

KIC 008126422

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008126422-01 | OBS | No | 2.162046 | 131.833938 | 4.6 | 12.099 | 7.5 | 4.8 | 1.96 | 7535 | 0.48 | 7393.30 |
| 008126422-02 | OBS | No | 382.552677 | 373.075528 | 92.6 | 9.185 | 9.4 | 8.2 | 1.96 | 7535 | 1.91 | 7.44 |
| 008126422-03 | OBS | No | 83.460082 | 145.567741 | 90.5 | 3.437 | 8.8 | 8.1 | 1.96 | 7535 | 2.18 | 56.67 |
| 008126422-04 | OBS | No | 124.454777 | 239.903928 | 35.3 | 12.126 | 7.5 | 3.3 | 1.96 | 7535 | 1.34 | 33.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008126422-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—CENT_SATURATED |
| 008126422-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

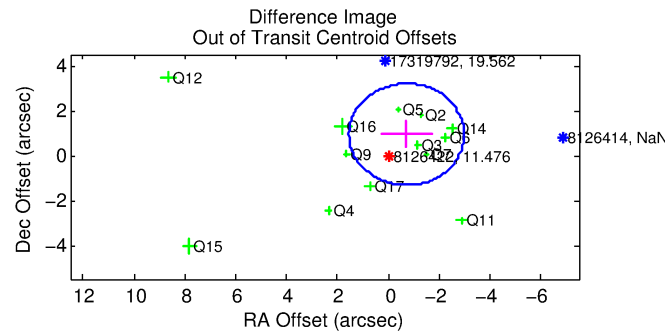
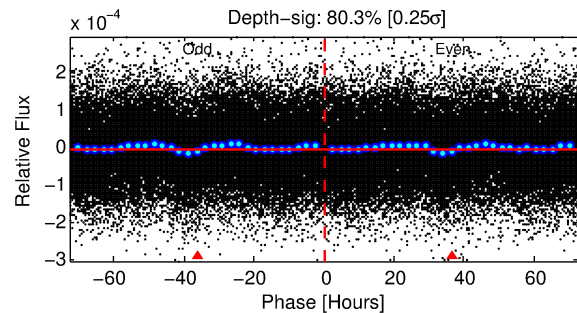
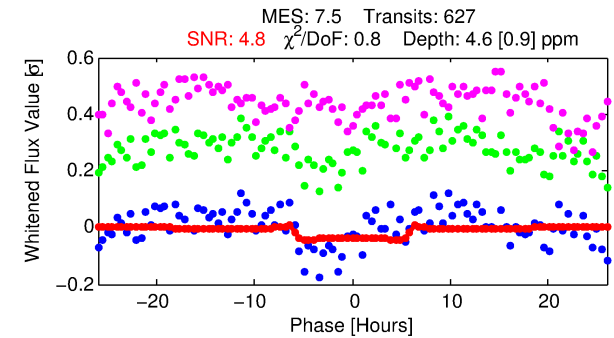
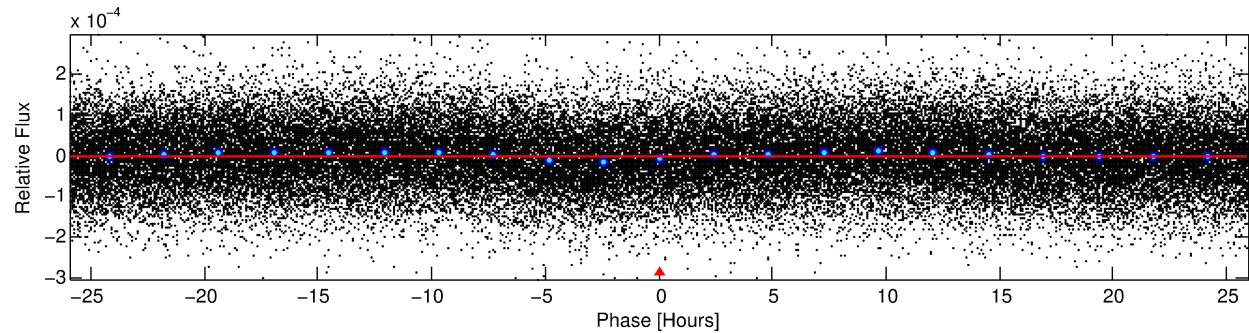
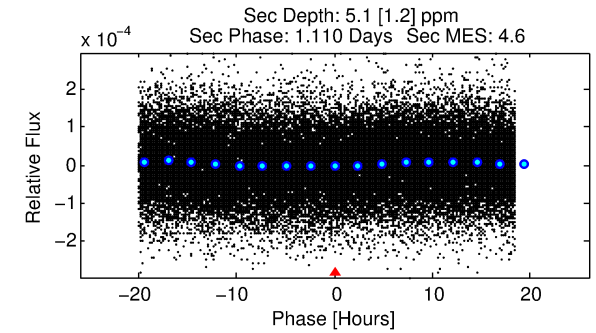
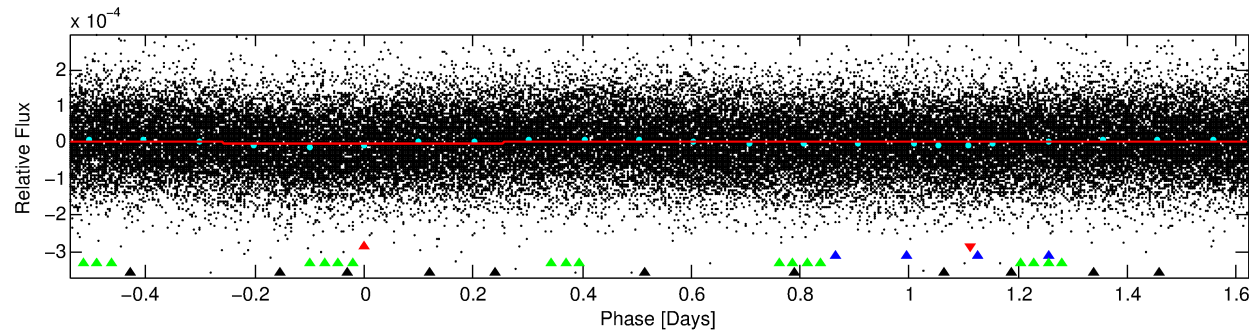
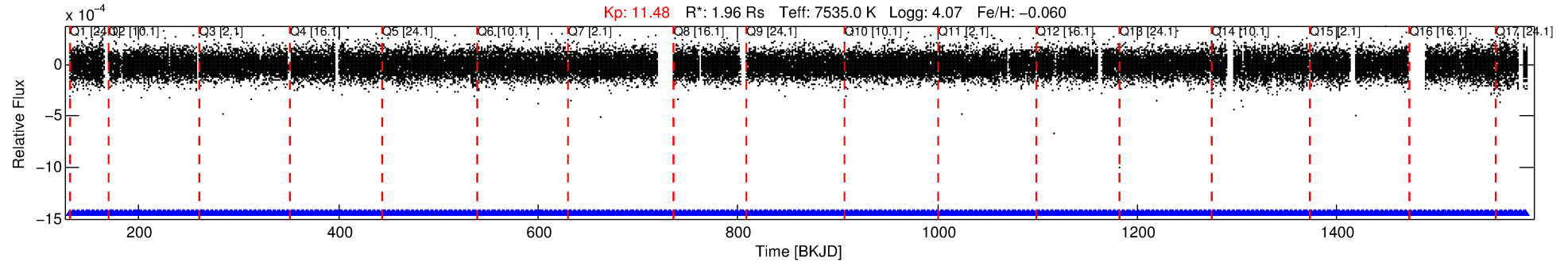
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008126422-01

No Significant Match Found

DV One-Page Summary

KIC: 8126422 Candidate: 1 of 4 Period: 2.162 d



DV Fit Results:

Period = 2.16205 [0.00006] d
Epoch = 131.8339 [0.0159] BKJD
Rp/R* = 0.0023 [0.0008]
a/R* = 1.12 [0.56]
b = 0.89 [0.55]
Seff = 7393.30 [2725.04]
Teq = 2364 [218] K
Rp = 0.48 [0.22] Re
a = 0.0386 [0.0088] AU
Ag = 18.15 [15.19] [1.13σ]
Teffp = 7546 [1497] K [3.42σ]

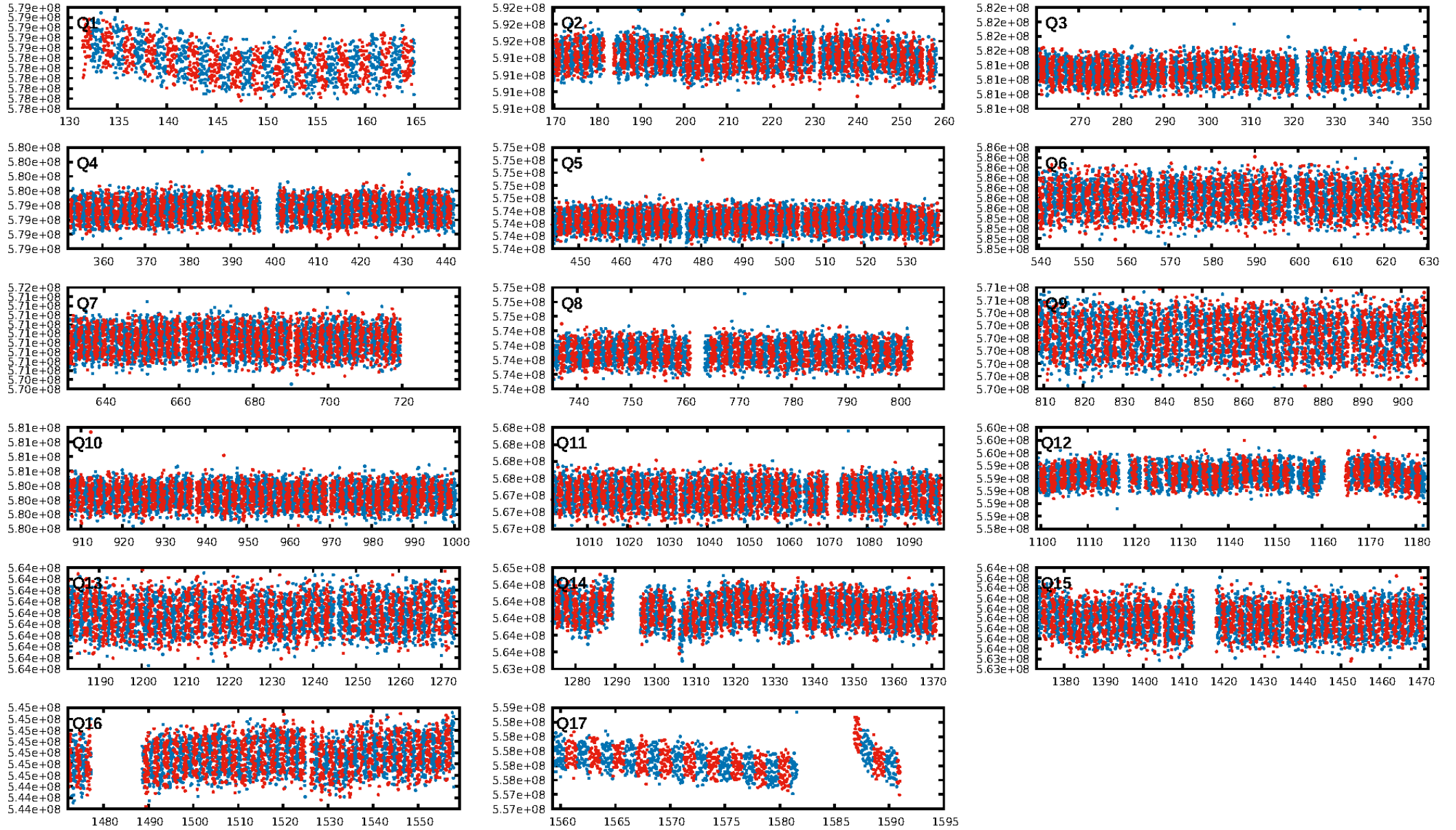
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [155.13σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.12e-08
RollingBand-fgt: 1.00 [598/598]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 1.175 arcsec [1.56σ]
KicOffset-rm: 1.243 arcsec [1.45σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.54 [7/13]
DiffImageOverlap-fno: 1.00 [17/17]

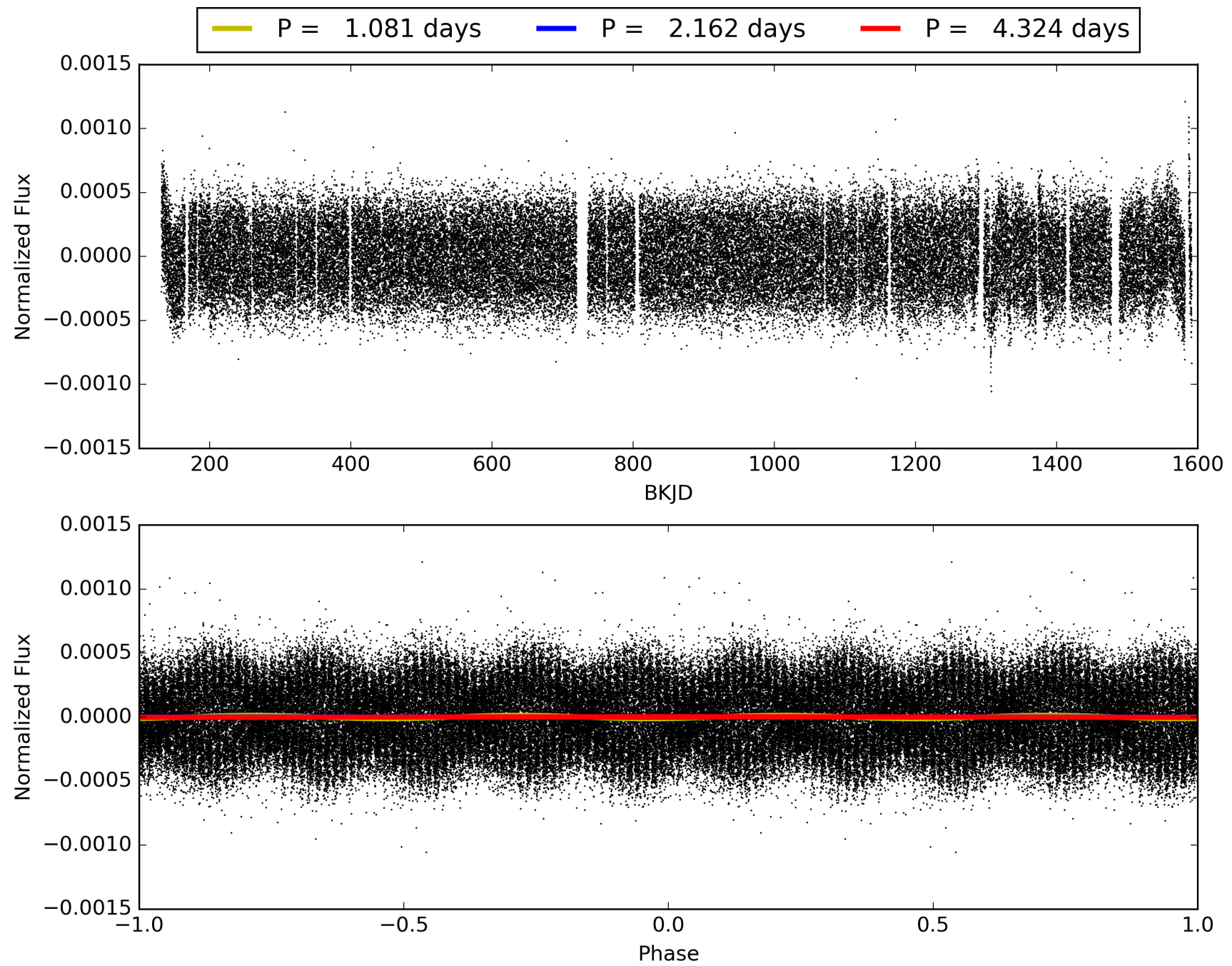
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:56:01 Z

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

TCE 008126422-01, PDC Light Curves

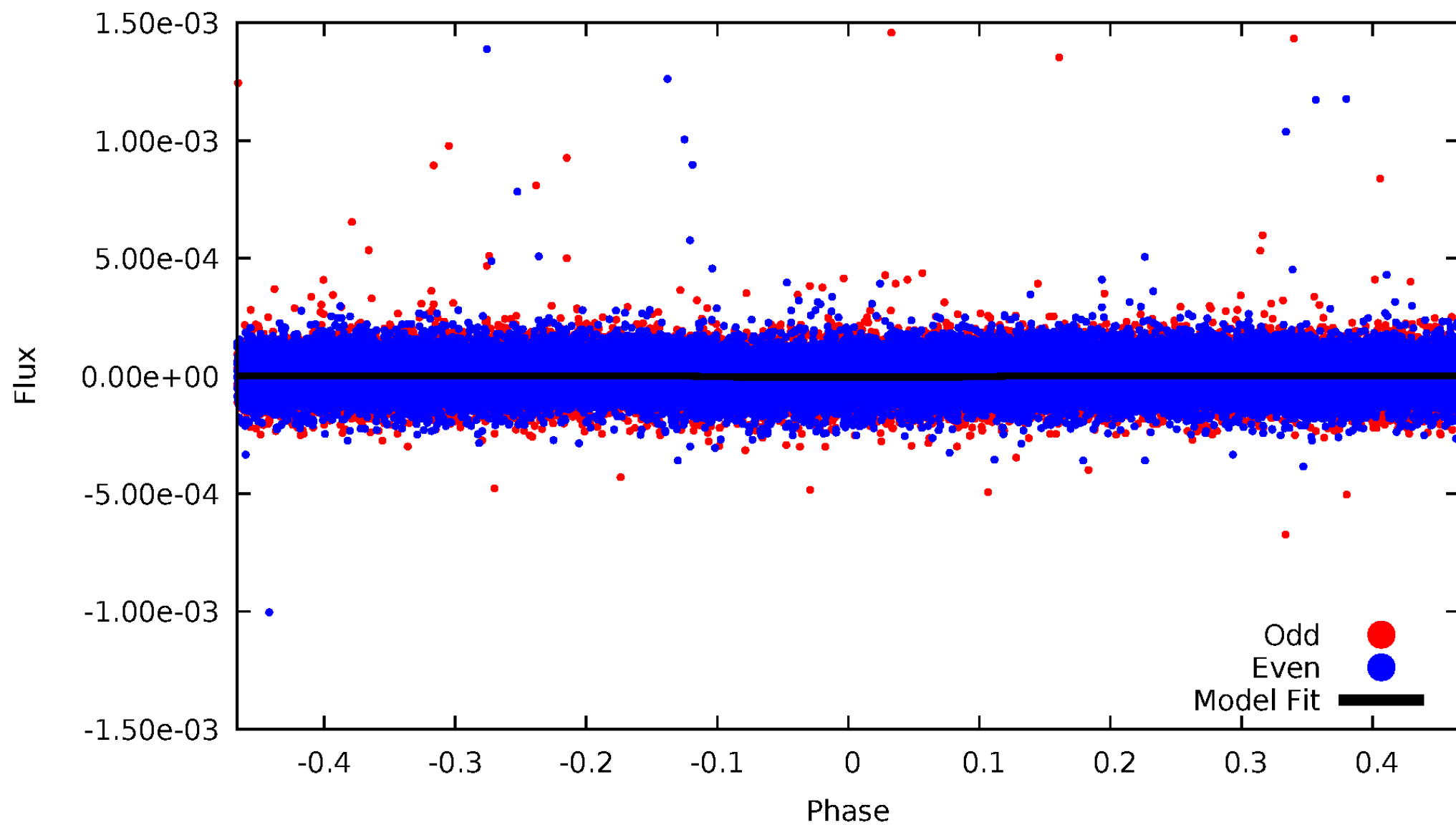


TCE 008126422-01



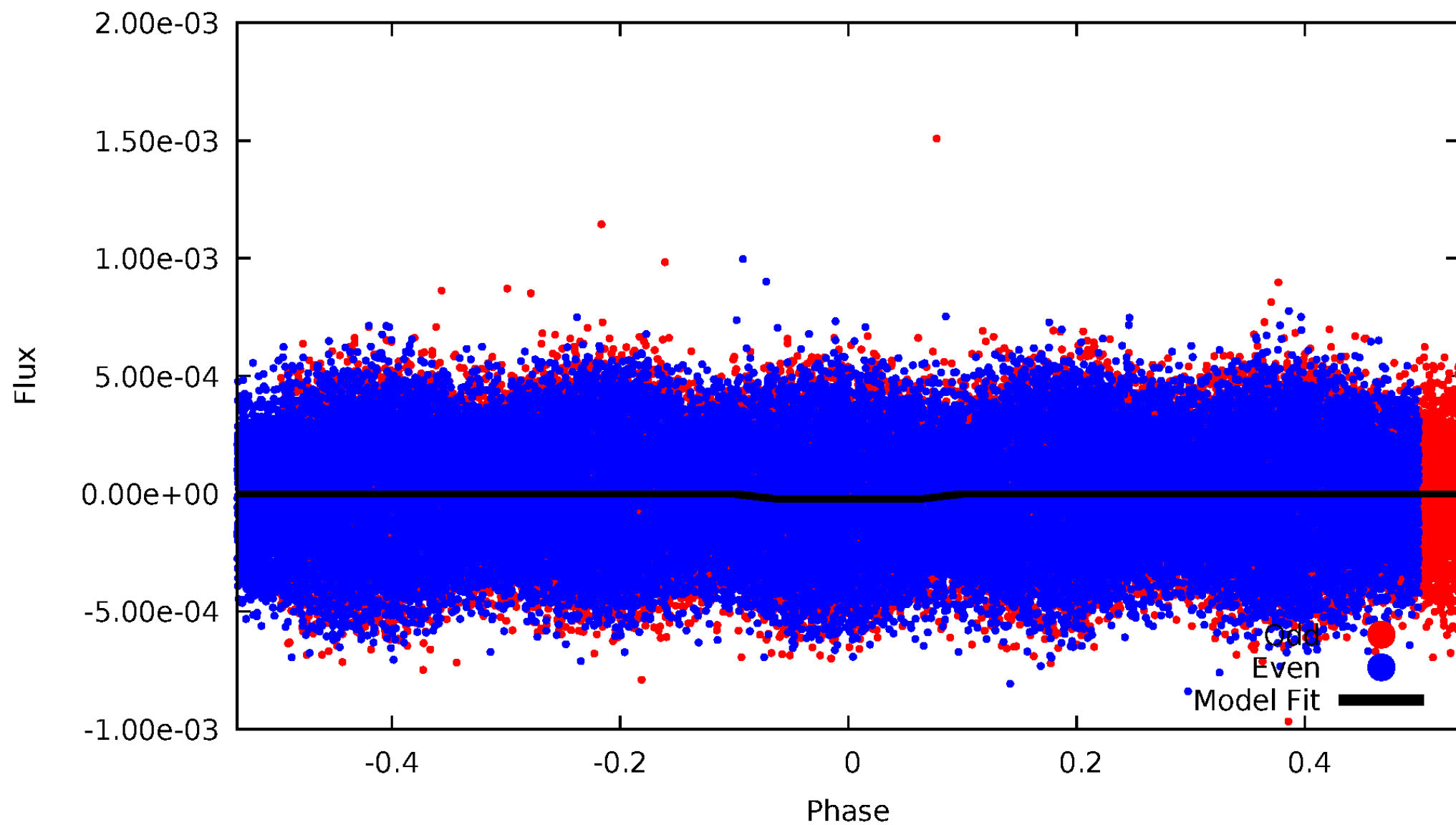
DV Odd/Even

TCE 008126422-01



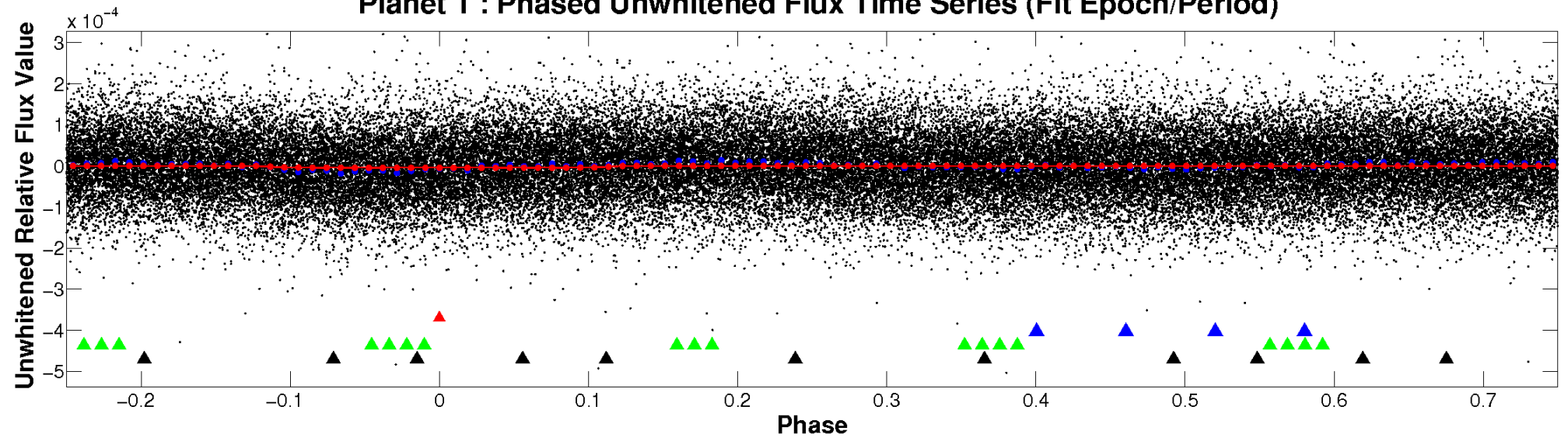
ALT Odd/Even

TCE 008126422-01

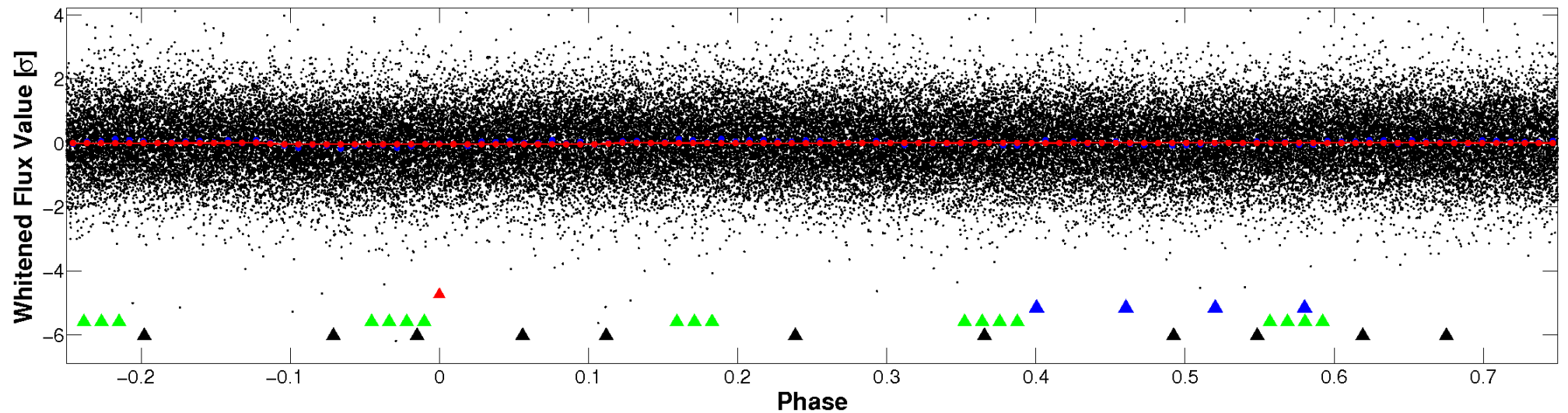


Non-Whitened Vs. Whitened Light Curve

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

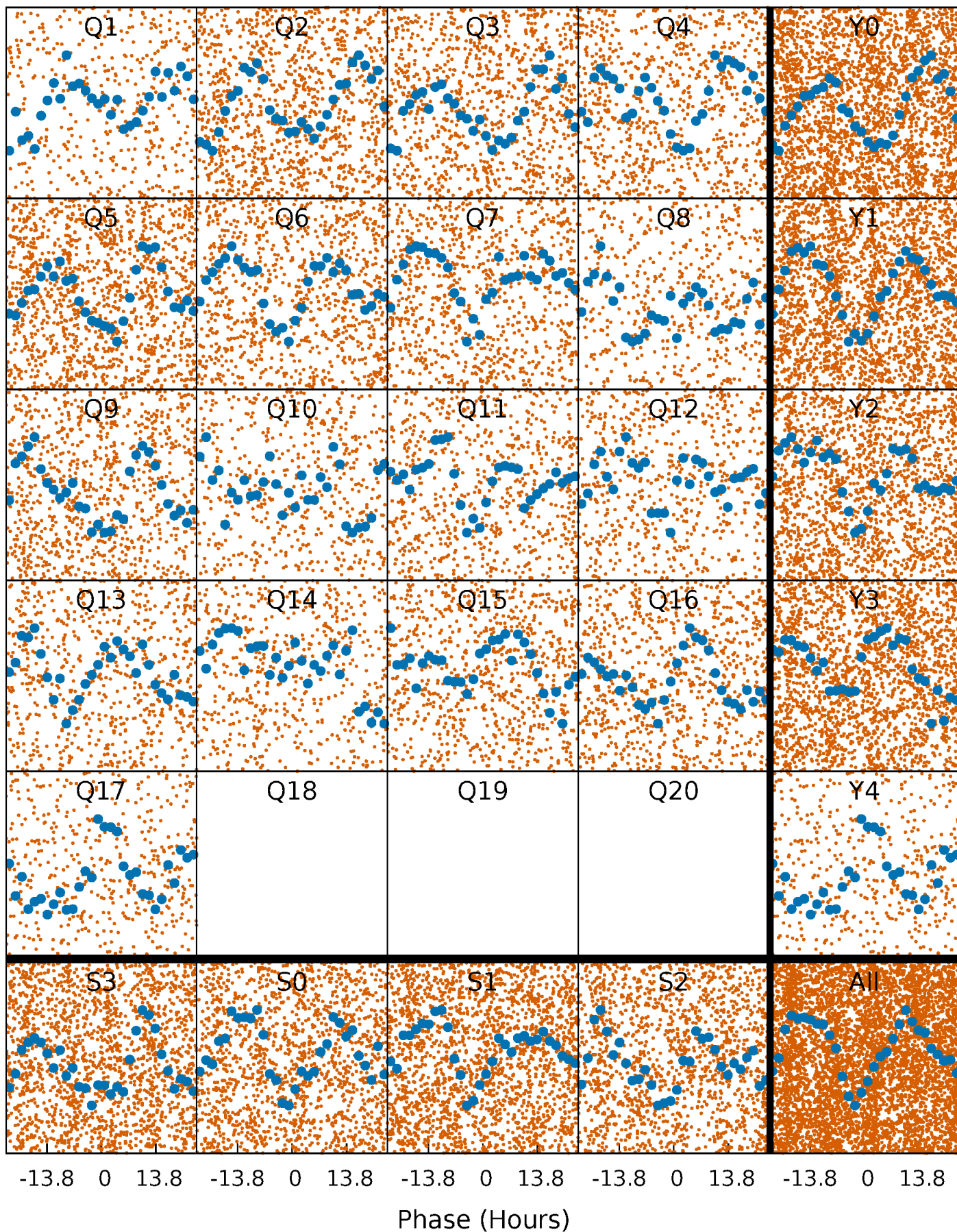


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



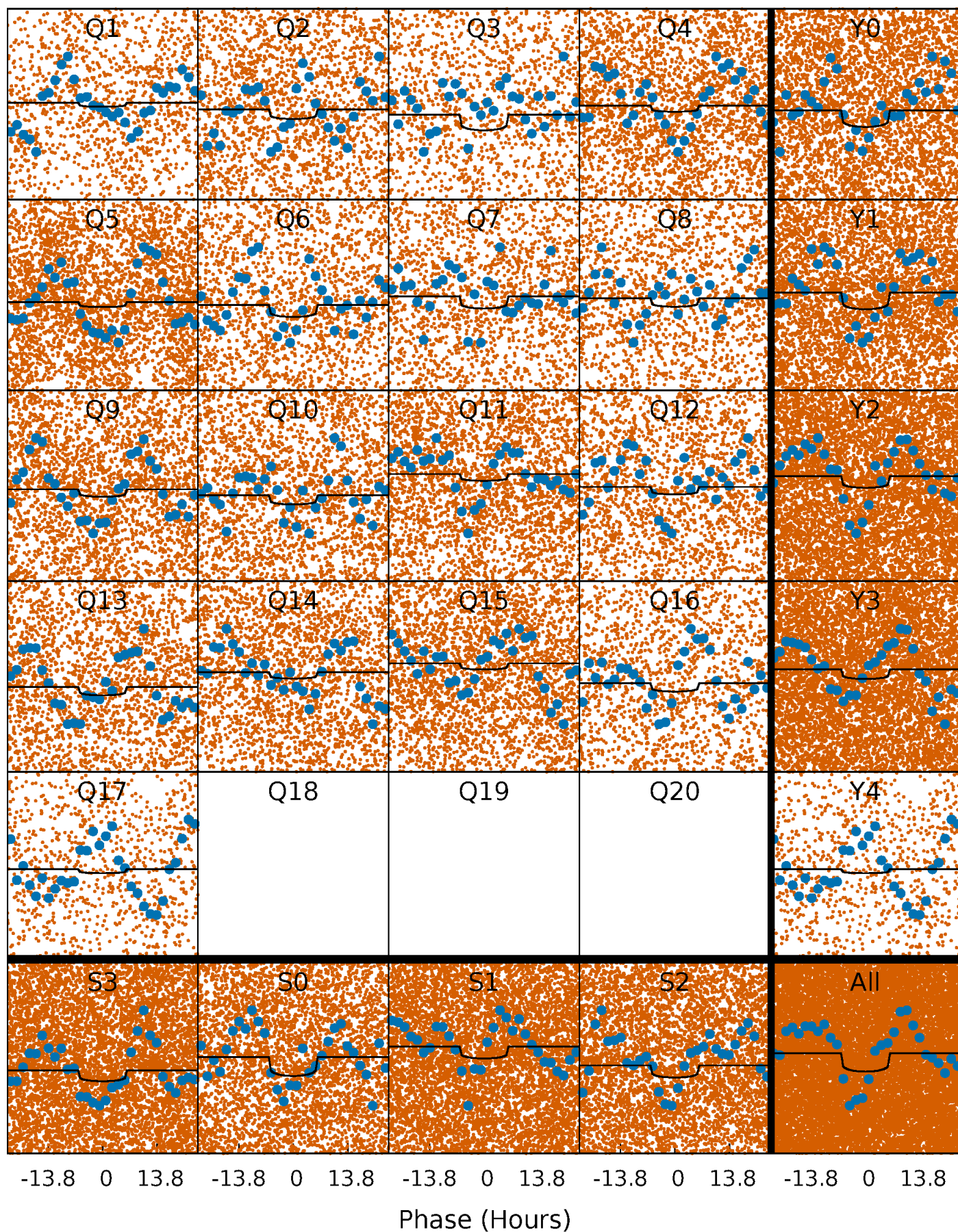
PDC Quarter-Phased Transit Curves

TCE 008126422-01 P= 2.162046 Days $T_0=131.833938$ (BKJD)



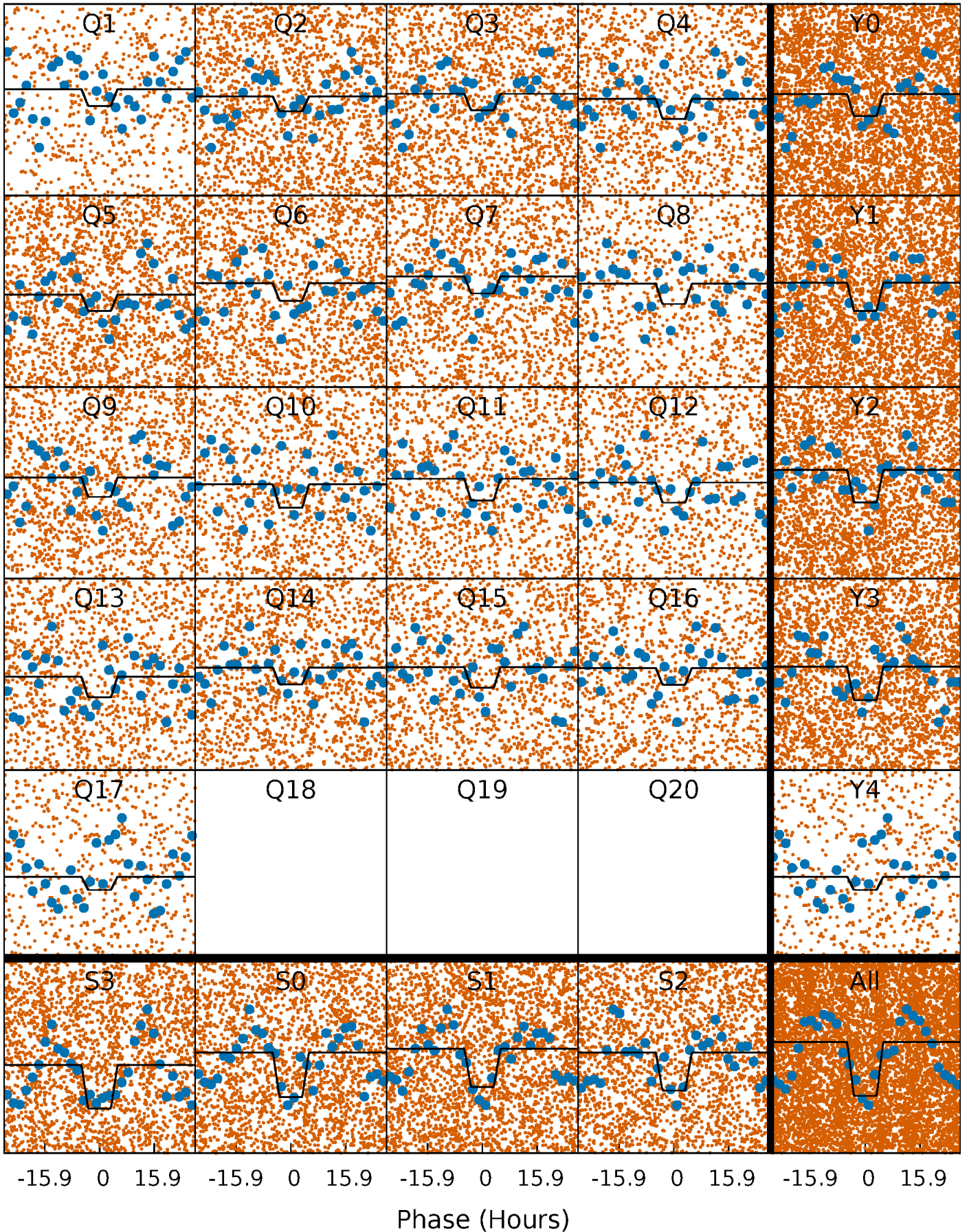
DV Quarter-Phased Transit Curves

TCE 008126422-01 P= 2.162046 Days $T_0=131.833938$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

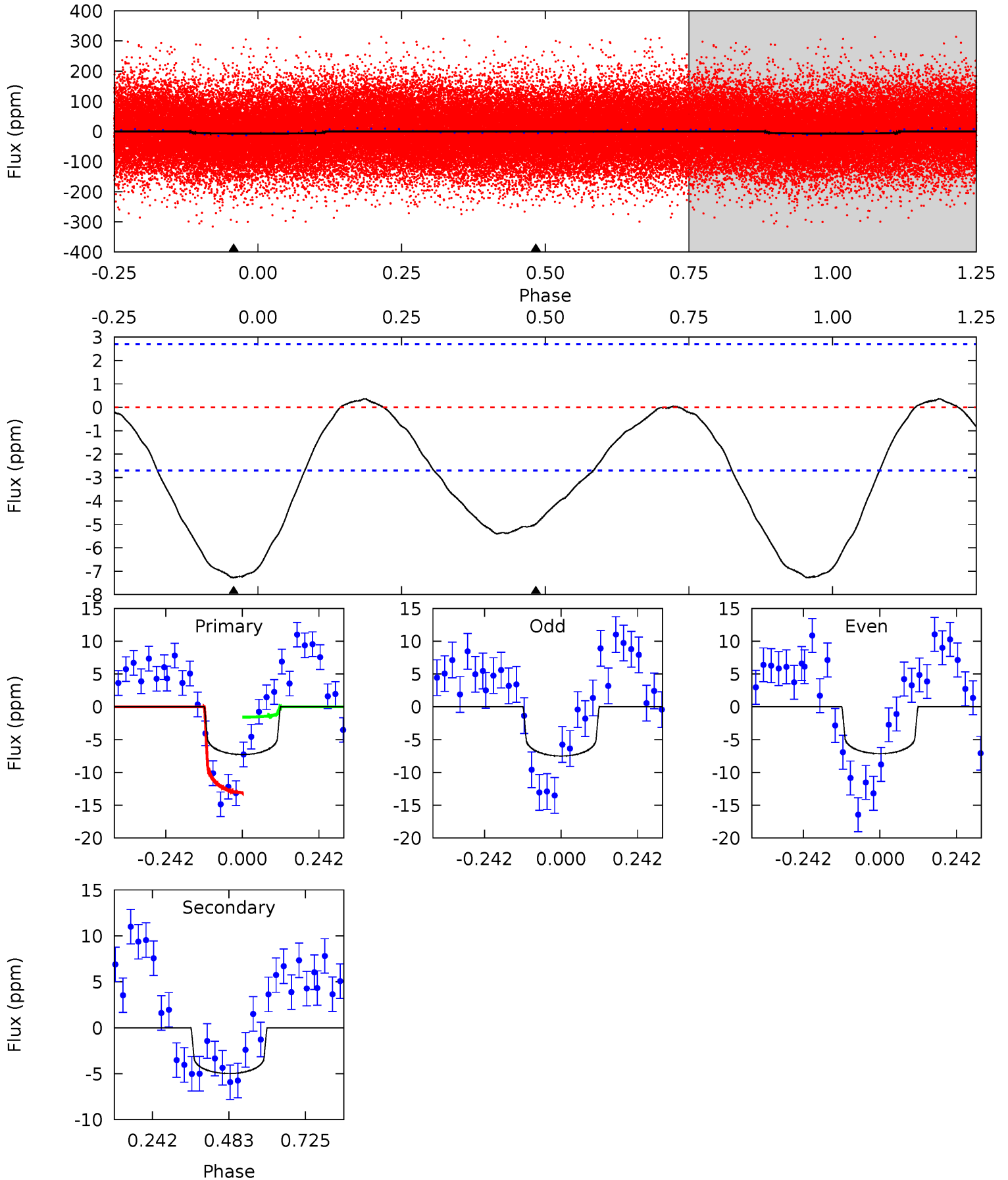
TCE 008126422-01 P= 2.161873 Days $T_0=131.800363$ (BKJD)



DV Model-Shift Uniqueness Test

008126422-01, P = 2.162046 Days, E = 129.671892 Days

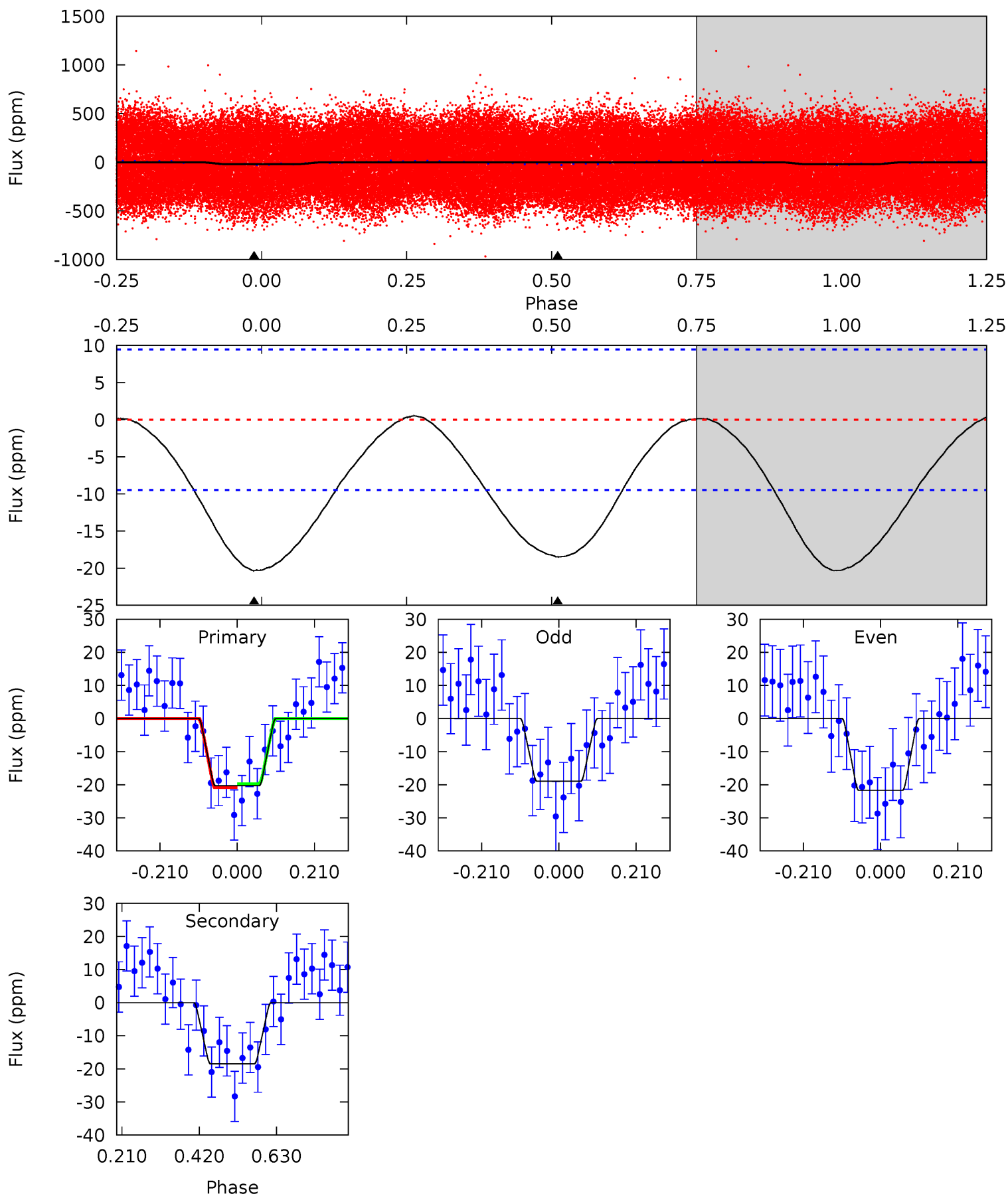
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.8 | 8.07 | 0 | 0 | 4.38 | 1.17 | 0.60 | 11.8 | 11.8 | 8.07 | 8.07 | 0.30 | 1.17 | 0.05 | 9.34 |



Alt Model-Shift Uniqueness Test

008126422-01, P = 2.161873 Days, E = 129.638490 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.46 | 8.61 | 0 | 0 | 4.41 | 1.25 | 0.34 | 9.46 | 9.46 | 8.61 | 8.61 | 0.65 | 1.06 | 0.03 | 0.27 |



Stellar Parameters For KIC 008126422

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7535^{+209}_{-340} | $4.072^{+0.170}_{-0.170}$ | $-0.060^{+0.200}_{-0.400}$ | $1.955^{+0.550}_{-0.450}$ | $1.642^{+0.188}_{-0.282}$ | $0.310^{+0.282}_{-0.148}$ |
| | +3%/-5% | +4%/-4% | +333%/-667% | +28%/-23% | +11%/-17% | +91%/-48% |
| Source | KIC0 | 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 008126422-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|-----------------|
| DV | -5 ± 1 | $0.47^{+0.20}_{-0.18}$ | 3283^{+264}_{-237} | 7388^{+2723}_{-1236} | 18^{+31}_{-9} |
| Alt. | -18 ± 2 | $1.02^{+0.23}_{-0.23}$ | 3300^{+237}_{-230} | 7028^{+939}_{-692} | 14^{+10}_{-5} |

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 $A_{obs} \gg 1.0$

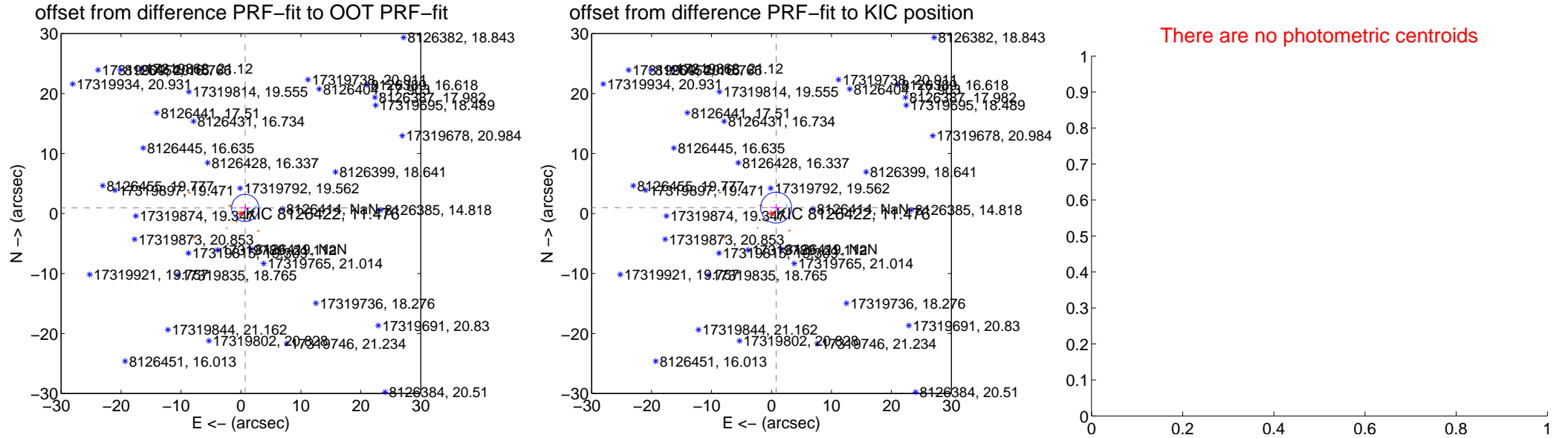
DV Centroid Data

Supplemental centroid analysis for 008126422-01. **Kepler magnitude: 11.48.** Transit SNR 4.84

There are 7 quarters with good PRF difference image offsets

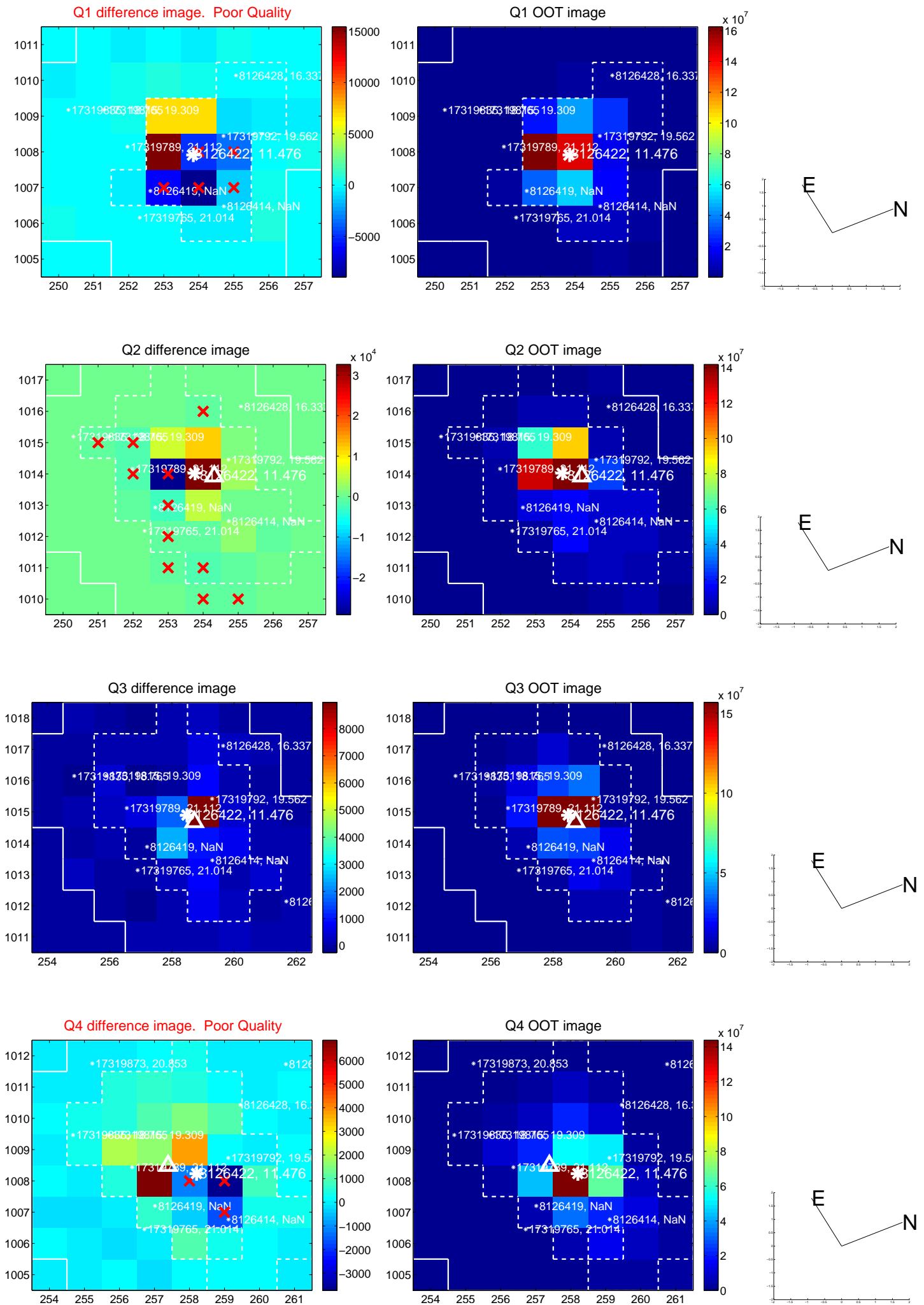
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 1.175 ± 0.755 | 1.56 | -0.716 ± 0.979 | 0.931 ± 0.569 |
| PRF-fit source offset from KIC position | 1.243 ± 0.859 | 1.45 | -0.771 ± 1.067 | 0.975 ± 0.637 |
| photometric centroid source offset | — | — | — | — |

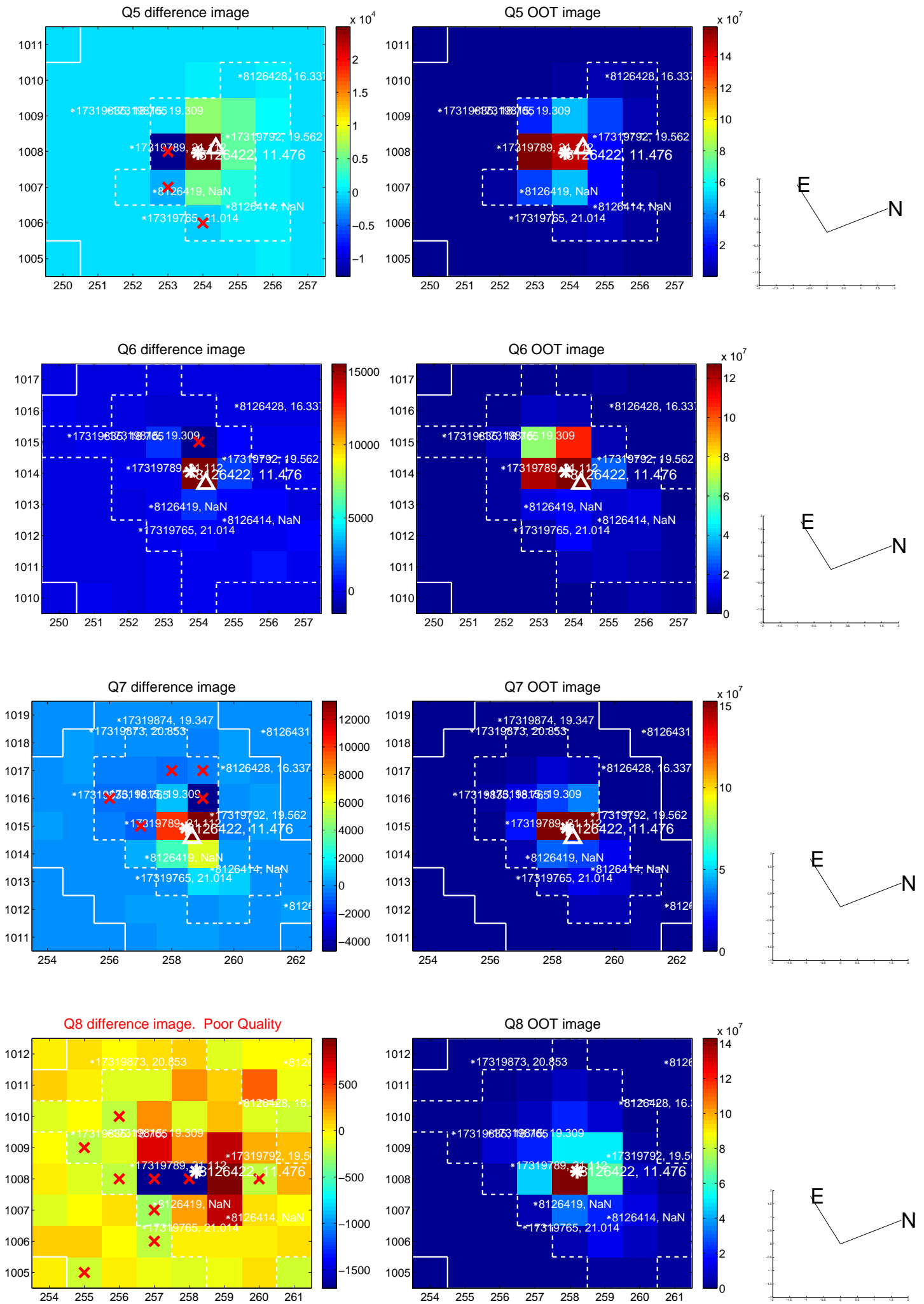


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

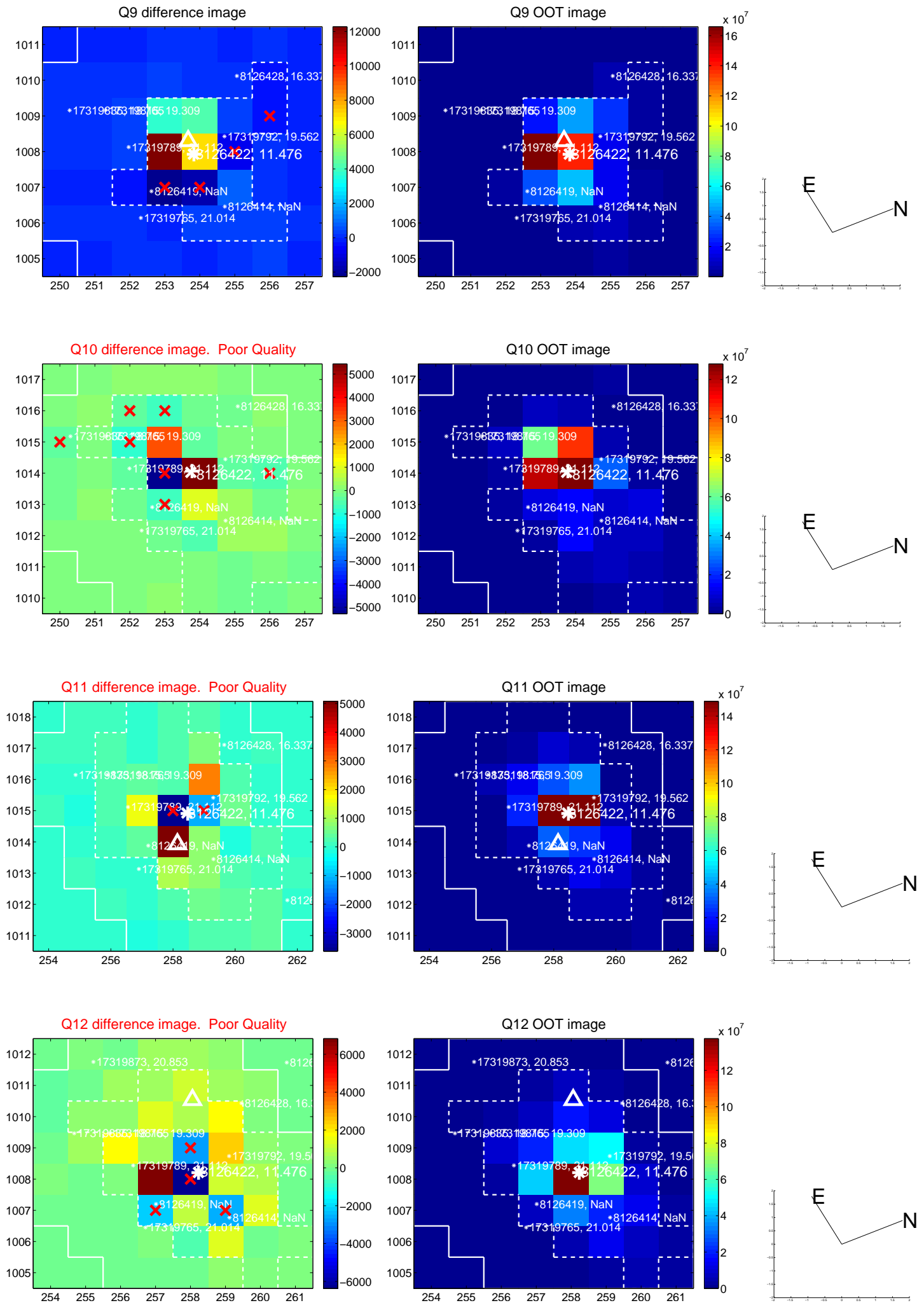
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



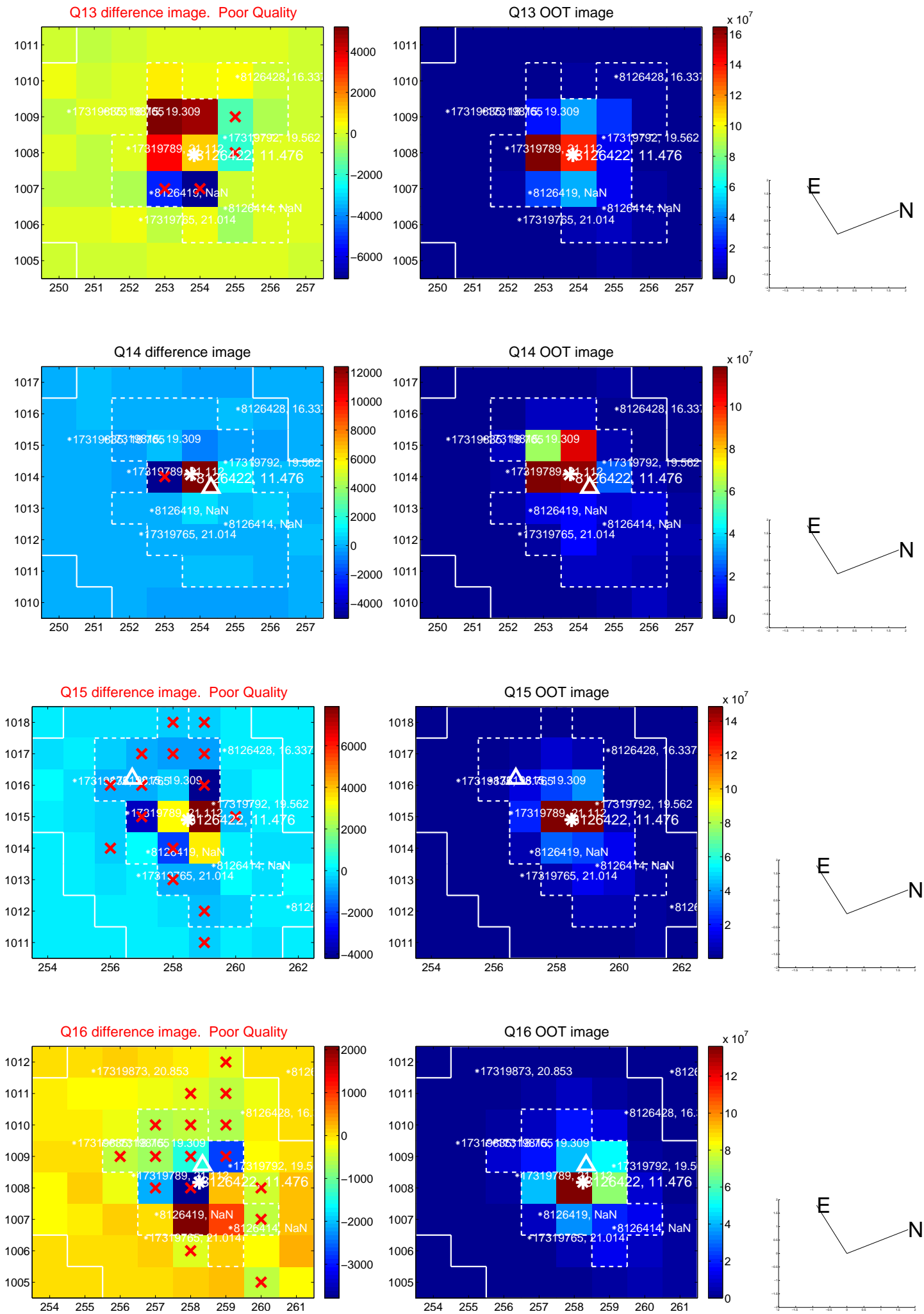
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



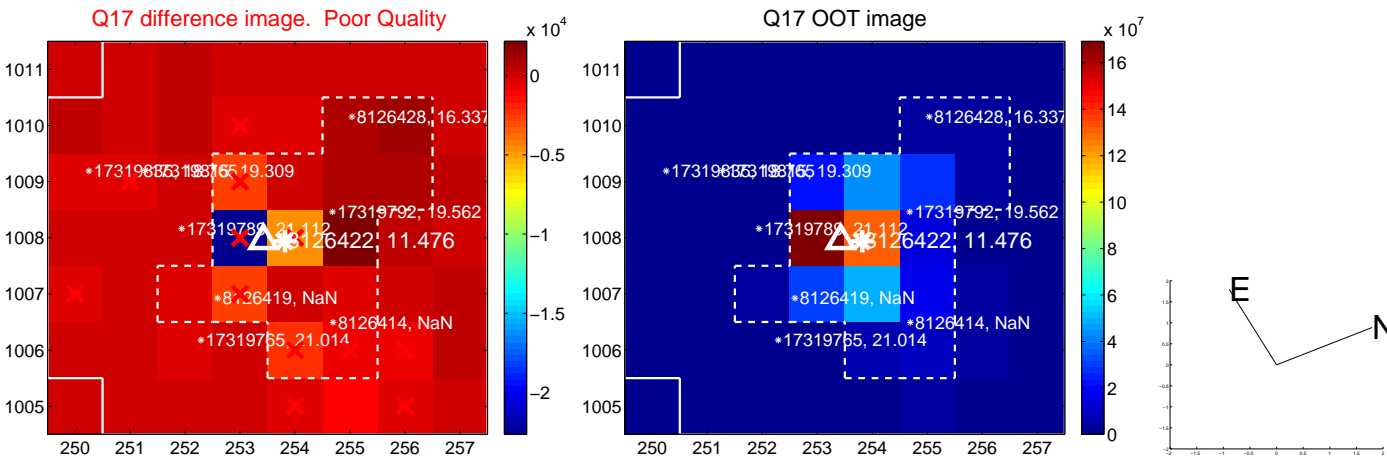
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



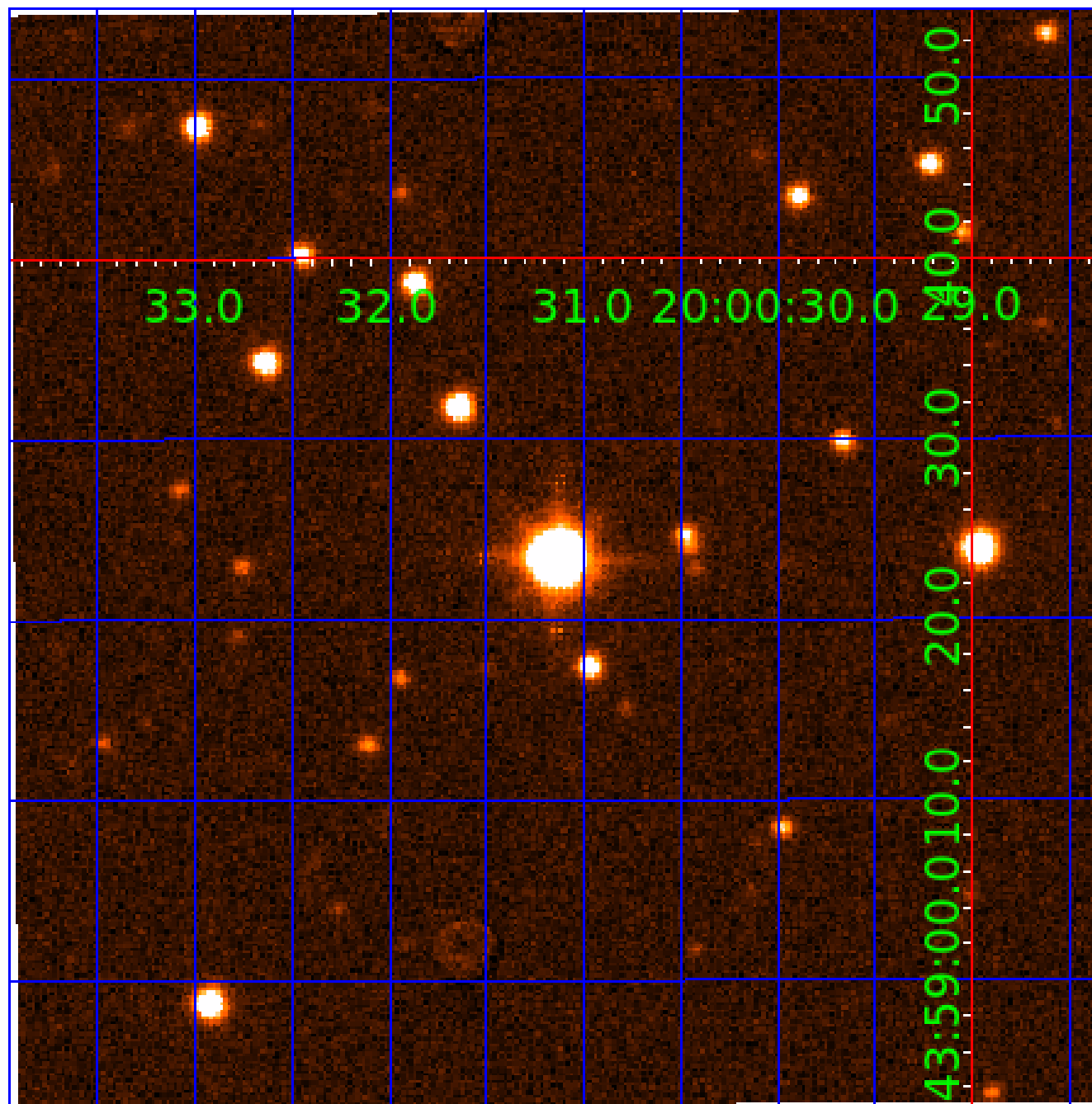
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 008126422

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008126422-01 | OBS | No | 2.162046 | 131.833938 | 4.6 | 12.099 | 7.5 | 4.8 | 1.96 | 7535 | 0.48 | 7393.30 |
| 008126422-02 | OBS | No | 382.552677 | 373.075528 | 92.6 | 9.185 | 9.4 | 8.2 | 1.96 | 7535 | 1.91 | 7.44 |
| 008126422-03 | OBS | No | 83.460082 | 145.567741 | 90.5 | 3.437 | 8.8 | 8.1 | 1.96 | 7535 | 2.18 | 56.67 |
| 008126422-04 | OBS | No | 124.454777 | 239.903928 | 35.3 | 12.126 | 7.5 | 3.3 | 1.96 | 7535 | 1.34 | 33.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008126422-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—CENT_SATURATED |
| 008126422-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

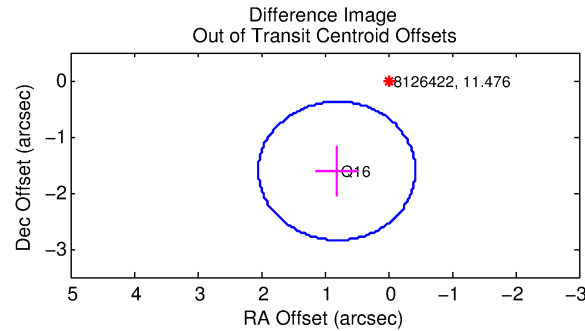
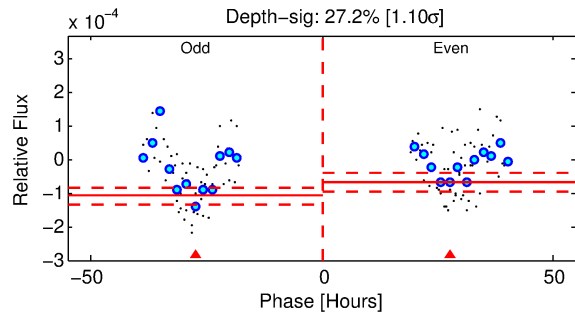
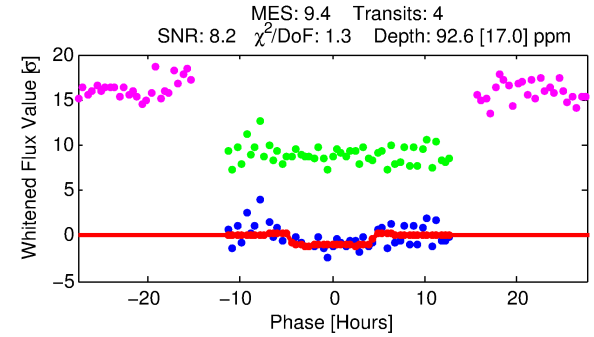
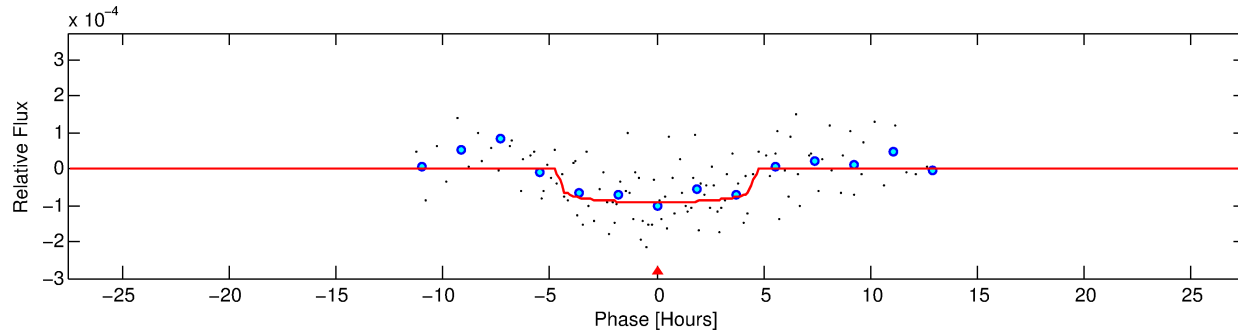
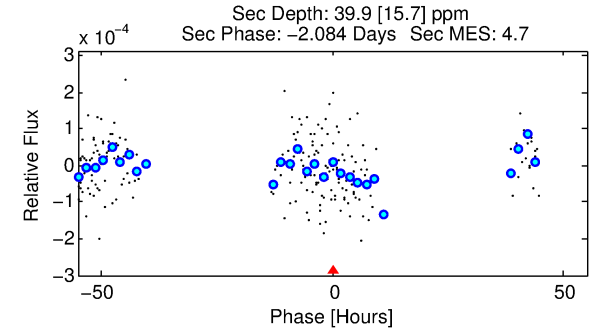
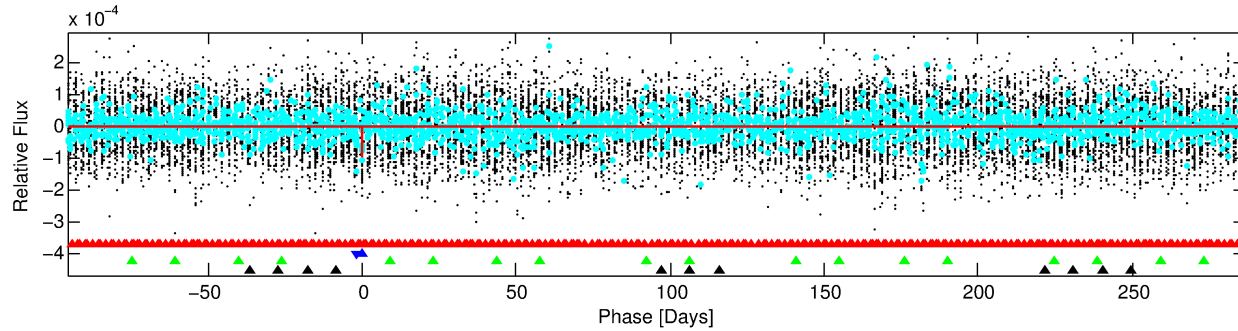
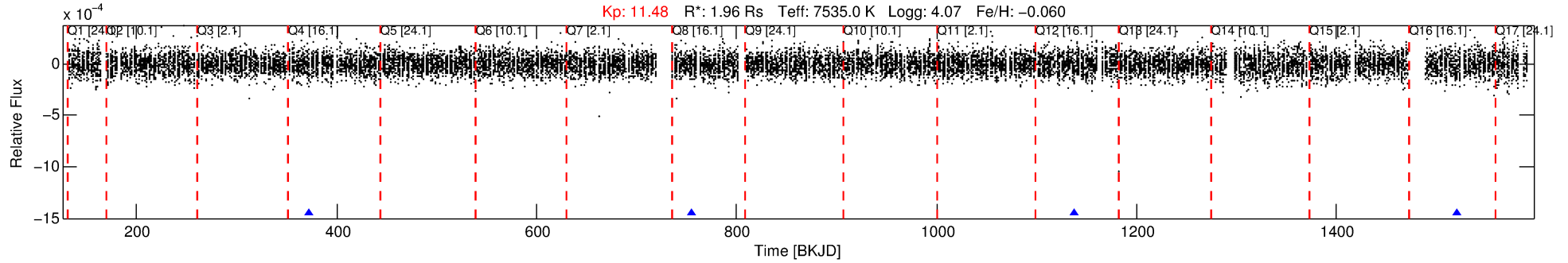
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008126422-02

No Significant Match Found

DV One-Page Summary

KIC: 8126422 Candidate: 2 of 4 Period: 382.553 d



DV Fit Results:

Period = 382.55268 [0.01127] d
Epoch = 373.0755 [0.0178] BKJD
Rp/R* = 0.0090 [0.0134]
a/R* = 316.80 [2910.71]
b = 0.16 [54.95]
Seff = 7.44 [2.74]
Teq = 421 [39] K
Rp = 1.91 [2.92] Re
a = 1.2178 [0.2782] AU
Ag = 8885.55 [26997.20] [0.33σ]
Teffp = 6322 [4784] K [1.23σ]

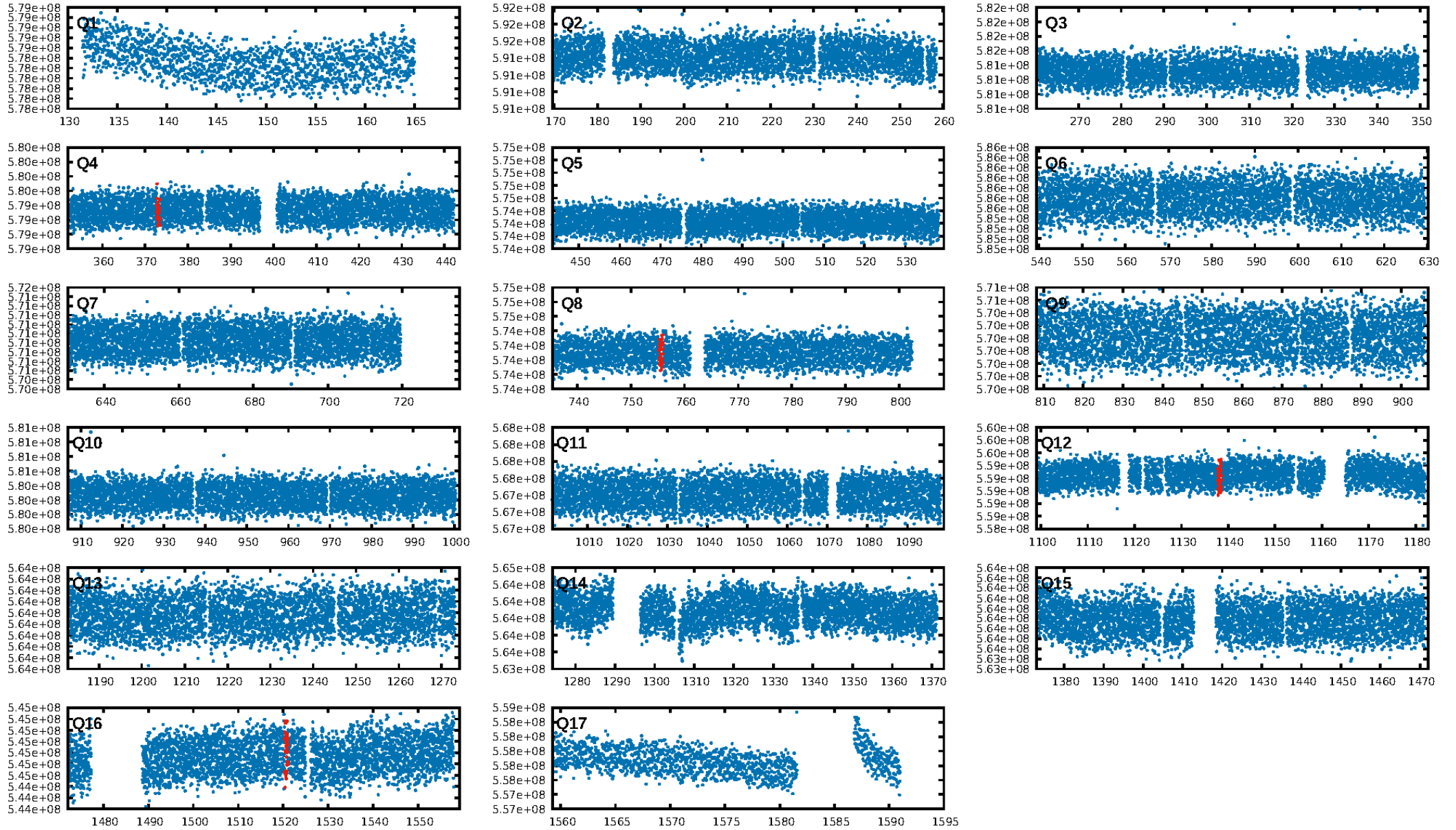
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [407.20σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 8.2%
ModelChiSquareGof-sig: 89.6%
Bootstrap-pfa: 1.45e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.819
Centroid-sig: 73.5%
Centroid-so: 0.761 arcsec [0.52σ]
OotOffset-rm: 1.803 arcsec [4.38σ]
KicOffset-rm: 1.778 arcsec [4.32σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.67 [2/3]

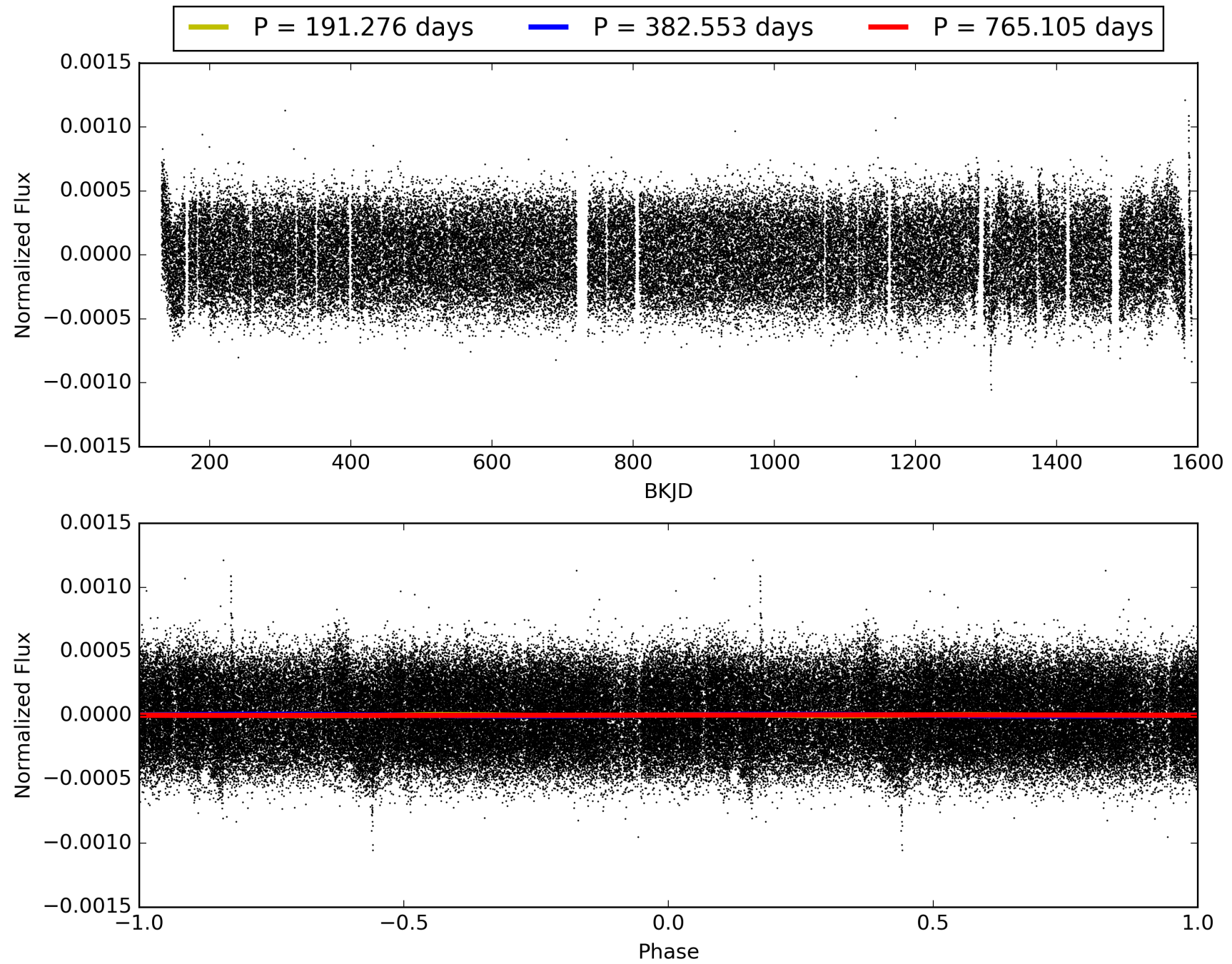
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:56:13 Z

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

TCE 008126422-02, PDC Light Curves

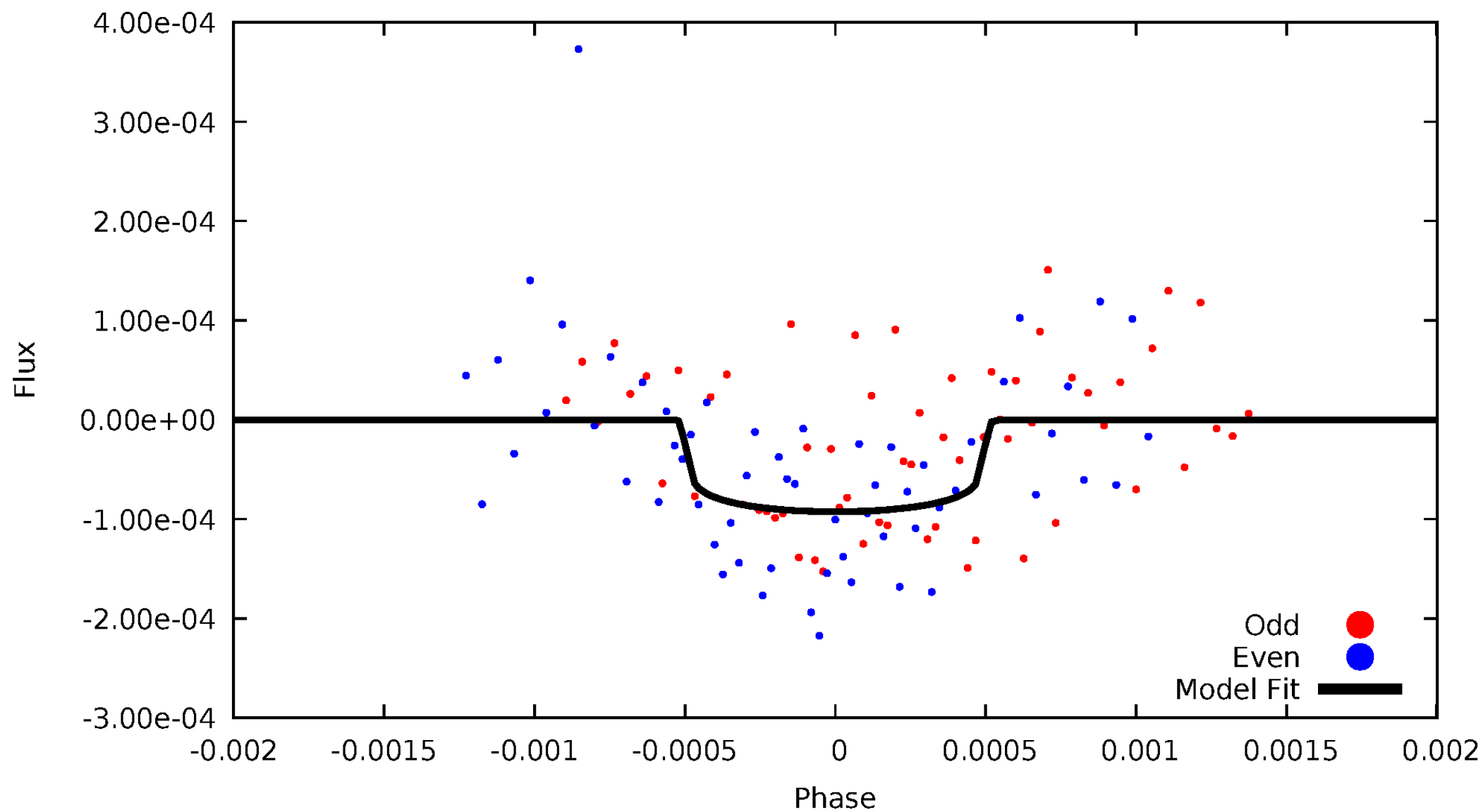


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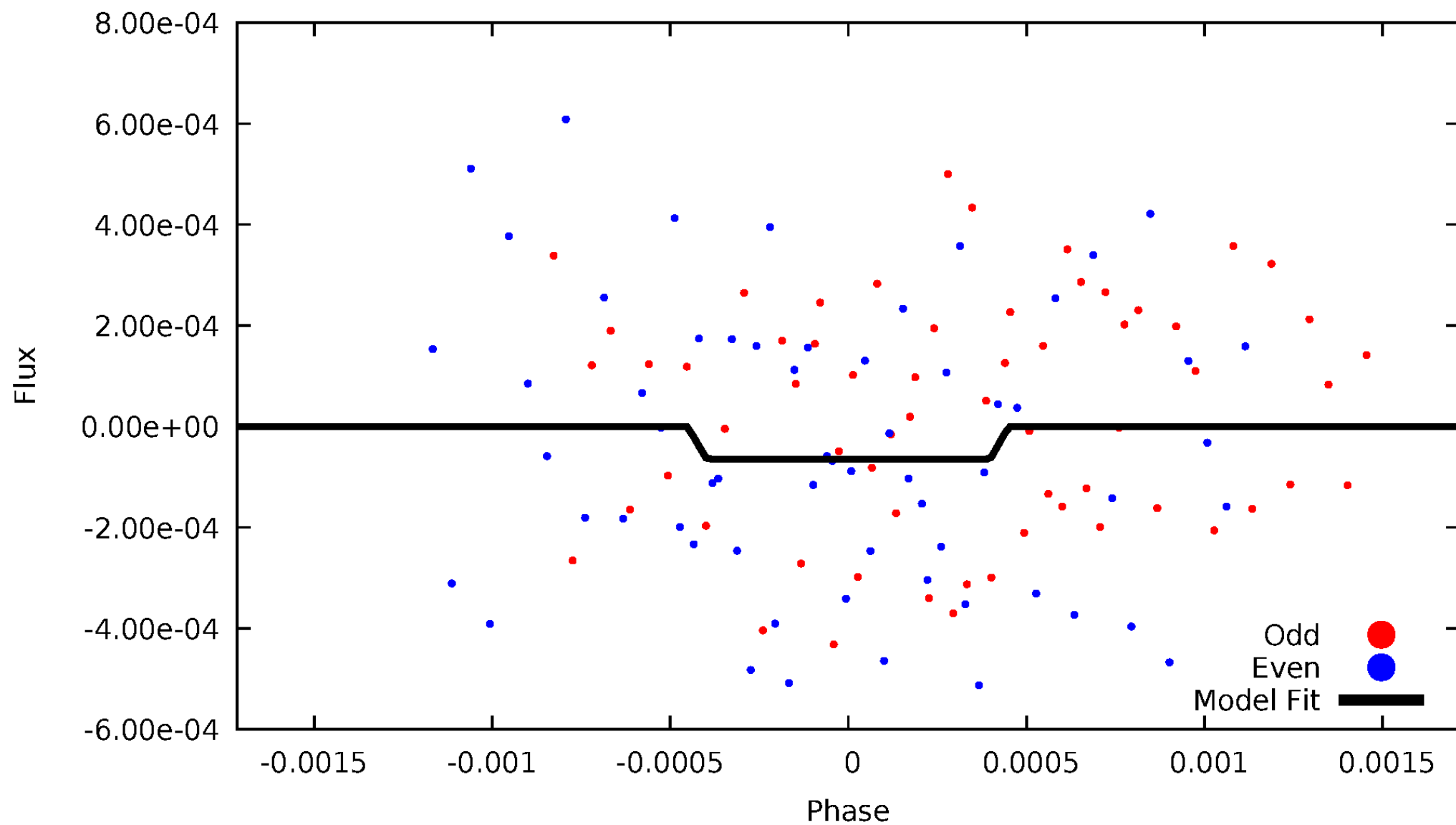
DV Odd/Even

TCE 008126422-02



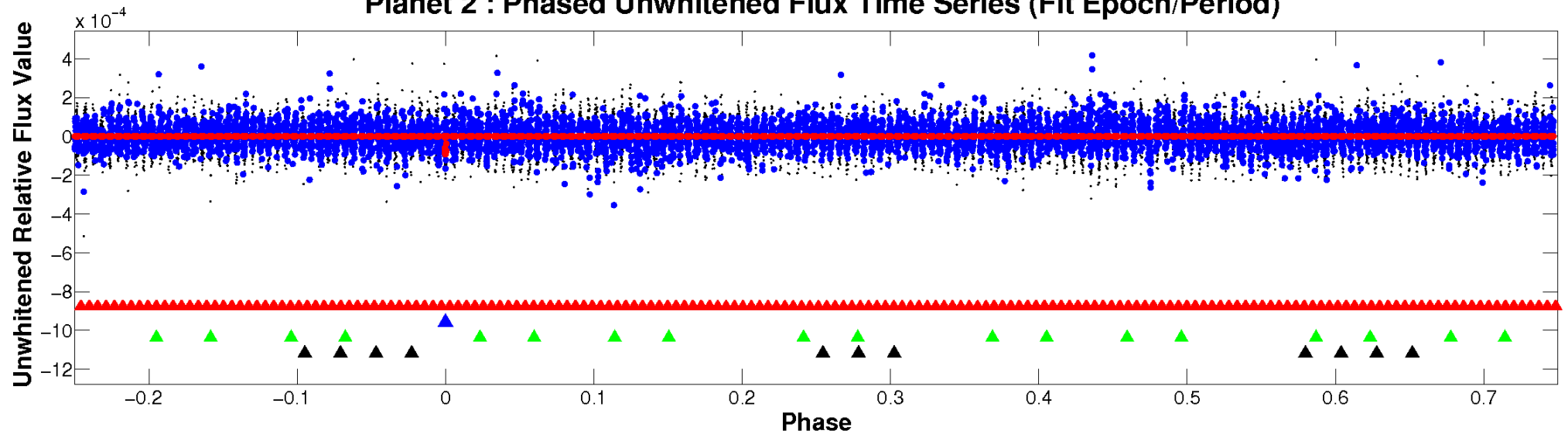
ALT Odd/Even

TCE 008126422-02

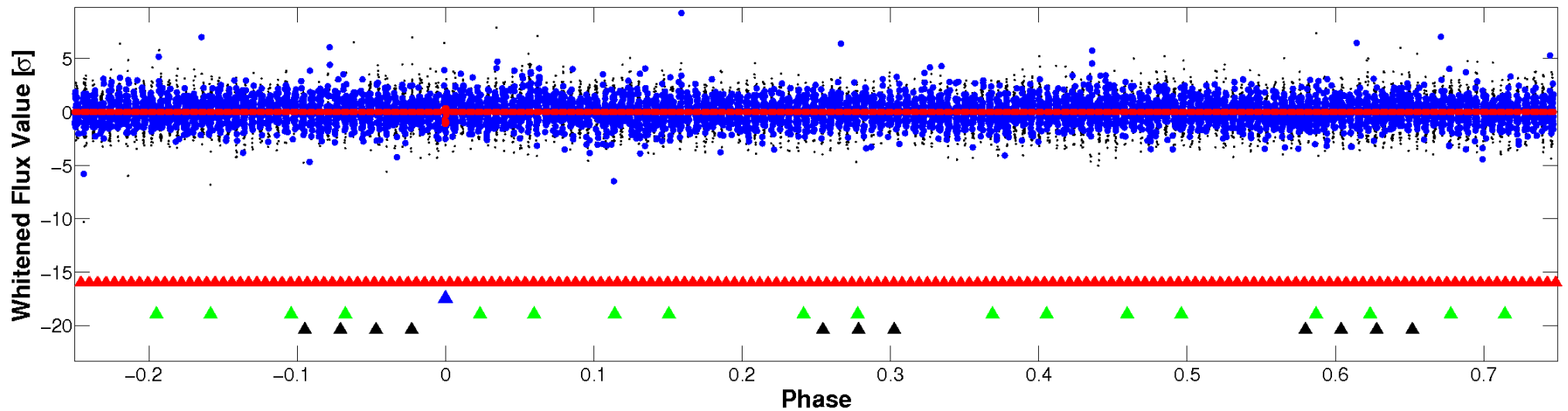


Non-Whitened Vs. Whitened Light Curve

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

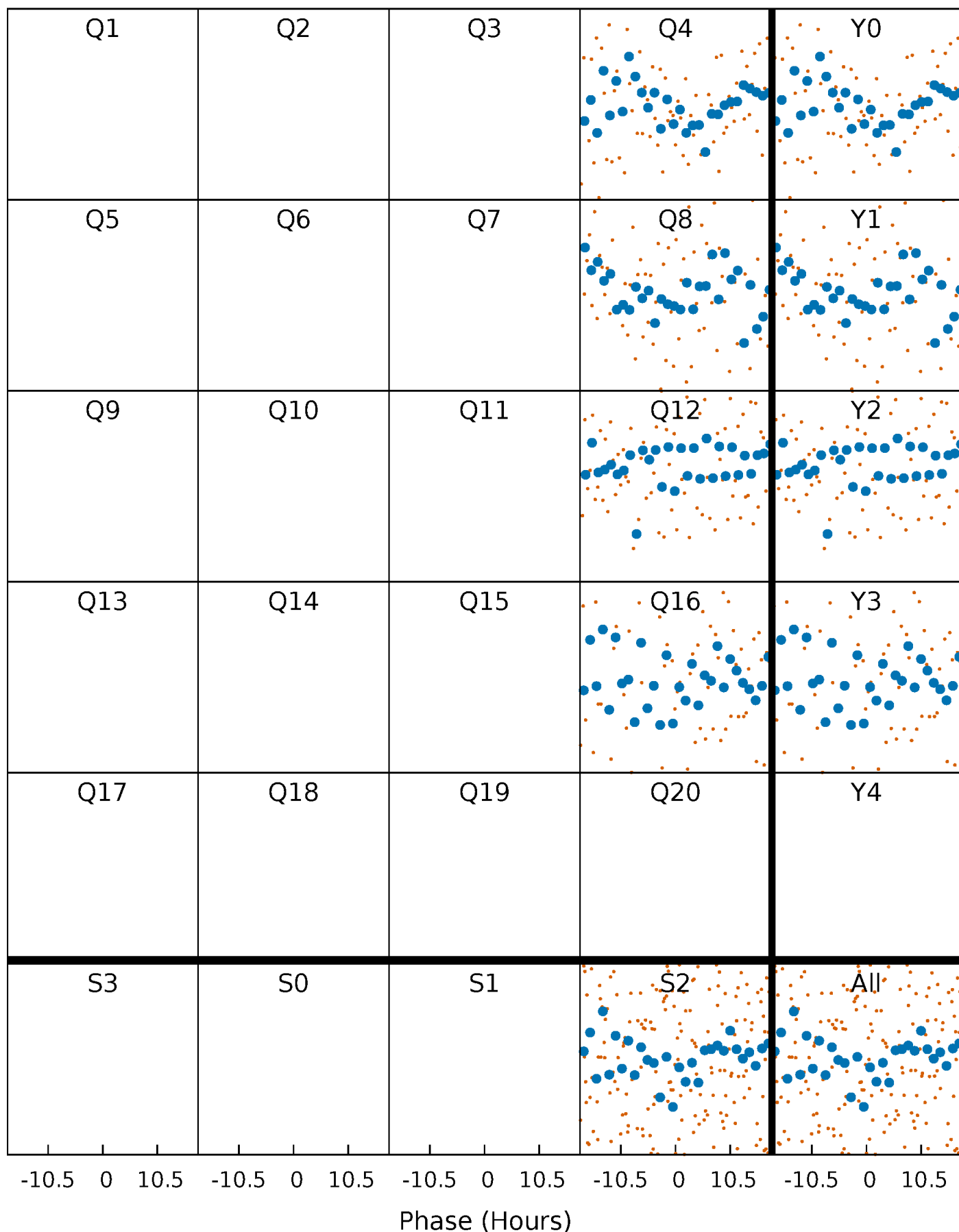


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



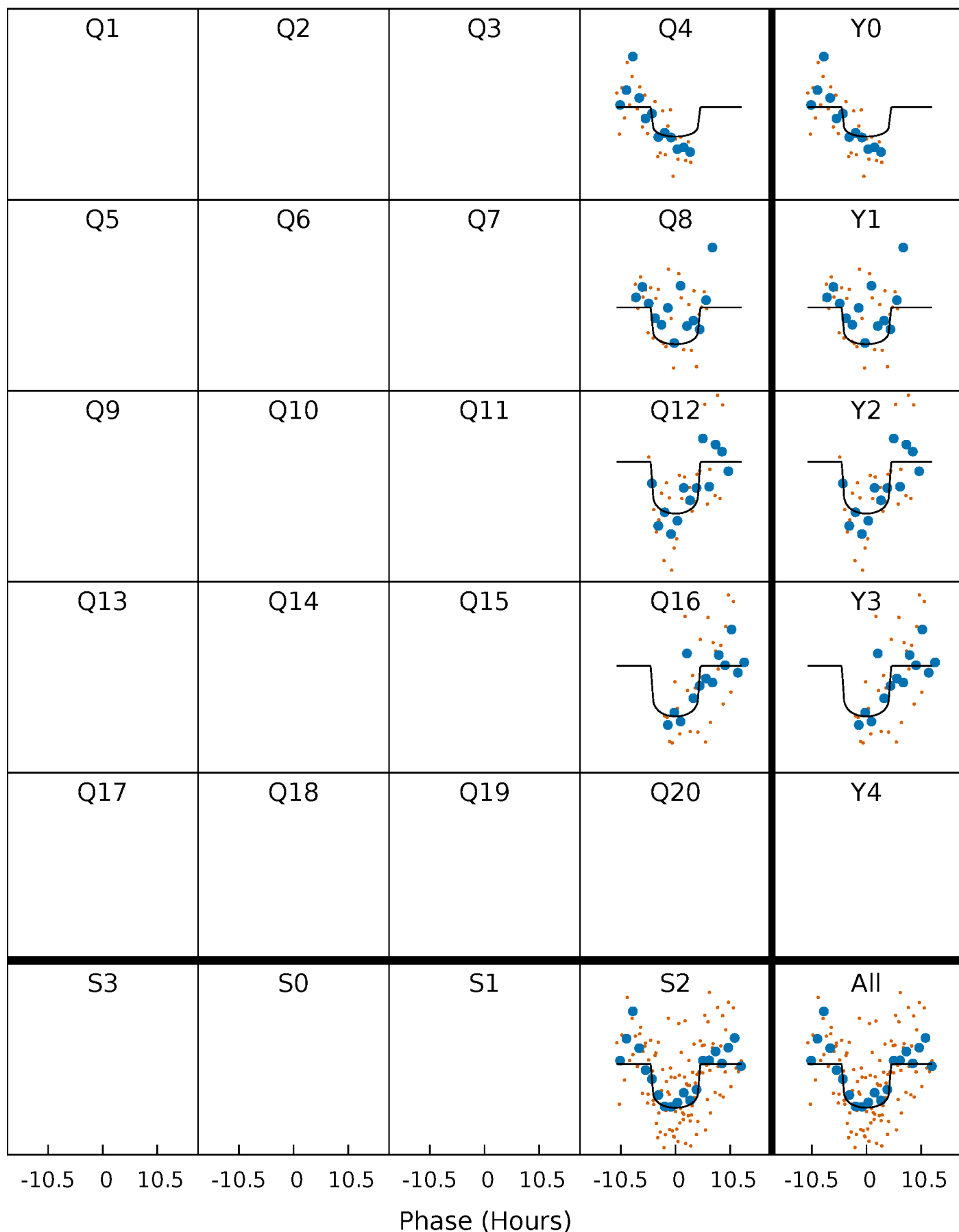
PDC Quarter-Phased Transit Curves

TCE 008126422-02 $P=382.552678$ Days $T_0=373.075528$ (BKJD)



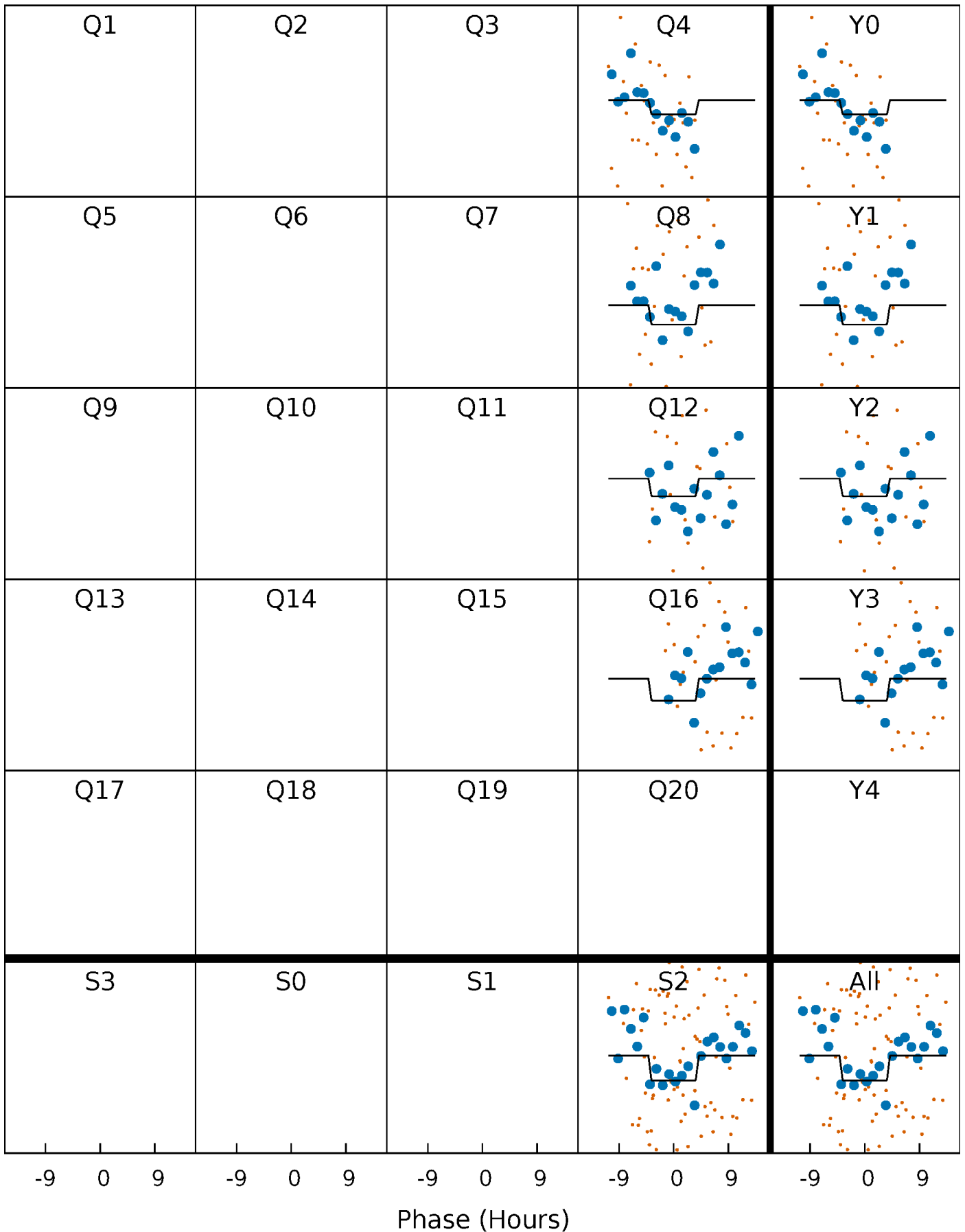
DV Quarter-Phased Transit Curves

TCE 008126422-02 P=382.552678 Days $T_0=373.075528$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

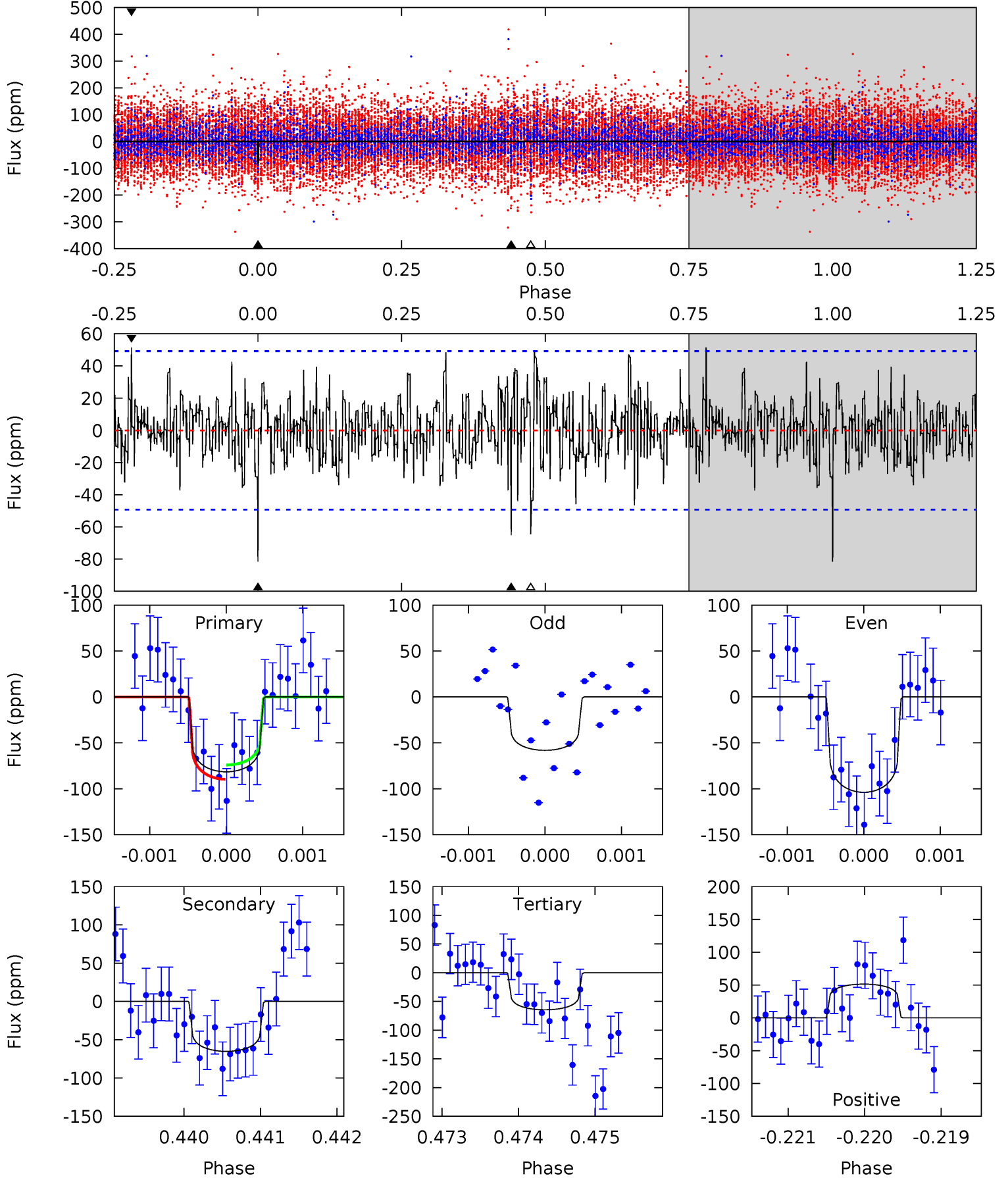
TCE 008126422-02 P=382.550299 Days $T_0=373.051940$ (BKJD)



DV Model-Shift Uniqueness Test

008126422-02, P = 382.552678 Days, E = 373.075528 Days

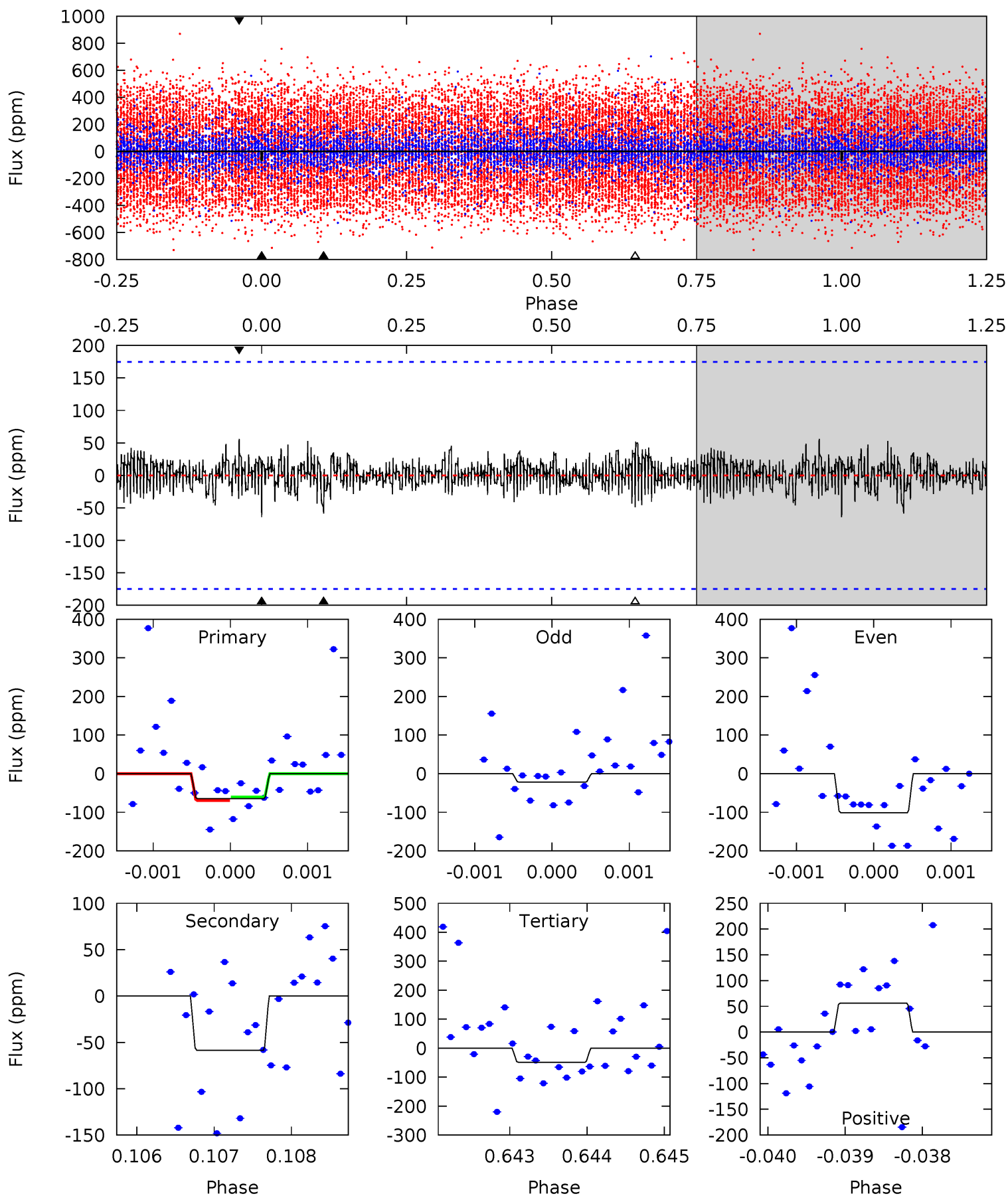
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.00 | 7.20 | 7.12 | 5.68 | 5.44 | 3.27 | 1.65 | 1.88 | 3.32 | 0.07 | 1.52 | 2.52 | 0.95 | 0.39 | 0.86 |



Alt Model-Shift Uniqueness Test

008126422-02, P = 382.550299 Days, E = 373.051940 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.01 | 1.83 | 1.52 | 1.75 | 5.47 | 3.32 | 0.46 | 0.49 | 0.26 | 0.31 | 0.08 | 1.24 | 1.04 | 0.47 | 0.14 |



Stellar Parameters For KIC 008126422

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7535^{+209}_{-340} | $4.072^{+0.170}_{-0.170}$ | $-0.060^{+0.200}_{-0.400}$ | $1.955^{+0.550}_{-0.450}$ | $1.642^{+0.188}_{-0.282}$ | $0.310^{+0.282}_{-0.148}$ |
| | +3%/-5% | +4%/-4% | +333%/-667% | +28%/-23% | +11%/-17% | +91%/-48% |
| Source | KIC0 | 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 008126422-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|-------------------|------------------------|-------------------------|
| DV | -65 ± 9 | $2.93^{+2.60}_{-1.94}$ | 587^{+45}_{-40} | 5590^{+5229}_{-1220} | 5847^{+47385}_{-4108} |
| Alt. | -58 ± 32 | $2.43^{+2.38}_{-1.65}$ | 584^{+43}_{-40} | 5748^{+6184}_{-1597} | 6605^{+59248}_{-5293} |

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 $A_{obs} \gg 1.0$

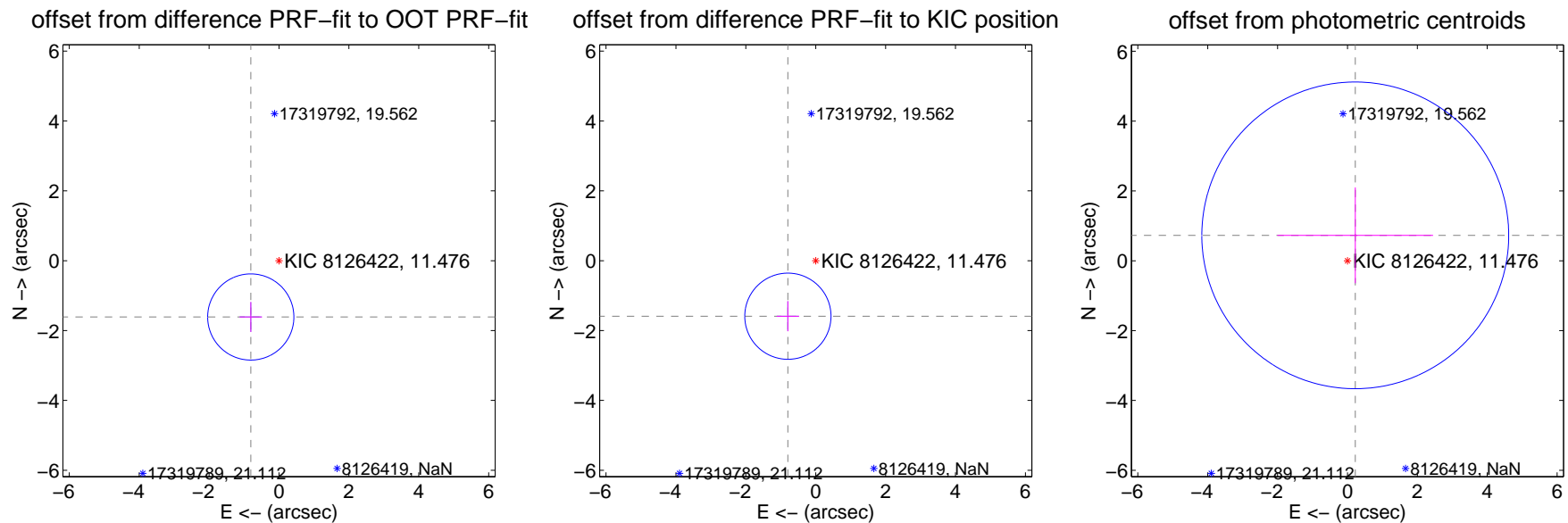
DV Centroid Data

Supplemental centroid analysis for 008126422-02. **Kepler magnitude: 11.48.** Transit SNR 8.23

There are 1 quarters with good PRF difference image offsets

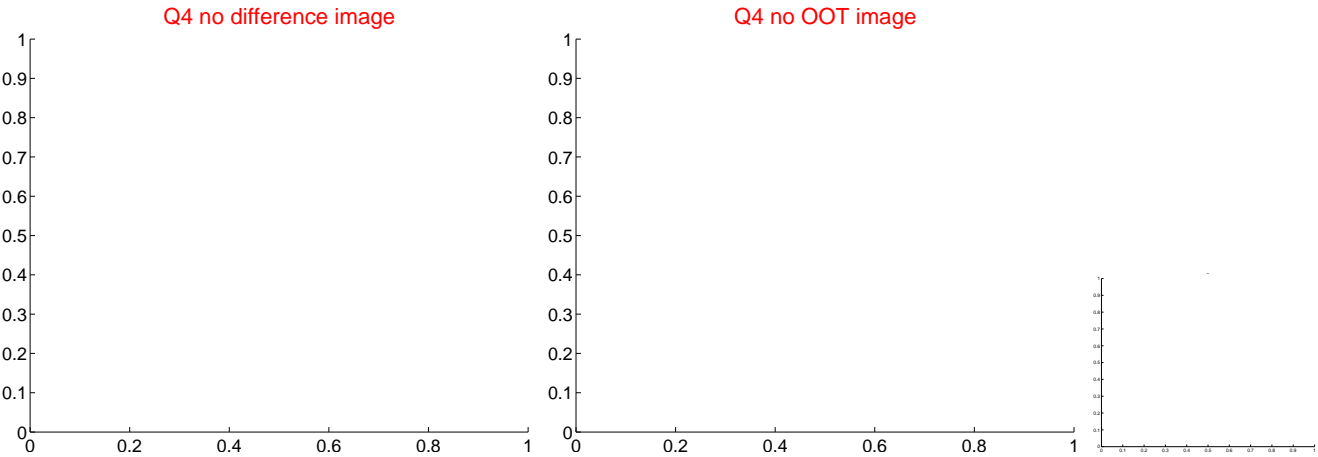
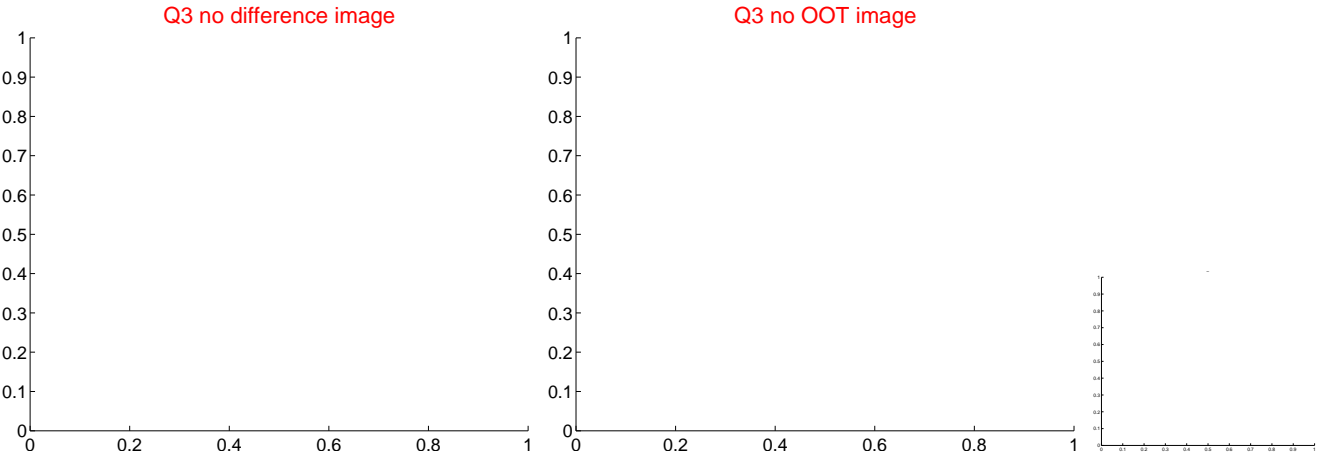
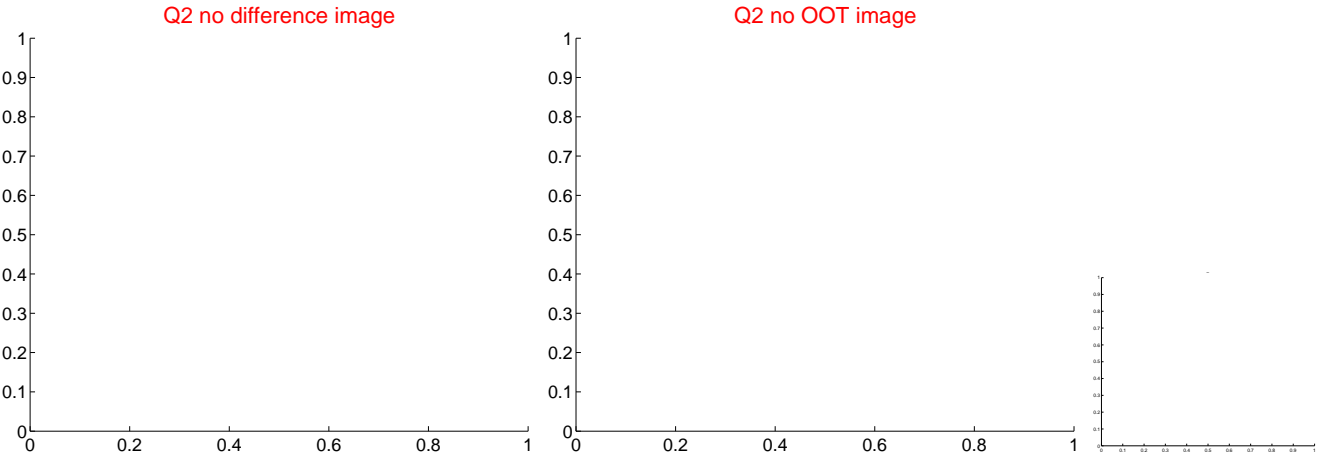
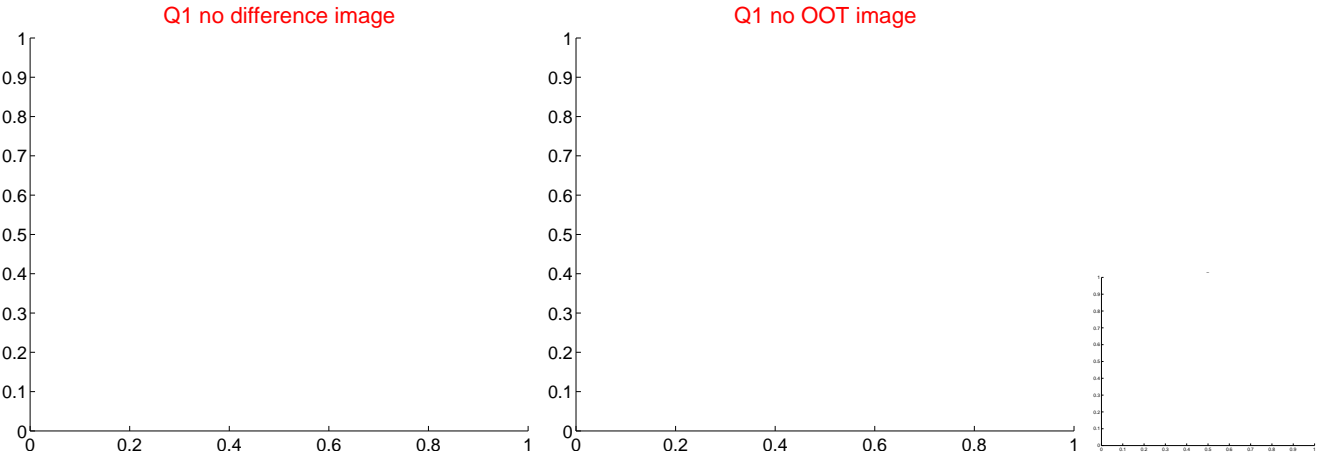
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.803 ± 0.411 | 4.38 | 0.808 ± 0.320 | -1.612 ± 0.431 |
| PRF-fit source offset from KIC position | 1.778 ± 0.411 | 4.32 | 0.796 ± 0.320 | -1.589 ± 0.431 |
| photometric centroid source offset | 0.76 ± 1.46 | 0.52 | -0.22 ± 2.23 | 0.73 ± 1.37 |



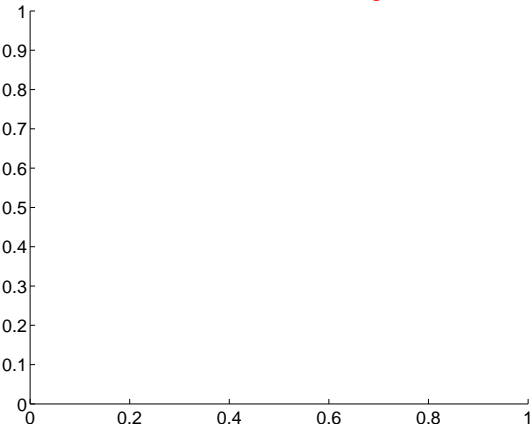
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

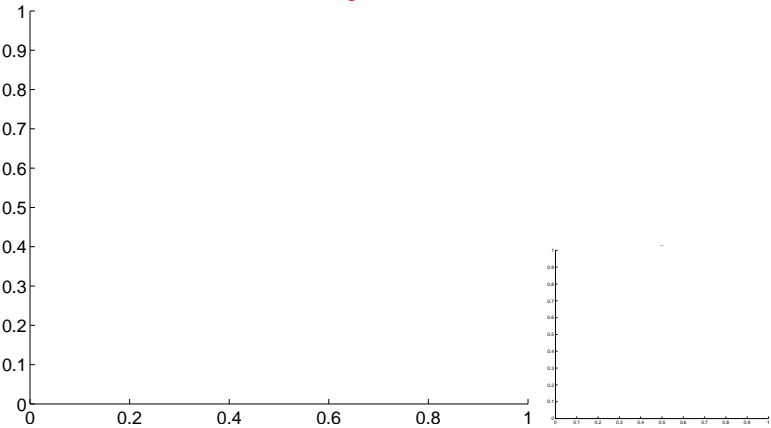


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

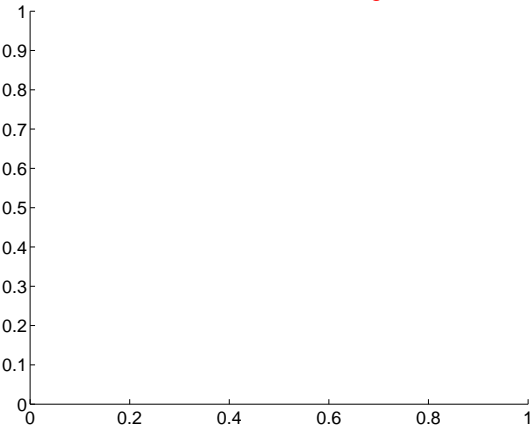
Q5 no difference image



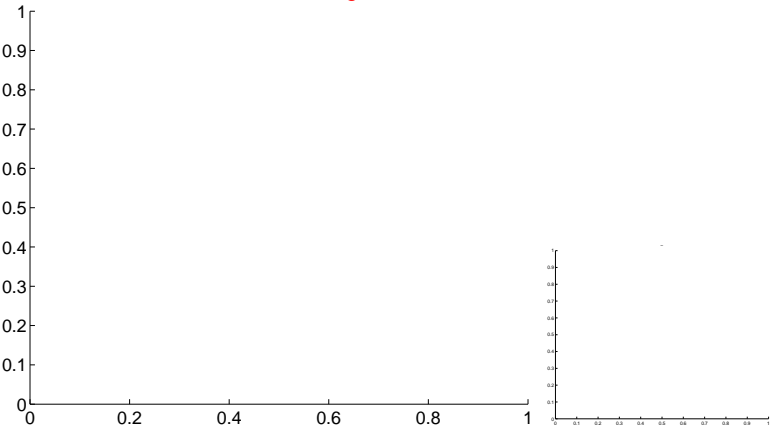
Q5 no OOT image



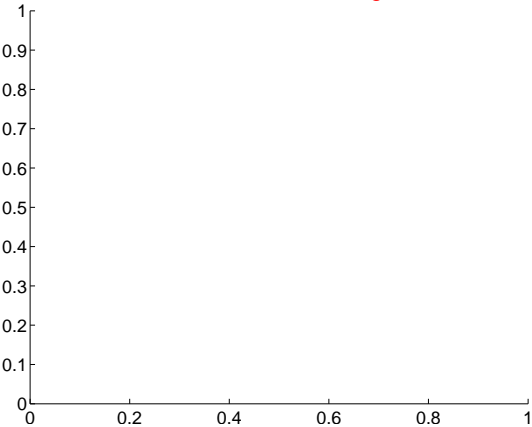
Q6 no difference image



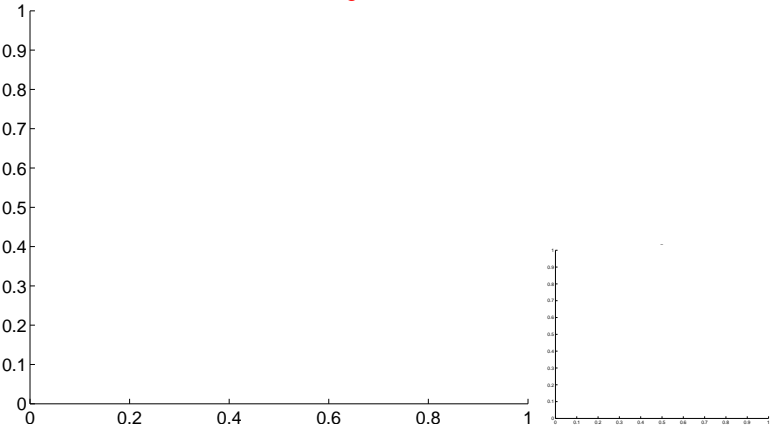
Q6 no OOT image



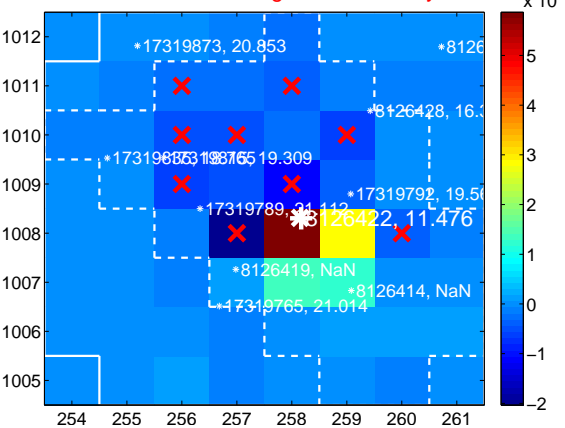
Q7 no difference image



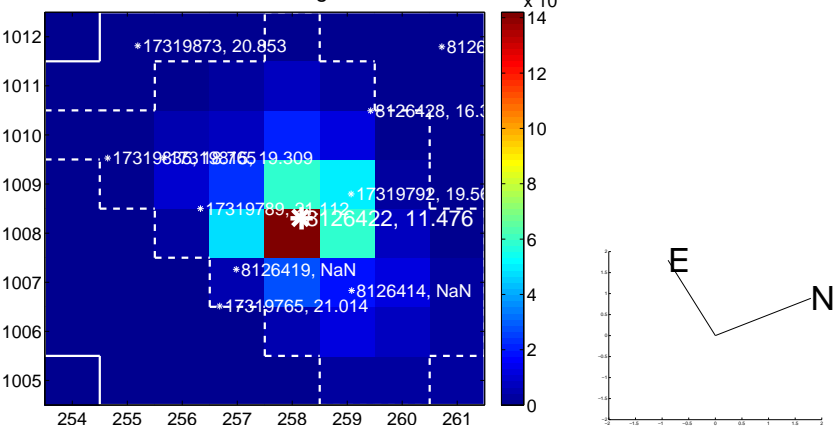
Q7 no OOT image



Q8 difference image. Poor Quality

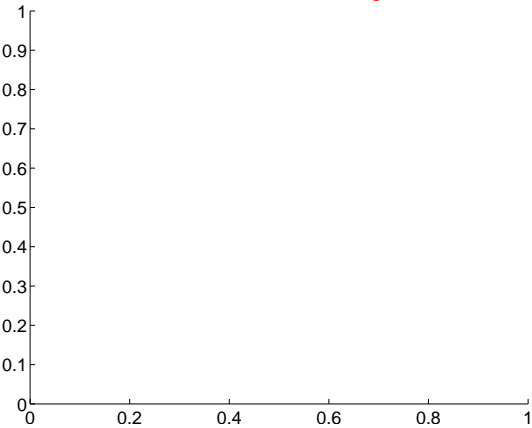


Q8 OOT image

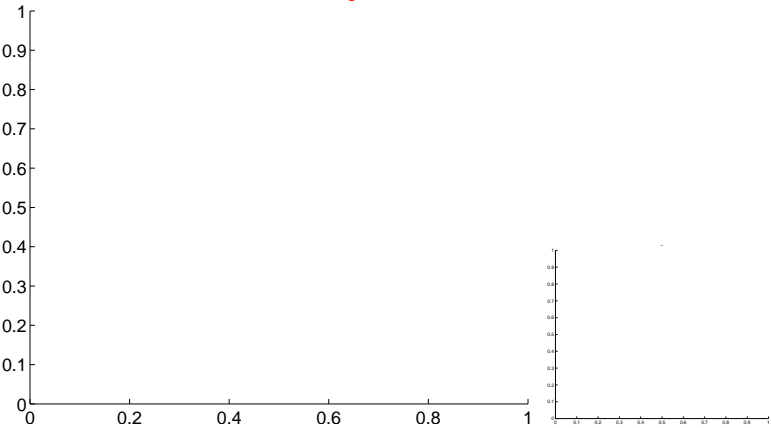


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

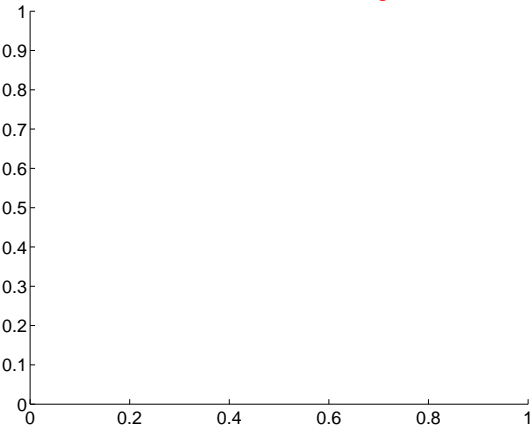
Q9 no difference image



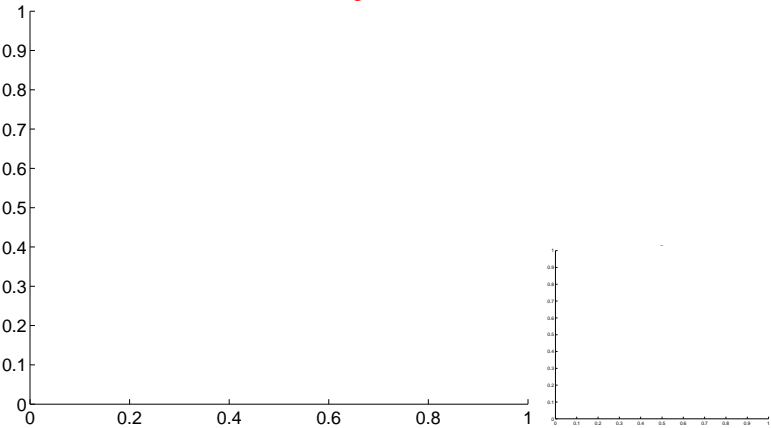
Q9 no OOT image



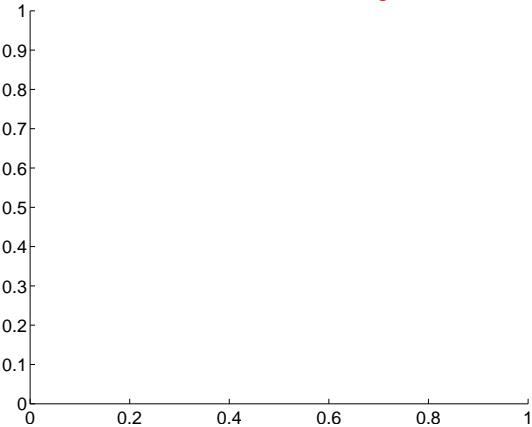
Q10 no difference image



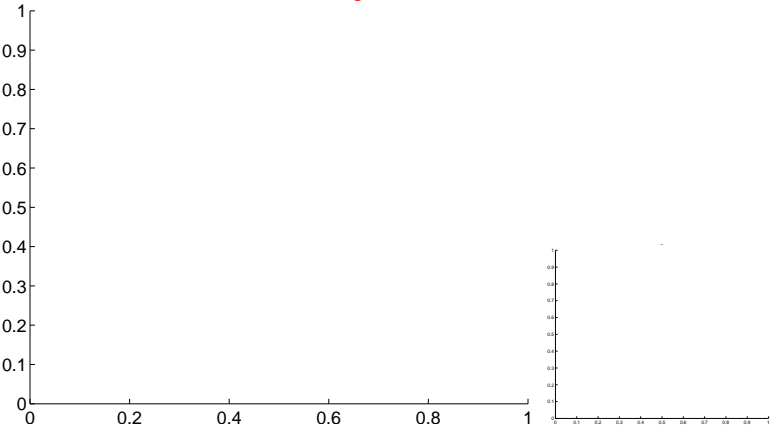
Q10 no OOT image



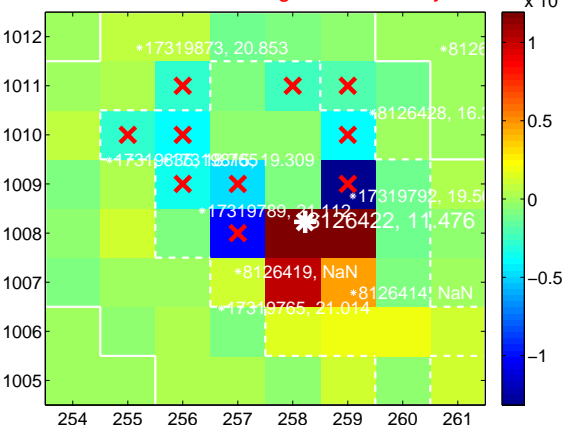
Q11 no difference image



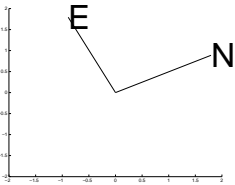
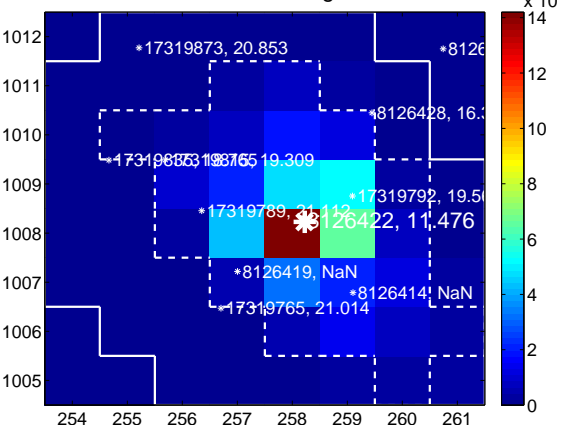
Q11 no OOT image



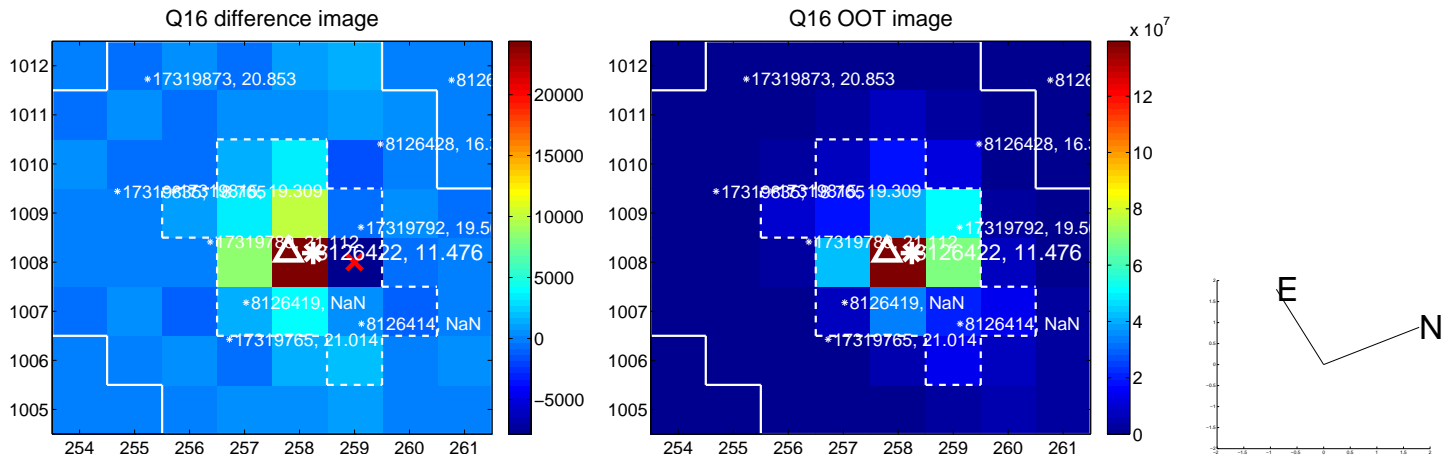
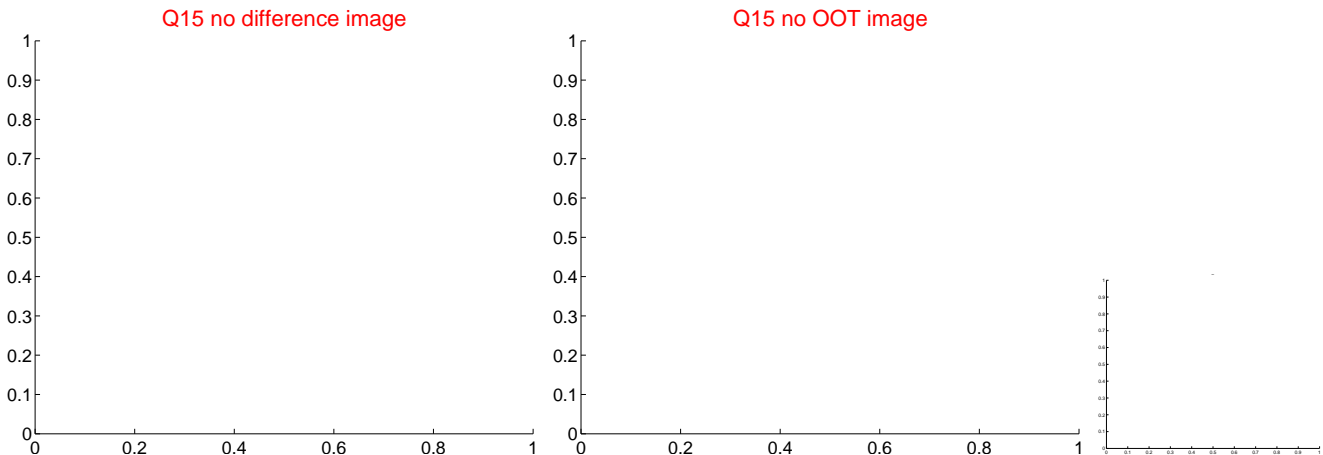
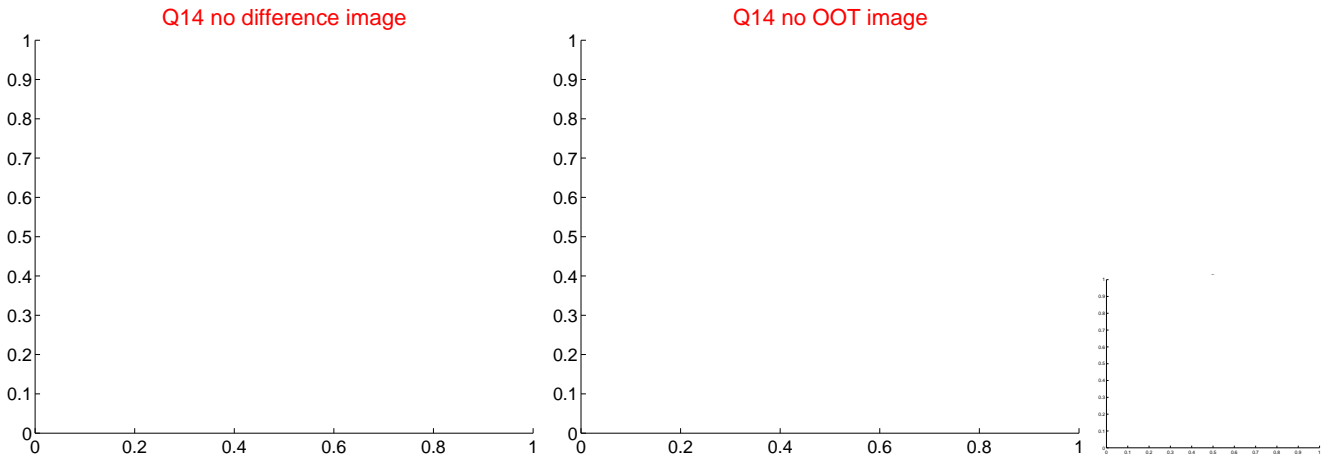
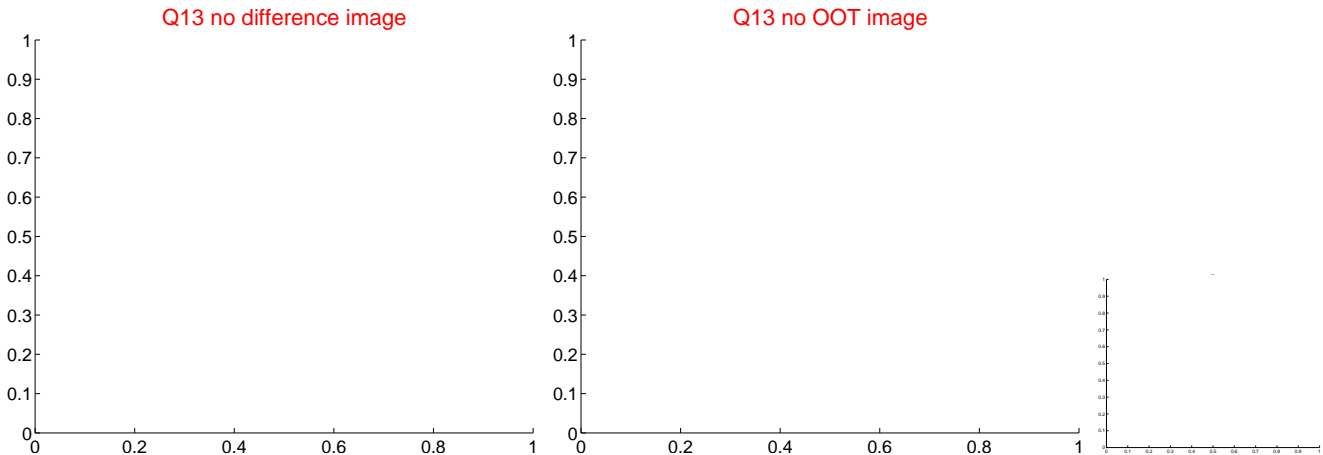
Q12 difference image. Poor Quality



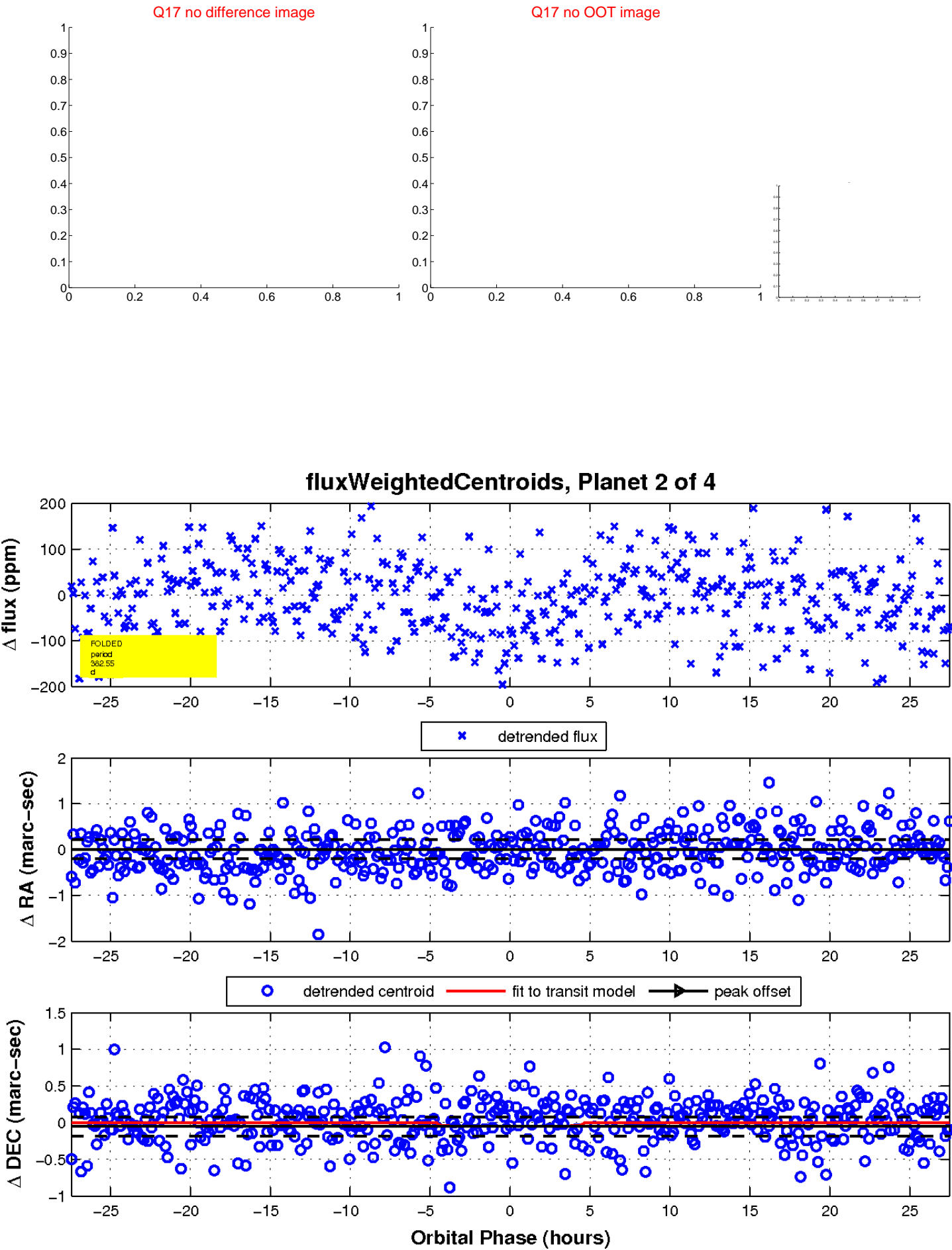
Q12 OOT image



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

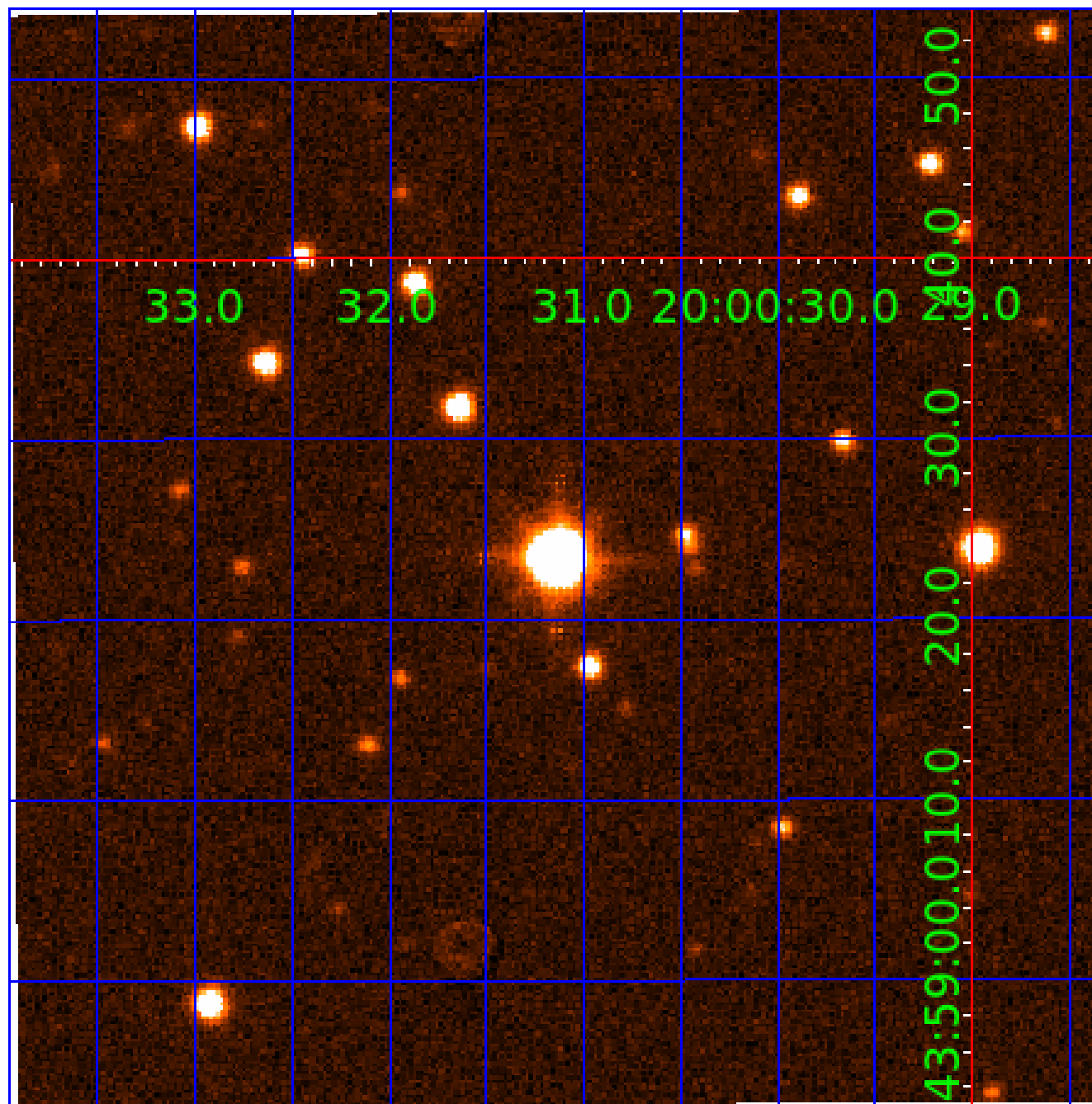


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008126422

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008126422-01 | OBS | No | 2.162046 | 131.833938 | 4.6 | 12.099 | 7.5 | 4.8 | 1.96 | 7535 | 0.48 | 7393.30 |
| 008126422-02 | OBS | No | 382.552677 | 373.075528 | 92.6 | 9.185 | 9.4 | 8.2 | 1.96 | 7535 | 1.91 | 7.44 |
| 008126422-03 | OBS | No | 83.460082 | 145.567741 | 90.5 | 3.437 | 8.8 | 8.1 | 1.96 | 7535 | 2.18 | 56.67 |
| 008126422-04 | OBS | No | 124.454777 | 239.903928 | 35.3 | 12.126 | 7.5 | 3.3 | 1.96 | 7535 | 1.34 | 33.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008126422-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—CENT_SATURATED |
| 008126422-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_SATURATED |
| 008126422-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_SATURATED |

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

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

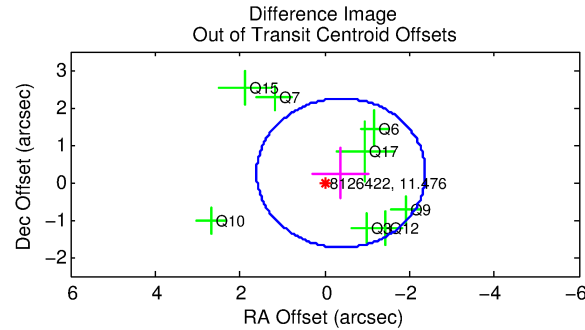
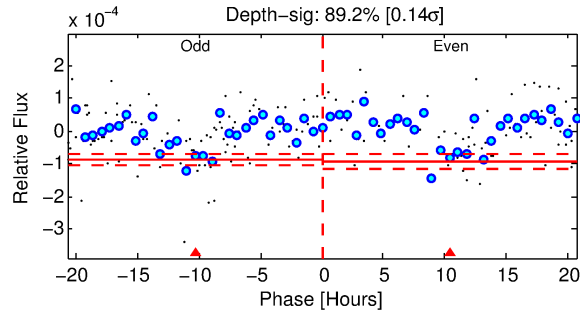
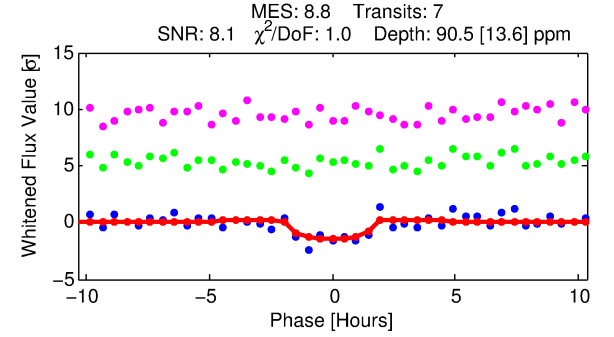
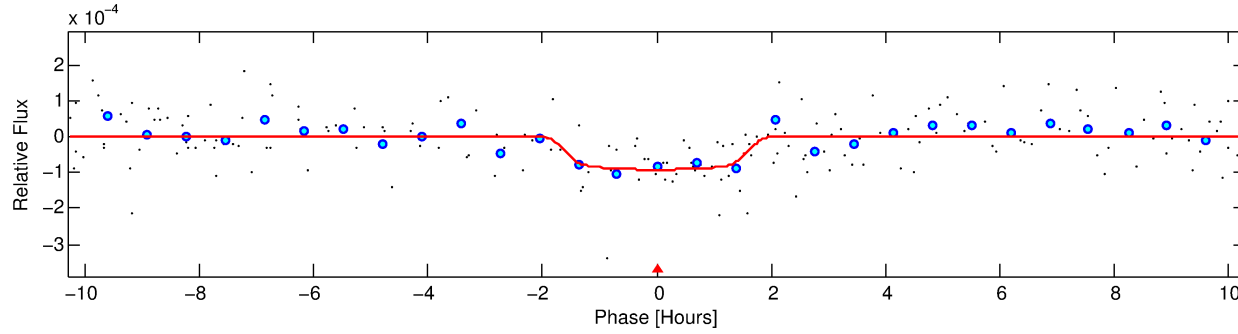
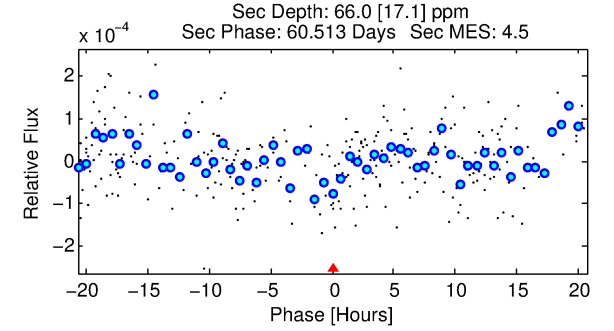
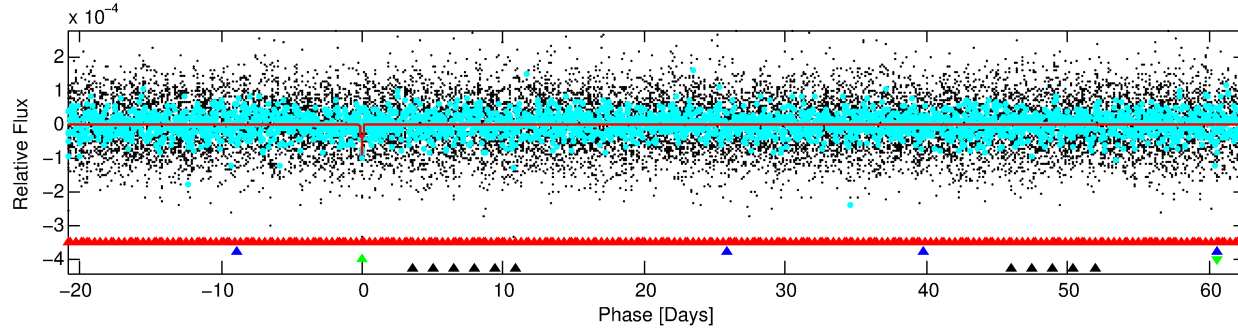
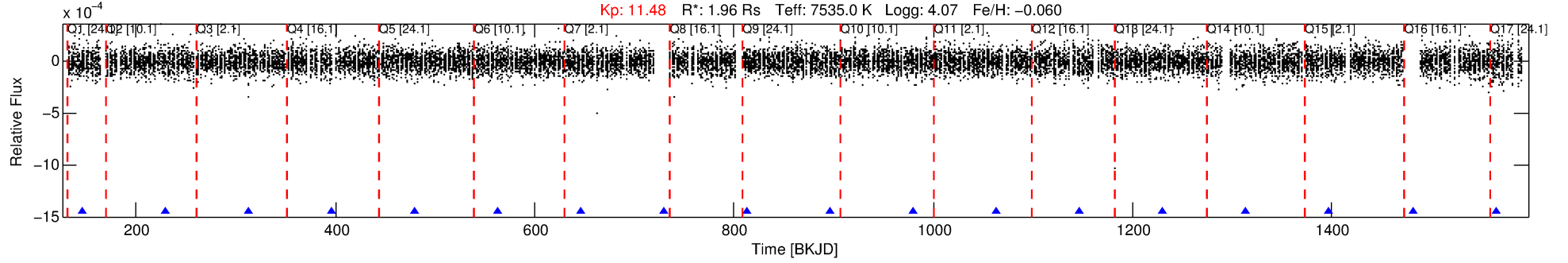
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008126422-03

No Significant Match Found

DV One-Page Summary

KIC: 8126422 Candidate: 3 of 4 Period: 83.460 d



DV Fit Results:

Period = 83.46008 [0.00097] d
Epoch = 145.5677 [0.0114] BKJD
Rp/R* = 0.0102 [0.0061]
a/R* = 78.87 [313.19]
b = 0.92 [0.70]
Seff = 56.67 [20.89]
Teq = 700 [64] K
Rp = 2.18 [1.44] Re
a = 0.4413 [0.1008] AU
Ag = 1493.06 [1896.58] [0.79σ]
Teffp = 6724 [2088] K [2.88σ]

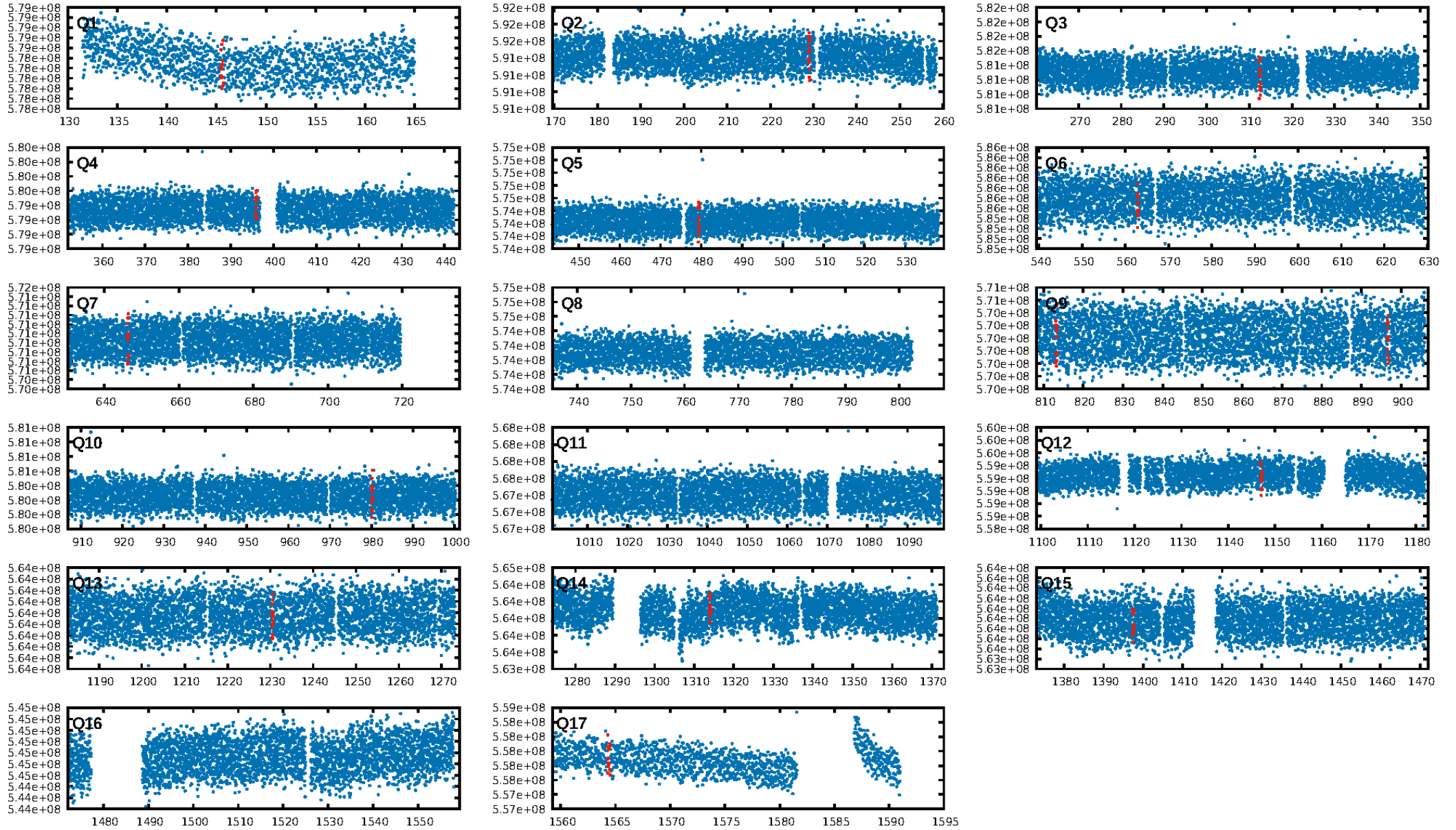
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [155.13σ]
LongPeriod-sig: 100.0% [78.06σ]
ModelChiSquare2-sig: 71.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.59e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.5606
Centroid-sig: 6.9%
Centroid-so: 2.435 arcsec [1.78σ]
OotOffset-rm: 0.460 arcsec [0.69σ]
KicOffset-rm: 0.519 arcsec [0.79σ]
OotOffset-st: 2/3/1/2 [8]
KicOffset-st: 2/3/1/2 [8]
DiffImageQuality-fgm: 0.88 [7/8]
DiffImageOverlap-fno: 0.50 [7/14]

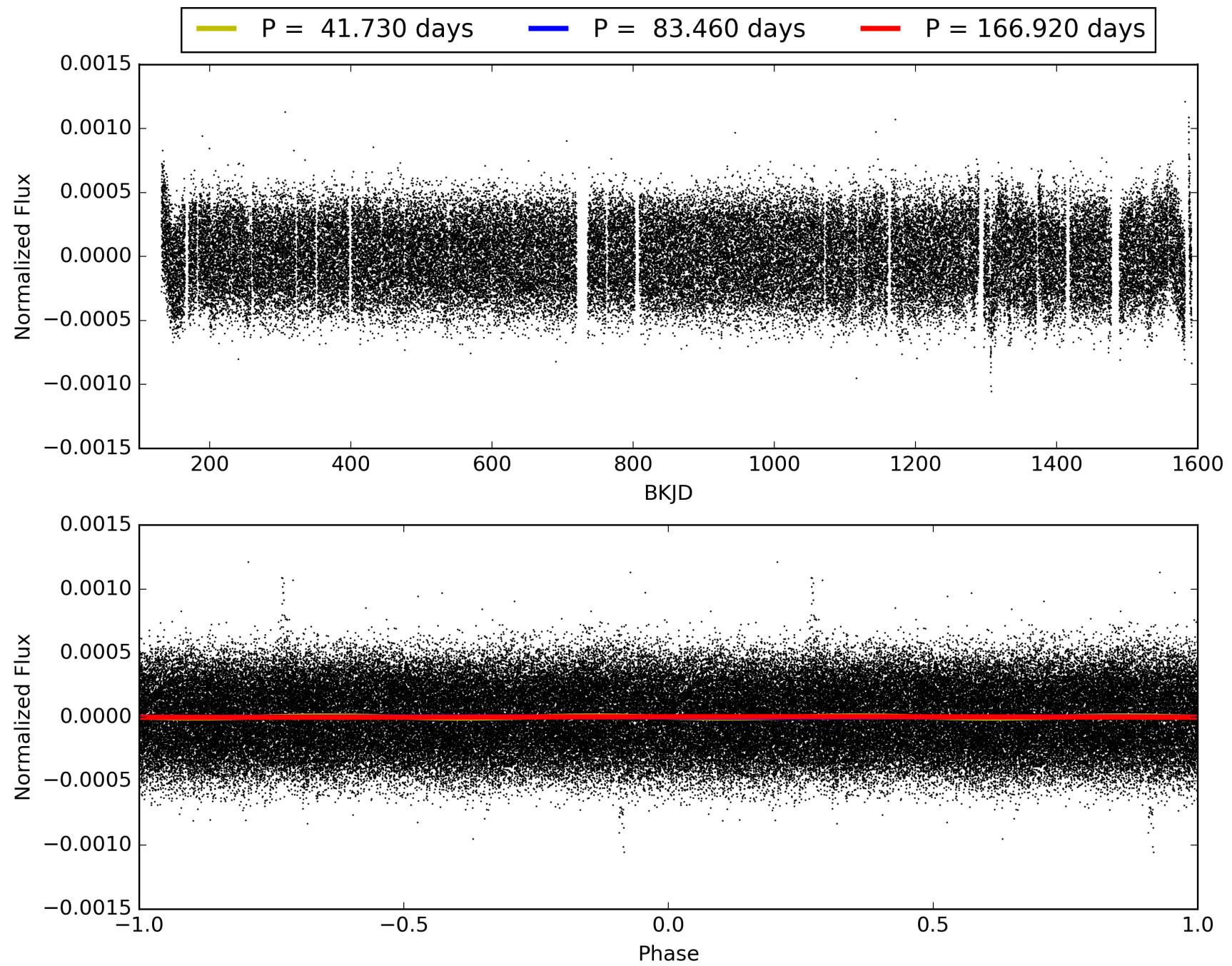
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:56:17 Z

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

TCE 008126422-03, PDC Light Curves

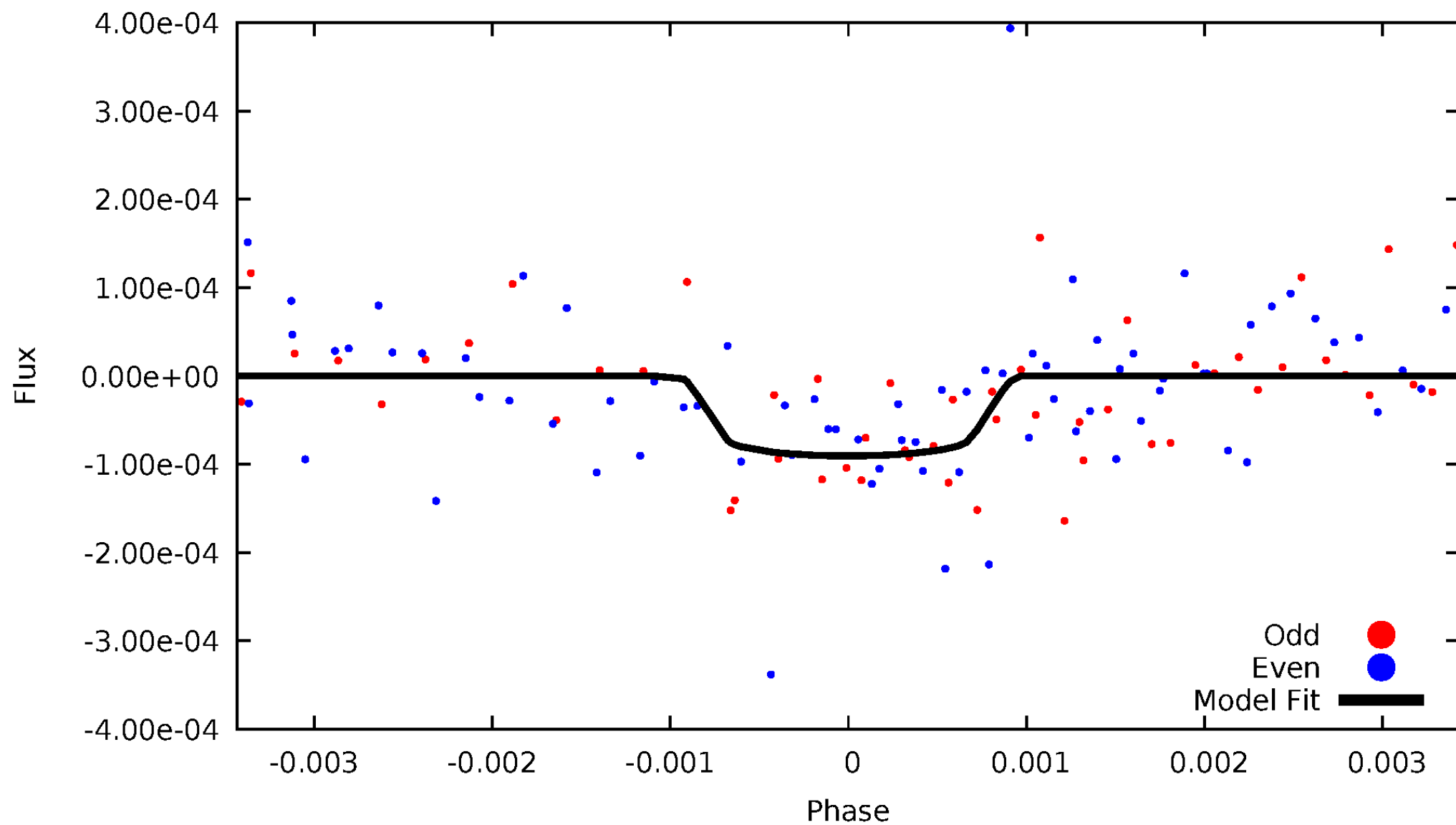


TCE 008126422-03



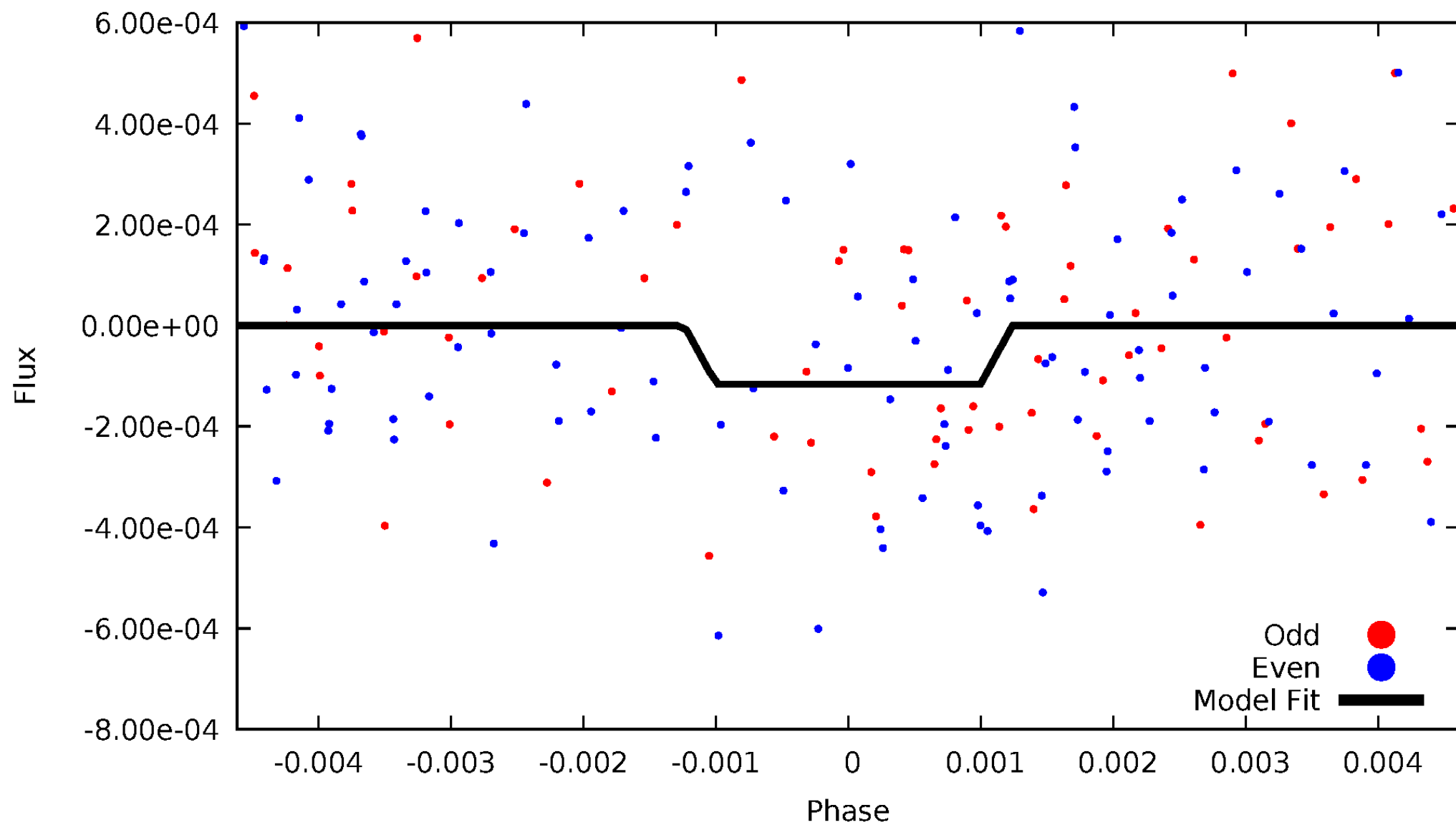
DV Odd/Even

TCE 008126422-03



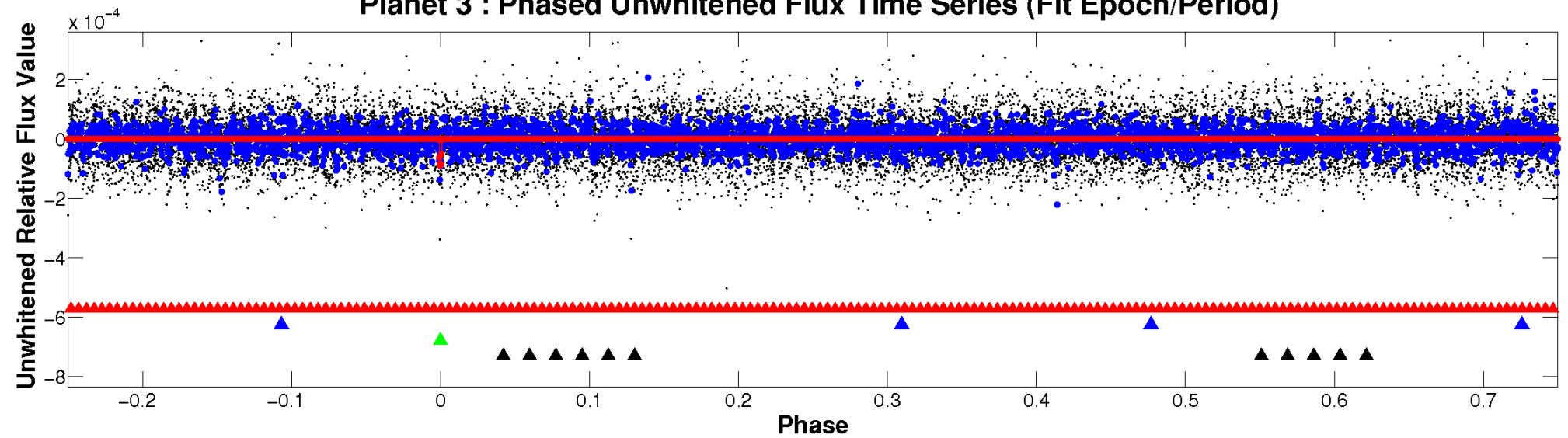
ALT Odd/Even

TCE 008126422-03

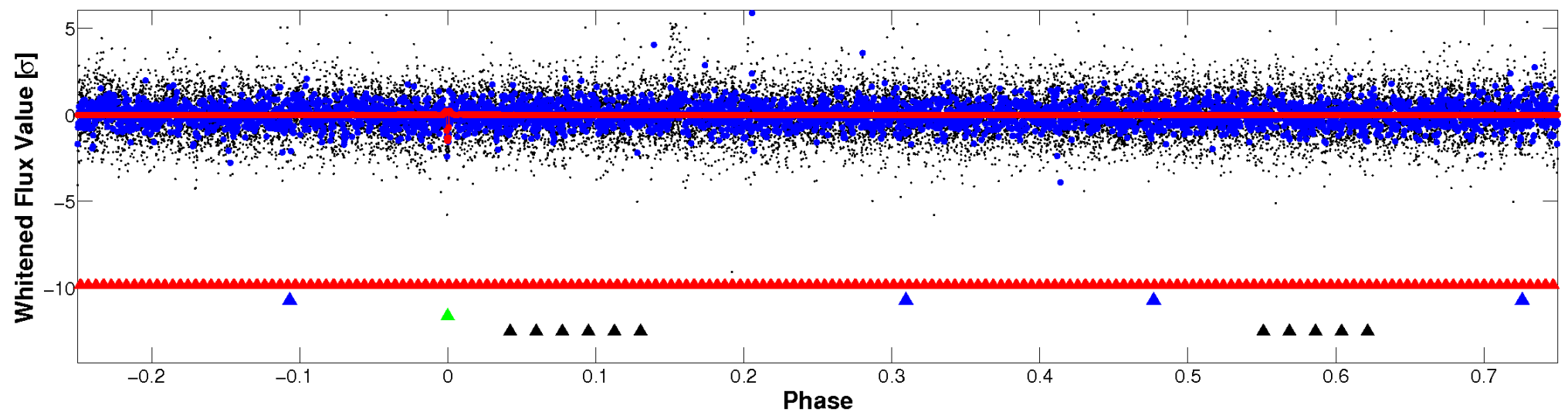


Non-Whitened Vs. Whitened Light Curve

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

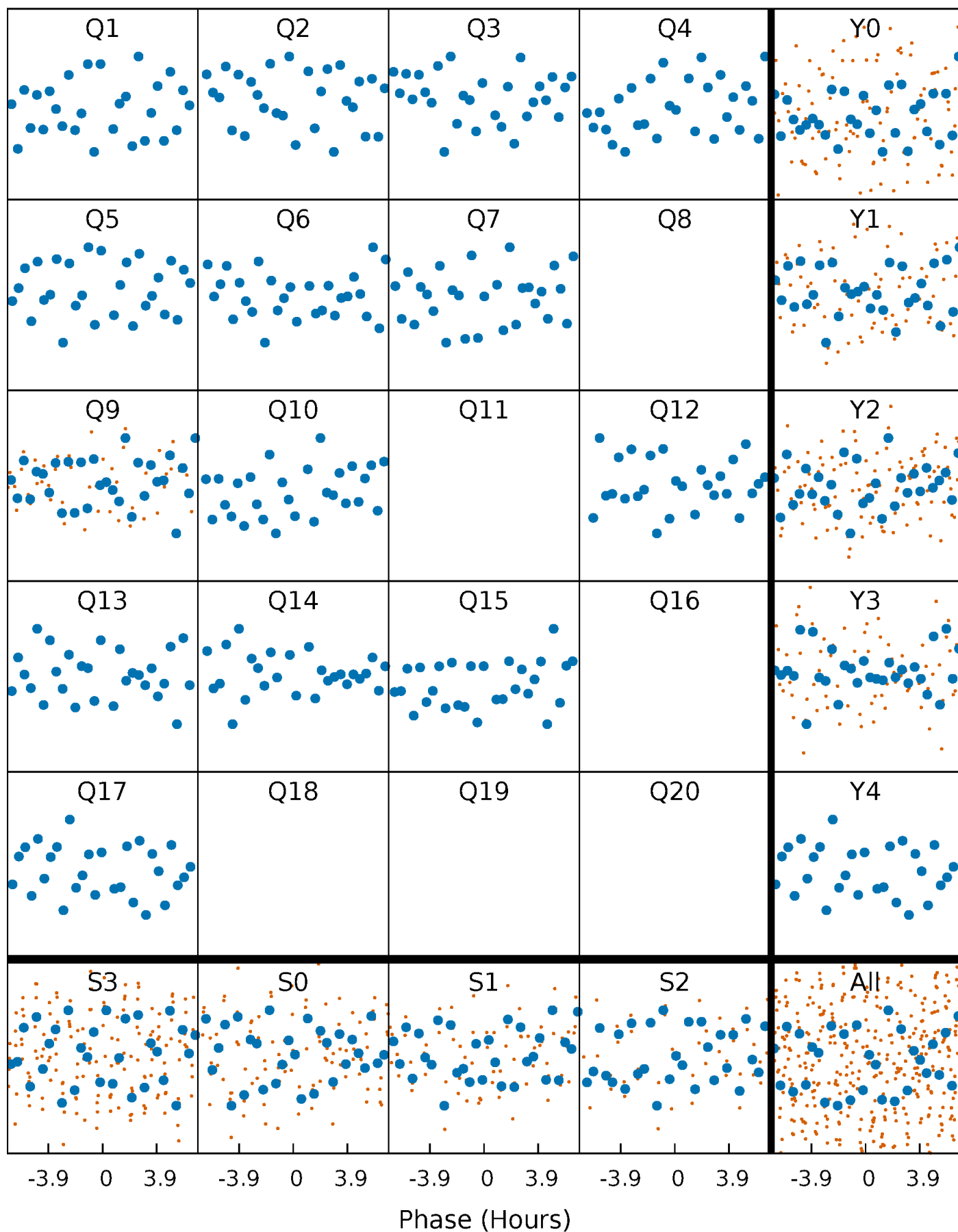


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



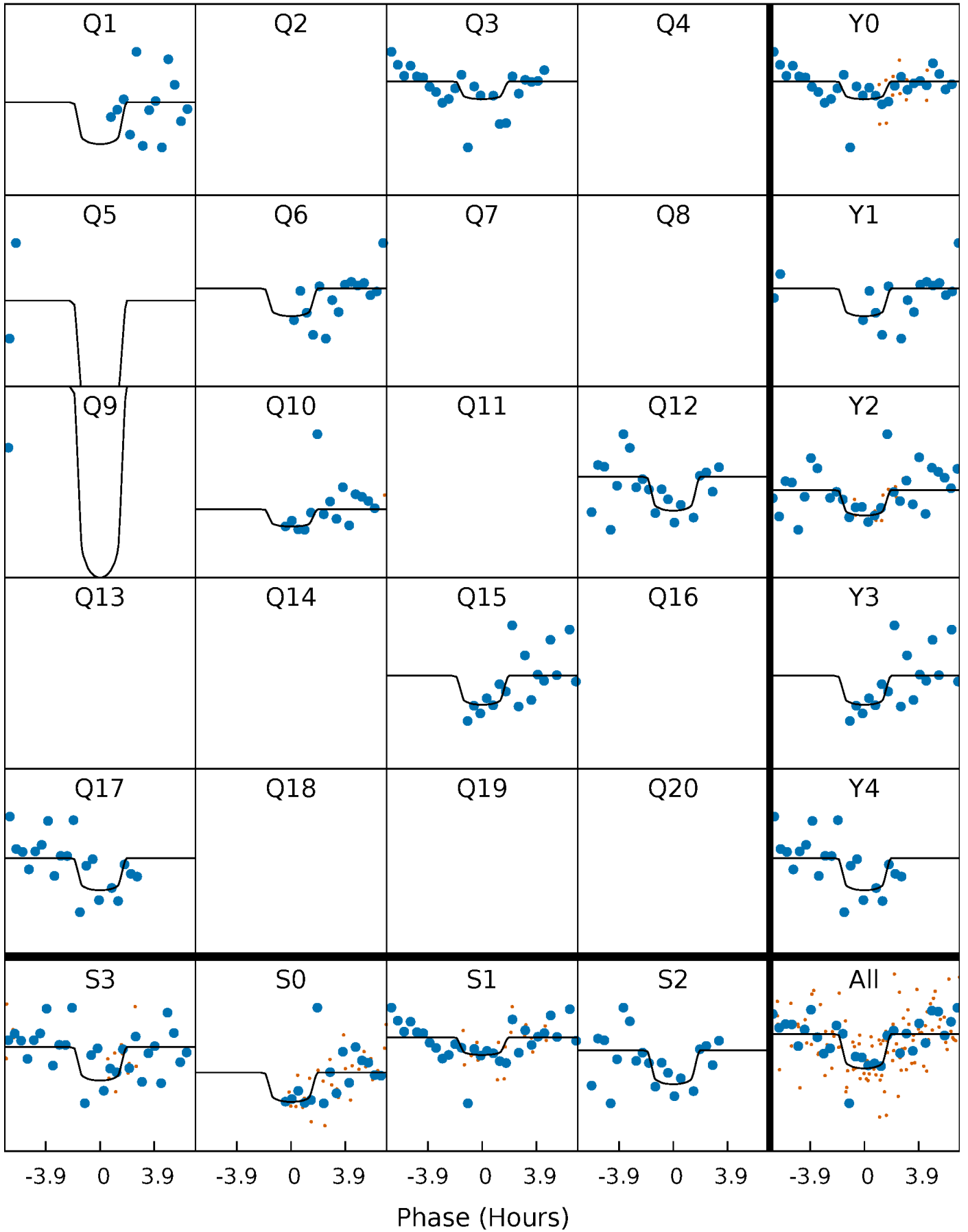
PDC Quarter-Phased Transit Curves

TCE 008126422-03 P= 83.460082 Days $T_0=145.567741$ (BKJD)



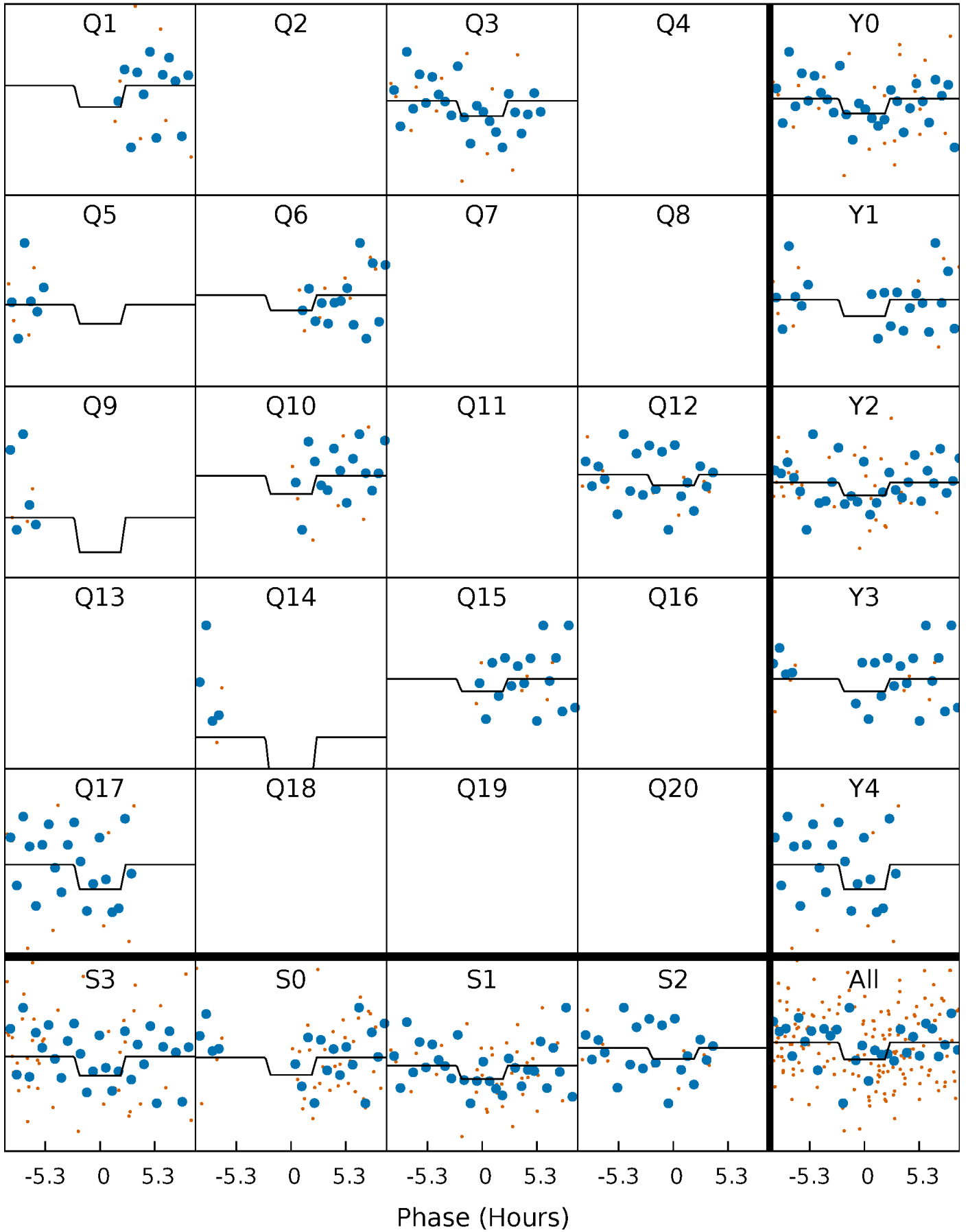
DV Quarter-Phased Transit Curves

TCE 008126422-03 P= 83.460082 Days $T_0=145.567741$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

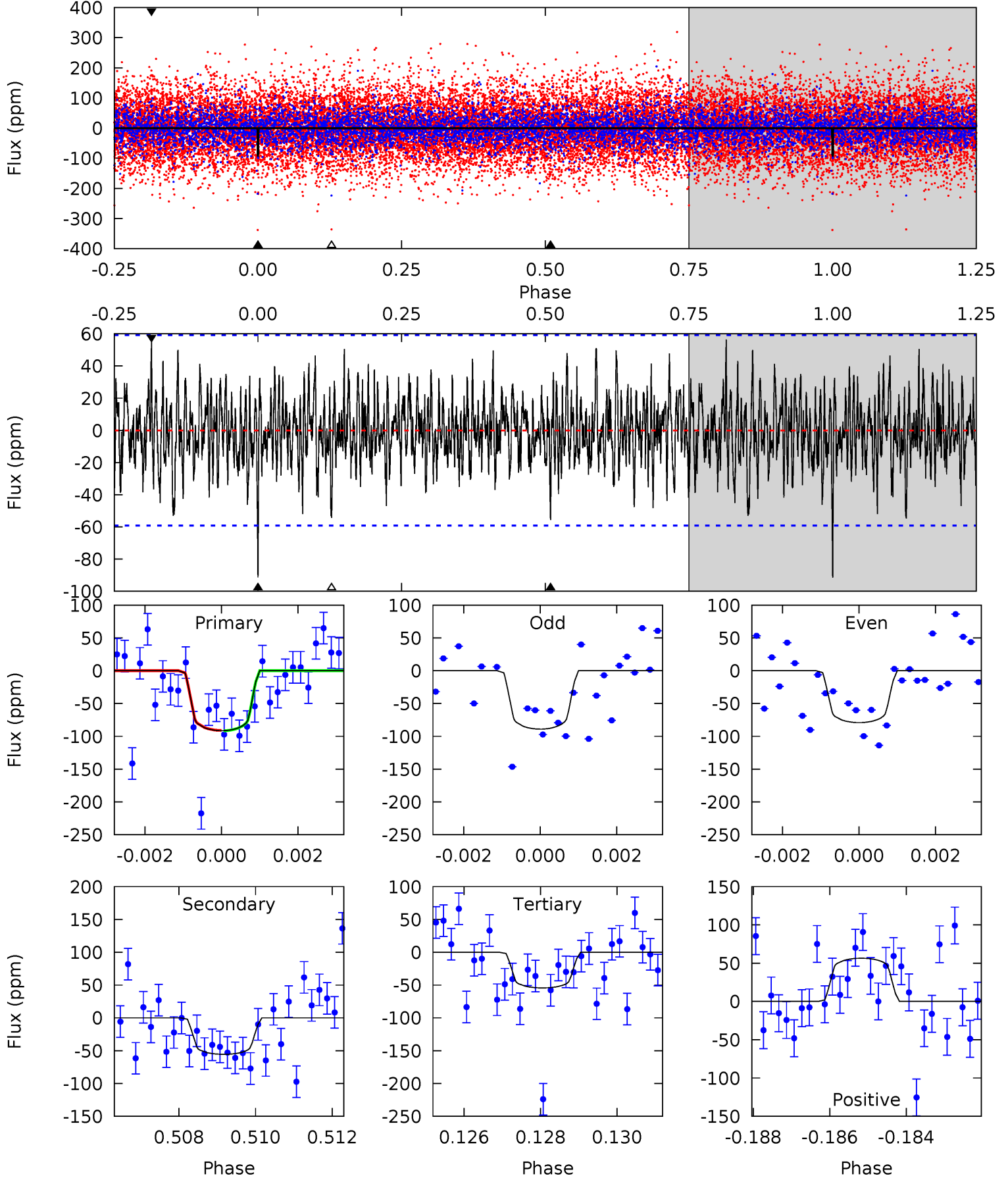
TCE 008126422-03 P= 83.460572 Days $T_0=145.530609$ (BKJD)



DV Model-Shift Uniqueness Test

008126422-03, P = 83.460082 Days, E = 62.107659 Days

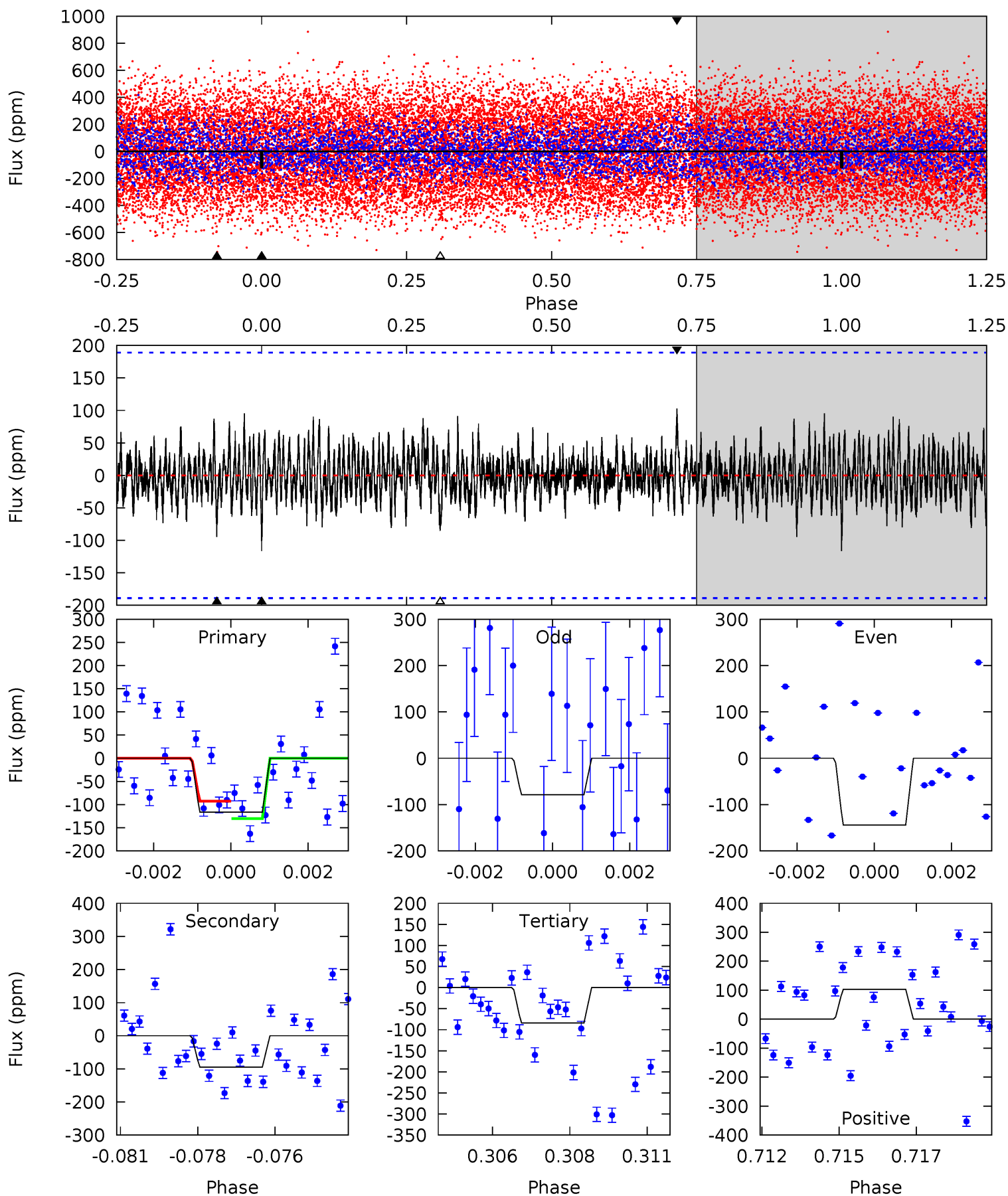
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.24 | 5.01 | 4.90 | 5.09 | 5.33 | 3.10 | 1.56 | 3.34 | 3.15 | 0.11 | -0.08 | 0.44 | 0.97 | 0.38 | 0.03 |



Alt Model-Shift Uniqueness Test

008126422-03, P = 83.460572 Days, E = 62.070037 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.26 | 2.65 | 2.35 | 2.87 | 5.29 | 3.03 | 0.80 | 0.91 | 0.38 | 0.30 | -0.23 | 0.92 | 1.10 | 0.47 | 0.49 |



Stellar Parameters For KIC 008126422

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7535^{+209}_{-340} | $4.072^{+0.170}_{-0.170}$ | $-0.060^{+0.200}_{-0.400}$ | $1.955^{+0.550}_{-0.450}$ | $1.642^{+0.188}_{-0.282}$ | $0.310^{+0.282}_{-0.148}$ |
| | +3%/-5% | +4%/-4% | +333%/-667% | +28%/-23% | +11%/-17% | +91%/-48% |
| Source | KIC0 | 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 008126422-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|------------------------|------------------------|
| DV | -56 ± 11 | $2.22^{+1.50}_{-1.13}$ | 972^{+73}_{-66} | 6188^{+3425}_{-1259} | 1158^{+3863}_{-751} |
| Alt. | -95 ± 36 | $2.35^{+1.30}_{-1.17}$ | 975^{+69}_{-68} | 6845^{+4075}_{-1387} | 1726^{+5371}_{-1078} |

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

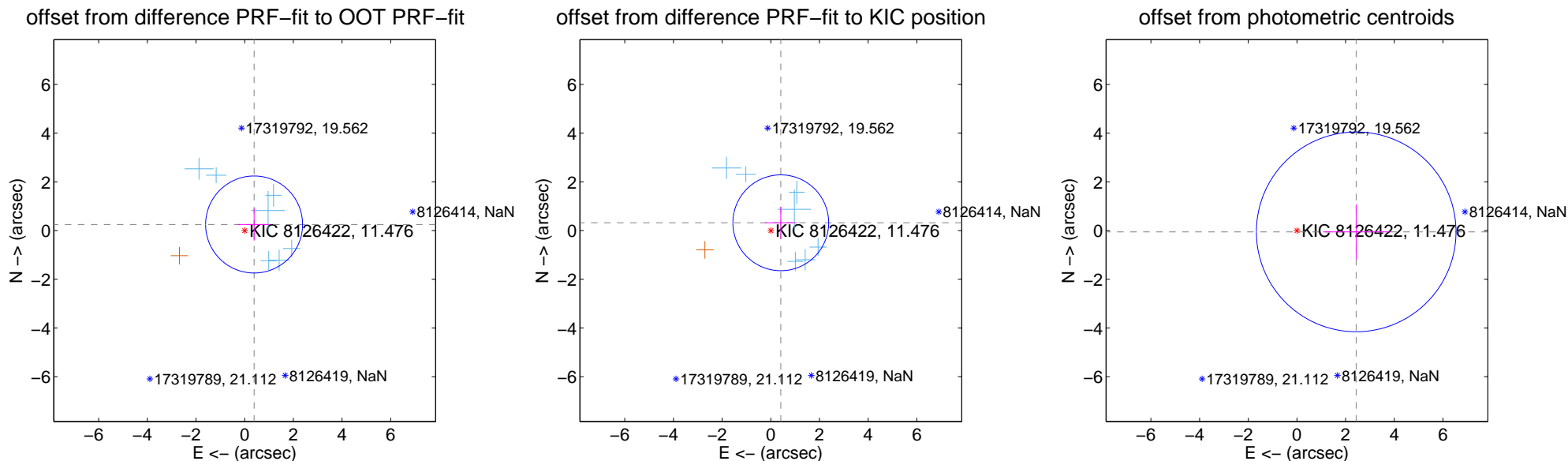
DV Centroid Data

Supplemental centroid analysis for 008126422-03. **Kepler magnitude: 11.48.** Transit SNR 8.08

There are 7 quarters with good PRF difference image offsets

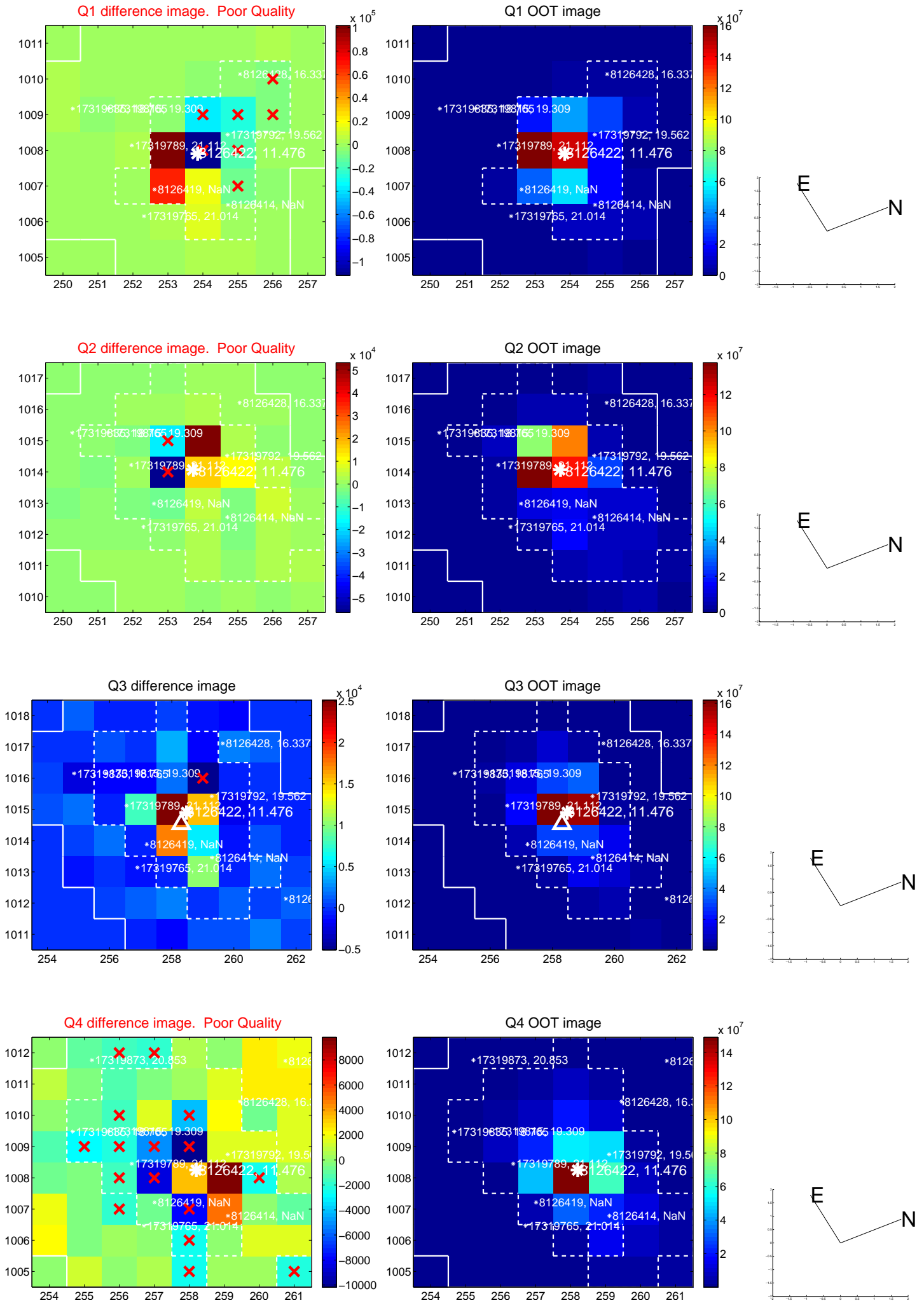
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.460 ± 0.664 | 0.69 | -0.387 ± 0.666 | 0.250 ± 0.658 |
| PRF-fit source offset from KIC position | 0.519 ± 0.656 | 0.79 | -0.409 ± 0.652 | 0.320 ± 0.661 |
| photometric centroid source offset | 2.43 ± 1.37 | 1.78 | -2.43 ± 1.37 | -0.05 ± 1.13 |

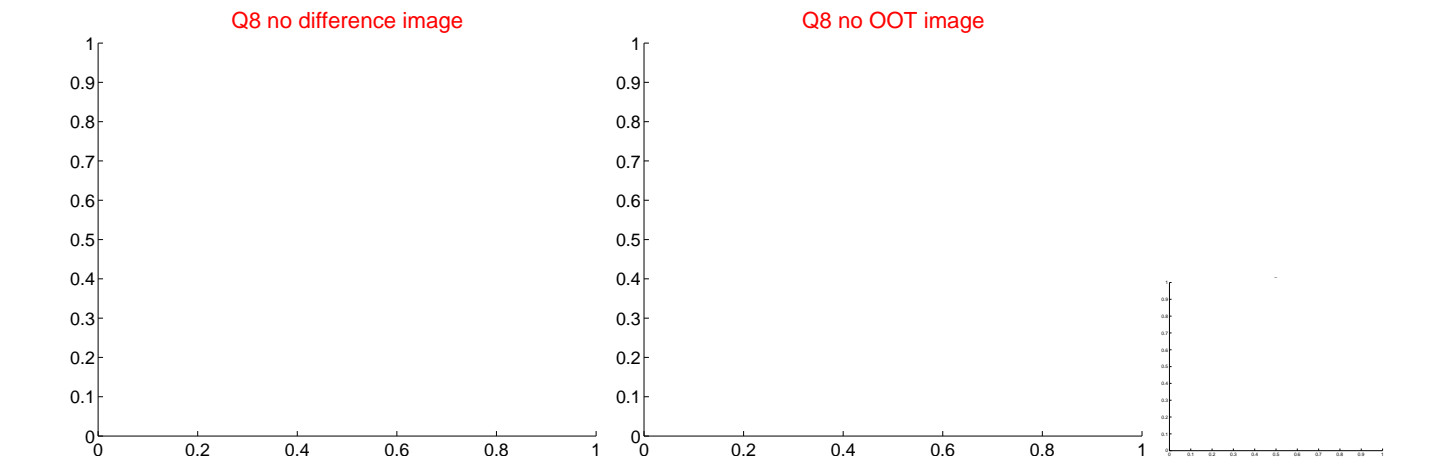
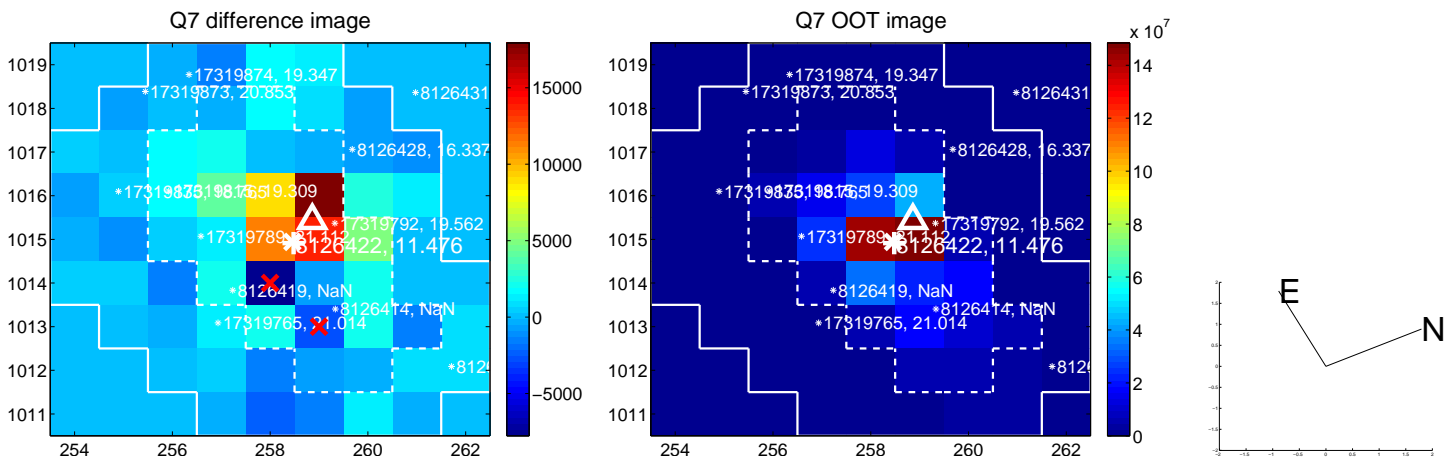
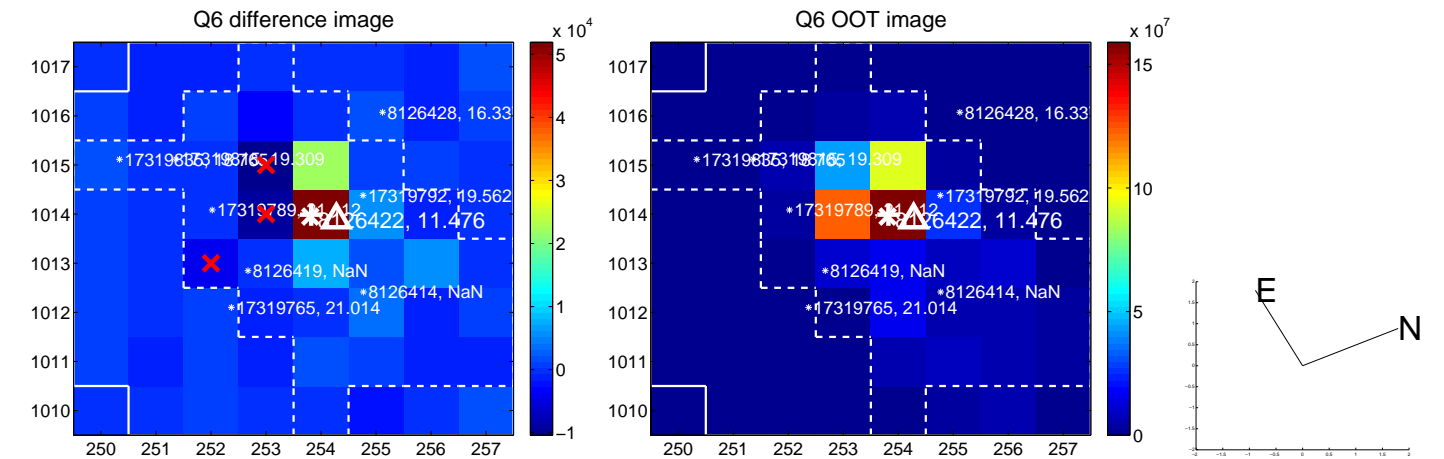
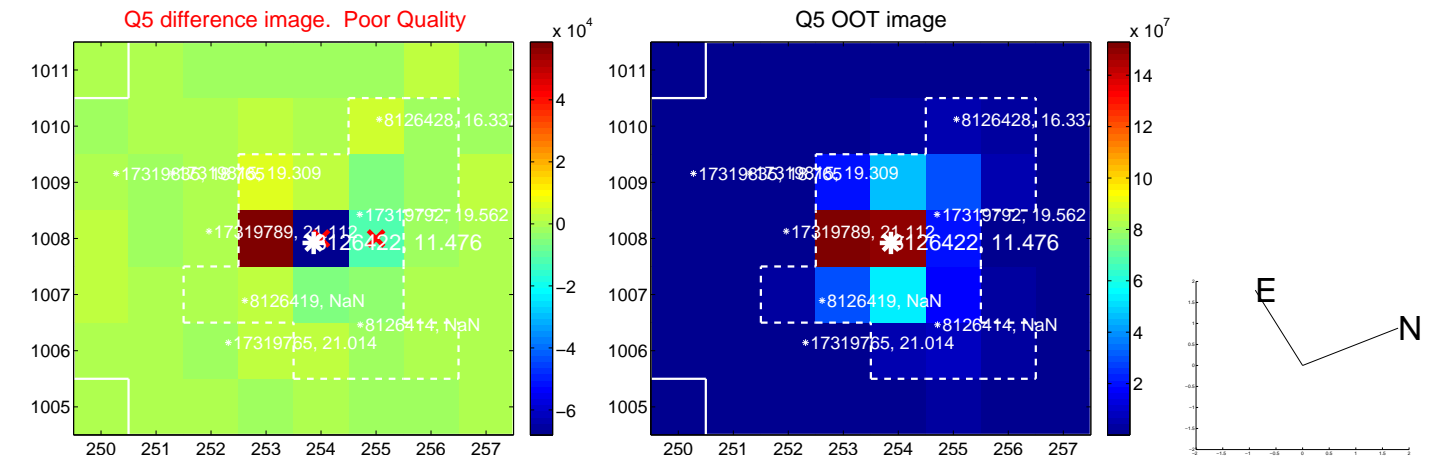


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

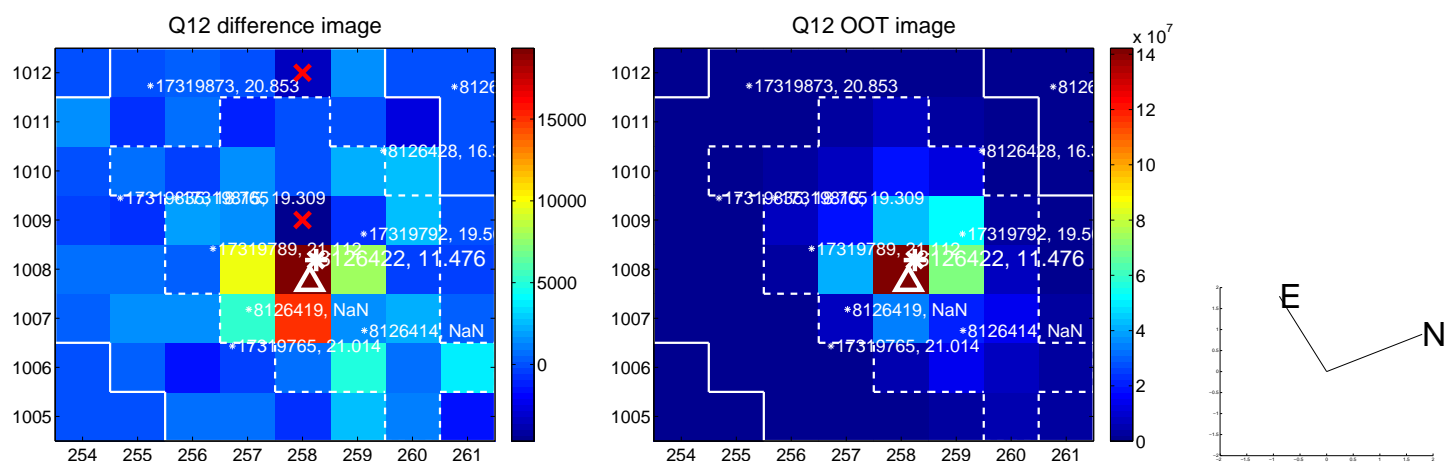
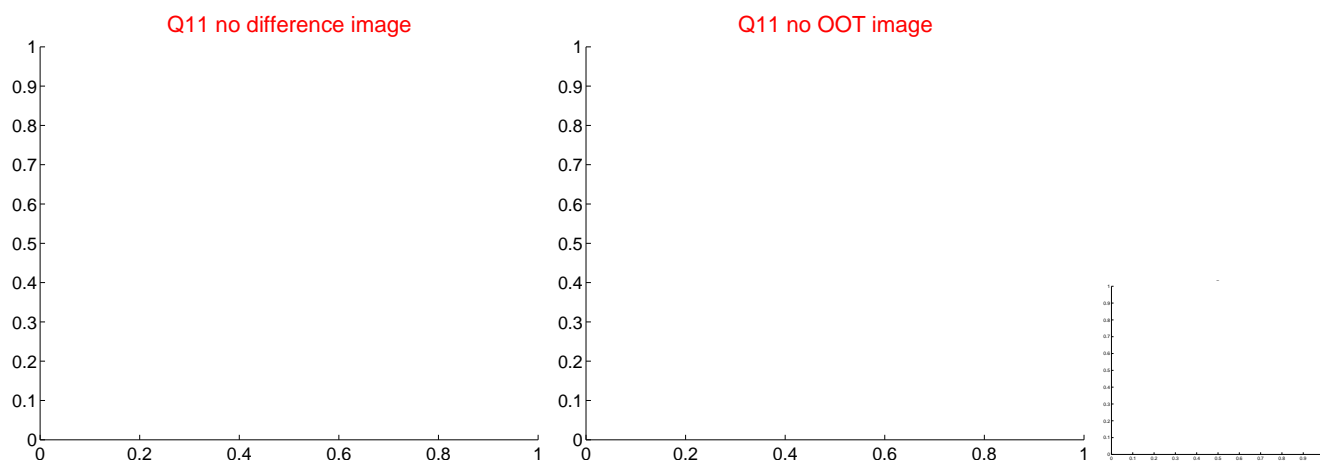
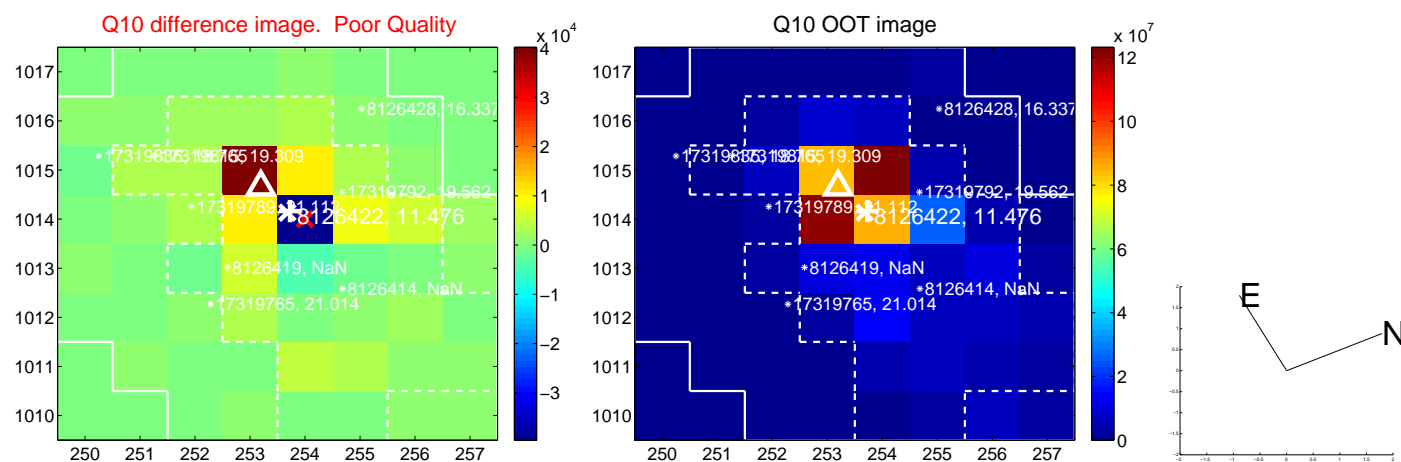
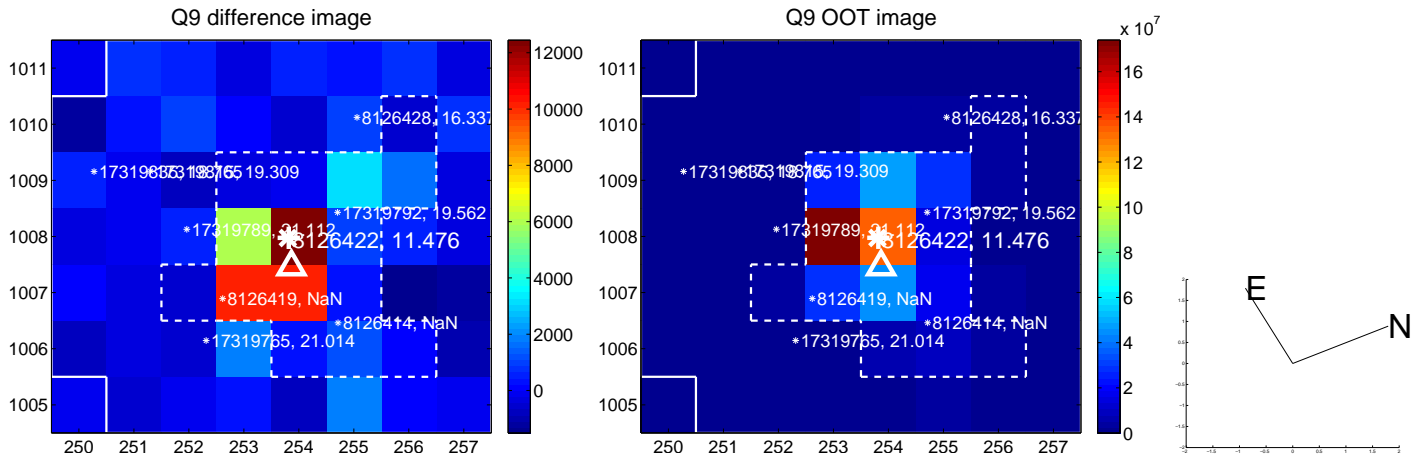
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



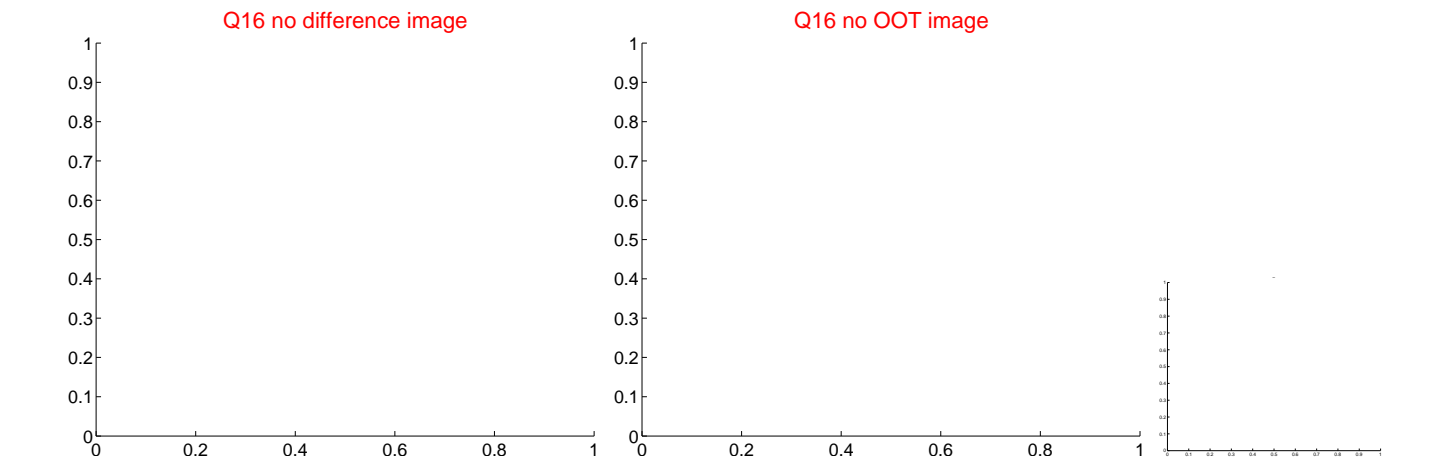
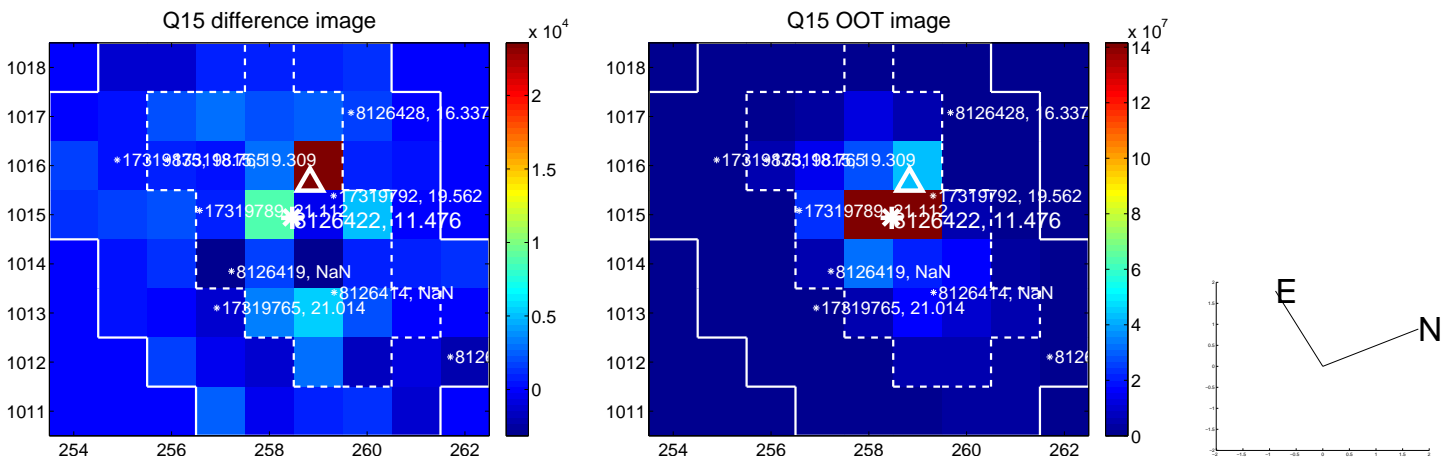
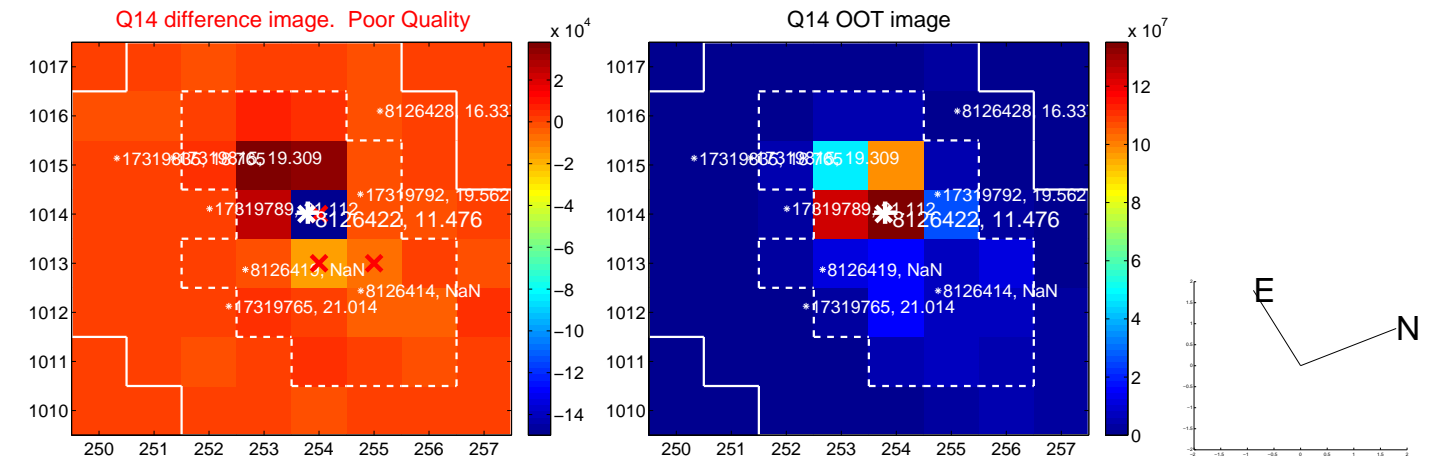
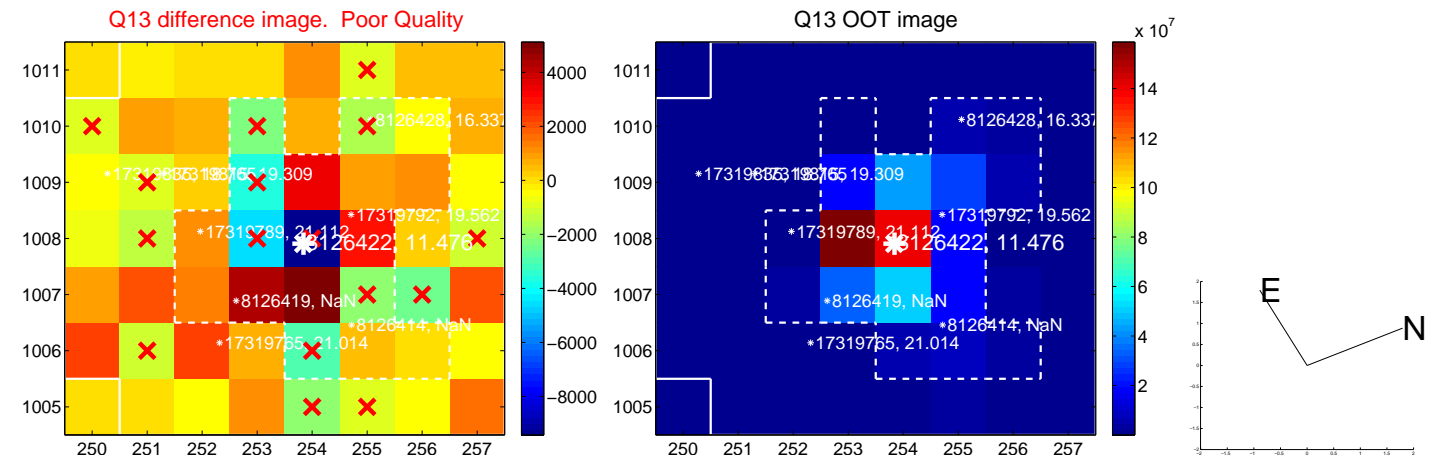
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



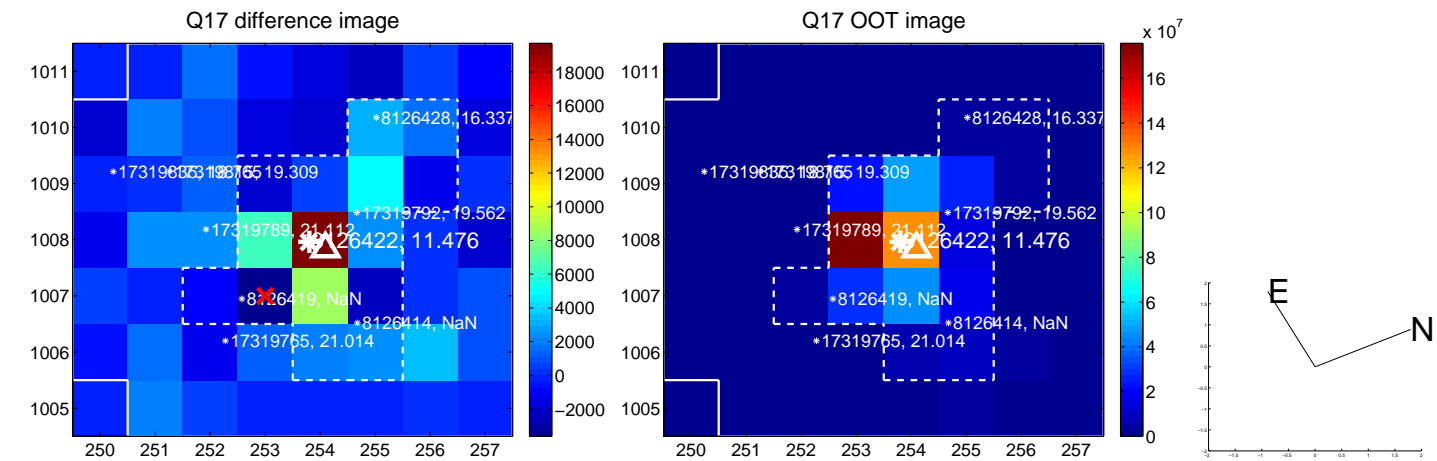
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



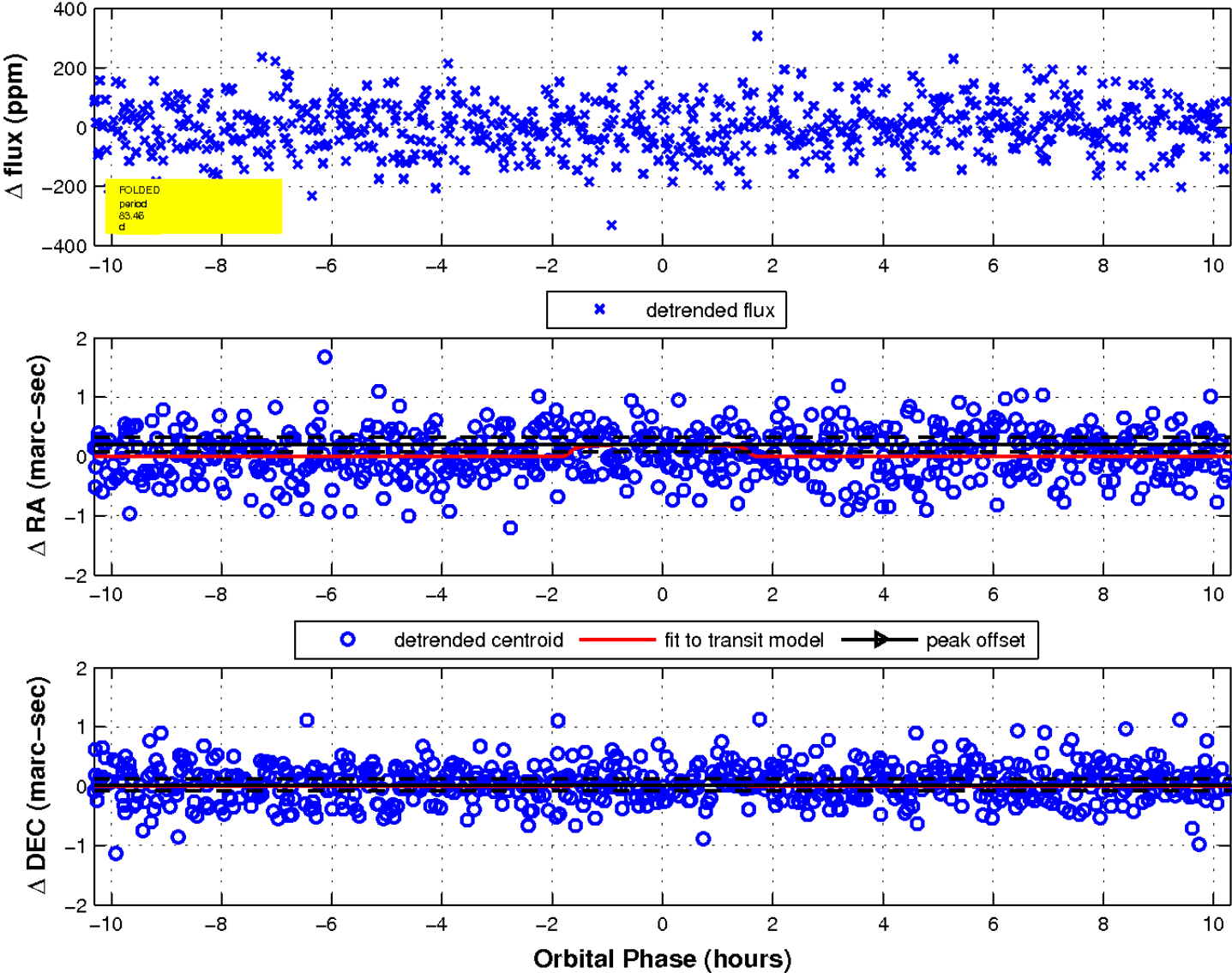
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

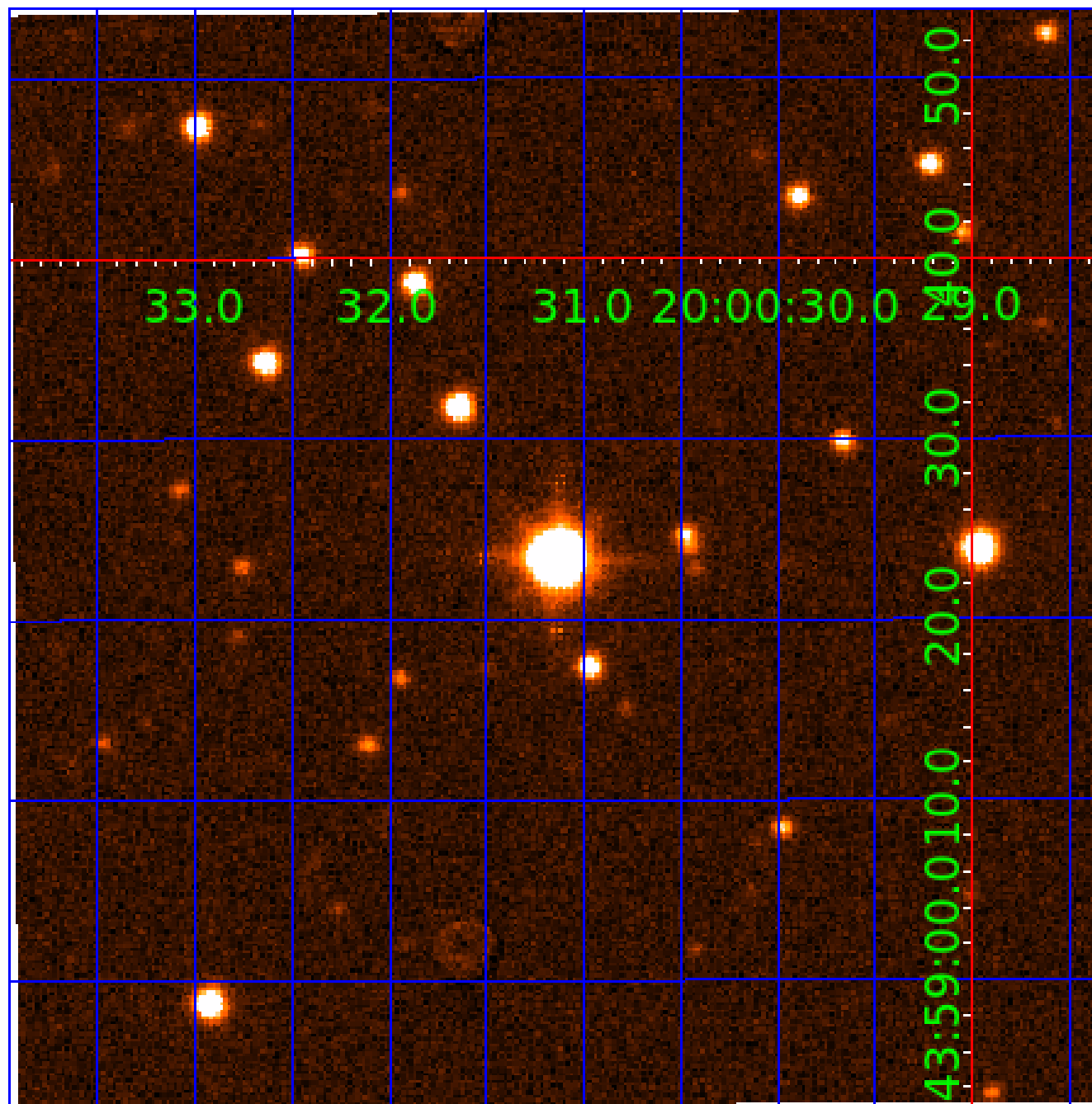


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 008126422

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008126422-01 | OBS | No | 2.162046 | 131.833938 | 4.6 | 12.099 | 7.5 | 4.8 | 1.96 | 7535 | 0.48 | 7393.30 |
| 008126422-02 | OBS | No | 382.552677 | 373.075528 | 92.6 | 9.185 | 9.4 | 8.2 | 1.96 | 7535 | 1.91 | 7.44 |
| 008126422-03 | OBS | No | 83.460082 | 145.567741 | 90.5 | 3.437 | 8.8 | 8.1 | 1.96 | 7535 | 2.18 | 56.67 |
| 008126422-04 | OBS | No | 124.454777 | 239.903928 | 35.3 | 12.126 | 7.5 | 3.3 | 1.96 | 7535 | 1.34 | 33.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 008126422-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—CENT_SATURATED |
| 008126422-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 008126422-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

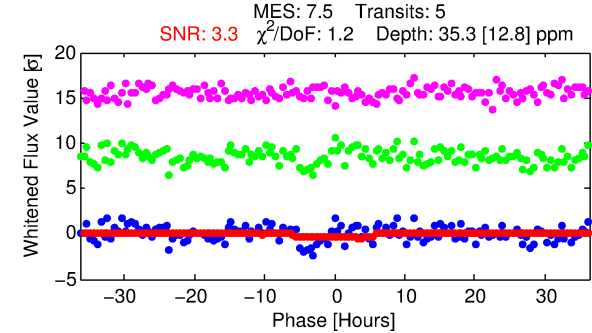
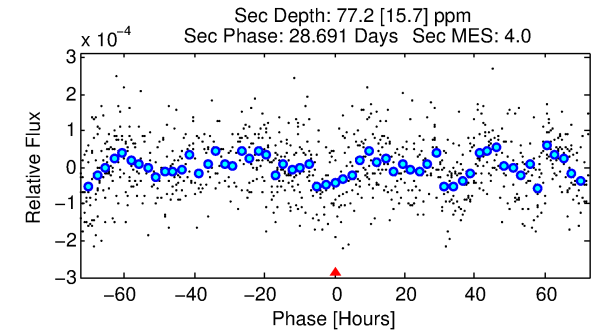
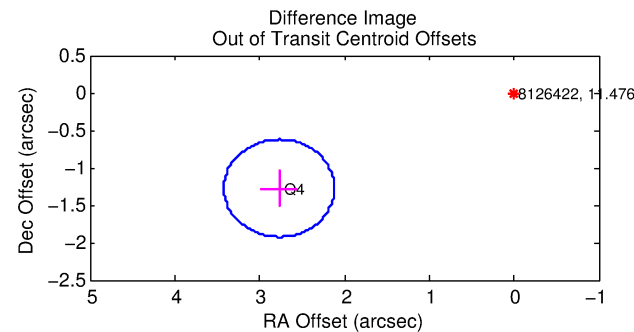
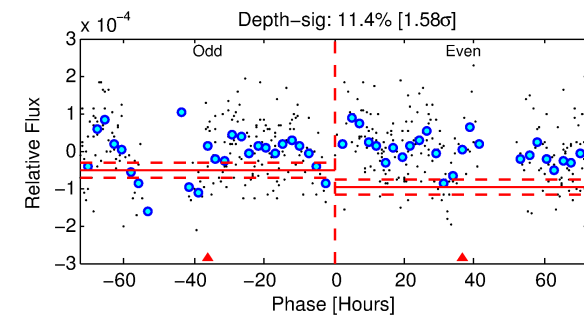
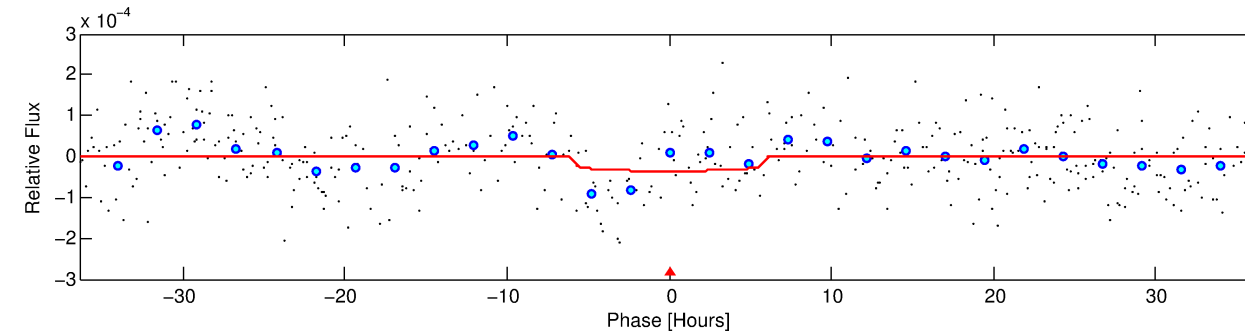
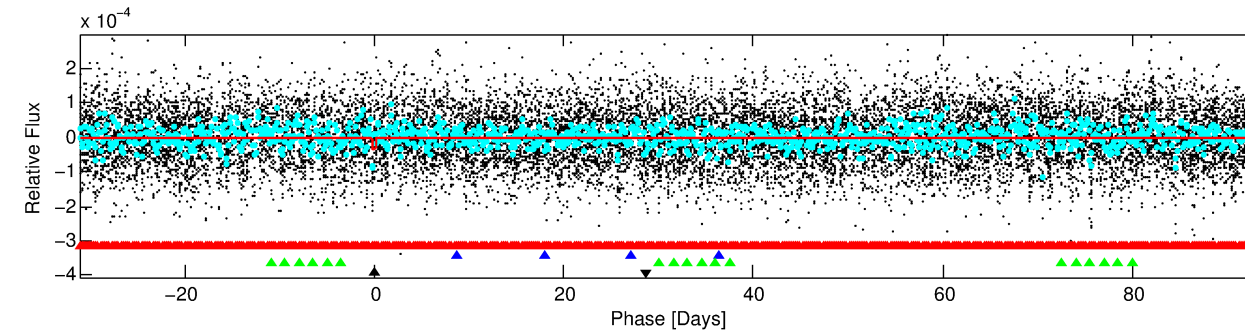
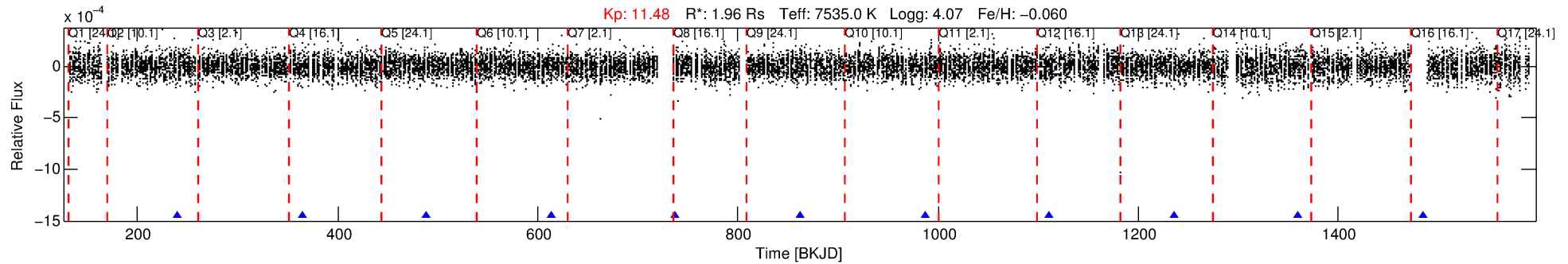
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008126422-04

No Significant Match Found

DV One-Page Summary

KIC: 8126422 Candidate: 4 of 4 Period: 124.455 d



DV Fit Results:

Period = 124.45478 [0.02730] d
Epoch = 239.9039 [0.1306] BKJD
 $R_p/R^* = 0.0063$ [0.0043]
 $a/R^* = 35.29$ [150.64]
 $b = 0.90$ [0.94]
 $S_{\text{eff}} = 33.26$ [12.26]
 $T_{\text{eq}} = 612$ [56] K
 $R_p = 1.34$ [0.99] R_e
 $a = 0.5761$ [0.1316] AU
 $A_g = 7830.22$ [11054.17] [0.71 σ]
 $T_{\text{eff}} = 8906$ [3088] K [2.69 σ]

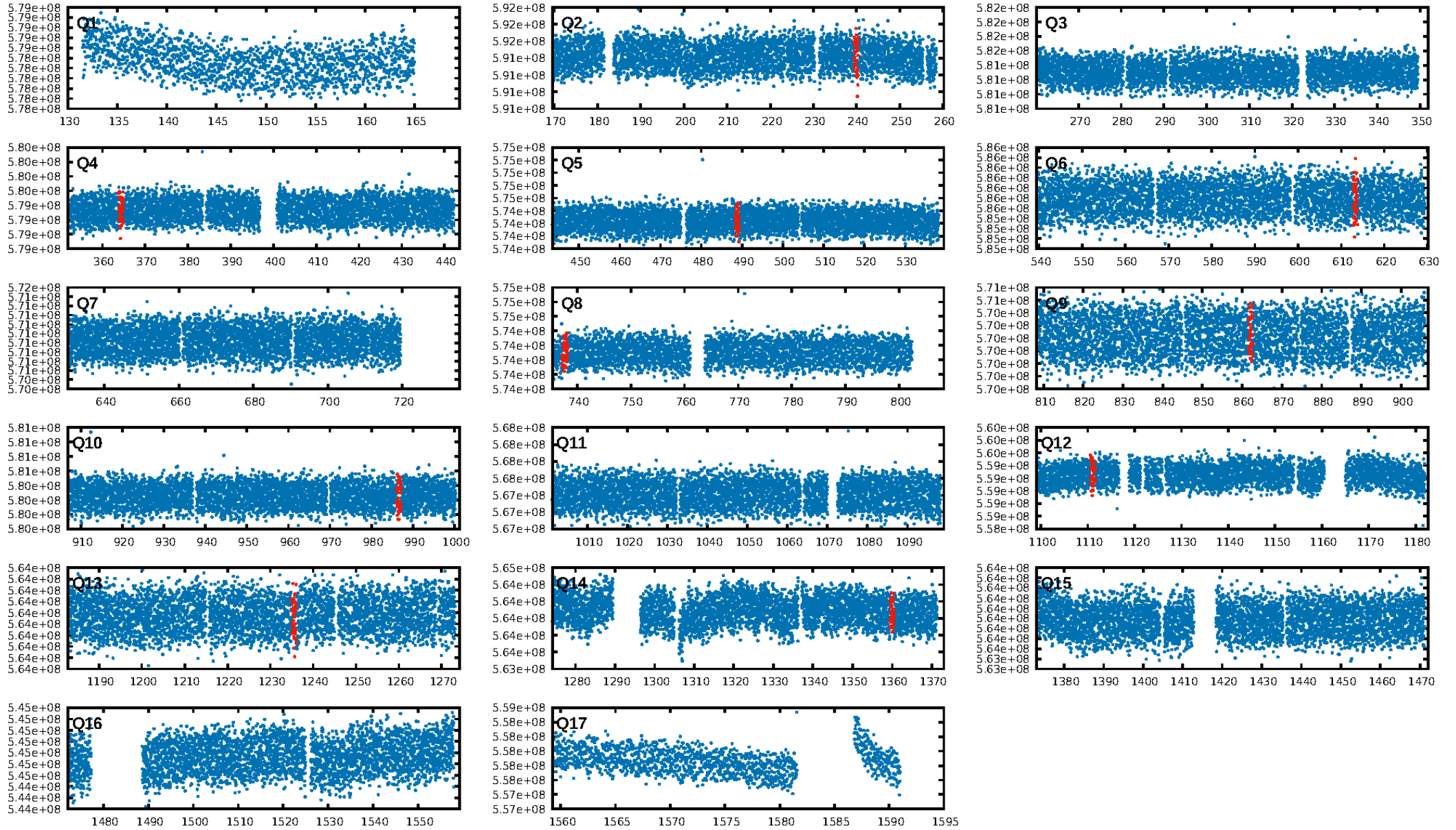
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.06 σ]
LongPeriod-sig: 100.0% [407.20 σ]
ModelChiSquare2-sig: 3.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.99e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.227
Centroid-sig: 67.1%
Centroid-so: 1.979 arcsec [0.61 σ]
OotOffset-rm: 3.049 arcsec [14.06 σ]
KicOffset-rm: 3.021 arcsec [13.93 σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/9]

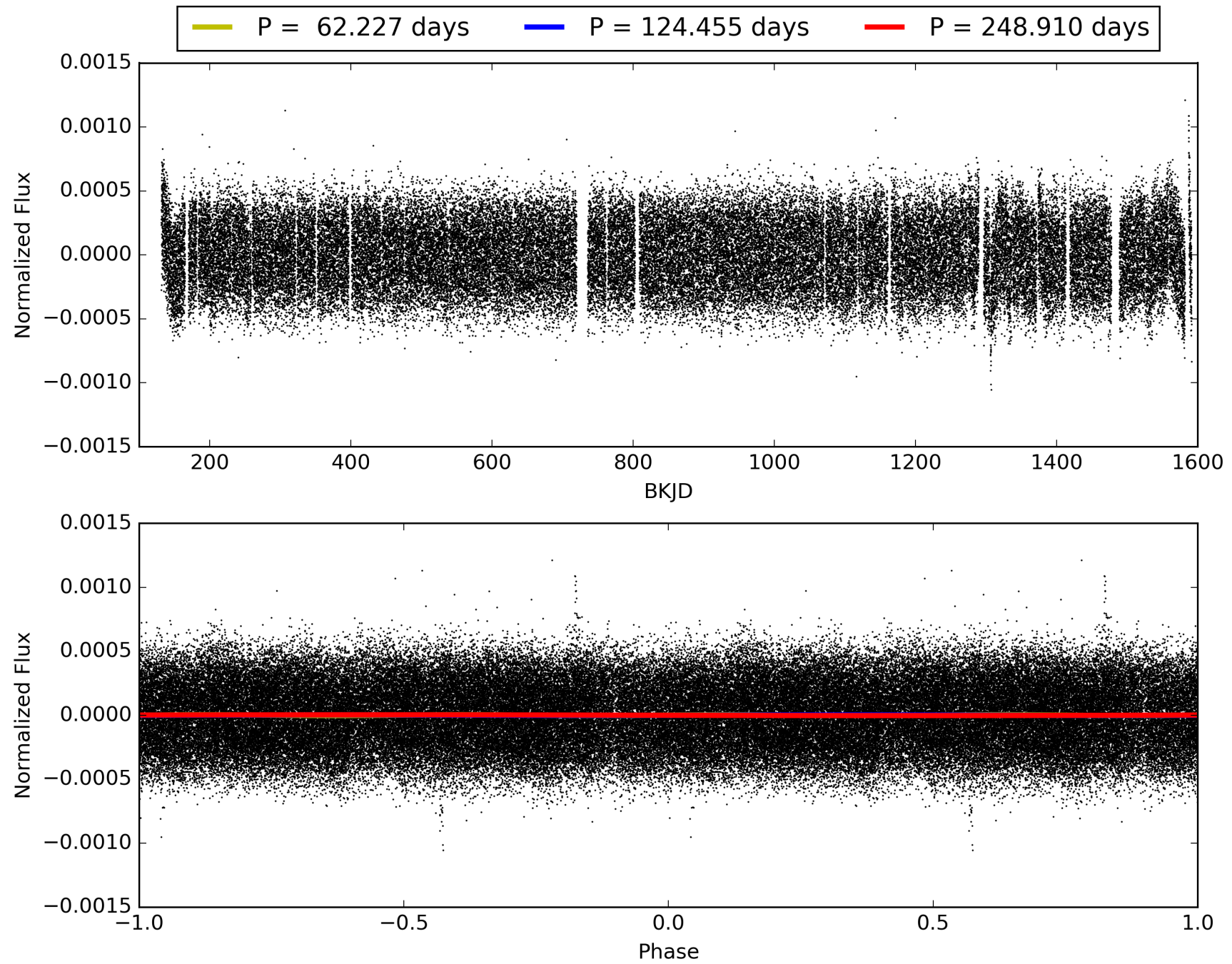
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:56:21 Z

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

TCE 008126422-04, PDC Light Curves

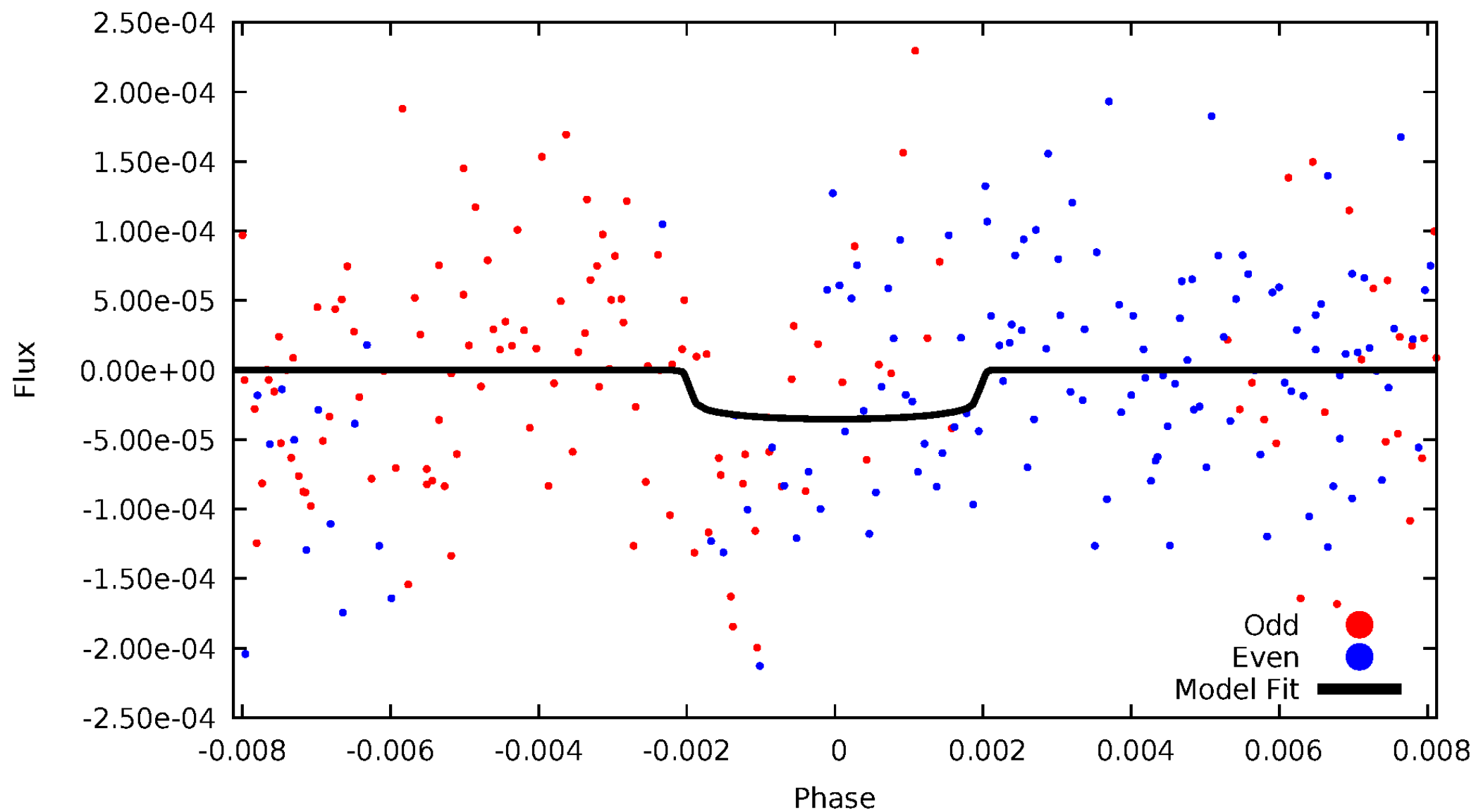


TCE 008126422-04



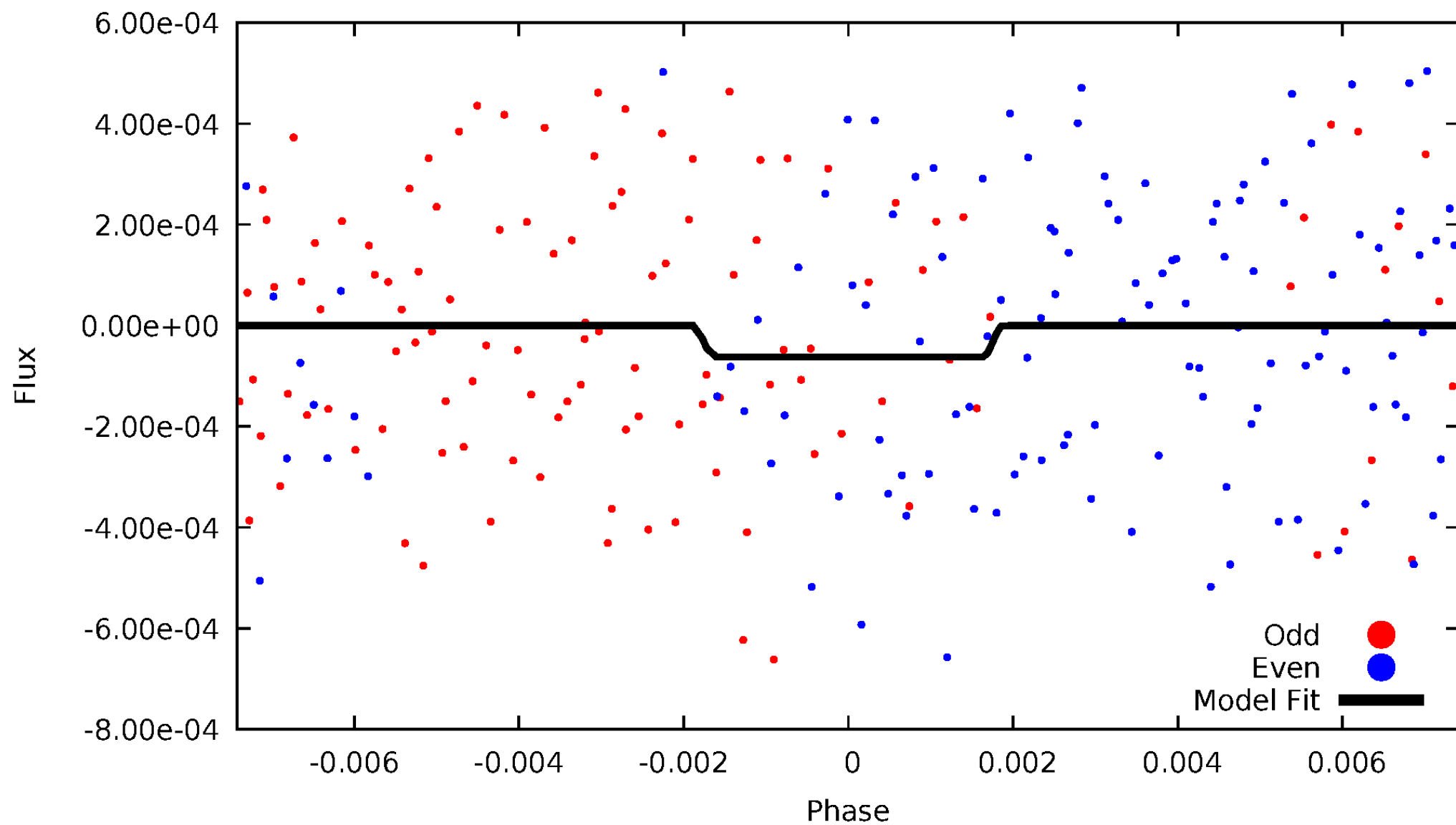
DV Odd/Even

TCE 008126422-04



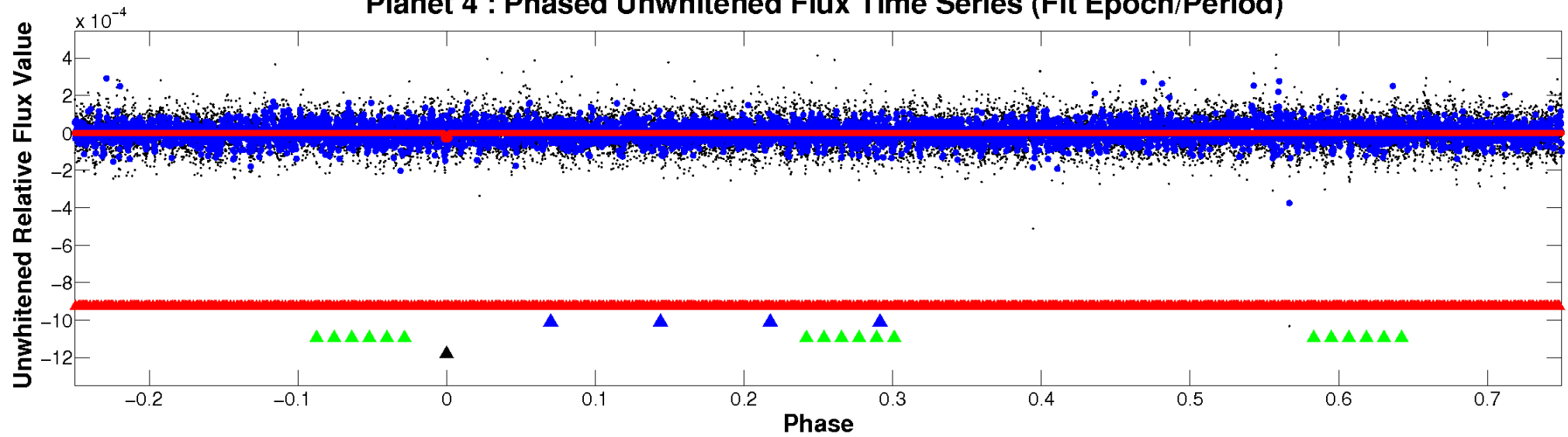
ALT Odd/Even

TCE 008126422-04

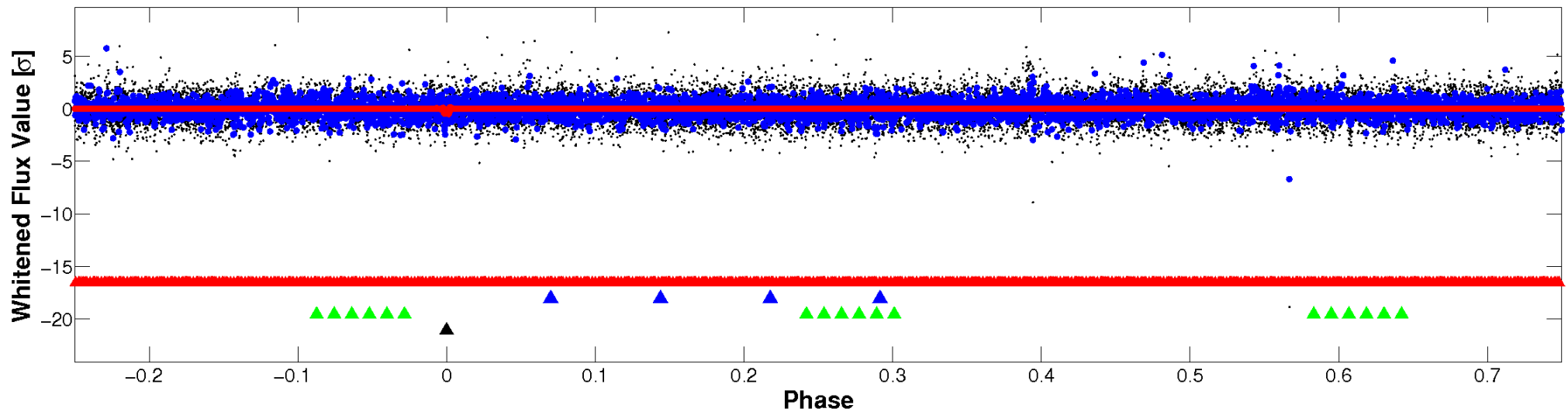


Non-Whitened Vs. Whitened Light Curve

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

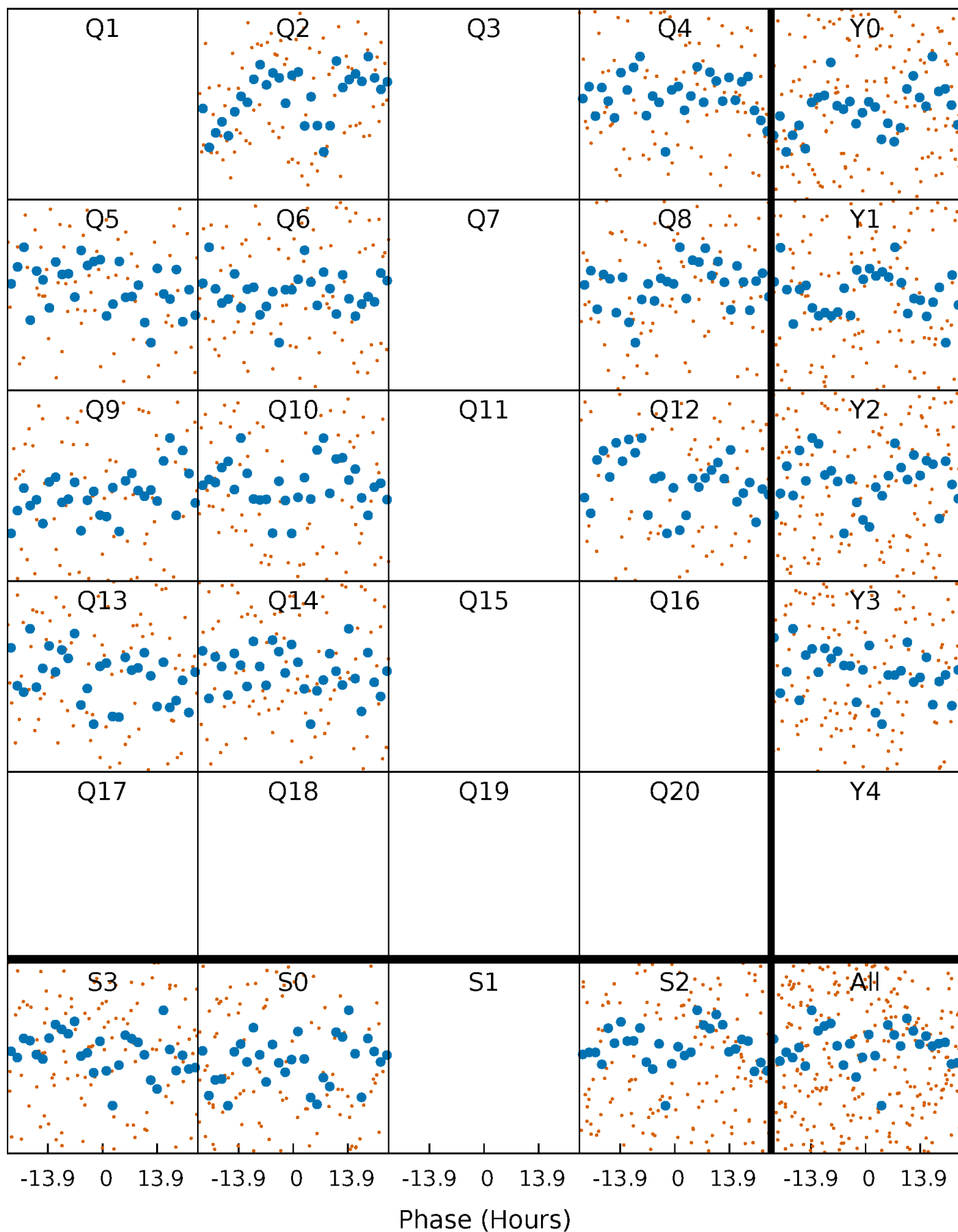


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



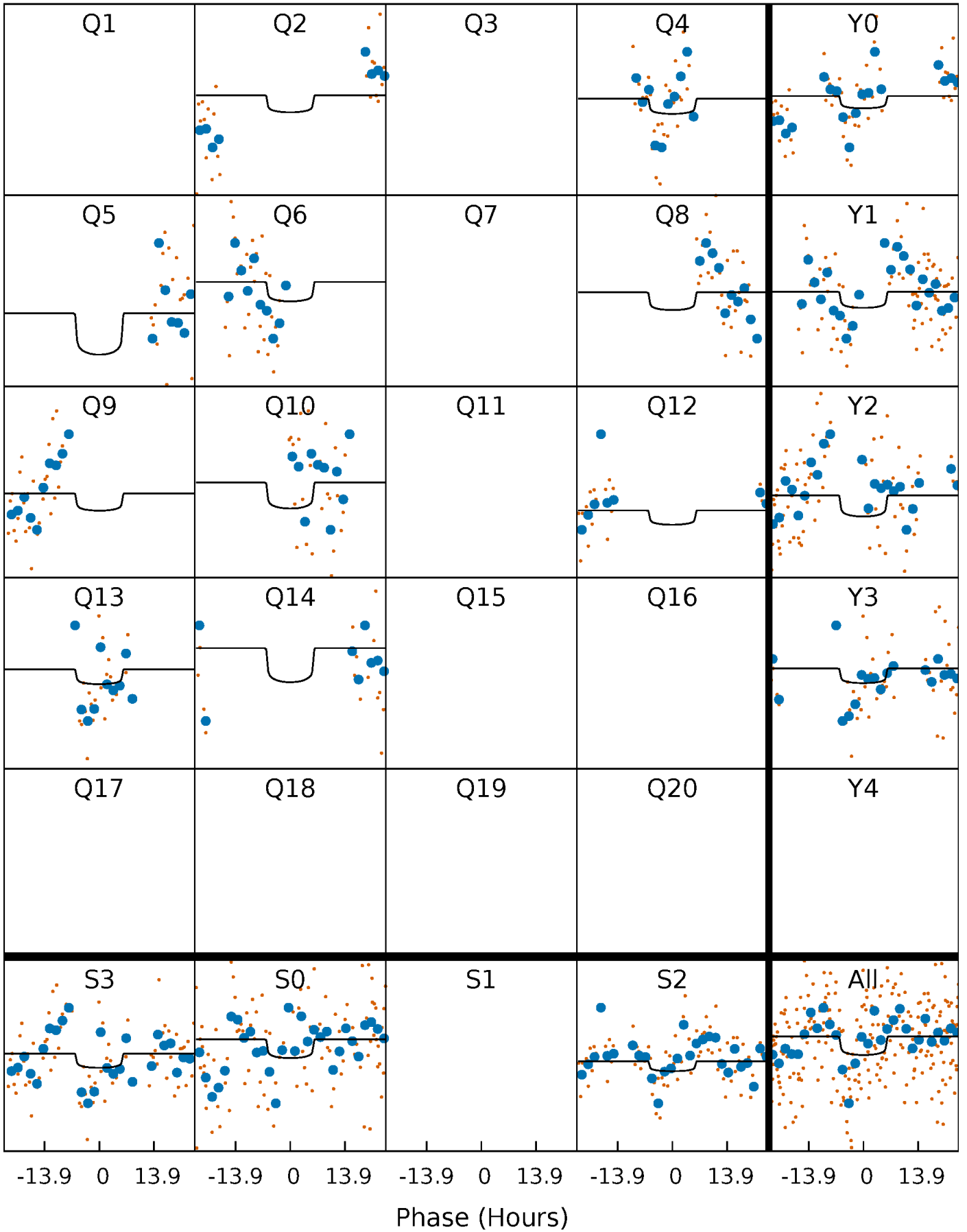
PDC Quarter-Phased Transit Curves

TCE 008126422-04 P=124.454777 Days $T_0=239.903928$ (BKJD)



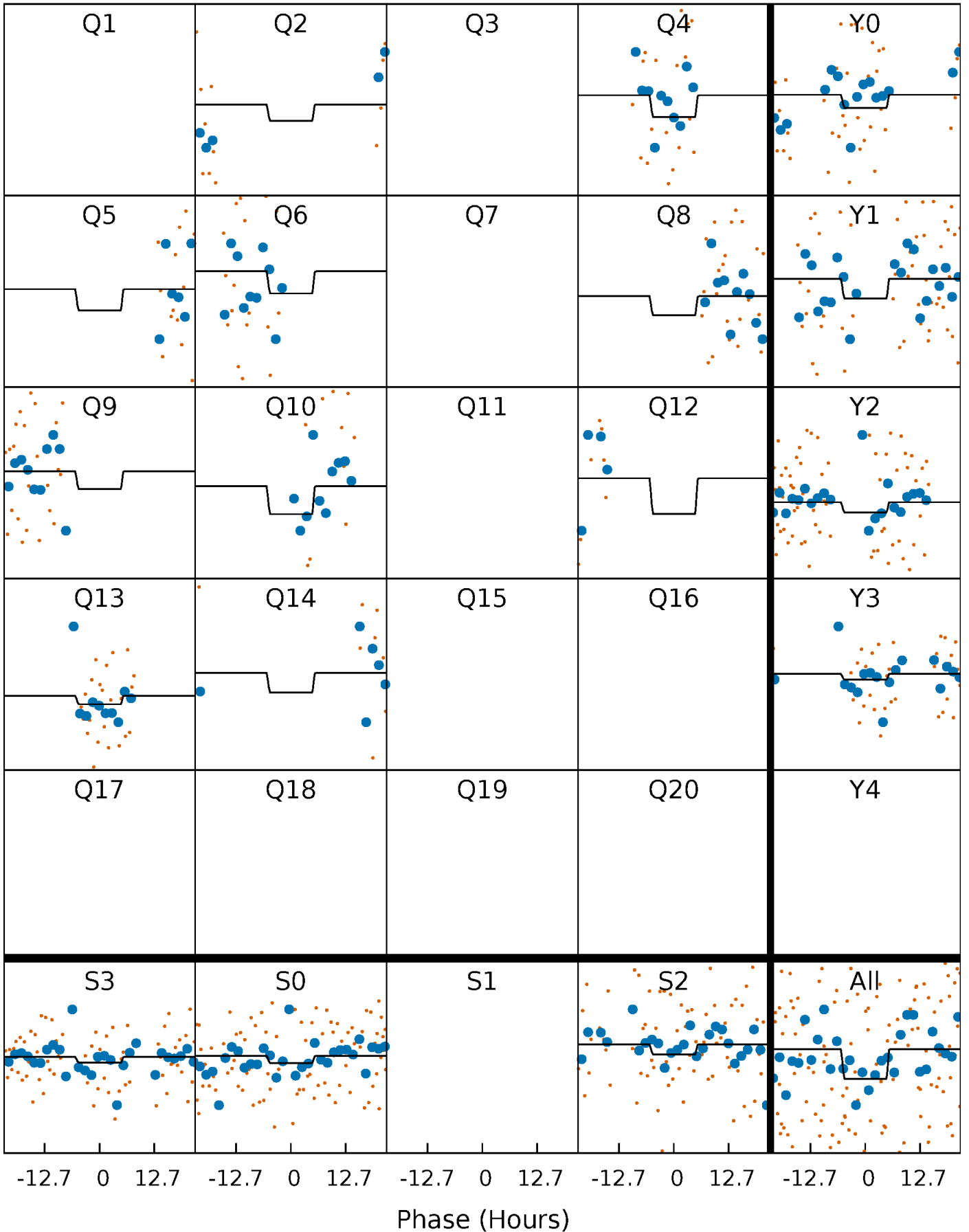
DV Quarter-Phased Transit Curves

TCE 008126422-04 P=124.454777 Days $T_0=239.903928$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

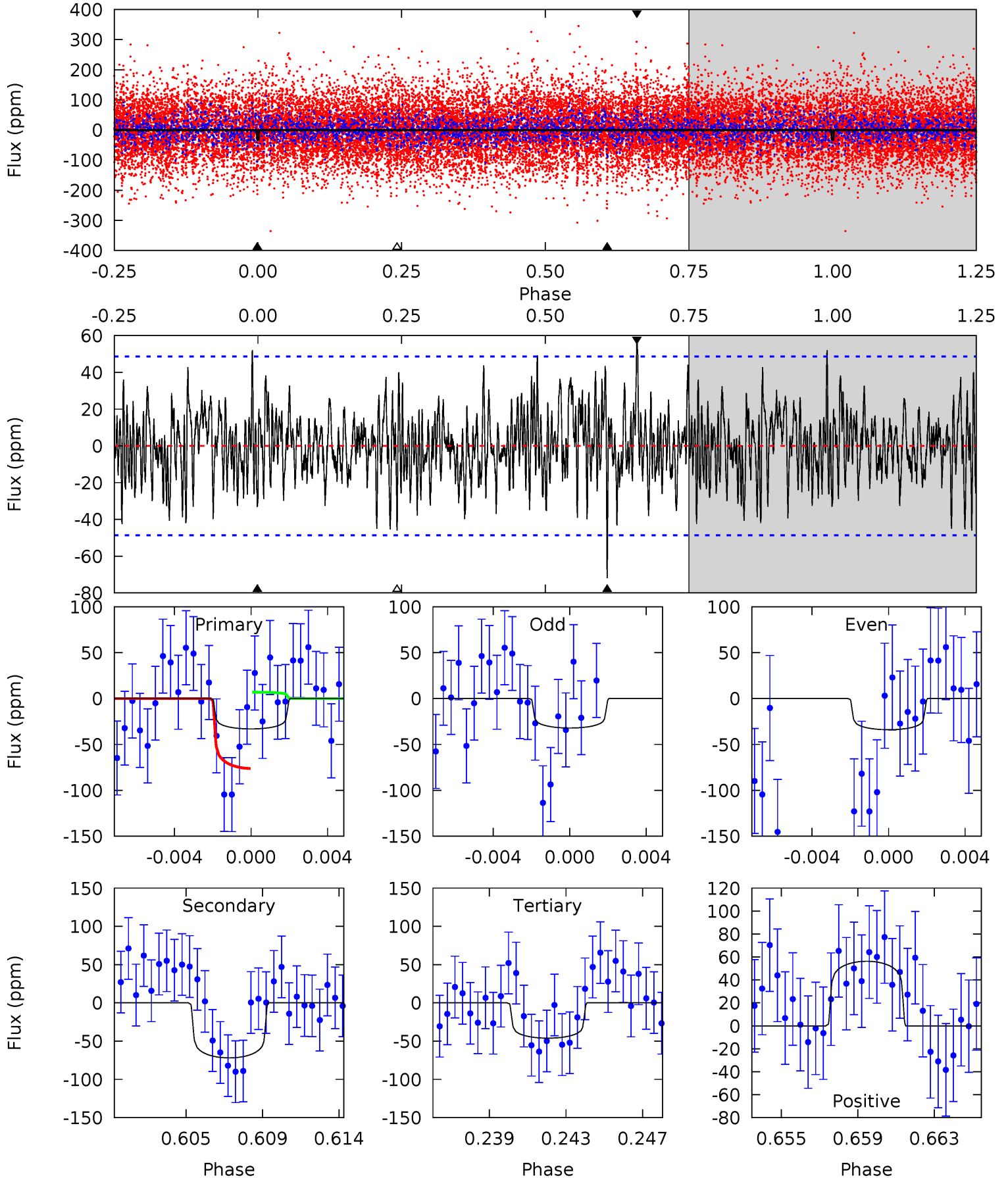
TCE 008126422-04 P=124.456015 Days $T_0=239.884428$ (BKJD)



DV Model-Shift Uniqueness Test

008126422-04, P = 124.454777 Days, E = 115.449151 Days

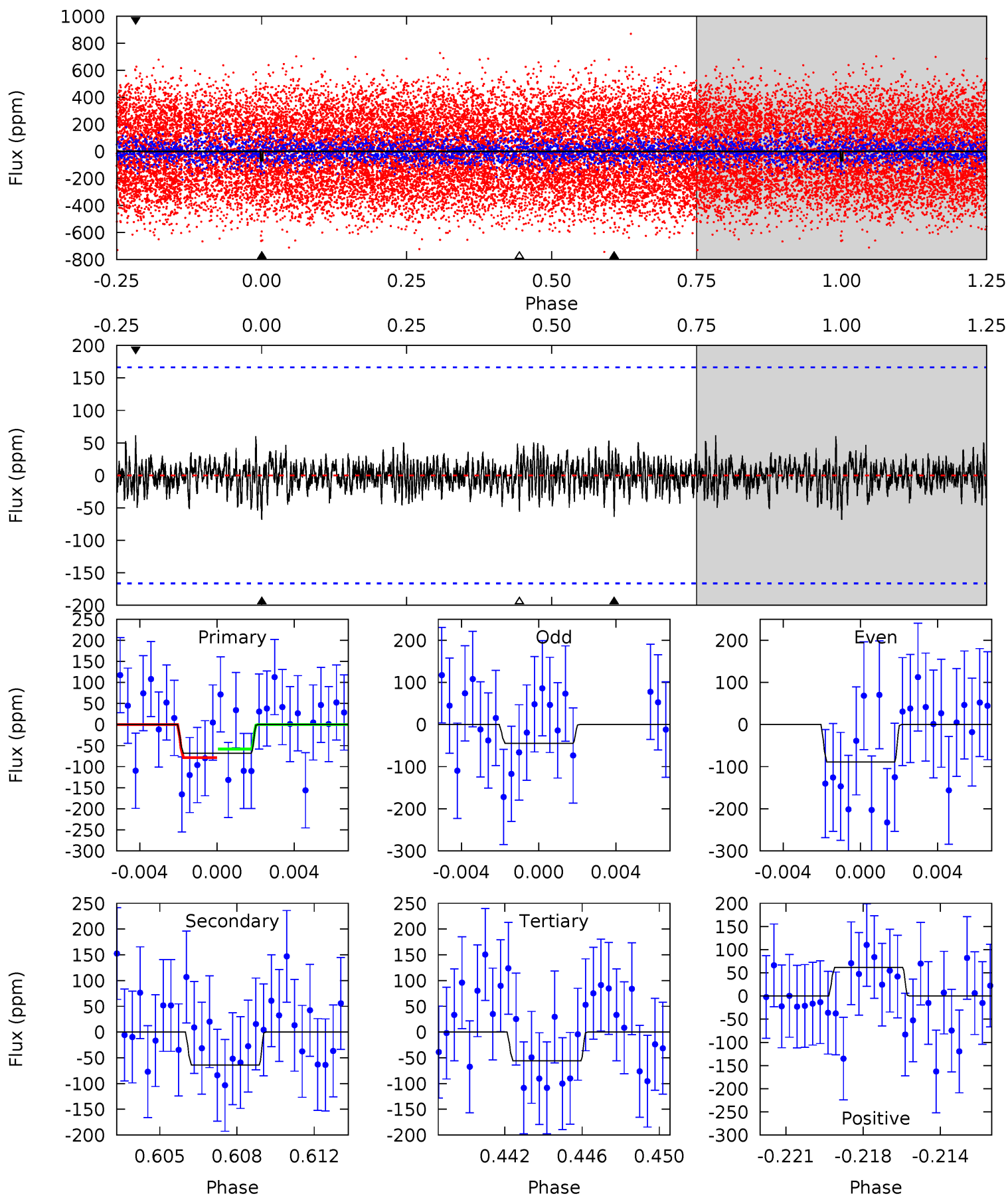
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.54 | 7.67 | 4.92 | 6.00 | 5.19 | 2.87 | 1.74 | -1.38 | -2.47 | 2.75 | 1.67 | 0.10 | 0.96 | 0.44 | 3.70 |



Alt Model-Shift Uniqueness Test

008126422-04, P = 124.456015 Days, E = 115.428413 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.14 | 2.00 | 1.76 | 1.94 | 5.21 | 2.90 | 0.55 | 0.38 | 0.20 | 0.24 | 0.06 | 0.69 | 1.16 | 0.48 | 0.32 |



Stellar Parameters For KIC 008126422

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7535^{+209}_{-340} | $4.072^{+0.170}_{-0.170}$ | $-0.060^{+0.200}_{-0.400}$ | $1.955^{+0.550}_{-0.450}$ | $1.642^{+0.188}_{-0.282}$ | $0.310^{+0.282}_{-0.148}$ |
| | +3%/-5% | +4%/-4% | +333%/-667% | +28%/-23% | +11%/-17% | +91%/-48% |
| Source | KIC0 | 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 008126422-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|-------------------|------------------------|-------------------------|
| DV | -72 ± 9 | $1.40^{+0.89}_{-0.77}$ | 853^{+62}_{-60} | 8720^{+8607}_{-2078} | 6774^{+26047}_{-4338} |
| Alt. | -64 ± 32 | $1.70^{+0.96}_{-0.85}$ | 853^{+64}_{-62} | 7205^{+4506}_{-1785} | 3527^{+10809}_{-2461} |

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 $A_{obs} \gg 1.0$

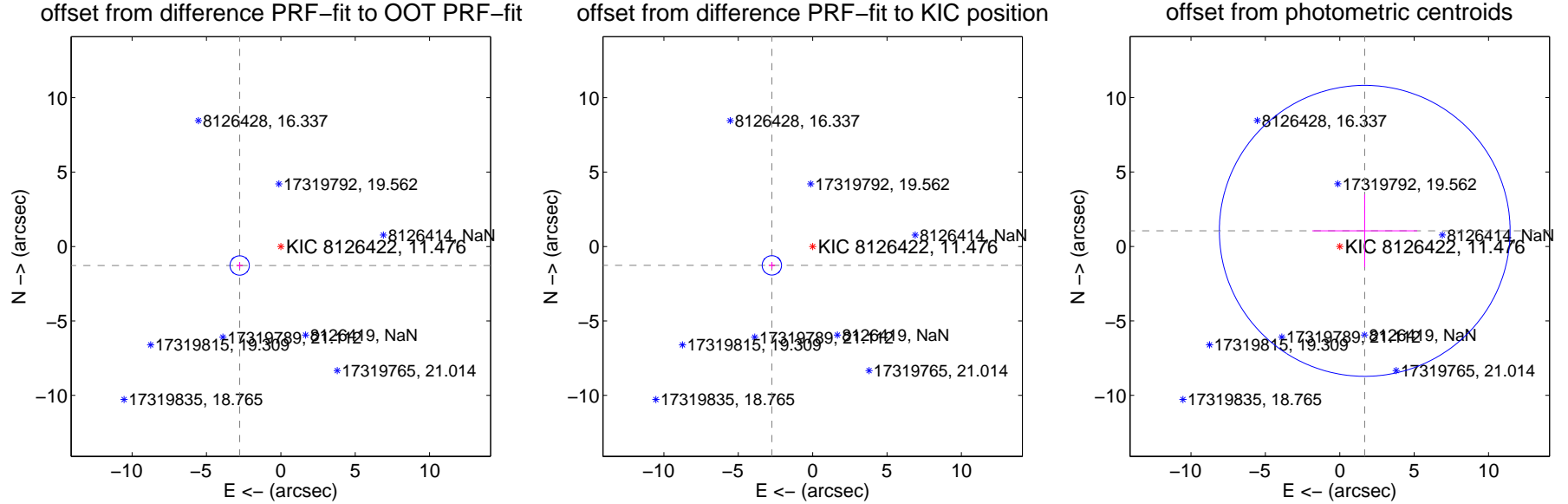
DV Centroid Data

Supplemental centroid analysis for 008126422-04. **Kepler magnitude: 11.48.** Transit SNR 3.27

There are 0 quarters with good PRF difference image offsets

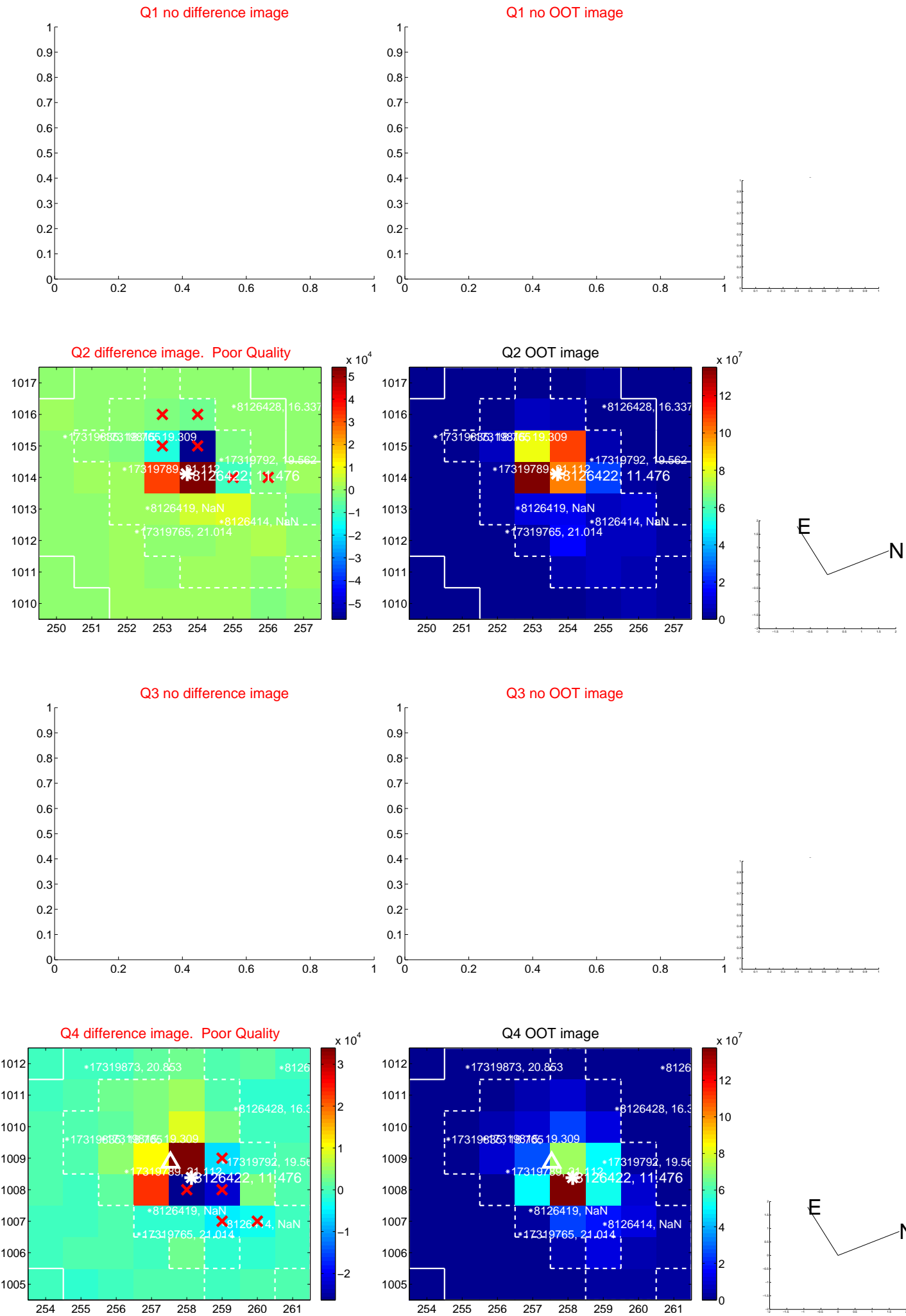
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 3.049 ± 0.217 | 14.06 | 2.769 ± 0.215 | -1.275 ± 0.226 |
| PRF-fit source offset from KIC position | 3.021 ± 0.217 | 13.93 | 2.743 ± 0.215 | -1.267 ± 0.226 |
| photometric centroid source offset | 1.98 ± 3.26 | 0.61 | -1.68 ± 3.52 | 1.05 ± 2.44 |

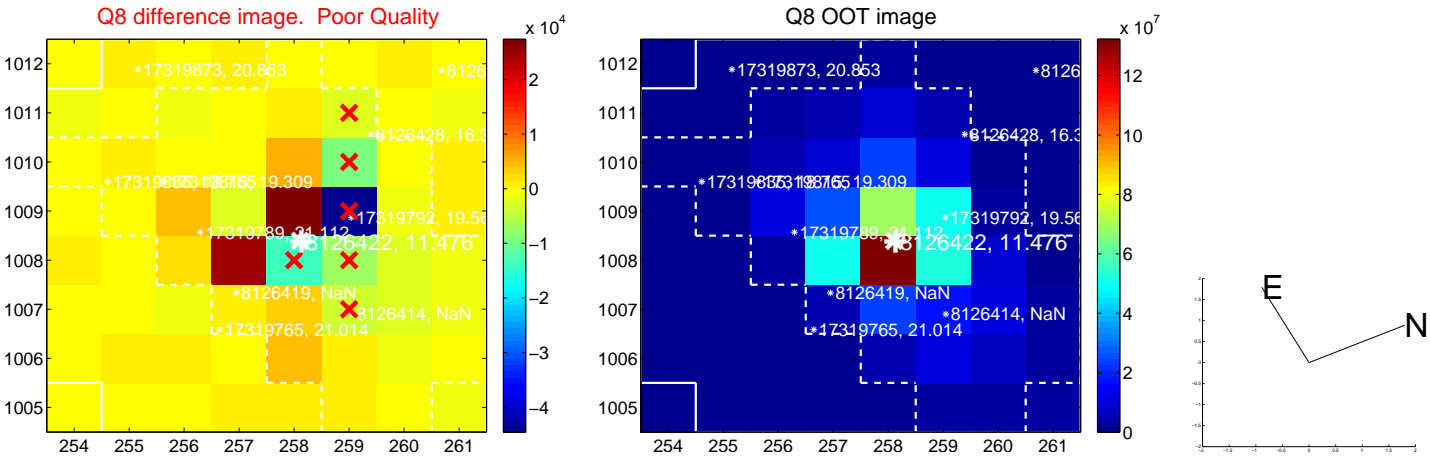
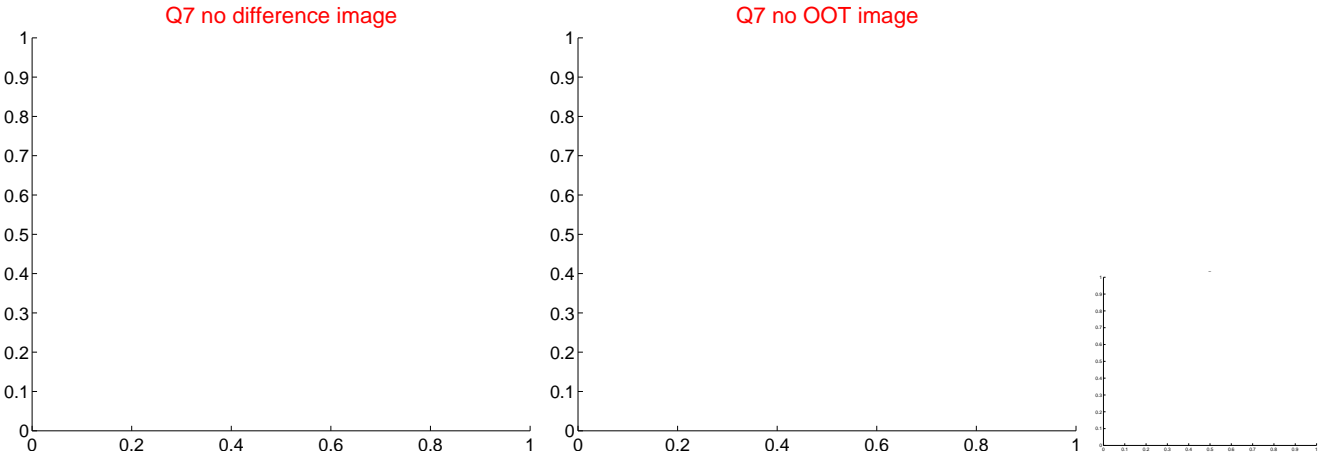
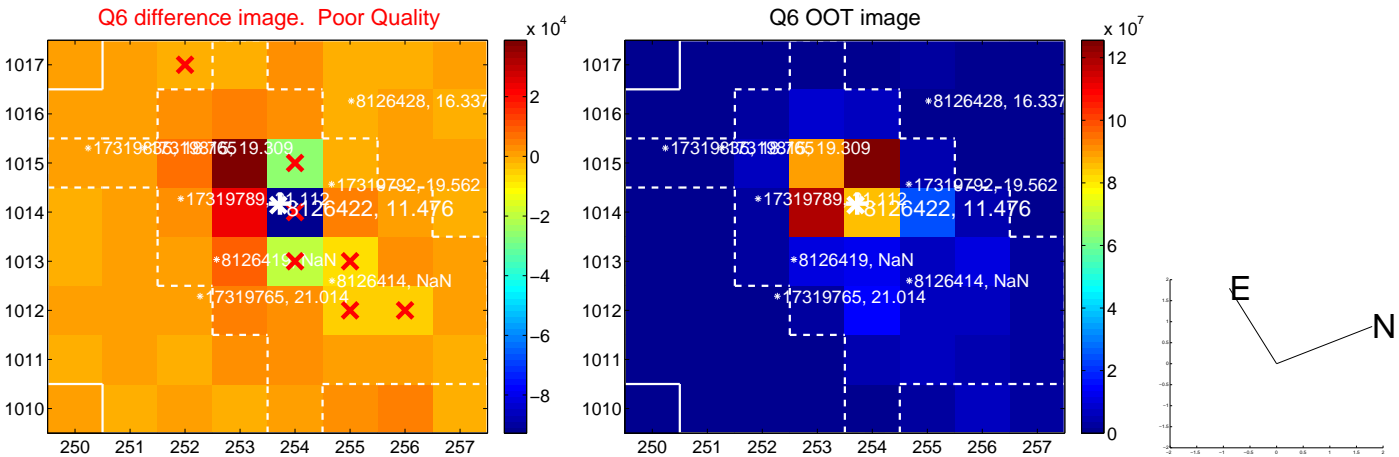
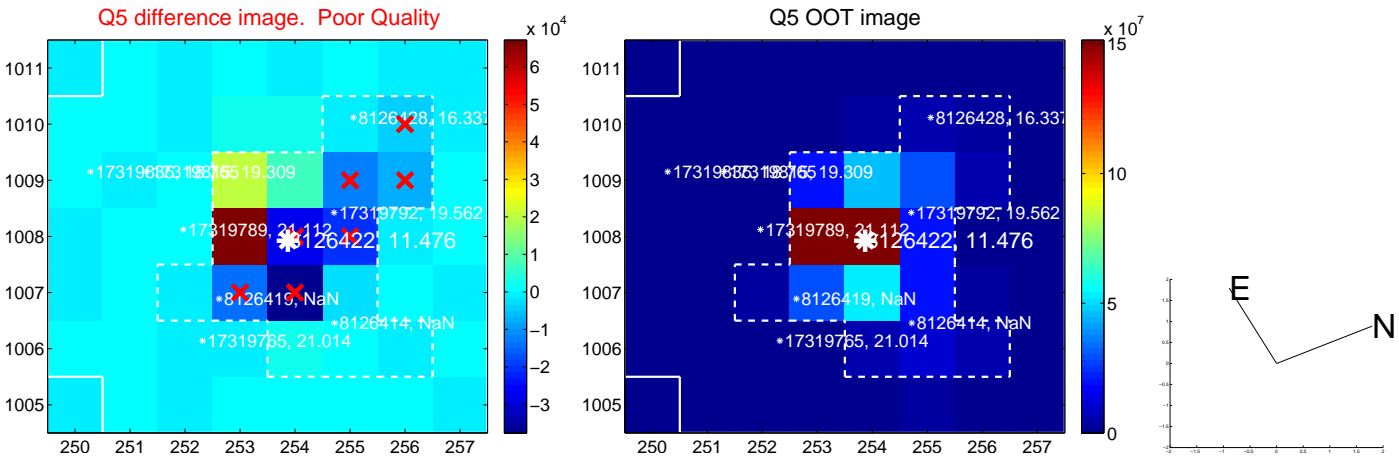


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

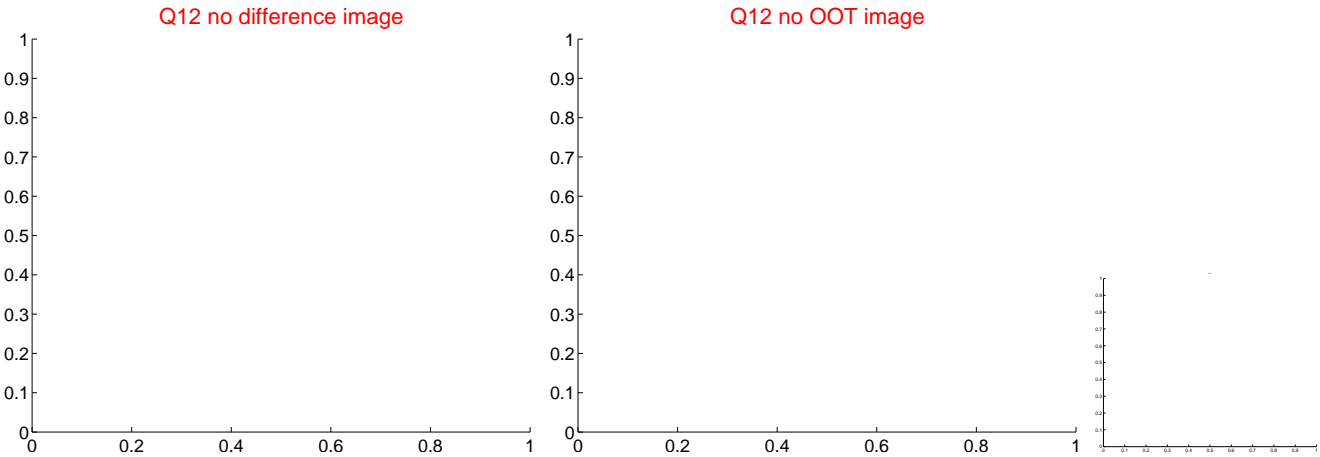
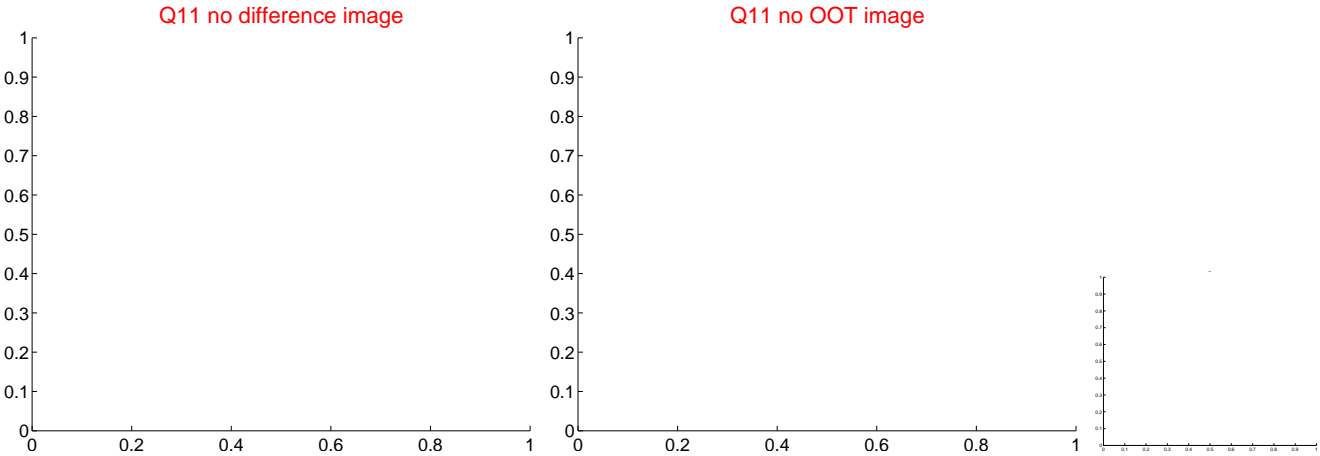
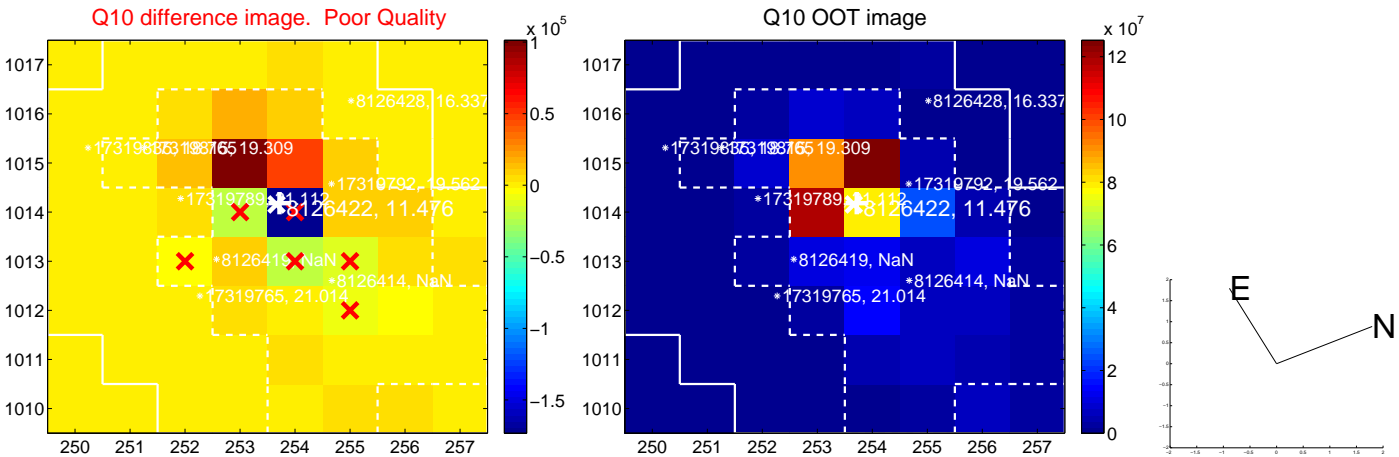
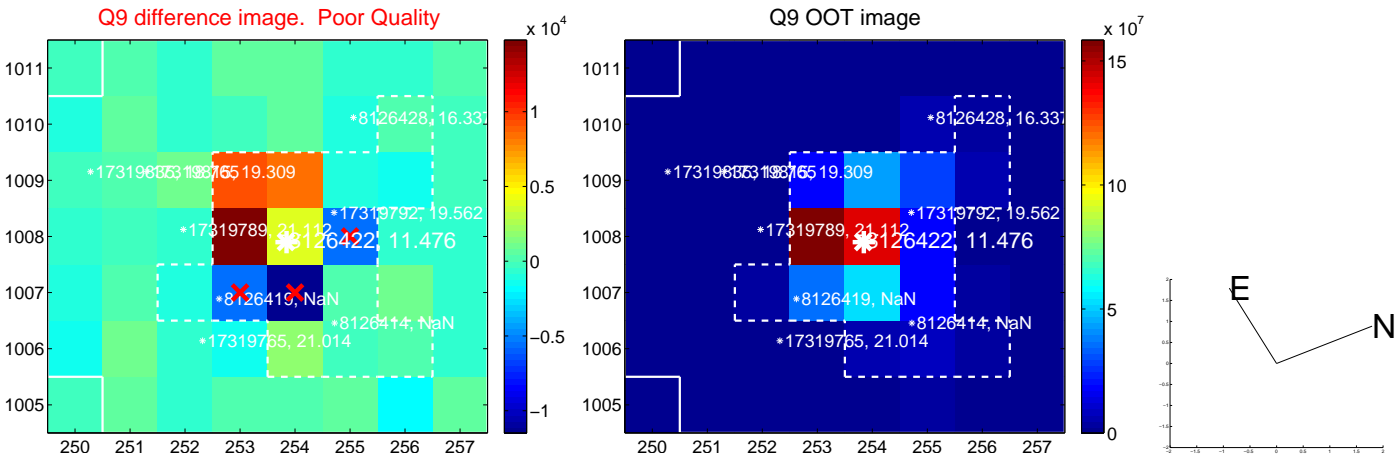
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



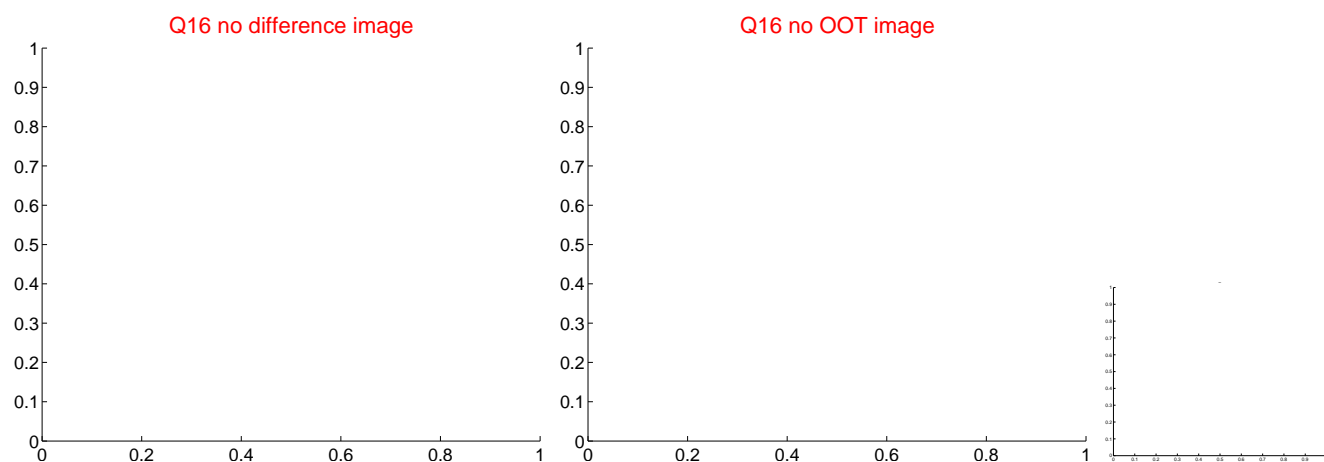
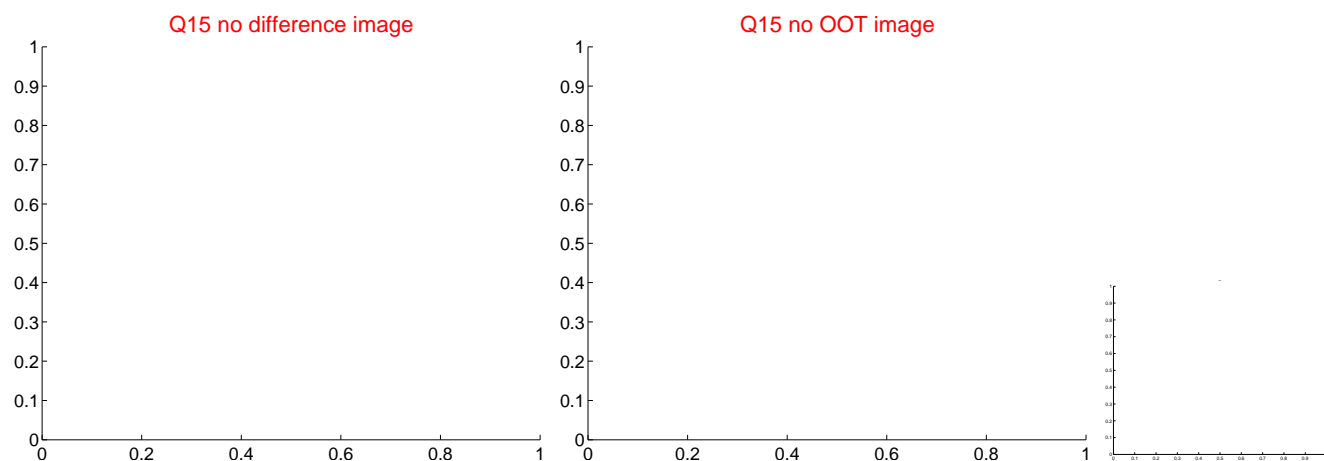
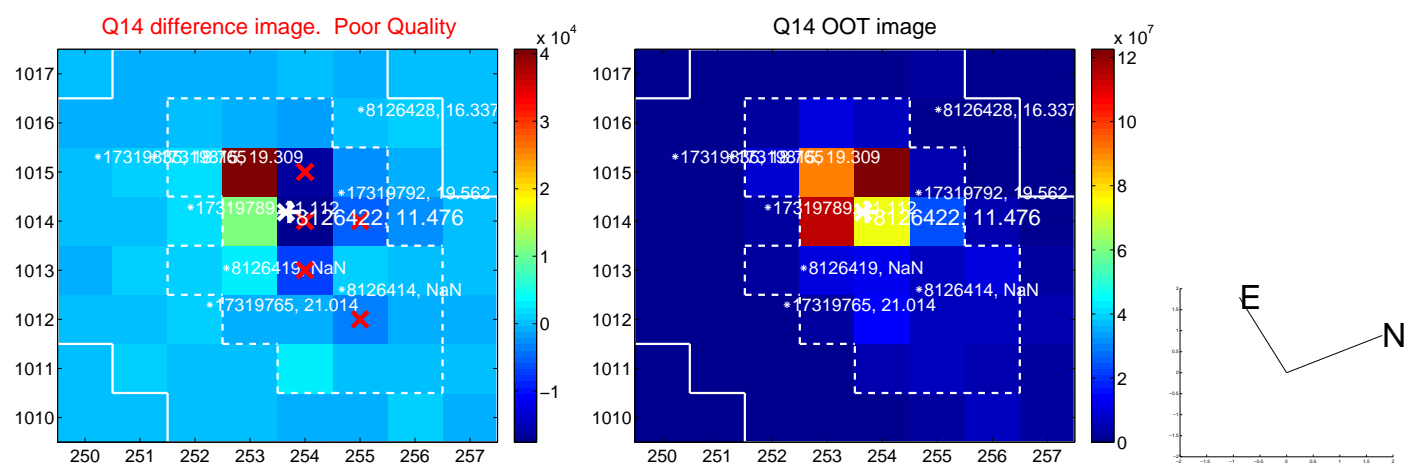
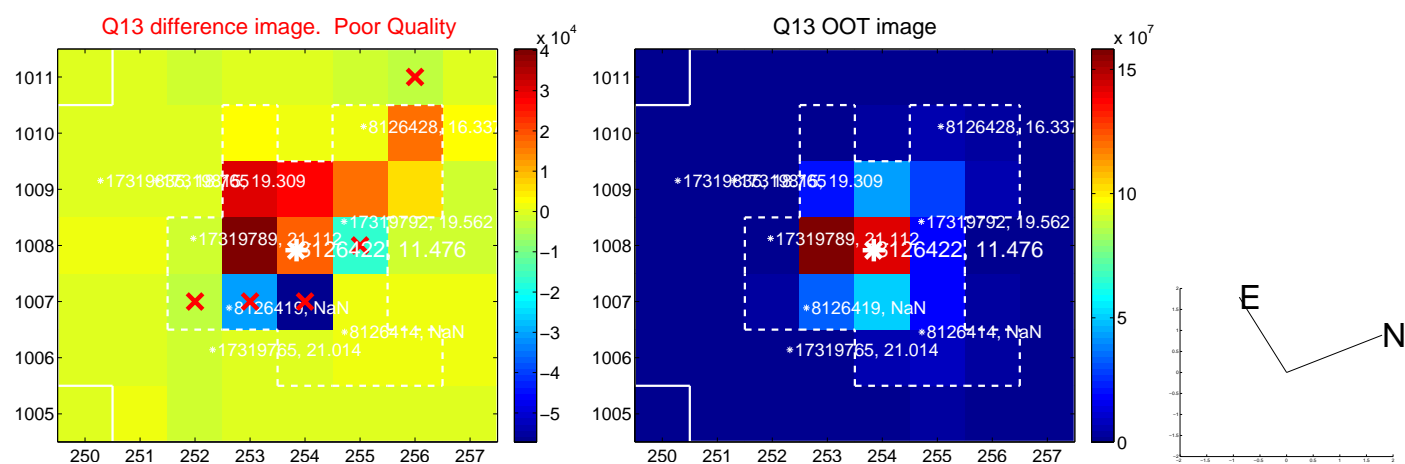
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



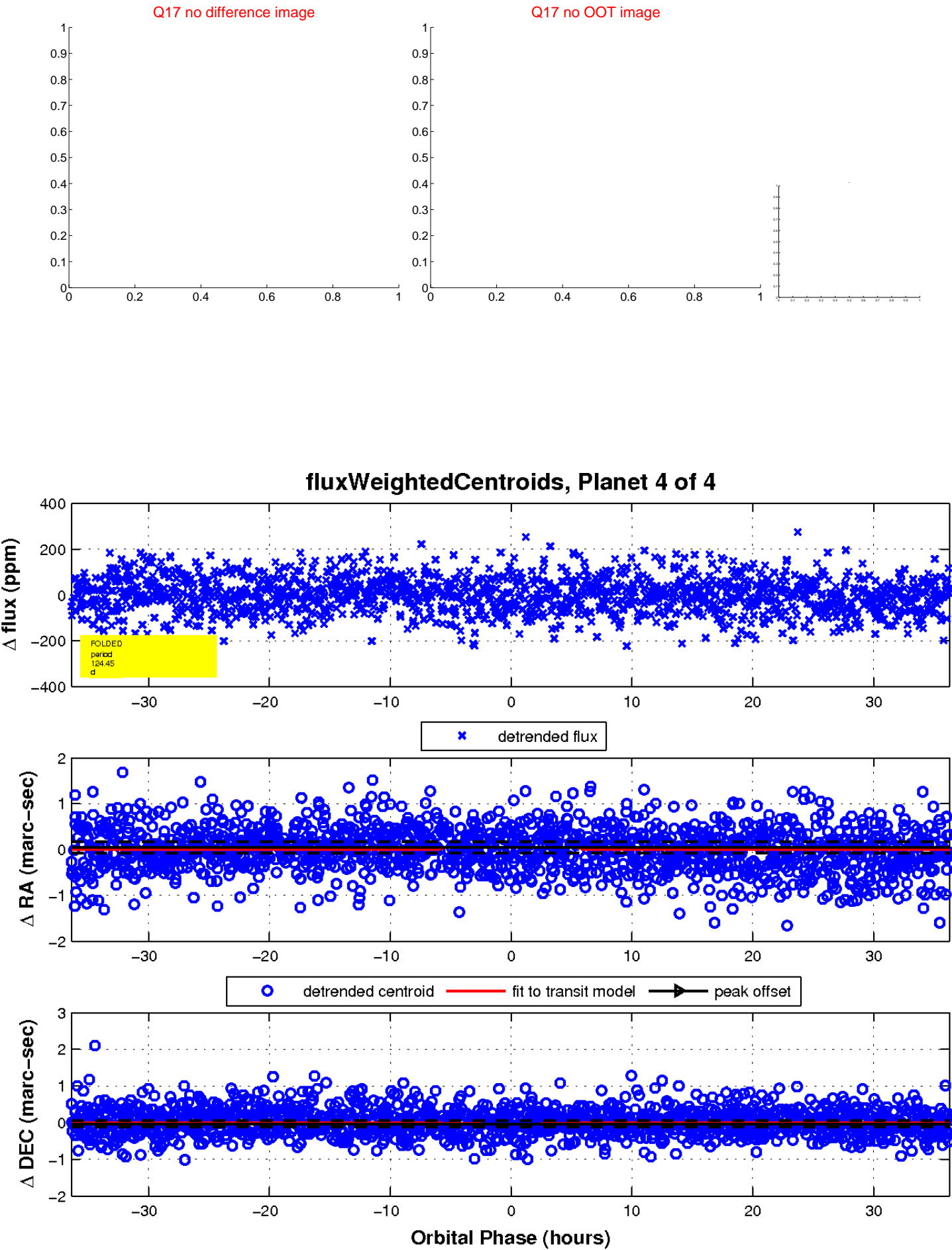
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

