

# KIC 010292216

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010292216-01 | OBS      | No   | 0.622380      | 132.699948   | 84.8        | 0.546            | 9.0 | 0.3 | 1.00                        | 5780            | 1.59                   | 4911.31                |
| 010292216-02 | OBS      | No   | 0.619704      | 131.954606   | 333.4       | 0.640            | 9.5 | 0.7 | 1.00                        | 5780            | 3.80                   | 4939.62                |
| 010292216-03 | OBS      | No   | 0.624527      | 131.745189   | 1916.1      | 1.234            | 8.4 | 6.4 | 1.00                        | 5780            | 4.36                   | 4888.82                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010292216-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_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.

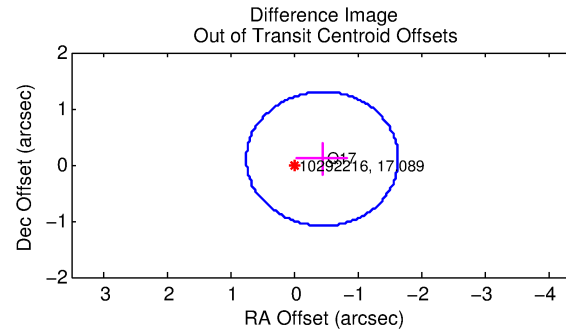
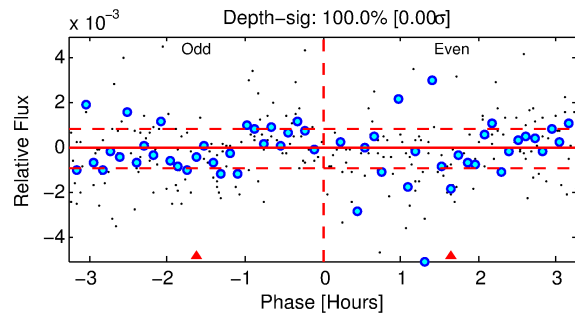
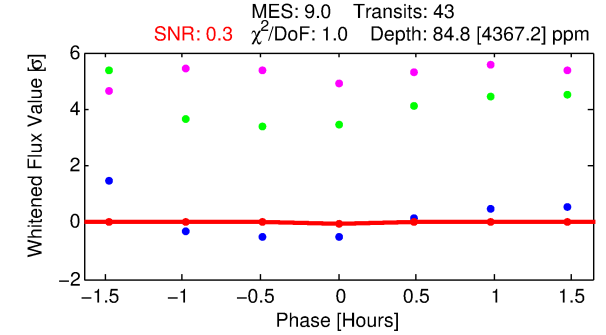
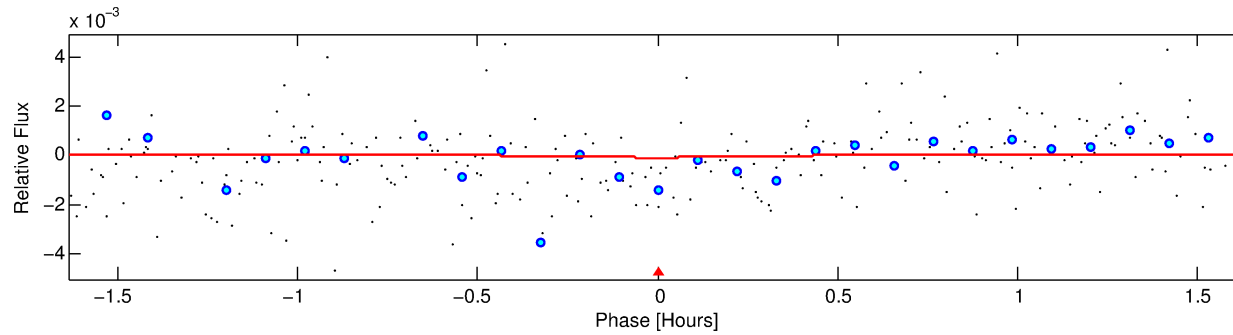
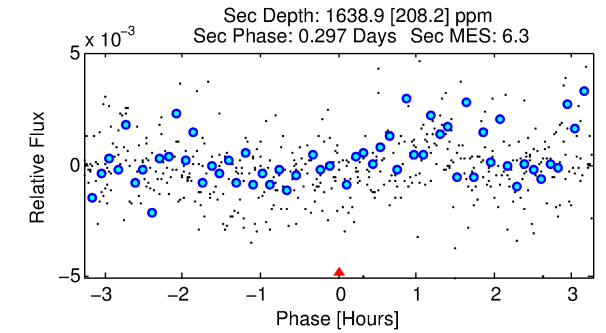
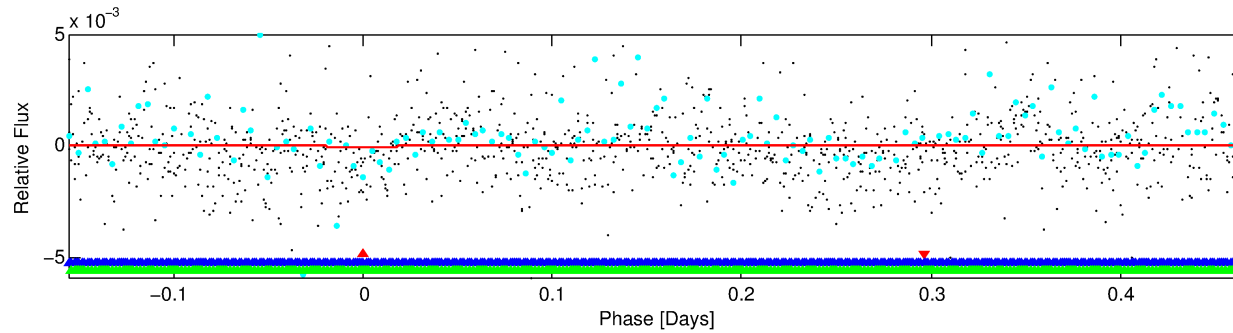
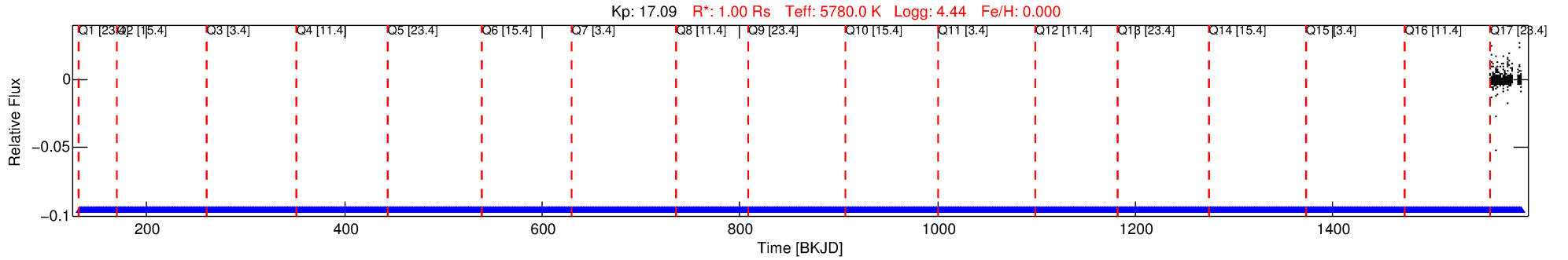
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010292216-01

No Significant Match Found

# DV One-Page Summary

KIC: 10292216 Candidate: 1 of 3 Period: 0.622 d



## DV Fit Results:

Period = 0.62238 [0.00046] d  
Epoch = 132.6999 [0.0484] BKJD  
Rp/R\* = 0.0146 [1.1951]  
a/R\* = 2.27 [135.19]  
b = 0.99 [3.89]  
Seff = 4911.31 [4.83]  
Teq = 2135 [1] K  
Rp = 1.59 [130.41] Re  
a = 0.0143 [0.0000] AU  
Ag = 72.52 [11887.61] [0.01σ]  
Teffp = 9631 [394706] K [0.02σ]

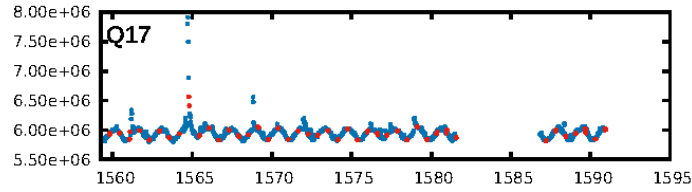
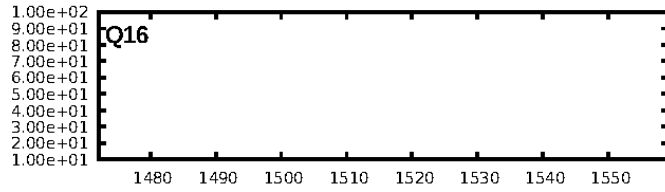
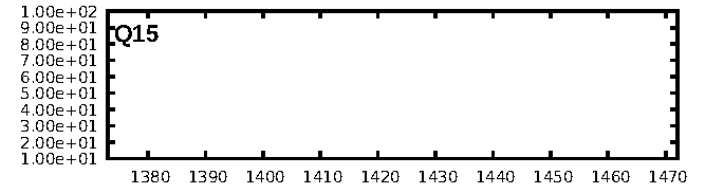
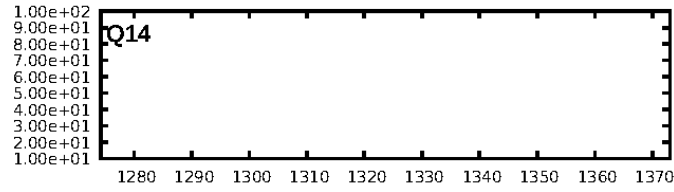
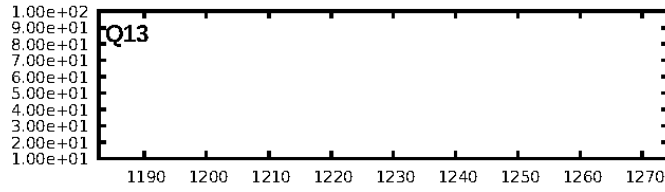
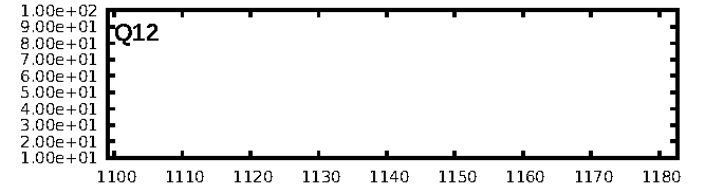
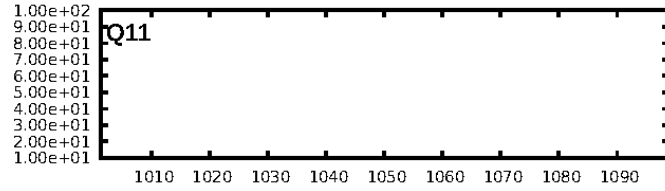
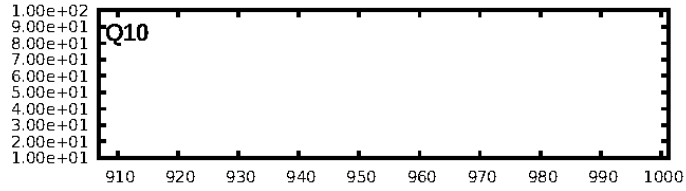
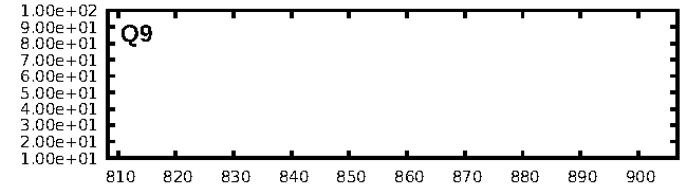
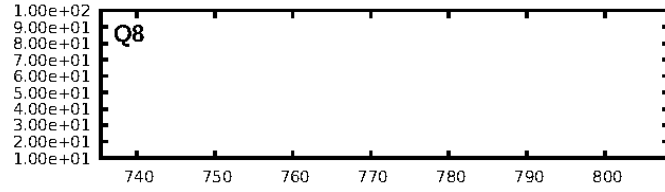
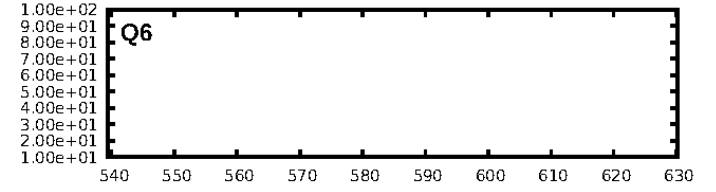
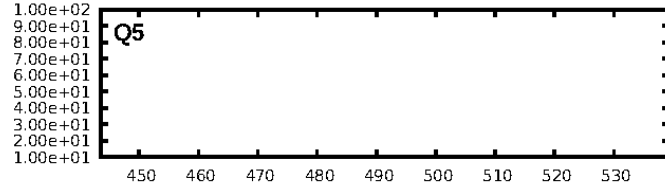
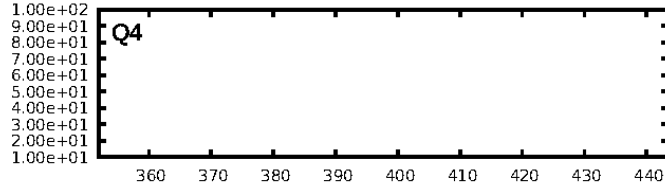
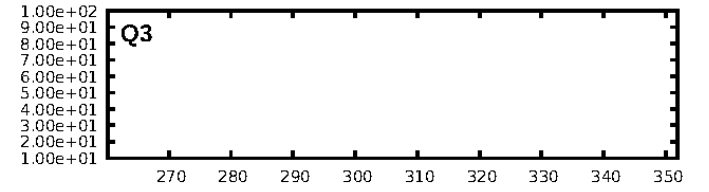
## DV Diagnostic Results:

ShortPeriod-sig: 6.1% [0.08σ]  
LongPeriod-sig: 3.0% [0.04σ]  
ModelChiSquare2-sig: 82.4%  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: 7.58e-109  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: -2.732  
Centroid-sig: N/A  
Centroid-so: 34.889 arcsec [0.80σ]  
OotOffset-rm: 0.461 arcsec [1.16σ]  
KicOffset-rm: 0.051 arcsec [0.17σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-figm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

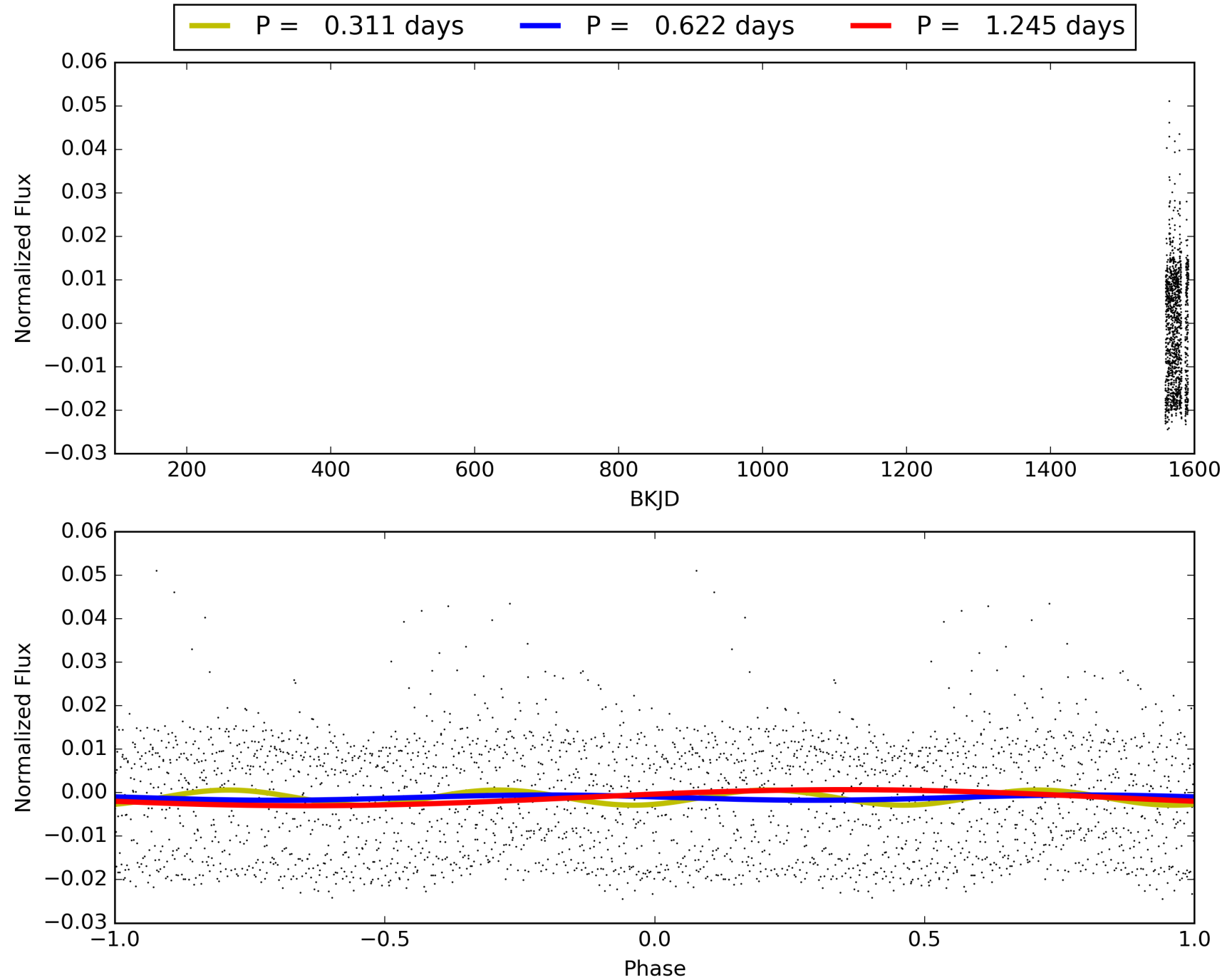
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:41:29 Z

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

# TCE 010292216-01, PDC Light Curves

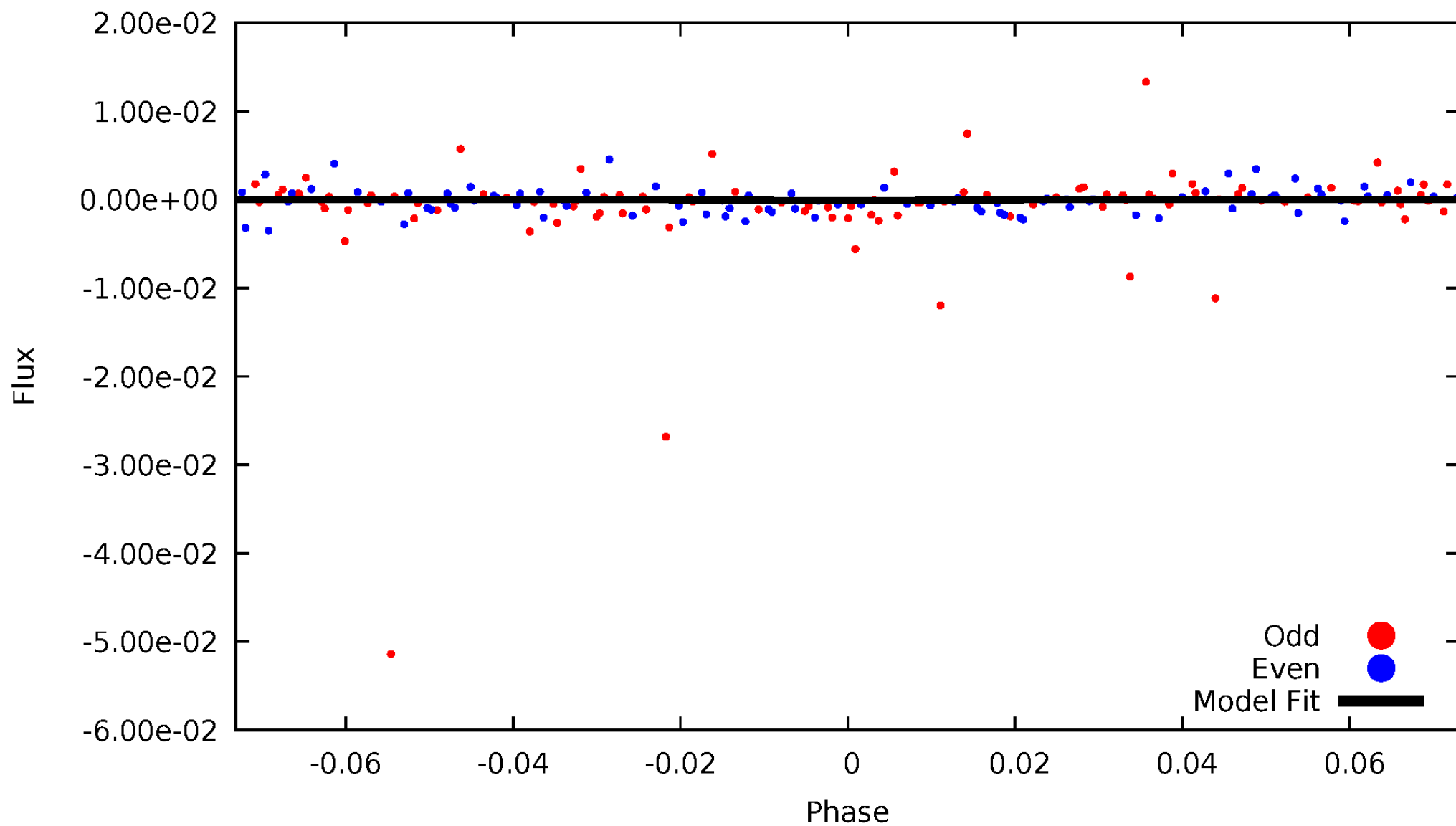


# TCE 010292216-01



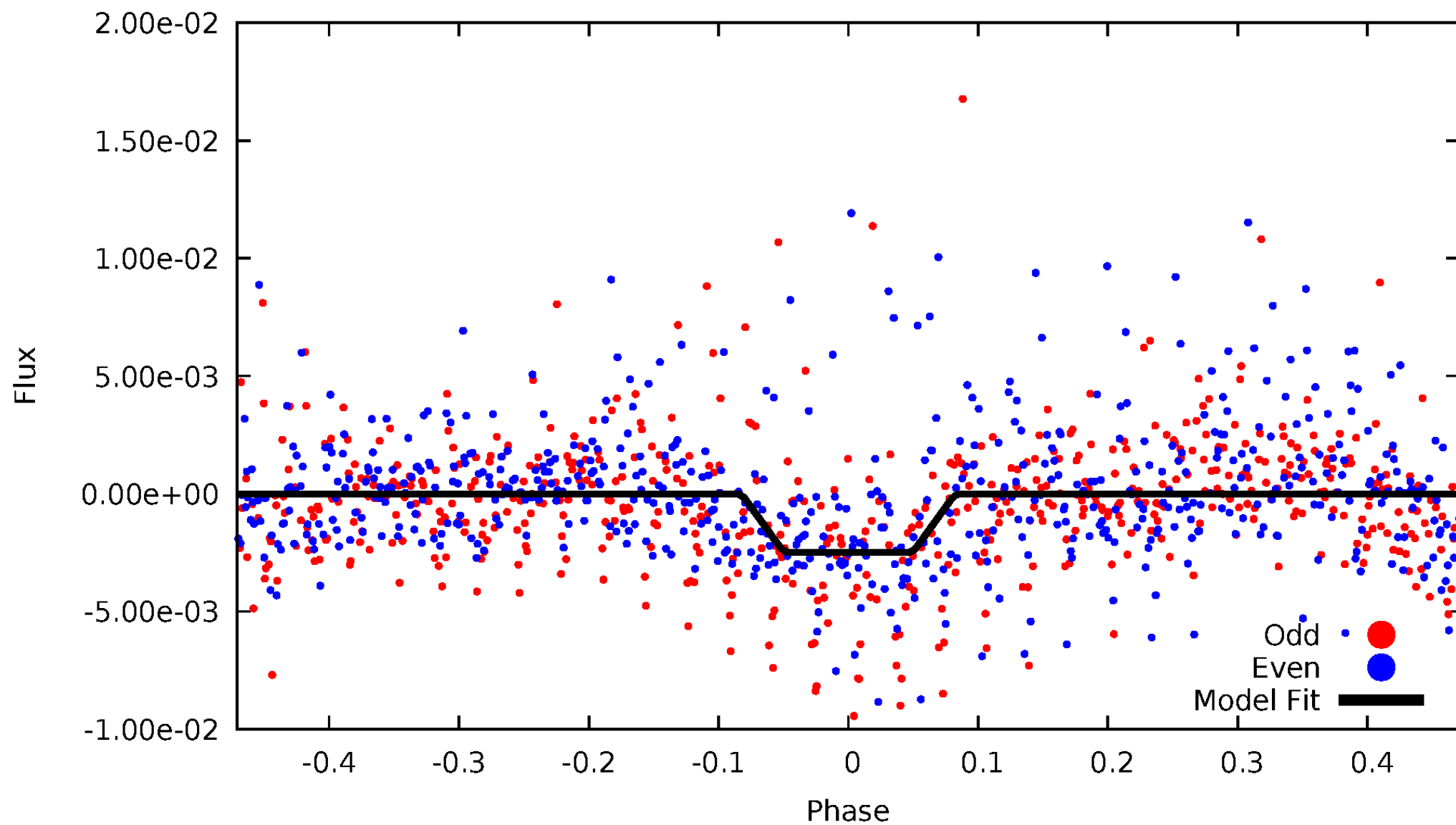
# DV Odd/Even

TCE 010292216-01



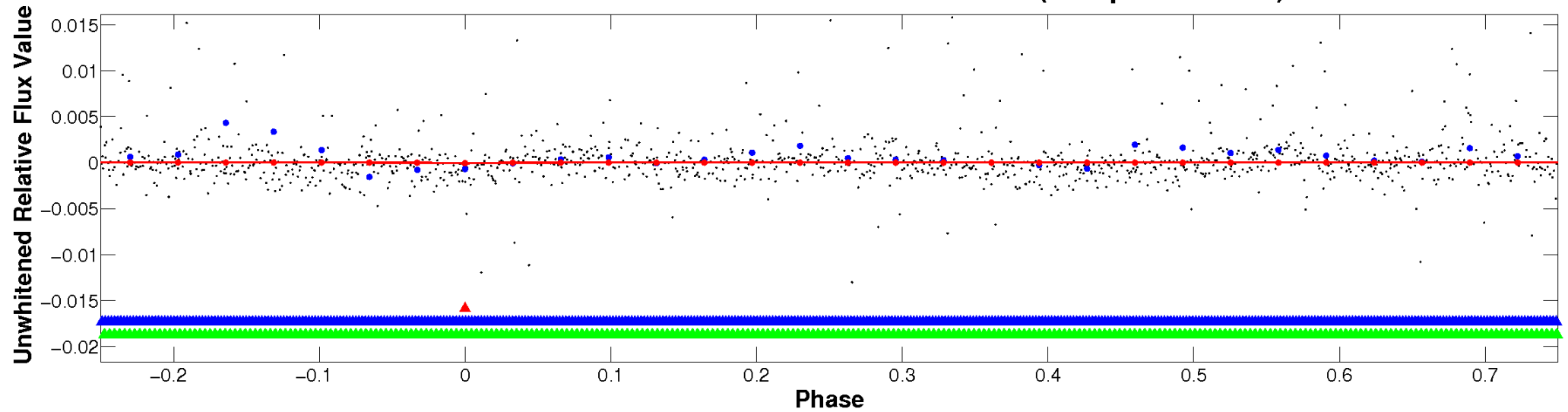
# ALT Odd/Even

TCE 010292216-01

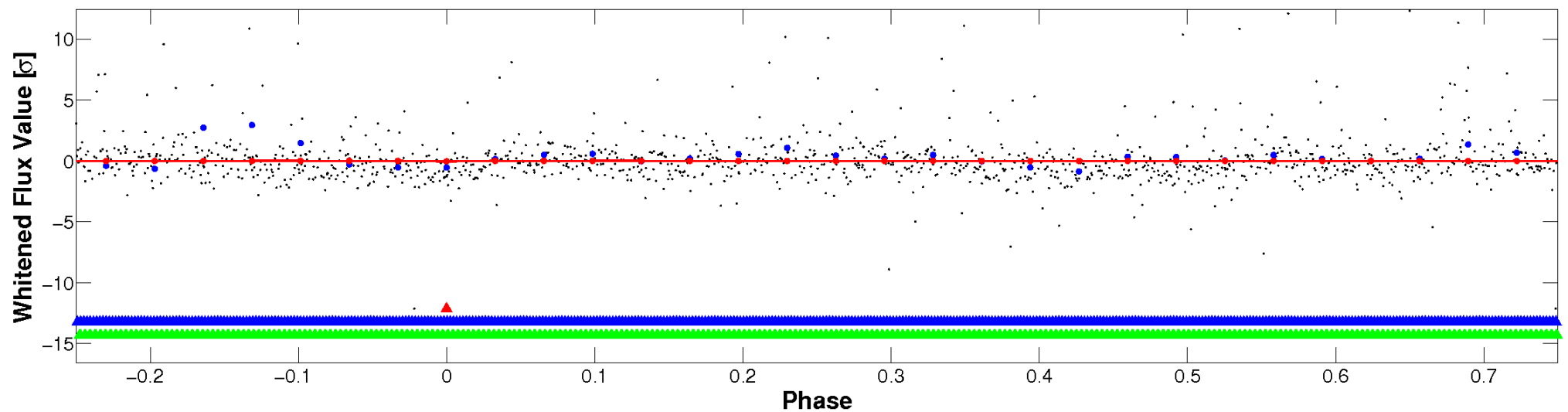


# Non-Whitened Vs. Whitened Light Curve

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

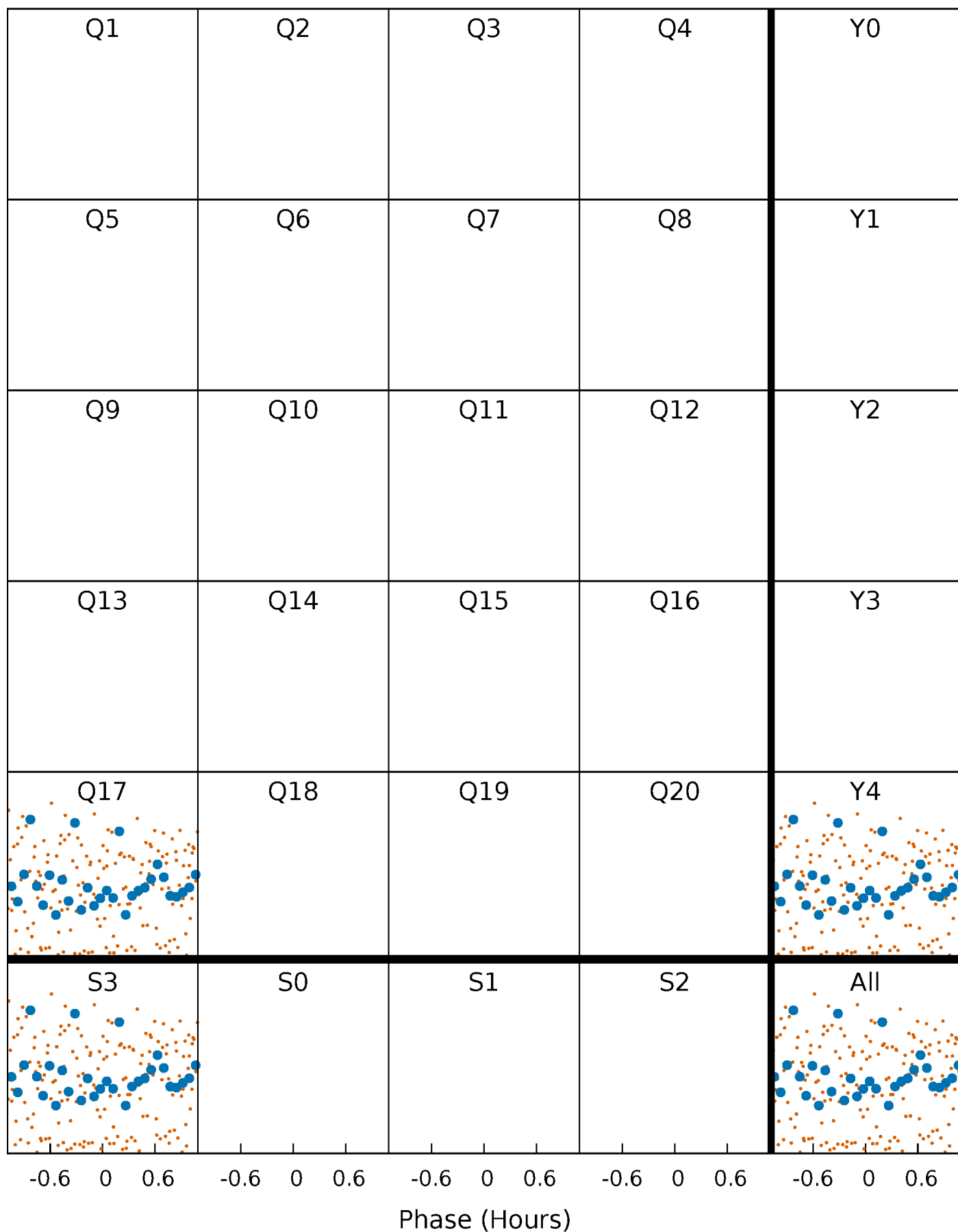


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

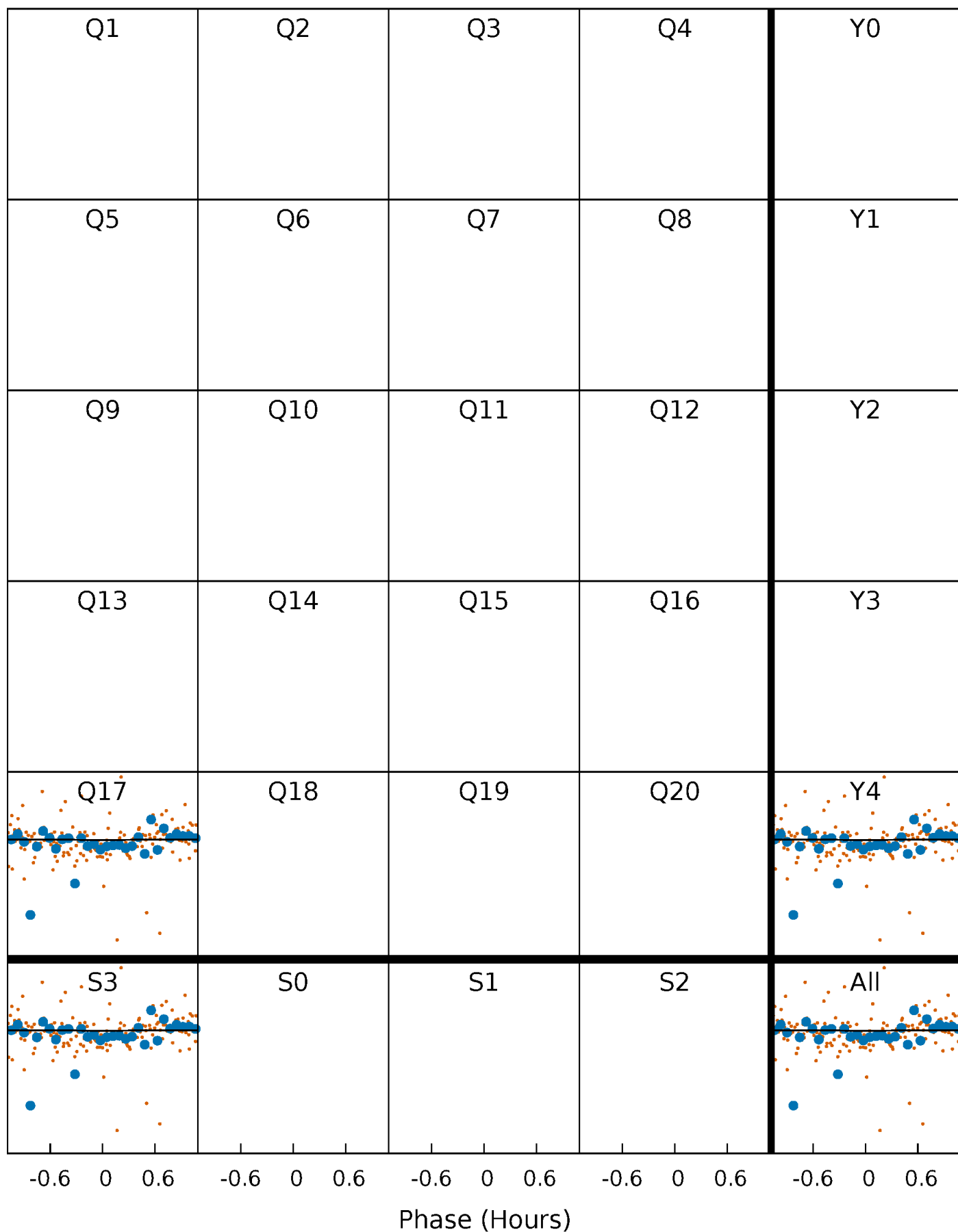
TCE 010292216-01   P= 0.622380 Days    $T_0=132.699948$  (BKJD)





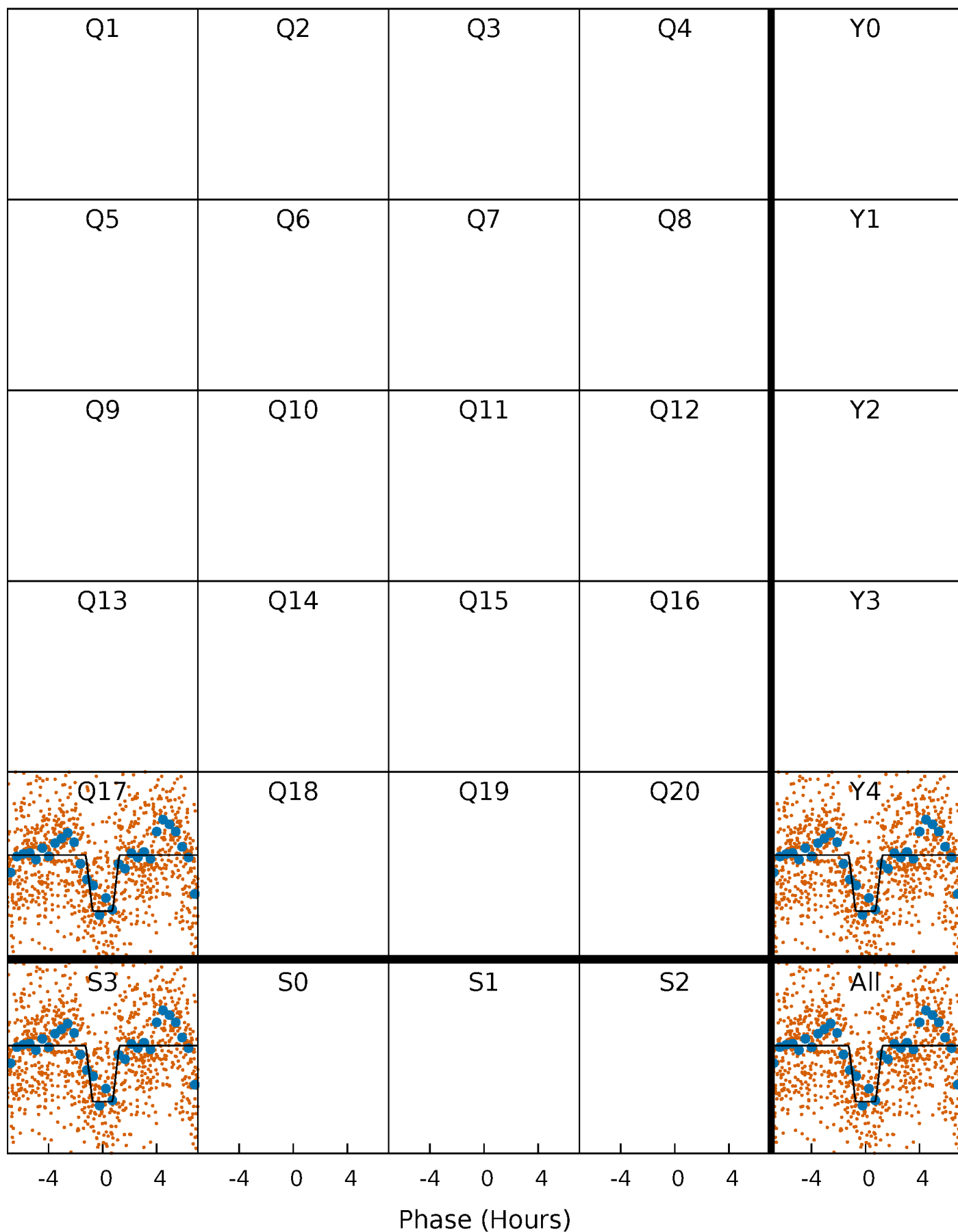
# DV Quarter-Phased Transit Curves

TCE 010292216-01   P= 0.622380 Days    $T_0=132.699948$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

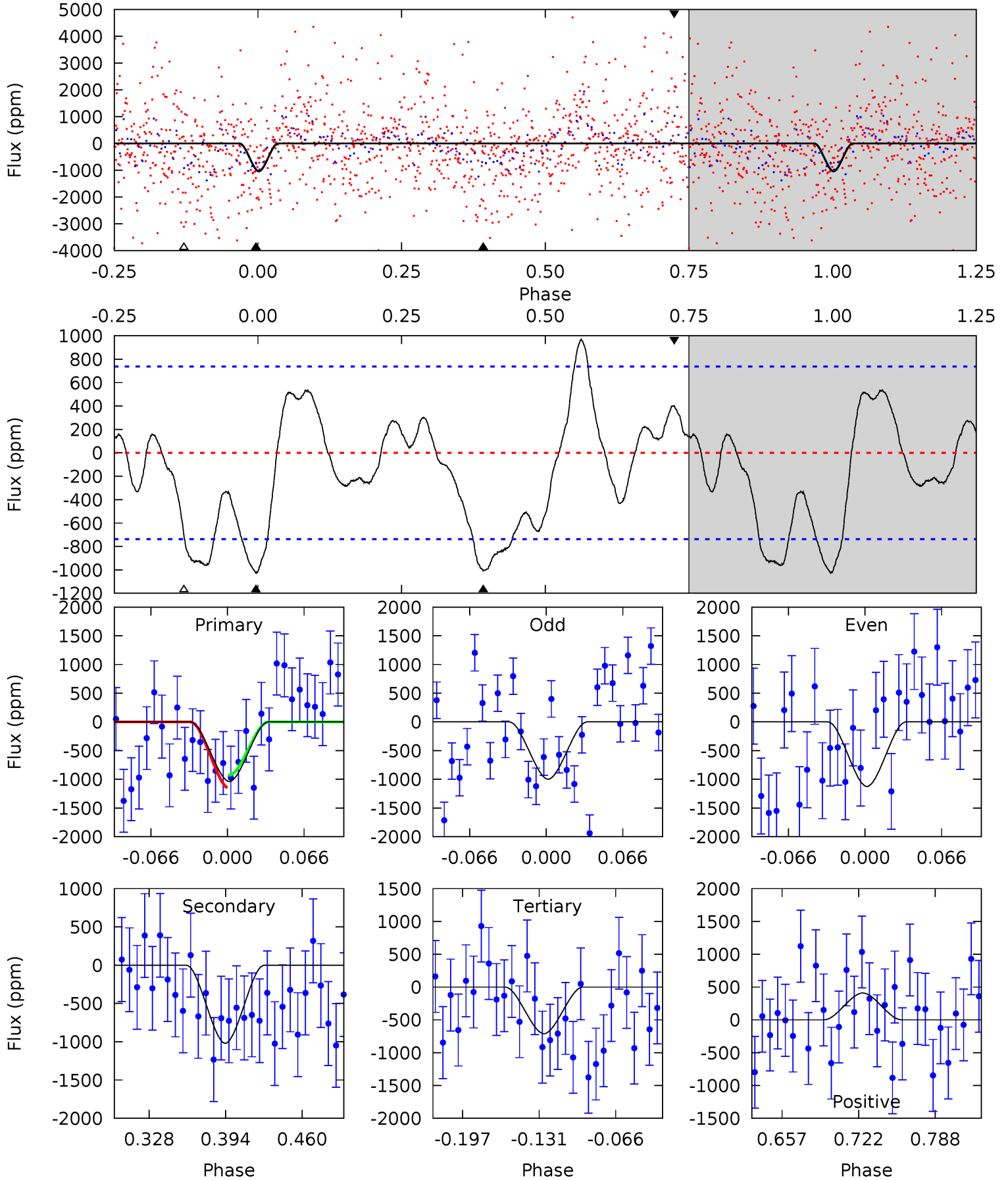
TCE 010292216-01   P= 0.624741 Days    $T_0=131.891762$  (BKJD)



# DV Model-Shift Uniqueness Test

010292216-01, P = 0.622380 Days, E = 132.699948 Days

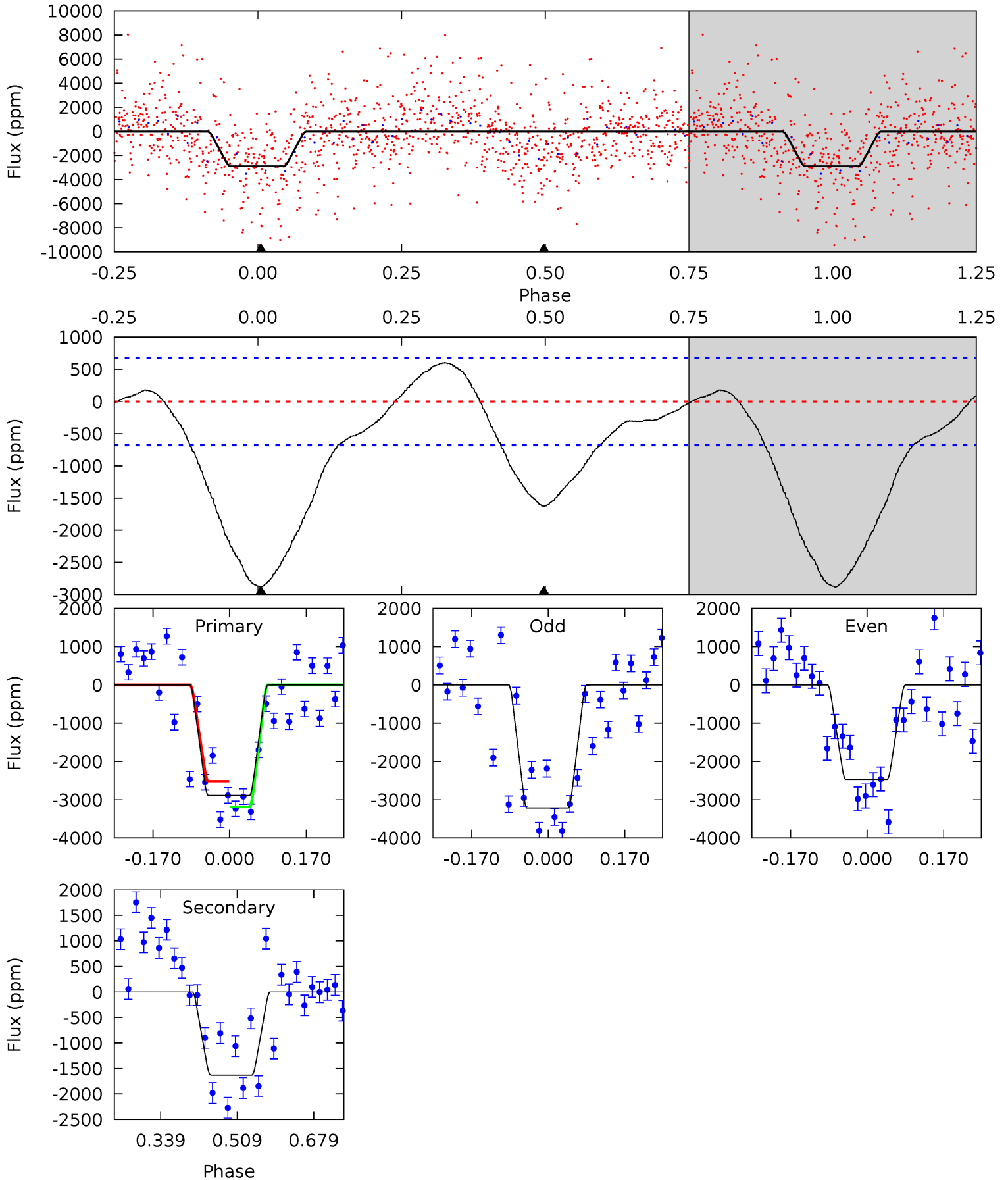
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.48 | 6.36 | 4.44 | 2.56 | 4.65            | 1.84            | 2.55             | 2.04    | 3.92    | 1.93    | 3.81    | 0.40    | 1.57 | 0.49  | 0.72 |



# Alt Model-Shift Uniqueness Test

010292216-01, P = 0.624741 Days, E = 131.891762 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  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 18.9 | 10.7 | 0   | 0   | 4.45            | 1.37            | 1.86             | 18.9    | 18.9    | 10.7    | 10.7    | 2.47    | 1.04 | 0.17  | 2.23 |



### Stellar Parameters For KIC 010292216

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$             | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|----------------------------|---|
|        | $5780^{+1}_{-1}$    | $4.438^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +23%/-23%                 | +inf%/-inf%               | +100%/-100%               | +100%/-100%                | +100%/-100%                               |
| Source | Solar               | Solar                     | Solar                     | Solar                     |                            |   |

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

### Secondary Eclipse Parameters for KIC 010292216-01 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$        | $T_{max} (K)$        | $T_{obs} (K)$         | $A_{obs}$                 |
|---------|-----------------|---------------------------|----------------------|-----------------------|---------------------------|
| DV      | $-1009 \pm 159$ | $88.22^{+98.29}_{-61.68}$ | $2992^{+143}_{-142}$ | $-3027^{+266}_{-106}$ | $0.015^{+0.154}_{-0.012}$ |
| Alt.    | $-1628 \pm 152$ | $95.74^{+93.46}_{-65.73}$ | $2987^{+147}_{-142}$ | $-3011^{+388}_{-114}$ | $0.020^{+0.182}_{-0.015}$ |

$T_{max}$  = 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

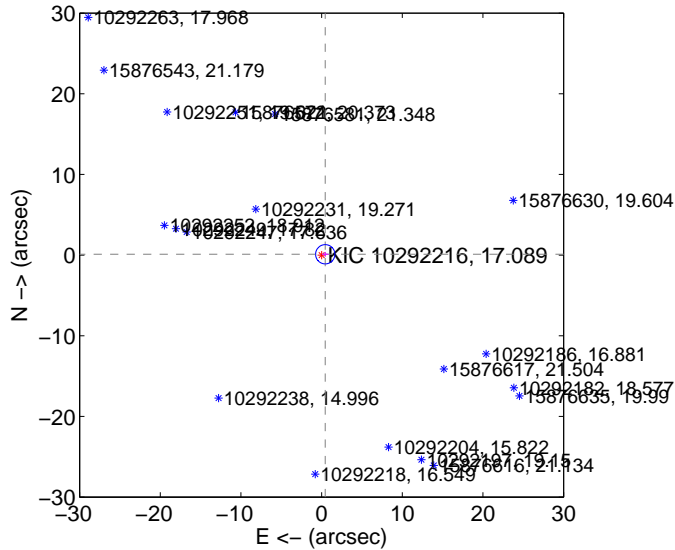
Supplemental centroid analysis for 010292216-01. Kepler magnitude: 17.09. Transit SNR 0.29

There are 1 quarters with good PRF difference image offsets

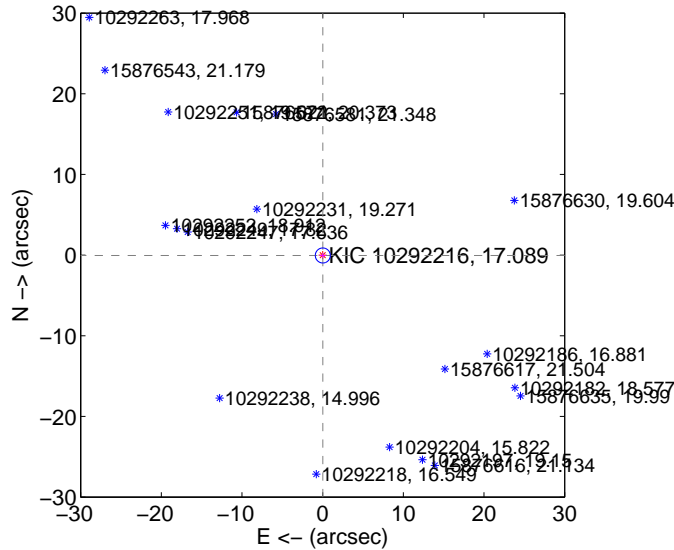
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.461 \pm 0.398$  | 1.16                | $-0.449 \pm 0.403$ | $0.103 \pm 0.292$  |
| PRF-fit source offset from KIC position | $0.051 \pm 0.310$  | 0.17                | $-0.019 \pm 0.403$ | $-0.048 \pm 0.292$ |
| photometric centroid source offset      | $34.89 \pm 43.39$  | 0.80                | $-33.66 \pm 43.60$ | $-9.18 \pm 40.39$  |

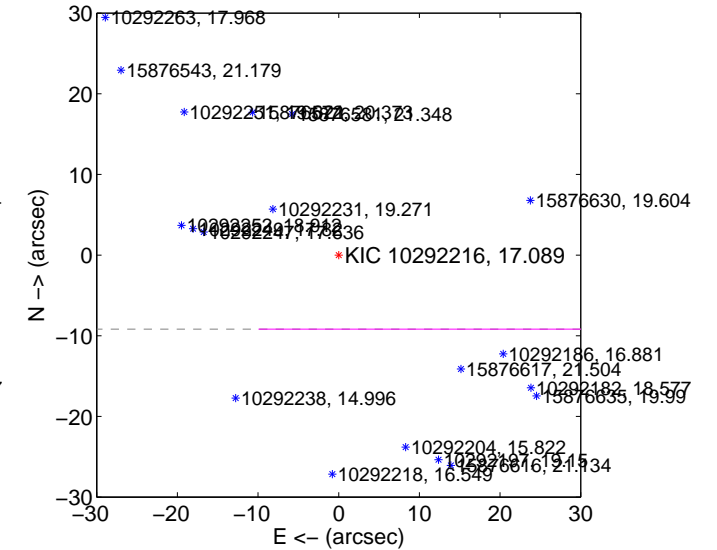
offset from difference PRF-fit to OOT PRF-fit



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.





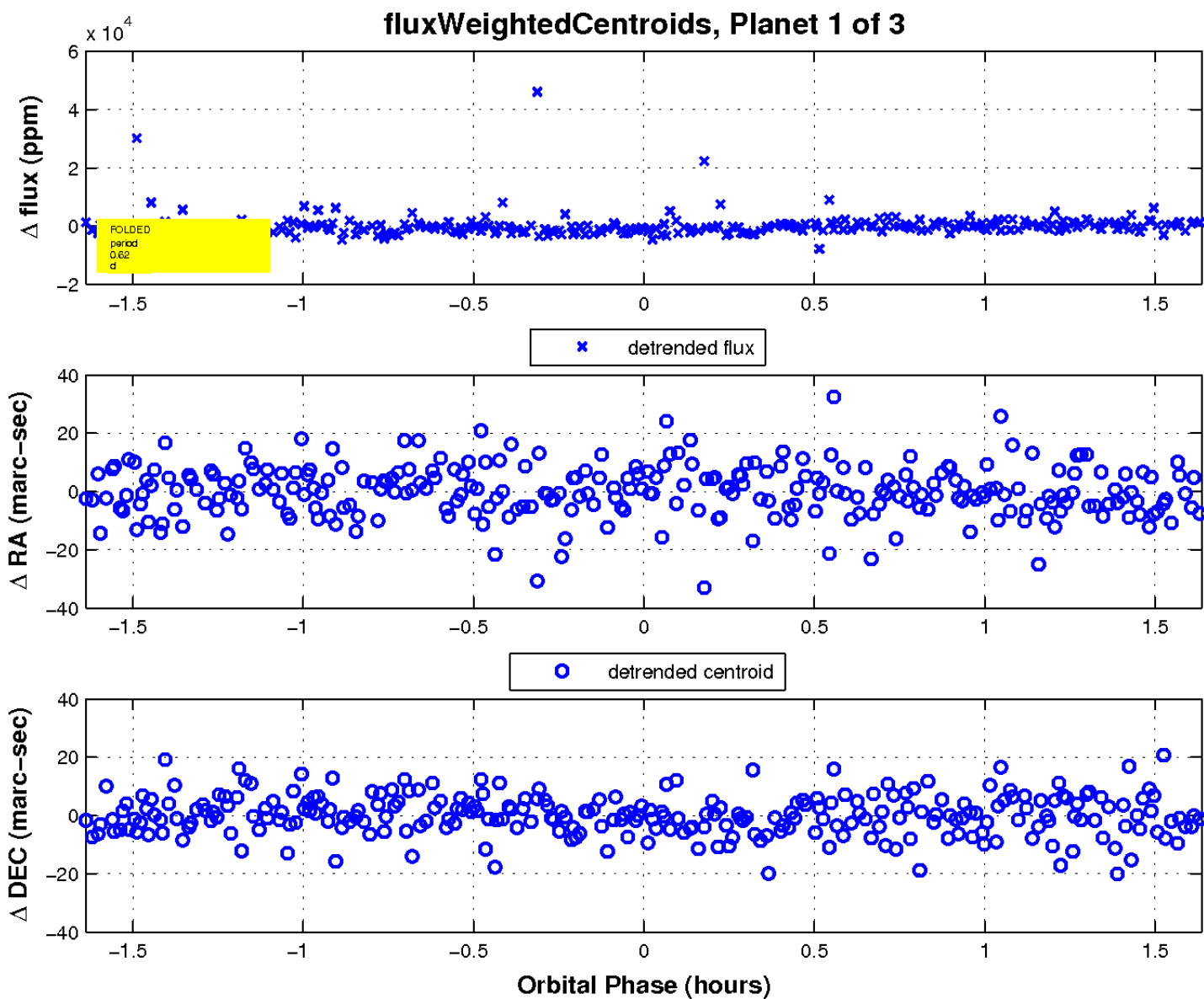
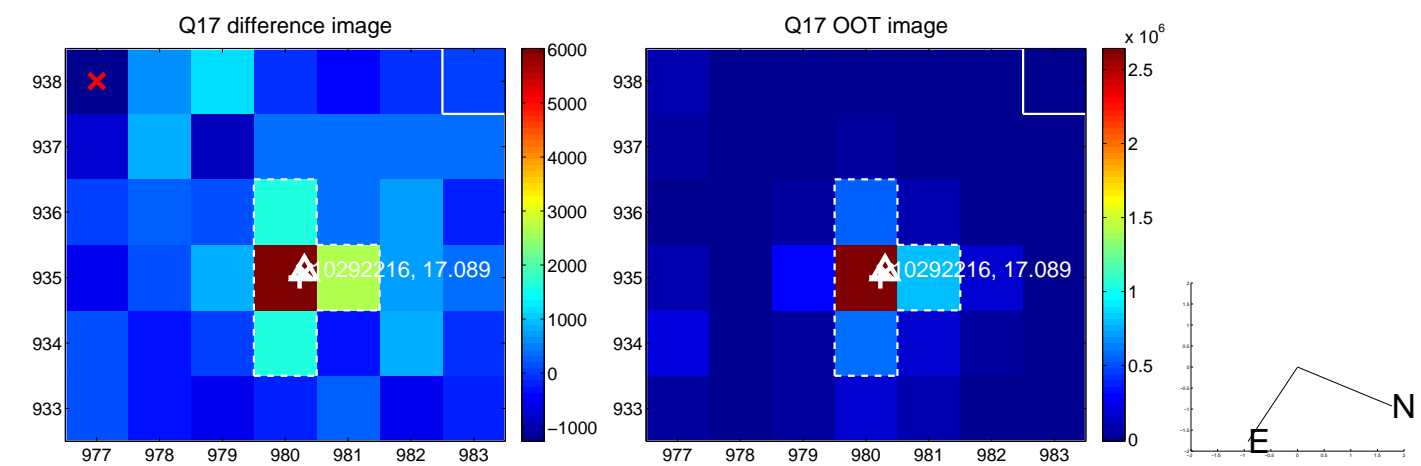
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



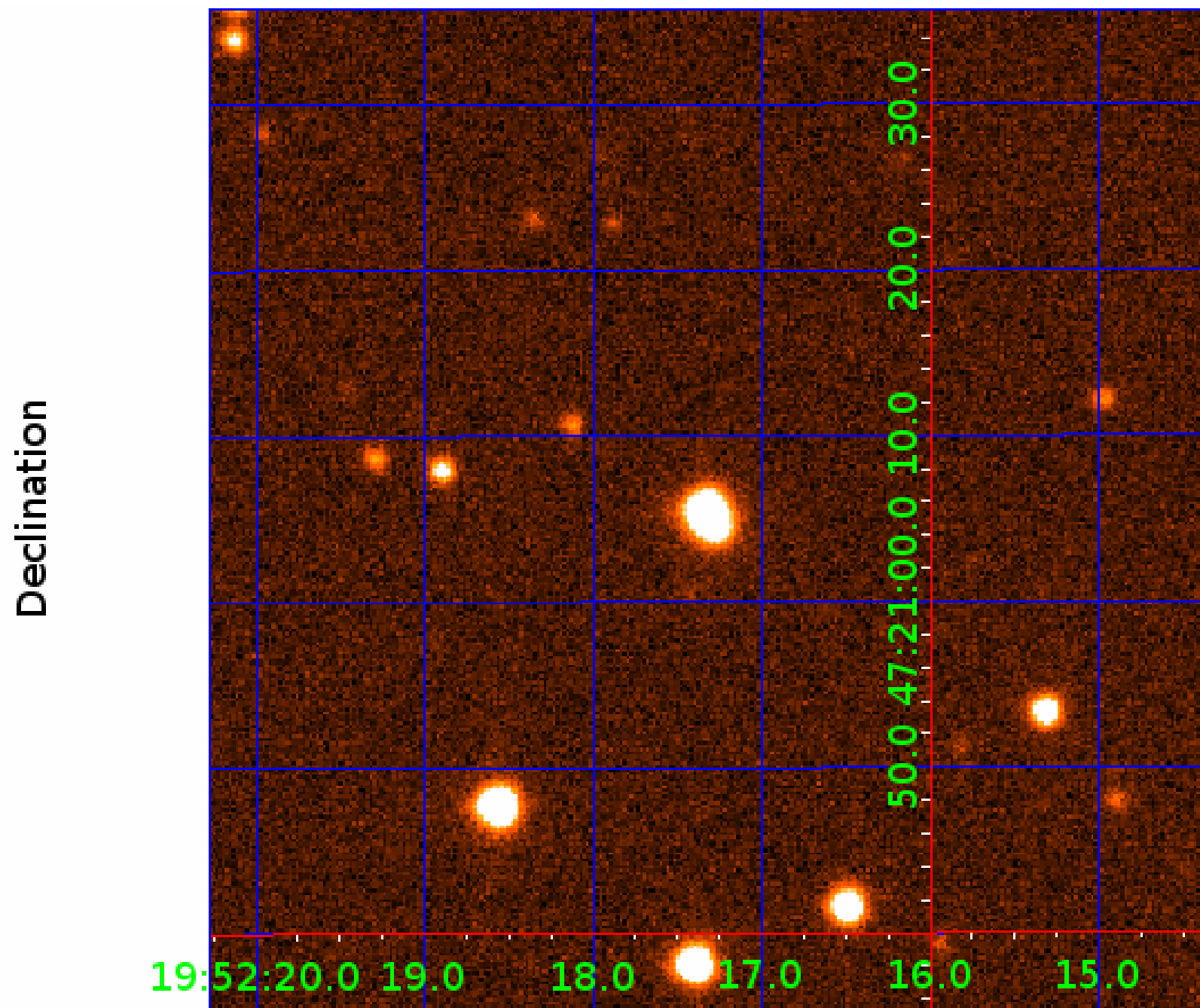
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 010292216

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010292216-01 | OBS      | No   | 0.622380      | 132.699948   | 84.8        | 0.546            | 9.0 | 0.3 | 1.00                        | 5780            | 1.59                   | 4911.31                |
| 010292216-02 | OBS      | No   | 0.619704      | 131.954606   | 333.4       | 0.640            | 9.5 | 0.7 | 1.00                        | 5780            | 3.80                   | 4939.62                |
| 010292216-03 | OBS      | No   | 0.624527      | 131.745189   | 1916.1      | 1.234            | 8.4 | 6.4 | 1.00                        | 5780            | 4.36                   | 4888.82                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010292216-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_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.

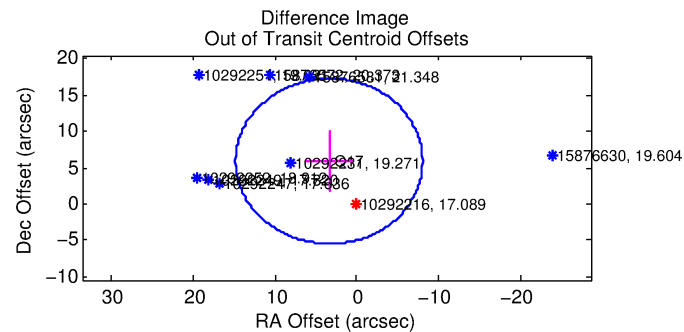
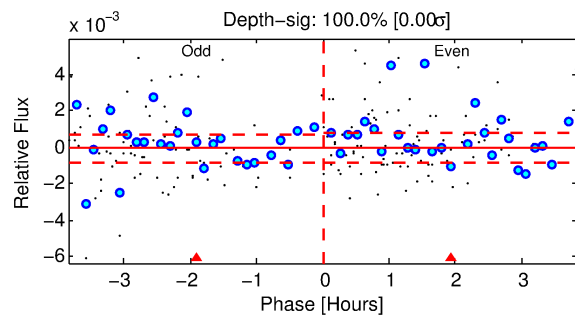
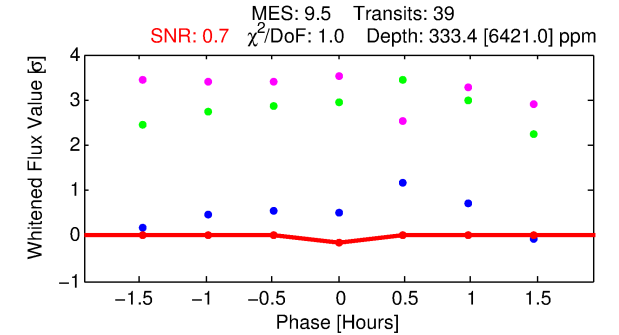
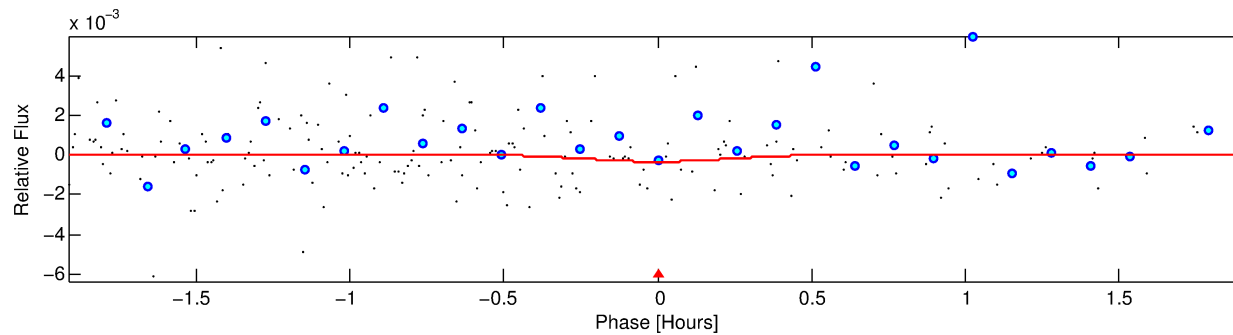
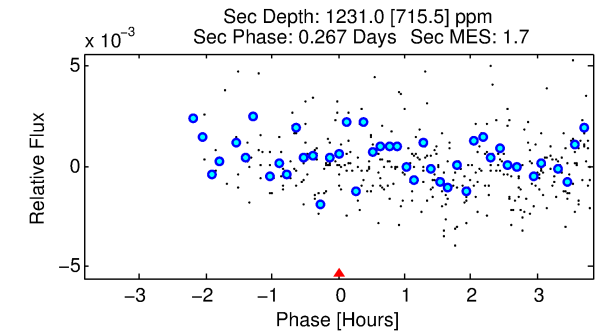
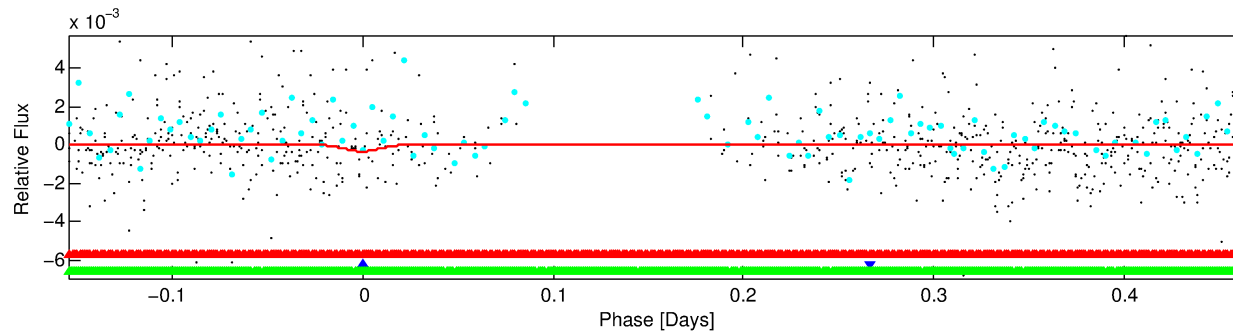
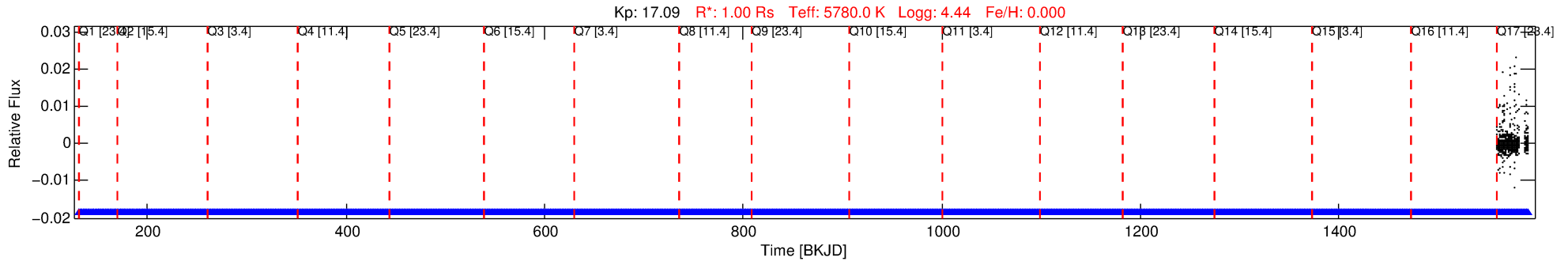
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010292216-02

No Significant Match Found

# DV One-Page Summary

KIC: 10292216 Candidate: 2 of 3 Period: 0.620 d



## DV Fit Results:

Period = 0.61970 [0.00015] d  
Epoch = 131.9546 [0.0161] BKJD  
Rp/R\* = 0.0348 [6.1831]  
a/R\* = 2.37 [96.82]  
b = 0.99 [10.09]  
Seff = 4939.62 [1.62]  
Teq = 2138 [0] K  
Rp = 3.80 [674.72] Re  
a = 0.0142 [0.0000] AU  
Ag = 9.49 [3370.49] [0.00σ]  
Teffp = 5801 [514981] K [0.01σ]

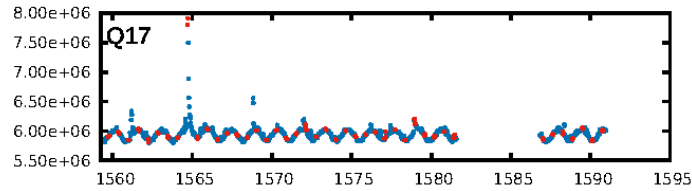
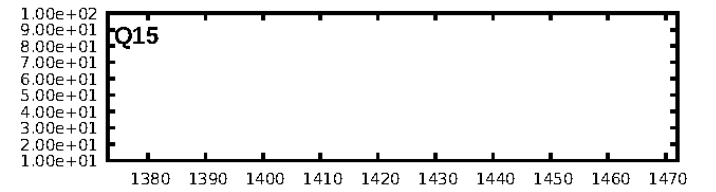
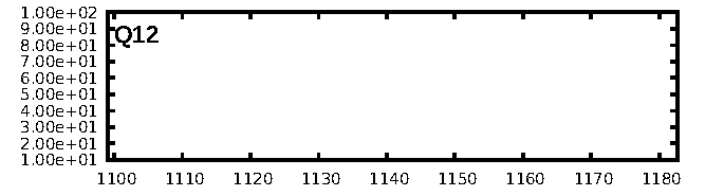
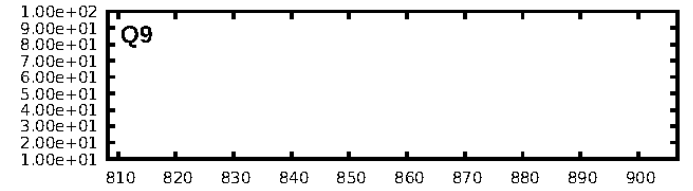
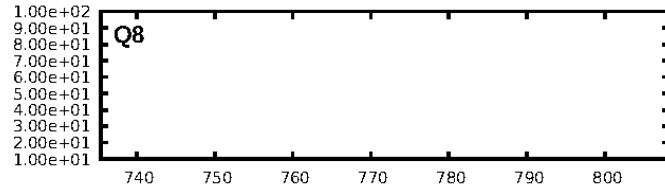
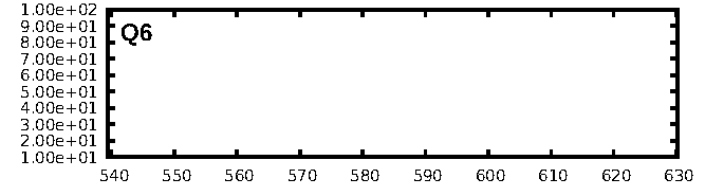
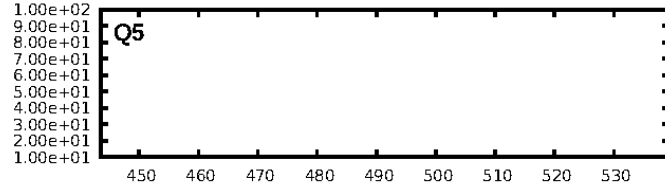
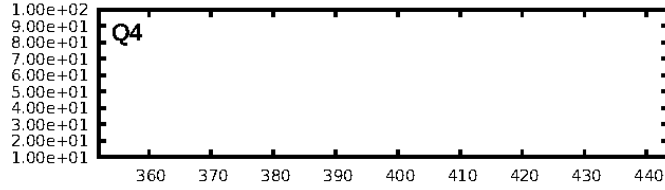
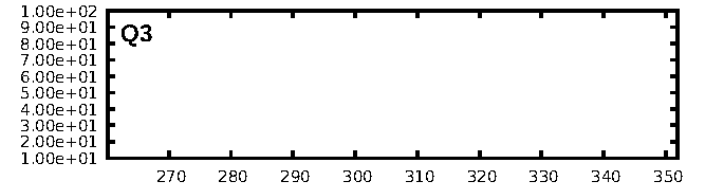
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 6.1% [0.08σ]  
ModelChiSquare2-sig: 88.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.19e-88  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: 0.4326  
Centroid-sig: N/A  
Centroid-so: 5.737 arcsec [0.55σ]  
OotOffset-rm: 6.801 arcsec [1.79σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-rm: 6.902 arcsec [1.84σ]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/1]

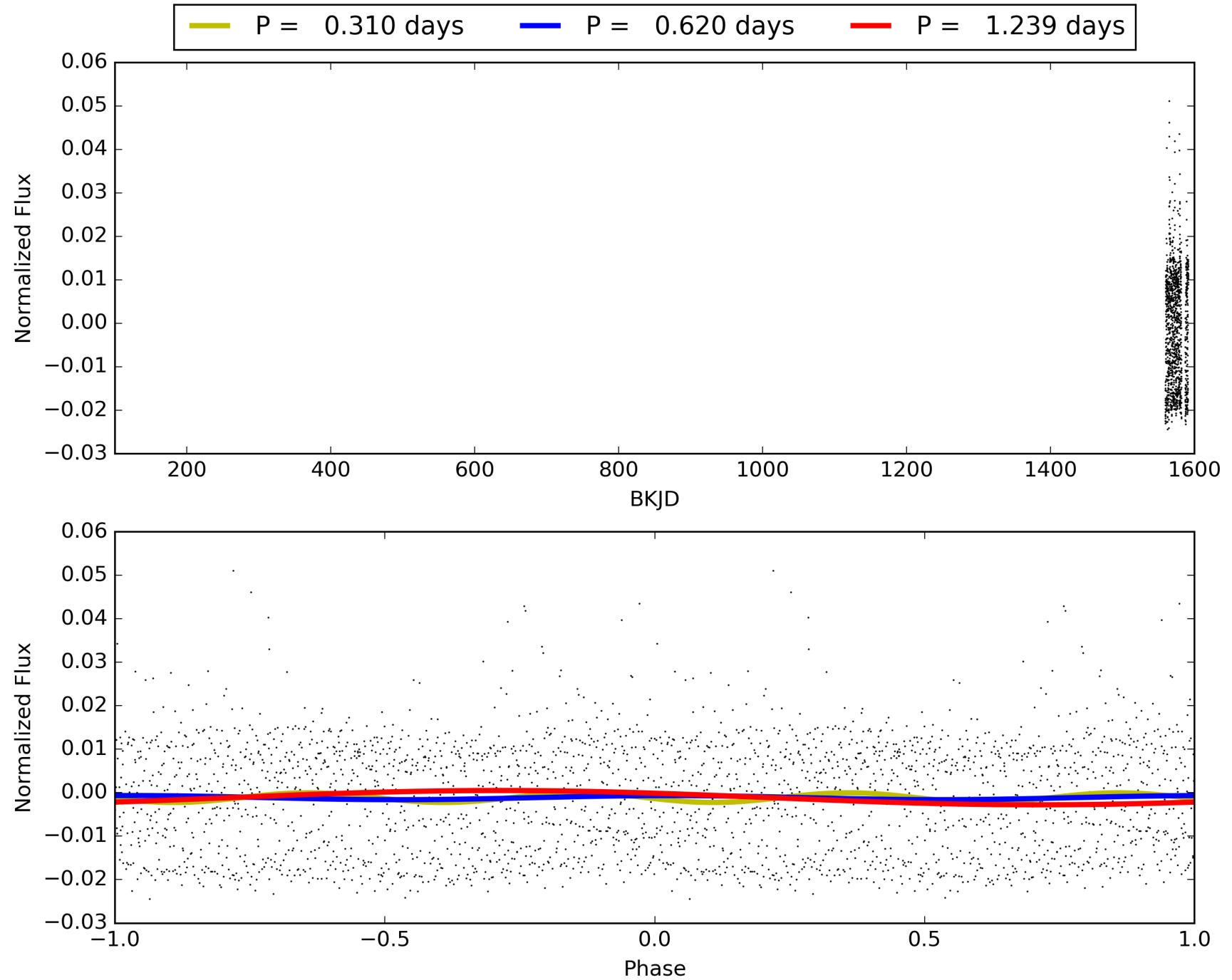
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:41:33 Z

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

# TCE 010292216-02, PDC Light Curves



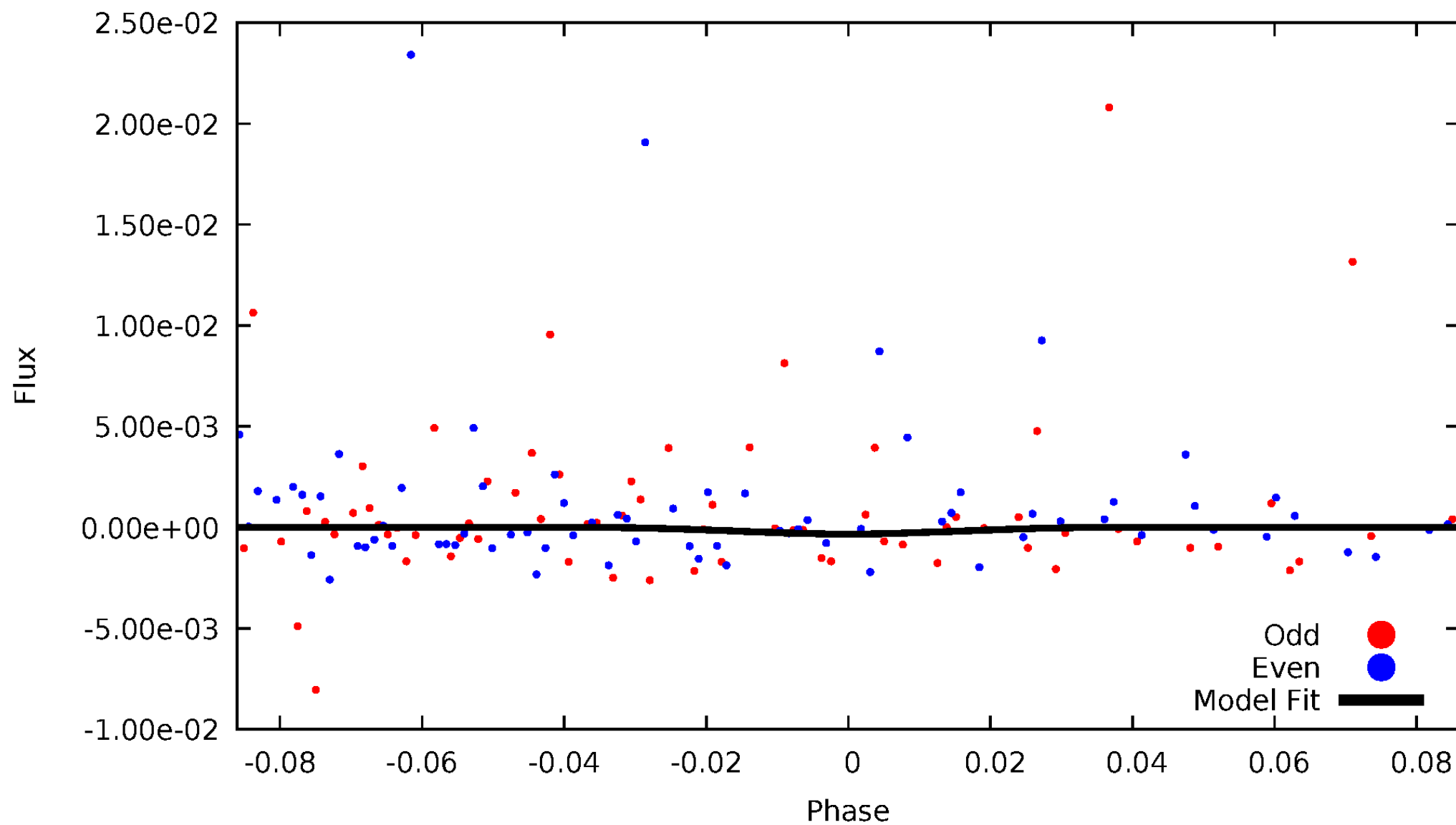
# TCE 010292216-02





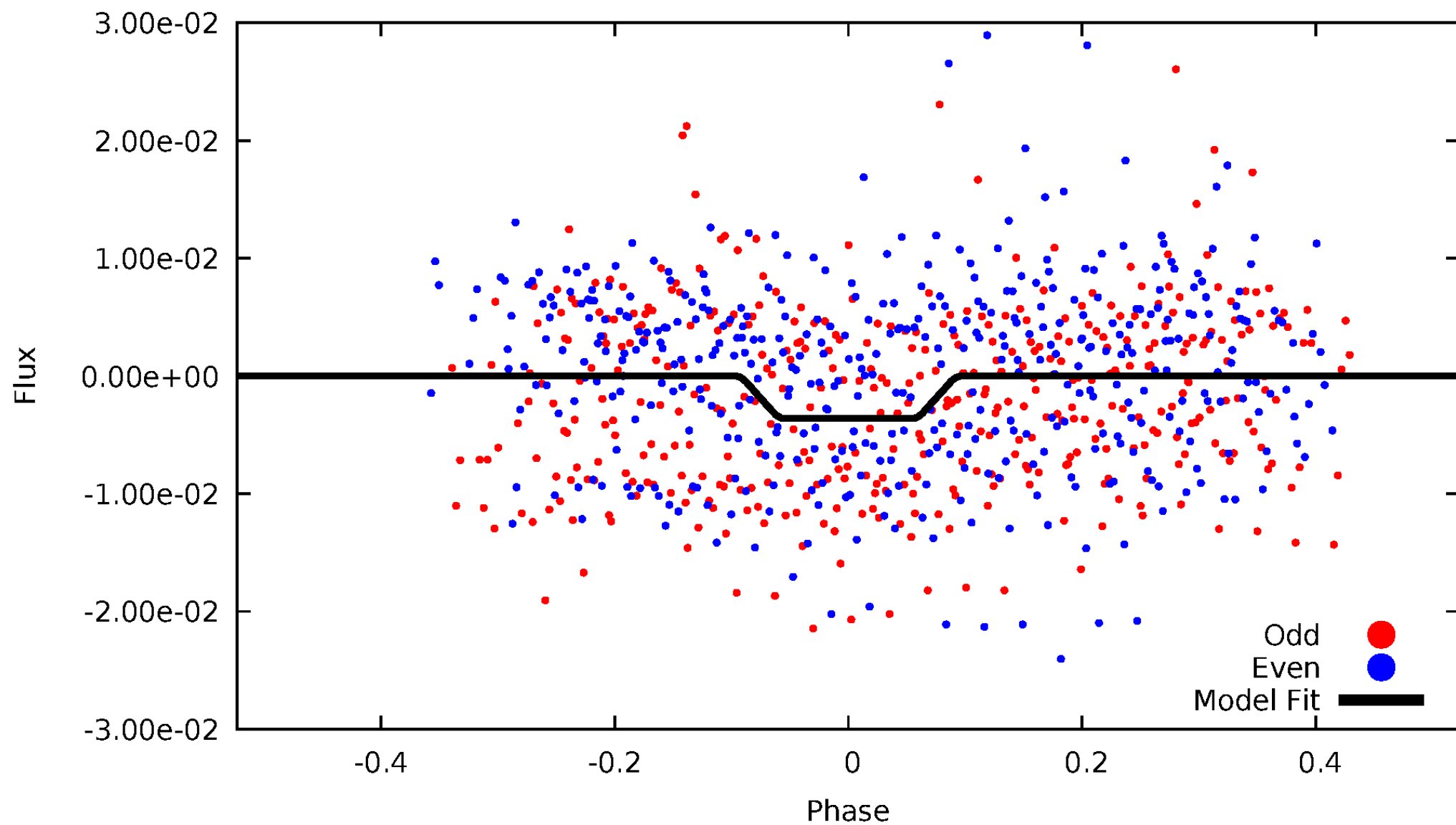
DV Odd/Even

TCE 010292216-02



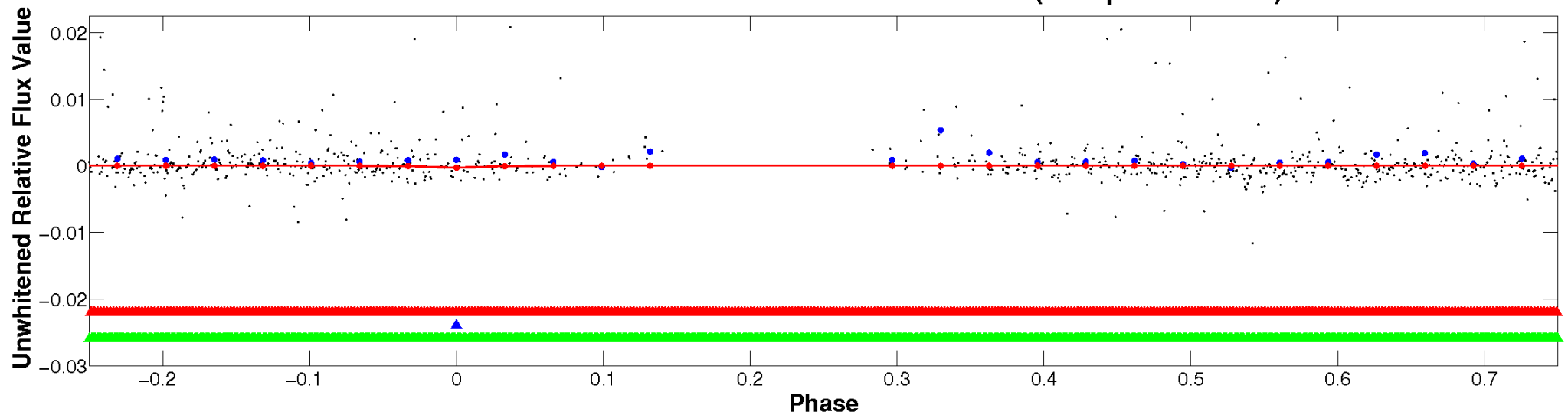
# ALT Odd/Even

TCE 010292216-02

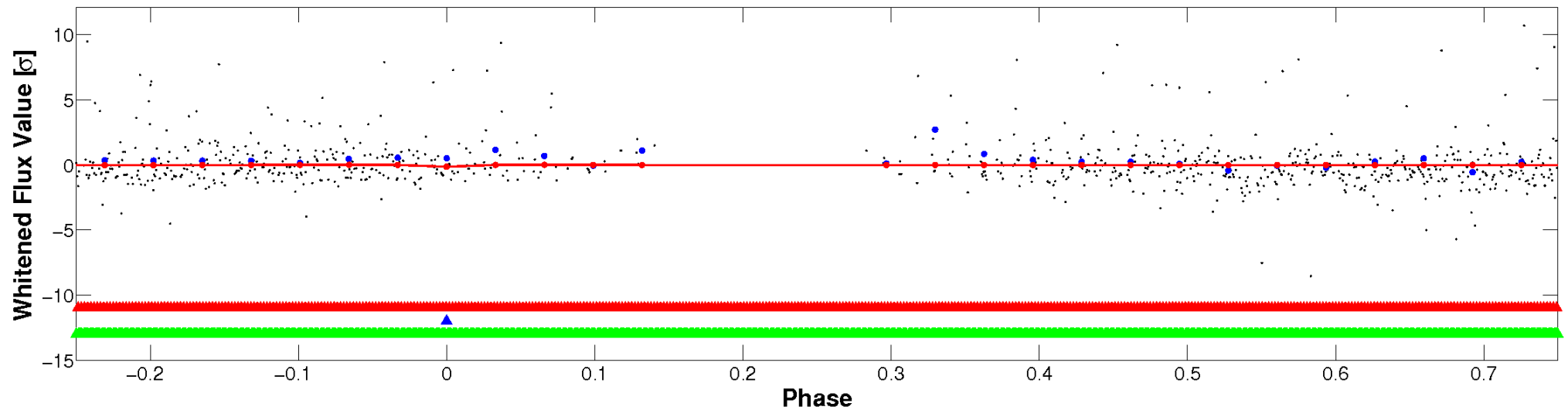


# Non-Whitened Vs. Whitened Light Curve

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

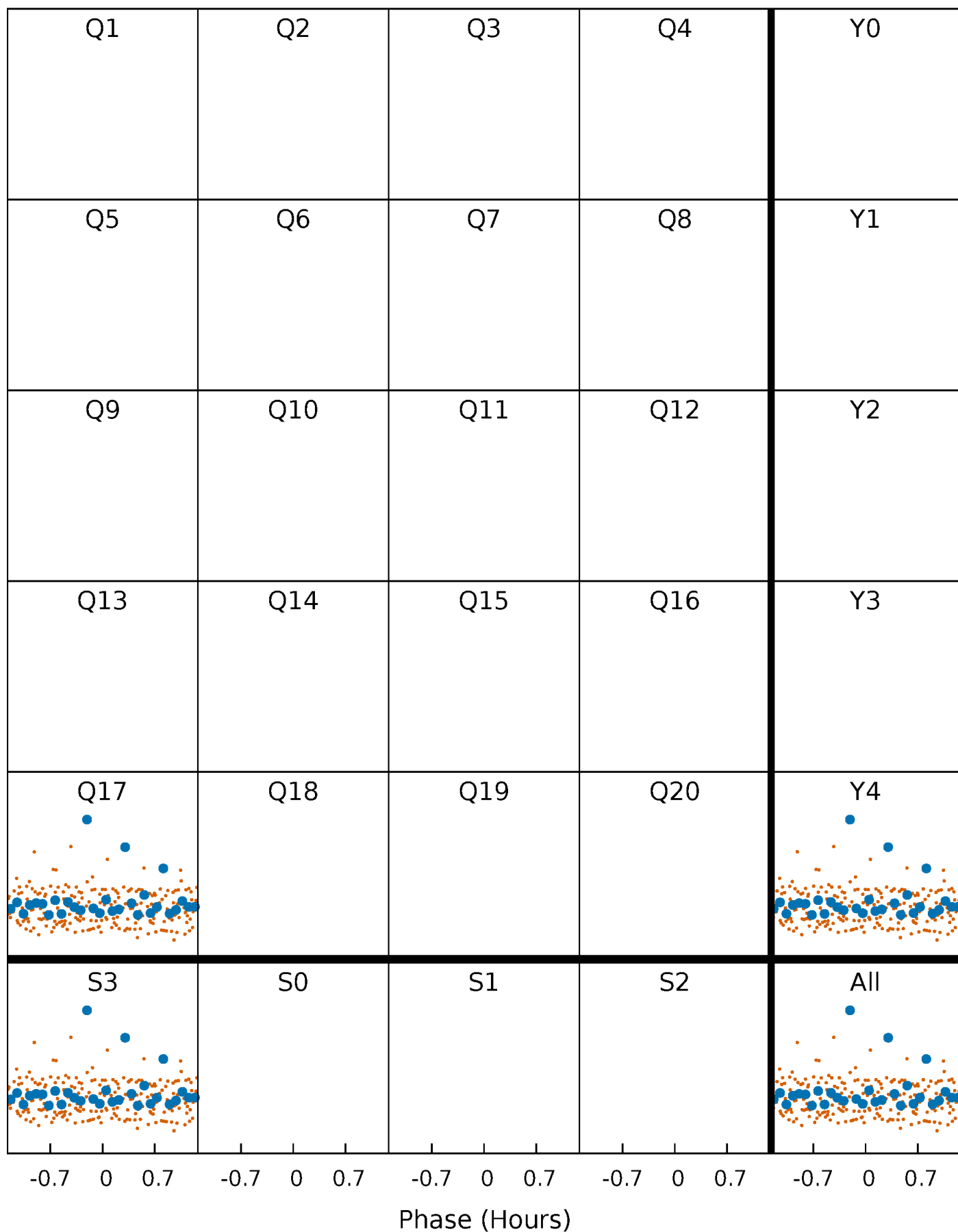


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



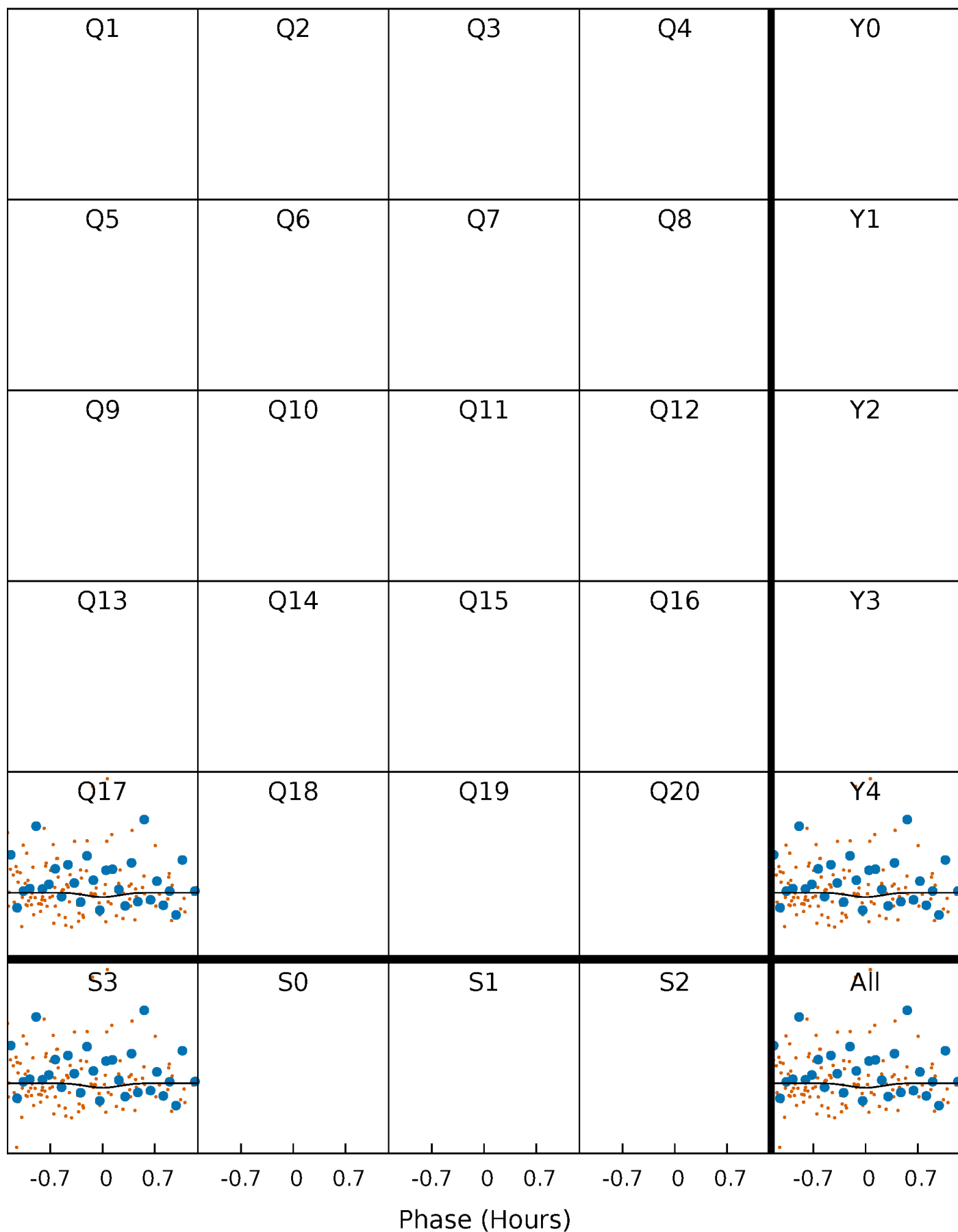
# PDC Quarter-Phased Transit Curves

TCE 010292216-02     $P = 0.619704$  Days     $T_0 = 131.954606$  (BKJD)



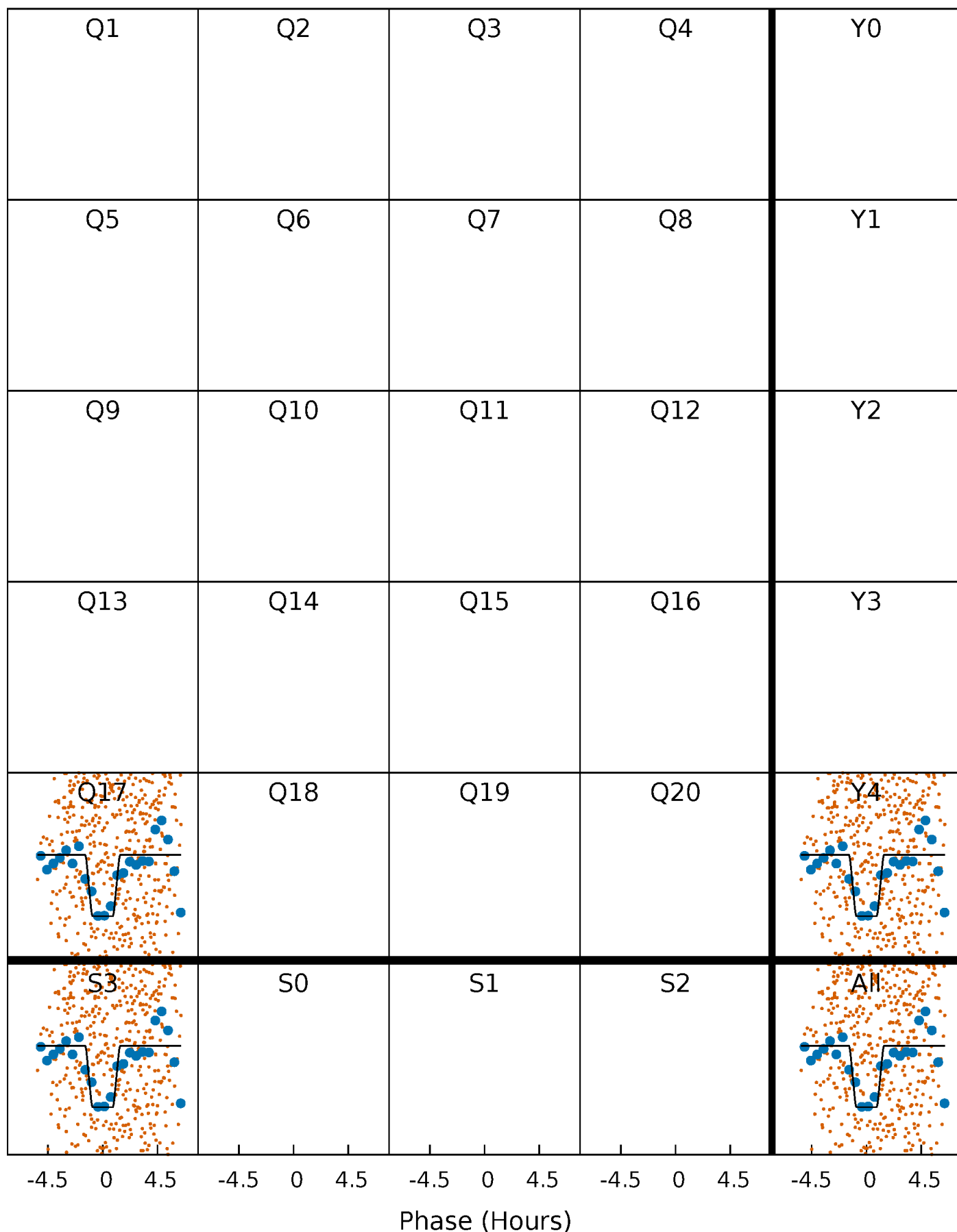
# DV Quarter-Phased Transit Curves

TCE 010292216-02   P= 0.619704 Days    $T_0=131.954606$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

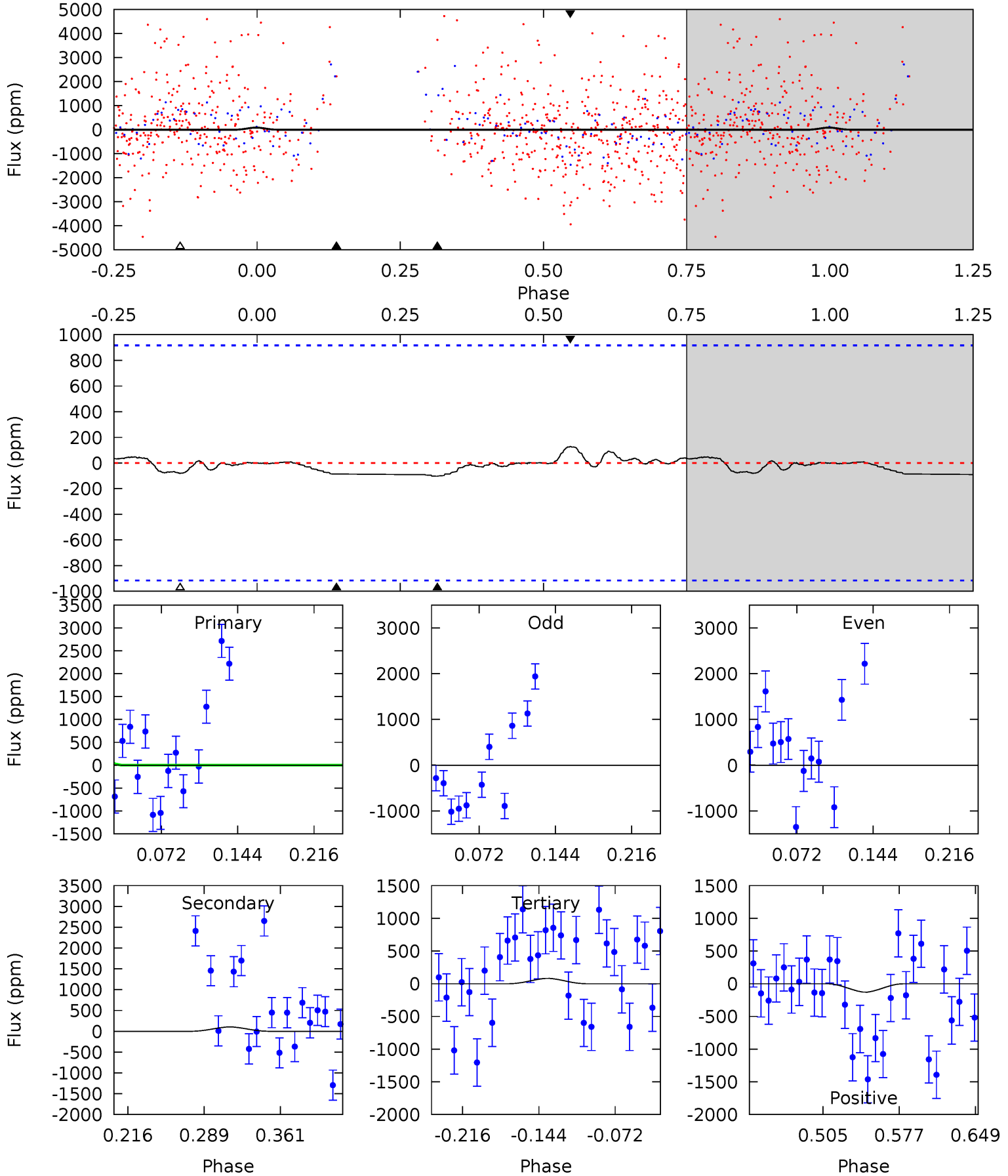
TCE 010292216-02    P= 0.624293 Days     $T_0=131.679842$  (BKJD)



# DV Model-Shift Uniqueness Test

010292216-02, P = 0.619704 Days, E = 131.954606 Days

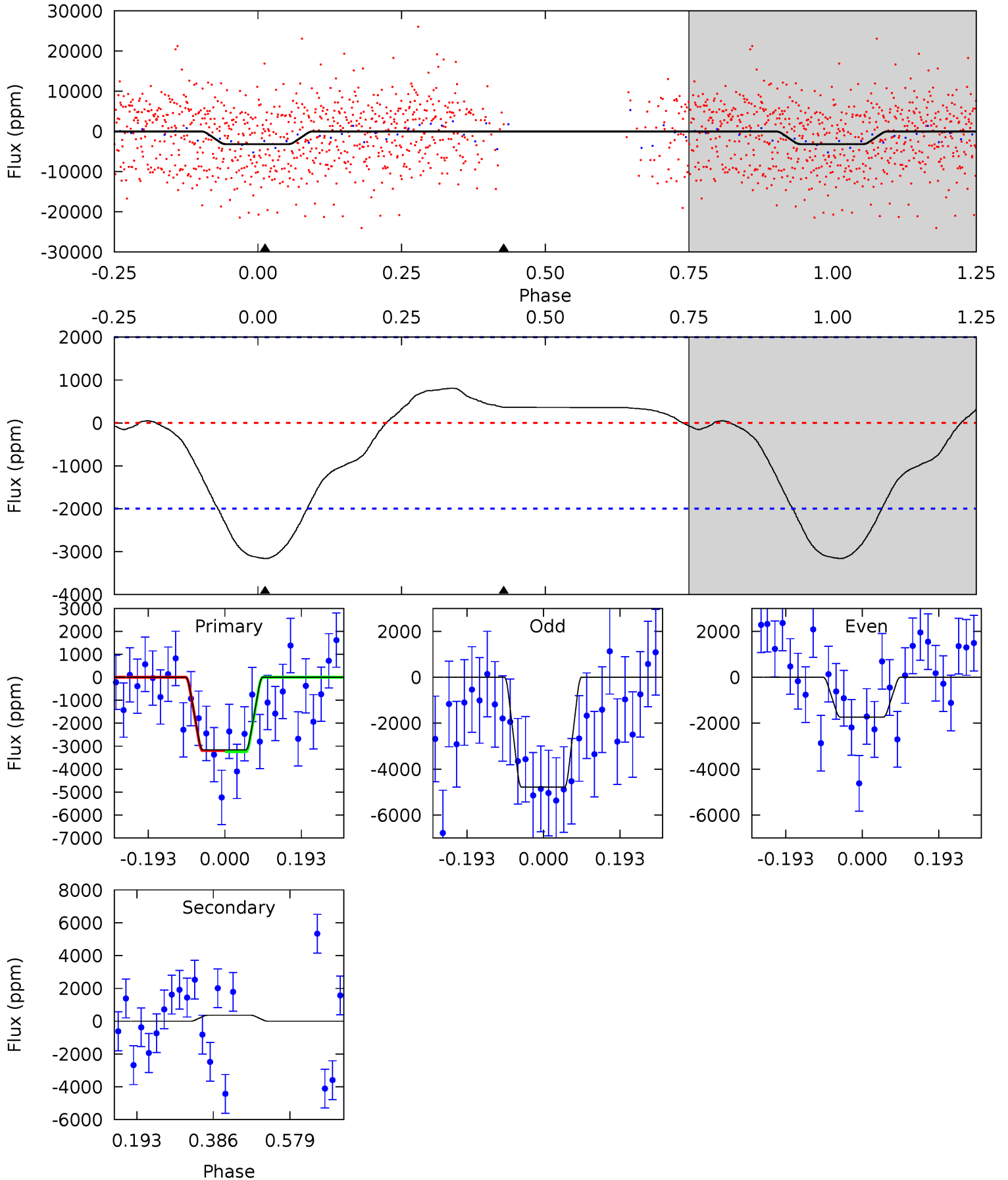
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.43 | 0.52 | 0.41 | 0.65 | 4.63            | 1.80            | 0.21             | 0.03    | -0.21   | 0.11    | -0.13   | 0.15    | 22.0 | 0.55  | 0.56 |



# Alt Model-Shift Uniqueness Test

010292216-02, P = 0.624293 Days, E = 131.679842 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  |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.00 | -0.81 | 0   | 0   | 4.42            | 1.30            | 0.33             | 7.00    | 7.00    | -0.81   | -0.81   | 3.40    | 0.85 | 0.20  | 0.05 |





### Stellar Parameters For KIC 010292216

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$             | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|----------------------------|---|
|        | $5780^{+1}_{-1}$    | $4.438^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +23%/-23%                 | +inf%/-inf%               | +100%/-100%               | +100%/-100%                | +100%/-100%                               |
| Source | Solar               | Solar                     | Solar                     | Solar                     |                            |   |

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

### Secondary Eclipse Parameters for KIC 010292216-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$           | $T_{max} (K)$        | $T_{obs} (K)$       | $A_{obs}$                  |
|---------|-------------|------------------------------|----------------------|---------------------|----------------------------|
| DV      | -104±198    | $451.11^{+491.53}_{-318.70}$ | $2981^{+145}_{-129}$ | $-3079^{+86}_{-91}$ | $0.000^{+0.000}_{-0.000}$  |
| Alt.    | 364±451     | $457.01^{+506.03}_{-306.46}$ | $2985^{+142}_{-147}$ | $-3086^{+89}_{-91}$ | $-0.000^{+0.000}_{-0.001}$ |

$T_{max}$  = 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  $A_{obs} \gg 1.0$

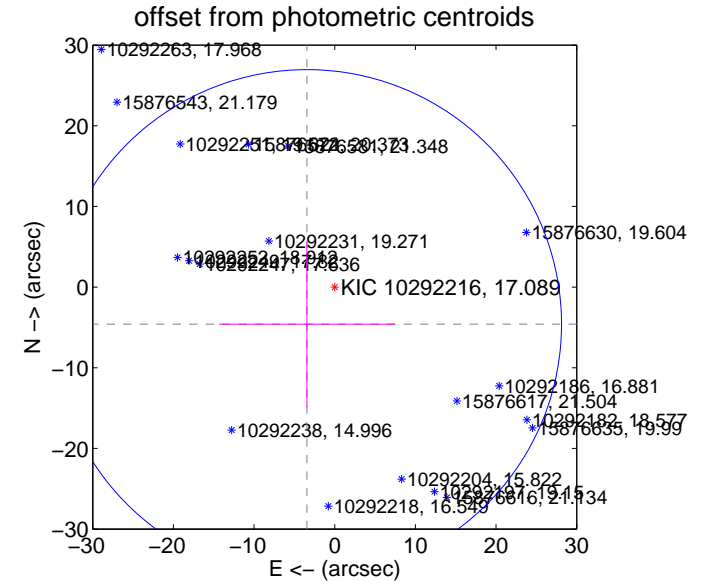
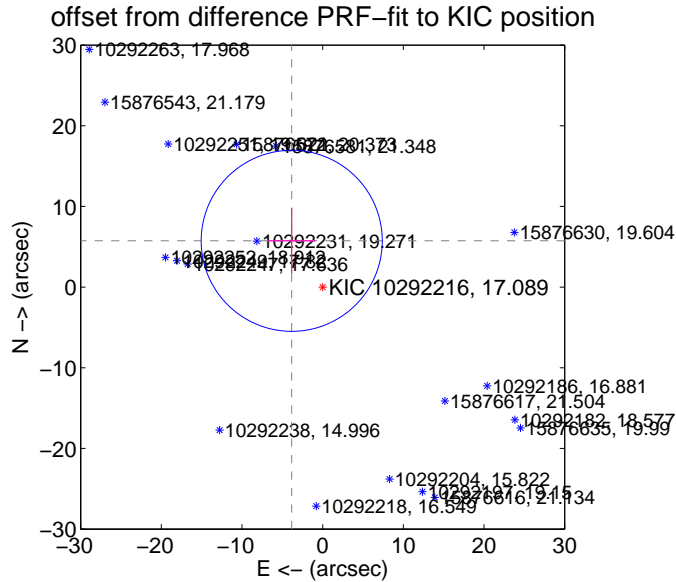
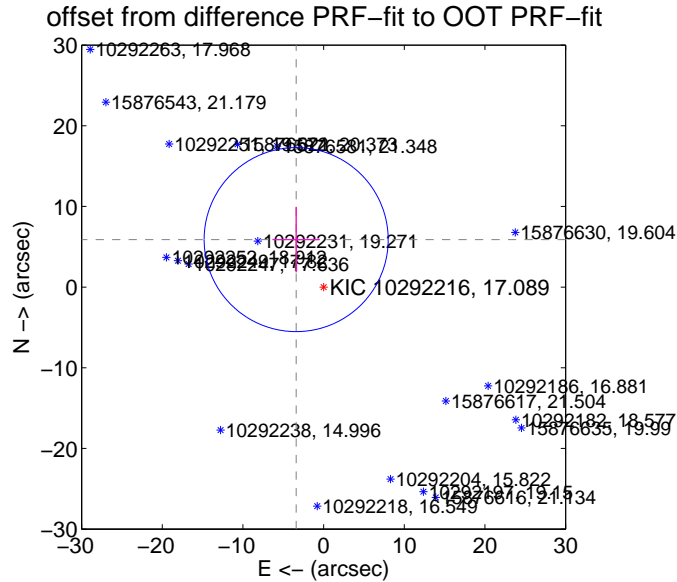
## DV Centroid Data

Supplemental centroid analysis for 010292216-02. Kepler magnitude: 17.09. Transit SNR 0.73

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $6.801 \pm 3.802$  | 1.79                | $3.403 \pm 2.921$ | $5.888 \pm 4.054$ |
| PRF-fit source offset from KIC position | $6.902 \pm 3.741$  | 1.84                | $3.835 \pm 2.921$ | $5.738 \pm 4.054$ |
| photometric centroid source offset      | $5.74 \pm 10.52$   | 0.55                | $3.44 \pm 10.92$  | $-4.59 \pm 10.28$ |



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.



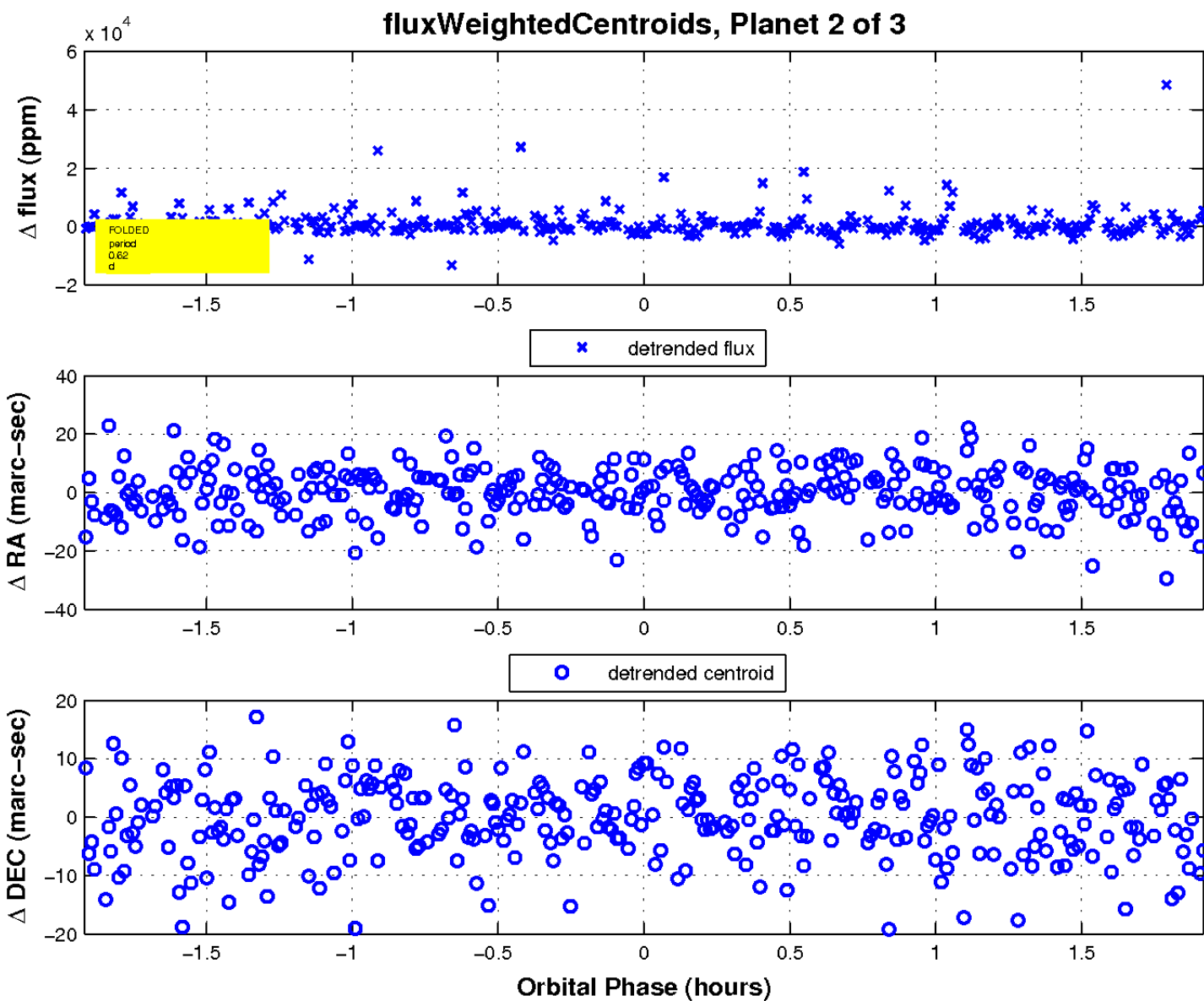
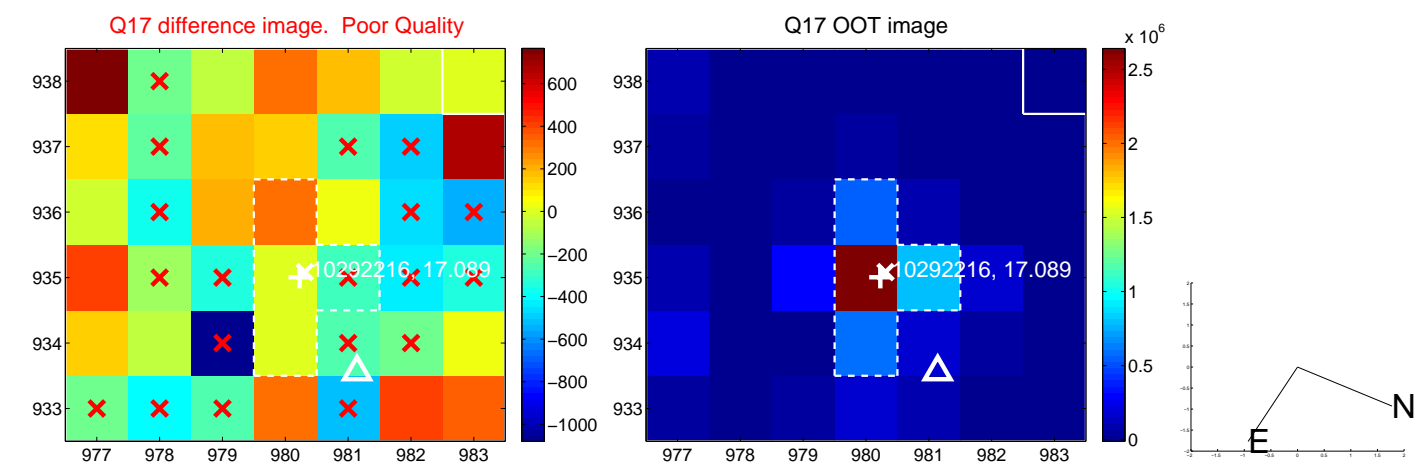
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



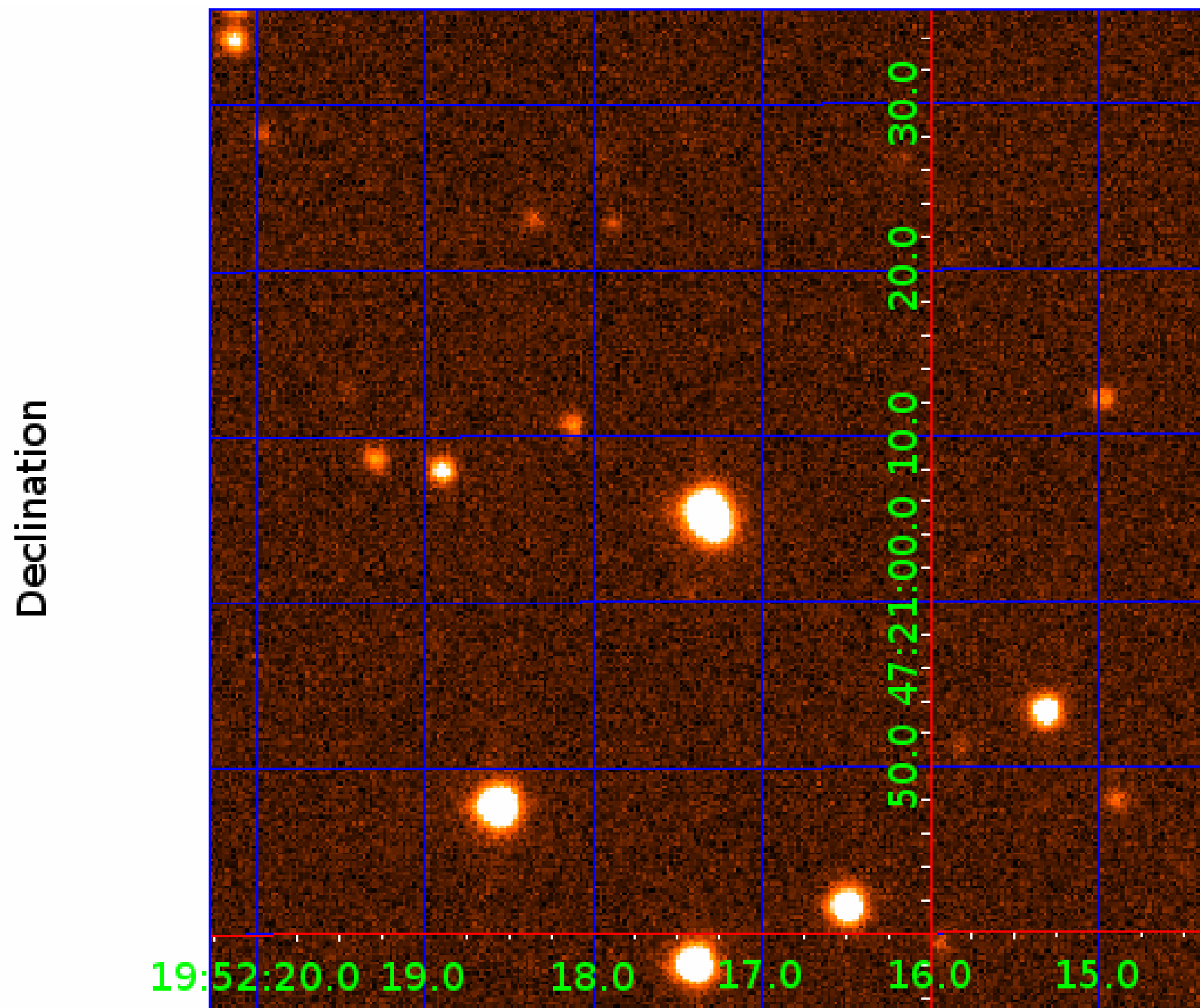
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 010292216

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010292216-01 | OBS      | No   | 0.622380      | 132.699948   | 84.8        | 0.546            | 9.0 | 0.3 | 1.00                        | 5780            | 1.59                   | 4911.31                |
| 010292216-02 | OBS      | No   | 0.619704      | 131.954606   | 333.4       | 0.640            | 9.5 | 0.7 | 1.00                        | 5780            | 3.80                   | 4939.62                |
| 010292216-03 | OBS      | No   | 0.624527      | 131.745189   | 1916.1      | 1.234            | 8.4 | 6.4 | 1.00                        | 5780            | 4.36                   | 4888.82                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010292216-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 010292216-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_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.

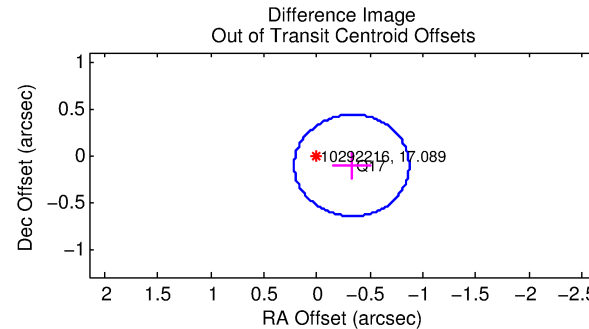
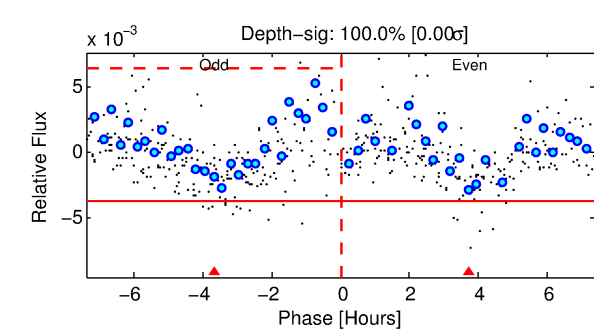
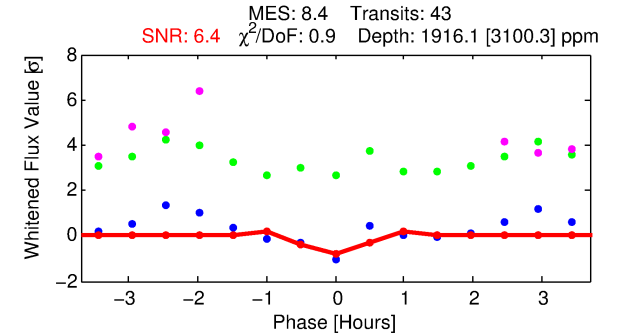
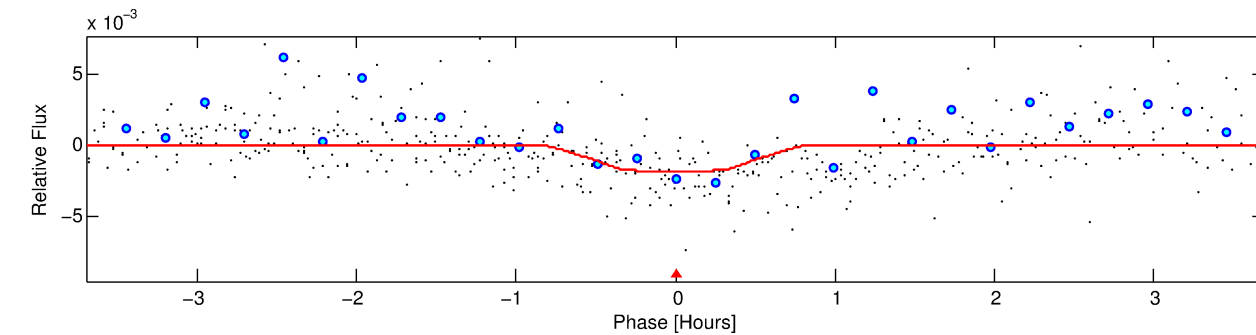
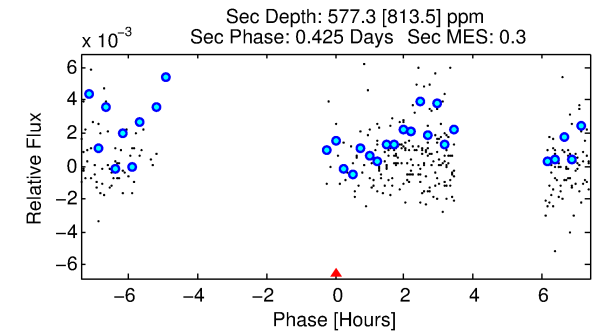
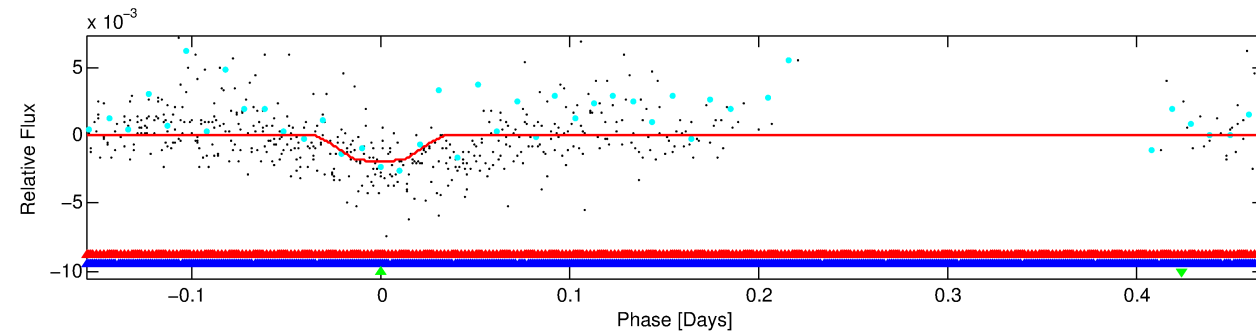
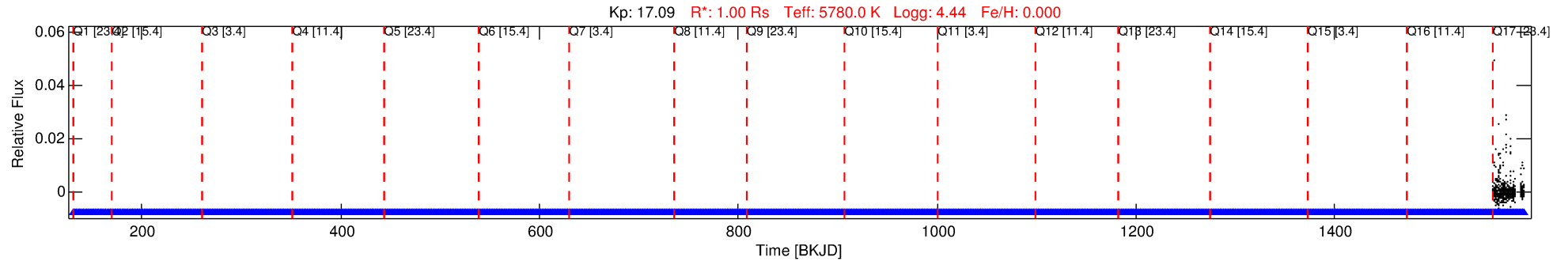
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010292216-03

No Significant Match Found

# DV One-Page Summary

KIC: 10292216 Candidate: 3 of 3 Period: 0.625 d



## DV Fit Results:

Period = 0.62453 [0.00016] d  
Epoch = 131.7452 [0.0029] BKJD  
Rp/R\* = 0.0400 [0.0649]  
a/R\* = 4.06 [24.09]  
b = 0.07 [93.04]  
Seff = 4888.82 [1.66]  
Teq = 2132 [0] K  
Rp = 4.36 [7.09] Re  
a = 0.0143 [0.0000] AU  
Ag = 3.42 [12.10] [0.20 $\sigma$ ]  
Teffp = 4482 [3969] K [0.59 $\sigma$ ]

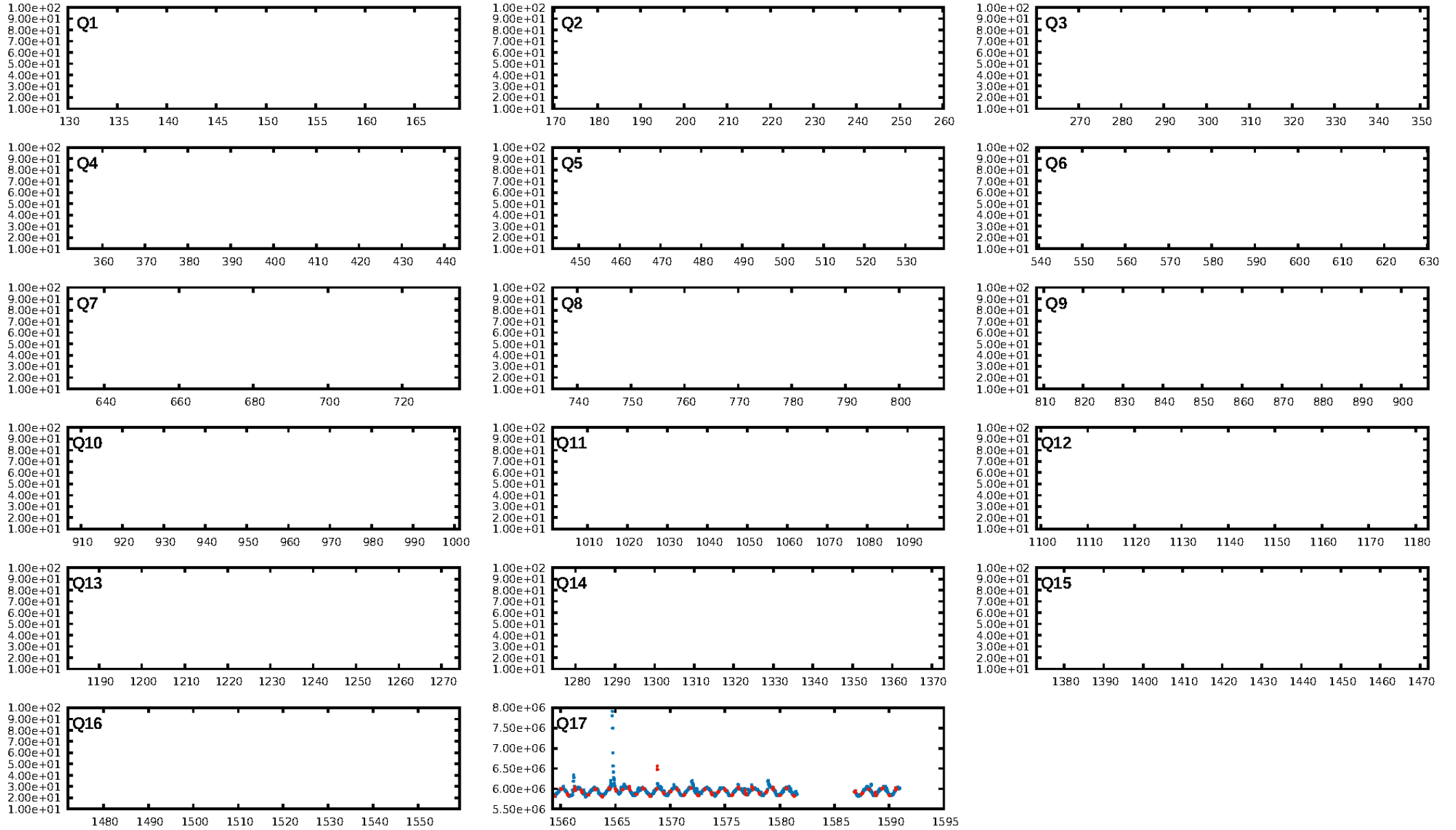
## DV Diagnostic Results:

ShortPeriod-sig: 3.0% [0.04 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 73.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.51e-104  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: 1.756  
Centroid-sig: N/A  
Centroid-so: 0.819 arcsec [0.66 $\sigma$ ]  
OotOffset-rm: 0.346 arcsec [1.91 $\sigma$ ]  
KicOffset-rm: 0.279 arcsec [1.83 $\sigma$ ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

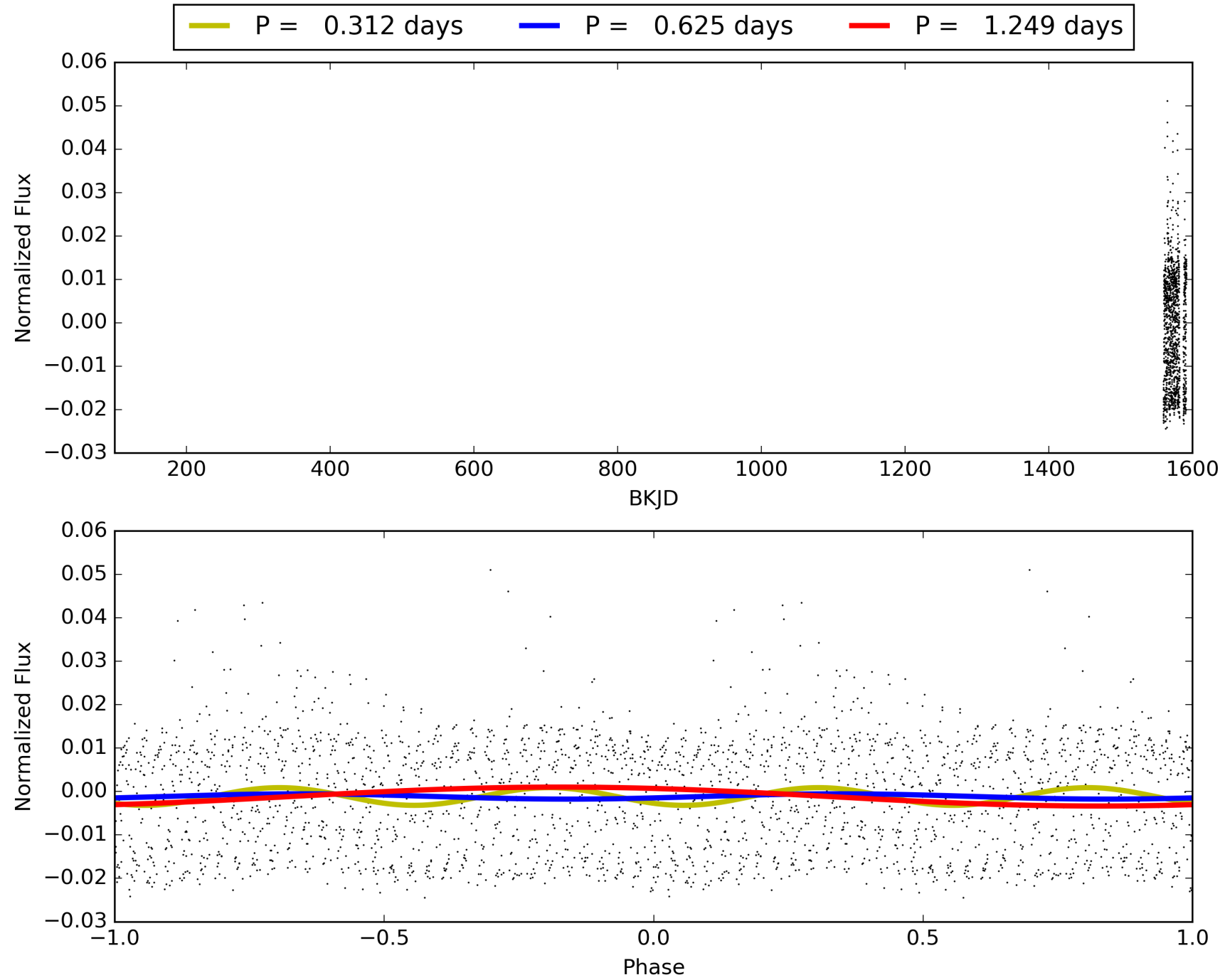
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:41:37 Z

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

# TCE 010292216-03, PDC Light Curves

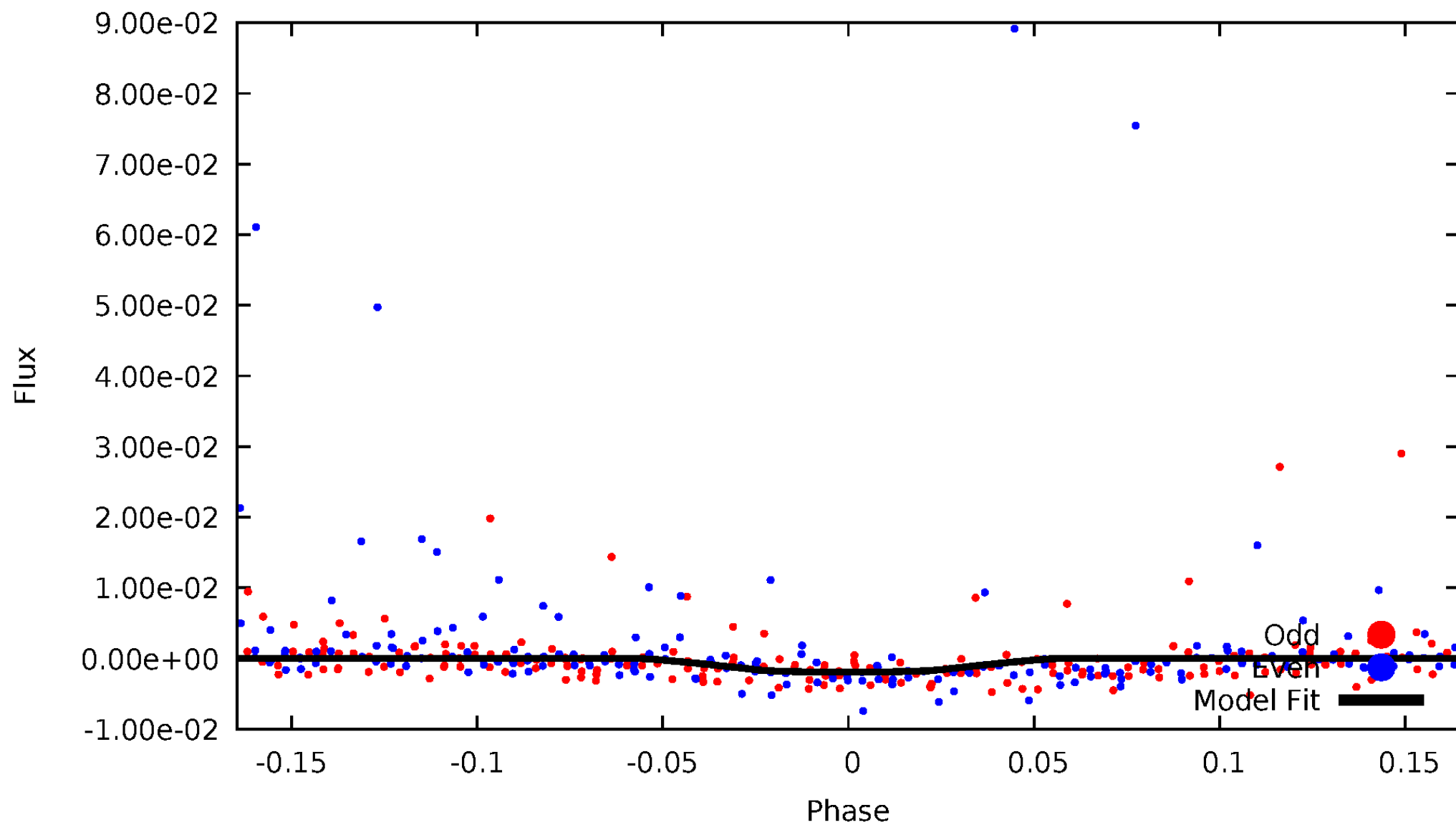


# TCE 010292216-03



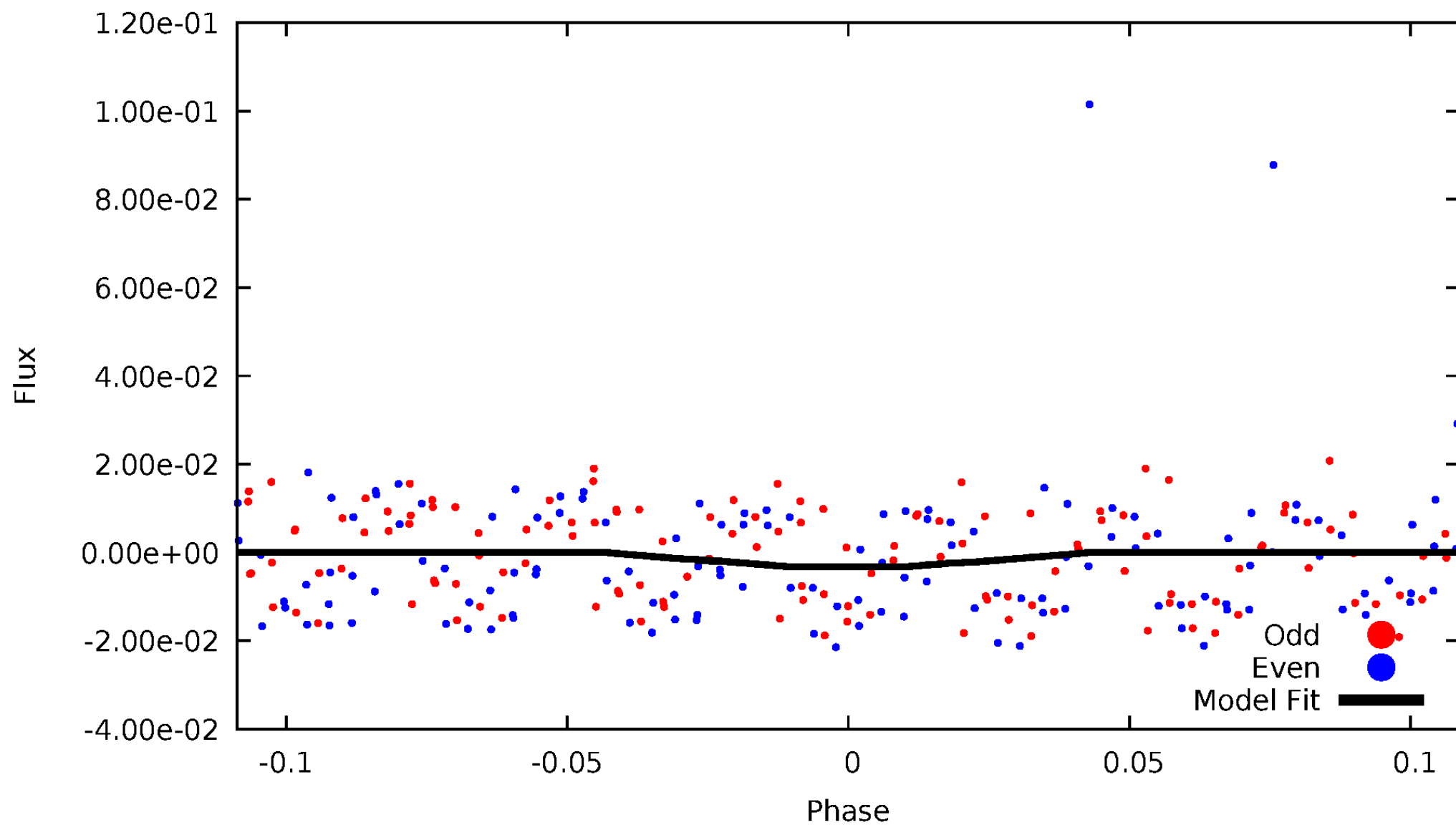
# DV Odd/Even

TCE 010292216-03



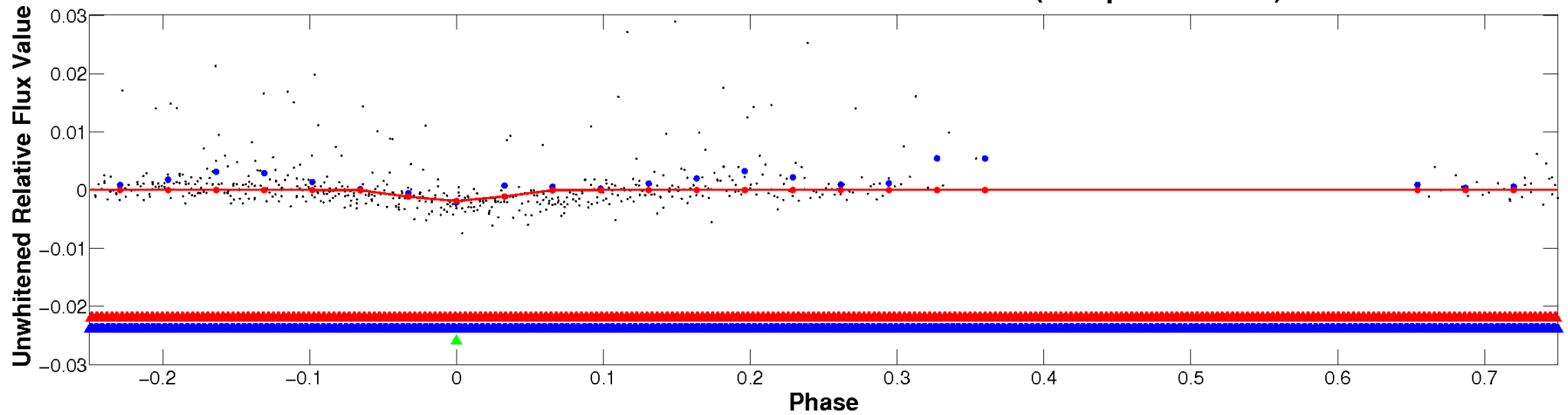
# ALT Odd/Even

TCE 010292216-03

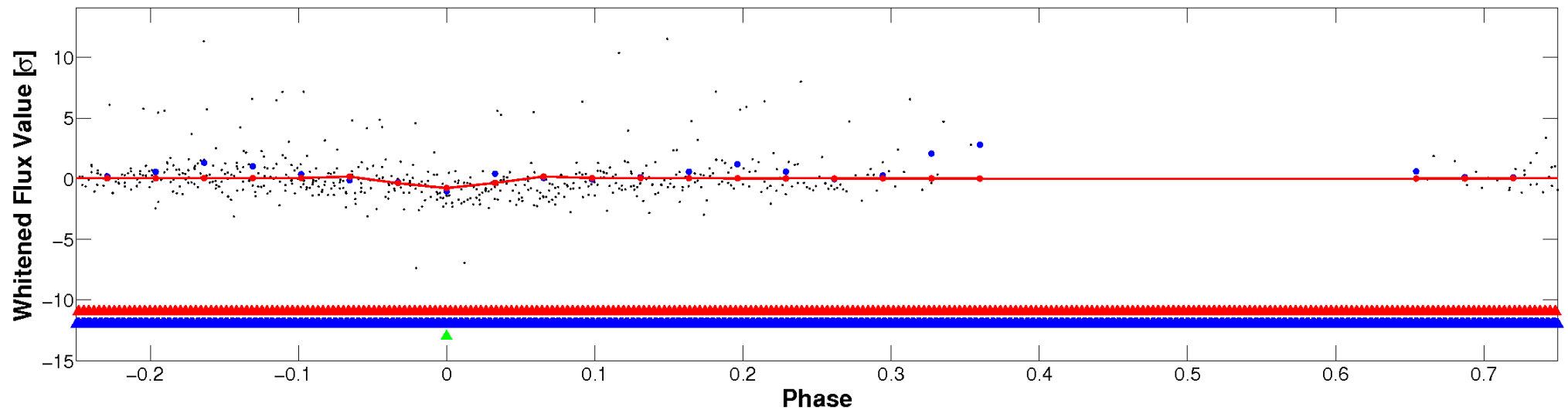


# Non-Whitened Vs. Whitened Light Curve

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

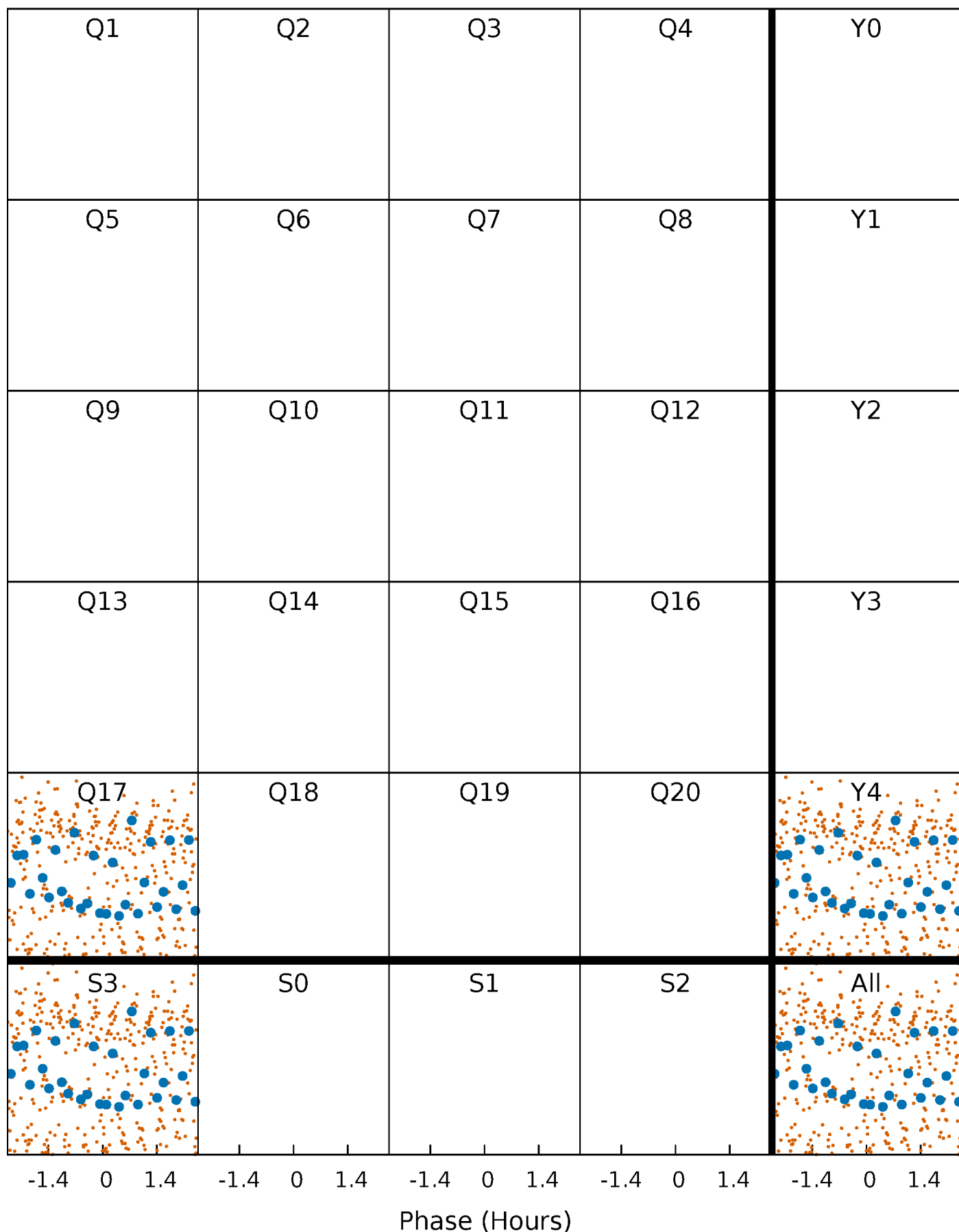


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

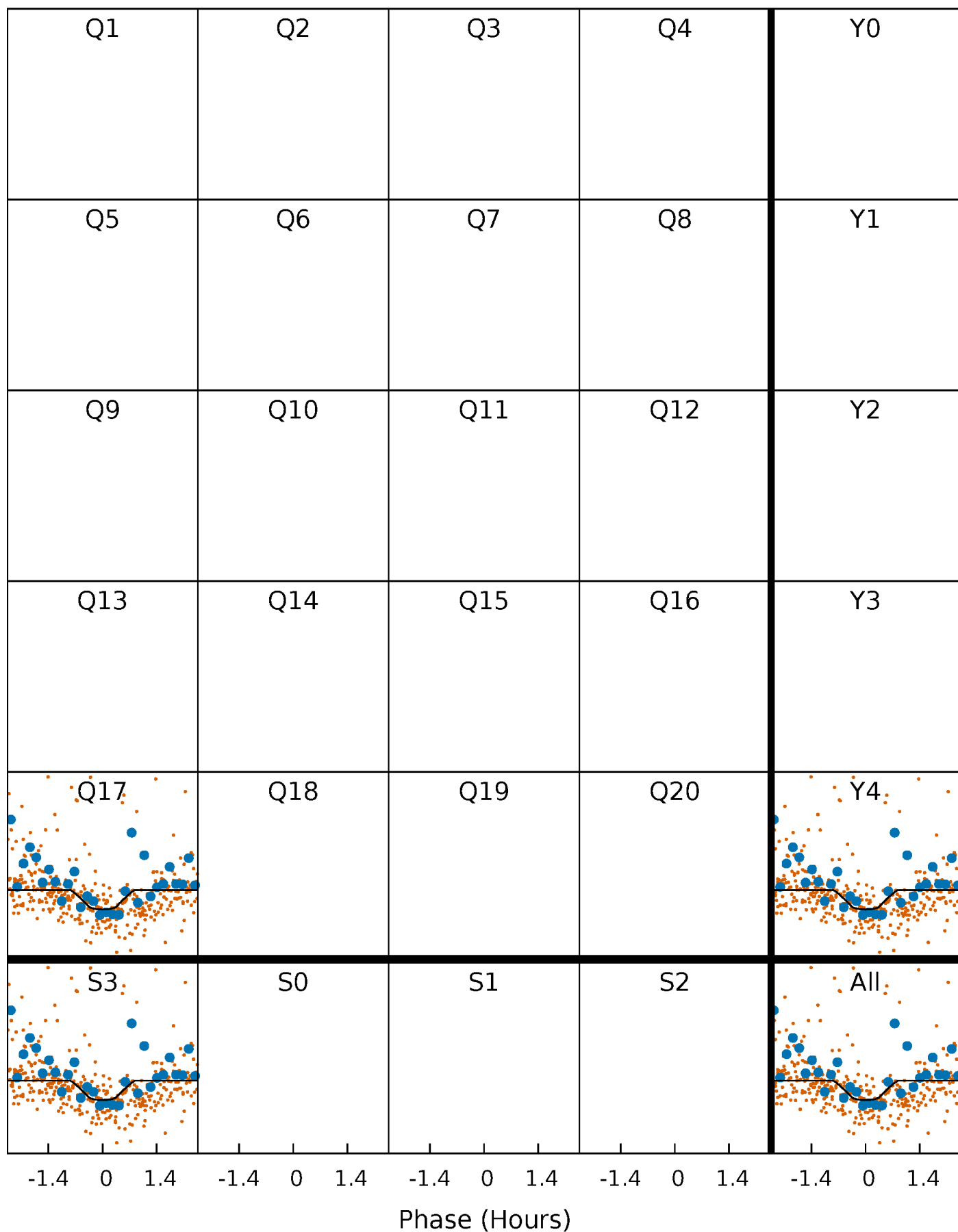
TCE 010292216-03   P= 0.624527 Days    $T_0=131.745189$  (BKJD)





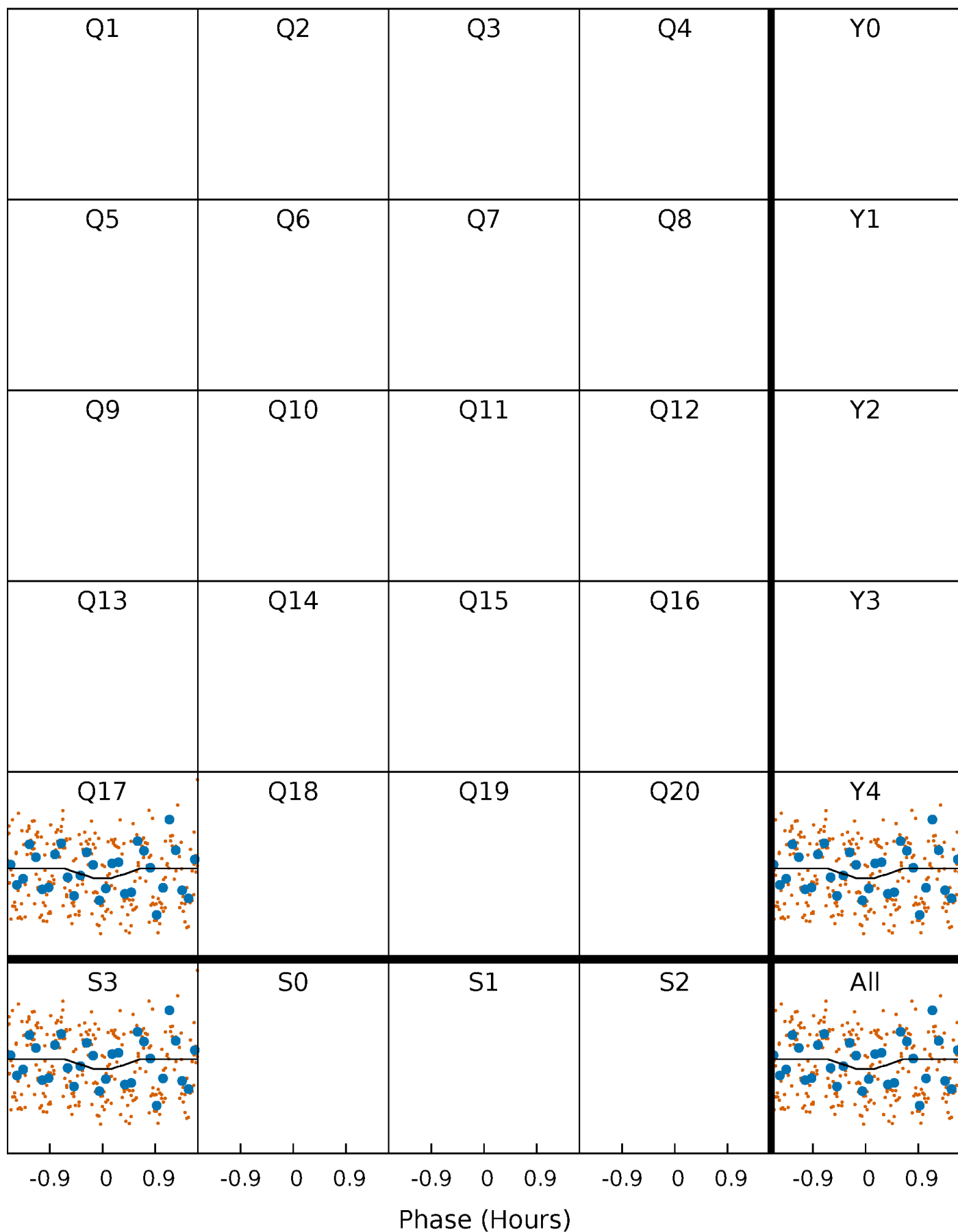
# DV Quarter-Phased Transit Curves

TCE 010292216-03   P= 0.624527 Days    $T_0=131.745189$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

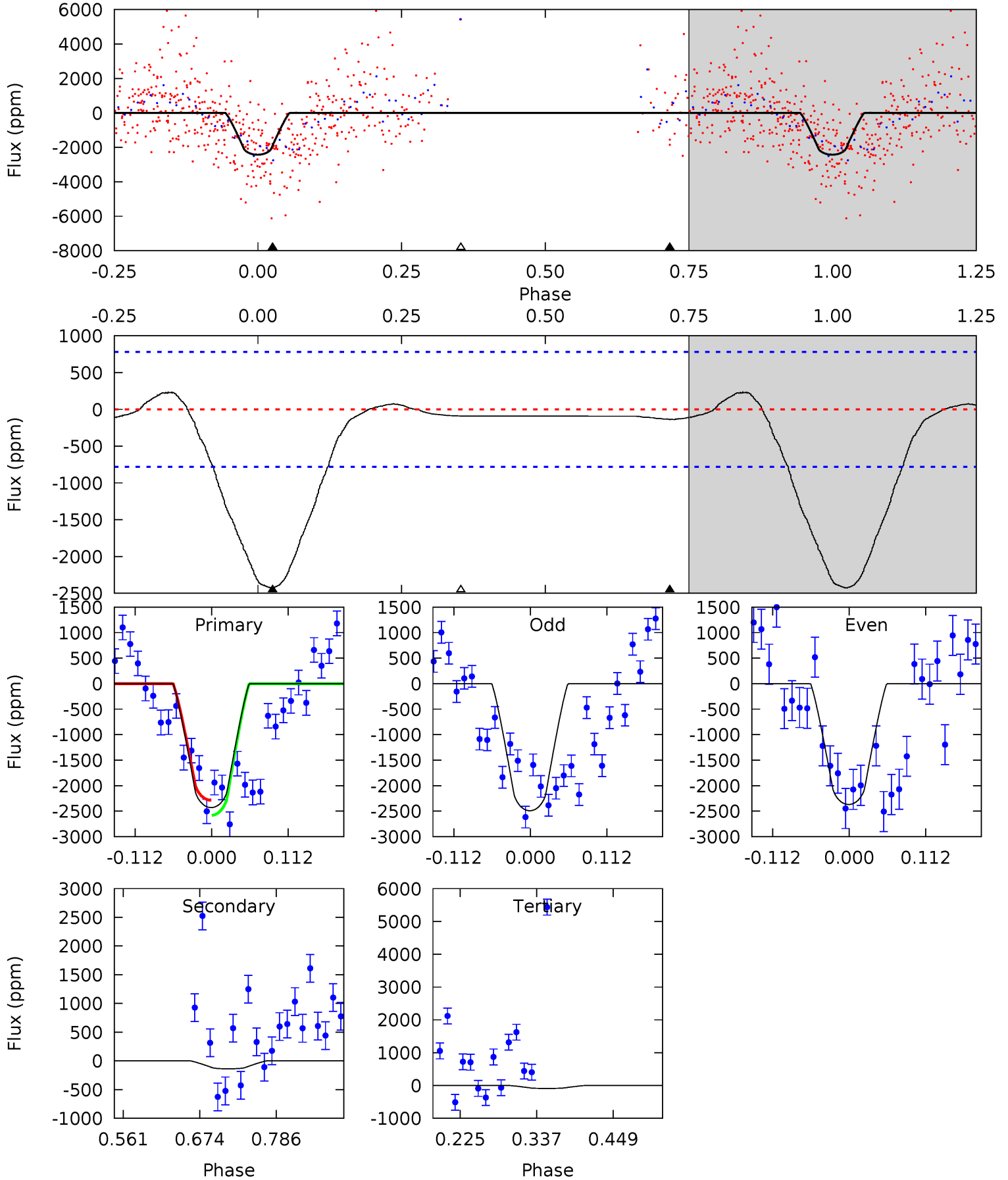
TCE 010292216-03     $P = 0.624527$  Days     $T_0 = 131.746743$  (BKJD)



# DV Model-Shift Uniqueness Test

010292216-03, P = 0.624527 Days, E = 131.745189 Days

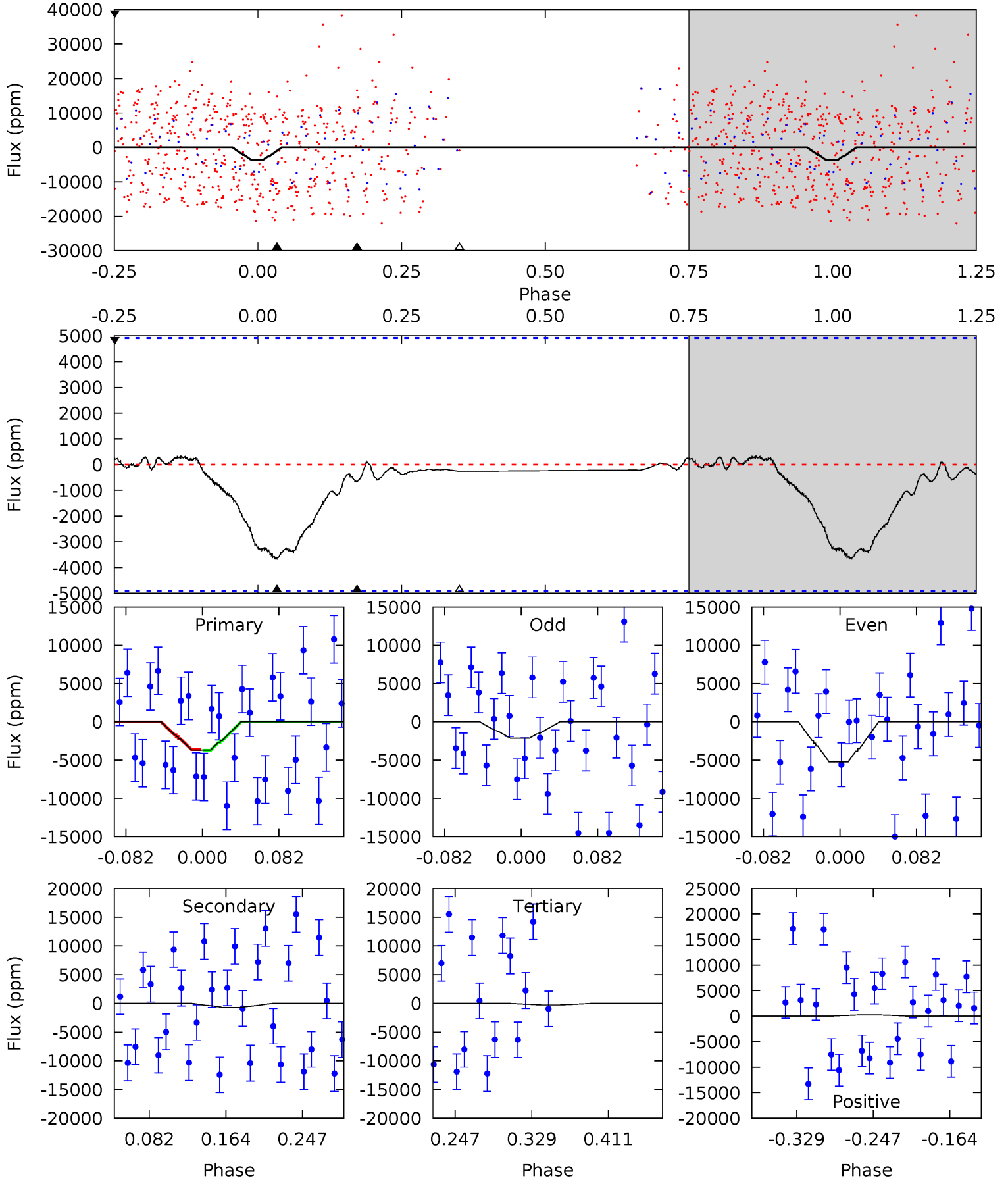
| Pri  | Sec  | Ter  | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.1 | 0.81 | 0.52 | 0   | 4.54            | 1.59            | 1.27             | 13.6    | 14.1    | 0.28    | 0.81    | 0.37    | 0.79 | 0.09  | 0.92 |



# Alt Model-Shift Uniqueness Test

010292216-03, P = 0.624527 Days, E = 131.746743 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.43 | 0.63 | 0.25 | 0.24 | 4.61            | 1.74            | 0.34             | 3.18    | 3.19    | 0.38    | 0.39    | 1.46    | 1.15 | 0.08  | 0.04 |



### Stellar Parameters For KIC 010292216

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$             | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|----------------------------|---|
|        | $5780^{+1}_{-1}$    | $4.438^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$                |
|        | +0%/-0%             | +23%/-23%                 | +inf%/-inf%               | +100%/-100%               | +100%/-100%                | +100%/-100%                               |
| Source | Solar               | Solar                     | Solar                     | Solar                     |                            |   |

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

### Secondary Eclipse Parameters for KIC 010292216-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$   | $A_{\text{obs}}$          |
|---------|-------------|------------------------|----------------------|------------------------|---------------------------|
| DV      | -139±172    | $6.92^{+5.78}_{-4.51}$ | $2987^{+139}_{-152}$ | $-2537^{+6713}_{-674}$ | $0.225^{+2.100}_{-0.289}$ |
| Alt.    | -671±1068   | $7.94^{+6.31}_{-5.16}$ | $2972^{+148}_{-142}$ | $3448^{+2345}_{-6992}$ | $0.964^{+8.925}_{-1.424}$ |

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

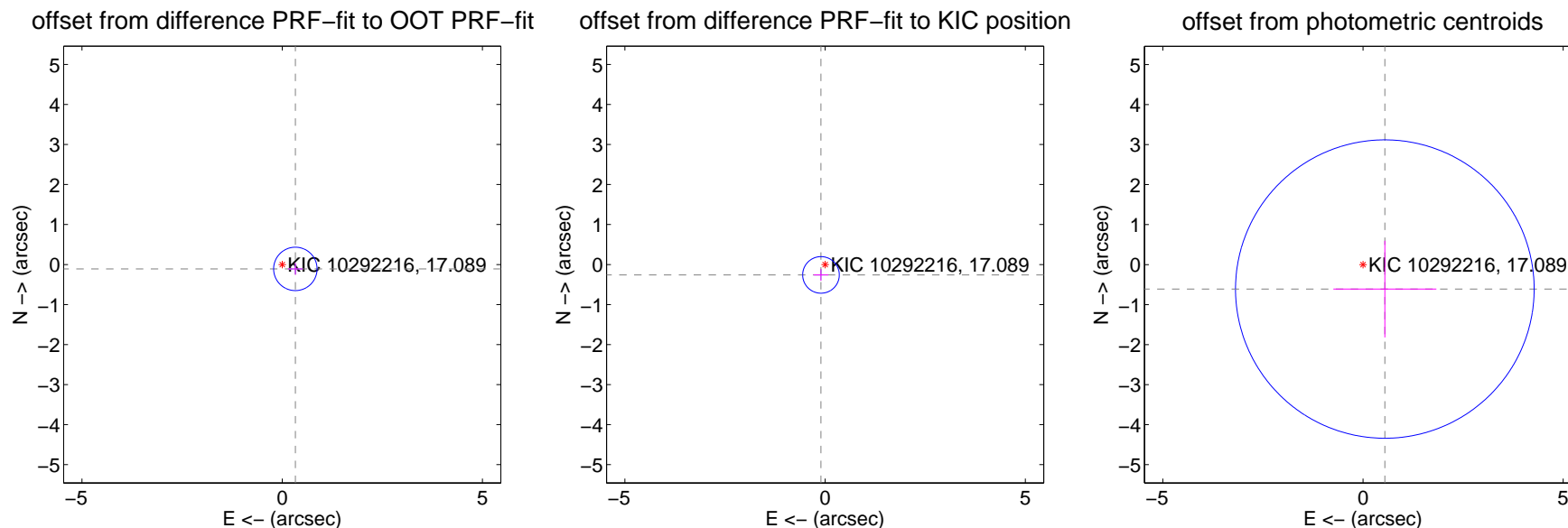
## DV Centroid Data

Supplemental centroid analysis for 010292216-03. Kepler magnitude: 17.09. Transit SNR 6.39

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.346 \pm 0.181$  | 1.91                | $-0.328 \pm 0.184$ | $-0.109 \pm 0.147$ |
| PRF-fit source offset from KIC position | $0.279 \pm 0.152$  | 1.83                | $0.103 \pm 0.184$  | $-0.259 \pm 0.147$ |
| photometric centroid source offset      | $0.82 \pm 1.24$    | 0.66                | $-0.55 \pm 1.29$   | $-0.61 \pm 1.21$   |



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  $\times$ : 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.





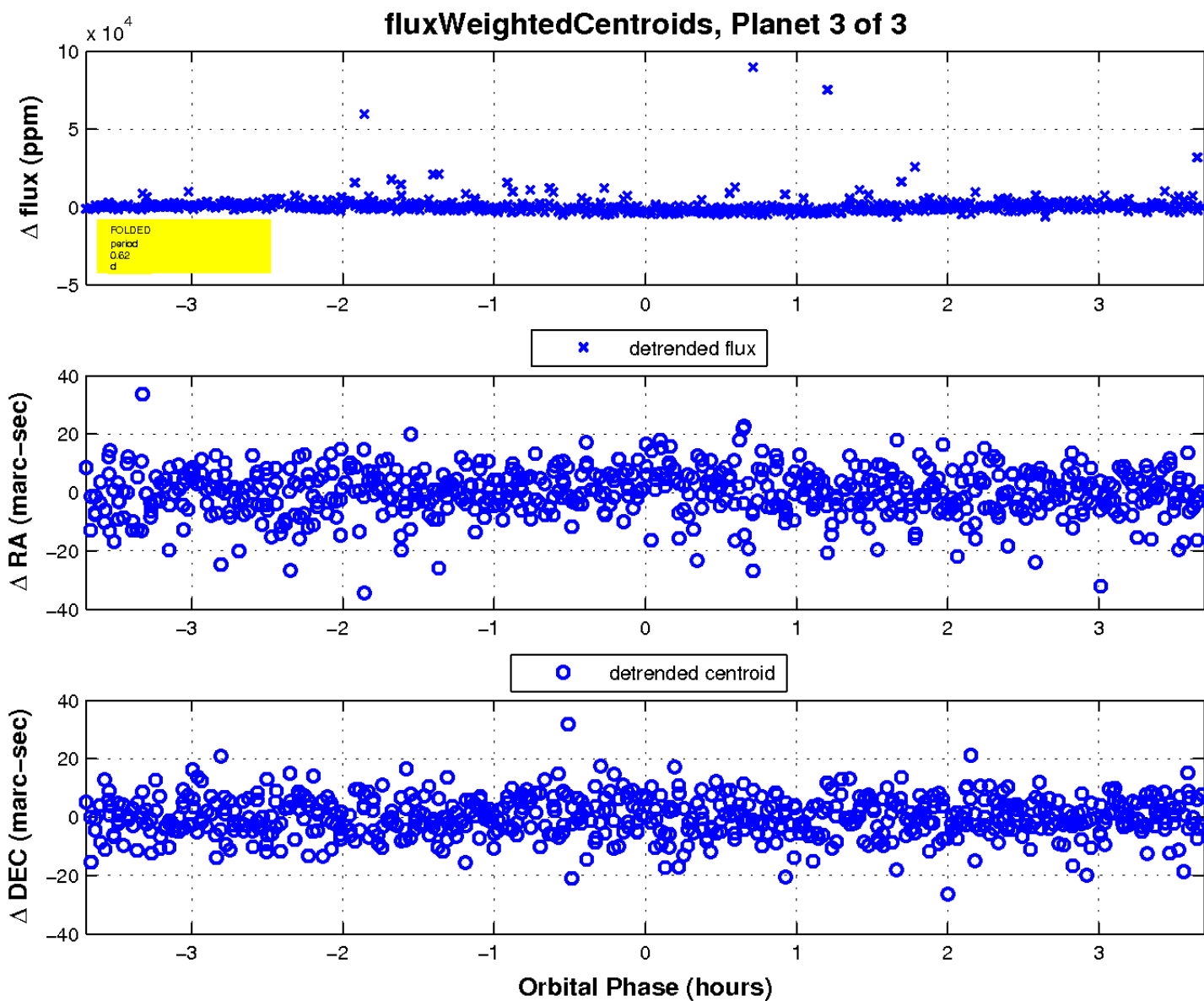
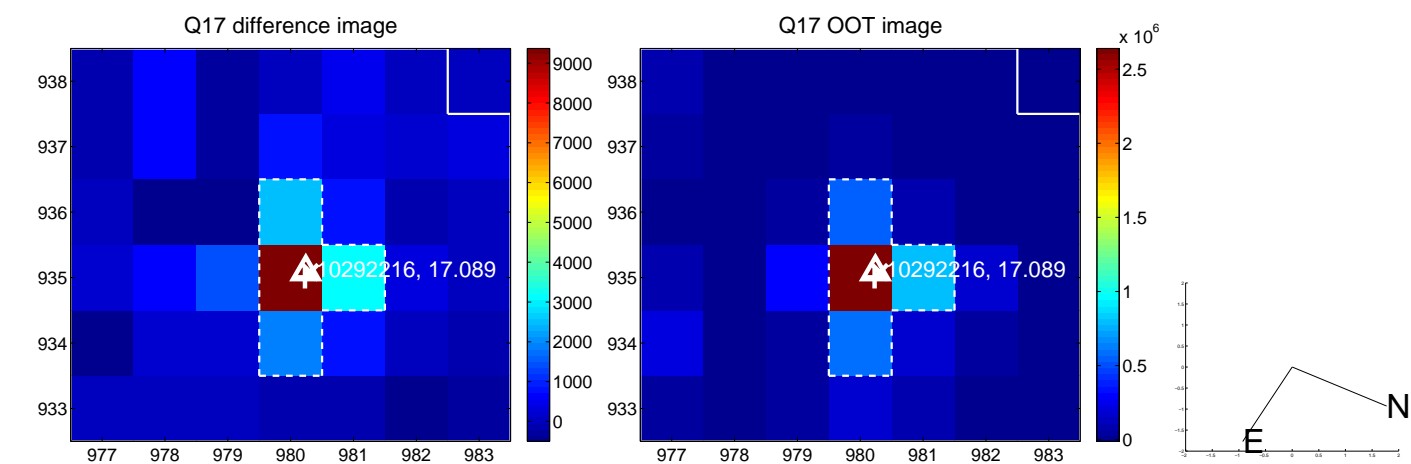
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

