# KIC 009153754

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 009153754-01 | OBS | No | 98.612361 | 153.790385 | 397.6 | 15.000 | 10.3 | -1.0 | 0.18 | 3193 | 0.36 | 0.06 |
| 009153754-02 | OBS | No | 89.296351 | 159.715893 | 1071.2 | 16.131 | 8.9 | 11.3 | 0.18 | 3193 | 0.72 | 0.07 |
| 009153754-03 | OBS | No | 123.431100 | 151.165653 | 355.7 | 9.295 | 8.4 | 2.8 | 0.18 | 3193 | 0.36 | 0.04 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 009153754-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS |
| 009153754-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—CENT_FEW_MEAS |
| 009153754-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—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—CENT_FEW_DIFFS |

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

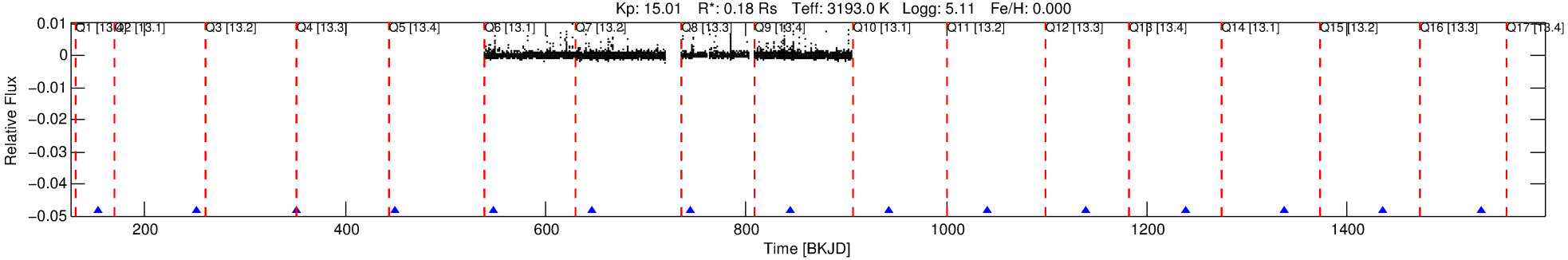
## Ephemeris Match Information For 009153754-01

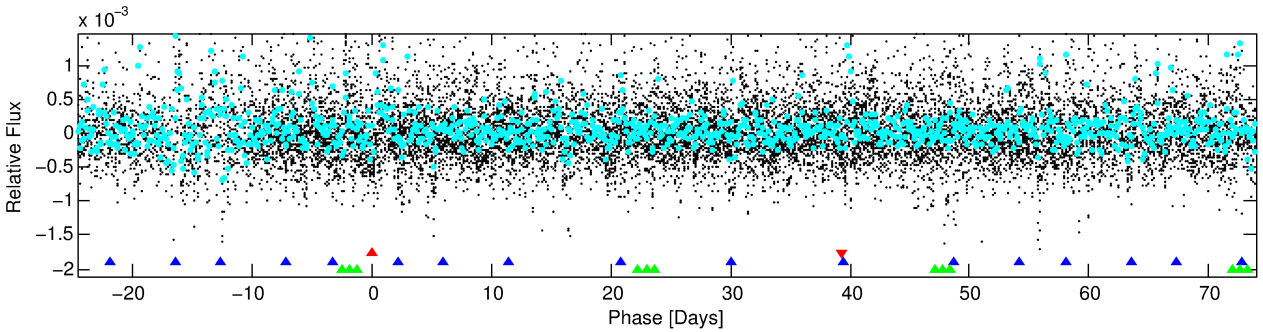
No Significant Match Found

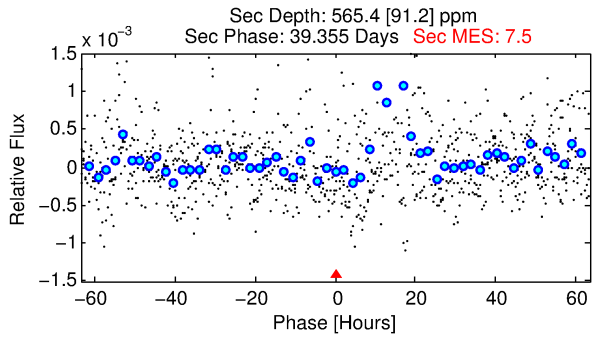
# DV One-Page Summary

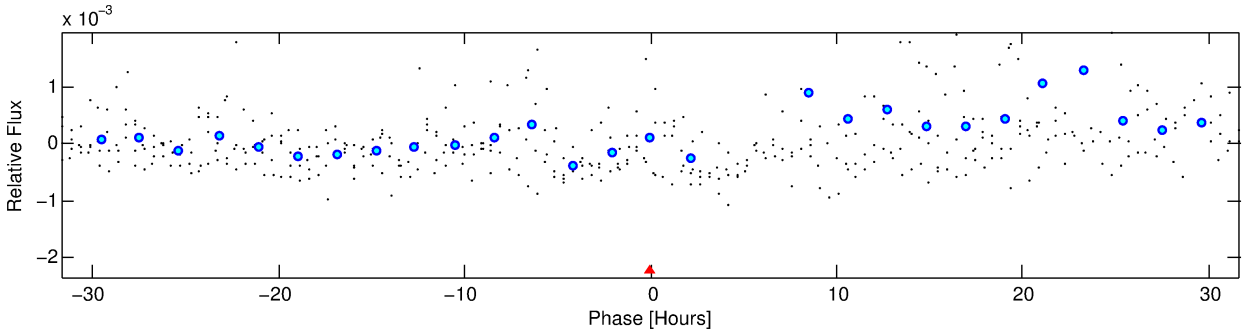
**KIC: 9153754 Candidate: 1 of 3 Period: 98.612 d**

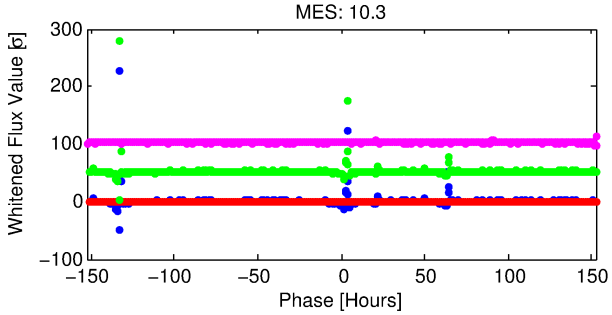
Kp: 15.01 R*: 0.18 Rs Teff: 3193.0 K Logg: 5.11 Fe/H: 0.000

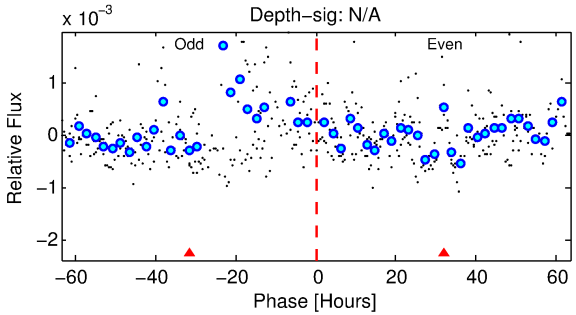


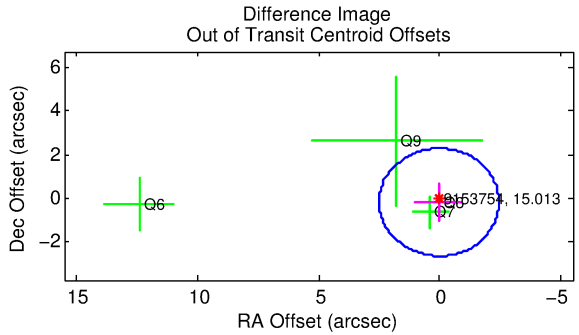




TPS TCE Results:

Period = 98.61236 d
Epoch = 153.7904 BKJD

DV fit results are unavailable

DV Diagnostic Results:

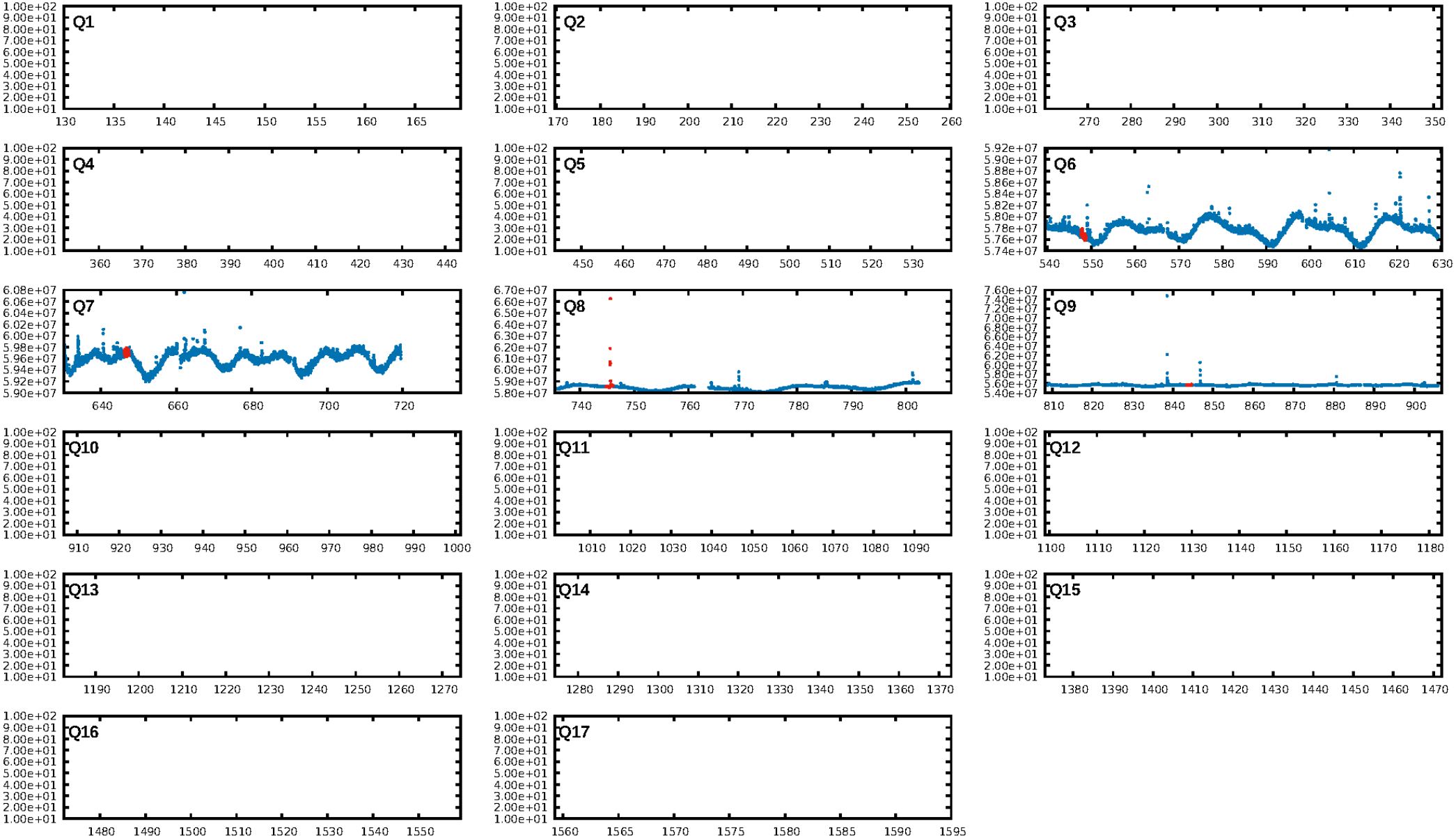
ShortPeriod−sig: 100.0% [10.15σ]
LongPeriod−sig: 100.0% [33.75σ]
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 3.58e−14
RollingBand−fgt: 1.00 [4/4]
GhostDiagnostic−chr: −5.014

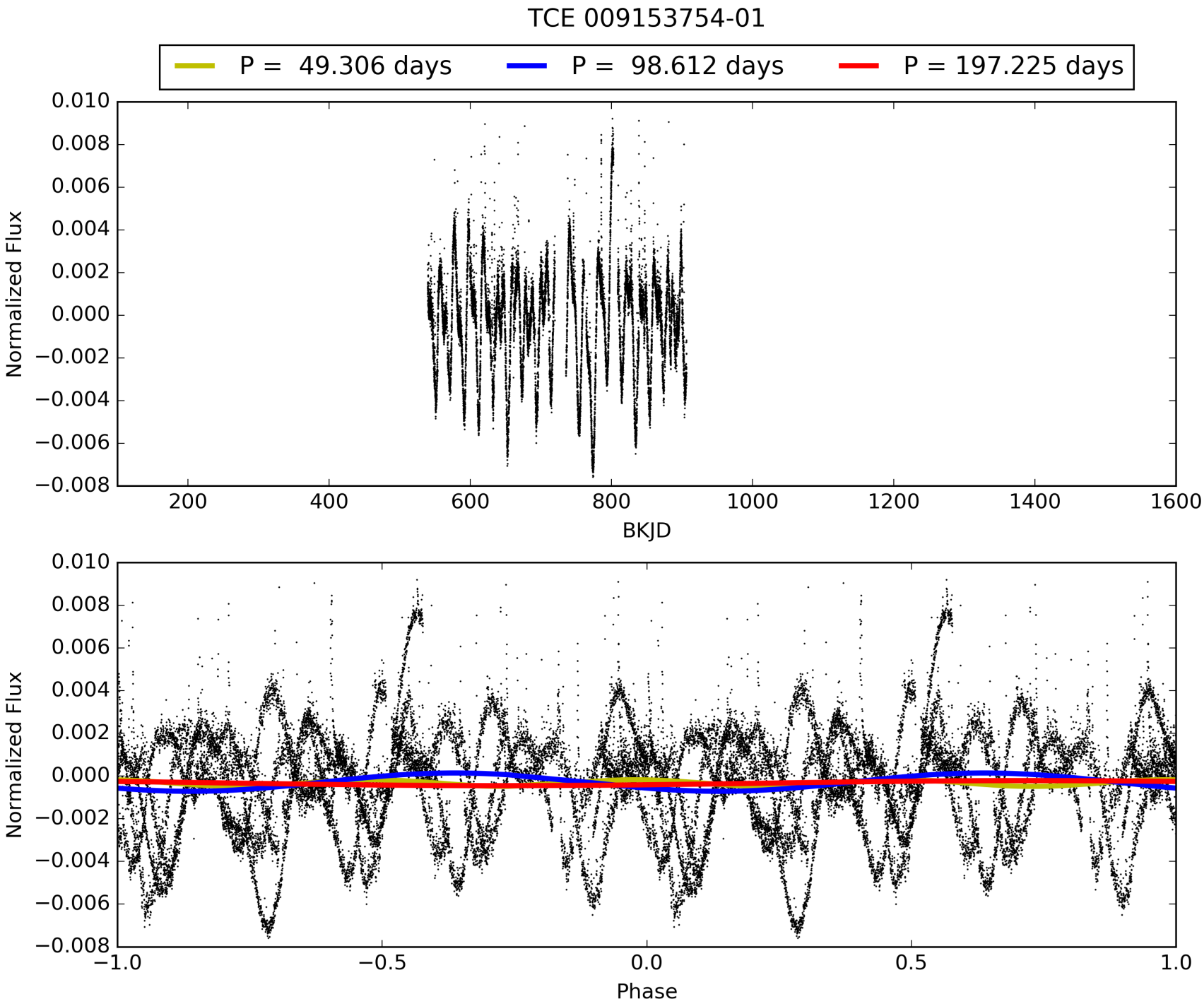
Centroid−sig: 52.0%
Centroid−so: 1.372 arcsec [1.38σ]
OotOffset−rm: 0.178 arcsec [0.22σ]
KicOffset−rm: 0.984 arcsec [0.88σ]
OotOffset−st: 1/1/1/1 [4]
KicOffset−st: 1/1/1/1 [4]
DiffImageQuality−fgm: 0.00 [0/4]
DiffImageOverlap−fno: 1.00 [4/4]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30−Jan−2016 18:05:01 Z**

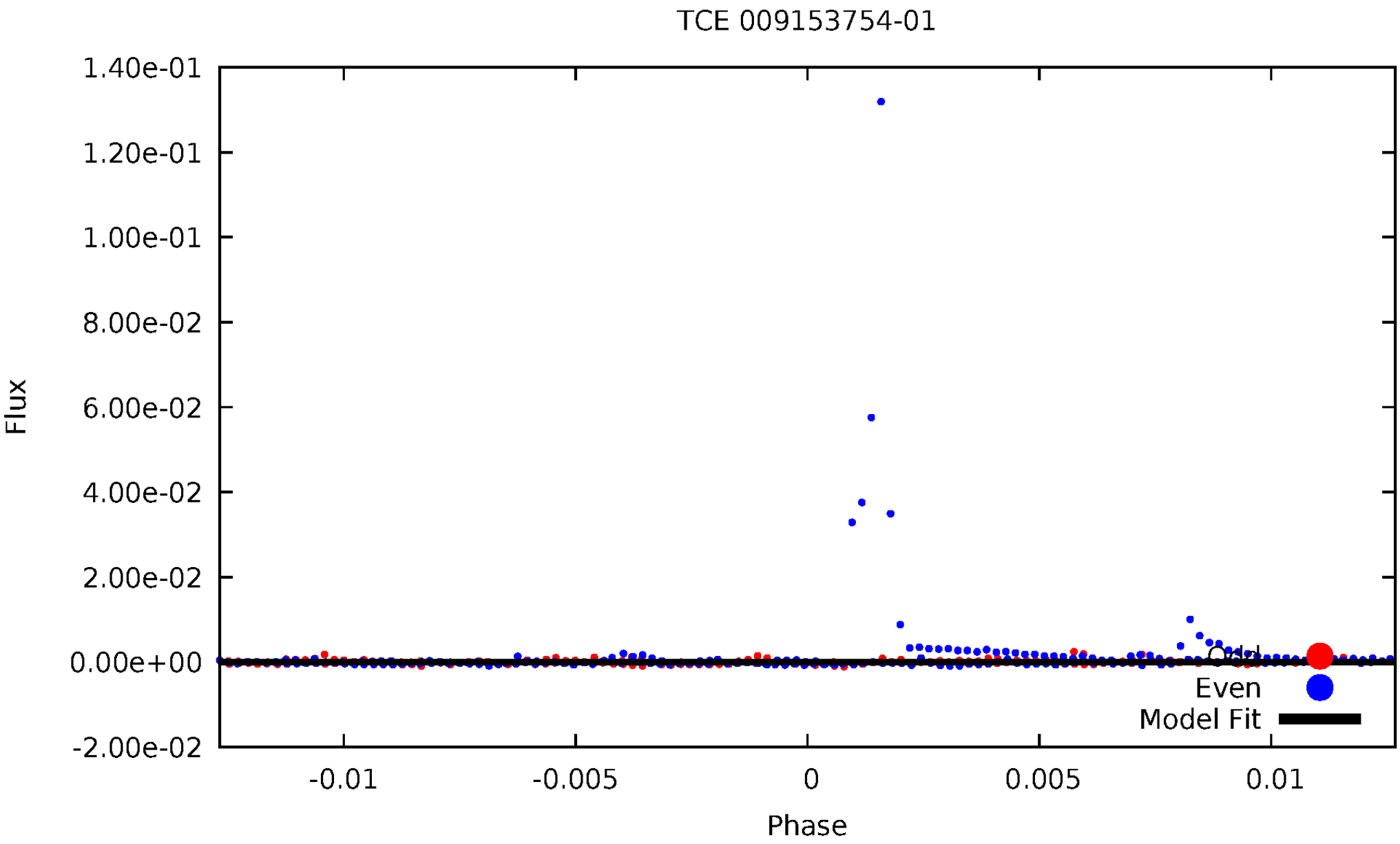
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 009153754-01, PDC Light Curves

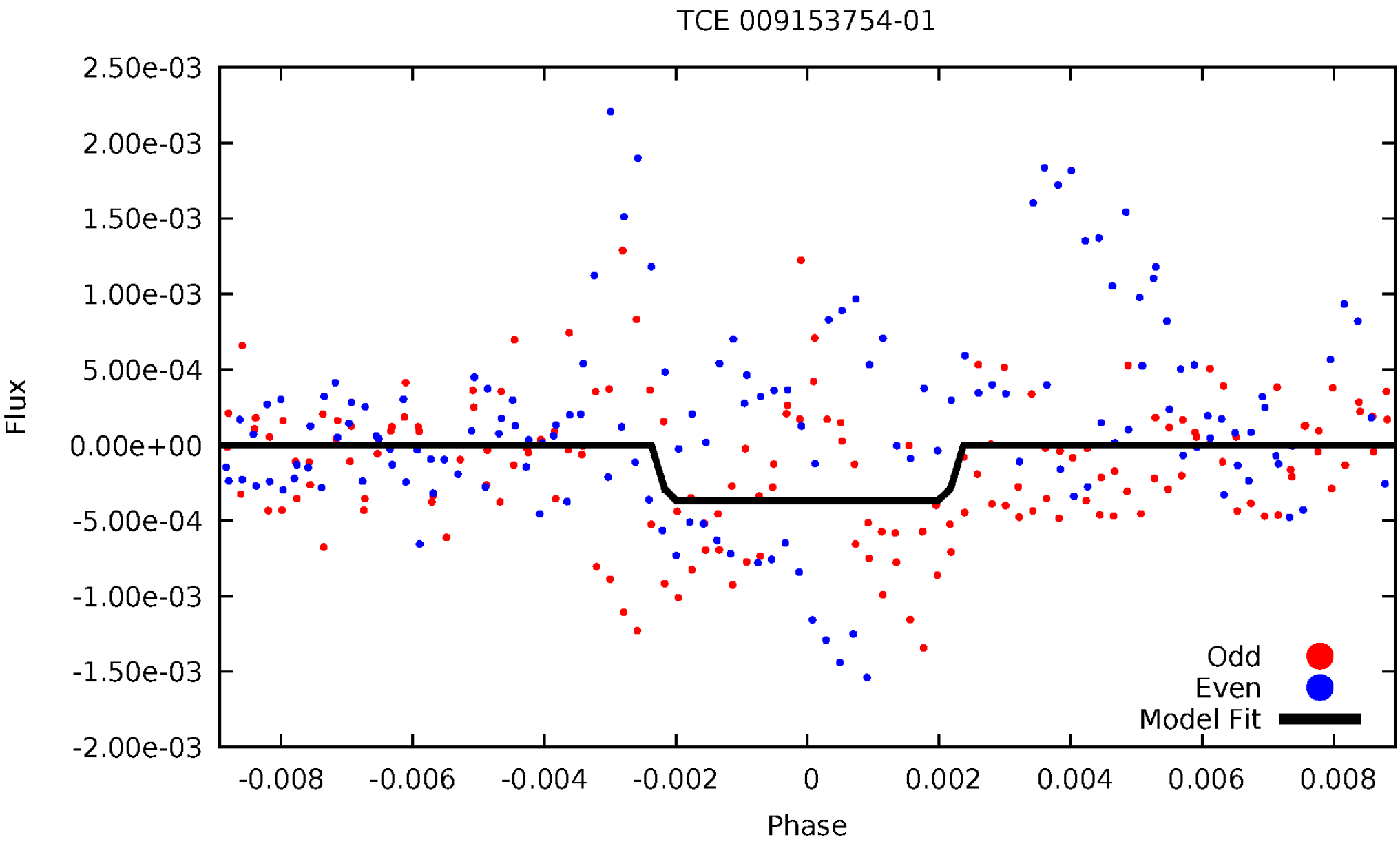



TCE 009153754-01
P = 49.306 days
P = 98.612 days
P = 197.225 days
Normalized Flux
BKJD
Normalized Flux
Phase

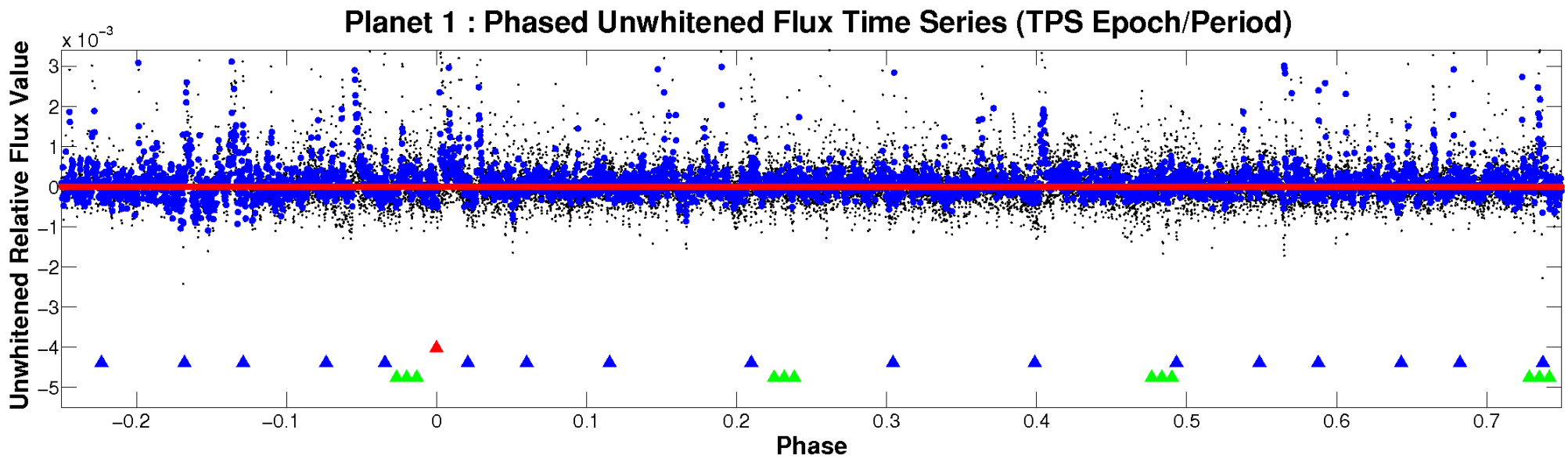
# DV Odd/Even

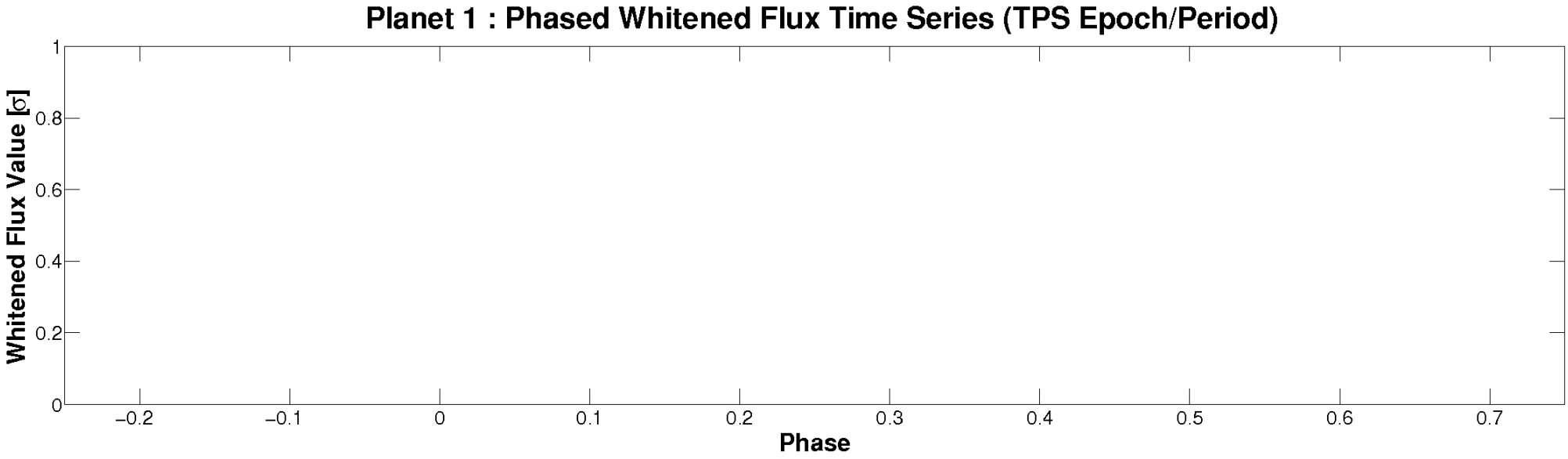

TCE 009153754-01
1.40e-01
1.20e-01
1.00e-01
8.00e-02
6.00e-02
4.00e-02
2.00e-02
0.00e+00
-2.00e-02
Flux
-0.01
-0.005
0
0.005
0.01
Phase
Odd
Even
Model Fit

**ALT Odd/Even**


TCE 009153754-01
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
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit

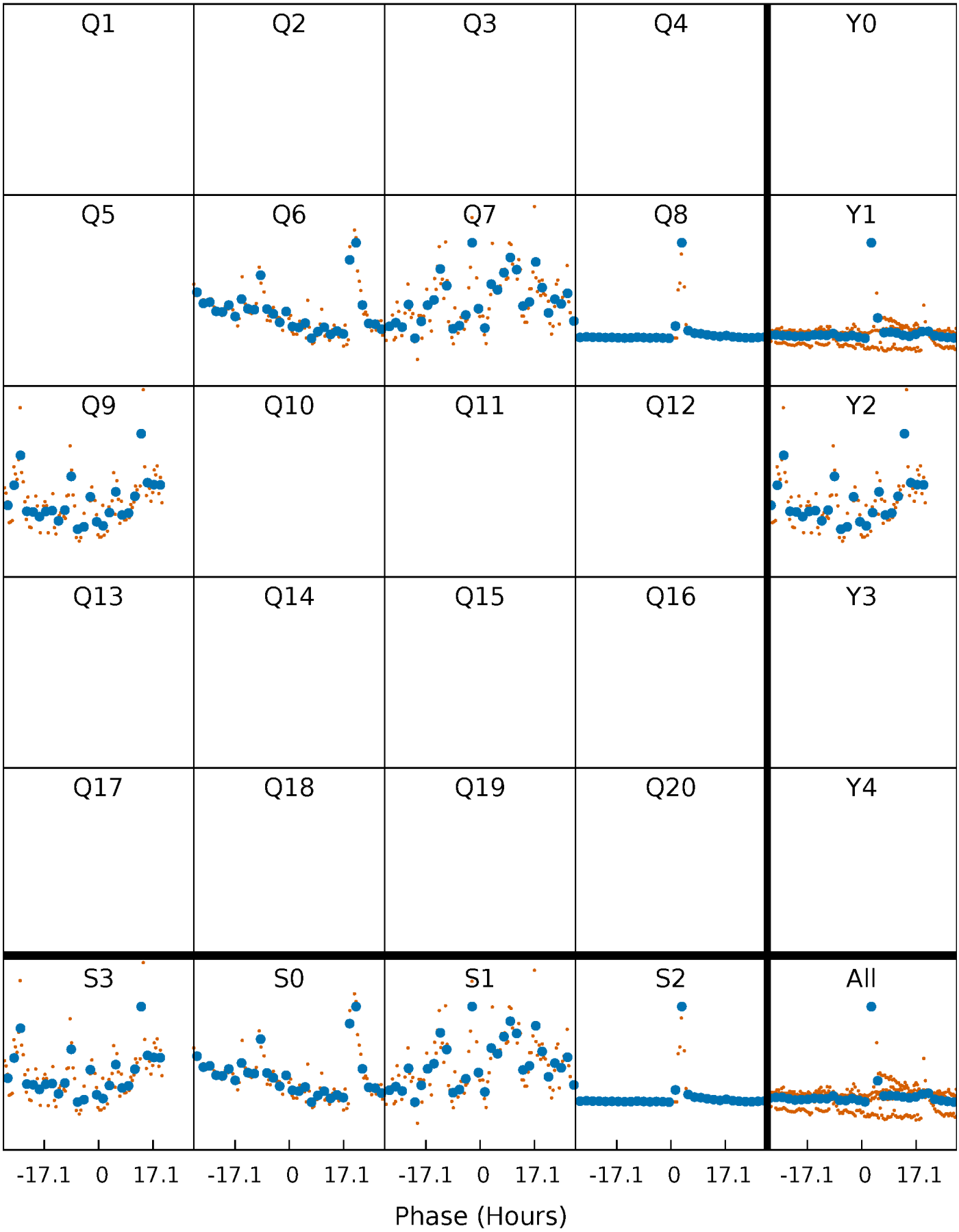
# Non-Whitened Vs. Whitened Light Curve



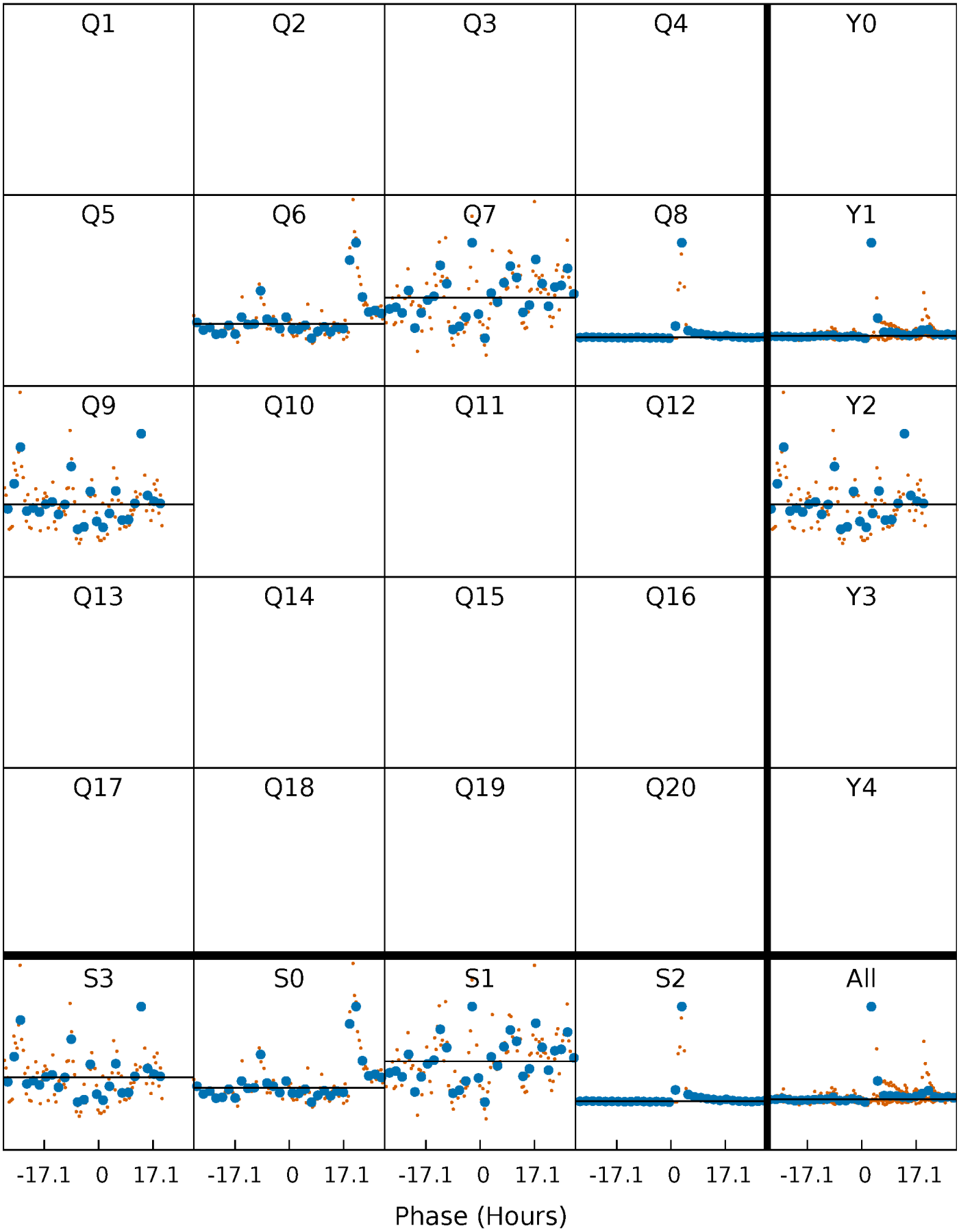
# PDC Quarter-Phased Transit Curves

TCE 009153754-01 P= 98.612361 Days $T_0$=153.790385 (BKJD)



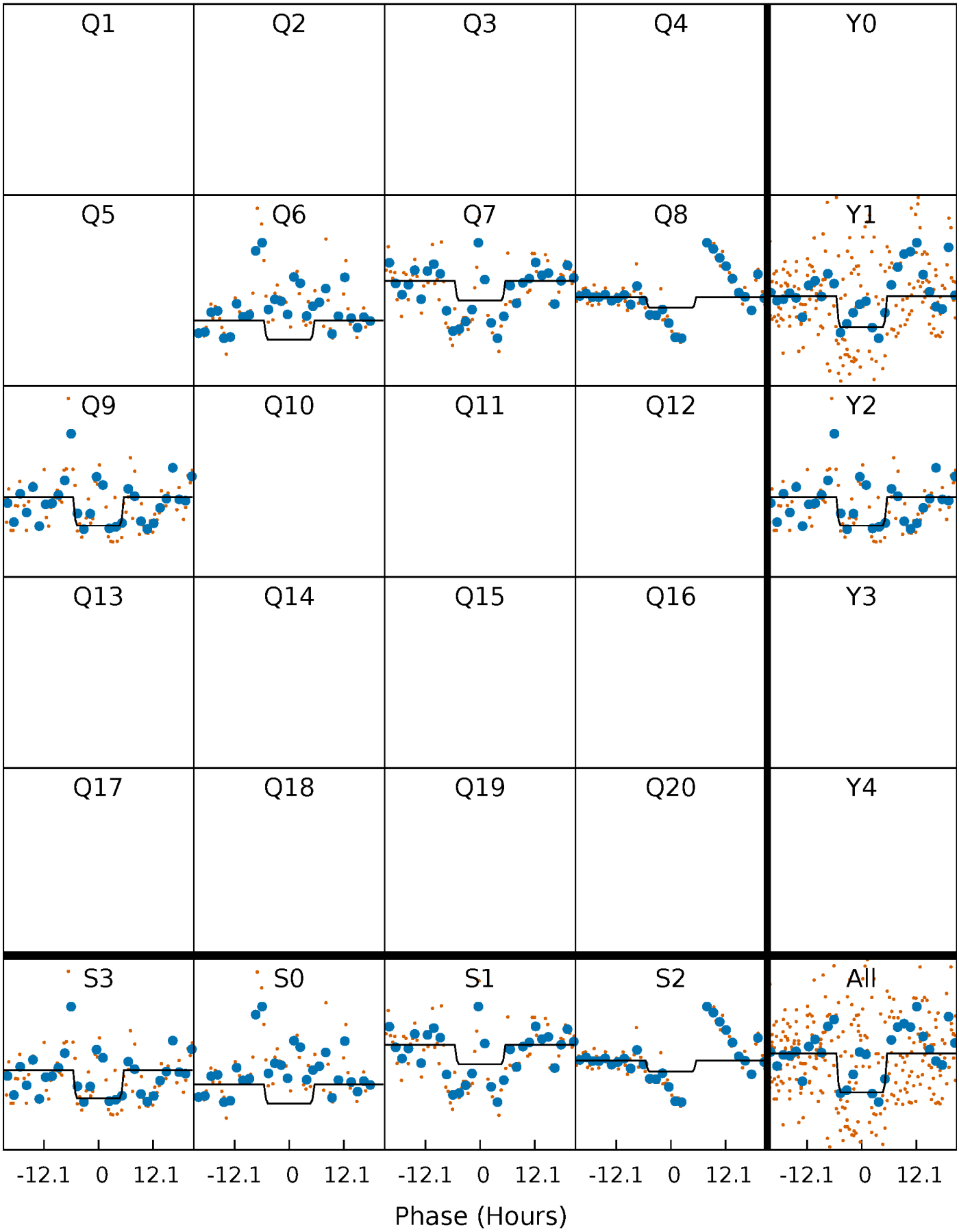
# DV Quarter-Phased Transit Curves

TCE 009153754-01 P= 98.612361 Days $T_0$=153.790385 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

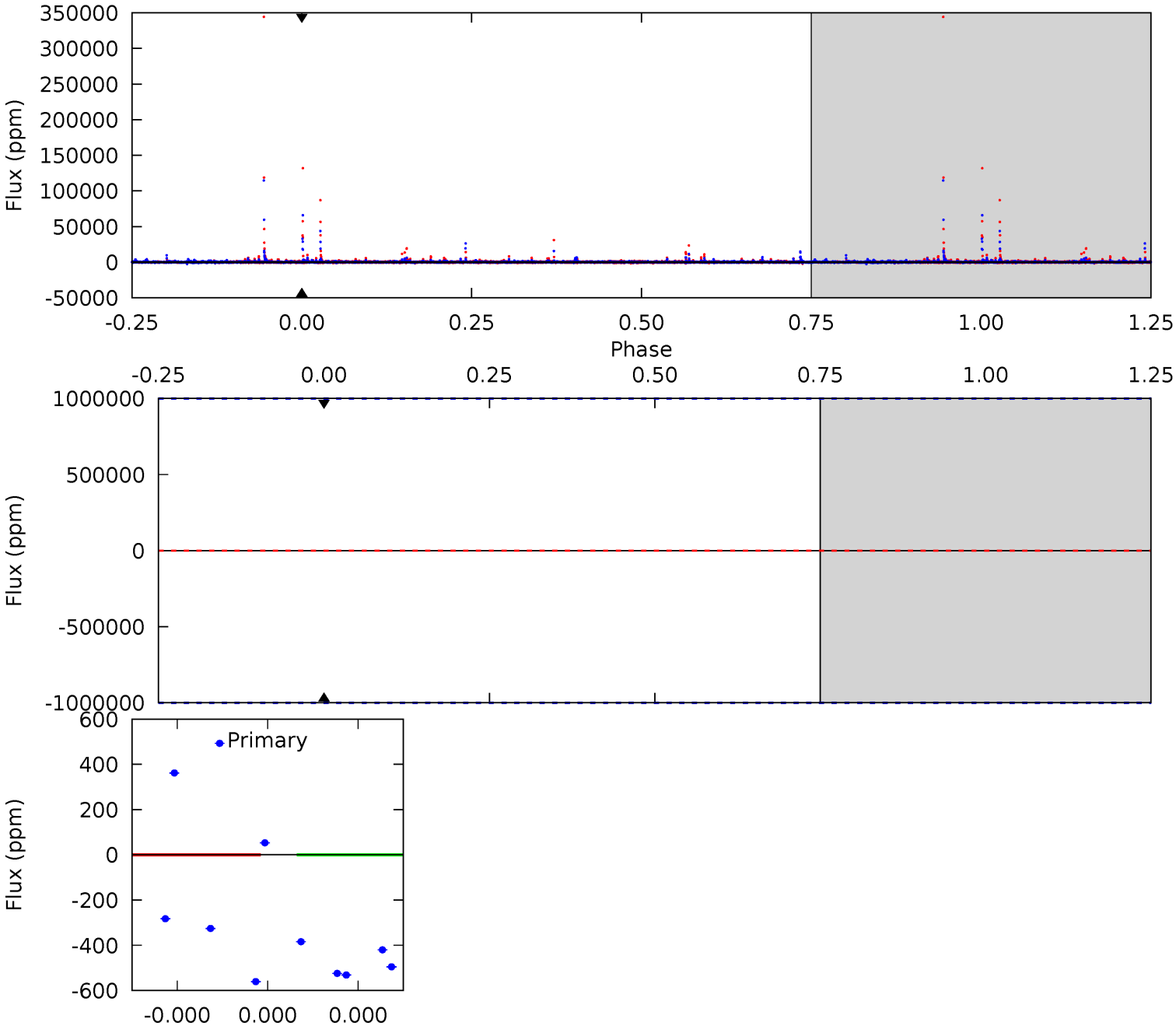
TCE 009153754-01 P= 98.612361 Days $T_0$=153.694050 (BKJD)



# DV Model-Shift Uniqueness Test

009153754-01, P = 98.612361 Days, E = 153.790385 Days

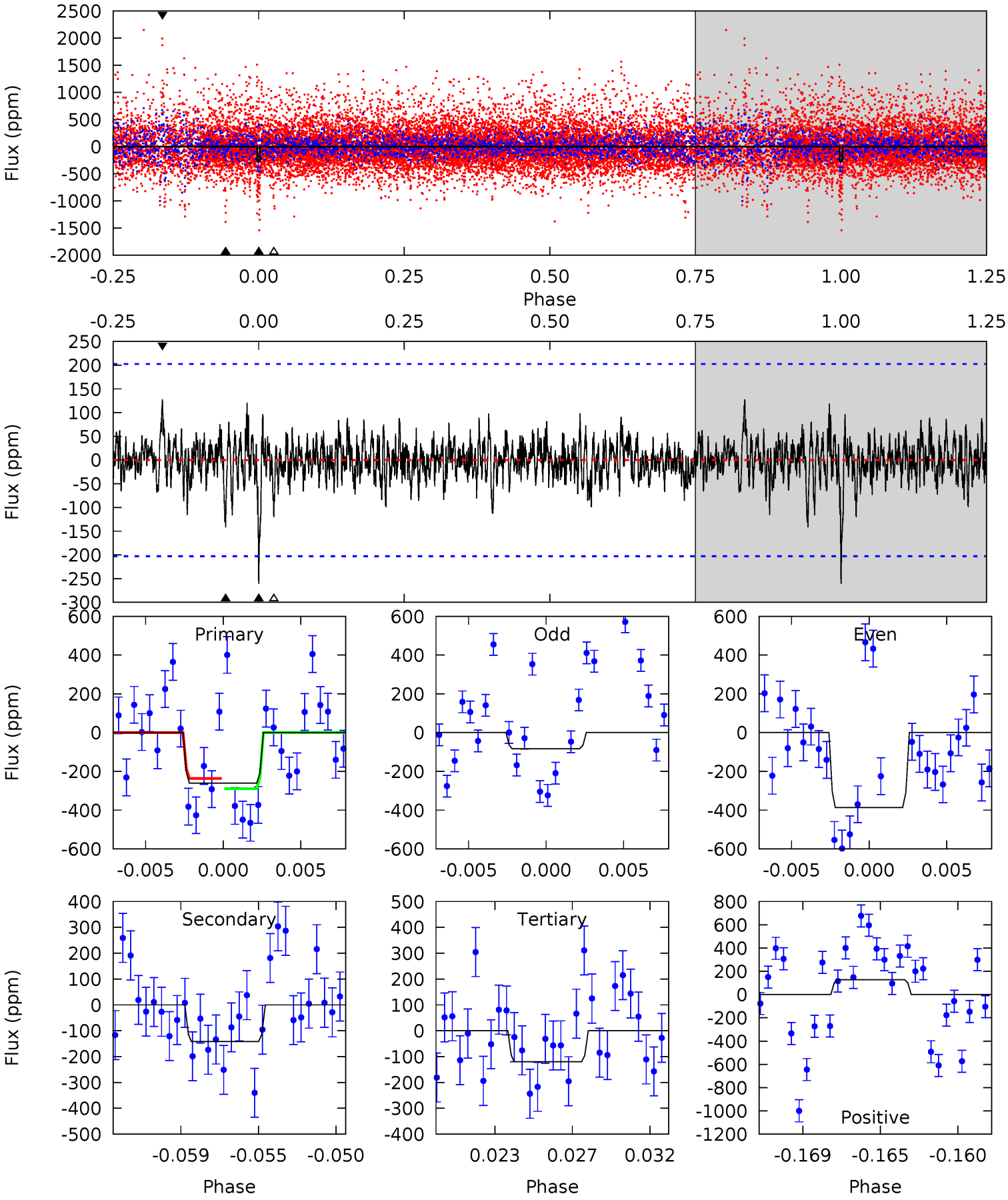
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Alt Model-Shift Uniqueness Test

009153754-01, P = 98.612361 Days, E = 153.694050 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.65 | 3.62 | 3.06 | 3.26 | 5.17 | 2.84 | 0.85 | 3.59 | 3.39 | 0.56 | 0.36 | 3.87 | 0.80 | 0.33 | 0.66 |



Stellar Parameters For KIC 009153754

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $3193^{+-1}_{-1}$ | $5.113^{+-1.000}_{-1.000}$ | $0.000^{+-1.000}_{-1.000}$ | $0.183^{+-1.000}_{-1.000}$ | $0.159^{+-1.000}_{-1.000}$ | $36.410^{+-1.000}_{-1.000}$ |
| | +0%/-0% | +20%/-20% | +inf%/-inf% | +546%/-546% | +629%/-629% | +3%/-3% |
| Source | PHO54 | PHO54 | PHO54 | BTSL | | |

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

Secondary Eclipse Parameters for KIC 009153754-01 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | 0±1000000 | $1.53^{+1.78}_{-1.13}$ | $179^{+16}_{-14}$ | $-2496^{+9242}_{-3530}$ | $-12528.189^{+2992437.944}_{-2142666.699}$ |
| Alt. | -142±39 | $1.54^{+1.87}_{-1.06}$ | $178^{+16}_{-16}$ | $2015^{+603}_{-284}$ | $1740^{+14463}_{-1386}$ |

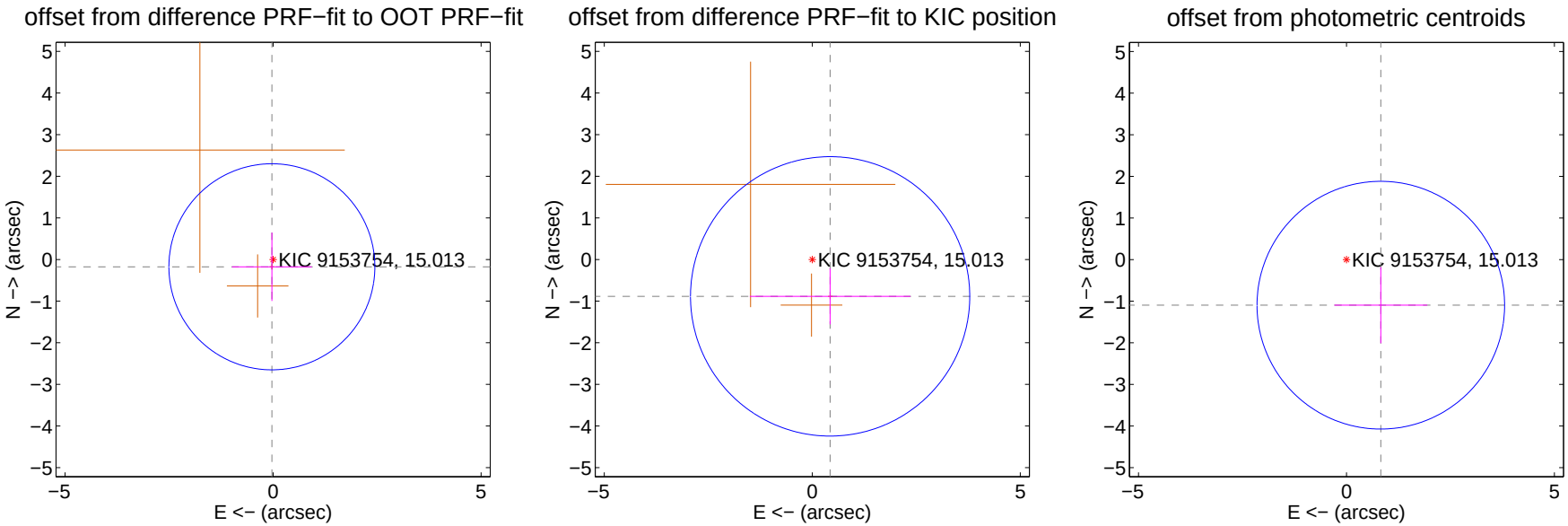
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

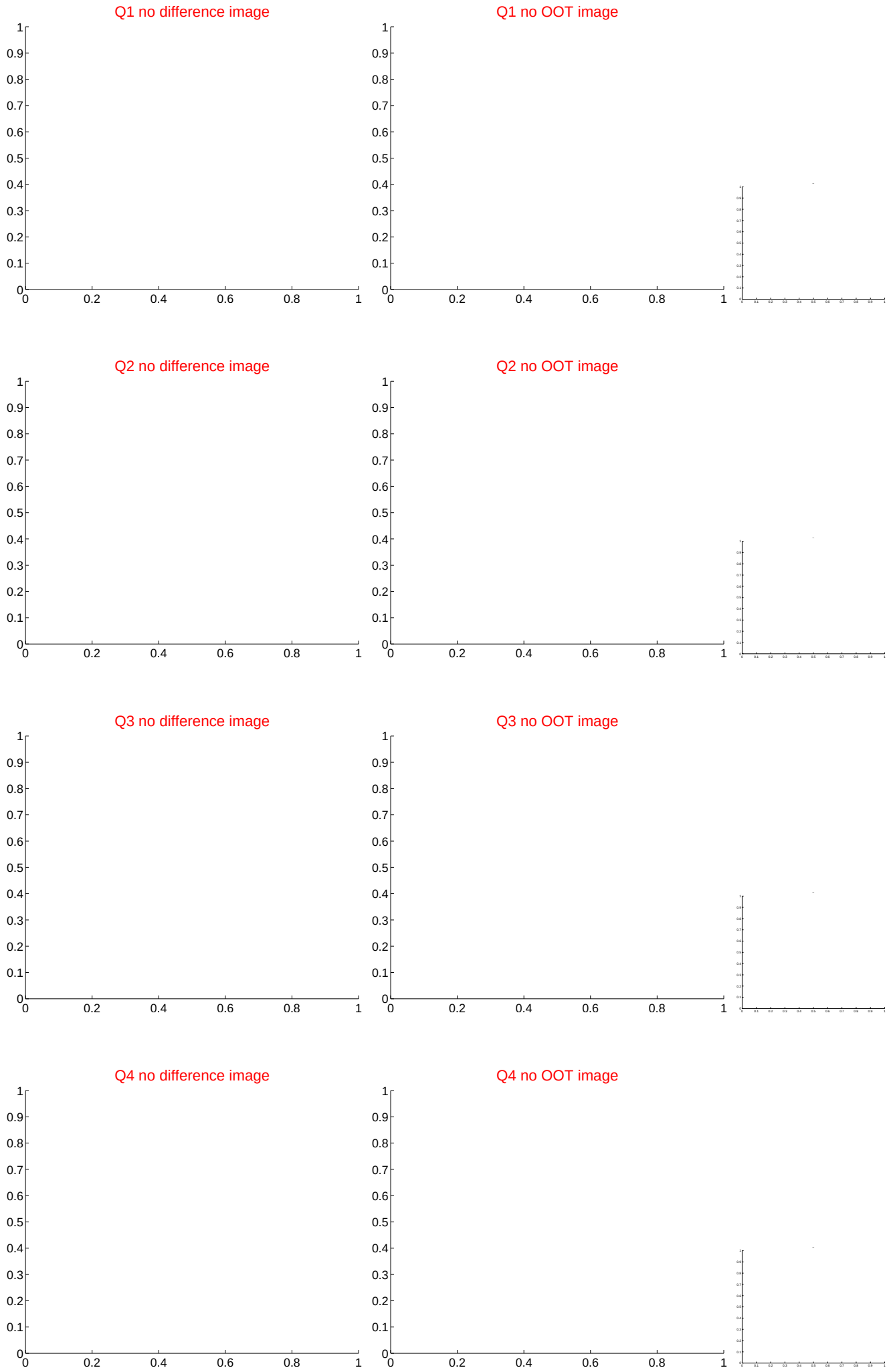
Supplemental centroid analysis for 009153754-01. Kepler magnitude: 15.01. Transit SNR -1.00
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.178 ± 0.825 | 0.22 | 0.029 ± 0.958 | -0.175 ± 0.821 |
| PRF-fit source offset from KIC position | 0.984 ± 1.118 | 0.88 | -0.429 ± 1.931 | -0.885 ± 0.672 |
| photometric centroid source offset | 1.37 ± 0.99 | 1.38 | -0.83 ± 1.12 | -1.10 ± 0.91 |




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.



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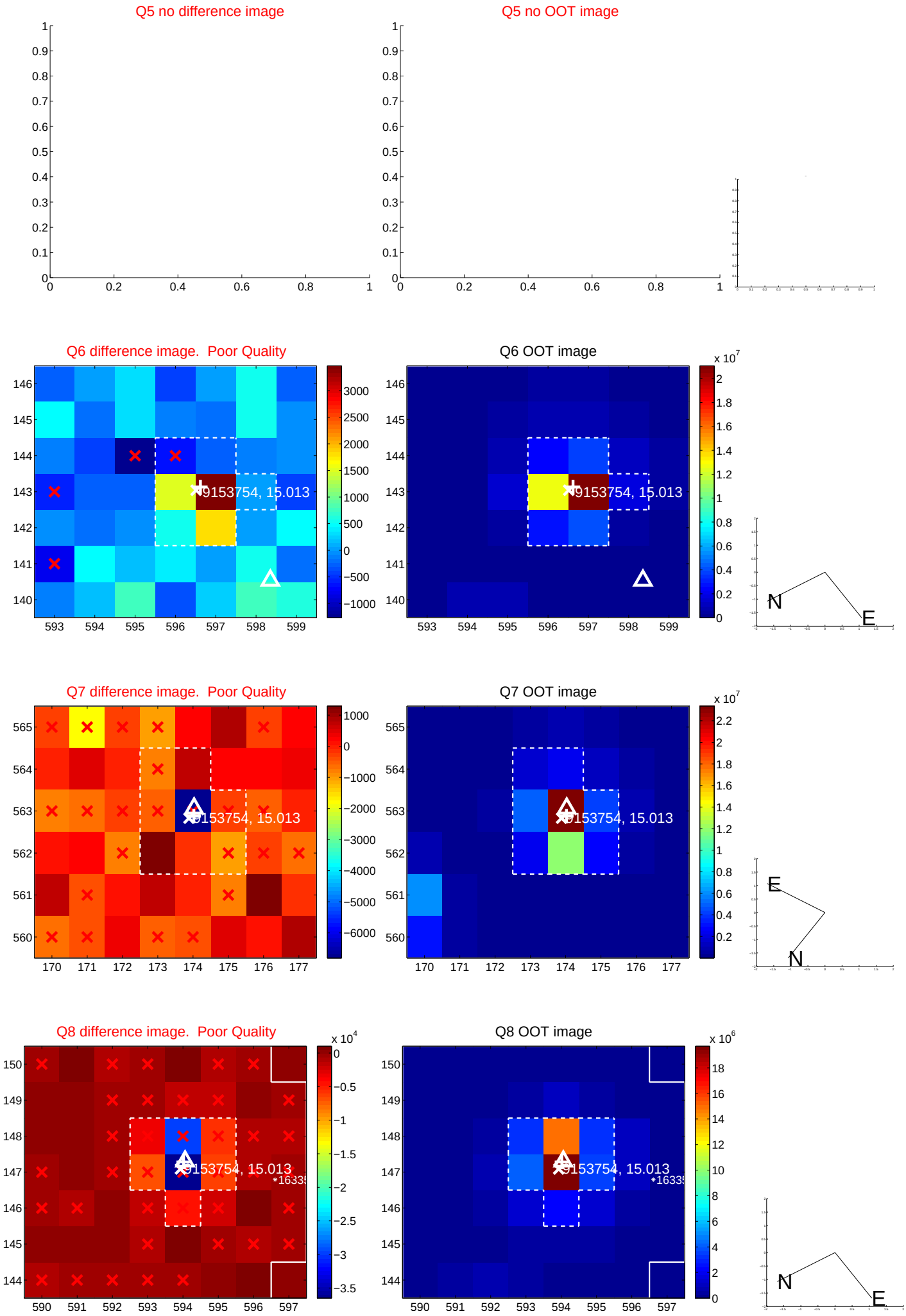
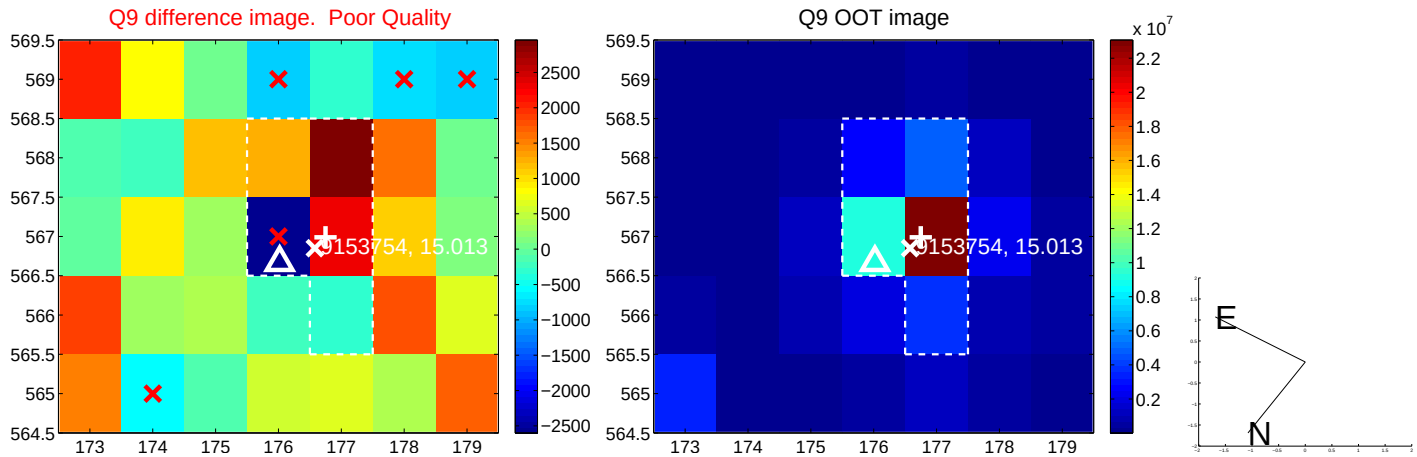
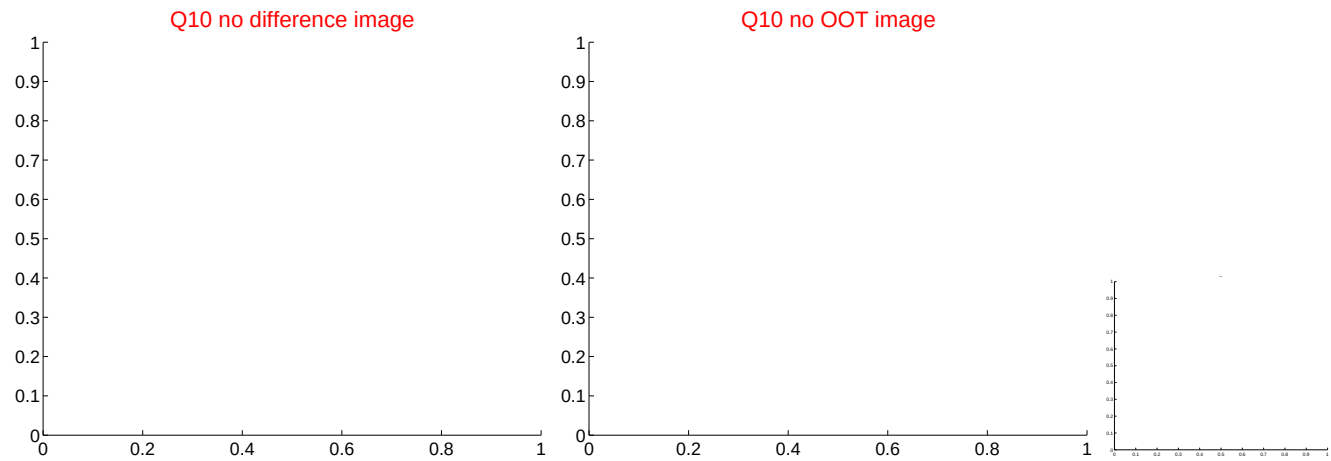
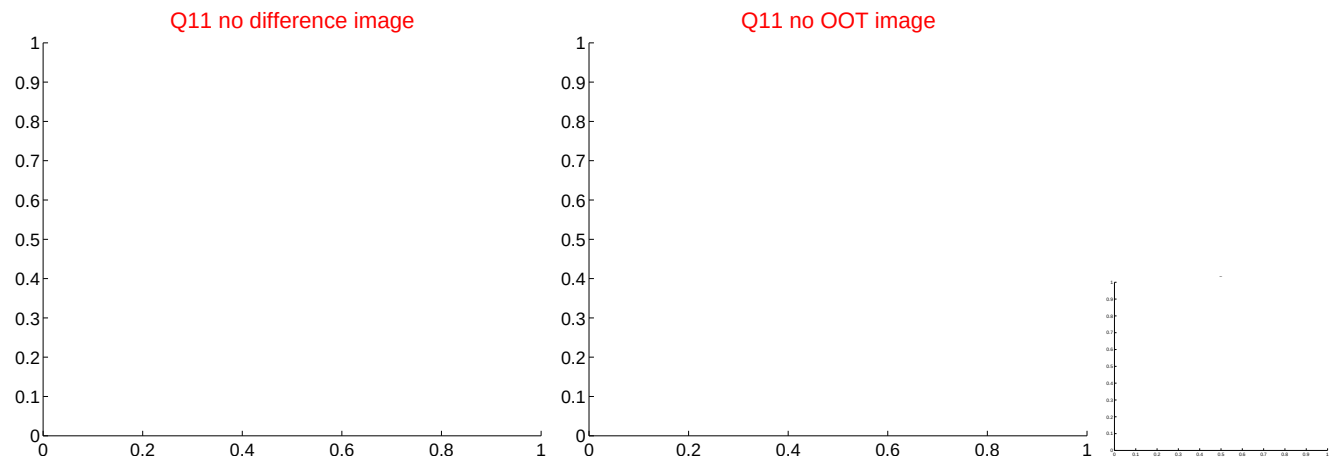
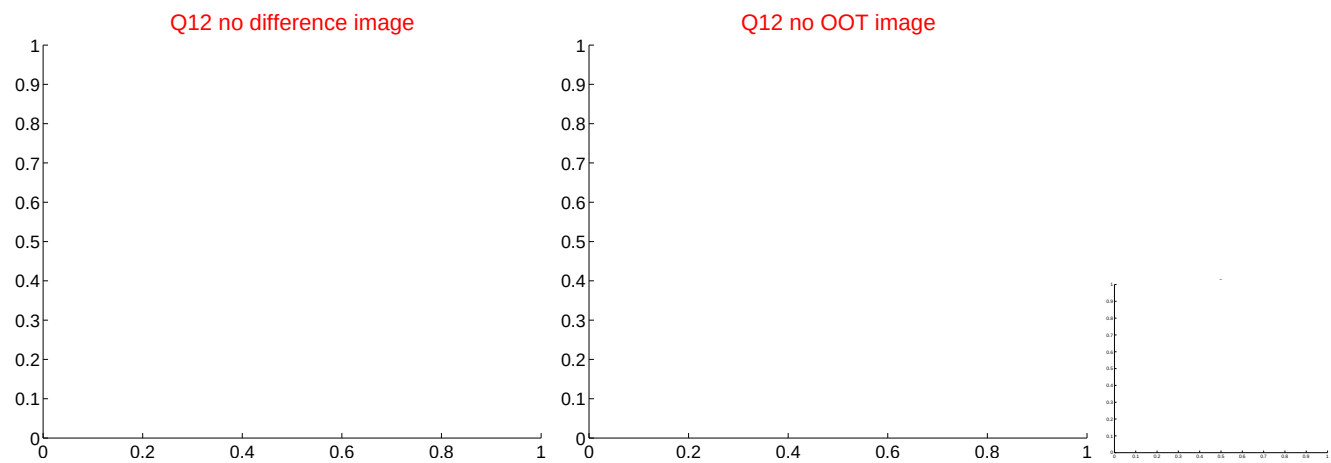


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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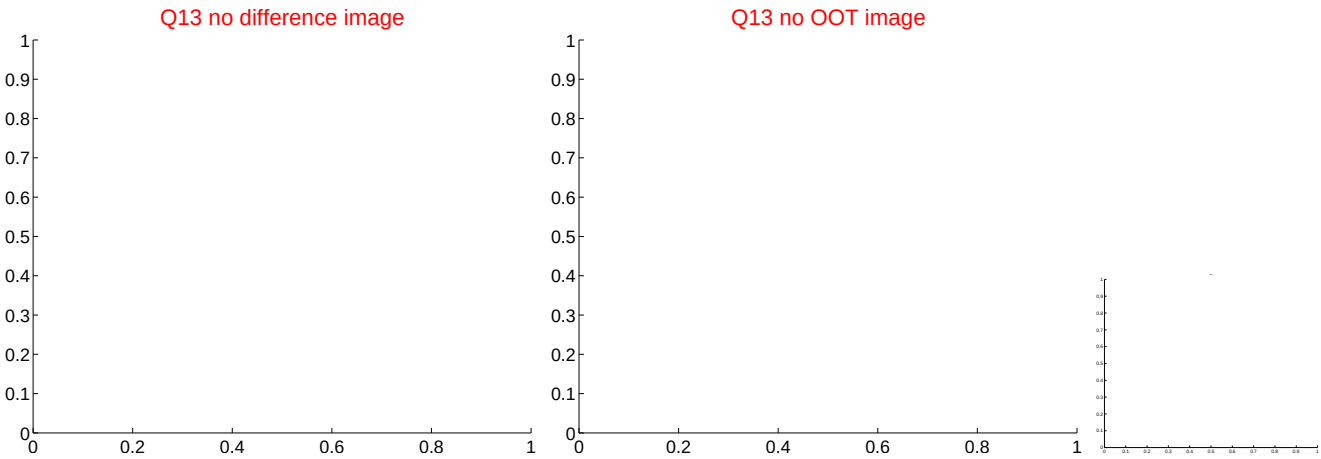


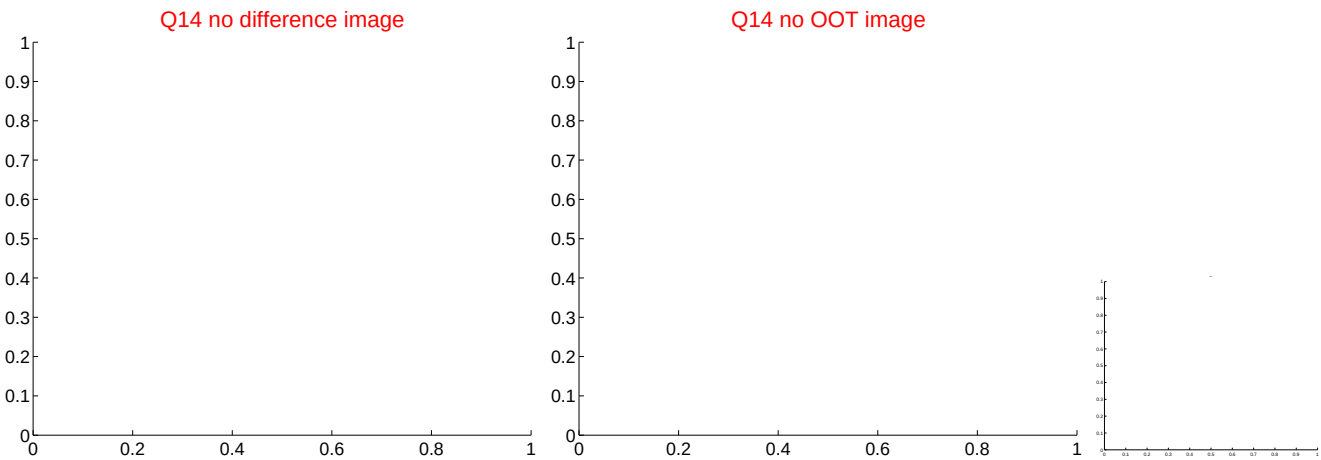


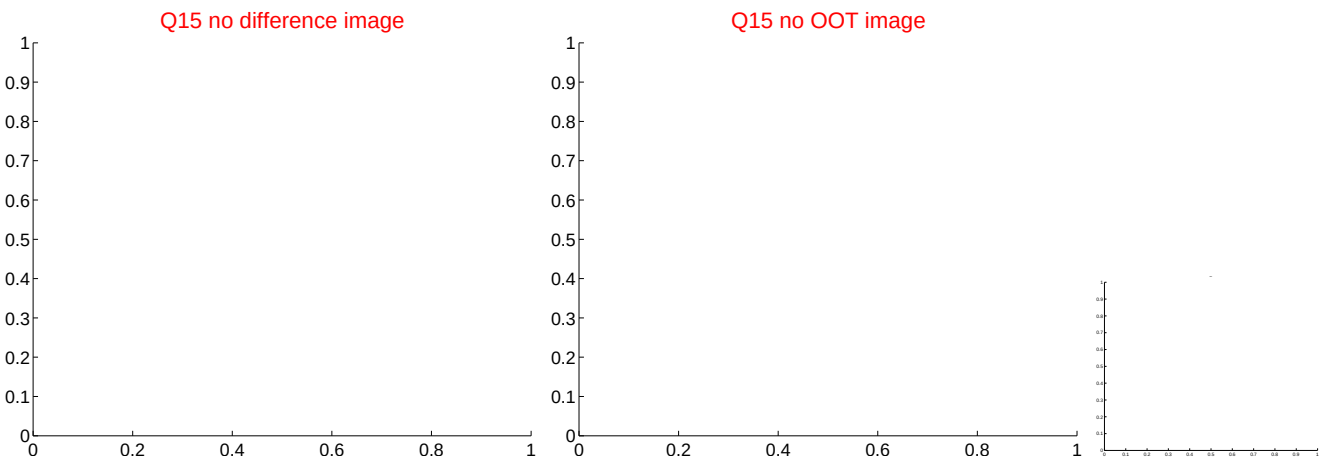


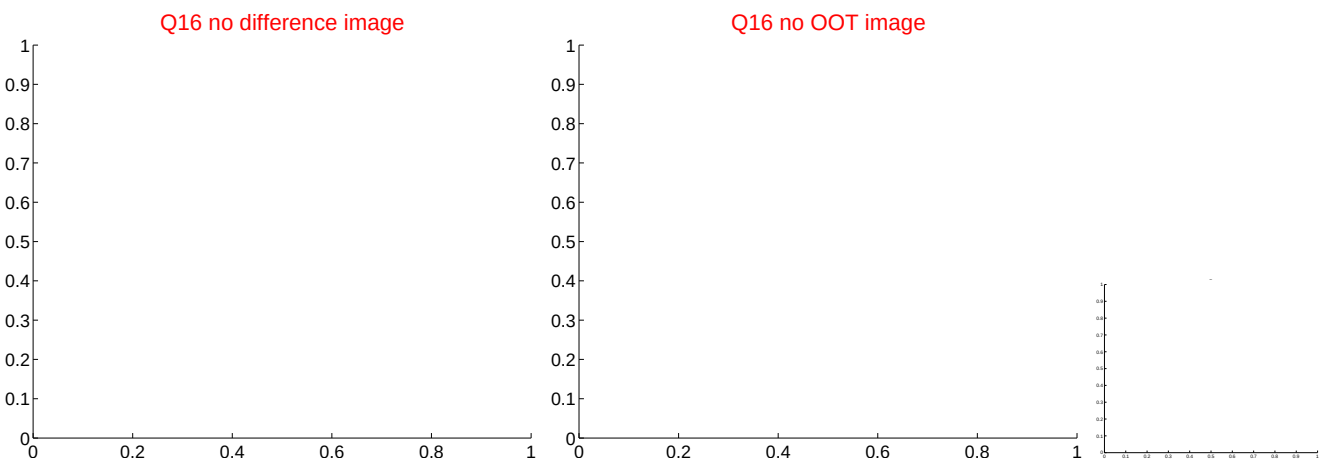

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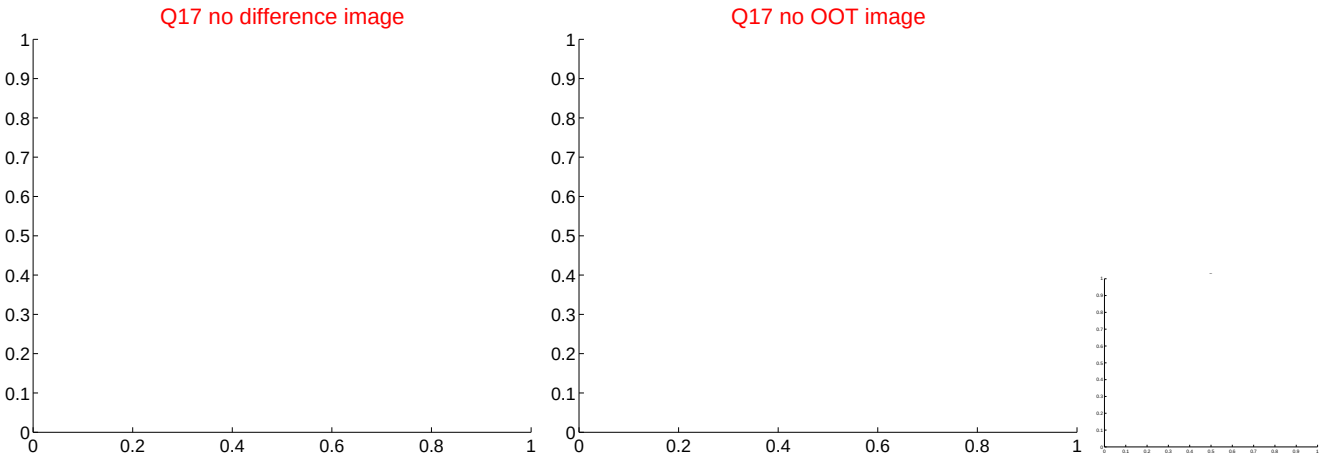
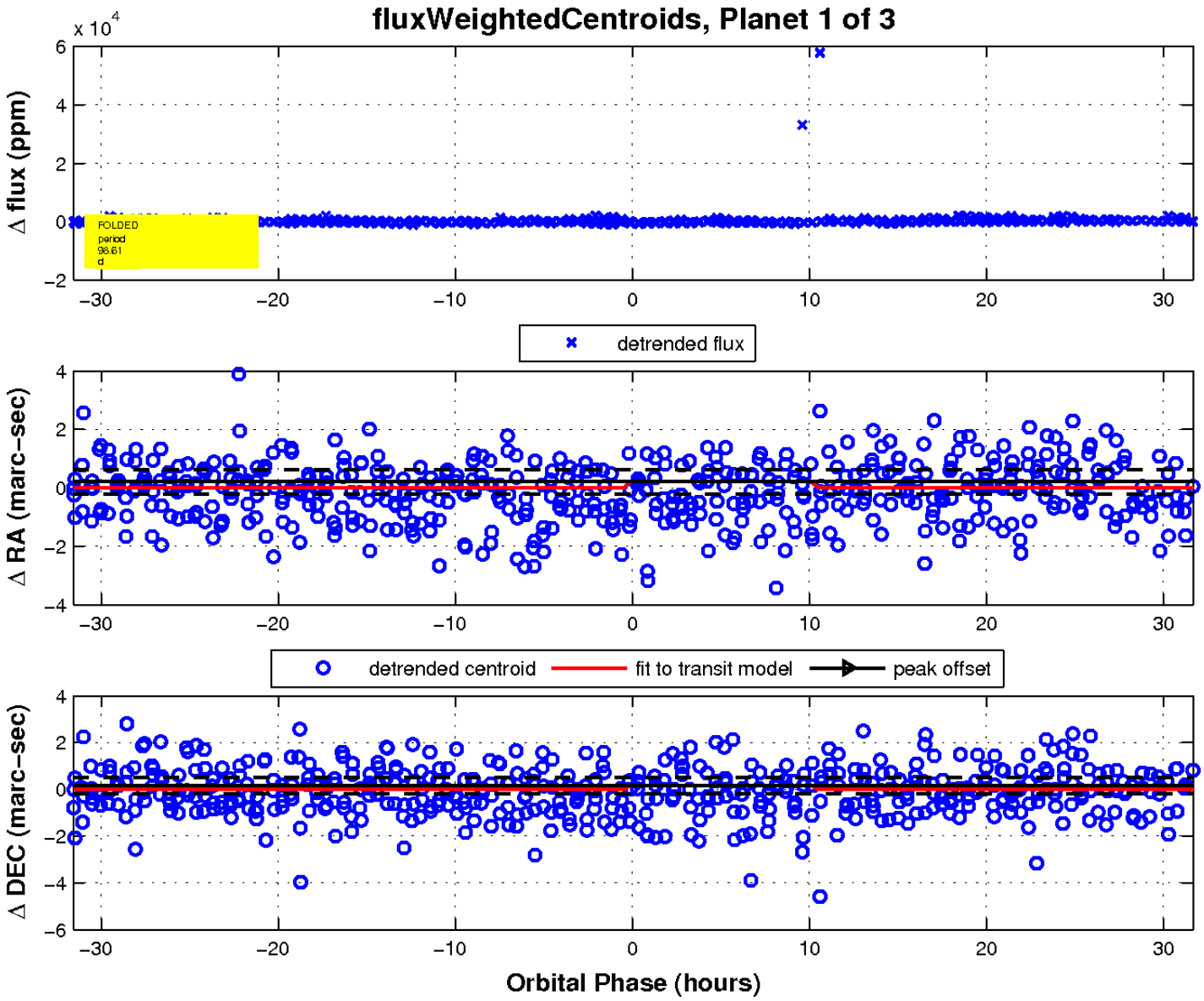
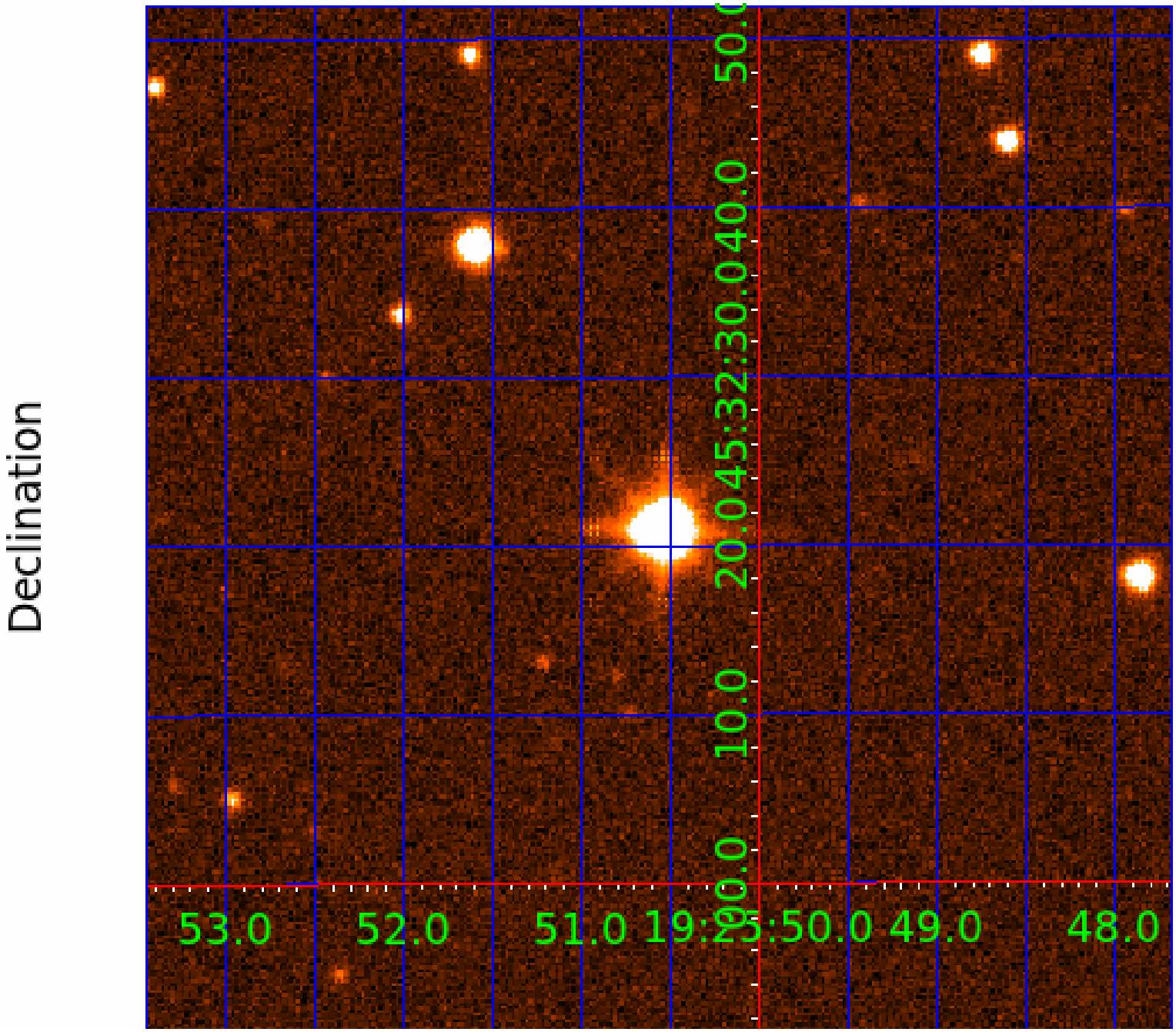


**UKIRT Image**


Declination
53.0
52.0
51.0
19:25:50.0
49.0
48.0
00.0
10.0
20.0
45:32:30.0
40.0
50.0

# KIC 009153754

## Q1-17 DR25 TCE Parameters

| TCE | Run Type | KOI? | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | $R_\star$ ($R_\odot$) | $T_\star$ (K) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| 009153754-02 | OBS | No | 89.296351 | 159.715893 | 1071.2 | 16.131 | 8.9 | 11.3 | 0.18 | 3193 | 0.72 | 0.07 |
| 009153754-03 | OBS | No | 123.431100 | 151.165653 | 355.7 | 9.295 | 8.4 | 2.8 | 0.18 | 3193 | 0.36 | 0.04 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 009153754-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS |
| 009153754-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—CENT_FEW_MEAS |
| 009153754-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—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—CENT_FEW_DIFFS |

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

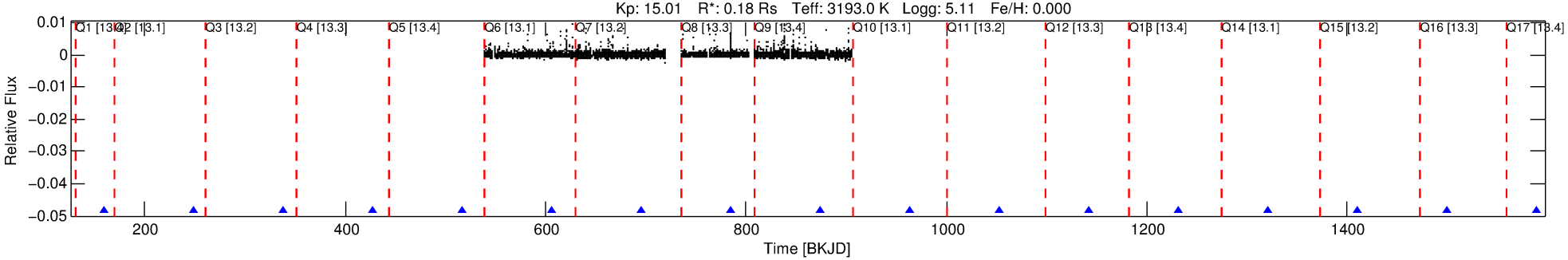
## Ephemeris Match Information For 009153754-02

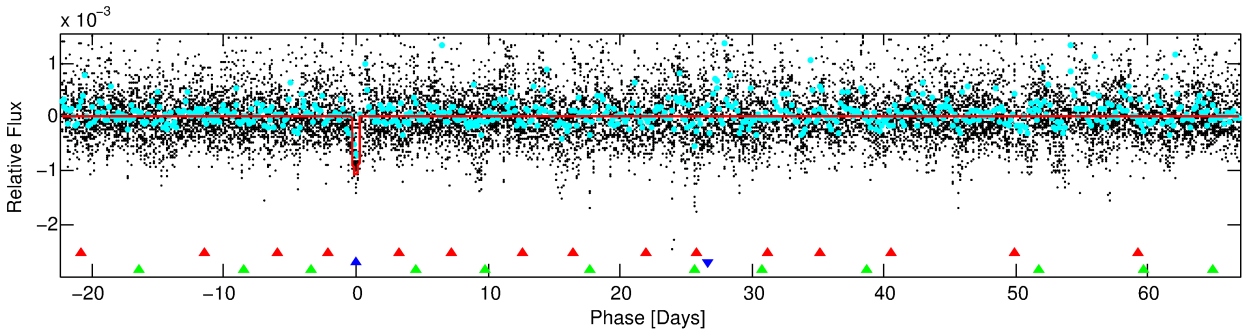
No Significant Match Found

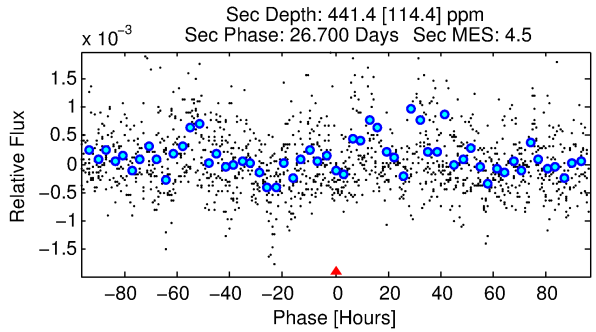
# DV One-Page Summary

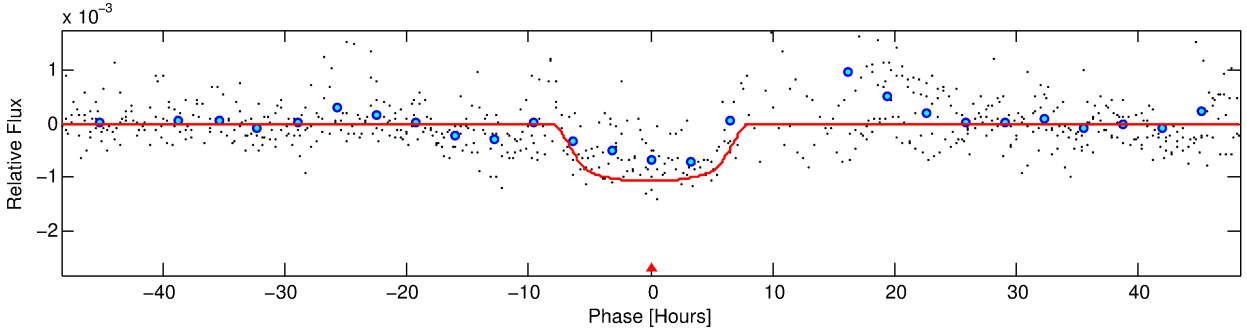
**KIC: 9153754 Candidate: 2 of 3 Period: 89.296 d**

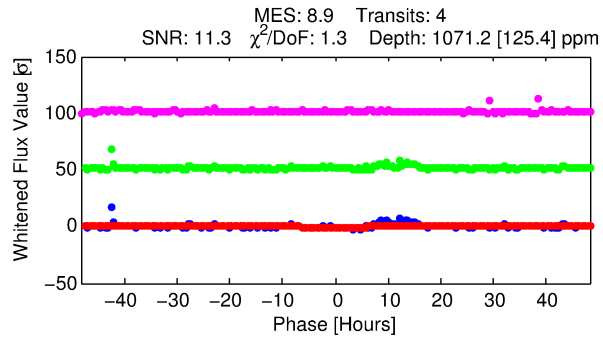
Kp: 15.01 R*: 0.18 Rs Teff: 3193.0 K Logg: 5.11 Fe/H: 0.000

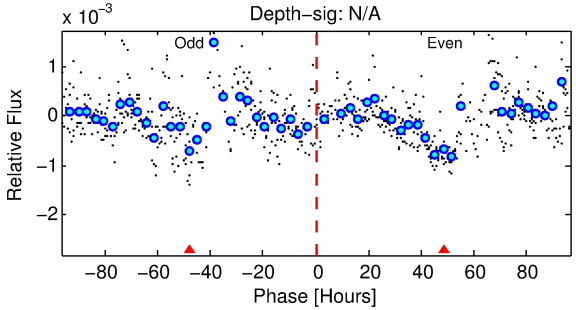


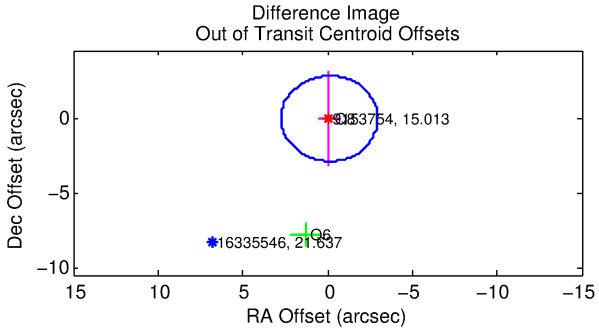




DV Fit Results:

Period = 89.29635 [0.01435] d
Epoch = 159.7159 [0.0921] BKJD
Rp/R* = 0.0360 [0.0031]
a/R* = 21.34 [4.92]
b = 0.91 [0.05]

Seff = 0.07 [0.00]
Teq = 131 [0] K
Rp = 0.72 [0.06] Re
a = 0.2116 [0.0000] AU

Ag = 21071.10 [6534.49] [3.22σ]
Teffp = 2440 [189] K [12.21σ]

DV Diagnostic Results:

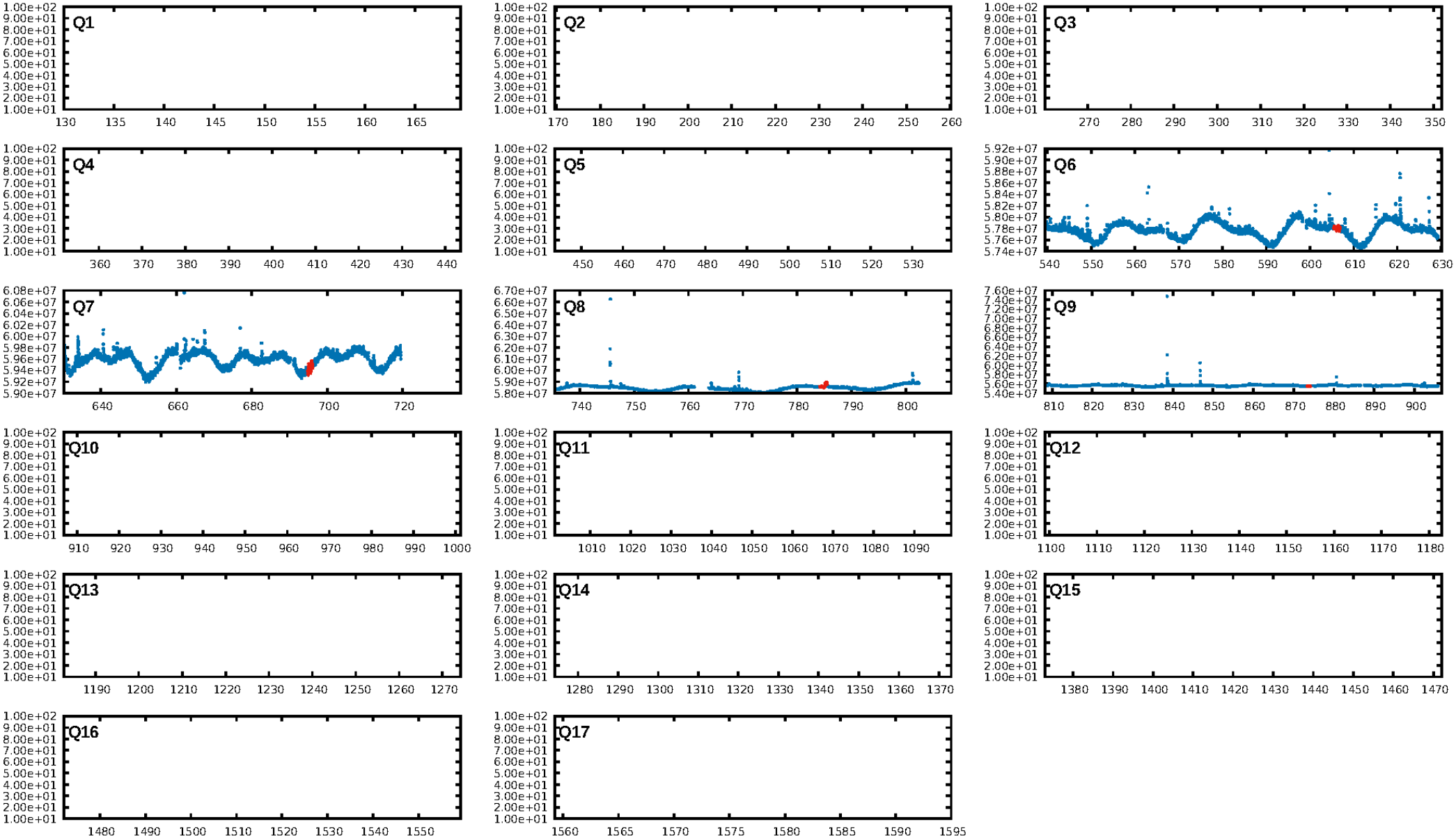
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [10.15σ]
ModelChiSquare2−sig: 0.0%
ModelChiSquareGof−sig: 91.6%
Bootstrap−pfa: 2.05e−11
RollingBand−fgt: 1.00 [4/4]
GhostDiagnostic−chr: 0.8657

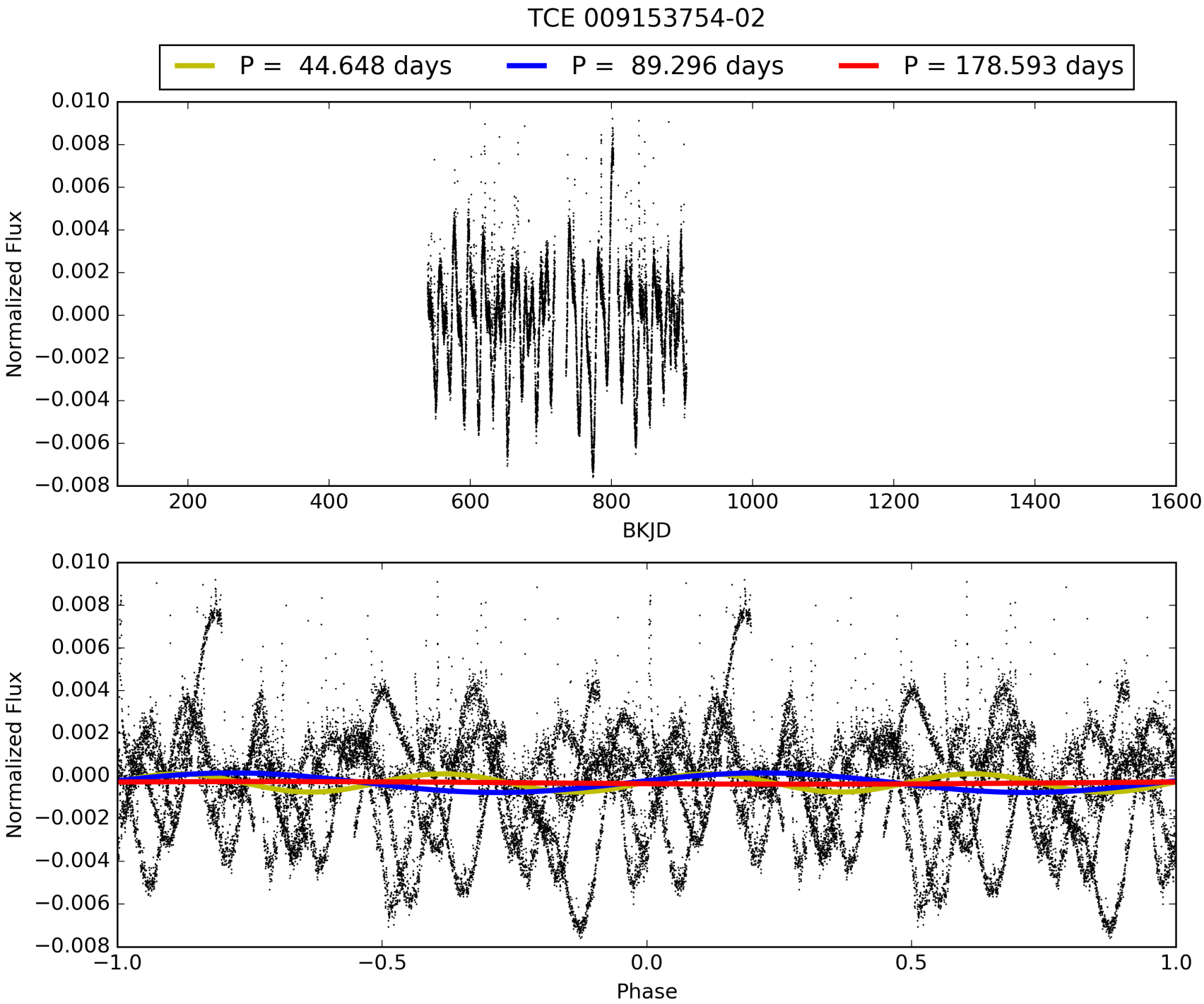
Centroid−sig: 1.4%
Centroid−so: 0.348 arcsec [0.85σ]
OotOffset−rm: 0.122 arcsec [0.13σ]
KicOffset−rm: 0.953 arcsec [0.47σ]
OotOffset−st: 1/0/1/0 [2]
KicOffset−st: 1/0/1/0 [2]
DiffImageQuality−fgm: 0.50 [1/2]
DiffImageOverlap−fno: 1.00 [3/3]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30−Jan−2016 18:05:05 Z**

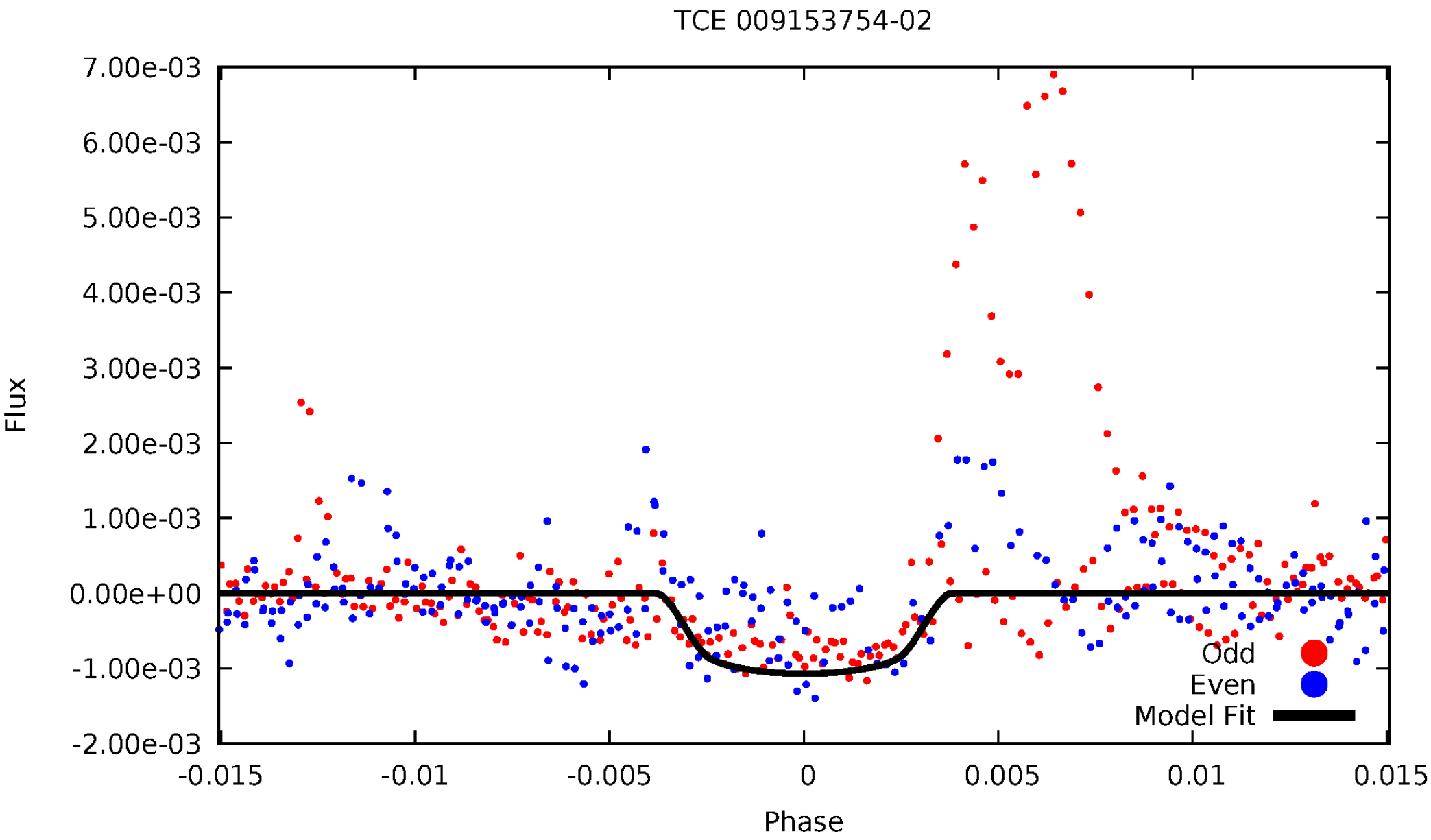
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 009153754-02, PDC Light Curves

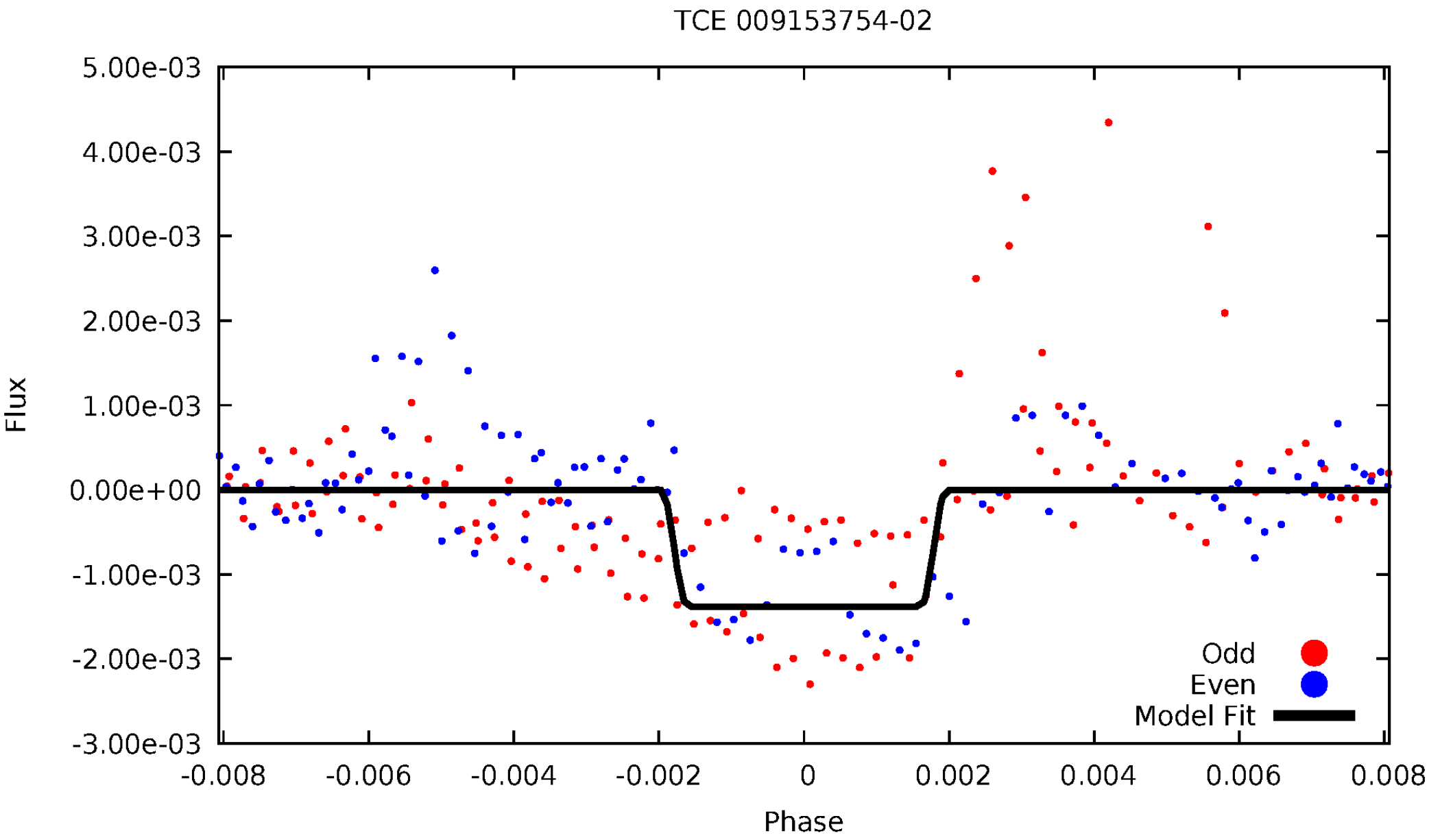



TCE 009153754-02
P = 44.648 days
P = 89.296 days
P = 178.593 days
Normalized Flux
BKJD
Normalized Flux
Phase

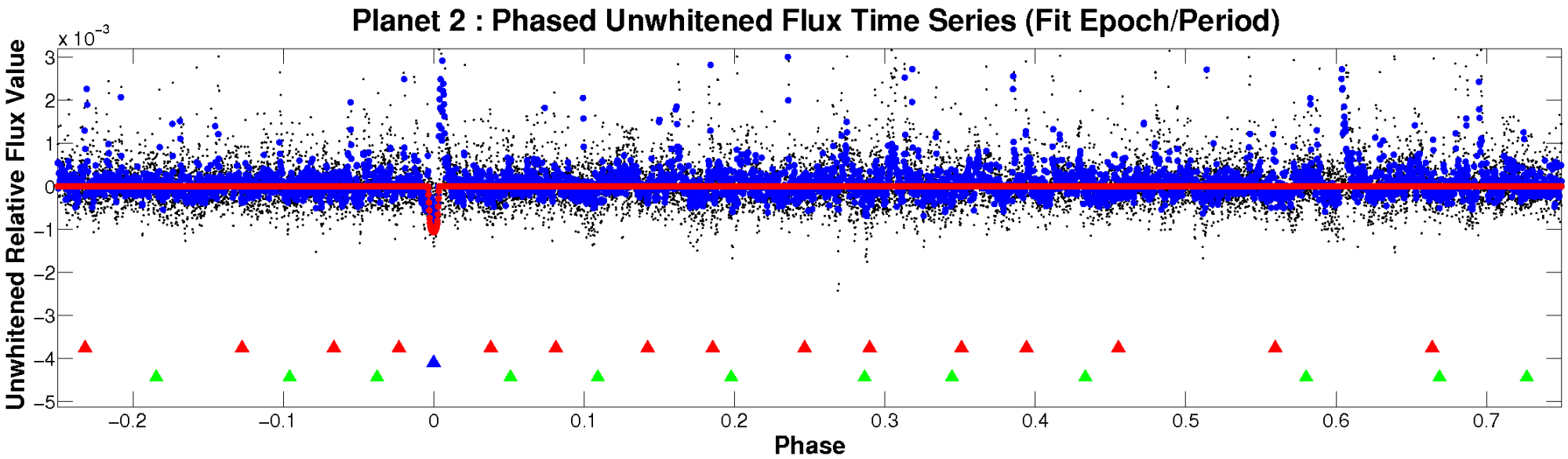
**DV Odd/Even**

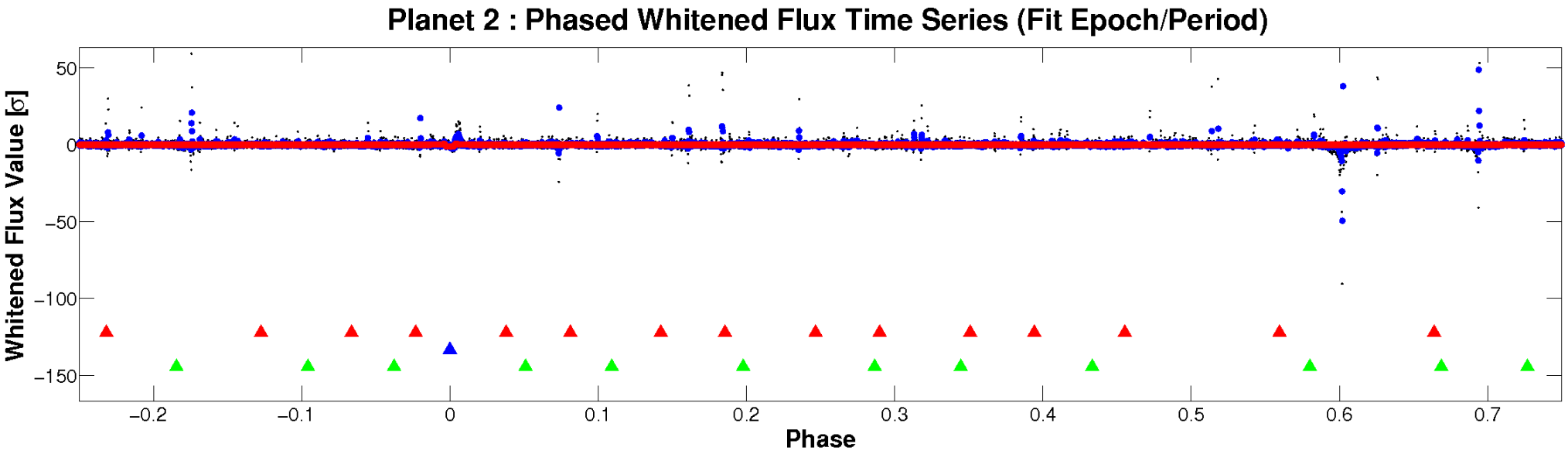

TCE 009153754-02
7.00e-03
6.00e-03
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
Flux
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
Phase
Odd
Even
Model Fit

**ALT Odd/Even**


TCE 009153754-02
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
Flux
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit

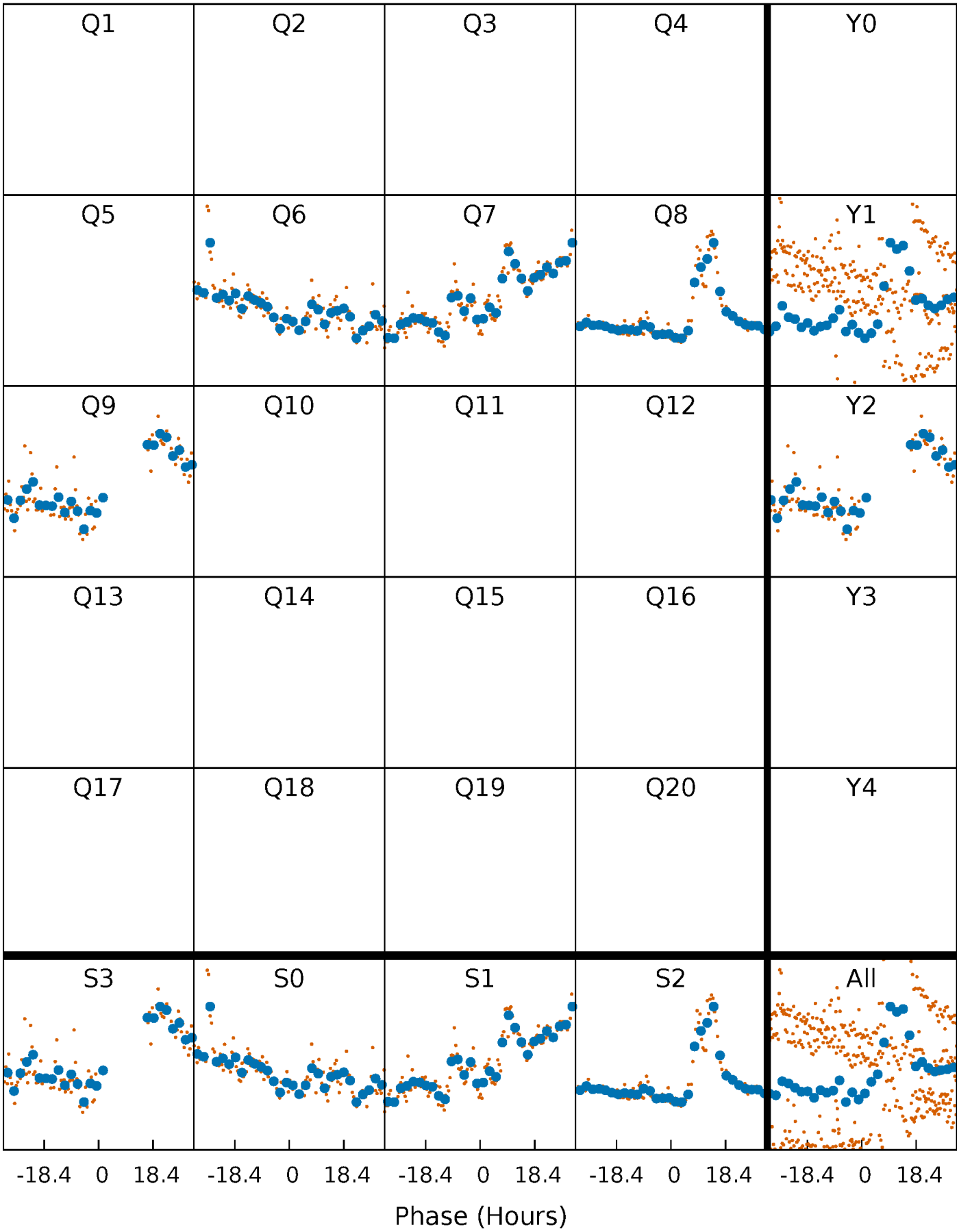
# Non-Whitened Vs. Whitened Light Curve



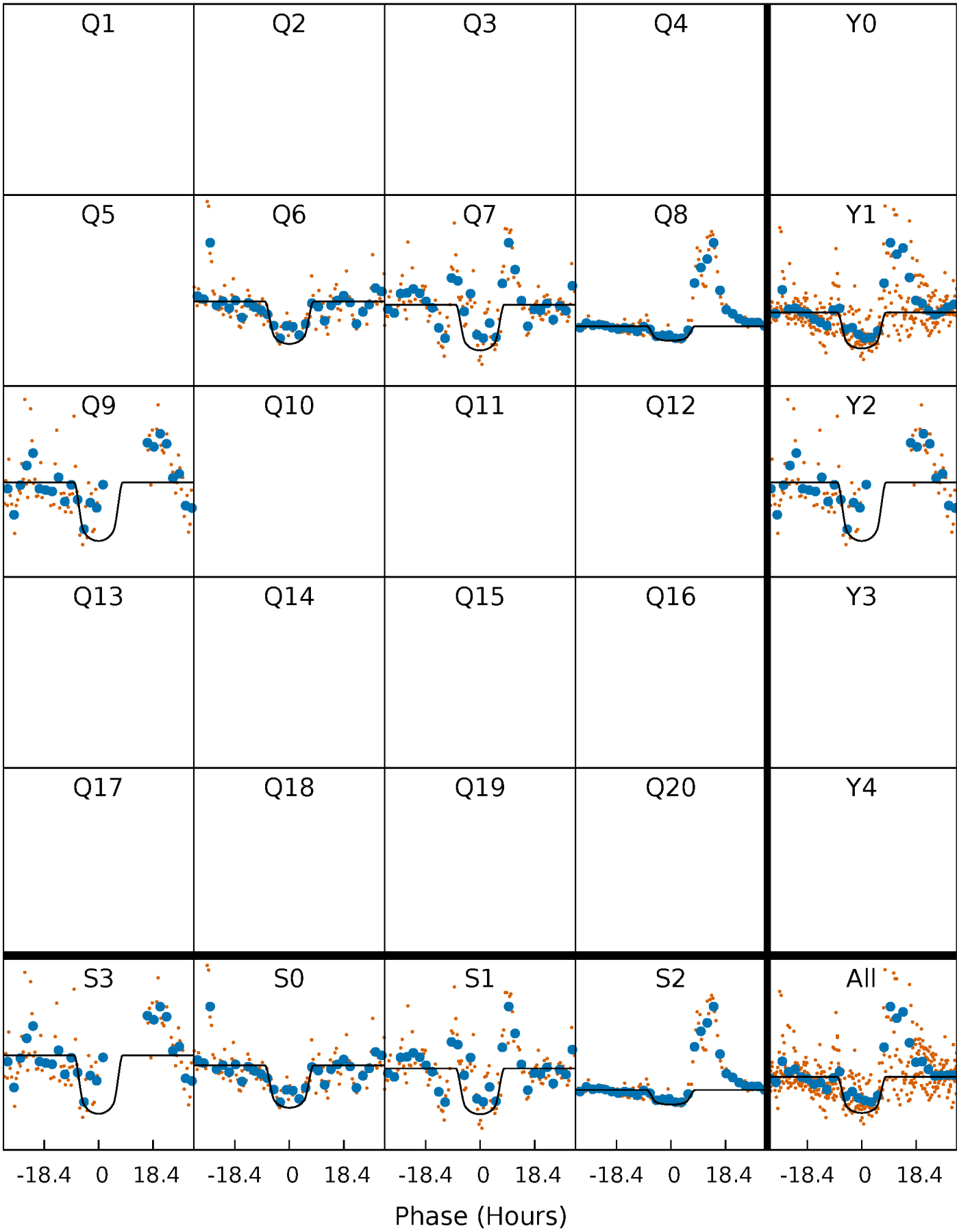
# PDC Quarter-Phased Transit Curves

TCE 009153754-02 P= 89.296351 Days $T_0$=159.715893 (BKJD)



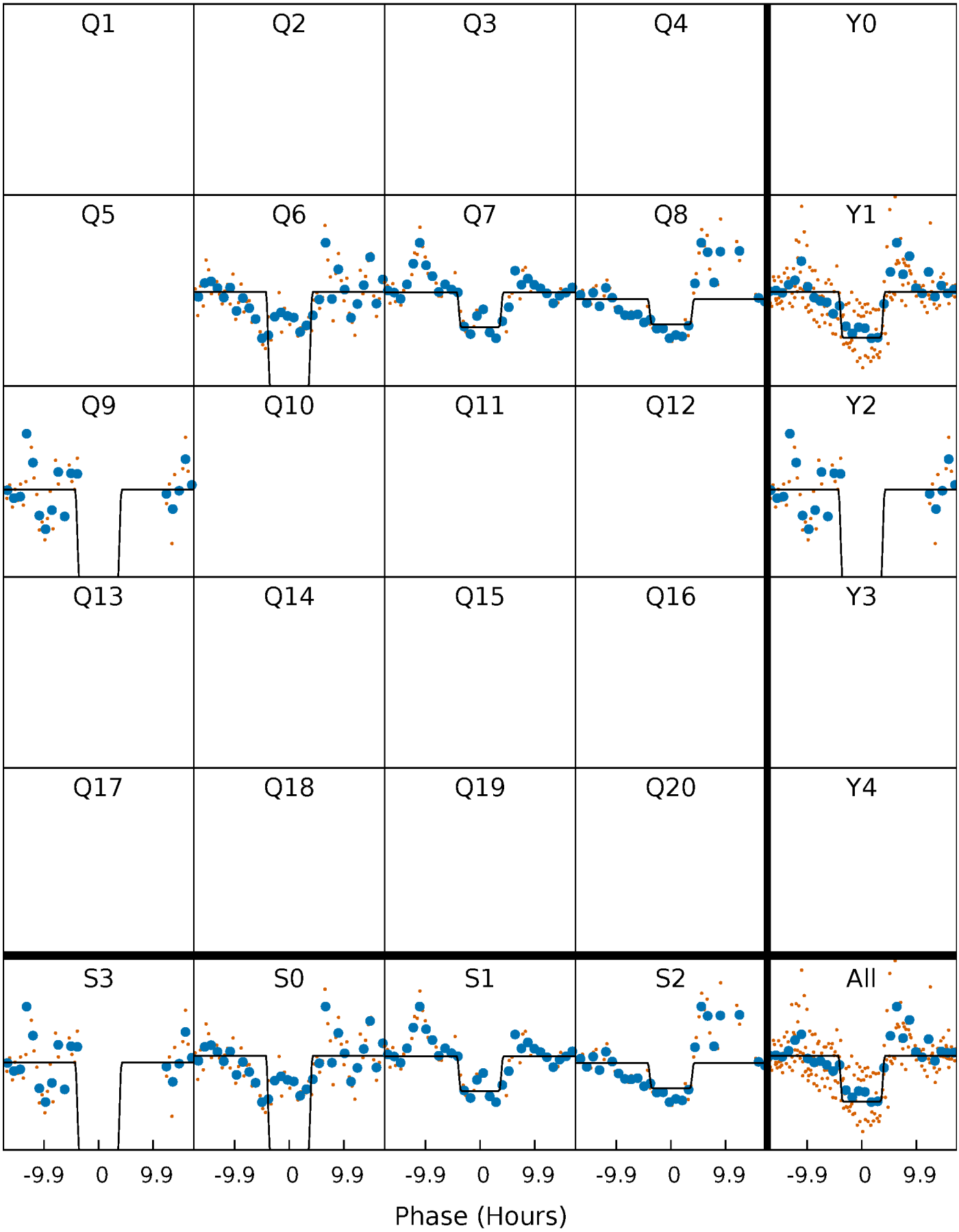
# DV Quarter-Phased Transit Curves

TCE 009153754-02 P= 89.296351 Days $T_0$=159.715893 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

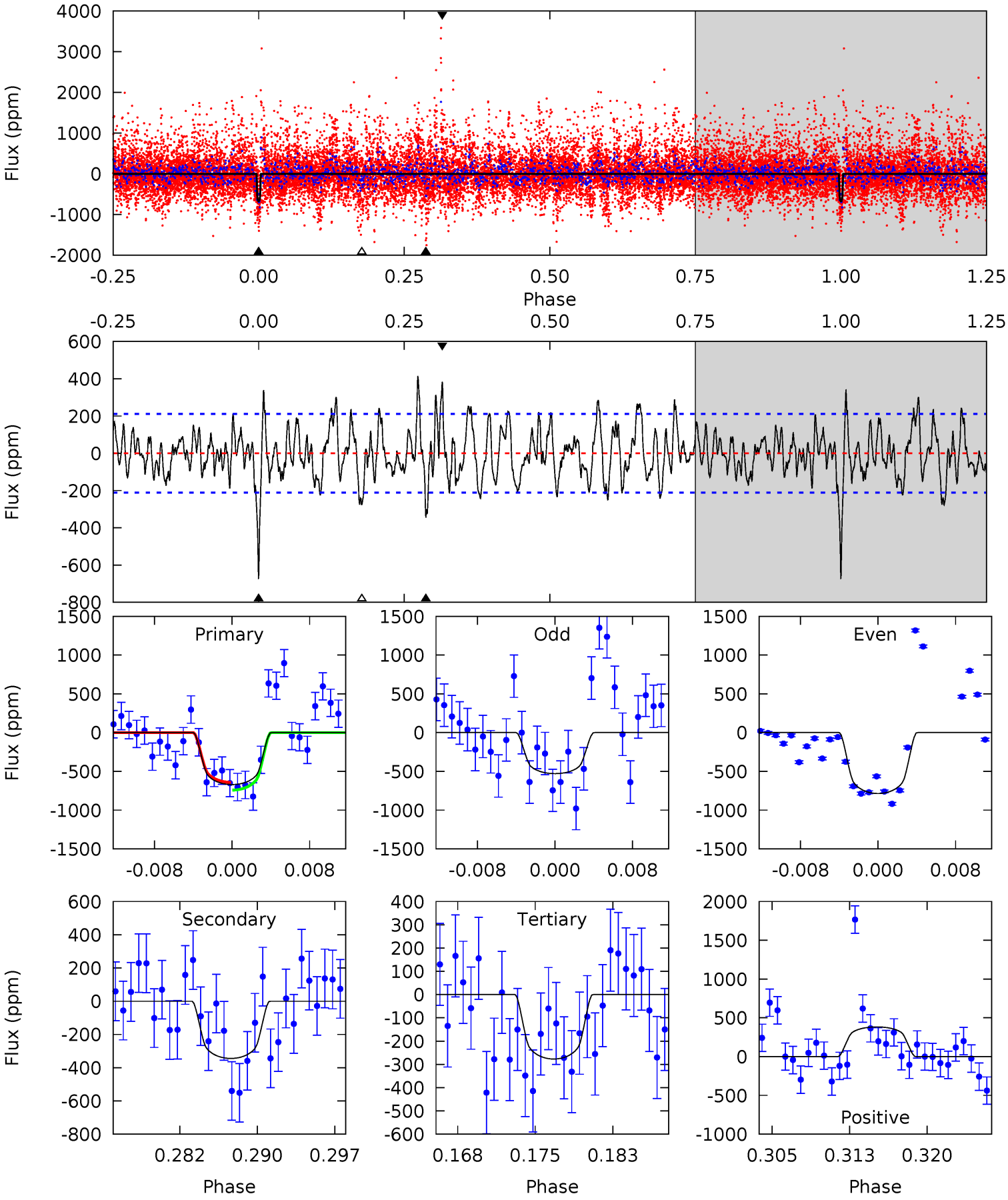
TCE 009153754-02 P= 89.342336 Days $T_0$=159.531434 (BKJD)



# DV Model-Shift Uniqueness Test

009153754-02, P = 89.296351 Days, E = 159.715893 Days

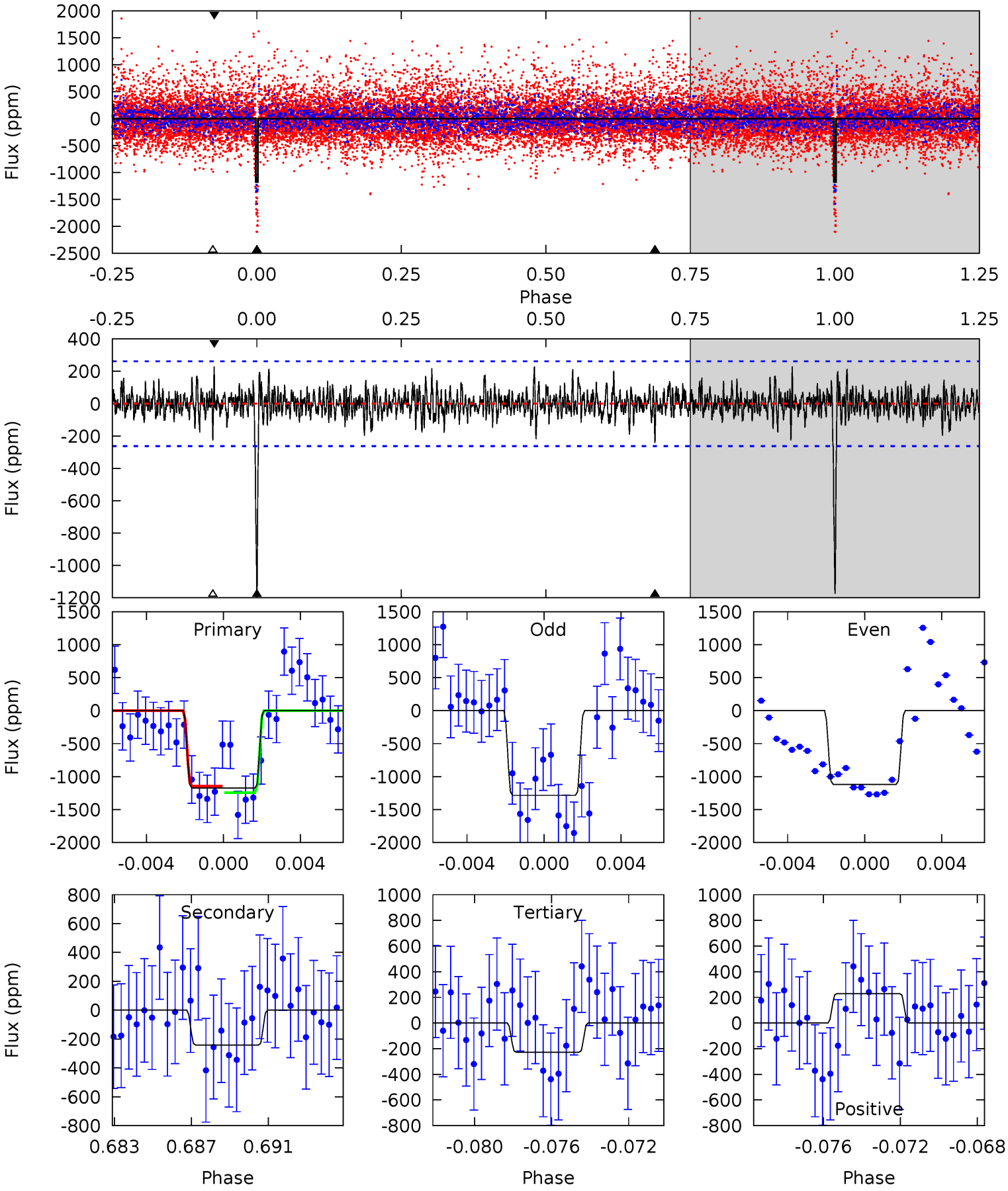
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.1 | 8.28 | 6.66 | 9.20 | 5.08 | 2.67 | 2.82 | 9.45 | 6.90 | 1.62 | -0.93 | 2.70 | 0.96 | 0.38 | 1.17 |



# Alt Model-Shift Uniqueness Test

009153754-02, P = 89.342336 Days, E = 159.531434 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23.3 | 4.79 | 4.51 | 4.55 | 5.21 | 2.89 | 1.21 | 18.8 | 18.8 | 0.28 | 0.24 | 1.54 | 0.90 | 0.16 | 1.00 |



Stellar Parameters For KIC 009153754

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $3193^{+-1}_{-1}$ | $5.113^{+-1.000}_{-1.000}$ | $0.000^{+-1.000}_{-1.000}$ | $0.183^{+-1.000}_{-1.000}$ | $0.159^{+-1.000}_{-1.000}$ | $36.410^{+-1.000}_{-1.000}$ |
| | +0%/-0% | +20%/-20% | +inf%/-inf% | +546%/-546% | +629%/-629% | +3%/-3% |
| Source | PHO54 | PHO54 | PHO54 | BTSL | | |

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

Secondary Eclipse Parameters for KIC 009153754-02 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -344±42 | $0.78^{+0.19}_{-0.19}$ | $185^{+17}_{-16}$ | $2667^{+160}_{-169}$ | $15670^{+6090}_{-4040}$ |
| Alt. | -241±50 | $0.81^{+0.20}_{-0.20}$ | $184^{+17}_{-16}$ | $2511^{+162}_{-160}$ | $10277^{+4214}_{-3281}$ |

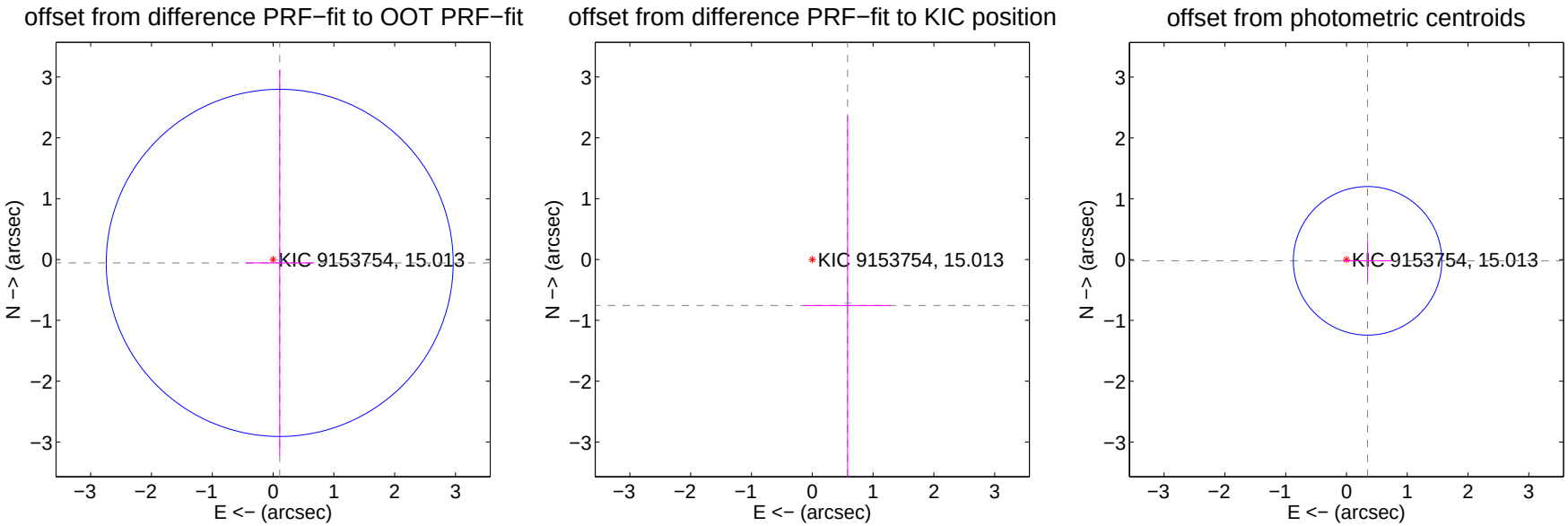
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

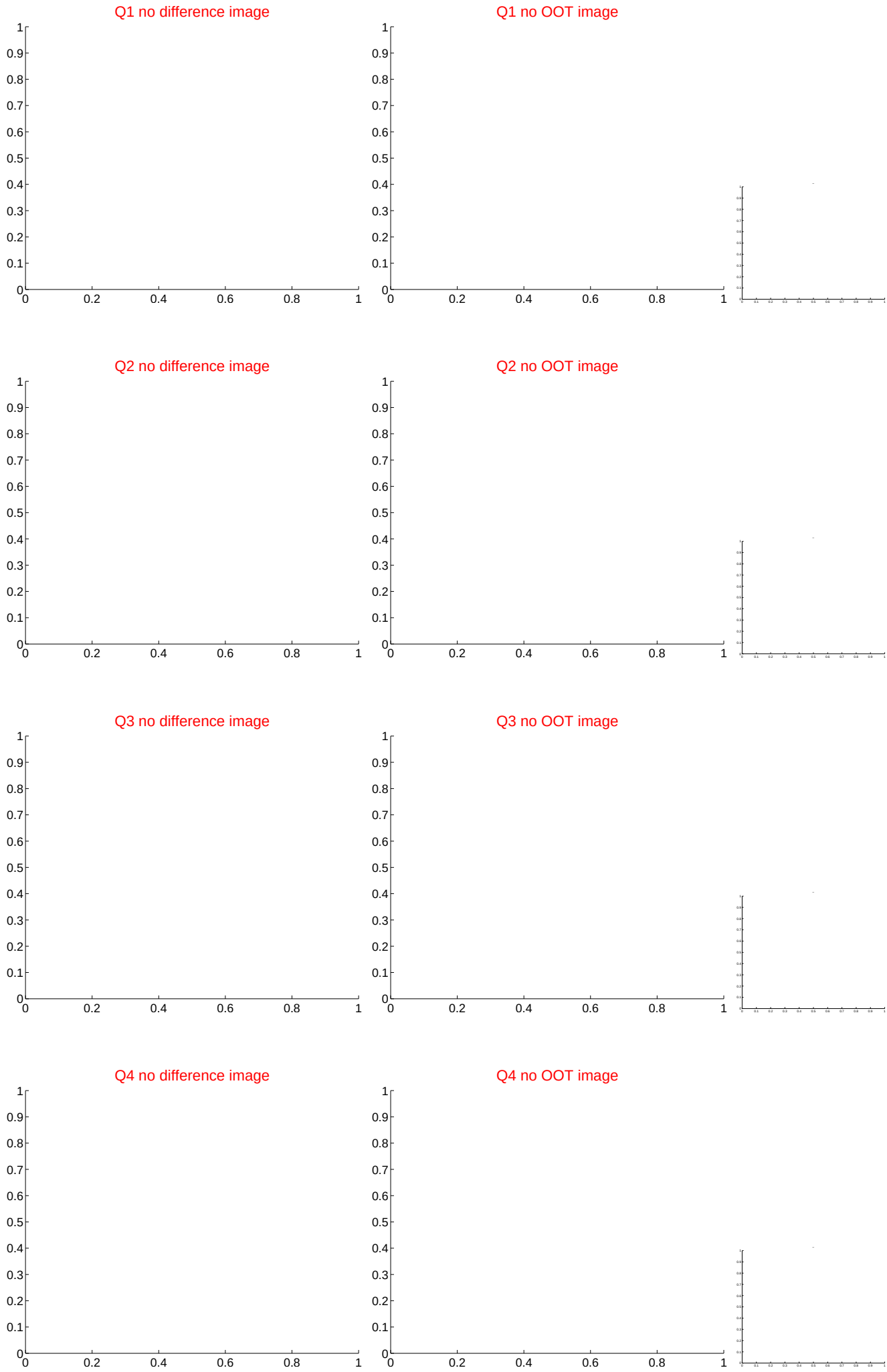
Supplemental centroid analysis for 009153754-02. Kepler magnitude: 15.01. Transit SNR 11.33
There are 1 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.85 arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | 0.122 ± 0.951 | 0.13 | -0.109 ± 0.563 | -0.056 ± 3.170 |
| PRF-fit source offset from KIC position | 0.953 ± 2.042 | 0.47 | -0.579 ± 0.713 | -0.756 ± 3.117 |
| photometric centroid source offset | 0.35 ± 0.41 | 0.85 | -0.35 ± 0.41 | -0.02 ± 0.34 |

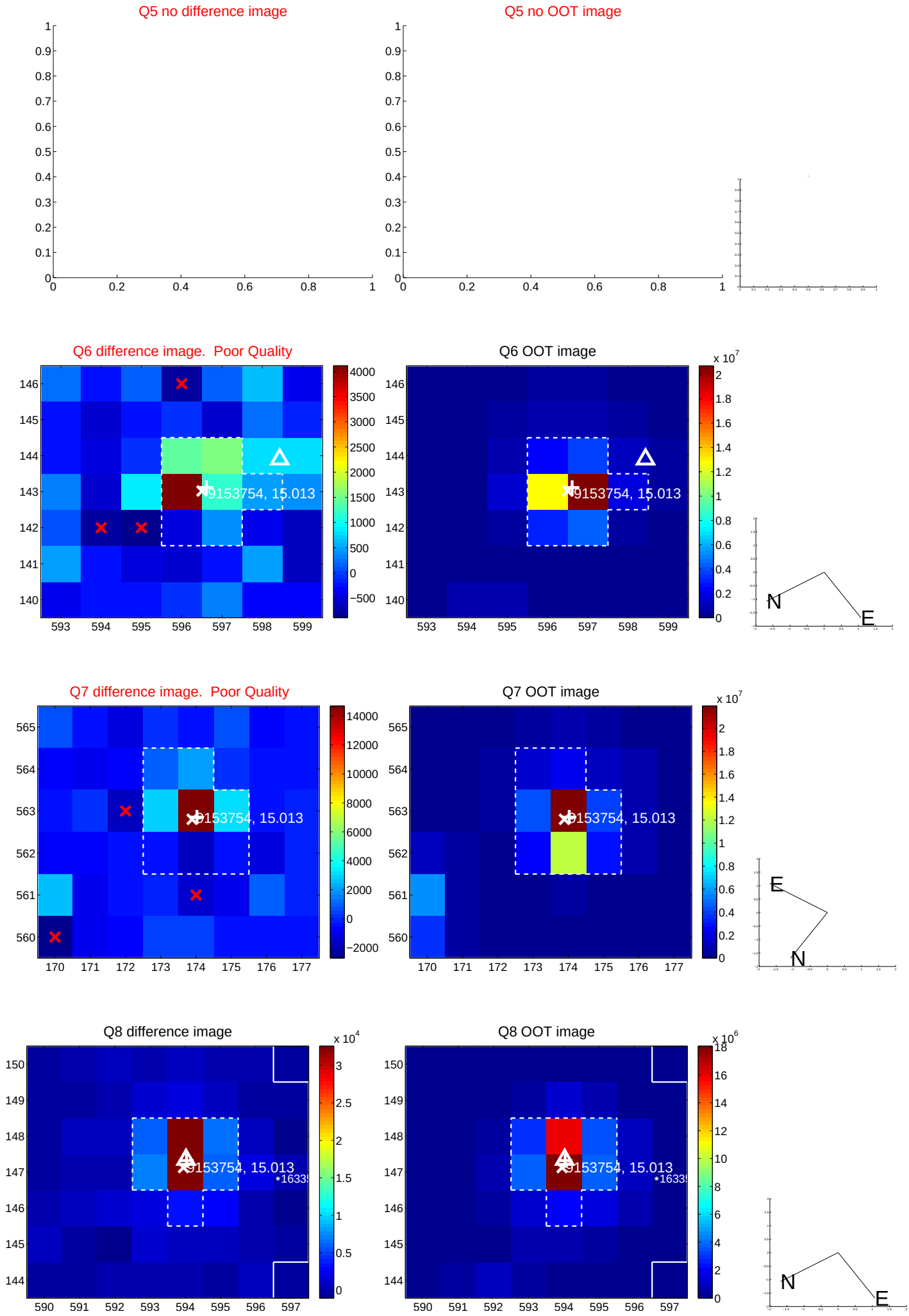



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

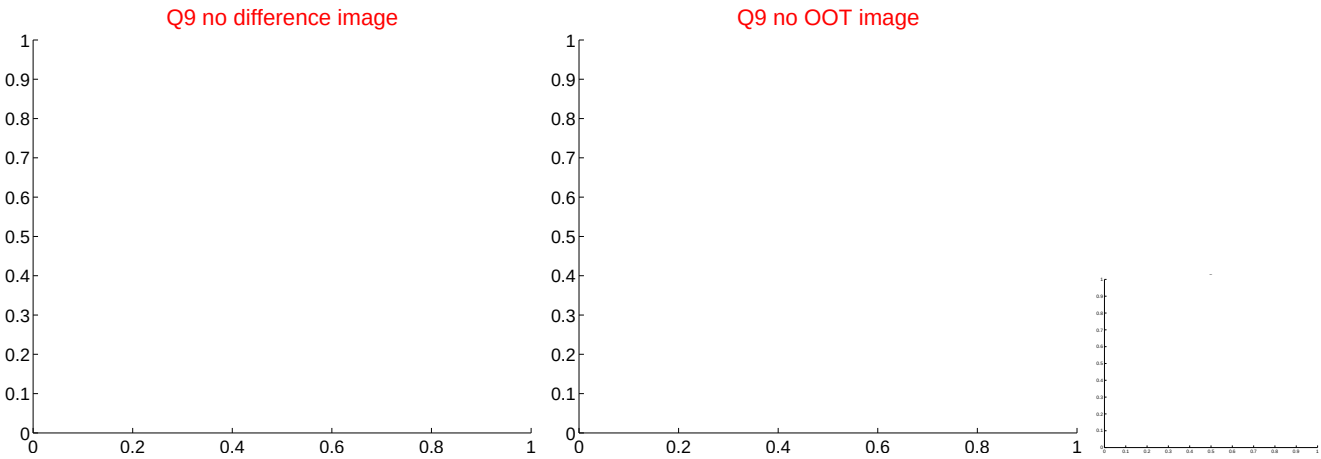
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

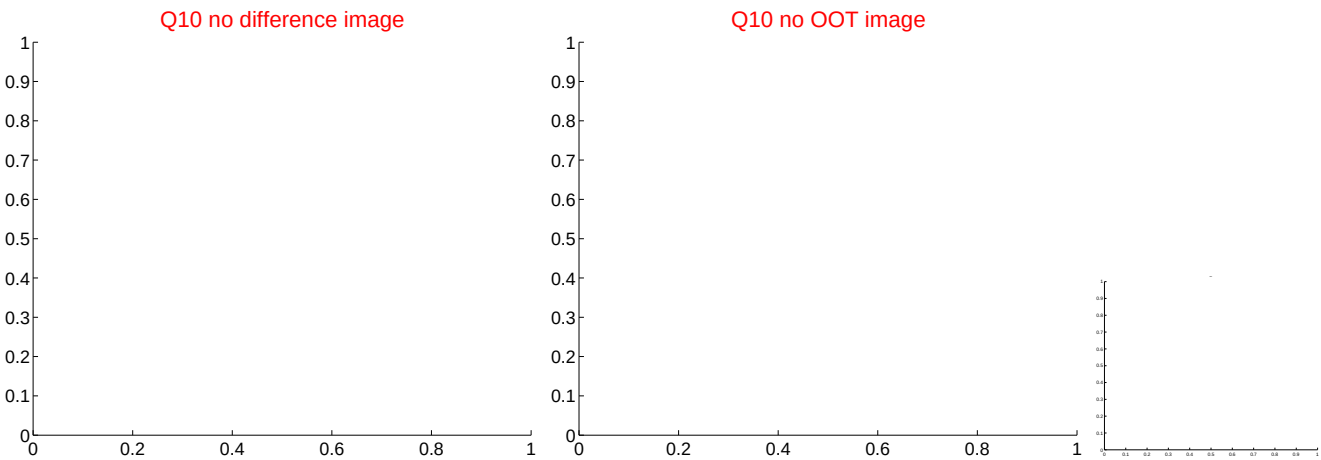


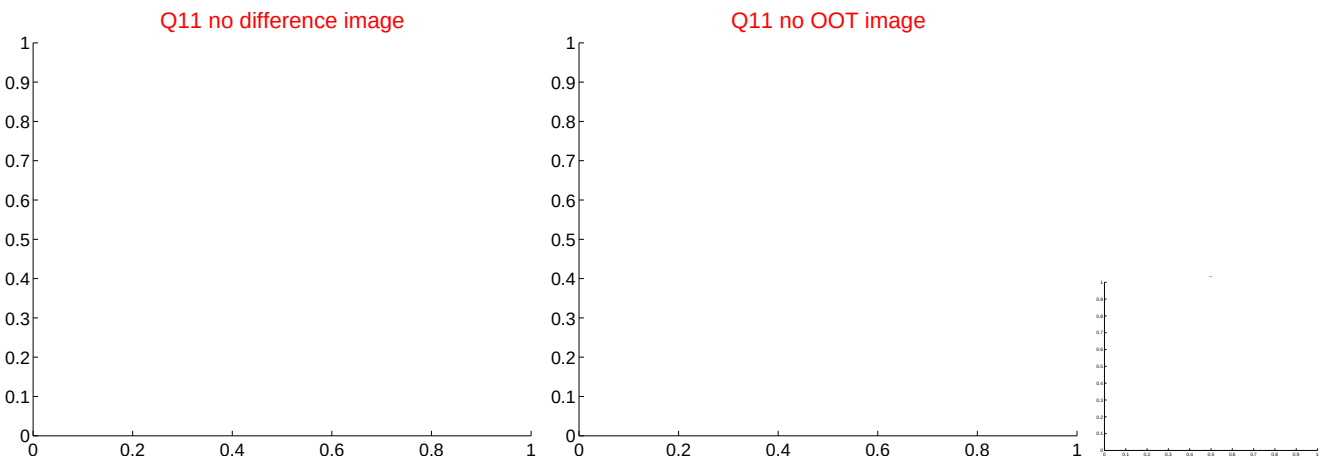
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

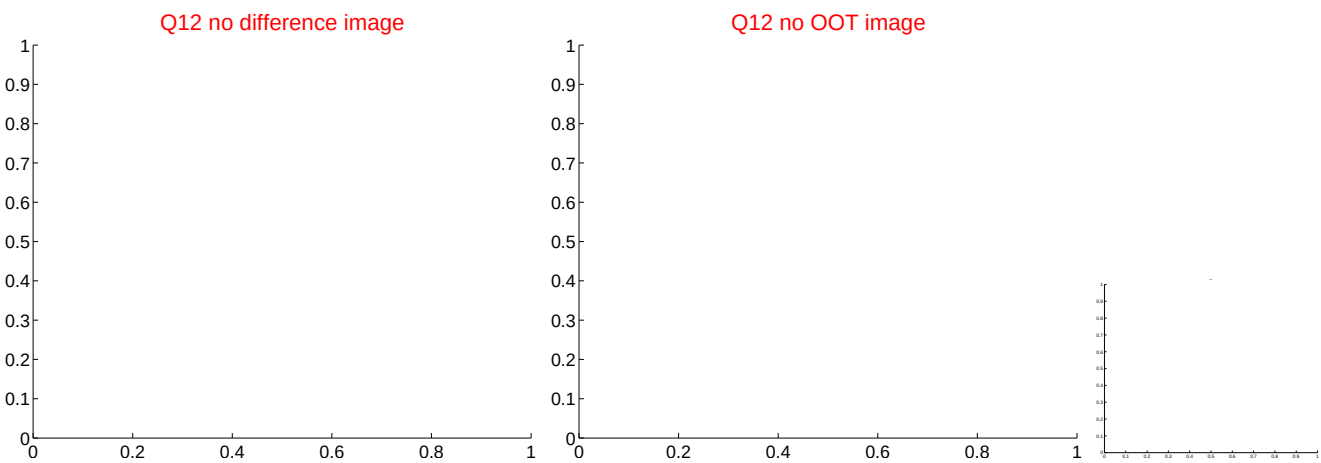


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

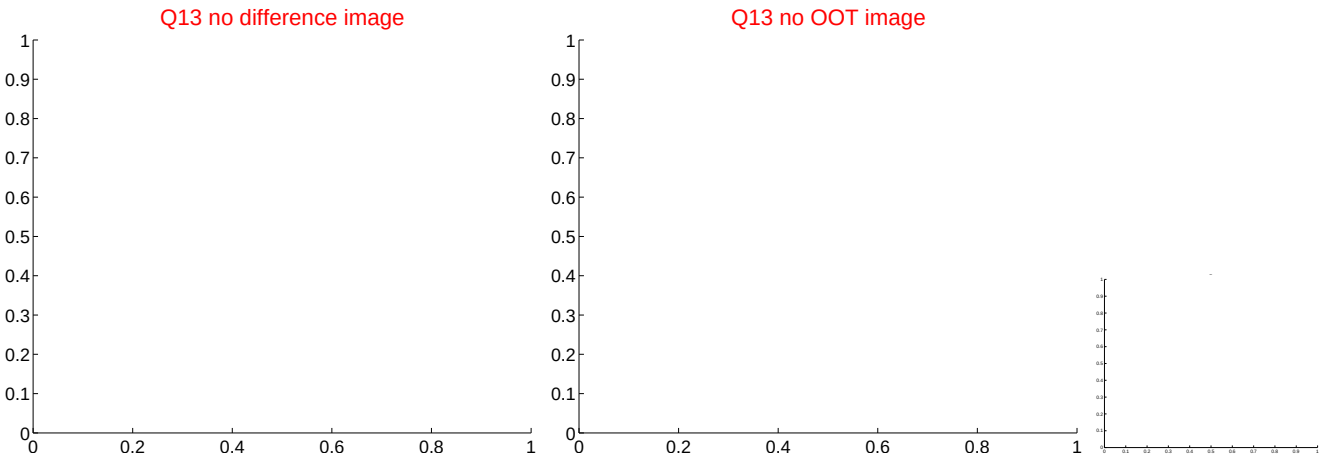


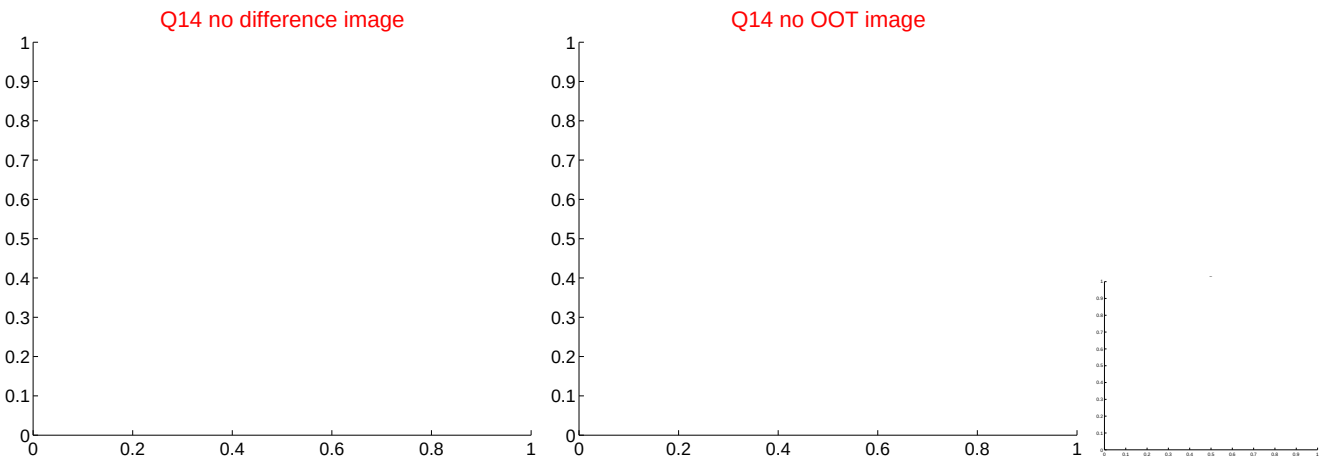



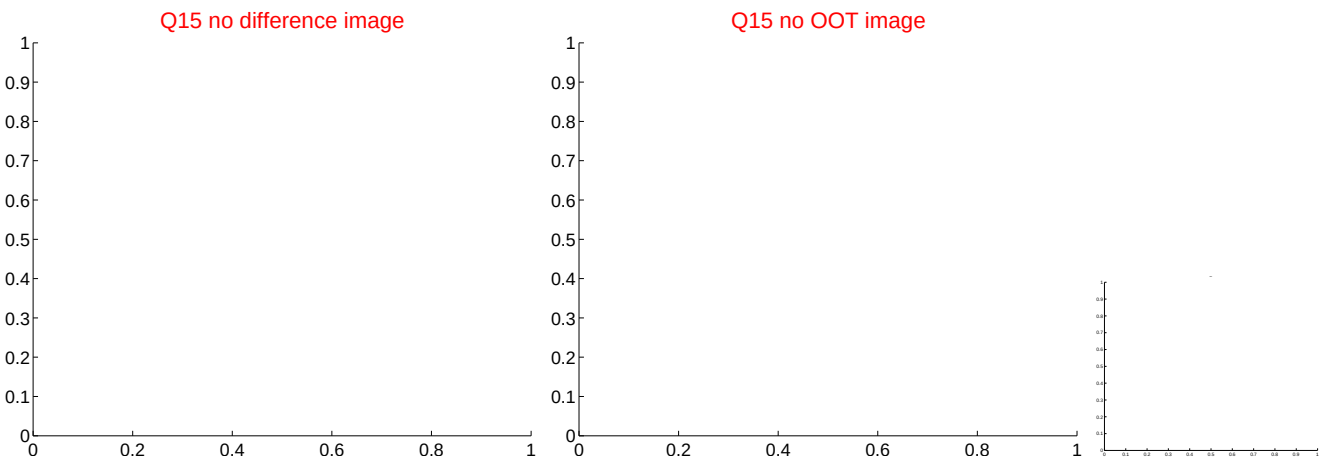



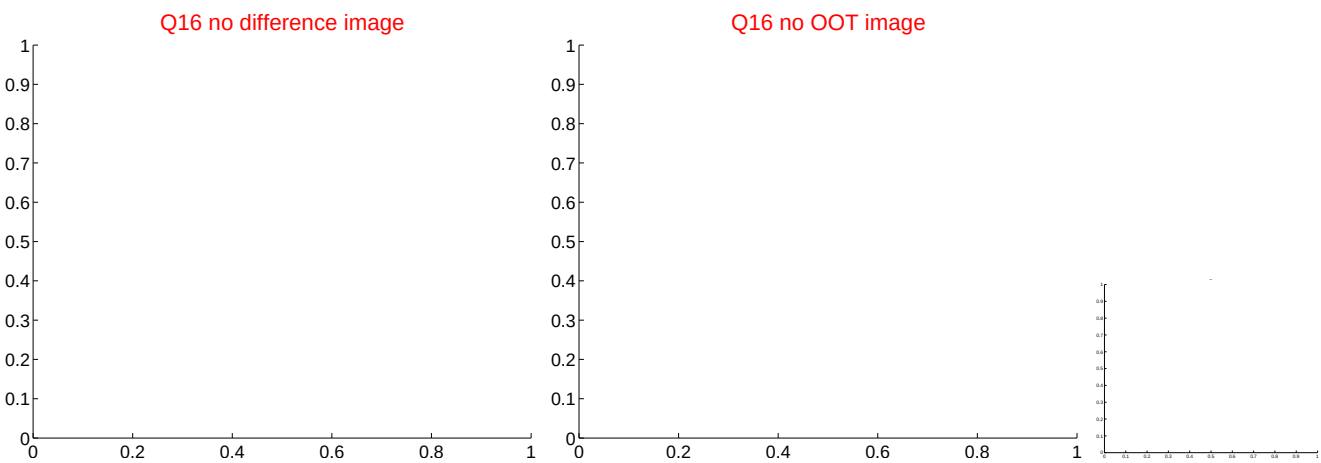



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

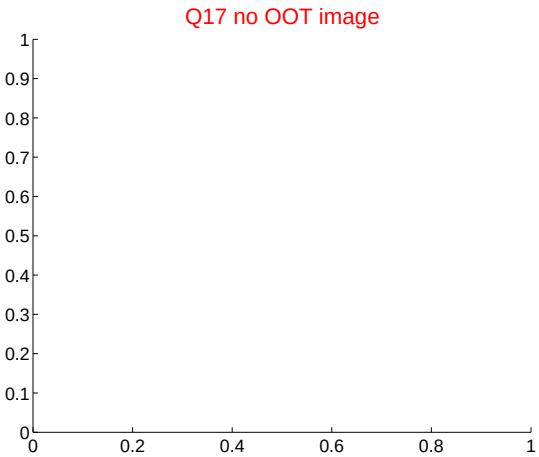


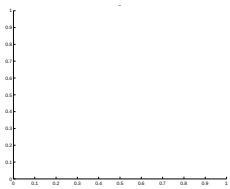



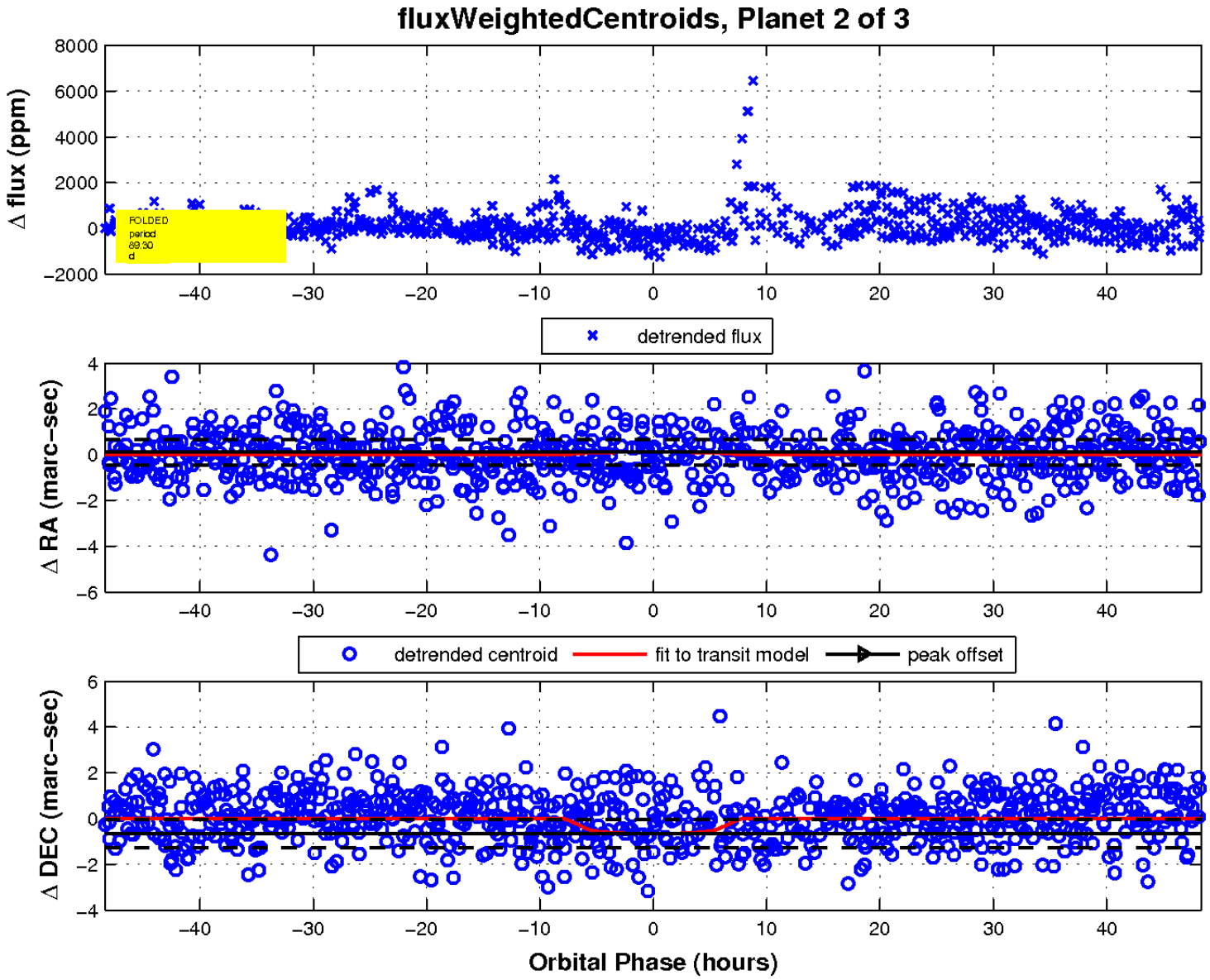



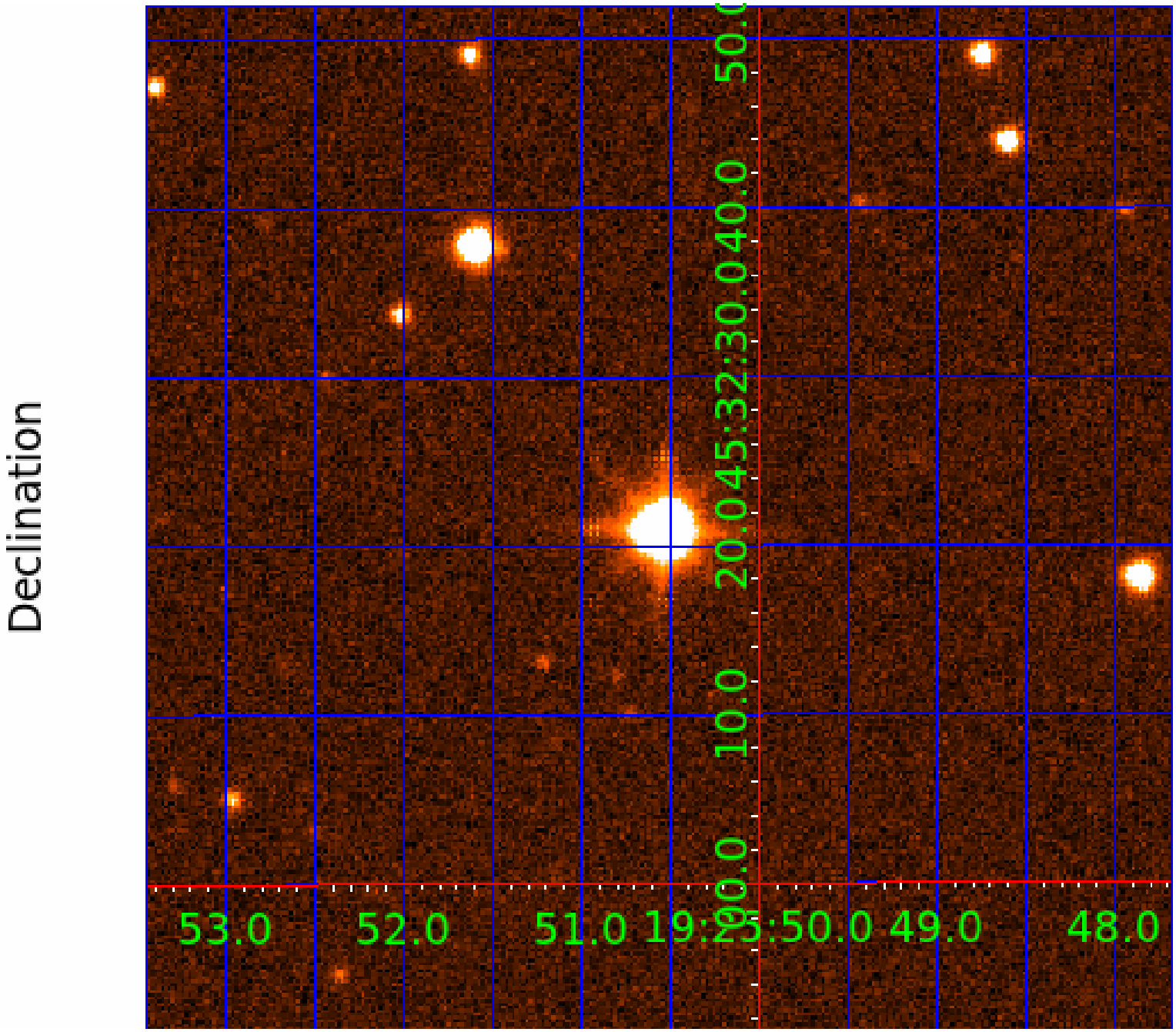
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





**UKIRT Image**


Declination
53.0
52.0
51.0
19:25:50.0
49.0
48.0
00.0
10.0
20.0
45:32:30.0
40.0
50.0

# KIC 009153754

## 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) | $R_p$ ($R_\oplus$) | $S_p$ ($S_\oplus$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 009153754-01 | OBS | No | 98.612361 | 153.790385 | 397.6 | 15.000 | 10.3 | -1.0 | 0.18 | 3193 | 0.36 | 0.06 |
| 009153754-02 | OBS | No | 89.296351 | 159.715893 | 1071.2 | 16.131 | 8.9 | 11.3 | 0.18 | 3193 | 0.72 | 0.07 |
| 009153754-03 | OBS | No | 123.431100 | 151.165653 | 355.7 | 9.295 | 8.4 | 2.8 | 0.18 | 3193 | 0.36 | 0.04 |

## Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|---|---|---|---|---|---|---|---|---|
| 009153754-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS |
| 009153754-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—ALL_TRANS_CHASES—CENT_FEW_MEAS |
| 009153754-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_SKYE—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—CENT_FEW_DIFFS |

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

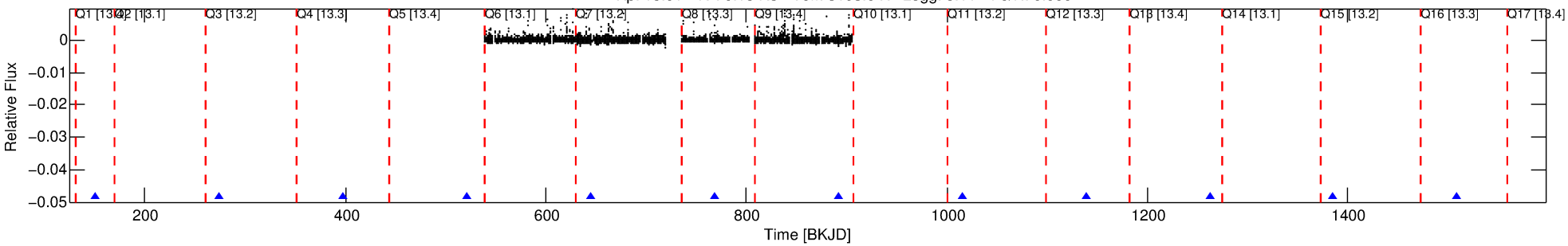
## Ephemeris Match Information For 009153754-03

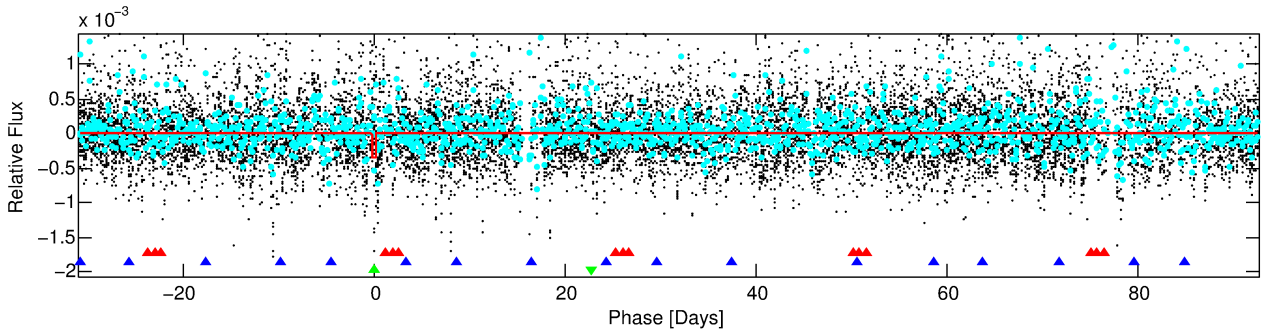
No Significant Match Found

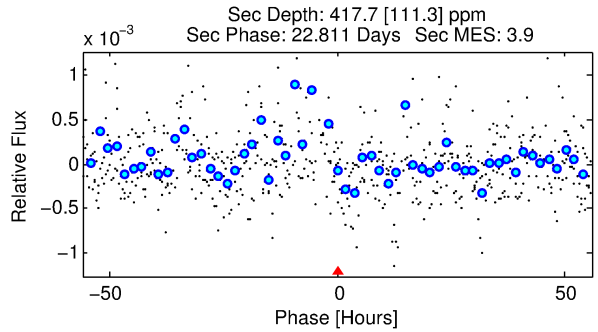
# DV One-Page Summary

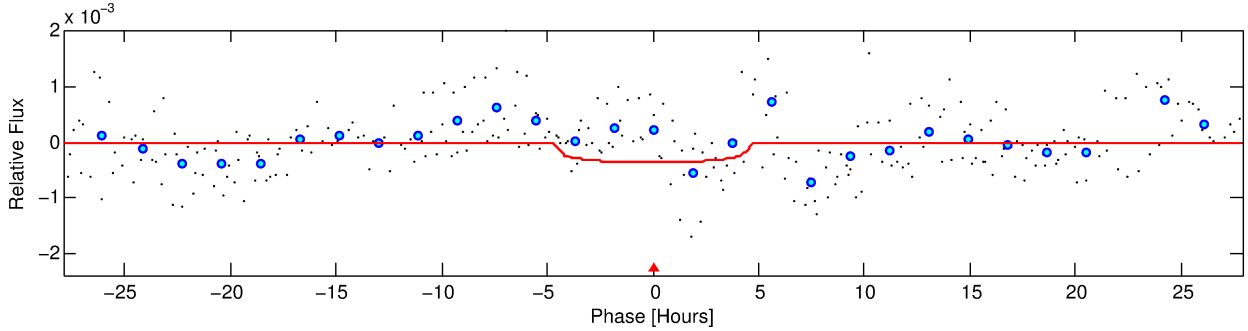
**KIC: 9153754 Candidate: 3 of 3 Period: 123.431 d**

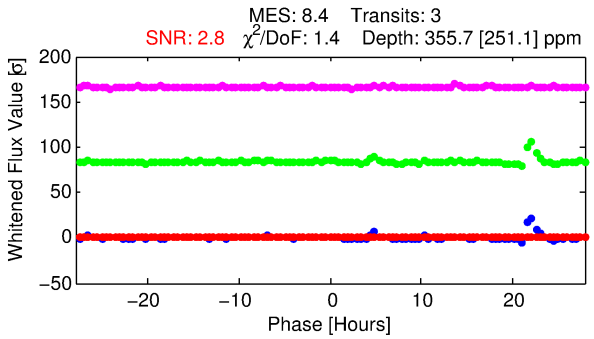
Kp: 15.01 R*: 0.18 Rs Teff: 3193.0 K Logg: 5.11 Fe/H: 0.000

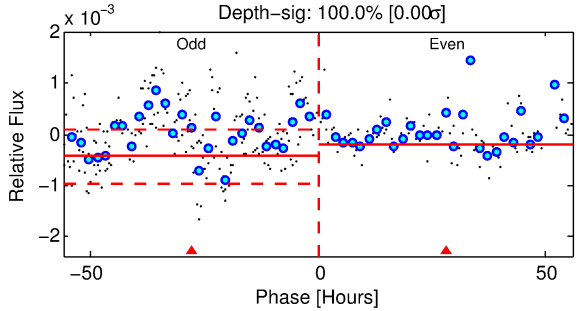



DV Fit Results:

Period = 123.43110 [0.03513] d
Epoch = 151.1657 [0.1793] BKJD
Rp/R* = 0.0178 [0.0792]
a/R* = 85.42 [1636.62]
b = 0.57 [22.63]

Seff = 0.05 [0.00]
Teq = 118 [0] K
Rp = 0.36 [1.58] Re
a = 0.2626 [0.0000] AU

Ag = 125032.63 [1111196.13] [0.11σ]
Teffp = 3419 [7596] K [0.43σ]

DV Diagnostic Results:

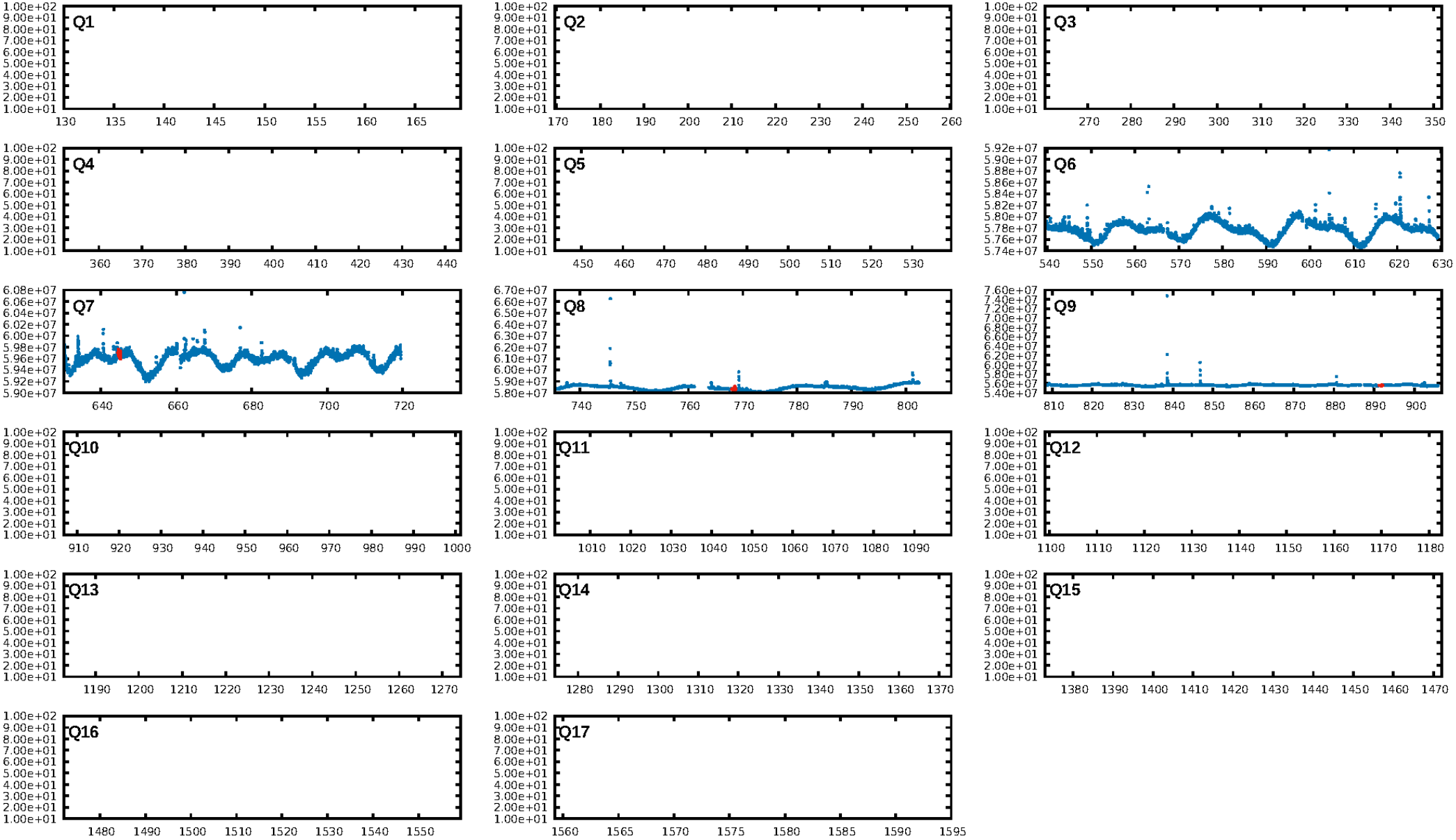
ShortPeriod−sig: 100.0% [33.75σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: 43.6%
ModelChiSquareGof−sig: 21.2%
Bootstrap−pfa: 8.90e−11
RollingBand−fgt: 1.00 [3/3]
GhostDiagnostic−chr: 1.309

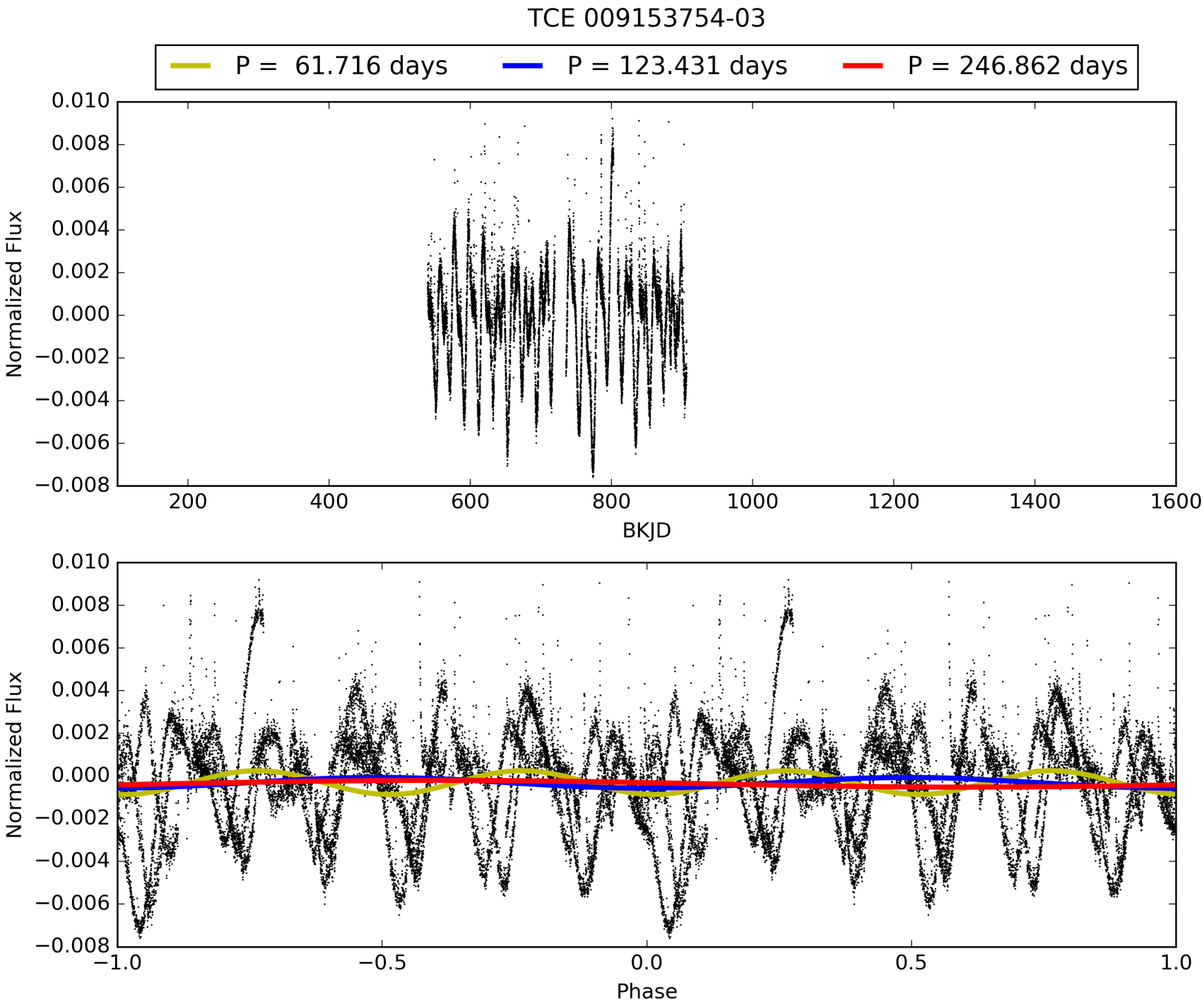
Centroid−sig: 69.9%
Centroid−so: 0.993 arcsec [0.75σ]
OotOffset−rm: N/A
KicOffset−rm: N/A
OotOffset−st: 0/0/0/0 [0]
KicOffset−st: 0/0/0/0 [0]
DiffImageQuality−fgm: N/A
DiffImageOverlap−fno: 1.00 [2/2]

**Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30−Jan−2016 18:05:08 Z**

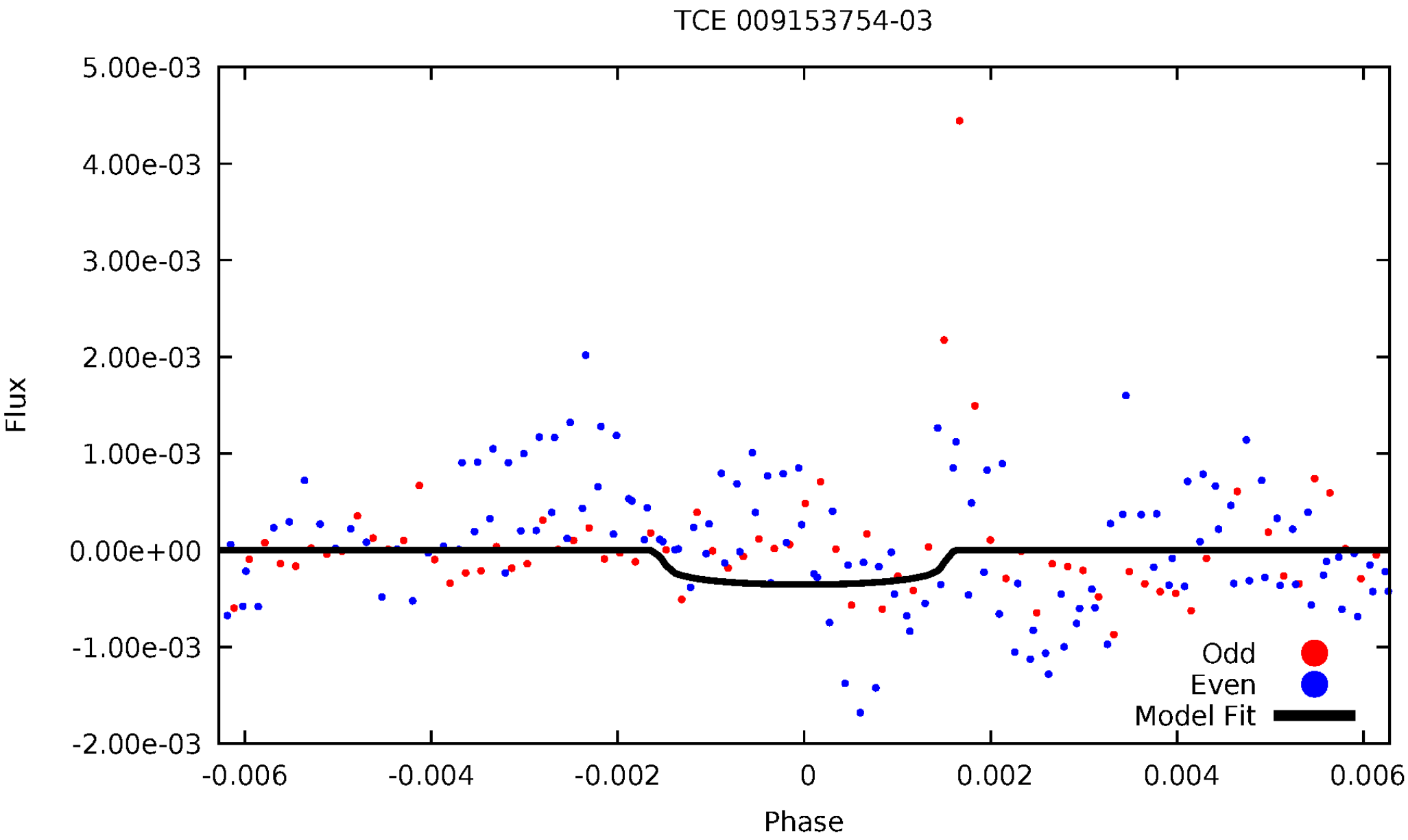
**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 009153754-03, PDC Light Curves

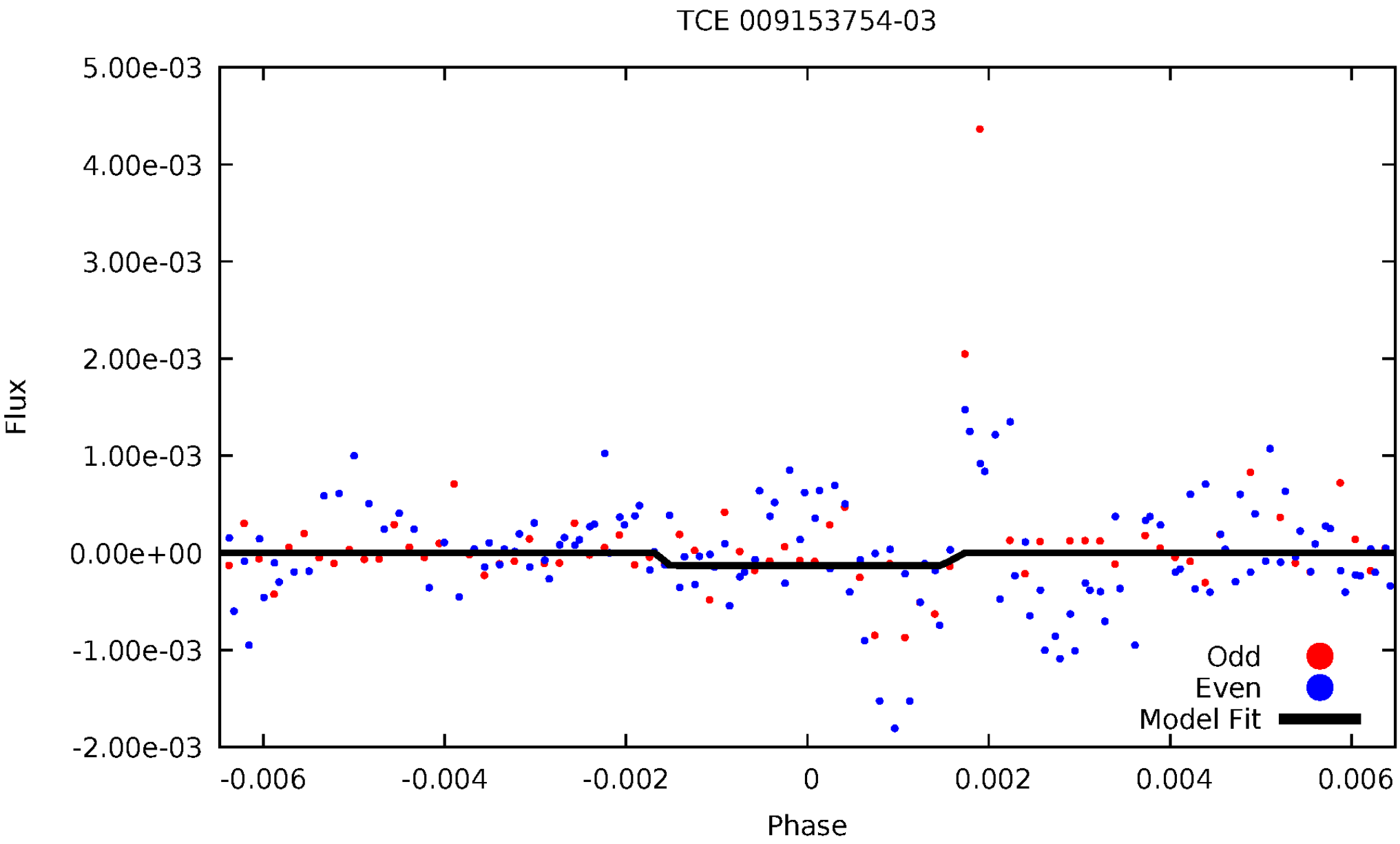



TCE 009153754-03
P = 61.716 days
P = 123.431 days
P = 246.862 days
Normalized Flux
BKJD
Phase

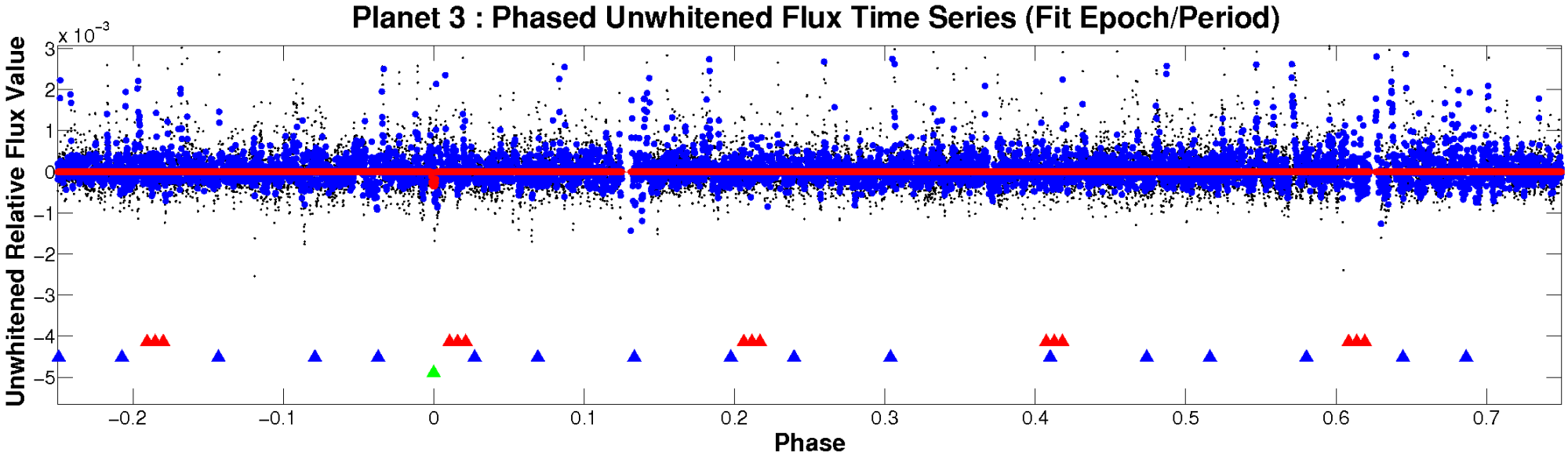
# DV Odd/Even

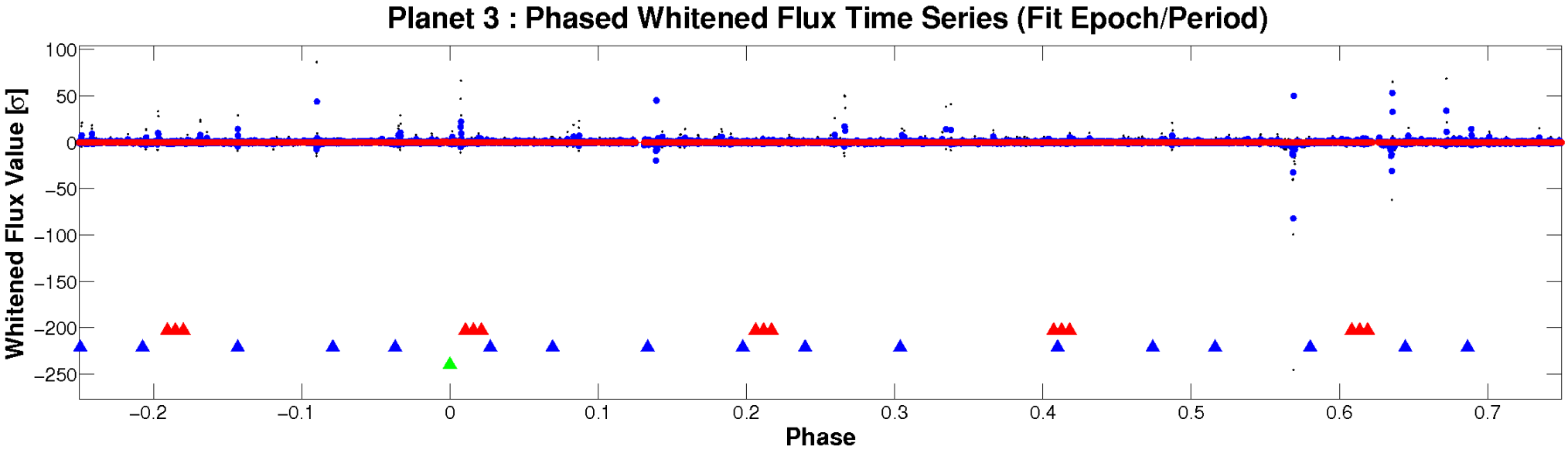

TCE 009153754-03
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

**ALT Odd/Even**


TCE 009153754-03
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

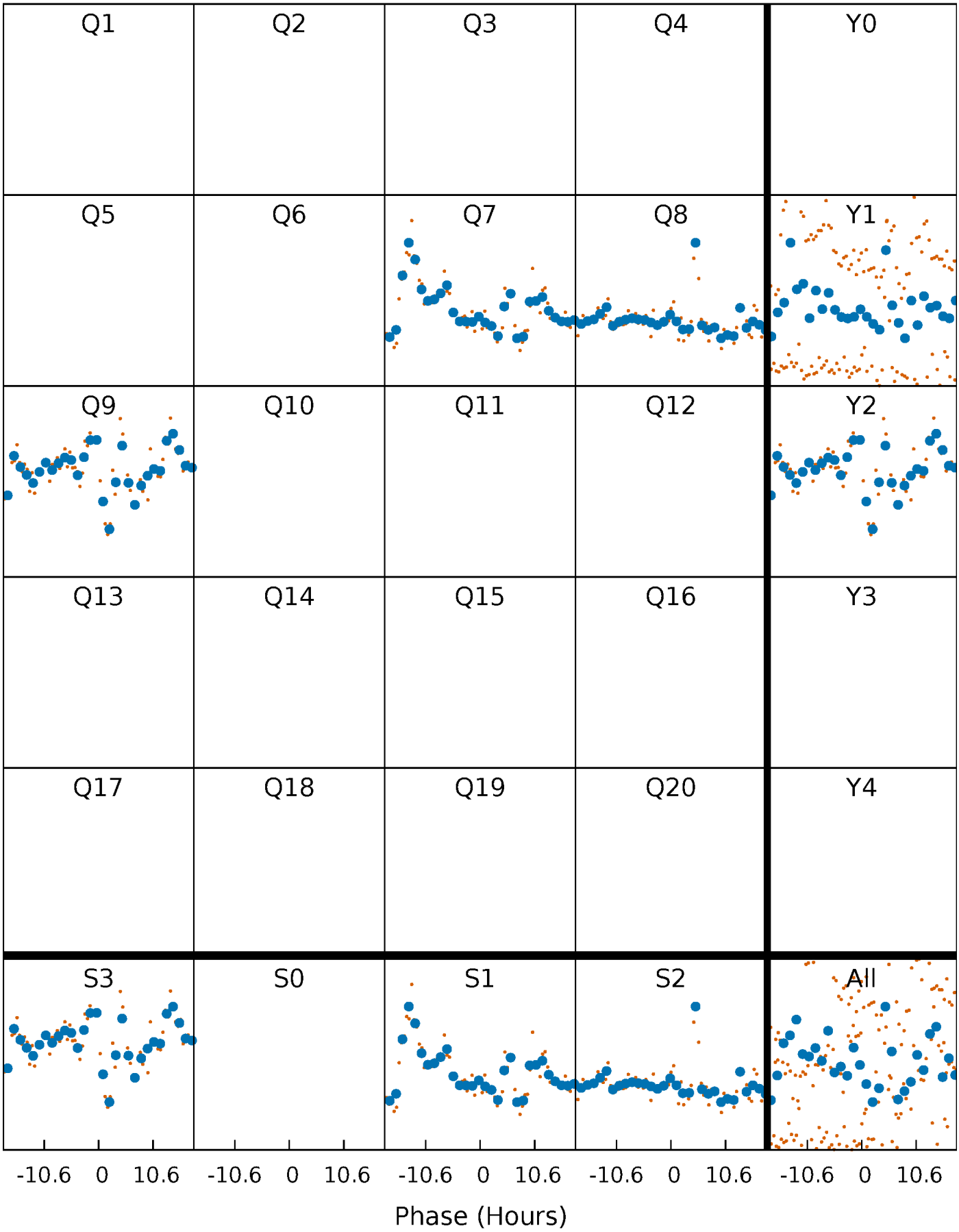
# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 009153754-03 P=123.431100 Days $T_0$=151.165653 (BKJD)

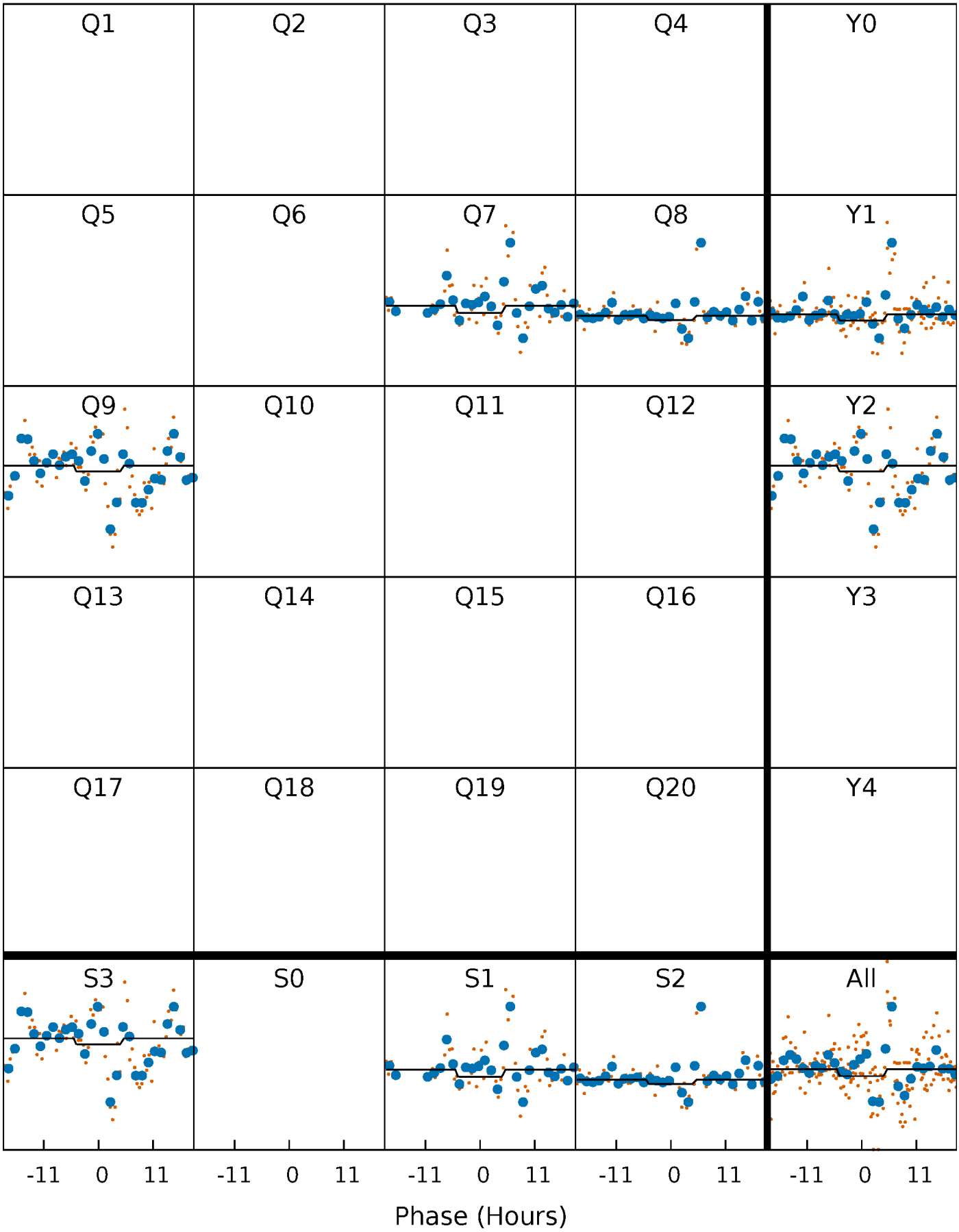


# DV Quarter-Phased Transit Curves

TCE 009153754-03 P=123.431100 Days $T_0$=151.165653 (BKJD)

# Alt. Detrend Quarter-Phased Transit Curves

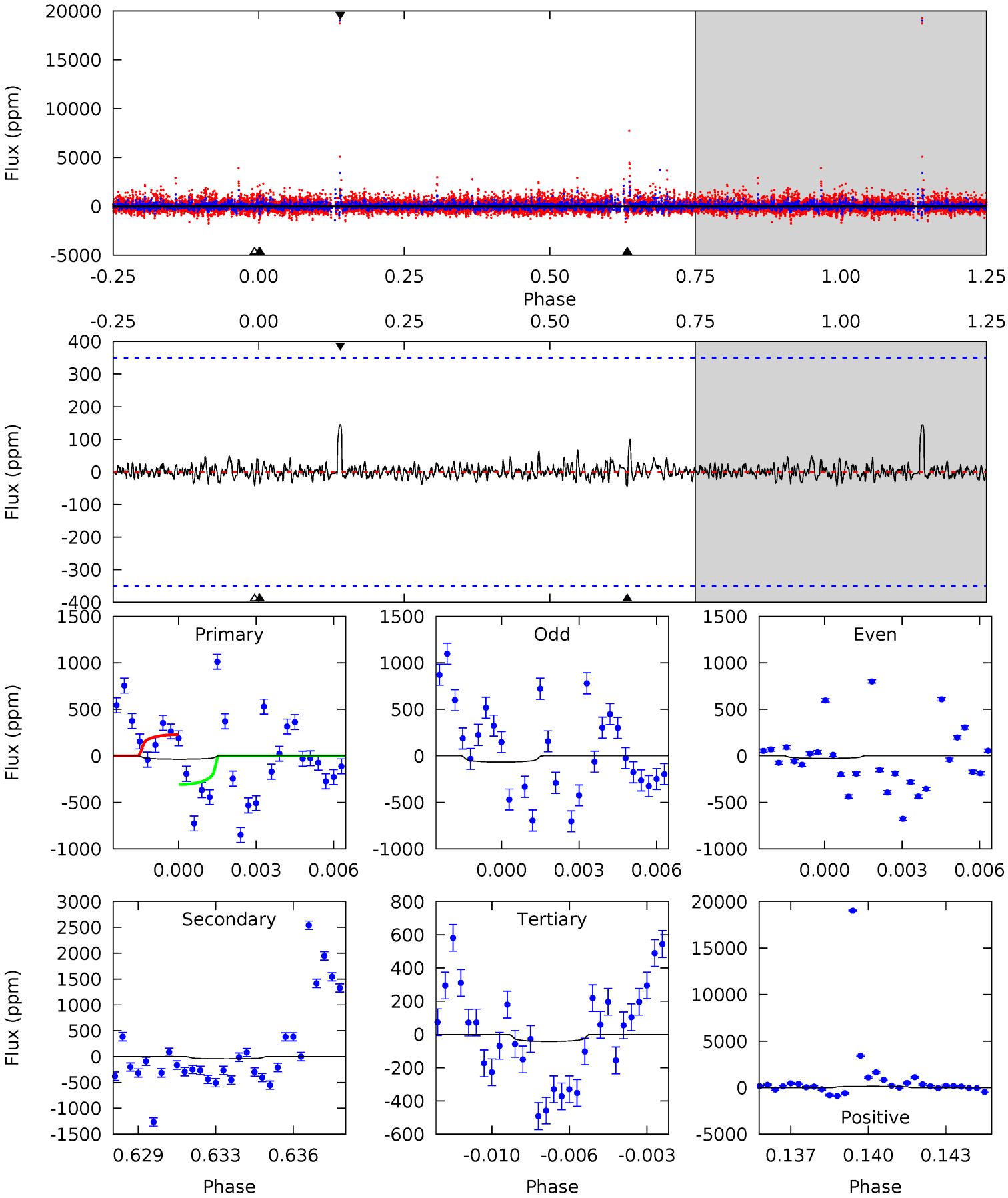
TCE 009153754-03 P=123.415737 Days $T_0$=151.213501 (BKJD)



# DV Model-Shift Uniqueness Test

009153754-03, P = 123.431100 Days, E = 151.165653 Days

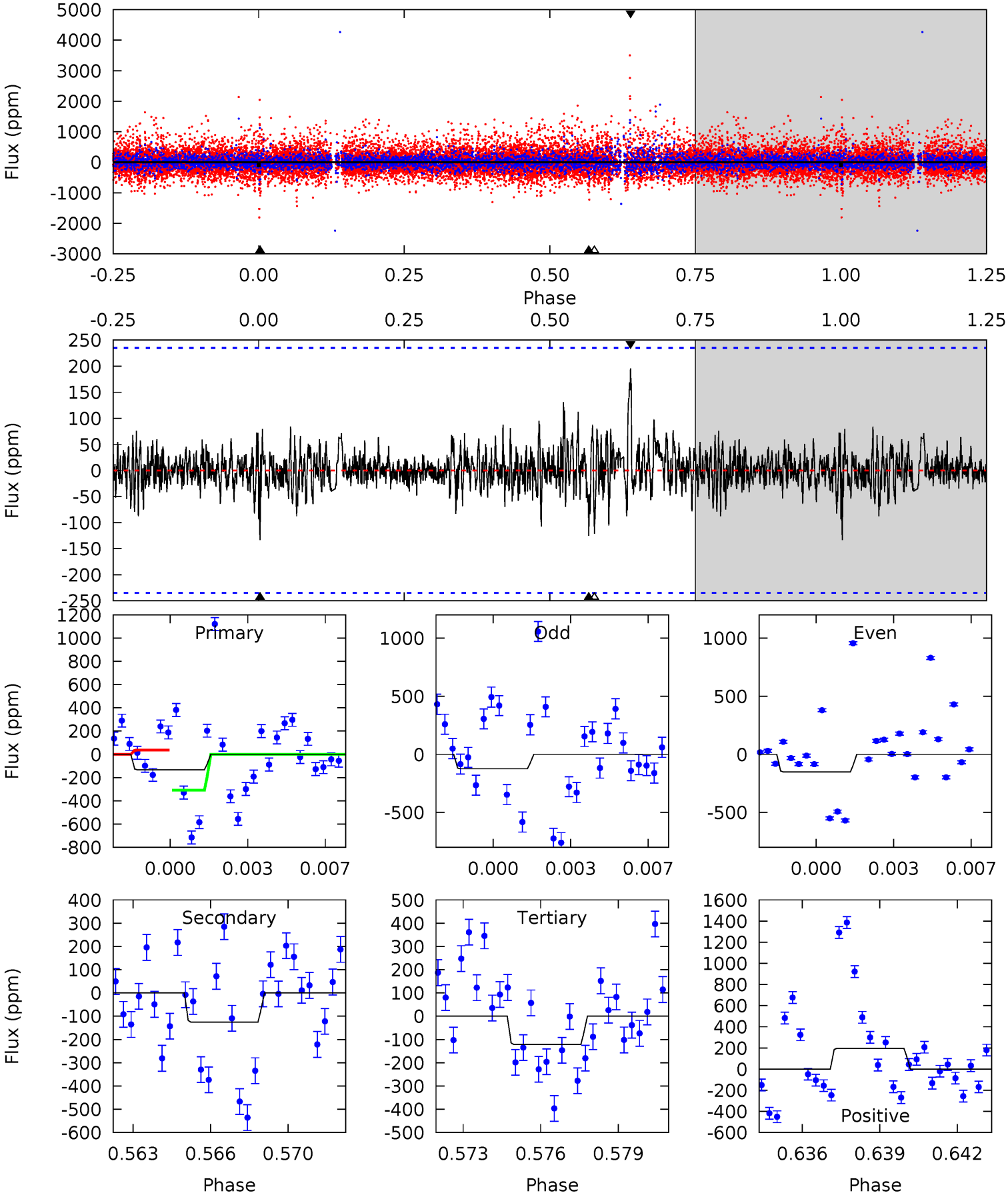
| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.53 | 0.64 | 0.63 | 2.16 | 5.24 | 2.95 | 0.26 | -0.10 | -1.63 | 0.01 | -1.52 | 0.28 | 0.78 | 0.77 | 0.61 |



# Alt Model-Shift Uniqueness Test

009153754-03, P = 123.415737 Days, E = 151.213501 Days

| Pri | Sec | Ter | Pos | $FA_1$ | $FA_2$ | $F_{Red}$ | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.97 | 2.79 | 2.70 | 4.36 | 5.23 | 2.94 | 0.68 | 0.27 | -1.39 | 0.08 | -1.57 | 0.28 | 0.88 | 0.59 | 3.07 |



Stellar Parameters For KIC 009153754

| | $T_{\rm eff}(K)$ | $\log(g)$ | [Fe/H] | $R$ ($R_\odot$) | $M(M_\odot)$ | $p_\star$ (g·cm$^{-3}$) |
|---|---|---|---|---|---|---|
| | $3193^{+-1}_{-1}$ | $5.113^{+-1.000}_{-1.000}$ | $0.000^{+-1.000}_{-1.000}$ | $0.183^{+-1.000}_{-1.000}$ | $0.159^{+-1.000}_{-1.000}$ | $36.410^{+-1.000}_{-1.000}$ |
| | +0%/-0% | +20%/-20% | +inf%/-inf% | +546%/-546% | +629%/-629% | +3%/-3% |
| Source | PHO54 | PHO54 | PHO54 | BTSL | | |

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

Secondary Eclipse Parameters for KIC 009153754-03 / KOI

| Detrend | Depth (ppm) | $R_p$ ($R_\oplus$) | $T_{max}$ (K) | $T_{obs}$ (K) | $A_{obs}$ |
|---|---|---|---|---|---|
| DV | -43±67 | $1.26^{+1.45}_{-0.88}$ | $166^{+14}_{-14}$ | $1784^{+558}_{-3488}$ | $695^{+8477}_{-1128}$ |
| Alt. | -125±45 | $1.25^{+1.27}_{-0.83}$ | $165^{+15}_{-14}$ | $2101^{+569}_{-310}$ | $3142^{+23330}_{-2450}$ |

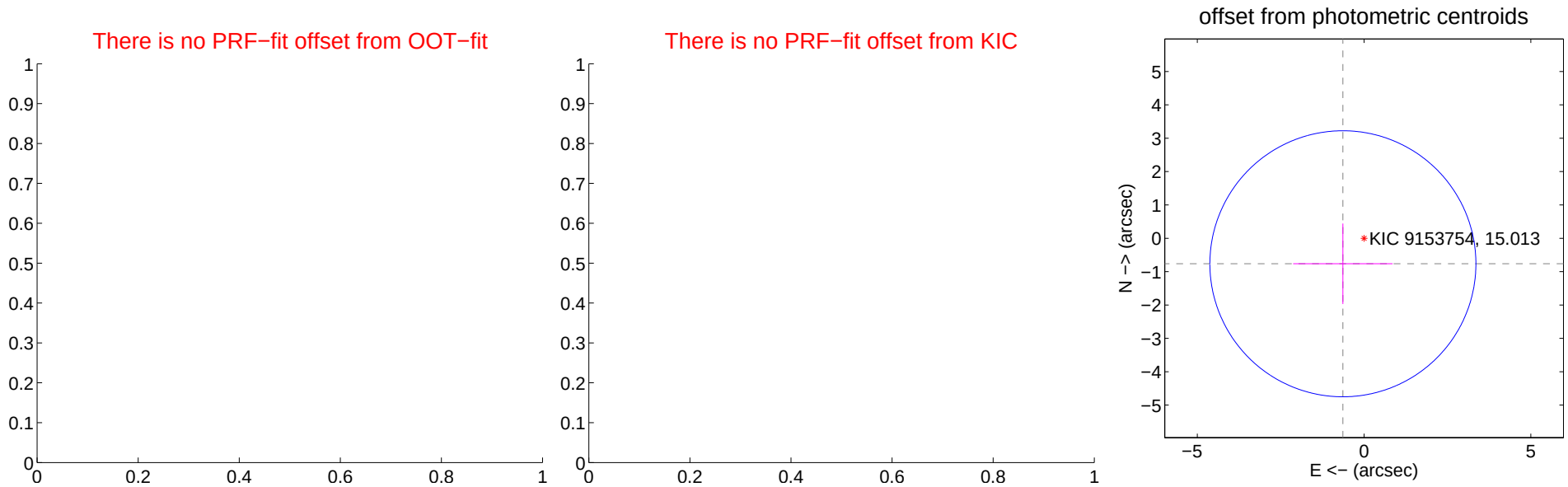
$T_{max}$ = Theoretical Maximum Planetary Temperature
$T_{obs}$ = Observed Planetary Temperature (Assuming A=0.3)
$A_{obs}$ = Observed Albedo (Assuming T=0)

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

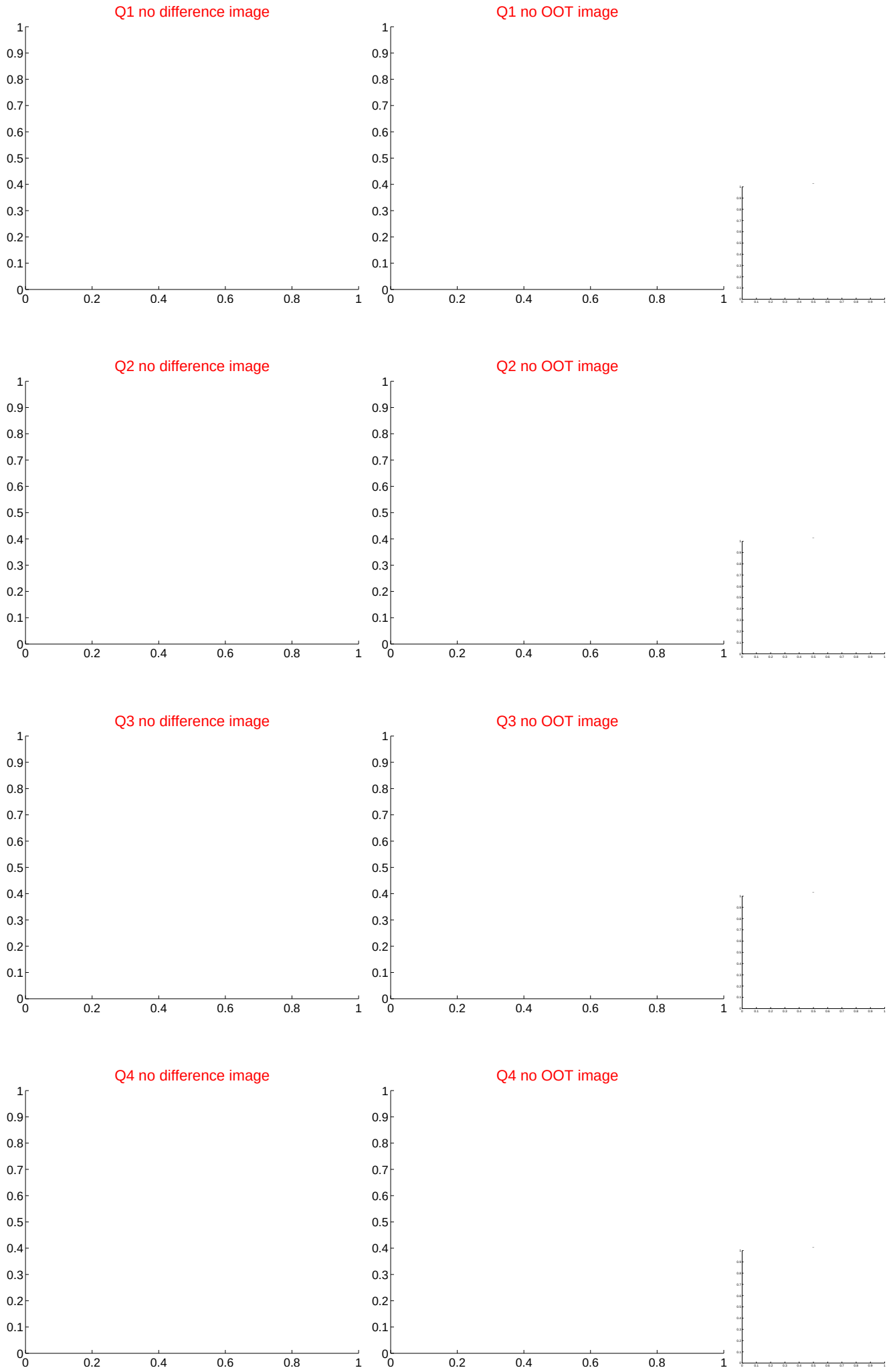
Supplemental centroid analysis for 009153754-03. Kepler magnitude: 15.01. Transit SNR 2.82
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

| | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA | $\Delta$ Dec |
|---|---|---|---|---|
| PRF-fit source offset from OOT | — | — | — | — |
| PRF-fit source offset from KIC position | — | — | — | — |
| photometric centroid source offset | 0.99 ± 1.33 | 0.75 | 0.63 ± 1.49 | -0.76 ± 1.21 |

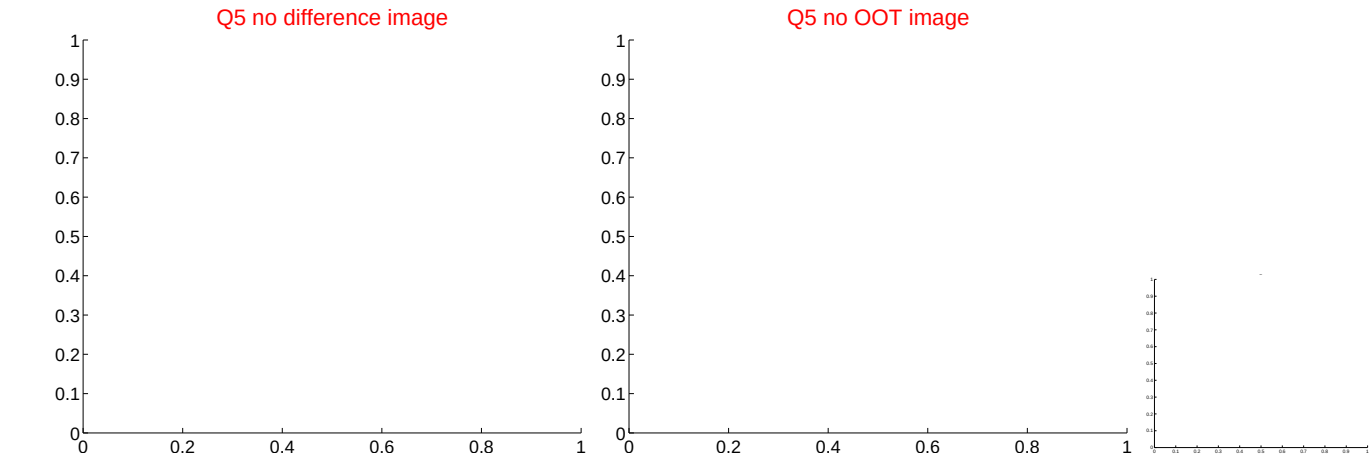


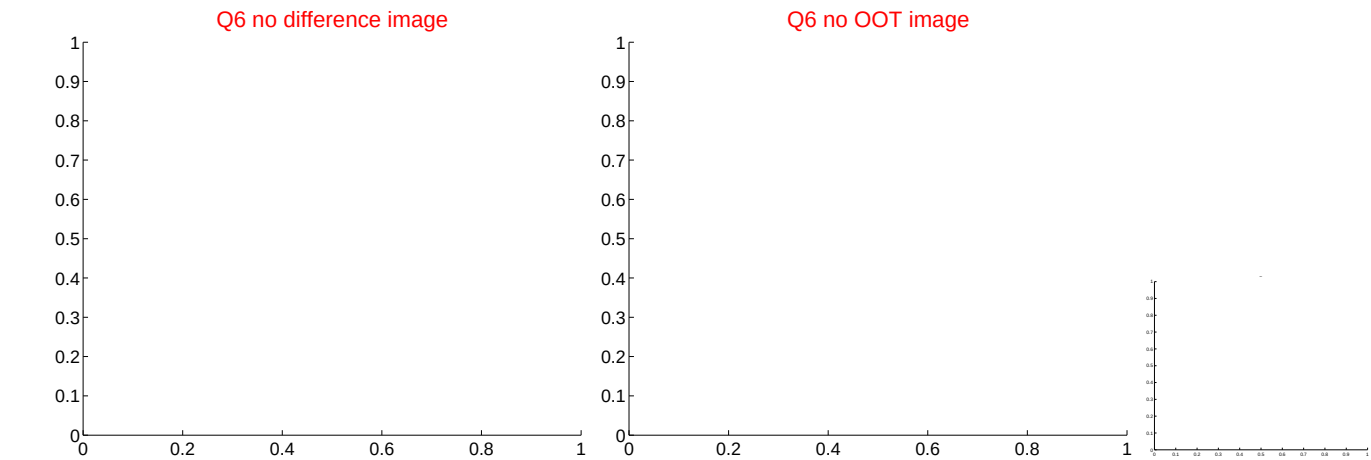

Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-$\sigma$ uncertainty. Blue circle: three-$\sigma$.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

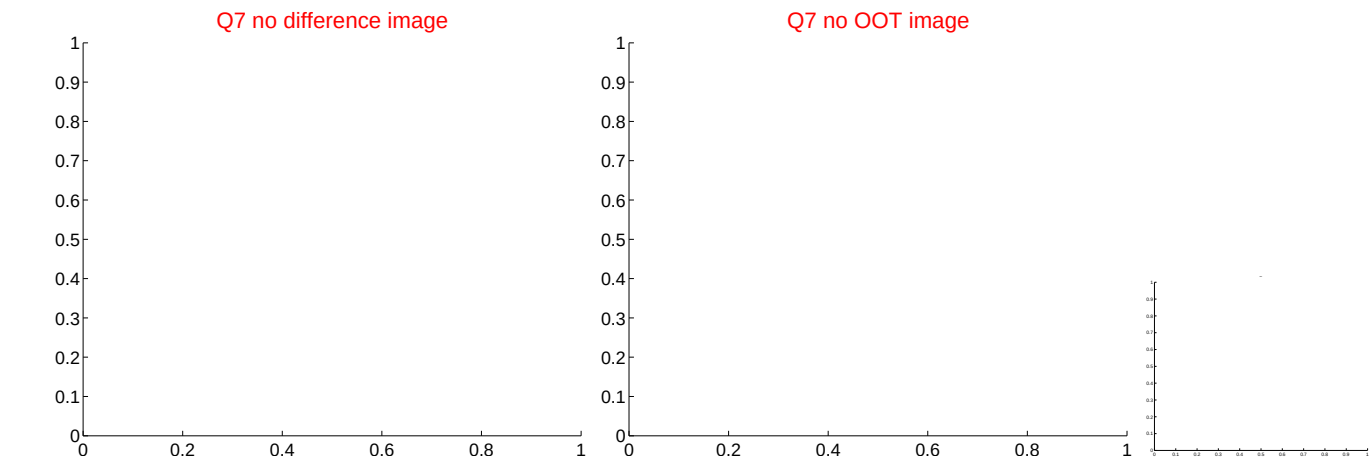
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

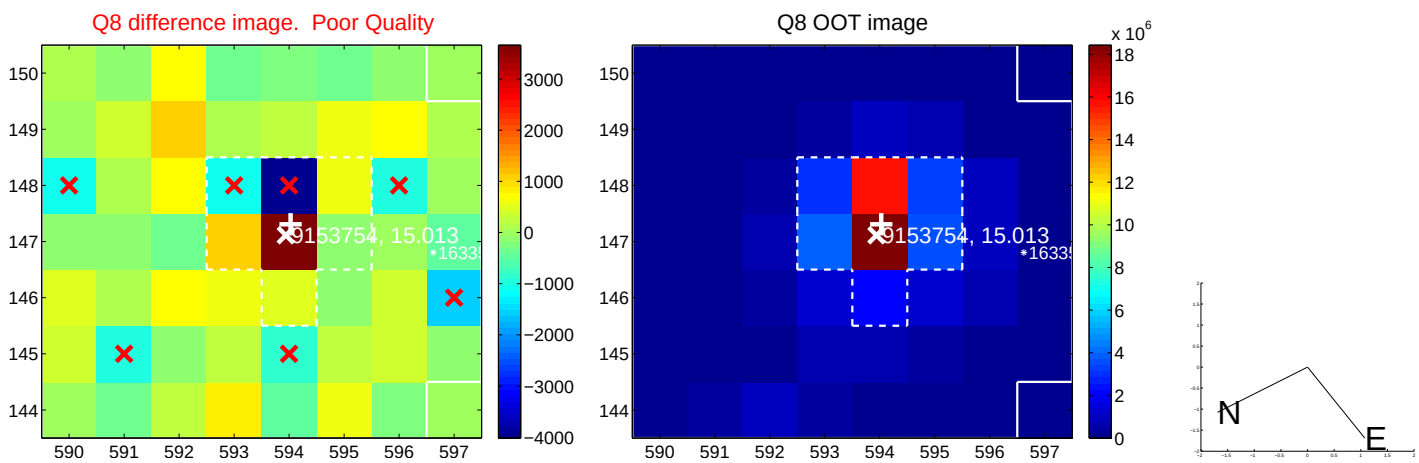


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

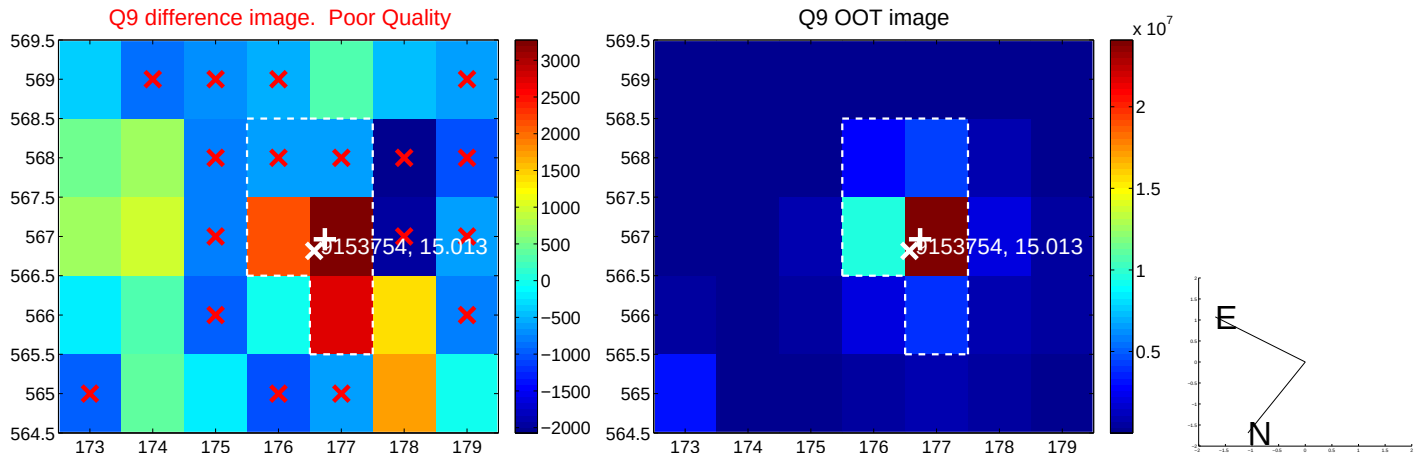


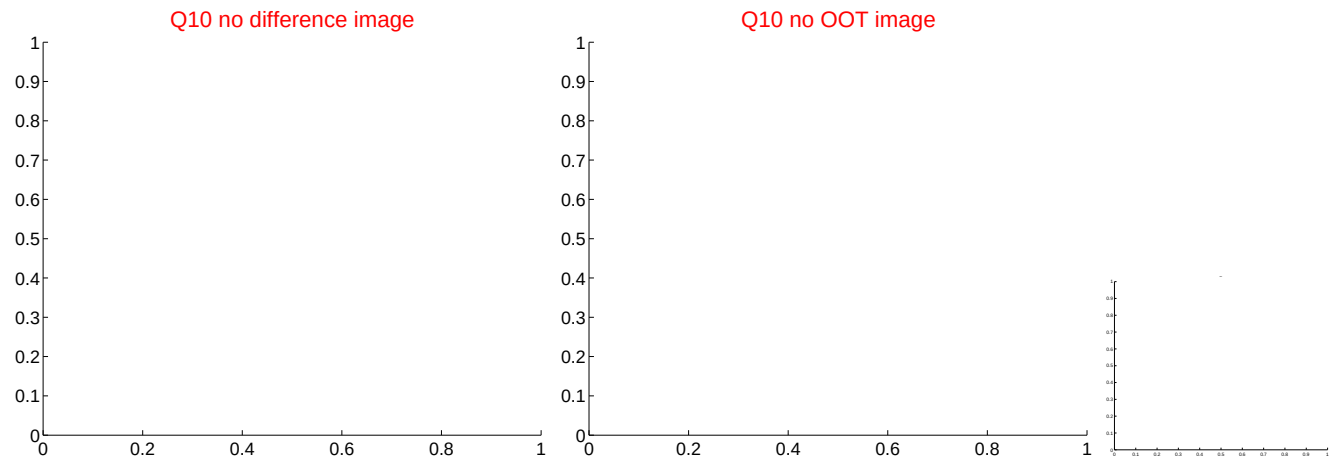



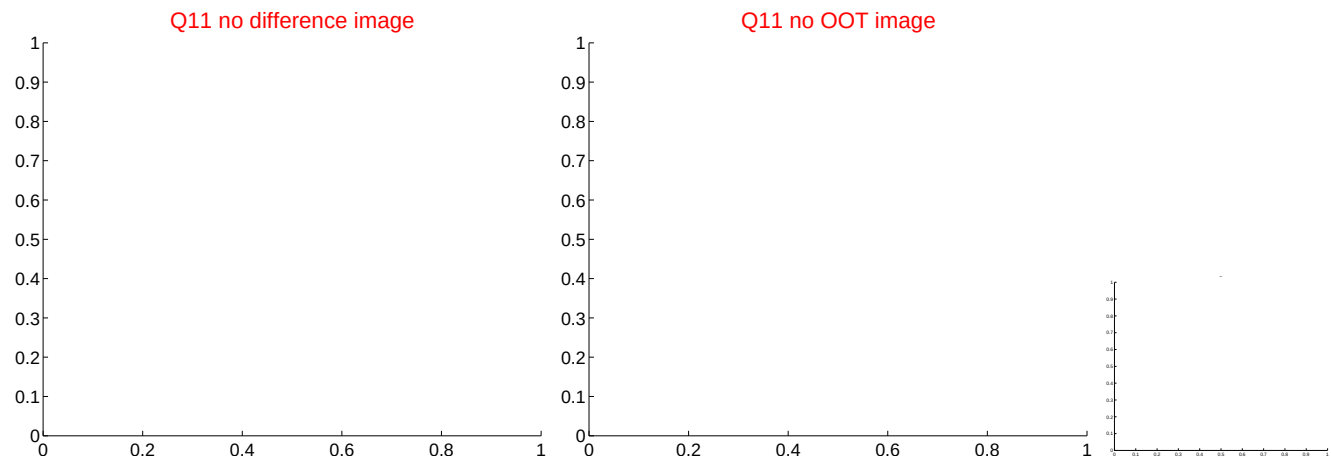



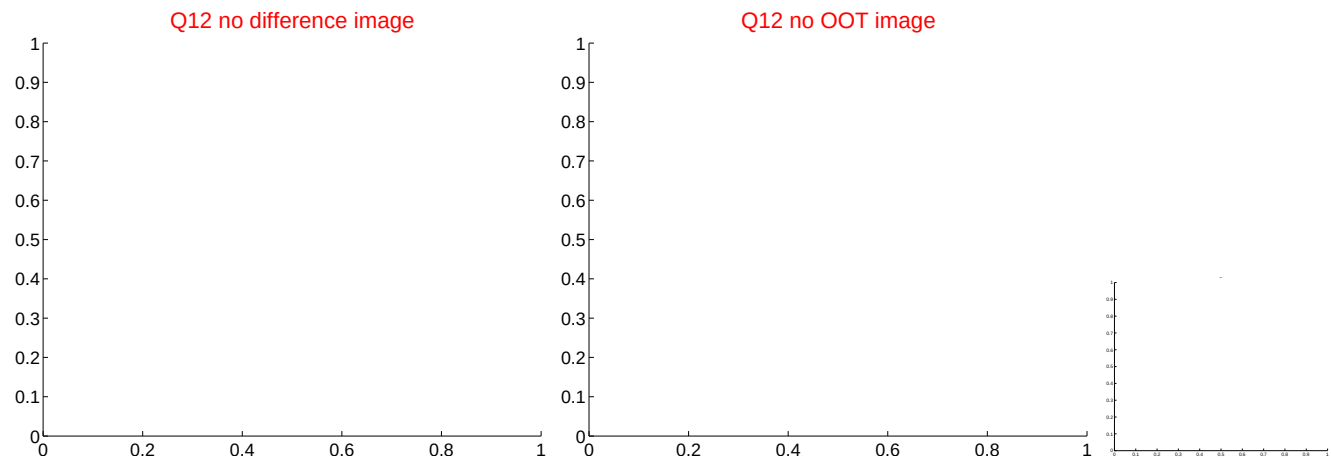



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

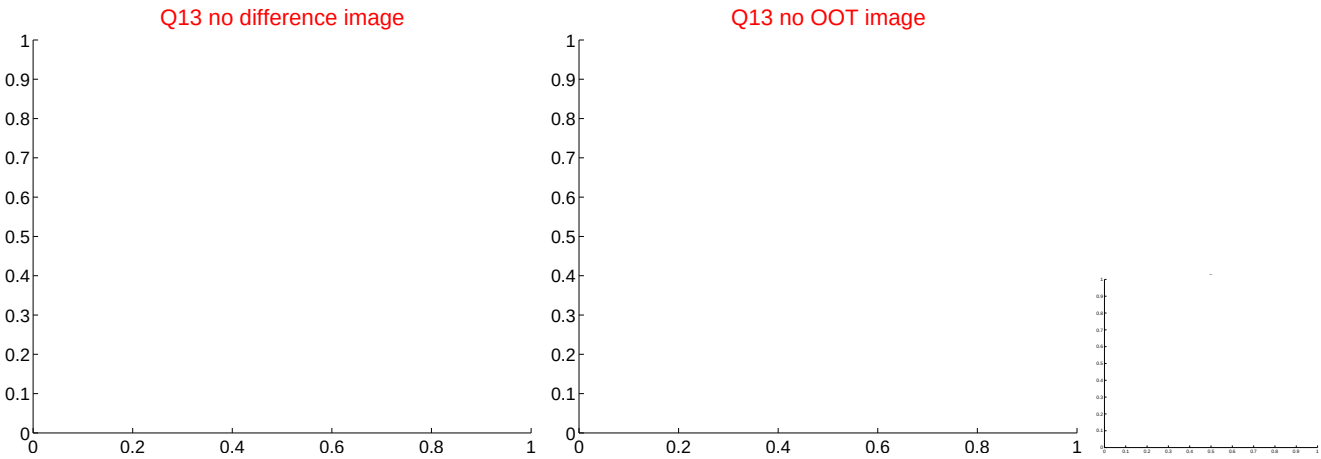


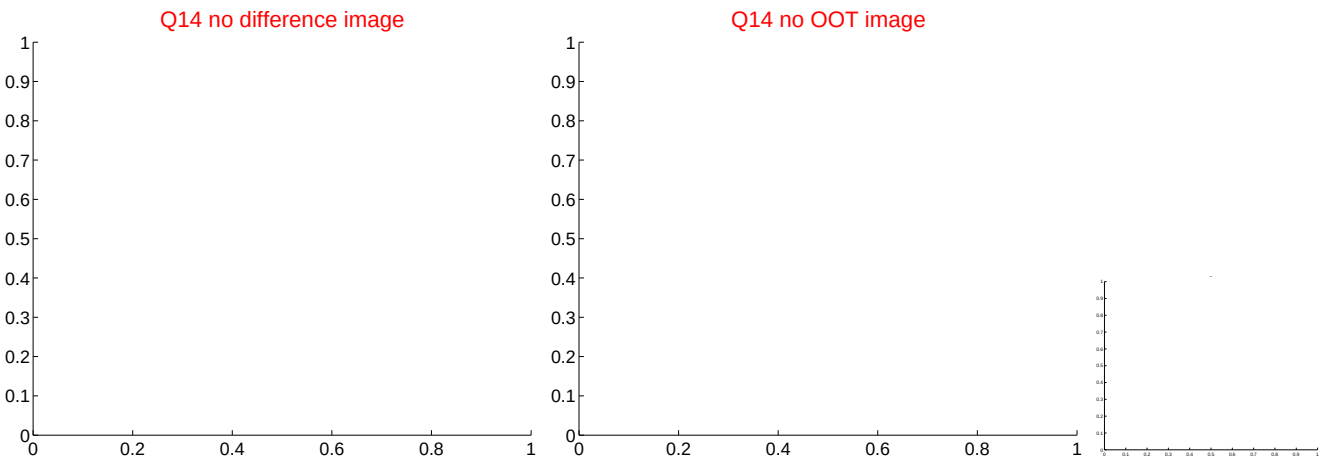



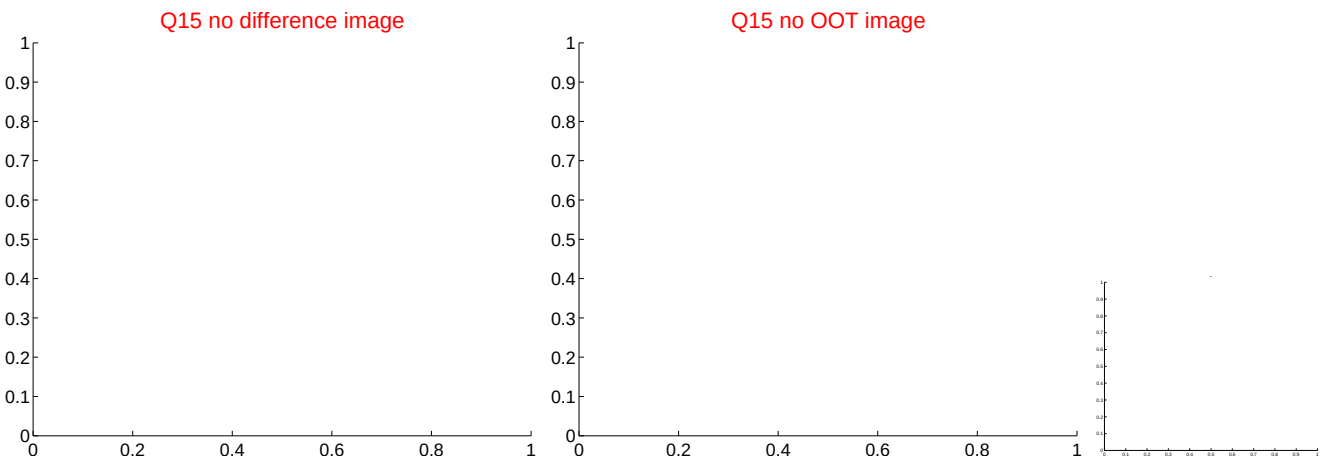



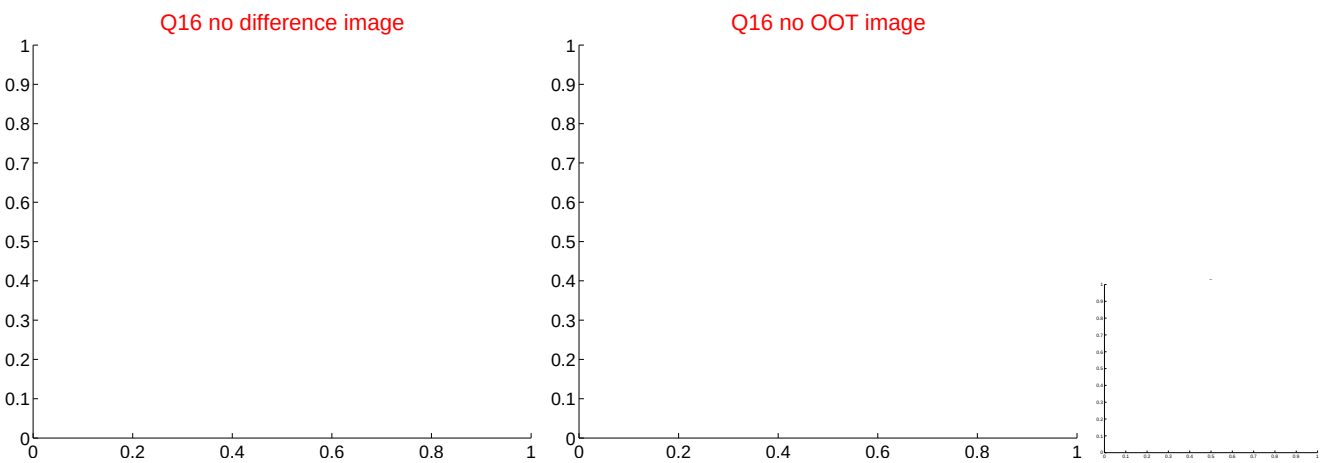



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

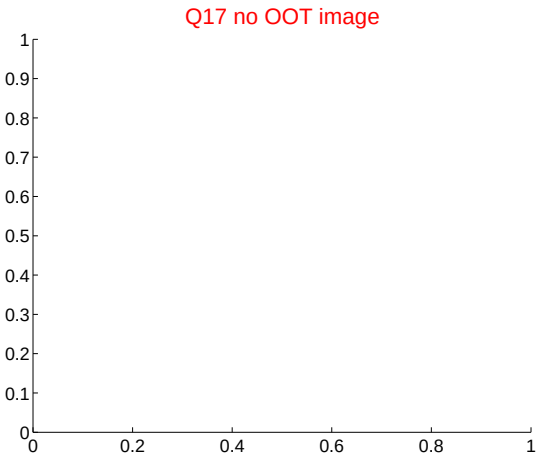


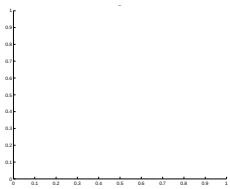



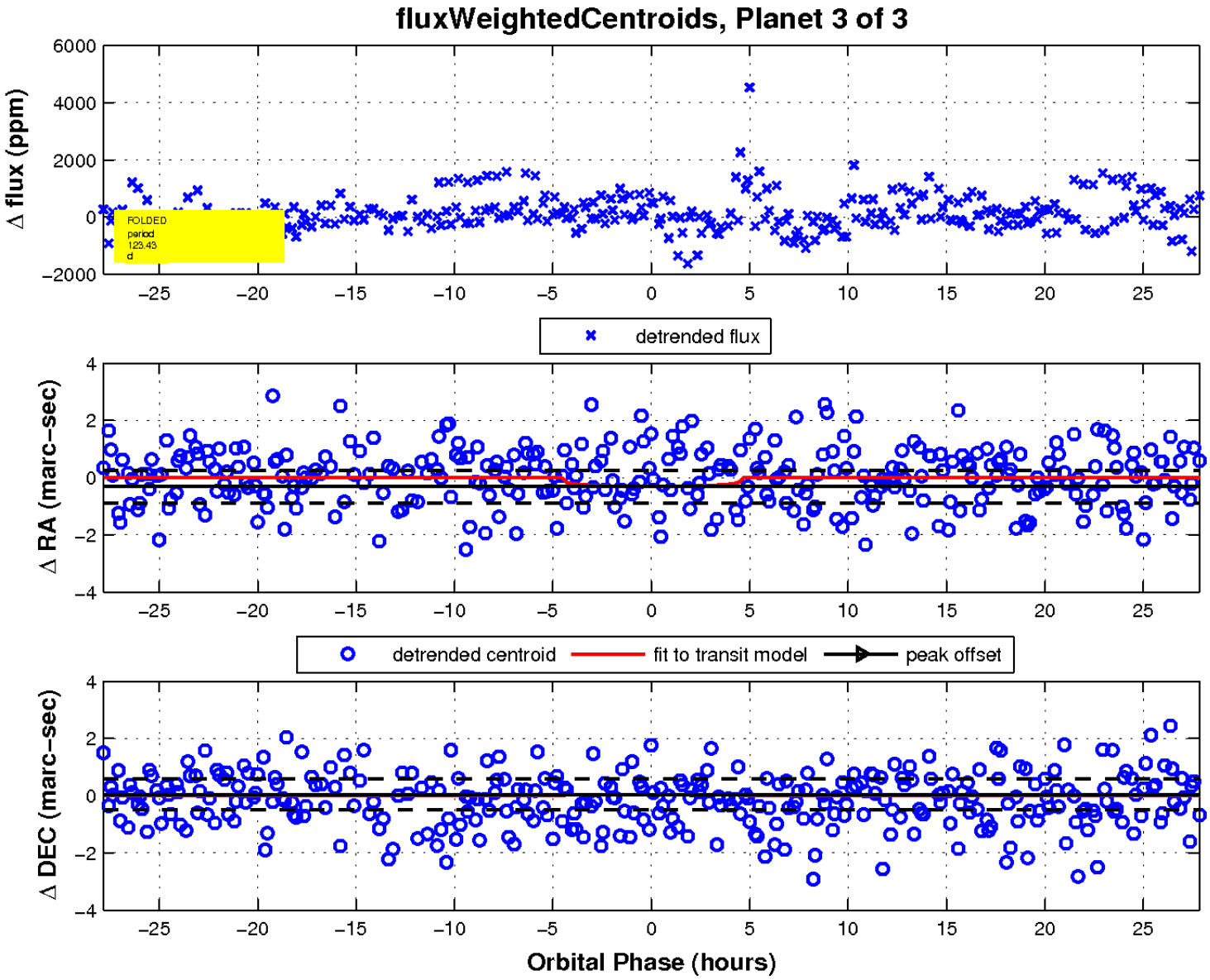



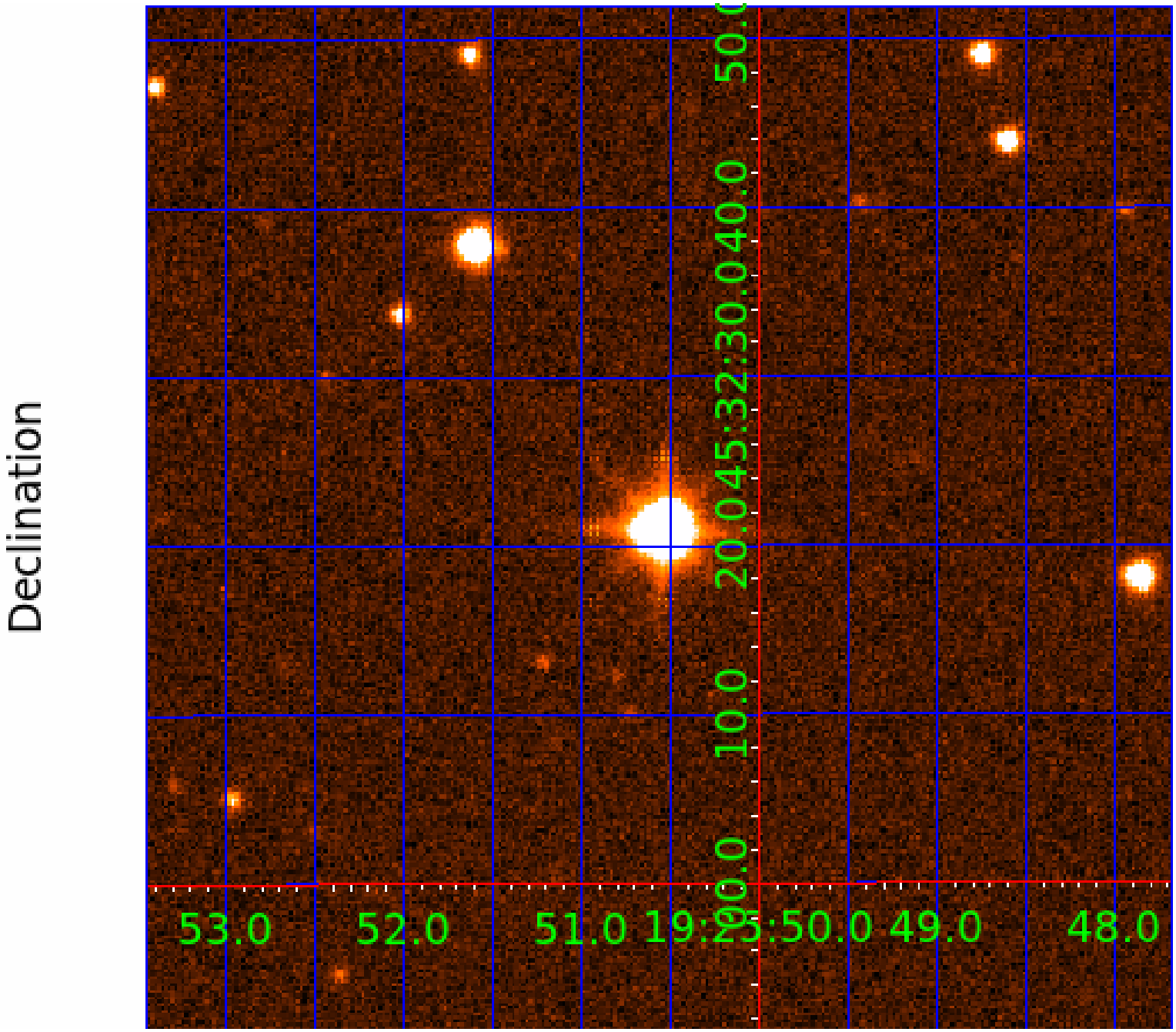
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





**UKIRT Image**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51.0
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49.0
48.0
00.0
10.0
20.0
45:32:30.0
40.0
50.0