# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

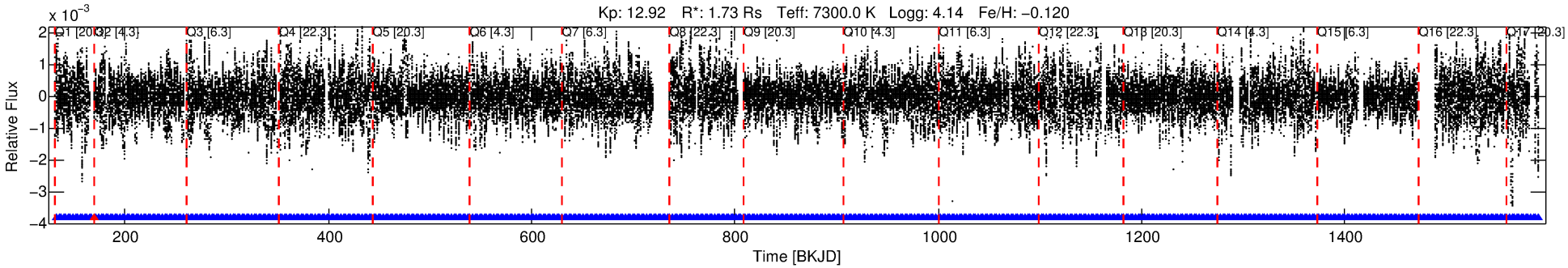
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

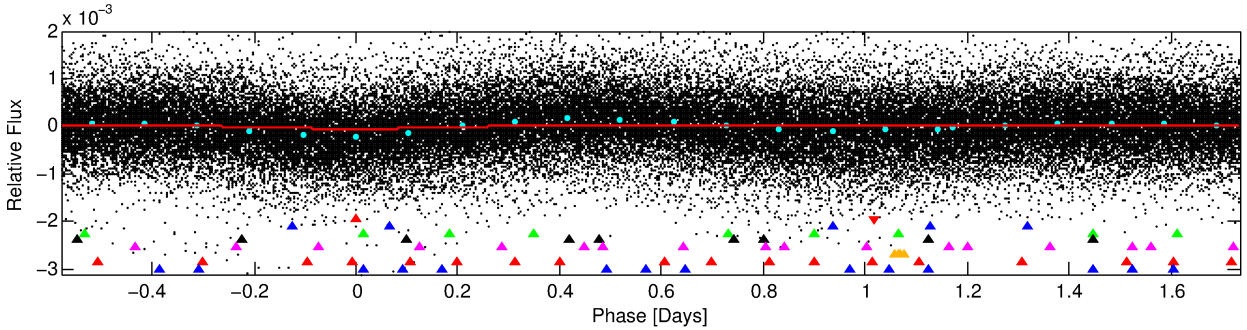
## Ephemeris Match Information For 005304634-01

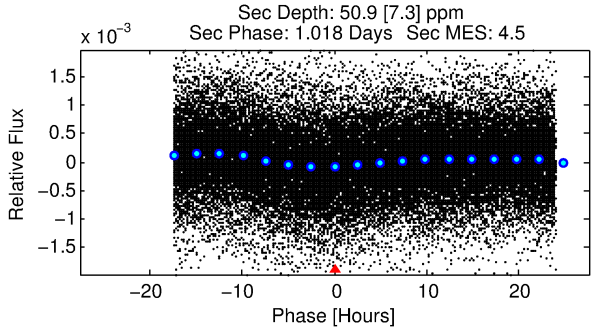
No Significant Match Found

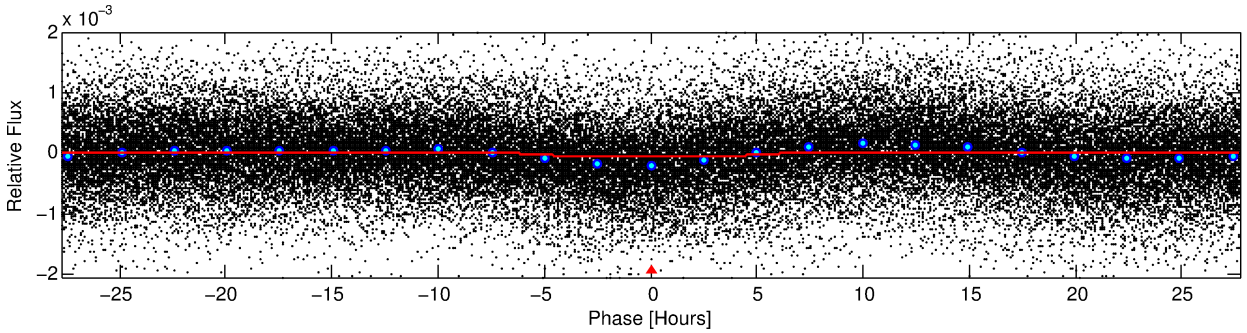
# DV One-Page Summary

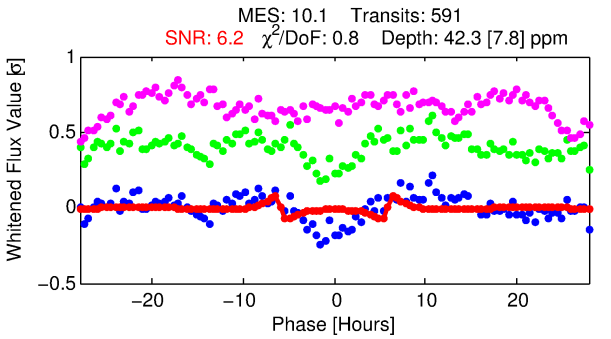
**KIC: 5304634 Candidate: 1 of 8 Period: 2.313 d**

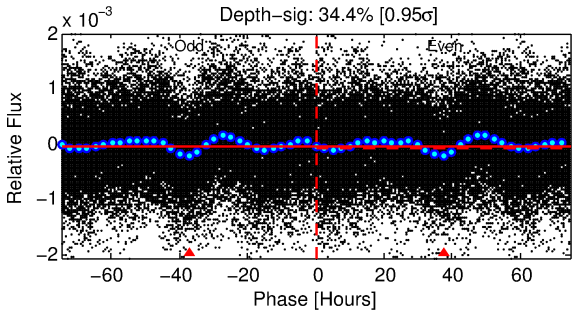


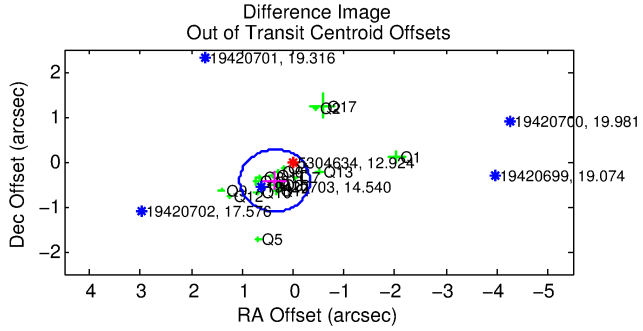




DV Fit Results:

Period = 2.31265 [0.00002] d
Epoch = 132.8290 [0.0048] BKJD
Rp/R* = 0.0070 [0.0009]
a/R* = 1.12 [0.10]
b = 0.91 [0.08]

Seff = 4951.44 [2105.50]
Teq = 2139 [227] K
Rp = 1.31 [0.45] Re
a = 0.0391 [0.0100] AU

Ag = 24.82 [11.23] [2.12σ]
Teffp = 7381 [684] K [7.27σ]

DV Diagnostic Results:

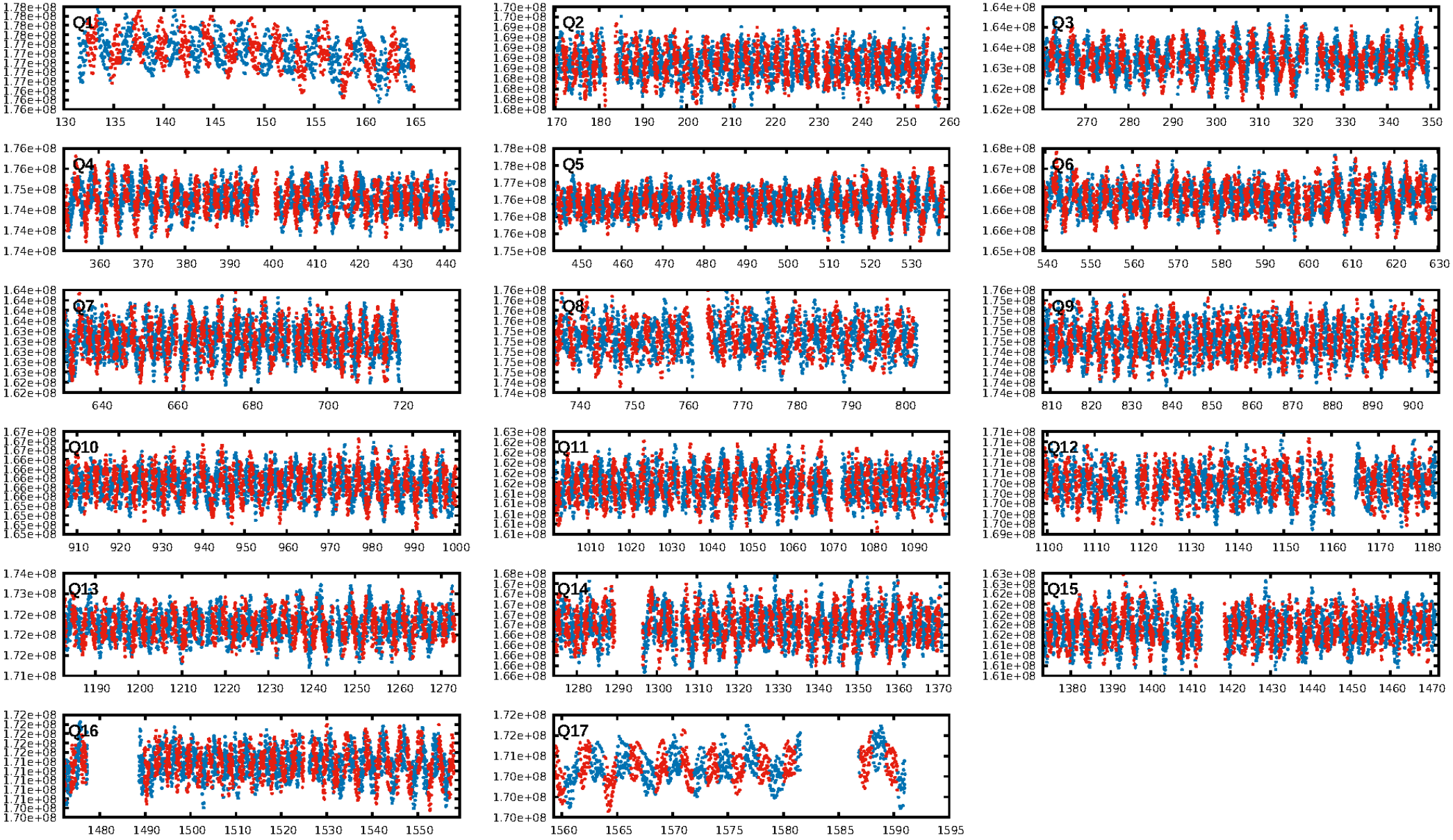
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [79.59σ]
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [563/564]
GhostDiagnostic−chr: 0.579

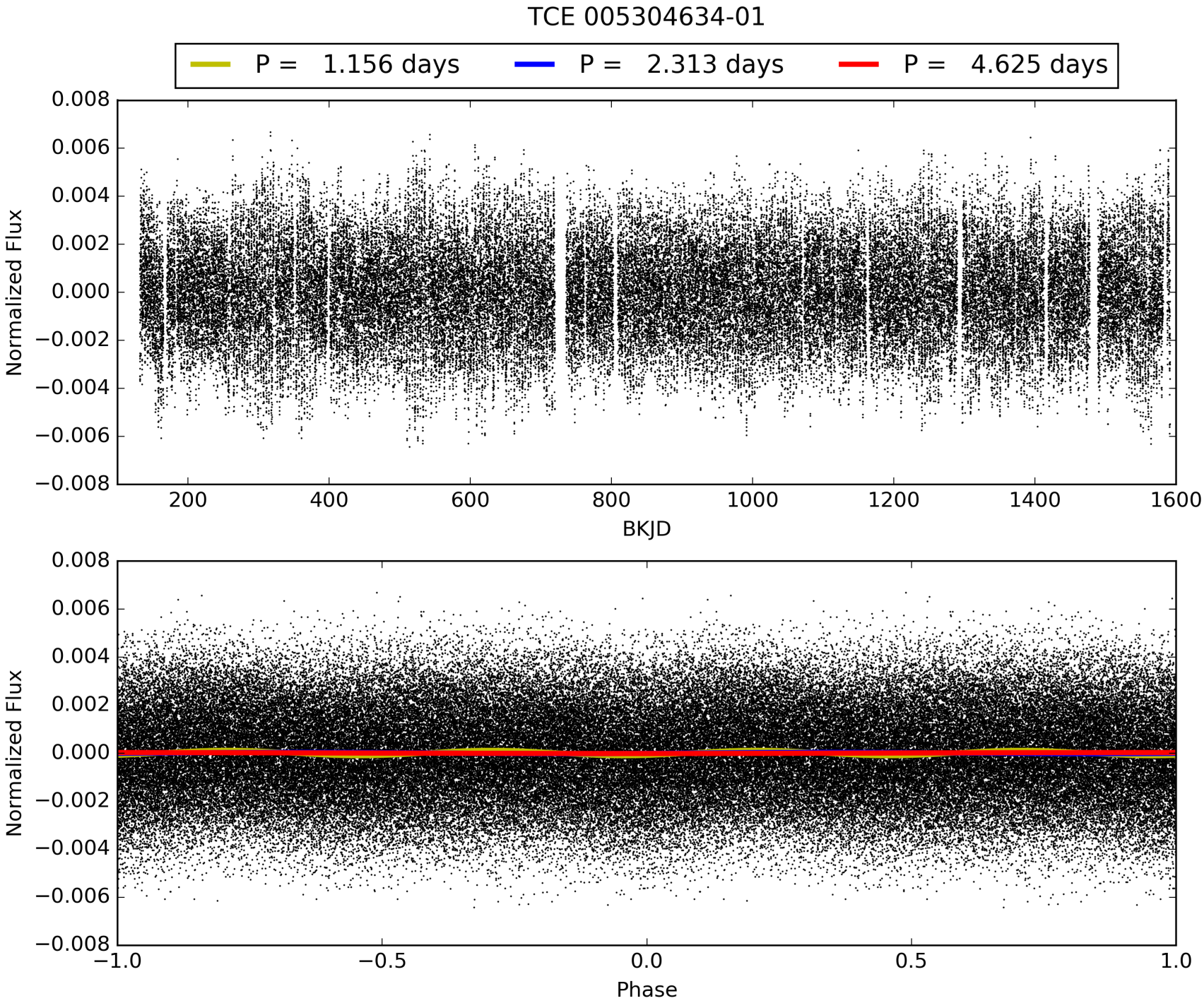
Centroid−sig: 0.0%
Centroid−so: 2.389 arcsec [3.33σ]
OotOffset−rm: 0.552 arcsec [2.41σ]
KicOffset−rm: 0.585 arcsec [2.61σ]
OotOffset−st: 4/4/4/5 [17]
KicOffset−st: 4/4/4/5 [17]
DiffImageQuality−fgm: 0.94 [16/17]
DiffImageOverlap−fno: 1.00 [17/17]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:07:47 Z**

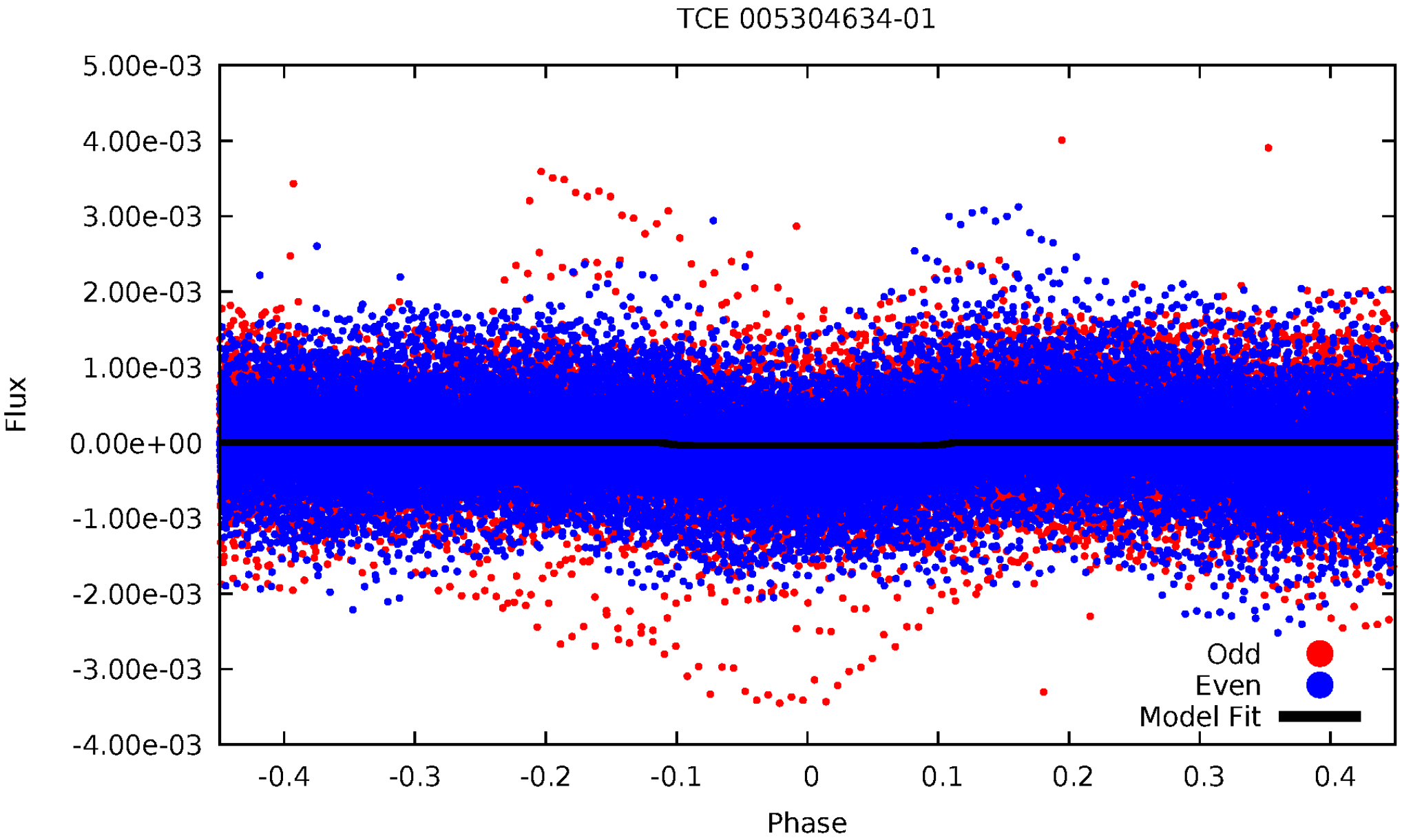
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

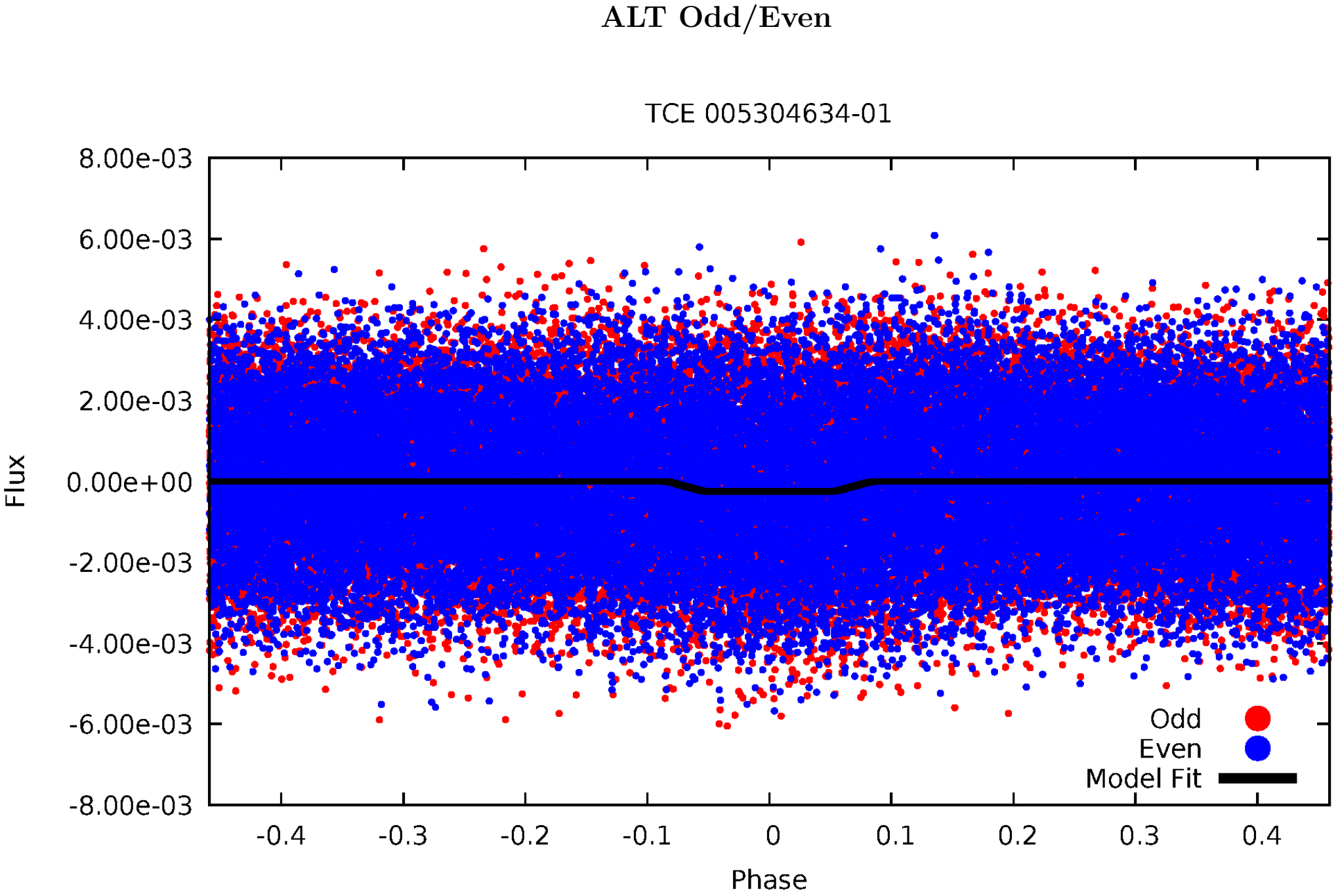
# TCE 005304634-01, PDC Light Curves



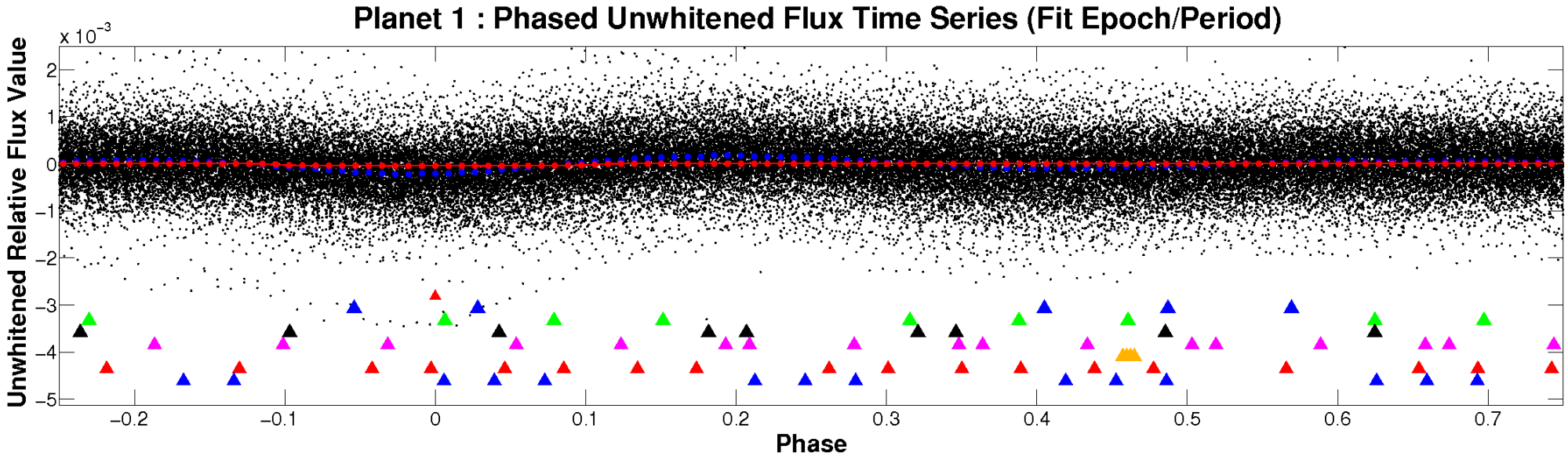

TCE 005304634-01
P = 1.156 days
P = 2.313 days
P = 4.625 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
−1.0
−0.5
0.0
0.5
1.0
Phase

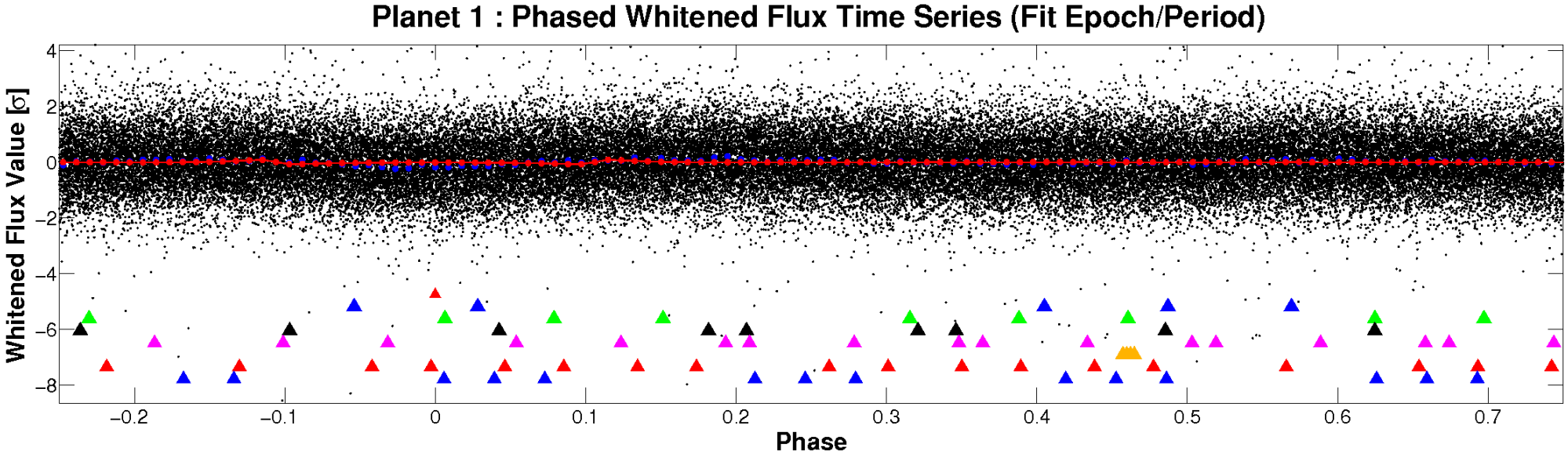
**DV Odd/Even**


TCE 005304634-01
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
Flux
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 005304634-01
8.00e-03
6.00e-03
4.00e-03
2.00e-03
0.00e+00
-2.00e-03
-4.00e-03
-6.00e-03
-8.00e-03
Flux
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
Phase
Odd
Even
Model Fit

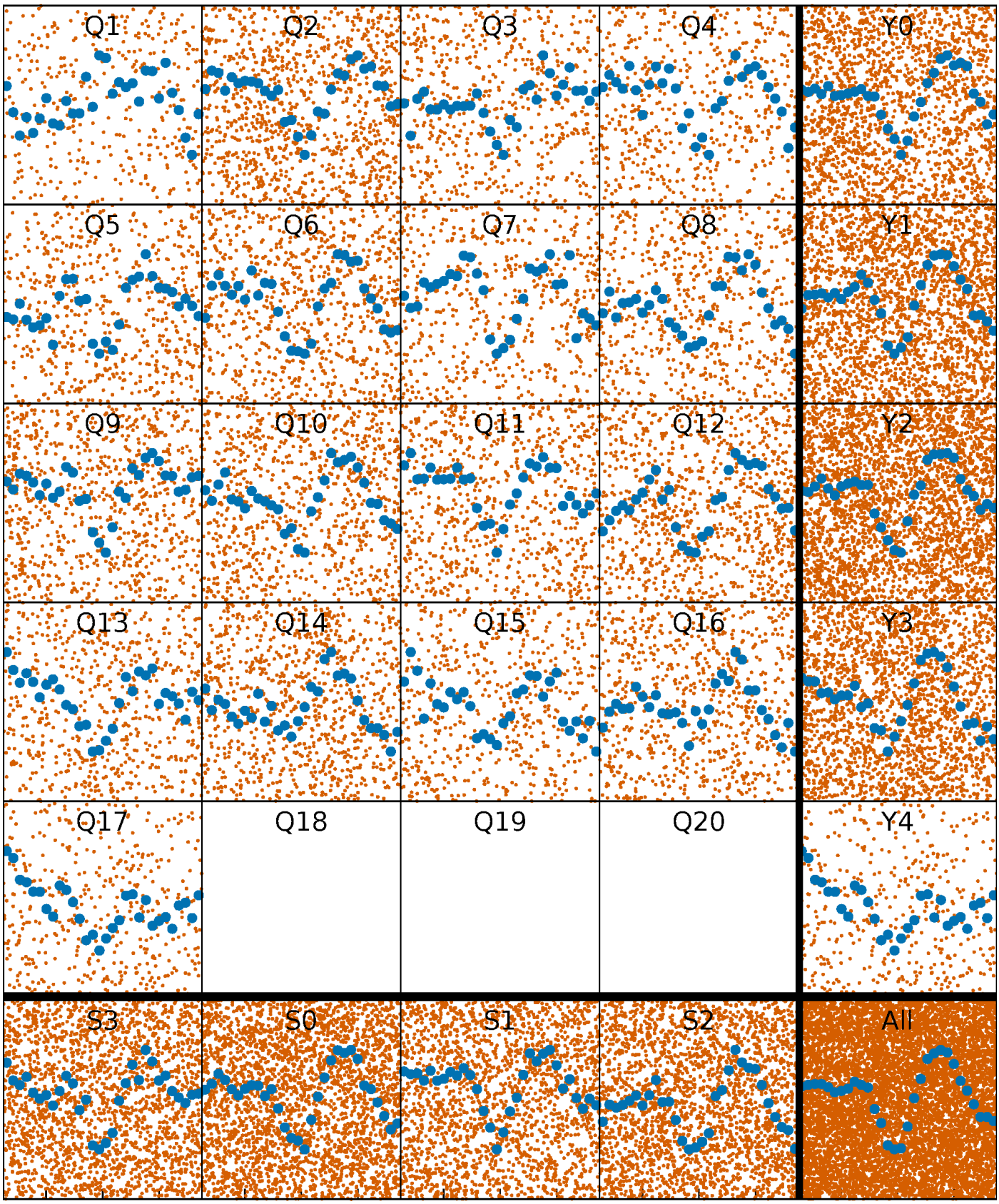
# Non-Whitened Vs. Whitened Light Curve



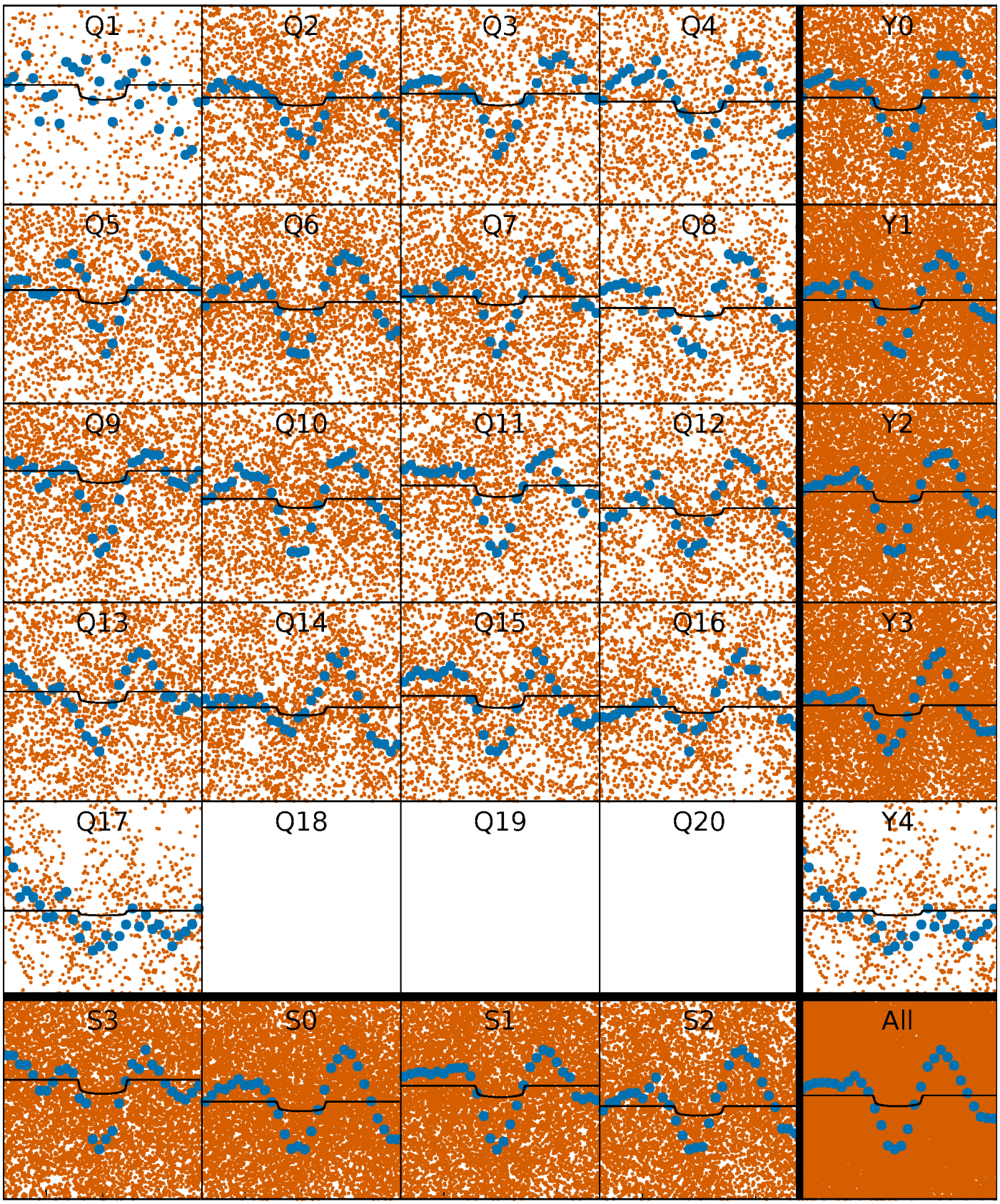
# PDC Quarter-Phased Transit Curves

TCE 005304634-01  P= 2.312655 Days  $T_0$=132.829015 (BKJD)



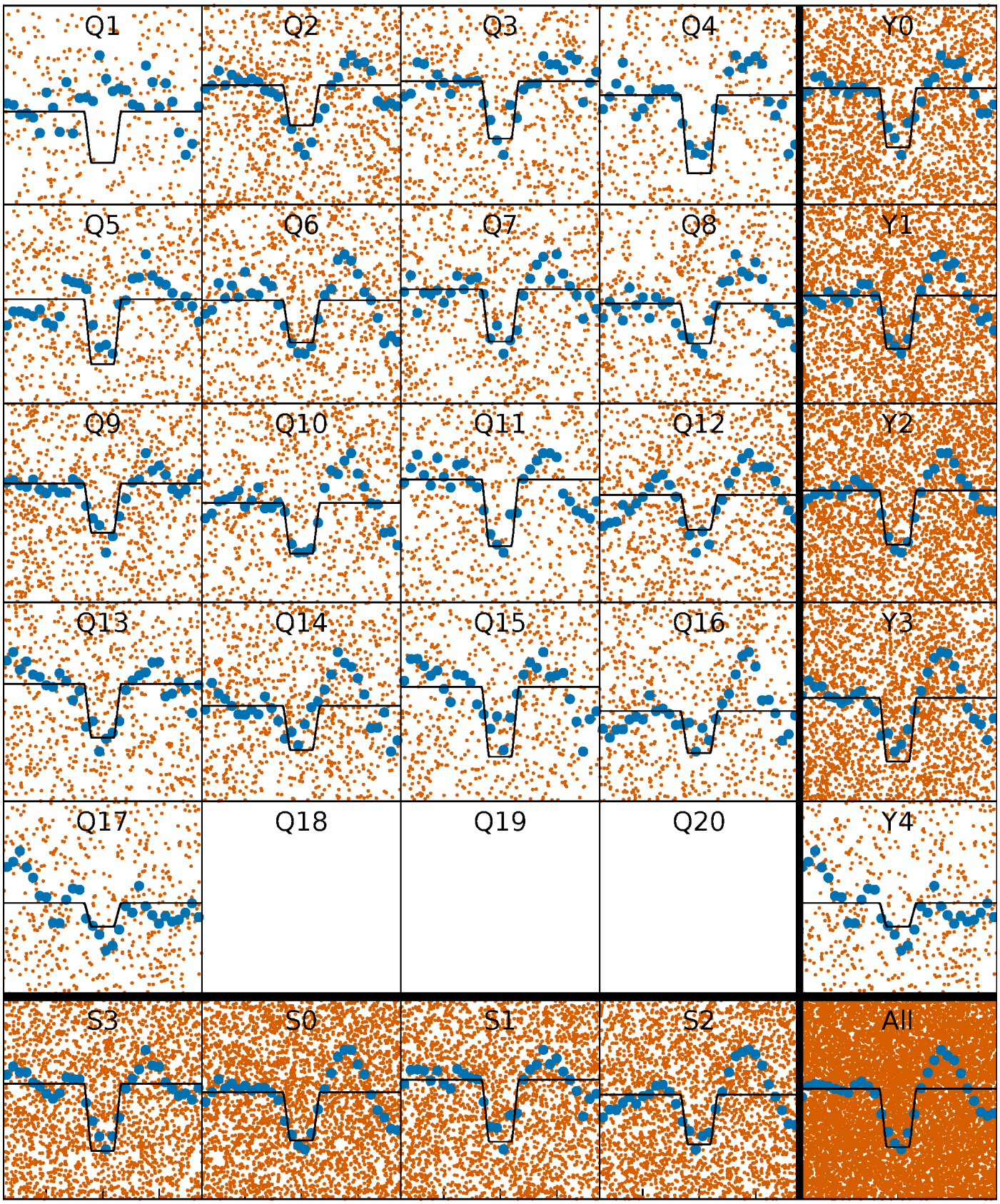
# DV Quarter-Phased Transit Curves

TCE 005304634-01  P= 2.312655 Days  $T_0$=132.829015 (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

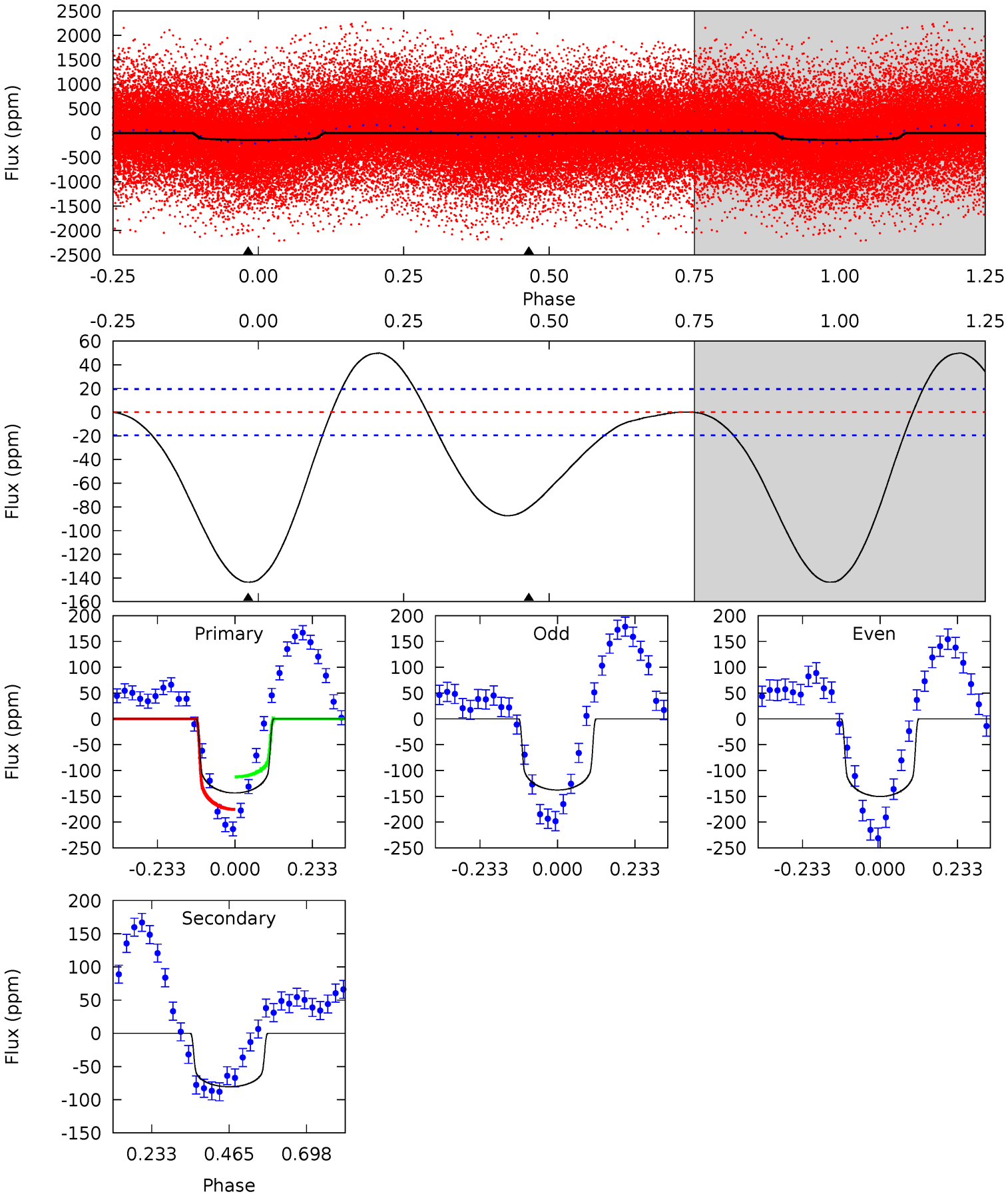
TCE 005304634-01  P= 2.312490 Days  $T_0$=132.839671 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-01, P = 2.312655 Days, E = 130.516360 Days

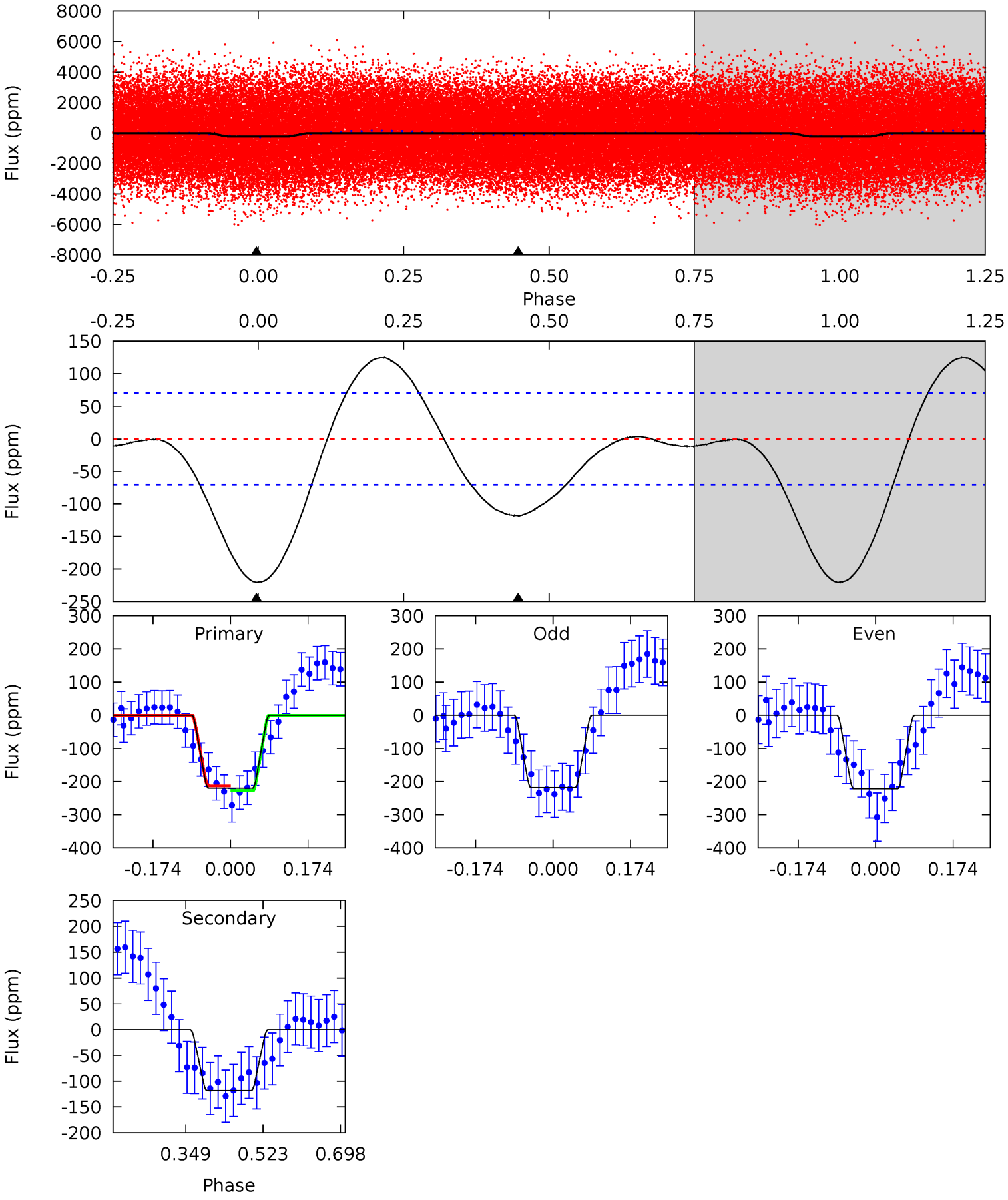
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32.3 | 18.1 | 0 | 0 | 4.38 | 1.19 | 4.97 | 32.3 | 32.3 | 18.1 | 18.1 | 1.39 | 1.33 | 0.26 | 7.03 |



# Alt Model-Shift Uniqueness Test

005304634-01, P = 2.312490 Days, E = 130.527181 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.8 | 7.43 | 0 | 0 | 4.45 | 1.36 | 3.46 | 13.8 | 13.8 | 7.43 | 7.43 | 0.09 | 1.64 | 0.36 | 0.45 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-01 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -81±4 | $1.32^{+0.26}_{-0.24}$ | $2975^{+242}_{-248}$ | $8396^{+891}_{-782}$ | $39^{+16}_{-12}$ |
| Alt. | -118±16 | $2.97^{+0.49}_{-0.38}$ | $2986^{+236}_{-237}$ | $5925^{+335}_{-358}$ | $11^{+4}_{-3}$ |

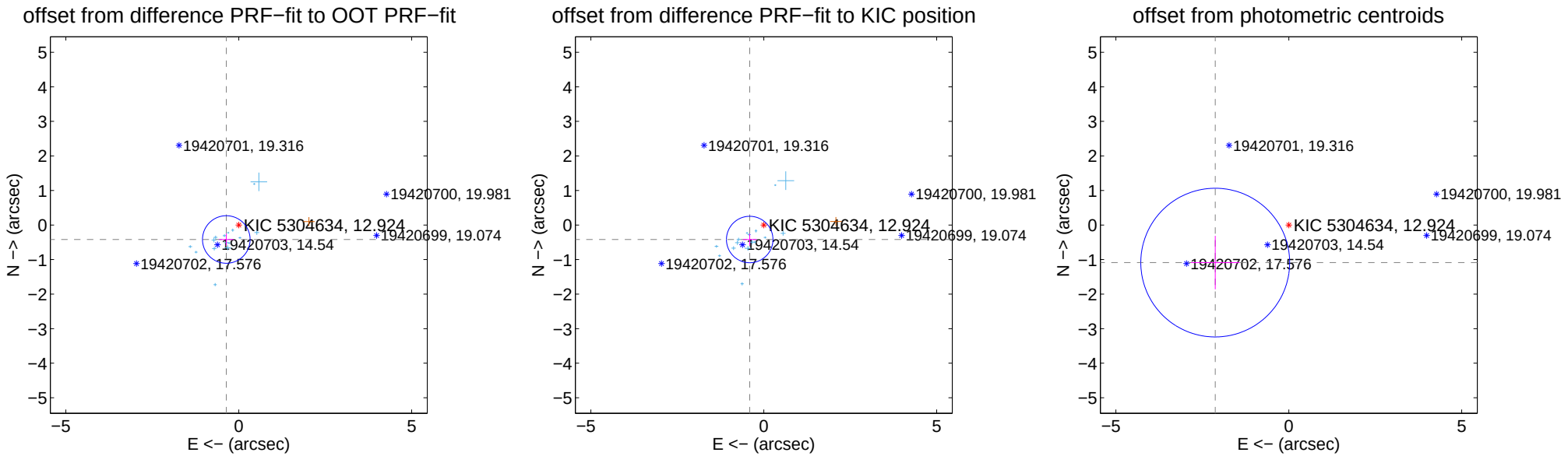
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

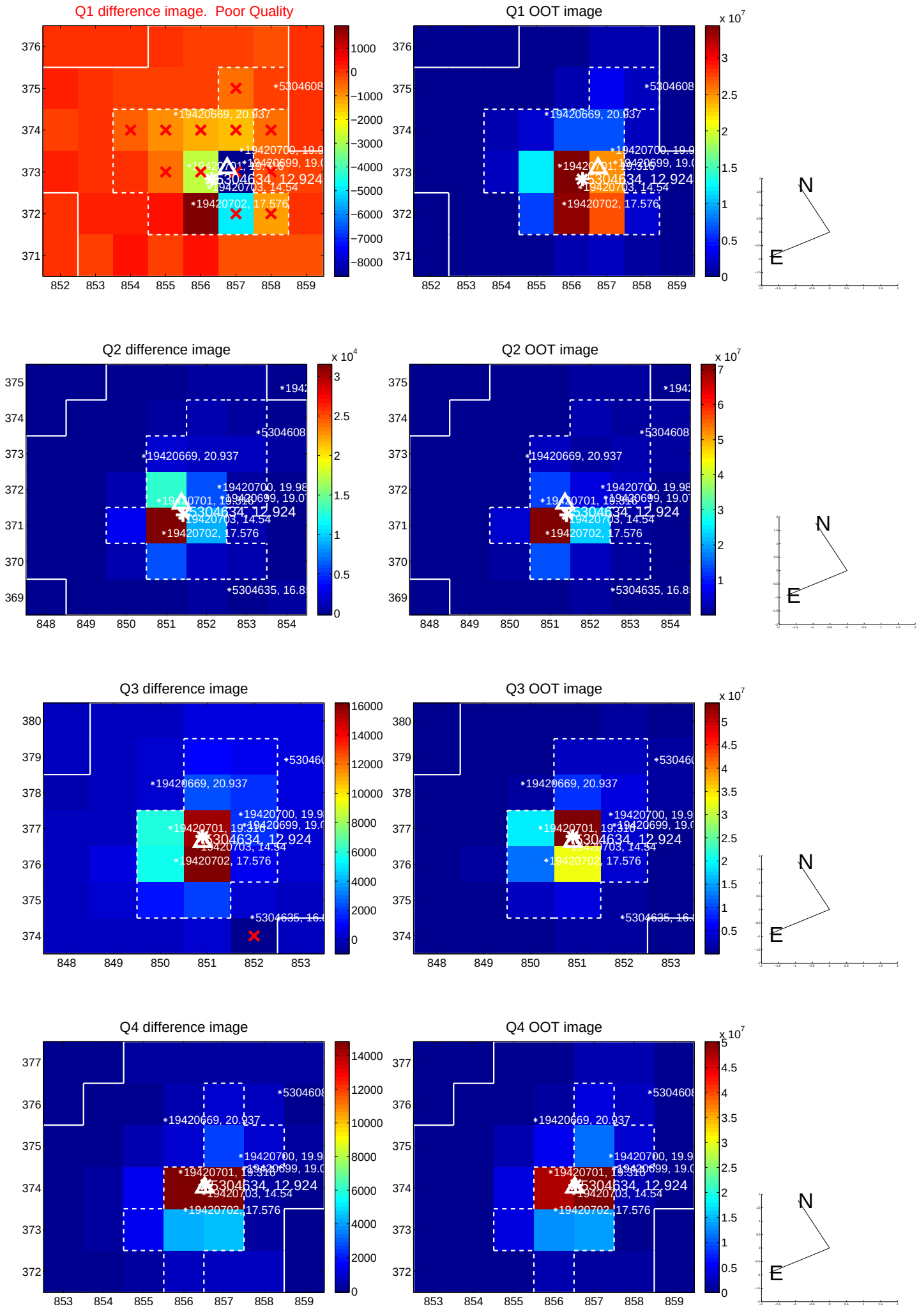
Supplemental centroid analysis for 005304634-01. Kepler magnitude: 12.92. Transit SNR 6.16
There are 16 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.552 ± 0.229 | 2.41 | 0.360 ± 0.207 | -0.419 ± 0.171 |
| PRF-fit source offset from KIC position | 0.585 ± 0.224 | 2.61 | 0.407 ± 0.201 | -0.420 ± 0.167 |
| photometric centroid source offset | 2.39 ± 0.72 | 3.33 | 2.13 ± 0.70 | -1.09 ± 0.77 |

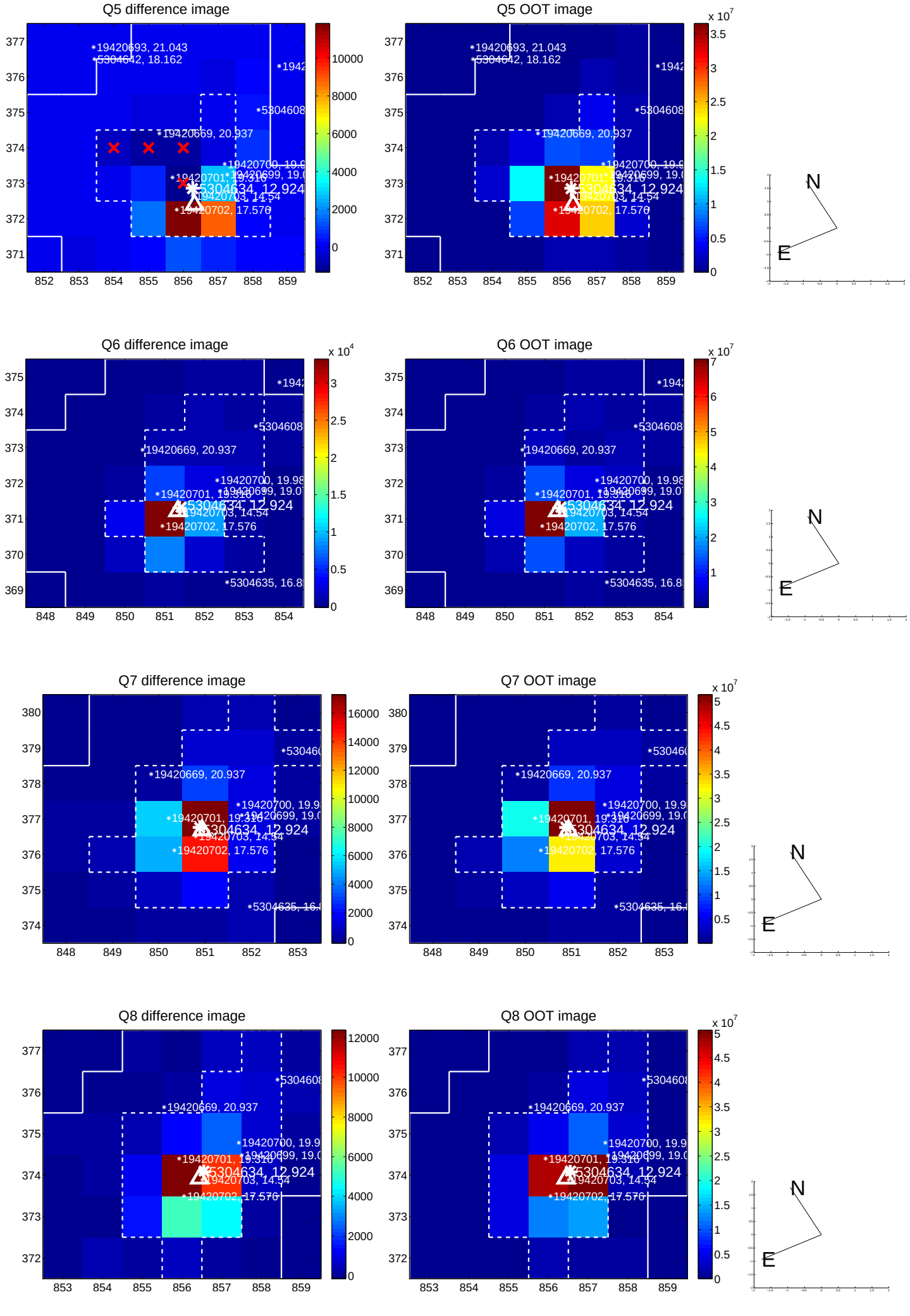



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

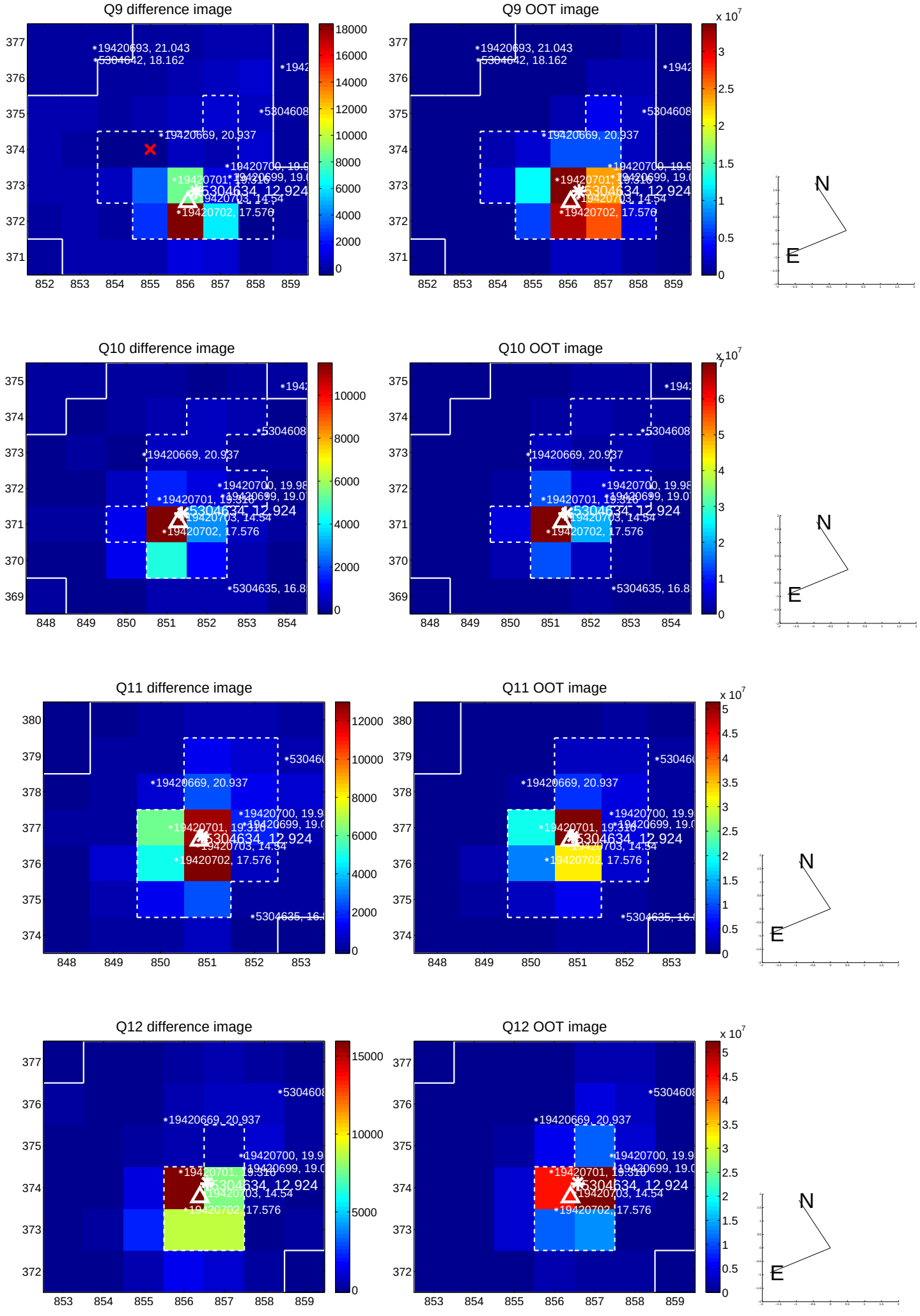
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



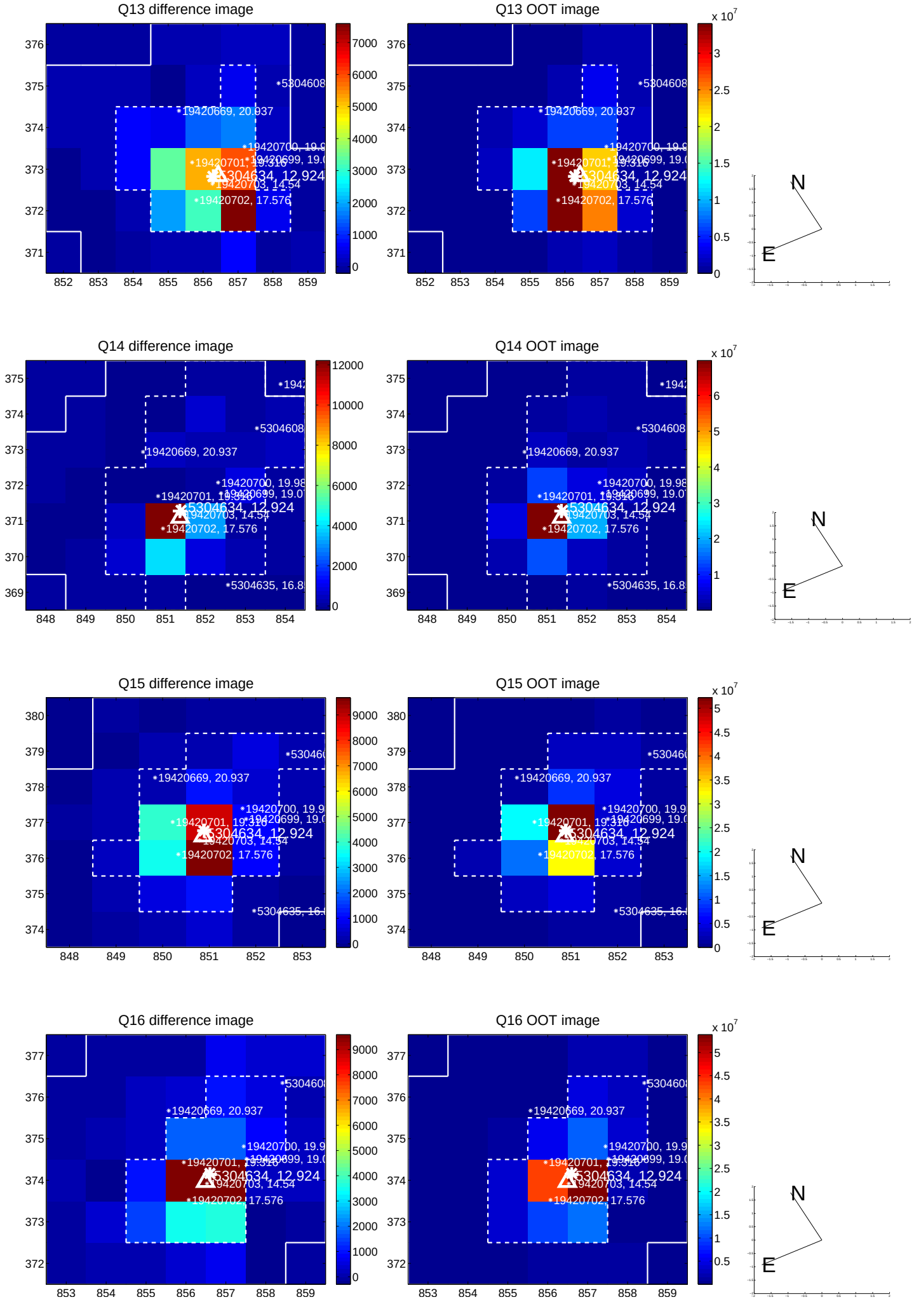
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



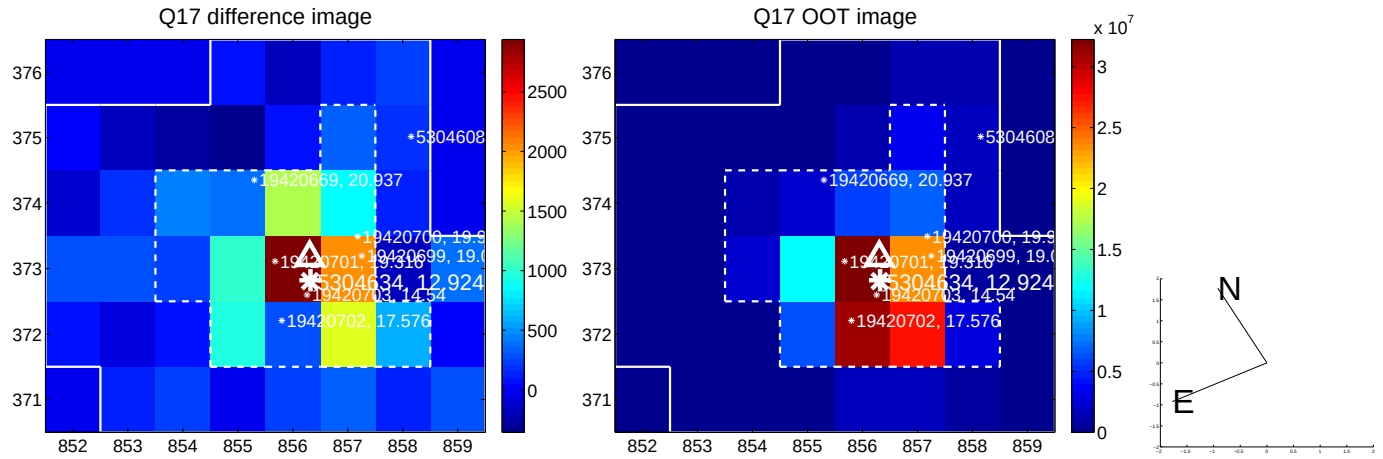
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

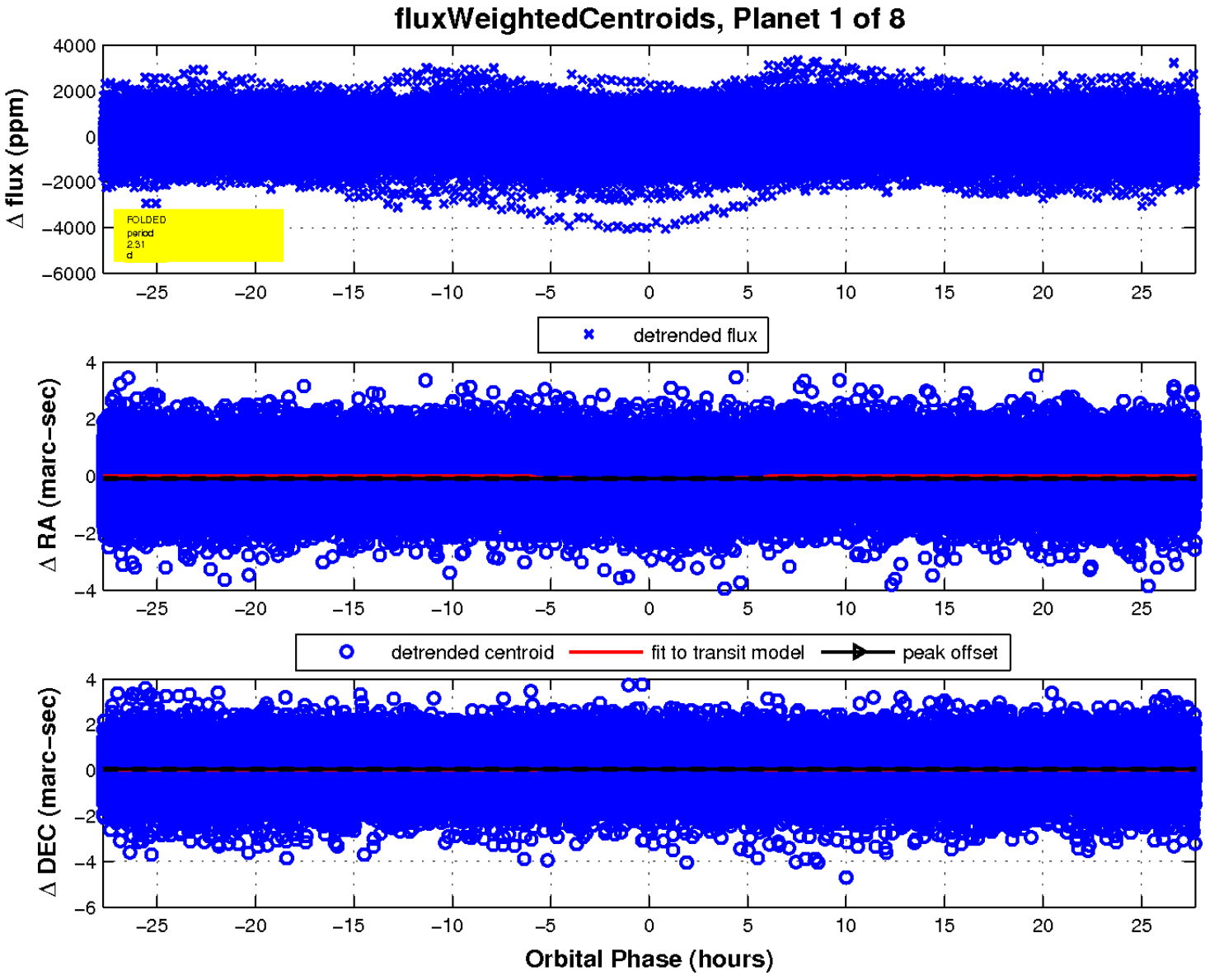


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

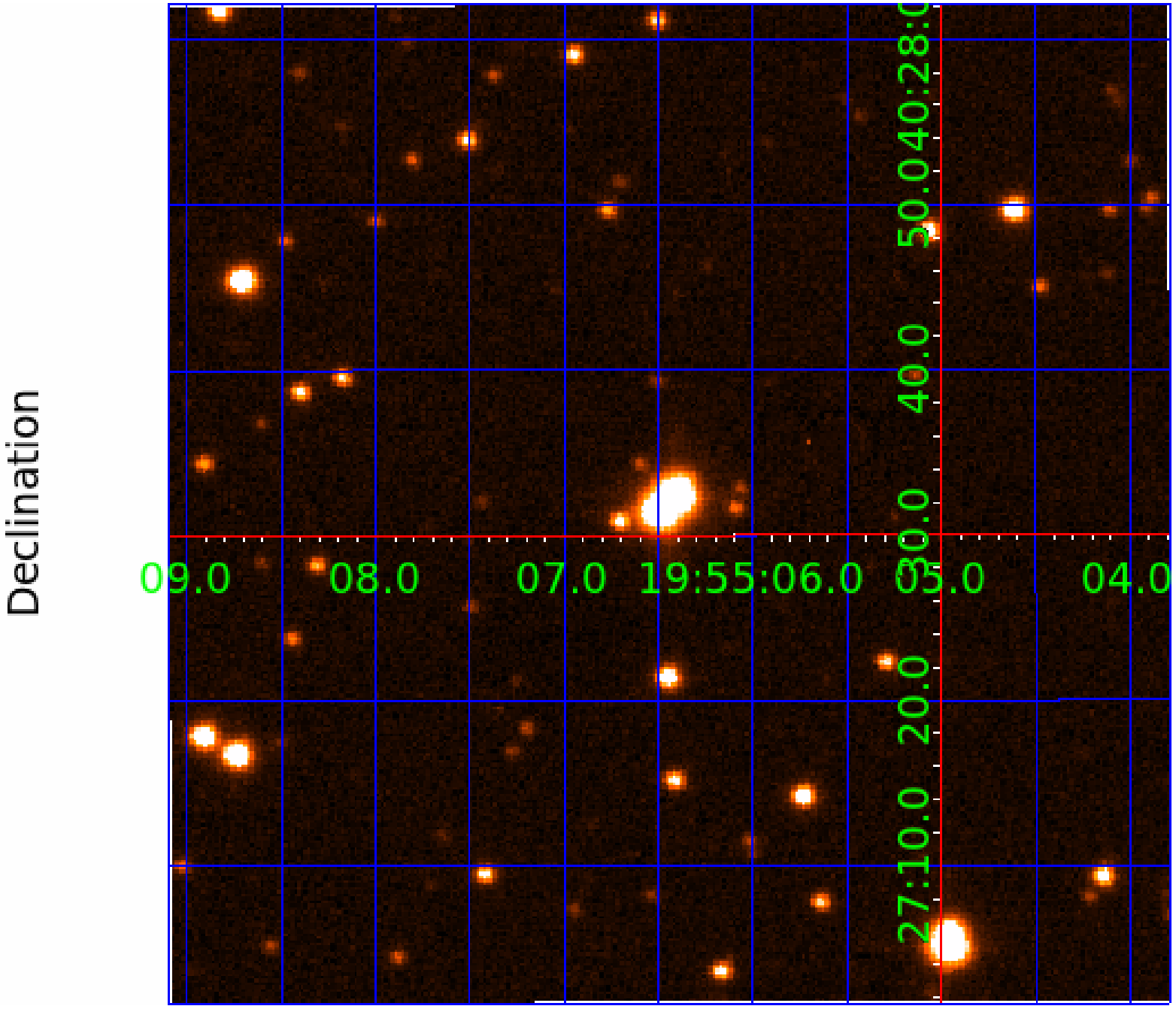


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

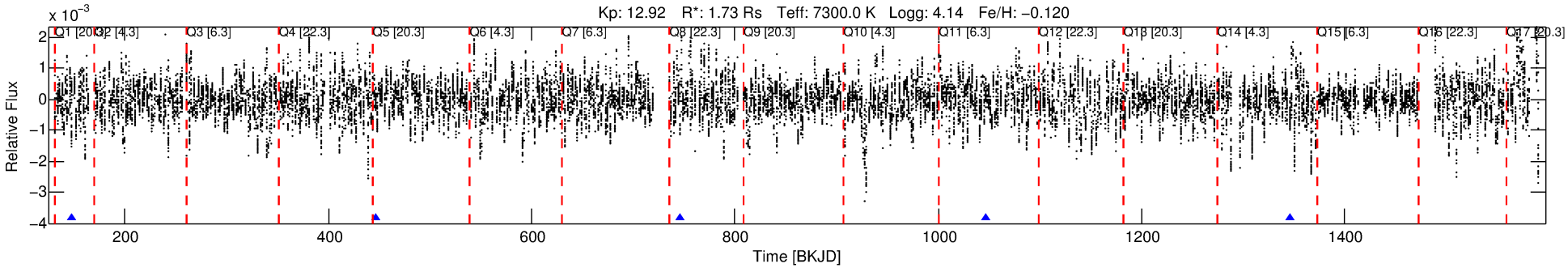
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

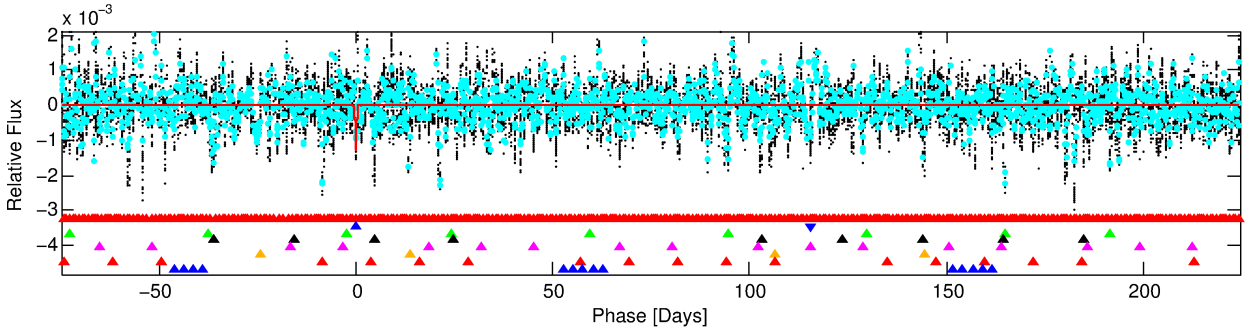
## Ephemeris Match Information For 005304634-02

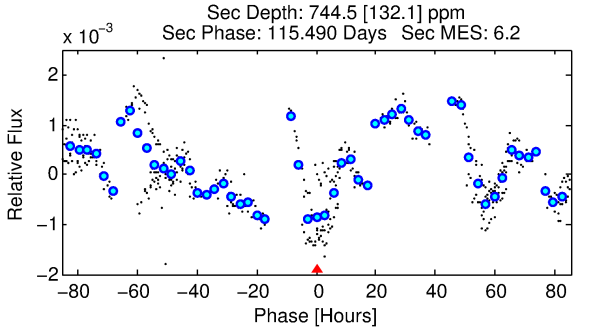
No Significant Match Found

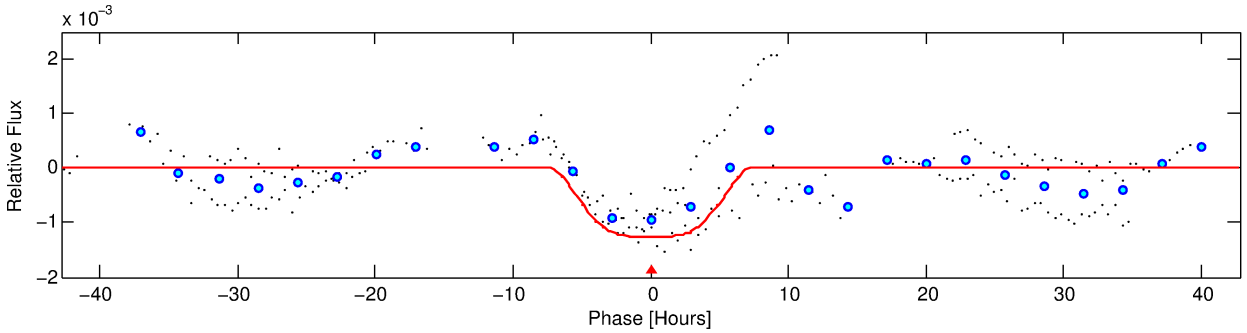
# DV One-Page Summary

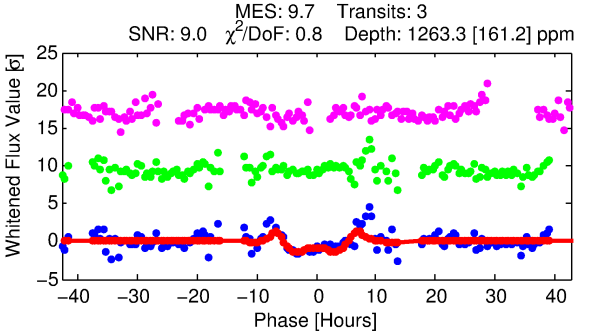
**KIC: 5304634 Candidate: 2 of 8 Period: 299.394 d**

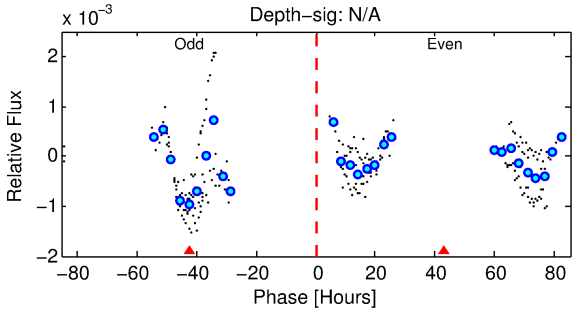


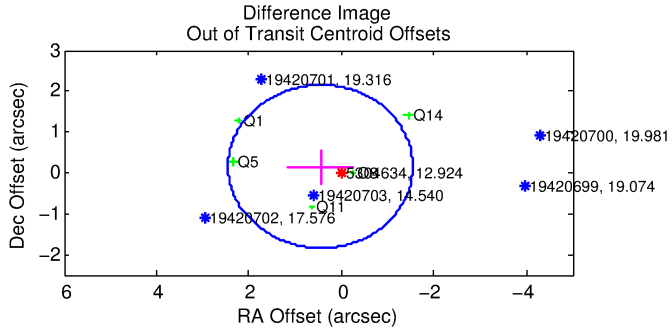




**DV Fit Results:**

Period = 299.39381 [0.00665] d
Epoch = 148.0216 [0.0144] BKJD
Rp/R* = 0.0397 [0.0026]
a/R* = 68.71 [4.34]
b = 0.95 [0.01]

Seff = 7.56 [3.21]
Teq = 423 [45] K
Rp = 7.48 [2.46] Re
a = 1.0013 [0.2562] AU

Ag = 7342.85 [3056.74] [2.40σ]
Teffp = 6052 [493] K [11.37σ]

**DV Diagnostic Results:**

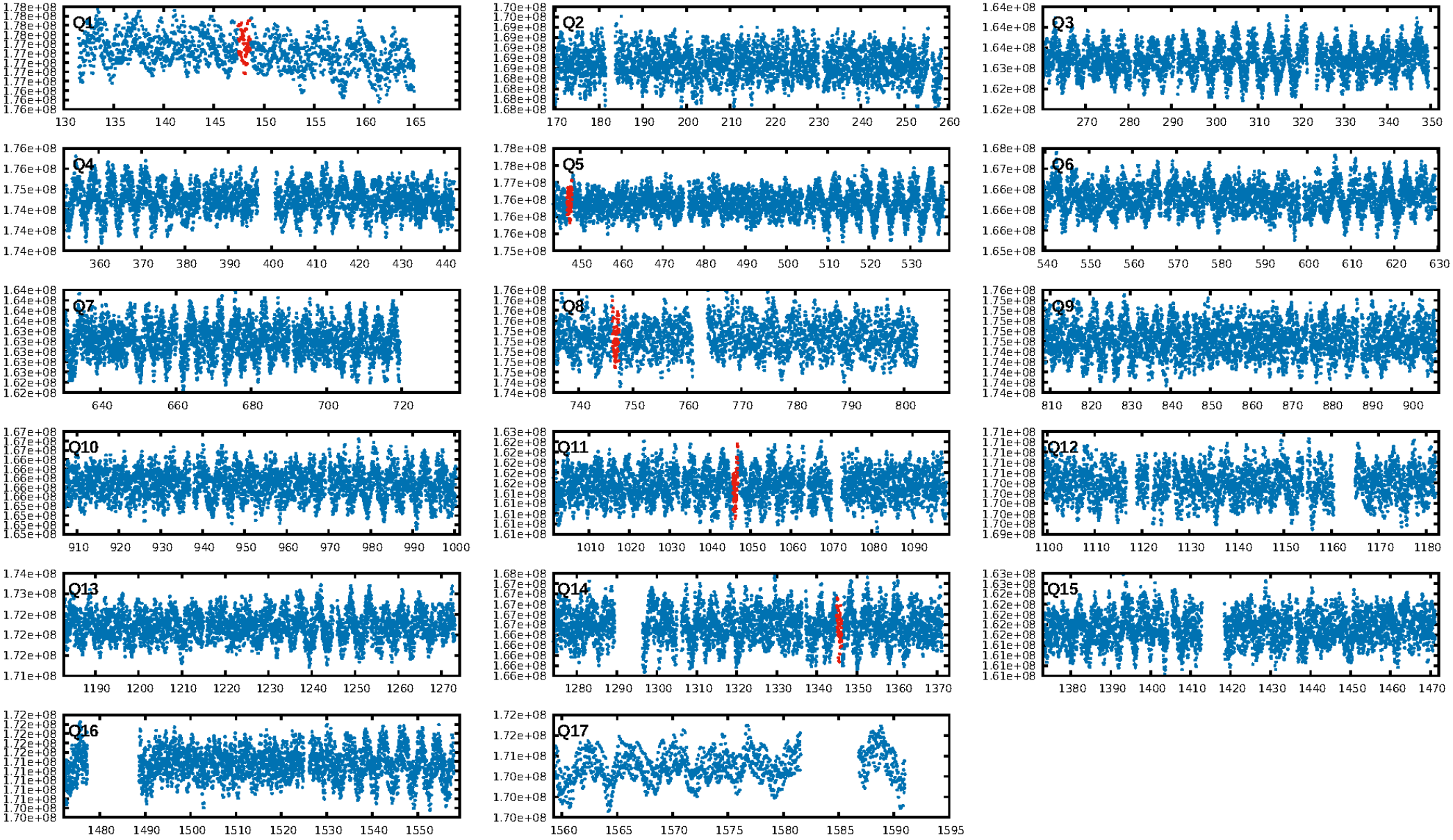
ShortPeriod−sig: 100.0% [178.68σ]
LongPeriod−sig: 100.0% [153.63σ]
ModelChiSquare2−sig: 38.5%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [2/2]
GhostDiagnostic−chr: −1.296

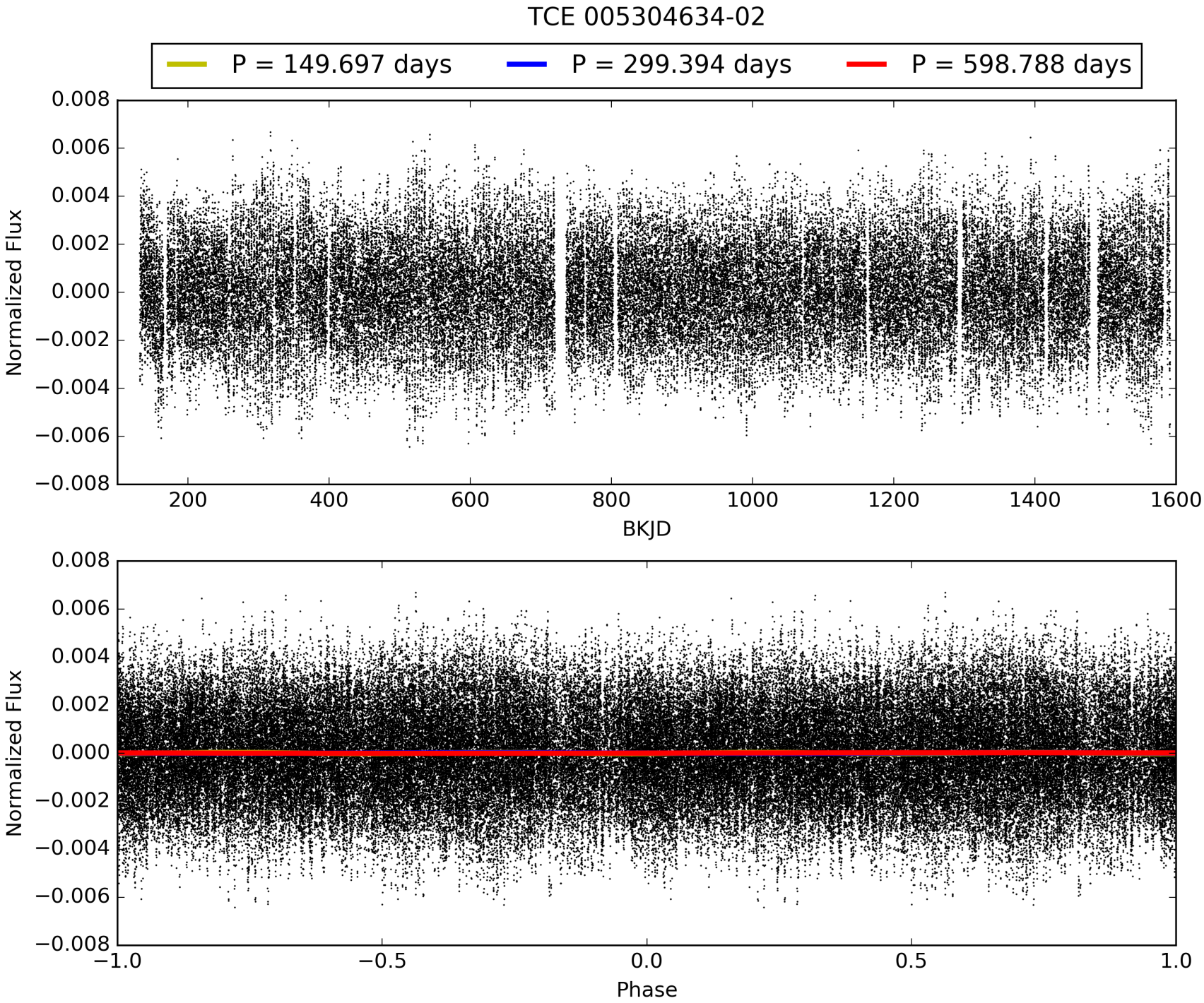
Centroid−sig: 1.1%
Centroid−so: 0.610 arcsec [1.84σ]
OotOffset−rm: 0.484 arcsec [0.73σ]
KicOffset−rm: 0.491 arcsec [0.84σ]
OotOffset−st: 1/1/1/2 [5]
KicOffset−st: 1/1/1/2 [5]
DiffImageQuality−fgm: 1.00 [5/5]
DiffImageOverlap−fno: 0.00 [0/5]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:07:59 Z**

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

# TCE 005304634-02, PDC Light Curves

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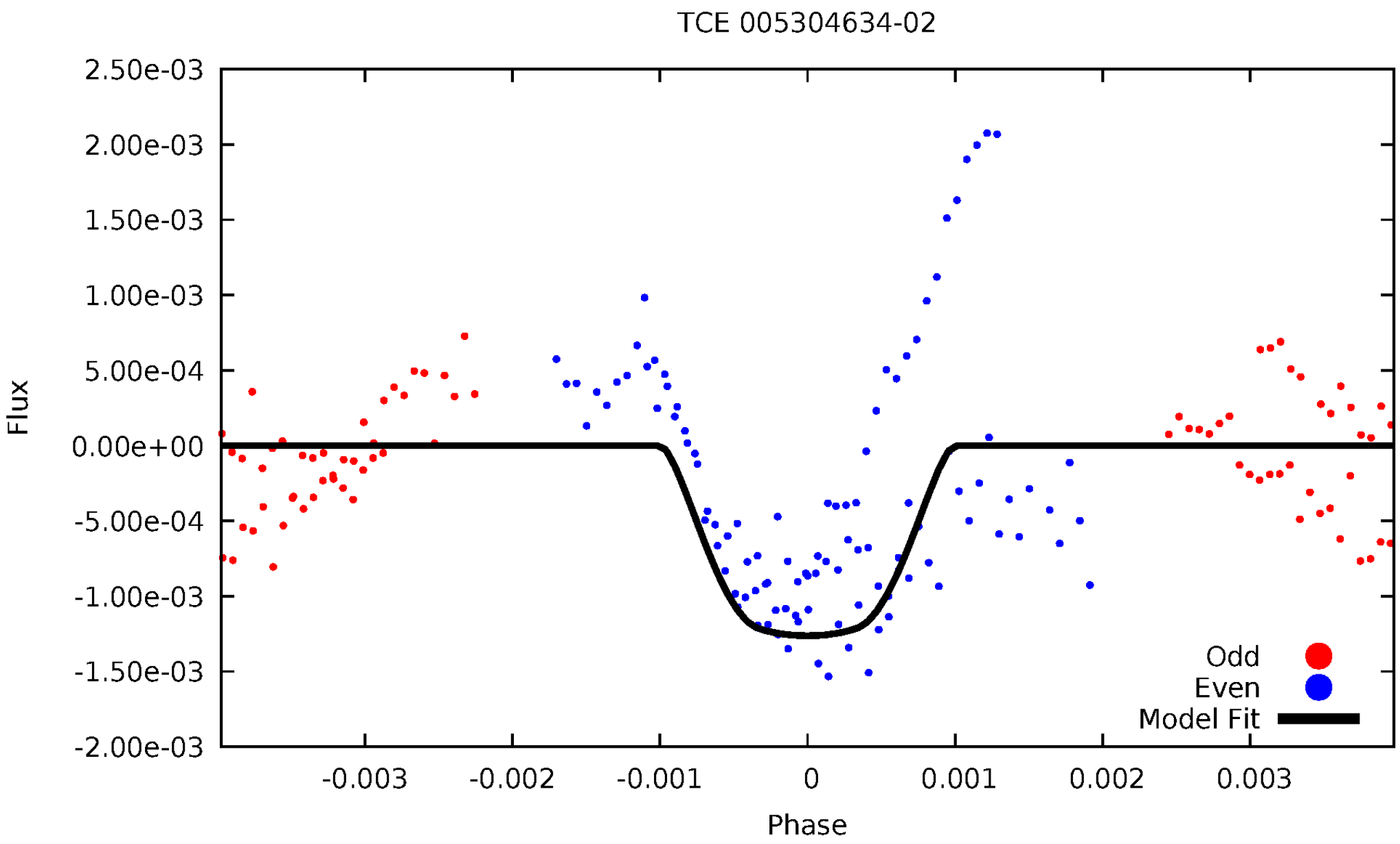
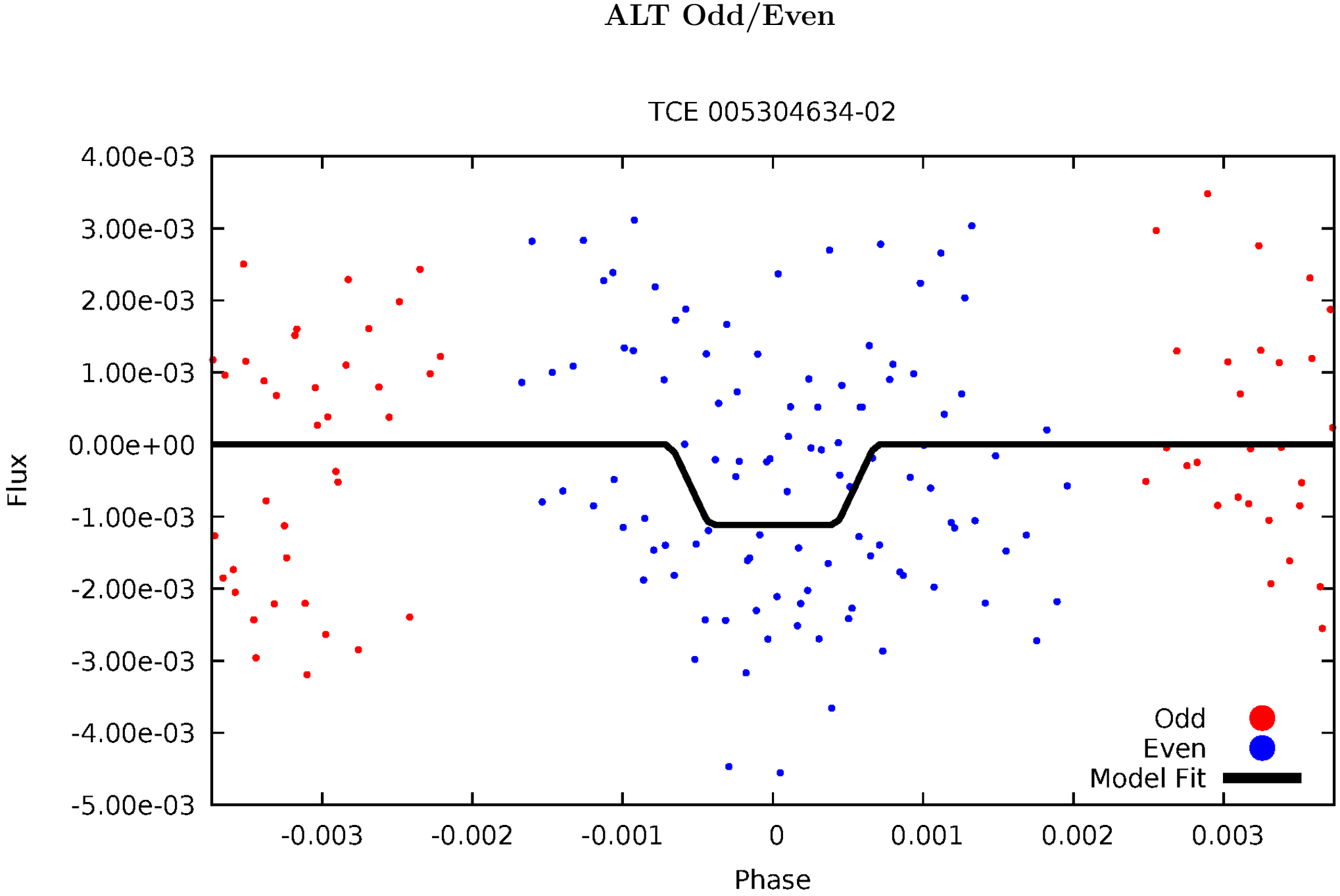
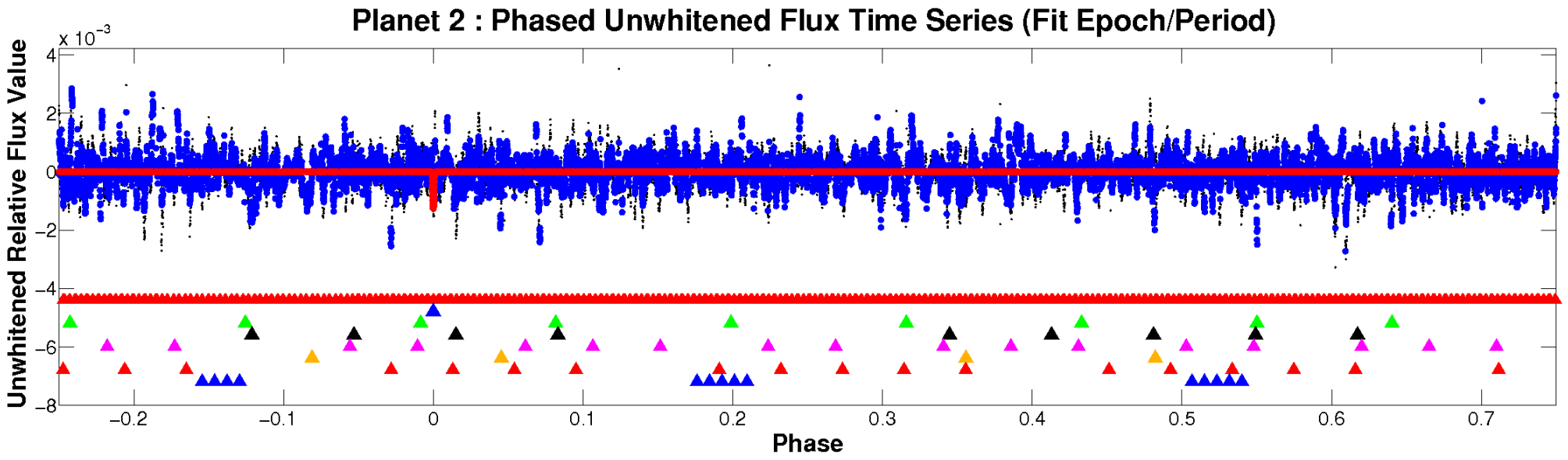
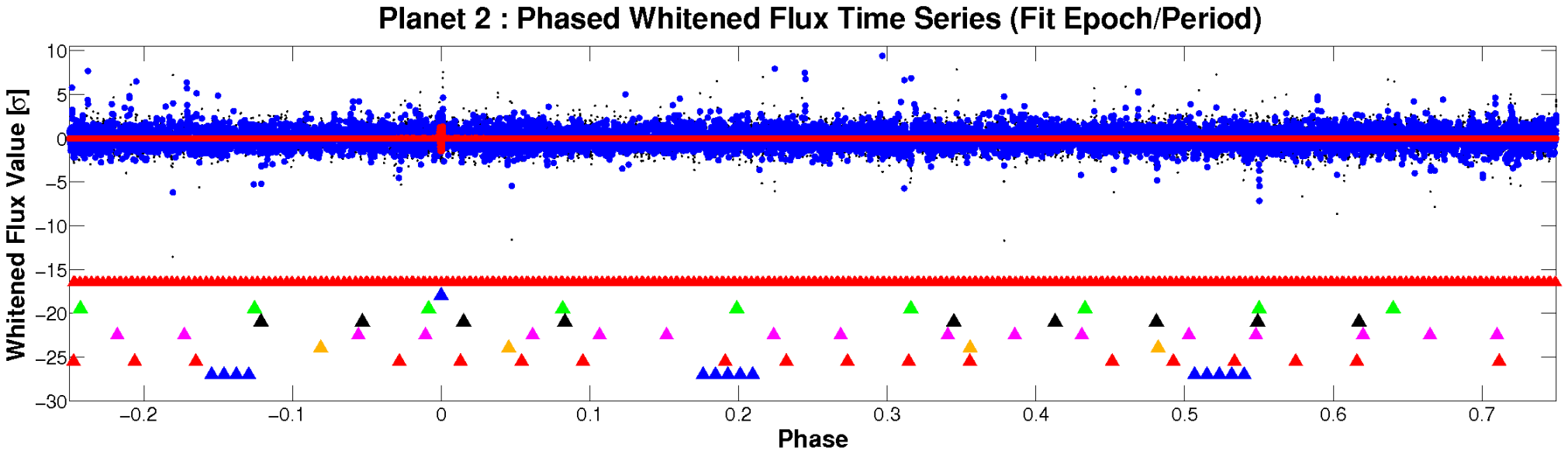
P = 149.697 days
P = 299.394 days
P = 598.788 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
−1.0
−0.5
0.0
0.5
1.0
Phase


DV Odd/Even
TCE 005304634-02
2.50e-03
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
Flux
-0.003
-0.002
-0.001
0
0.001
0.002
0.003
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 005304634-02
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
-5.00e-03
Flux
-0.003
-0.002
-0.001
0
0.001
0.002
0.003
Phase
Odd
Even
Model Fit

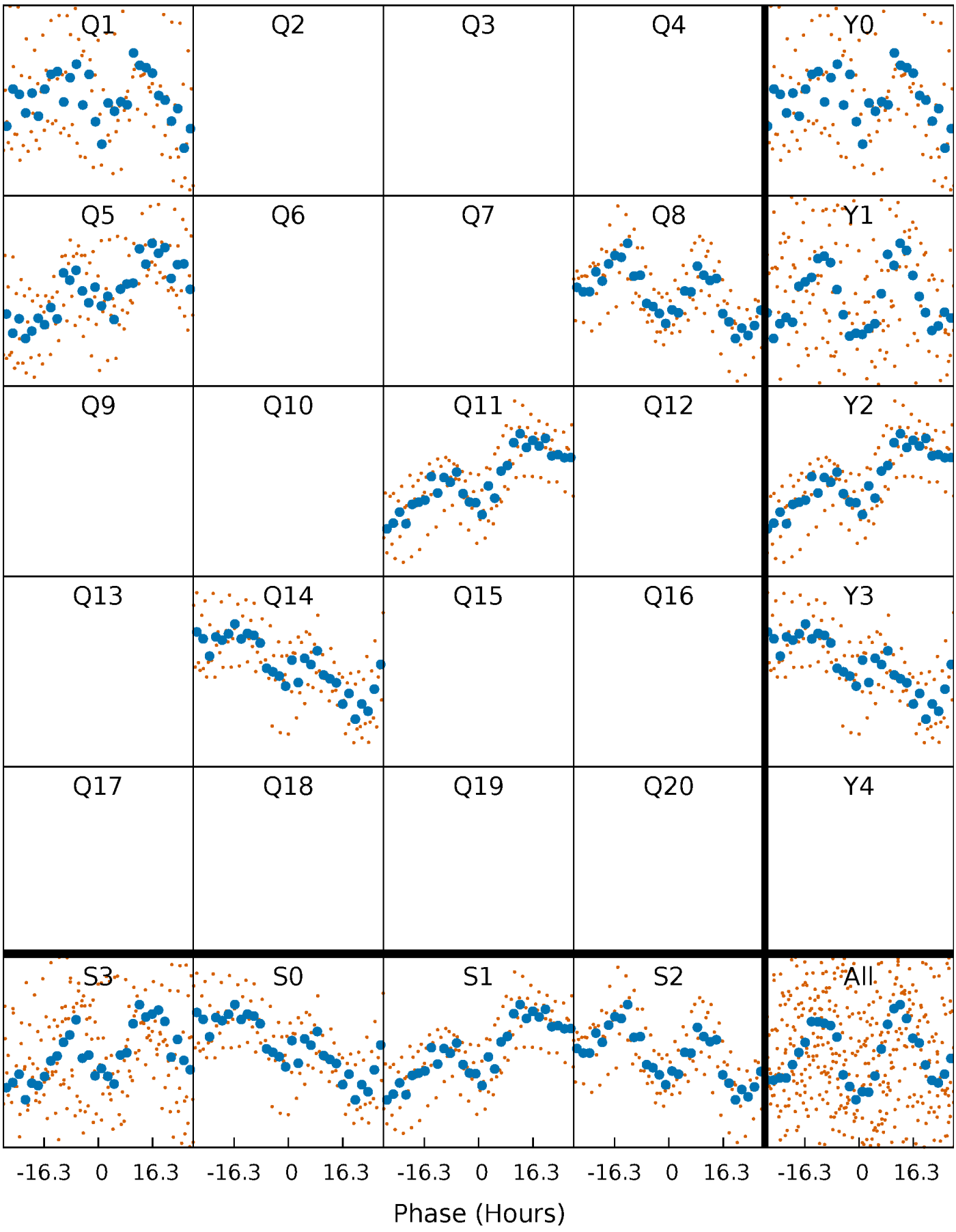
# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 005304634-02  P=299.393813 Days  $T_0$=148.021601 (BKJD)



# DV Quarter-Phased Transit Curves

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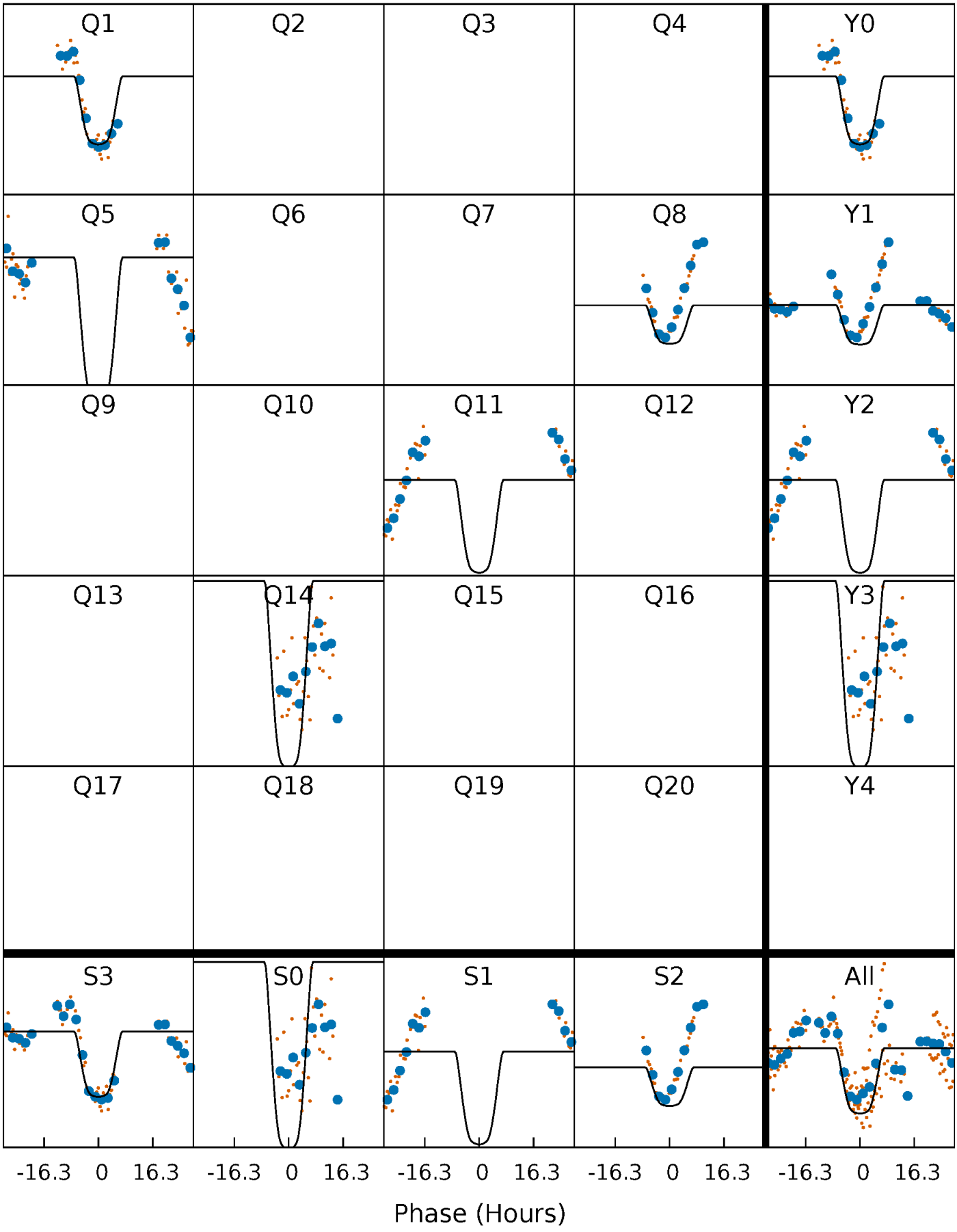
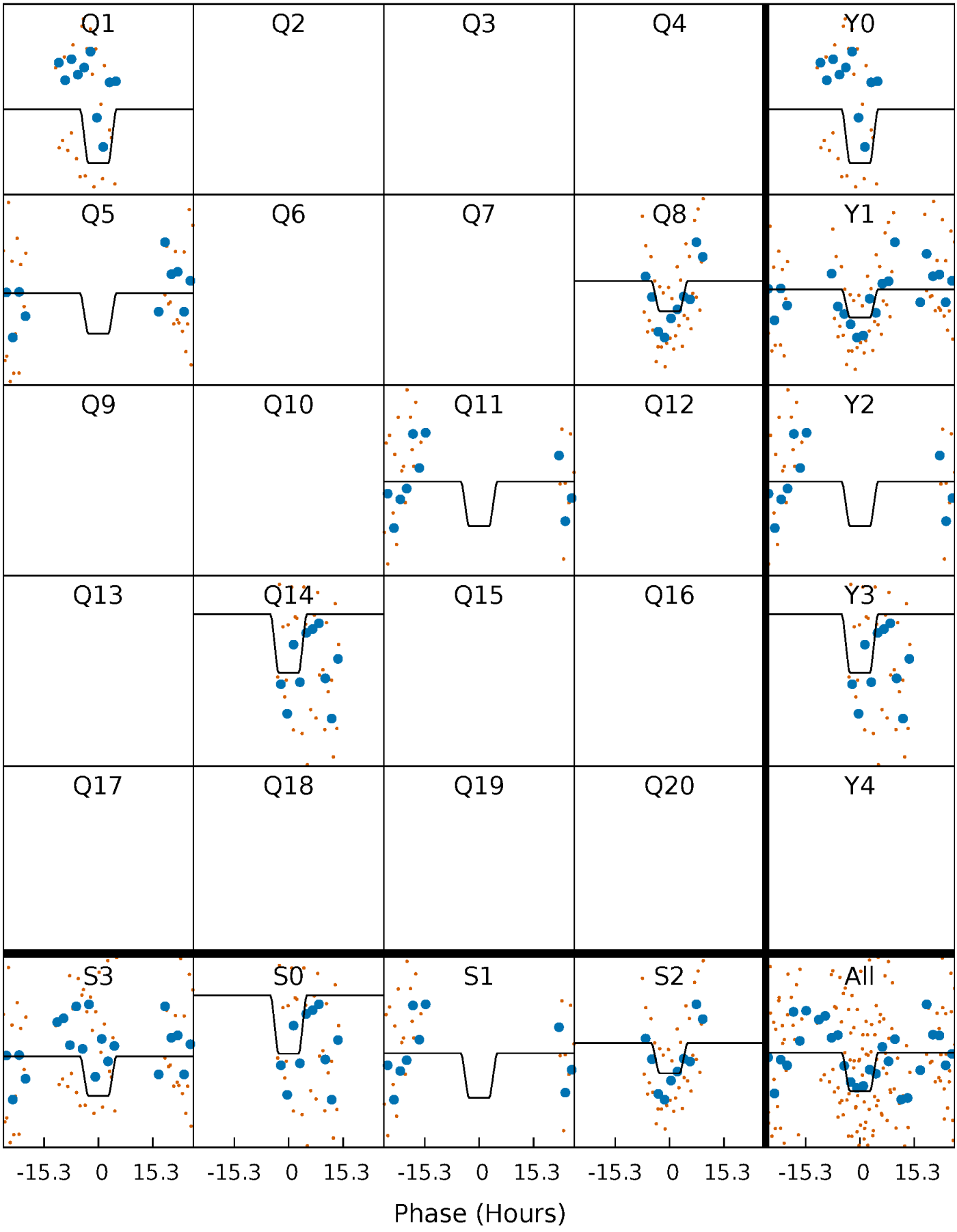


# Alt. Detrend Quarter-Phased Transit Curves

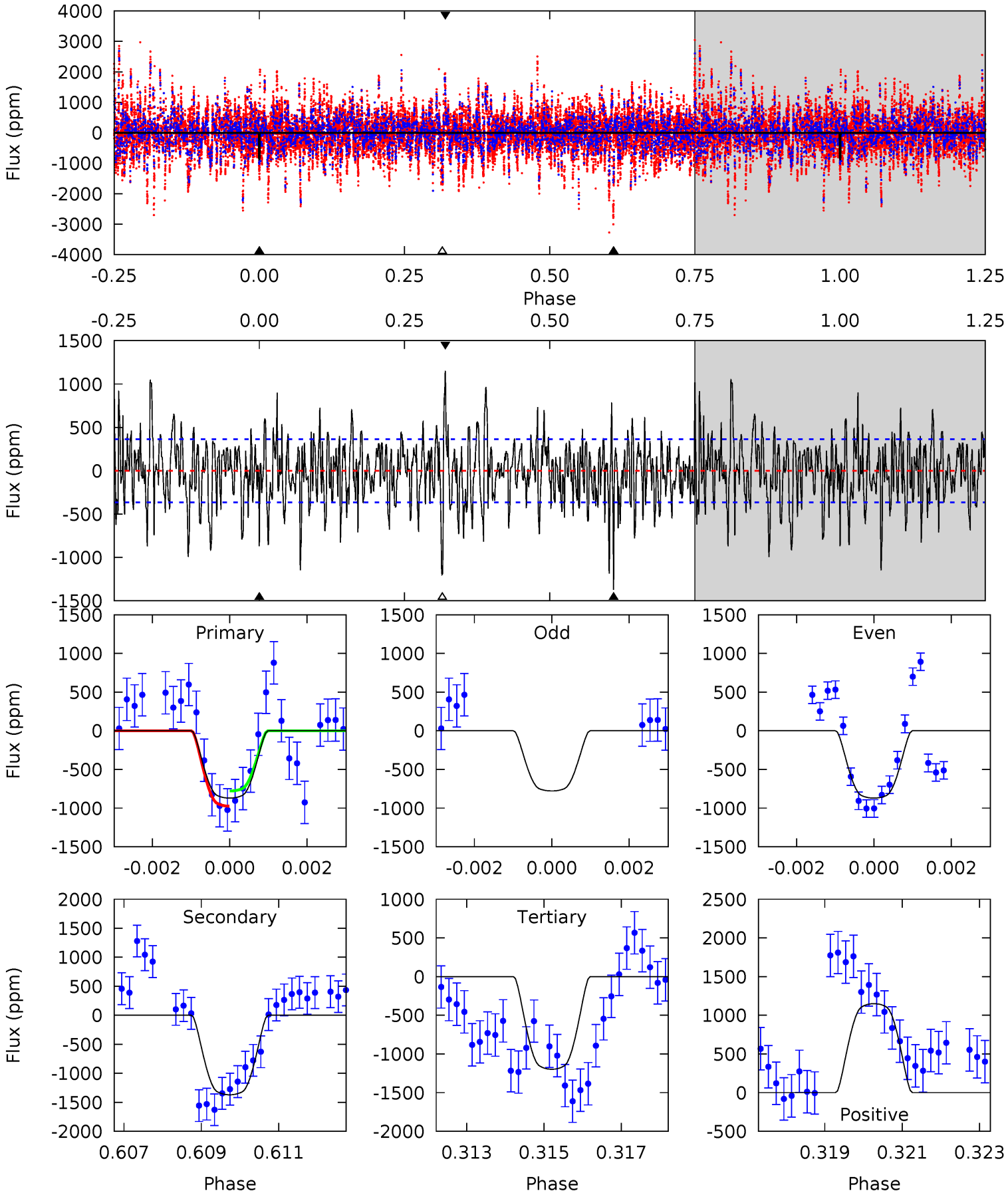
TCE 005304634-02 P=299.392521 Days $T_0$=148.012740 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-02, P = 299.393813 Days, E = 148.021601 Days

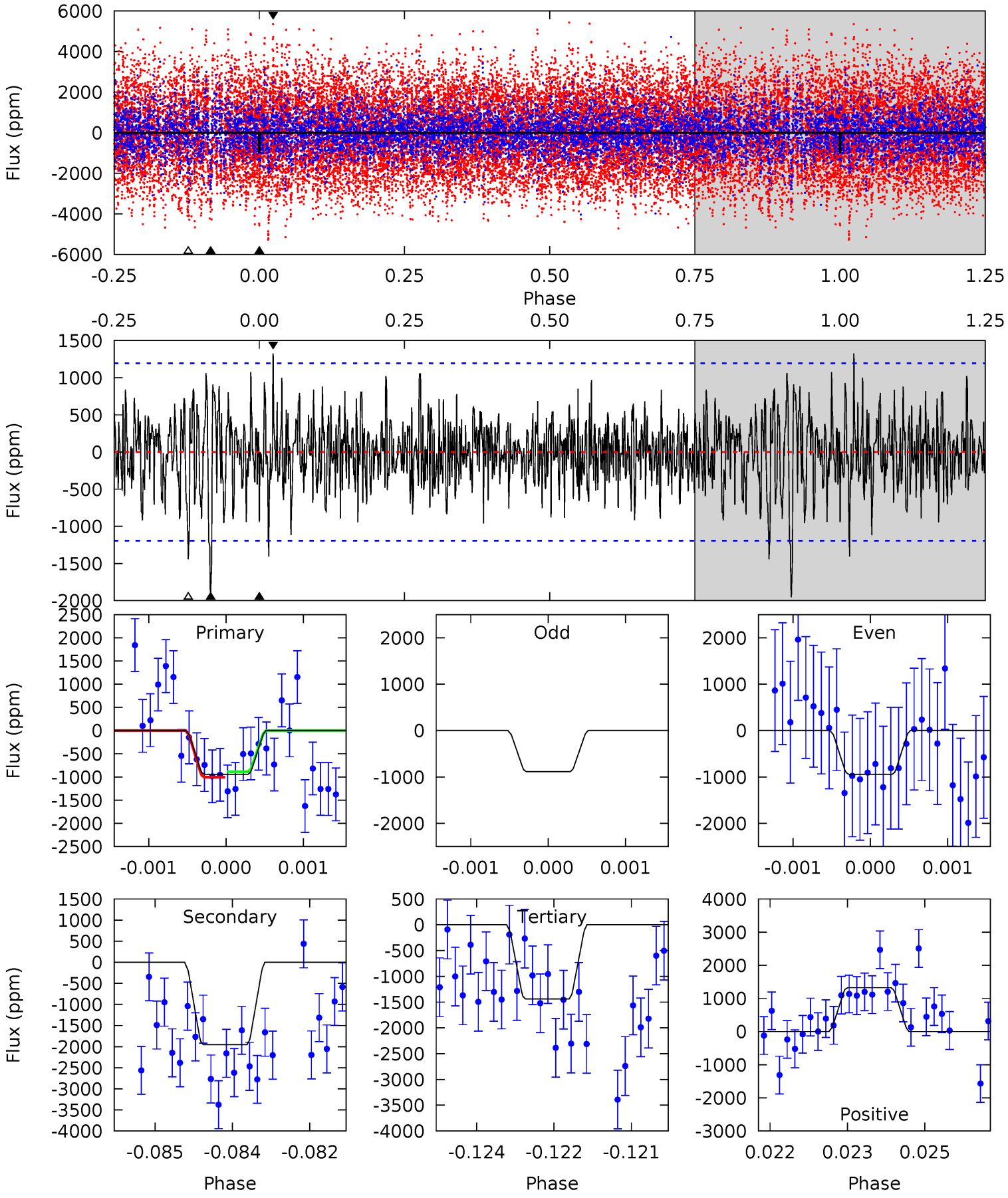
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.7 | 20.0 | 17.5 | 16.8 | 5.32 | 3.08 | 4.67 | -4.79 | -4.09 | 2.52 | 3.22 | 0.84 | 1.09 | 0.46 | 1.44 |



# Alt Model-Shift Uniqueness Test

005304634-02, P = 299.392521 Days, E = 148.012740 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.26 | 8.83 | 6.51 | 5.98 | 5.39 | 3.20 | 1.66 | -2.25 | -1.72 | 2.32 | 2.85 | 0.15 | 0.70 | 0.40 | 0.26 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-02 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -1370±68 | $7.42^{+1.42}_{-1.03}$ | $589^{+48}_{-46}$ | $6999^{+387}_{-458}$ | $13476^{+4120}_{-3592}$ |
| Alt. | -1954±221 | $6.26^{+1.26}_{-0.91}$ | $590^{+46}_{-49}$ | $8584^{+804}_{-743}$ | $26707^{+10115}_{-7616}$ |

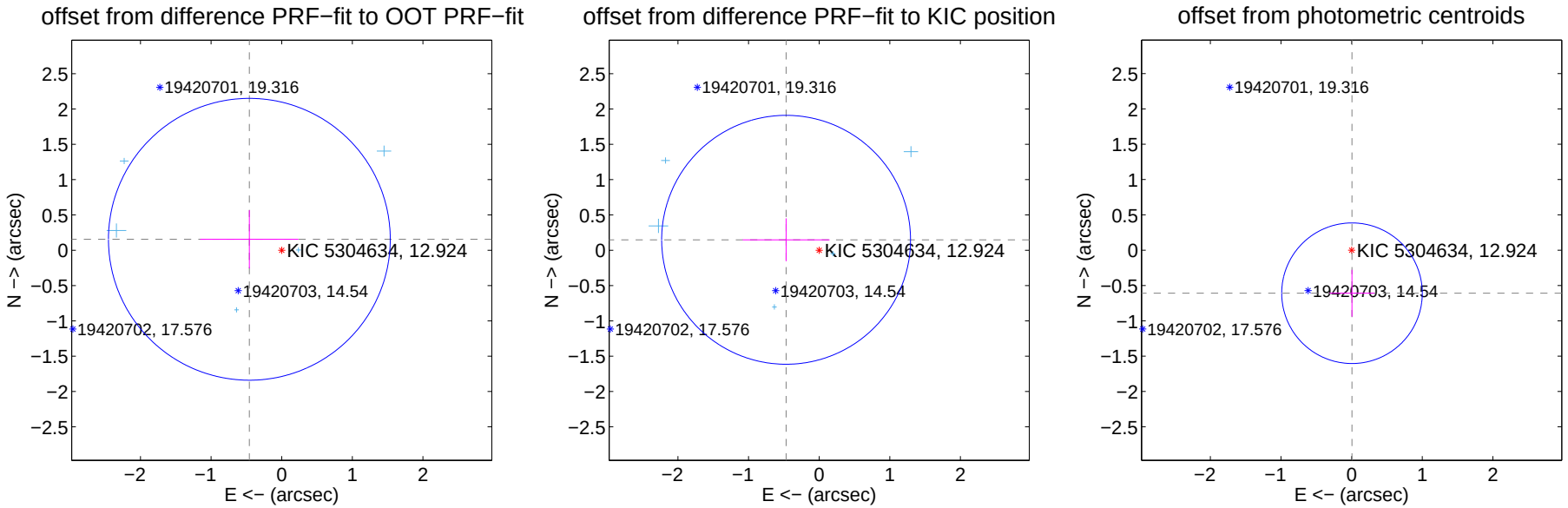
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

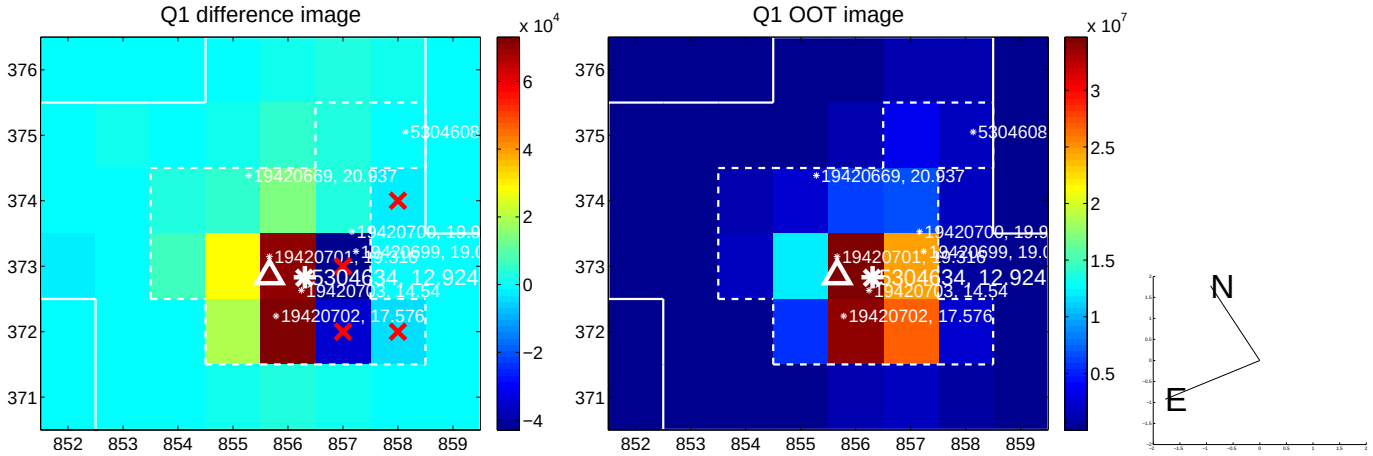
Supplemental centroid analysis for 005304634-02. Kepler magnitude: 12.92. Transit SNR 8.97
There are 5 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

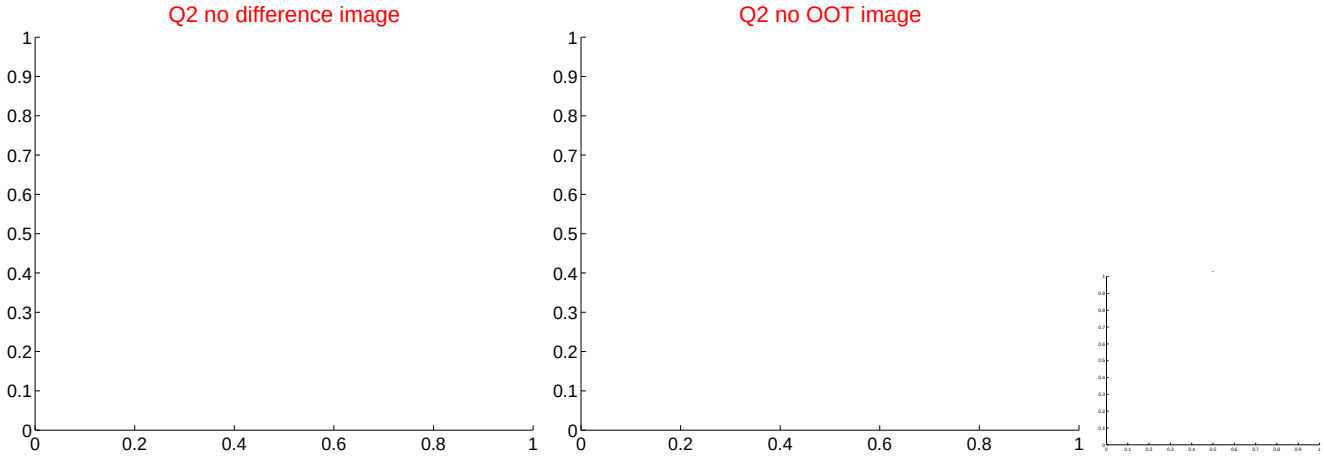
| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.484 ± 0.665 | 0.73 | 0.458 ± 0.695 | 0.155 ± 0.412 |
| PRF-fit source offset from KIC position | 0.491 ± 0.587 | 0.84 | 0.468 ± 0.615 | 0.148 ± 0.304 |
| photometric centroid source offset | 0.61 ± 0.33 | 1.84 | -0.01 ± 0.32 | -0.61 ± 0.33 |

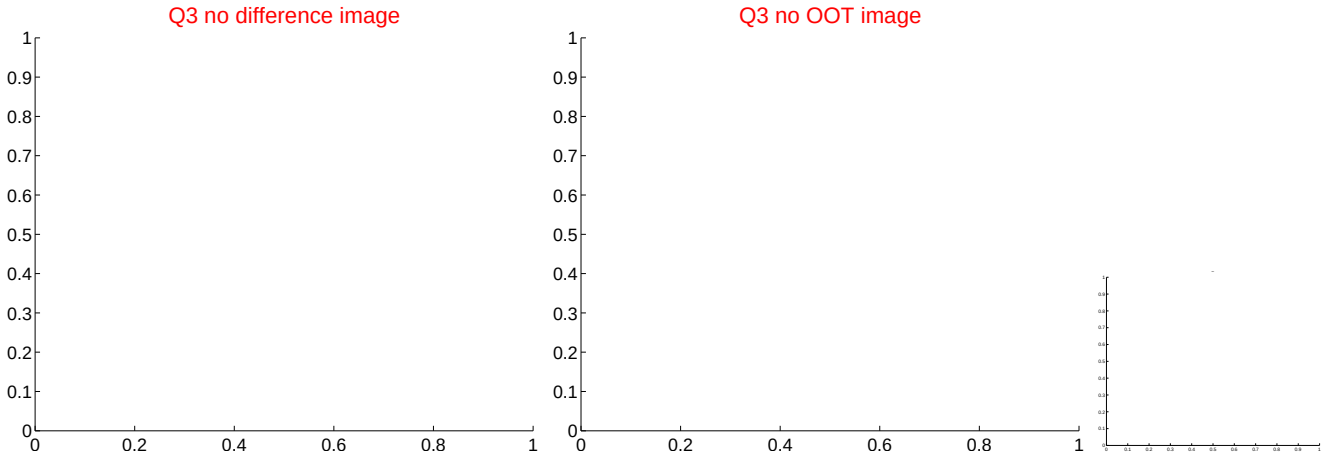


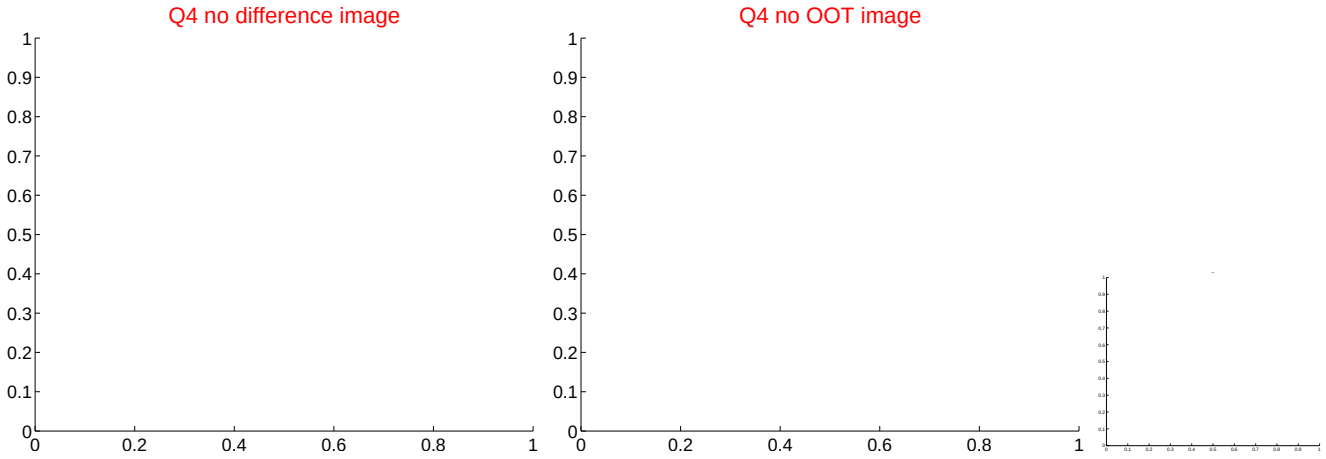

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

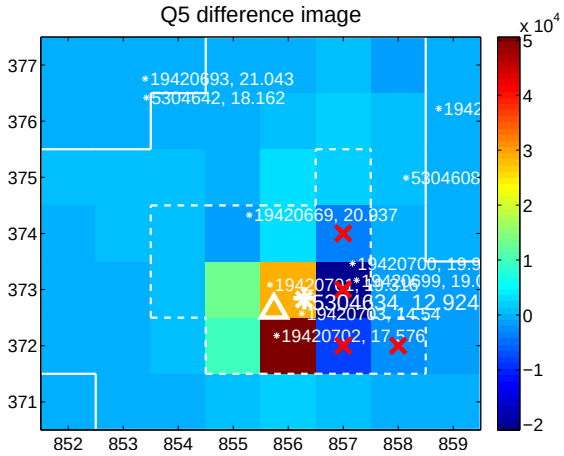


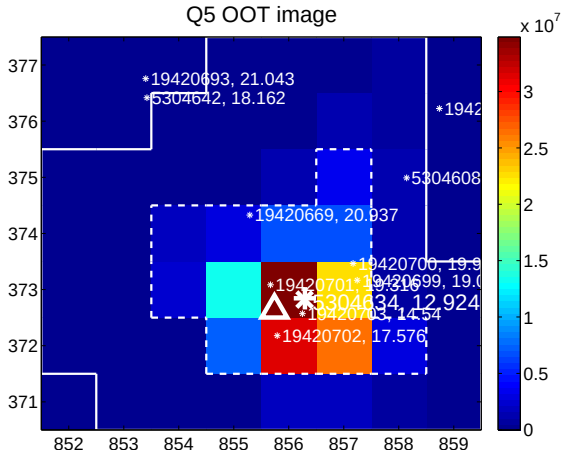



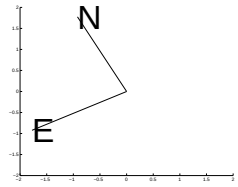



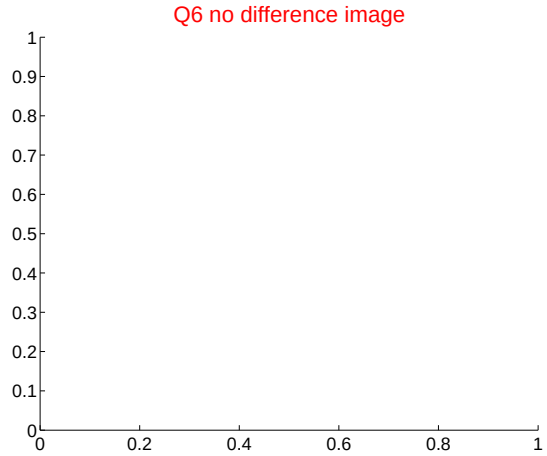



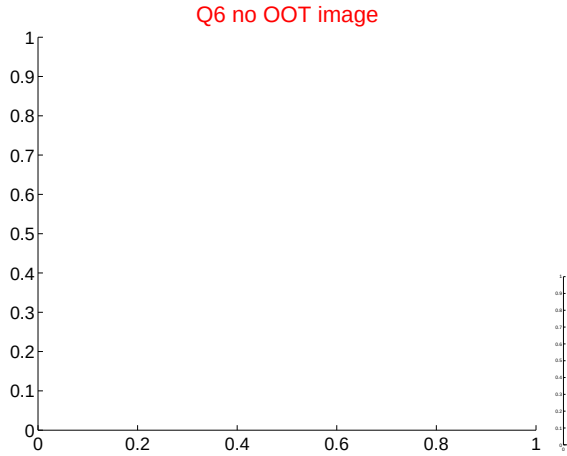
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

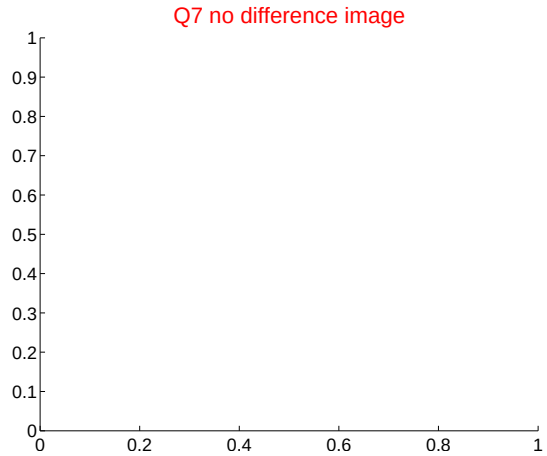


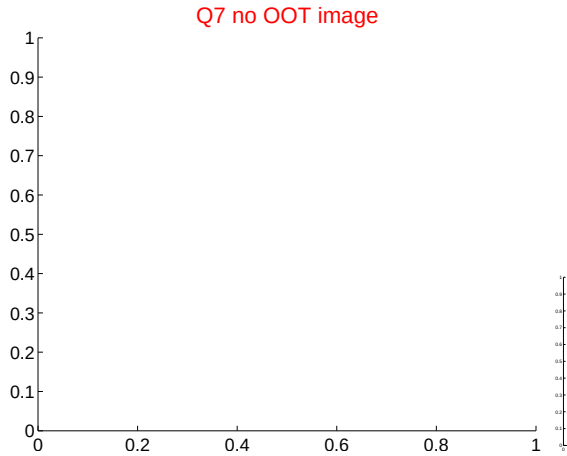



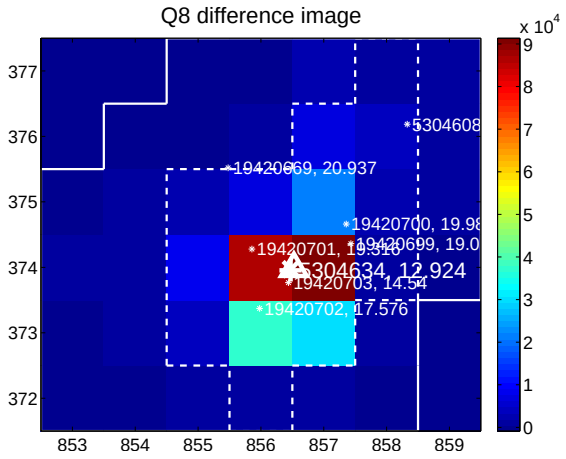



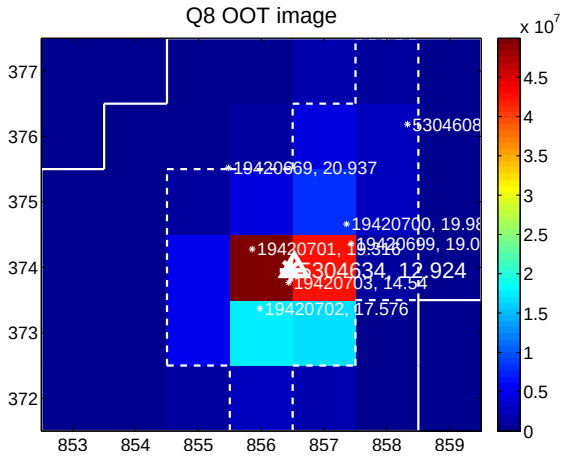



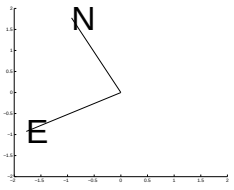



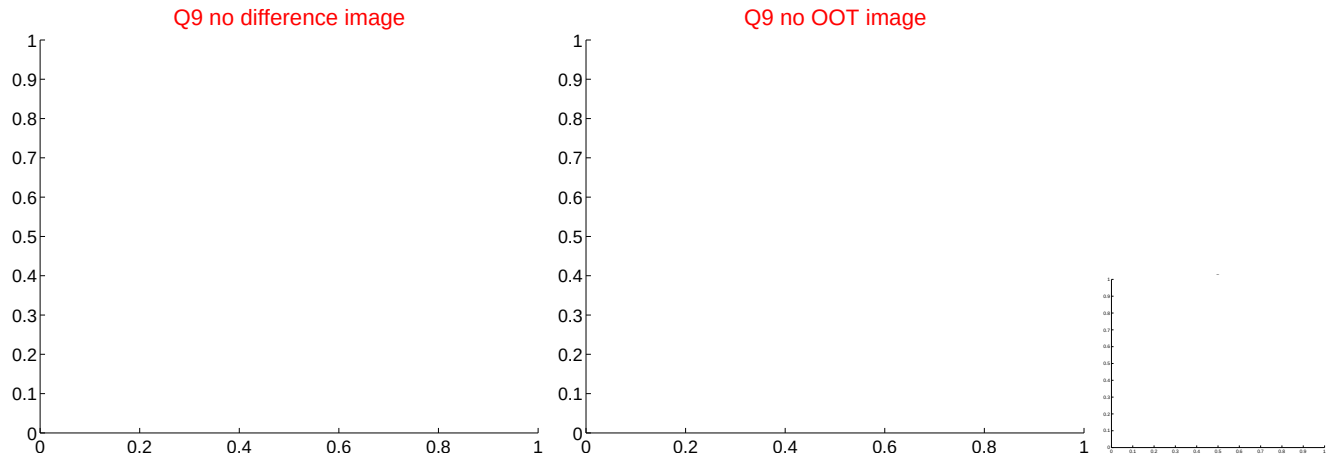



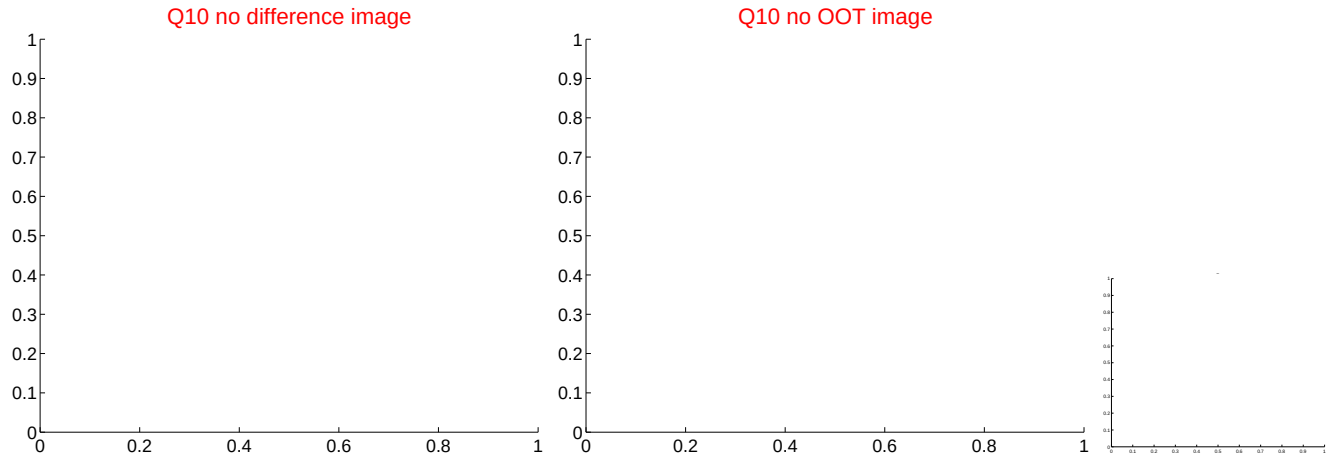



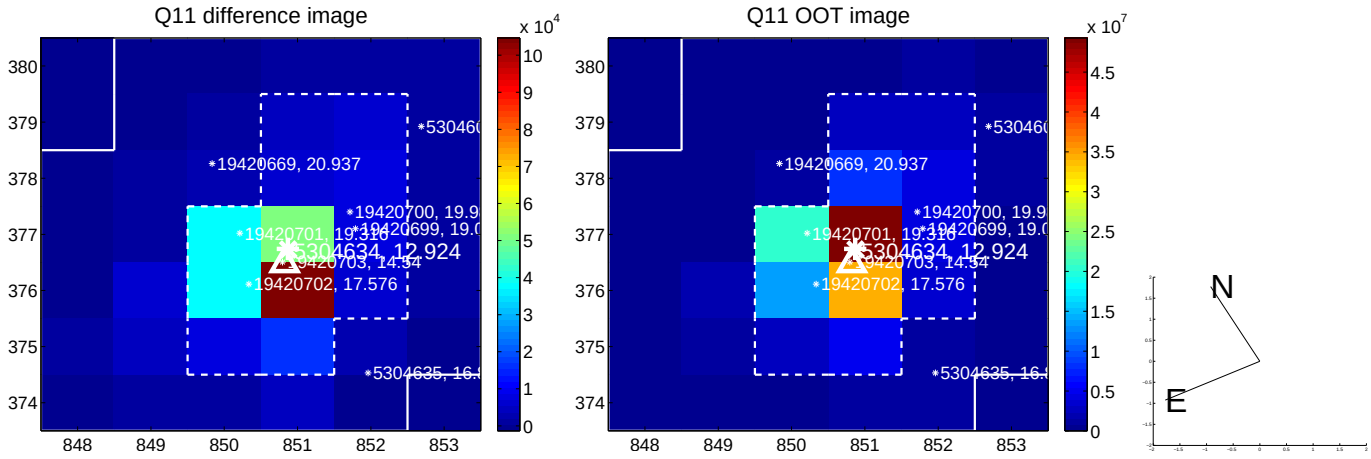



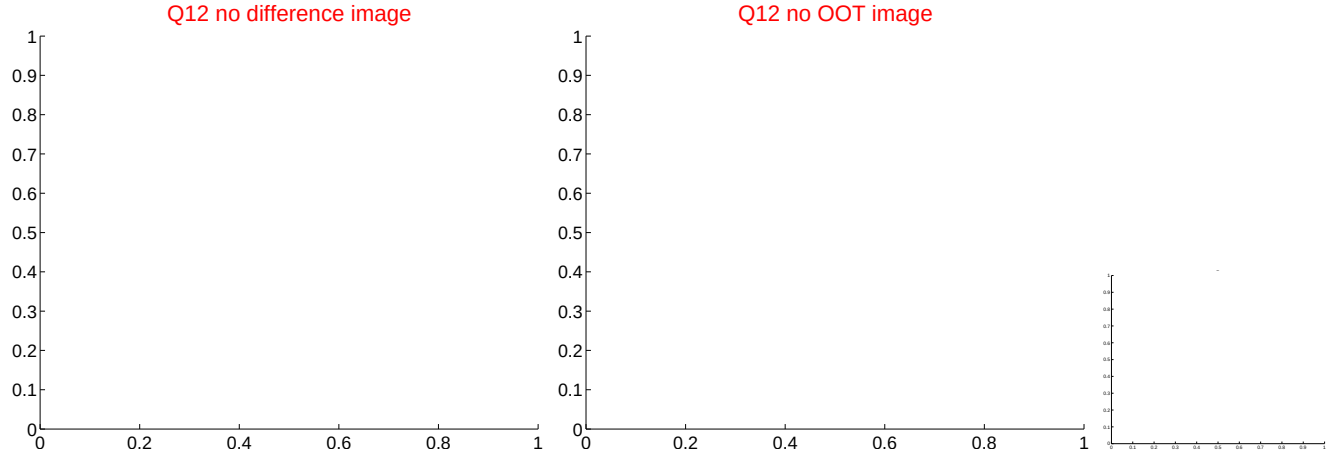



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

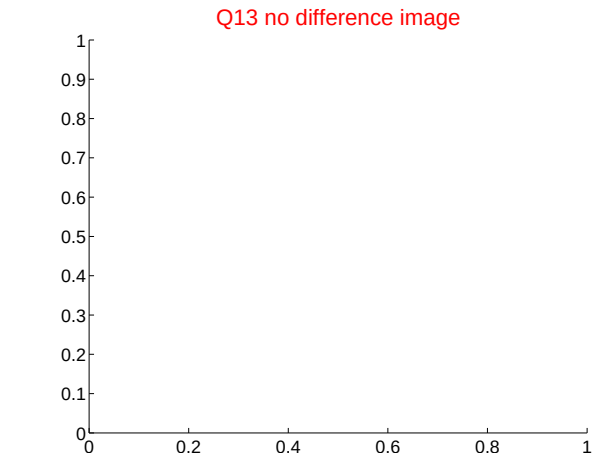


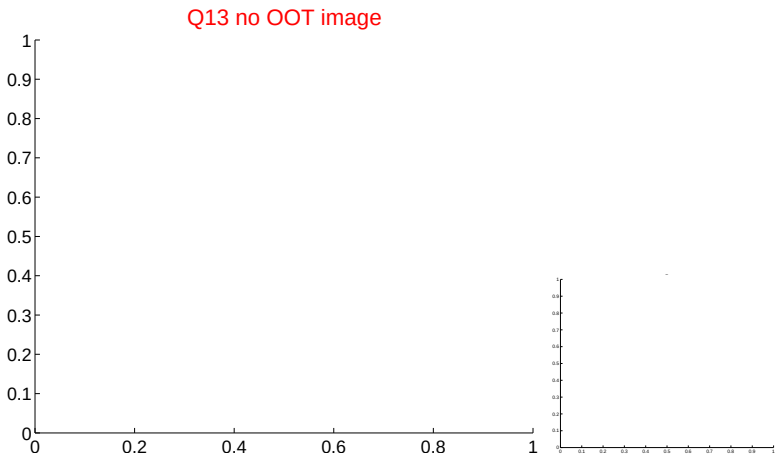



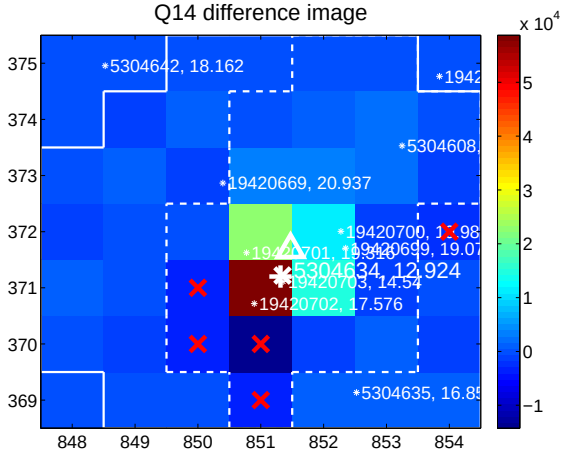



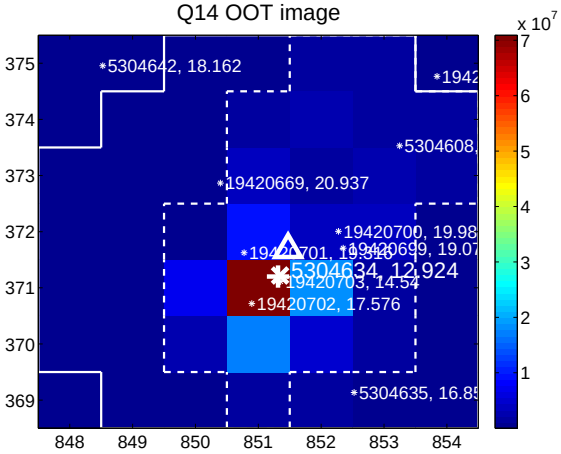



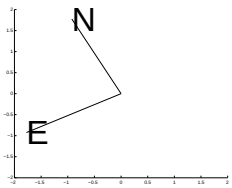
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

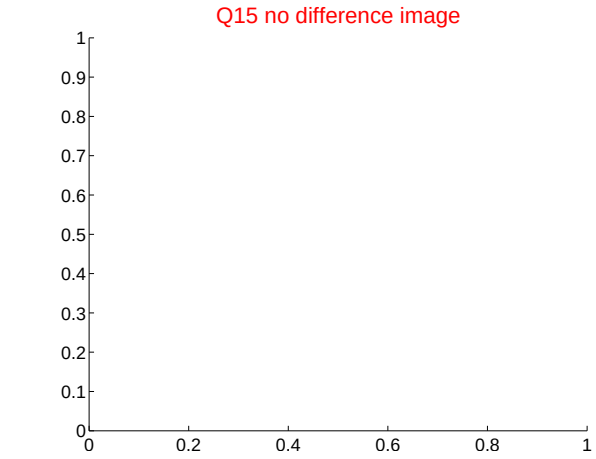


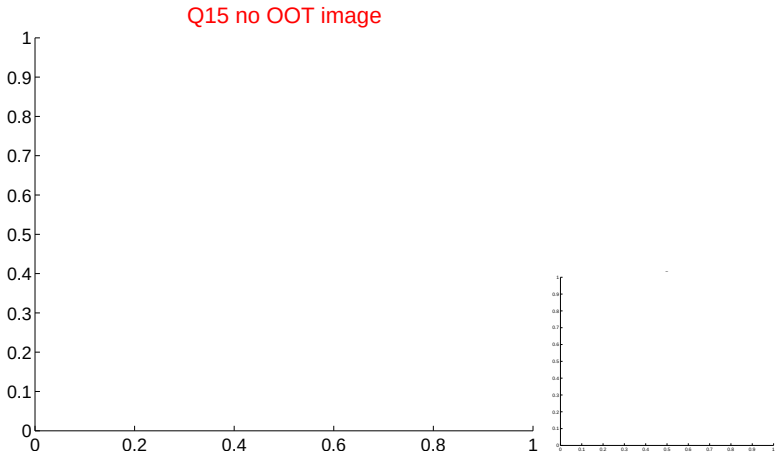



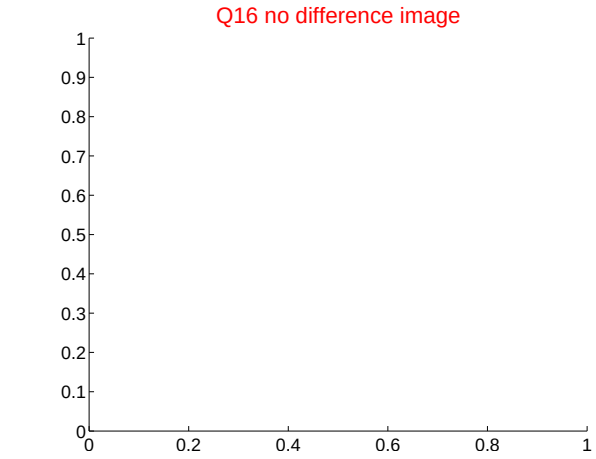



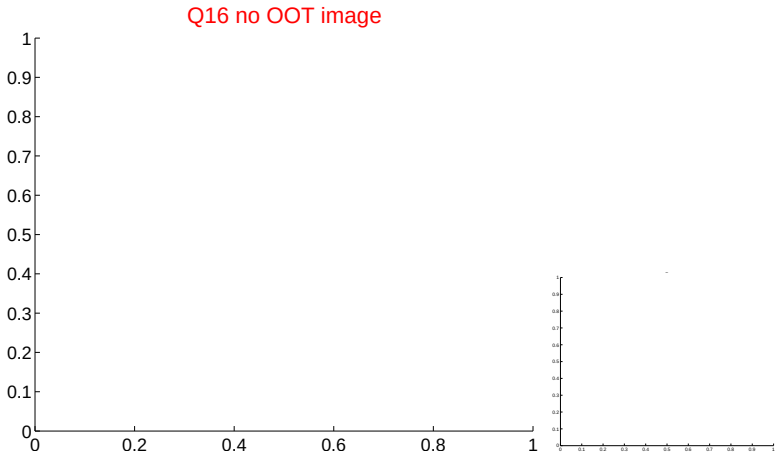



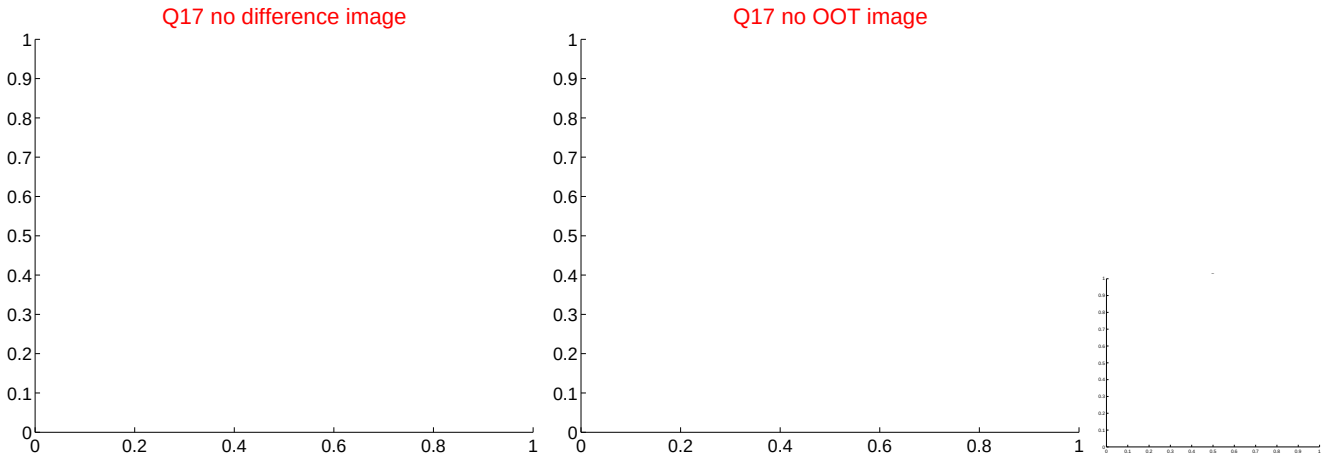



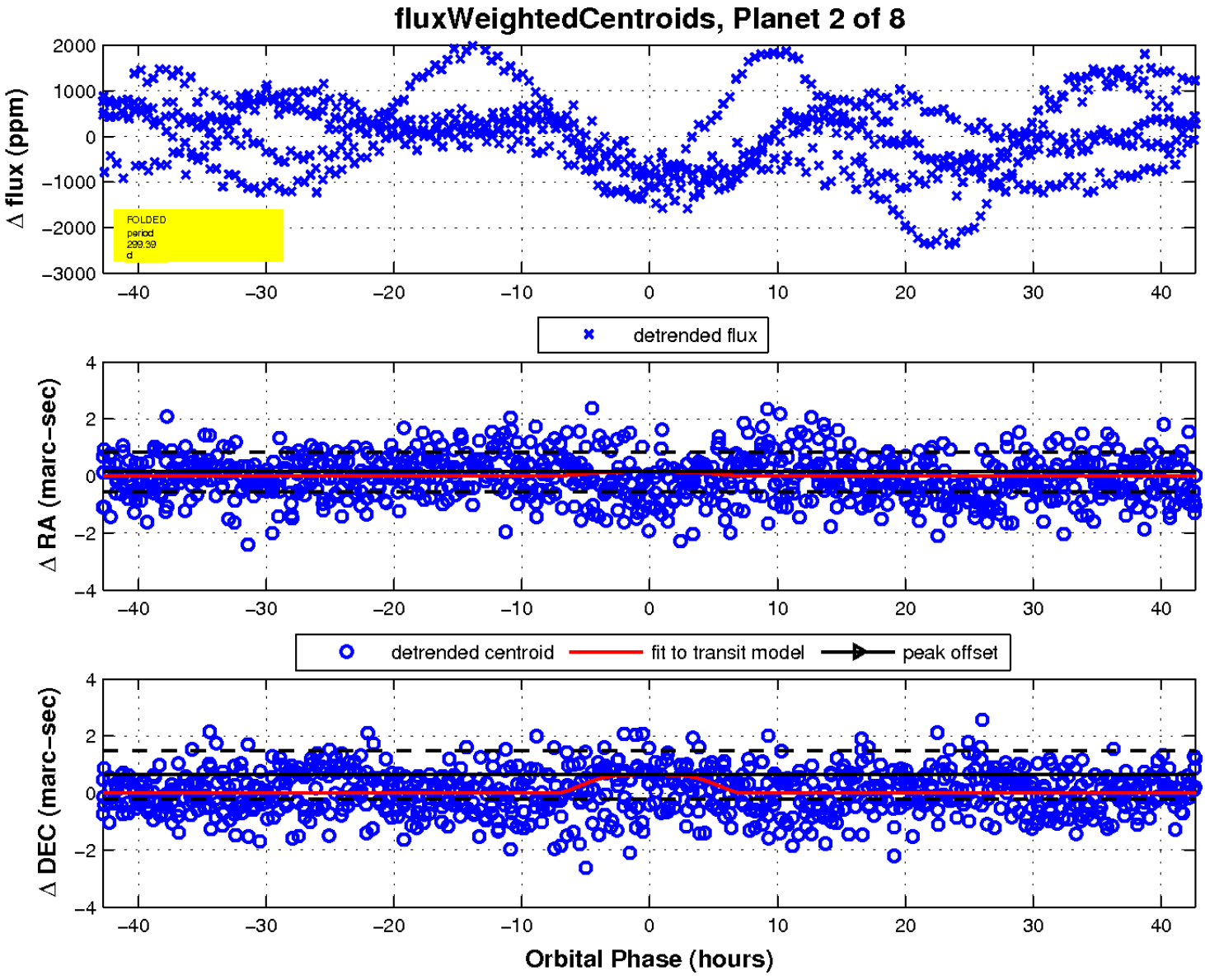



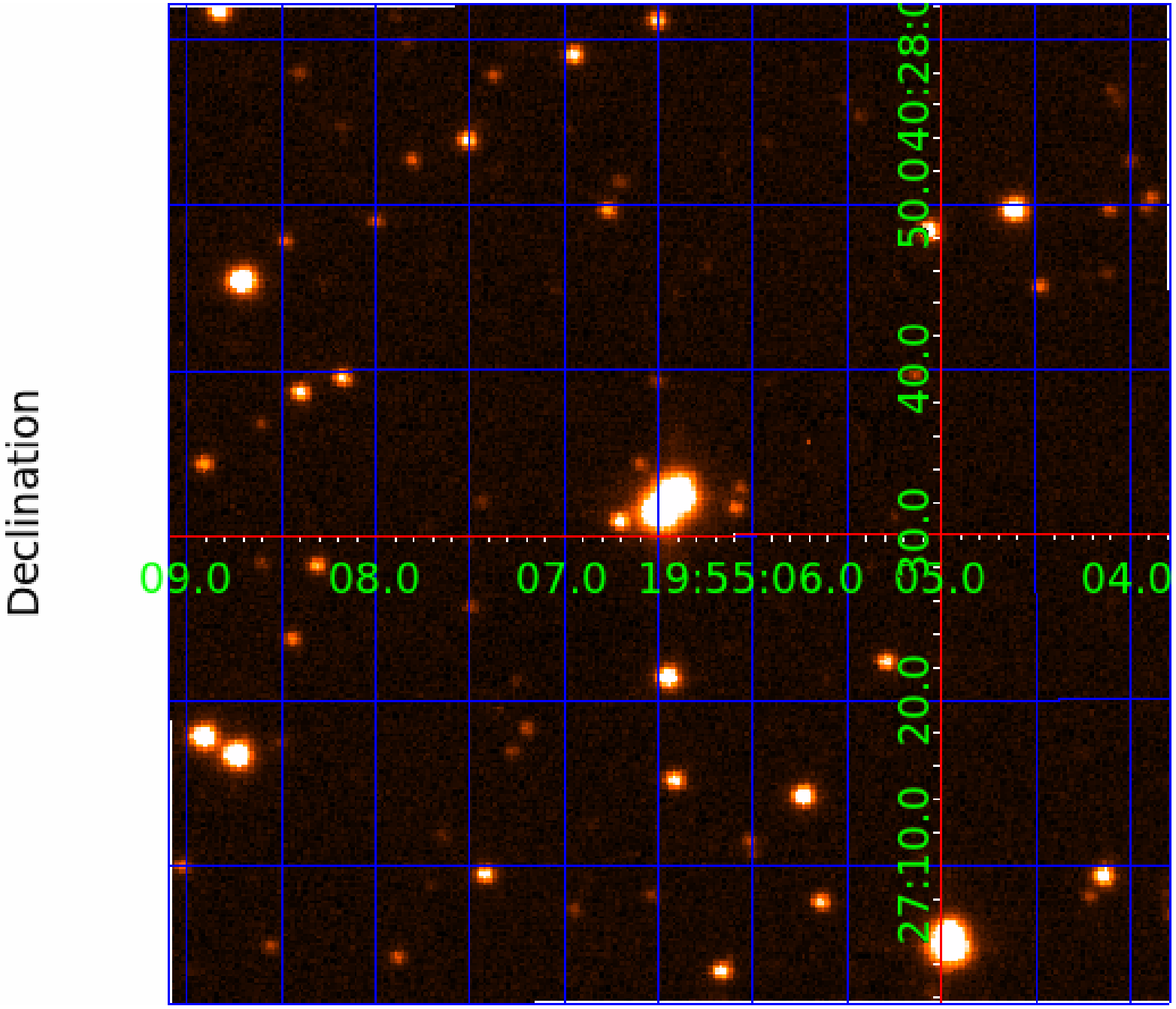



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

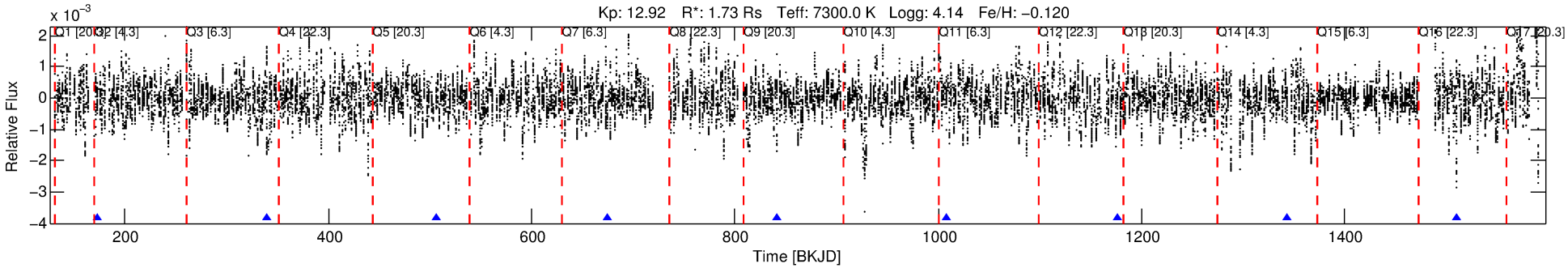
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

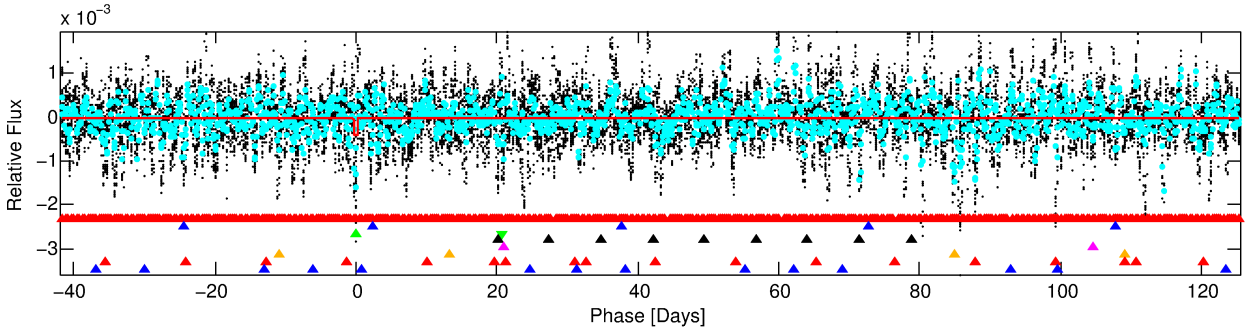
## Ephemeris Match Information For 005304634-03

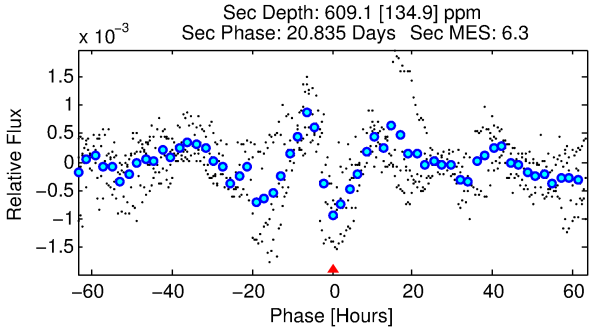
No Significant Match Found

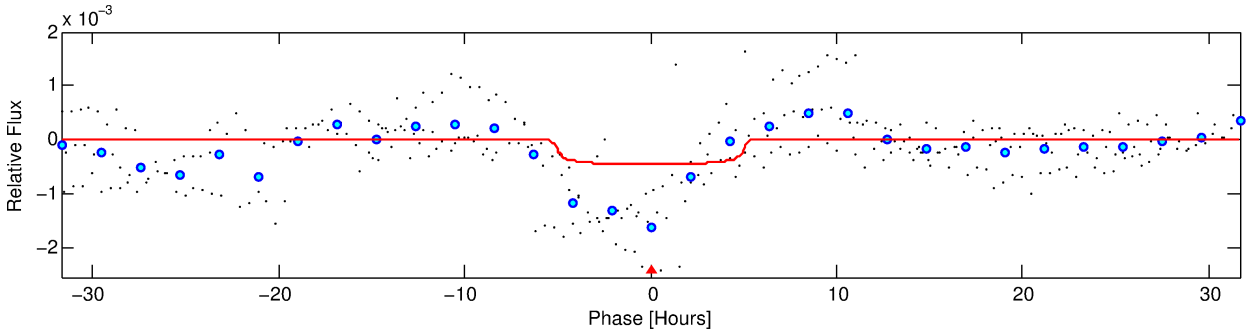
# DV One-Page Summary

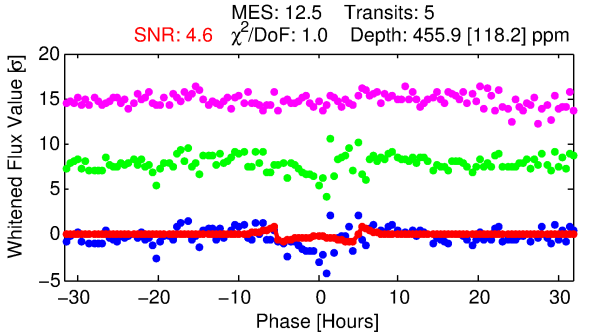
**KIC: 5304634 Candidate: 3 of 8 Period: 167.226 d**

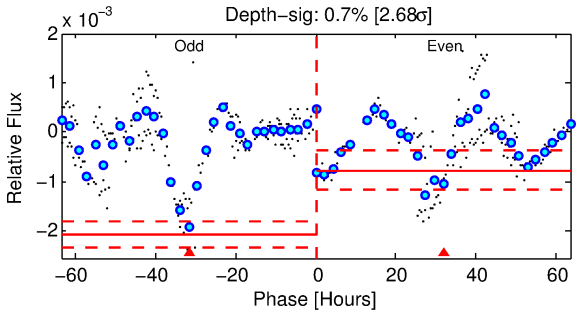


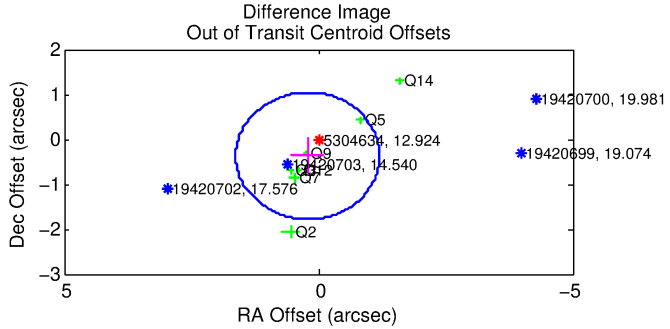




DV Fit Results:

Period = 167.22613 [0.00251] d
Epoch = 172.4945 [0.0123] BKJD
Rp/R* = 0.0212 [0.0048]
a/R* = 84.63 [79.35]
b = 0.74 [0.56]

Seff = 16.44 [6.99]
Teq = 513 [55] K
Rp = 3.99 [1.57] Re
a = 0.6791 [0.1738] AU

Ag = 9703.23 [5989.51] [1.62σ]
Teffp = 7879 [1103] K [6.67σ]

DV Diagnostic Results:

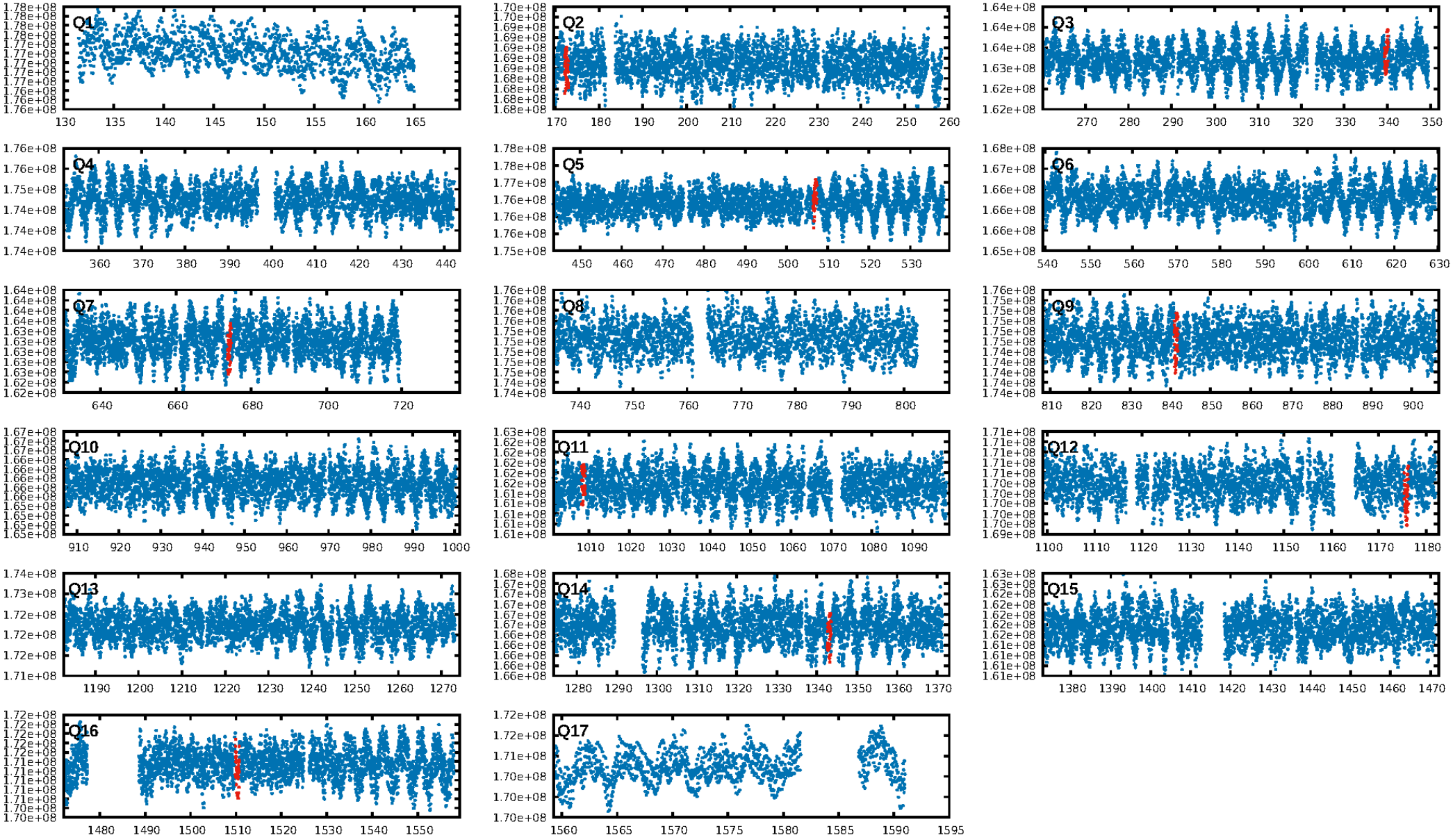
ShortPeriod−sig: 100.0% [7.25σ]
LongPeriod−sig: 100.0% [178.68σ]
ModelChiSquare2−sig: 67.5%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [5/5]
GhostDiagnostic−chr: 1.998

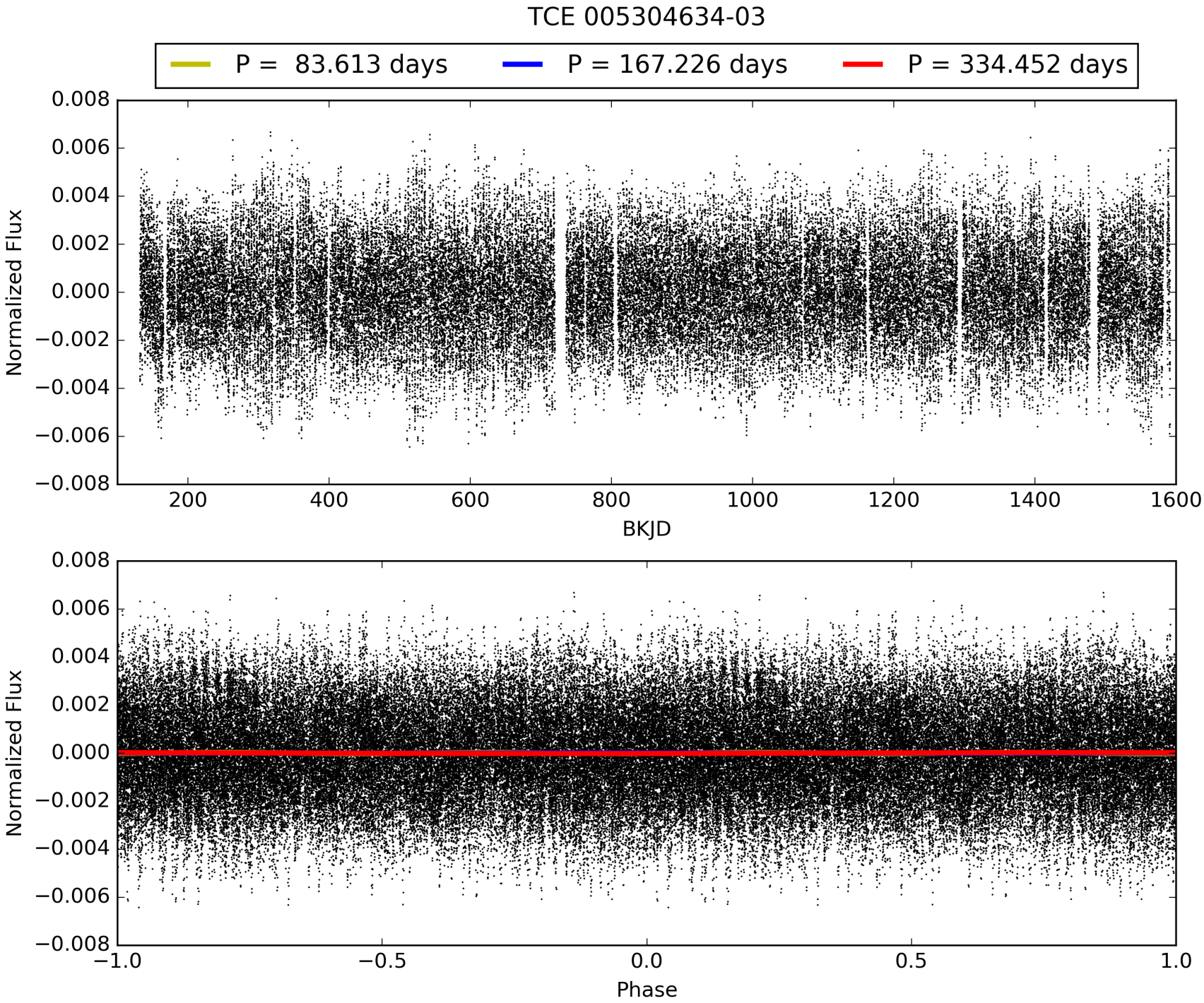
Centroid−sig: 0.1%
Centroid−so: 1.505 arcsec [2.19σ]
OotOffset−rm: 0.428 arcsec [0.91σ]
KicOffset−rm: 0.407 arcsec [0.79σ]
OotOffset−st: 2/2/1/2 [7]
KicOffset−st: 2/2/1/2 [7]
DiffImageQuality−fgm: 0.71 [5/7]
DiffImageOverlap−fno: 0.14 [1/7]

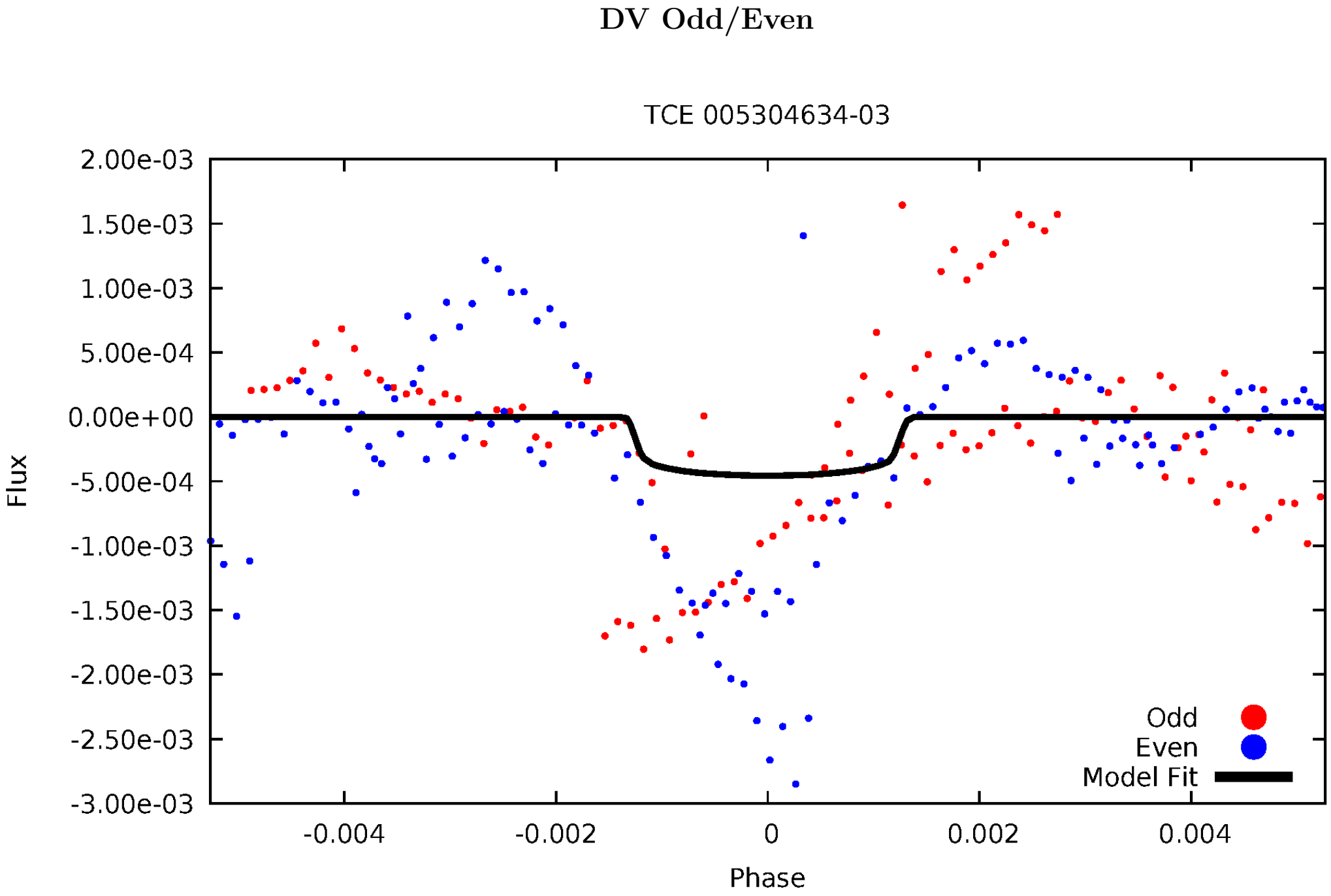
**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:03 Z**

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

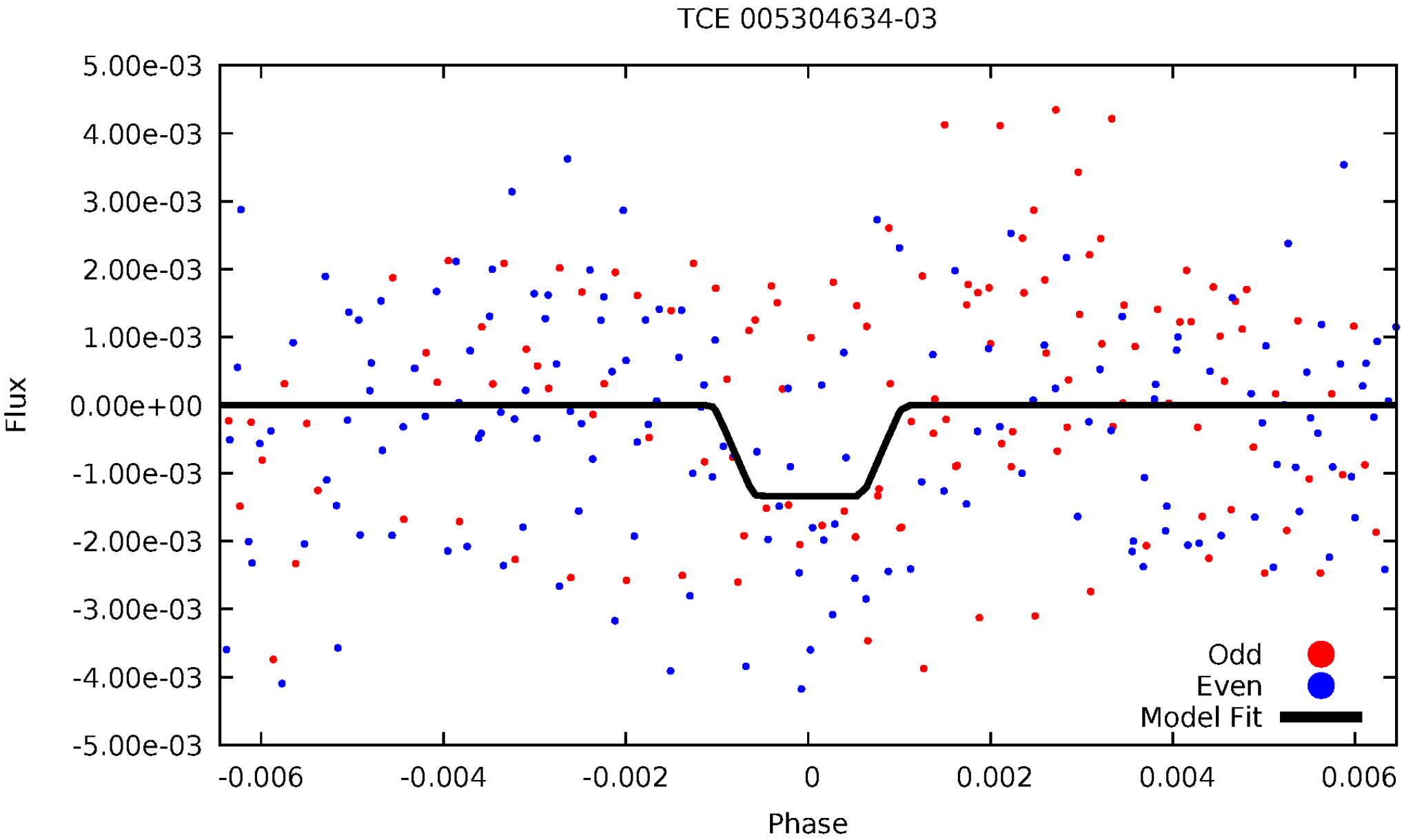
# TCE 005304634-03, PDC Light Curves



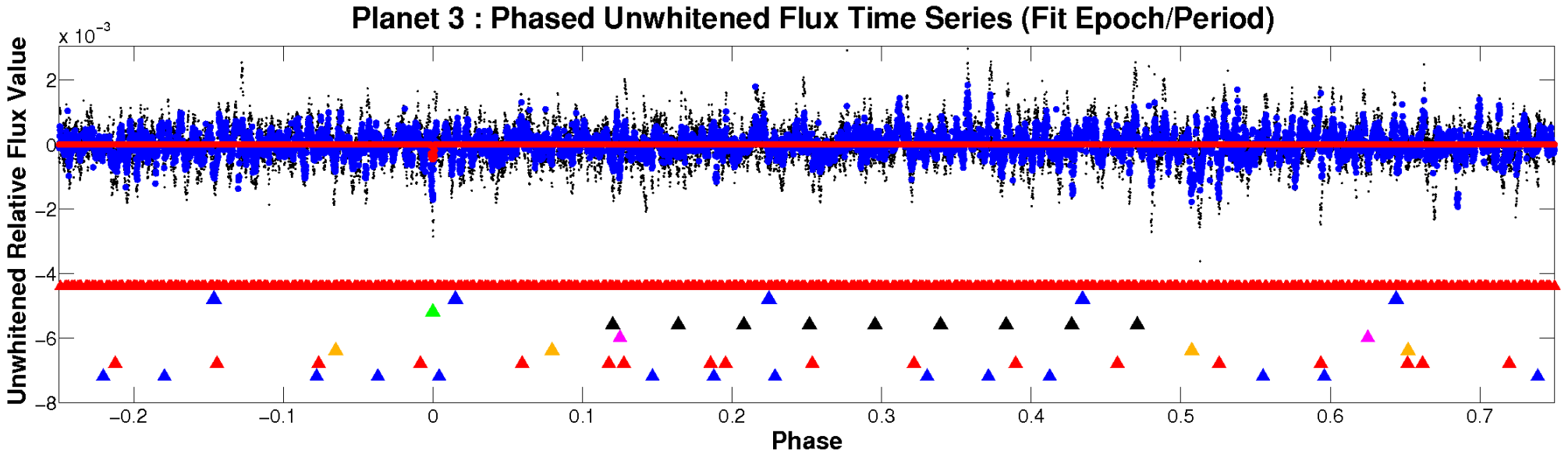

TCE 005304634-03
P = 83.613 days
P = 167.226 days
P = 334.452 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
−1.0
−0.5
0.0
0.5
1.0
Phase

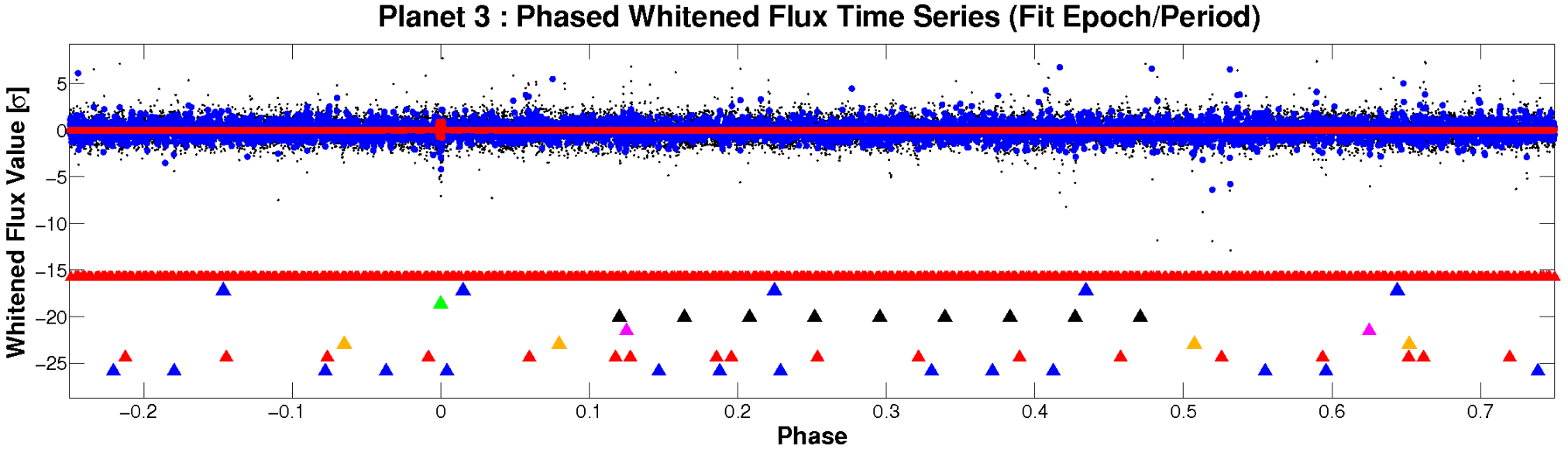

DV Odd/Even
TCE 005304634-03
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
-2.50e-03
-3.00e-03
Flux
-0.004
-0.002
0
0.002
0.004
Phase
Odd
Even
Model Fit

**ALT Odd/Even**


TCE 005304634-03
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
-5.00e-03
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

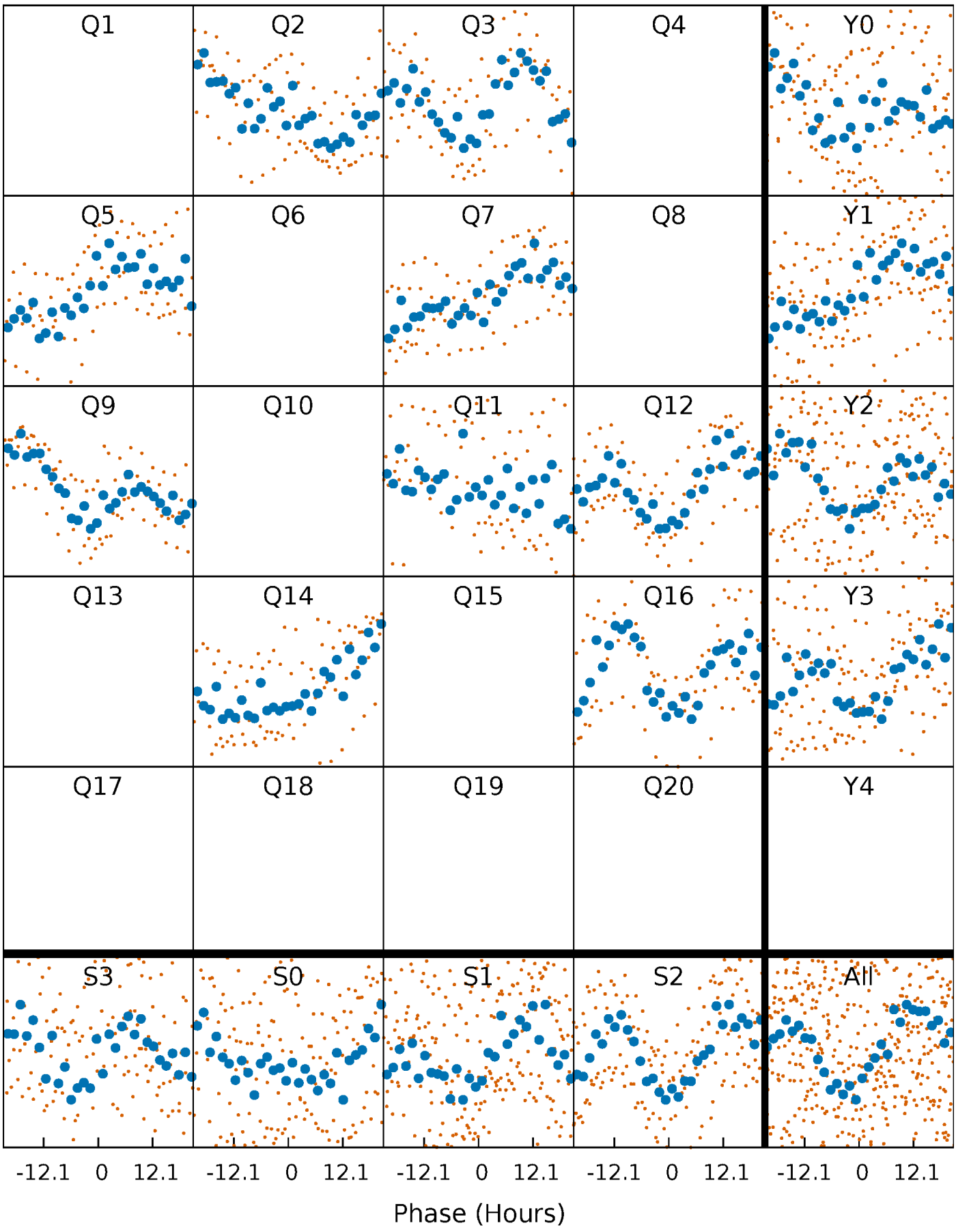
# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 005304634-03  P=167.226130 Days  $T_0$=172.494474 (BKJD)



# DV Quarter-Phased Transit Curves

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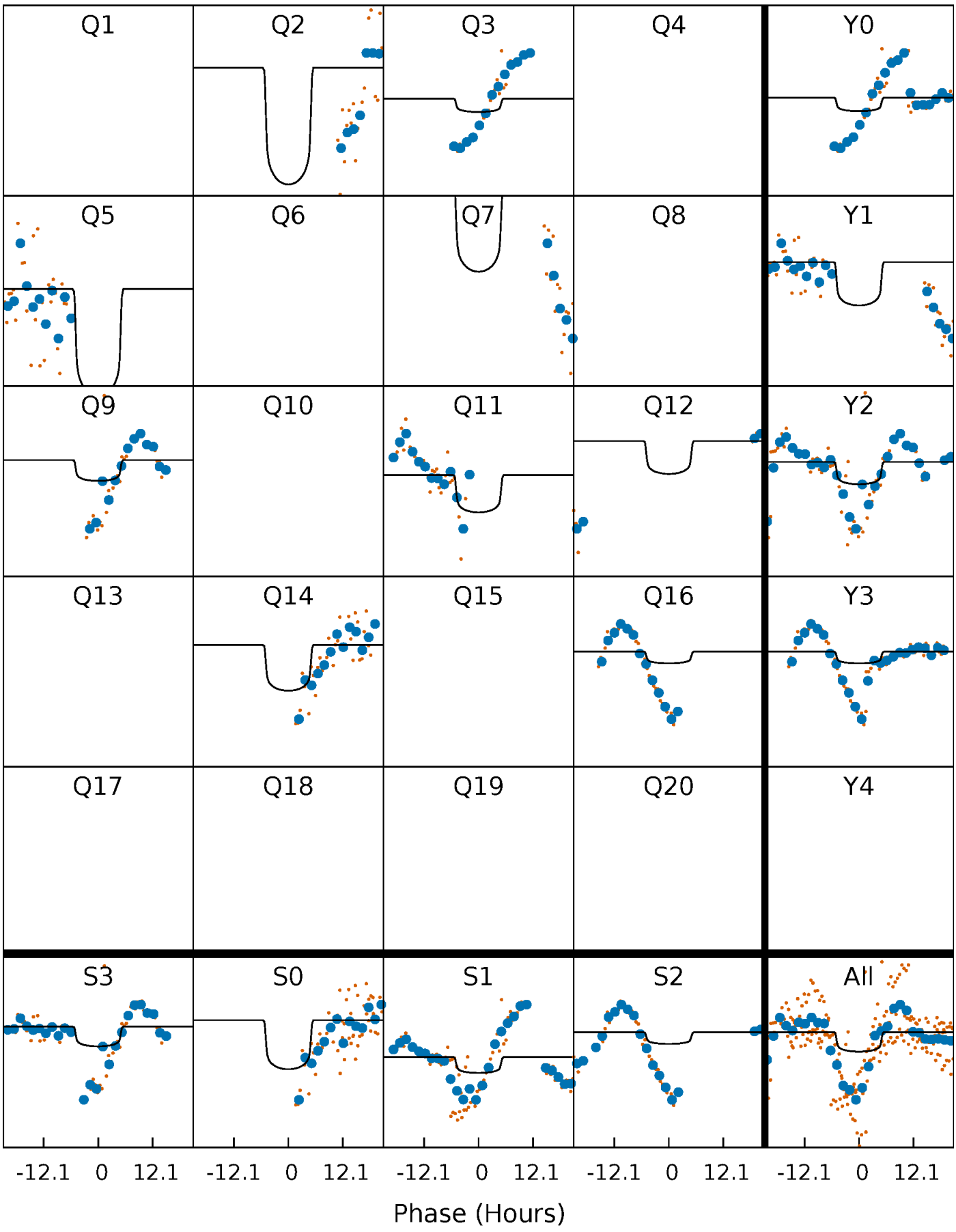
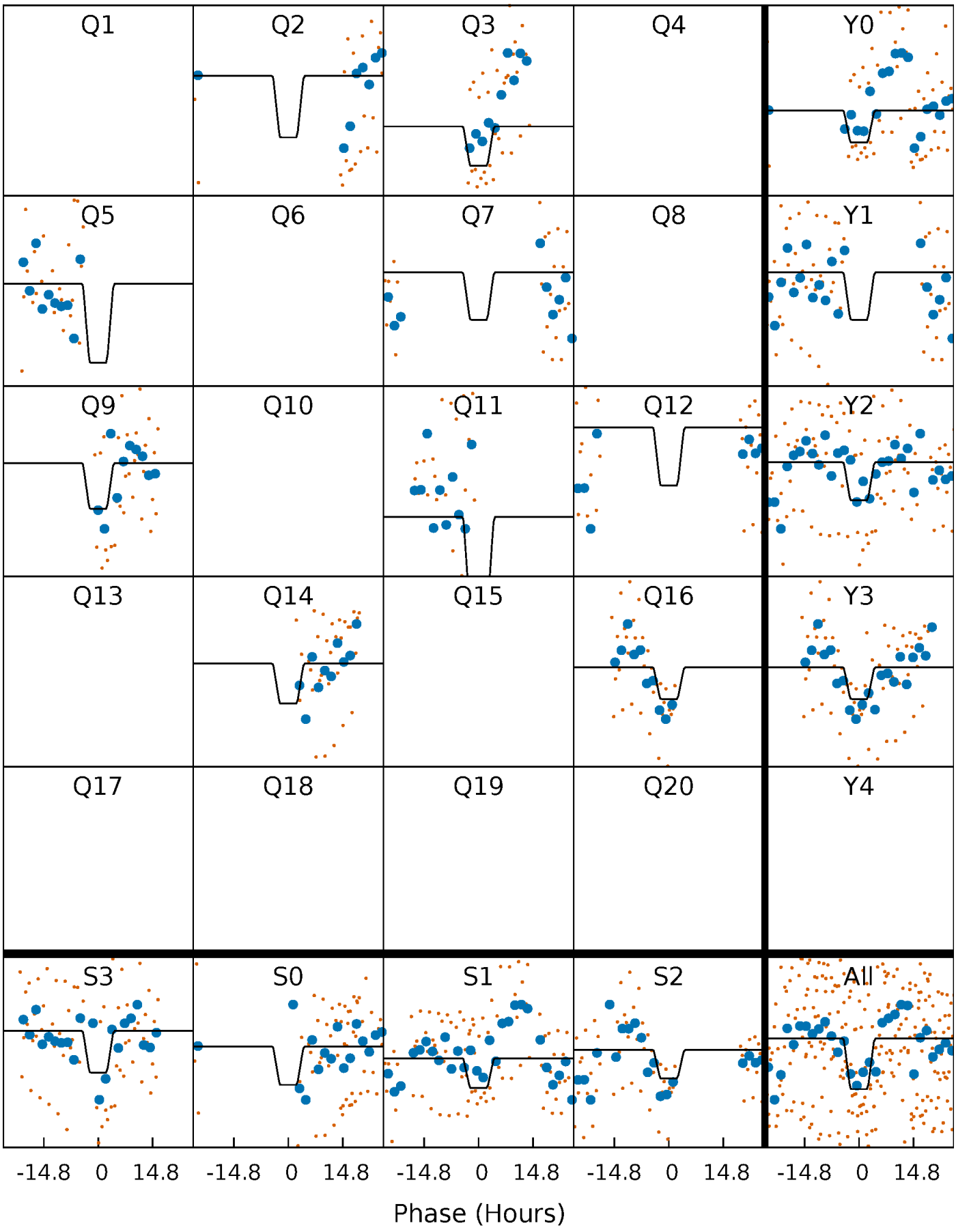


# Alt. Detrend Quarter-Phased Transit Curves

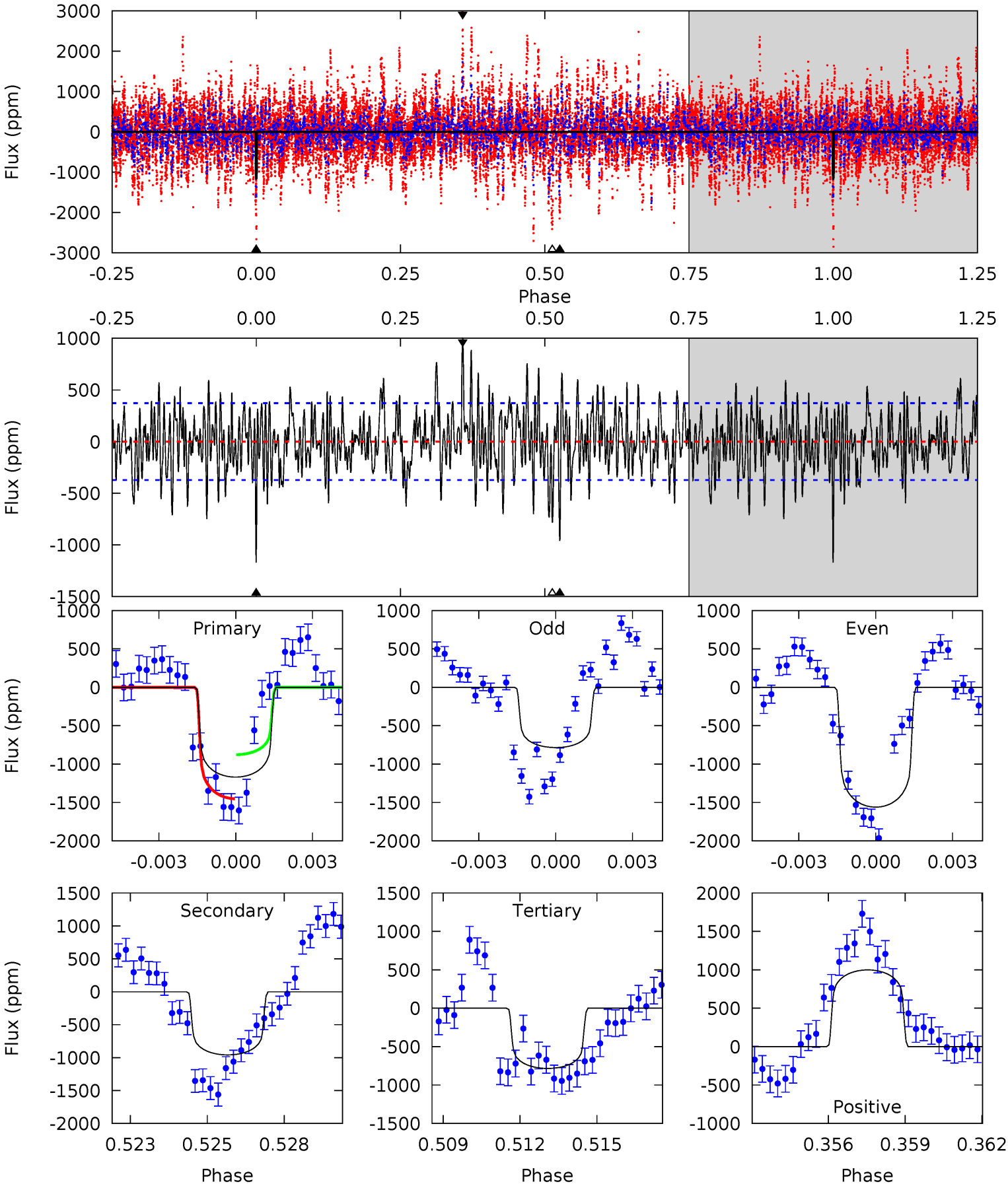
TCE 005304634-03  P=167.242488 Days  $T_0$=172.358790 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-03, P = 167.226130 Days, E = 5.268344 Days

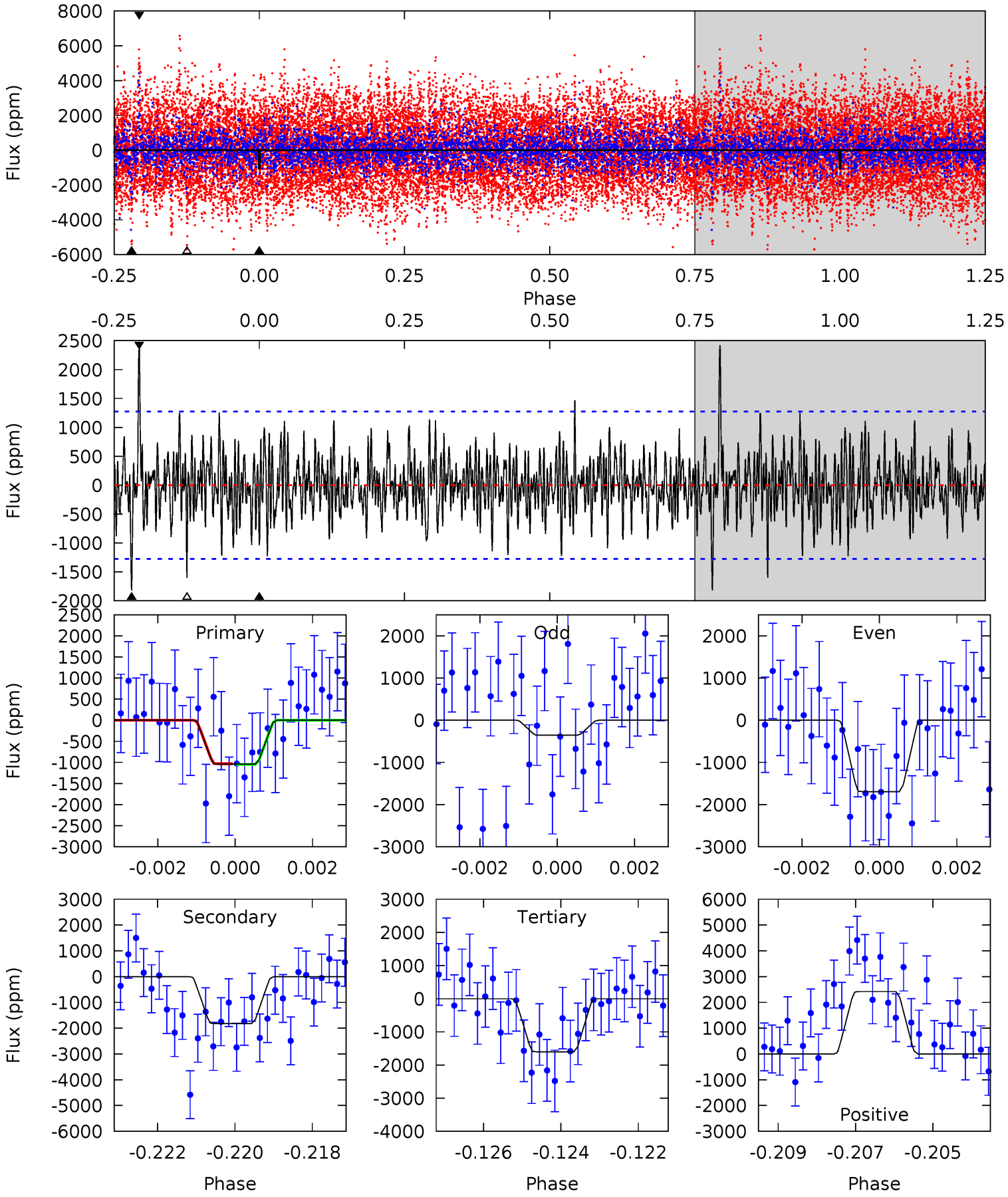
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.6 | 13.6 | 11.1 | 14.2 | 5.28 | 3.01 | 3.65 | 5.47 | 2.42 | 2.48 | -0.56 | 5.46 | 1.14 | 0.46 | 4.07 |



# Alt Model-Shift Uniqueness Test

005304634-03, P = 167.242488 Days, E = 5.116302 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.34 | 7.59 | 6.69 | 10.1 | 5.32 | 3.08 | 1.80 | -2.34 | -5.76 | 0.90 | -2.51 | 2.79 | 0.85 | 0.57 | 0.03 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-03 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -959±71 | $3.99^{+1.27}_{-1.02}$ | $716^{+59}_{-57}$ | $9160^{+2129}_{-1204}$ | $15185^{+11761}_{-6053}$ |
| Alt. | -1818±240 | $6.93^{+1.47}_{-1.14}$ | $719^{+57}_{-57}$ | $7931^{+916}_{-767}$ | $9437^{+4235}_{-2983}$ |

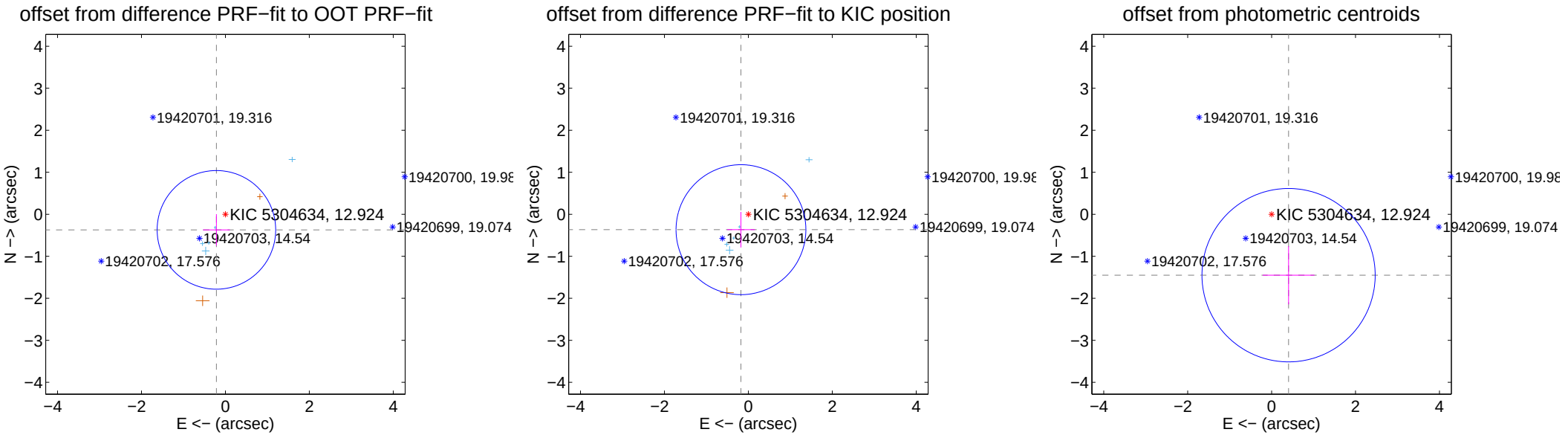
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

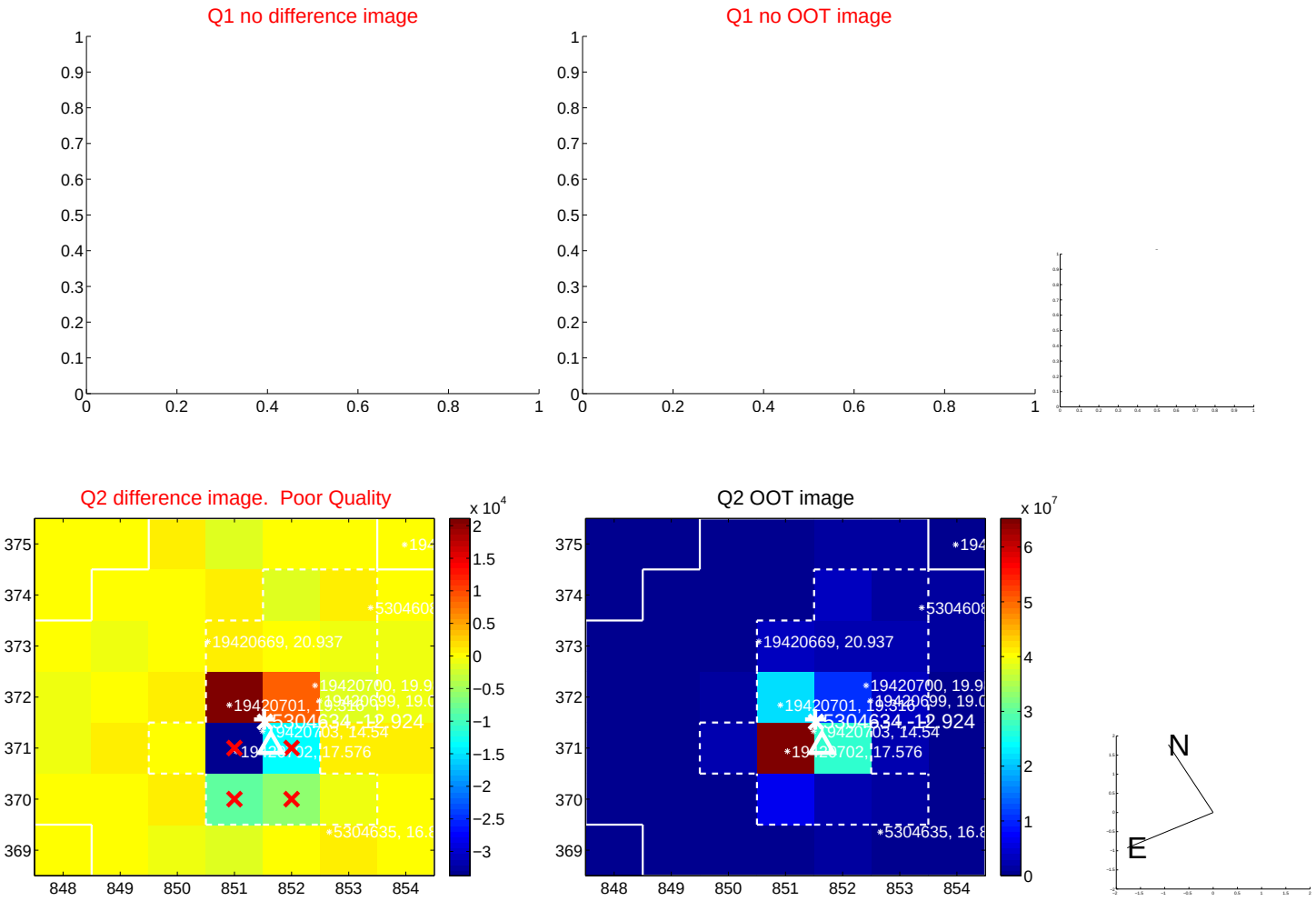
Supplemental centroid analysis for 005304634-03. Kepler magnitude: 12.92. Transit SNR 4.60
There are 5 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.428 ± 0.471 | 0.91 | 0.214 ± 0.320 | -0.371 ± 0.373 |
| PRF-fit source offset from KIC position | 0.407 ± 0.516 | 0.79 | 0.176 ± 0.331 | -0.366 ± 0.422 |
| photometric centroid source offset | 1.50 ± 0.69 | 2.19 | -0.40 ± 0.62 | -1.45 ± 0.69 |

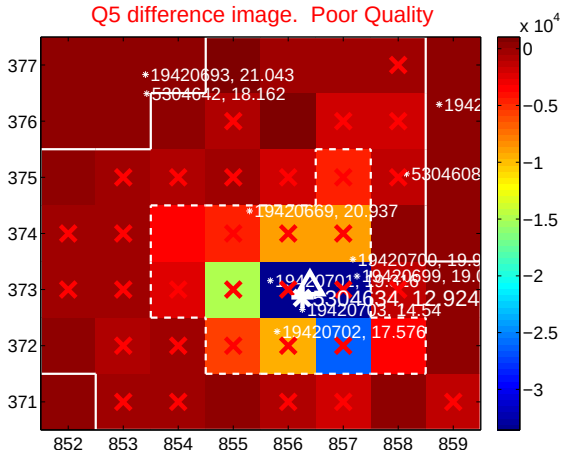


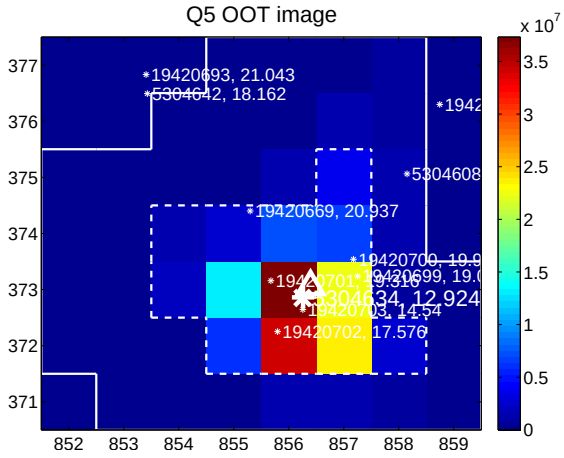

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

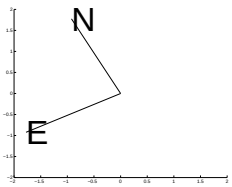
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

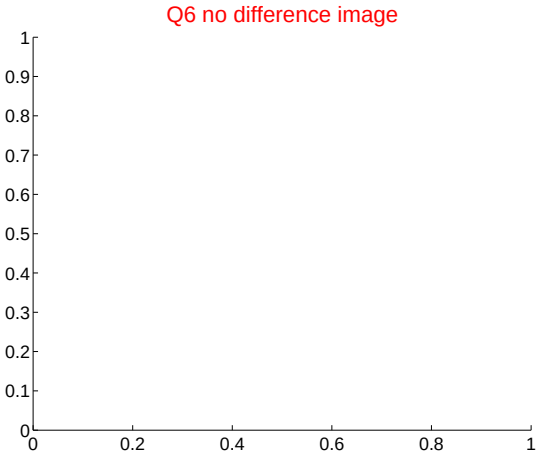


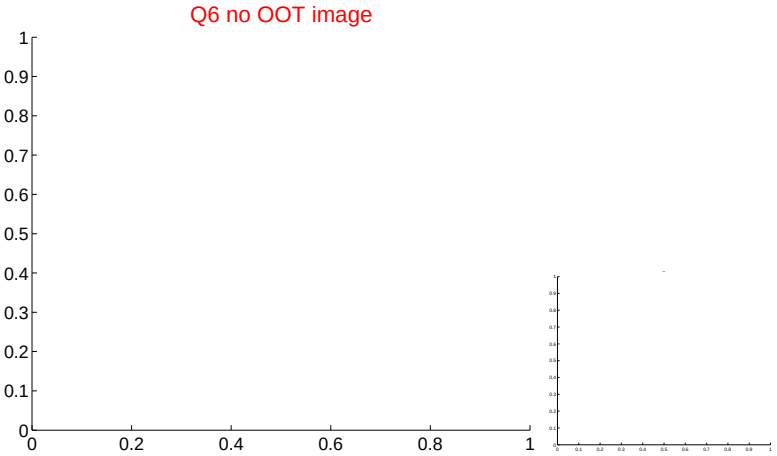
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

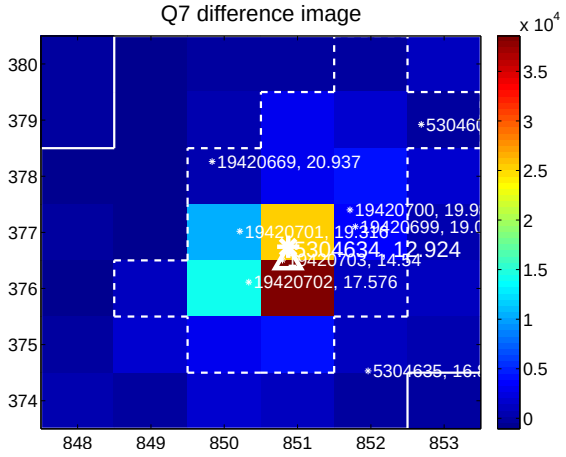


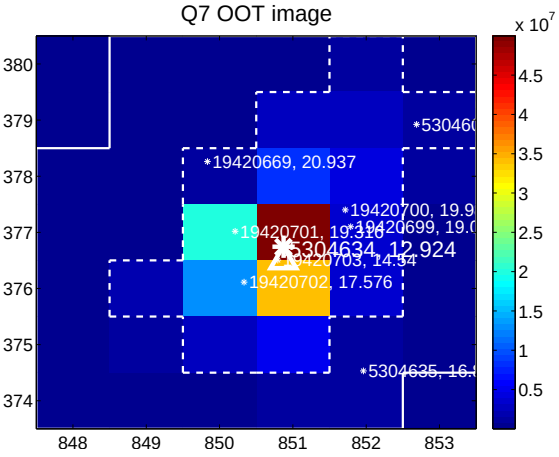



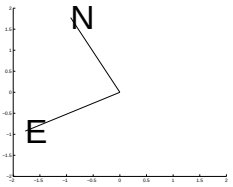



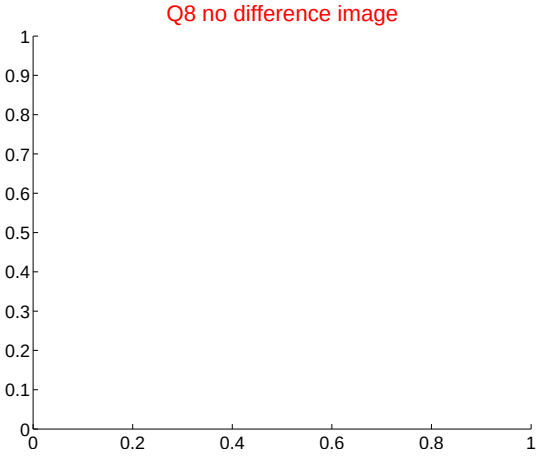



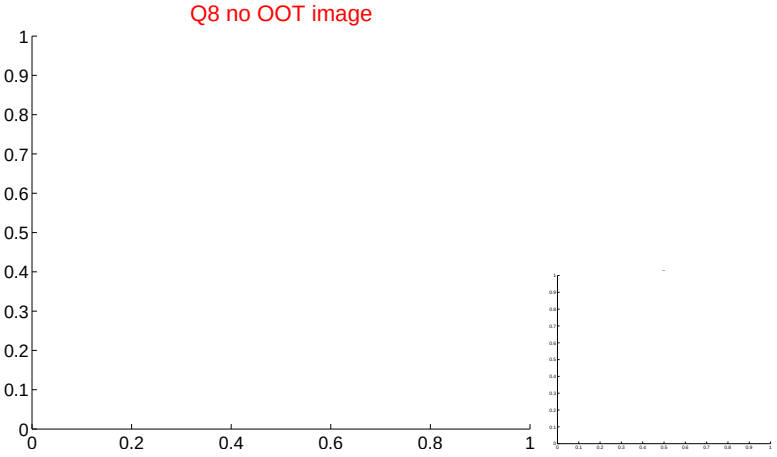



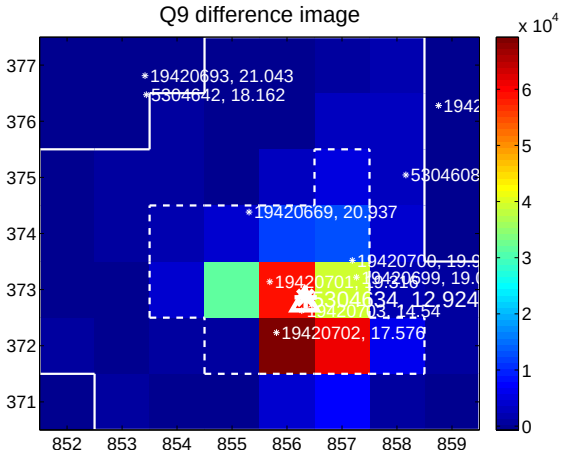



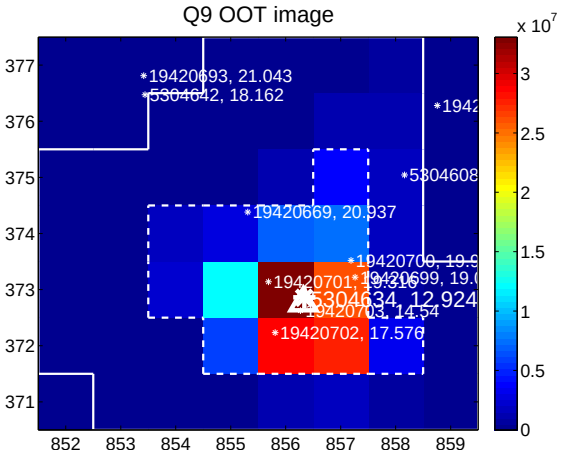



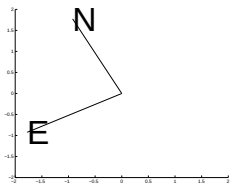



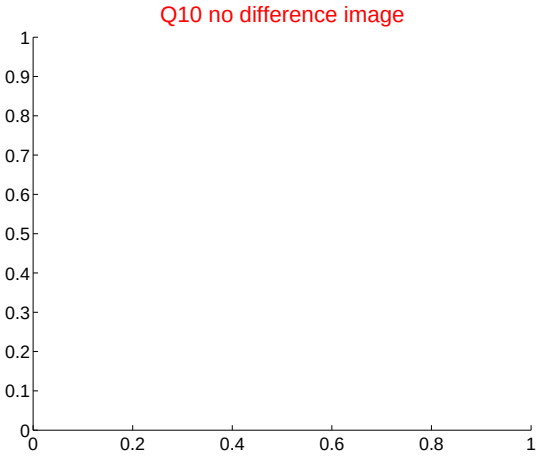



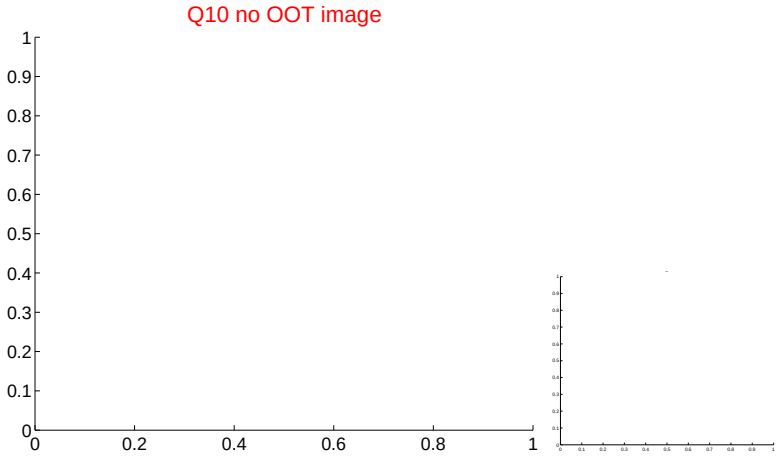
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

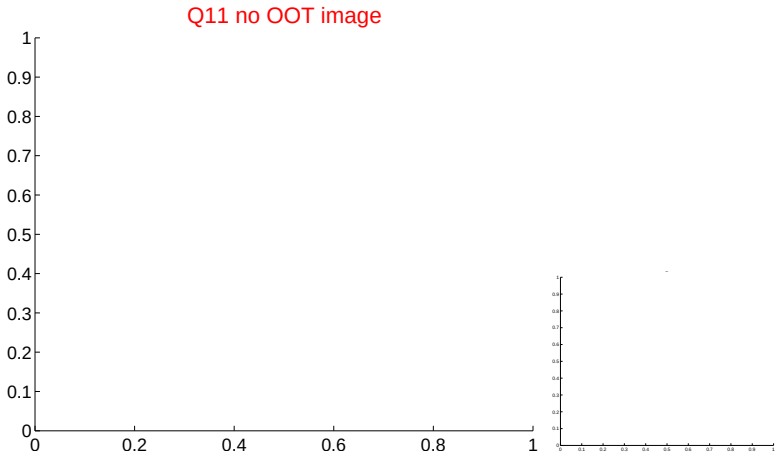


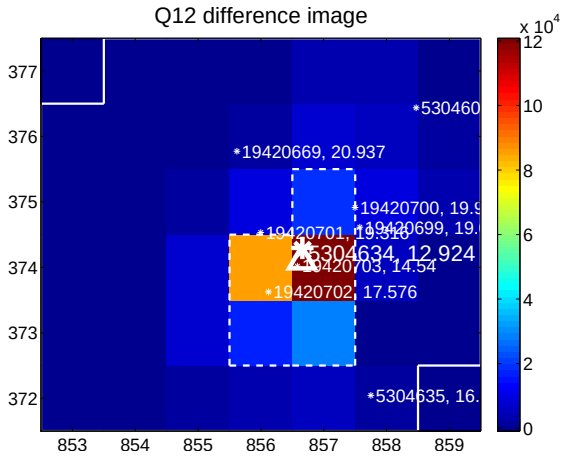



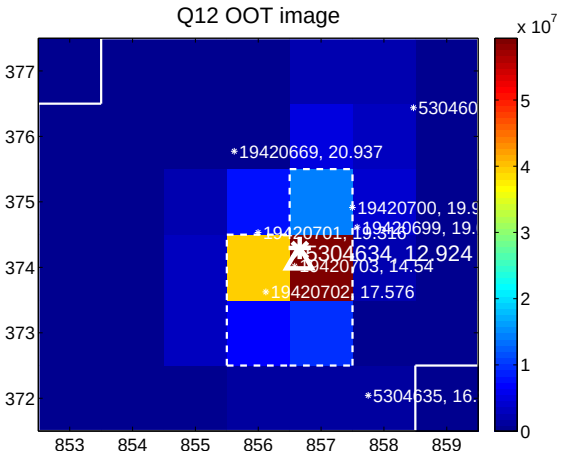



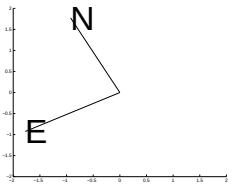





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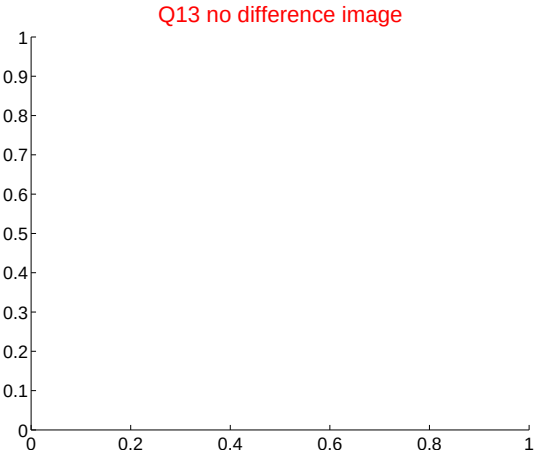


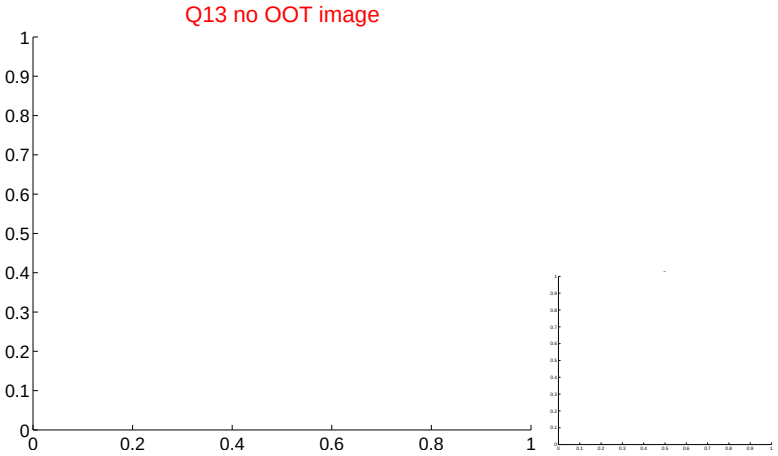


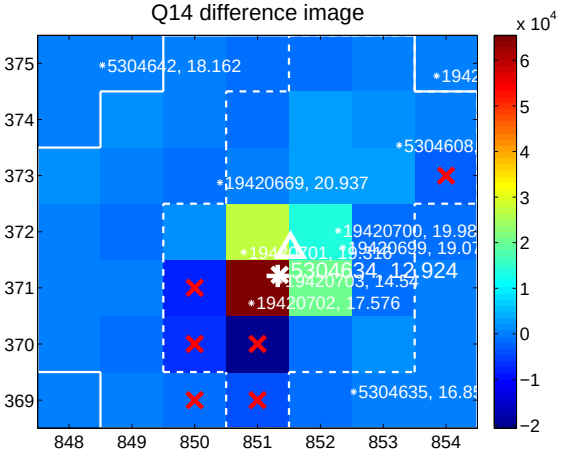


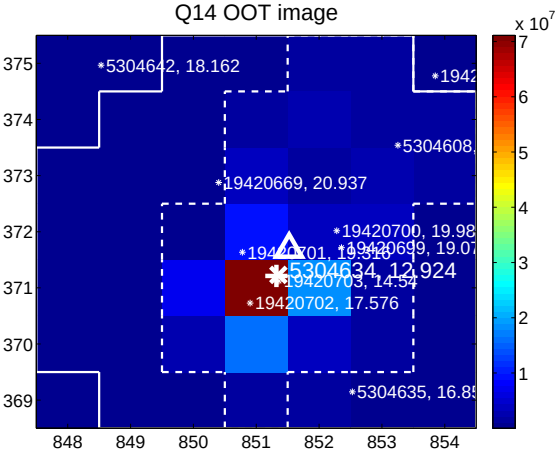


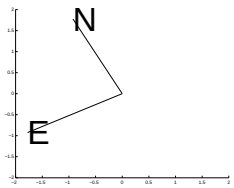


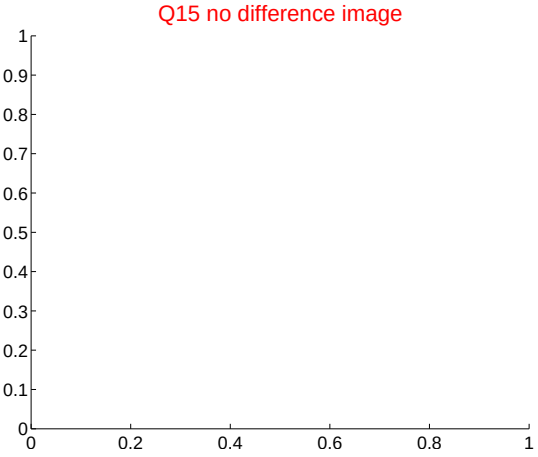


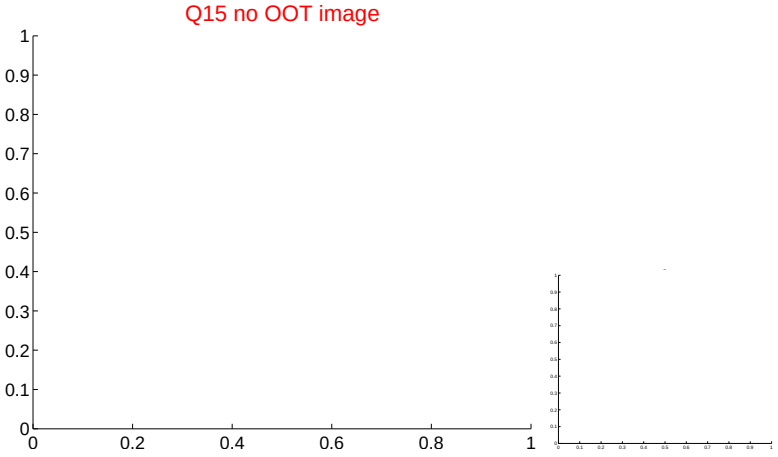

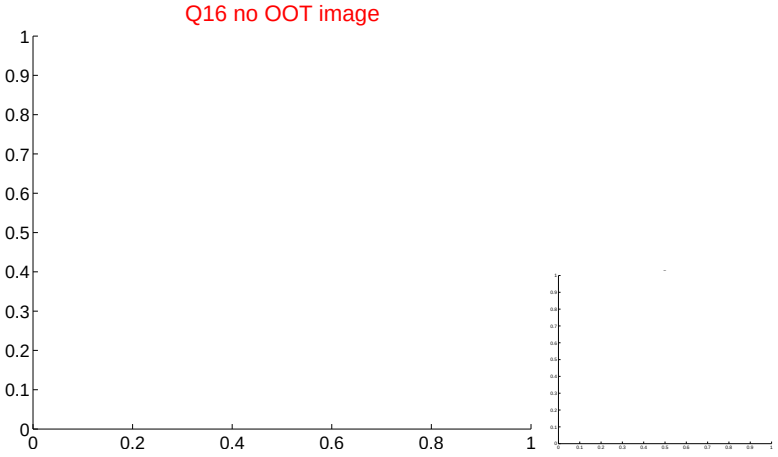

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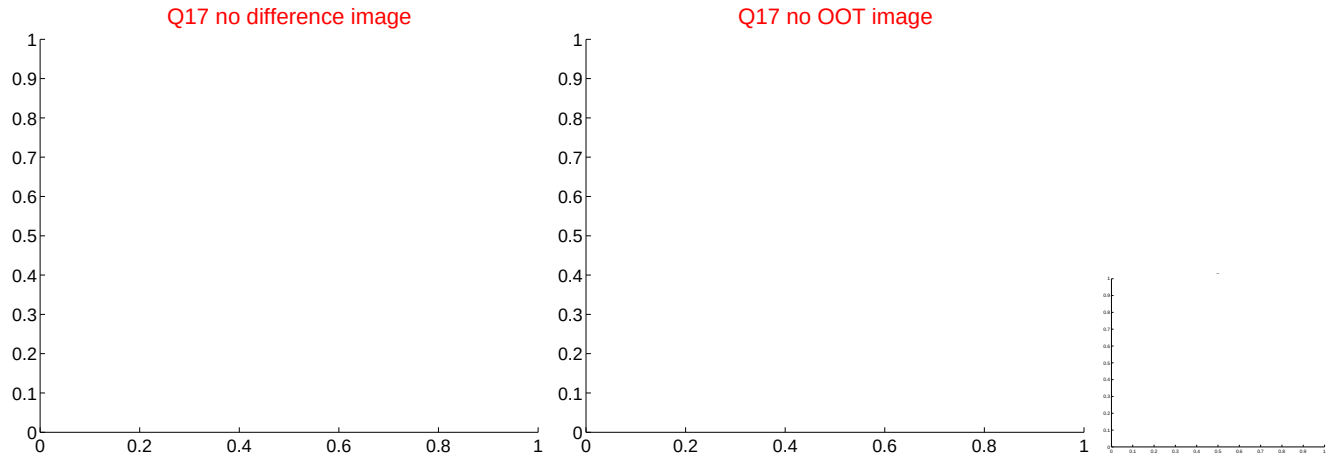
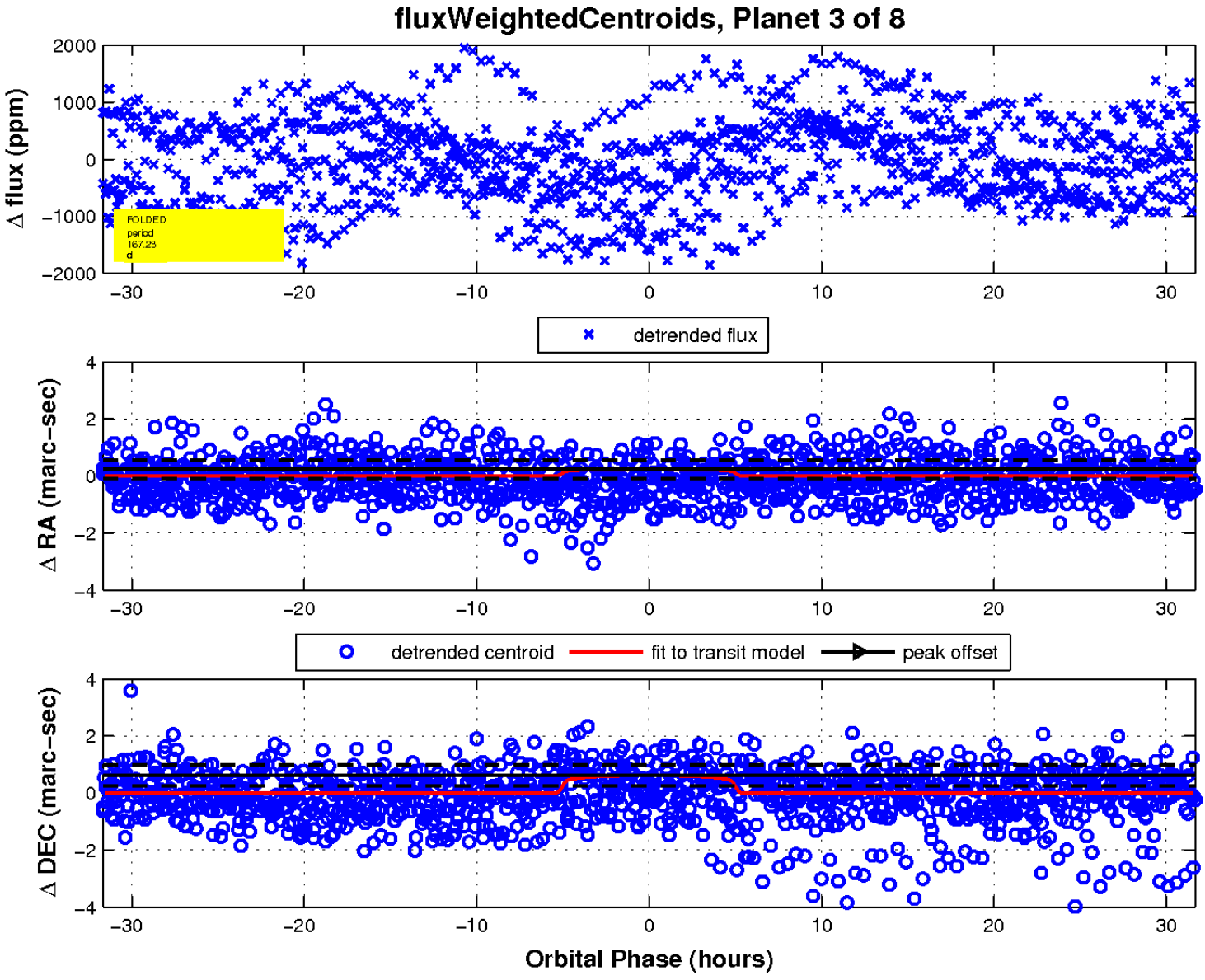
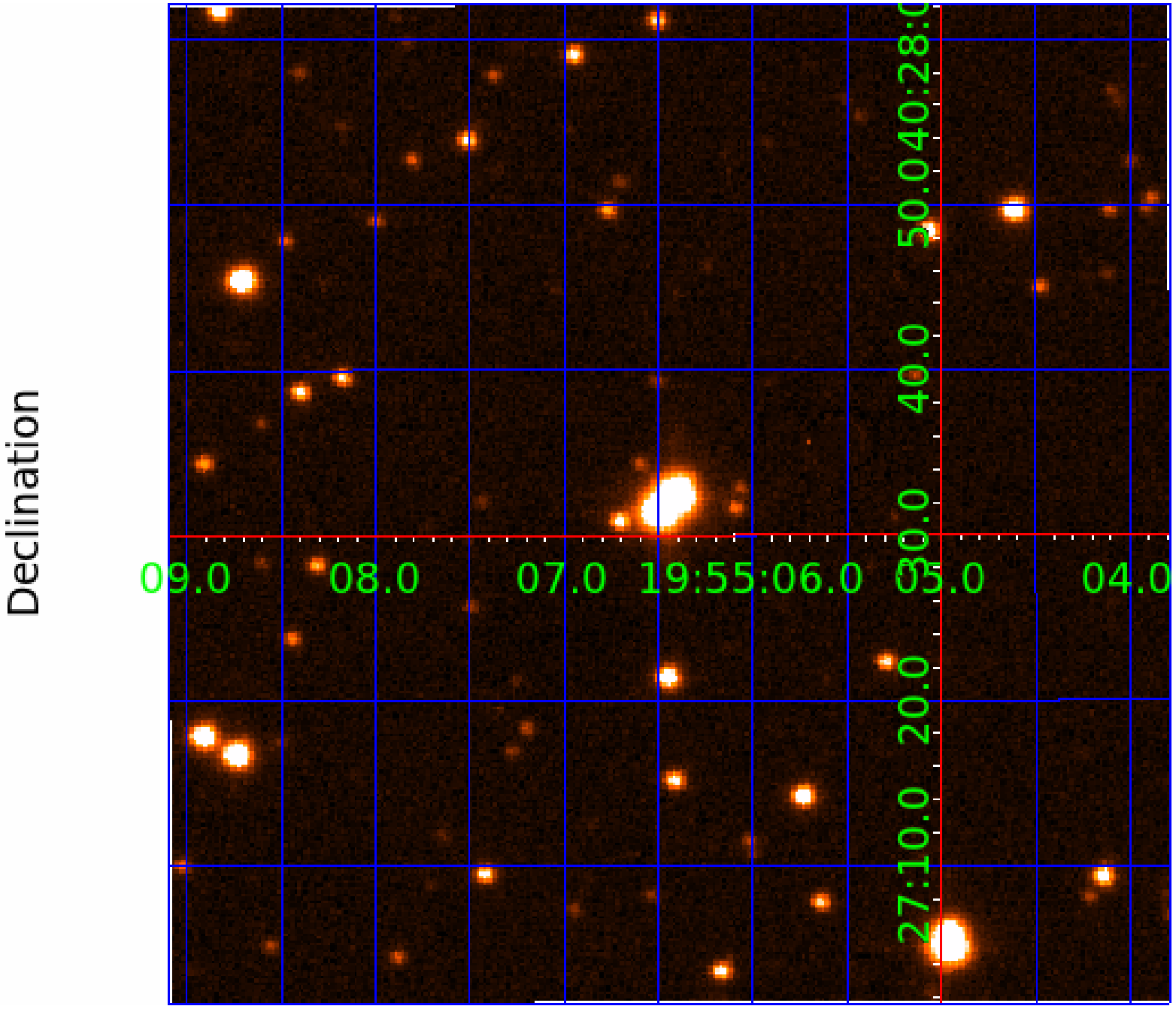


**UKIRT Image**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07.0
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05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

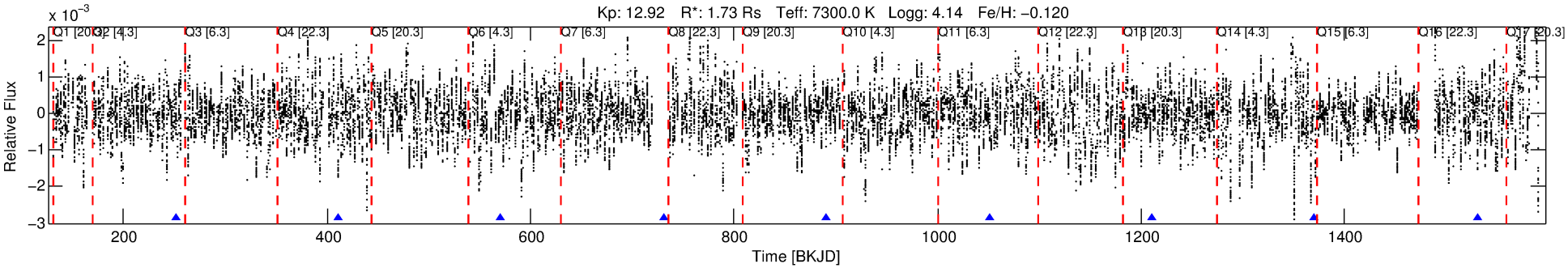
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

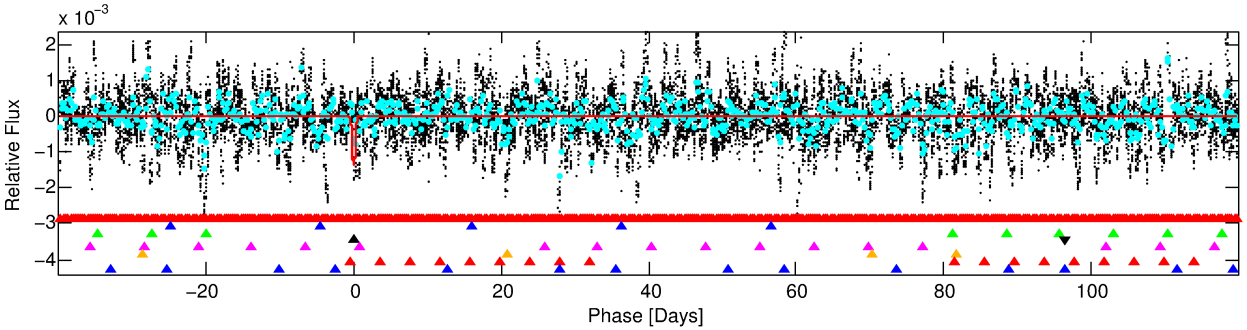
## Ephemeris Match Information For 005304634-04

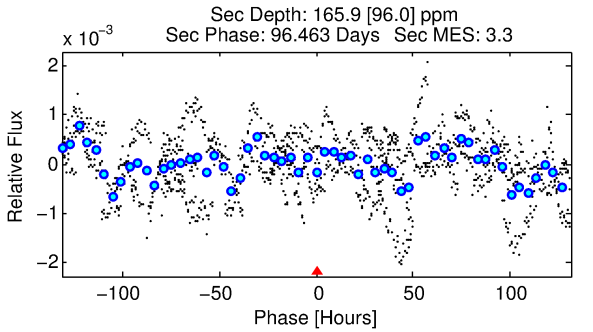
No Significant Match Found

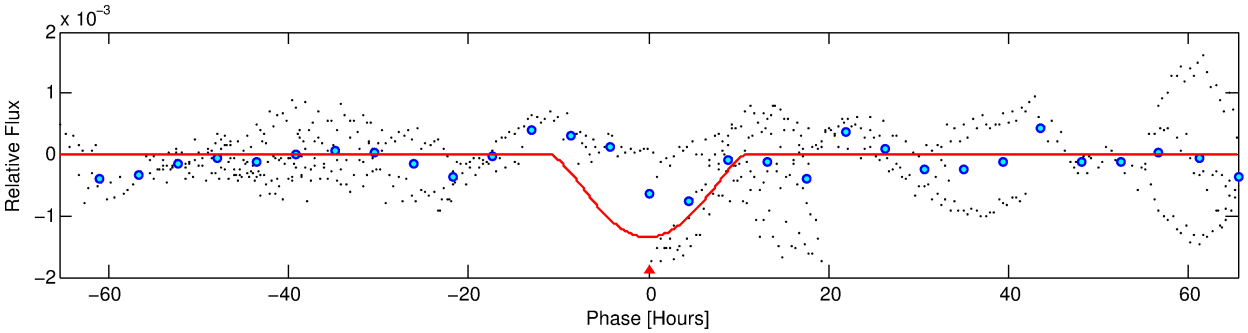
# DV One-Page Summary

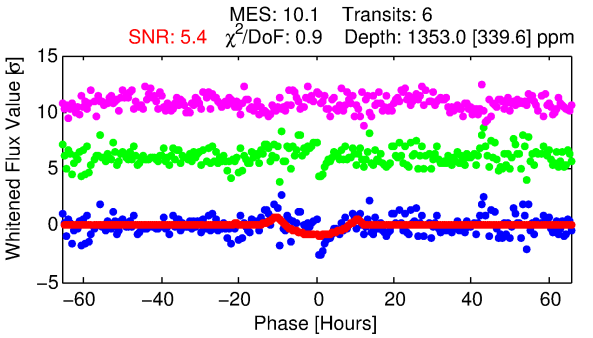
**KIC: 5304634 Candidate: 4 of 8 Period: 159.895 d**

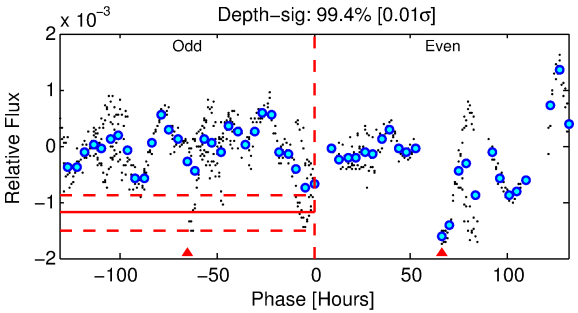


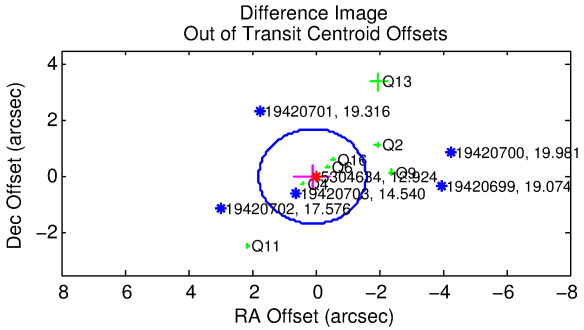




DV Fit Results:

Period = 159.89522 [0.00826] d
Epoch = 251.2530 [0.0367] BKJD
Rp/R* = 0.0619 [0.0973]
a/R* = 20.01 [6.70]
b = 1.00 [0.13]

Seff = 17.45 [7.42]
Teq = 521 [55] K
Rp = 11.66 [18.70] Re
a = 0.6591 [0.1686] AU

Ag = 291.51 [936.81] [0.31σ]
Teffp = 3329 [2666] K [1.05σ]

DV Diagnostic Results:

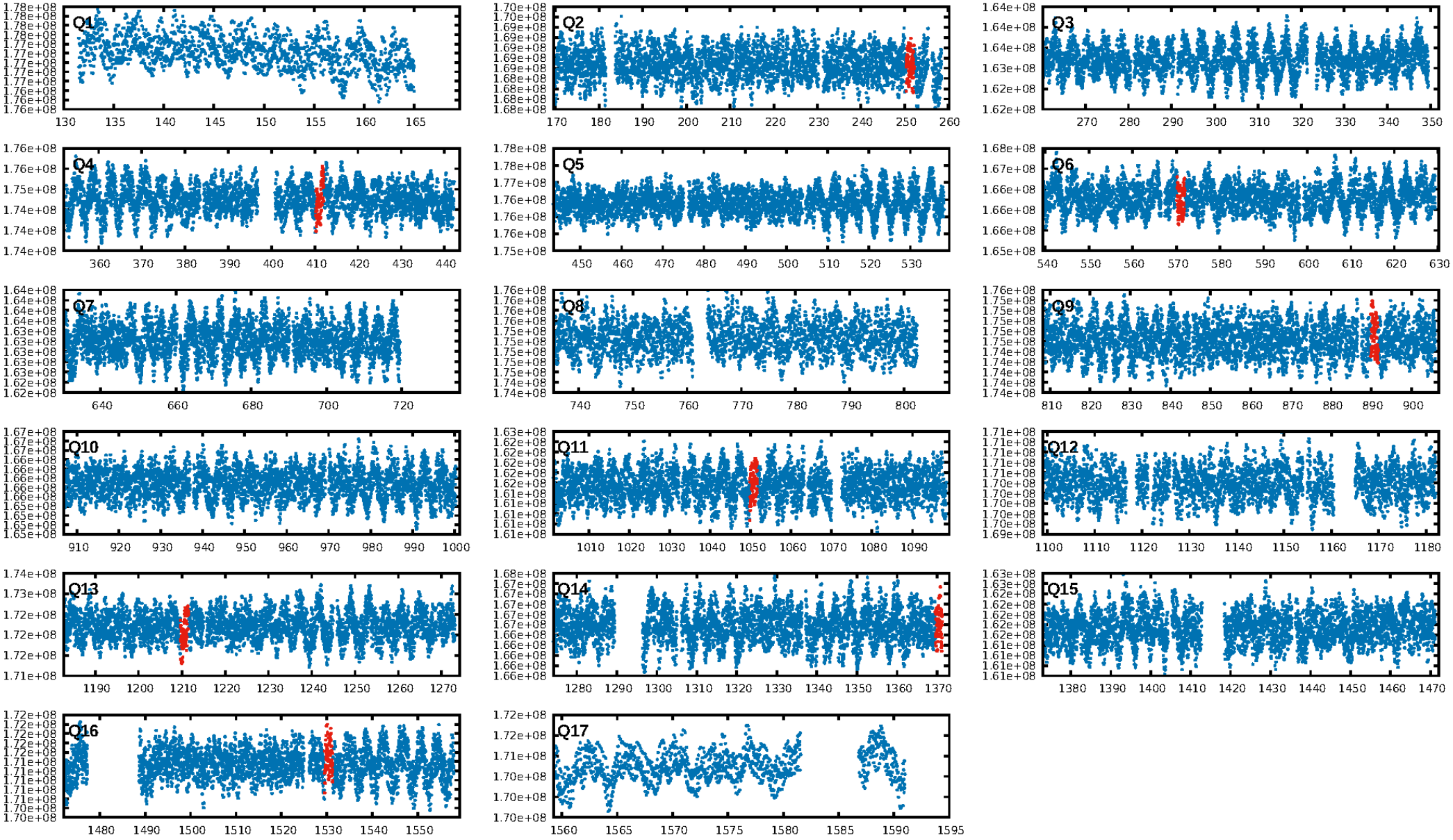
ShortPeriod−sig: 100.0% [61.66σ]
LongPeriod−sig: 100.0% [7.25σ]
ModelChiSquare2−sig: 0.2%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [6/6]
GhostDiagnostic−chr: 2.992

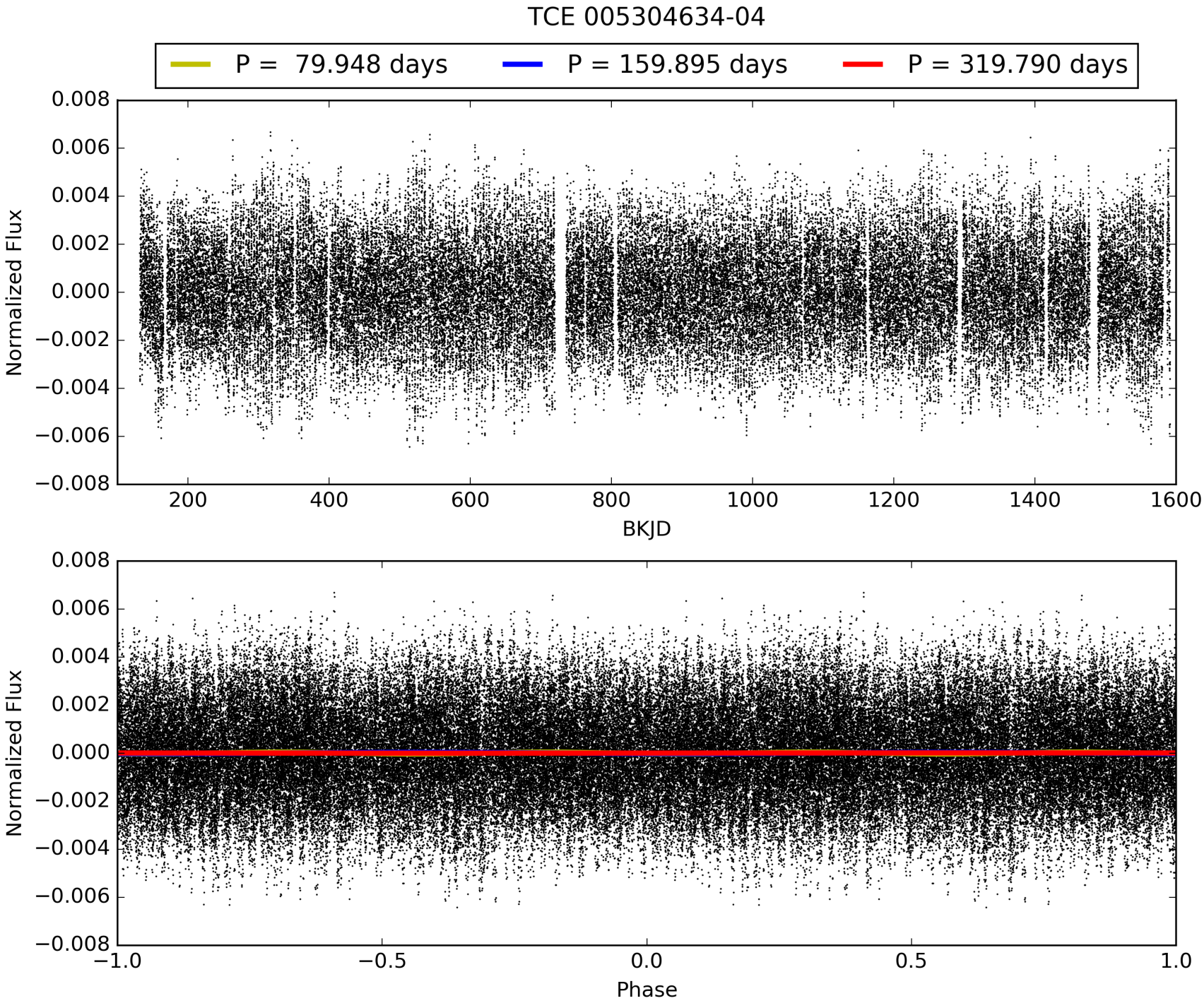
Centroid−sig: 12.7%
Centroid−so: 0.468 arcsec [1.60σ]
OotOffset−rm: 0.095 arcsec [0.17σ]
KicOffset−rm: 0.132 arcsec [0.25σ]
OotOffset−st: 2/1/2/2 [7]
KicOffset−st: 2/1/2/2 [7]
DiffImageQuality−fgm: 0.29 [2/7]
DiffImageOverlap−fno: 0.00 [0/7]

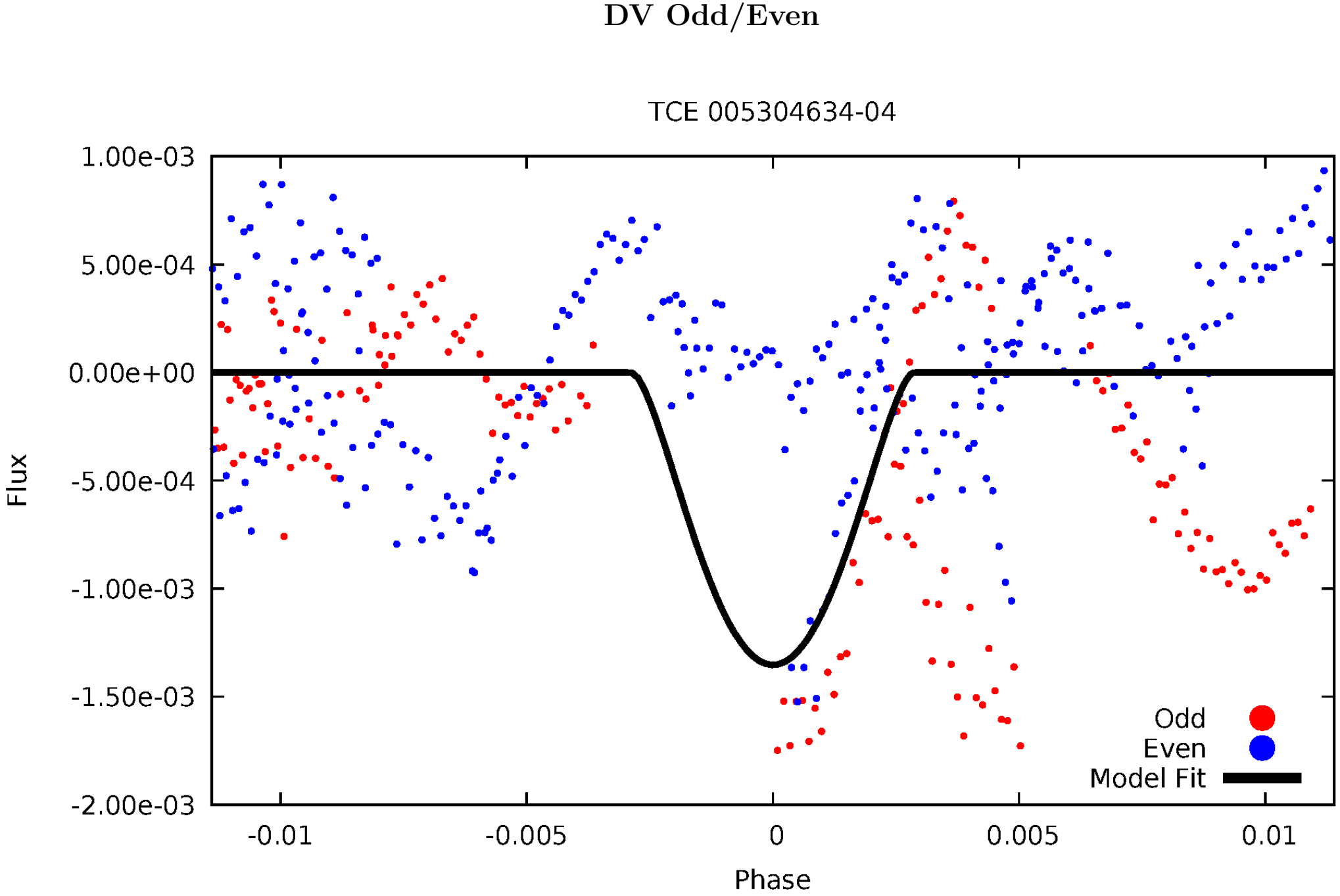
**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:08 Z**

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

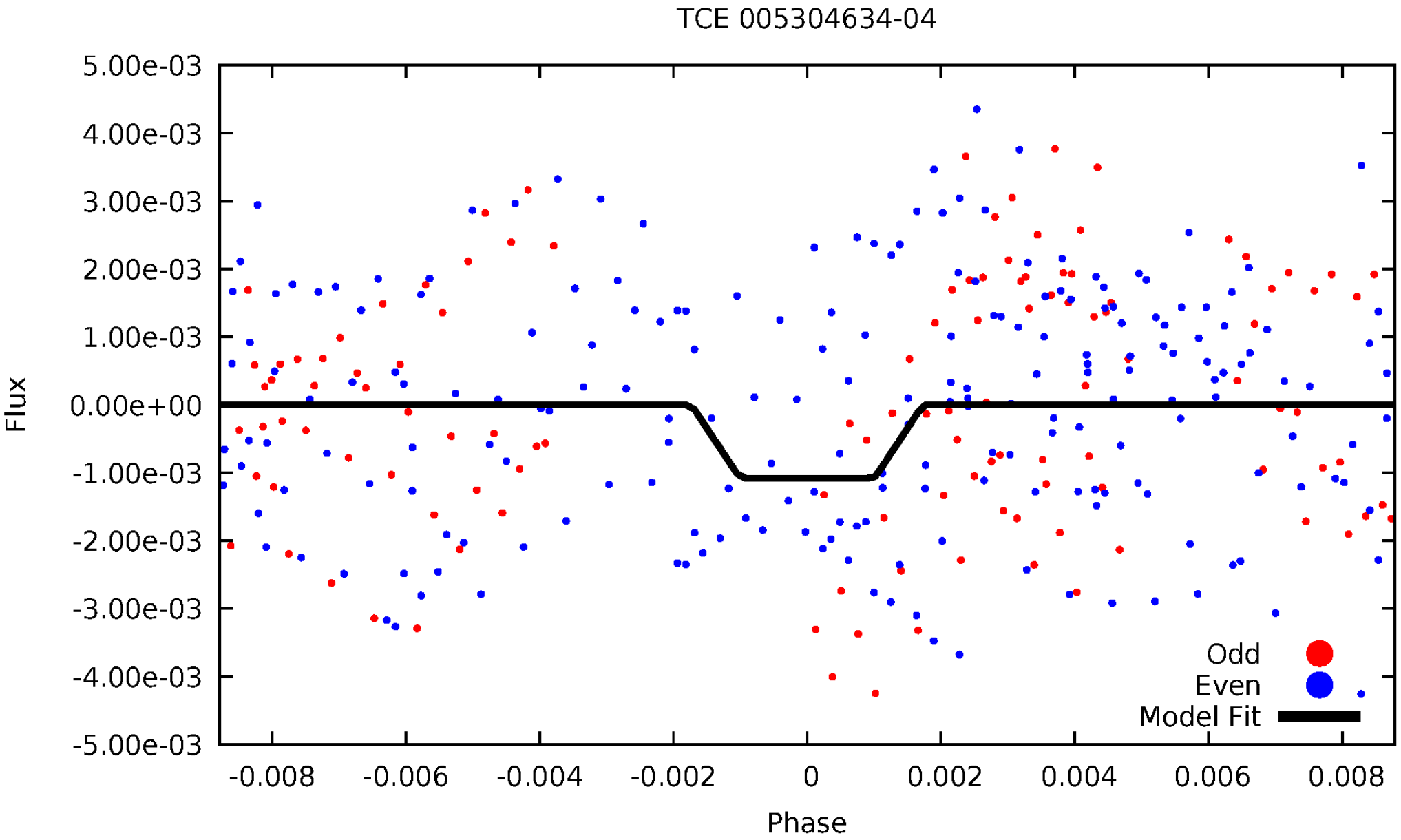
# TCE 005304634-04, PDC Light Curves



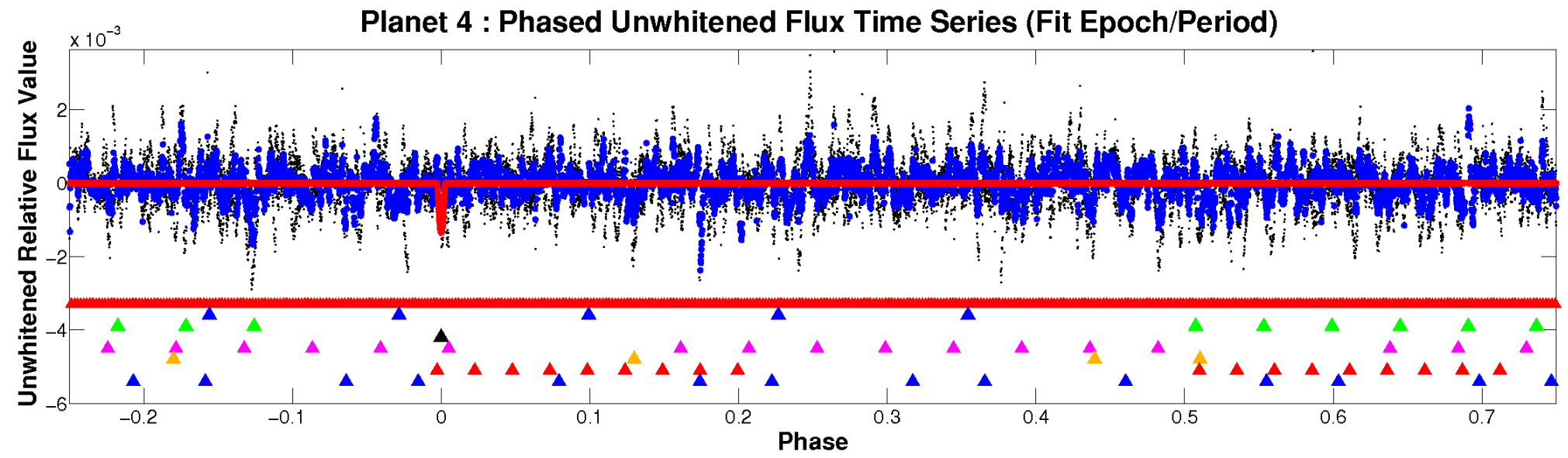

TCE 005304634-04
P = 79.948 days
P = 159.895 days
P = 319.790 days
Normalized Flux
BKJD
Normalized Flux
Phase

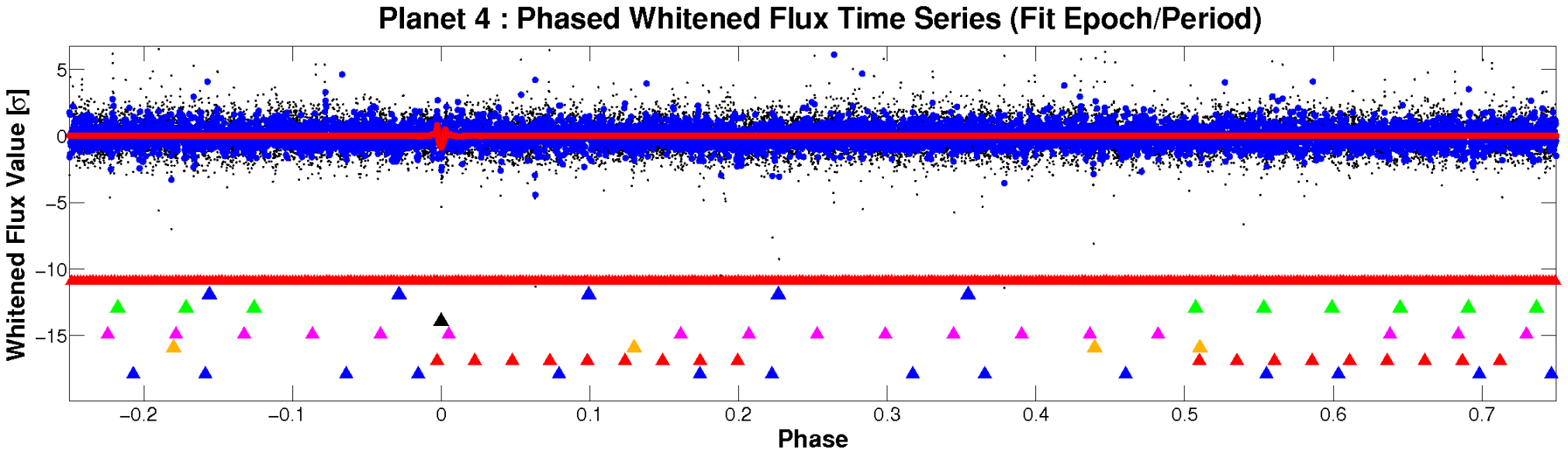

DV Odd/Even
TCE 005304634-04
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
Flux
-0.01
-0.005
0
0.005
0.01
Phase
Odd
Even
Model Fit

**ALT Odd/Even**


TCE 005304634-04
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
-5.00e-03
Flux
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit

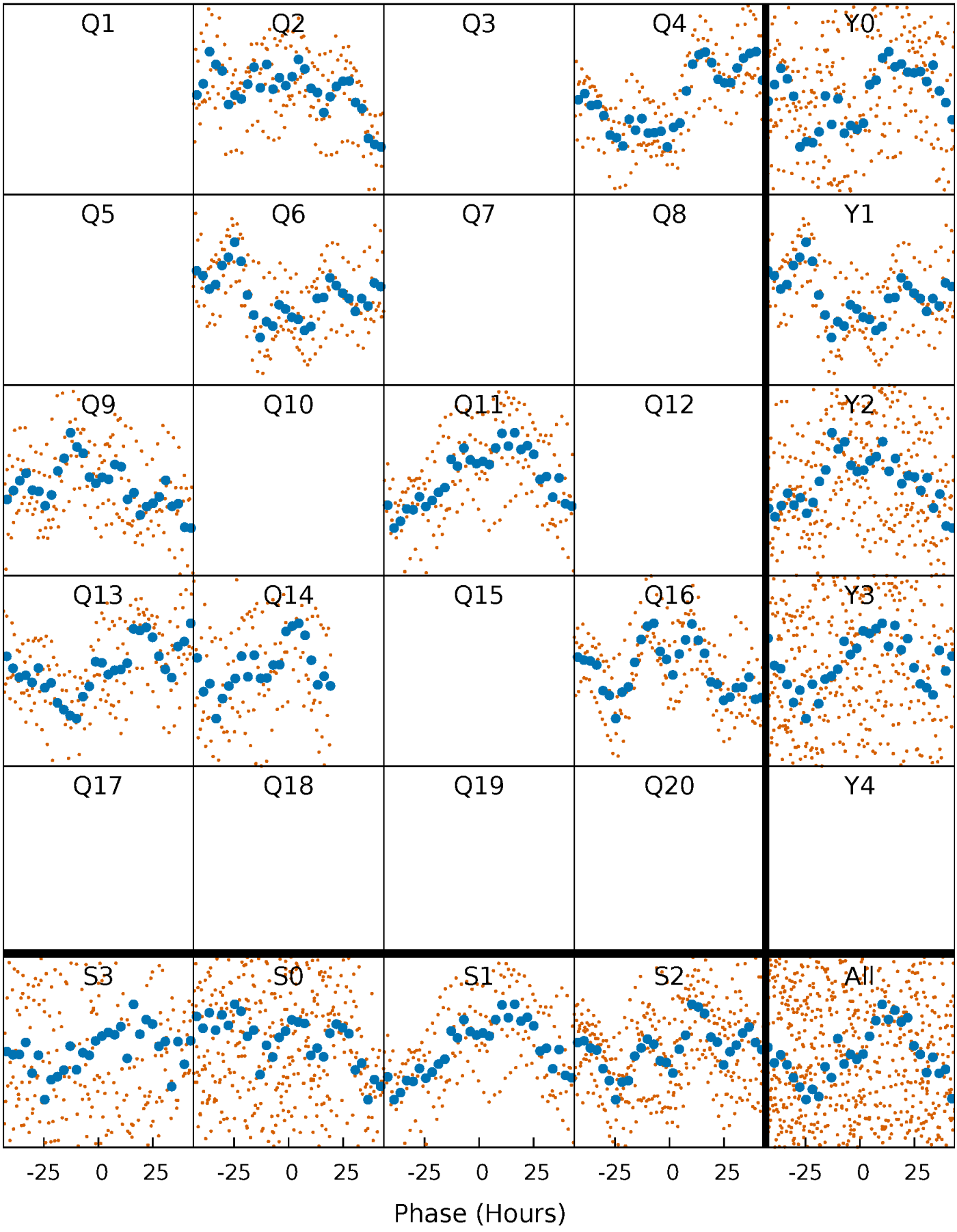
# Non-Whitened Vs. Whitened Light Curve



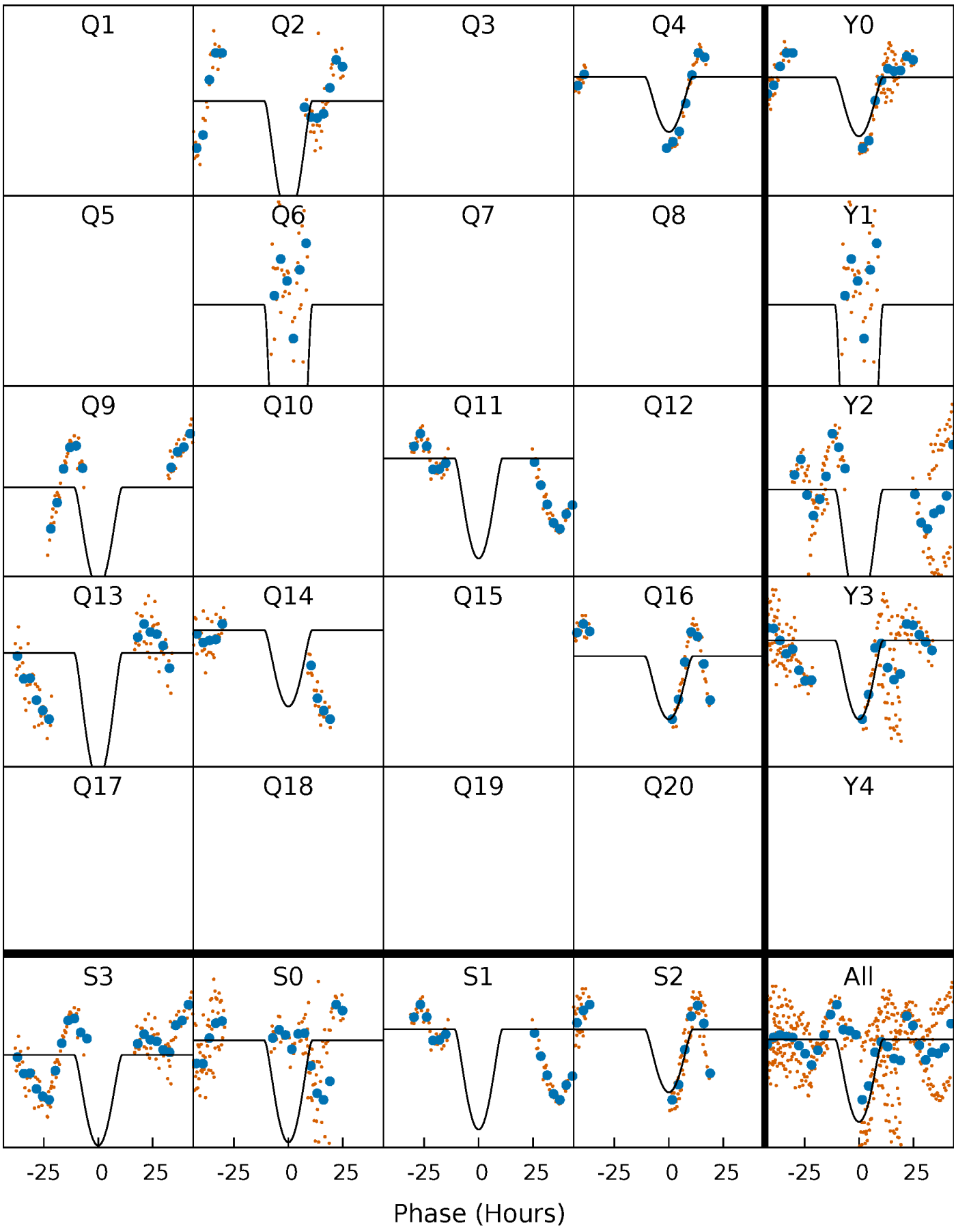
# PDC Quarter-Phased Transit Curves

TCE 005304634-04  P=159.895217 Days  $T_0$=251.253032 (BKJD)



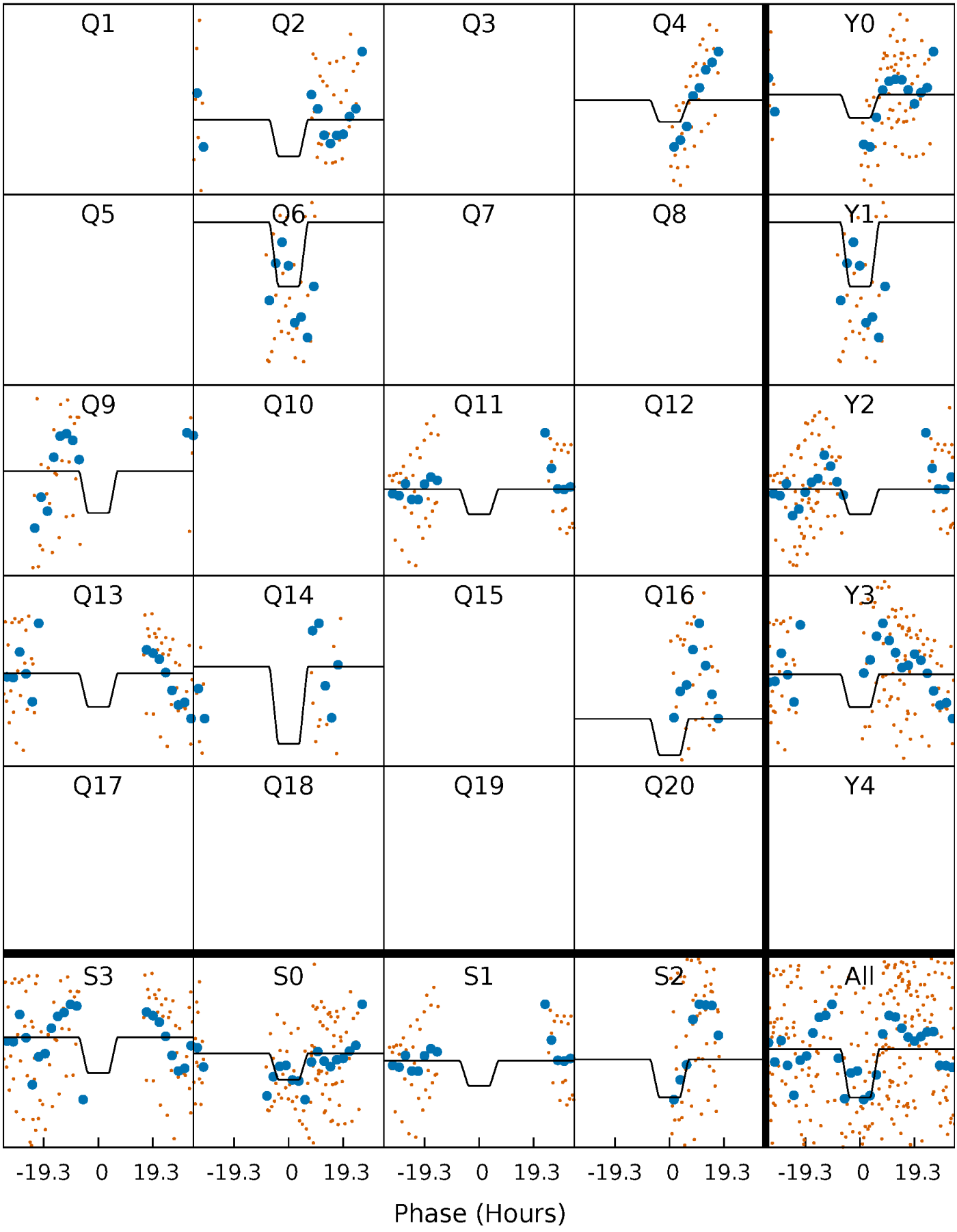
# DV Quarter-Phased Transit Curves

TCE 005304634-04  P=159.895217 Days  $T_0$=251.253032 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

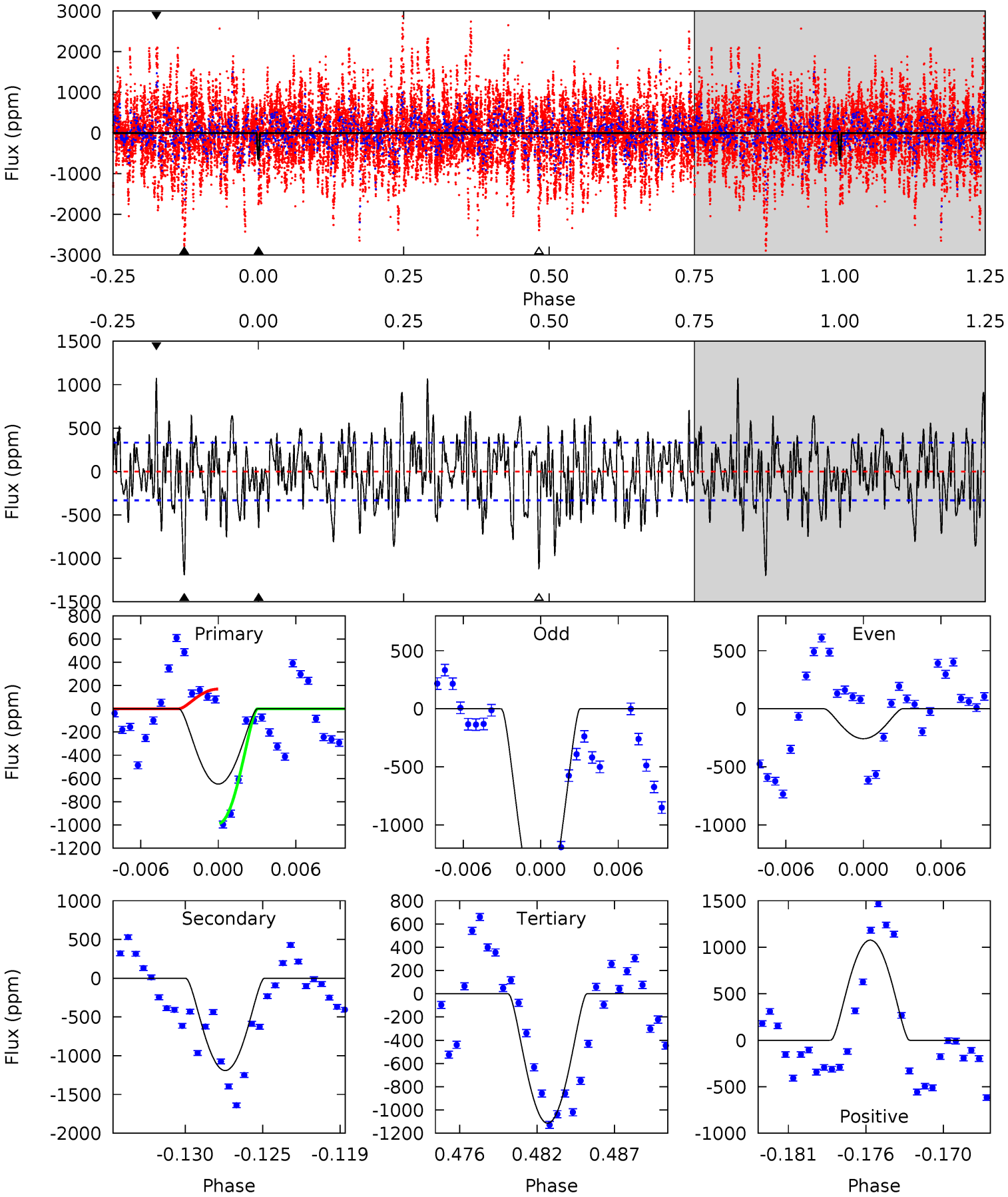
TCE 005304634-04 P=159.902052 Days $T_0$=251.241275 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-04, P = 159.895217 Days, E = 91.357815 Days

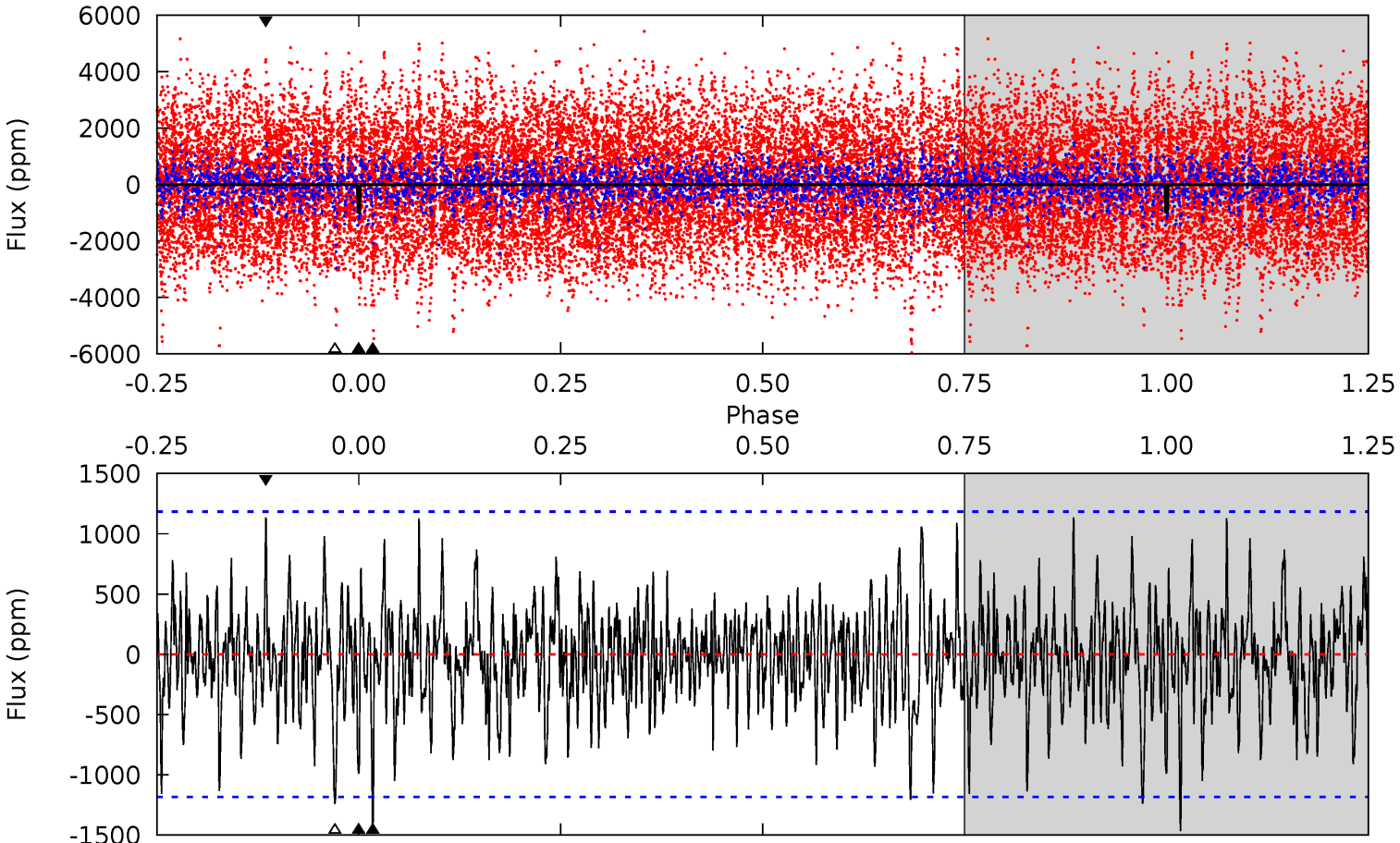
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.0 | 18.4 | 17.2 | 16.6 | 5.13 | 2.77 | 4.84 | -7.20 | -6.62 | 1.20 | 1.78 | 10.7 | 1.45 | 0.47 | 5.58 |



# Alt Model-Shift Uniqueness Test

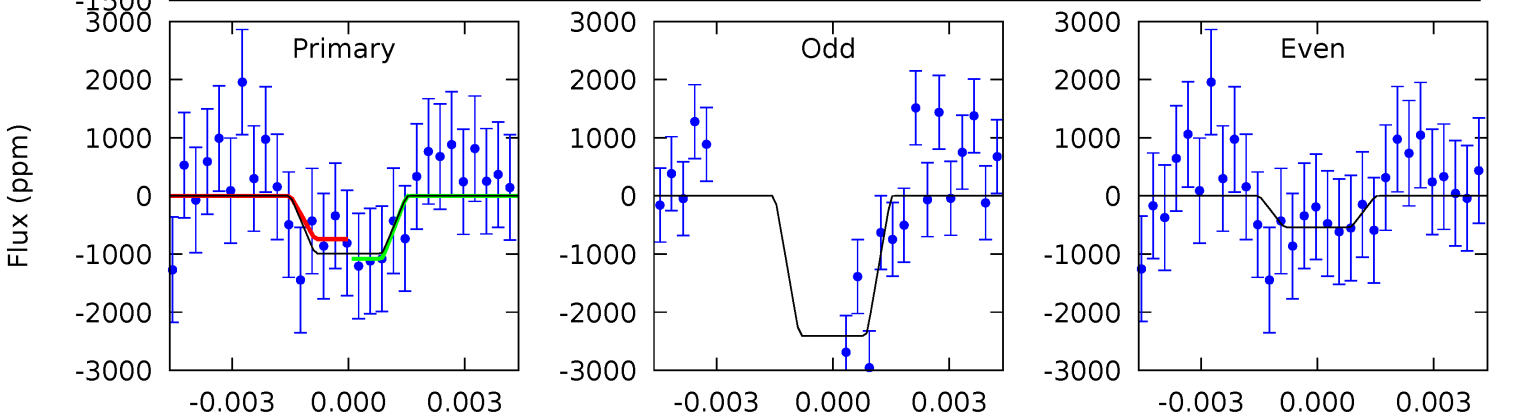
005304634-04, P = 159.902052 Days, E = 91.339223 Days

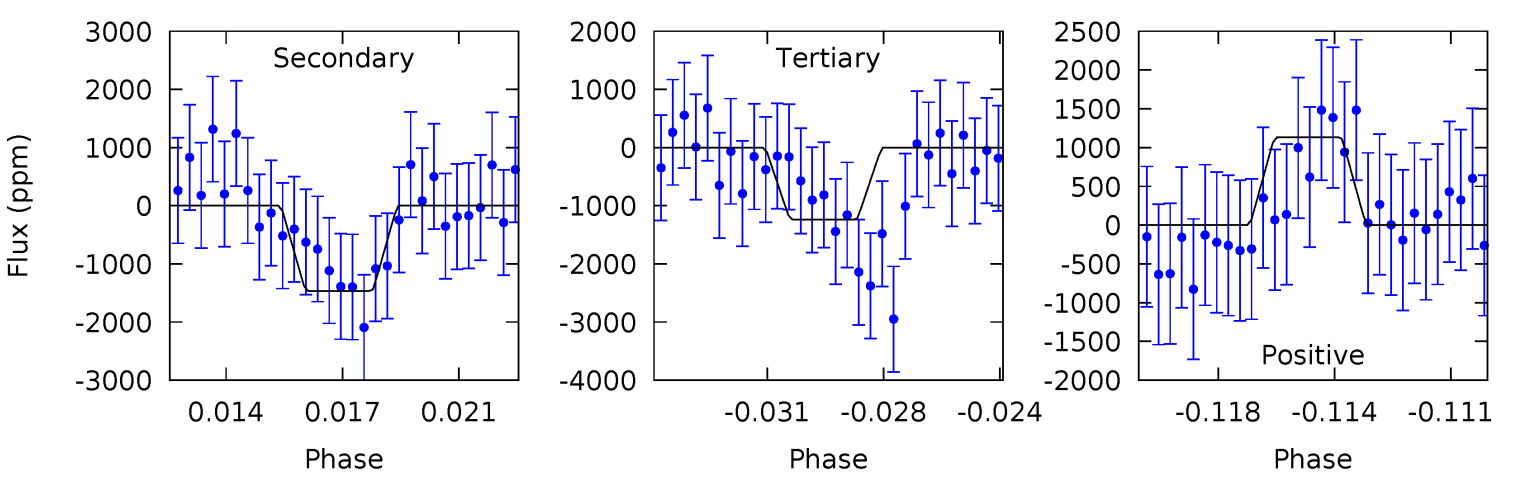
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.38 | 6.47 | 5.47 | 5.01 | 5.23 | 2.92 | 1.57 | -1.09 | -0.63 | 1.00 | 1.47 | 3.52 | 0.92 | 0.44 | 0.64 |









Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-04 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -1192±65 | $18.07^{+17.22}_{-12.25}$ | $731^{+57}_{-62}$ | $4503^{+3216}_{-961}$ | $861^{+7365}_{-640}$ |
| Alt. | -1467±227 | $15.17^{+15.49}_{-10.08}$ | $727^{+62}_{-59}$ | $5054^{+4088}_{-1203}$ | $1501^{+12649}_{-1146}$ |

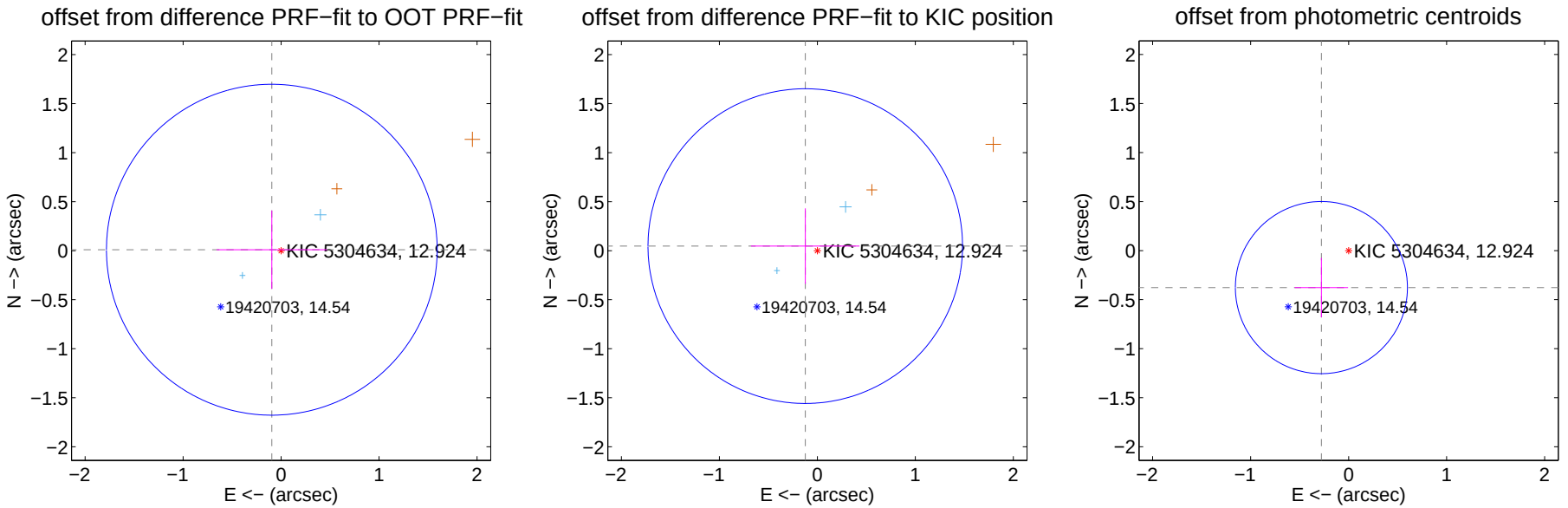
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

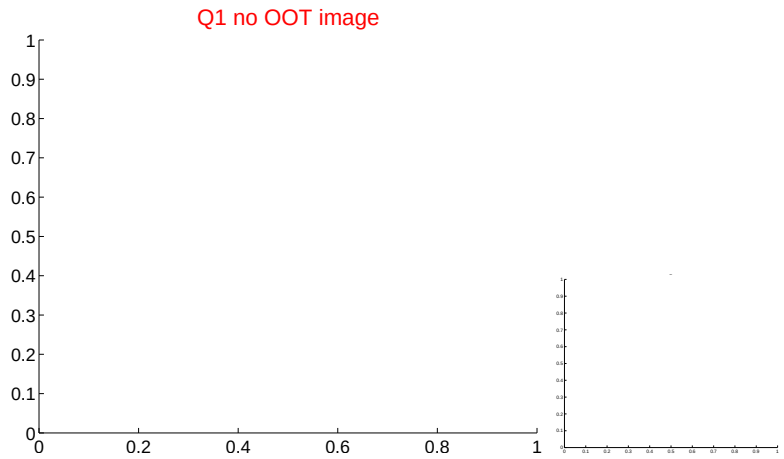
Supplemental centroid analysis for 005304634-04. Kepler magnitude: 12.92. Transit SNR 5.45
There are 2 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

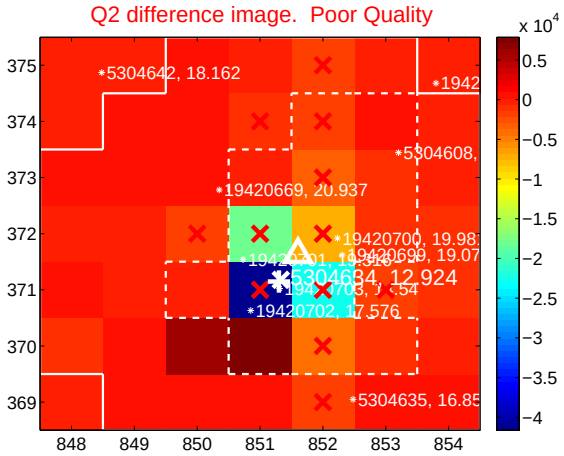
| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.095 ± 0.563 | 0.17 | 0.095 ± 0.564 | 0.010 ± 0.400 |
| PRF-fit source offset from KIC position | 0.132 ± 0.535 | 0.25 | 0.123 ± 0.553 | 0.047 ± 0.385 |
| photometric centroid source offset | 0.47 ± 0.29 | 1.60 | 0.28 ± 0.27 | -0.38 ± 0.30 |

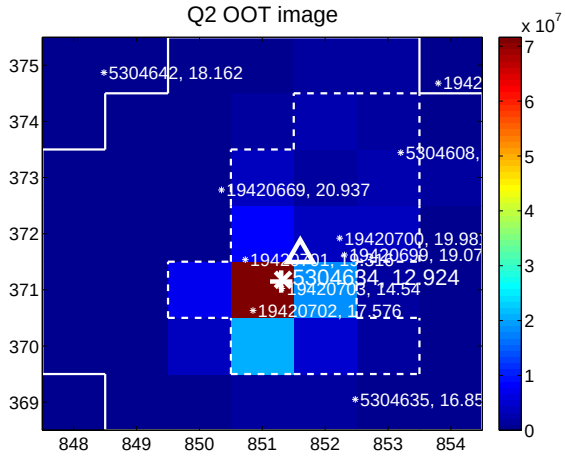


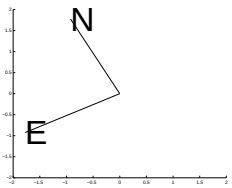

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

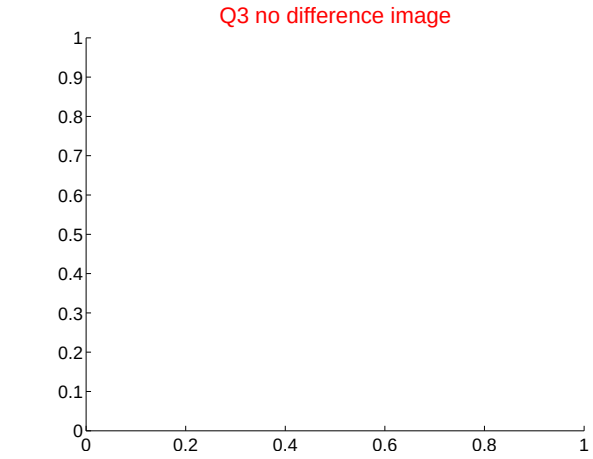
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

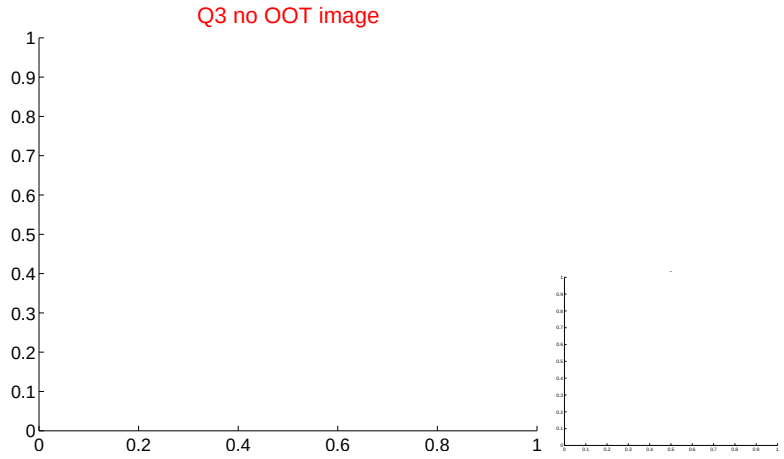


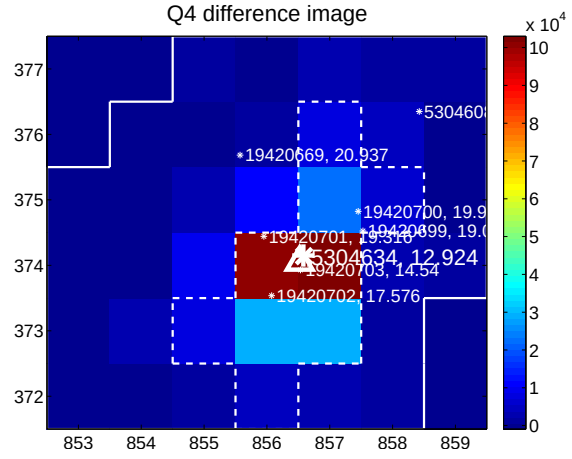



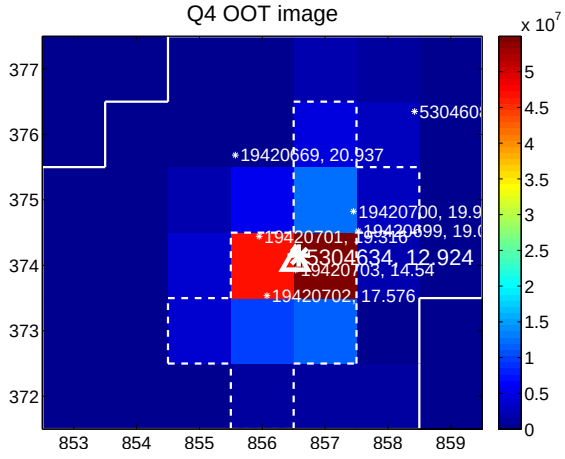



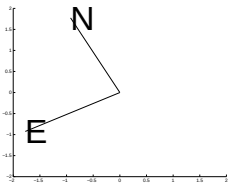



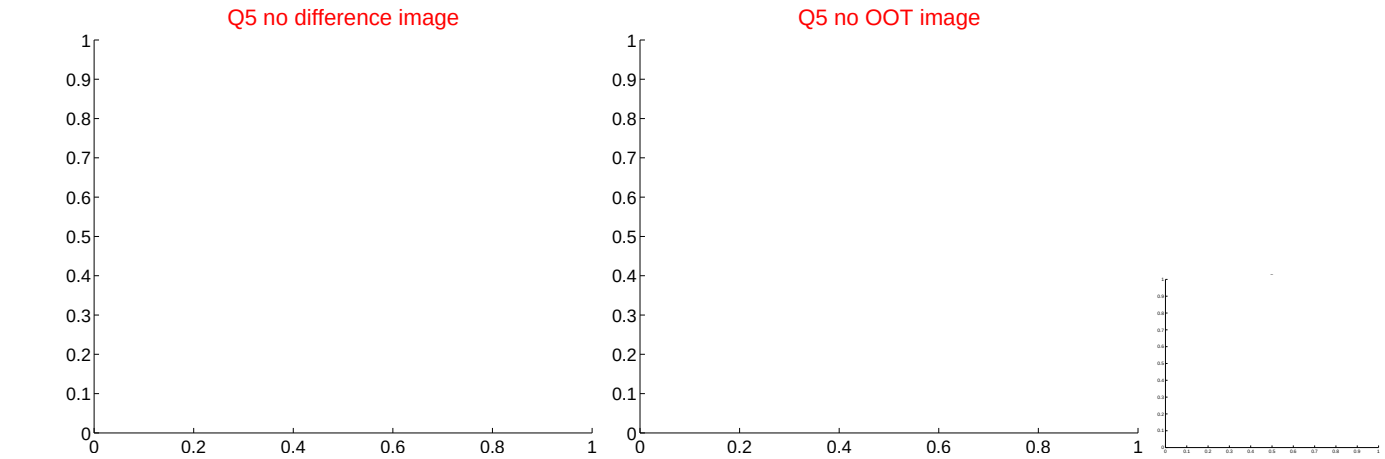



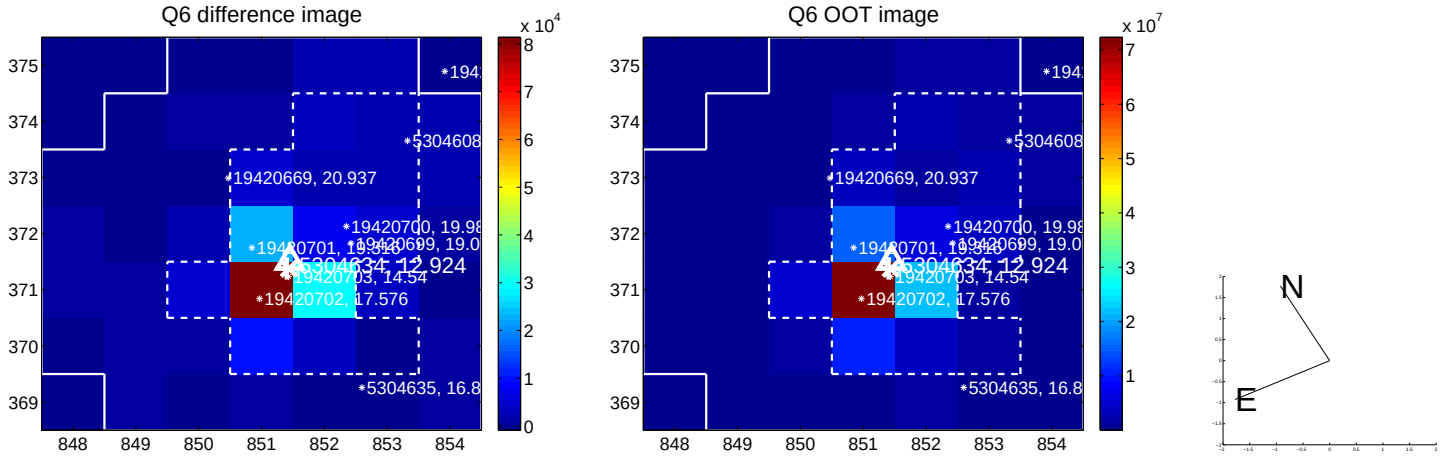



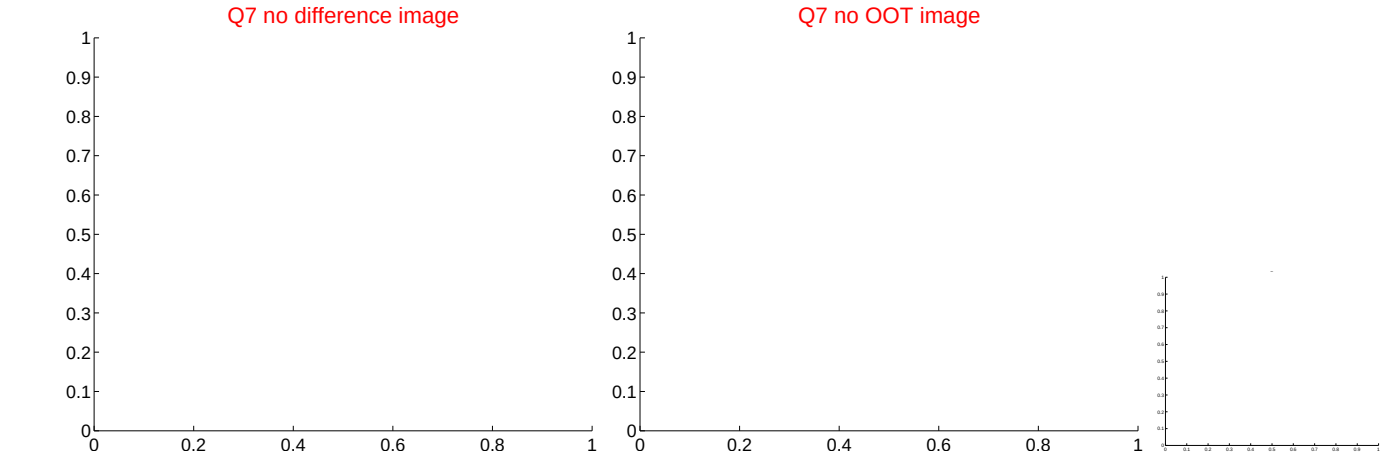



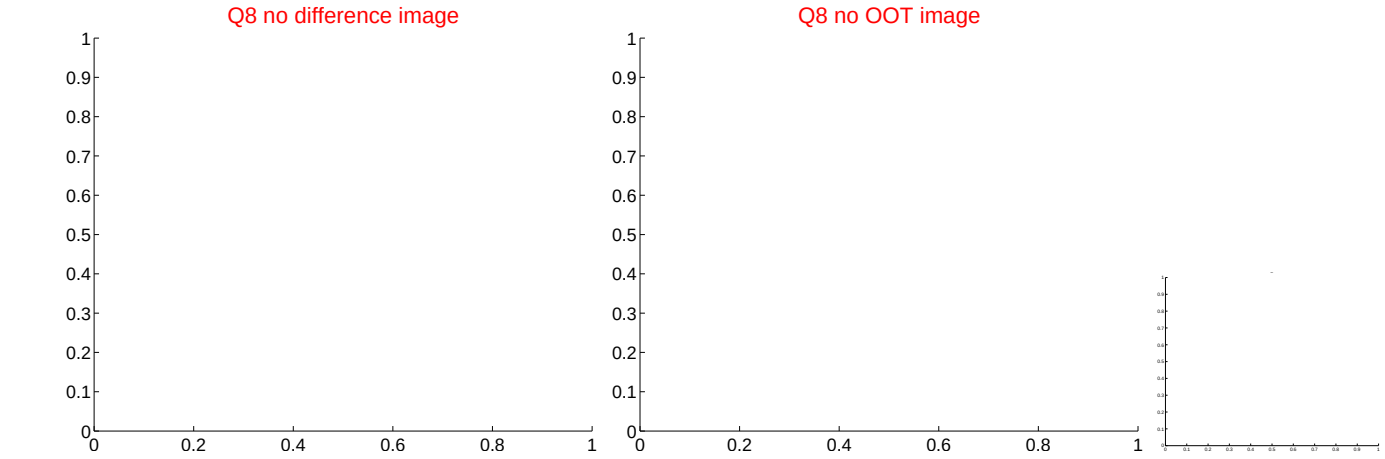



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

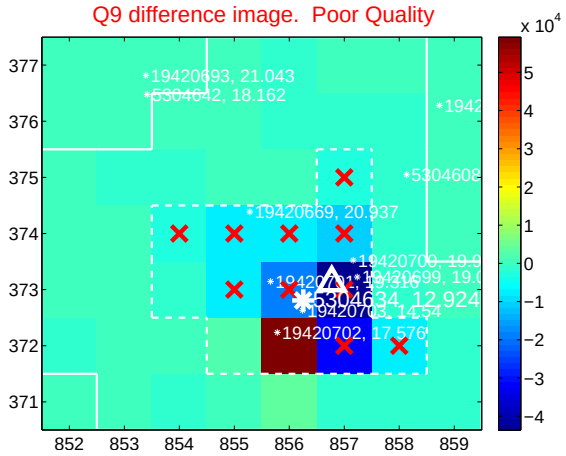


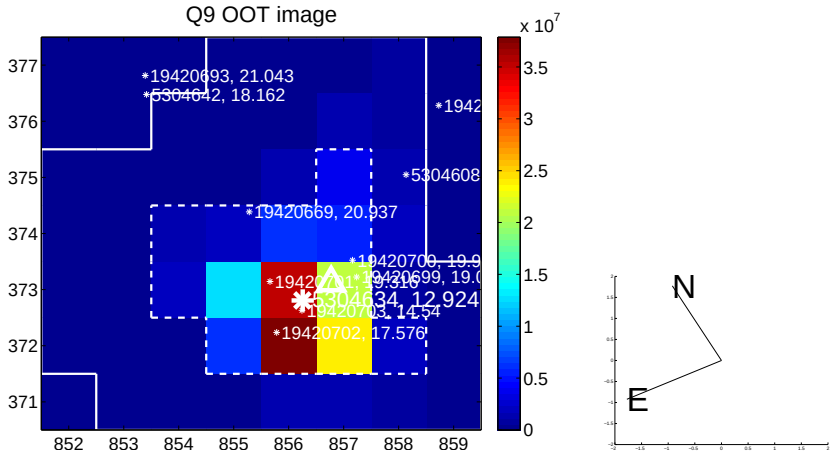



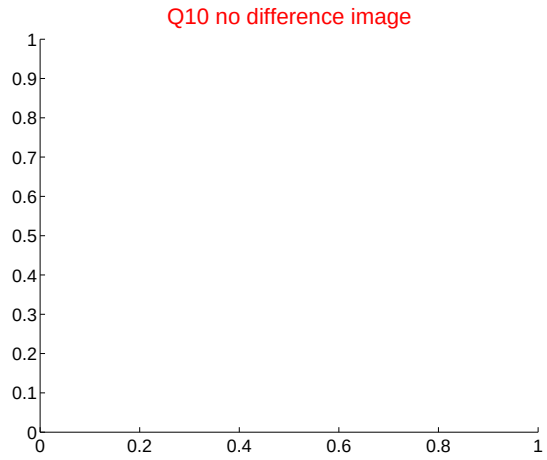



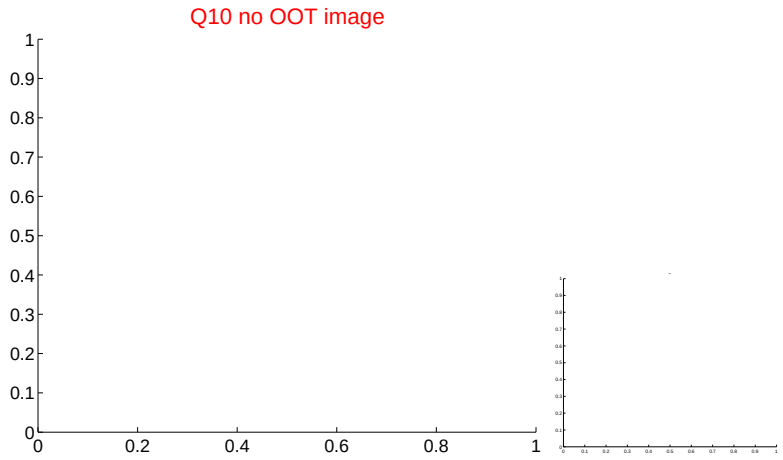



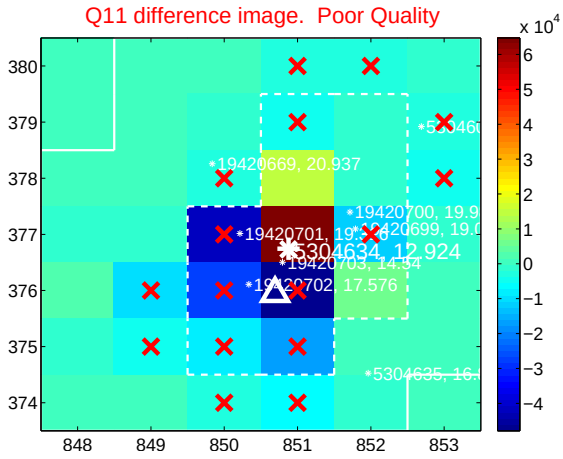
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

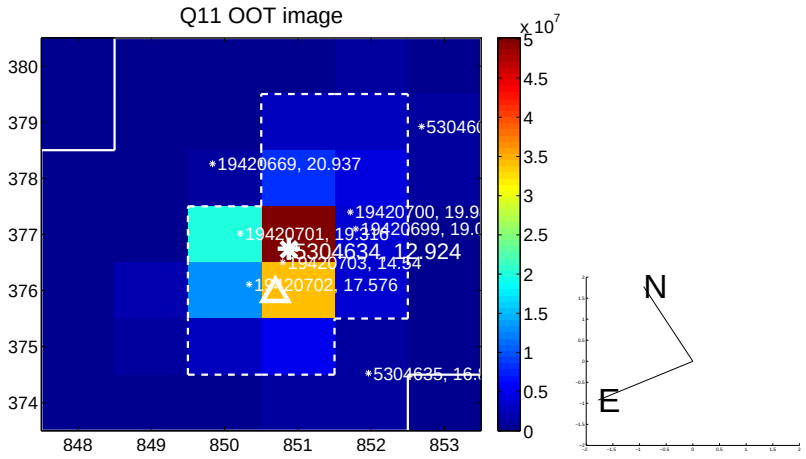


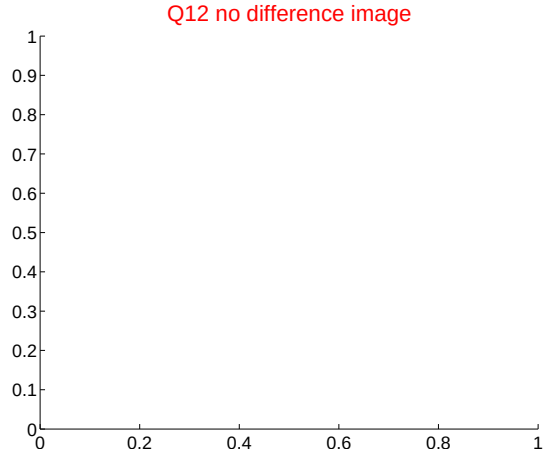



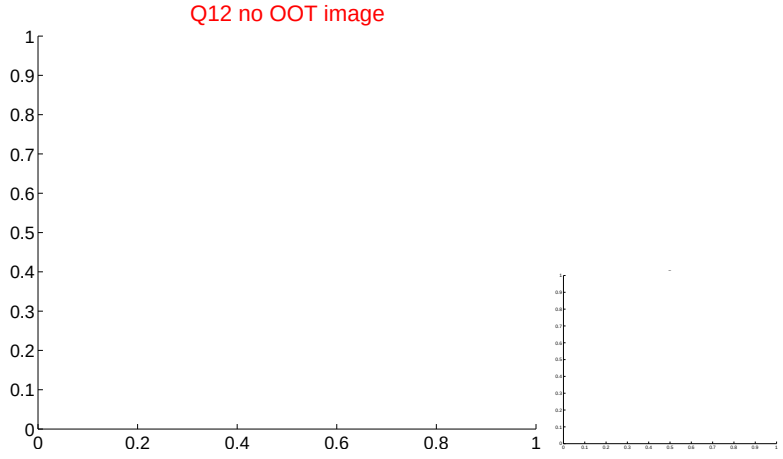



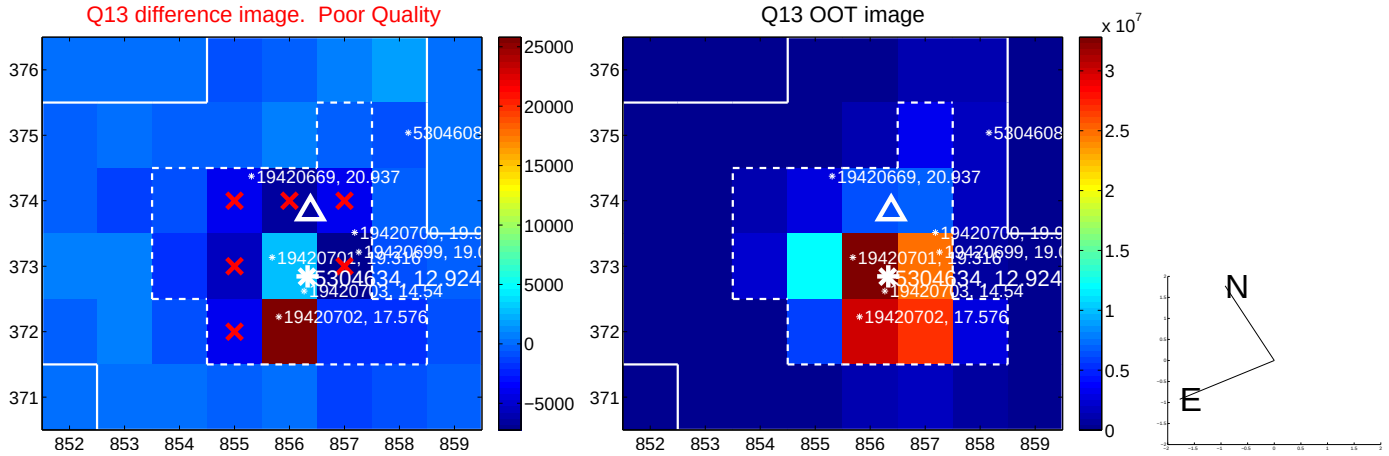



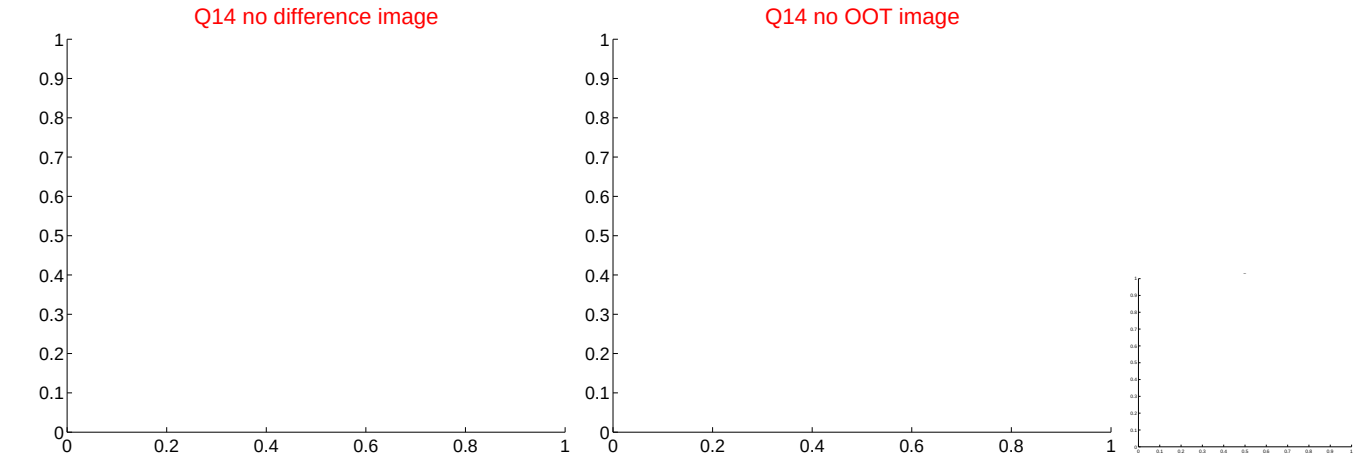



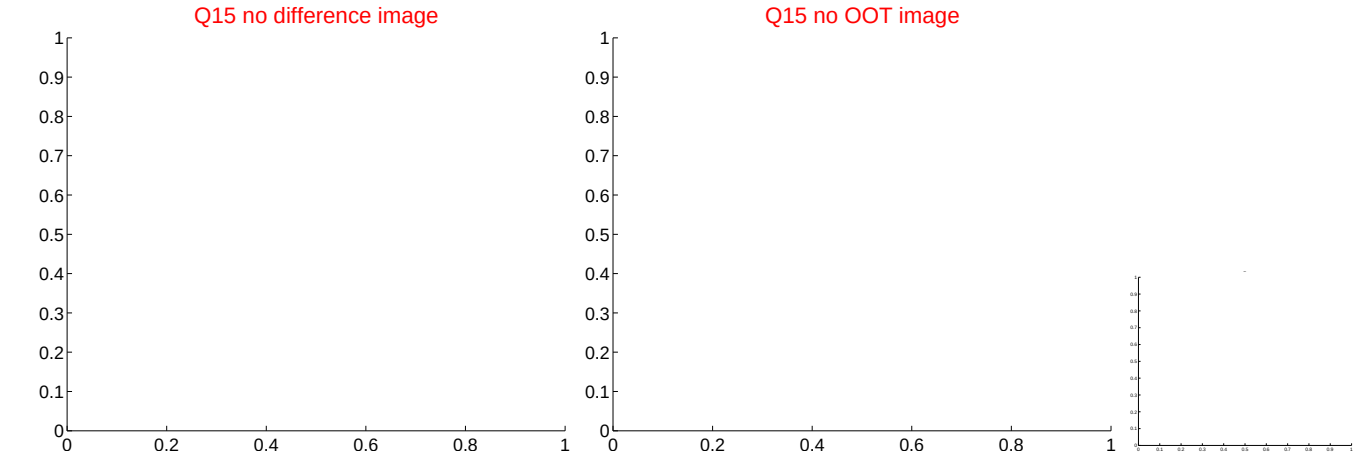



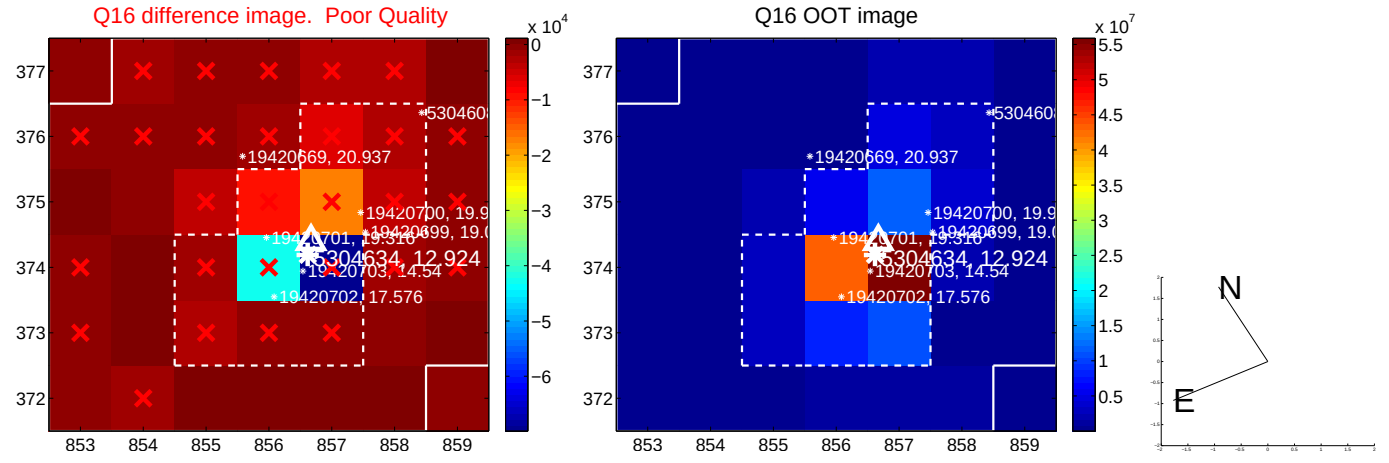



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

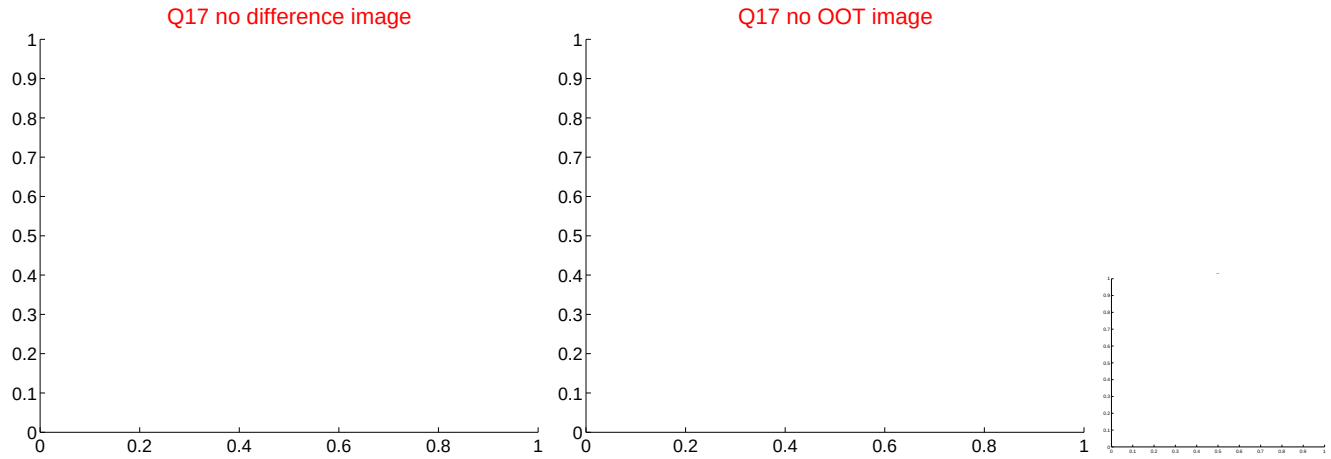


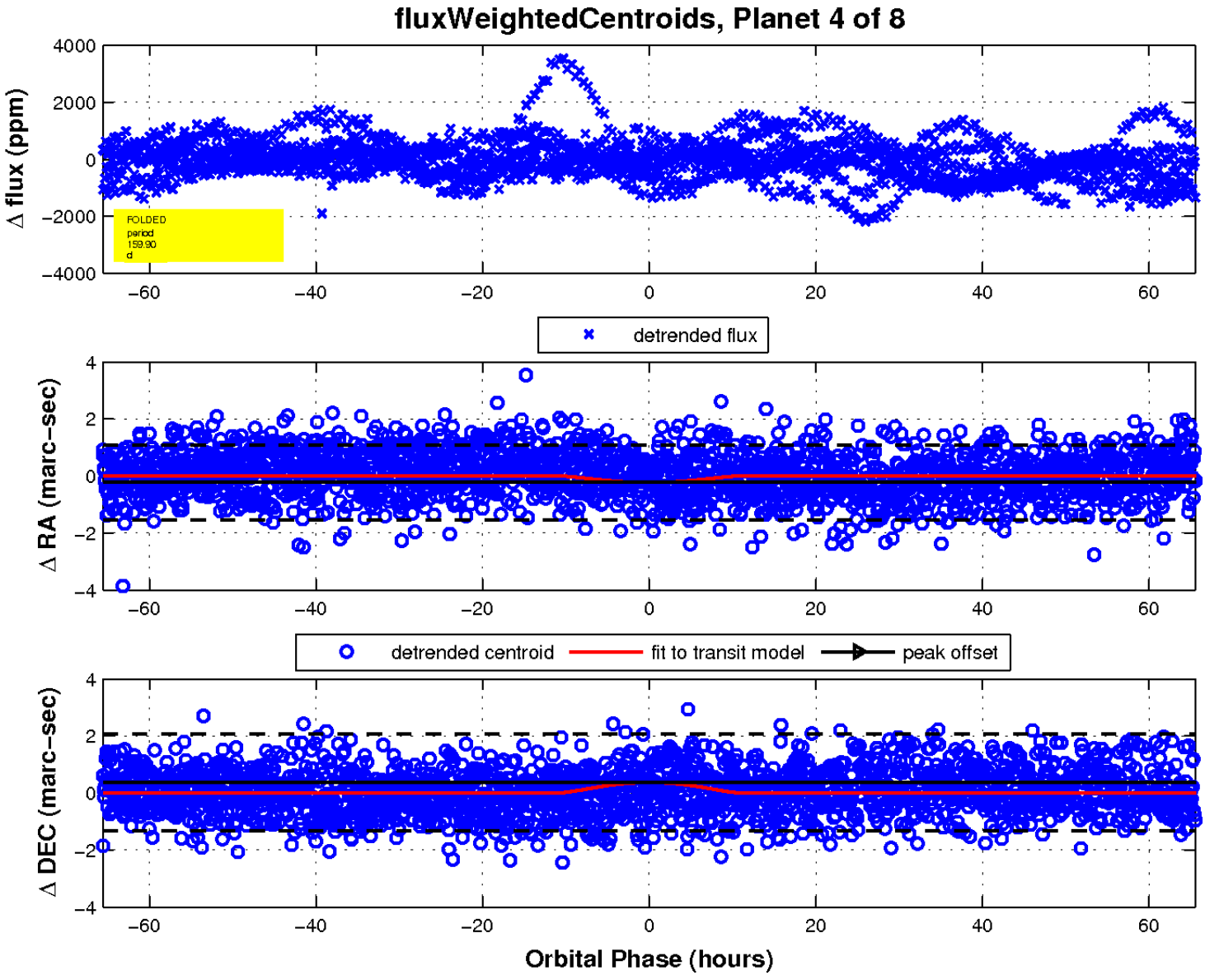



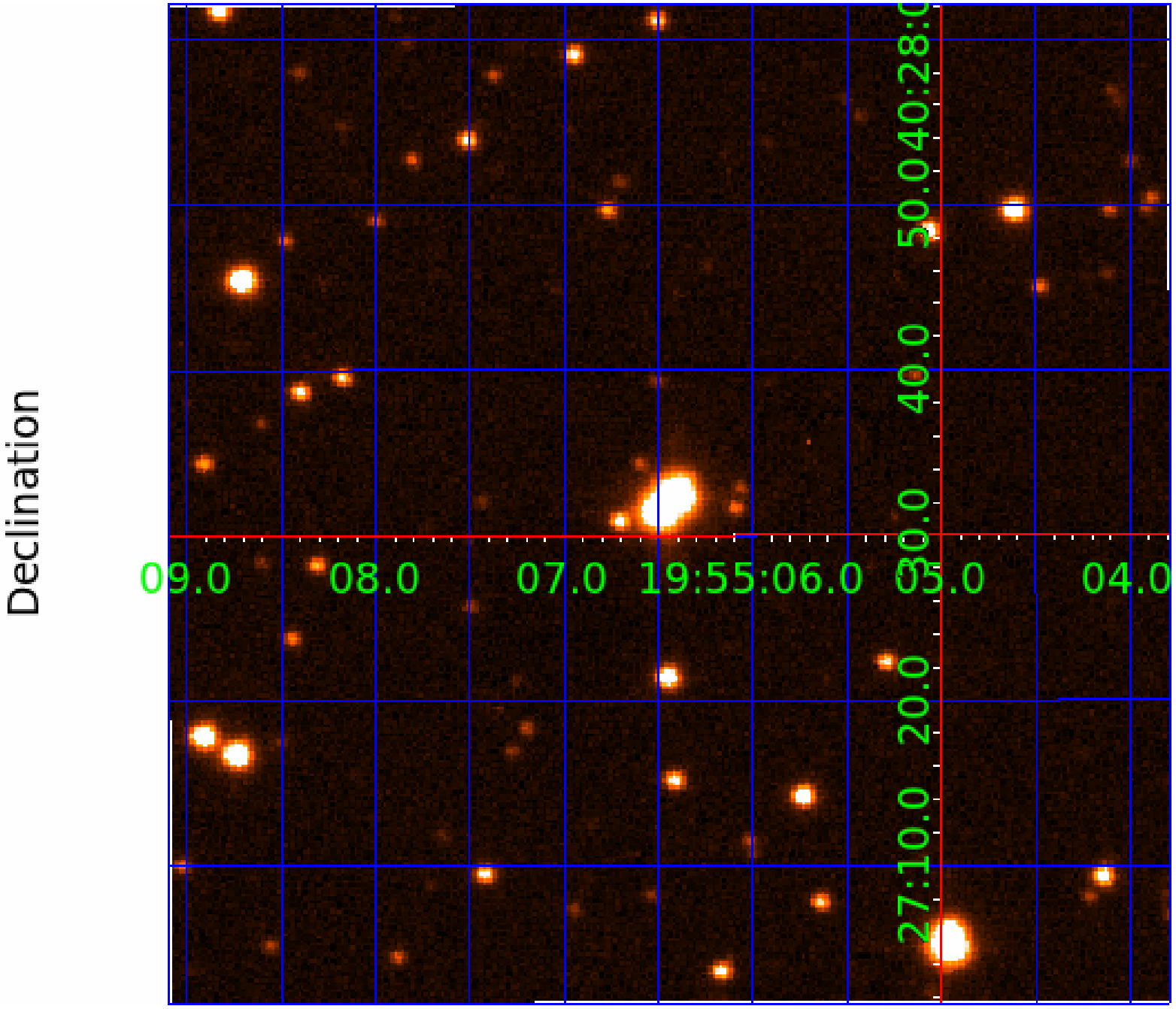



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

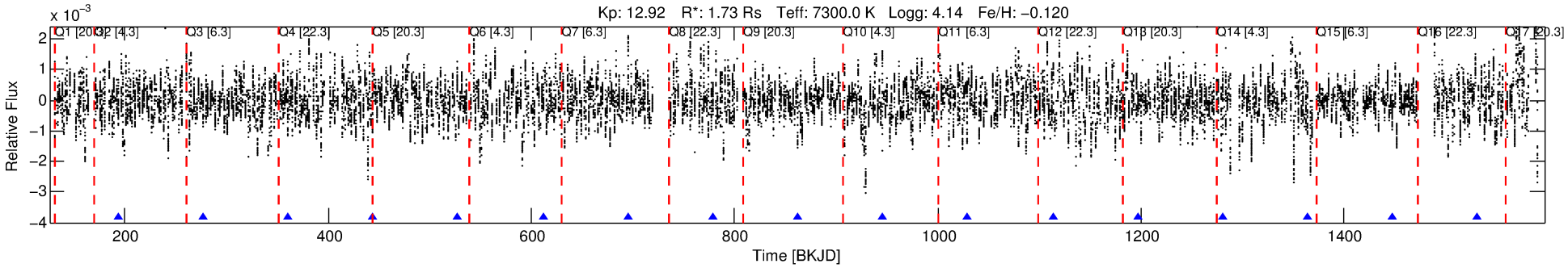
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

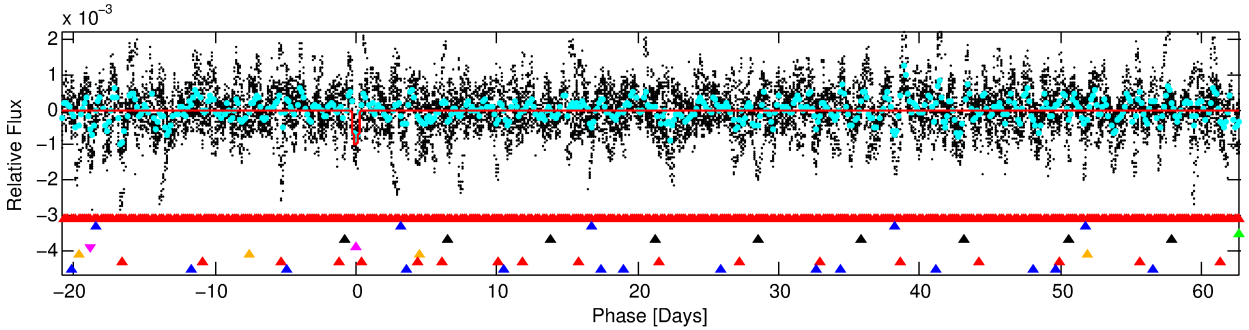
## Ephemeris Match Information For 005304634-05

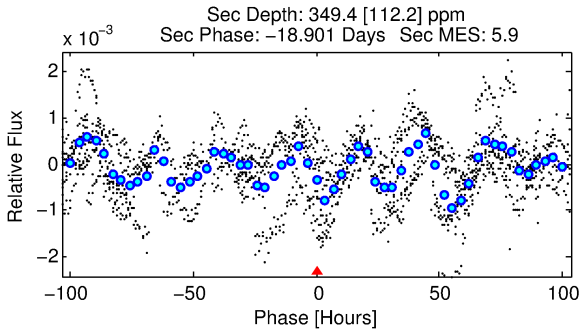
No Significant Match Found

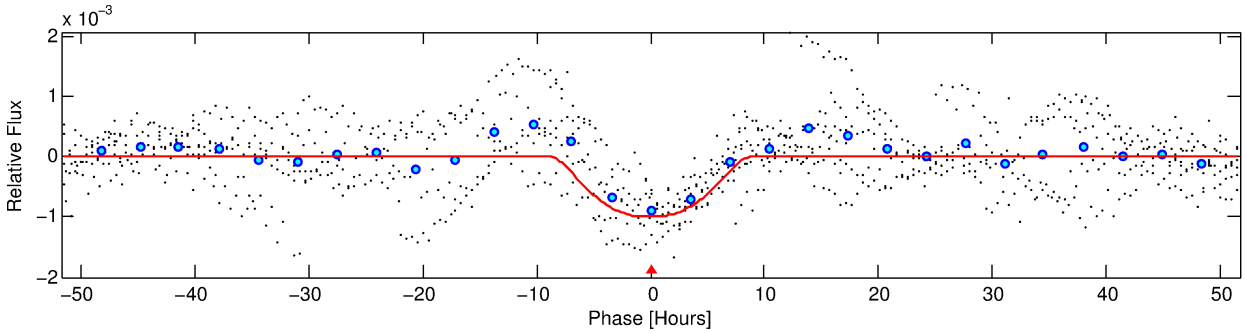
# DV One-Page Summary

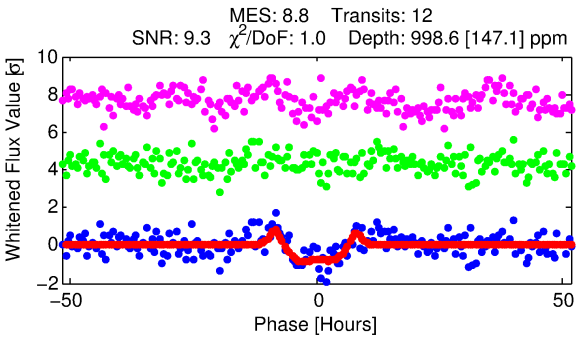
**KIC: 5304634 Candidate: 5 of 8 Period: 83.614 d**

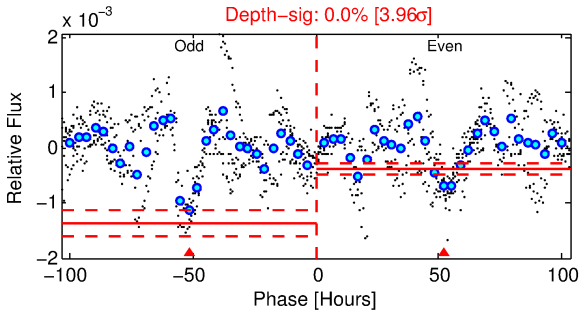


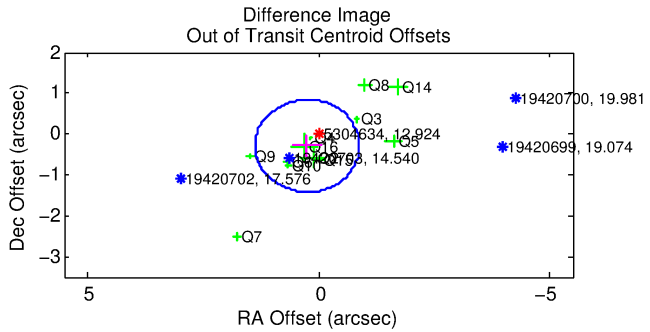




DV Fit Results:

Period = 83.61419 [0.00216] d
Epoch = 193.4046 [0.0207] BKJD
Rp/R* = 0.0367 [0.0036]
a/R* = 14.02 [0.90]
b = 0.97 [0.01]

Seff = 41.42 [17.61]
Teq = 647 [69] K
Rp = 6.91 [2.32] Re
a = 0.4278 [0.1095] AU

Ag = 736.16 [379.18] [1.94σ]
Teffp = 5210 [580] K [7.82σ]

DV Diagnostic Results:

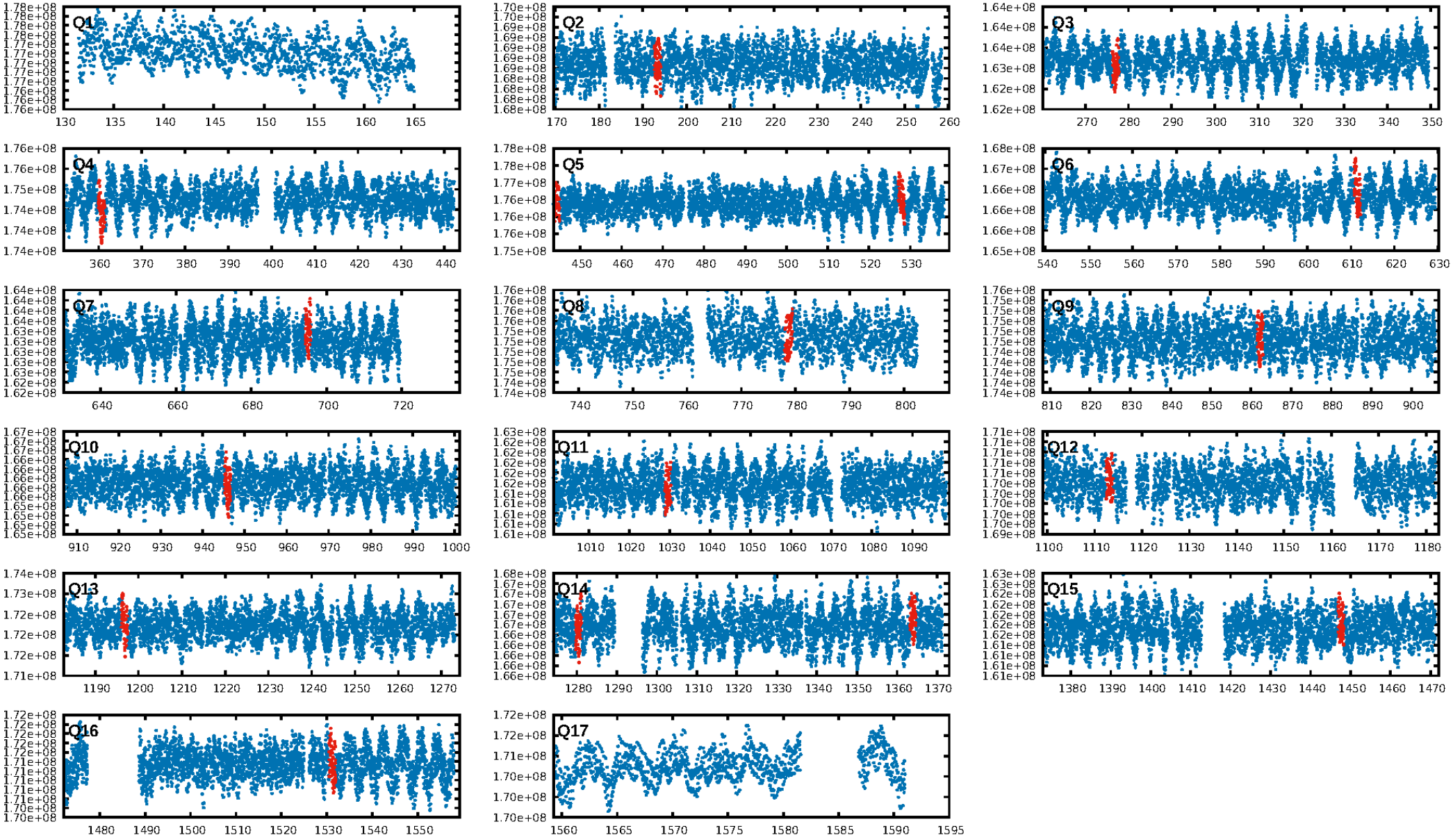
ShortPeriod−sig: 100.0% [5.30σ]
LongPeriod−sig: 100.0% [18.84σ]
ModelChiSquare2−sig: 9.3%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [12/12]
GhostDiagnostic−chr: 0.4392

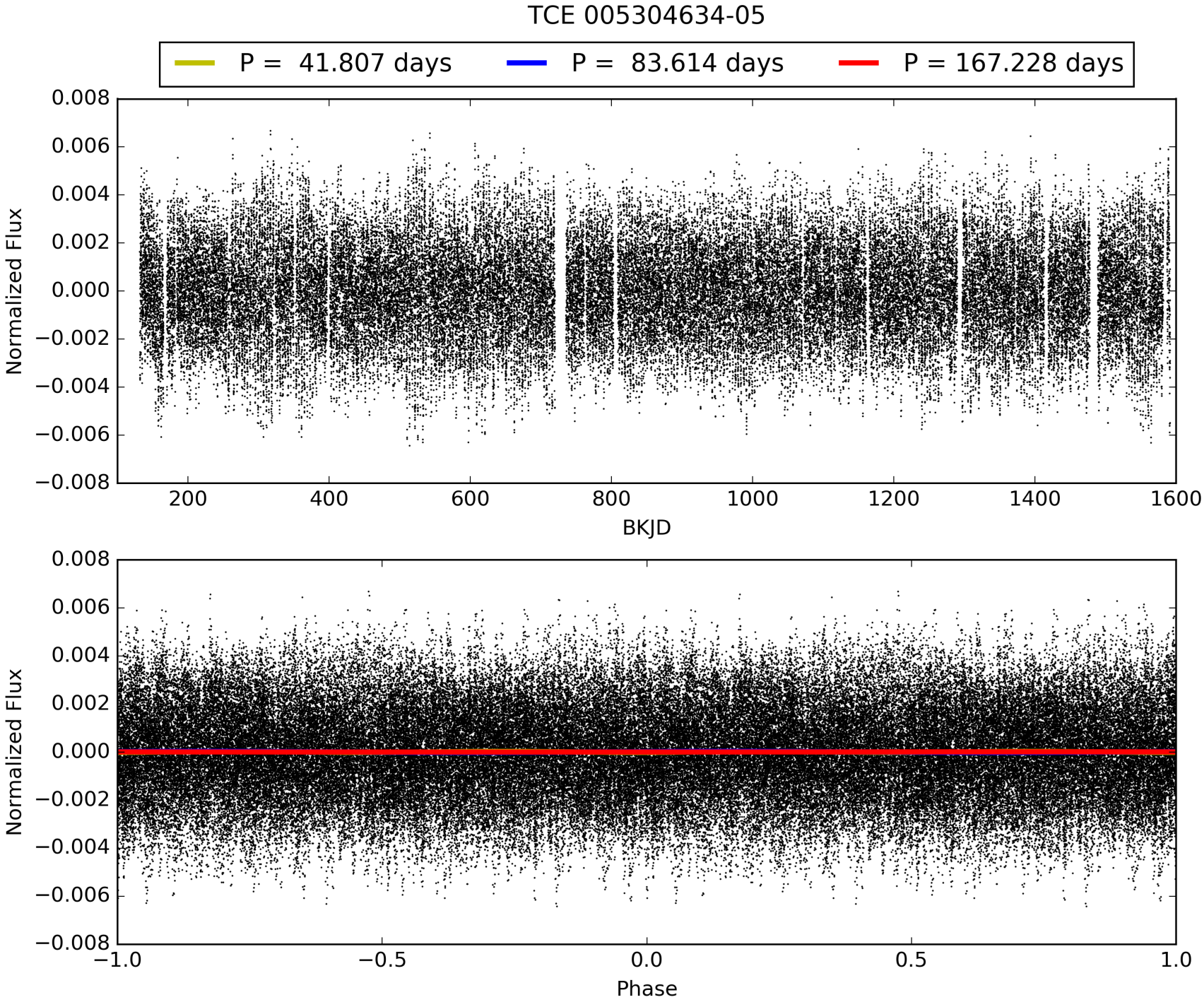
Centroid−sig: 0.0%
Centroid−so: 0.792 arcsec [3.08σ]
OotOffset−rm: 0.380 arcsec [1.01σ]
KicOffset−rm: 0.395 arcsec [1.02σ]
OotOffset−st: 4/3/3/2 [12]
KicOffset−st: 4/3/3/2 [12]
DiffImageQuality−fgm: 0.67 [8/12]
DiffImageOverlap−fno: 0.00 [0/12]

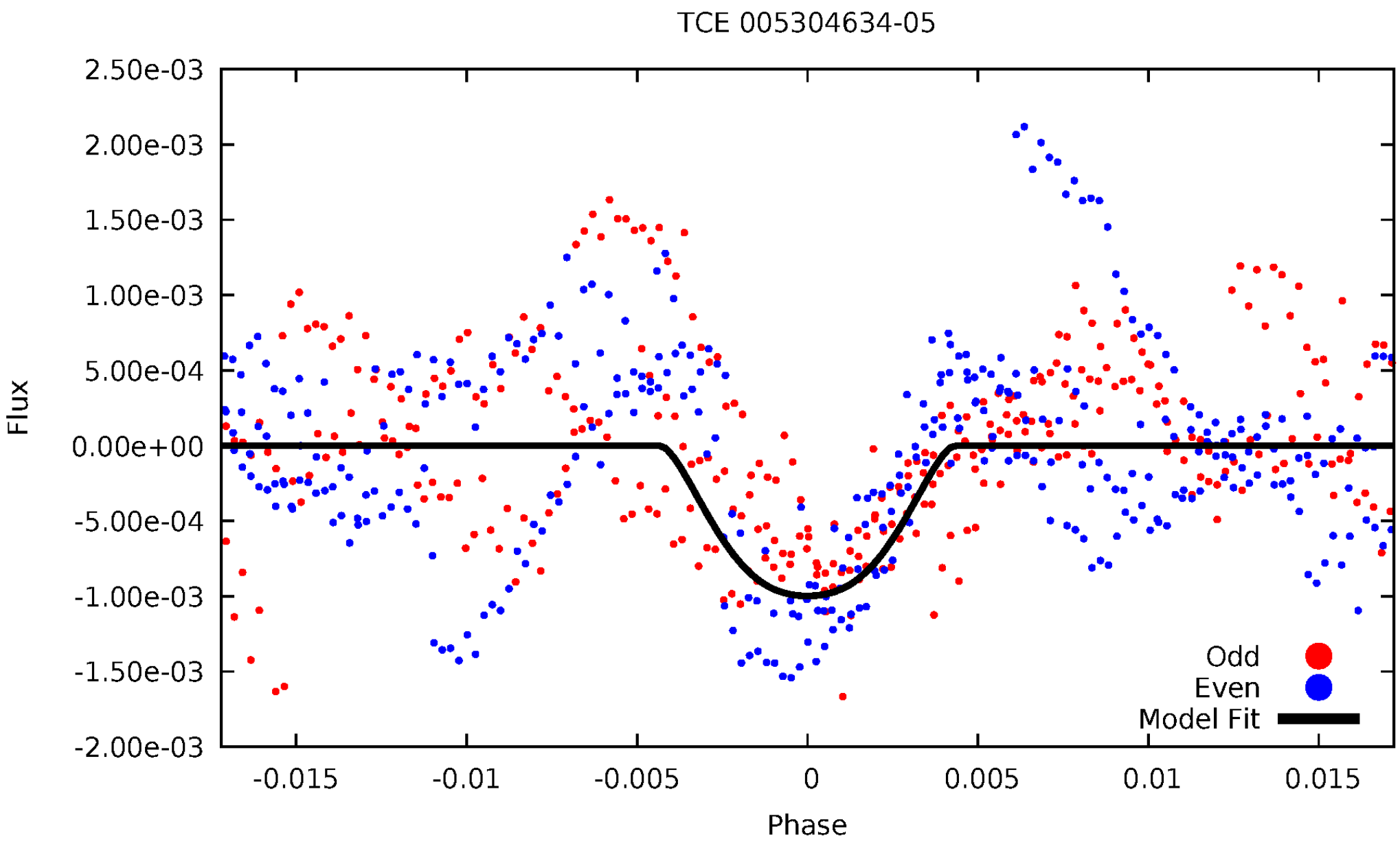
**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:13 Z**

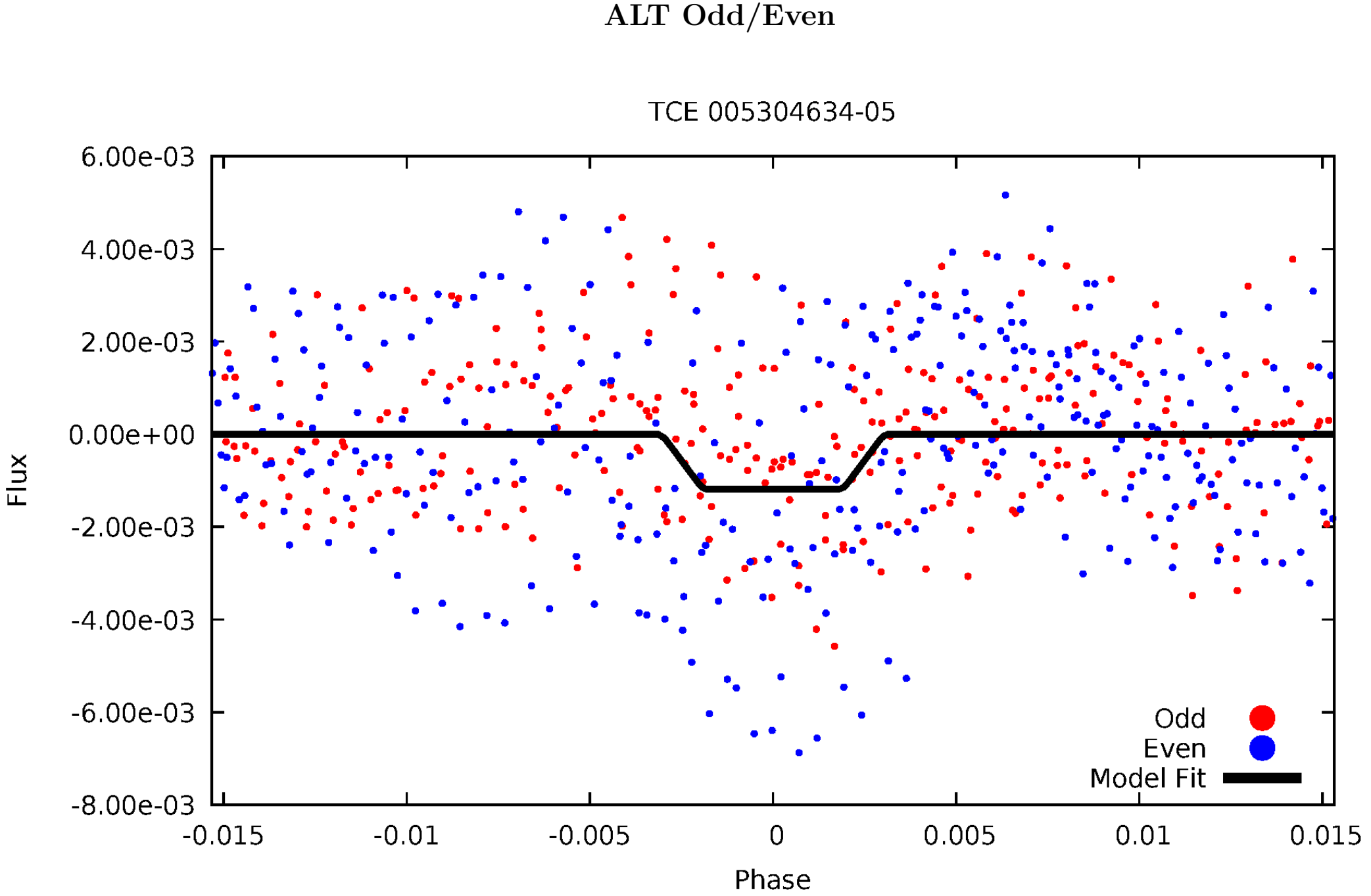
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 005304634-05, PDC Light Curves

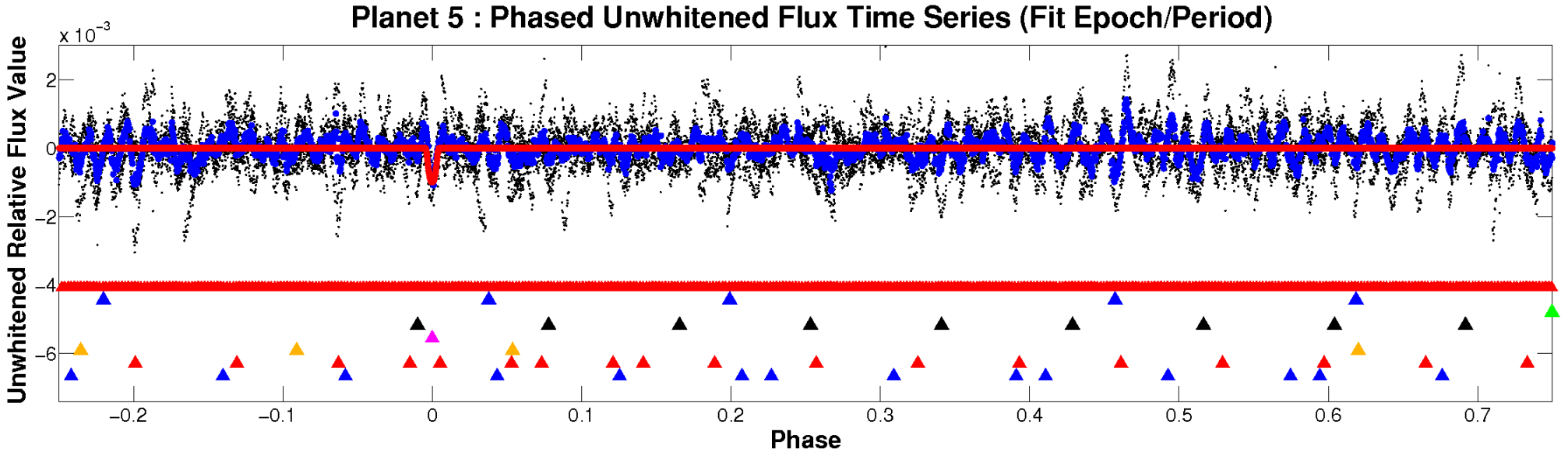


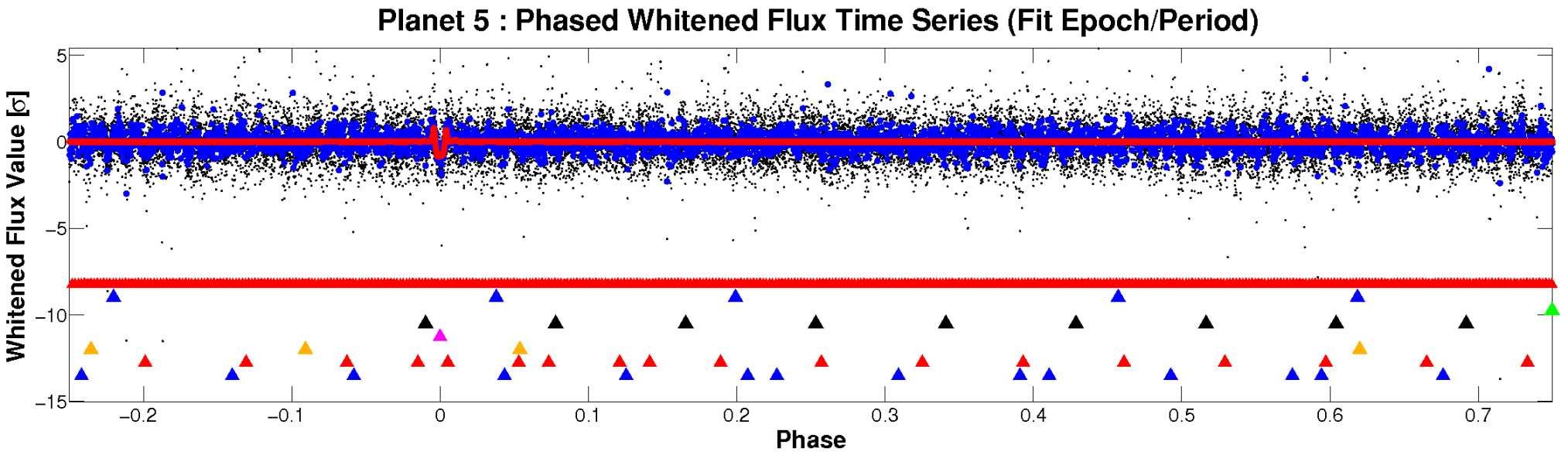

TCE 005304634-05
P = 41.807 days
P = 83.614 days
P = 167.228 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
−1.0
−0.5
0.0
0.5
1.0
Phase


DV Odd/Even
TCE 005304634-05
2.50e-03
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
Flux
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 005304634-05
6.00e-03
4.00e-03
2.00e-03
0.00e+00
-2.00e-03
-4.00e-03
-6.00e-03
-8.00e-03
Flux
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
Phase
Odd
Even
Model Fit

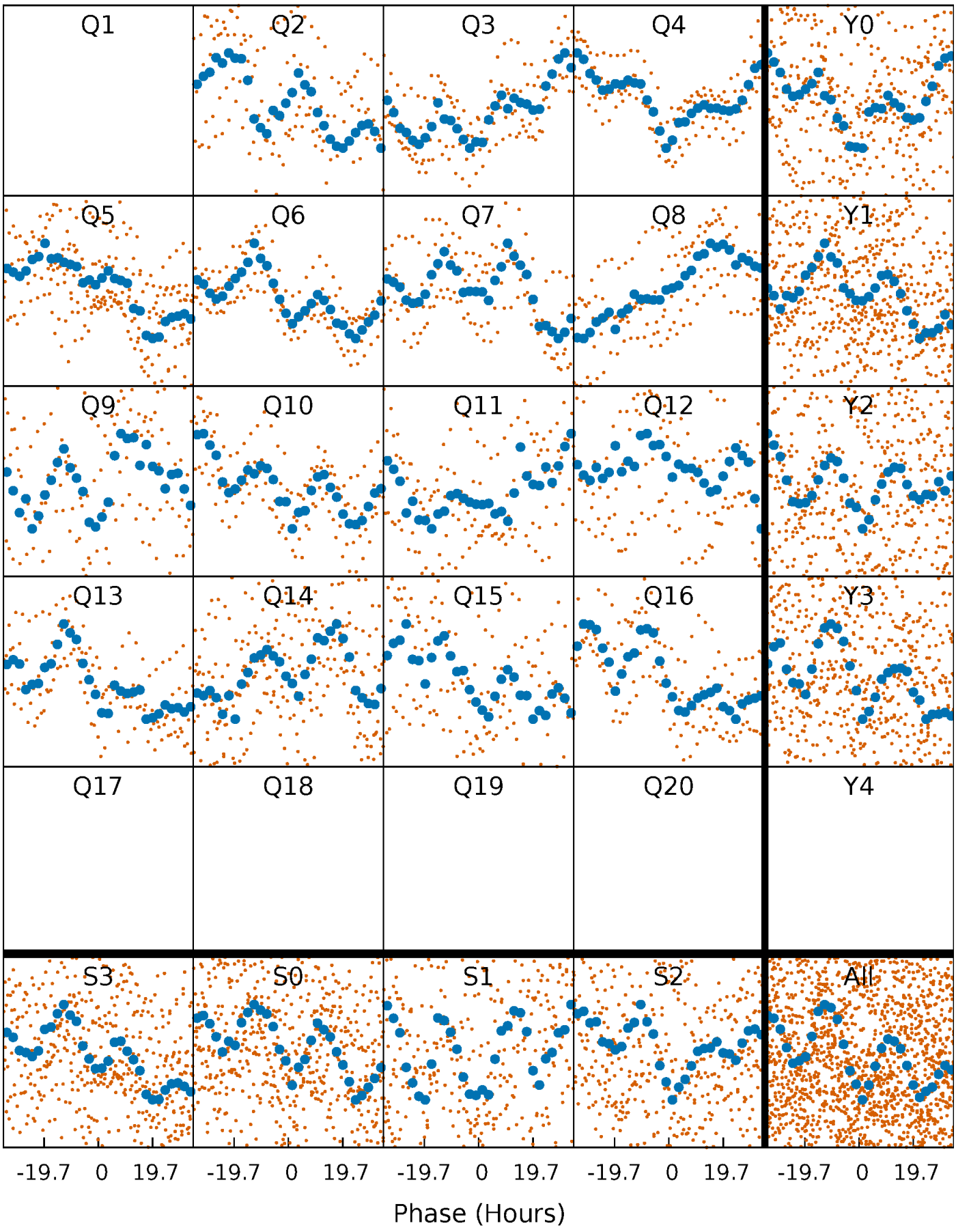
# Non-Whitened Vs. Whitened Light Curve



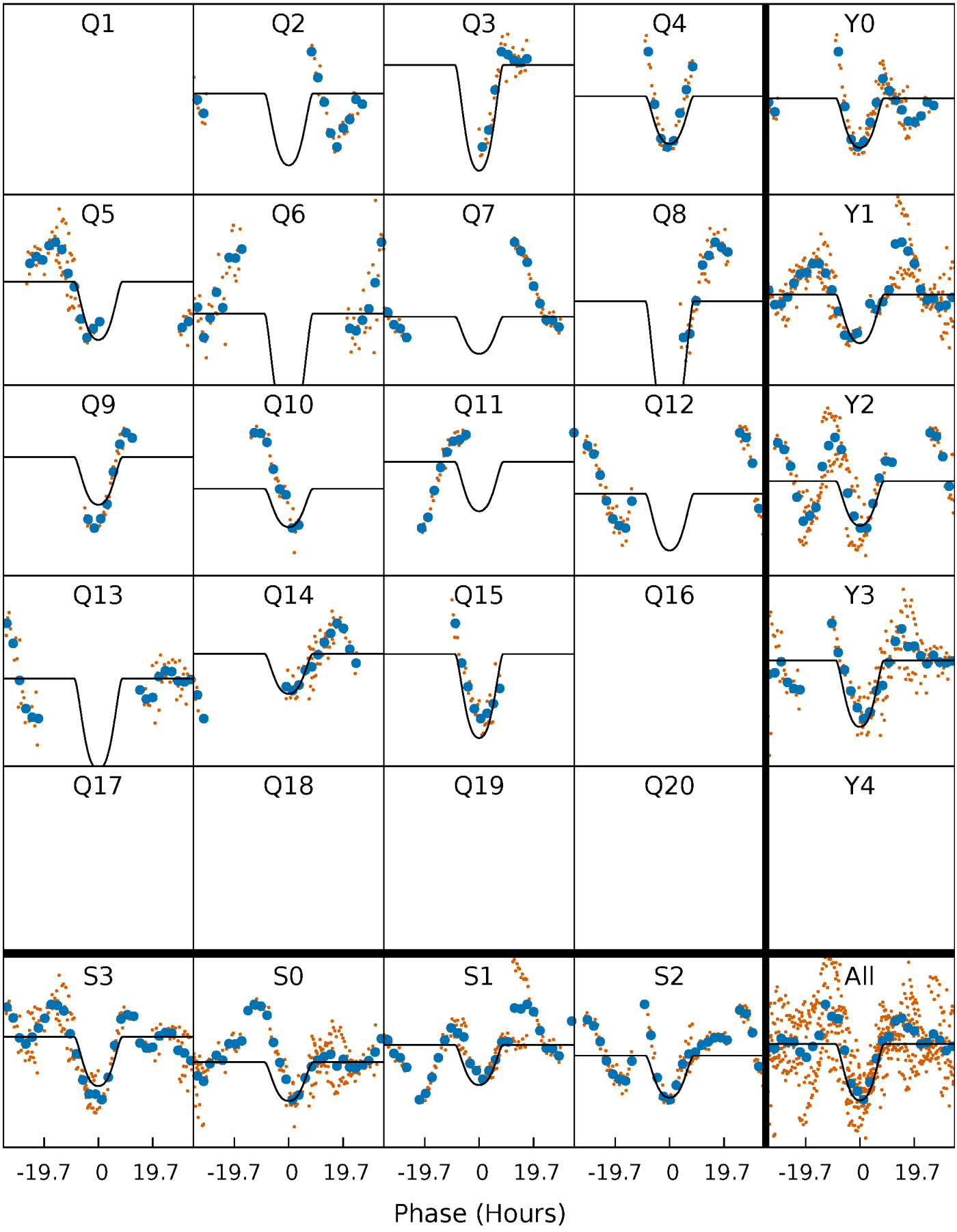
# PDC Quarter-Phased Transit Curves

TCE 005304634-05  P= 83.614187 Days  $T_0$=193.404613 (BKJD)



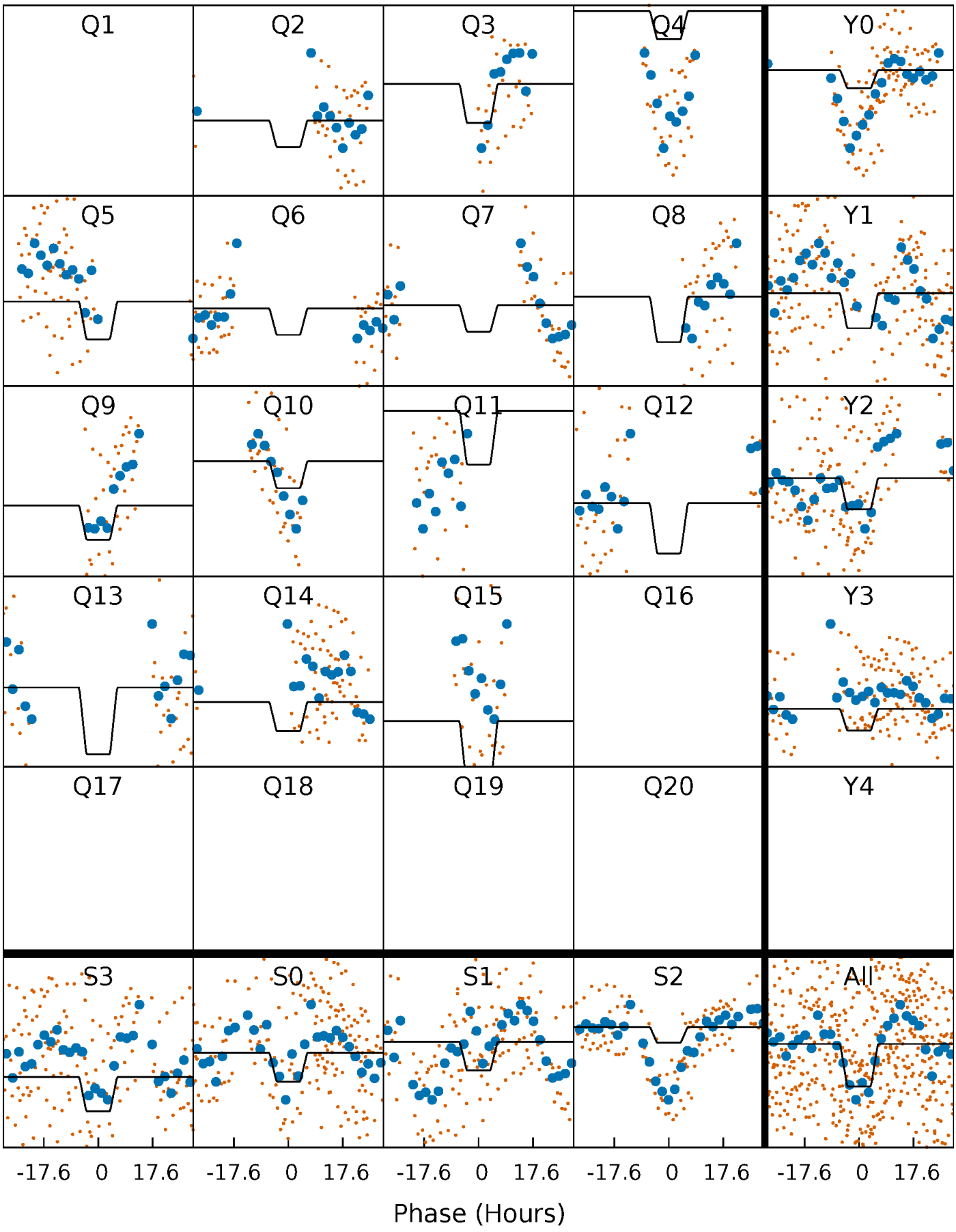
# DV Quarter-Phased Transit Curves

TCE 005304634-05  P= 83.614187 Days  $T_0$=193.404613 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

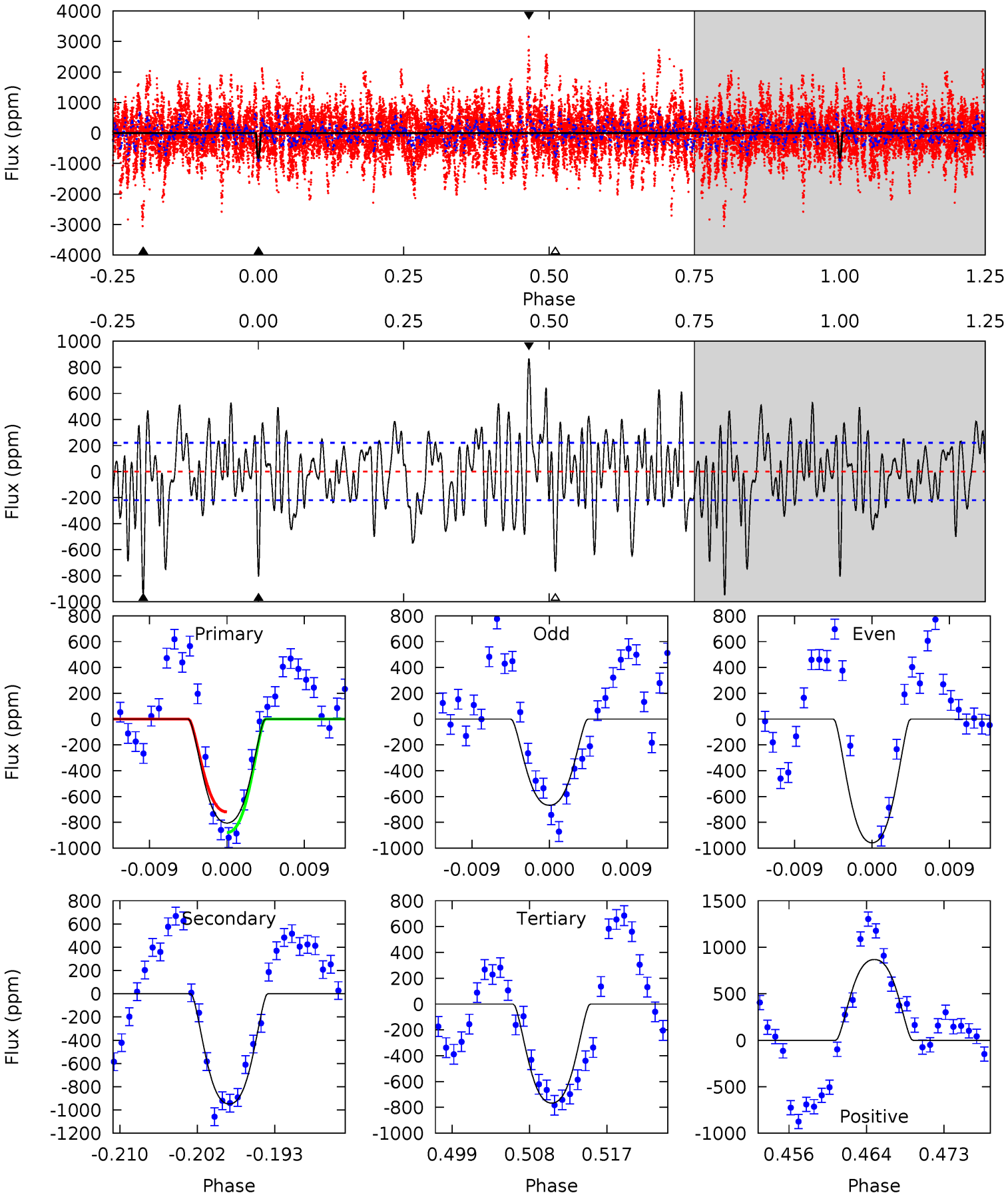
TCE 005304634-05  P= 83.609306 Days  $T_0$=193.414803 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-05, P = 83.614187 Days, E = 109.790426 Days

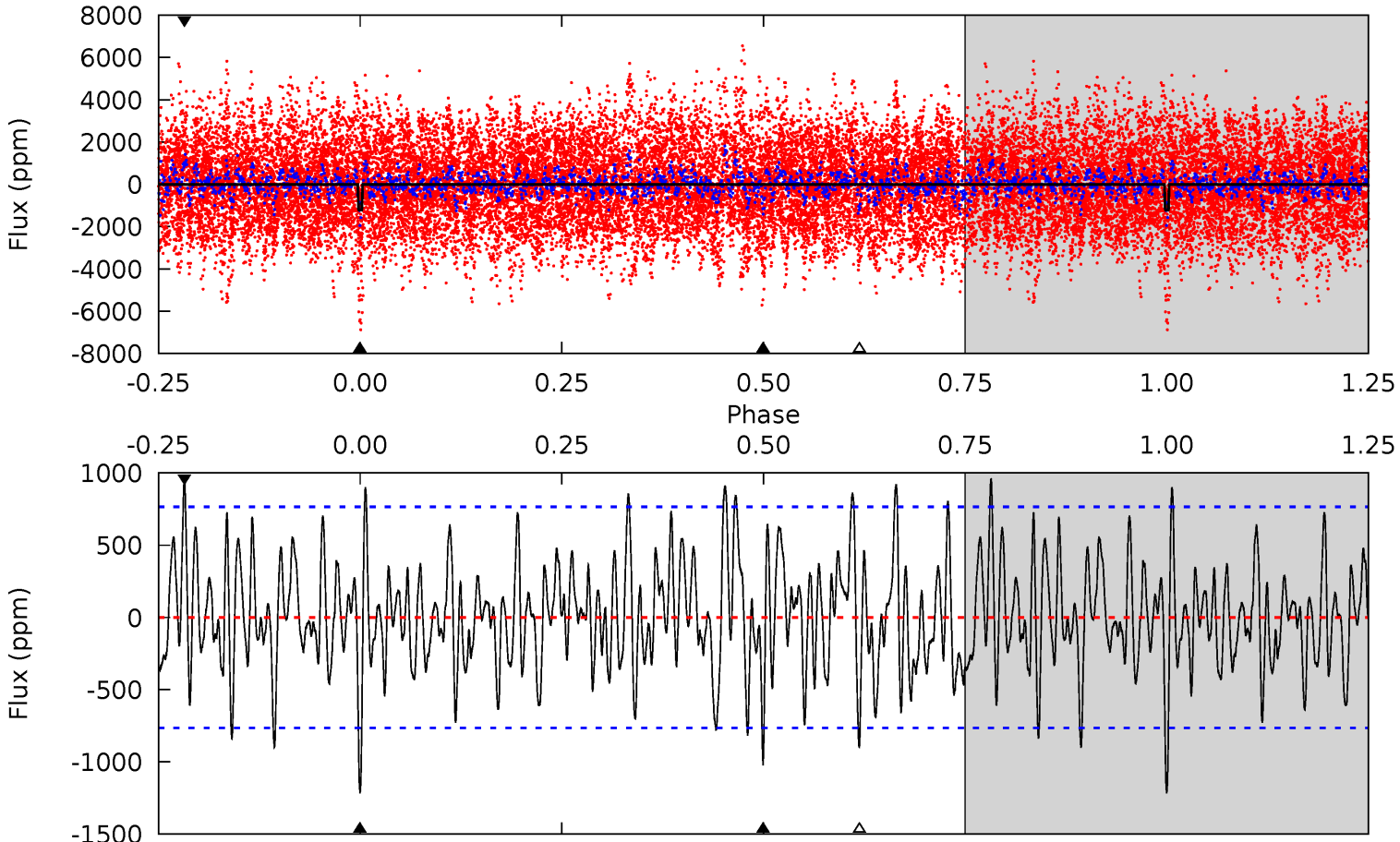
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18.5 | 21.8 | 17.6 | 19.9 | 5.05 | 2.62 | 5.80 | 0.88 | -1.44 | 4.17 | 1.85 | 3.34 | 1.81 | 0.48 | 1.85 |



# Alt Model-Shift Uniqueness Test

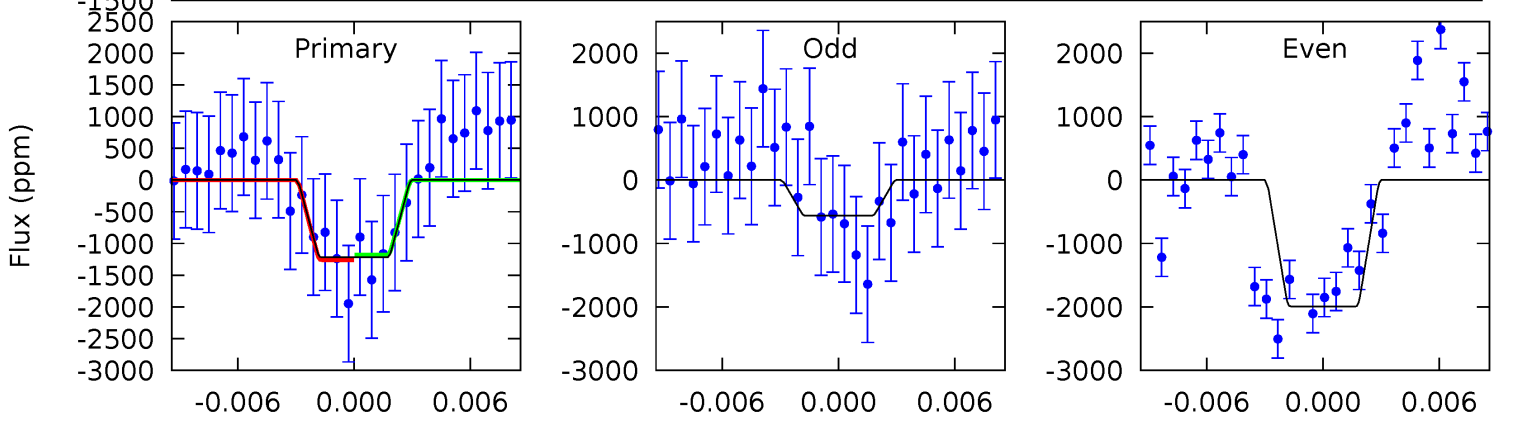
005304634-05, P = 83.609306 Days, E = 109.805497 Days

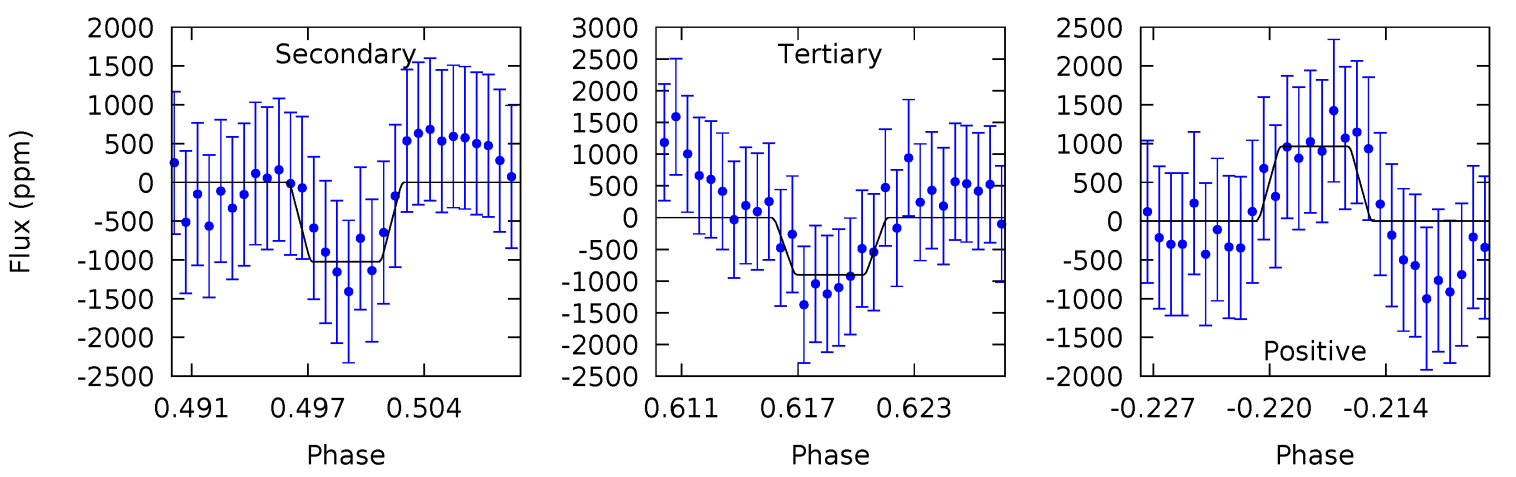
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.14 | 6.84 | 6.02 | 6.44 | 5.11 | 2.73 | 2.28 | 2.11 | 1.70 | 0.82 | 0.41 | 4.75 | 1.46 | 0.44 | 0.26 |









Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-05 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -949±44 | $6.90^{+1.34}_{-1.04}$ | $895^{+78}_{-68}$ | $6556^{+472}_{-418}$ | $2008^{+692}_{-595}$ |
| Alt. | -1024±150 | $6.47^{+1.31}_{-0.99}$ | $897^{+74}_{-70}$ | $6923^{+613}_{-571}$ | $2396^{+920}_{-720}$ |

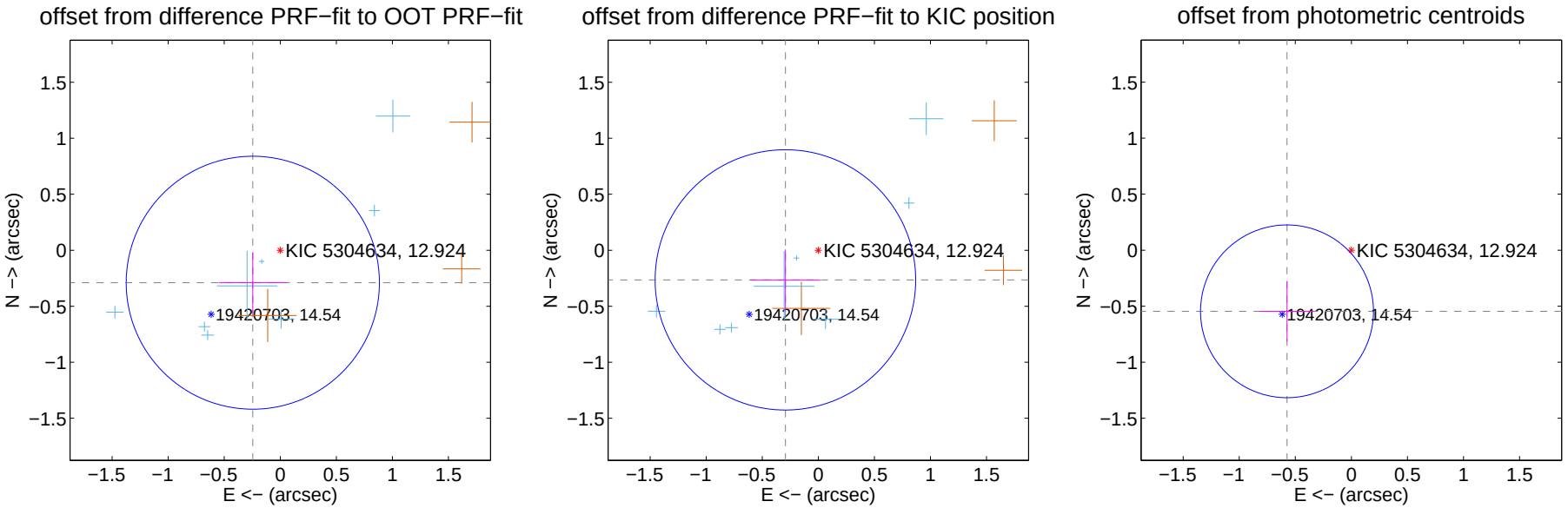
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

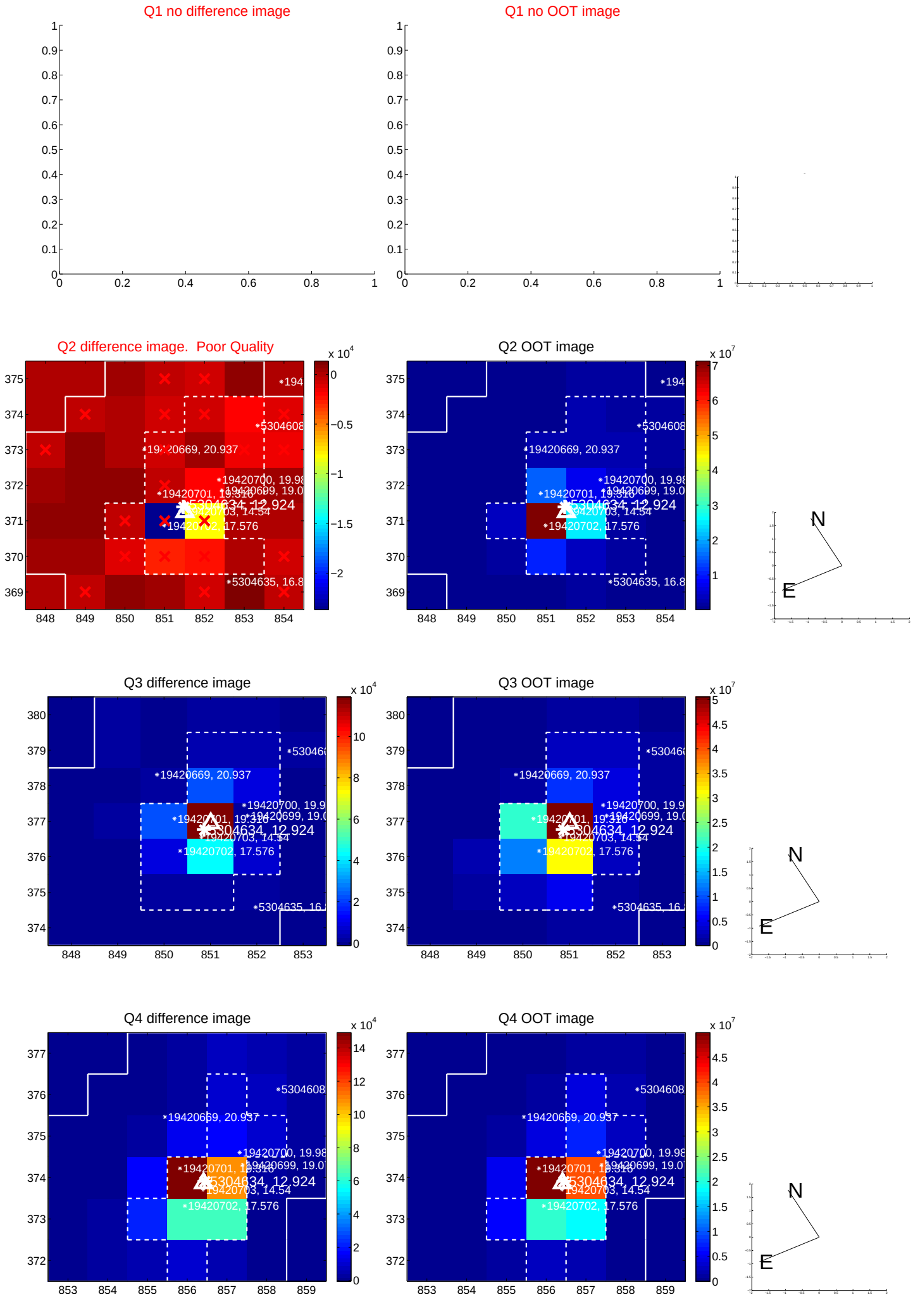
Supplemental centroid analysis for 005304634-05. Kepler magnitude: 12.92. Transit SNR 9.29
There are 8 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.380 ± 0.376 | 1.01 | 0.245 ± 0.302 | -0.290 ± 0.272 |
| PRF-fit source offset from KIC position | 0.395 ± 0.387 | 1.02 | 0.294 ± 0.311 | -0.265 ± 0.273 |
| photometric centroid source offset | 0.79 ± 0.26 | 3.08 | 0.57 ± 0.24 | -0.55 ± 0.27 |

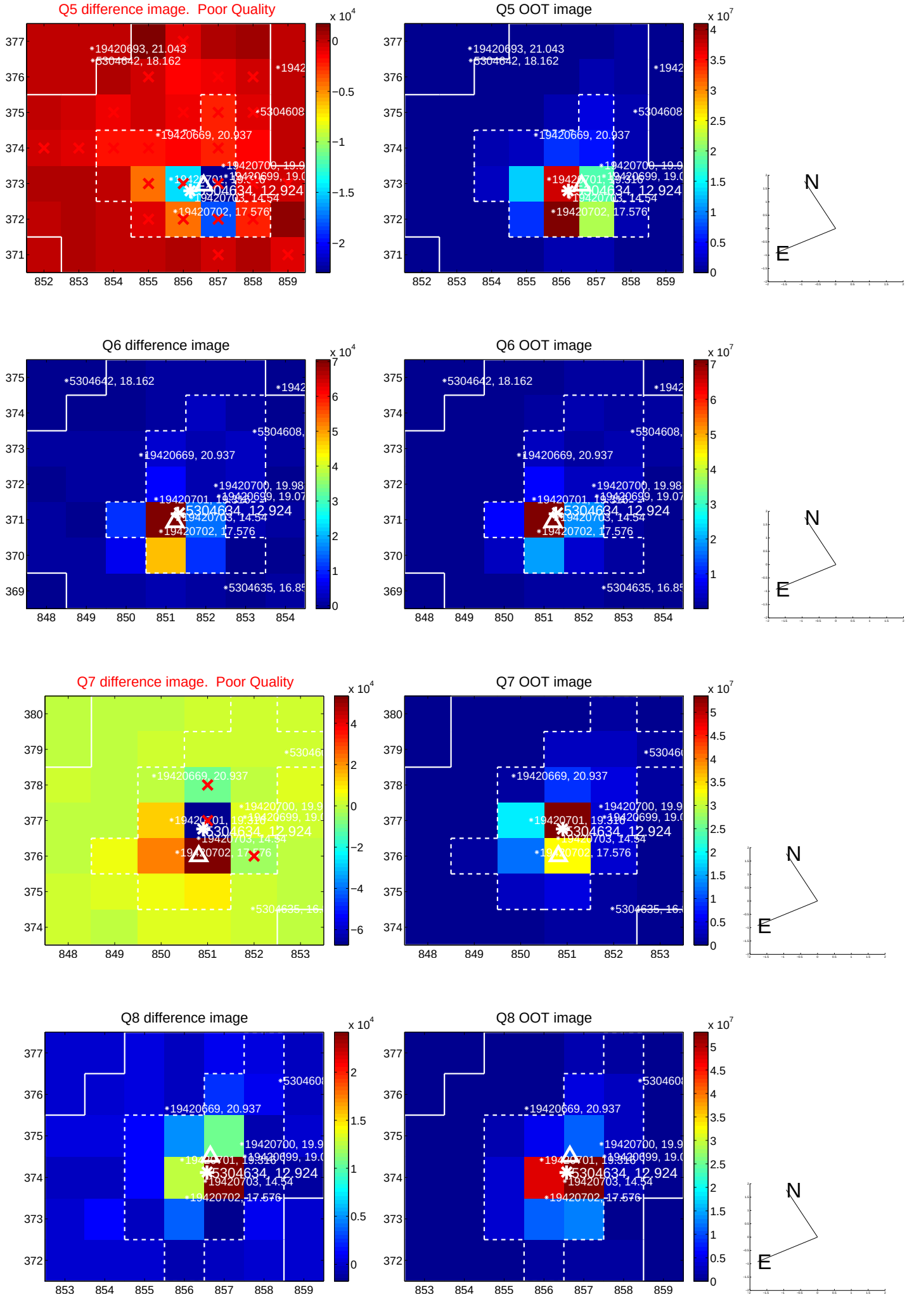



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

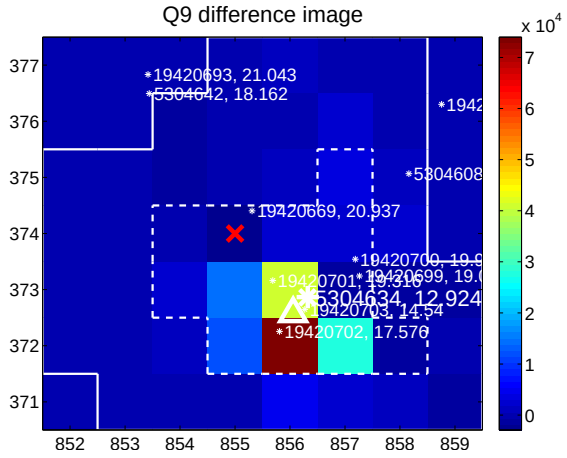
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

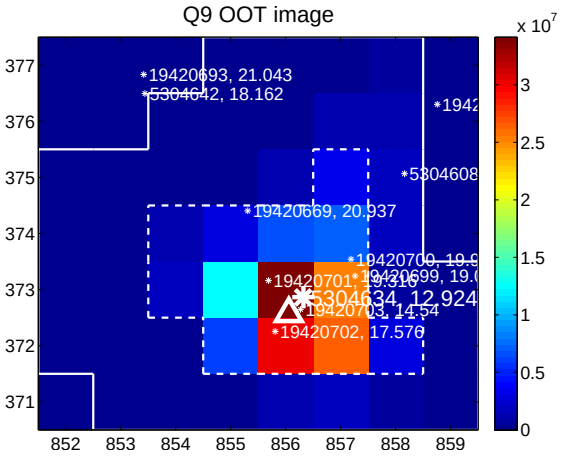


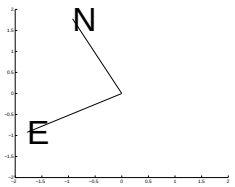
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

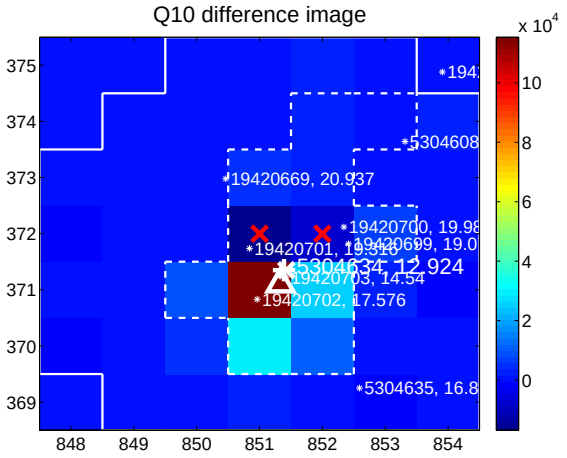


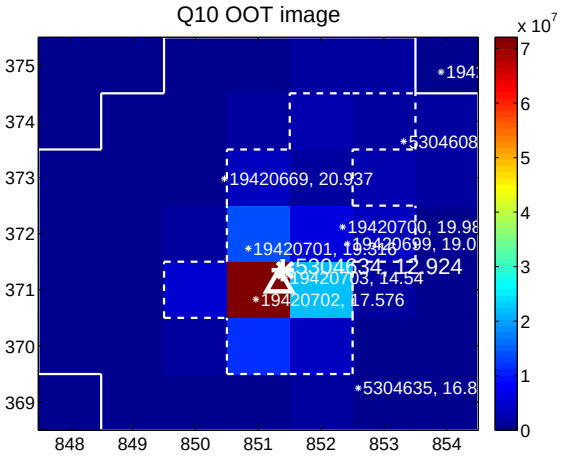
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

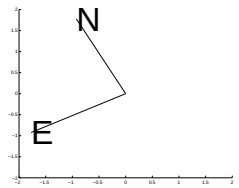


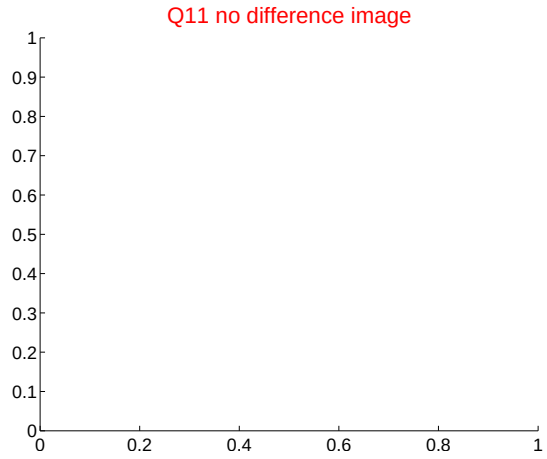



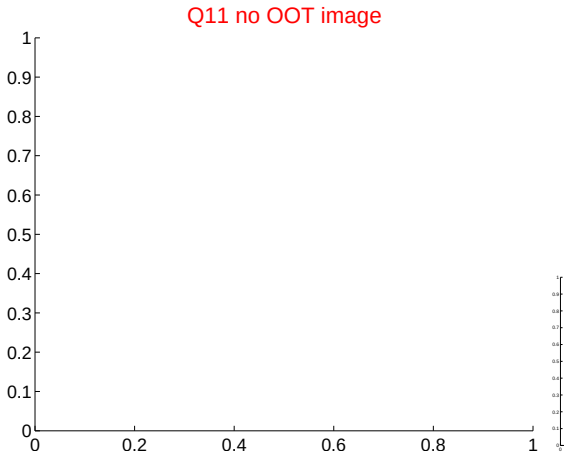



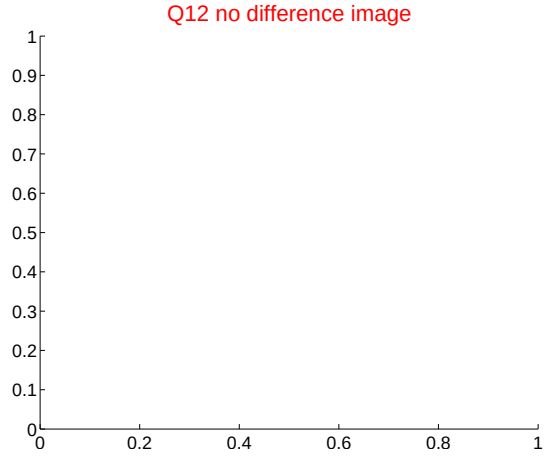



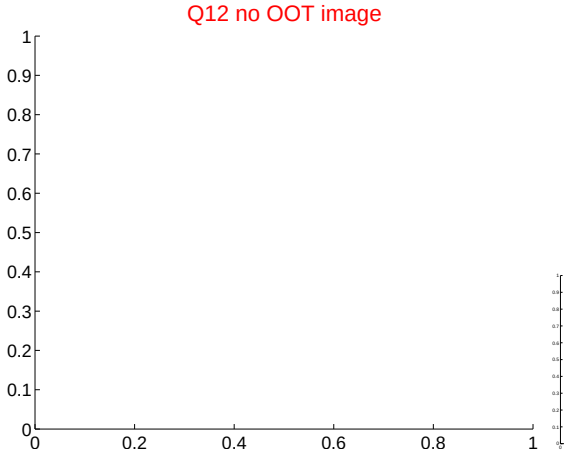



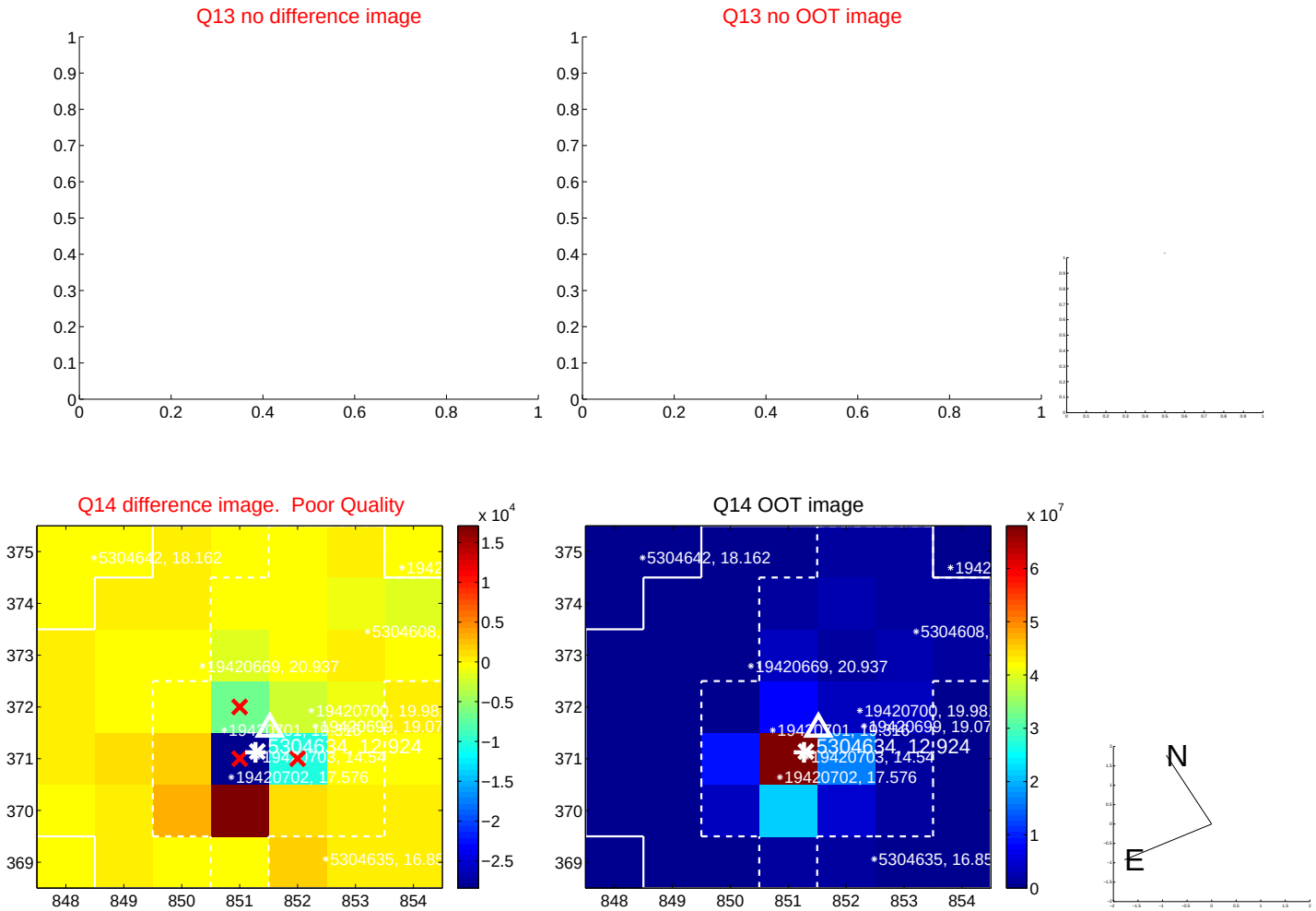



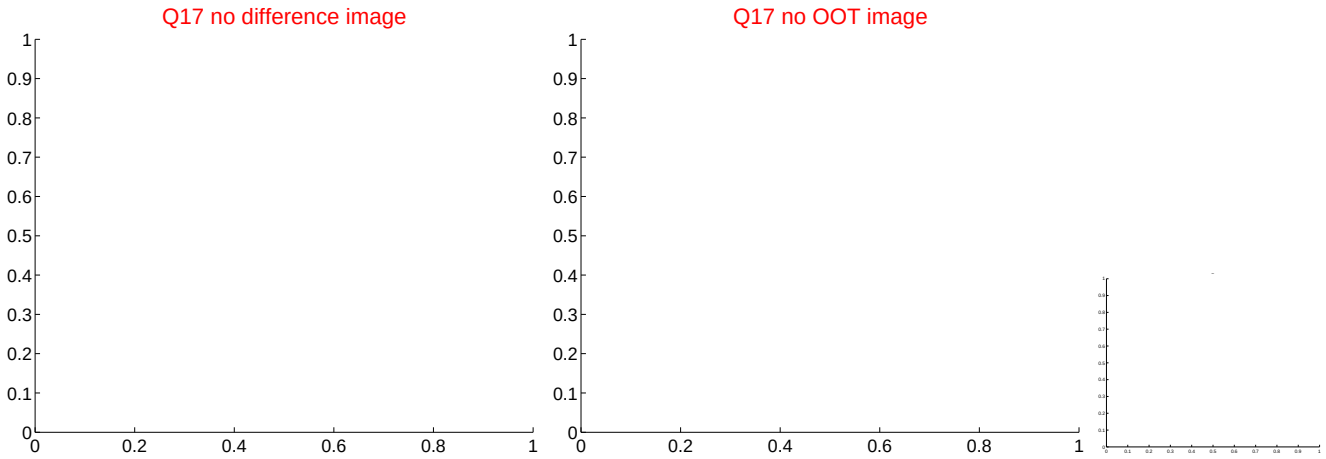



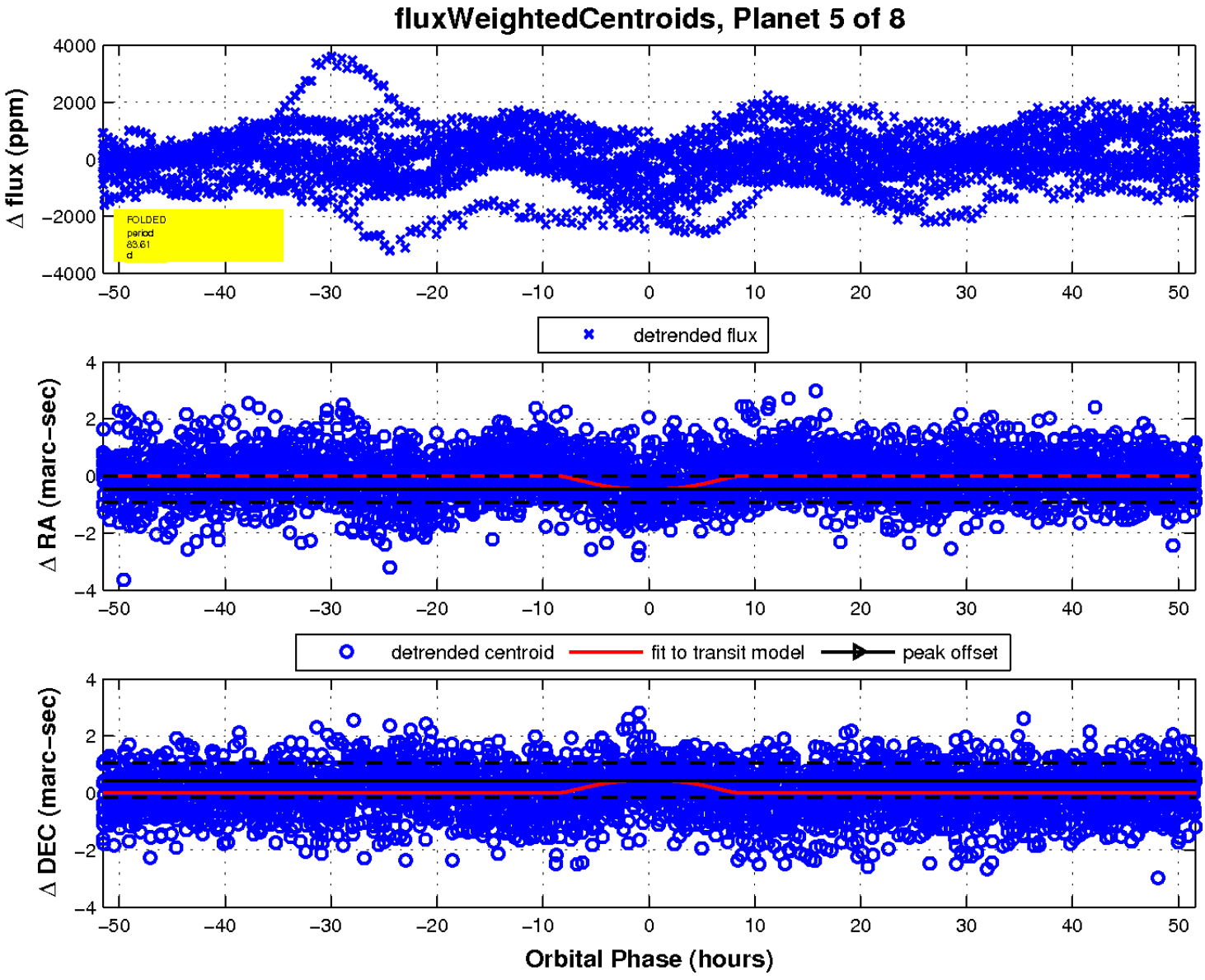



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

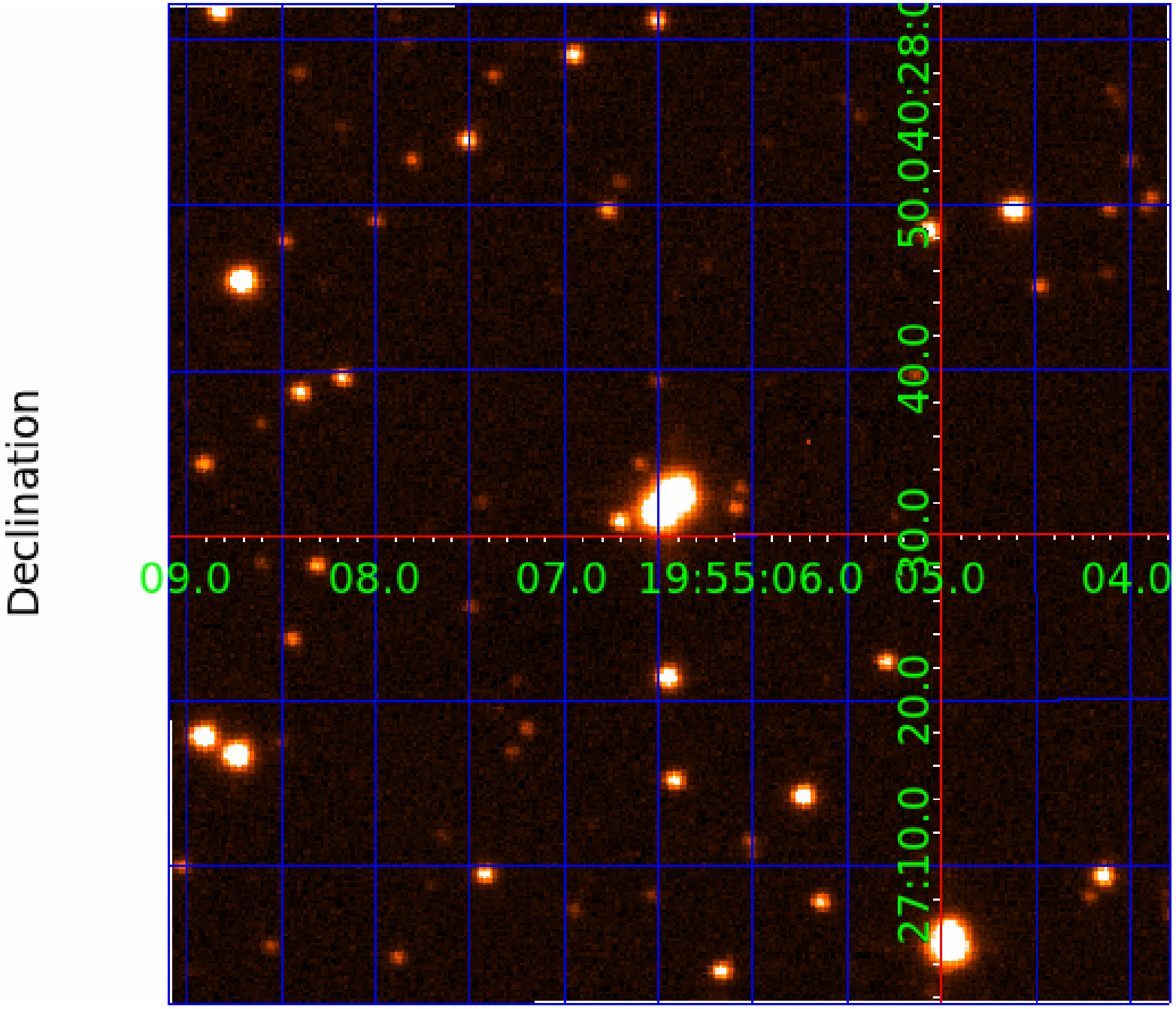


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

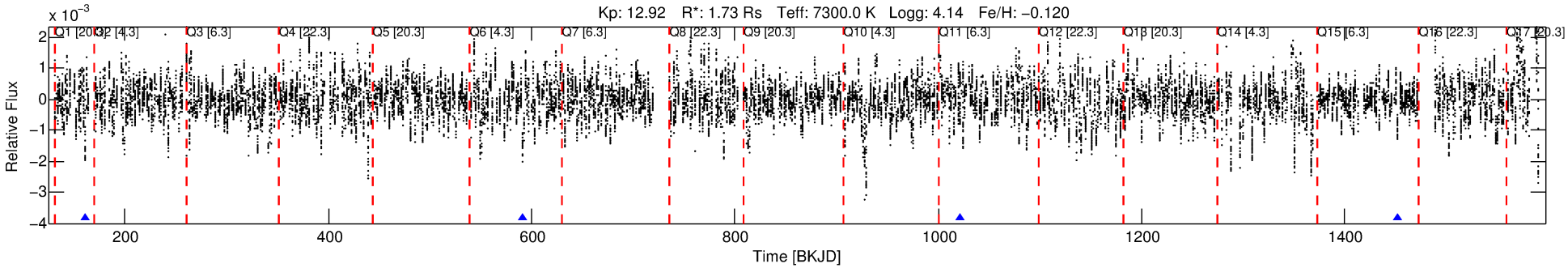
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

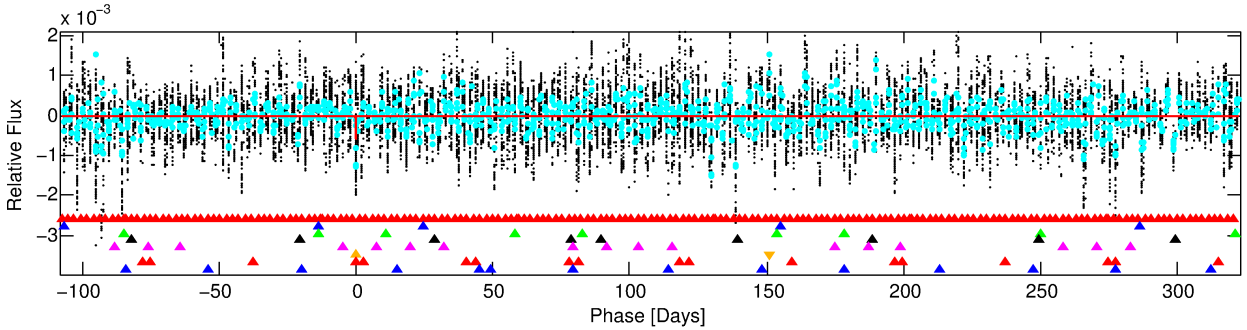
## Ephemeris Match Information For 005304634-06

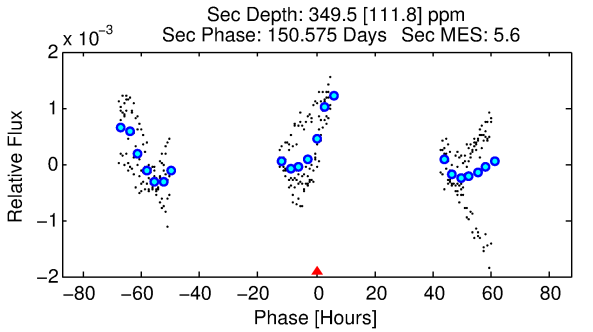
No Significant Match Found

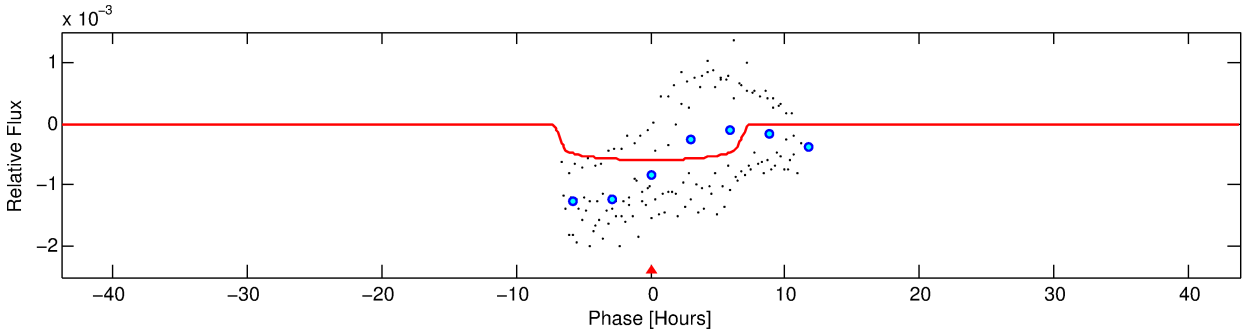
# DV One-Page Summary

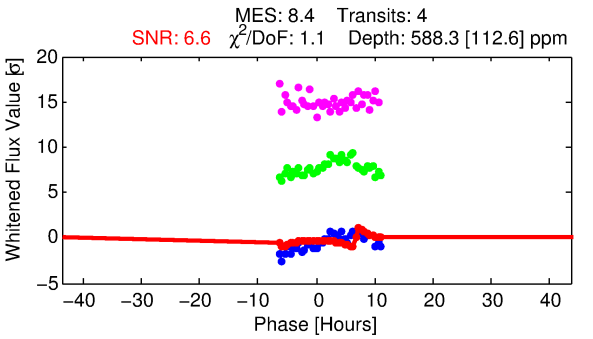
**KIC: 5304634 Candidate: 6 of 8 Period: 430.160 d**

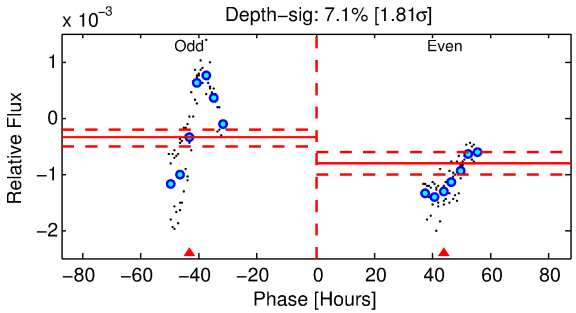


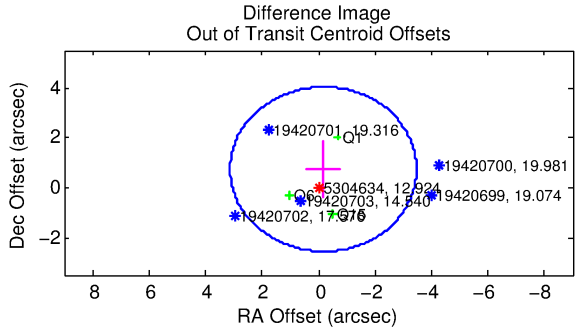




DV Fit Results:

Period = 430.15961 [0.00676] d
Epoch = 161.6383 [0.0162] BKJD
Rp/R* = 0.0246 [0.0035]
a/R* = 139.10 [68.29]
b = 0.82 [0.19]

Seff = 4.66 [1.98]
Teq = 375 [40] K
Rp = 4.64 [1.63] Re
a = 1.2749 [0.3262] AU

Ag = 14505.68 [8025.70] [1.81σ]
Teffp = 6358 [777] K [7.69σ]

DV Diagnostic Results:

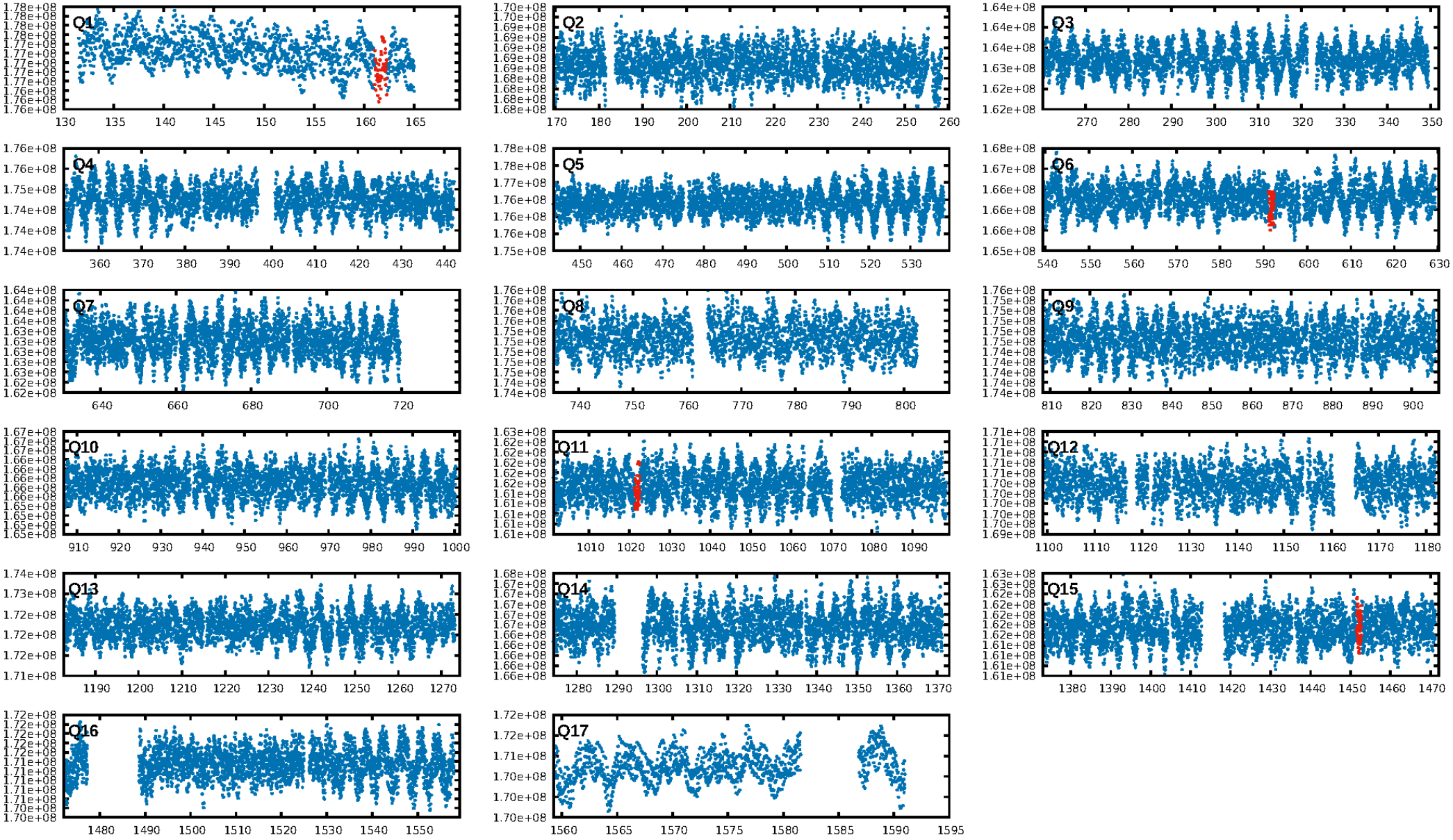
ShortPeriod−sig: 100.0% [153.63σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: 4.2%
ModelChiSquareGof−sig: 96.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [3/3]
GhostDiagnostic−chr: 2.574

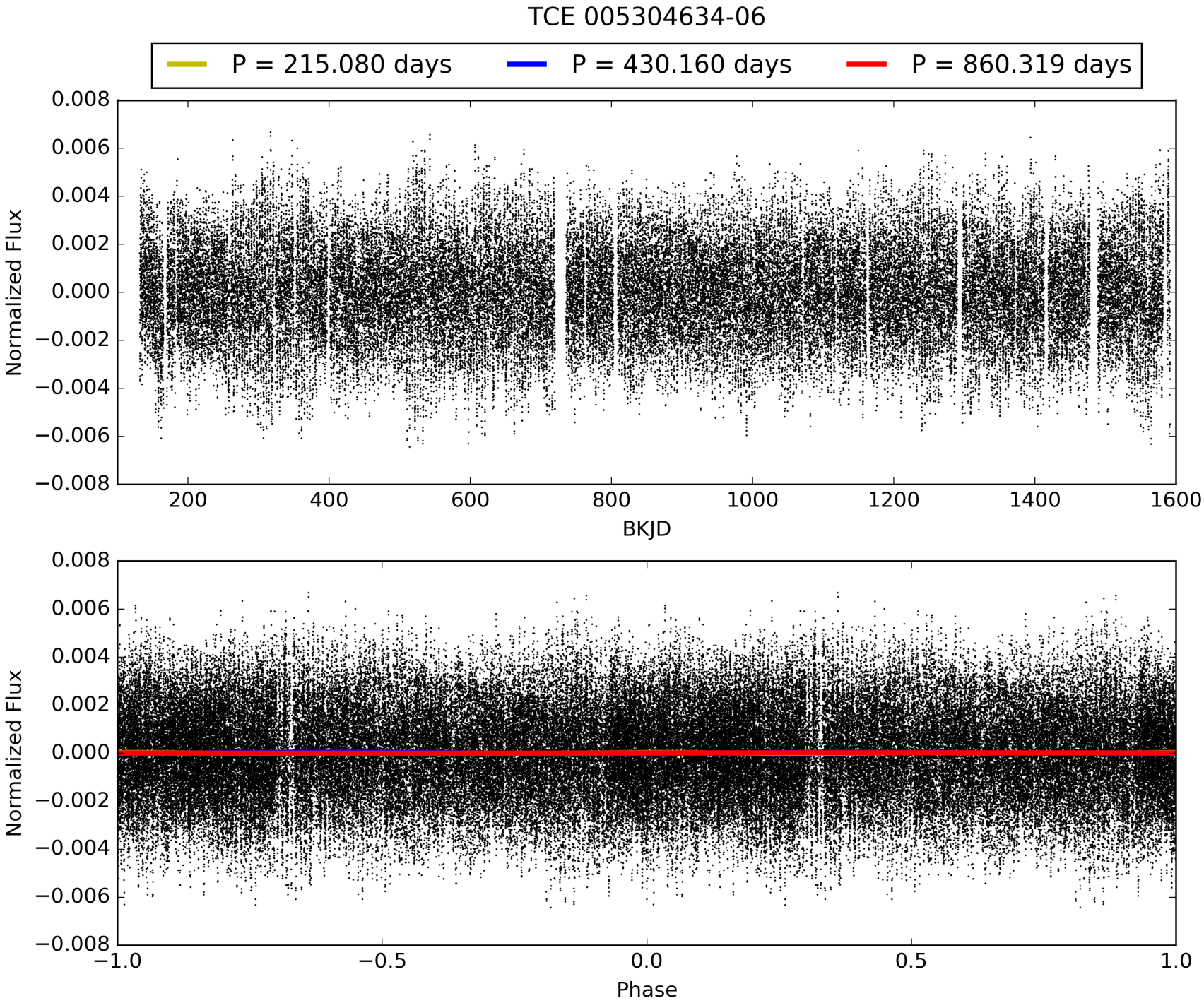
Centroid−sig: 0.3%
Centroid−so: 1.116 arcsec [1.54σ]
OotOffset−rm: 0.756 arcsec [0.69σ]
KicOffset−rm: 0.743 arcsec [0.67σ]
OotOffset−st: 1/1/0/1 [3]
KicOffset−st: 1/1/0/1 [3]
DiffImageQuality−fgm: 1.00 [3/3]
DiffImageOverlap−fno: 0.00 [0/3]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:18 Z**

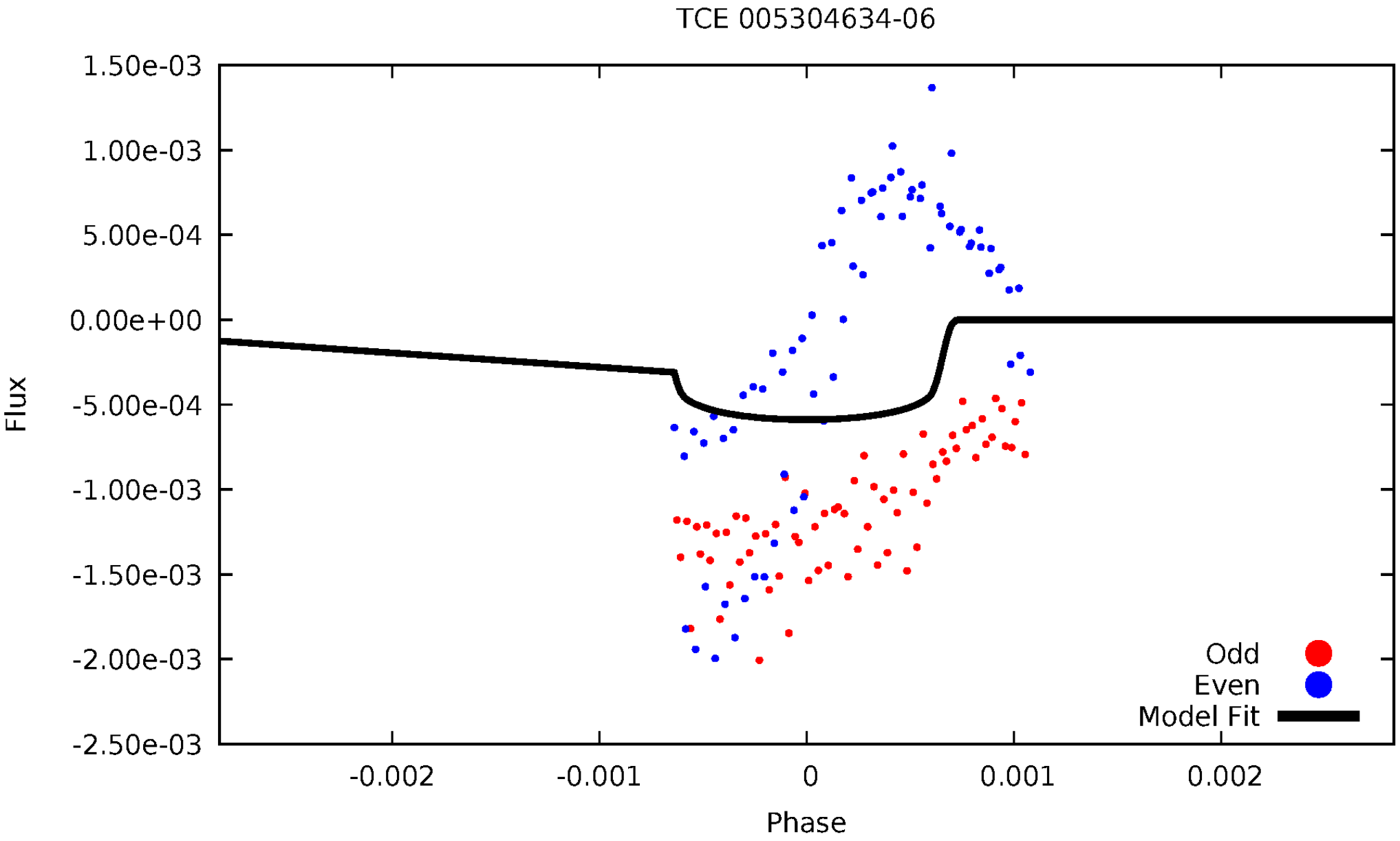
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

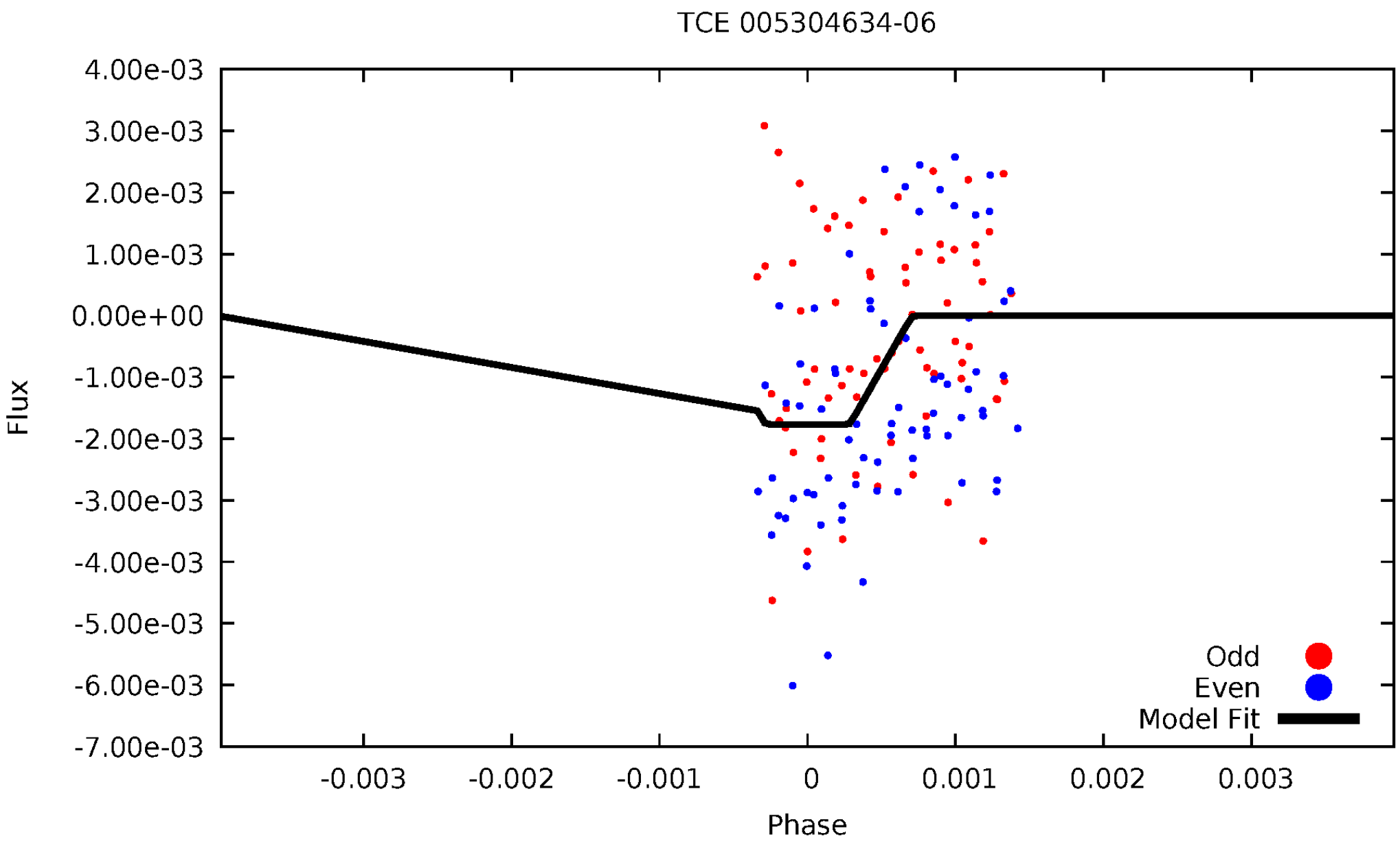
# TCE 005304634-06, PDC Light Curves



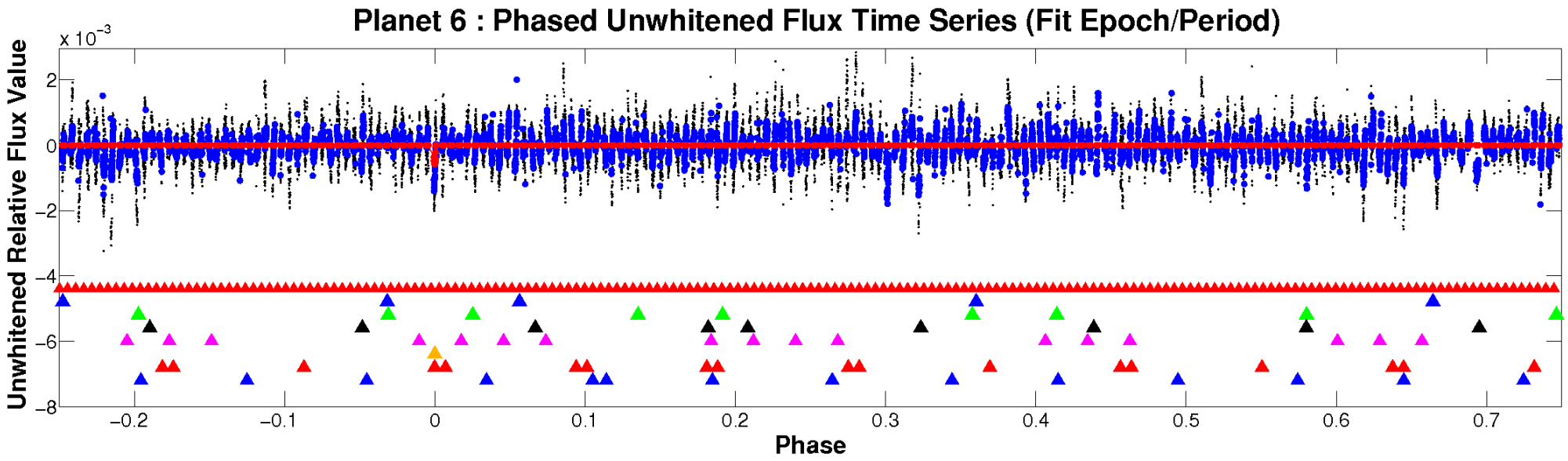

TCE 005304634-06
P = 215.080 days
P = 430.160 days
P = 860.319 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
−1.0
−0.5
0.0
0.5
1.0
Phase

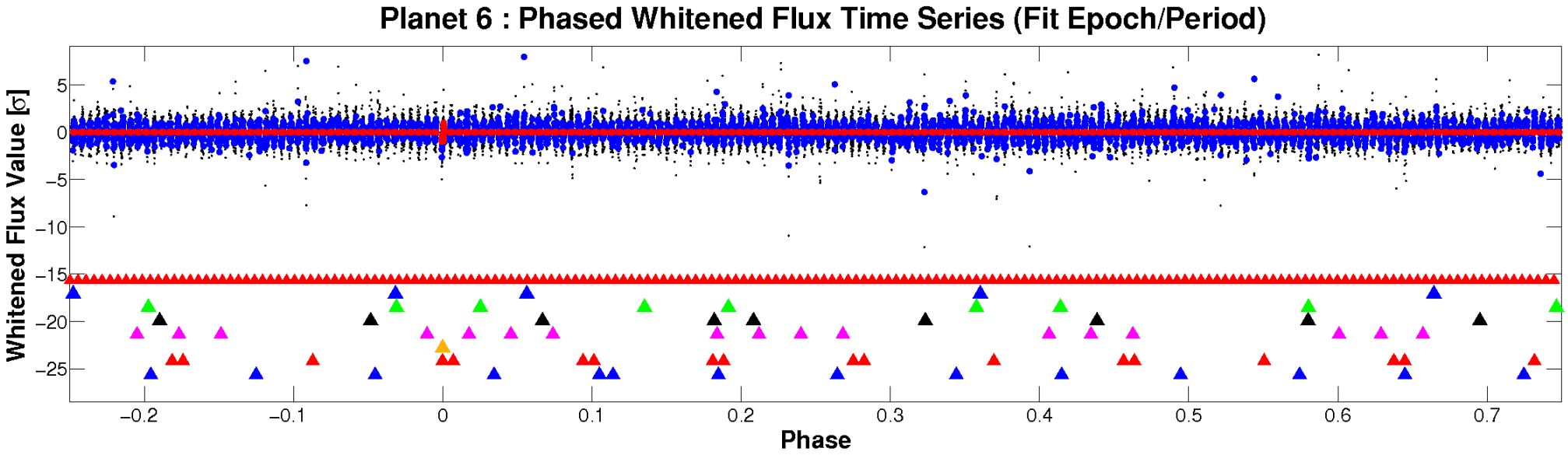
**DV Odd/Even**


TCE 005304634-06
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
-2.50e-03
Flux
-0.002
-0.001
0
0.001
0.002
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 005304634-06
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
-5.00e-03
-6.00e-03
-7.00e-03
Flux
-0.003
-0.002
-0.001
0
0.001
0.002
0.003
Phase
Odd
Even
Model Fit

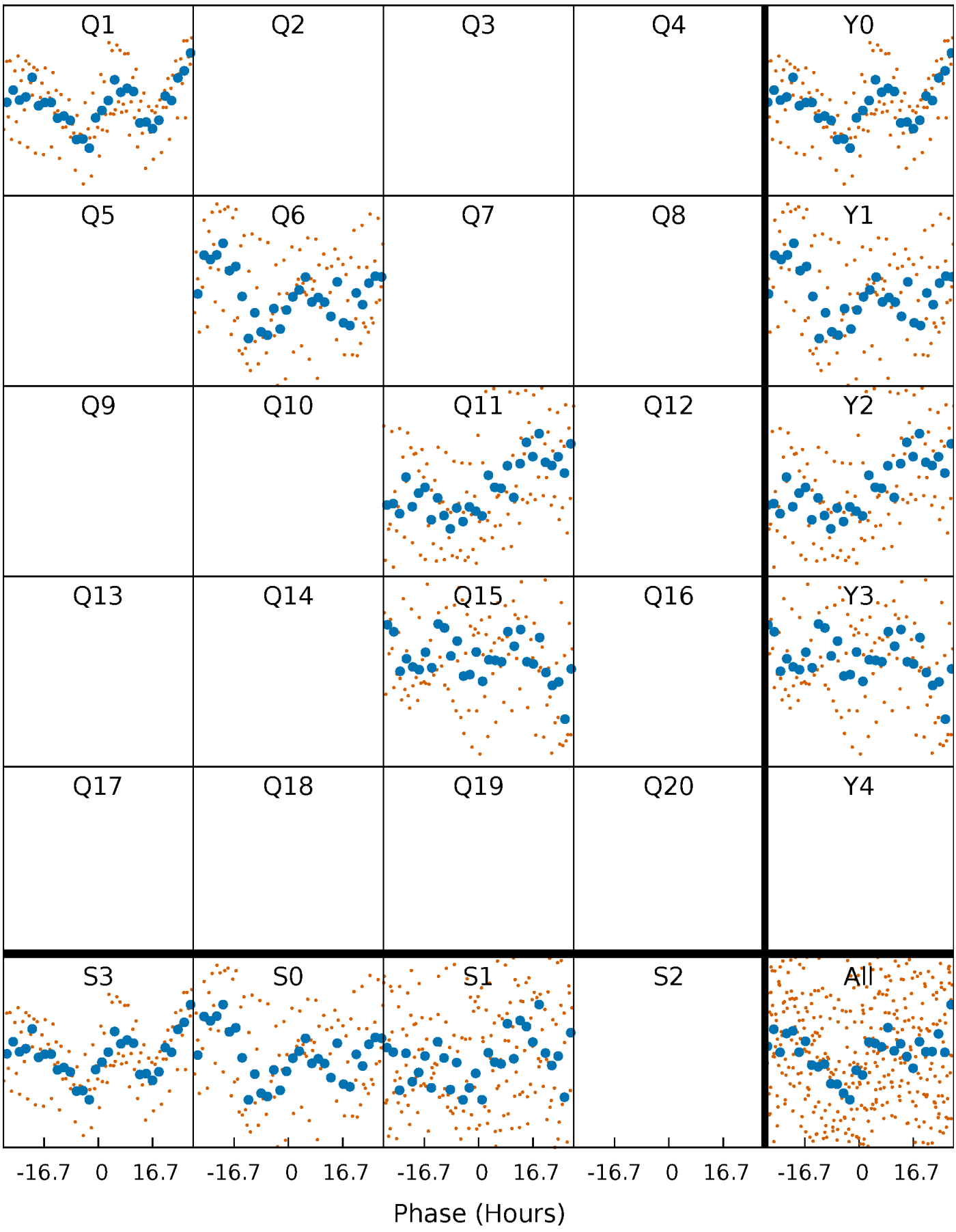
# Non-Whitened Vs. Whitened Light Curve



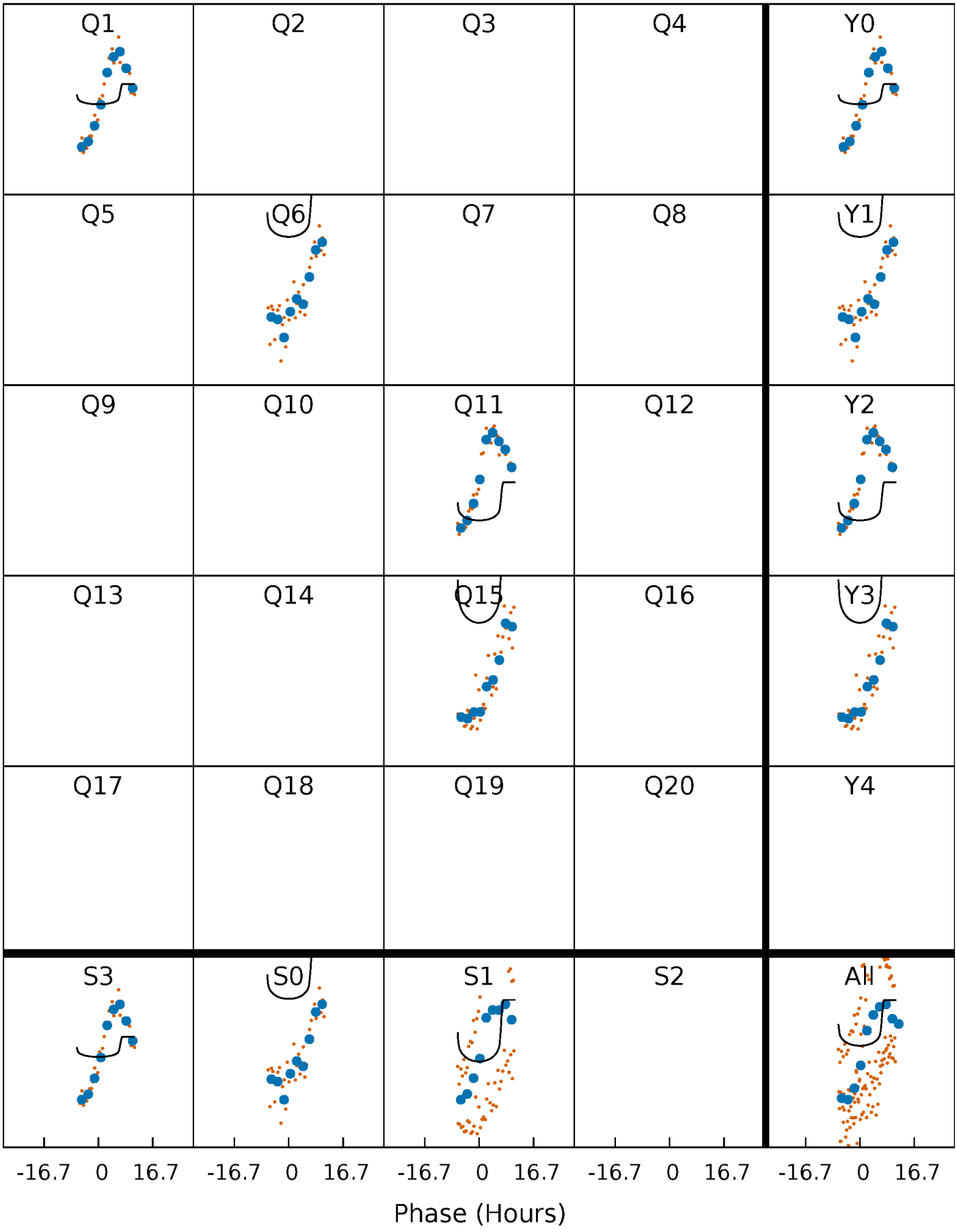
# PDC Quarter-Phased Transit Curves

TCE 005304634-06  P=430.159611 Days  $T_0$=161.638326 (BKJD)



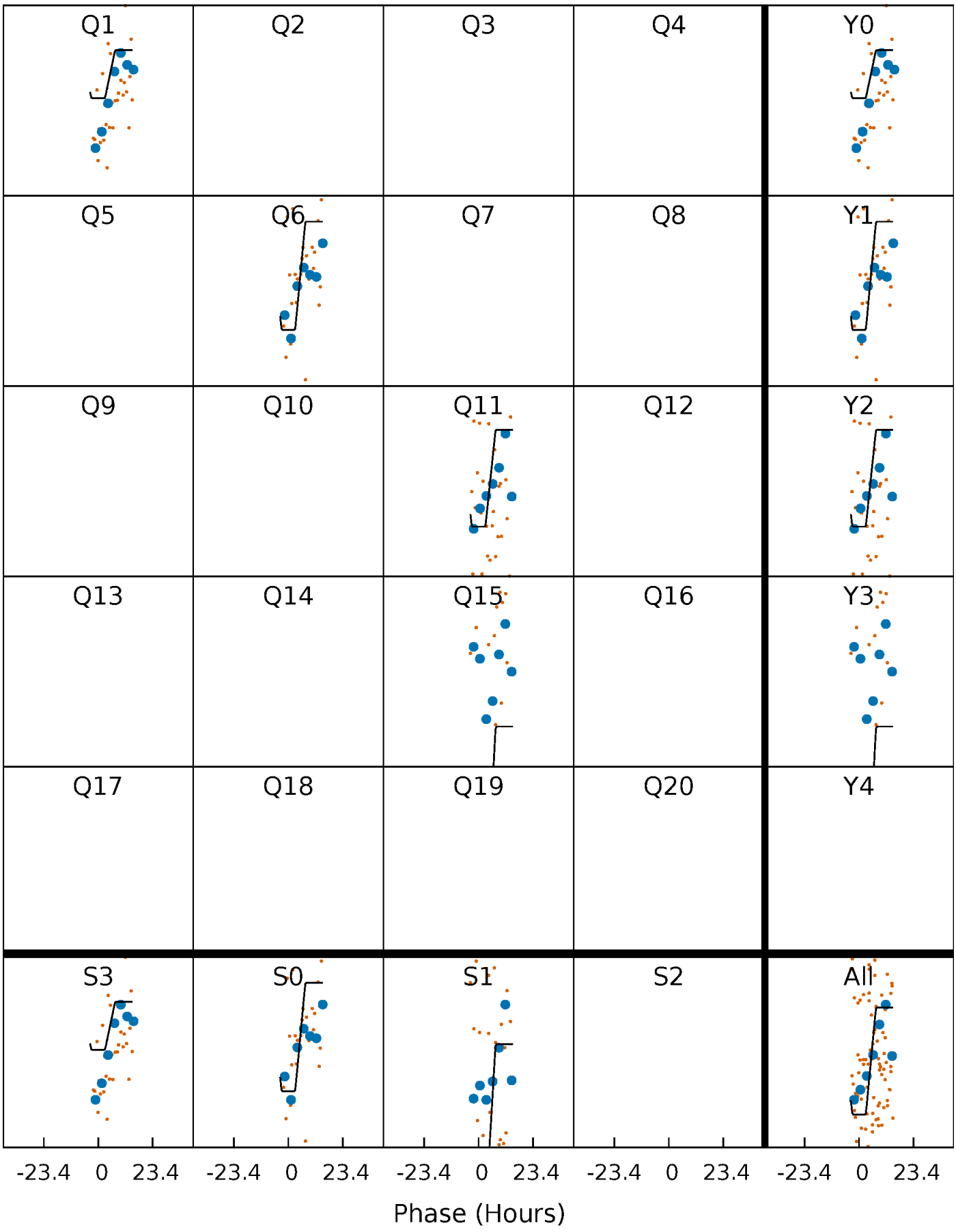
# DV Quarter-Phased Transit Curves

TCE 005304634-06  P=430.159611 Days  $T_0$=161.638326 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

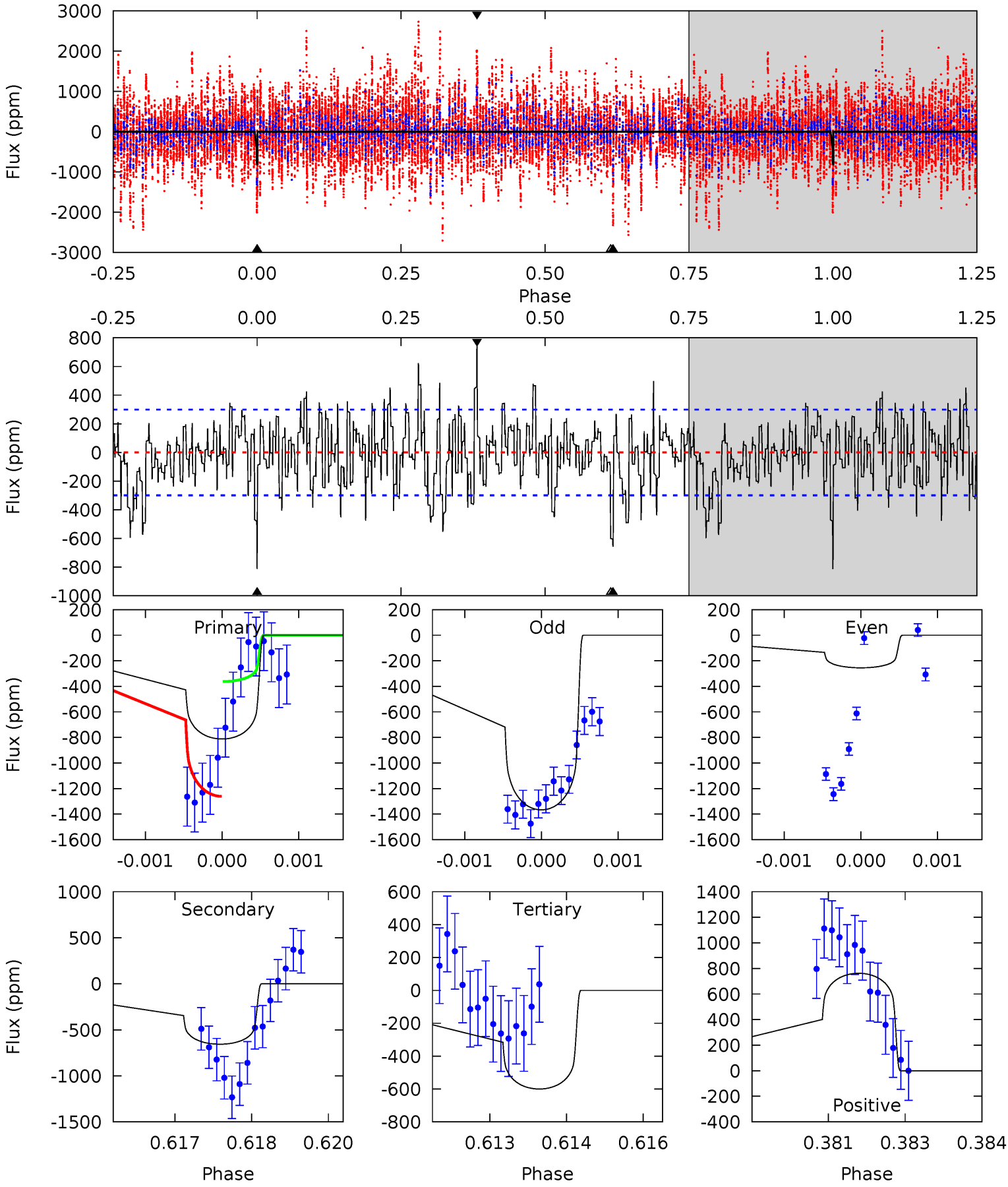
TCE 005304634-06  P=430.167305 Days  $T_0$=161.491868 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-06, P = 430.159611 Days, E = 161.638326 Days

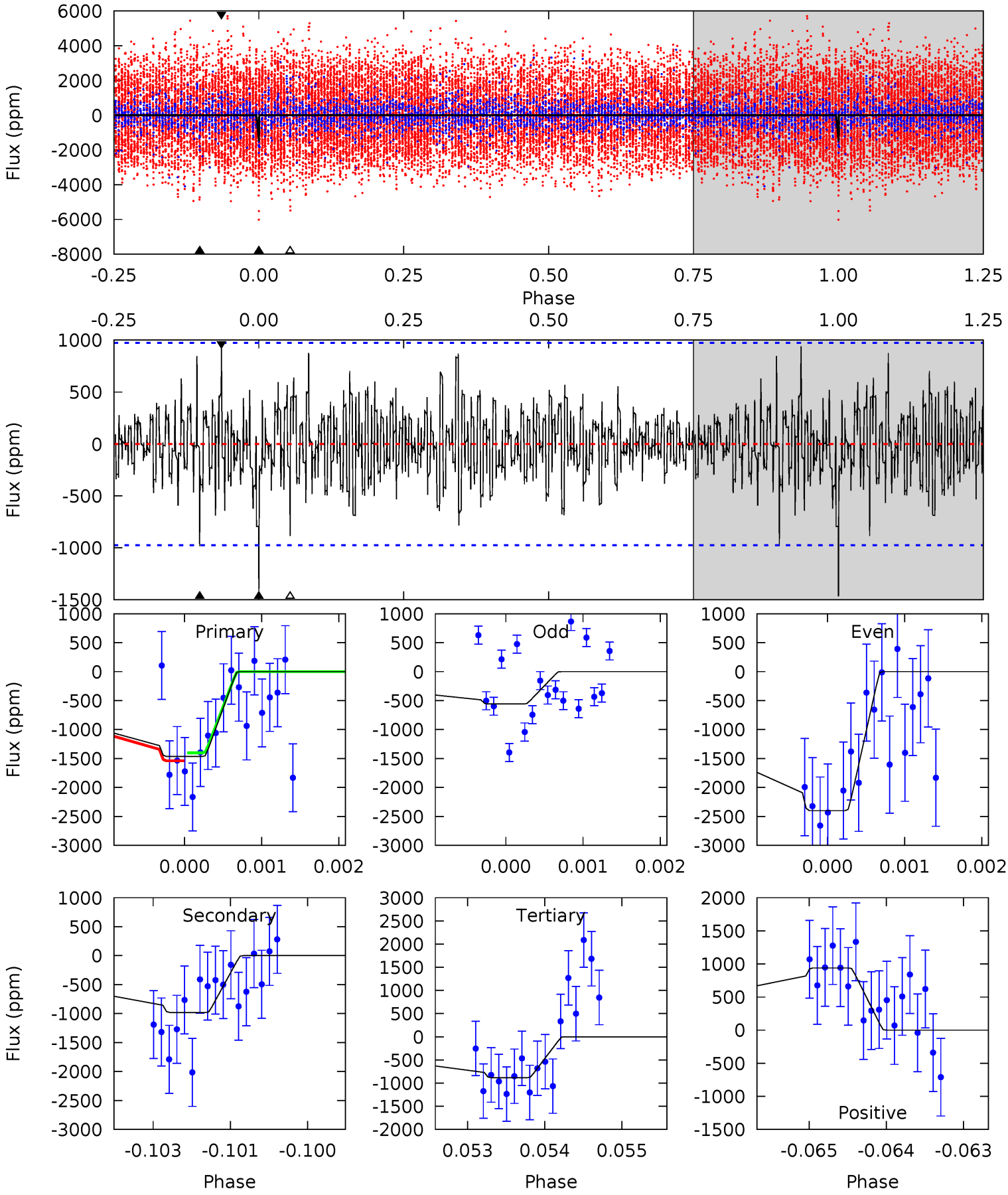
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14.7 | 11.9 | 10.8 | 13.8 | 5.40 | 3.21 | 3.51 | 3.83 | 0.90 | 1.02 | -1.91 | 9.96 | 0.92 | 0.48 | 8.16 |



# Alt Model-Shift Uniqueness Test

005304634-06, P = 430.167305 Days, E = 161.491868 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.19 | 5.49 | 4.94 | 5.25 | 5.44 | 3.28 | 1.42 | 3.25 | 2.94 | 0.55 | 0.24 | 5.18 | 0.94 | 0.39 | 0.36 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-06 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -656±55 | $4.65^{+0.88}_{-0.87}$ | $523^{+40}_{-38}$ | $7458^{+788}_{-649}$ | $27315^{+12364}_{-8423}$ |
| Alt. | -982±179 | $7.90^{+1.48}_{-1.20}$ | $519^{+48}_{-39}$ | $6165^{+491}_{-438}$ | $13680^{+6043}_{-4191}$ |

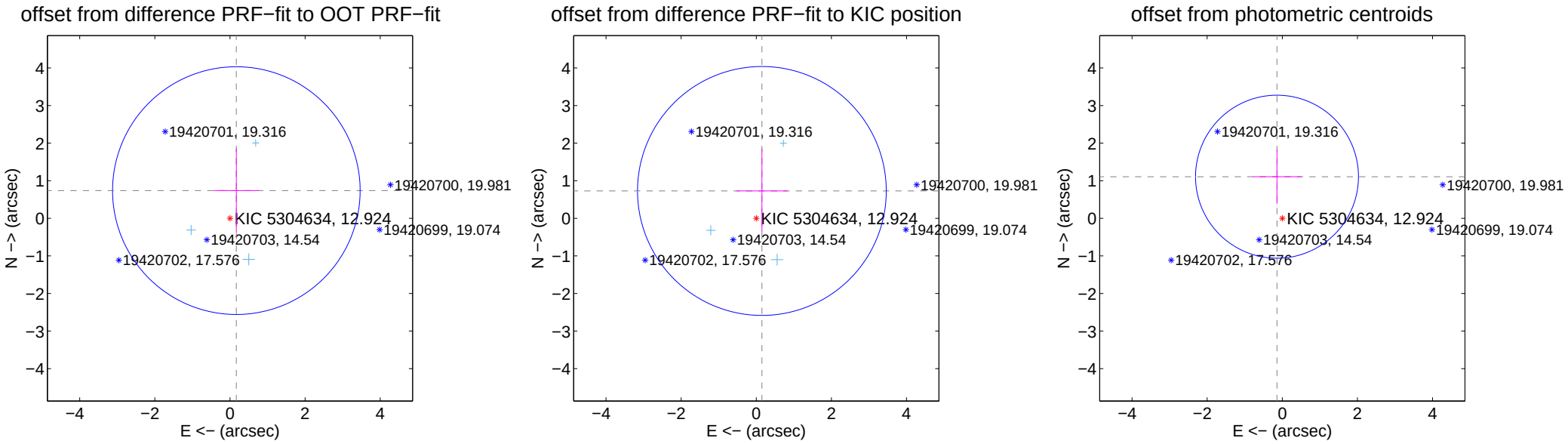
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

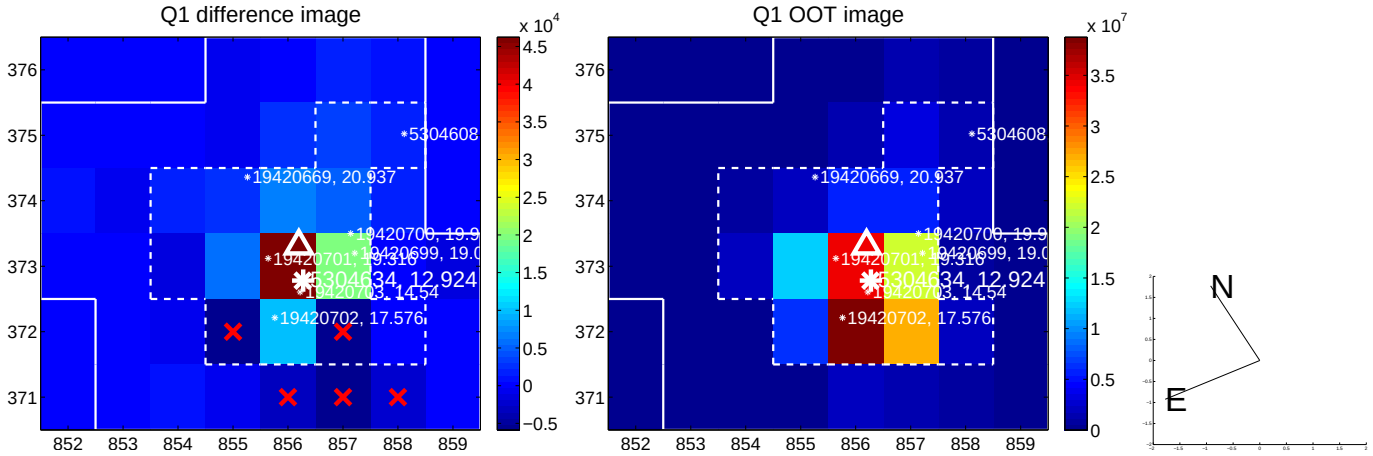
Supplemental centroid analysis for 005304634-06. Kepler magnitude: 12.92. Transit SNR 6.61
There are 3 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

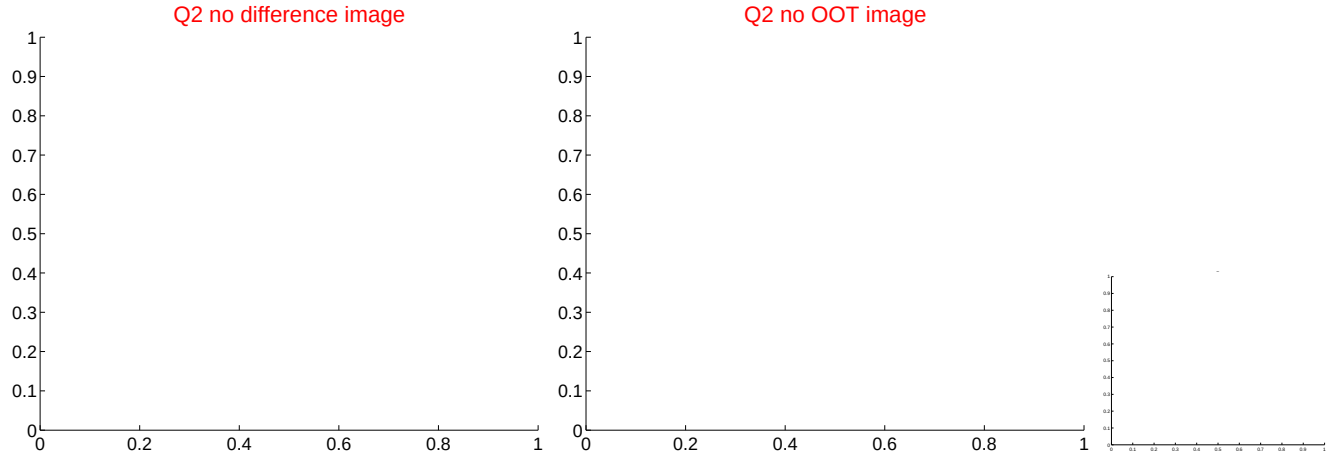
| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.756 ± 1.099 | 0.69 | -0.169 ± 0.603 | 0.737 ± 1.119 |
| PRF-fit source offset from KIC position | 0.743 ± 1.104 | 0.67 | -0.150 ± 0.681 | 0.727 ± 1.118 |
| photometric centroid source offset | 1.12 ± 0.72 | 1.54 | 0.14 ± 0.65 | 1.11 ± 0.72 |

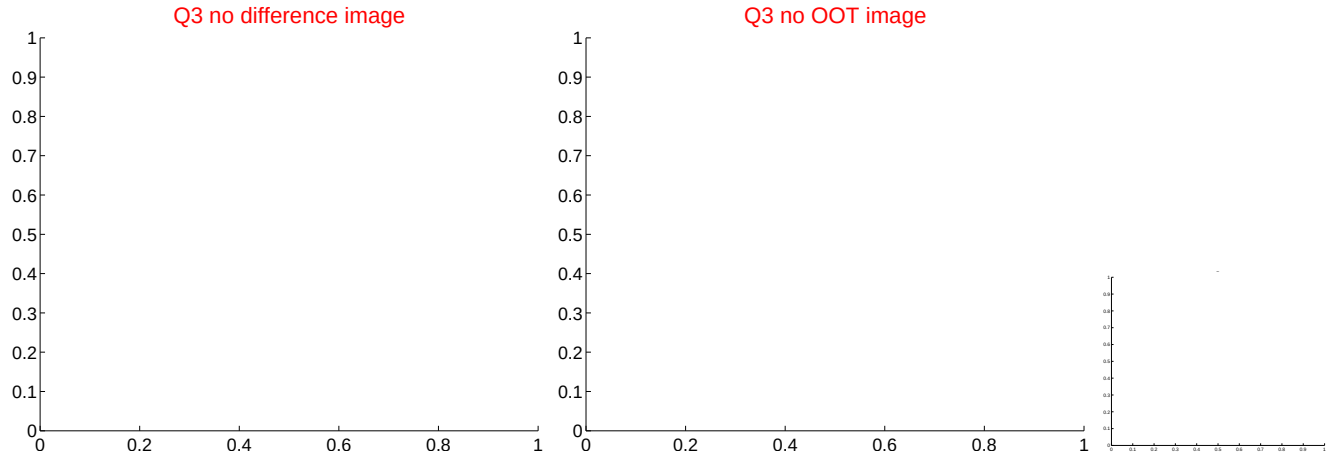


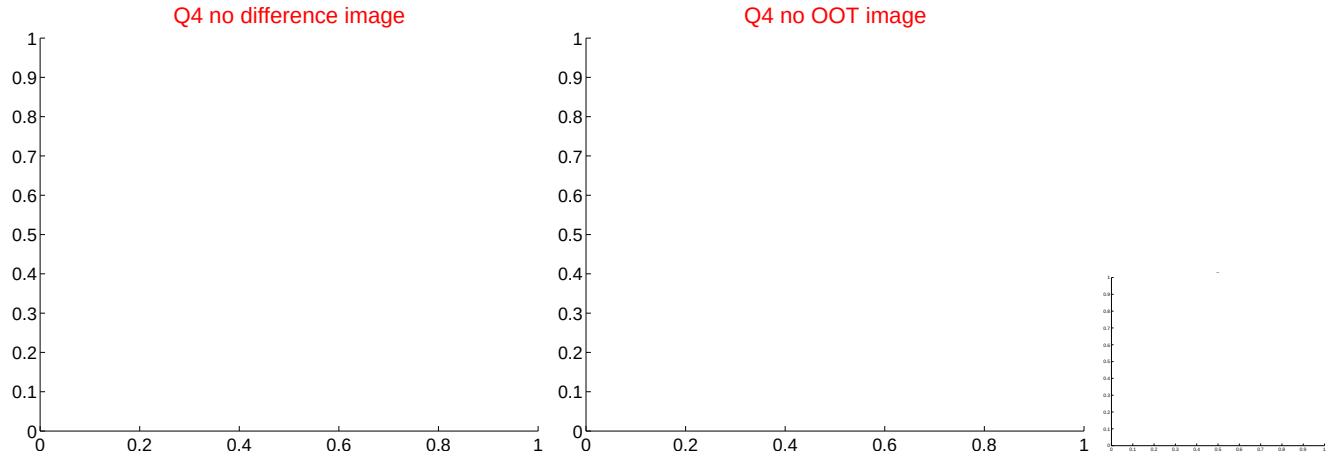

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

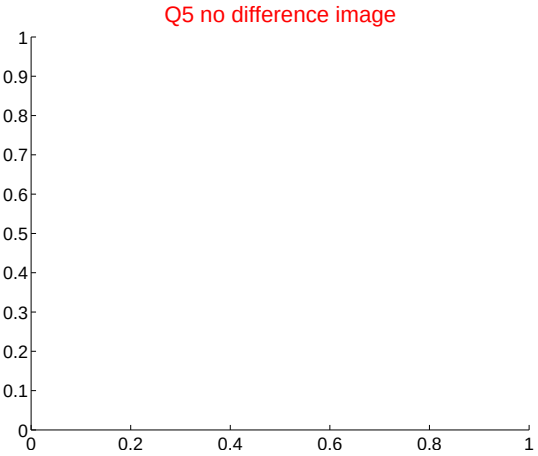


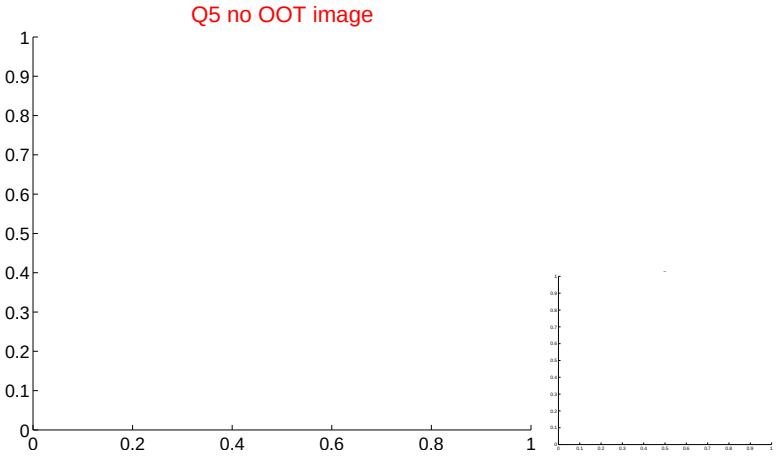



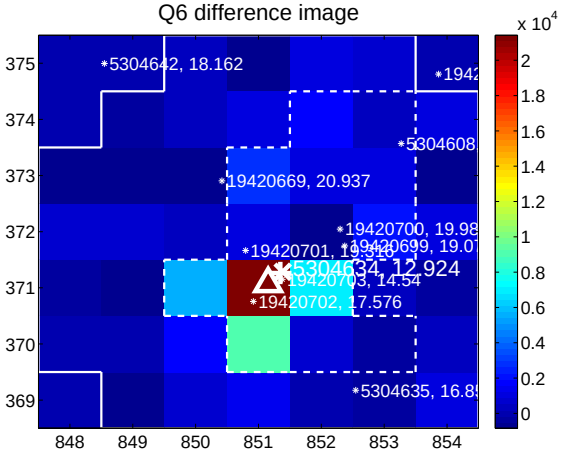



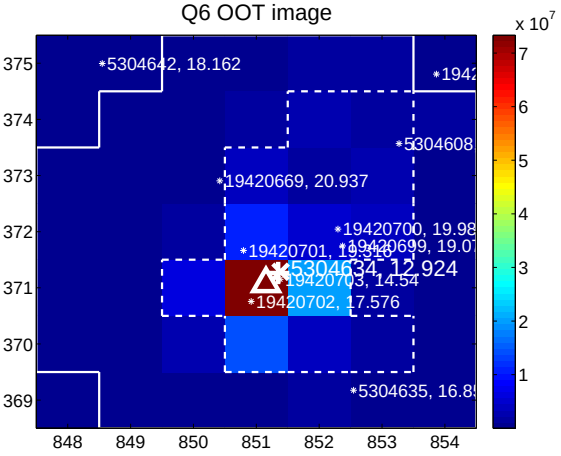



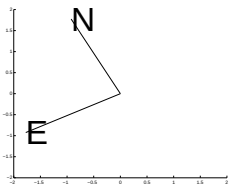
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

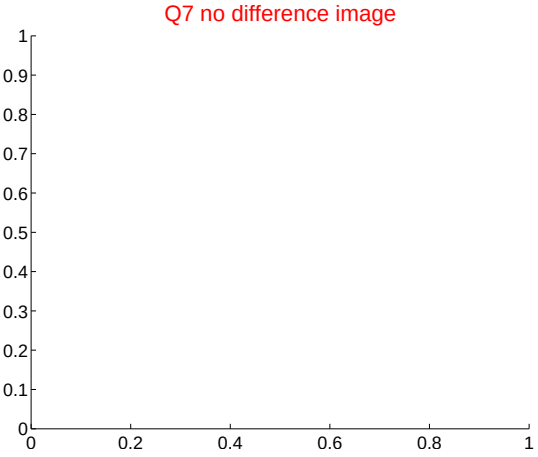


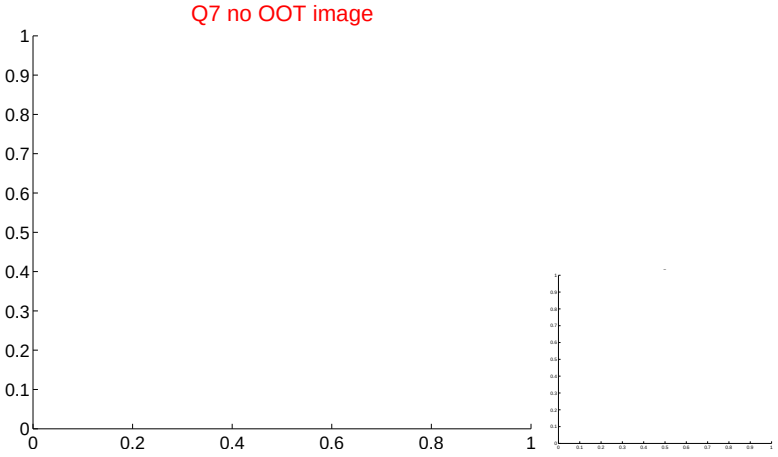



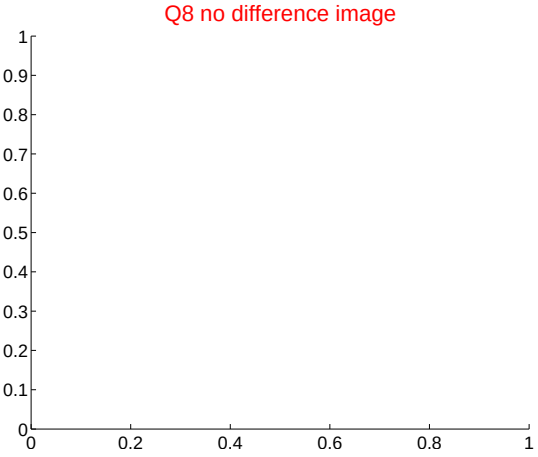



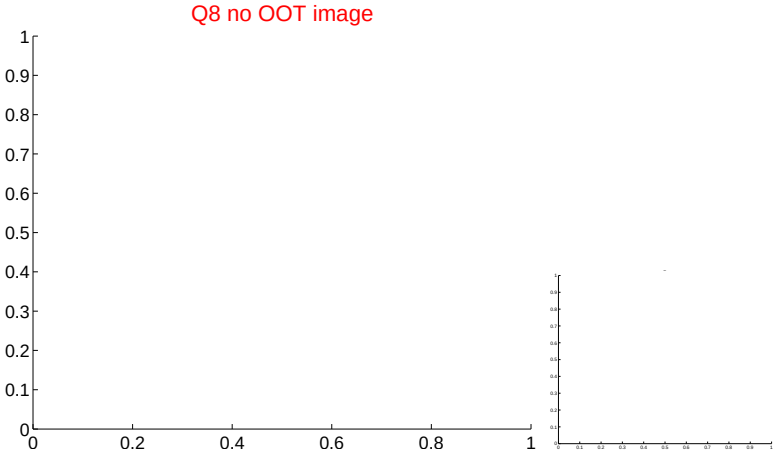



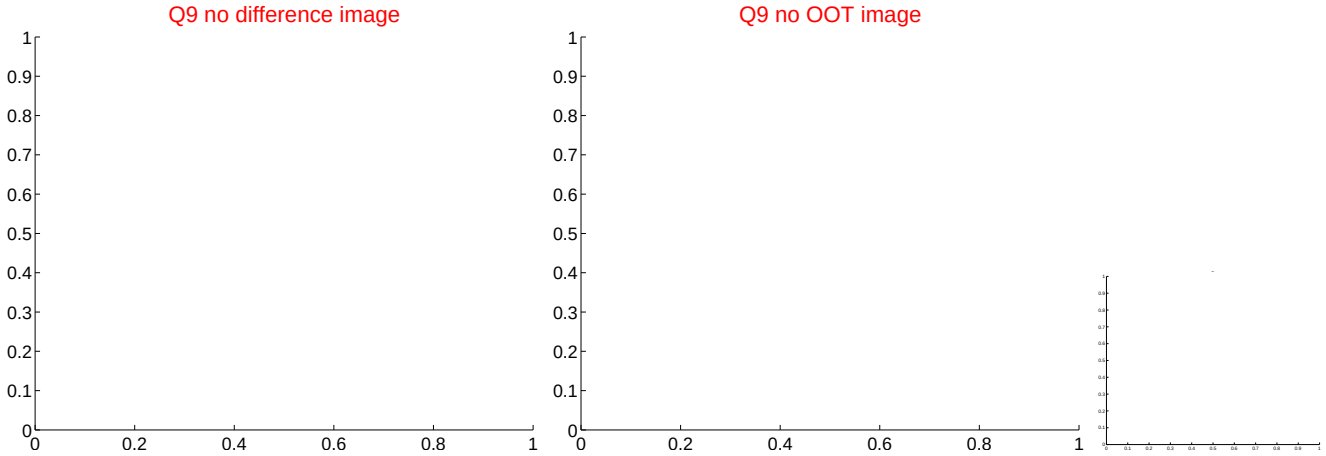



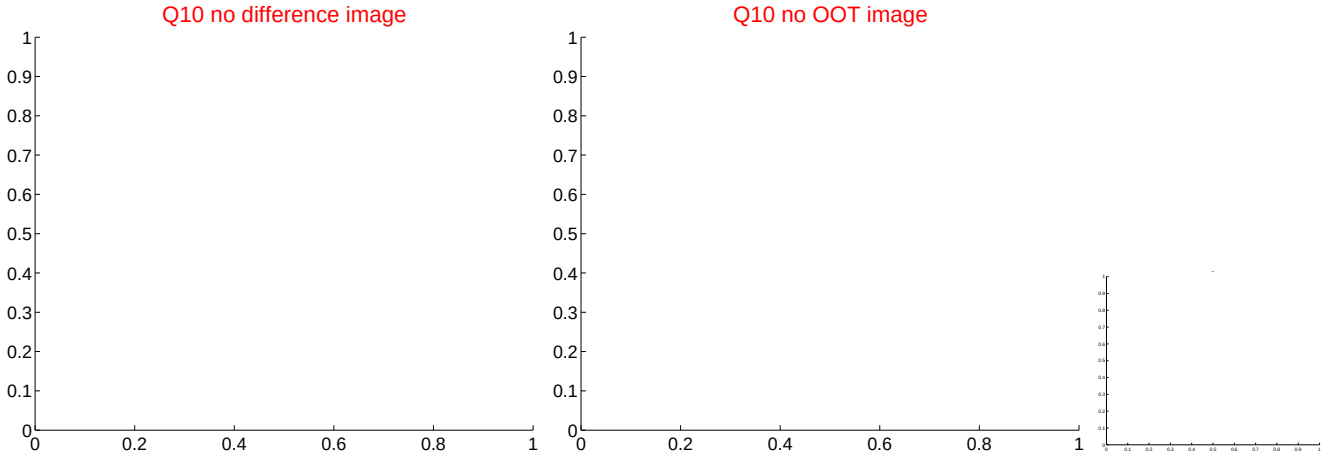



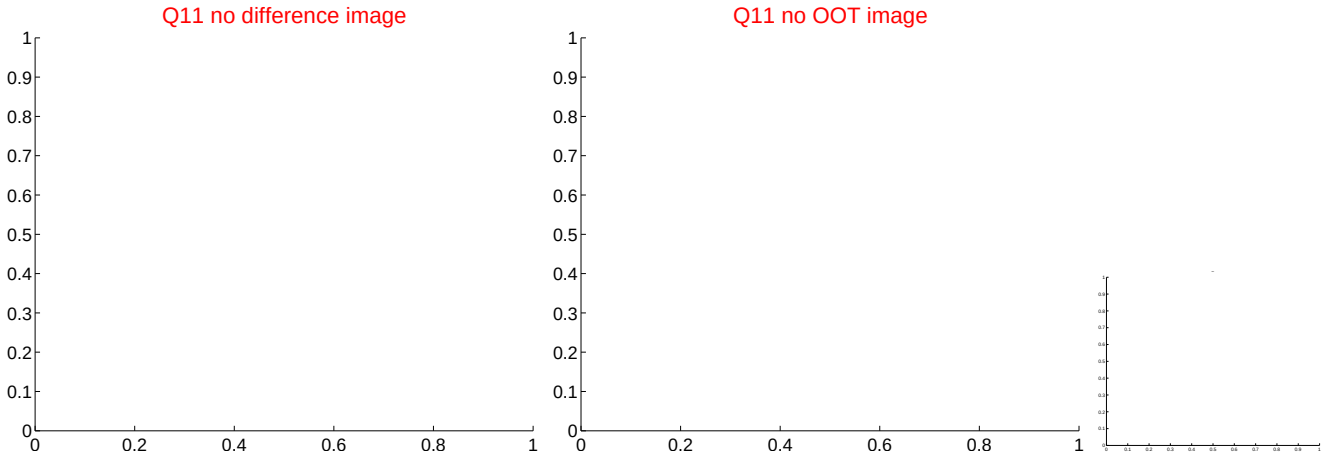



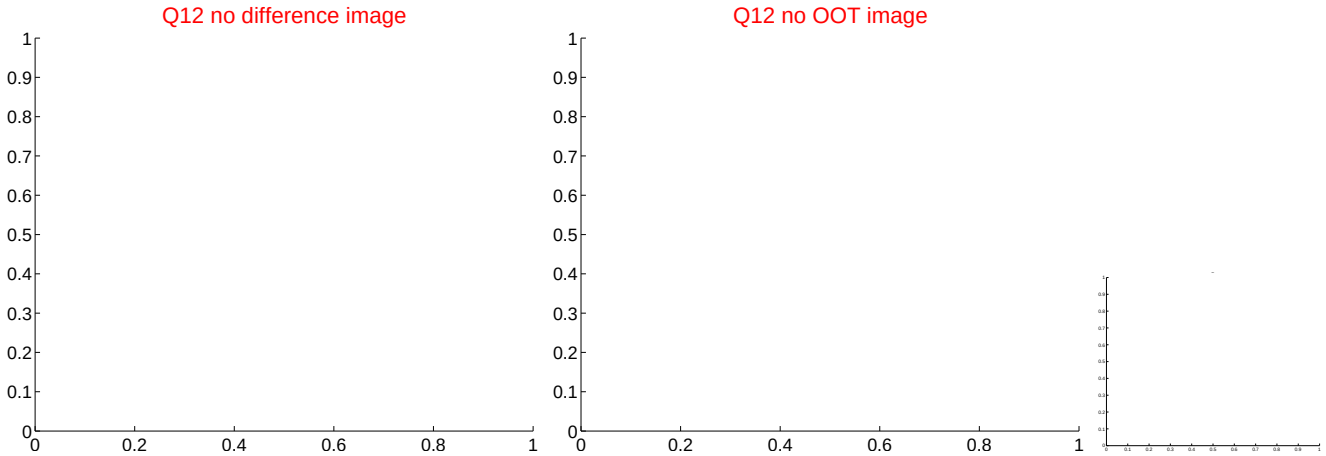



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

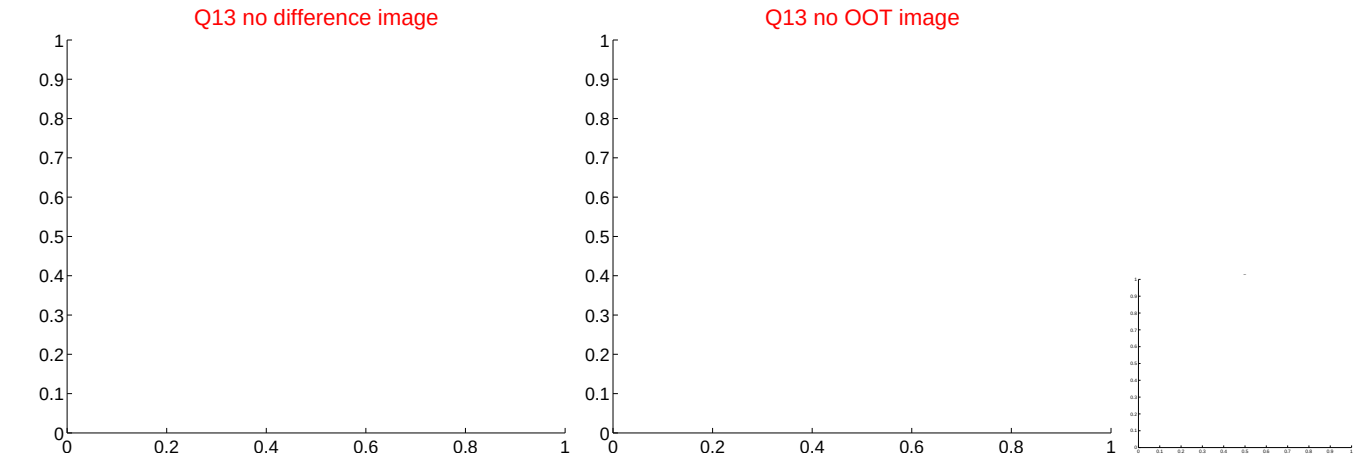


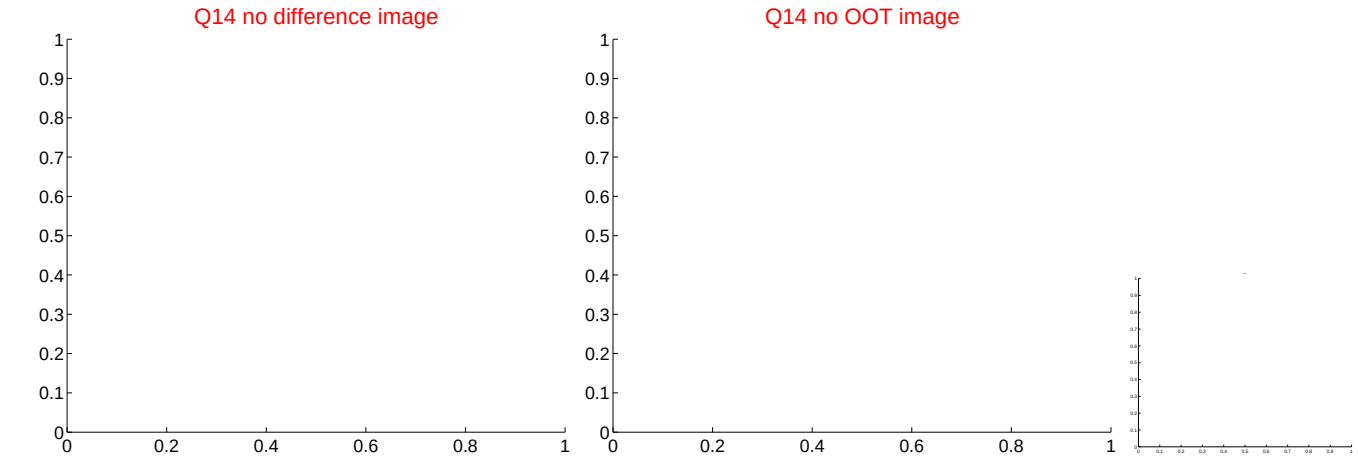



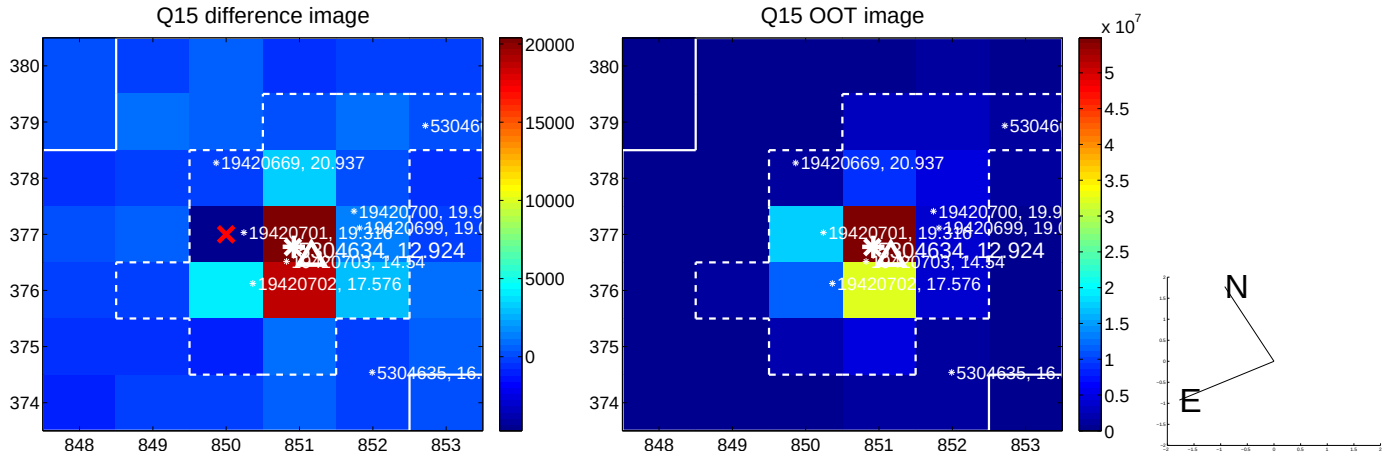



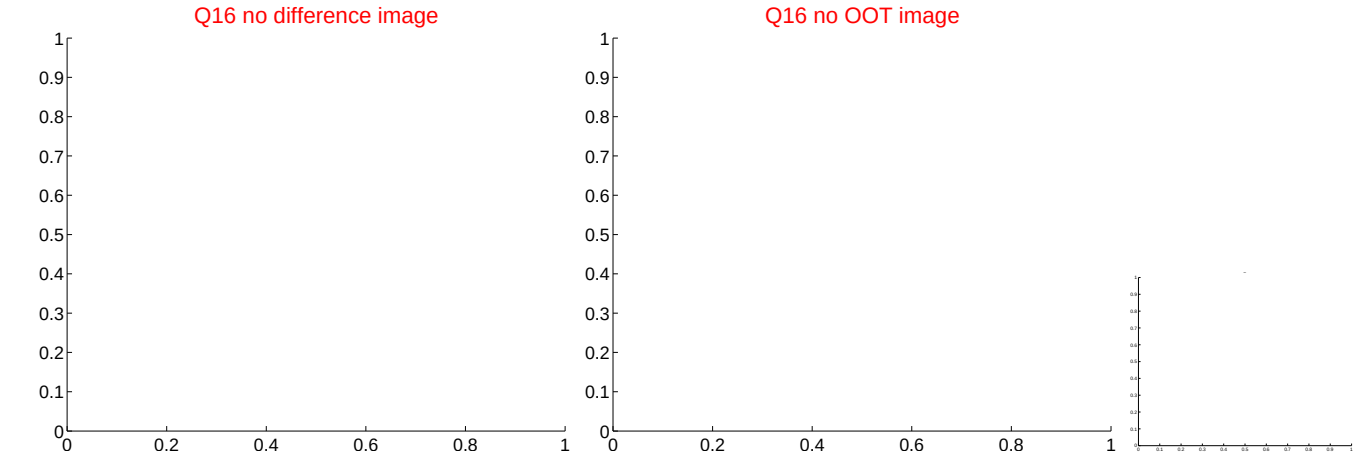



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

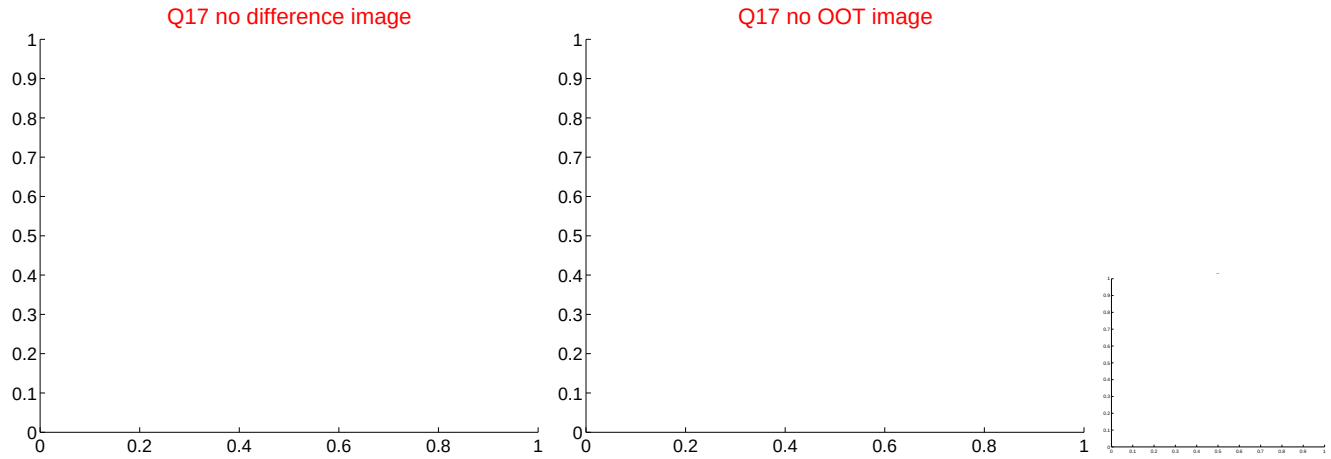


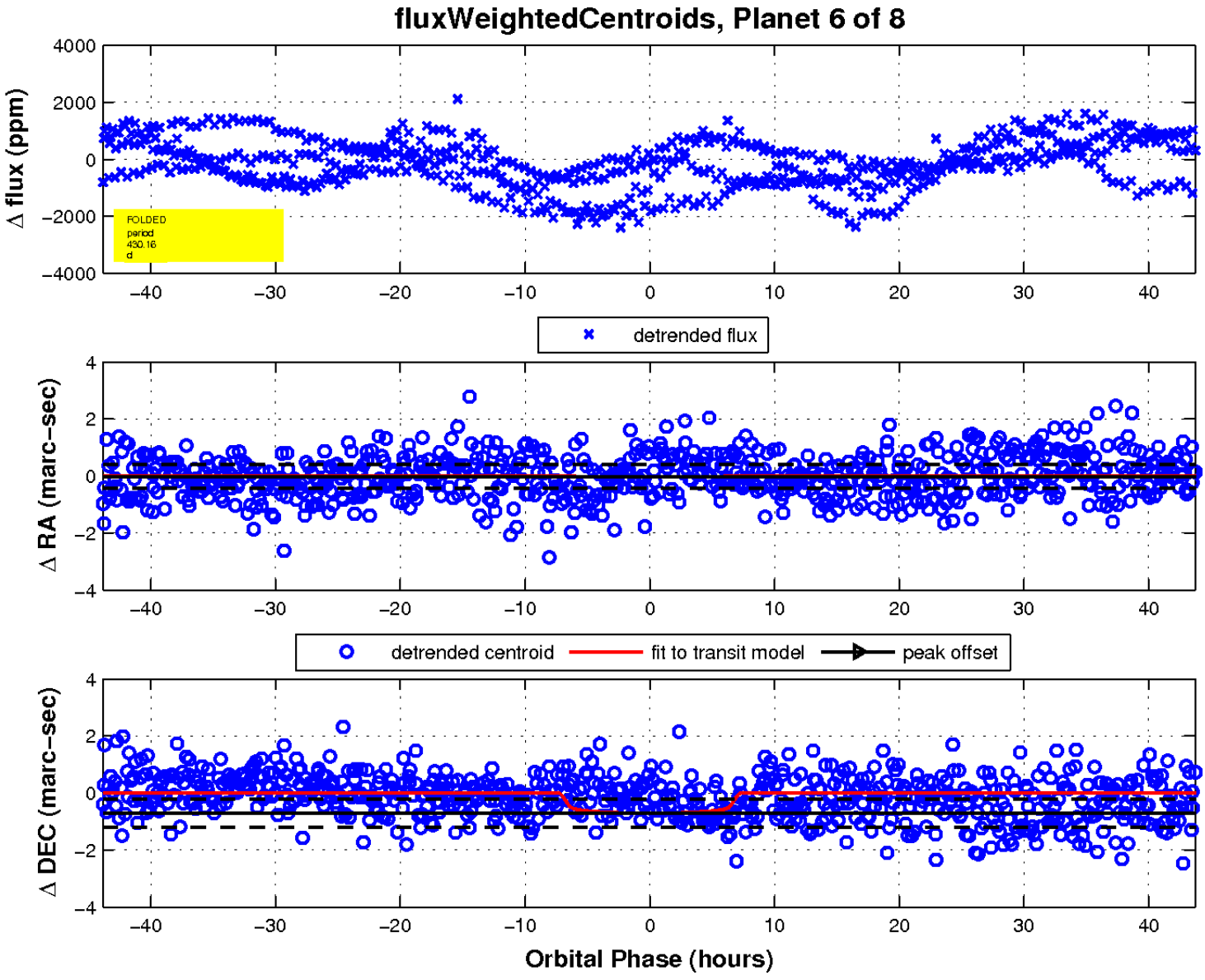



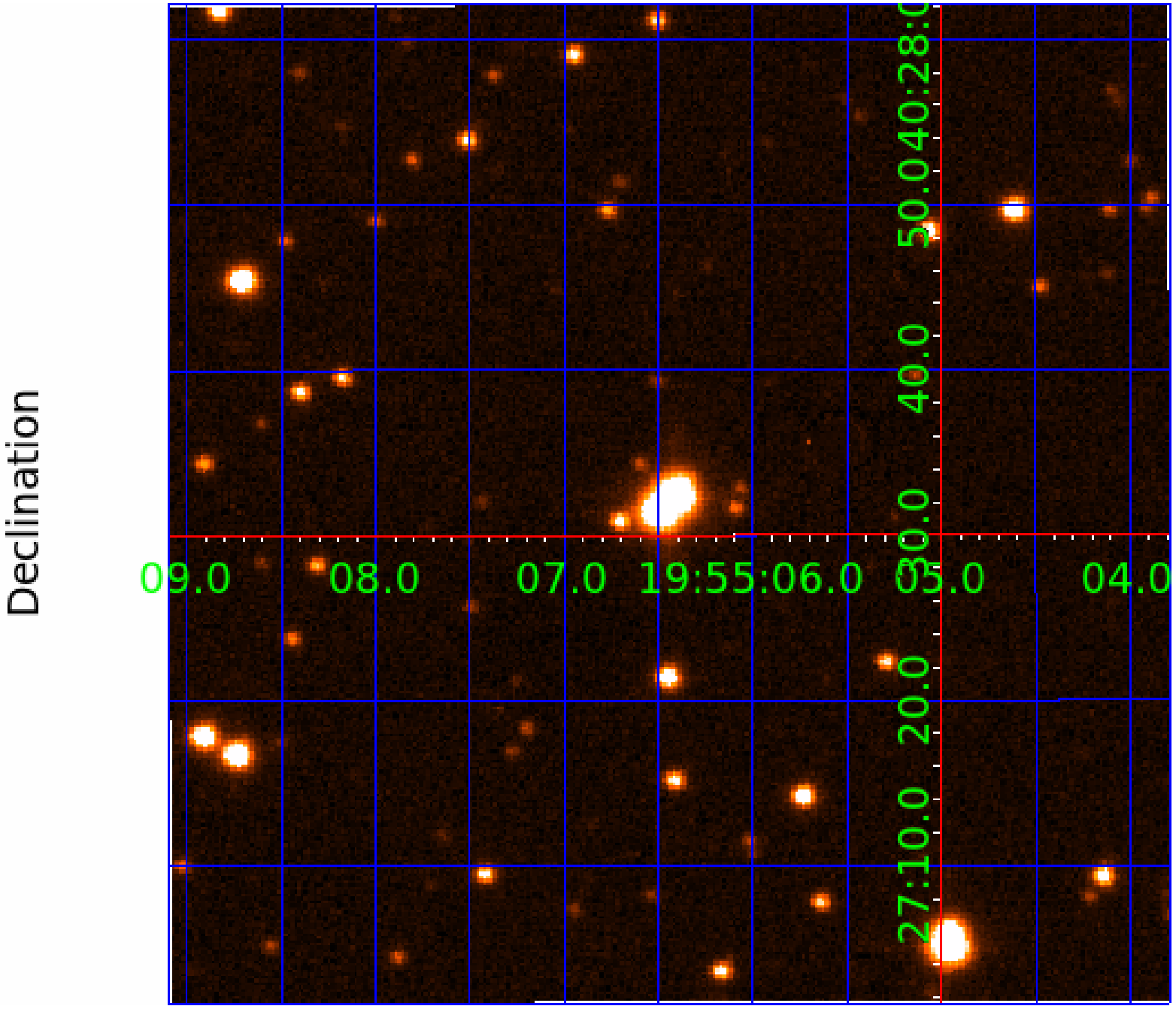



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

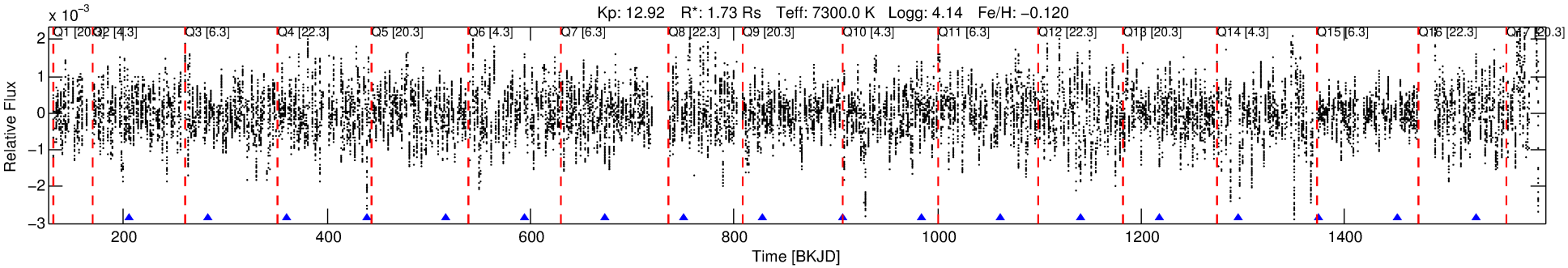
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

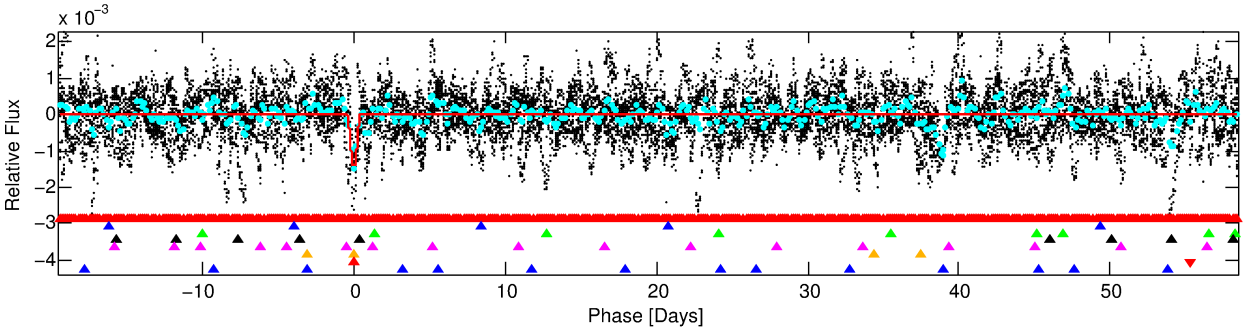
## Ephemeris Match Information For 005304634-07

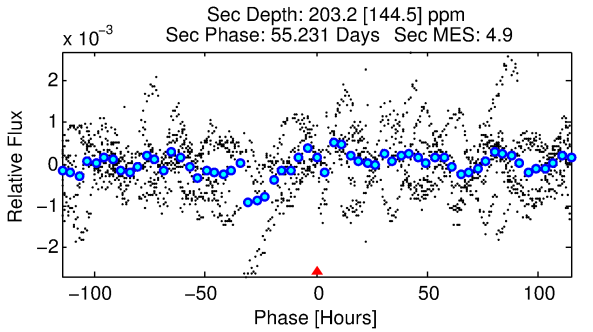
No Significant Match Found

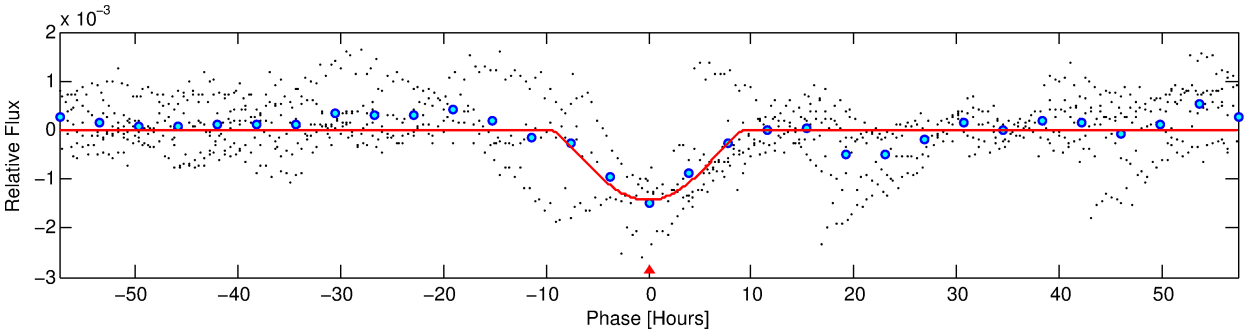
# DV One-Page Summary

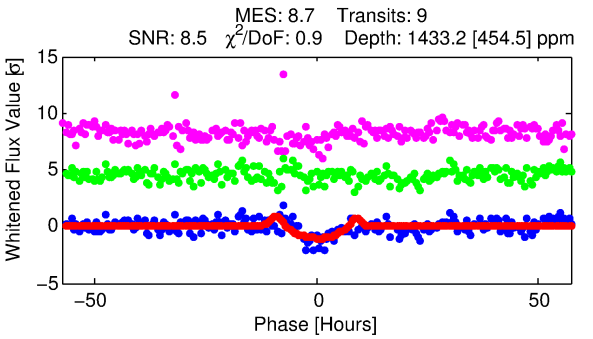
**KIC: 5304634 Candidate: 7 of 8 Period: 77.927 d**

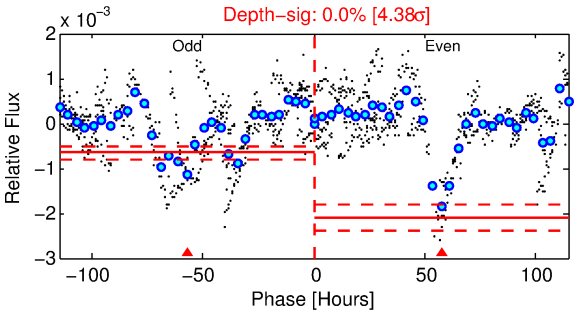


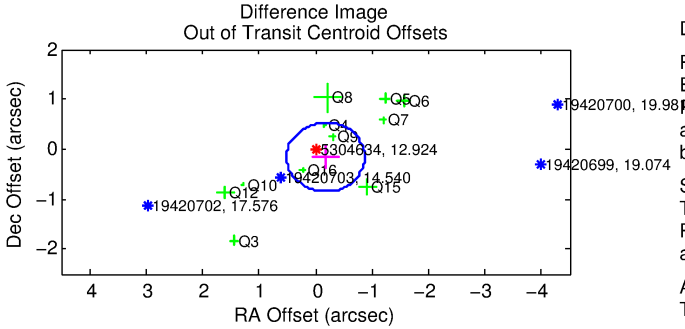




**DV Fit Results:**

Period = 77.92740 [0.00274] d
Epoch = 205.2177 [0.0275] BKJD
Rp/R* = 0.0637 [0.0605]
a/R* = 11.35 [2.33]
b = 1.00 [0.10]

Seff = 45.49 [19.35]
Teq = 662 [70] K
Rp = 12.00 [12.04] Re
a = 0.4082 [0.1044] AU

Ag = 129.31 [266.30] [0.48σ]
Teffp = 3453 [1764] K [1.58σ]

**DV Diagnostic Results:**

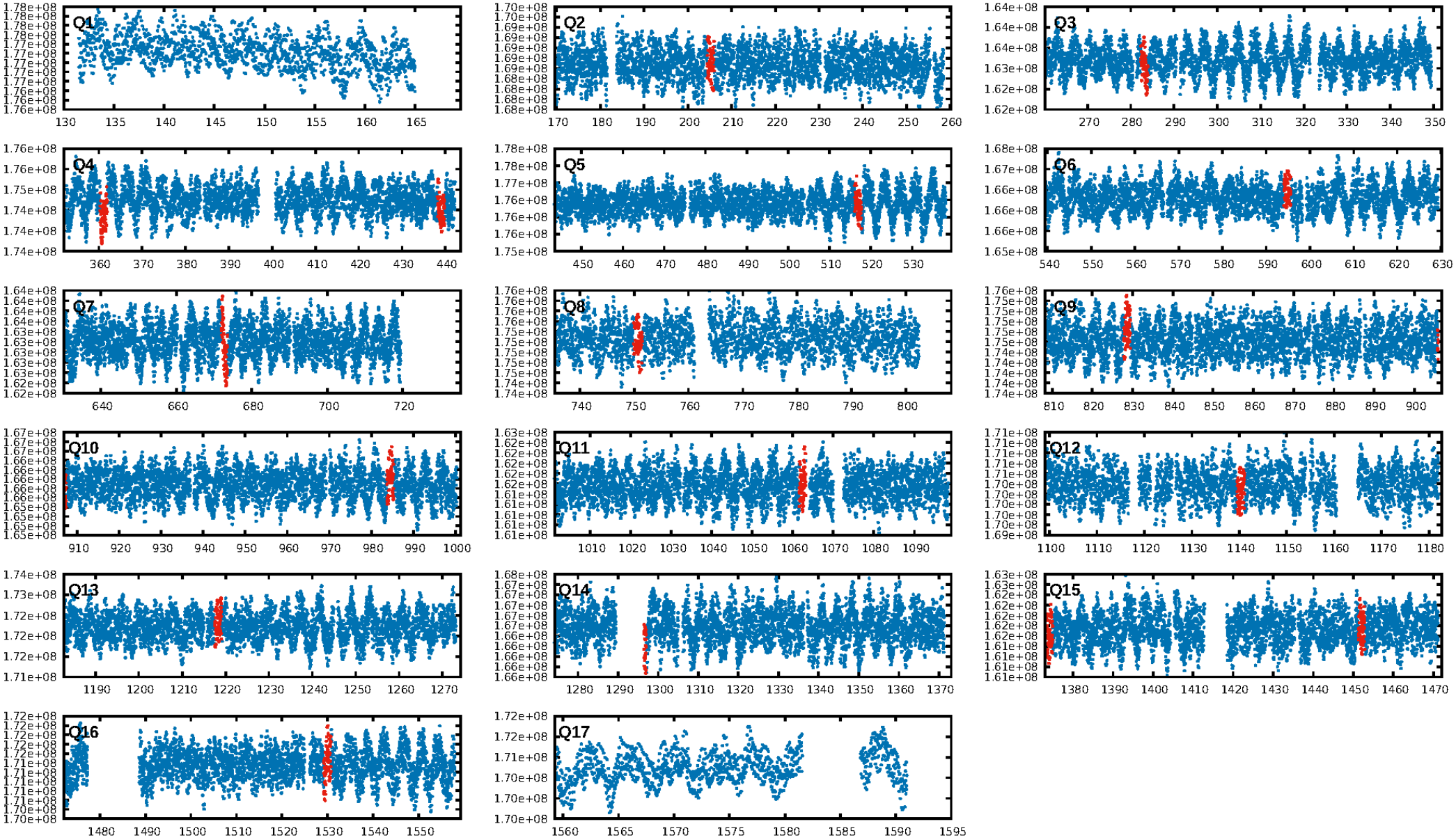
ShortPeriod−sig: 100.0% [79.59σ]
LongPeriod−sig: 100.0% [5.30σ]
ModelChiSquare2−sig: 18.3%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [9/9]
GhostDiagnostic−chr: −2.127

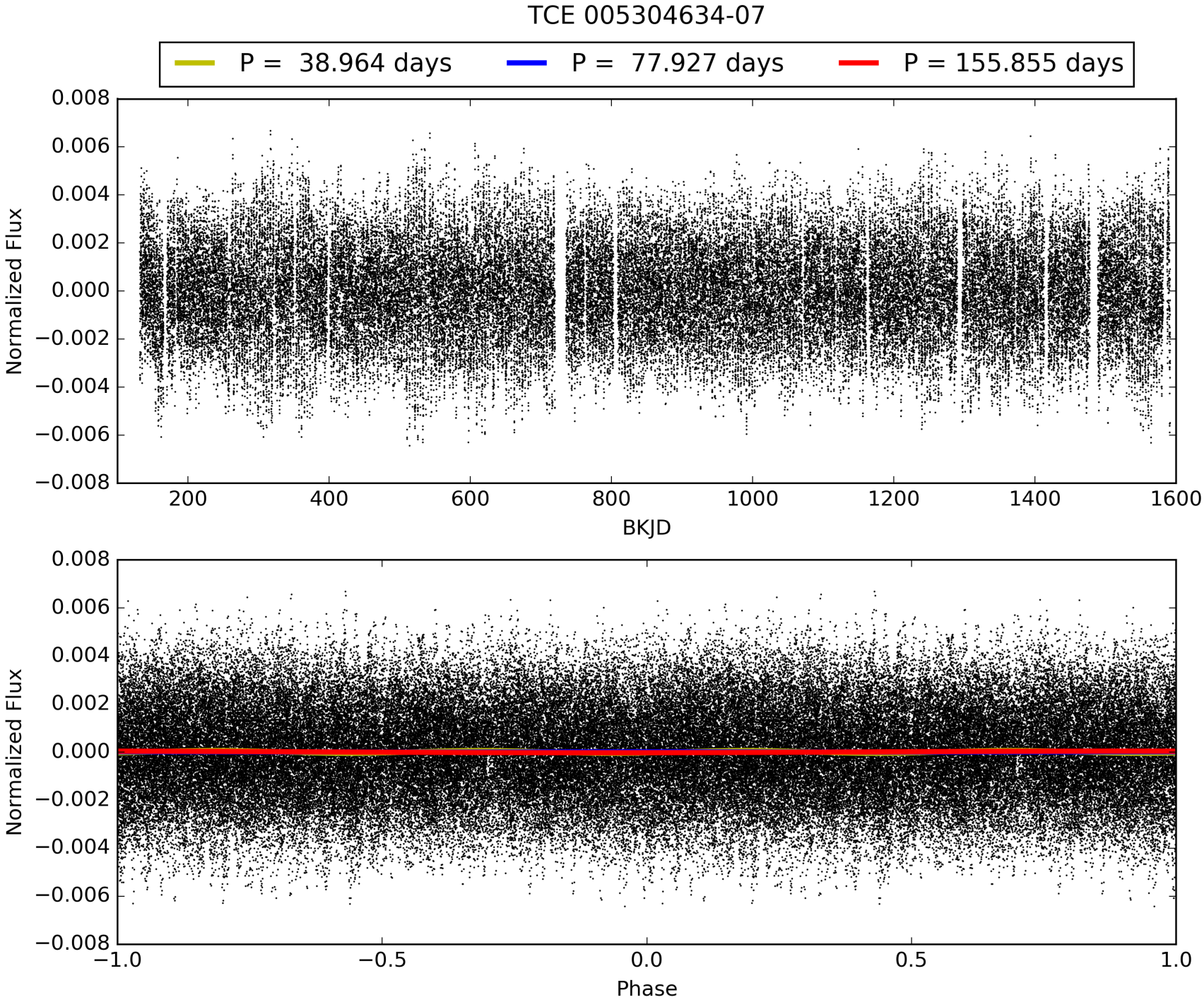
Centroid−sig: 0.8%
Centroid−so: 0.302 arcsec [1.54σ]
OotOffset−rm: 0.239 arcsec [1.04σ]
KicOffset−rm: 0.237 arcsec [1.04σ]
OotOffset−st: 2/3/4/2 [11]
KicOffset−st: 2/3/4/2 [11]
DiffImageQuality−fgm: 0.45 [5/11]
DiffImageOverlap−fno: 0.00 [0/12]

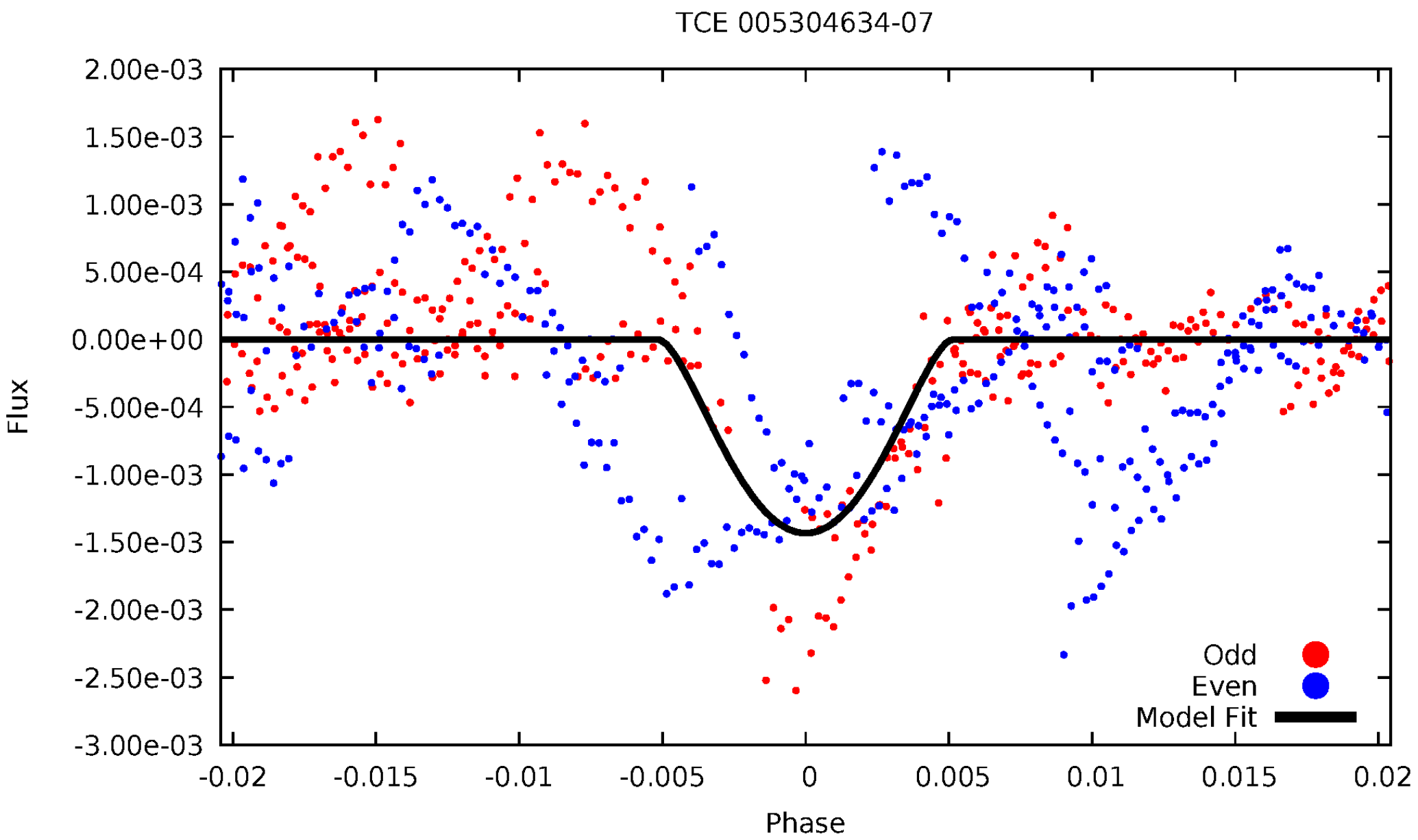
**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:22 Z**

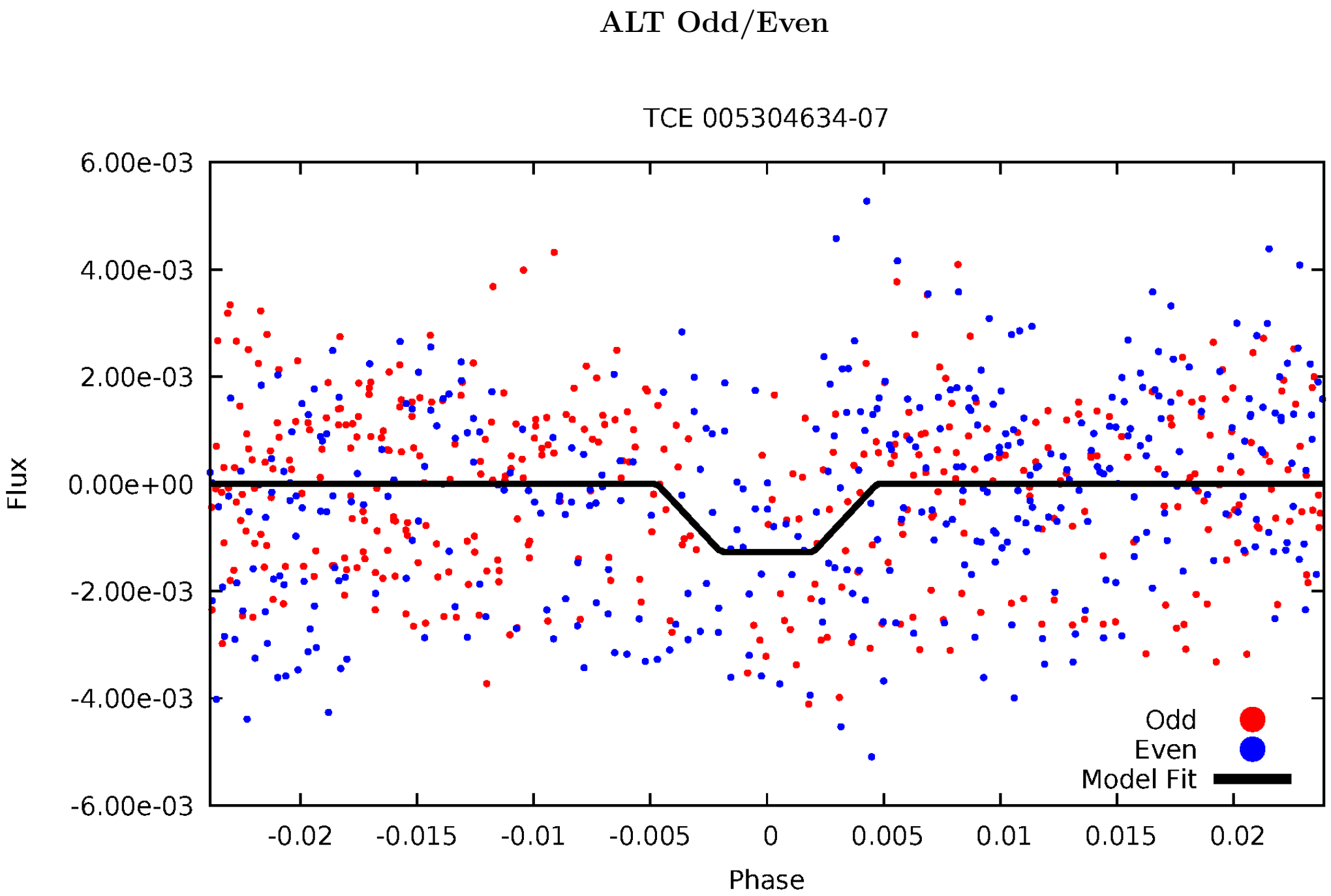
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 005304634-07, PDC Light Curves

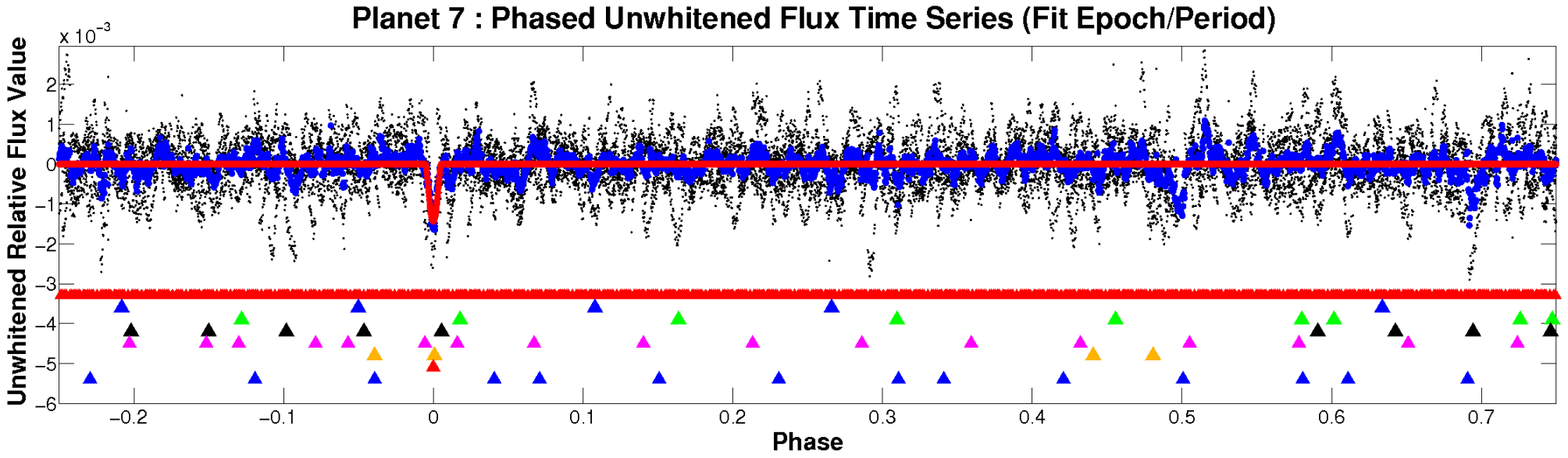


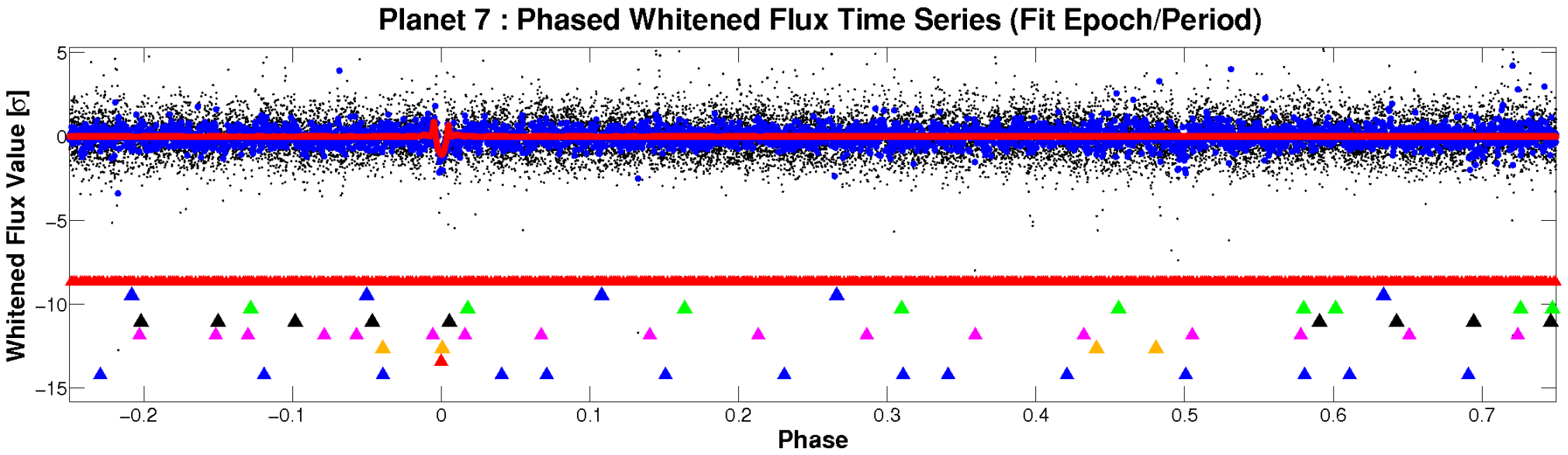

TCE 005304634-07
P = 38.964 days
P = 77.927 days
P = 155.855 days
Normalized Flux
BKJD
Phase
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
−1.0
−0.5
0.0
0.5
1.0


DV Odd/Even
TCE 005304634-07
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
-2.50e-03
-3.00e-03
Flux
-0.02
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
0.02
Phase
Odd
Even
Model Fit


ALT Odd/Even
TCE 005304634-07
6.00e-03
4.00e-03
2.00e-03
0.00e+00
-2.00e-03
-4.00e-03
-6.00e-03
Flux
-0.02
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
0.02
Phase
Odd
Even
Model Fit

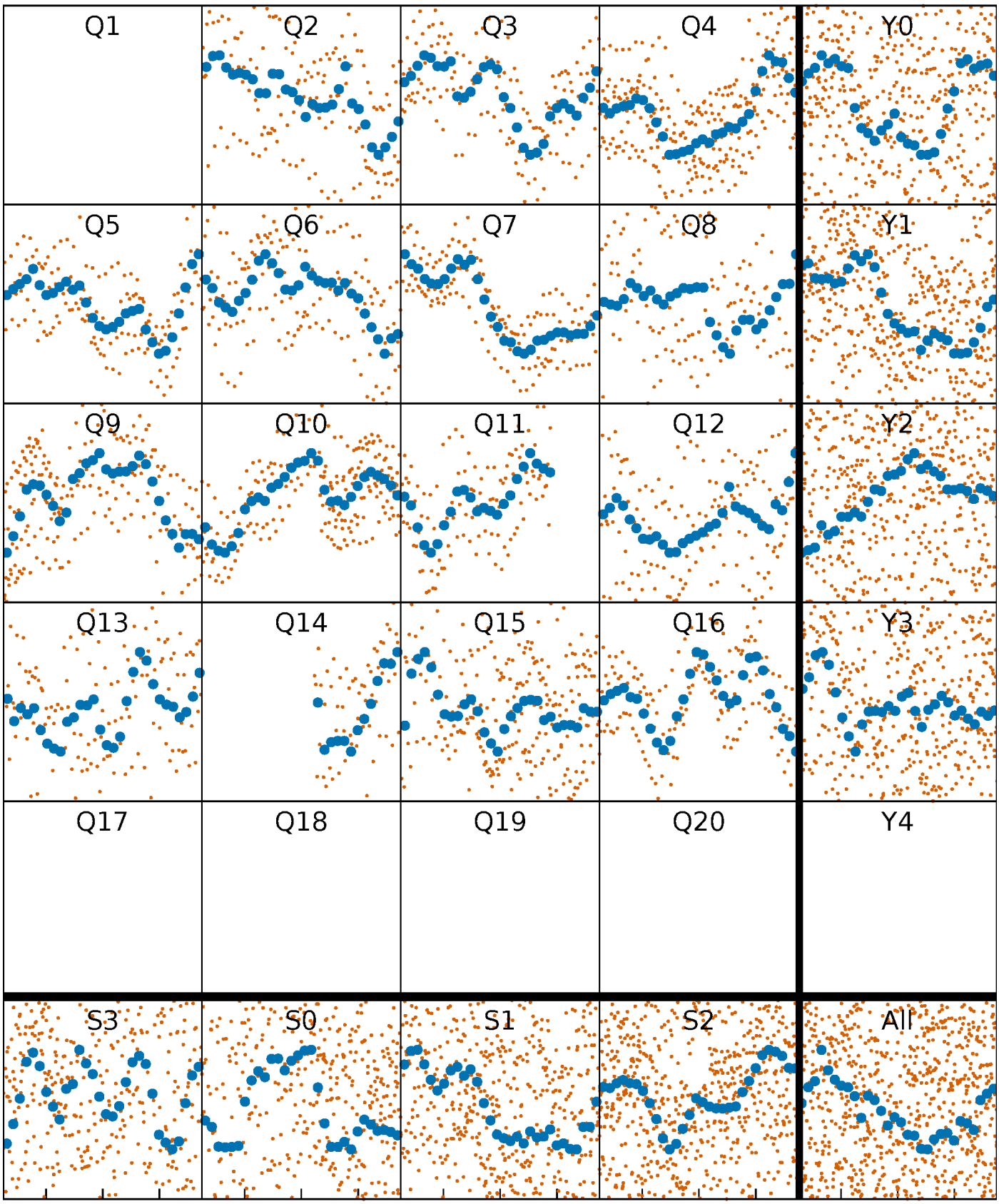
# Non-Whitened Vs. Whitened Light Curve



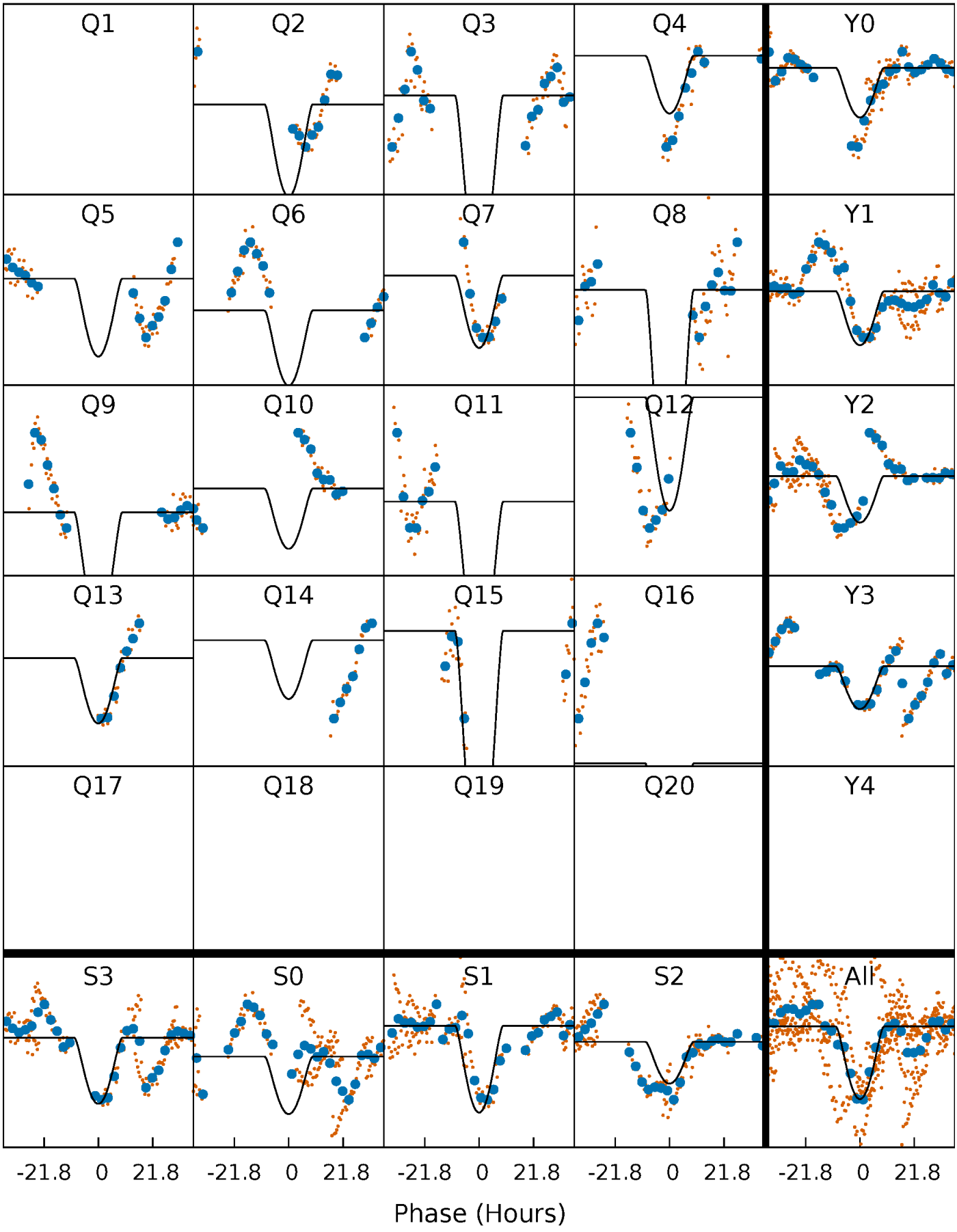
# PDC Quarter-Phased Transit Curves

TCE 005304634-07  P= 77.927400 Days  $T_0$=205.217710 (BKJD)



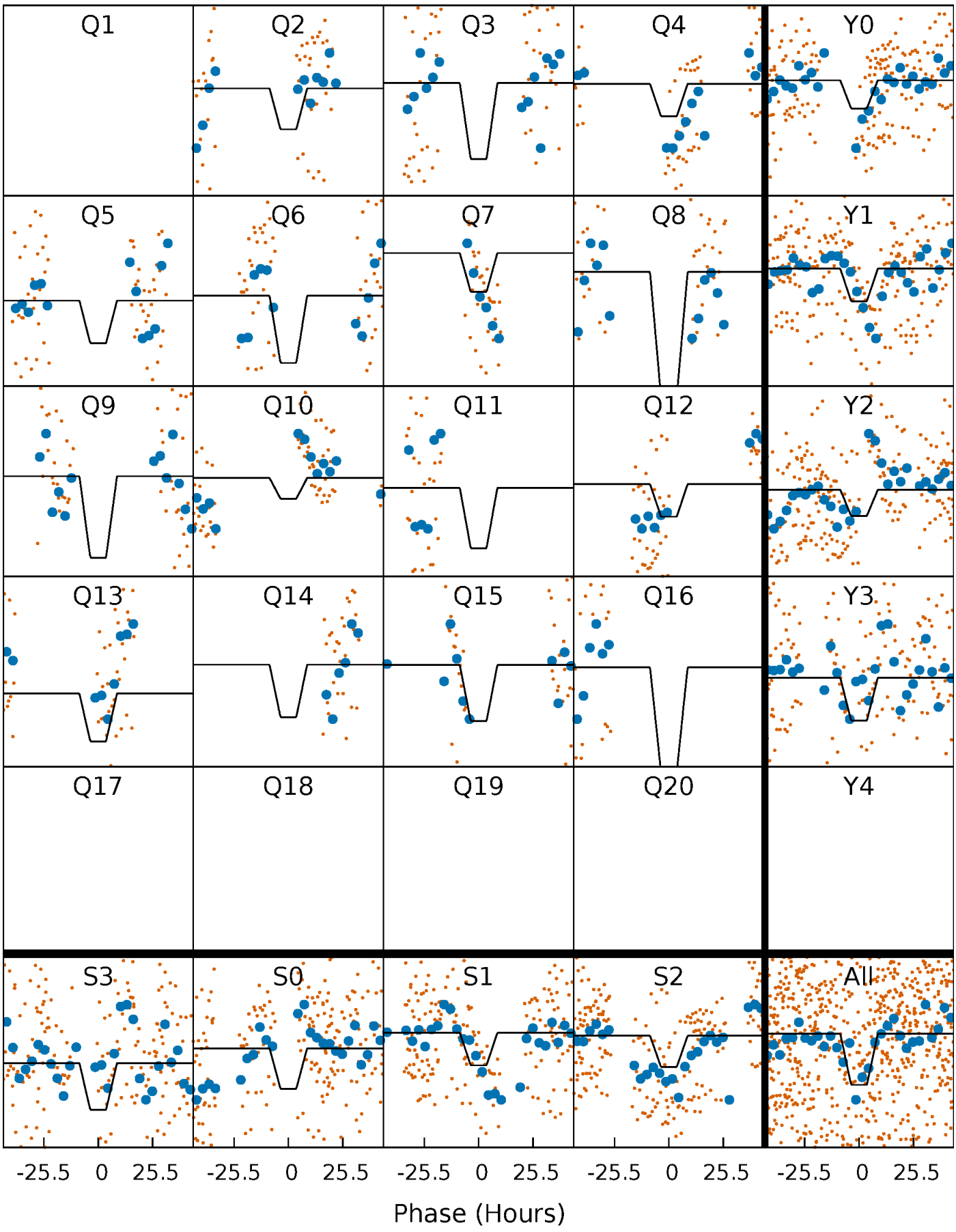
# DV Quarter-Phased Transit Curves

TCE 005304634-07  P= 77.927400 Days  $T_0$=205.217710 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

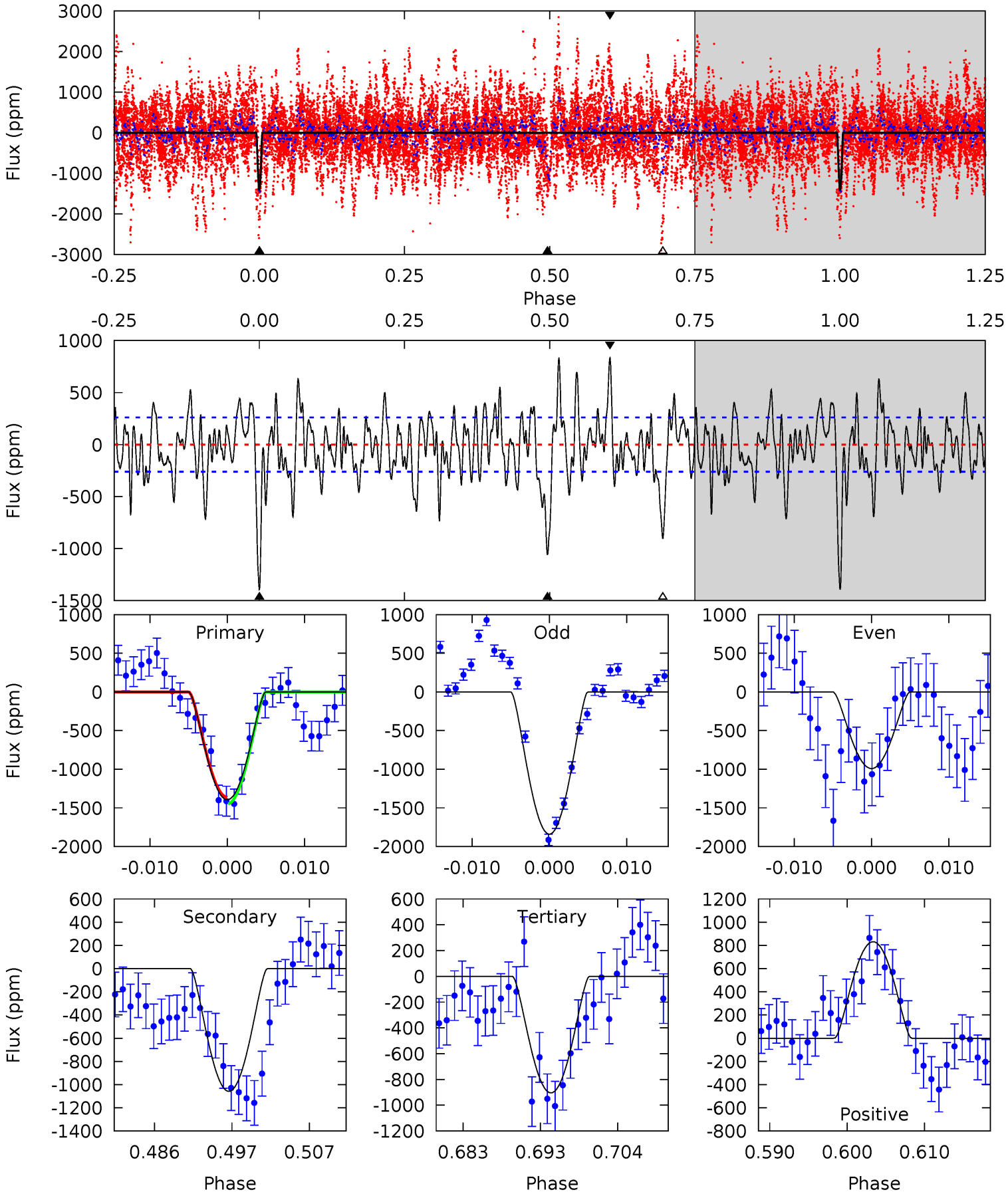
TCE 005304634-07  P= 77.933100 Days  $T_0$=205.157275 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-07, P = 77.927400 Days, E = 127.290310 Days

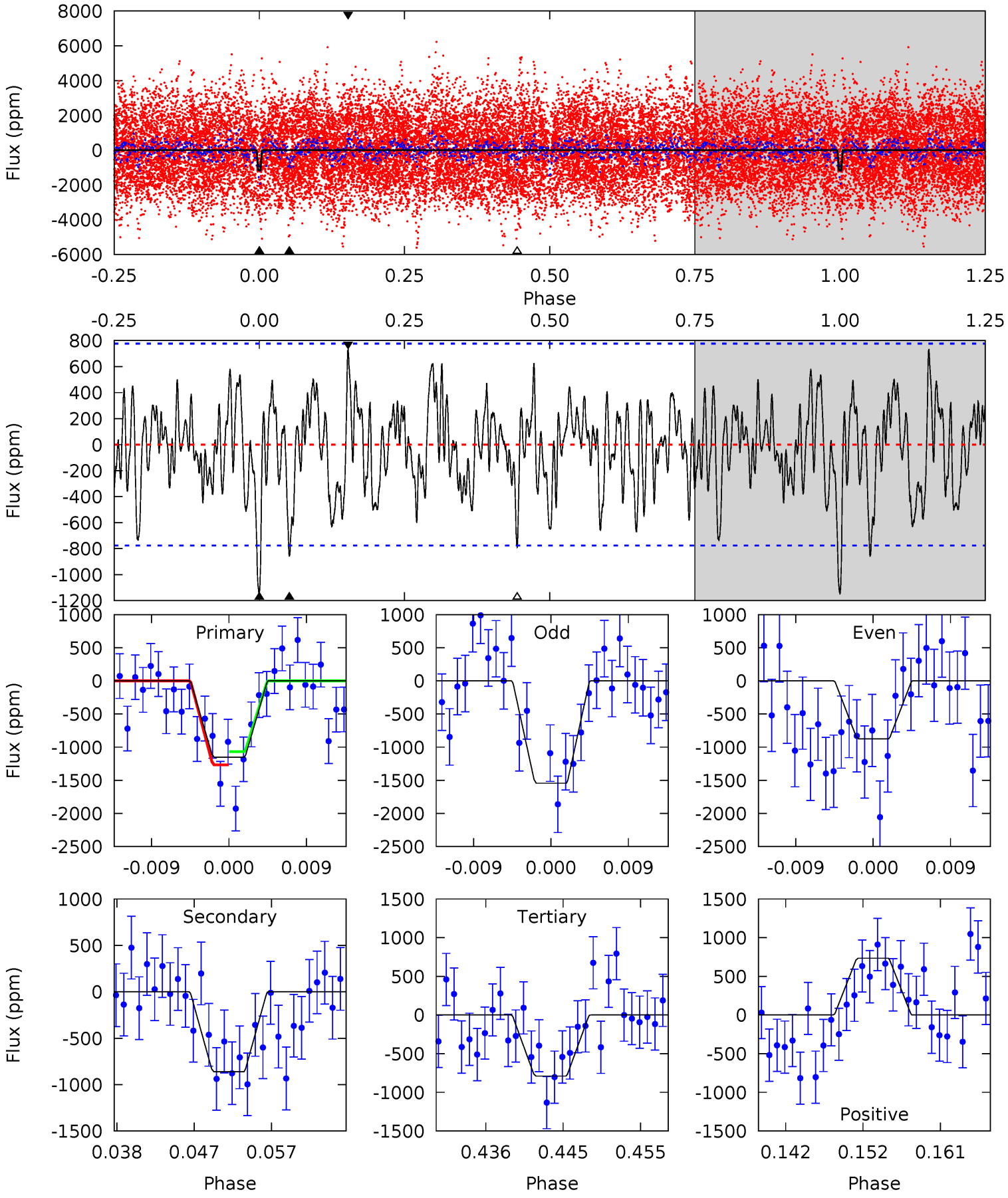
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26.8 | 20.3 | 17.4 | 16.0 | 5.02 | 2.56 | 4.96 | 9.42 | 10.8 | 2.96 | 4.35 | 8.18 | 0.51 | 0.37 | 0.80 |



# Alt Model-Shift Uniqueness Test

005304634-07, P = 77.933100 Days, E = 127.224175 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.46 | 5.59 | 5.13 | 4.77 | 5.04 | 2.59 | 1.78 | 2.34 | 2.70 | 0.46 | 0.82 | 2.16 | 0.57 | 0.39 | 0.64 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-07 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -1058±52 | $14.10^{+10.46}_{-8.68}$ | $922^{+73}_{-73}$ | $4835^{+2959}_{-902}$ | $485^{+2760}_{-330}$ |
| Alt. | -861±154 | $10.53^{+10.15}_{-6.87}$ | $924^{+74}_{-69}$ | $5215^{+4197}_{-1243}$ | $705^{+5469}_{-545}$ |

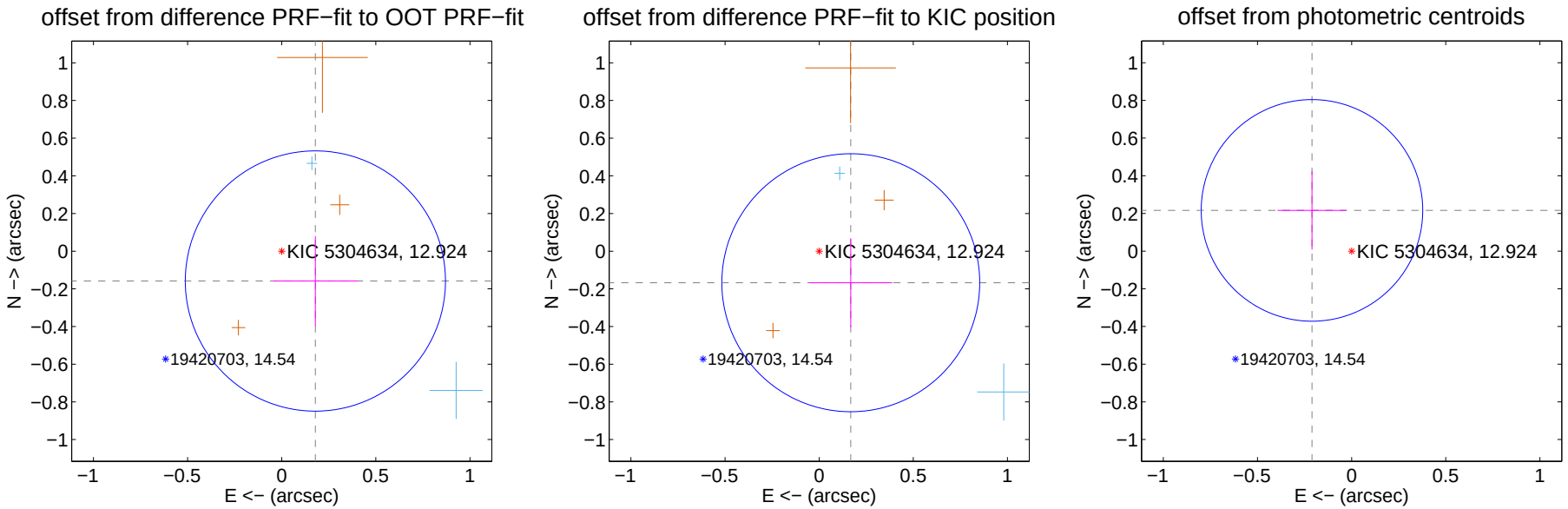
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

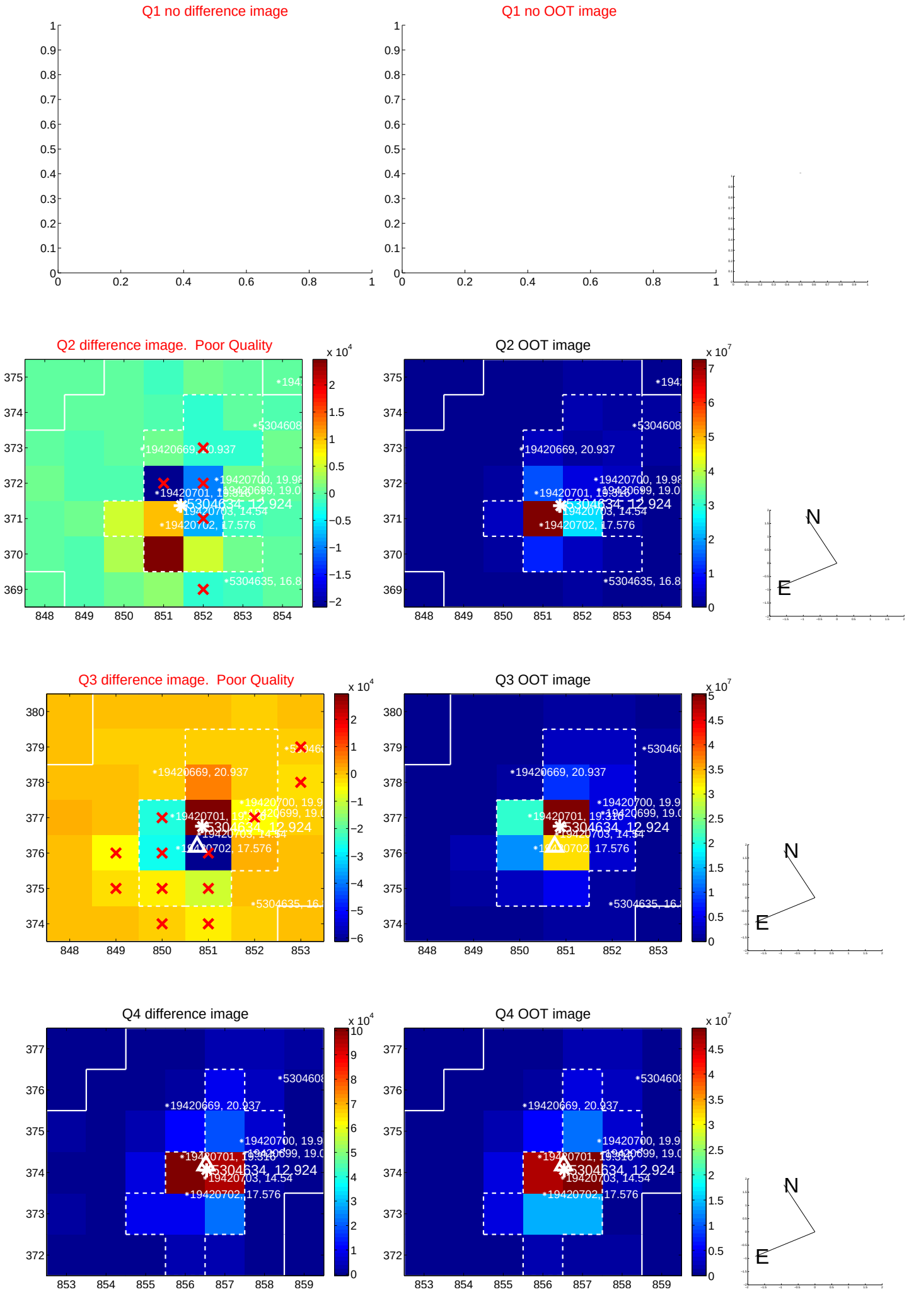
Supplemental centroid analysis for 005304634-07. Kepler magnitude: 12.92. Transit SNR 8.46
There are 5 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.239 ± 0.230 | 1.04 | -0.179 ± 0.224 | -0.158 ± 0.239 |
| PRF-fit source offset from KIC position | 0.237 ± 0.228 | 1.04 | -0.168 ± 0.220 | -0.168 ± 0.236 |
| photometric centroid source offset | 0.30 ± 0.20 | 1.54 | 0.21 ± 0.18 | 0.22 ± 0.21 |

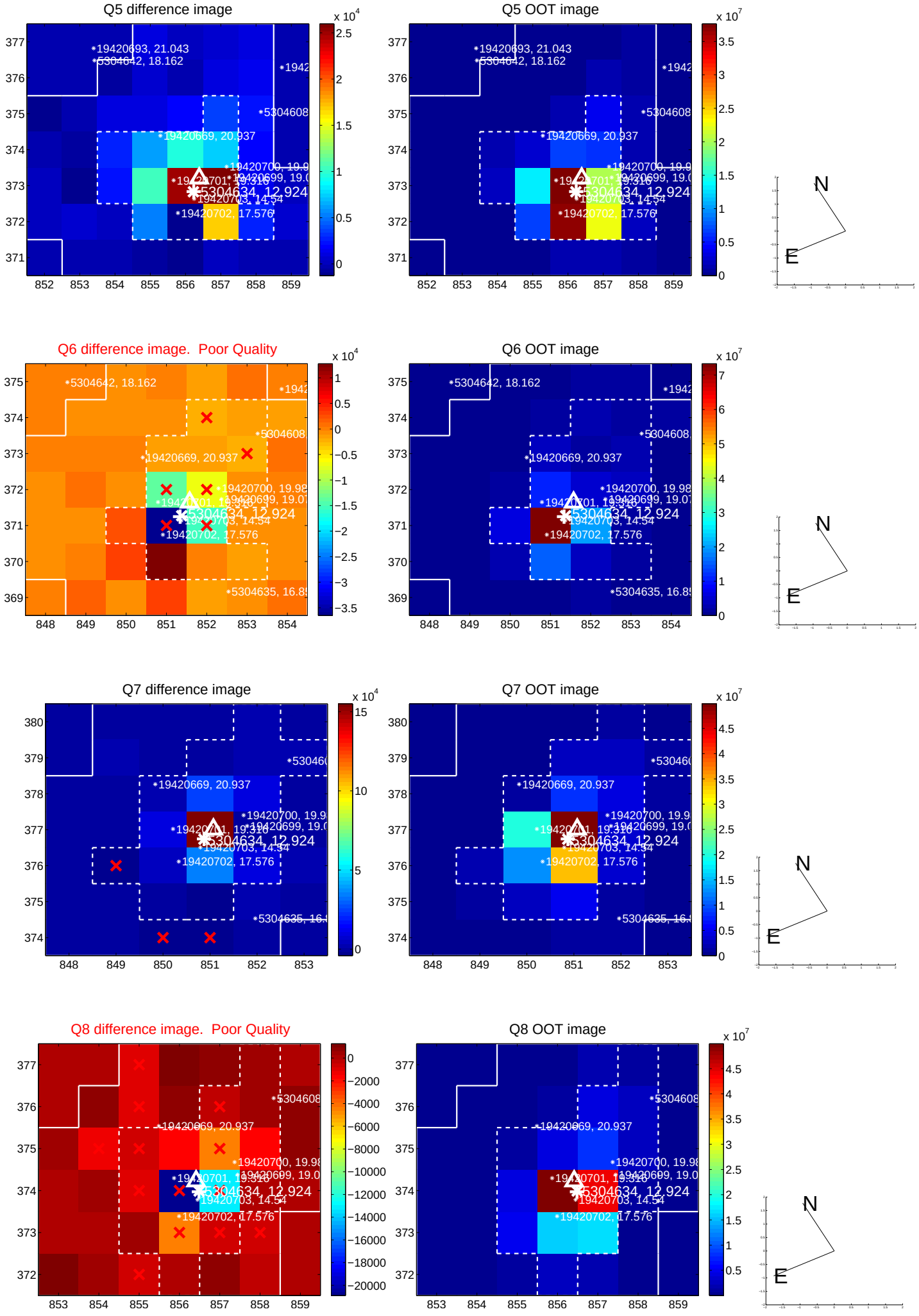



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

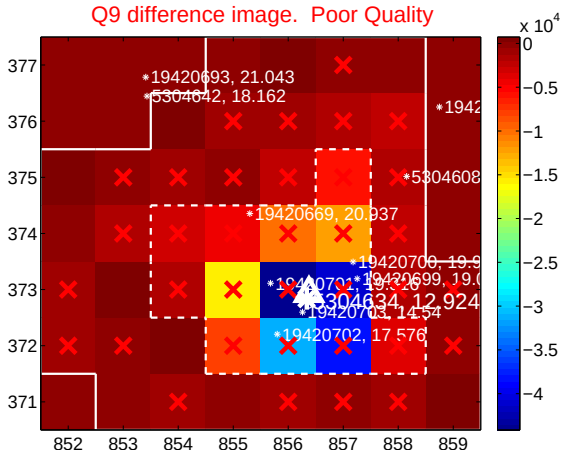
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

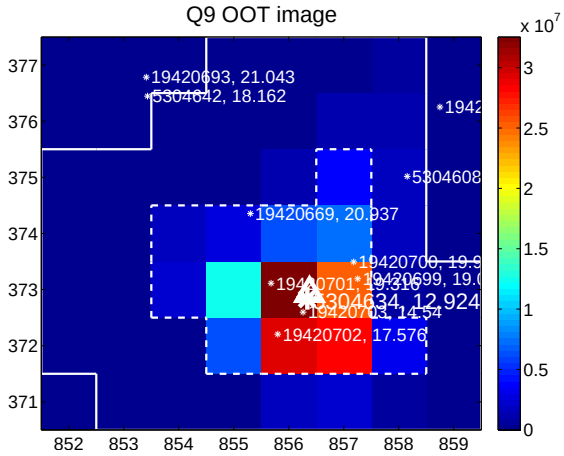


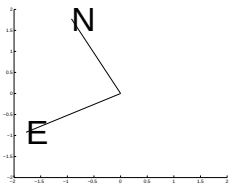
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

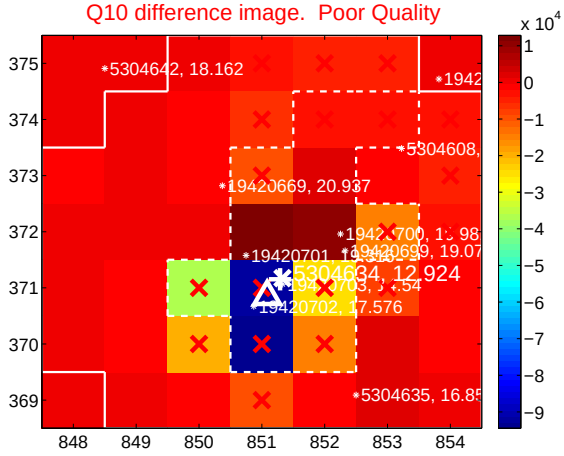


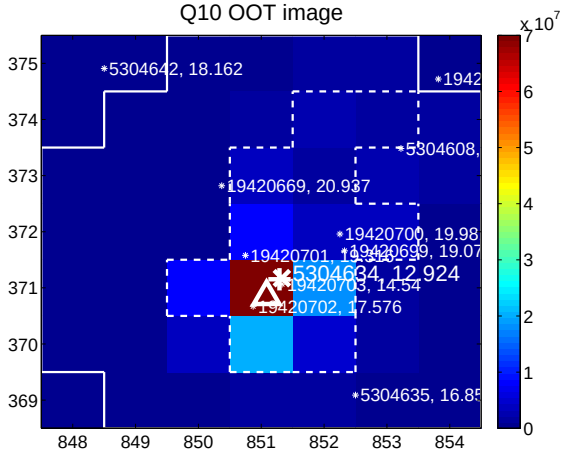
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

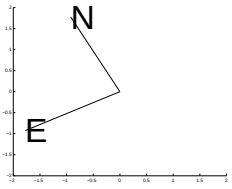


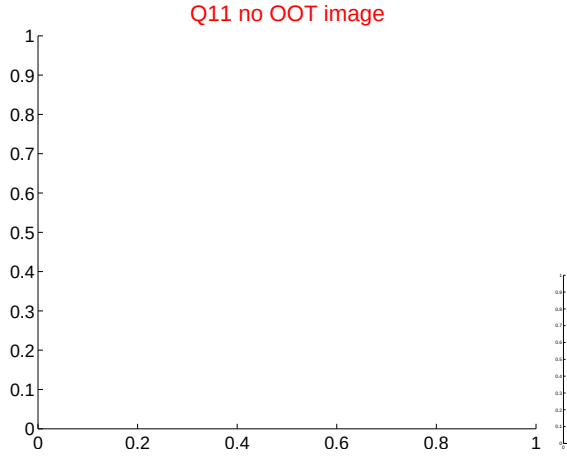



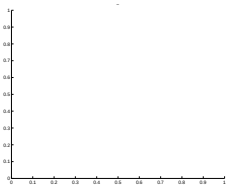



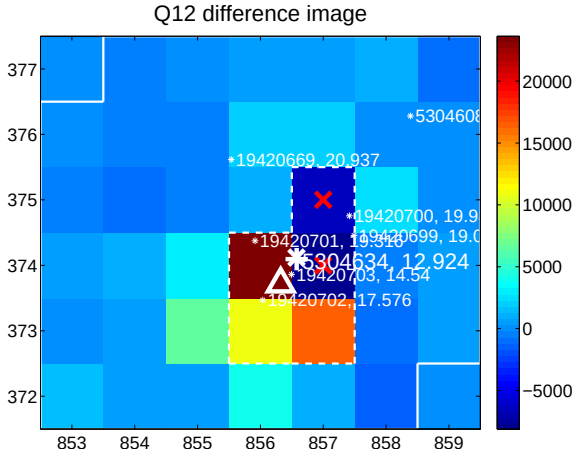



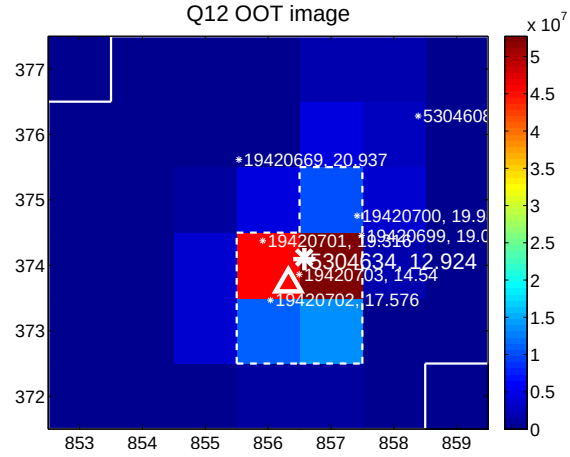



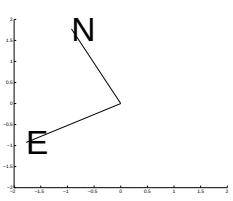





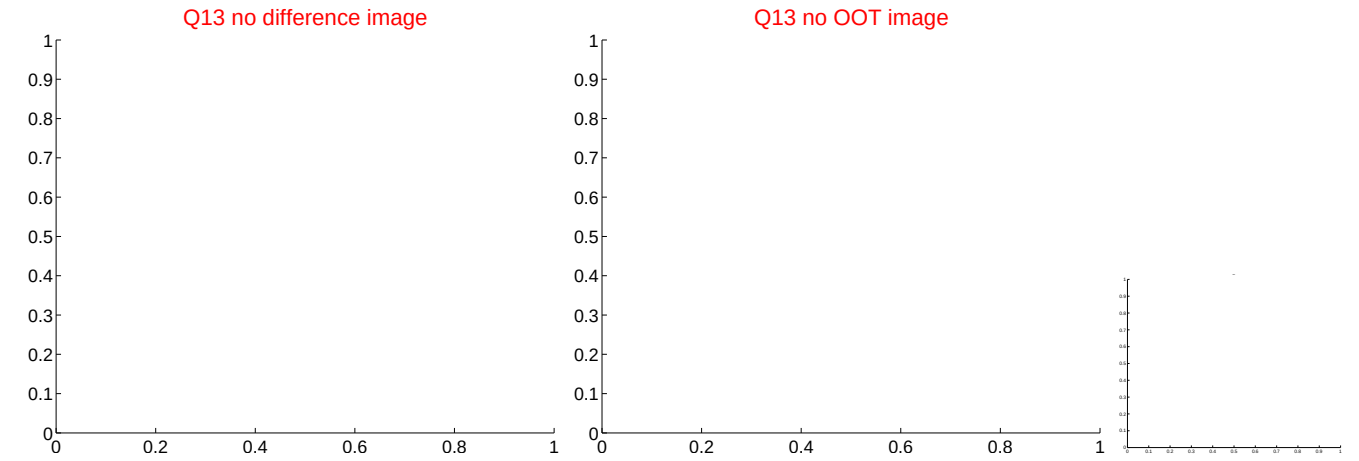



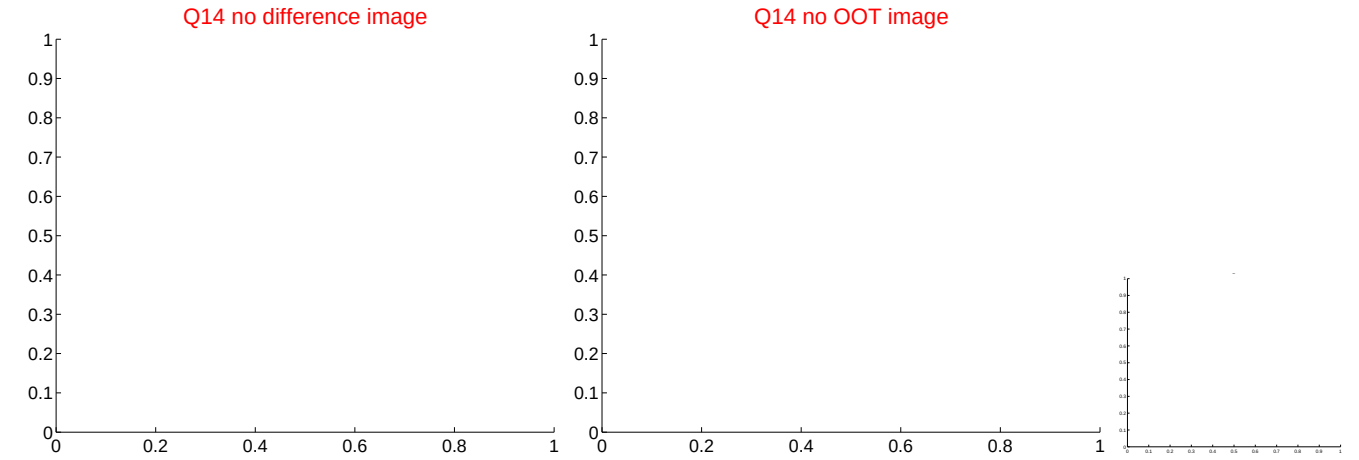


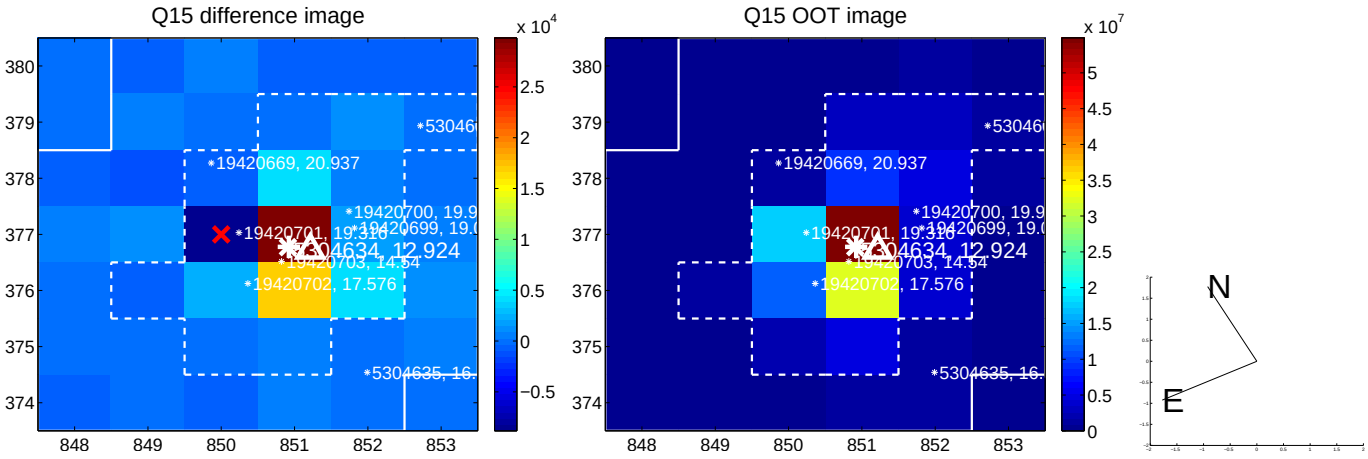



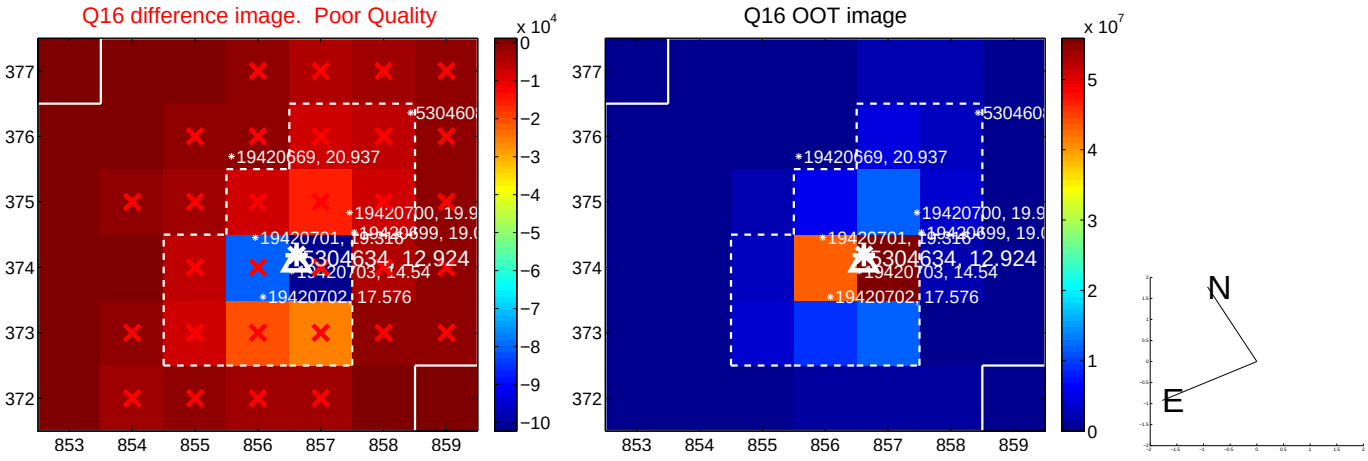



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

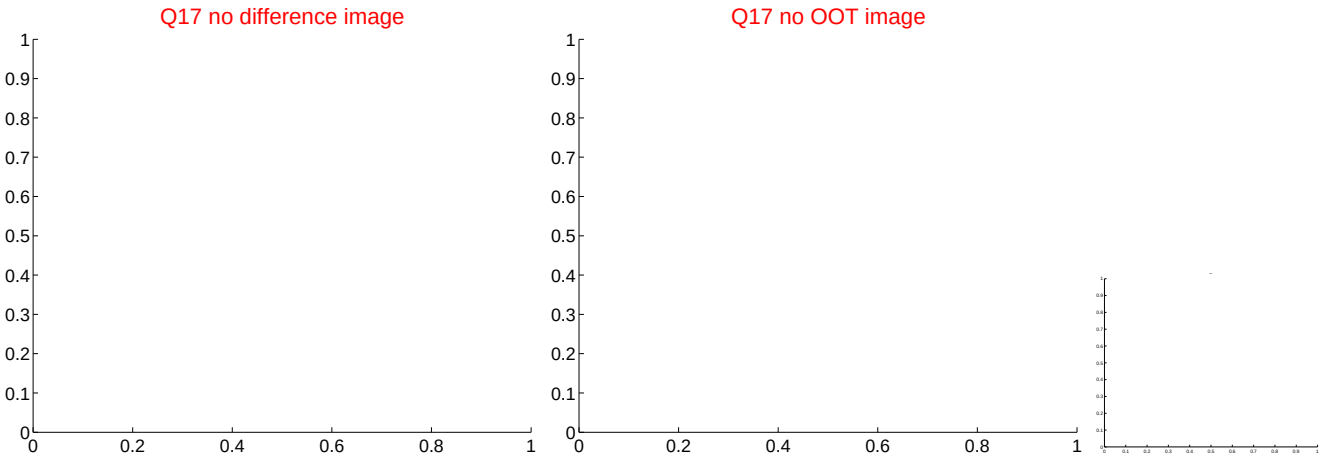


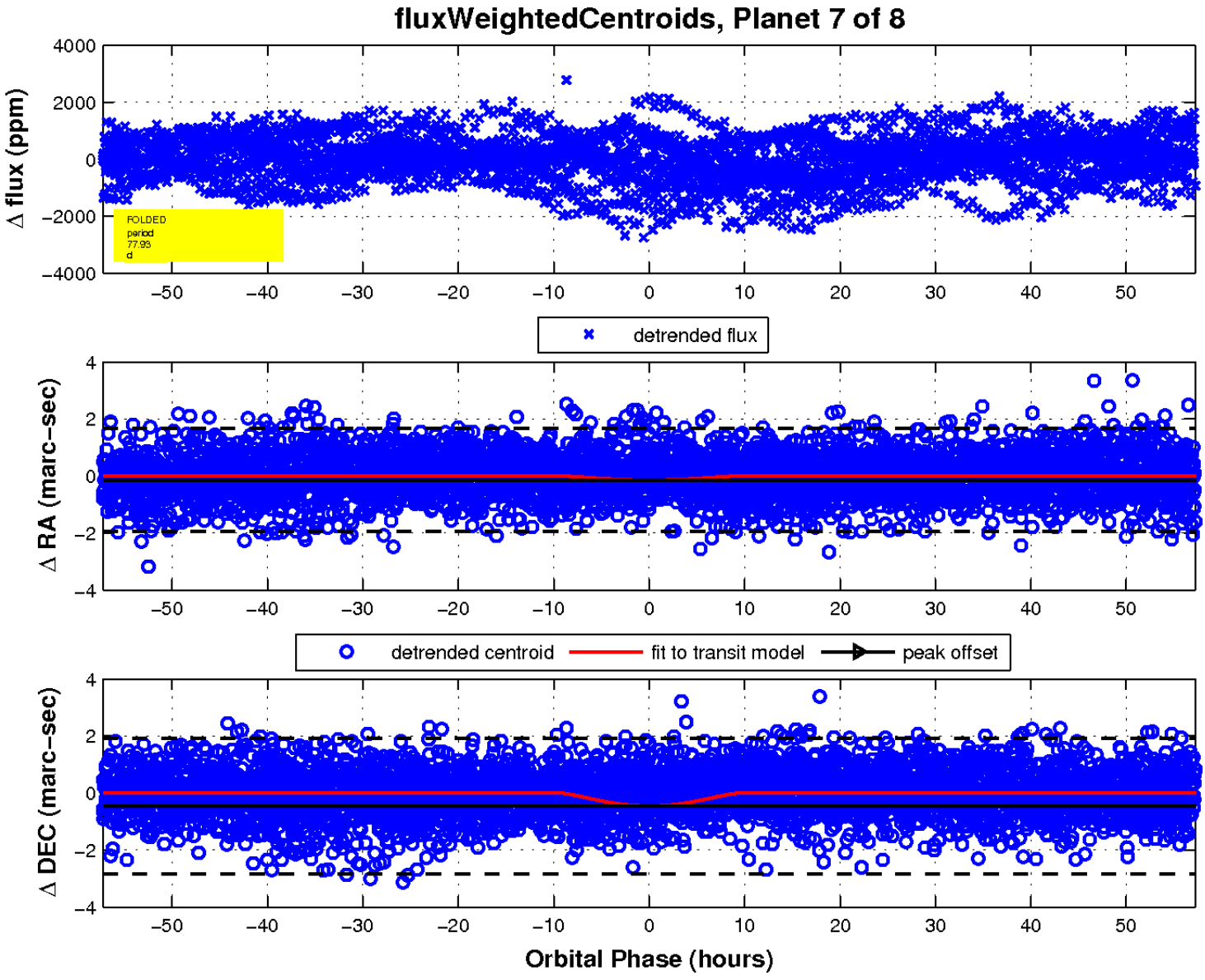



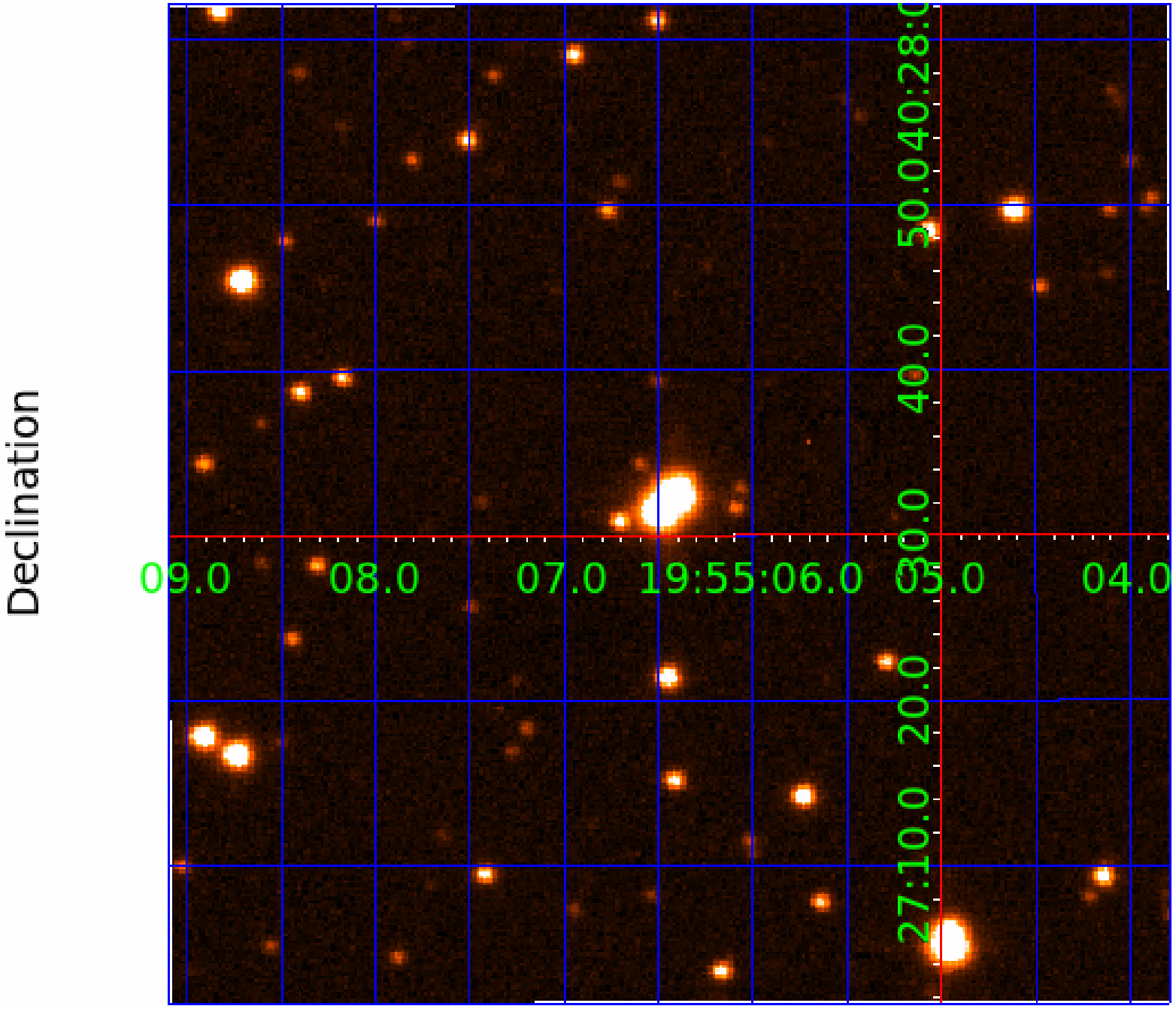



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**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08.0
07.0
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05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0

# KIC 005304634

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | No | 2.312655 | 132.829015 | 42.3 | 12.464 | 10.1 | 6.2 | 1.73 | 7300 | 1.31 | 4951.44 |
| 005304634-02 | OBS | No | 299.393813 | 148.021600 | 1263.3 | 14.268 | 9.7 | 9.0 | 1.73 | 7300 | 7.48 | 7.56 |
| 005304634-03 | OBS | No | 167.226130 | 172.494474 | 455.9 | 10.564 | 12.5 | 4.6 | 1.73 | 7300 | 3.99 | 16.44 |
| 005304634-04 | OBS | No | 159.895217 | 251.253032 | 1353.0 | 21.861 | 10.1 | 5.4 | 1.73 | 7300 | 11.66 | 17.45 |
| 005304634-05 | OBS | No | 83.614187 | 193.404613 | 998.6 | 17.256 | 8.8 | 9.3 | 1.73 | 7300 | 6.91 | 41.42 |
| 005304634-06 | OBS | No | 430.159611 | 161.638326 | 588.3 | 14.620 | 8.4 | 6.6 | 1.73 | 7300 | 4.64 | 4.66 |
| 005304634-07 | OBS | No | 77.927400 | 205.217710 | 1433.2 | 19.093 | 8.7 | 8.5 | 1.73 | 7300 | 12.00 | 45.49 |
| 005304634-08 | OBS | No | 98.966140 | 210.749006 | 659.2 | 9.194 | 7.7 | 7.5 | 1.73 | 7300 | 8.24 | 33.08 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 005304634-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |
| 005304634-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—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 |
| 005304634-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS |
| 005304634-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 005304634-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—SAME_NTL_PERIOD |
| 005304634-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS |
| 005304634-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT |
| 005304634-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

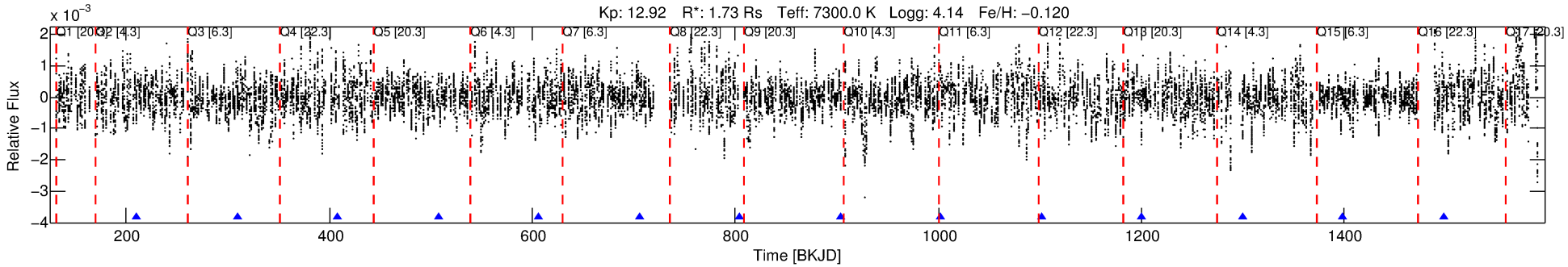
**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

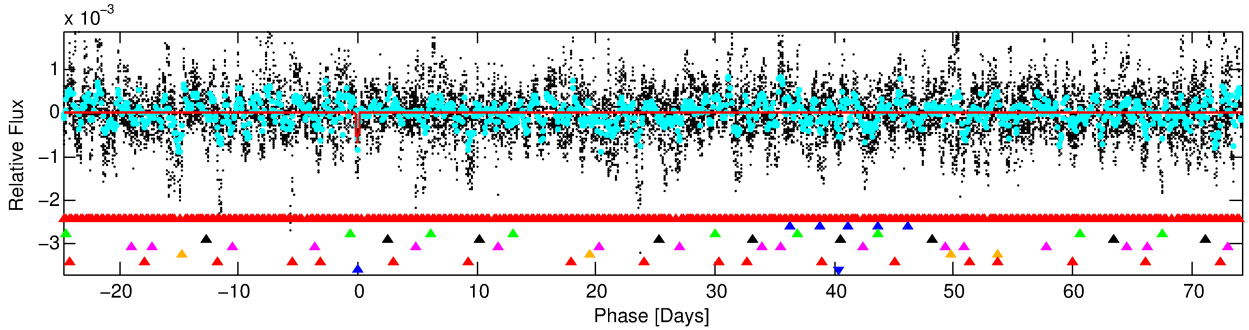
## Ephemeris Match Information For 005304634-08

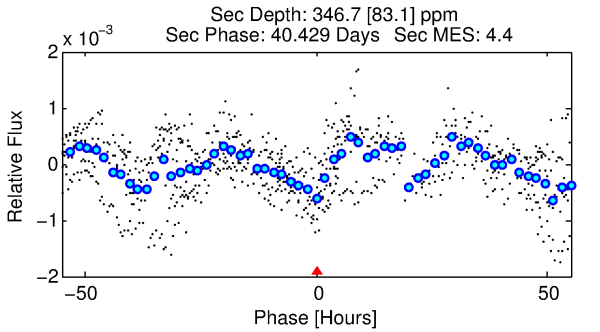
No Significant Match Found

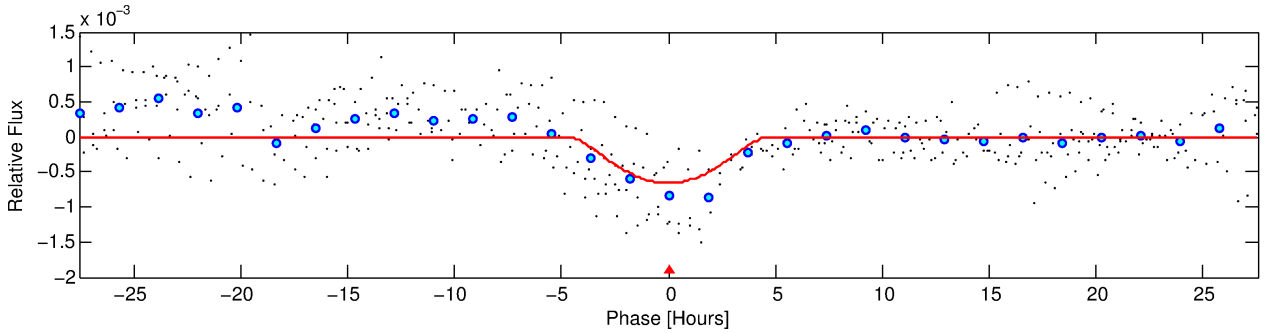
# DV One-Page Summary

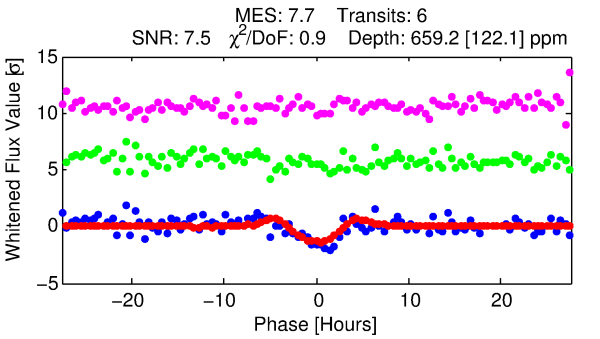
**KIC: 5304634 Candidate: 8 of 8 Period: 98.966 d**

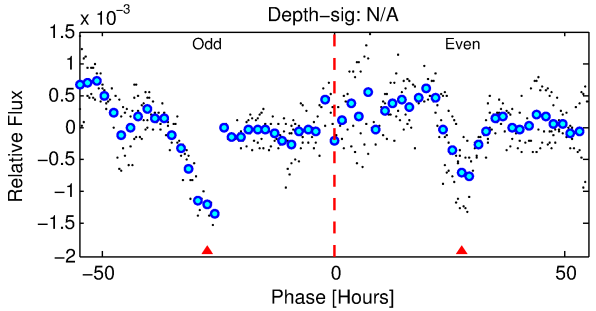


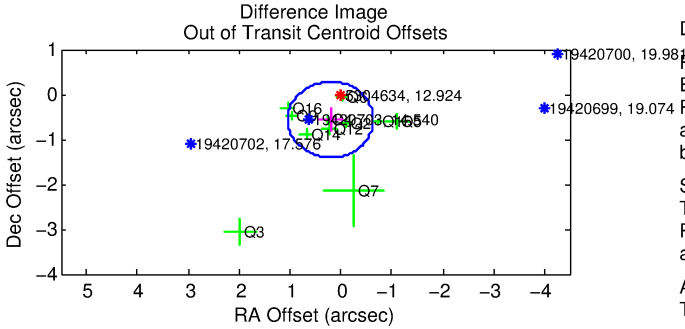




DV Fit Results:

Period = 98.96614 [0.00207] d
Epoch = 210.7490 [0.0170] BKJD
Rp/R* = 0.0437 [0.0876]
a/R* = 24.78 [12.51]
b = 1.00 [0.13]

Seff = 33.08 [14.07]
Teq = 612 [65] K
Rp = 8.24 [16.70] Re
a = 0.4787 [0.1225] AU

Ag = 643.92 [2592.65] [0.25σ]
Teffp = 4763 [4784] K [0.87σ]

DV Diagnostic Results:

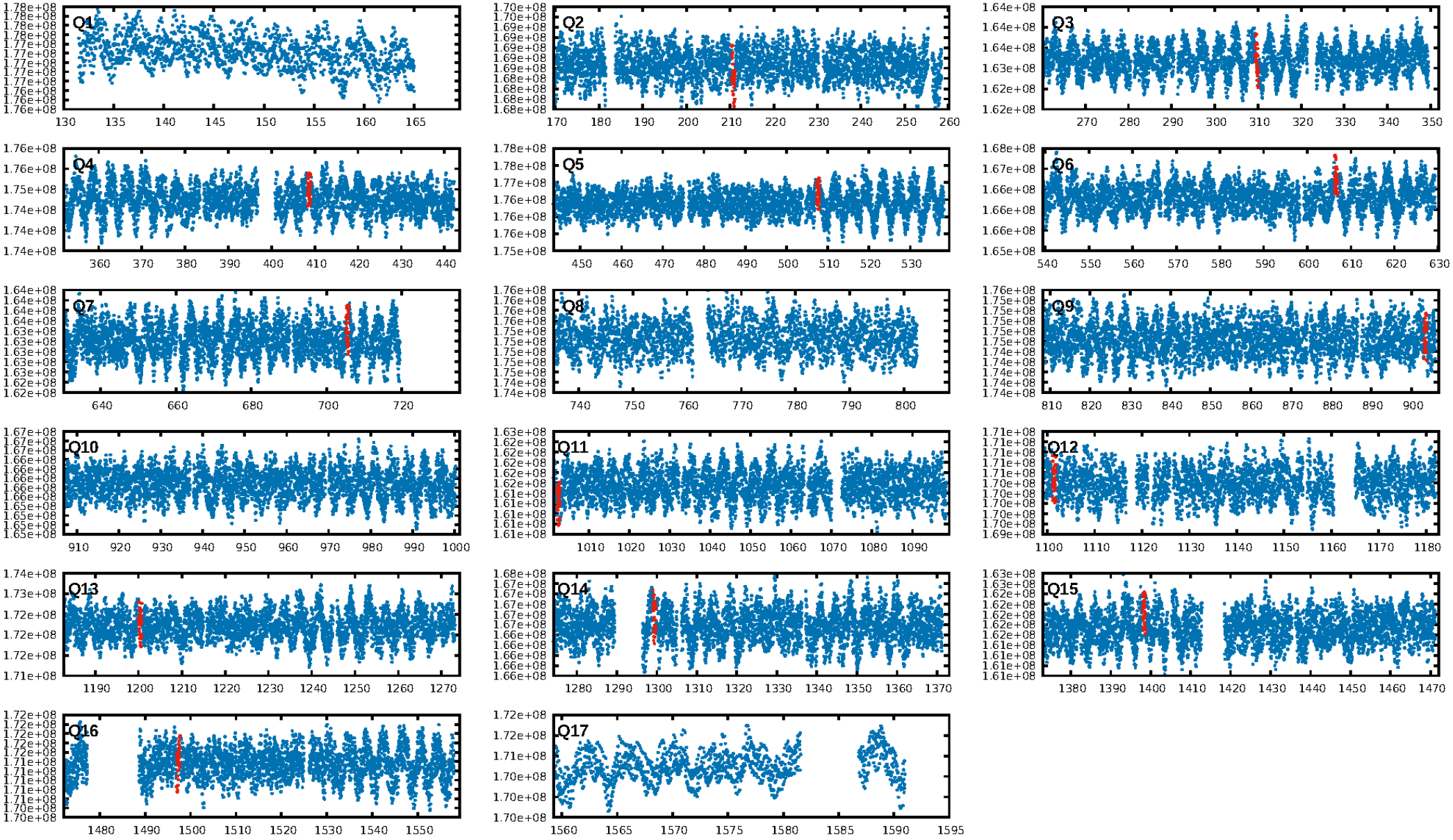
ShortPeriod−sig: 100.0% [18.84σ]
LongPeriod−sig: 100.0% [61.66σ]
ModelChiSquare2−sig: 56.2%
ModelChiSquareGof−sig: 100.0%
Bootstrap−pfa: N/A
RollingBand−fgt: 1.00 [6/6]
GhostDiagnostic−chr: −1.96

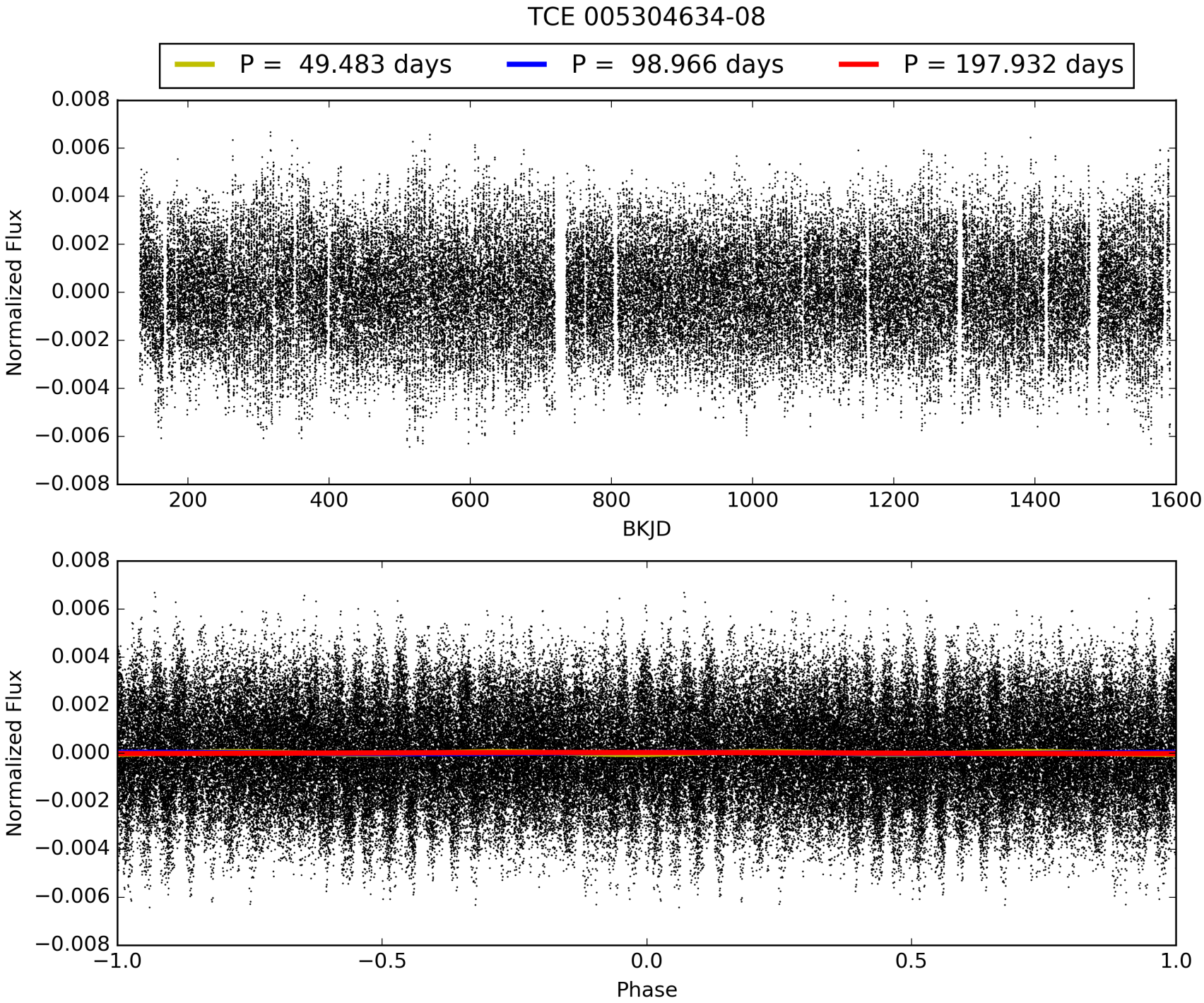
Centroid−sig: 82.6%
Centroid−so: 0.090 arcsec [0.20σ]
OotOffset−rm: 0.599 arcsec [2.13σ]
KicOffset−rm: 0.629 arcsec [1.97σ]
OotOffset−st: 3/3/3/2 [11]
KicOffset−st: 3/3/3/2 [11]
DiffImageQuality−fgm: 0.64 [7/11]
DiffImageOverlap−fno: 0.18 [2/11]

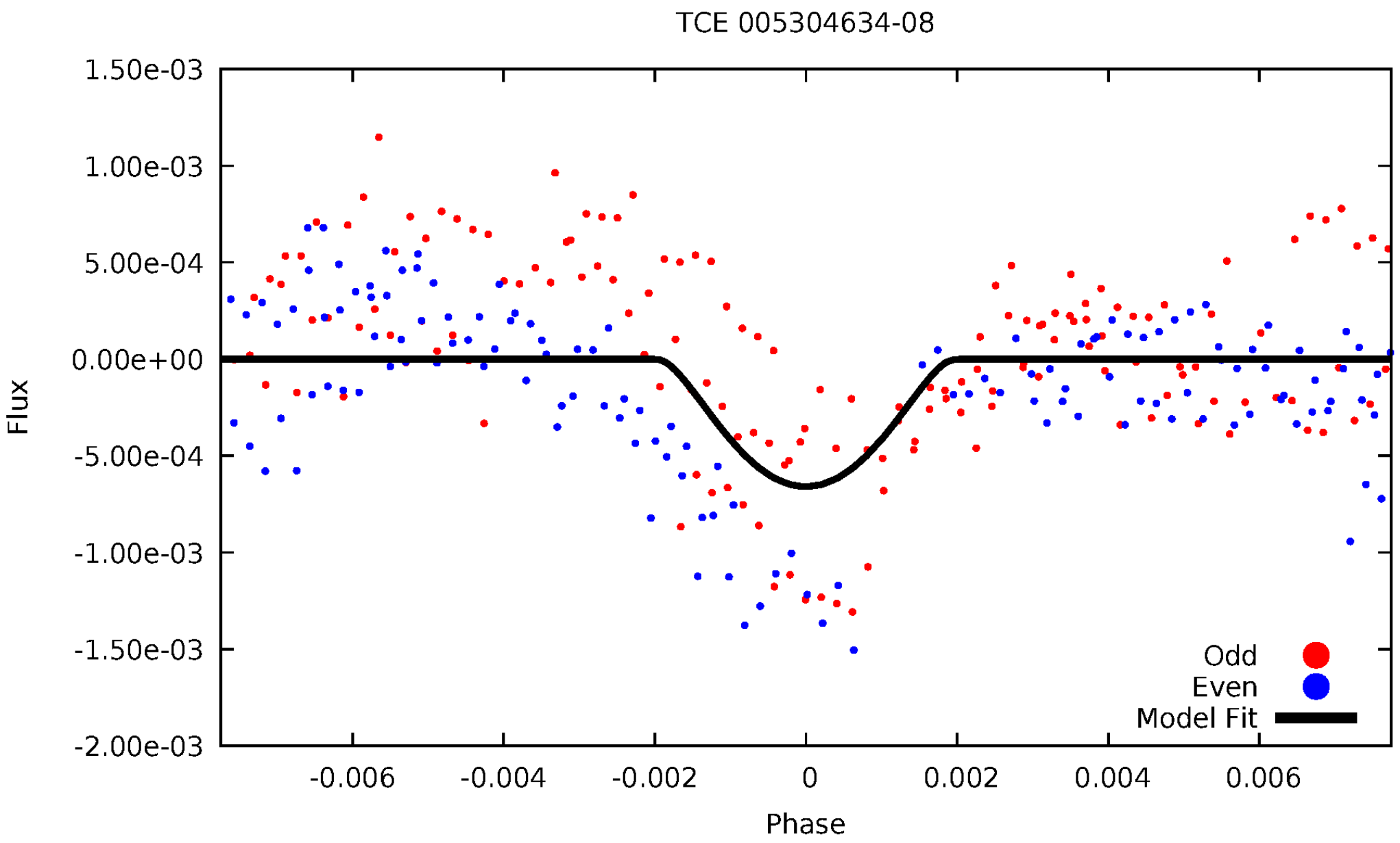
**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 −− Date Generated: 30−Jan−2016 17:08:26 Z**

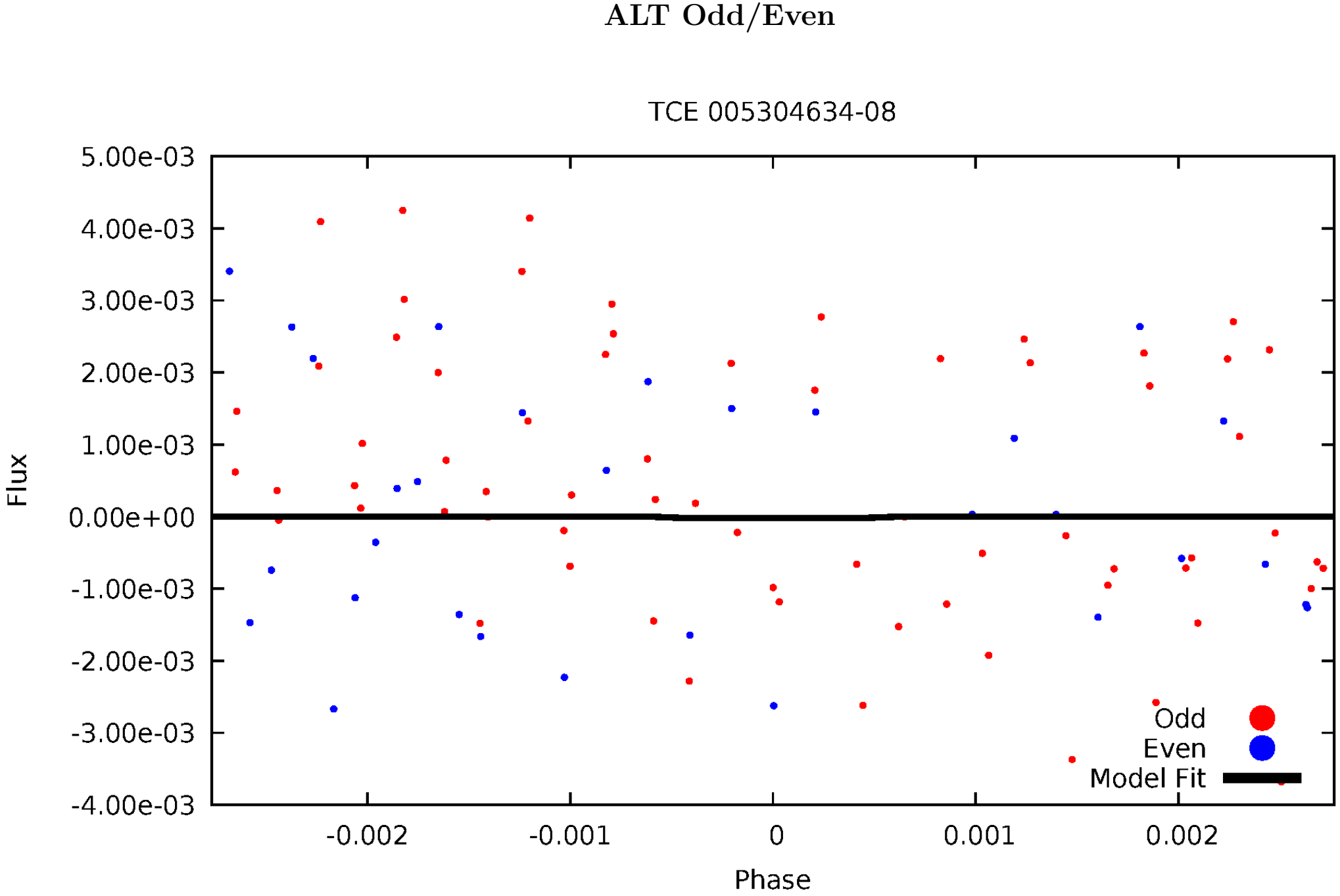
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 005304634-08, PDC Light Curves

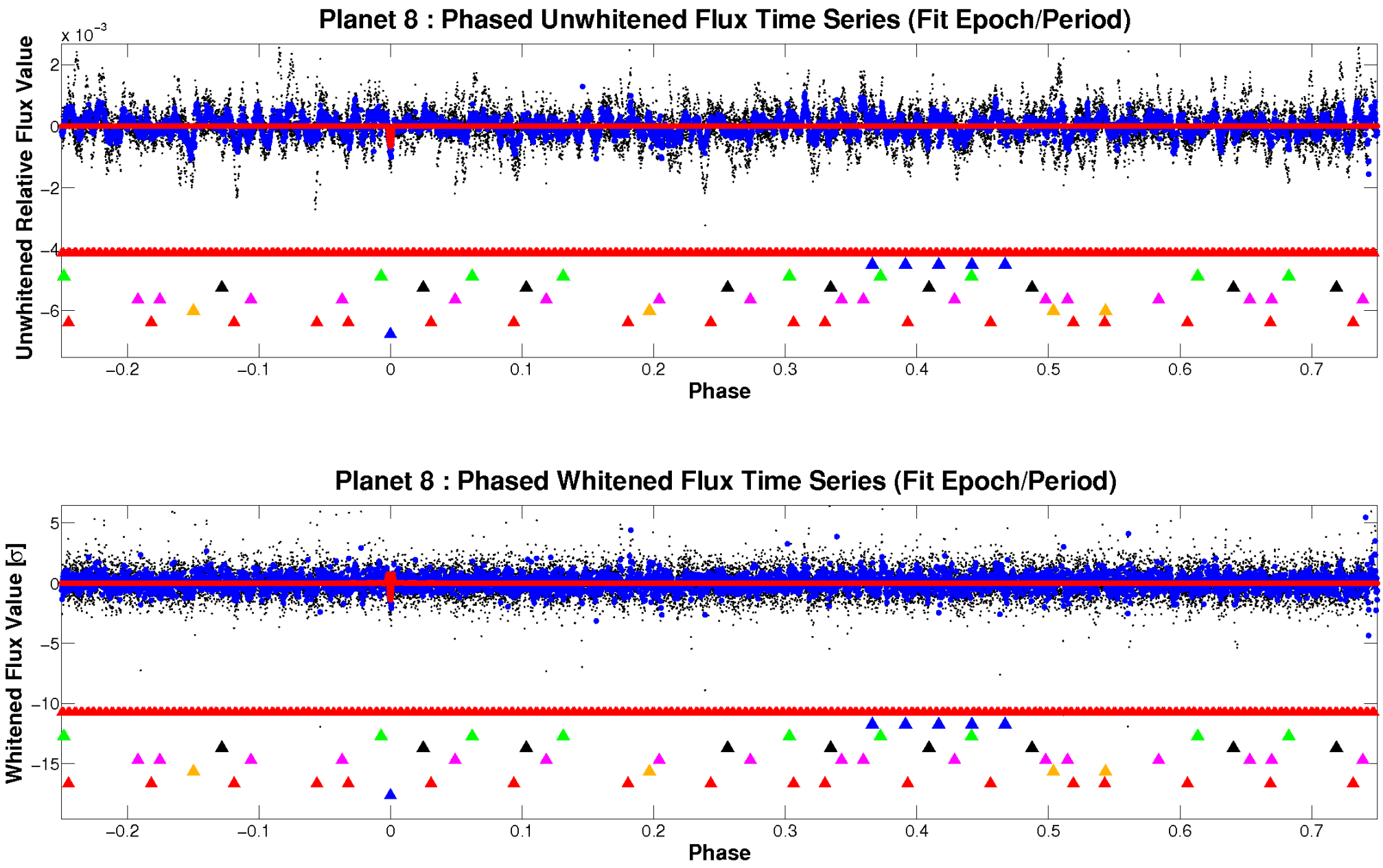



TCE 005304634-08
P = 49.483 days
P = 98.966 days
P = 197.932 days
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.008
0.006
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
−1.0
−0.5
0.0
0.5
1.0
Phase


DV Odd/Even
TCE 005304634-08
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
-2.00e-03
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

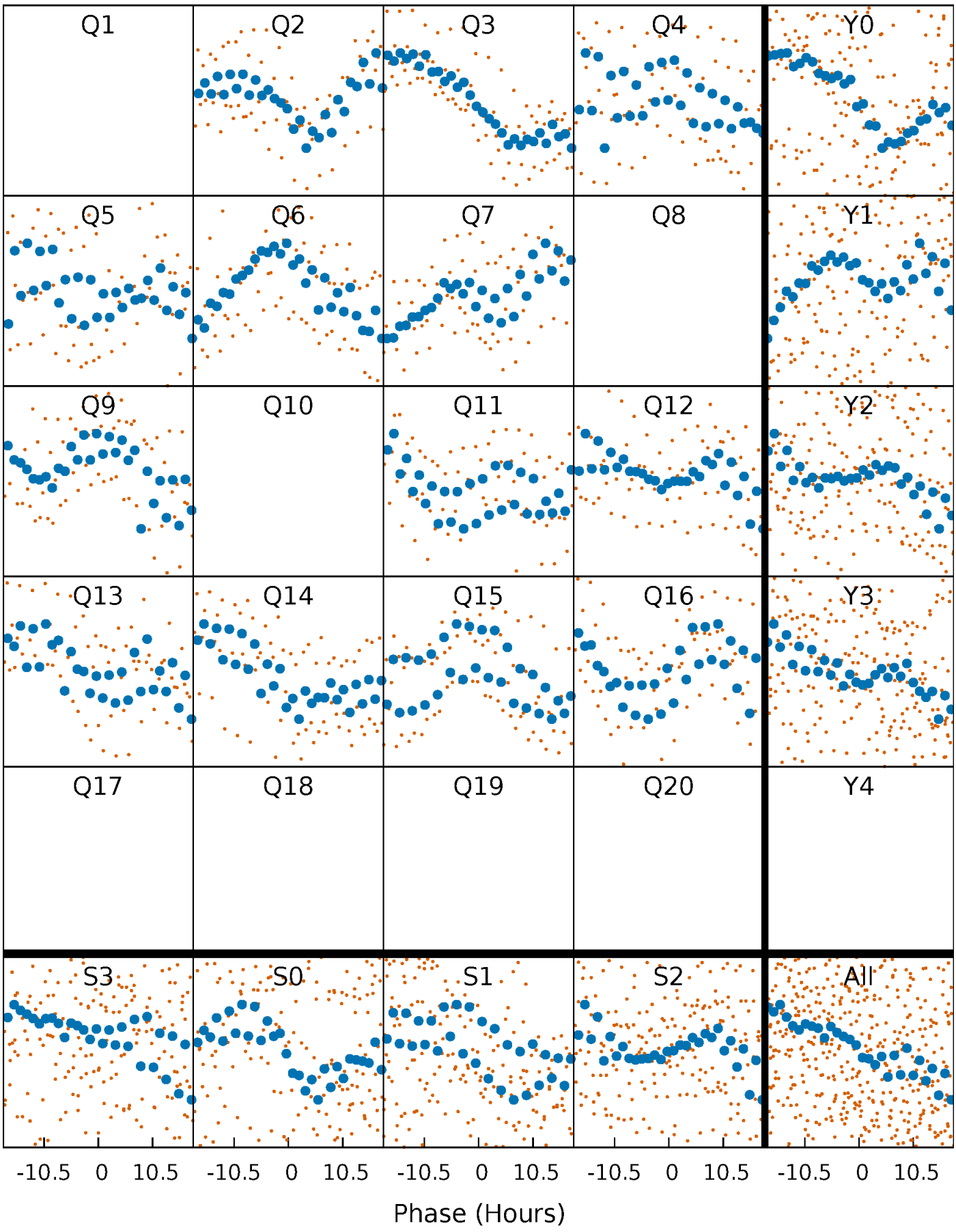

ALT Odd/Even
TCE 005304634-08
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
-4.00e-03
Flux
-0.002
-0.001
0
0.001
0.002
Phase
Odd
Even
Model Fit

# Non-Whitened Vs. Whitened Light Curve



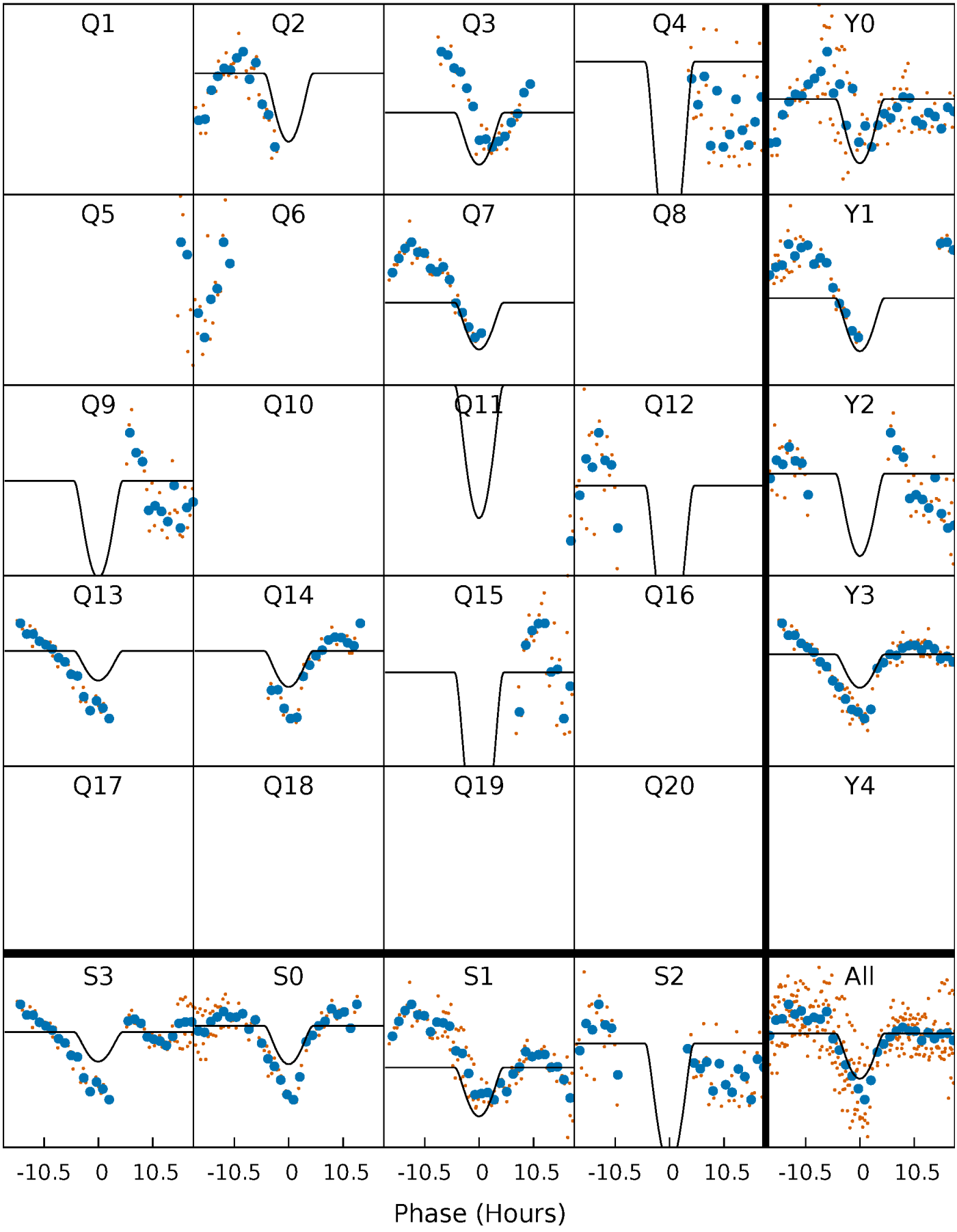
# PDC Quarter-Phased Transit Curves

TCE 005304634-08  P= 98.966140 Days  $T_0$=210.749006 (BKJD)



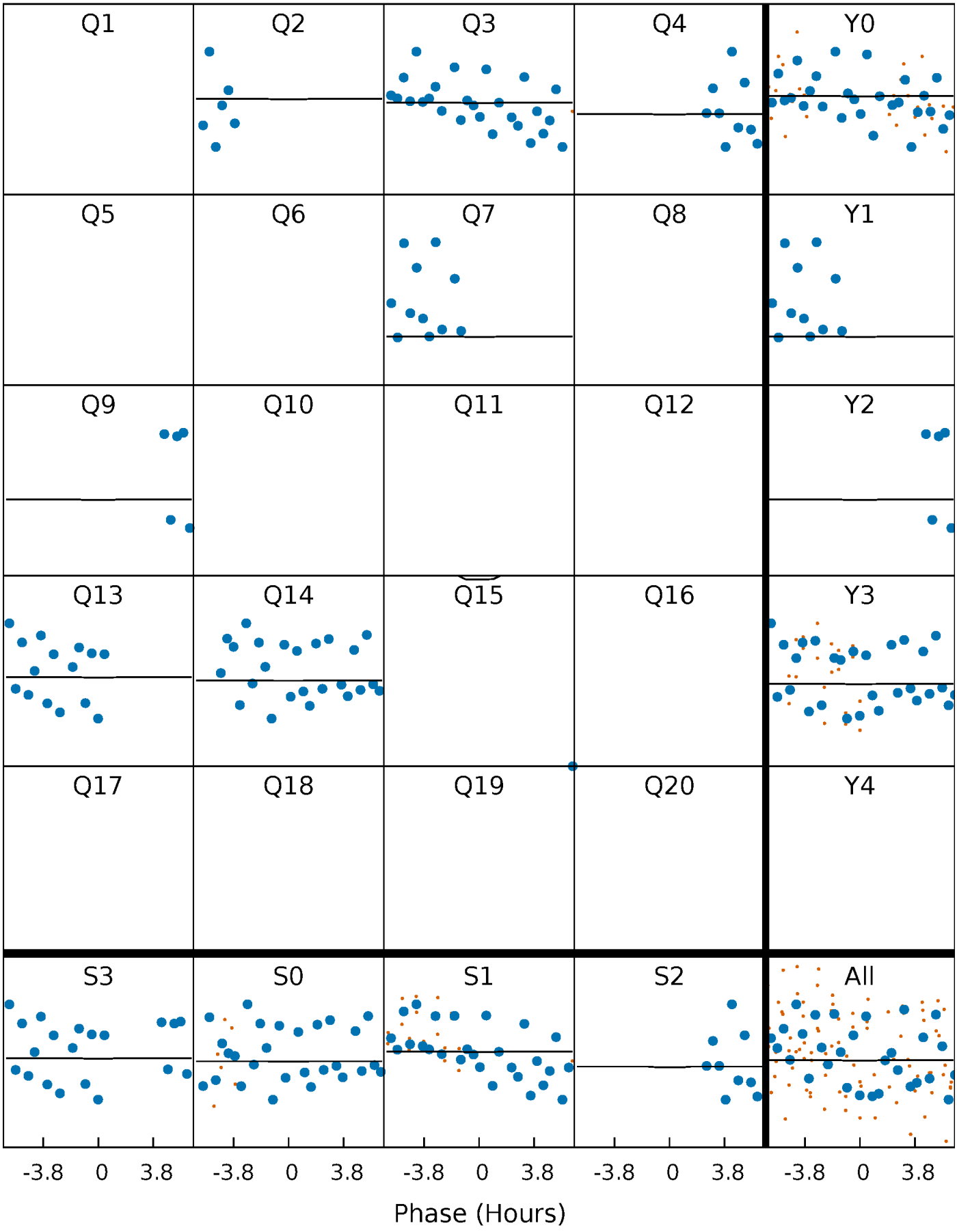
# DV Quarter-Phased Transit Curves

TCE 005304634-08  P= 98.966140 Days  $T_0$=210.749006 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

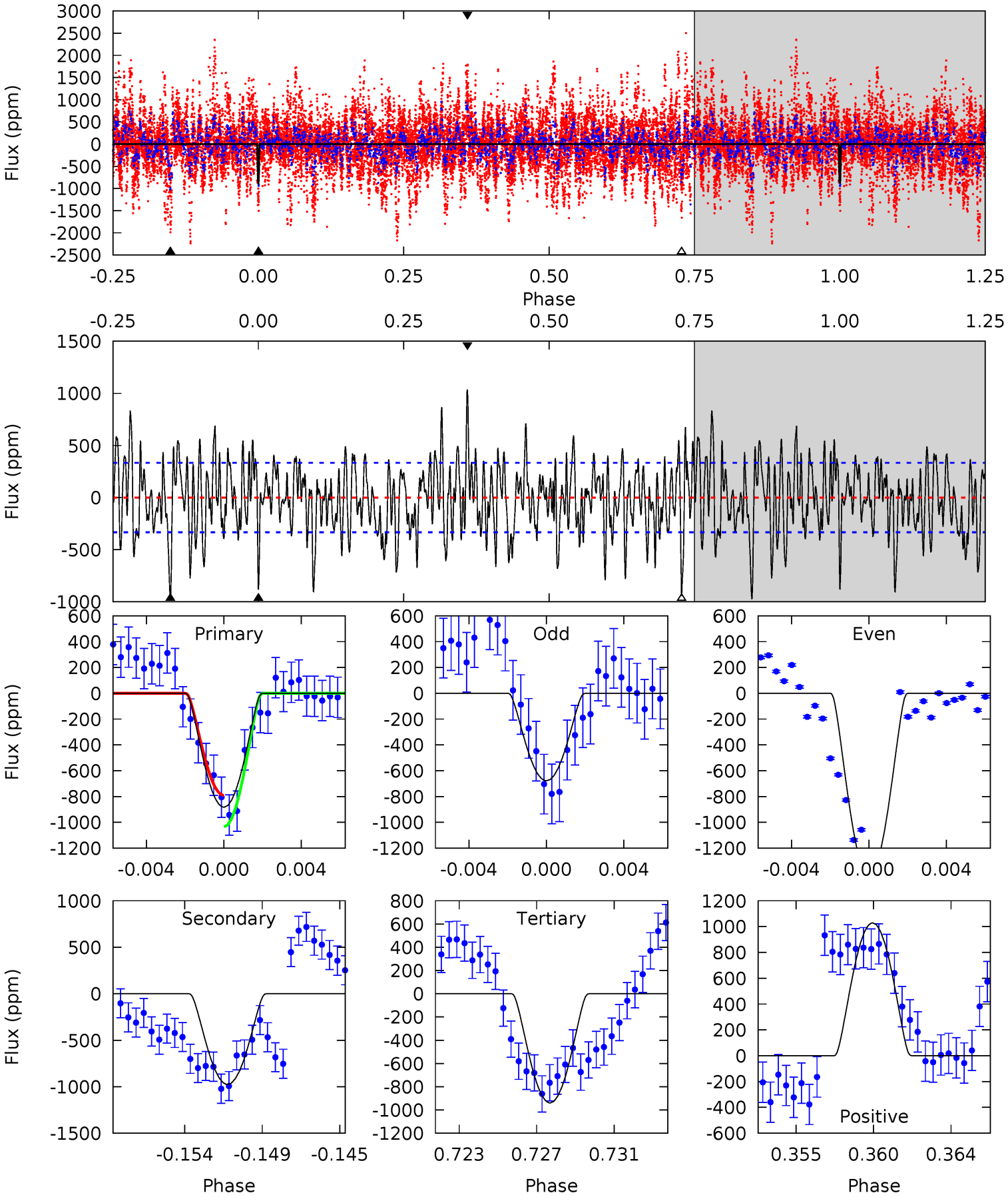
TCE 005304634-08  P= 98.964522 Days  $T_0$=210.807156 (BKJD)



# DV Model-Shift Uniqueness Test

005304634-08, P = 98.966140 Days, E = 111.782866 Days

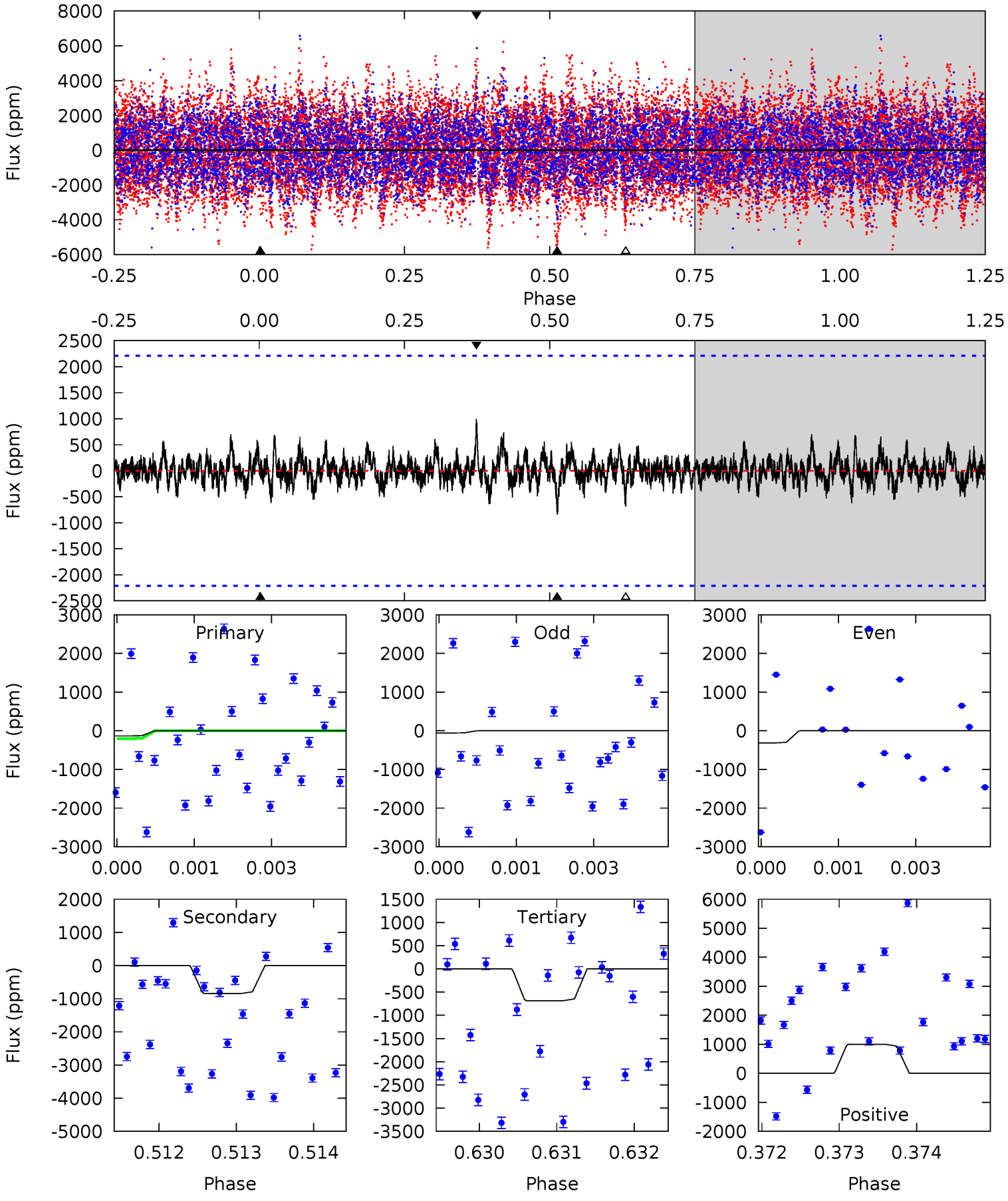
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.7 | 15.2 | 14.6 | 16.0 | 5.20 | 2.88 | 4.65 | -0.88 | -2.28 | 0.56 | -0.83 | 5.20 | 0.92 | 0.51 | 1.87 |



# Alt Model-Shift Uniqueness Test

005304634-08, P = 98.964522 Days, E = 111.842634 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.32 | 2.06 | 1.68 | 2.44 | 5.41 | 3.22 | 0.48 | -1.35 | -2.12 | 0.38 | -0.38 | 0.29 | 1.00 | 0.54 | 0.20 |



Stellar Parameters For KIC 005304634

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $7300^{+254}_{-435}$ | $4.138^{+0.149}_{-0.182}$ | $-0.120^{+0.250}_{-0.350}$ | $1.726^{+0.555}_{-0.370}$ | $1.491^{+0.234}_{-0.257}$ | $0.409^{+0.316}_{-0.206}$ |
| | +3%/-6% | +4%/-4% | +208%/-292% | +32%/-21% | +16%/-17% | +77%/-51% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 005304634-08 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -975±64 | $15.27^{+13.57}_{-10.42}$ | $853^{+72}_{-65}$ | $4685^{+3146}_{-994}$ | $518^{+4618}_{-365}$ |
| Alt. | -841±409 | $11.36^{+12.92}_{-8.25}$ | $849^{+72}_{-66}$ | $4923^{+4695}_{-1269}$ | $726^{+8551}_{-583}$ |

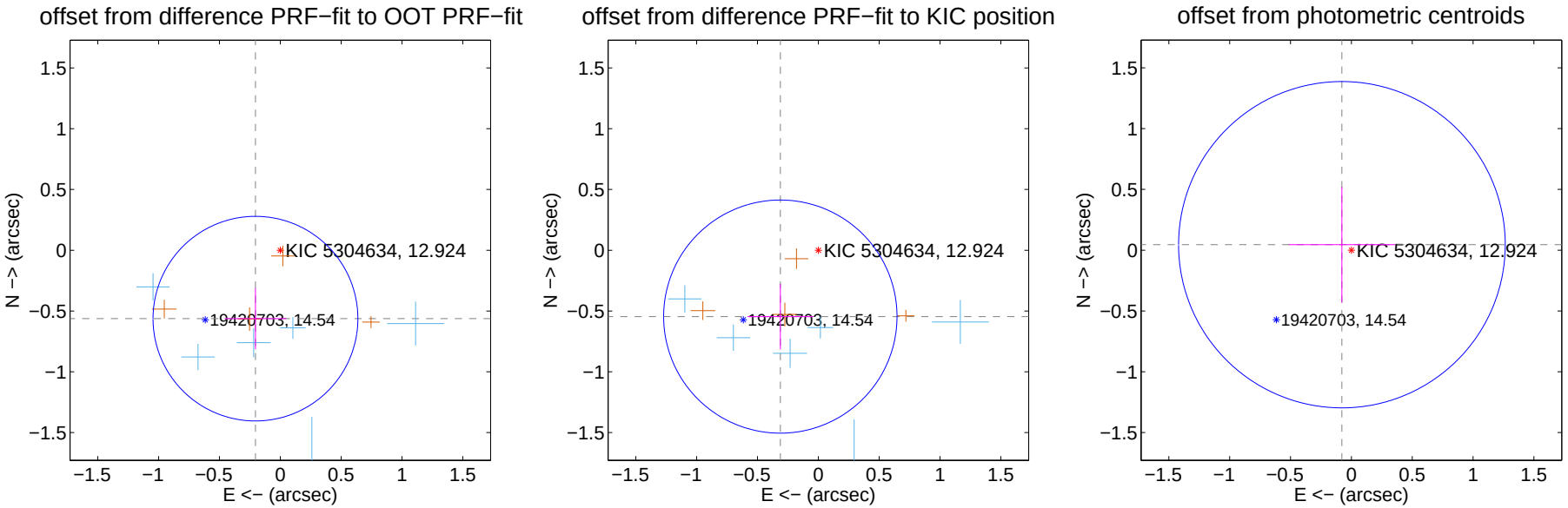
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

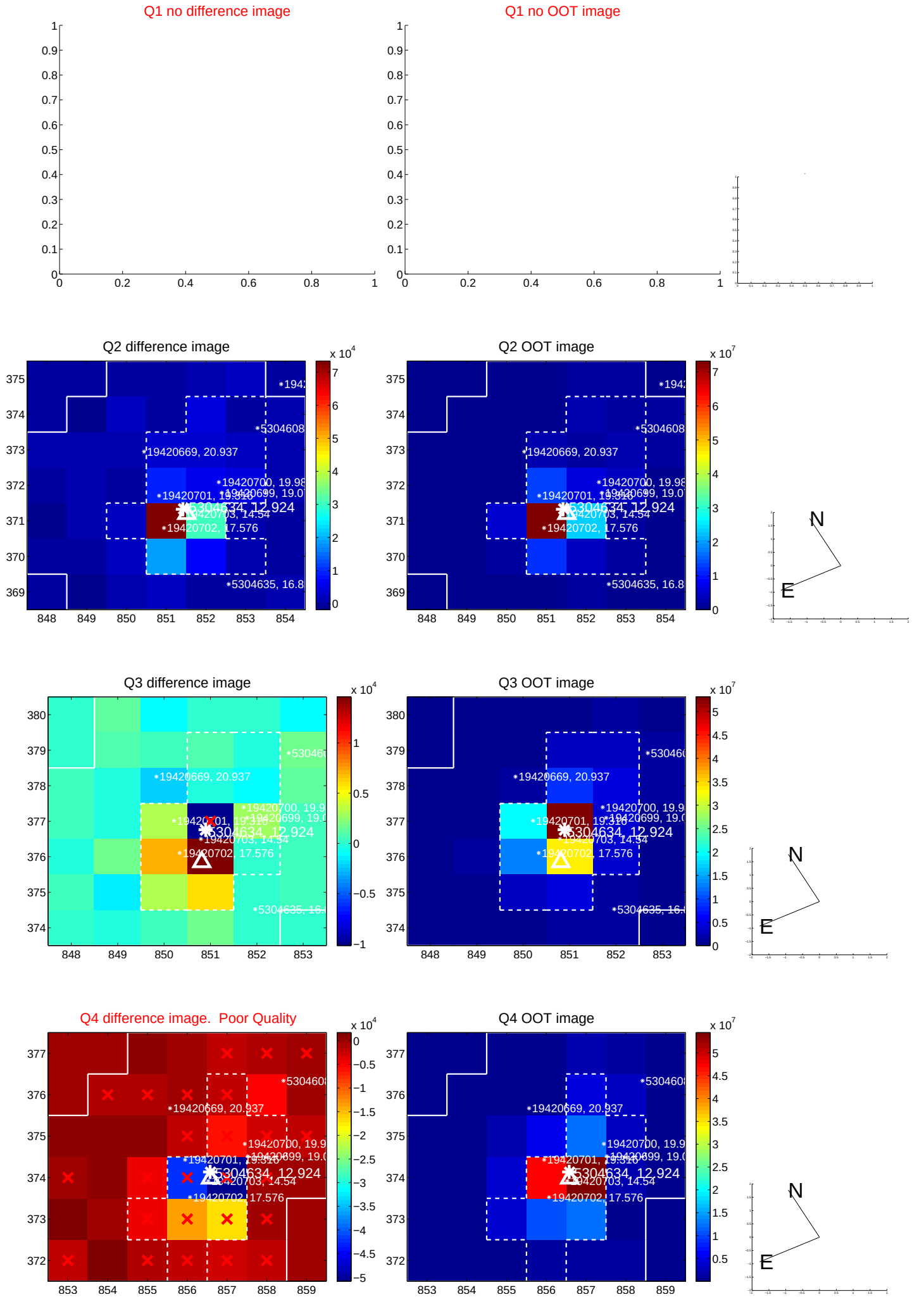
Supplemental centroid analysis for 005304634-08. Kepler magnitude: 12.92. Transit SNR 7.52
There are 7 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.599 ± 0.281 | 2.13 | 0.204 ± 0.254 | -0.563 ± 0.252 |
| PRF-fit source offset from KIC position | 0.629 ± 0.320 | 1.97 | 0.313 ± 0.269 | -0.546 ± 0.269 |
| photometric centroid source offset | 0.09 ± 0.45 | 0.20 | 0.08 ± 0.44 | 0.05 ± 0.48 |

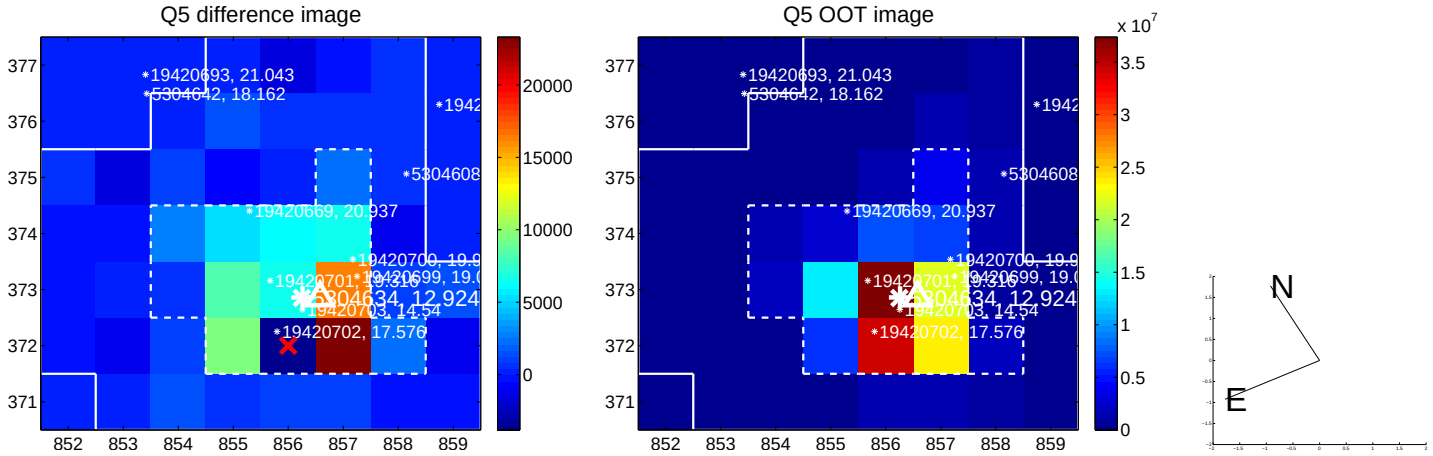


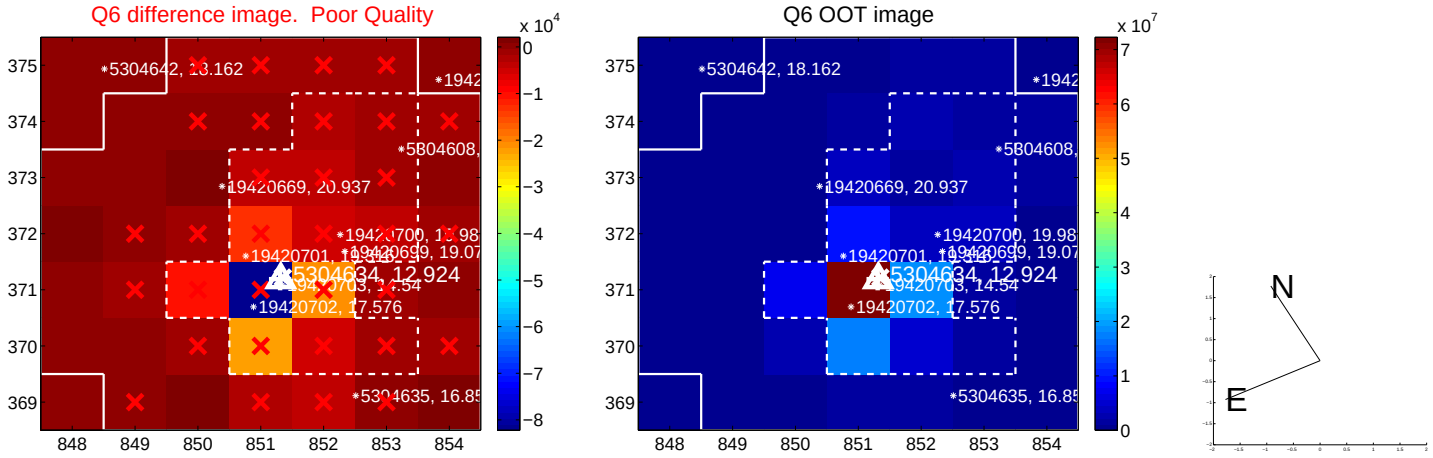

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

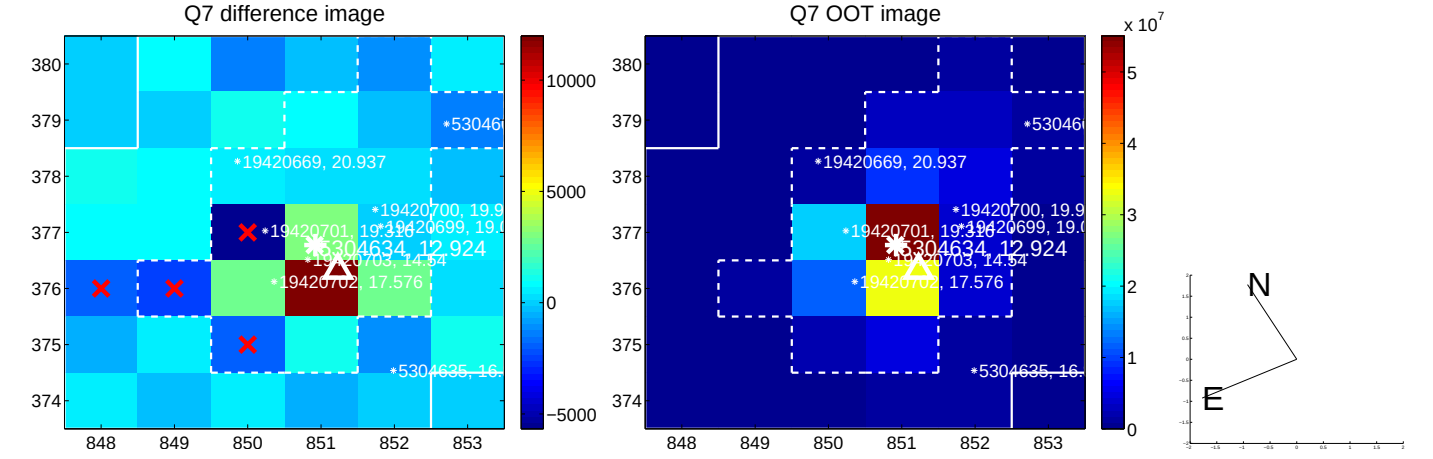
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

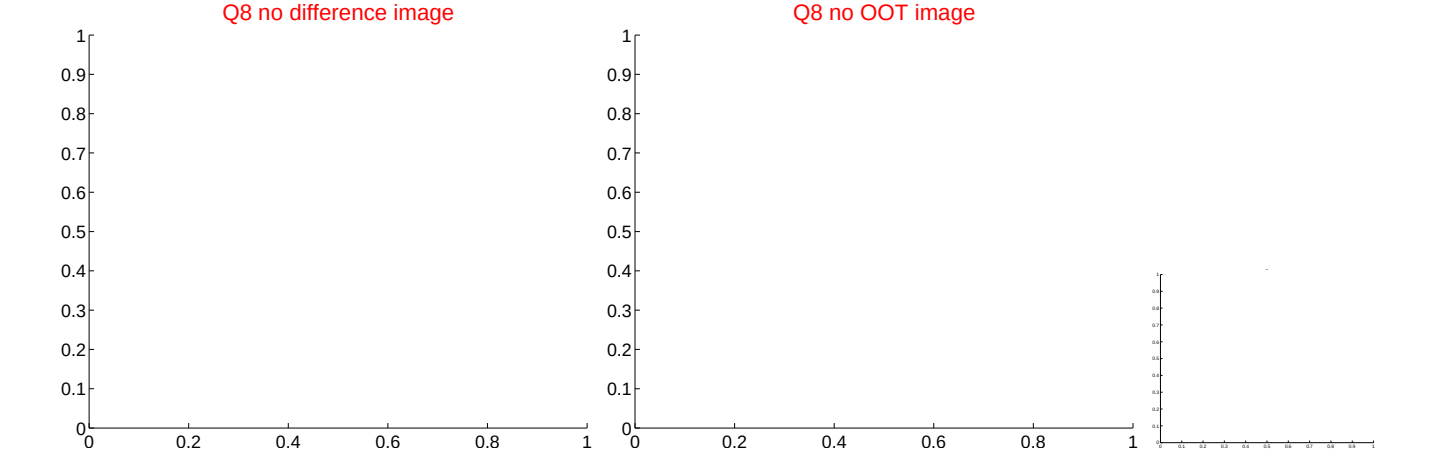


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

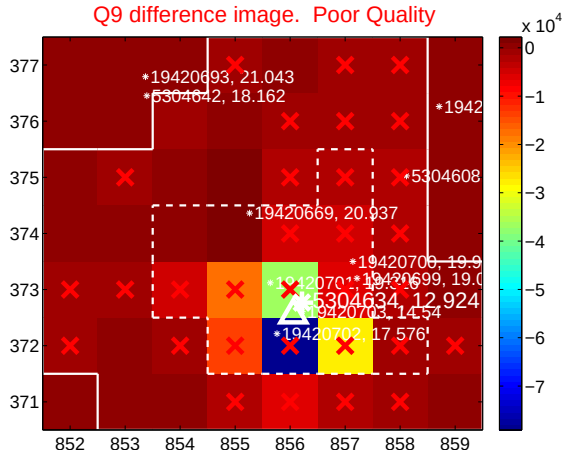


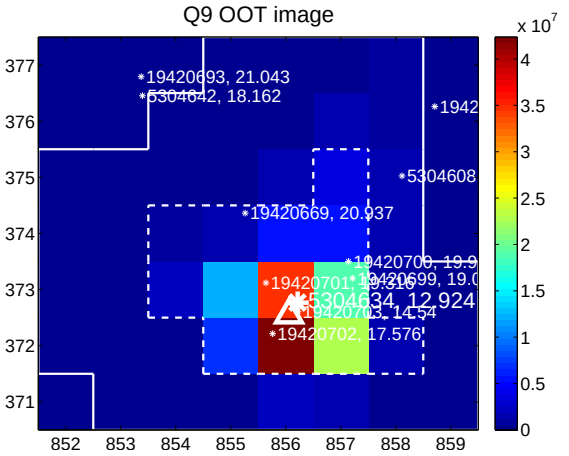



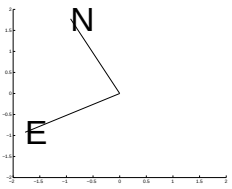



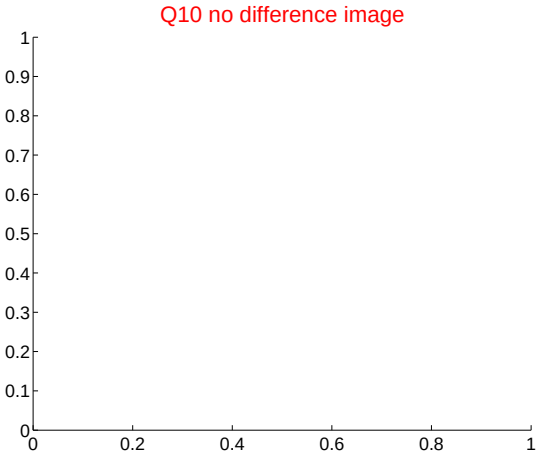



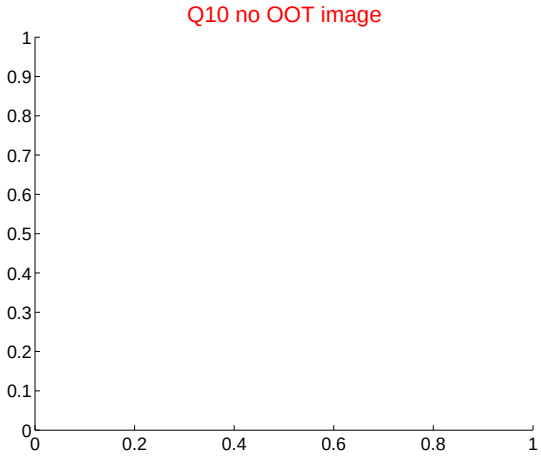
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

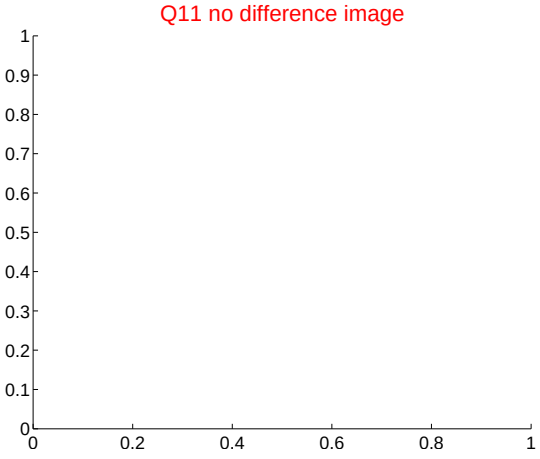


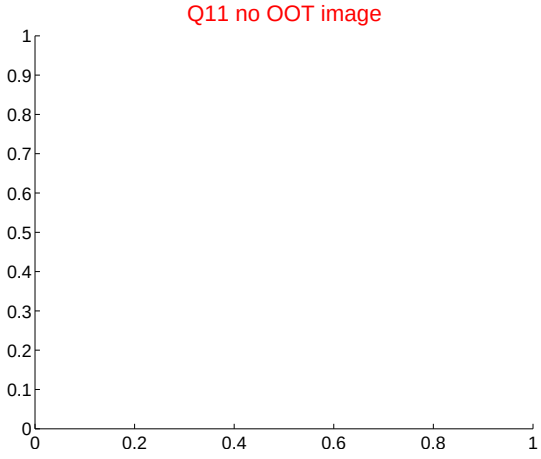



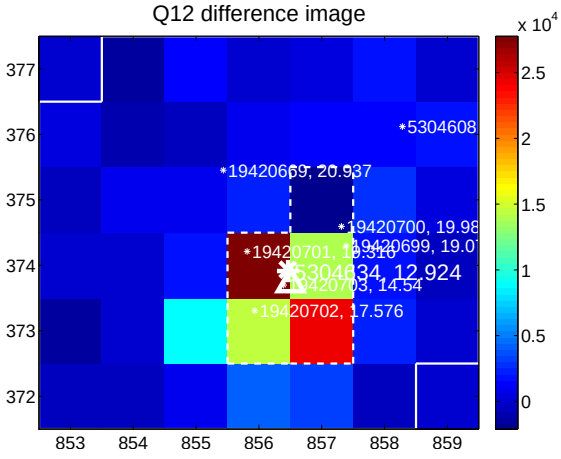



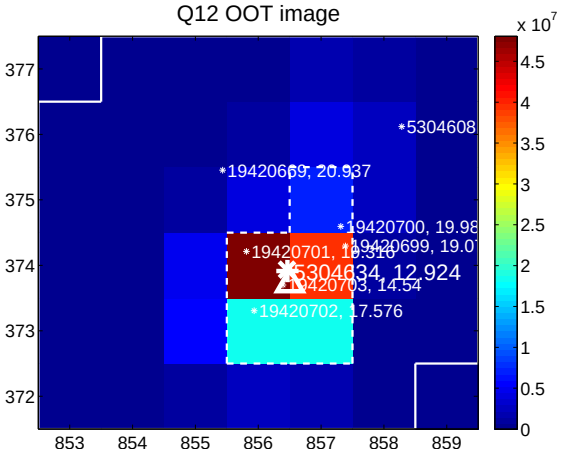



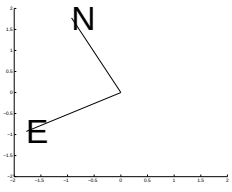



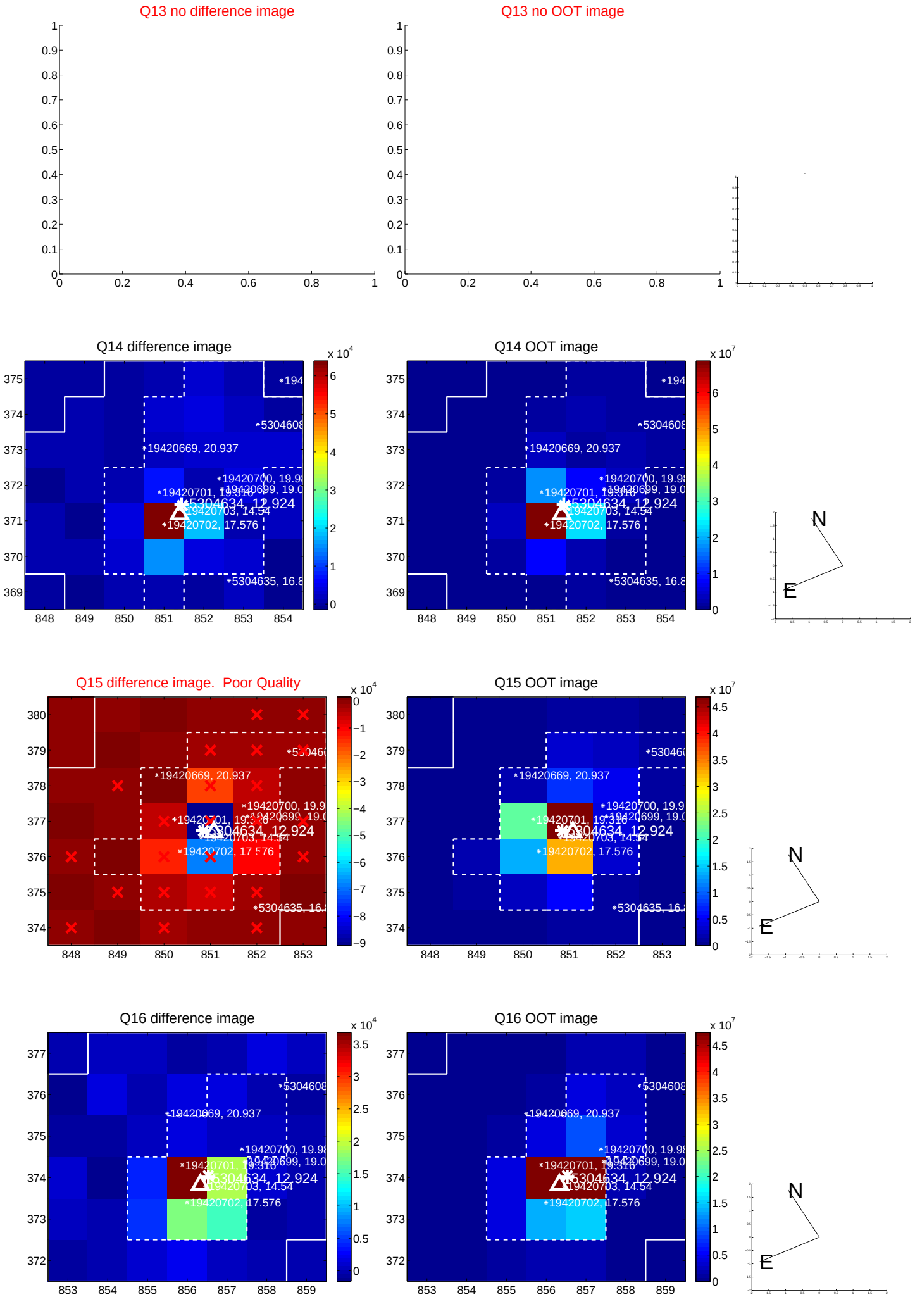



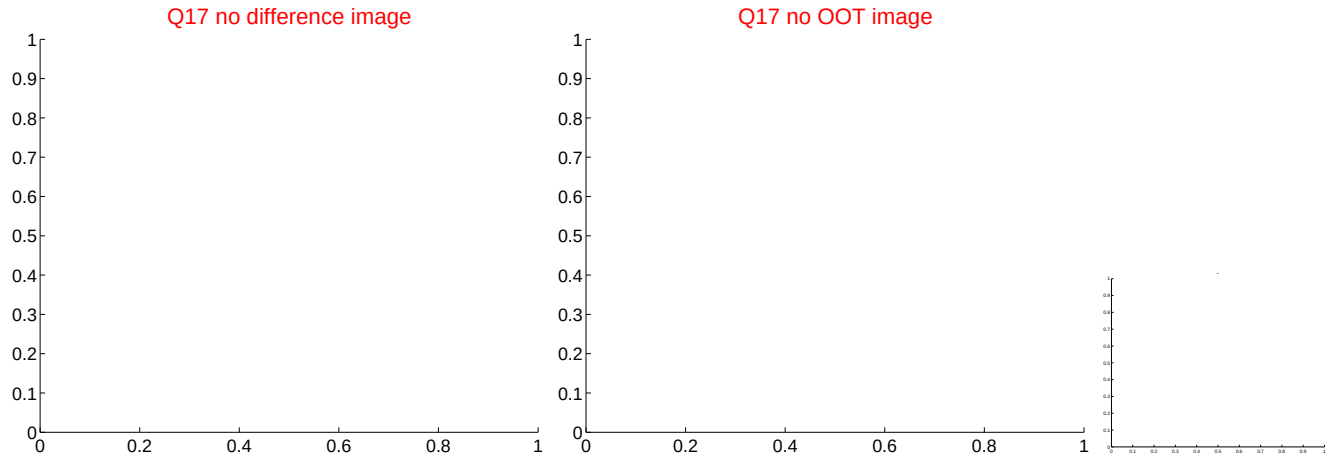



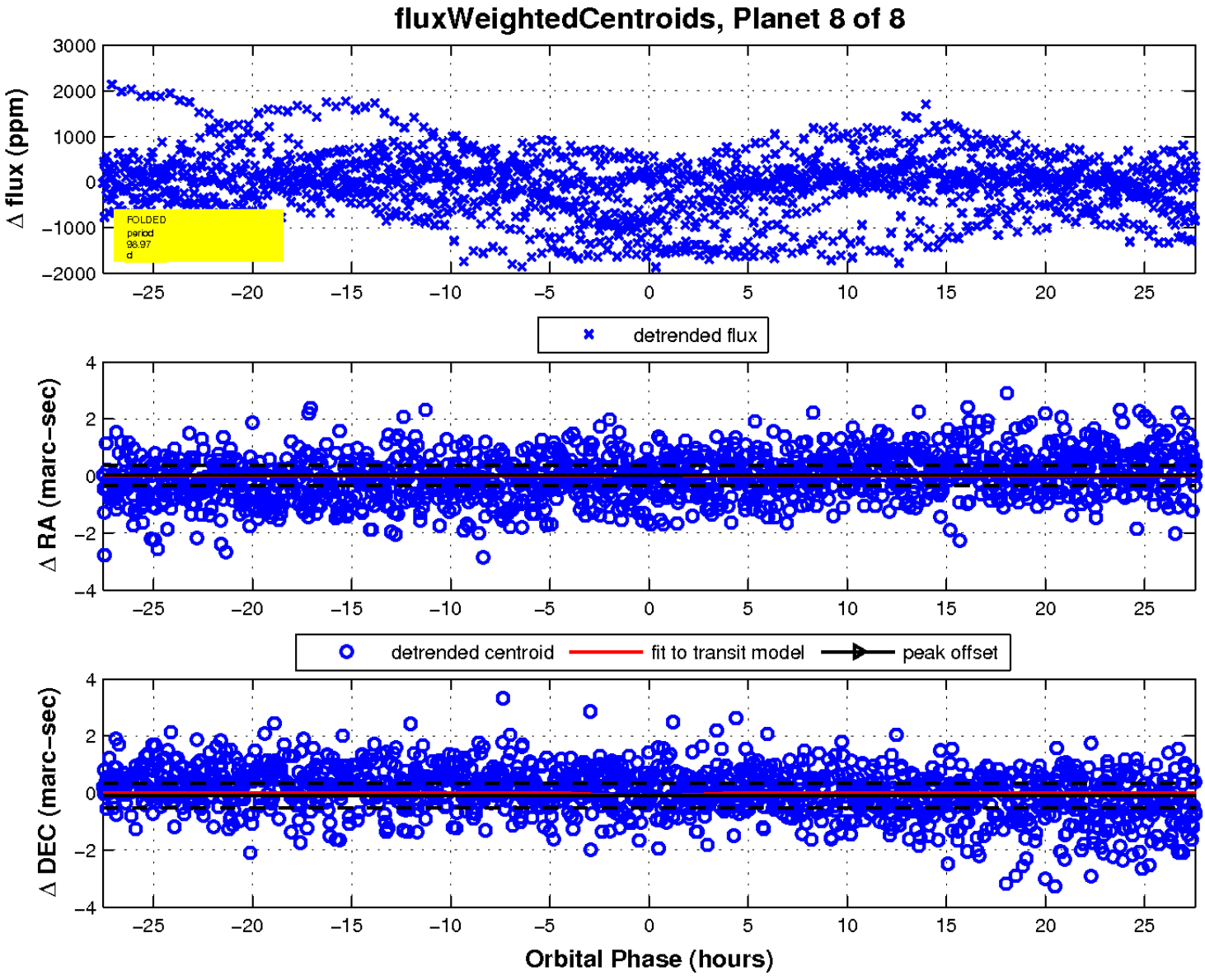



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

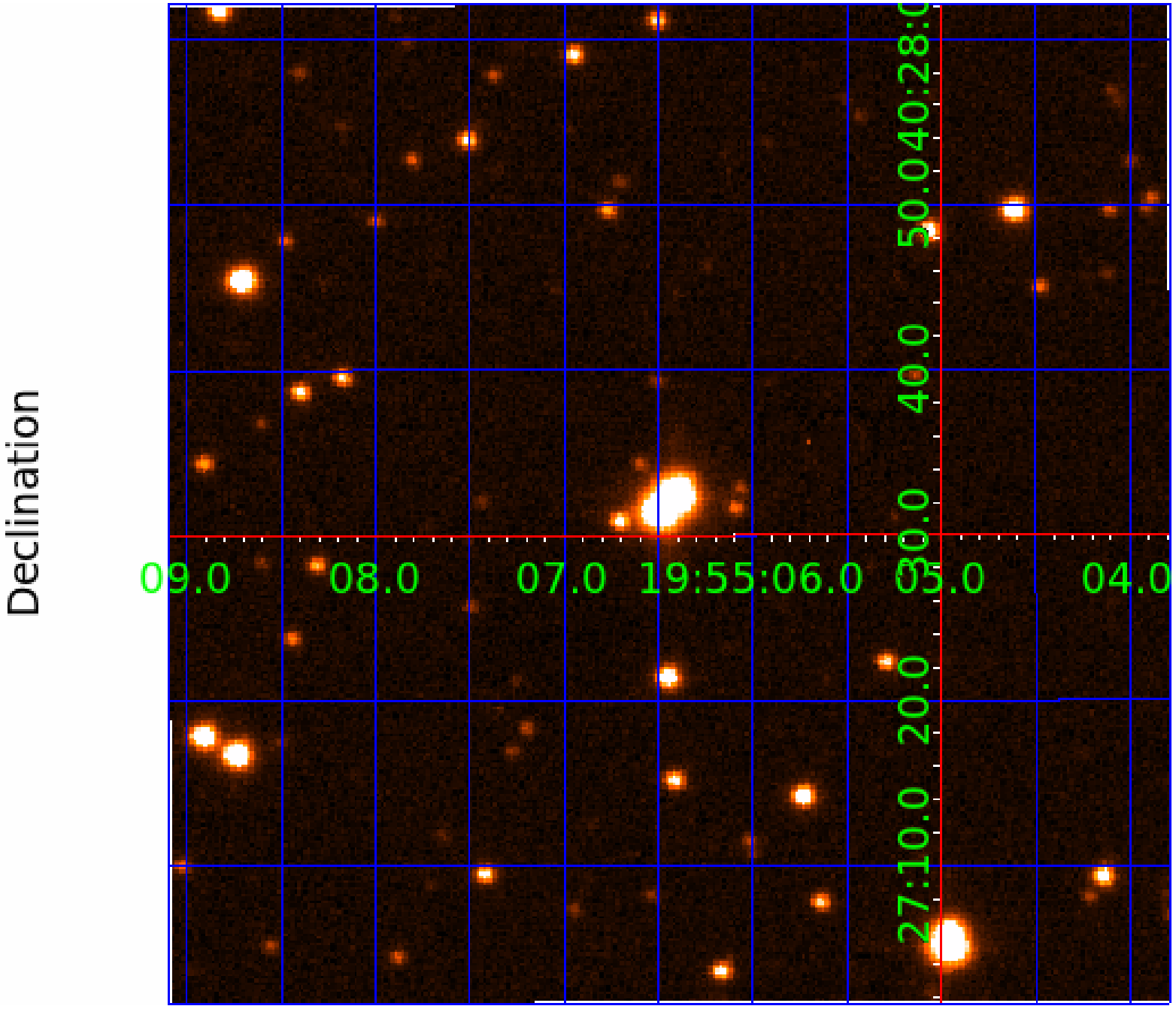


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



**UKIRT Image**


Declination
09.0
08.0
07.0
19:55:06.0
05.0
04.0
50.0
40.0
30.0
20.0
10.0
27:
40:28:0