

KIC 008154223

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008154223-01 | OBS | No | 1.167712 | 132.053696 | 0.0 | 6.113 | 8.6 | 0.0 | 2.24 | 7512 | 0.00 | 21062.26 |
| 008154223-02 | OBS | No | 115.358304 | 219.602130 | 1740.1 | 13.184 | 10.3 | 8.0 | 2.24 | 7512 | 10.88 | 46.12 |
| 008154223-03 | OBS | No | 187.775425 | 266.675021 | 3022.2 | 16.156 | 10.3 | 9.2 | 2.24 | 7512 | 14.78 | 24.09 |
| 008154223-04 | OBS | No | 52.437614 | 140.727896 | 1296.9 | 12.657 | 10.4 | 8.3 | 2.24 | 7512 | 10.17 | 131.96 |
| 008154223-05 | OBS | No | 210.295388 | 277.304444 | 92.5 | 15.000 | 8.4 | -1.0 | 2.24 | 7512 | 2.19 | 20.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008154223-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 008154223-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 008154223-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 008154223-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV |
| 008154223-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—CENT_NOFITS |

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

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

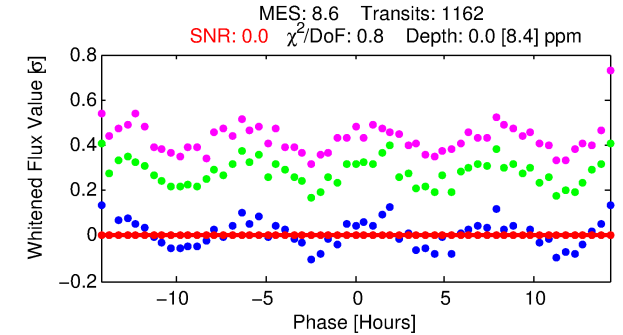
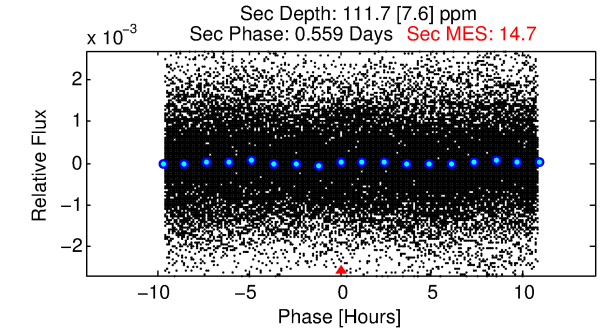
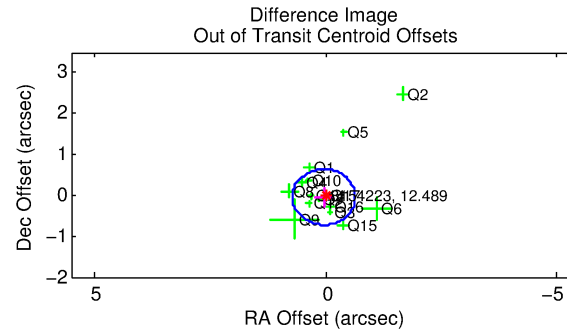
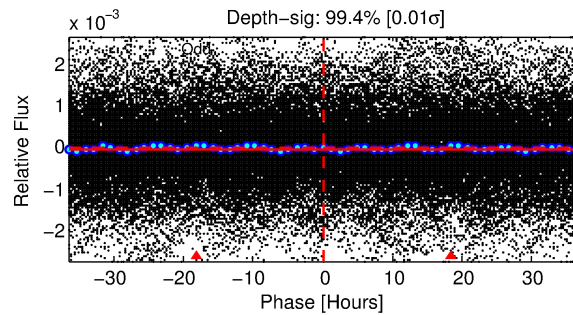
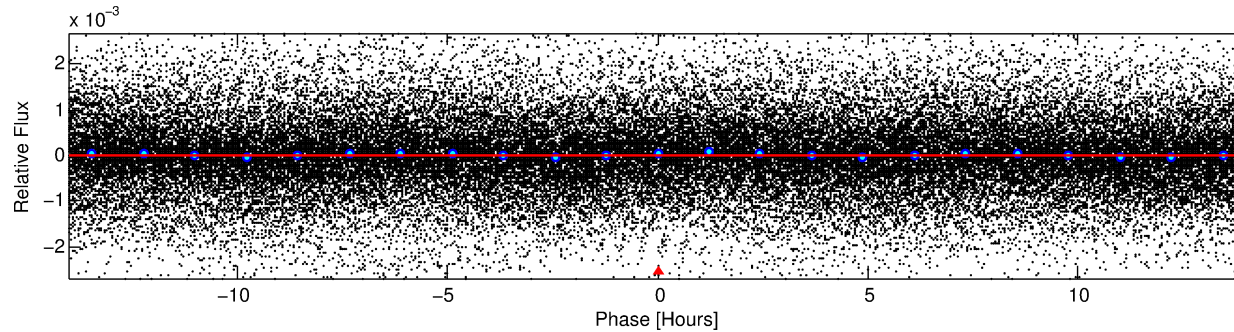
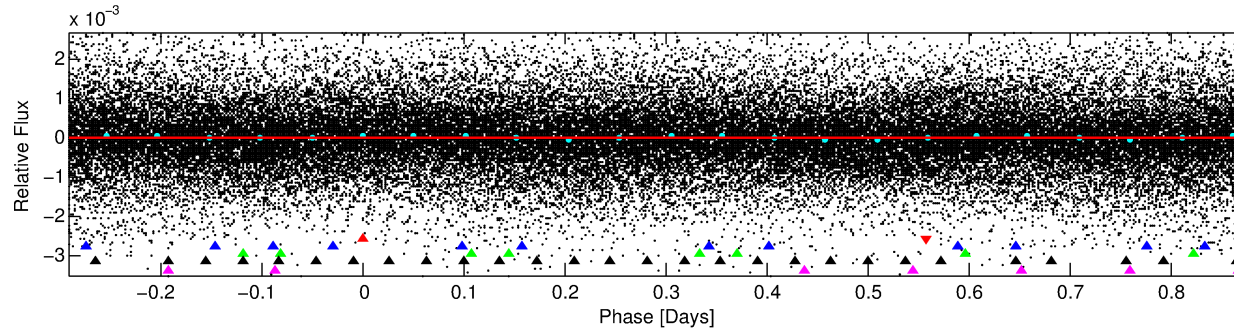
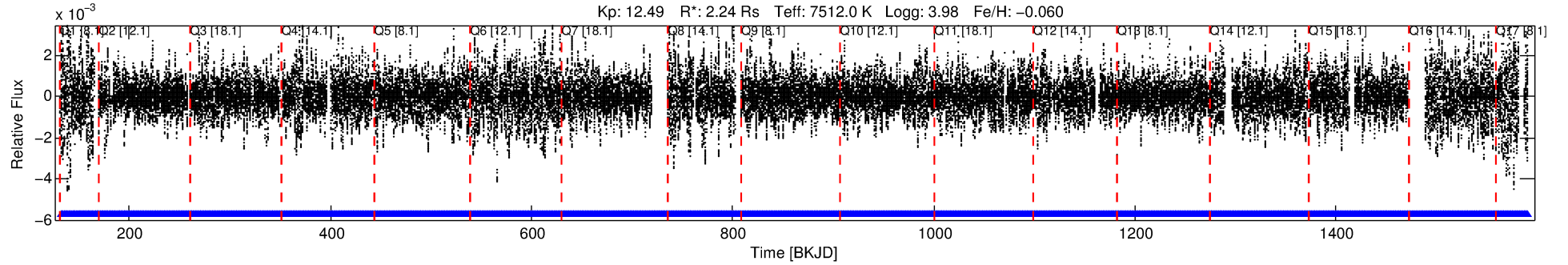
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008154223-01

No Significant Match Found

DV One-Page Summary

KIC: 8154223 Candidate: 1 of 5 Period: 1.168 d



DV Fit Results:

Period = 1.16771 [23.10158] d
Epoch = 132.0537 [2920.5196] BKJD
Rp/R* = 0.0000 [0.7908]
a/R* = 1.31 [1171.22]
b = 0.73 [5851.42]
Seff = 21062.26 [555650.50]
Teq = 3072 [20260] K
Rp = 0.00 [193.22] Re
a = 0.0261 [0.3438] AU
Ag = 25622033.61 [7758909844427.38] 10¹⁰ erg
Teff = 337906 [25582792014] K [0.001]

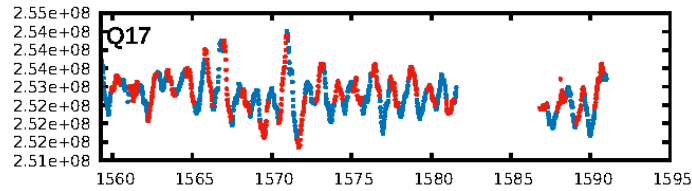
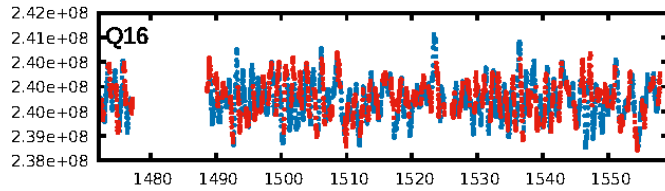
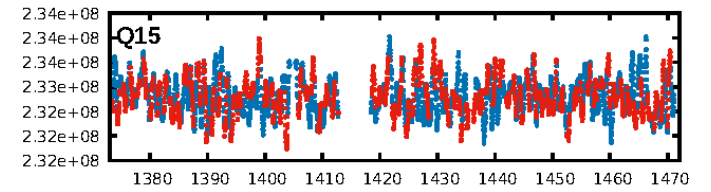
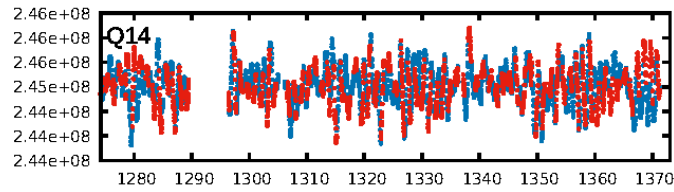
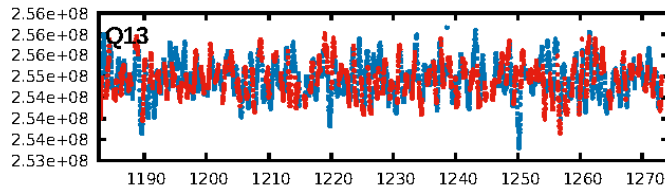
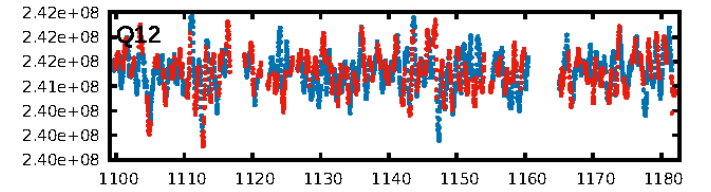
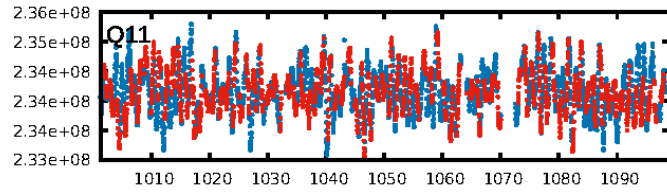
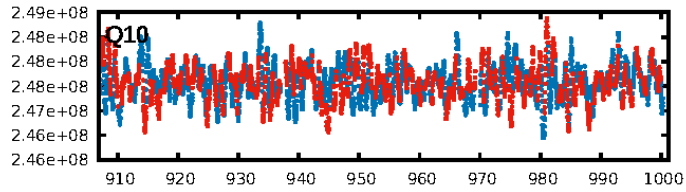
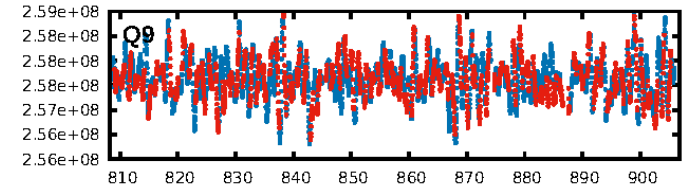
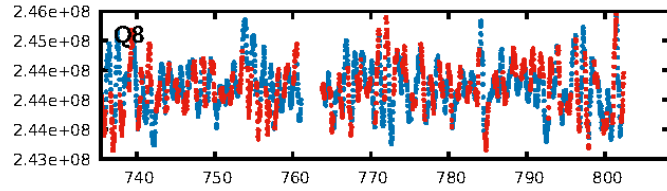
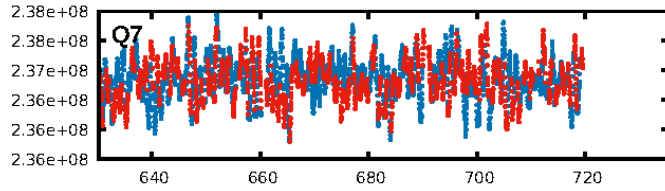
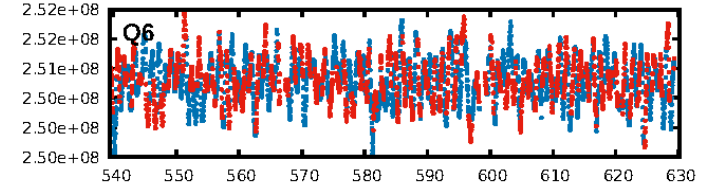
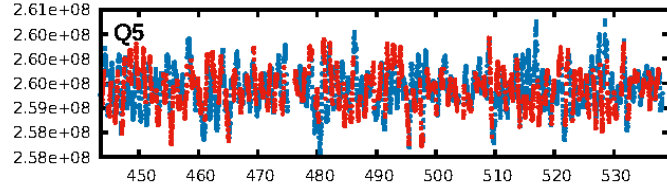
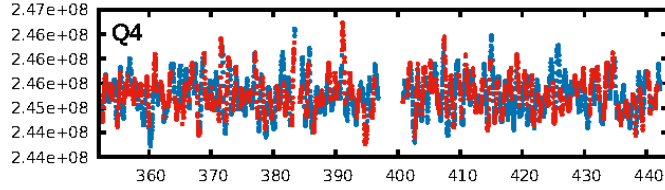
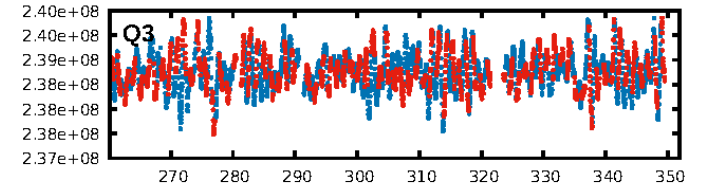
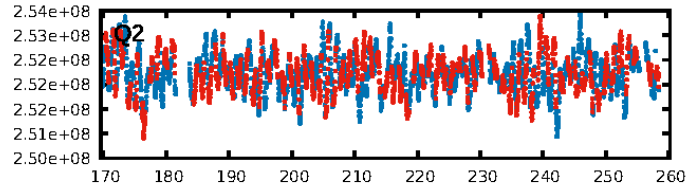
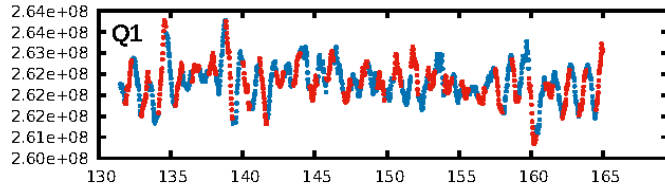
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [87.54 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1110/1110]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OutOffset-rm: 0.060 arcsec [0.26 σ]
OutOffset-rm: 0.007 arcsec [0.04 σ]
OutOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.33 [5/15]
DiffImageOverlap-fno: 1.00 [17/17]

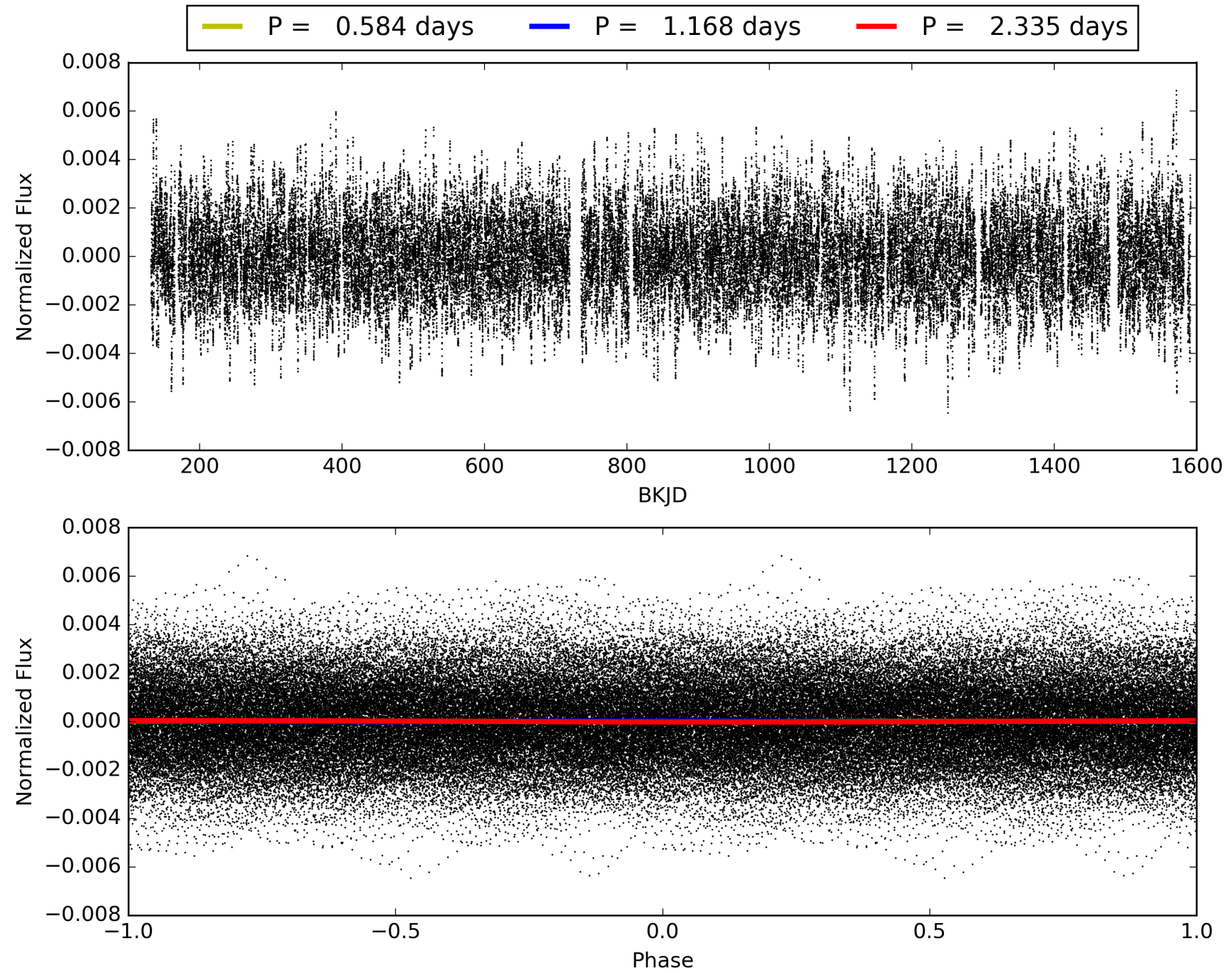
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008154223-01, PDC Light Curves

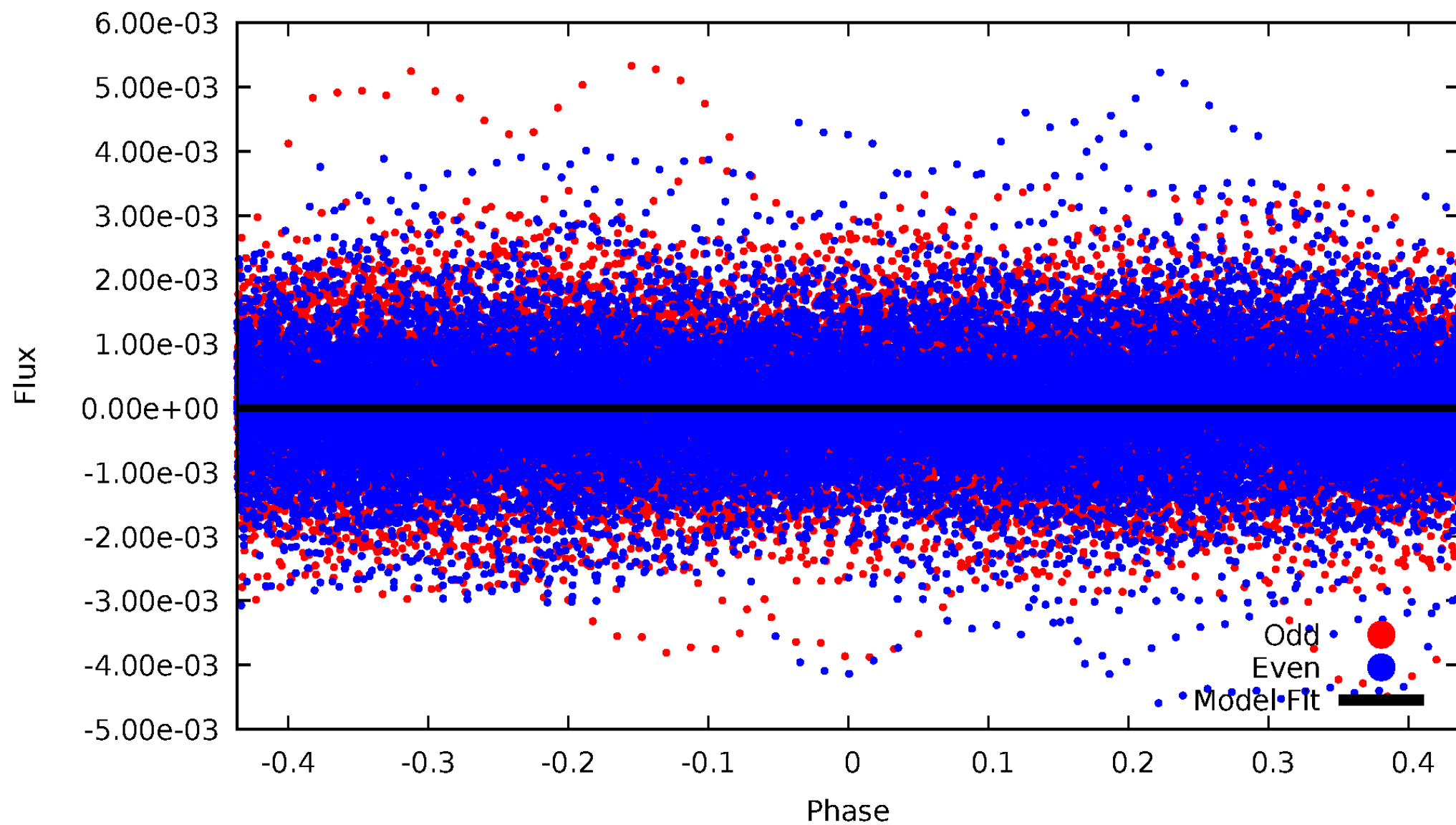


TCE 008154223-01



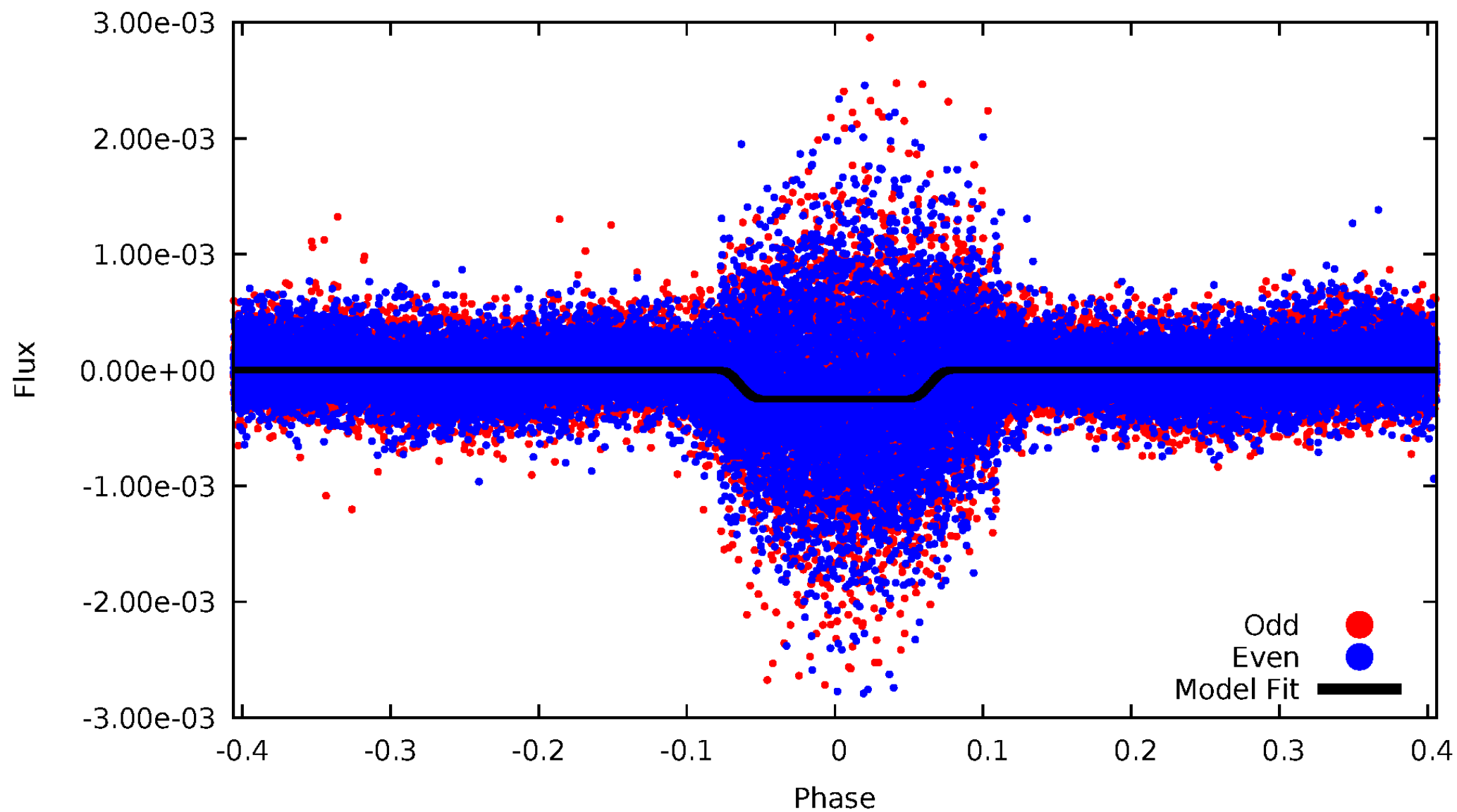
DV Odd/Even

TCE 008154223-01

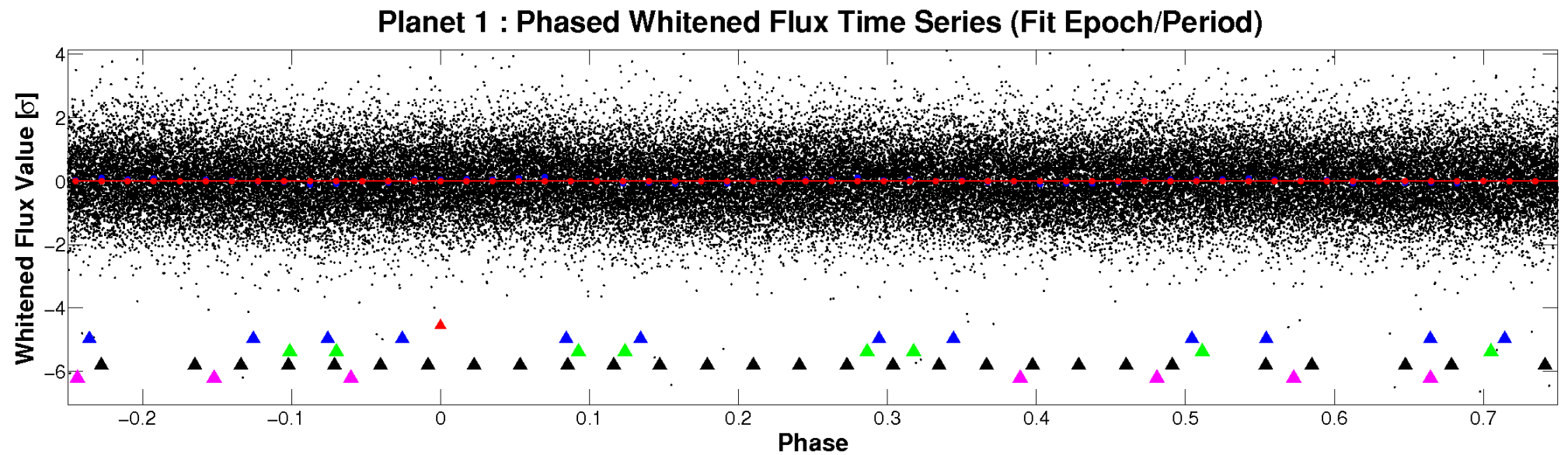
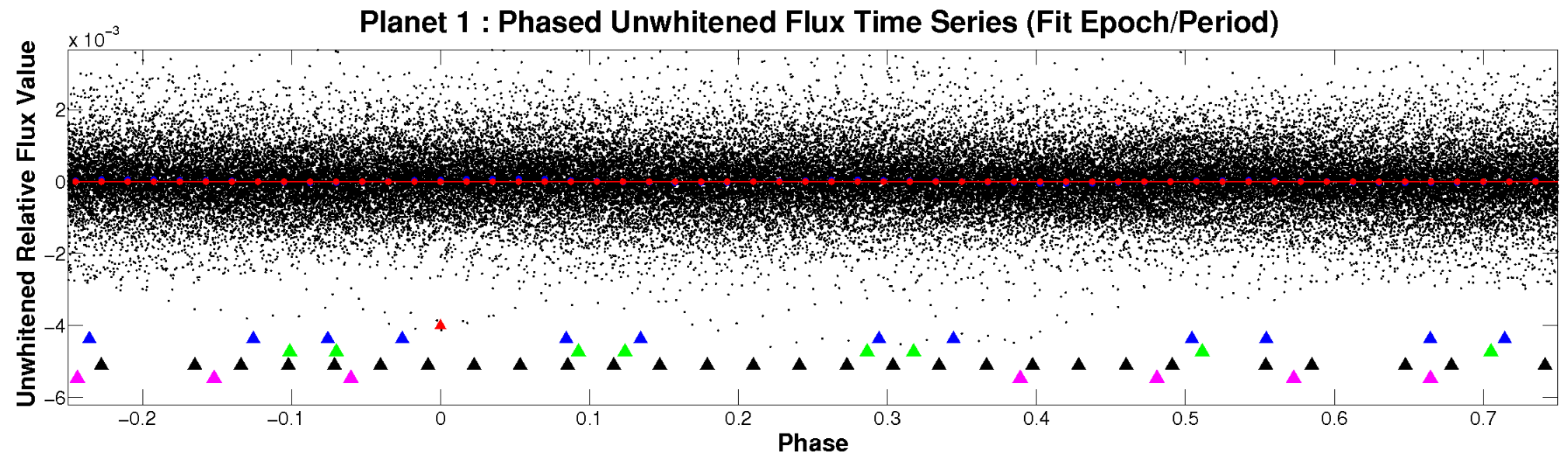


ALT Odd/Even

TCE 008154223-01

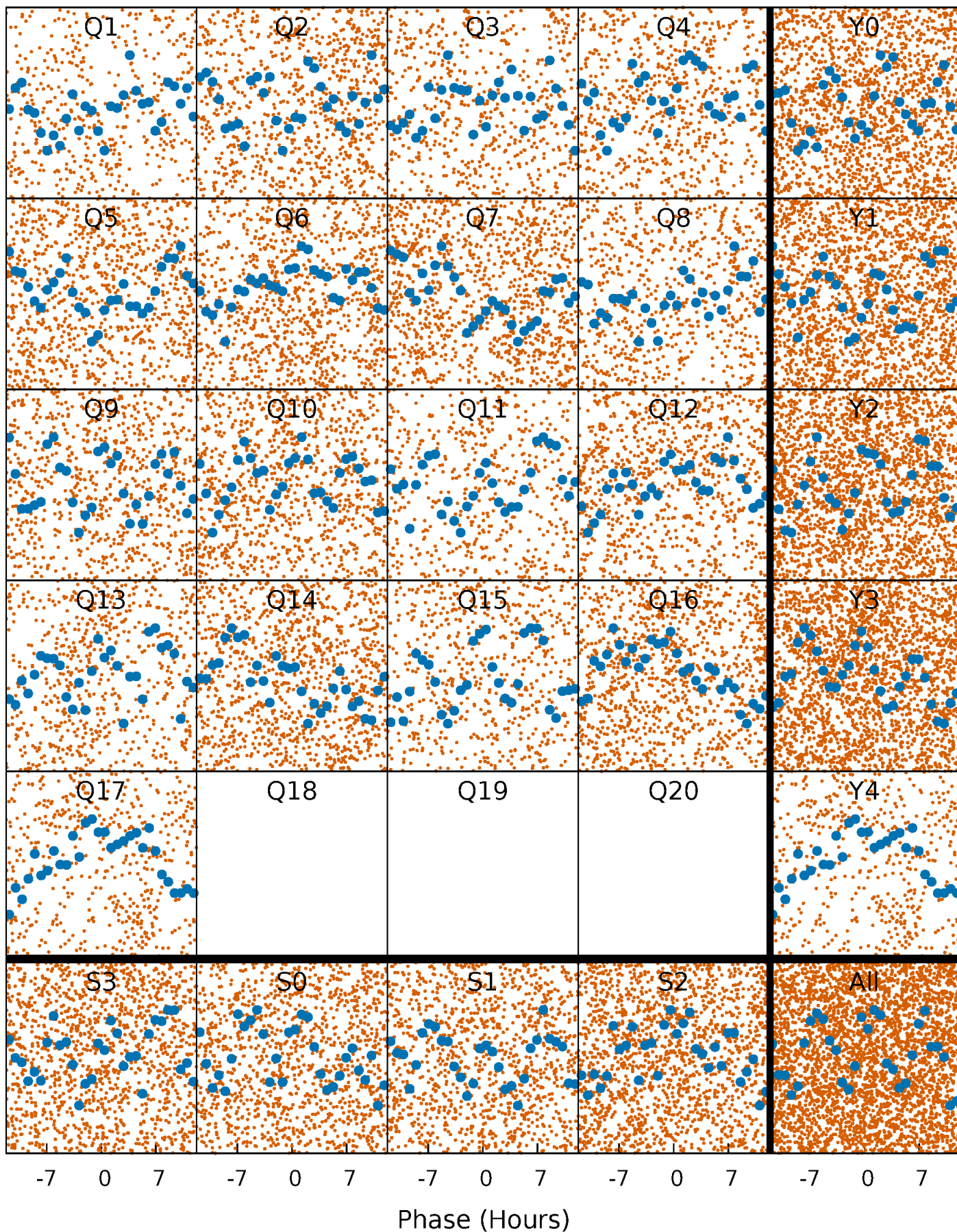


Non-Whitened Vs. Whitened Light Curve



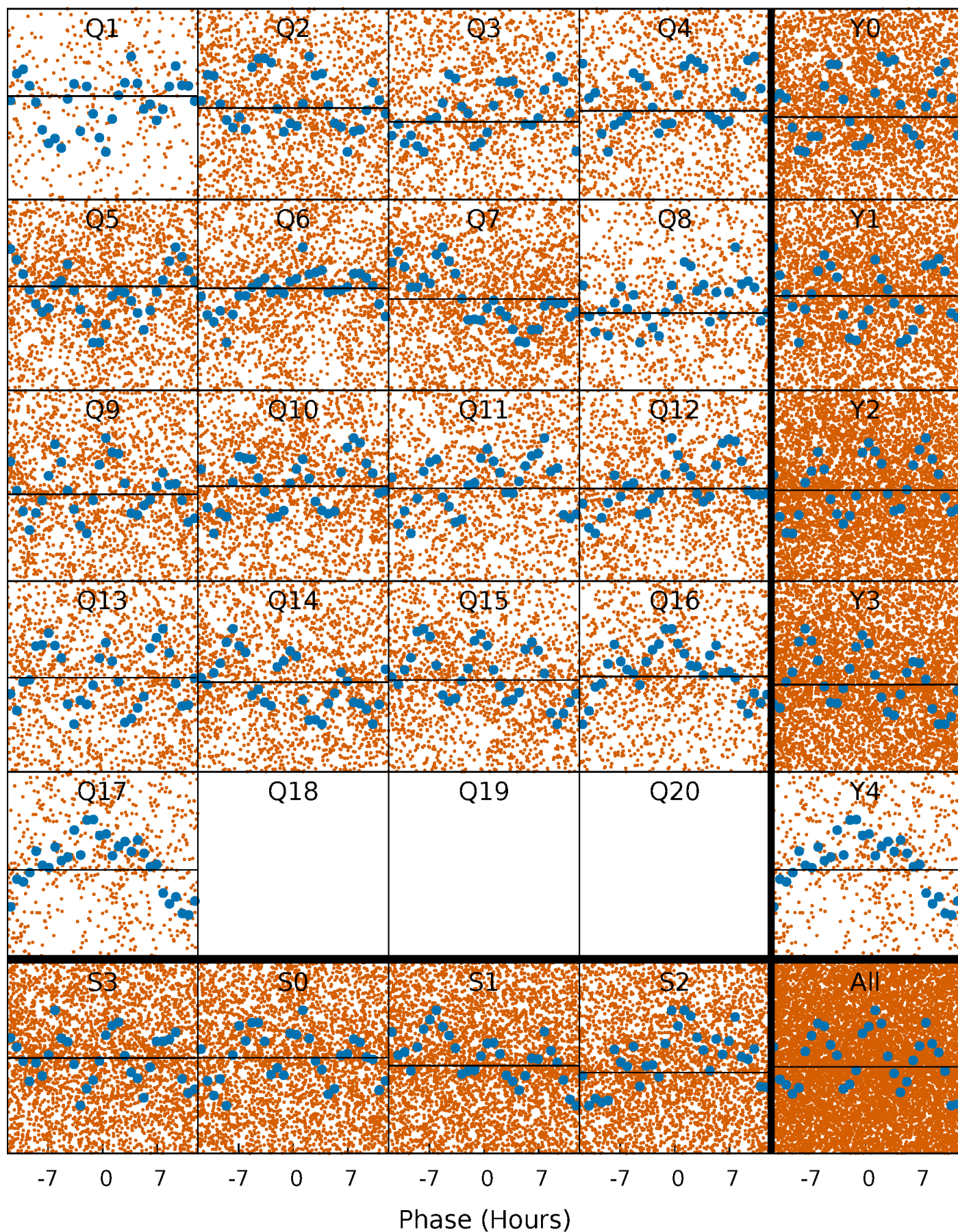
PDC Quarter-Phased Transit Curves

TCE 008154223-01 P= 1.167712 Days $T_0=132.053696$ (BKJD)



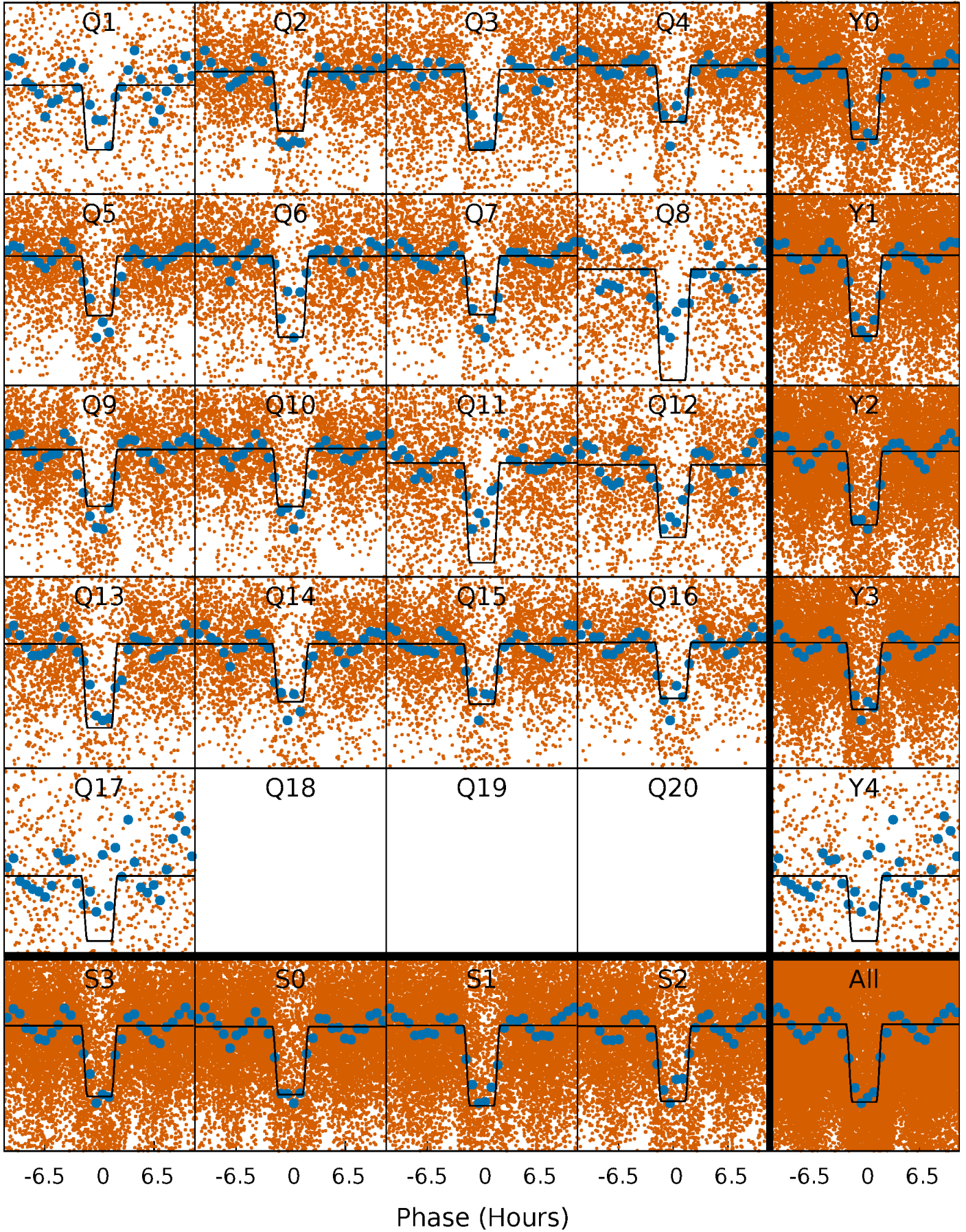
DV Quarter-Phased Transit Curves

TCE 008154223-01 P= 1.167712 Days $T_0=132.053696$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

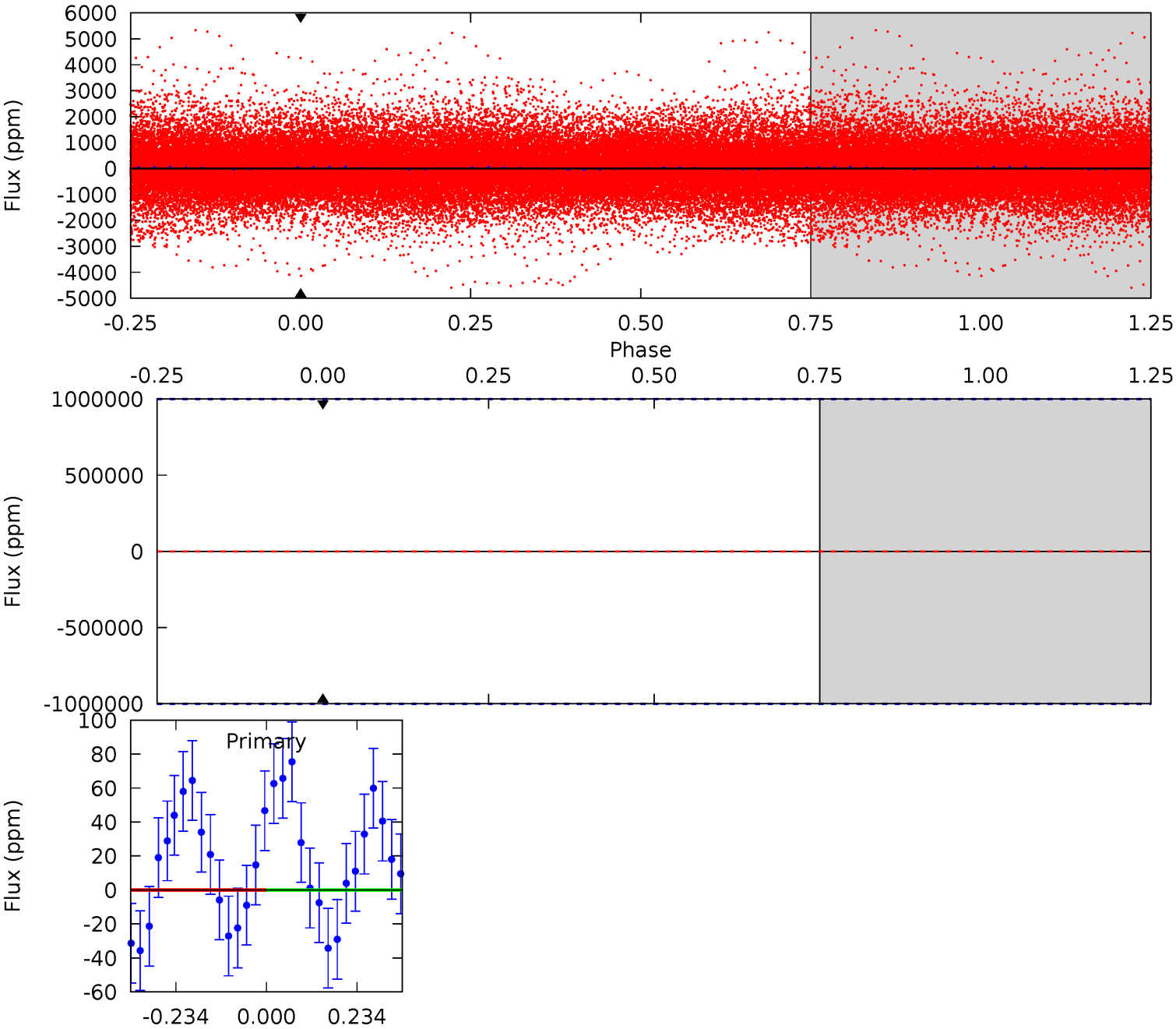
TCE 008154223-01 P= 1.167566 Days $T_0=132.045583$ (BKJD)



DV Model-Shift Uniqueness Test

008154223-01, P = 1.167712 Days, E = 130.885984 Days

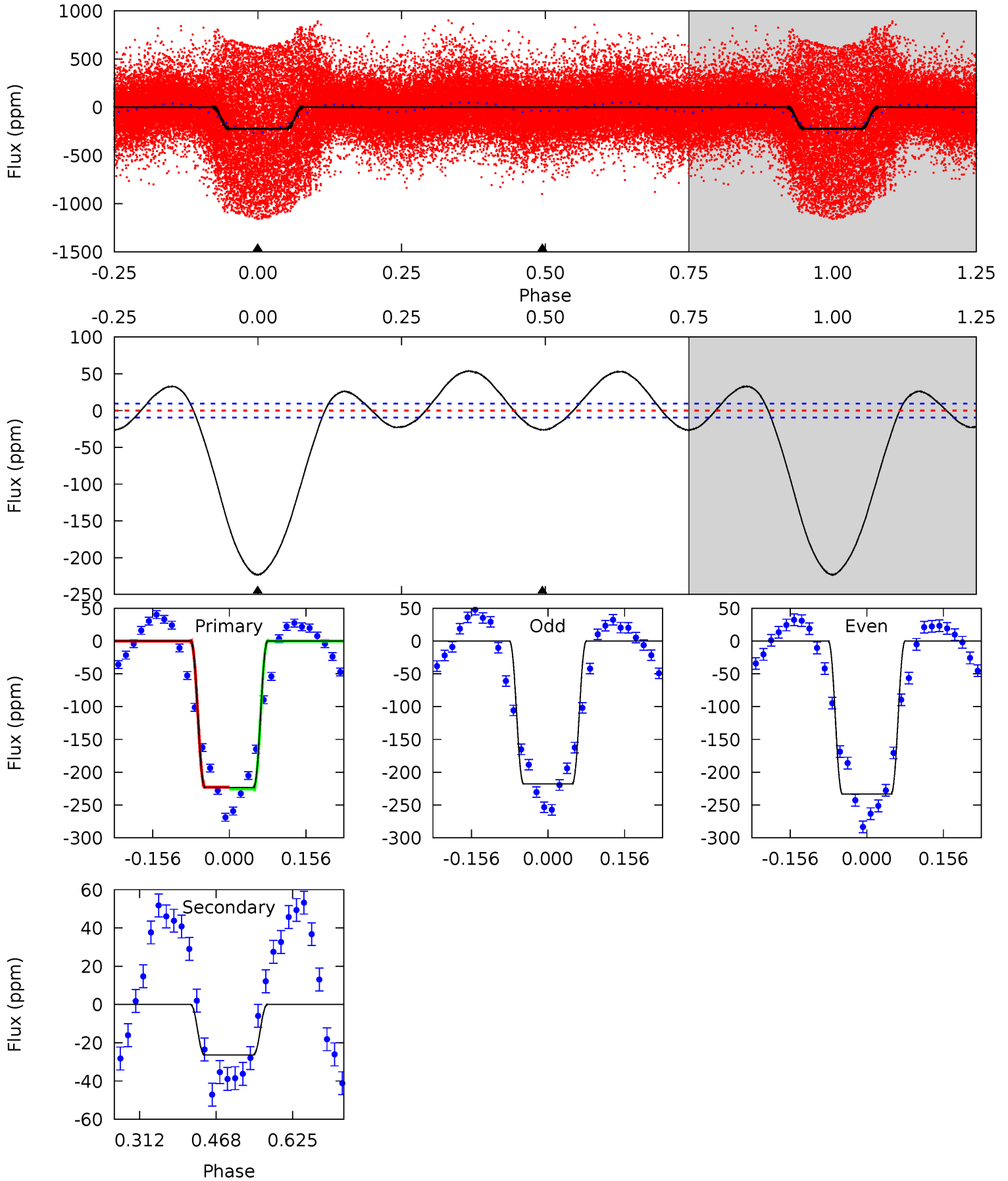
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Alt Model-Shift Uniqueness Test

008154223-01, P = 1.167566 Days, E = 130.878017 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 104.7 | 12.4 | 0 | 0 | 4.47 | 1.42 | 9.70 | 104.7 | 104.7 | 12.4 | 12.4 | 3.58 | 0.99 | 0.19 | 0.64 |



Stellar Parameters For KIC 008154223

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7512^{+209}_{-314} | $3.976^{+0.209}_{-0.152}$ | $-0.060^{+0.200}_{-0.350}$ | $2.239^{+0.525}_{-0.642}$ | $1.727^{+0.185}_{-0.317}$ | $0.217^{+0.281}_{-0.091}$ |
| | +3%/-4% | +5%/-4% | +333%/-583% | +23%/-29% | +11%/-18% | +130%/-42% |
| 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 008154223-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|-----------------------------|----------------------|-------------------------|------------------------------|
| DV | 0 ± 1000000 | $130.45^{+138.66}_{-89.91}$ | 1774^{+853}_{-375} | -2078^{+9214}_{-4029} | $0.267^{+169.773}_{-94.426}$ |
| Alt. | -26 ± 2 | $128.66^{+143.92}_{-93.72}$ | 1816^{+847}_{-426} | -2281^{+439}_{-552} | $0.017^{+0.213}_{-0.015}$ |

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 $A_{obs} \gg 1.0$

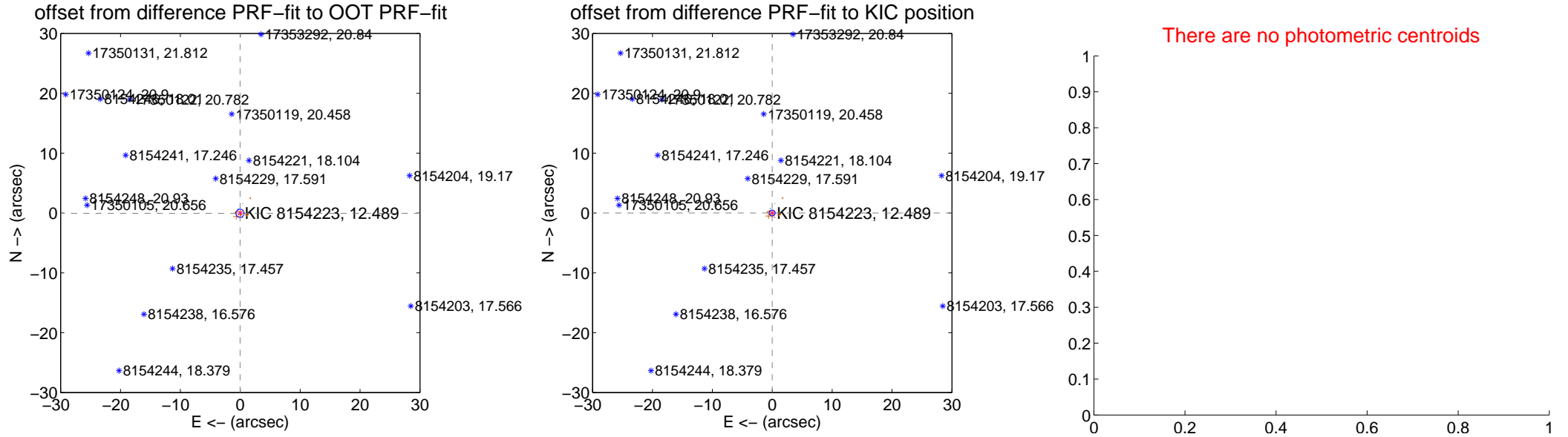
DV Centroid Data

Supplemental centroid analysis for 008154223-01. Kepler magnitude: 12.49. Transit SNR 0.00

There are 5 quarters with good PRF difference image offsets

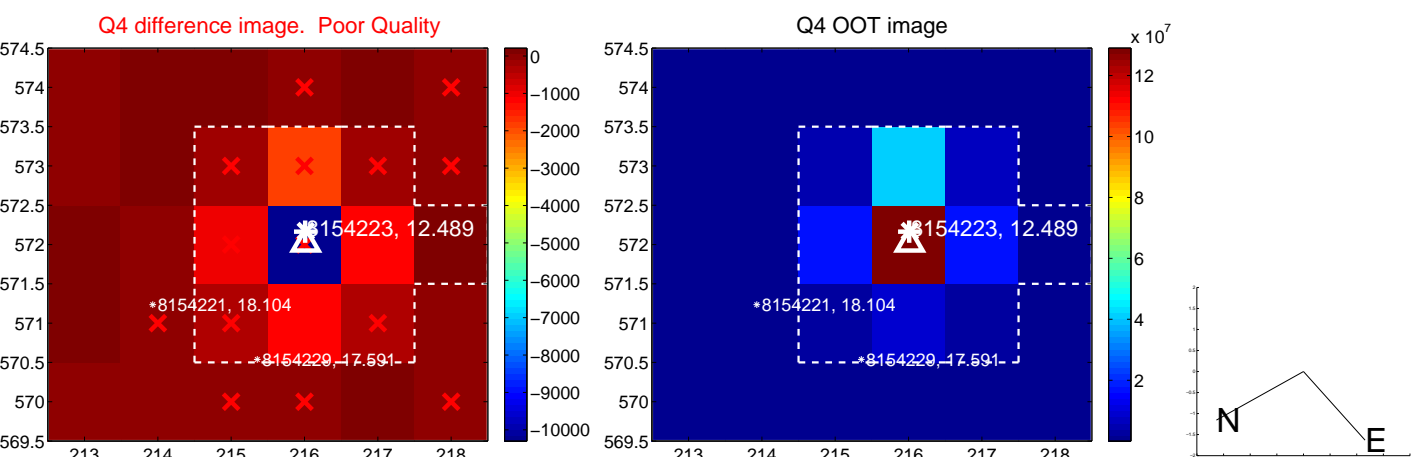
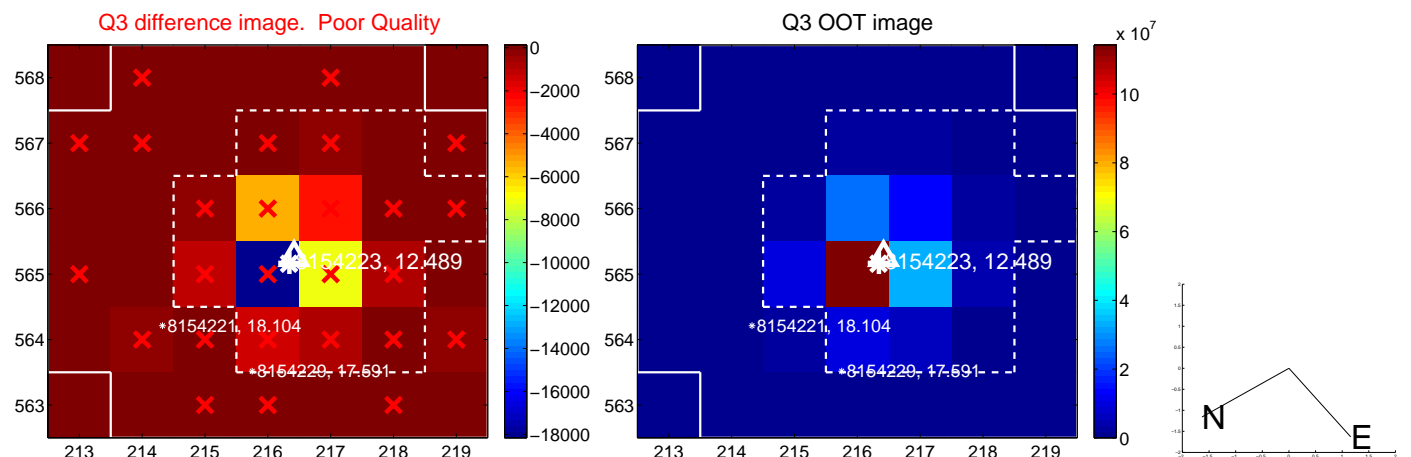
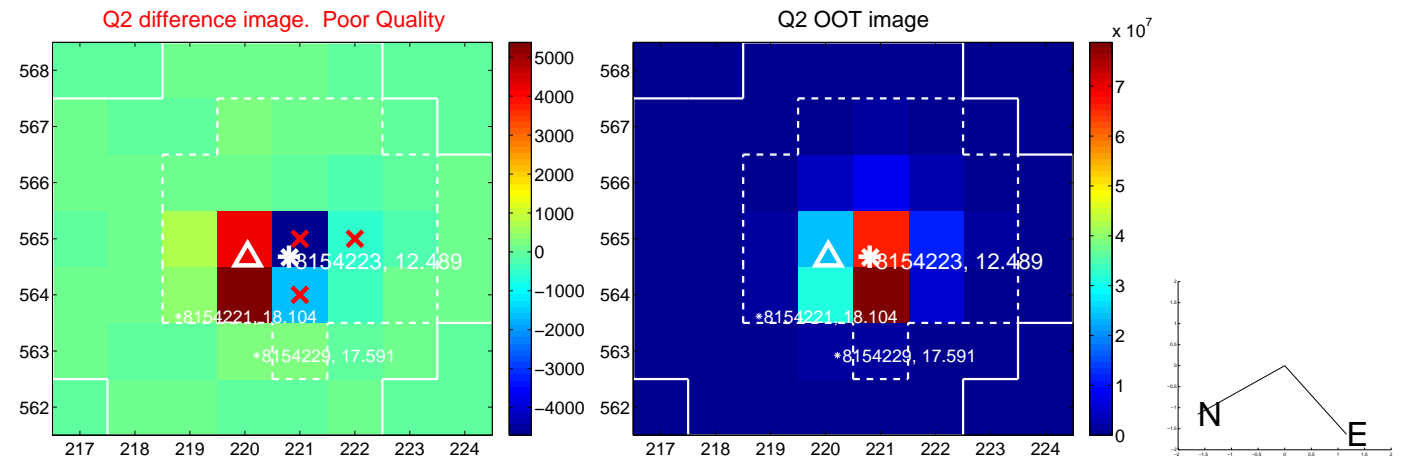
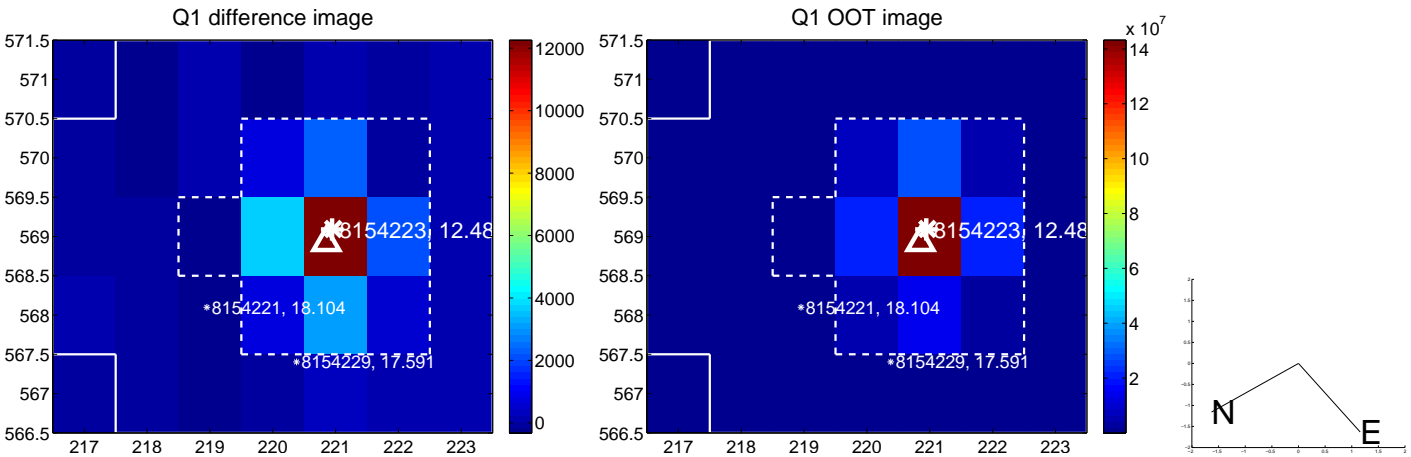
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.060 ± 0.228 | 0.26 | 0.040 ± 0.169 | -0.045 ± 0.214 |
| PRF-fit source offset from KIC position | 0.007 ± 0.165 | 0.04 | 0.007 ± 0.172 | 0.000 ± 0.216 |
| photometric centroid source offset | — | — | — | — |

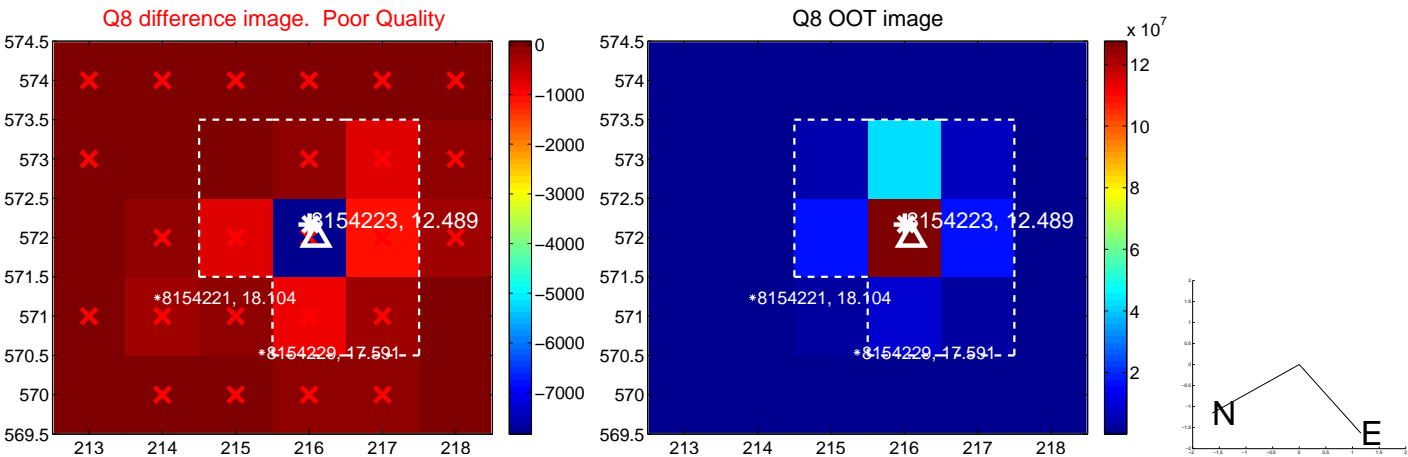
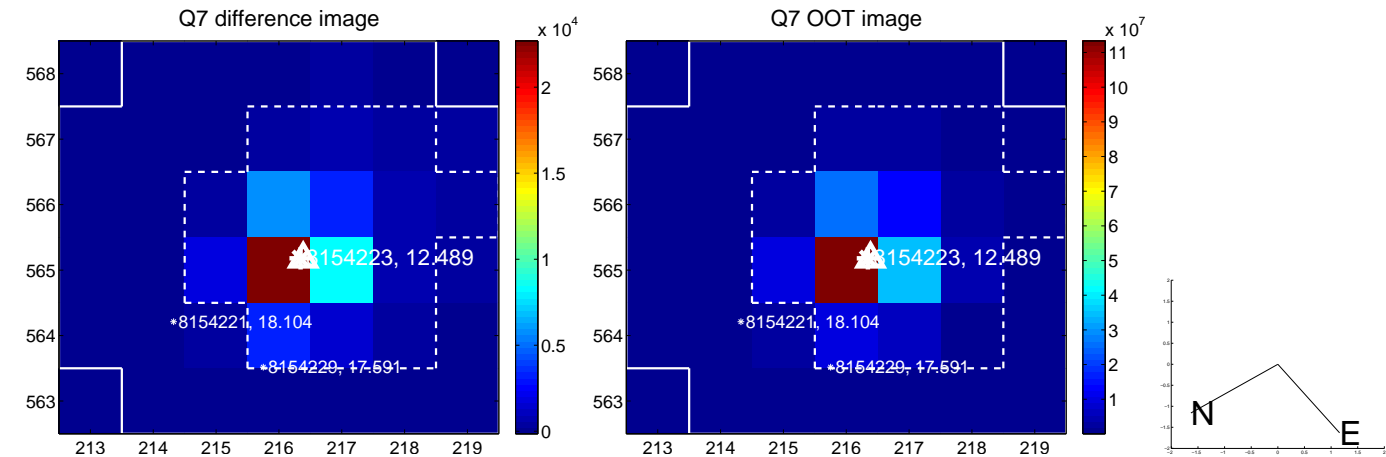
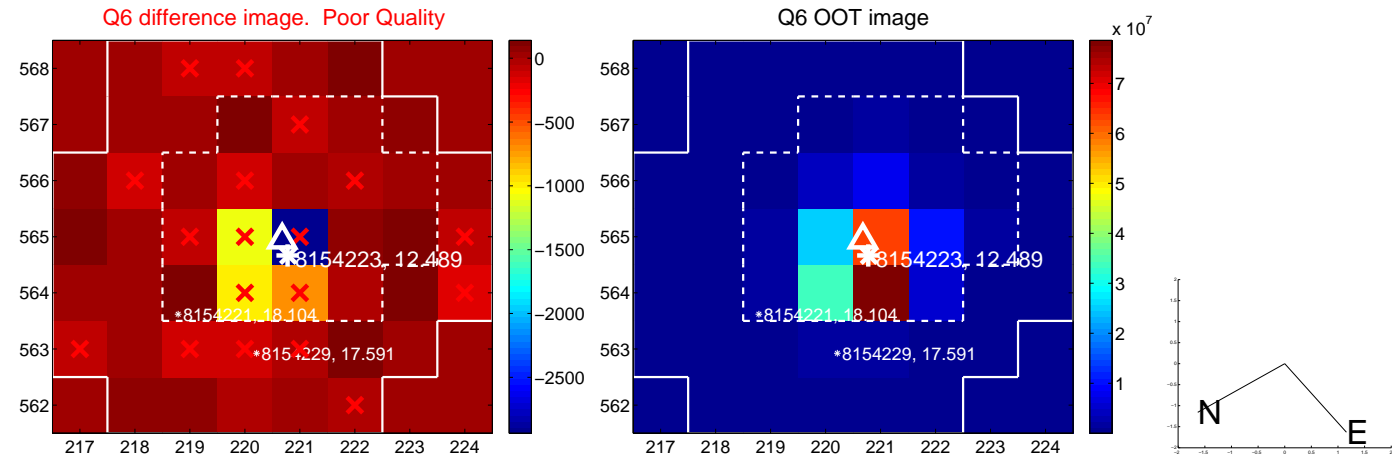
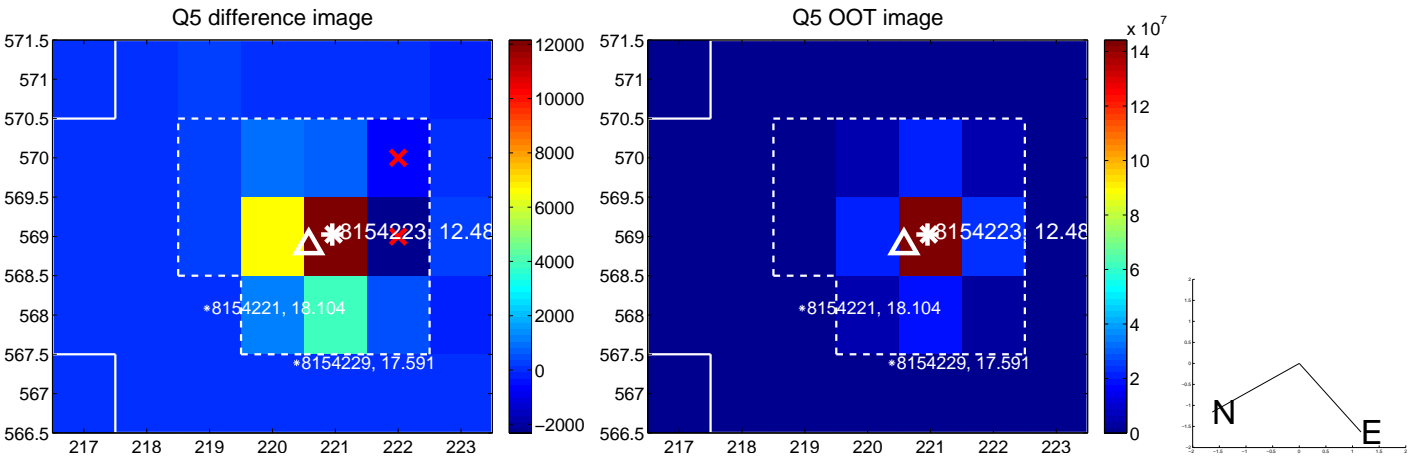


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

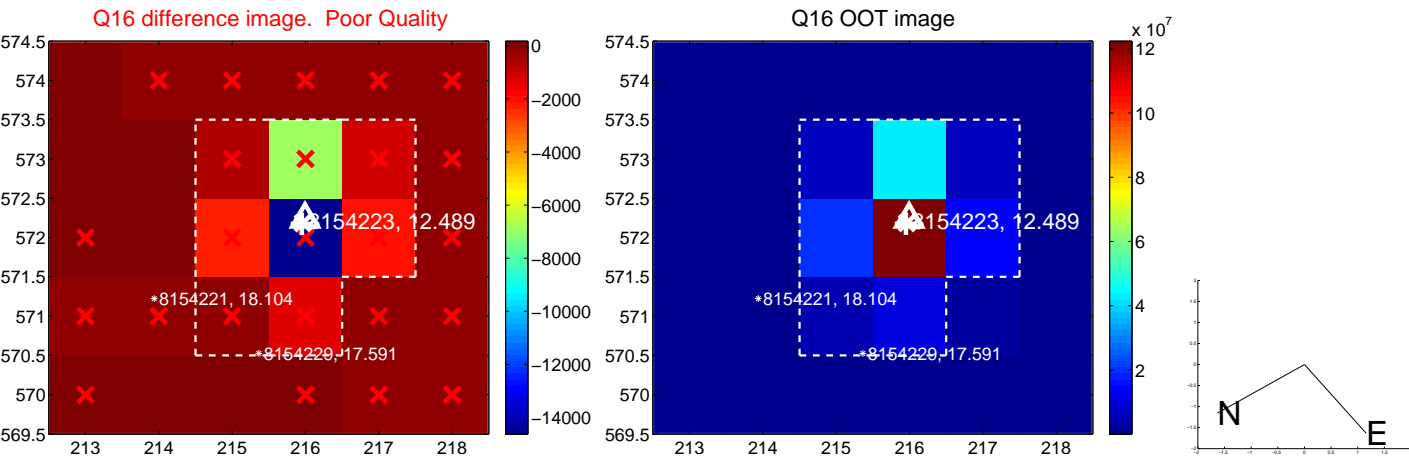
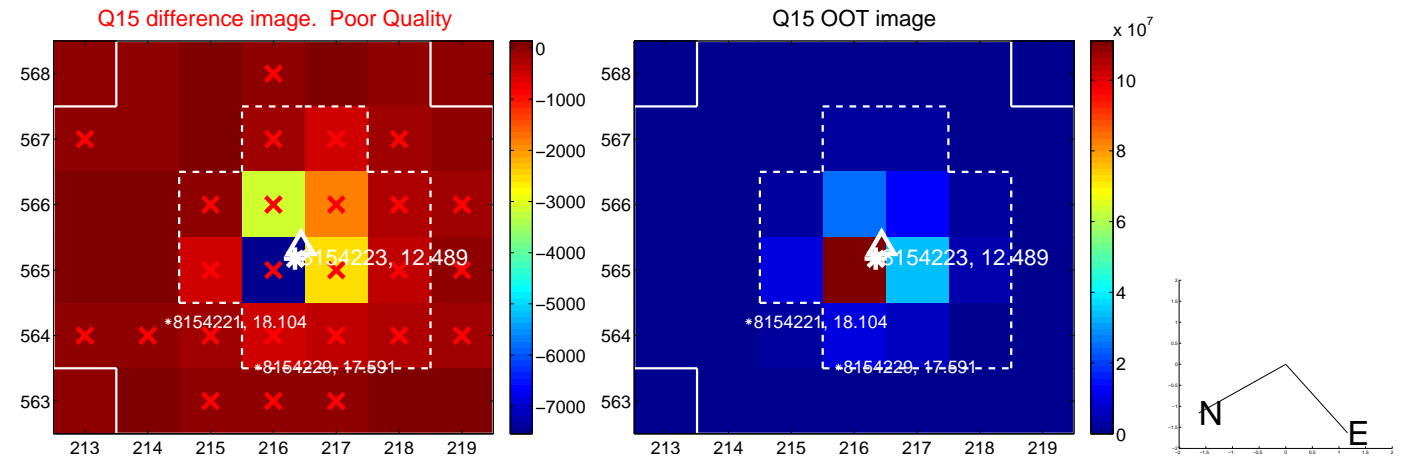
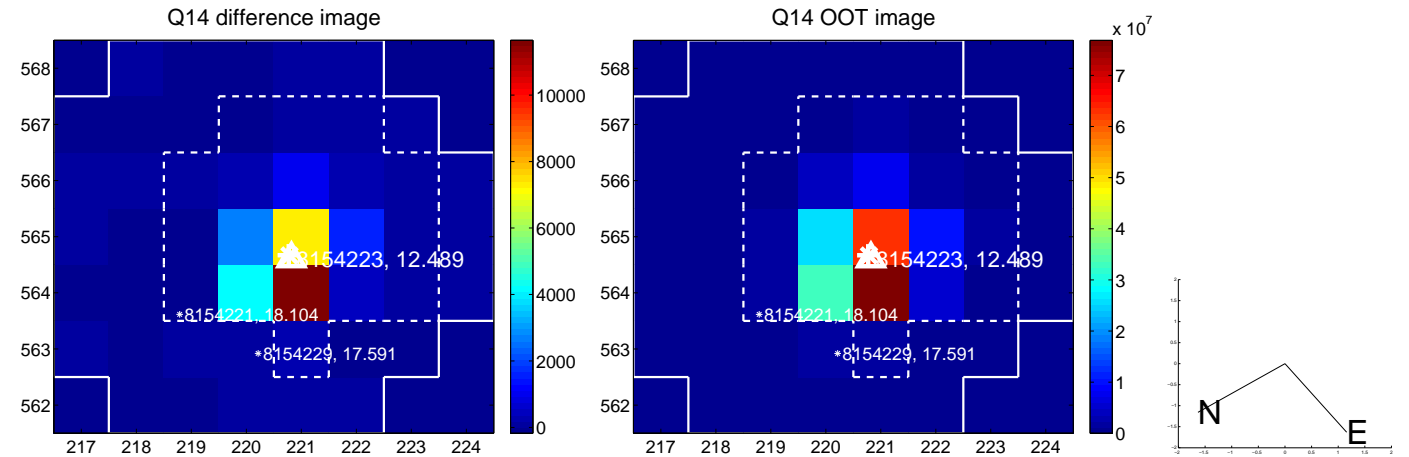
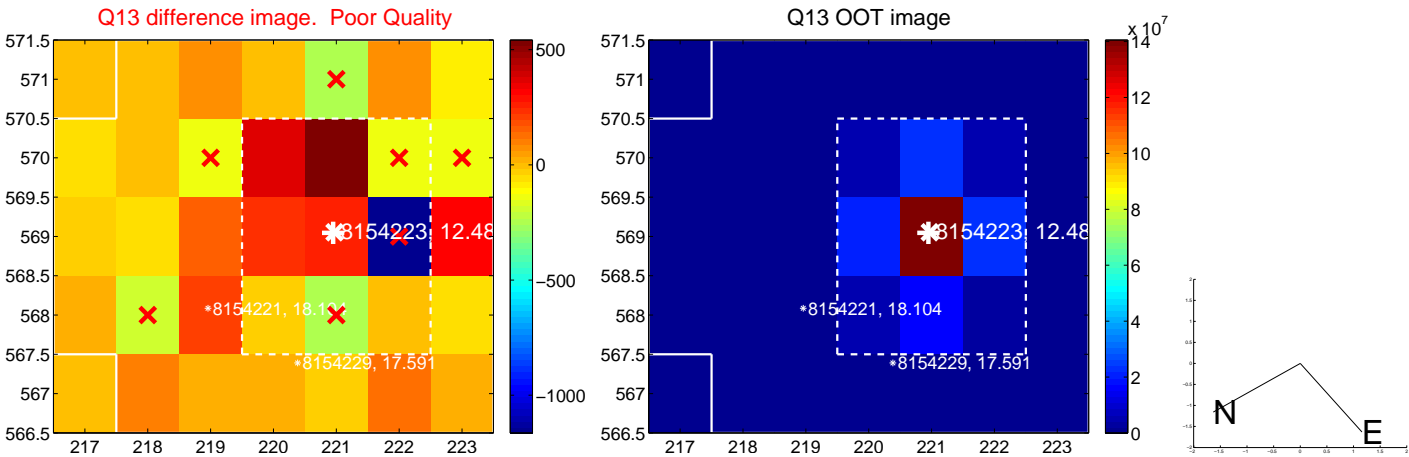
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



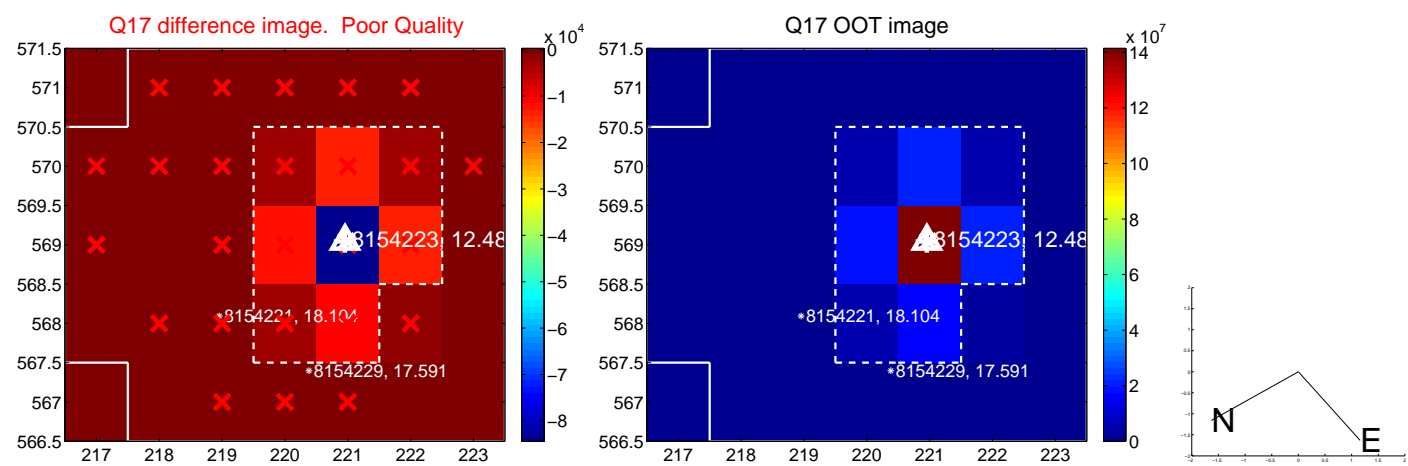
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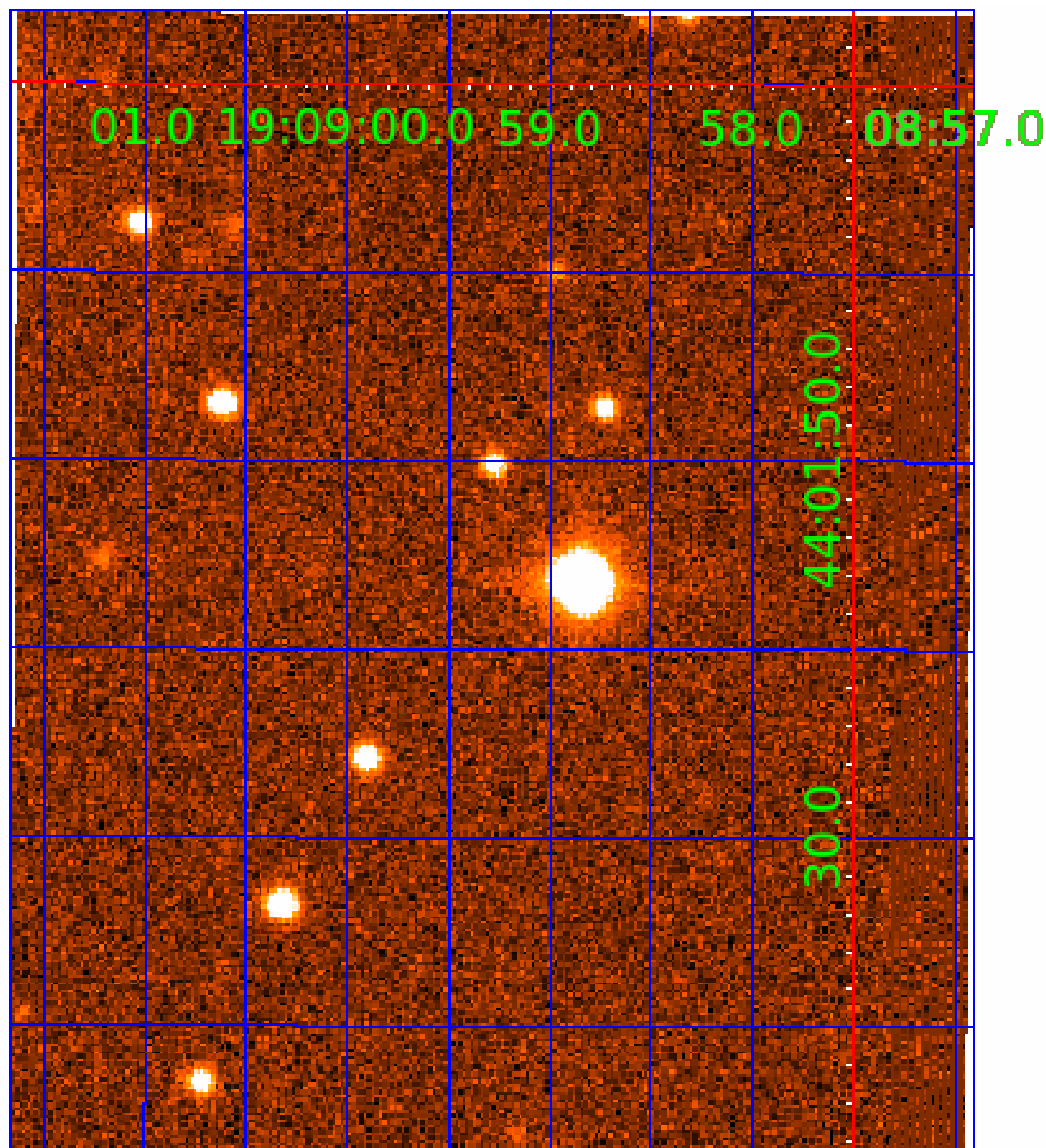
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 008154223

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}) |
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Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008154223-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 008154223-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 008154223-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 008154223-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV |
| 008154223-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—CENT_NOFITS |

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

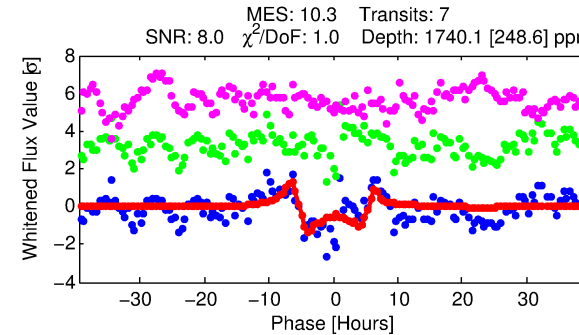
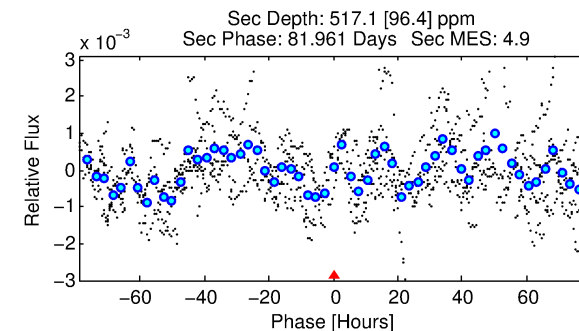
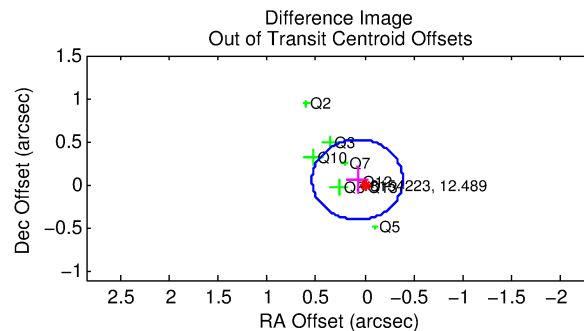
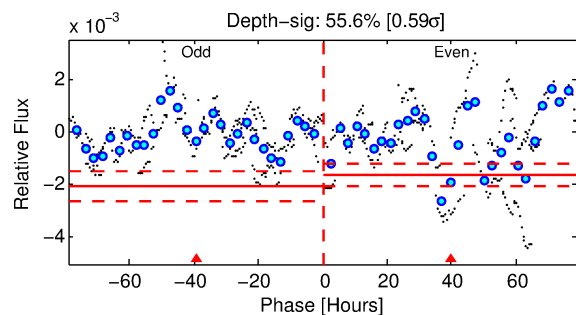
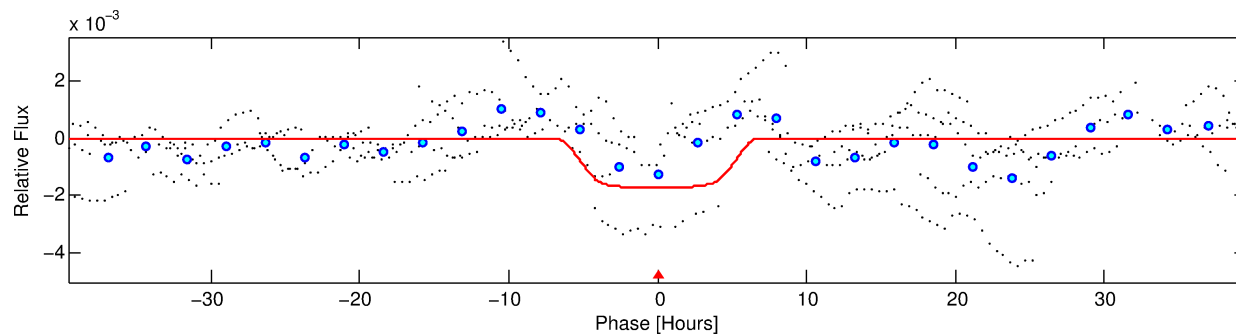
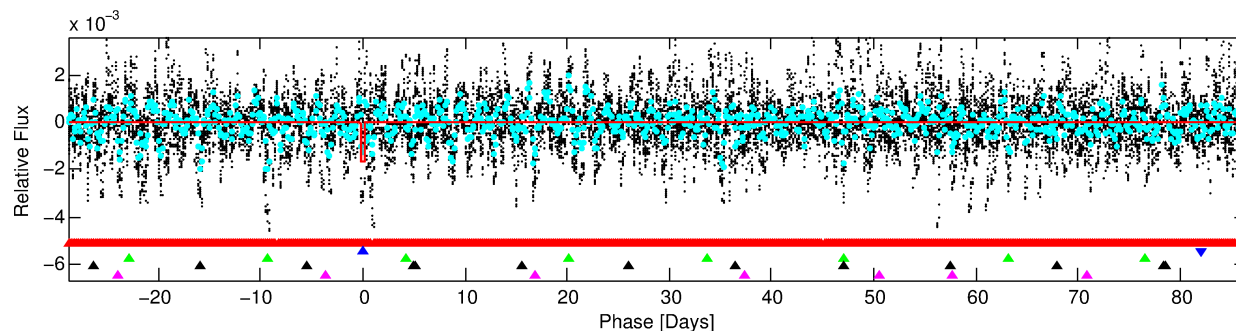
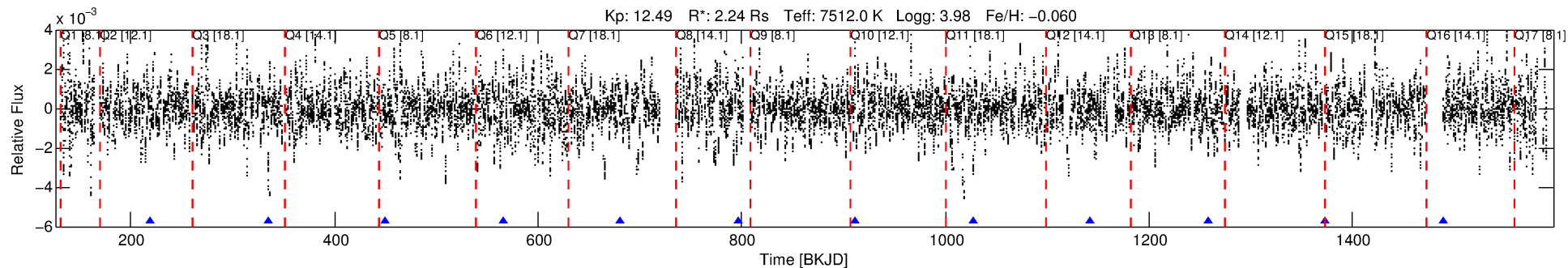
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008154223-02

No Significant Match Found

DV One-Page Summary

KIC: 8154223 Candidate: 2 of 5 Period: 115.358 d



DV Fit Results:

Period = 115.35830 [0.00329] d
Epoch = 219.6021 [0.0160] BKJD
Rp/R* = 0.0445 [0.0033]
a/R* = 34.59 [3.20]
b = 0.91 [0.02]
Seff = 46.12 [18.87]
Teq = 665 [68] K
Rp = 10.88 [3.22] Re
a = 0.5569 [0.1390] AU
Ag = 745.08 [330.28] [2.25 σ]
Teffp = 5368 [391] K [11.85 σ]

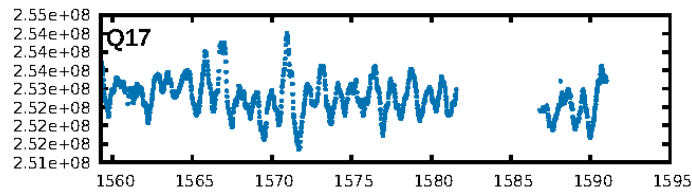
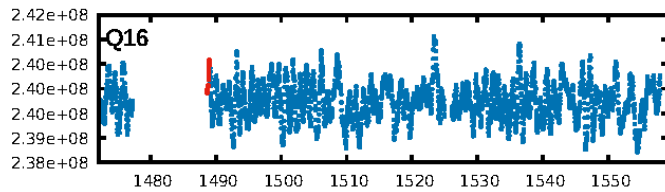
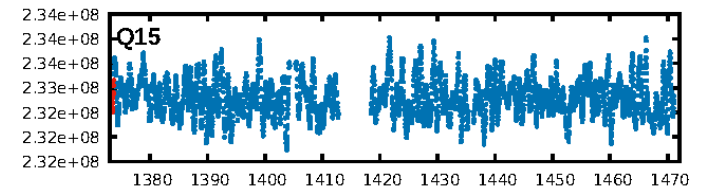
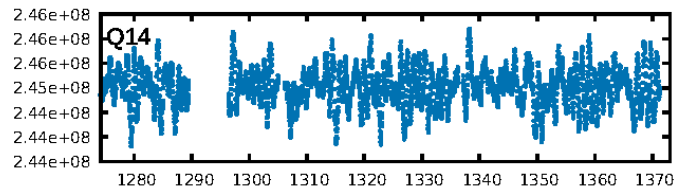
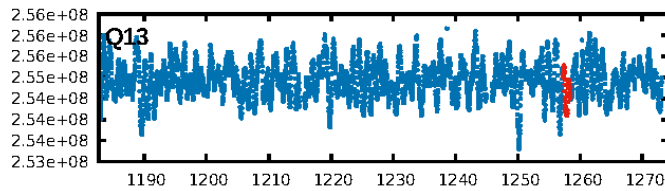
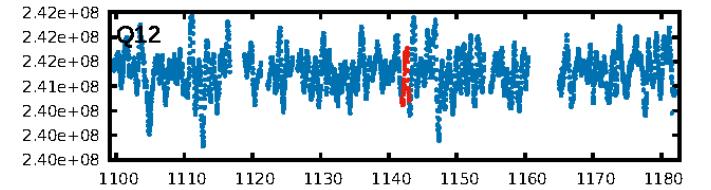
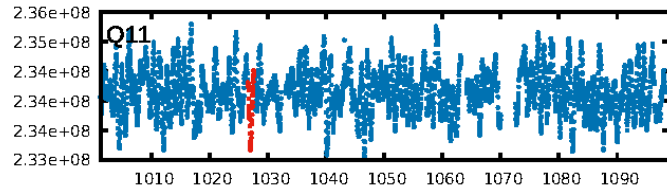
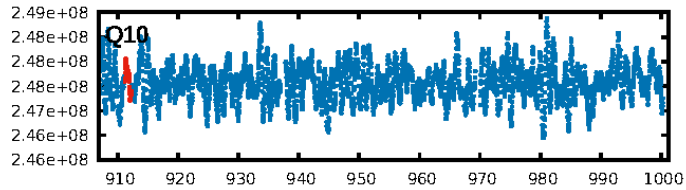
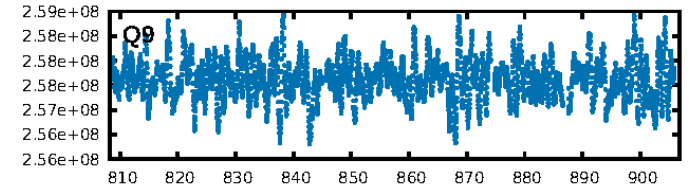
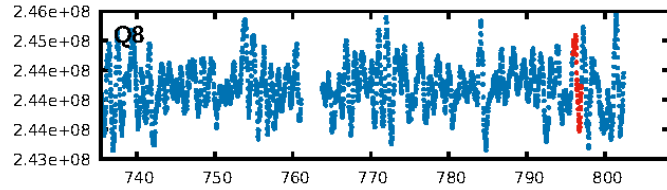
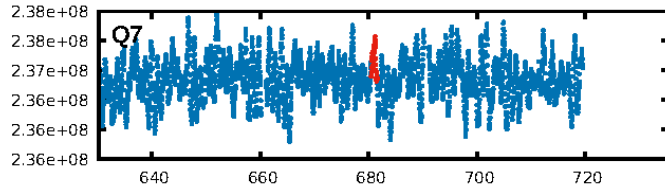
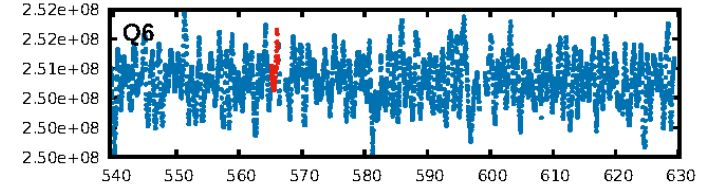
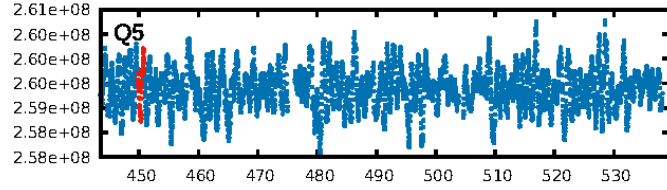
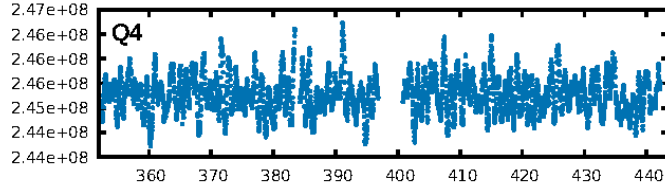
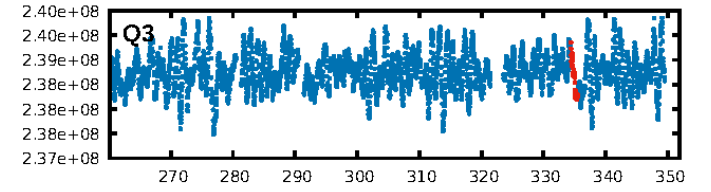
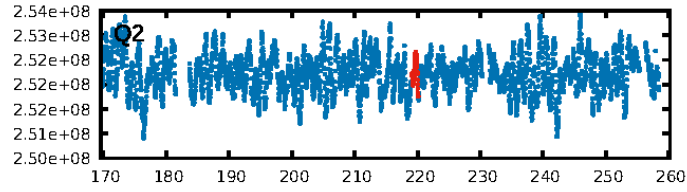
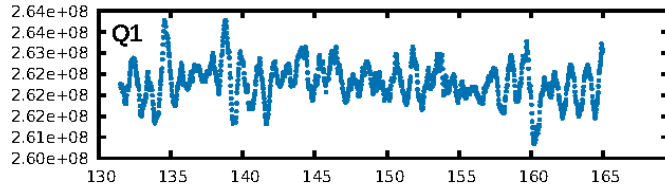
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [82.63 σ]
LongPeriod-sig: 100.0% [83.35 σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -2.146
Centroid-sig: 81.2%
Centroid-so: 0.152 arcsec [2.14 σ]
OotOffset-rm: 0.098 arcsec [0.63 σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-rm: 0.128 arcsec [0.70 σ]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/8]

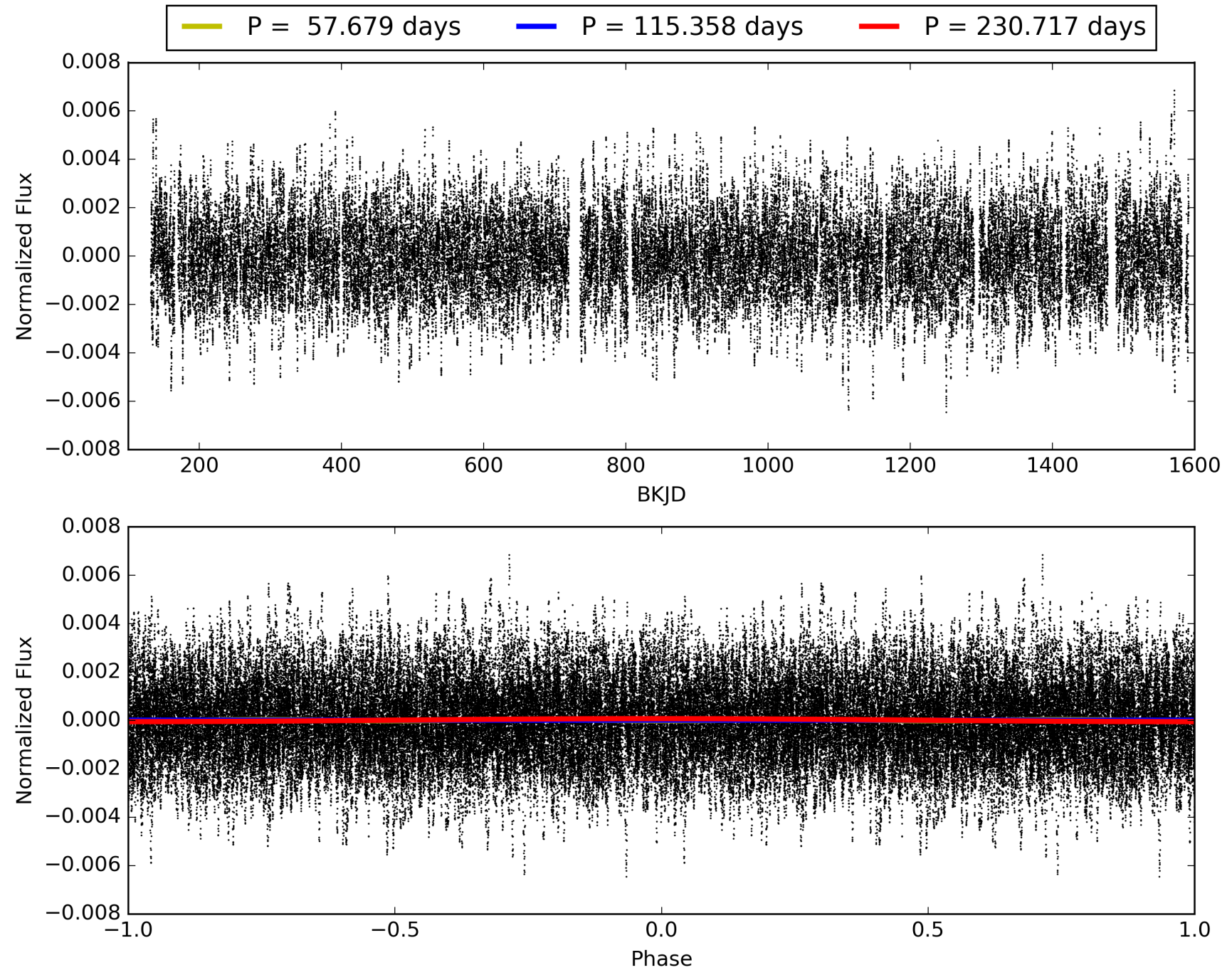
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:33:21 Z

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

TCE 008154223-02, PDC Light Curves

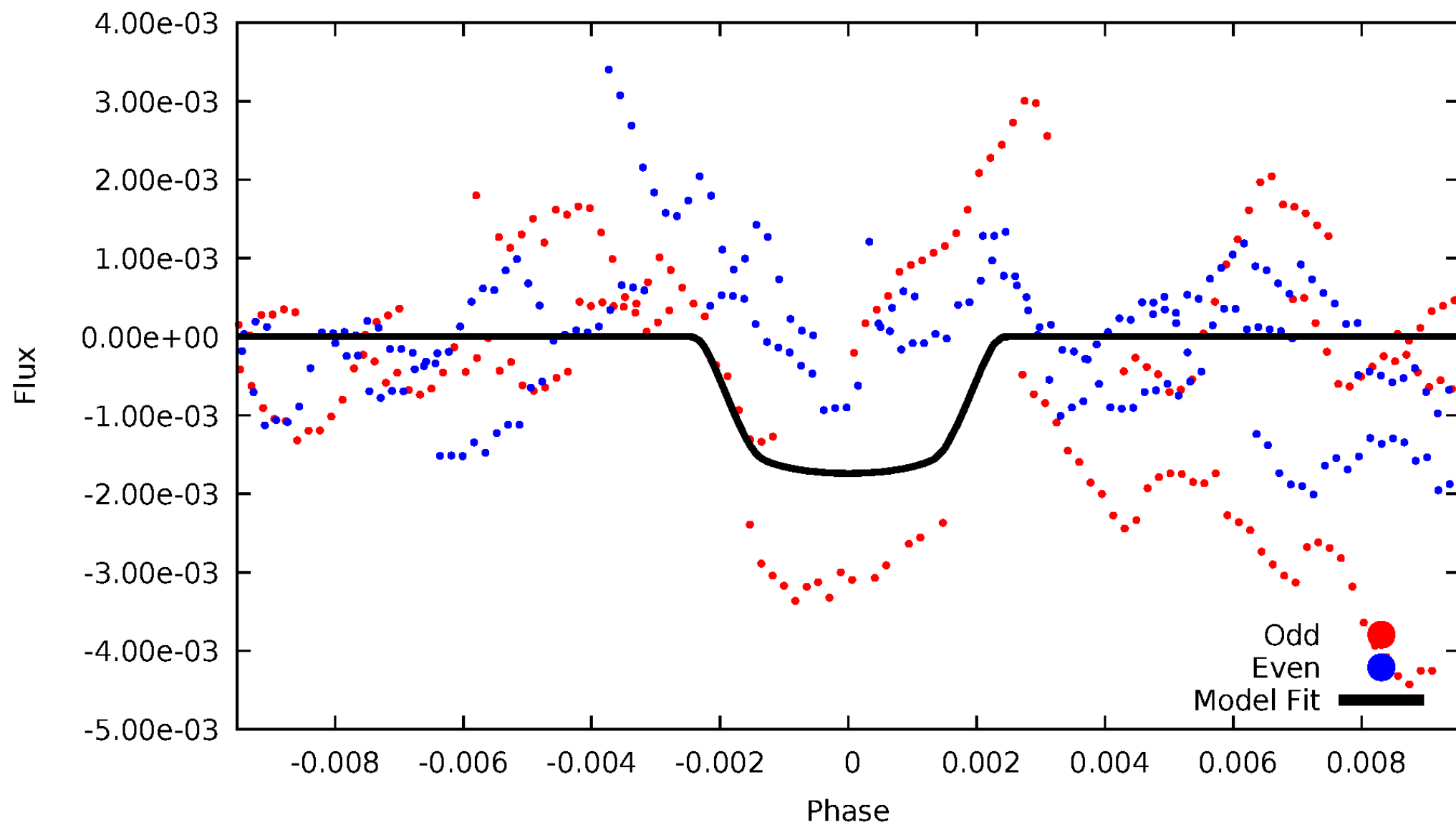


TCE 008154223-02



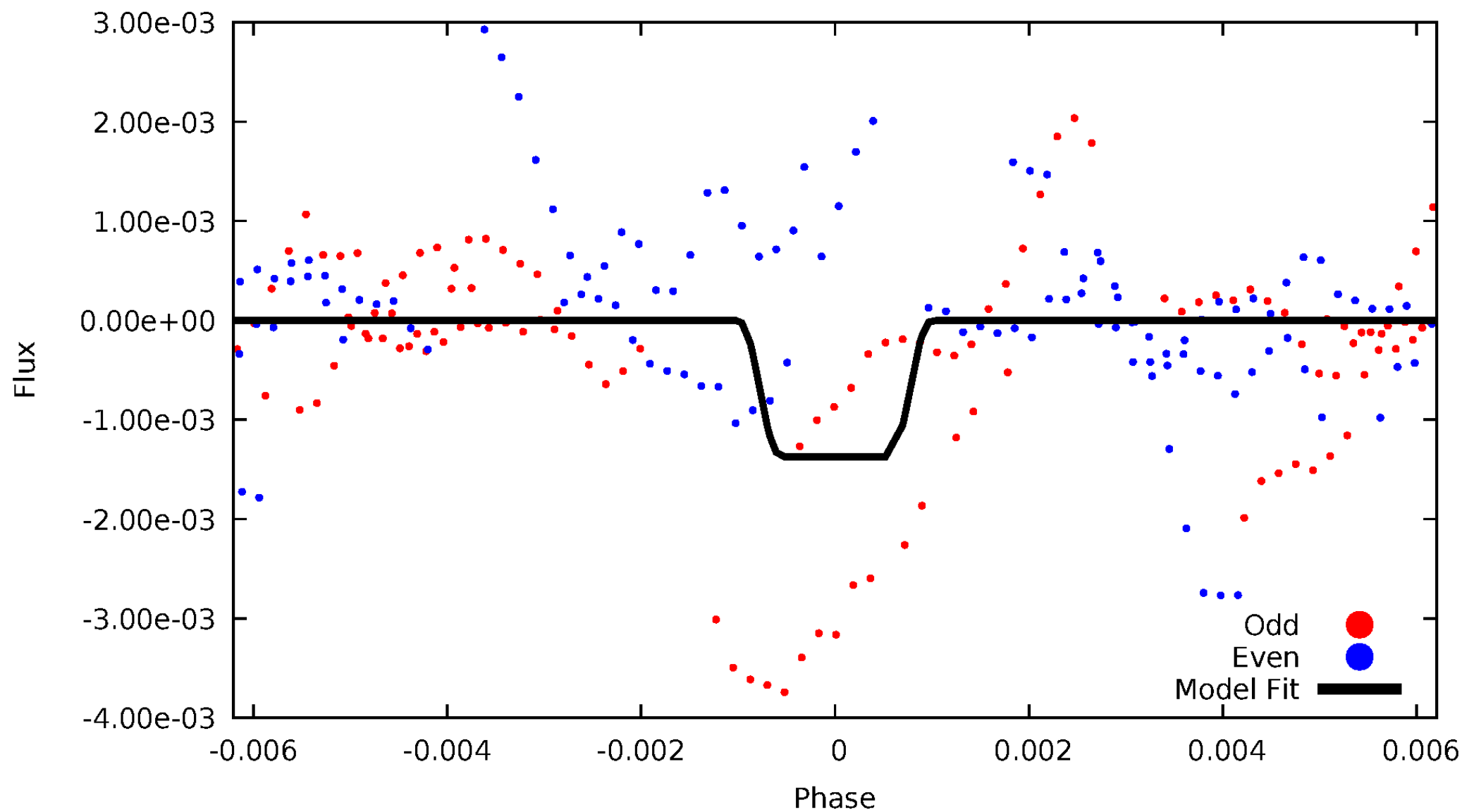
DV Odd/Even

TCE 008154223-02



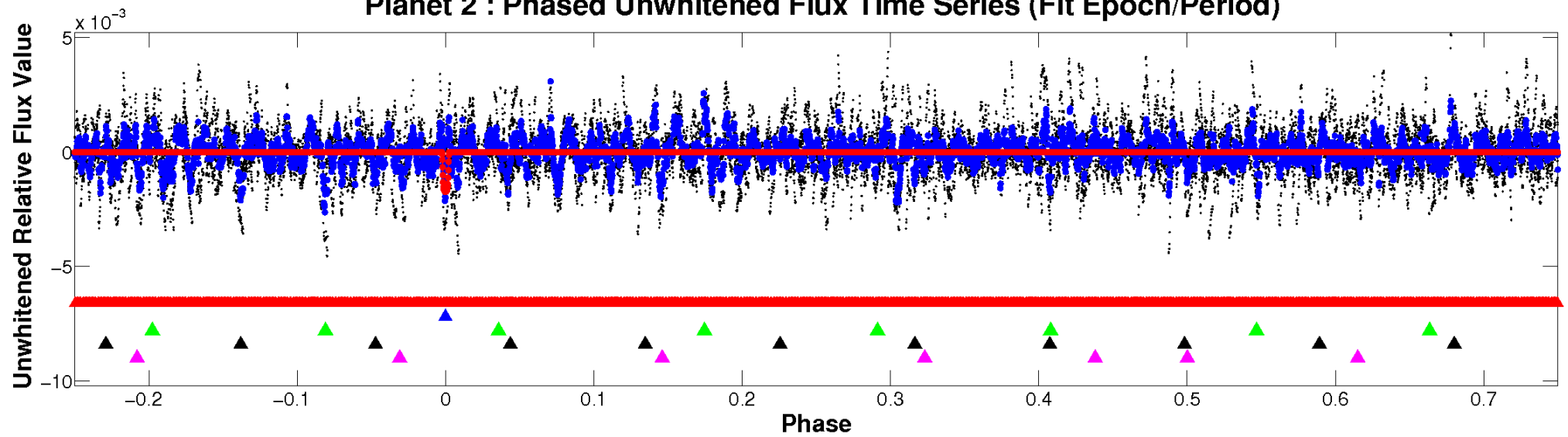
ALT Odd/Even

TCE 008154223-02

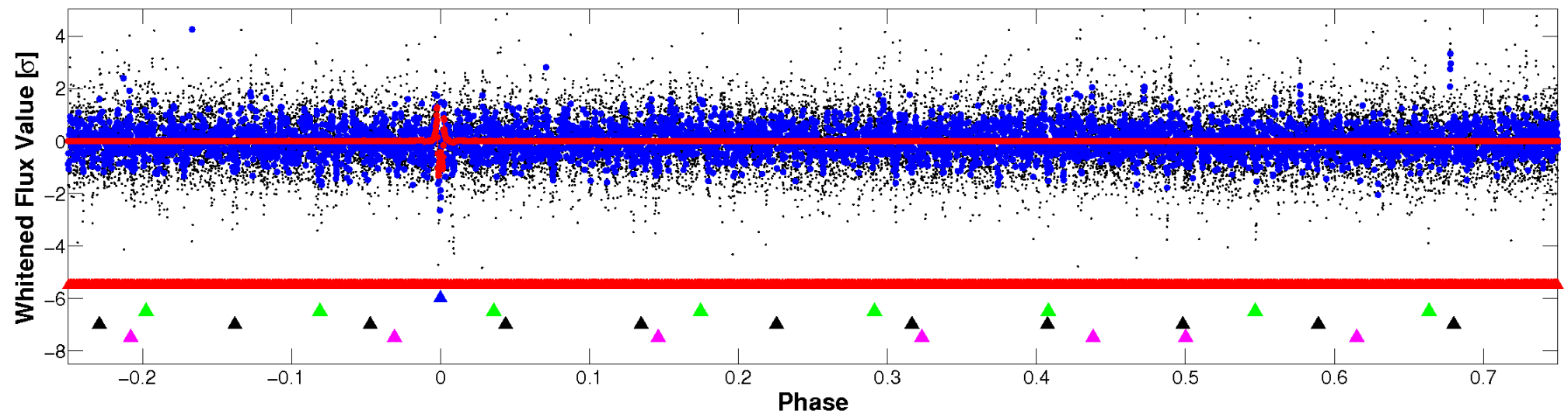


Non-Whitened Vs. Whitened Light Curve

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

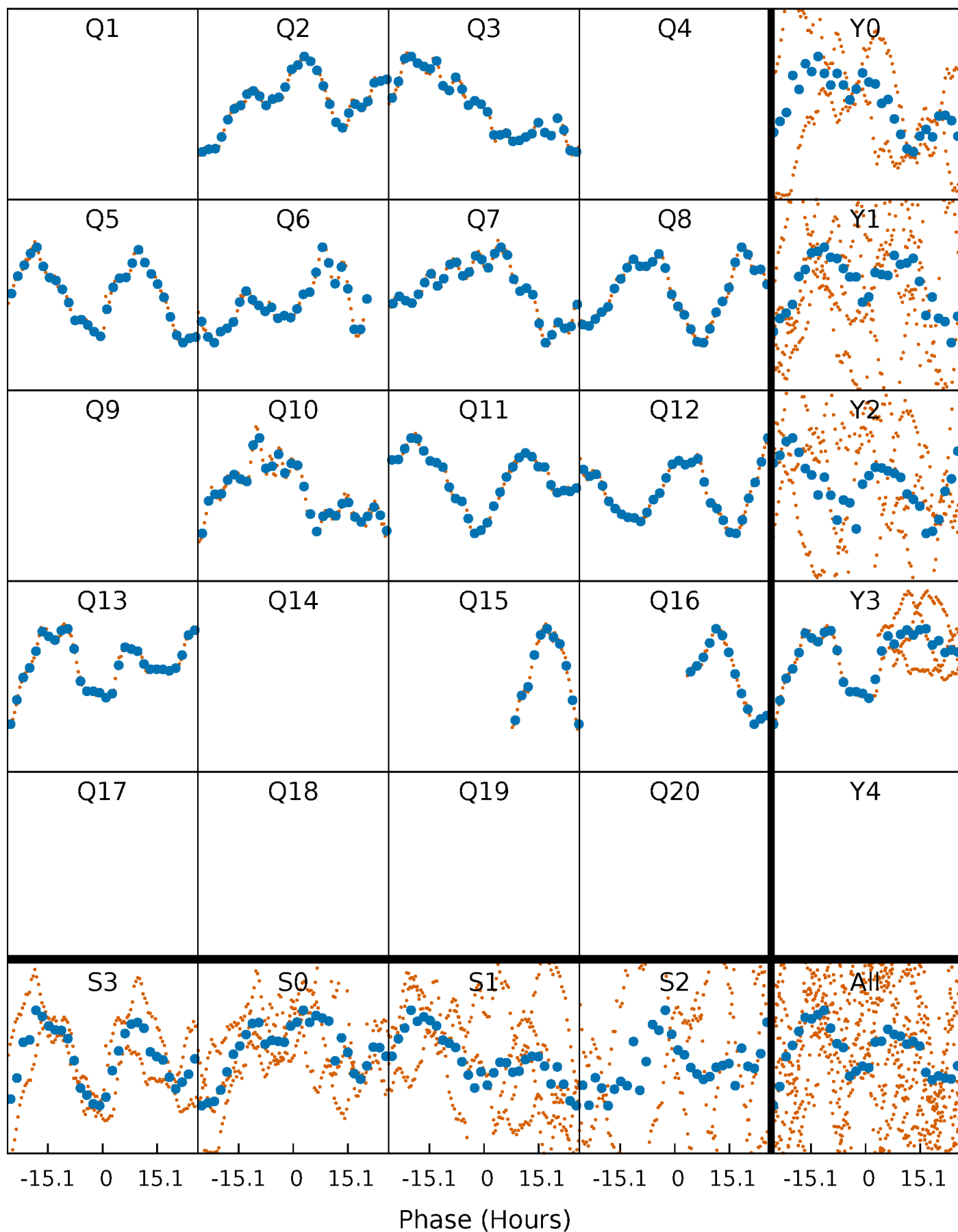


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



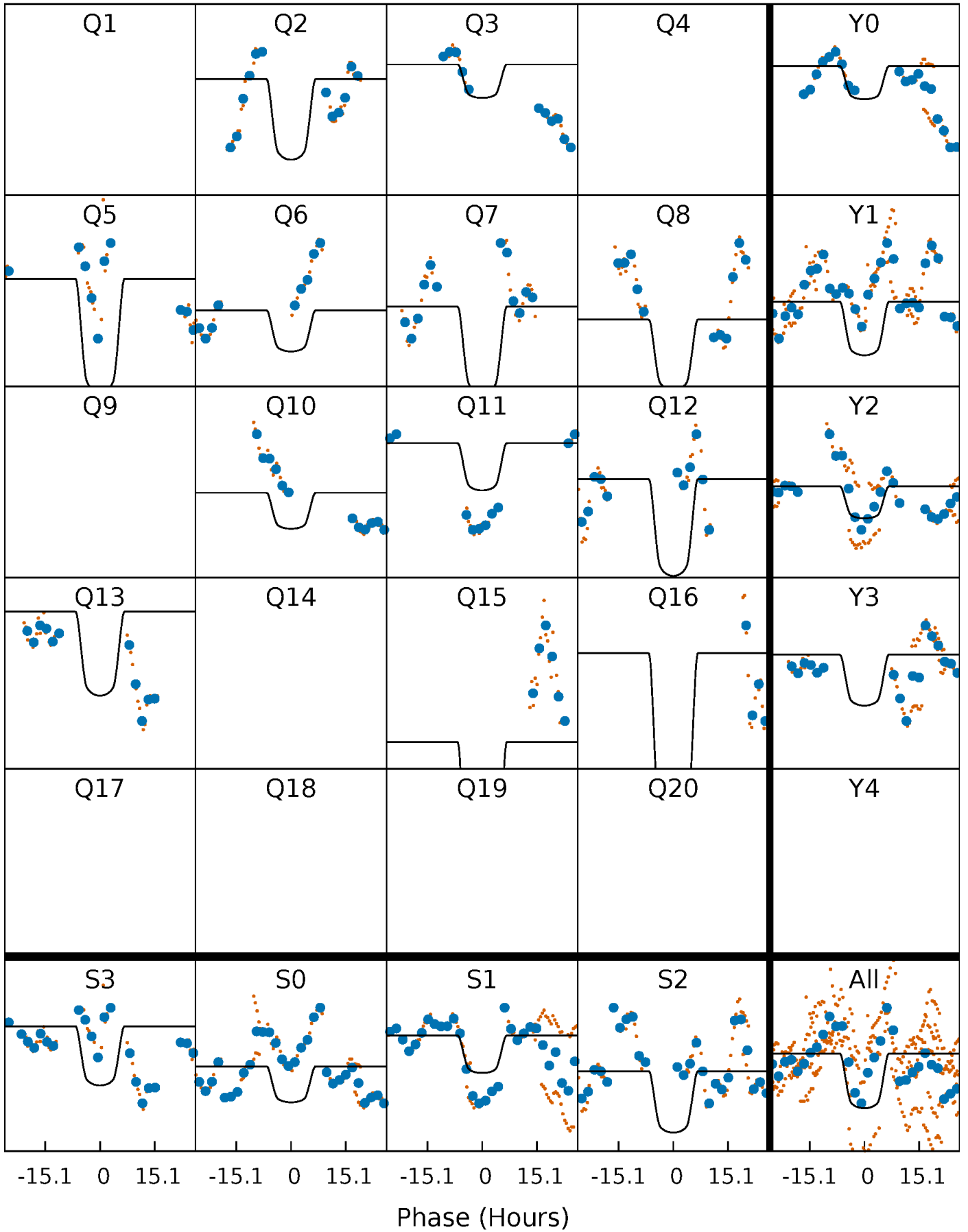
PDC Quarter-Phased Transit Curves

TCE 008154223-02 P=115.358304 Days $T_0=219.602130$ (BKJD)



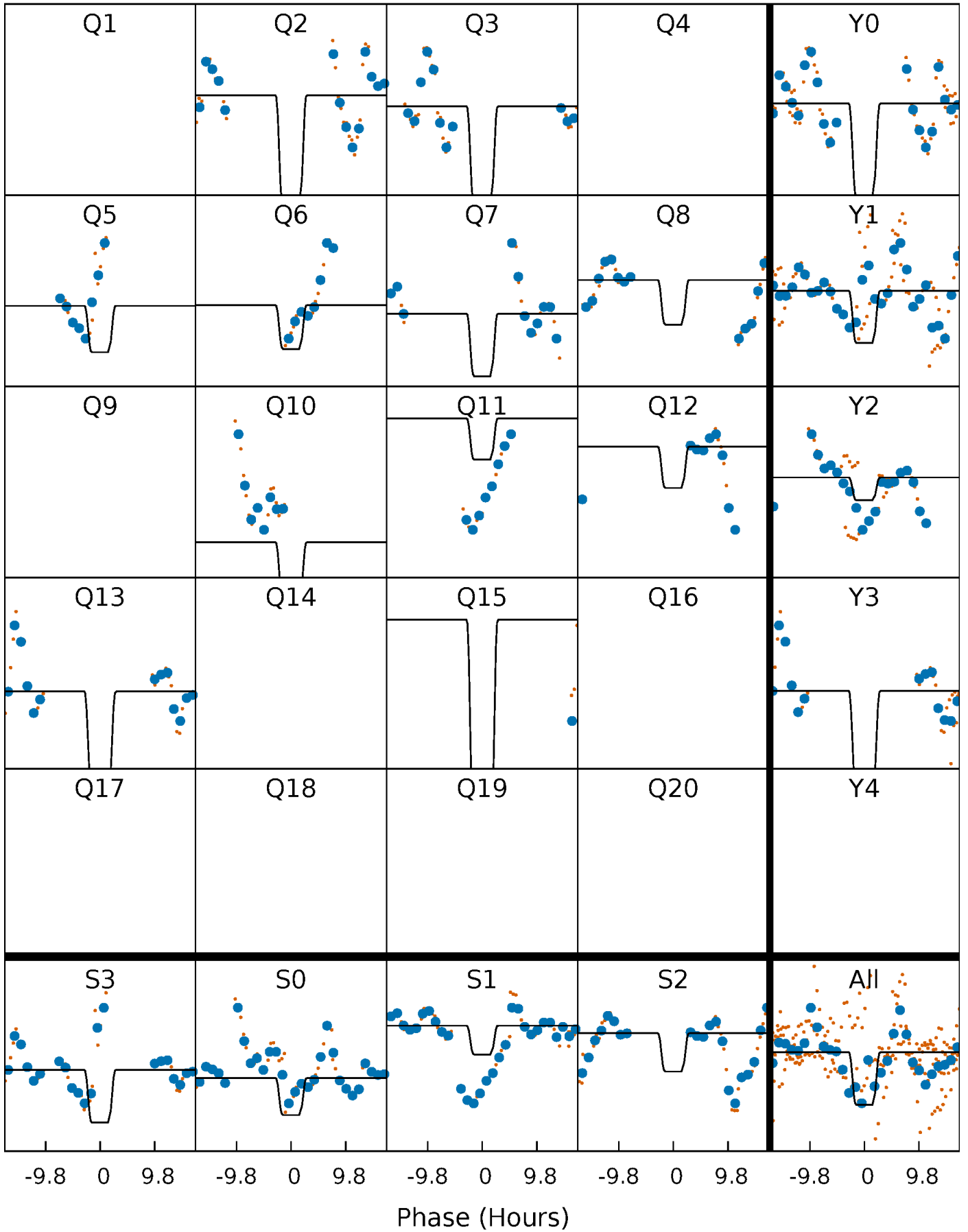
DV Quarter-Phased Transit Curves

TCE 008154223-02 P=115.358304 Days $T_0=219.602130$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

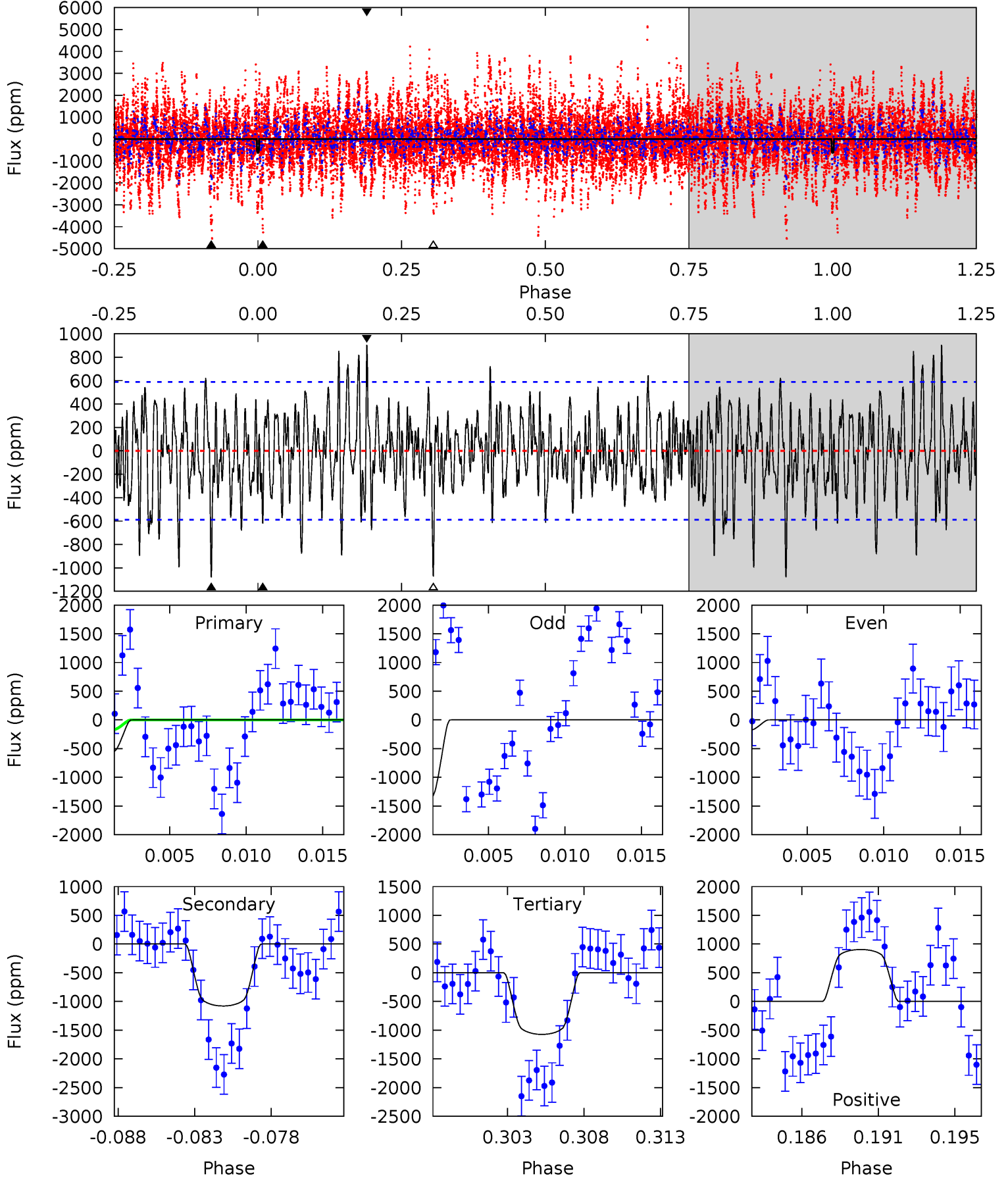
TCE 008154223-02 P=115.336424 Days $T_0=219.719963$ (BKJD)



DV Model-Shift Uniqueness Test

008154223-02, P = 115.358304 Days, E = 104.243826 Days

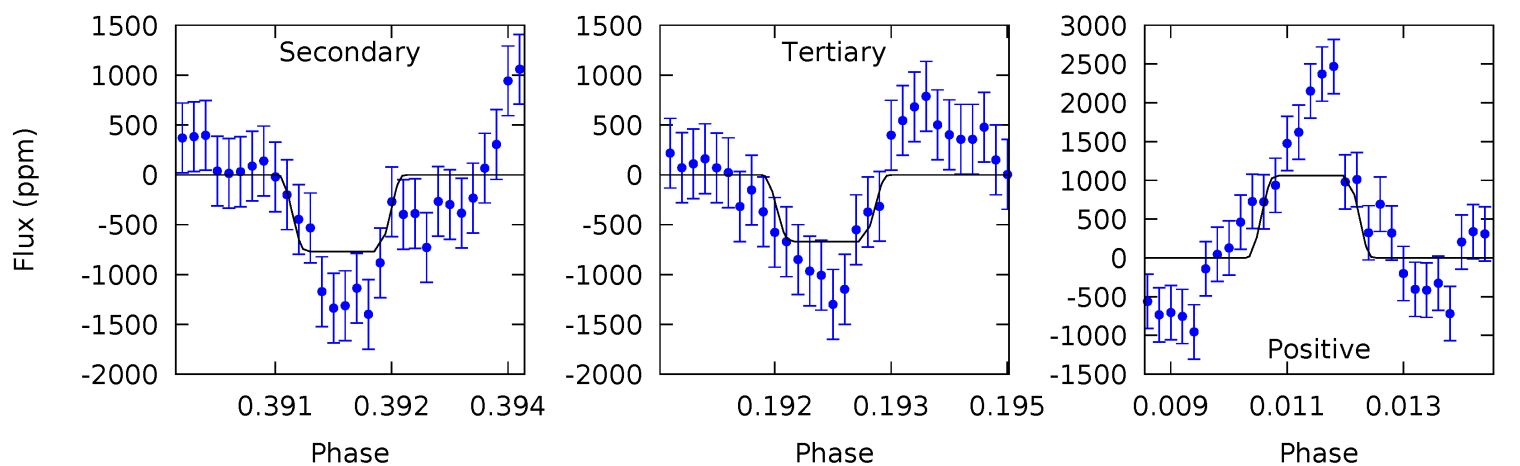
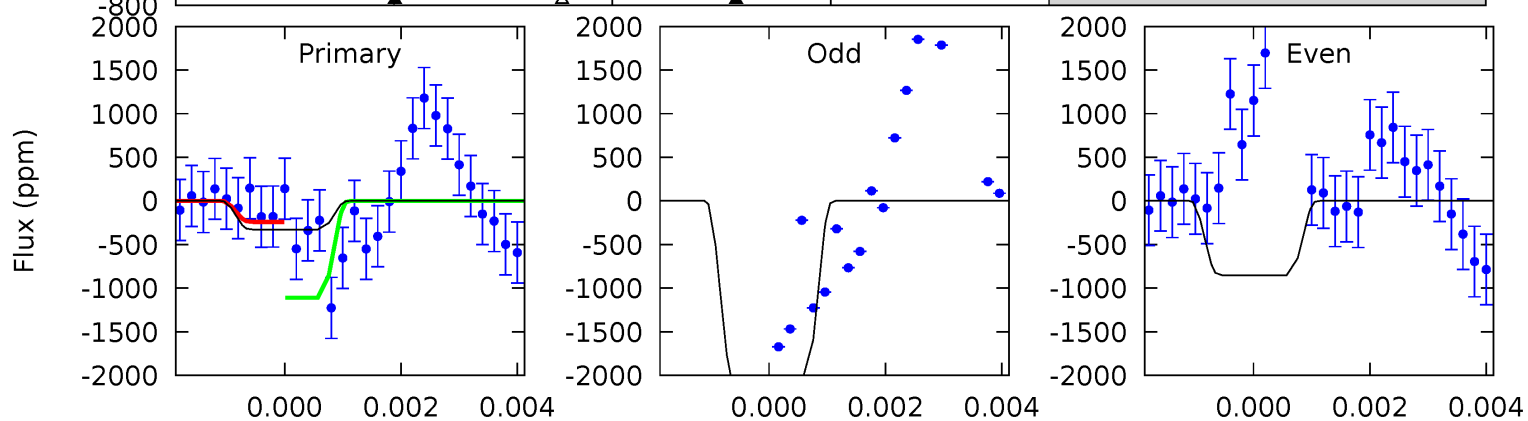
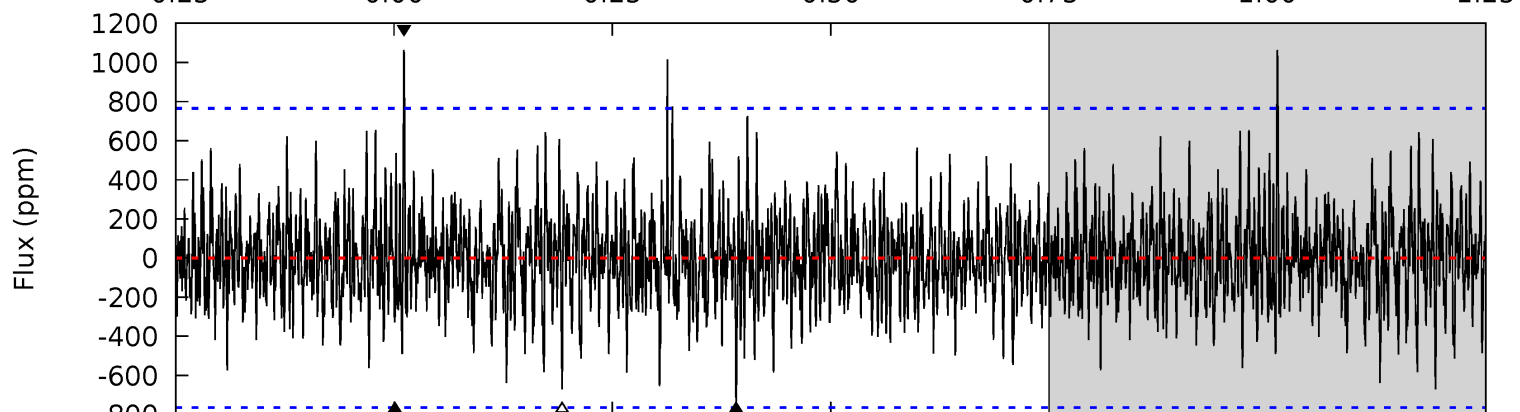
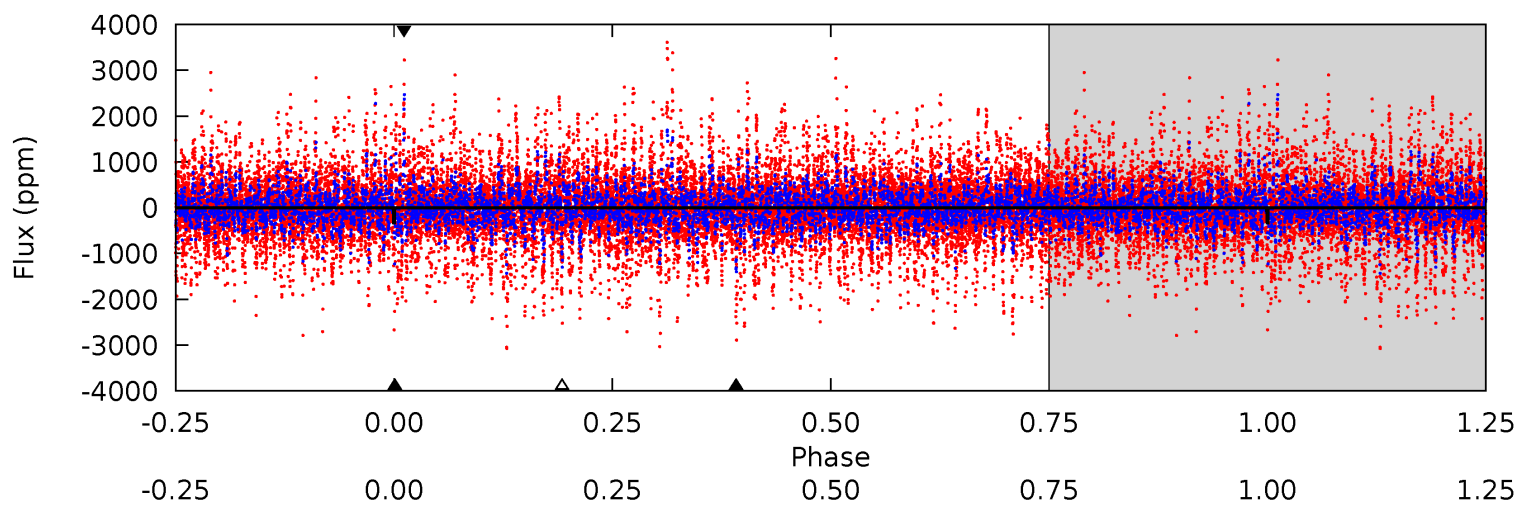
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.43 | 9.46 | 9.41 | 7.93 | 5.16 | 2.81 | 2.46 | -3.98 | -2.50 | 0.05 | 1.52 | 5.53 | 6.71 | 0.46 | 3.84 |



Alt Model-Shift Uniqueness Test

008154223-02, P = 115.336424 Days, E = 104.383539 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 2.30 | 5.38 | 4.68 | 7.43 | 5.34 | 3.11 | 1.43 | -2.38 | -5.13 | 0.70 | -2.05 | 4.77 | -7.64 | 0.58 | 3.05 |



Stellar Parameters For KIC 008154223

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7512^{+209}_{-314} | $3.976^{+0.209}_{-0.152}$ | $-0.060^{+0.200}_{-0.350}$ | $2.239^{+0.525}_{-0.642}$ | $1.727^{+0.185}_{-0.317}$ | $0.217^{+0.281}_{-0.091}$ |
| | +3%/-4% | +5%/-4% | +333%/-583% | +23%/-29% | +11%/-18% | +130%/-42% |
| 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 008154223-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|-------------------------|----------------------|----------------------|----------------------|
| DV | -1079 ± 114 | $10.69^{+1.86}_{-1.72}$ | 925^{+67}_{-75} | 6328^{+377}_{-337} | 1574^{+630}_{-426} |
| Alt. | -770 ± 143 | $8.99^{+1.41}_{-1.44}$ | 925^{+67}_{-69} | 6389^{+449}_{-460} | 1610^{+708}_{-505} |

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

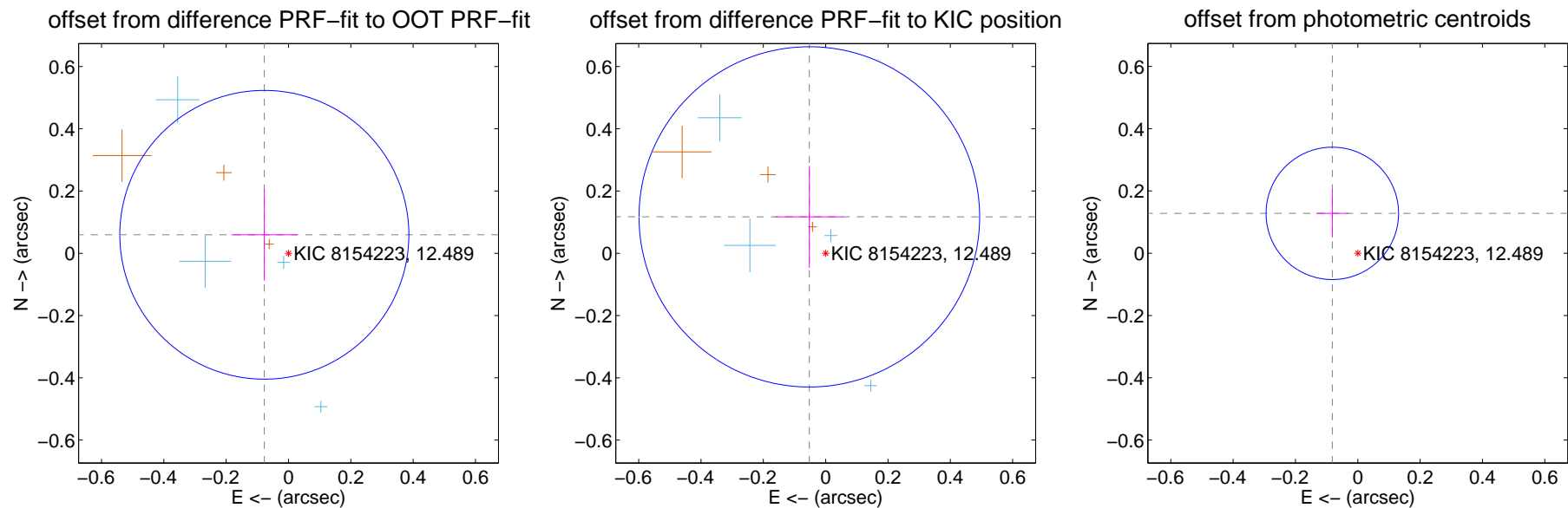
DV Centroid Data

Supplemental centroid analysis for 008154223-02. Kepler magnitude: 12.49. Transit SNR 7.95

There are 4 quarters with good PRF difference image offsets

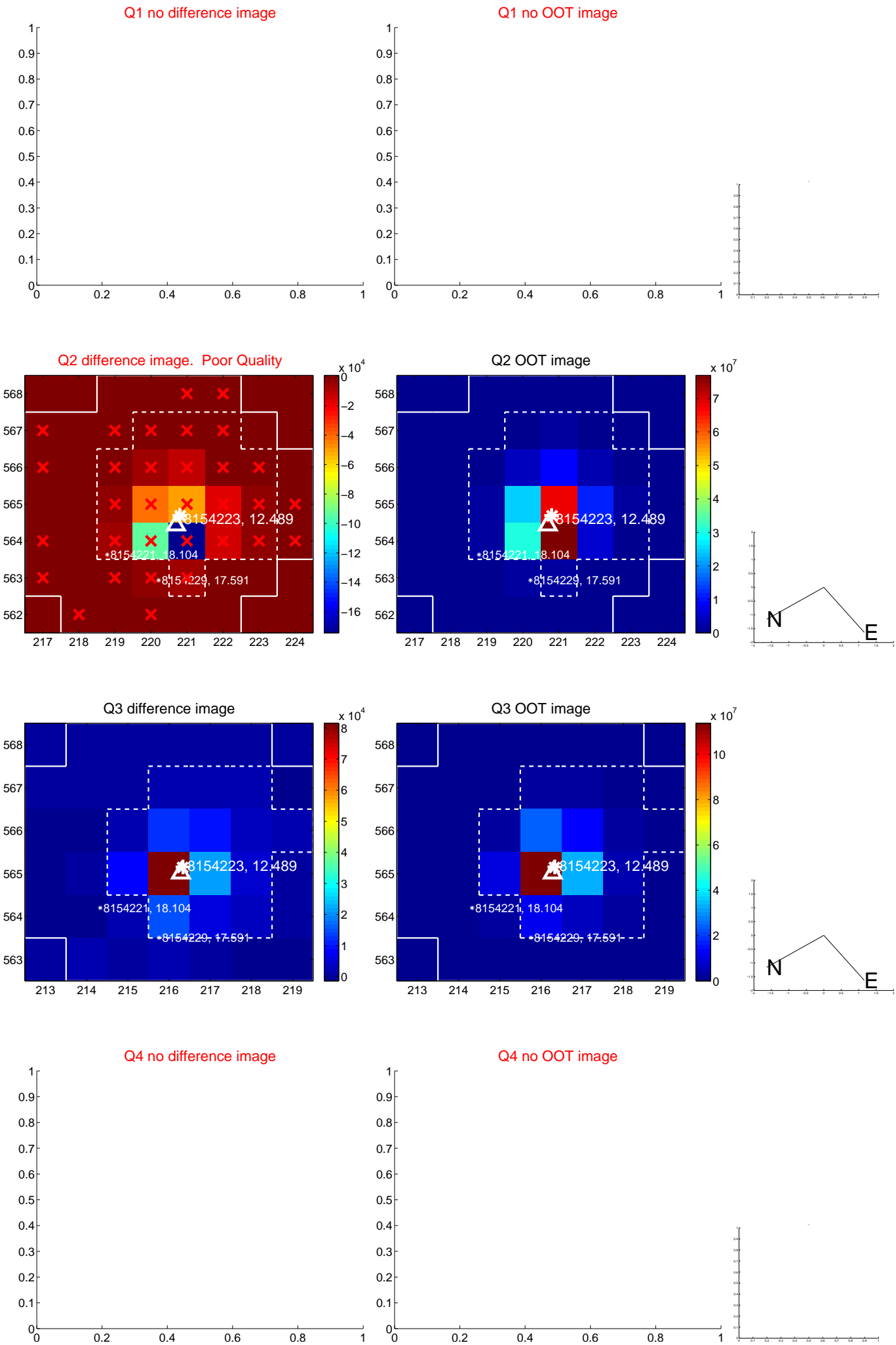
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.098 ± 0.155 | 0.63 | 0.078 ± 0.106 | 0.059 ± 0.147 |
| PRF-fit source offset from KIC position | 0.128 ± 0.182 | 0.70 | 0.052 ± 0.109 | 0.117 ± 0.164 |
| photometric centroid source offset | 0.15 ± 0.07 | 2.14 | 0.08 ± 0.05 | 0.13 ± 0.08 |

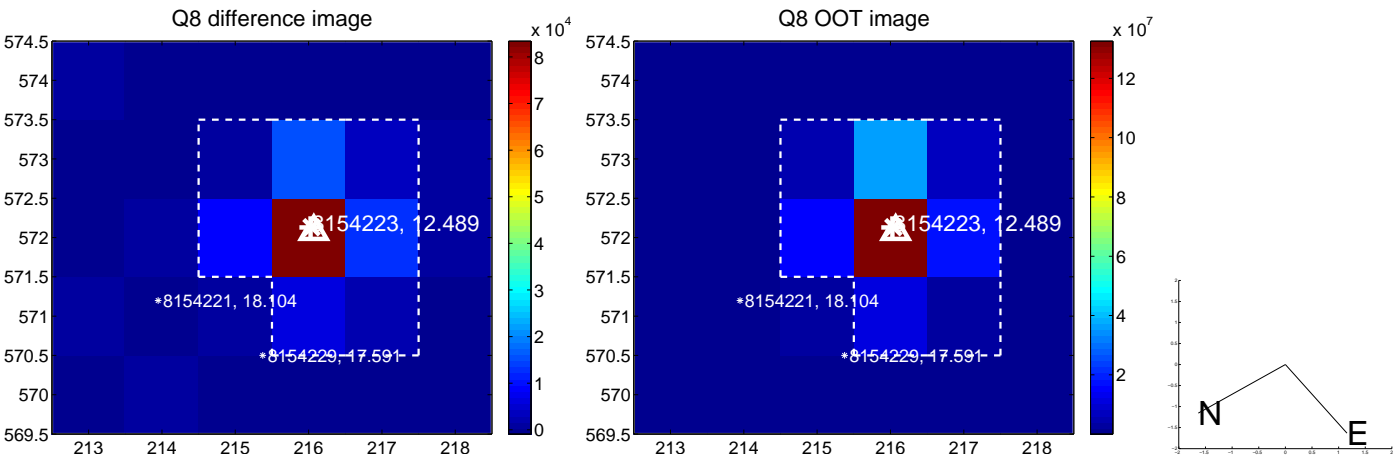
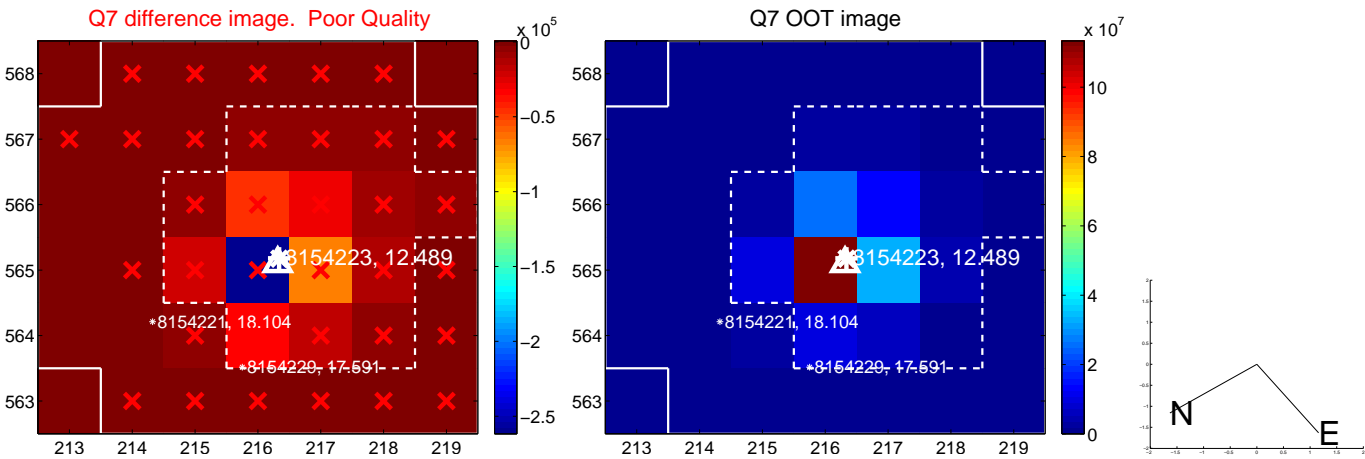
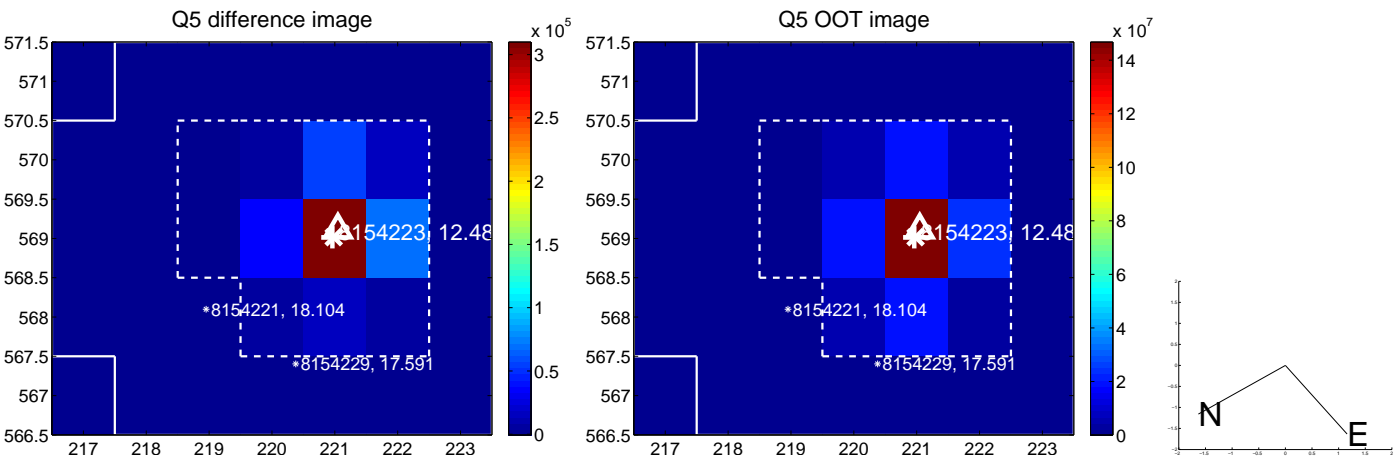


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

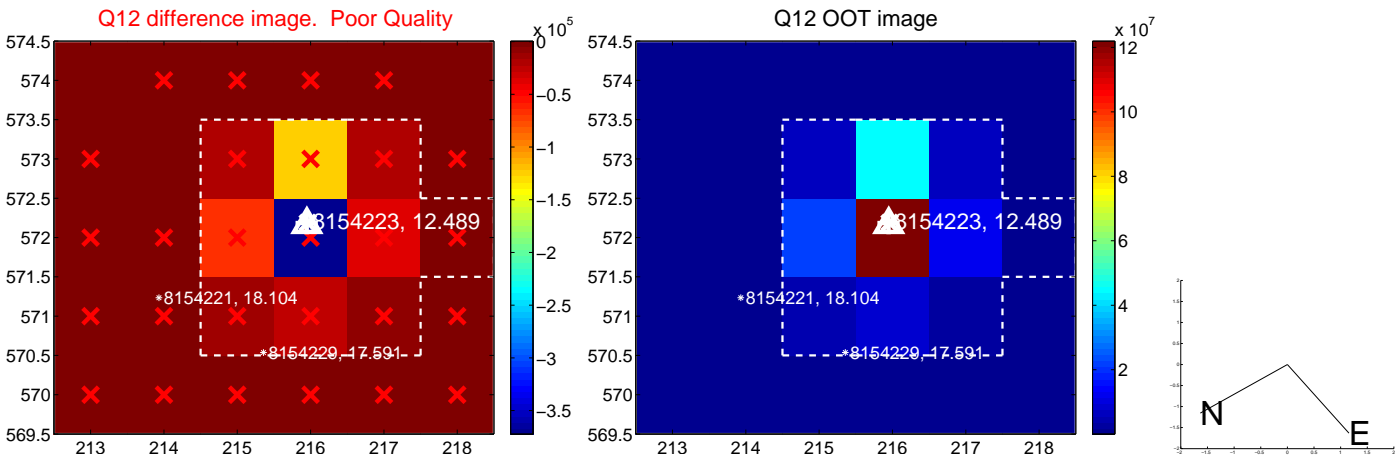
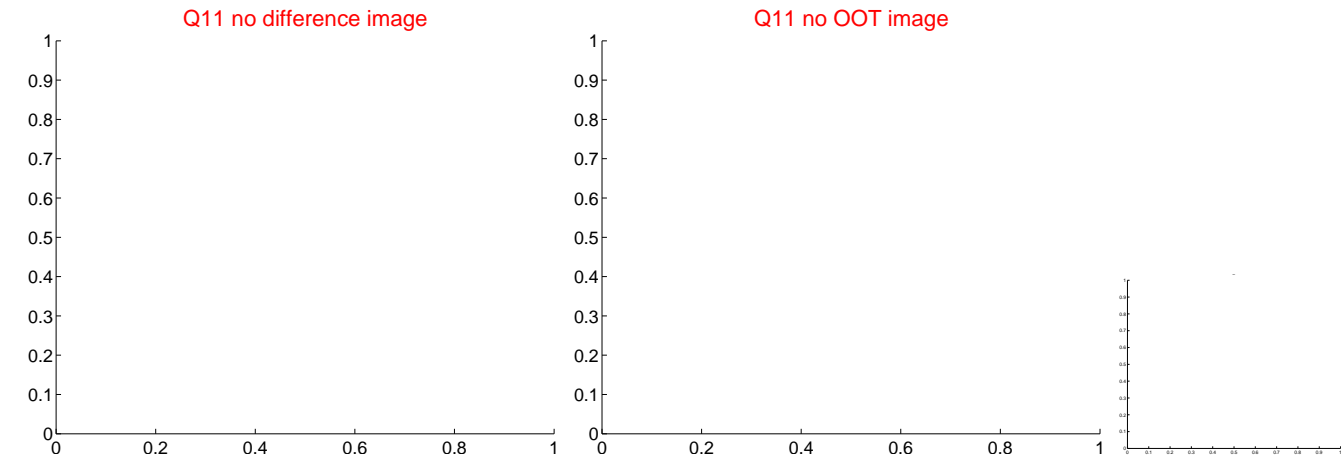
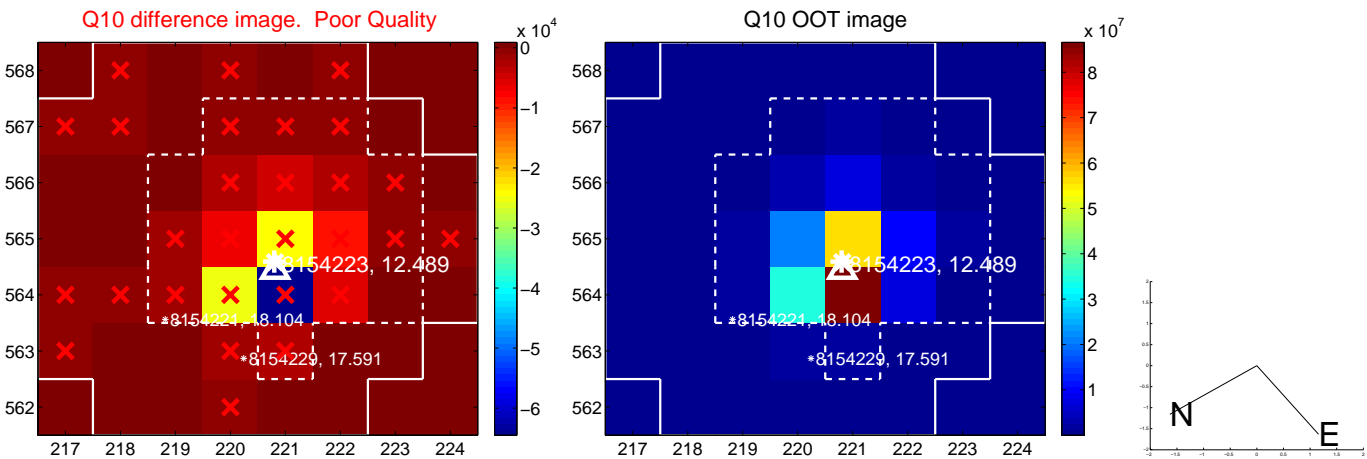
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



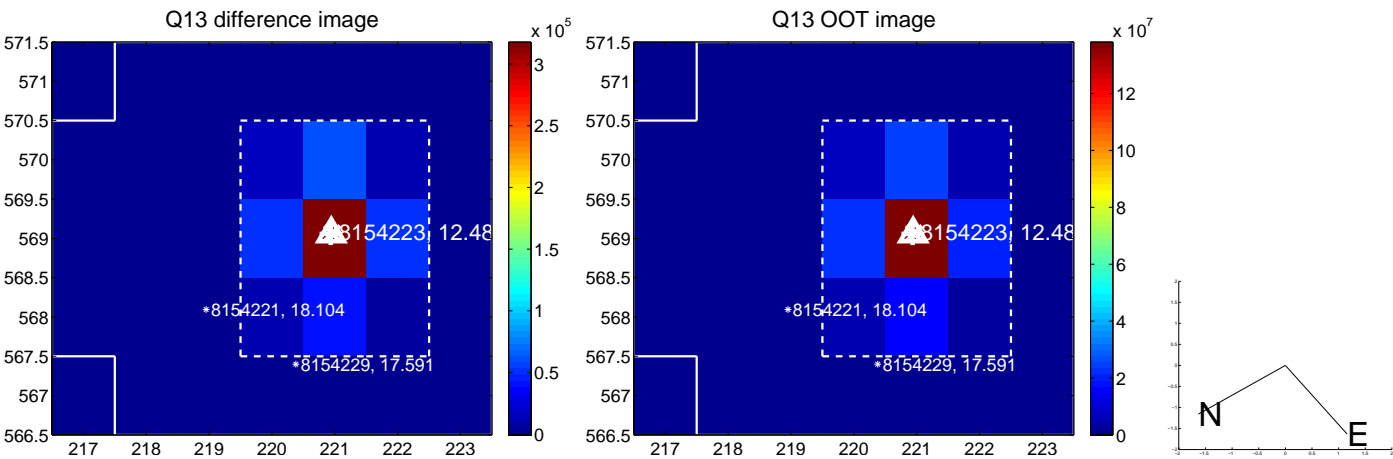
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



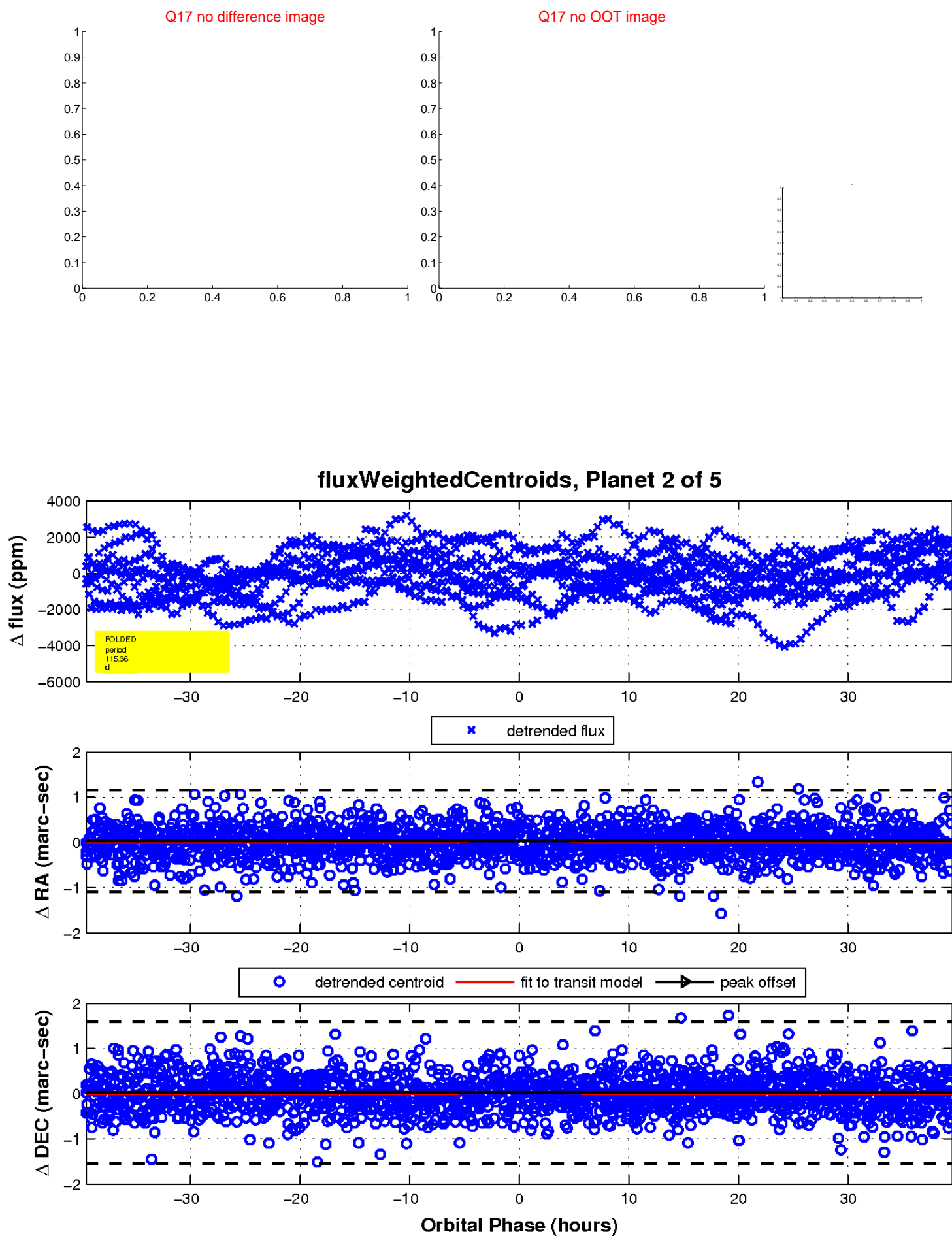
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

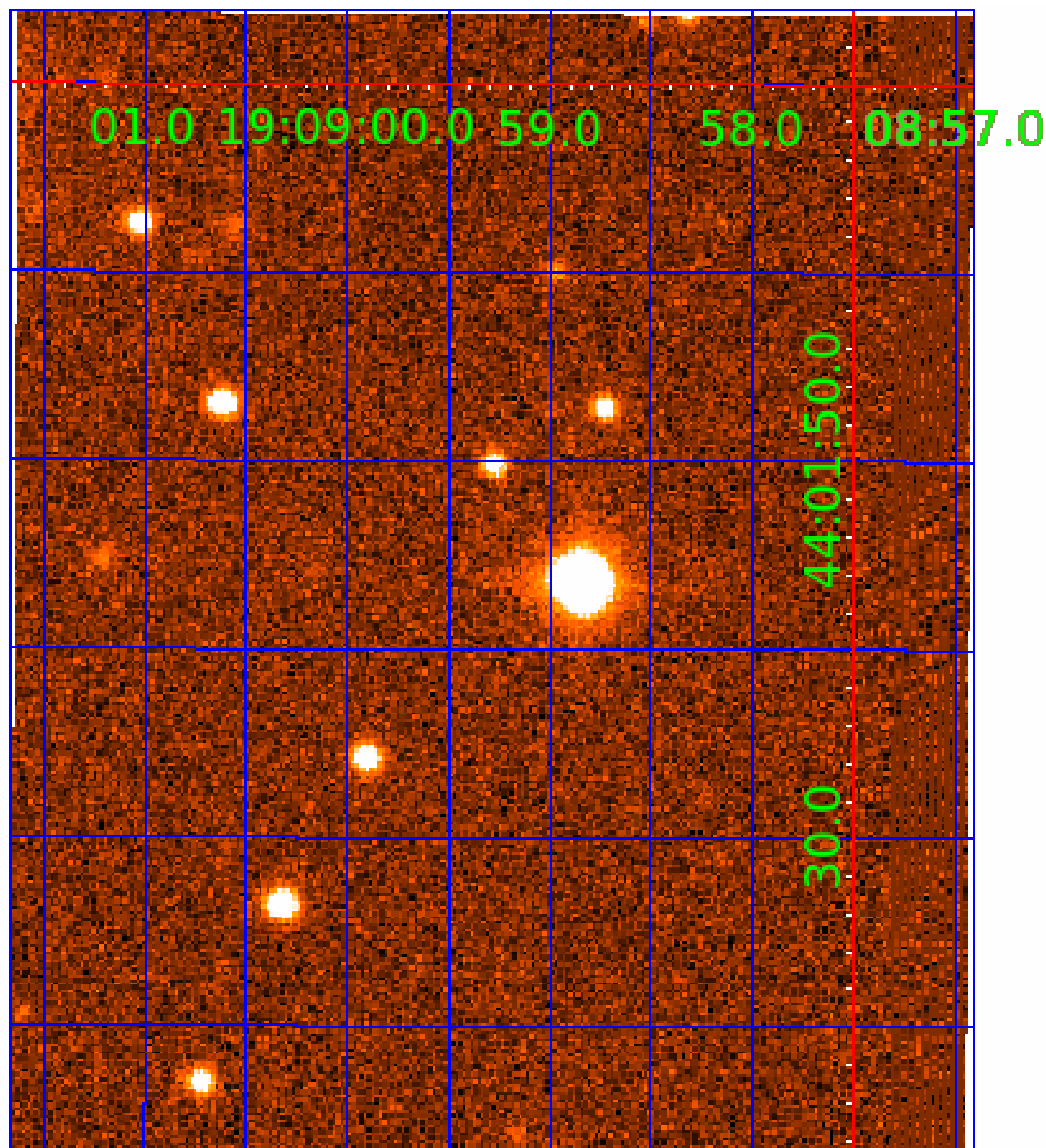


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008154223

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008154223-01 | OBS | No | 1.167712 | 132.053696 | 0.0 | 6.113 | 8.6 | 0.0 | 2.24 | 7512 | 0.00 | 21062.26 |
| 008154223-02 | OBS | No | 115.358304 | 219.602130 | 1740.1 | 13.184 | 10.3 | 8.0 | 2.24 | 7512 | 10.88 | 46.12 |
| 008154223-03 | OBS | No | 187.775425 | 266.675021 | 3022.2 | 16.156 | 10.3 | 9.2 | 2.24 | 7512 | 14.78 | 24.09 |
| 008154223-04 | OBS | No | 52.437614 | 140.727896 | 1296.9 | 12.657 | 10.4 | 8.3 | 2.24 | 7512 | 10.17 | 131.96 |
| 008154223-05 | OBS | No | 210.295388 | 277.304444 | 92.5 | 15.000 | 8.4 | -1.0 | 2.24 | 7512 | 2.19 | 20.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008154223-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 008154223-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 008154223-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 008154223-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV |
| 008154223-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—CENT_NOFITS |

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

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

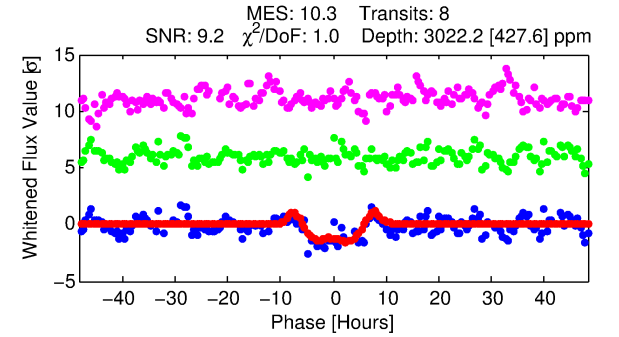
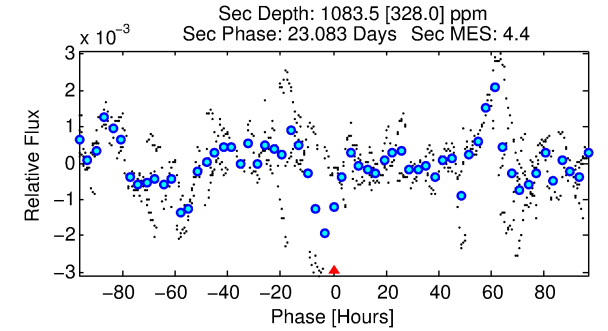
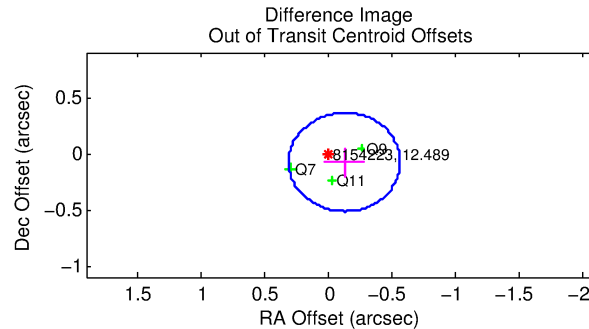
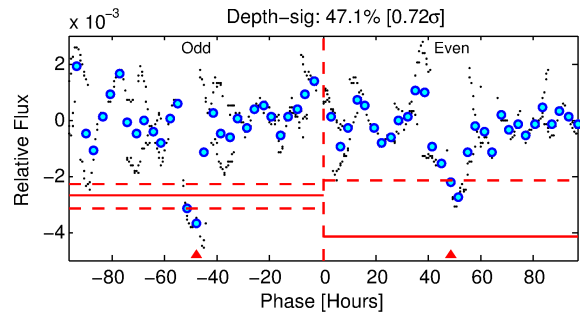
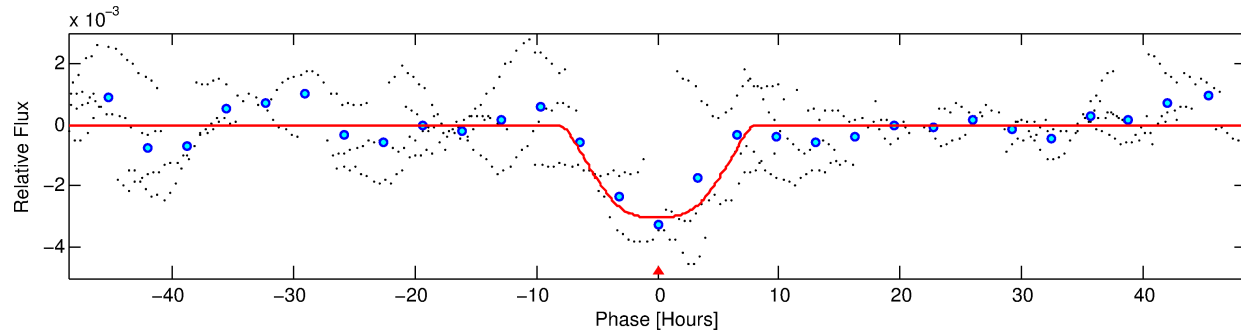
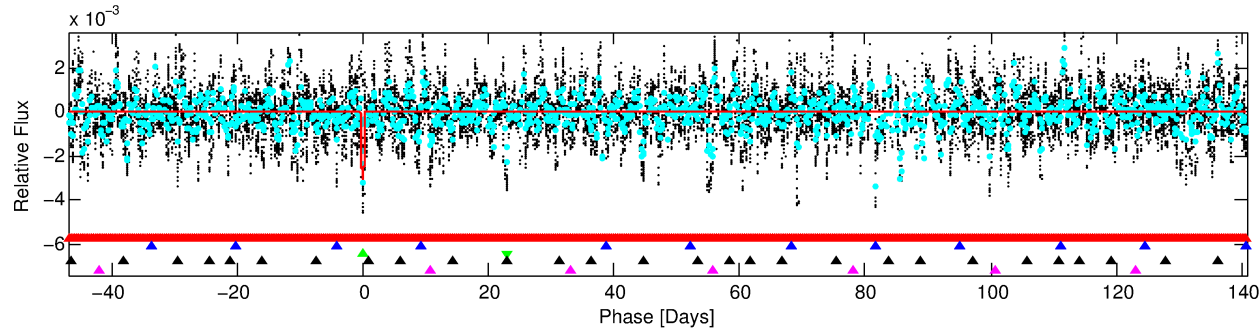
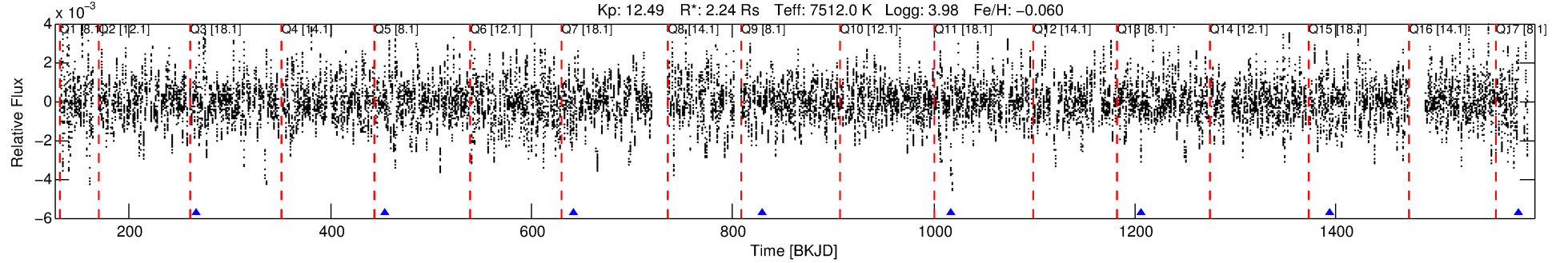
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008154223-03

No Significant Match Found

DV One-Page Summary

KIC: 8154223 Candidate: 3 of 5 Period: 187.775 d



DV Fit Results:

Period = 187.77542 [0.00524] d
Epoch = 266.6750 [0.0204] BKJD
Rp/R* = 0.0605 [0.0047]
a/R* = 44.59 [2.40]
b = 0.93 [0.01]
Seff = 24.09 [9.86]
Teff = 565 [58] K
Rp = 14.78 [4.39] Re
a = 0.7706 [0.1923] AU
Ag = 1619.90 [817.65] [1.98 σ]
Teffp = 5541 [524] K [9.43 σ]

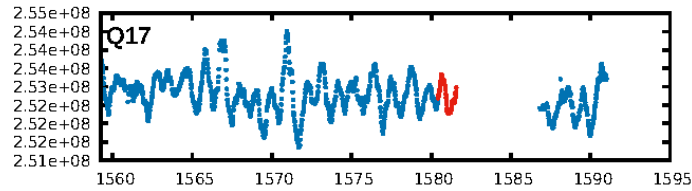
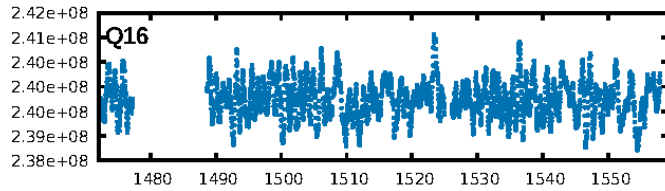
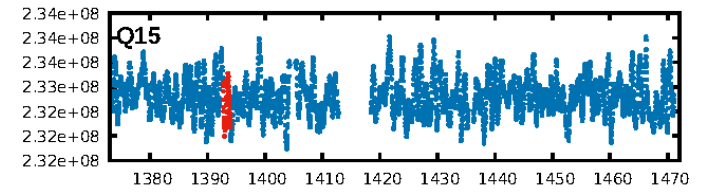
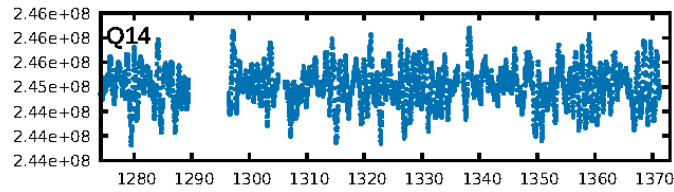
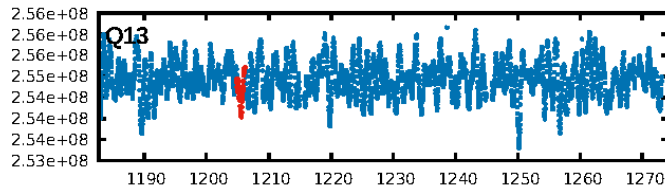
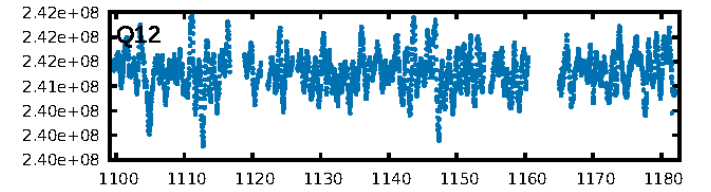
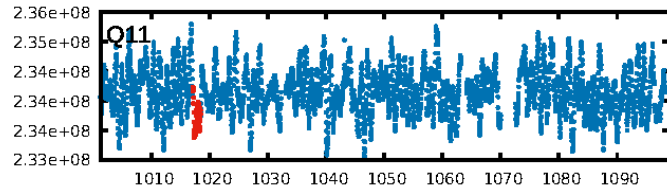
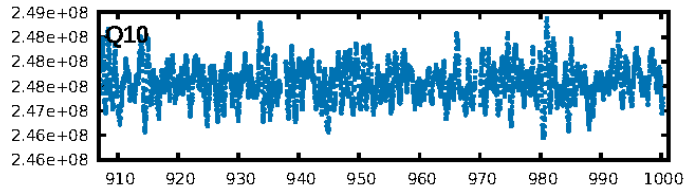
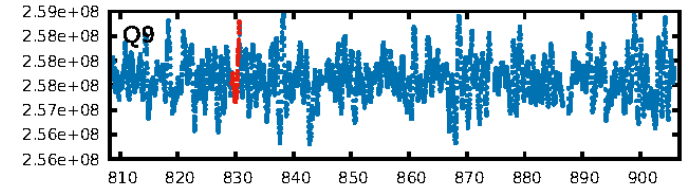
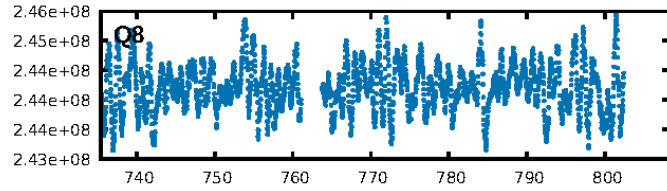
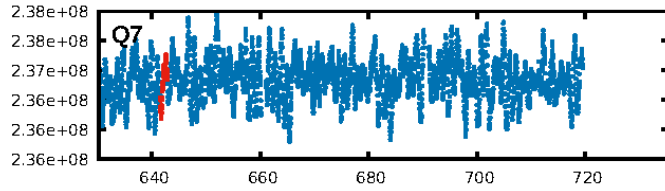
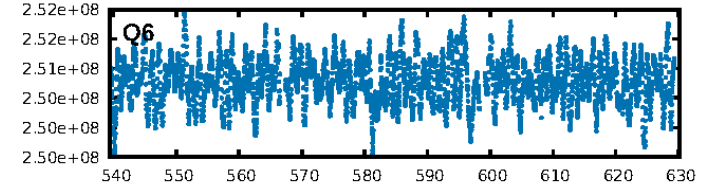
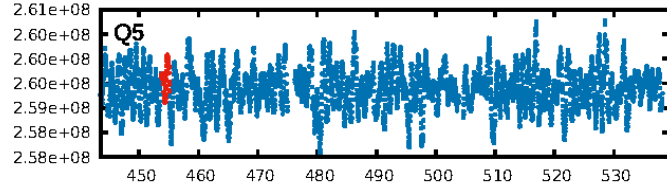
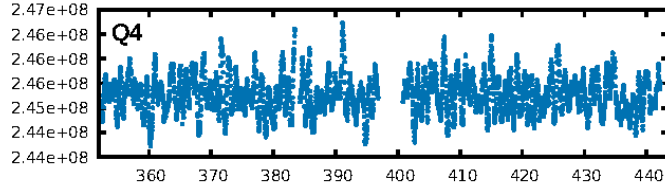
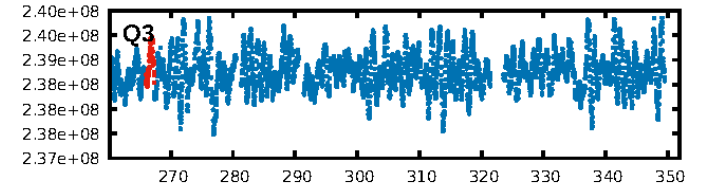
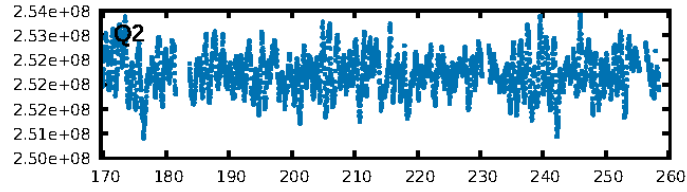
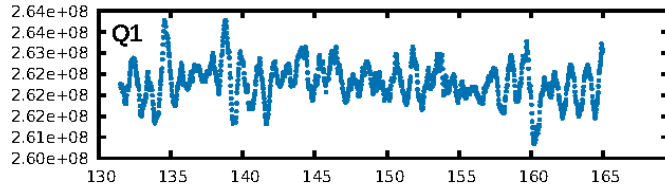
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.35 σ]
LongPeriod-sig: 100.0% [24.52 σ]
ModelChiSquare2-sig: 1.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.09078
Centroid-sig: 86.9%
Centroid-so: 0.186 arcsec [4.26 σ]
OotOffset-rm: 0.152 arcsec [1.04 σ]
KicOffset-rm: 0.173 arcsec [1.14 σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/4]

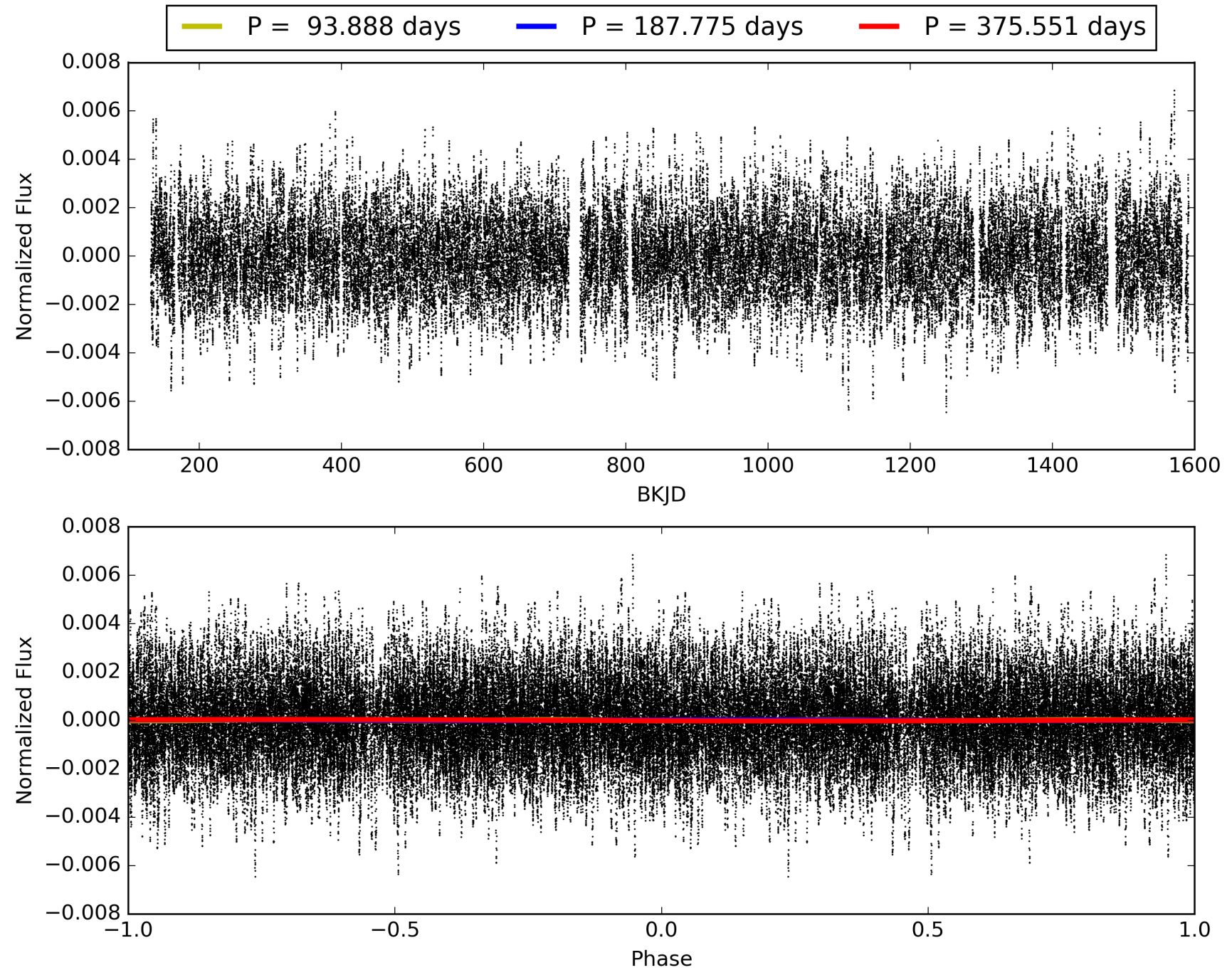
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:33:25 Z

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

TCE 008154223-03, PDC Light Curves

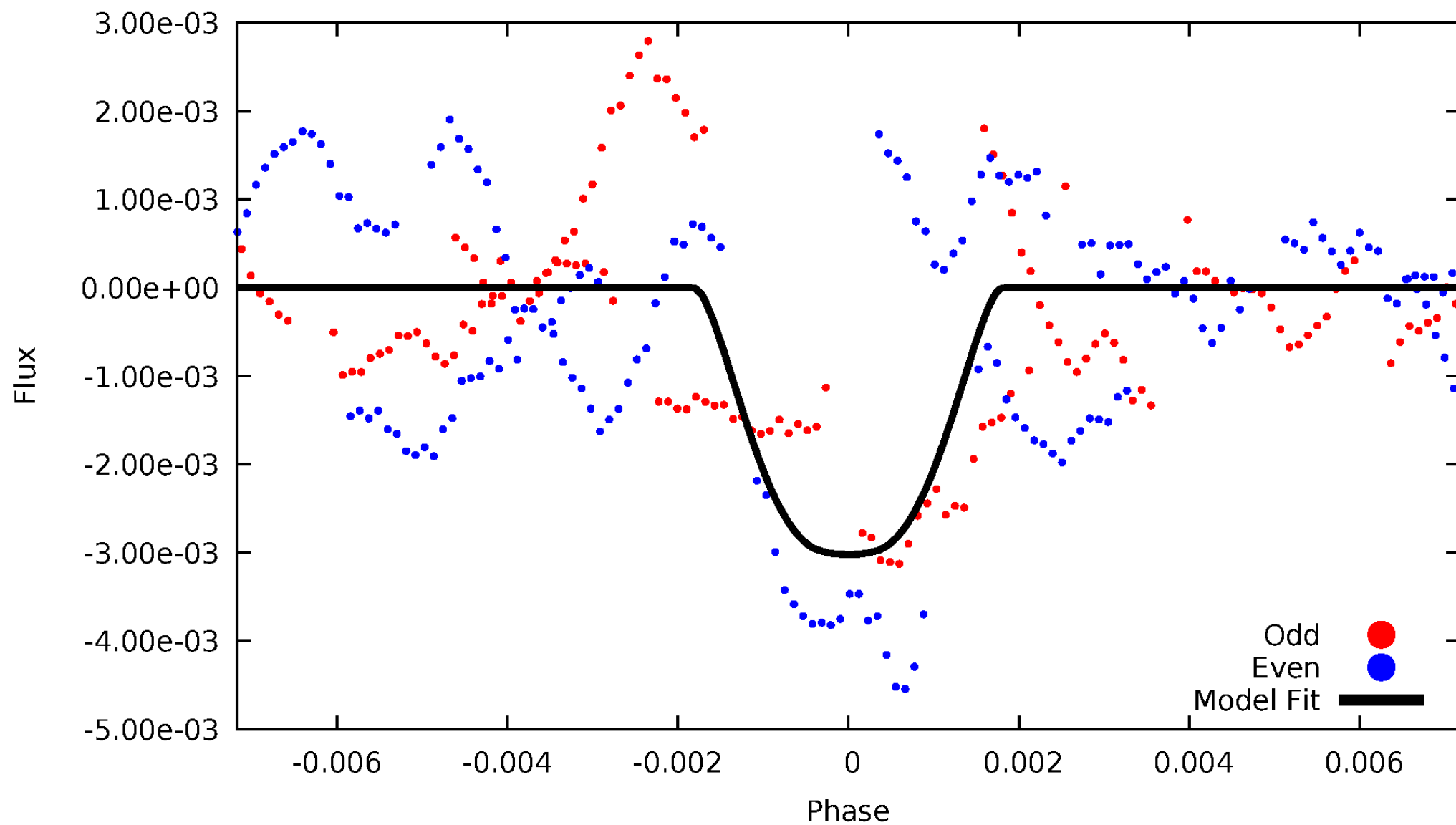


TCE 008154223-03



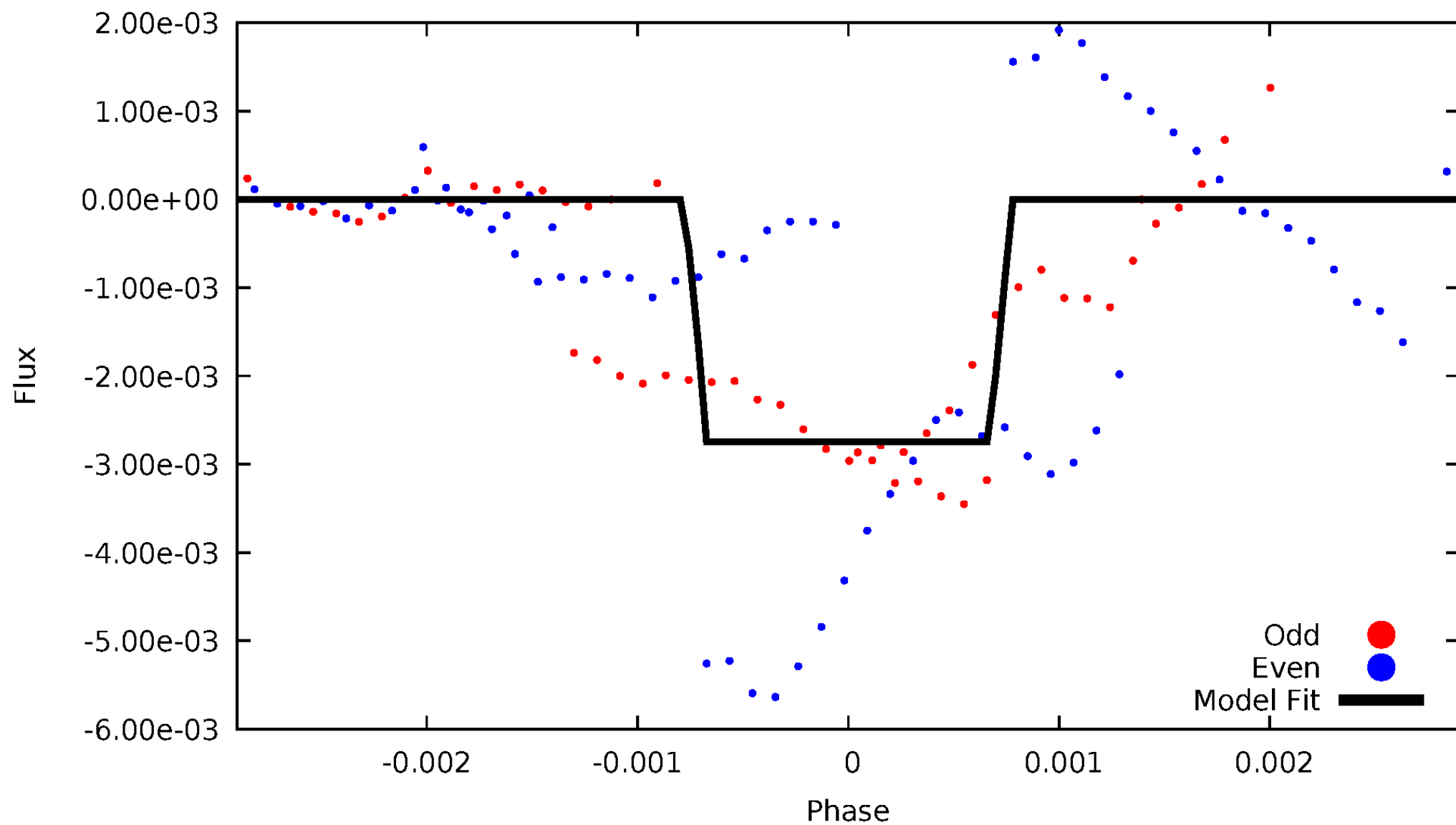
DV Odd/Even

TCE 008154223-03



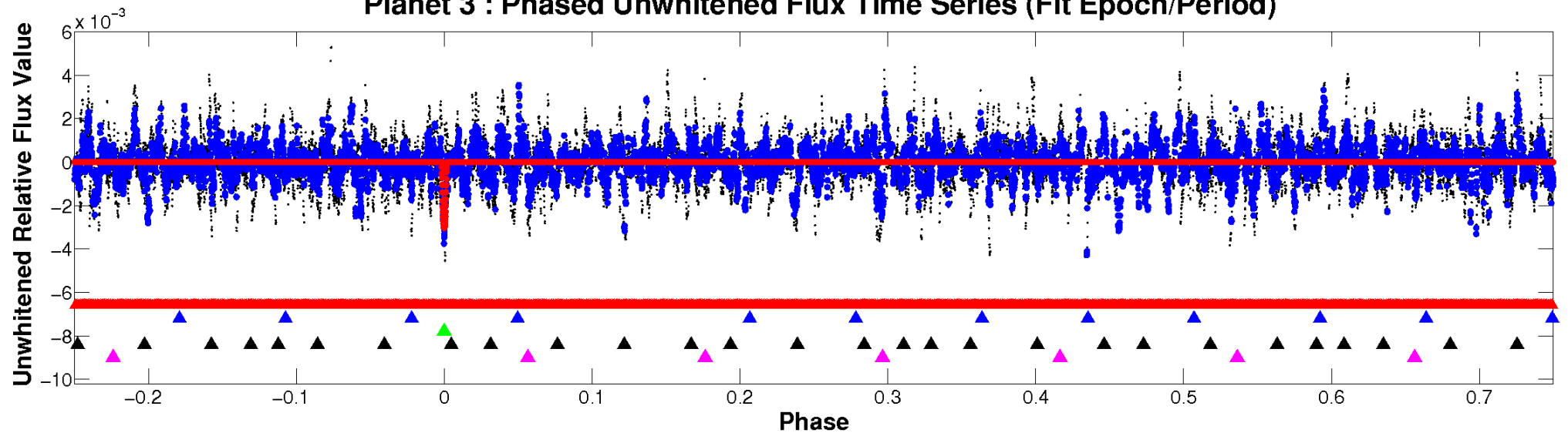
ALT Odd/Even

TCE 008154223-03

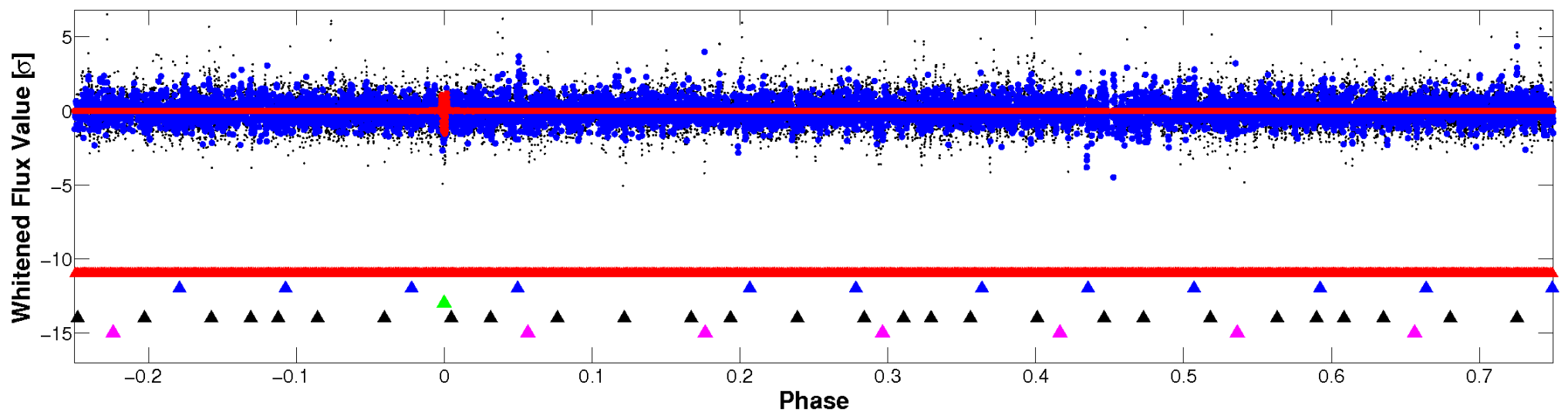


Non-Whitened Vs. Whitened Light Curve

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

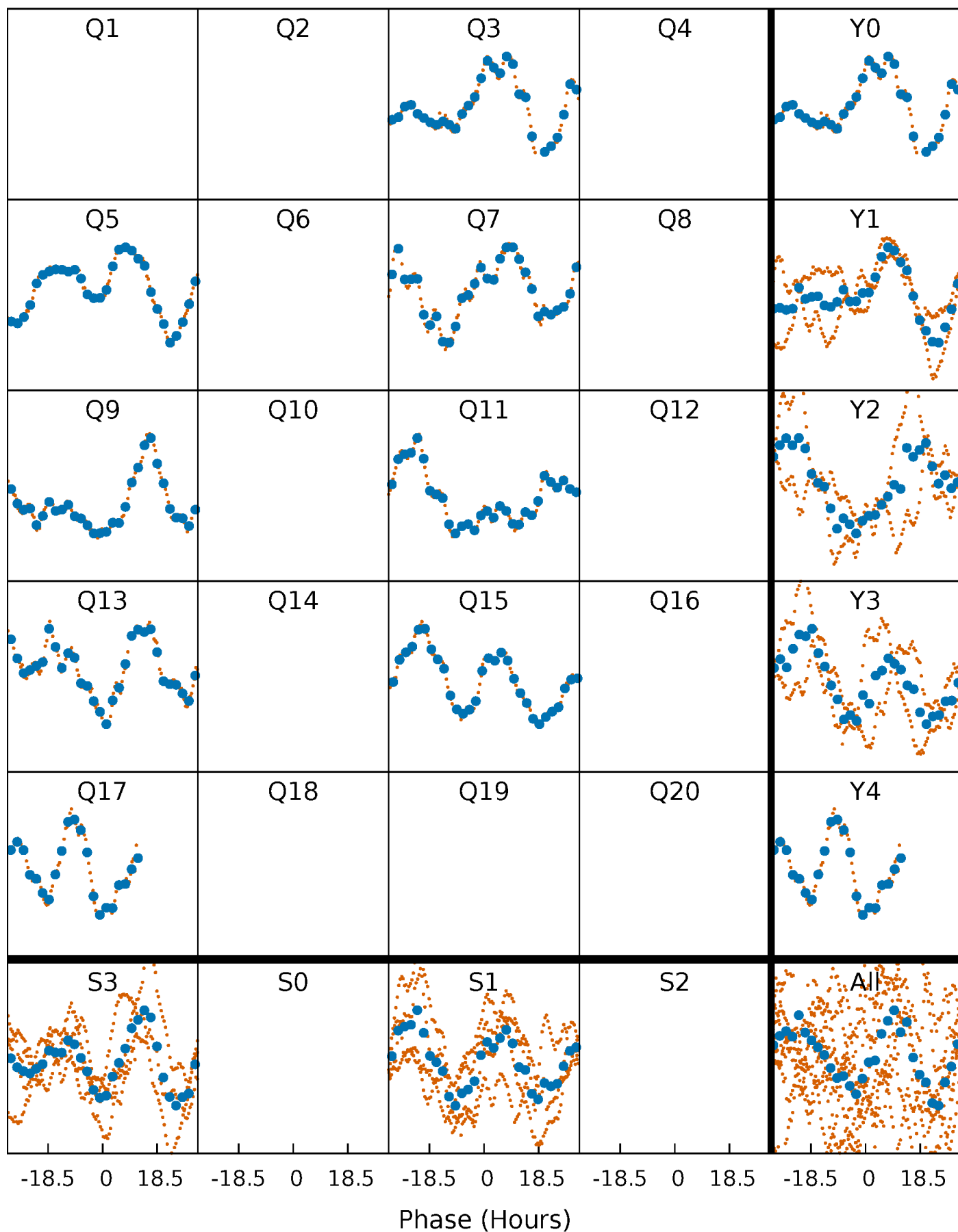


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



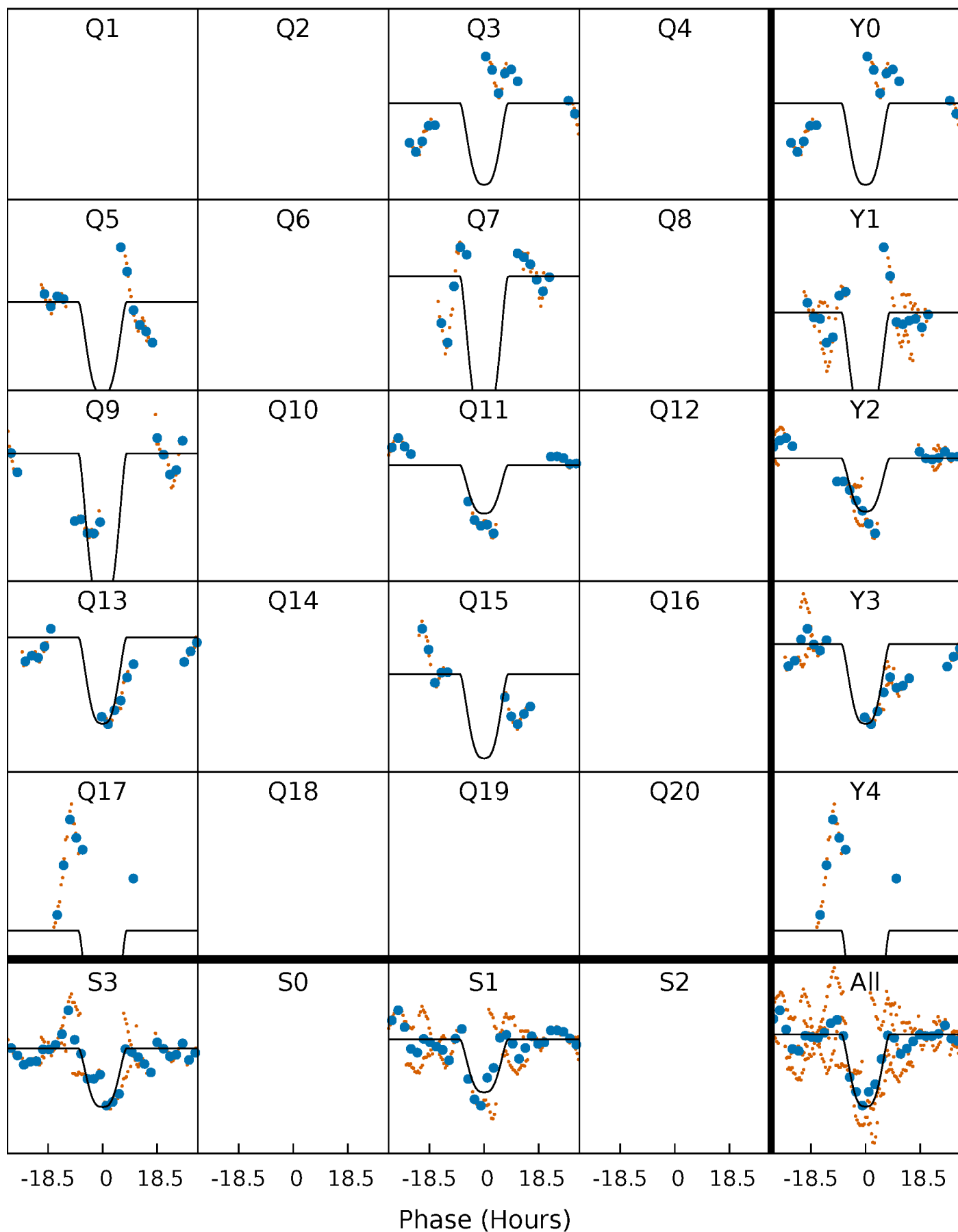
PDC Quarter-Phased Transit Curves

TCE 008154223-03 $P=187.775425$ Days $T_0=266.675021$ (BKJD)



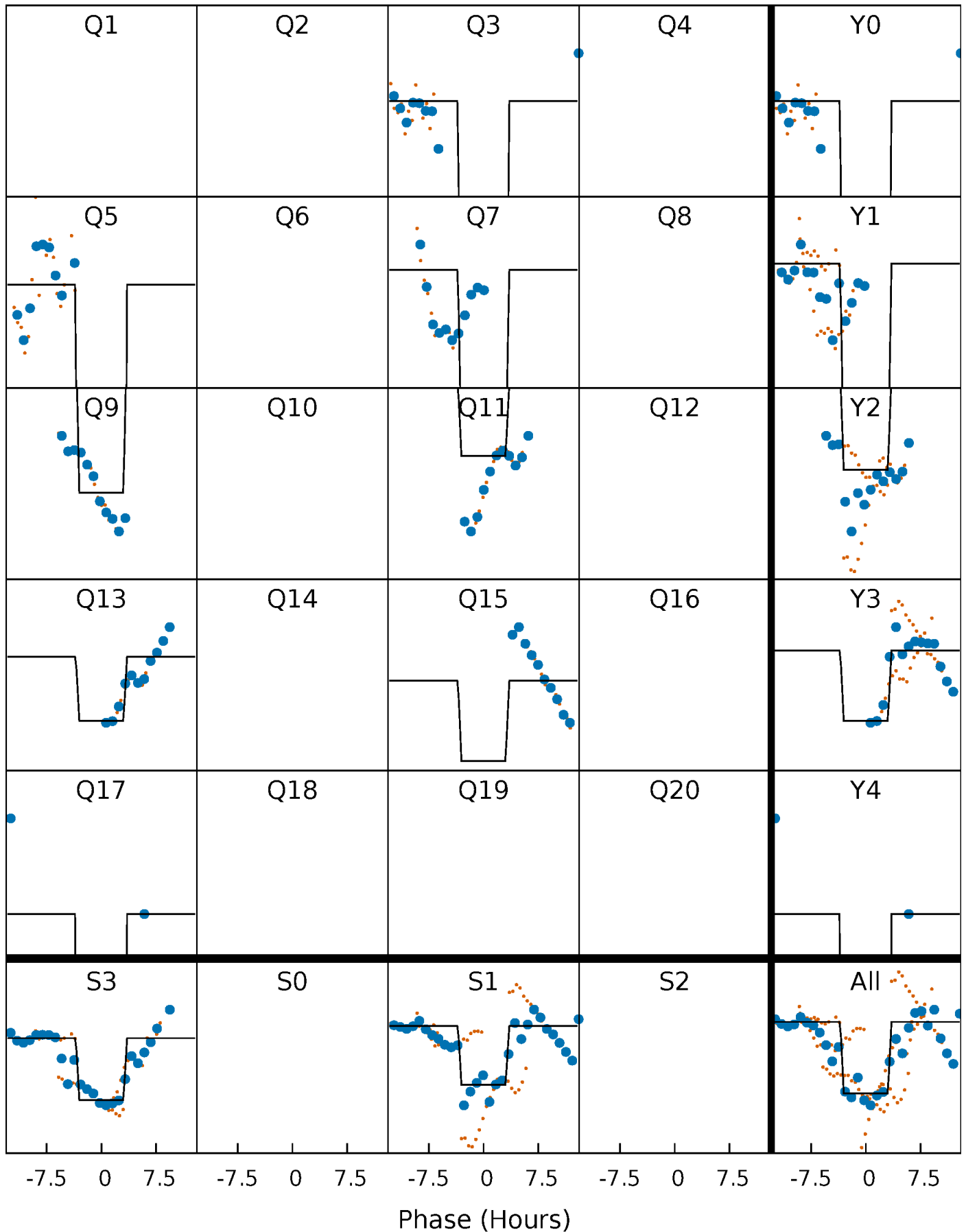
DV Quarter-Phased Transit Curves

TCE 008154223-03 P=187.775425 Days $T_0=266.675021$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

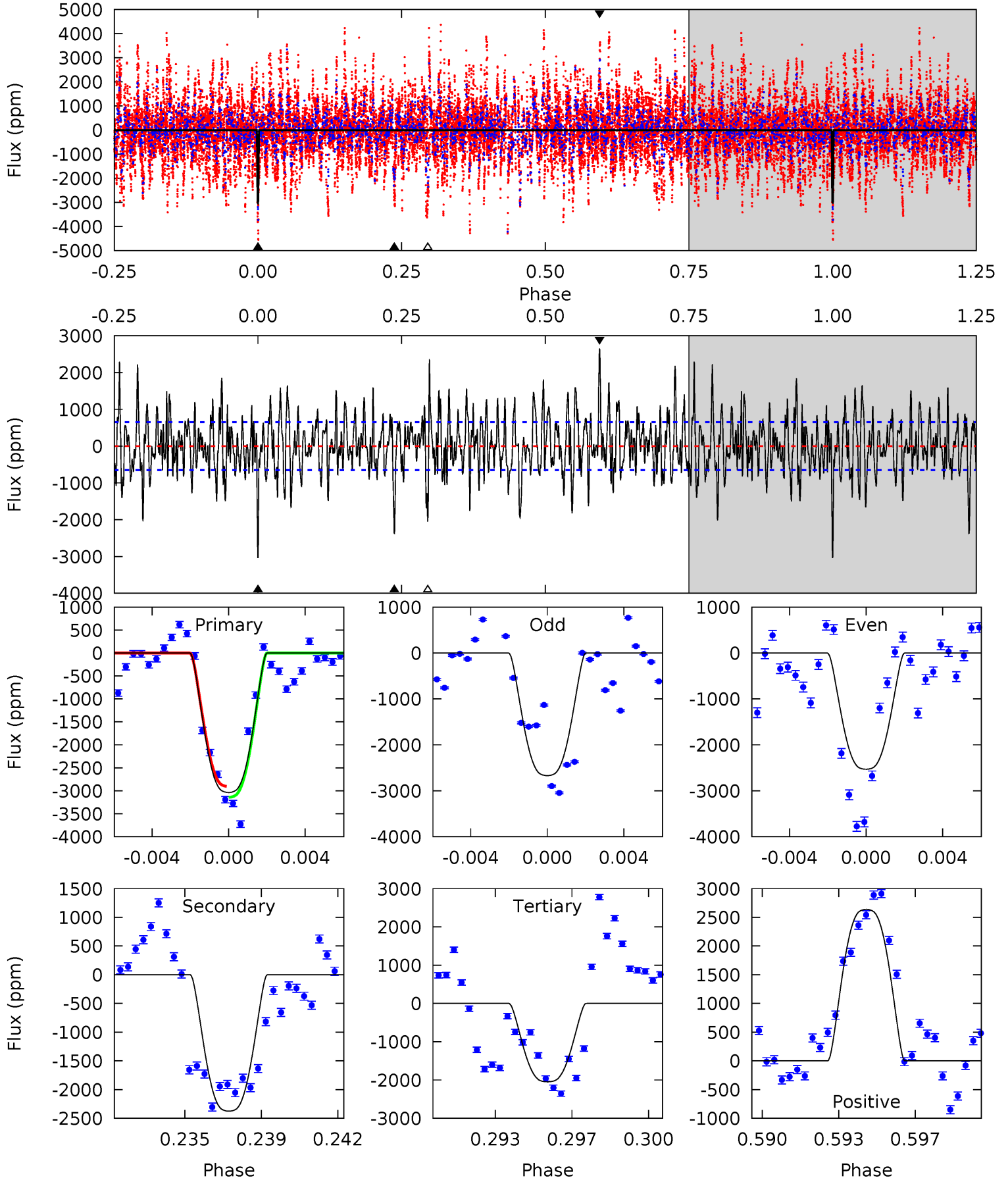
TCE 008154223-03 P=187.872962 Days $T_0=266.209366$ (BKJD)



DV Model-Shift Uniqueness Test

008154223-03, P = 187.775425 Days, E = 78.899596 Days

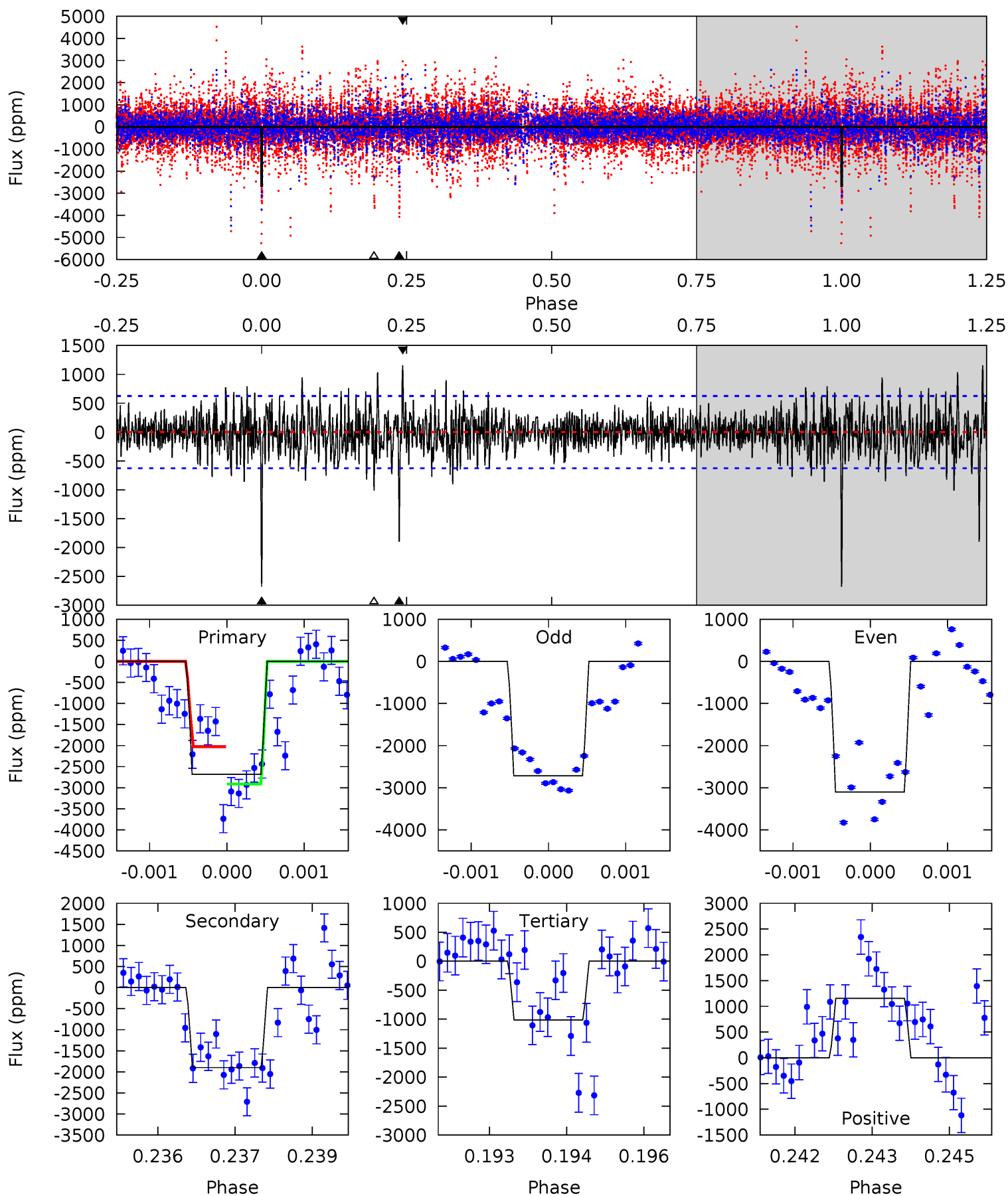
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 24.2 | 19.0 | 16.3 | 21.1 | 5.22 | 2.91 | 5.41 | 7.91 | 3.18 | 2.63 | -2.09 | 0.56 | -22.8 | 0.46 | 0.93 |



Alt Model-Shift Uniqueness Test

008154223-03, $P = 187.872962$ Days, $E = 78.336404$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.1 | 16.3 | 8.71 | 9.94 | 5.38 | 3.18 | 2.22 | 14.4 | 13.1 | 7.63 | 6.39 | 1.69 | 0.93 | 0.30 | 3.53 |



Stellar Parameters For KIC 008154223

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7512^{+209}_{-314} | $3.976^{+0.209}_{-0.152}$ | $-0.060^{+0.200}_{-0.350}$ | $2.239^{+0.525}_{-0.642}$ | $1.727^{+0.185}_{-0.317}$ | $0.217^{+0.281}_{-0.091}$ |
| | +3%/-4% | +5%/-4% | +333%/-583% | +23%/-29% | +11%/-18% | +130%/-42% |
| 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 008154223-03 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-----------------|-------------------------|-------------------|----------------------|------------------------|
| DV | -2377 ± 125 | $14.42^{+2.45}_{-2.23}$ | 783^{+57}_{-63} | 6639^{+386}_{-356} | 3679^{+1445}_{-987} |
| Alt. | -1898 ± 116 | $12.65^{+2.04}_{-2.13}$ | 784^{+56}_{-62} | 6736^{+413}_{-381} | 3855^{+1627}_{-1044} |

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 $A_{obs} \gg 1.0$

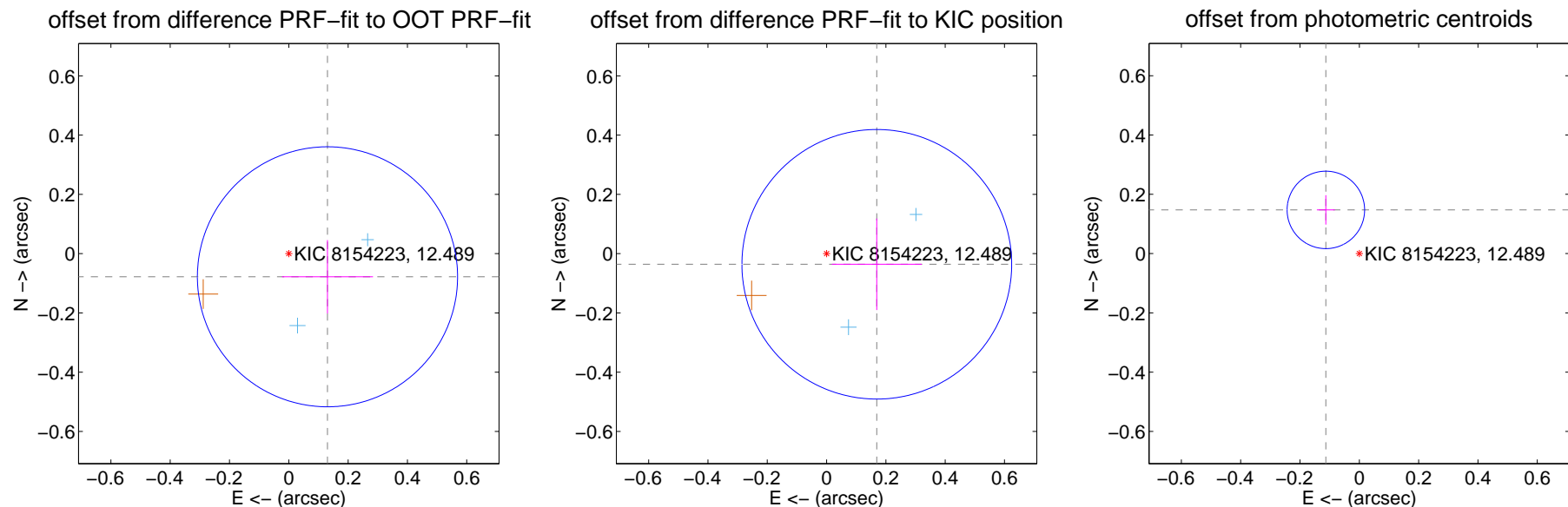
DV Centroid Data

Supplemental centroid analysis for 008154223-03. Kepler magnitude: 12.49. Transit SNR 9.20

There are 2 quarters with good PRF difference image offsets

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

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.152 ± 0.146 | 1.04 | -0.130 ± 0.153 | -0.078 ± 0.124 |
| PRF-fit source offset from KIC position | 0.173 ± 0.152 | 1.14 | -0.169 ± 0.151 | -0.036 ± 0.154 |
| photometric centroid source offset | 0.19 ± 0.04 | 4.26 | 0.11 ± 0.03 | 0.15 ± 0.05 |

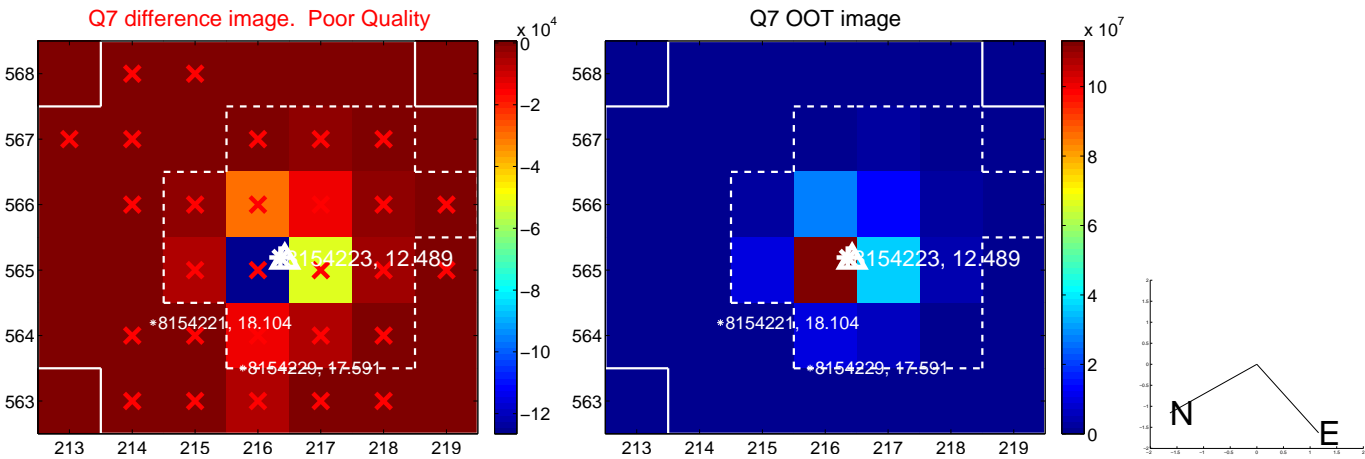
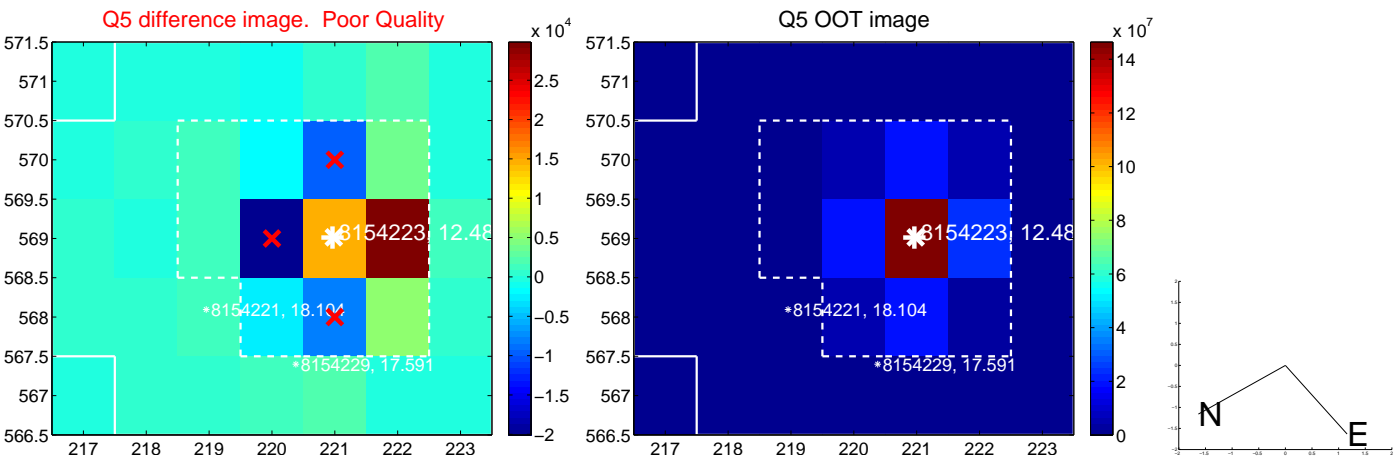


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

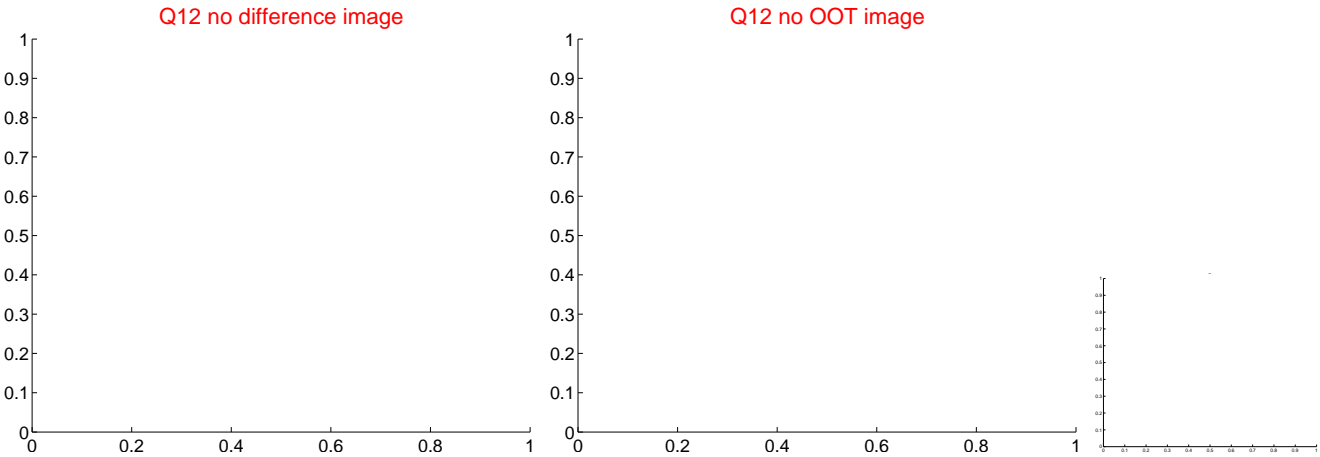
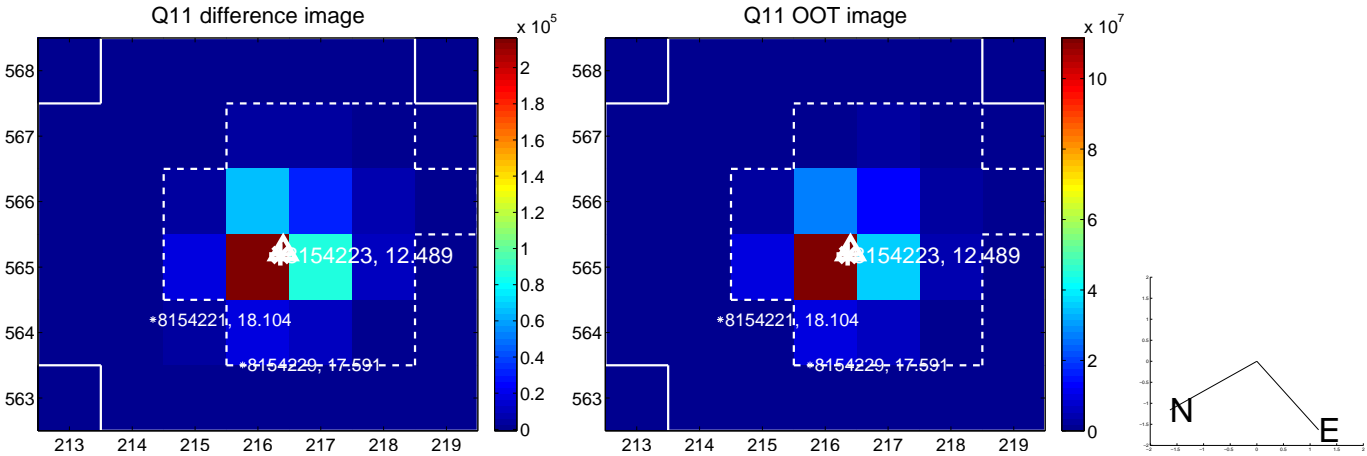
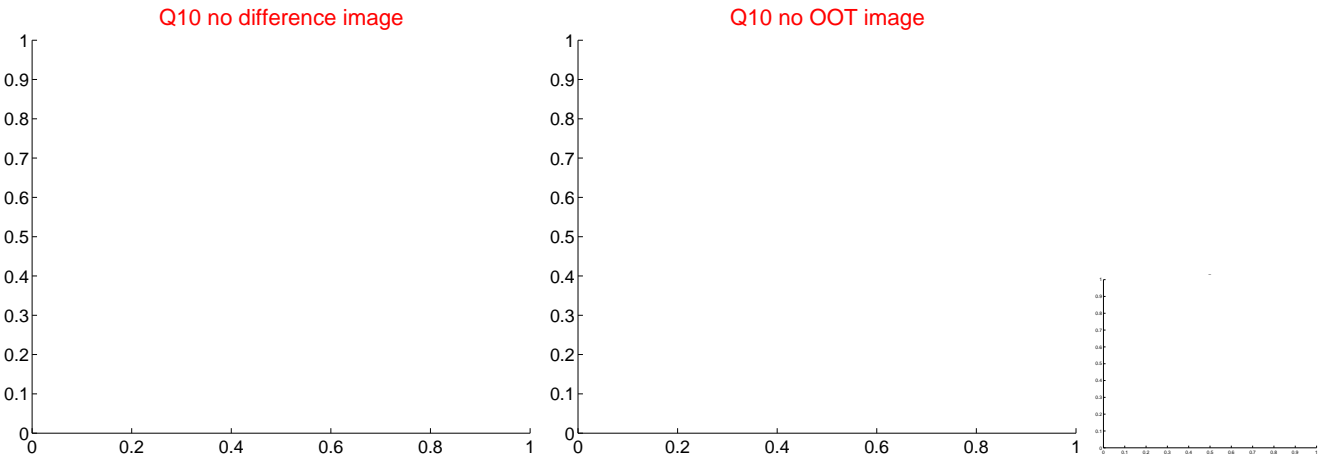
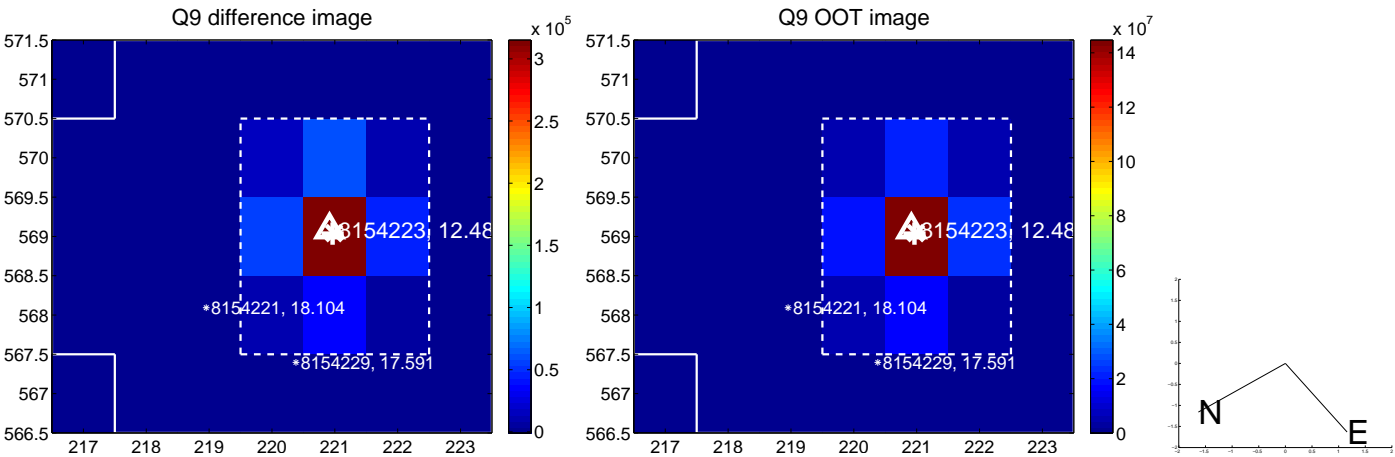
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



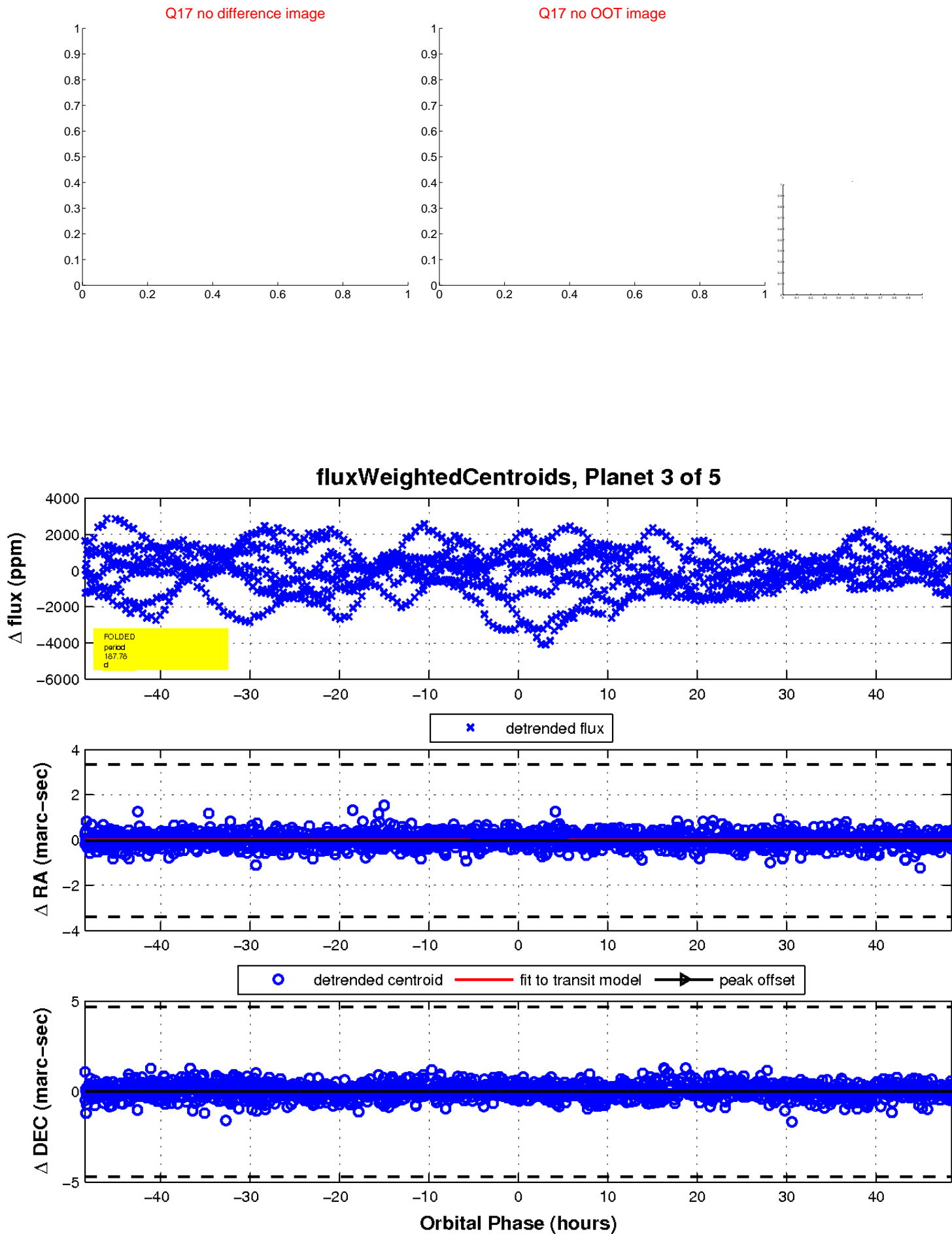
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

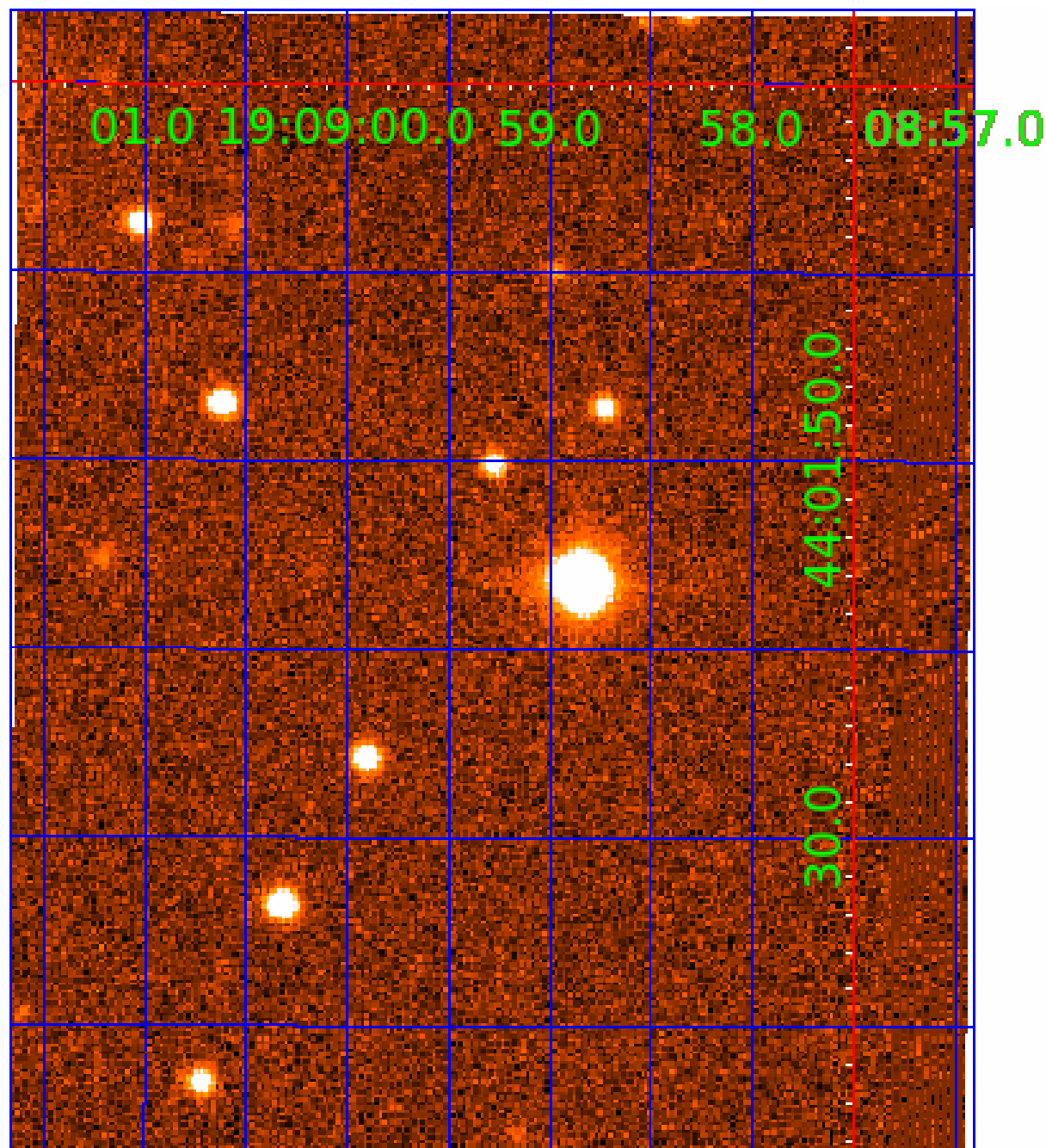


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008154223

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008154223-01 | OBS | No | 1.167712 | 132.053696 | 0.0 | 6.113 | 8.6 | 0.0 | 2.24 | 7512 | 0.00 | 21062.26 |
| 008154223-02 | OBS | No | 115.358304 | 219.602130 | 1740.1 | 13.184 | 10.3 | 8.0 | 2.24 | 7512 | 10.88 | 46.12 |
| 008154223-03 | OBS | No | 187.775425 | 266.675021 | 3022.2 | 16.156 | 10.3 | 9.2 | 2.24 | 7512 | 14.78 | 24.09 |
| 008154223-04 | OBS | No | 52.437614 | 140.727896 | 1296.9 | 12.657 | 10.4 | 8.3 | 2.24 | 7512 | 10.17 | 131.96 |
| 008154223-05 | OBS | No | 210.295388 | 277.304444 | 92.5 | 15.000 | 8.4 | -1.0 | 2.24 | 7512 | 2.19 | 20.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008154223-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 008154223-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 008154223-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 008154223-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV |
| 008154223-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—CENT_NOFITS |

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

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

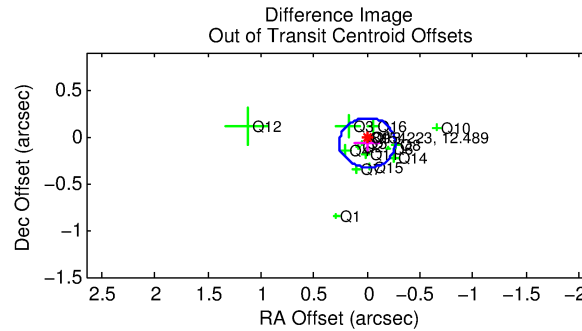
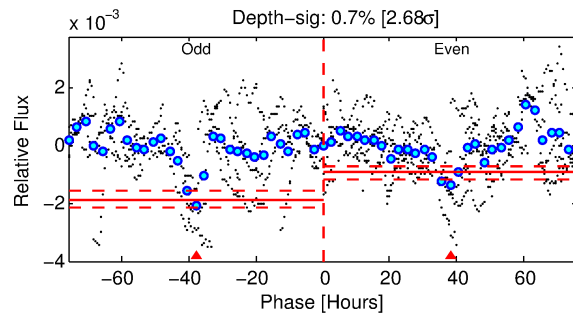
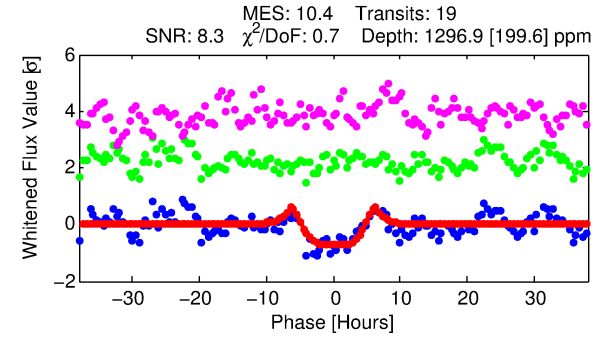
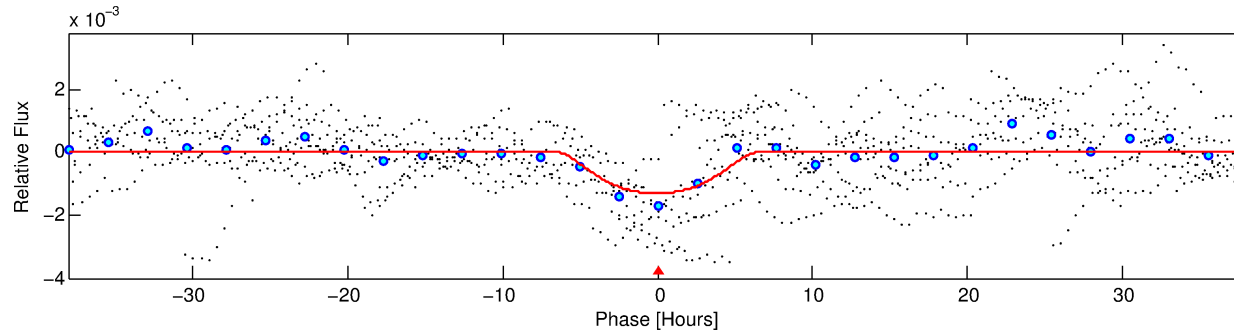
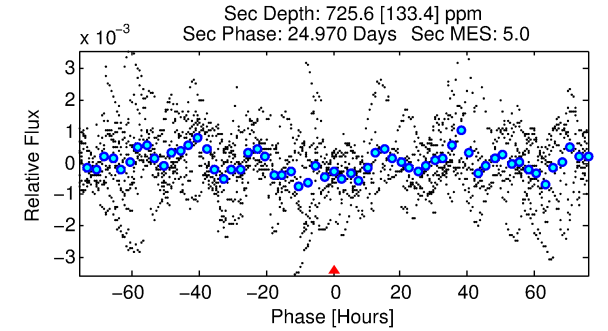
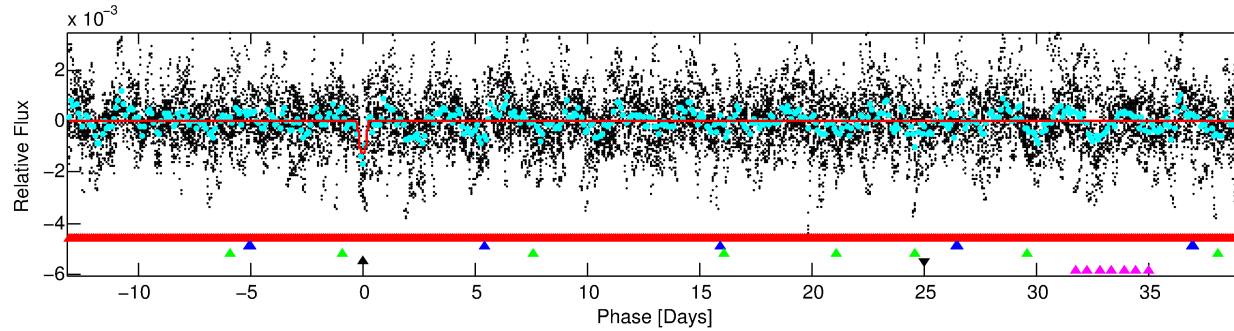
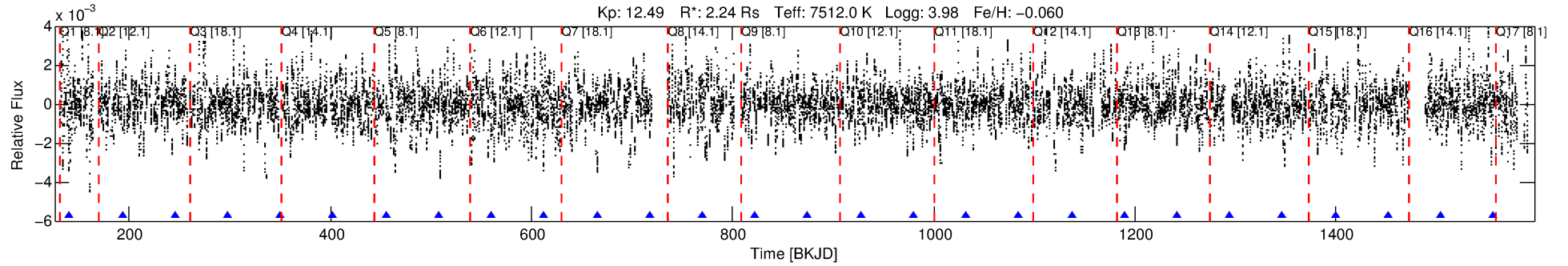
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008154223-04

No Significant Match Found

DV One-Page Summary

KIC: 8154223 Candidate: 4 of 5 Period: 52.438 d



DV Fit Results:

Period = 52.43761 [0.00120] d
Epoch = 140.7279 [0.0176] BKJD
Rp/R* = 0.0416 [0.0050]
a/R* = 12.66 [1.03]
b = 0.96 [0.01]
Seff = 131.96 [53.99]
Teq = 864 [88] K
Rp = 10.17 [3.16] Re
a = 0.3292 [0.0822] AU
Ag = 418.39 [200.87] [2.08σ]
Teffp = 6043 [521] K [9.80σ]

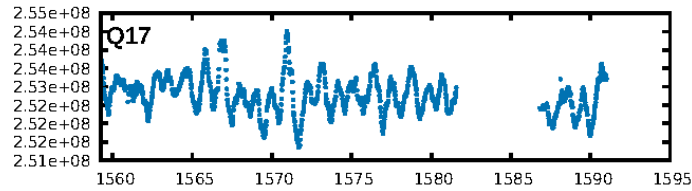
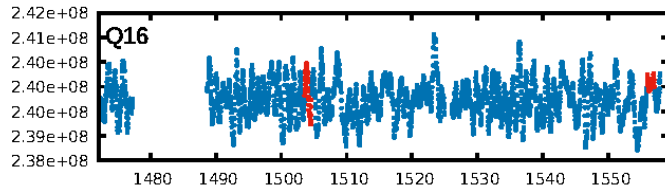
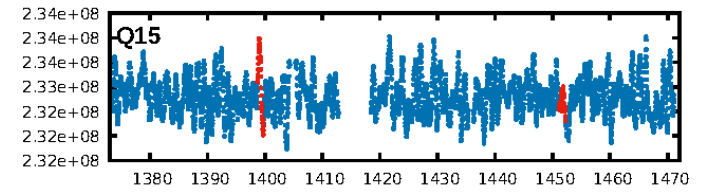
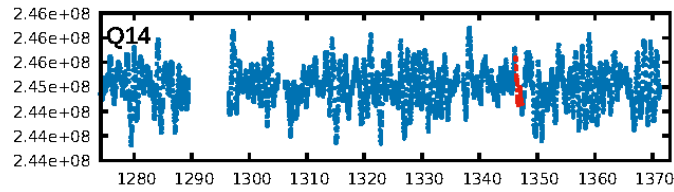
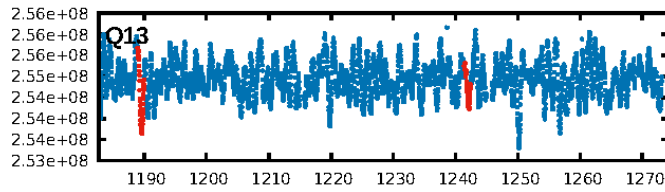
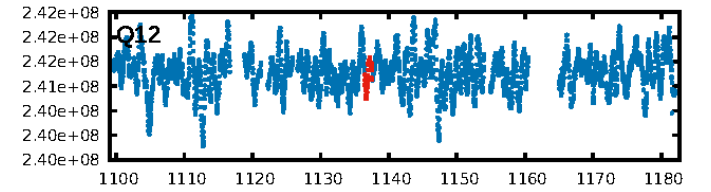
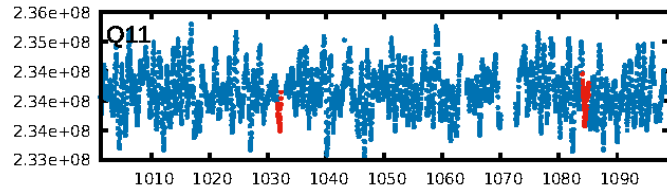
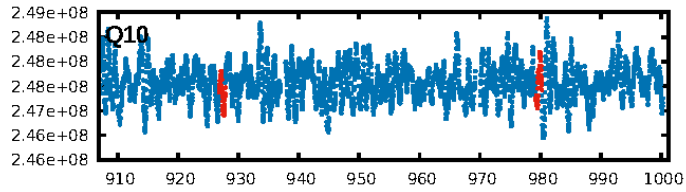
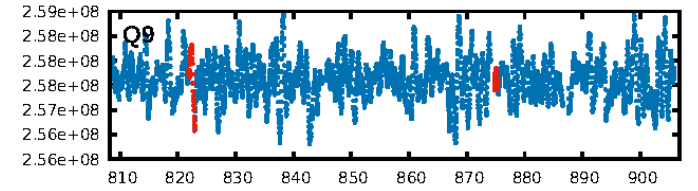
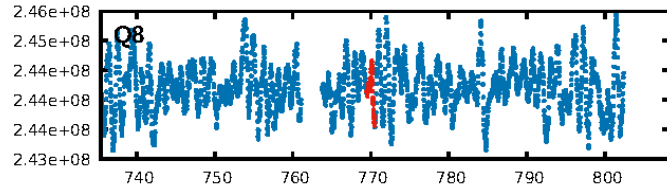
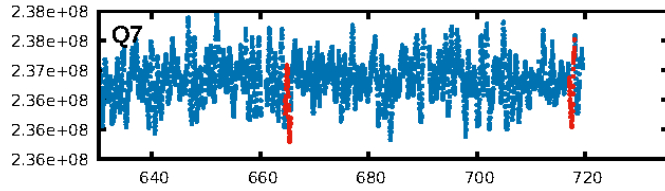
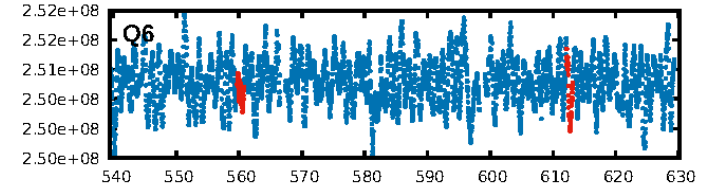
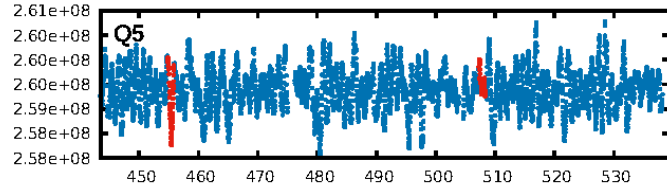
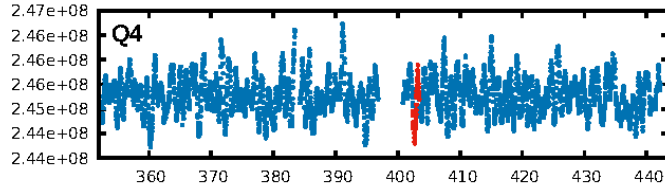
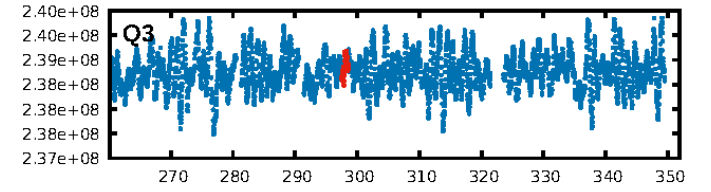
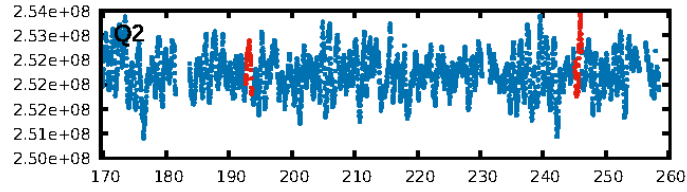
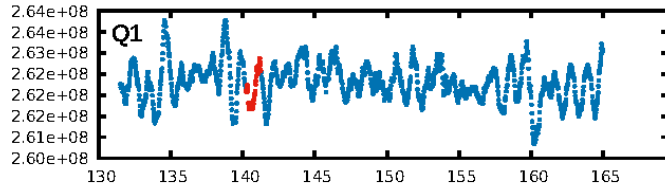
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.54σ]
LongPeriod-sig: 100.0% [82.63σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 1.583
Centroid-sig: 4.6%
Centroid-so: 0.083 arcsec [1.32σ]
OotOffset-rm: 0.066 arcsec [0.75σ]
KicOffset-rm: 0.029 arcsec [0.27σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/16]

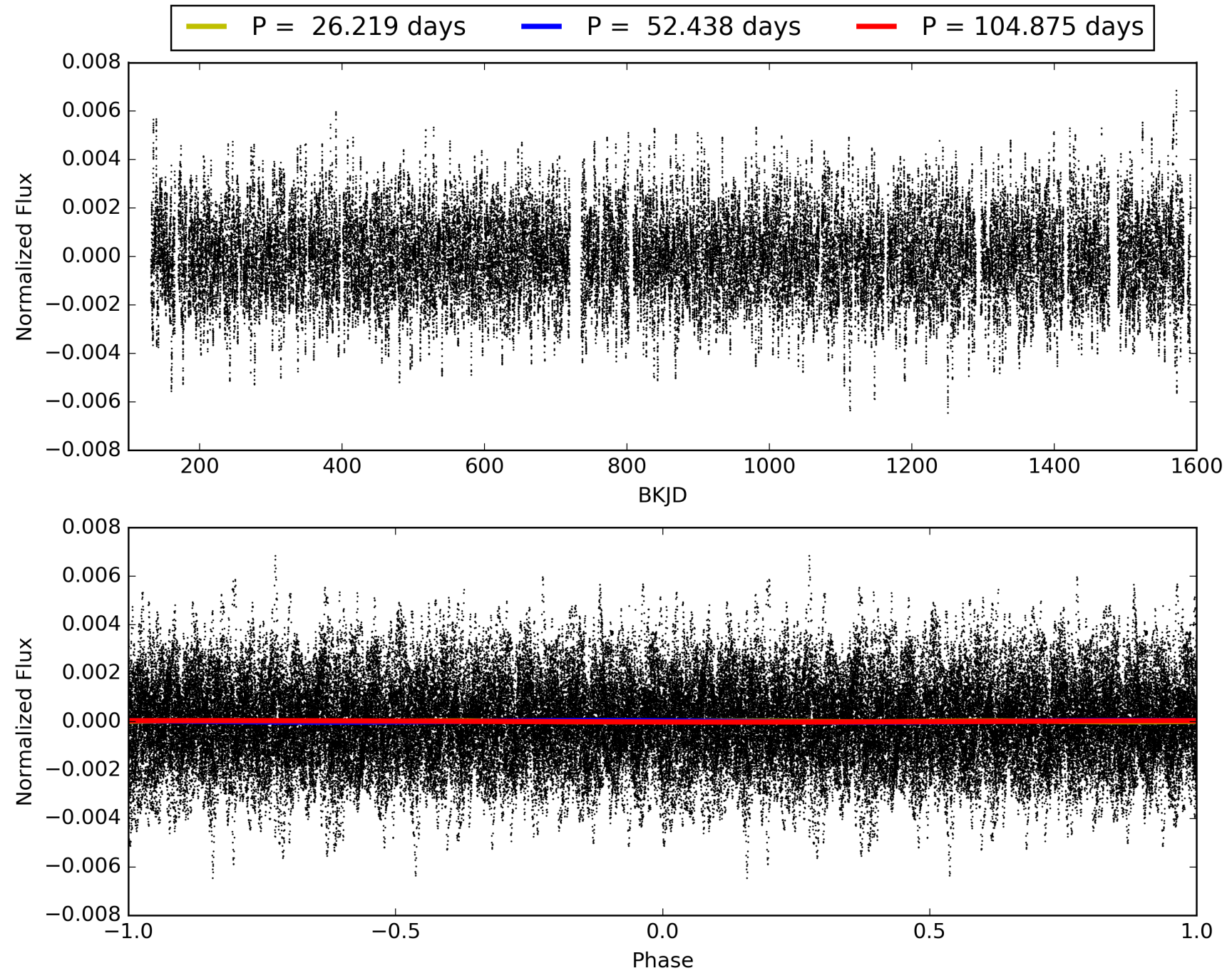
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:33:29 Z

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

TCE 008154223-04, PDC Light Curves

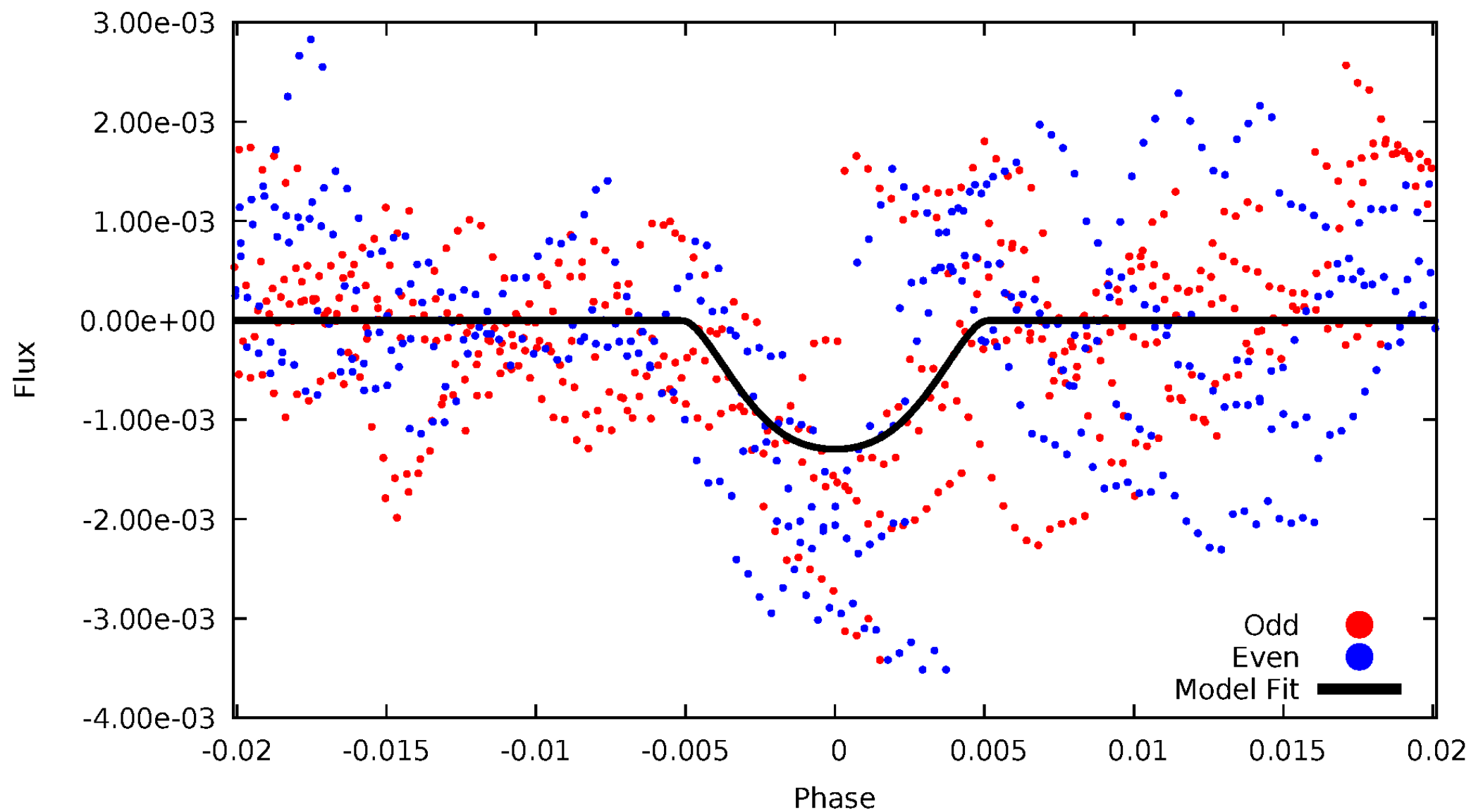


TCE 008154223-04



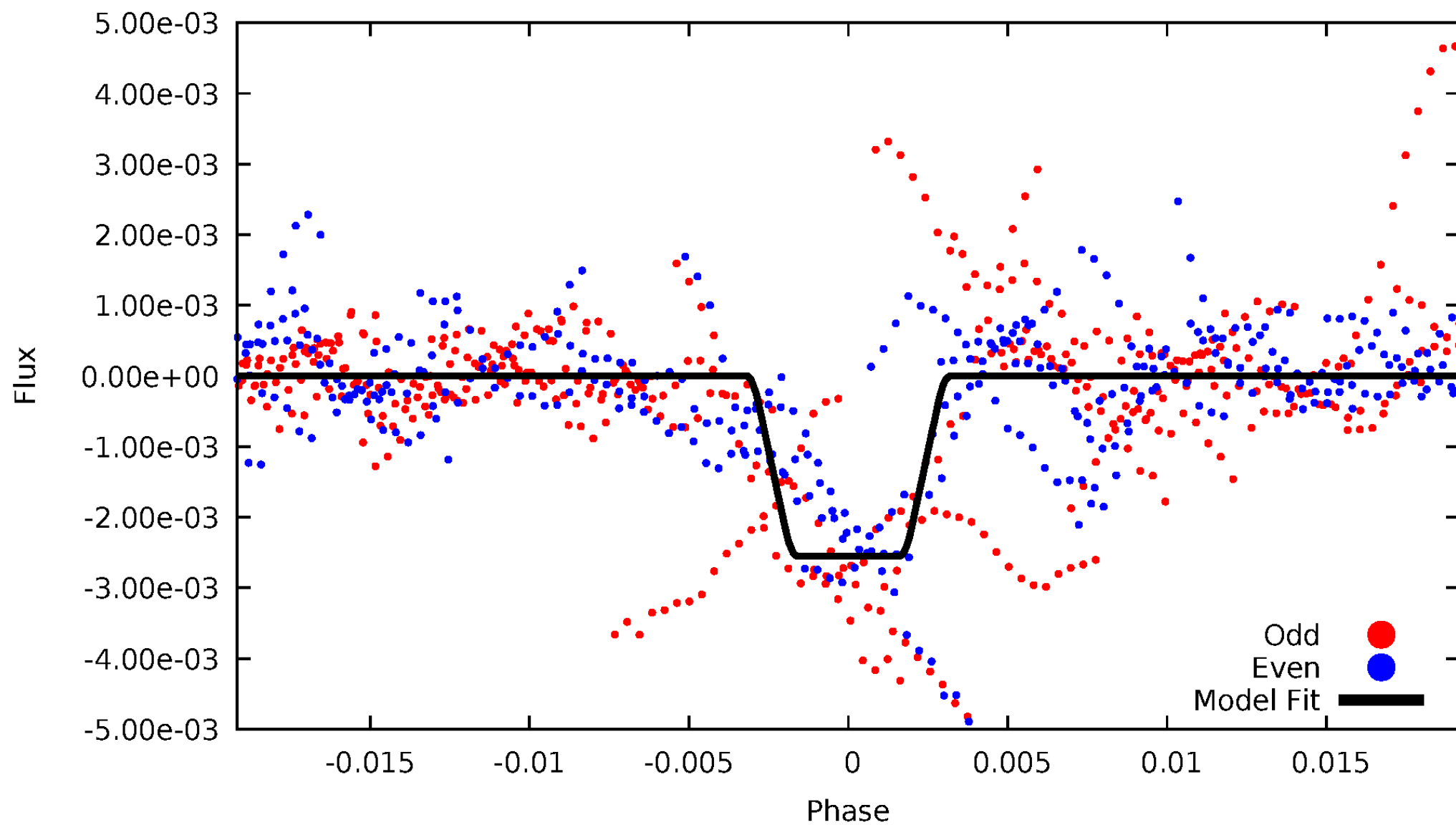
DV Odd/Even

TCE 008154223-04



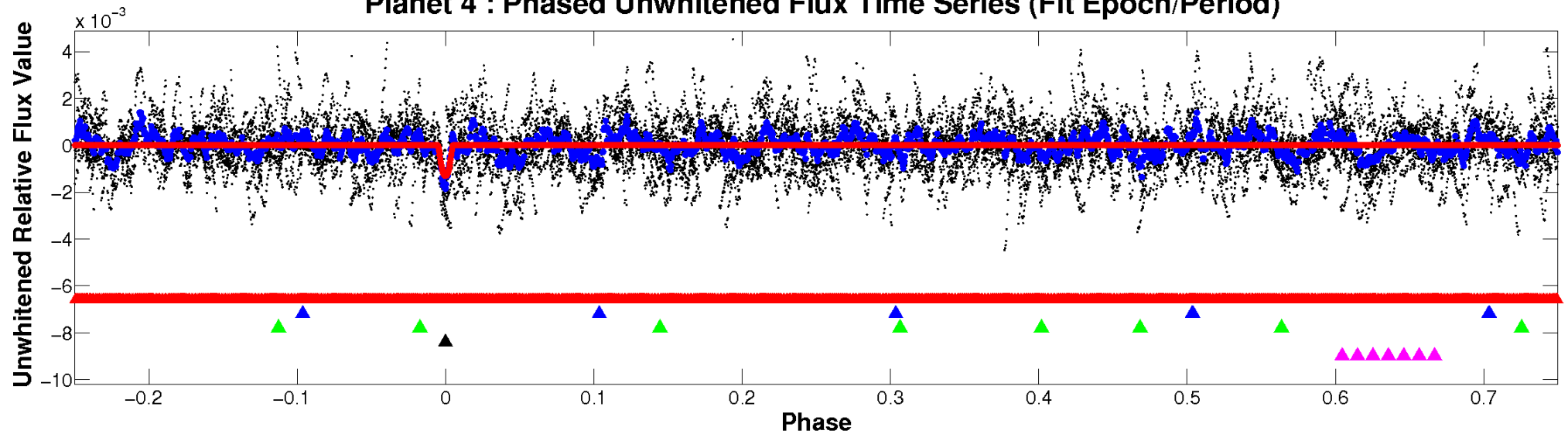
ALT Odd/Even

TCE 008154223-04

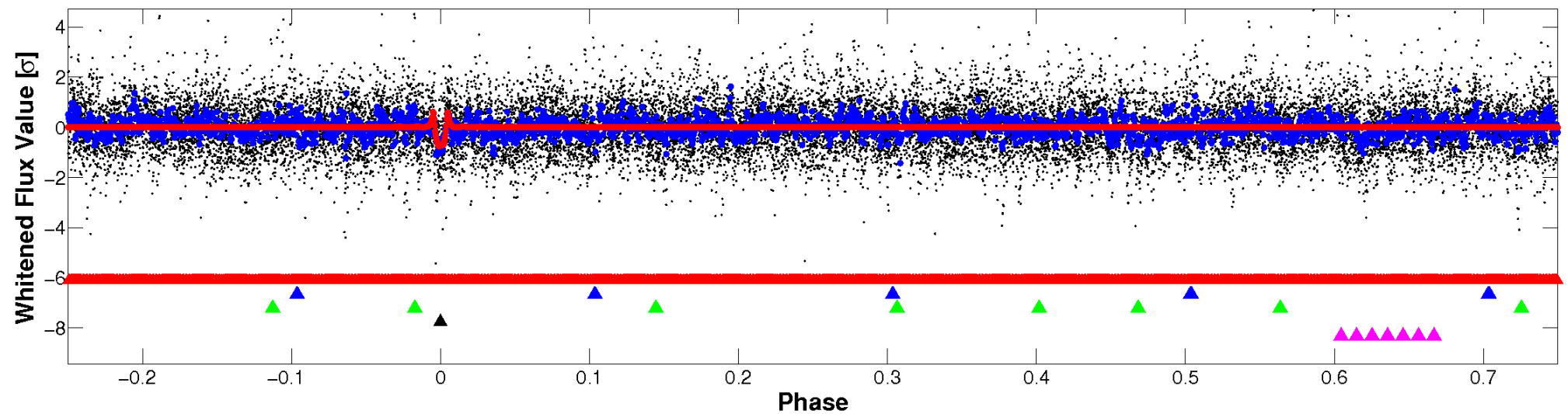


Non-Whitened Vs. Whitened Light Curve

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

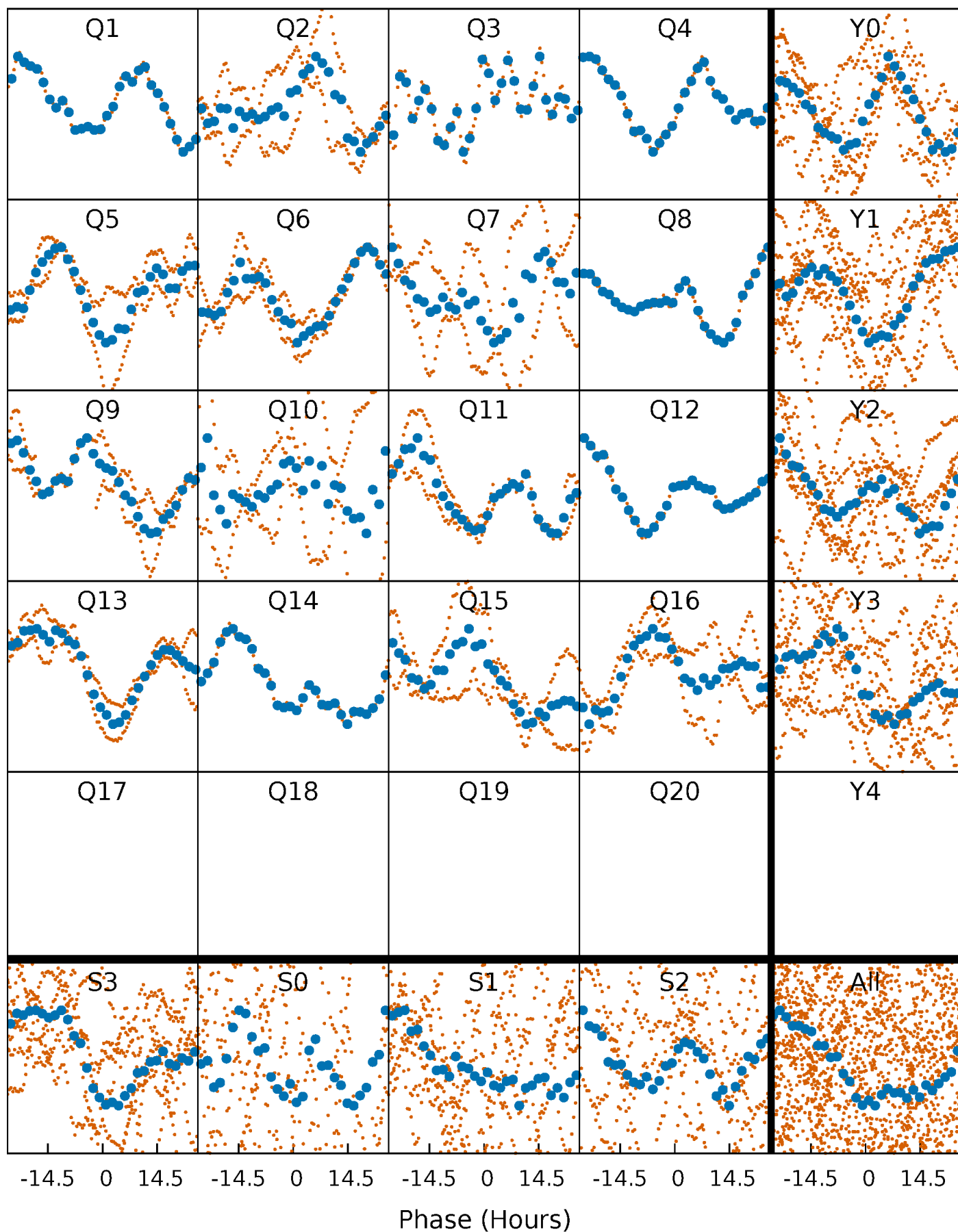


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



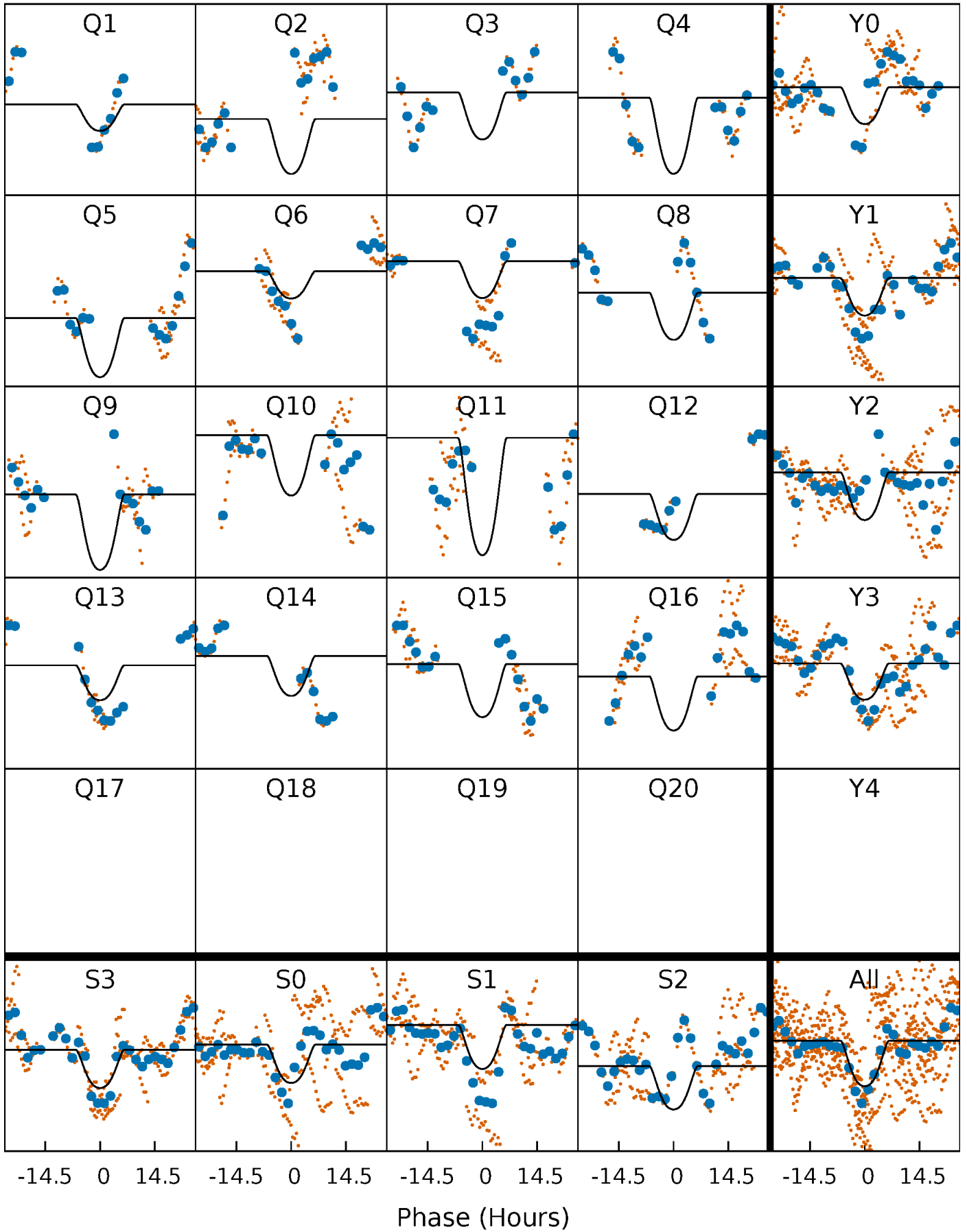
PDC Quarter-Phased Transit Curves

TCE 008154223-04 $P = 52.437614$ Days $T_0 = 140.727896$ (BKJD)



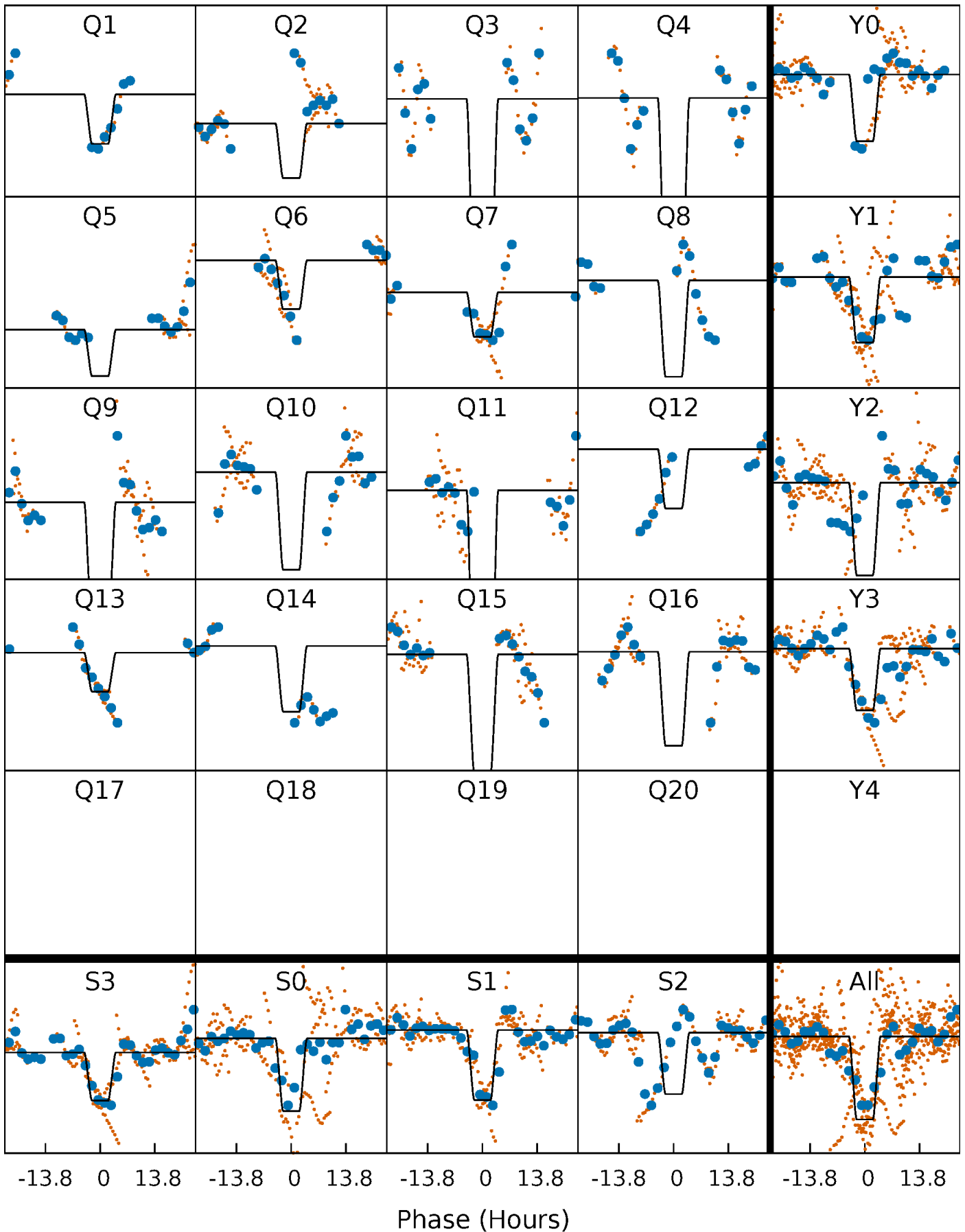
DV Quarter-Phased Transit Curves

TCE 008154223-04 $P = 52.437614$ Days $T_0 = 140.727896$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

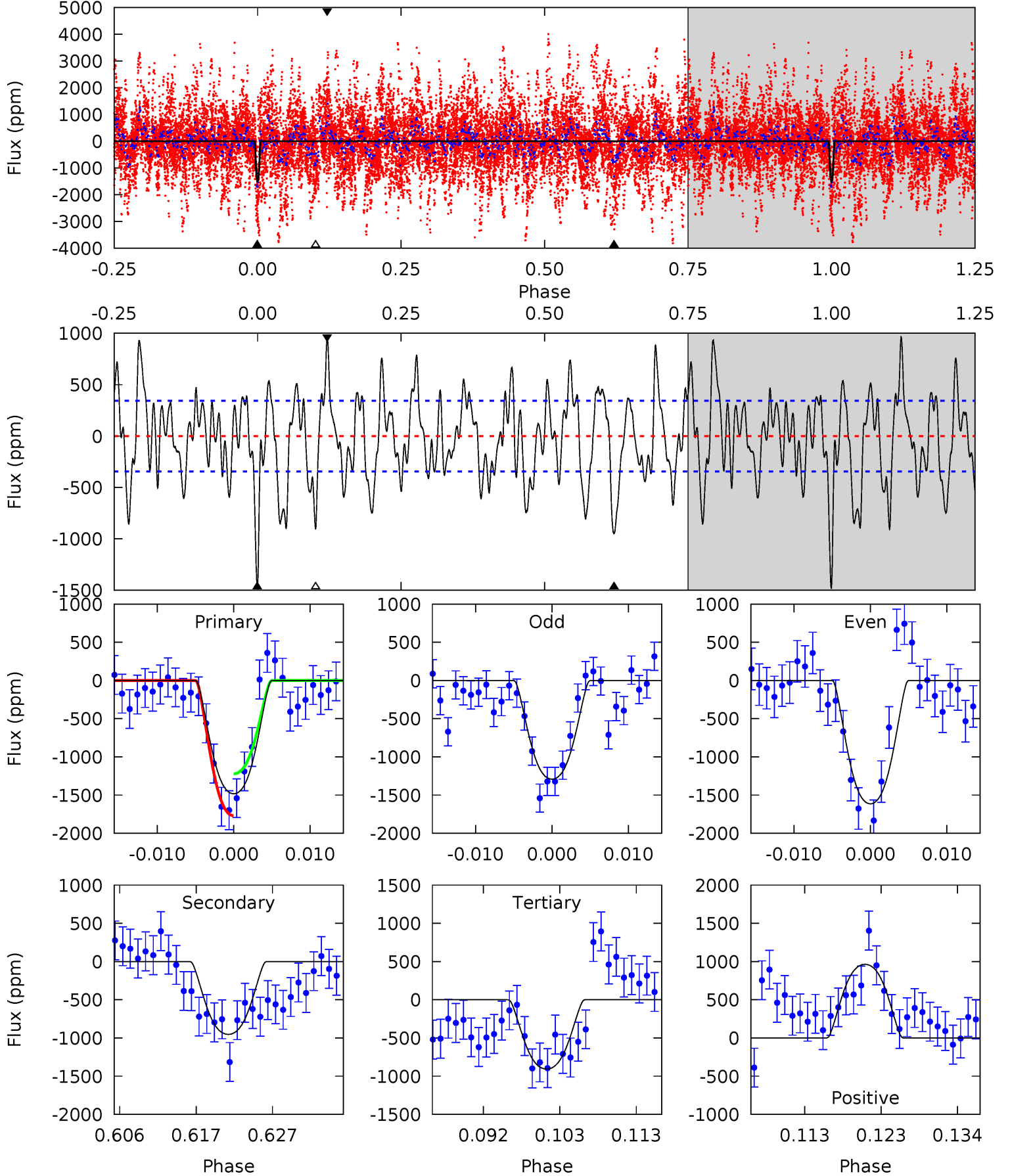
TCE 008154223-04 P= 52.440294 Days $T_0=140.697620$ (BKJD)



DV Model-Shift Uniqueness Test

008154223-04, P = 52.437614 Days, E = 88.290282 Days

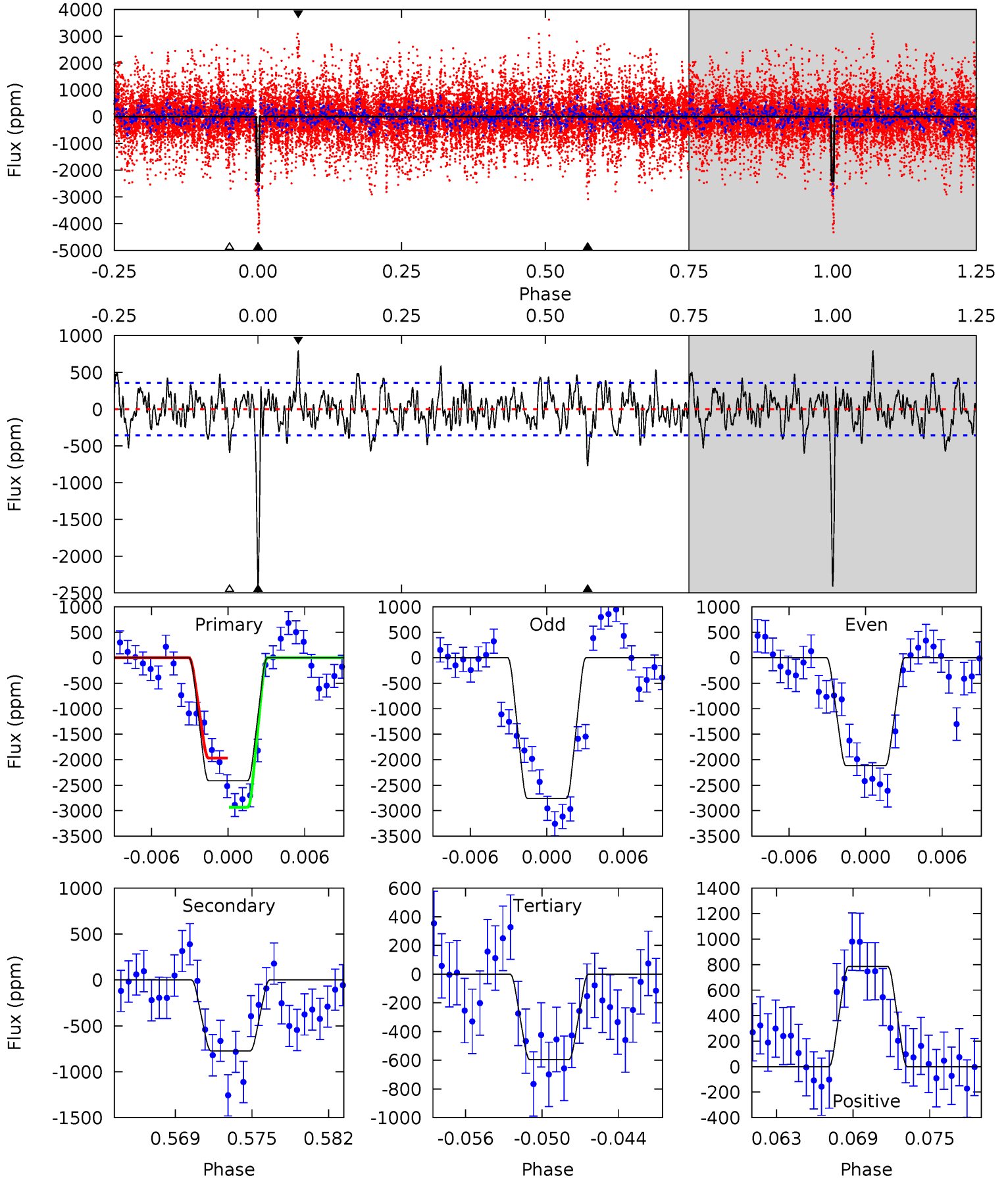
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.6 | 13.9 | 13.2 | 14.0 | 5.02 | 2.57 | 5.35 | 8.42 | 7.58 | 0.68 | -0.15 | 2.34 | 0.43 | 0.39 | 3.99 |



Alt Model-Shift Uniqueness Test

008154223-04, P = 52.440294 Days, E = 88.257326 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 34.7 | 11.1 | 8.56 | 11.3 | 5.12 | 2.73 | 2.80 | 26.1 | 23.4 | 2.55 | -0.19 | 4.58 | 0.66 | 0.25 | 6.90 |



Stellar Parameters For KIC 008154223

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7512^{+209}_{-314} | $3.976^{+0.209}_{-0.152}$ | $-0.060^{+0.200}_{-0.350}$ | $2.239^{+0.525}_{-0.642}$ | $1.727^{+0.185}_{-0.317}$ | $0.217^{+0.281}_{-0.091}$ |
| | +3%/-4% | +5%/-4% | +333%/-583% | +23%/-29% | +11%/-18% | +130%/-42% |
| 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 008154223-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|-------------------------|----------------------|----------------------|---------------------|
| DV | -953 ± 69 | $10.01^{+2.07}_{-1.68}$ | 1199^{+87}_{-87} | 6327^{+501}_{-410} | 566^{+224}_{-179} |
| Alt. | -773 ± 70 | $12.25^{+2.16}_{-2.10}$ | 1201^{+90}_{-93} | 5508^{+328}_{-317} | 302^{+137}_{-81} |

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

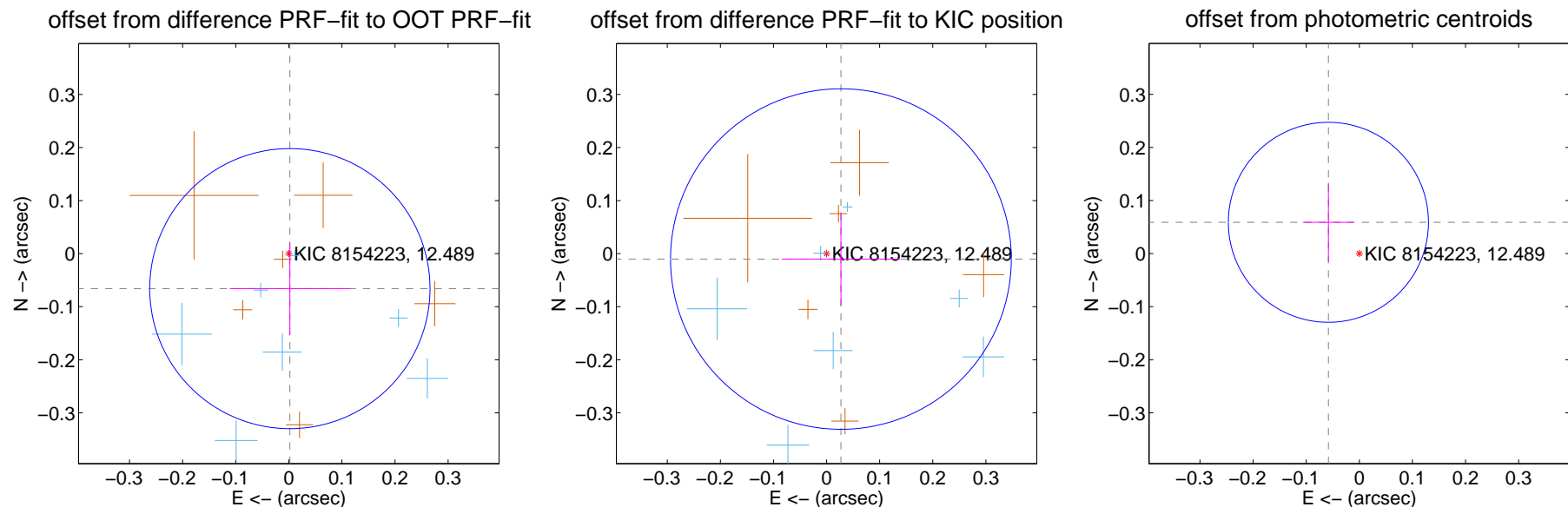
DV Centroid Data

Supplemental centroid analysis for 008154223-04. Kepler magnitude: 12.49. Transit SNR 8.32

There are 8 quarters with good PRF difference image offsets

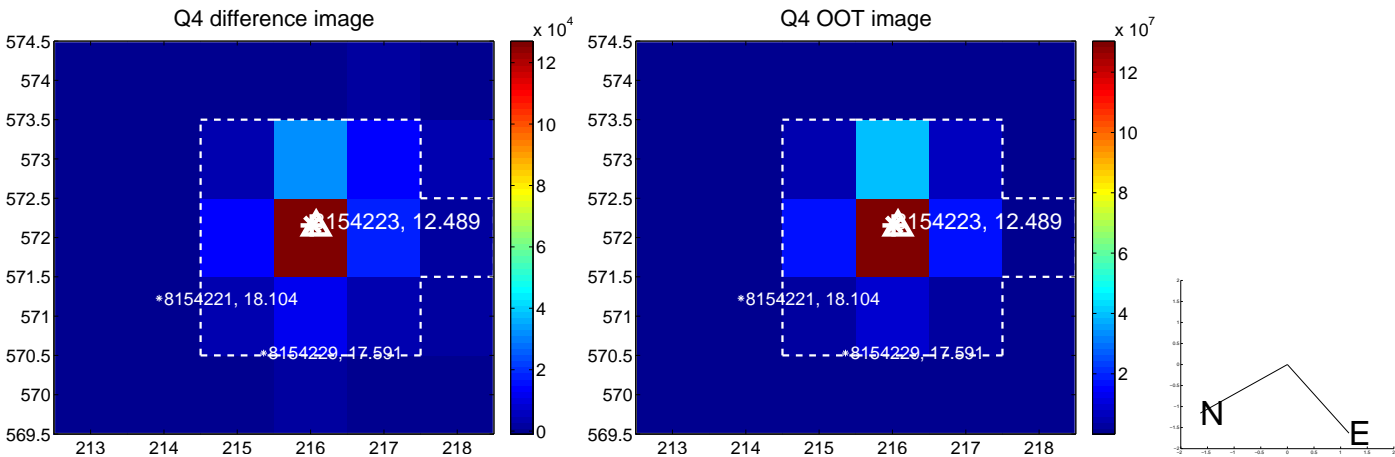
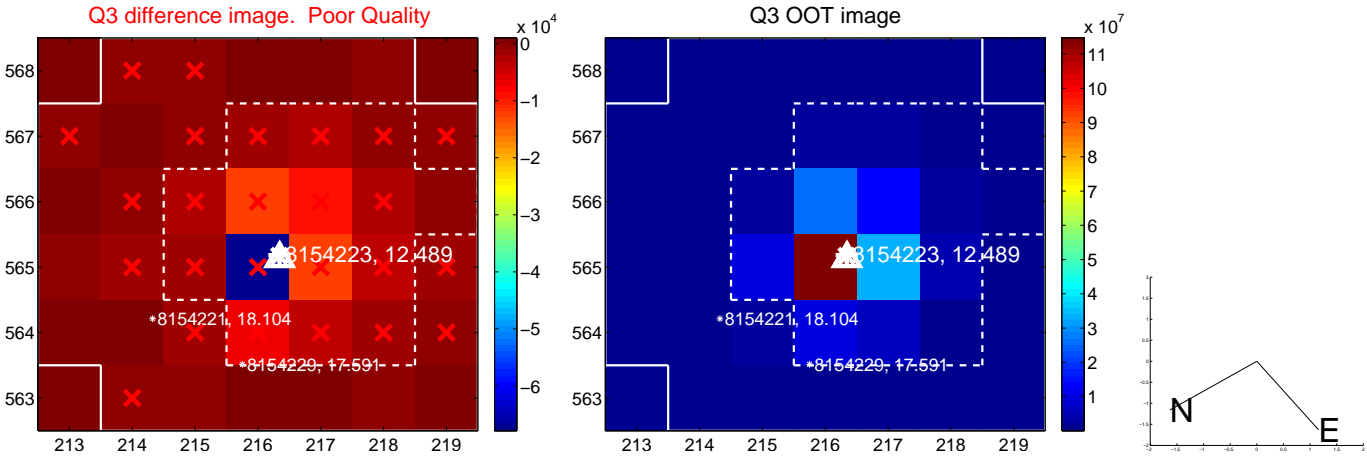
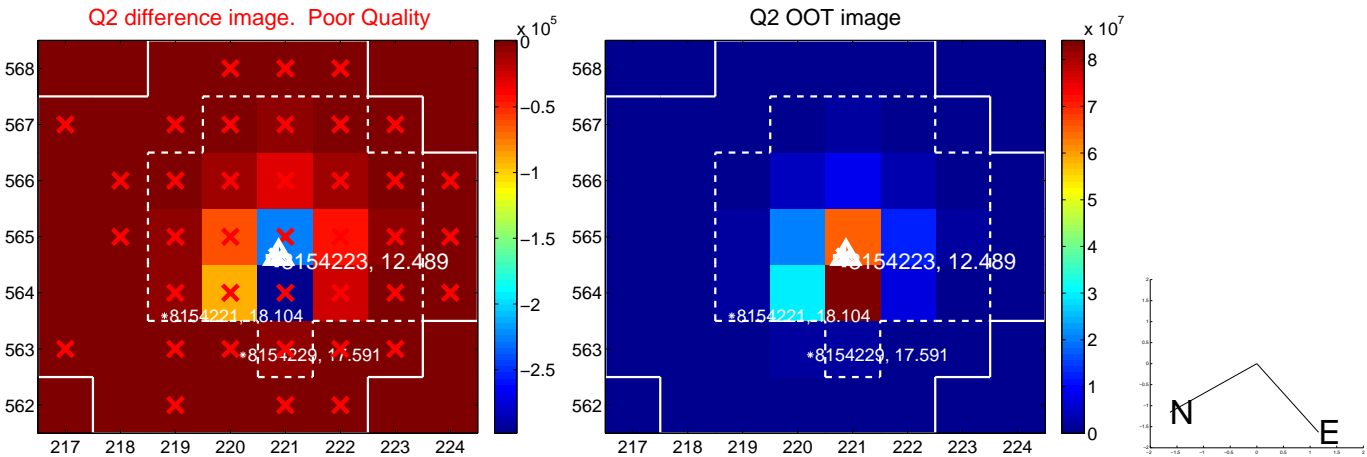
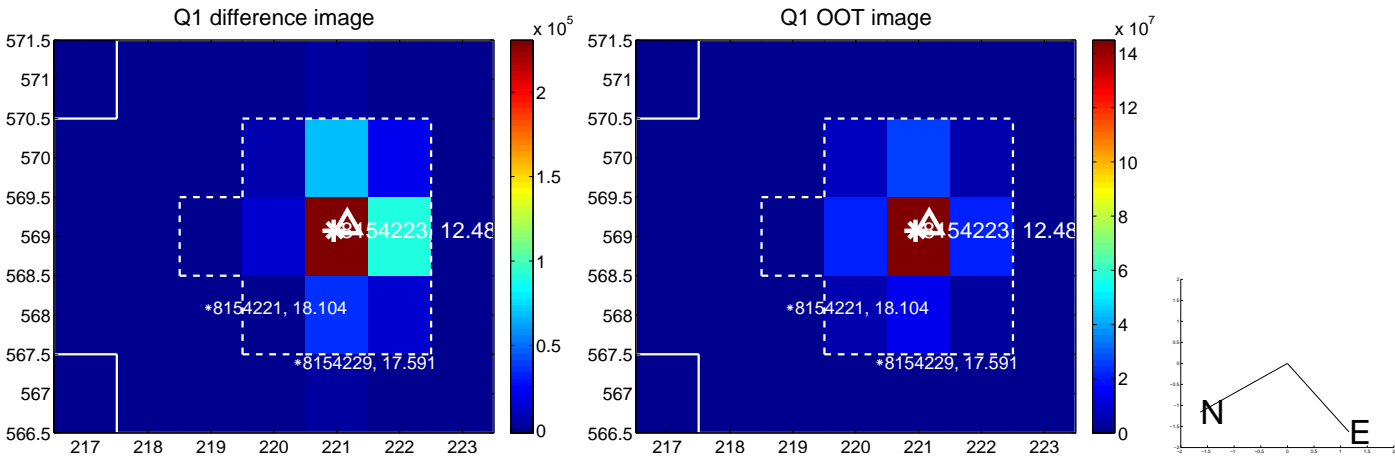
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.066 ± 0.088 | 0.75 | -0.002 ± 0.113 | -0.066 ± 0.088 |
| PRF-fit source offset from KIC position | 0.029 ± 0.107 | 0.27 | -0.027 ± 0.112 | -0.010 ± 0.088 |
| photometric centroid source offset | 0.08 ± 0.06 | 1.32 | 0.06 ± 0.05 | 0.06 ± 0.07 |

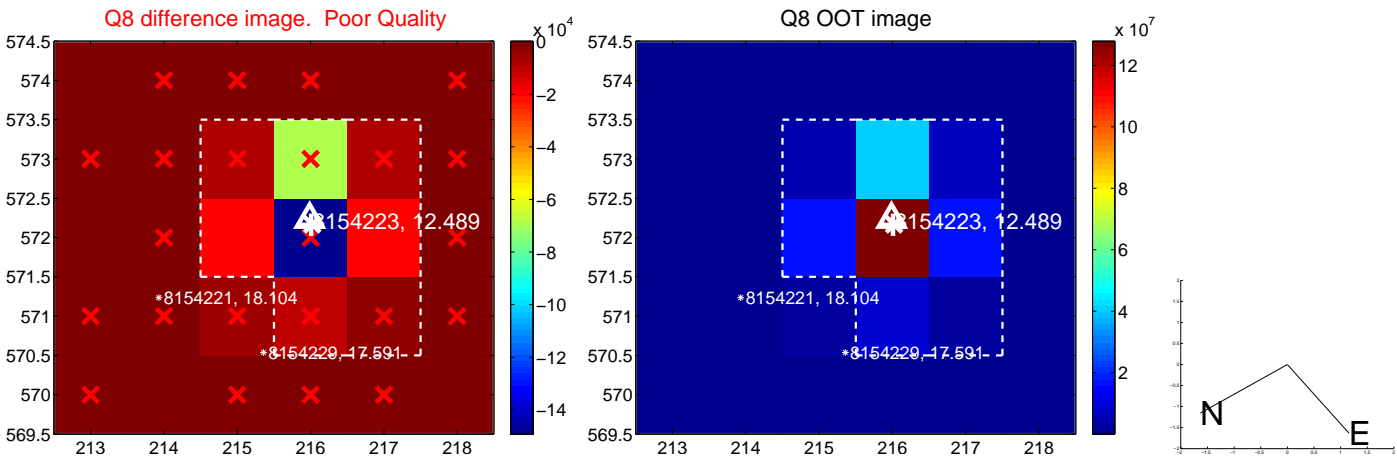
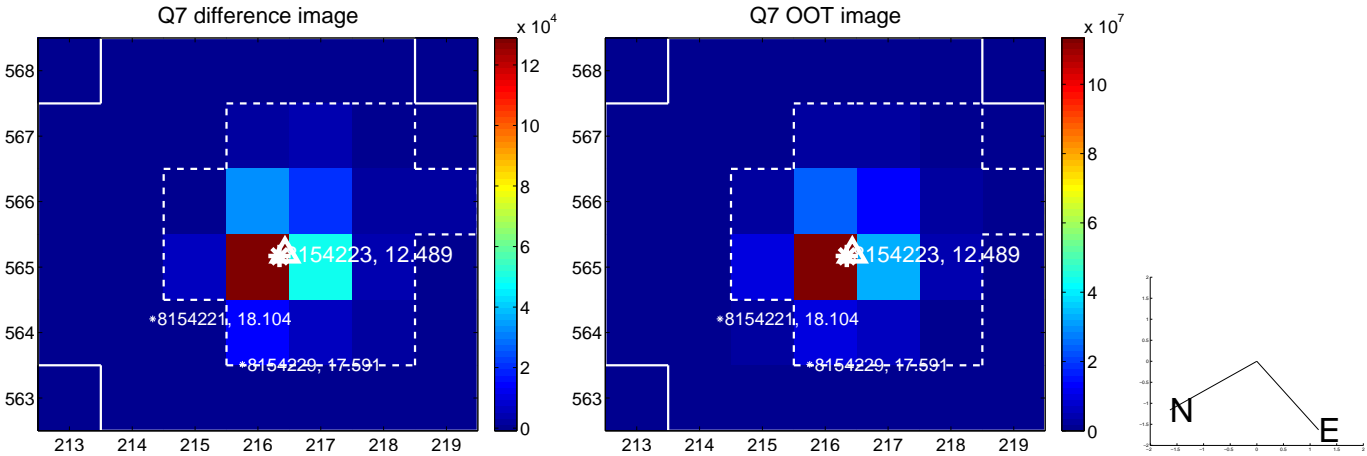
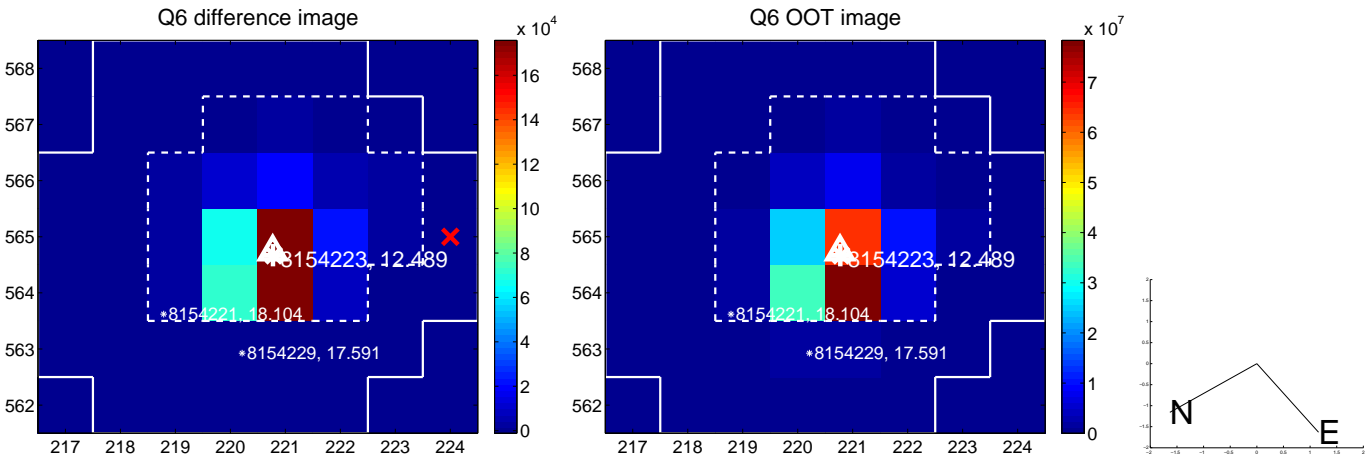
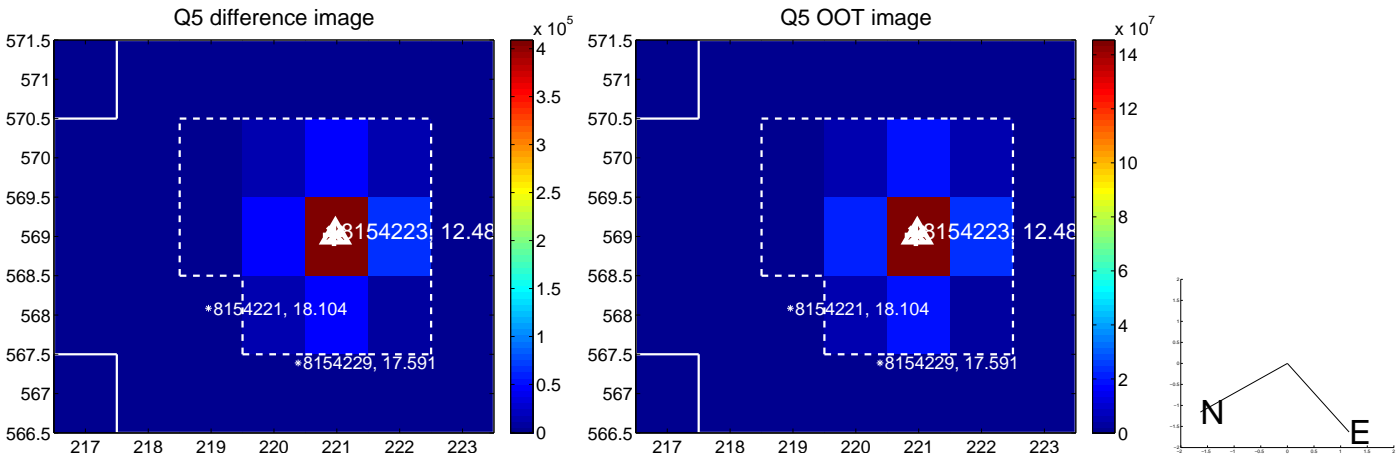


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

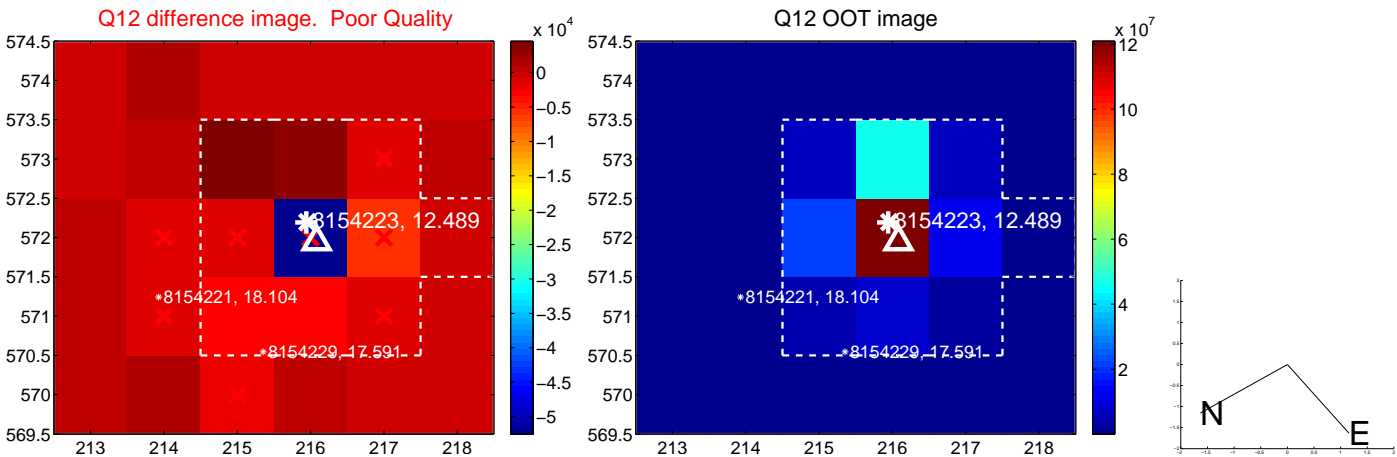
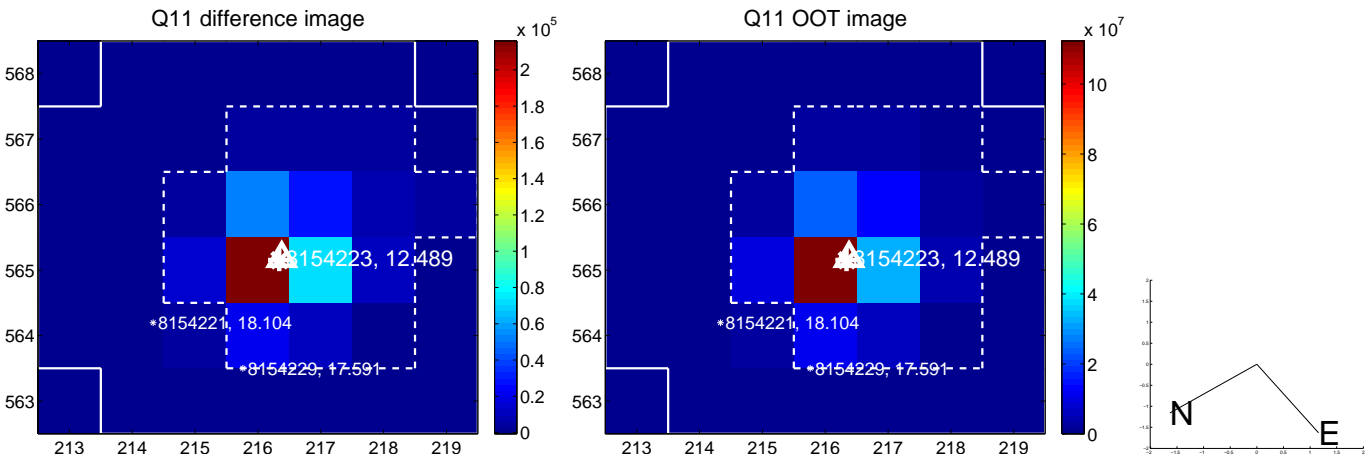
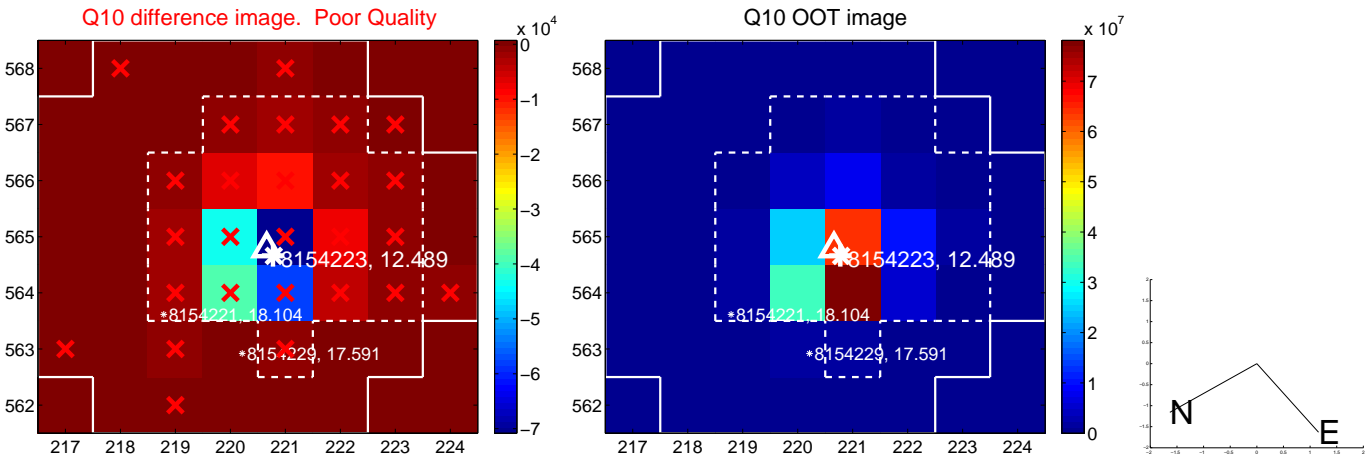
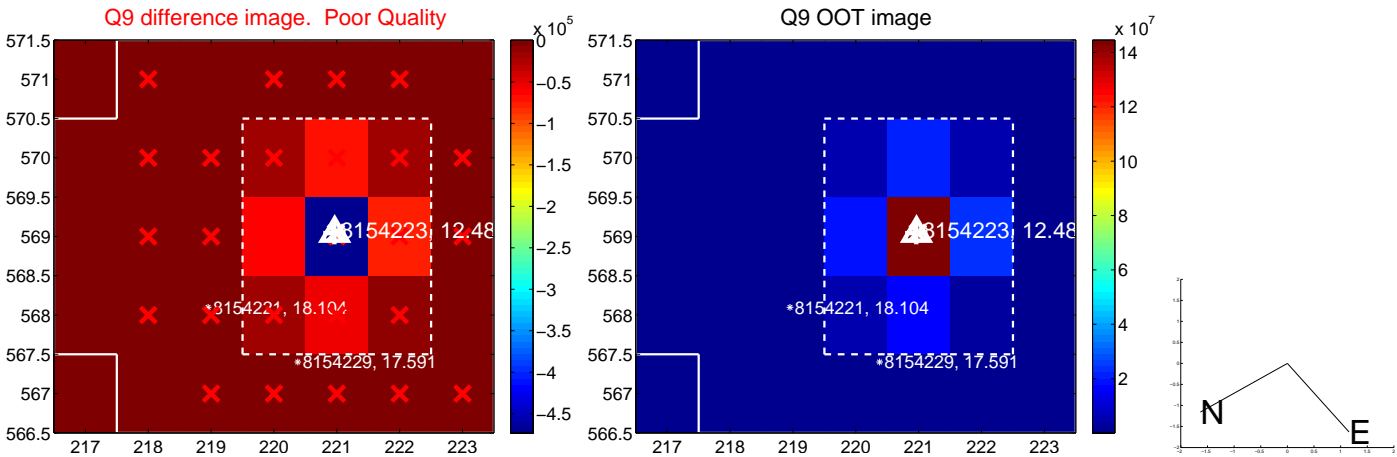
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



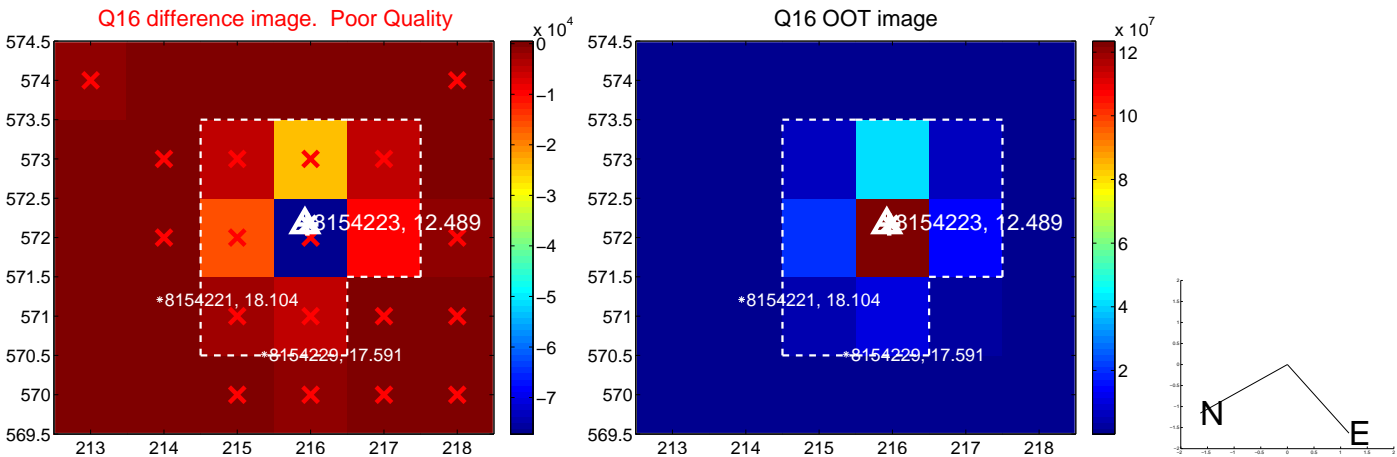
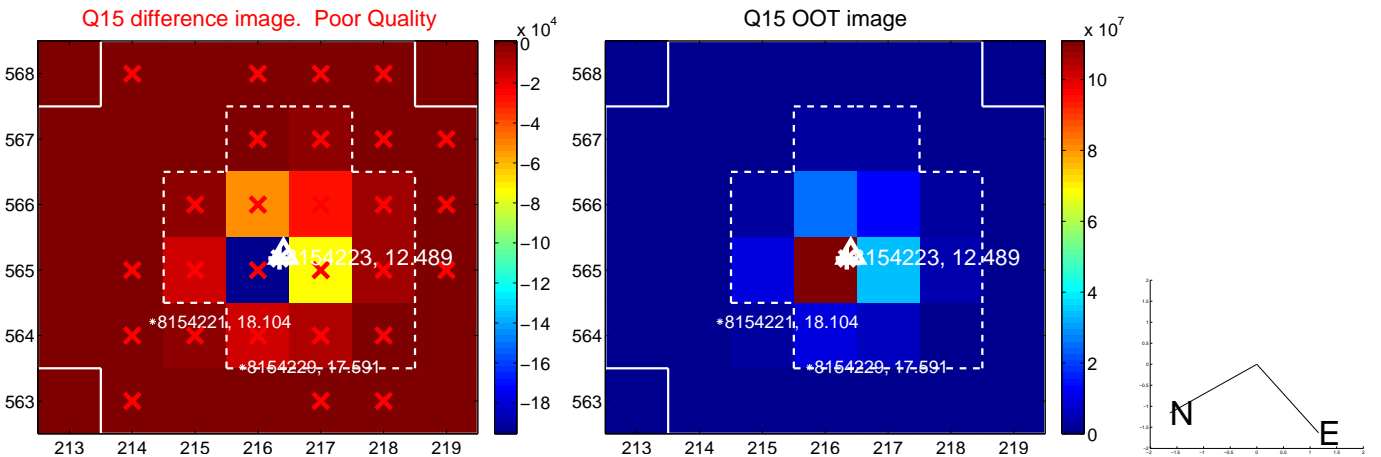
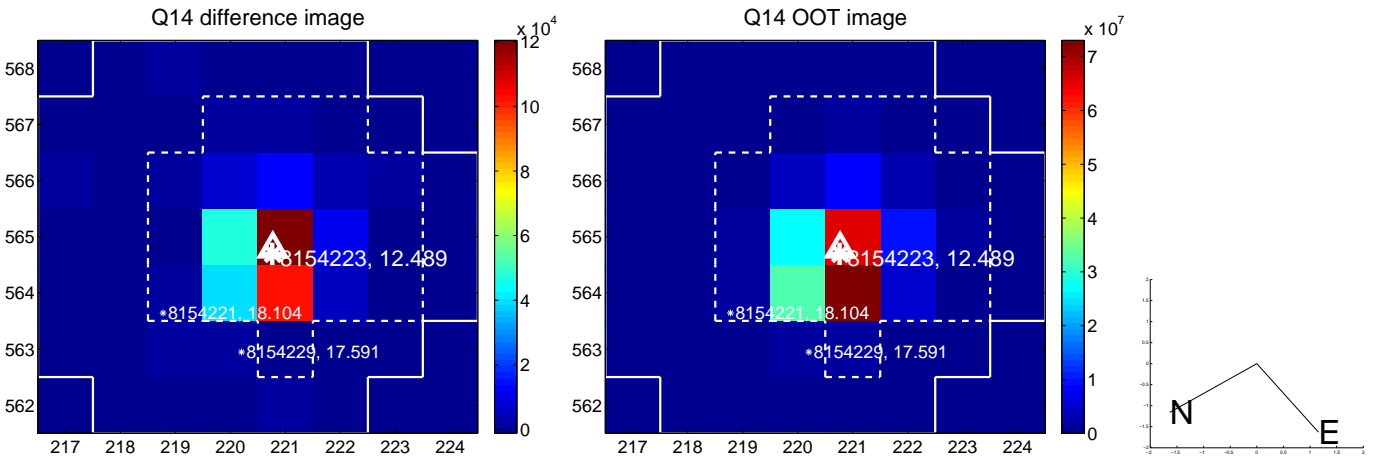
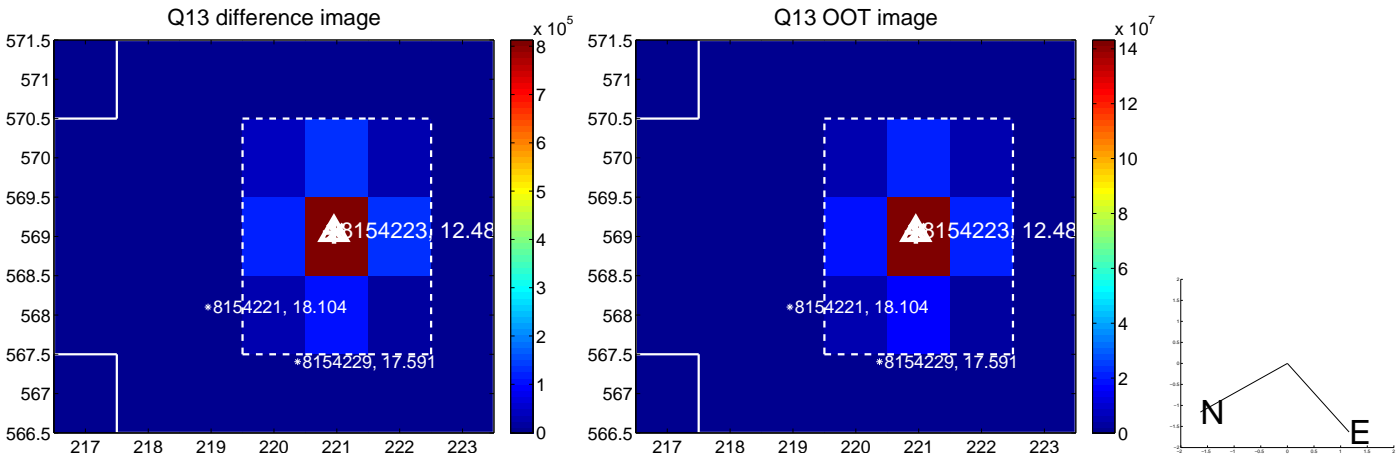
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



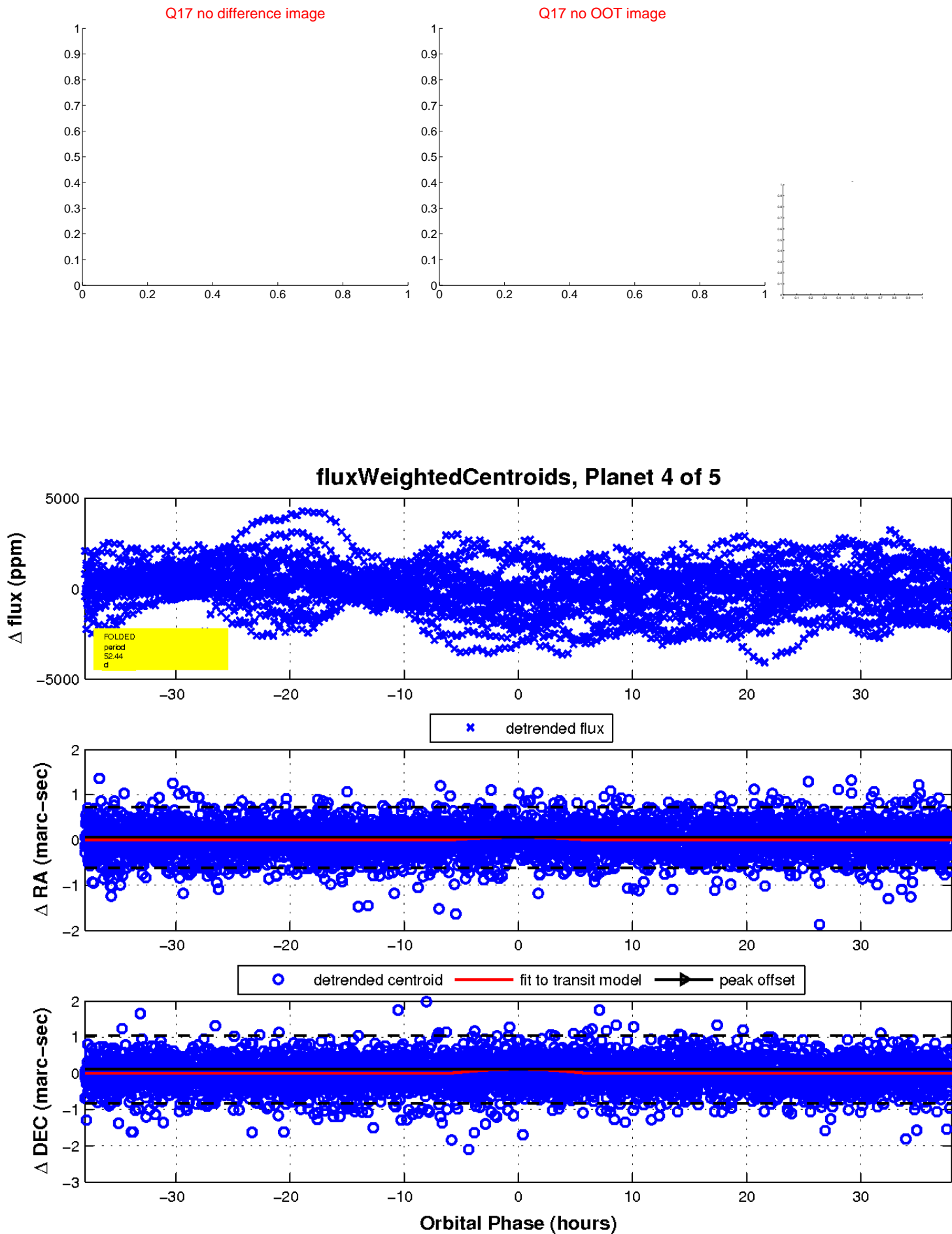
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

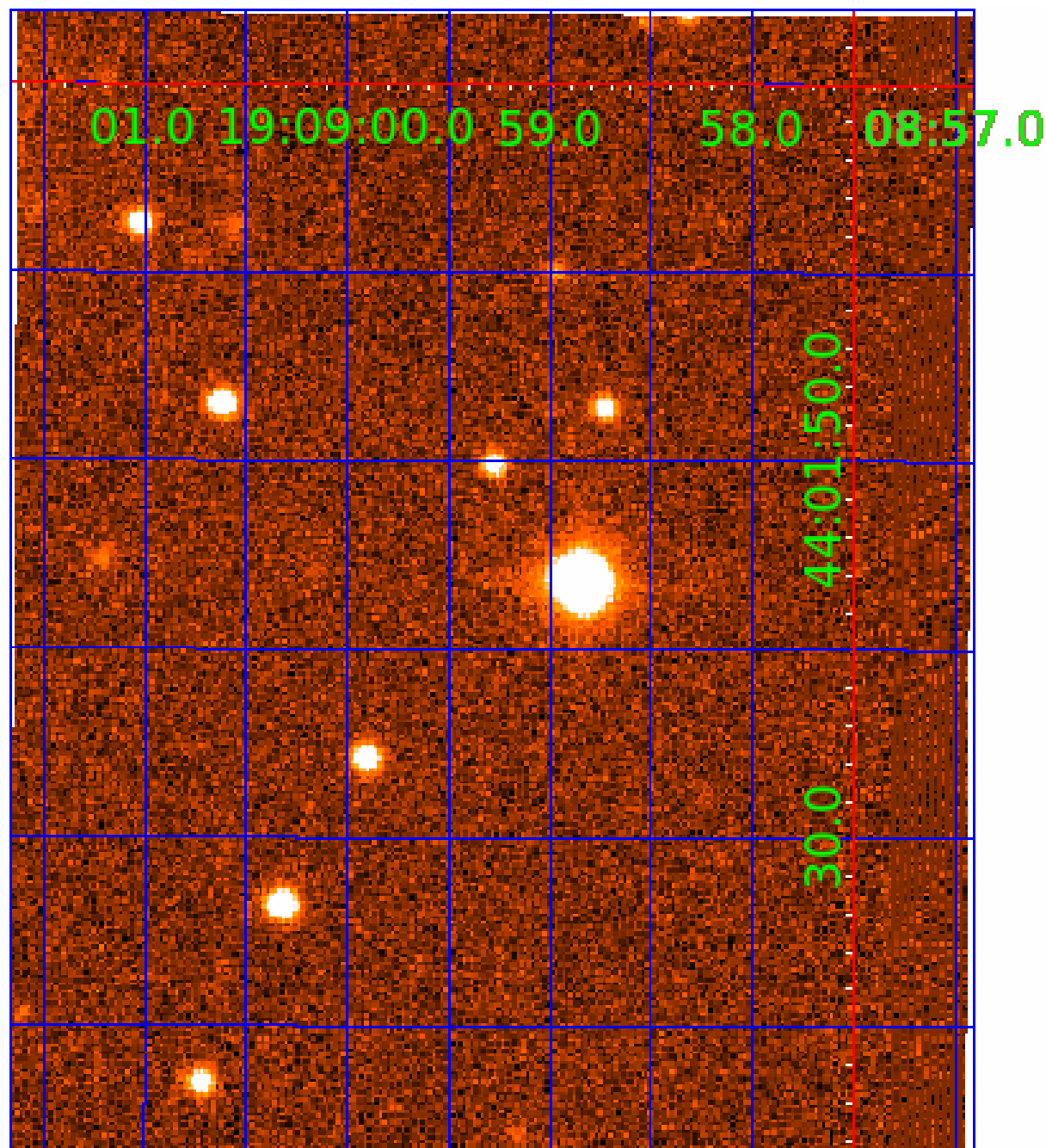


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008154223

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008154223-01 | OBS | No | 1.167712 | 132.053696 | 0.0 | 6.113 | 8.6 | 0.0 | 2.24 | 7512 | 0.00 | 21062.26 |
| 008154223-02 | OBS | No | 115.358304 | 219.602130 | 1740.1 | 13.184 | 10.3 | 8.0 | 2.24 | 7512 | 10.88 | 46.12 |
| 008154223-03 | OBS | No | 187.775425 | 266.675021 | 3022.2 | 16.156 | 10.3 | 9.2 | 2.24 | 7512 | 14.78 | 24.09 |
| 008154223-04 | OBS | No | 52.437614 | 140.727896 | 1296.9 | 12.657 | 10.4 | 8.3 | 2.24 | 7512 | 10.17 | 131.96 |
| 008154223-05 | OBS | No | 210.295388 | 277.304444 | 92.5 | 15.000 | 8.4 | -1.0 | 2.24 | 7512 | 2.19 | 20.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008154223-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 008154223-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 008154223-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 008154223-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV |
| 008154223-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—CENT_NOFITS |

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

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

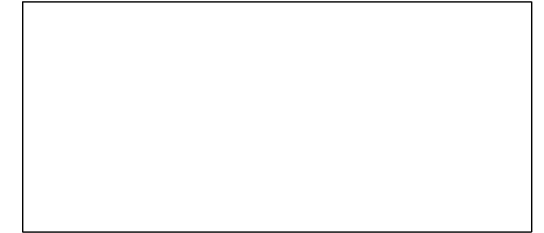
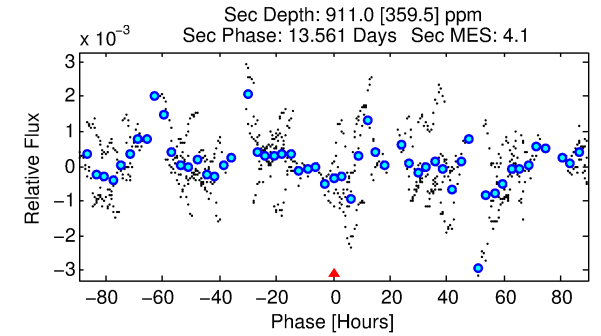
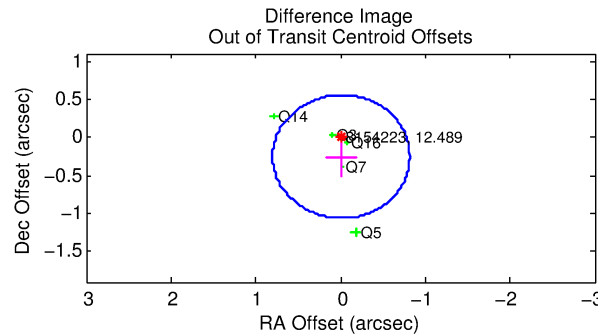
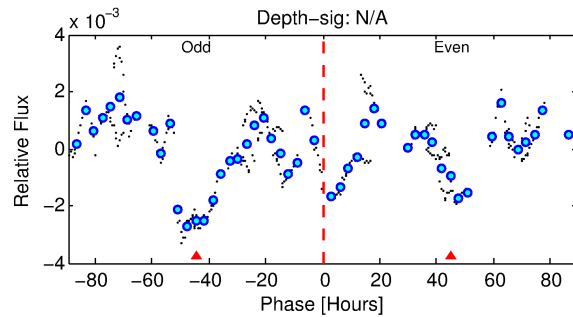
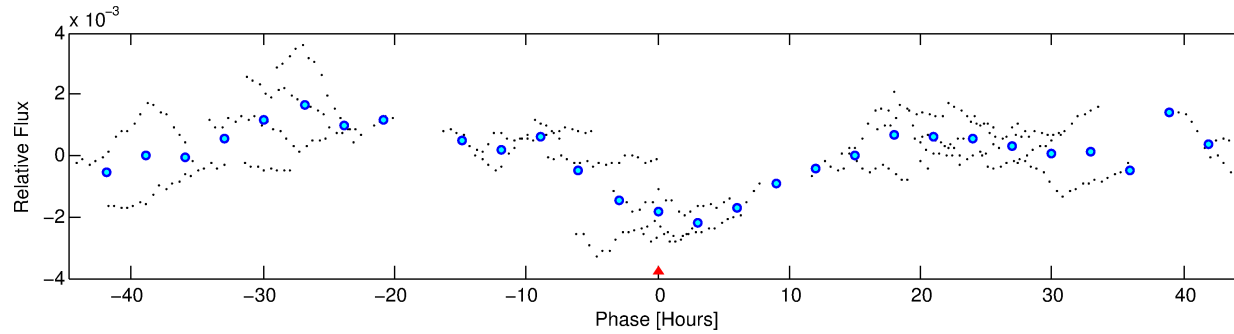
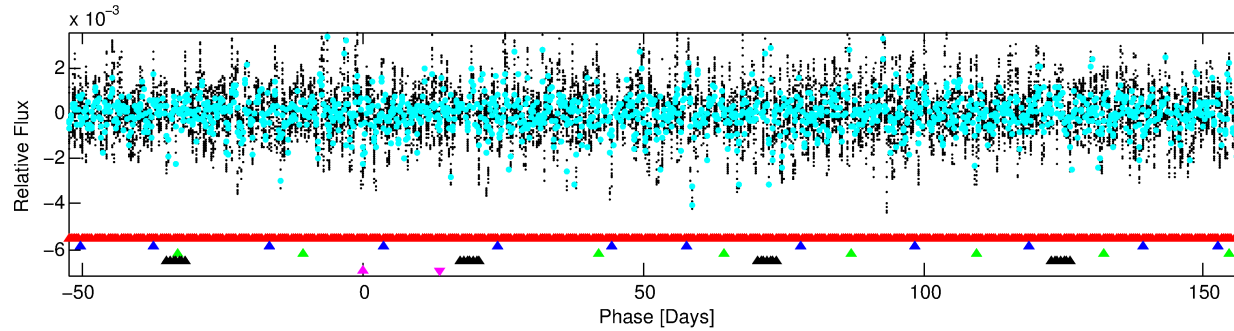
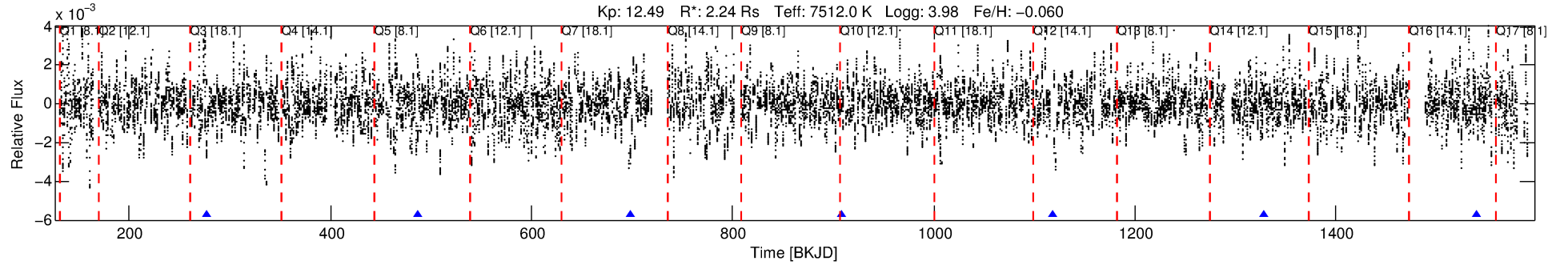
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008154223-05

No Significant Match Found

DV One-Page Summary

KIC: 8154223 Candidate: 5 of 5 Period: 210.295 d



TPS TCE Results:

Period = 210.29539 d
Epoch = 277.3044 BKJD

DV fit results are unavailable

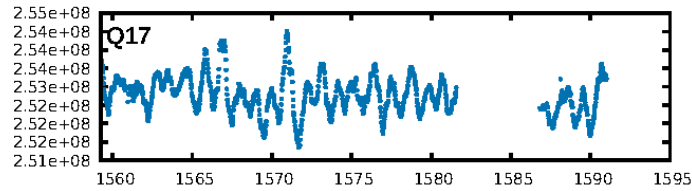
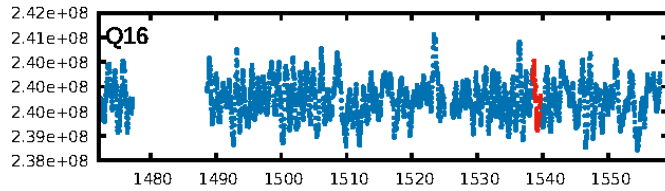
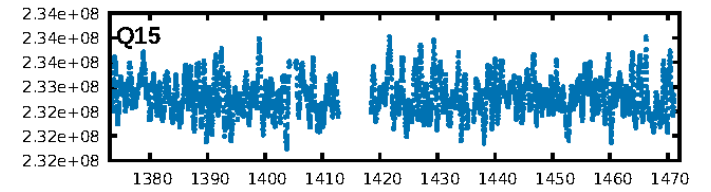
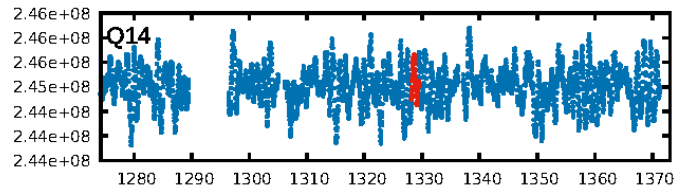
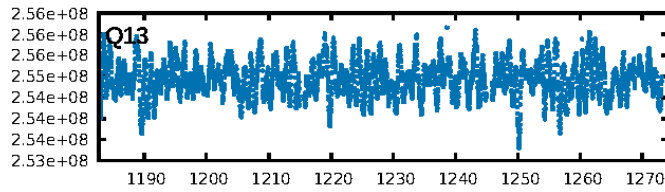
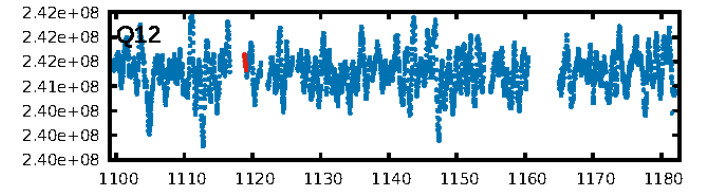
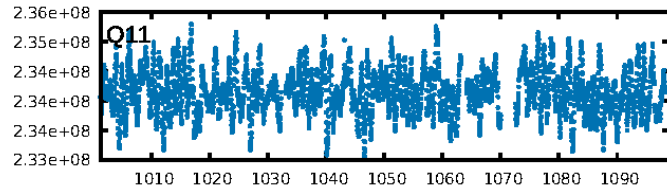
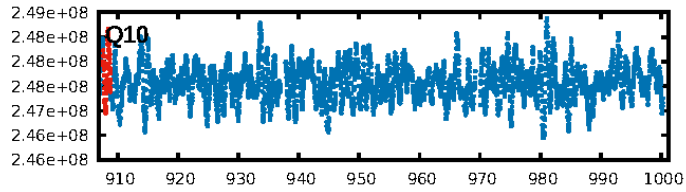
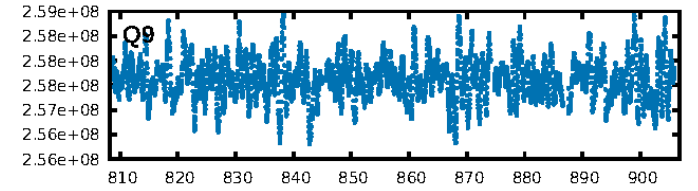
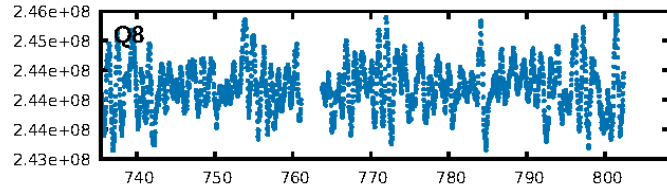
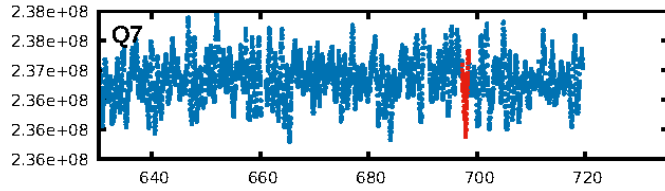
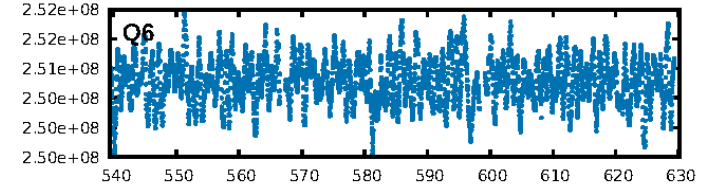
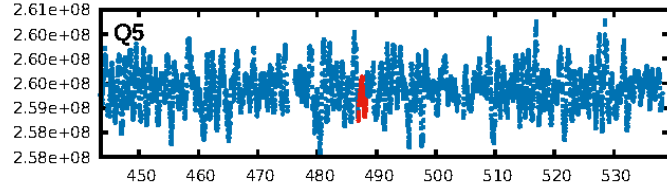
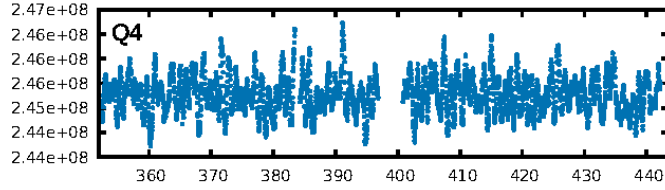
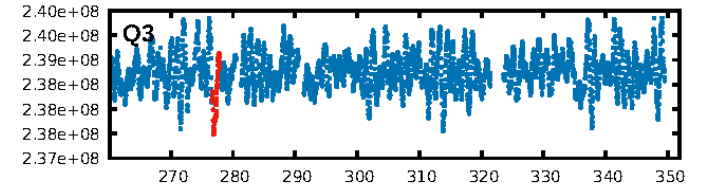
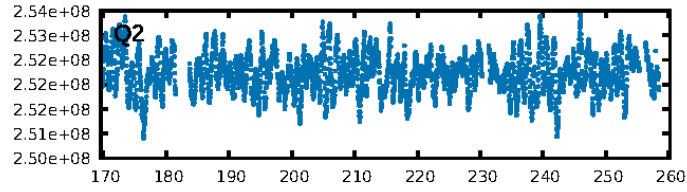
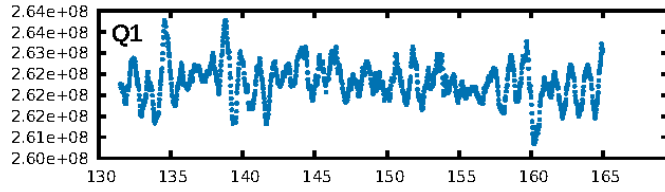
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.7094
Centroid-sig: 20.6%
Centroid-so: 0.126 arcsec [2.18σ]
OotOffset-rm: 0.254 arcsec [0.94σ]
KicOffset-rm: 0.254 arcsec [0.86σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.00 [0/5]

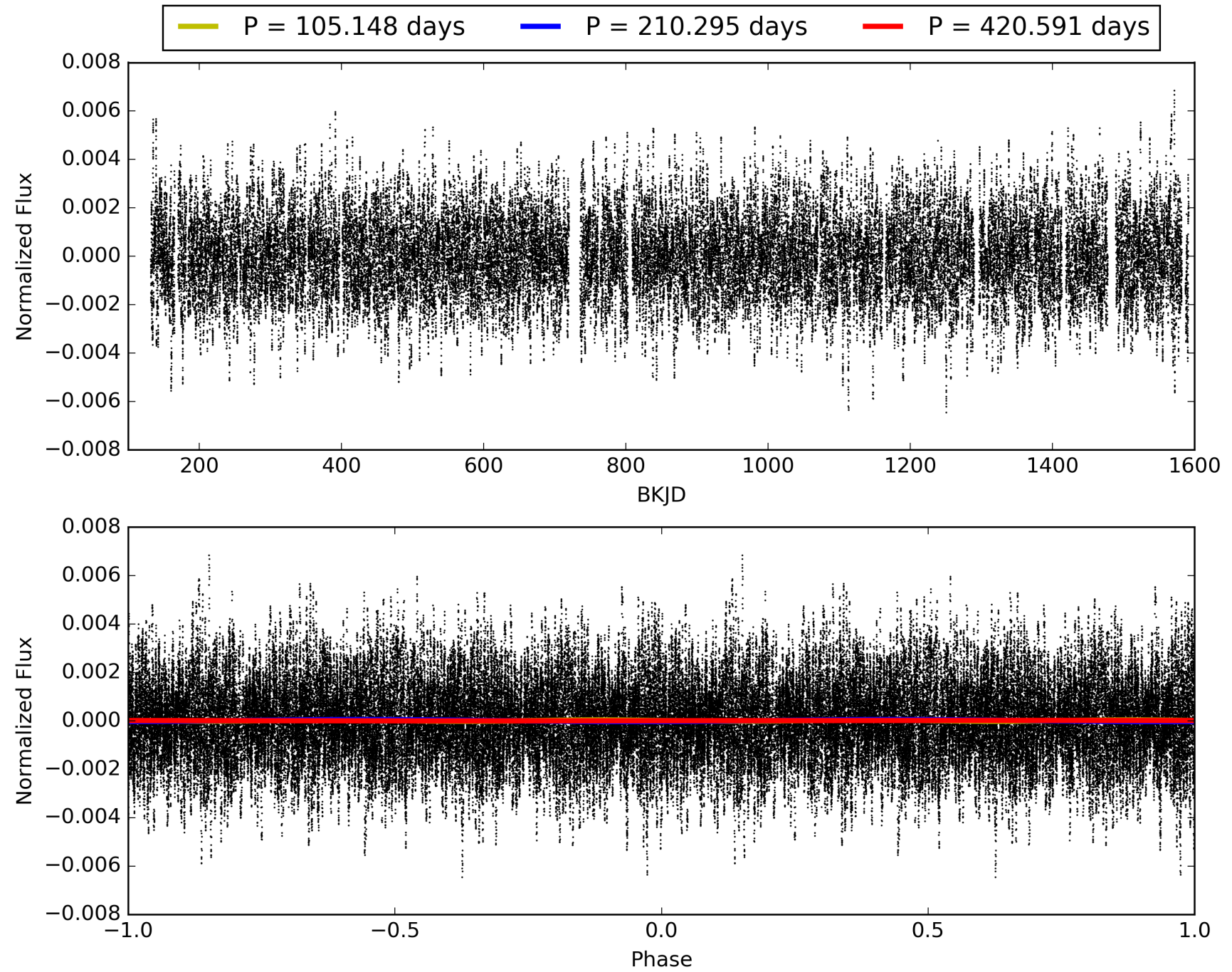
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:33:34 Z

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

TCE 008154223-05, PDC Light Curves

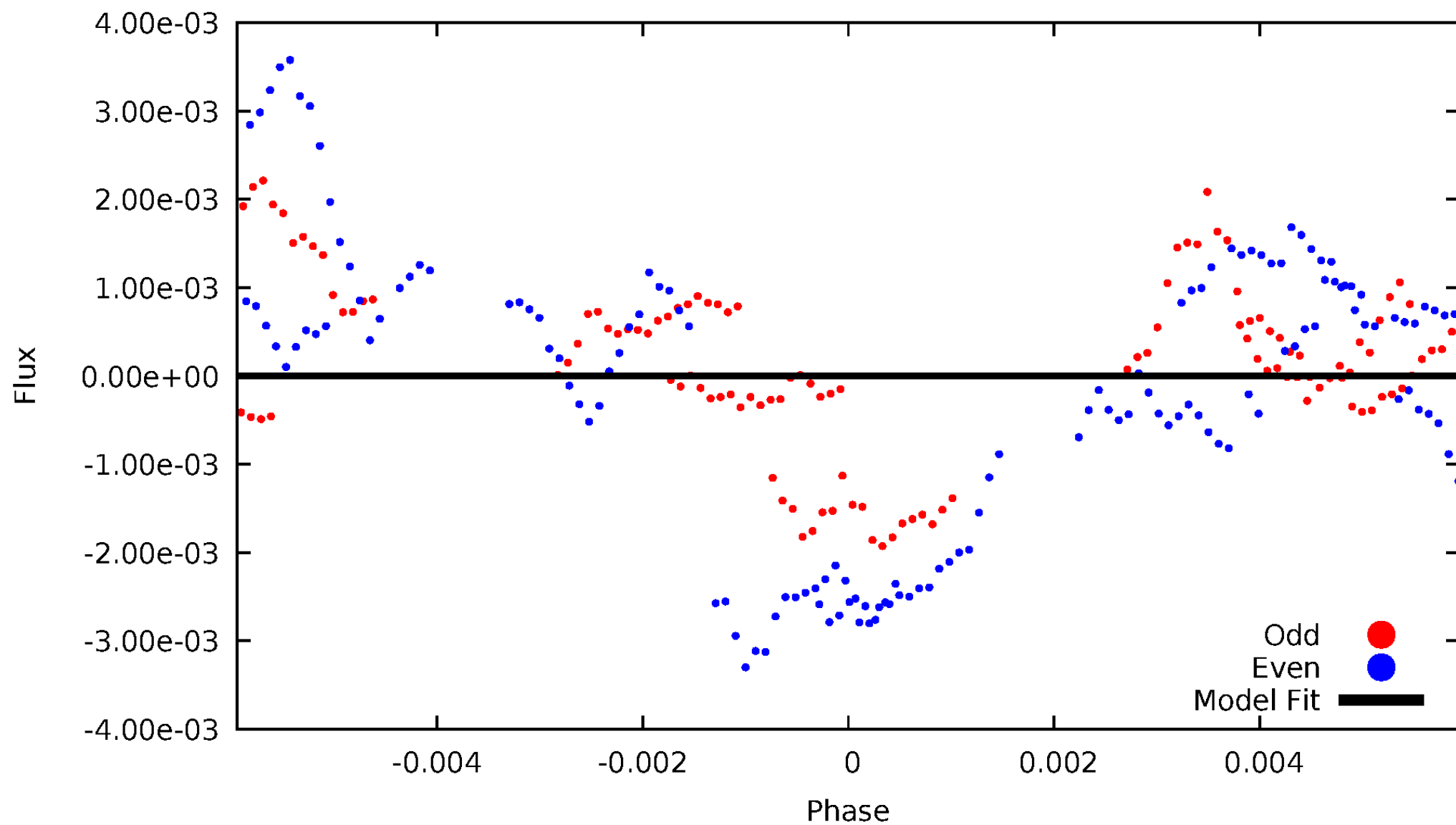


TCE 008154223-05



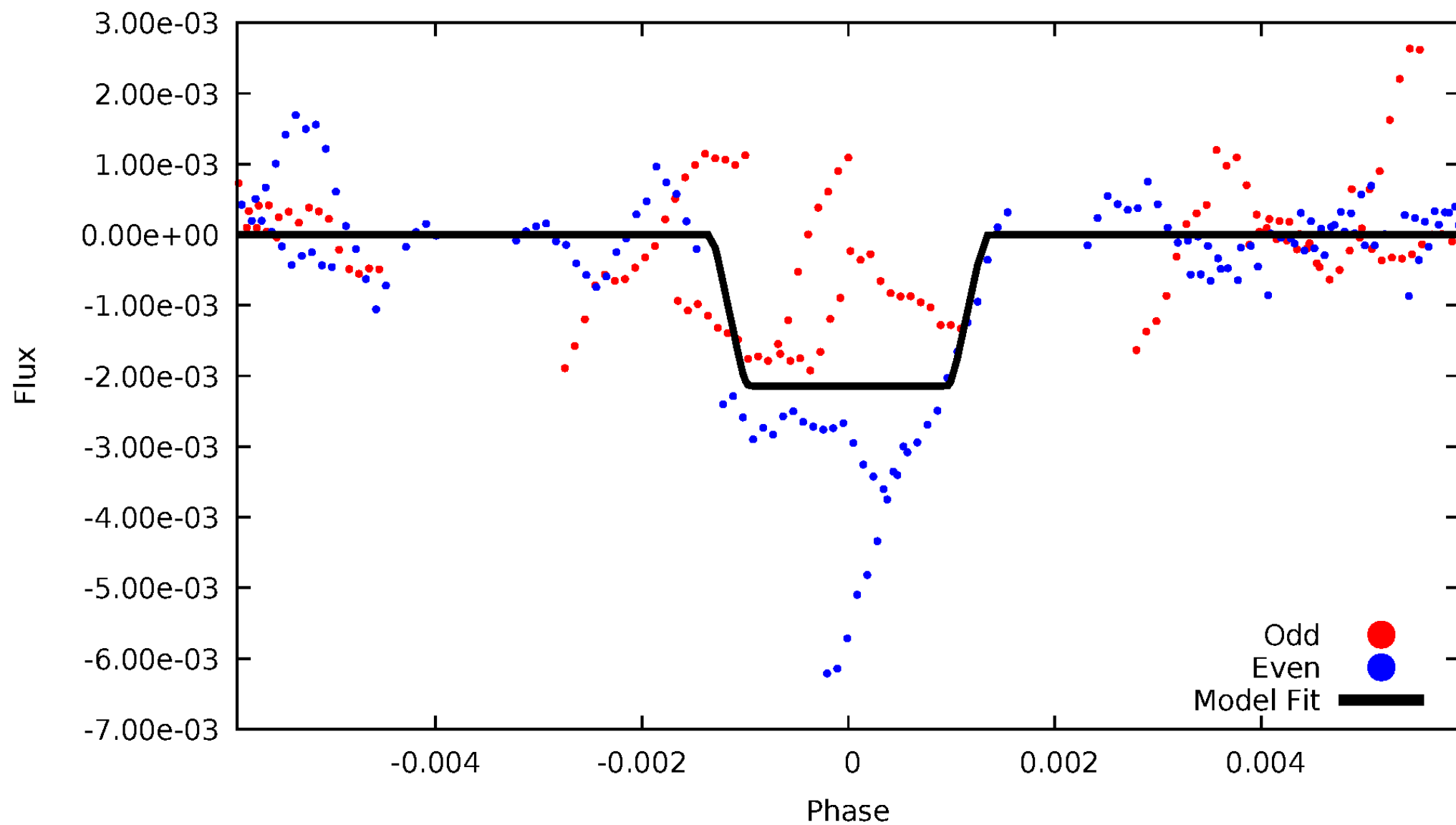
DV Odd/Even

TCE 008154223-05

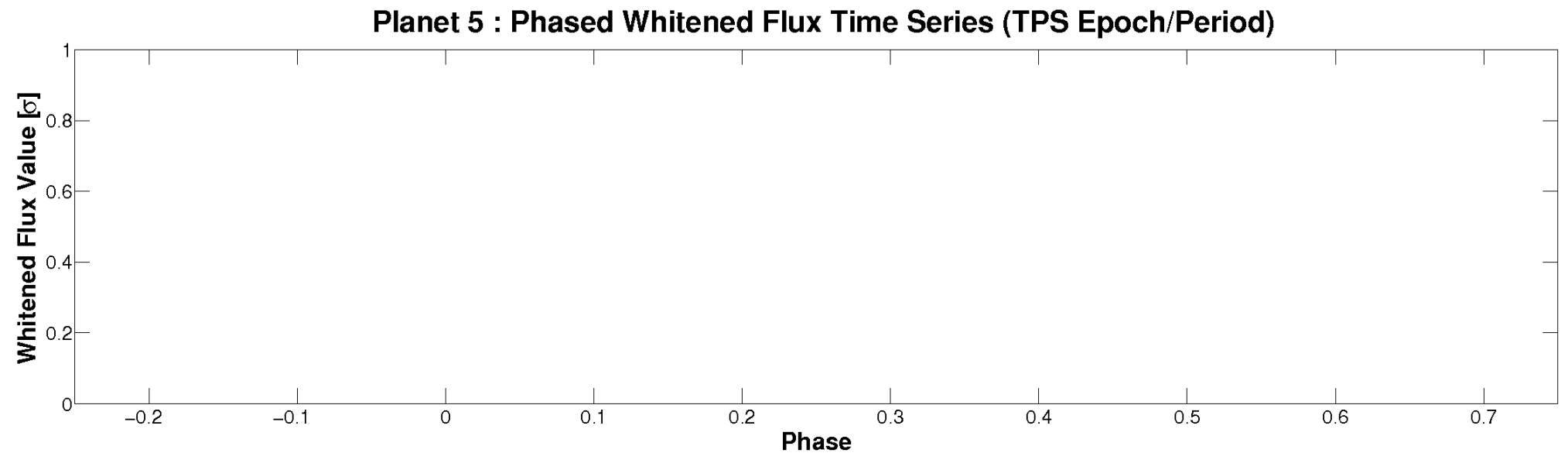
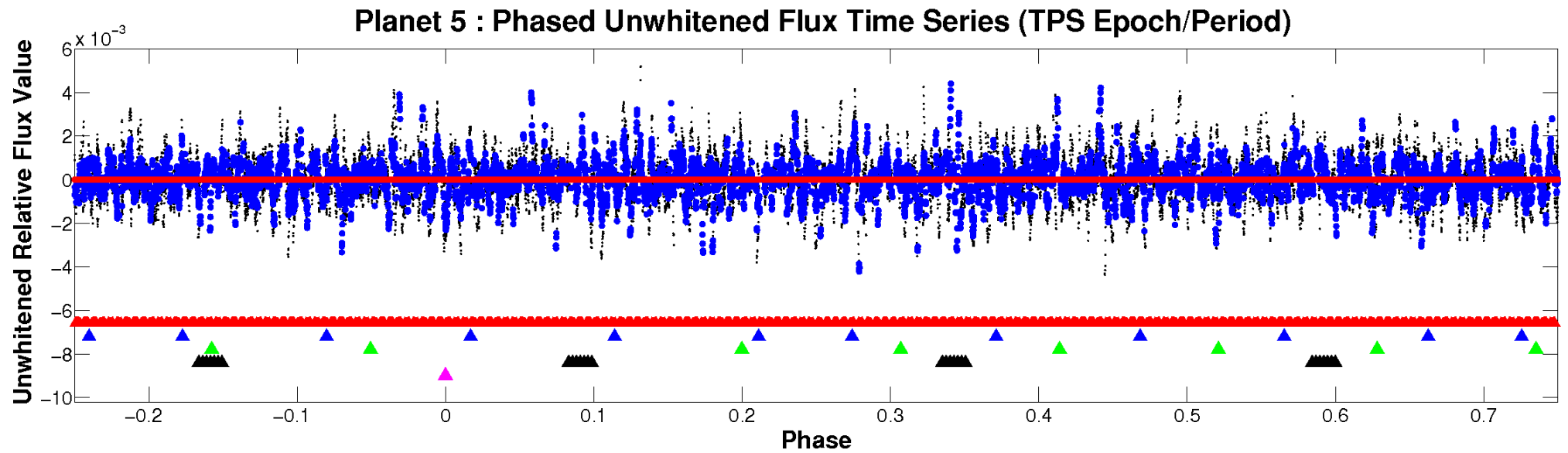


ALT Odd/Even

TCE 008154223-05

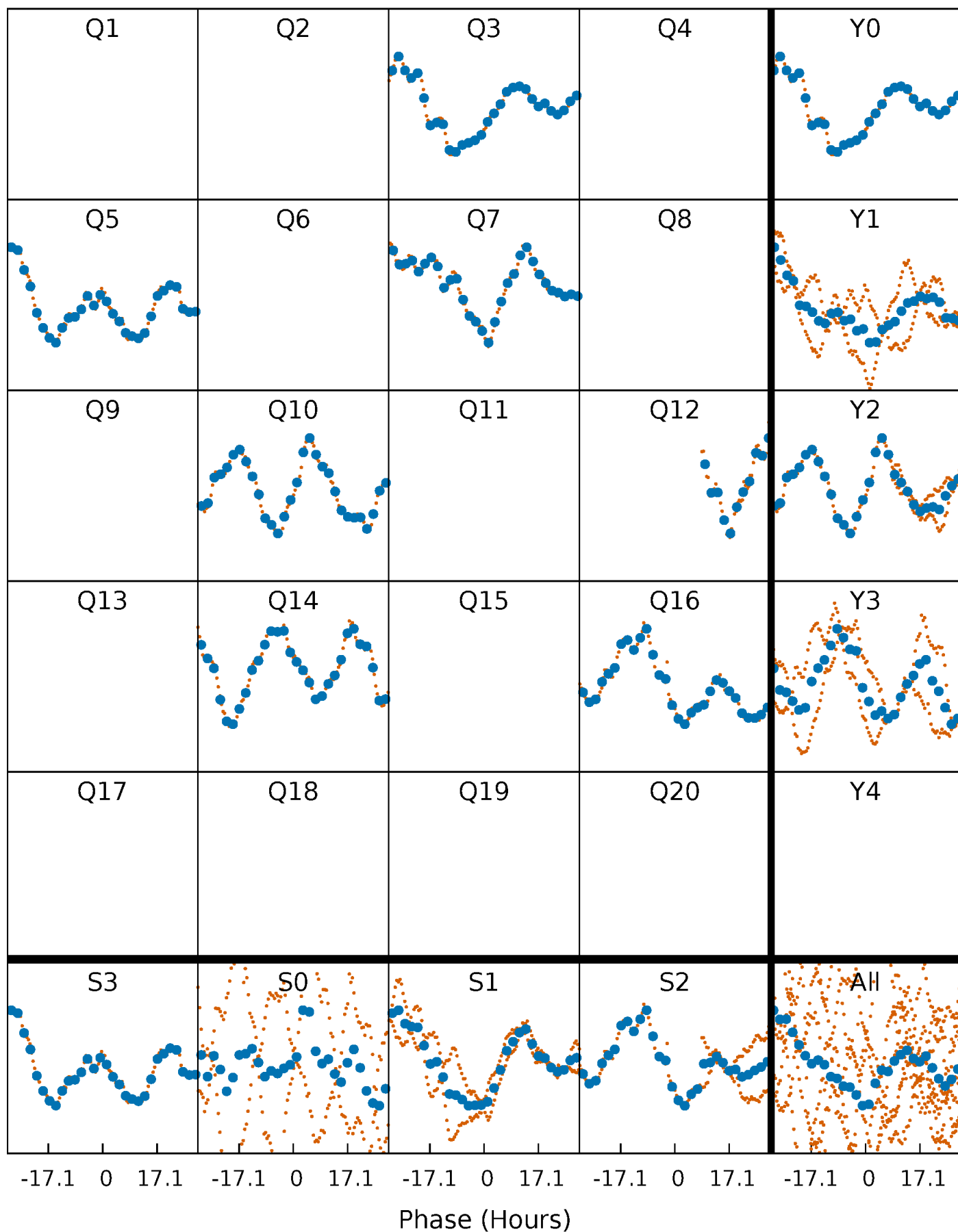


Non-Whitened Vs. Whitened Light Curve



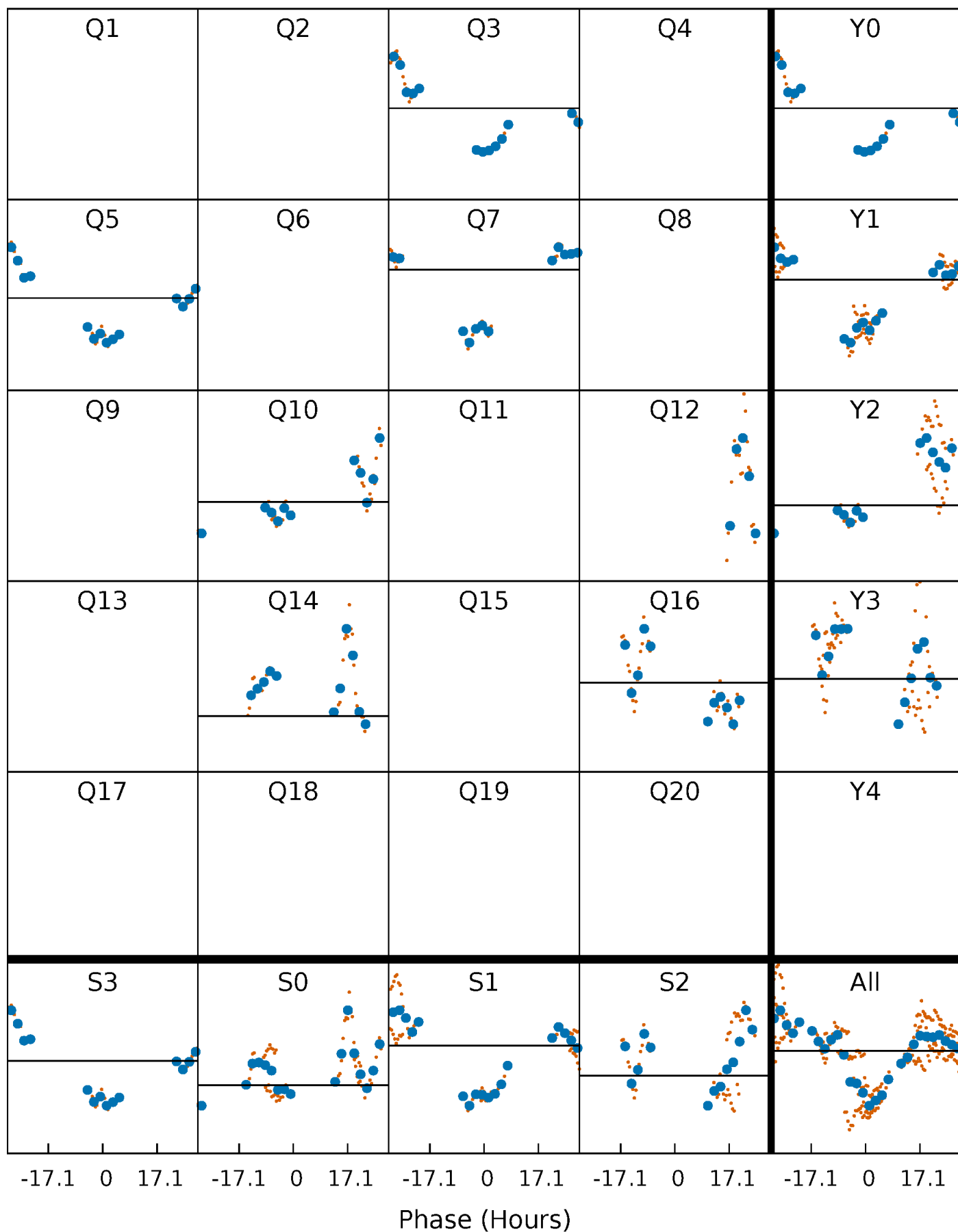
PDC Quarter-Phased Transit Curves

TCE 008154223-05 $P=210.295388$ Days $T_0=277.304444$ (BKJD)



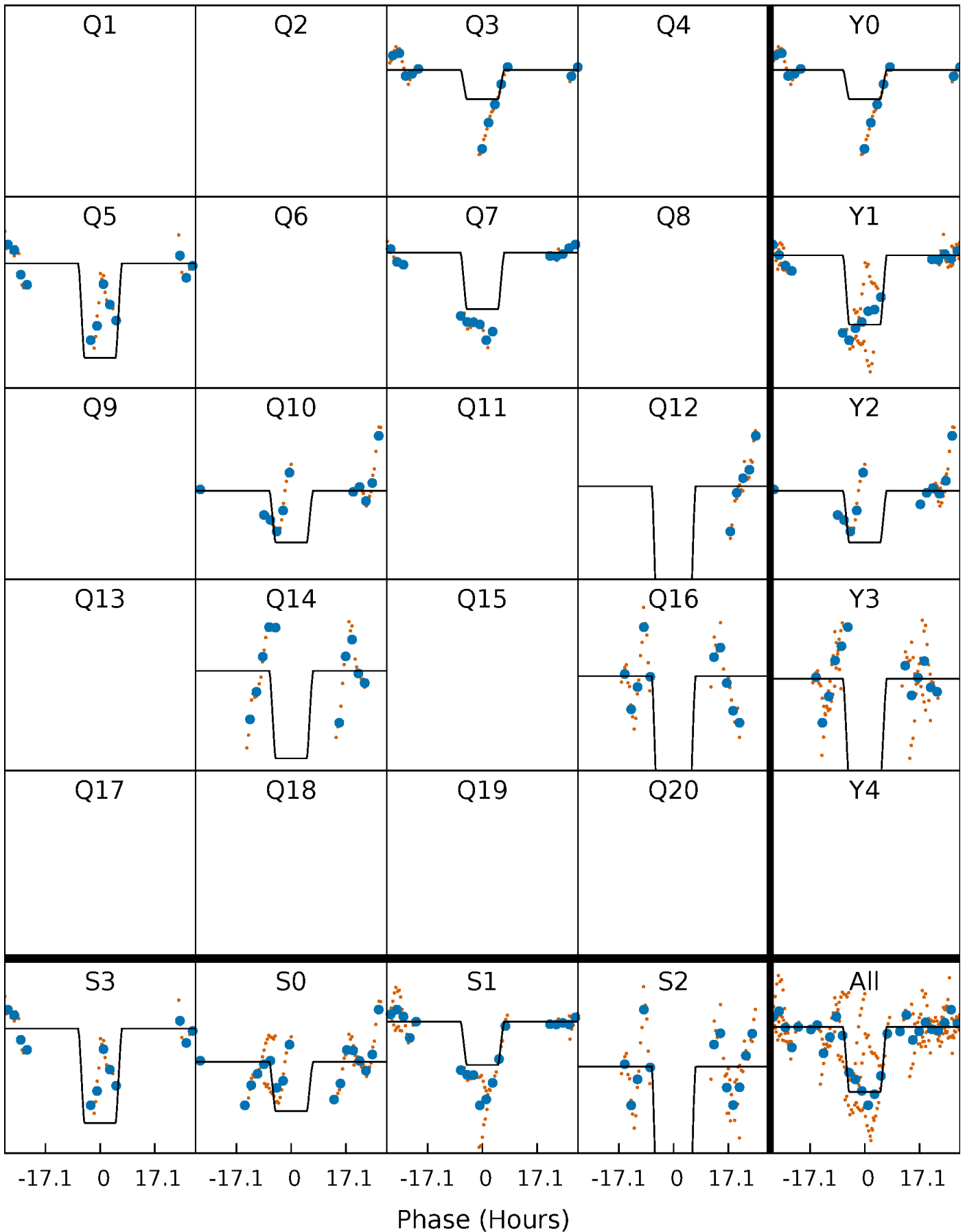
DV Quarter-Phased Transit Curves

TCE 008154223-05 $P=210.295388$ Days $T_0=277.304444$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

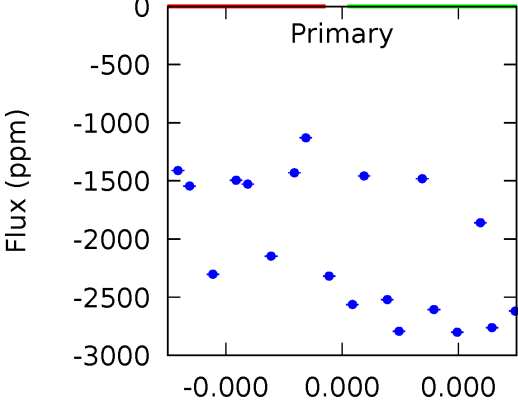
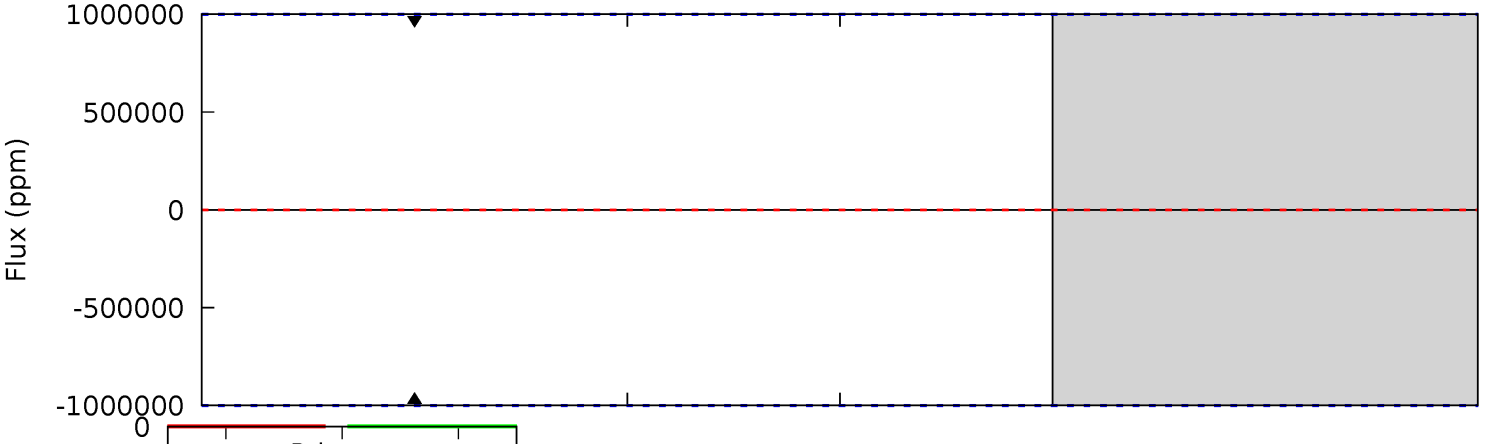
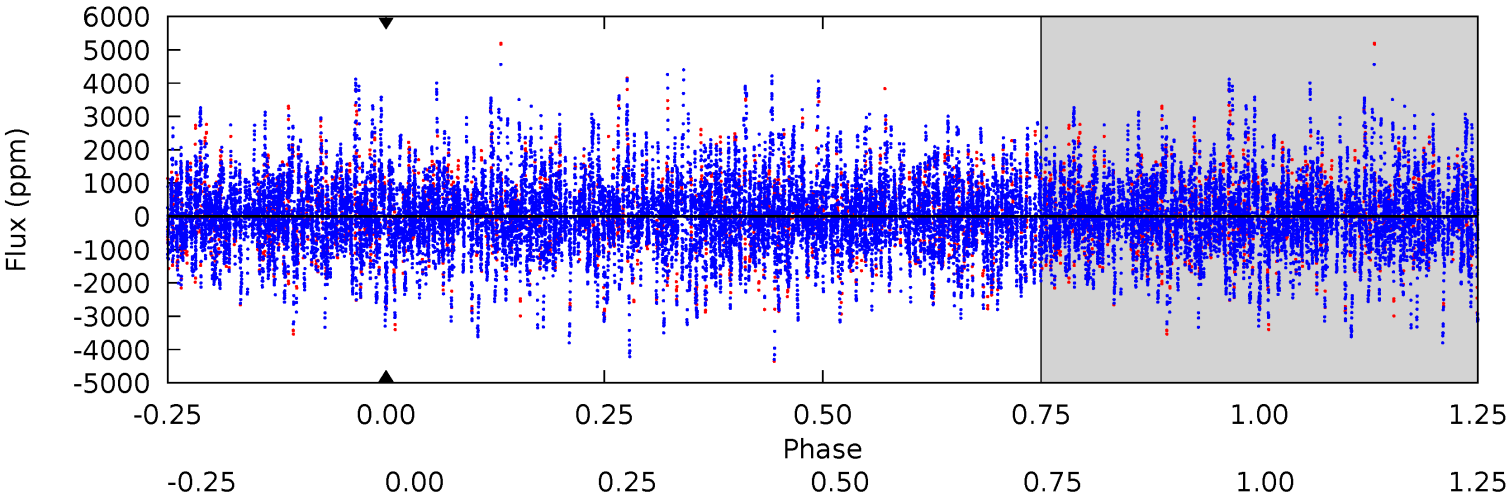
TCE 008154223-05 $P=210.295388$ Days $T_0=277.288284$ (BKJD)



DV Model-Shift Uniqueness Test

008154223-05, P = 210.295388 Days, E = 67.009056 Days

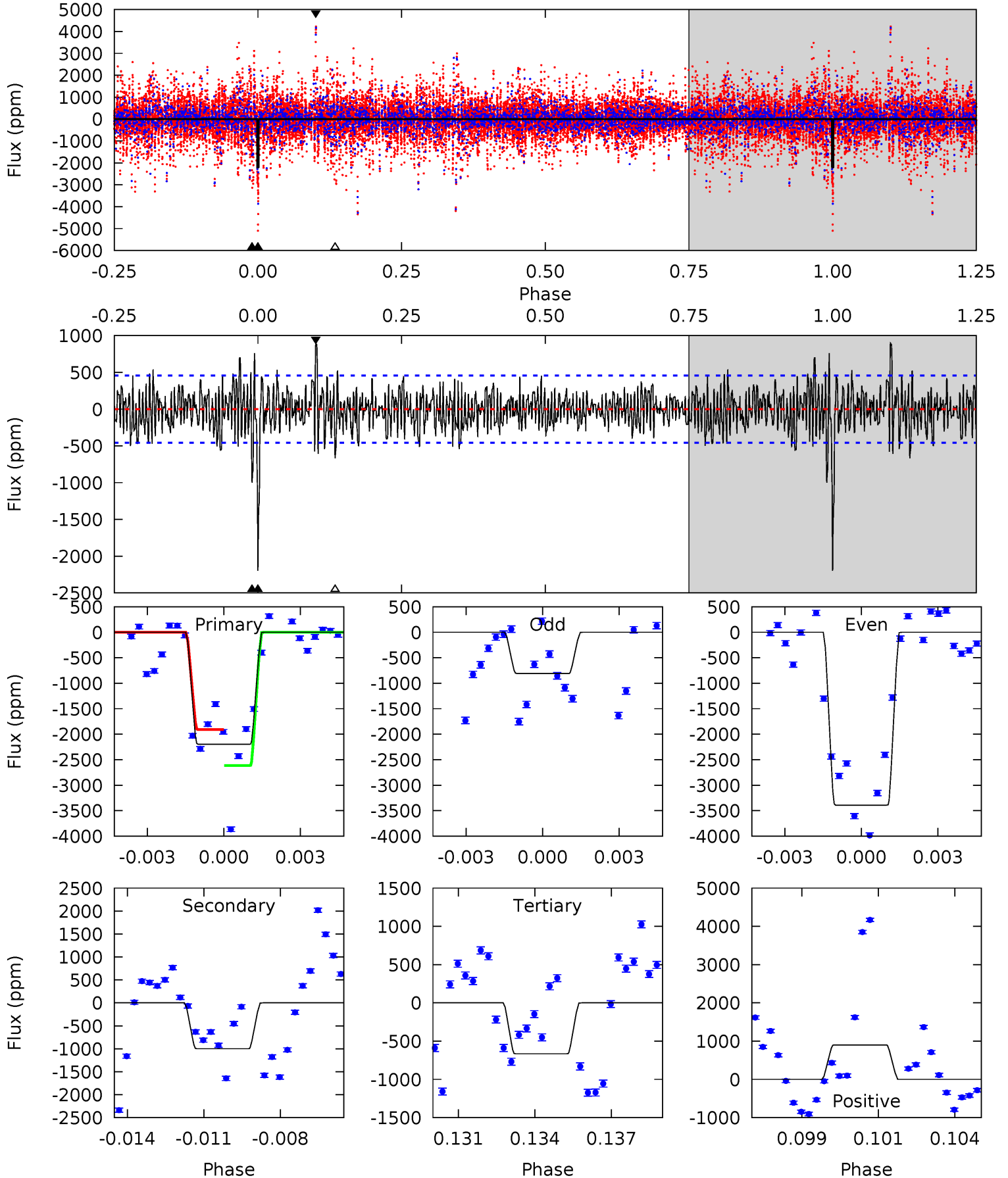
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Alt Model-Shift Uniqueness Test

008154223-05, P = 210.295388 Days, E = 66.992896 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 25.3 | 11.5 | 7.67 | 10.4 | 5.27 | 3.00 | 2.22 | 17.7 | 14.9 | 3.84 | 1.14 | 15.5 | 1.30 | 0.29 | 4.01 |



Stellar Parameters For KIC 008154223

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7512^{+209}_{-314} | $3.976^{+0.209}_{-0.152}$ | $-0.060^{+0.200}_{-0.350}$ | $2.239^{+0.525}_{-0.642}$ | $1.727^{+0.185}_{-0.317}$ | $0.217^{+0.281}_{-0.091}$ |
| | +3%/-4% | +5%/-4% | +333%/-583% | +23%/-29% | +11%/-18% | +130%/-42% |
| 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 008154223-05 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-----------------|---------------------------|----------------------|---------------------------|---|
| DV | 0 ± 1000000 | $17.26^{+19.87}_{-11.77}$ | 758^{+55}_{-62} | -5479^{+47143}_{-33422} | $-2232.161^{+202338.559}_{-201435.495}$ |
| Alt. | -998 ± 87 | $20.26^{+19.78}_{-13.92}$ | 746^{+60}_{-54} | 4650^{+3457}_{-989} | 921^{+7651}_{-690} |

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

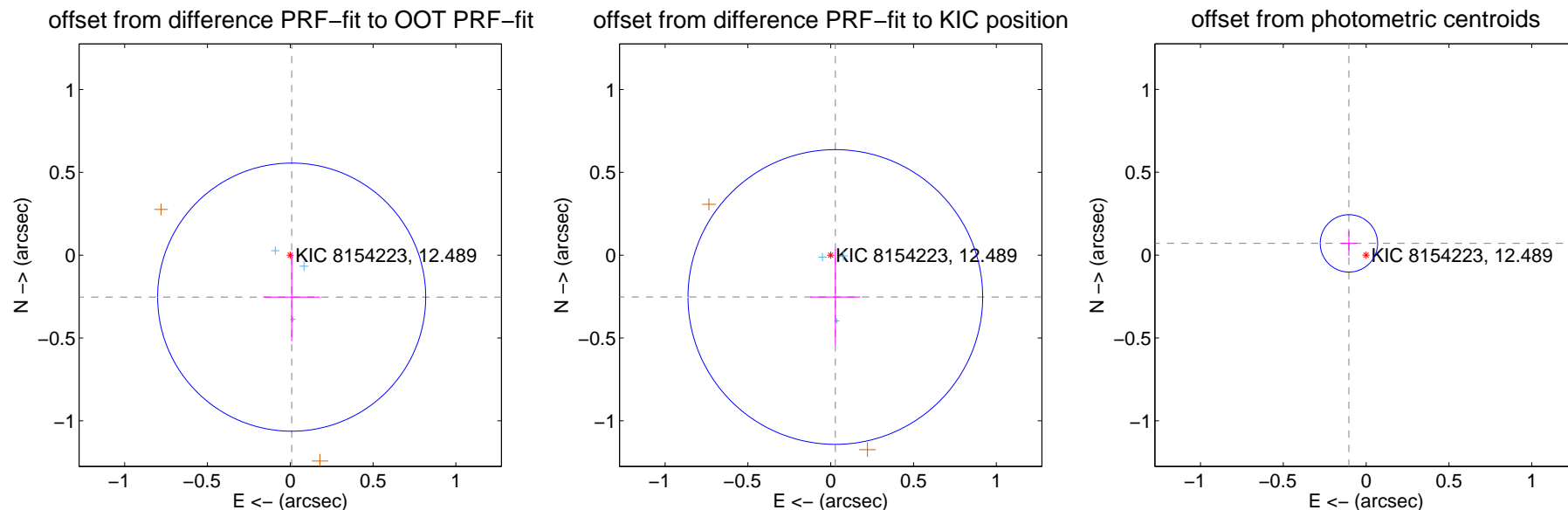
DV Centroid Data

Supplemental centroid analysis for 008154223-05. Kepler magnitude: 12.49. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

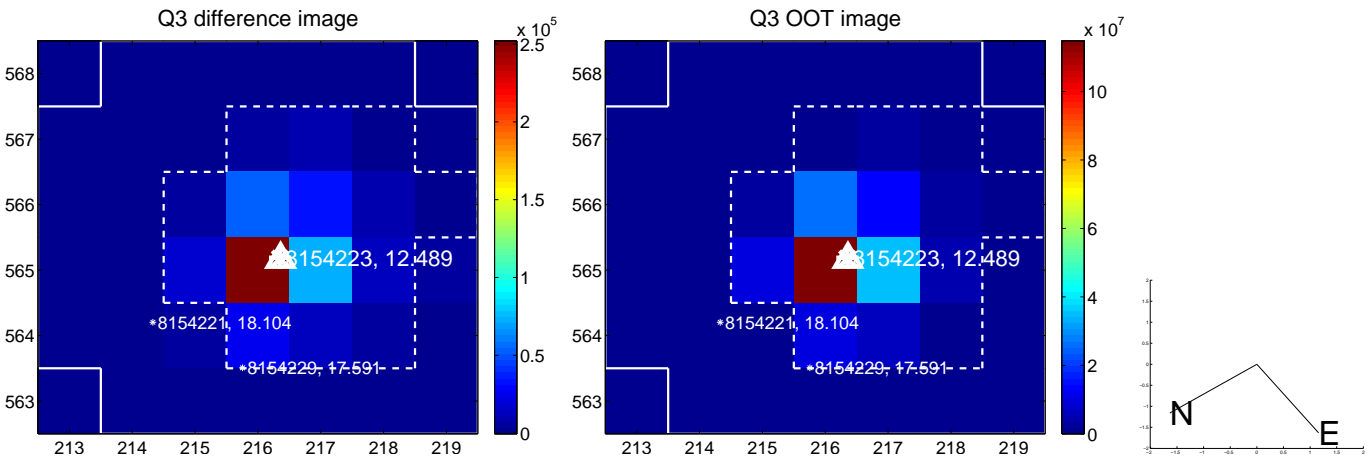
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.254 ± 0.270 | 0.94 | -0.009 ± 0.171 | -0.254 ± 0.266 |
| PRF-fit source offset from KIC position | 0.254 ± 0.297 | 0.86 | -0.028 ± 0.151 | -0.253 ± 0.287 |
| photometric centroid source offset | 0.13 ± 0.06 | 2.18 | 0.10 ± 0.05 | 0.07 ± 0.07 |

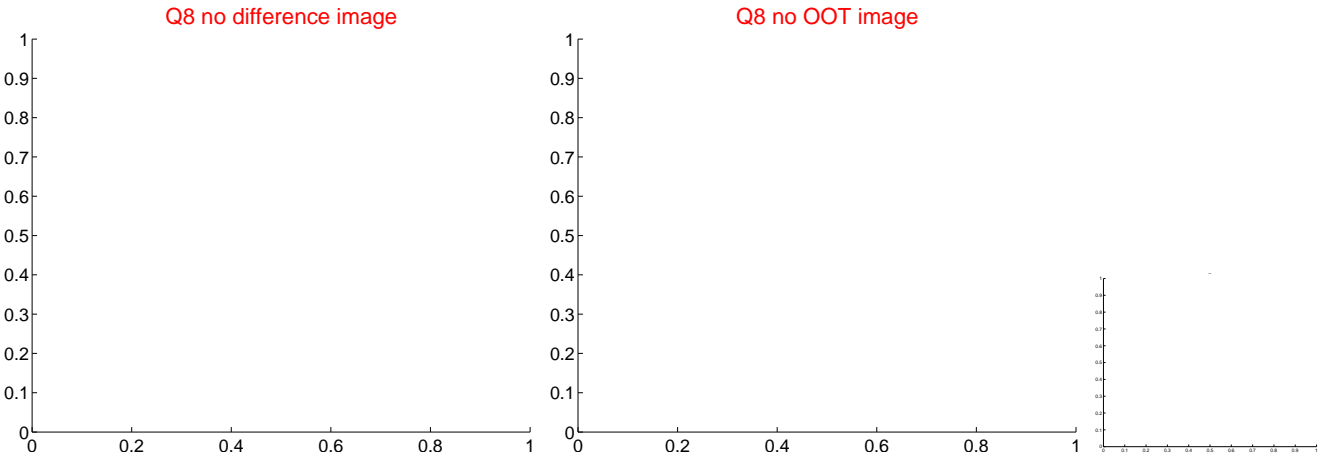
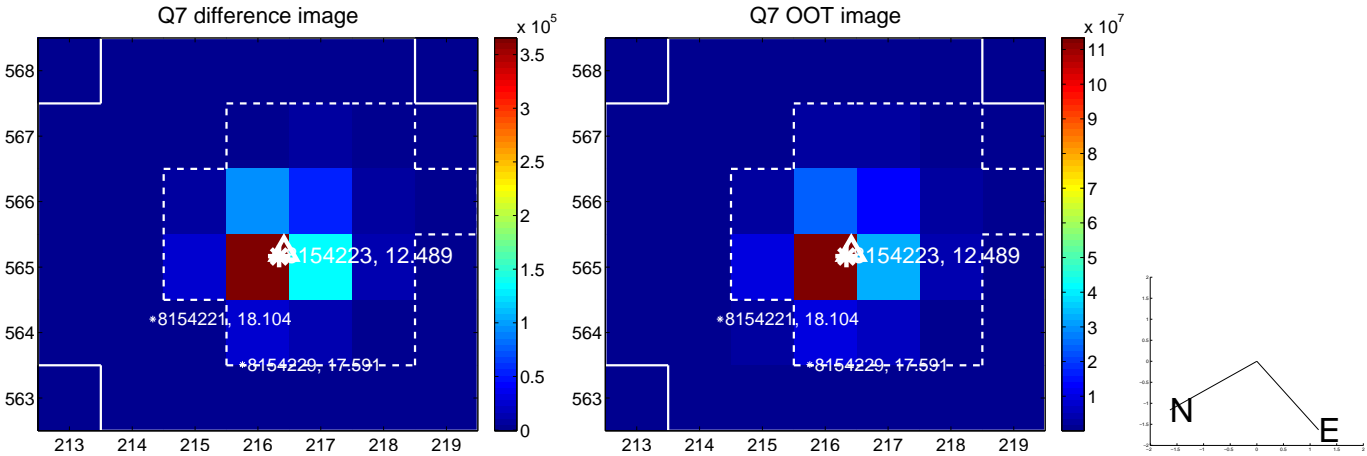
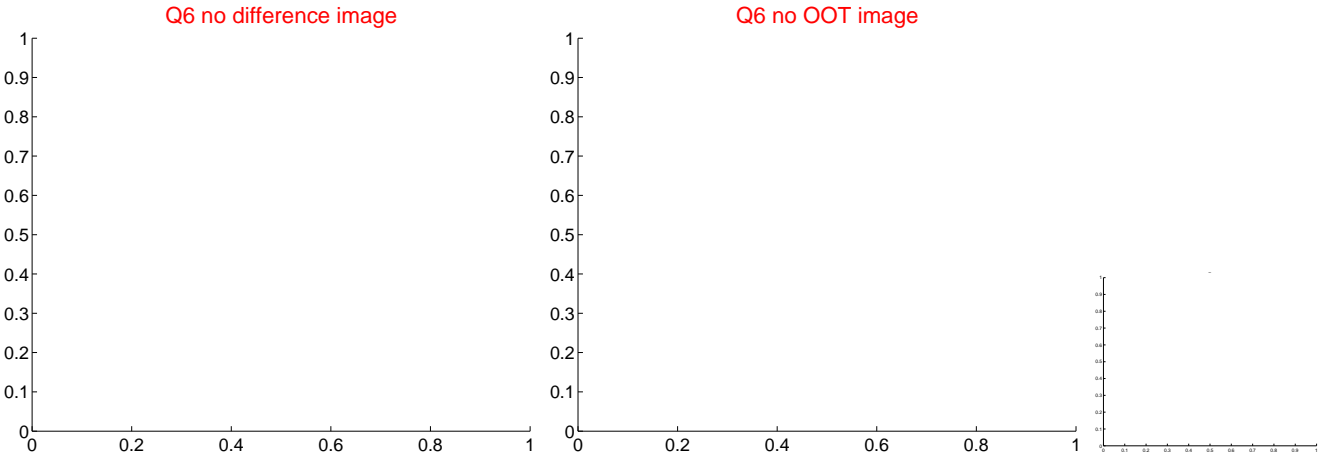
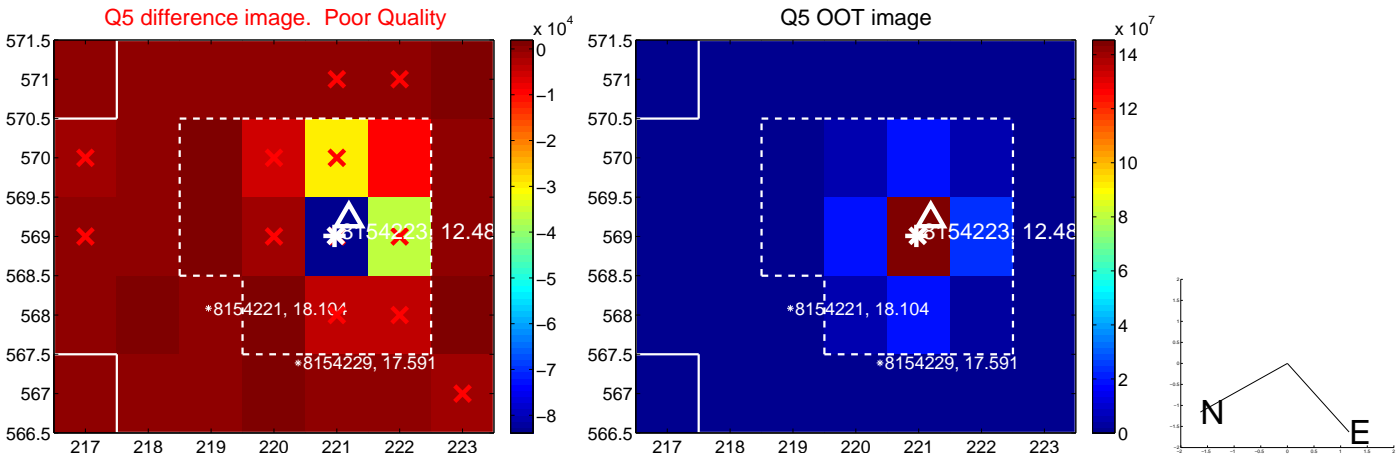


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



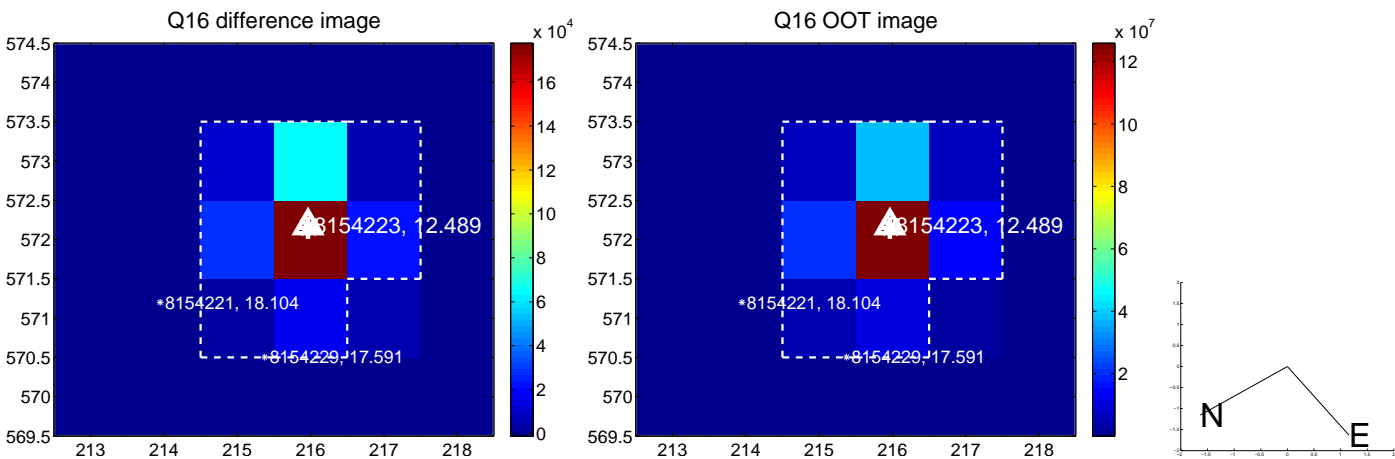
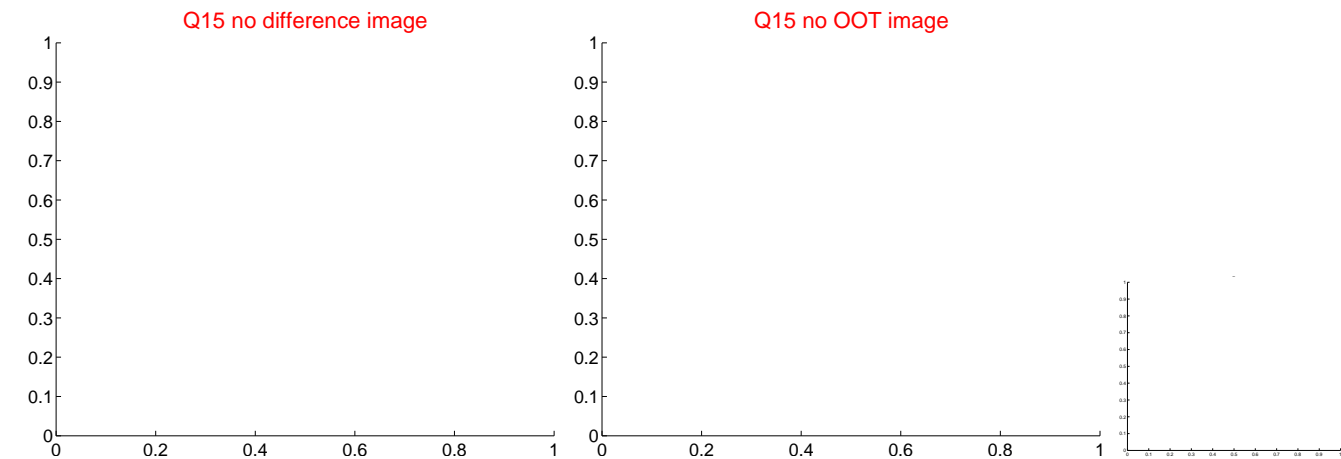
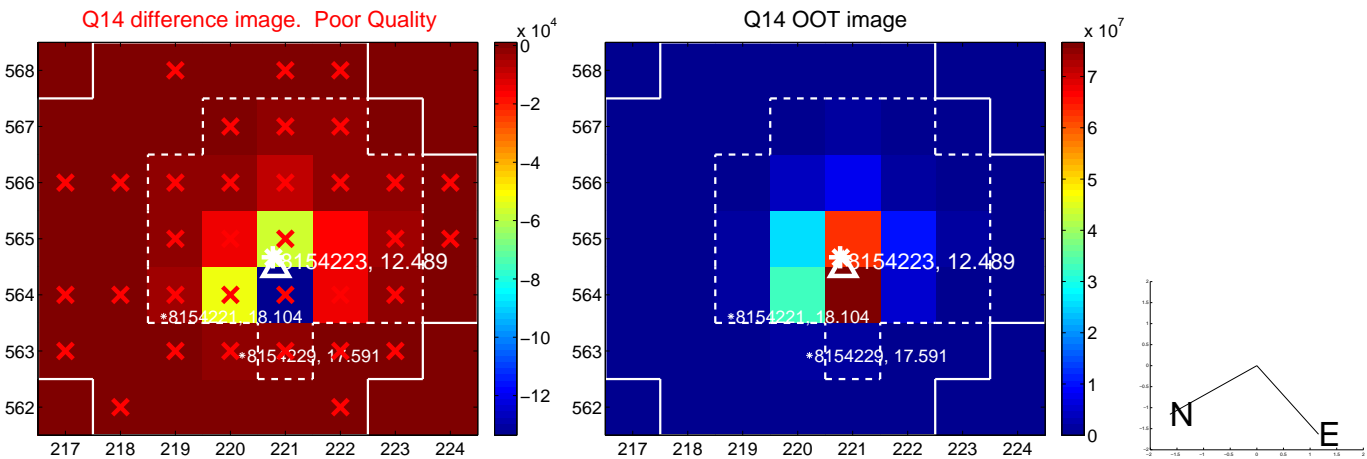
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



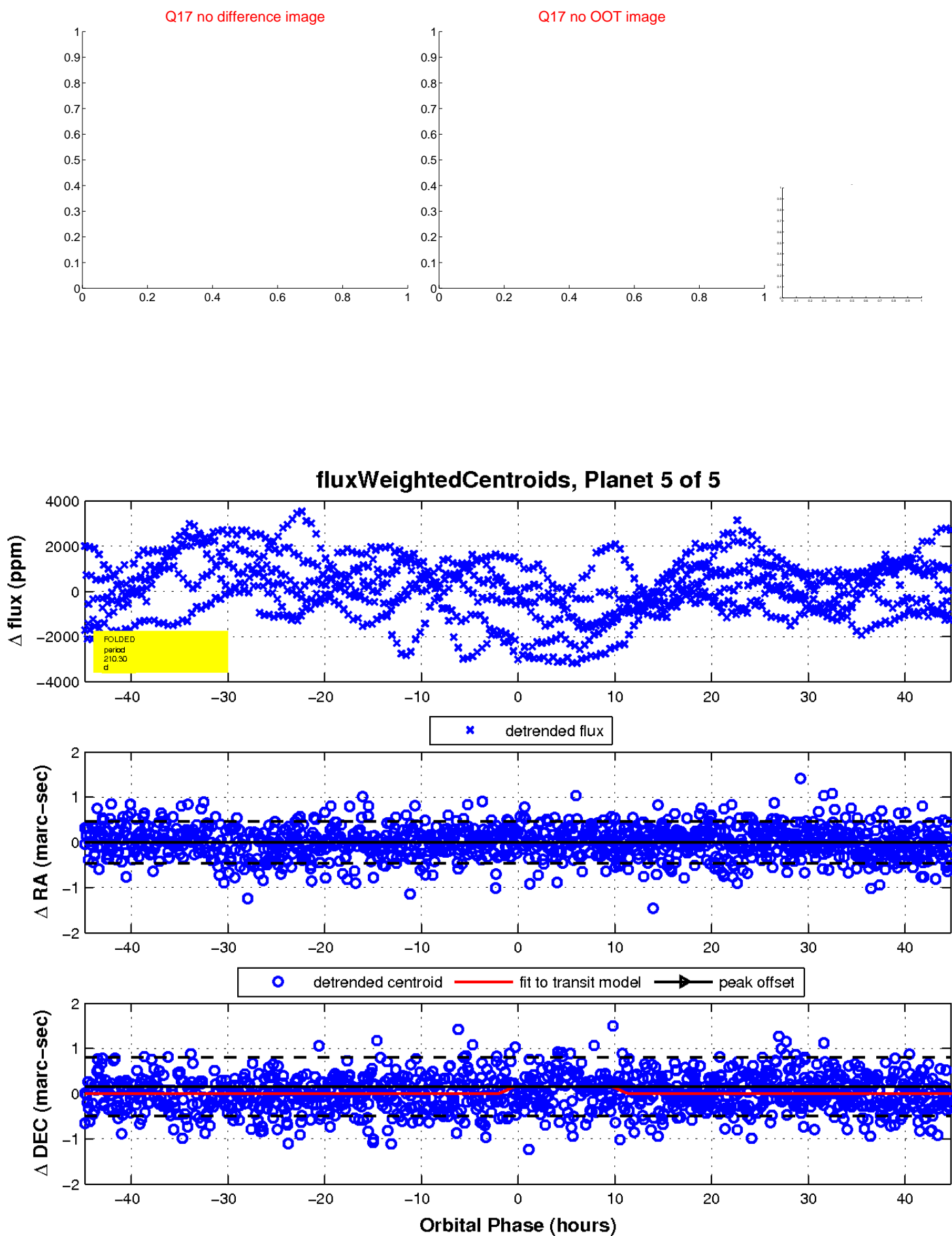
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

