

# KIC 004935813

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004935813-01 | OBS      | No   | 1.980199      | 132.365633   | 135.0       | 9.429            | 9.2  | 9.6  | 1.00                        | 6092            | 1.57                   | 1229.54                |
| 004935813-02 | OBS      | No   | 370.195438    | 445.664570   | 977.5       | 47.790           | 12.1 | 6.9  | 1.00                        | 6092            | 3.12                   | 1.15                   |
| 004935813-03 | OBS      | No   | 1.980199      | 133.338137   | 138.3       | 9.570            | 11.4 | 12.7 | 1.00                        | 6092            | 2.39                   | 1229.54                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 004935813-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT  |
| 004935813-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004935813-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS   |

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

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

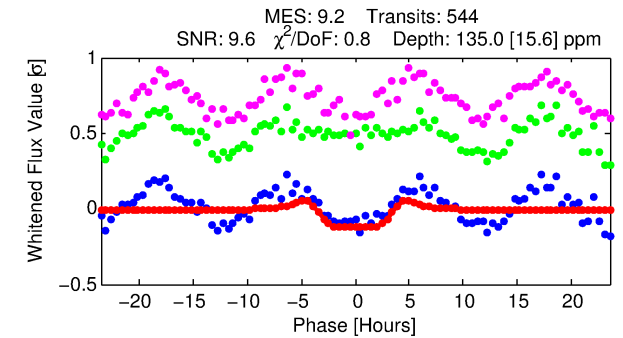
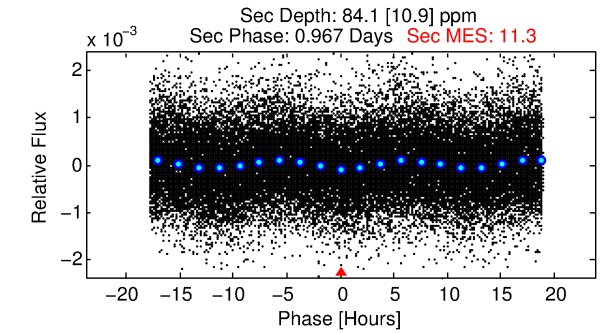
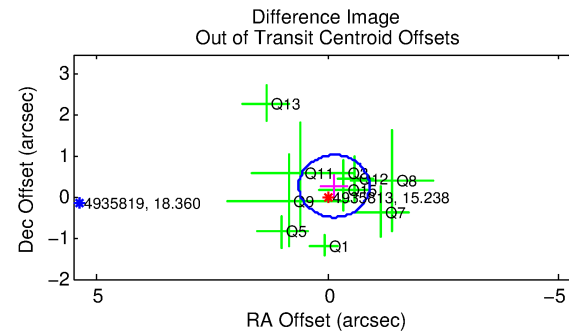
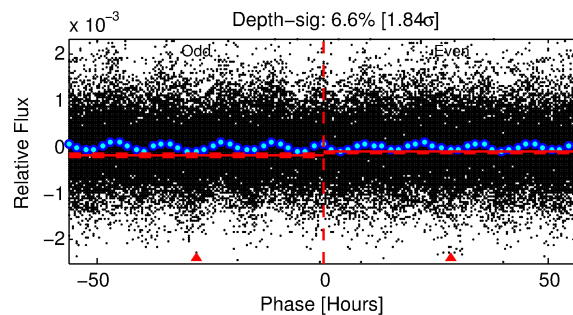
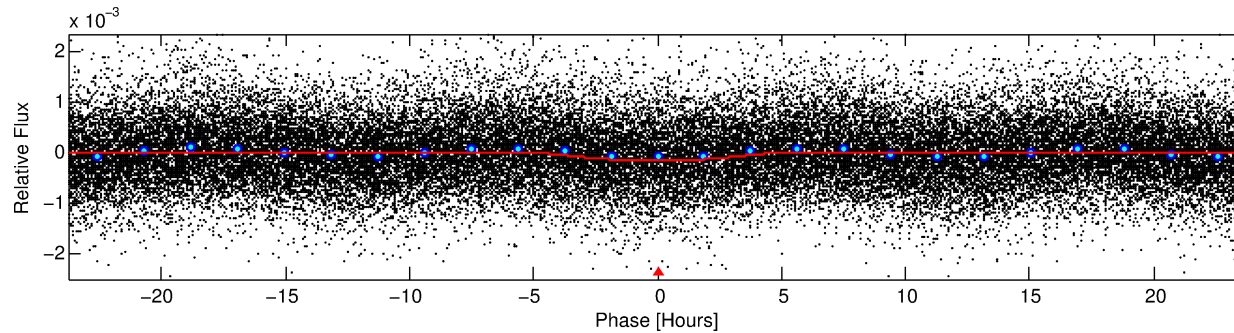
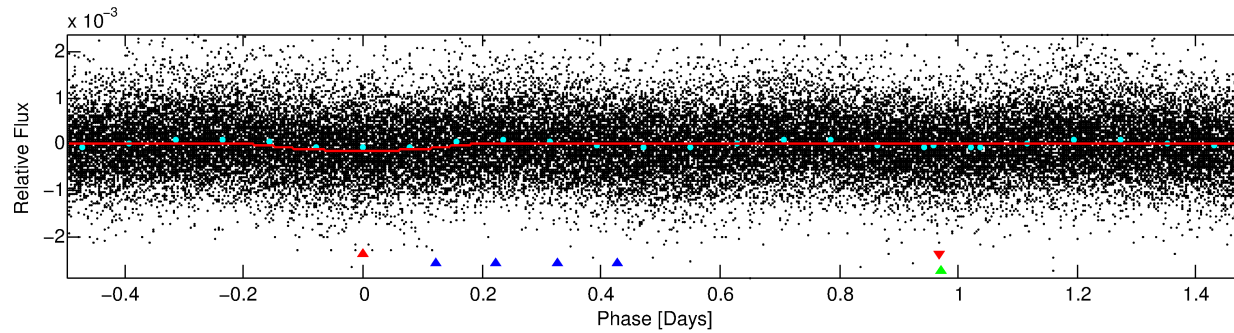
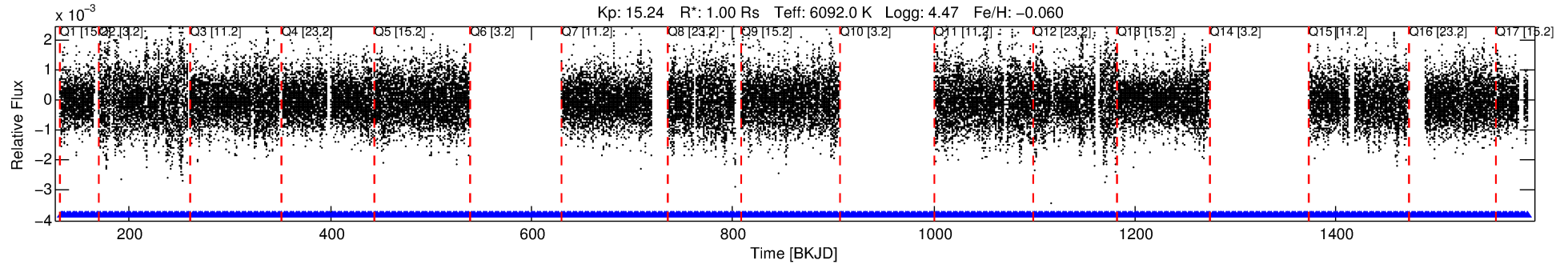
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004935813-01

No Significant Match Found

# DV One-Page Summary

KIC: 4935813 Candidate: 1 of 3 Period: 1.980 d



## DV Fit Results:

Period = 1.98020 [0.00003] d  
Epoch = 132.3656 [0.0113] BKJD  
Rp/R\* = 0.0145 [0.0009]  
a/R\* = 1.08 [0.02]  
b = 0.98 [0.00]  
Seff = 1229.54 [491.80]  
Teq = 1510 [151] K  
Rp = 1.57 [0.47] Re  
a = 0.0316 [0.0078] AU  
Ag = 18.66 [7.49] [2.36 $\sigma$ ]  
**Teffp = 4852 [313] K [9.62 $\sigma$ ]**

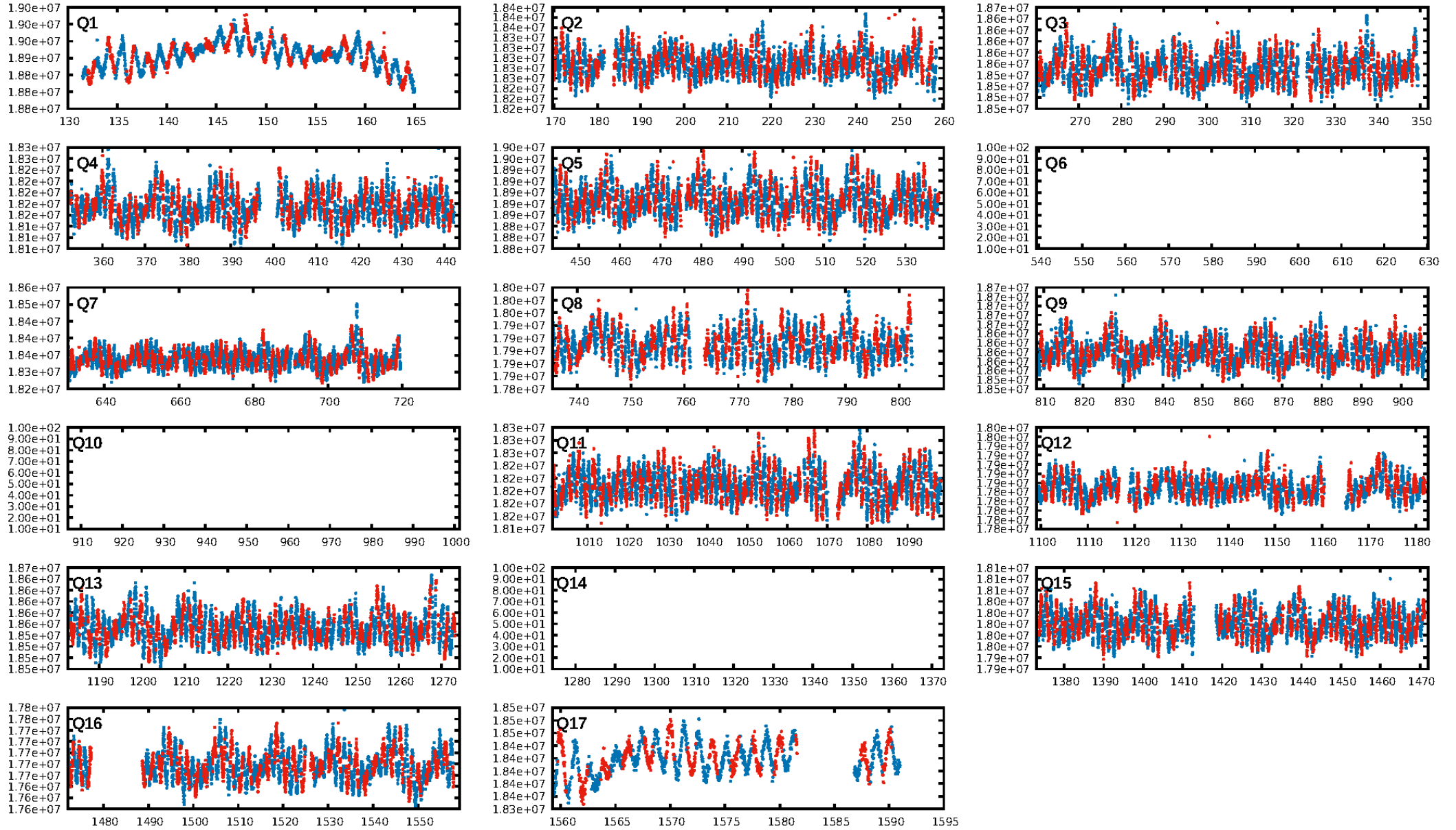
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
**LongPeriod-sig: 0.0% [0.00 $\sigma$ ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [514/514]  
GhostDiagnostic-chr: -8.356  
Centroid-sig: 63.8%  
Centroid-so: 0.424 arcsec [0.64 $\sigma$ ]  
OotOffset-rm: 0.306 arcsec [1.20 $\sigma$ ]  
OotOffset-st: 0/4/2/4 [10]  
KicOffset-rm: 0.218 arcsec [0.75 $\sigma$ ]  
KicOffset-st: 0/4/2/4 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 1.00 [14/14]

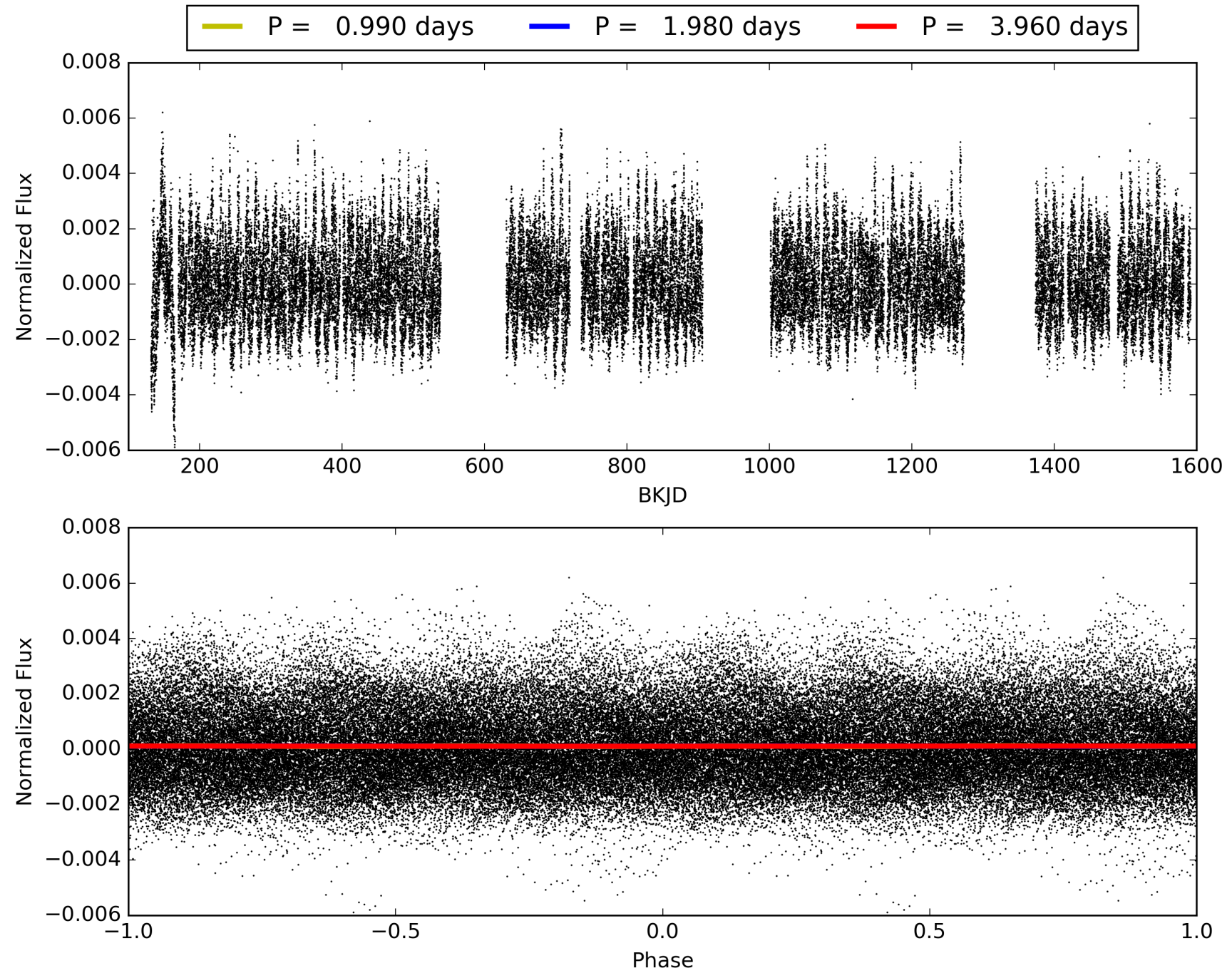
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:12:48 Z

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

# TCE 004935813-01, PDC Light Curves



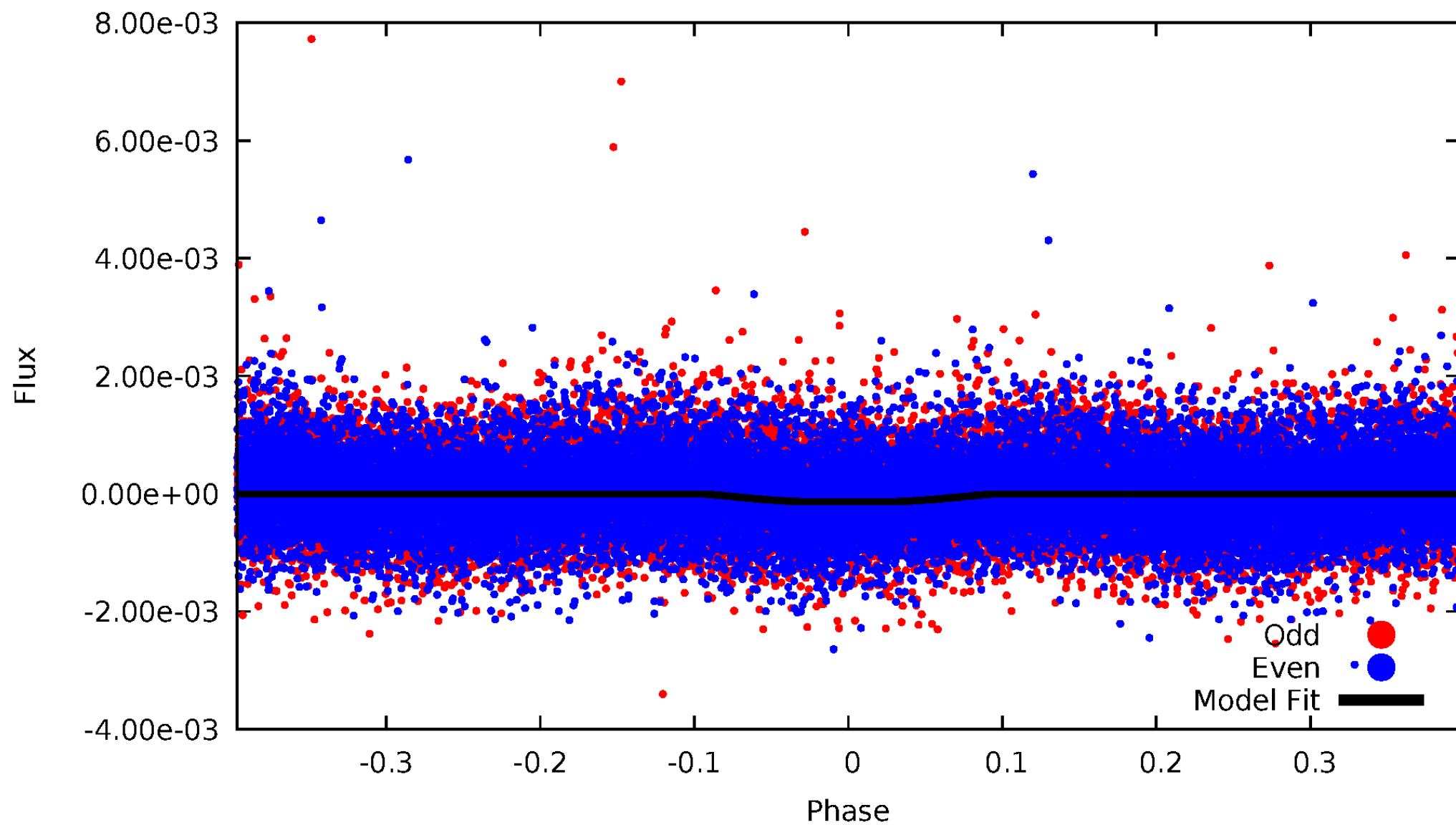
TCE 004935813-01





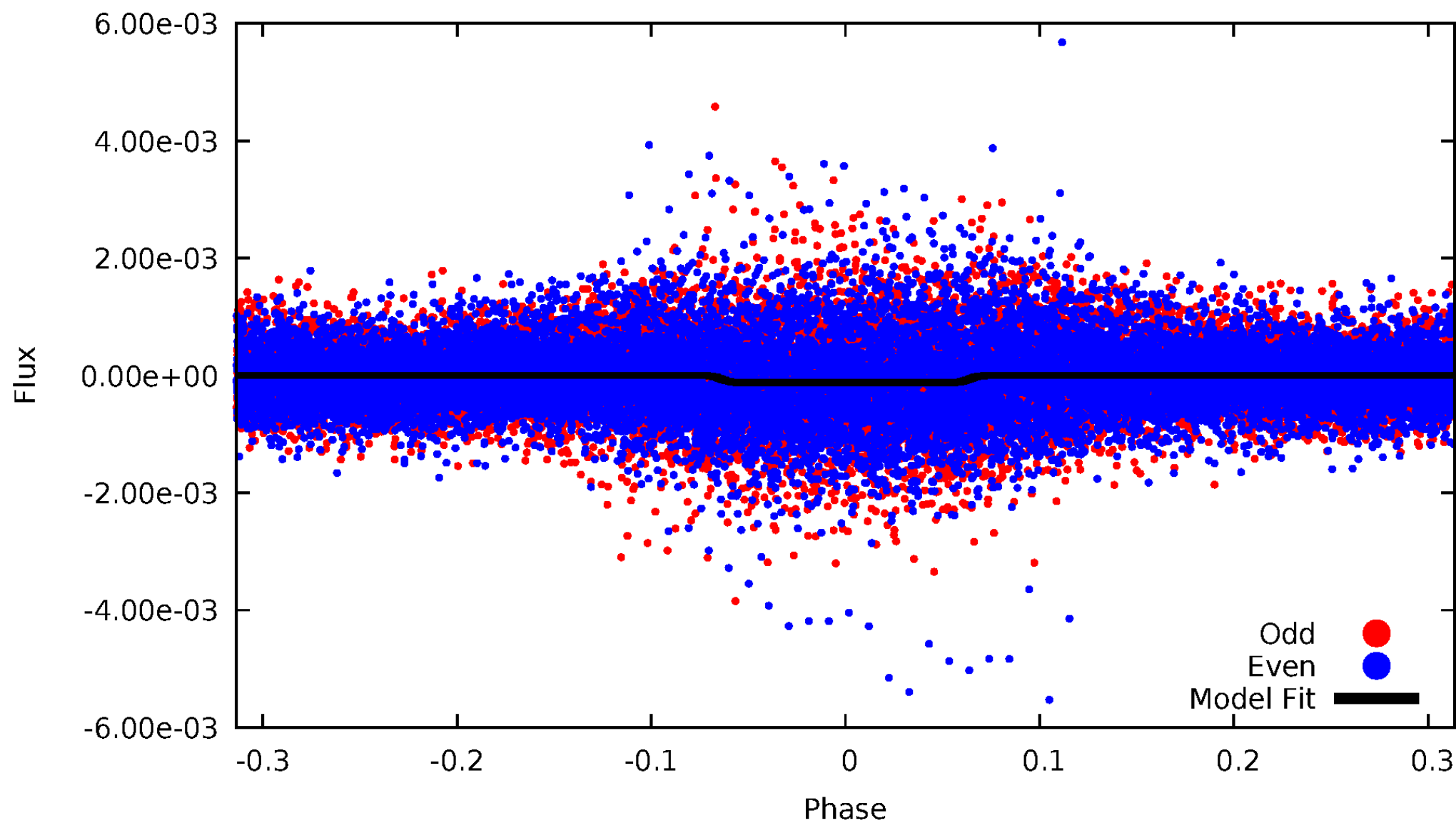
# DV Odd/Even

TCE 004935813-01

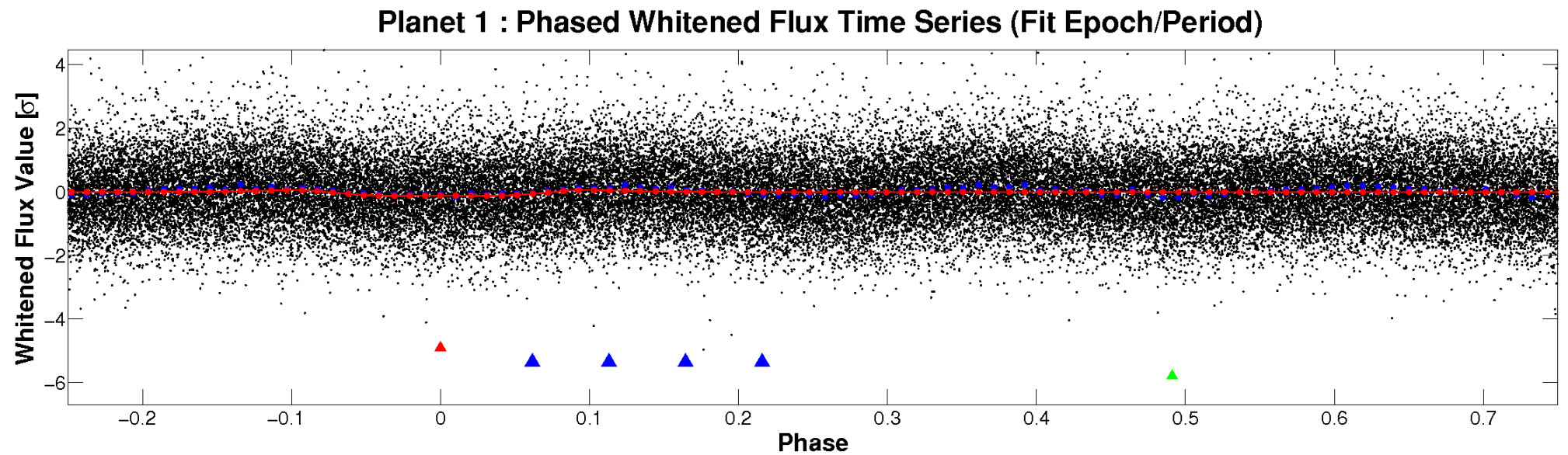
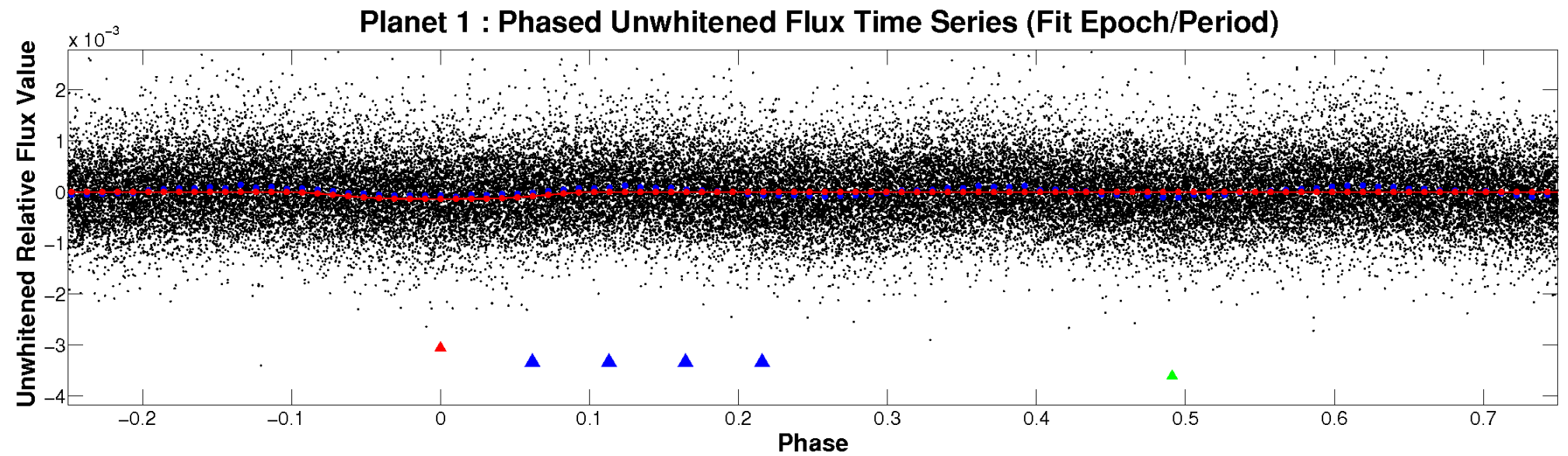


# ALT Odd/Even

TCE 004935813-01

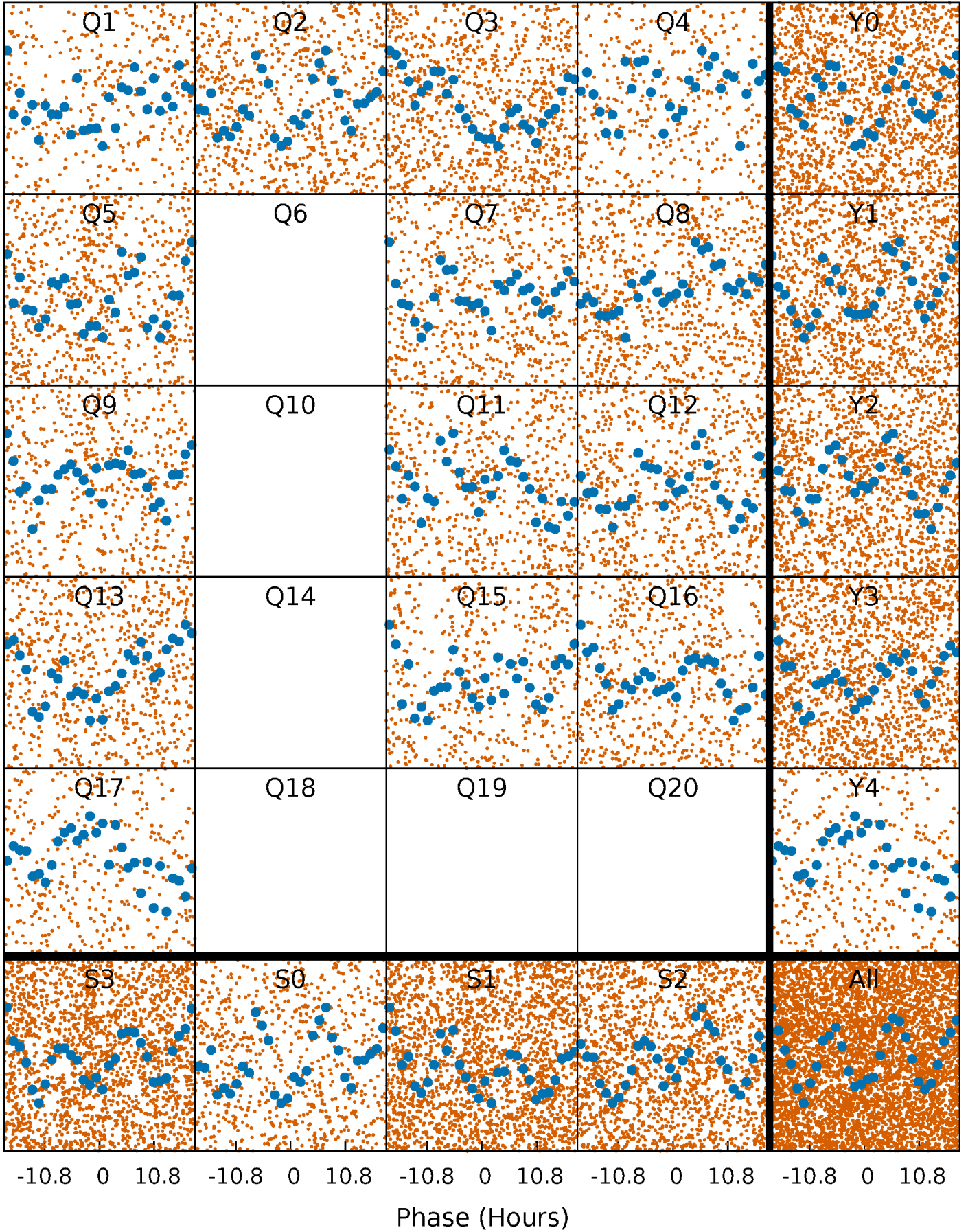


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

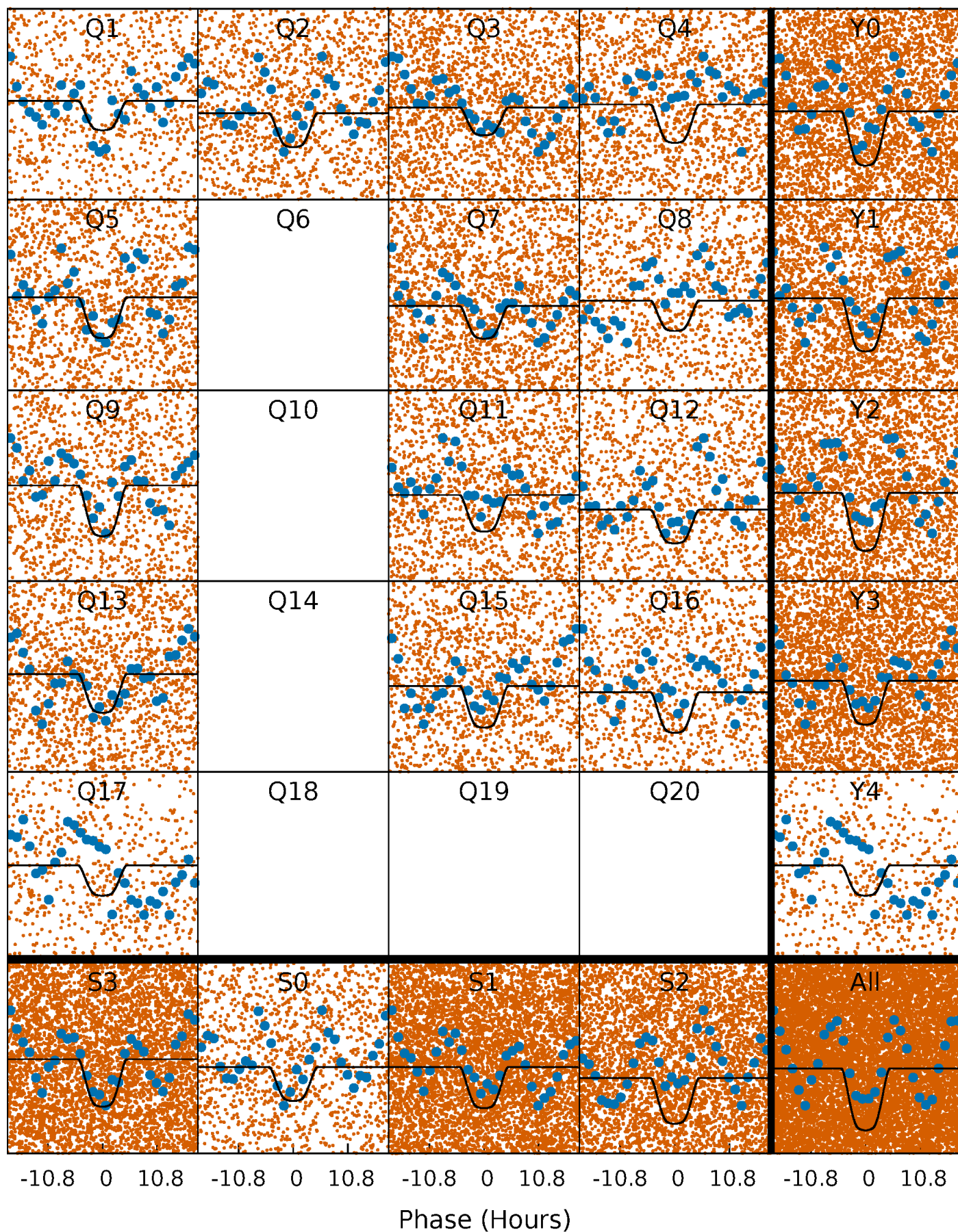
TCE 004935813-01 P= 1.980199 Days  $T_0=132.365633$  (BKJD)





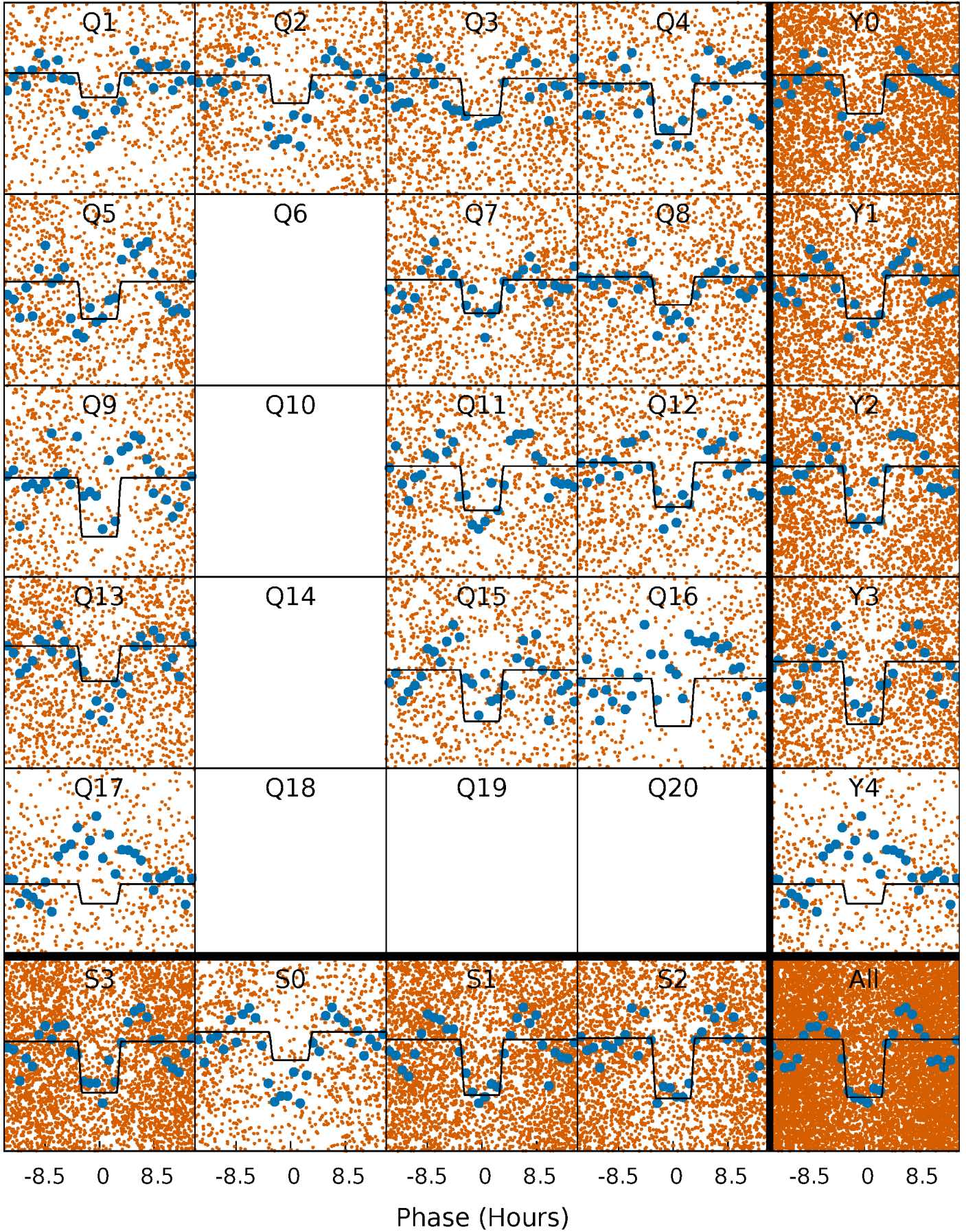
# DV Quarter-Phased Transit Curves

TCE 004935813-01 P= 1.980199 Days  $T_0=132.365633$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004935813-01 P= 1.980139 Days  $T_0=132.385605$  (BKJD)

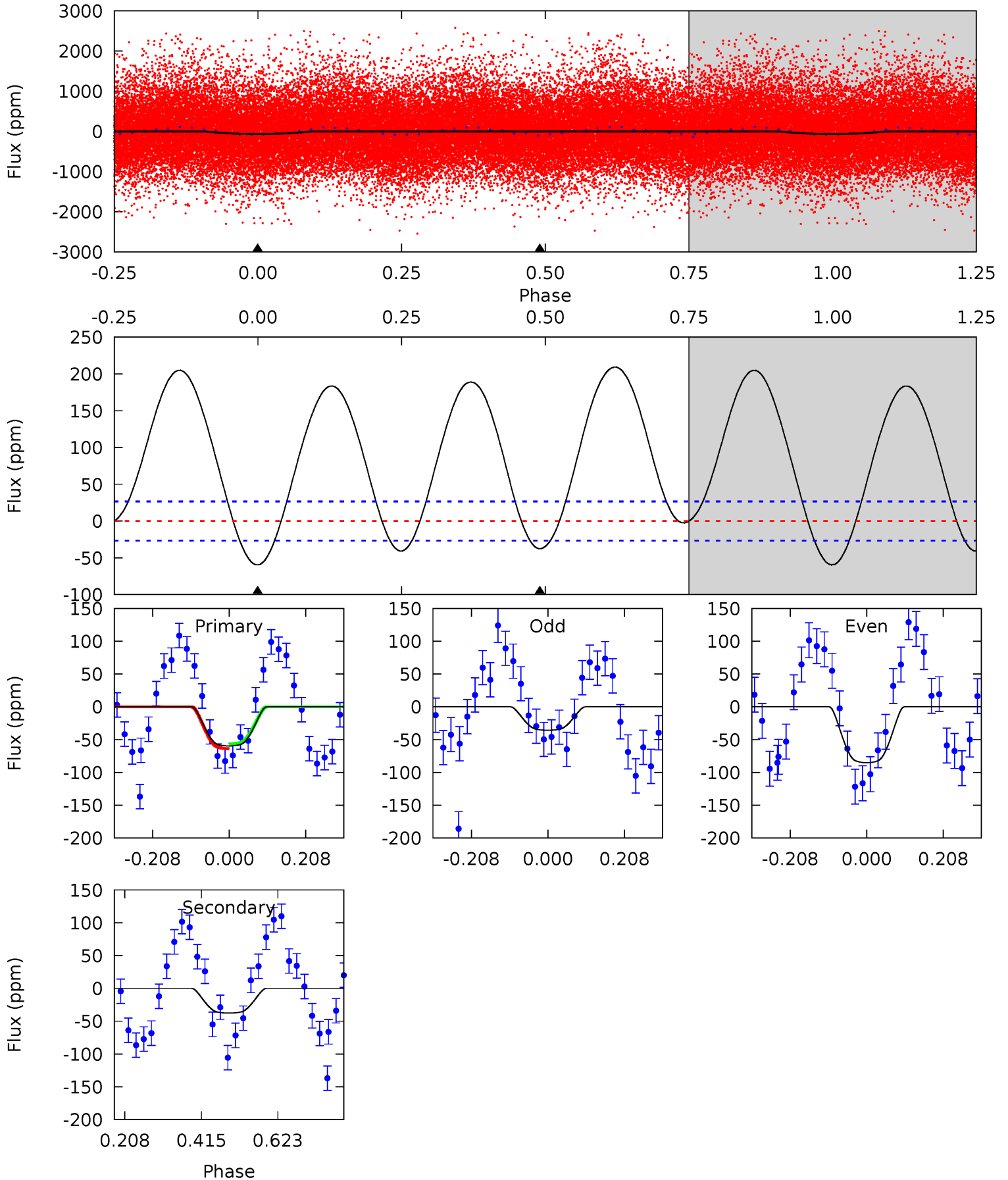




# DV Model-Shift Uniqueness Test

004935813-01, P = 1.980199 Days, E = 130.385434 Days

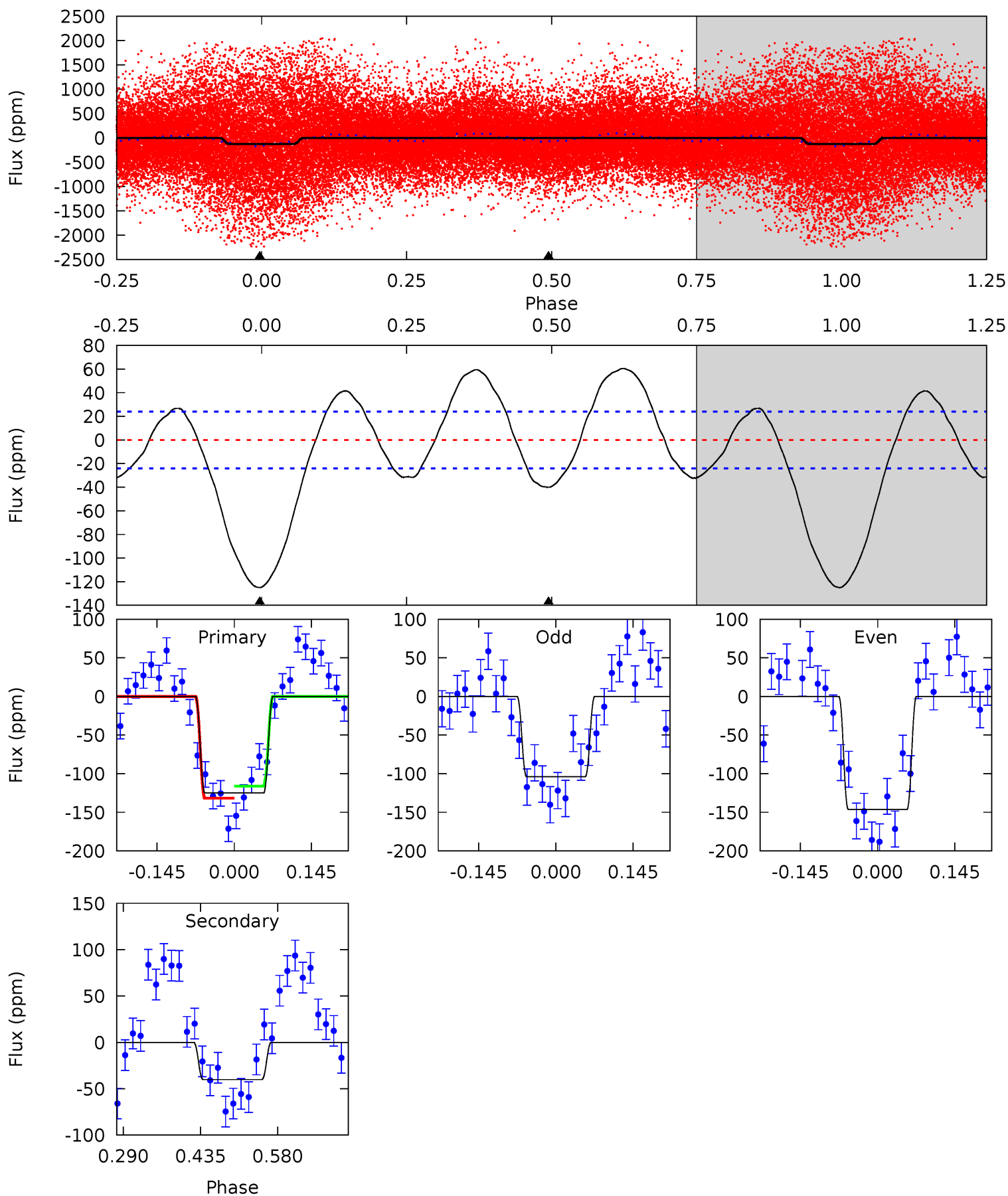
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.89 | 6.24 | 0   | 0   | 4.41            | 1.26            | 4.52             | 9.89    | 9.89    | 6.24    | 6.24    | 4.11    | 1.20 | 0.78  | 0.60 |



# Alt Model-Shift Uniqueness Test

004935813-01, P = 1.980139 Days, E = 130.405466 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  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.3 | 7.49 | 0   | 0   | 4.49            | 1.46            | 5.02             | 23.3    | 23.3    | 7.49    | 7.49    | 3.96    | 0.70 | 0.33  | 1.45 |





### Stellar Parameters For KIC 004935813

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6092^{+220}_{-275}$ | $4.471^{+0.052}_{-0.195}$ | $-0.060^{+0.250}_{-0.300}$ | $0.998^{+0.291}_{-0.125}$ | $1.074^{+0.148}_{-0.148}$ | $1.522^{+0.407}_{-0.731}$                 |
|        | +4%/-5%              | +1%/-4%                   | +417%/-500%                | +29%/-13%                 | +14%/-14%                 | +27%/-48%                                 |
| Source | PHO1                 | KIC0                      | KIC0                       | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 004935813-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{max} (K)$        | $T_{obs} (K)$        | $A_{obs}$                 |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-38 \pm 6$ | $1.64^{+0.27}_{-0.17}$ | $2159^{+151}_{-129}$ | $4167^{+207}_{-210}$ | $7.380^{+2.326}_{-1.963}$ |
| Alt.    | $-40 \pm 5$ | $1.25^{+0.22}_{-0.16}$ | $2156^{+159}_{-120}$ | $4715^{+260}_{-240}$ | $14^{+4}_{-4}$            |

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

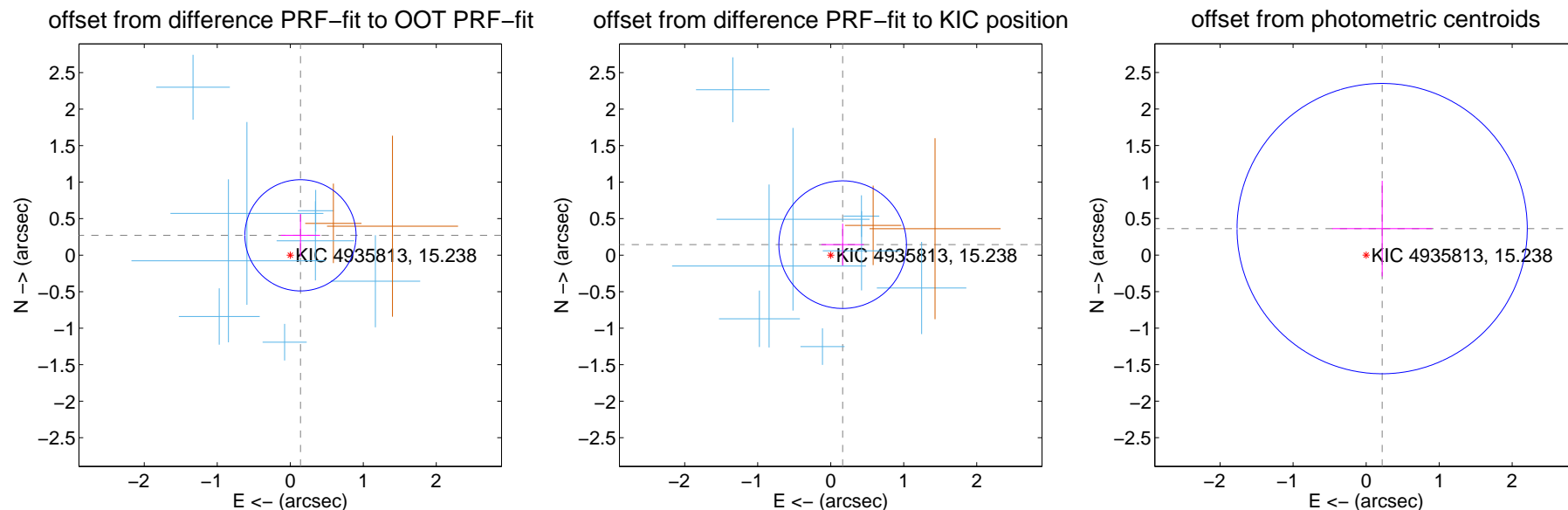
## DV Centroid Data

Supplemental centroid analysis for 004935813-01. Kepler magnitude: 15.24. Transit SNR 9.65

There are 8 quarters with good PRF difference image offsets

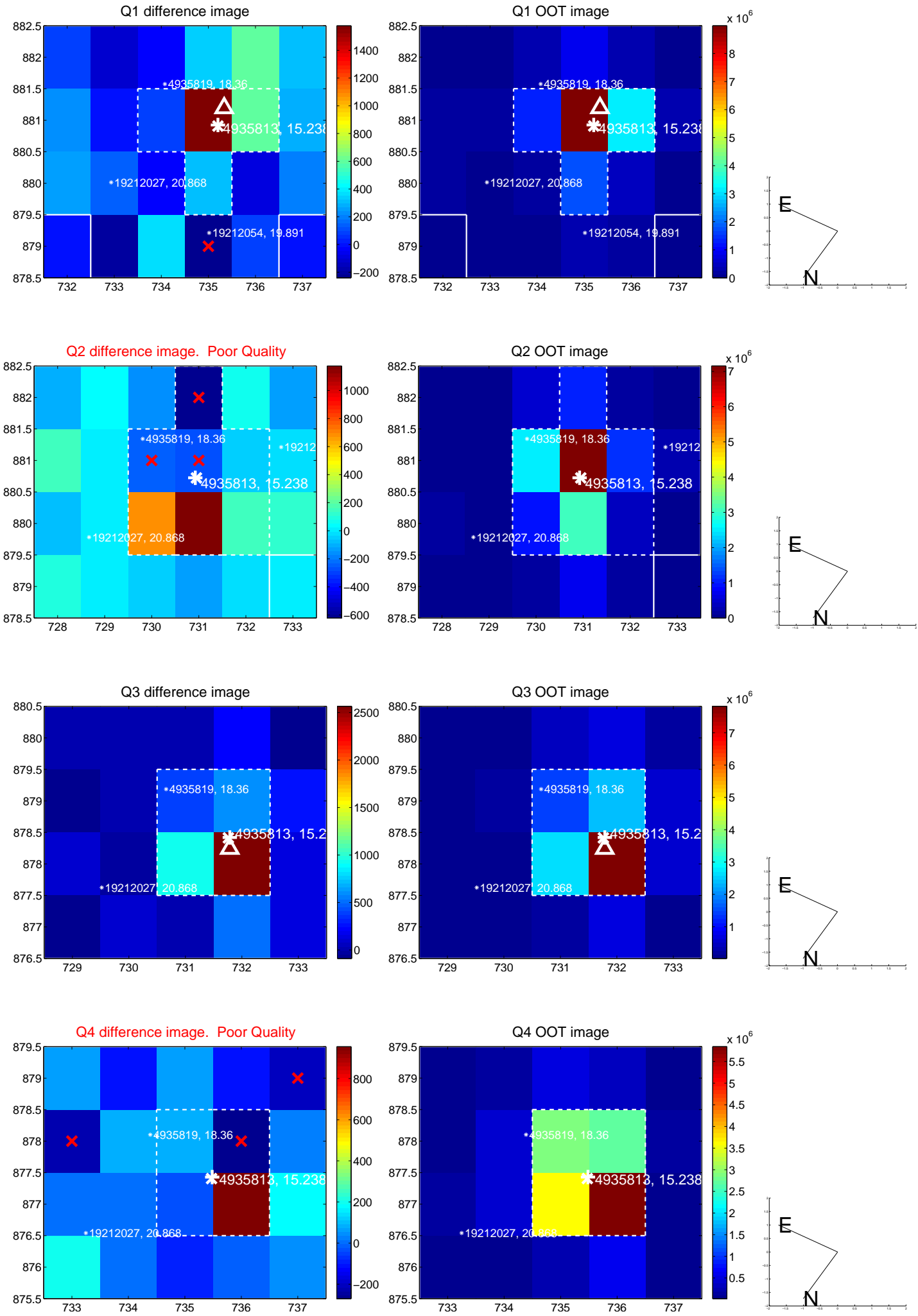
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.306 \pm 0.254$  | 1.20                | $-0.140 \pm 0.268$ | $0.272 \pm 0.292$ |
| PRF-fit source offset from KIC position | $0.218 \pm 0.291$  | 0.75                | $-0.163 \pm 0.290$ | $0.144 \pm 0.287$ |
| photometric centroid source offset      | $0.42 \pm 0.66$    | 0.64                | $-0.22 \pm 0.68$   | $0.36 \pm 0.65$   |

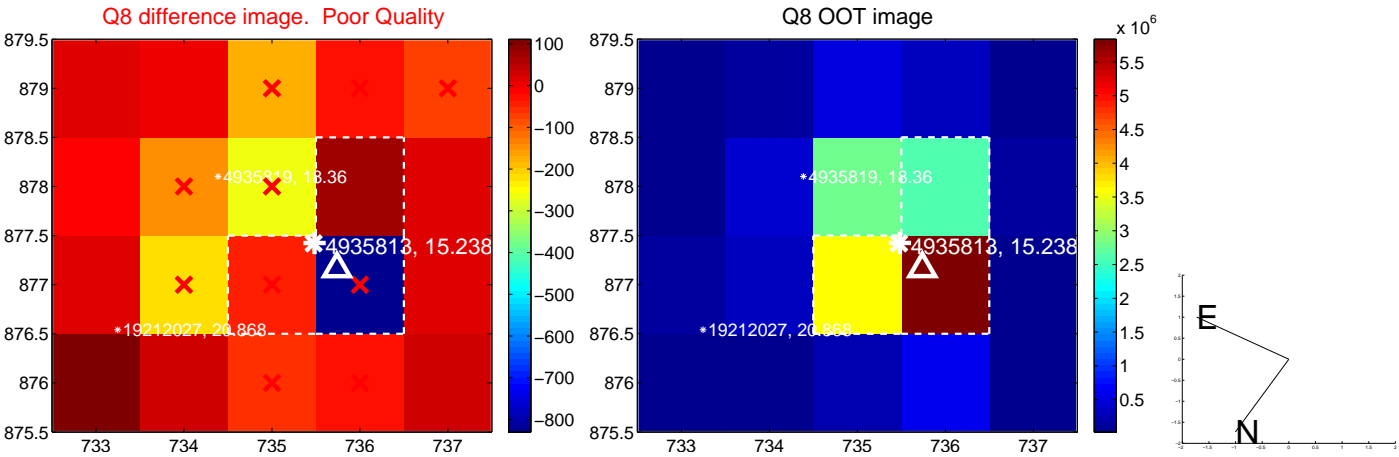
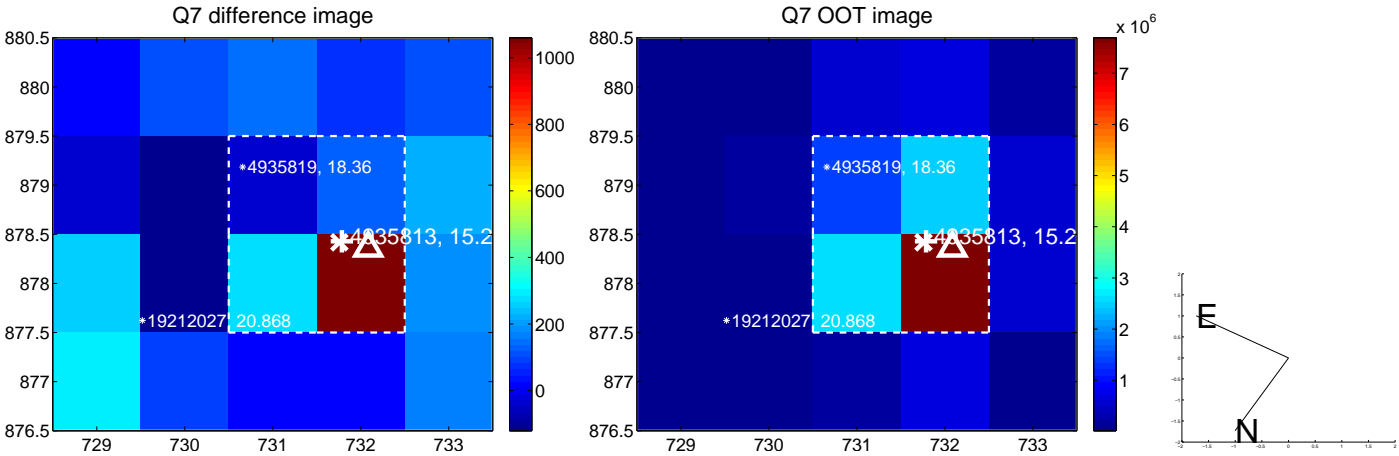
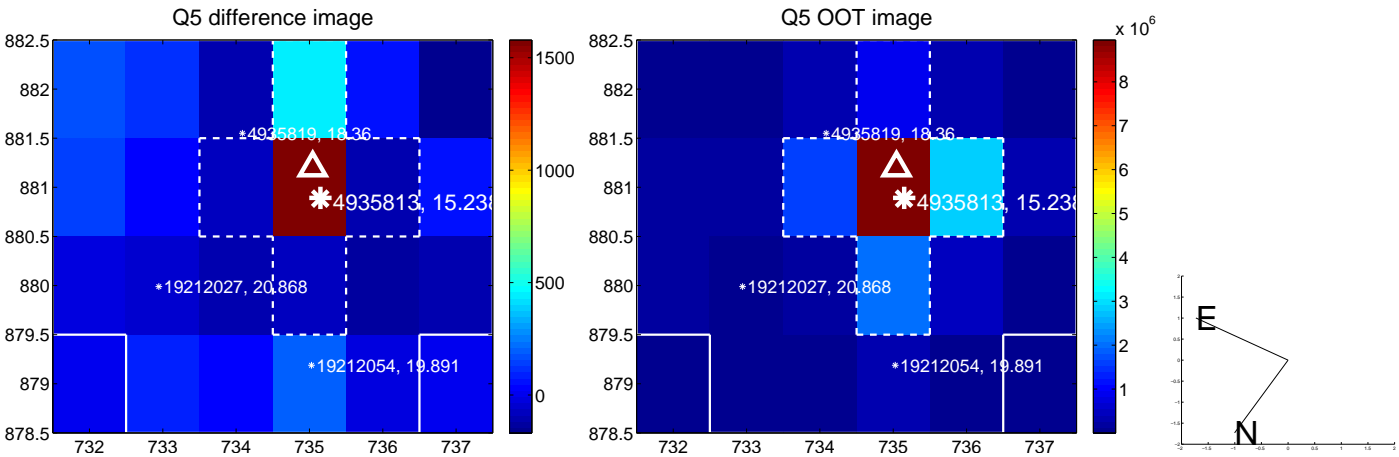


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

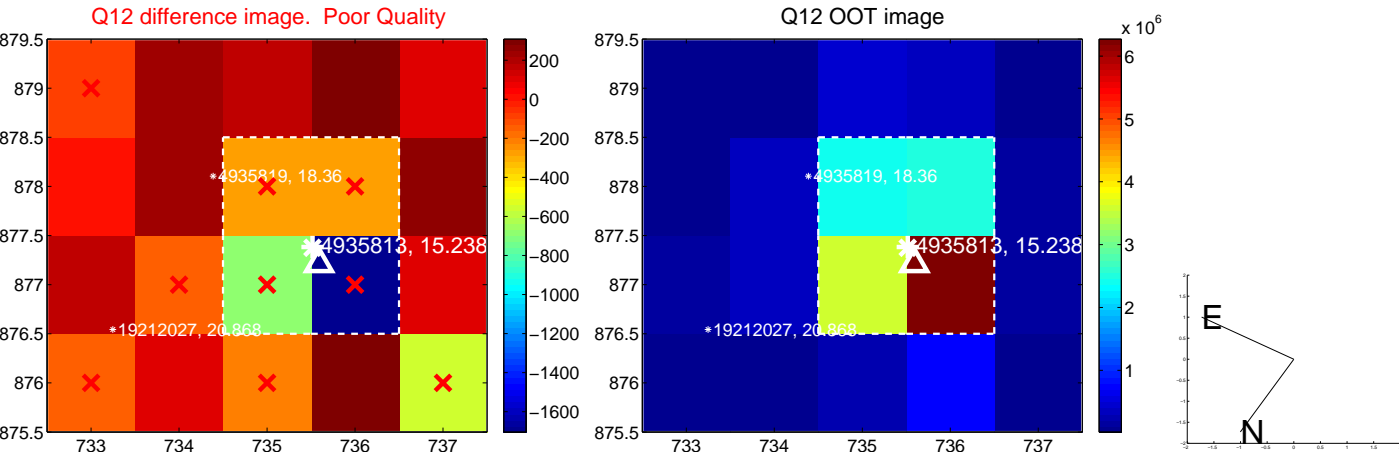
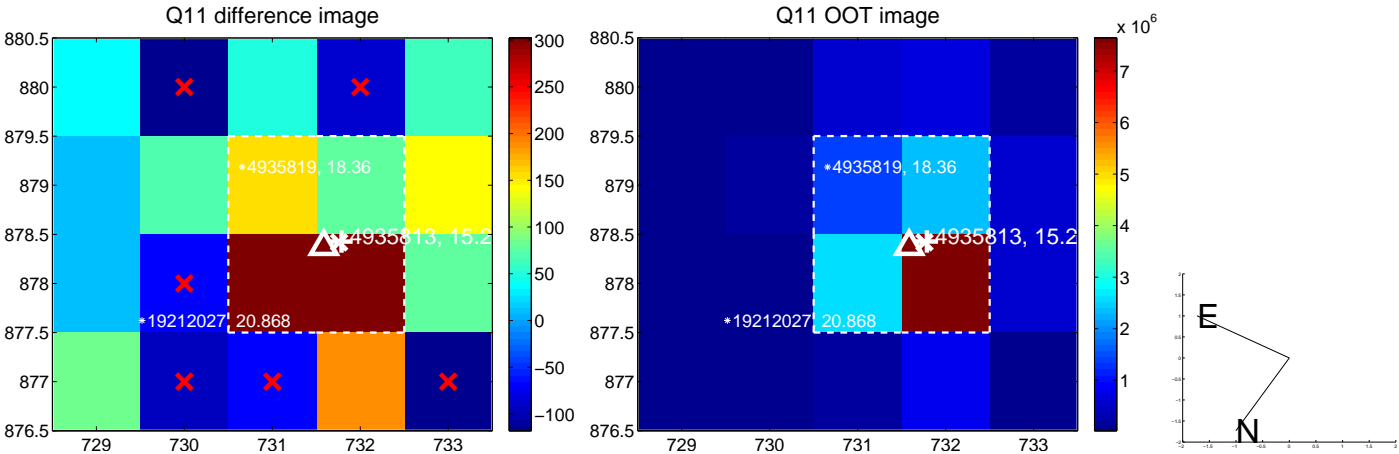
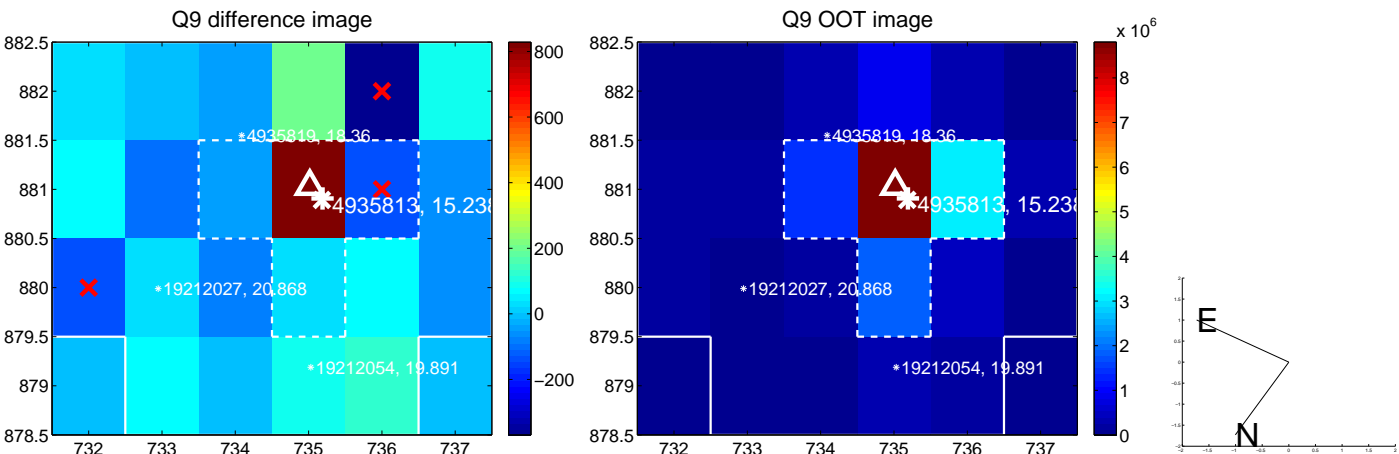


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

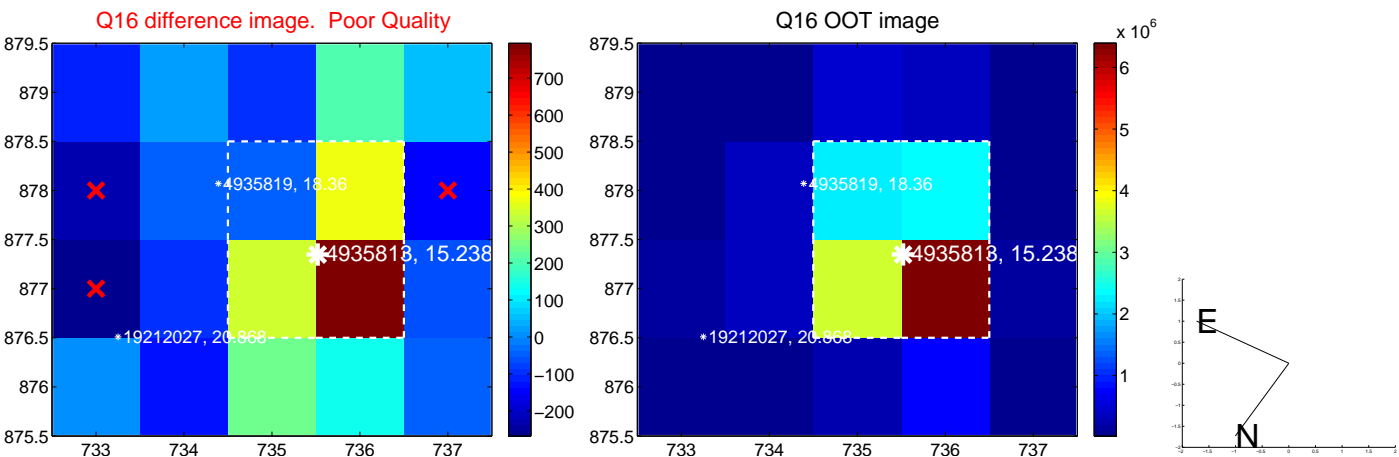
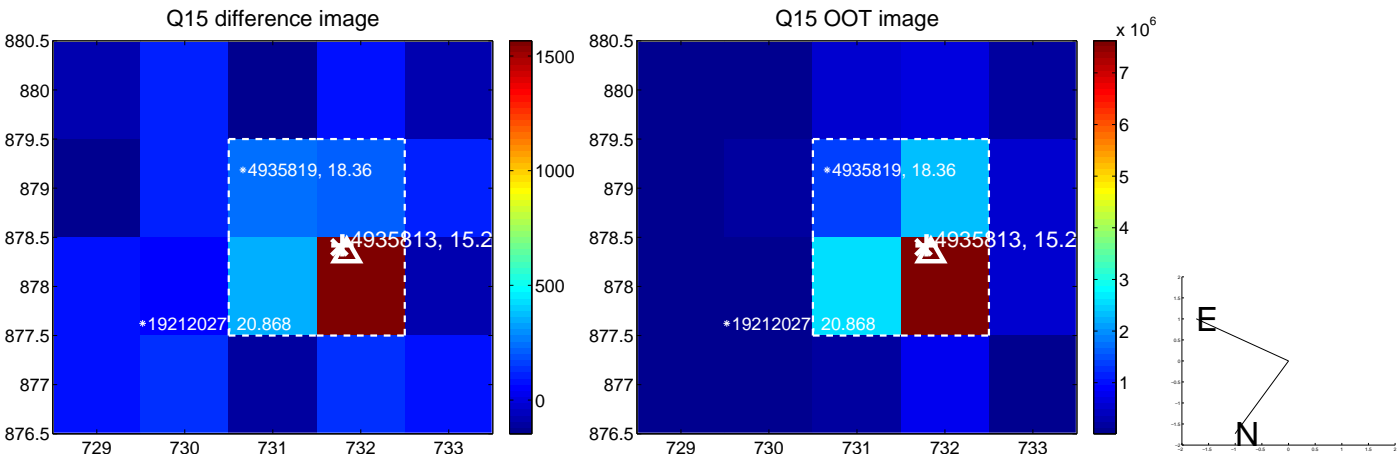
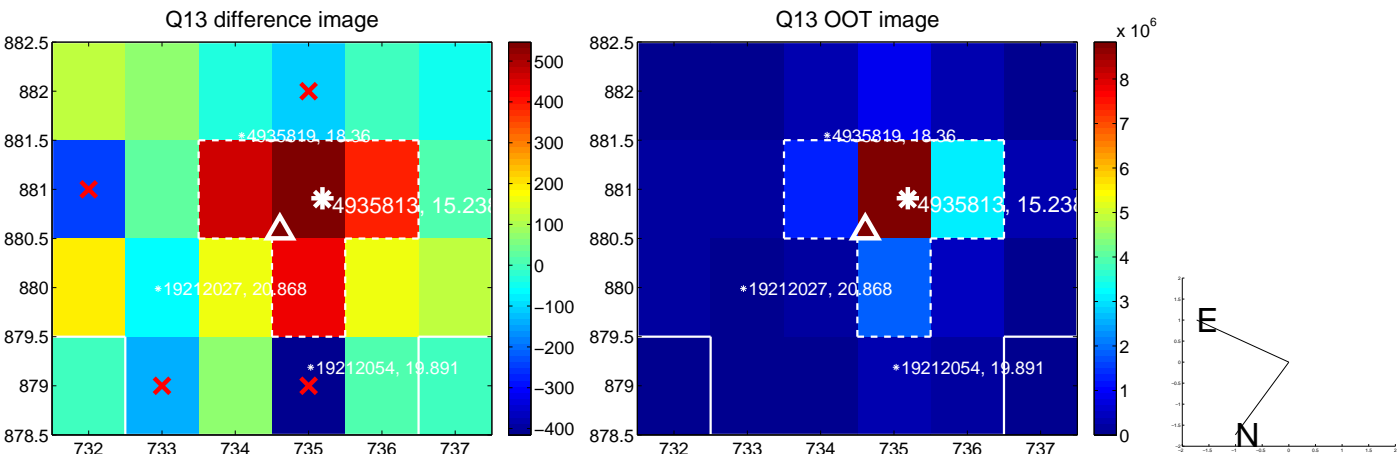




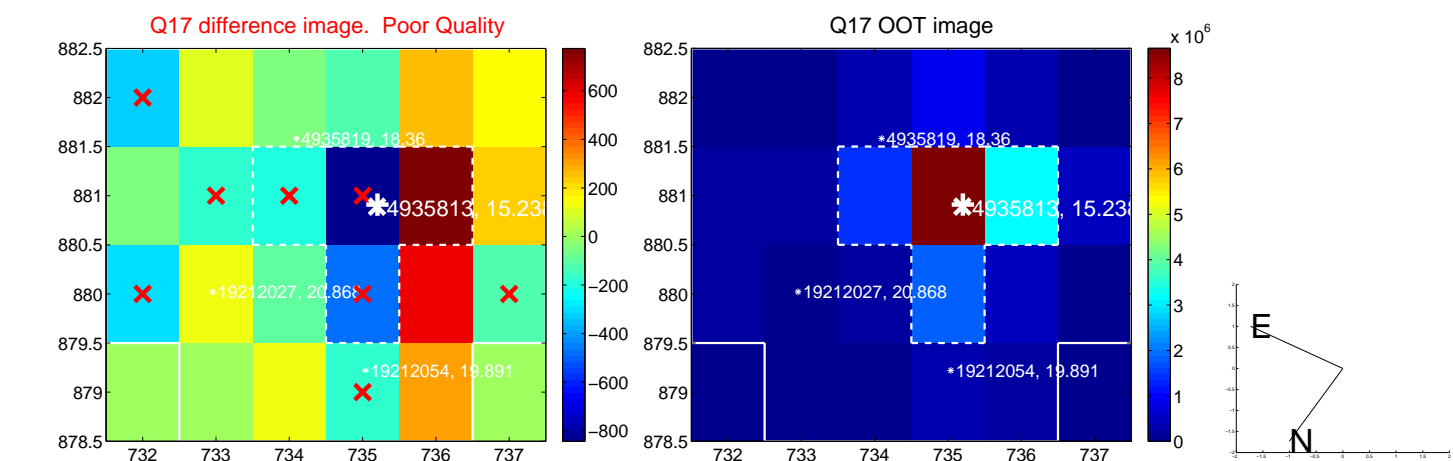
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



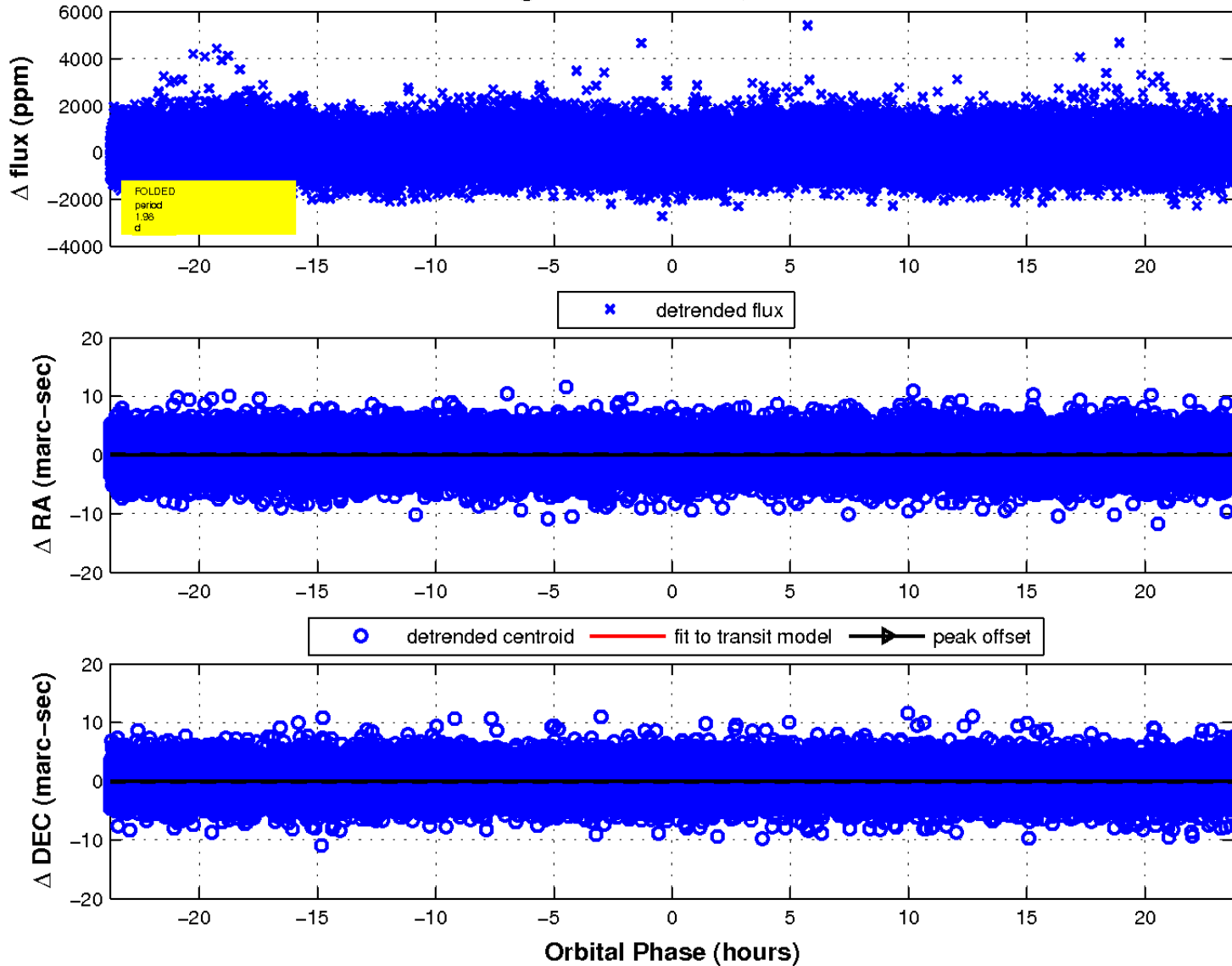
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

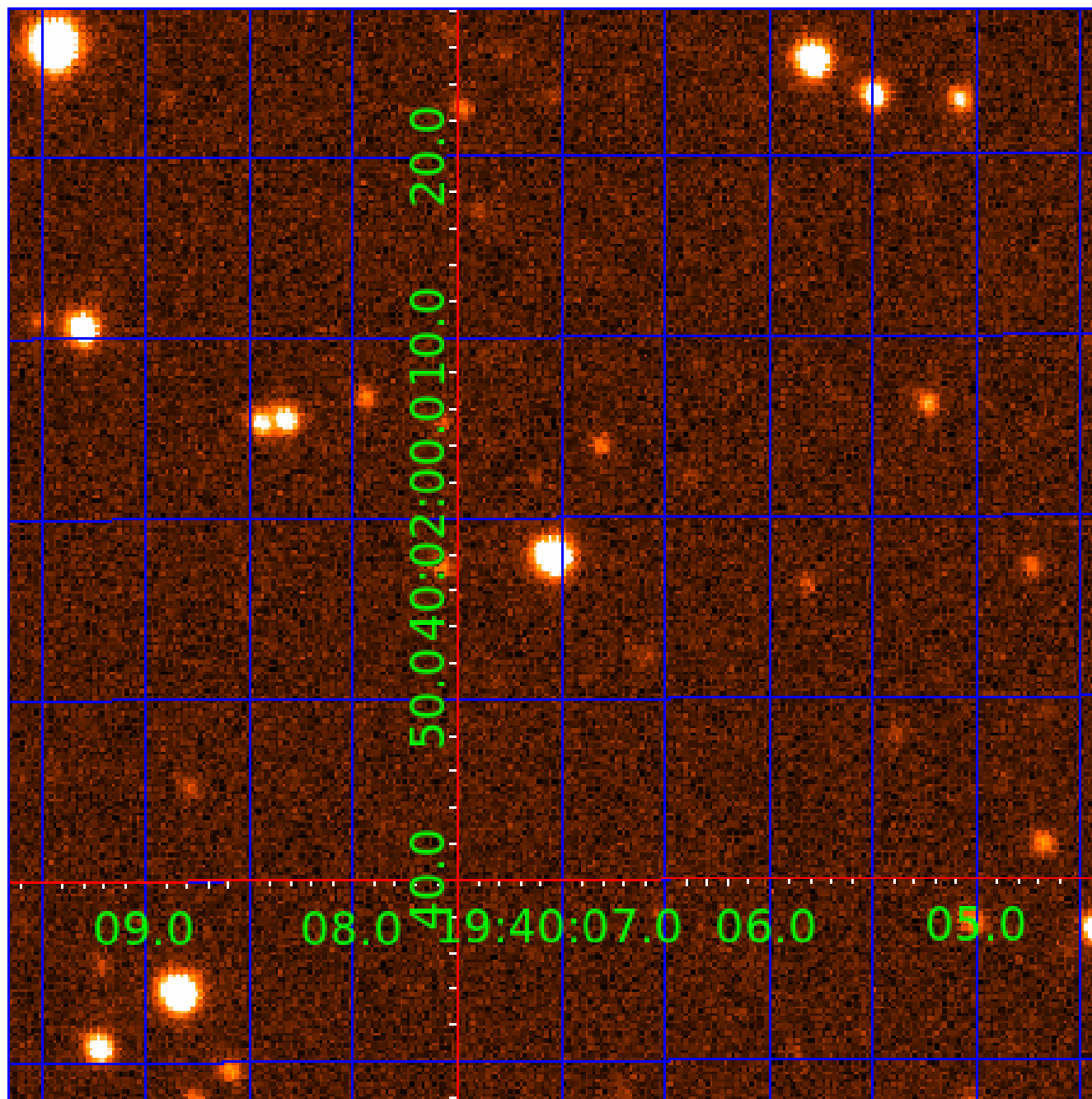


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 004935813

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004935813-01 | OBS      | No   | 1.980199      | 132.365633   | 135.0       | 9.429            | 9.2  | 9.6  | 1.00                        | 6092            | 1.57                   | 1229.54                |
| 004935813-02 | OBS      | No   | 370.195438    | 445.664570   | 977.5       | 47.790           | 12.1 | 6.9  | 1.00                        | 6092            | 3.12                   | 1.15                   |
| 004935813-03 | OBS      | No   | 1.980199      | 133.338137   | 138.3       | 9.570            | 11.4 | 12.7 | 1.00                        | 6092            | 2.39                   | 1229.54                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 004935813-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT  |
| 004935813-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004935813-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS   |

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

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

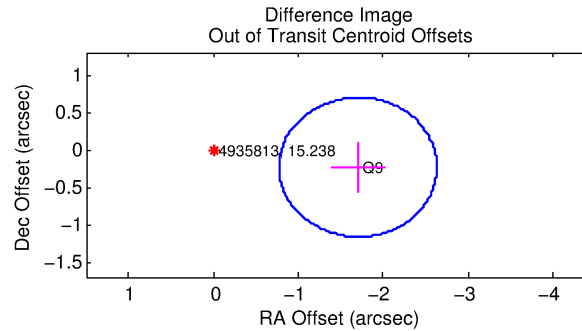
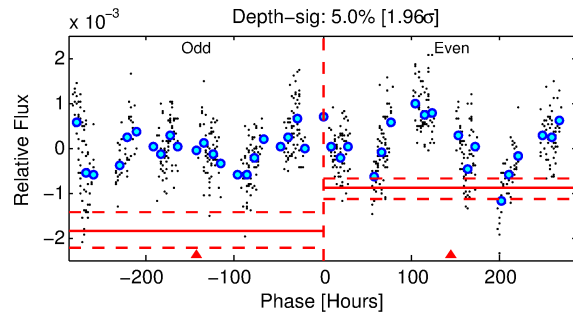
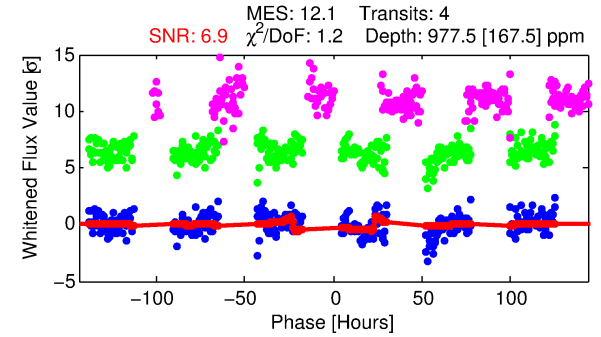
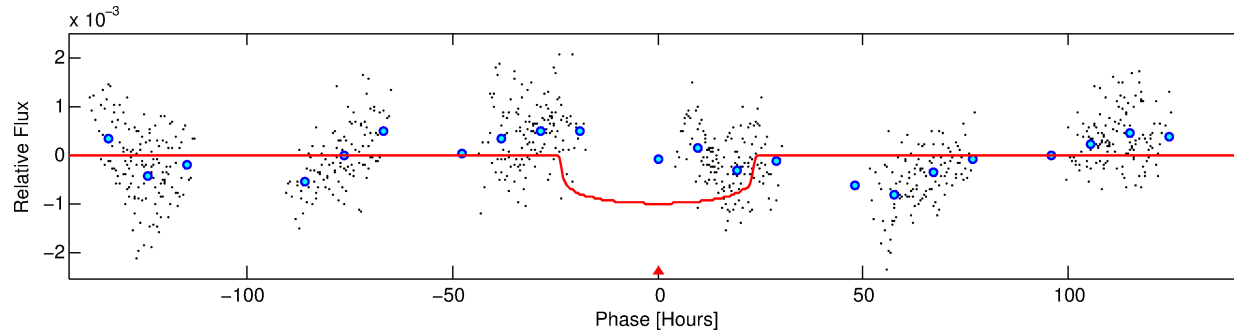
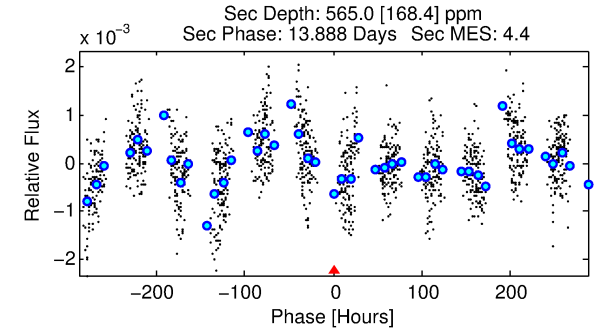
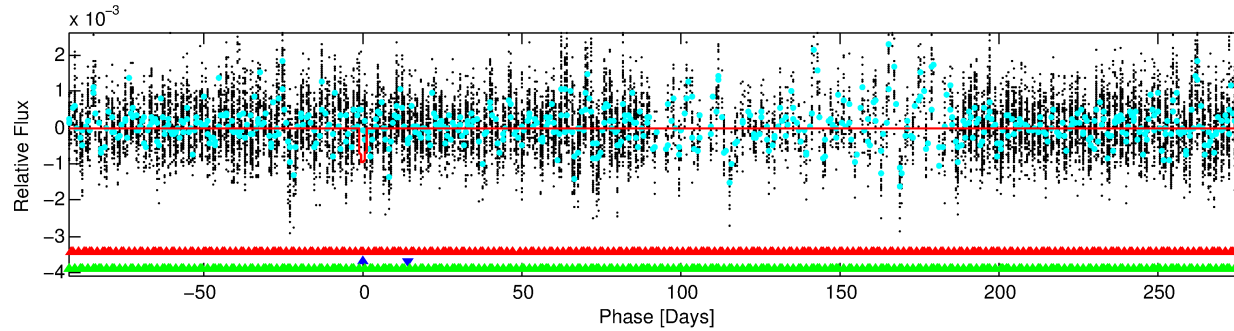
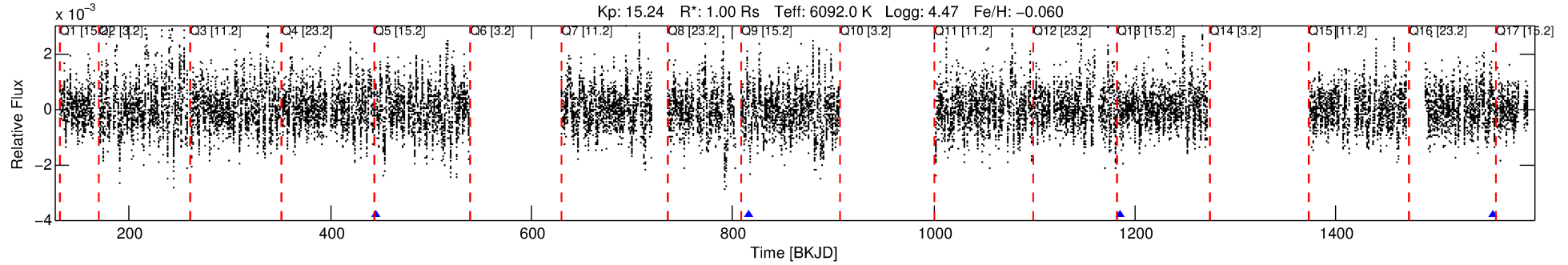
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004935813-02

No Significant Match Found

# DV One-Page Summary

KIC: 4935813 Candidate: 2 of 3 Period: 370.195 d



## DV Fit Results:

Period = 370.19544 [0.01433] d  
Epoch = 445.6646 [0.0303] BKJD  
Rp/R\* = 0.0286 [0.0044]  
a/R\* = 60.43 [34.22]  
b = 0.12 [4.46]  
Seff = 1.15 [0.46]  
Teff = 264 [26] K  
Rp = 3.12 [1.02] Re  
a = 1.0337 [0.2536] AU  
Ag = 34223.48 [19021.17] [1.80 $\sigma$ ]  
Teffp = 5553 [642] K [8.23 $\sigma$ ]

## DV Diagnostic Results:

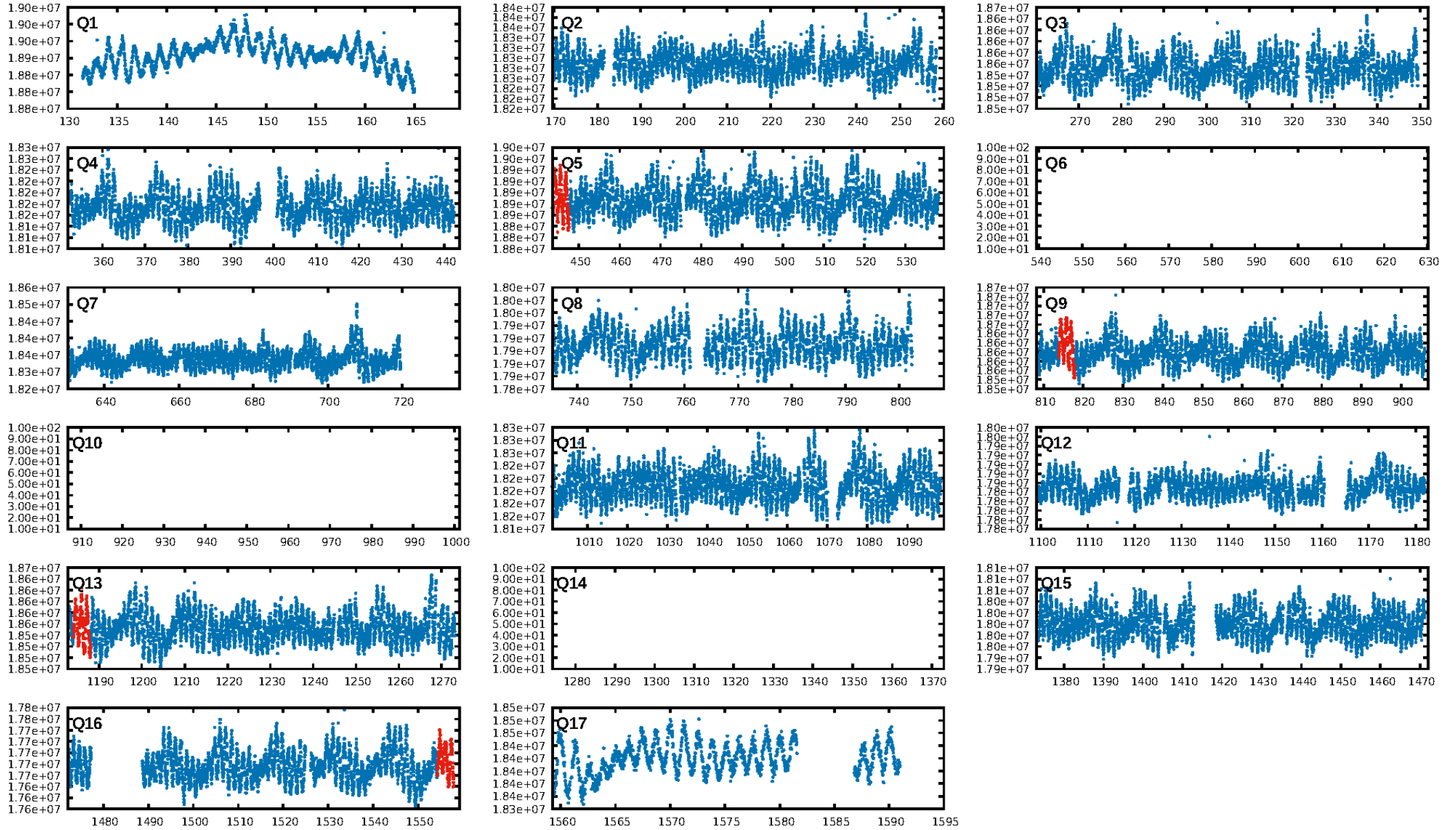
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LongPeriod-sig: N/A  
ModelChiSquare2-sig: 24.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgm: 1.00 [4/4]  
GhostDiagnostic-chr: -0.2034  
Centroid-sig: 0.5%  
Centroid-so: 0.826 arcsec [1.96 $\sigma$ ]  
OotOffset-rm: 1.721 arcsec [5.55 $\sigma$ ]  
KicOffset-rm: 1.755 arcsec [5.65 $\sigma$ ]  
OotOffset-st: 0/0/0/1 [1]  
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: 30-Jan-2016 21:12:59 Z

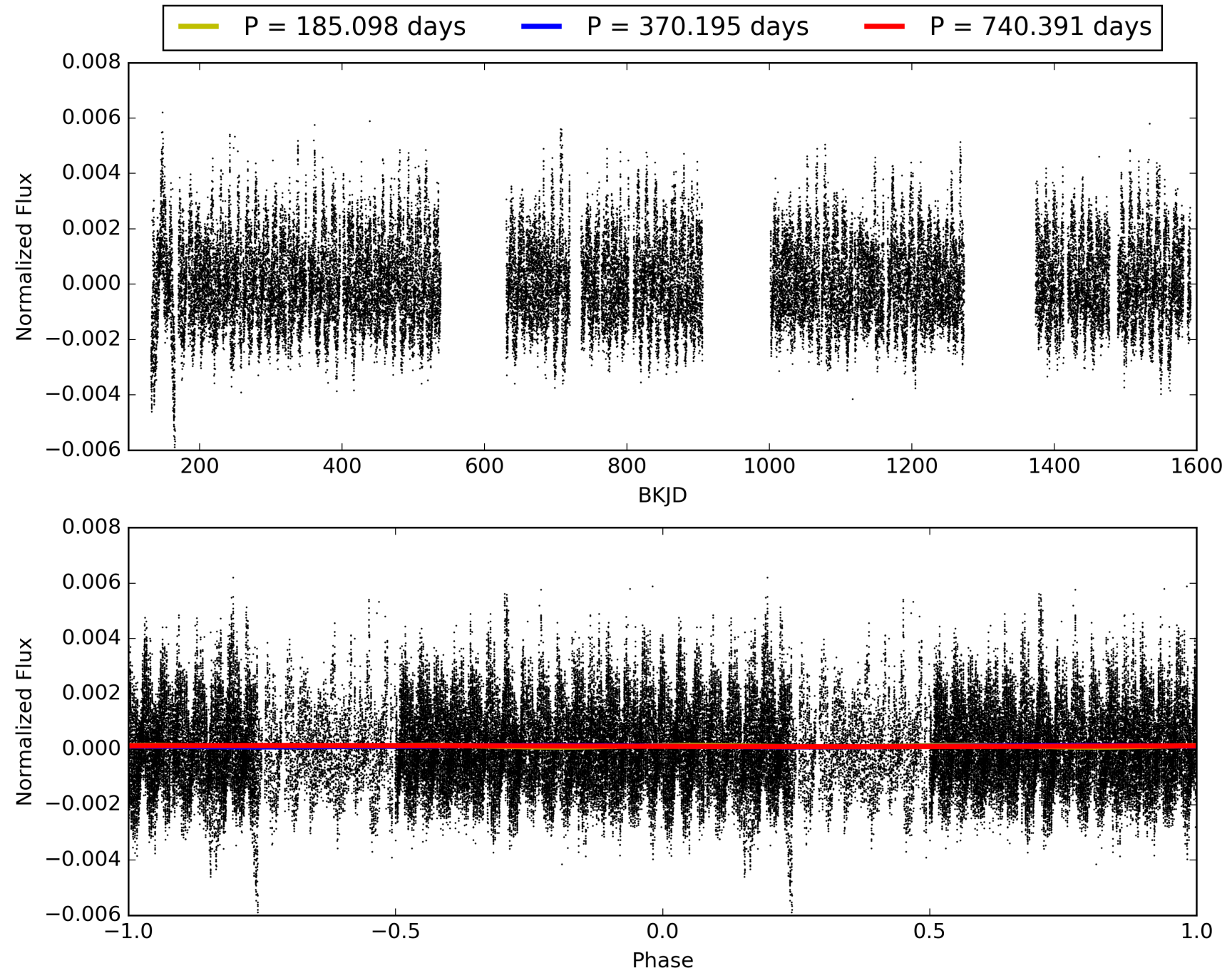
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 004935813-02, PDC Light Curves

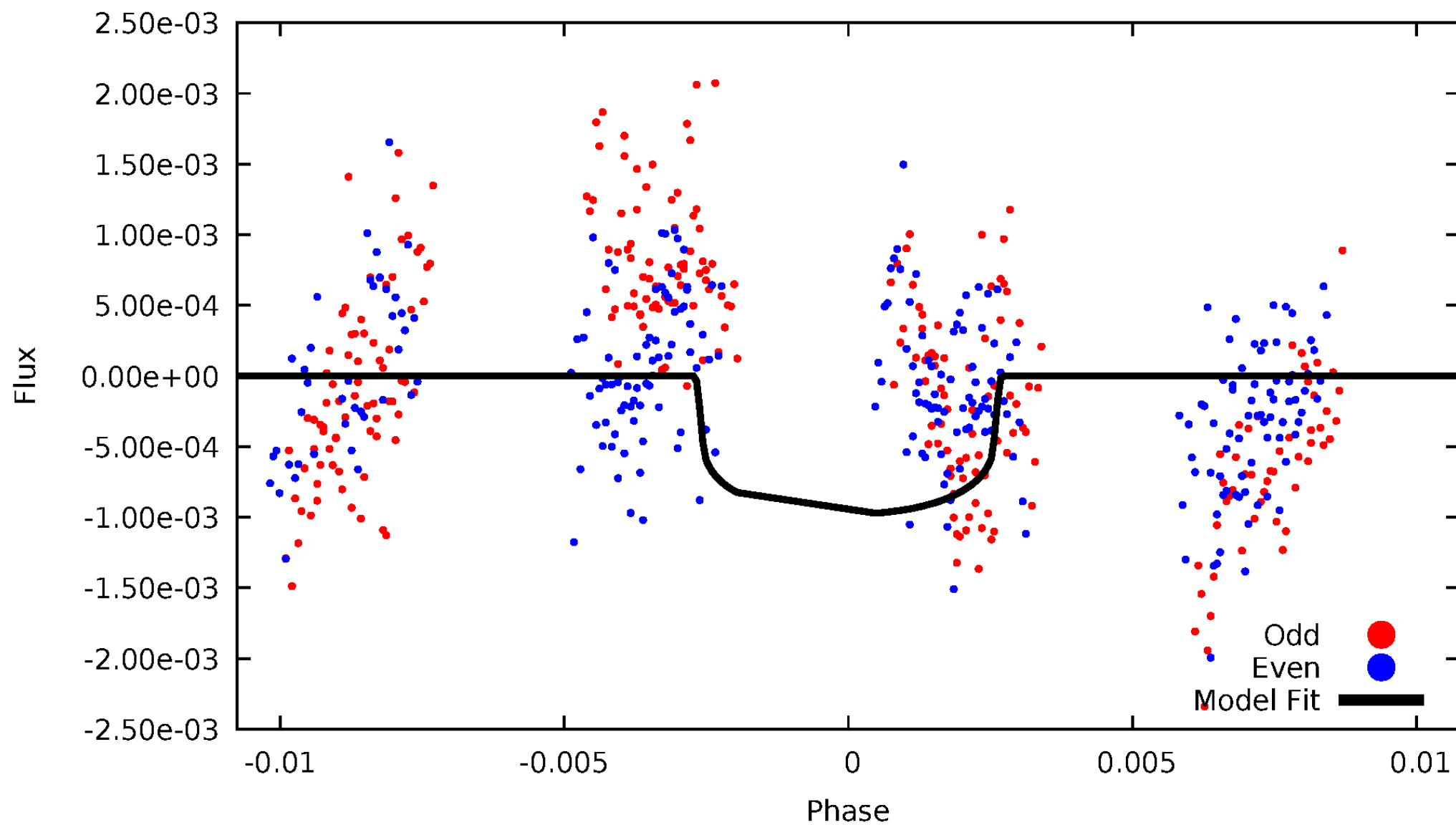


TCE 004935813-02



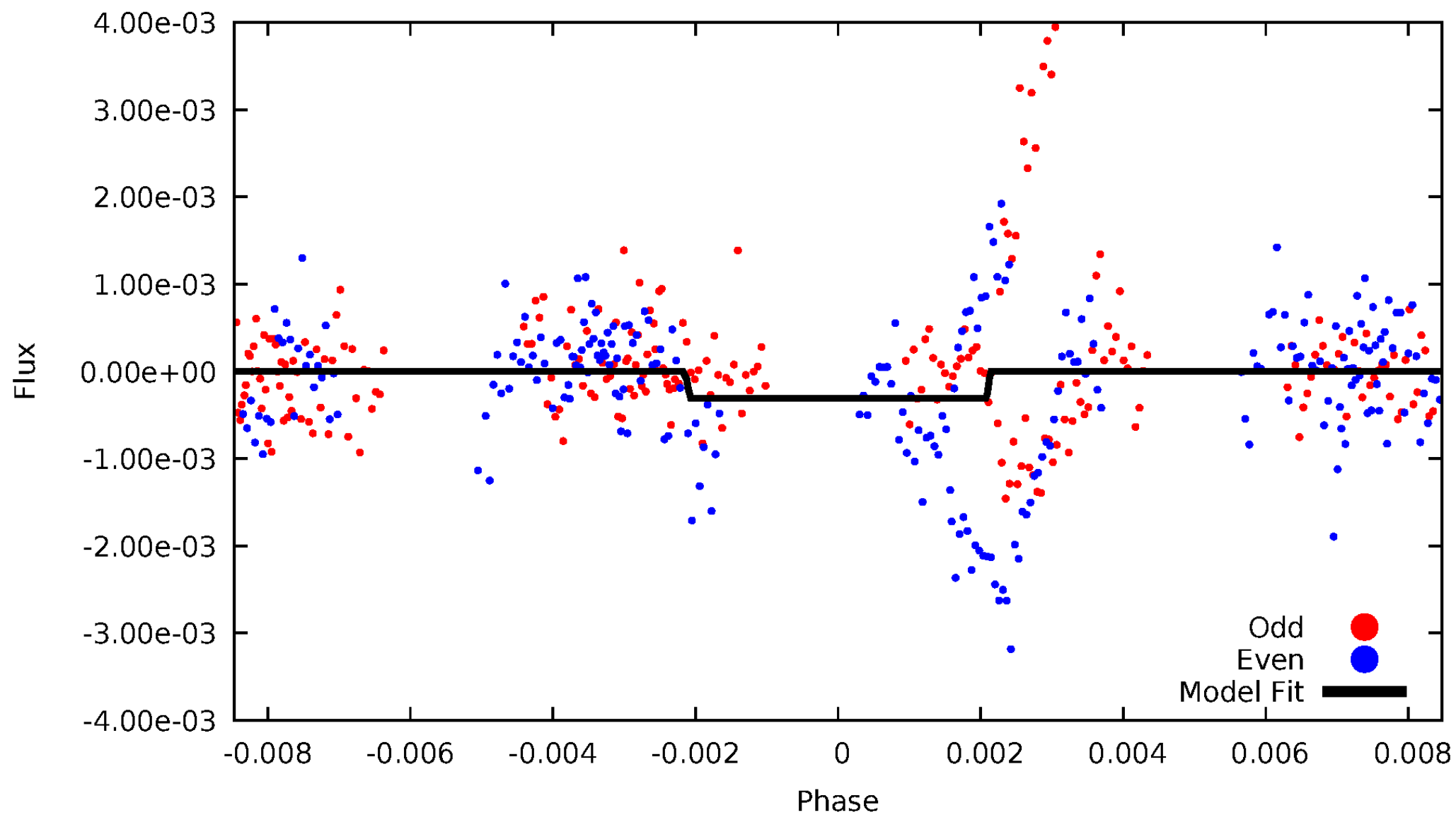
# DV Odd/Even

TCE 004935813-02



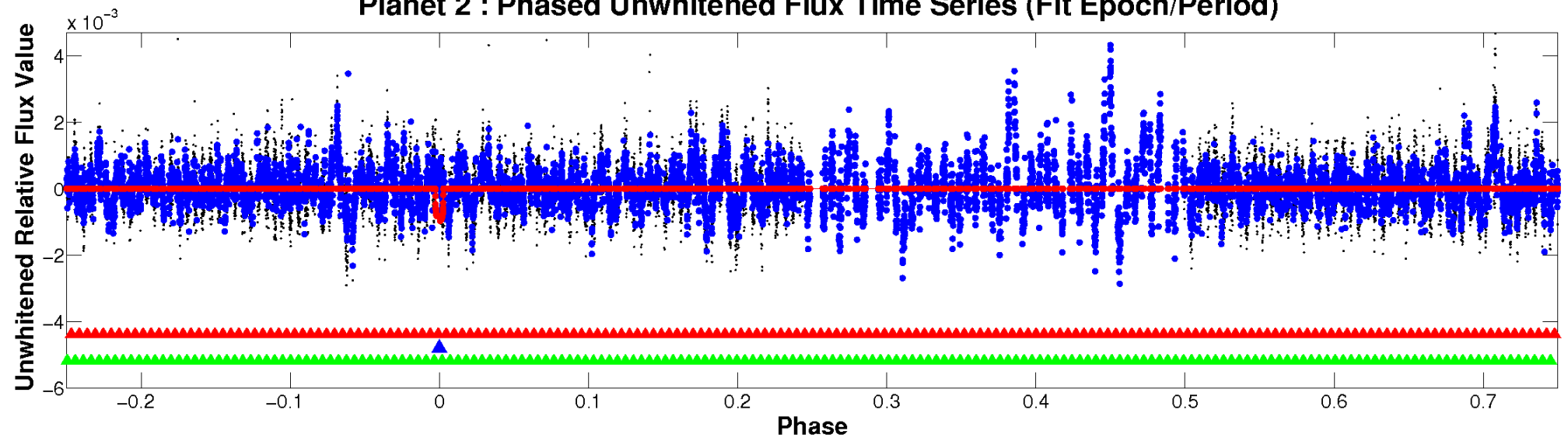
# ALT Odd/Even

TCE 004935813-02

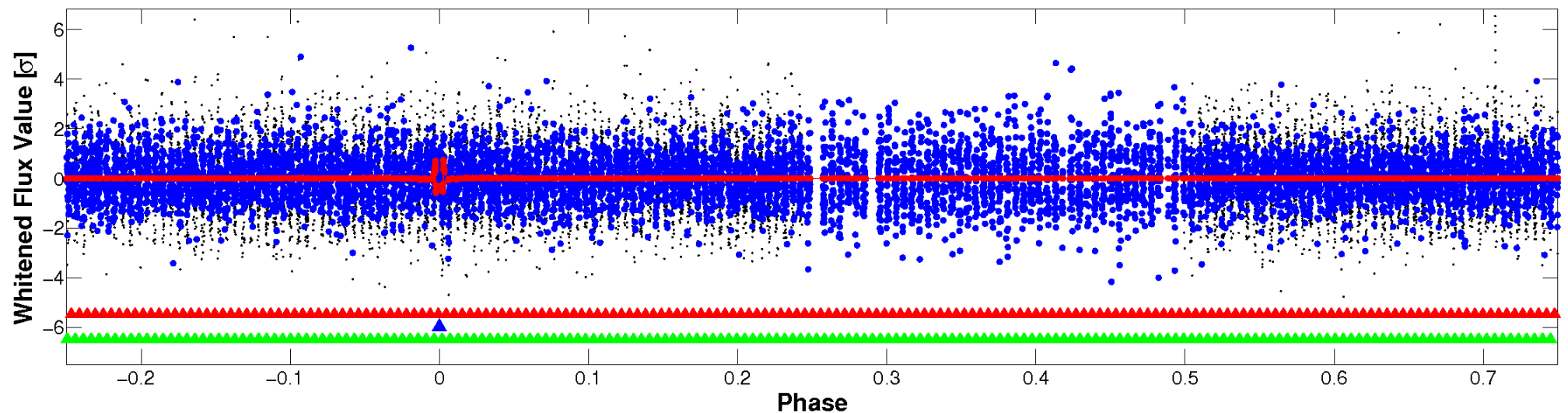


# Non-Whitened Vs. Whitened Light Curve

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

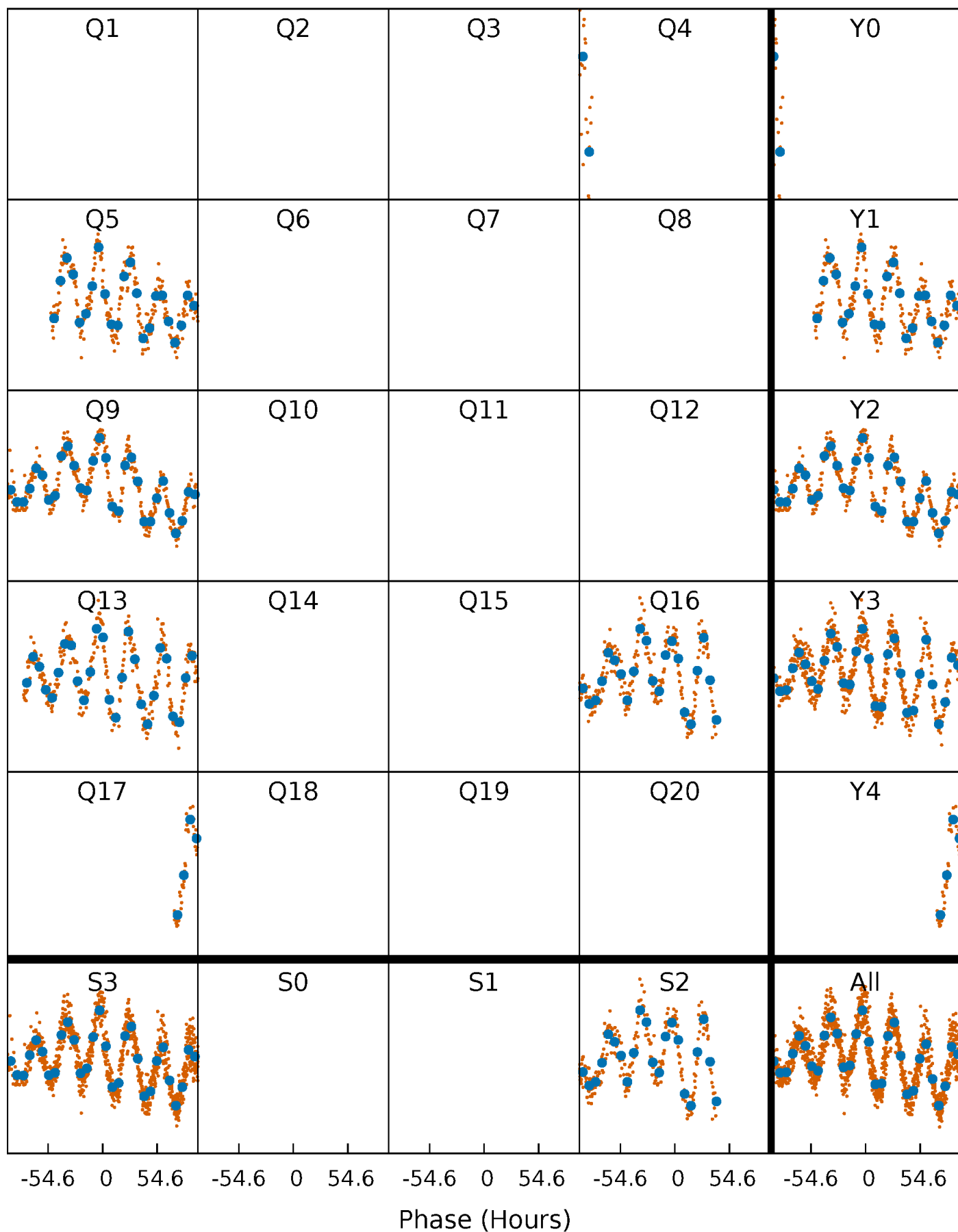


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

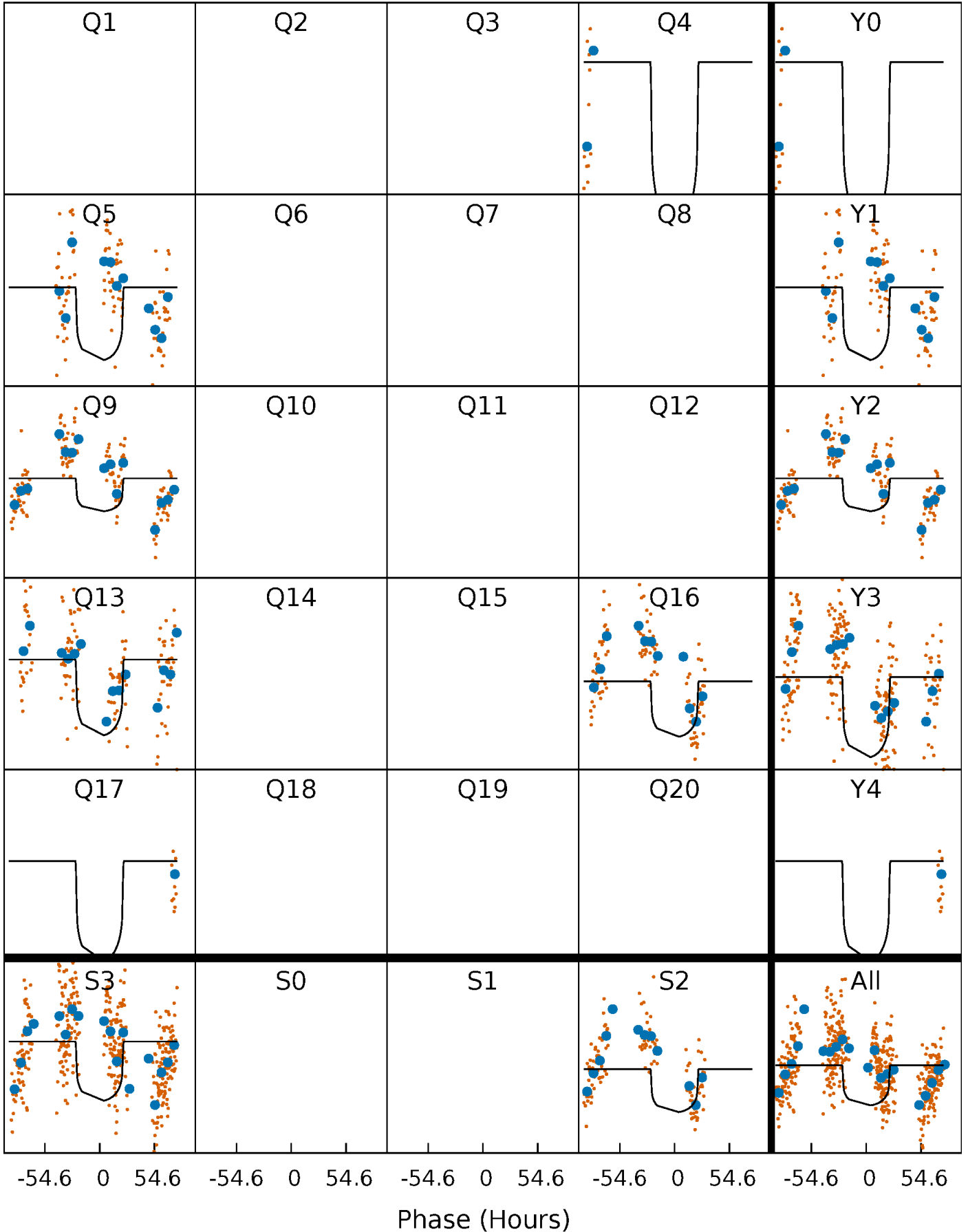
TCE 004935813-02     $P=370.195438$  Days     $T_0=445.664570$  (BKJD)





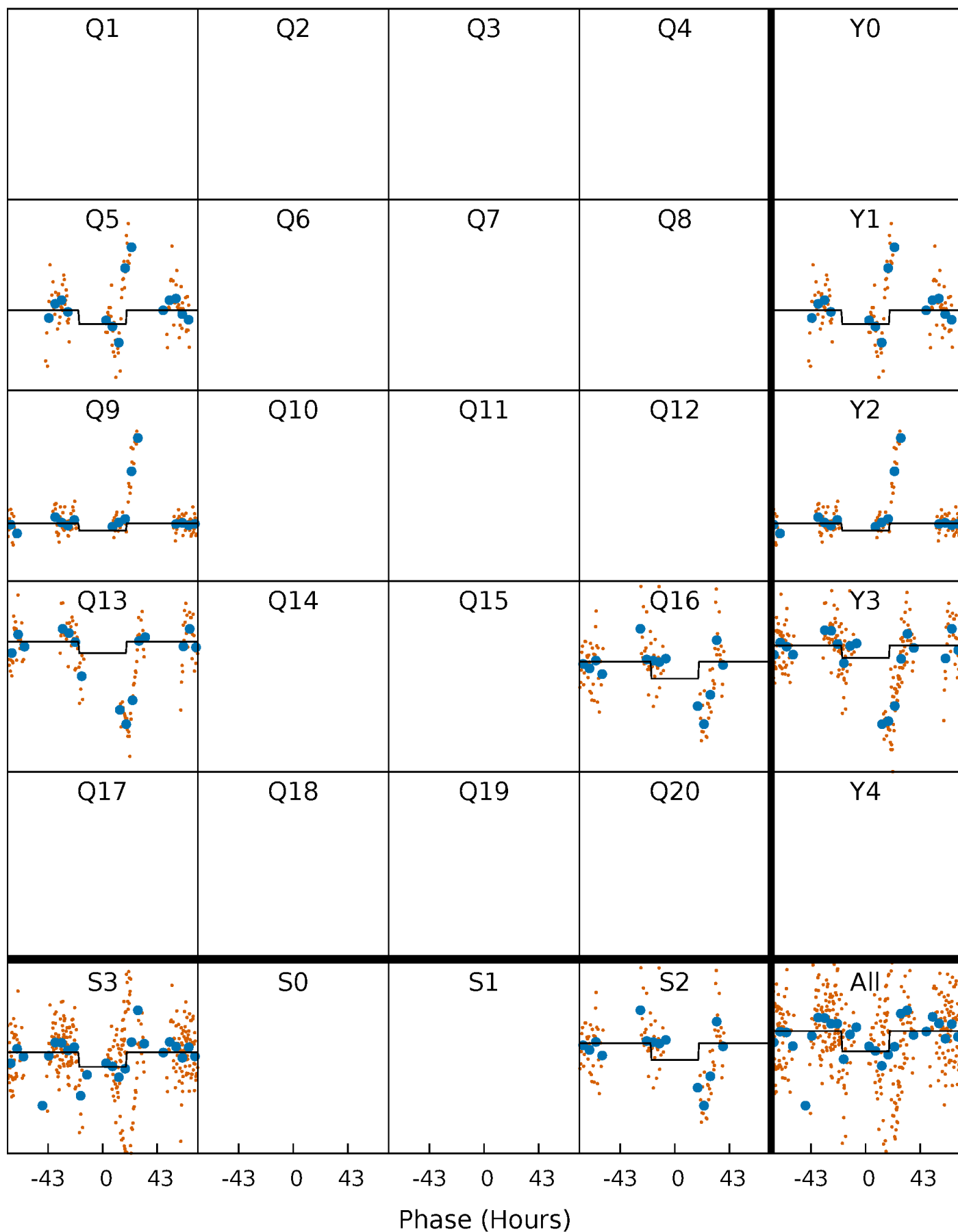
# DV Quarter-Phased Transit Curves

TCE 004935813-02 P=370.195438 Days  $T_0=445.664570$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

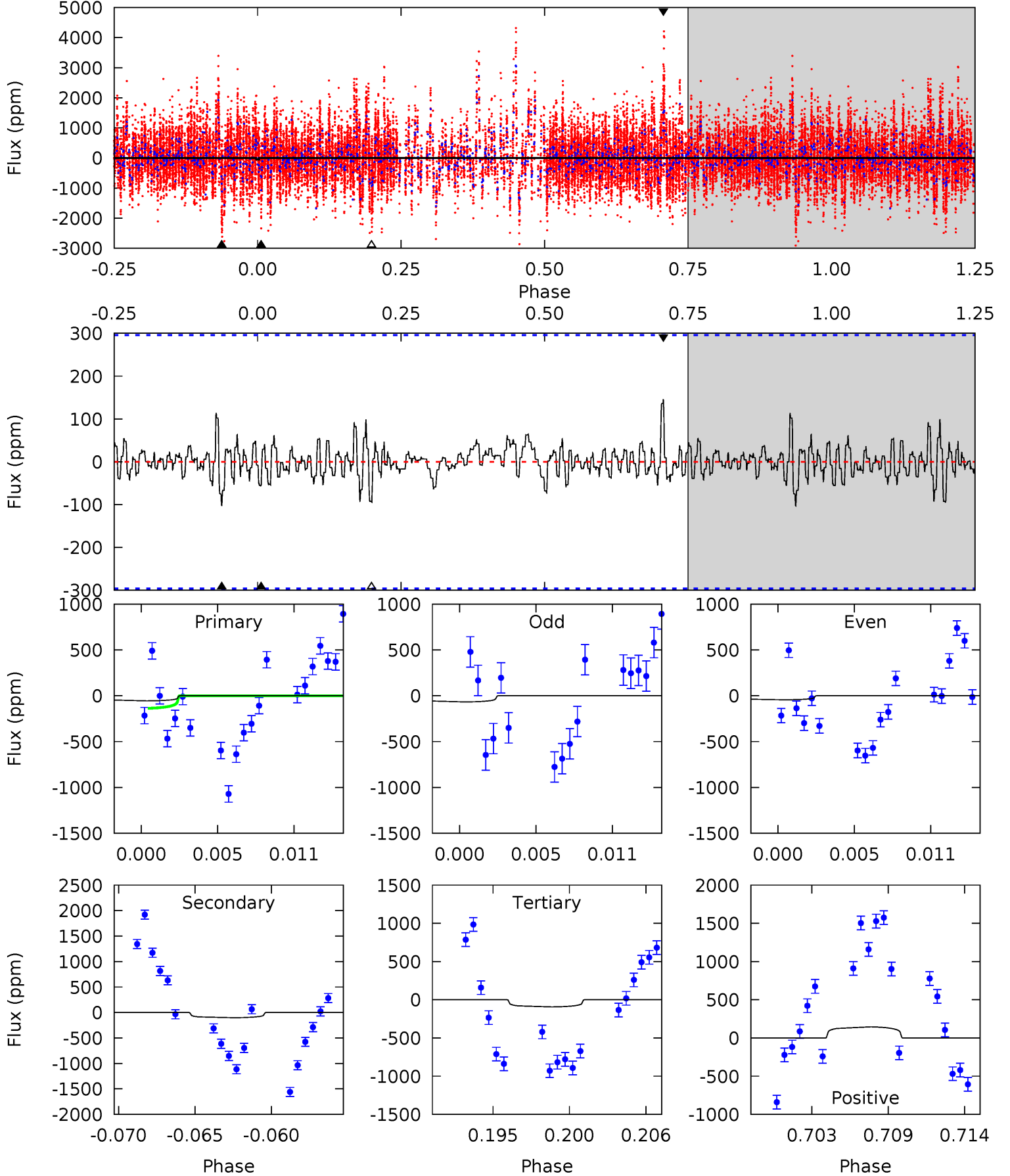
TCE 004935813-02 P=370.058583 Days  $T_0=445.727701$  (BKJD)



# DV Model-Shift Uniqueness Test

004935813-02, P = 370.195438 Days, E = 75.469132 Days

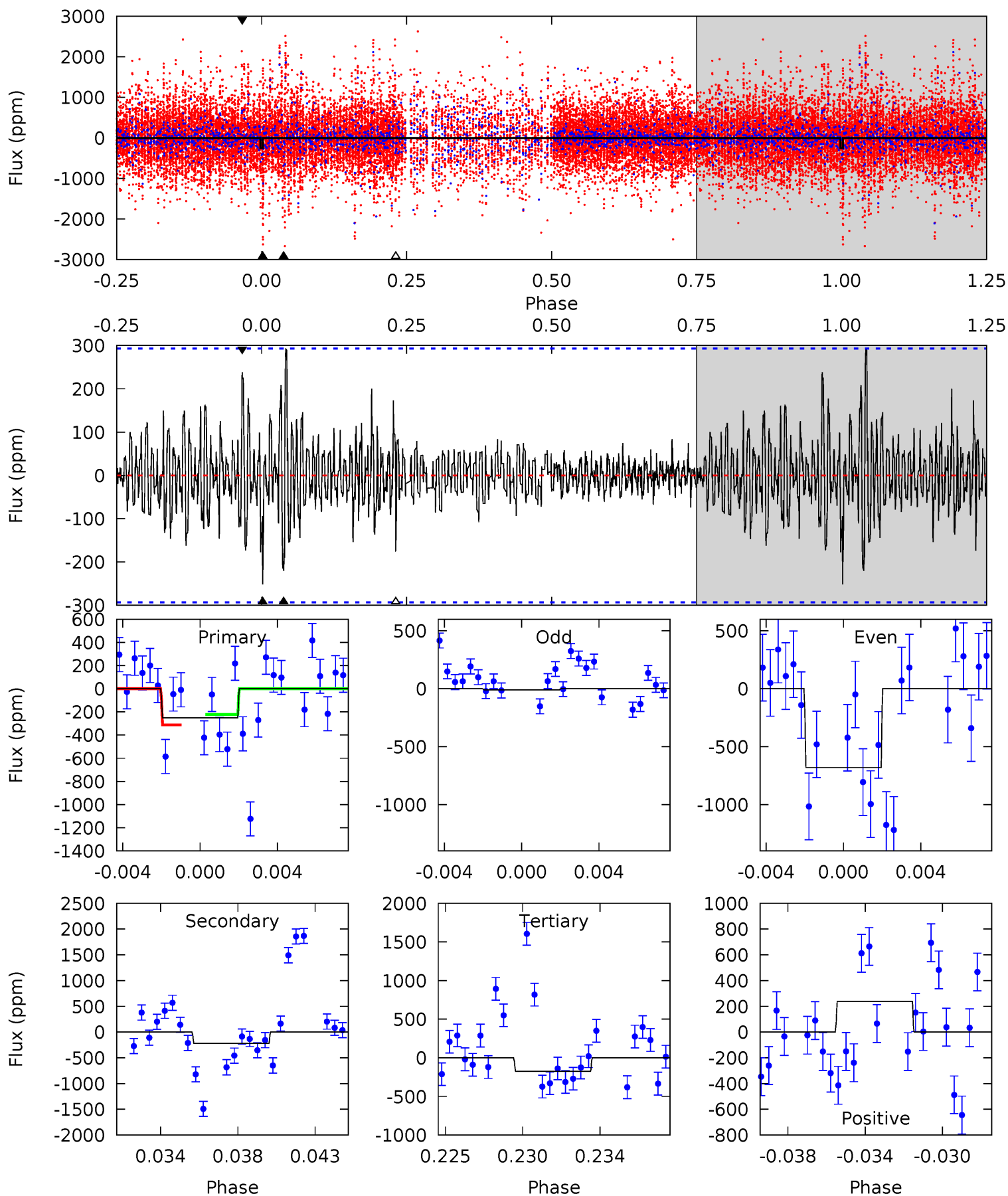
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.97 | 1.79 | 1.63 | 2.53 | 5.14            | 2.78            | 0.54             | -0.66   | -1.57   | 0.16    | -0.75   | 0.20    | 1.02 | 0.59  | 2.85 |



# Alt Model-Shift Uniqueness Test

004935813-02,  $P = 370.058583$  Days,  $E = 75.669118$  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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.46 | 3.90 | 3.08 | 4.22 | 5.19            | 2.86            | 0.93             | 1.38    | 0.24    | 0.82    | -0.31   | 6.05    | 3.75 | 0.54  | 0.74 |



### Stellar Parameters For KIC 004935813

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6092^{+220}_{-275}$ | $4.471^{+0.052}_{-0.195}$ | $-0.060^{+0.250}_{-0.300}$ | $0.998^{+0.291}_{-0.125}$ | $1.074^{+0.148}_{-0.148}$ | $1.522^{+0.407}_{-0.731}$                 |
|        | +4%/-5%              | +1%/-4%                   | +417%/-500%                | +29%/-13%                 | +14%/-14%                 | +27%/-48%                                 |
| Source | PHO1                 | KIC0                      | KIC0                       | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 004935813-02 / KOI

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{max} (K)$     | $T_{obs} (K)$        | $A_{obs}$                 |
|---------|---------------|------------------------|-------------------|----------------------|---------------------------|
| DV      | $-103 \pm 58$ | $3.28^{+0.67}_{-0.61}$ | $378^{+27}_{-22}$ | $3902^{+469}_{-517}$ | $5255^{+4357}_{-3207}$    |
| Alt.    | $-220 \pm 56$ | $2.03^{+0.55}_{-0.54}$ | $376^{+28}_{-22}$ | $5566^{+918}_{-626}$ | $31127^{+28764}_{-13764}$ |

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



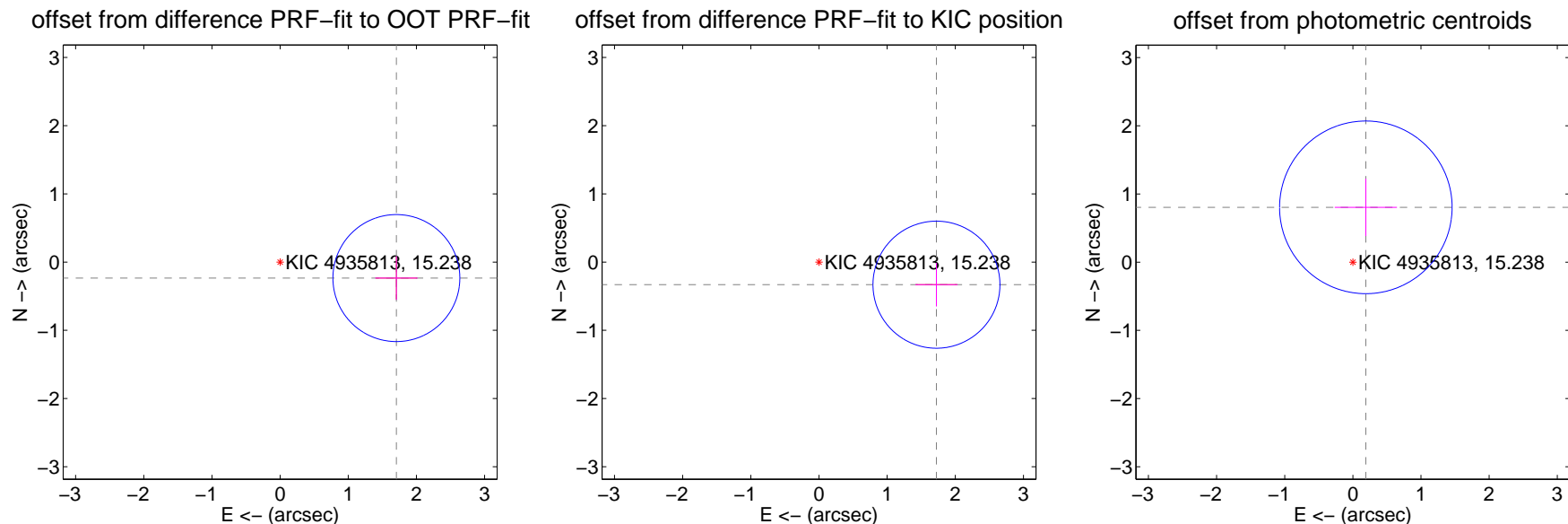
## DV Centroid Data

Supplemental centroid analysis for 004935813-02. Kepler magnitude: 15.24. Transit SNR 6.88

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $1.721 \pm 0.310$  | 5.55                | $-1.705 \pm 0.310$ | $-0.234 \pm 0.319$ |
| PRF-fit source offset from KIC position | $1.755 \pm 0.310$  | 5.65                | $-1.723 \pm 0.310$ | $-0.331 \pm 0.319$ |
| photometric centroid source offset      | $0.83 \pm 0.42$    | 1.96                | $-0.19 \pm 0.46$   | $0.80 \pm 0.42$    |



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.

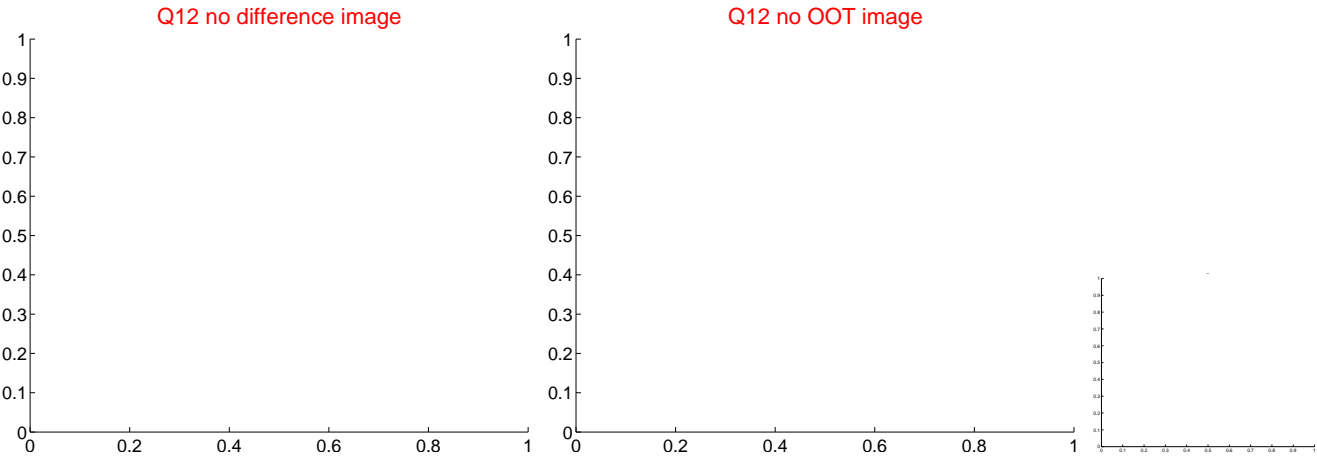
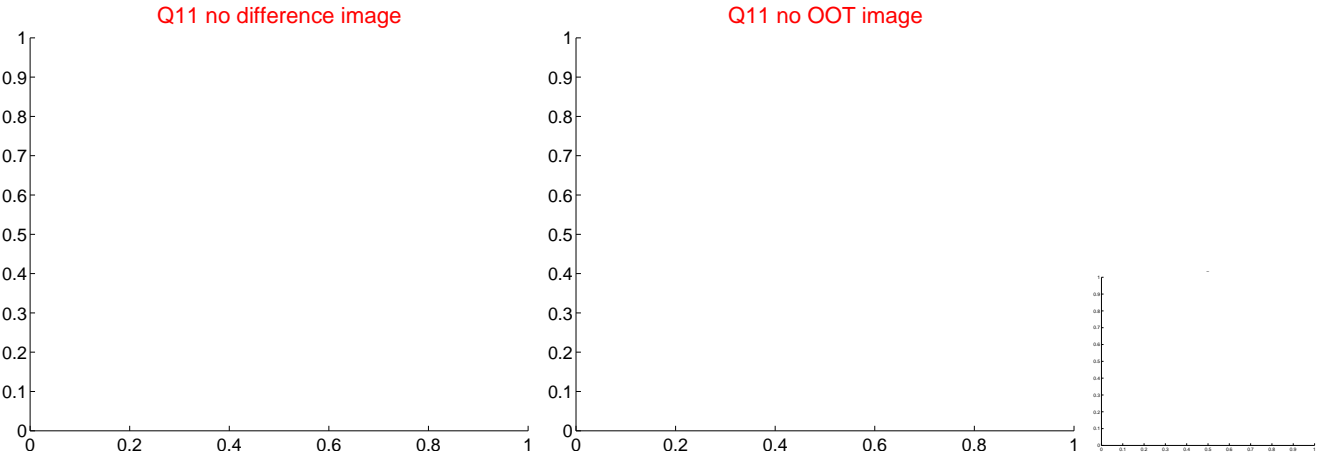
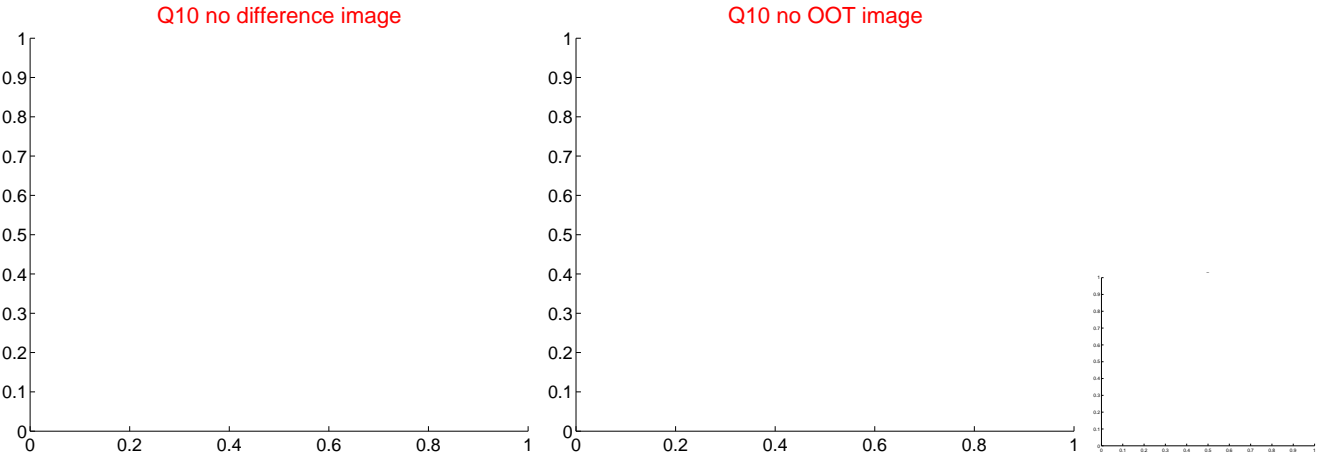
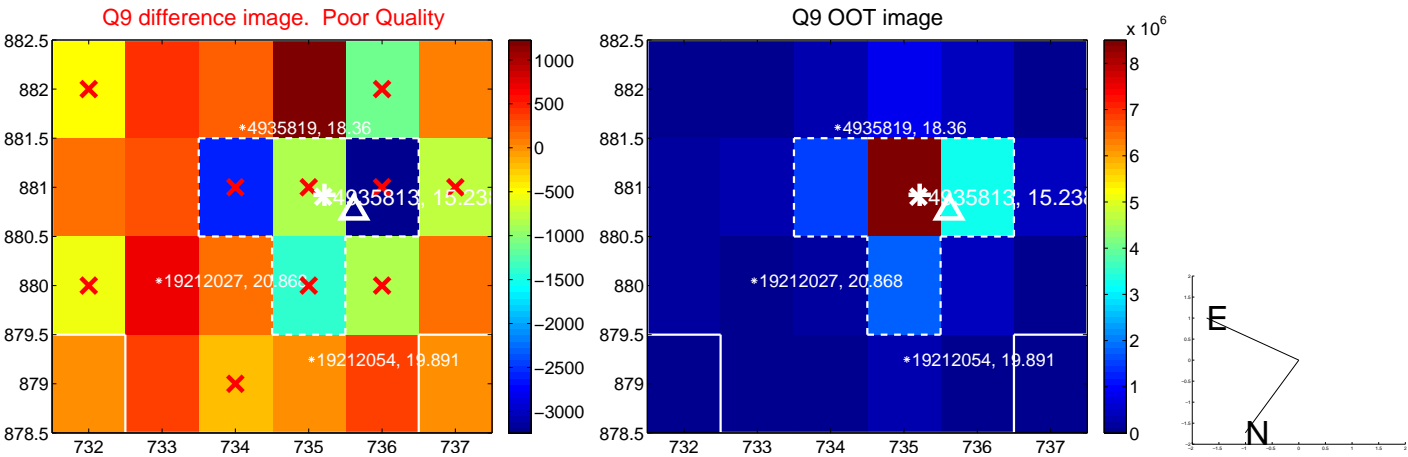
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

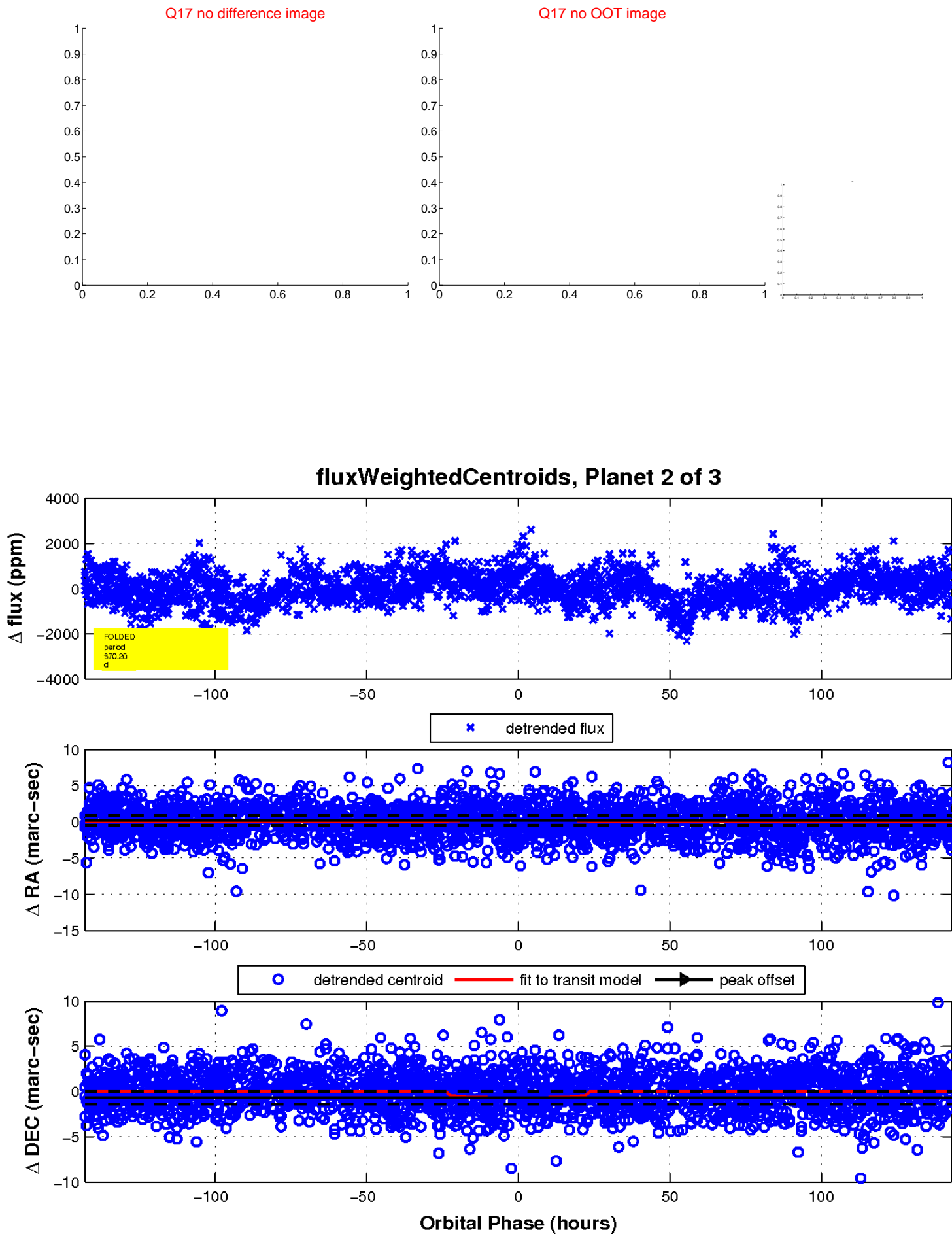


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



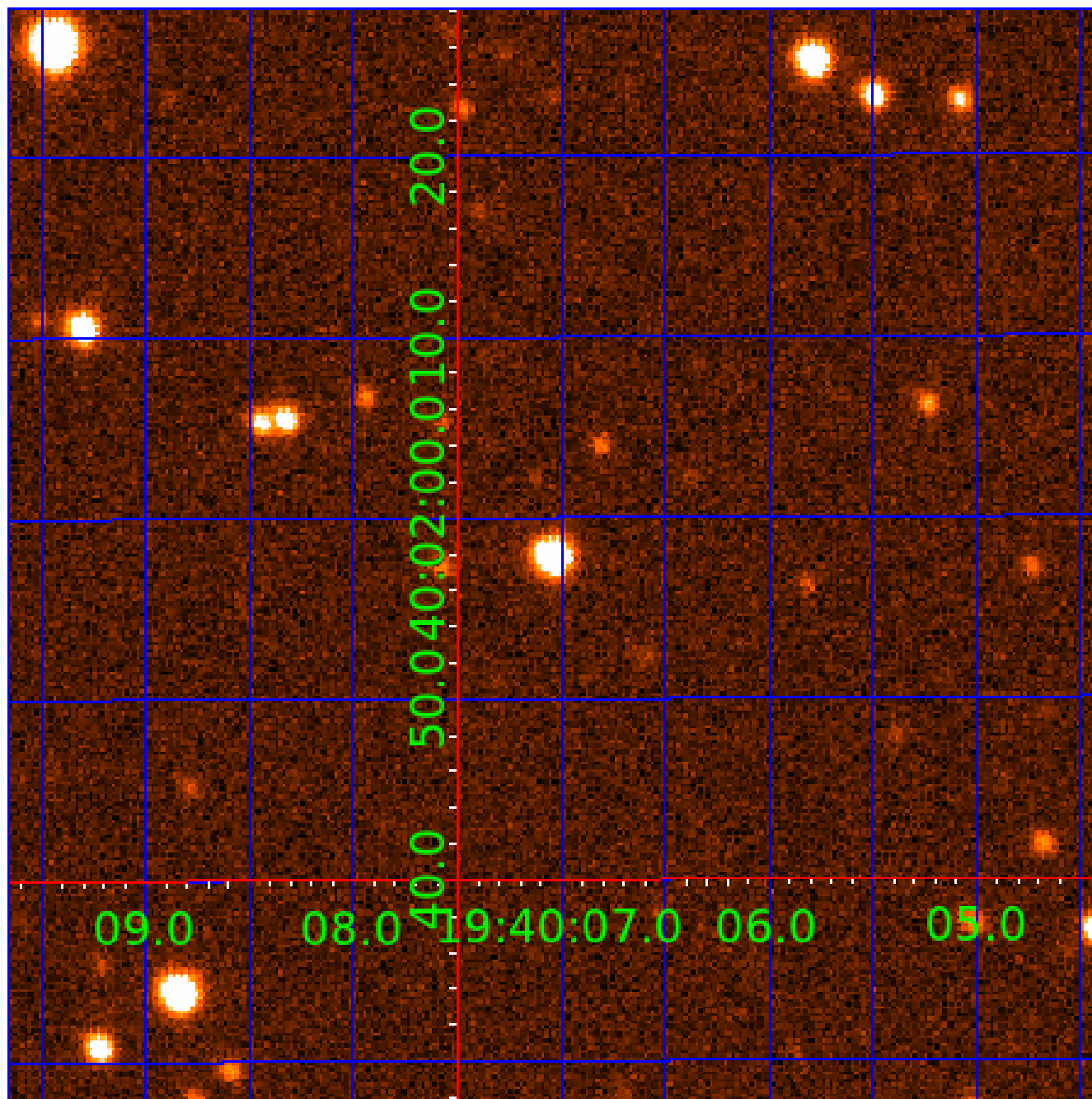


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004935813

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004935813-01 | OBS      | No   | 1.980199      | 132.365633   | 135.0       | 9.429            | 9.2  | 9.6  | 1.00                        | 6092            | 1.57                   | 1229.54                |
| 004935813-02 | OBS      | No   | 370.195438    | 445.664570   | 977.5       | 47.790           | 12.1 | 6.9  | 1.00                        | 6092            | 3.12                   | 1.15                   |
| 004935813-03 | OBS      | No   | 1.980199      | 133.338137   | 138.3       | 9.570            | 11.4 | 12.7 | 1.00                        | 6092            | 2.39                   | 1229.54                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 004935813-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT  |
| 004935813-02 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST |
| 004935813-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS   |

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

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

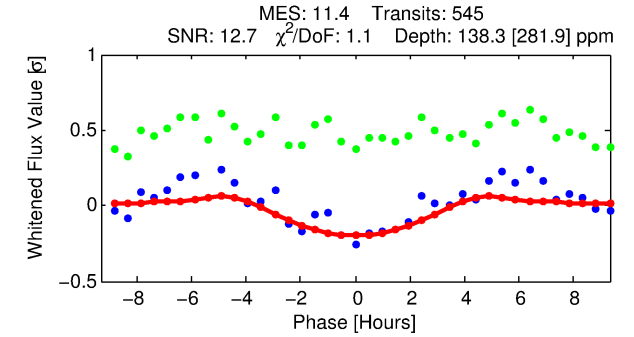
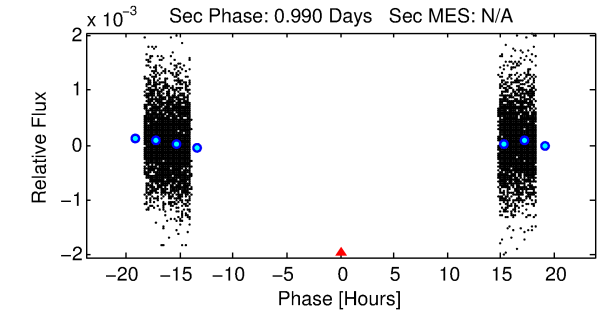
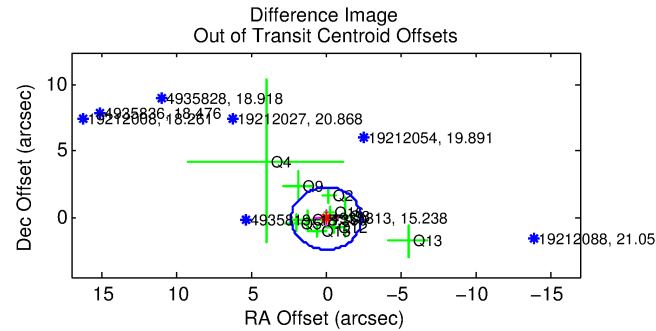
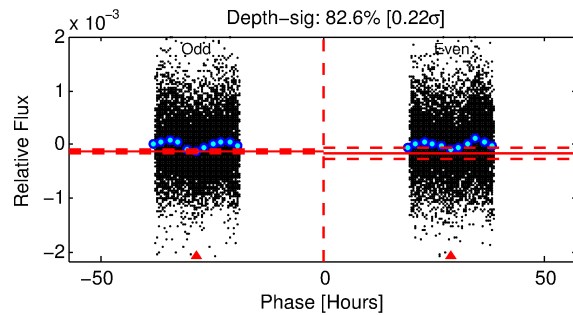
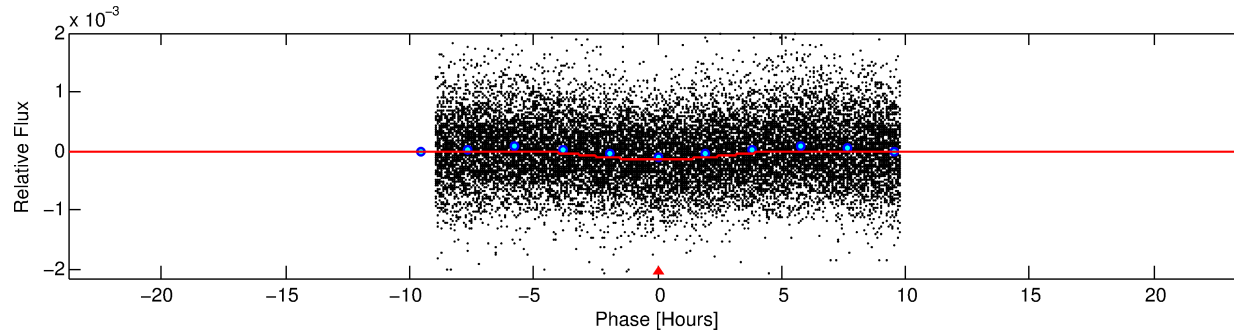
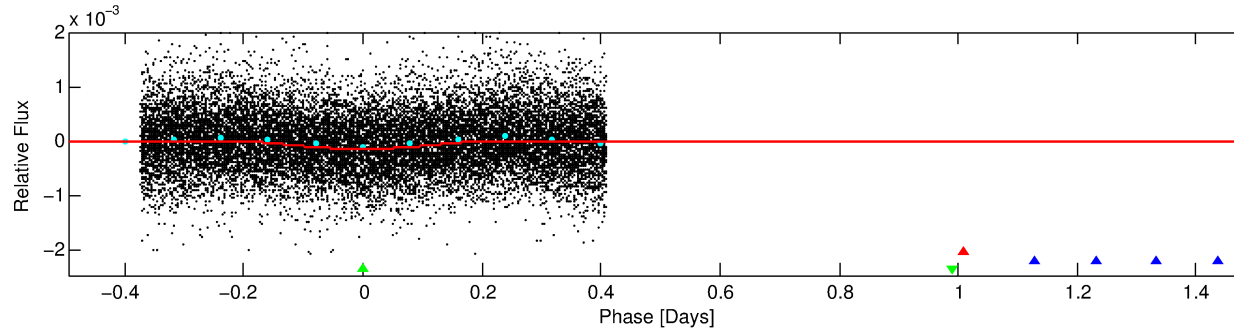
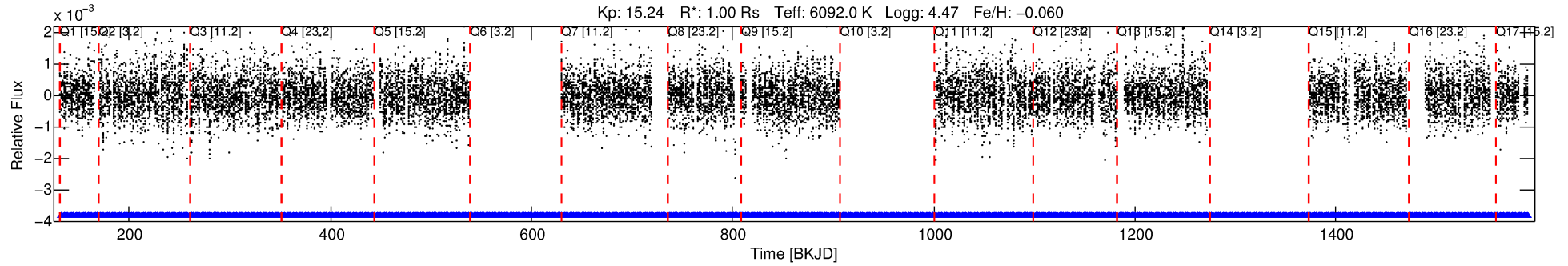
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004935813-03

No Significant Match Found

# DV One-Page Summary

KIC: 4935813 Candidate: 3 of 3 Period: 1.980 d



## DV Fit Results:

Period = 1.98020 [0.00003] d  
Epoch = 133.3381 [0.0129] BKJD  
Rp/R\* = 0.0220 [0.0400]  
a/R\* = 1.06 [0.01]  
b = 1.00 [0.03]  
Seff = 1229.54 [491.80]  
Teq = 1510 [151] K  
Rp = 2.39 [4.41] Re  
a = 0.0316 [0.0078] AU

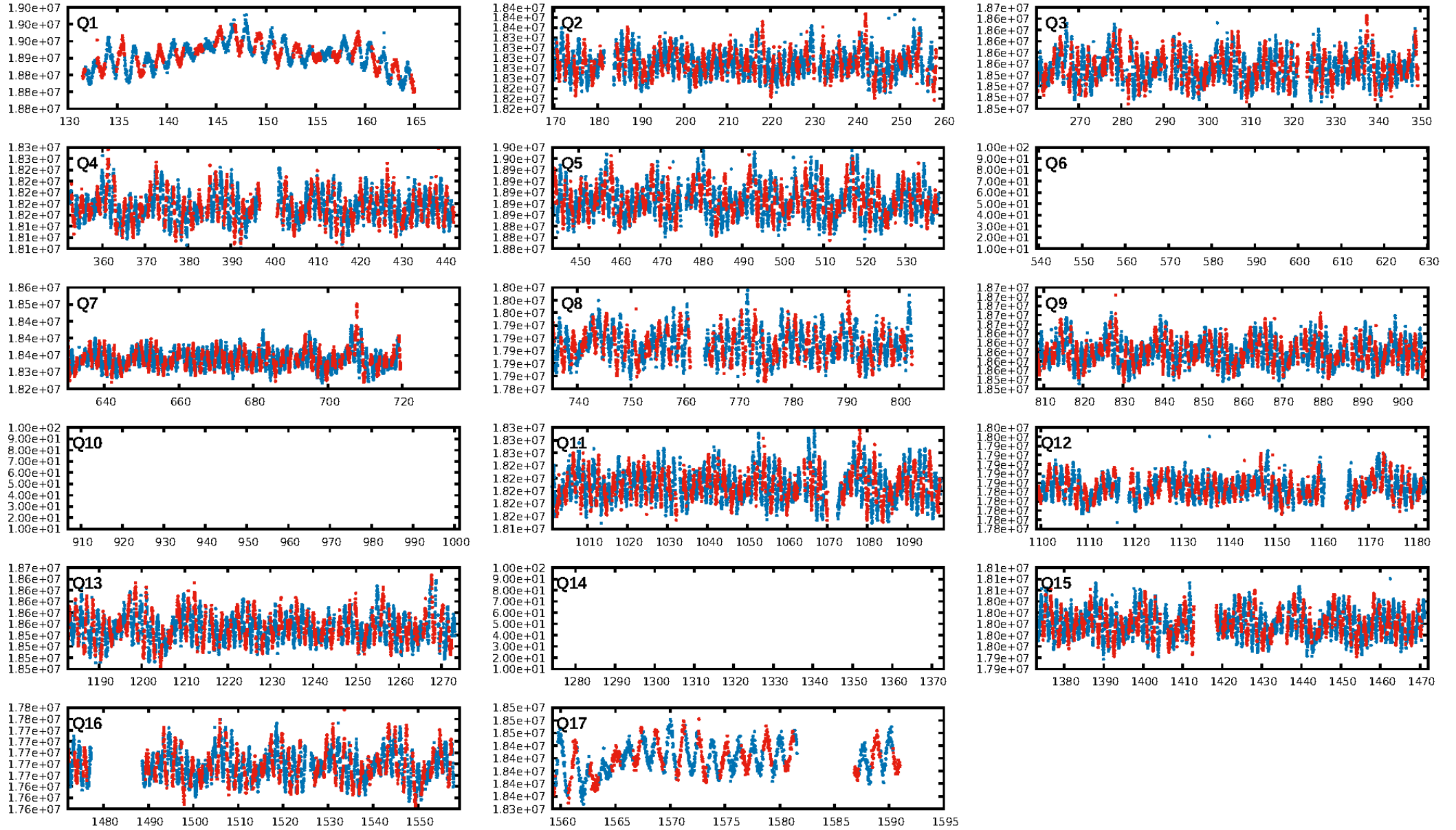
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [181.32σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [512/512]  
GhostDiagnostic-chr: 0.7681  
Centroid-sig: 4.2%  
Centroid-so: 1.166 arcsec [1.56σ]  
OotOffset-rm: 0.092 arcsec [0.12σ]  
KicOffset-rm: 0.129 arcsec [0.19σ]  
OotOffset-st: 1/1/4/4 [10]  
KicOffset-st: 1/1/4/4 [10]  
DiffImageQuality-fgm: 0.30 [3/10]  
DiffImageOverlap-fno: 1.00 [14/14]

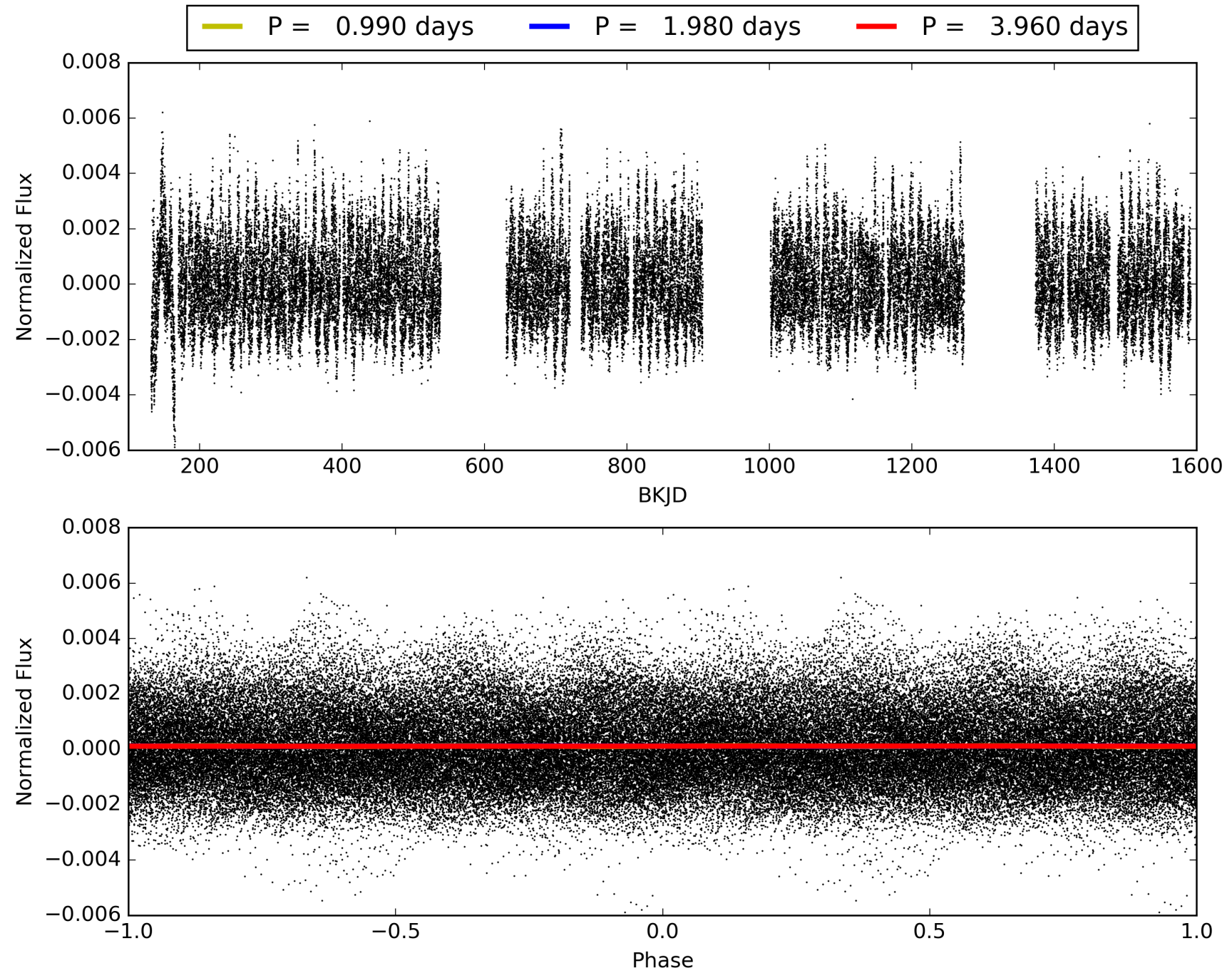
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:13:06 Z

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

# TCE 004935813-03, PDC Light Curves



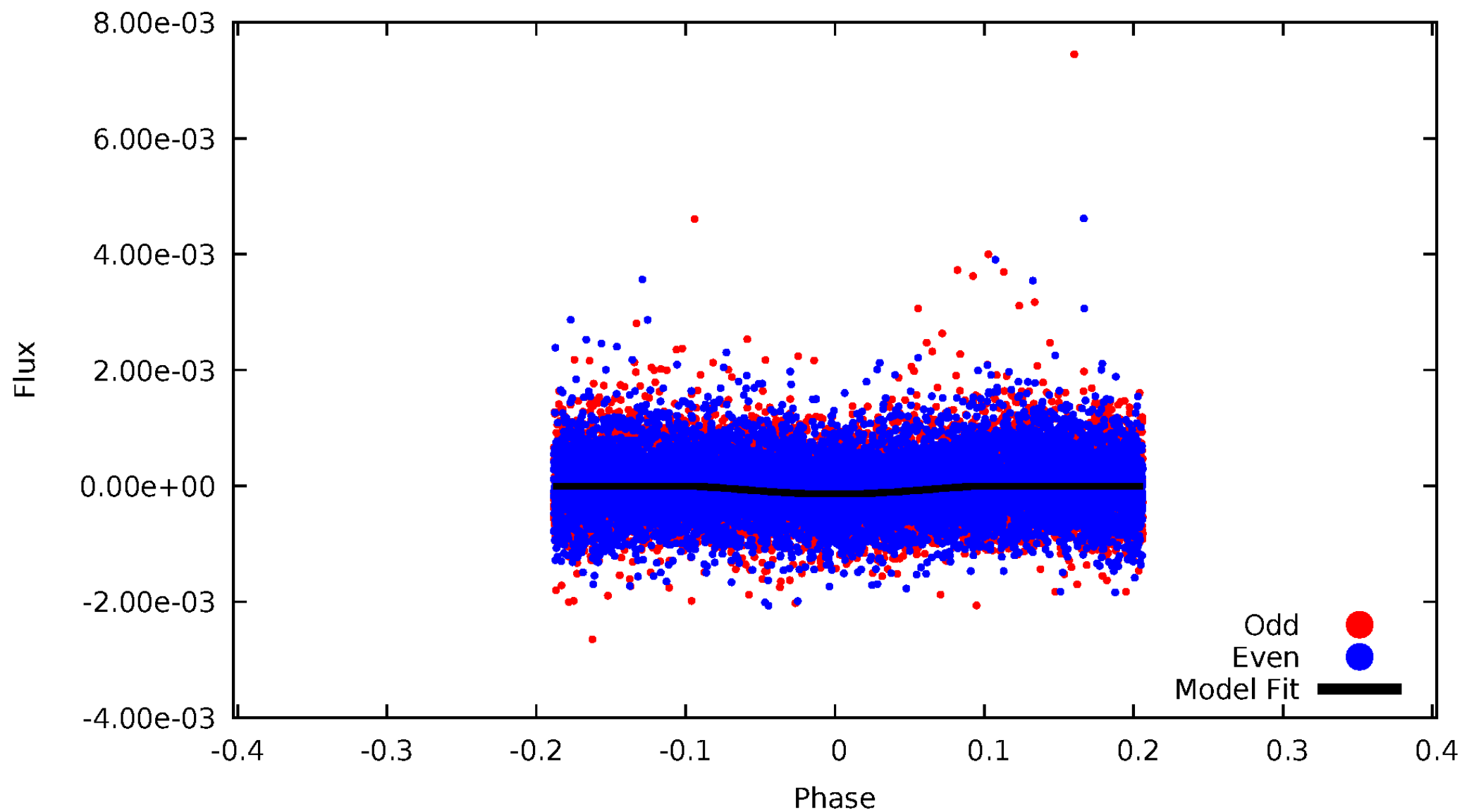
# TCE 004935813-03





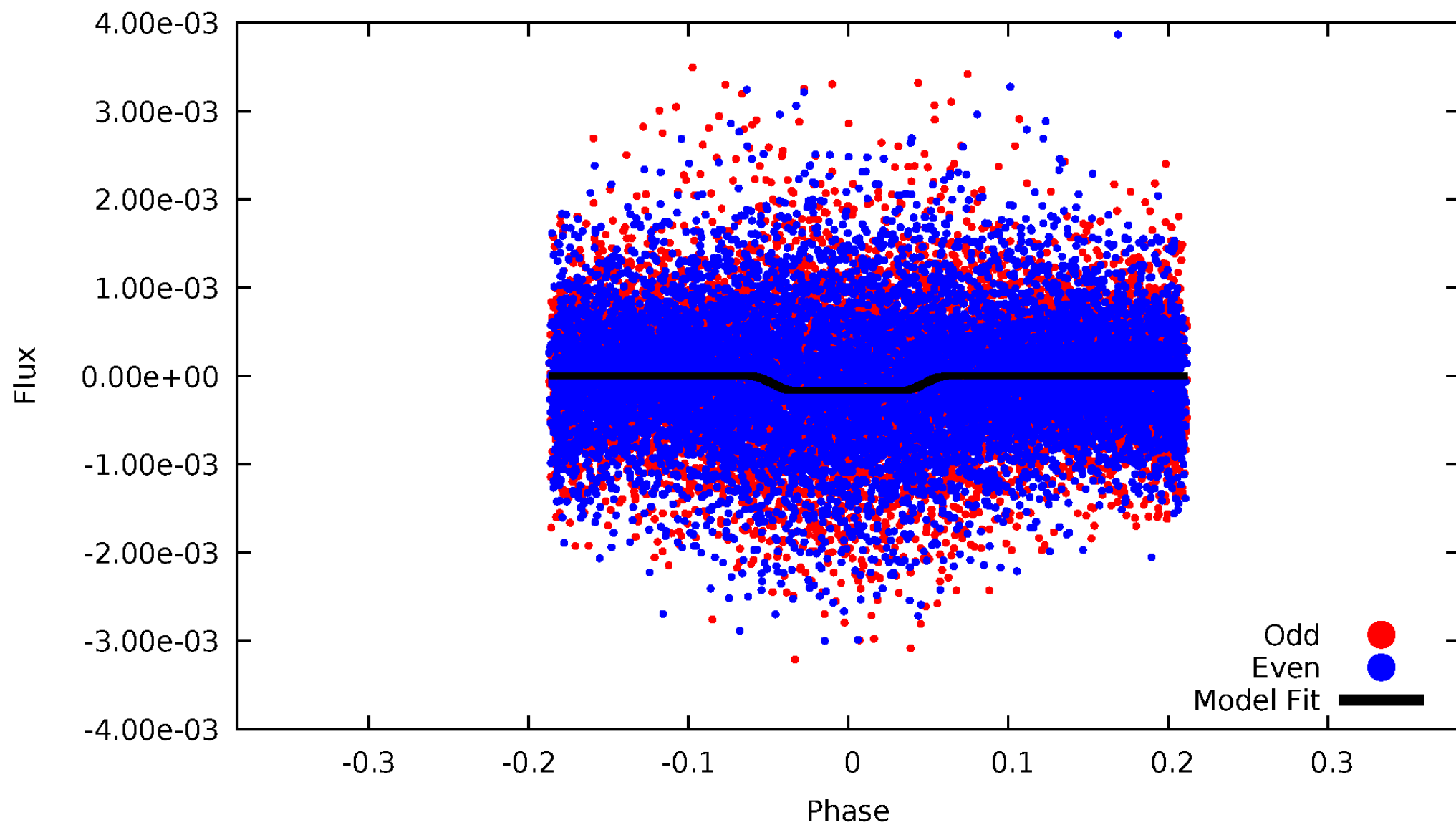
# DV Odd/Even

TCE 004935813-03



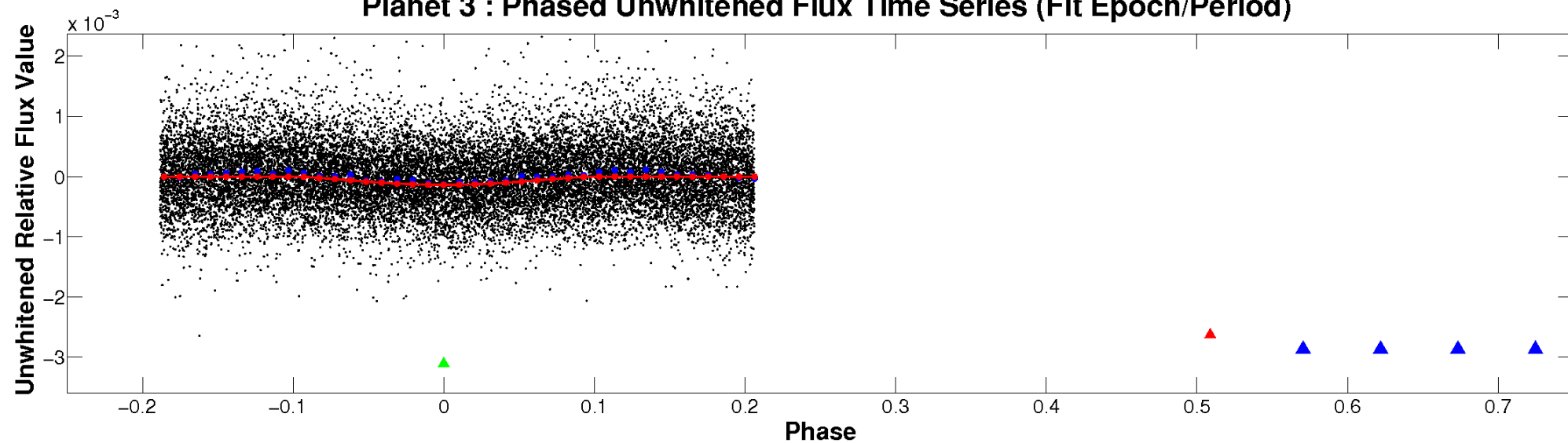
# ALT Odd/Even

TCE 004935813-03

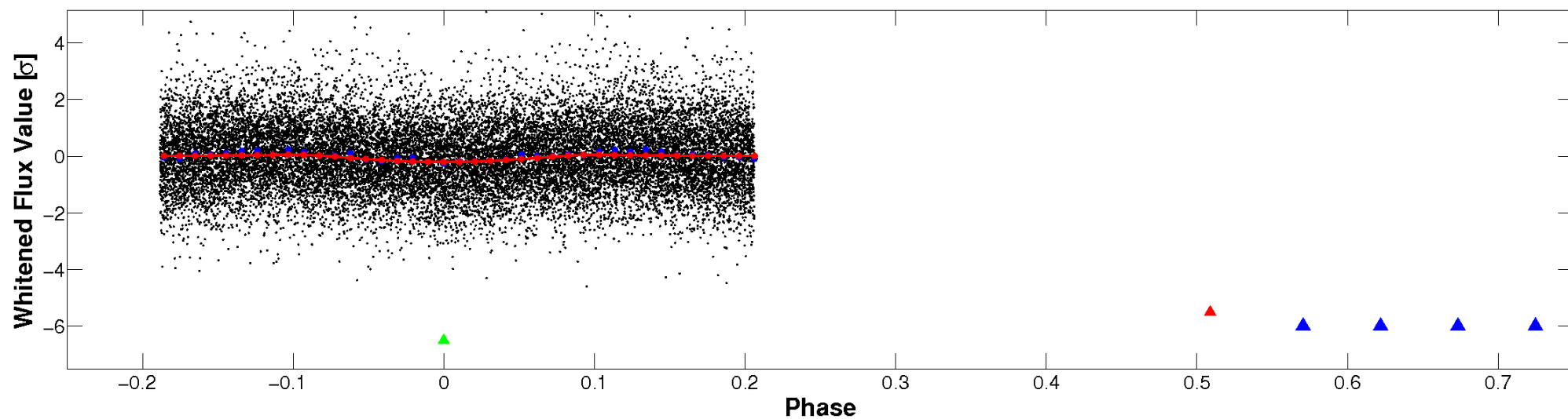


# Non-Whitened Vs. Whitened Light Curve

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

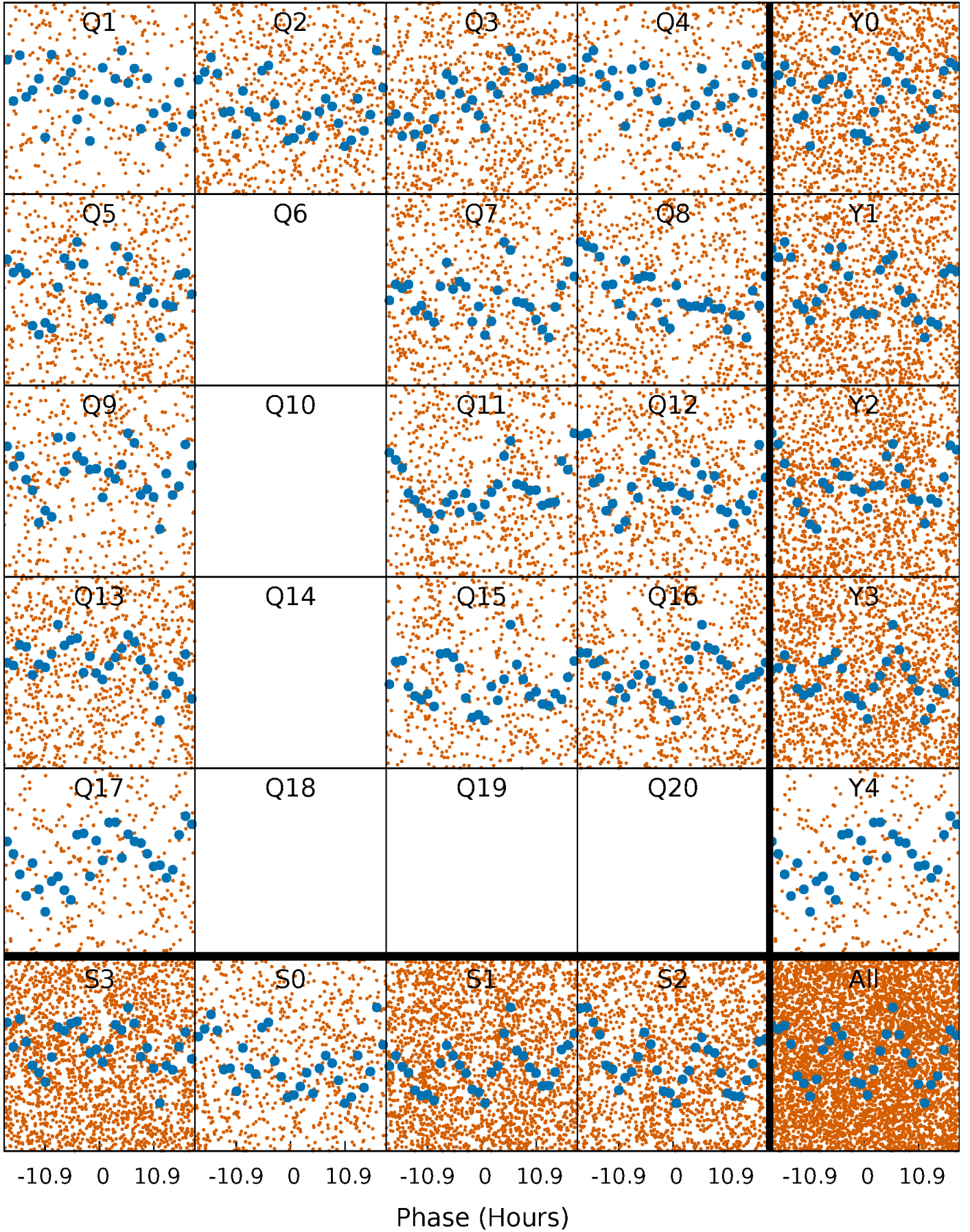


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



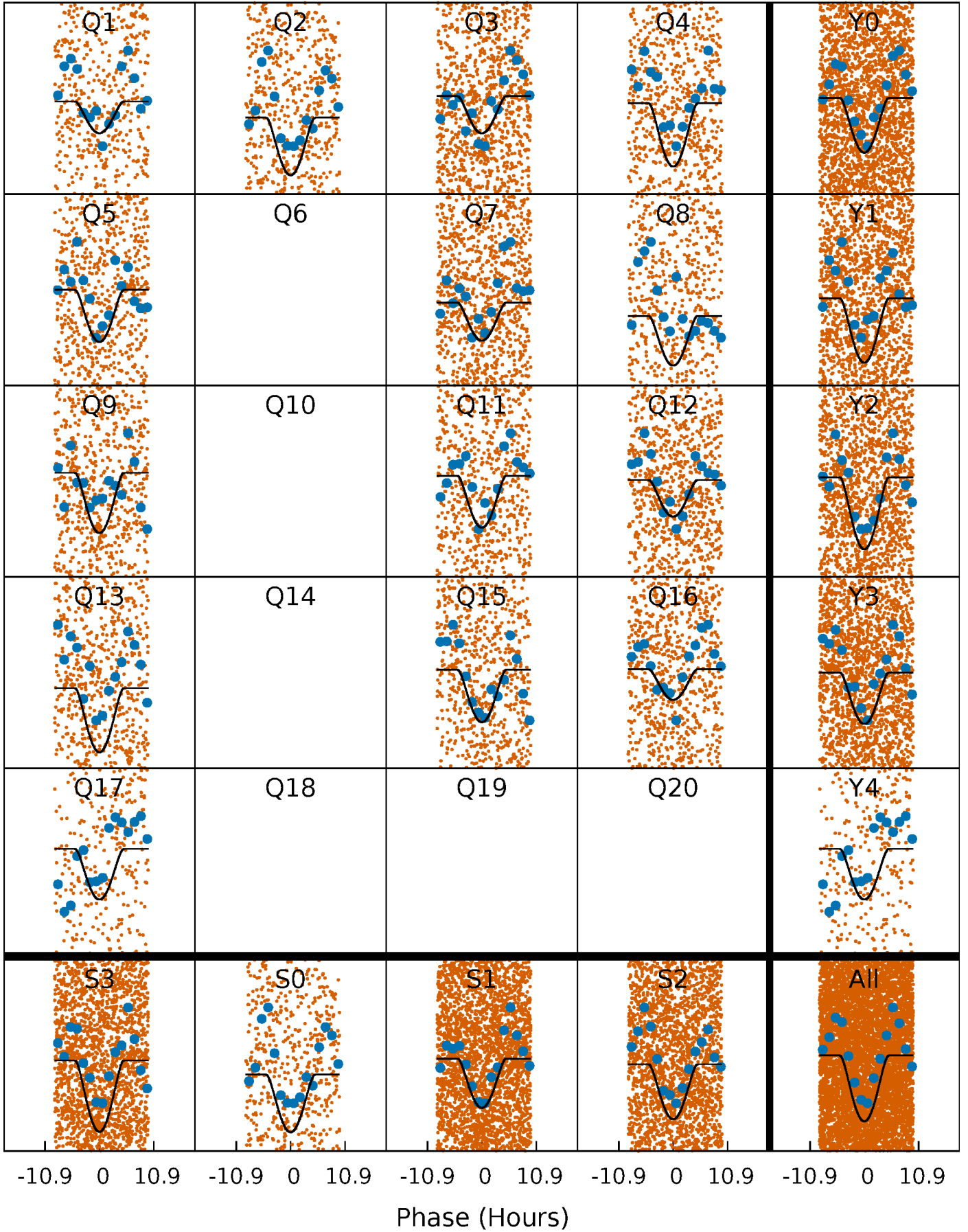
# PDC Quarter-Phased Transit Curves

TCE 004935813-03 P= 1.980199 Days  $T_0=133.338137$  (BKJD)



# DV Quarter-Phased Transit Curves

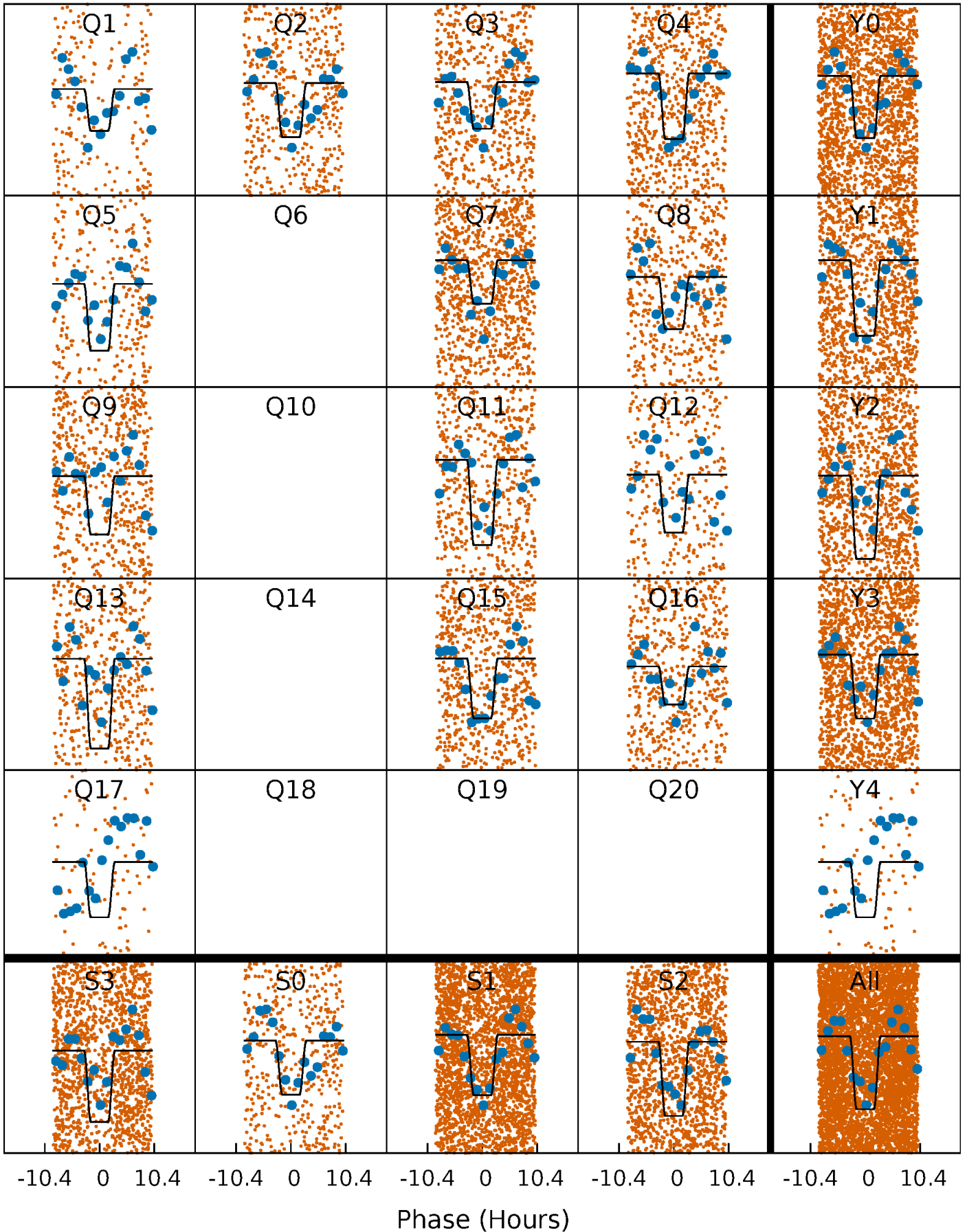
TCE 004935813-03   P= 1.980199 Days    $T_0=133.338137$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

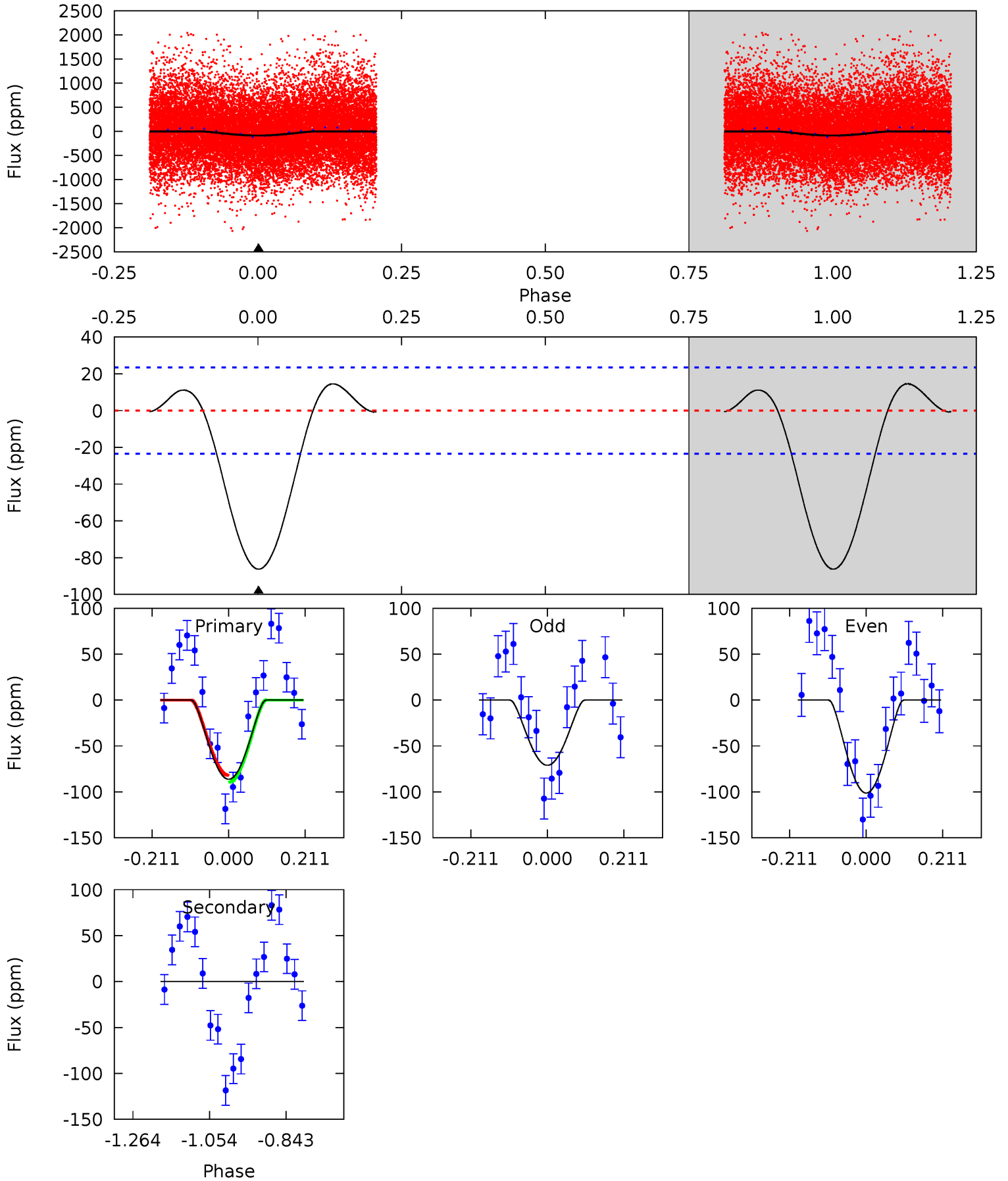
TCE 004935813-03   P= 1.980183 Days    $T_0=133.336676$  (BKJD)



# DV Model-Shift Uniqueness Test

004935813-03, P = 1.980199 Days, E = 131.357938 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  |
|------|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.2 | 0   | 0   | 0   | 4.41            | 1.25            | 0.20             | 16.2    | 16.2    | 0       | 0       | 2.85    | 1.14 | 0.14  | 0.75 |

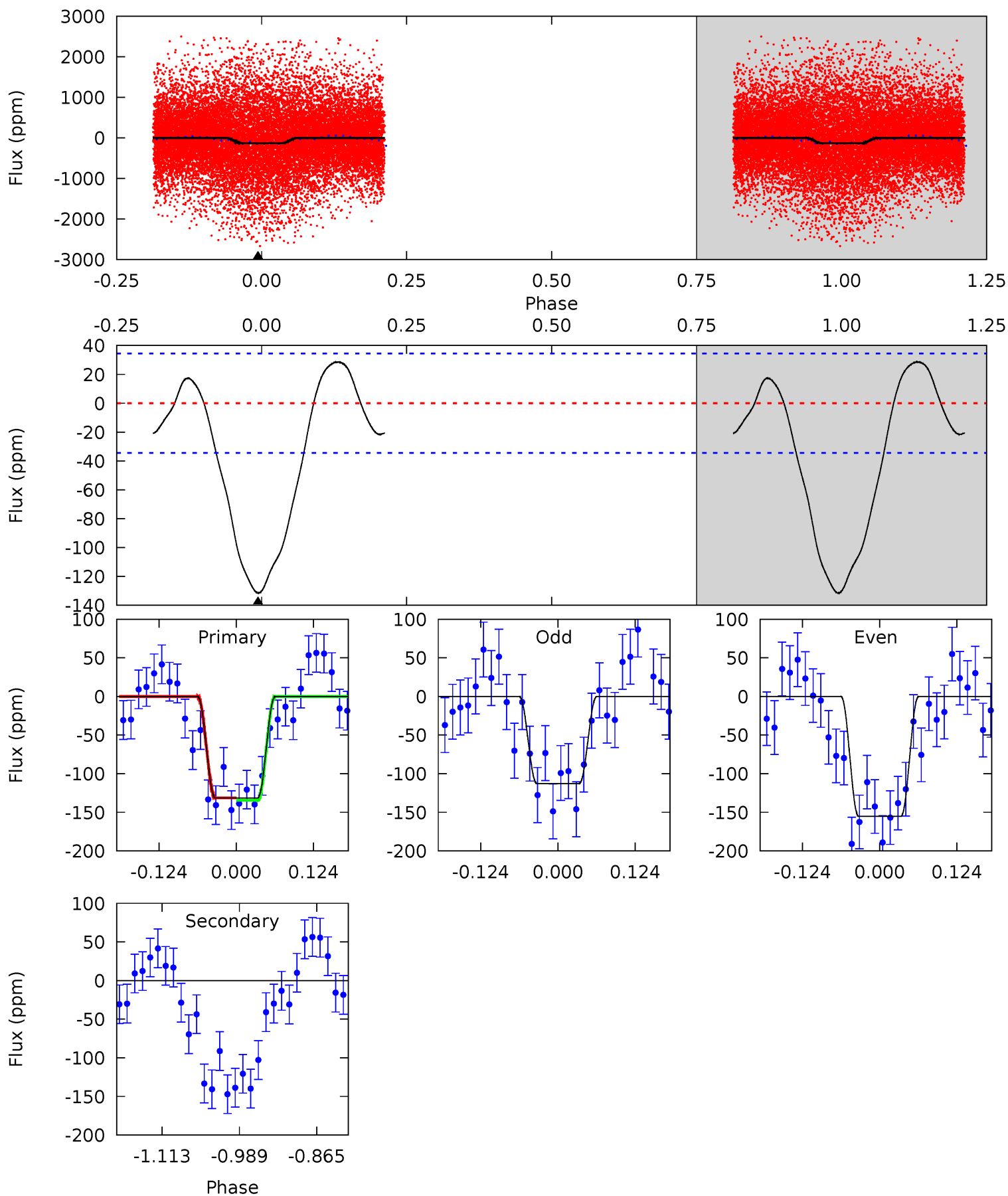




# Alt Model-Shift Uniqueness Test

004935813-03, P = 1.980183 Days, E = 131.356493 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  |
|------|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.3 | 0   | 0   | 0   | 4.52            | 1.54            | 2.32             | 17.3    | 17.3    | 0       | 0       | 2.80    | 0.88 | 0.18  | 0.14 |



### Stellar Parameters For KIC 004935813

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6092^{+220}_{-275}$ | $4.471^{+0.052}_{-0.195}$ | $-0.060^{+0.250}_{-0.300}$ | $0.998^{+0.291}_{-0.125}$ | $1.074^{+0.148}_{-0.148}$ | $1.522^{+0.407}_{-0.731}$                 |
|        | +4%/-5%              | +1%/-4%                   | +417%/-500%                | +29%/-13%                 | +14%/-14%                 | +27%/-48%                                 |
| Source | PHO1                 | KIC0                      | KIC0                       | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 004935813-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{max} (K)$        | $T_{obs} (K)$          | $A_{obs}$                  |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV      | $0 \pm 5$   | $4.04^{+4.22}_{-2.88}$ | $2162^{+144}_{-120}$ | $-2592^{+957}_{-314}$  | $0.002^{+0.295}_{-0.355}$  |
| Alt.    | $0 \pm 8$   | $3.73^{+3.66}_{-2.64}$ | $2167^{+153}_{-126}$ | $-2605^{+5027}_{-370}$ | $-0.007^{+0.510}_{-0.474}$ |

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

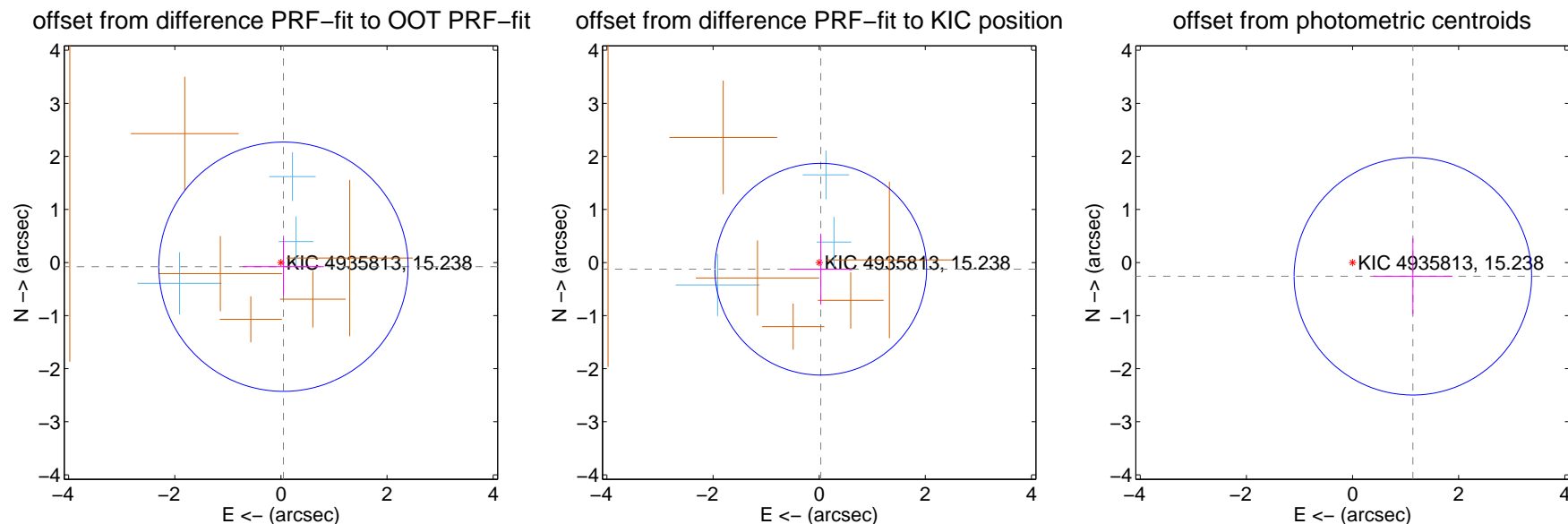
## DV Centroid Data

Supplemental centroid analysis for 004935813-03. Kepler magnitude: 15.24. Transit SNR 12.67

There are 3 quarters with good PRF difference image offsets

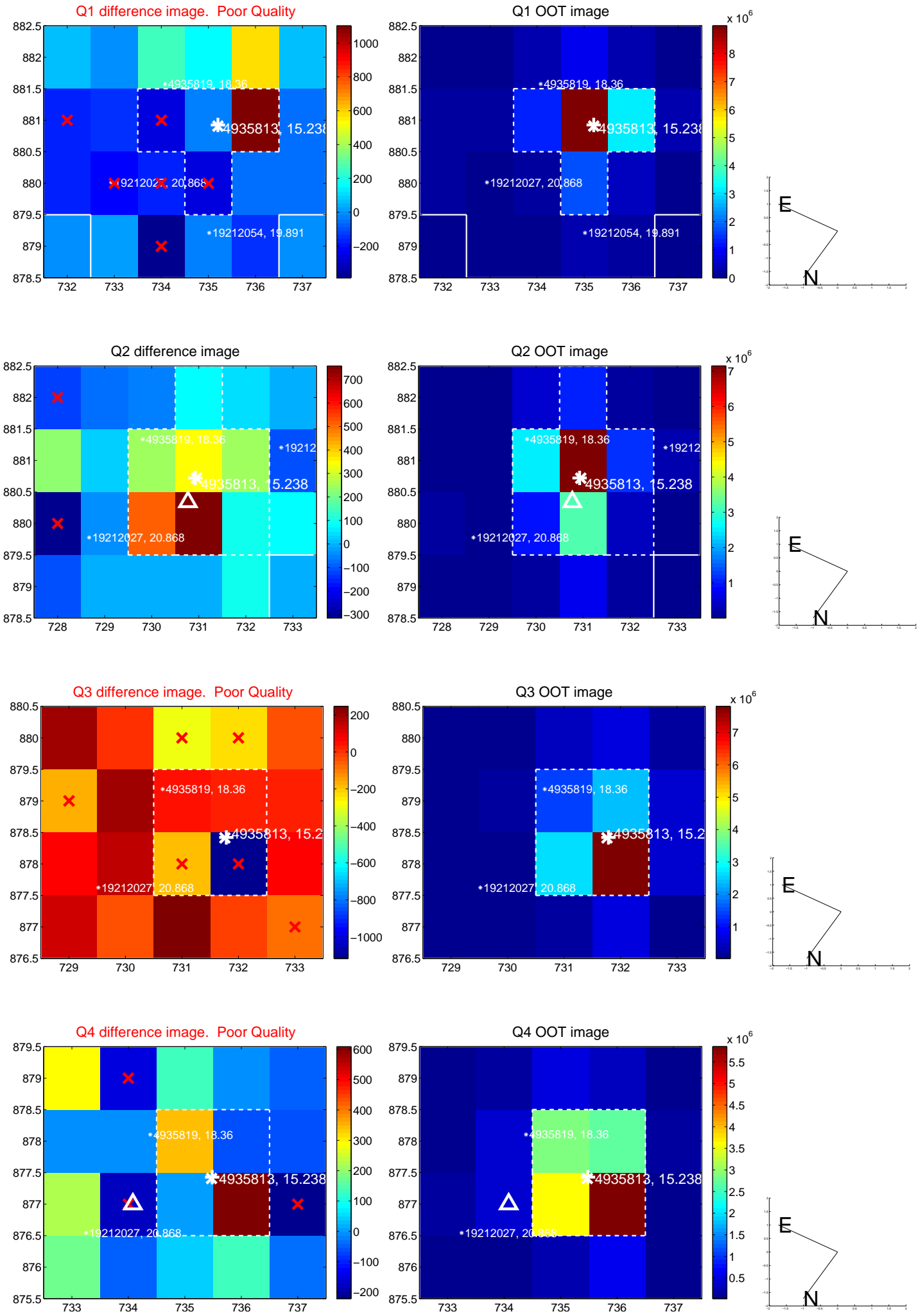
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.092 \pm 0.783$  | 0.12                | $-0.048 \pm 0.763$ | $-0.079 \pm 0.544$ |
| PRF-fit source offset from KIC position | $0.129 \pm 0.665$  | 0.19                | $-0.029 \pm 0.586$ | $-0.126 \pm 0.669$ |
| photometric centroid source offset      | $1.17 \pm 0.75$    | 1.56                | $-1.14 \pm 0.75$   | $-0.26 \pm 0.72$   |

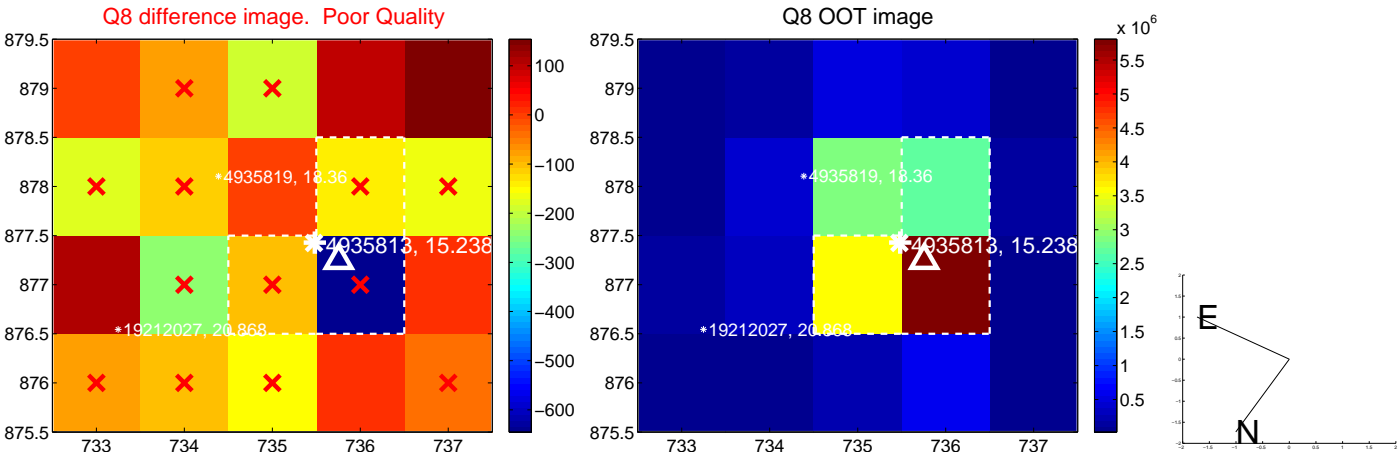
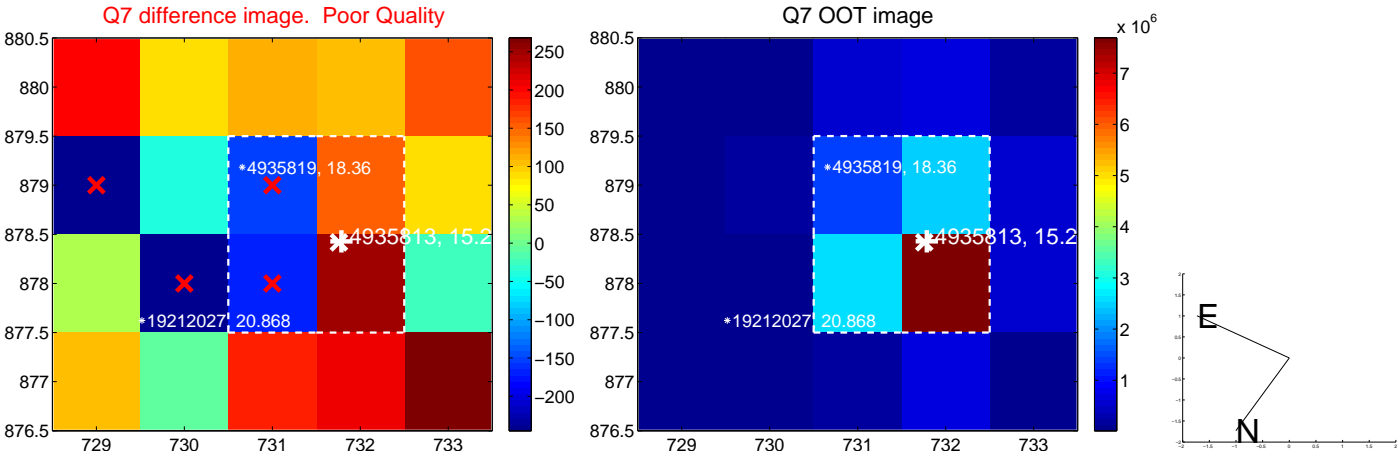
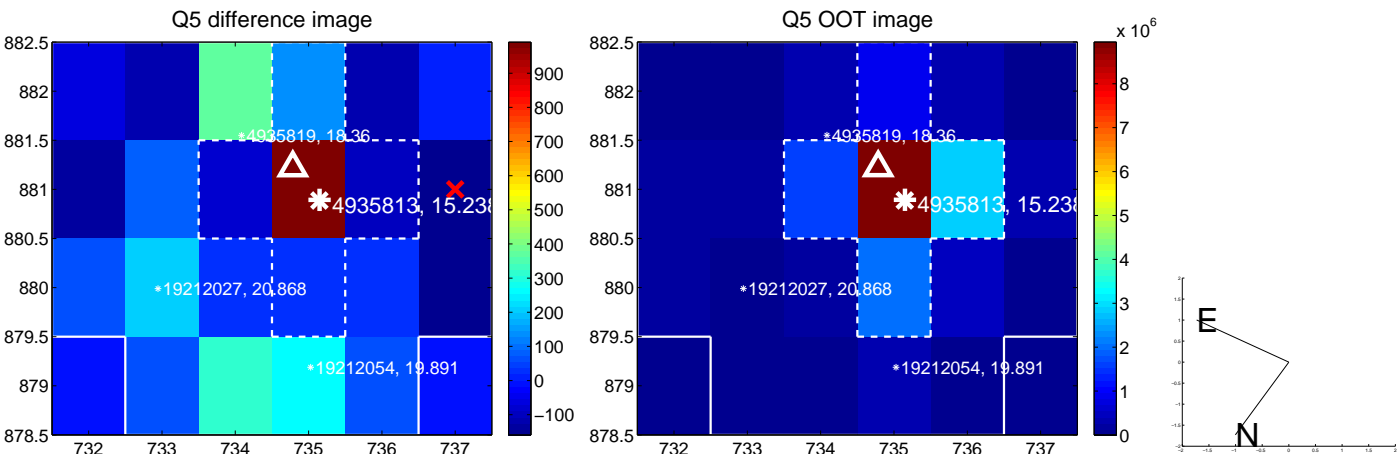


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

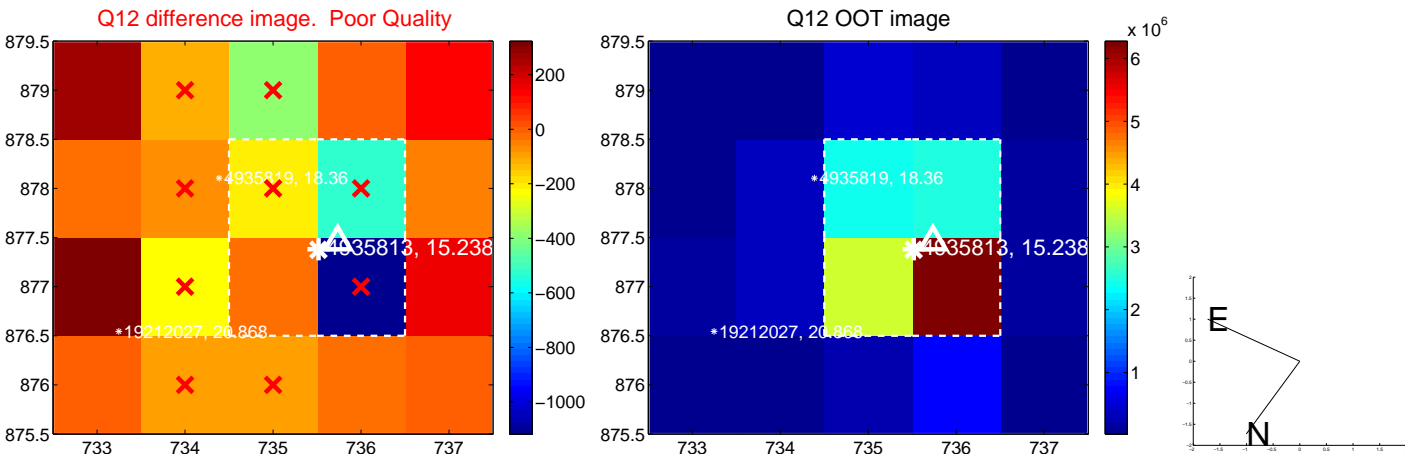
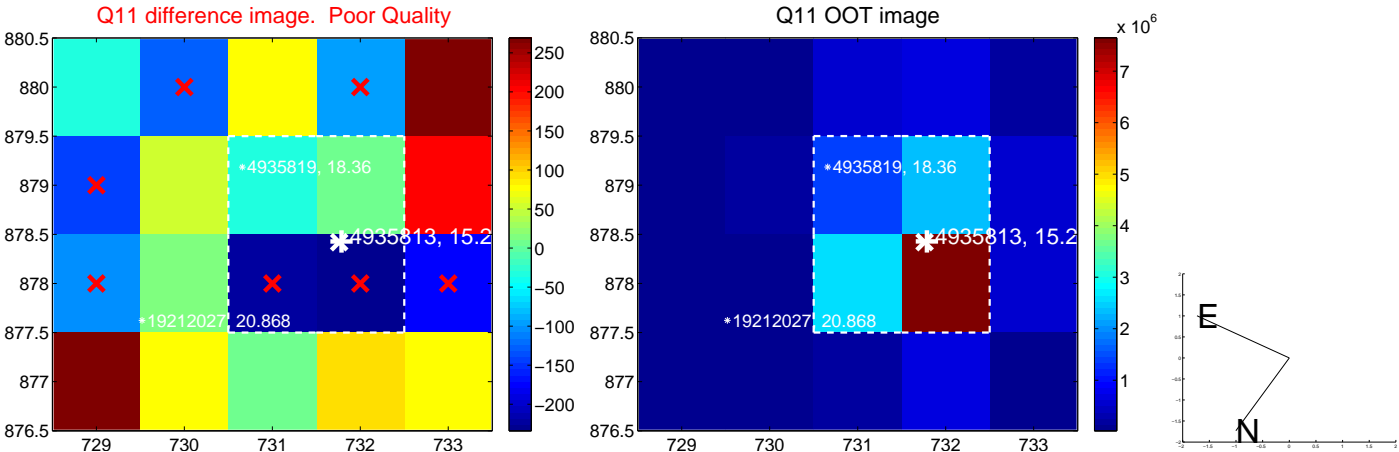
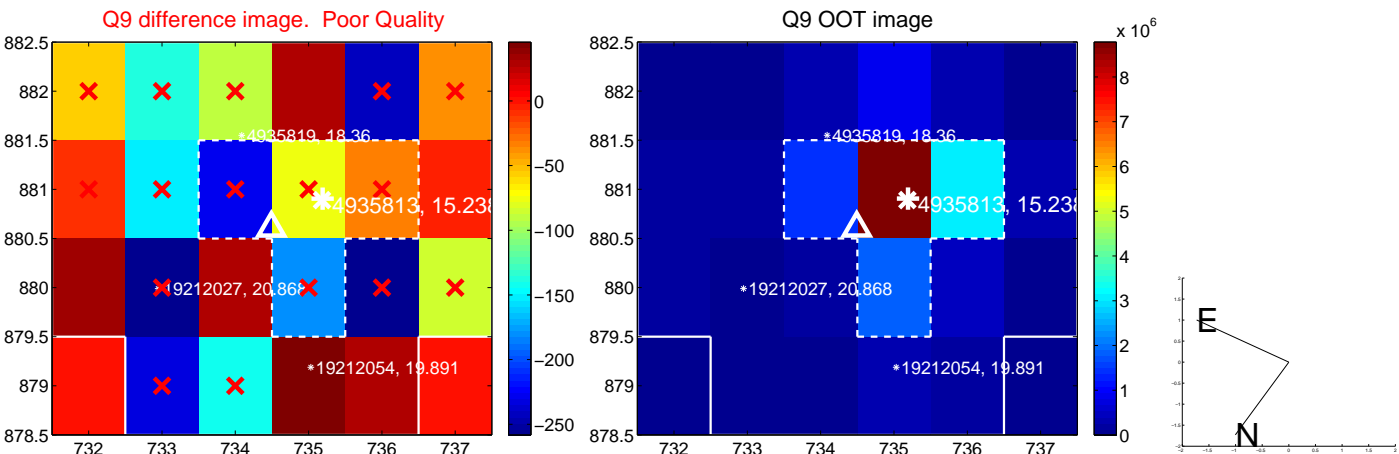
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



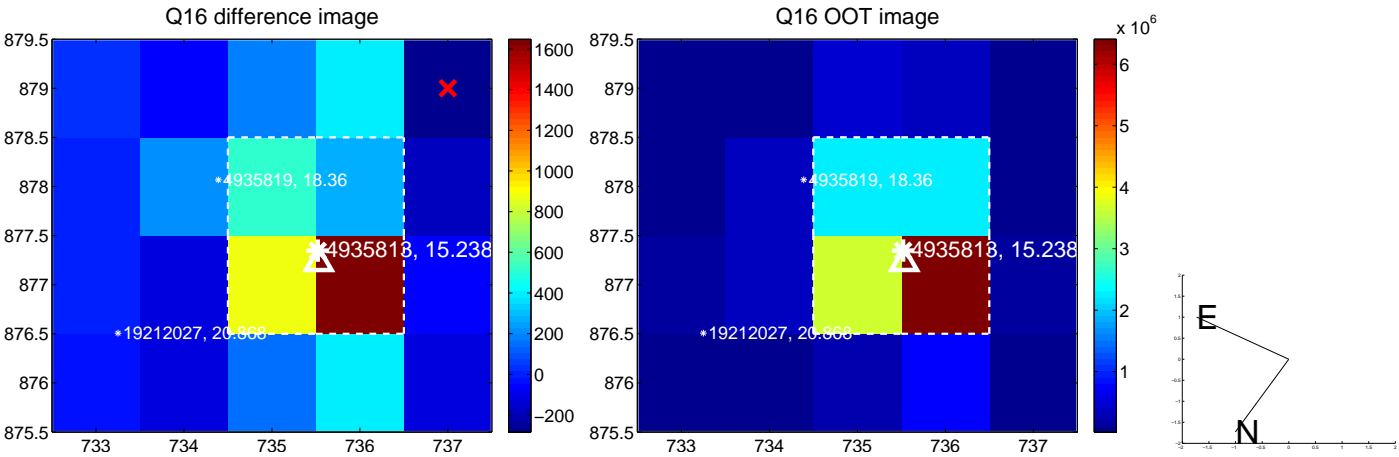
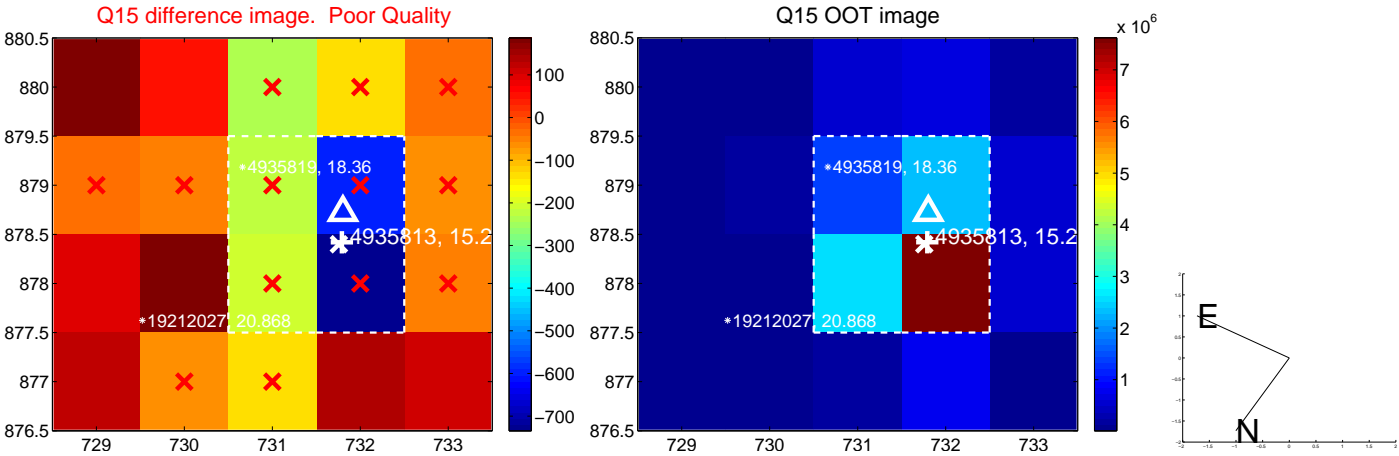
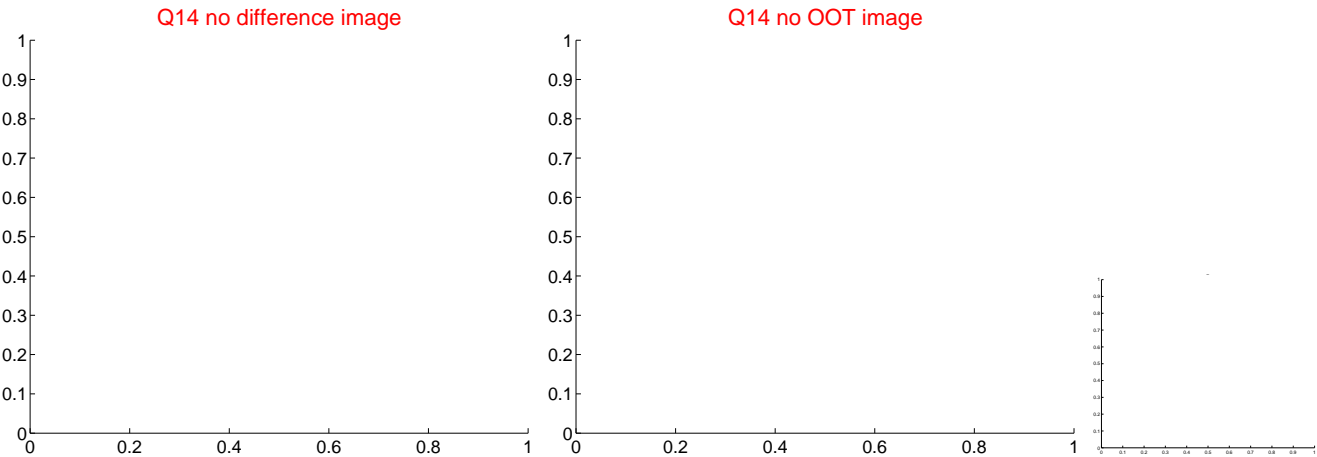
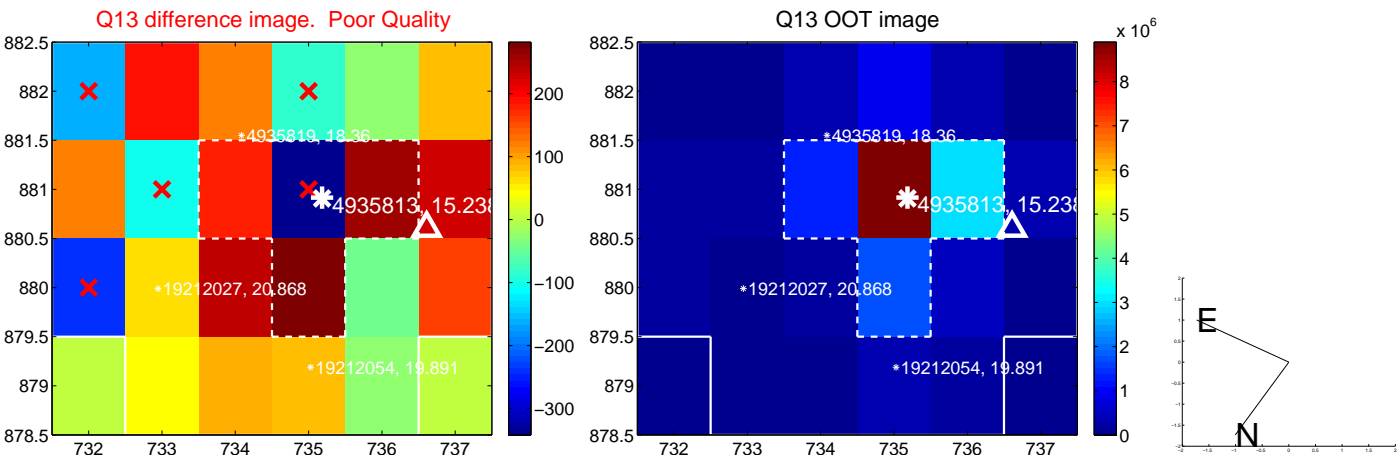
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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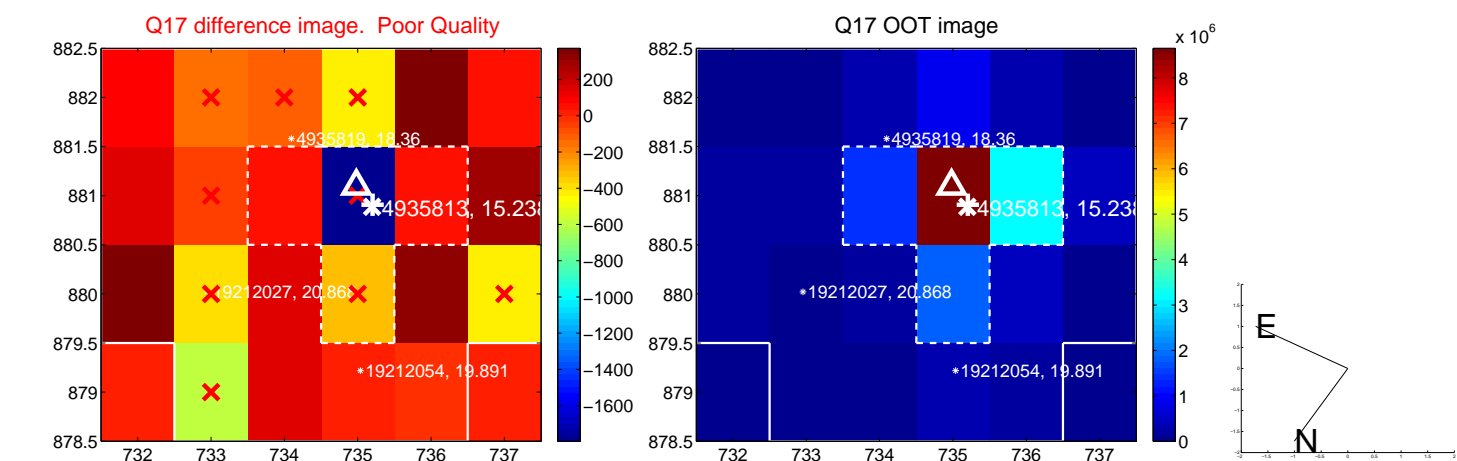


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

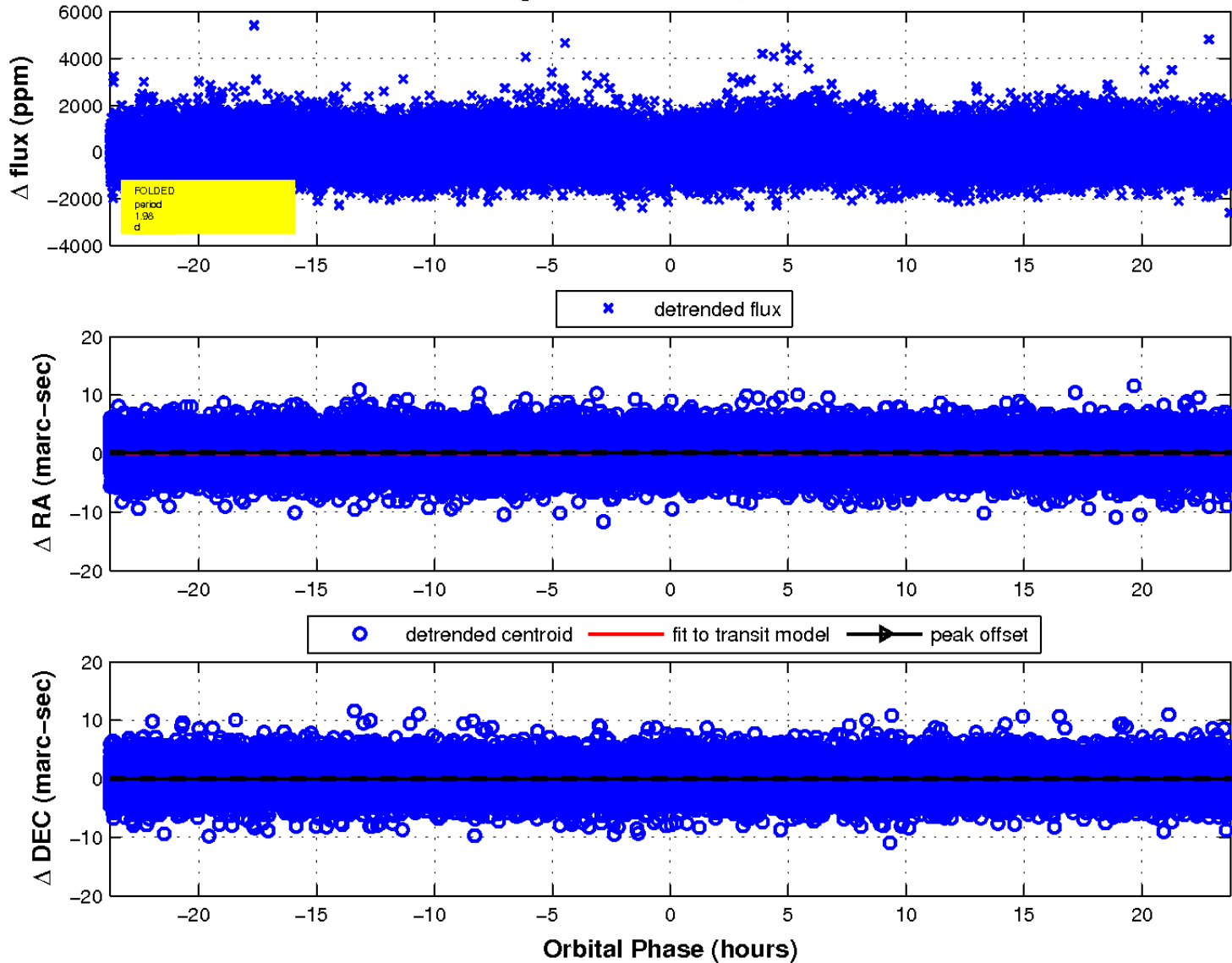




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

