

KIC 007032132

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007032132-01 | OBS | No | 0.566794 | 131.794953 | 14.3 | 2.477 | 7.9 | 7.5 | 1.50 | 6210 | 0.63 | 16157.28 |
| 007032132-02 | OBS | No | 85.109152 | 209.125767 | 325.3 | 1.469 | 7.4 | 8.4 | 1.50 | 6210 | 2.72 | 20.24 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007032132-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH |
| 007032132-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT |

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

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

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

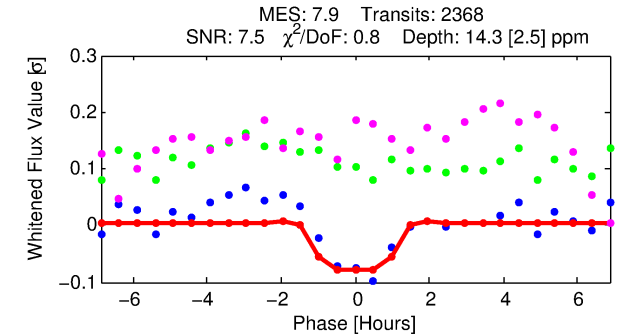
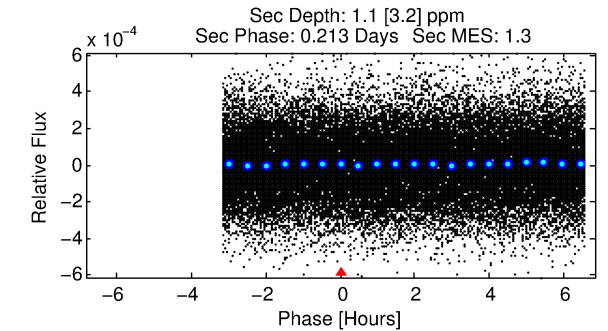
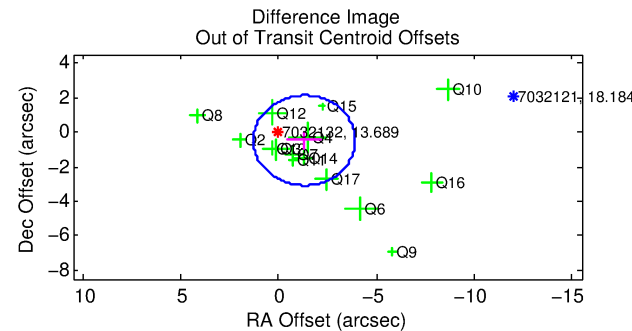
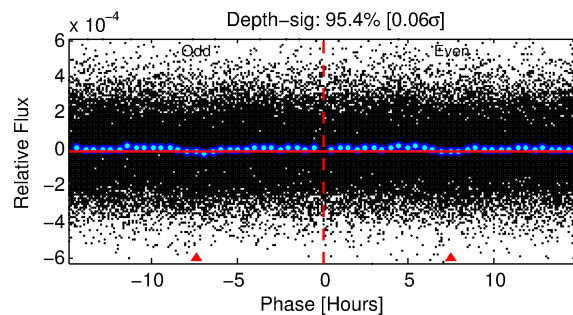
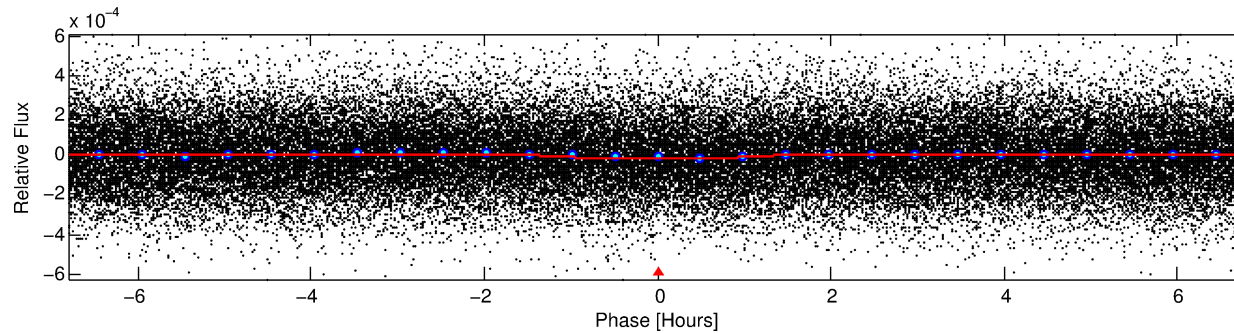
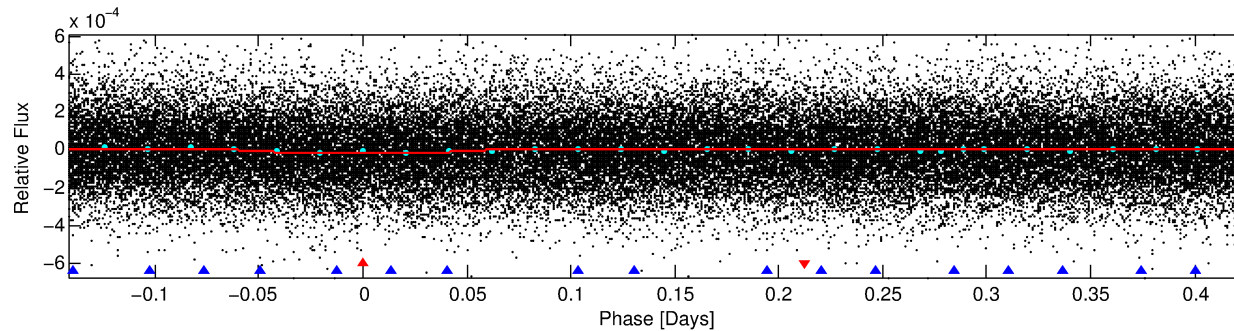
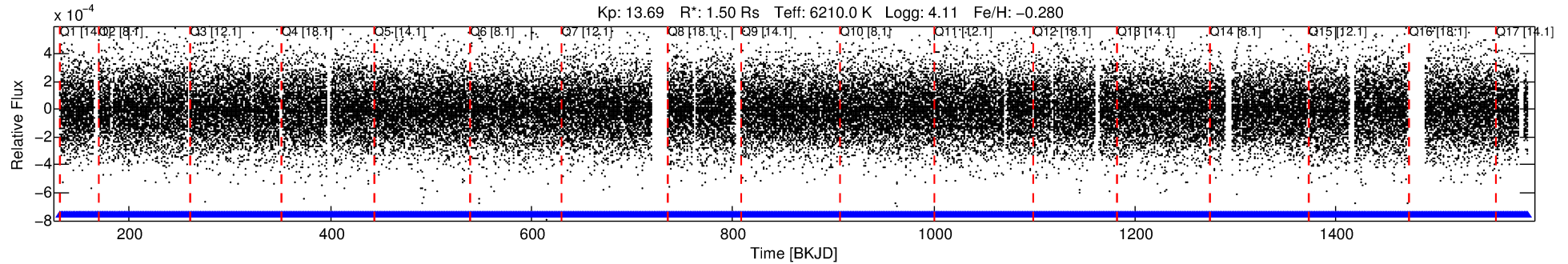
Ephemeris Match Information For 007032132-01

| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|---------|------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 007032132-01 | 7032132 | RR-Lyr-pri | 7198959 | 1:1 | 989.5 | 194 | -156 | 7.86 | 13.69 | 44521.00 | Direct-PRF | 0 | 0.77 | 21.78 |

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ 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. σ_P and σ_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 σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7032132 Candidate: 1 of 2 Period: 0.567 d



DV Fit Results:

Period = 0.56679 [0.00001] d
Epoch = 131.7950 [0.0040] BKJD
Rp/R* = 0.0038 [0.0012]
a/R* = 1.38 [1.05]
b = 0.80 [0.74]
Seff = 16157.28 [8456.04]
Teq = 2875 [376] K
Rp = 0.63 [0.28] Re
a = 0.0136 [0.0043] AU
Ag = 0.28 [0.87] [-0.83 σ]
Teffp = 3223 [2509] K [0.14 σ]

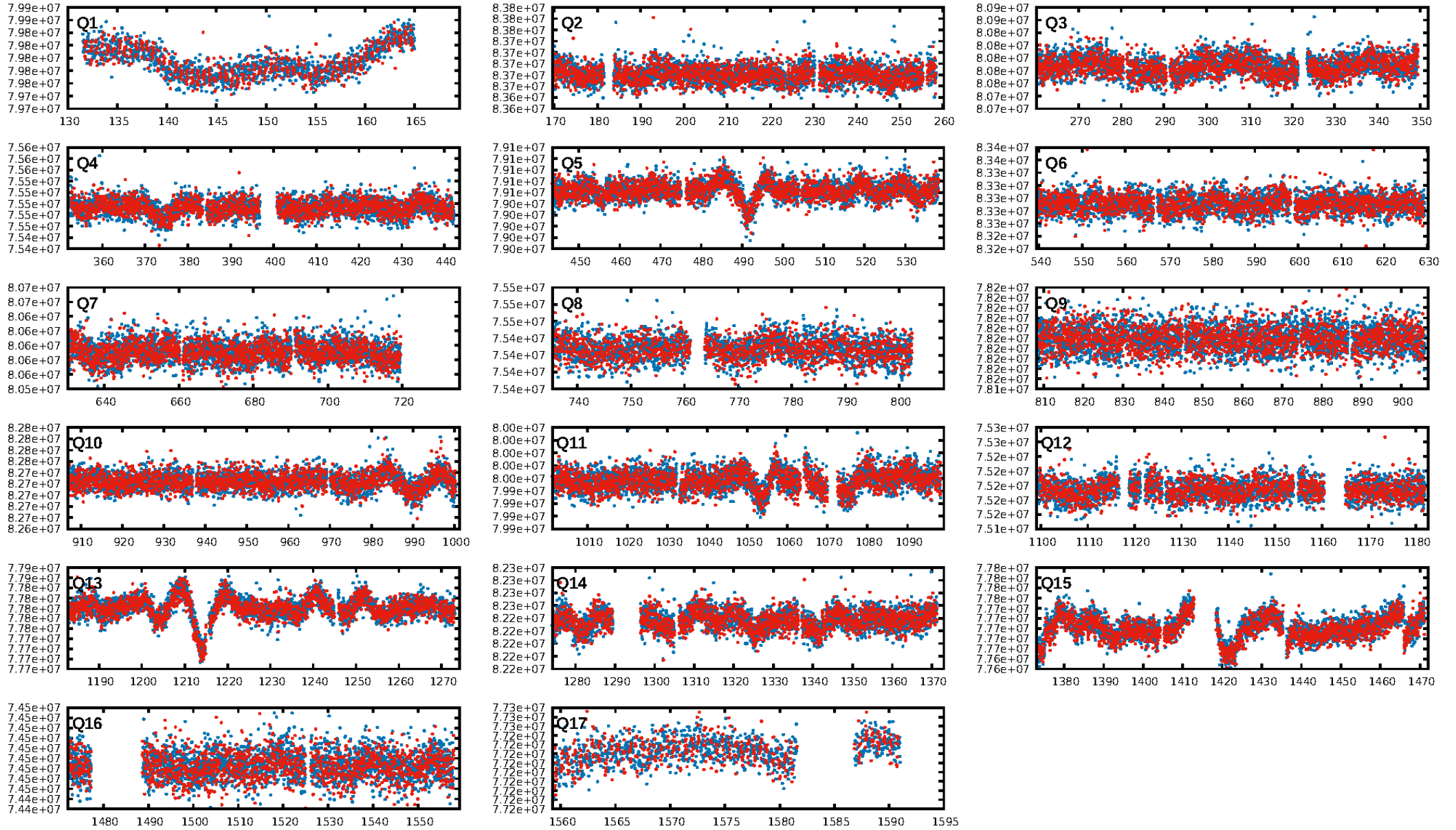
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [704.60 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.32e-12
RollingBand-fgt: 1.00 [2263/2263]
GhostDiagnostic-chr: 0.1683
Centroid-sig: 0.0%
Centroid-so: 3.637 arcsec [2.74 σ]
OotOffset-rm: 1.400 arcsec [1.61 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-rm: 1.258 arcsec [1.37 σ]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.20 [3/15]
DiffImageOverlap-fno: 1.00 [17/17]

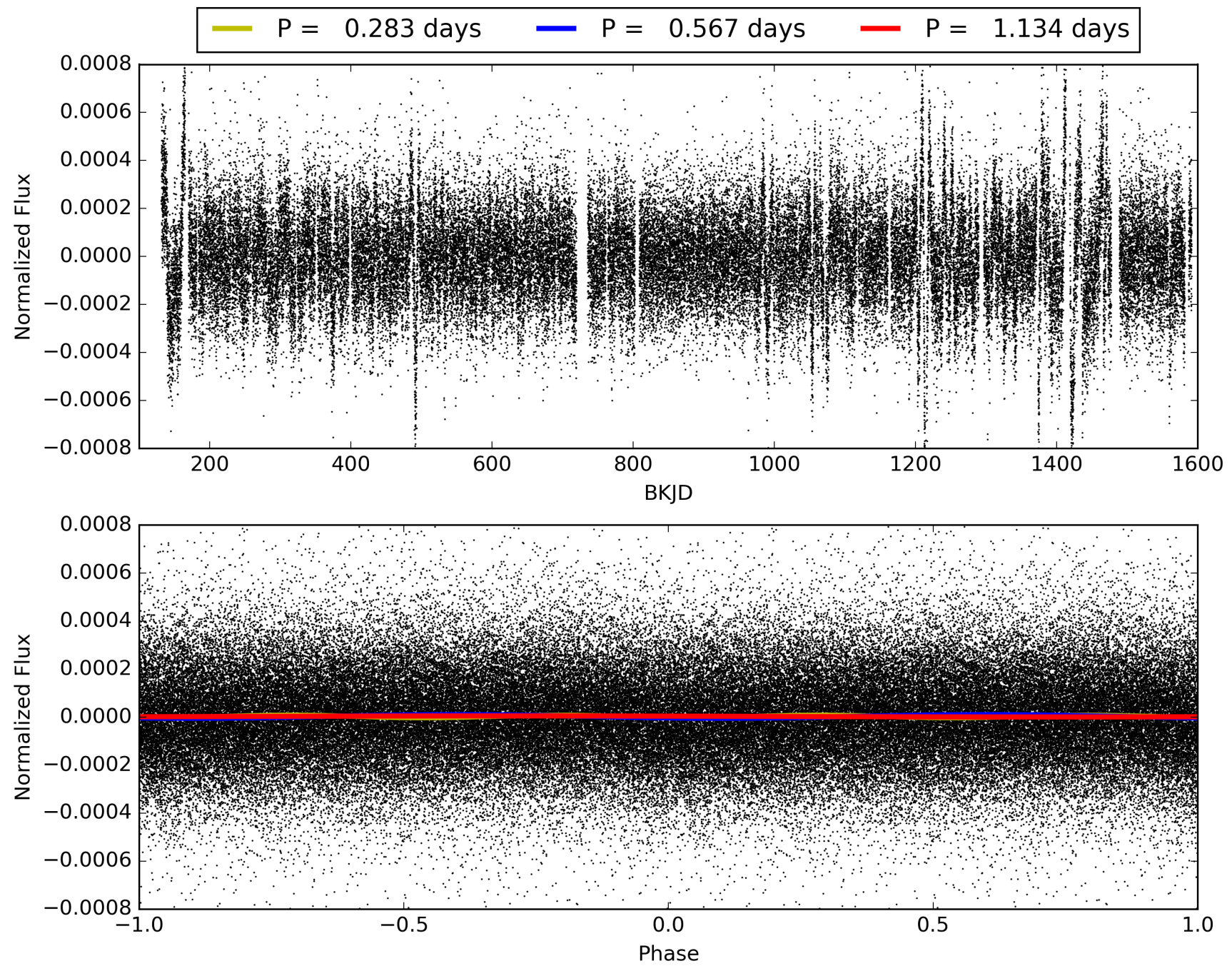
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:15:44 Z

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

TCE 007032132-01, PDC Light Curves

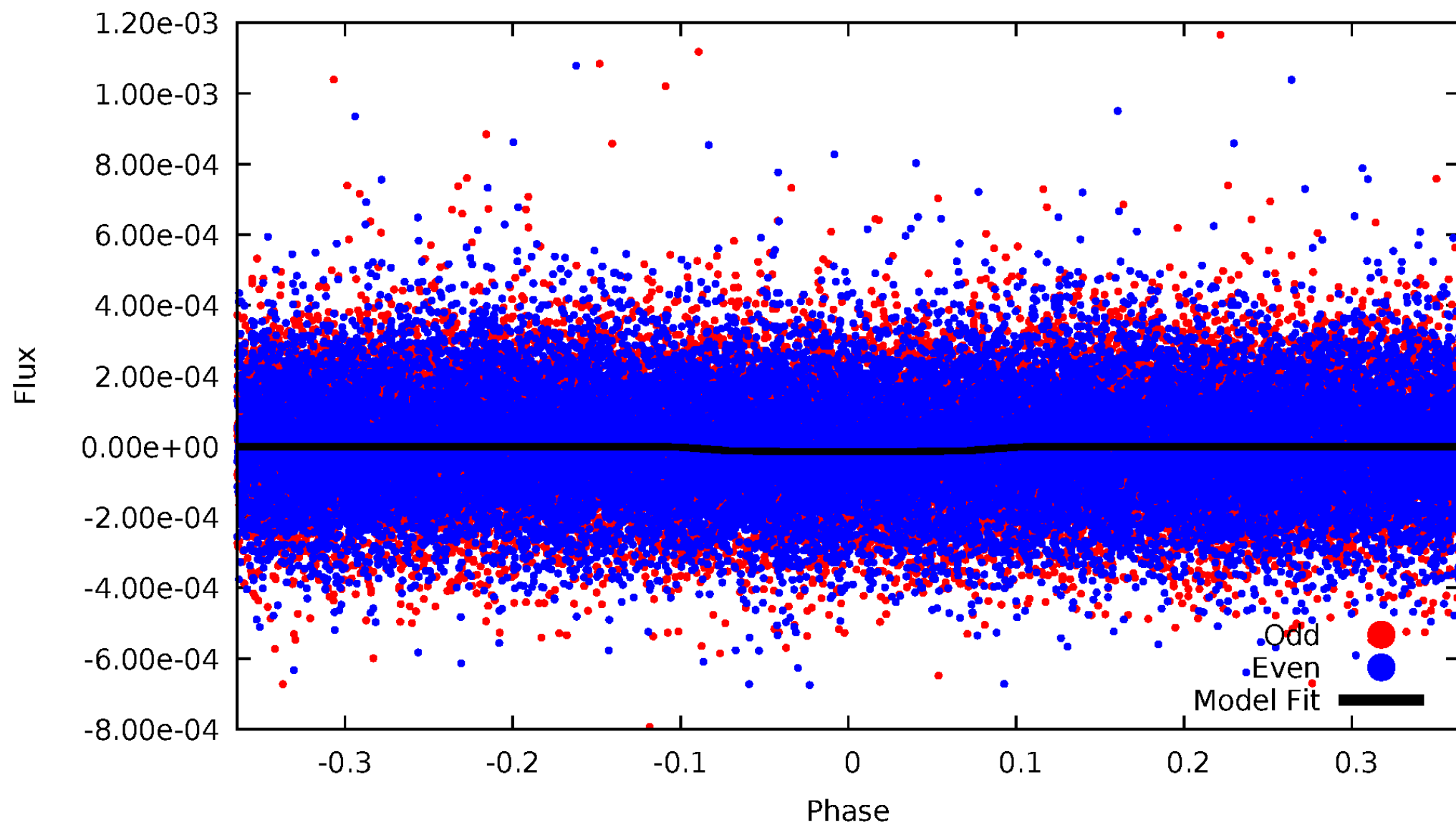


TCE 007032132-01



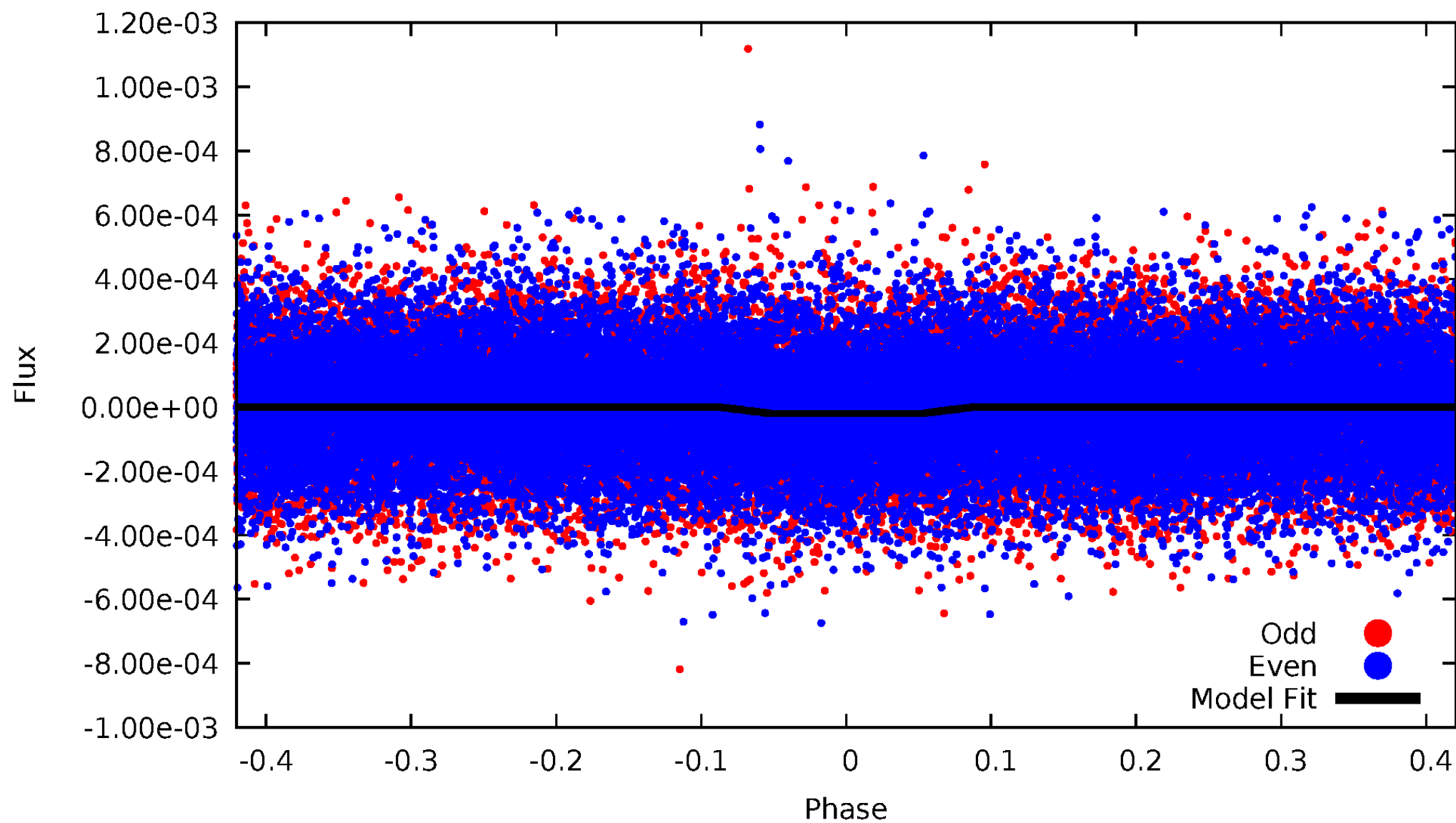
DV Odd/Even

TCE 007032132-01



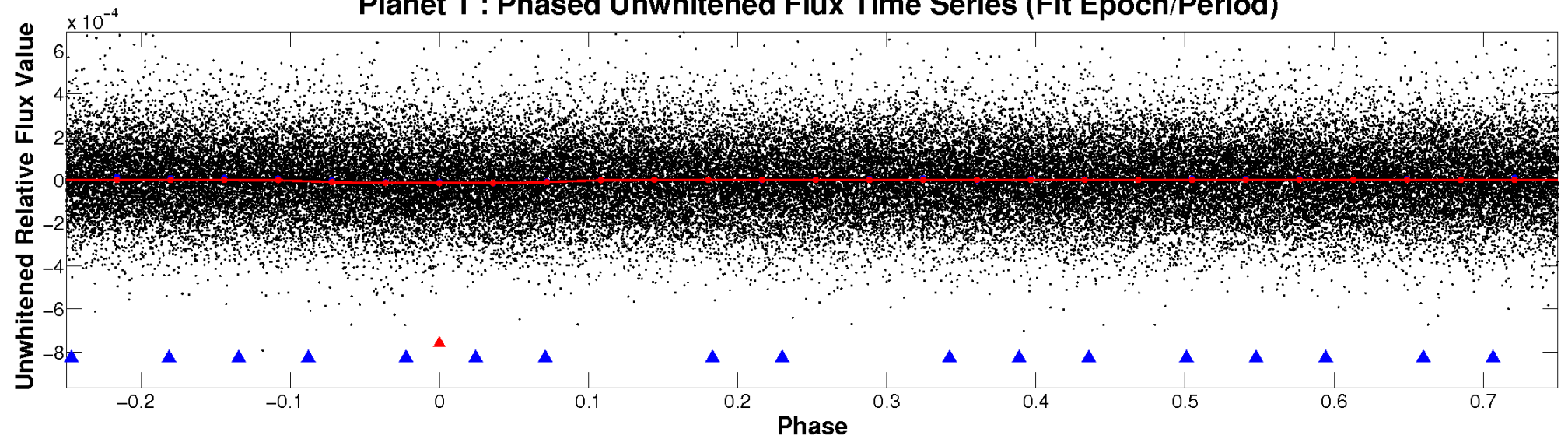
ALT Odd/Even

TCE 007032132-01

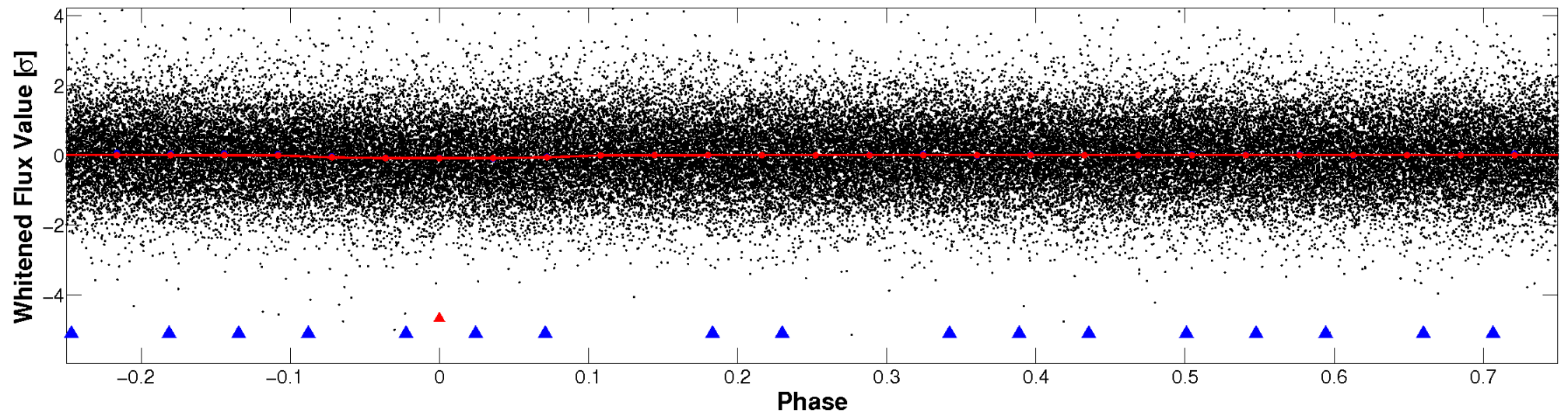


Non-Whitened Vs. Whitened Light Curve

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

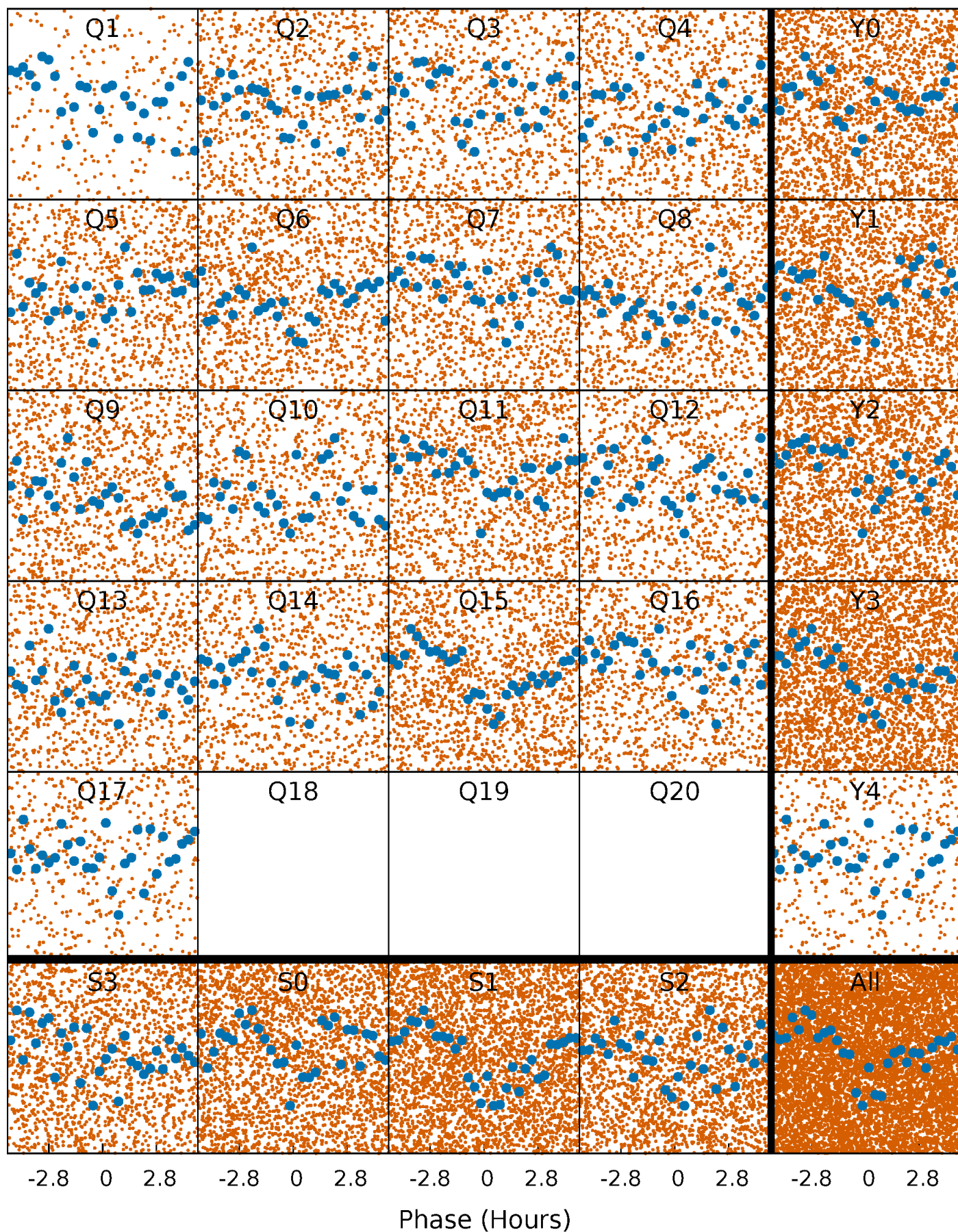


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



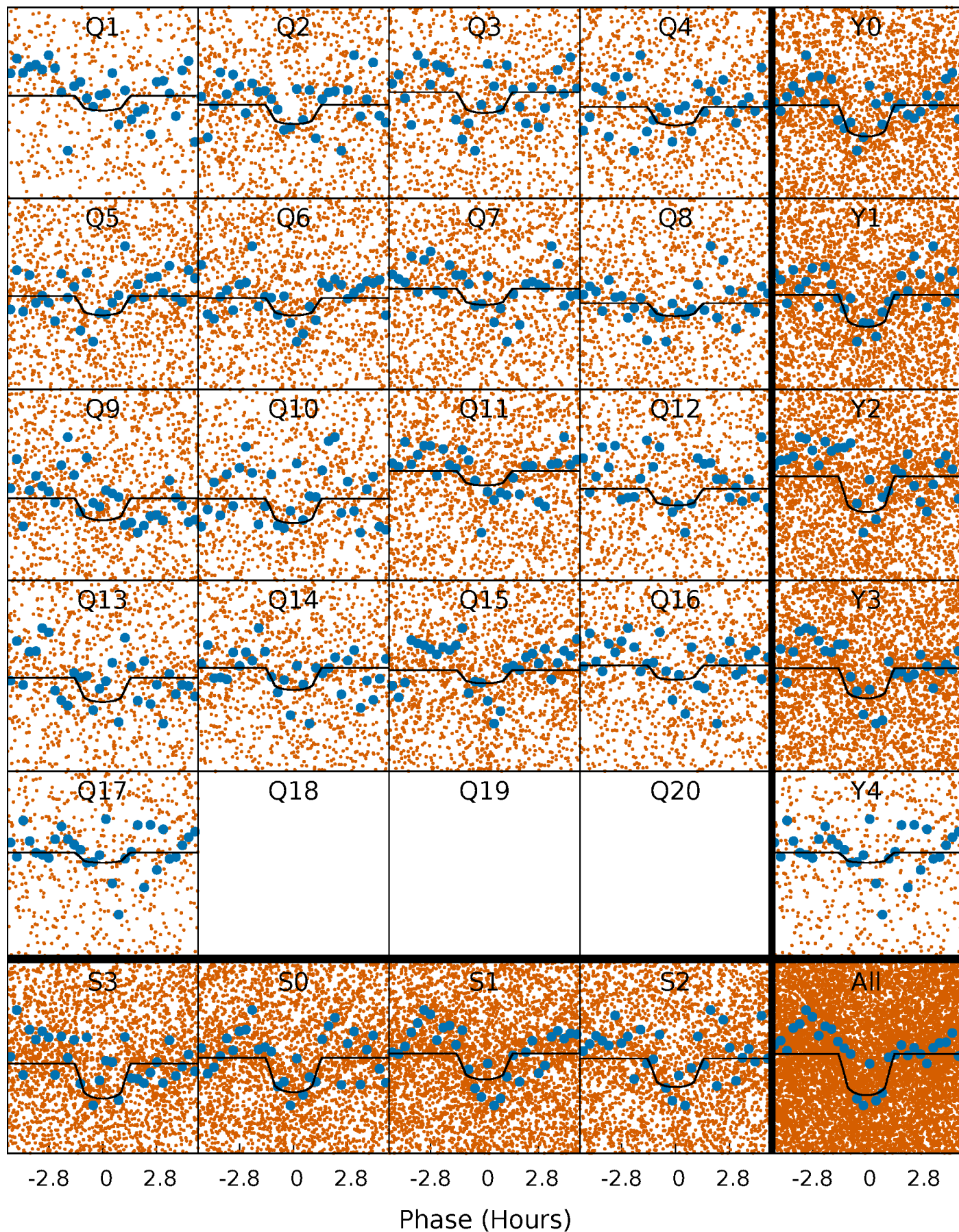
PDC Quarter-Phased Transit Curves

TCE 007032132-01 P= 0.566794 Days $T_0=131.794953$ (BKJD)



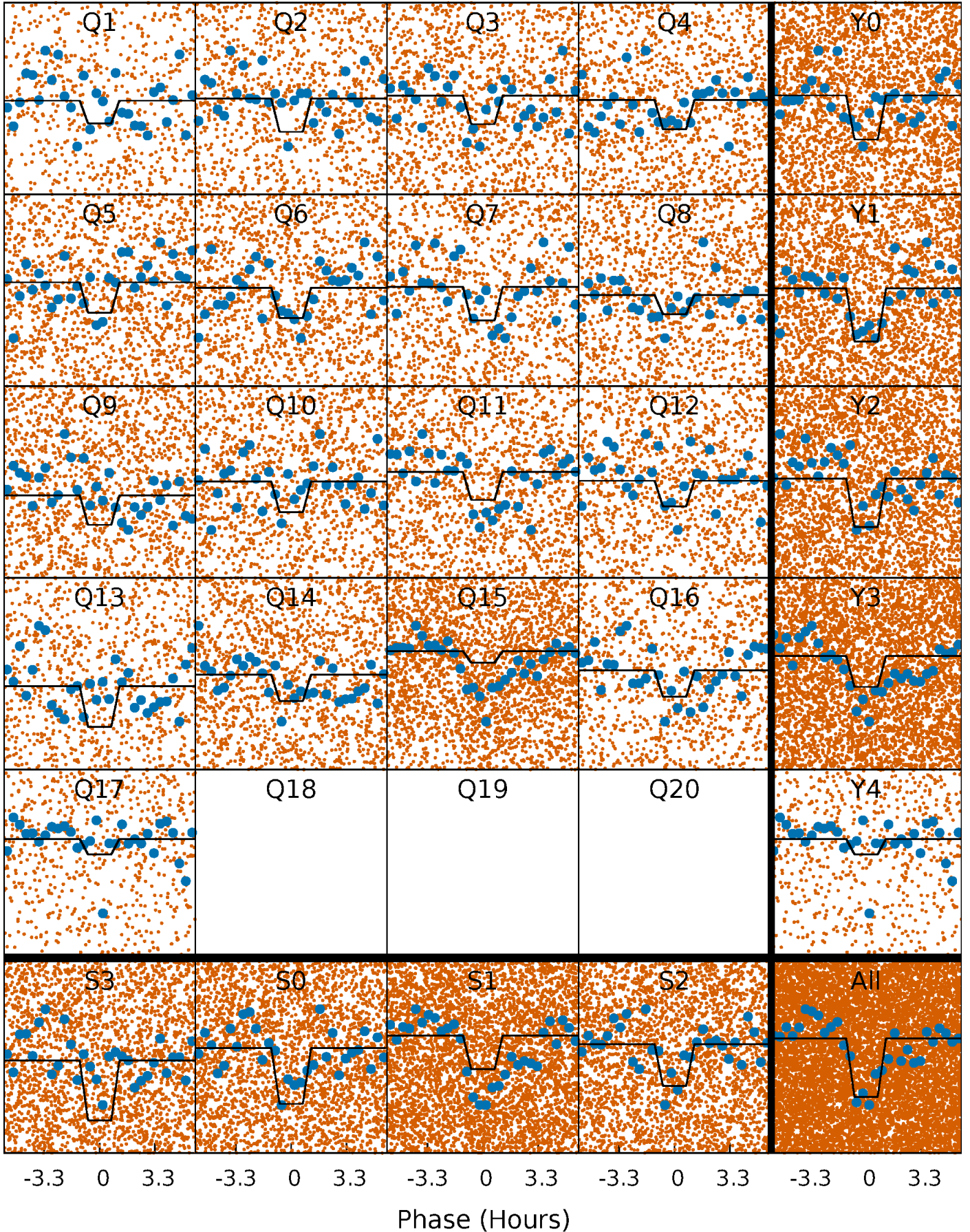
DV Quarter-Phased Transit Curves

TCE 007032132-01 P= 0.566794 Days $T_0=131.794953$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

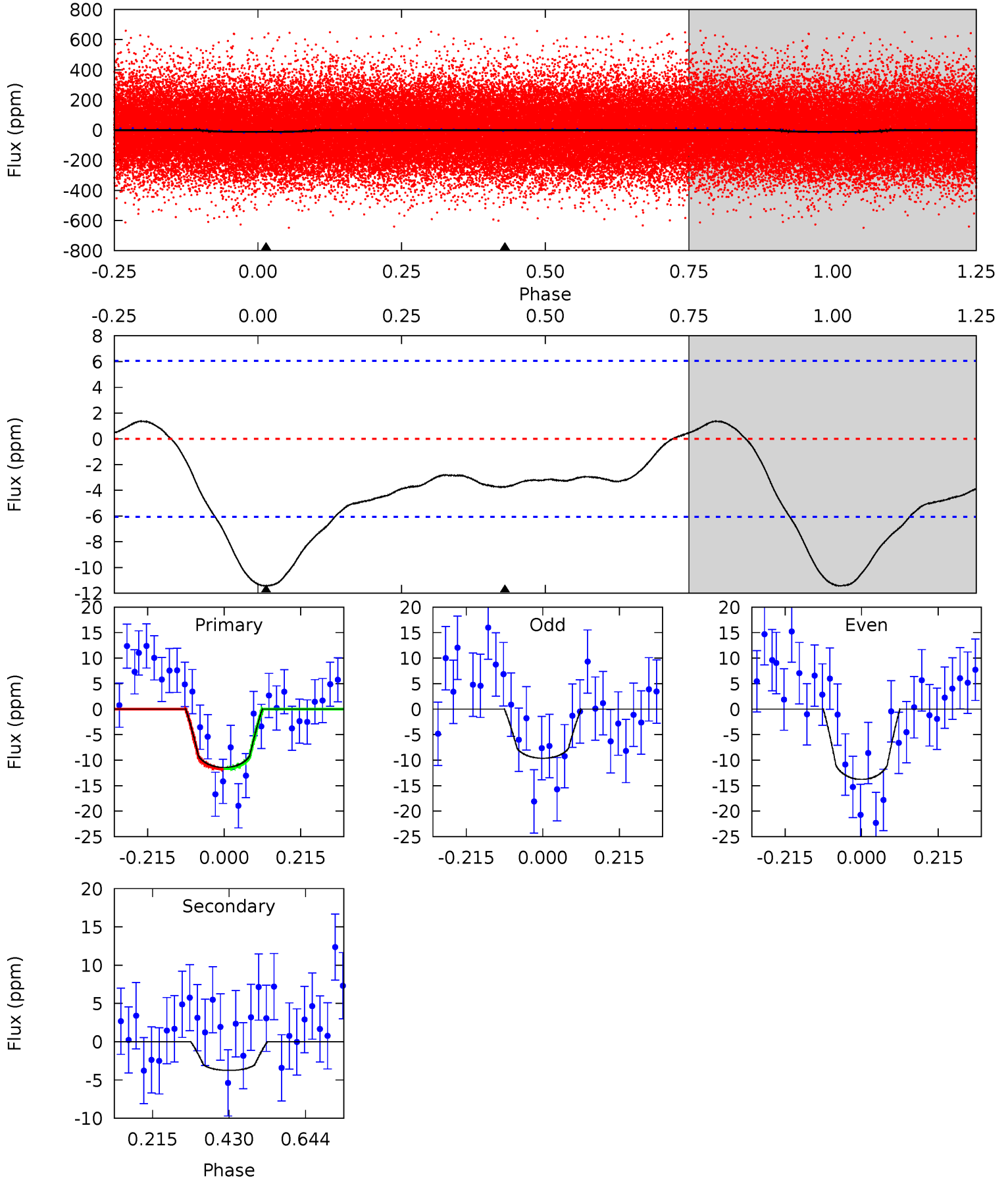
TCE 007032132-01 P= 0.566808 Days $T_0=131.781292$ (BKJD)



DV Model-Shift Uniqueness Test

007032132-01, P = 0.566794 Days, E = 131.228159 Days

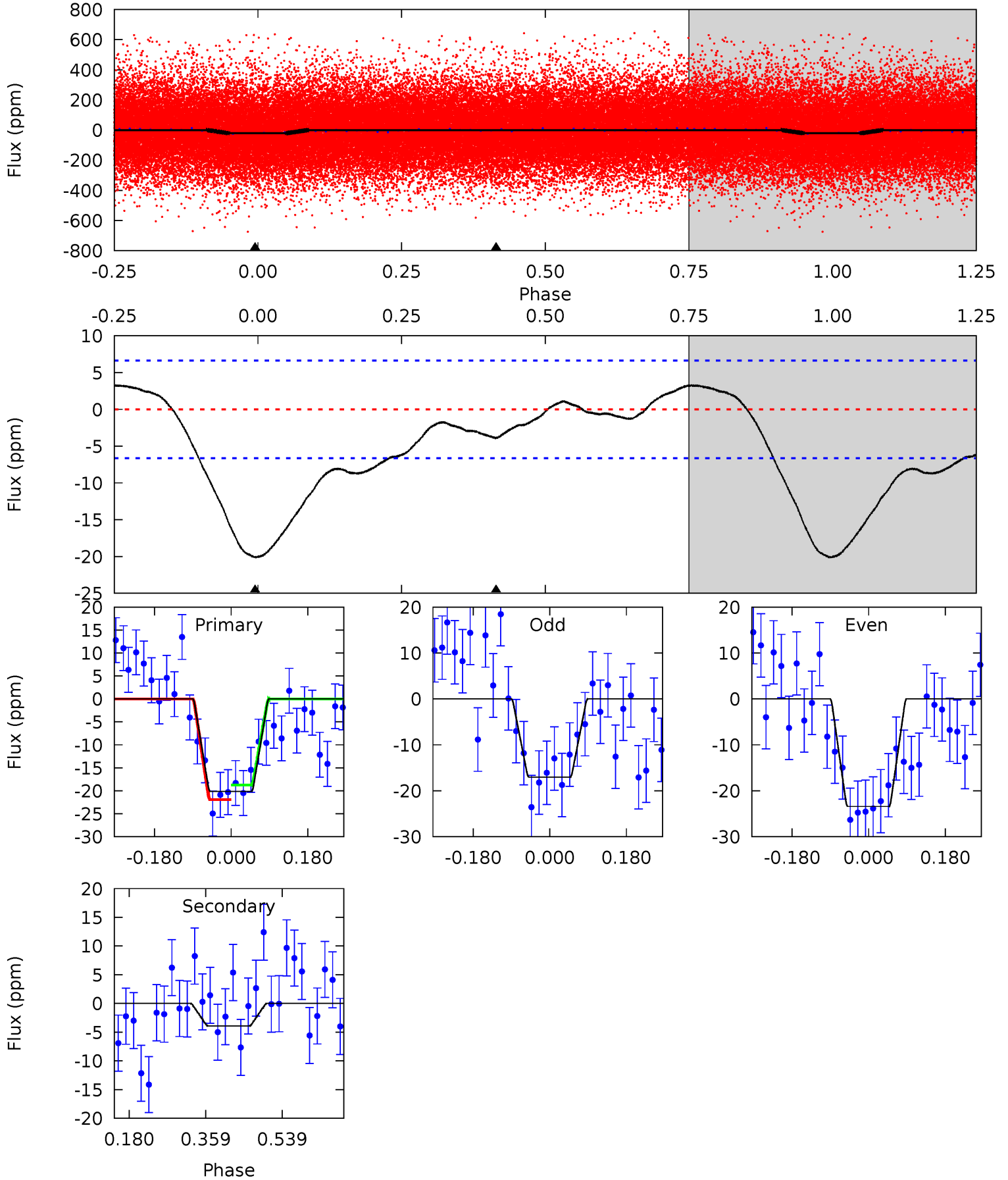
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.31 | 2.73 | 0 | 0 | 4.40 | 1.24 | 1.01 | 8.31 | 8.31 | 2.73 | 2.73 | 1.53 | 0.98 | 0.11 | 0.02 |



Alt Model-Shift Uniqueness Test

007032132-01, P = 0.566808 Days, E = 131.214484 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.5 | 2.62 | 0 | 0 | 4.44 | 1.34 | 2.65 | 13.5 | 13.5 | 2.62 | 2.62 | 2.14 | 1.00 | 0.14 | 1.06 |



Stellar Parameters For KIC 007032132

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6210^{+169}_{-206} | $4.106^{+0.299}_{-0.161}$ | $-0.280^{+0.300}_{-0.300}$ | $1.498^{+0.393}_{-0.480}$ | $1.046^{+0.169}_{-0.154}$ | $0.438^{+0.867}_{-0.197}$ |
| | +3%/-3% | +7%/-4% | +107%/-107% | +26%/-32% | +16%/-15% | +198%/-45% |
| 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 007032132-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|---------------------------|
| DV | -4 ± 1 | $0.61^{+0.25}_{-0.23}$ | 3987^{+307}_{-371} | 4217^{+1027}_{-989} | $0.988^{+1.633}_{-0.556}$ |
| Alt. | -4 ± 1 | $0.71^{+0.24}_{-0.20}$ | 3995^{+295}_{-375} | 3954^{+749}_{-1043} | $0.773^{+0.792}_{-0.417}$ |

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

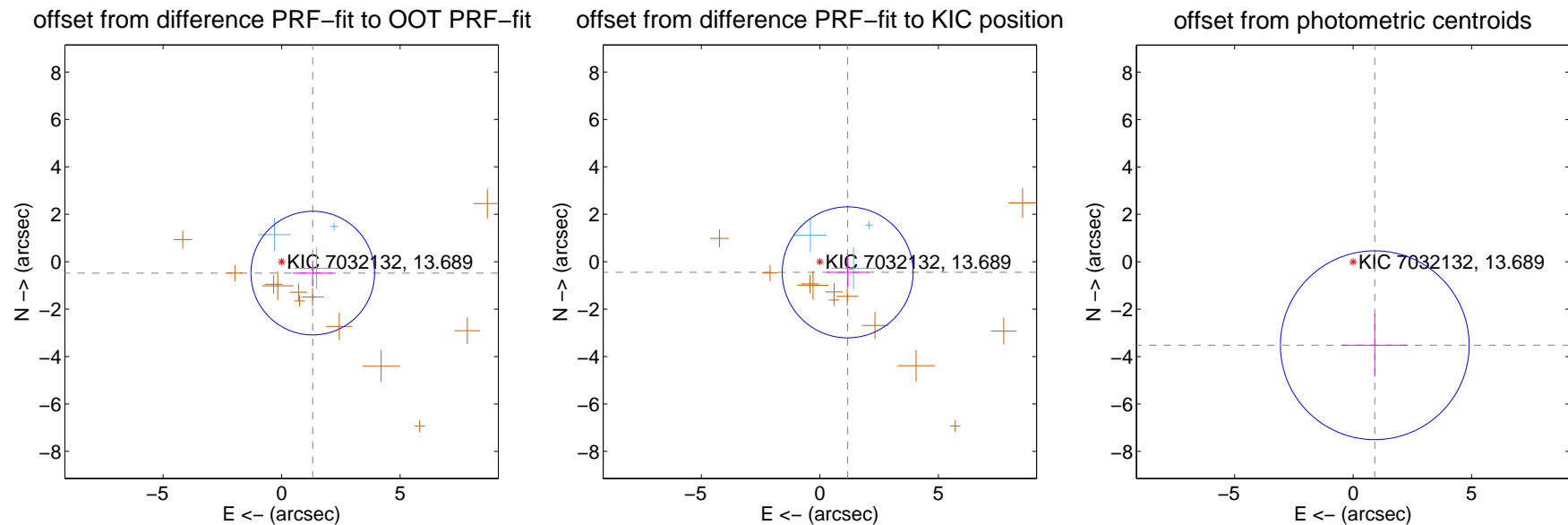
DV Centroid Data

Supplemental centroid analysis for 007032132-01. Kepler magnitude: 13.69. Transit SNR 7.51

There are 3 quarters with good PRF difference image offsets

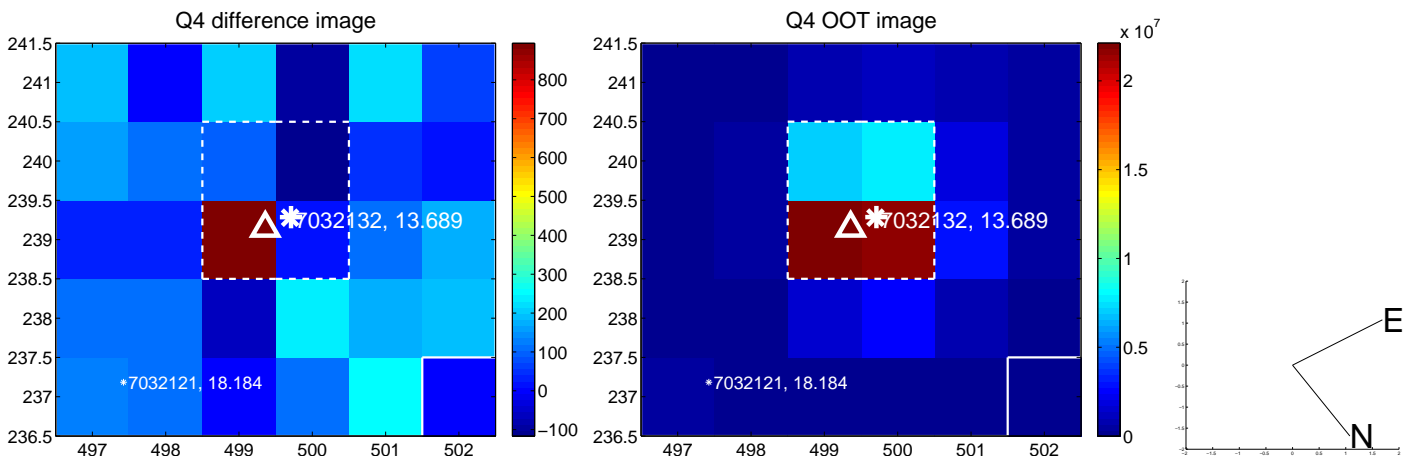
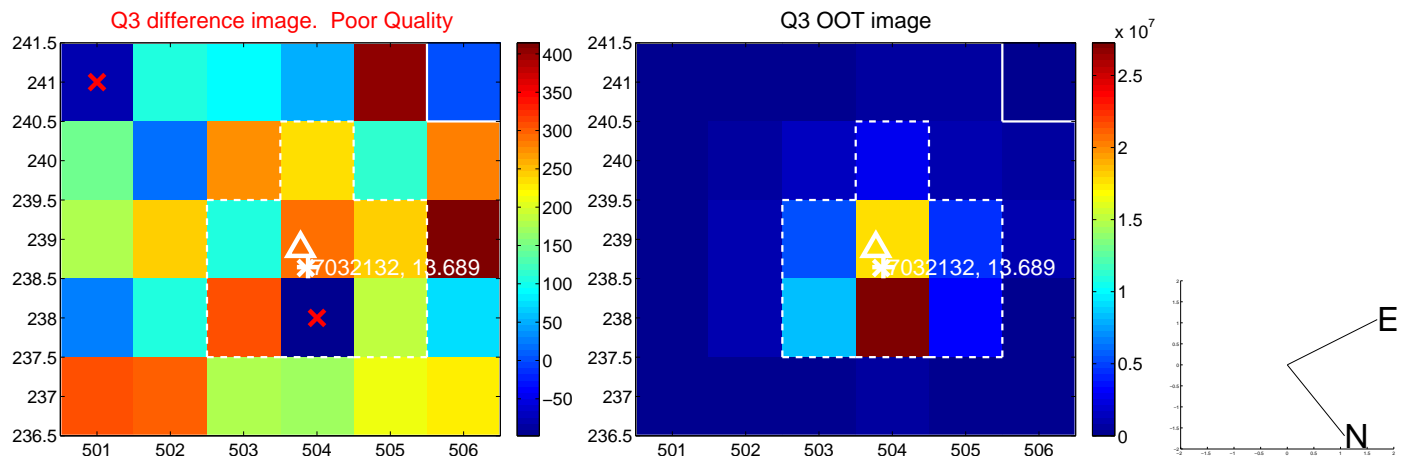
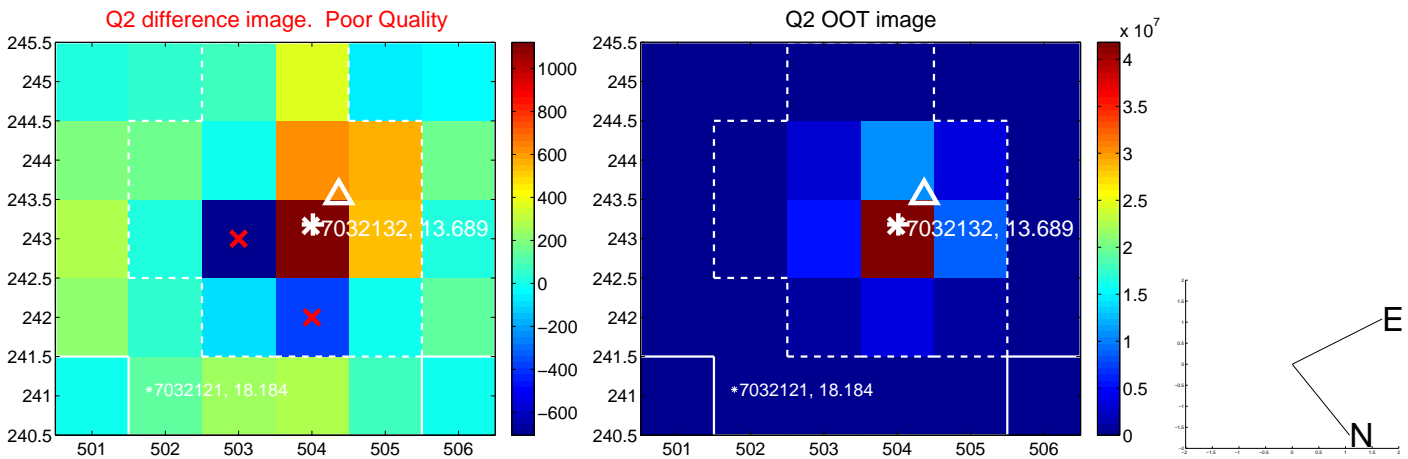
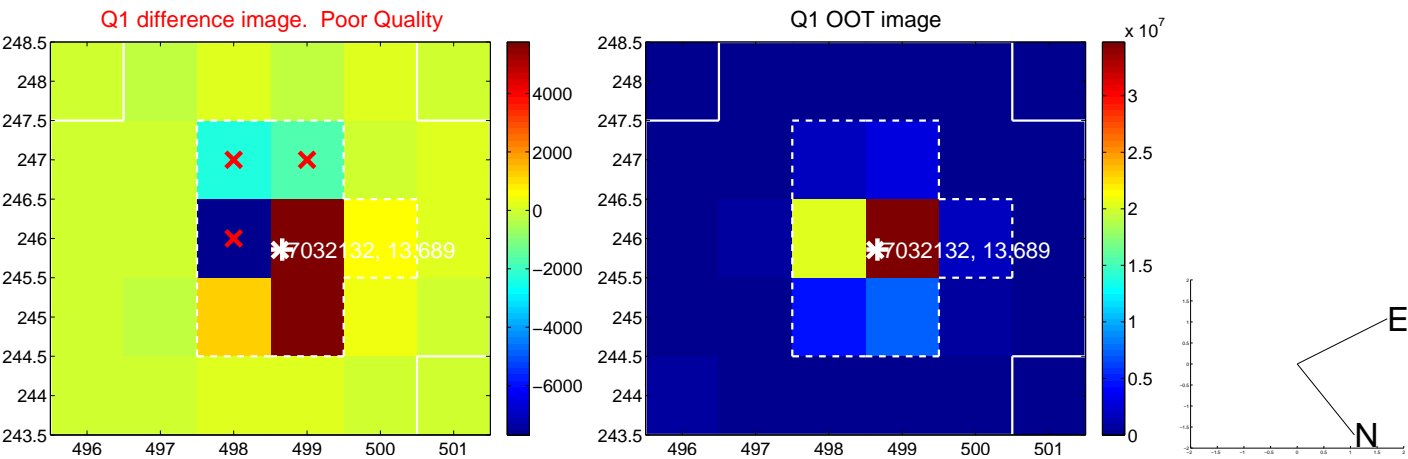
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.400 ± 0.869 | 1.61 | -1.315 ± 0.845 | -0.481 ± 0.533 |
| PRF-fit source offset from KIC position | 1.258 ± 0.921 | 1.37 | -1.175 ± 0.890 | -0.449 ± 0.620 |
| photometric centroid source offset | 3.64 ± 1.33 | 2.74 | -0.91 ± 1.39 | -3.52 ± 1.32 |

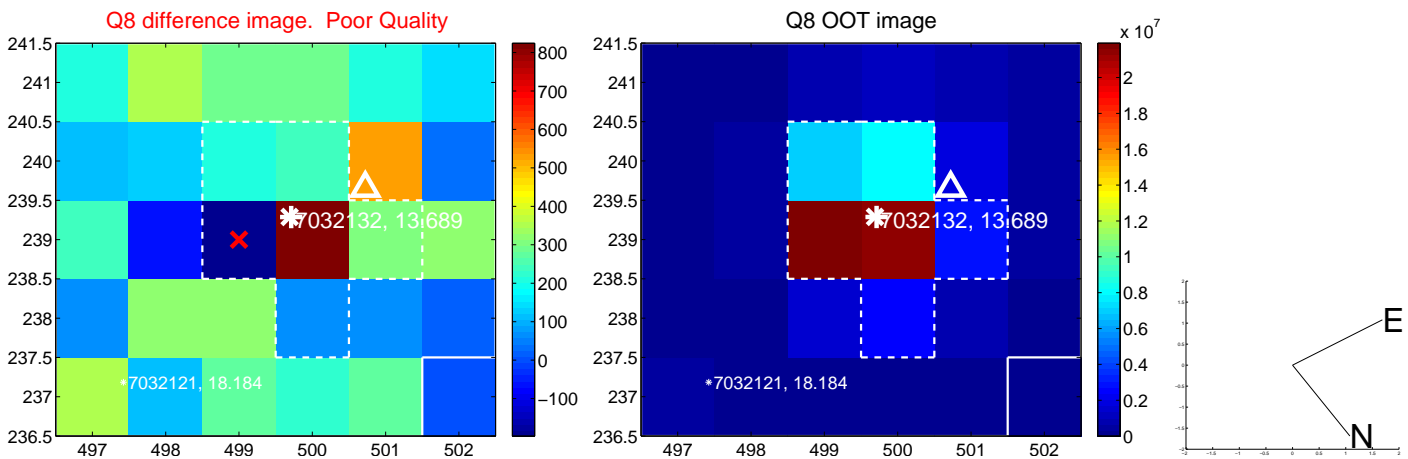
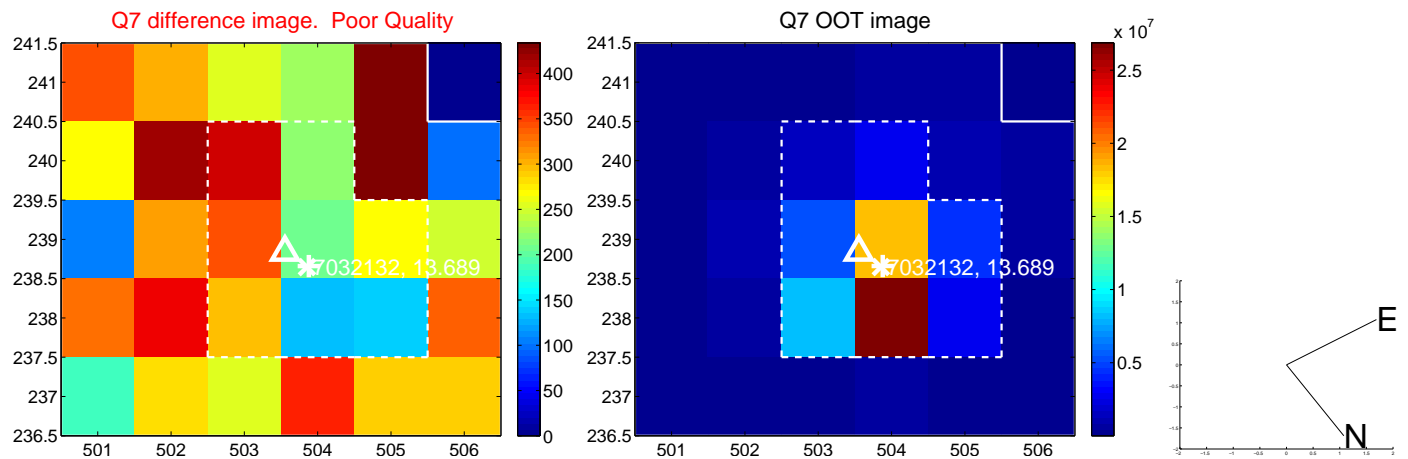
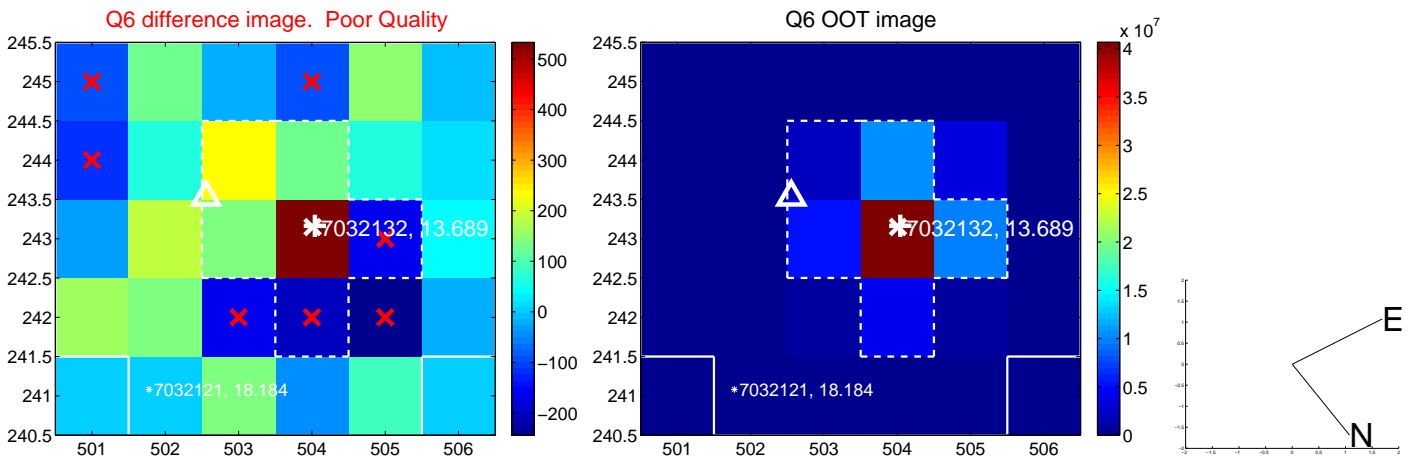
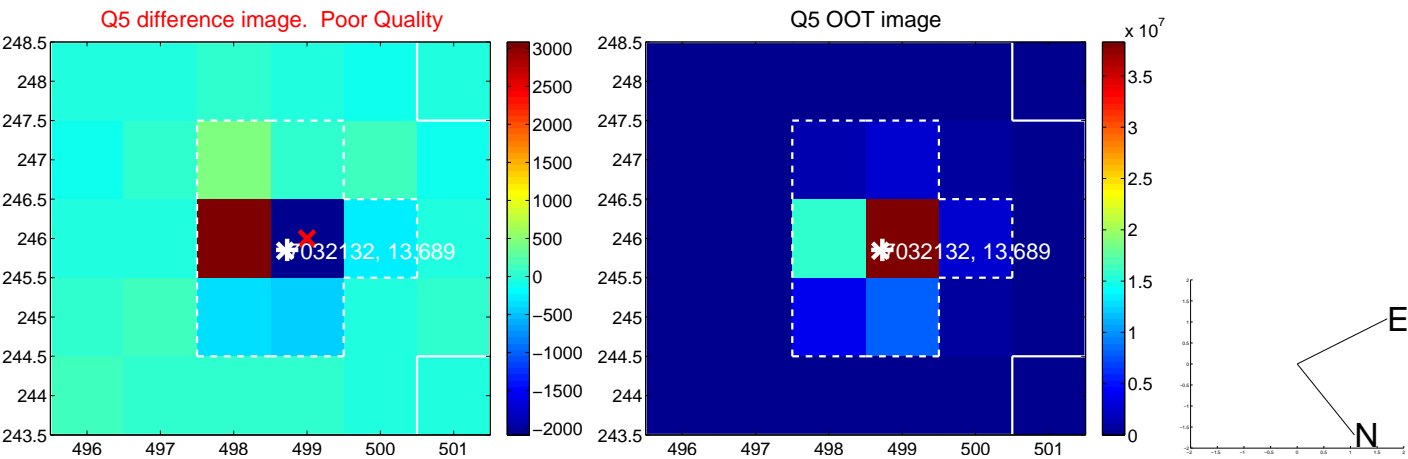


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

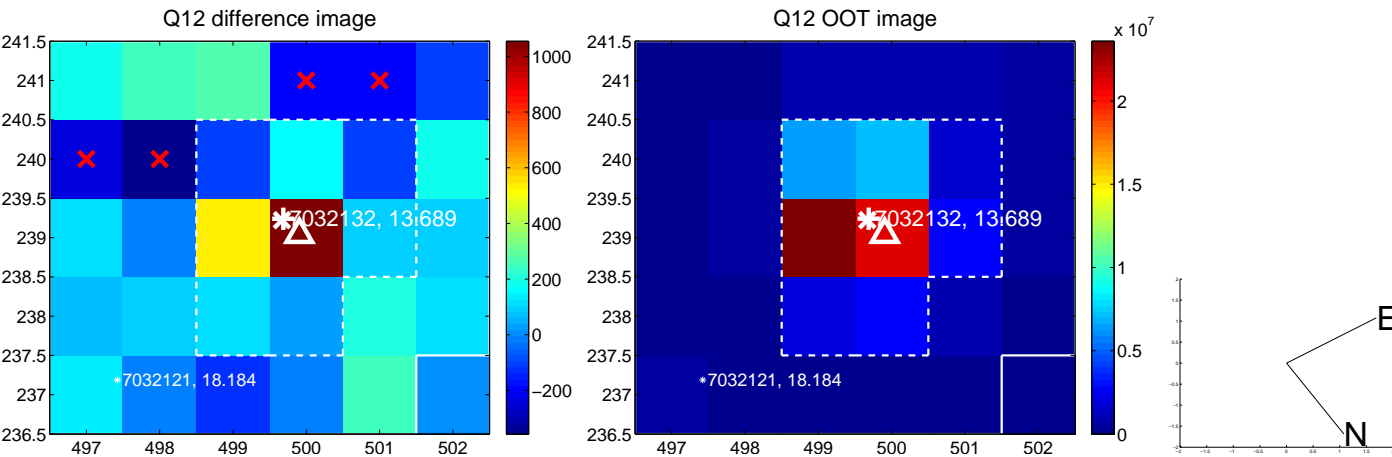
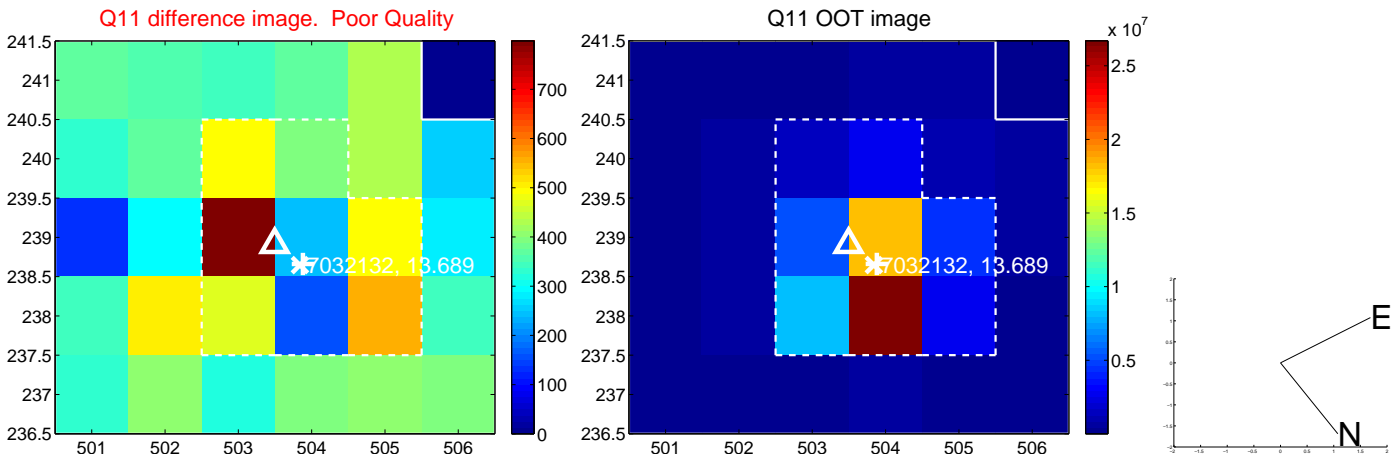
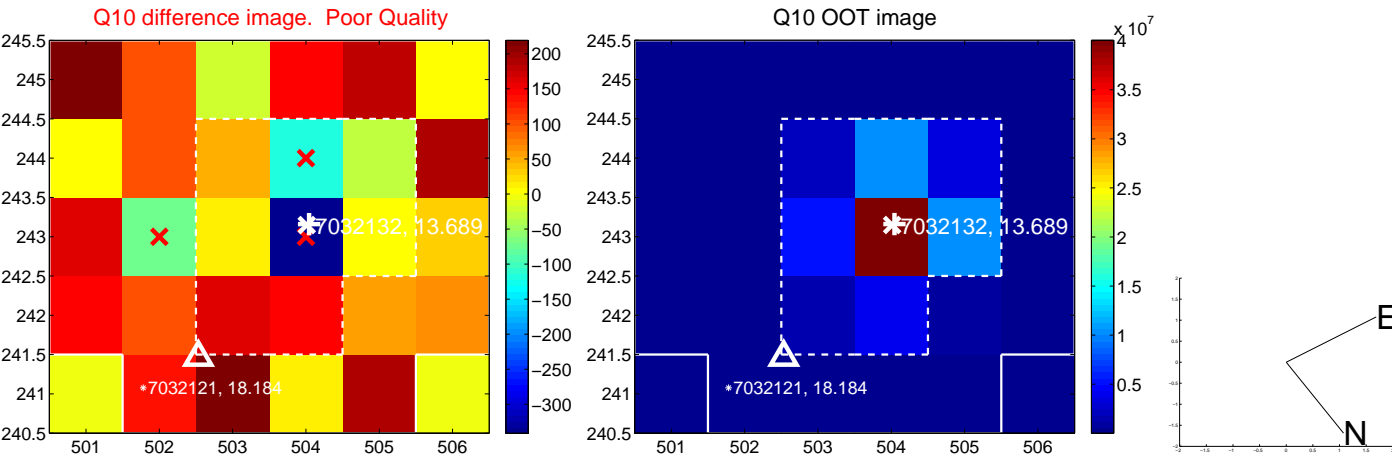
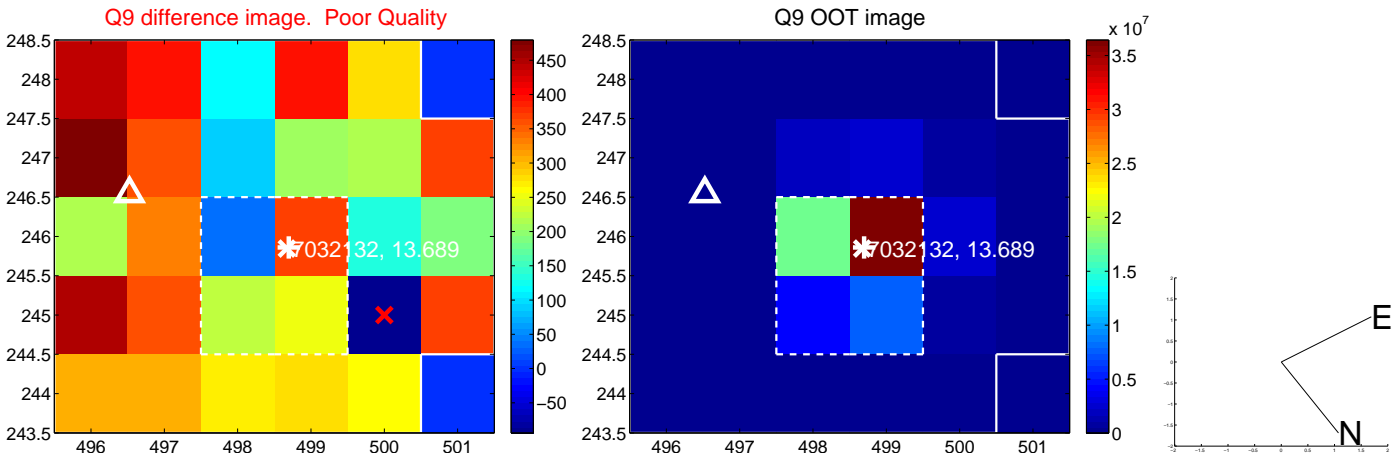
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



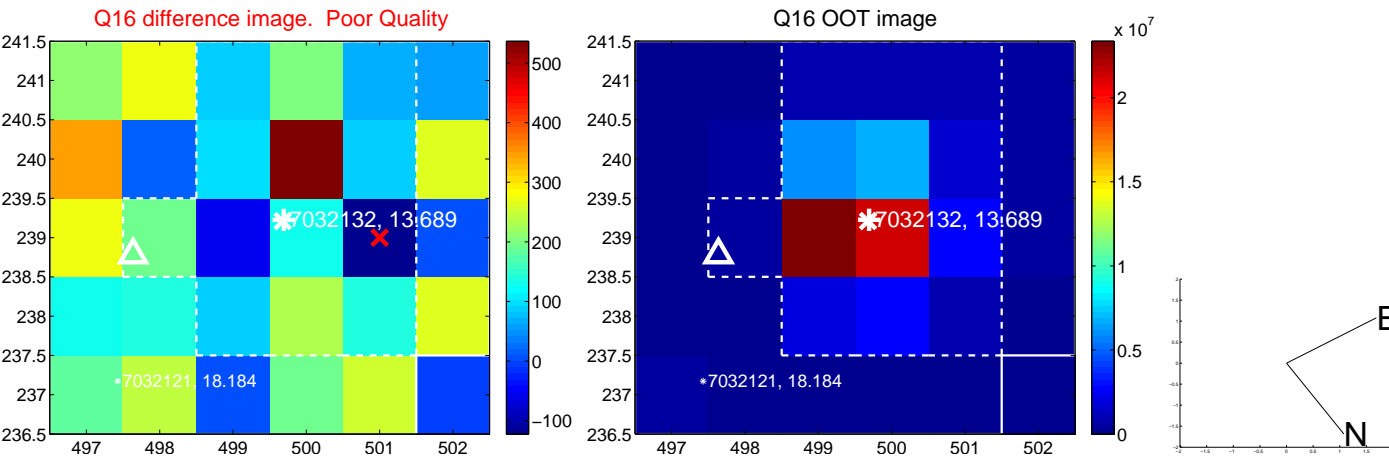
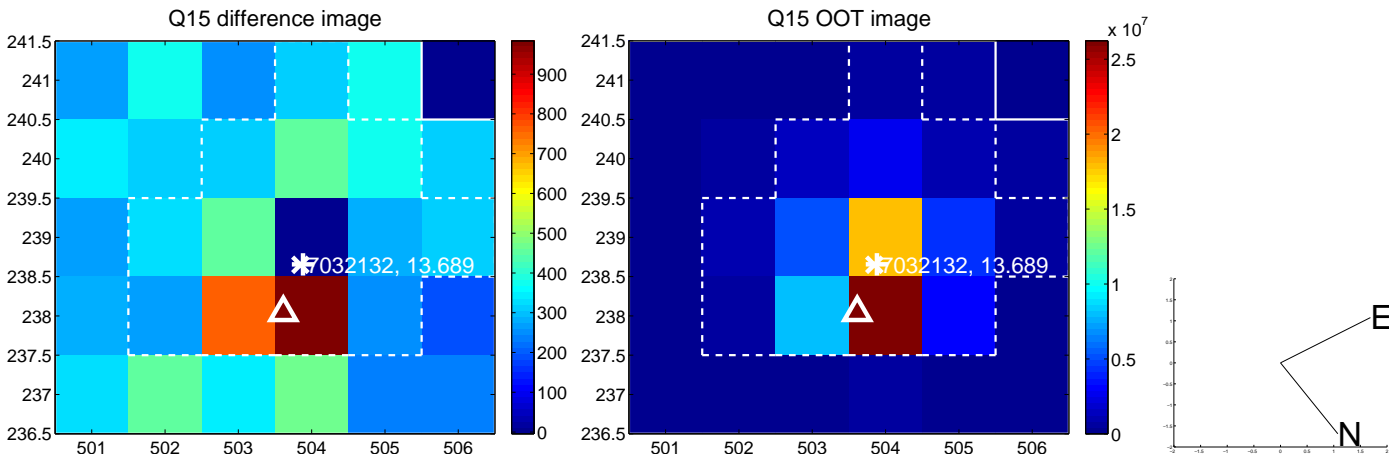
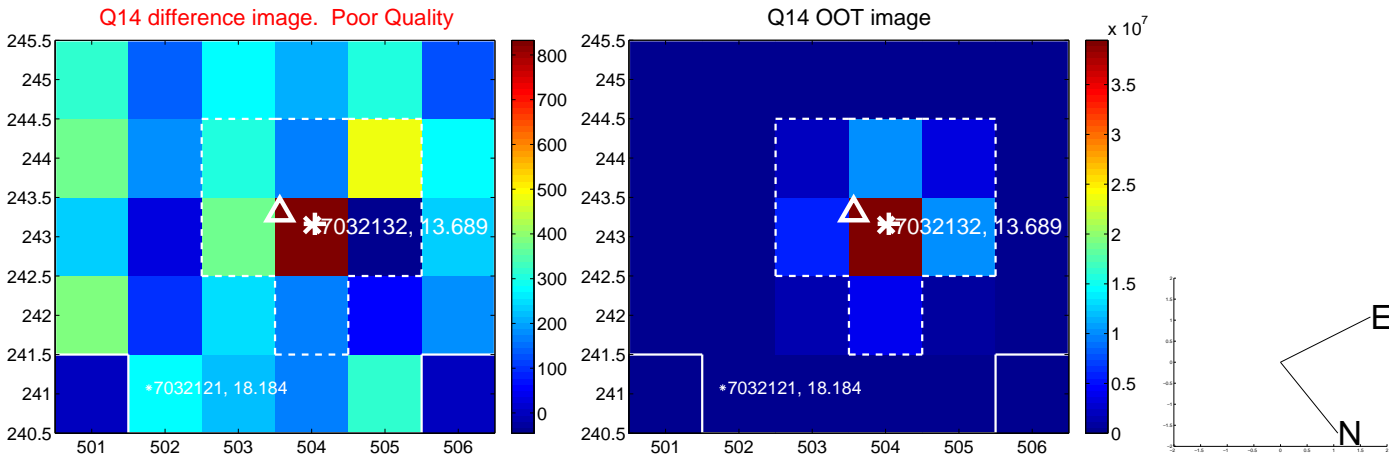
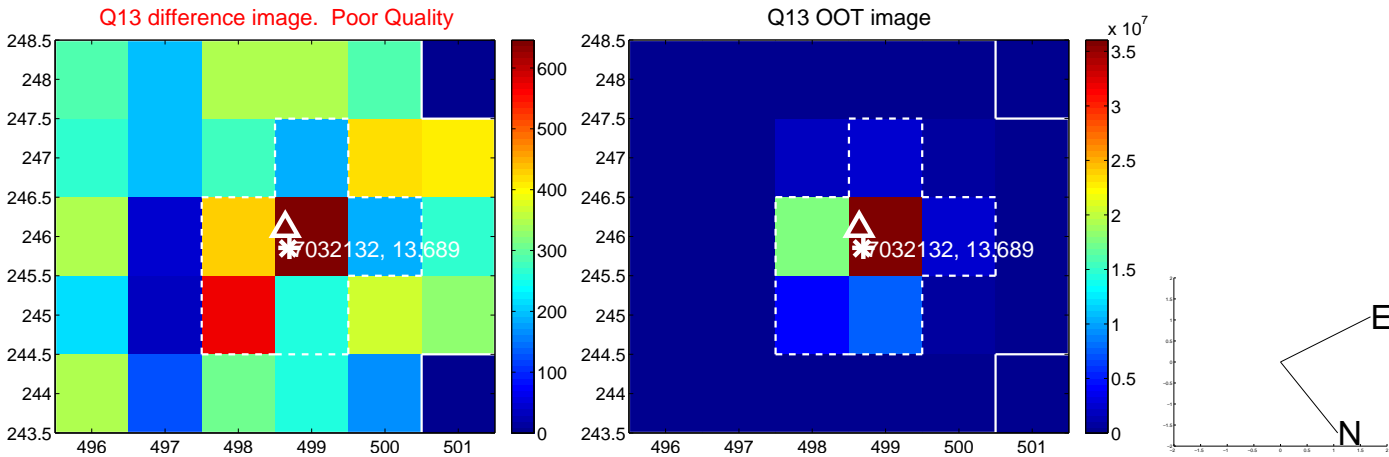
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



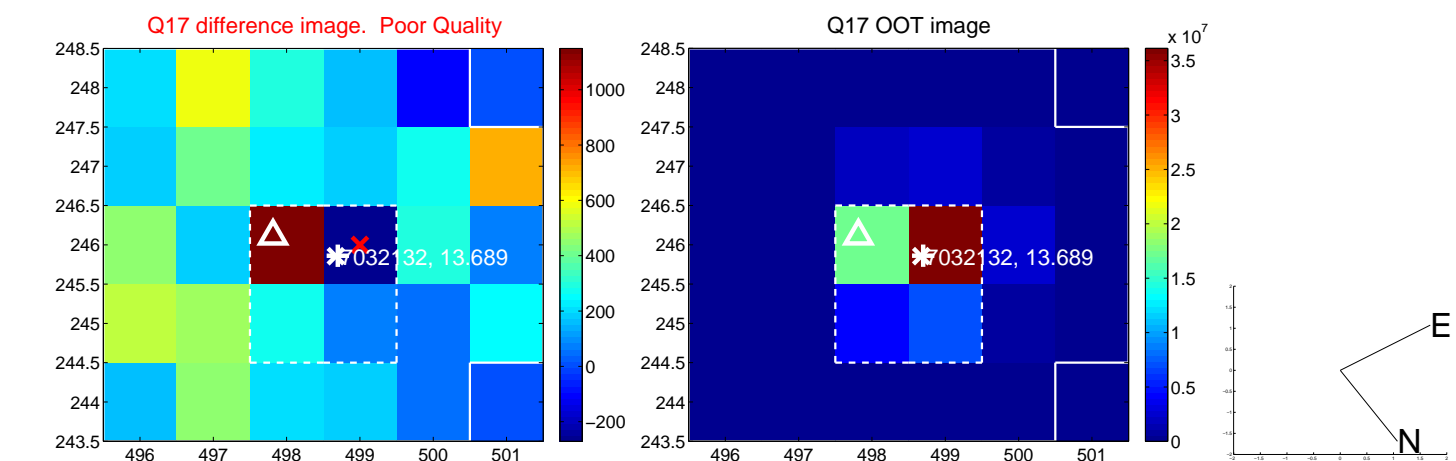
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



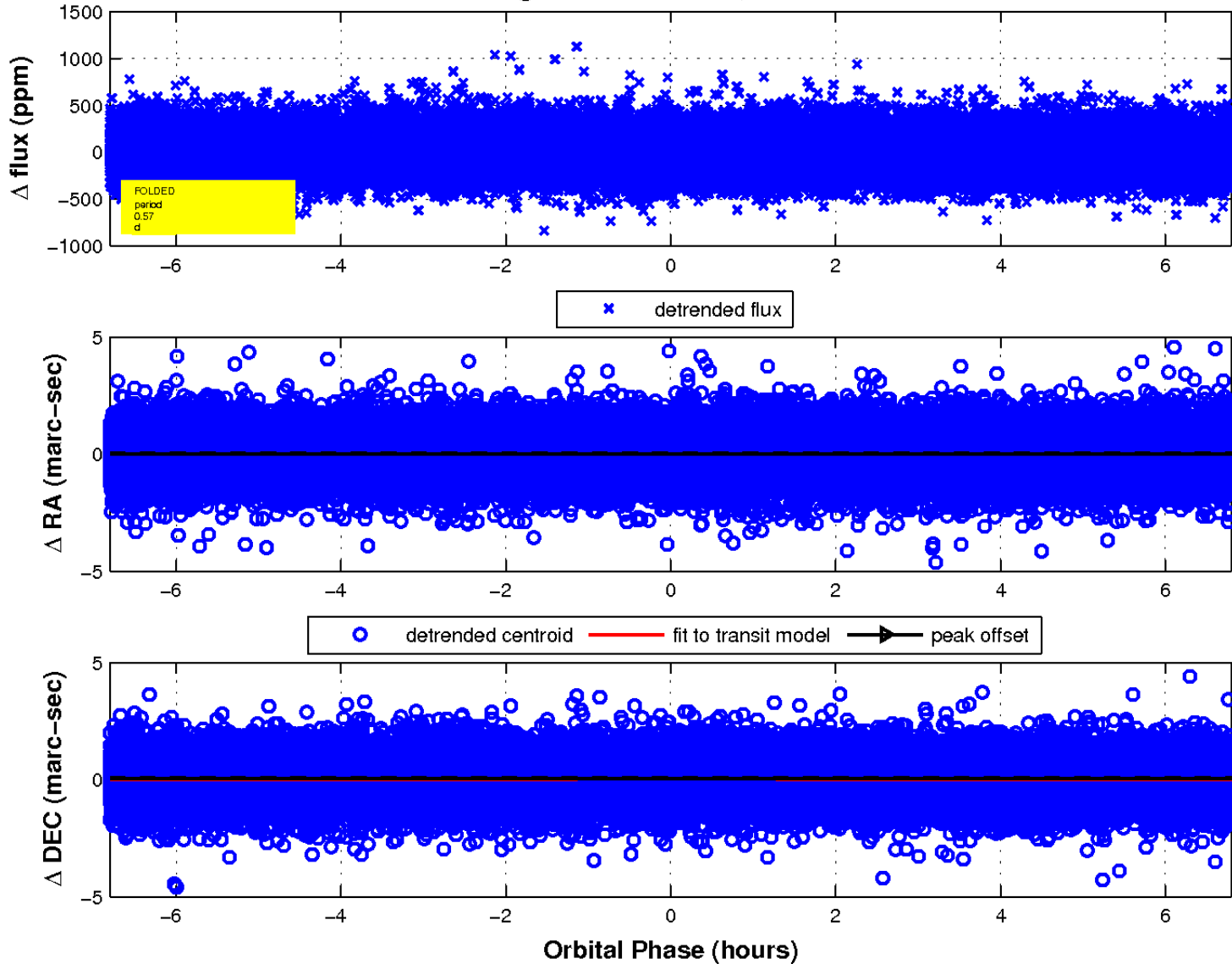
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



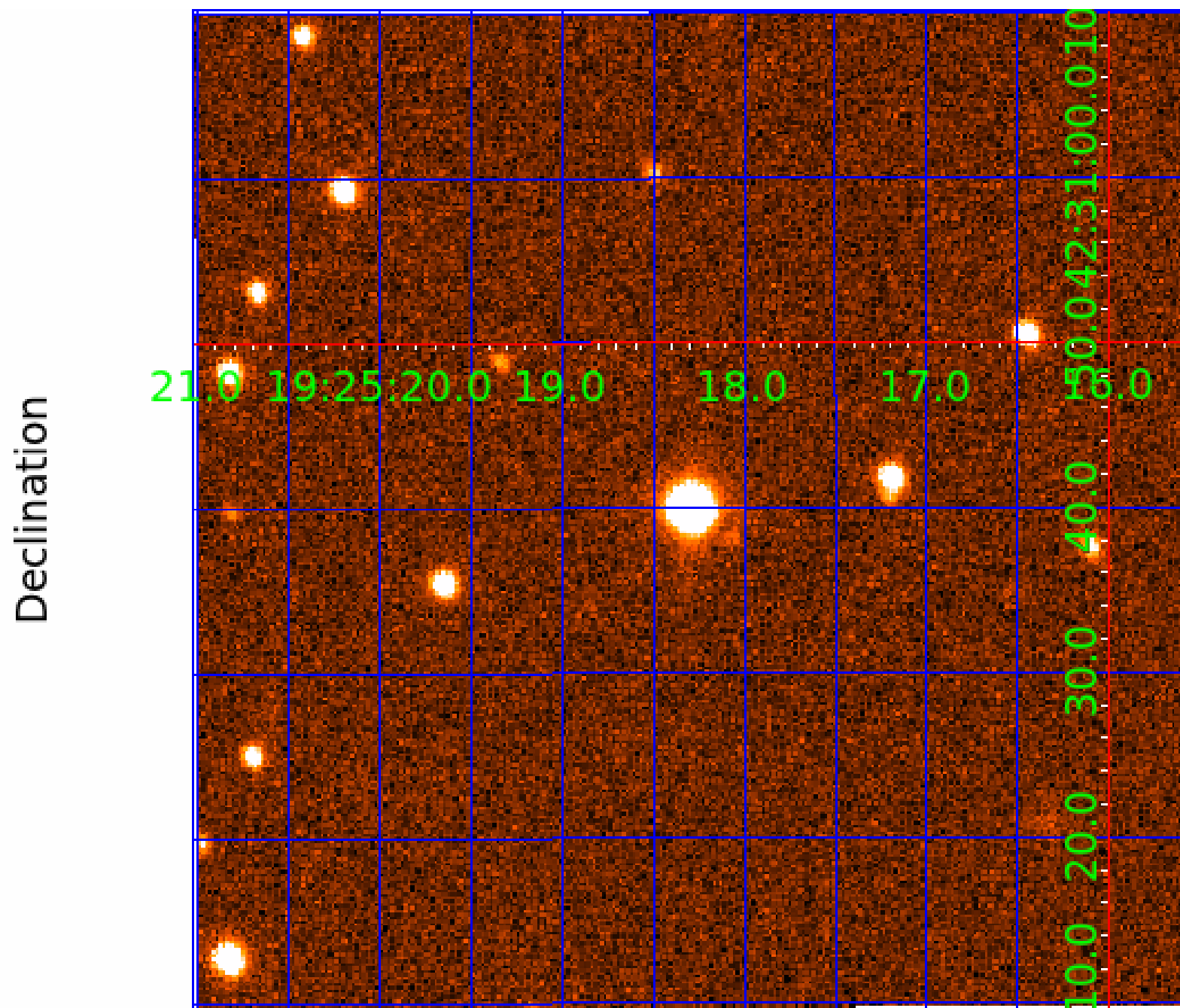
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 007032132

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007032132-01 | OBS | No | 0.566794 | 131.794953 | 14.3 | 2.477 | 7.9 | 7.5 | 1.50 | 6210 | 0.63 | 16157.28 |
| 007032132-02 | OBS | No | 85.109152 | 209.125767 | 325.3 | 1.469 | 7.4 | 8.4 | 1.50 | 6210 | 2.72 | 20.24 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007032132-01 | OBS | FP | 0.00 | 1 | 0 | 1 | 1 | LPP_DV—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH |
| 007032132-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT |

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

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

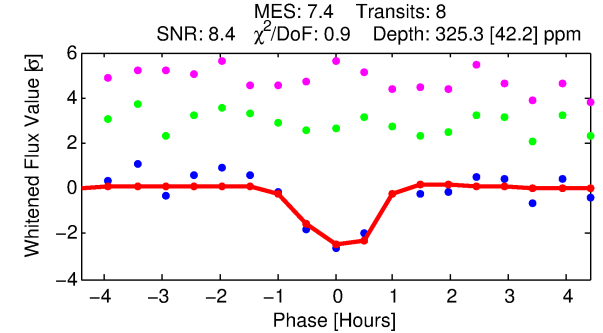
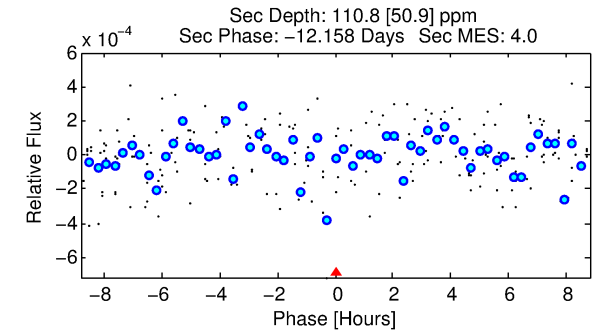
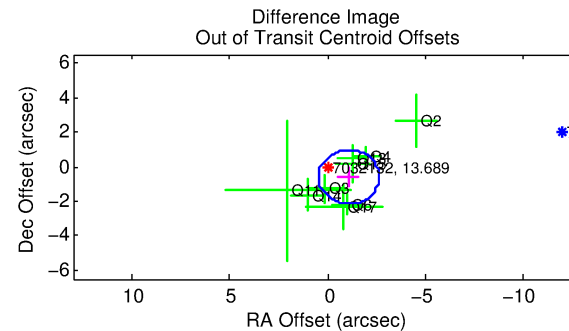
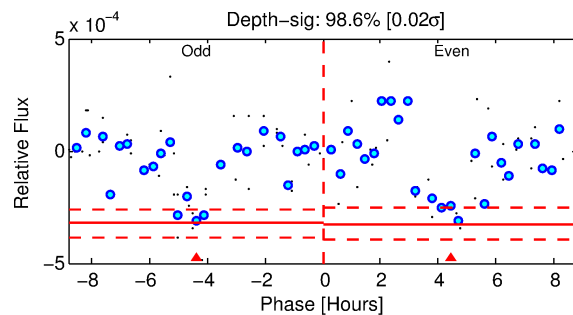
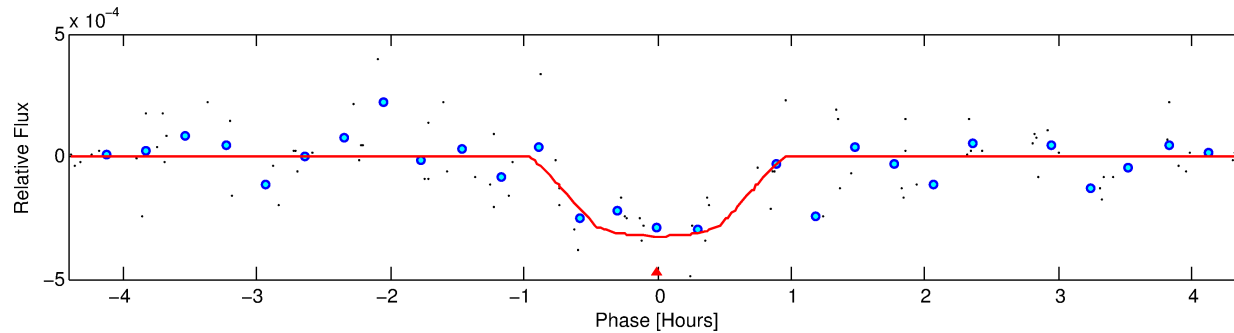
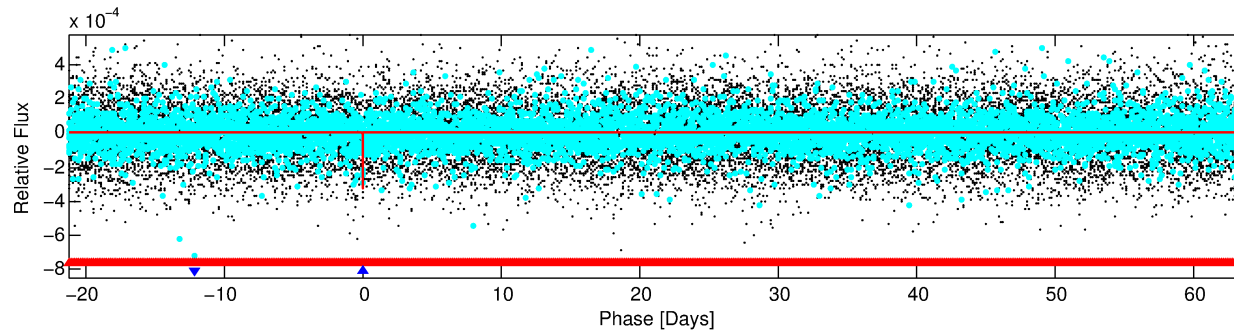
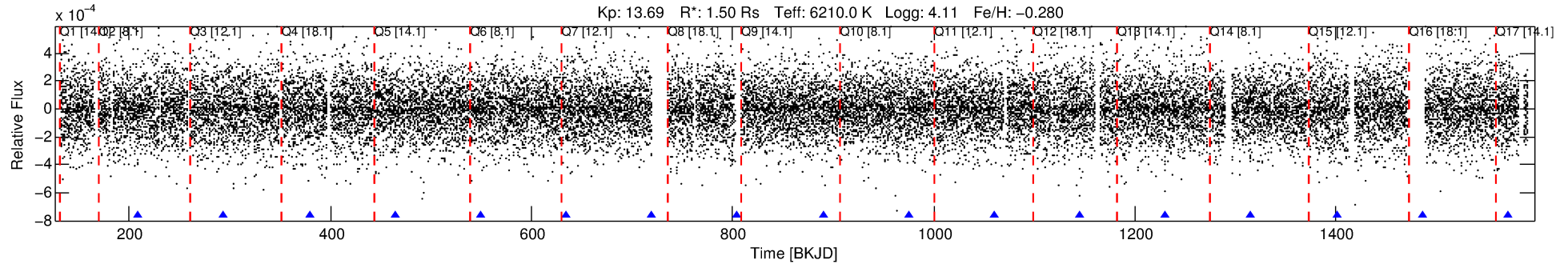
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007032132-02

No Significant Match Found

DV One-Page Summary

KIC: 7032132 Candidate: 2 of 2 Period: 85.109 d



DV Fit Results:

Period = 85.10915 [0.00050] d
Epoch = 209.1258 [0.0050] BKJD
Rp/R* = 0.0166 [0.0230]
a/R* = 447.88 [3111.22]
b = 0.10 [70.06]
Seff = 20.24 [10.59]
Teq = 541 [71] K
Rp = 2.72 [3.86] Re
a = 0.3843 [0.1205] AU
Ag = 1218.72 [3473.82] [0.35σ]
Teffp = 4941 [3469] K [1.27σ]

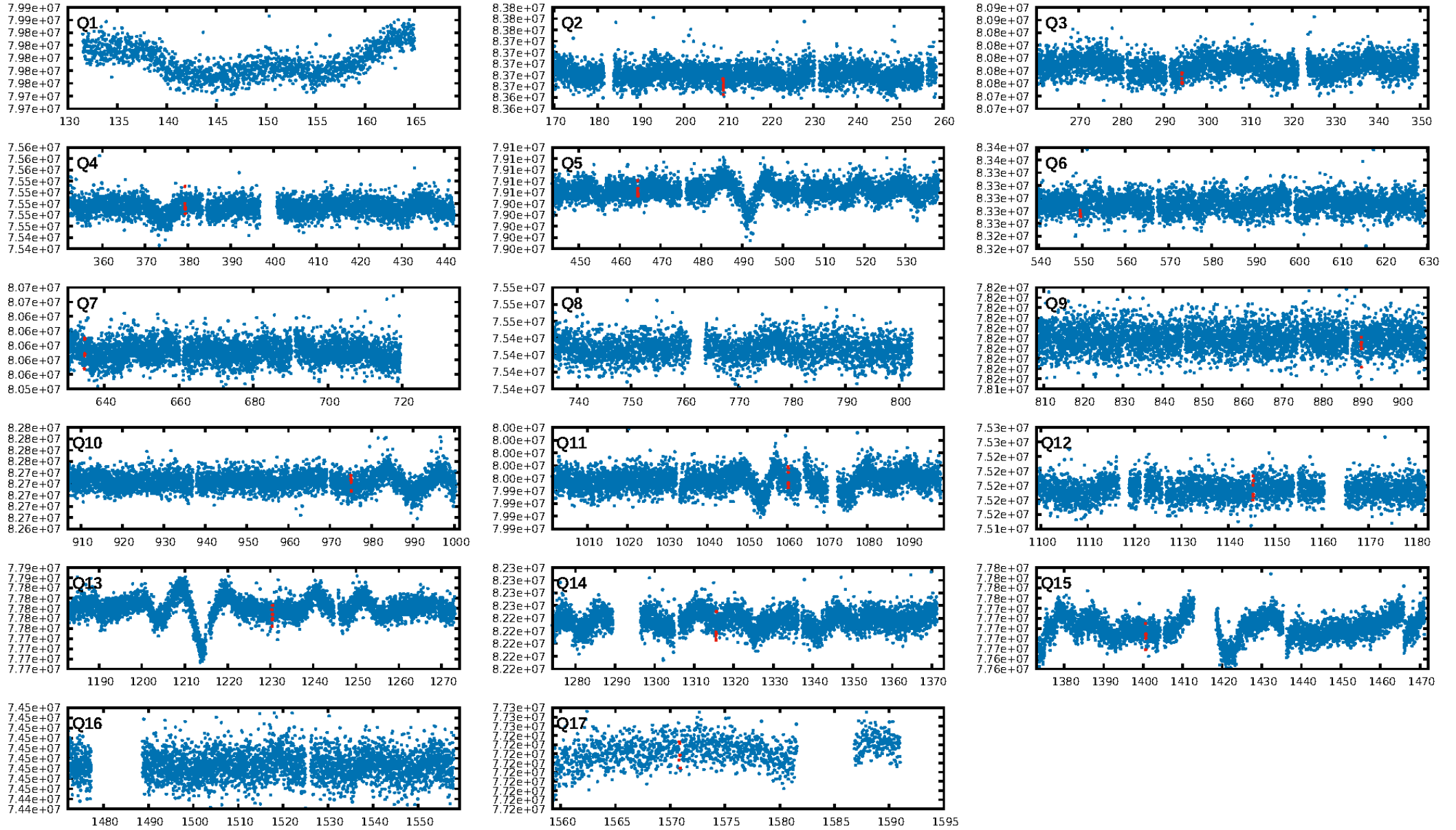
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [704.60σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 30.2%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 5.86e-11
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 1.028
Centroid-sig: 22.7%
Centroid-so: 0.943 arcsec [0.98σ]
OotOffset-rm: 1.242 arcsec [2.39σ]
KicOffset-rm: 1.140 arcsec [2.16σ]
OotOffset-st: 3/3/1/2 [9]
KicOffset-st: 3/3/1/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.07 [1/14]

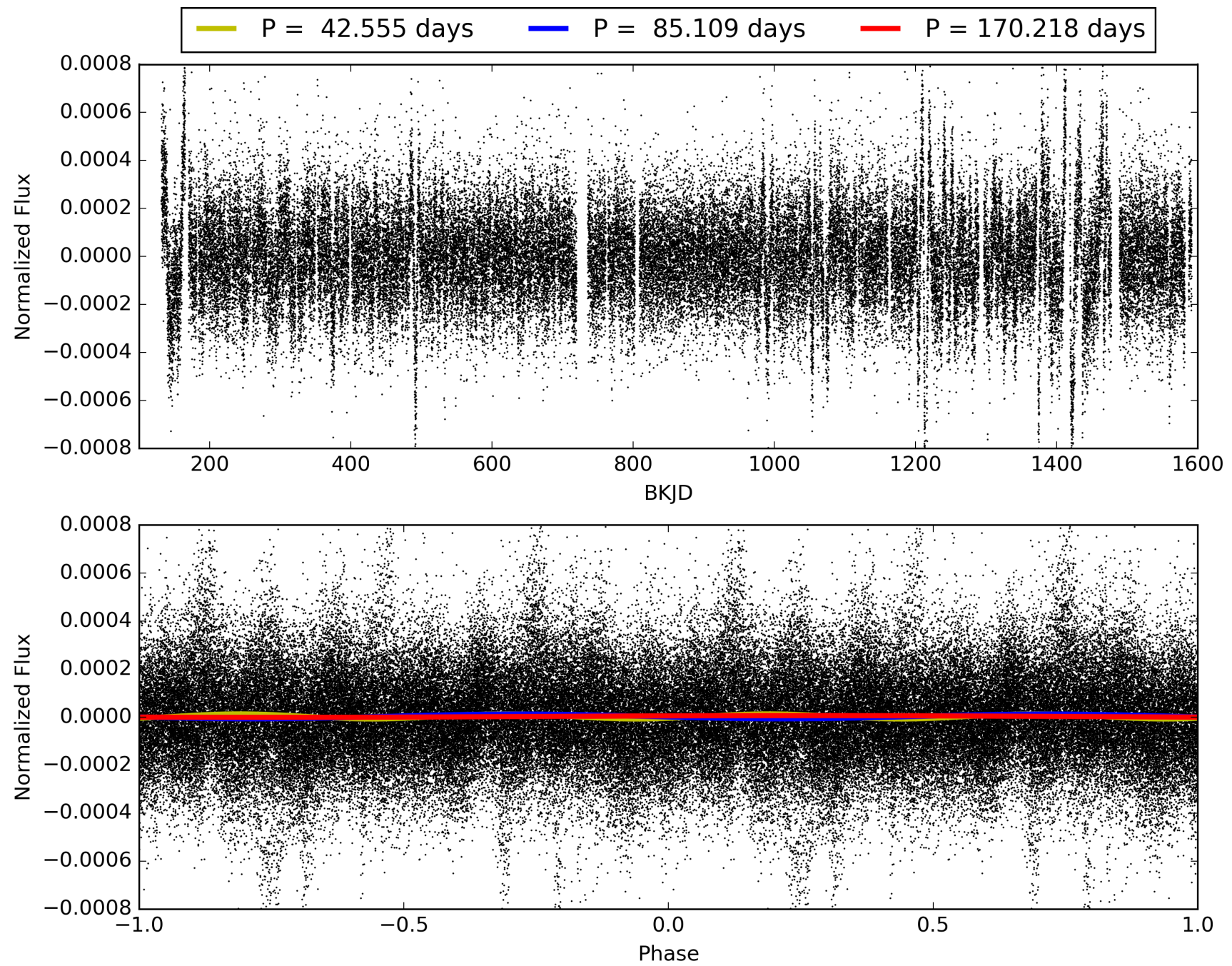
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:15:57 Z

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

TCE 007032132-02, PDC Light Curves

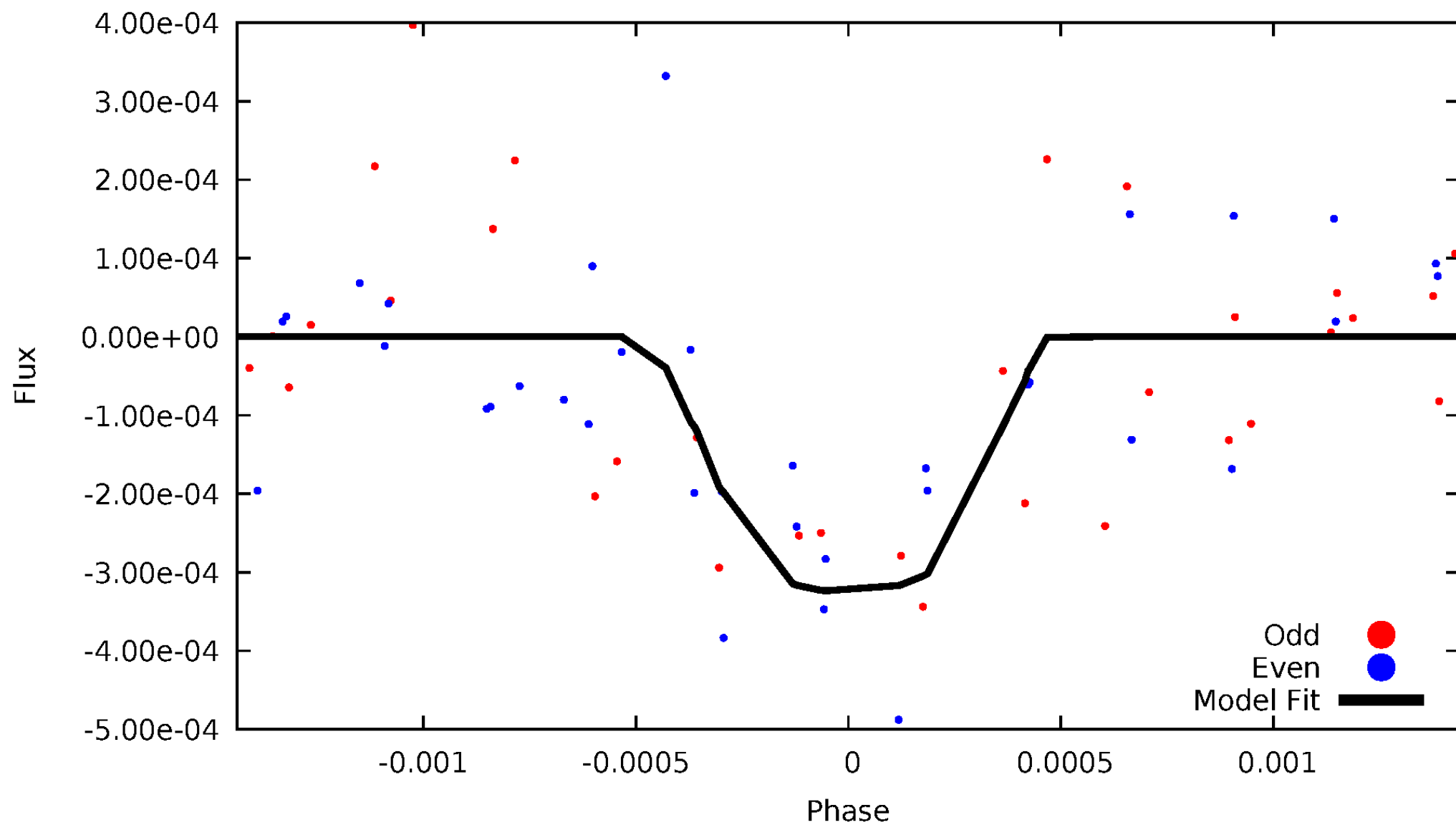


TCE 007032132-02



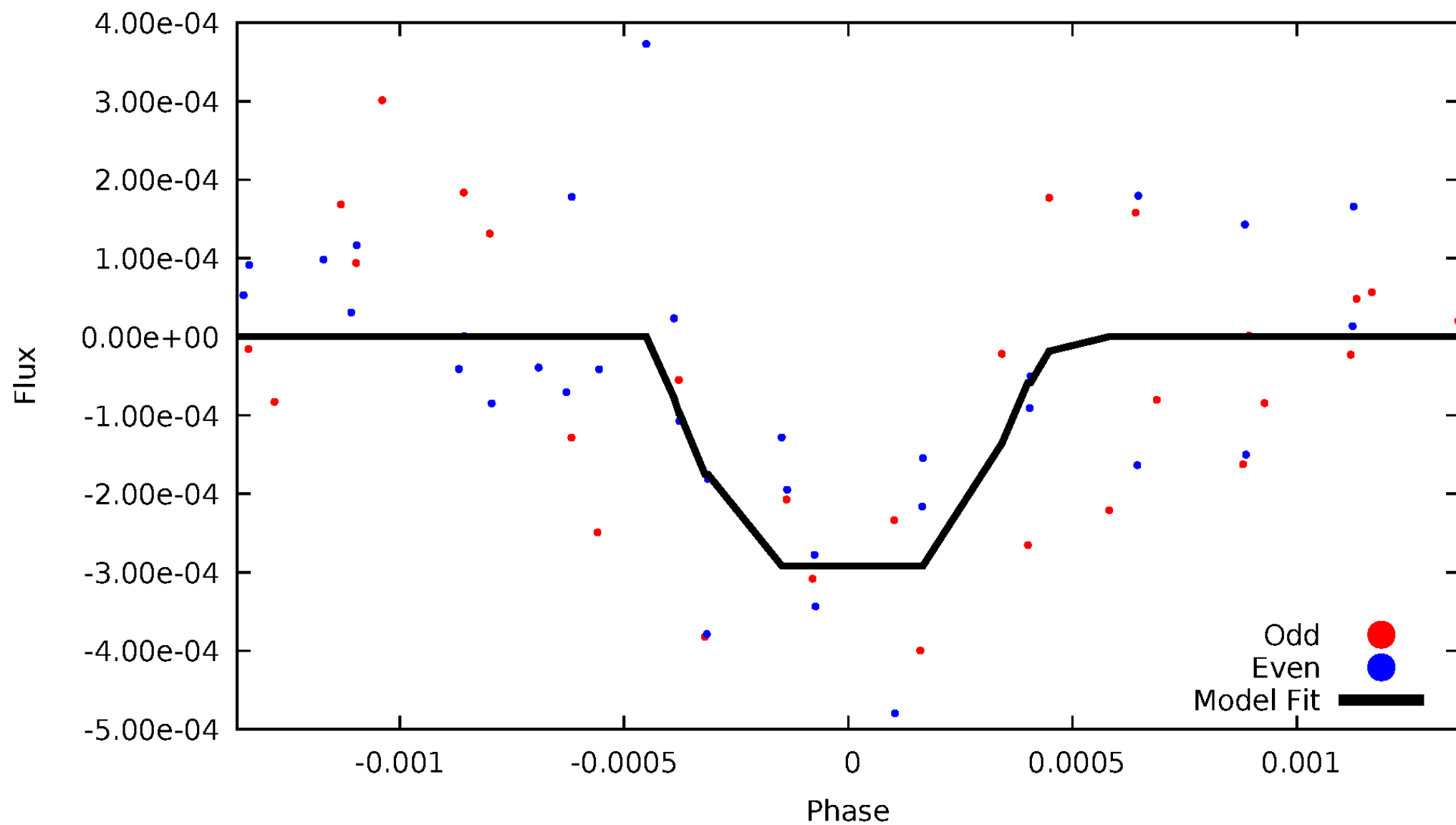
DV Odd/Even

TCE 007032132-02



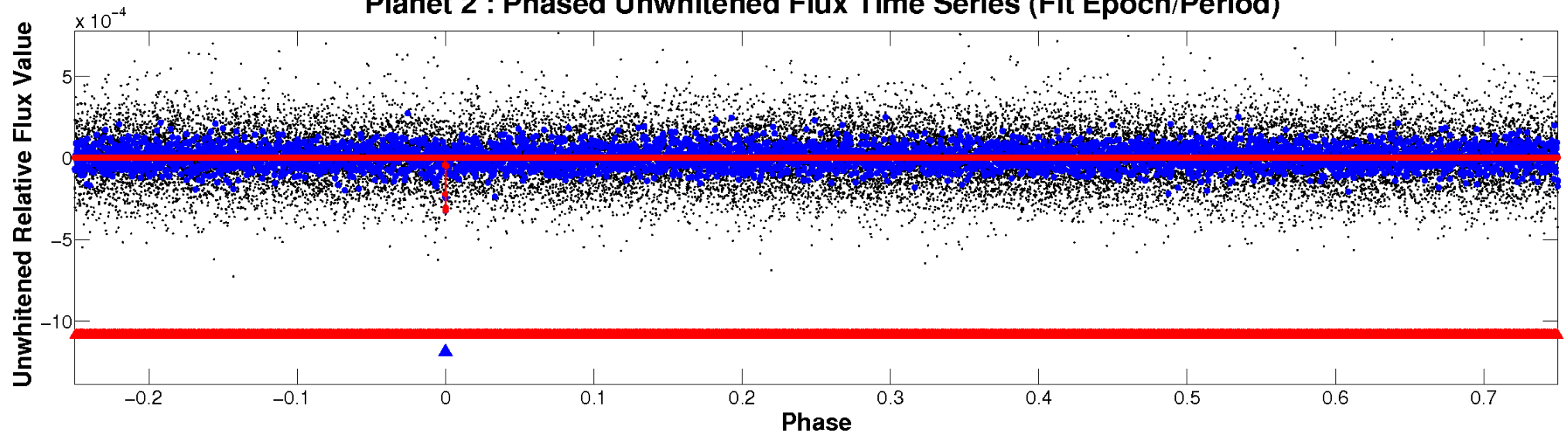
ALT Odd/Even

TCE 007032132-02

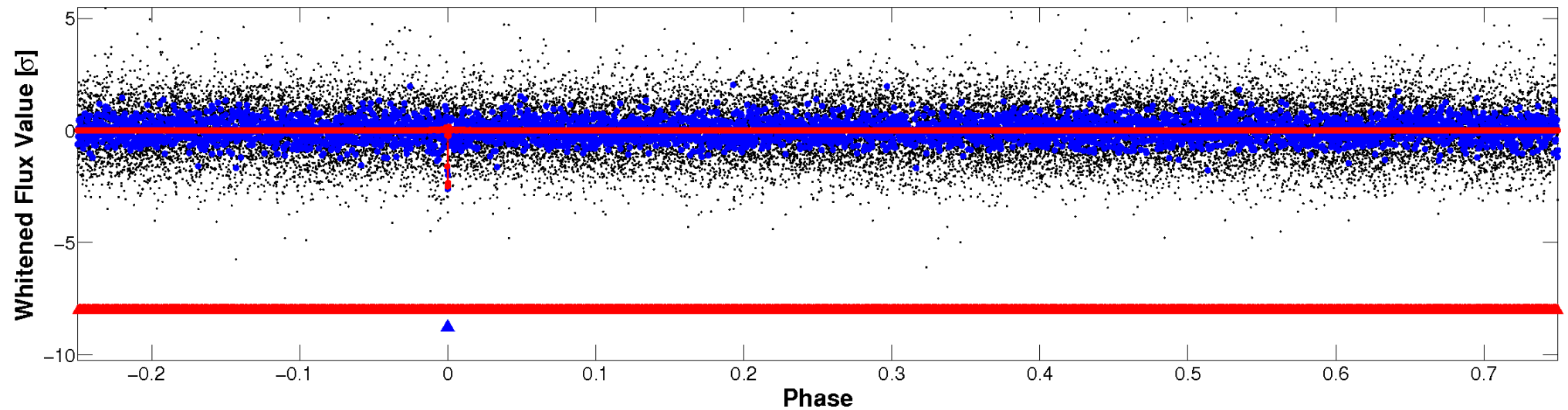


Non-Whitened Vs. Whitened Light Curve

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

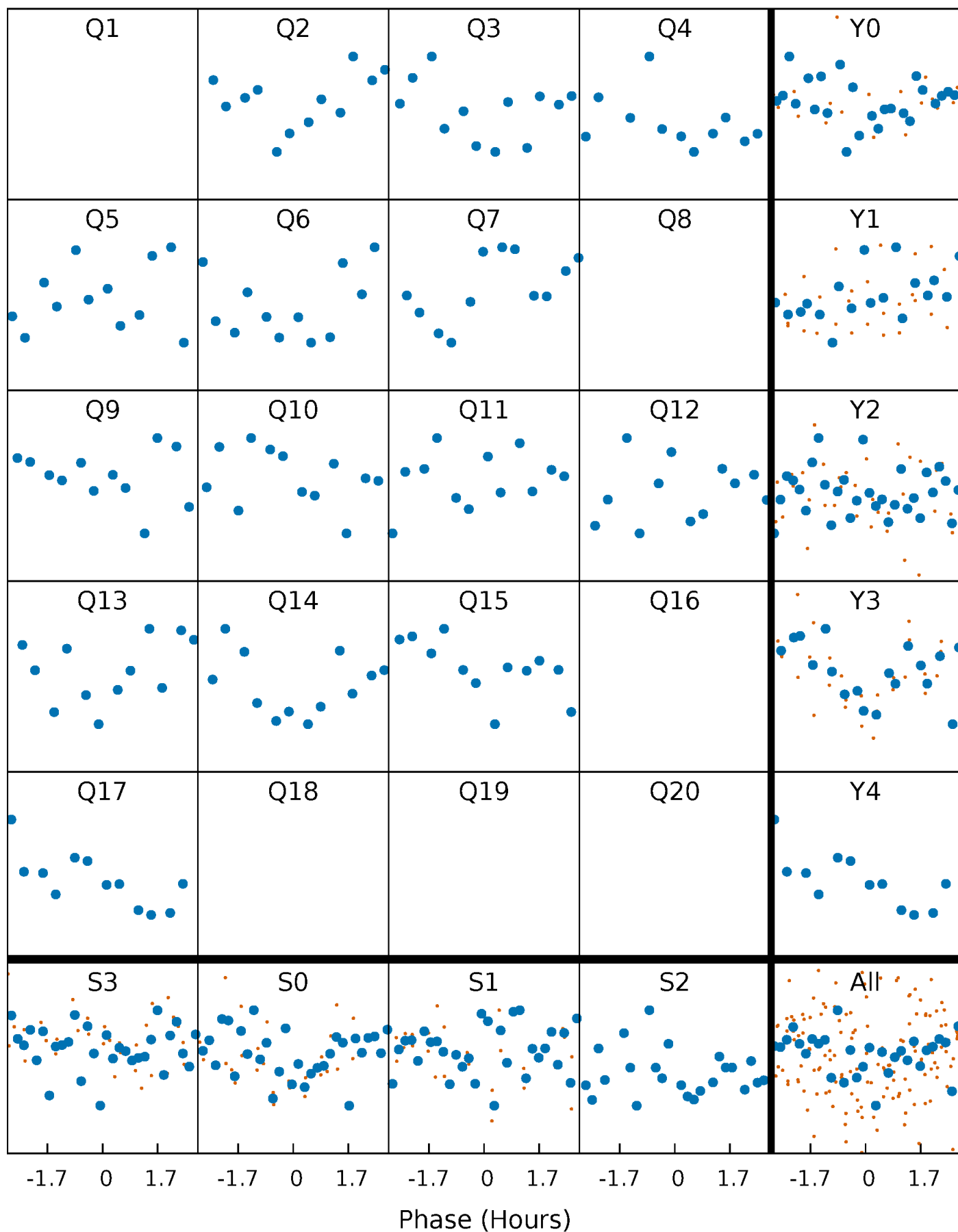


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



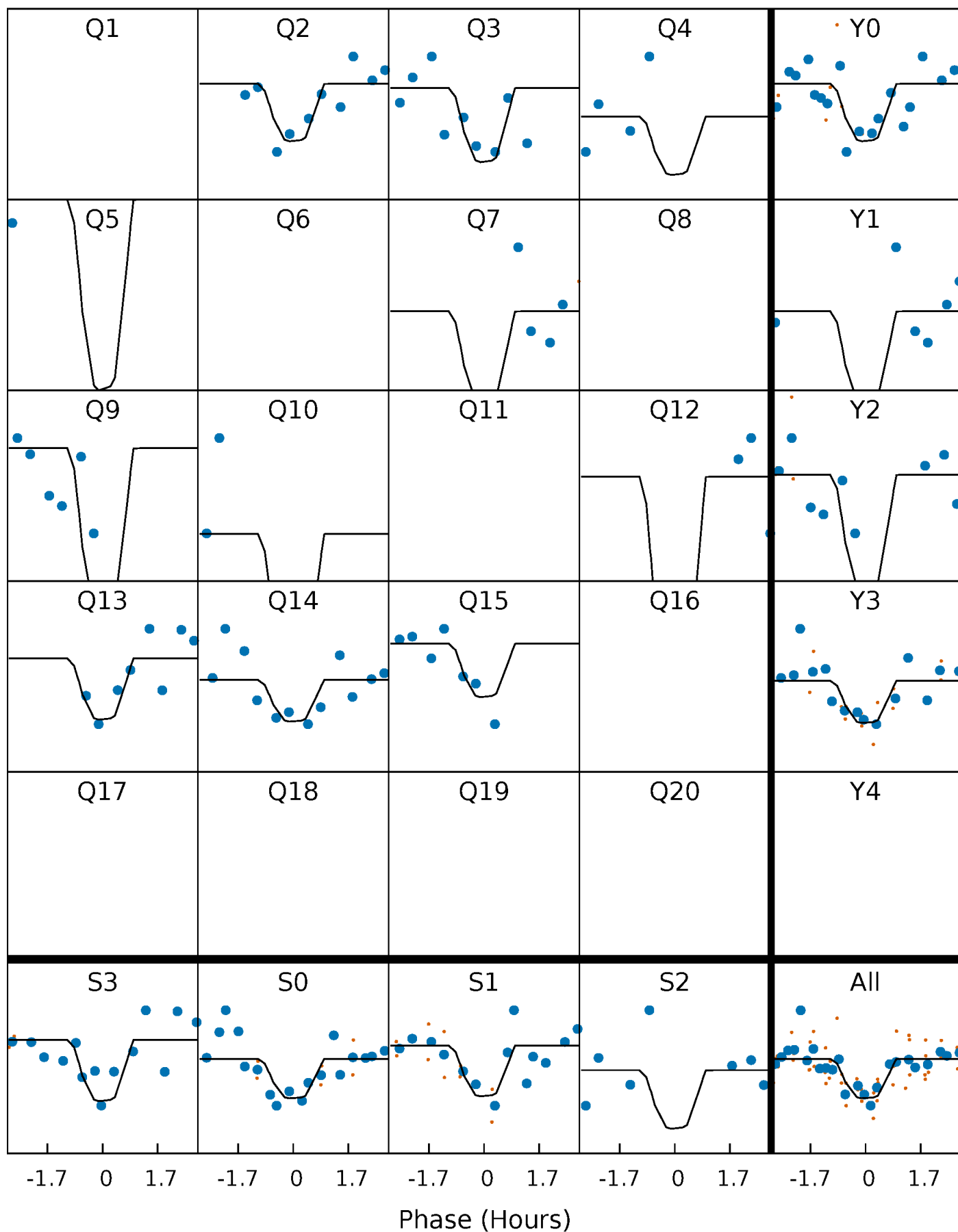
PDC Quarter-Phased Transit Curves

TCE 007032132-02 P= 85.109152 Days $T_0=209.125767$ (BKJD)



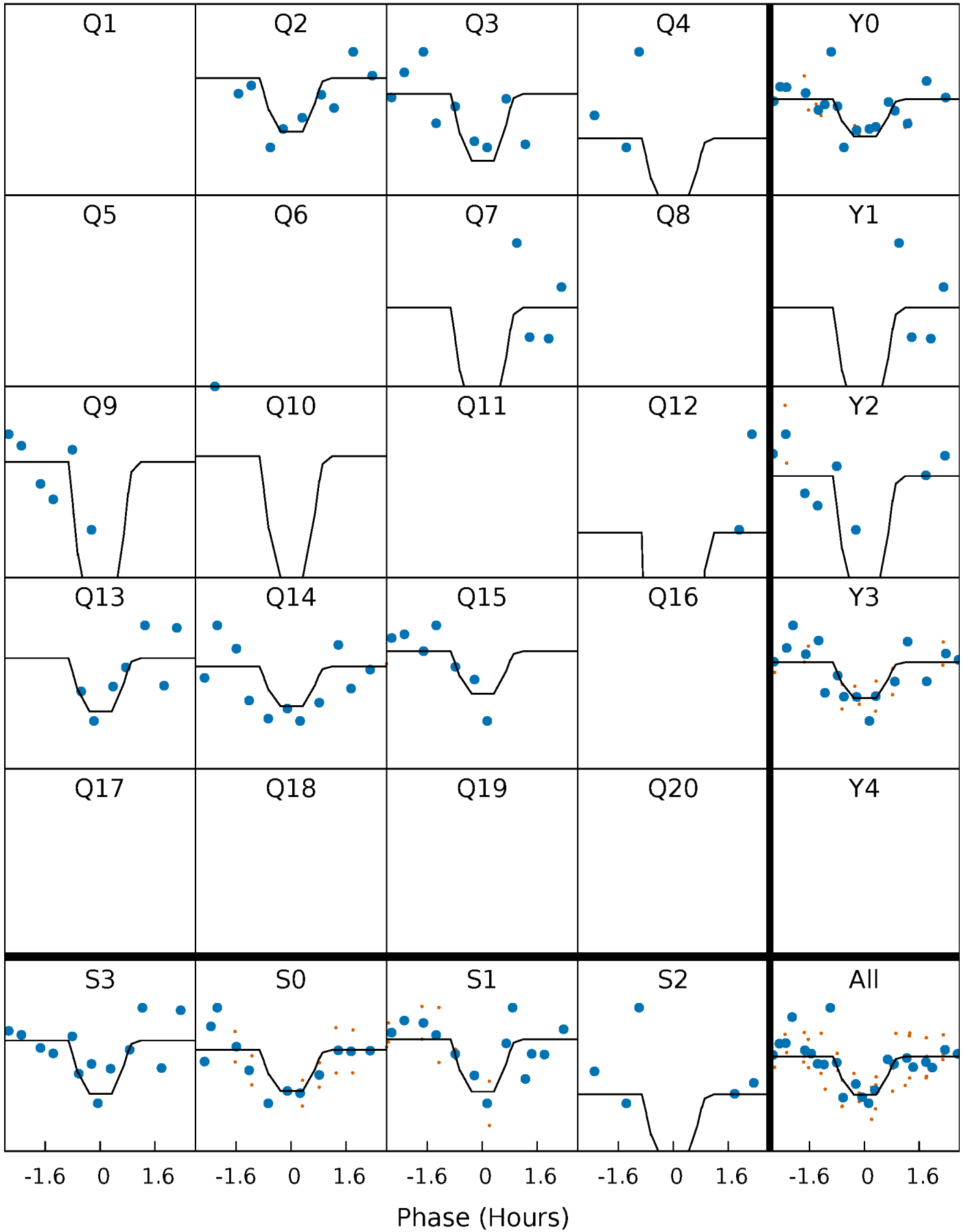
DV Quarter-Phased Transit Curves

TCE 007032132-02 P= 85.109152 Days $T_0=209.125767$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

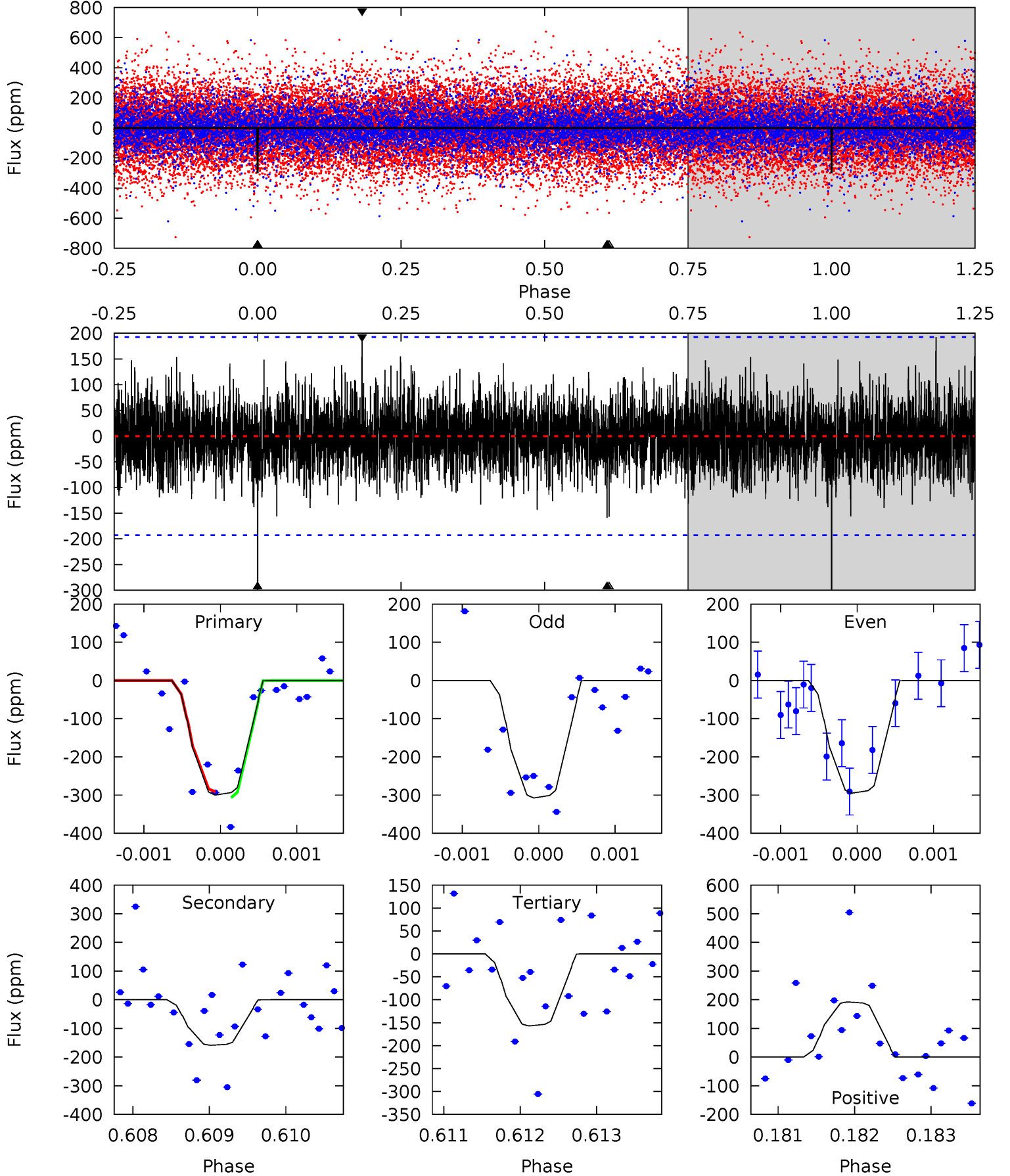
TCE 007032132-02 P= 85.109106 Days $T_0=209.127653$ (BKJD)



DV Model-Shift Uniqueness Test

007032132-02, P = 85.109152 Days, E = 124.016615 Days

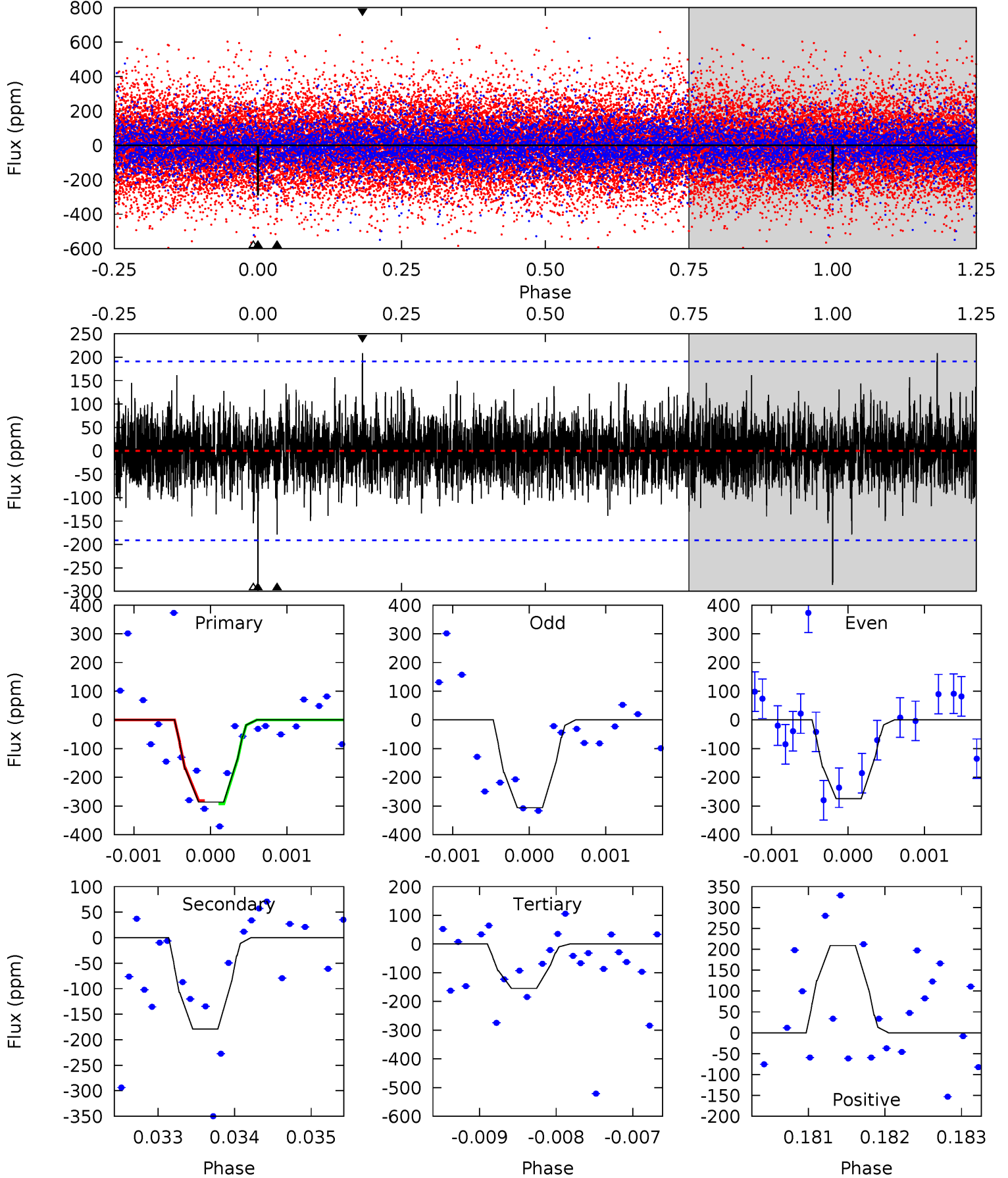
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.53 | 4.52 | 4.47 | 5.48 | 5.48 | 3.34 | 1.28 | 4.06 | 3.05 | 0.05 | -0.96 | 0.18 | 0.98 | 0.39 | 0.22 |



Alt Model-Shift Uniqueness Test

007032132-02, P = 85.109106 Days, E = 124.018547 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.18 | 5.11 | 4.41 | 5.97 | 5.46 | 3.30 | 1.24 | 3.76 | 2.21 | 0.70 | -0.85 | 0.45 | 0.96 | 0.42 | 0.17 |



Stellar Parameters For KIC 007032132

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6210^{+169}_{-206} | $4.106^{+0.299}_{-0.161}$ | $-0.280^{+0.300}_{-0.300}$ | $1.498^{+0.393}_{-0.480}$ | $1.046^{+0.169}_{-0.154}$ | $0.438^{+0.867}_{-0.197}$ |
| | +3%/-3% | +7%/-4% | +107%/-107% | +26%/-32% | +16%/-15% | +198%/-45% |
| 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 007032132-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|-----------------------|
| DV | -159 ± 35 | $3.78^{+3.32}_{-2.57}$ | 746^{+61}_{-64} | 4619^{+3586}_{-920} | 868^{+7900}_{-628} |
| Alt. | -179 ± 35 | $3.66^{+3.24}_{-2.51}$ | 744^{+61}_{-65} | 4796^{+3831}_{-1023} | 1066^{+9077}_{-753} |

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

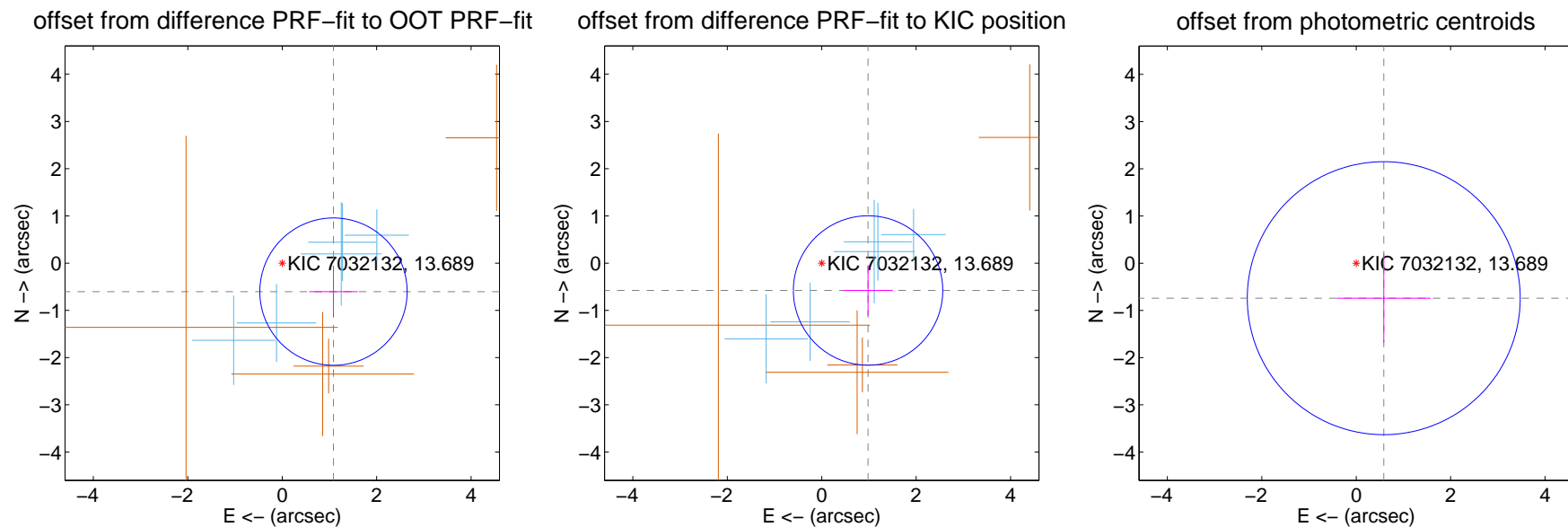
DV Centroid Data

Supplemental centroid analysis for 007032132-02. Kepler magnitude: 13.69. Transit SNR 8.39

There are 5 quarters with good PRF difference image offsets

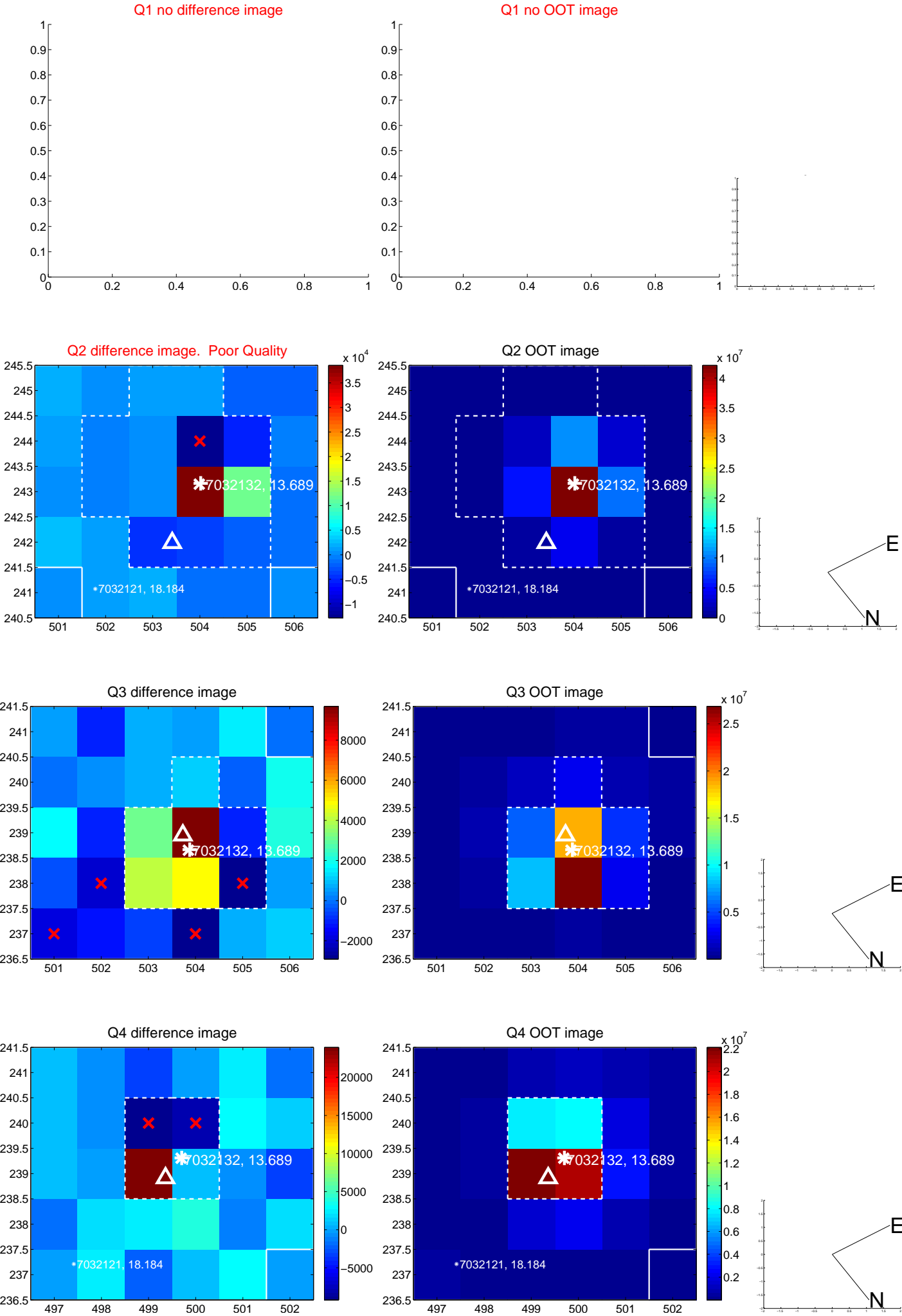
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.242 ± 0.520 | 2.39 | -1.085 ± 0.515 | -0.603 ± 0.536 |
| PRF-fit source offset from KIC position | 1.140 ± 0.527 | 2.16 | -0.982 ± 0.525 | -0.579 ± 0.534 |
| photometric centroid source offset | 0.94 ± 0.96 | 0.98 | -0.58 ± 0.99 | -0.74 ± 0.94 |

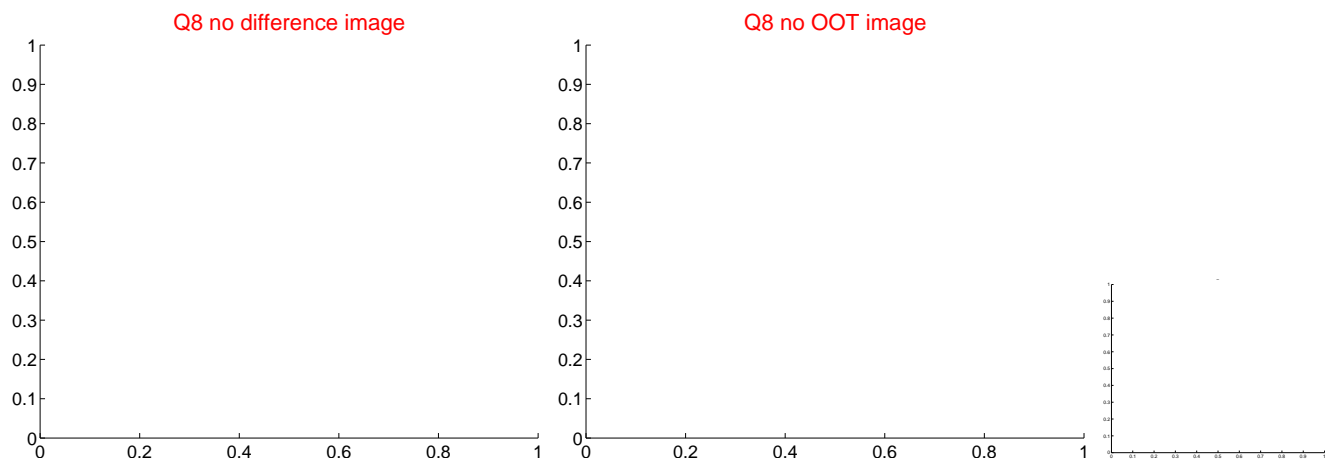
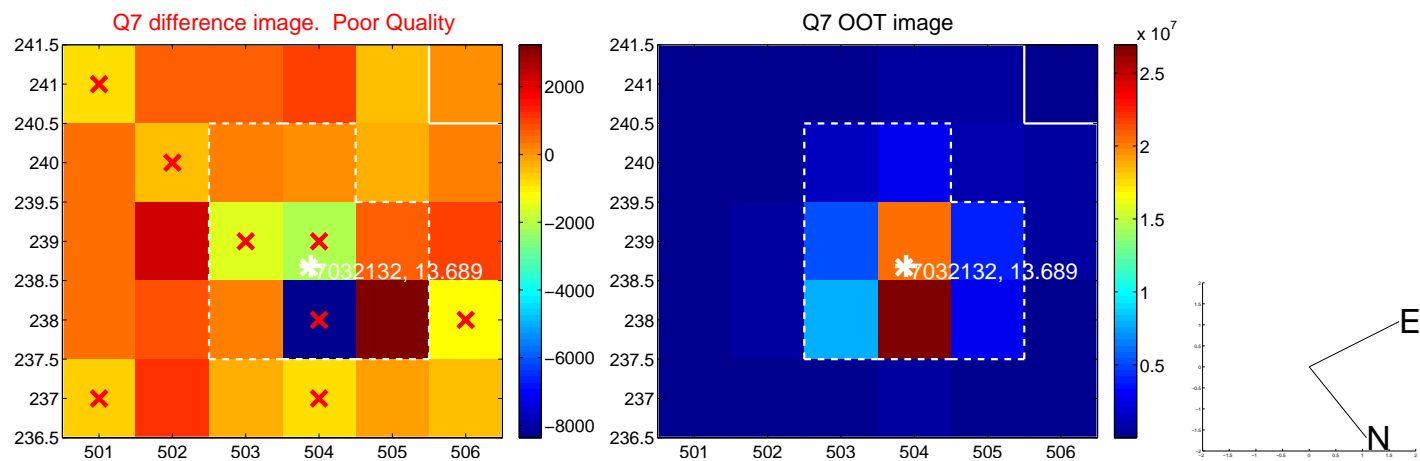
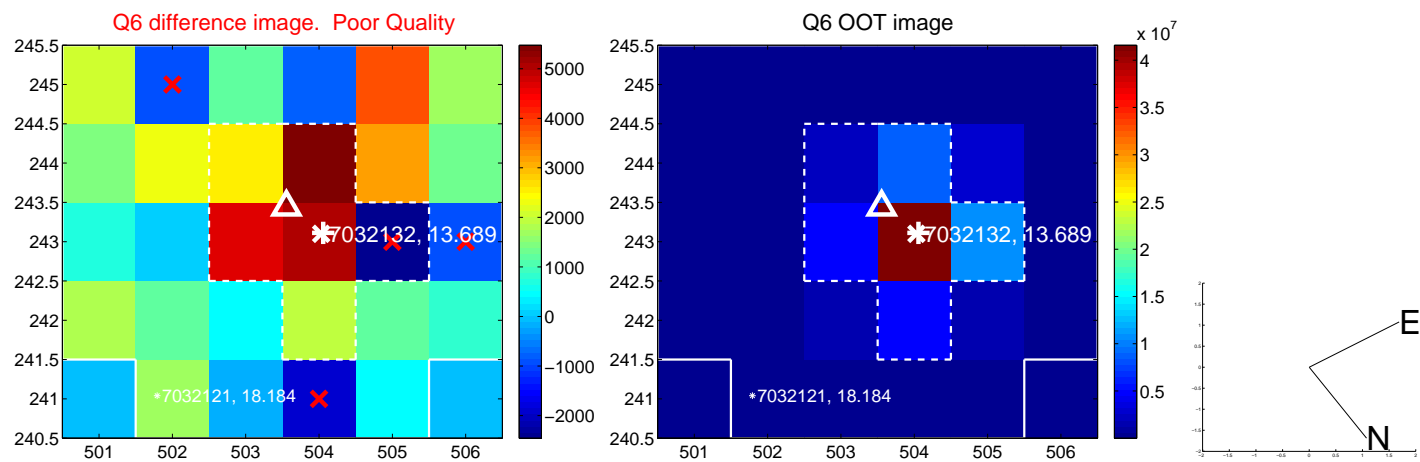
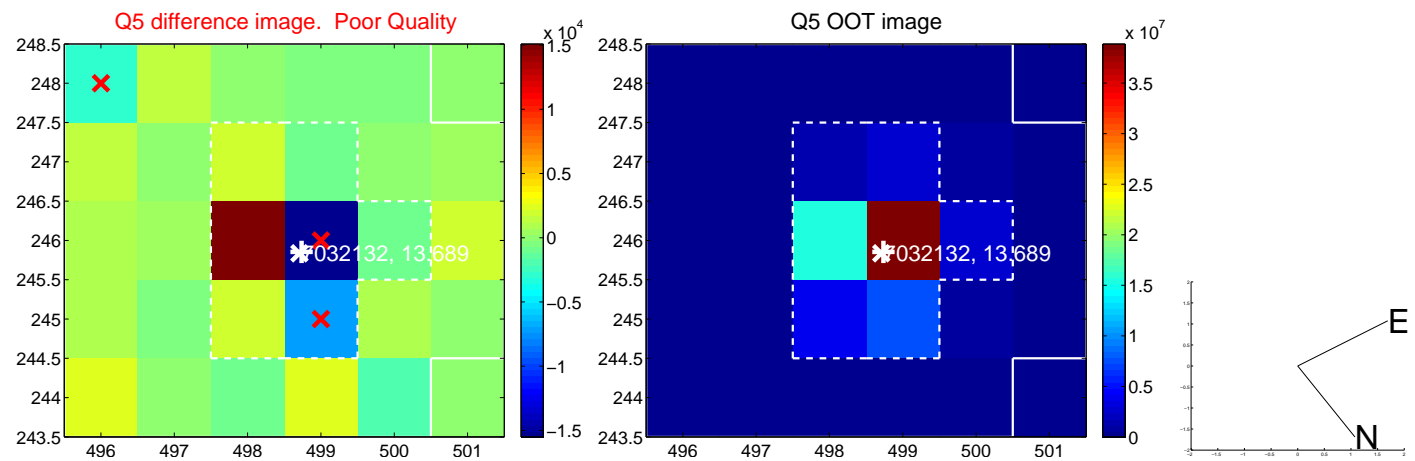


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

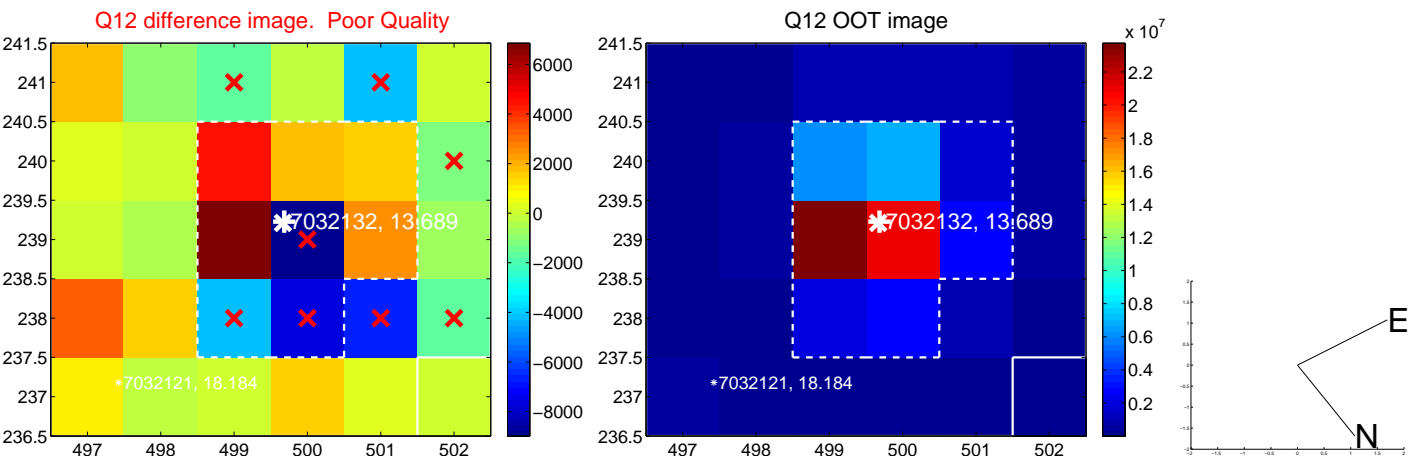
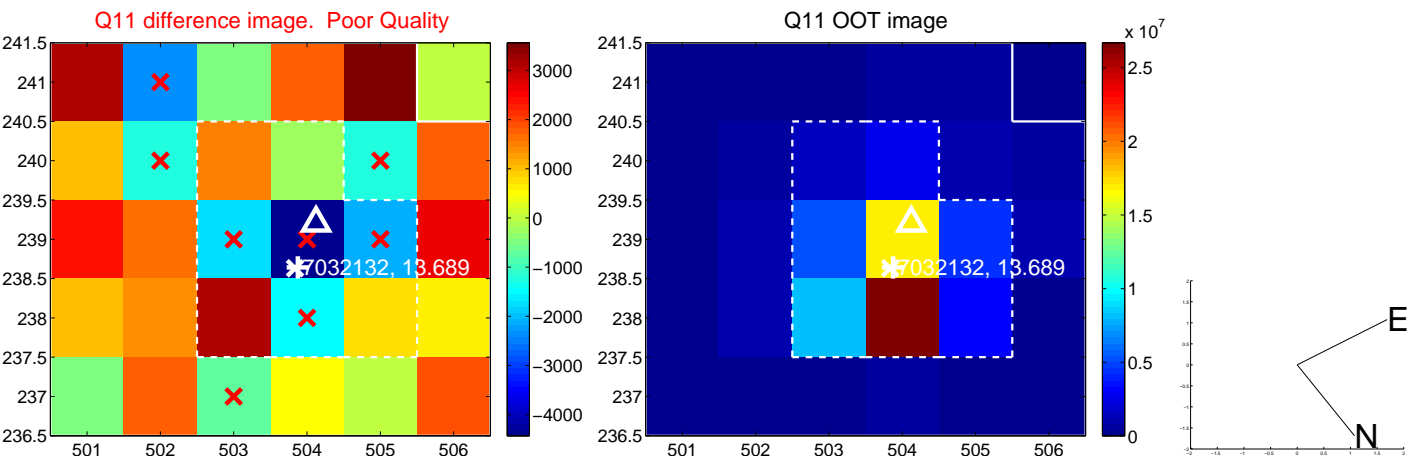
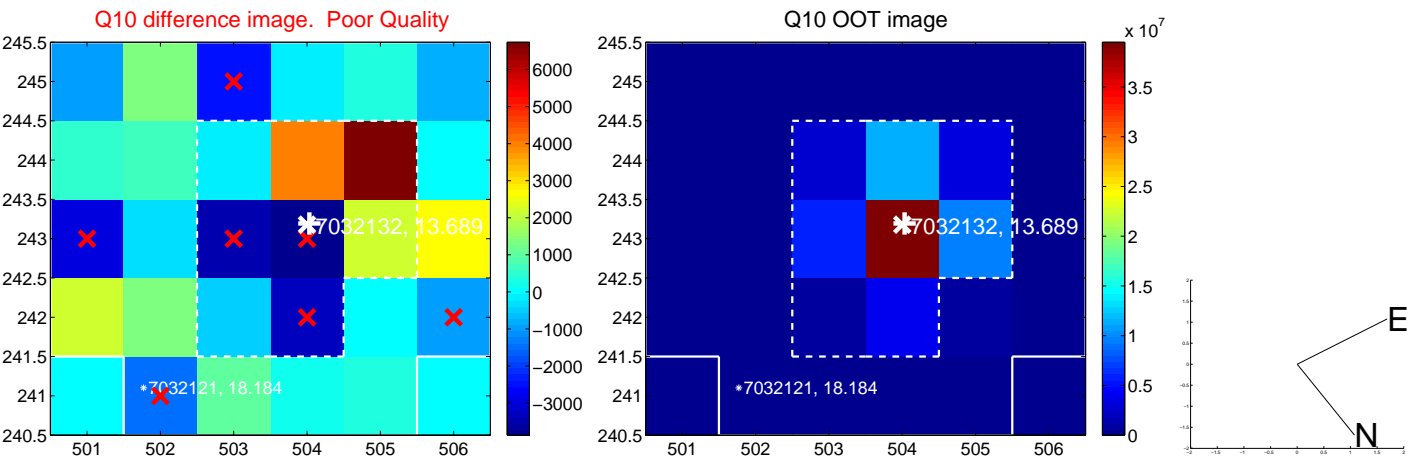
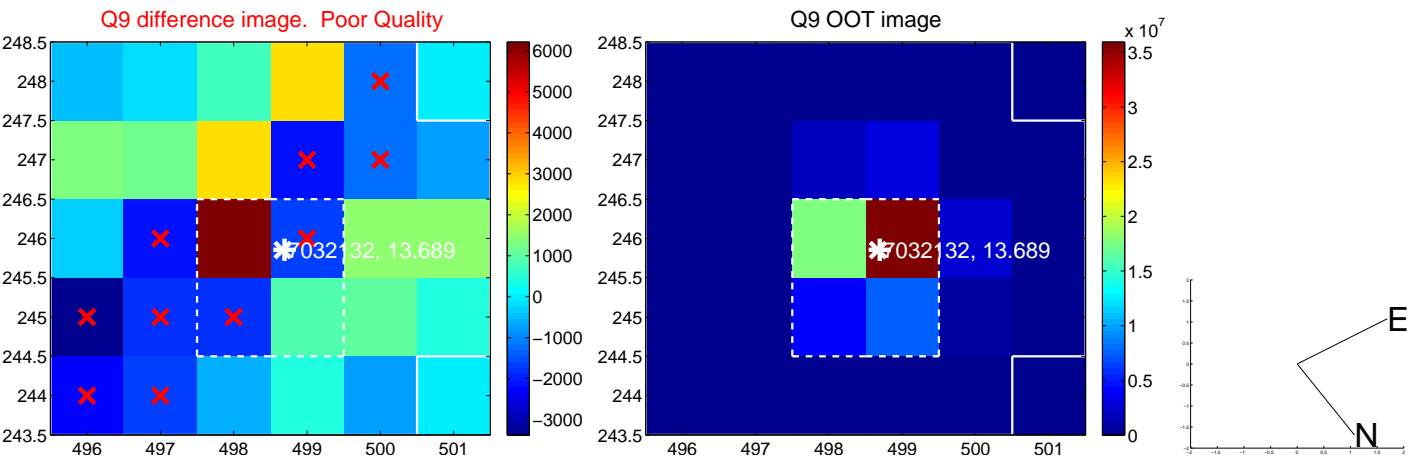
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



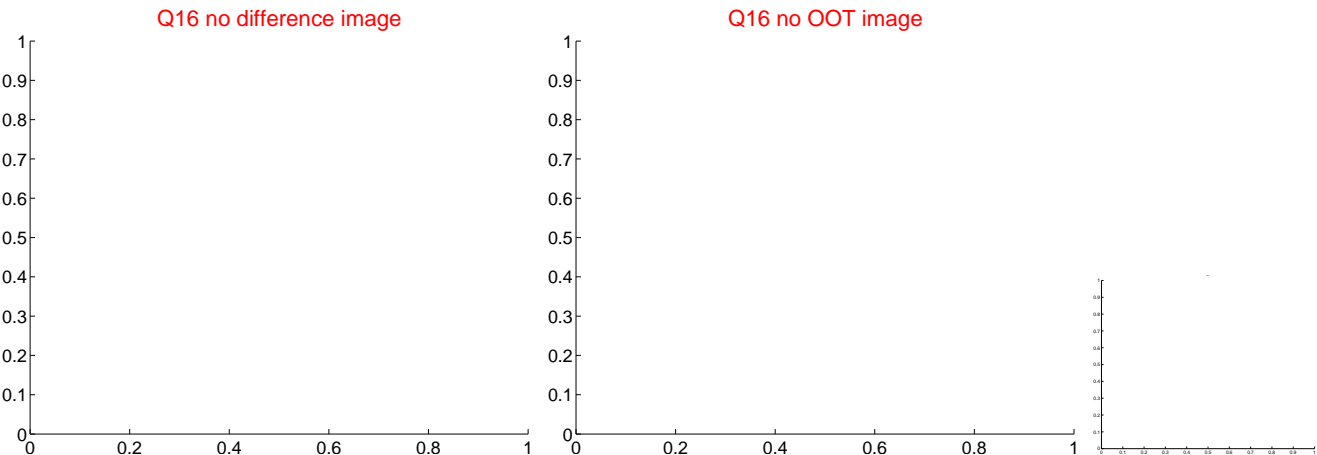
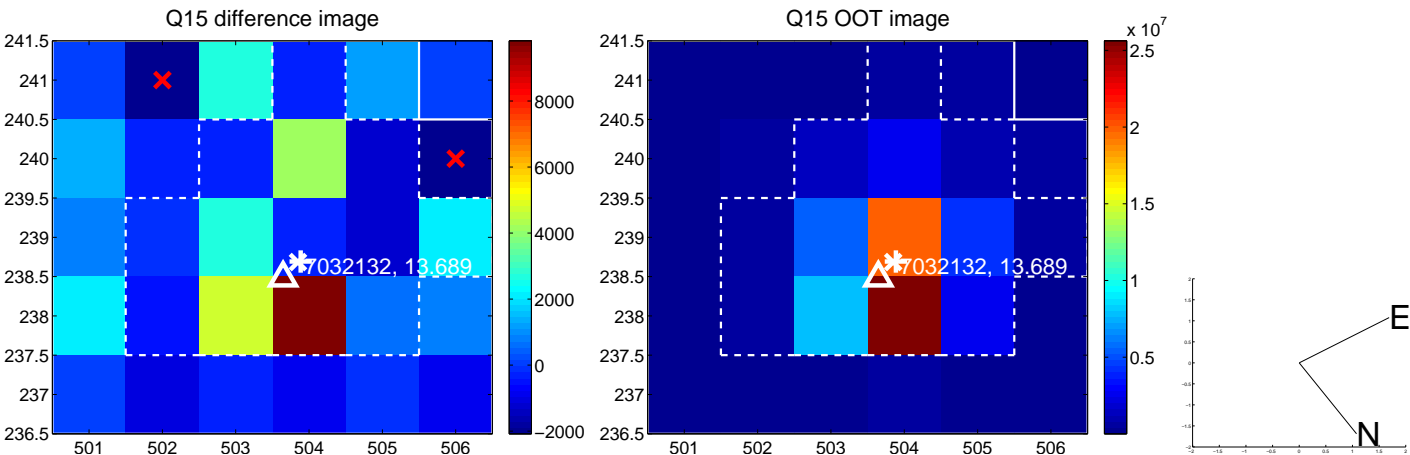
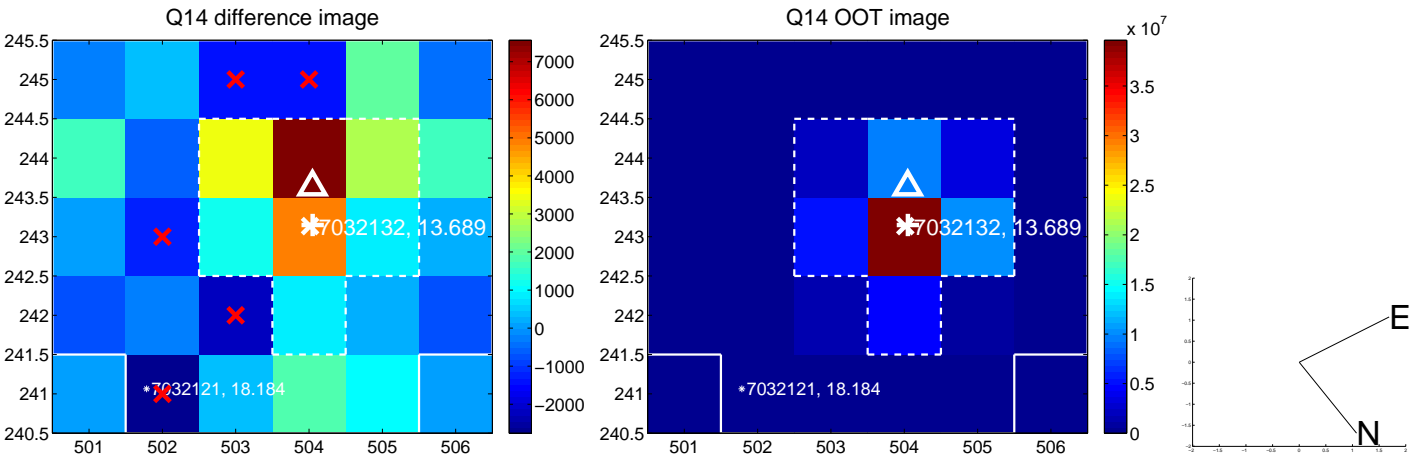
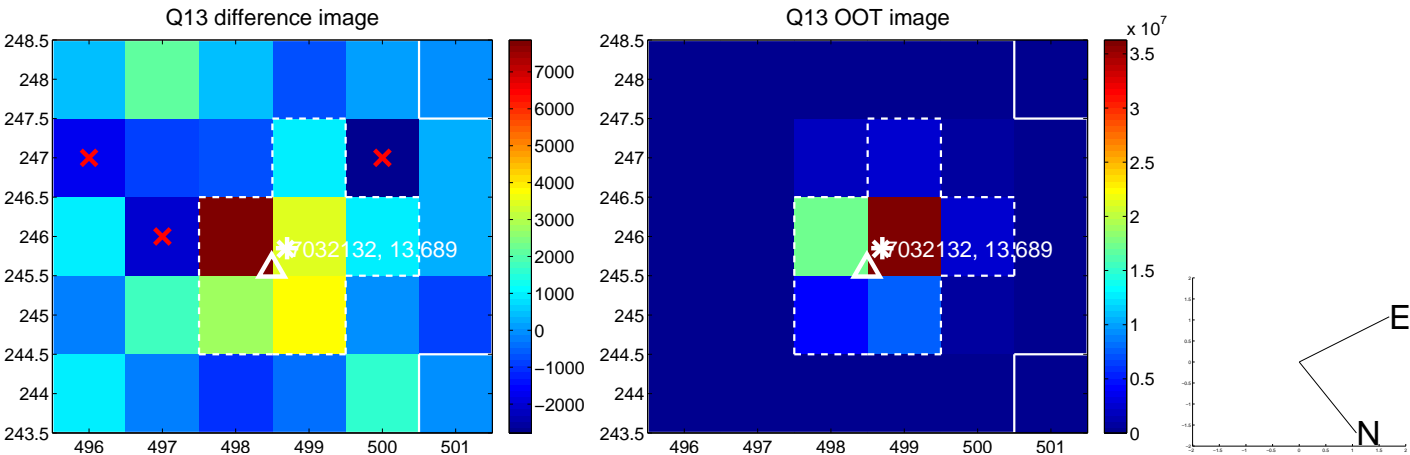
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



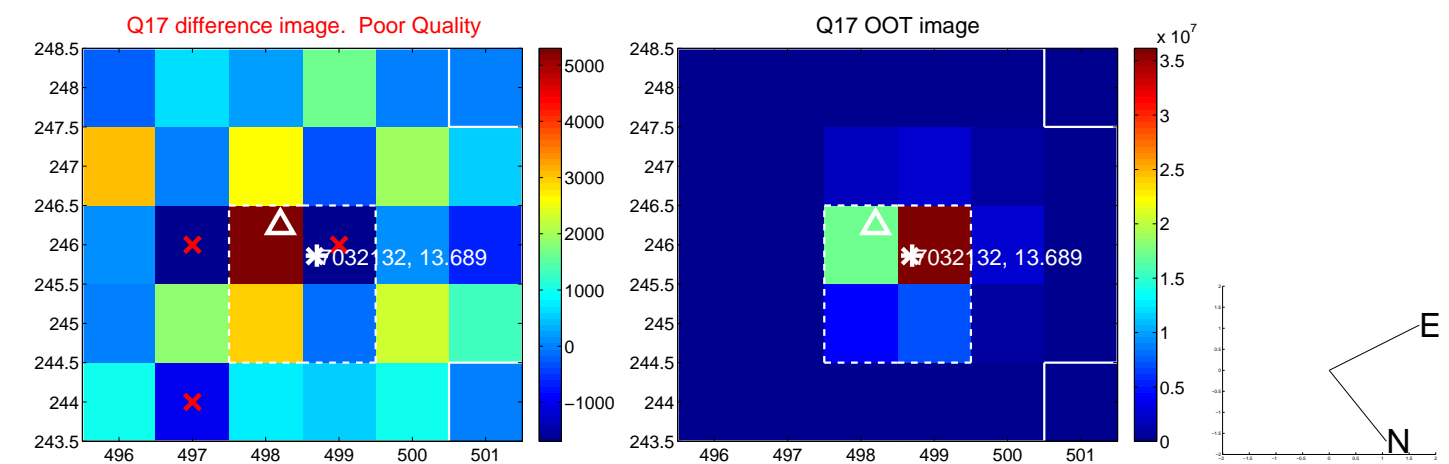
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



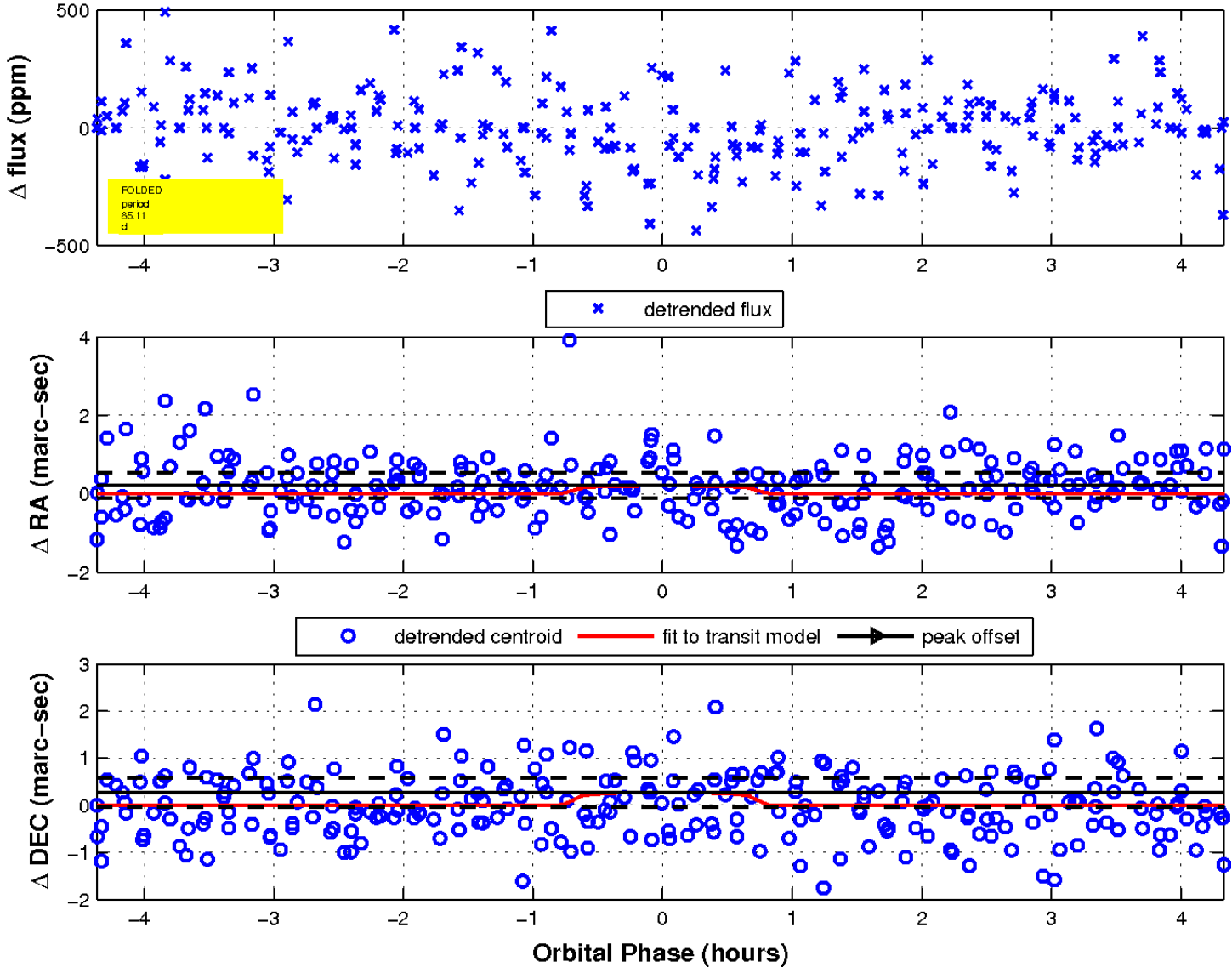
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

