

KIC 007742097

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007742097-01 | OBS | No | 522.295841 | 315.261420 | 908.1 | 6.809 | 9.9 | 2.2 | 0.55 | 3940 | 1.73 | 0.06 |
| 007742097-02 | OBS | No | 372.261985 | 175.155527 | 2837.7 | 4.105 | 12.3 | 7.2 | 0.55 | 3940 | 2.95 | 0.09 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 007742097-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 007742097-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |

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

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

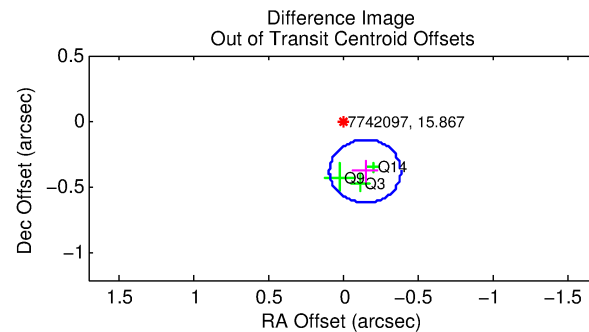
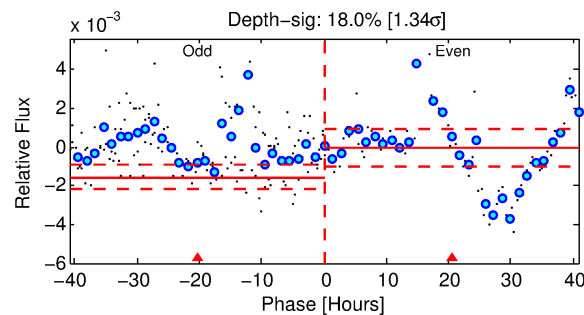
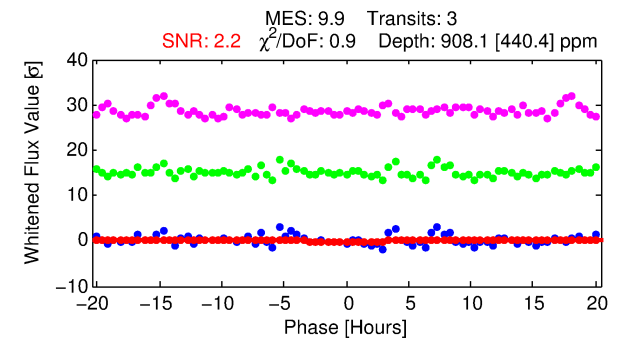
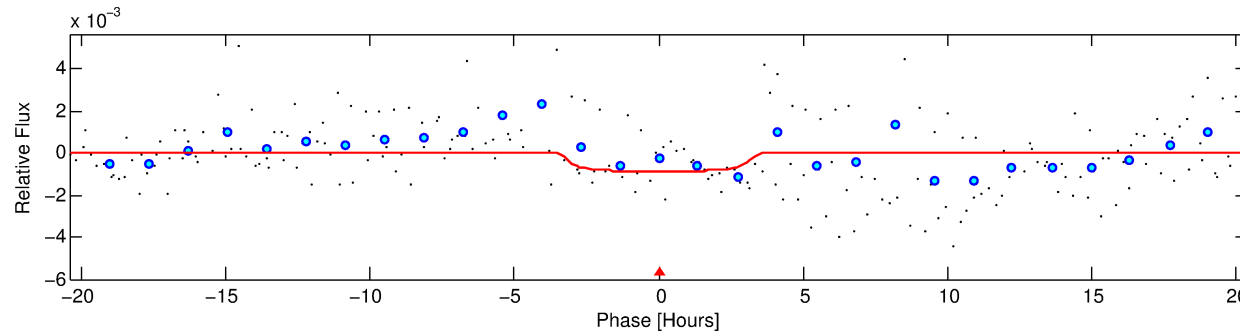
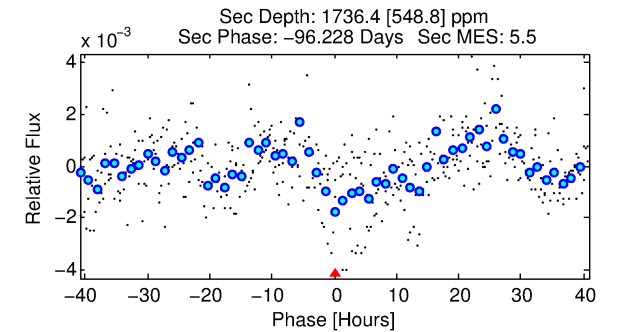
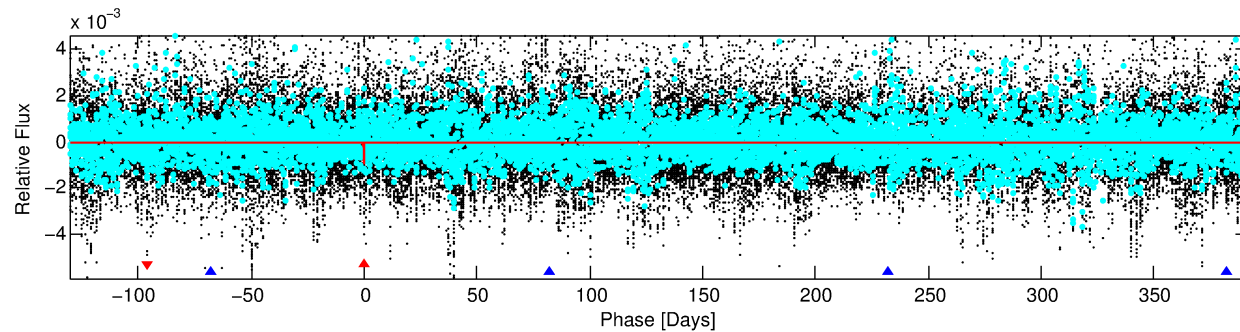
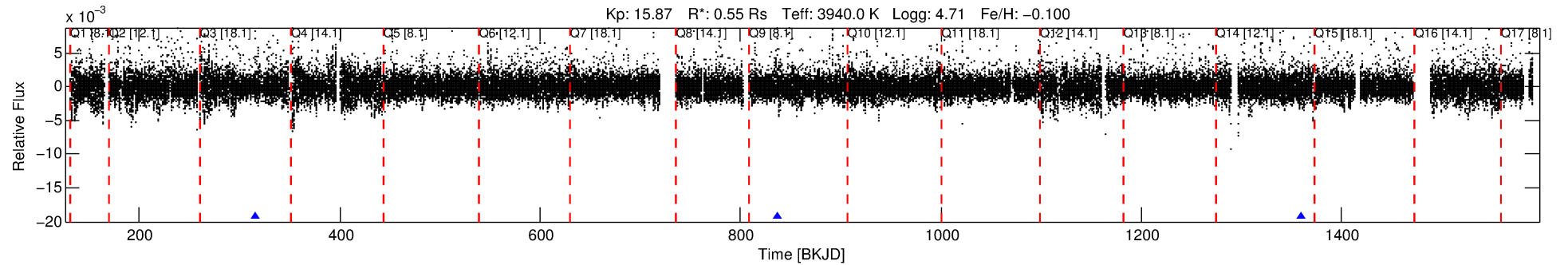
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007742097-01

No Significant Match Found

DV One-Page Summary

KIC: 7742097 Candidate: 1 of 2 Period: 522.296 d



DV Fit Results:

Period = 522.29584 [0.01539] d
Epoch = 315.2614 [0.0206] BKJD
Rp/R* = 0.0289 [0.0515]
a/R* = 477.20 [3461.49]
b = 0.63 [7.01]
Seff = 0.06 [0.01]
Teq = 126 [4] K
Rp = 1.73 [3.09] Re
a = 1.0485 [0.0562] AU
Ag = 349922.20 [1253516.75] [0.28 σ]
Teffp = 4734 [4240] K [1.09 σ]

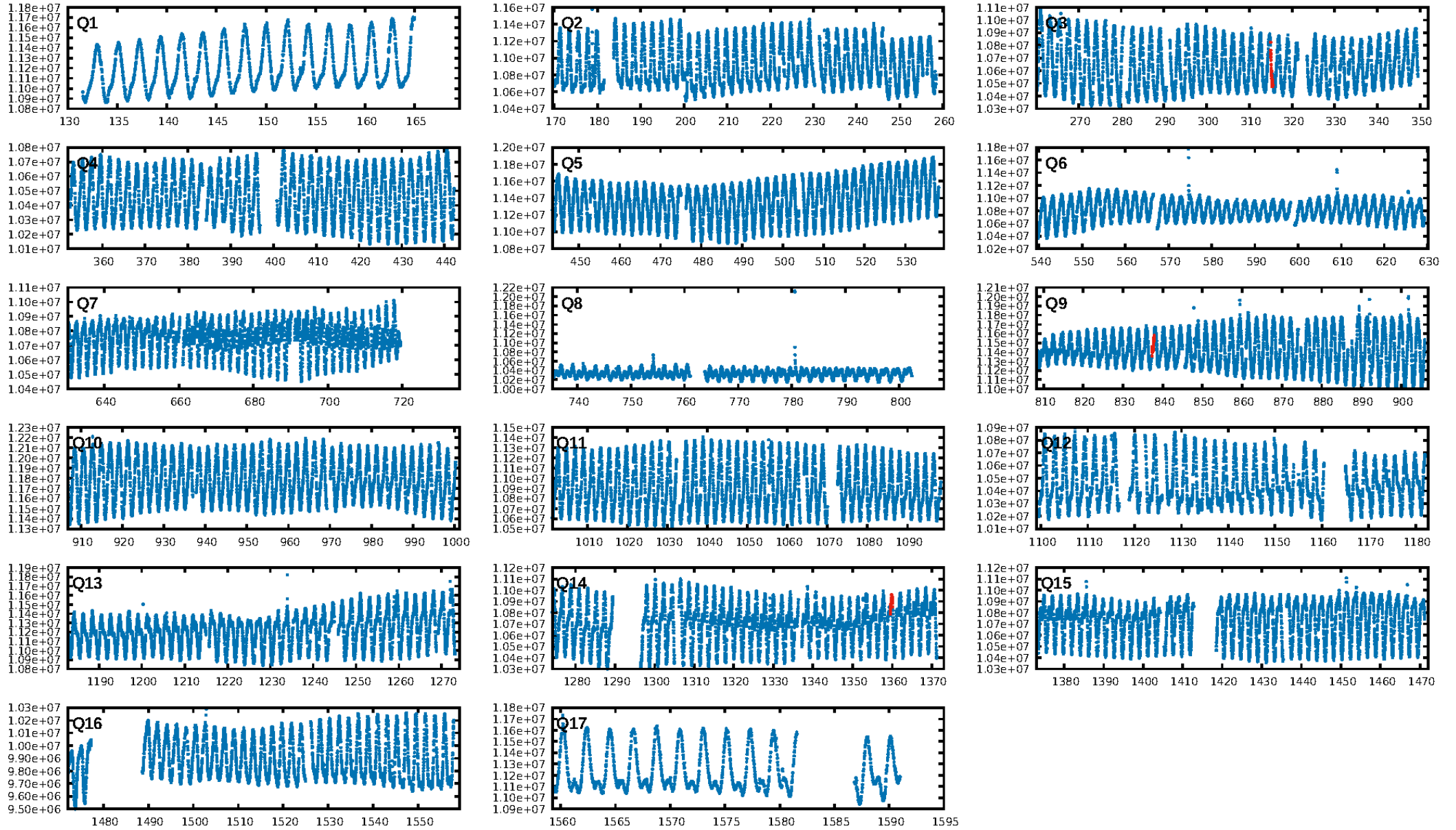
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [452.91 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 41.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.01e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.5898
Centroid-sig: 36.0%
Centroid-so: 2.228 arcsec [0.97 σ]
OotOffset-rm: 0.406 arcsec [5.10 σ]
KicOffset-rm: 0.523 arcsec [5.71 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

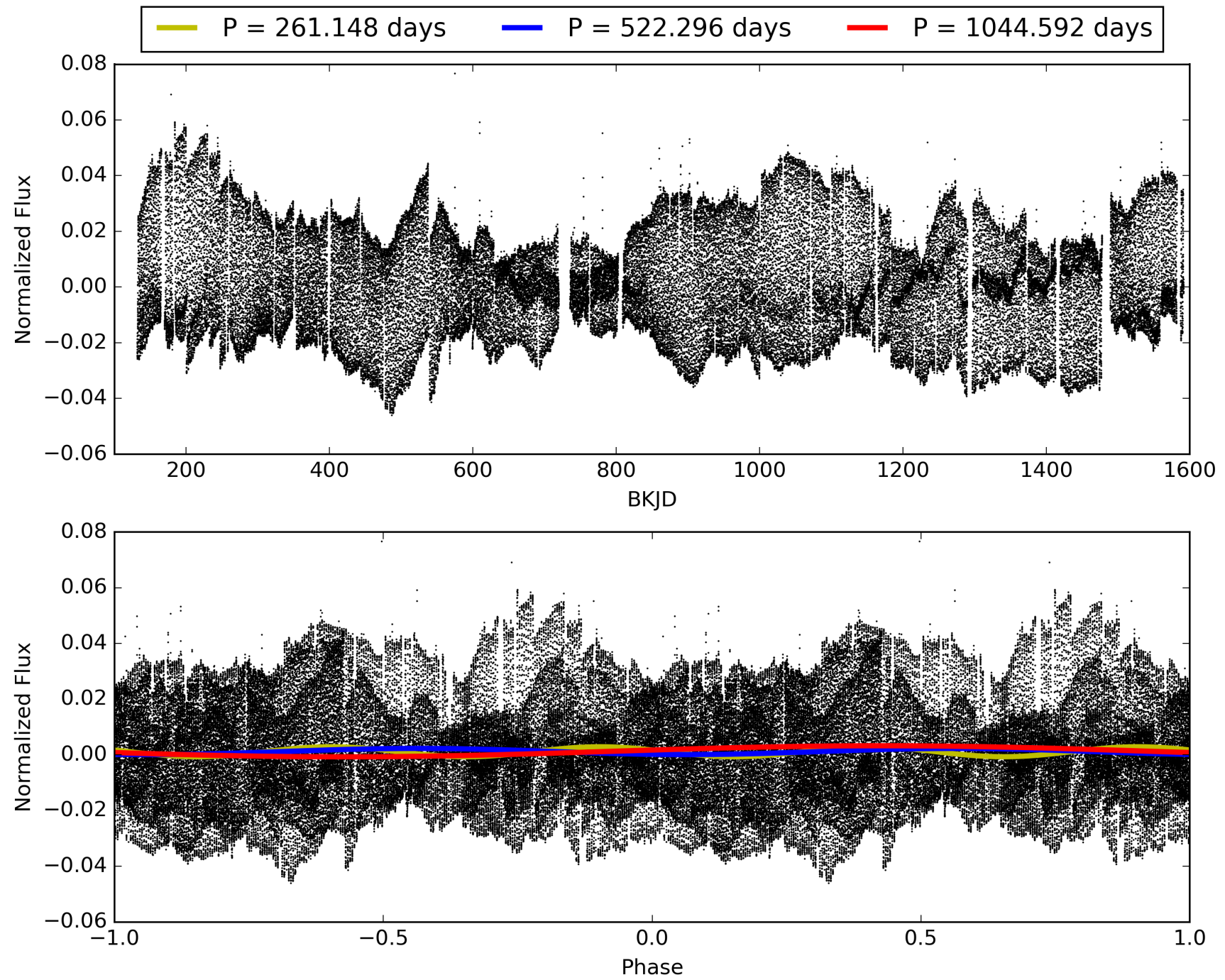
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:46:11 Z

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

TCE 007742097-01, PDC Light Curves

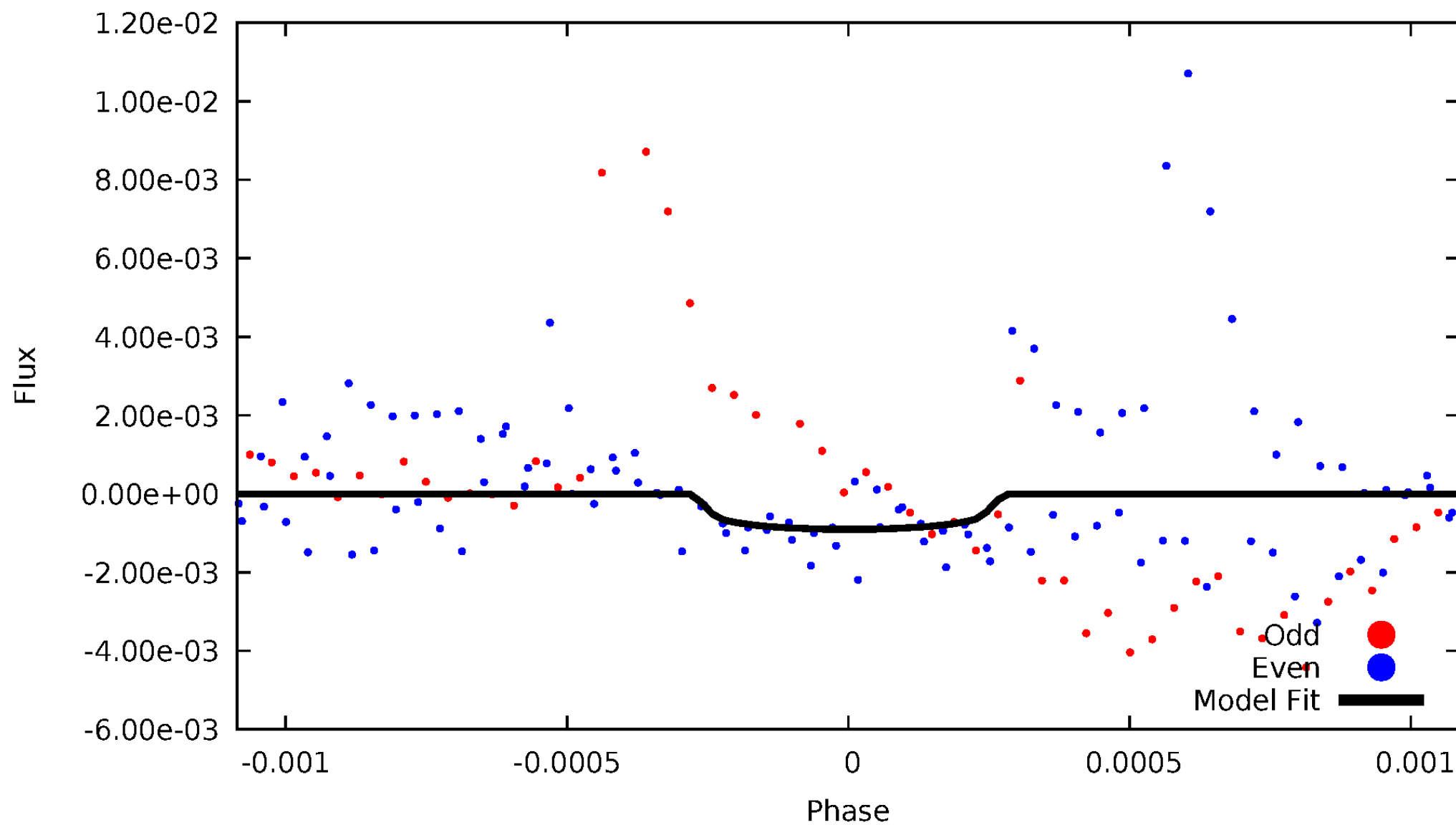


TCE 007742097-01



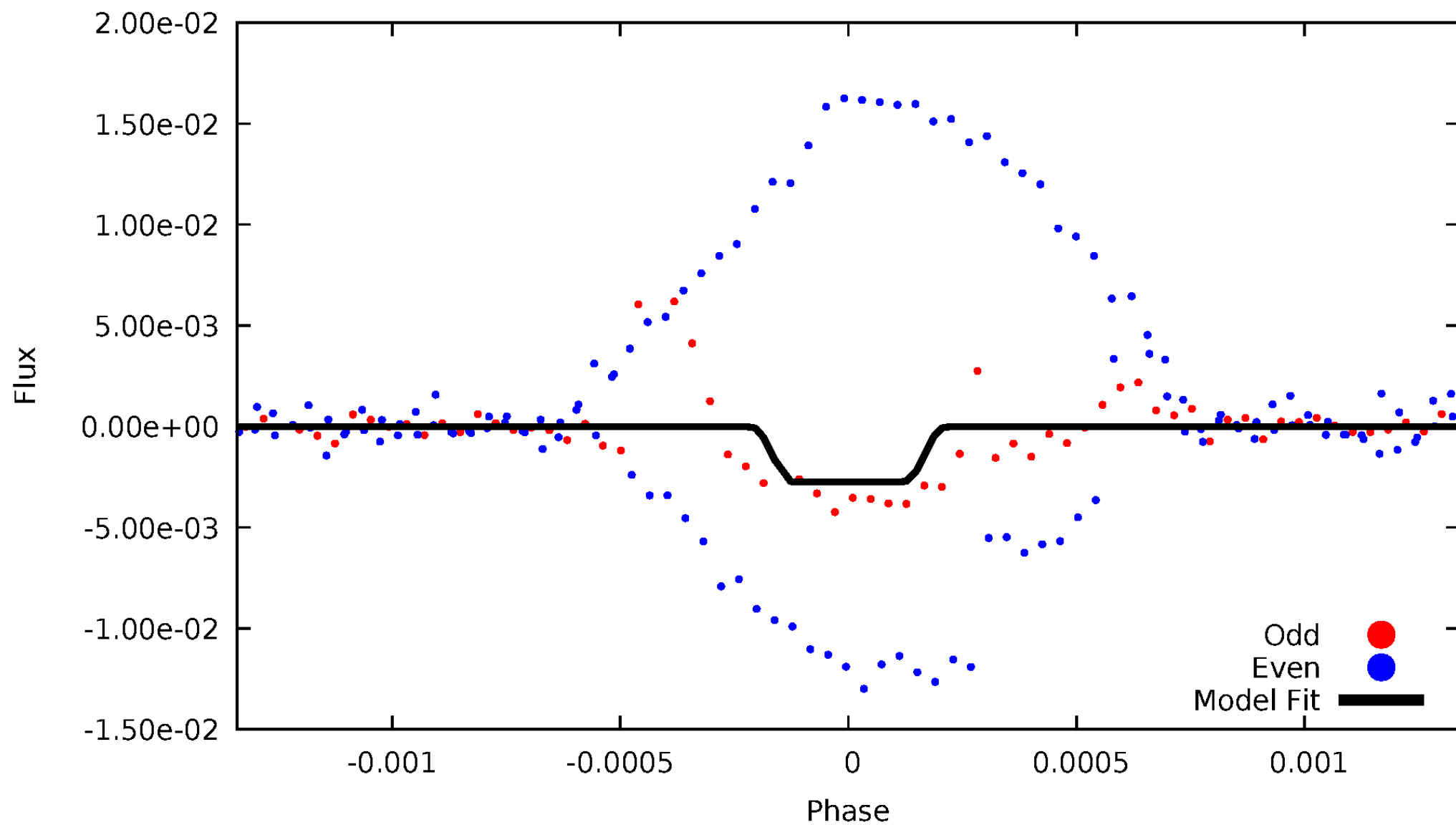
DV Odd/Even

TCE 007742097-01



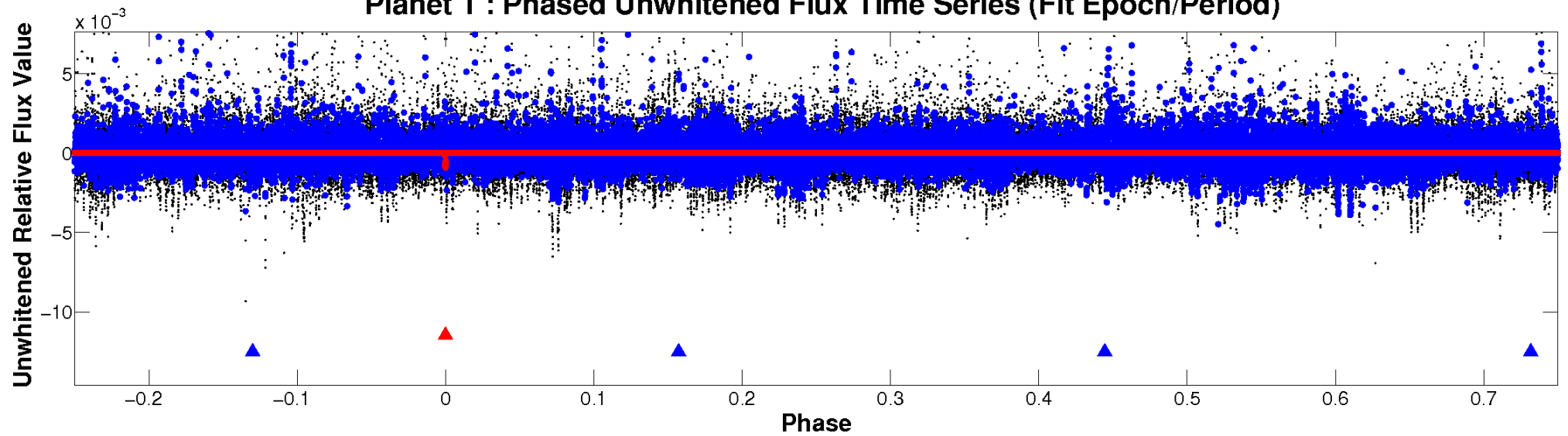
ALT Odd/Even

TCE 007742097-01

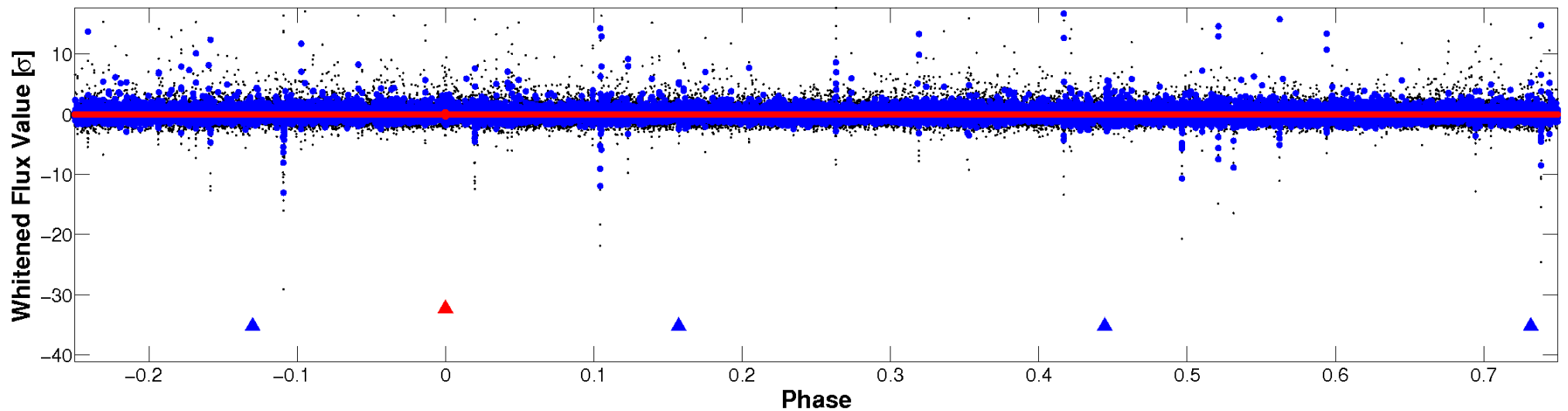


Non-Whitened Vs. Whitened Light Curve

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

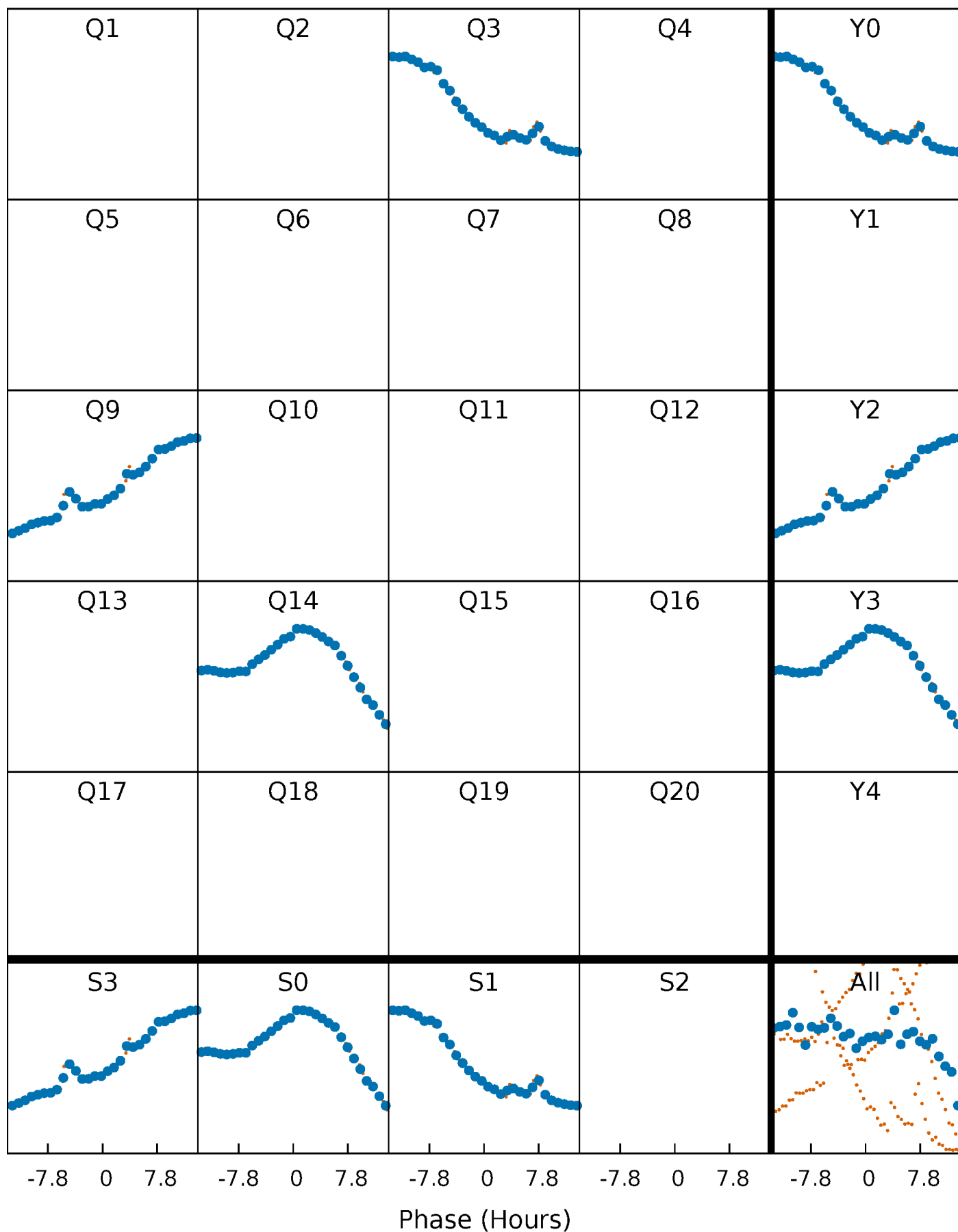


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



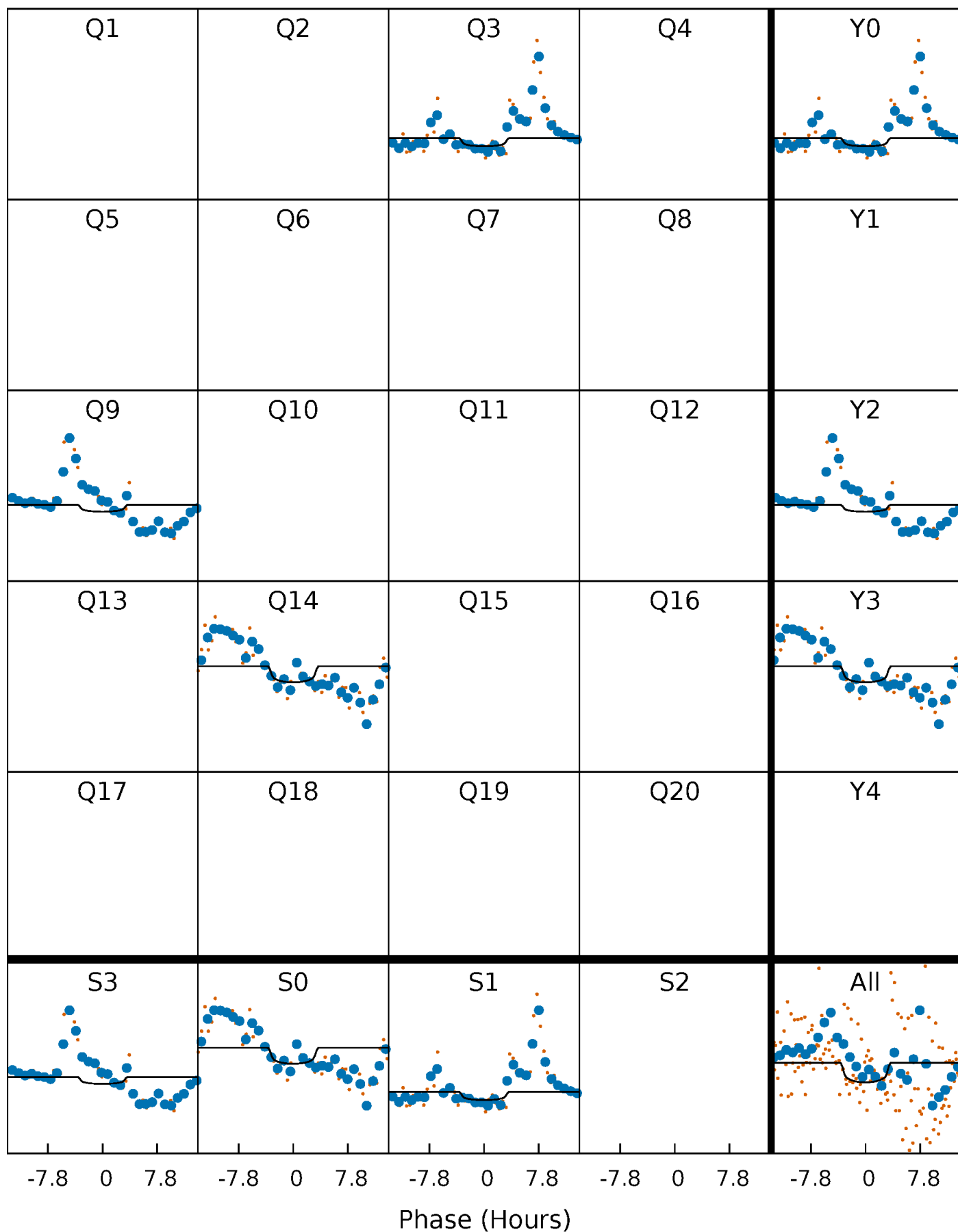
PDC Quarter-Phased Transit Curves

TCE 007742097-01 P=522.295841 Days $T_0=315.261420$ (BKJD)



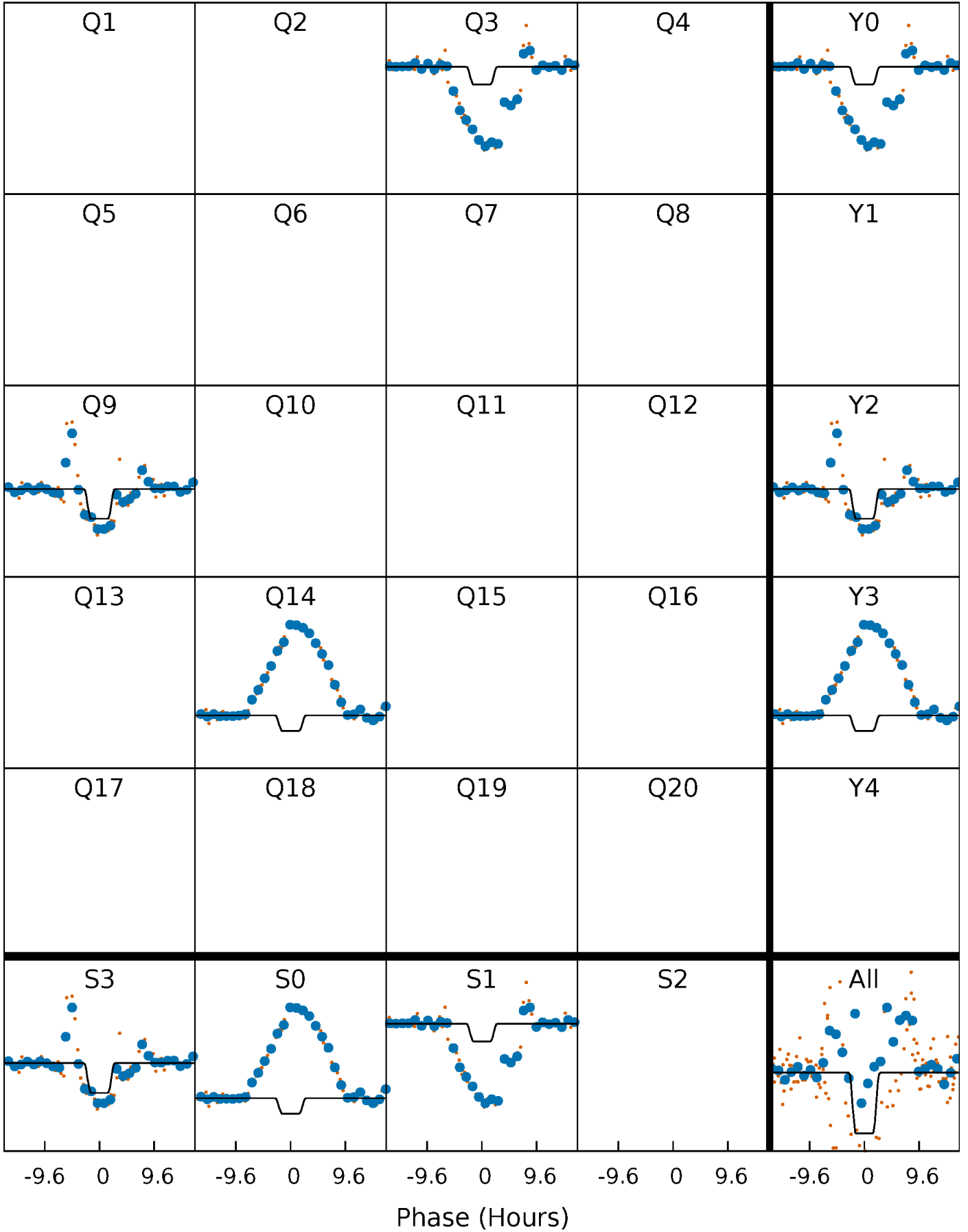
DV Quarter-Phased Transit Curves

TCE 007742097-01 $P=522.295841$ Days $T_0=315.261420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

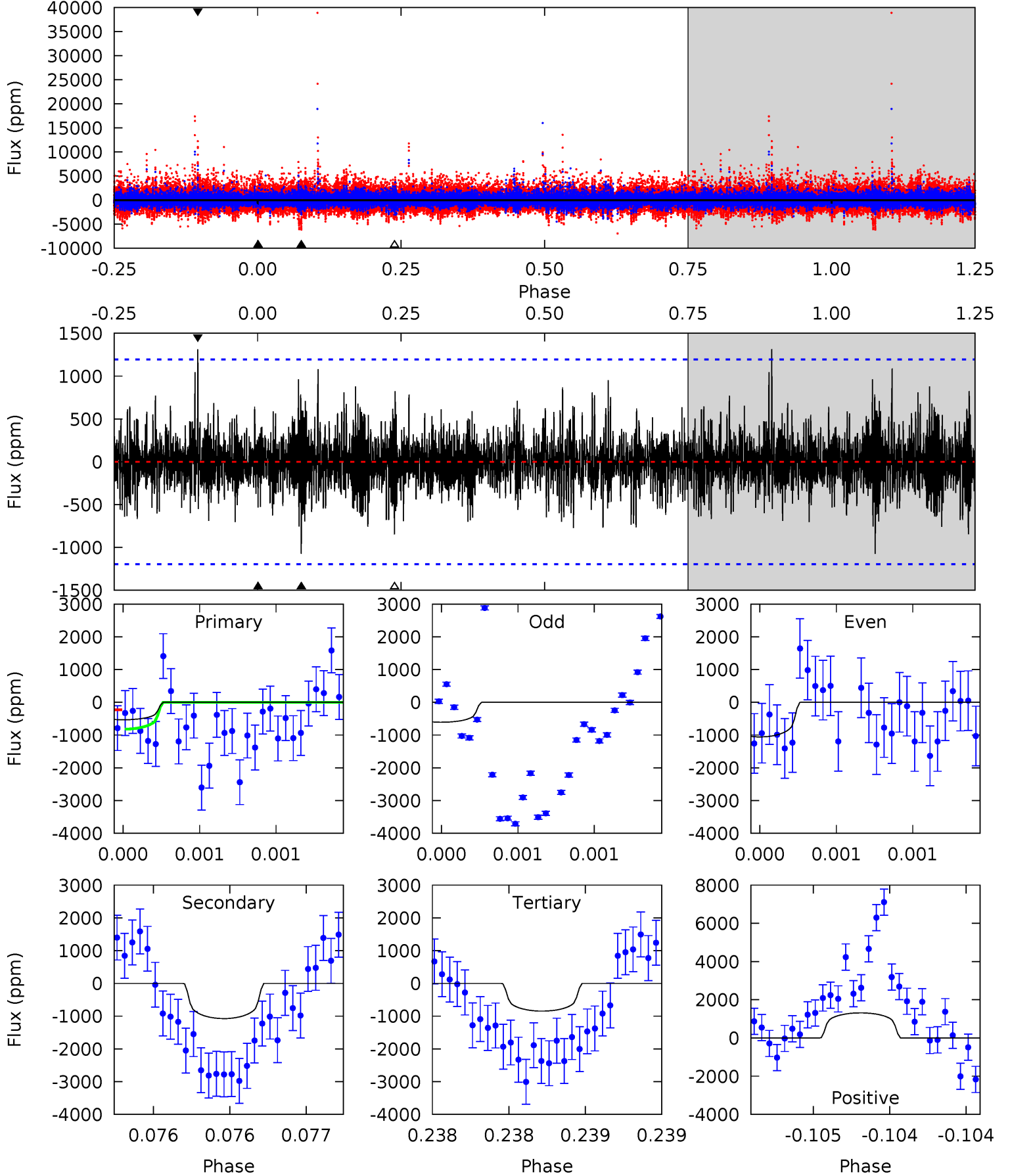
TCE 007742097-01 P=522.315850 Days $T_0=315.252788$ (BKJD)



DV Model-Shift Uniqueness Test

007742097-01, P = 522.295841 Days, E = 315.261420 Days

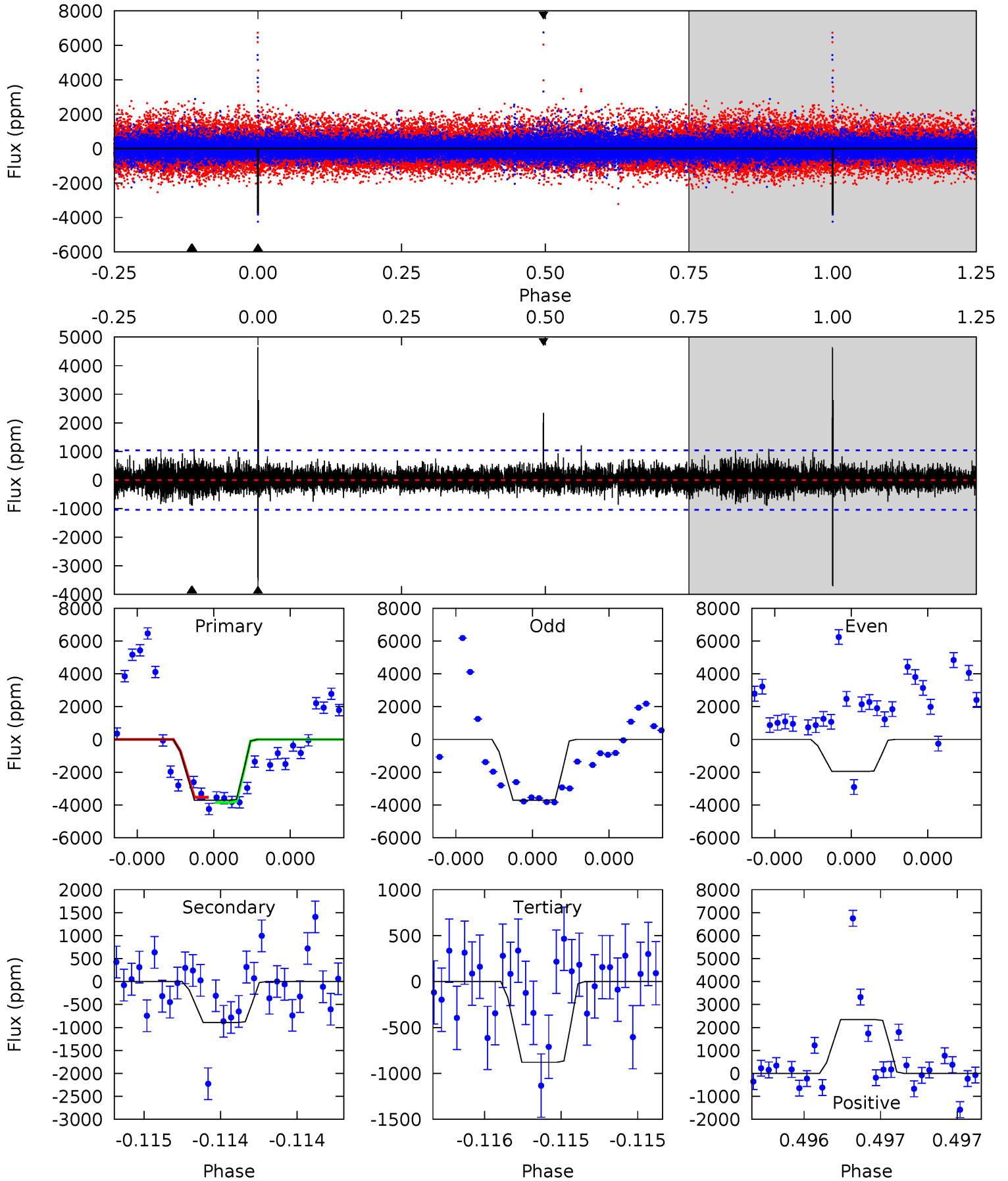
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.48 | 5.00 | 3.94 | 6.11 | 5.56 | 3.46 | 1.13 | -1.46 | -3.63 | 1.06 | -1.11 | 0.90 | 0.59 | 0.55 | 1.38 |



Alt Model-Shift Uniqueness Test

007742097-01, P = 522.315850 Days, E = 315.252788 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|-----|
| 20.0 | 4.79 | 4.73 | 12.6 | 5.60 | 3.52 | 1.04 | 15.3 | 7.39 | 0.06 | -7.82 | 7.44 | -0.02 | 0.56 | 0 |



Stellar Parameters For KIC 007742097

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3940^{+78}_{-86} | $4.708^{+0.033}_{-0.027}$ | $-0.100^{+0.200}_{-0.200}$ | $0.550^{+0.035}_{-0.039}$ | $0.564^{+0.037}_{-0.041}$ | $4.767^{+0.784}_{-0.569}$ |
| | +2%/-2% | +1%/-1% | +200%/-200% | +6%/-7% | +7%/-7% | +16%/-12% |
| 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 007742097-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -1075 ± 215 | $2.98^{+2.59}_{-1.92}$ | 175^{+4}_{-4} | 3388^{+1564}_{-541} | $70688^{+507096}_{-49691}$ |
| Alt. | -890 ± 186 | $3.89^{+2.56}_{-2.28}$ | 176^{+4}_{-4} | 3085^{+1001}_{-430} | $36899^{+172773}_{-24977}$ |

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 $A_{obs} \gg 1.0$

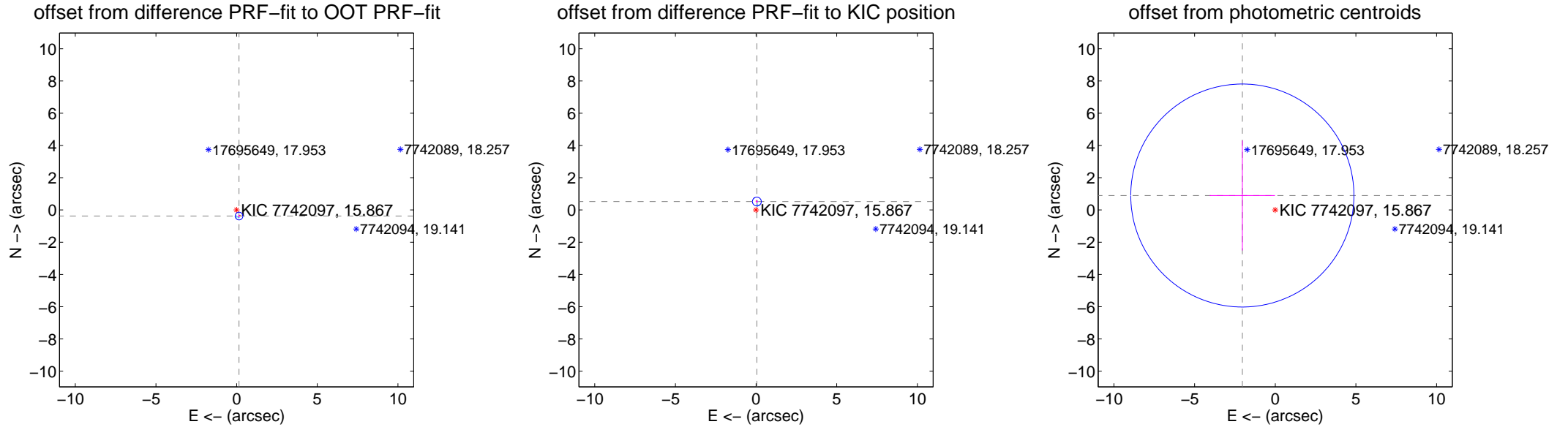
DV Centroid Data

Supplemental centroid analysis for 007742097-01. Kepler magnitude: 15.87. Transit SNR 2.20

There are 2 quarters with good PRF difference image offsets

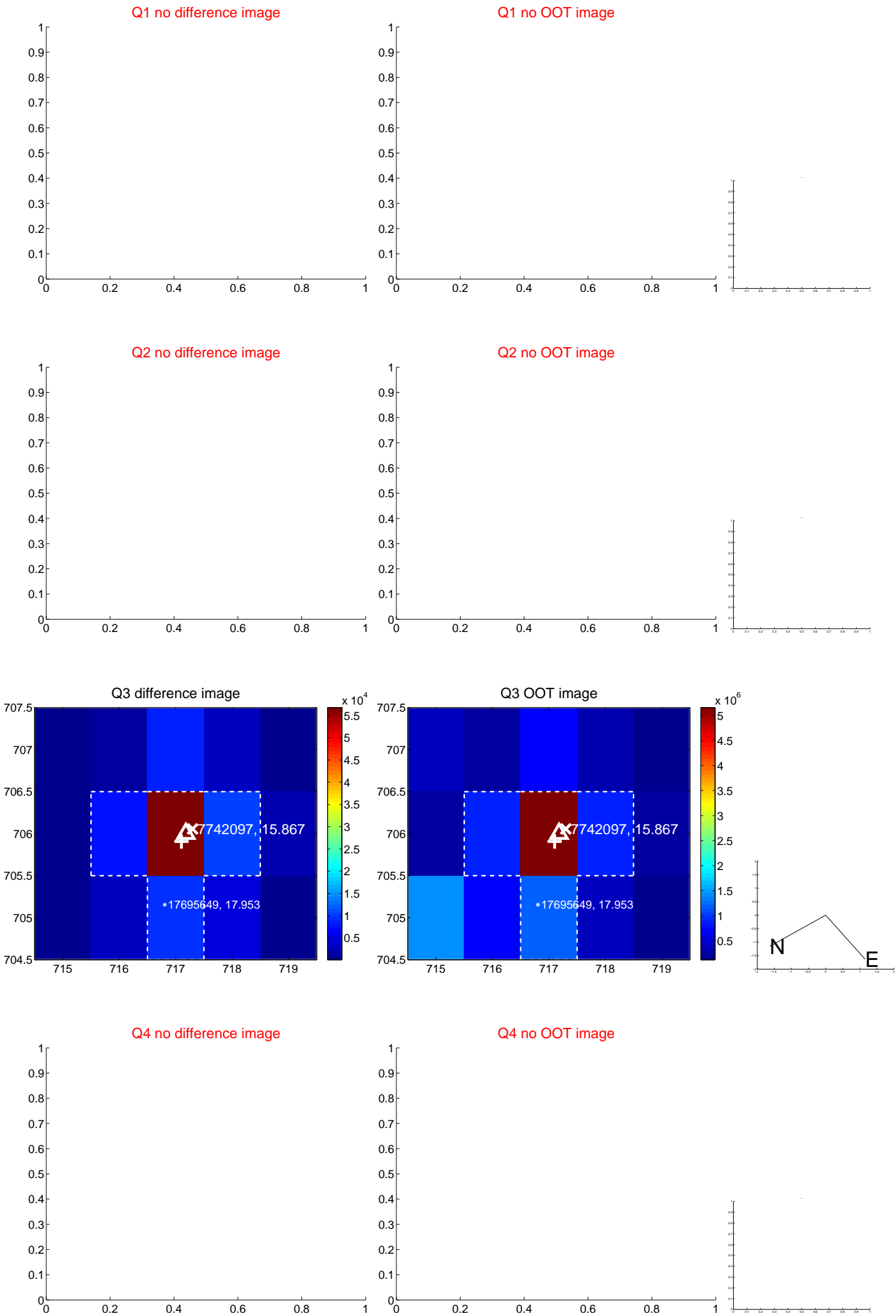
The direct PRF centroid is offset from the target star catalog position by about 0.91 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.406 ± 0.080 | 5.10 | -0.150 ± 0.078 | -0.377 ± 0.080 |
| PRF-fit source offset from KIC position | 0.523 ± 0.092 | 5.71 | -0.050 ± 0.068 | 0.520 ± 0.092 |
| photometric centroid source offset | 2.23 ± 2.30 | 0.97 | 2.04 ± 2.02 | 0.90 ± 3.41 |

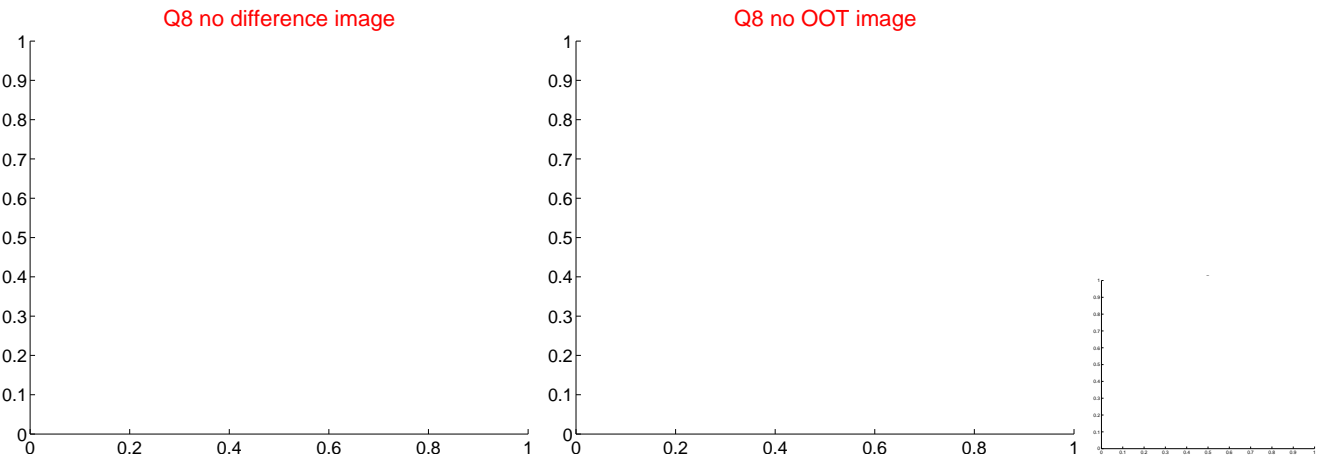


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

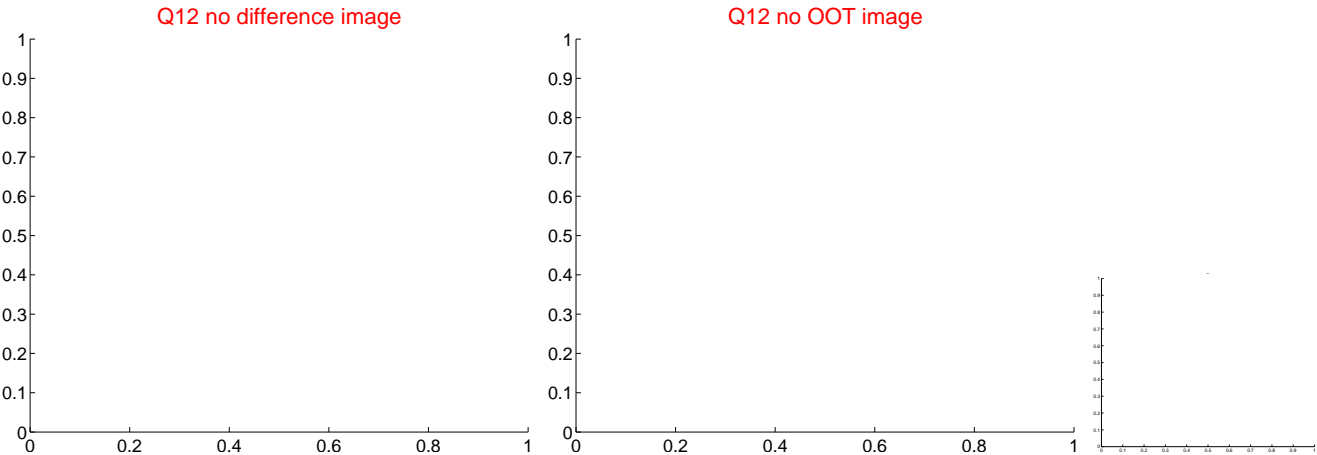
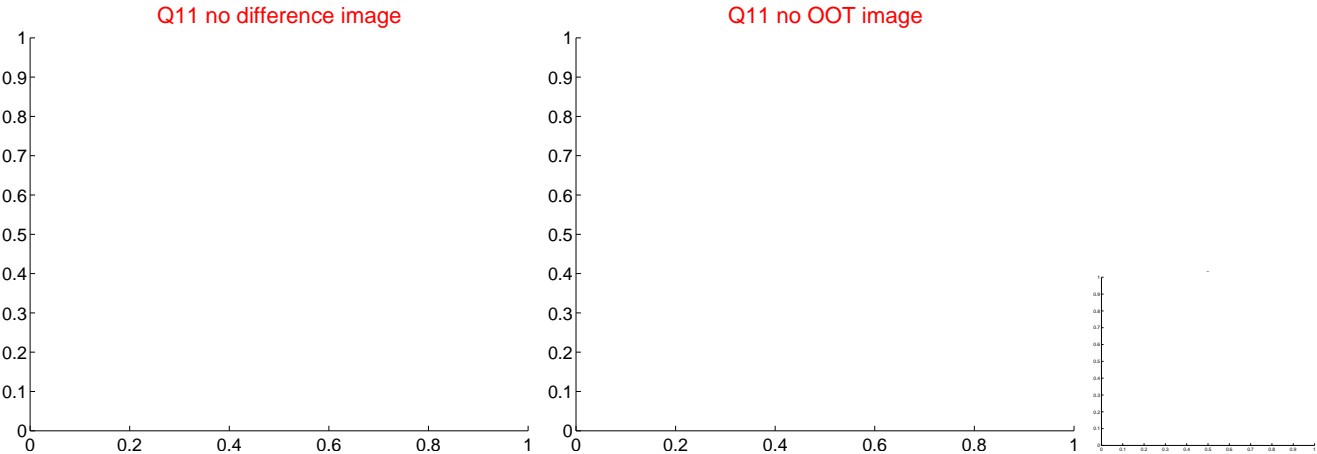
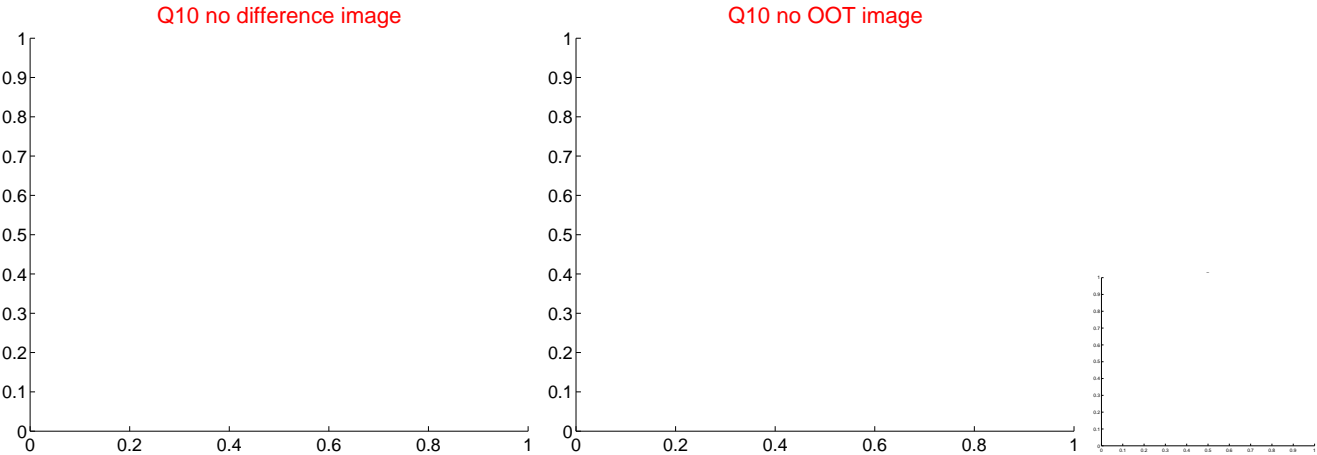
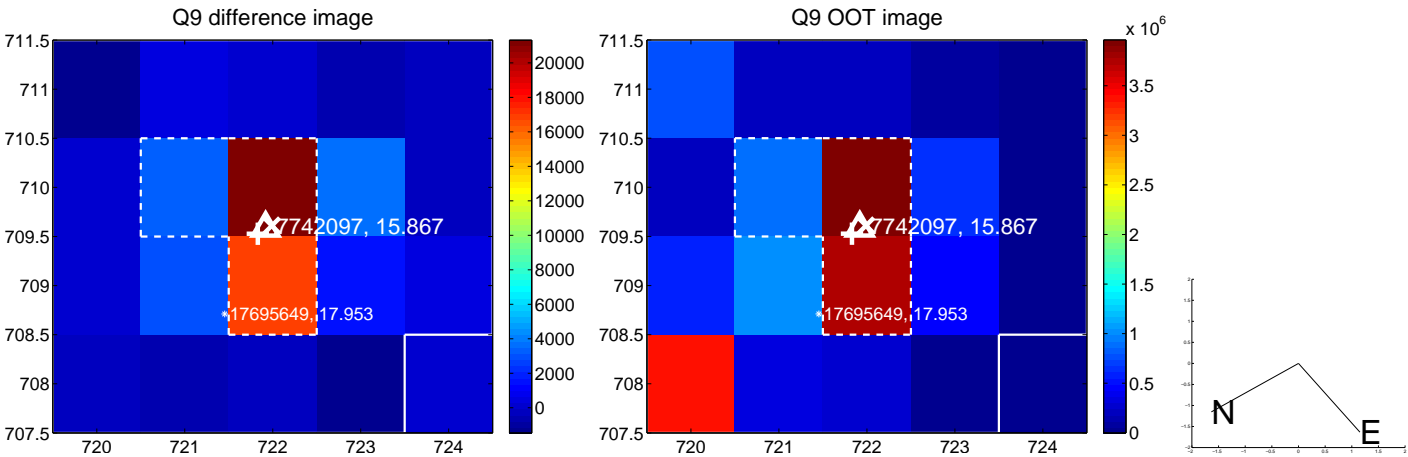
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



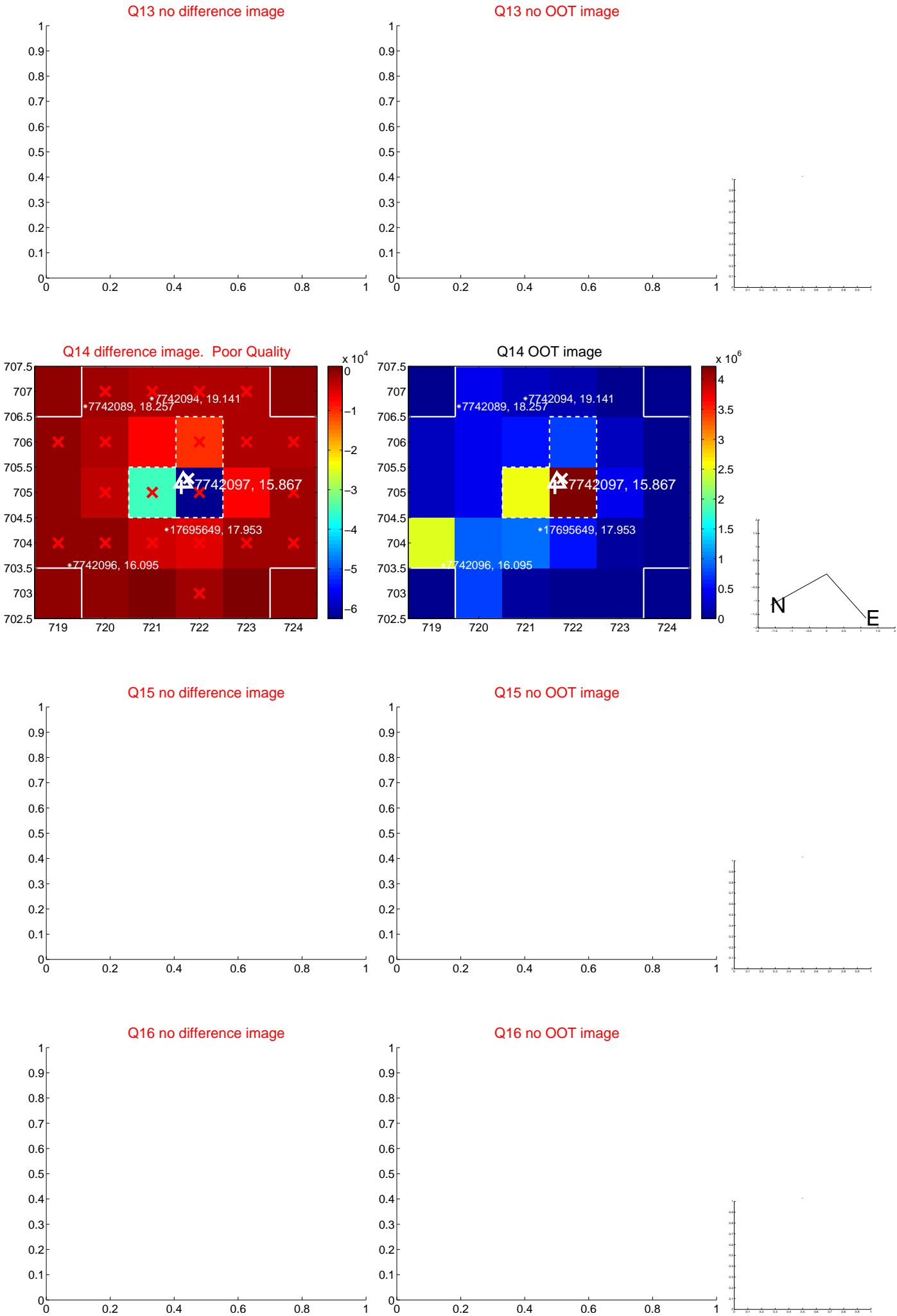
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



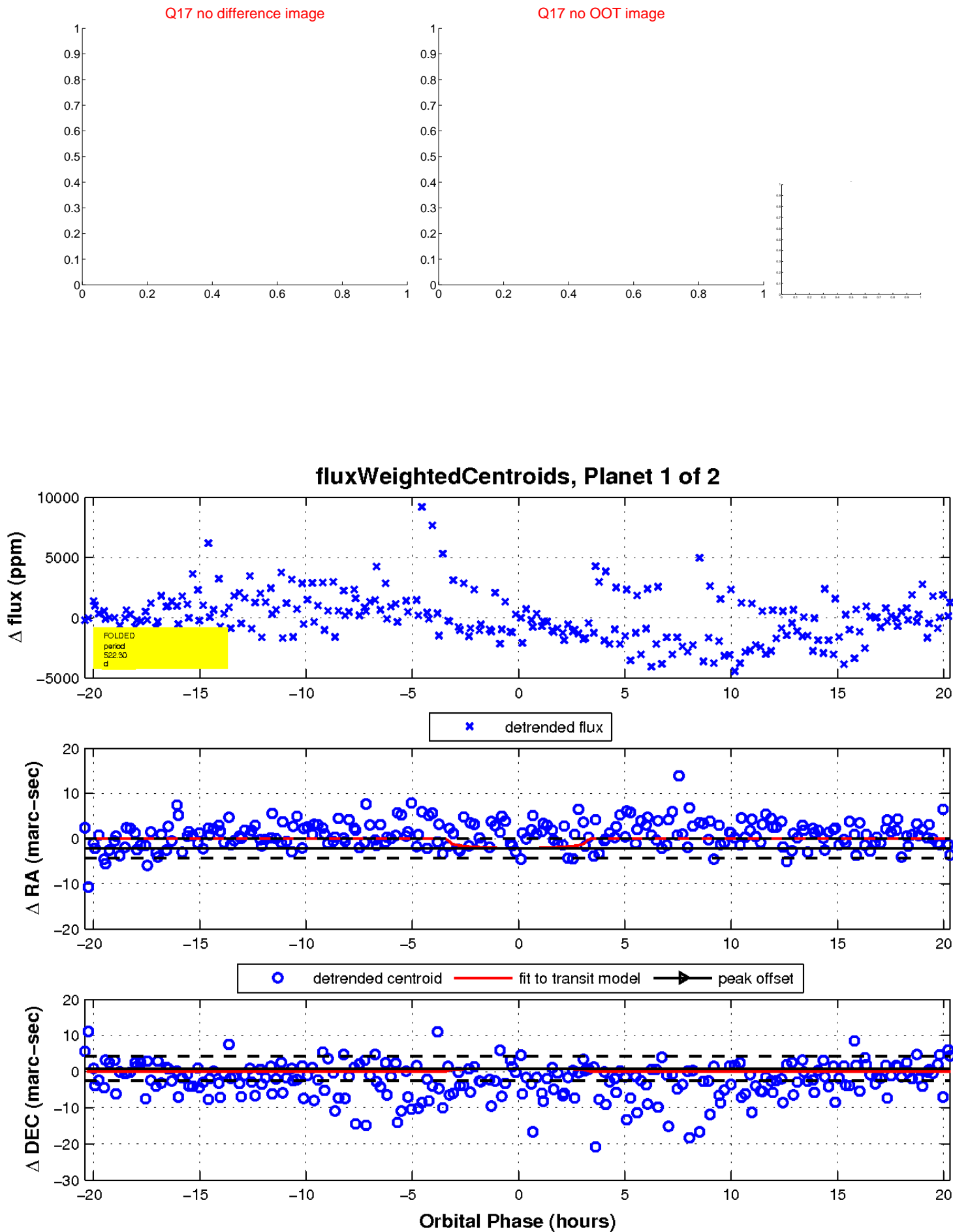
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

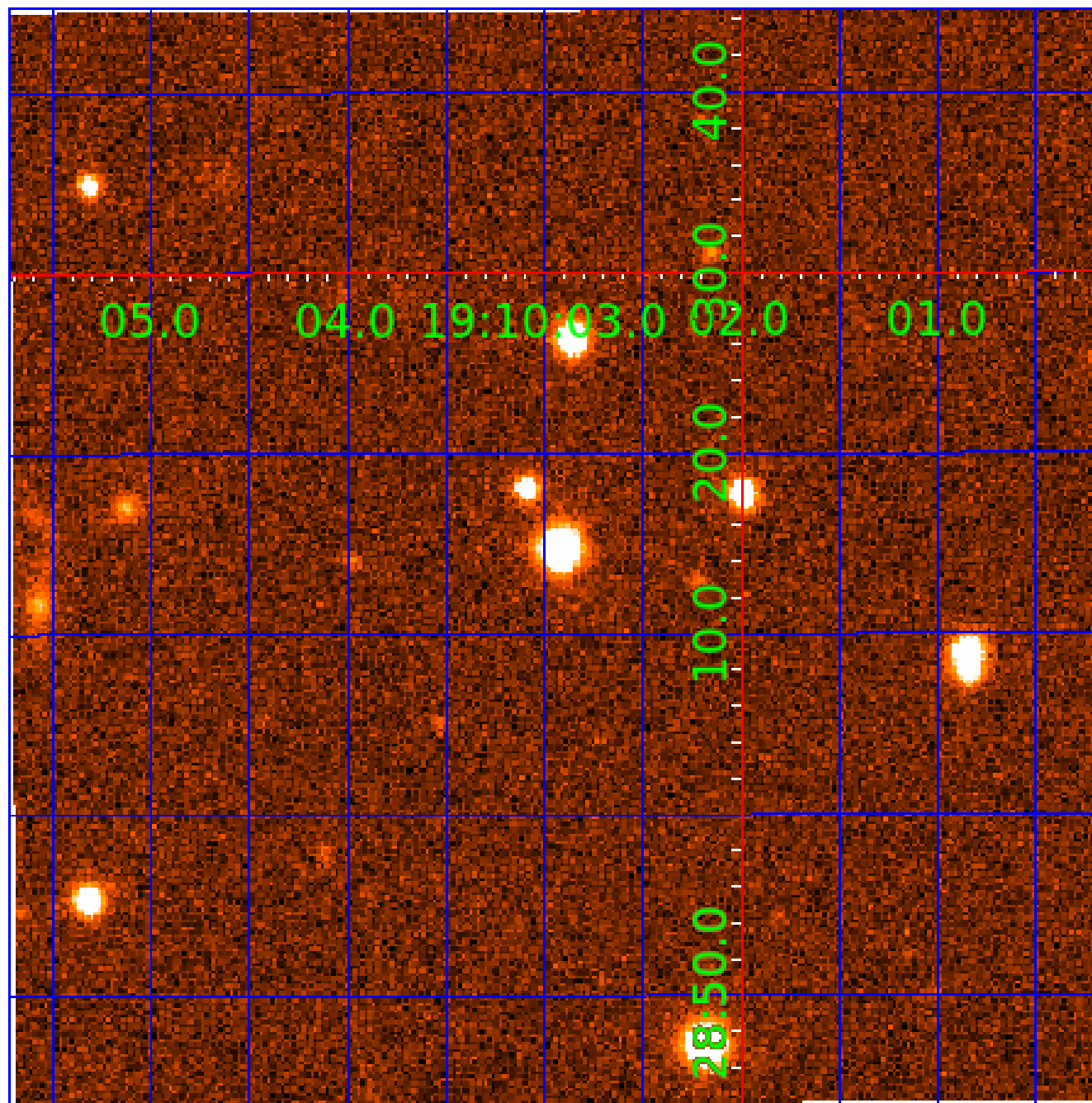


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007742097

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007742097-01 | OBS | No | 522.295841 | 315.261420 | 908.1 | 6.809 | 9.9 | 2.2 | 0.55 | 3940 | 1.73 | 0.06 |
| 007742097-02 | OBS | No | 372.261985 | 175.155527 | 2837.7 | 4.105 | 12.3 | 7.2 | 0.55 | 3940 | 2.95 | 0.09 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 007742097-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 007742097-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS |

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

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

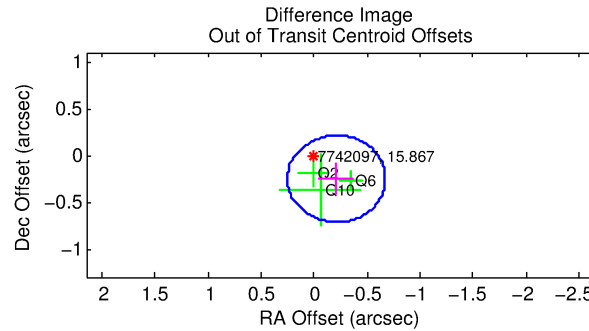
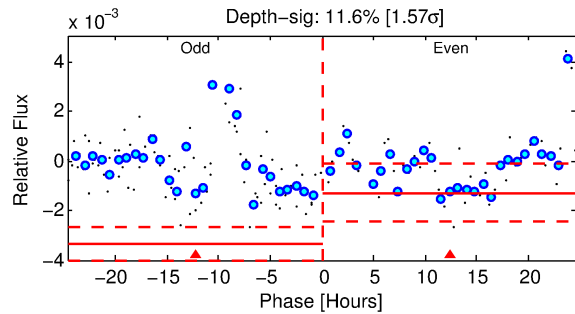
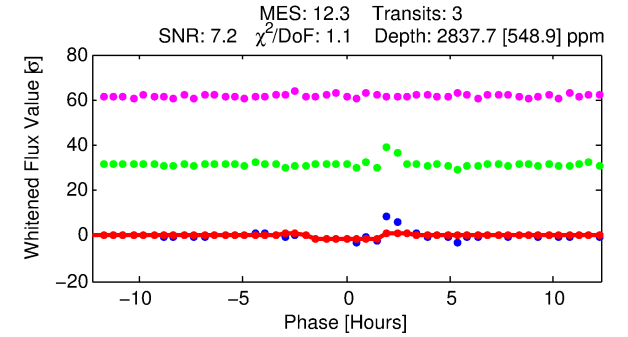
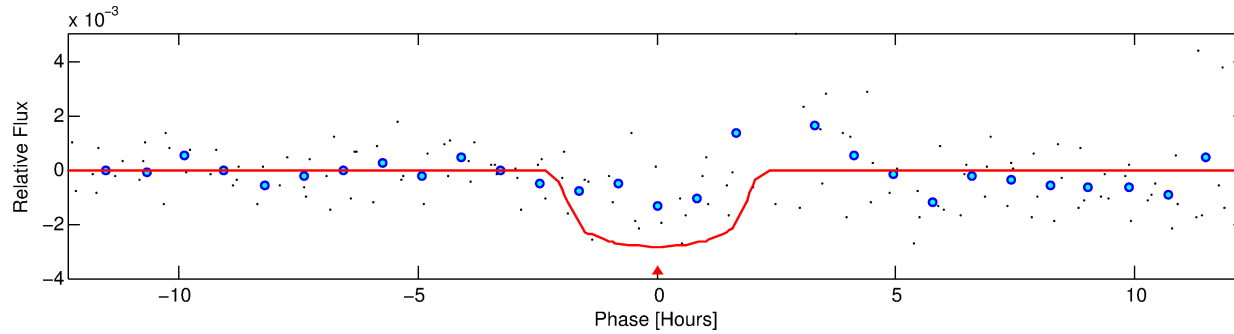
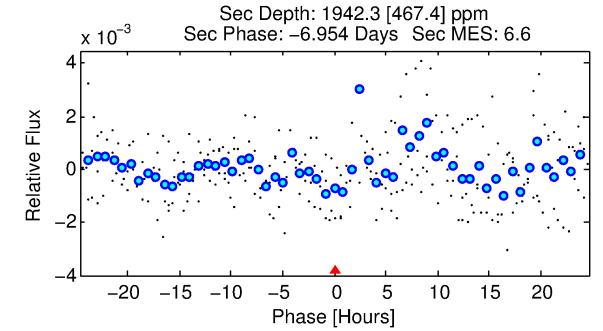
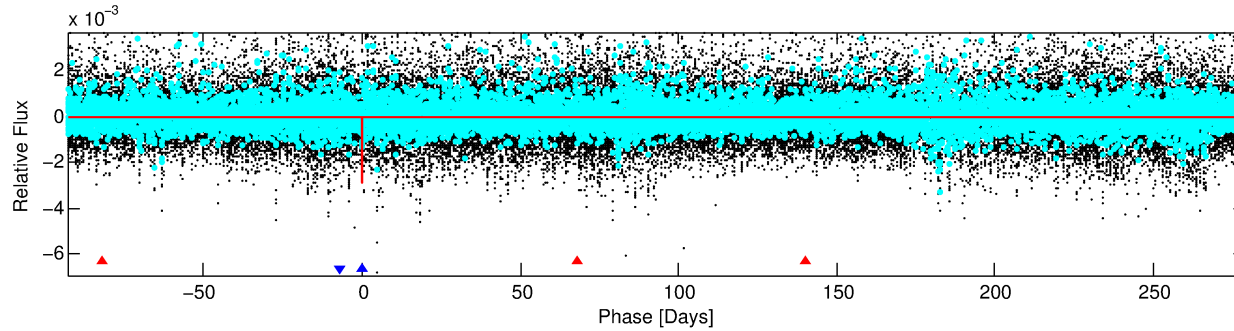
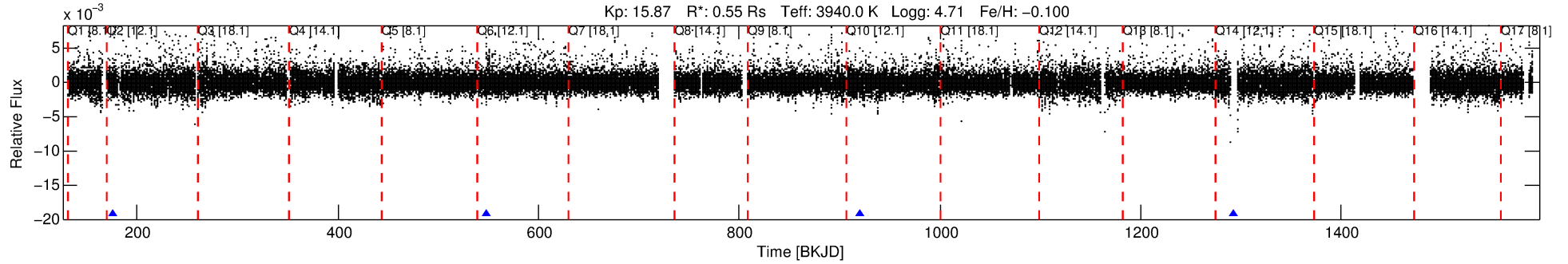
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007742097-02

No Significant Match Found

DV One-Page Summary

KIC: 7742097 Candidate: 2 of 2 Period: 372.262 d



DV Fit Results:

Period = 372.26198 [0.00533] d
Epoch = 175.1555 [0.0071] BKJD
Rp/R* = 0.0492 [0.1574]
a/R* = 665.81 [8596.42]
b = 0.42 [25.53]
Seff = 0.09 [0.01]
Teq = 141 [4] K
Rp = 2.95 [9.45] Re
a = 0.8366 [0.0449] AU
Ag = 85909.23 [550392.86] [0.16 σ]
Teffp = 3731 [5975] K [0.60 σ]

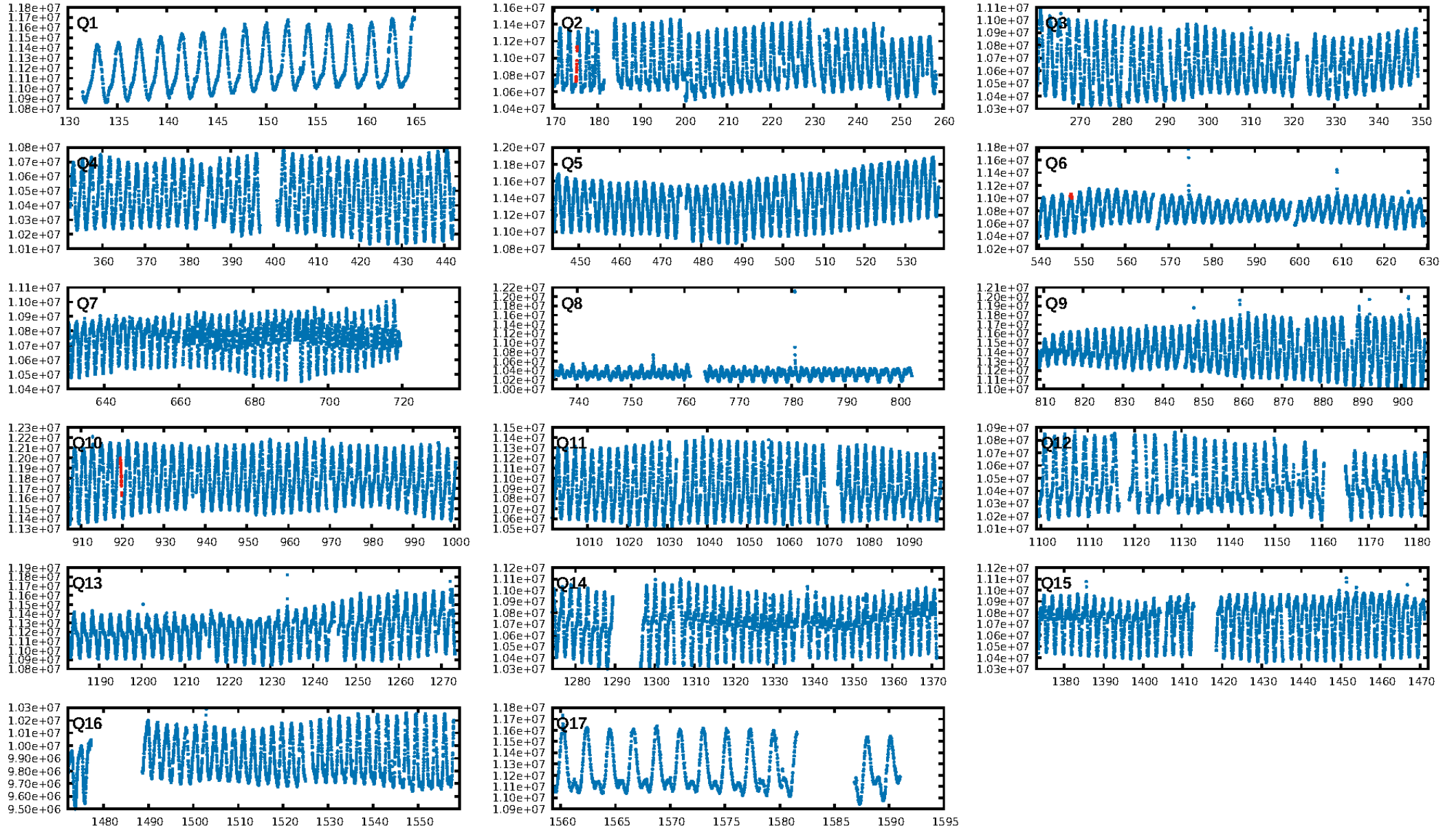
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [452.91 σ]
ModelChiSquare2-sig: 9.4%
ModelChiSquareGof-sig: 75.8%
Bootstrap-pfa: 1.38e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.196
Centroid-sig: 27.8%
Centroid-so: 1.286 arcsec [1.14 σ]
OotOffset-rm: 0.328 arcsec [2.12 σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: **0.475 arcsec [3.08 σ]**
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

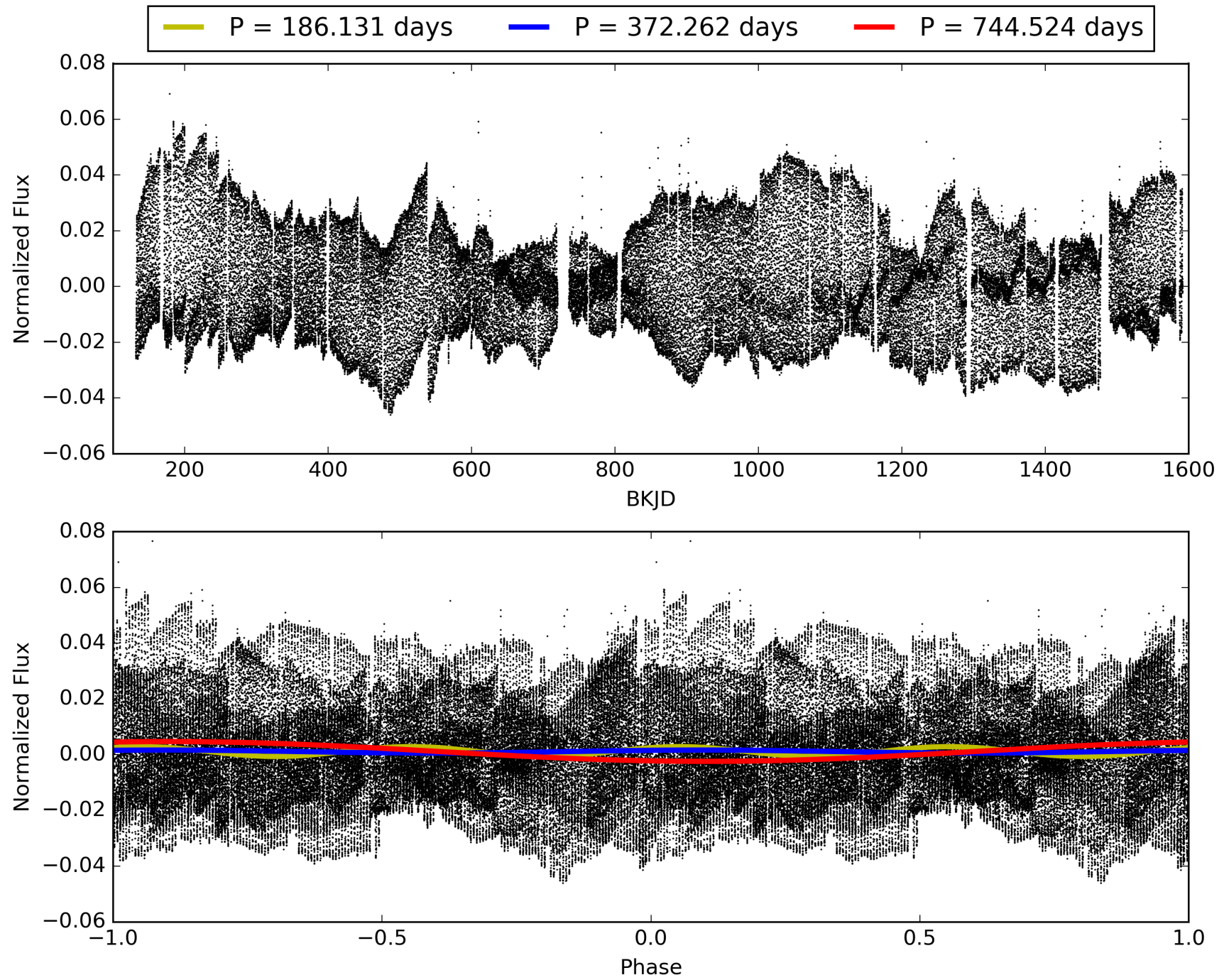
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:46:27 Z

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

TCE 007742097-02, PDC Light Curves

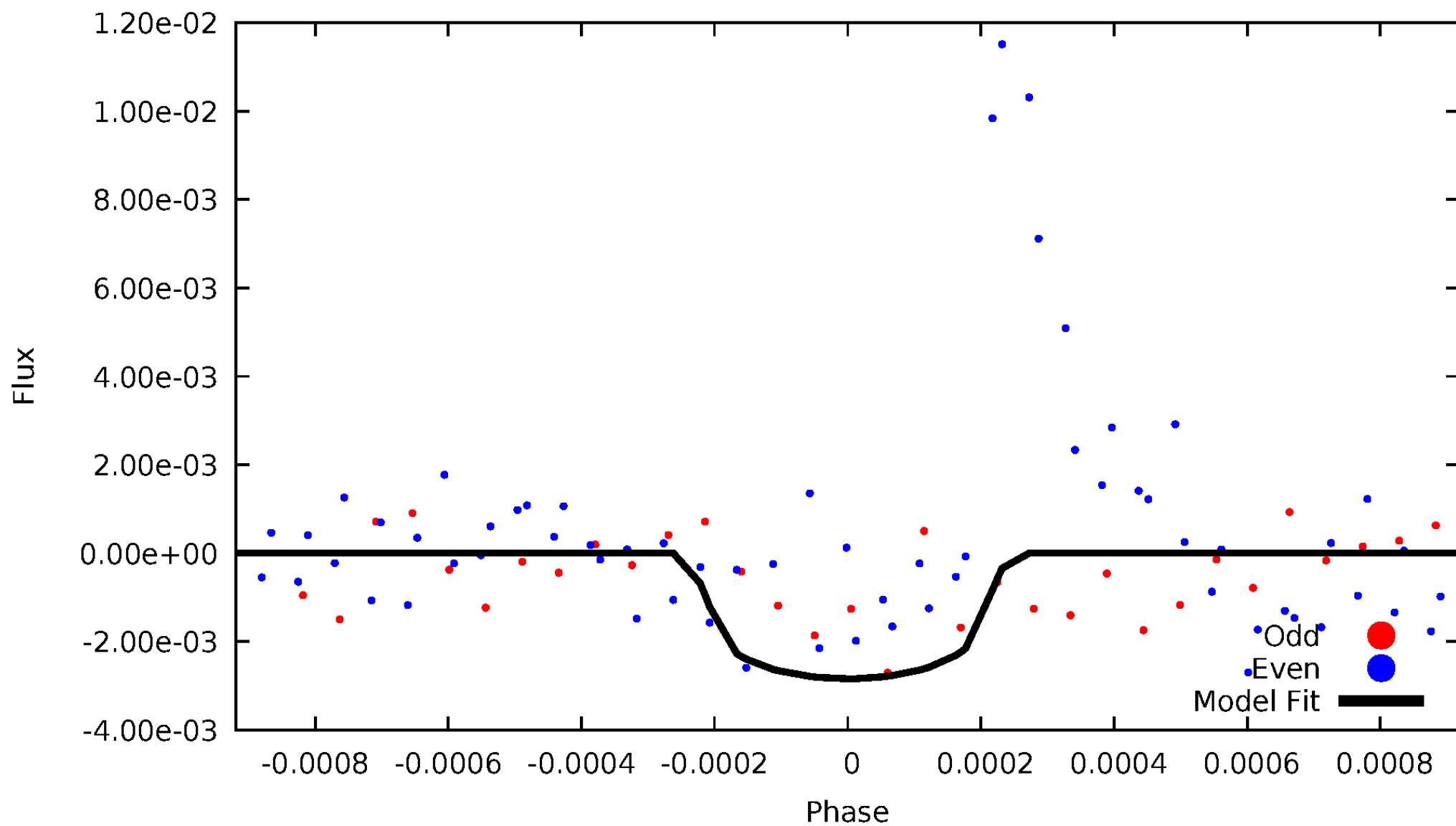


TCE 007742097-02



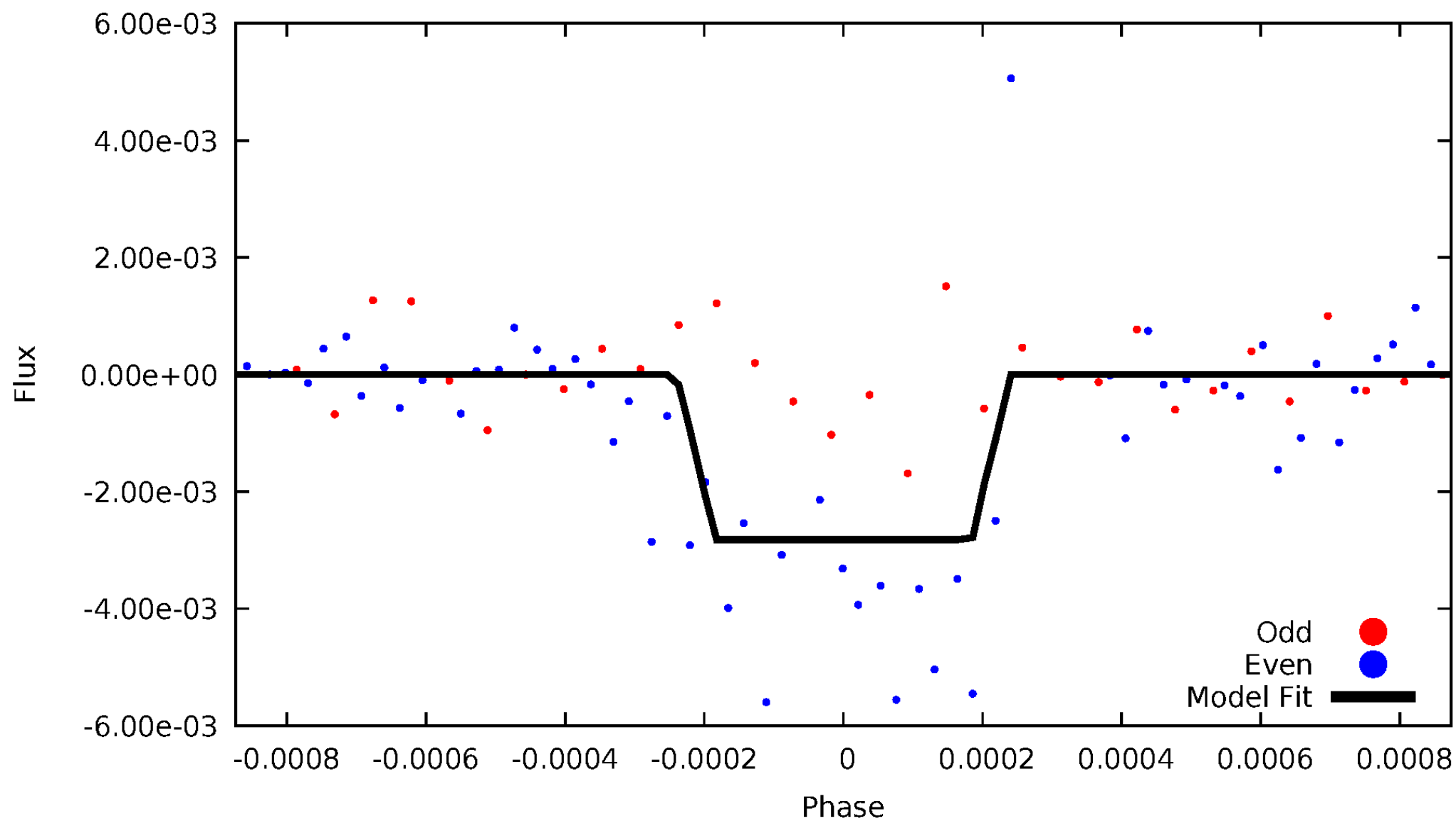
DV Odd/Even

TCE 007742097-02



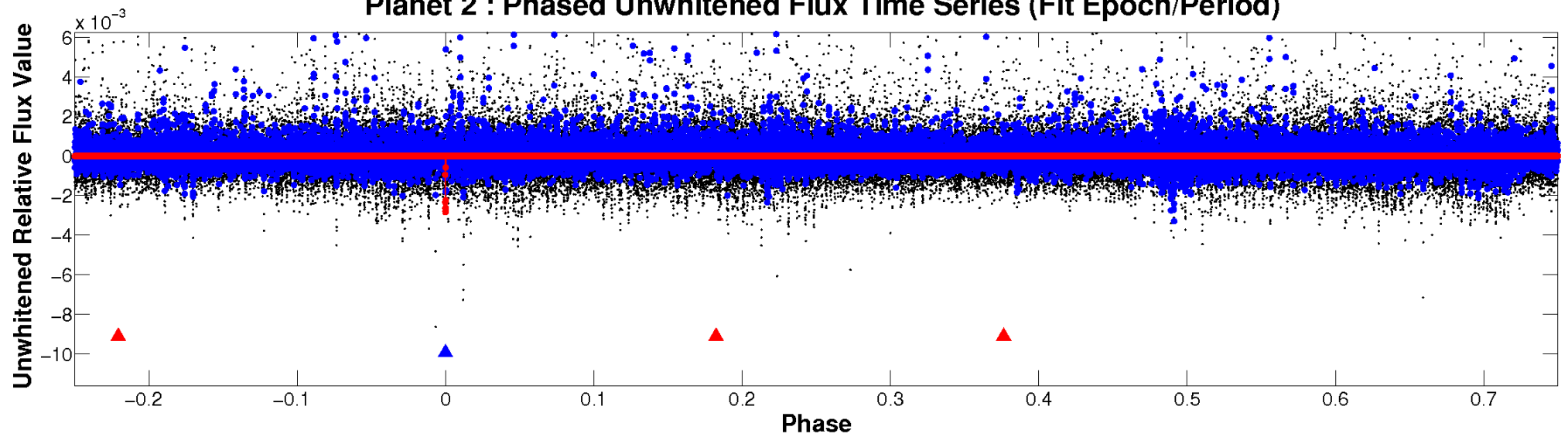
ALT Odd/Even

TCE 007742097-02

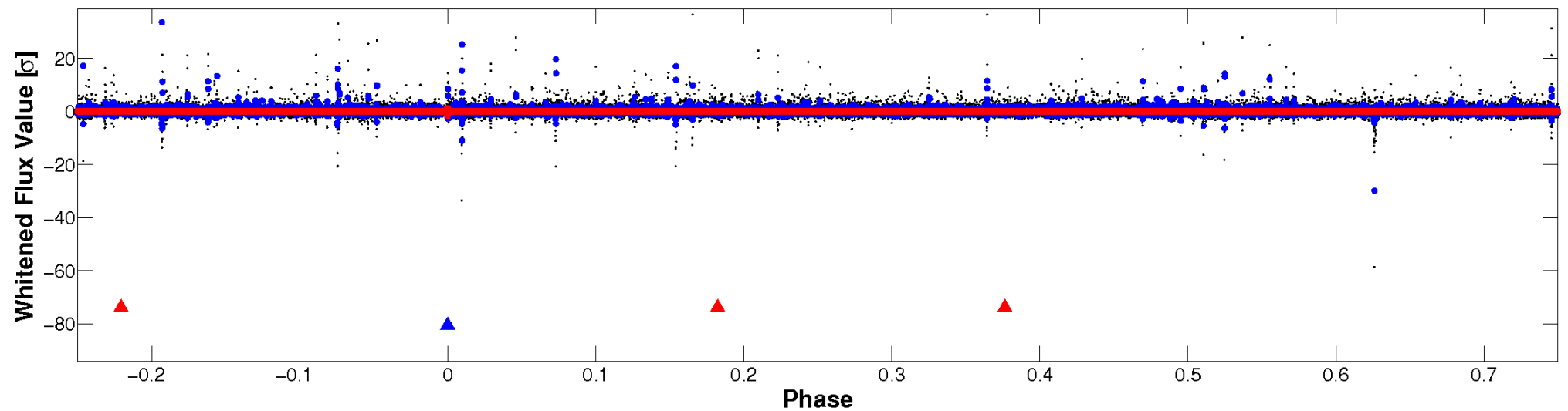


Non-Whitened Vs. Whitened Light Curve

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

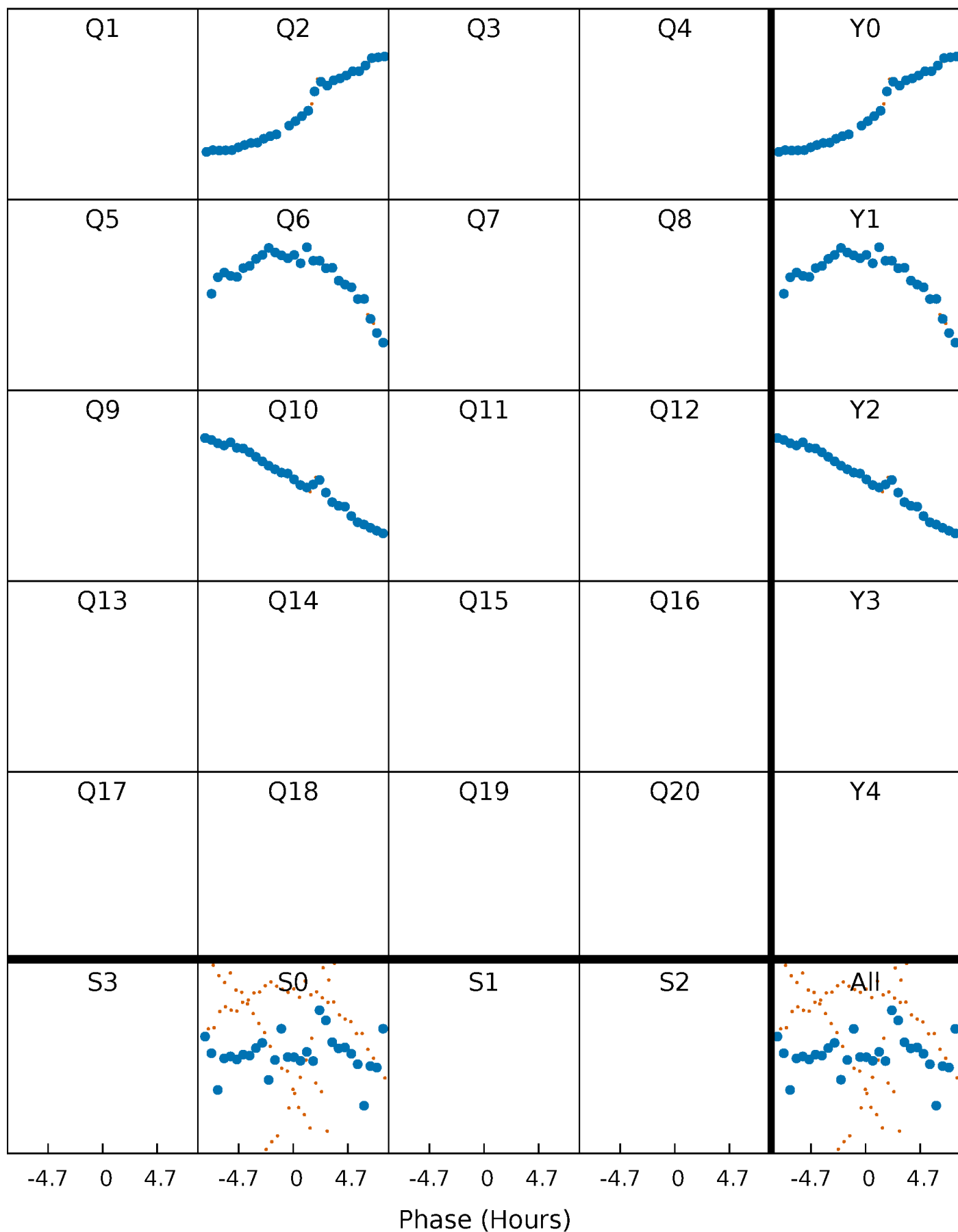


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



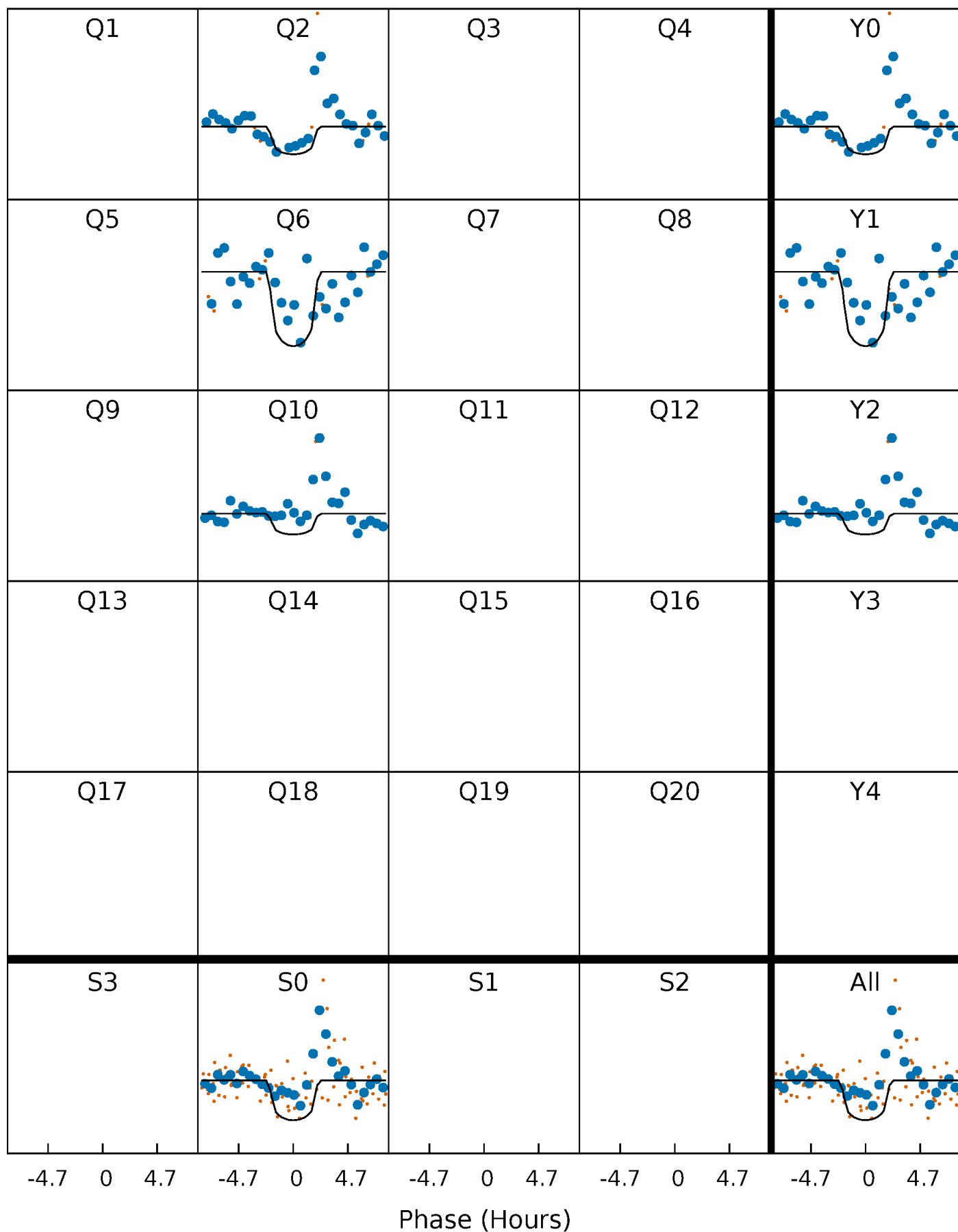
PDC Quarter-Phased Transit Curves

TCE 007742097-02 P=372.261985 Days $T_0=175.155527$ (BKJD)



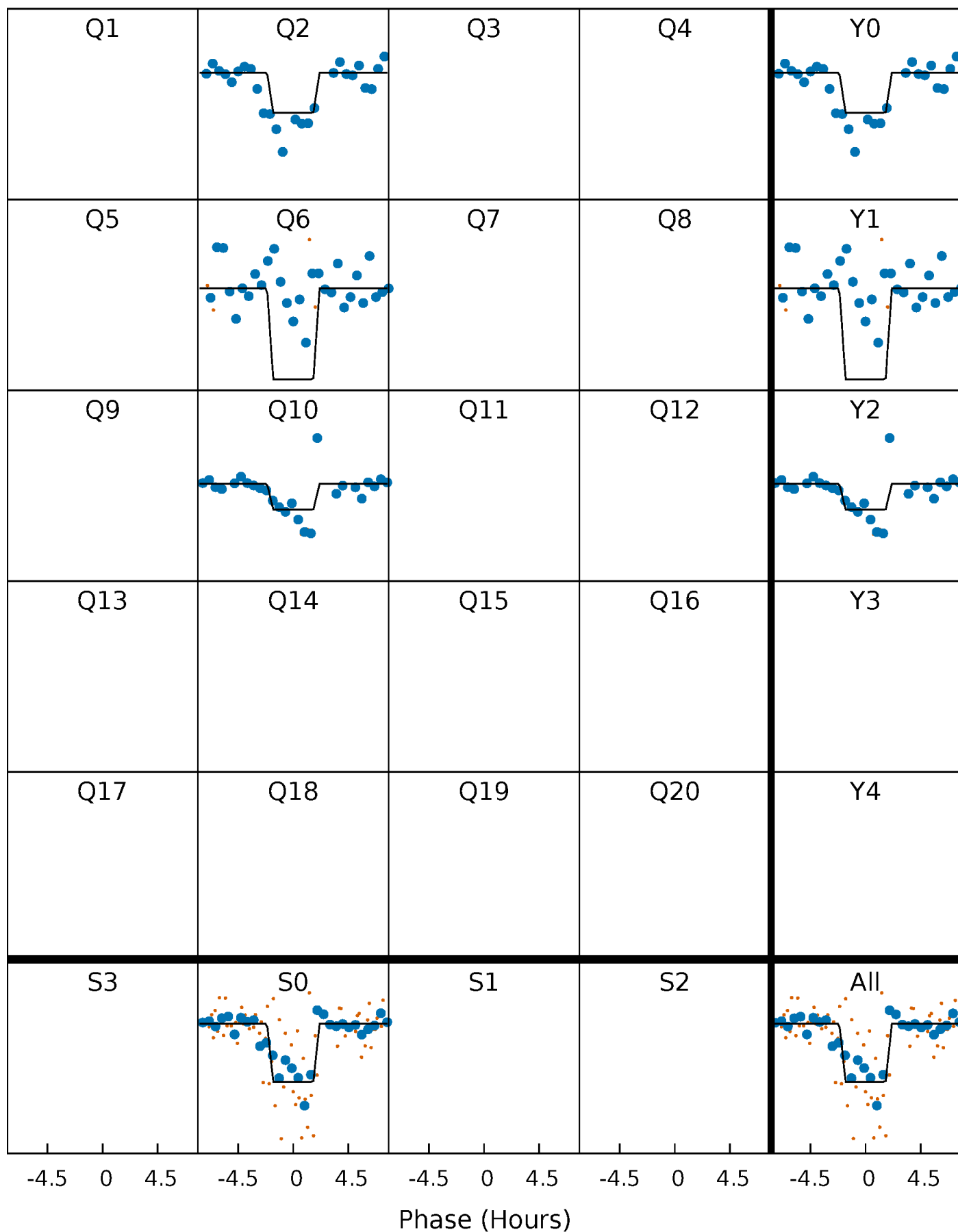
DV Quarter-Phased Transit Curves

TCE 007742097-02 $P=372.261985$ Days $T_0=175.155527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

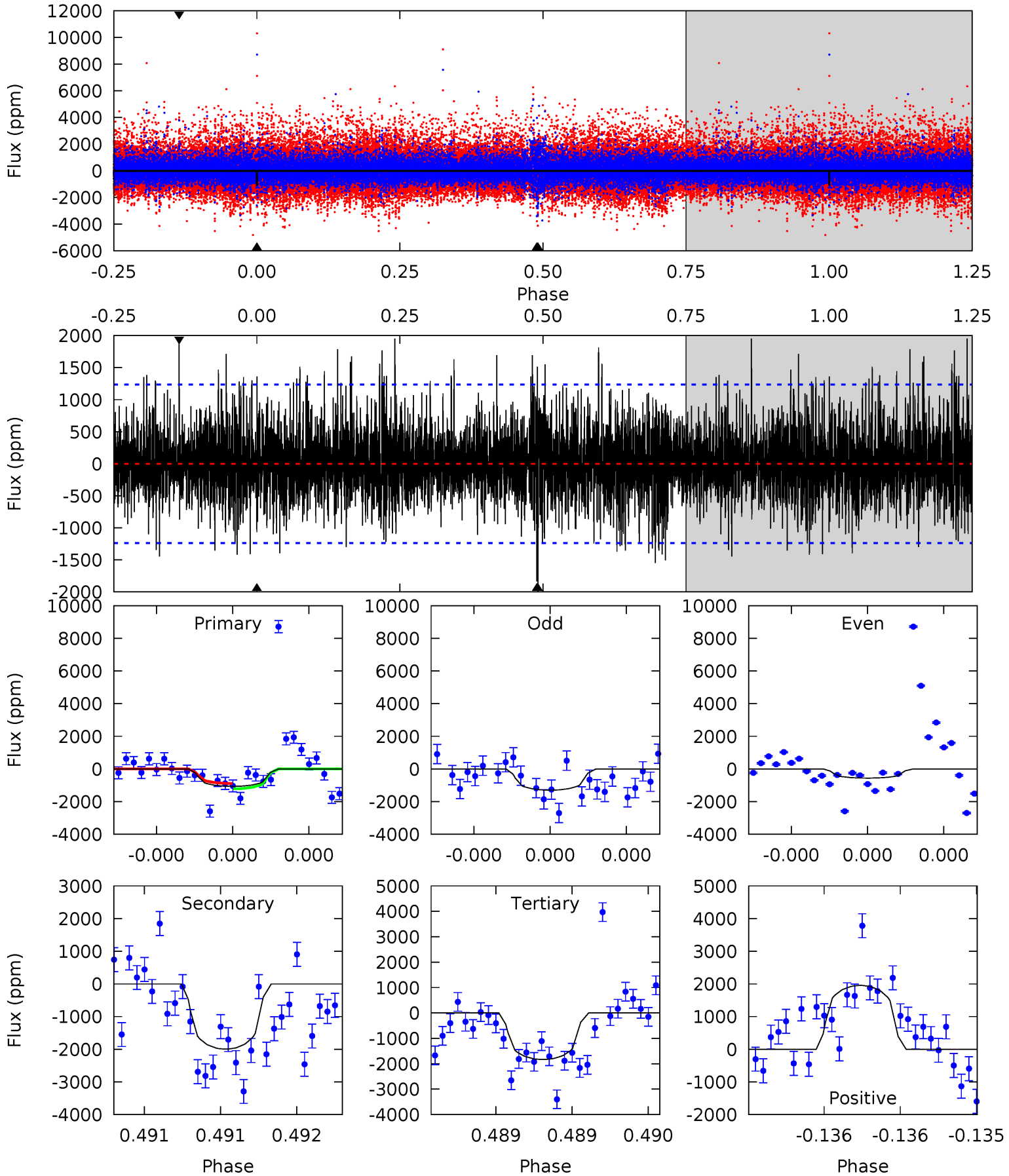
TCE 007742097-02 P=372.265407 Days $T_0=175.140016$ (BKJD)



DV Model-Shift Uniqueness Test

007742097-02, P = 372.261985 Days, E = 175.155527 Days

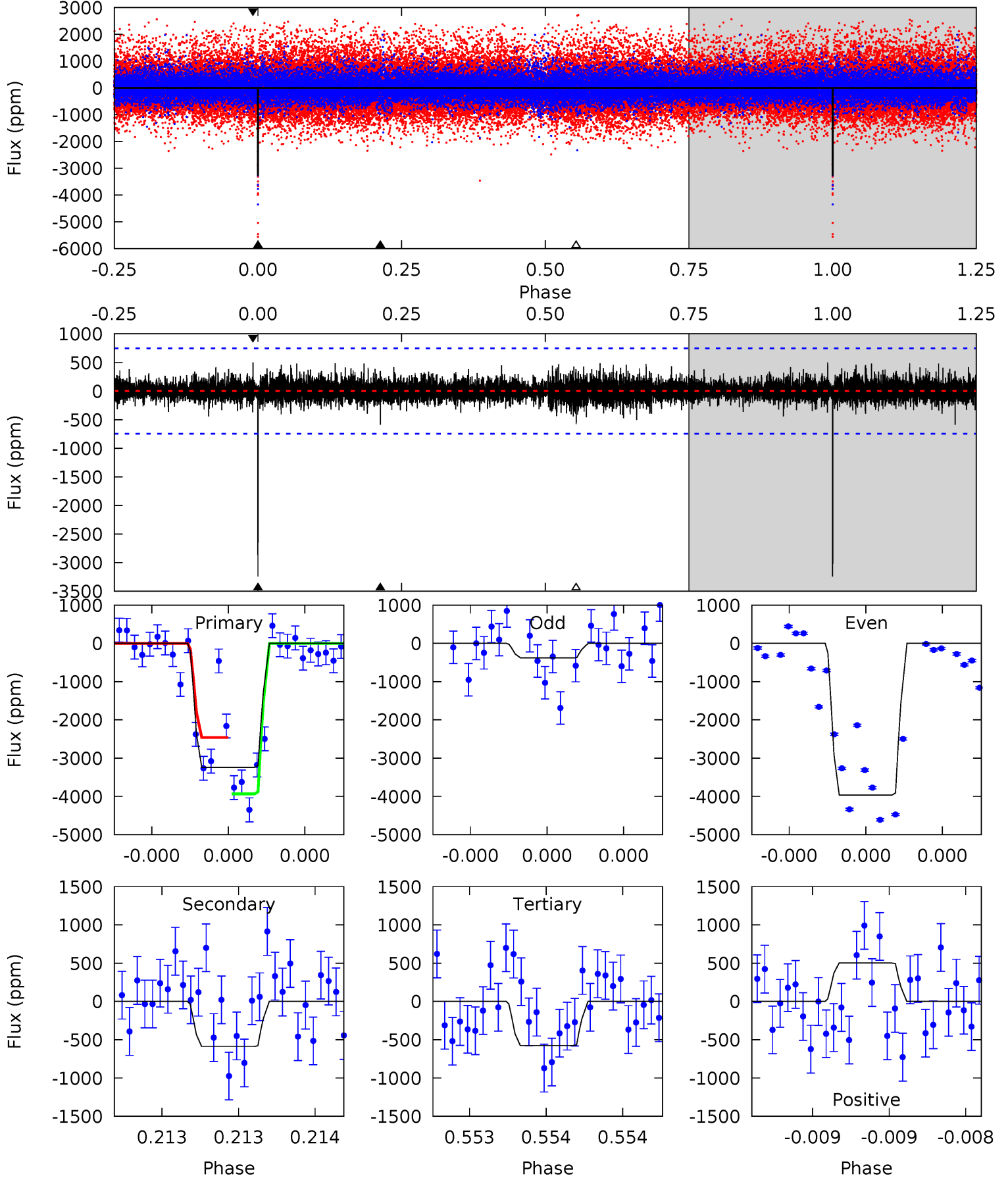
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.83 | 9.03 | 8.28 | 8.83 | 5.59 | 3.51 | 1.94 | -3.45 | -4.01 | 0.74 | 0.19 | 1.29 | 0.66 | 0.49 | 0.74 |



Alt Model-Shift Uniqueness Test

007742097-02, P = 372.265407 Days, E = 175.140016 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 | 4.39 | 4.30 | 3.75 | 5.58 | 3.49 | 0.84 | 19.9 | 20.5 | 0.09 | 0.64 | 13.0 | 0.70 | 0.13 | 5.55 |



Stellar Parameters For KIC 007742097

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 3940^{+78}_{-86} | $4.708^{+0.033}_{-0.027}$ | $-0.100^{+0.200}_{-0.200}$ | $0.550^{+0.035}_{-0.039}$ | $0.564^{+0.037}_{-0.041}$ | $4.767^{+0.784}_{-0.569}$ |
| | +2%/-2% | +1%/-1% | +200%/-200% | +6%/-7% | +7%/-7% | +16%/-12% |
| 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 007742097-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -1998 ± 221 | $7.41^{+7.31}_{-4.95}$ | 197^{+4}_{-5} | 2895^{+1187}_{-482} | $14448^{+115937}_{-10887}$ |
| Alt. | -587 ± 134 | $7.34^{+7.28}_{-5.07}$ | 196^{+5}_{-5} | 2443^{+906}_{-346} | 4059^{+36794}_{-3033} |

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

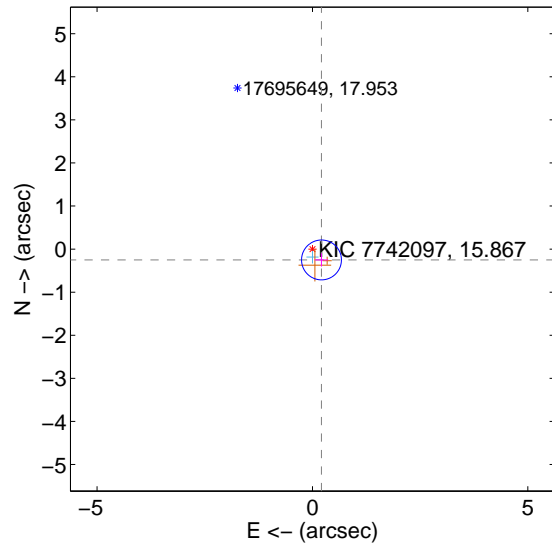
Supplemental centroid analysis for 007742097-02. Kepler magnitude: 15.87. Transit SNR 7.24

There are 1 quarters with good PRF difference image offsets

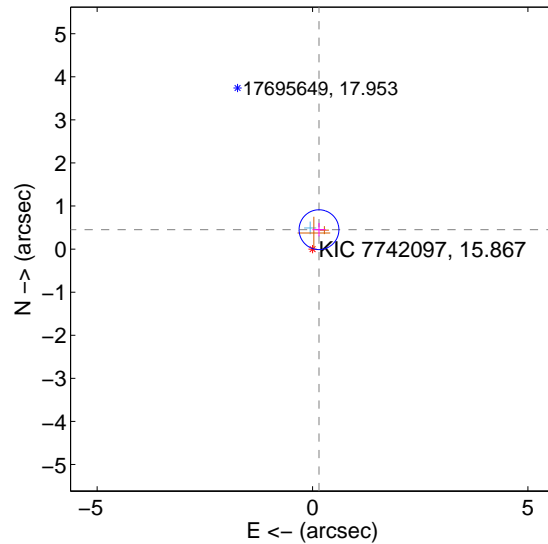
The direct PRF centroid is offset from the target star catalog position by about 0.75 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.328 ± 0.154 | 2.12 | -0.210 ± 0.155 | -0.252 ± 0.154 |
| PRF-fit source offset from KIC position | 0.475 ± 0.154 | 3.08 | -0.150 ± 0.155 | 0.451 ± 0.154 |
| photometric centroid source offset | 1.29 ± 1.13 | 1.14 | -0.88 ± 0.82 | 0.94 ± 1.35 |

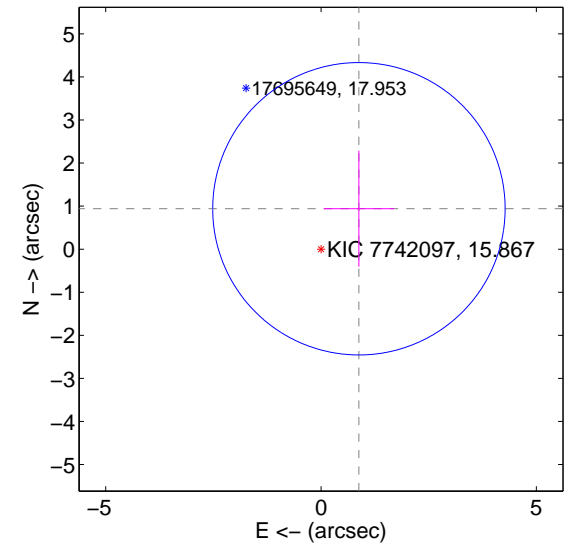
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

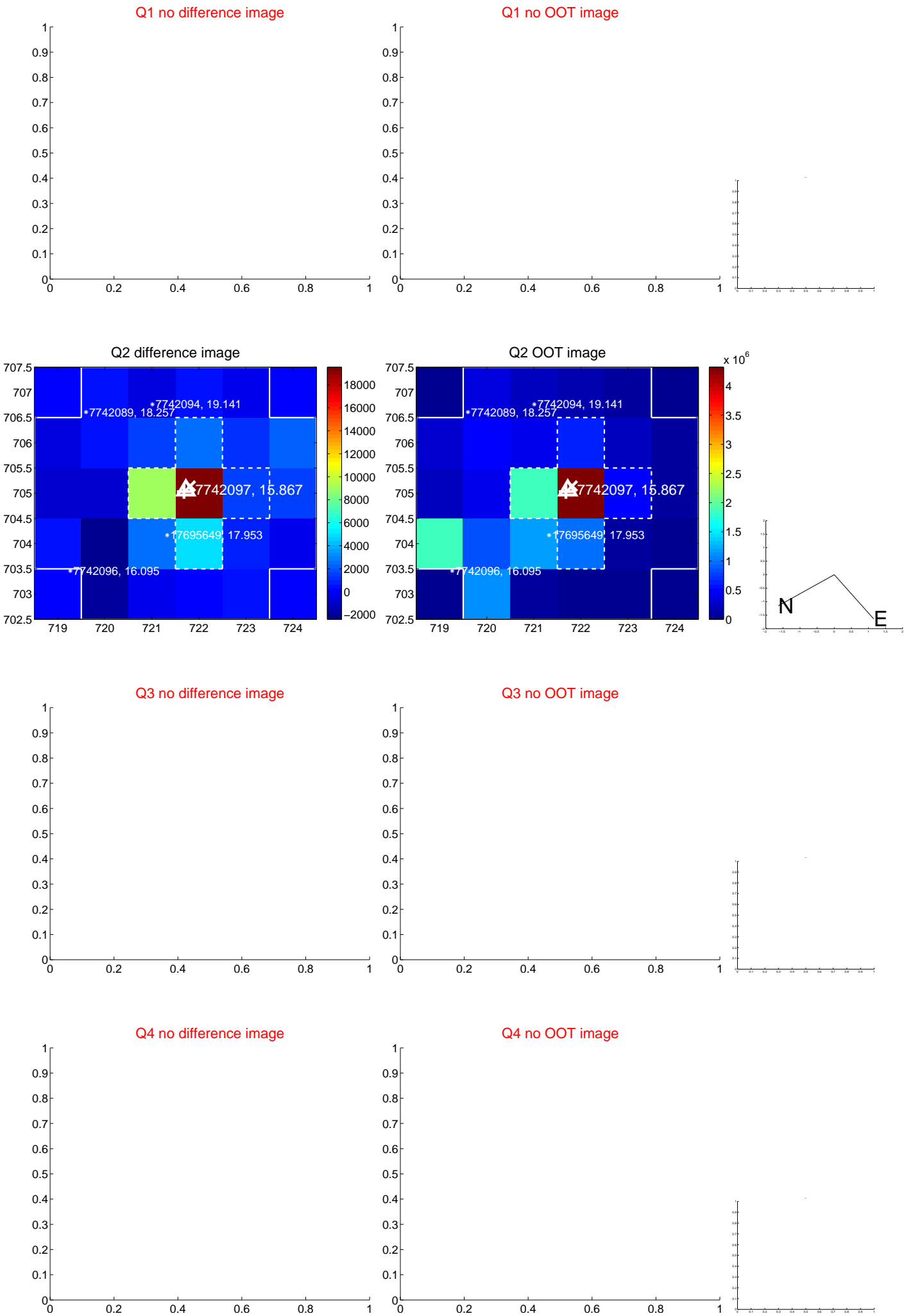


offset from photometric centroids

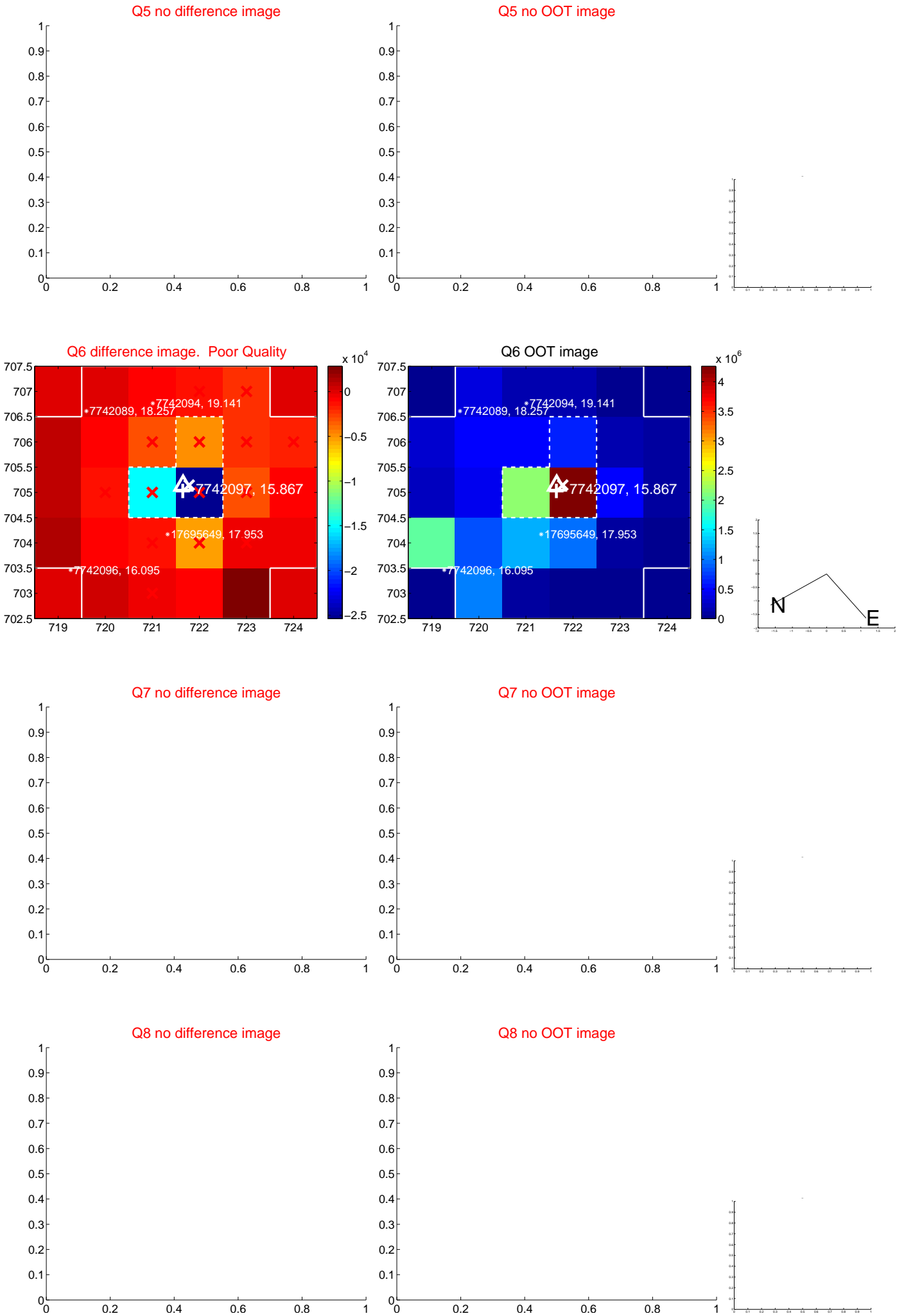


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

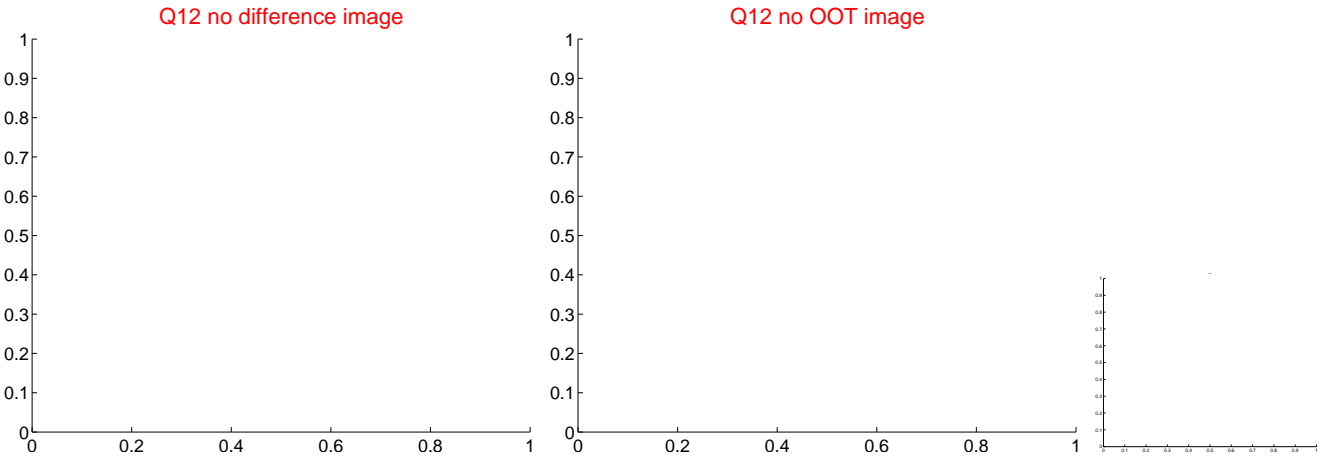
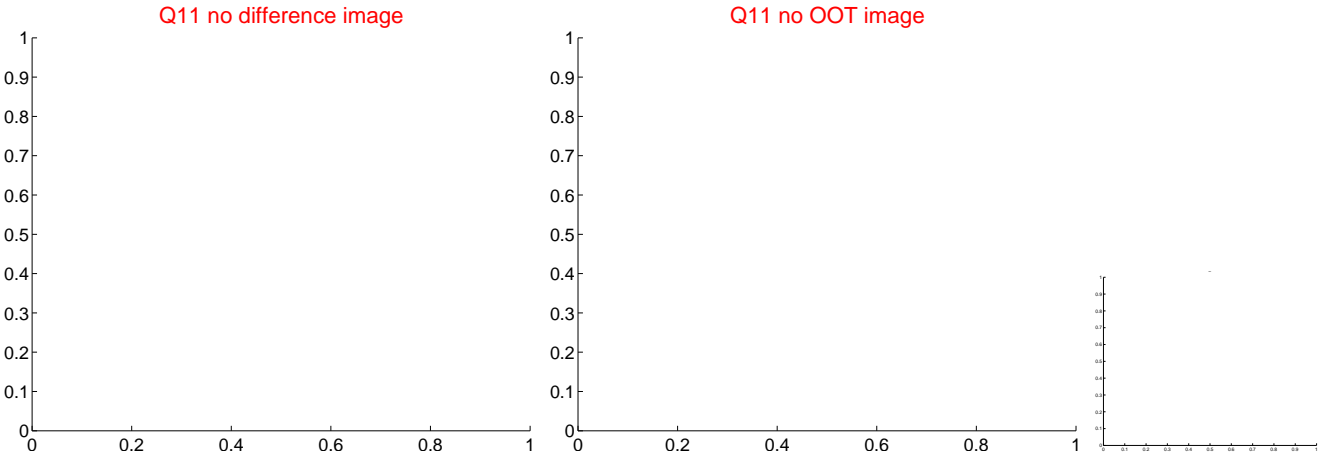
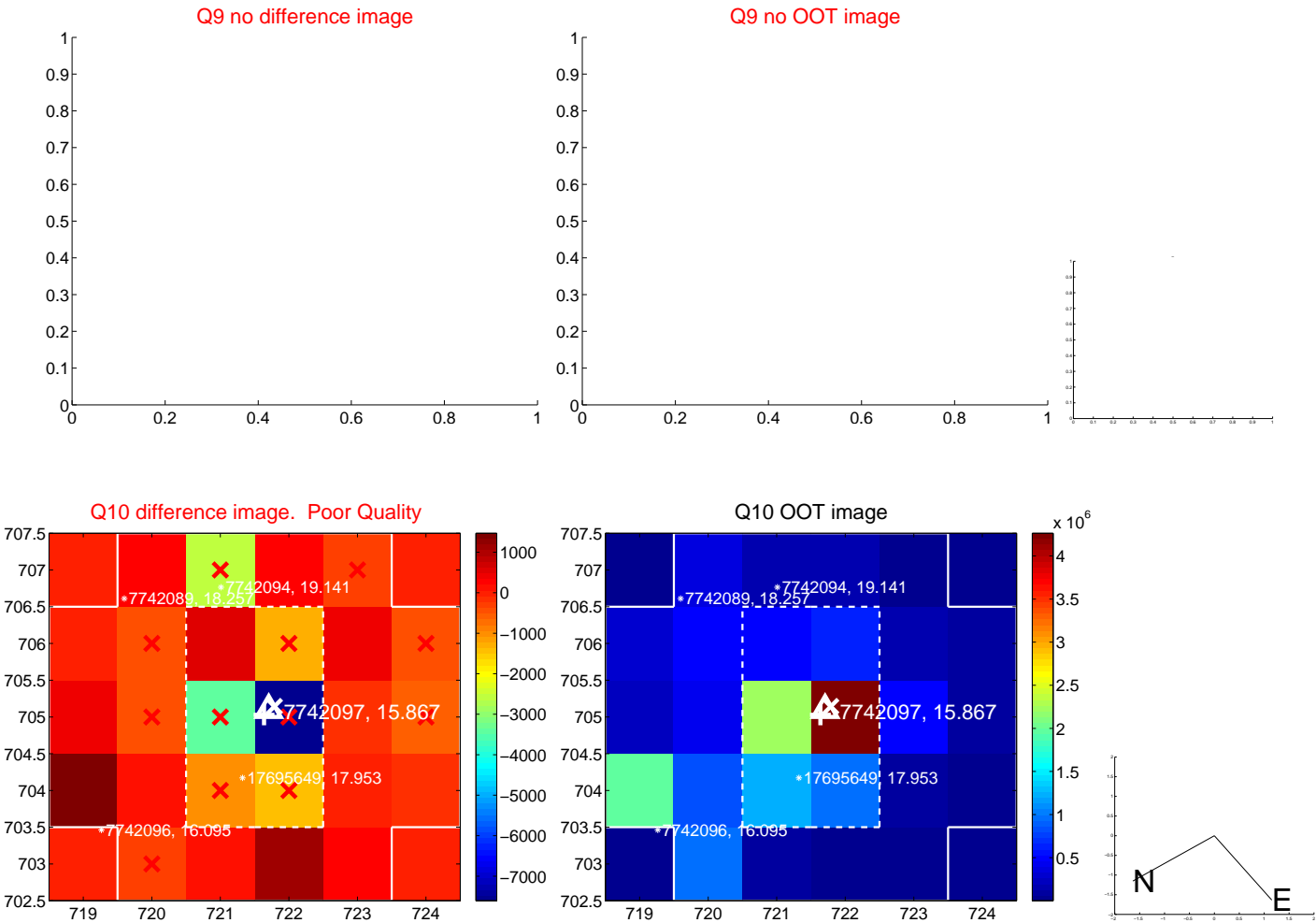
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



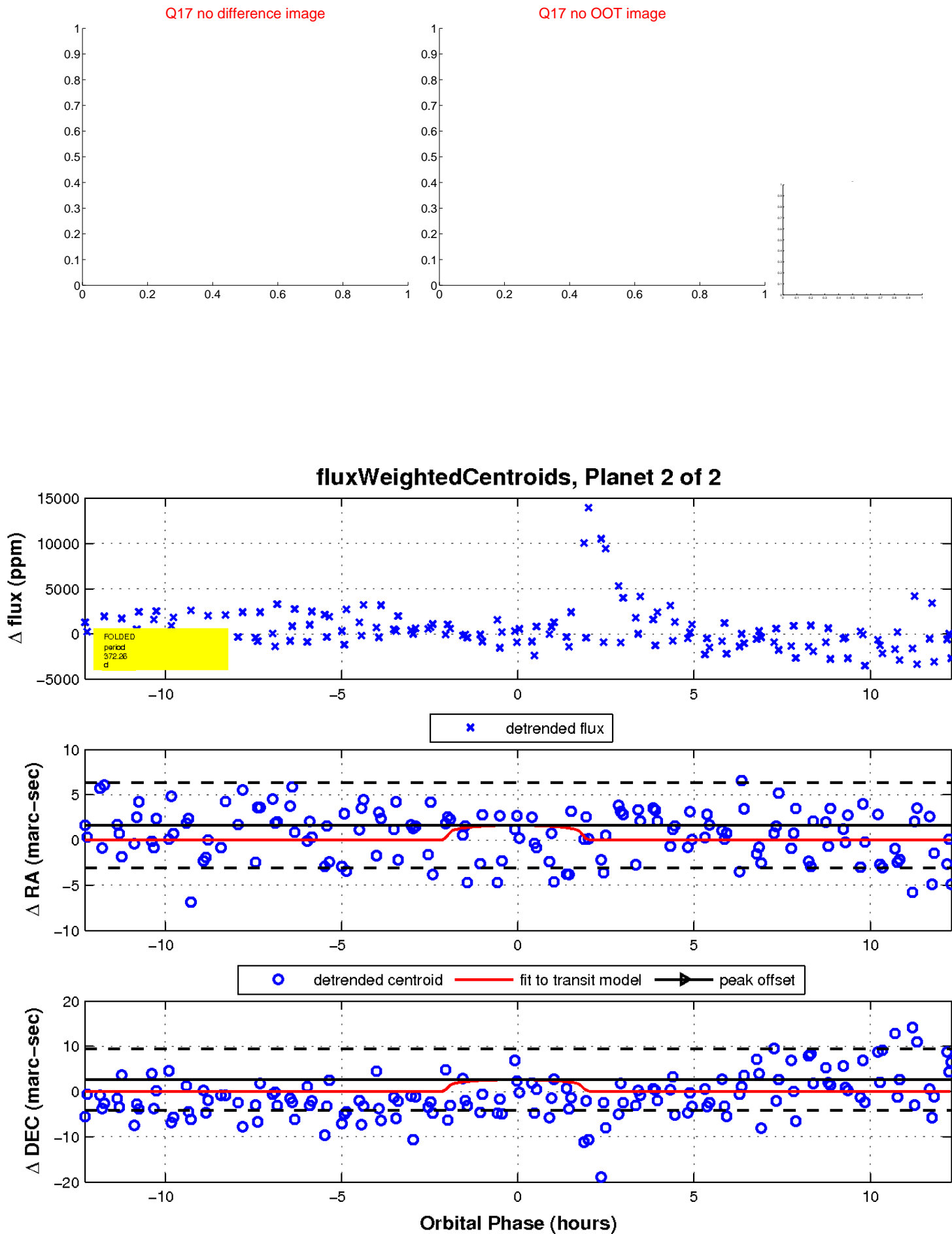
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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.



UKIRT Image

Declination

