

# KIC 006301035

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 006301035-01 | OBS      | 1124.01 | 11.990982     | 143.284529   | 2711.9      | 5.433            | 129.5 | 136.2 | 1.07                        | 6110            | 10.33                  | 141.92                 |
| 006301035-02 | OBS      | No      | 11.991015     | 139.598320   | 2524.3      | 5.602            | 126.9 | 129.0 | 1.07                        | 6110            | 9.99                   | 141.92                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 006301035-01 | OBS      | FP   | 0.00  | 0 | 1 | 1 | 1 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH |
| 006301035-02 | OBS      | FP   | 0.00  | 1 | 1 | 1 | 1 | IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH                                       |

**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 006301035-01

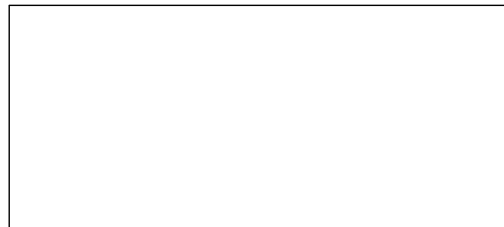
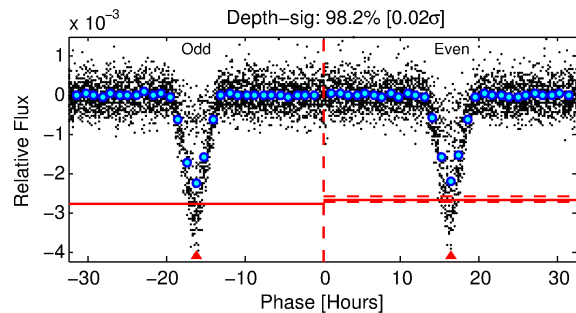
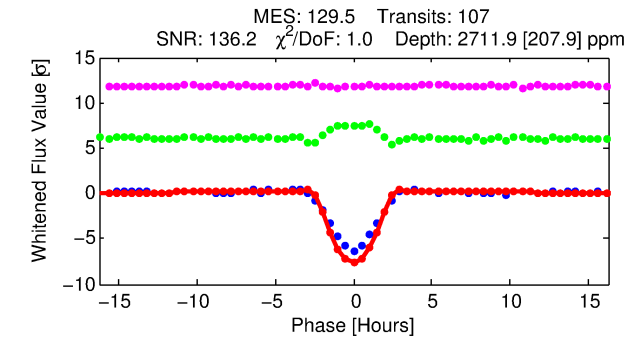
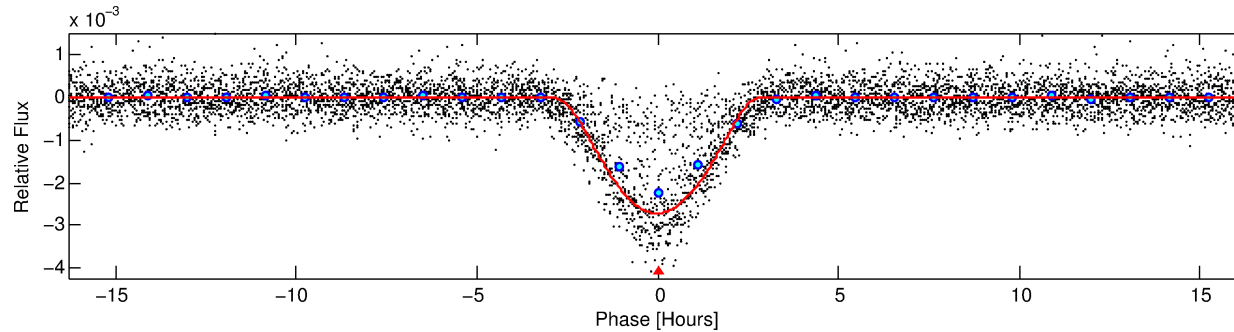
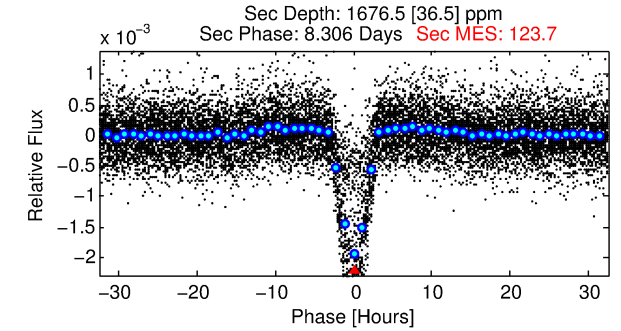
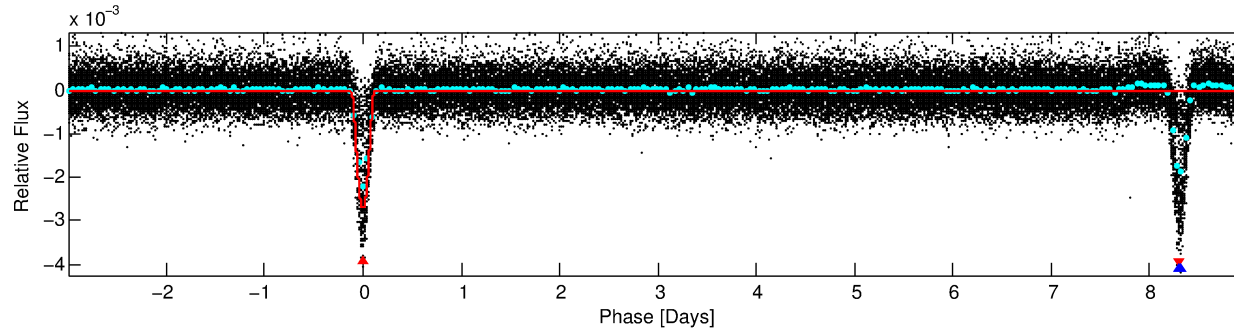
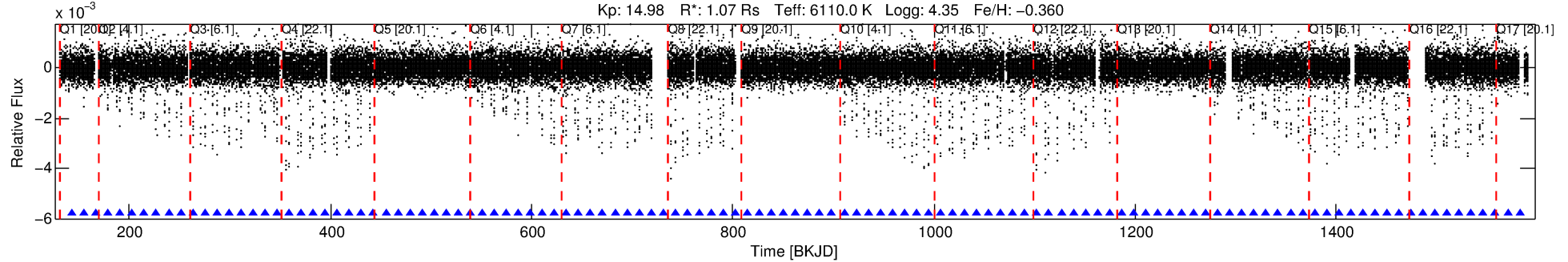
| TCE (1)      | KIC     | Parent (2)    | Parent KIC | P <sub>1</sub> :P <sub>2</sub> | Dist (″) | $\Delta$ Row | $\Delta$ Col | m <sub>2</sub> | m <sub>1</sub> | D <sub>2</sub> /D <sub>1</sub> | Mechanism  | Flag | $\sigma_P$ | $\sigma_T$ |
|--------------|---------|---------------|------------|--------------------------------|----------|--------------|--------------|----------------|----------------|--------------------------------|------------|------|------------|------------|
| 006301035-01 | 6301035 | 006301030-pri | 6301030    | 1:1                            | 8.8      | 3            | 1            | 17.78          | 14.98          | 92.77                          | Direct-PRF | 0    | 0.53       | 0.55       |

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 6301035 Candidate: 1 of 2 Period: 11.991 d  
KOI: K01124.01 Corr: 0.973

Kp: 14.98 R\*: 1.07 Rs Teff: 6110.0 K Logg: 4.35 Fe/H: -0.360



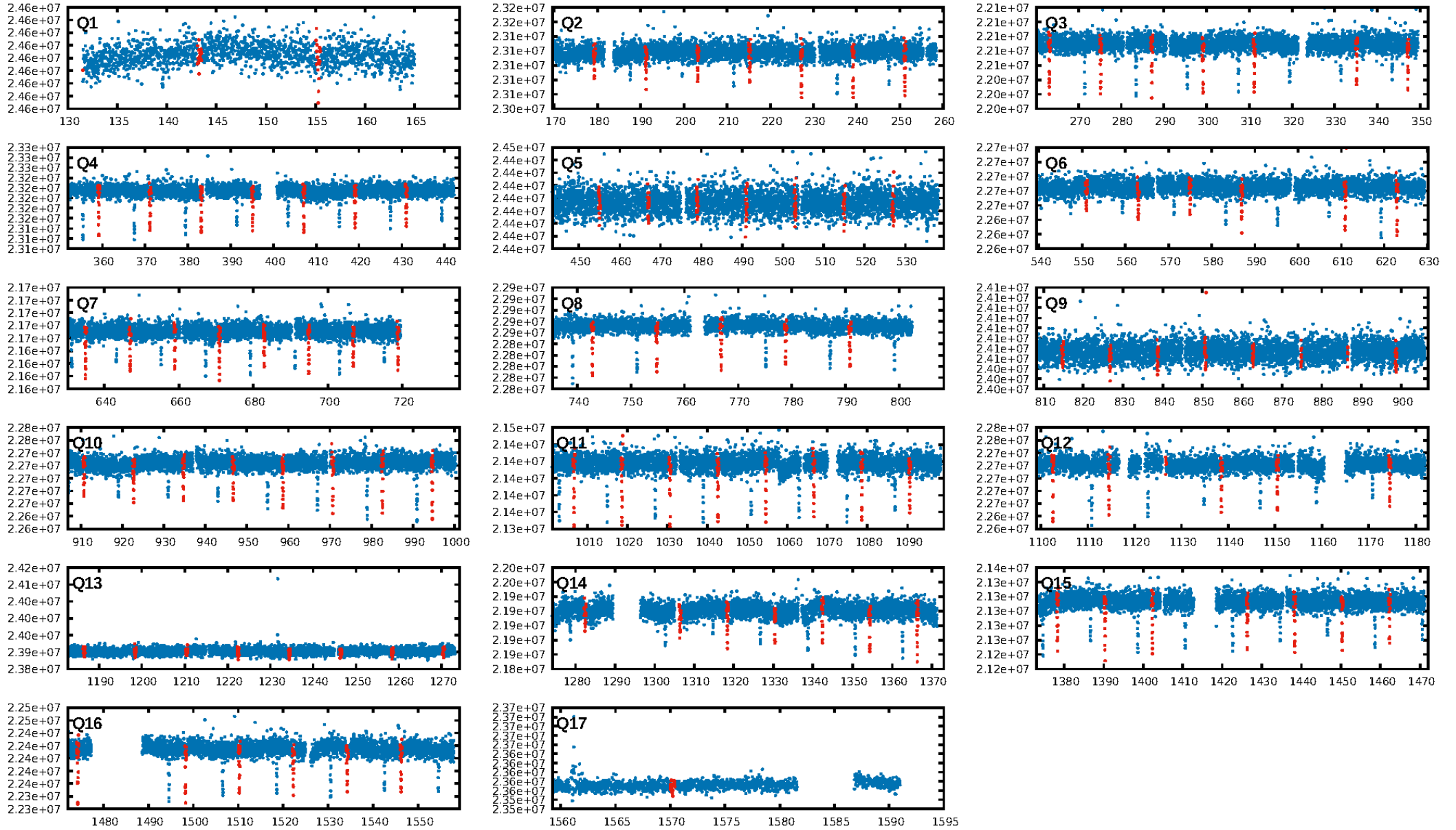
## DV Fit Results:

Period = 11.99098 [0.00001] d  
Epoch = 143.2845 [0.0008] BKJD  
Rp/R\* = 0.0883 [0.0257]  
a/R\* = 7.31 [0.43]  
b = 1.00 [0.04]  
Seff = 141.92 [52.50]  
Teq = 880 [81] K  
Rp = 10.33 [4.30] Re  
a = 0.1006 [0.0244] AU  
Ag = 87.44 [59.02] [1.46σ]  
Teff = 4161 [622] K [5.23σ]

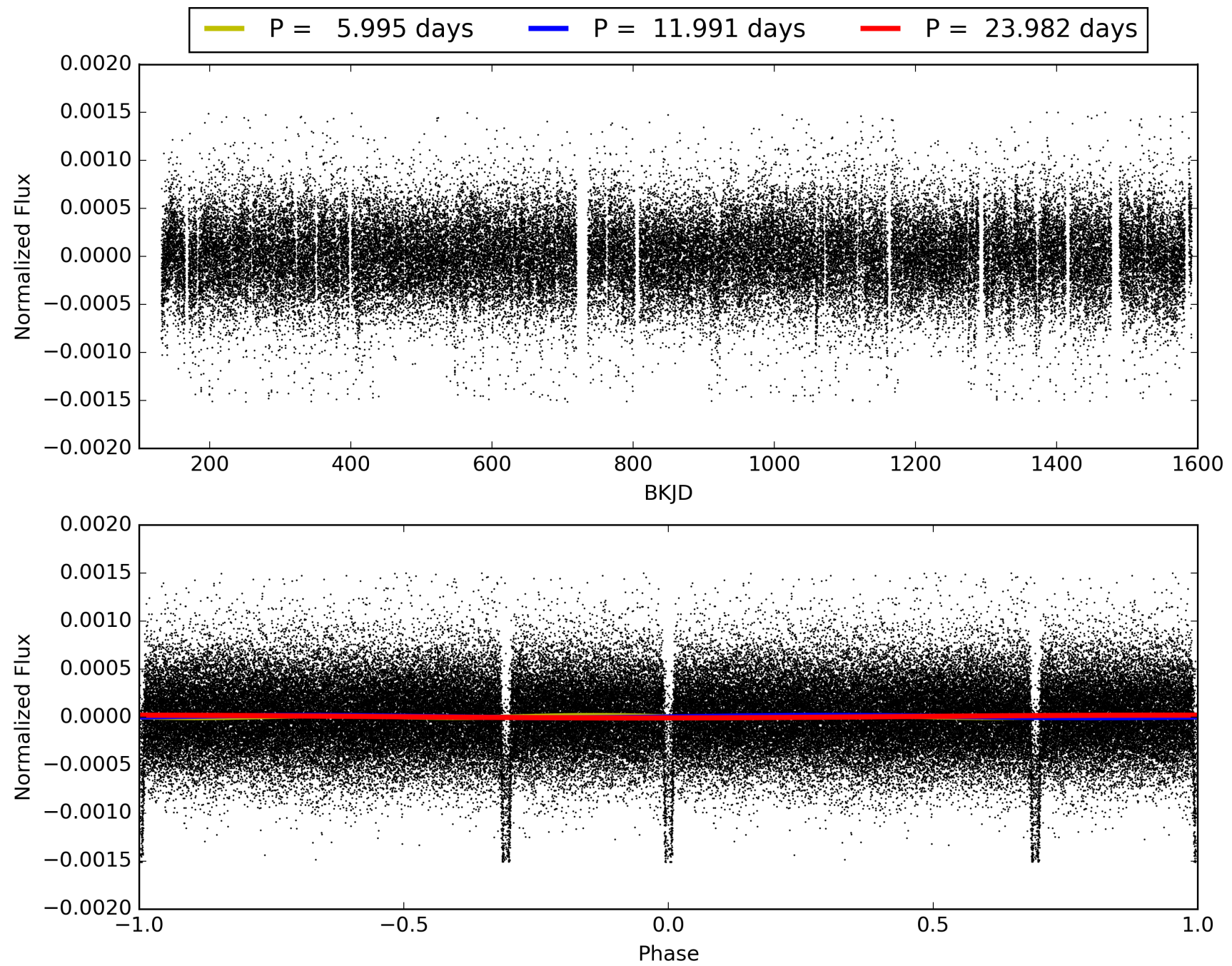
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [104/104]  
GhostDiagnostic-chr: -0.494  
Centroid-sig: 0.0%  
Centroid-so: 26.550 arcsec [333.34σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006301035-01, PDC Light Curves

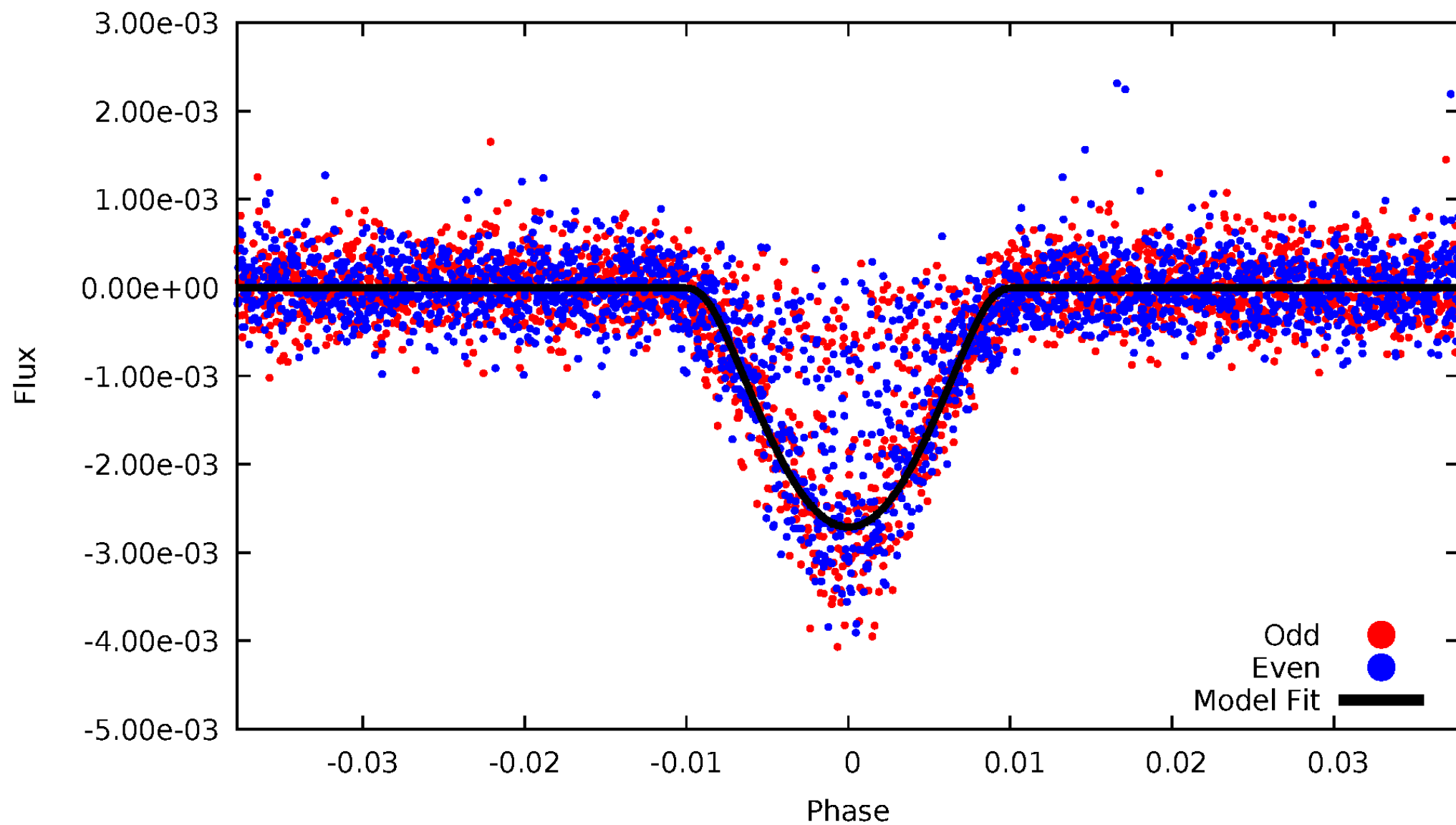


# TCE 006301035-01



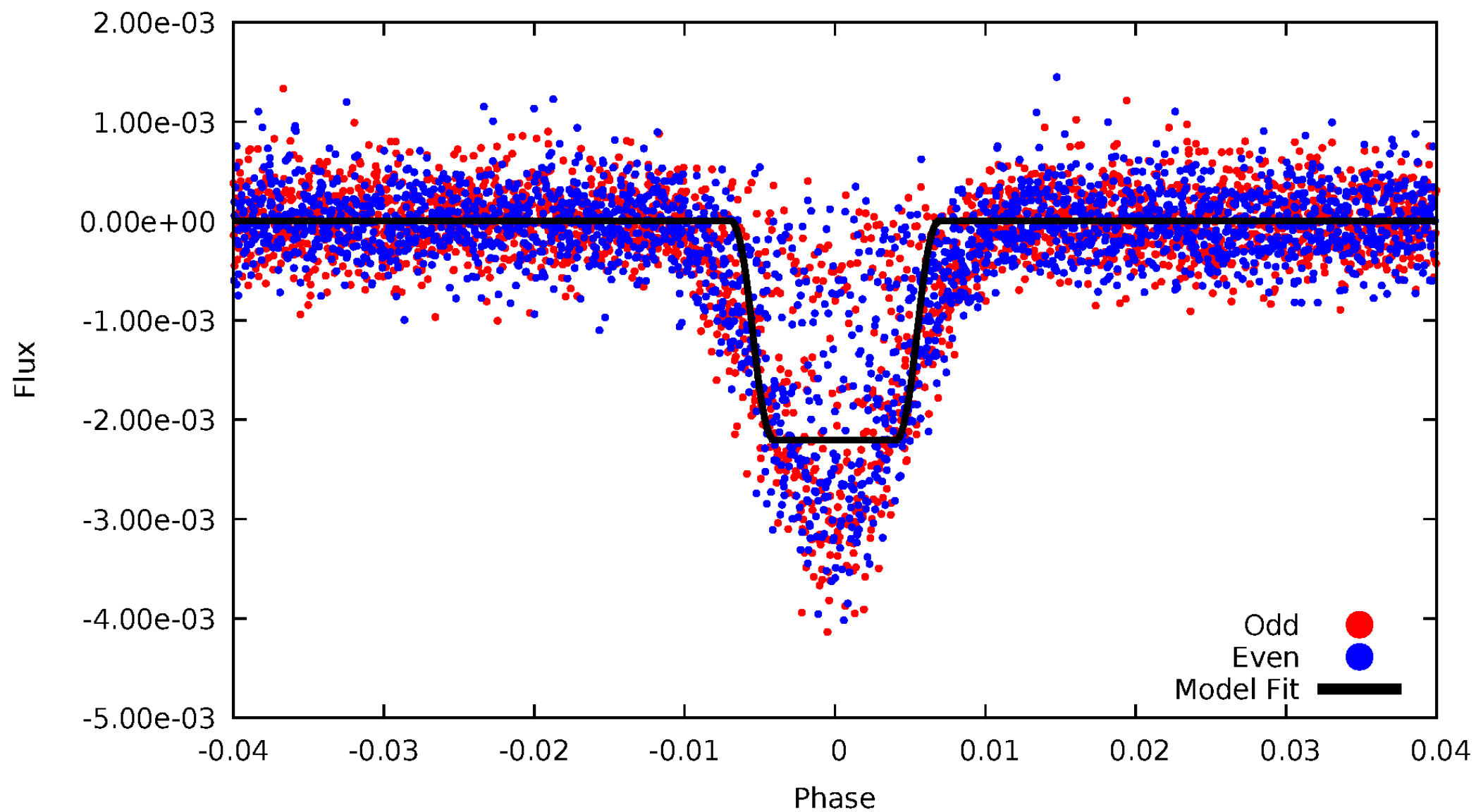
# DV Odd/Even

TCE 006301035-01



# ALT Odd/Even

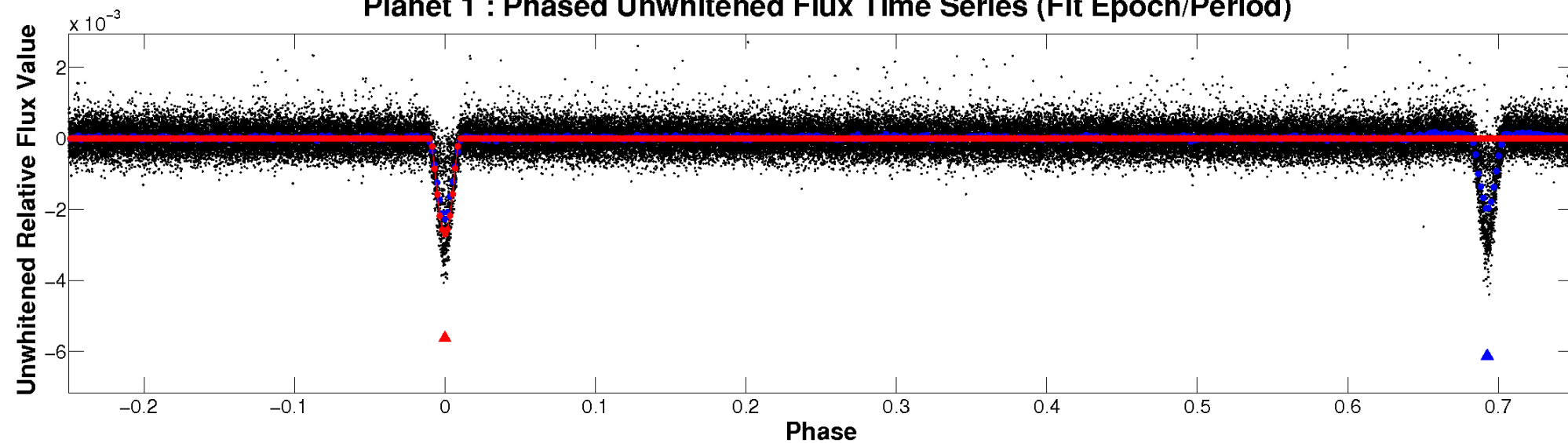
TCE 006301035-01



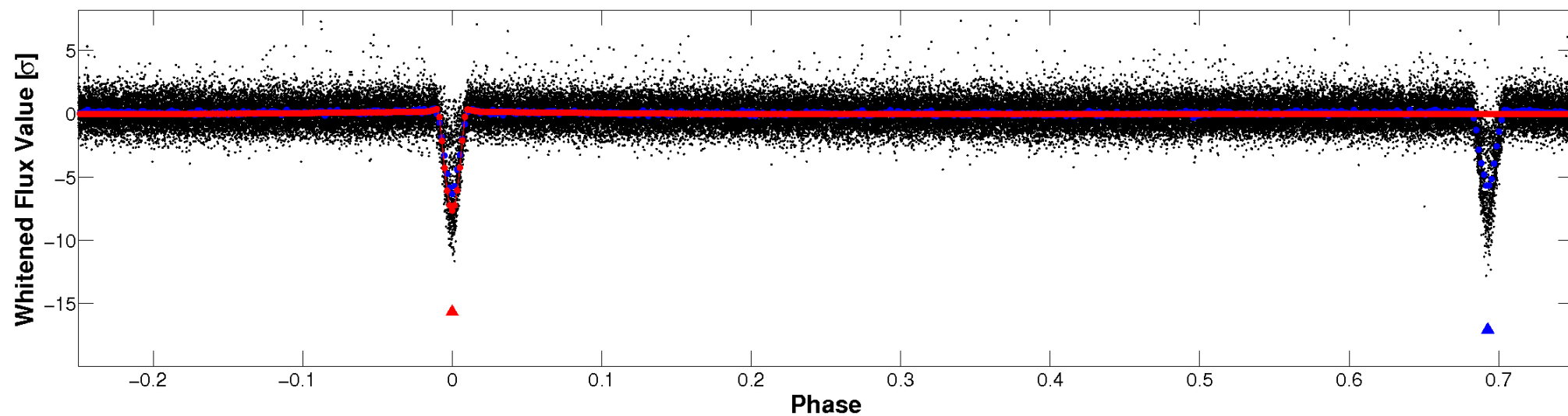


# Non-Whitened Vs. Whitened Light Curve

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

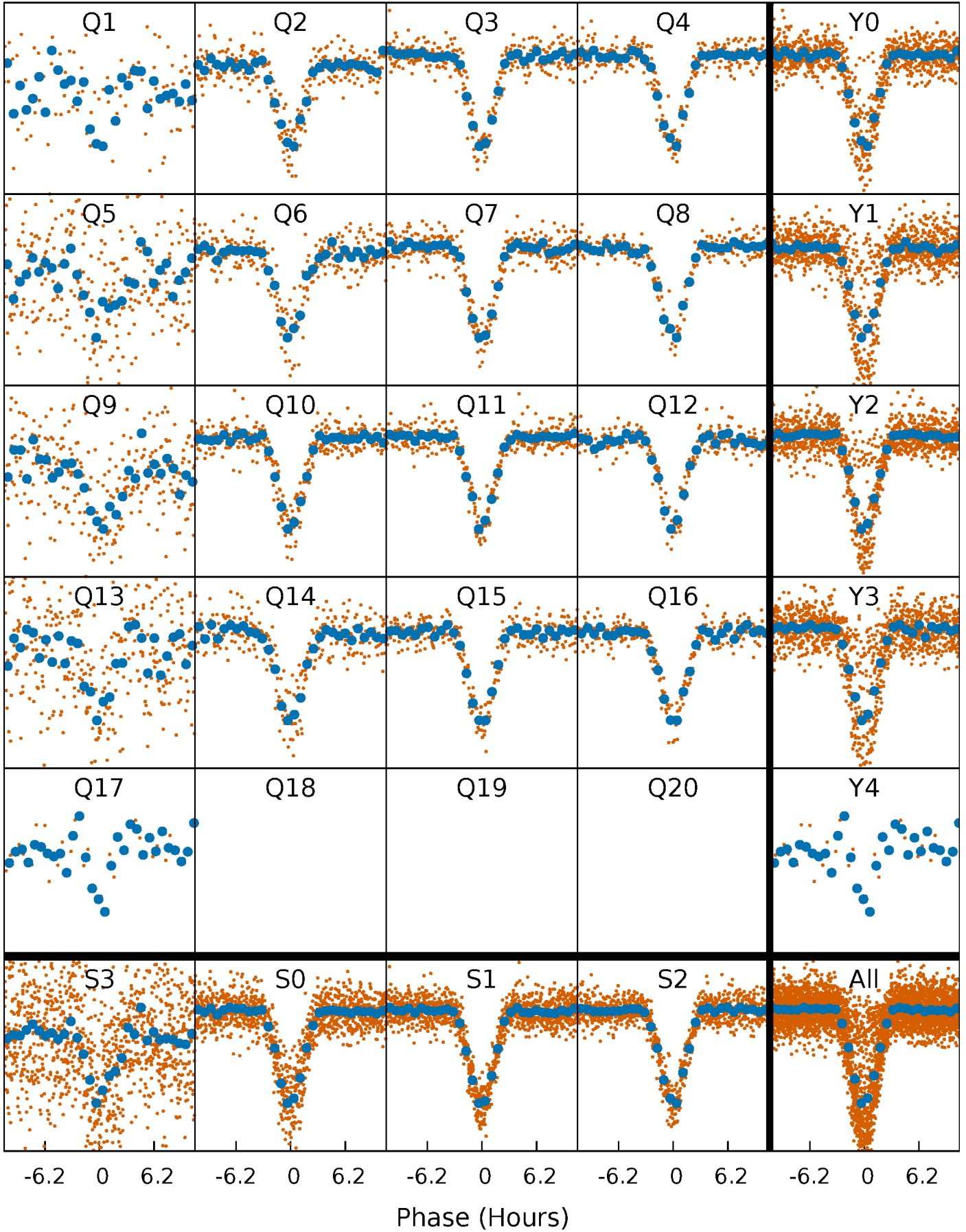


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

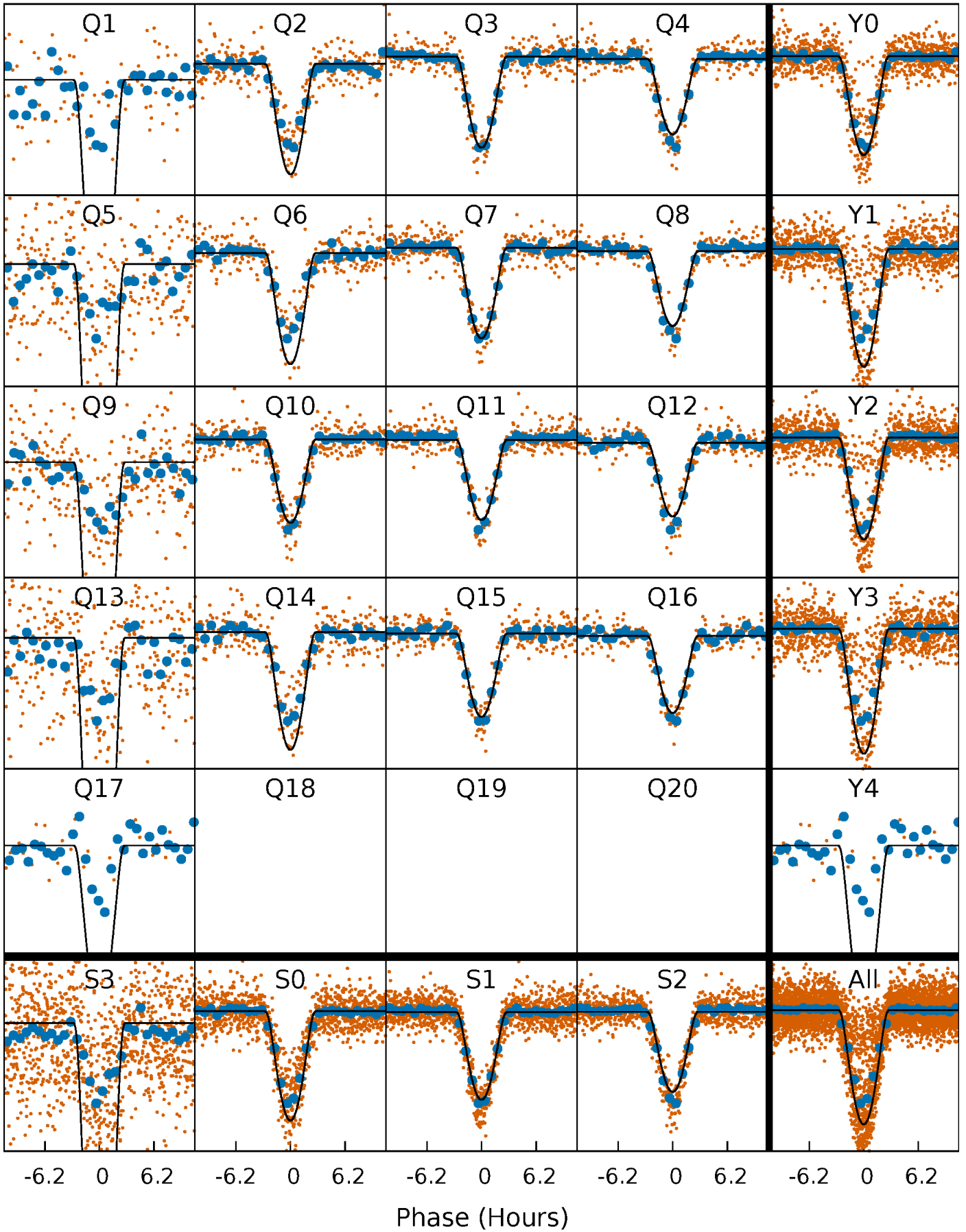
TCE 006301035-01 P= 11.990982 Days  $T_0=143.284529$  (BKJD)





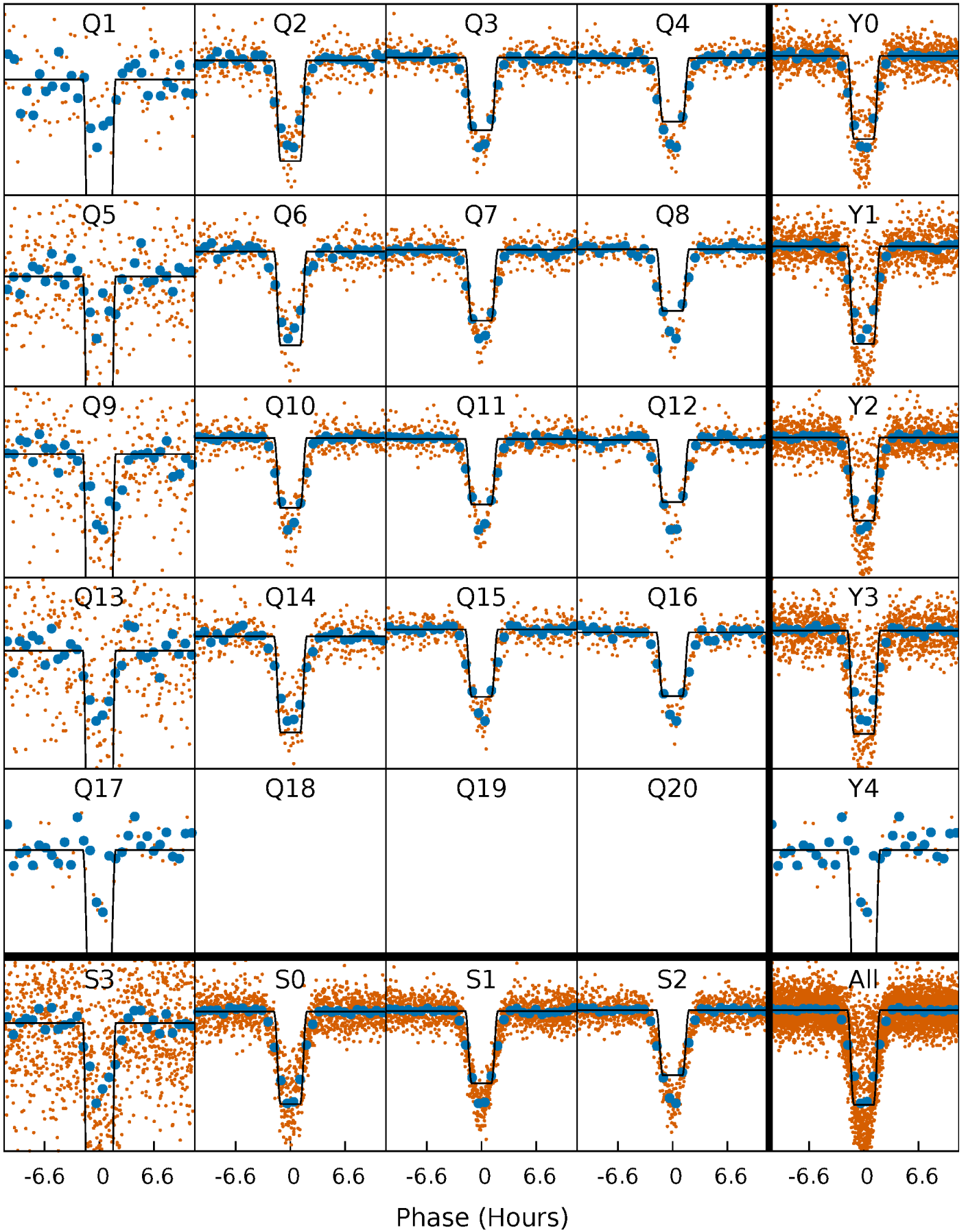
# DV Quarter-Phased Transit Curves

TCE 006301035-01 P= 11.990982 Days  $T_0=143.284529$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

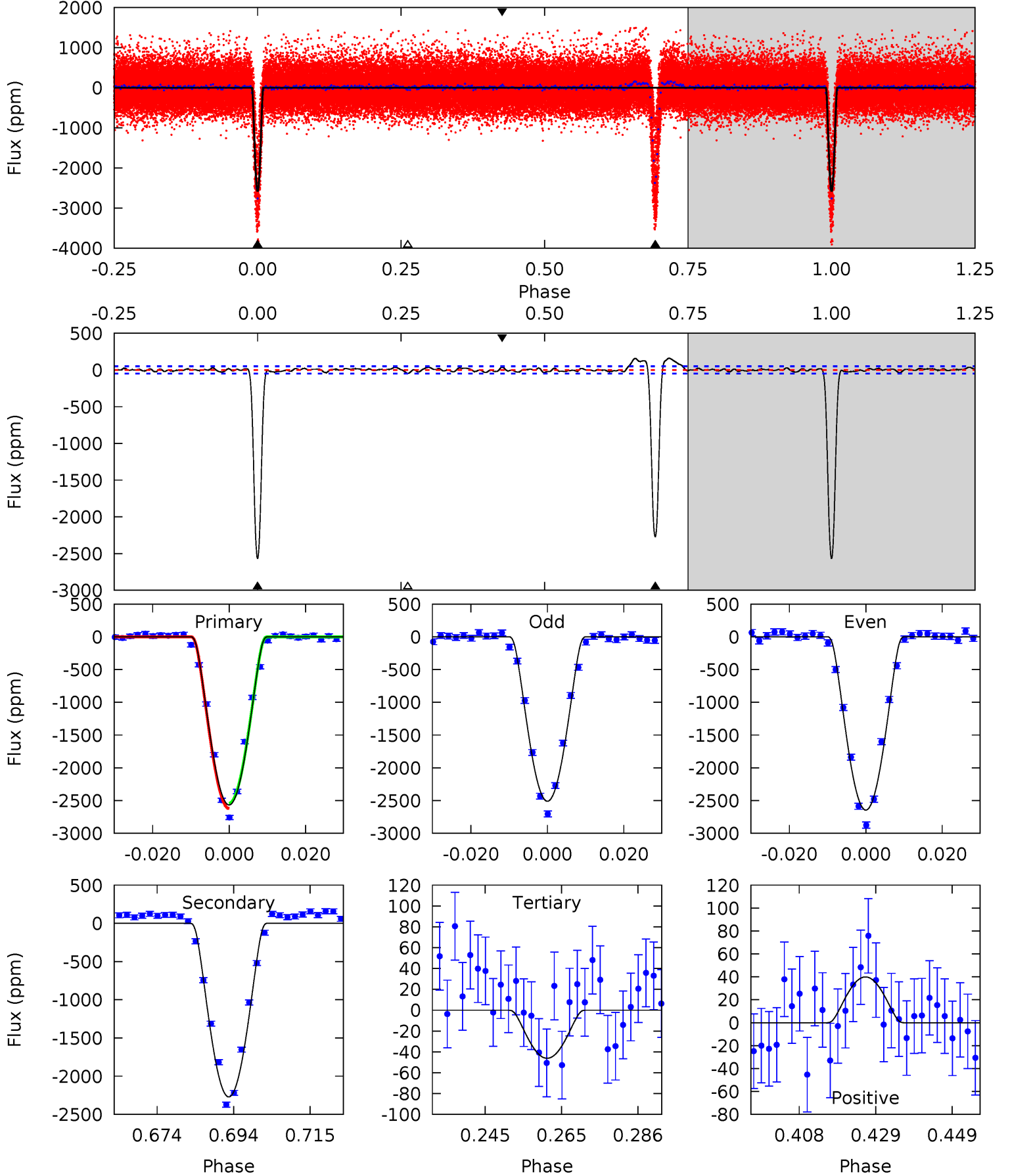
TCE 006301035-01 P= 11.990919 Days  $T_0=143.287611$  (BKJD)



# DV Model-Shift Uniqueness Test

006301035-01, P = 11.990982 Days, E = 131.293547 Days

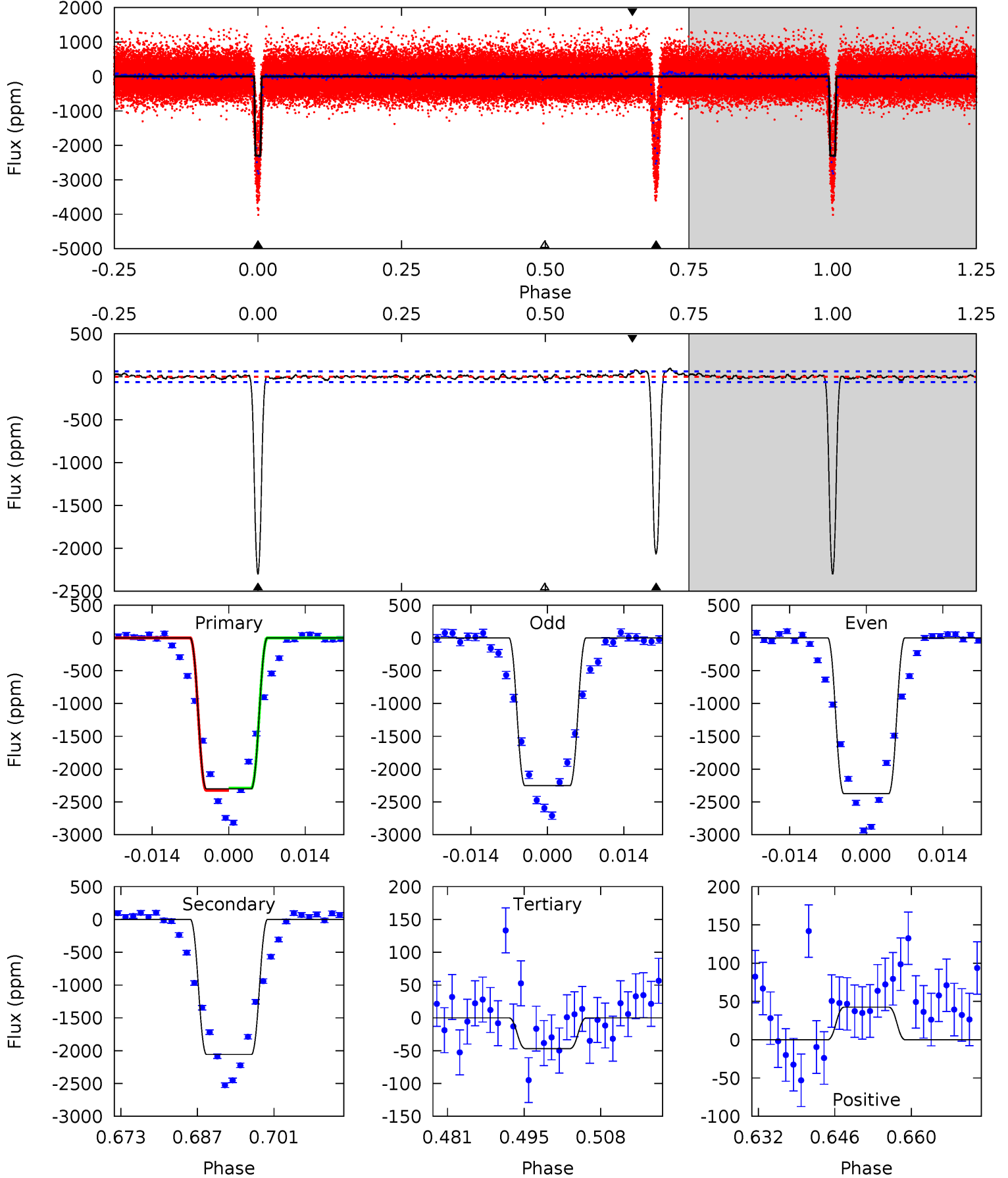
| Pri   | Sec   | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|-------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 256.7 | 227.1 | 4.62 | 3.99 | 4.89            | 2.32            | 3.25             | 252.1   | 252.7   | 222.5   | 223.1   | 6.75    | 0.85 | 0.06  | 4.03 |



# Alt Model-Shift Uniqueness Test

006301035-01, P = 11.990919 Days, E = 131.296692 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  |
|-------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 183.1 | 163.8 | 3.73 | 3.39 | 4.96            | 2.46            | 1.67             | 179.3   | 179.7   | 160.1   | 160.4   | 4.74    | 0.82 | 0.04  | 1.33 |



### Stellar Parameters For KIC 006301035

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6110^{+192}_{-213}$ | $4.352^{+0.149}_{-0.182}$ | $-0.360^{+0.300}_{-0.300}$ | $1.072^{+0.319}_{-0.196}$ | $0.944^{+0.140}_{-0.102}$ | $1.080^{+0.769}_{-0.520}$                 |
|        | +3%/-3%              | +3%/-4%                   | +83%/-83%                  | +30%/-18%                 | +15%/-11%                 | +71%/-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 006301035-01 / KOI 1124.01

| Detrend | Depth (ppm)    | $R_p (R_{\oplus})$      | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$   | $A_{\text{obs}}$     |
|---------|----------------|-------------------------|----------------------|------------------------|----------------------|
| DV      | $-2271 \pm 10$ | $10.20^{+3.57}_{-3.18}$ | $1234^{+90}_{-81}$   | $4685^{+782}_{-471}$   | $124^{+135}_{-59}$   |
| Alt.    | $-2058 \pm 13$ | $5.48^{+3.18}_{-2.73}$  | $1231^{+88}_{-73}$   | $5981^{+3159}_{-1075}$ | $381^{+1156}_{-228}$ |

$T_{\text{max}}$  = 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

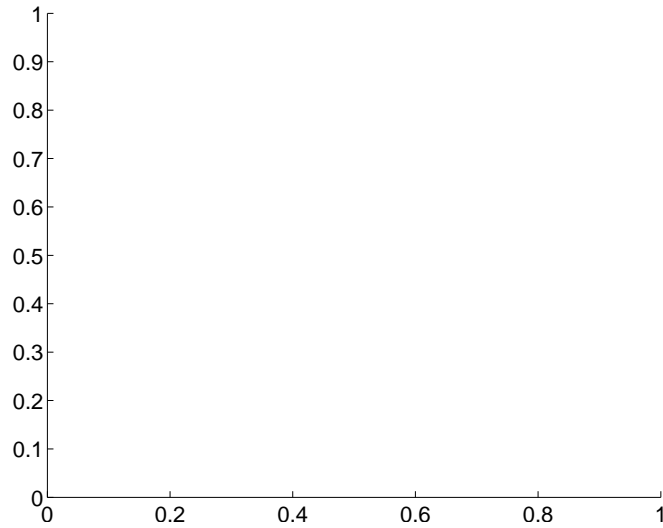
Supplemental centroid analysis for 006301035-01. Kepler magnitude: 14.98. Transit SNR 136.20

There are 0 quarters with good PRF difference image offsets

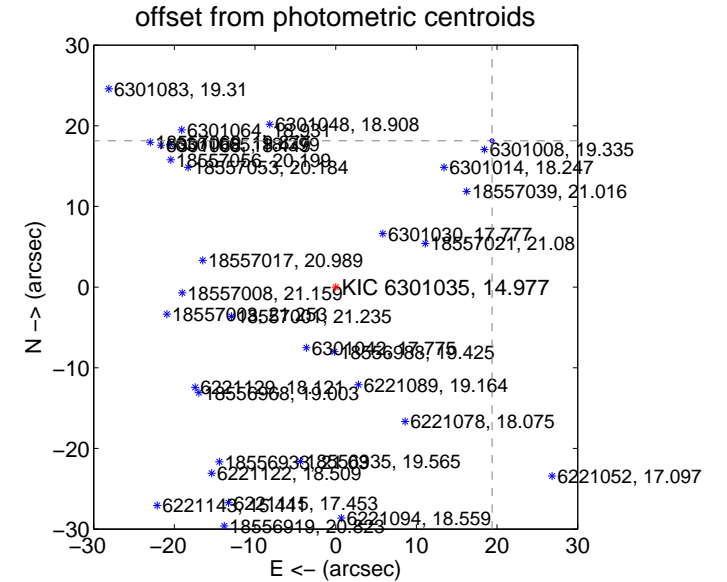
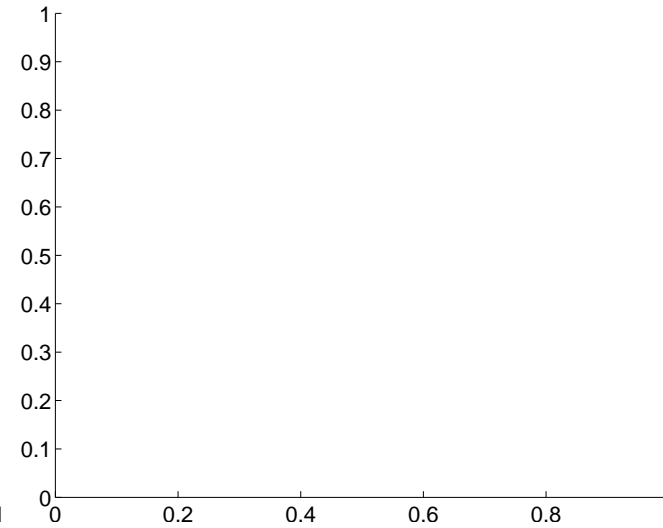
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec     |
|---|--------------------|---------------------|-------------------|------------------|
| PRF-fit source offset from OOT          | —                  | —                   | —                 | —                |
| PRF-fit source offset from KIC position | —                  | —                   | —                 | —                |
| photometric centroid source offset      | $26.55 \pm 0.08$   | $333.34$            | $-19.39 \pm 0.08$ | $18.14 \pm 0.08$ |

There is no PRF-fit offset from OOT-fit



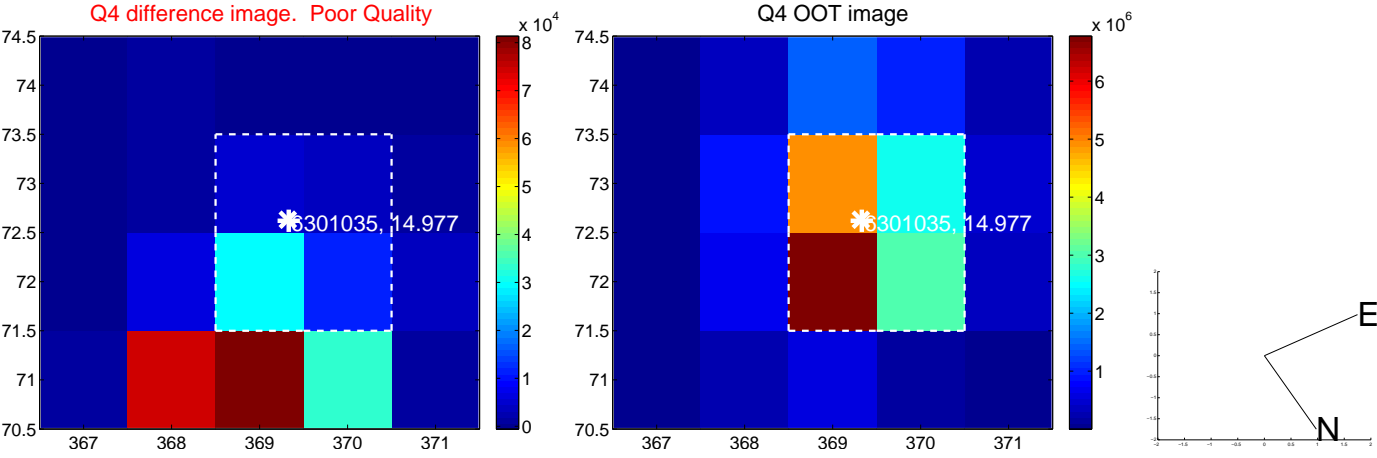
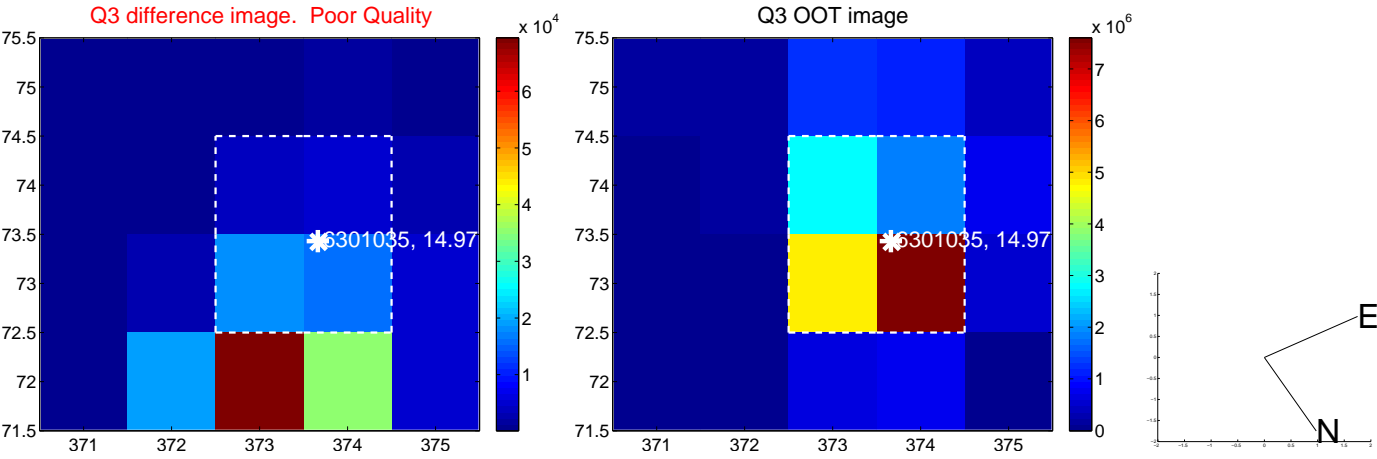
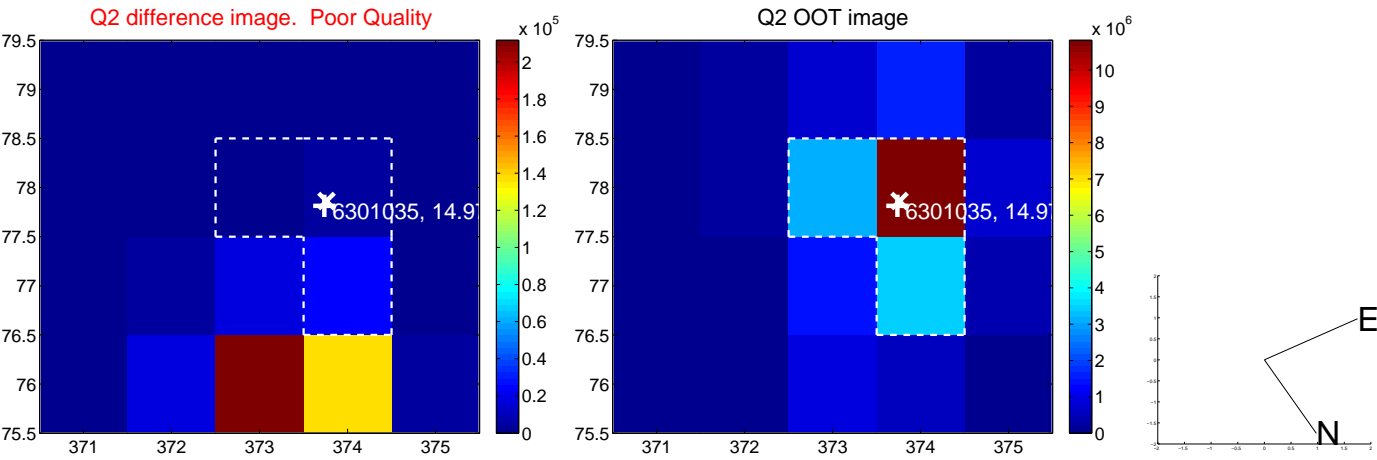
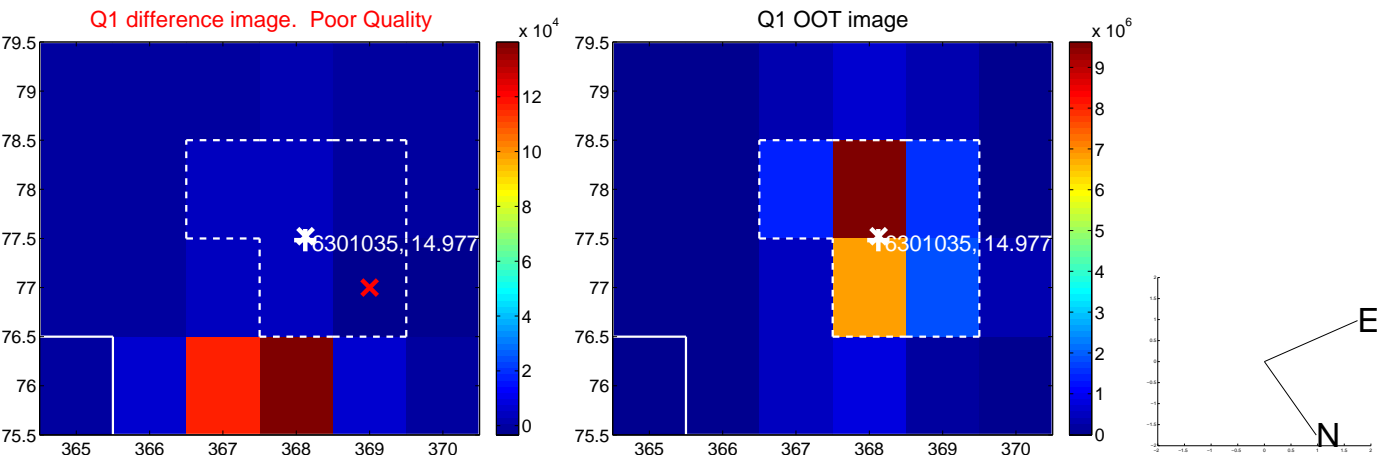
There is no PRF-fit offset from KIC



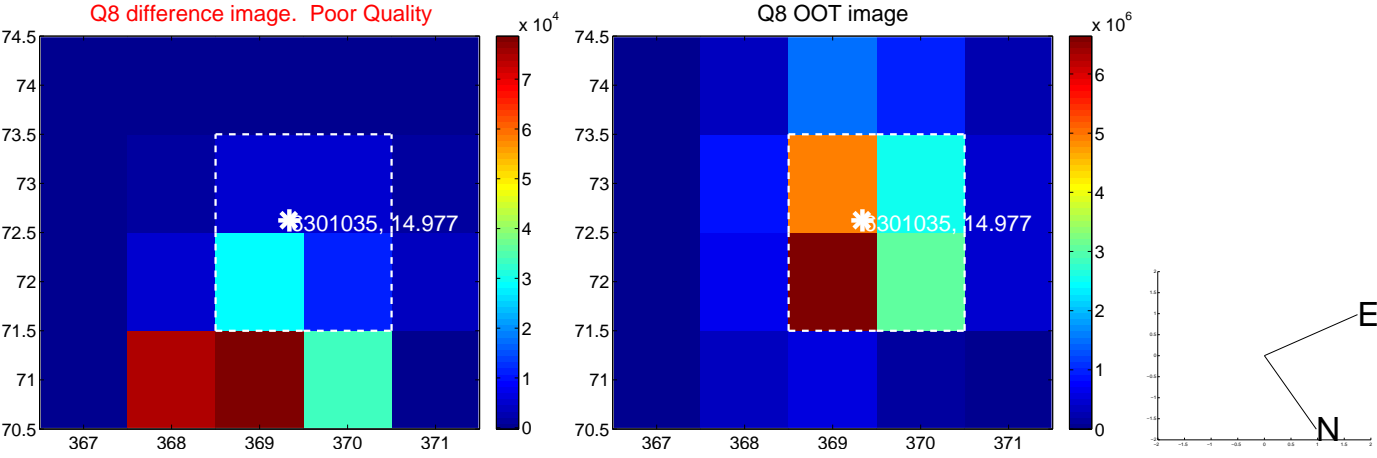
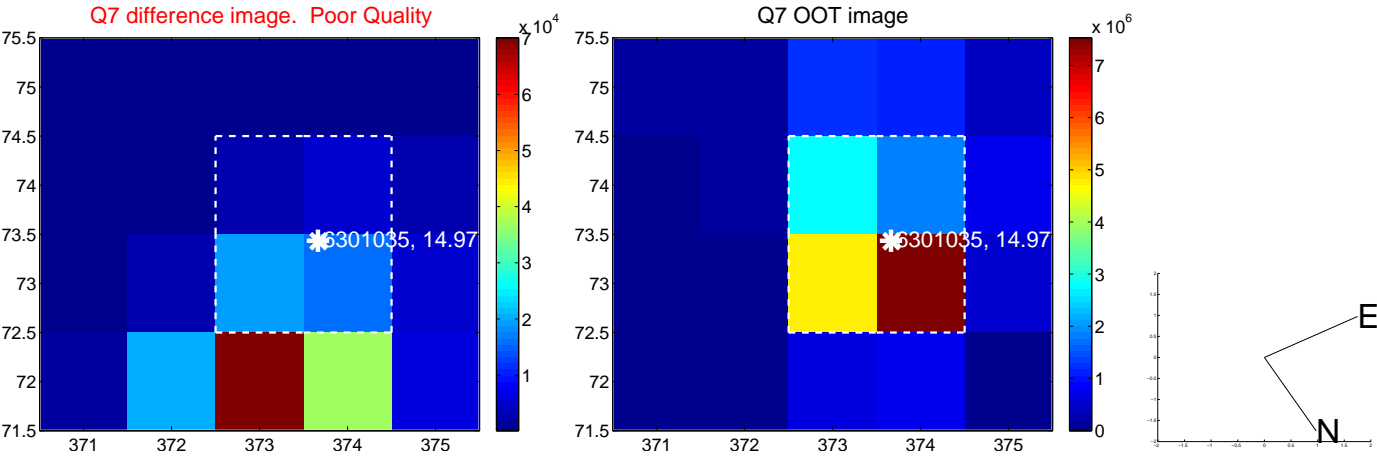
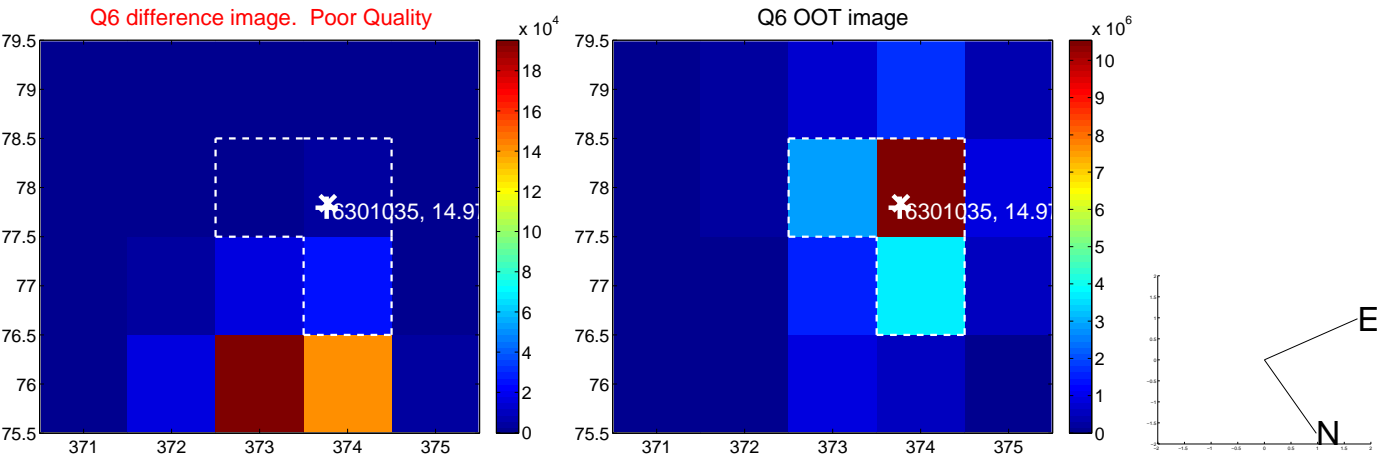
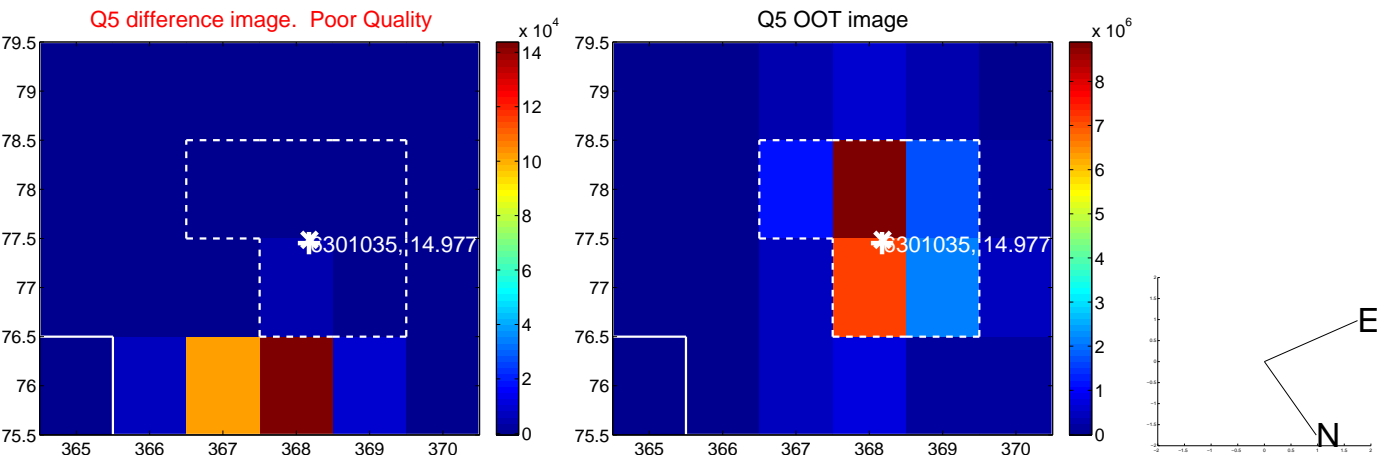
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



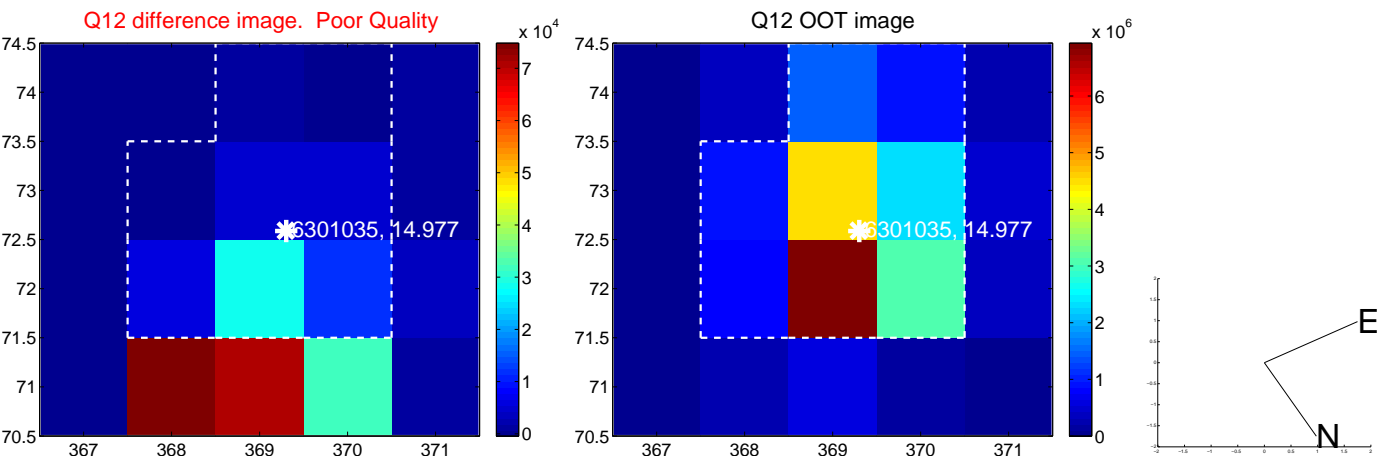
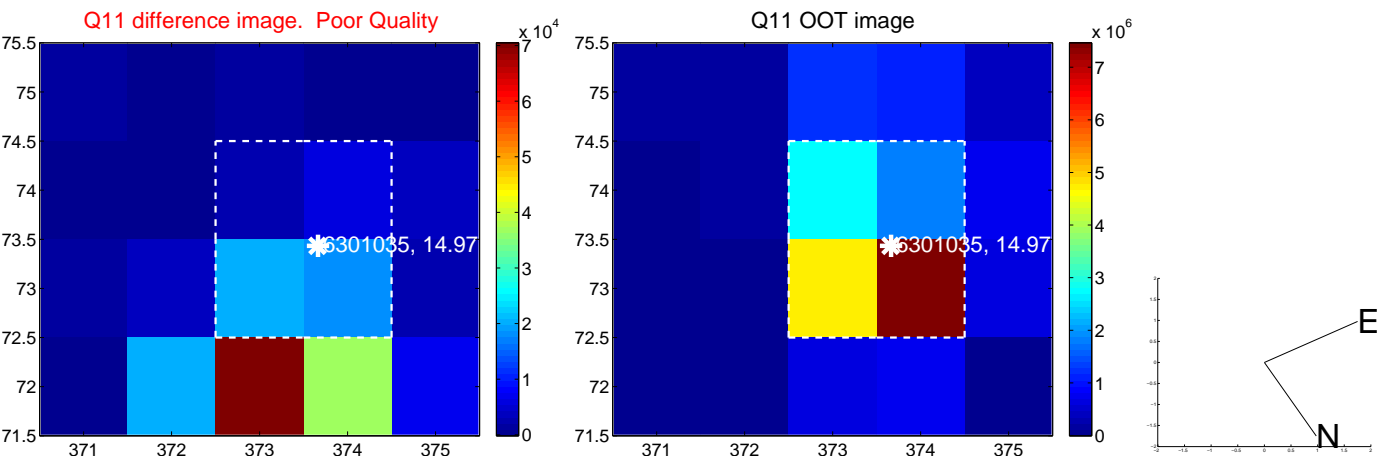
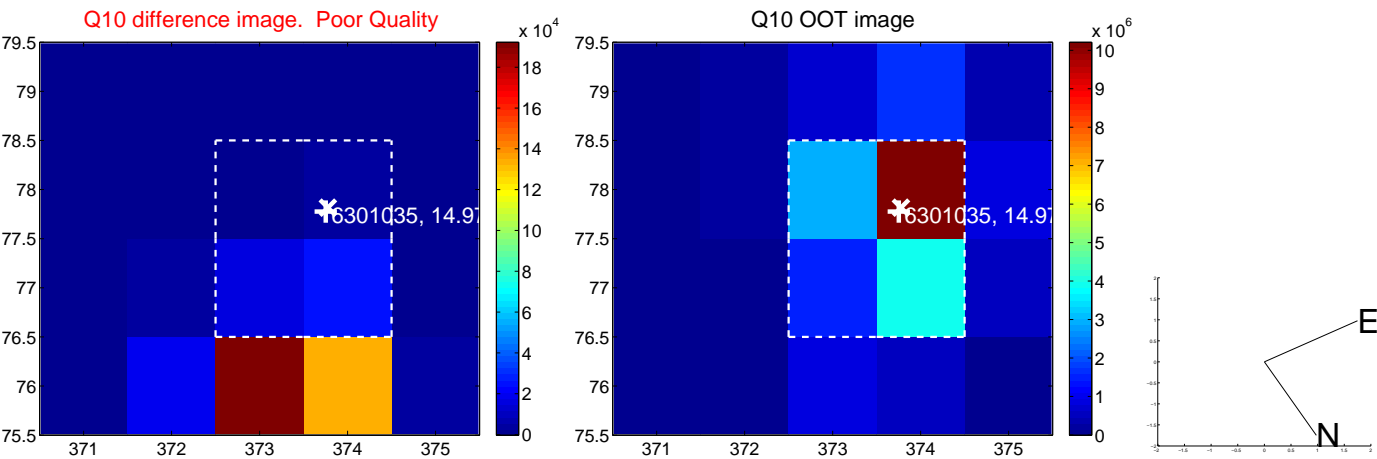
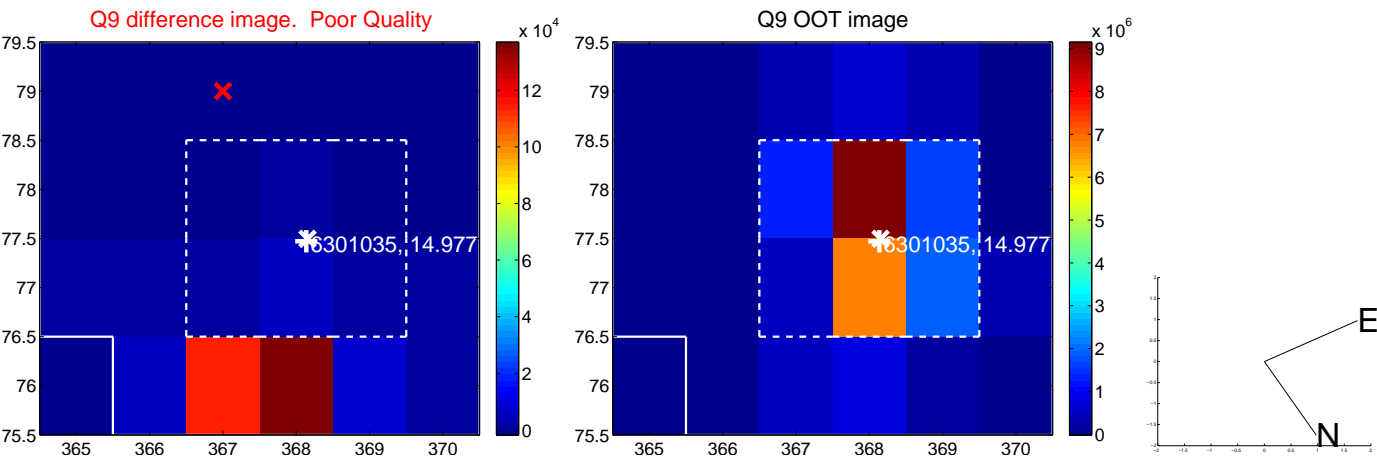
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



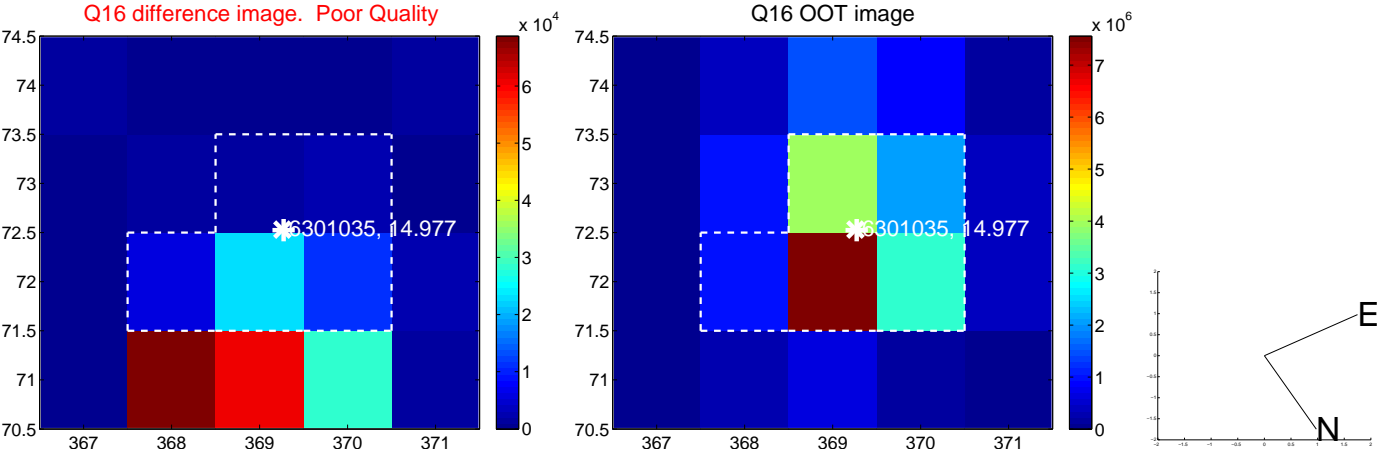
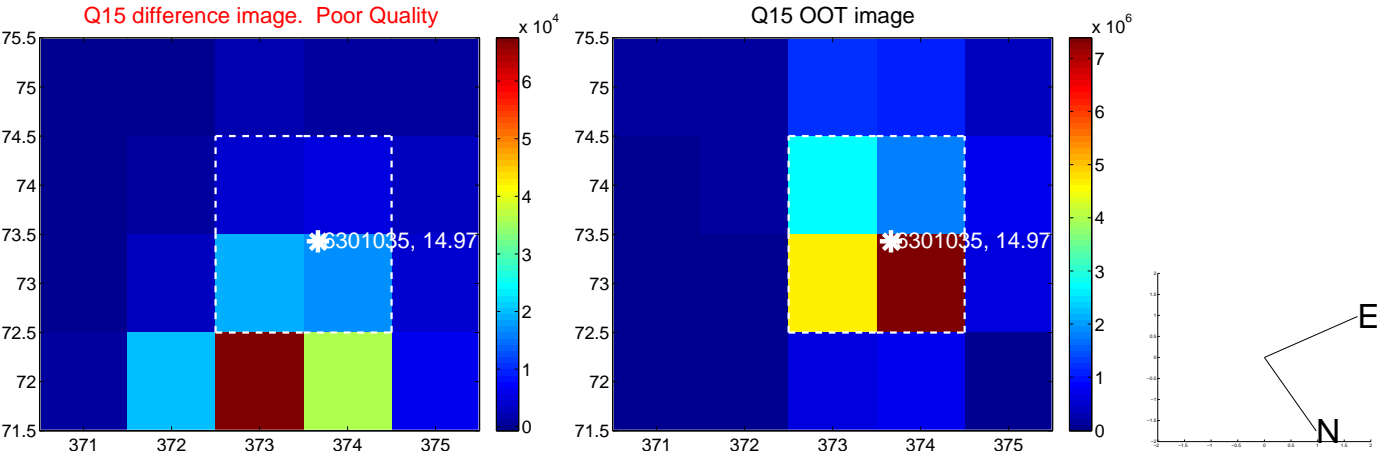
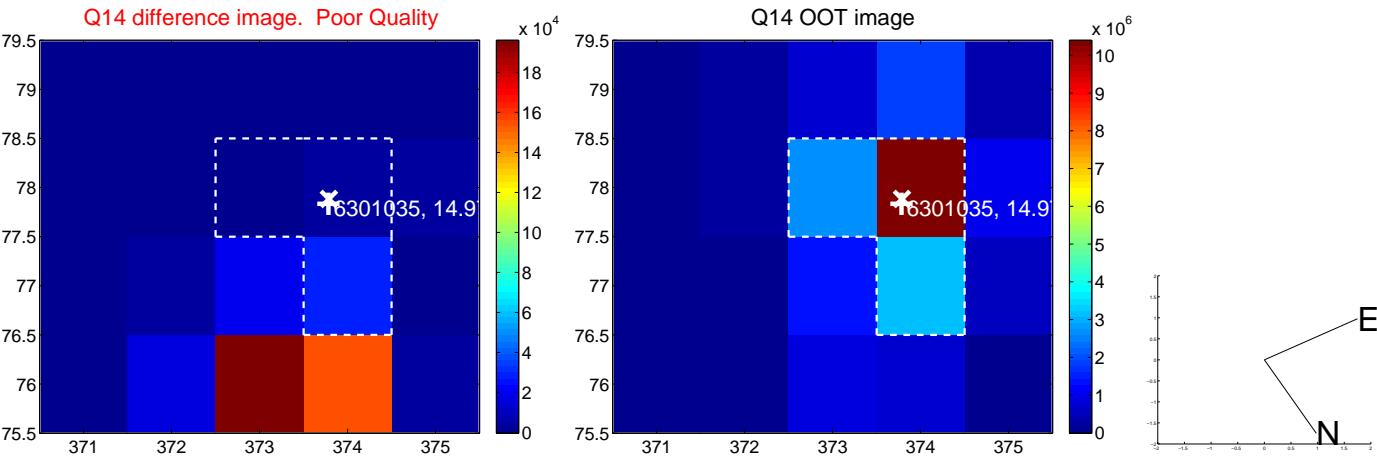
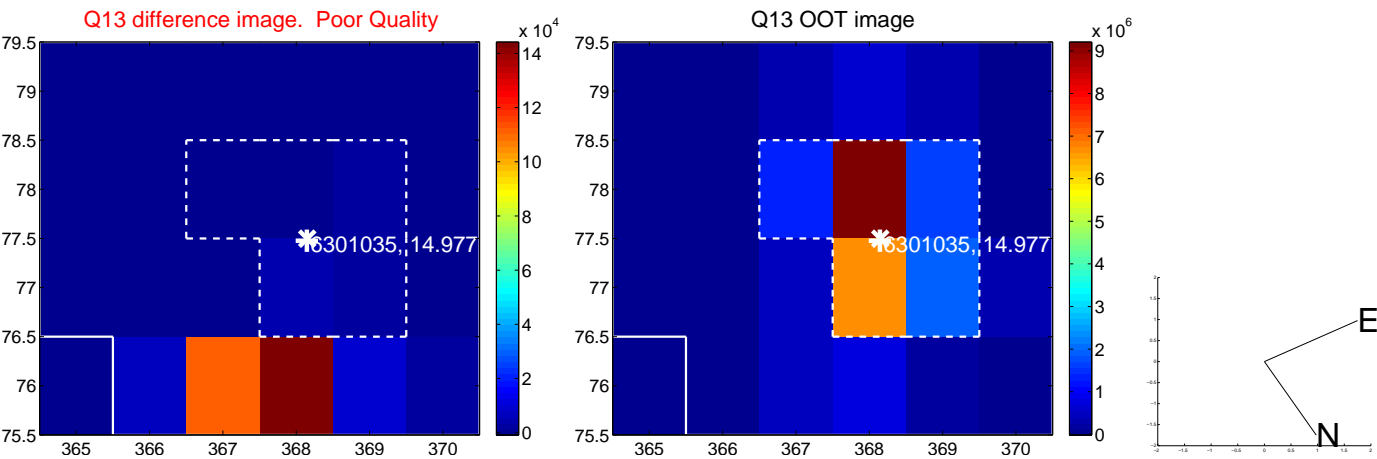
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



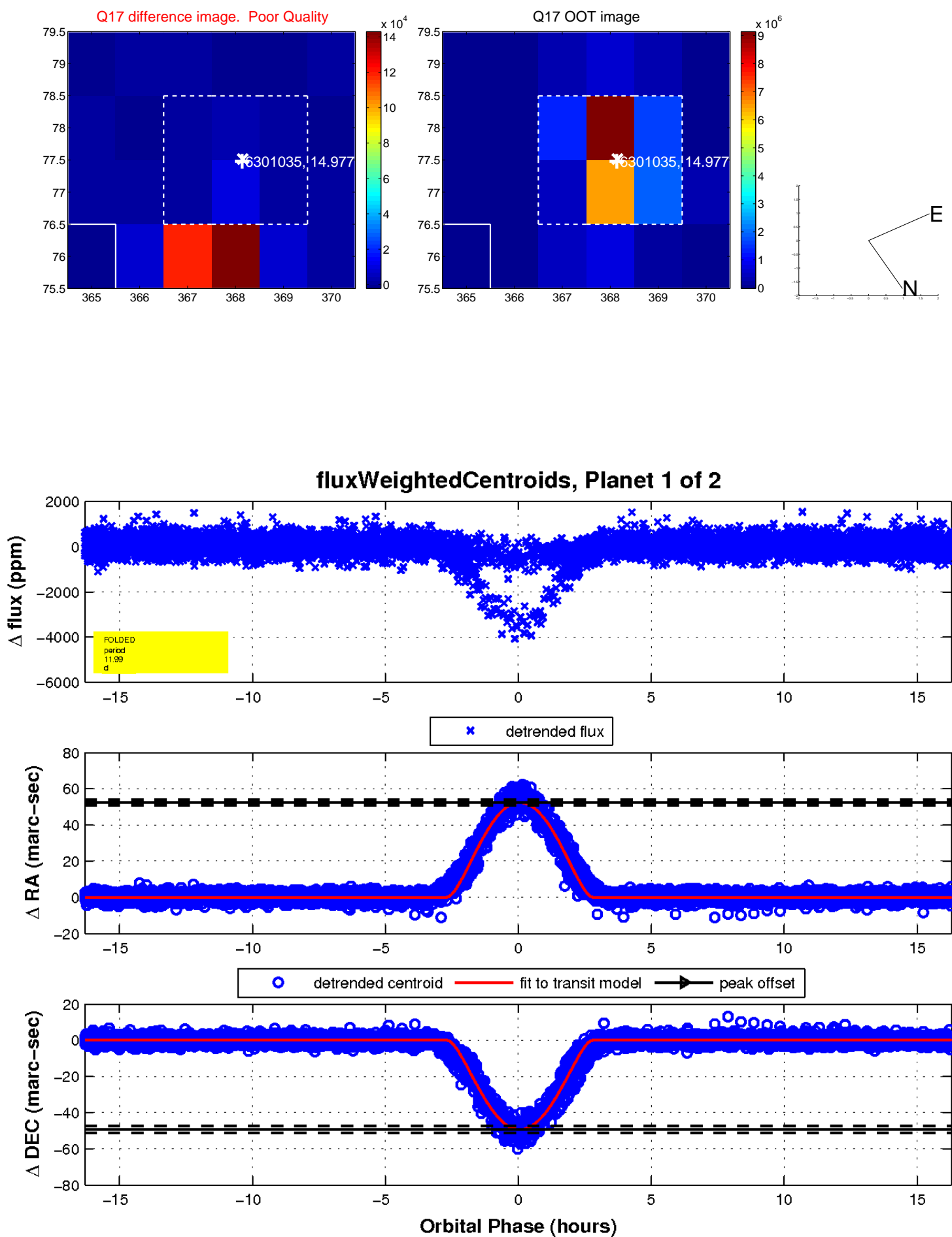
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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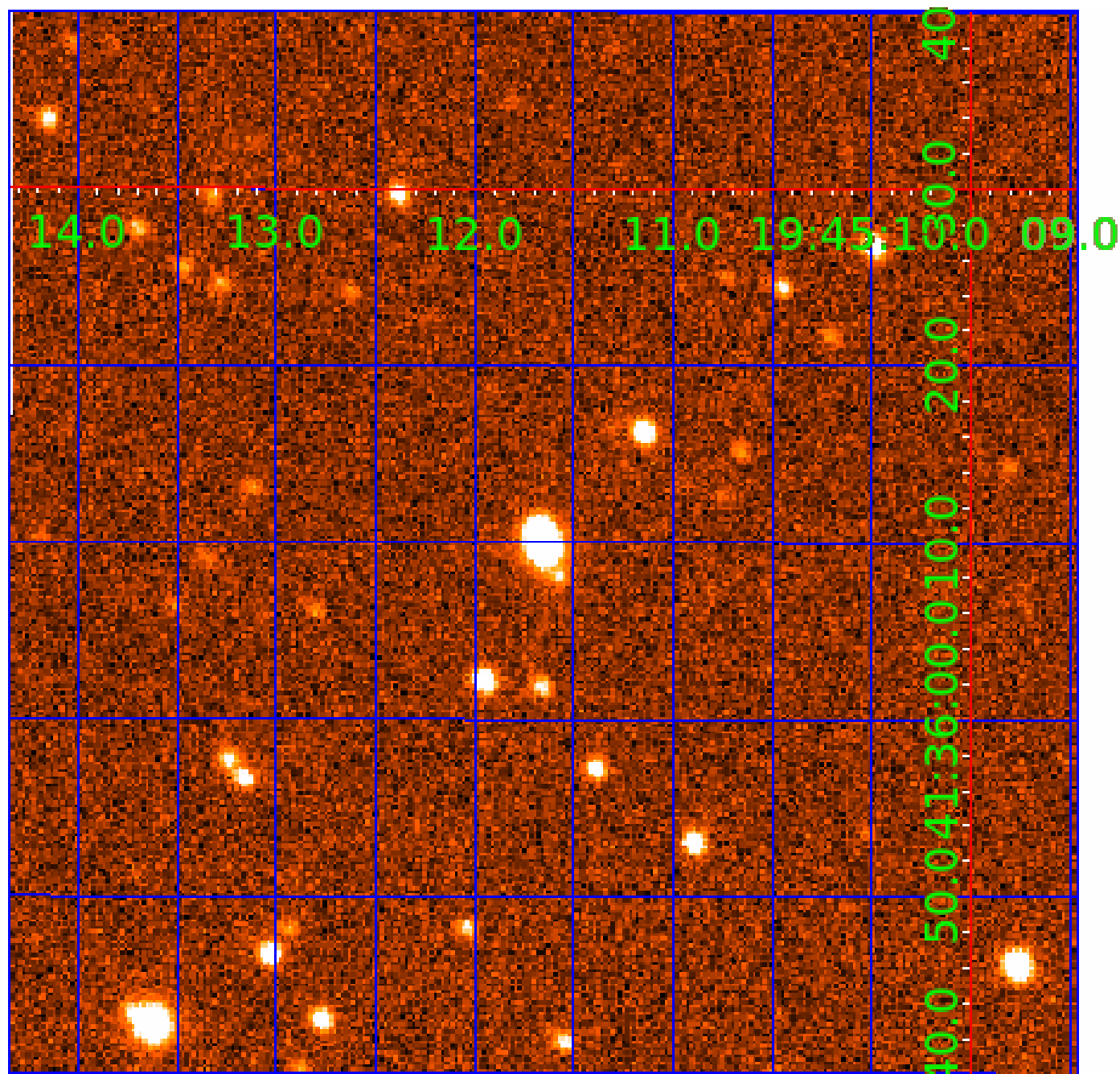


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006301035

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 006301035-01 | OBS      | 1124.01 | 11.990982     | 143.284529   | 2711.9      | 5.433            | 129.5 | 136.2 | 1.07                        | 6110            | 10.33                  | 141.92                 |
| 006301035-02 | OBS      | No      | 11.991015     | 139.598320   | 2524.3      | 5.602            | 126.9 | 129.0 | 1.07                        | 6110            | 9.99                   | 141.92                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 006301035-01 | OBS      | FP   | 0.00  | 0 | 1 | 1 | 1 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH |
| 006301035-02 | OBS      | FP   | 0.00  | 1 | 1 | 1 | 1 | IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH                                       |

**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 006301035-02

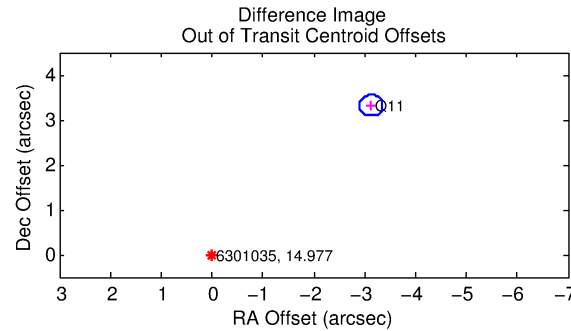
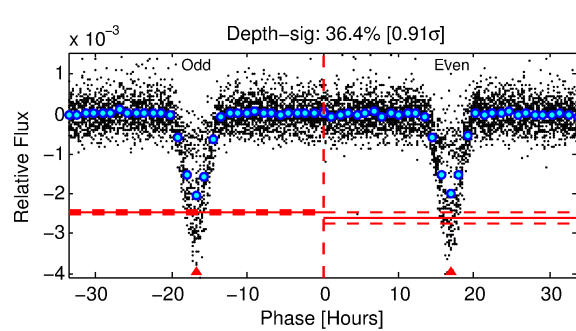
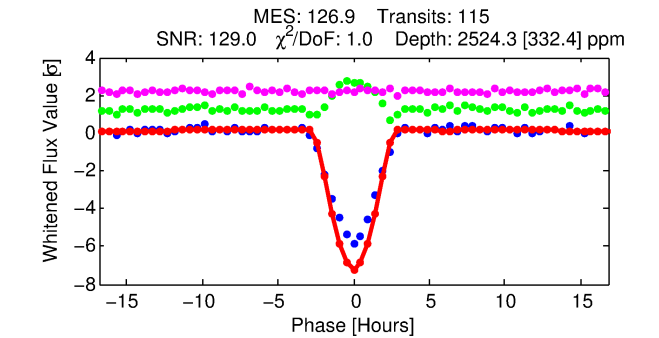
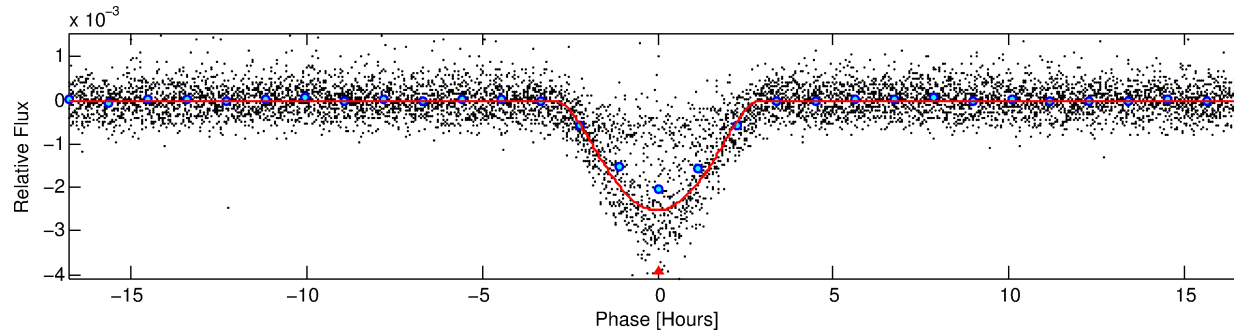
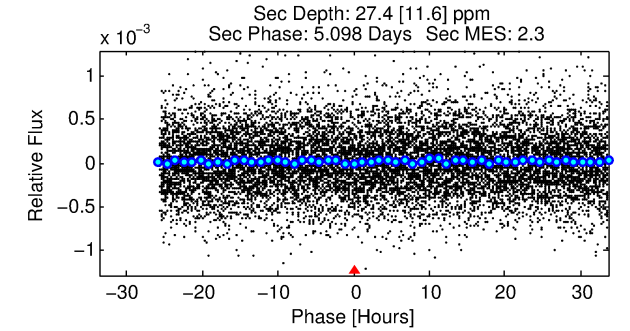
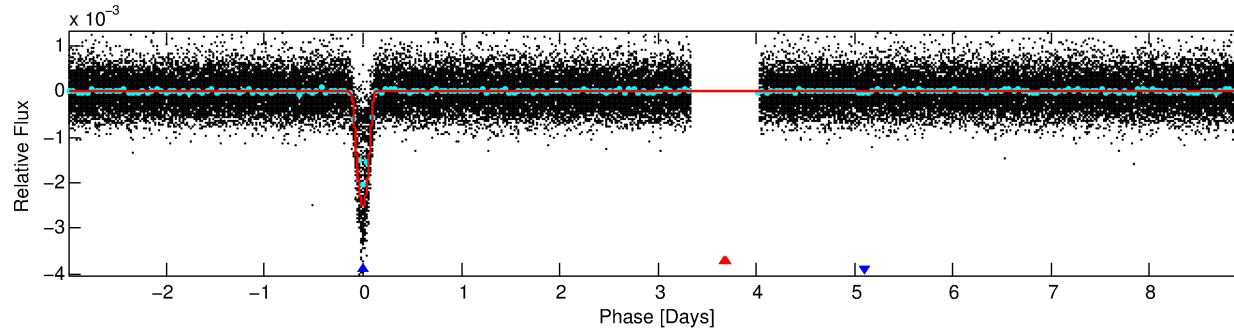
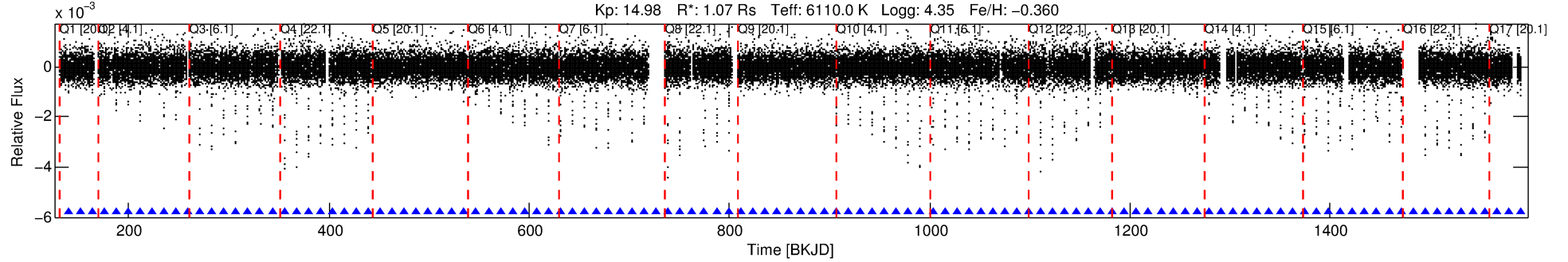
| TCE (1)      | KIC     | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ( $''$ ) | $\Delta$ Row | $\Delta$ Col | $m_2$ | $m_1$ | $D_2/D_1$ | Mechanism  | Flag | $\sigma_P$ | $\sigma_T$ |
|--------------|---------|------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 006301035-02 | 6301035 | 6027.01    | 6301030    | 1:1       | 8.8           | 3            | 1            | 17.78 | 14.98 | 221.15    | Direct-PRF | 0    | 0.02       | 0.02       |

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 6301035 Candidate: 2 of 2 Period: 11.991 d  
KOI: K01124 Corr: No Ephemeris Match

Kp: 14.98 R\*: 1.07 Rs Teff: 6110.0 K Logg: 4.35 Fe/H: -0.360



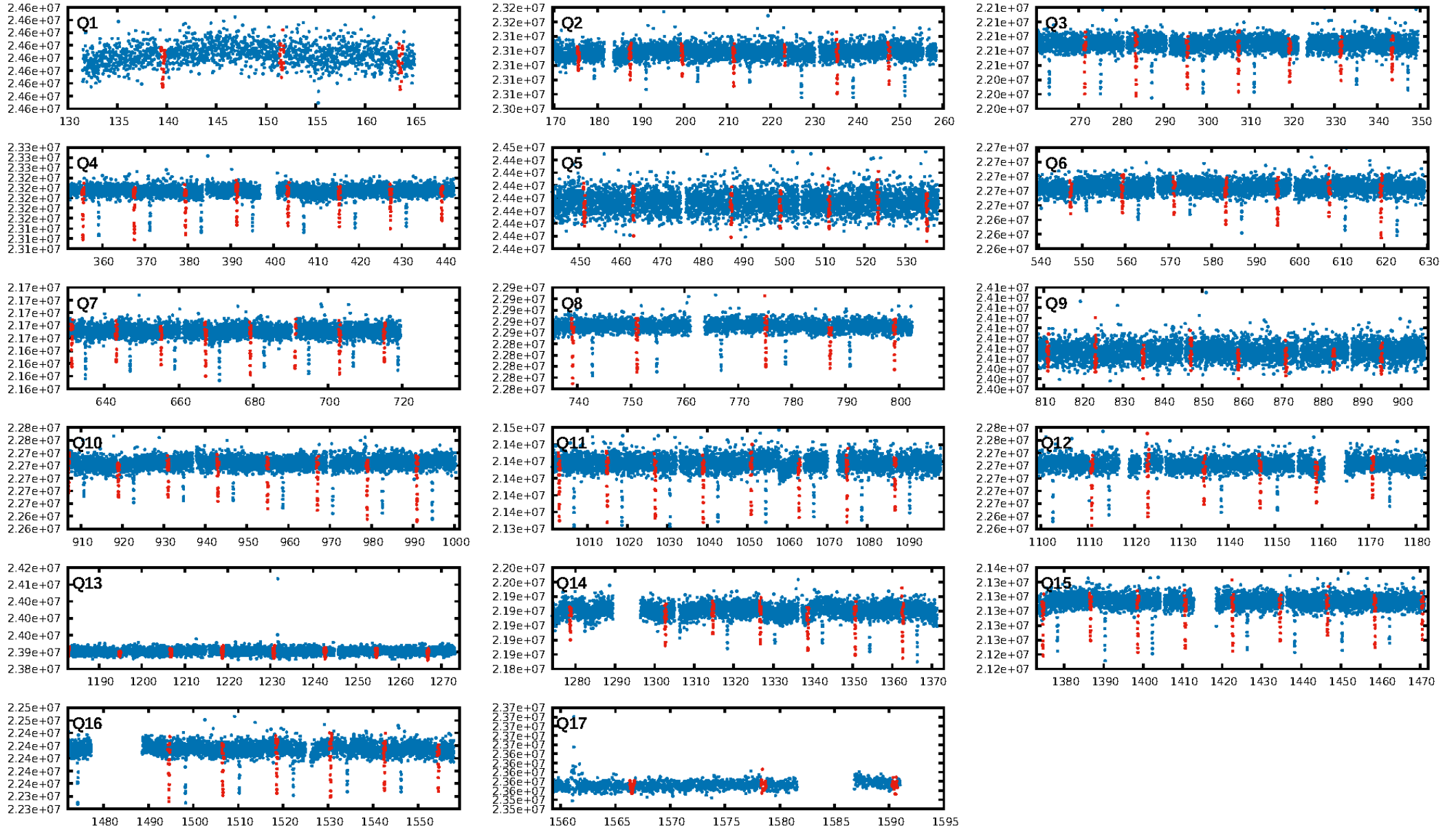
## DV Fit Results:

Period = 11.99101 [0.00001] d  
Epoch = 139.5983 [0.0009] BKJD  
Rp/R\* = 0.0854 [0.0267]  
a/R\* = 6.98 [0.45]  
b = 1.00 [0.05]  
Seff = 141.92 [52.50]  
Teq = 880 [81] K  
Rp = 9.99 [4.31] Re  
a = 0.1006 [0.0244] AU  
Ag = 1.53 [1.27] [0.42σ]  
Teff = 1513 [291] K [2.10σ]

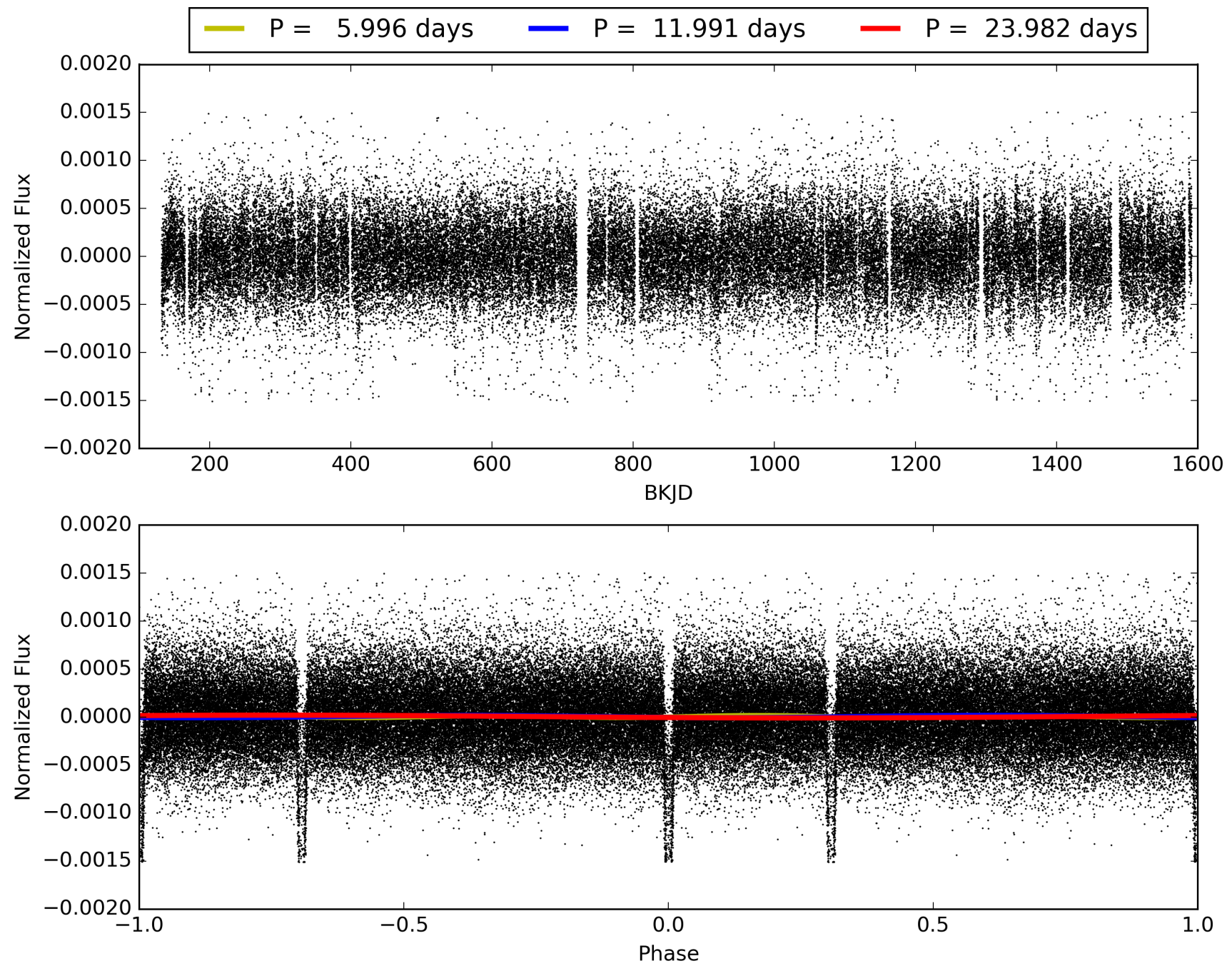
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [109/109]  
GhostDiagnostic-chr: -0.6018  
Centroid-sig: 0.0%  
Centroid-so: 29.193 arcsec [357.53σ]  
OotOffset-rm: 4.557 arcsec [58.52σ]  
KicOffset-rm: 4.538 arcsec [58.25σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006301035-02, PDC Light Curves

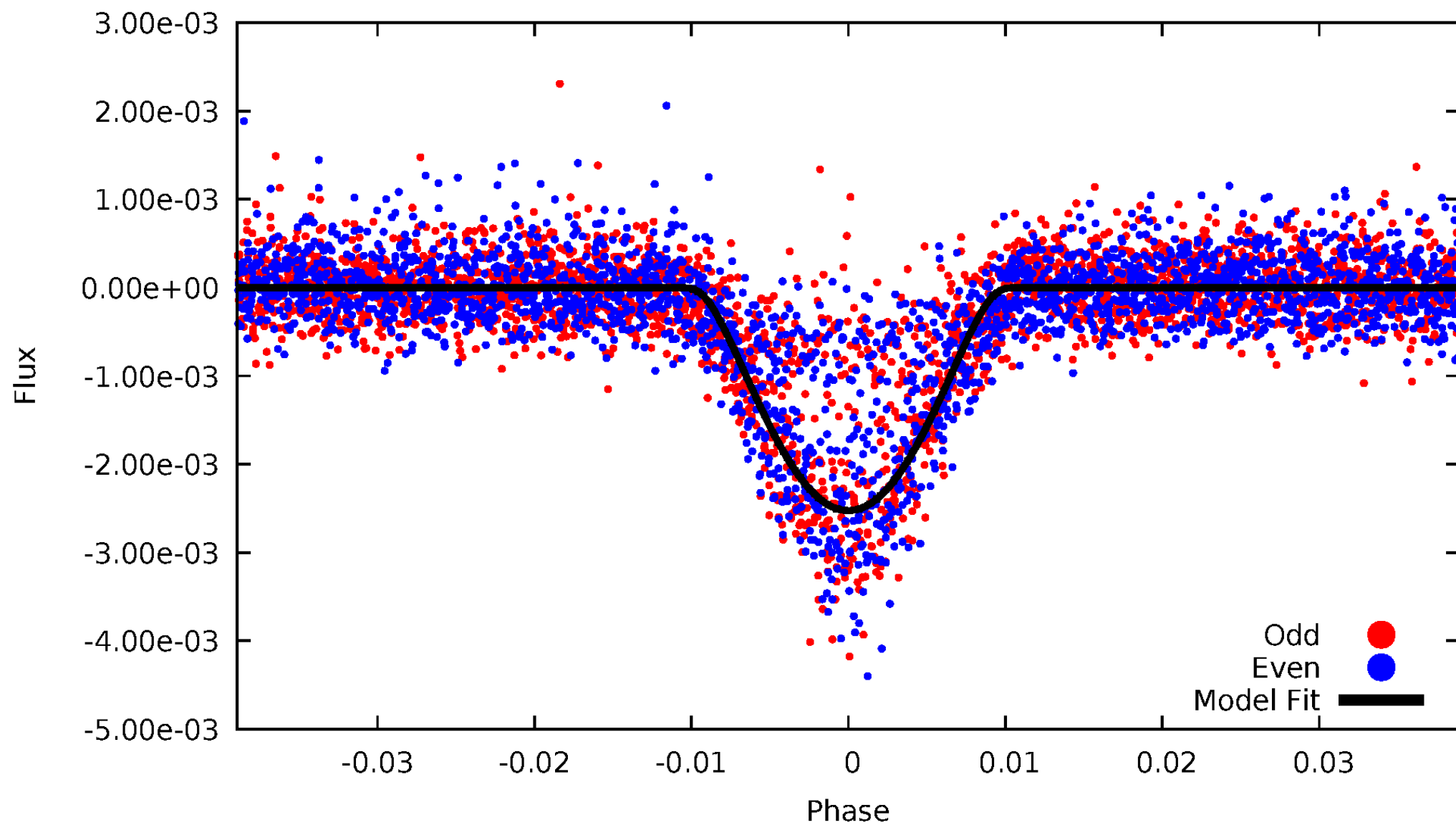


TCE 006301035-02



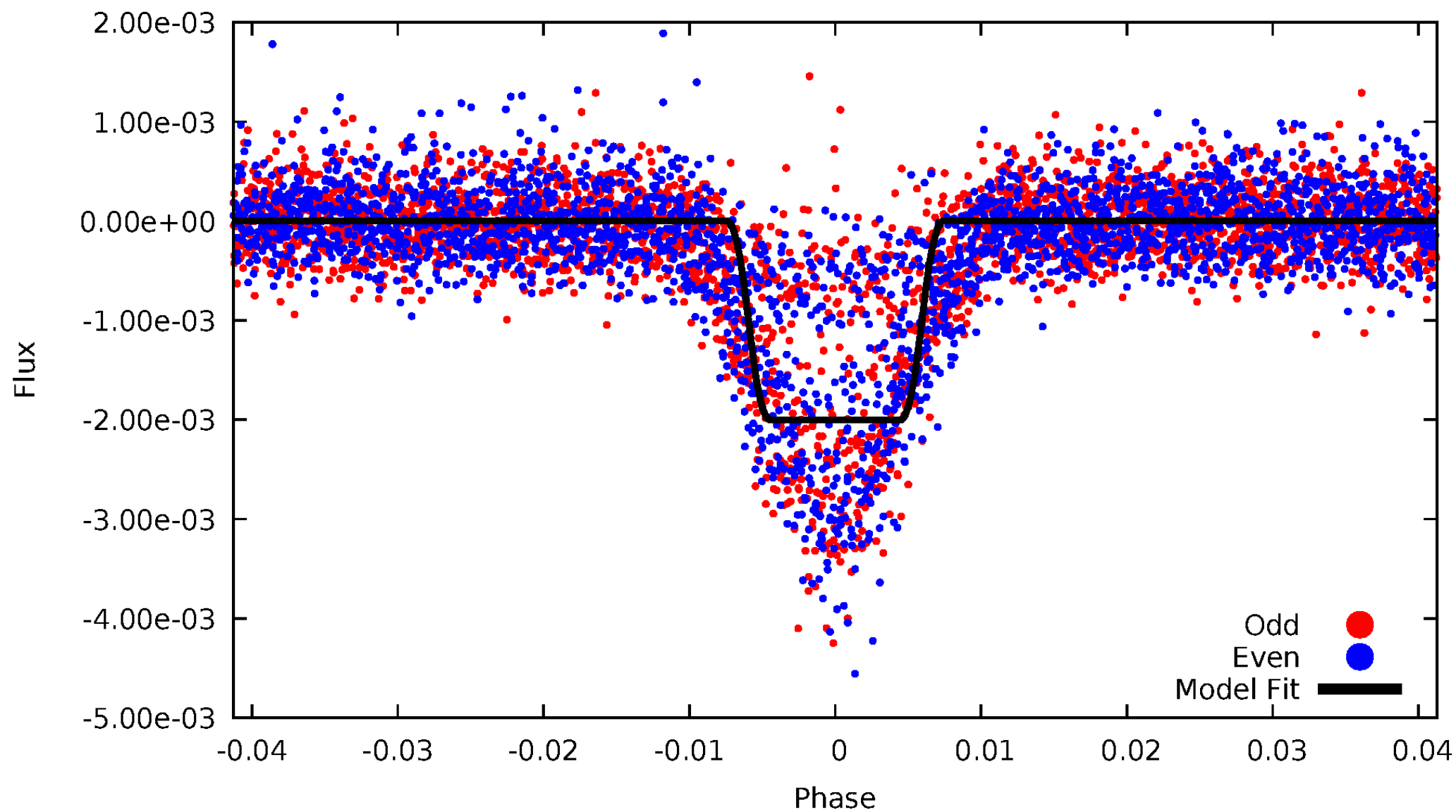
# DV Odd/Even

TCE 006301035-02



# ALT Odd/Even

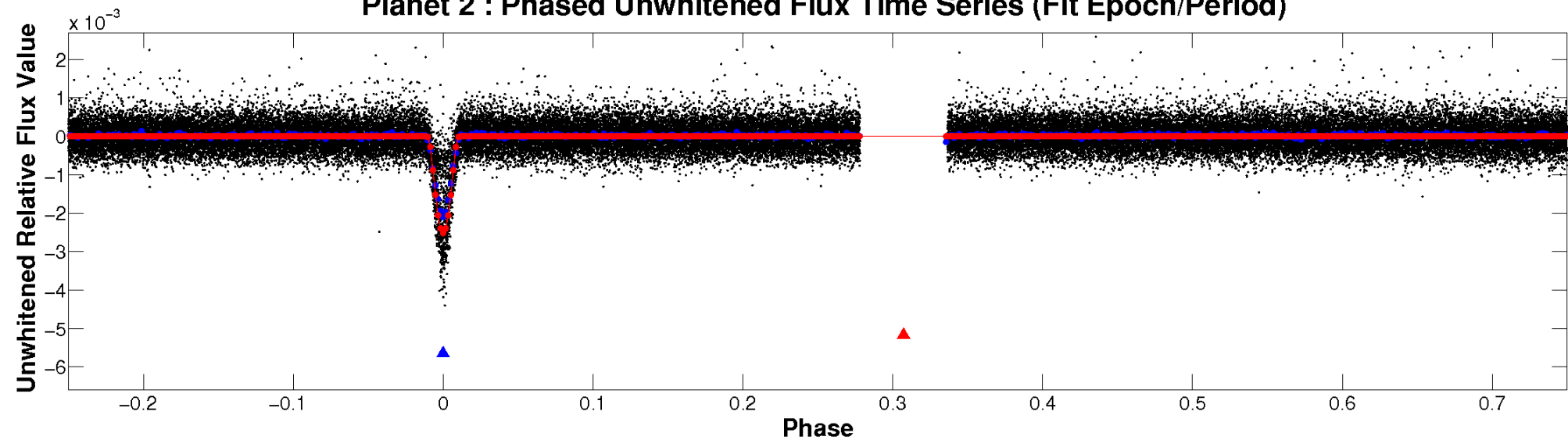
TCE 006301035-02



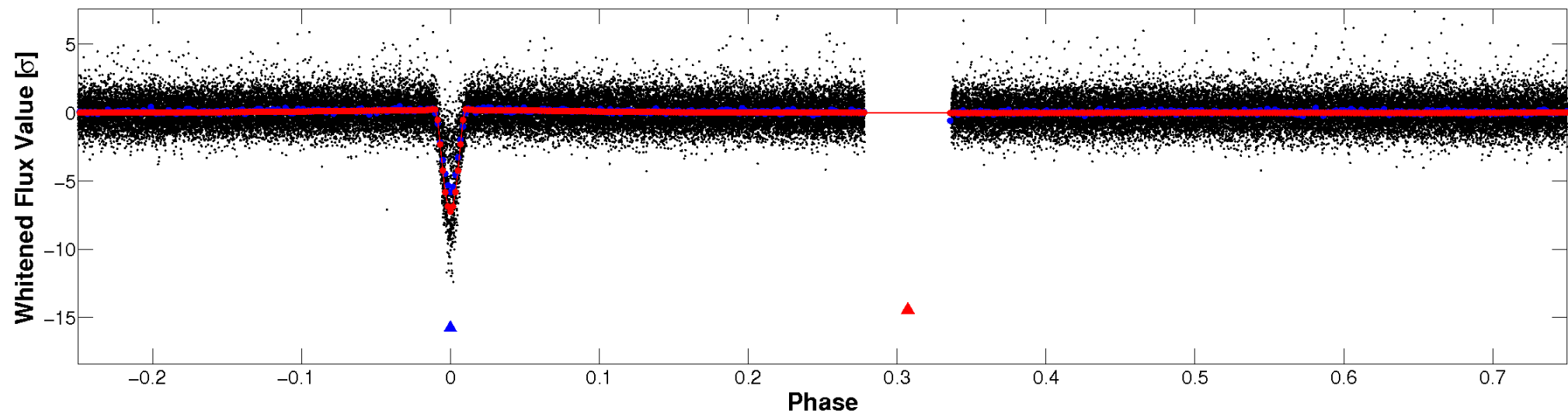


# Non-Whitened Vs. Whitened Light Curve

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

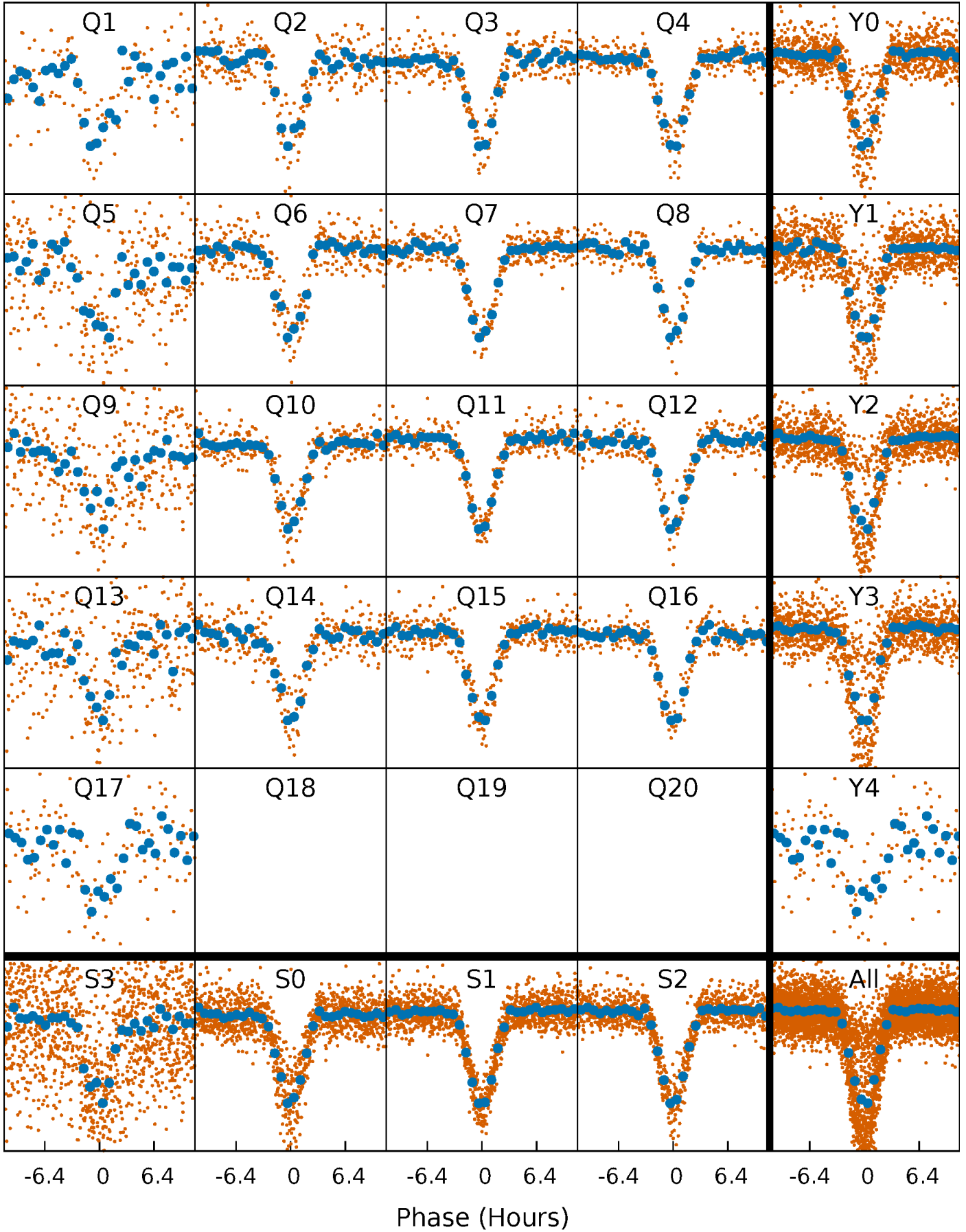


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



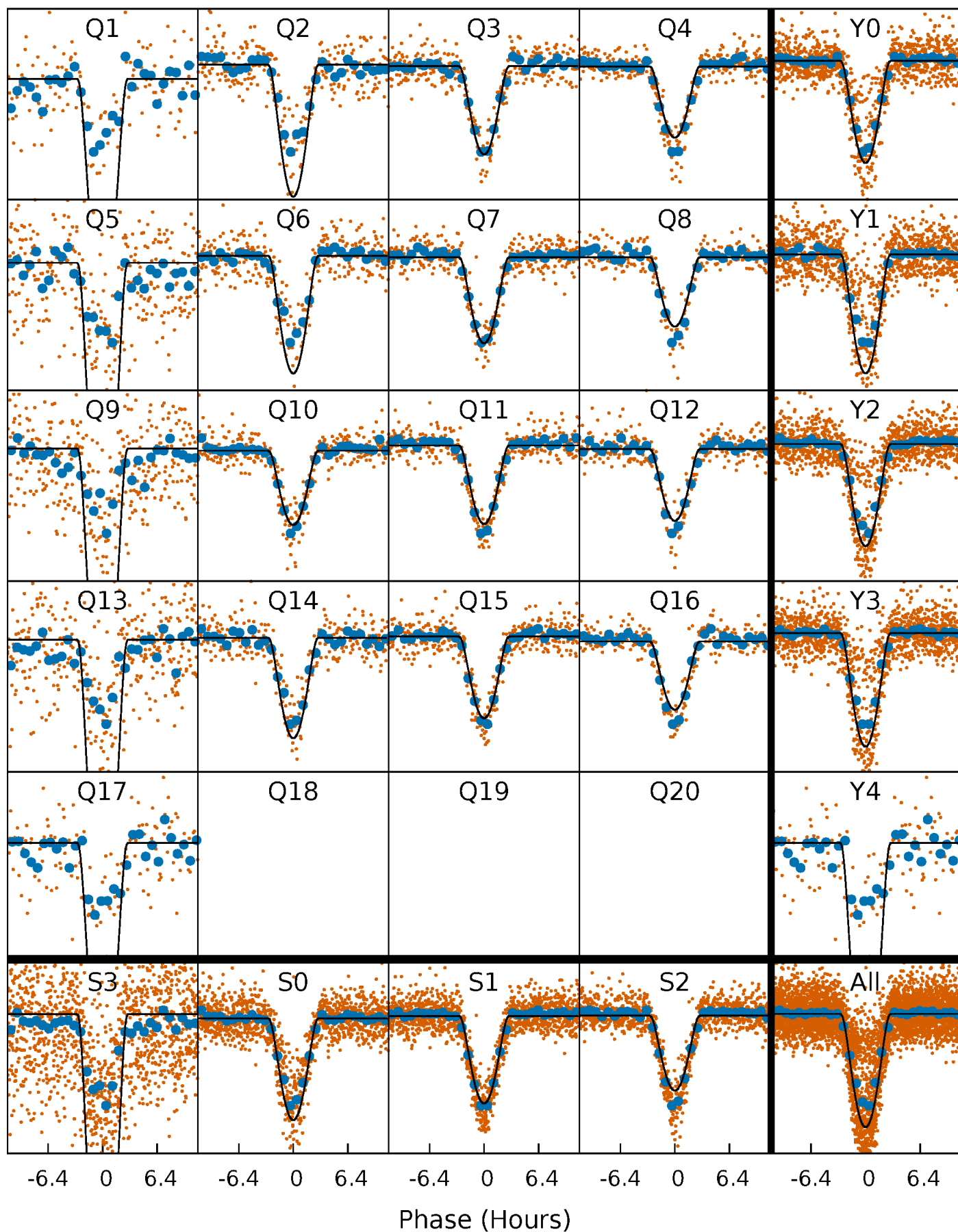
# PDC Quarter-Phased Transit Curves

TCE 006301035-02 P= 11.991015 Days  $T_0=139.598320$  (BKJD)



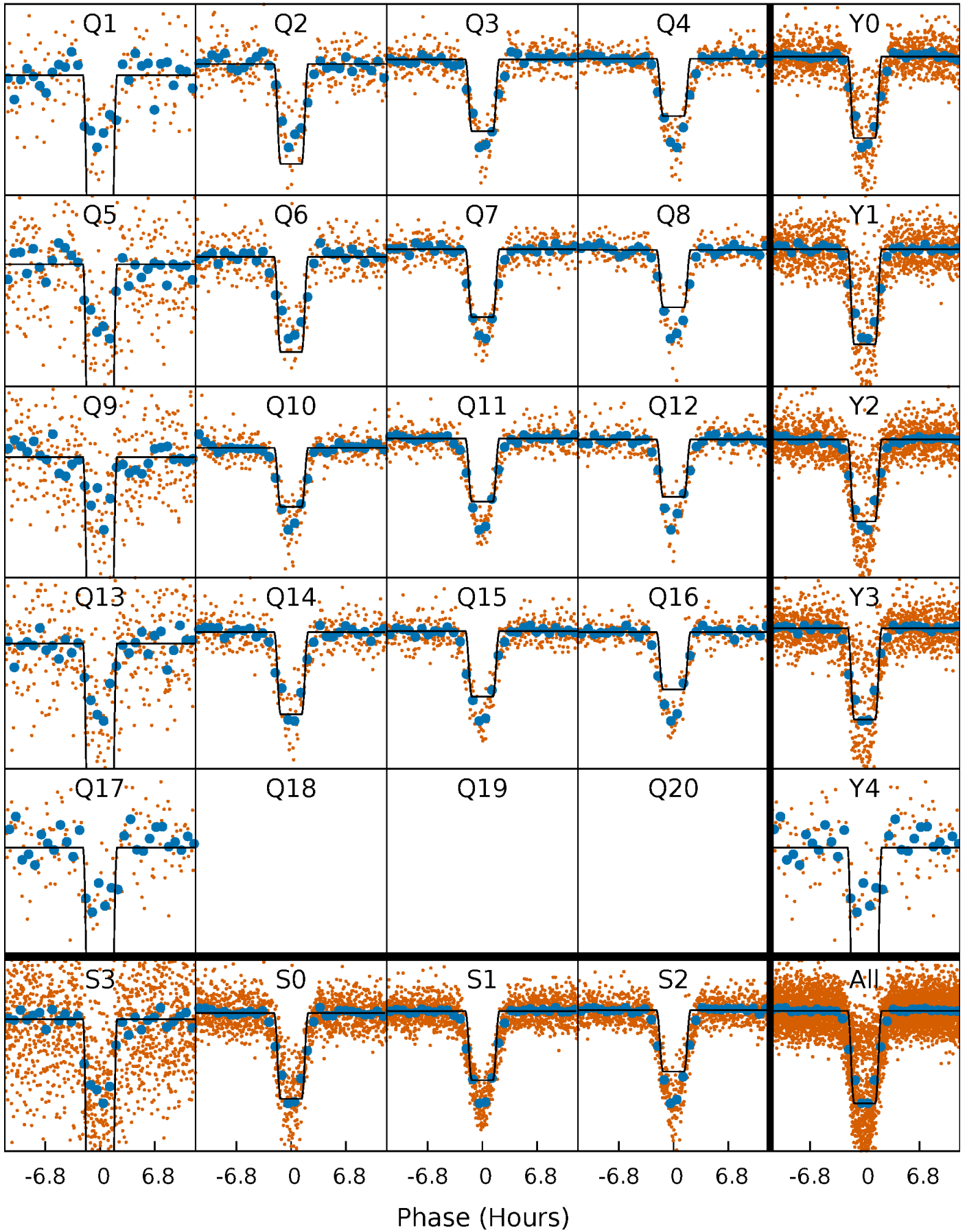
# DV Quarter-Phased Transit Curves

TCE 006301035-02 P= 11.991015 Days  $T_0=139.598320$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

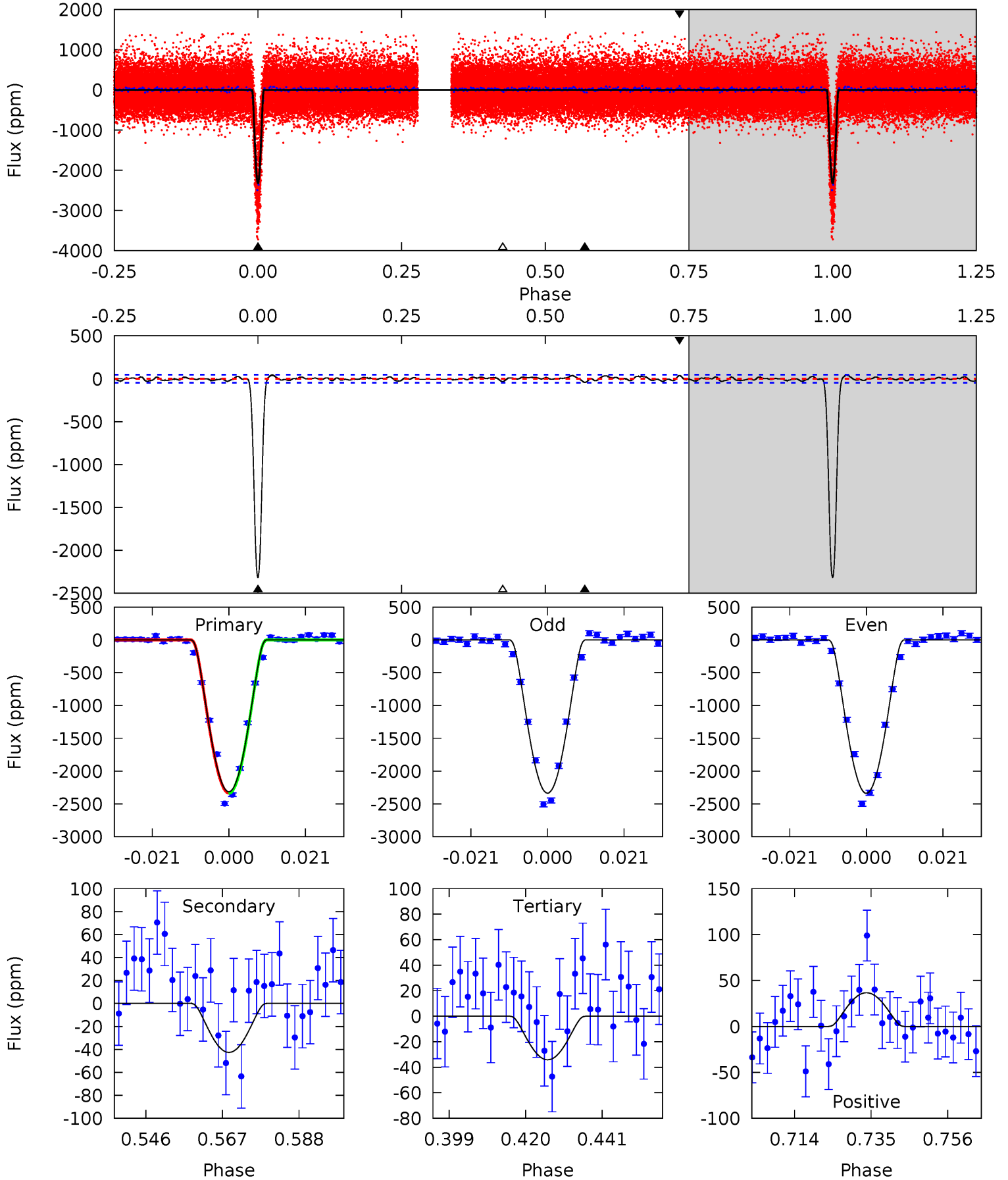
TCE 006301035-02 P= 11.991137 Days  $T_0=139.590851$  (BKJD)



# DV Model-Shift Uniqueness Test

006301035-02, P = 11.991015 Days, E = 127.607305 Days

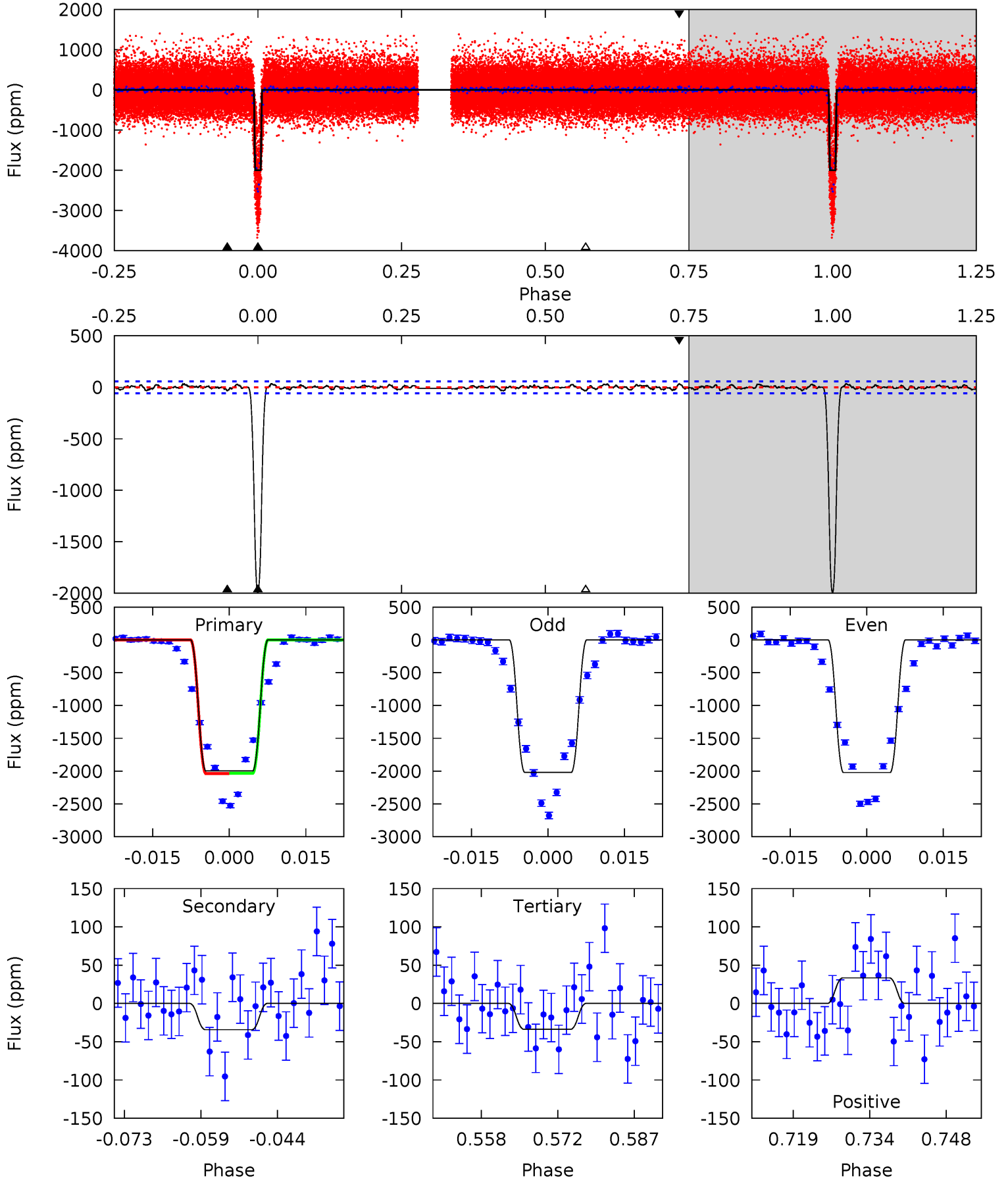
| Pri   | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 244.3 | 4.50 | 3.61 | 3.87 | 4.88            | 2.31            | 1.51             | 240.7   | 240.5   | 0.89    | 0.63    | 0.12    | 0.89 | 0.02  | 0.22 |



# Alt Model-Shift Uniqueness Test

006301035-02, P = 11.991137 Days, E = 127.599714 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  |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 171.5 | 2.94 | 2.90 | 2.87 | 4.95            | 2.44            | 1.09             | 168.6   | 168.7   | 0.04    | 0.08    | 0.19    | 0.89 | 0.02  | 0.22 |





### Stellar Parameters For KIC 006301035

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6110^{+192}_{-213}$ | $4.352^{+0.149}_{-0.182}$ | $-0.360^{+0.300}_{-0.300}$ | $1.072^{+0.319}_{-0.196}$ | $0.944^{+0.140}_{-0.102}$ | $1.080^{+0.769}_{-0.520}$                 |
|        | +3%/-3%              | +3%/-4%                   | +83%/-83%                  | +30%/-18%                 | +15%/-11%                 | +71%/-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 006301035-02 / KOI

| Detrend | Depth (ppm)  | $R_p (R_{\oplus})$      | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$           |
|---------|--------------|-------------------------|----------------------|----------------------|----------------------------|
| DV      | $-43 \pm 9$  | $10.02^{+3.82}_{-3.22}$ | $1230^{+91}_{-78}$   | $2491^{+284}_{-224}$ | $2.322^{+2.990}_{-1.148}$  |
| Alt.    | $-34 \pm 12$ | $5.32^{+3.08}_{-2.62}$  | $1231^{+98}_{-80}$   | $2877^{+700}_{-386}$ | $6.472^{+20.621}_{-4.261}$ |

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

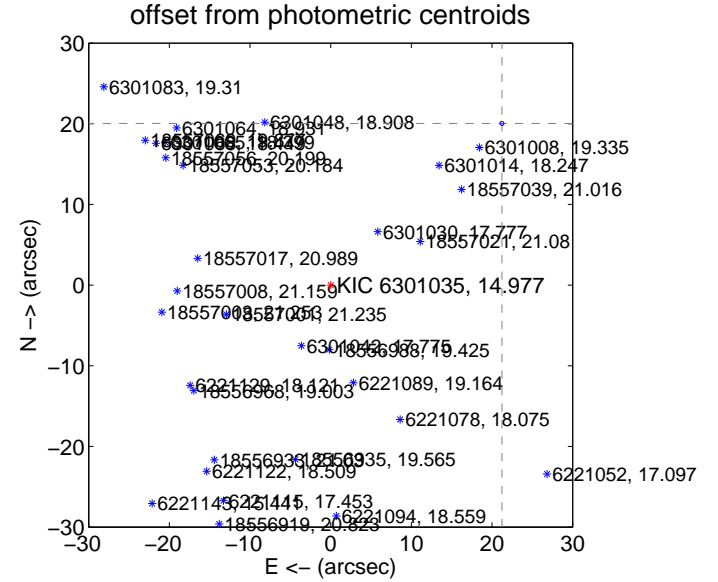
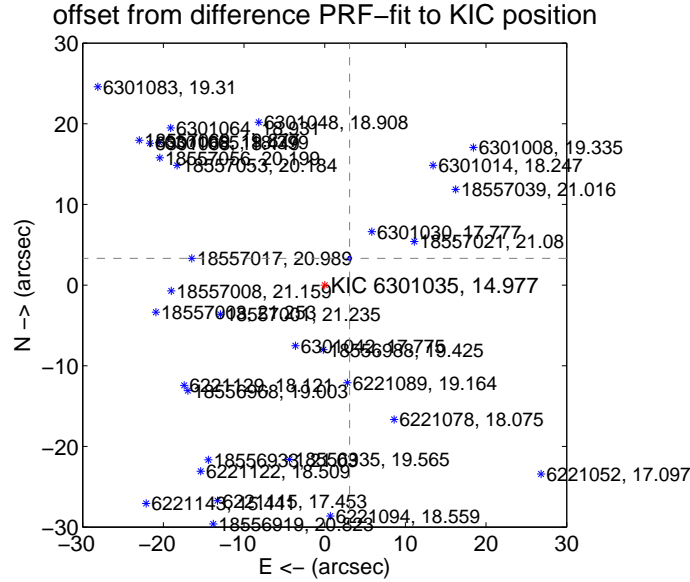
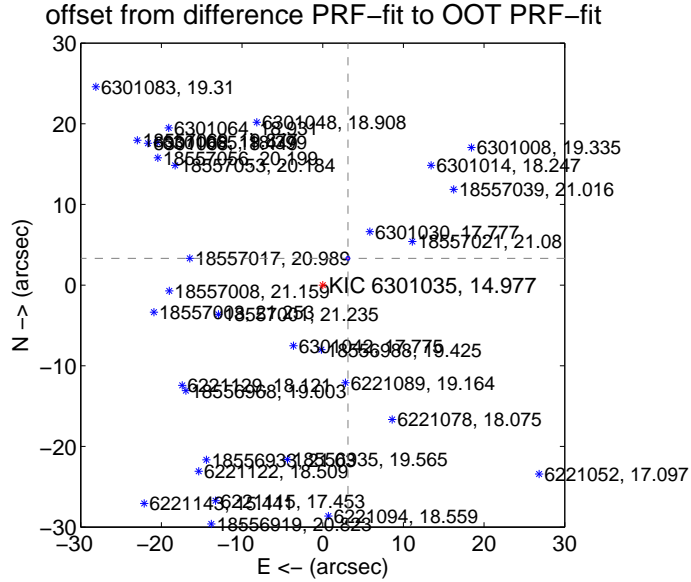
## DV Centroid Data

Supplemental centroid analysis for 006301035-02. Kepler magnitude: 14.98. Transit SNR 129.00

There are 1 quarters with good PRF difference image offsets

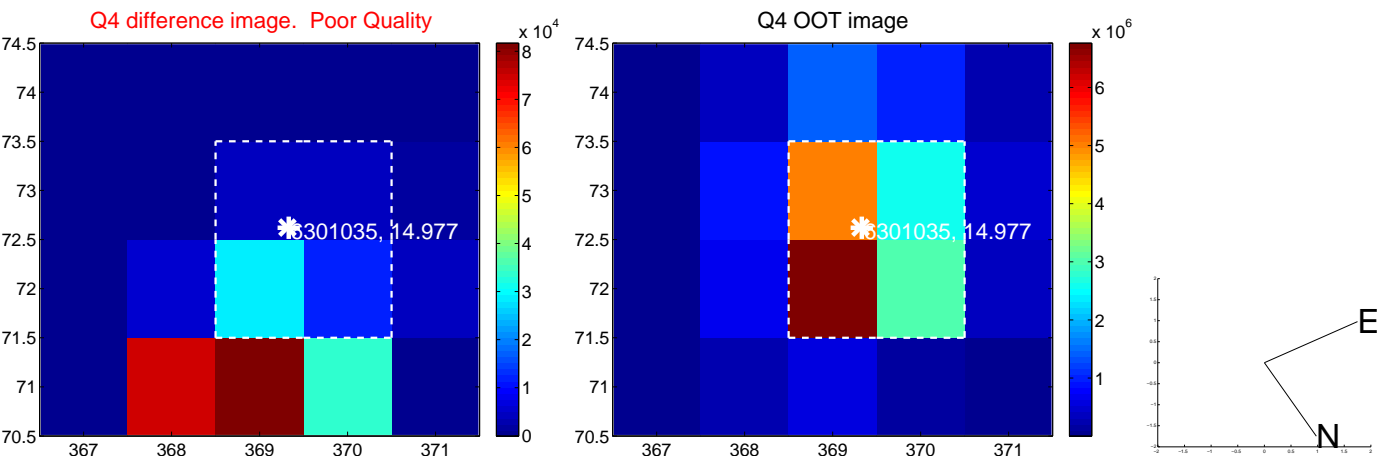
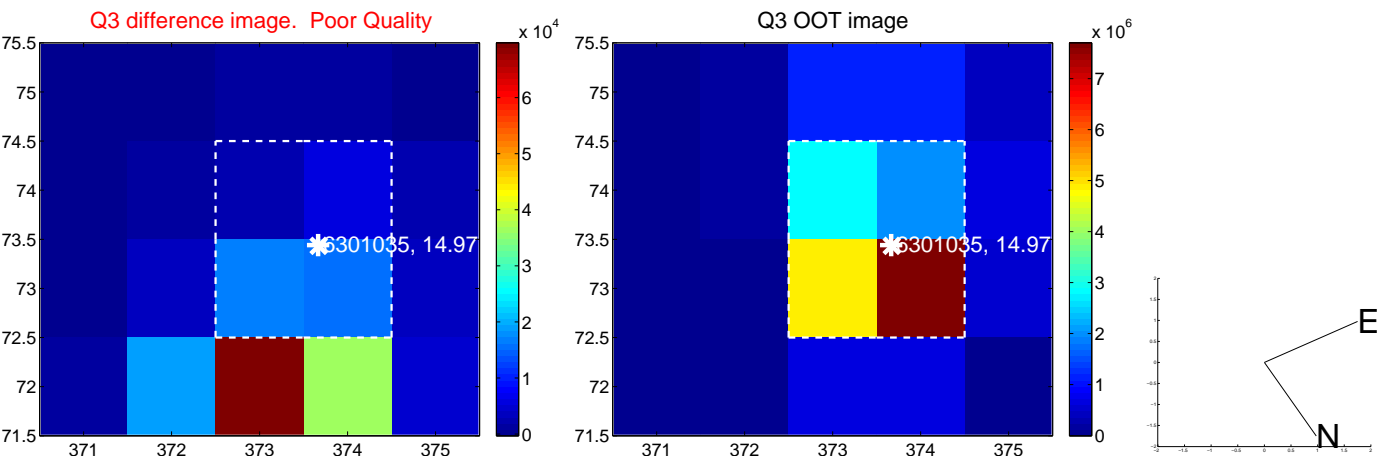
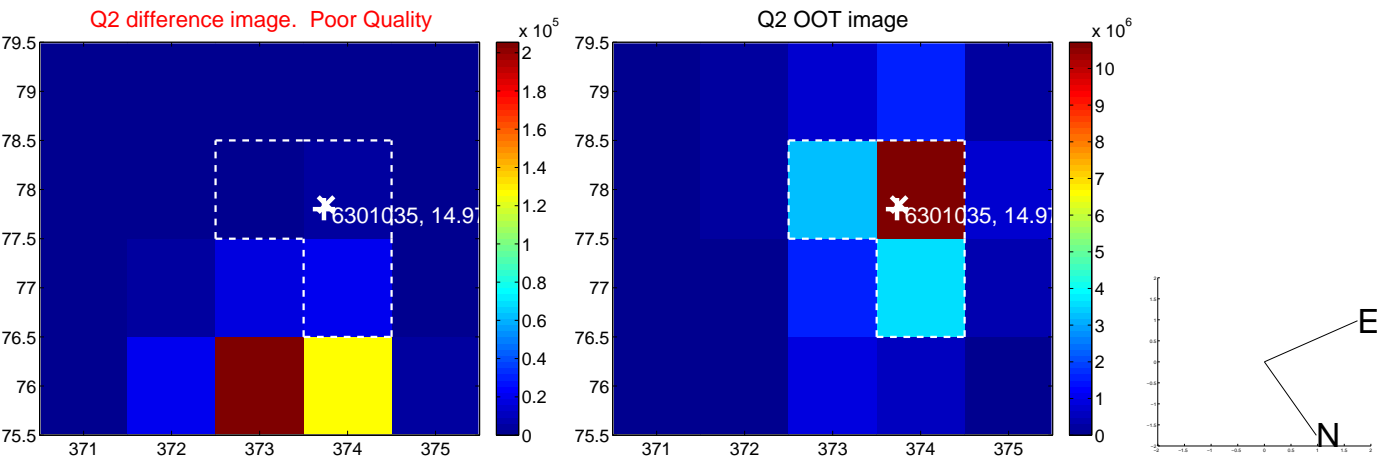
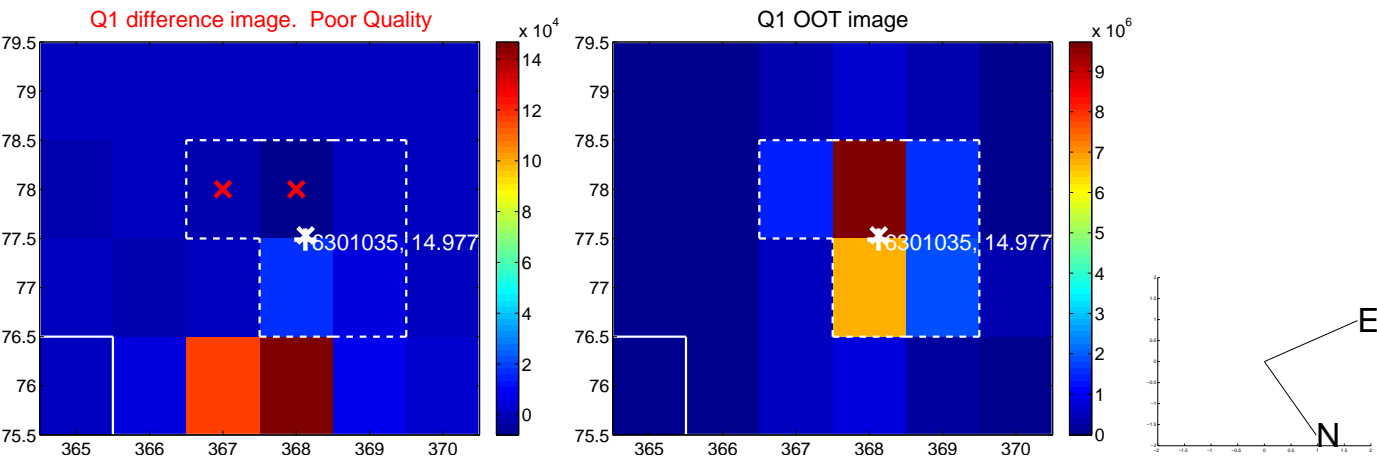
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | 4.557 $\pm$ 0.078  | 58.52               | -3.124 $\pm$ 0.074 | 3.317 $\pm$ 0.081 |
| PRF-fit source offset from KIC position | 4.538 $\pm$ 0.078  | 58.25               | -3.095 $\pm$ 0.074 | 3.319 $\pm$ 0.081 |
| photometric centroid source offset      | 29.19 $\pm$ 0.08   | 357.53              | -21.23 $\pm$ 0.08  | 20.04 $\pm$ 0.08  |

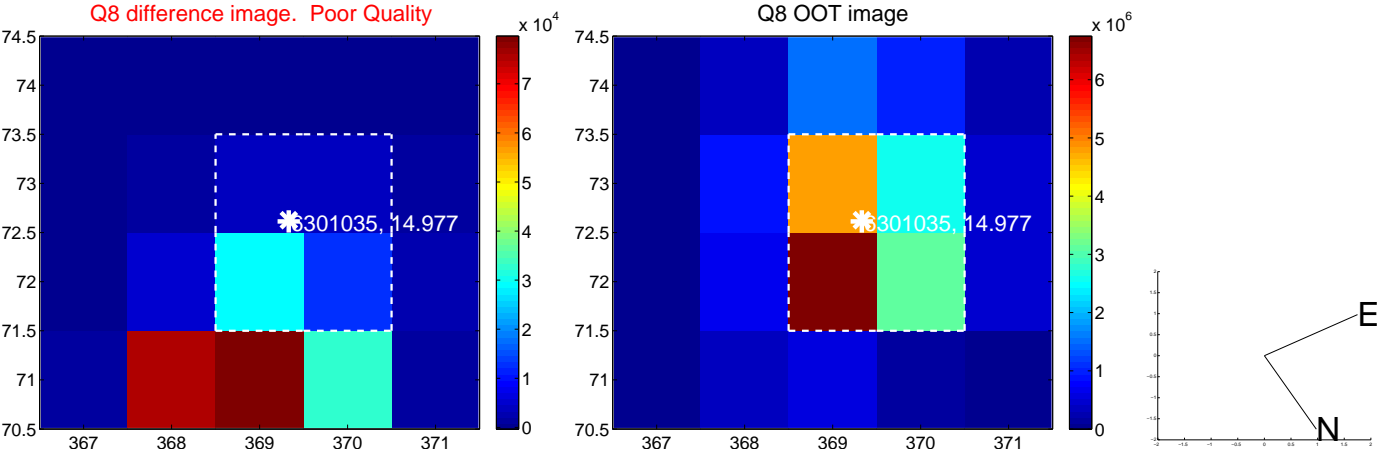
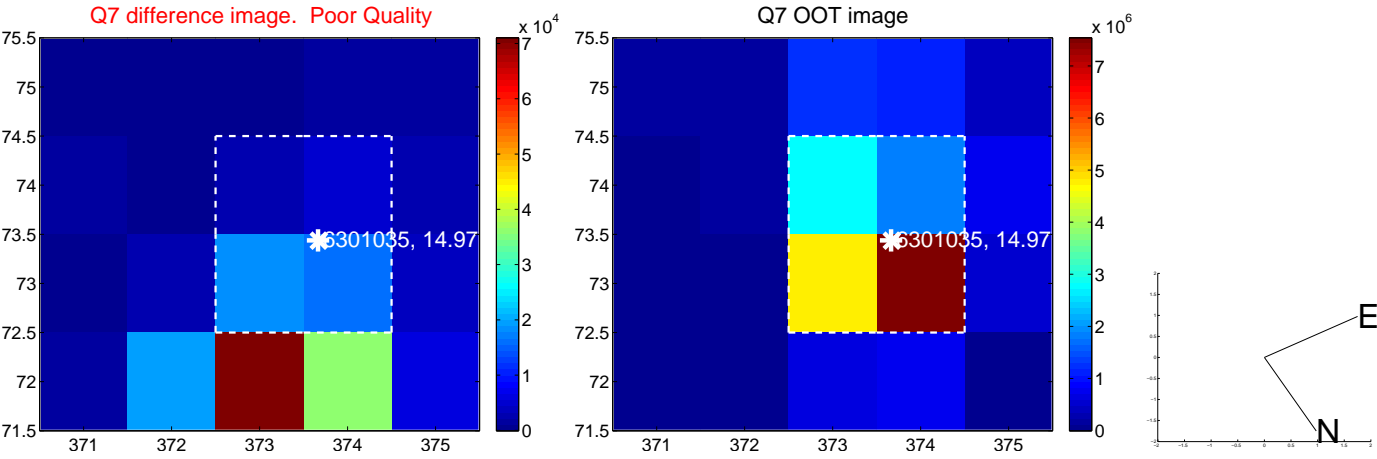
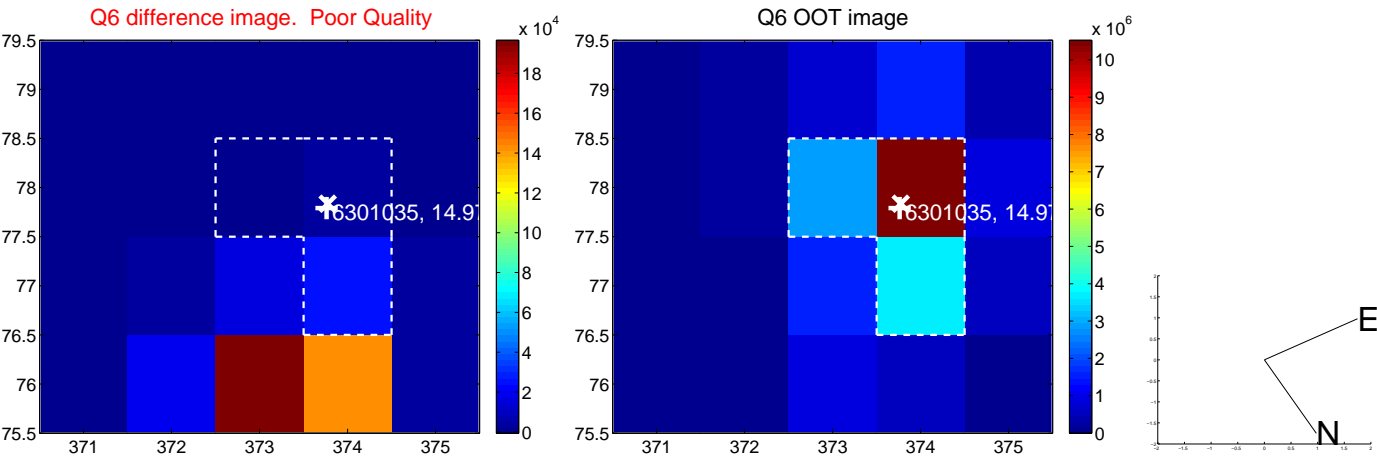
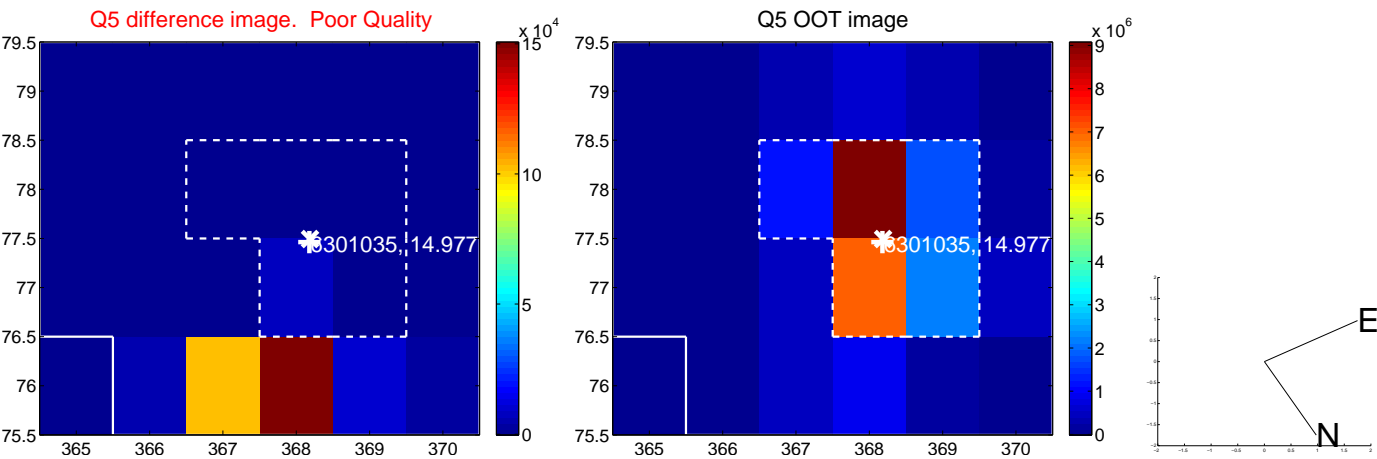


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

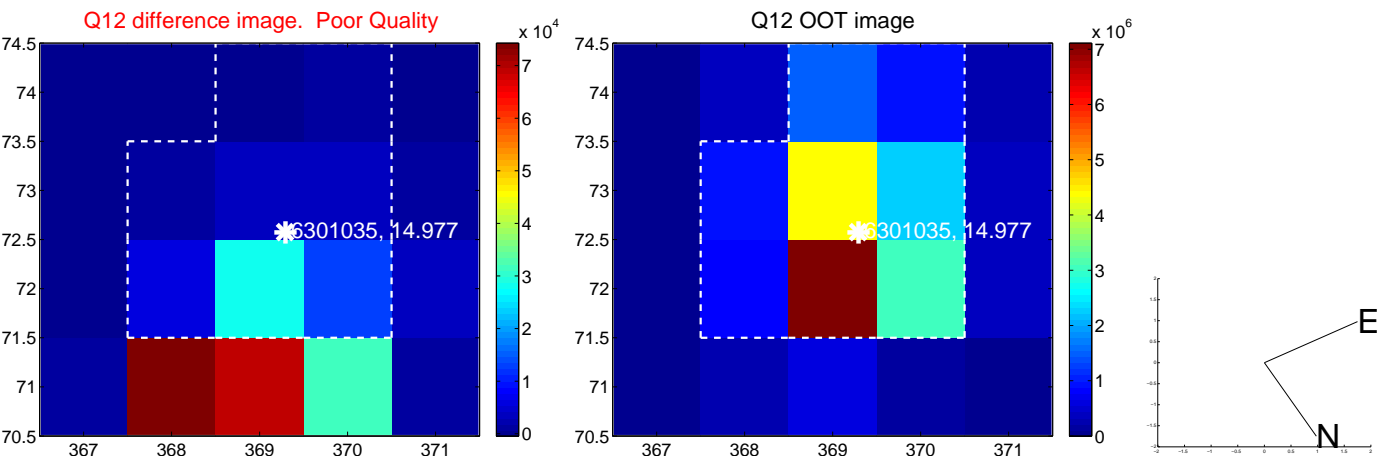
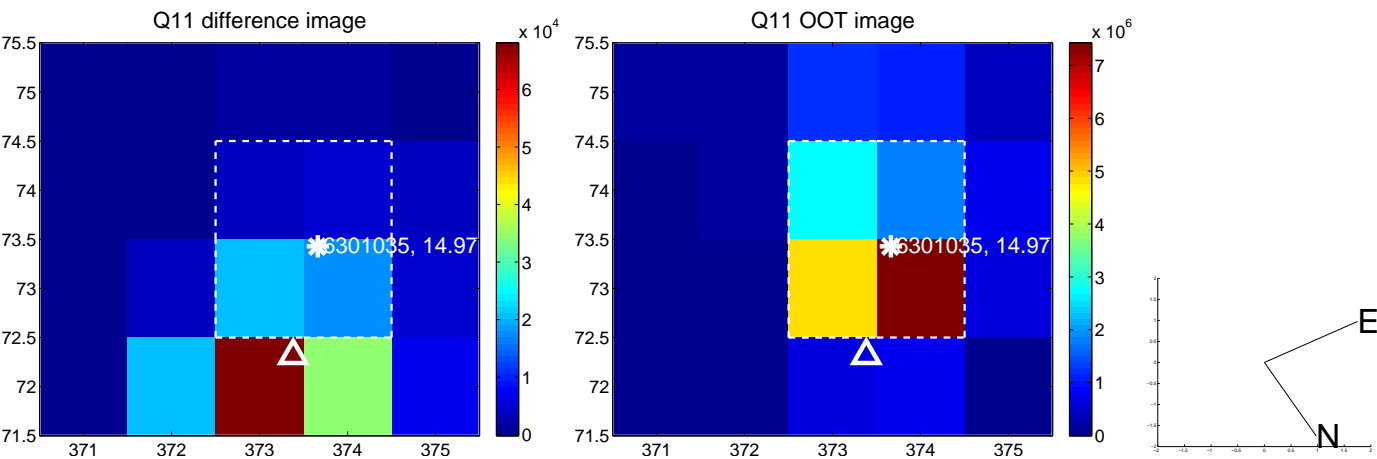
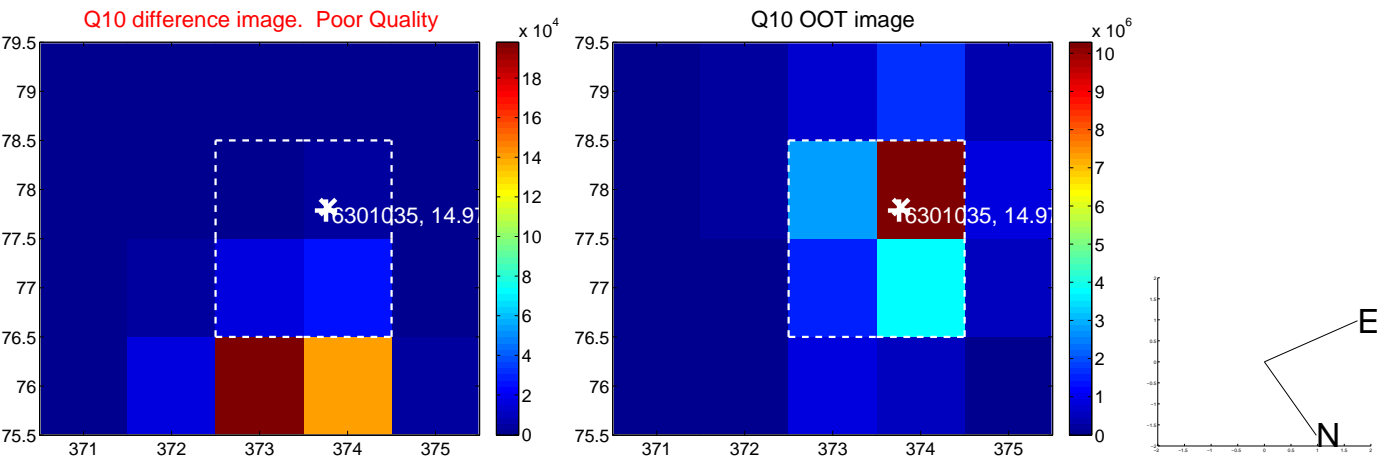
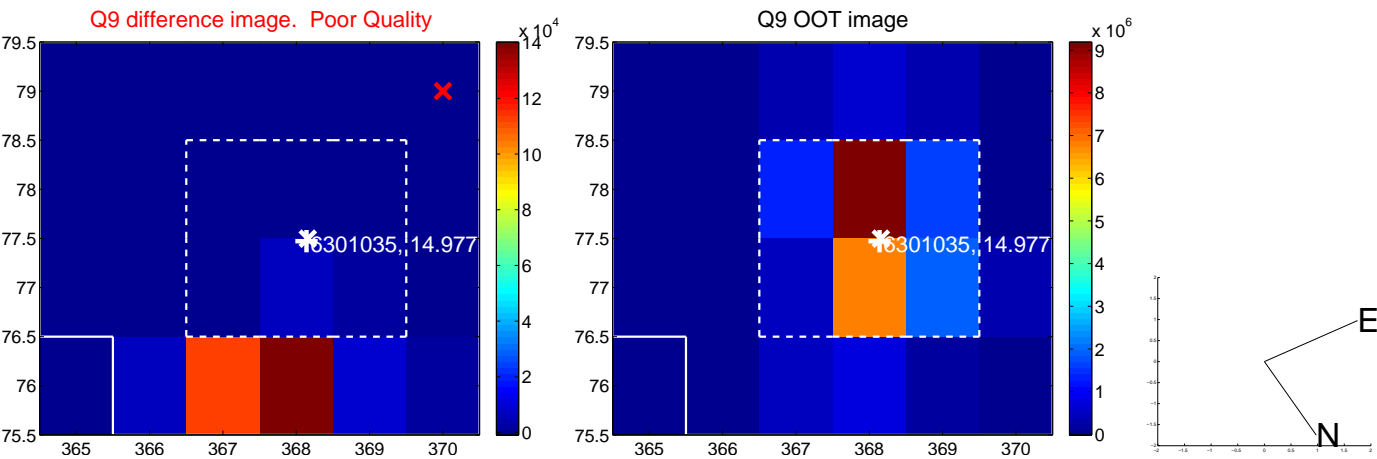
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



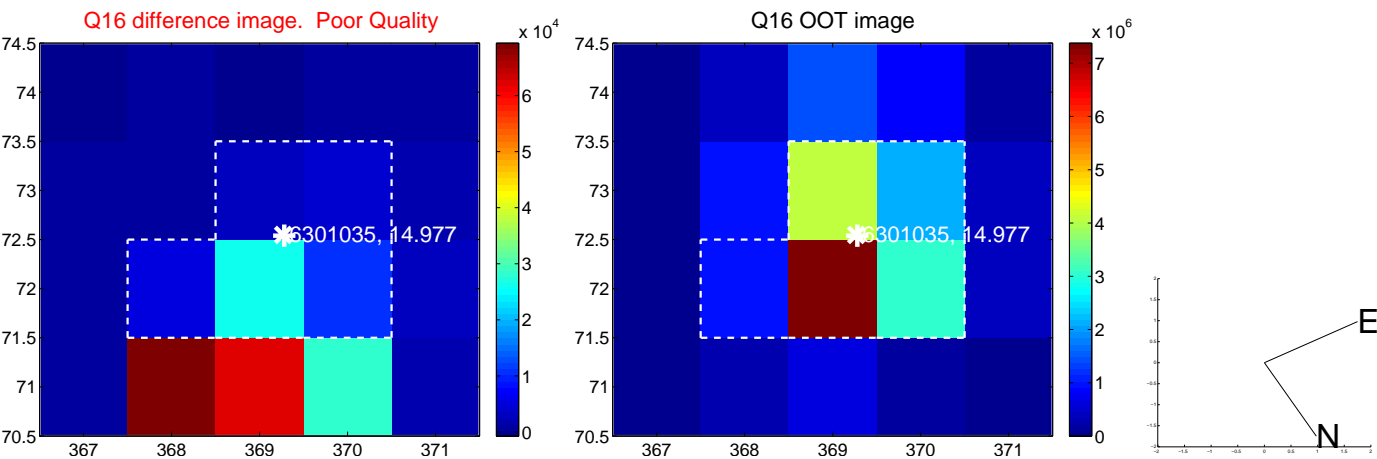
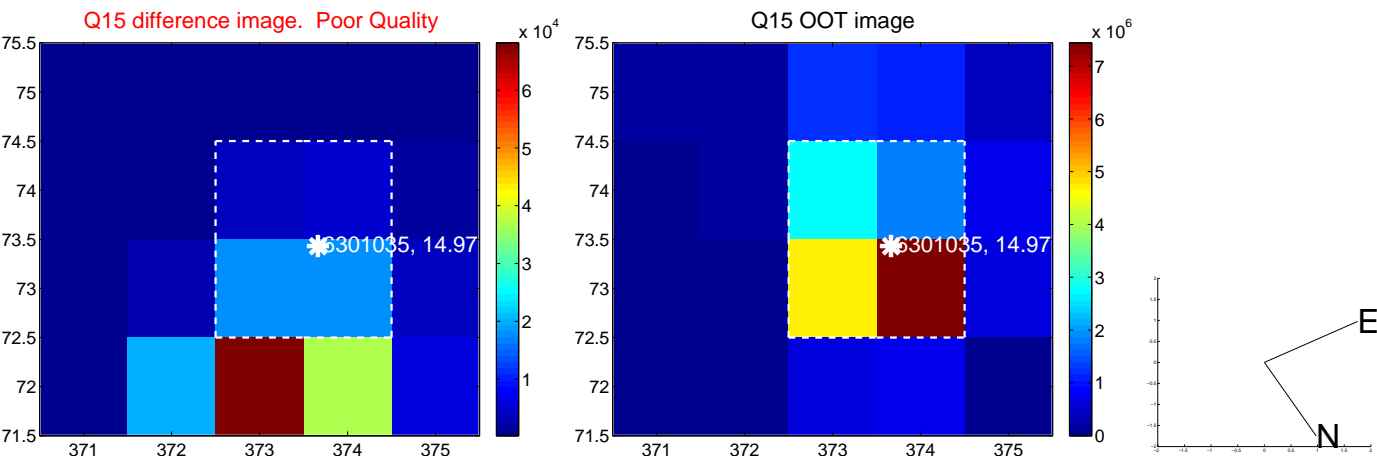
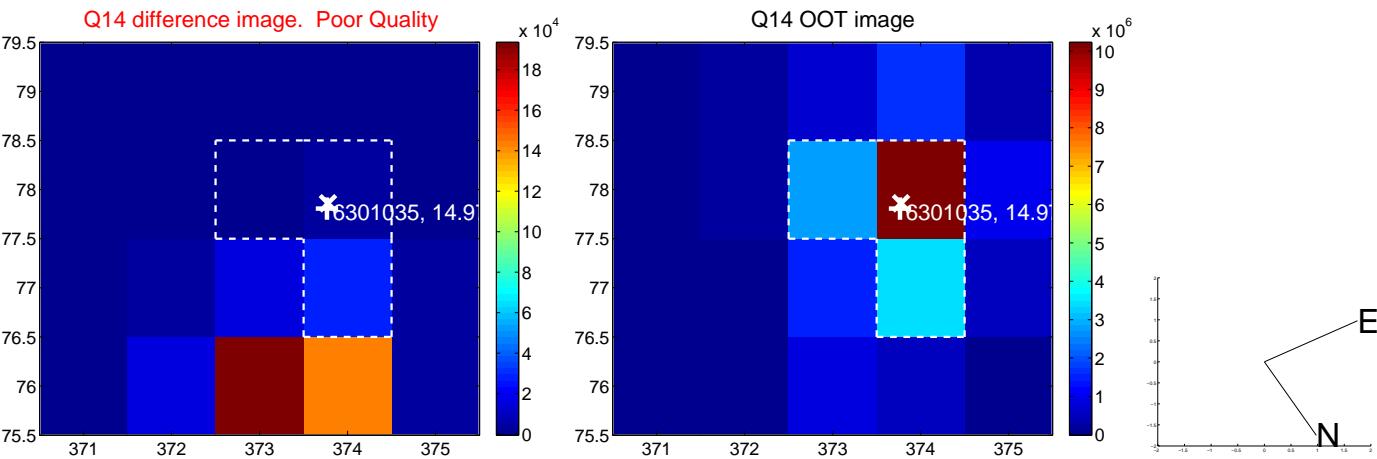
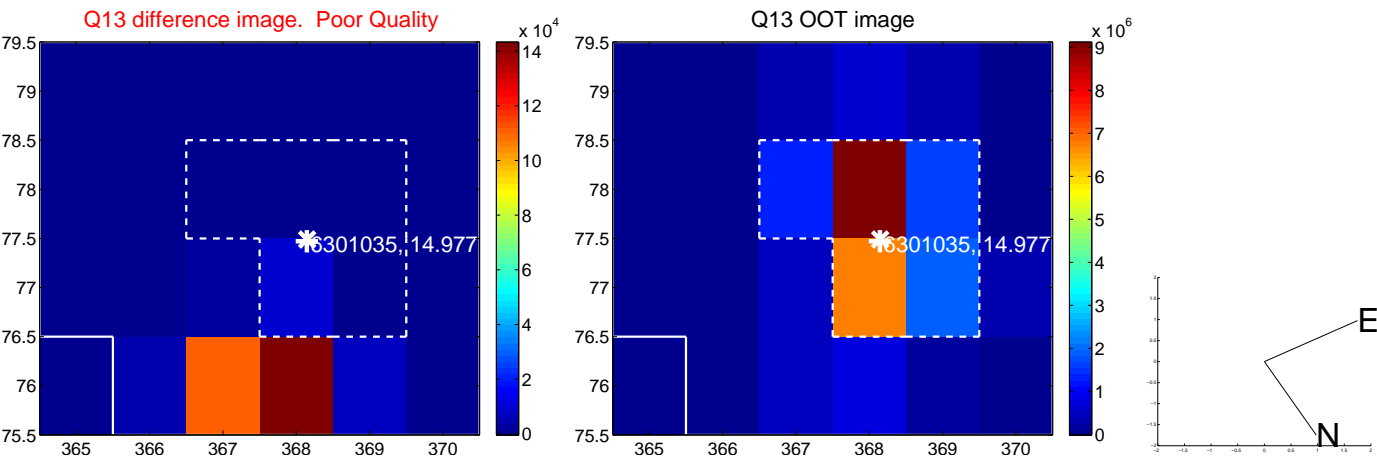
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.





UKIRT Image

Declination

