

KIC 008265921

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008265921-01 | OBS | No | 0.779890 | 132.234680 | 14.6 | 5.385 | 8.5 | 6.3 | 1.18 | 6555 | 0.45 | 7400.10 |
| 008265921-02 | OBS | No | 49.460903 | 179.500848 | 404.3 | 2.064 | 11.0 | 7.9 | 1.18 | 6555 | 2.54 | 29.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008265921-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—LPP_ALT—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH |
| 008265921-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |

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.

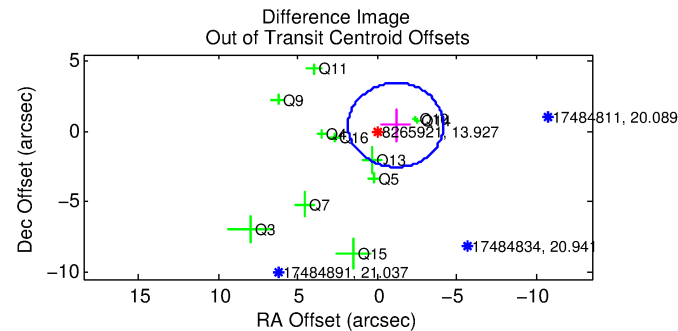
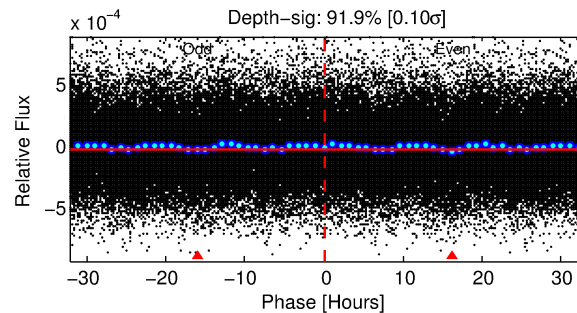
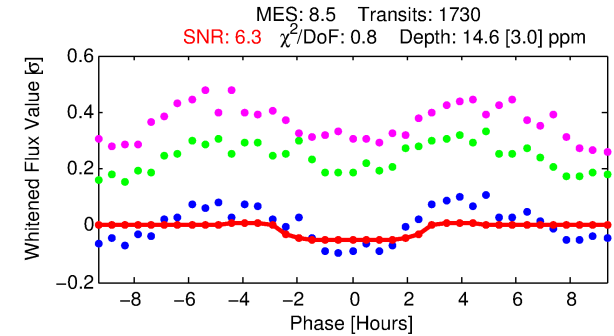
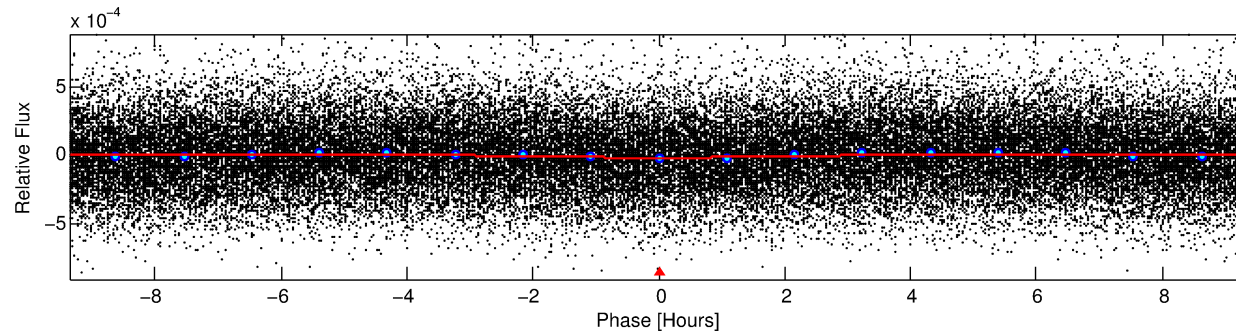
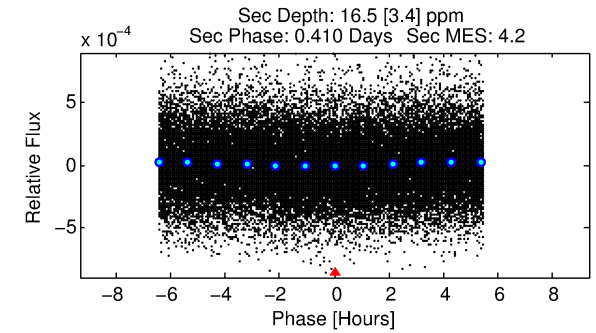
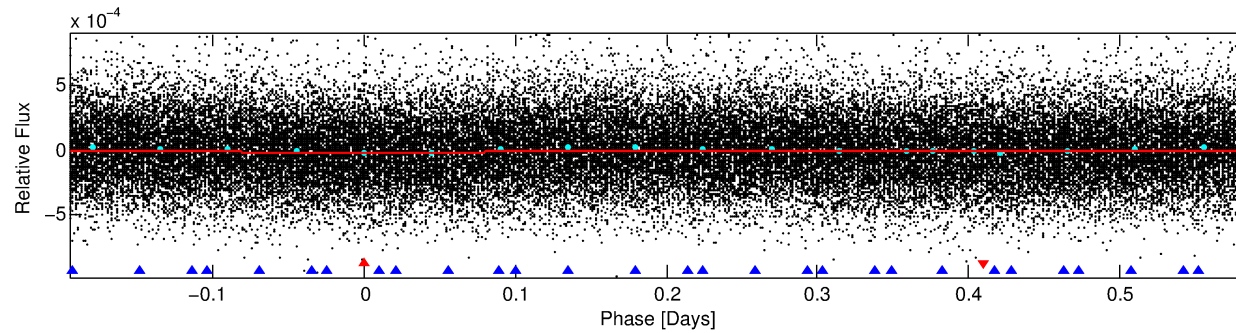
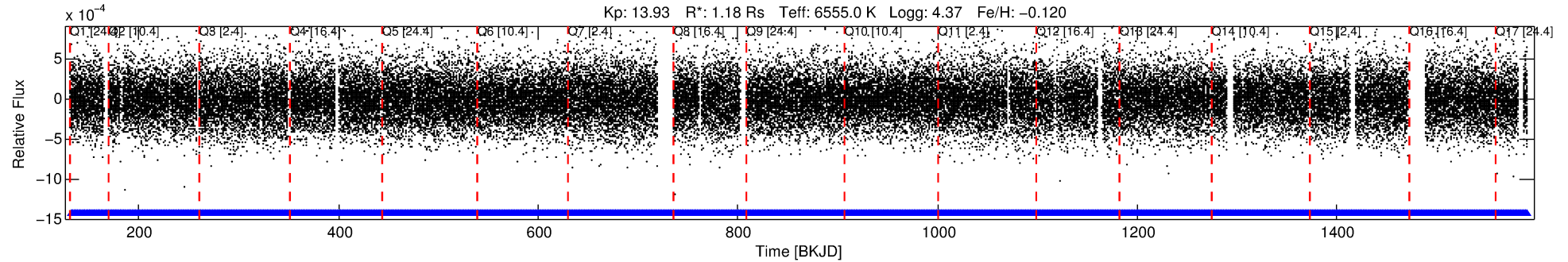
Ephemeris Match Information For 008265921-01

| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|---------|--------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 008265921-01 | 8265921 | 008265953-01 | 8265953 | 1:1 | 86.6 | 14 | -17 | 15.31 | 13.93 | 3.07 | Direct-PRF | 1 | 2.54 | 2.06 |

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8265921 Candidate: 1 of 2 Period: 0.780 d



DV Fit Results:

Period = 0.77989 [0.00002] d
Epoch = 132.2347 [0.0085] BKJD
Rp/R* = 0.0035 [0.0063]
a/R* = 1.27 [4.61]
b = 0.15 [62.87]
Seff = 7400.10 [2998.45]
Teq = 2365 [240] K
Rp = 0.45 [0.82] Re
a = 0.0176 [0.0048] AU
Ag = 13.72 [49.23] [0.26σ]
Teffp = 7037 [6283] K [0.74σ]

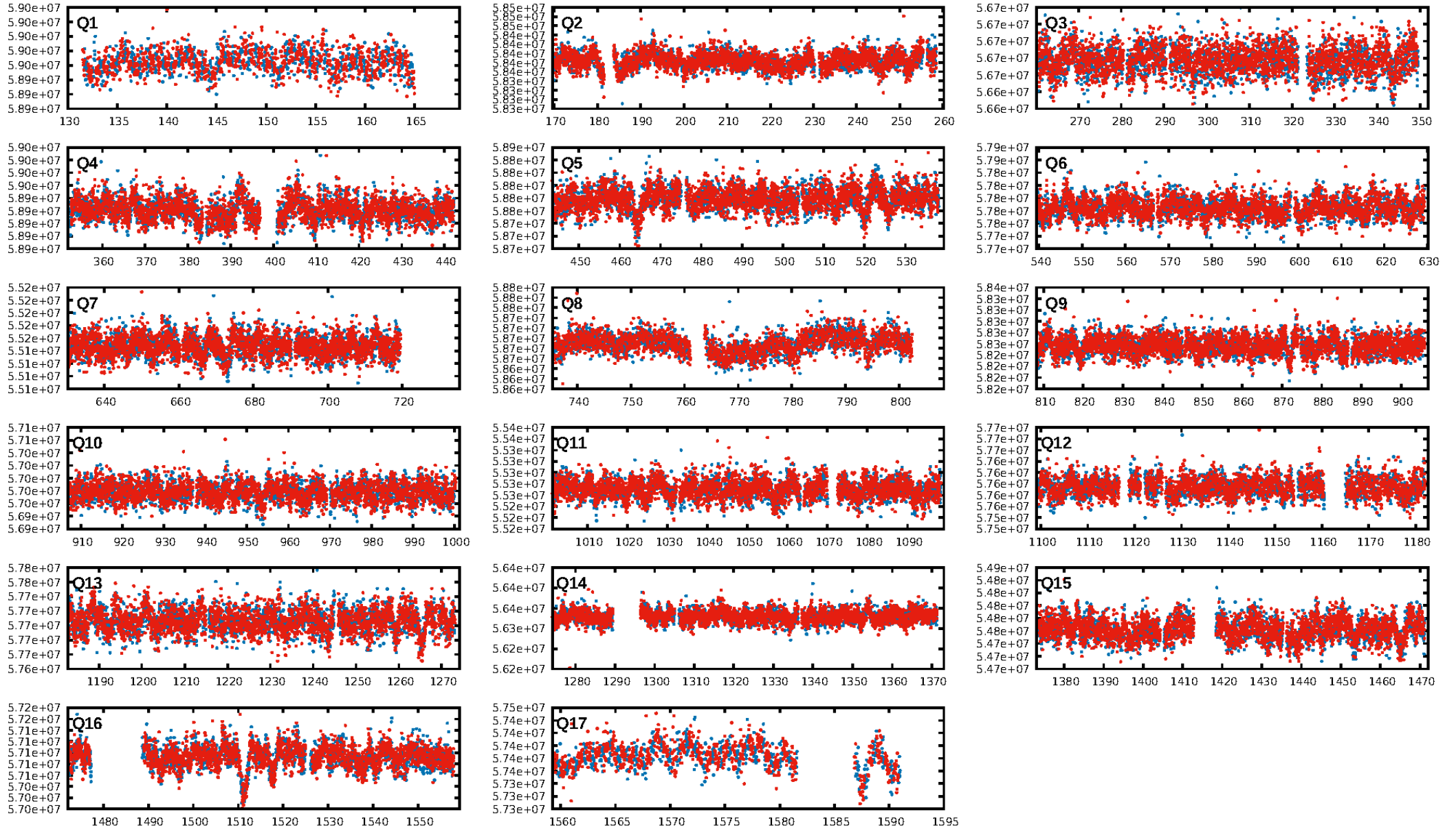
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [202.59σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.37e-07
RollingBand-fgt: 1.00 [1651/1651]
GhostDiagnostic-chr: 0.009487
Centroid-sig: 0.0%
Centroid-so: 8.438 arcsec [4.15σ]
OotOffset-rm: 1.239 arcsec [1.24σ]
KicOffset-rm: 1.264 arcsec [1.22σ]
OotOffset-st: 2/4/2/3 [11]
KicOffset-st: 2/4/2/3 [11]
DiffImageQuality-fgm: 0.18 [2/11]
DiffImageOverlap-fno: 1.00 [17/17]

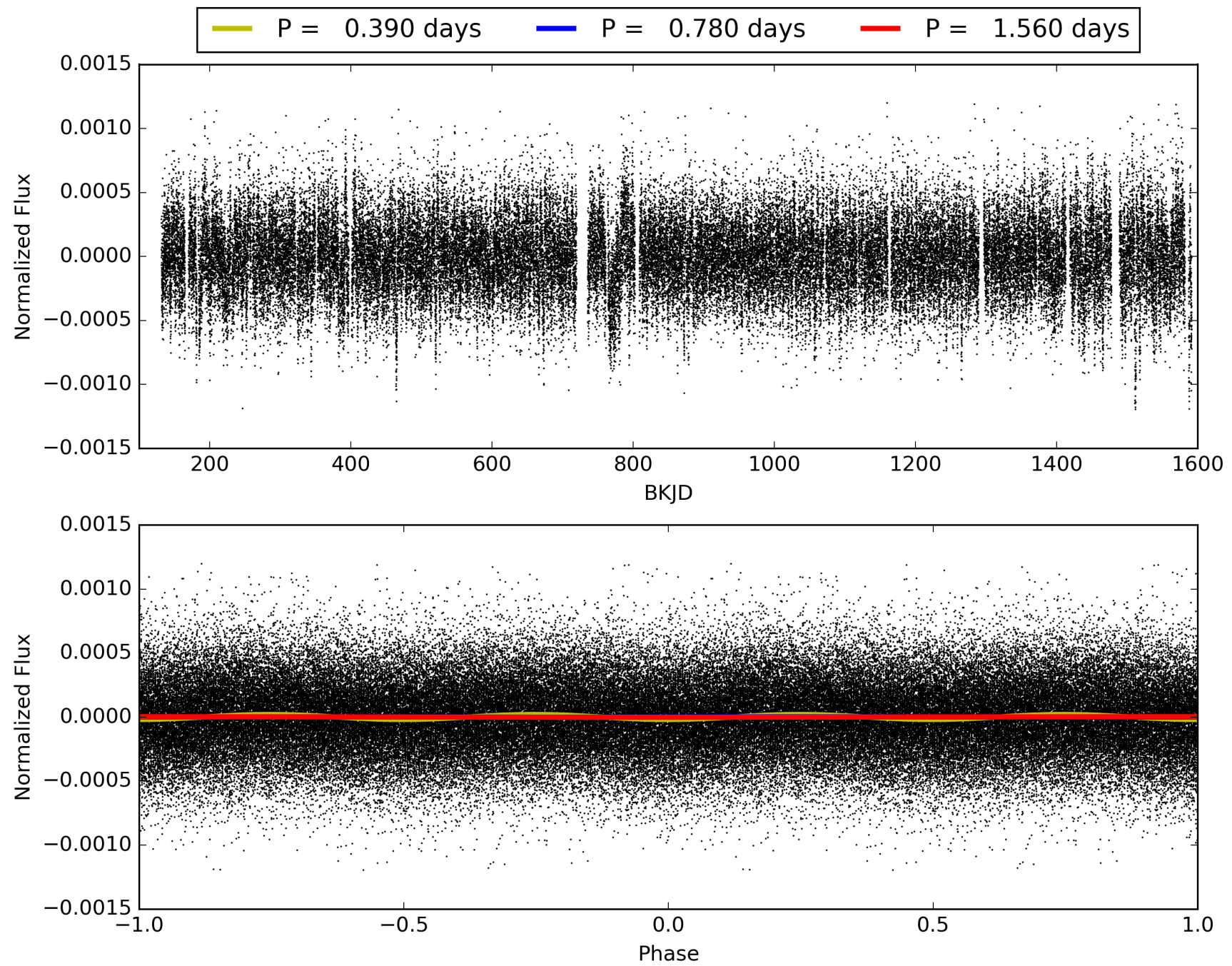
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:01:27 Z

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

TCE 008265921-01, PDC Light Curves

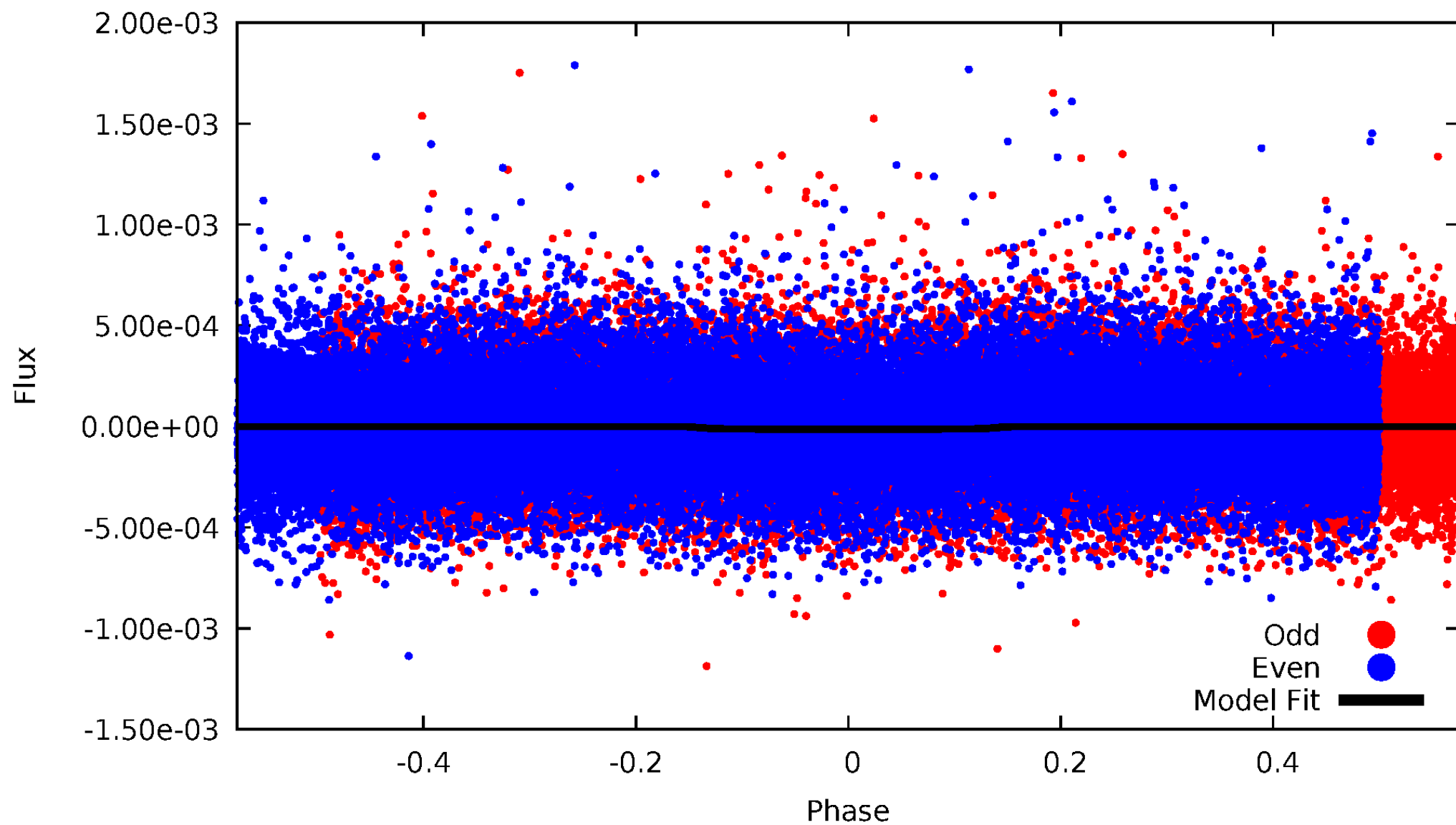


TCE 008265921-01



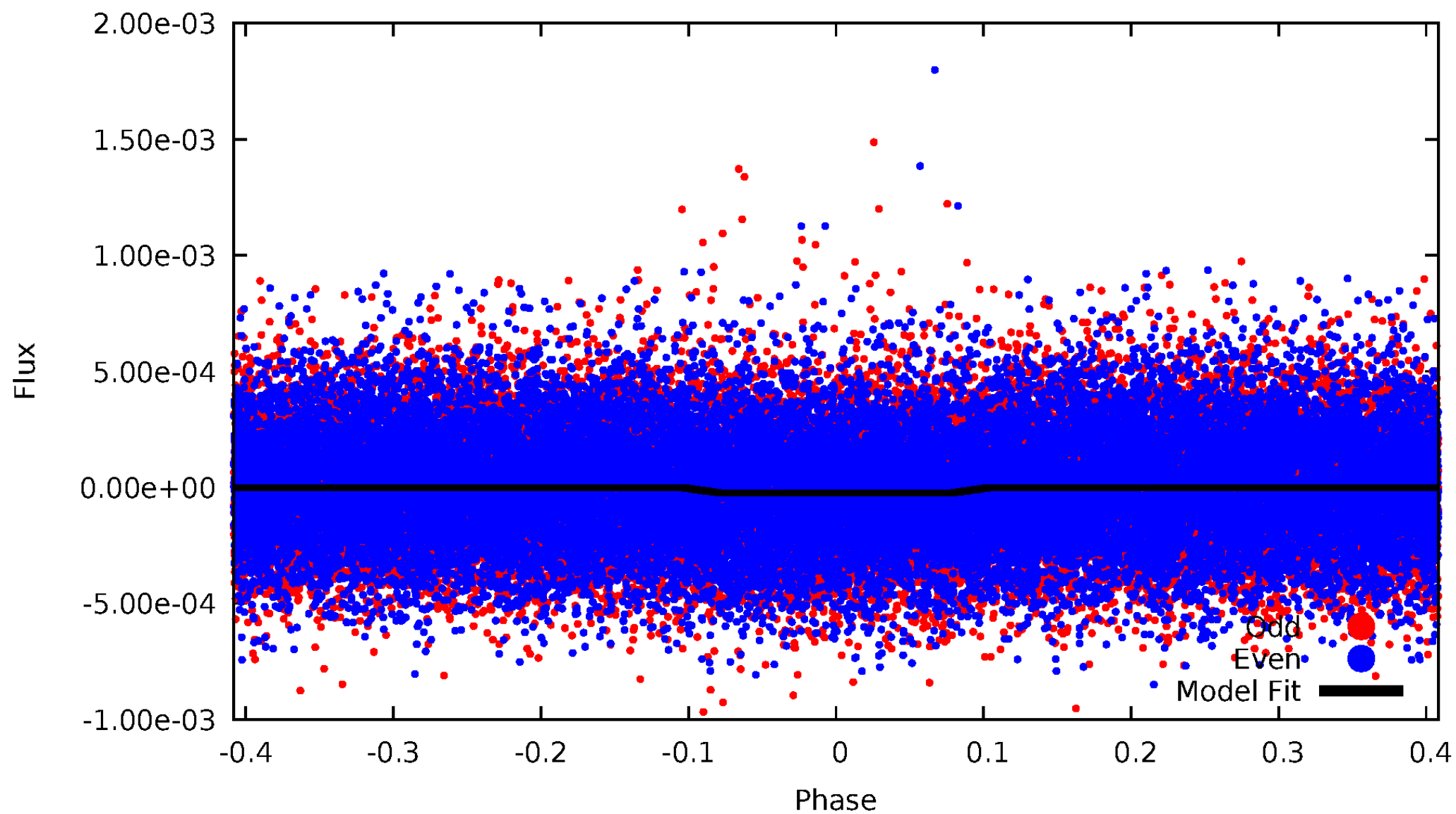
DV Odd/Even

TCE 008265921-01



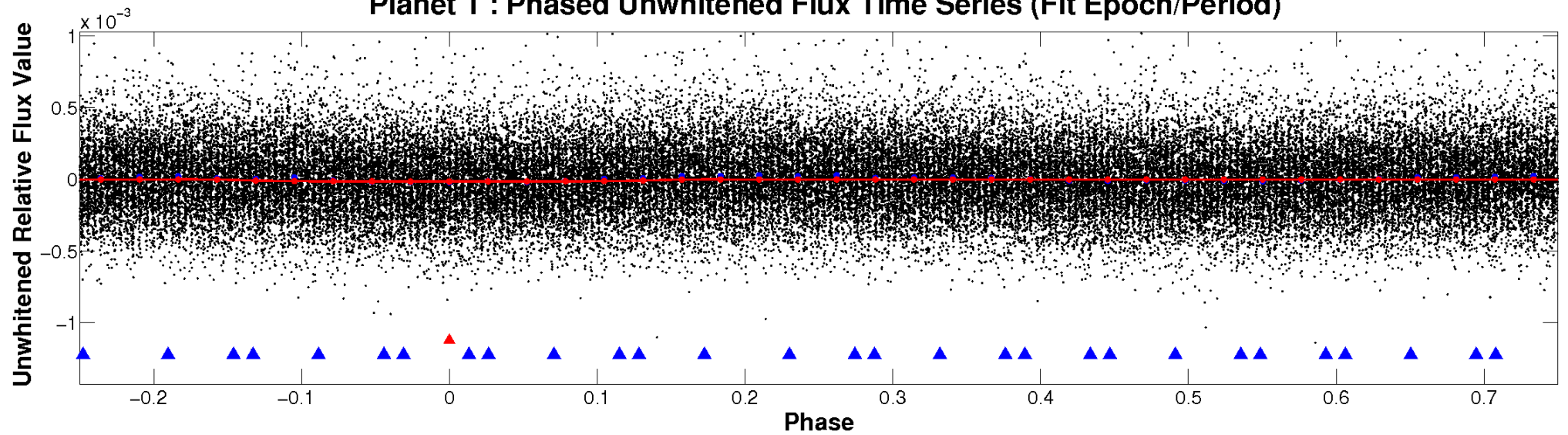
ALT Odd/Even

TCE 008265921-01

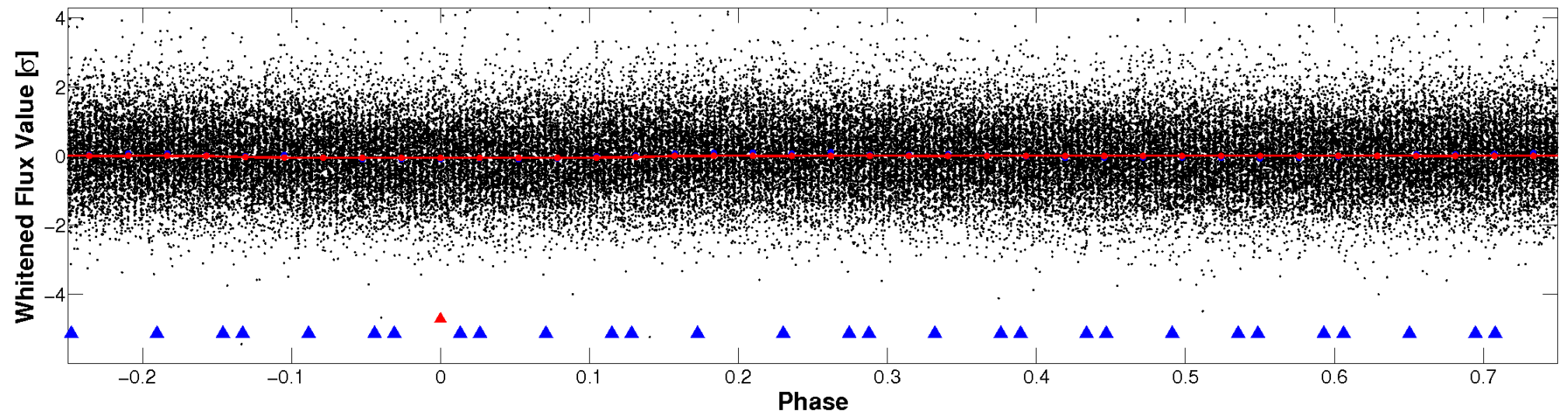


Non-Whitened Vs. Whitened Light Curve

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

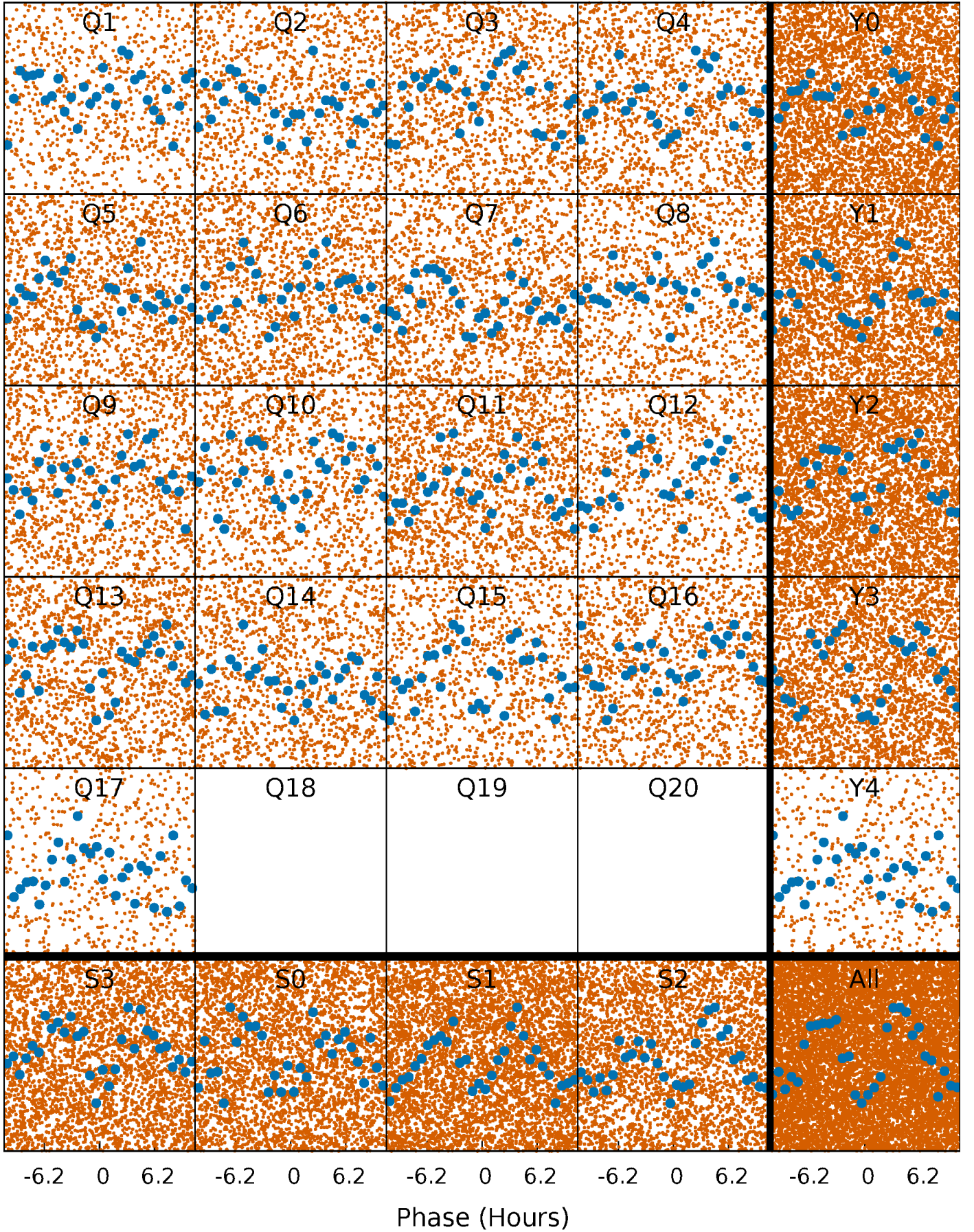


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



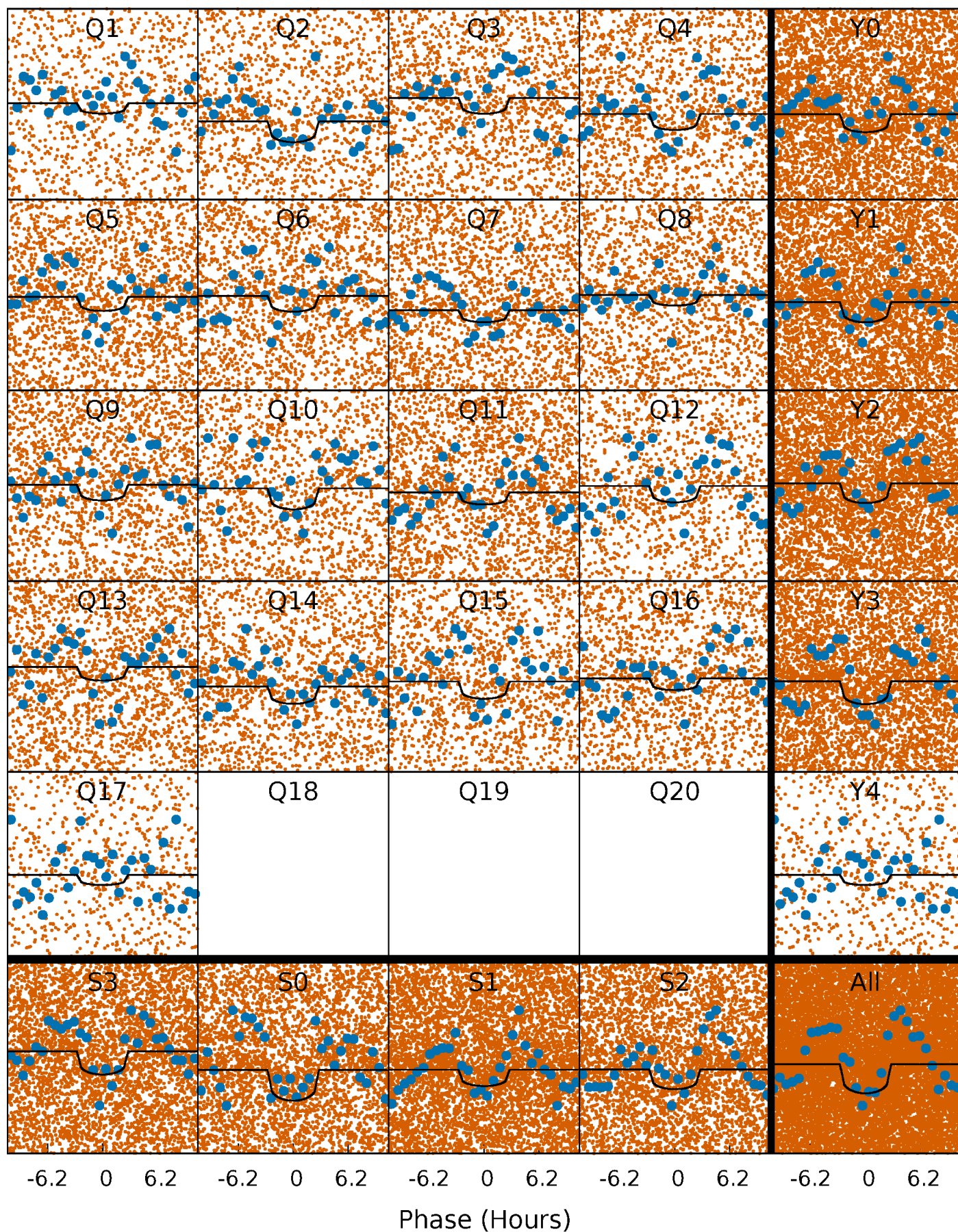
PDC Quarter-Phased Transit Curves

TCE 008265921-01 P= 0.779890 Days $T_0=132.234680$ (BKJD)



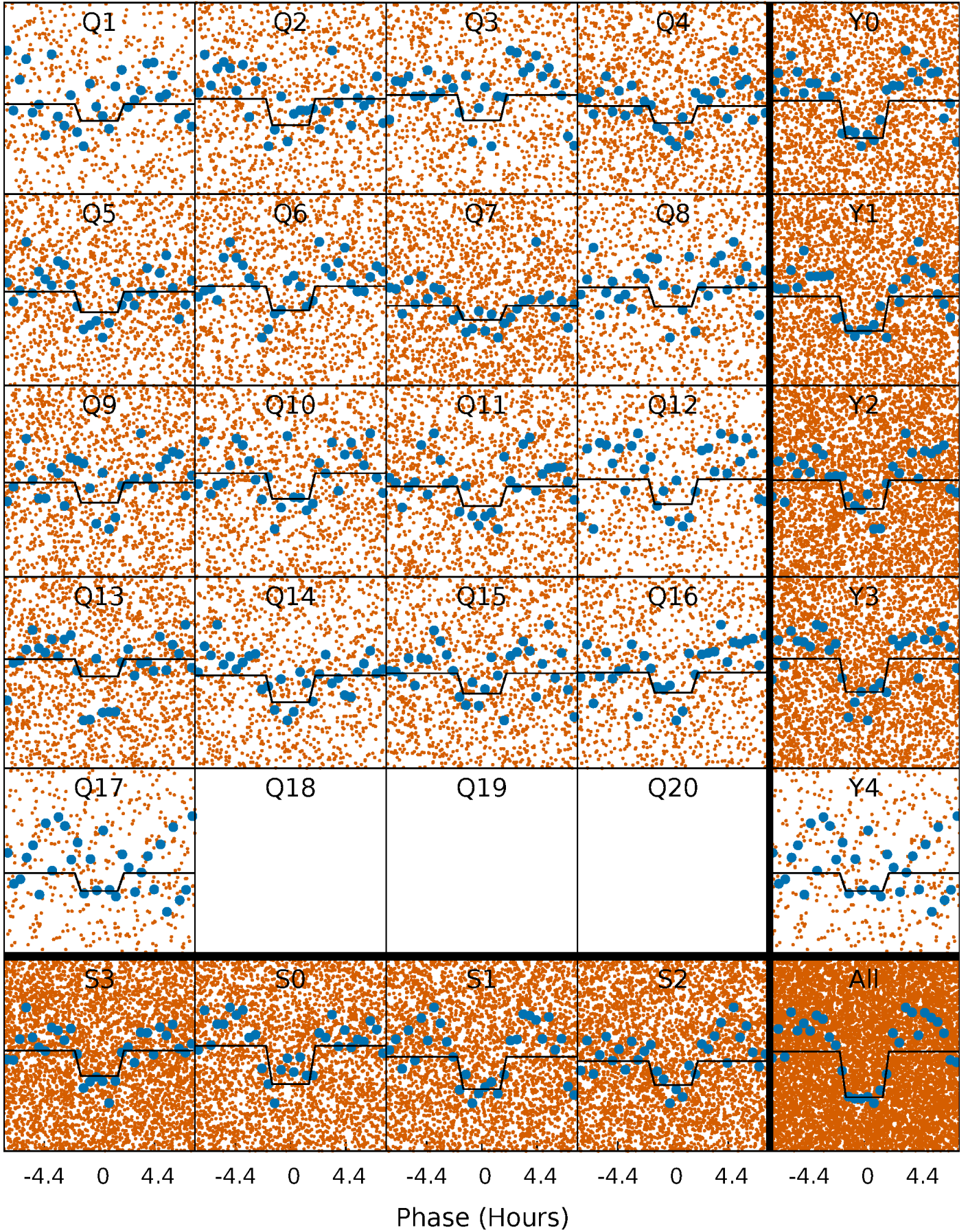
DV Quarter-Phased Transit Curves

TCE 008265921-01 P= 0.779890 Days $T_0=132.234680$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

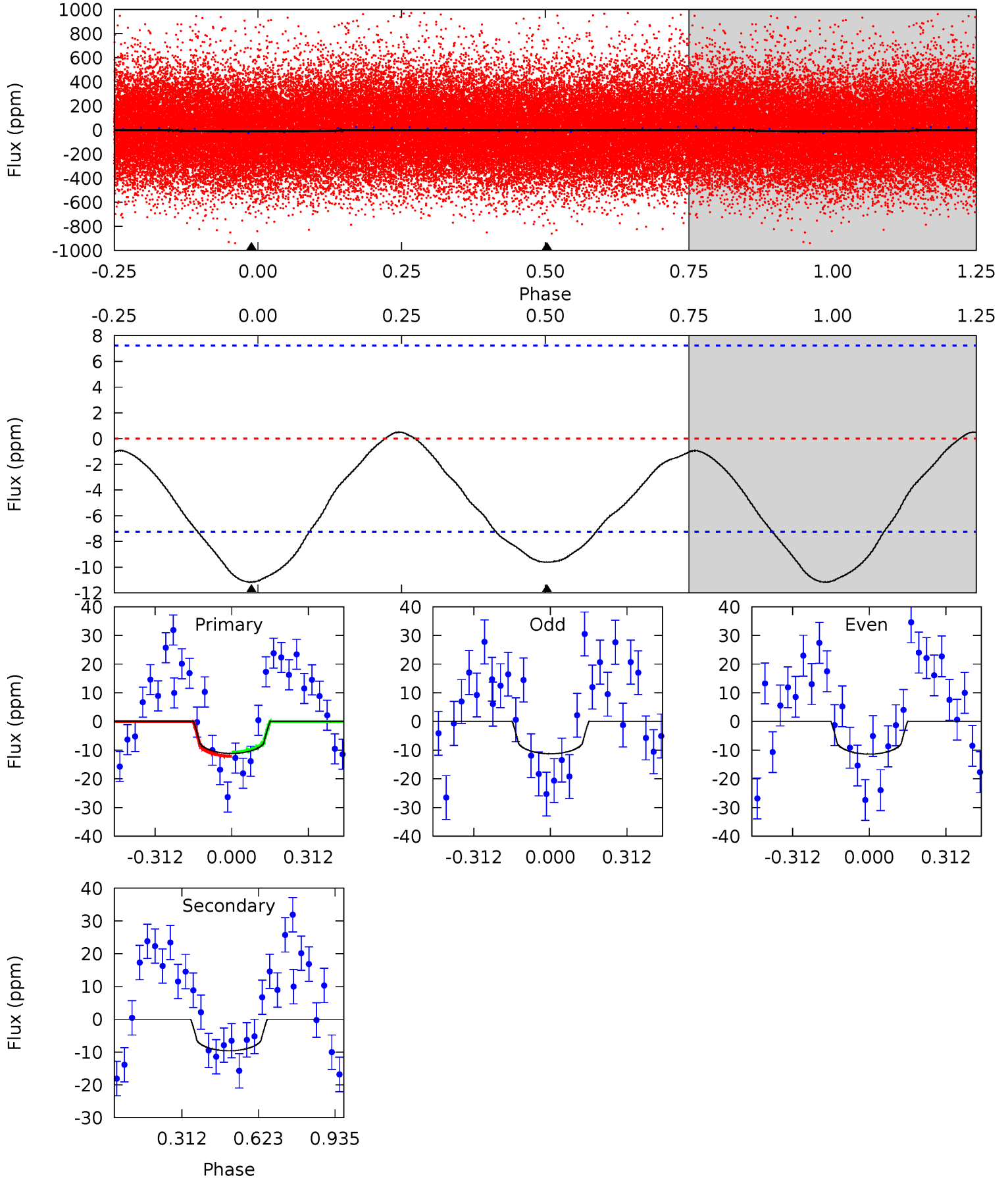
TCE 008265921-01 P= 0.779936 Days $T_0=132.190257$ (BKJD)



DV Model-Shift Uniqueness Test

008265921-01, P = 0.779890 Days, E = 131.454790 Days

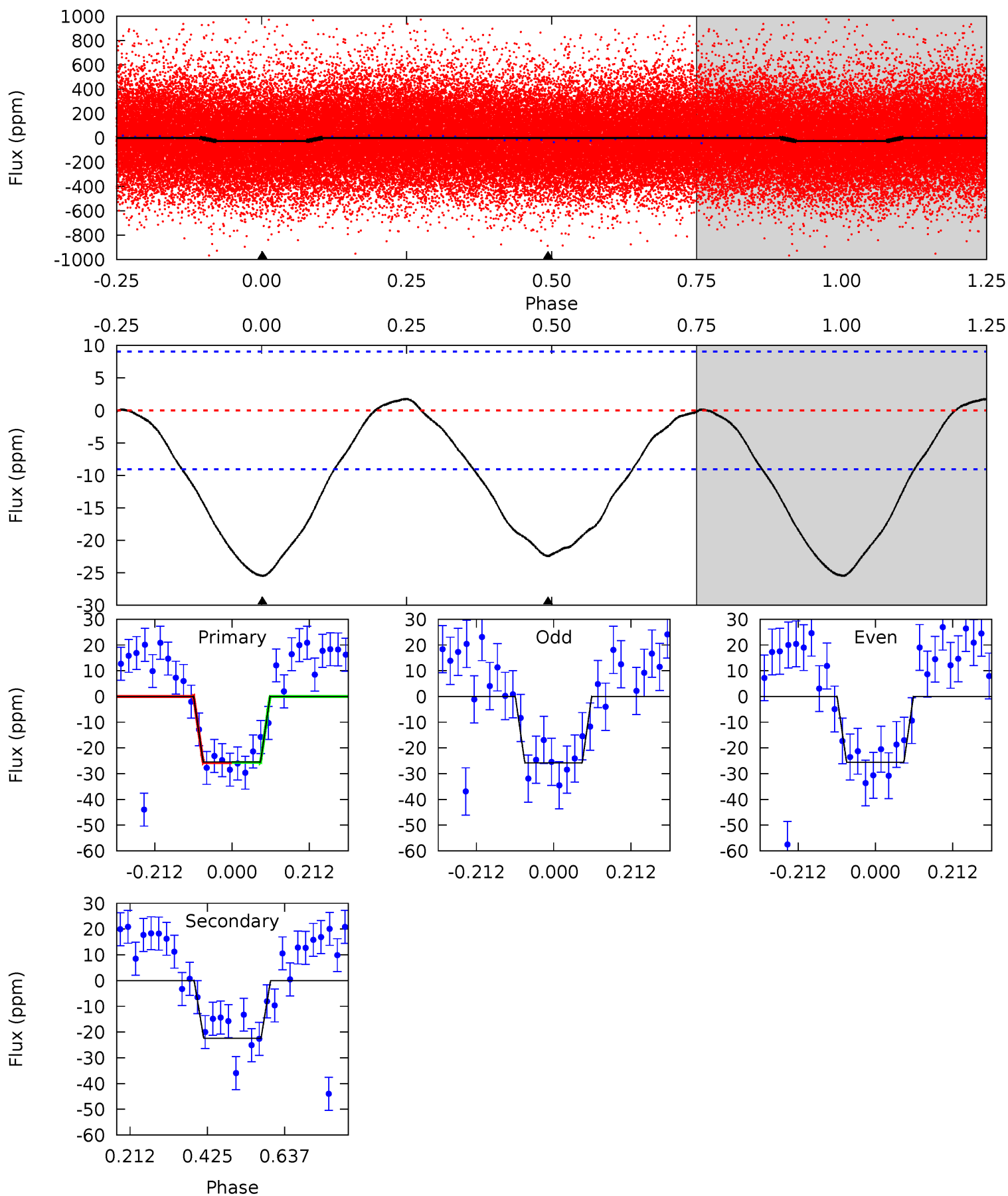
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.66 | 5.74 | 0 | 0 | 4.32 | 1.01 | 0.42 | 6.66 | 6.66 | 5.74 | 5.74 | 0.03 | 0.86 | 0.04 | 0.44 |



Alt Model-Shift Uniqueness Test

008265921-01, P = 0.779936 Days, E = 131.410321 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 | 10.9 | 0 | 0 | 4.40 | 1.25 | 0.48 | 12.4 | 12.4 | 10.9 | 10.9 | 0.06 | 0.94 | 0.06 | 0.02 |



Stellar Parameters For KIC 008265921

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6555^{+159}_{-219} | $4.374^{+0.068}_{-0.203}$ | $-0.120^{+0.250}_{-0.300}$ | $1.178^{+0.392}_{-0.131}$ | $1.200^{+0.187}_{-0.153}$ | $1.033^{+0.301}_{-0.550}$ |
| | +2%/-3% | +2%/-5% | +208%/-250% | +33%/-11% | +16%/-13% | +29%/-53% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 008265921-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -10 ± 2 | $0.75^{+0.69}_{-0.51}$ | 3353^{+243}_{-160} | 4794^{+4101}_{-1241} | $2.743^{+22.279}_{-1.982}$ |
| Alt. | -22 ± 2 | $0.92^{+0.79}_{-0.61}$ | 3357^{+243}_{-167} | 5414^{+4749}_{-1343} | $4.619^{+34.005}_{-3.306}$ |

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 $A_{obs} \gg 1.0$

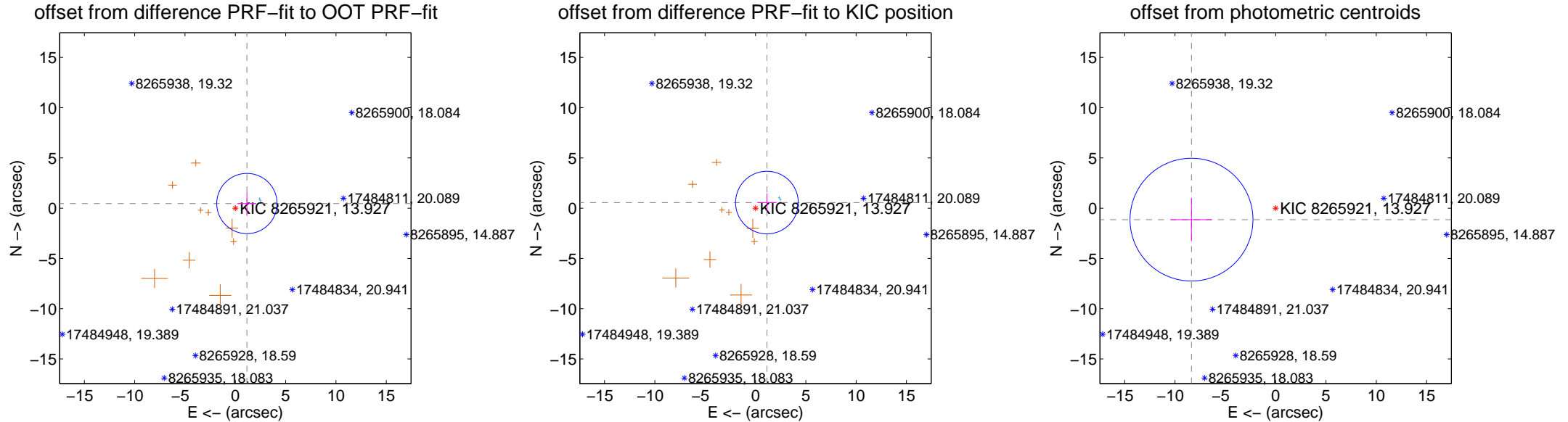
DV Centroid Data

Supplemental centroid analysis for 008265921-01. Kepler magnitude: 13.93. Transit SNR 6.30

There are 2 quarters with good PRF difference image offsets

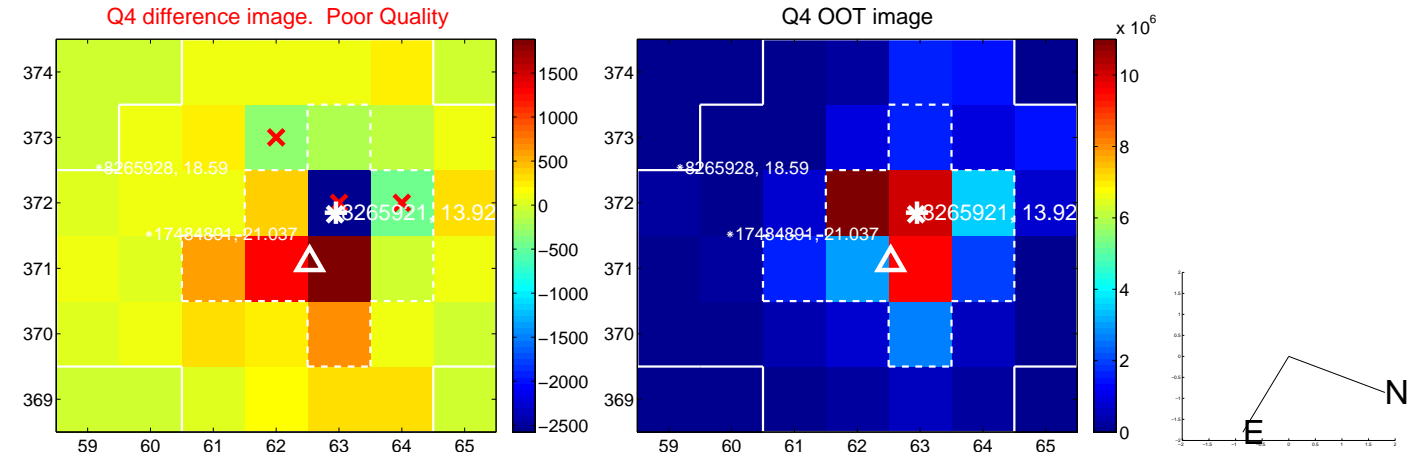
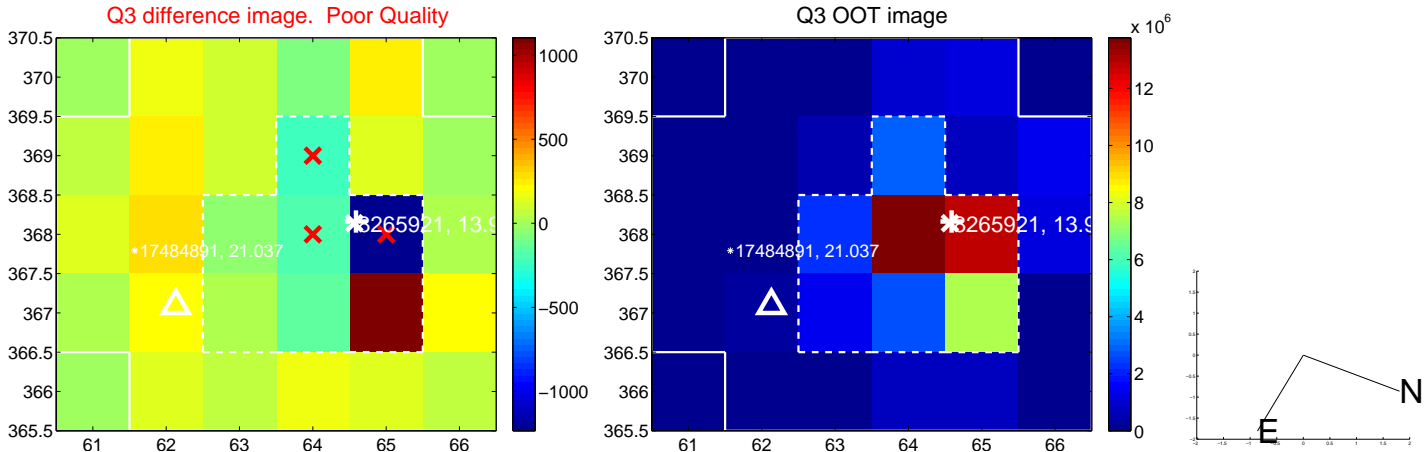
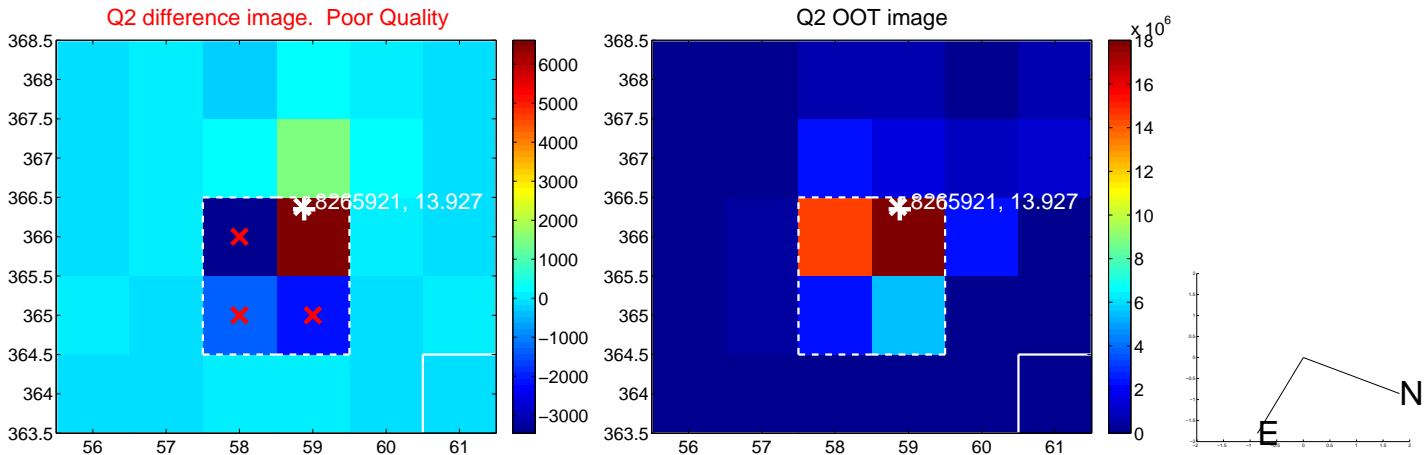
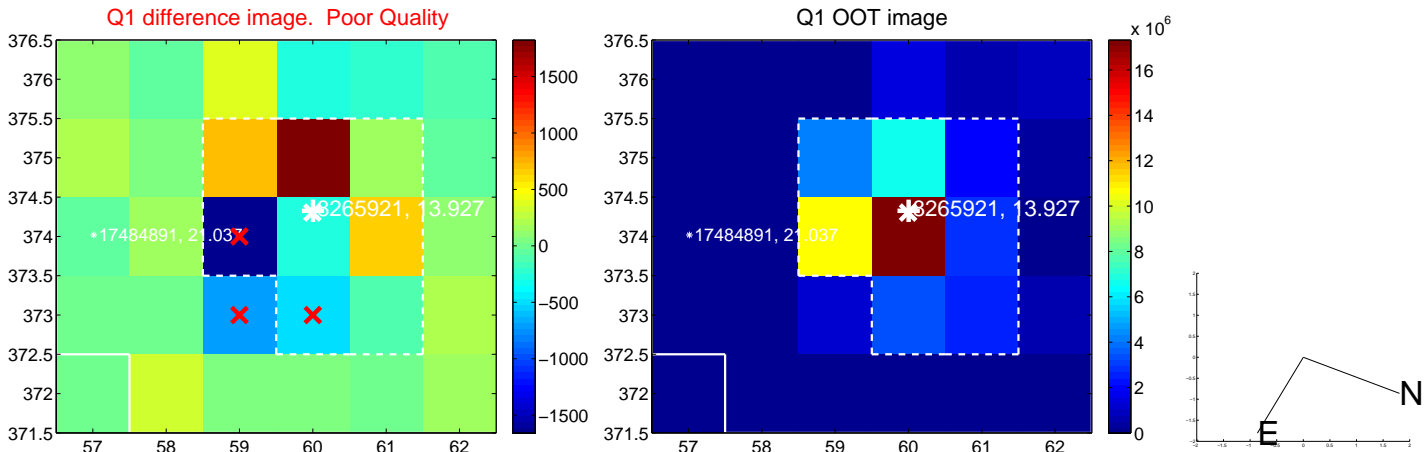
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 1.239 ± 0.999 | 1.24 | -1.150 ± 0.926 | 0.462 ± 1.118 |
| PRF-fit source offset from KIC position | 1.264 ± 1.038 | 1.22 | -1.135 ± 0.947 | 0.556 ± 0.922 |
| photometric centroid source offset | 8.44 ± 2.04 | 4.15 | 8.36 ± 2.03 | -1.14 ± 2.15 |

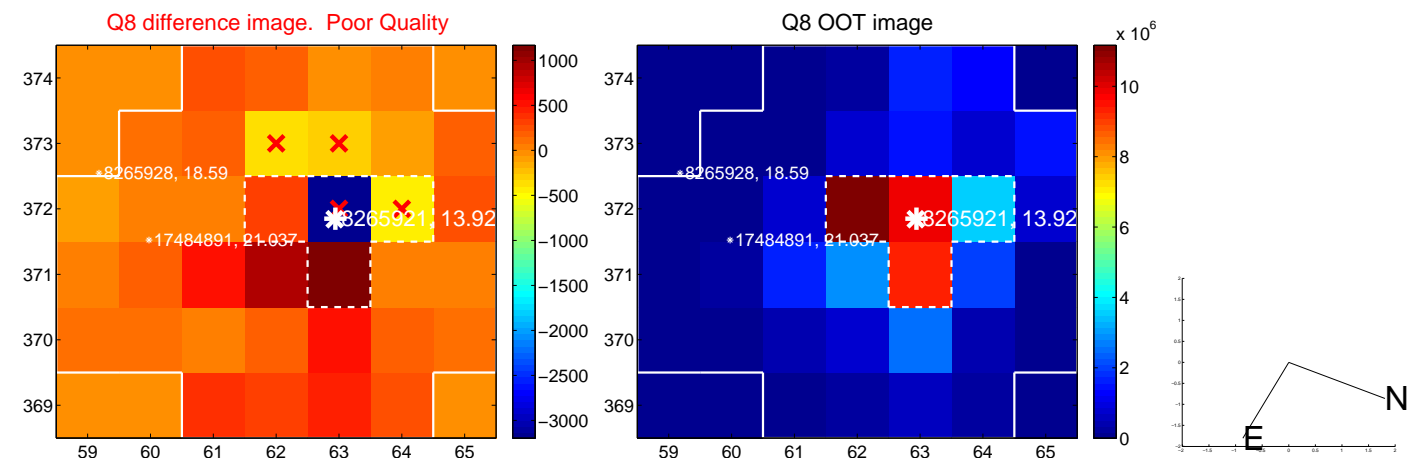
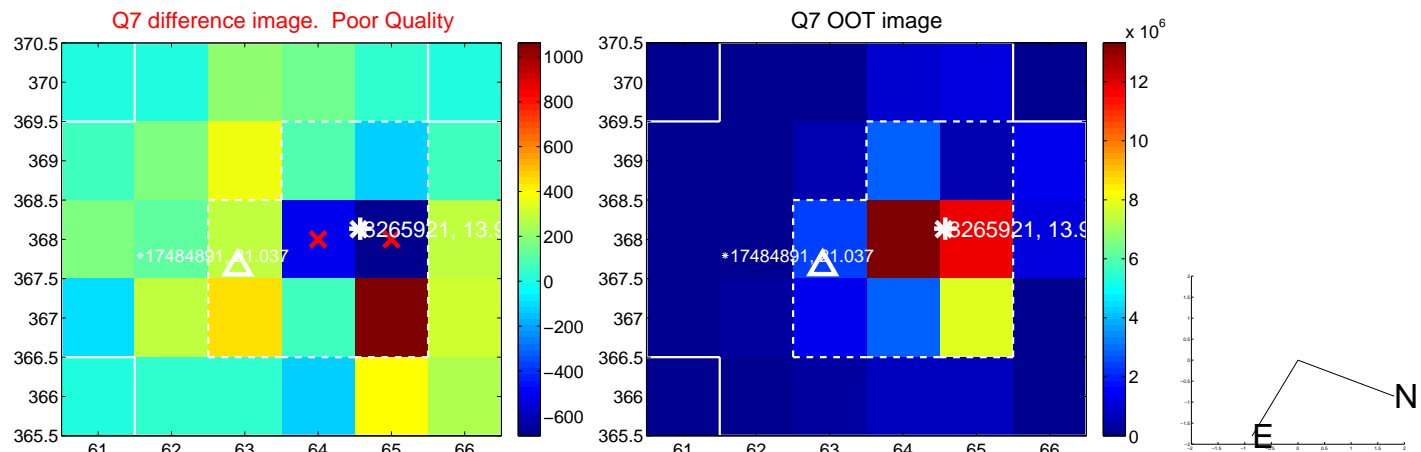
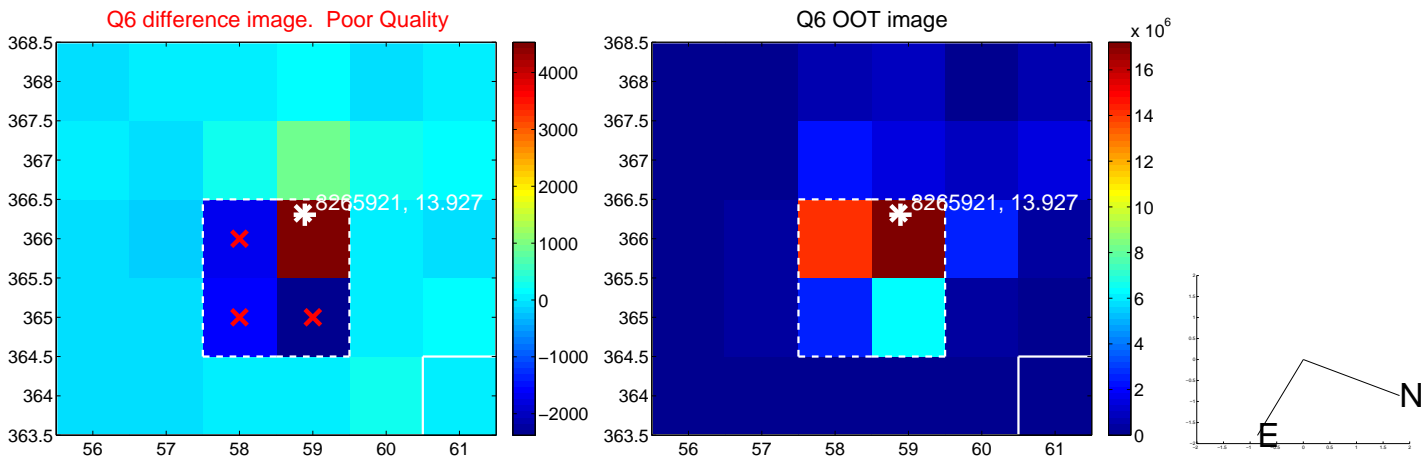
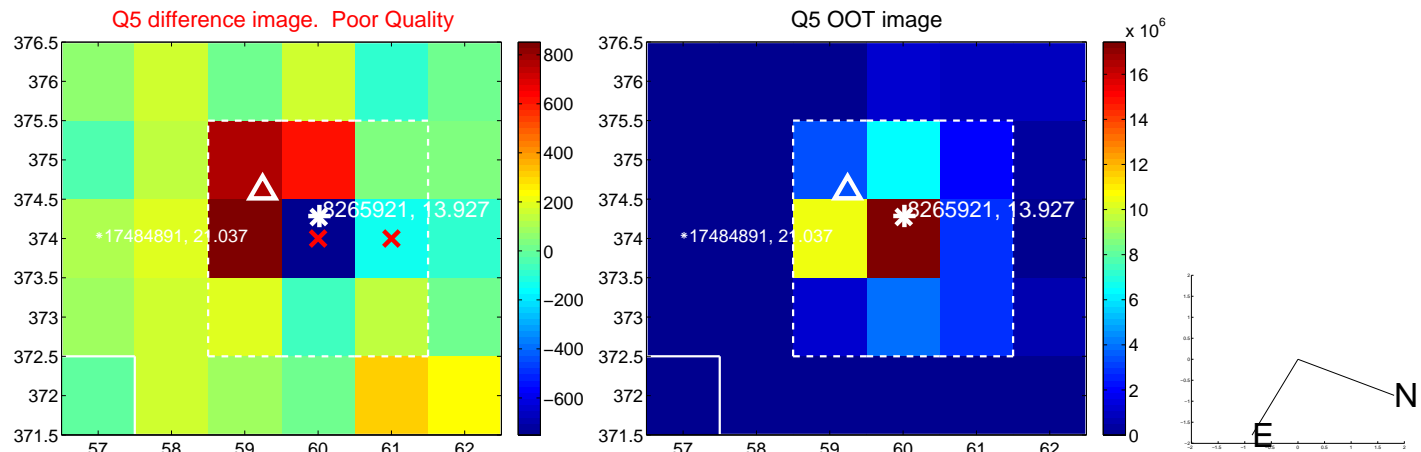


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

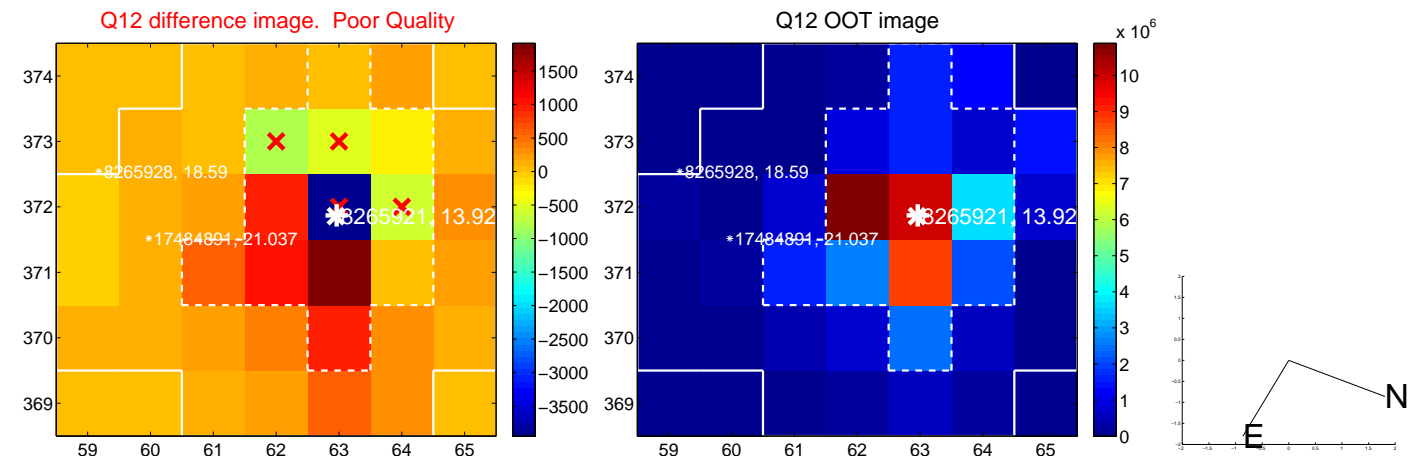
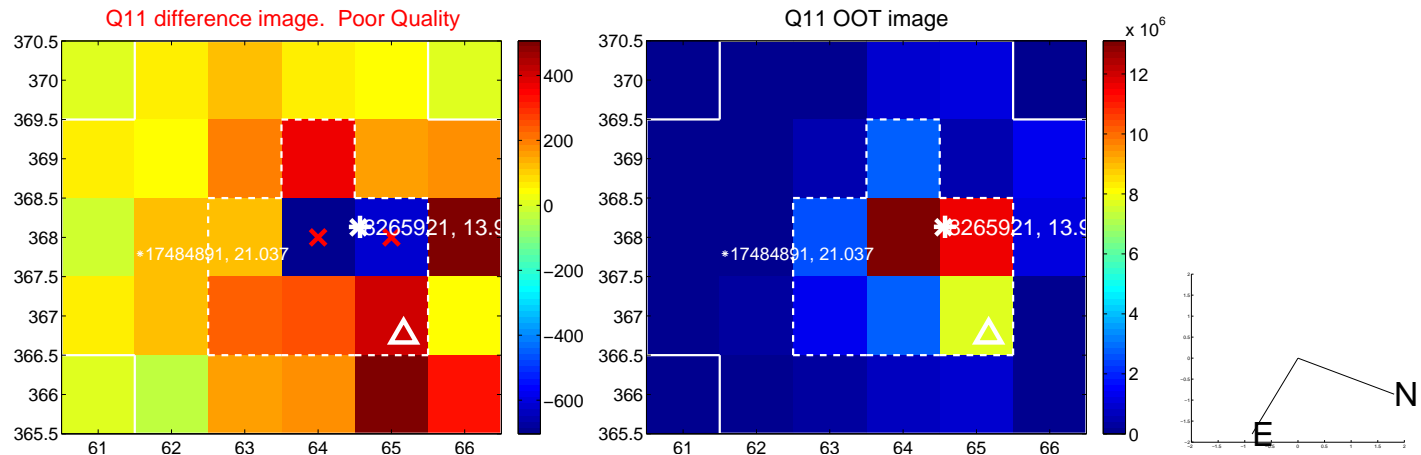
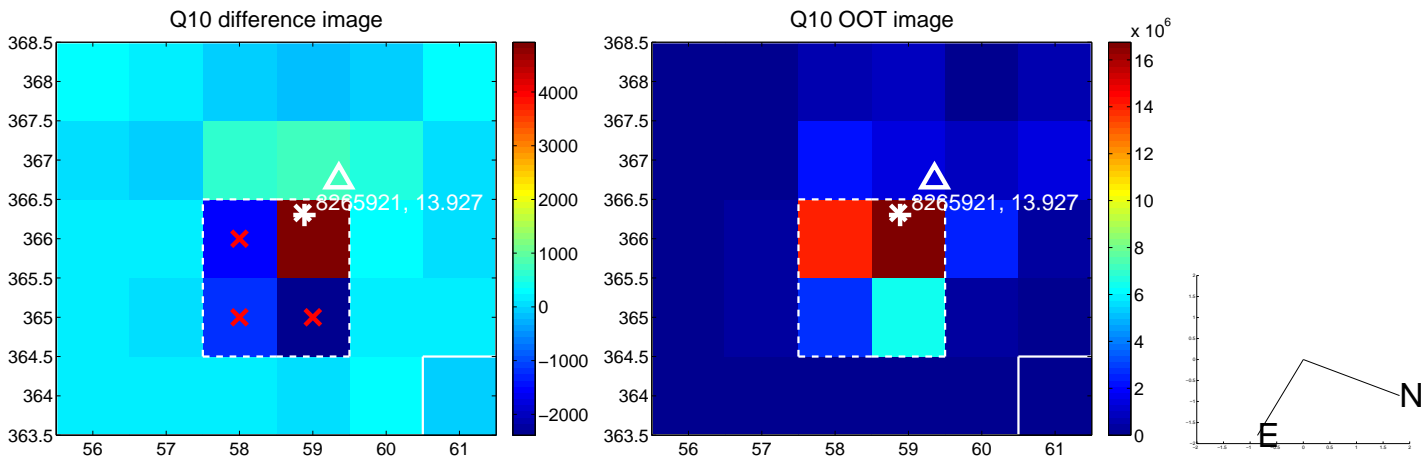
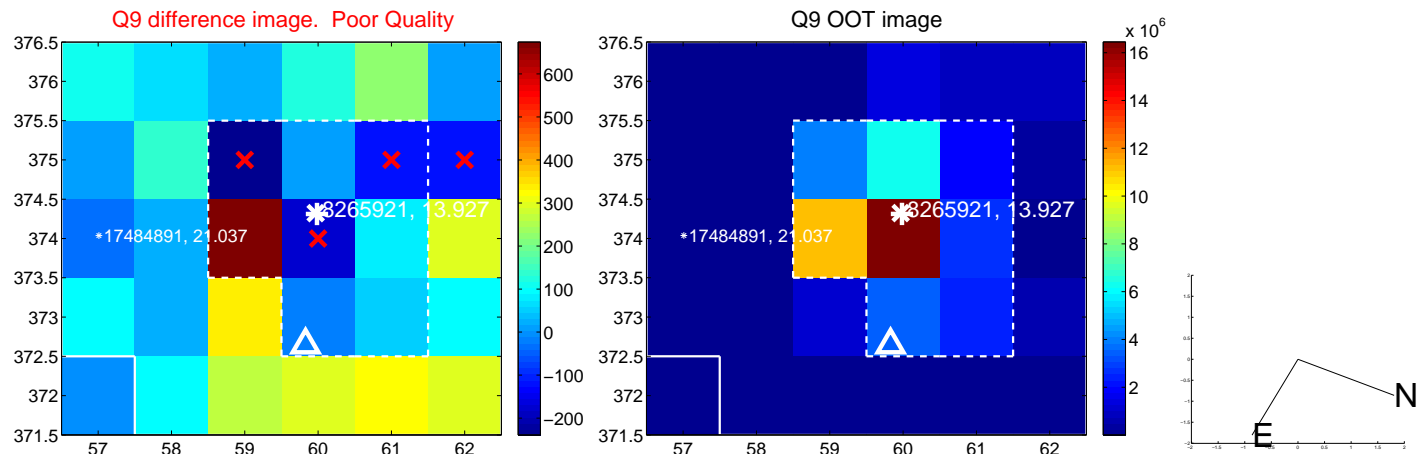
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



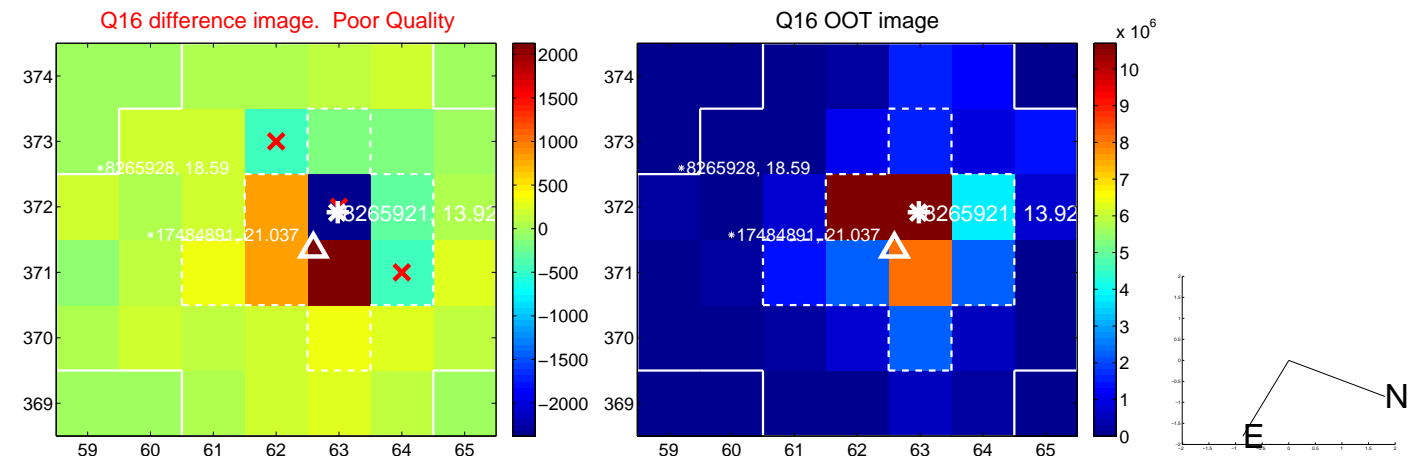
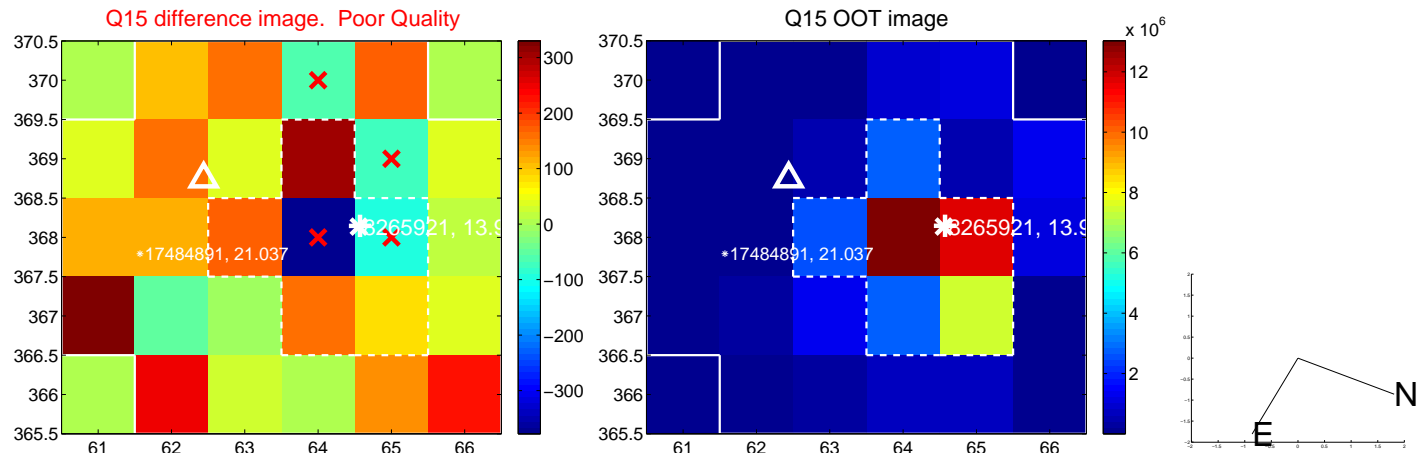
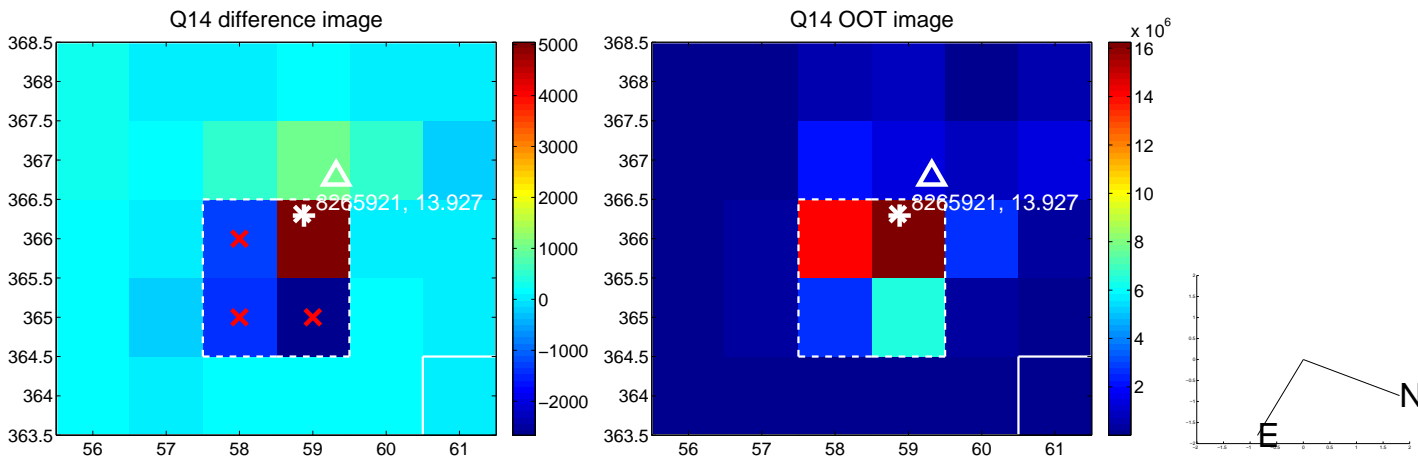
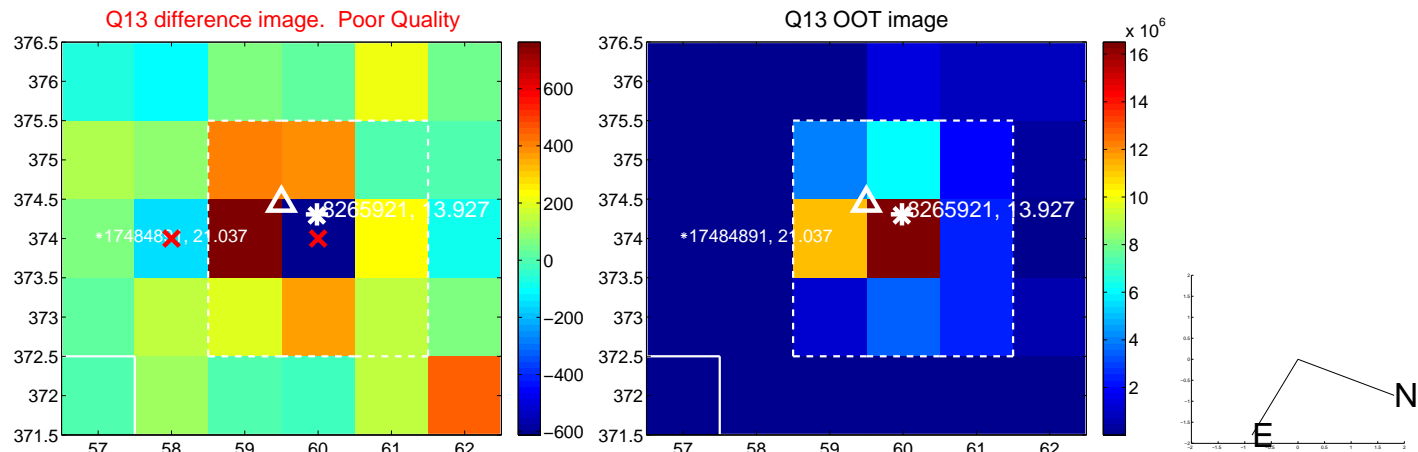
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



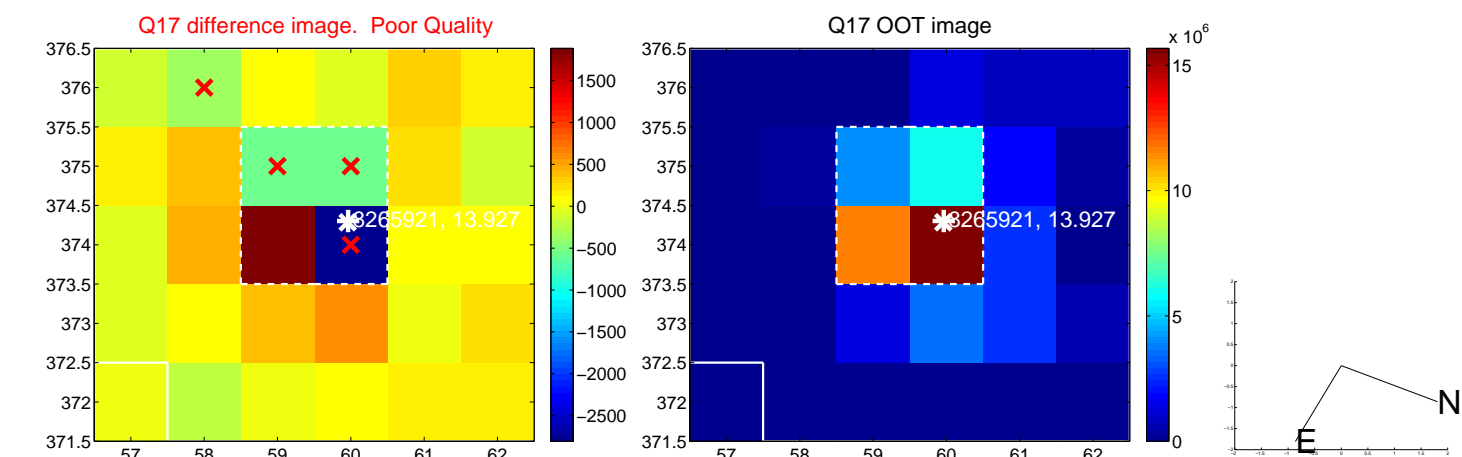
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



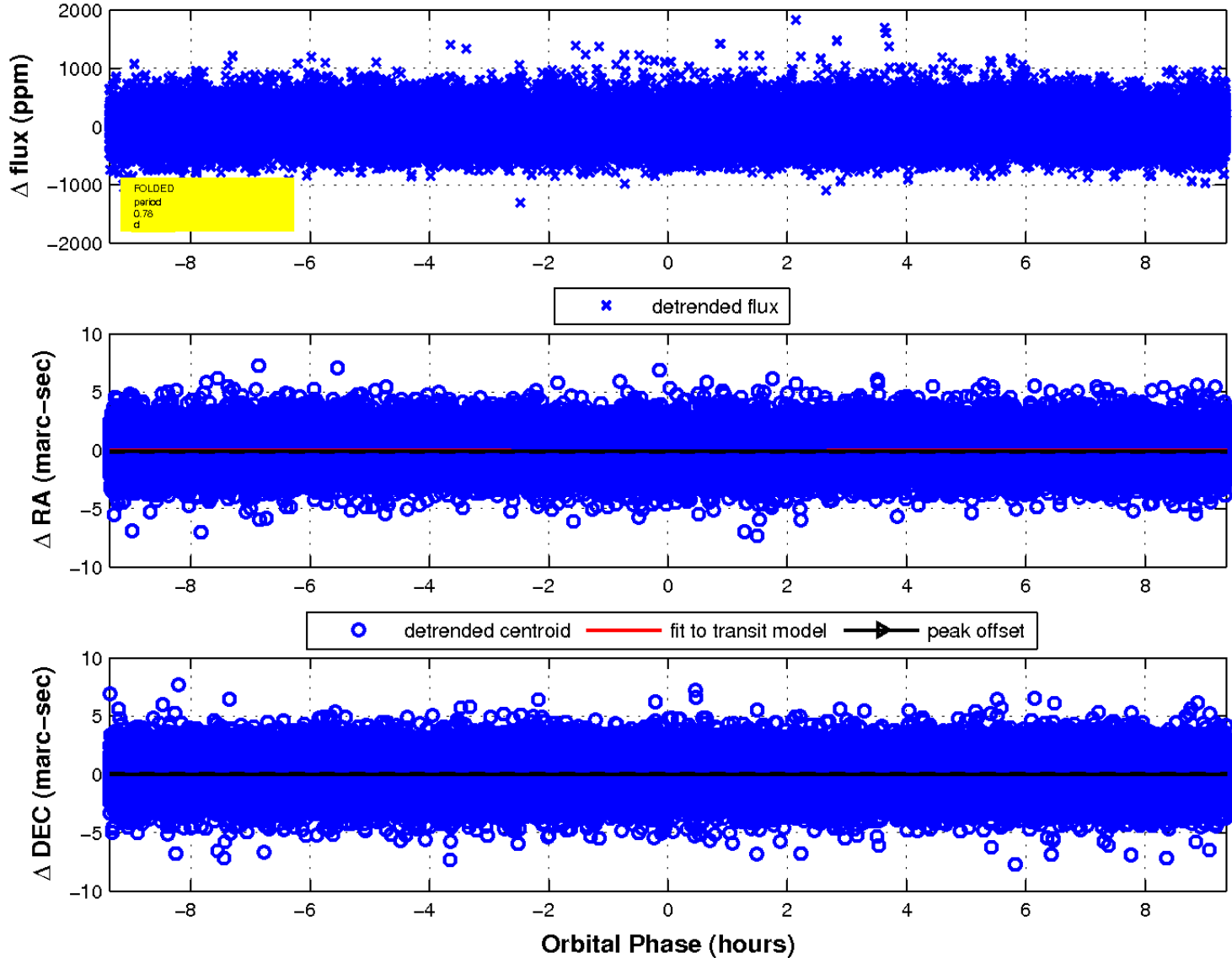
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

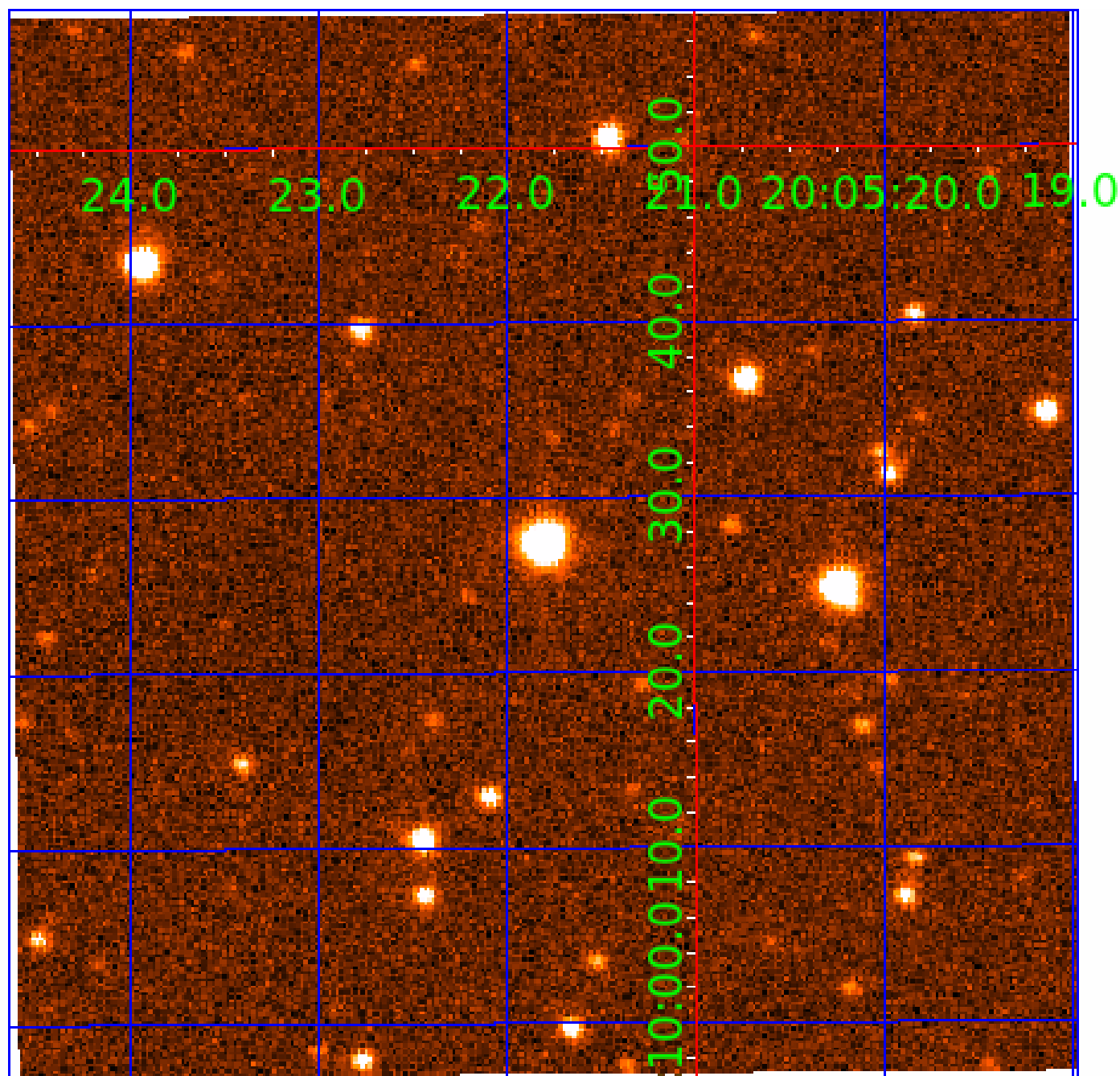


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008265921

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008265921-01 | OBS | No | 0.779890 | 132.234680 | 14.6 | 5.385 | 8.5 | 6.3 | 1.18 | 6555 | 0.45 | 7400.10 |
| 008265921-02 | OBS | No | 49.460903 | 179.500848 | 404.3 | 2.064 | 11.0 | 7.9 | 1.18 | 6555 | 2.54 | 29.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008265921-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—LPP_ALT—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH |
| 008265921-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |

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

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

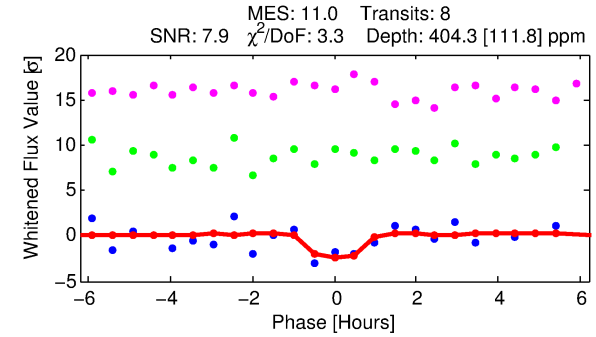
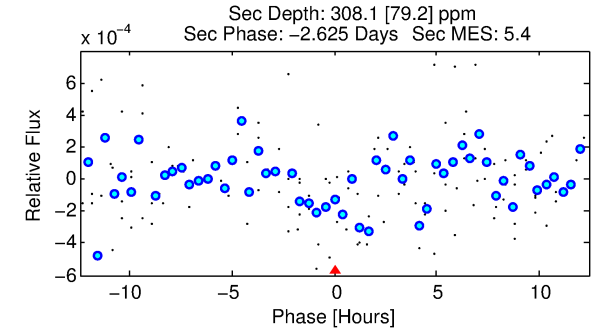
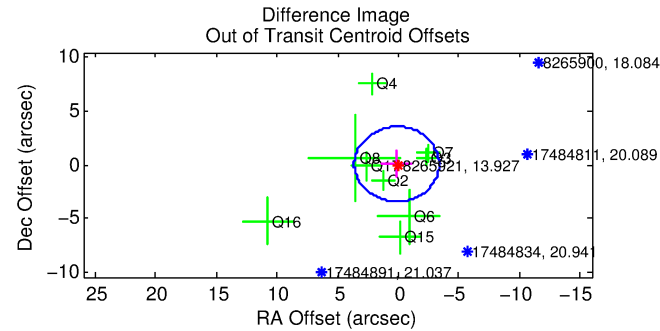
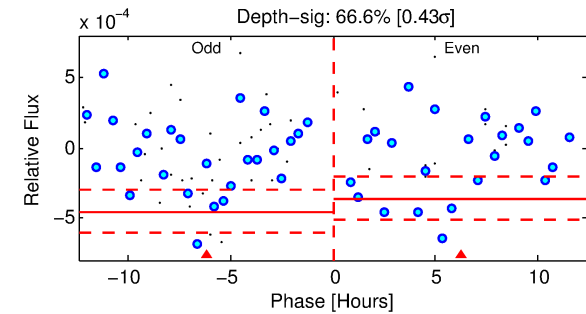
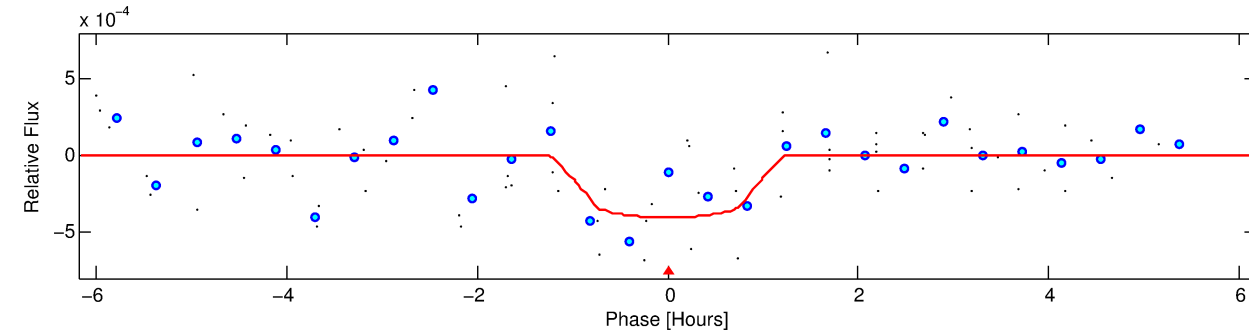
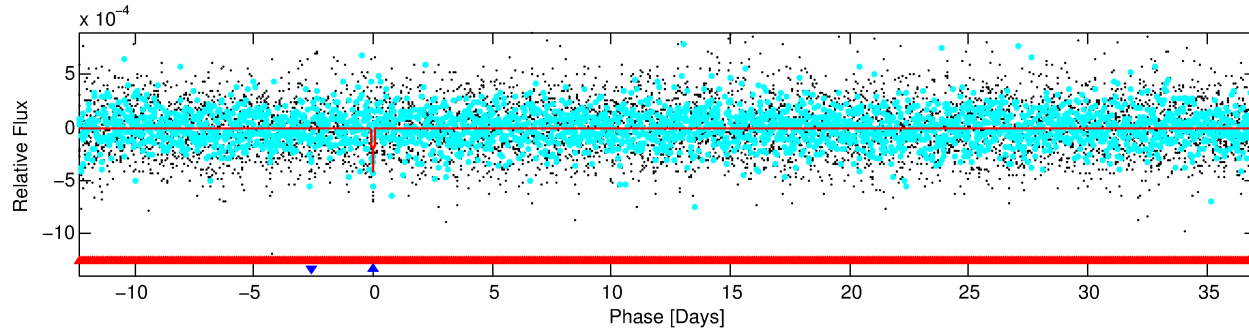
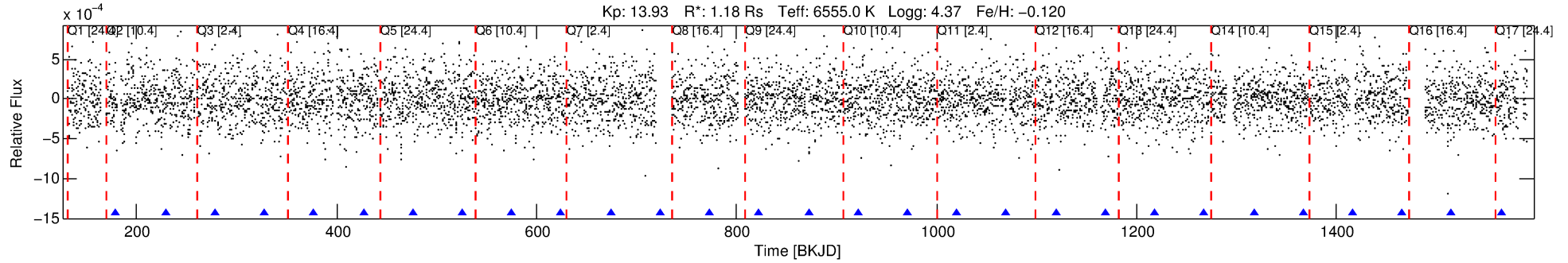
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008265921-02

No Significant Match Found

DV One-Page Summary

KIC: 8265921 Candidate: 2 of 2 Period: 49.461 d



DV Fit Results:

Period = 49.46090 [0.00099] d
Epoch = 179.5008 [0.0147] BKJD
Rp/R* = 0.0198 [0.0489]
a/R* = 135.76 [1809.88]
b = 0.70 [9.80]
Seff = 29.26 [11.86]
Teq = 593 [60] K
Rp = 2.54 [6.34] Re
a = 0.2801 [0.0759] AU
Ag = 2062.00 [10250.69] [0.20 σ]
Teffp = 6179 [7659] K [0.73 σ]

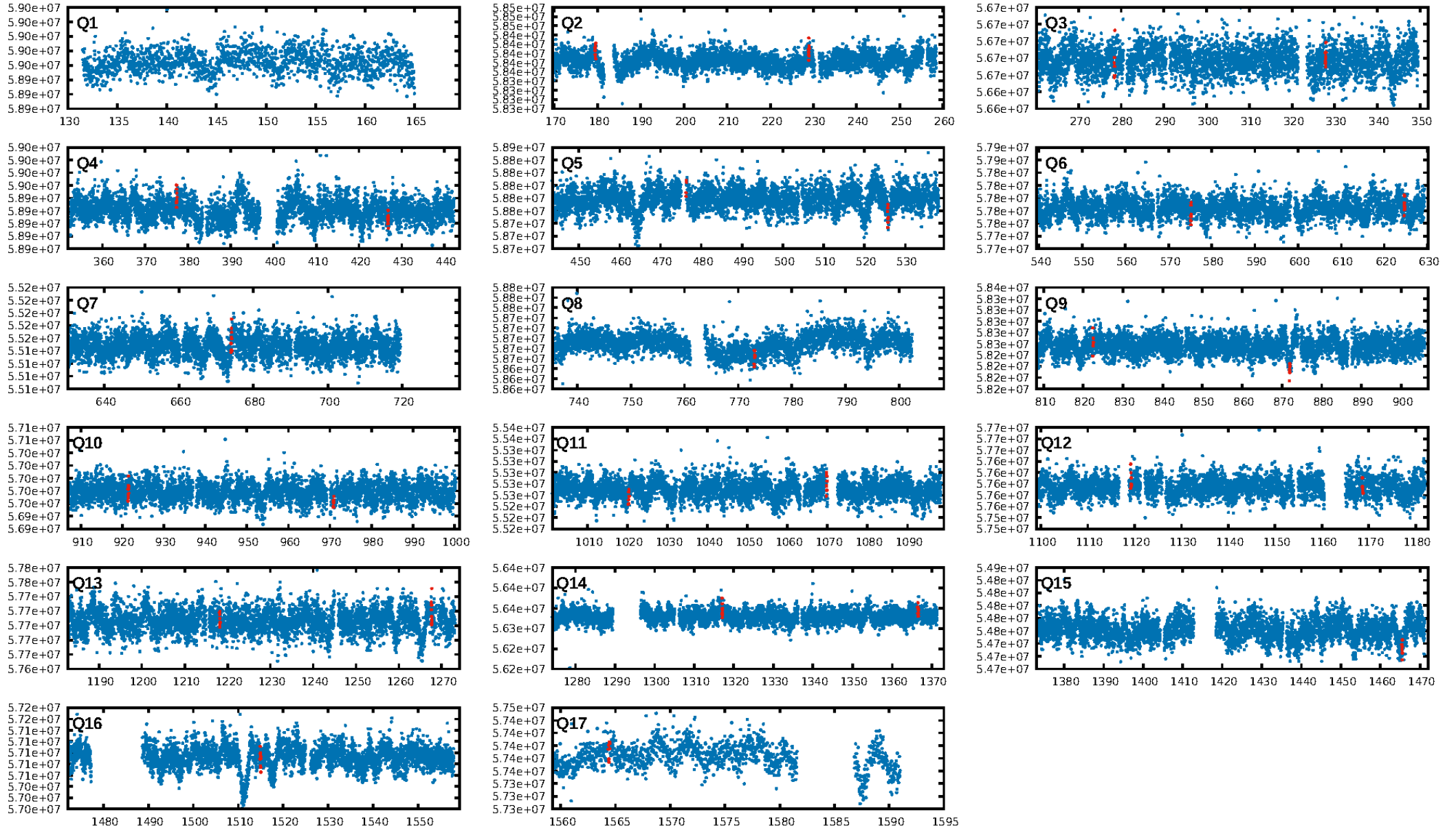
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [202.59 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 25.0%
Bootstrap-pfa: 6.18e-12
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -2.068
Centroid-sig: 0.2%
Centroid-so: 2.223 arcsec [2.32 σ]
OotOffset-rm: 0.135 arcsec [0.12 σ]
KicOffset-rm: 0.109 arcsec [0.10 σ]
OotOffset-st: 2/3/3/1 [9]
KicOffset-st: 2/3/3/1 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 0.06 [1/16]

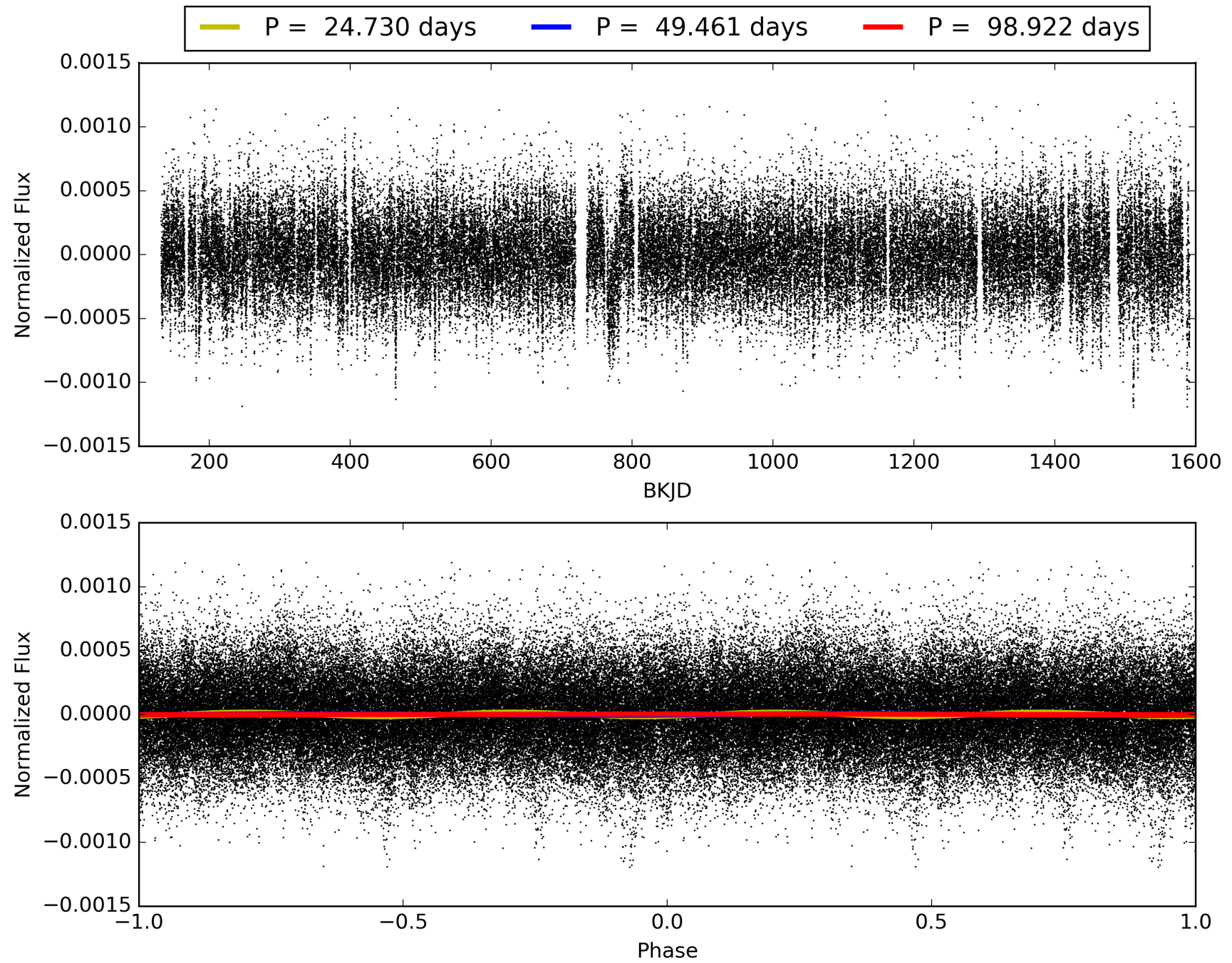
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008265921-02, PDC Light Curves

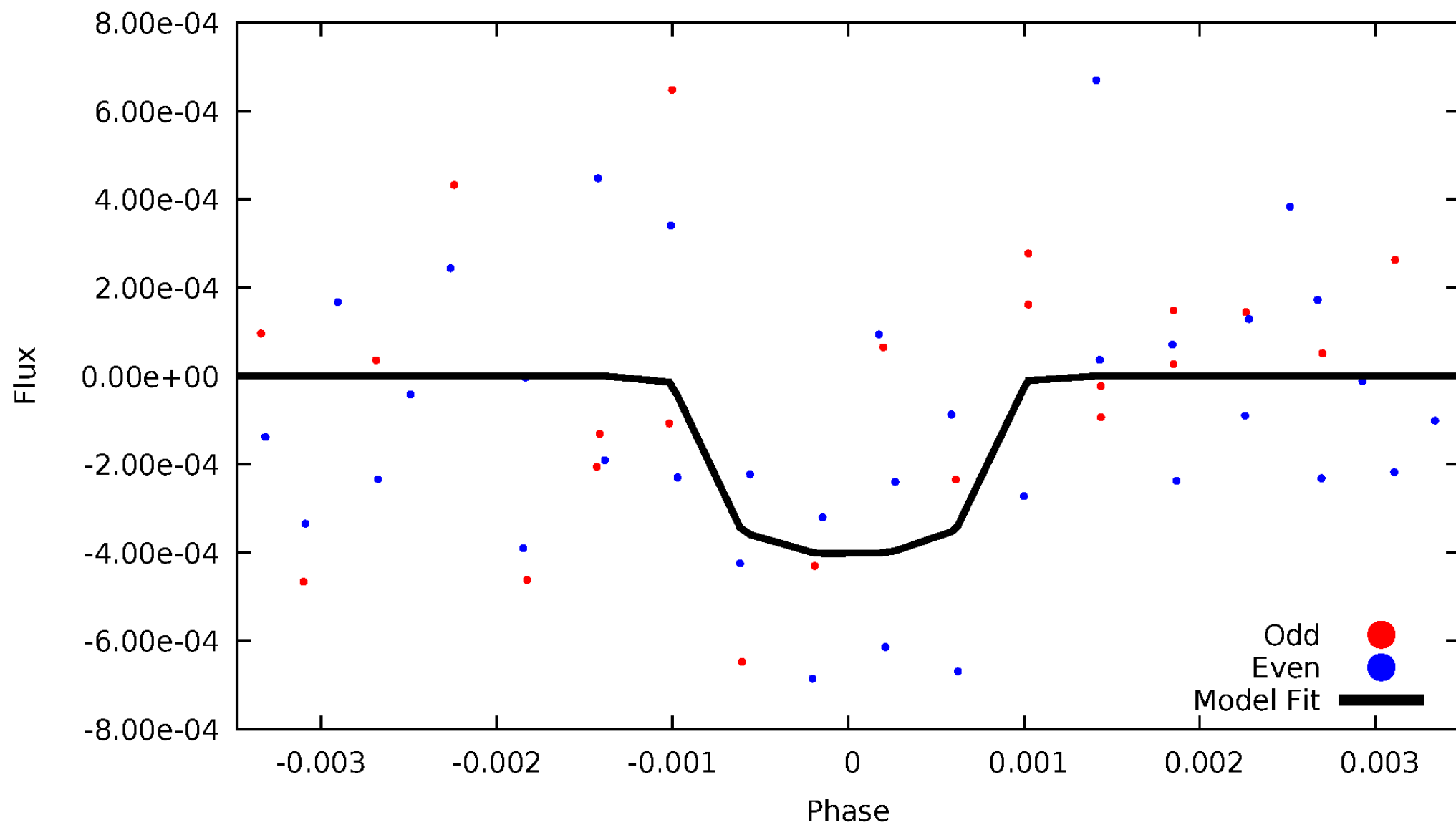


TCE 008265921-02



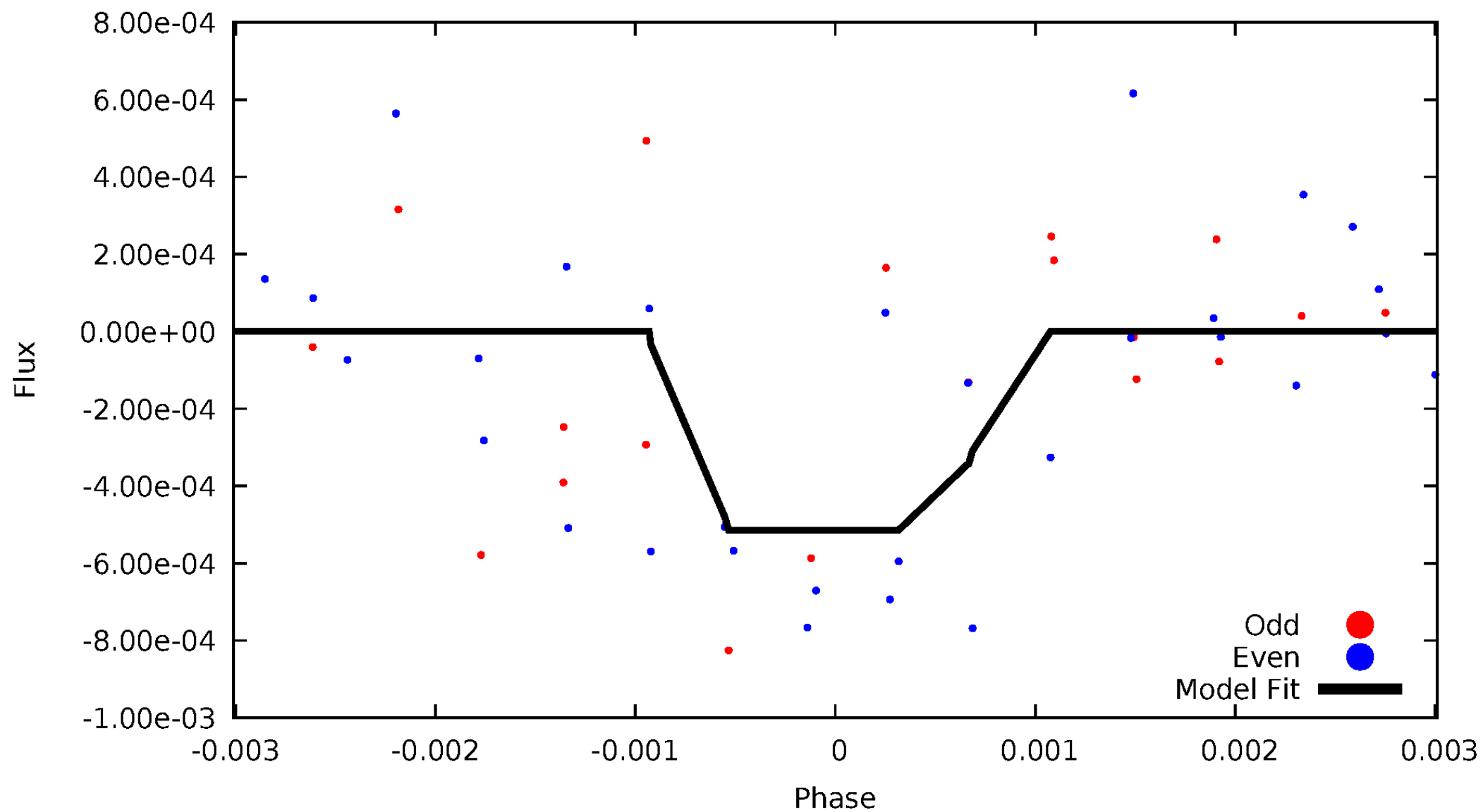
DV Odd/Even

TCE 008265921-02



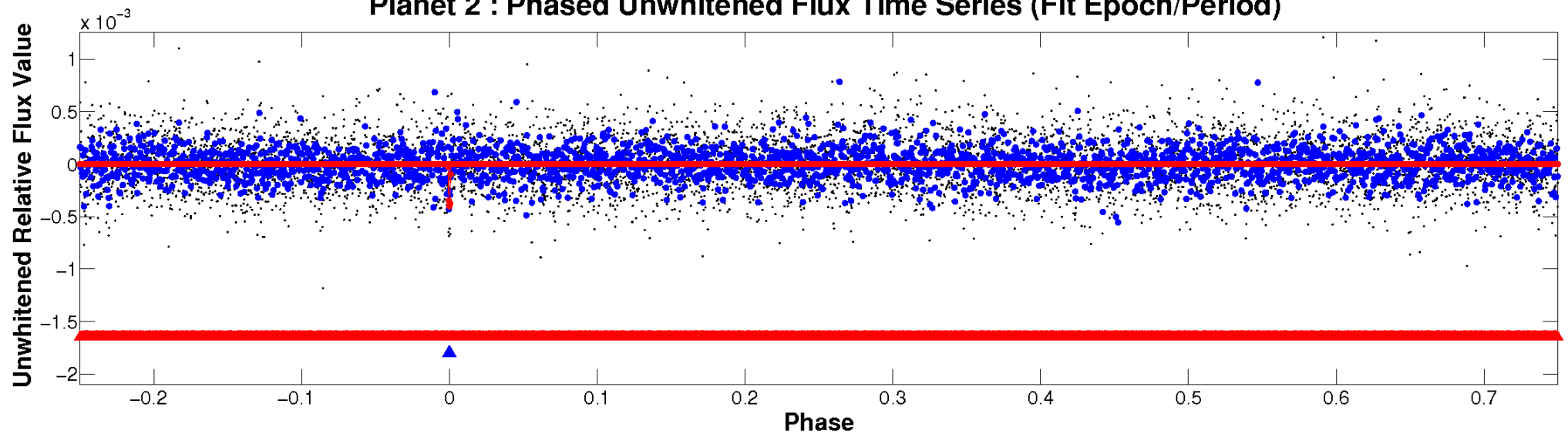
ALT Odd/Even

TCE 008265921-02

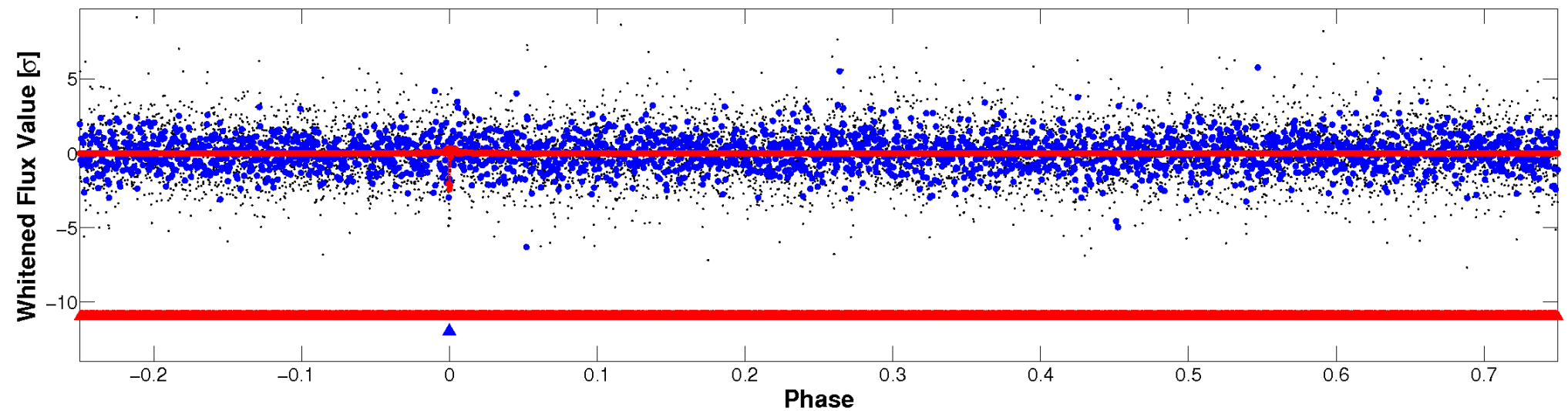


Non-Whitened Vs. Whitened Light Curve

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

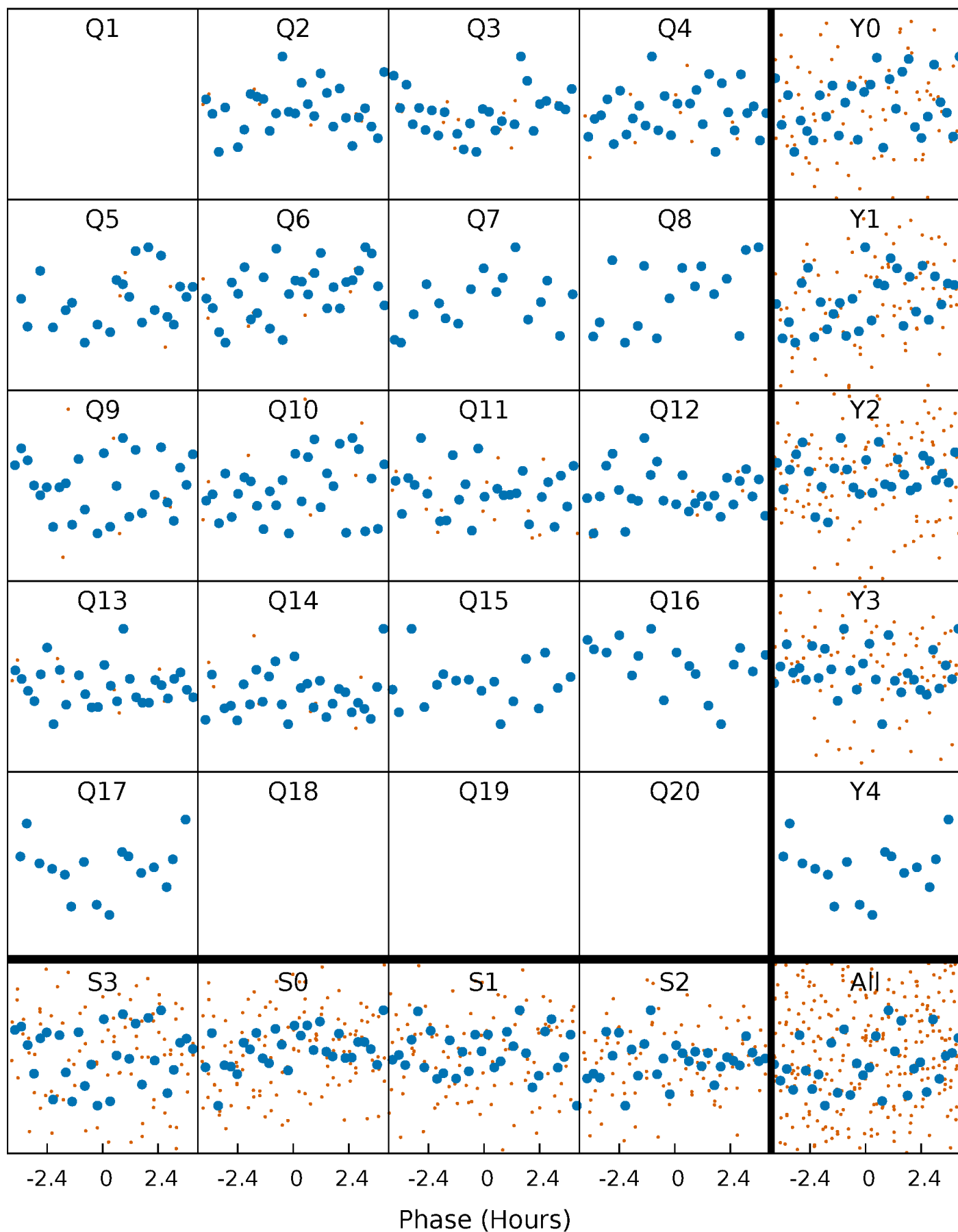


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



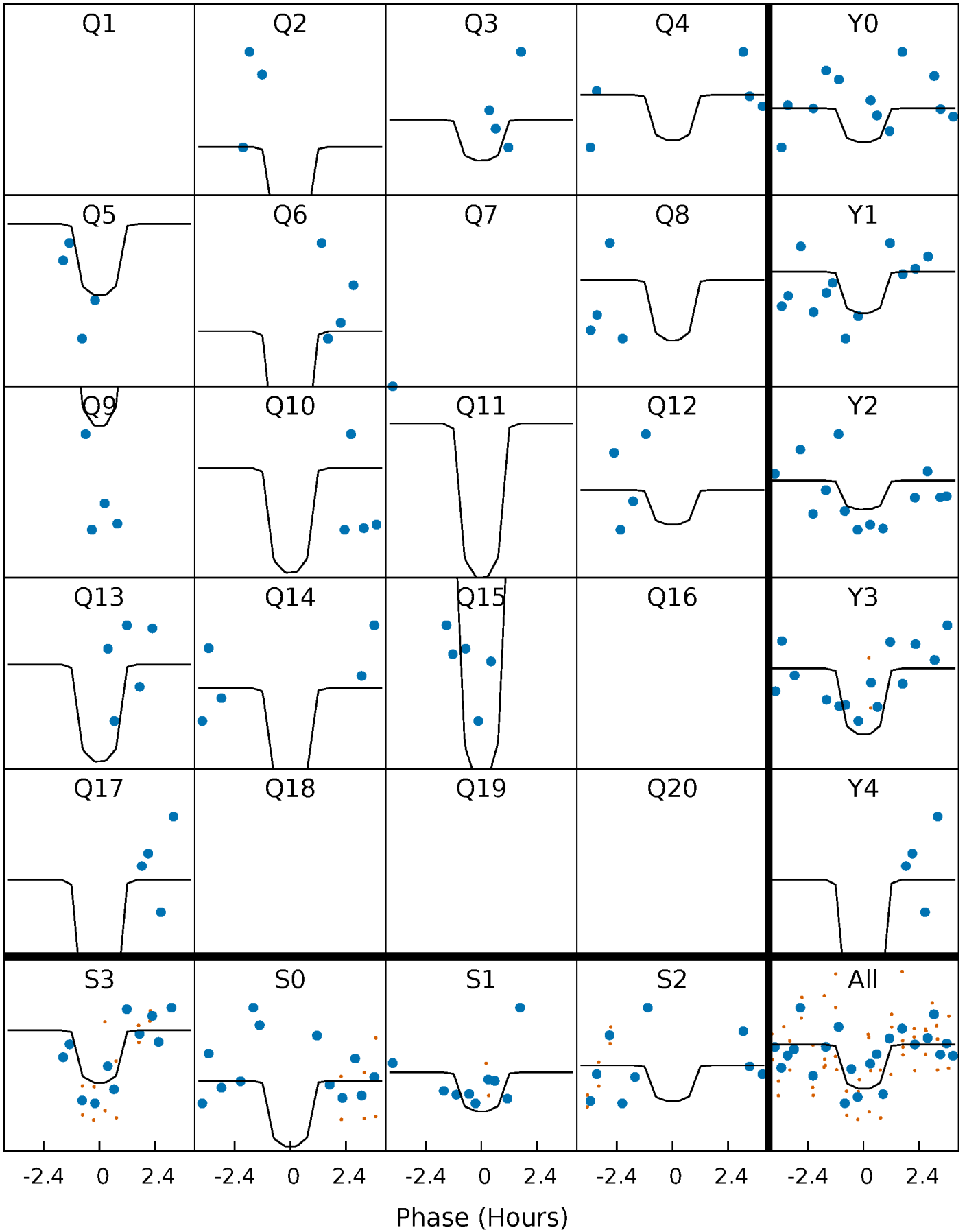
PDC Quarter-Phased Transit Curves

TCE 008265921-02 P= 49.460903 Days $T_0=179.500848$ (BKJD)



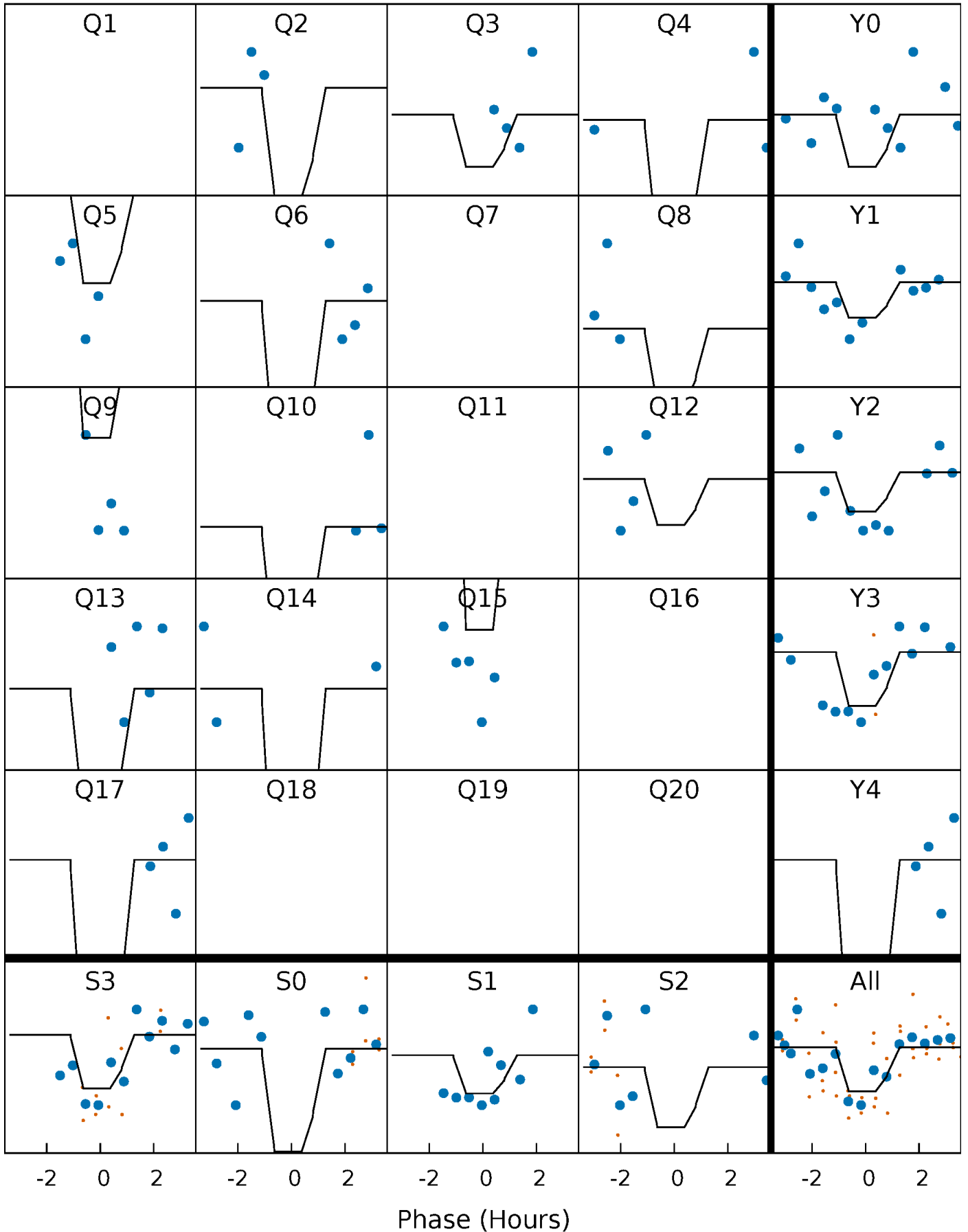
DV Quarter-Phased Transit Curves

TCE 008265921-02 P= 49.460903 Days $T_0=179.500848$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

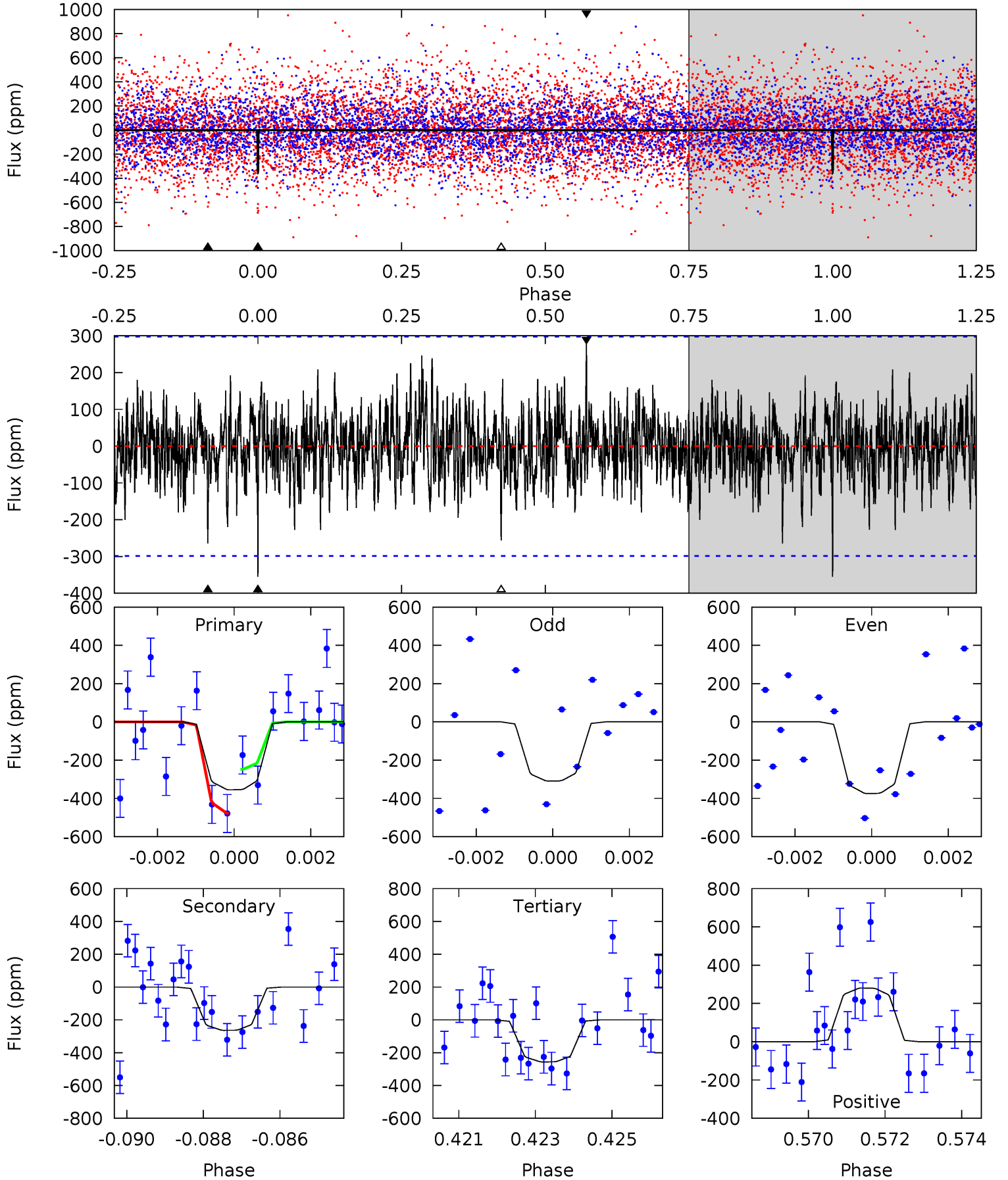
TCE 008265921-02 P= 49.460961 Days $T_0=179.496890$ (BKJD)



DV Model-Shift Uniqueness Test

008265921-02, P = 49.460903 Days, E = 130.039945 Days

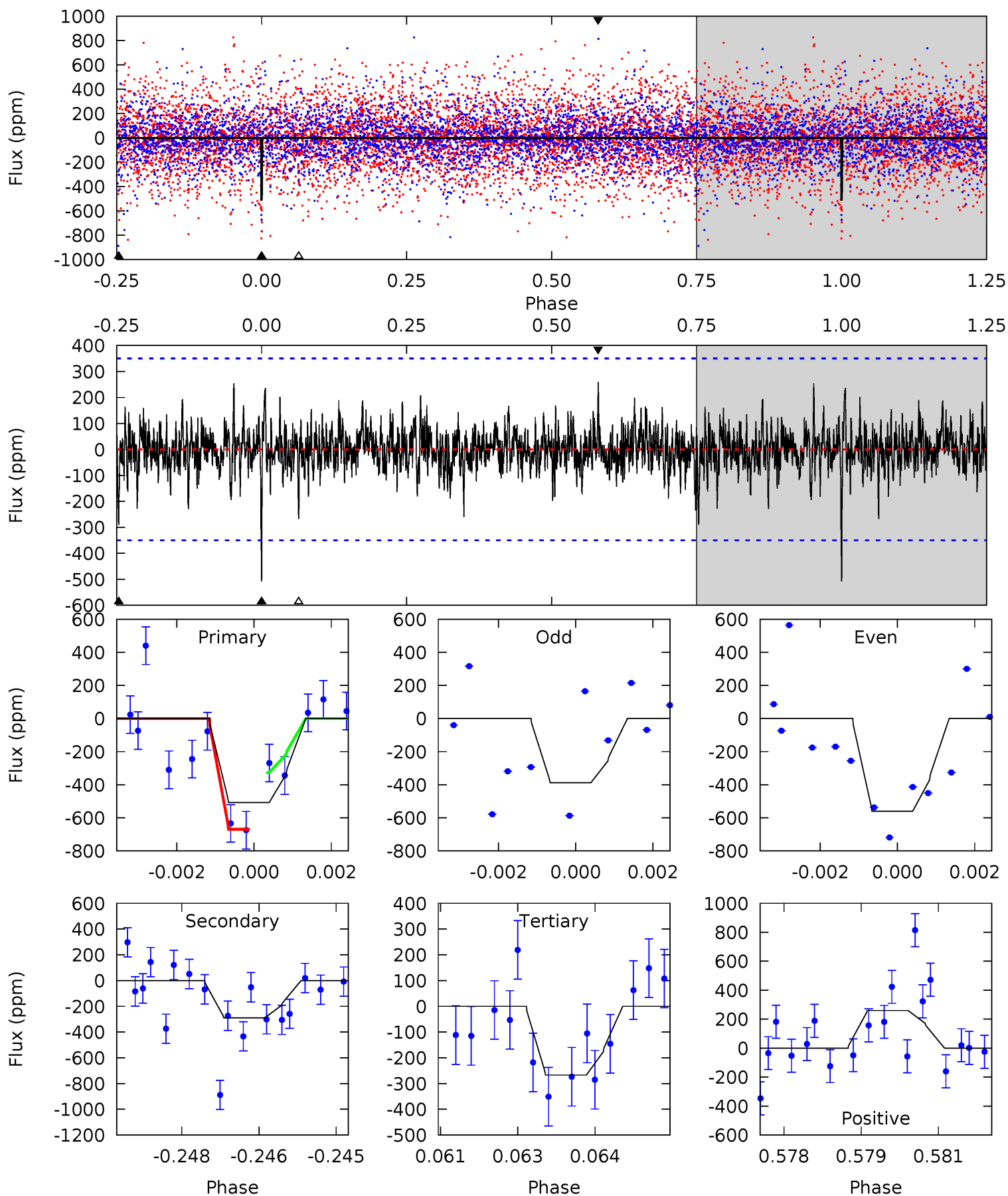
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.33 | 4.71 | 4.57 | 5.01 | 5.32 | 3.08 | 1.30 | 1.76 | 1.33 | 0.13 | -0.30 | 0.56 | 1.12 | 0.44 | 2.07 |



Alt Model-Shift Uniqueness Test

008265921-02, P = 49.460961 Days, E = 130.035929 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.77 | 4.45 | 4.09 | 3.98 | 5.37 | 3.15 | 1.00 | 3.68 | 3.79 | 0.36 | 0.47 | 1.27 | 0.66 | 0.34 | 2.64 |



Stellar Parameters For KIC 008265921

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 6555^{+159}_{-219} | $4.374^{+0.068}_{-0.203}$ | $-0.120^{+0.250}_{-0.300}$ | $1.178^{+0.392}_{-0.131}$ | $1.200^{+0.187}_{-0.153}$ | $1.033^{+0.301}_{-0.550}$ |
| | +2%/-3% | +2%/-5% | +208%/-250% | +33%/-11% | +16%/-13% | +29%/-53% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 008265921-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|----------------------|
| DV | -264 ± 56 | $5.71^{+5.30}_{-3.84}$ | 841^{+65}_{-40} | 4284^{+2742}_{-874} | 347^{+2781}_{-258} |
| Alt. | -290 ± 65 | $5.67^{+5.59}_{-3.69}$ | 842^{+61}_{-43} | 4348^{+2634}_{-931} | 377^{+2742}_{-283} |

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 $A_{obs} \gg 1.0$

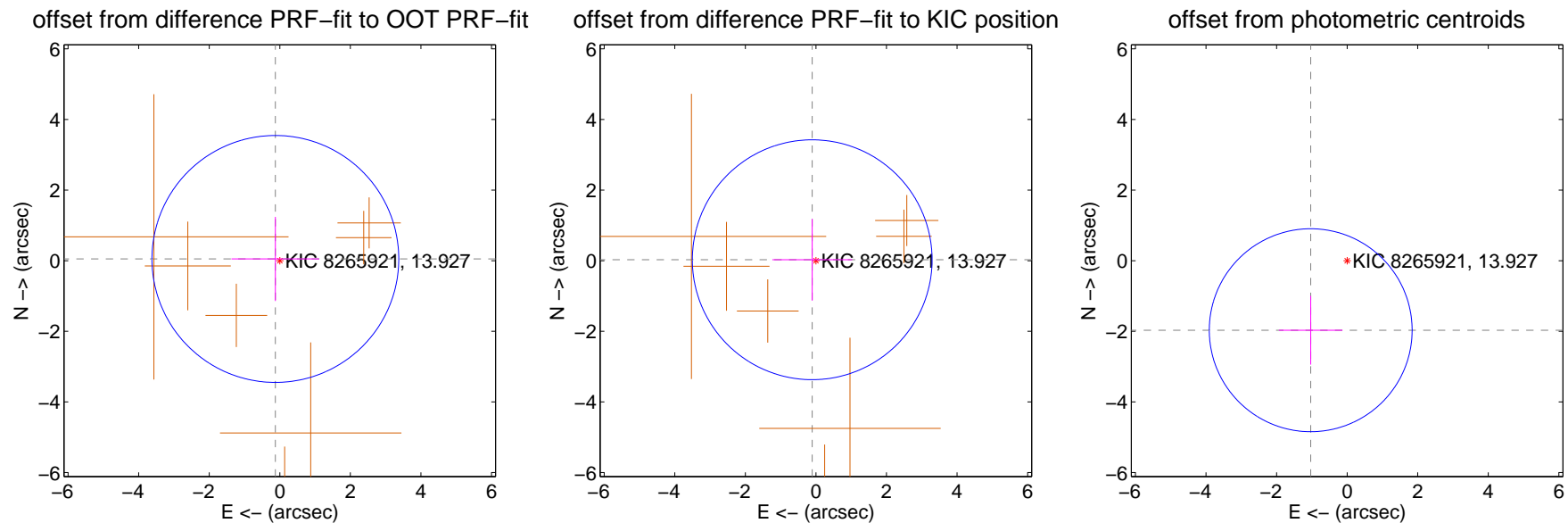
DV Centroid Data

Supplemental centroid analysis for 008265921-02. Kepler magnitude: 13.93. Transit SNR 7.91

There are 0 quarters with good PRF difference image offsets

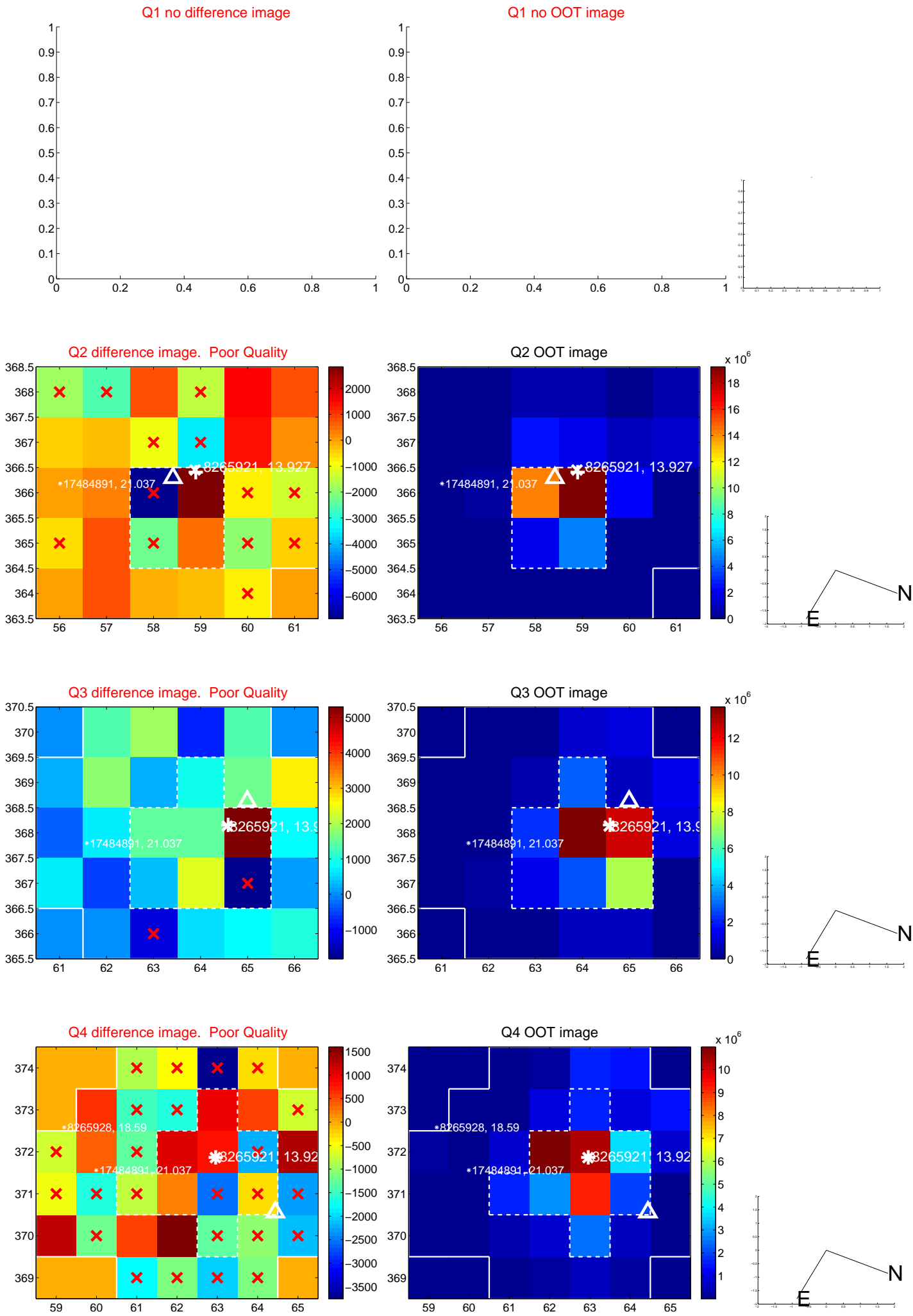
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.135 ± 1.166 | 0.12 | 0.126 ± 1.246 | 0.049 ± 1.192 |
| PRF-fit source offset from KIC position | 0.109 ± 1.132 | 0.10 | 0.105 ± 1.131 | 0.027 ± 1.156 |
| photometric centroid source offset | 2.22 ± 0.96 | 2.32 | 1.03 ± 0.90 | -1.97 ± 0.97 |

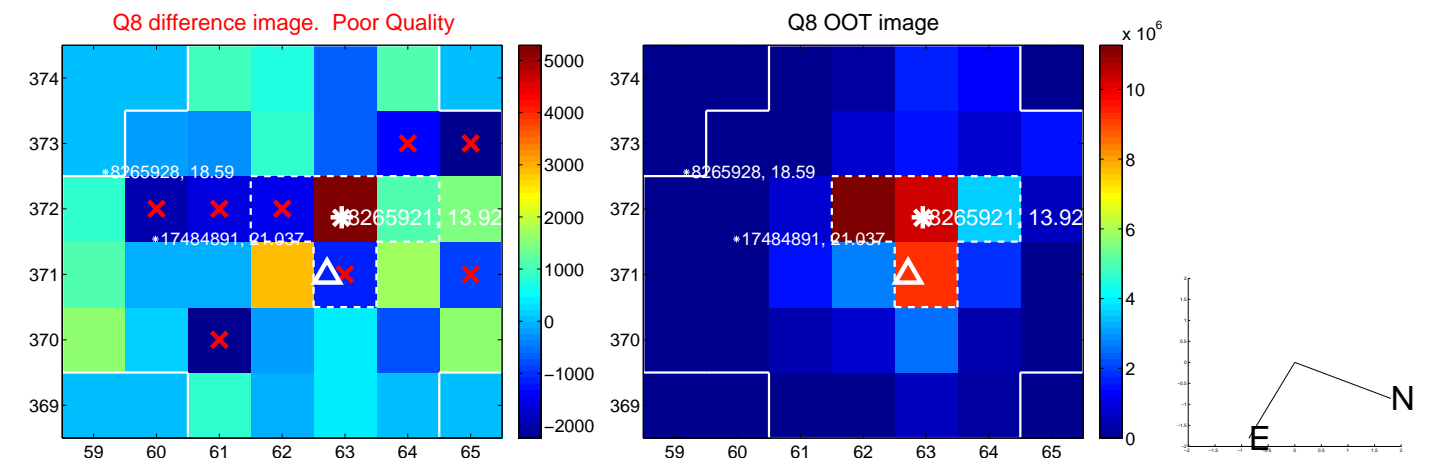
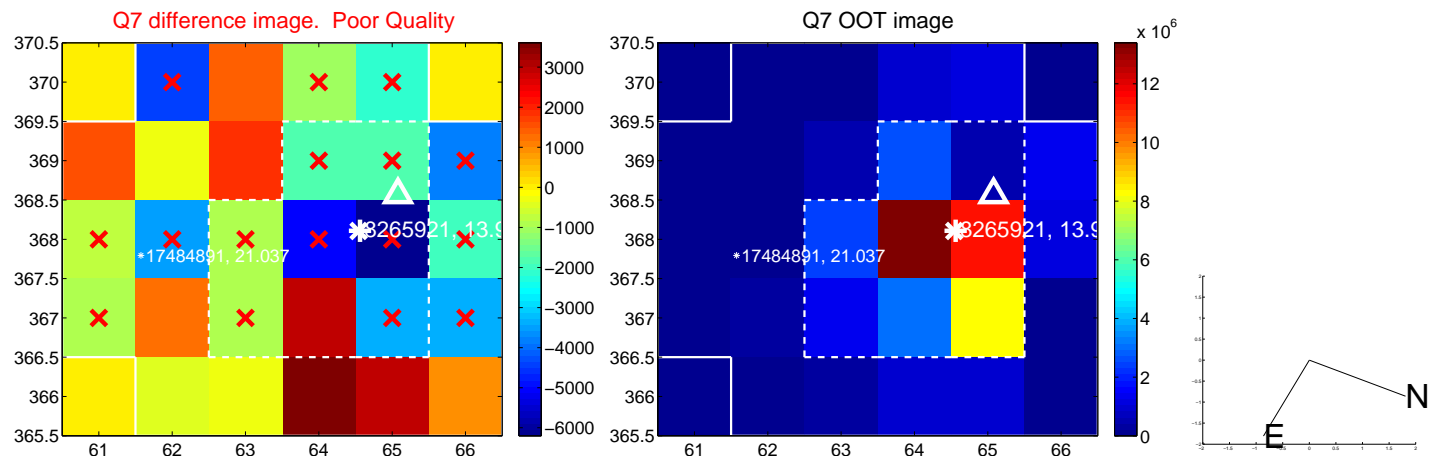
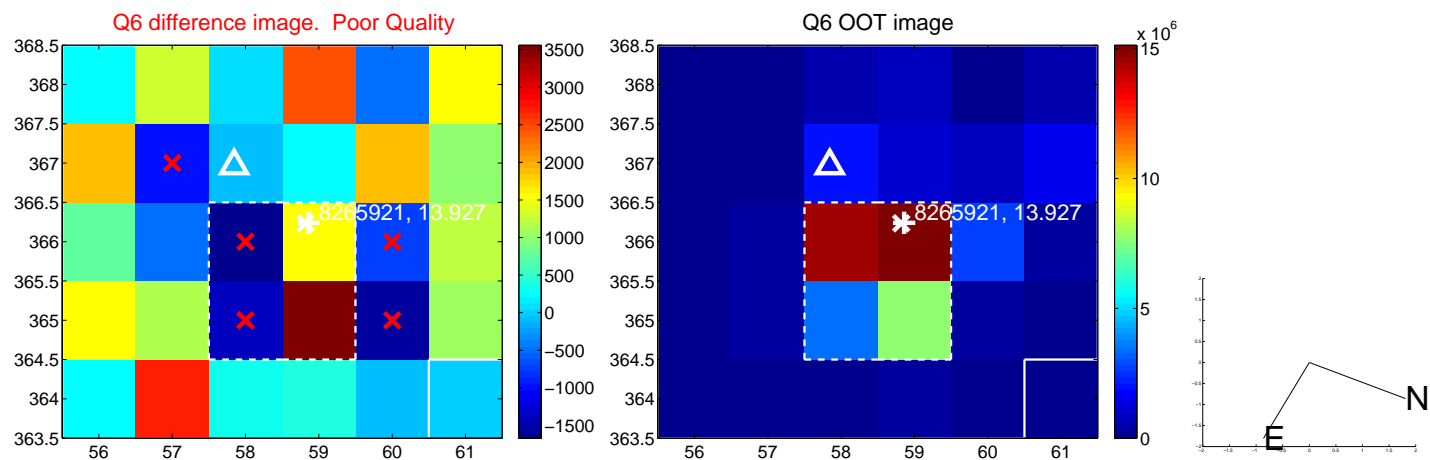
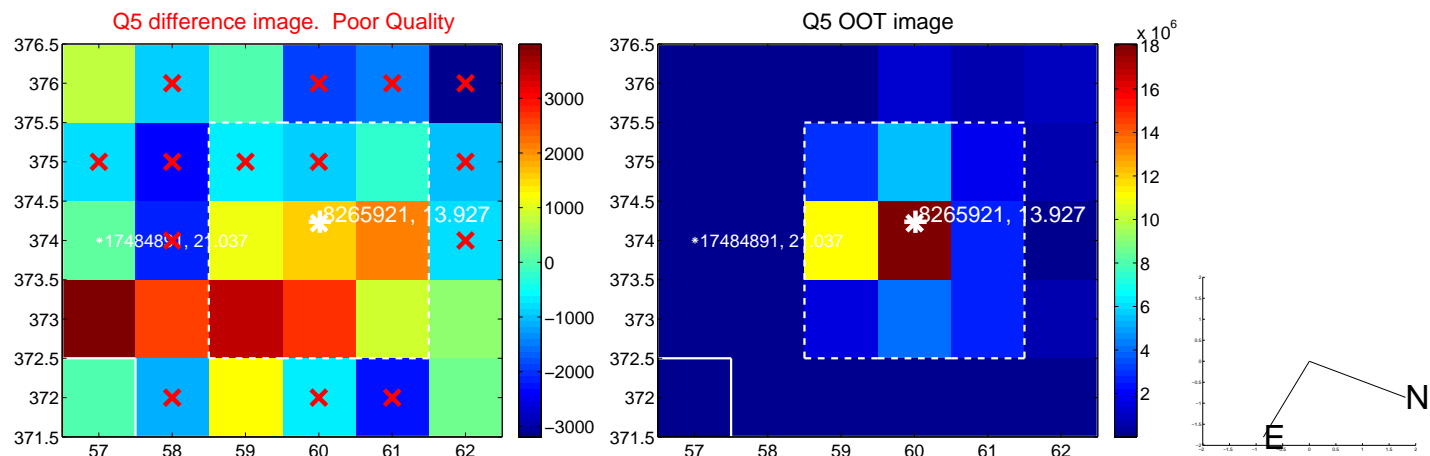


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

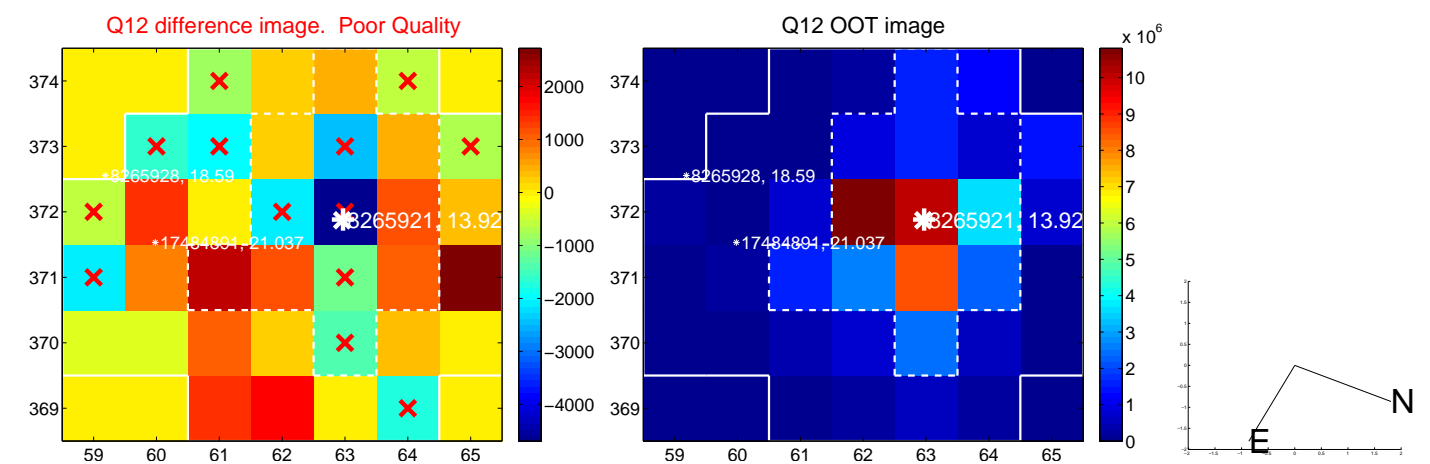
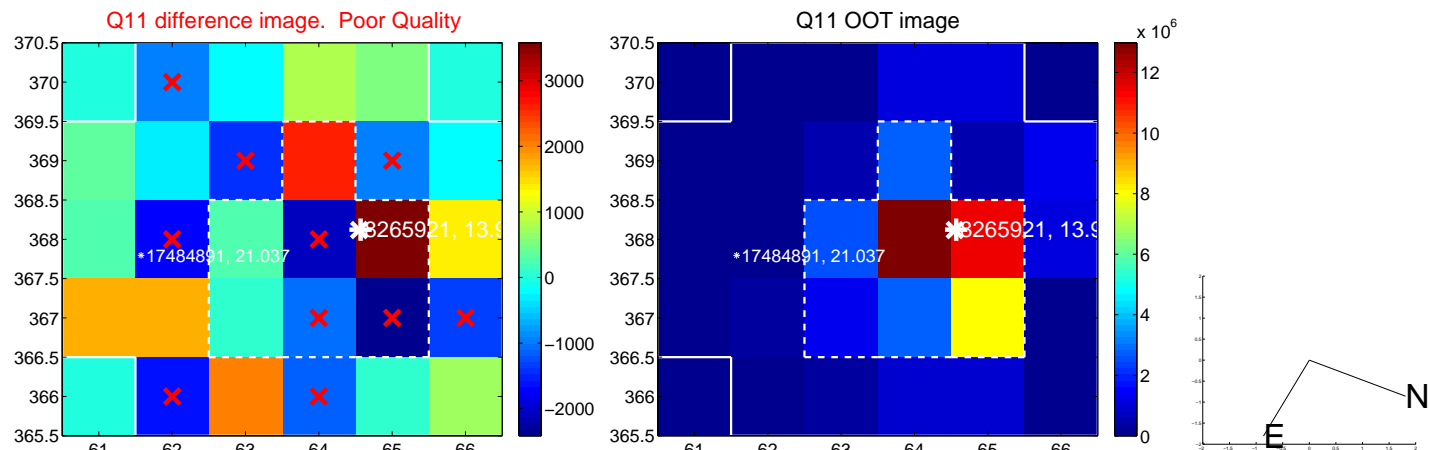
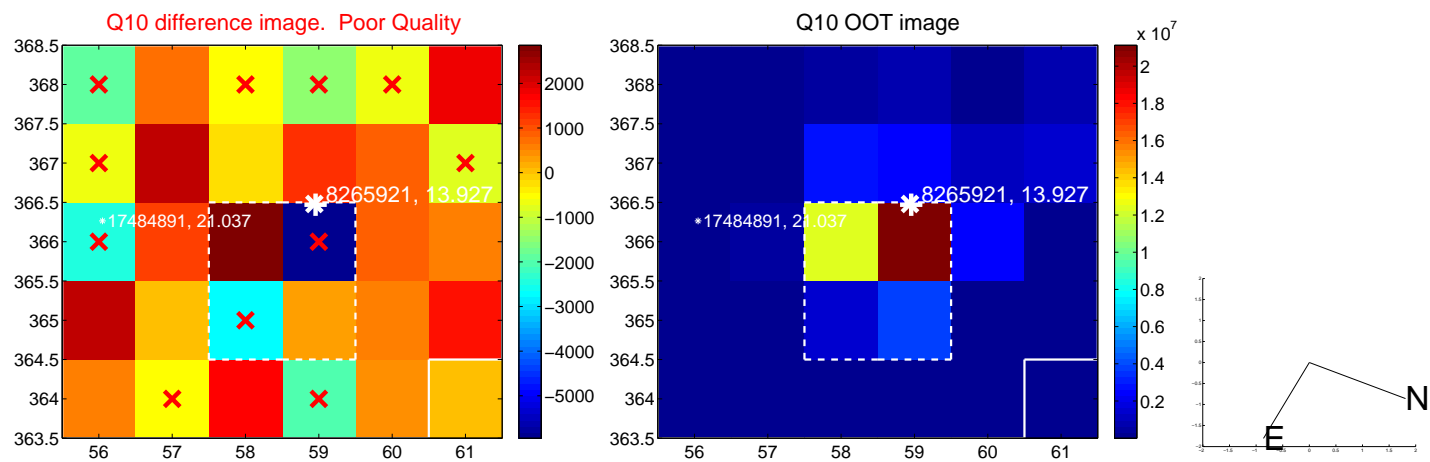
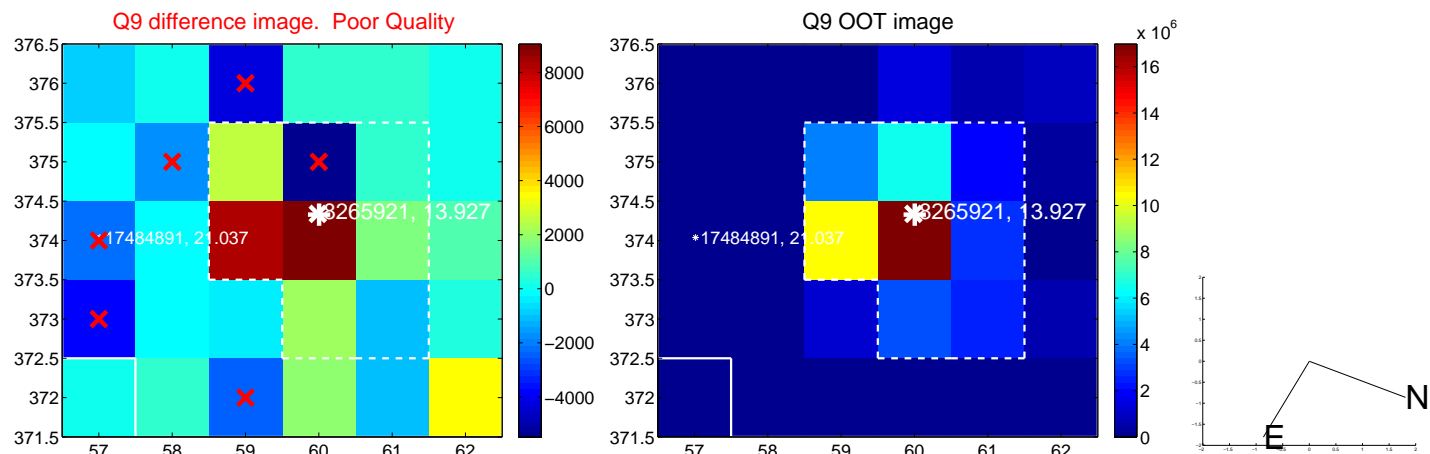
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



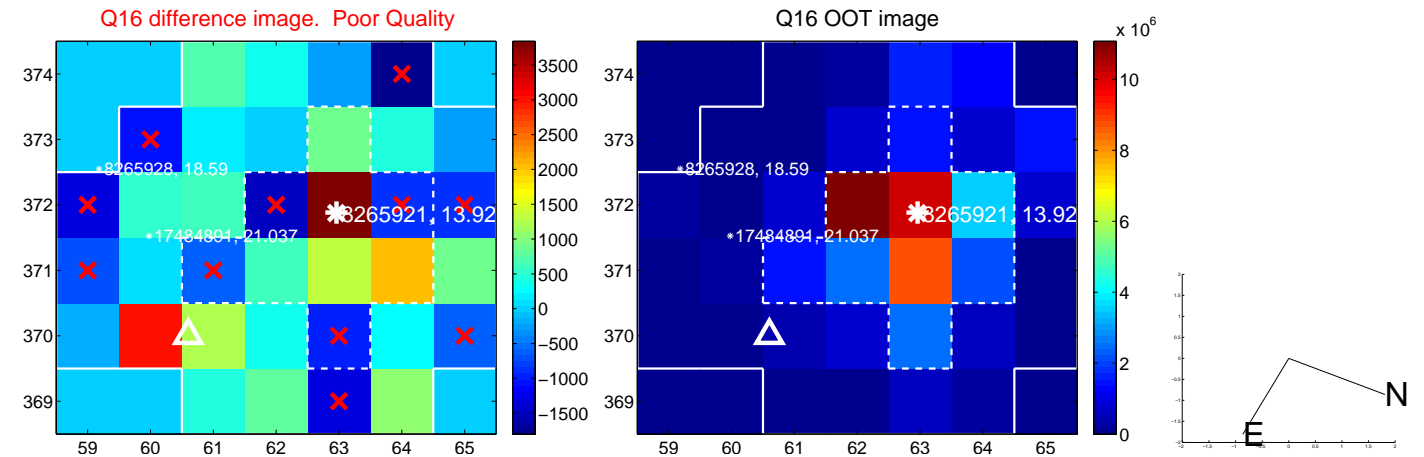
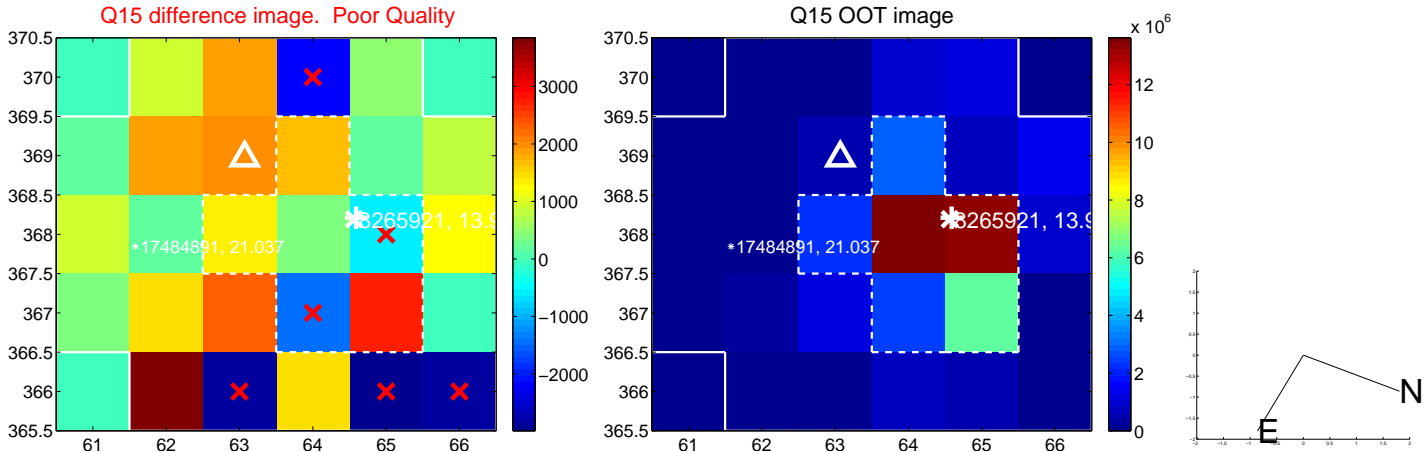
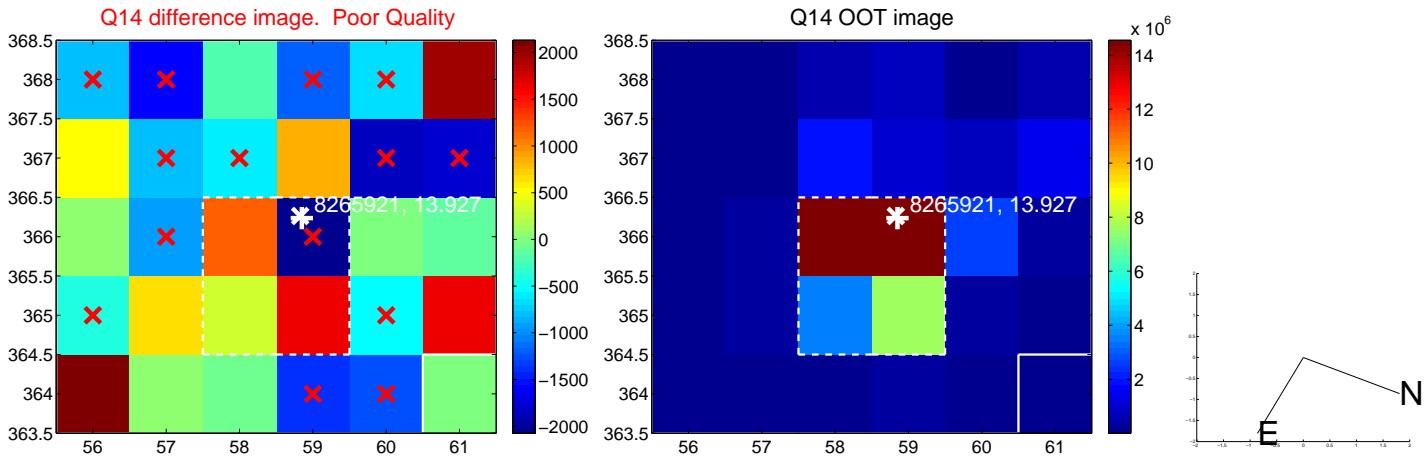
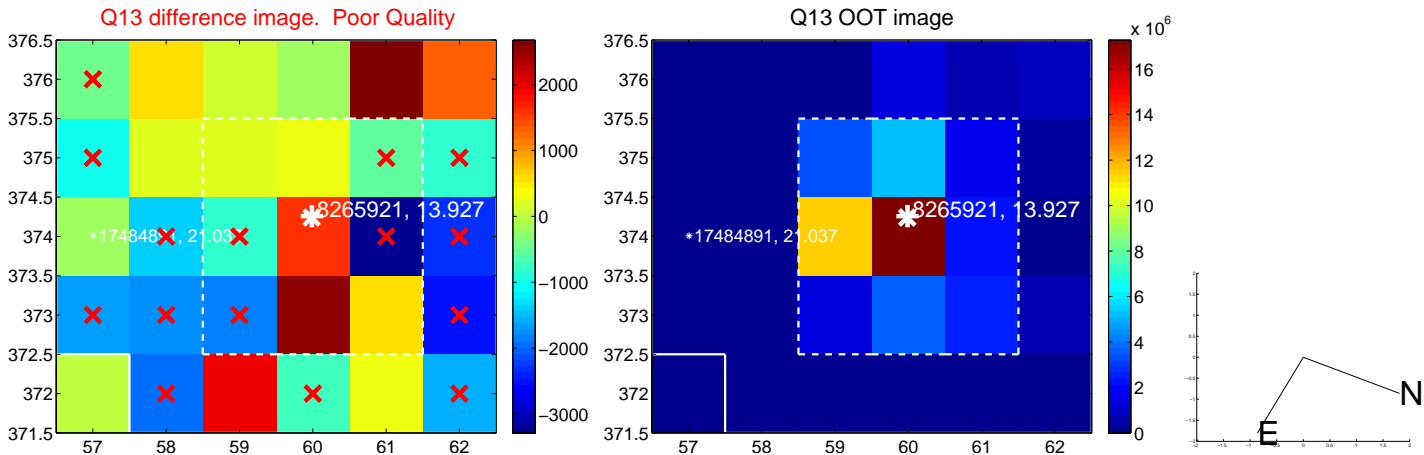
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



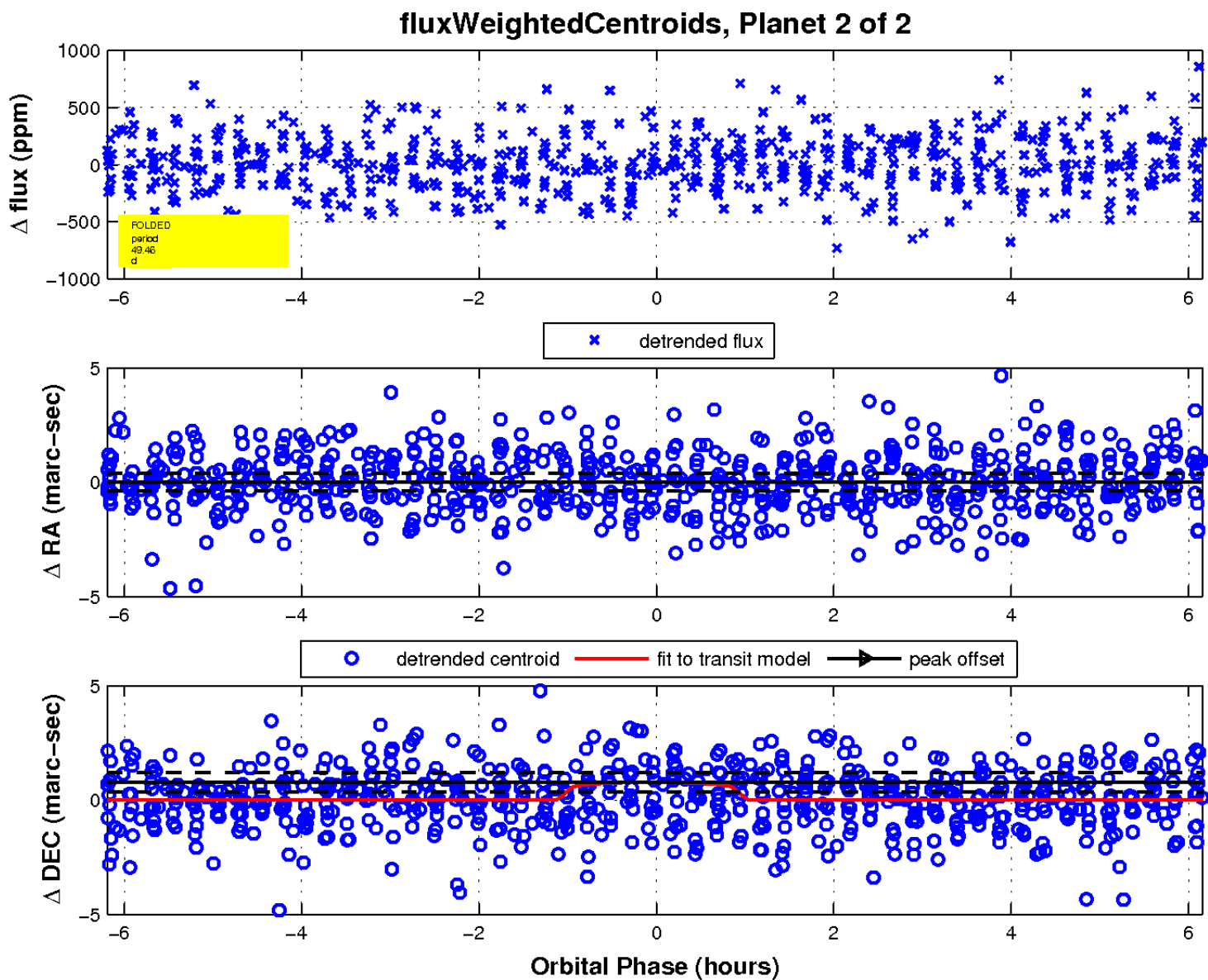
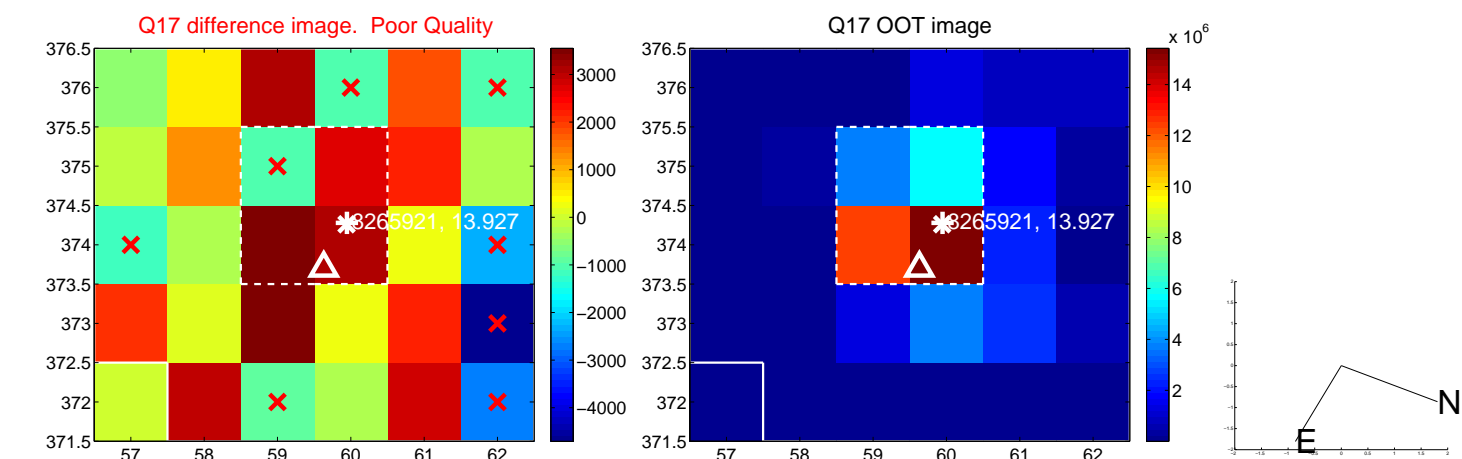
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

