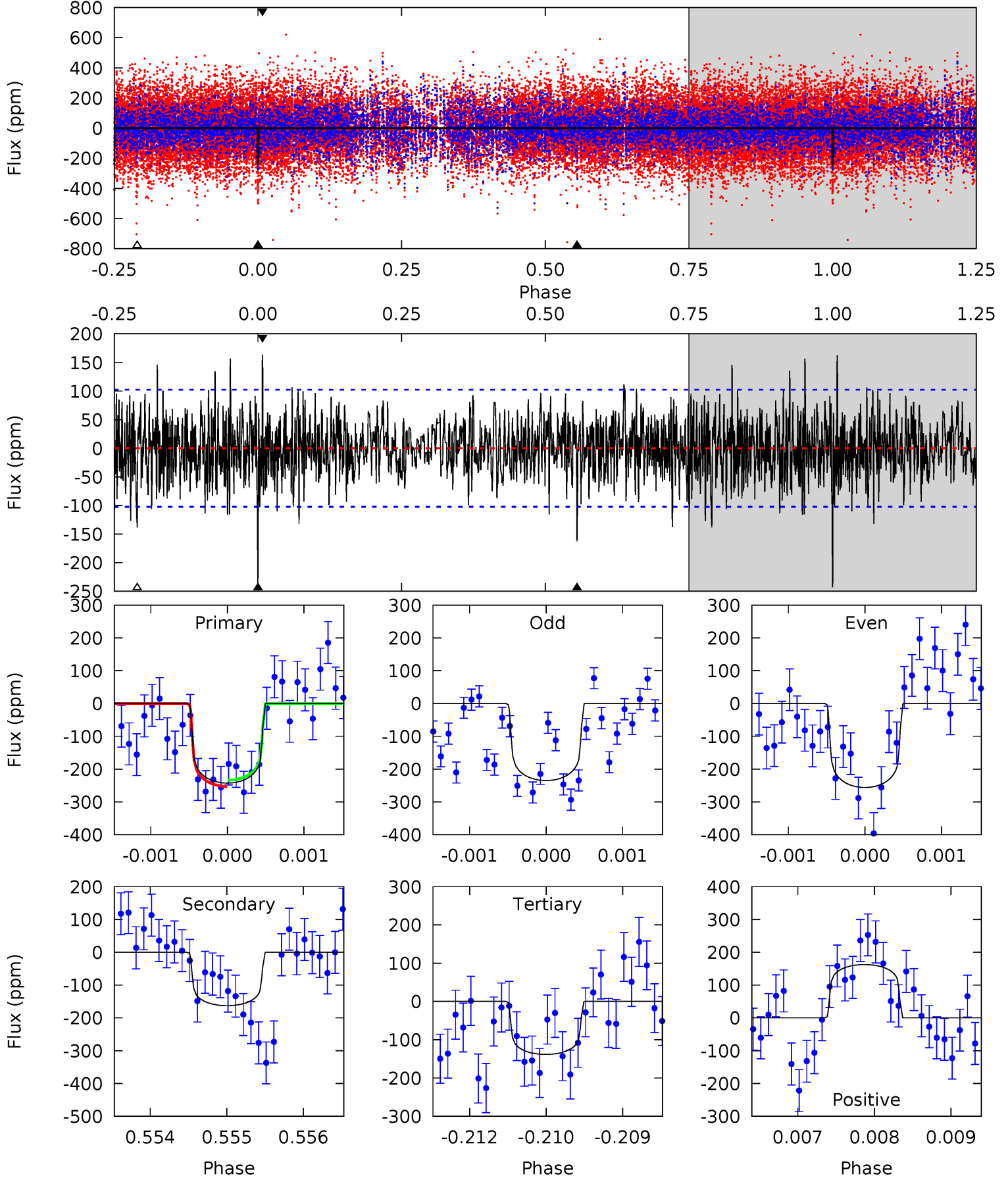
TCE 008297017-03 P=333.632357 Days $T_0=185.866361$ (BKJD)



DV Model-Shift Uniqueness Test

008297017-03, P = 333.643660 Days, E = 185.853323 Days

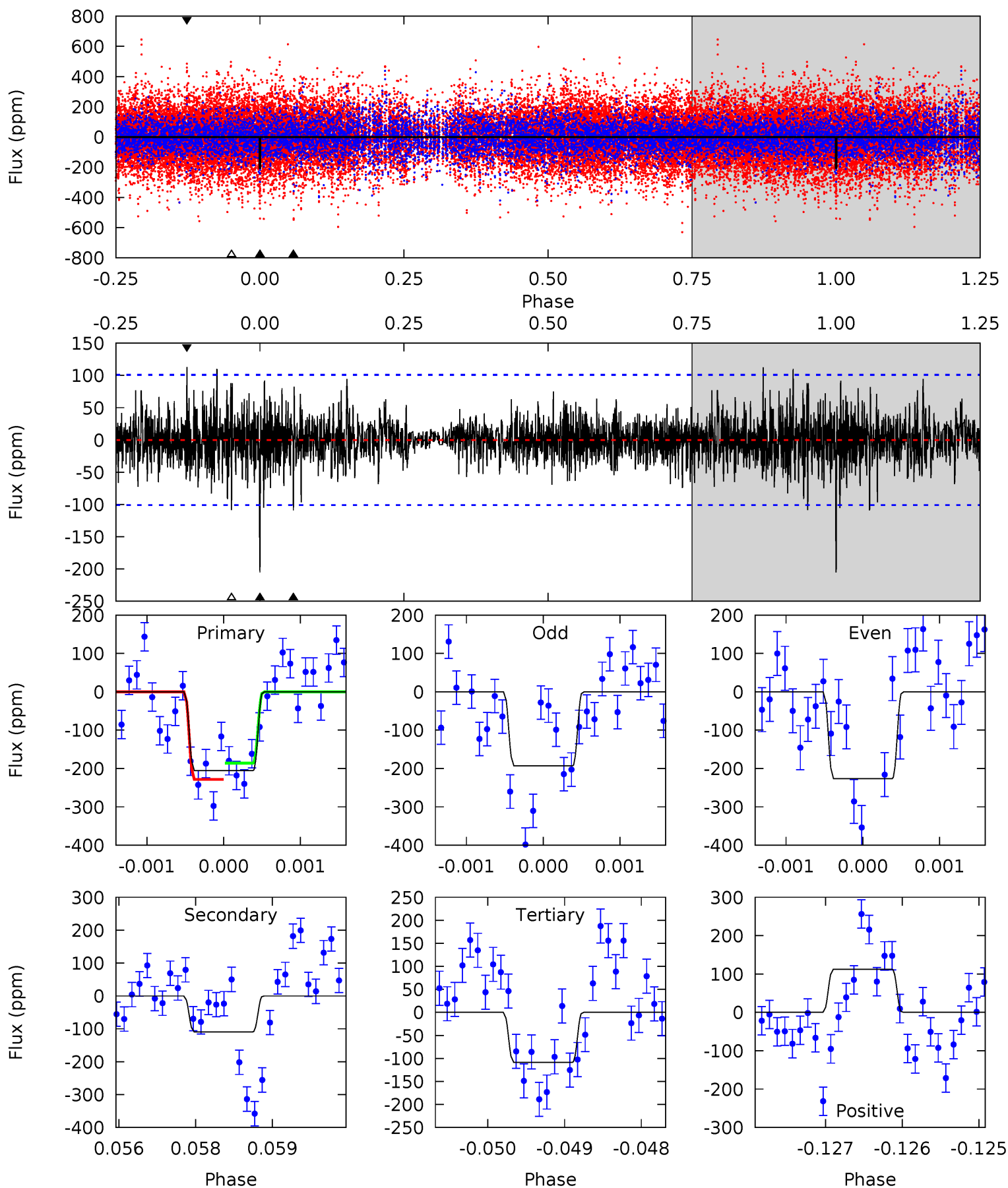
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.8 | 8.58 | 7.29 | 8.56 | 5.40 | 3.21 | 2.11 | 5.49 | 4.22 | 1.29 | 0.02 | 0.56 | 0.90 | 0.40 | 0.50 |



Alt Model-Shift Uniqueness Test

008297017-03, P = 333.632357 Days, E = 185.866361 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.0 | 5.87 | 5.83 | 6.05 | 5.42 | 3.23 | 1.38 | 5.20 | 4.99 | 0.04 | -0.18 | 0.87 | 0.86 | 0.35 | 1.13 |



Stellar Parameters For KIC 008297017

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 7128^{+224}_{-274} | $3.520^{+0.352}_{-0.088}$ | $-0.500^{+0.350}_{-0.250}$ | $3.811^{+0.403}_{-1.510}$ | $1.754^{+0.164}_{-0.383}$ | $0.045^{+0.122}_{-0.012}$ |
| | +3%/-4% | +10%/-2% | +70%/-50% | +11%/-40% | +9%/-22% | +274%/-28% |
| Source | KIC0 | FLK73 | 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 008297017-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|------------------------|
| DV | -163 ± 19 | $6.59^{+1.98}_{-1.89}$ | 790^{+46}_{-83} | 6100^{+907}_{-596} | 2623^{+2450}_{-1051} |
| Alt. | -109 ± 19 | $5.70^{+1.75}_{-1.69}$ | 788^{+49}_{-73} | 5932^{+1107}_{-671} | 2391^{+2338}_{-1063} |

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

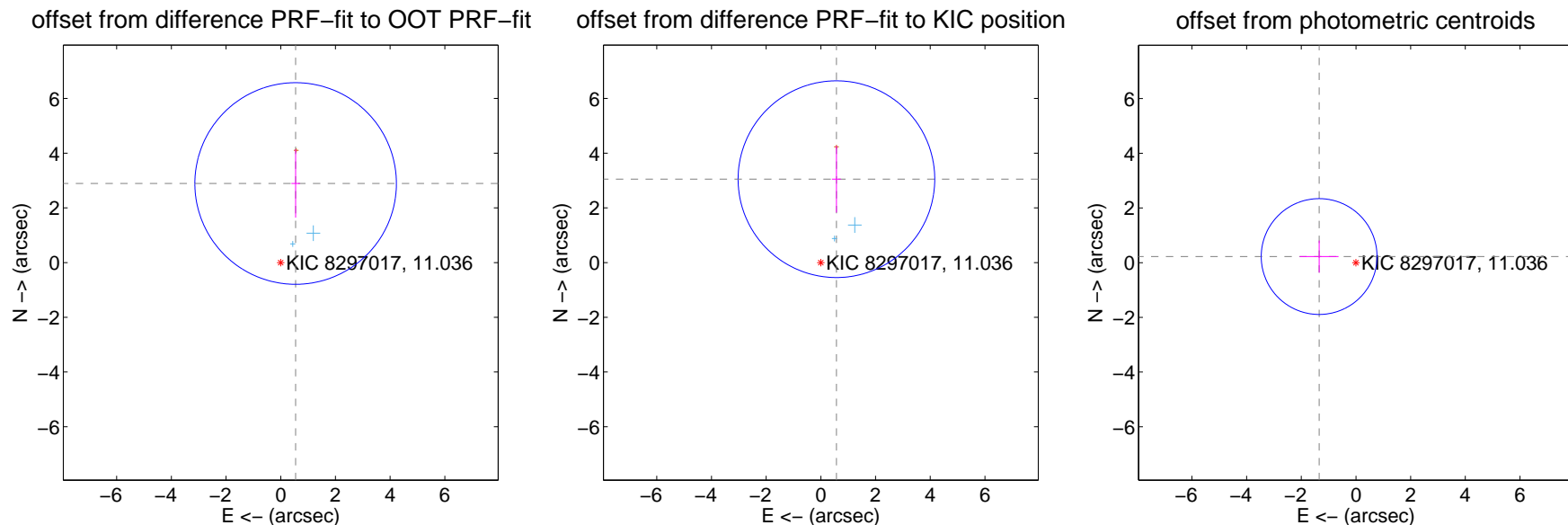
DV Centroid Data

Supplemental centroid analysis for 008297017-03. **Kepler magnitude: 11.04.** Transit SNR 6.77

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 2.942 ± 1.228 | 2.40 | -0.544 ± 0.156 | 2.891 ± 1.249 |
| PRF-fit source offset from KIC position | 3.101 ± 1.198 | 2.59 | -0.569 ± 0.164 | 3.048 ± 1.219 |
| photometric centroid source offset | 1.37 ± 0.71 | 1.93 | 1.35 ± 0.71 | 0.22 ± 0.58 |

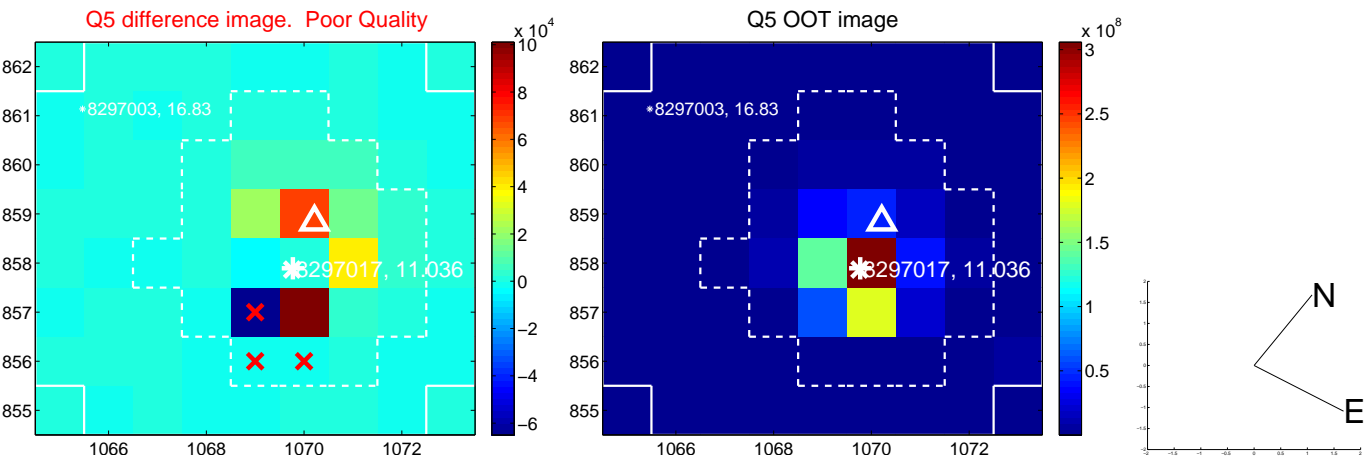


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

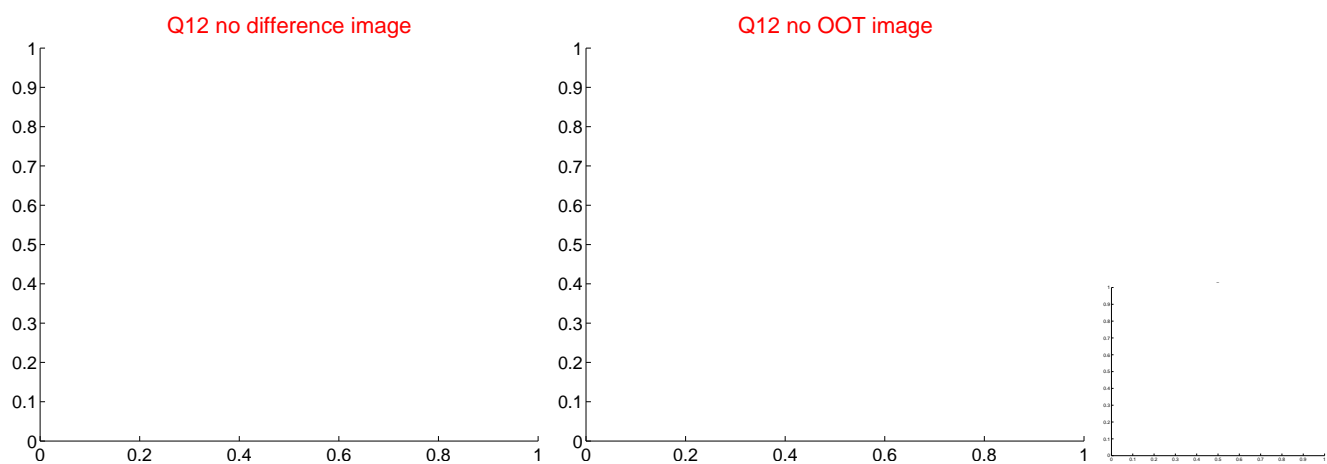
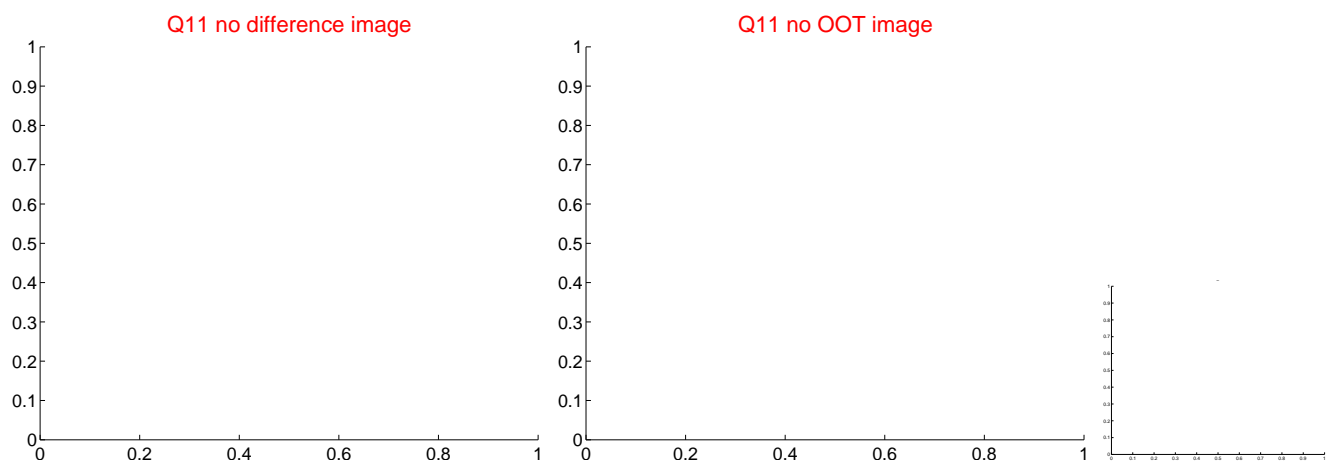
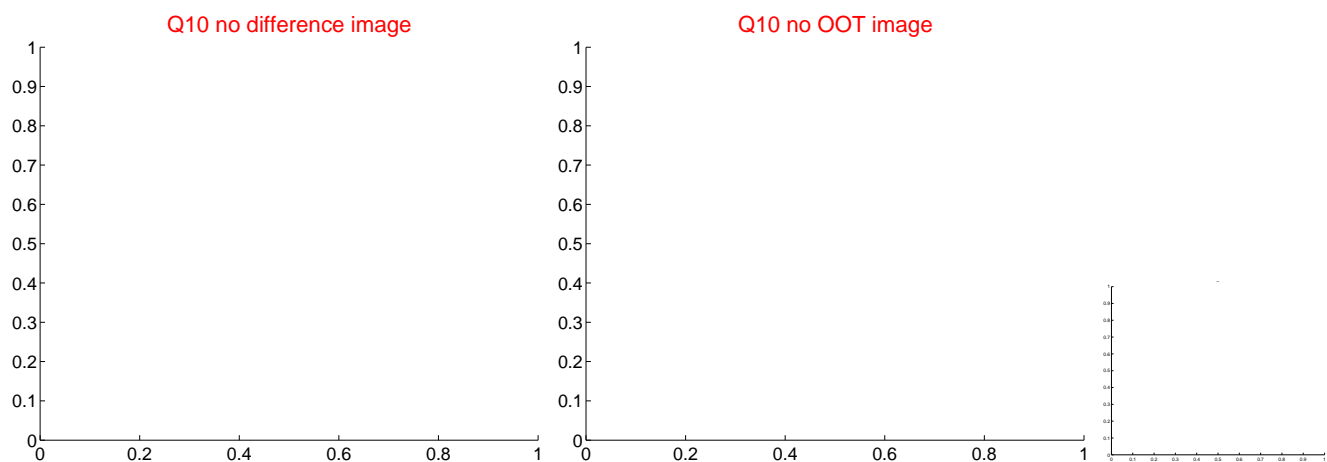
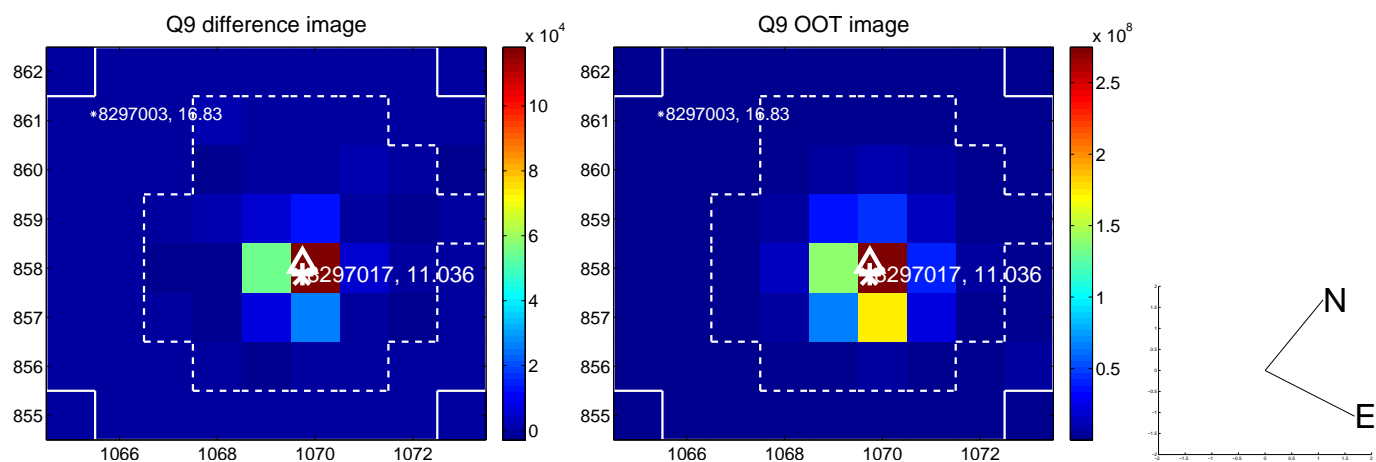
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



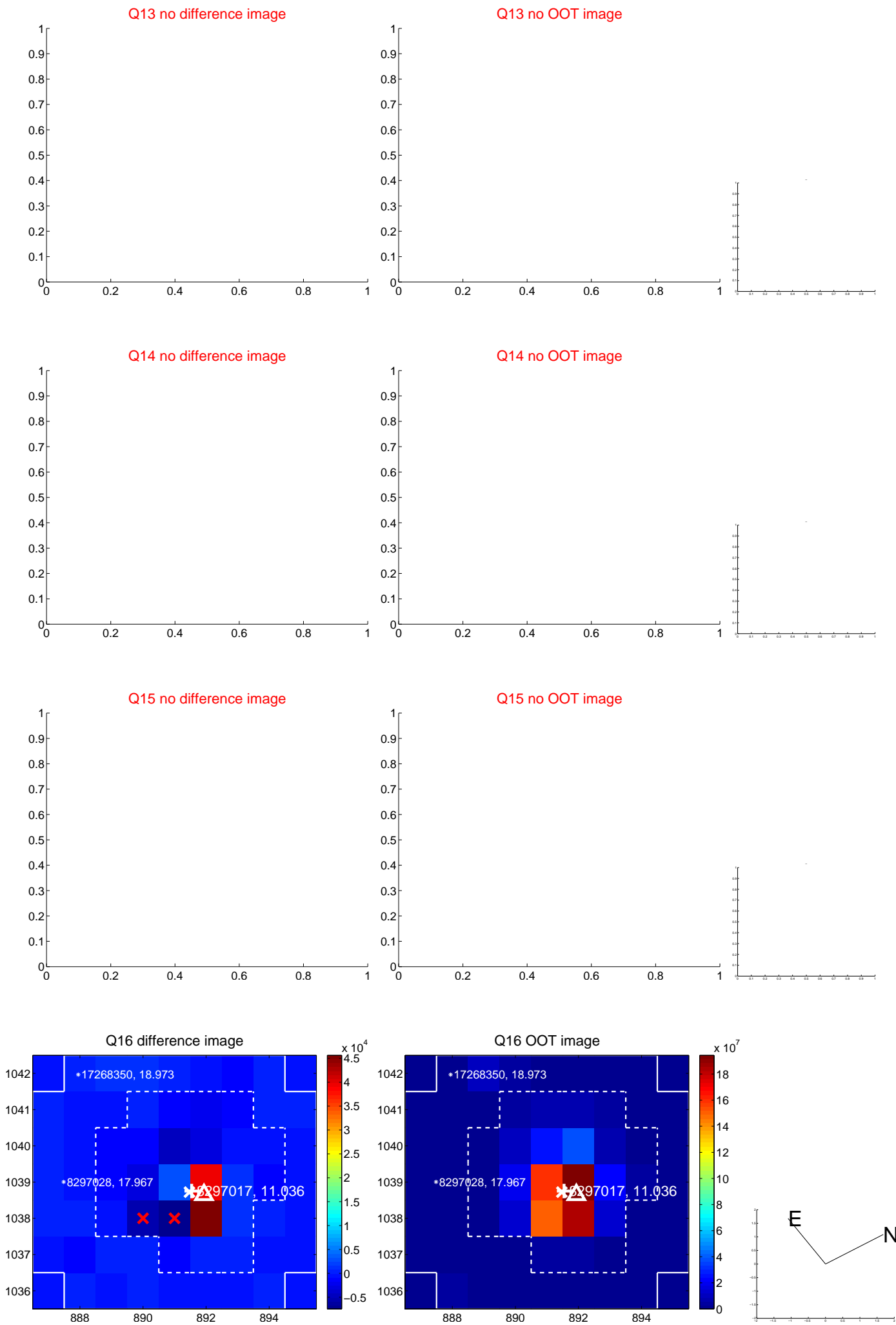
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



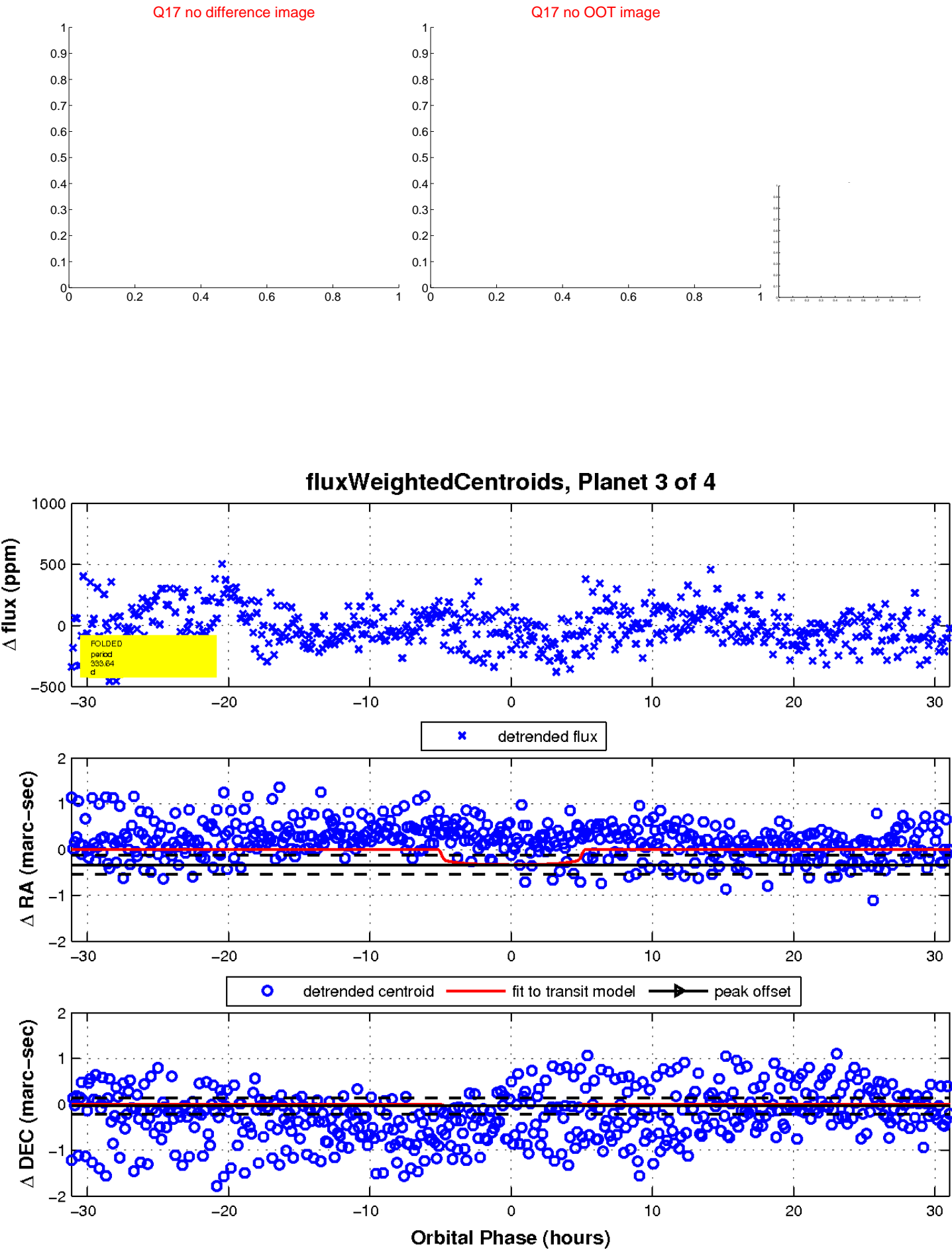
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

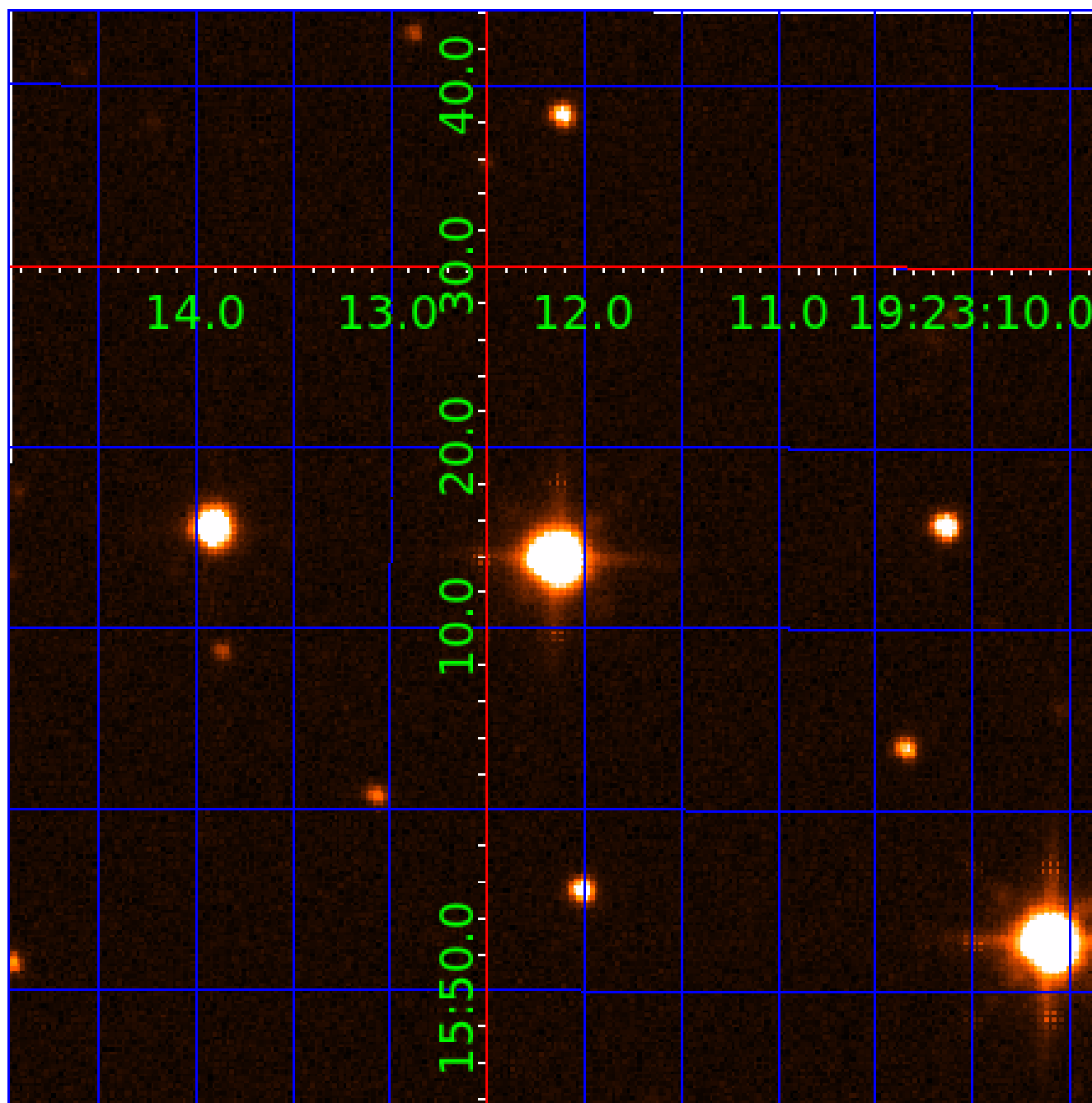


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008297017

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008297017-01 | OBS | No | 2.321215 | 132.466789 | 18.3 | 6.234 | 7.4 | 4.8 | 3.81 | 7128 | 1.94 | 19611.19 |
| 008297017-02 | OBS | 7879.01 | 128.207009 | 230.199177 | 359.3 | 3.755 | 9.0 | 9.4 | 3.81 | 7128 | 9.62 | 93.23 |
| 008297017-03 | OBS | No | 333.643660 | 185.853323 | 292.0 | 10.378 | 7.7 | 6.8 | 3.81 | 7128 | 7.09 | 26.05 |
| 008297017-04 | OBS | No | 343.814367 | 165.471356 | 351.5 | 6.045 | 7.7 | 8.4 | 3.81 | 7128 | 7.66 | 25.02 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------------------------------------------------------|
| 008297017-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-02 | OBS | FP | 0.21 | 1 | 0 | 0 | 0 | MOD_NONUNIQ_ALT—CENT_SATURATED |
| 008297017-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |
| 008297017-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED |

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

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

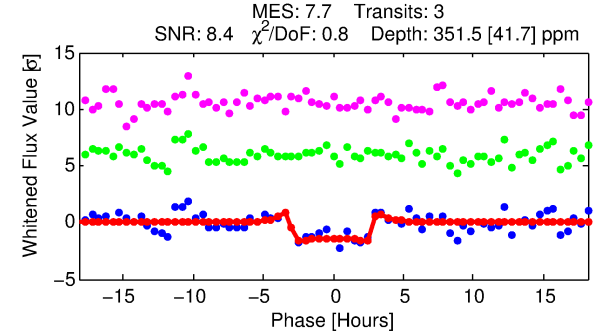
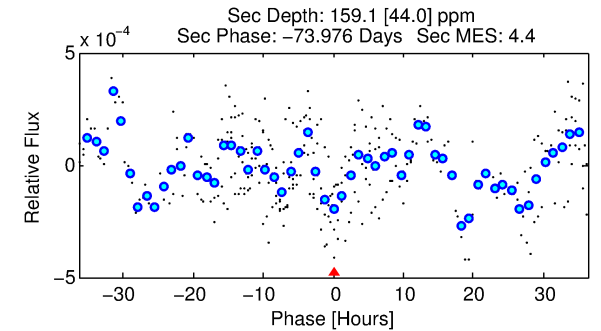
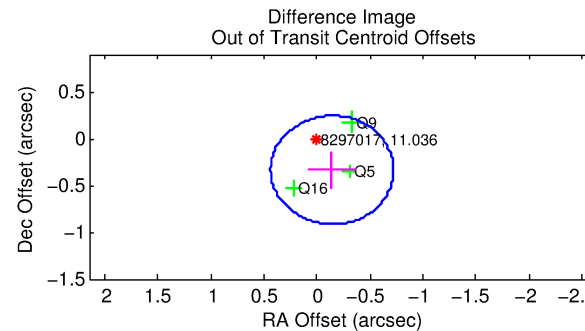
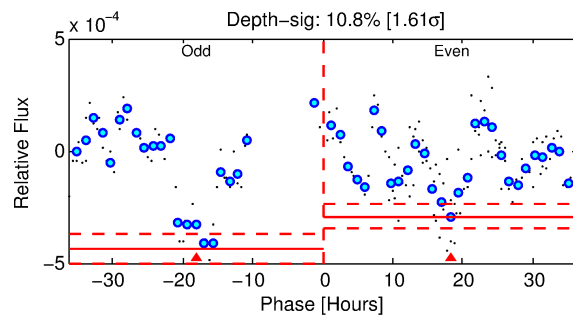
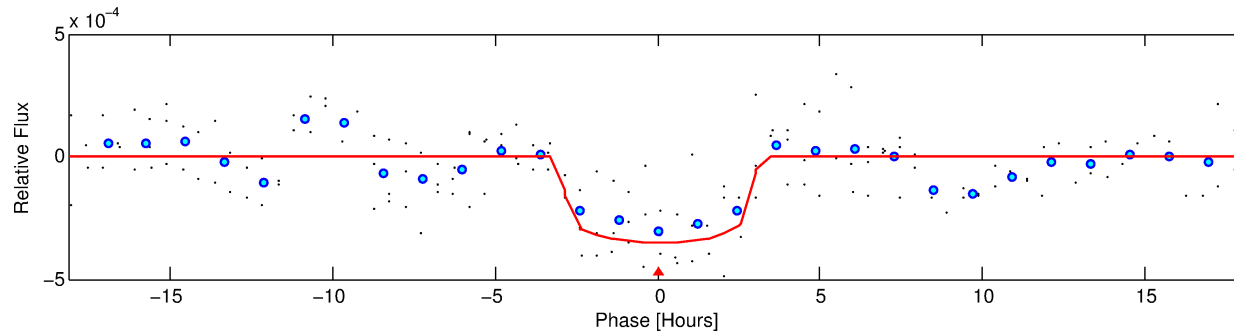
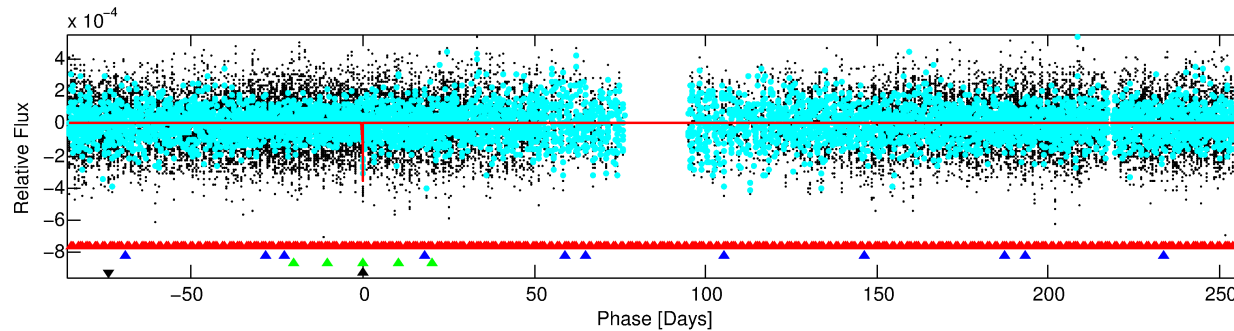
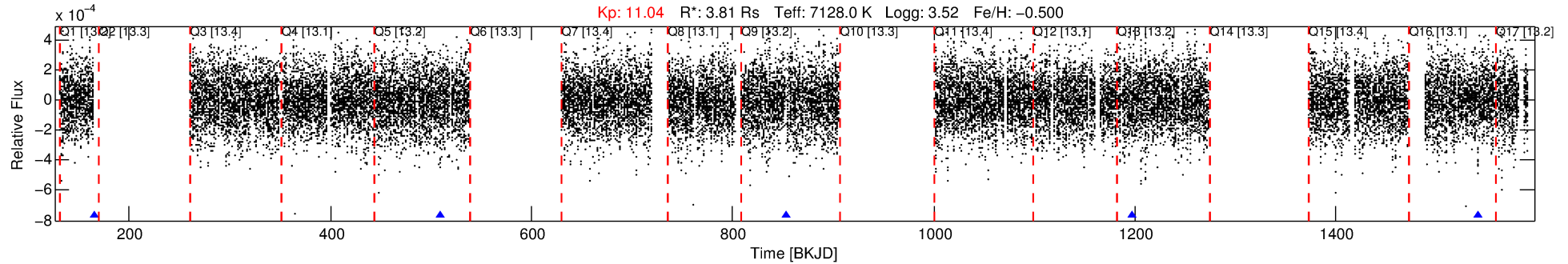
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008297017-04

No Significant Match Found

DV One-Page Summary

KIC: 8297017 Candidate: 4 of 4 Period: 343.814 d



DV Fit Results:

Period = 343.81437 [0.00323] d
Epoch = 165.4714 [0.0093] BKJD
Rp/R* = 0.0184 [0.0116]
a/R* = 319.76 [1222.95]
b = 0.70 [2.76]
Seff = 25.02 [15.53]
Teq = 570 [89] K
Rp = 7.66 [5.70] Re
a = 1.1586 [0.4378] AU
Ag = 2001.06 [2845.24] [0.70 σ]
Teffp = 5898 [1913] K [2.78 σ]

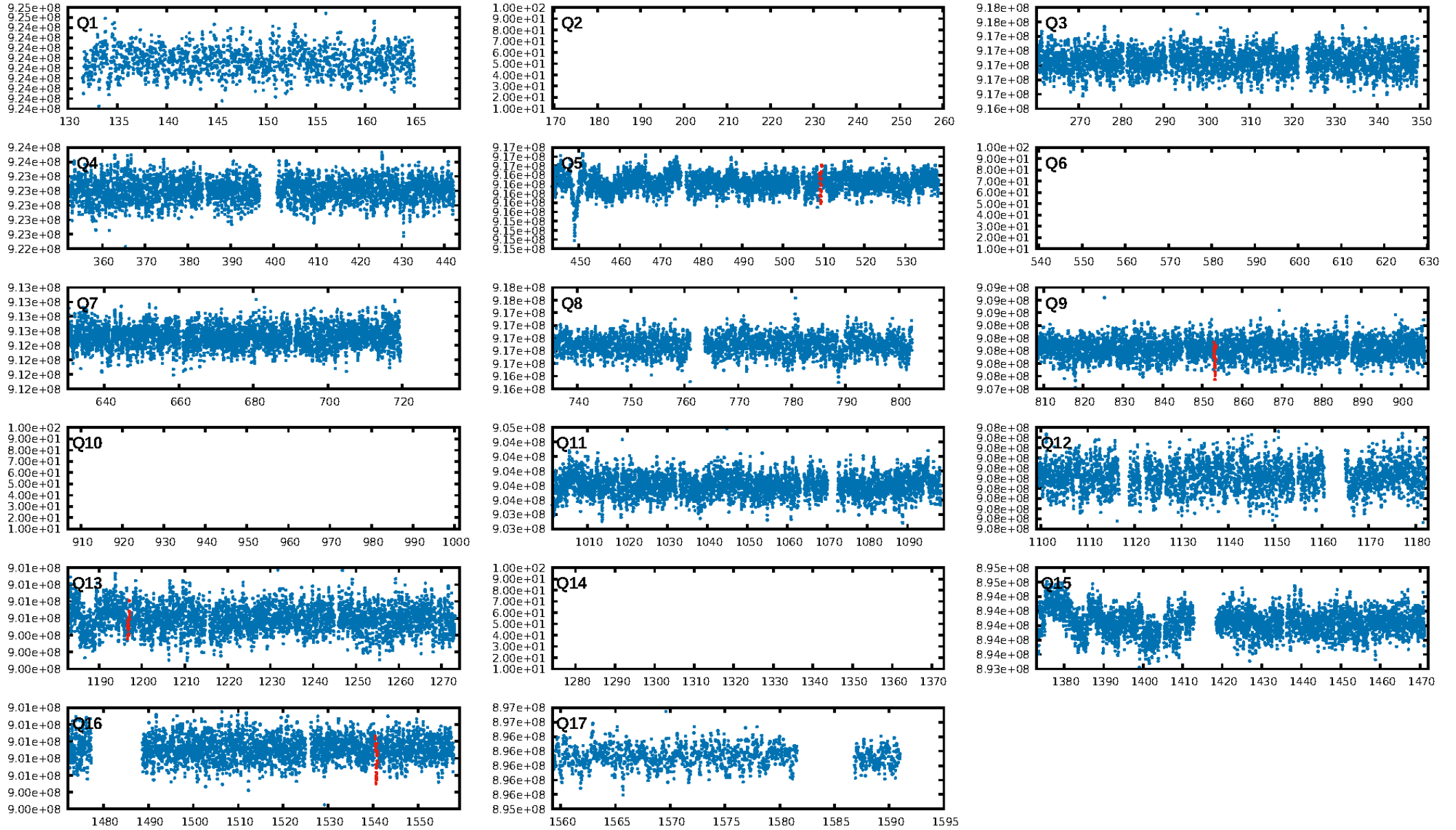
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.32 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 34.5%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 3.01e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.787
Centroid-sig: 2.2%
Centroid-so: 0.883 arcsec [1.58 σ]
OotOffset-rm: 0.365 arcsec [1.89 σ]
KicOffset-rm: 0.275 arcsec [1.61 σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.67 [2/3]

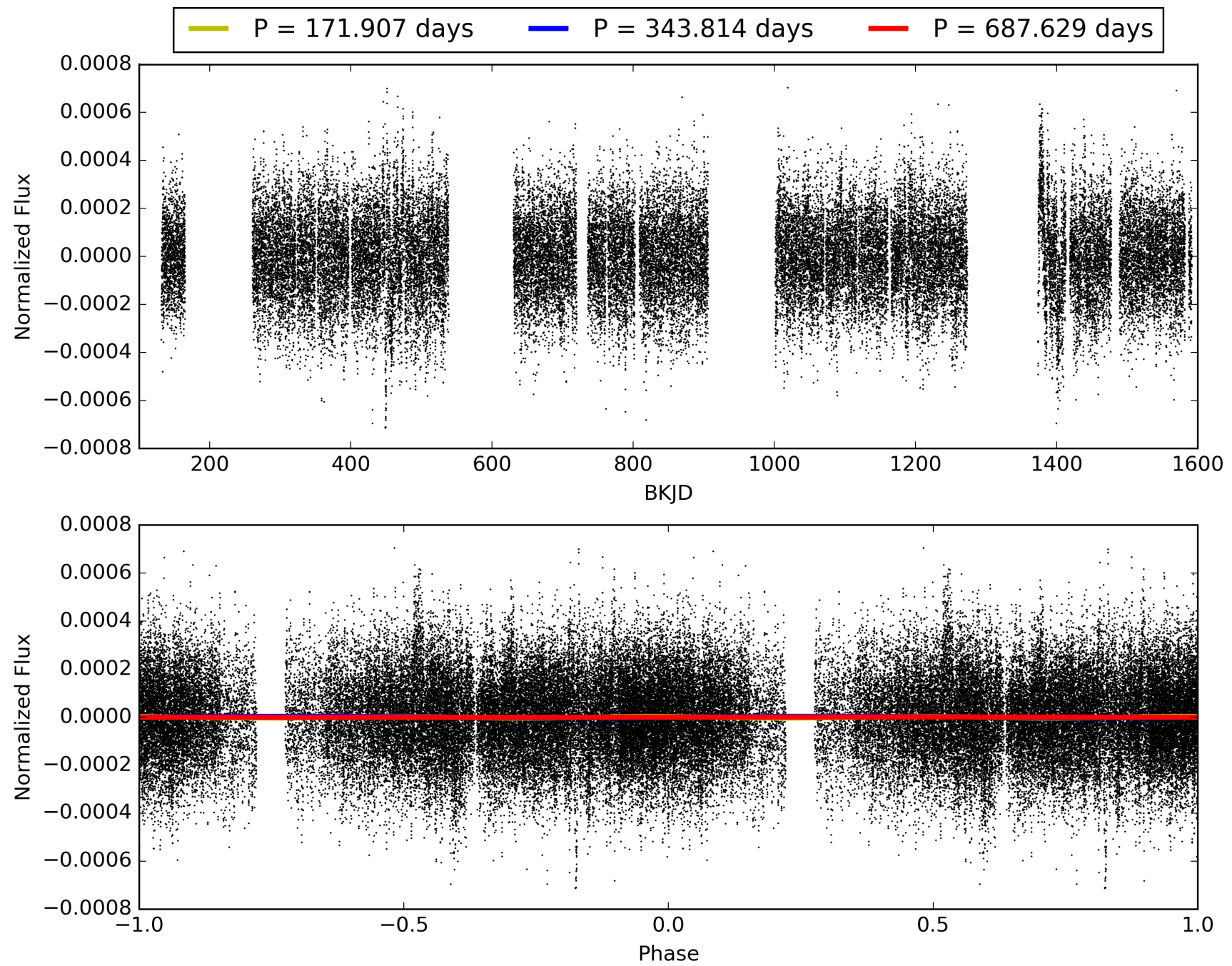
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:36:52 Z

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

TCE 008297017-04, PDC Light Curves

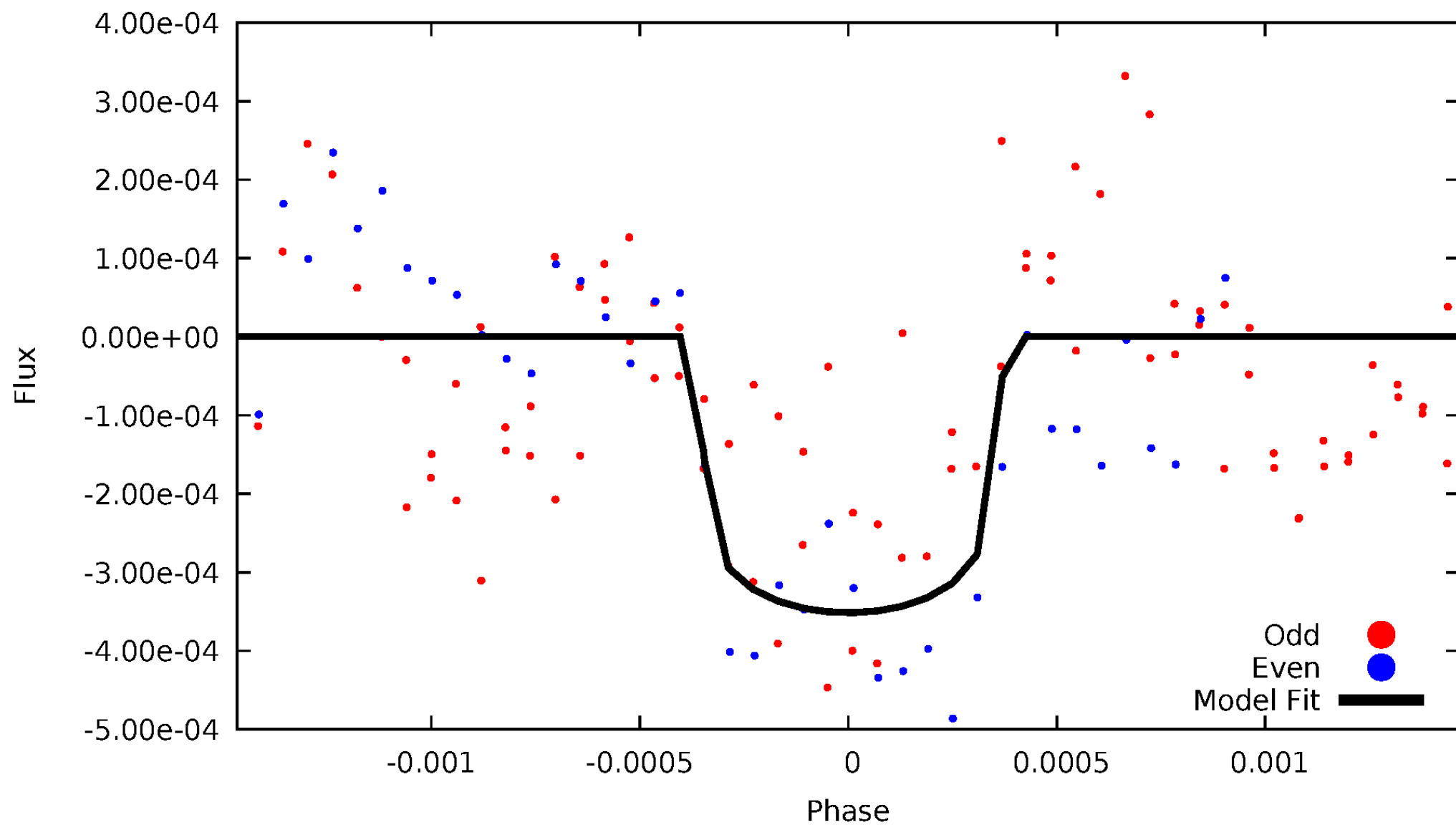


TCE 008297017-04



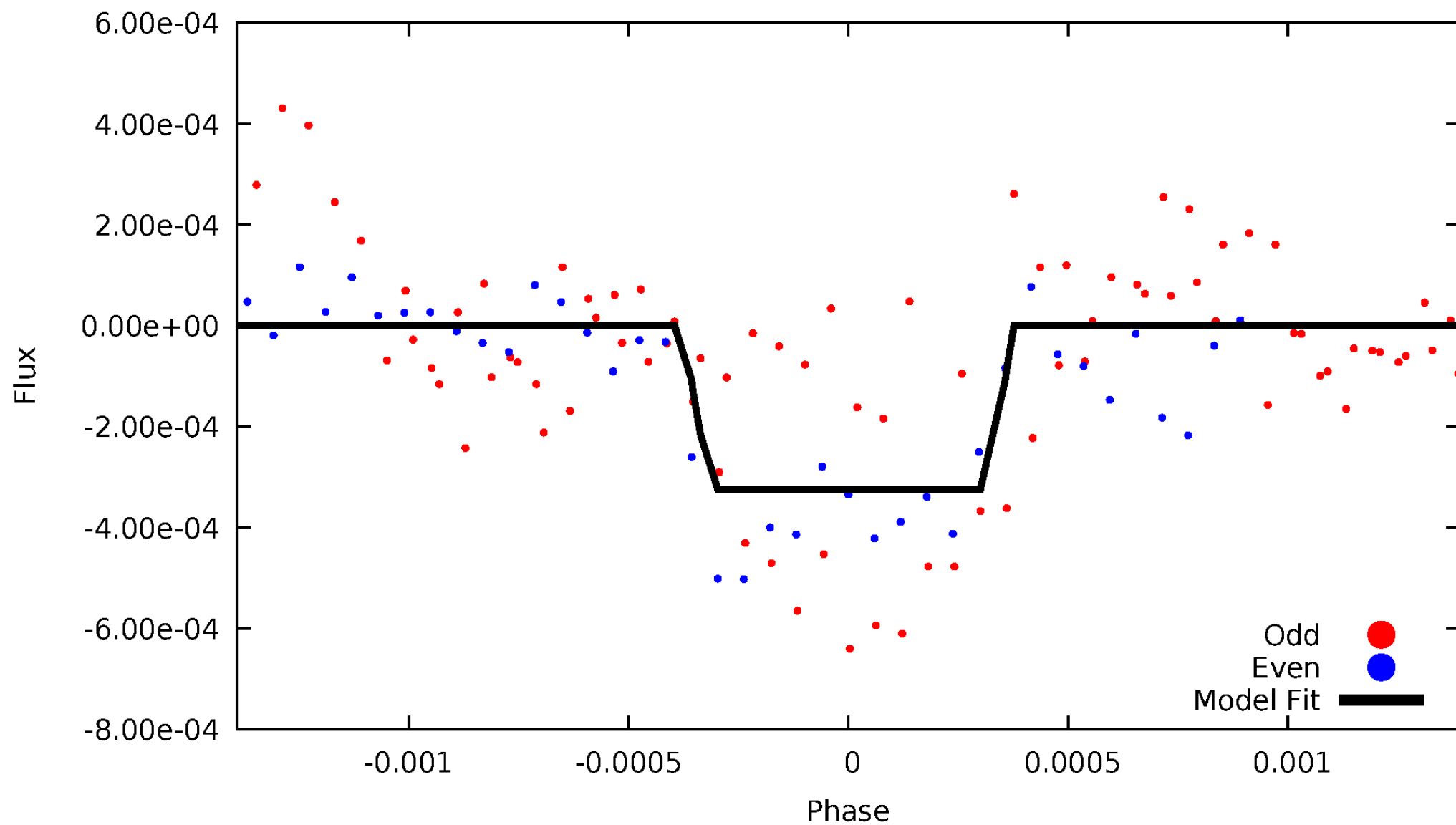
DV Odd/Even

TCE 008297017-04



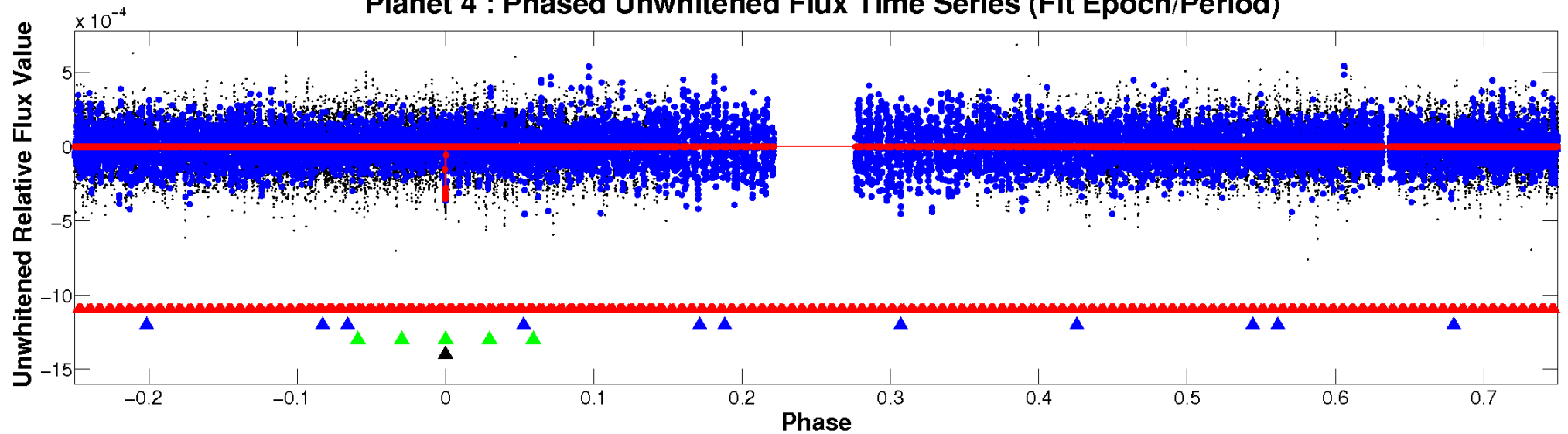
ALT Odd/Even

TCE 008297017-04

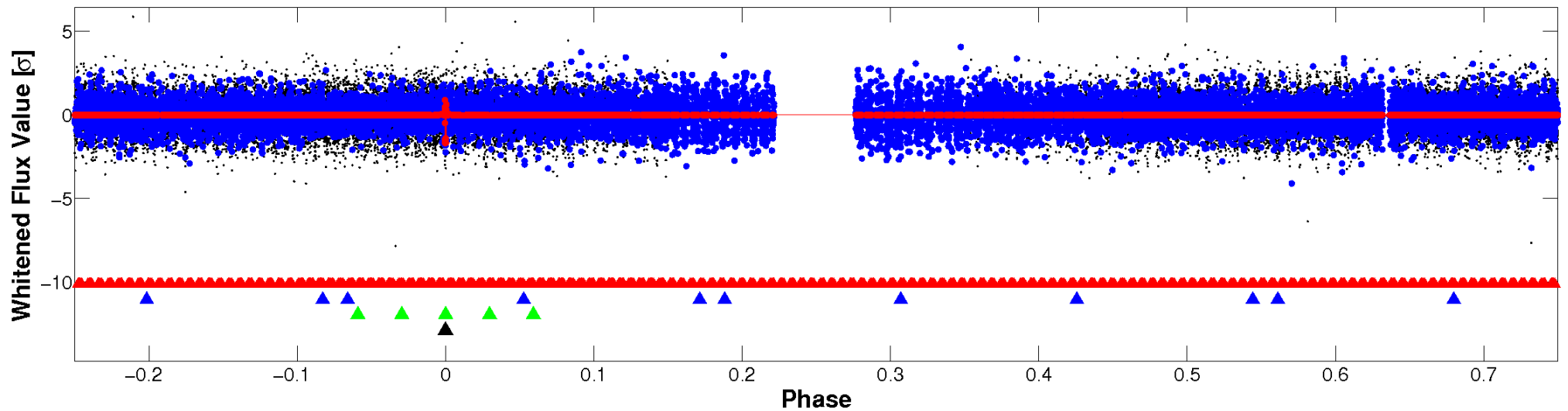


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

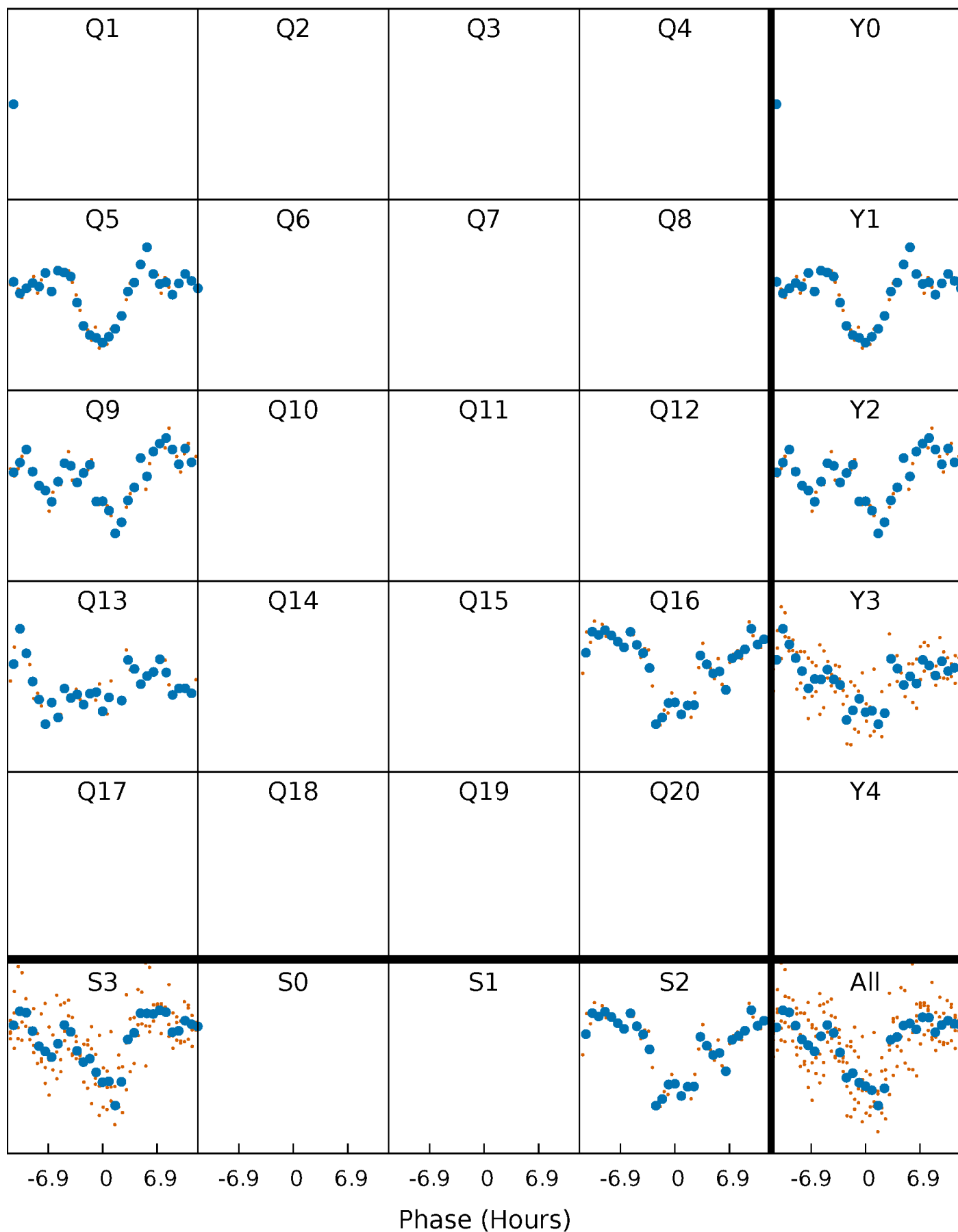


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



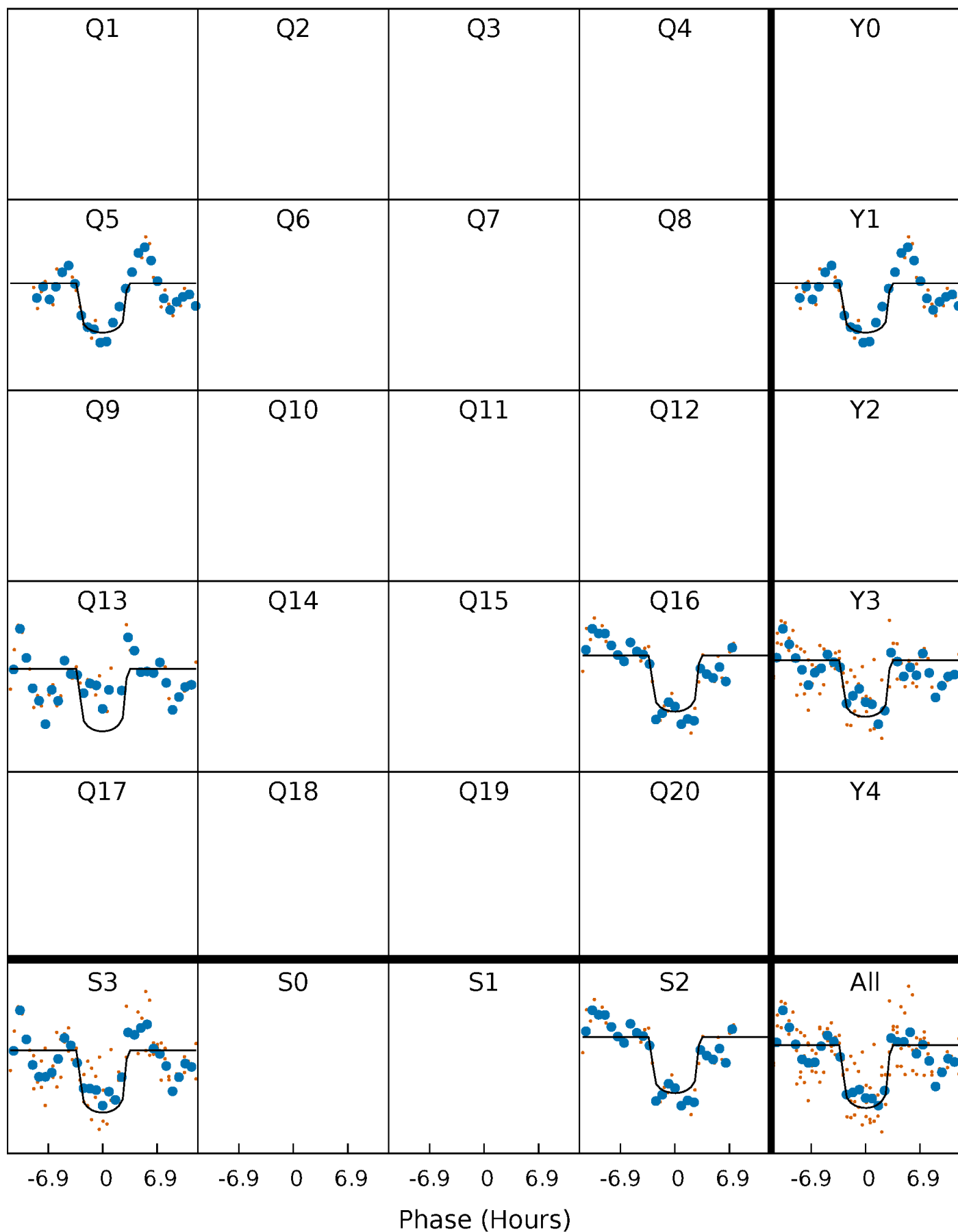
PDC Quarter-Phased Transit Curves

TCE 008297017-04 $P=343.814368$ Days $T_0=165.471356$ (BKJD)



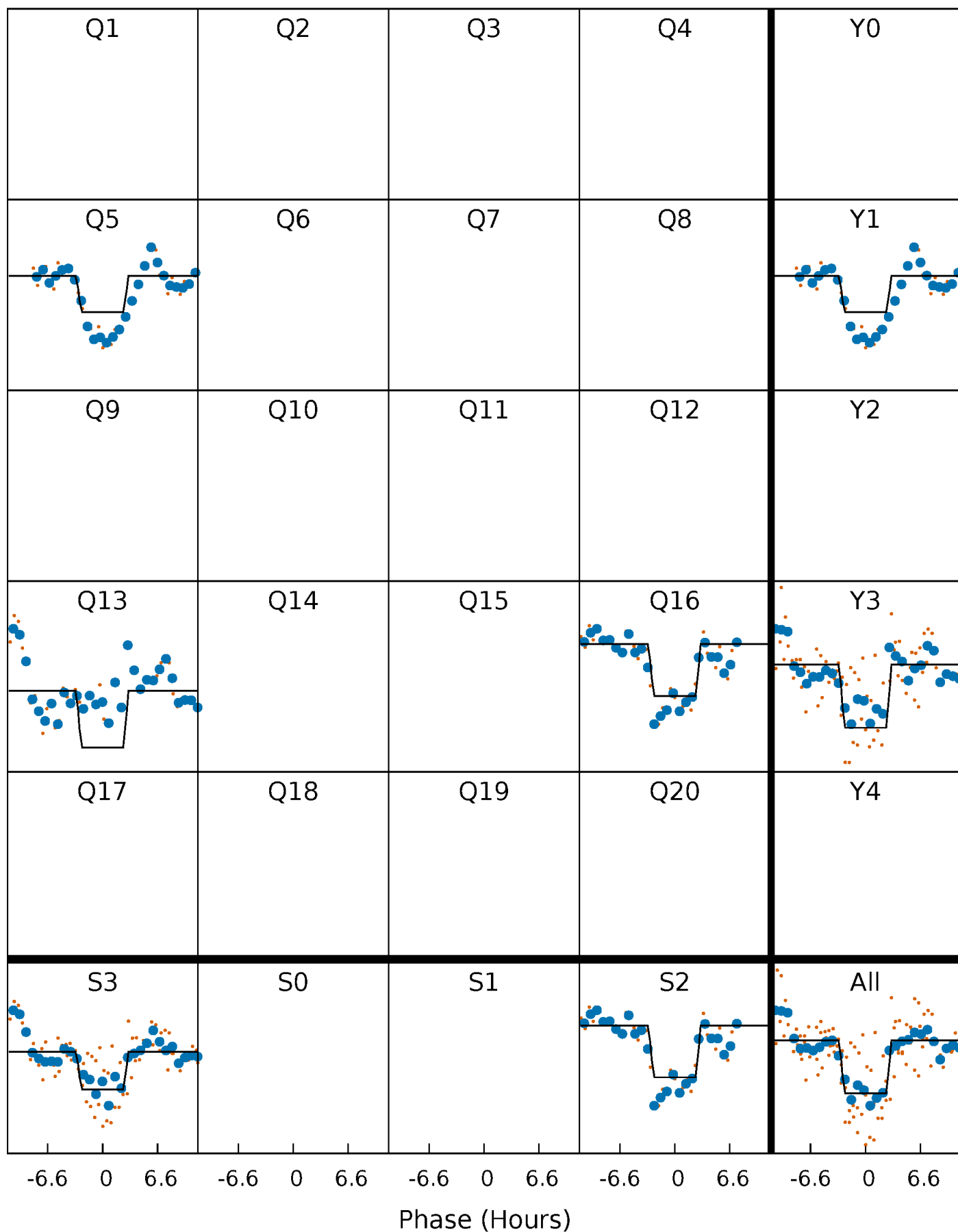
DV Quarter-Phased Transit Curves

TCE 008297017-04 $P=343.814368$ Days $T_0=165.471356$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

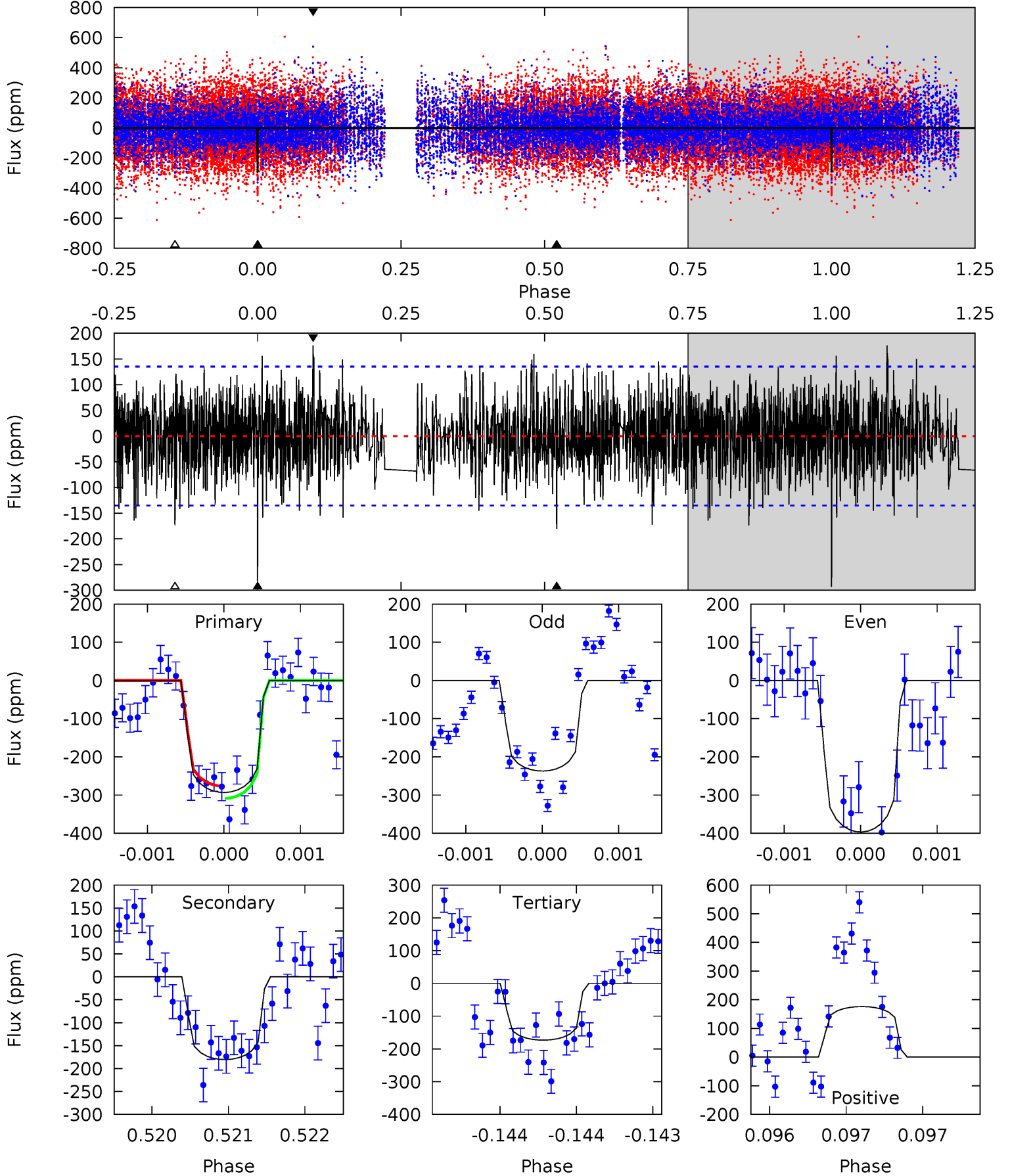
TCE 008297017-04 P=343.821892 Days $T_0=165.445525$ (BKJD)



DV Model-Shift Uniqueness Test

008297017-04, $P = 343.814368$ Days, $E = 165.471356$ Days

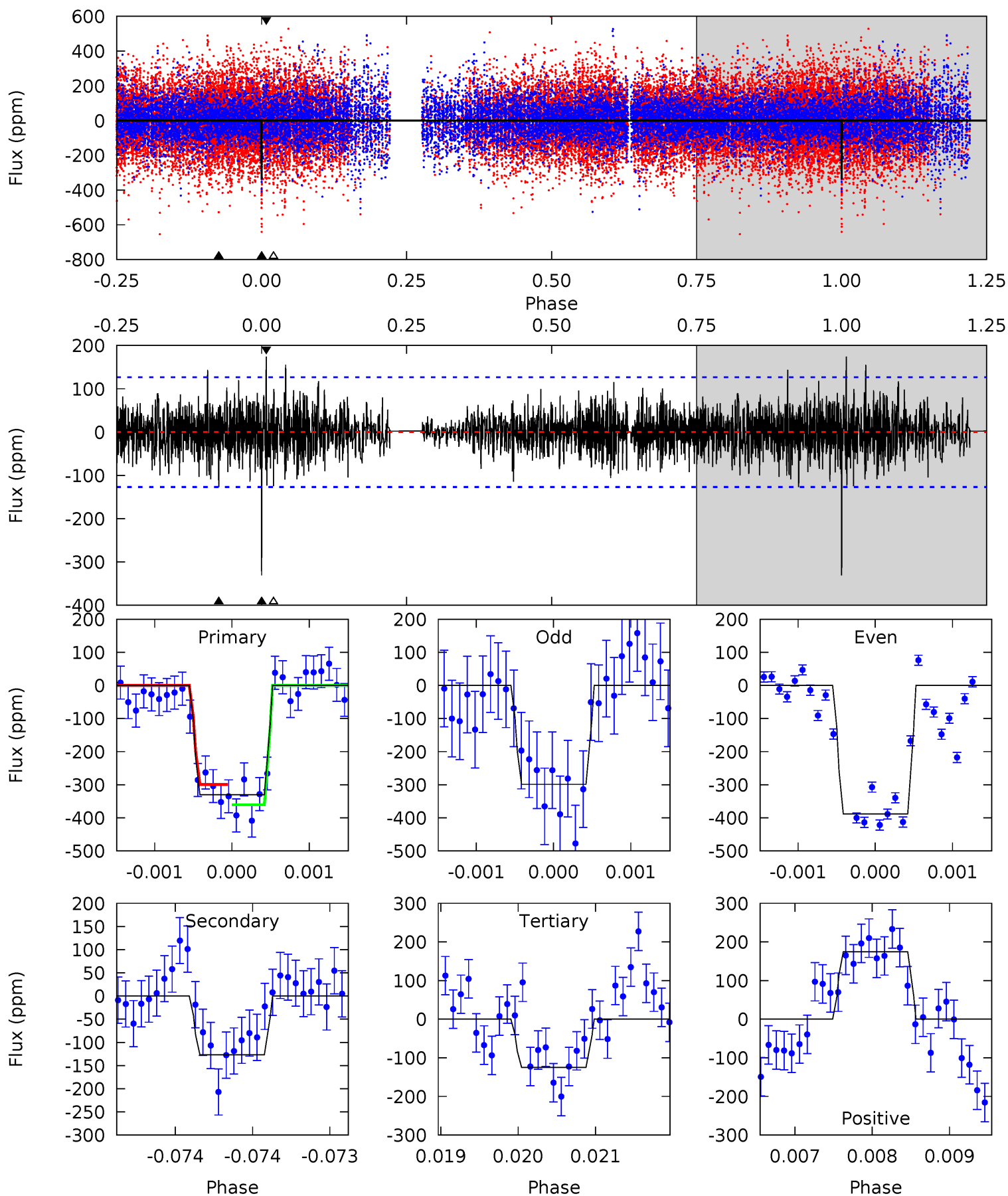
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.0 | 7.36 | 7.06 | 7.19 | 5.51 | 3.38 | 2.06 | 4.89 | 4.76 | 0.30 | 0.17 | 3.11 | 0.85 | 0.38 | 0.67 |



Alt Model-Shift Uniqueness Test

008297017-04, P = 343.821892 Days, E = 165.445525 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.4 | 5.52 | 5.41 | 7.58 | 5.51 | 3.38 | 1.54 | 8.94 | 6.78 | 0.11 | -2.06 | 1.89 | 0.81 | 0.35 | 1.32 |



Stellar Parameters For KIC 008297017

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 7128^{+224}_{-274} | $3.520^{+0.352}_{-0.088}$ | $-0.500^{+0.350}_{-0.250}$ | $3.811^{+0.403}_{-1.510}$ | $1.754^{+0.164}_{-0.383}$ | $0.045^{+0.122}_{-0.012}$ |
| | +3%/-4% | +10%/-2% | +70%/-50% | +11%/-40% | +9%/-22% | +274%/-28% |
| Source | KIC0 | FLK73 | 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 008297017-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|------------------------|
| DV | -181 ± 25 | $7.37^{+4.90}_{-3.98}$ | 785^{+41}_{-76} | 5903^{+3099}_{-1149} | 2467^{+8487}_{-1590} |
| Alt. | -127 ± 23 | $7.01^{+5.11}_{-3.90}$ | 779^{+52}_{-77} | 5513^{+2958}_{-1040} | 1830^{+7472}_{-1207} |

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

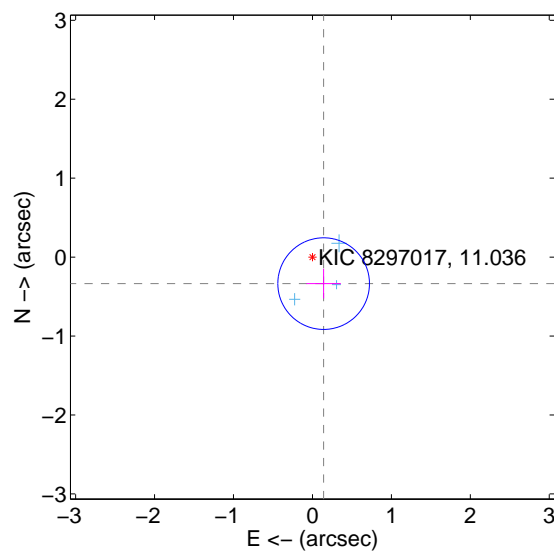
Supplemental centroid analysis for 008297017-04. **Kepler magnitude: 11.04.** Transit SNR 8.43

There are 3 quarters with good PRF difference image offsets

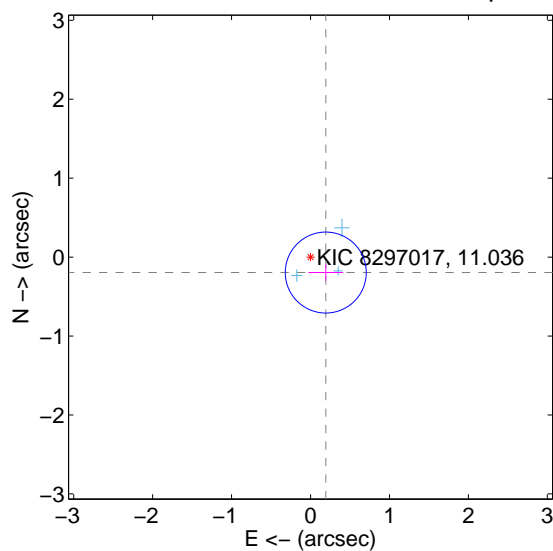
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.365 ± 0.194 | 1.89 | -0.142 ± 0.219 | -0.336 ± 0.189 |
| PRF-fit source offset from KIC position | 0.275 ± 0.171 | 1.61 | -0.193 ± 0.220 | -0.196 ± 0.102 |
| photometric centroid source offset | 0.88 ± 0.56 | 1.58 | -0.75 ± 0.58 | 0.46 ± 0.51 |

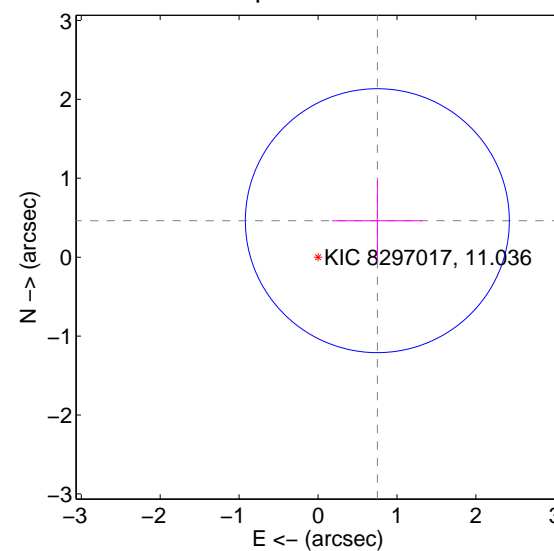
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

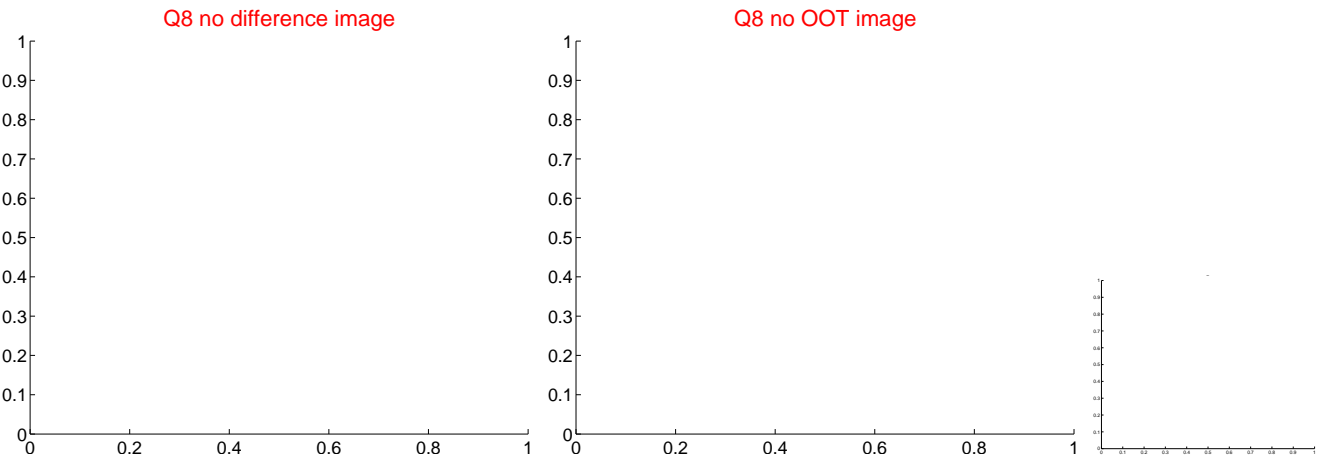
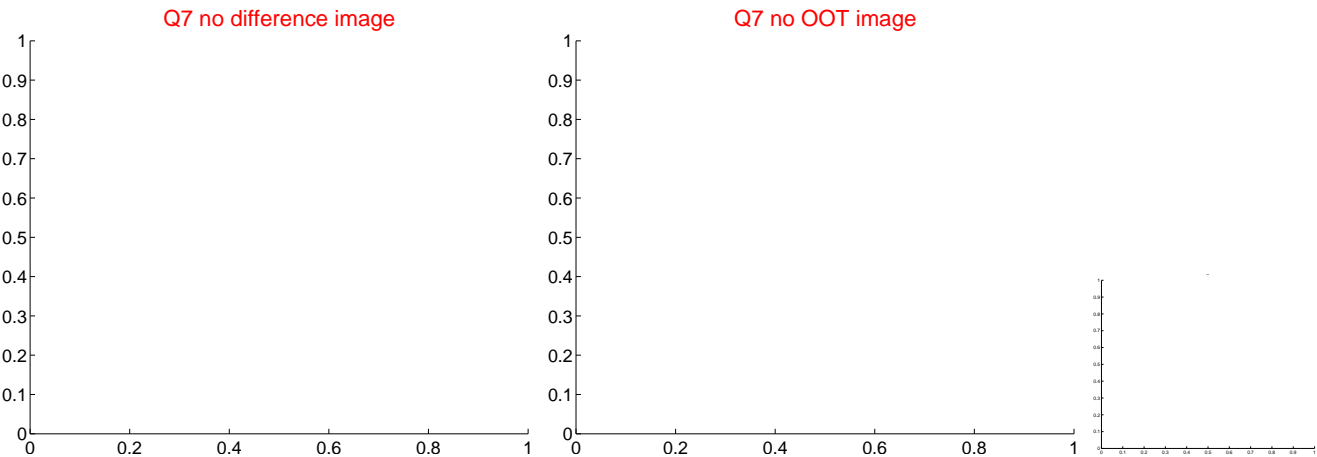
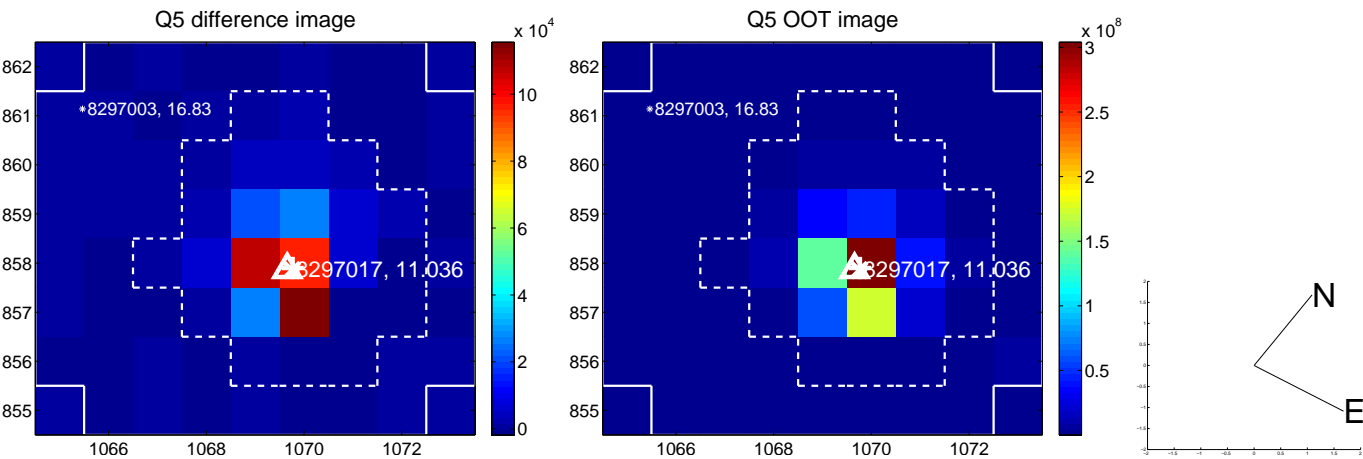


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

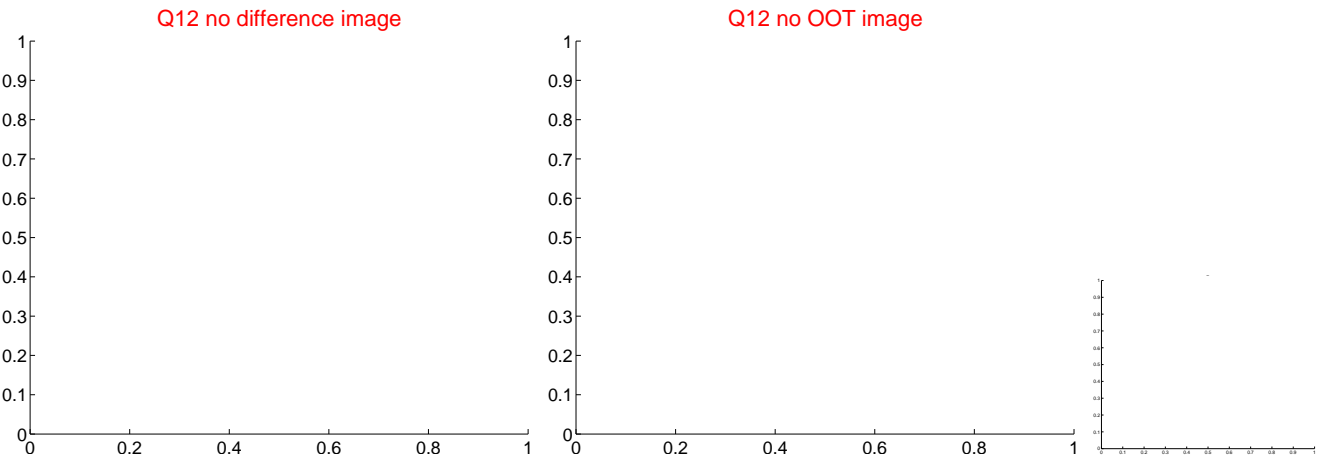
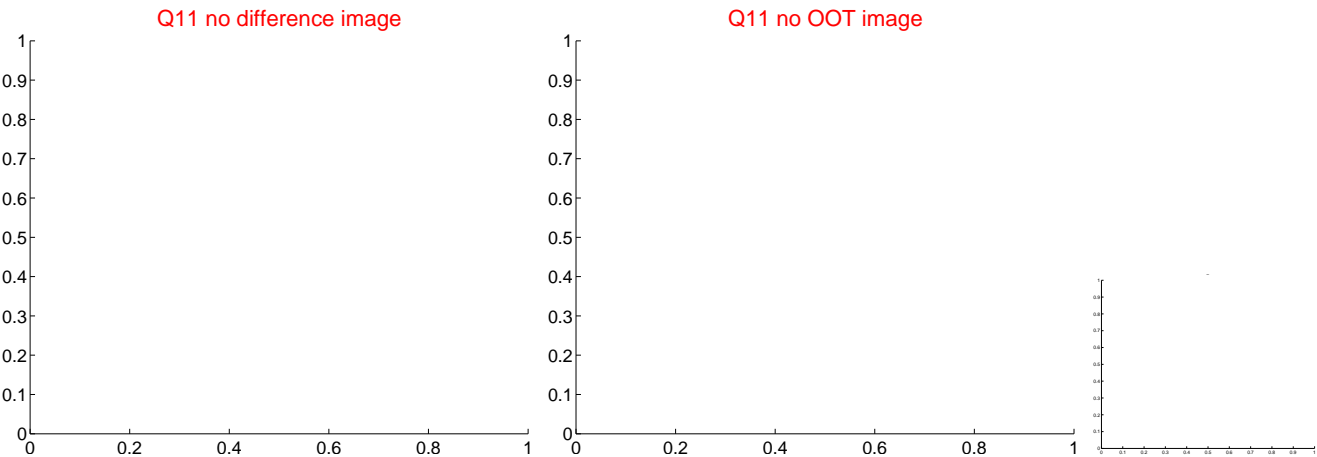
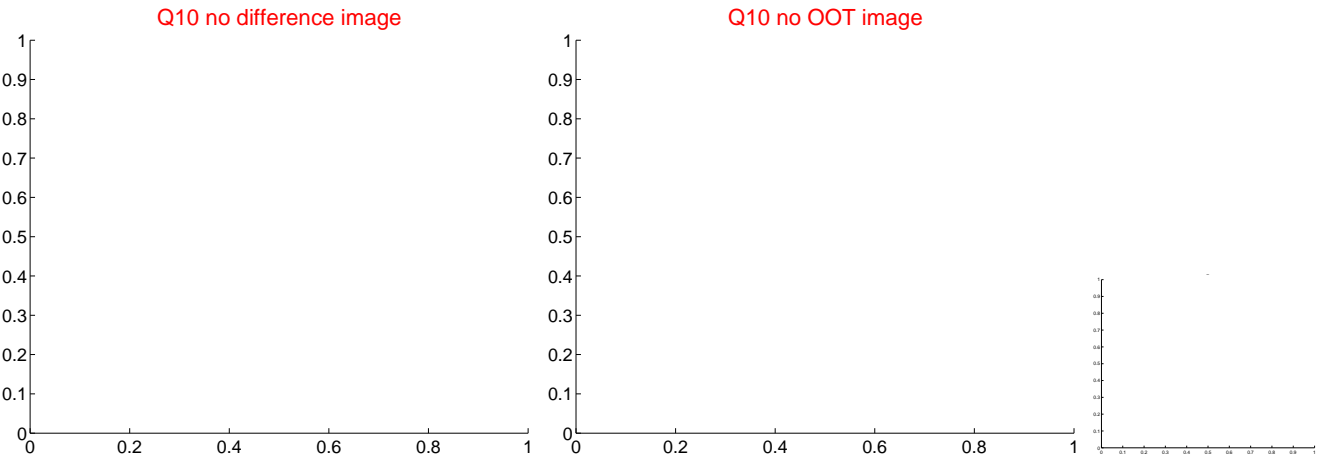
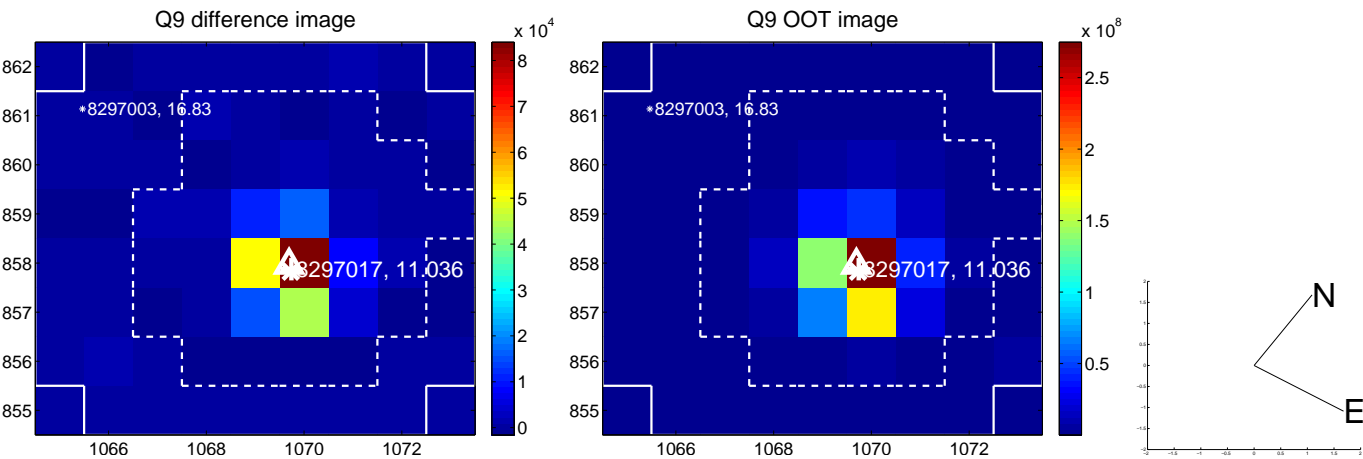
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



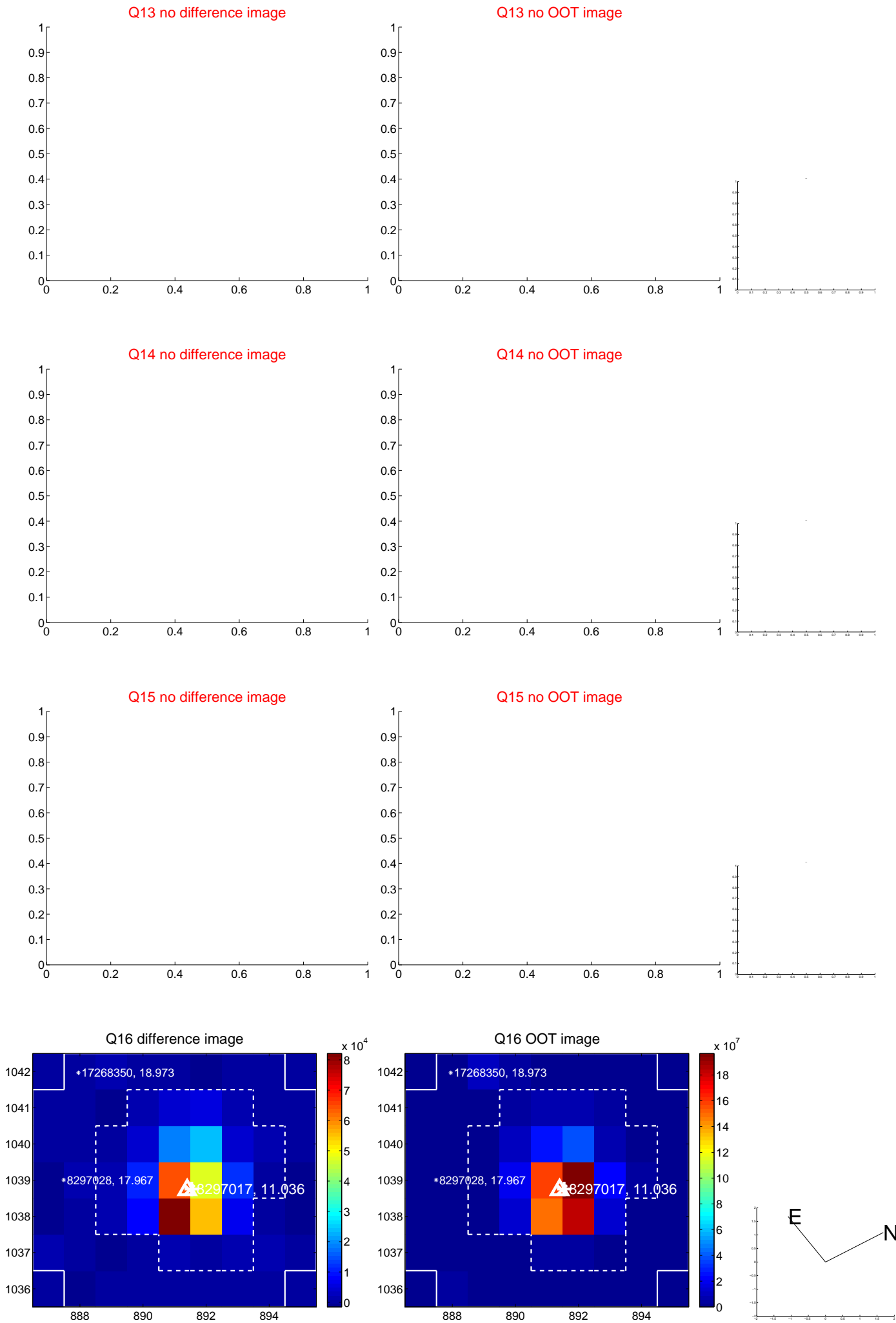
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



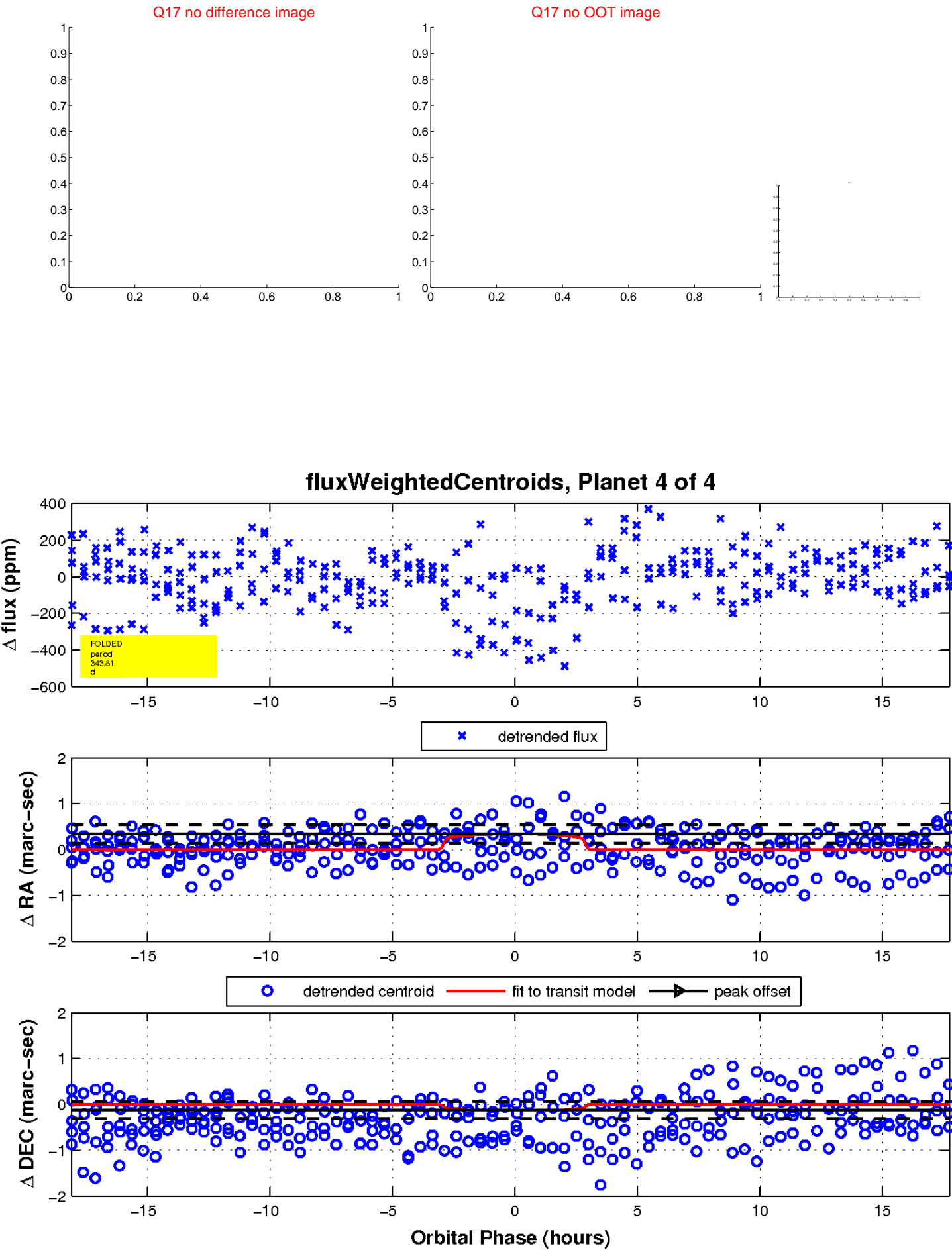
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

