

KIC 005254230

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005254230-01 | OBS | 5999.01 | 7.035530 | 137.949786 | 2013.8 | 3.512 | 107.0 | 89.0 | 0.71 | 5288 | 6.15 | 88.68 |
| 005254230-02 | OBS | No | 7.035311 | 134.400639 | 1238.2 | 3.409 | 54.8 | 56.9 | 0.71 | 5288 | 4.80 | 88.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005254230-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST |
| 005254230-02 | OBS | FP | 0.00 | 1 | 1 | 1 | 0 | IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST |

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

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

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

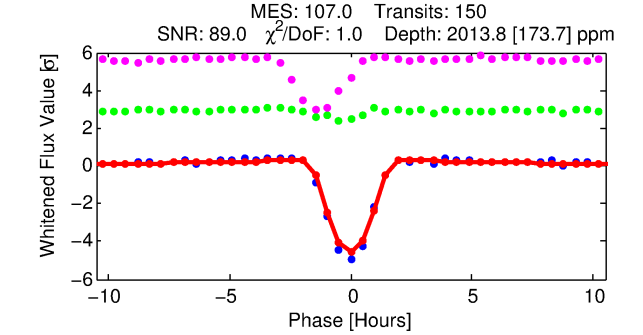
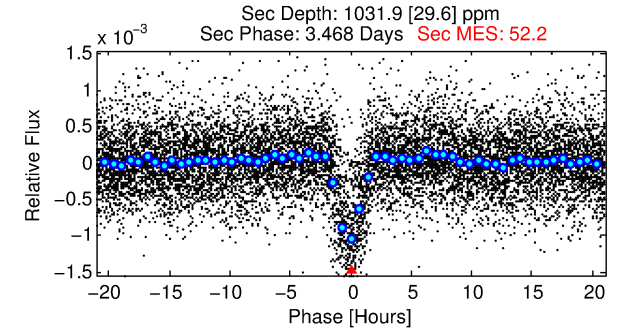
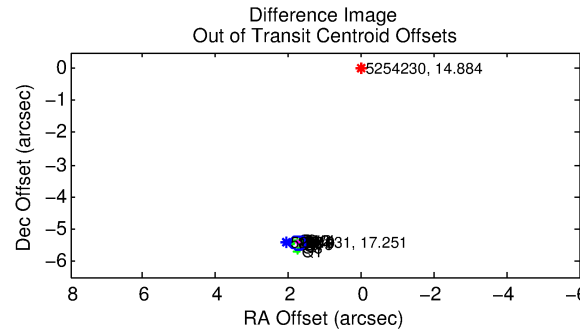
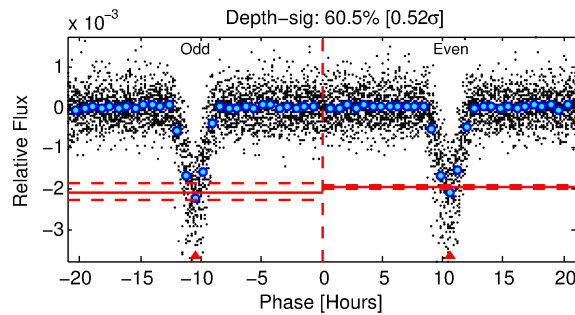
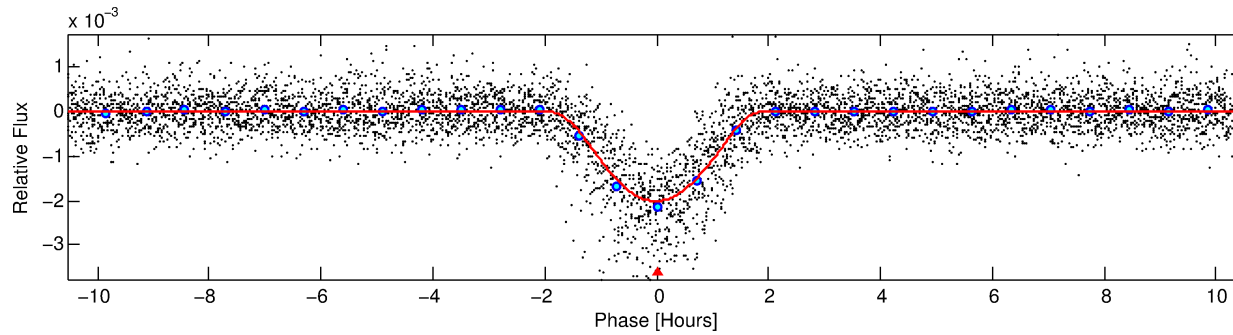
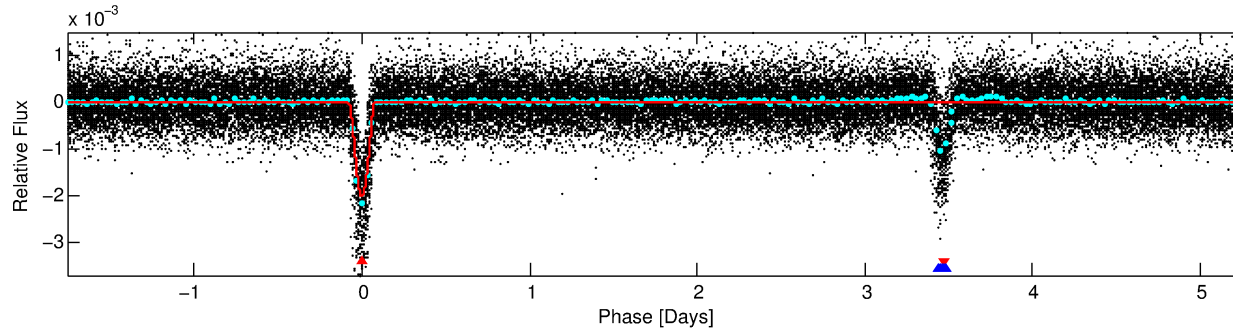
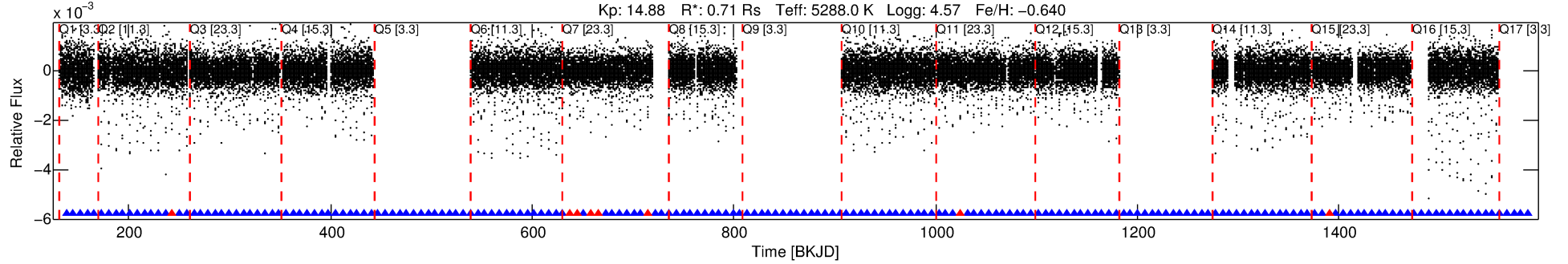
Ephemeris Match Information For 005254230-01

No Significant Match Found

DV One-Page Summary

KIC: 5254230 Candidate: 1 of 2 Period: 7.036 d
KOI: K05999.01 Corr: 0.984

Kp: 14.88 R*: 0.71 Rs Teff: 5288.0 K Logg: 4.57 Fe/H: -0.640



DV Fit Results:

Period = 7.03553 [0.00001] d
Epoch = 137.9498 [0.0009] BKJD
Rp/R* = 0.0794 [0.0422]
a/R* = 6.31 [0.69]
b = 1.00 [0.06]
Seff = 88.68 [16.73]
Teq = 783 [37] K
Rp = 6.15 [3.34] Re
a = 0.0631 [0.0062] AU
Ag = 59.72 [64.04] [0.92σ]
Teffp = 3363 [899] K [2.87σ]

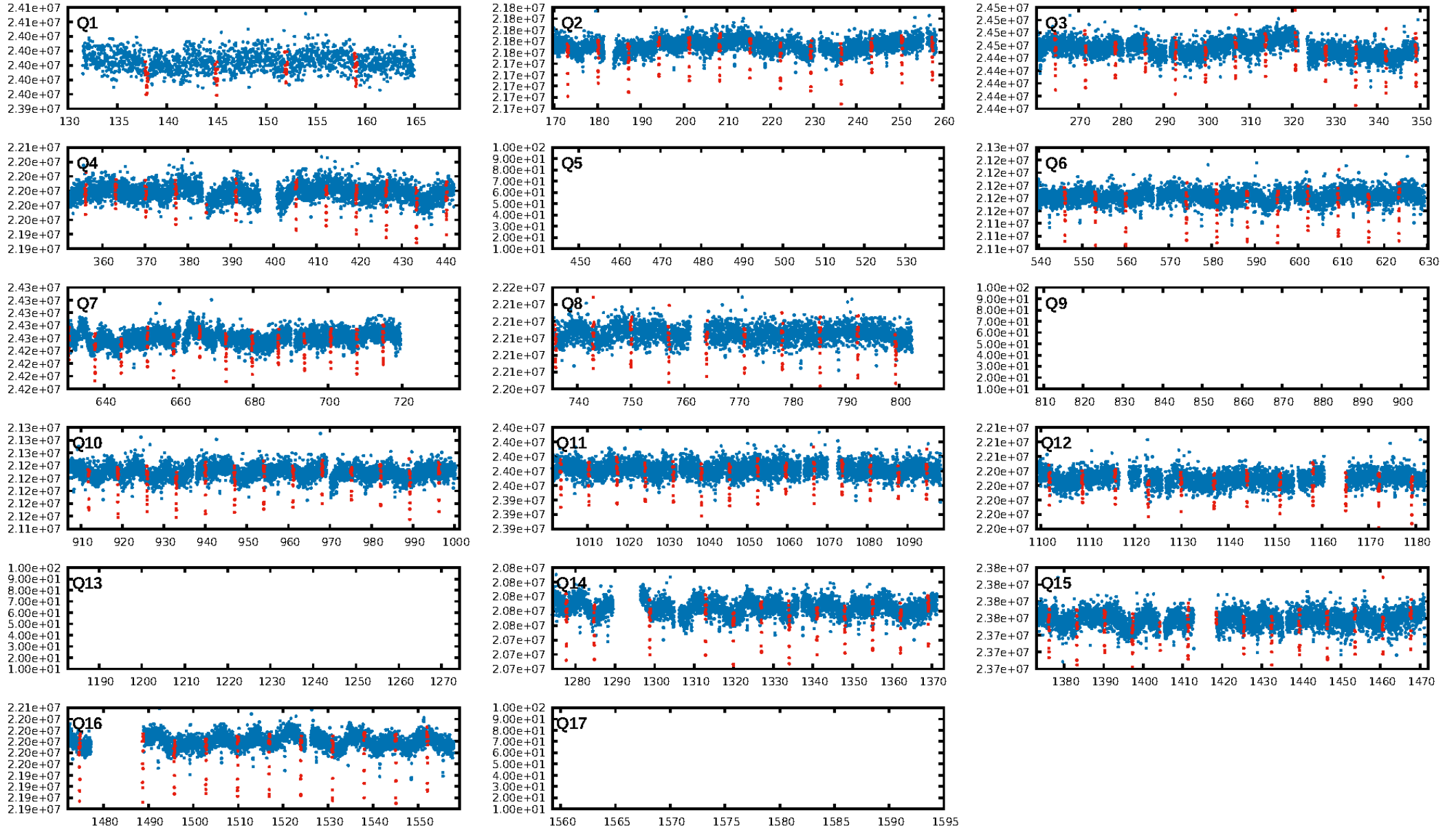
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 99.6%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.95 [138/146]
GhostDiagnostic-chr: -0.005229
Centroid-sig: 0.0%
Centroid-so: 14.088 arcsec [99.90σ]
OotOffset-rm: 5.719 arcsec [79.48σ]
KicOffset-rm: 5.825 arcsec [83.41σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

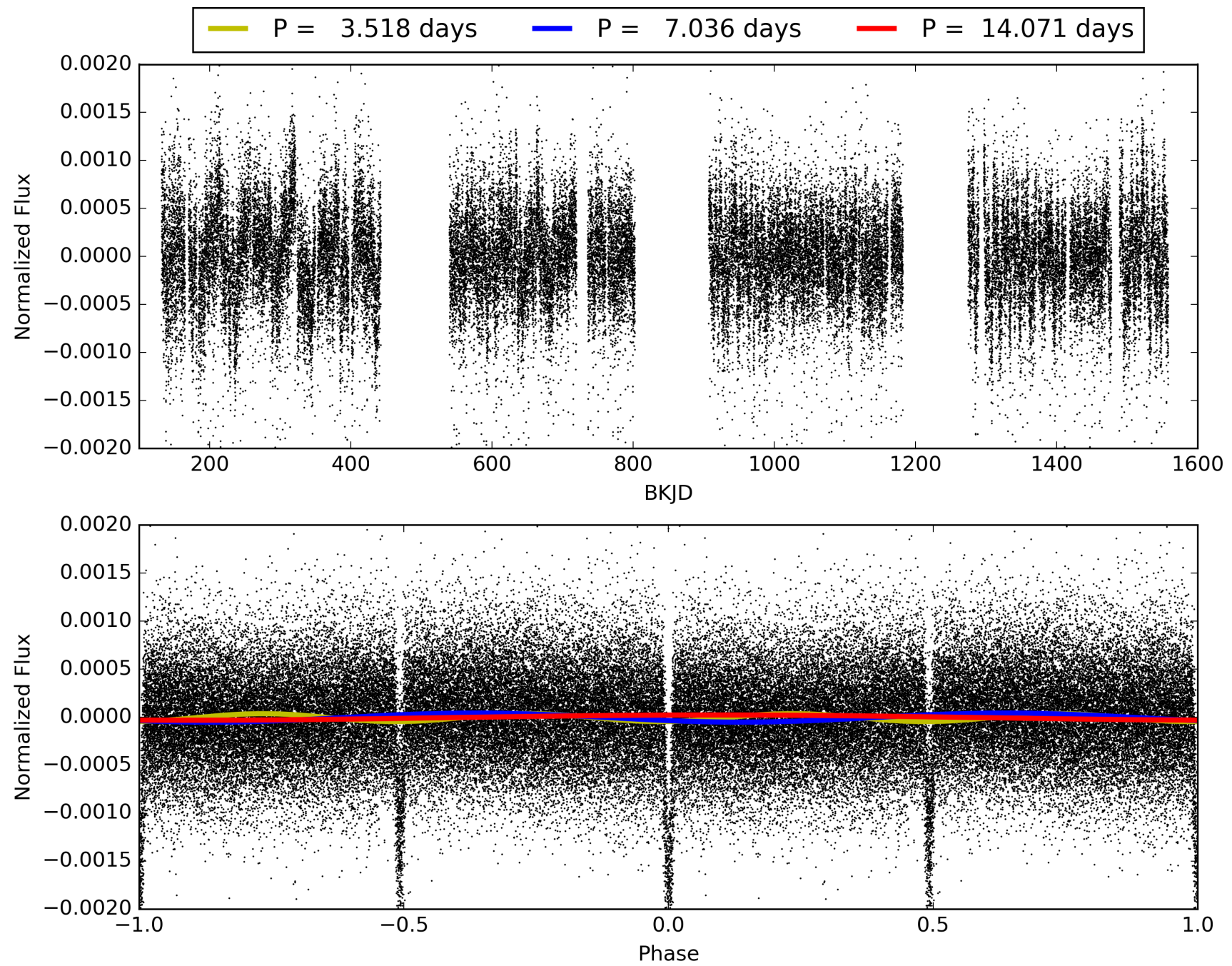
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:59:19 Z

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

TCE 005254230-01, PDC Light Curves

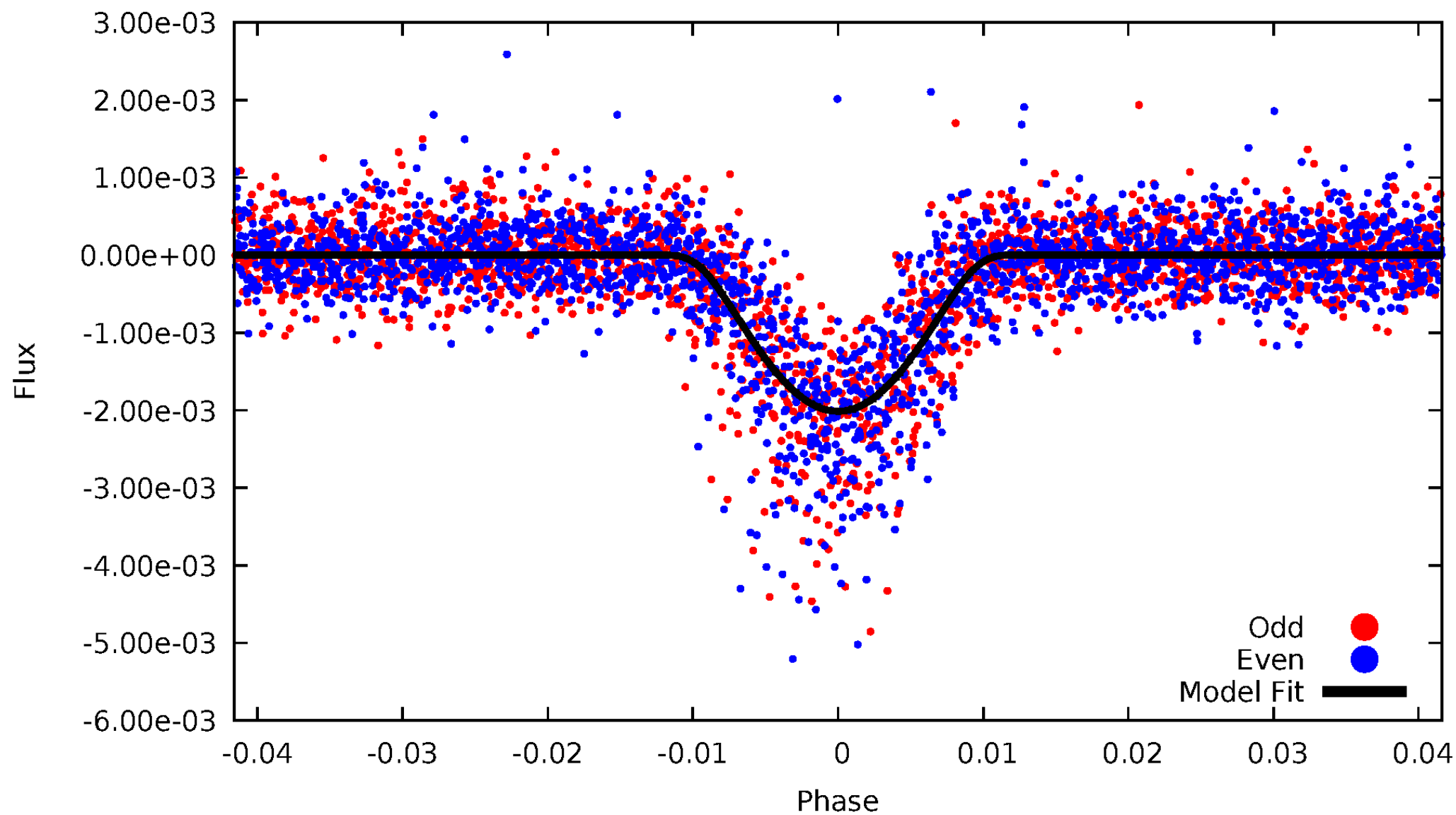


TCE 005254230-01



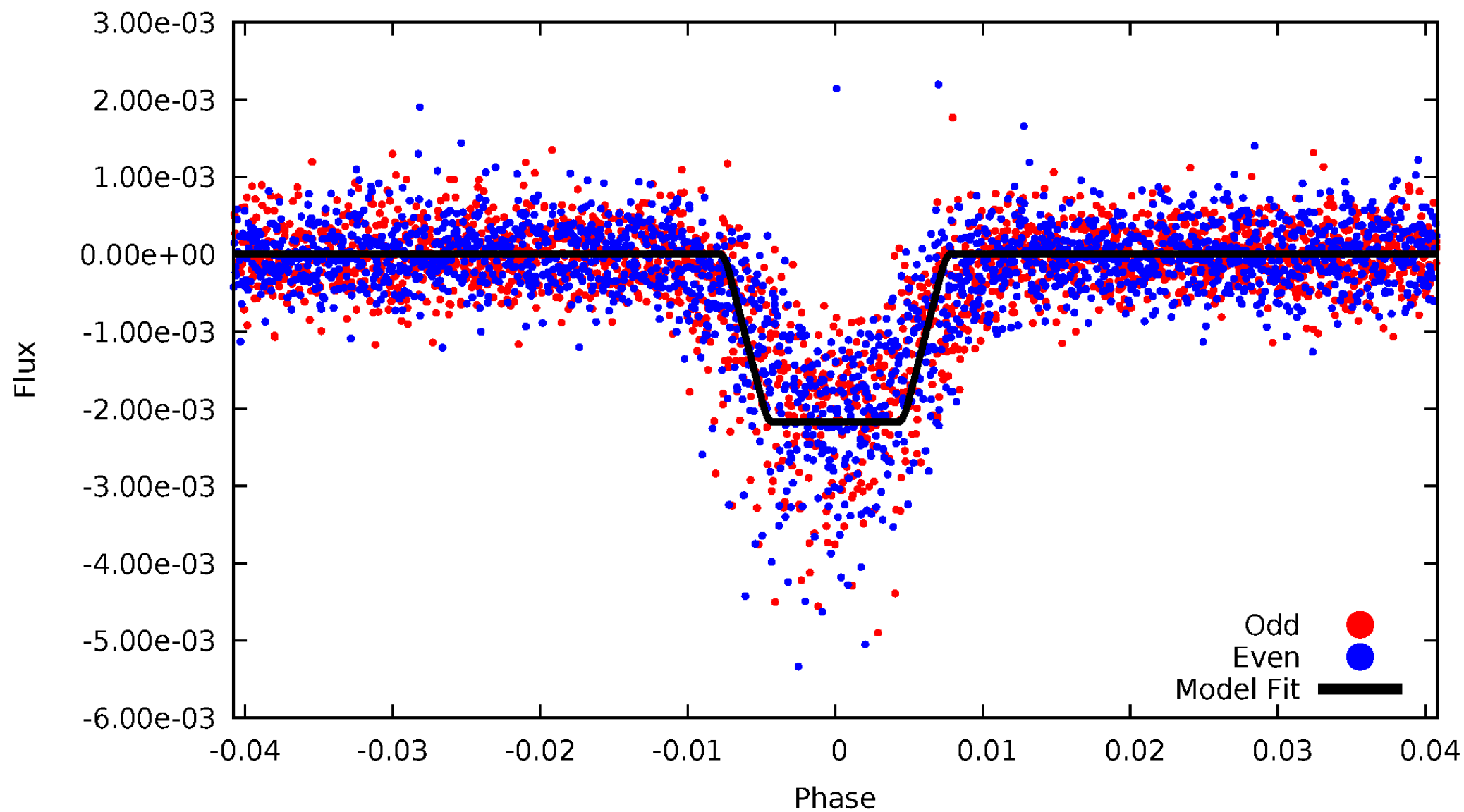
DV Odd/Even

TCE 005254230-01



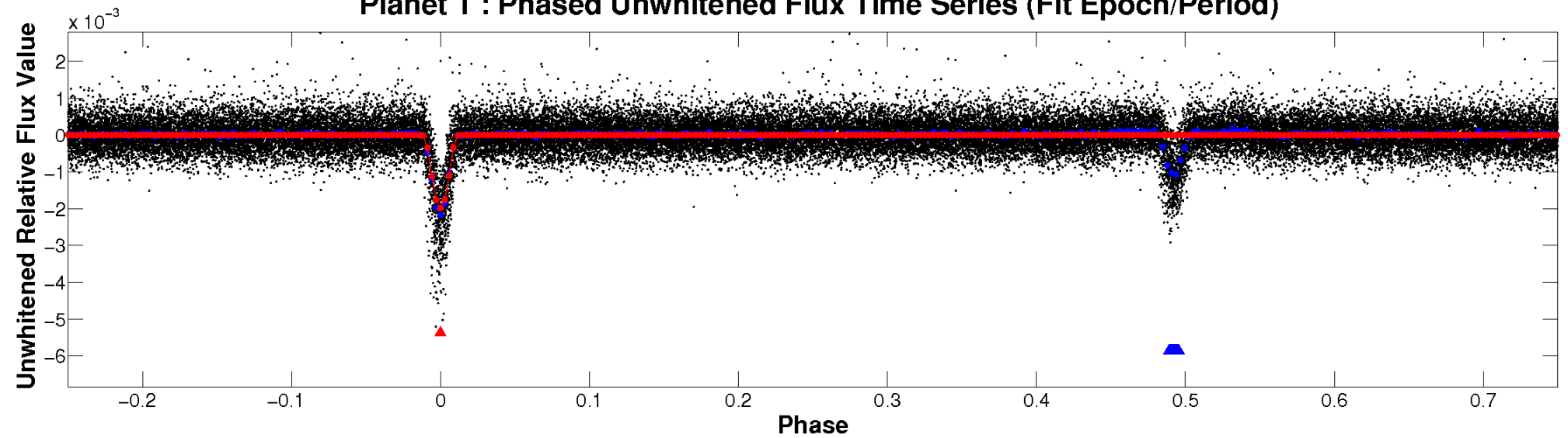
ALT Odd/Even

TCE 005254230-01

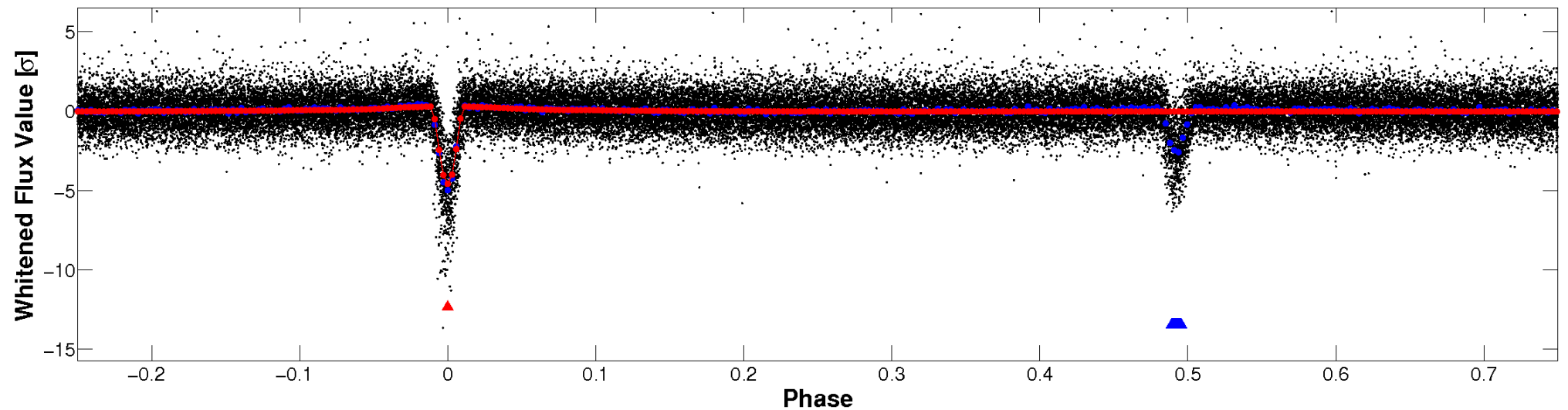


Non-Whitened Vs. Whitened Light Curve

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

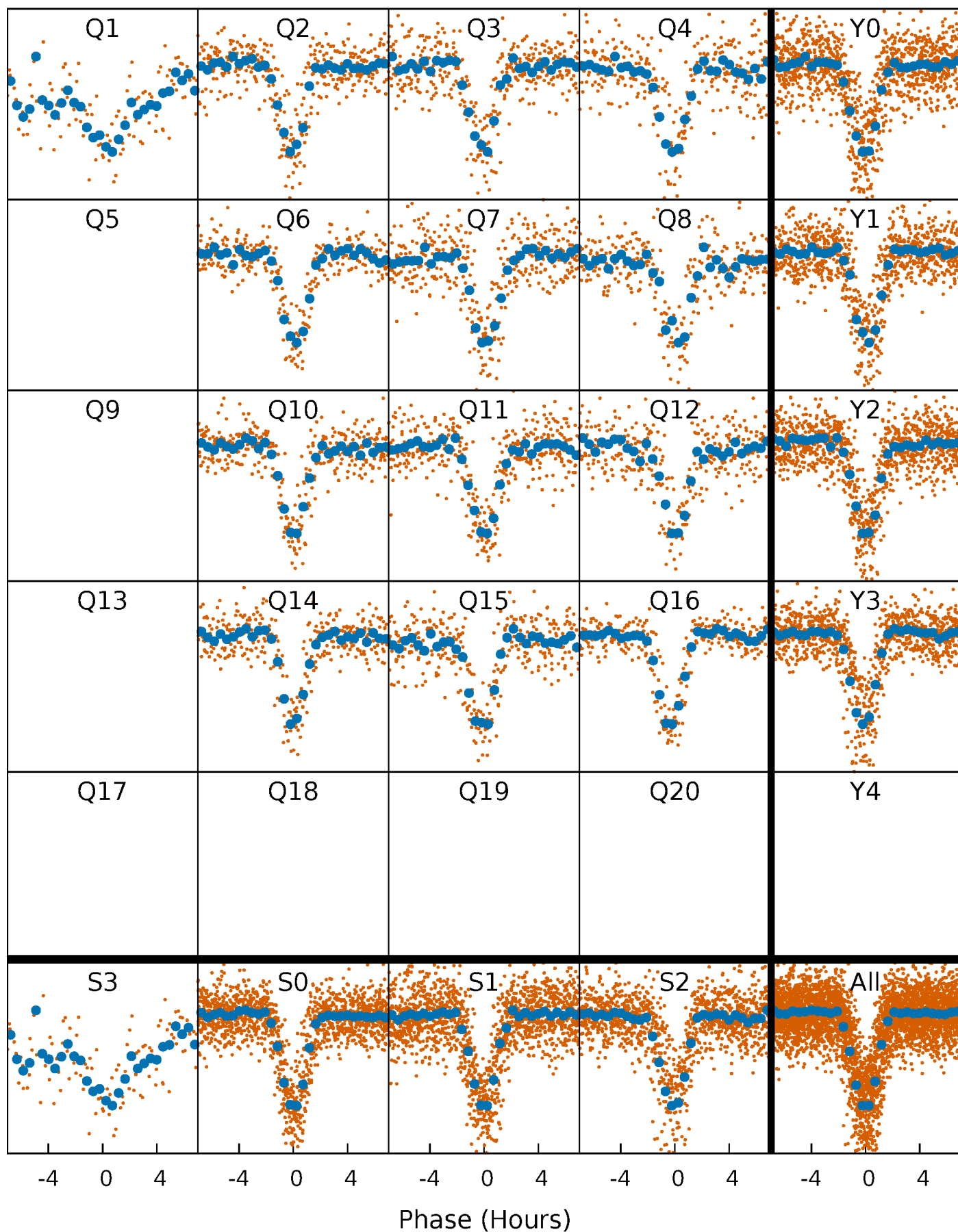


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



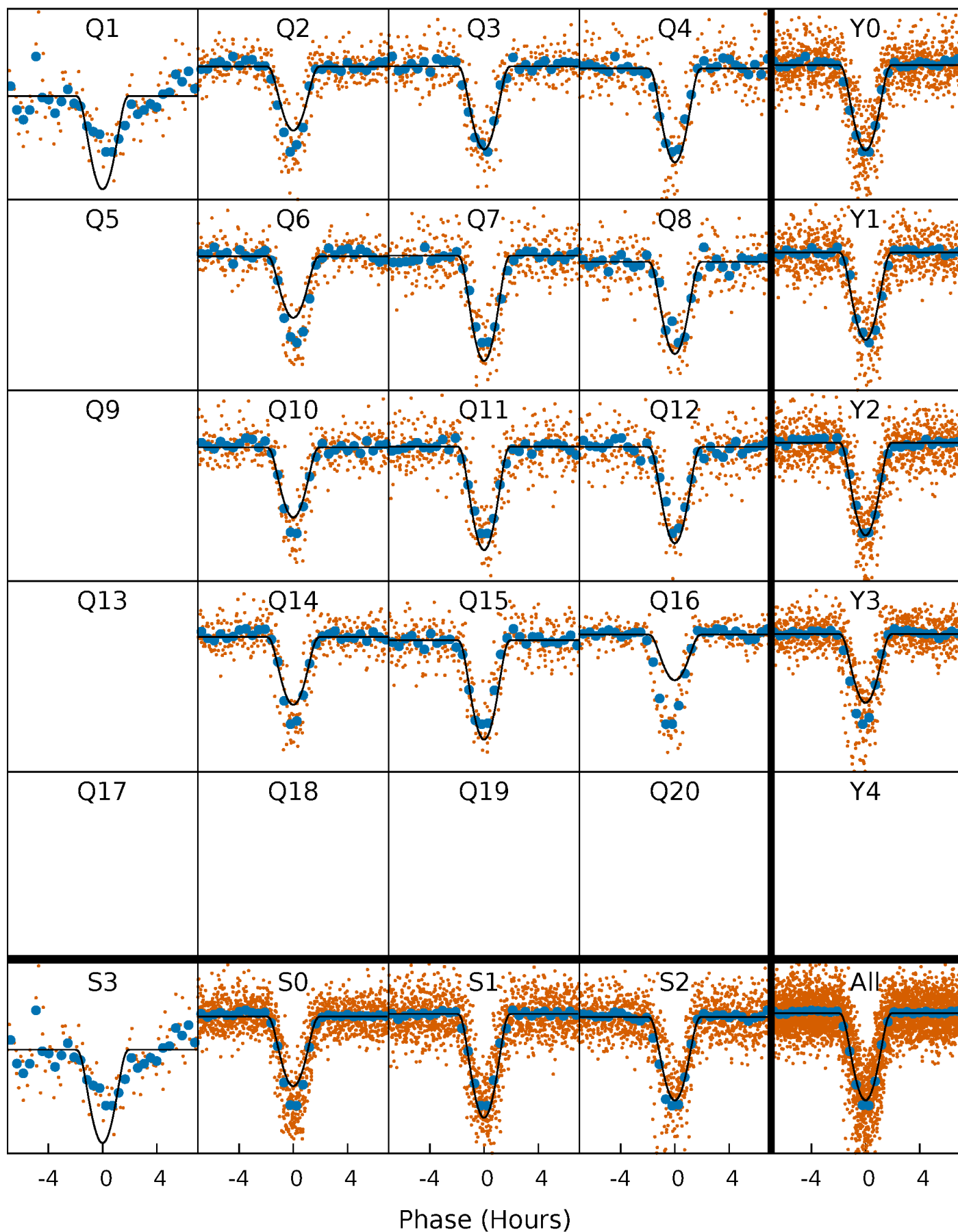
PDC Quarter-Phased Transit Curves

TCE 005254230-01 P= 7.035530 Days $T_0=137.949786$ (BKJD)



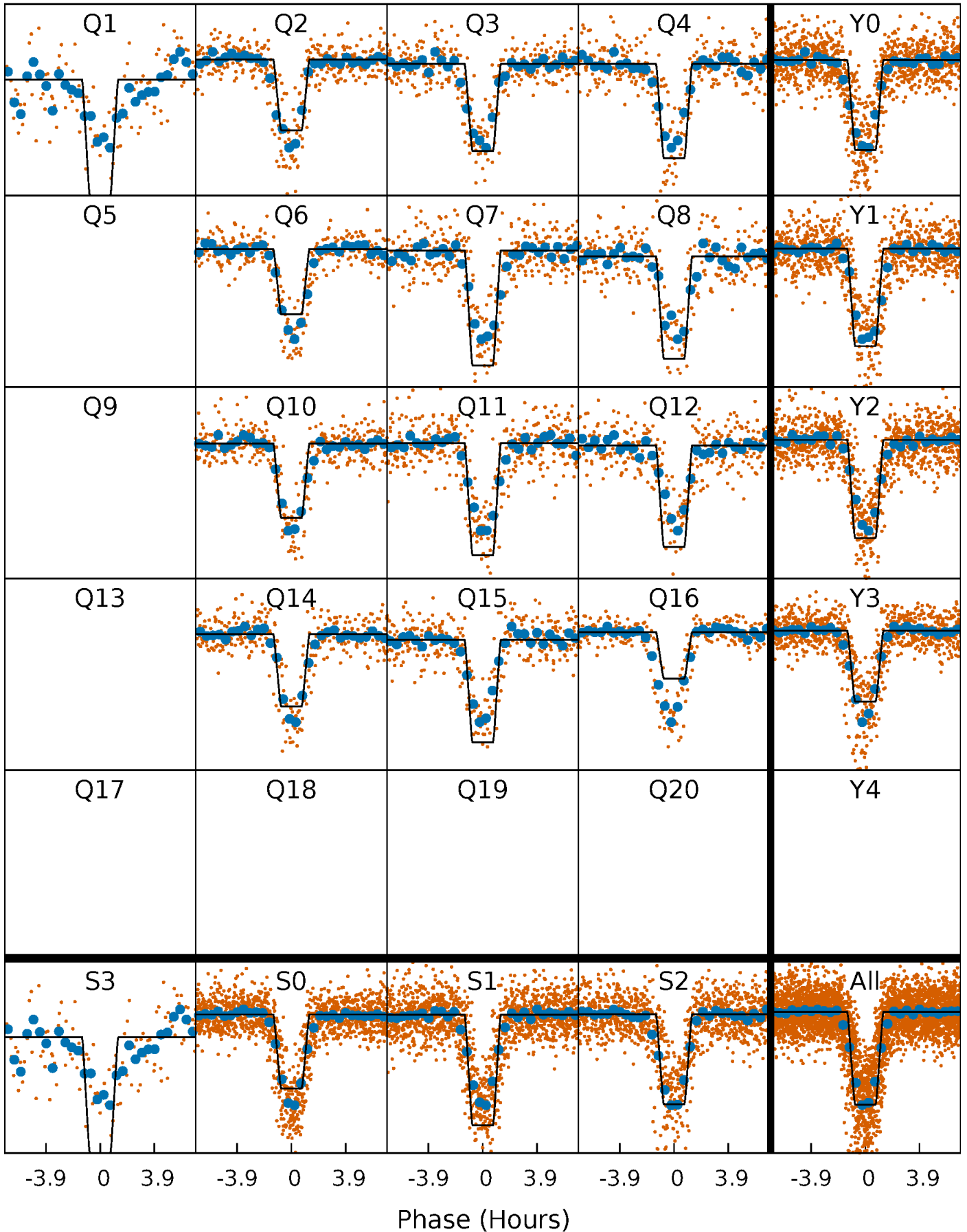
DV Quarter-Phased Transit Curves

TCE 005254230-01 P= 7.035530 Days $T_0=137.949786$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

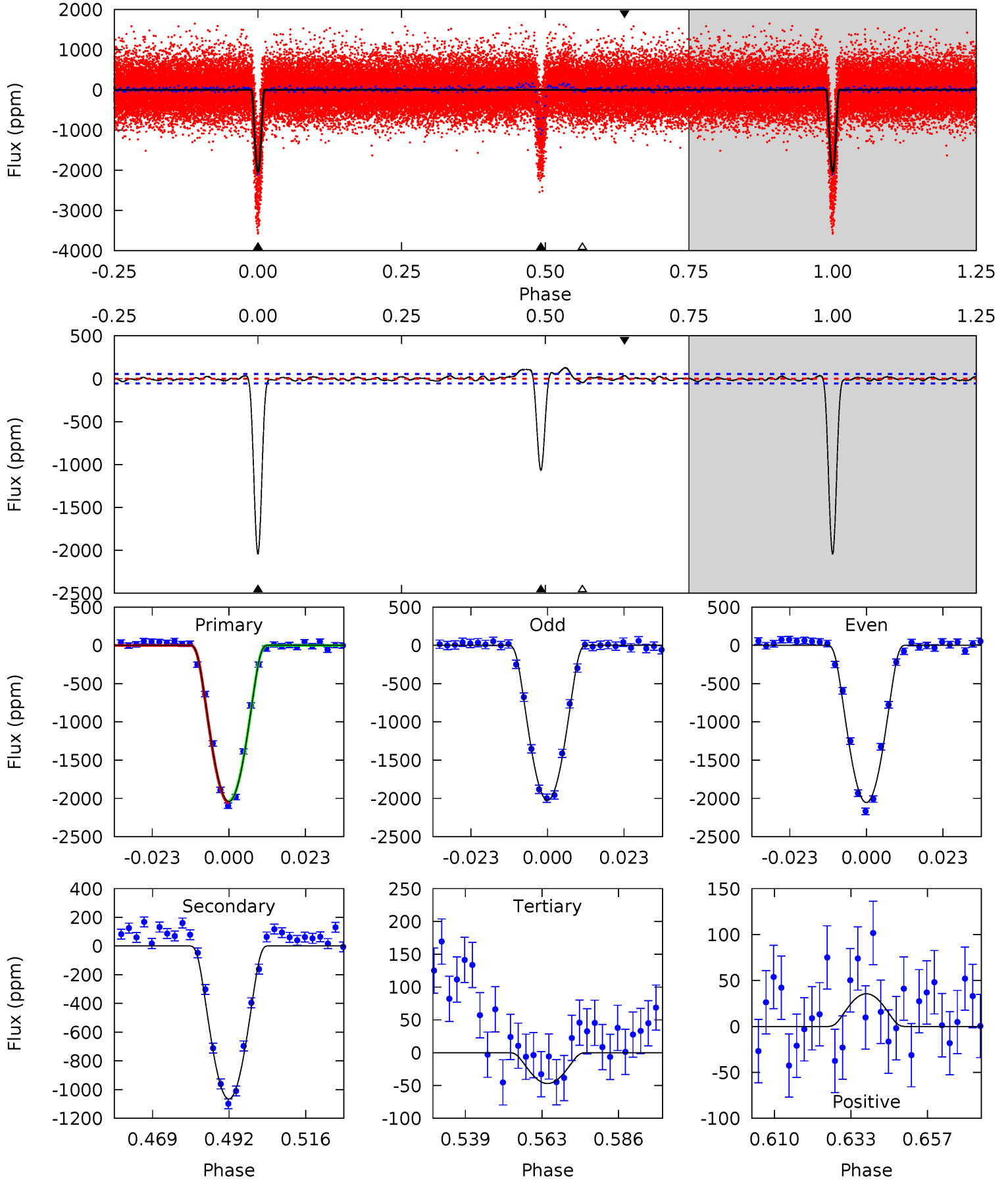
TCE 005254230-01 P= 7.035497 Days $T_0=137.951760$ (BKJD)



DV Model-Shift Uniqueness Test

005254230-01, P = 7.035530 Days, E = 130.914256 Days

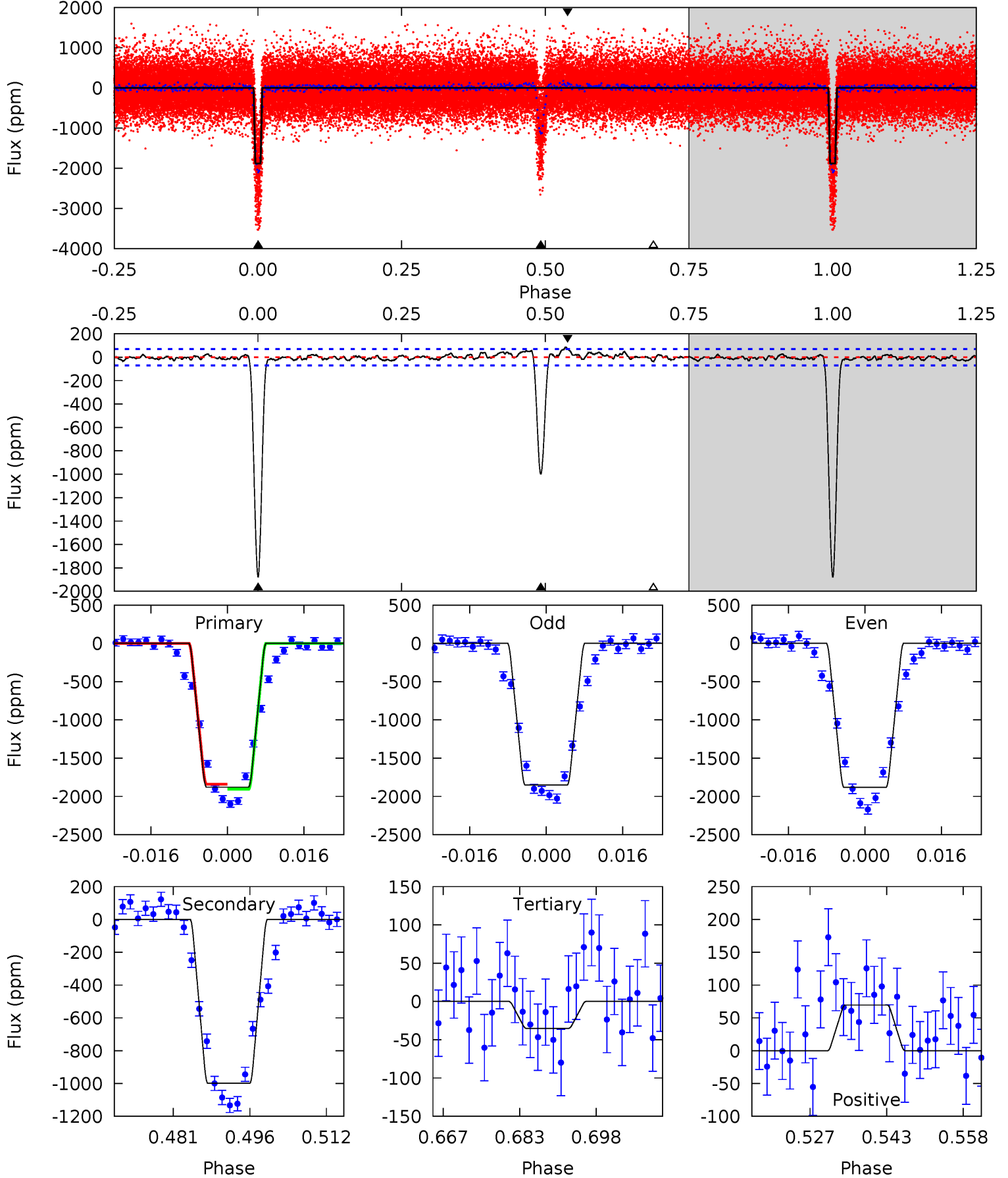
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 177.4 | 92.6 | 4.09 | 3.09 | 4.86 | 2.27 | 2.25 | 173.3 | 174.3 | 88.5 | 89.5 | 1.28 | 1.06 | 0.06 | 0.81 |



Alt Model-Shift Uniqueness Test

005254230-01, P = 7.035497 Days, E = 130.916263 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 132.2 | 70.2 | 2.48 | 4.89 | 4.94 | 2.42 | 1.41 | 129.7 | 127.3 | 67.7 | 65.3 | 1.07 | 1.09 | 0.04 | 0 |



Stellar Parameters For KIC 005254230

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5288^{+157}_{-157} | $4.566^{+0.082}_{-0.060}$ | $-0.640^{+0.350}_{-0.300}$ | $0.710^{+0.080}_{-0.072}$ | $0.675^{+0.084}_{-0.034}$ | $2.661^{+0.909}_{-0.570}$ |
| | +3%/-3% | +2%/-1% | +55%/-47% | +11%/-10% | +12%/-5% | +34%/-21% |
| 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 005254230-01 / KOI 5999.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|--------------------|-----------------------|--------------------|
| DV | -1066 ± 12 | $6.15^{+3.46}_{-3.08}$ | 1089^{+40}_{-47} | 3739^{+1177}_{-487} | 63^{+191}_{-37} |
| Alt. | -998 ± 14 | $4.17^{+3.06}_{-2.51}$ | 1087^{+44}_{-43} | 4198^{+2231}_{-669} | 126^{+671}_{-83} |

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

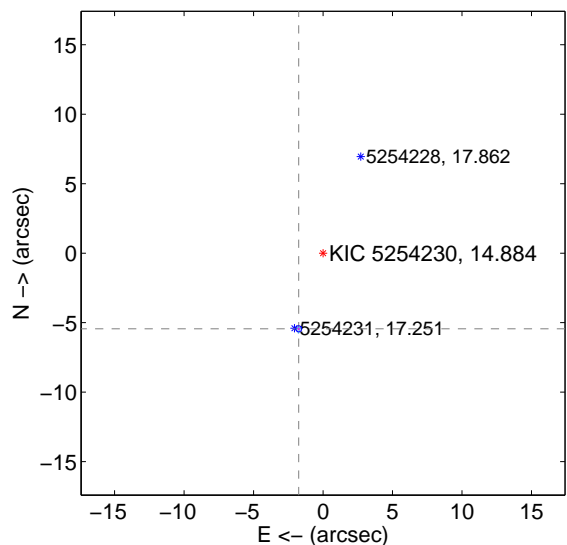
Supplemental centroid analysis for 005254230-01. Kepler magnitude: 14.88. Transit SNR 89.02

There are 13 quarters with good PRF difference image offsets

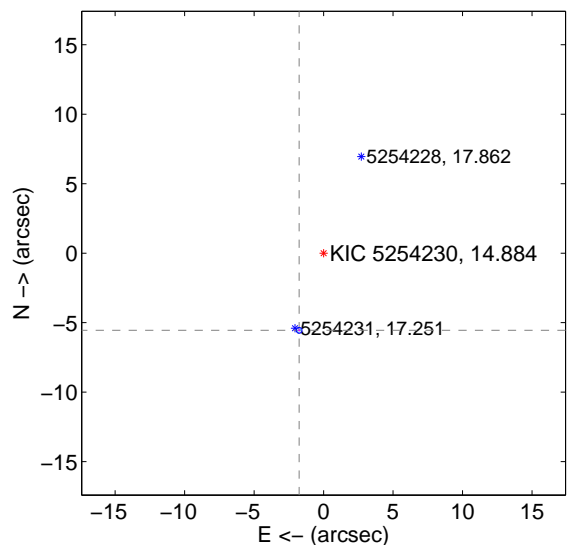
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 5.719 ± 0.072 | 79.48 | 1.751 ± 0.069 | -5.444 ± 0.072 |
| PRF-fit source offset from KIC position | 5.825 ± 0.070 | 83.41 | 1.759 ± 0.070 | -5.553 ± 0.069 |
| photometric centroid source offset | 14.09 ± 0.14 | 99.90 | 3.81 ± 0.13 | -13.56 ± 0.14 |

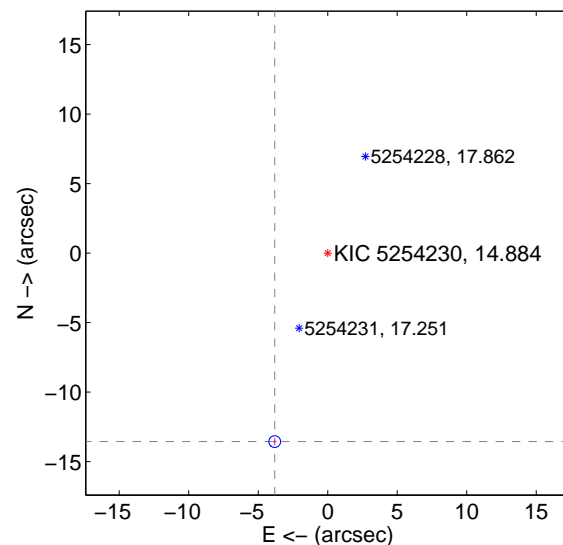
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

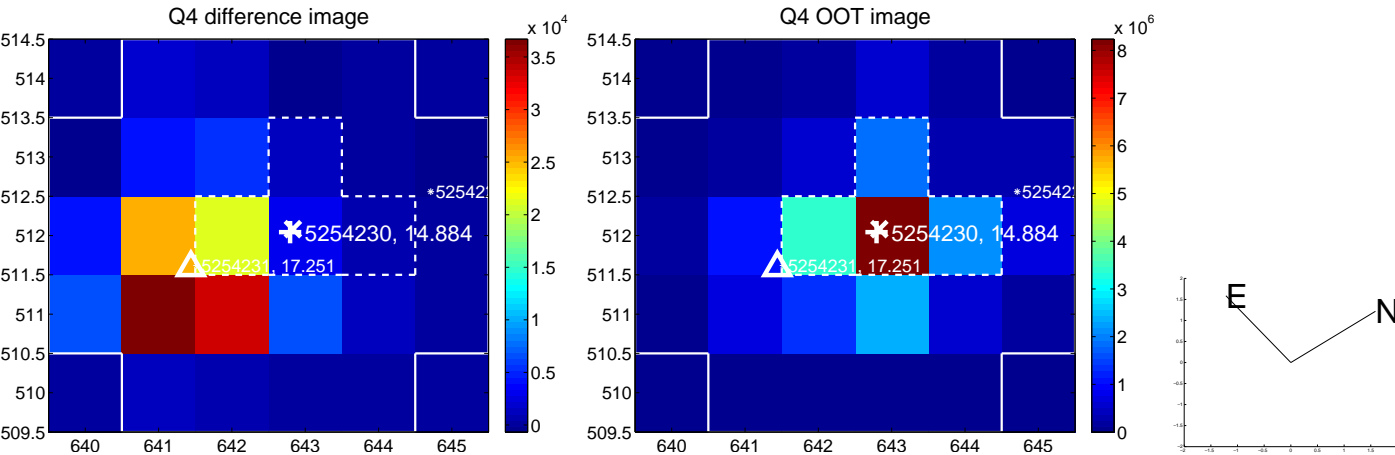
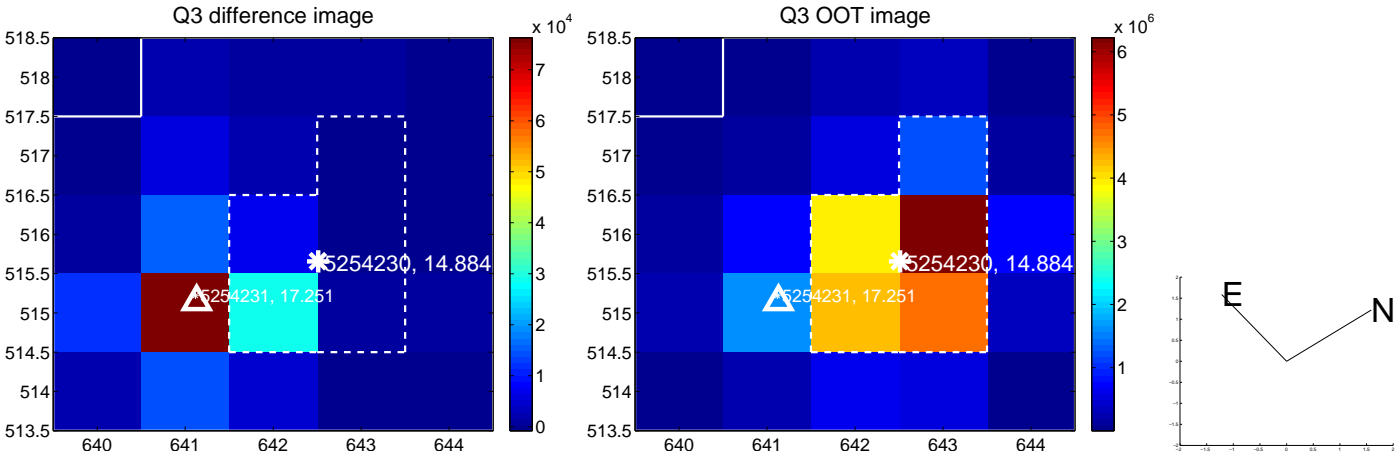
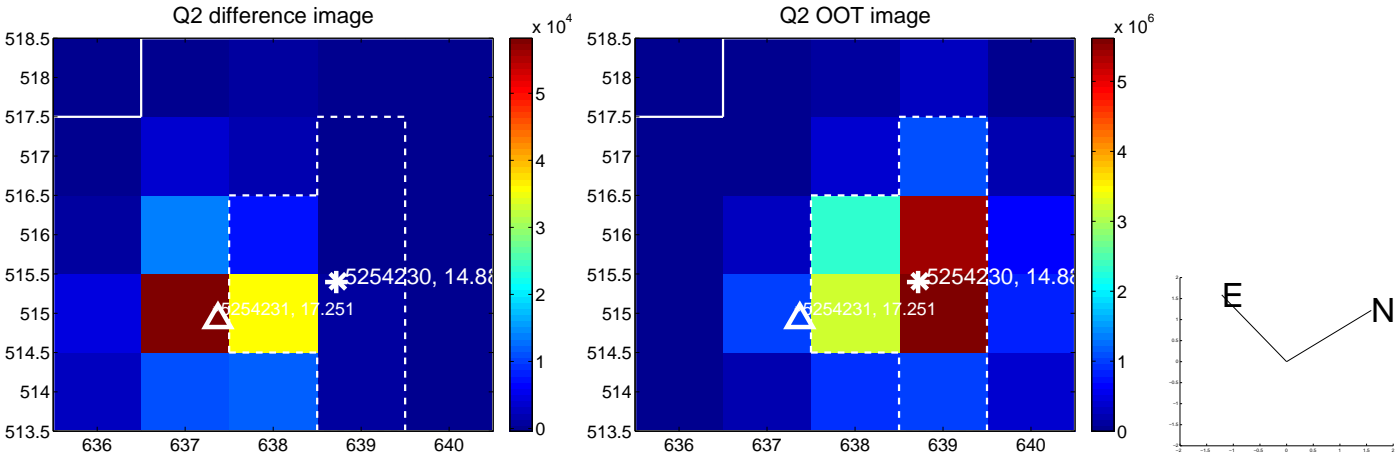
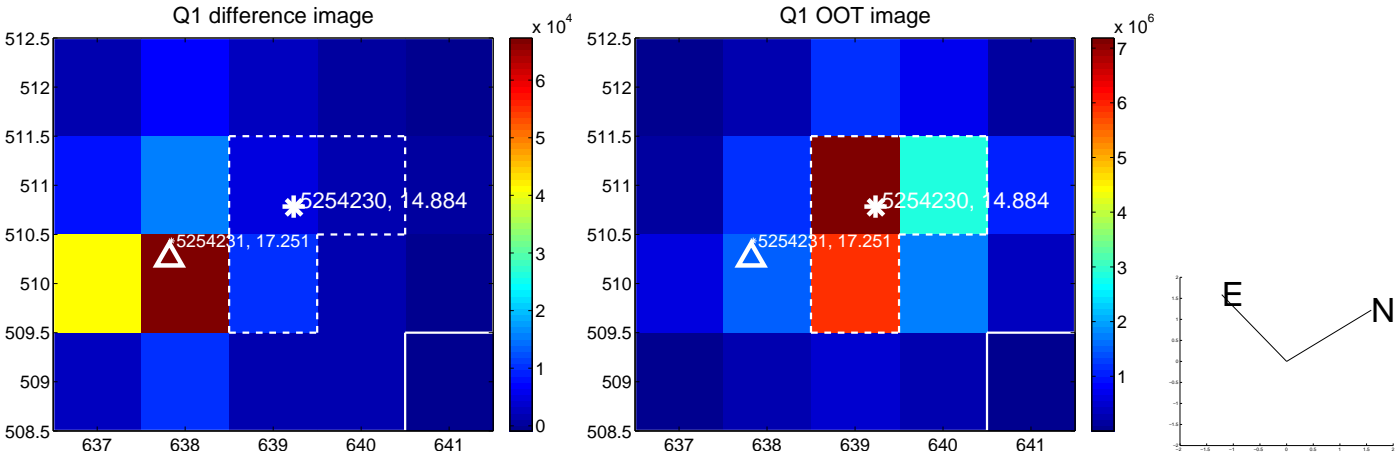


offset from photometric centroids

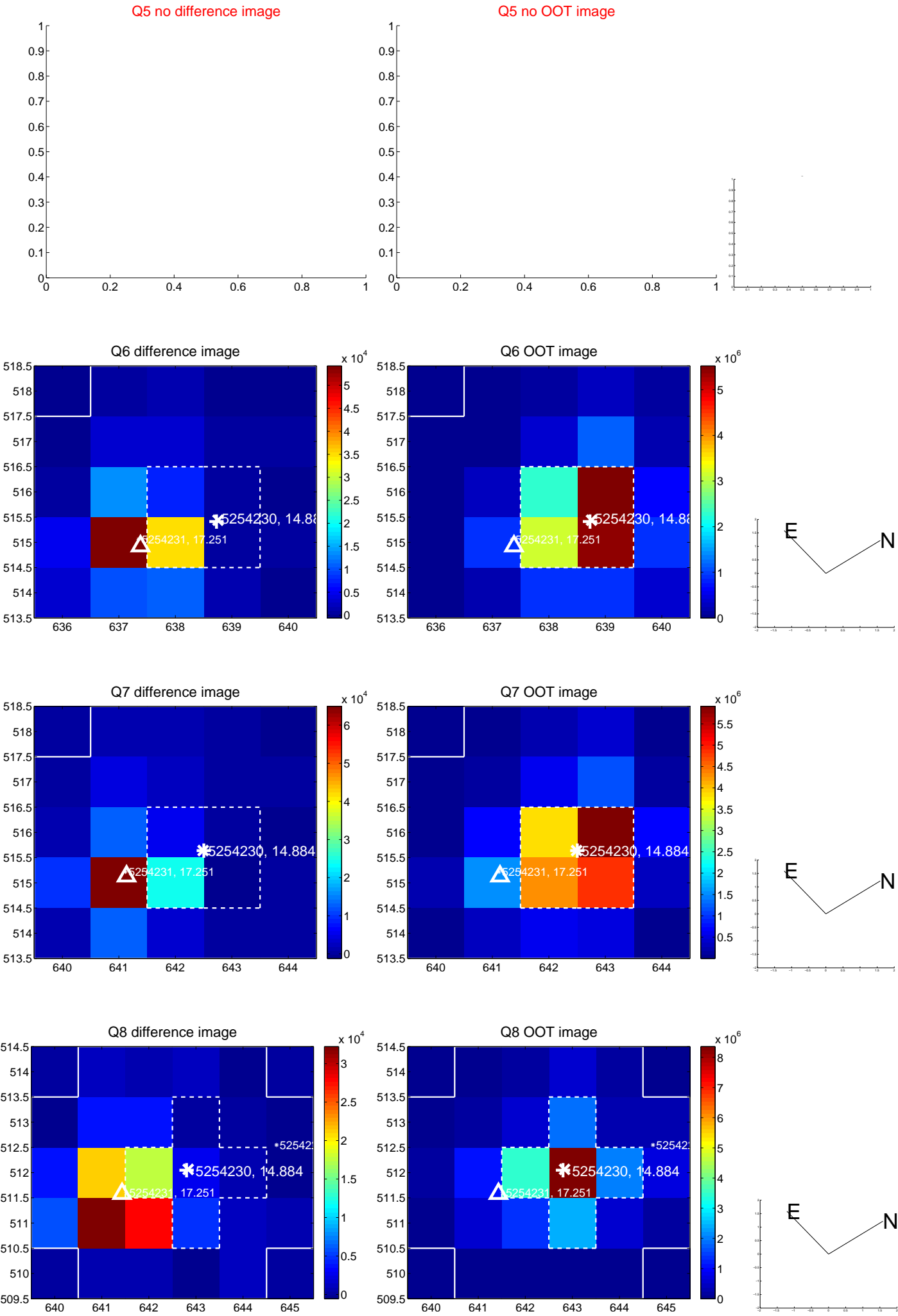


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

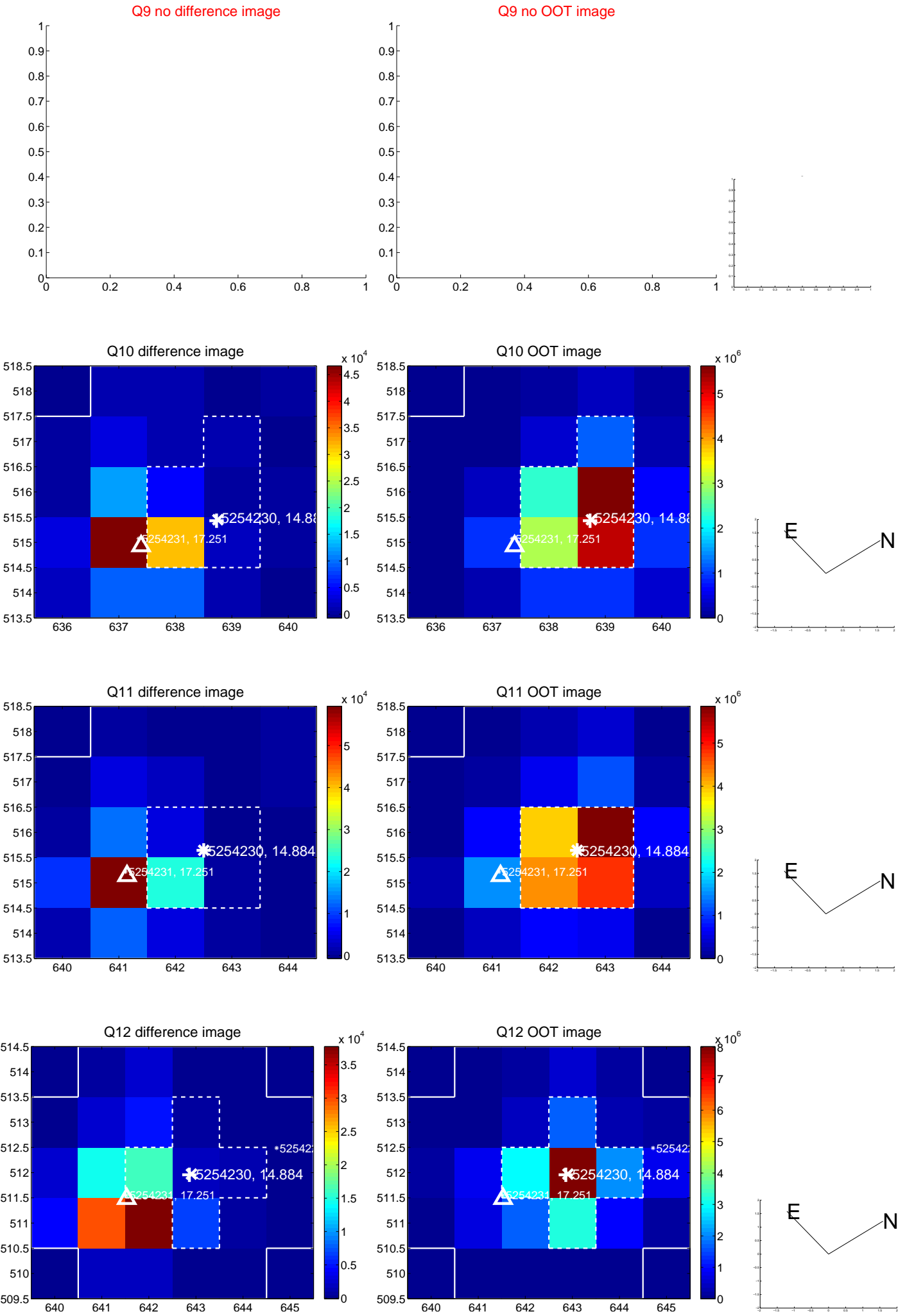
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



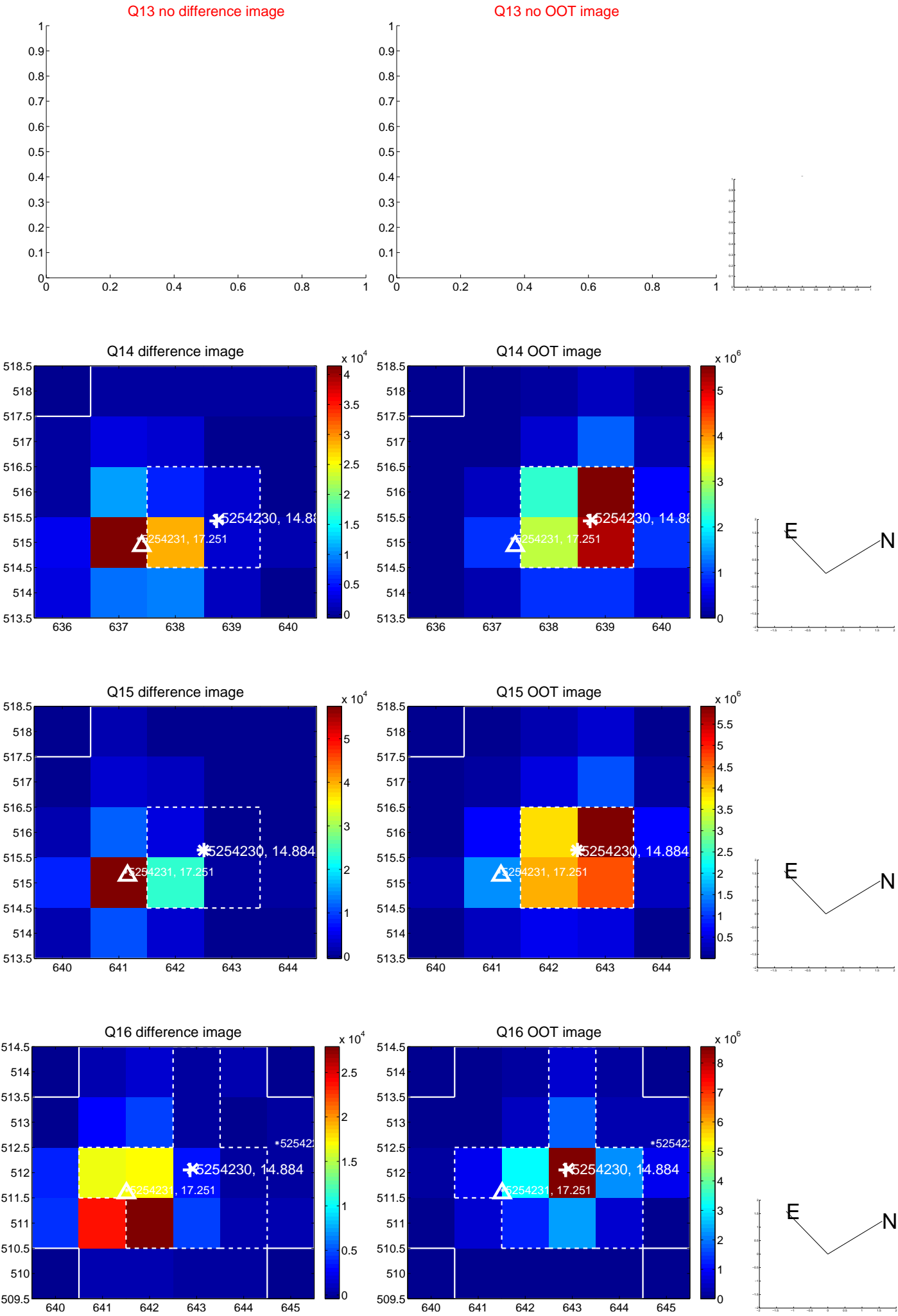
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



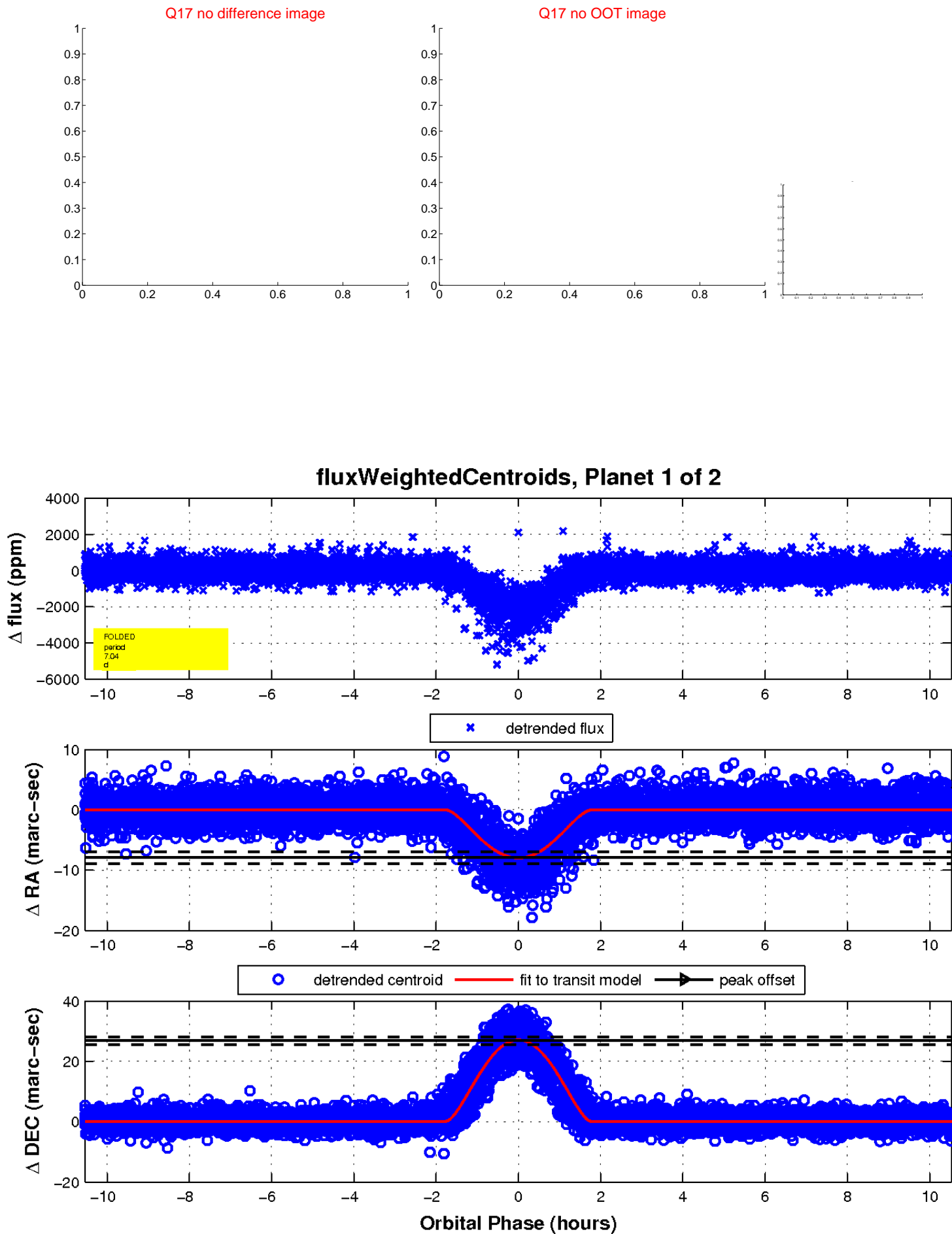
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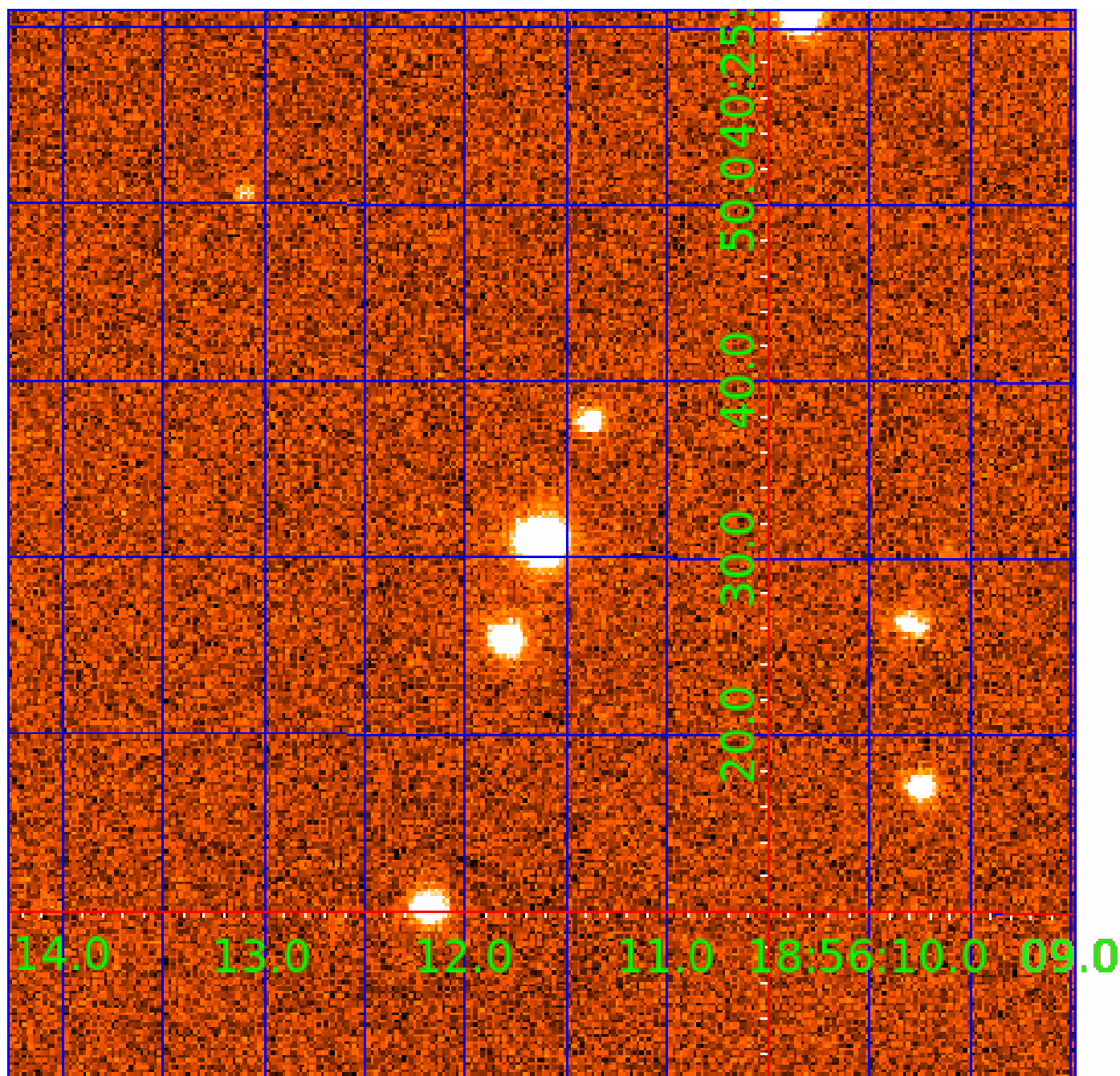


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005254230

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005254230-01 | OBS | 5999.01 | 7.035530 | 137.949786 | 2013.8 | 3.512 | 107.0 | 89.0 | 0.71 | 5288 | 6.15 | 88.68 |
| 005254230-02 | OBS | No | 7.035311 | 134.400639 | 1238.2 | 3.409 | 54.8 | 56.9 | 0.71 | 5288 | 4.80 | 88.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005254230-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST |
| 005254230-02 | OBS | FP | 0.00 | 1 | 1 | 1 | 0 | IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST |

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

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

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

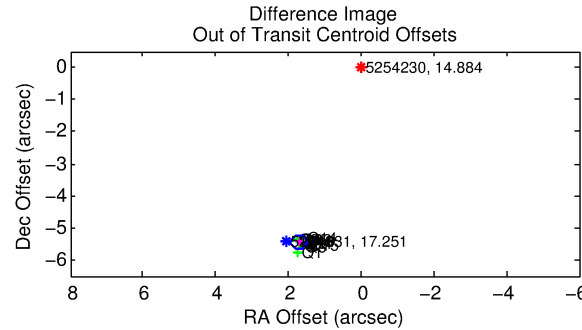
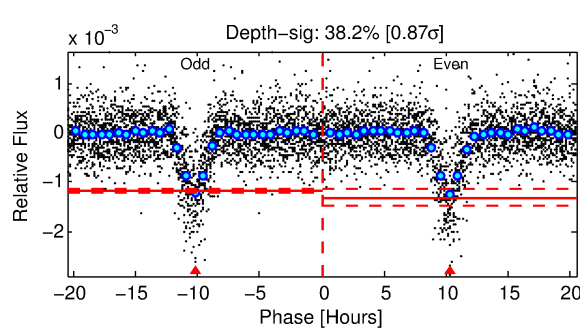
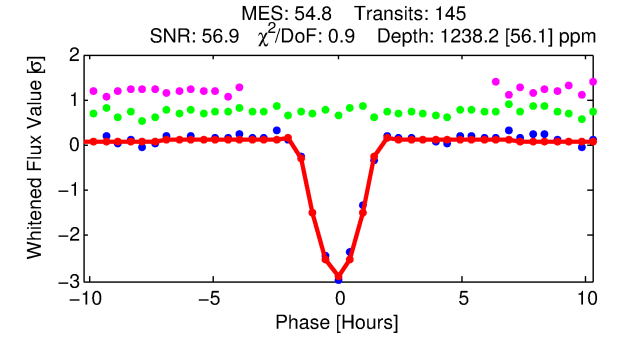
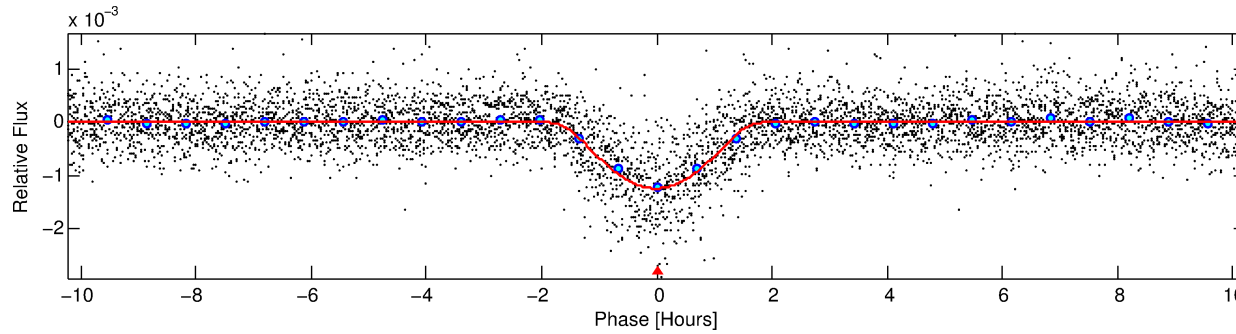
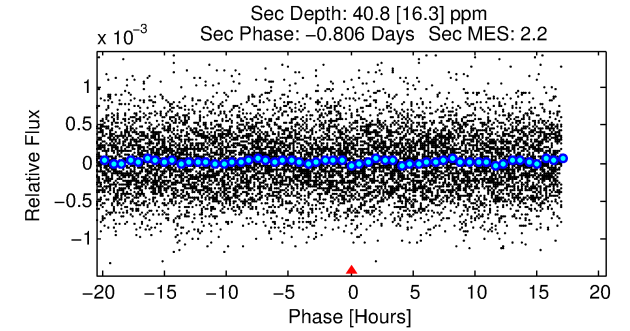
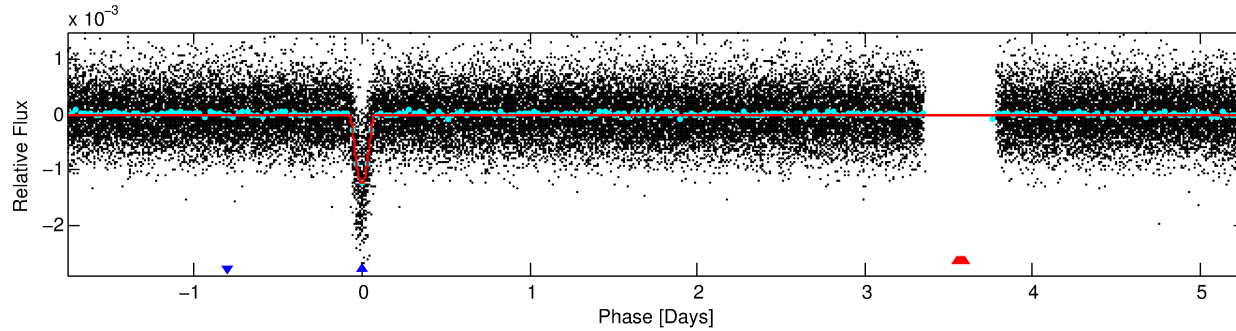
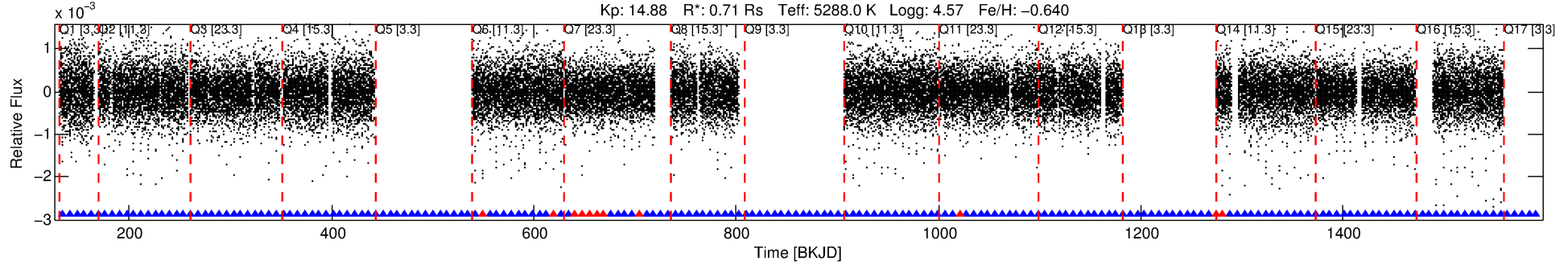
Ephemeris Match Information For 005254230-02

No Significant Match Found

DV One-Page Summary

KIC: 5254230 Candidate: 2 of 2 Period: 7.035 d
KOI: K05999 Corr: No Ephemeris Match

Kp: 14.88 R*: 0.71 Rs Teff: 5288.0 K Logg: 4.57 Fe/H: -0.640



DV Fit Results:

Period = 7.03531 [0.00001] d
Epoch = 134.4006 [0.0013] BKJD
Rp/R* = 0.0620 [0.0454]
a/R* = 5.82 [0.97]
b = 1.00 [0.07]
Seff = 88.69 [16.73]
Teq = 783 [37] K
Rp = 4.80 [3.56] Re
a = 0.0631 [0.0062] AU
Ag = 3.87 [5.91] [0.49σ]
Teff = 1697 [646] K [1.41σ]

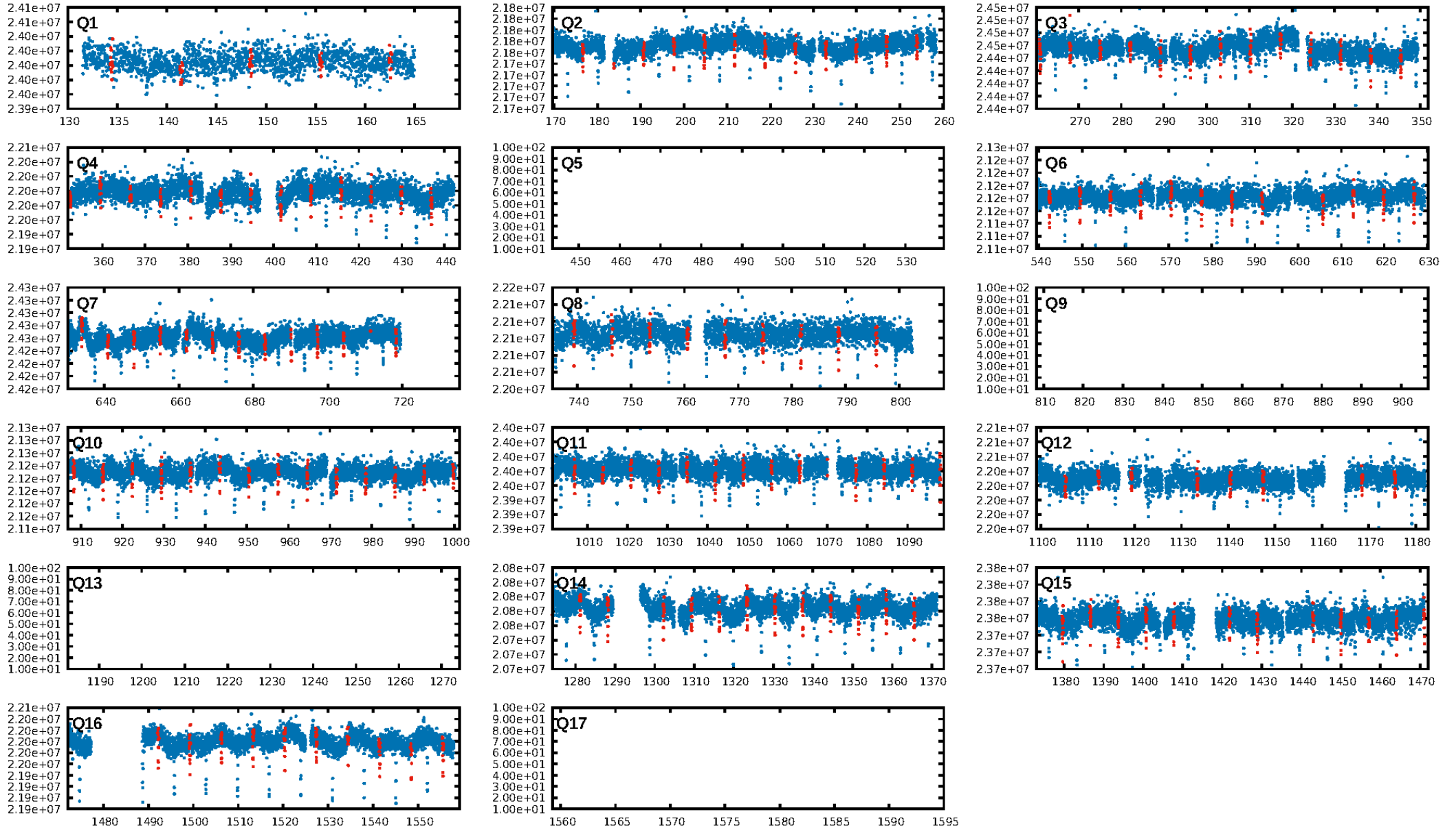
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.92 [129/140]
GhostDiagnostic-chr: 0.003349
Centroid-sig: 0.0%
Centroid-so: 13.656 arcsec [58.11σ]
OotOffset-rm: 5.704 arcsec [78.72σ]
KicOffset-rm: 5.811 arcsec [82.83σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

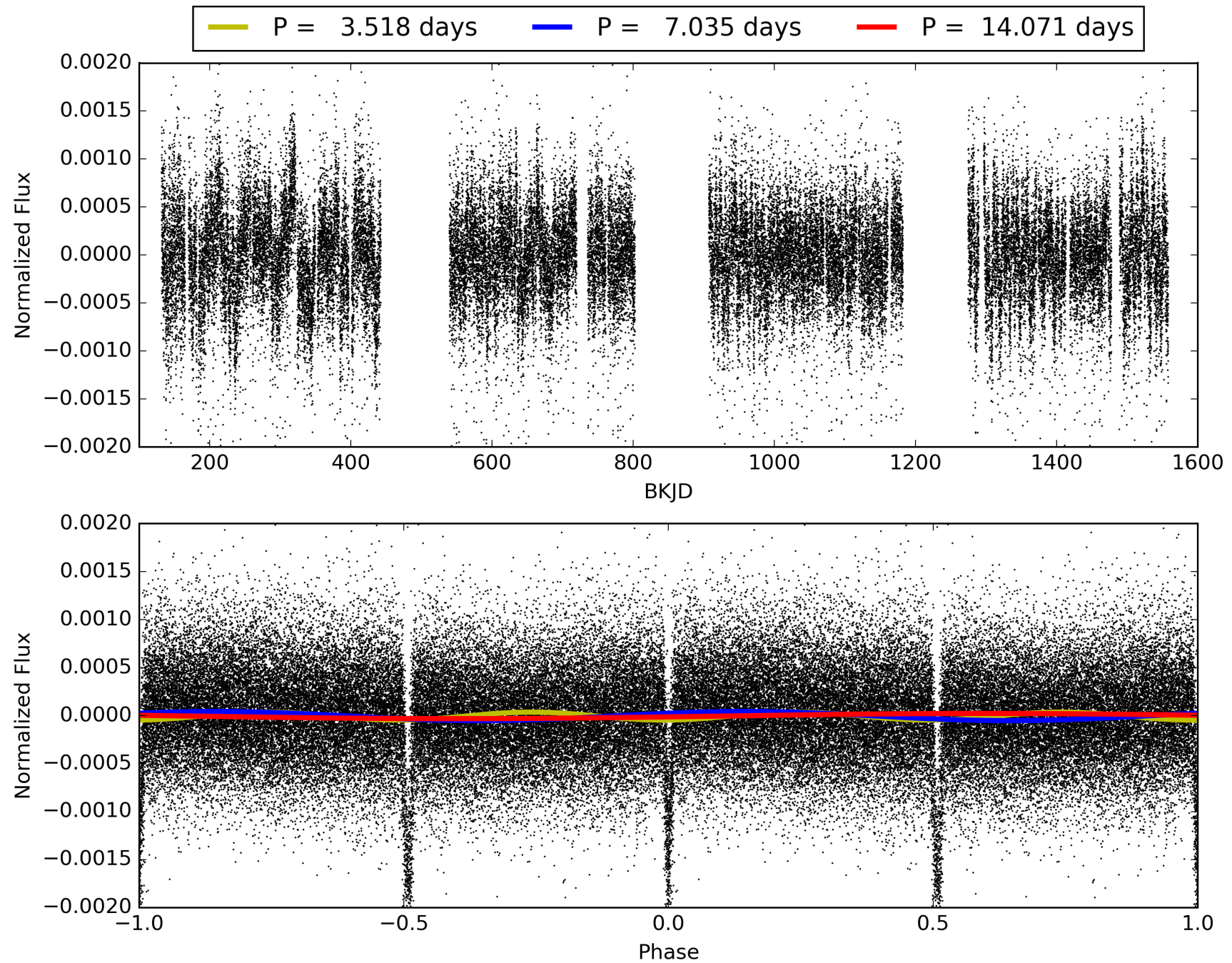
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:59:25 Z

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TCE 005254230-02, PDC Light Curves

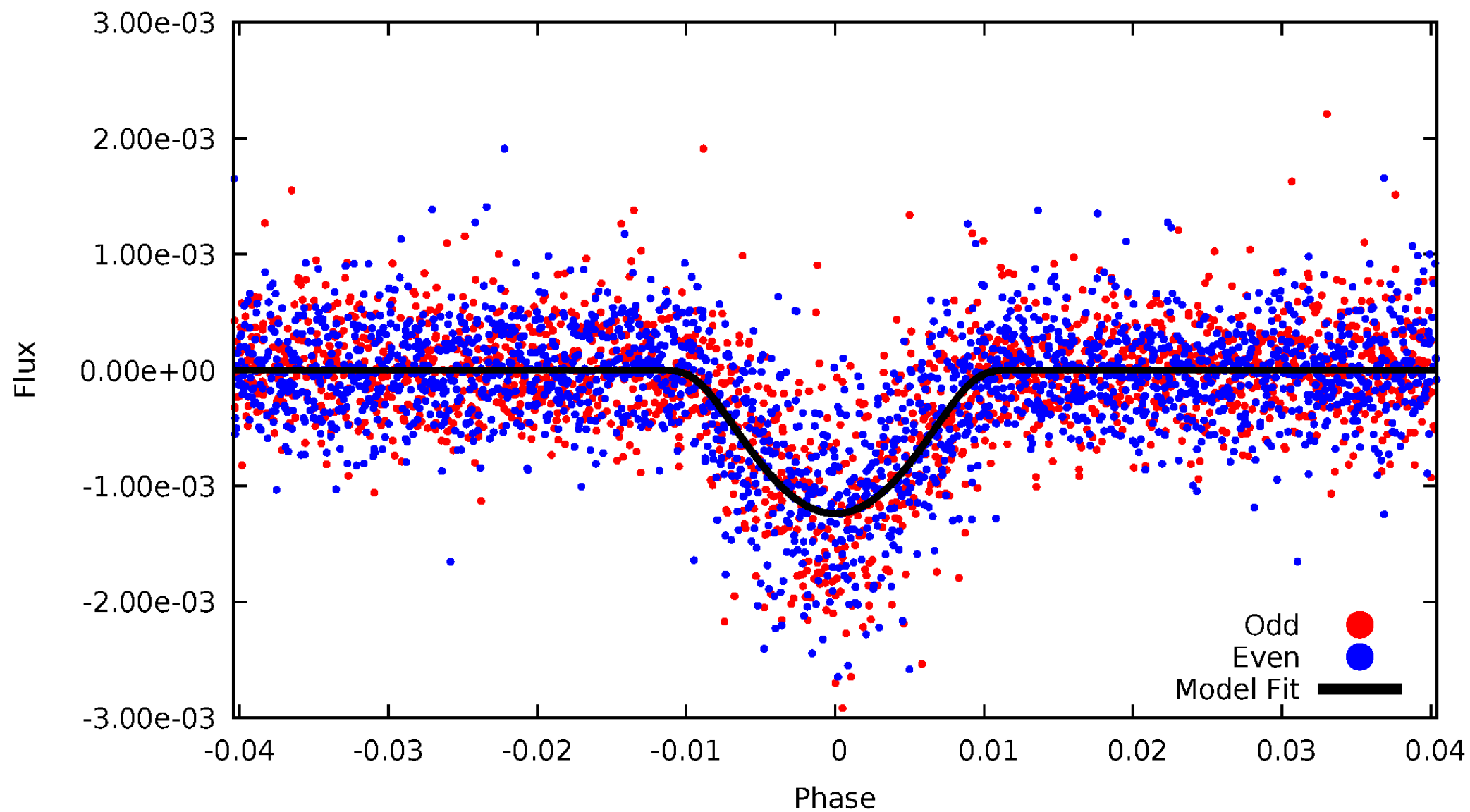


TCE 005254230-02



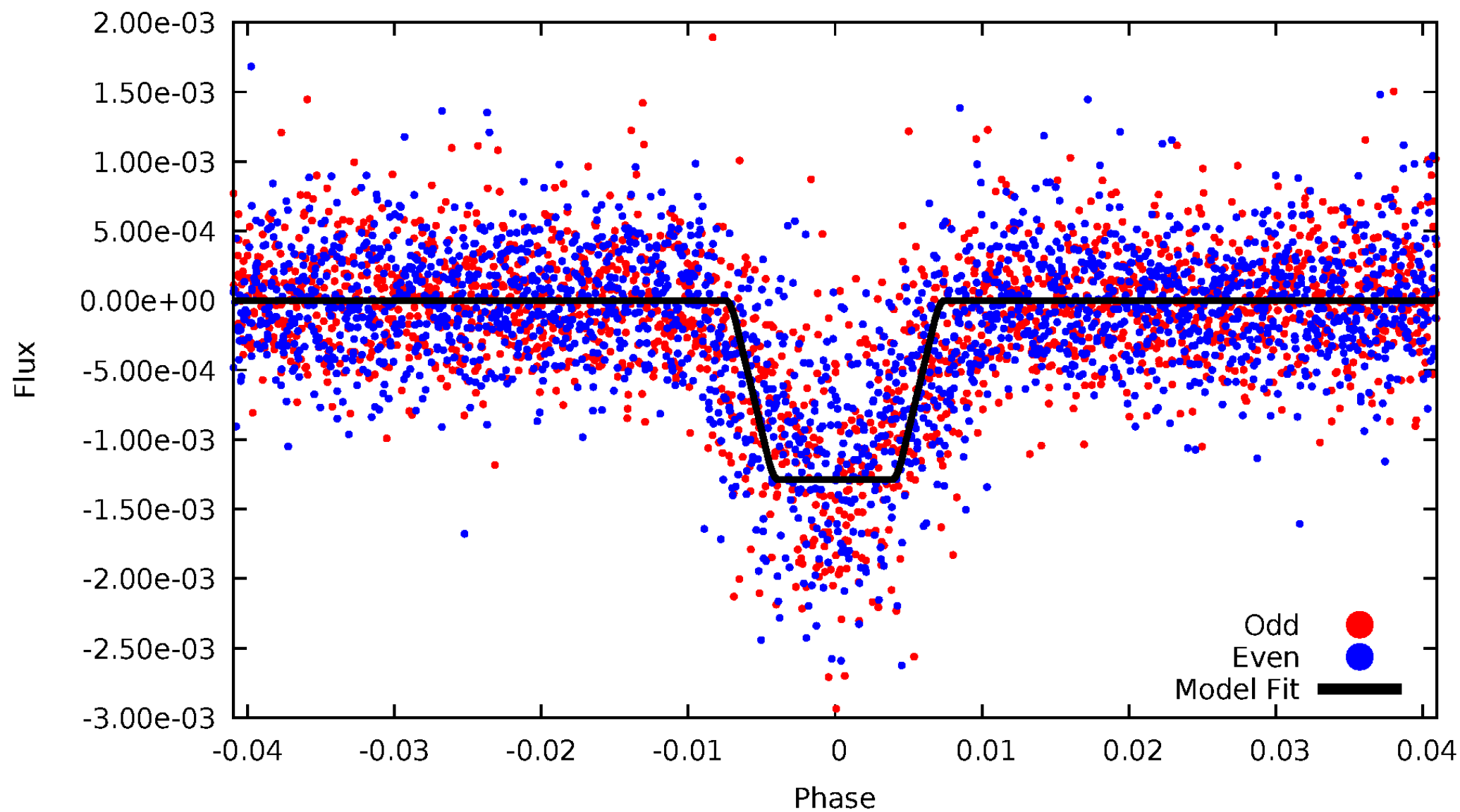
DV Odd/Even

TCE 005254230-02



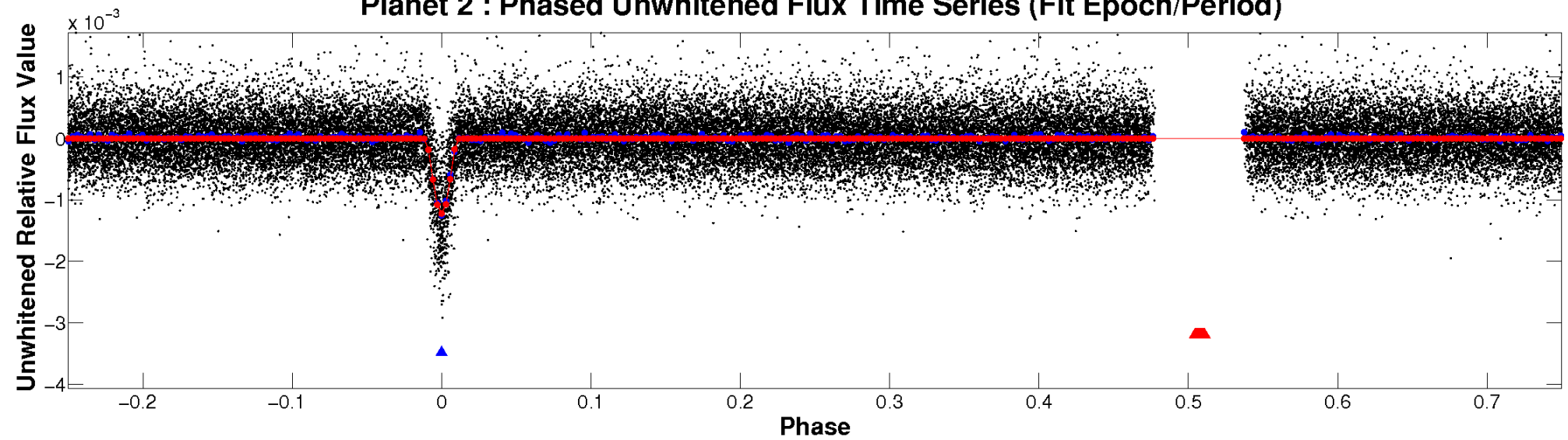
ALT Odd/Even

TCE 005254230-02

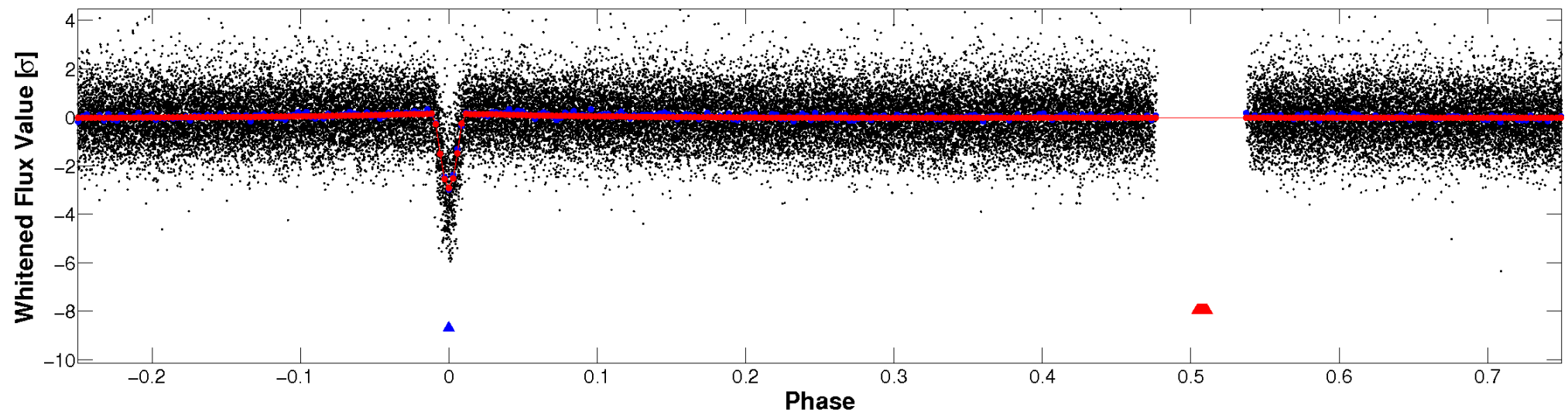


Non-Whitened Vs. Whitened Light Curve

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

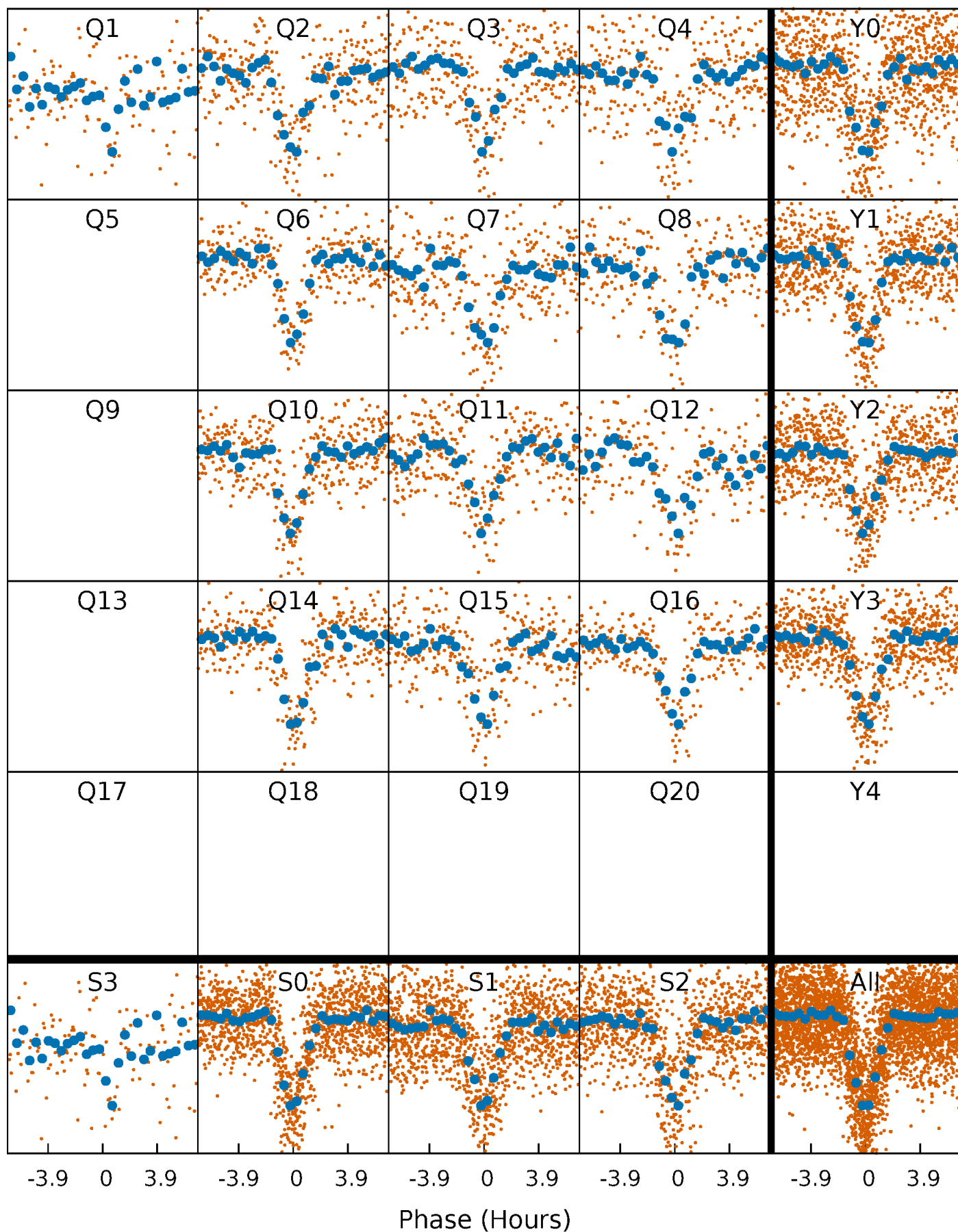


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



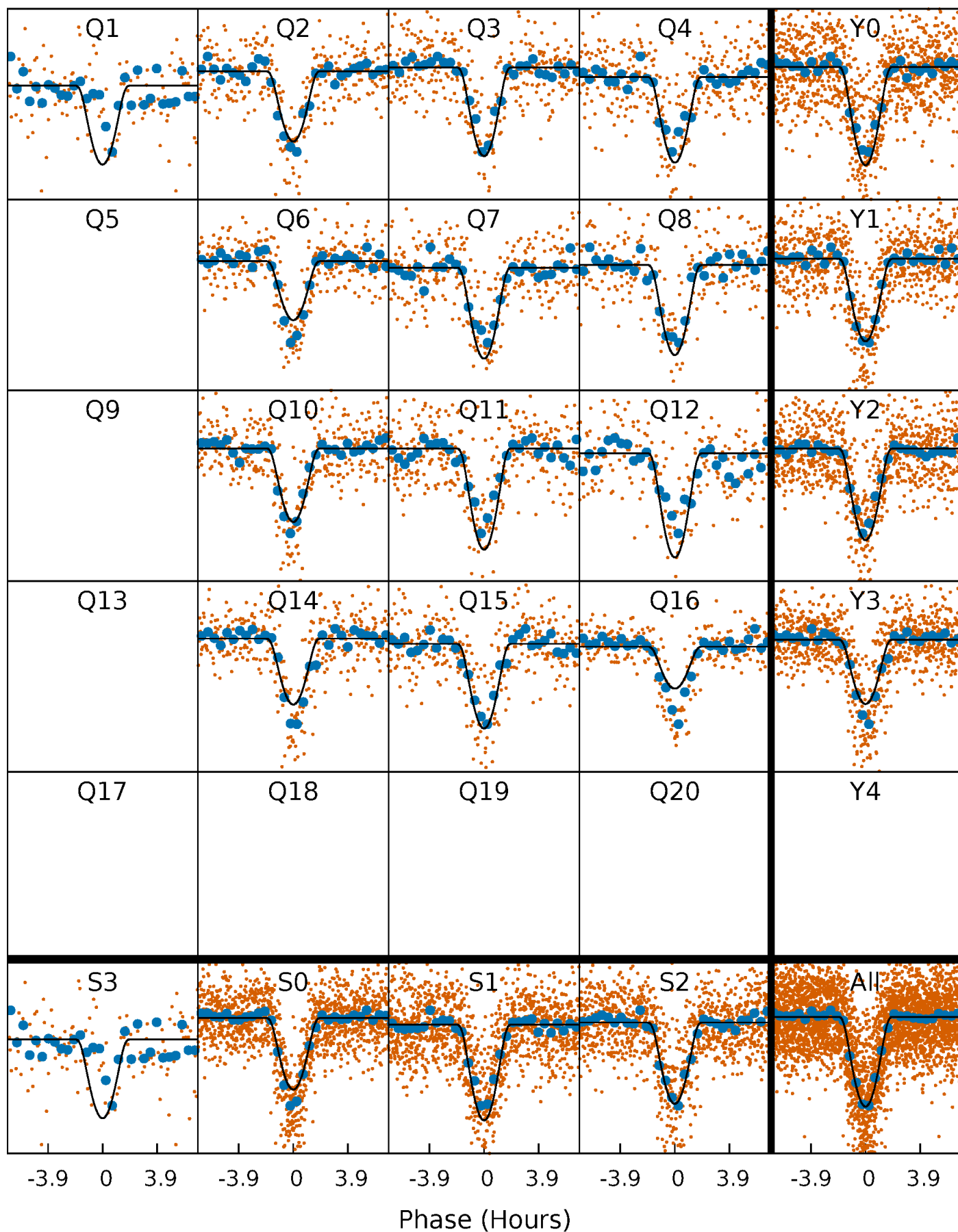
PDC Quarter-Phased Transit Curves

TCE 005254230-02 P= 7.035311 Days $T_0=134.400639$ (BKJD)



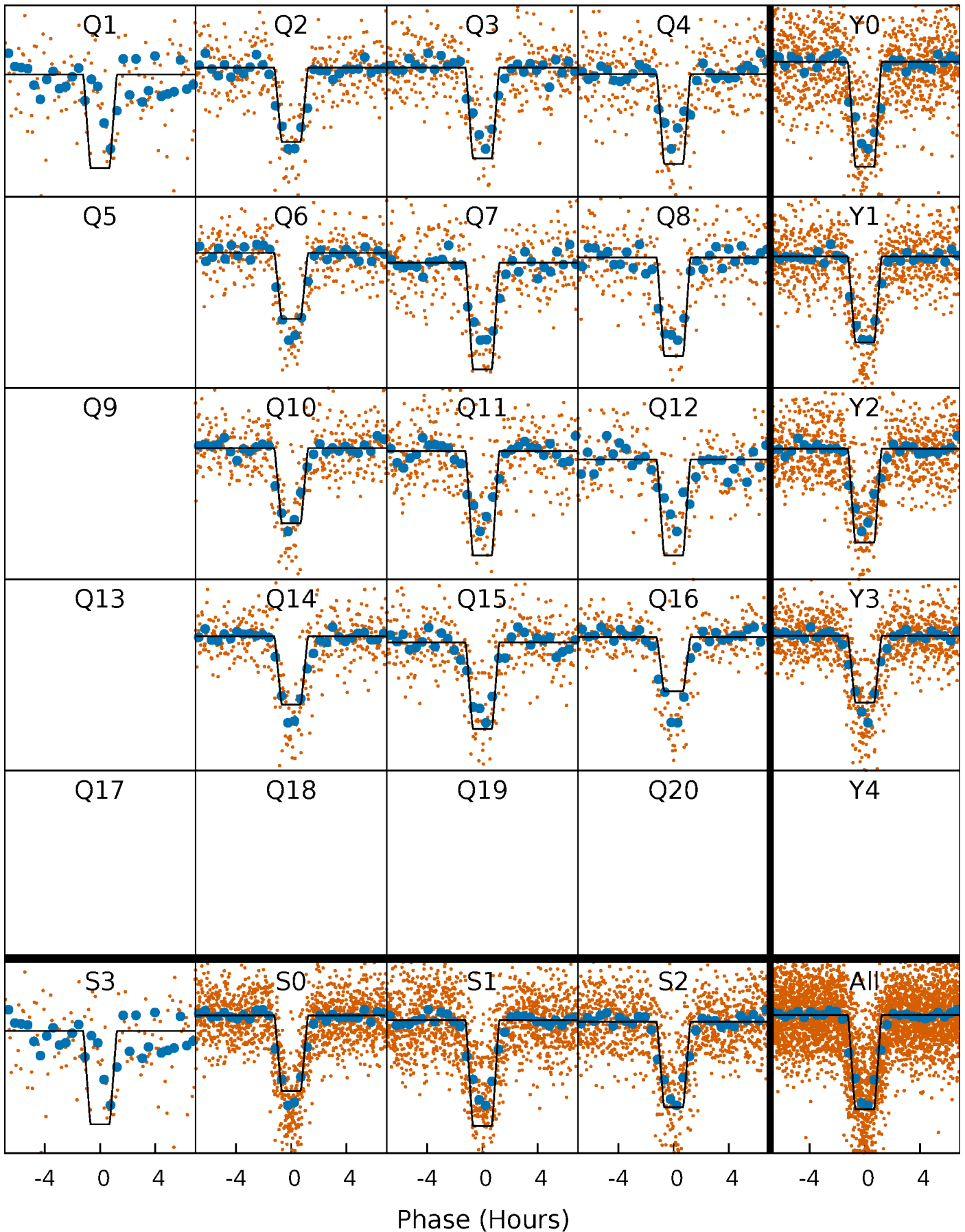
DV Quarter-Phased Transit Curves

TCE 005254230-02 P= 7.035311 Days $T_0=134.400639$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

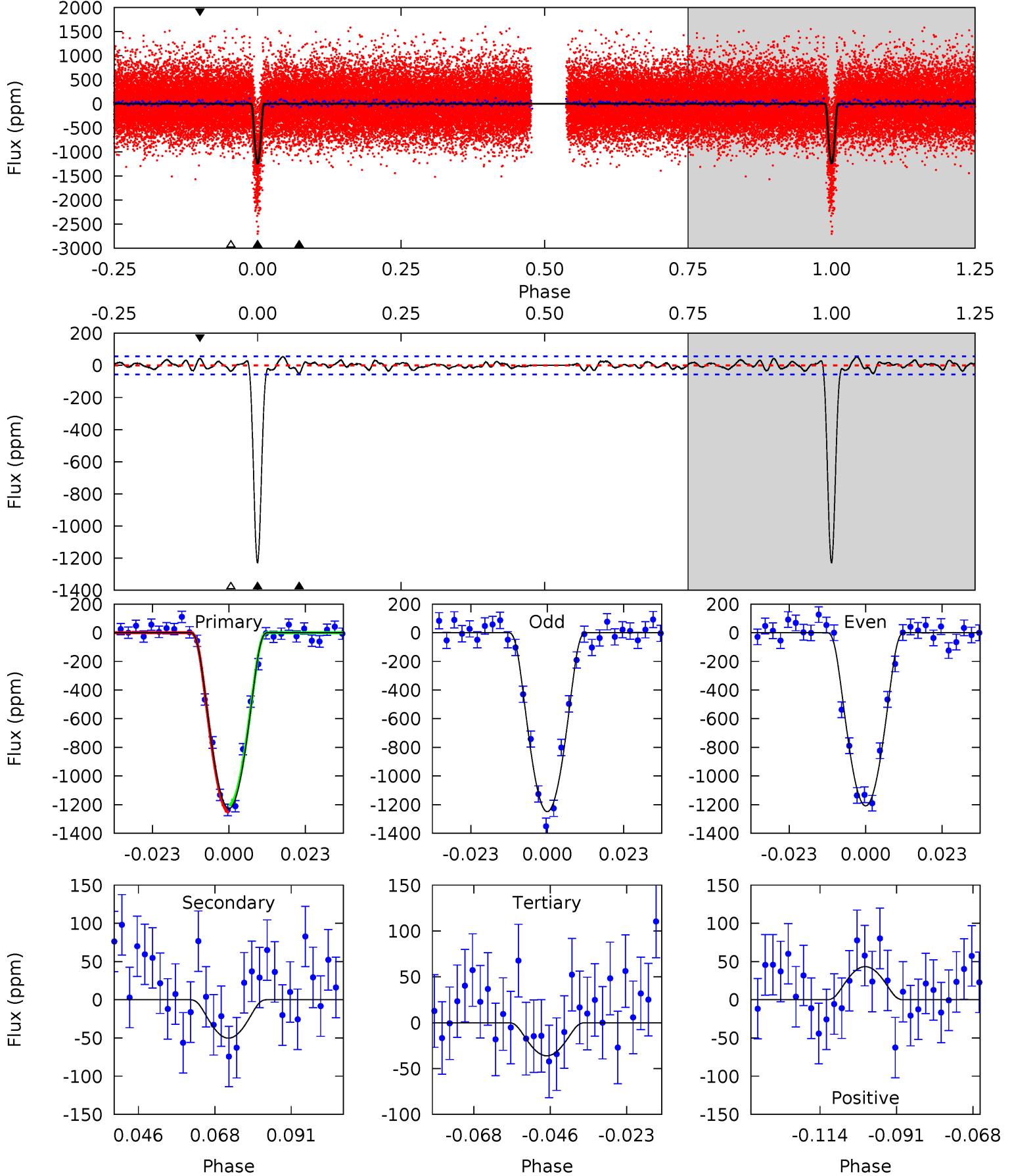
TCE 005254230-02 $P = 7.035348$ Days $T_0 = 134.396395$ (BKJD)



DV Model-Shift Uniqueness Test

005254230-02, P = 7.035311 Days, E = 127.365328 Days

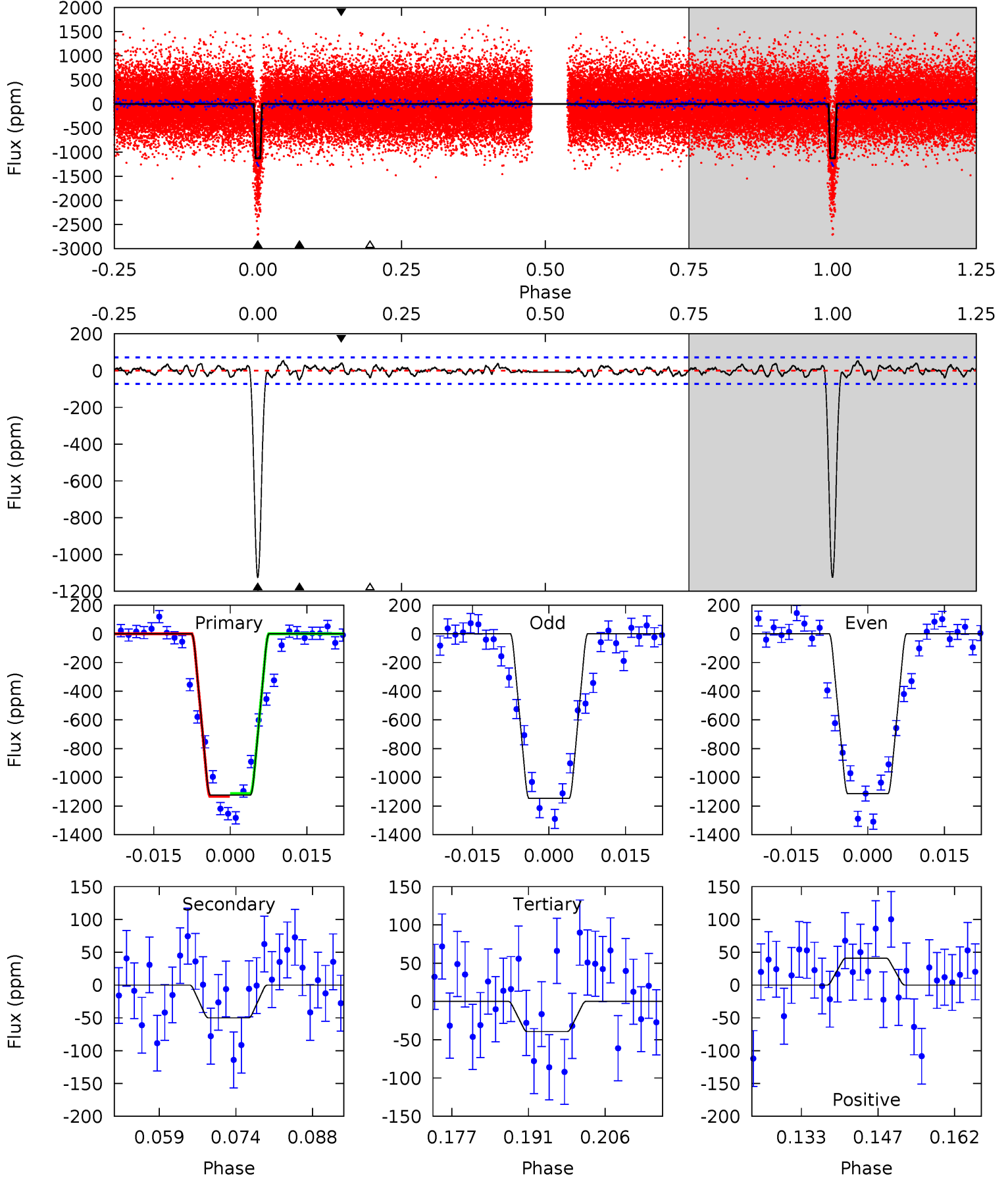
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 105.1 | 4.30 | 3.09 | 3.71 | 4.87 | 2.28 | 1.36 | 102.0 | 101.3 | 1.21 | 0.59 | 1.75 | 1.00 | 0.04 | 2.16 |



Alt Model-Shift Uniqueness Test

005254230-02, P = 7.035348 Days, E = 127.361047 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 77.5 | 3.45 | 2.71 | 2.83 | 4.95 | 2.44 | 1.09 | 74.7 | 74.6 | 0.74 | 0.62 | 1.10 | 1.00 | 0.05 | 0.69 |



Stellar Parameters For KIC 005254230

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5288^{+157}_{-157} | $4.566^{+0.082}_{-0.060}$ | $-0.640^{+0.350}_{-0.300}$ | $0.710^{+0.080}_{-0.072}$ | $0.675^{+0.084}_{-0.034}$ | $2.661^{+0.909}_{-0.570}$ |
| | +3%/-3% | +2%/-1% | +55%/-47% | +11%/-10% | +12%/-5% | +34%/-21% |
| 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 005254230-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | -50 ± 12 | $5.30^{+3.21}_{-3.16}$ | 1088^{+42}_{-42} | 2503^{+738}_{-314} | $3.977^{+19.461}_{-2.554}$ |
| Alt. | -50 ± 15 | $3.76^{+3.18}_{-2.49}$ | 1087^{+45}_{-42} | 2754^{+1049}_{-435} | $7.821^{+58.427}_{-5.587}$ |

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

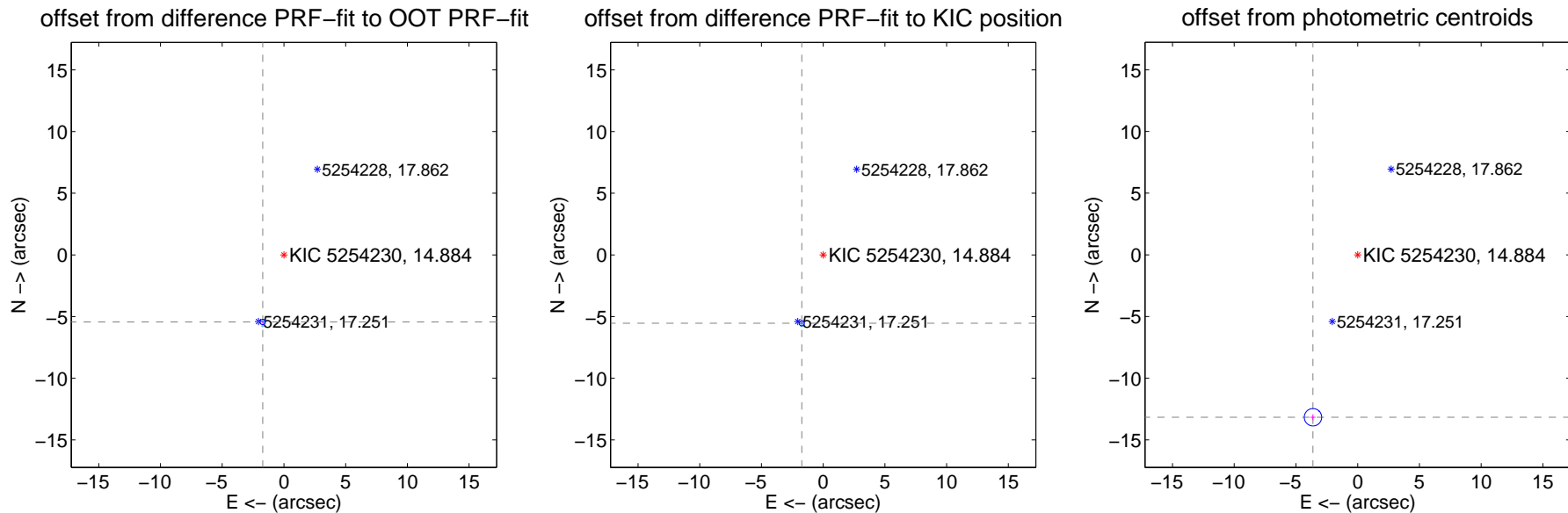
DV Centroid Data

Supplemental centroid analysis for 005254230-02. Kepler magnitude: 14.88. Transit SNR 56.88

There are 13 quarters with good PRF difference image offsets

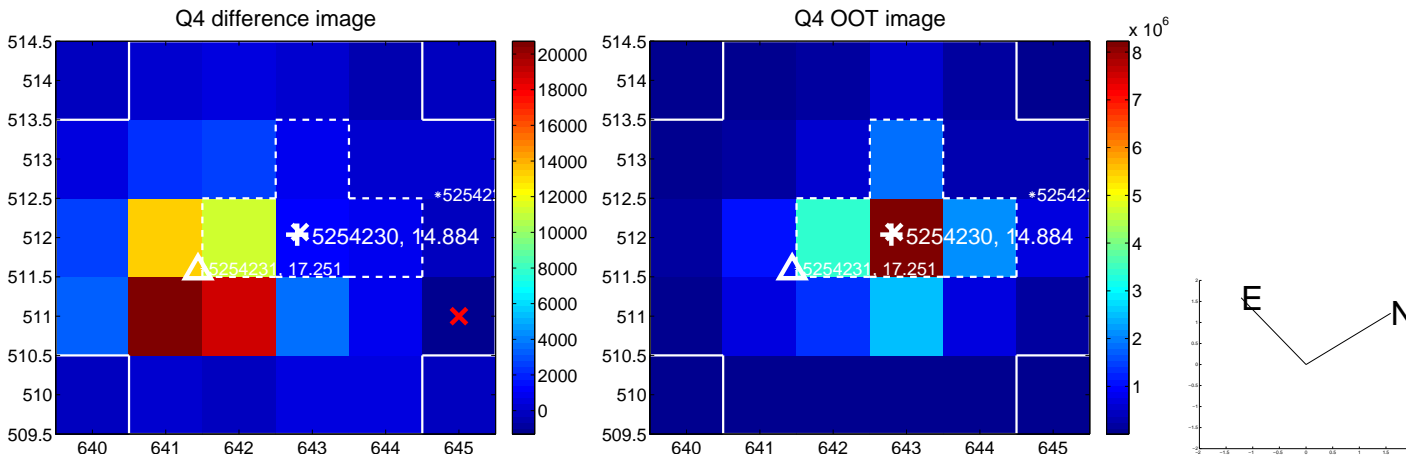
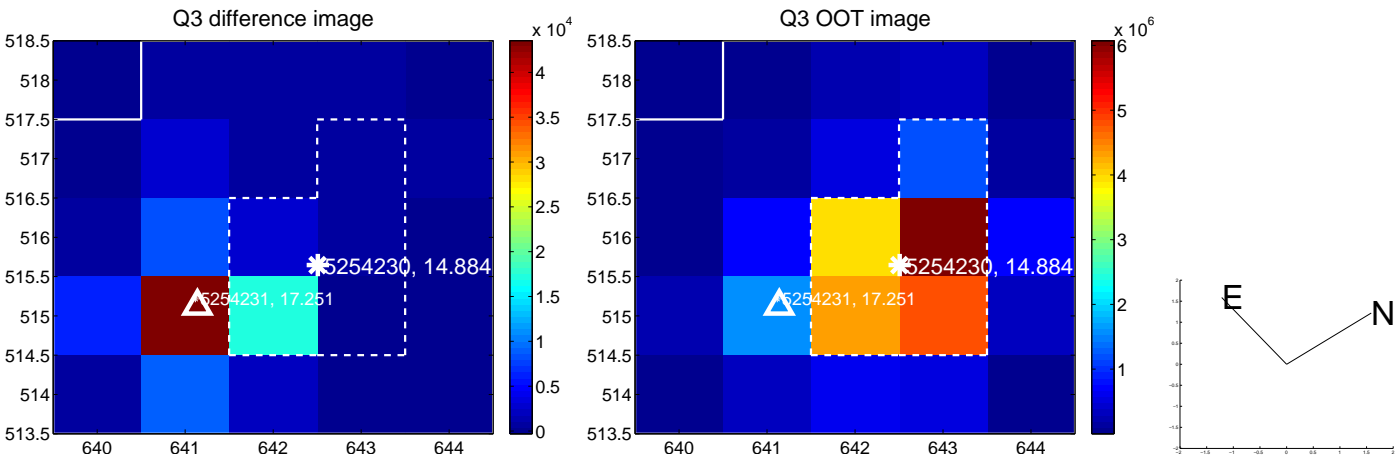
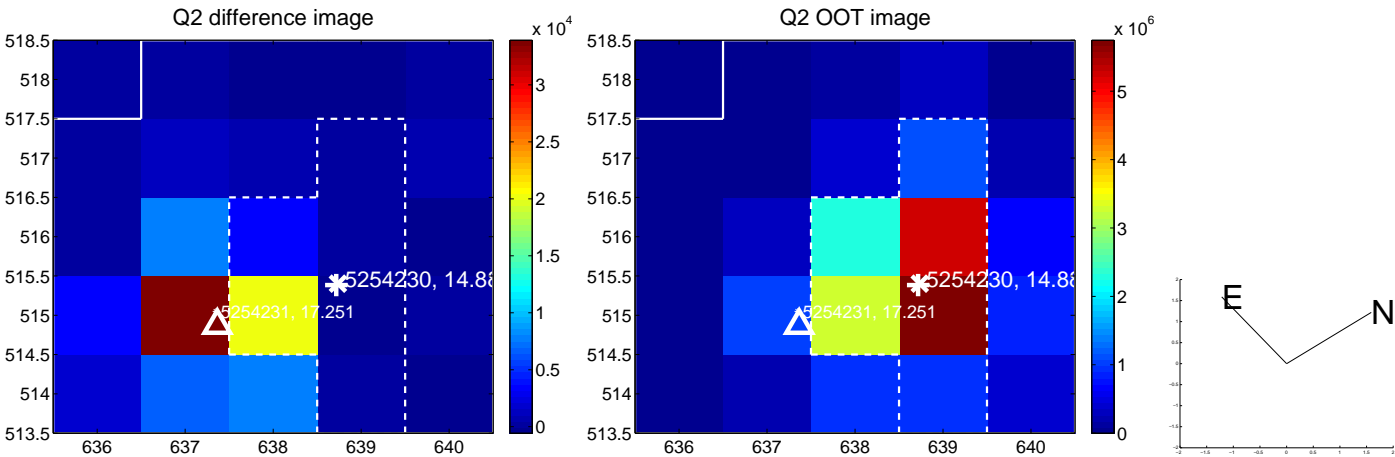
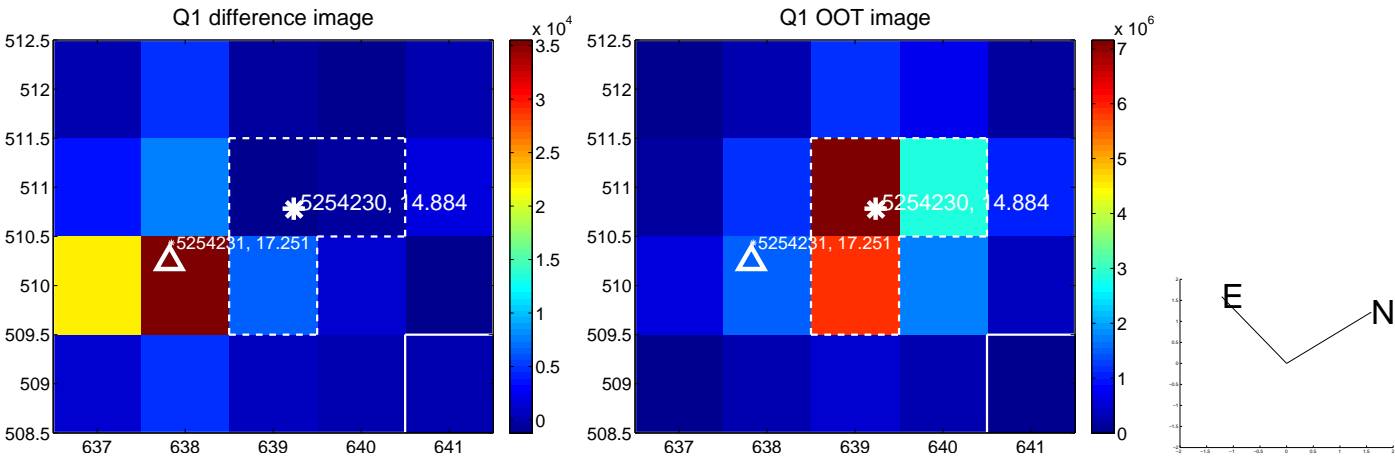
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 5.704 ± 0.072 | 78.72 | 1.721 ± 0.072 | -5.438 ± 0.073 |
| PRF-fit source offset from KIC position | 5.811 ± 0.070 | 82.83 | 1.737 ± 0.071 | -5.545 ± 0.070 |
| photometric centroid source offset | 13.66 ± 0.23 | 58.11 | 3.62 ± 0.21 | -13.17 ± 0.24 |

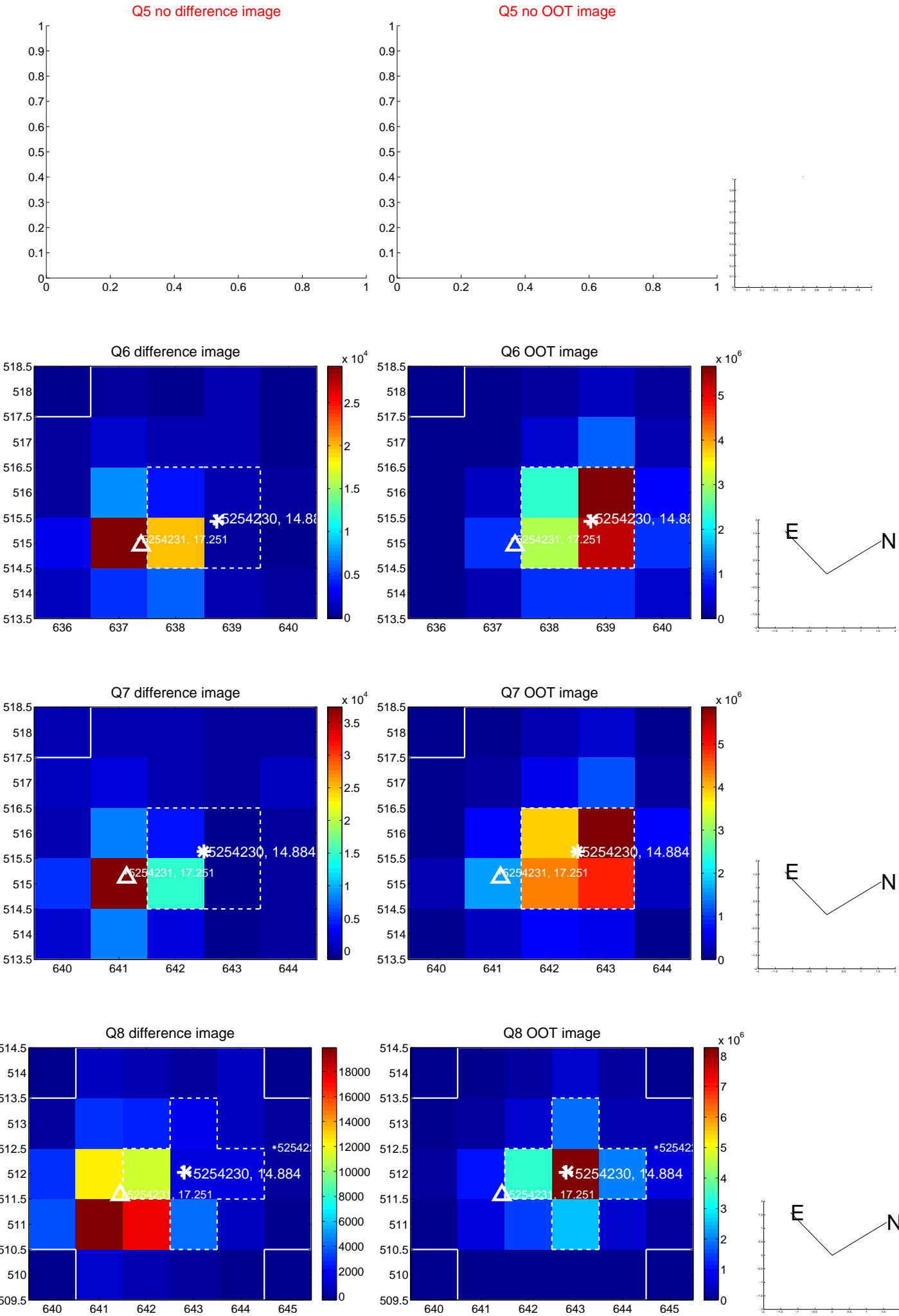


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

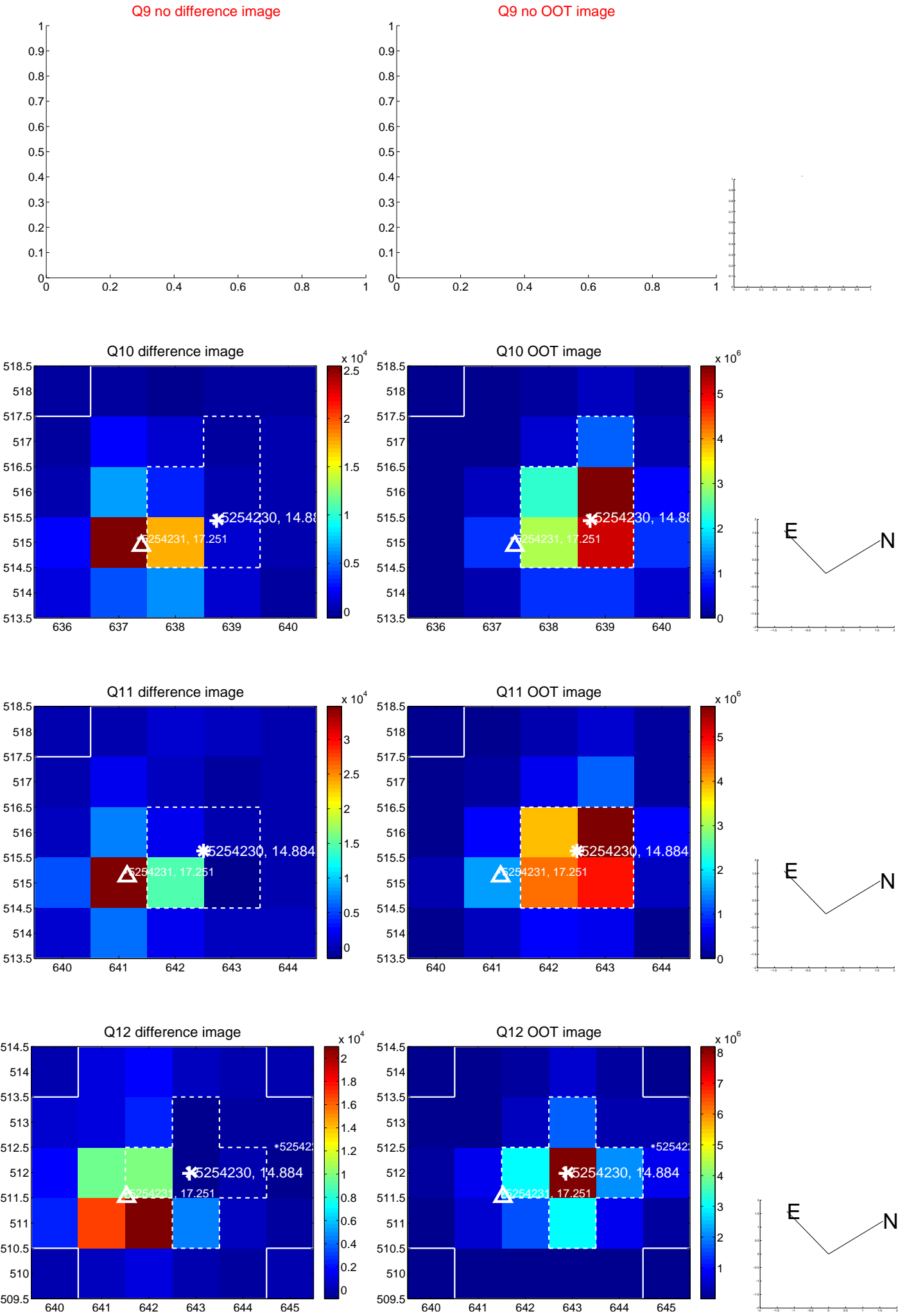
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



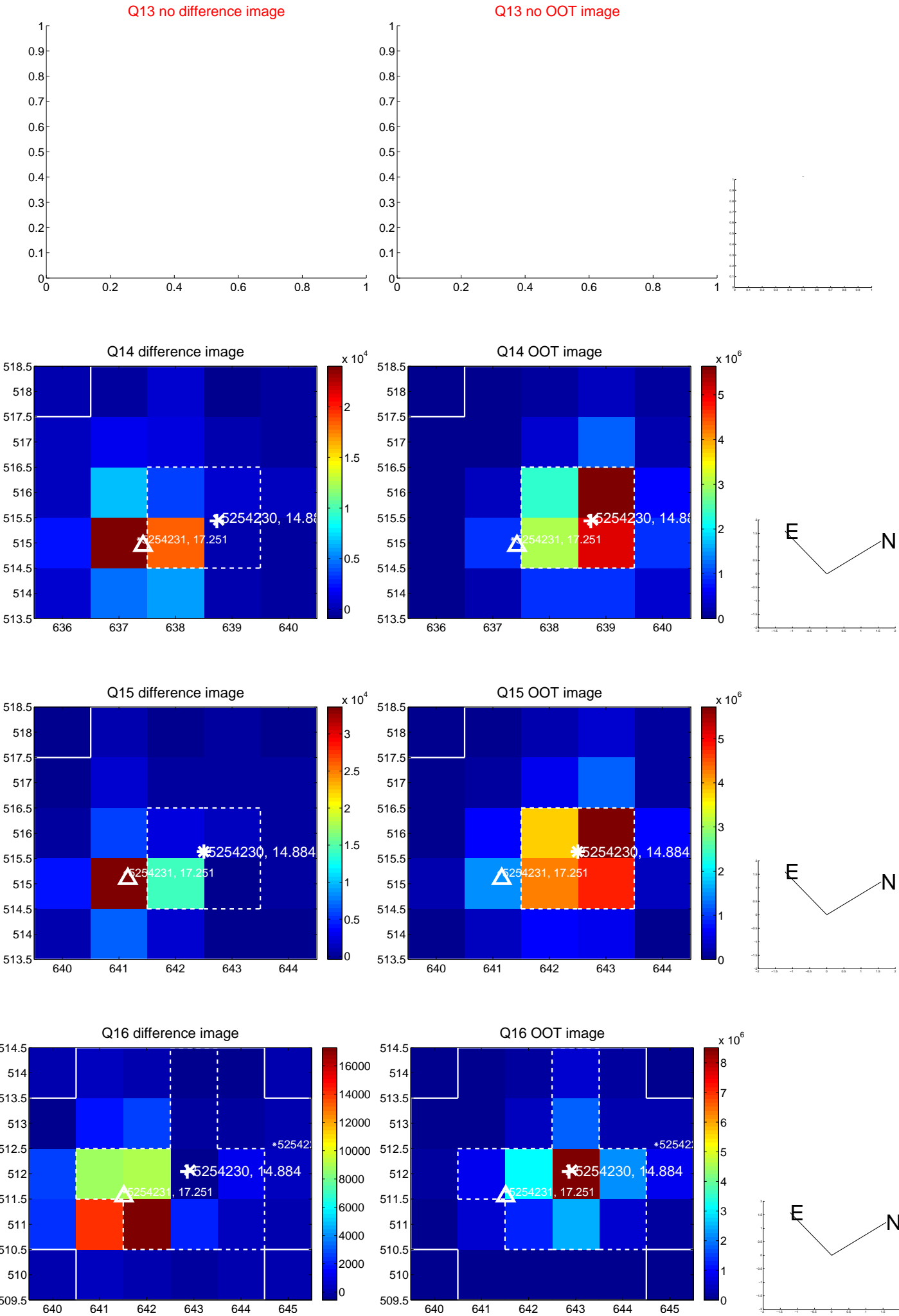
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



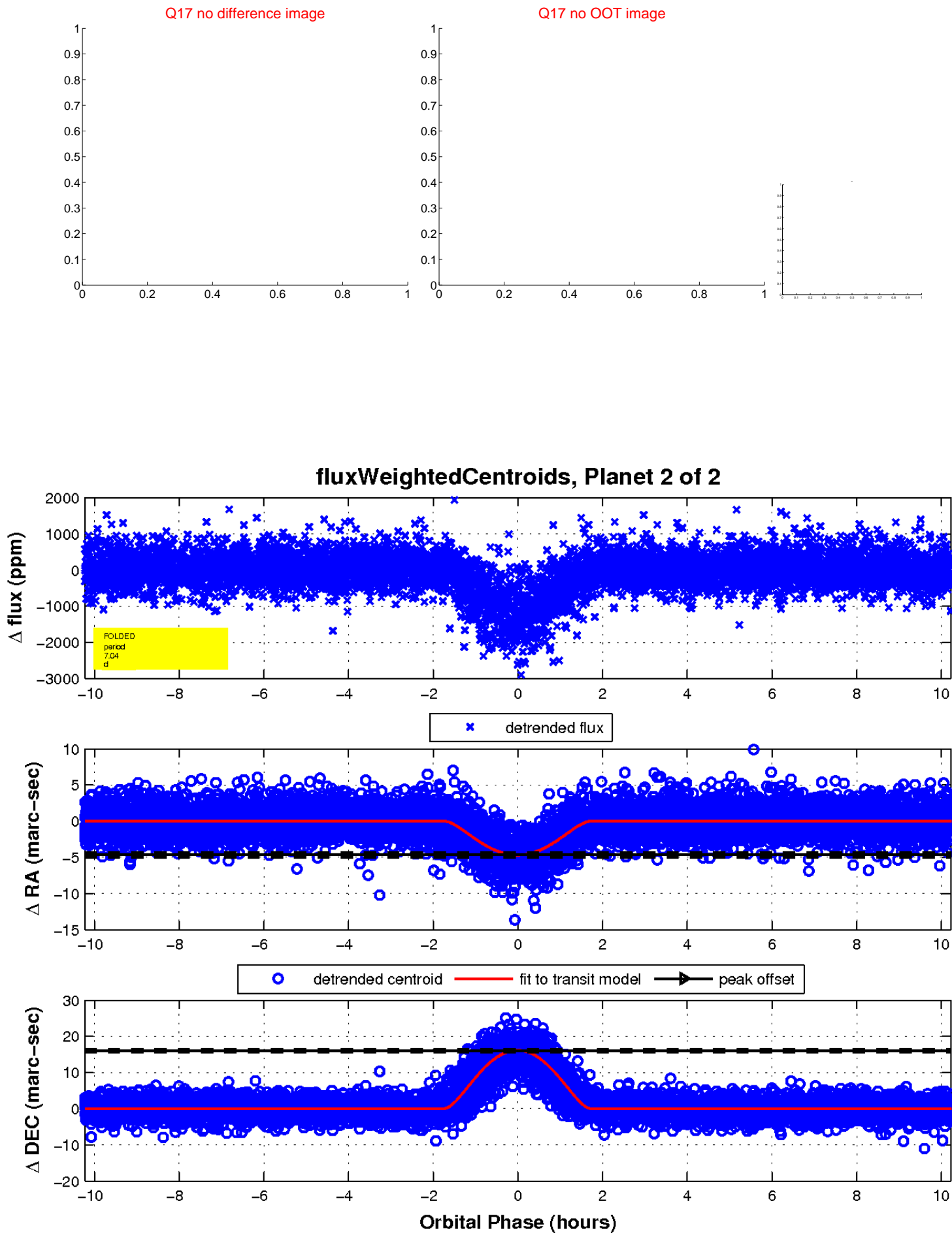
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

