

# KIC 009726699

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009726699-01 | OBS      | No   | 0.592531      | 131.751677   | 0.0         | 3.969            | 13.9 | 0.0 | 0.12                        | 2661            | 0.00                   | 15.31                  |
| 009726699-02 | OBS      | No   | 12.703876     | 140.873496   | 983.6       | 1.731            | 8.7  | 9.3 | 0.12                        | 2661            | 0.36                   | 0.26                   |
| 009726699-03 | OBS      | No   | 18.044714     | 147.686334   | 1174.8      | 1.493            | 9.0  | 5.9 | 0.12                        | 2661            | 0.44                   | 0.16                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 009726699-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—CENT_KIC_POS   |
| 009726699-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST |
| 009726699-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS    |

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

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

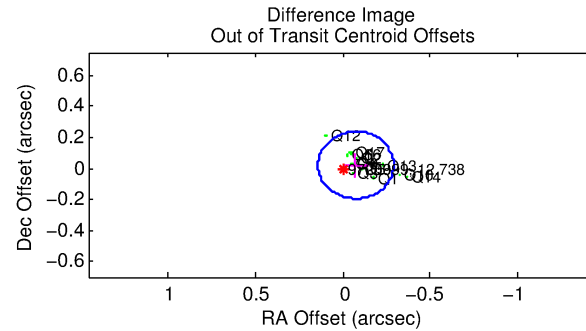
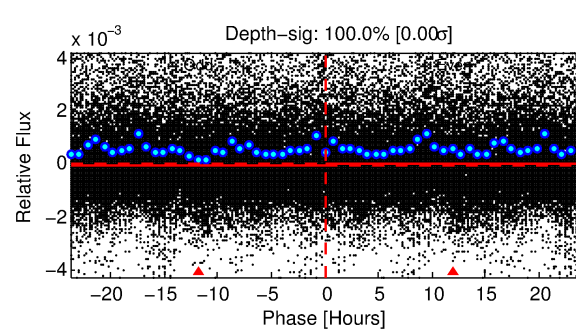
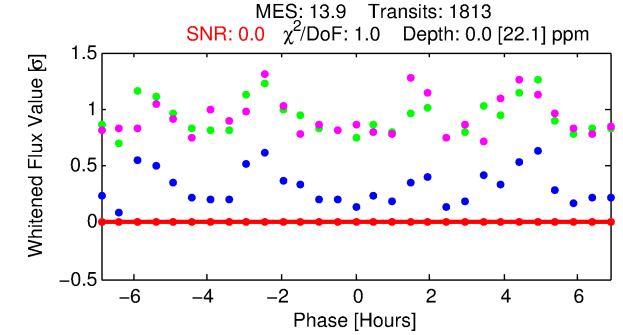
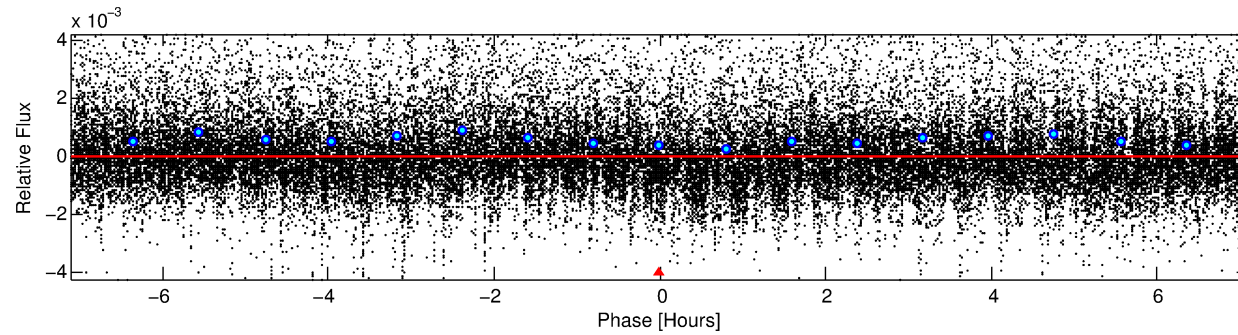
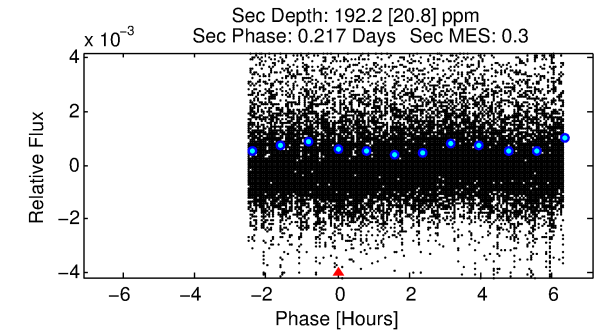
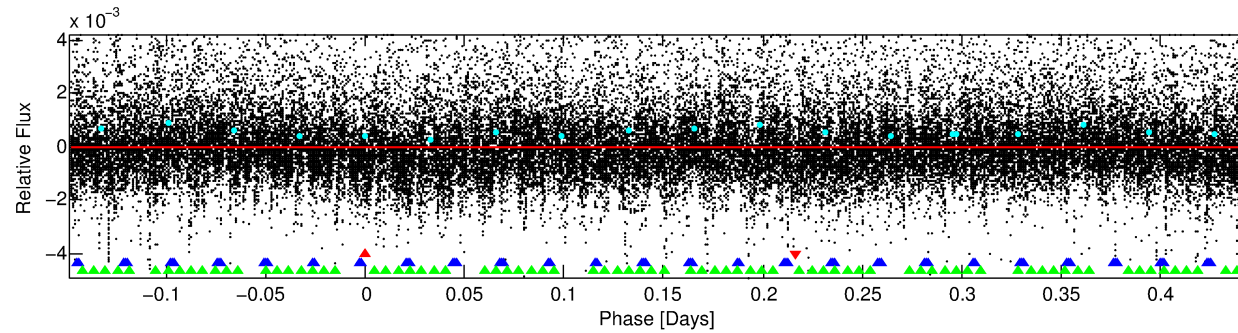
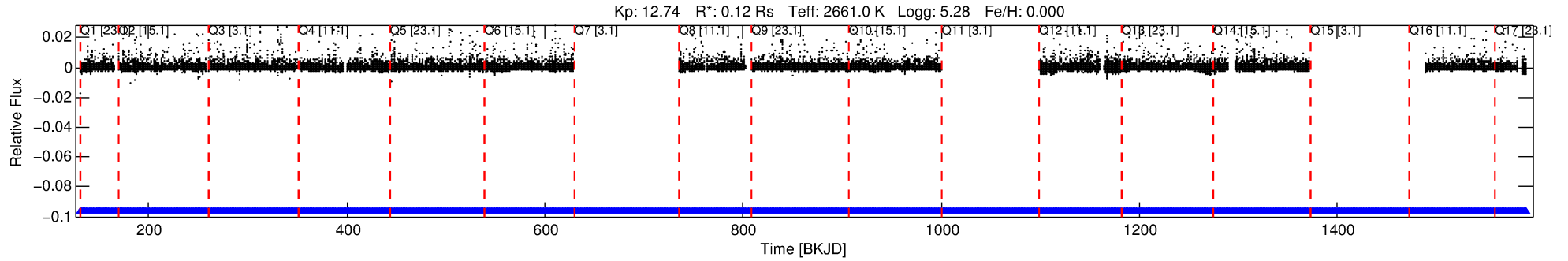
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009726699-01

No Significant Match Found

# DV One-Page Summary

KIC: 9726699 Candidate: 1 of 3 Period: 0.593 d



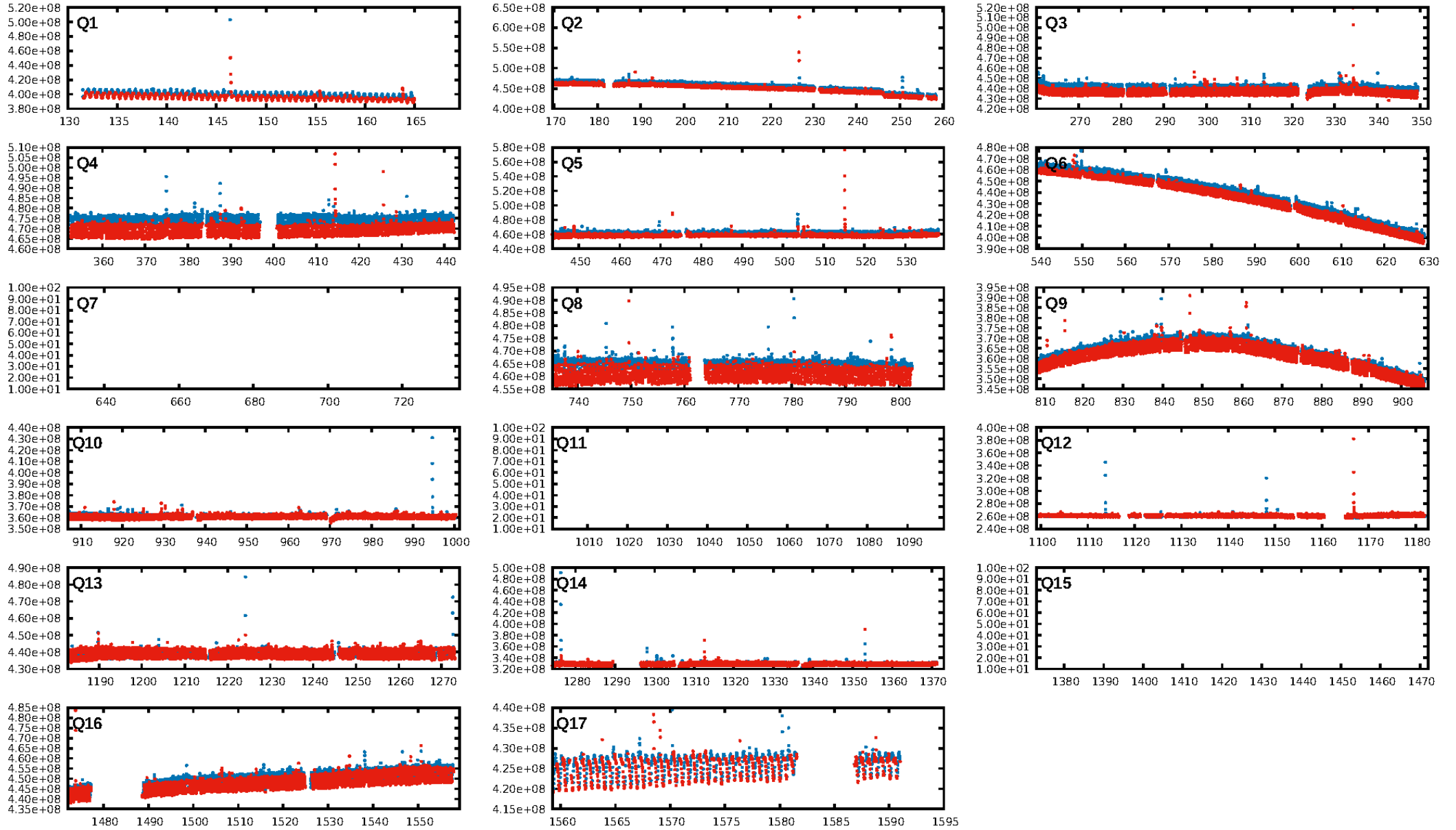
## DV Fit Results:

Period = 0.59253 [0.14353] d  
Epoch = 131.7517 [31.1199] BKJD  
Rp/R\* = 0.0001 [0.0943]  
a/R\* = 1.28 [606.50]  
b = 0.29 [3978.42]  
Seff = 15.31 [4.95]  
Teq = 504 [41] K  
Rp = 0.00 [1.19] Re  
a = 0.0063 [0.0010] AU  
Ag = 2416246.95 [4390718912.49] [0.00σ]  
Teffp = 30749 [13970263] K [0.00σ]

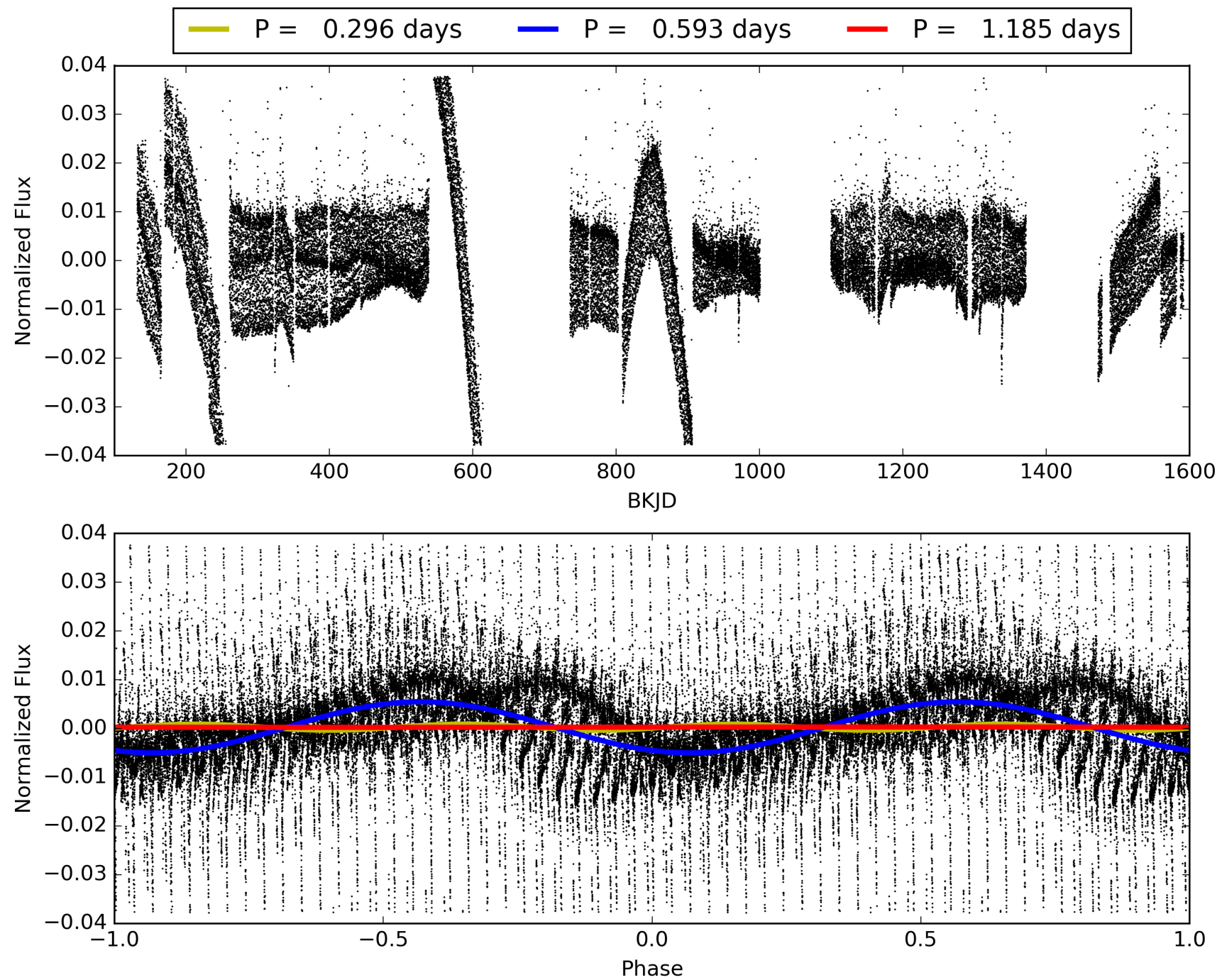
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [67.14σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.07e-53  
RollingBand-fgt: 1.00 [1711/1711]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.077 arcsec [1.07σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-rm: 2.339 arcsec [16.75σ]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009726699-01, PDC Light Curves

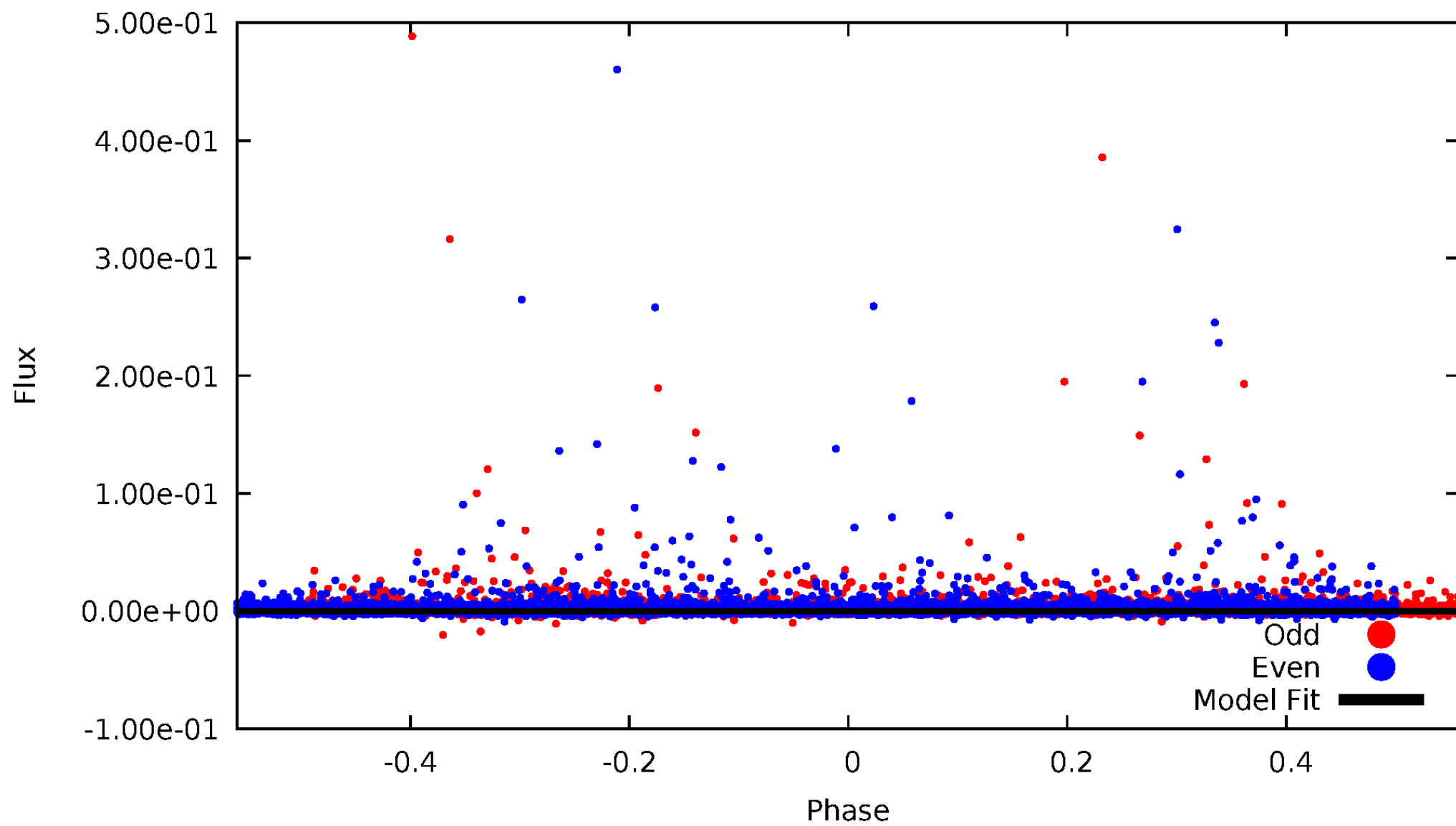


TCE 009726699-01



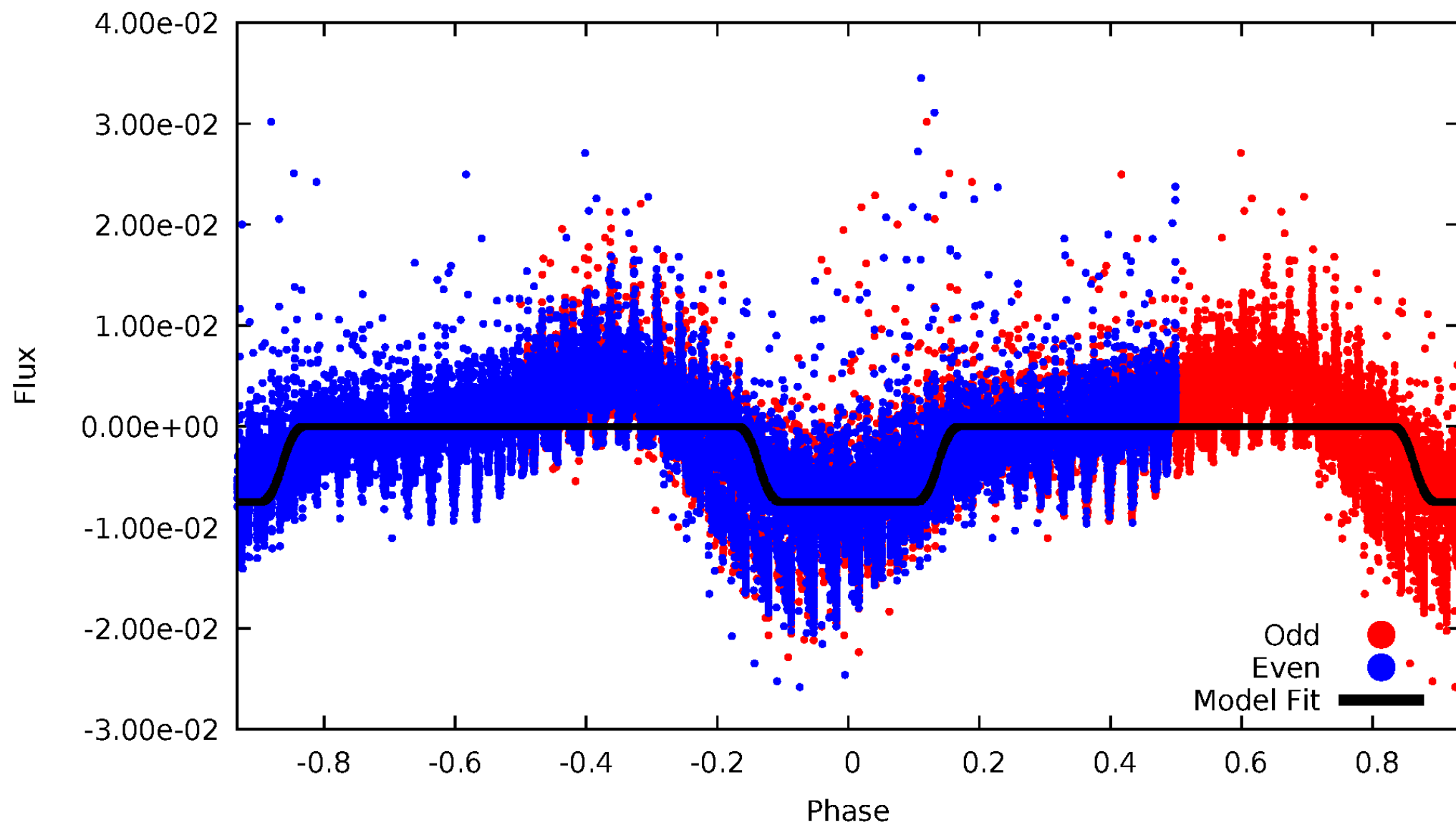
# DV Odd/Even

TCE 009726699-01



# ALT Odd/Even

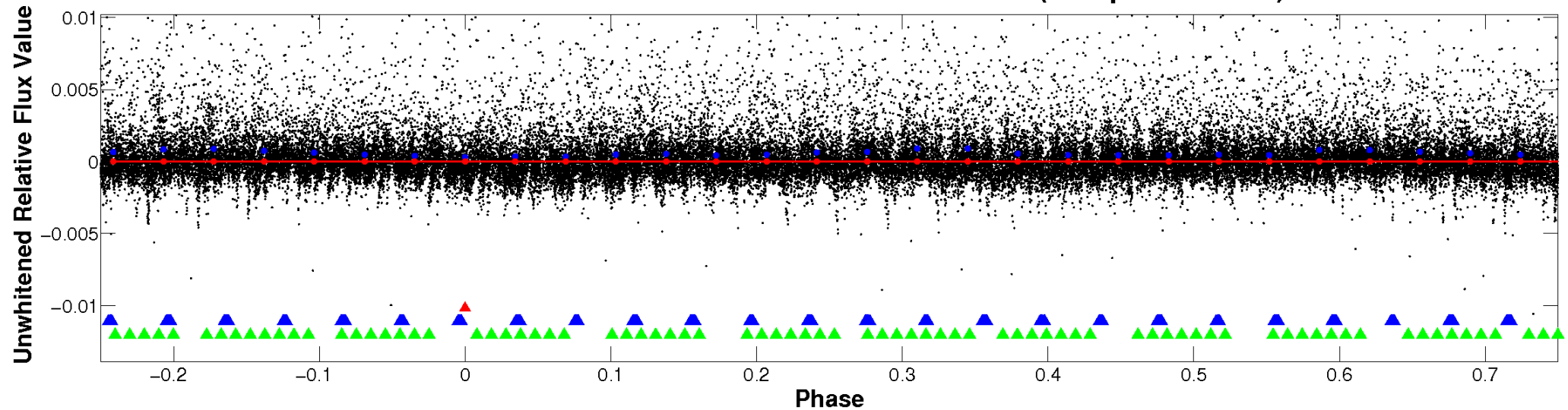
TCE 009726699-01



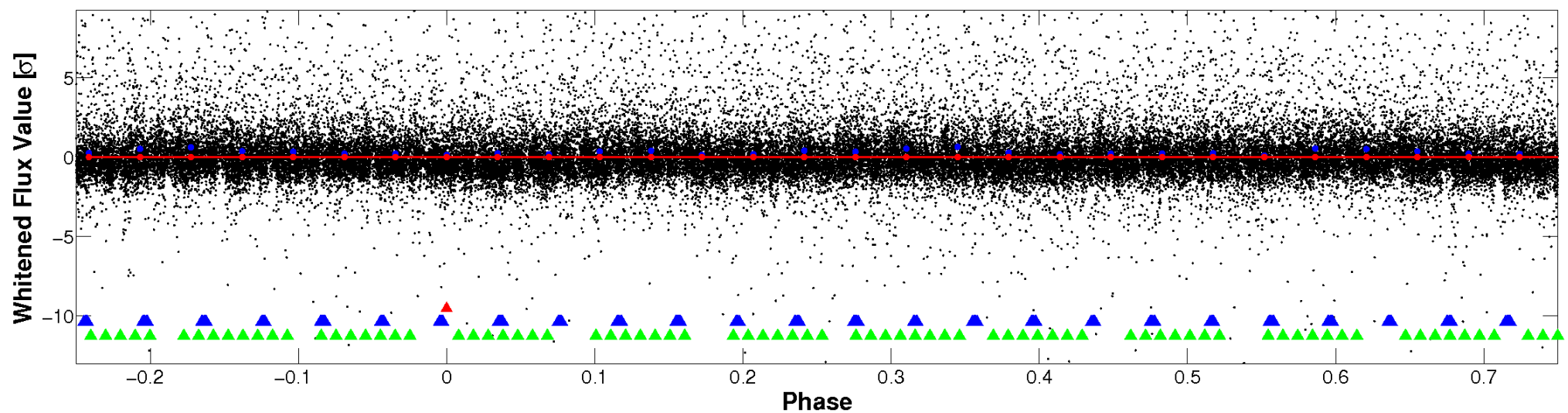


# Non-Whitened Vs. Whitened Light Curve

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

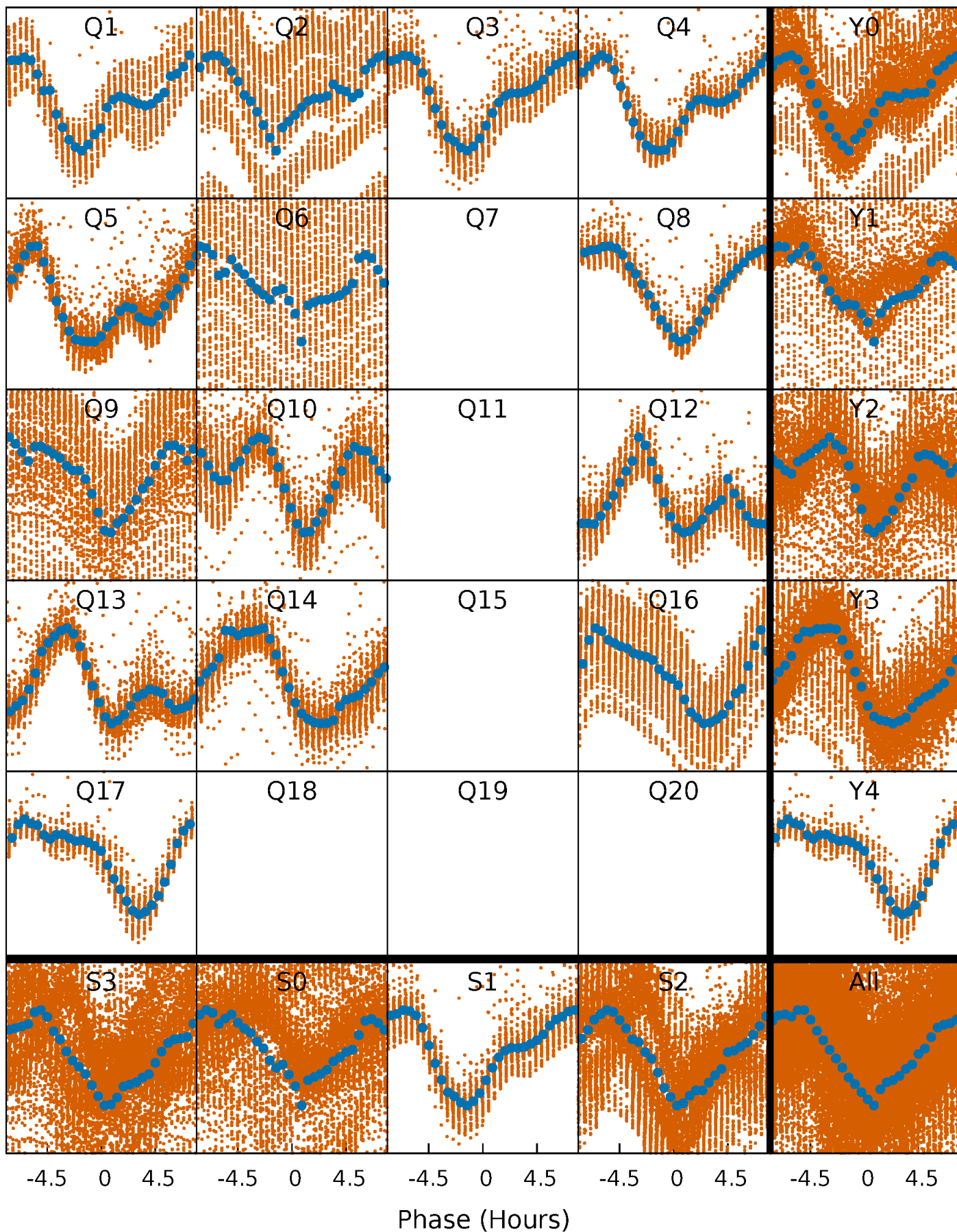


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

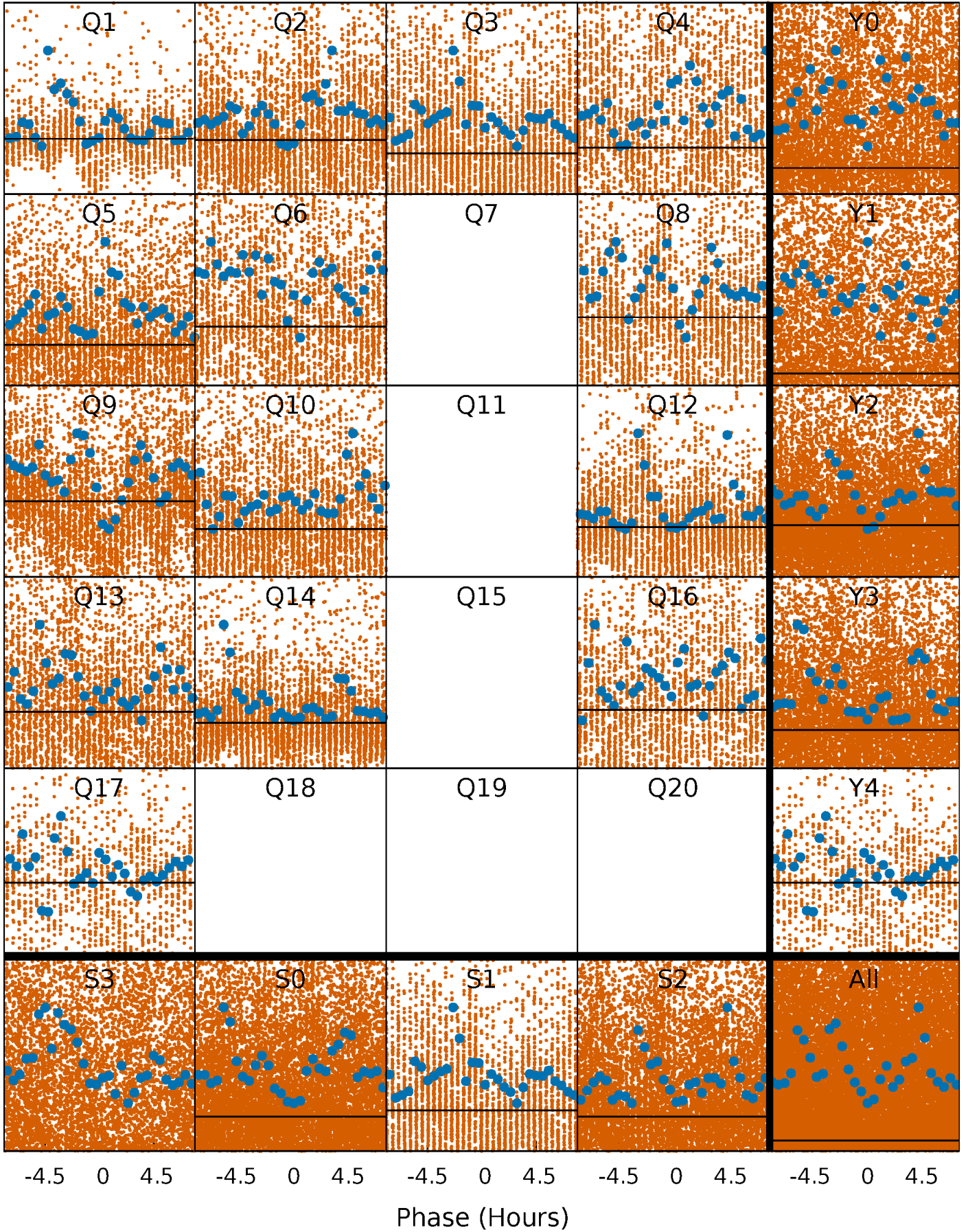
TCE 009726699-01   P= 0.592531 Days    $T_0=131.751677$  (BKJD)





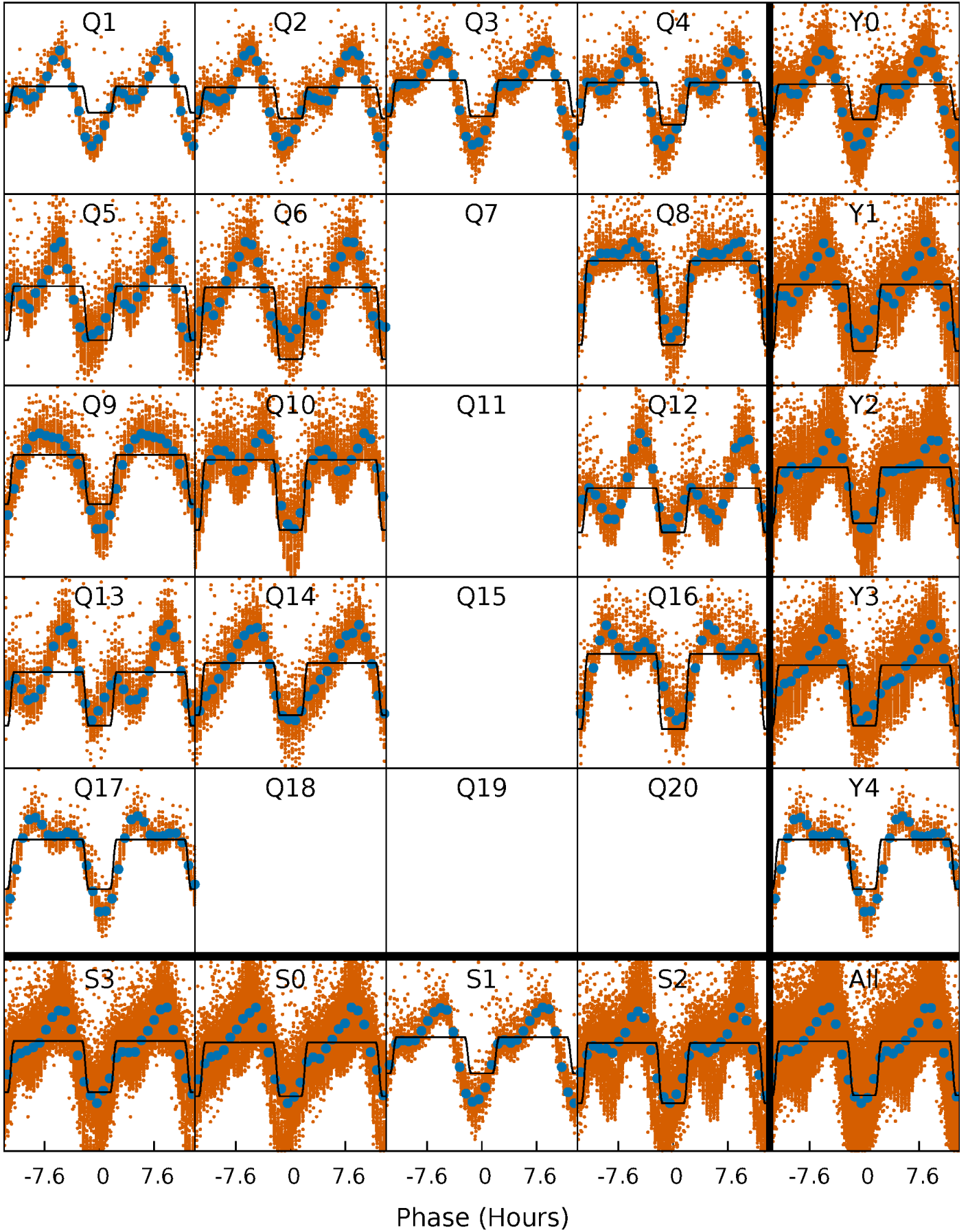
# DV Quarter-Phased Transit Curves

TCE 009726699-01 P= 0.592531 Days  $T_0=131.751677$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

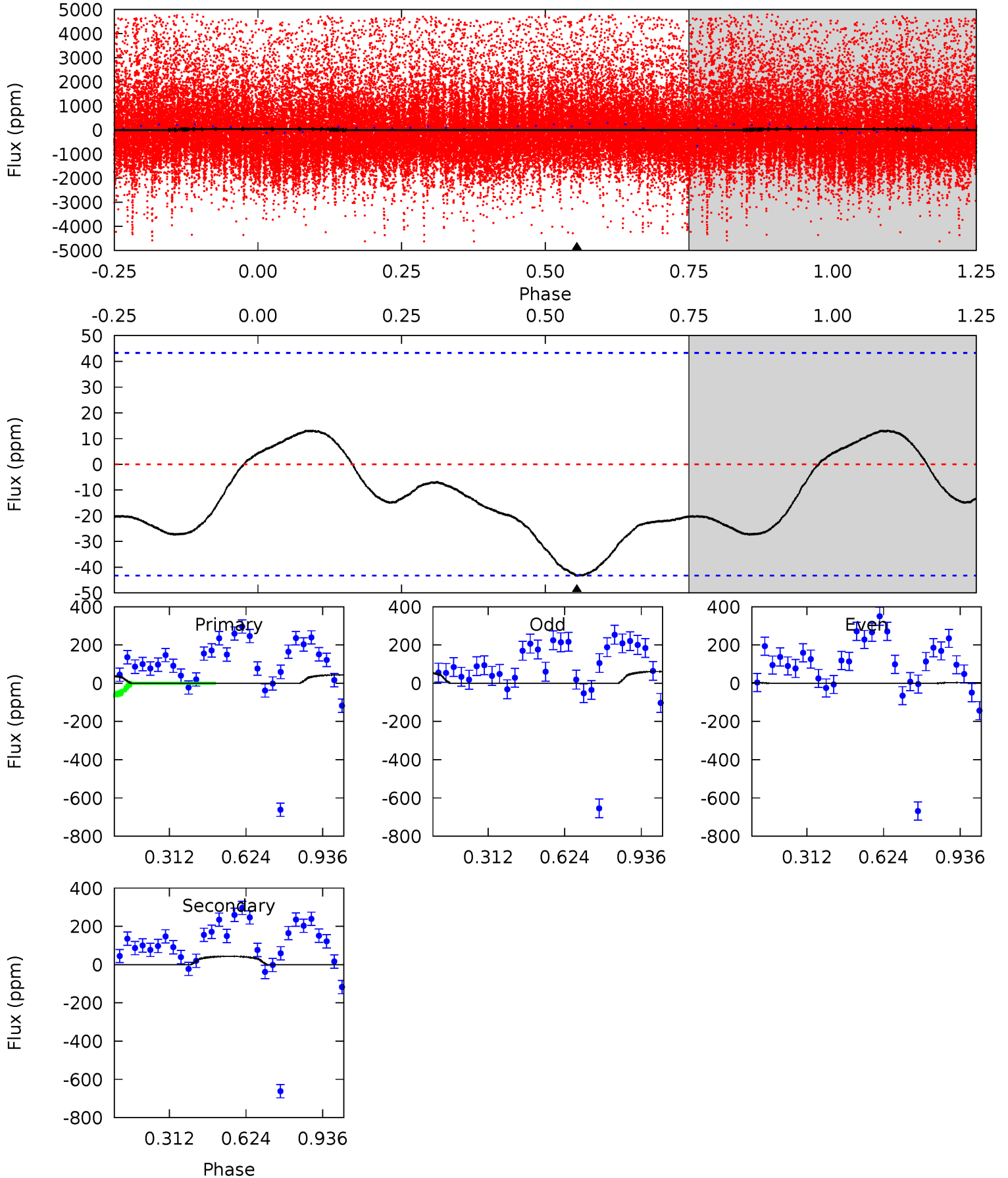
TCE 009726699-01   P= 0.592596 Days    $T_0=131.706606$  (BKJD)



# DV Model-Shift Uniqueness Test

009726699-01, P = 0.592531 Days, E = 131.159146 Days

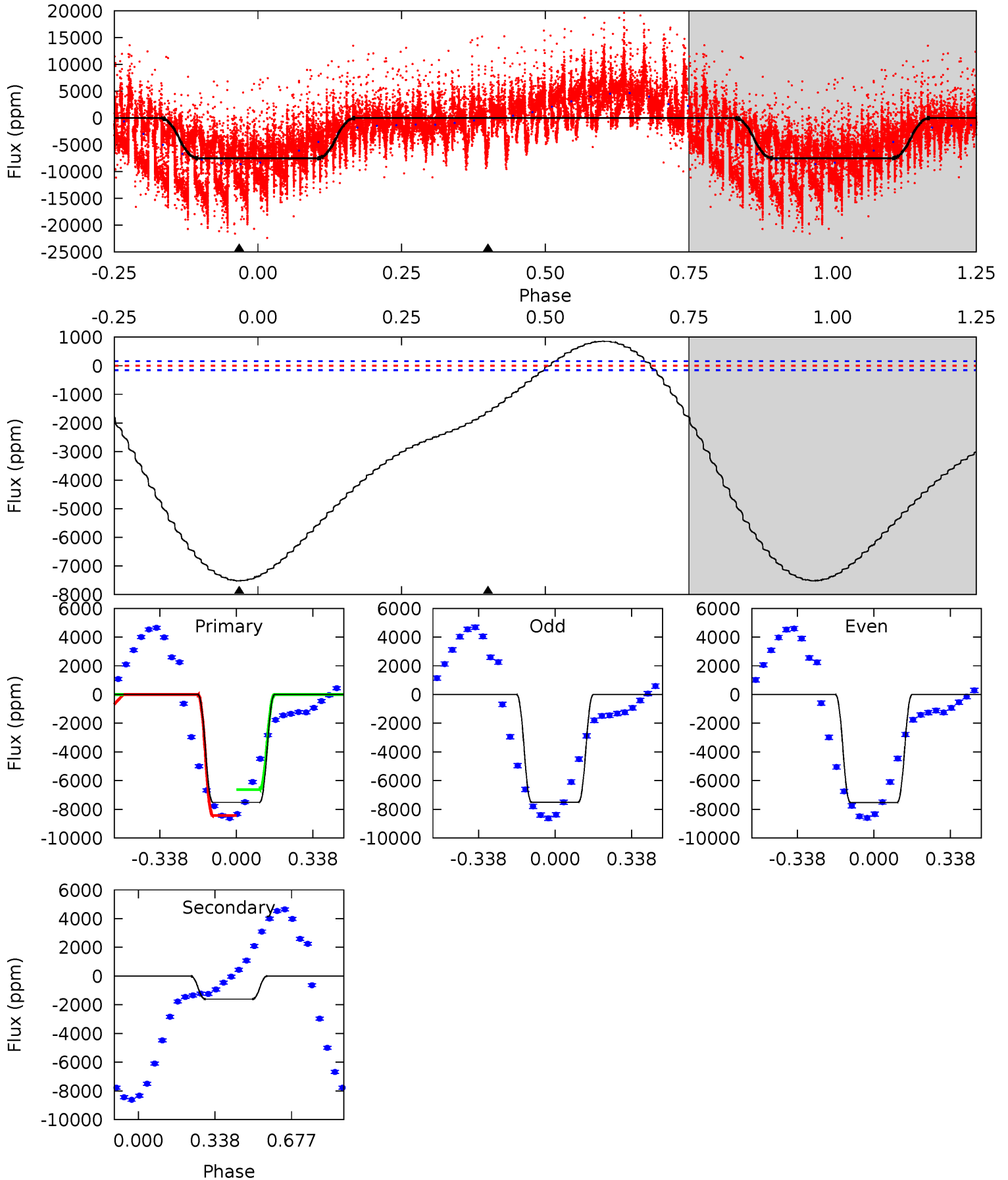
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.32 | 4.32 | 0   | 0   | 4.32            | 1.01            | 1.25             | 4.32    | 4.32    | 4.32    | 4.32    | 2.92    | 4.30 | 0.23  | 3.29 |



# Alt Model-Shift Uniqueness Test

009726699-01, P = 0.592596 Days, E = 131.114010 Days

| Pri   | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|-------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 202.6 | 43.4 | 0   | 0   | 4.30            | 0.96            | 16.7             | 202.6   | 202.6   | 43.4    | 43.4    | 0.14    | 1.07 | 0.10  | 35.2 |



### Stellar Parameters For KIC 009726699

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $2661^{+1}_{-1}$    | $5.283^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $0.116^{+1.000}_{-1.000}$ | $0.094^{+1.000}_{-1.000}$ | $85.200^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +19%/-19%                 | +inf%/-inf%               | +862%/-862%               | +1064%/-1064%             | +1%/-1%                                   |
| 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 009726699-01 / KOI

| Detrend | Depth (ppm)    | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$  | $A_{\text{obs}}$           |
|---------|----------------|------------------------|----------------------|-----------------------|----------------------------|
| DV      | $-43 \pm 10$   | $0.89^{+1.08}_{-0.62}$ | $727^{+105}_{-84}$   | $1602^{+477}_{-2897}$ | $1.255^{+13.721}_{-1.009}$ |
| Alt.    | $-1608 \pm 37$ | $1.48^{+1.59}_{-1.01}$ | $727^{+103}_{-84}$   | $2139^{+659}_{-305}$  | $19^{+145}_{-14}$          |

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

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



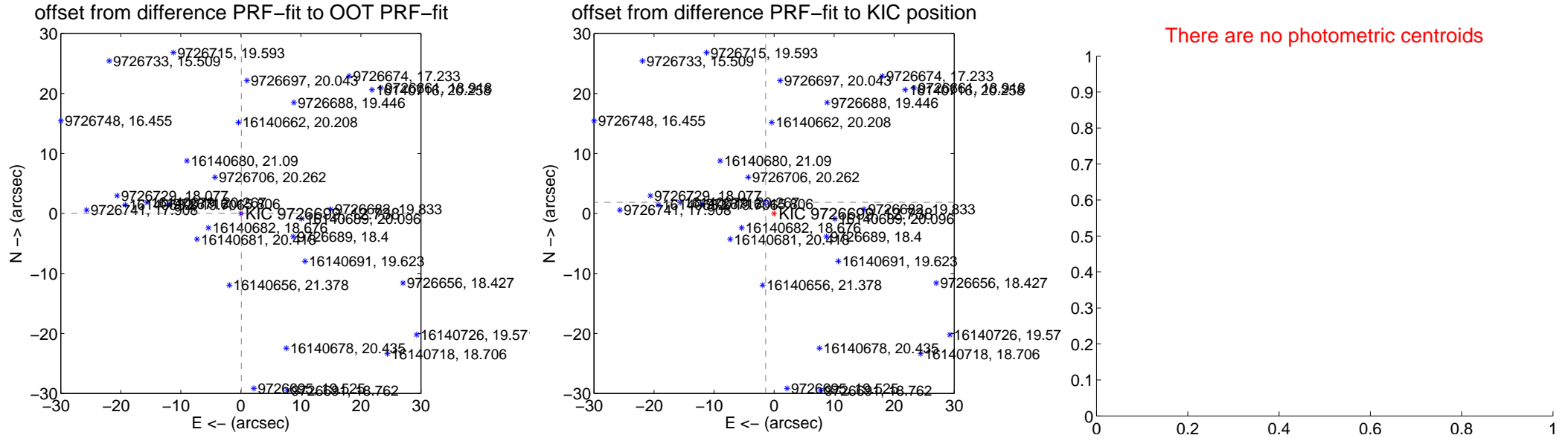
## DV Centroid Data

Supplemental centroid analysis for 009726699-01. Kepler magnitude: 12.74. Transit SNR 0.00

There are 14 quarters with good PRF difference image offsets

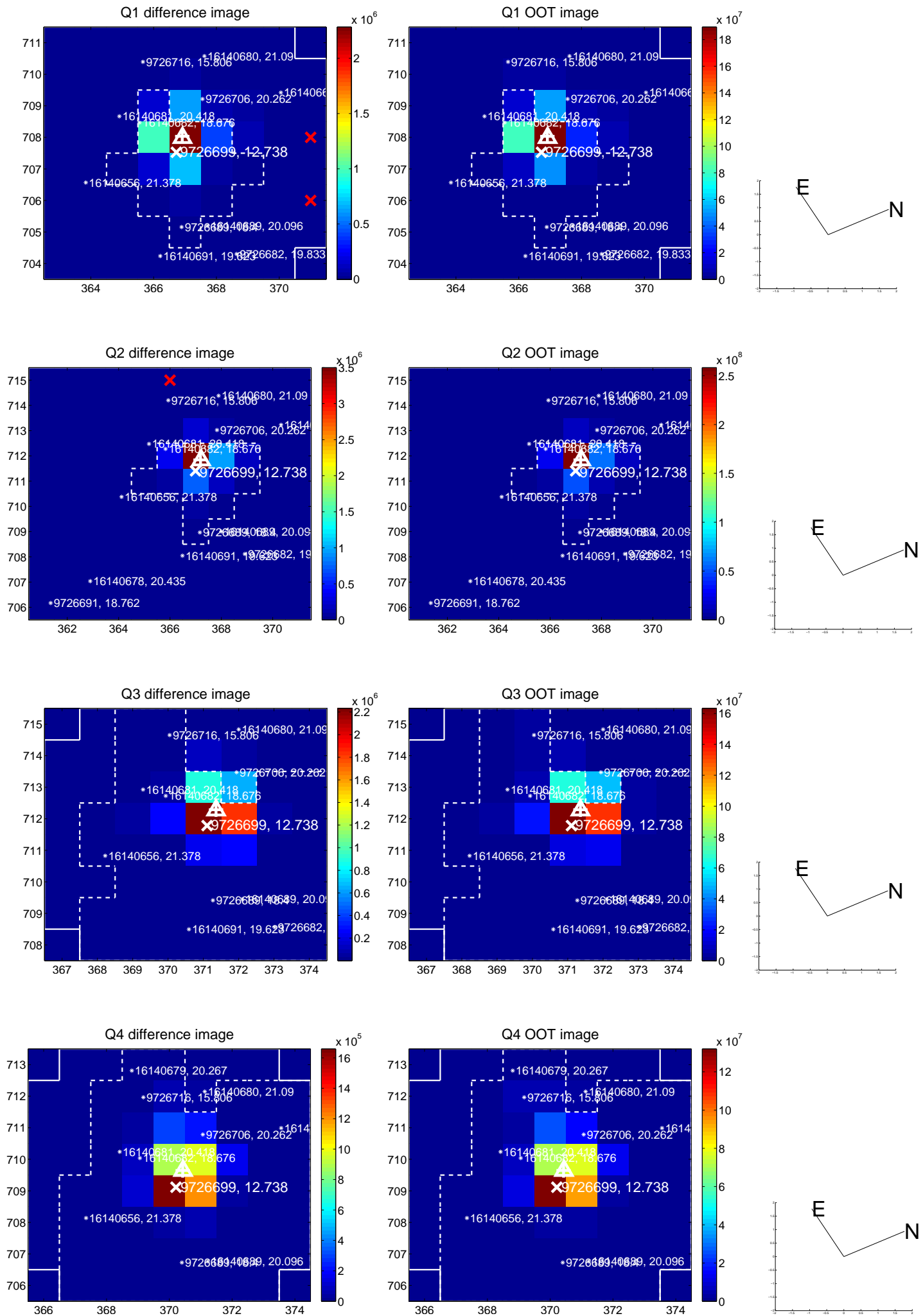
The OOT PRF centroid is offset from the target star catalog position by about 3.32 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

|   | Distance in arcsec                  | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|-------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.077 \pm 0.072$                   | 1.07                | $-0.074 \pm 0.074$ | $0.022 \pm 0.069$ |
| PRF-fit source offset from KIC position | <b><math>2.339 \pm 0.140</math></b> | <b>16.75</b>        | $1.402 \pm 0.109$  | $1.872 \pm 0.115$ |
| photometric centroid source offset      | —                                   | —                   | —                  | —                 |

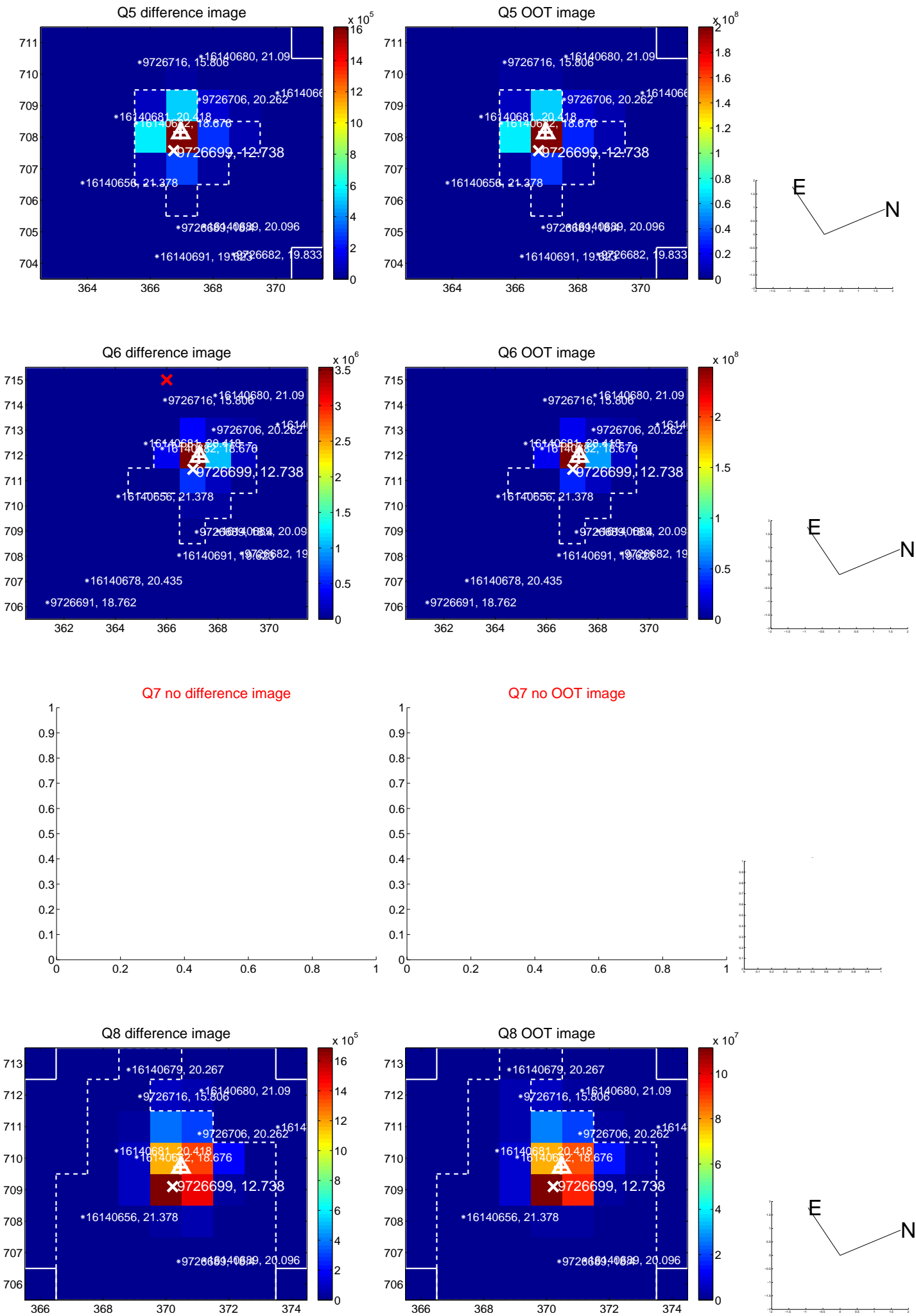


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

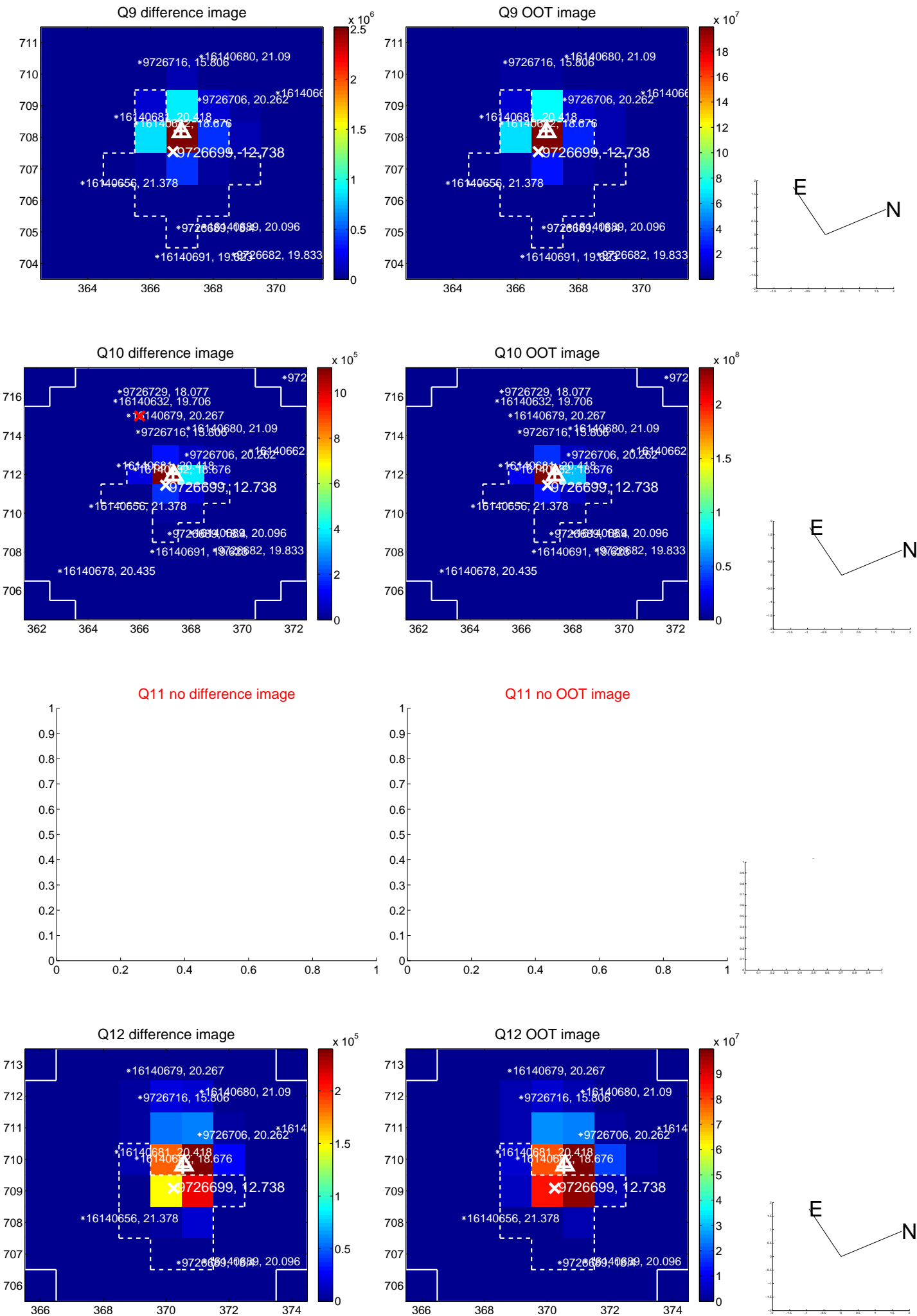
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



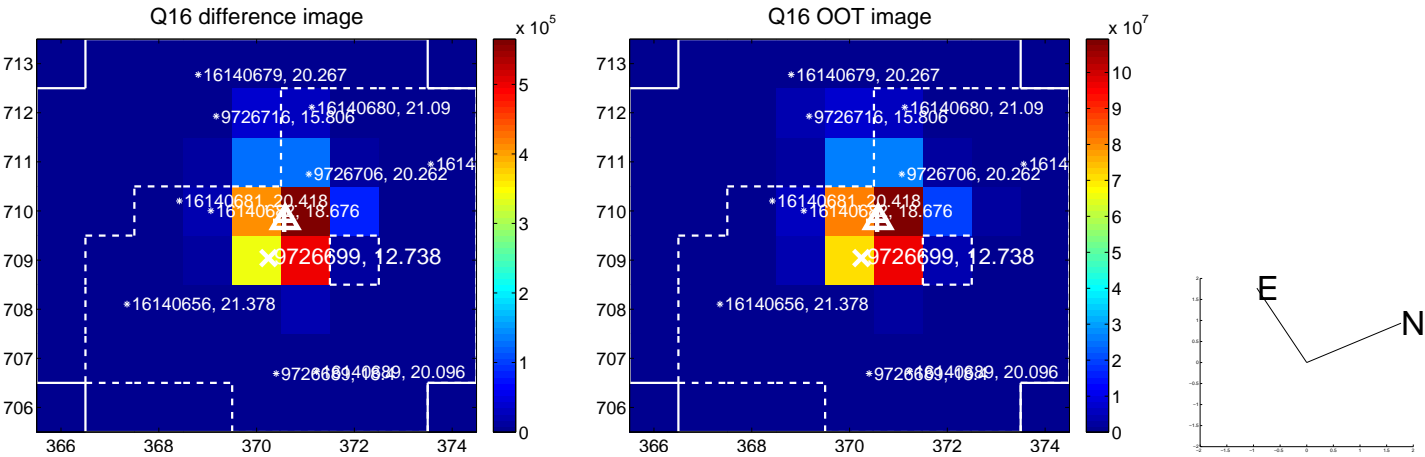
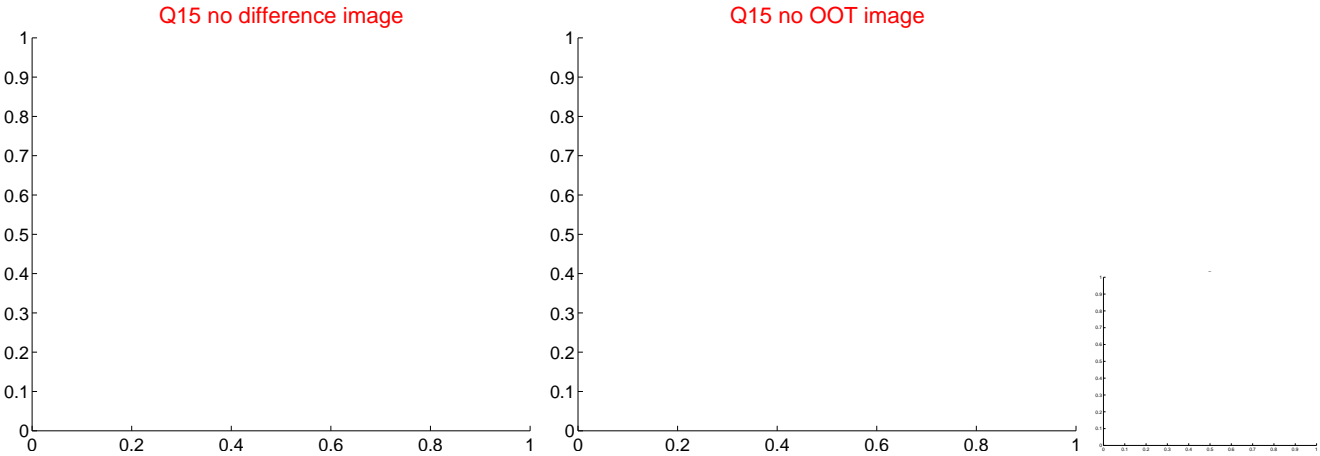
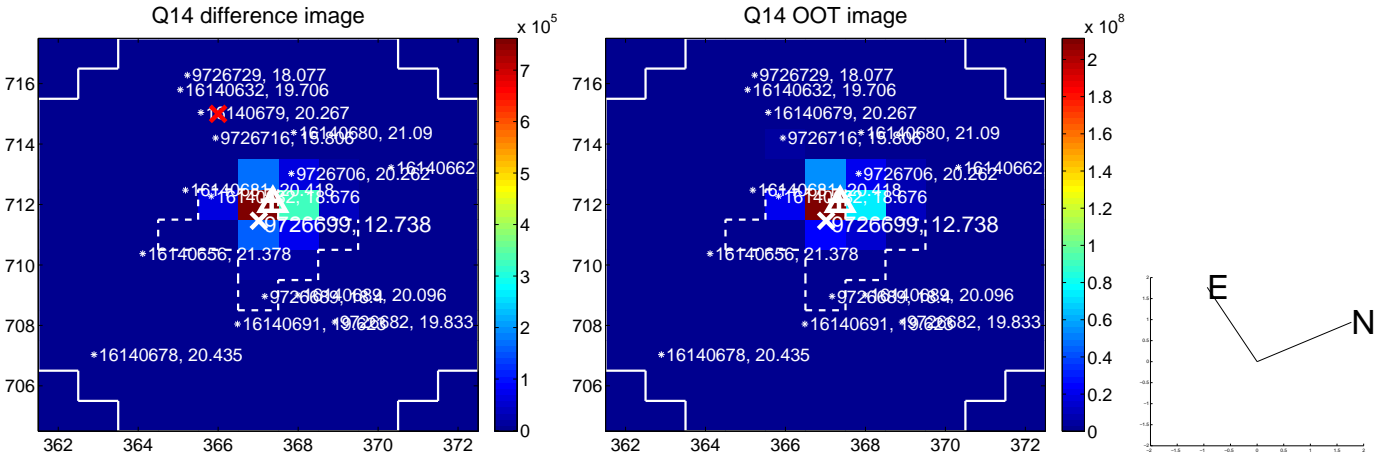
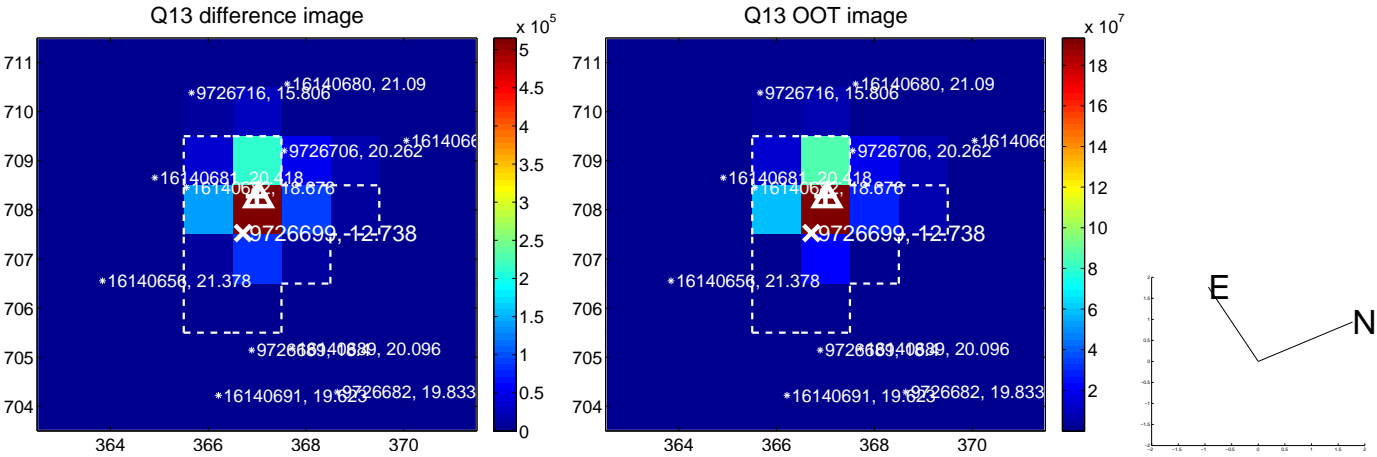
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

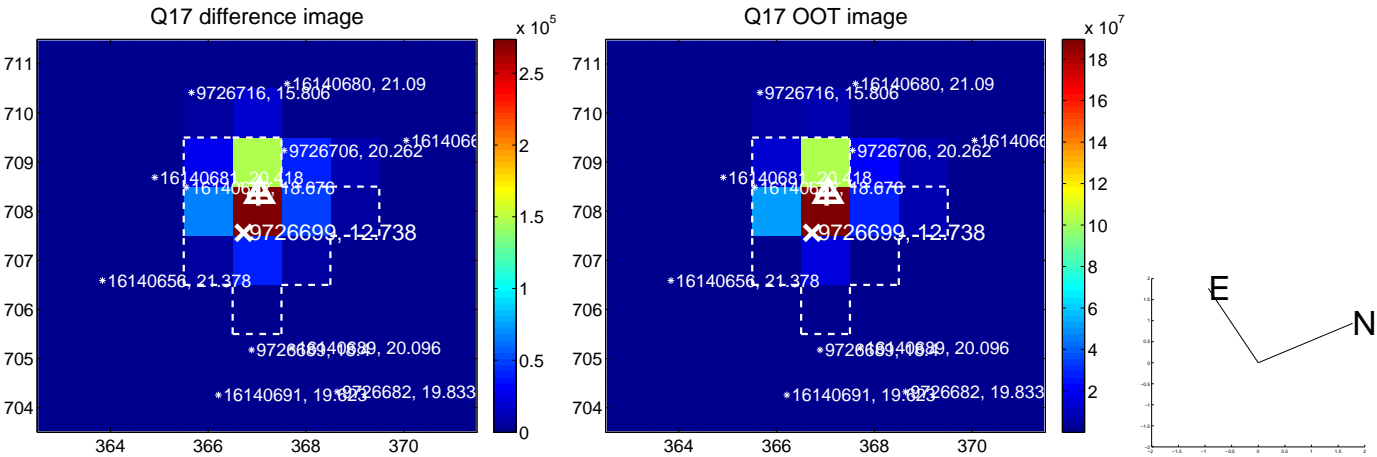


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





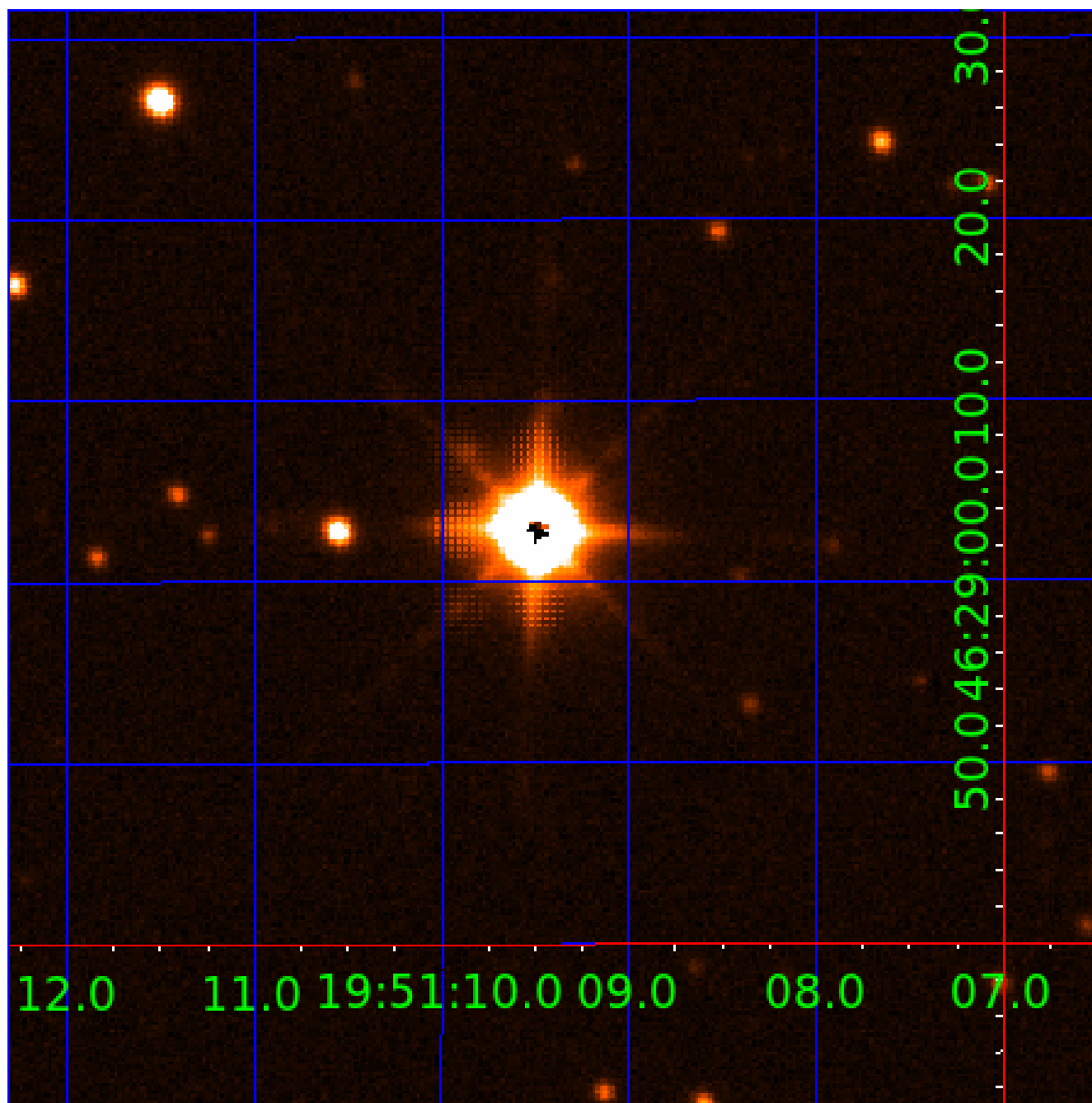
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 009726699

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009726699-01 | OBS      | No   | 0.592531      | 131.751677   | 0.0         | 3.969            | 13.9 | 0.0 | 0.12                        | 2661            | 0.00                   | 15.31                  |
| 009726699-02 | OBS      | No   | 12.703876     | 140.873496   | 983.6       | 1.731            | 8.7  | 9.3 | 0.12                        | 2661            | 0.36                   | 0.26                   |
| 009726699-03 | OBS      | No   | 18.044714     | 147.686334   | 1174.8      | 1.493            | 9.0  | 5.9 | 0.12                        | 2661            | 0.44                   | 0.16                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 009726699-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—CENT_KIC_POS   |
| 009726699-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST |
| 009726699-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS    |

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

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

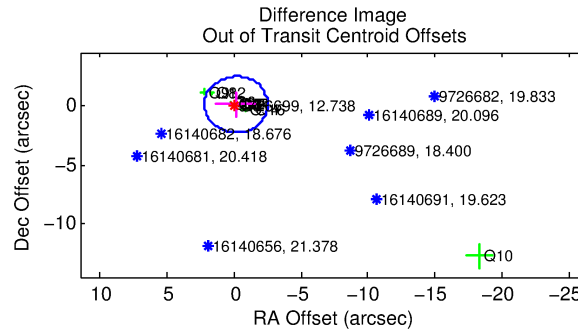
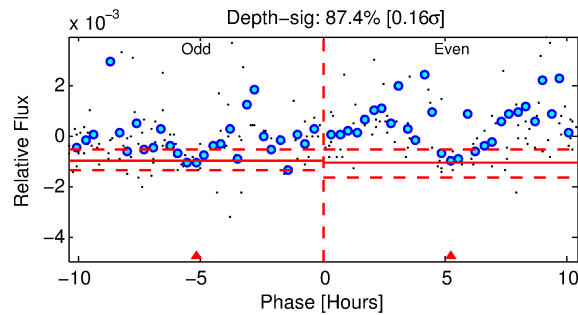
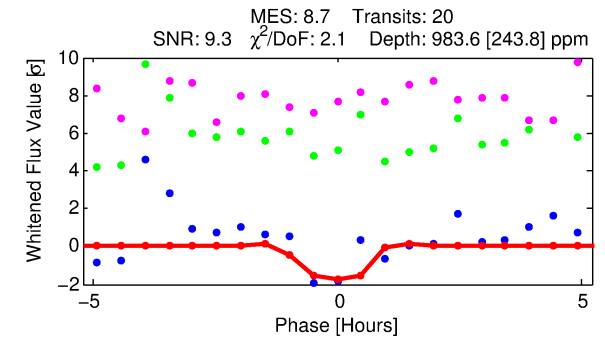
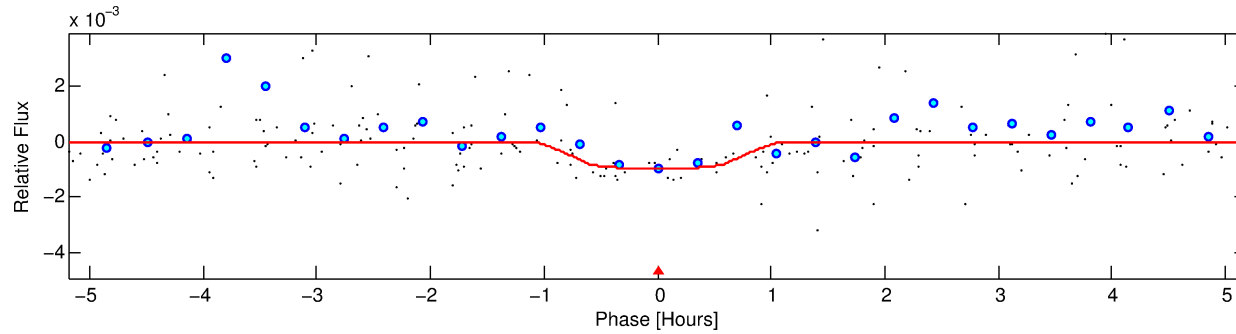
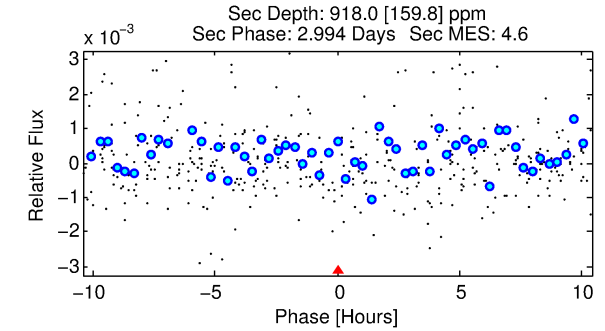
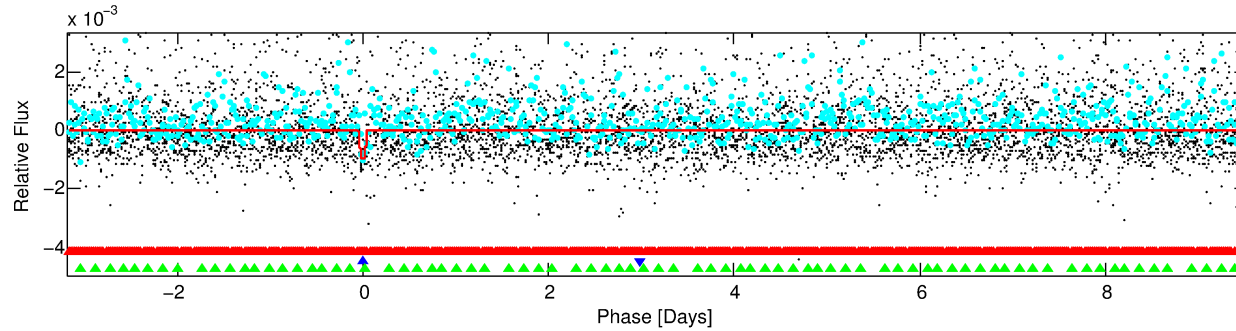
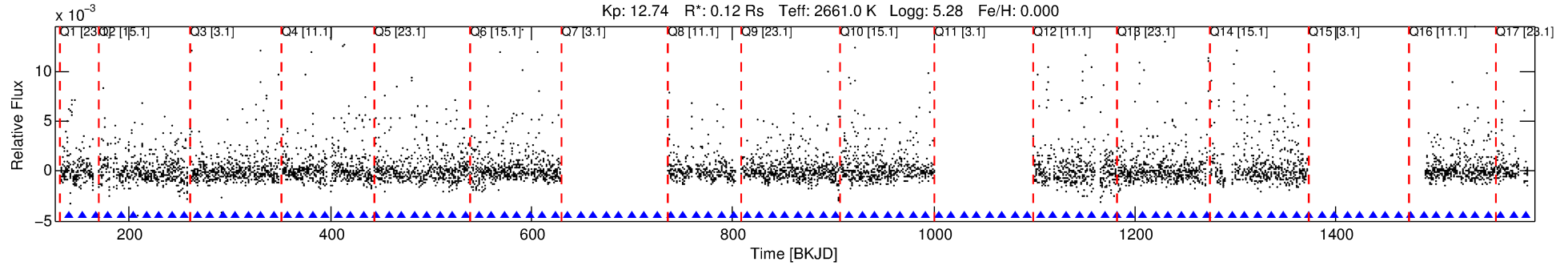
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009726699-02

No Significant Match Found

# DV One-Page Summary

KIC: 9726699 Candidate: 2 of 3 Period: 12.704 d



## DV Fit Results:

Period = 12.70388 [0.00016] d  
Epoch = 140.8735 [0.0096] BKJD  
Rp/R\* = 0.0284 [0.0986]  
a/R\* = 57.67 [882.54]  
b = 0.00 [4171.59]  
Seff = 0.26 [0.00]  
Teq = 182 [0] K  
Rp = 0.36 [1.25] Re  
a = 0.0485 [0.0000] AU  
Ag = 9166.76 [63624.87] [0.14σ]  
Teffp = 2747 [4767] K [0.54σ]

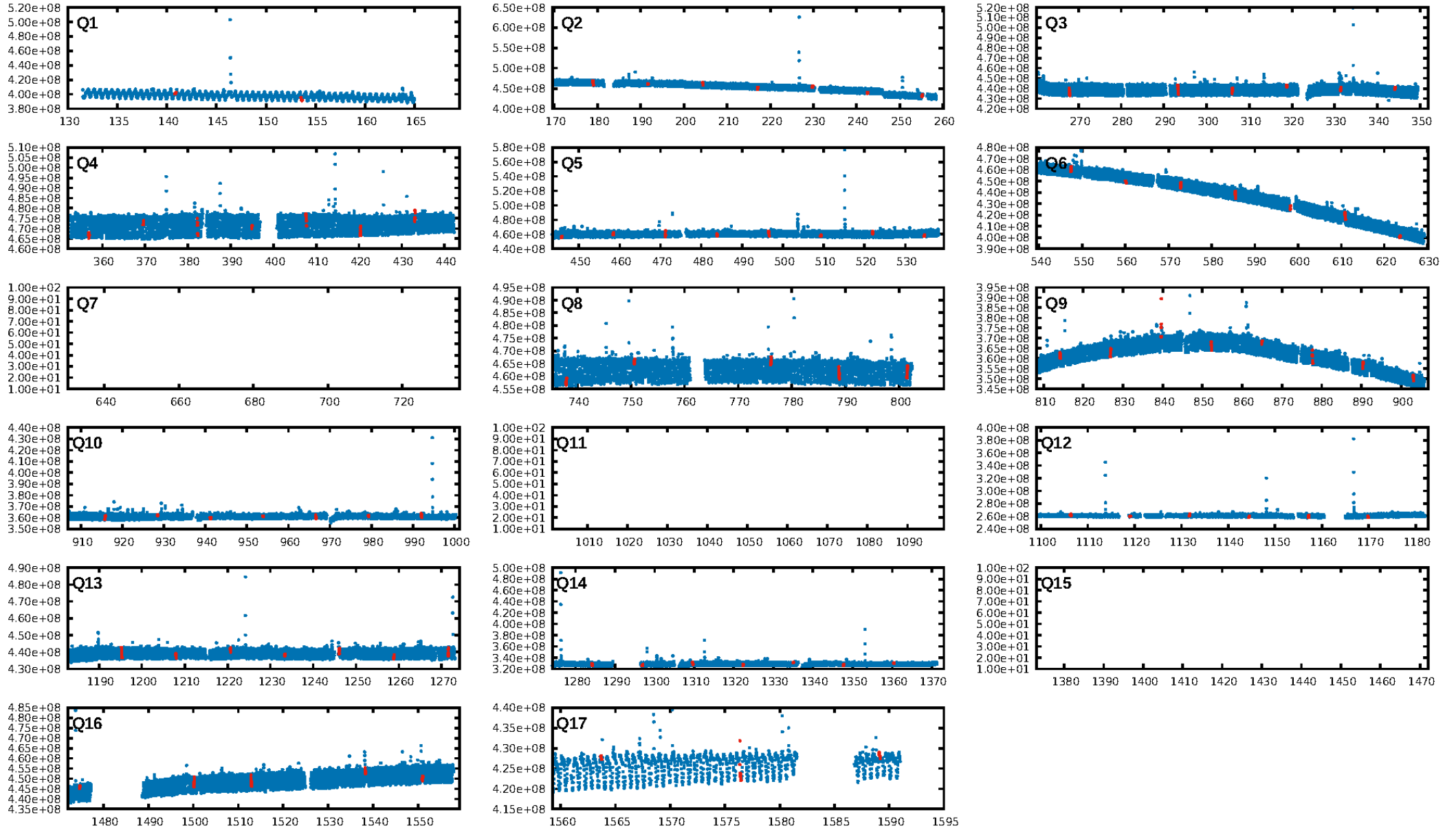
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.14σ]  
LongPeriod-sig: 100.0% [56.09σ]  
ModelChiSquare2-sig: 3.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.39e-10**  
RollingBand-fgt: 1.00 [18/18]  
**GhostDiagnostic-chr: 0.1928**  
Centroid-sig: 0.7%  
**Centroid-so: 2.618 arcsec [36.90σ]**  
OotOffset-rm: 0.170 arcsec [0.22σ]  
KicOffset-rm: 2.461 arcsec [1.59σ]  
OotOffset-st: 4/1/3/5 [13]  
KicOffset-st: 4/1/3/5 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:05:51 Z

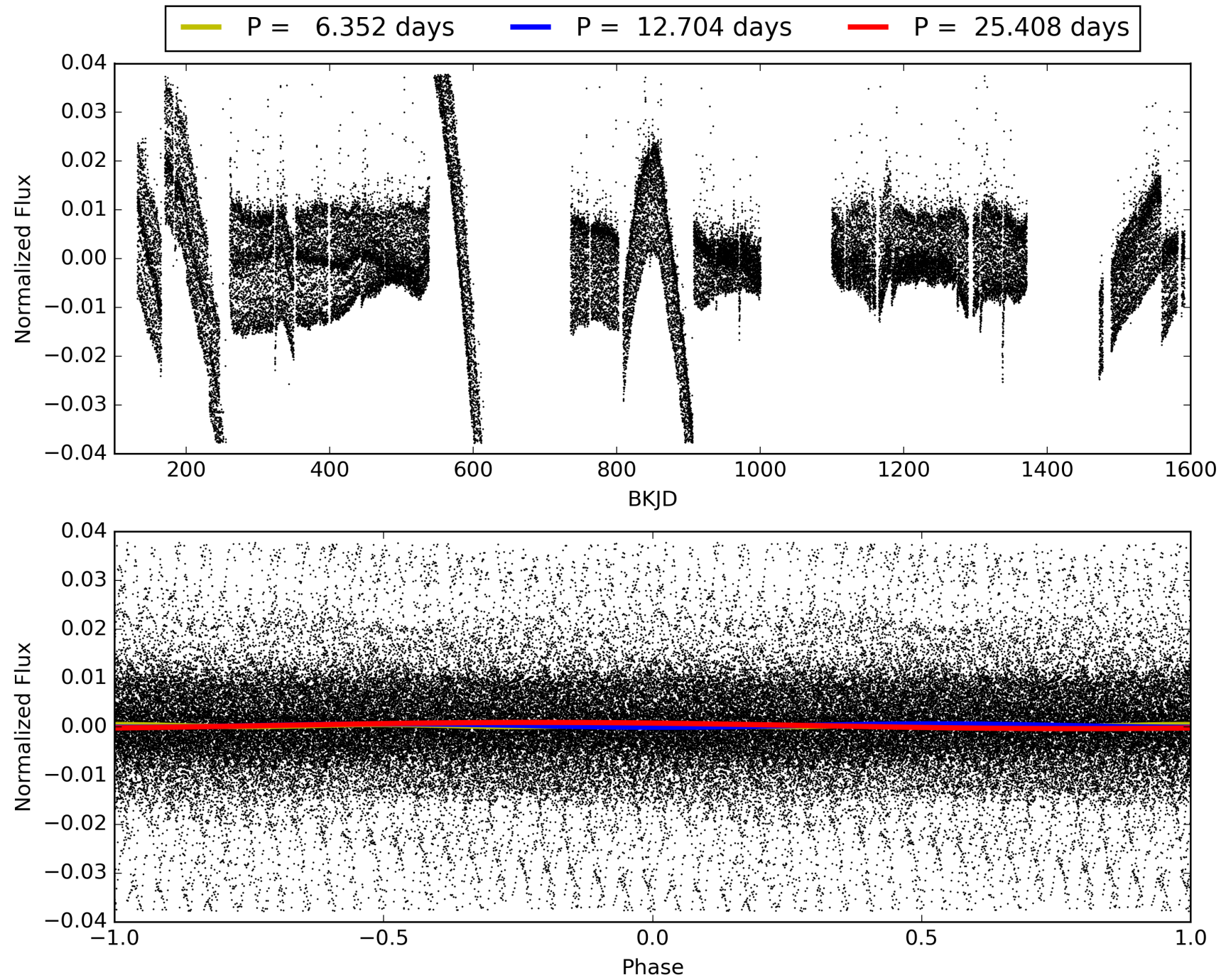
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009726699-02, PDC Light Curves



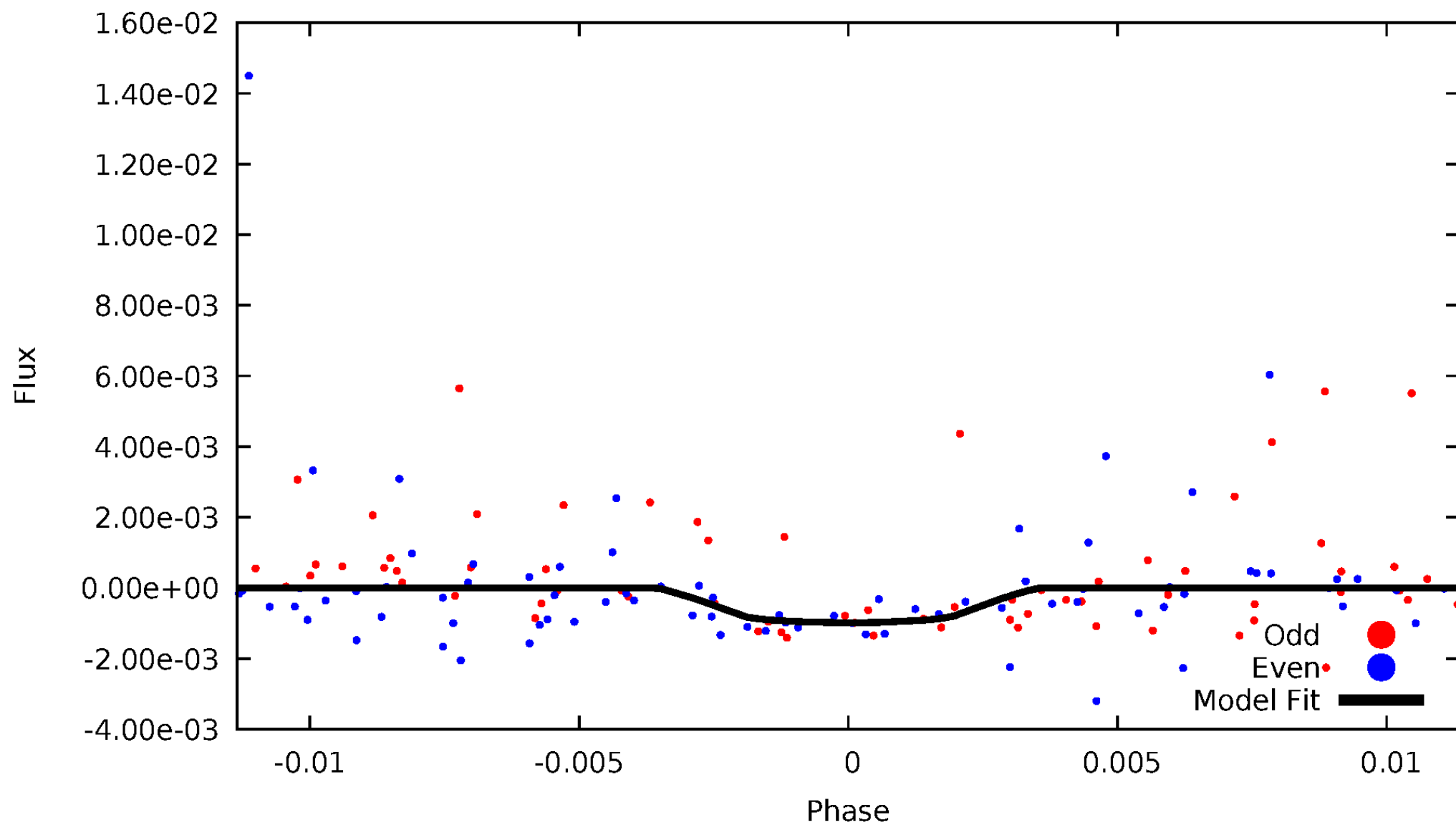


TCE 009726699-02



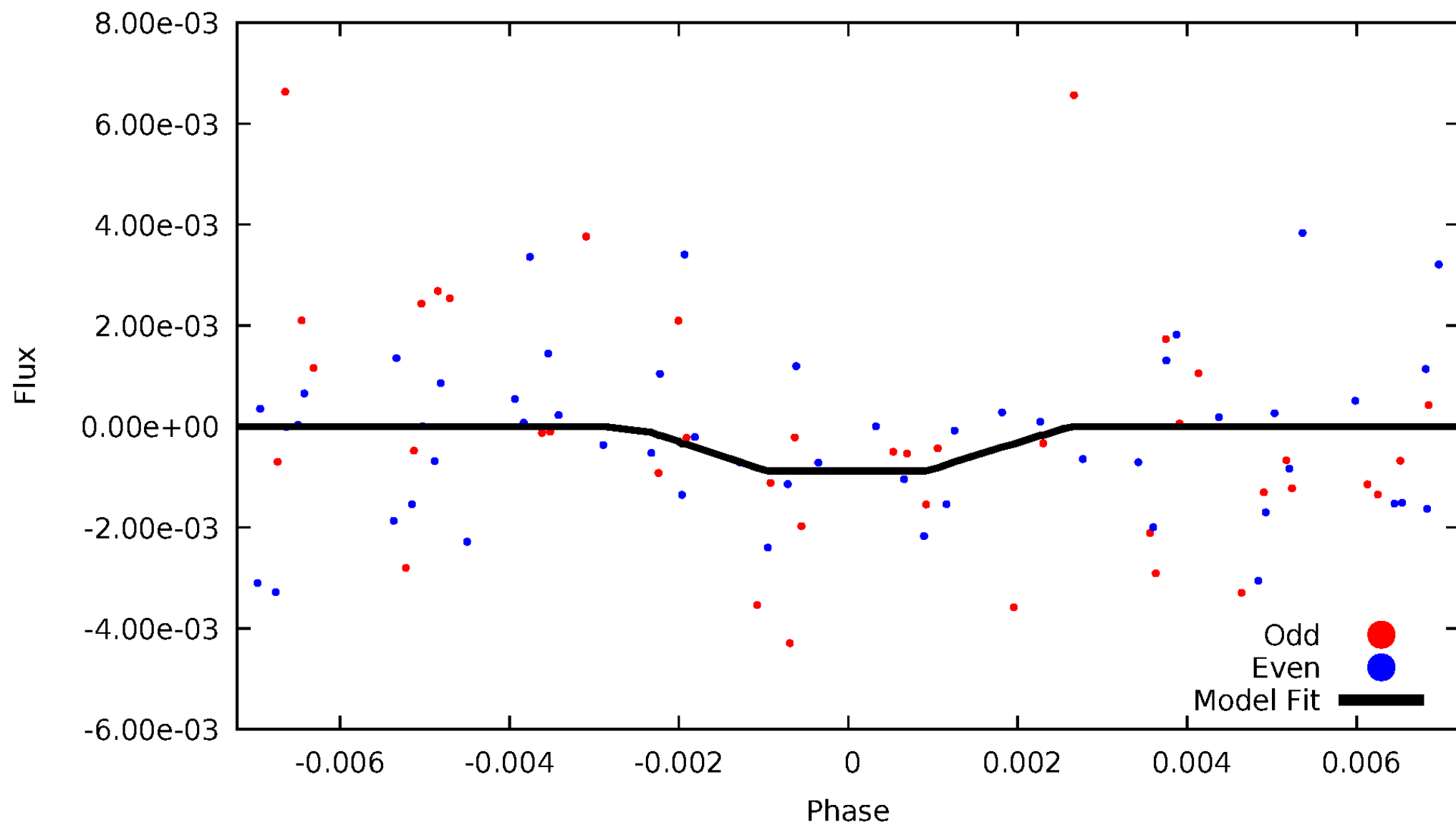
# DV Odd/Even

TCE 009726699-02



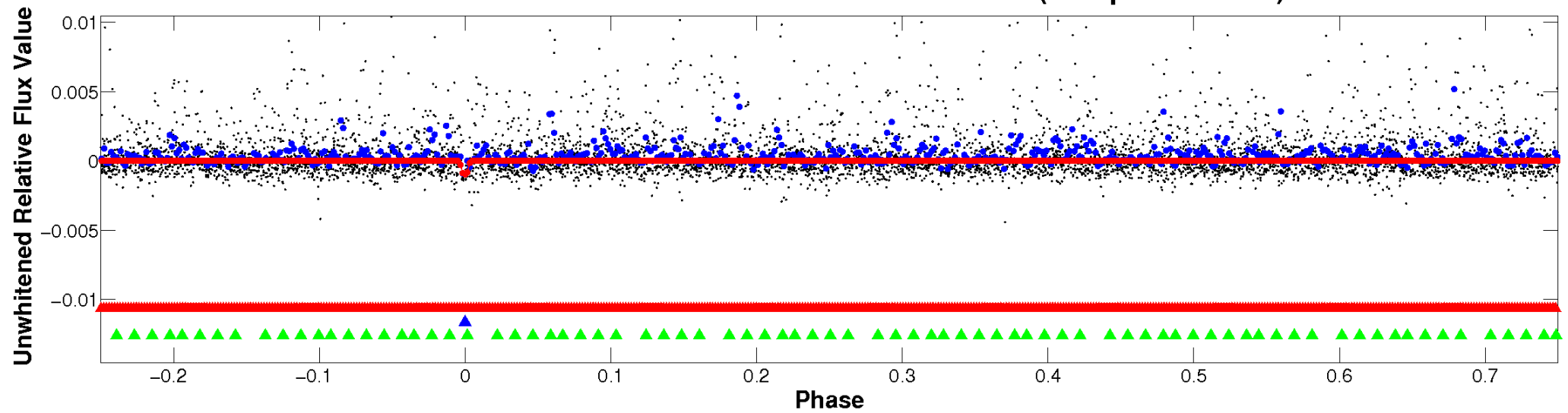
# ALT Odd/Even

TCE 009726699-02

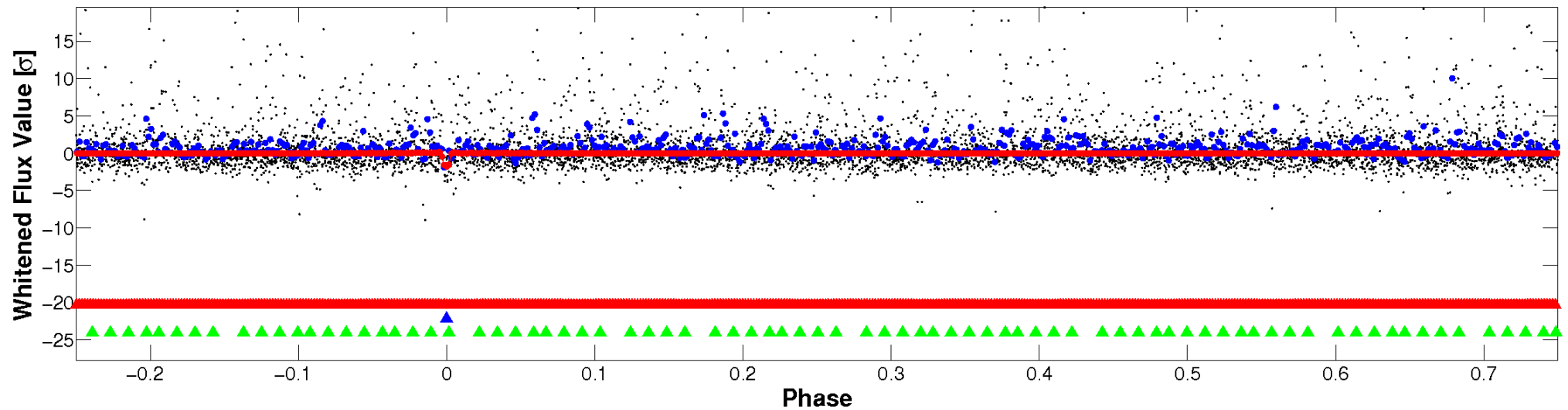


# Non-Whitened Vs. Whitened Light Curve

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

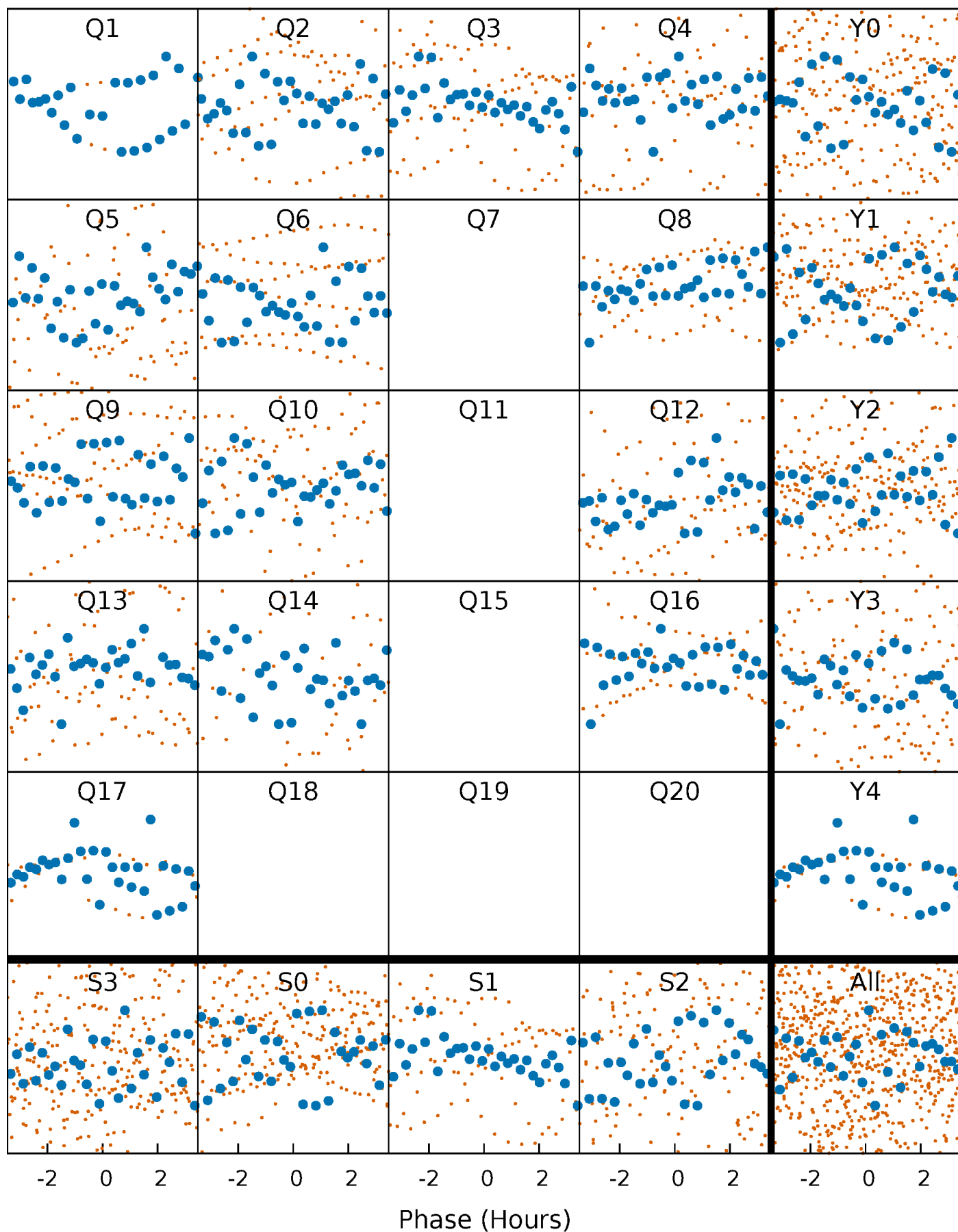


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

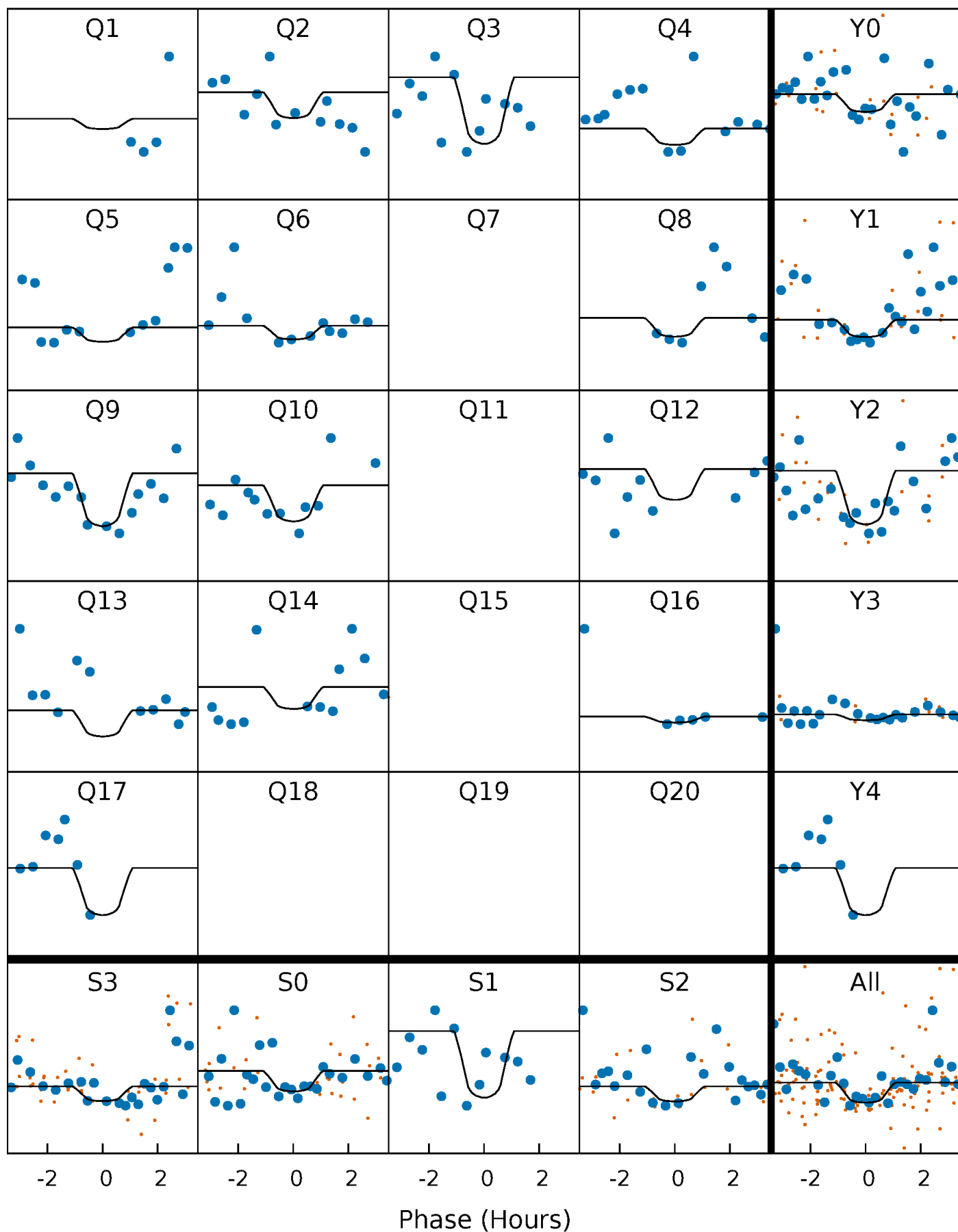
TCE 009726699-02 P= 12.703876 Days  $T_0=140.873496$  (BKJD)





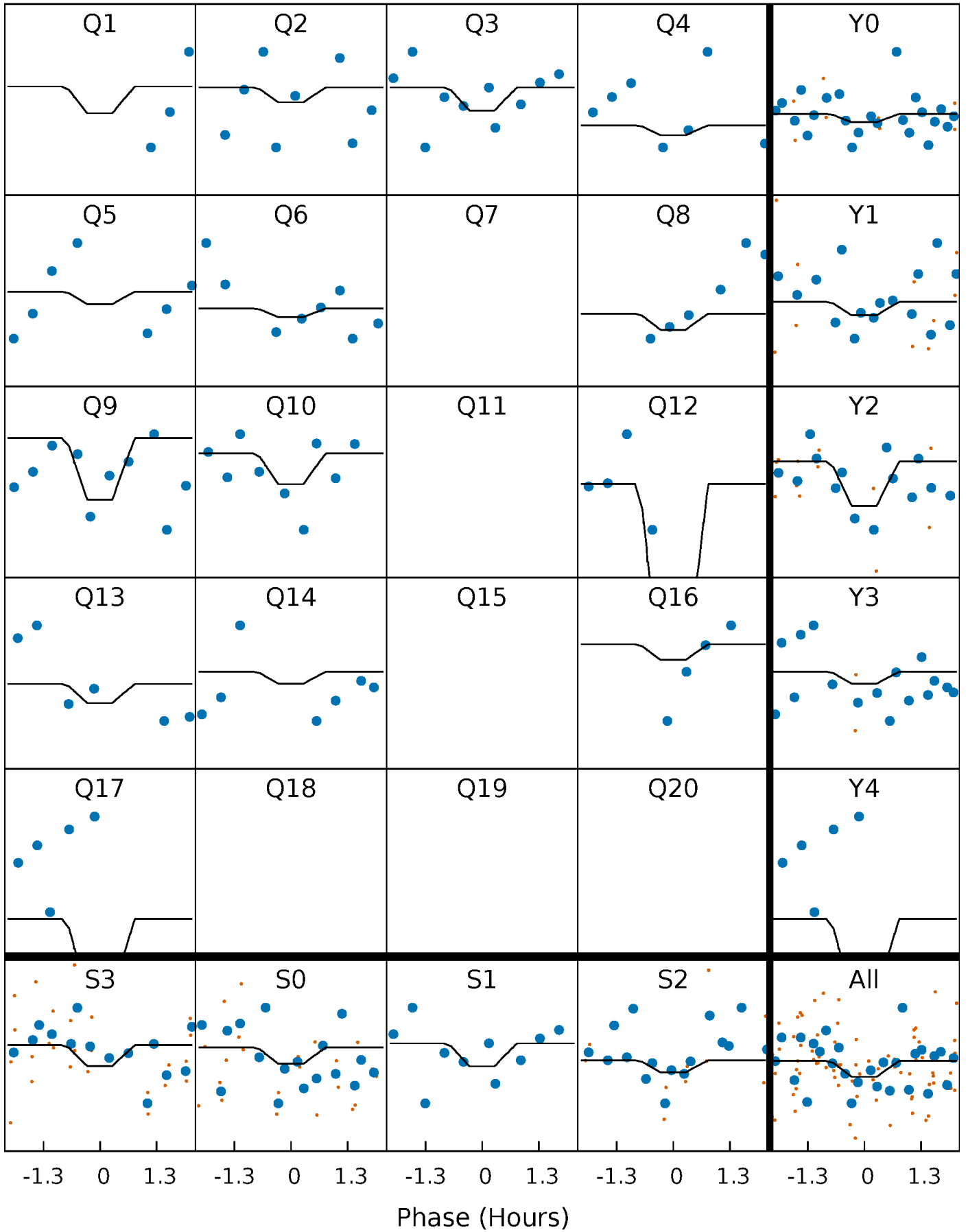
# DV Quarter-Phased Transit Curves

TCE 009726699-02 P= 12.703876 Days  $T_0=140.873496$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

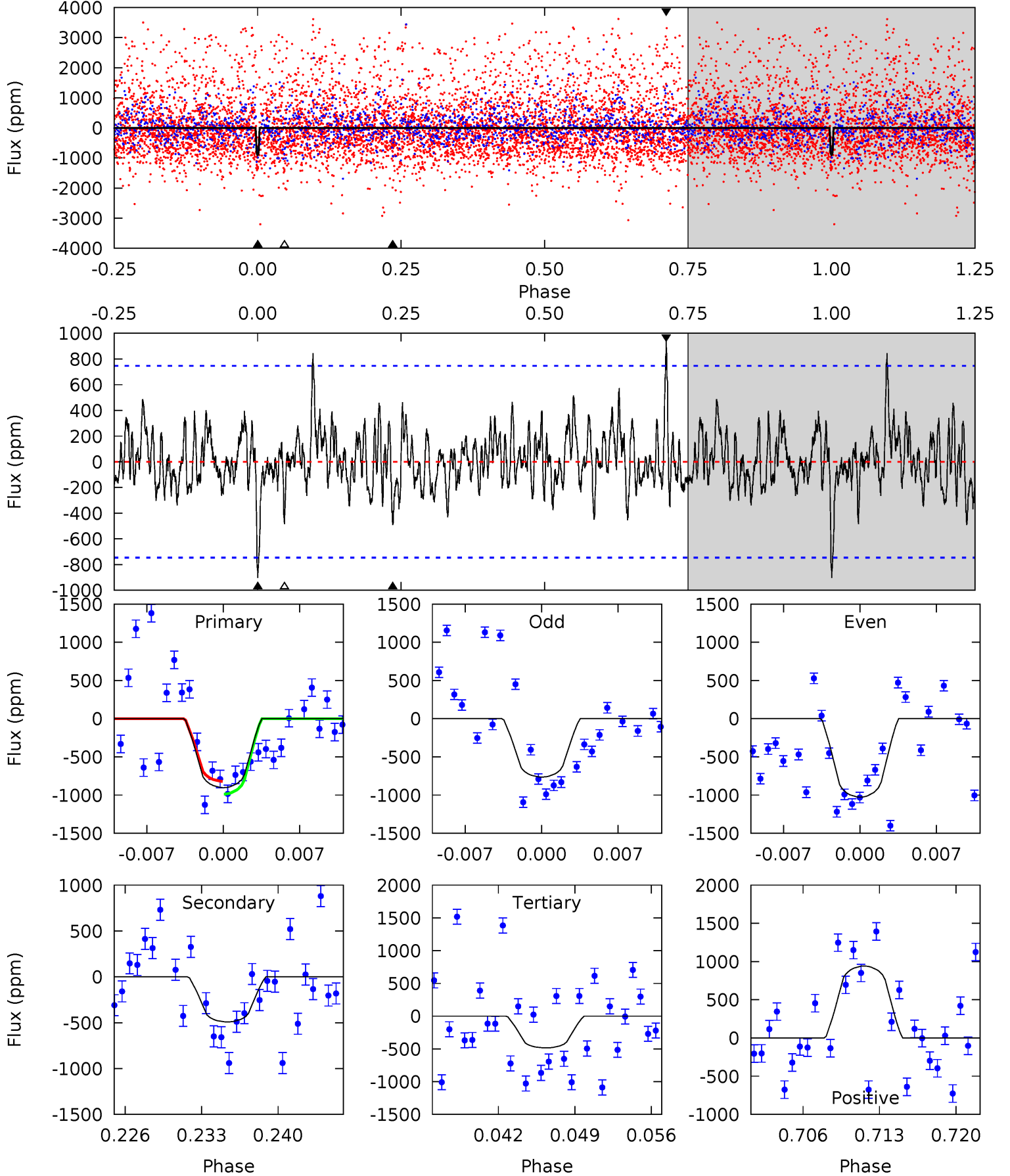
TCE 009726699-02   P= 12.703881 Days    $T_0=140.865913$  (BKJD)



# DV Model-Shift Uniqueness Test

009726699-02,  $P = 12.703876$  Days,  $E = 128.169620$  Days

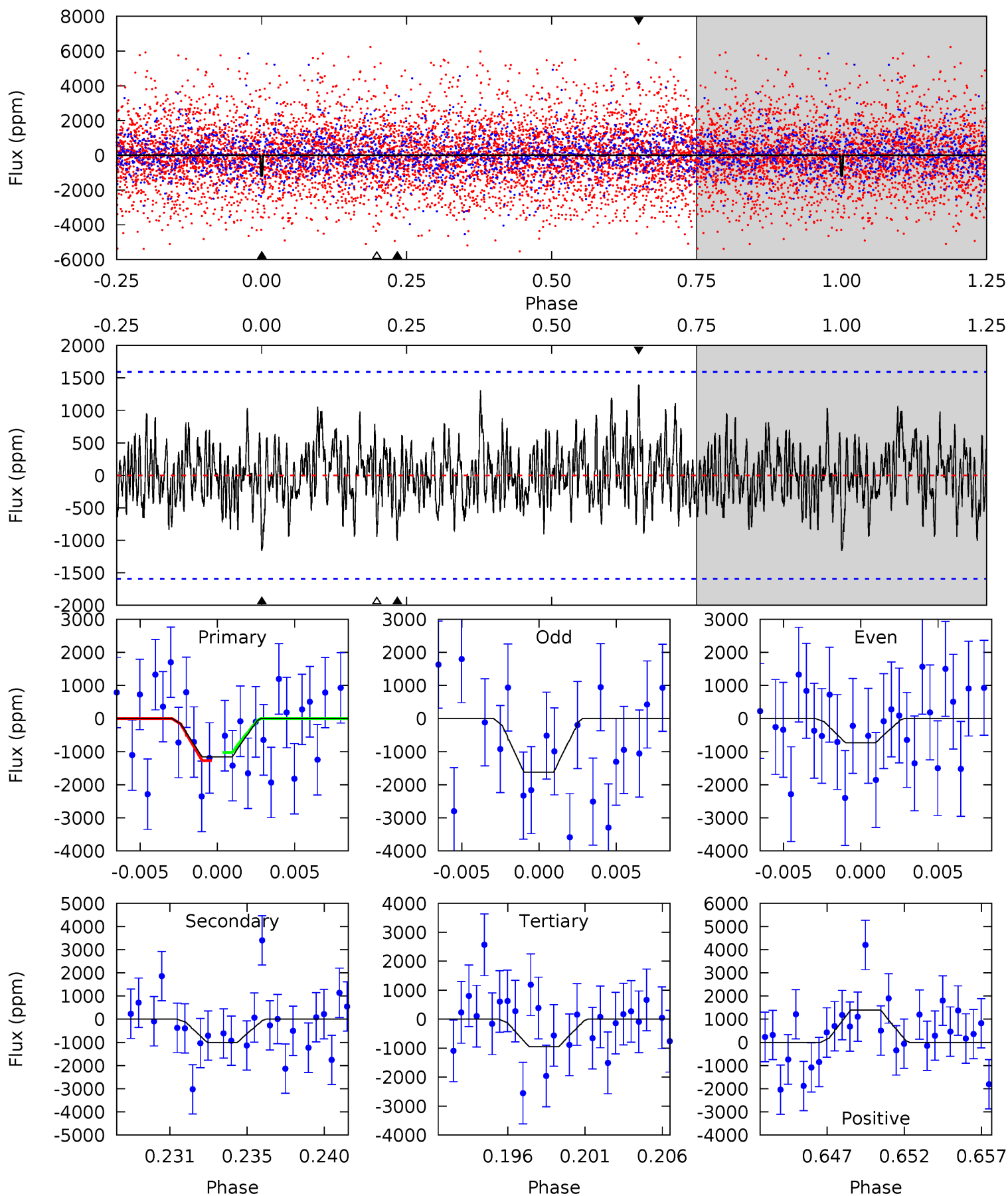
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.16 | 3.36 | 3.31 | 6.42 | 5.09            | 2.69            | 1.31             | 2.85    | -0.27   | 0.05    | -3.07   | 0.89    | 0.66 | 0.51  | 0.58 |



# Alt Model-Shift Uniqueness Test

009726699-02, P = 12.703881 Days, E = 128.162032 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.77 | 3.26 | 3.07 | 4.53 | 5.16            | 2.81            | 1.21             | 0.70    | -0.76   | 0.19    | -1.27   | 1.43    | 1.00 | 0.55  | 0.40 |



### Stellar Parameters For KIC 009726699

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $2661^{+1}_{-1}$    | $5.283^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $0.116^{+1.000}_{-1.000}$ | $0.094^{+1.000}_{-1.000}$ | $85.200^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +19%/-19%                 | +inf%/-inf%               | +862%/-862%               | +1064%/-1064%             | +1%/-1%                                   |
| 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 009726699-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$       |
|---------|-------------|------------------------|----------------------|----------------------|------------------------|
| DV      | -492±147    | $1.11^{+1.23}_{-0.78}$ | $259^{+25}_{-25}$    | $1993^{+544}_{-263}$ | $580^{+5022}_{-439}$   |
| Alt.    | -1005±308   | $1.16^{+1.28}_{-0.85}$ | $262^{+25}_{-28}$    | $2142^{+800}_{-325}$ | $1064^{+12763}_{-808}$ |

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

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

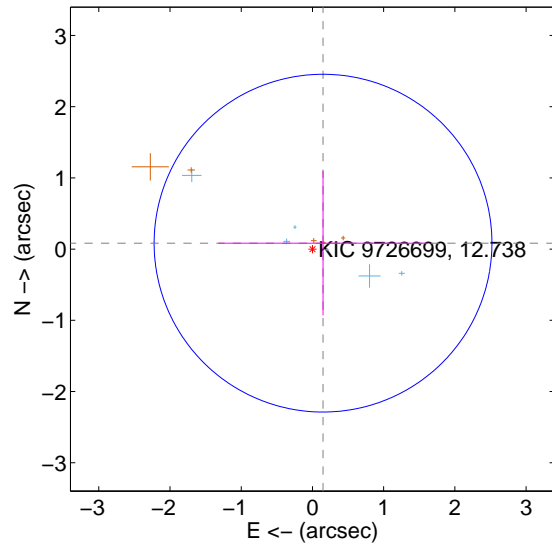
Supplemental centroid analysis for 009726699-02. Kepler magnitude: 12.74. Transit SNR 9.31

There are 7 quarters with good PRF difference image offsets

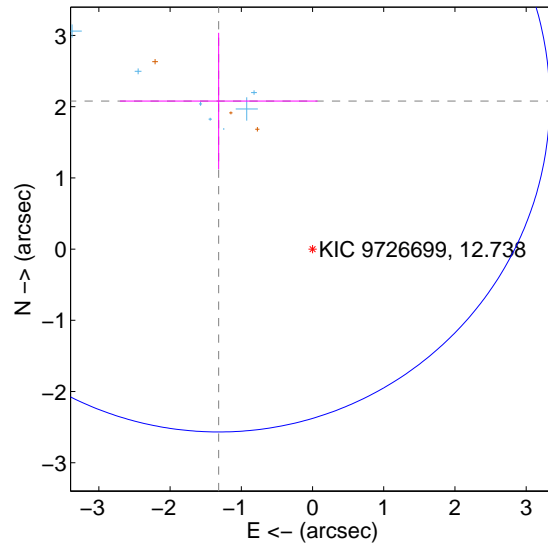
The OOT PRF centroid is offset from the target star catalog position by about 3.36 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.170 \pm 0.790$  | 0.22                | $-0.149 \pm 1.470$ | $0.083 \pm 1.013$ |
| PRF-fit source offset from KIC position | $2.461 \pm 1.549$  | 1.59                | $1.317 \pm 1.387$  | $2.079 \pm 0.958$ |
| photometric centroid source offset      | $2.62 \pm 0.07$    | 36.90               | $1.63 \pm 0.08$    | $2.05 \pm 0.06$   |

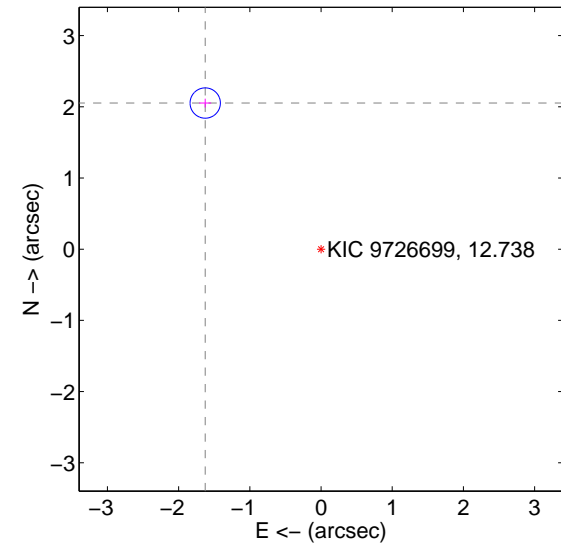
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

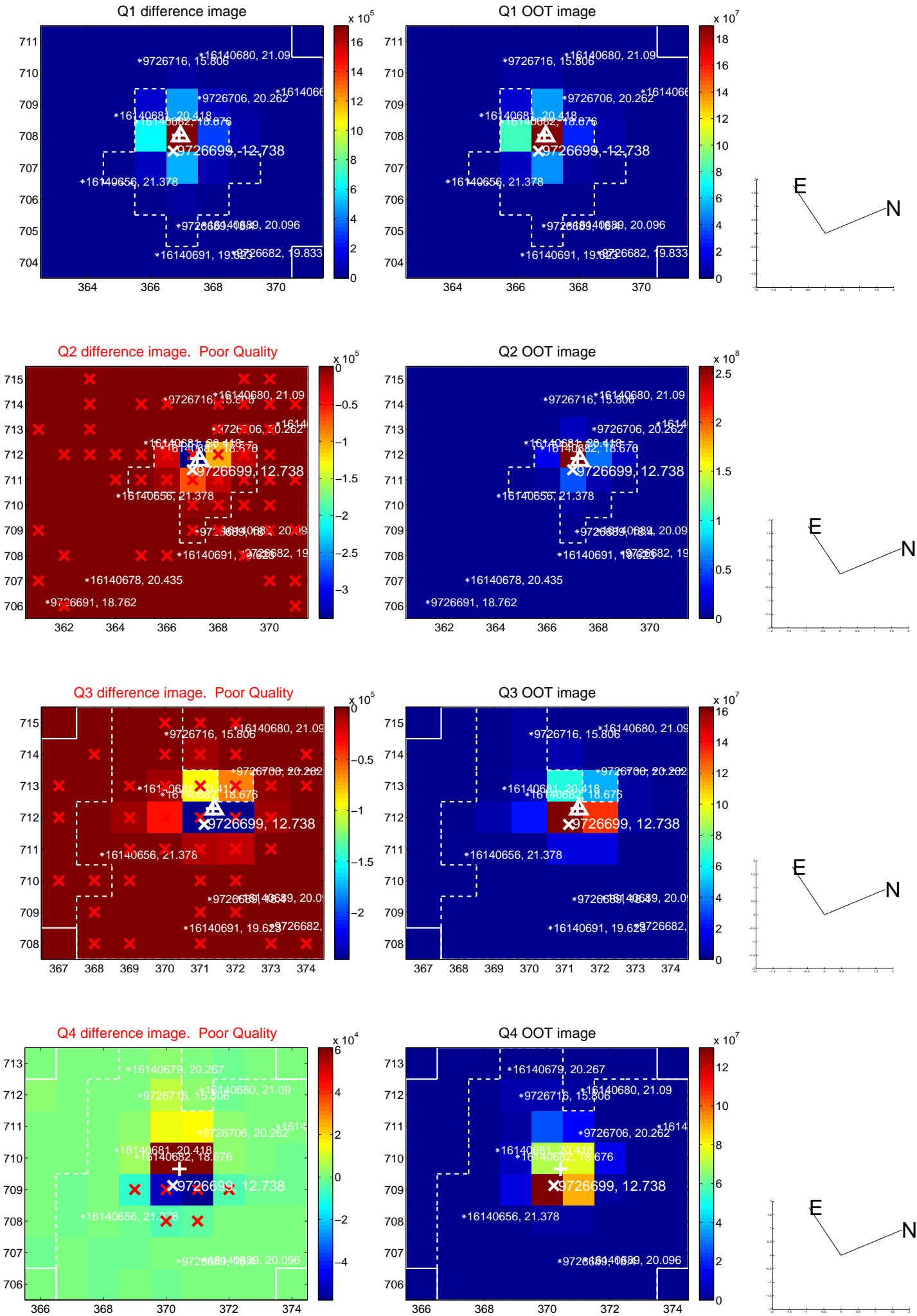


offset from photometric centroids



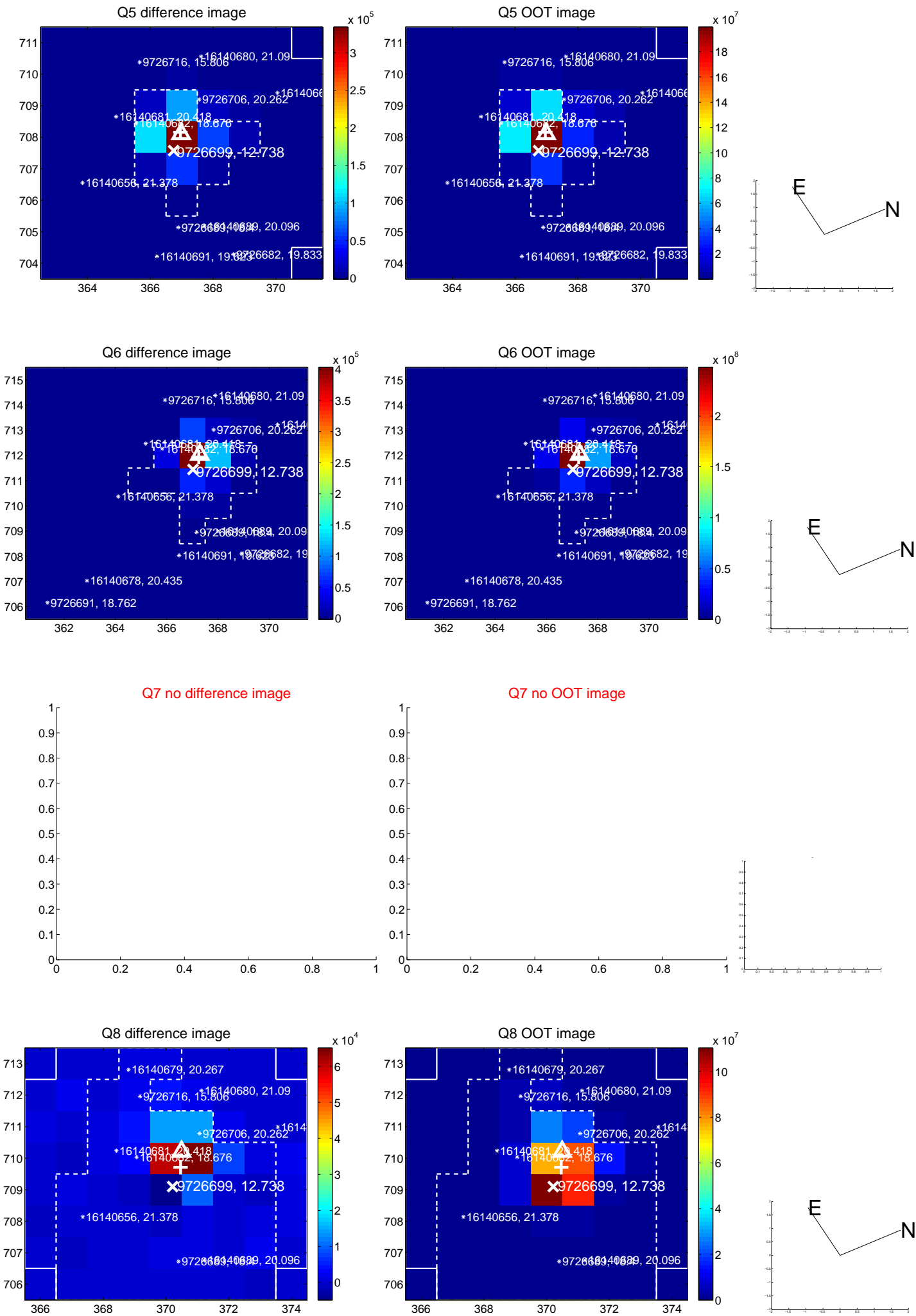
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

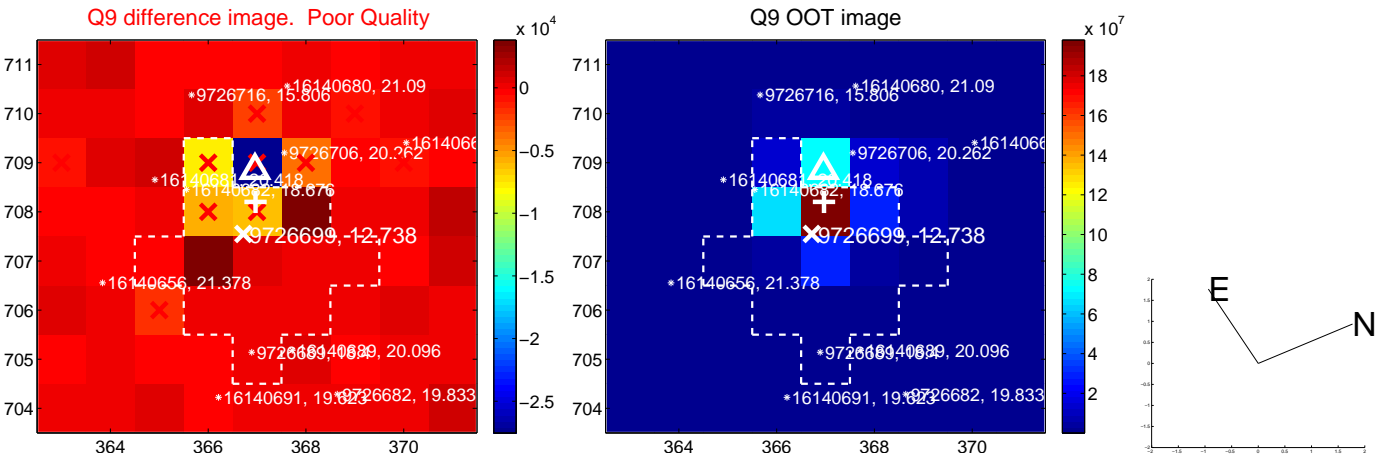




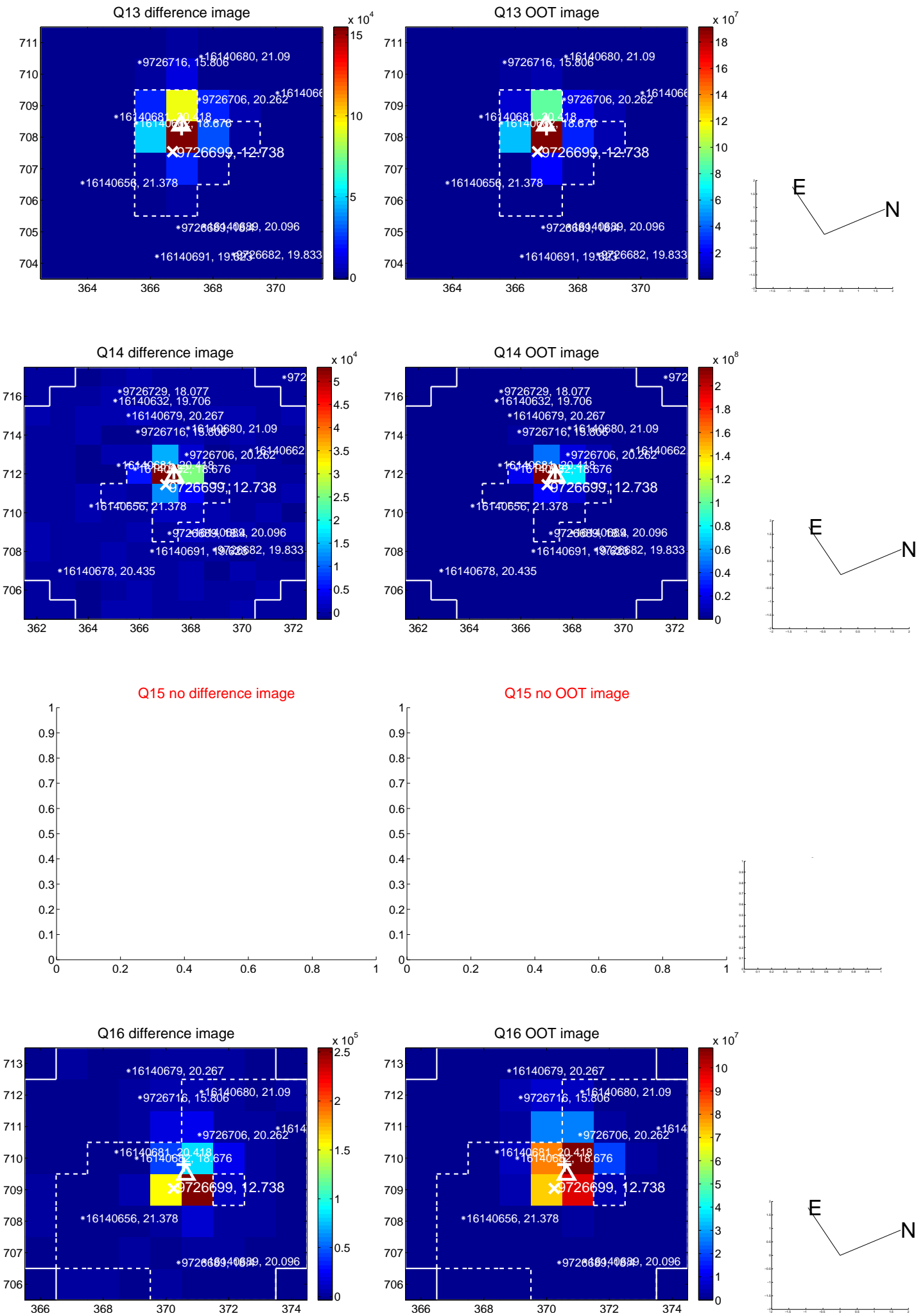
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



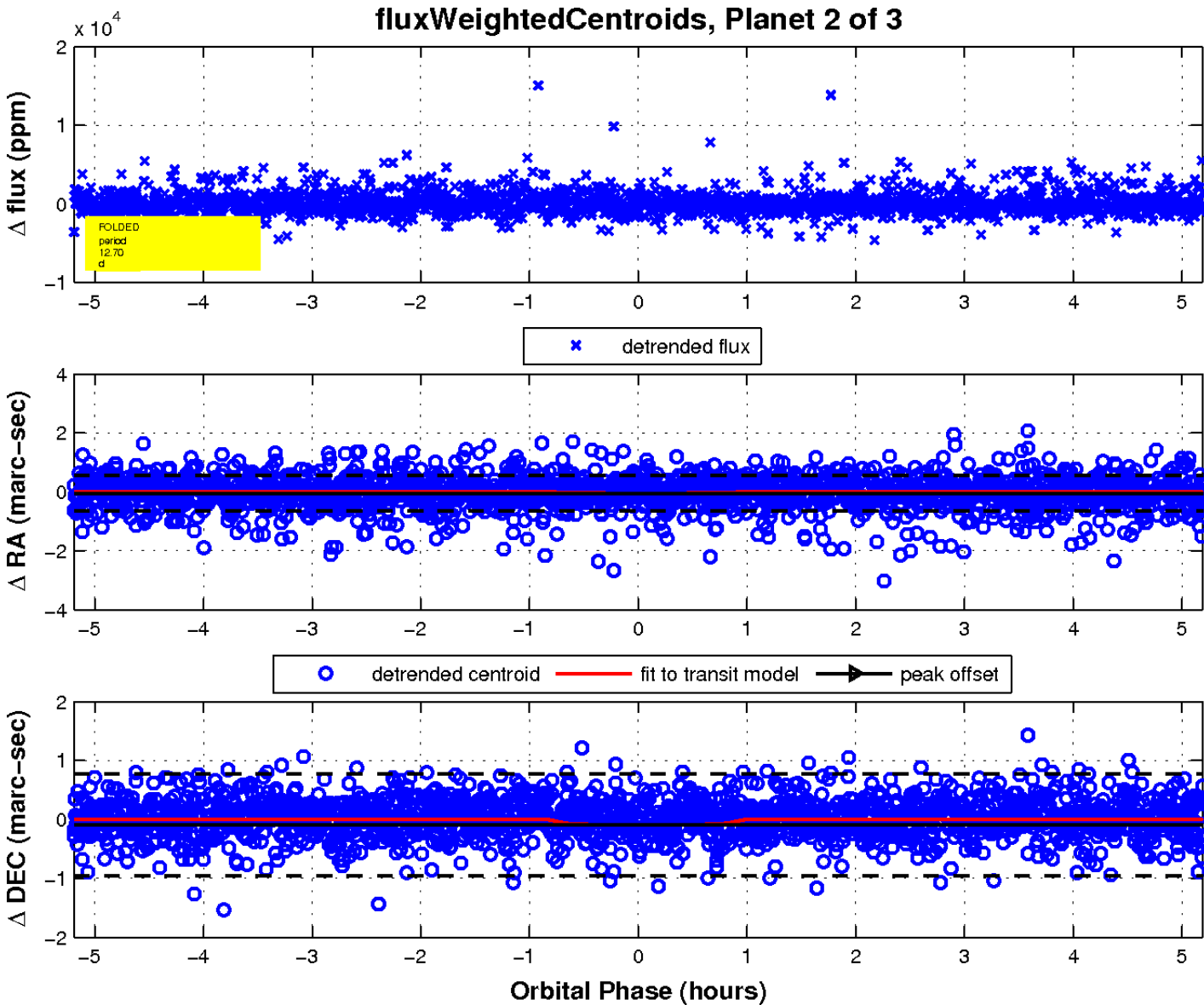
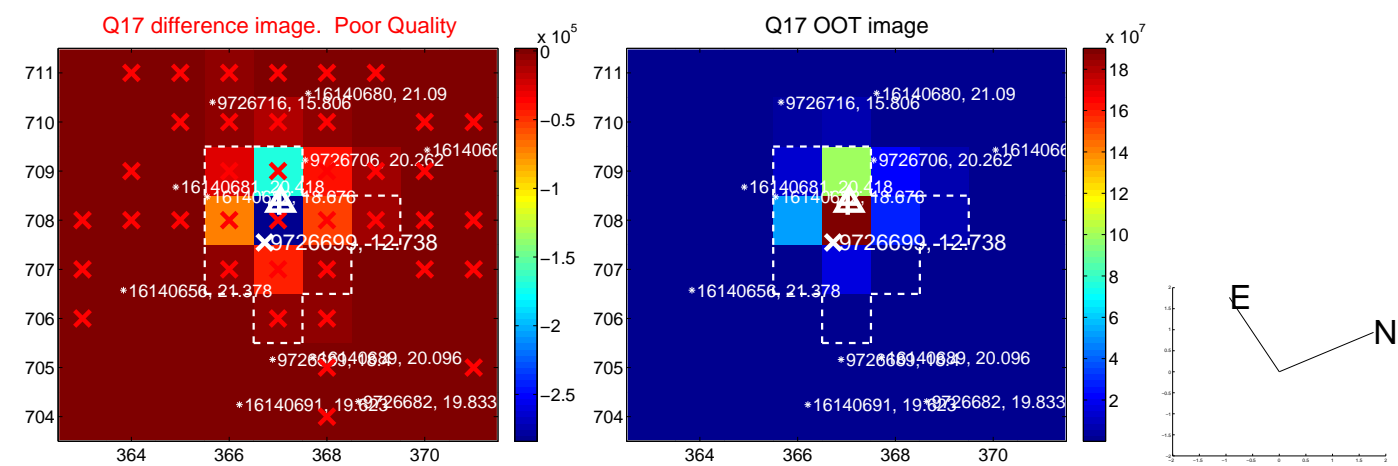
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

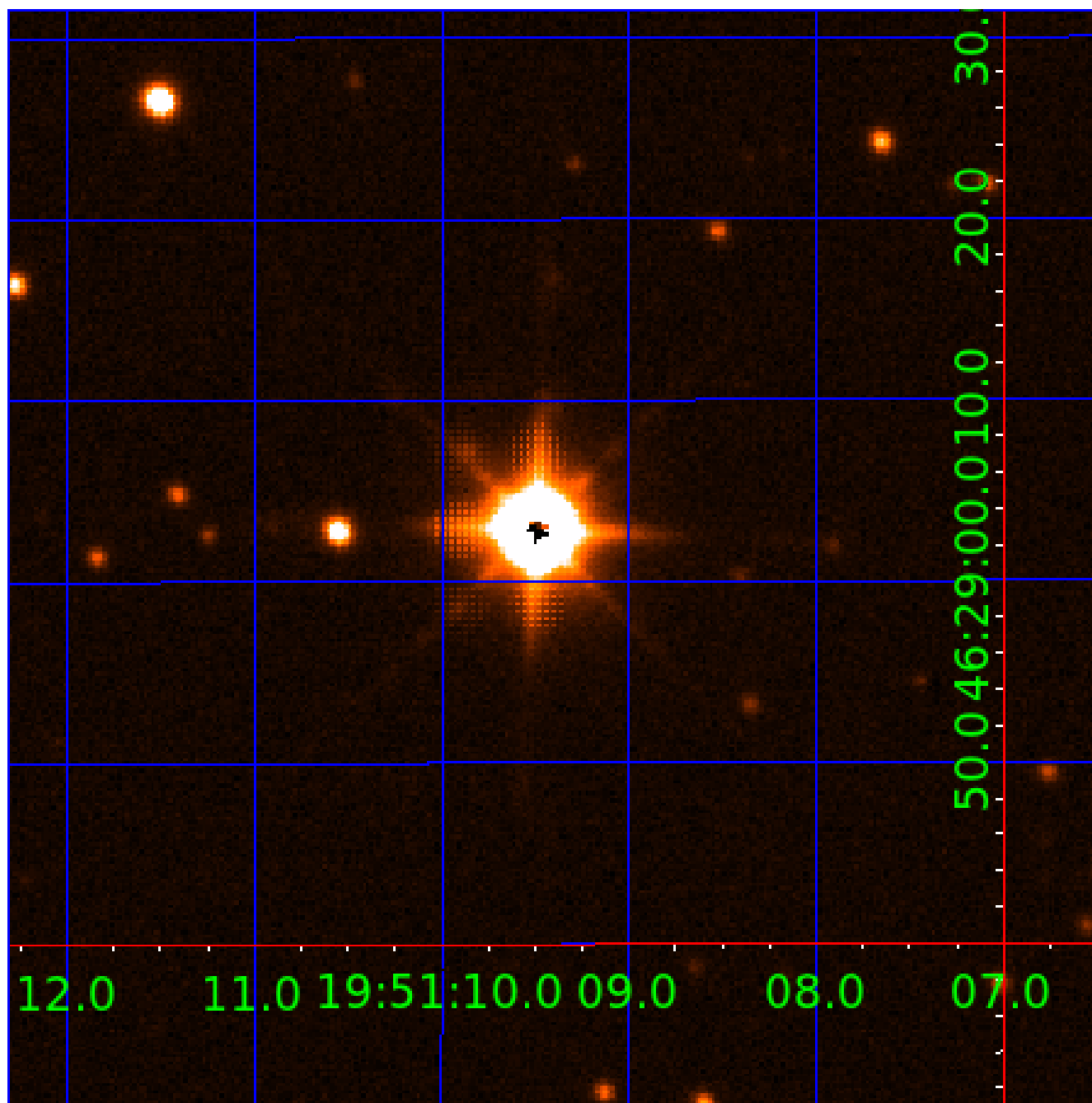


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009726699

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009726699-01 | OBS      | No   | 0.592531      | 131.751677   | 0.0         | 3.969            | 13.9 | 0.0 | 0.12                        | 2661            | 0.00                   | 15.31                  |
| 009726699-02 | OBS      | No   | 12.703876     | 140.873496   | 983.6       | 1.731            | 8.7  | 9.3 | 0.12                        | 2661            | 0.36                   | 0.26                   |
| 009726699-03 | OBS      | No   | 18.044714     | 147.686334   | 1174.8      | 1.493            | 9.0  | 5.9 | 0.12                        | 2661            | 0.44                   | 0.16                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 009726699-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—CENT_KIC_POS   |
| 009726699-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST |
| 009726699-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS    |

**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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

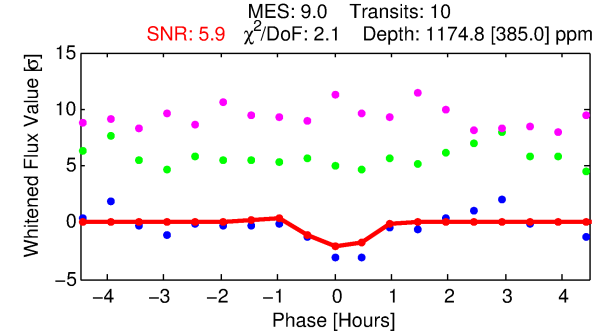
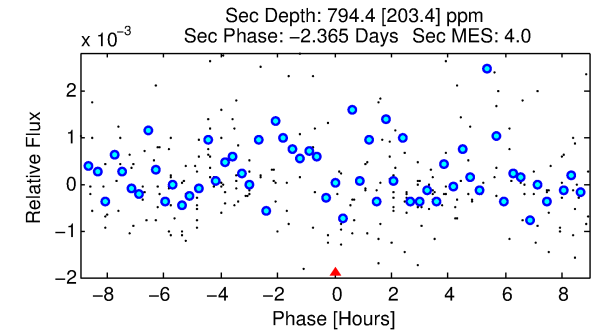
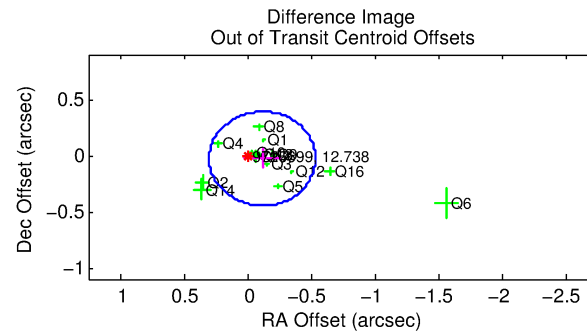
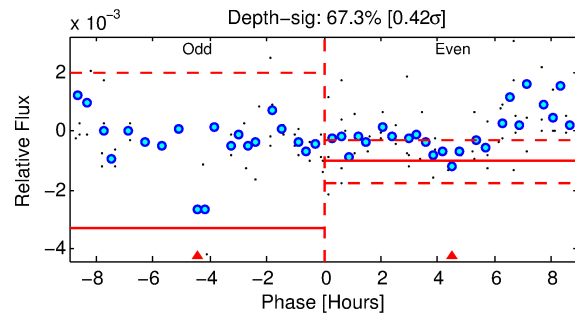
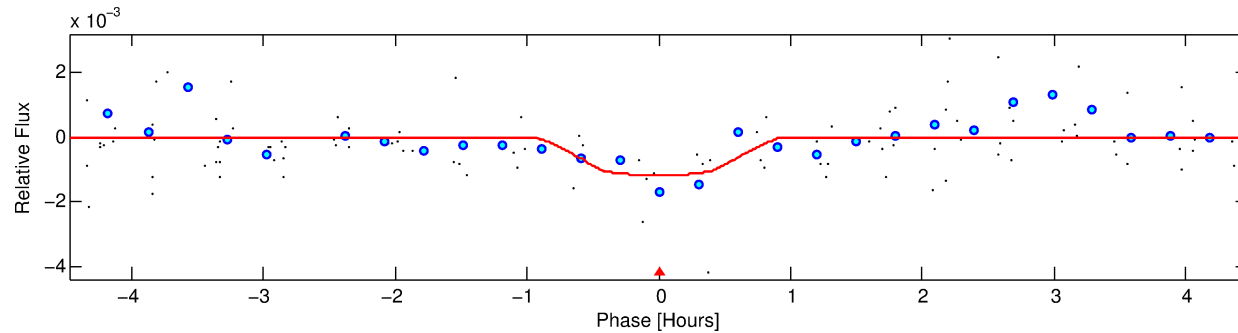
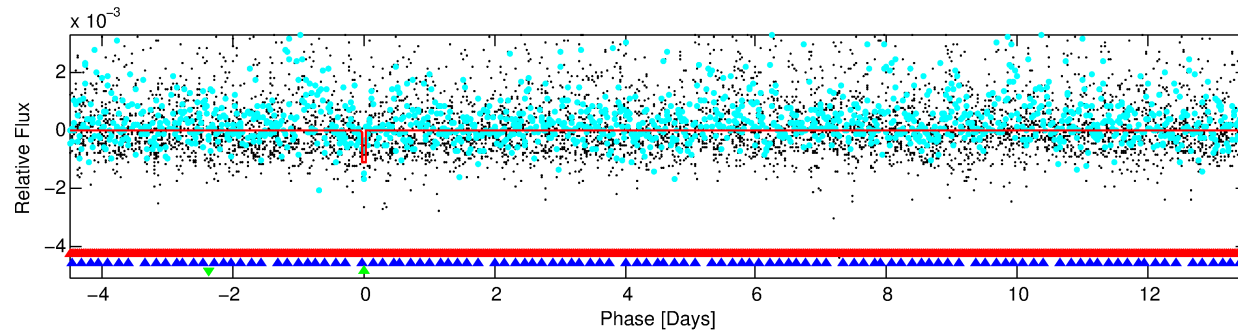
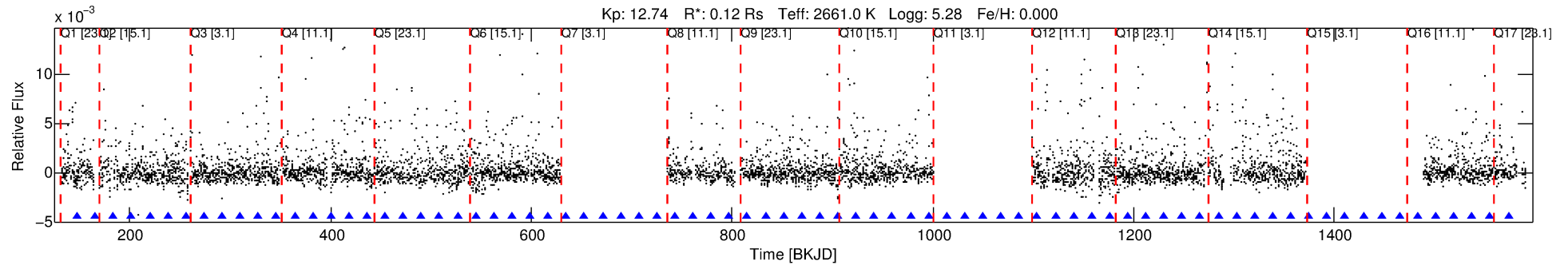
## Ephemeris Match Information For 009726699-03

No Significant Match Found



# DV One-Page Summary

KIC: 9726699 Candidate: 3 of 3 Period: 18.045 d



## DV Fit Results:

Period = 18.04471 [0.00025] d  
Epoch = 147.6863 [0.0114] BKJD  
Rp/R\* = 0.0347 [0.2286]  
a/R\* = 62.33 [1769.11]  
b = 0.78 [14.07]  
Seff = 0.16 [0.00]  
Teq = 162 [0] K  
Rp = 0.44 [2.89] Re  
a = 0.0613 [0.0000] AU  
Ag = 8496.19 [111904.55] [0.08σ]  
Teff = 2398 [7895] K [0.28σ]

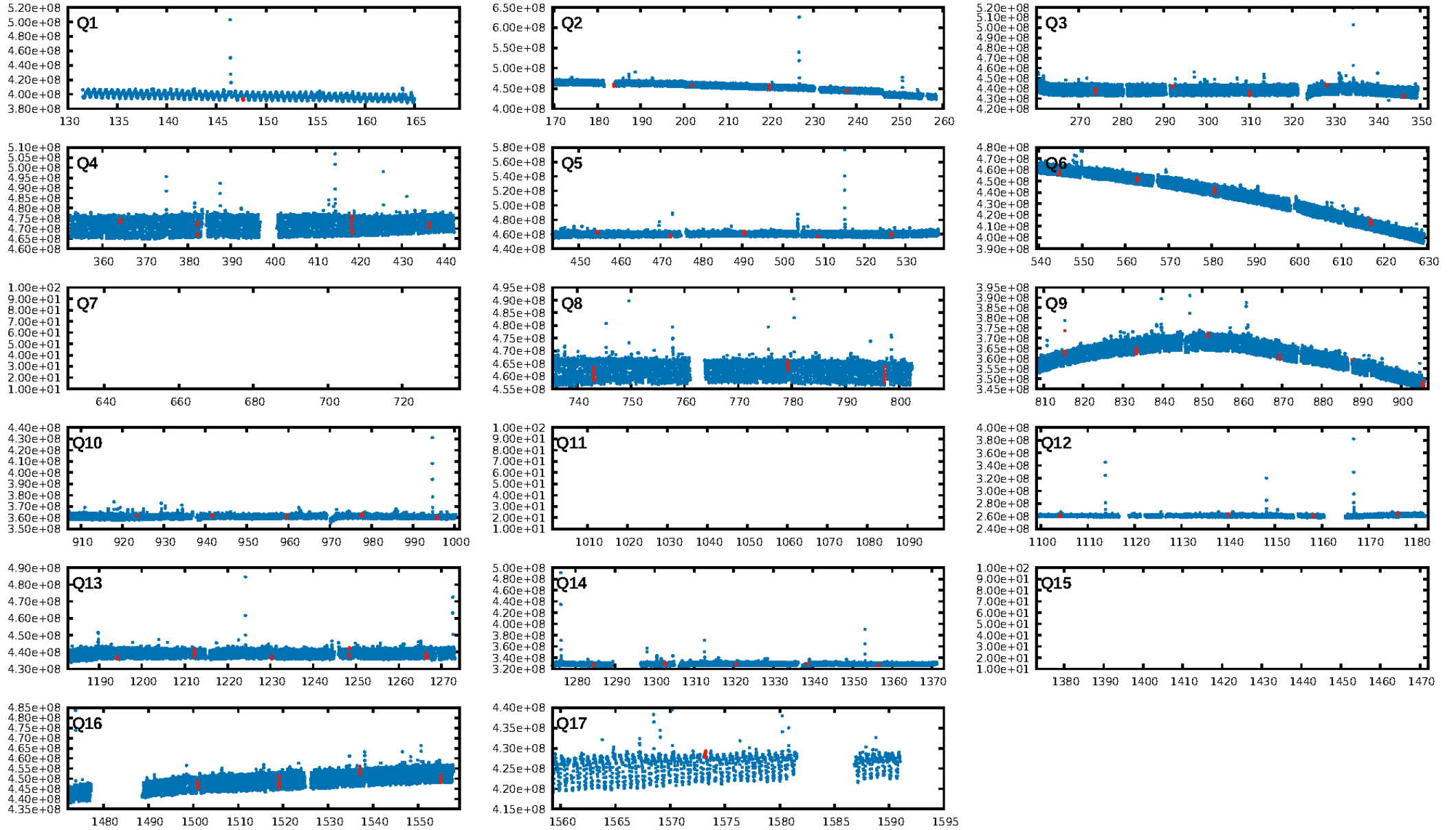
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.09σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 65.3%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 5.48e-12**  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 4.422  
Centroid-sig: 17.3%  
**Centroid-so: 2.402 arcsec [30.50σ]**  
OotOffset-rm: 0.121 arcsec [0.87σ]  
**KicOffset-rm: 2.539 arcsec [15.28σ]**  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.71 [10/14]  
DiffImageOverlap-fno: 0.00 [0/14]

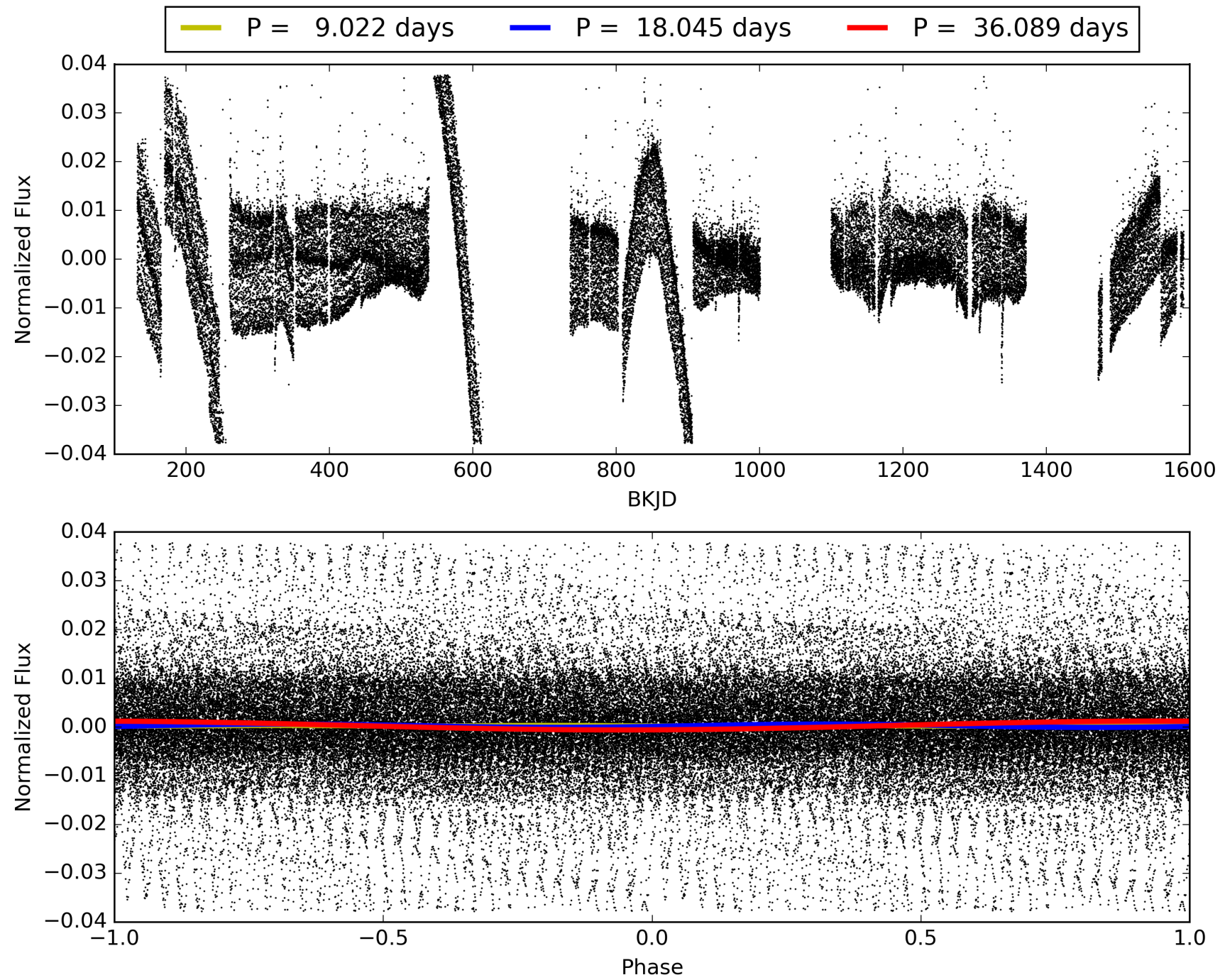
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:05:58 Z

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

# TCE 009726699-03, PDC Light Curves

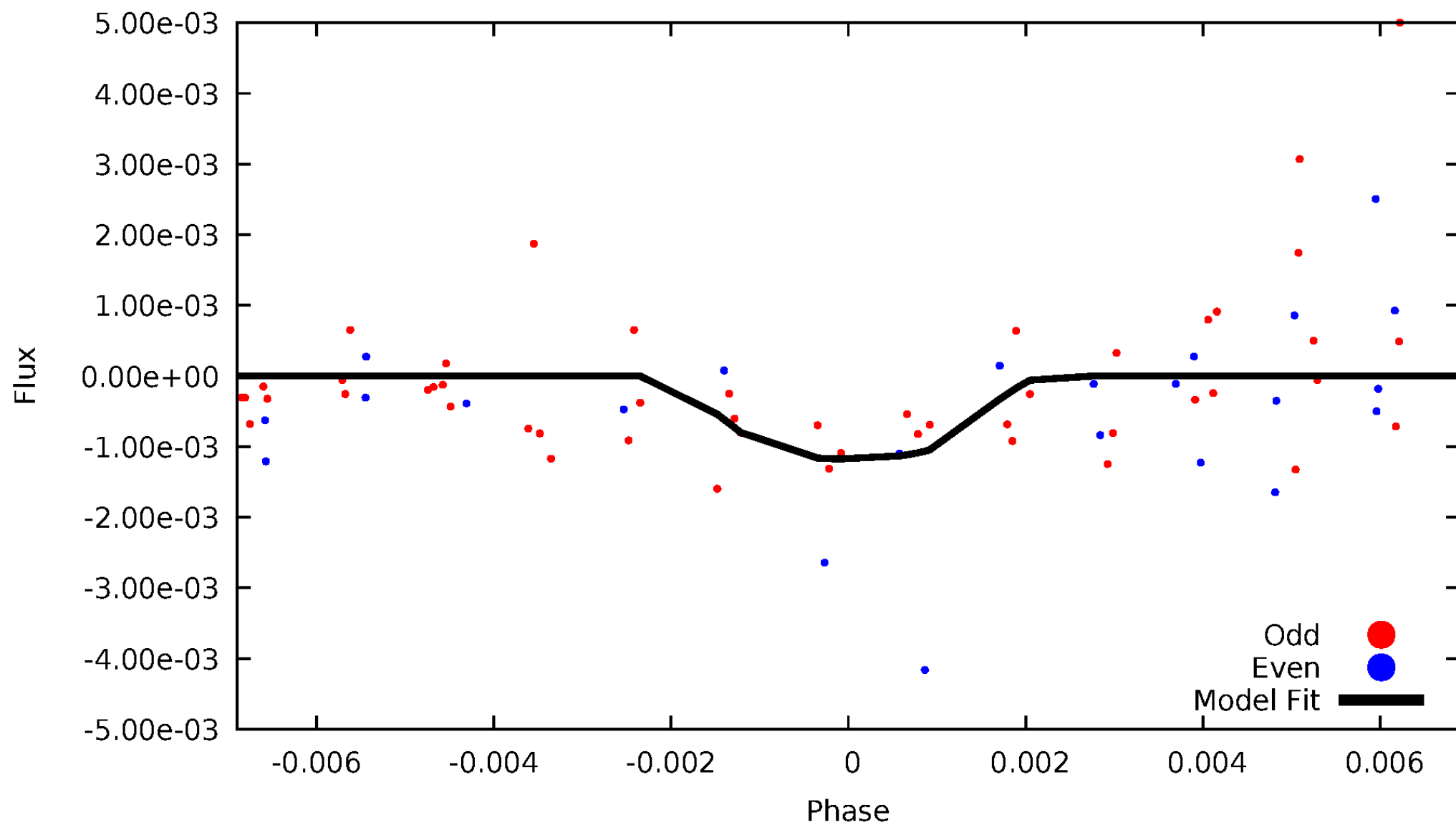


TCE 009726699-03



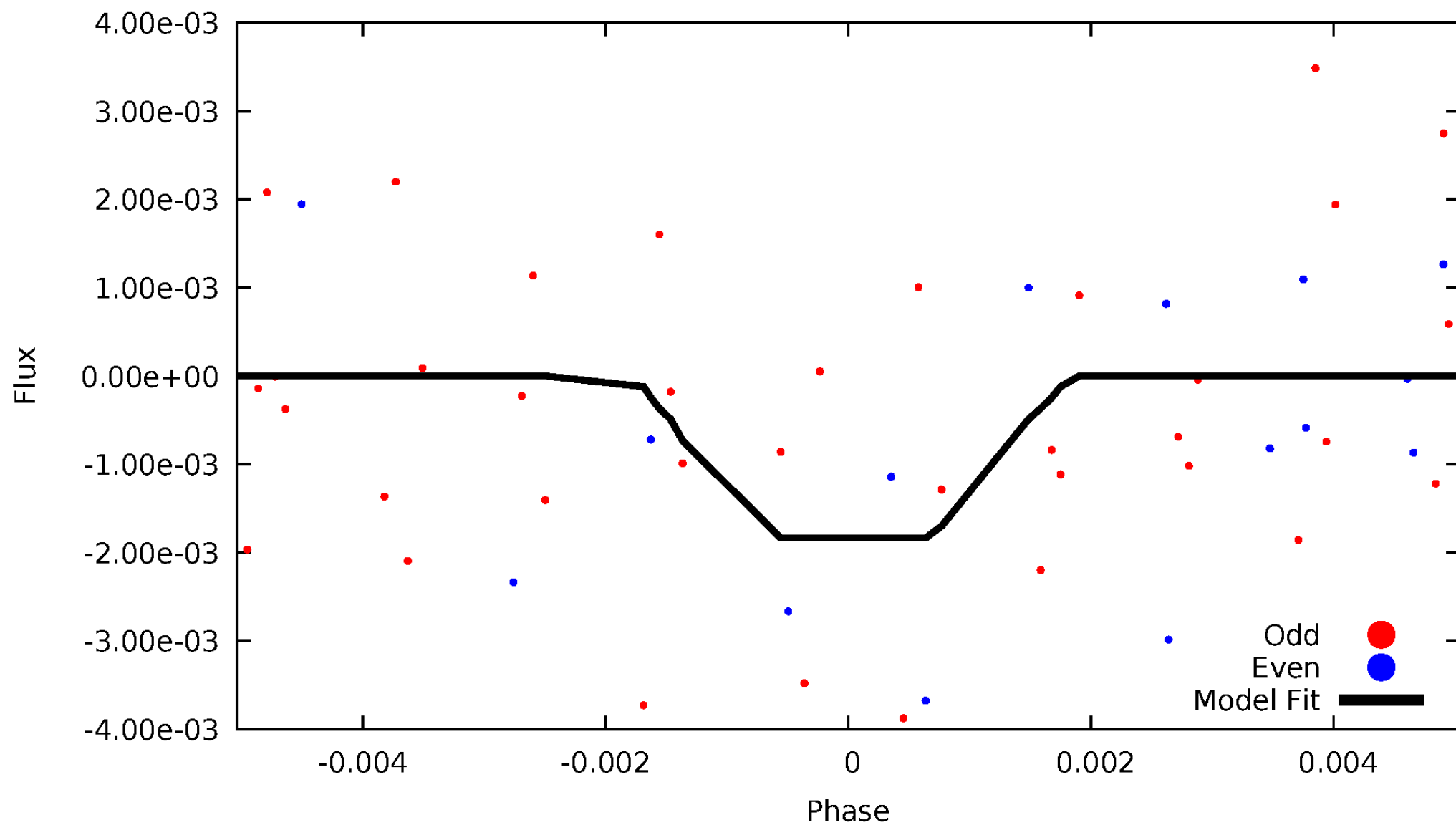
# DV Odd/Even

TCE 009726699-03



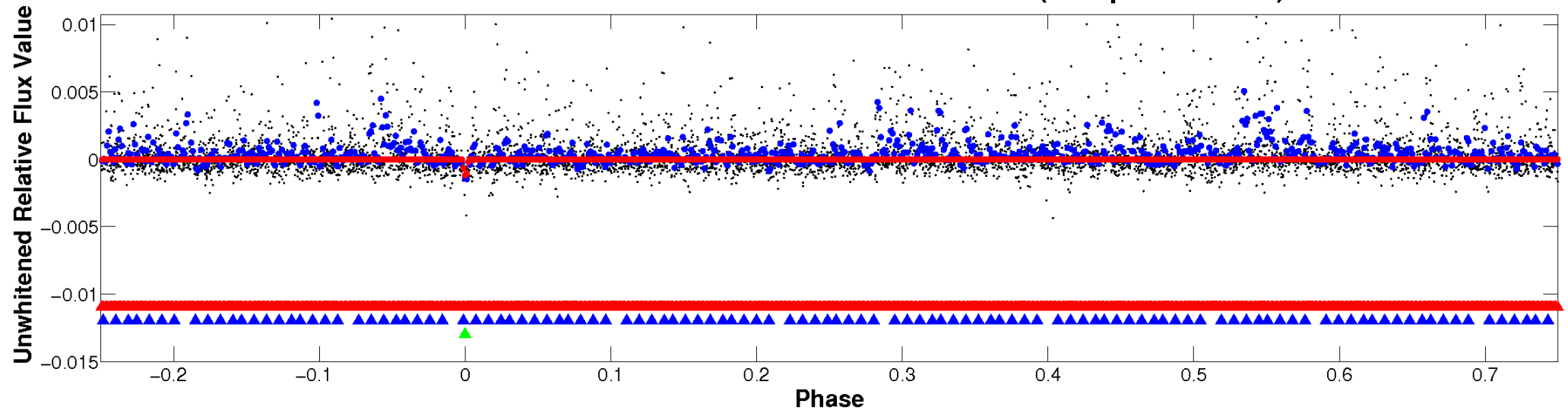
# ALT Odd/Even

TCE 009726699-03

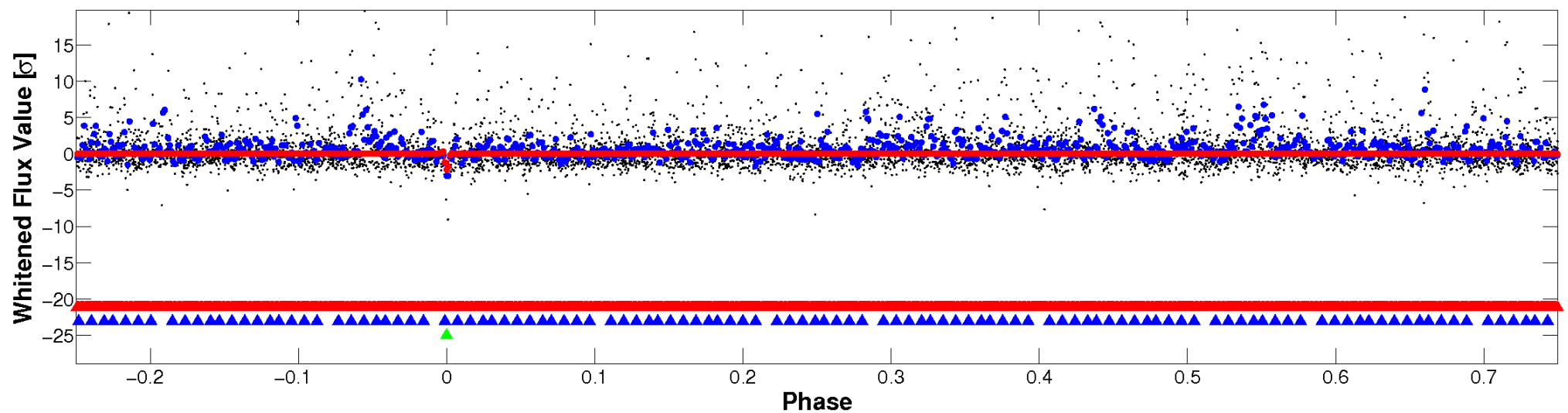


# Non-Whitened Vs. Whitened Light Curve

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



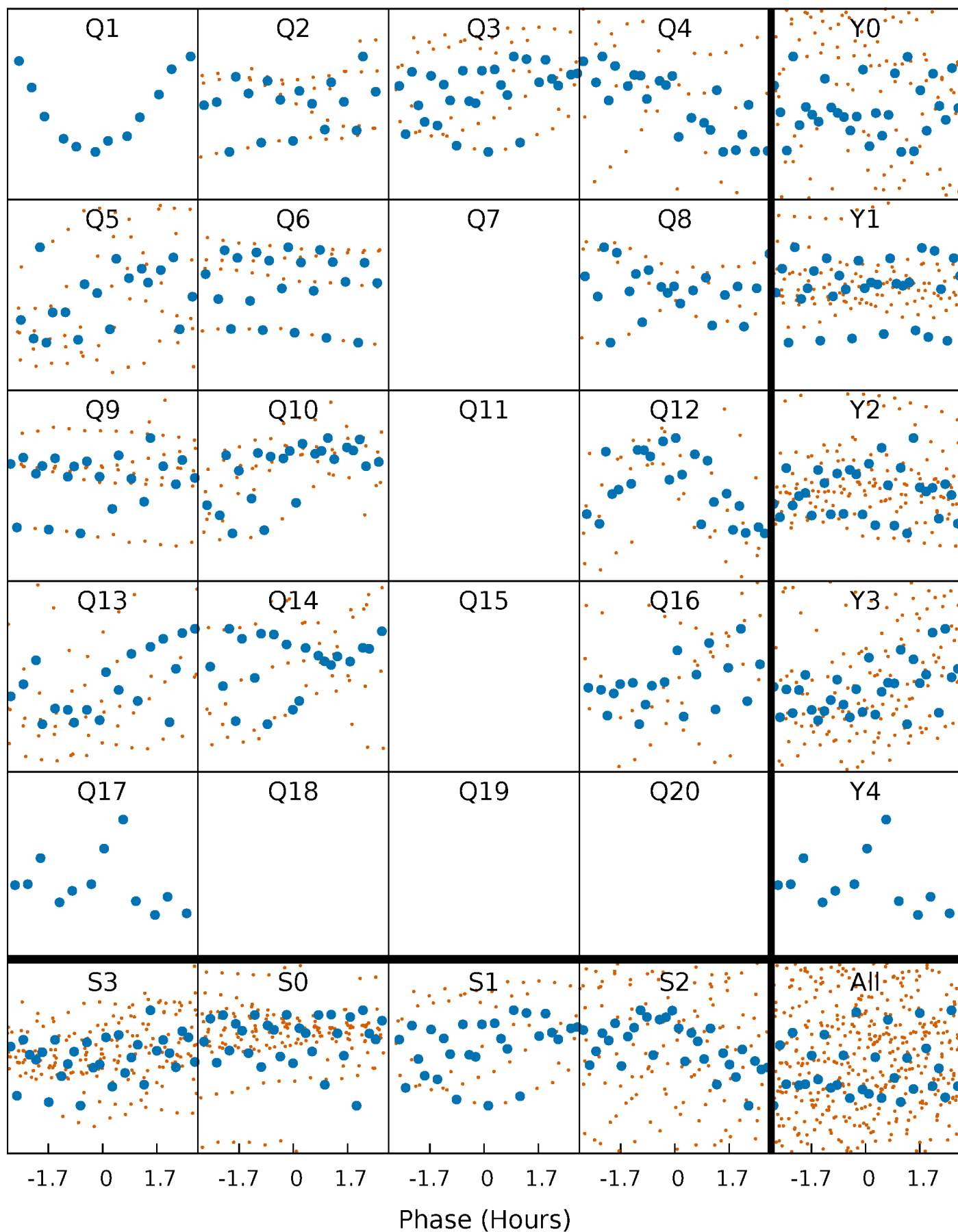
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





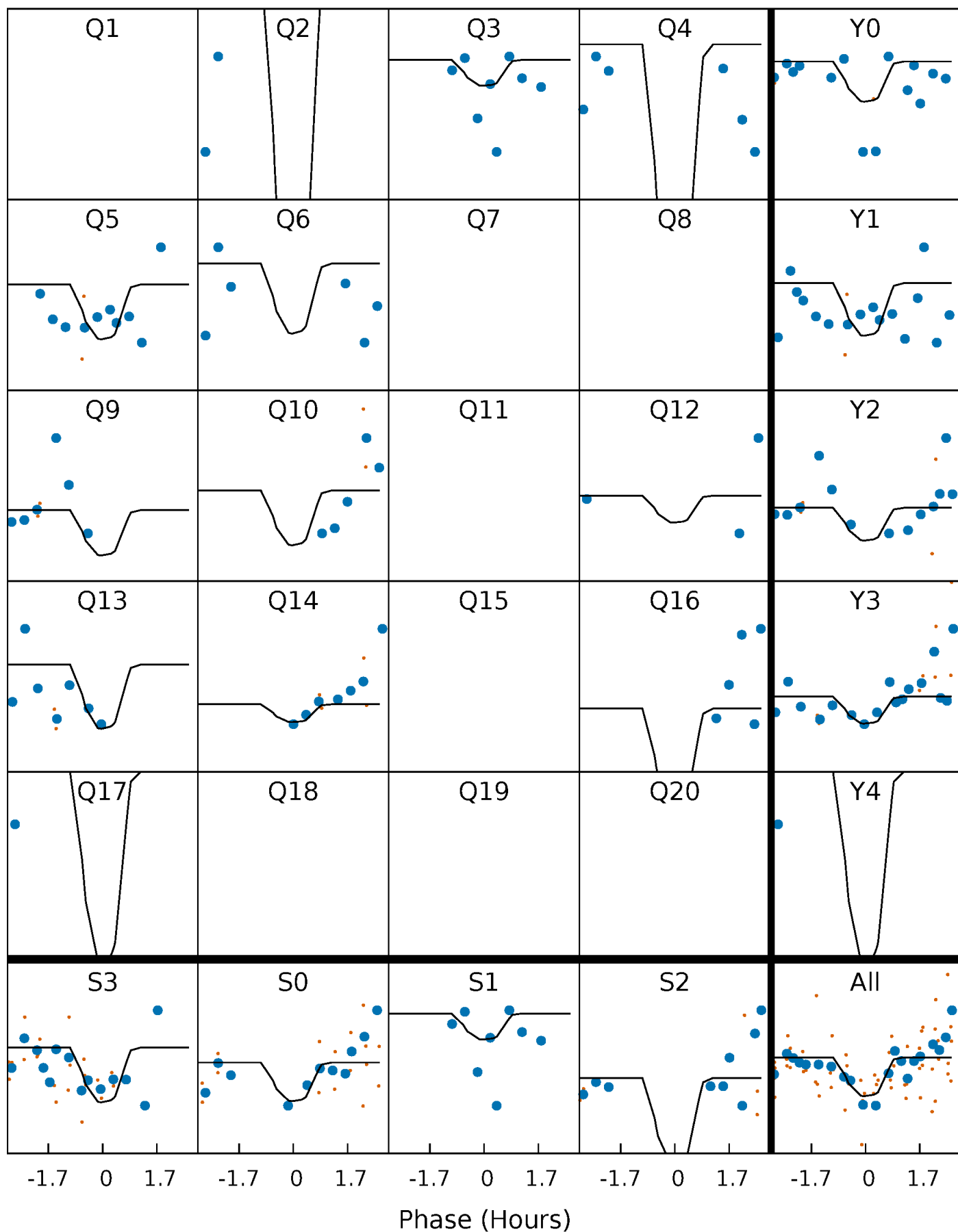
# PDC Quarter-Phased Transit Curves

TCE 009726699-03   P= 18.044714 Days    $T_0=147.686334$  (BKJD)



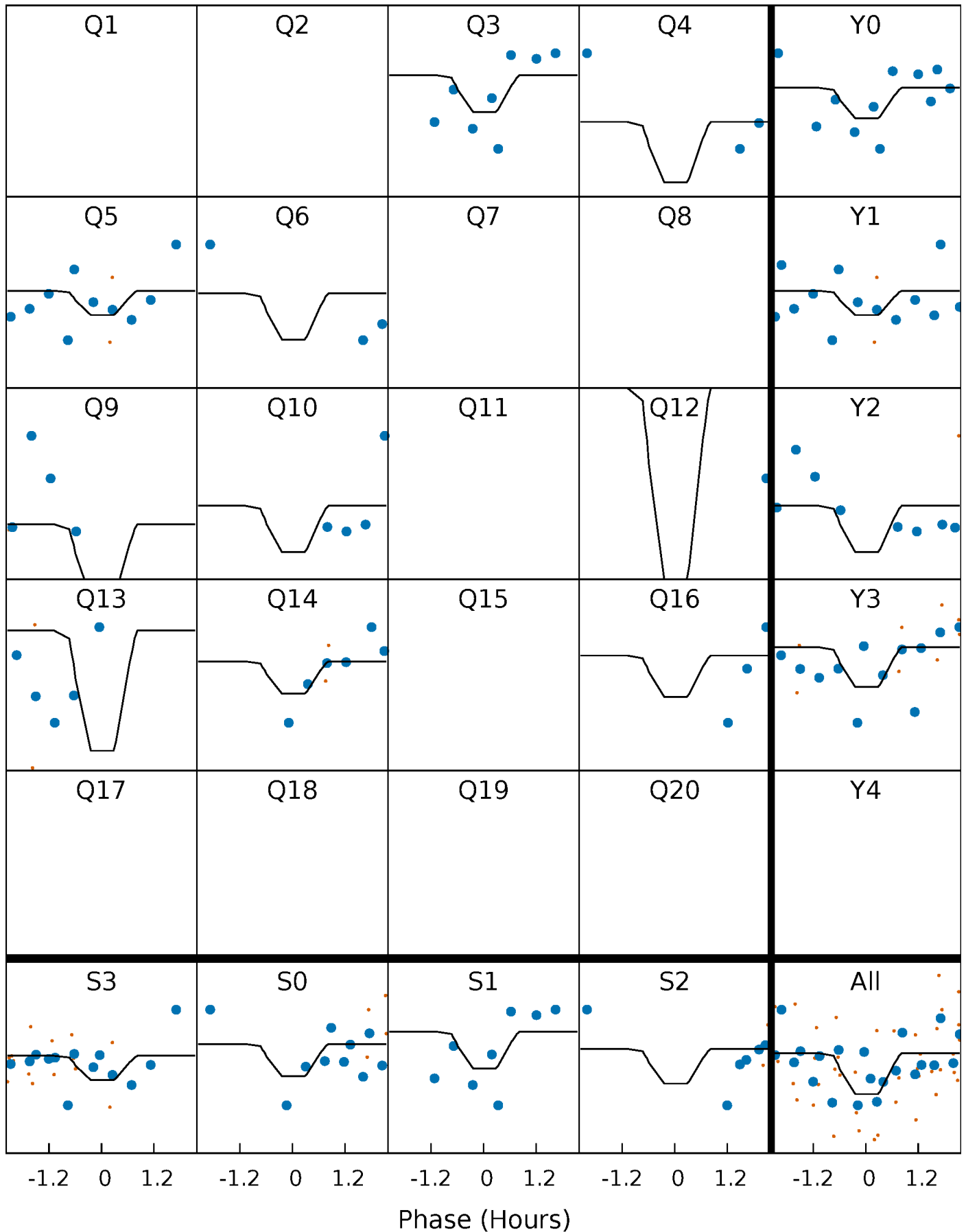
# DV Quarter-Phased Transit Curves

TCE 009726699-03 P= 18.044714 Days  $T_0=147.686334$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

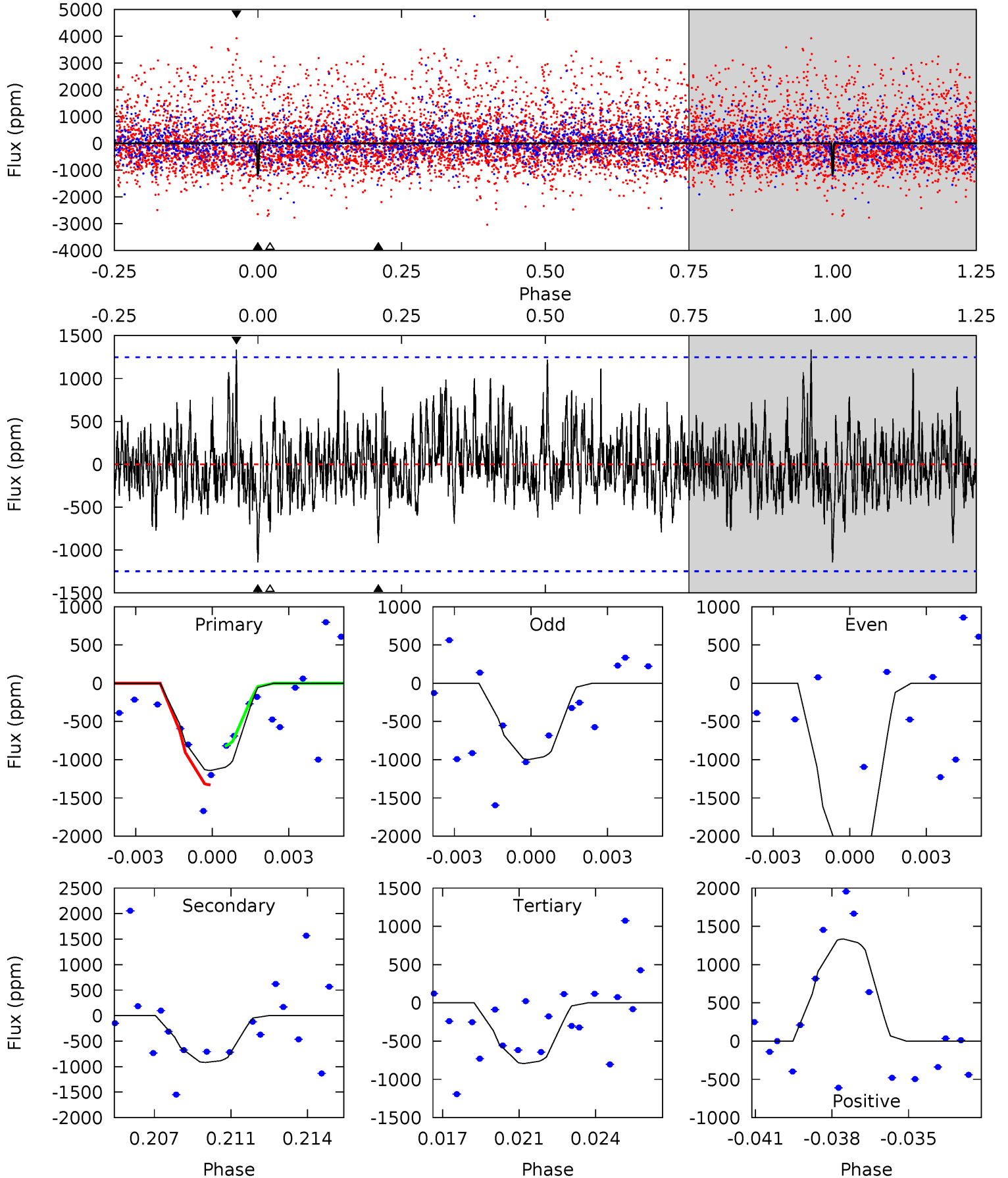
TCE 009726699-03 P= 18.044689 Days  $T_0=147.690609$  (BKJD)



# DV Model-Shift Uniqueness Test

009726699-03, P = 18.044714 Days, E = 129.641620 Days

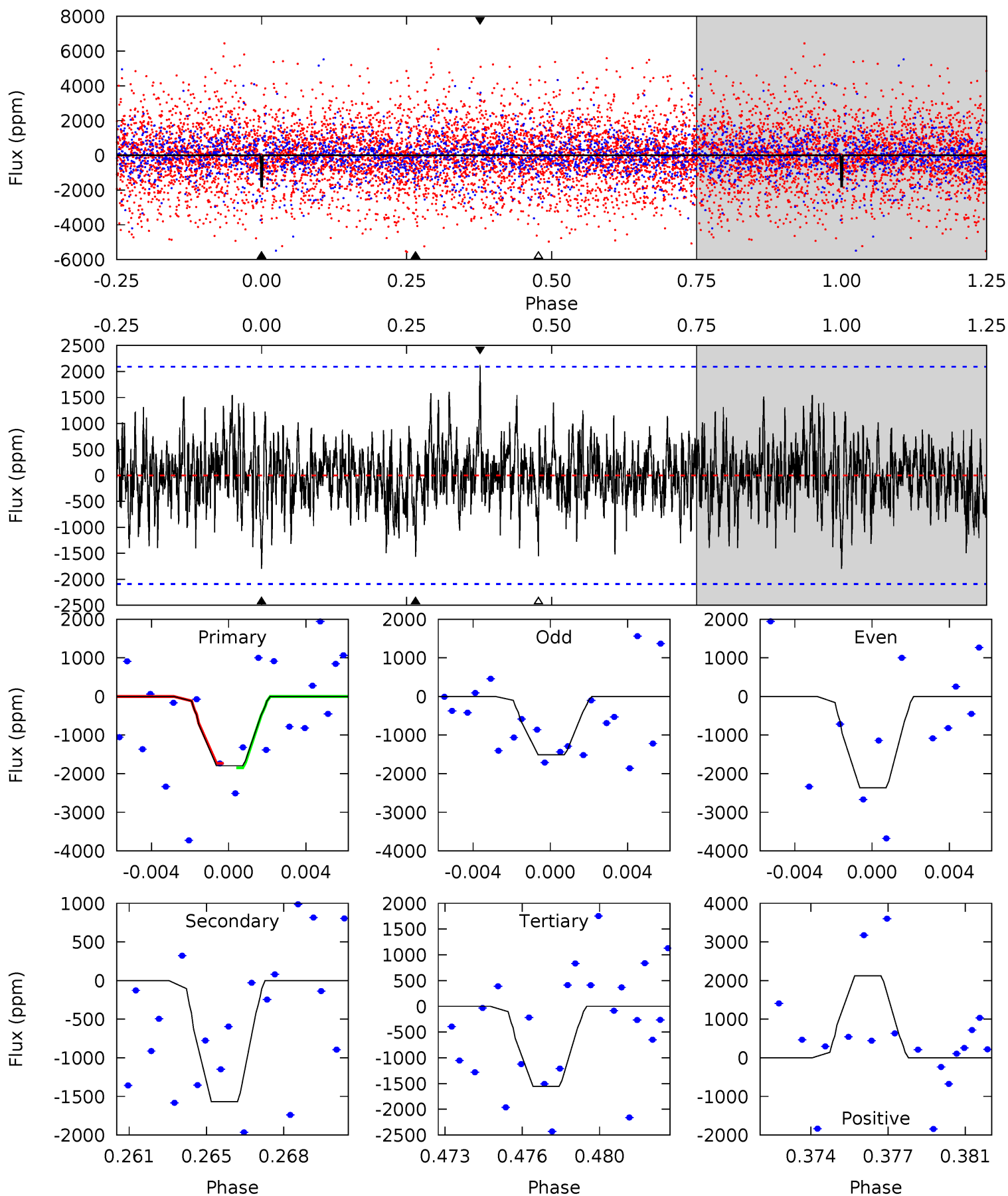
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.78 | 3.84 | 3.32 | 5.59 | 5.23            | 2.92            | 1.29             | 1.46    | -0.81   | 0.52    | -1.75   | 2.47    | 1.24 | 0.54  | 1.08 |



# Alt Model-Shift Uniqueness Test

009726699-03, P = 18.044689 Days, E = 129.645920 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.48 | 3.92 | 3.88 | 5.31 | 5.22            | 2.92            | 1.16             | 0.60    | -0.83   | 0.04    | -1.39   | 0.92    | 1.10 | 0.54  | 0.15 |



### Stellar Parameters For KIC 009726699

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $2661^{+1}_{-1}$    | $5.283^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $0.116^{+1.000}_{-1.000}$ | $0.094^{+1.000}_{-1.000}$ | $85.200^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +19%/-19%                 | +inf%/-inf%               | +862%/-862%               | +1064%/-1064%             | +1%/-1%                                   |
| 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 009726699-03 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$     |
|---------|-----------------|------------------------|----------------------|----------------------|----------------------|
| DV      | $-918 \pm 239$  | $2.28^{+2.85}_{-1.68}$ | $232^{+22}_{-23}$    | $1839^{+619}_{-253}$ | $441^{+5319}_{-355}$ |
| Alt.    | $-1568 \pm 400$ | $2.66^{+3.02}_{-1.90}$ | $231^{+24}_{-22}$    | $1887^{+535}_{-251}$ | $563^{+5212}_{-436}$ |

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

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

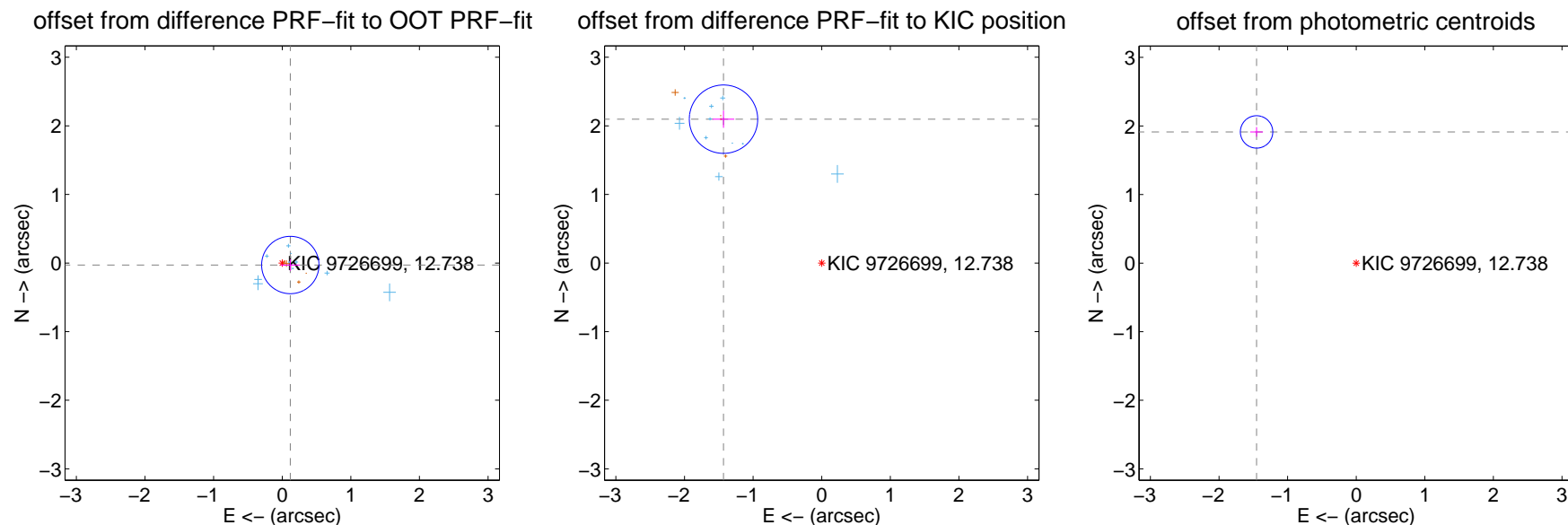
## DV Centroid Data

Supplemental centroid analysis for 009726699-03. Kepler magnitude: 12.74. Transit SNR 5.94

There are 10 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.32 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

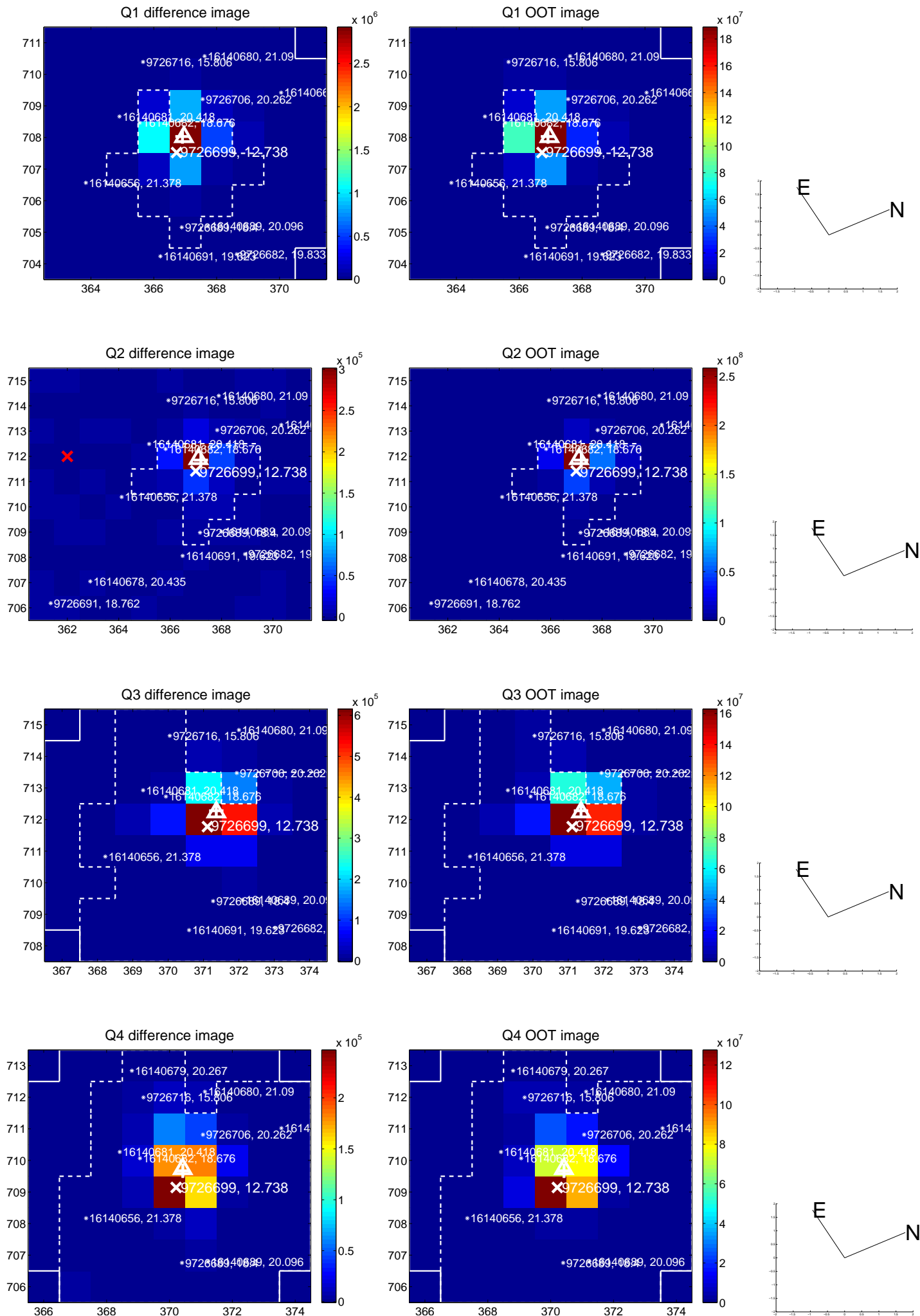
|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.121 \pm 0.139$  | 0.87                | $-0.118 \pm 0.138$ | $-0.029 \pm 0.083$ |
| PRF-fit source offset from KIC position | $2.539 \pm 0.166$  | 15.28               | $1.431 \pm 0.157$  | $2.097 \pm 0.126$  |
| photometric centroid source offset      | $2.40 \pm 0.08$    | 30.50               | $1.45 \pm 0.09$    | $1.91 \pm 0.07$    |



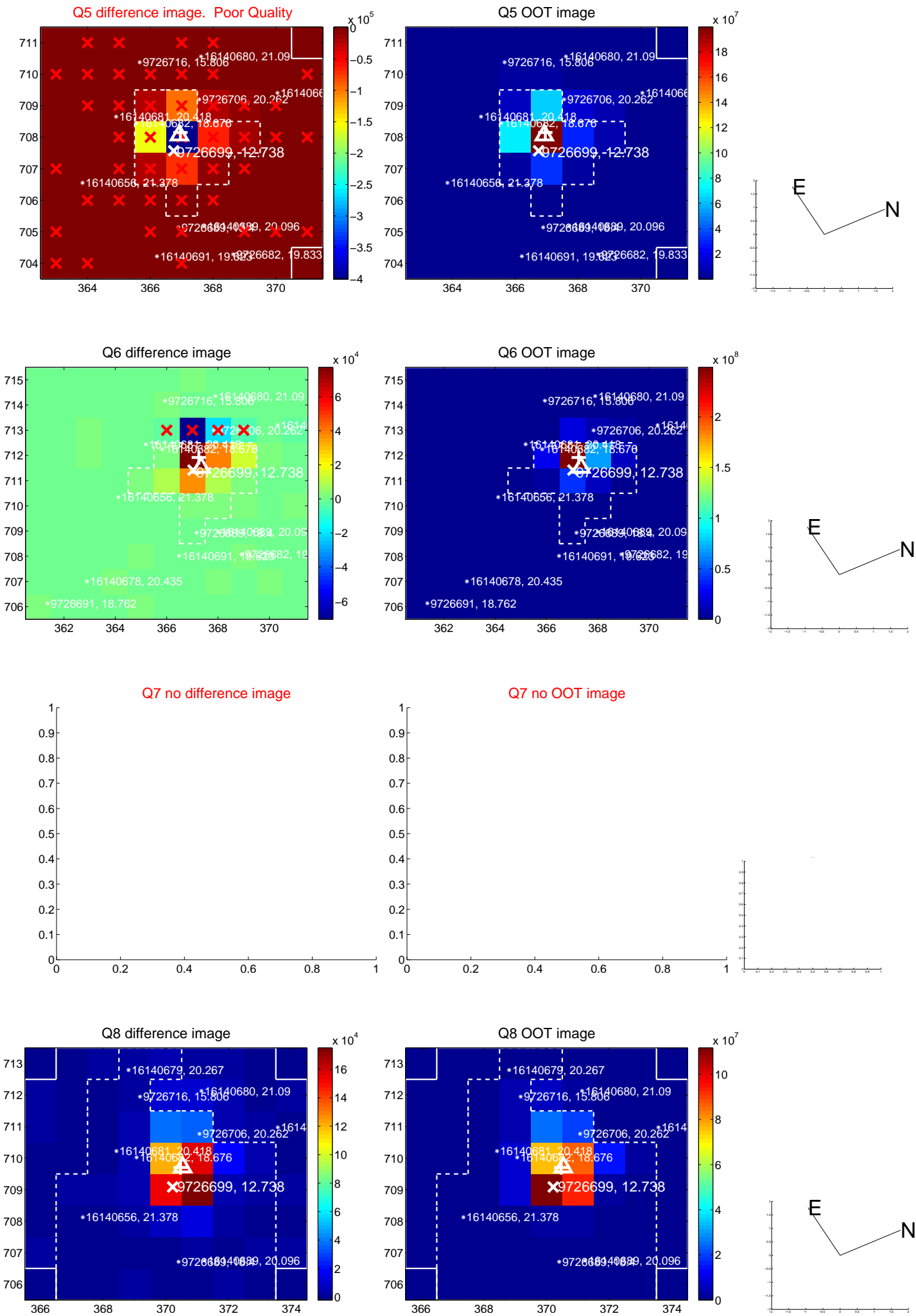
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



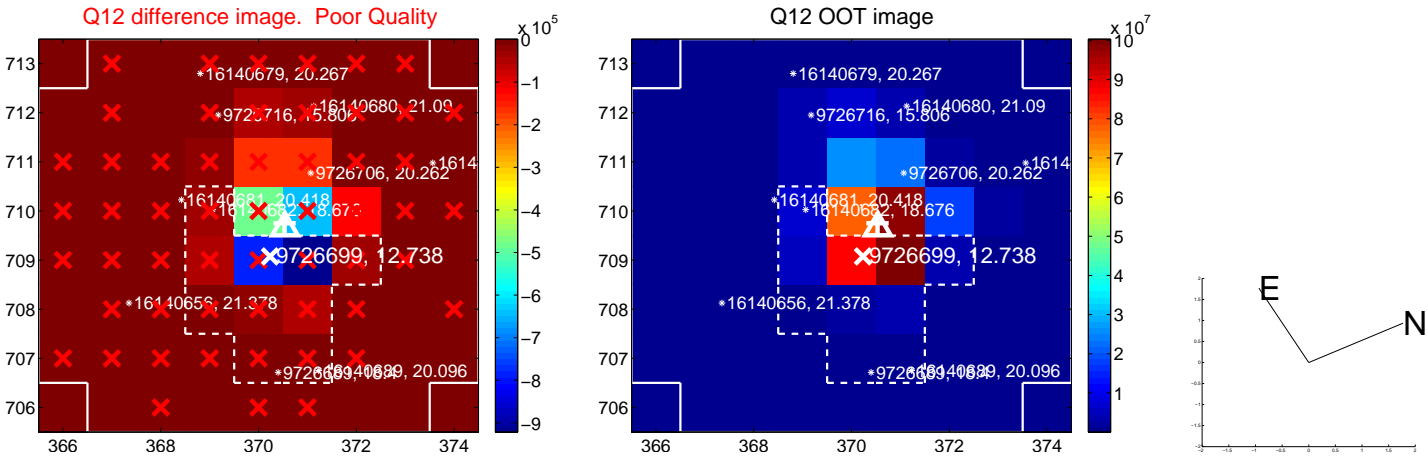
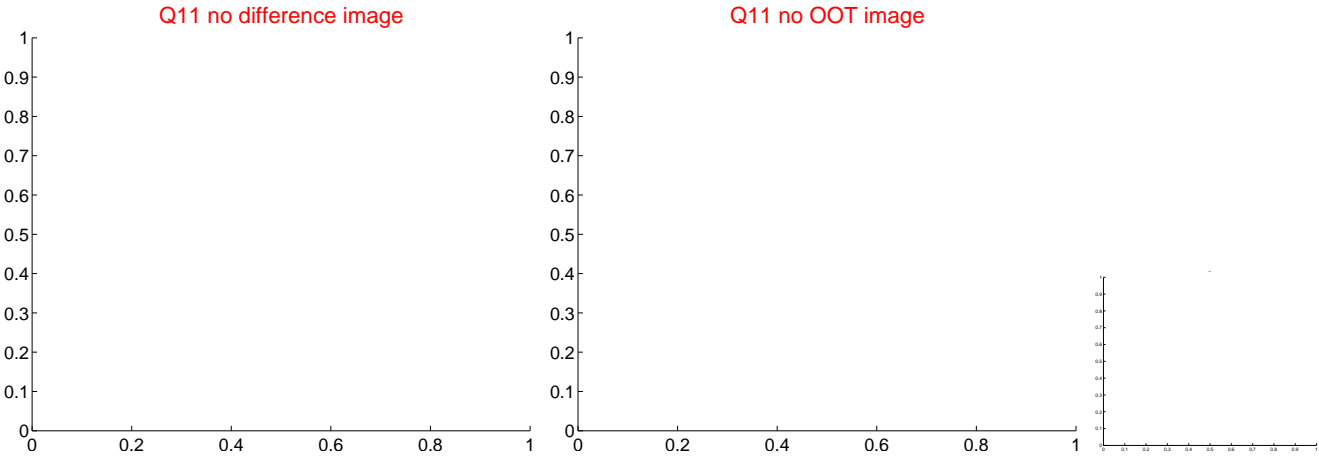
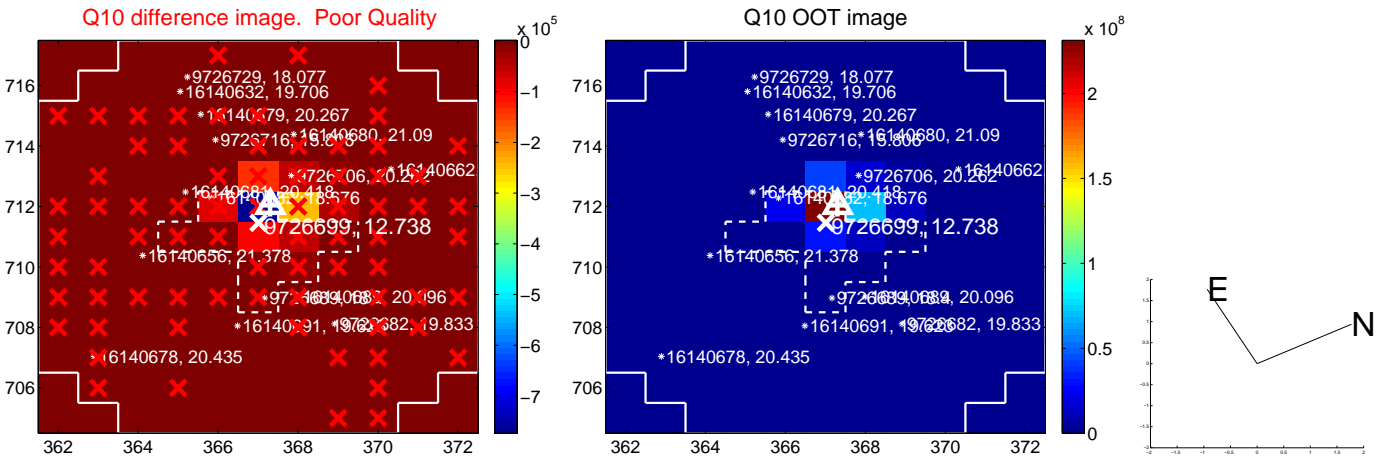
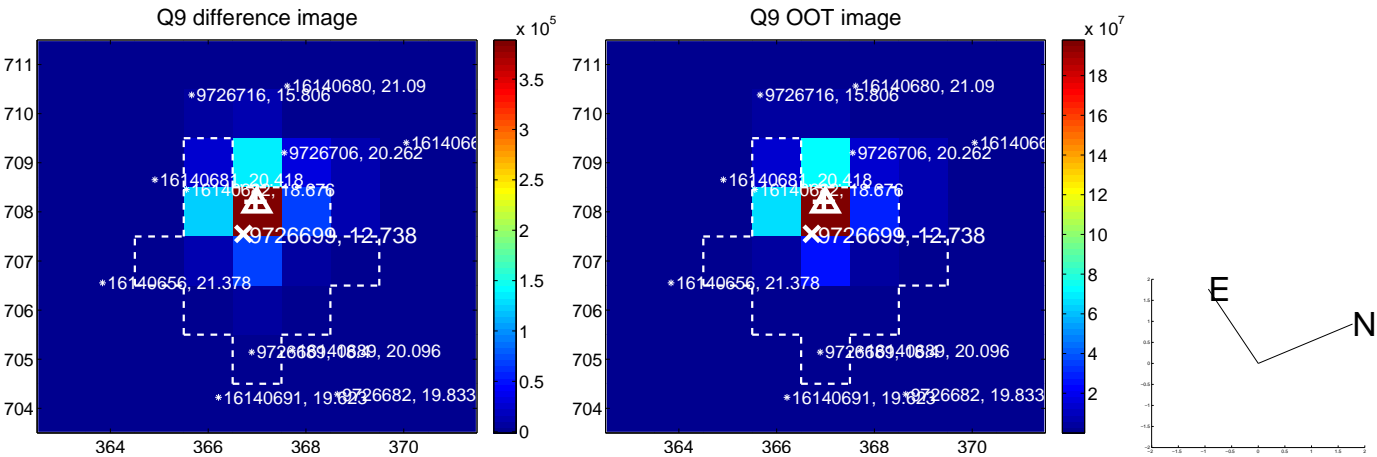
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



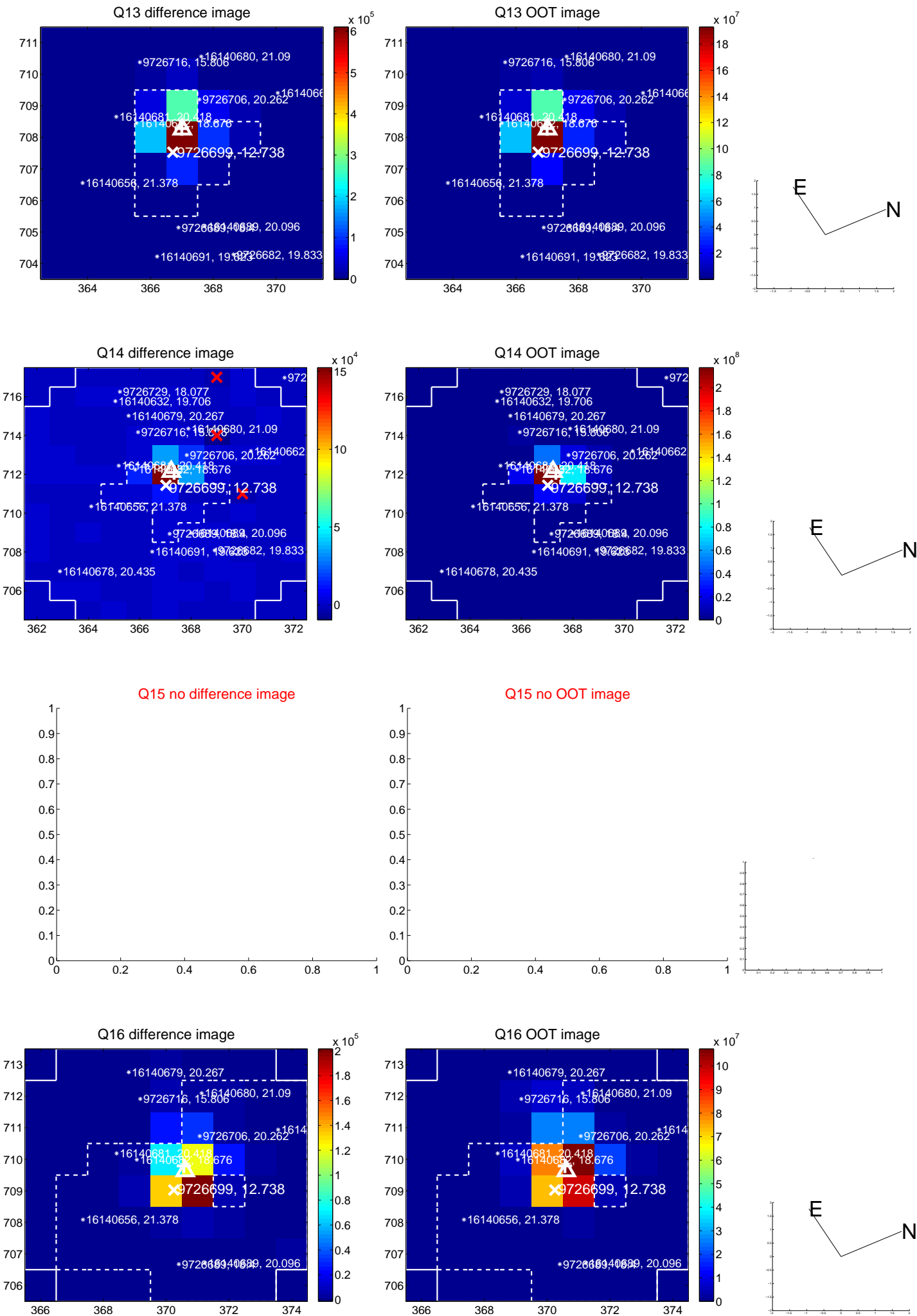
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



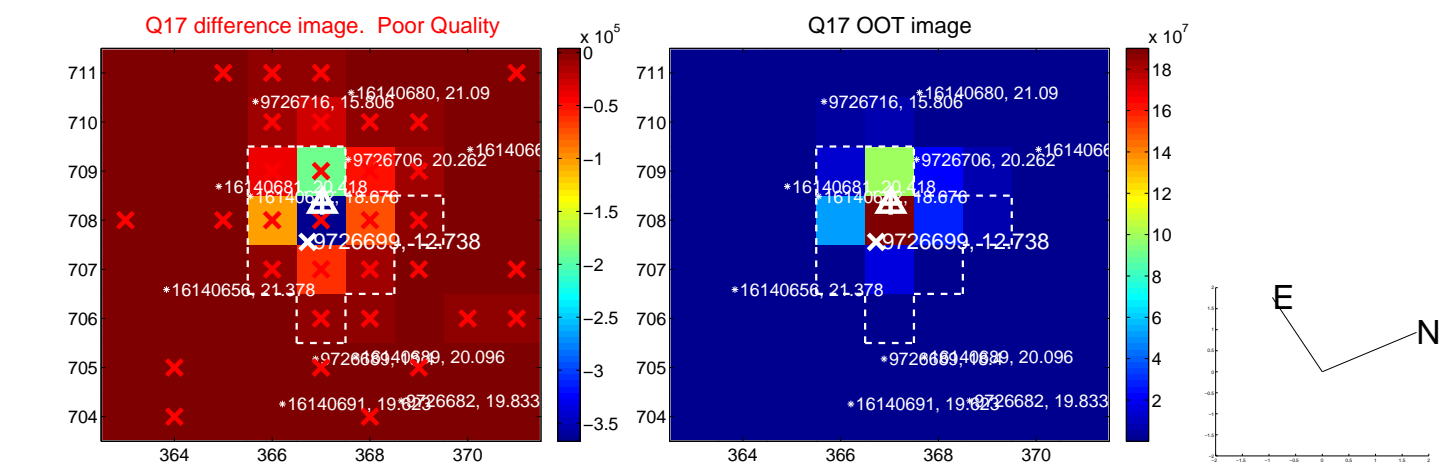
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



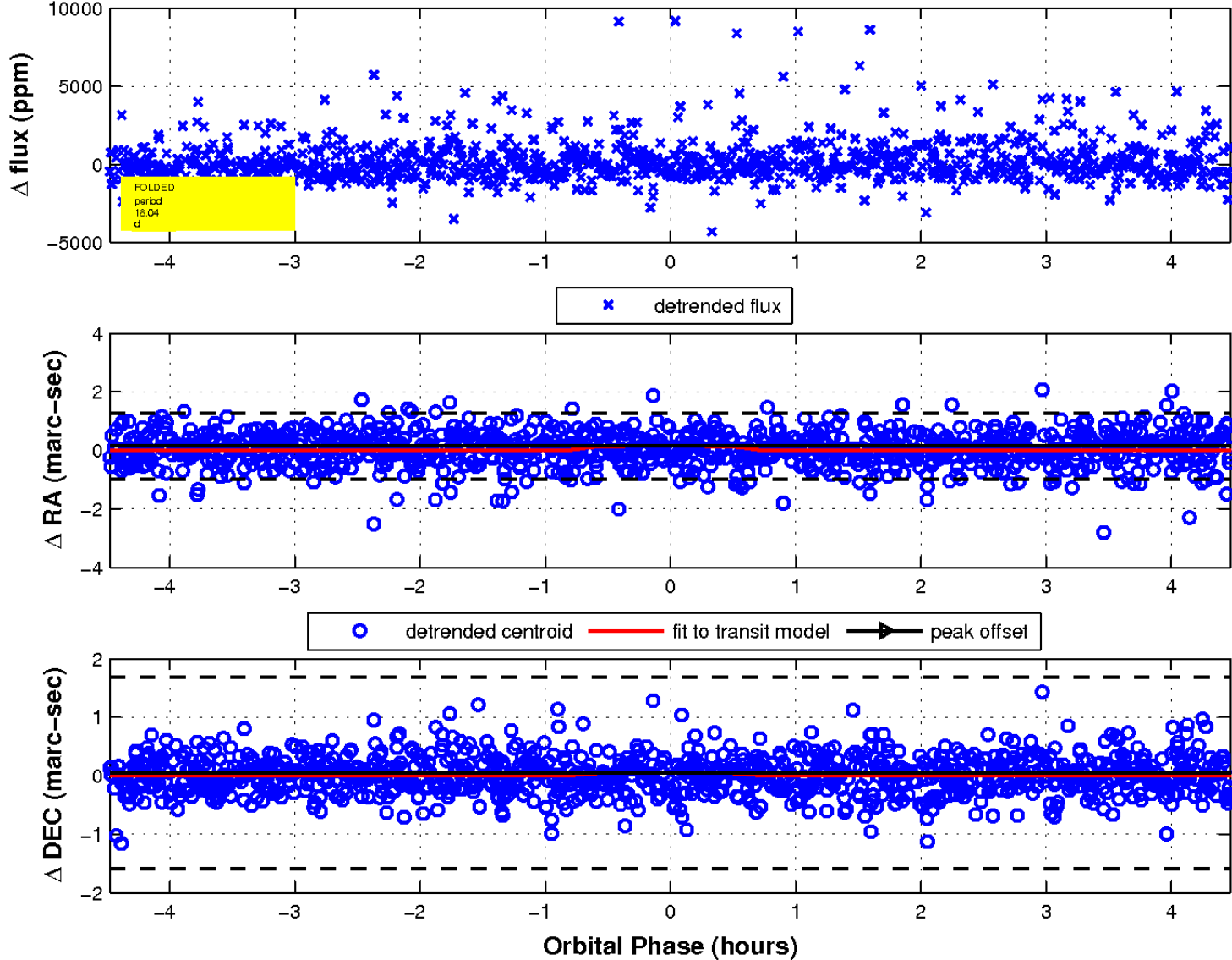
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

