

KIC 004355503

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004355503-01 | OBS | No | 546.710662 | 140.225113 | 1808.2 | 5.771 | 15.1 | 8.0 | 0.39 | 3585 | 1.73 | 0.02 |
| 004355503-02 | OBS | No | 463.524994 | 387.831592 | 2876.1 | 9.960 | 12.3 | 11.6 | 0.39 | 3585 | 2.33 | 0.03 |
| 004355503-03 | OBS | 7691.01 | 0.570828 | 131.591564 | 158.3 | 0.925 | 11.8 | 15.8 | 0.39 | 3585 | 0.57 | 224.25 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004355503-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-03 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET |

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

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

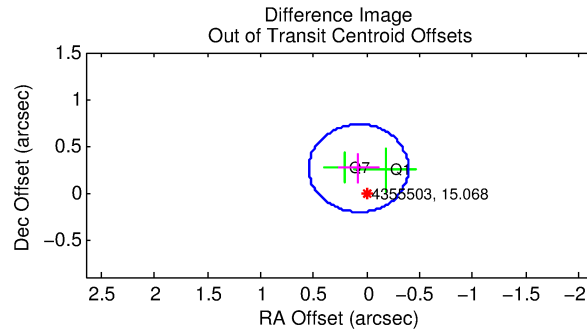
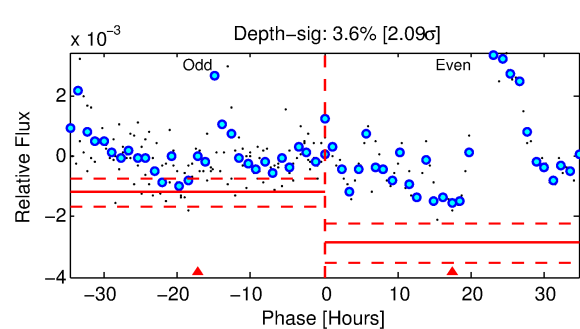
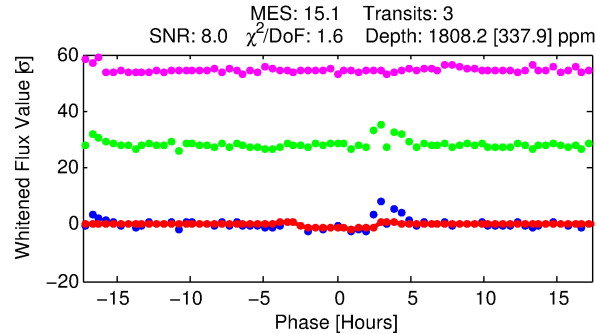
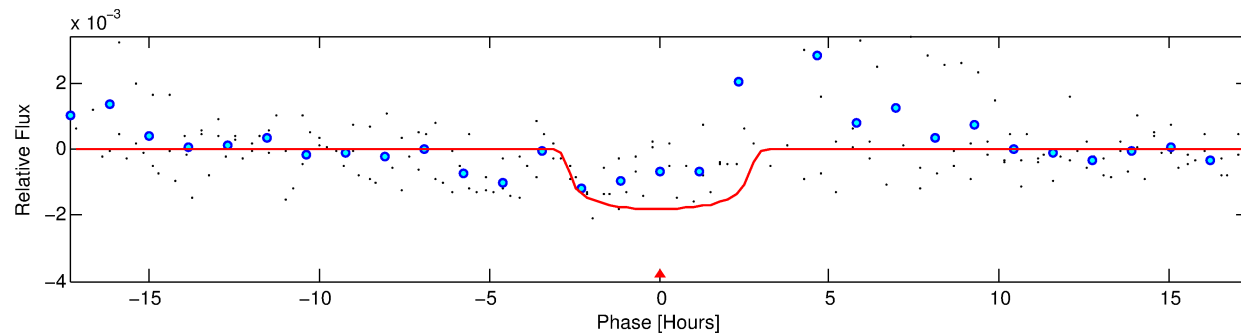
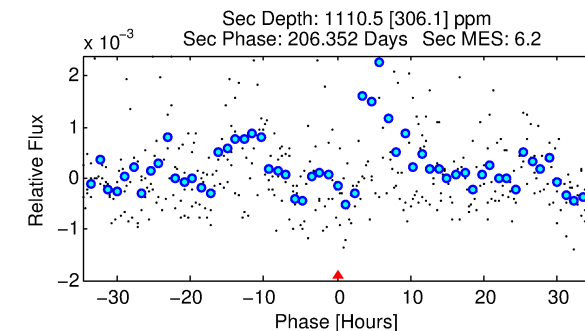
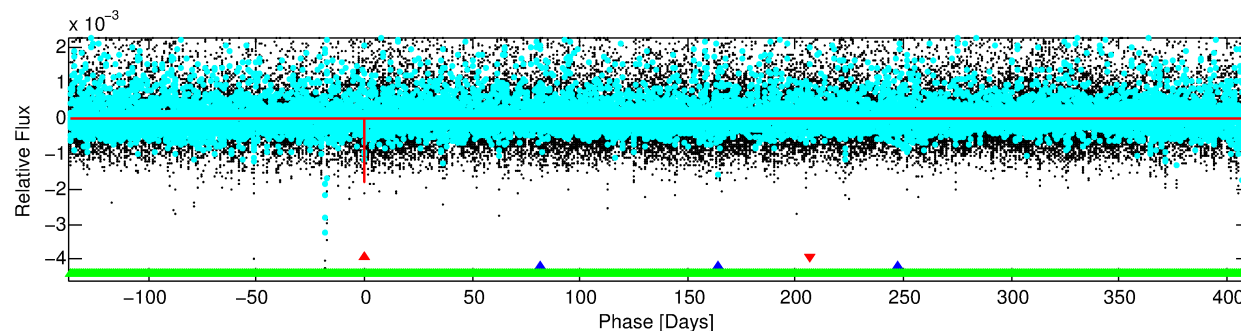
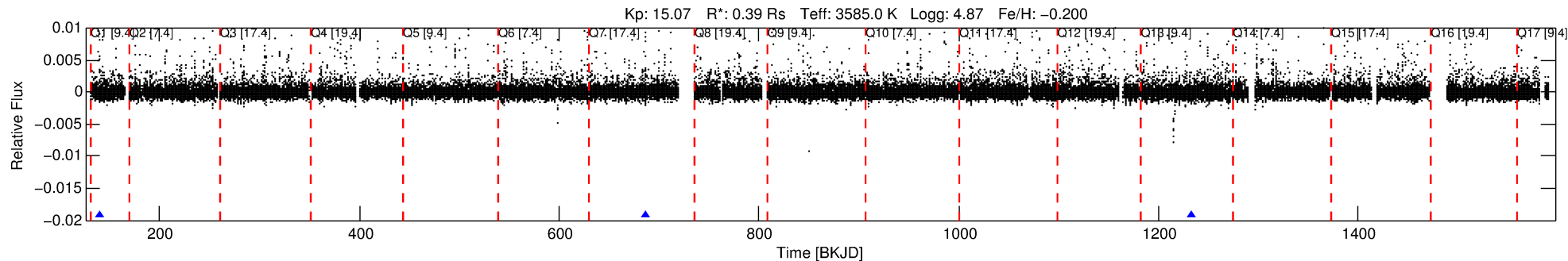
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004355503-01

No Significant Match Found

DV One-Page Summary

KIC: 4355503 Candidate: 1 of 3 Period: 546.711 d



DV Fit Results:

Period = 546.71066 [0.00726] d
Epoch = 140.2251 [0.0097] BKJD
Rp/R* = 0.0408 [0.0197]
a/R* = 598.80 [1253.75]
b = 0.63 [2.00]
Seff = 0.02 [0.00]
Teq = 100 [4] K
Rp = 1.73 [0.87] Re
a = 0.9685 [0.0969] AU
Ag = 191992.07 [194664.47] [0.99σ]
Teff = 3240 [818] K [3.84σ]

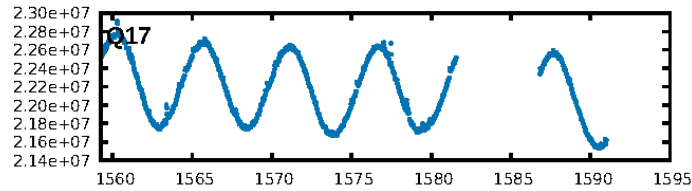
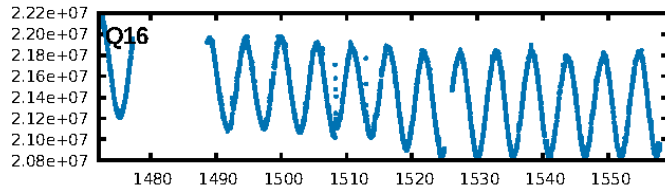
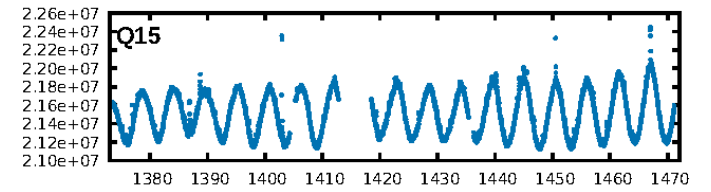
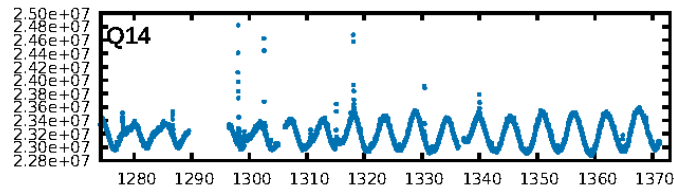
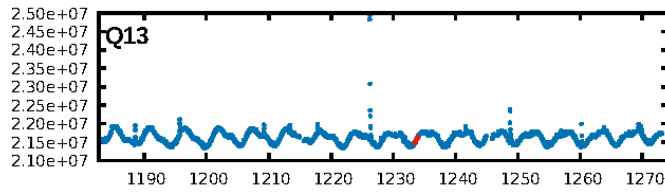
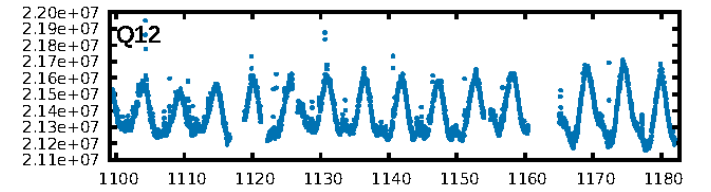
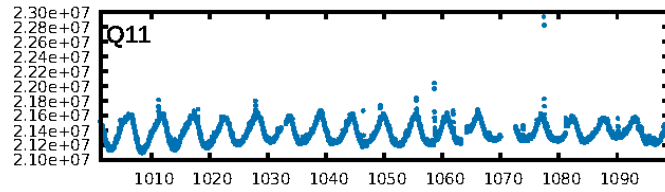
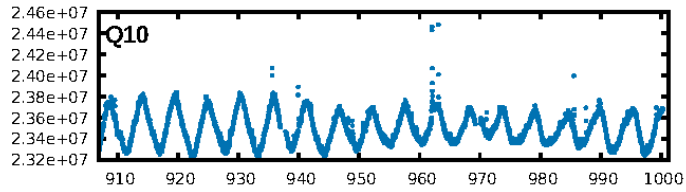
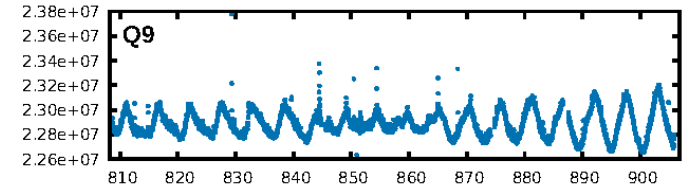
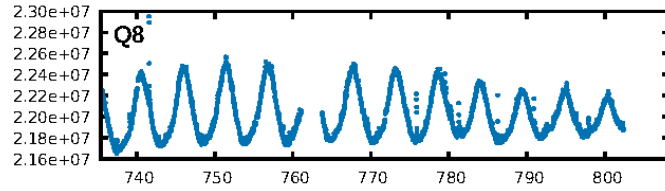
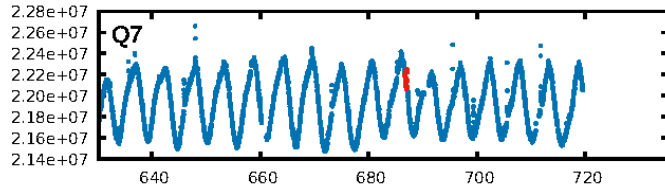
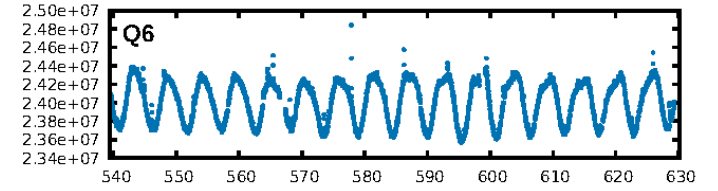
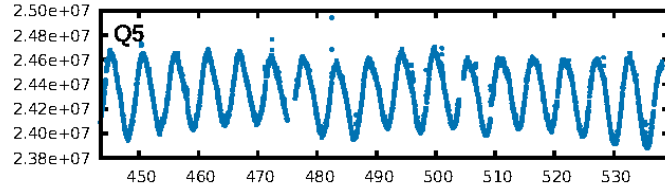
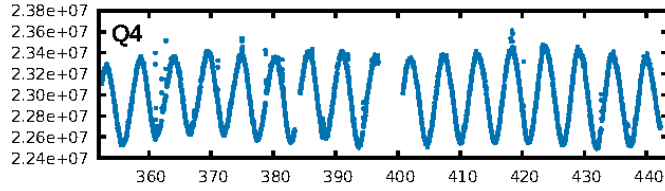
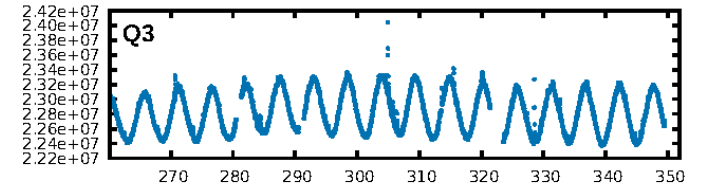
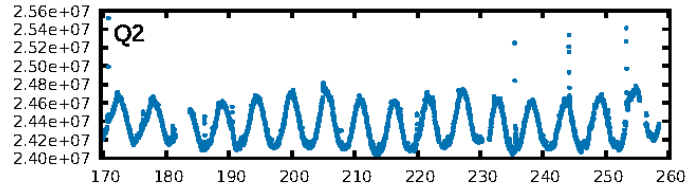
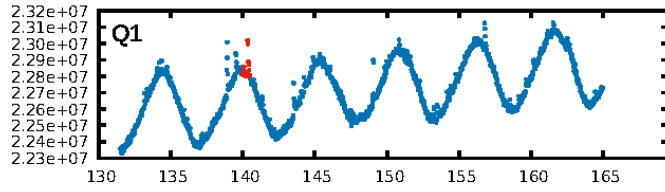
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [173.44σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 22.7%
Bootstrap-pfa: 2.51e-14
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.083
Centroid-sig: 33.4%
Centroid-so: 1.399 arcsec [1.49σ]
OotOffset-rm: 0.271 arcsec [1.74σ]
KicOffset-rm: 0.478 arcsec [2.92σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/3]

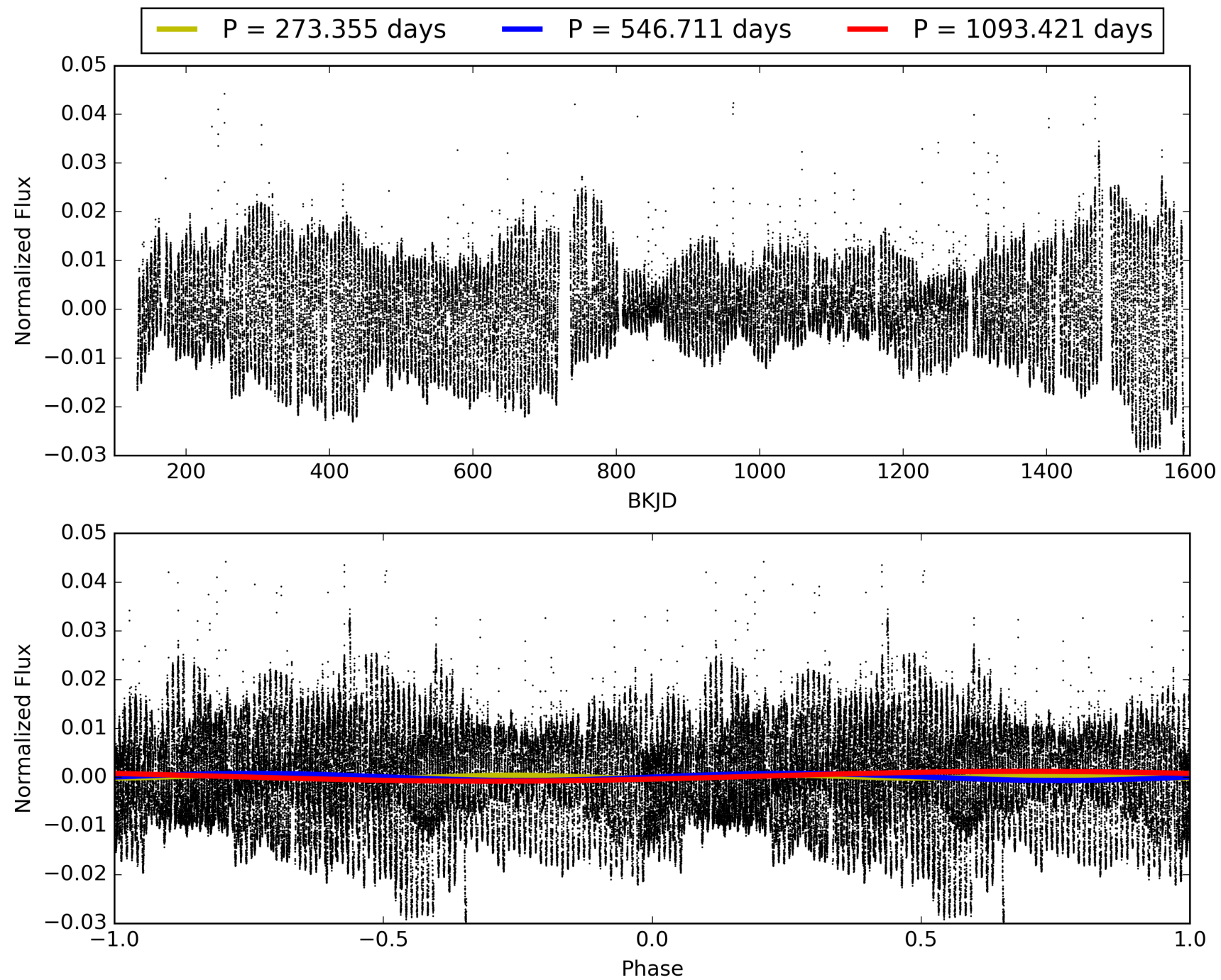
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:01:08 Z

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

TCE 004355503-01, PDC Light Curves

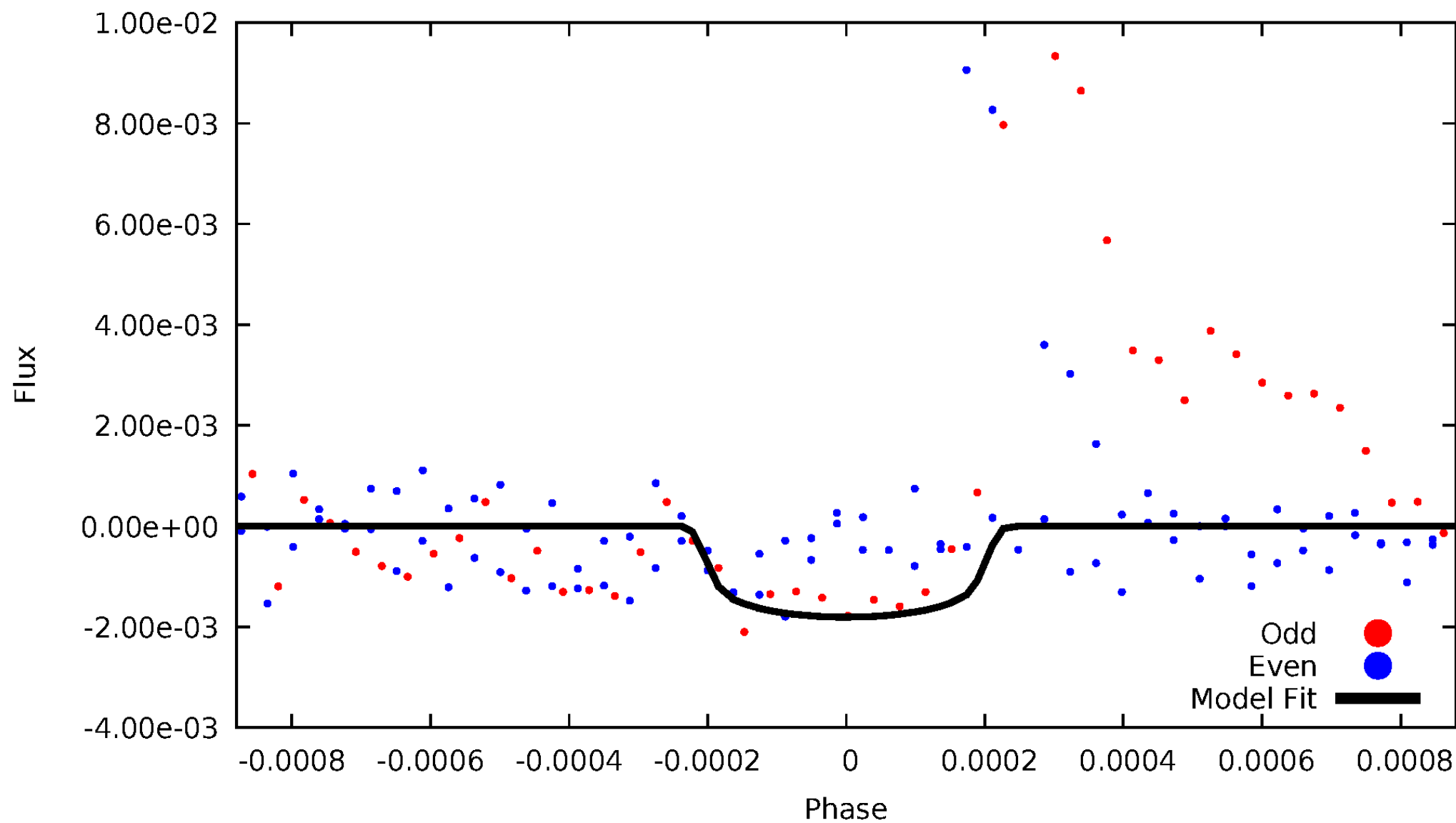


TCE 004355503-01



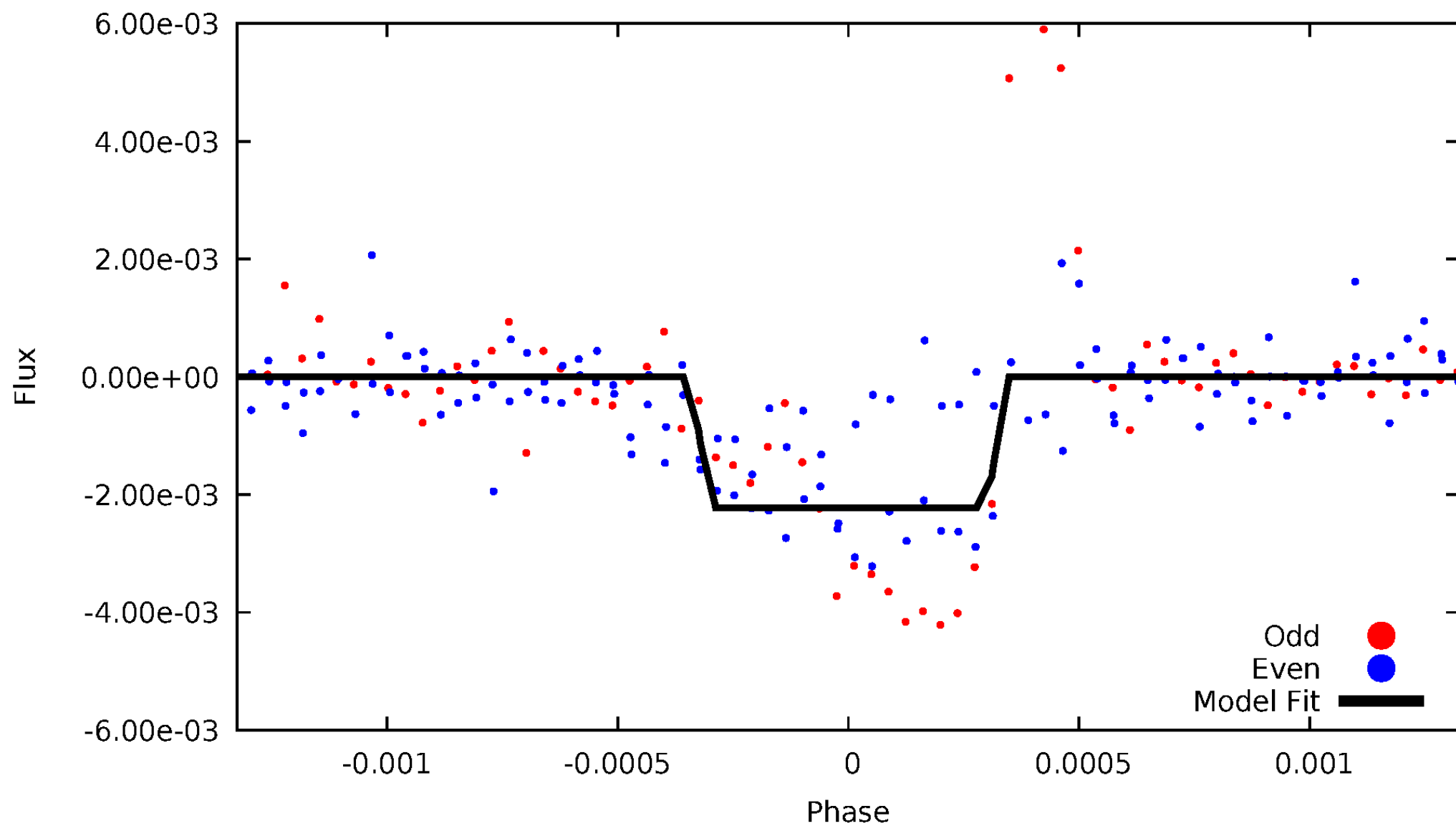
DV Odd/Even

TCE 004355503-01



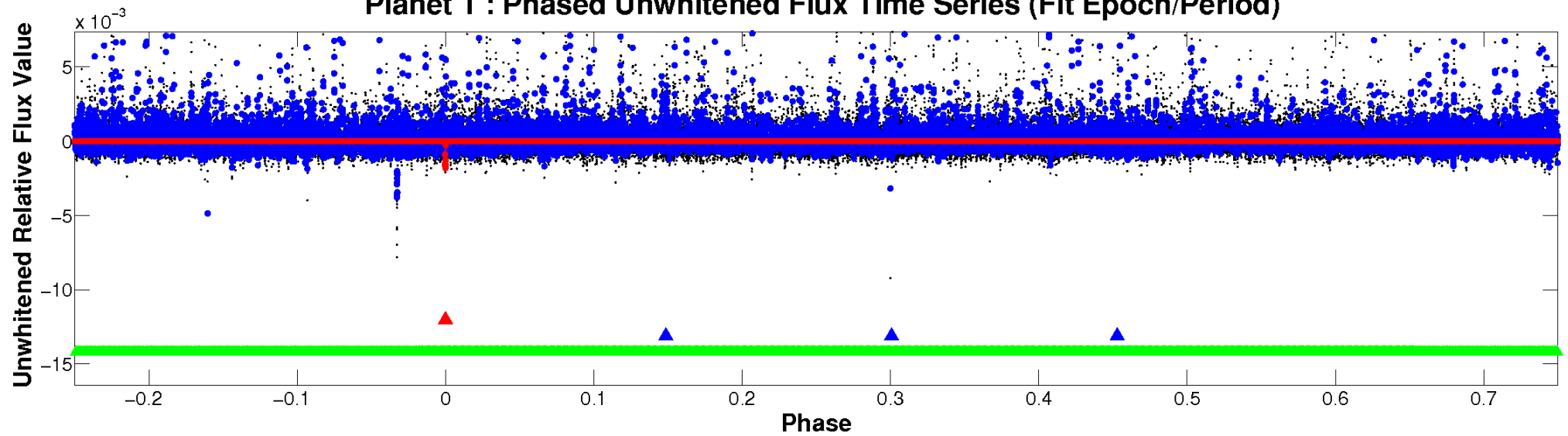
ALT Odd/Even

TCE 004355503-01

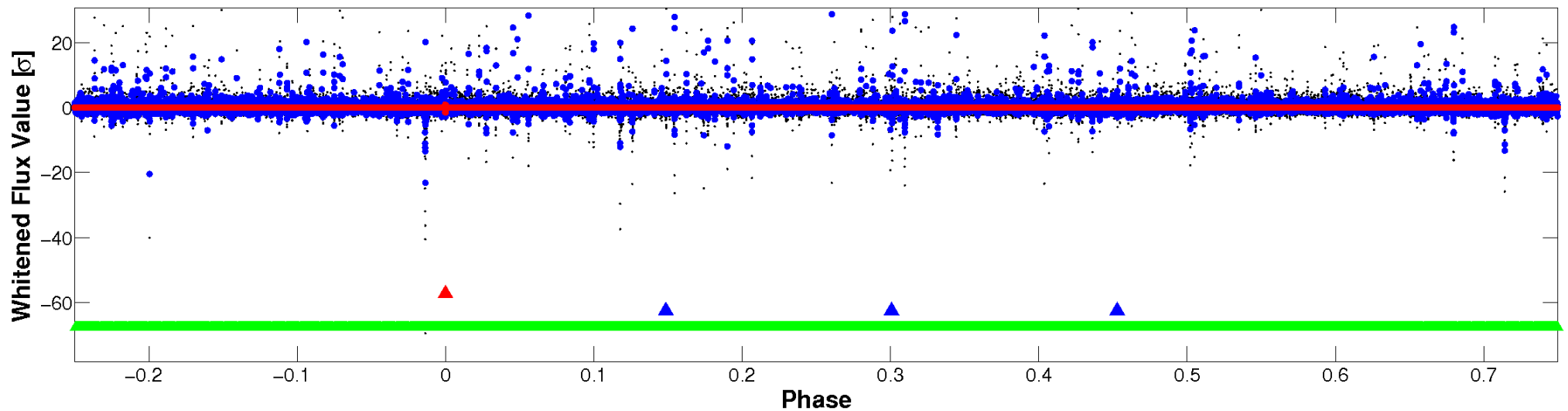


Non-Whitened Vs. Whitened Light Curve

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

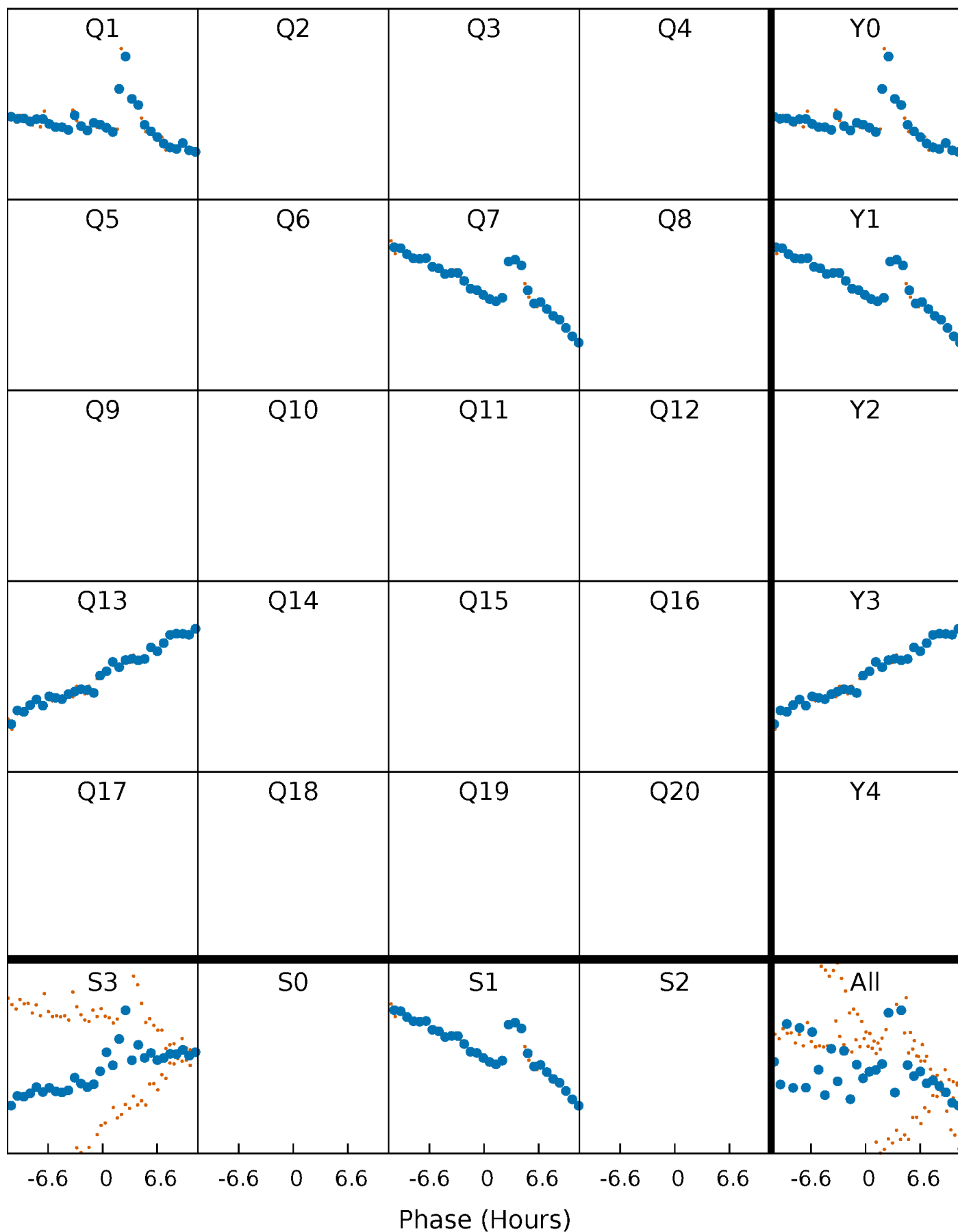


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



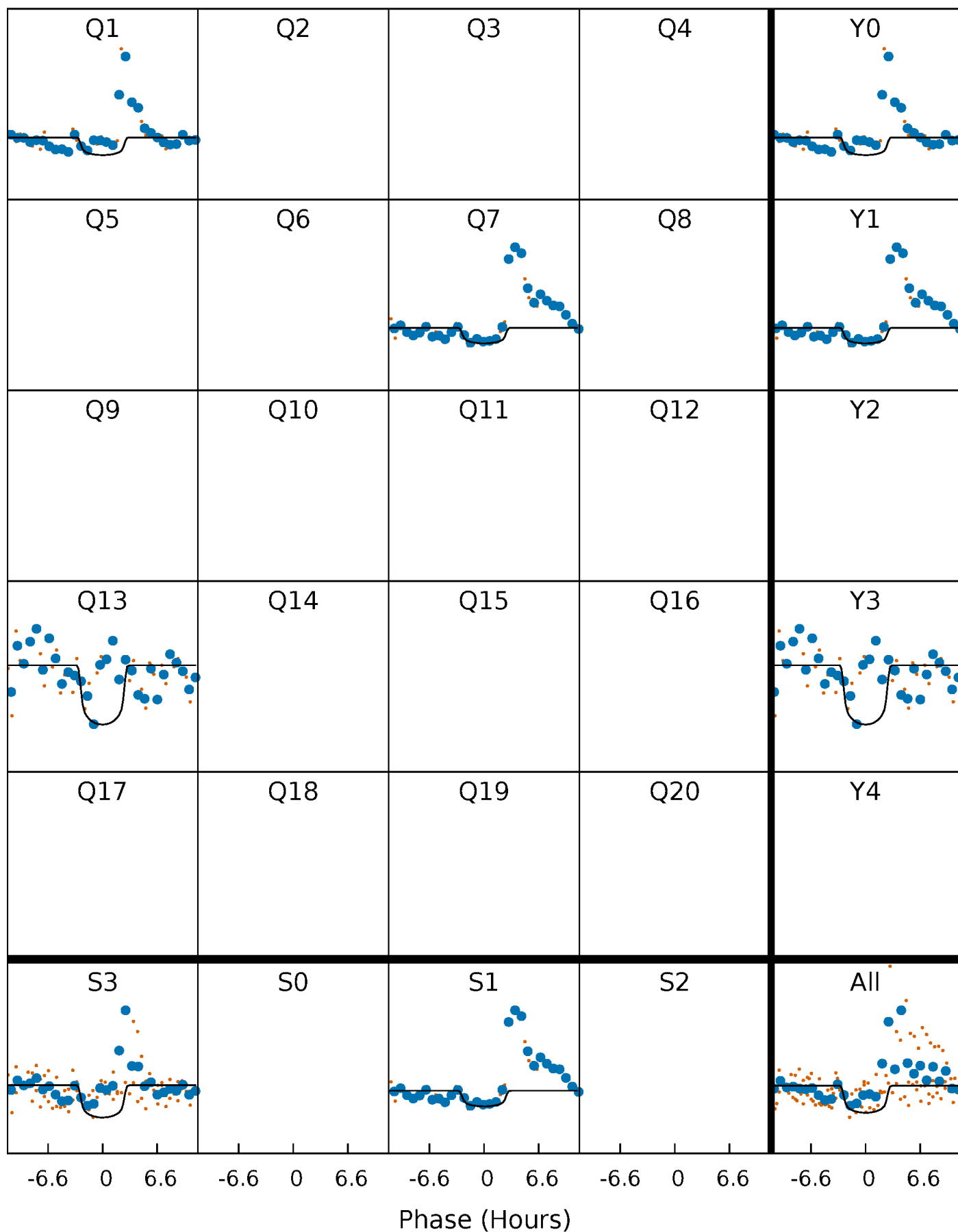
PDC Quarter-Phased Transit Curves

TCE 004355503-01 P=546.710662 Days $T_0=140.225113$ (BKJD)



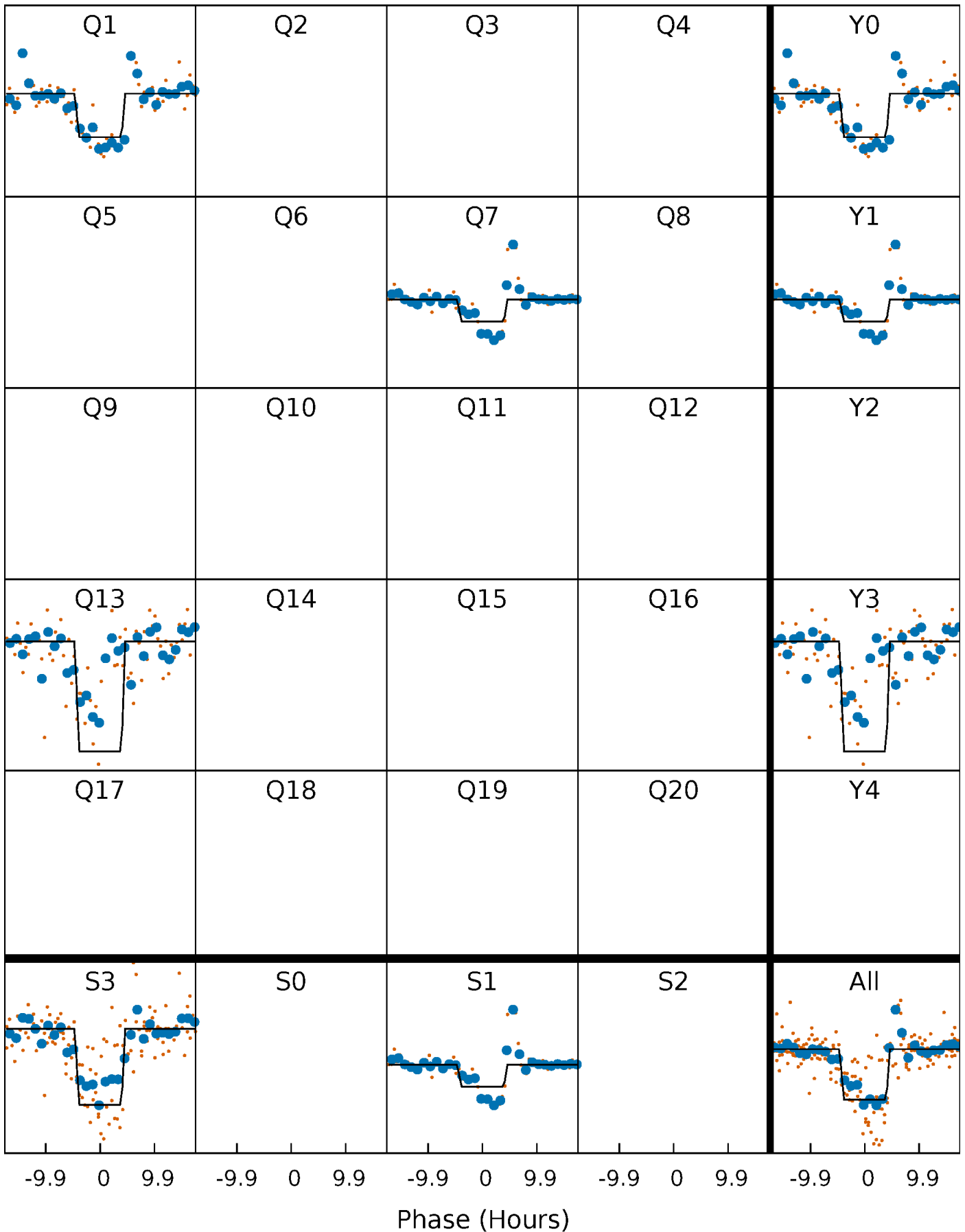
DV Quarter-Phased Transit Curves

TCE 004355503-01 $P=546.710662$ Days $T_0=140.225113$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

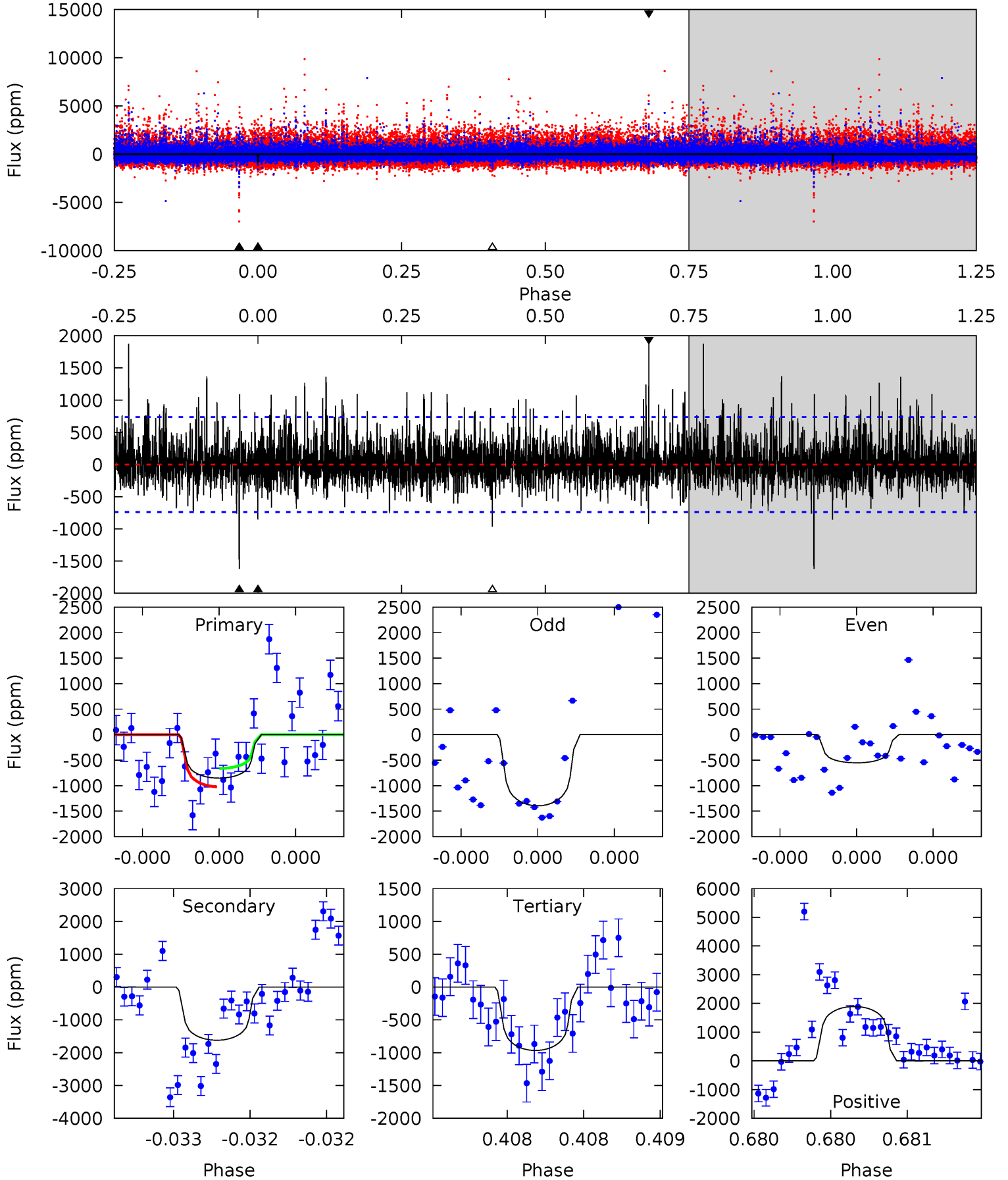
TCE 004355503-01 P=546.740765 Days $T_0=140.128434$ (BKJD)



DV Model-Shift Uniqueness Test

004355503-01, P = 546.710662 Days, E = 140.225113 Days

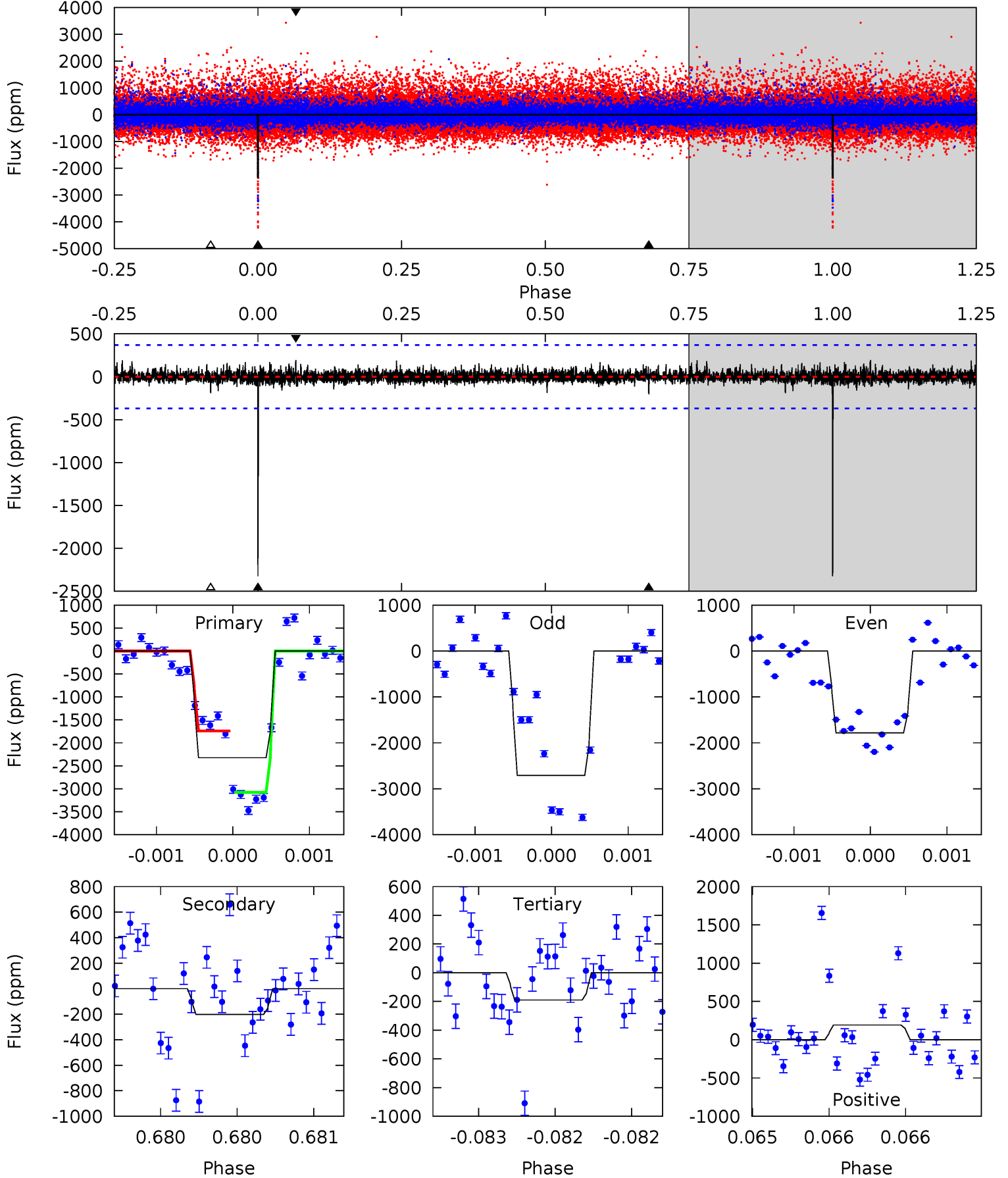
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.45 | 12.3 | 7.32 | 14.3 | 5.59 | 3.51 | 1.97 | -0.87 | -7.89 | 4.95 | -2.07 | 2.30 | 1.15 | 0.54 | 1.37 |



Alt Model-Shift Uniqueness Test

004355503-01, P = 546.740765 Days, E = 140.128434 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 34.9 | 3.03 | 2.84 | 2.89 | 5.53 | 3.42 | 0.58 | 32.0 | 32.0 | 0.19 | 0.14 | 6.82 | 0.84 | 0.08 | 9.79 |



Stellar Parameters For KIC 004355503

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3585^{+72}_{-79} | $4.868^{+0.054}_{-0.041}$ | $-0.200^{+0.100}_{-0.100}$ | $0.388^{+0.039}_{-0.053}$ | $0.406^{+0.041}_{-0.061}$ | $9.786^{+2.837}_{-1.842}$ |
| | +2%/-2% | +1%/-1% | +50%/-50% | +10%/-14% | +10%/-15% | +29%/-19% |
| Source | PHO2 | PHO2 | PHO2 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004355503-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|------------------------|----------------------|----------------------|------------------------------|
| DV | -1621 ± 132 | $1.73^{+0.88}_{-0.76}$ | 140^{+4}_{-4} | 3536^{+844}_{-381} | $281497^{+593917}_{-155205}$ |
| Alt. | -202 ± 67 | $2.00^{+0.85}_{-0.77}$ | 140^{+4}_{-5} | 2530^{+375}_{-207} | 24574^{+46623}_{-12912} |

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

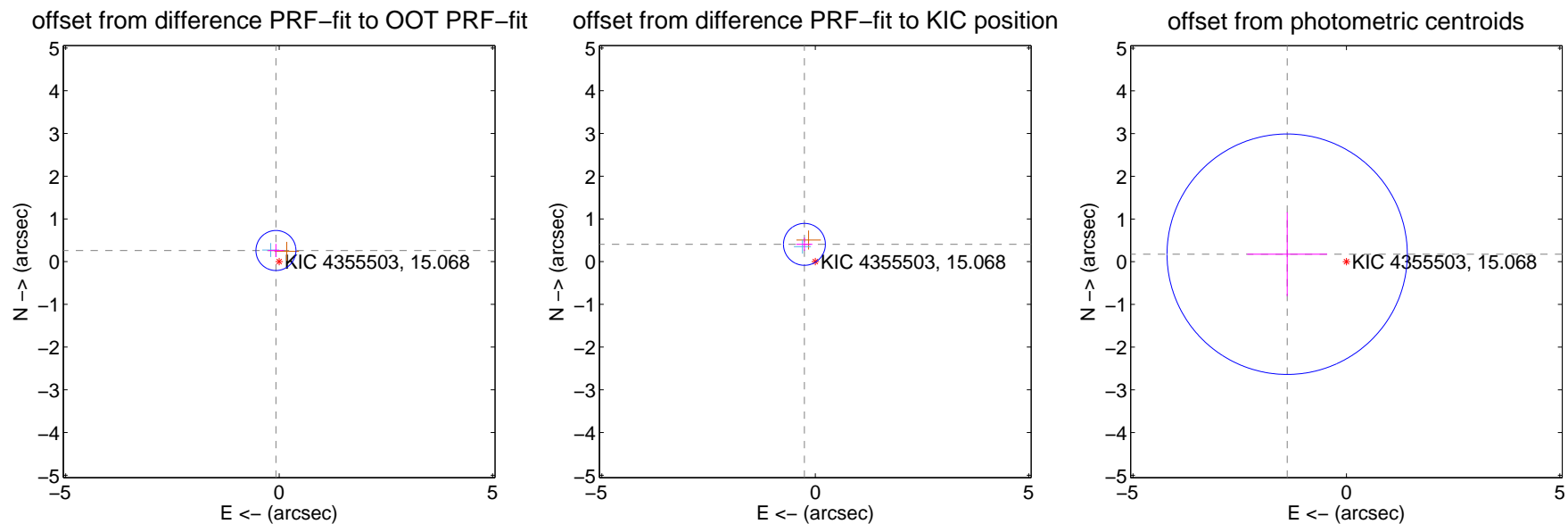
DV Centroid Data

Supplemental centroid analysis for 004355503-01. Kepler magnitude: 15.07. Transit SNR 8.04

There are 1 quarters with good PRF difference image offsets

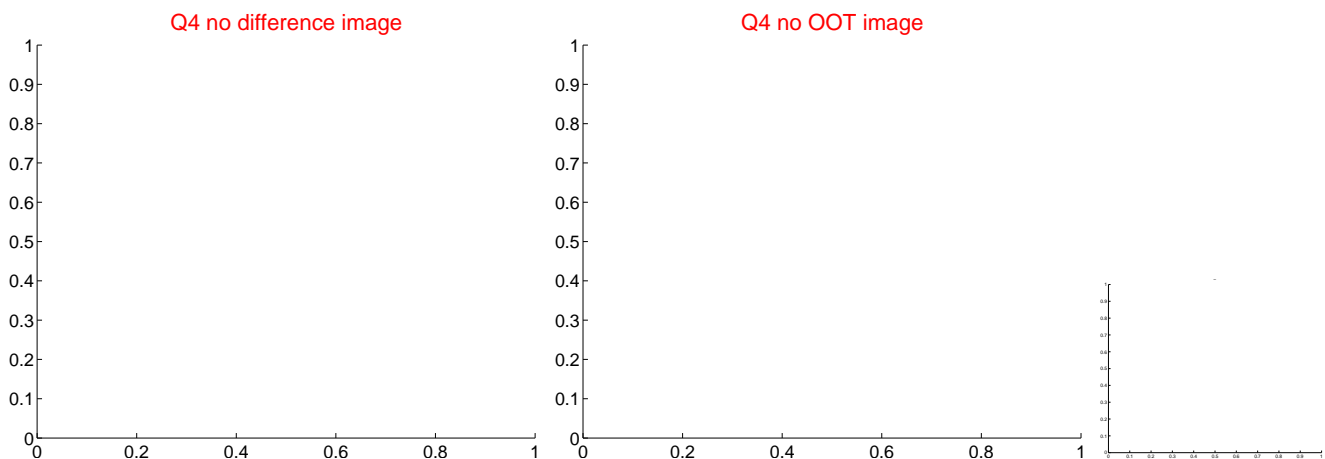
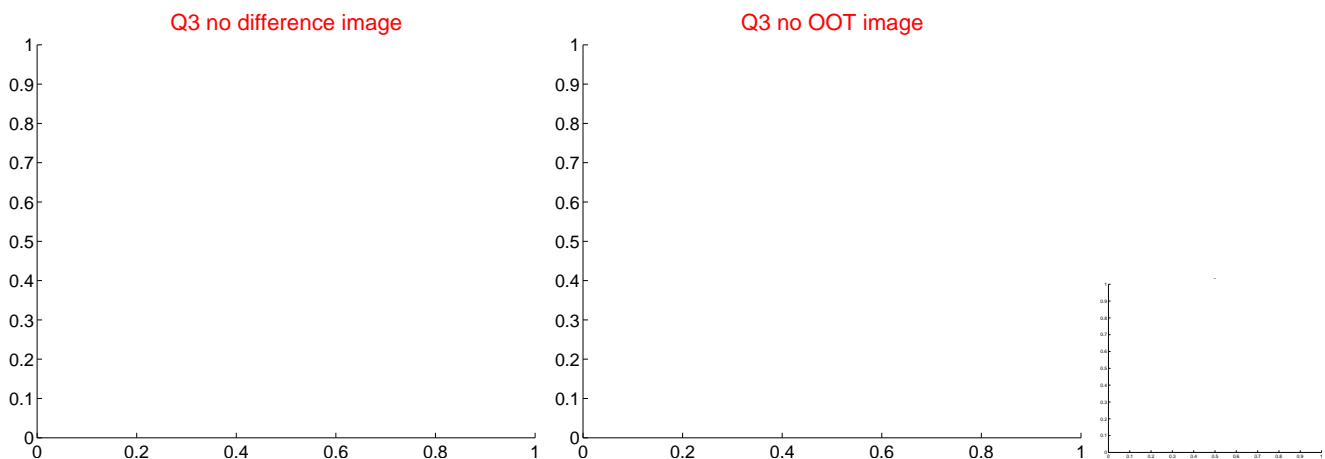
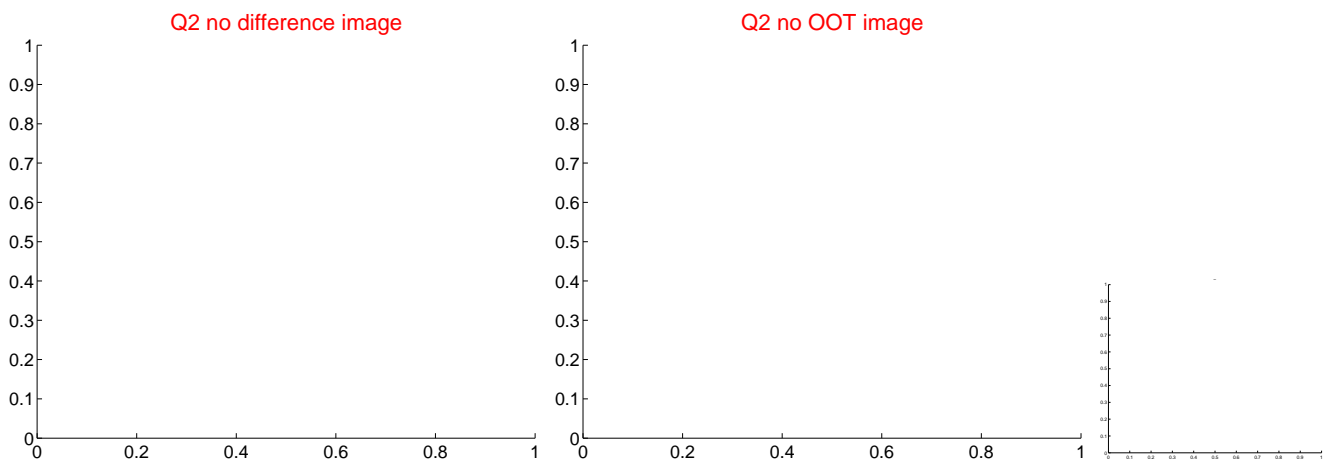
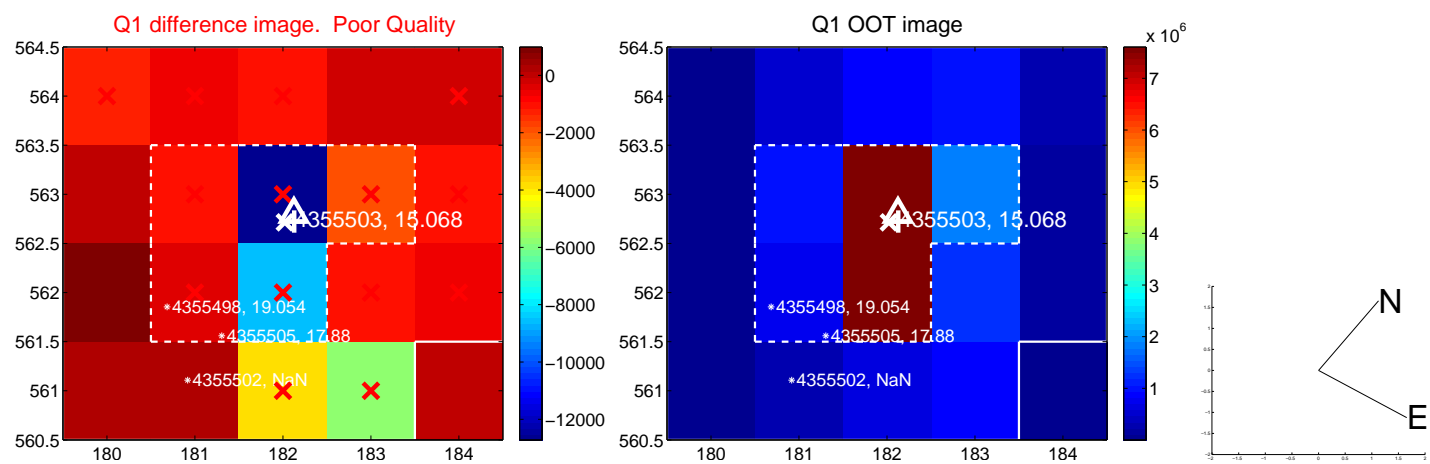
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.271 ± 0.156 | 1.74 | 0.075 ± 0.187 | 0.261 ± 0.153 |
| PRF-fit source offset from KIC position | 0.478 ± 0.164 | 2.92 | 0.254 ± 0.187 | 0.405 ± 0.153 |
| photometric centroid source offset | 1.40 ± 0.94 | 1.49 | 1.39 ± 0.94 | 0.18 ± 0.98 |

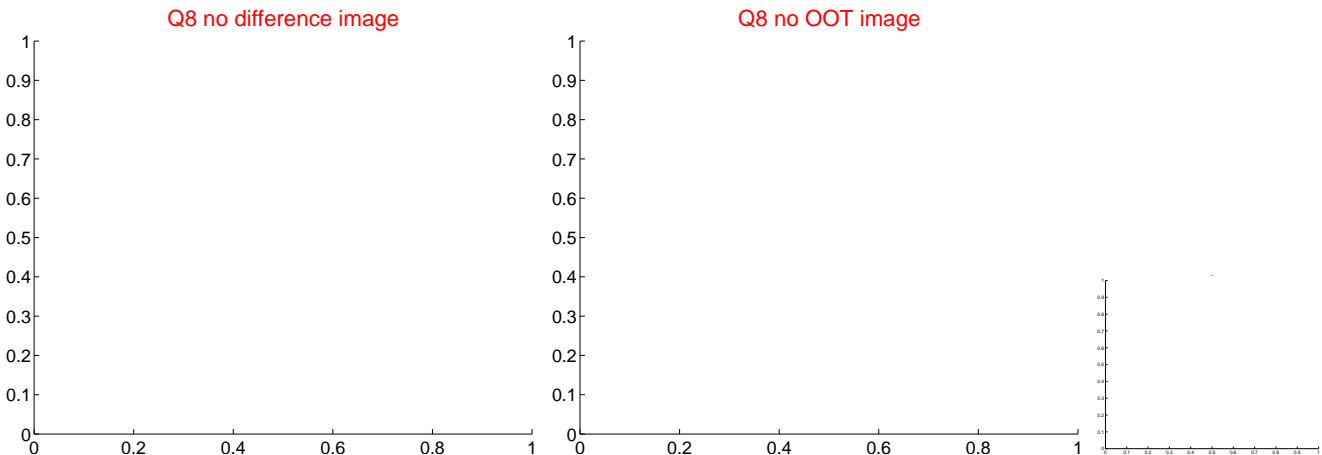
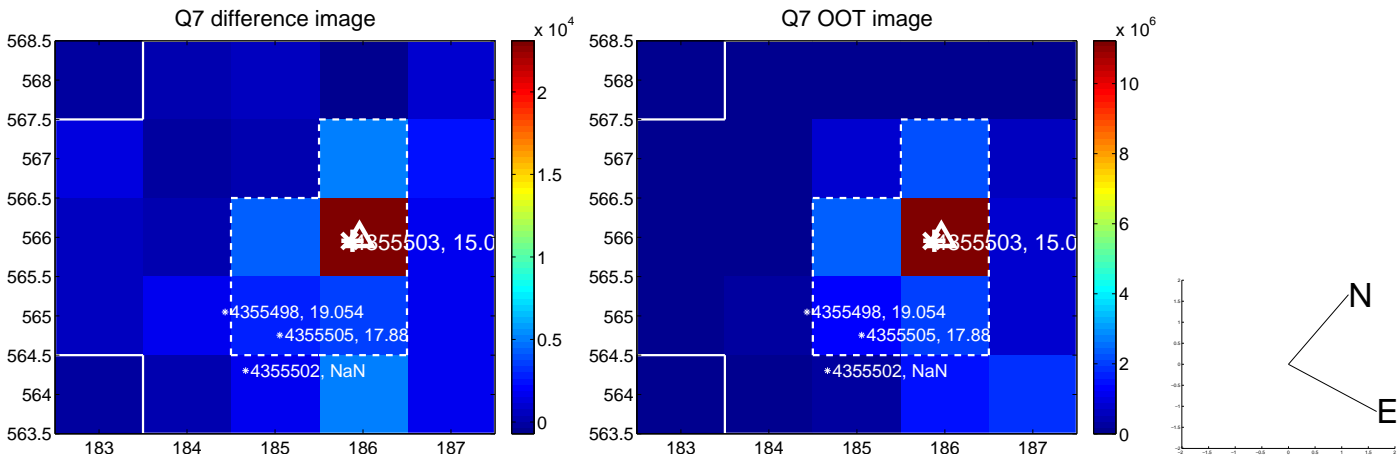
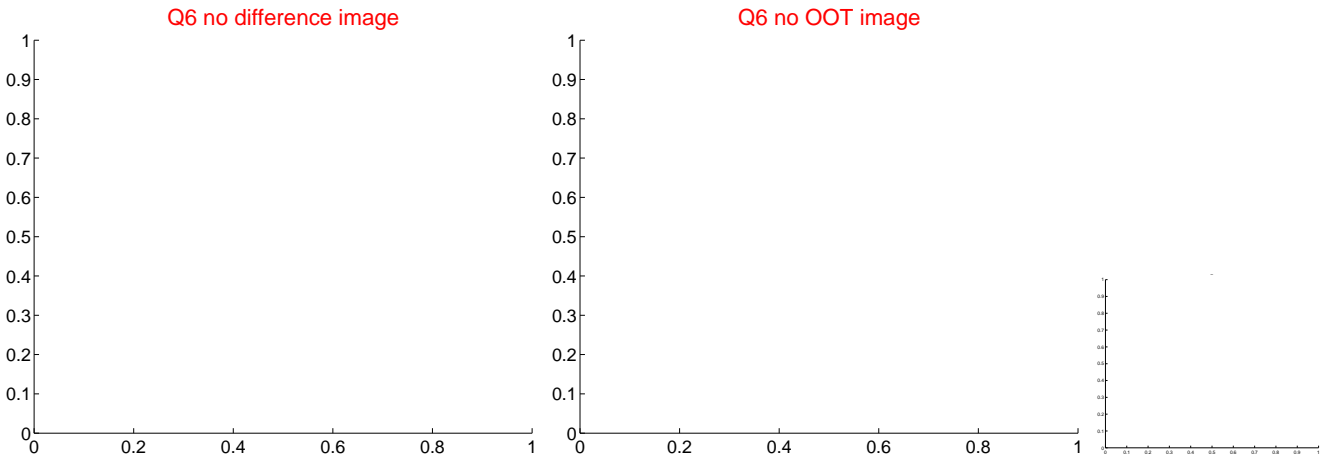
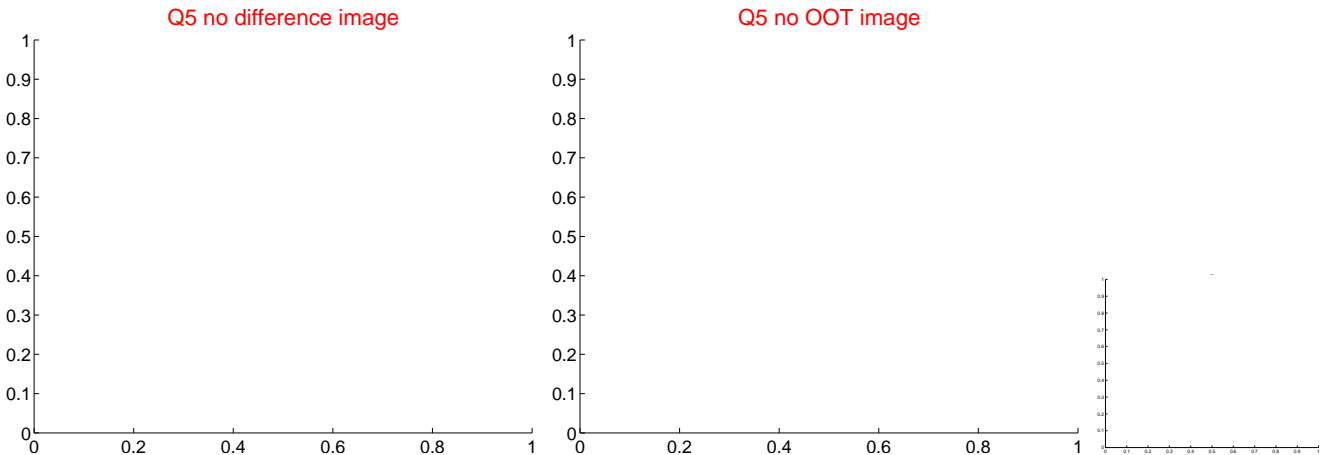


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



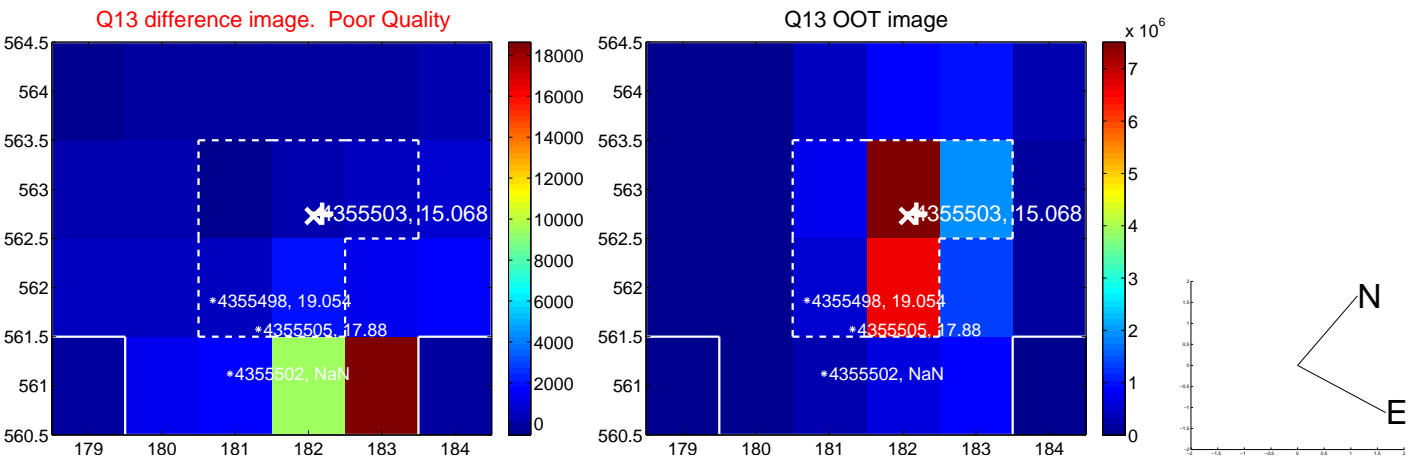
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



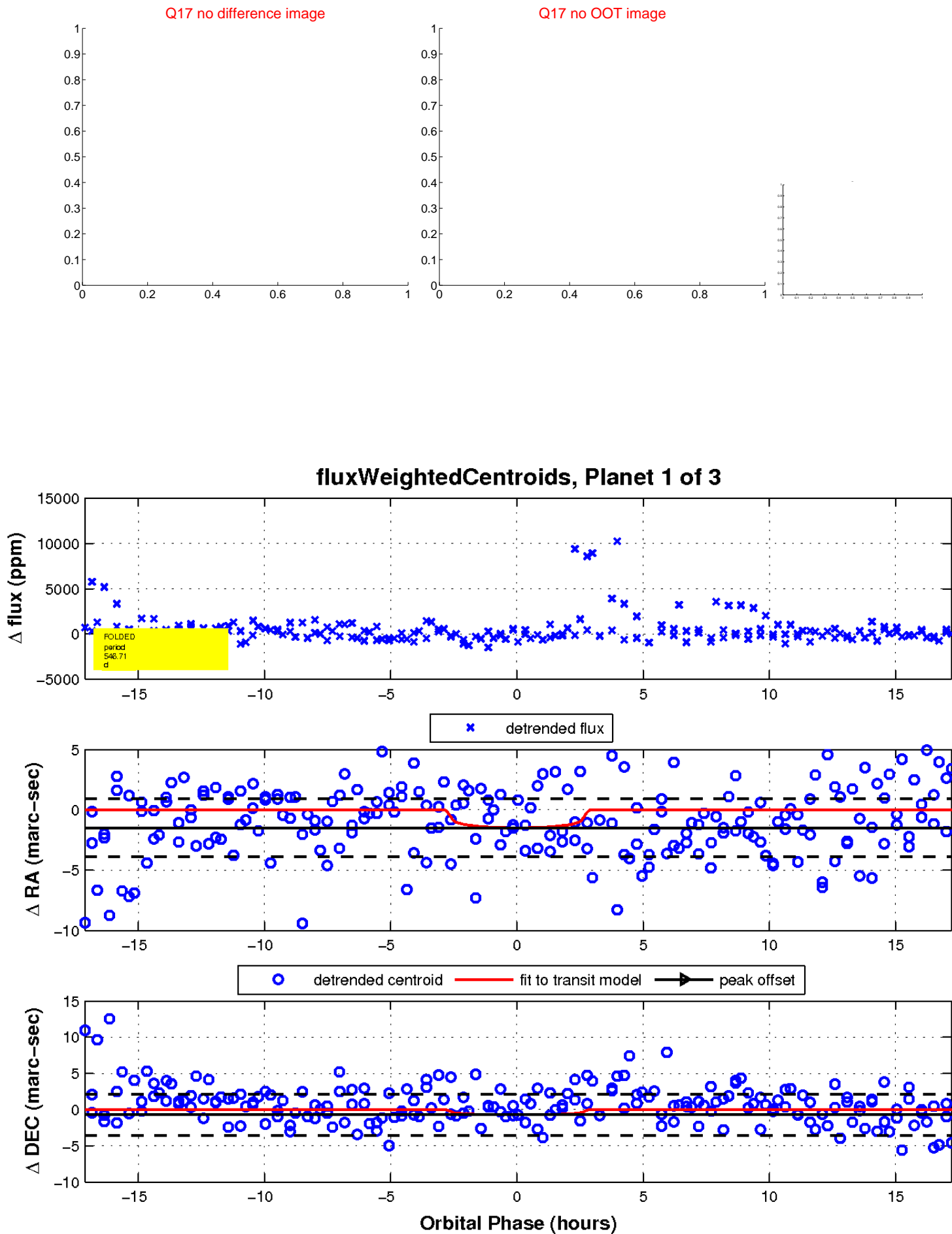
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



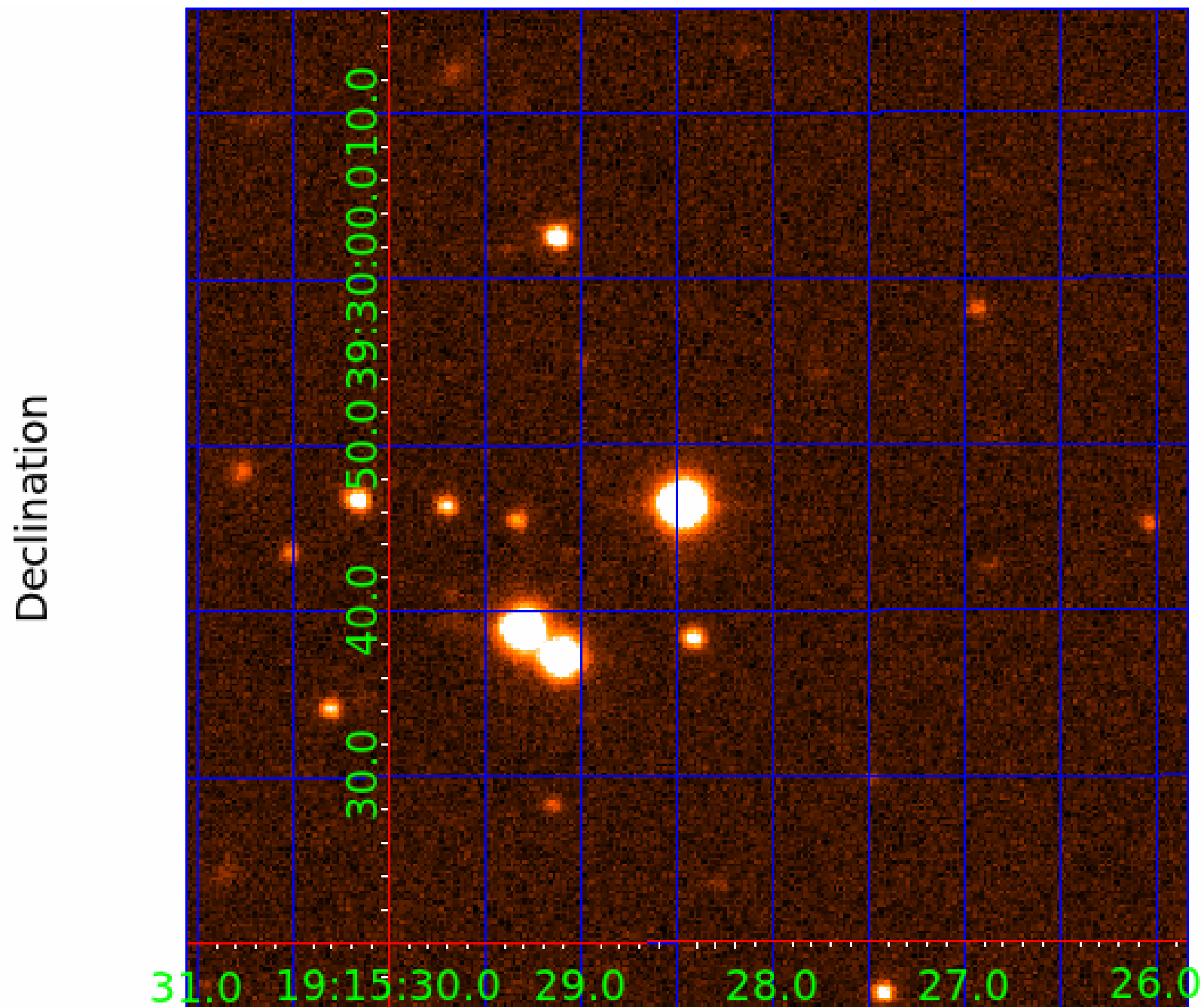
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



KIC 004355503

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004355503-01 | OBS | No | 546.710662 | 140.225113 | 1808.2 | 5.771 | 15.1 | 8.0 | 0.39 | 3585 | 1.73 | 0.02 |
| 004355503-02 | OBS | No | 463.524994 | 387.831592 | 2876.1 | 9.960 | 12.3 | 11.6 | 0.39 | 3585 | 2.33 | 0.03 |
| 004355503-03 | OBS | 7691.01 | 0.570828 | 131.591564 | 158.3 | 0.925 | 11.8 | 15.8 | 0.39 | 3585 | 0.57 | 224.25 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004355503-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-03 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET |

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

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

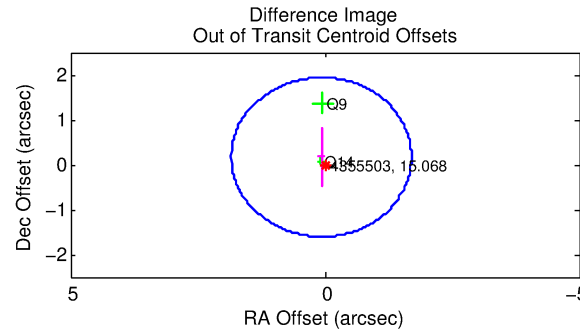
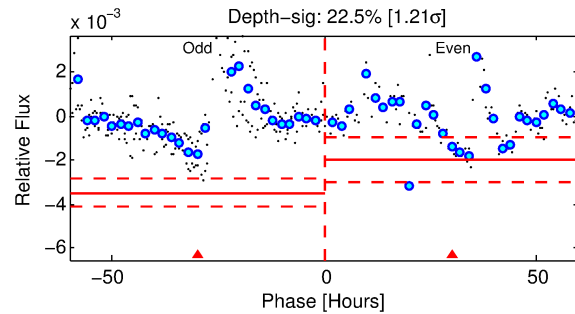
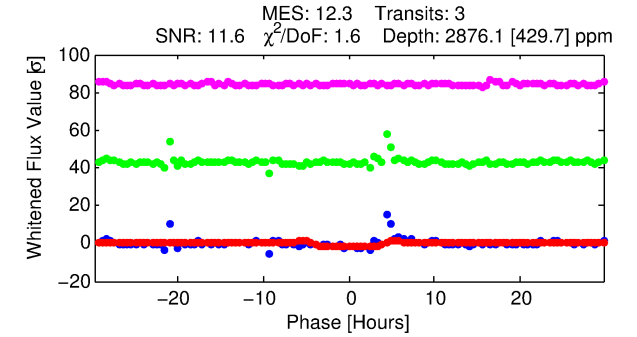
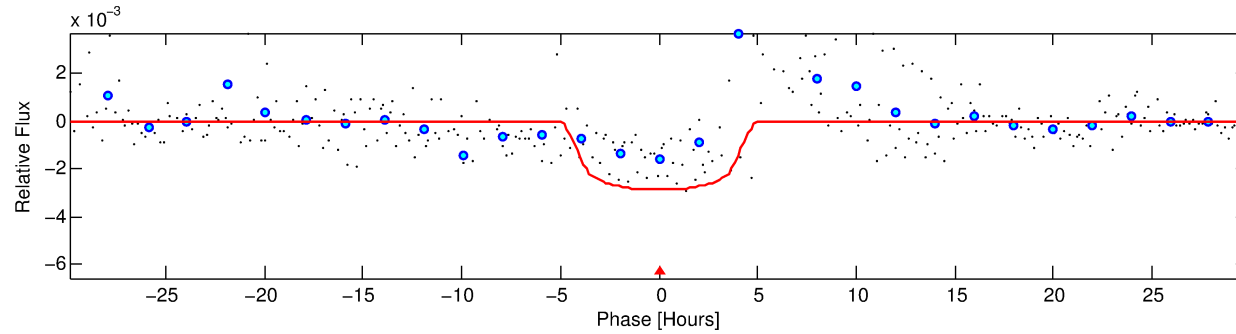
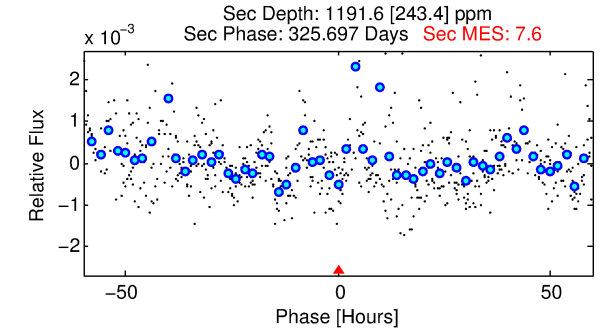
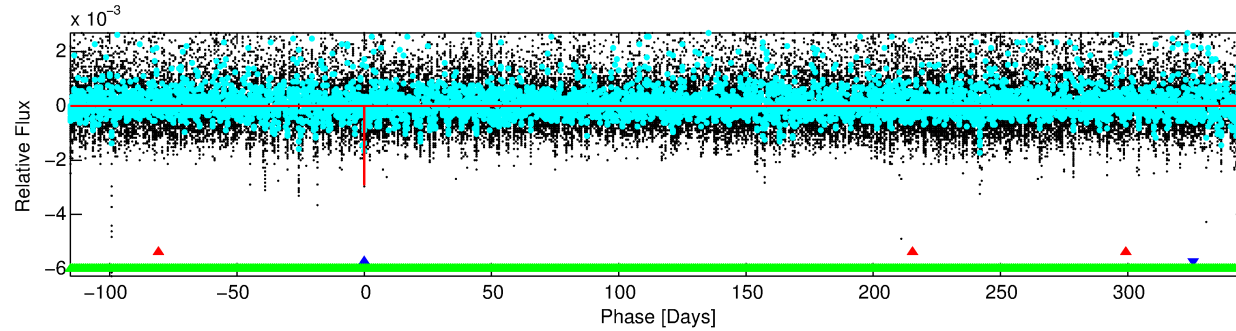
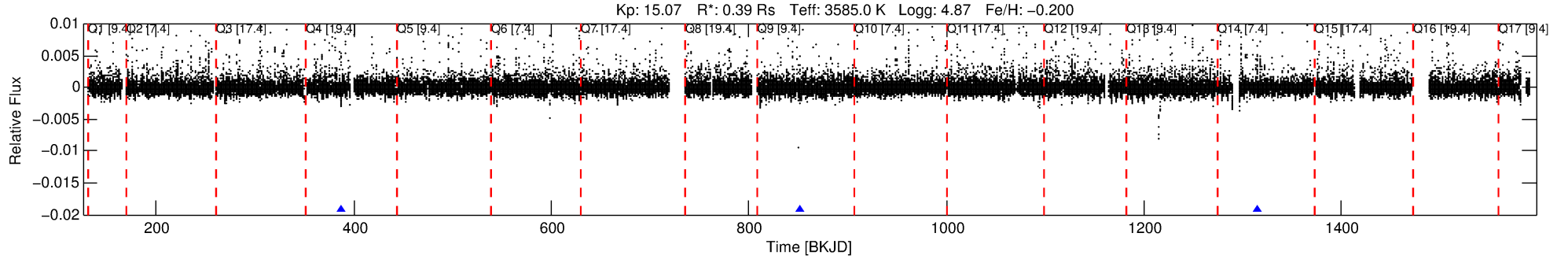
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004355503-02

No Significant Match Found

DV One-Page Summary

KIC: 4355503 Candidate: 2 of 3 Period: 463.525 d



DV Fit Results:

Period = 463.52499 [0.00955] d
Epoch = 387.8316 [0.0125] BKJD
Rp/R* = 0.0549 [0.0056]
a/R* = 236.82 [61.79]
b = 0.82 [0.11]
Seff = 0.03 [0.00]
Teq = 106 [4] K
Rp = 2.33 [0.40] Re
a = 0.8676 [0.0868] AU
Ag = 91241.13 [28691.30] [3.18σ]
Teffp = 2842 [215] K [12.73σ]

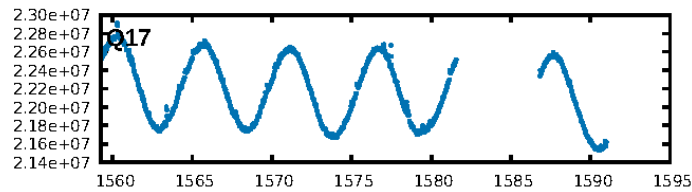
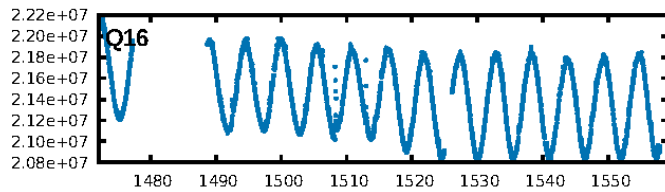
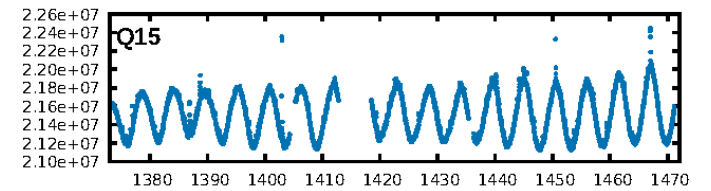
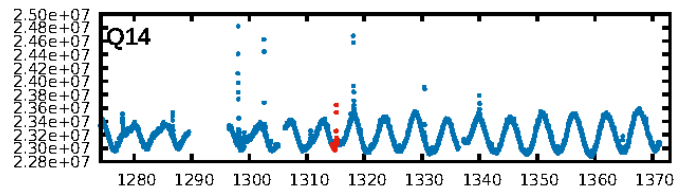
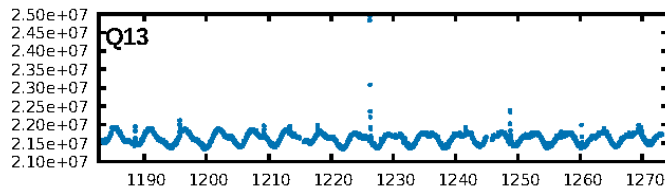
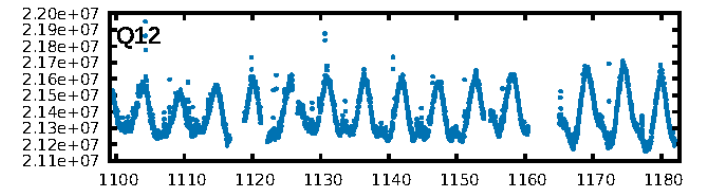
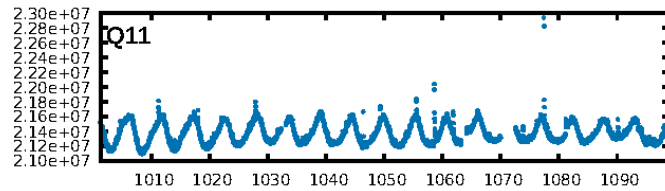
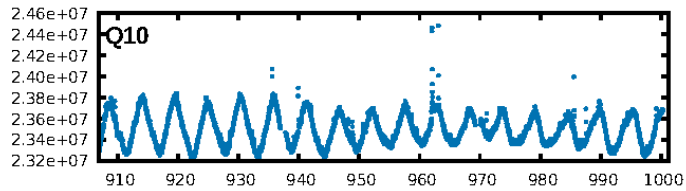
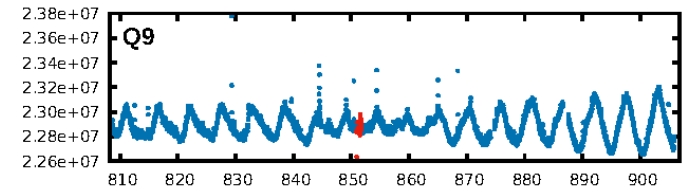
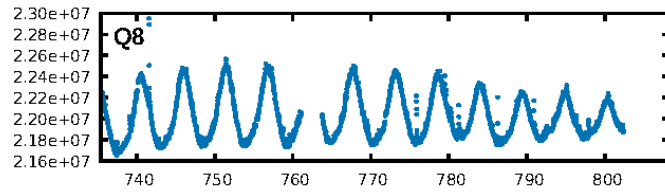
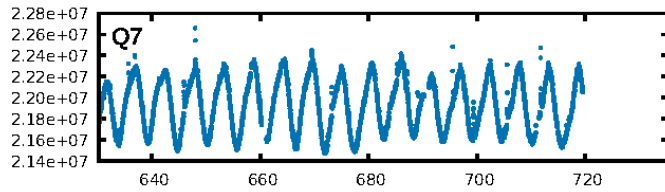
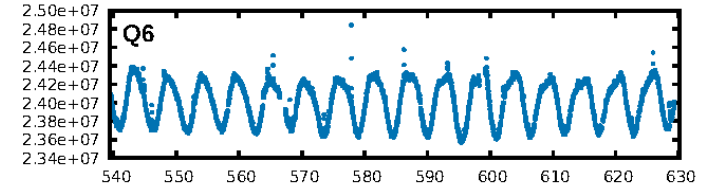
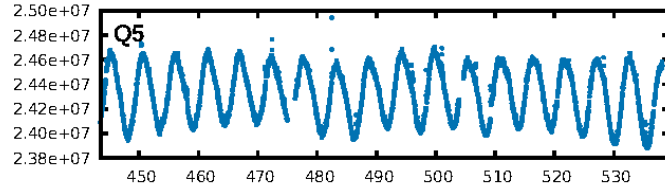
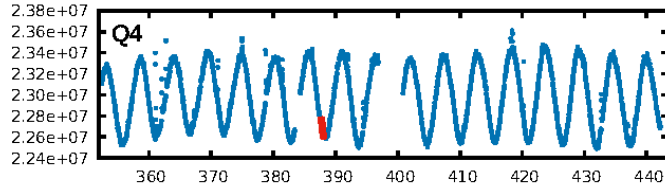
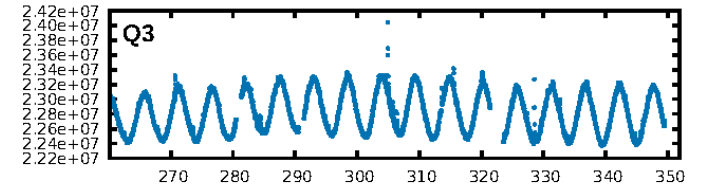
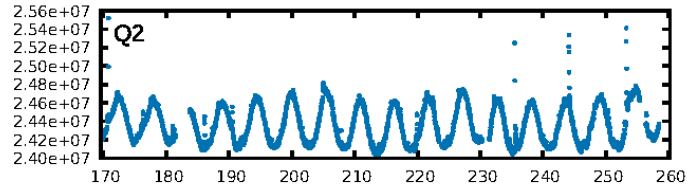
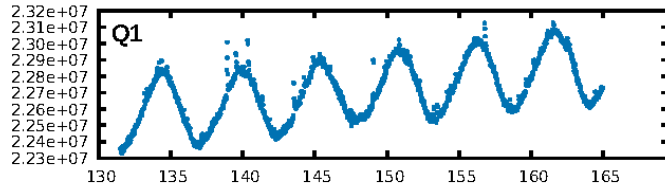
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1110.81σ]
LongPeriod-sig: 100.0% [173.44σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 32.9%
Bootstrap-pfa: 8.78e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.76
Centroid-sig: 4.8%
Centroid-so: 0.572 arcsec [1.43σ]
OotOffset-rm: 0.182 arcsec [0.31σ]
KicOffset-rm: 0.476 arcsec [1.39σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/3]

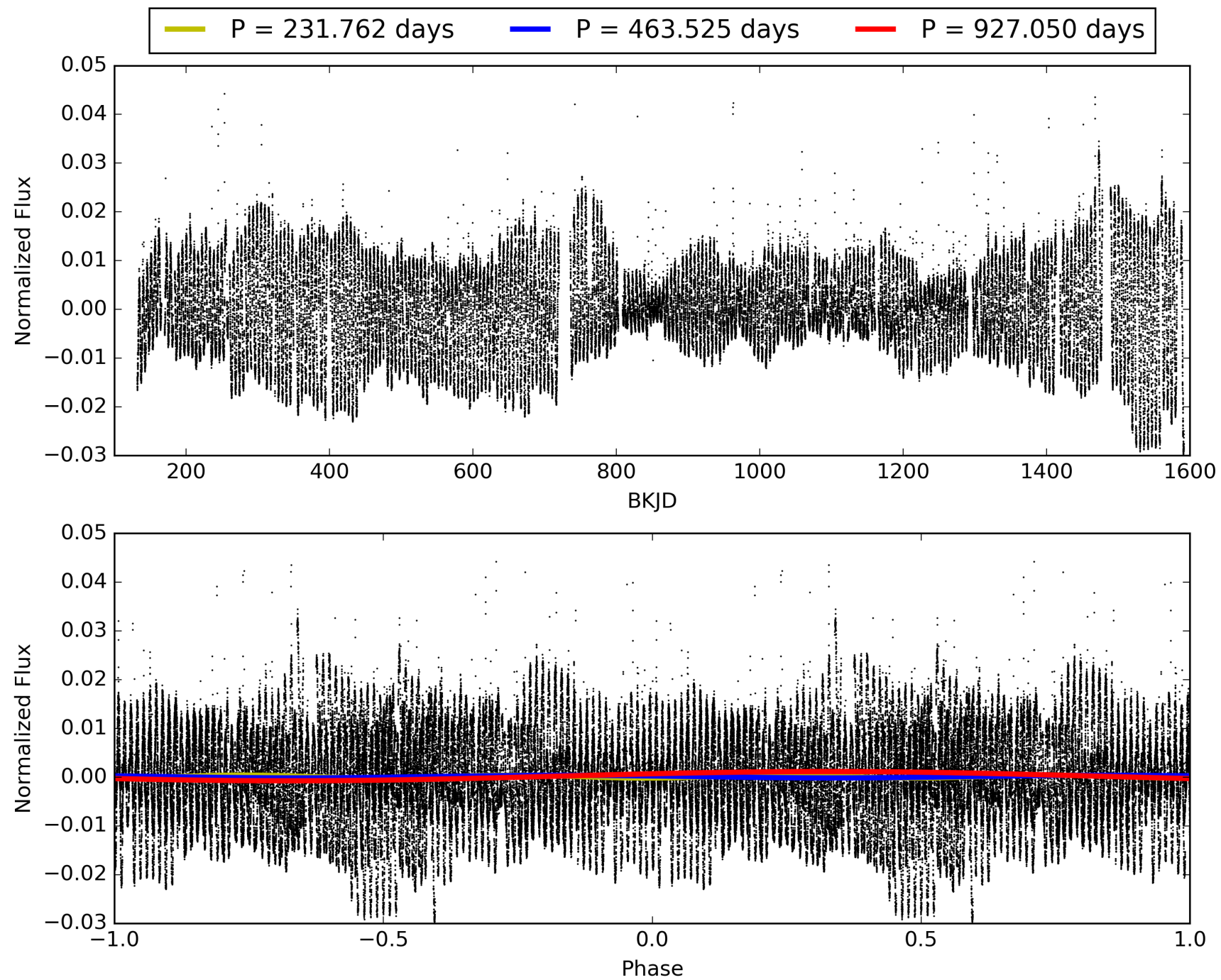
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:01:19 Z

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

TCE 004355503-02, PDC Light Curves

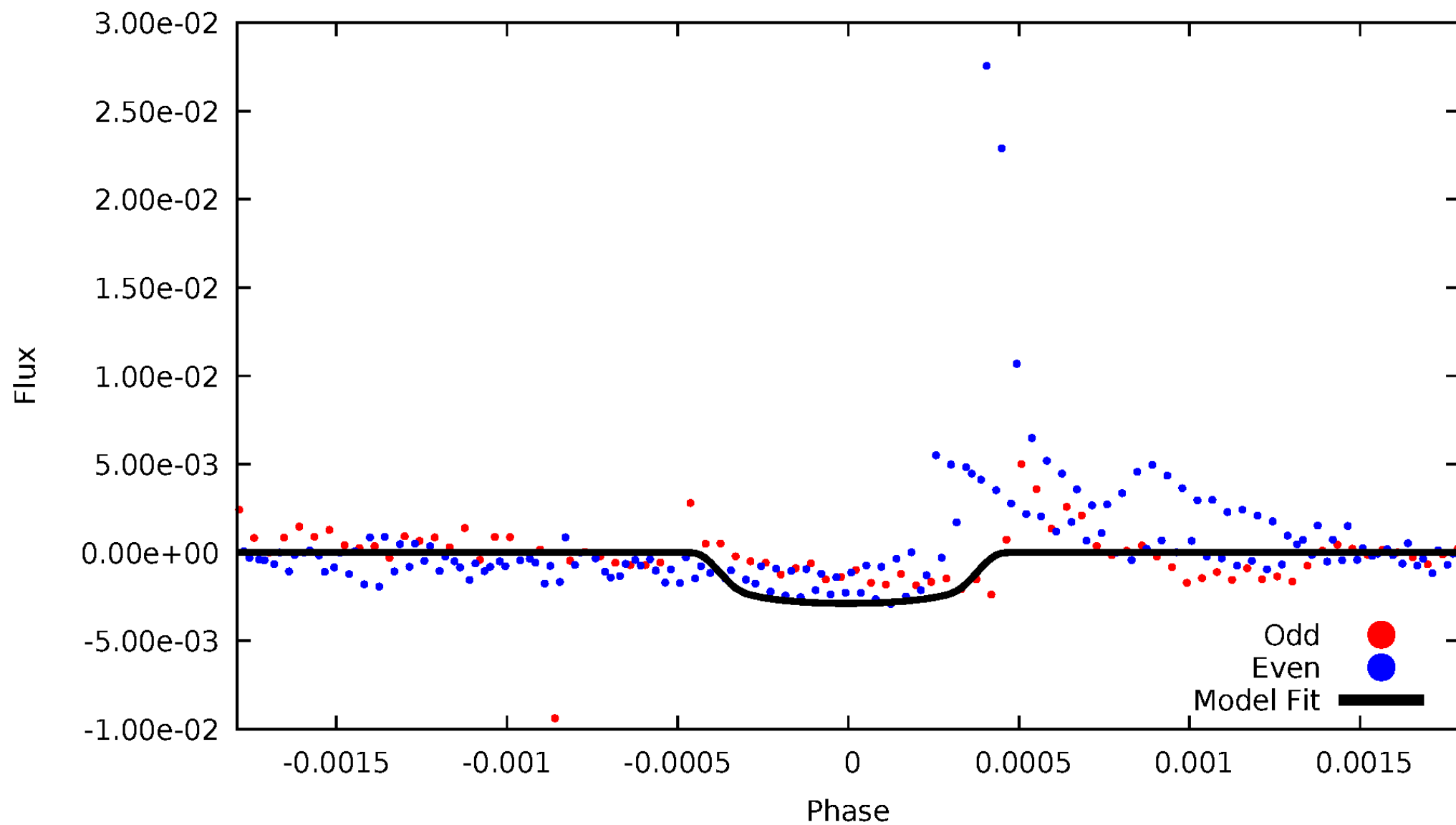


TCE 004355503-02



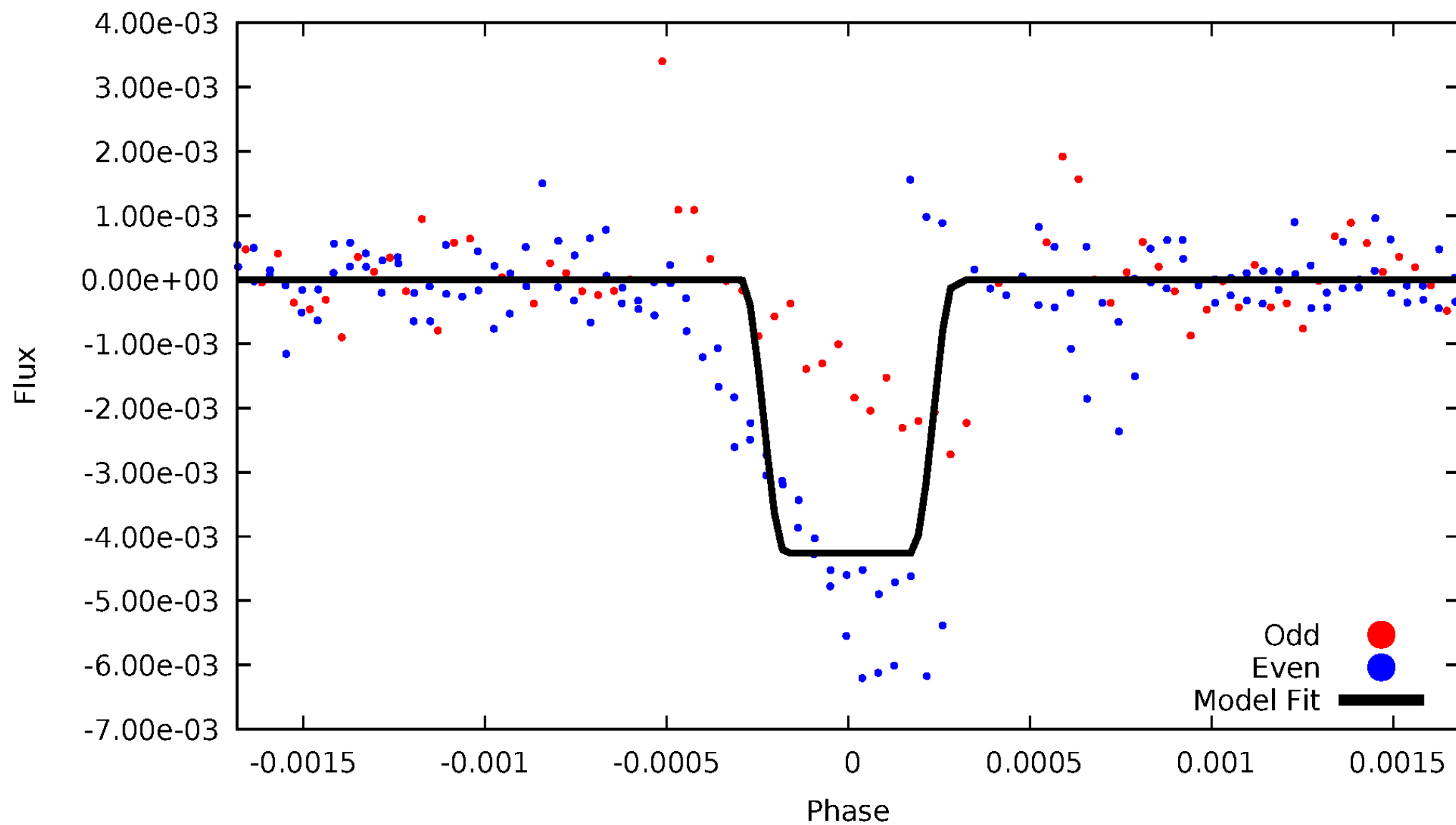
DV Odd/Even

TCE 004355503-02



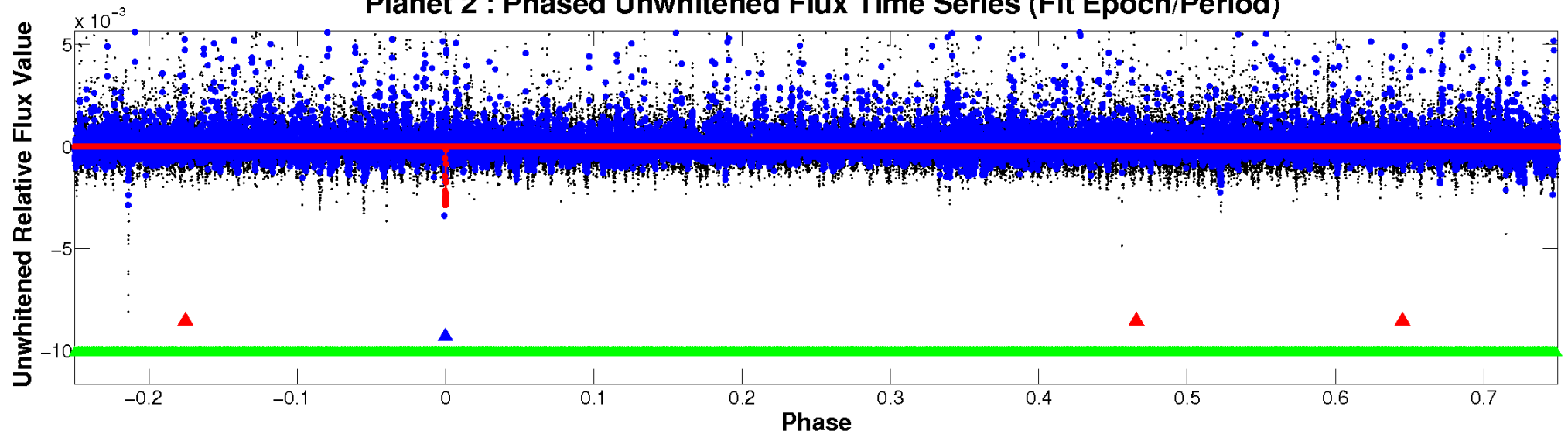
ALT Odd/Even

TCE 004355503-02

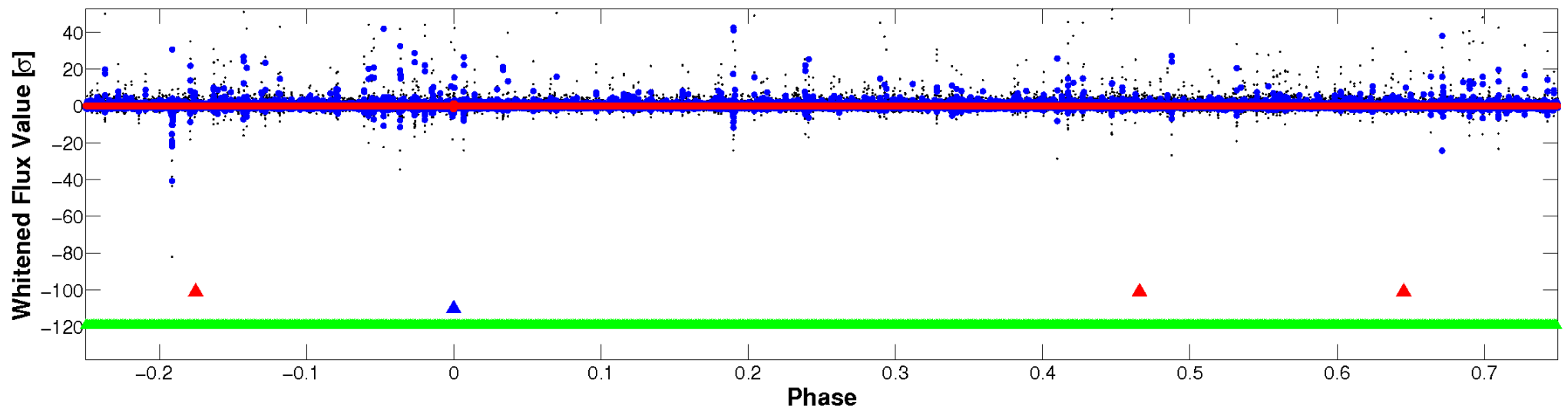


Non-Whitened Vs. Whitened Light Curve

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

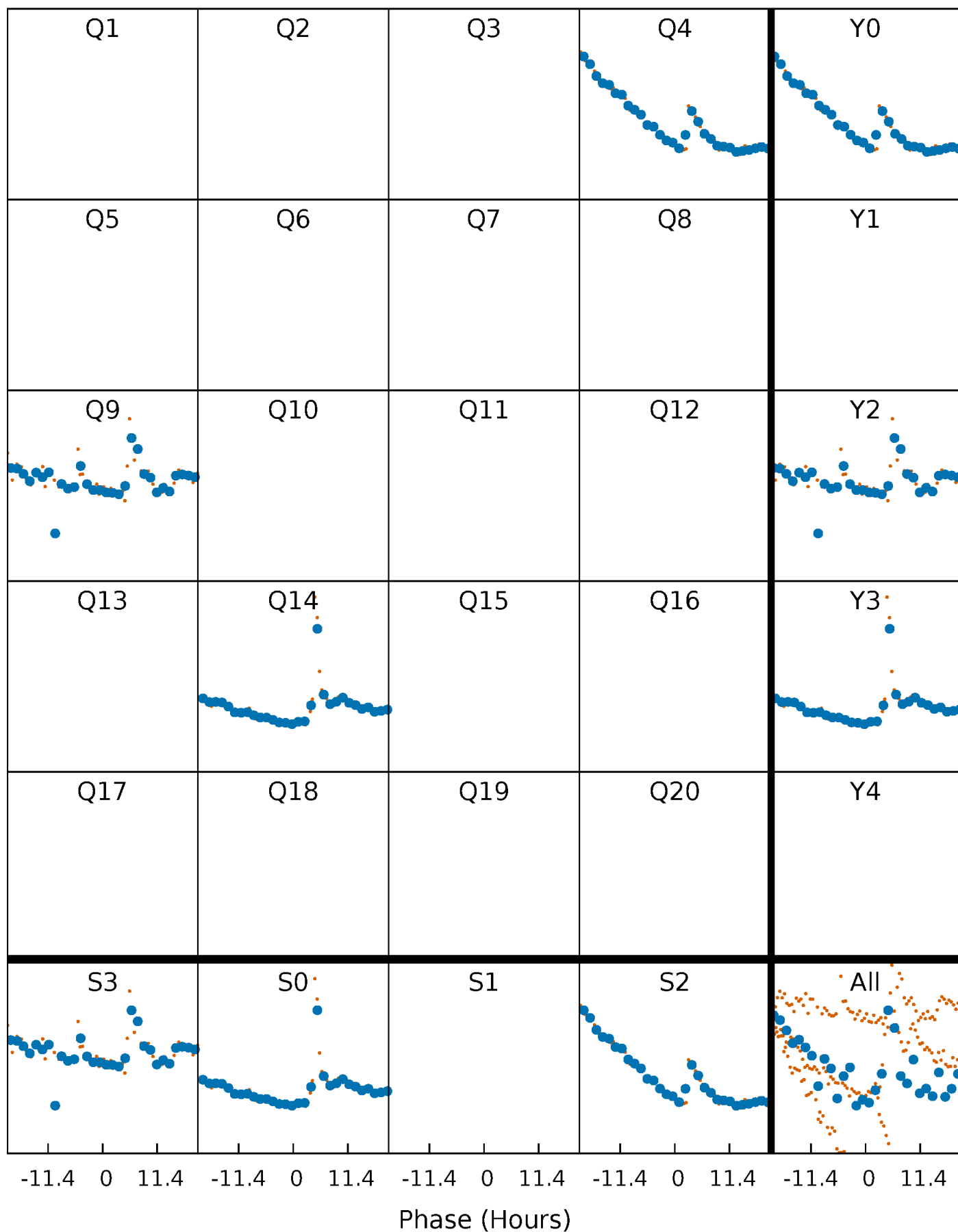


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



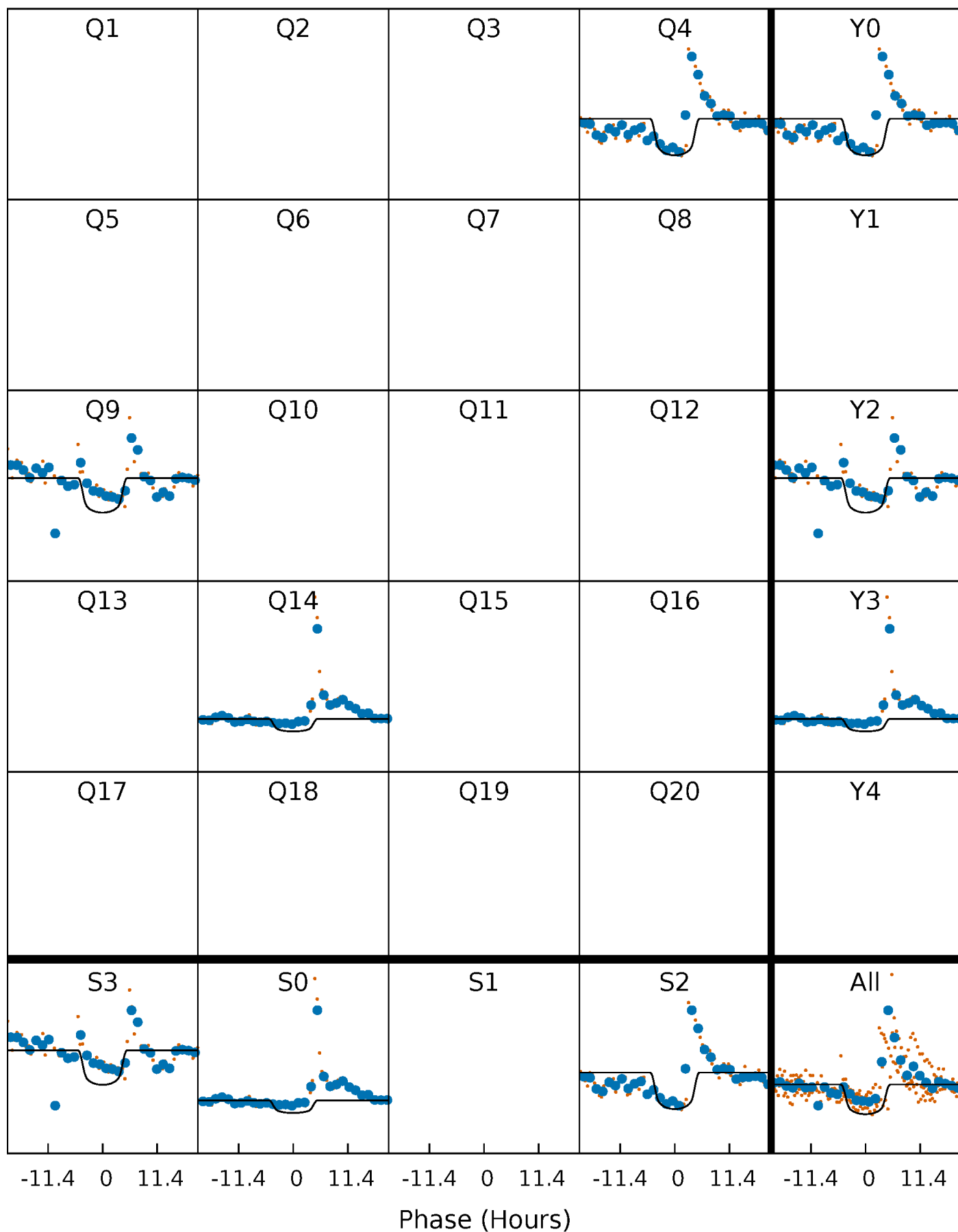
PDC Quarter-Phased Transit Curves

TCE 004355503-02 P=463.524994 Days $T_0=387.831592$ (BKJD)



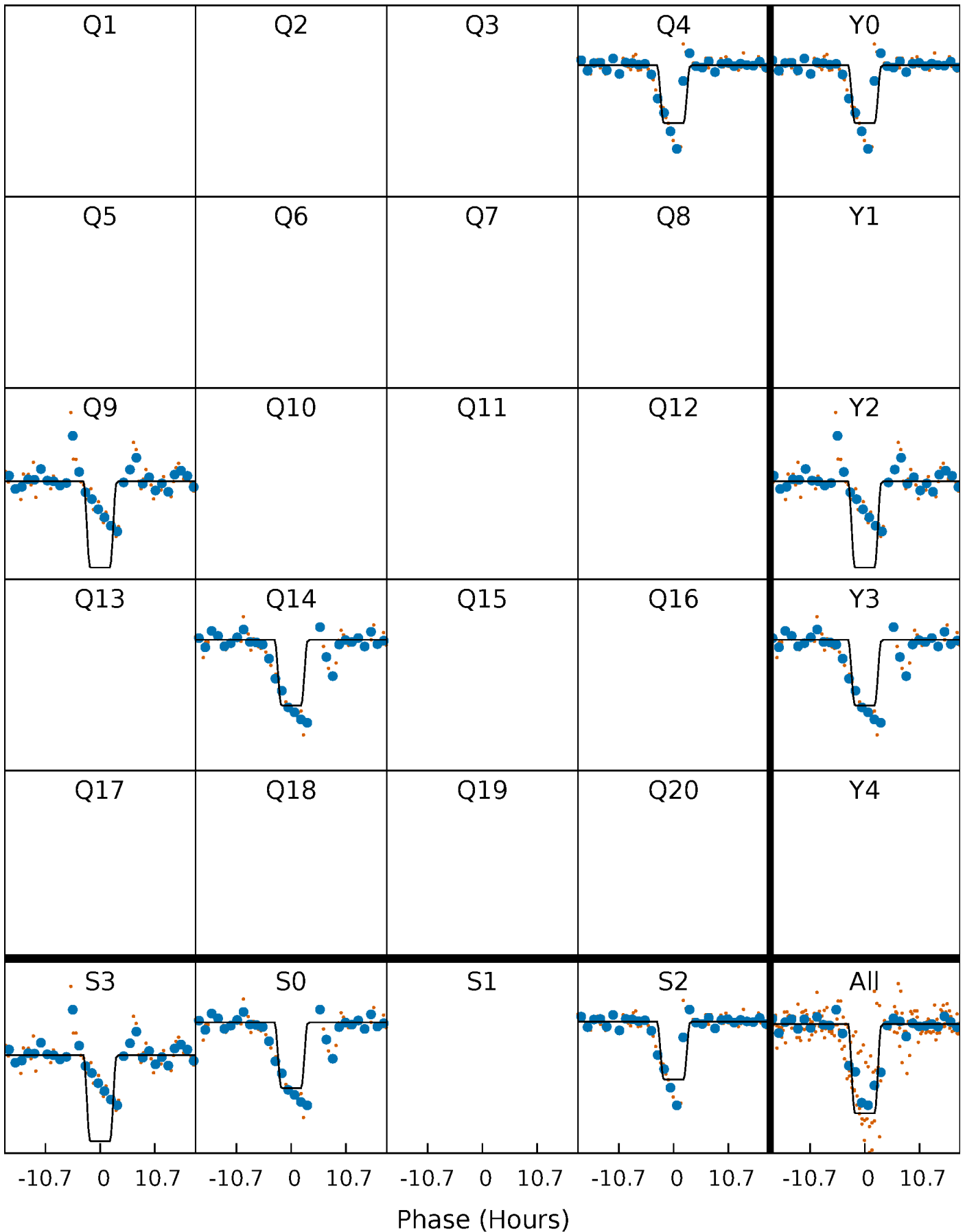
DV Quarter-Phased Transit Curves

TCE 004355503-02 $P=463.524994$ Days $T_0=387.831592$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

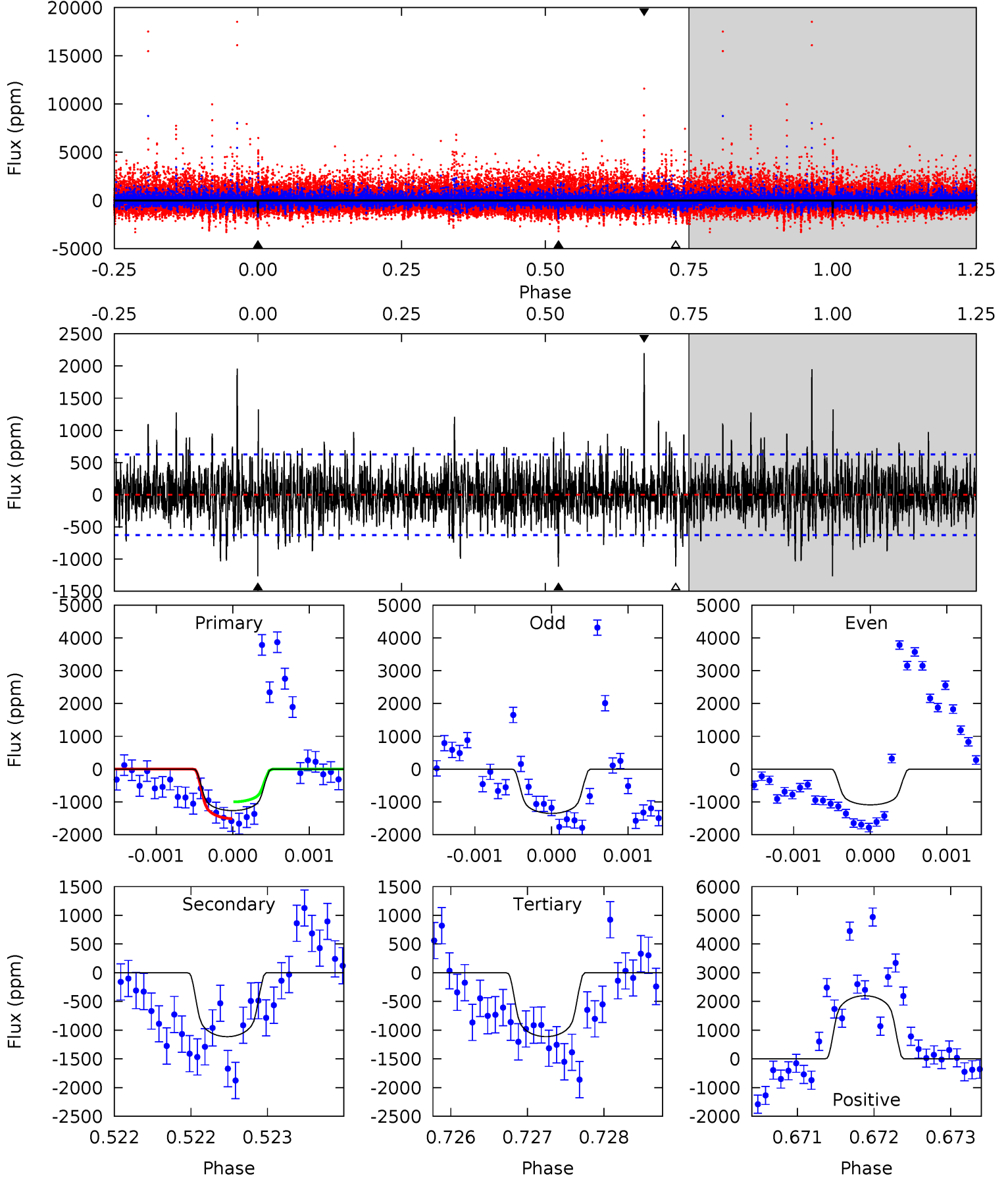
TCE 004355503-02 P=463.508064 Days $T_0=387.871592$ (BKJD)



DV Model-Shift Uniqueness Test

004355503-02, P = 463.524994 Days, E = 387.831592 Days

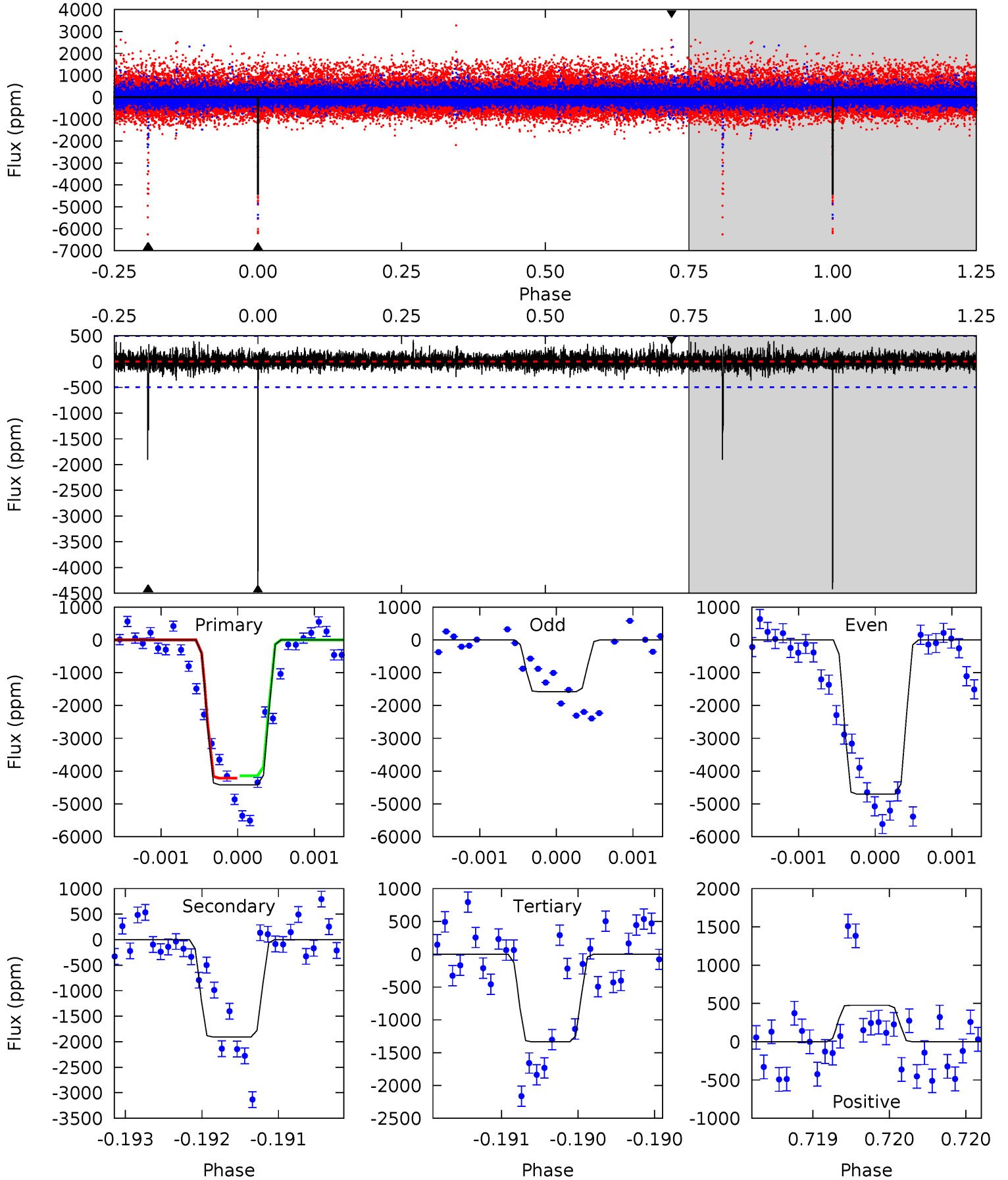
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.0 | 9.72 | 9.71 | 19.2 | 5.47 | 3.32 | 2.56 | 1.33 | -8.15 | 0.00 | -9.47 | 0.82 | 0.81 | 0.63 | 2.23 |



Alt Model-Shift Uniqueness Test

004355503-02, P = 463.508064 Days, E = 387.871592 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 49.3 | 21.3 | 14.9 | 5.31 | 5.55 | 3.44 | 0.94 | 34.4 | 44.0 | 6.38 | 16.0 | 18.7 | 0.85 | 0.10 | 0.40 |



Stellar Parameters For KIC 004355503

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3585^{+72}_{-79} | $4.868^{+0.054}_{-0.041}$ | $-0.200^{+0.100}_{-0.100}$ | $0.388^{+0.039}_{-0.053}$ | $0.406^{+0.041}_{-0.061}$ | $9.786^{+2.837}_{-1.842}$ |
| | +2%/-2% | +1%/-1% | +50%/-50% | +10%/-14% | +10%/-15% | +29%/-19% |
| Source | PHO2 | PHO2 | PHO2 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004355503-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|------------------------|----------------------|----------------------|----------------------------|
| DV | -1113 ± 115 | $2.30^{+0.28}_{-0.27}$ | 147^{+4}_{-4} | 3079^{+131}_{-115} | 87814^{+23220}_{-20011} |
| Alt. | -1906 ± 90 | $2.76^{+0.29}_{-0.31}$ | 147^{+5}_{-4} | 3165^{+108}_{-99} | 104040^{+26060}_{-18654} |

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

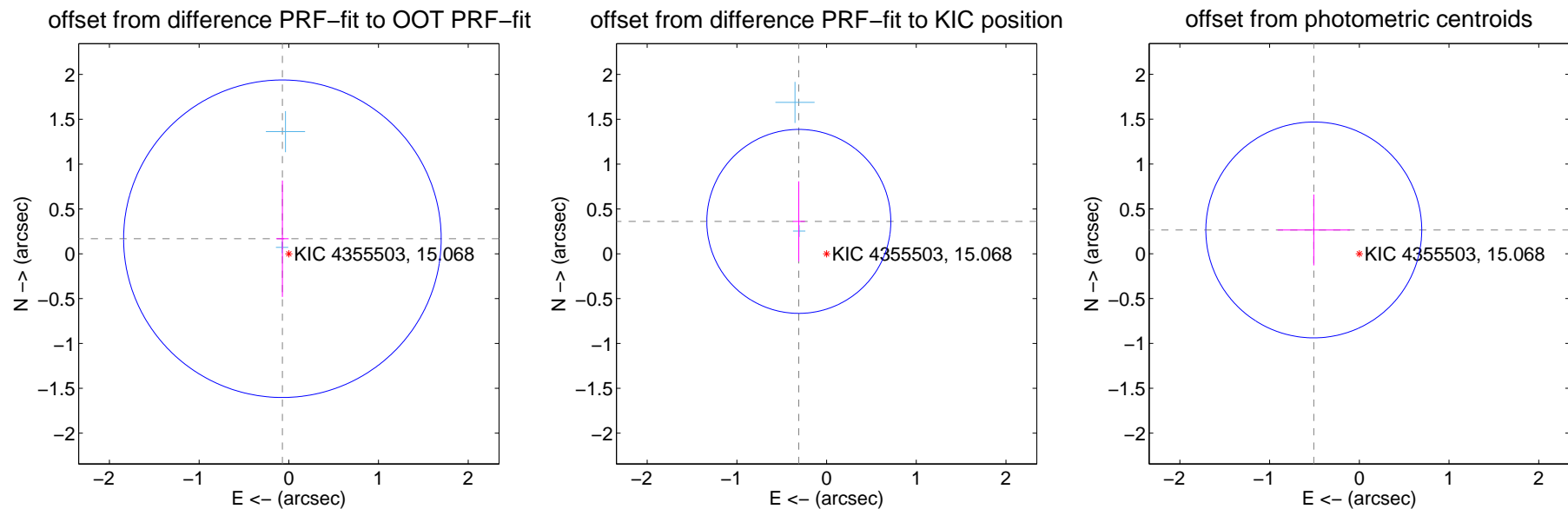
DV Centroid Data

Supplemental centroid analysis for 004355503-02. Kepler magnitude: 15.07. Transit SNR 11.56

There are 2 quarters with good PRF difference image offsets

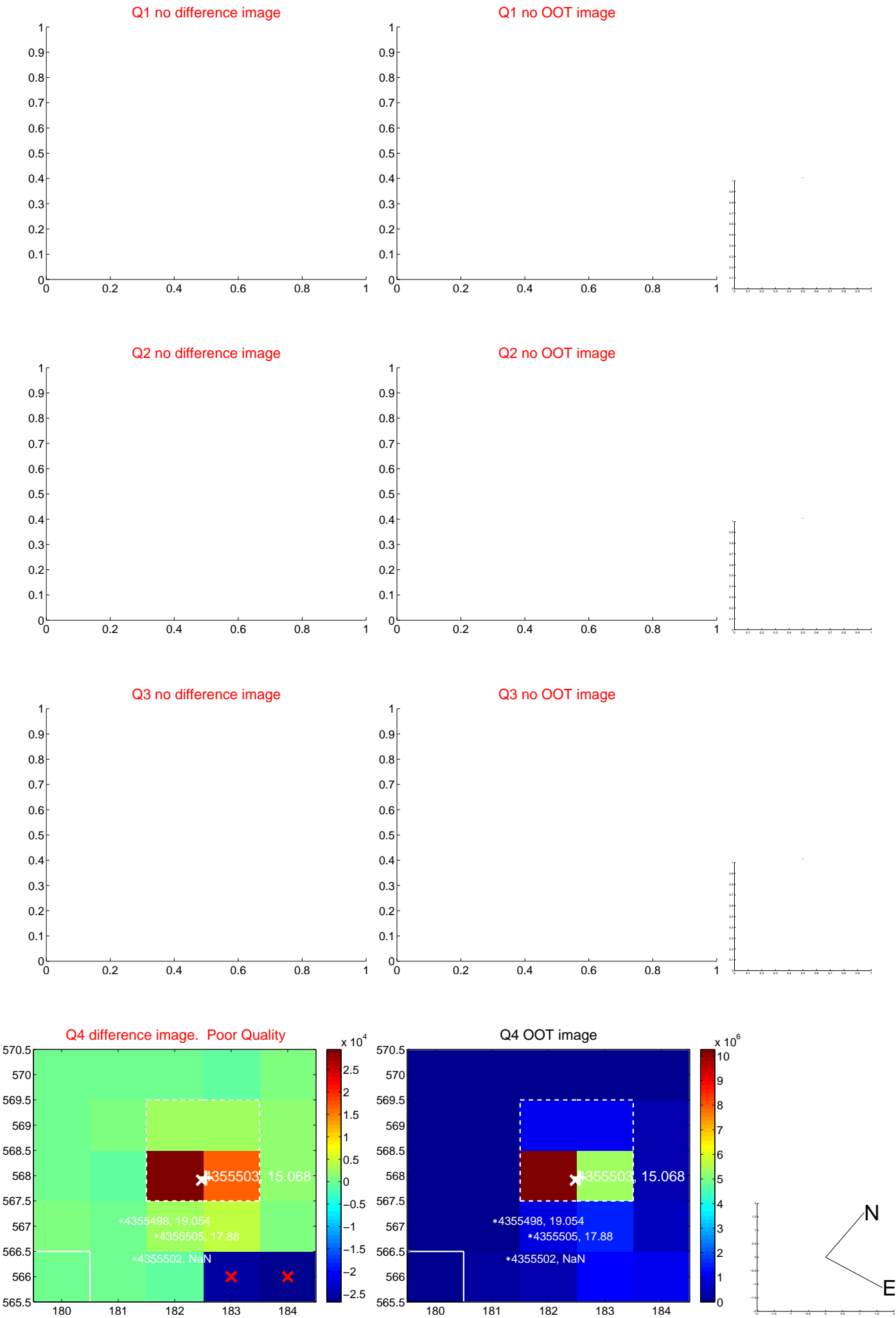
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.182 ± 0.590 | 0.31 | 0.072 ± 0.069 | 0.168 ± 0.649 |
| PRF-fit source offset from KIC position | 0.476 ± 0.342 | 1.39 | 0.310 ± 0.069 | 0.361 ± 0.446 |
| photometric centroid source offset | 0.57 ± 0.40 | 1.43 | 0.51 ± 0.40 | 0.26 ± 0.39 |



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

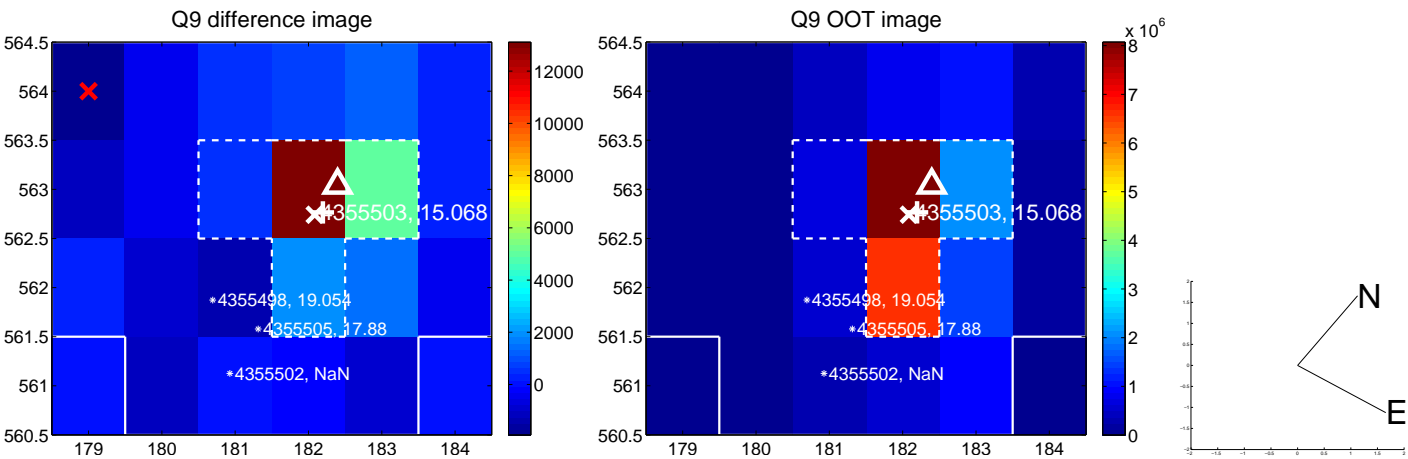
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

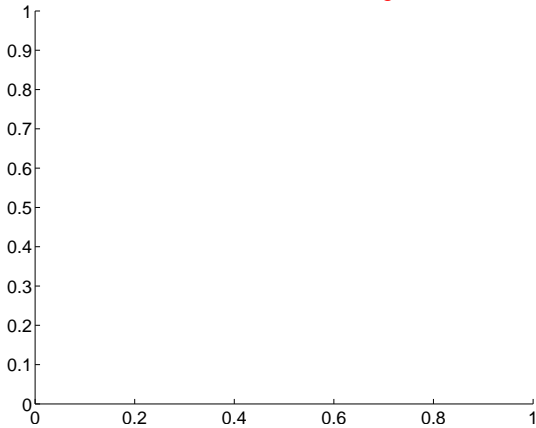


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

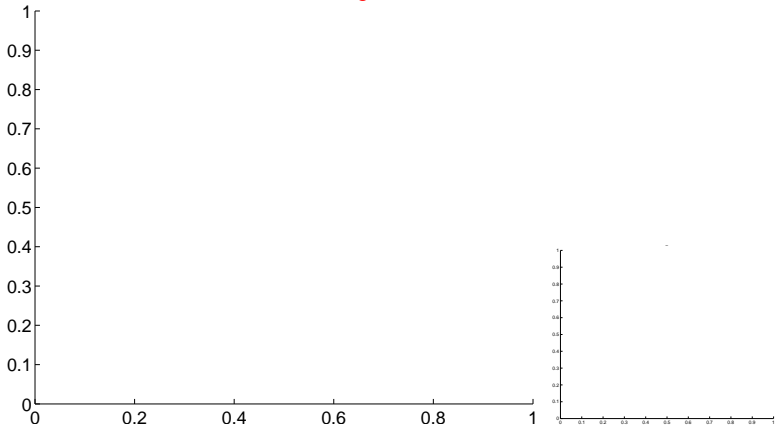


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

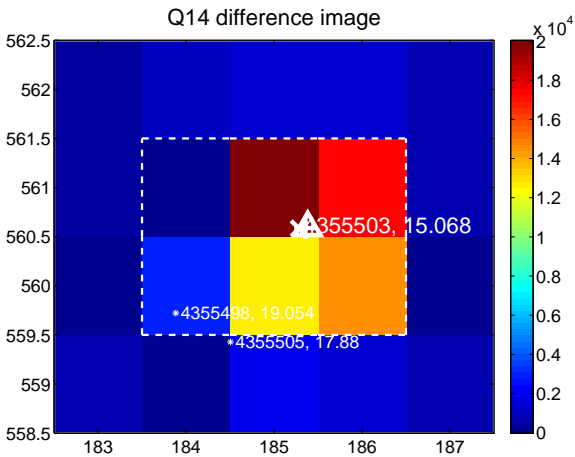
Q13 no difference image



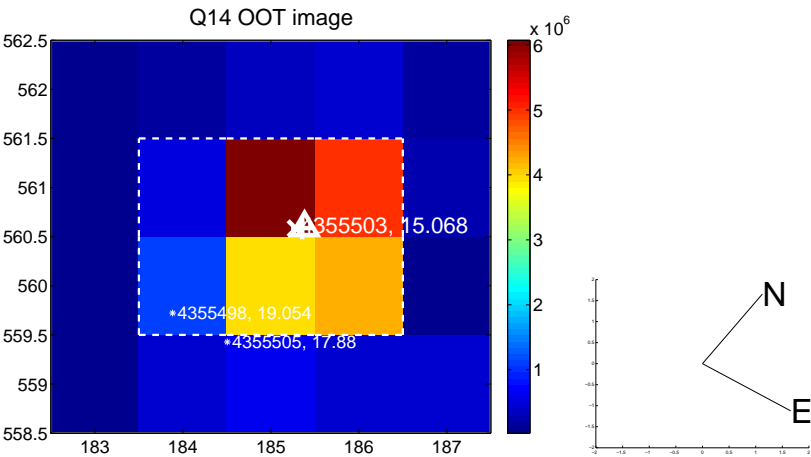
Q13 no OOT image



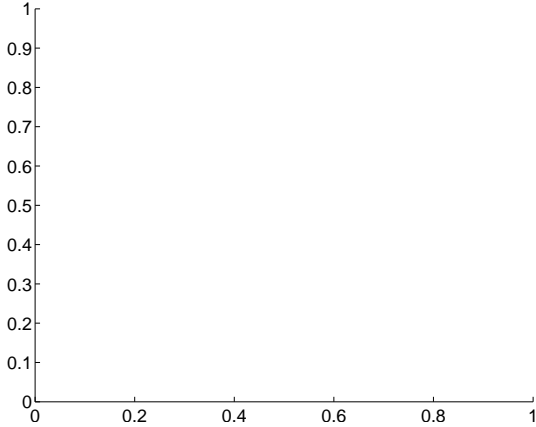
Q14 difference image



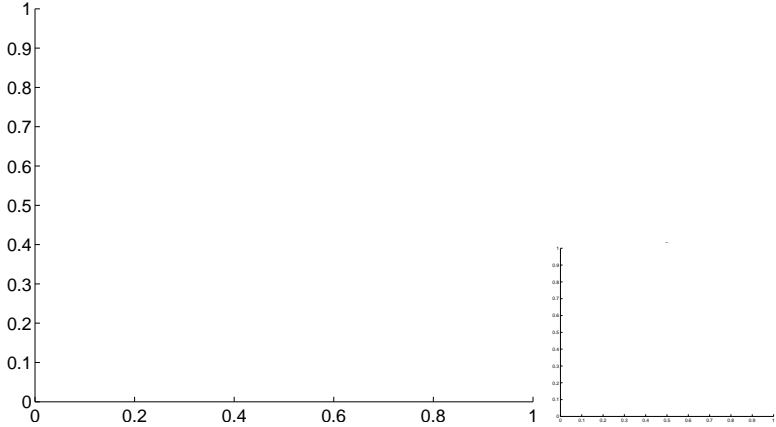
Q14 OOT image



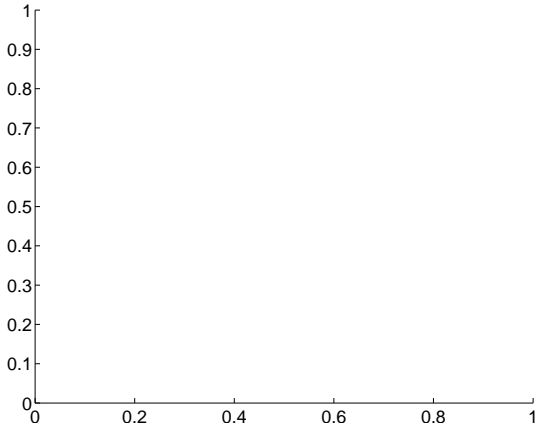
Q15 no difference image



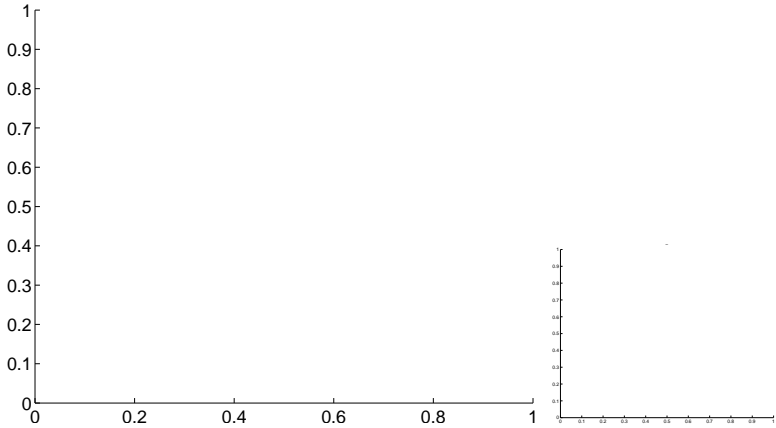
Q15 no OOT image



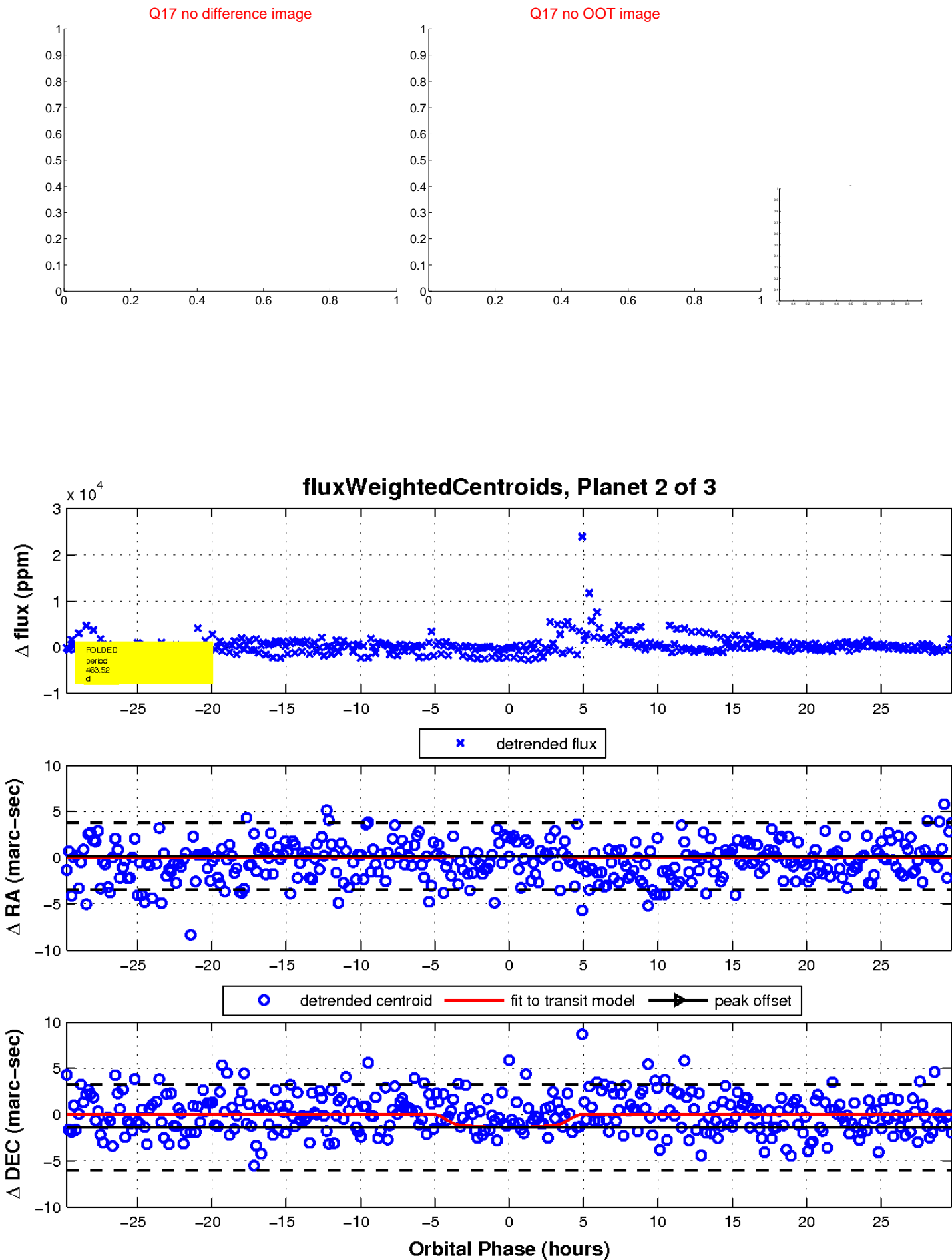
Q16 no difference image



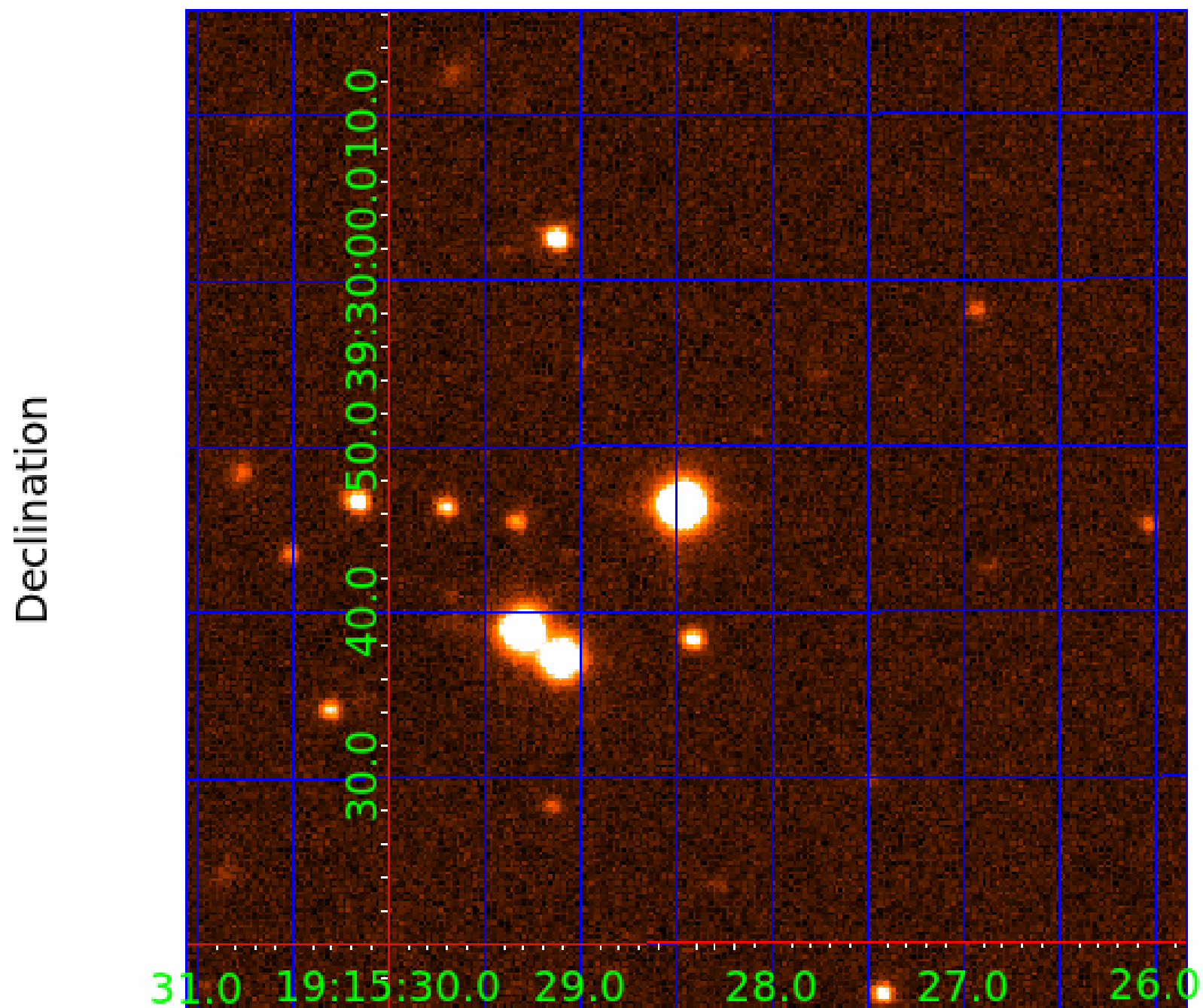
Q16 no OOT image



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



UKIRT Image



KIC 004355503

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004355503-01 | OBS | No | 546.710662 | 140.225113 | 1808.2 | 5.771 | 15.1 | 8.0 | 0.39 | 3585 | 1.73 | 0.02 |
| 004355503-02 | OBS | No | 463.524994 | 387.831592 | 2876.1 | 9.960 | 12.3 | 11.6 | 0.39 | 3585 | 2.33 | 0.03 |
| 004355503-03 | OBS | 7691.01 | 0.570828 | 131.591564 | 158.3 | 0.925 | 11.8 | 15.8 | 0.39 | 3585 | 0.57 | 224.25 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004355503-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 004355503-03 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET |

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

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

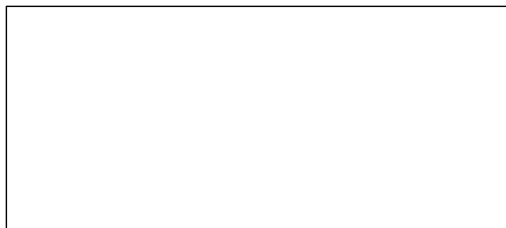
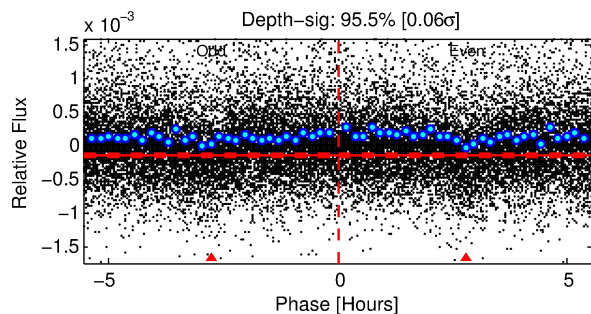
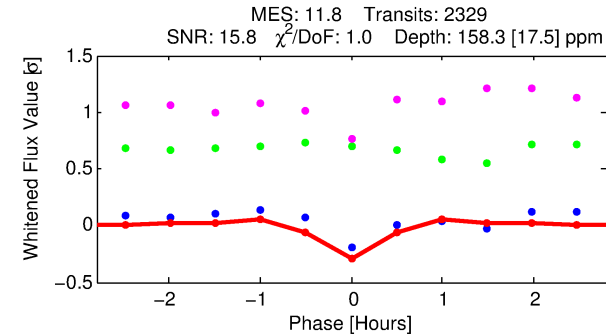
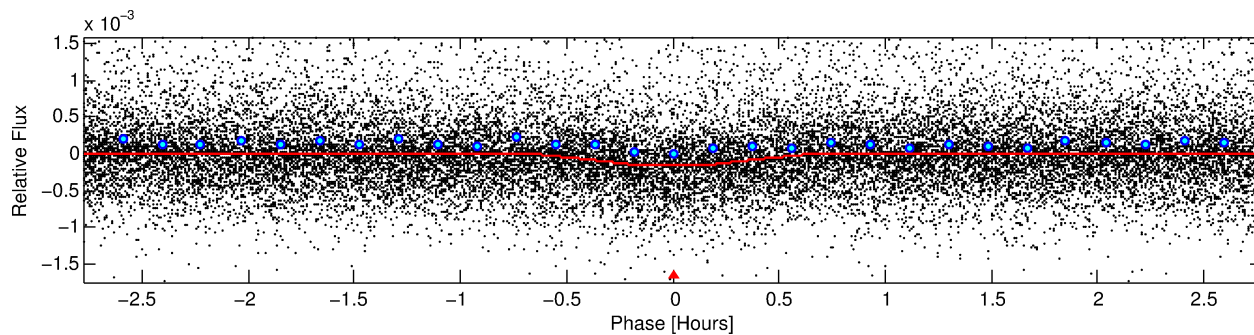
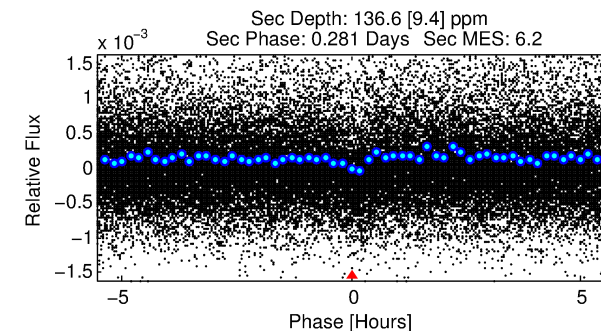
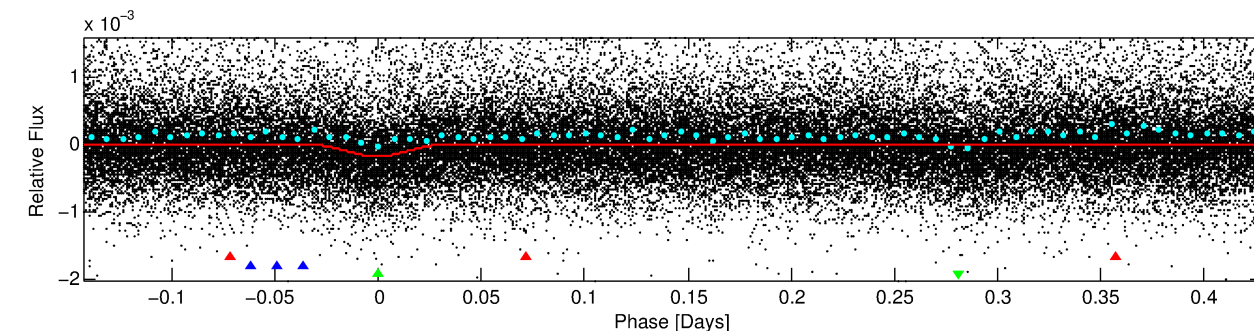
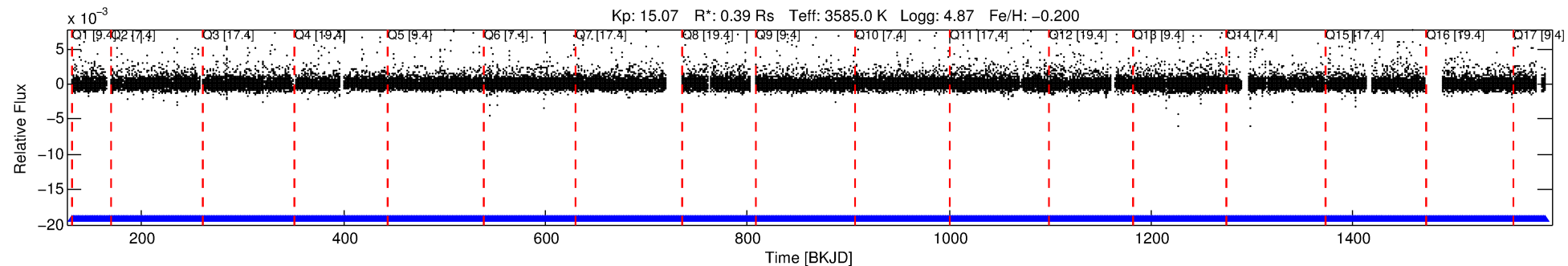
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004355503-03

No Significant Match Found

DV One-Page Summary

KIC: 4355503 Candidate: 3 of 3 Period: 0.571 d



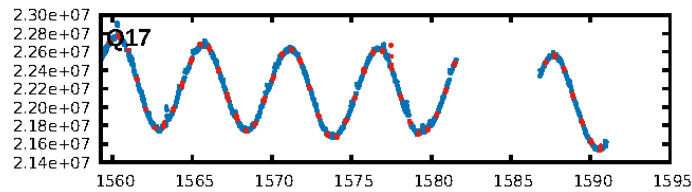
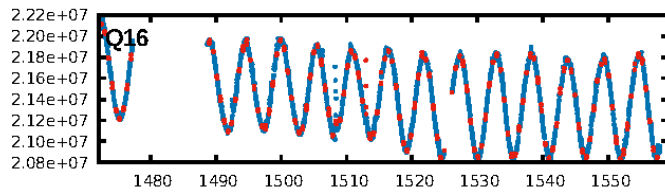
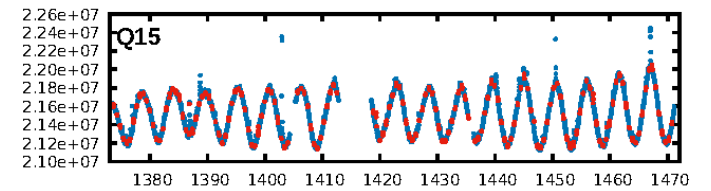
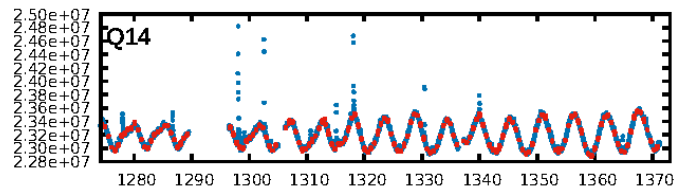
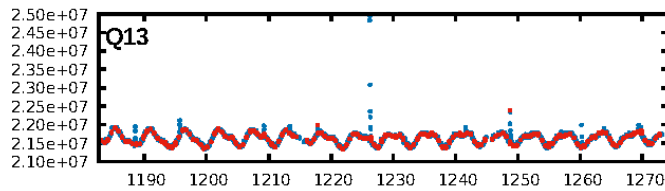
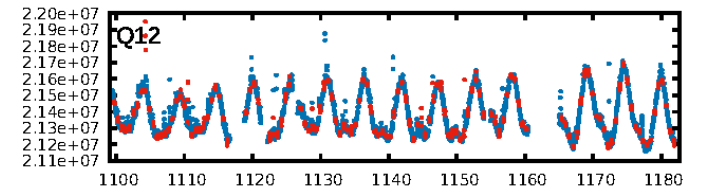
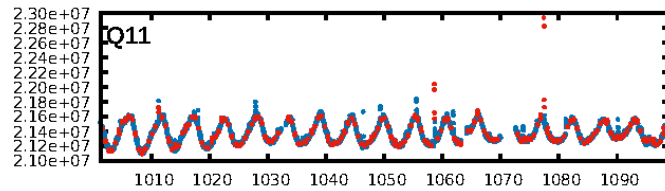
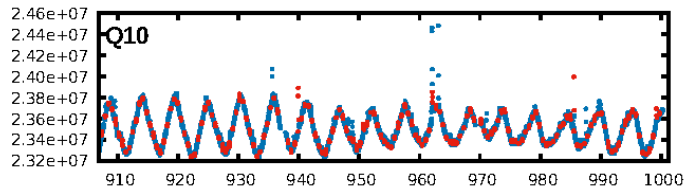
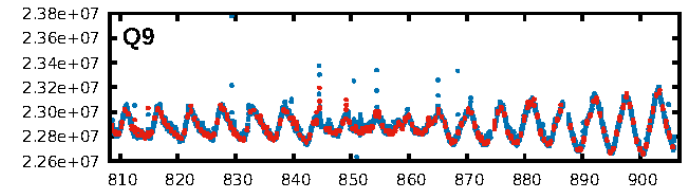
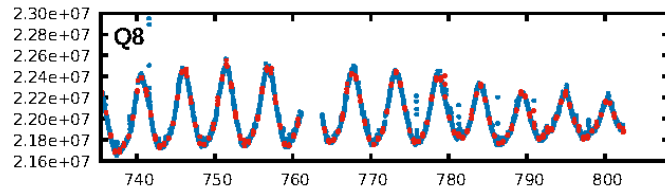
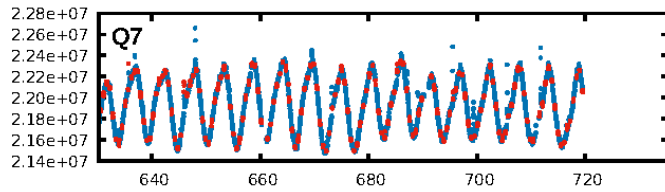
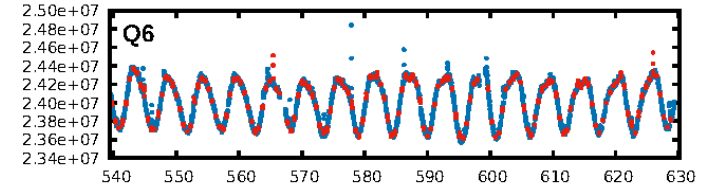
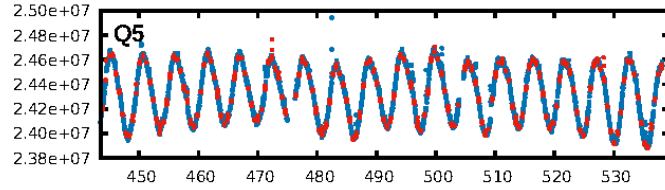
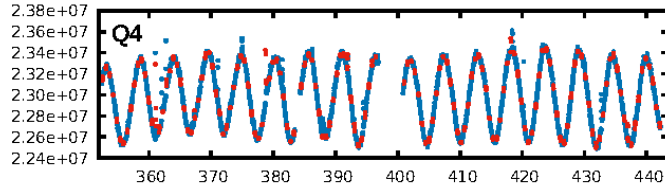
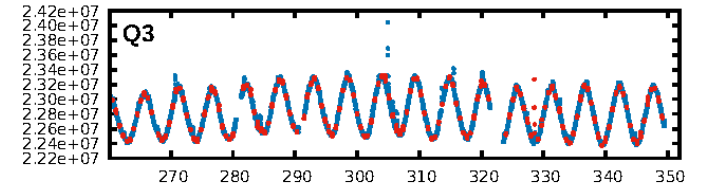
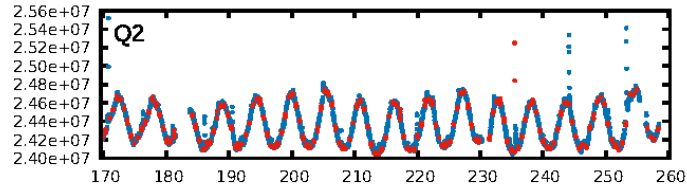
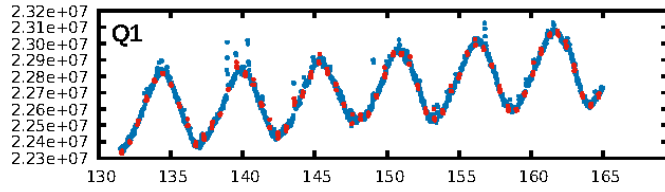
DV Fit Results:

Period = 0.57083 [0.00001] d
Epoch = 131.5916 [0.0009] BKJD
Rp/R* = 0.0135 [0.0054]
a/R* = 2.60 [4.06]
b = 0.87 [0.51]
Seff = 224.25 [33.96]
Teq = 987 [37] K
Rp = 0.57 [0.24] Re
a = 0.0100 [0.0010] AU
Ag = 22.90 [18.67] [1.17σ]
Teffp = 3337 [676] K [3.47σ]

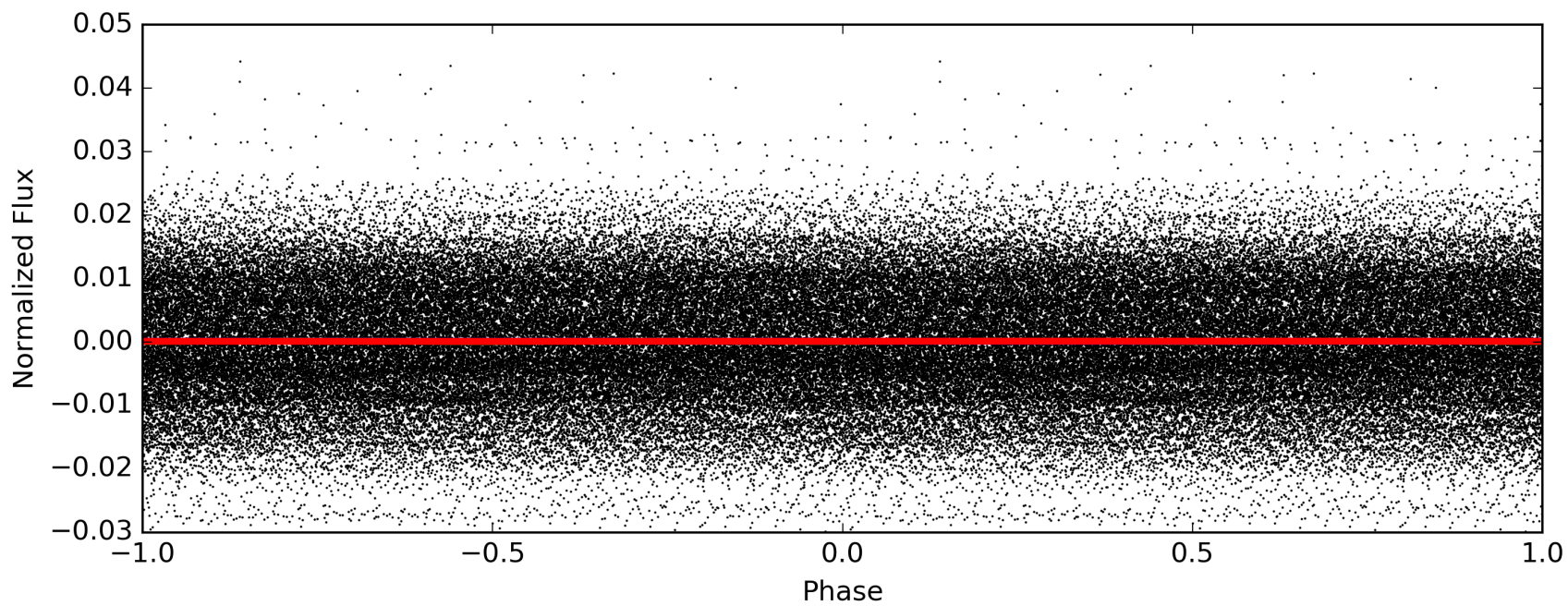
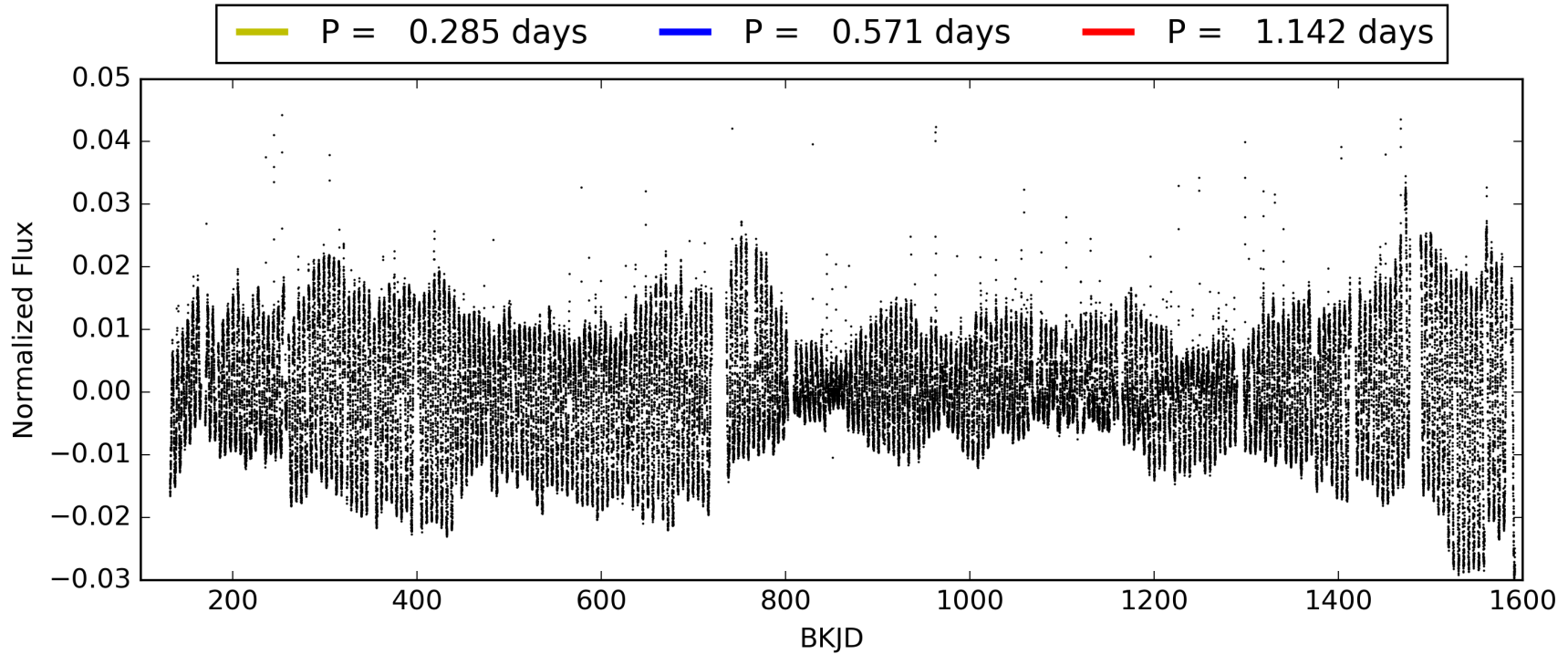
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1110.81σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 4.77e-23
RollingBand-fgt: 1.00 [2224/2224]
GhostDiagnostic-chr: -0.6881
Centroid-sig: 0.0%
Centroid-so: 5.661 arcsec [8.44σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [17/17]

TCE 004355503-03, PDC Light Curves

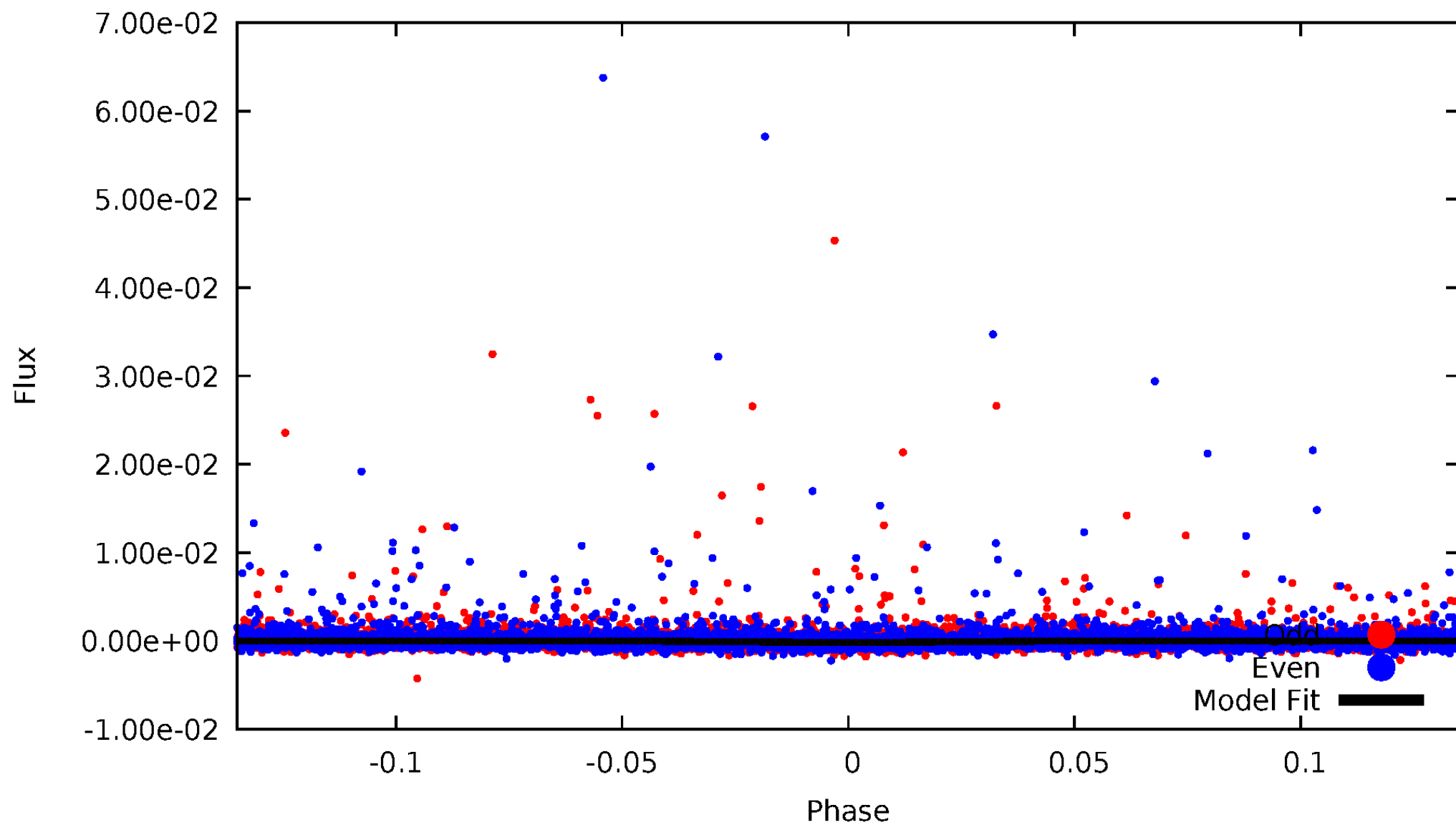


TCE 004355503-03



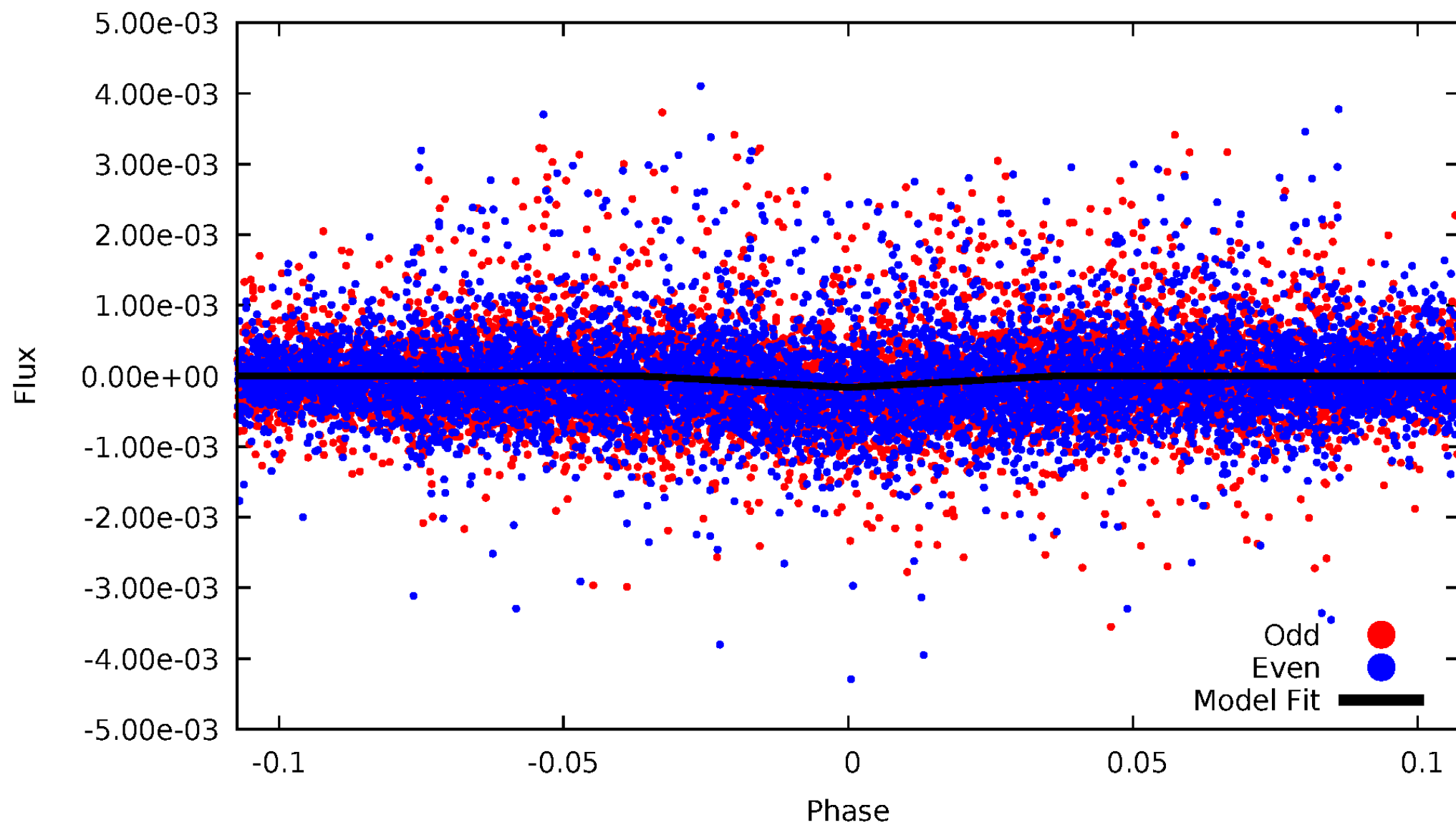
DV Odd/Even

TCE 004355503-03



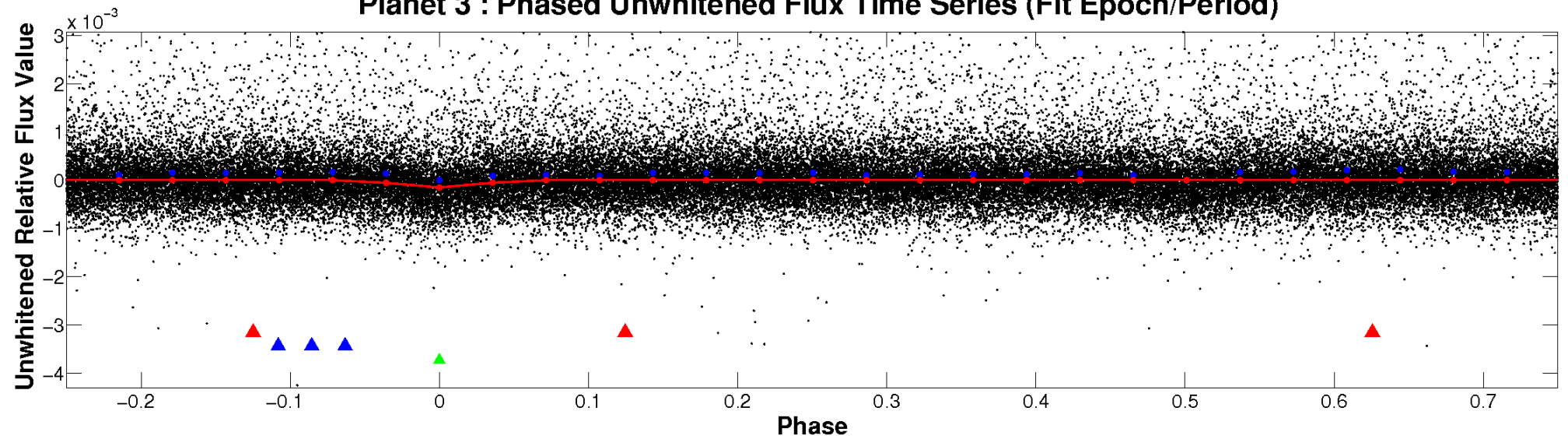
ALT Odd/Even

TCE 004355503-03

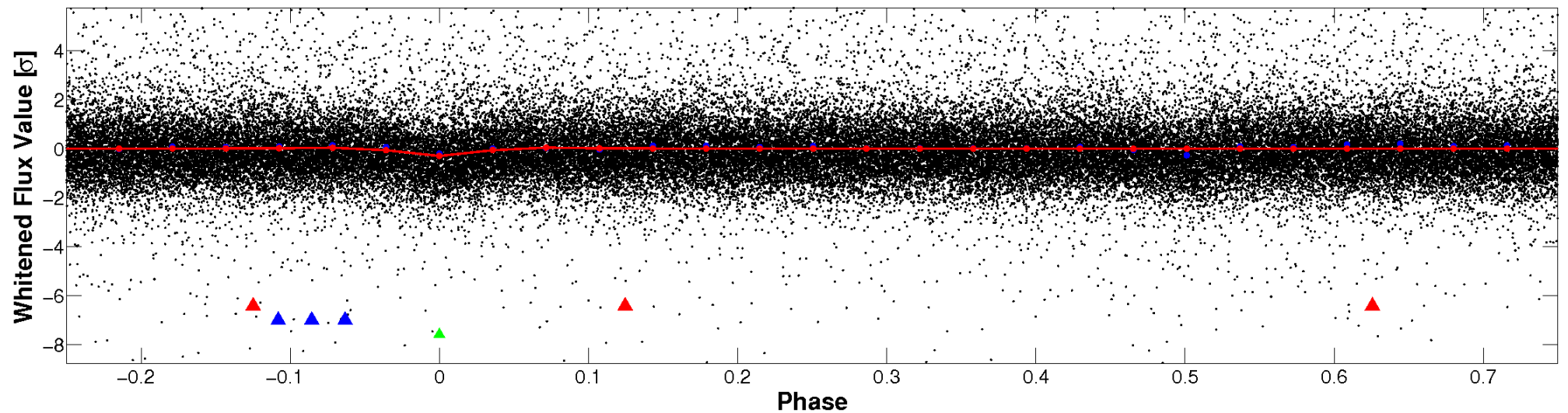


Non-Whitened Vs. Whitened Light Curve

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

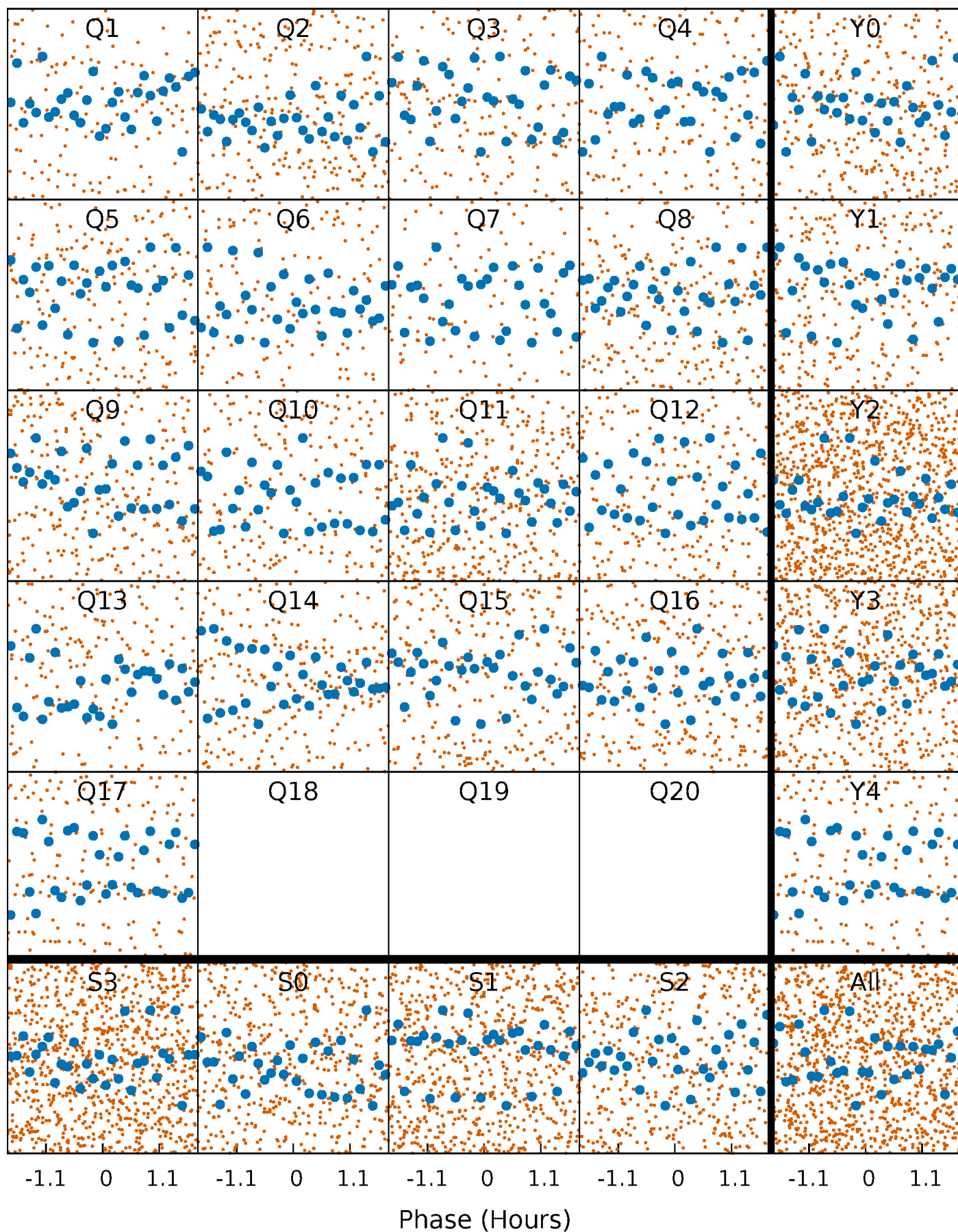


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



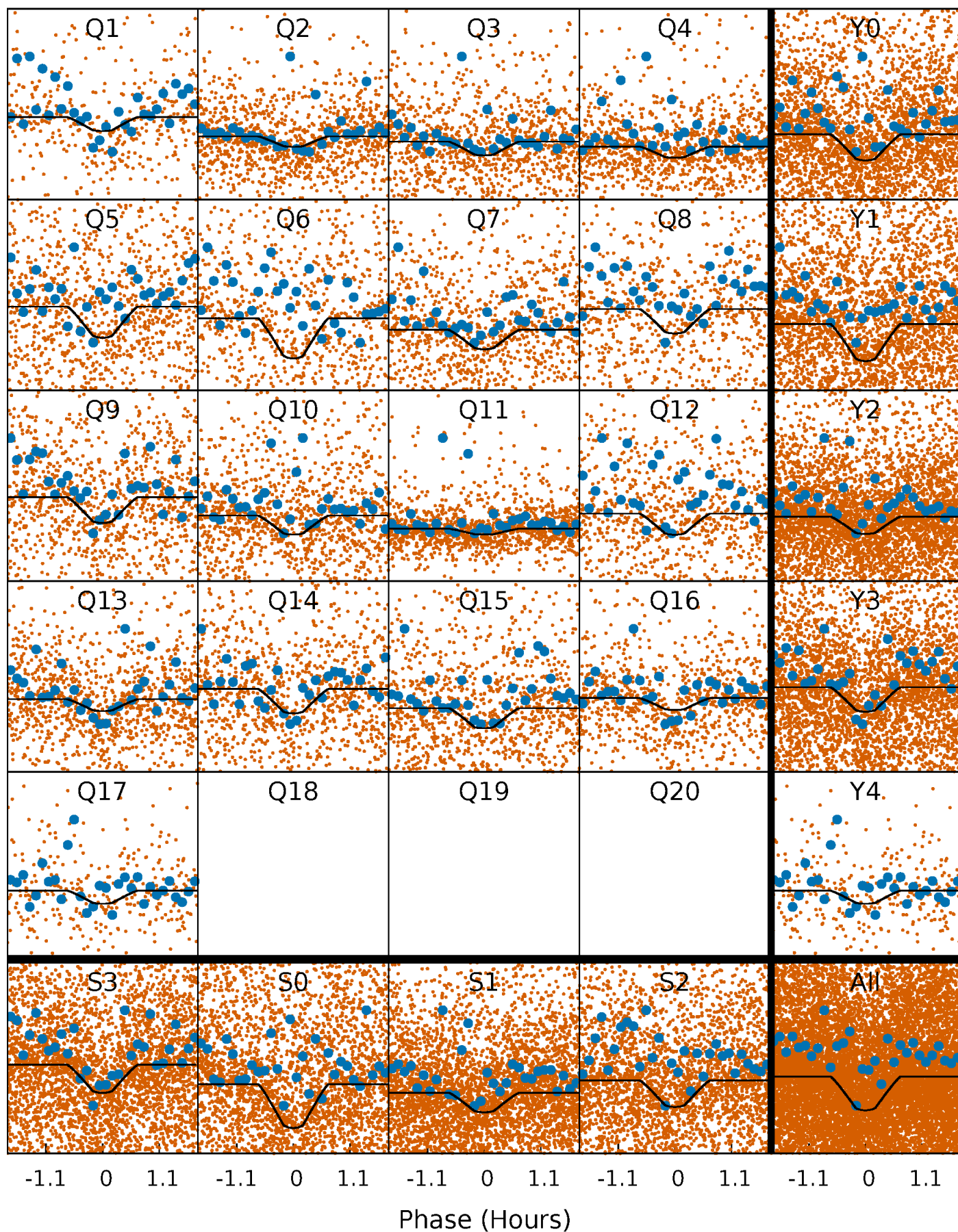
PDC Quarter-Phased Transit Curves

TCE 004355503-03 P= 0.570828 Days $T_0=131.591564$ (BKJD)



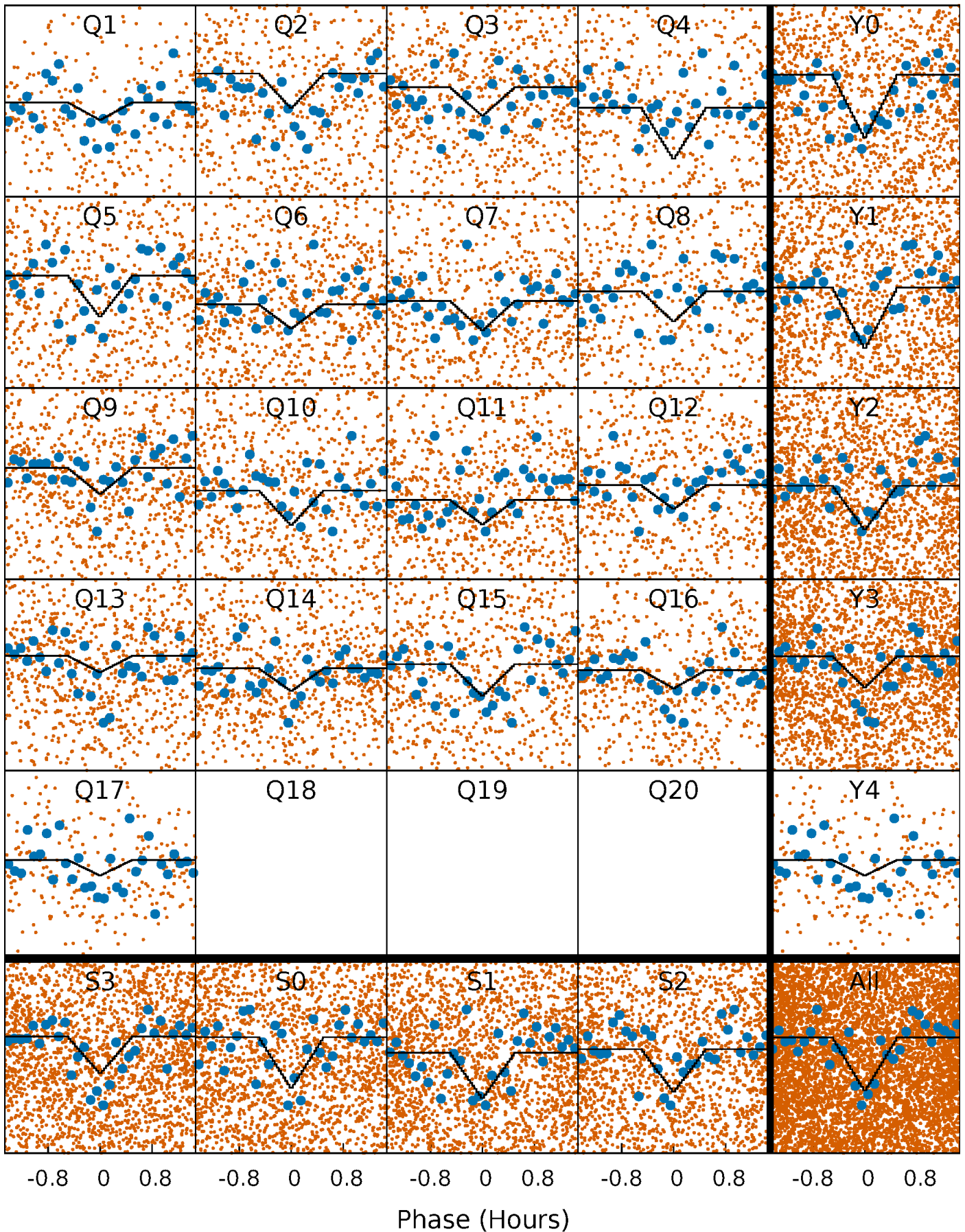
DV Quarter-Phased Transit Curves

TCE 004355503-03 P= 0.570828 Days $T_0=131.591564$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

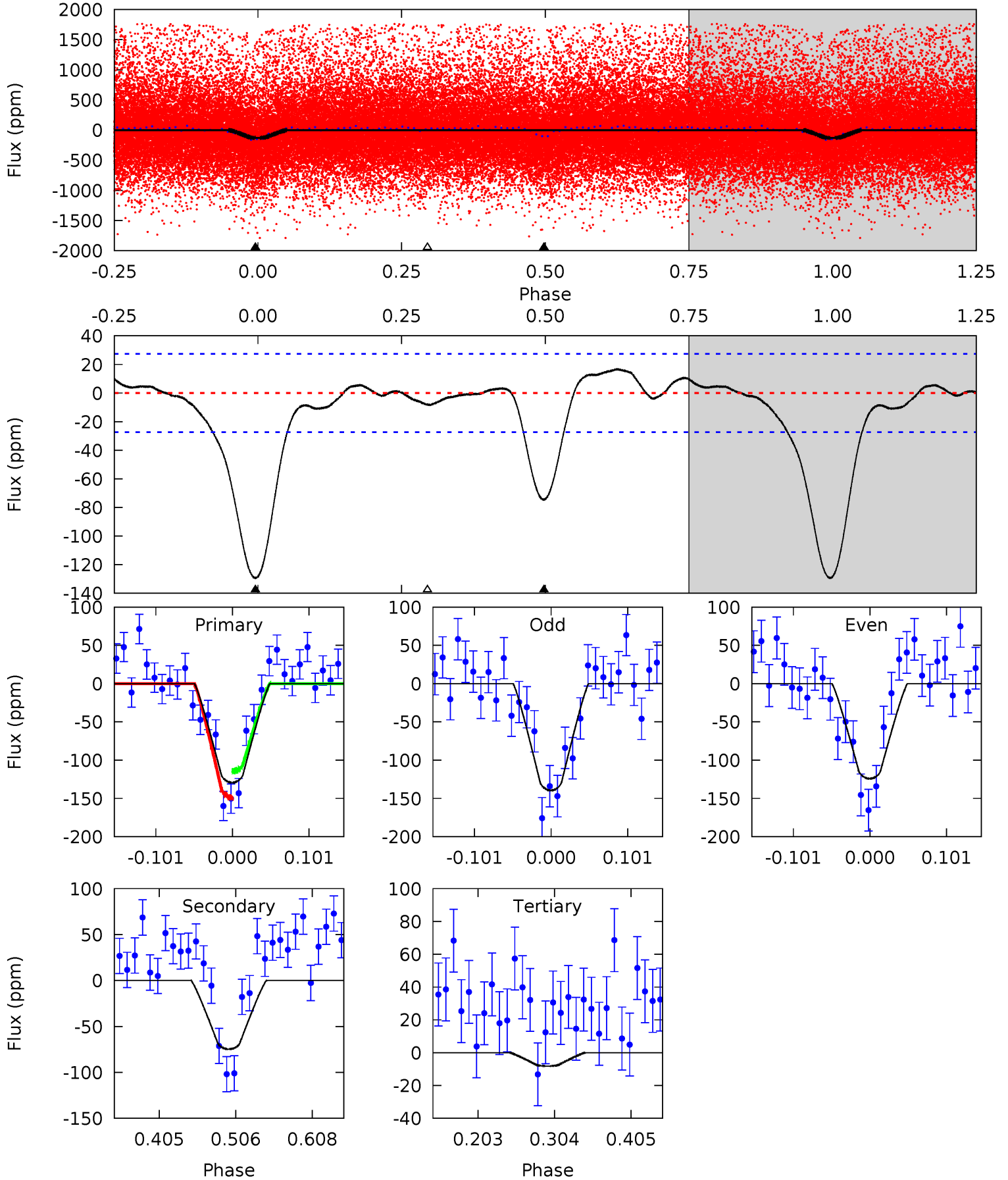
TCE 004355503-03 P= 0.570826 Days $T_0=131.591869$ (BKJD)



DV Model-Shift Uniqueness Test

004355503-03, P = 0.570828 Days, E = 131.020736 Days

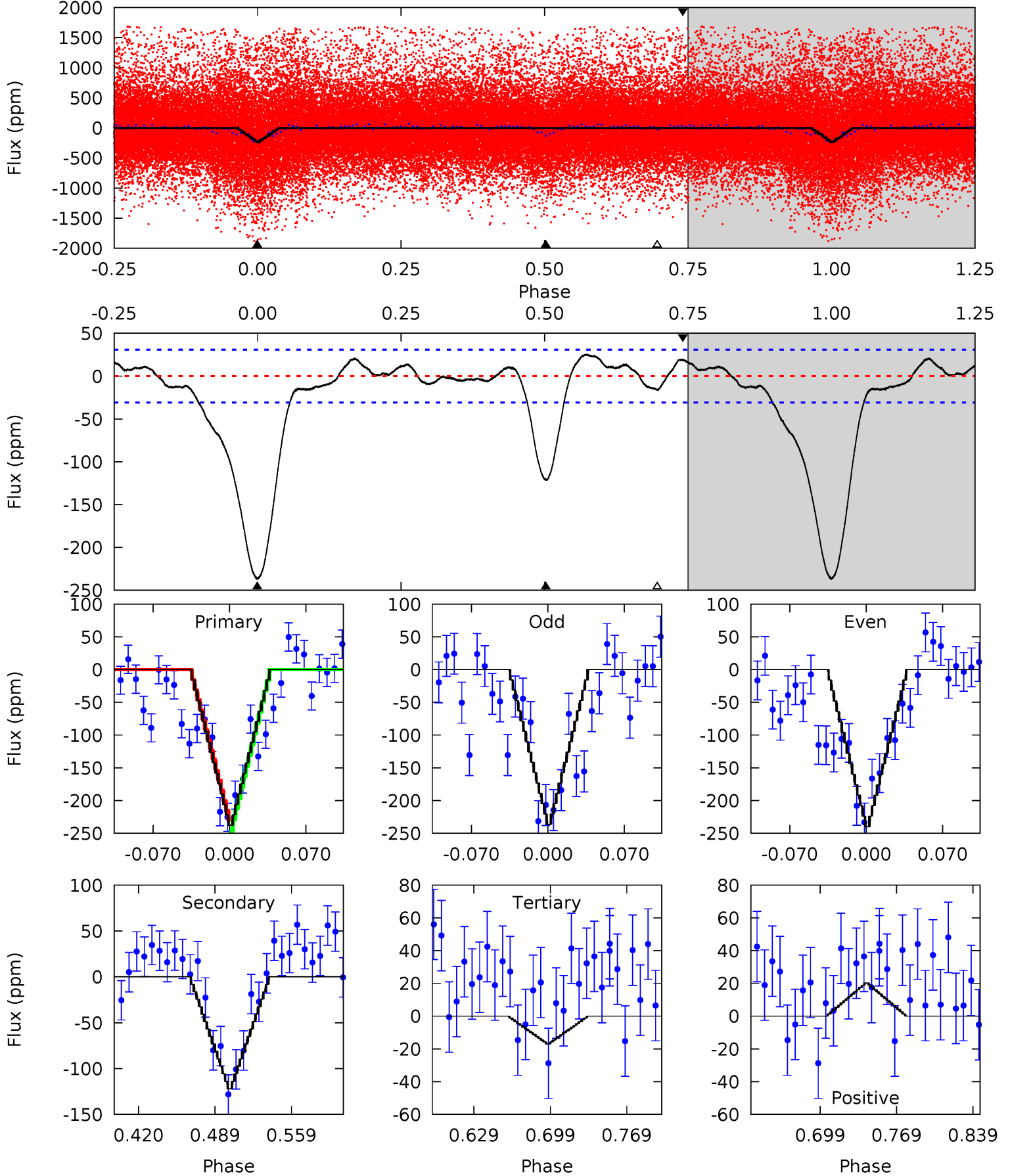
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 21.6 | 12.4 | 1.36 | 0 | 4.56 | 1.64 | 1.12 | 20.2 | 21.6 | 11.1 | 12.4 | 1.30 | -0.47 | 0.11 | 2.92 |



Alt Model-Shift Uniqueness Test

004355503-03, P = 0.570826 Days, E = 131.021043 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 35.8 | 18.4 | 2.54 | 3.04 | 4.64 | 1.81 | 2.32 | 33.2 | 32.7 | 15.8 | 15.3 | 0.28 | 0.78 | 0.10 | 1.25 |



Stellar Parameters For KIC 004355503

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3585^{+72}_{-79} | $4.868^{+0.054}_{-0.041}$ | $-0.200^{+0.100}_{-0.100}$ | $0.388^{+0.039}_{-0.053}$ | $0.406^{+0.041}_{-0.061}$ | $9.786^{+2.837}_{-1.842}$ |
| | +2%/-2% | +1%/-1% | +50%/-50% | +10%/-14% | +10%/-15% | +29%/-19% |
| Source | PHO2 | PHO2 | PHO2 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 004355503-03 / KOI 7691.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -75 ± 6 | $0.59^{+0.22}_{-0.23}$ | 1375^{+41}_{-45} | 3093^{+503}_{-291} | 12^{+20}_{-6} |
| Alt. | -122 ± 7 | $0.55^{+0.22}_{-0.22}$ | 1377^{+38}_{-42} | 3411^{+645}_{-347} | 22^{+42}_{-11} |

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

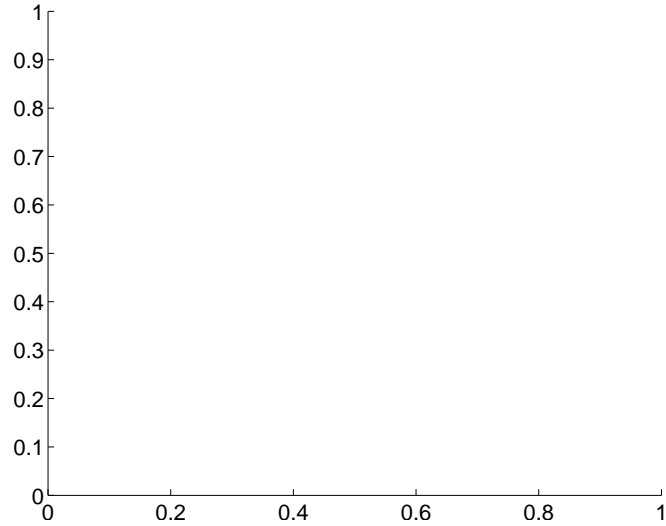
Supplemental centroid analysis for 004355503-03. Kepler magnitude: 15.07. Transit SNR 15.84

There are 0 quarters with good PRF difference image offsets

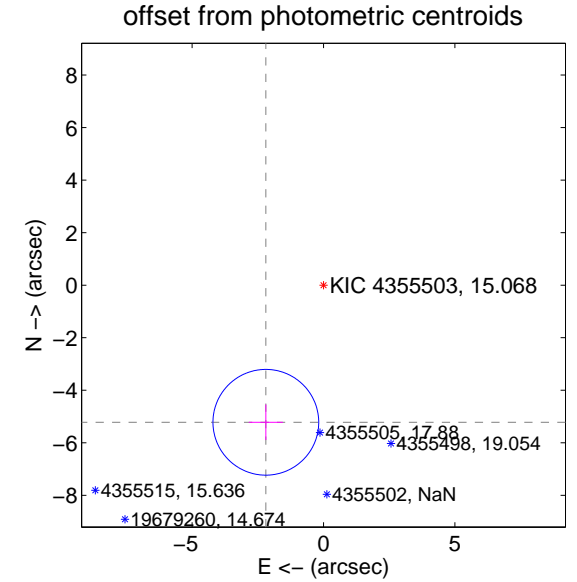
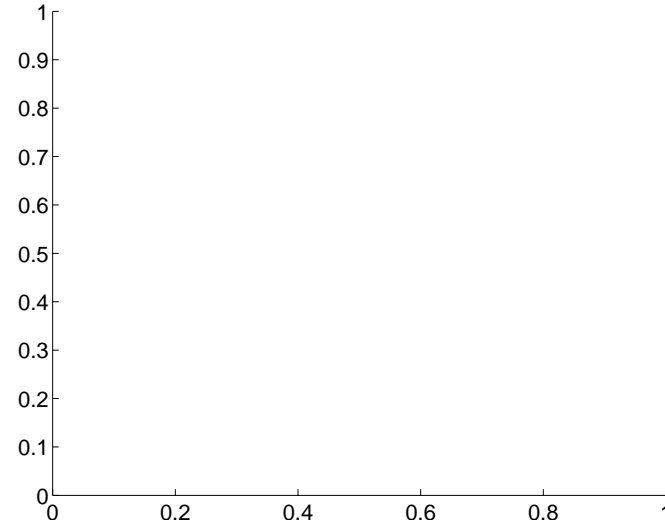
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-----------------|------------------|
| PRF-fit source offset from OOT | — | — | — | — |
| PRF-fit source offset from KIC position | — | — | — | — |
| photometric centroid source offset | 5.66 ± 0.67 | 8.44 | 2.19 ± 0.65 | -5.22 ± 0.67 |

There is no PRF-fit offset from OOT-fit

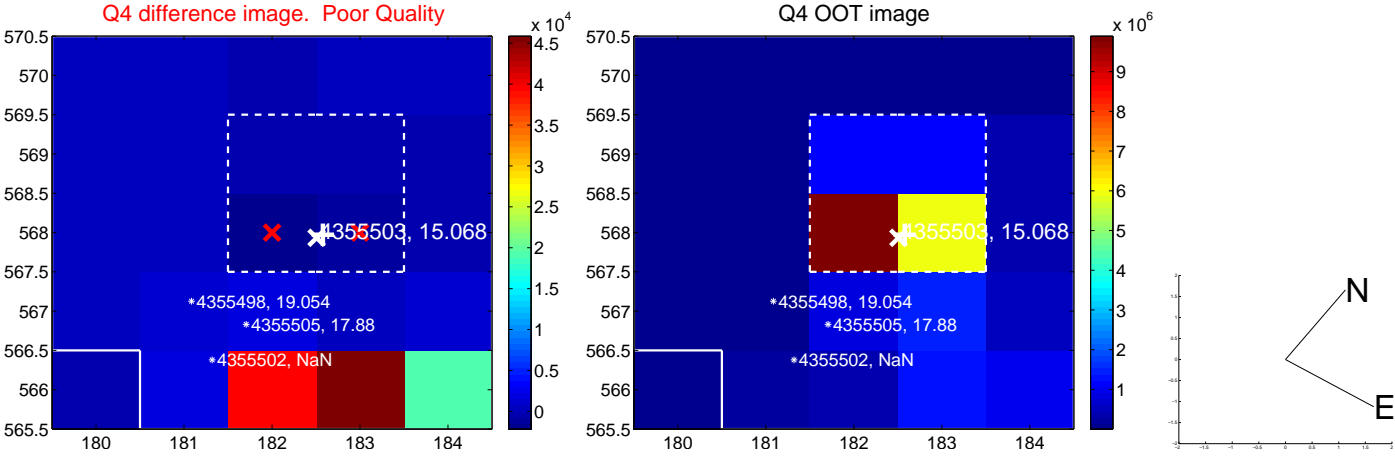
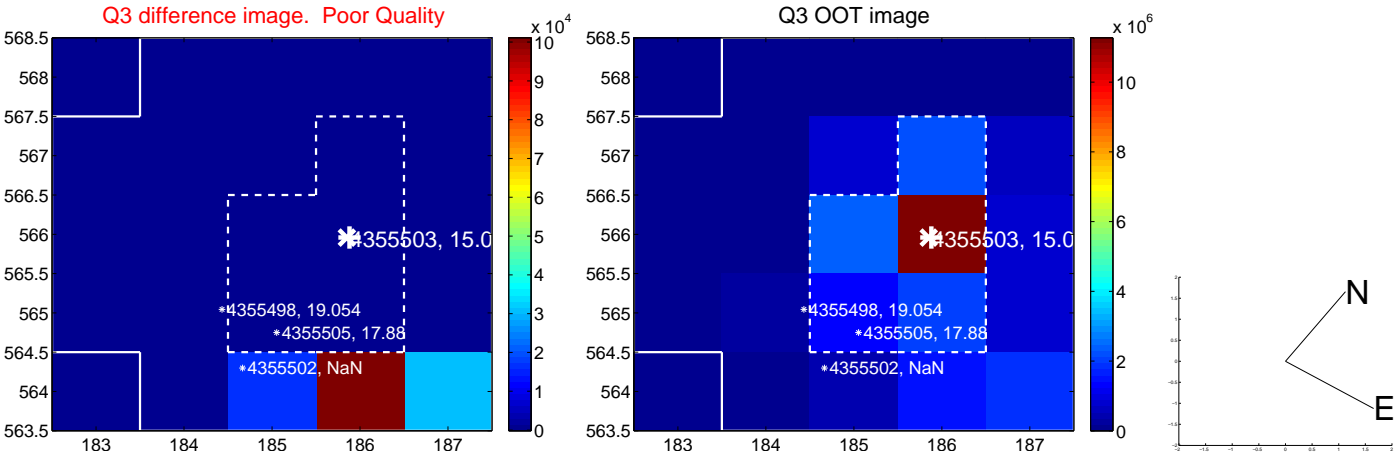
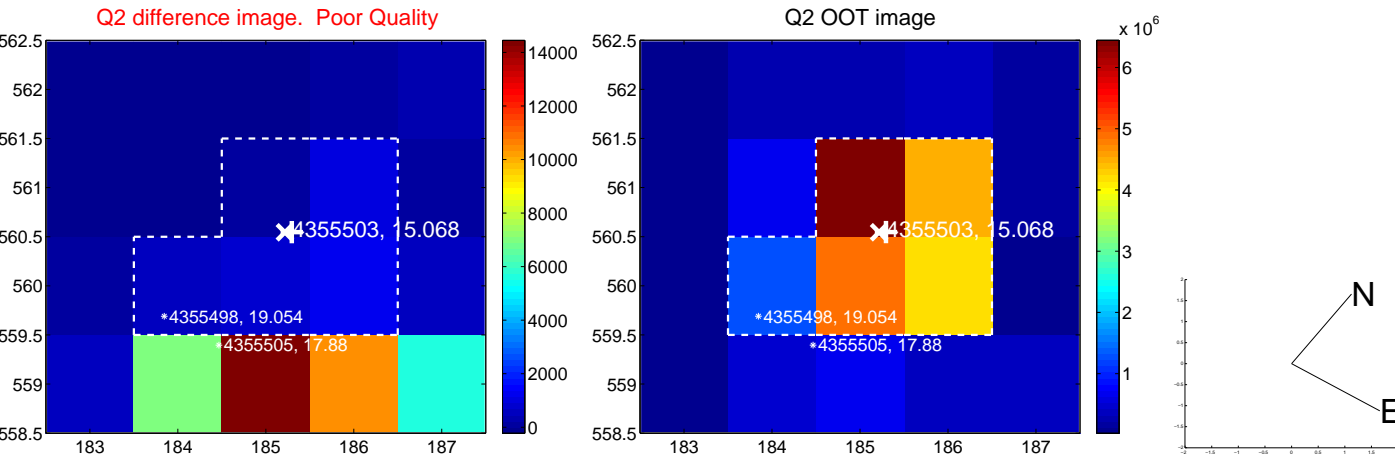
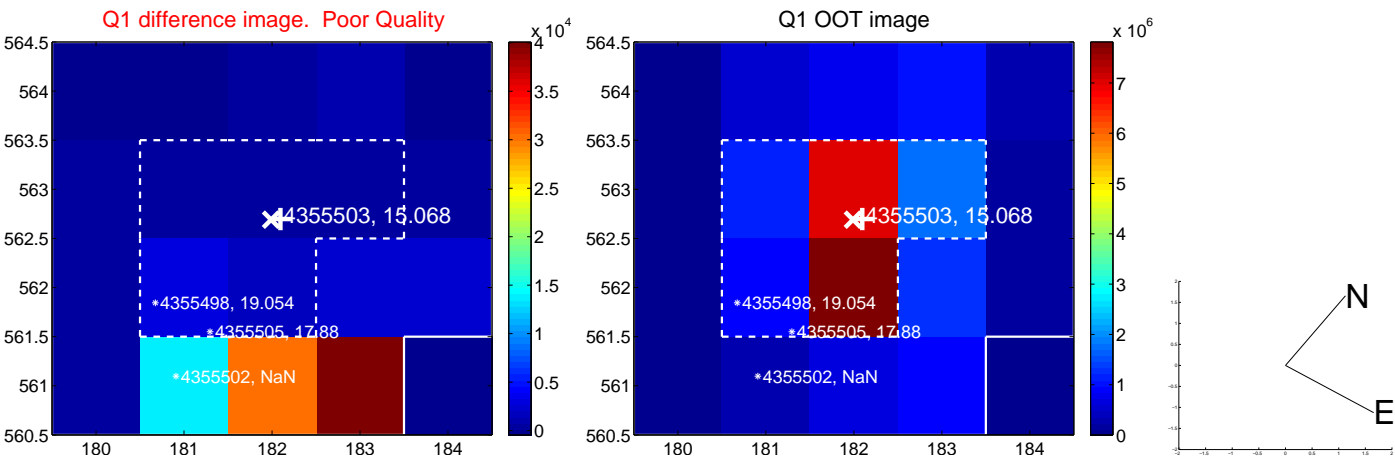


There is no PRF-fit offset from KIC

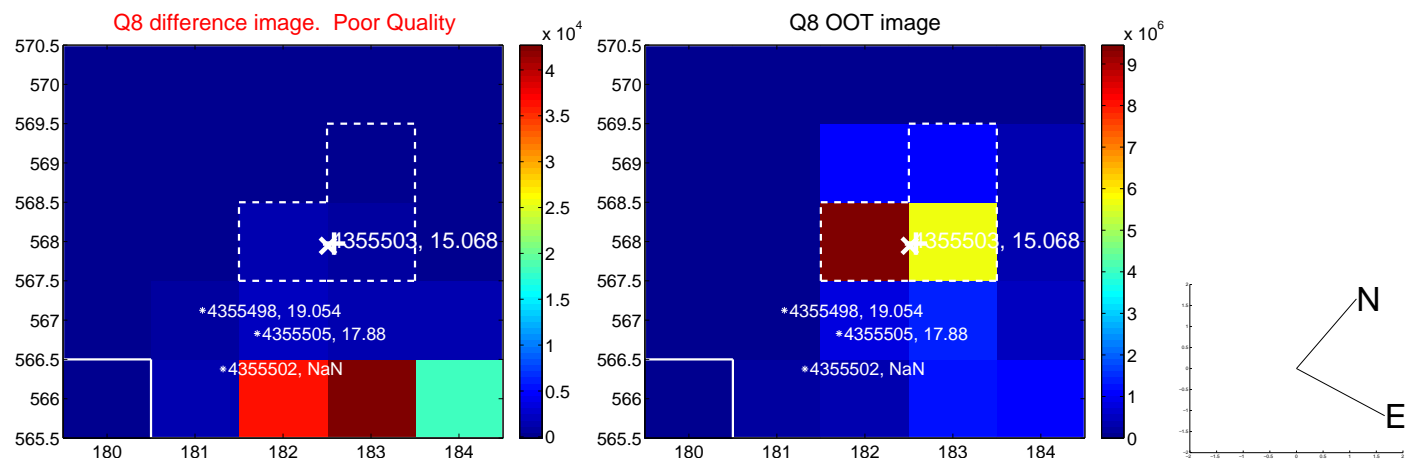
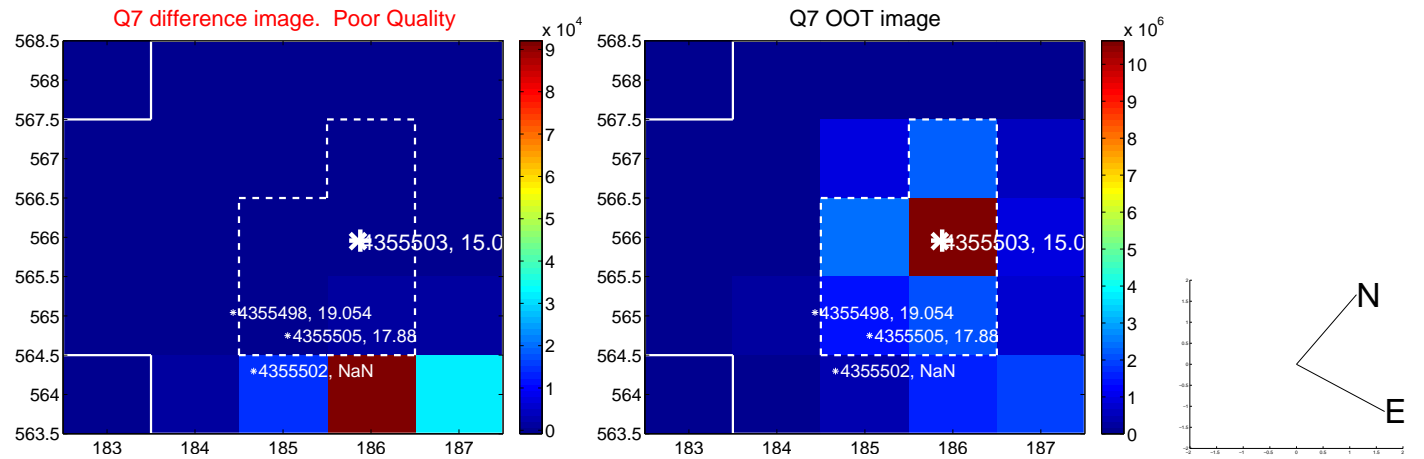
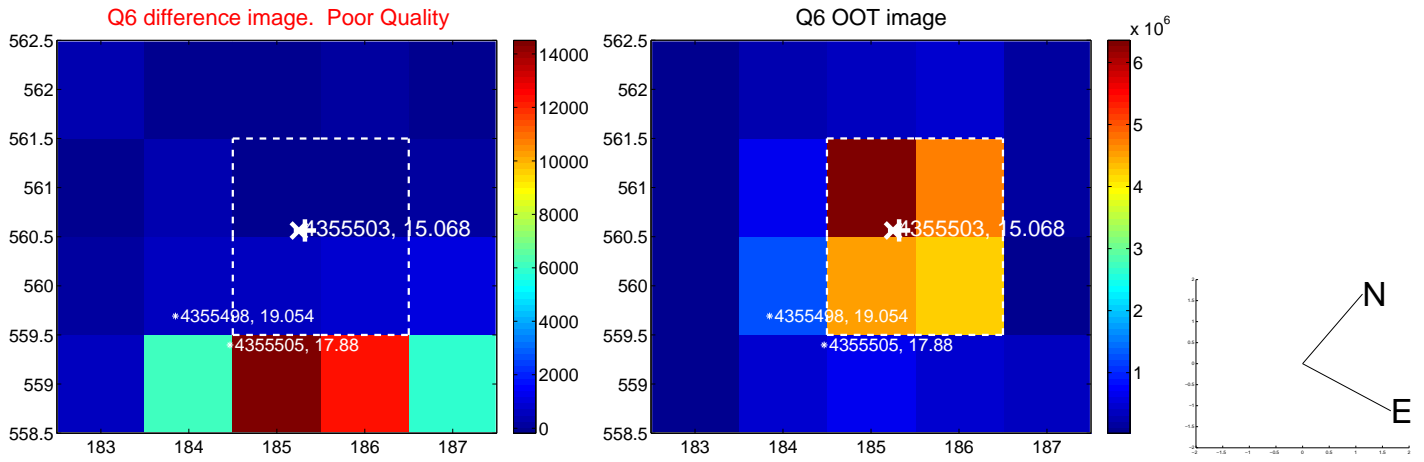
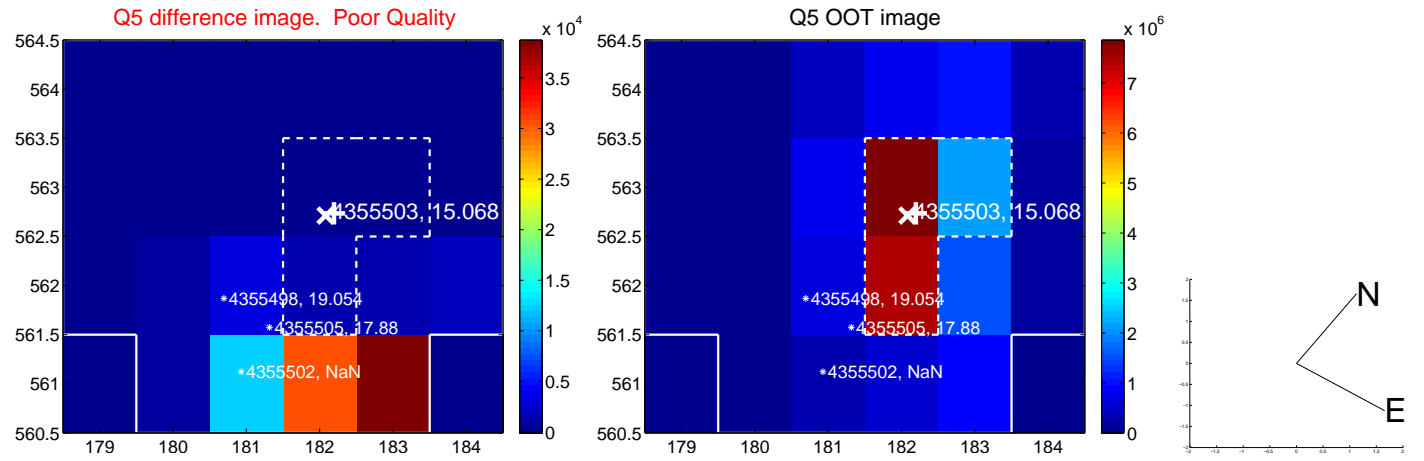


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

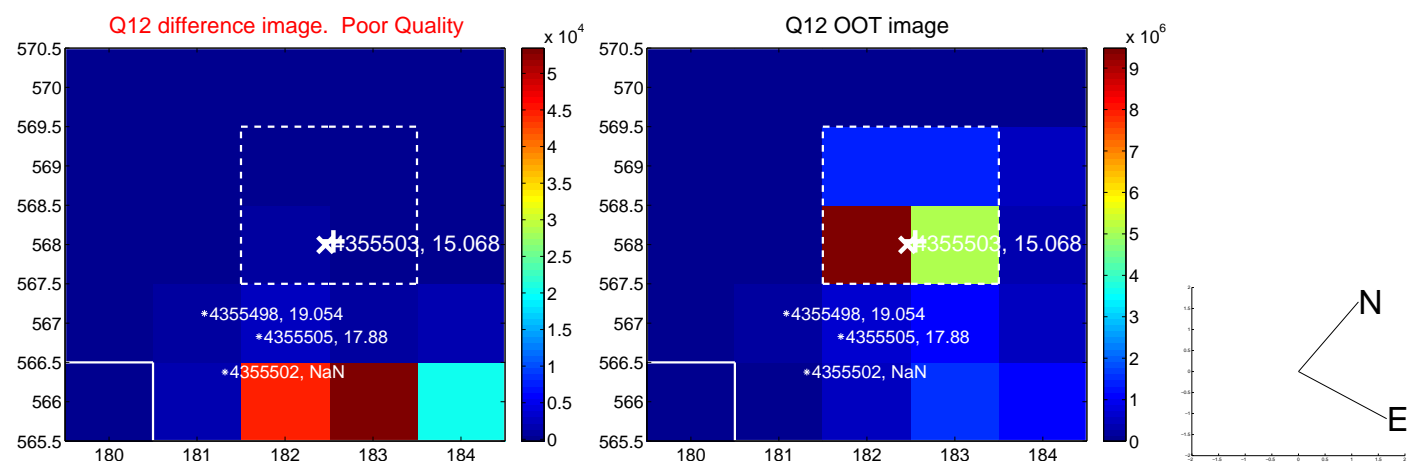
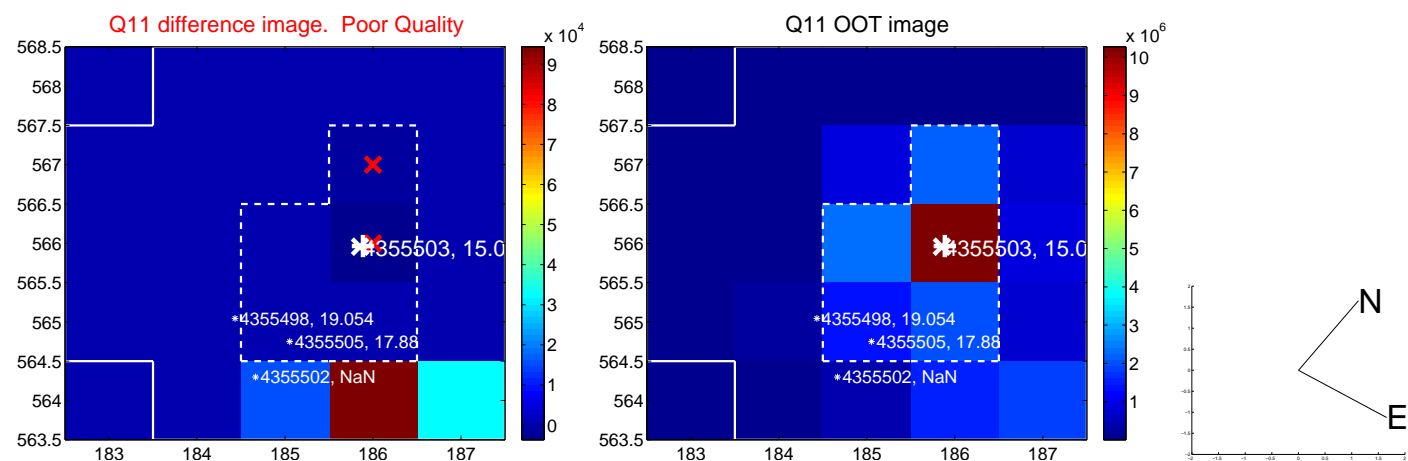
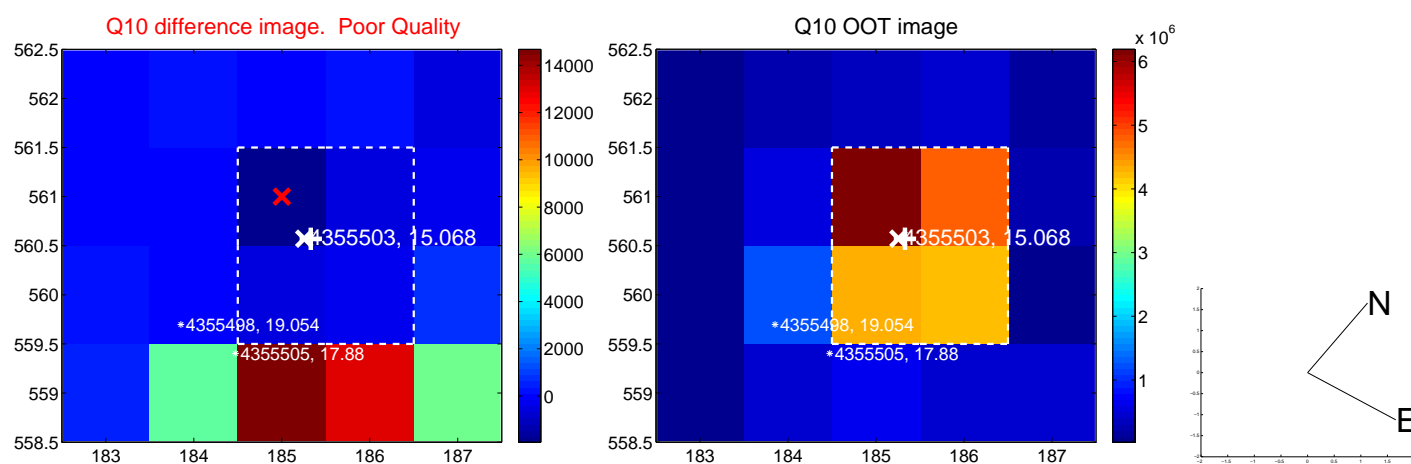
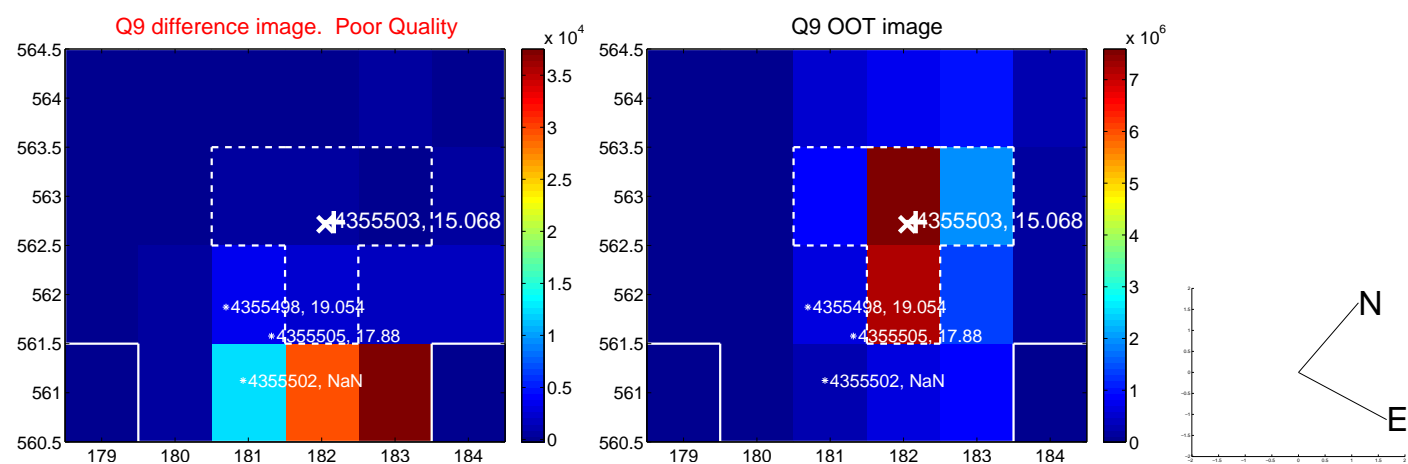
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



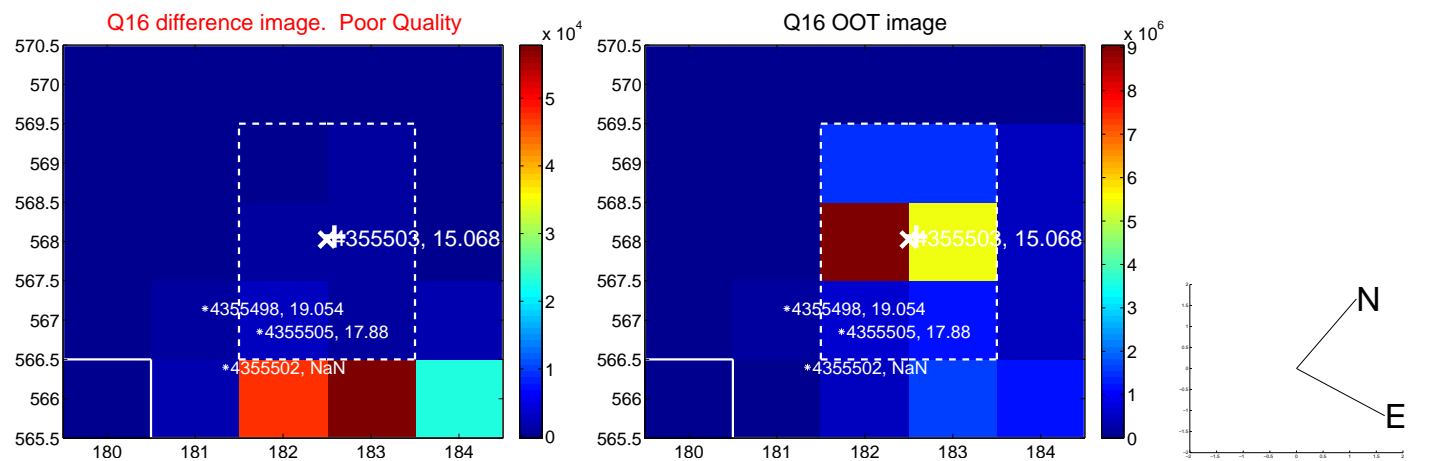
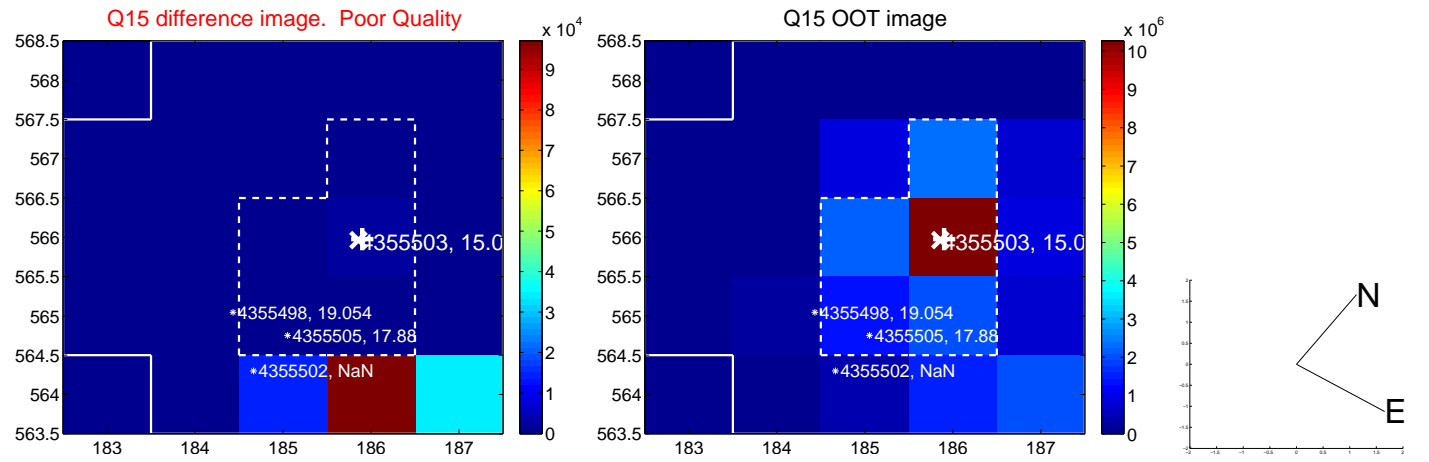
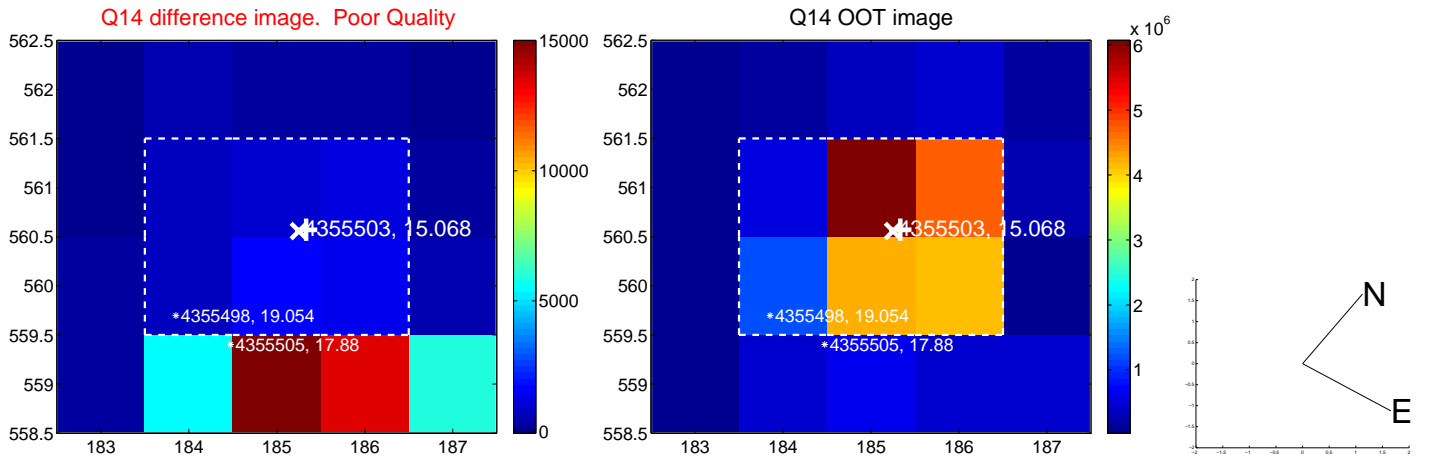
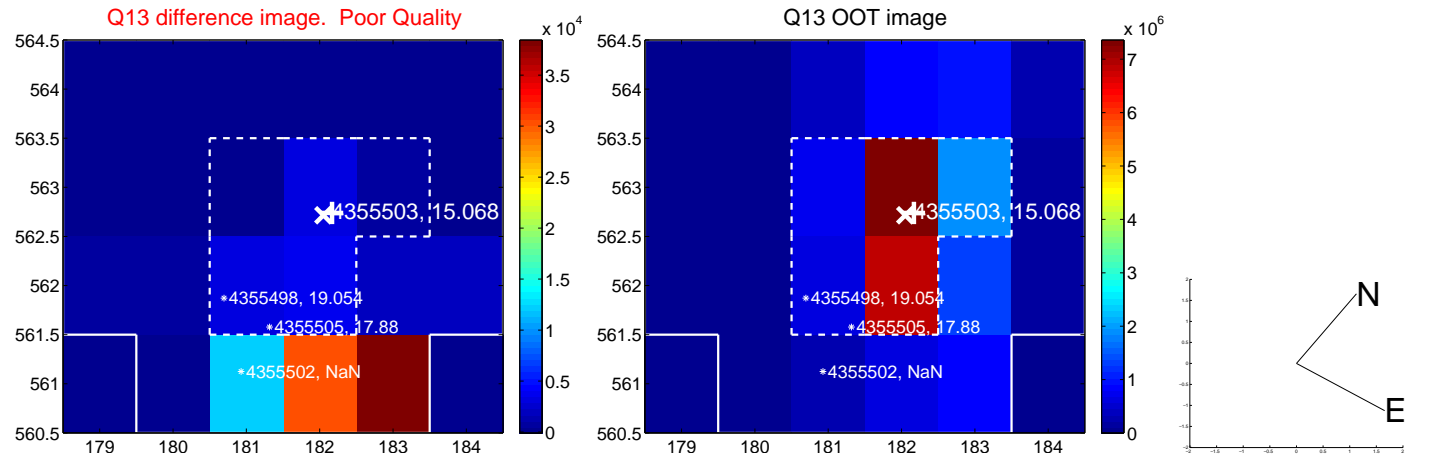
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



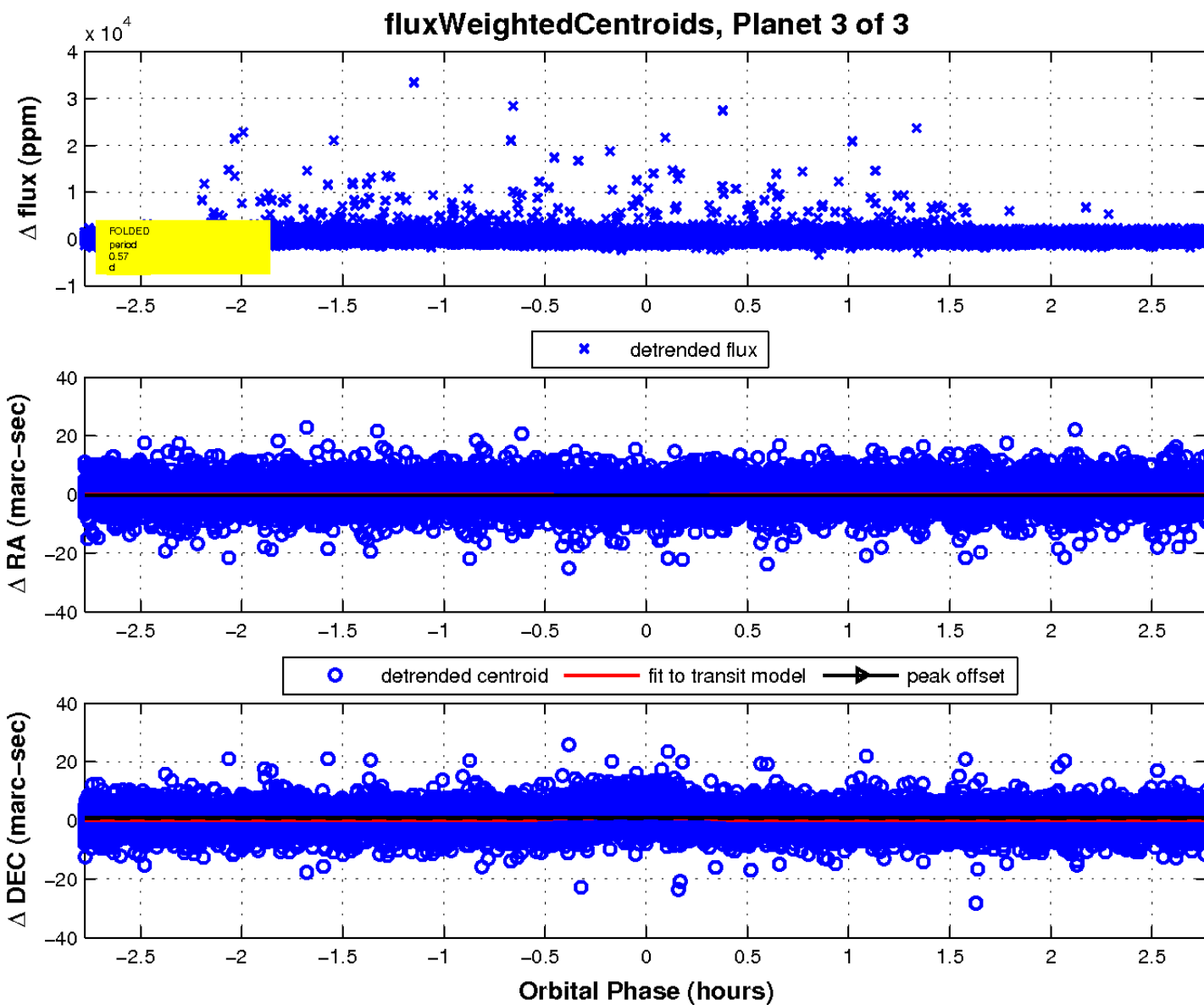
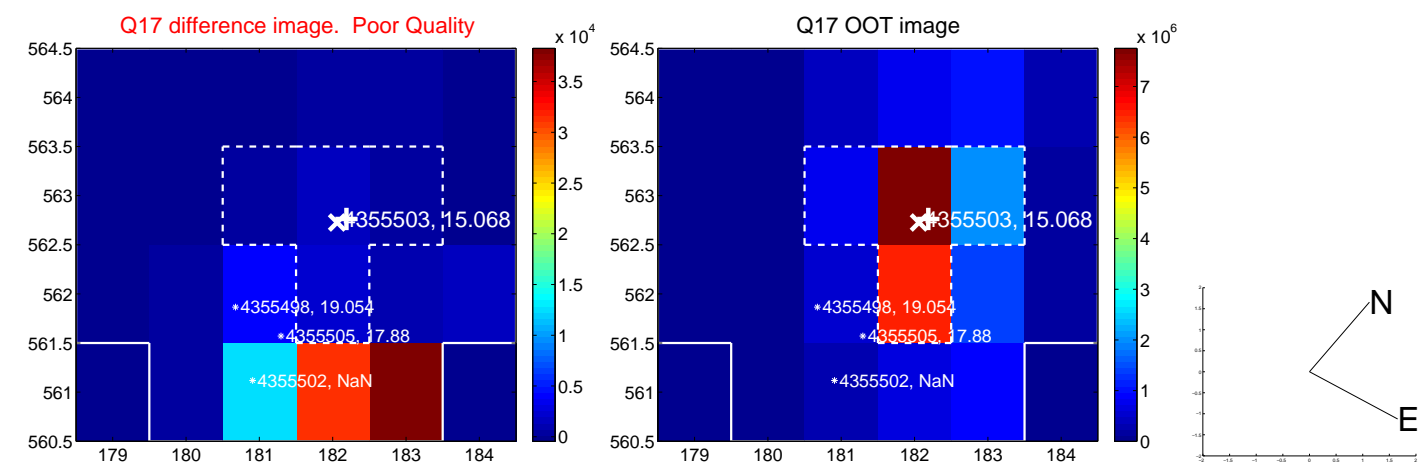
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

