

KIC 007265298

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007265298-01 | OBS | 2051.01 | 25.762664 | 147.695709 | 605.6 | 7.181 | 33.9 | 36.0 | 1.07 | 5739 | 2.93 | 38.04 |
| 007265298-02 | OBS | 2051.02 | 11.032086 | 141.697119 | 188.9 | 6.431 | 13.4 | 14.2 | 1.07 | 5739 | 2.01 | 117.86 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 007265298-01 | OBS | PC | 0.86 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 007265298-02 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | NO_COMMENT |

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.

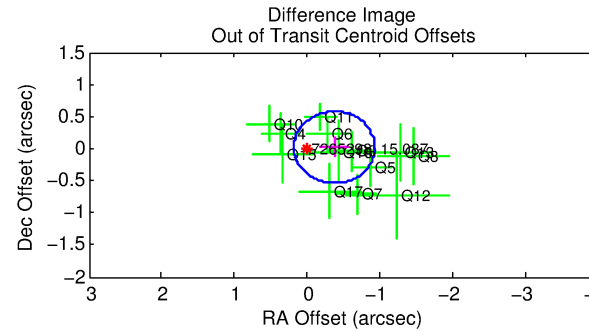
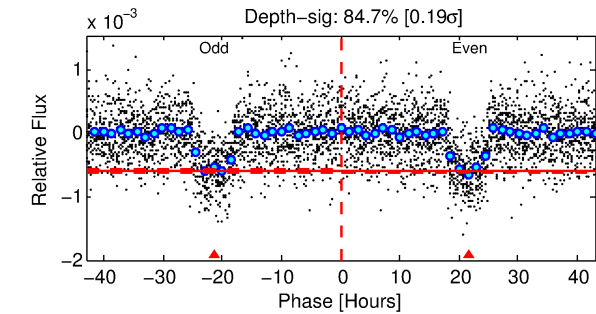
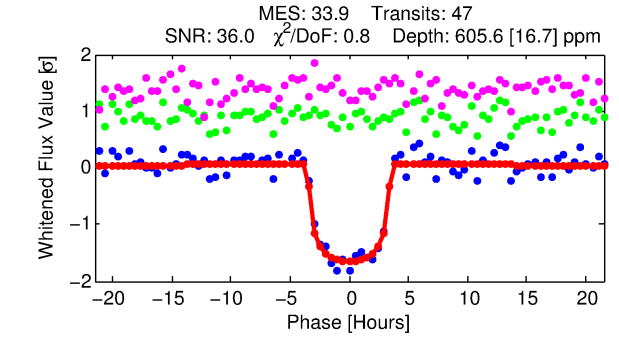
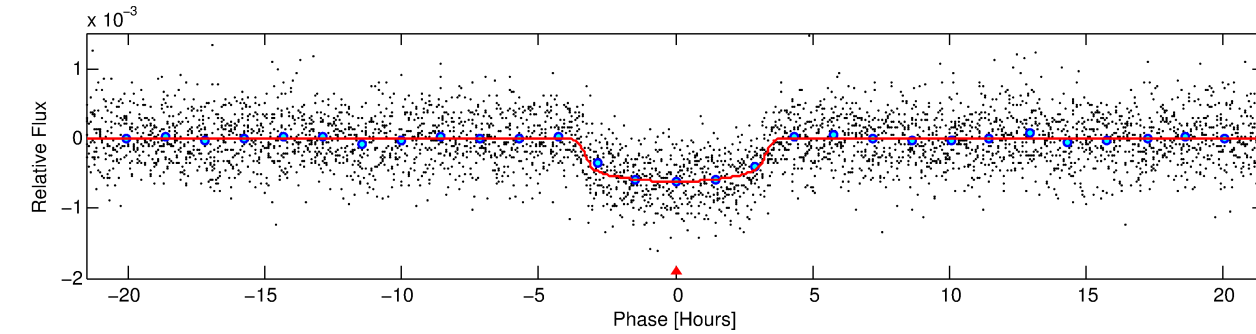
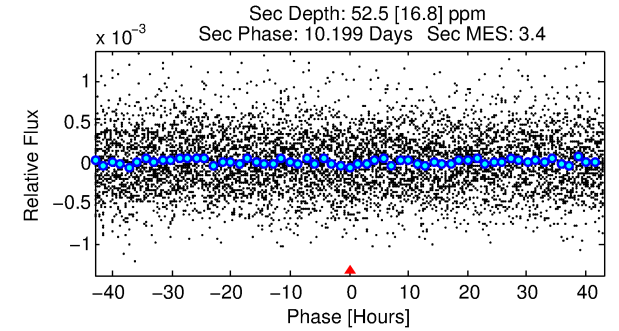
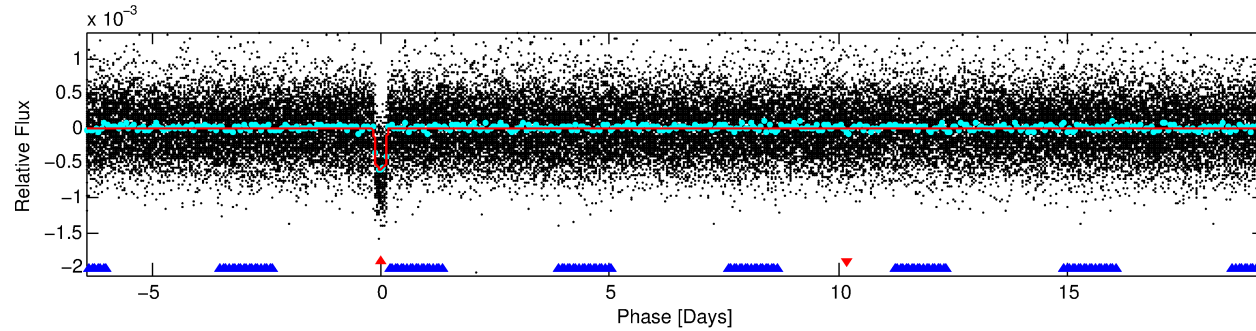
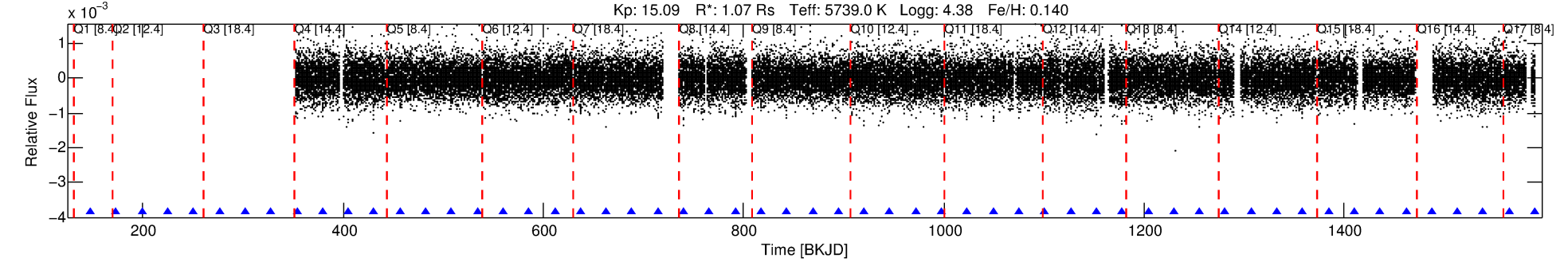
Ephemeris Match Information For 007265298-01

No Significant Match Found

DV One-Page Summary

KIC: 7265298 Candidate: 1 of 2 Period: 25.763 d
KOI: K02051.01 Name: Kepler-355c Corr: 0.978

Kp: 15.09 R*: 1.07 Rs Teff: 5739.0 K Logg: 4.38 Fe/H: 0.140



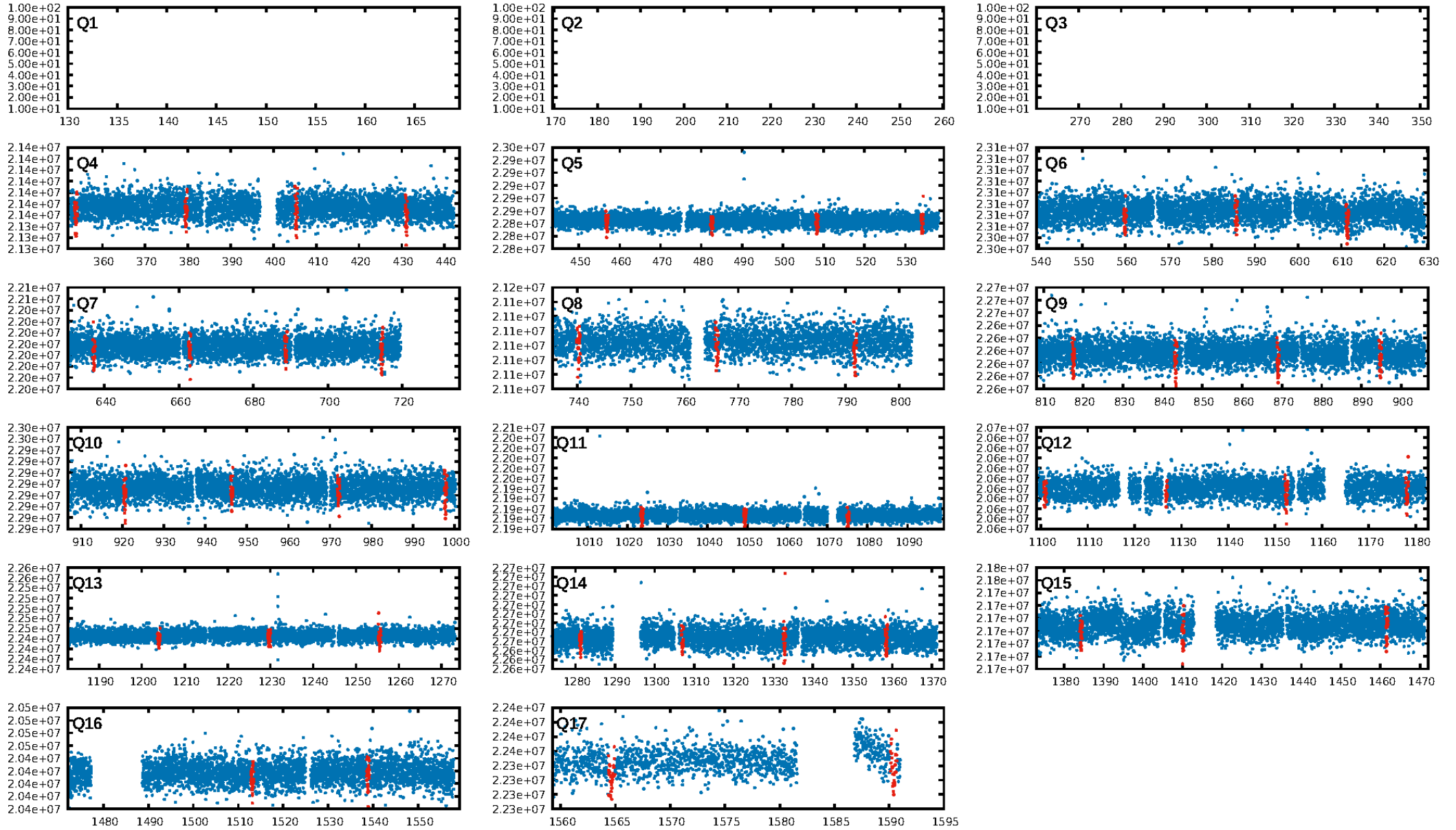
DV Fit Results:

Period = 25.76266 [0.00014] d
Epoch = 147.6957 [0.0049] BKJD
Rp/R* = 0.0251 [0.0027]
a/R* = 17.43 [7.97]
b = 0.80 [0.20]
Seff = 38.04 [8.25]
Teq = 633 [34] K
Rp = 2.93 [0.57] Re
a = 0.1709 [0.0240] AU
Ag = 98.28 [42.94] [2.27σ]
Teff = 3083 [300] K [8.12σ]

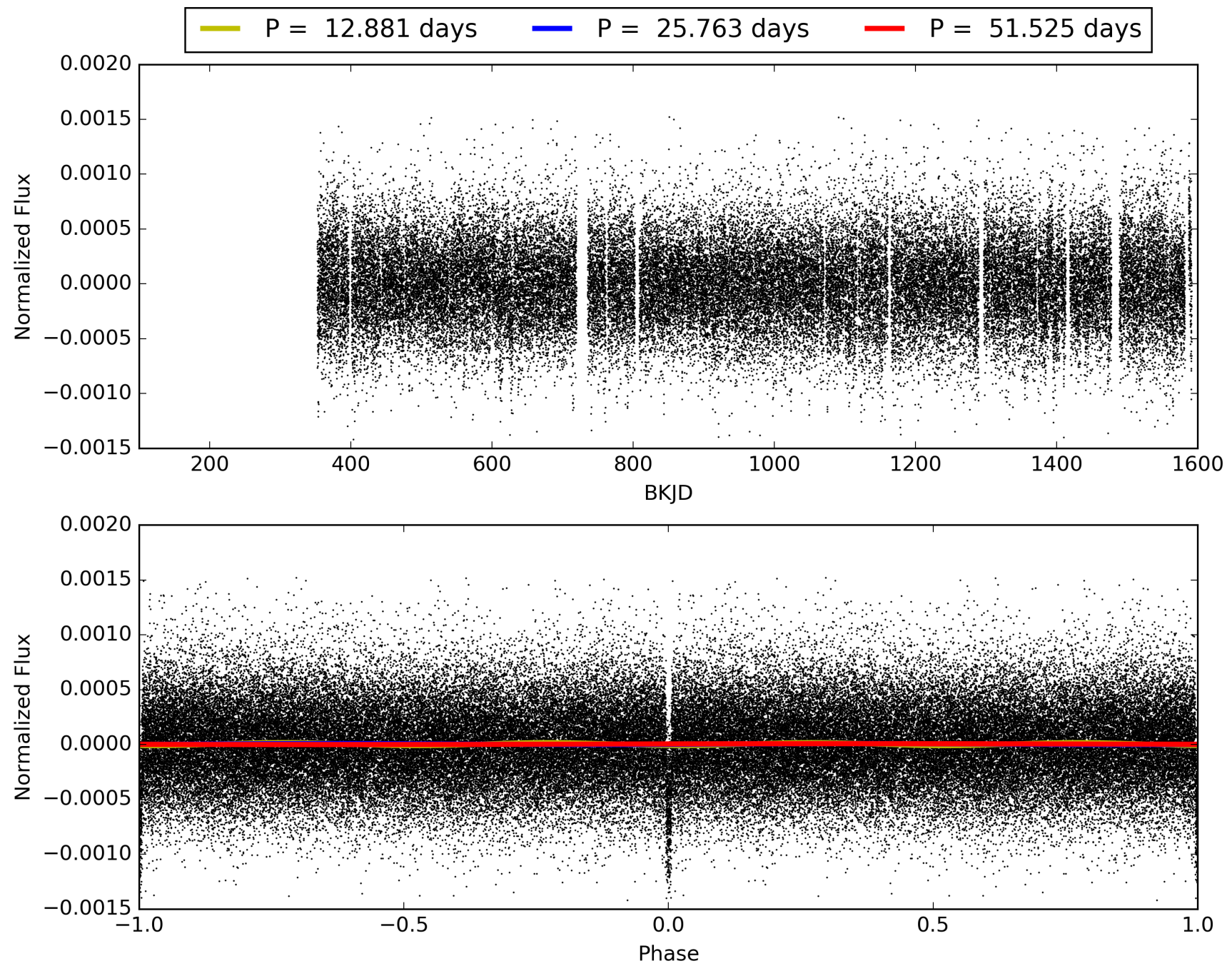
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 90.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.91e-242
RollingBand-fgt: 1.00 [45/45]
GhostDiagnostic-chr: -15.47
Centroid-sig: 69.5%
Centroid-so: 0.293 arcsec [0.71σ]
OotOffset-rm: 0.374 arcsec [2.01σ]
KicOffset-rm: 0.314 arcsec [1.67σ]
OotOffset-st: 2/3/4/4 [13]
KicOffset-st: 2/3/4/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 007265298-01, PDC Light Curves

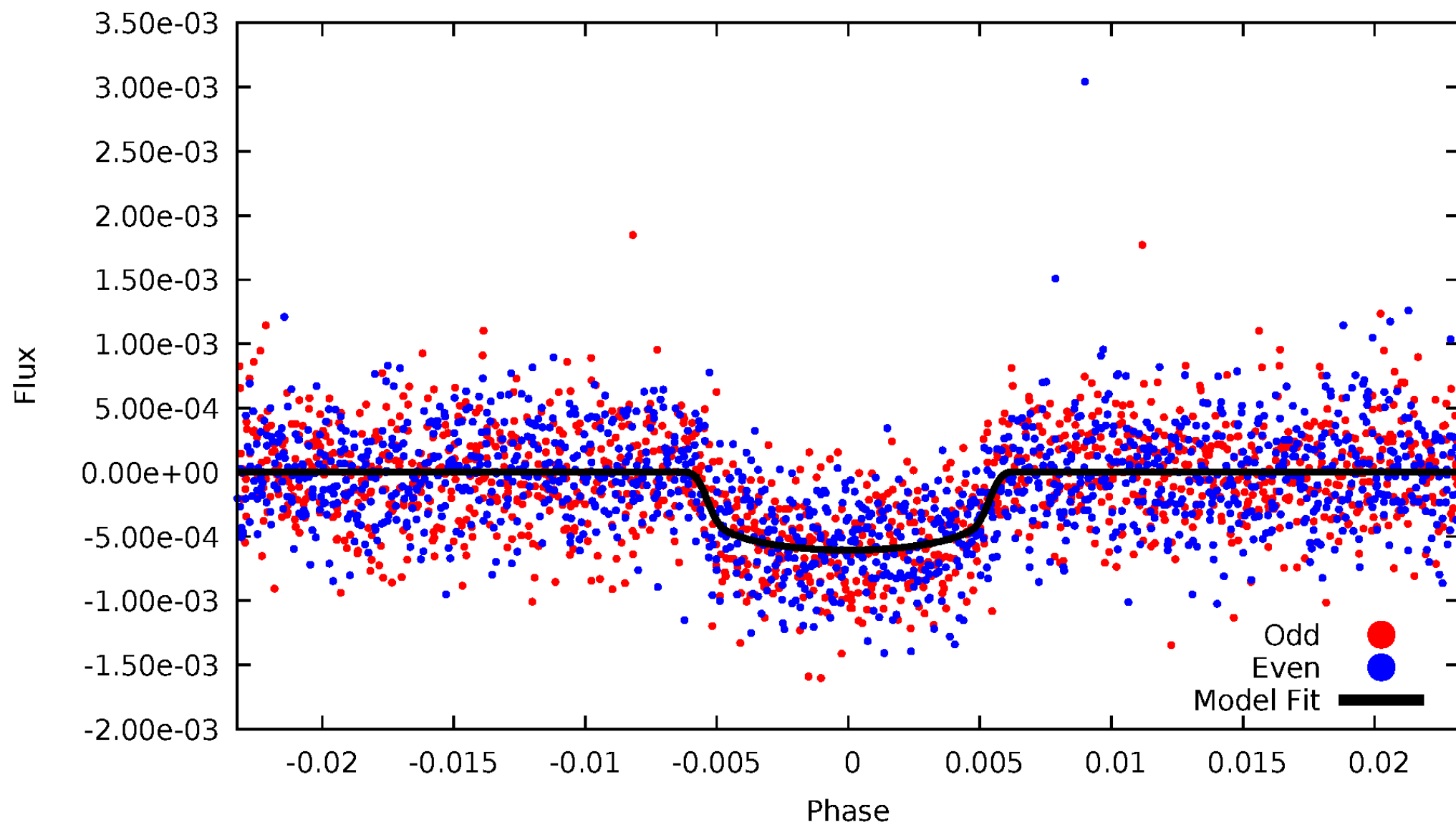


TCE 007265298-01



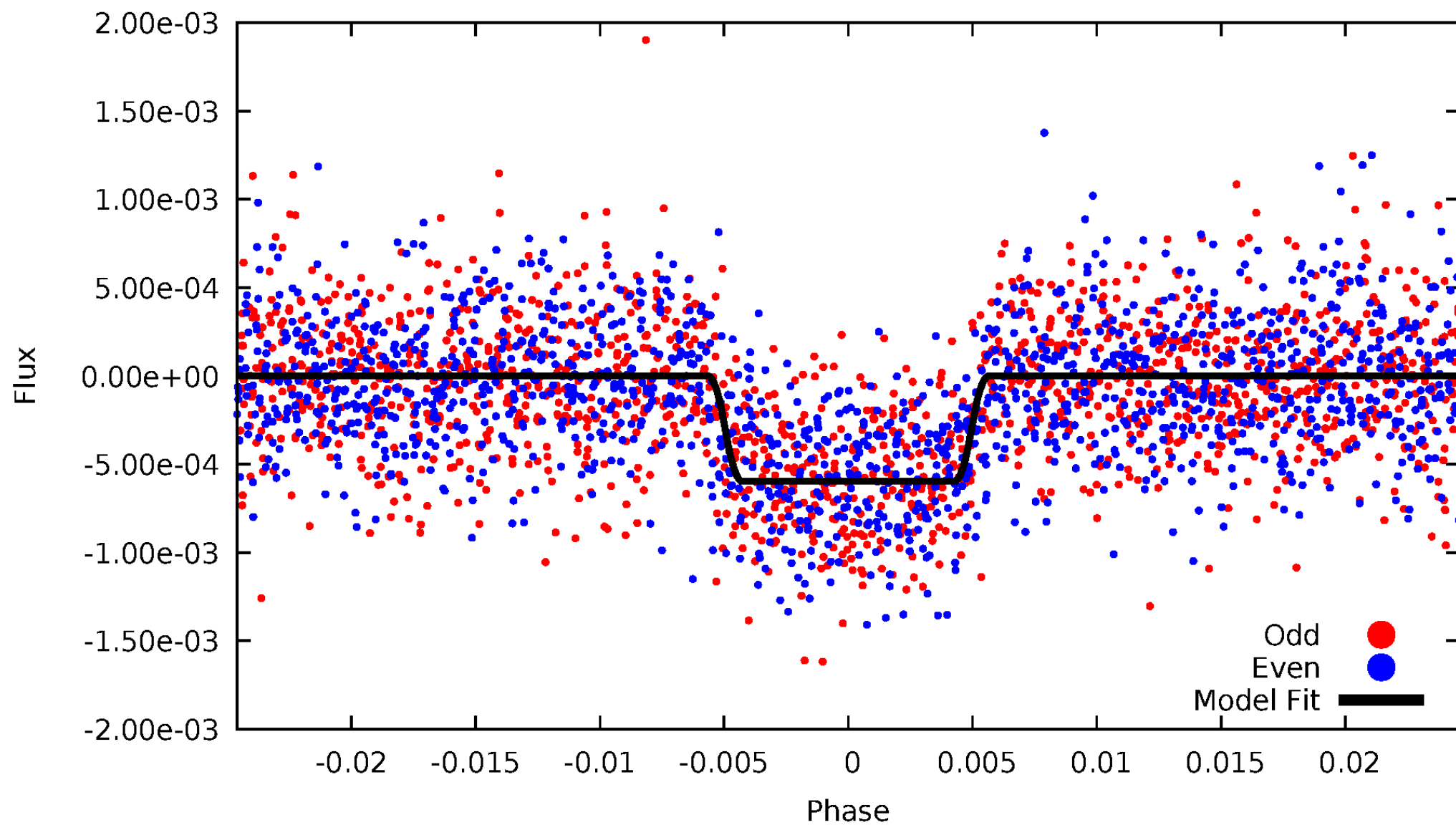
DV Odd/Even

TCE 007265298-01

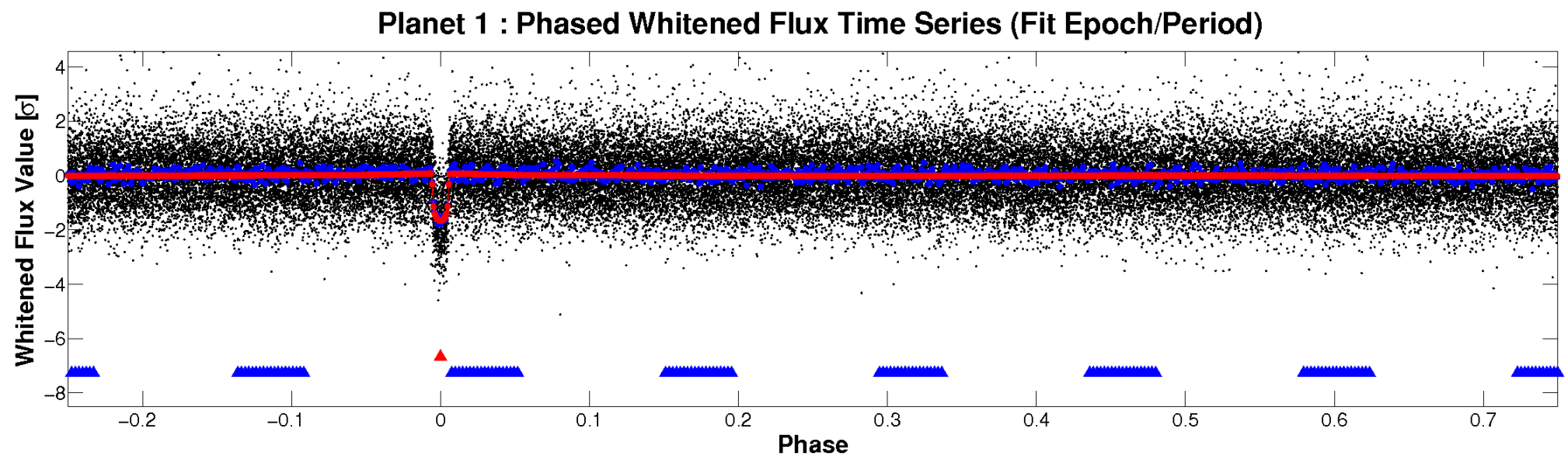
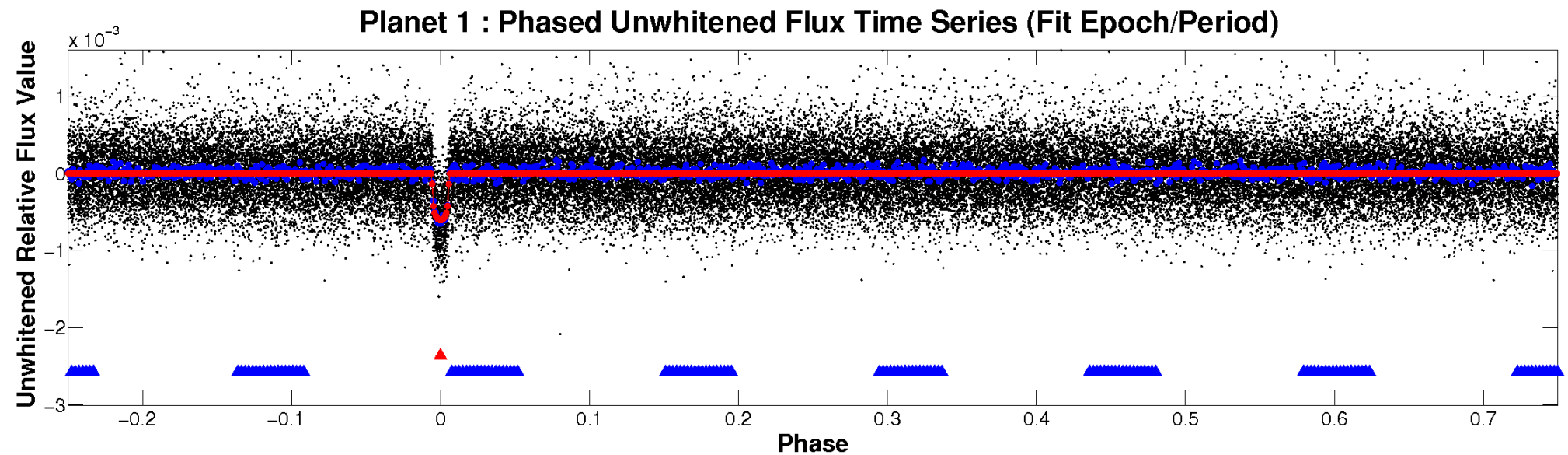


ALT Odd/Even

TCE 007265298-01

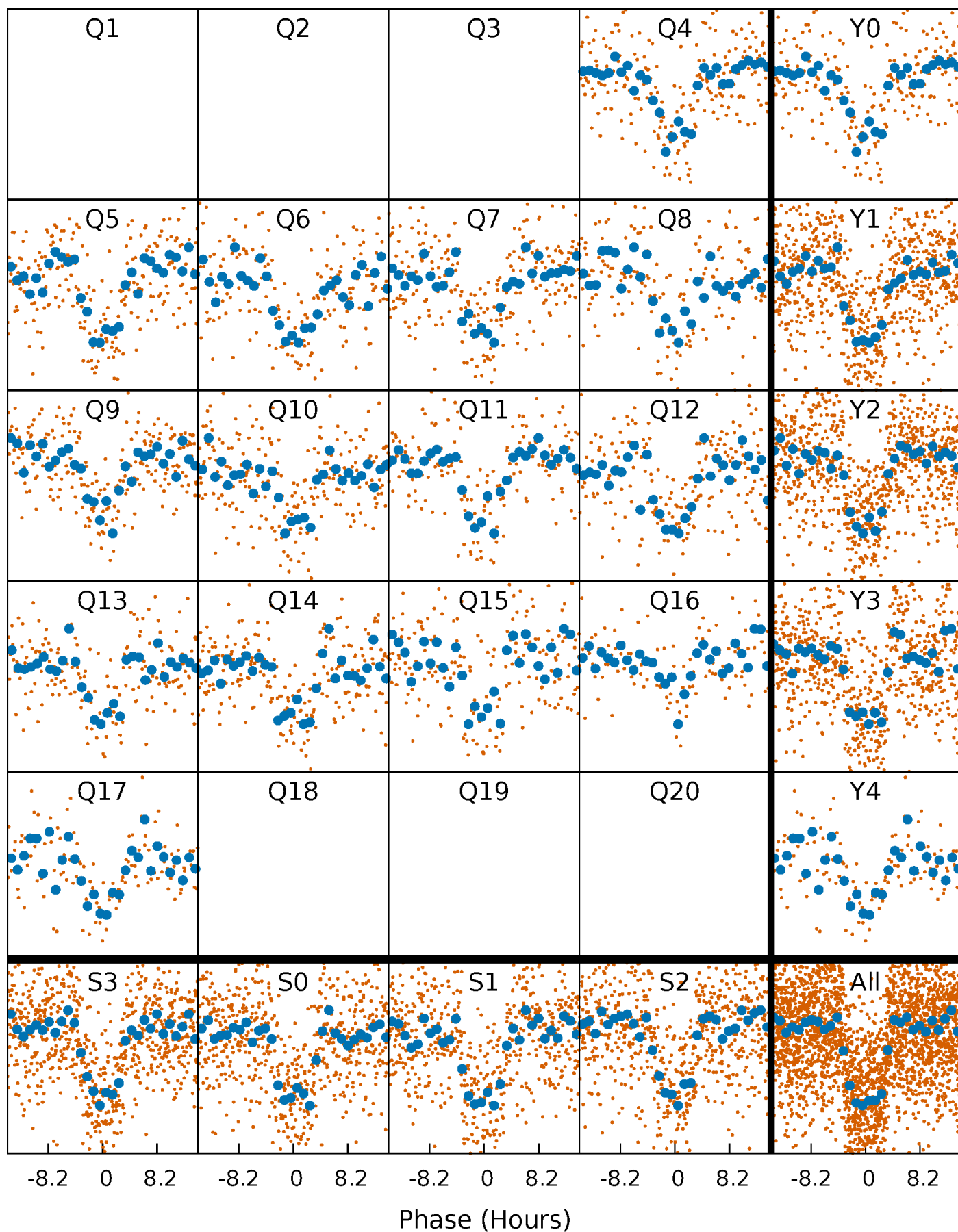


Non-Whitened Vs. Whitened Light Curve



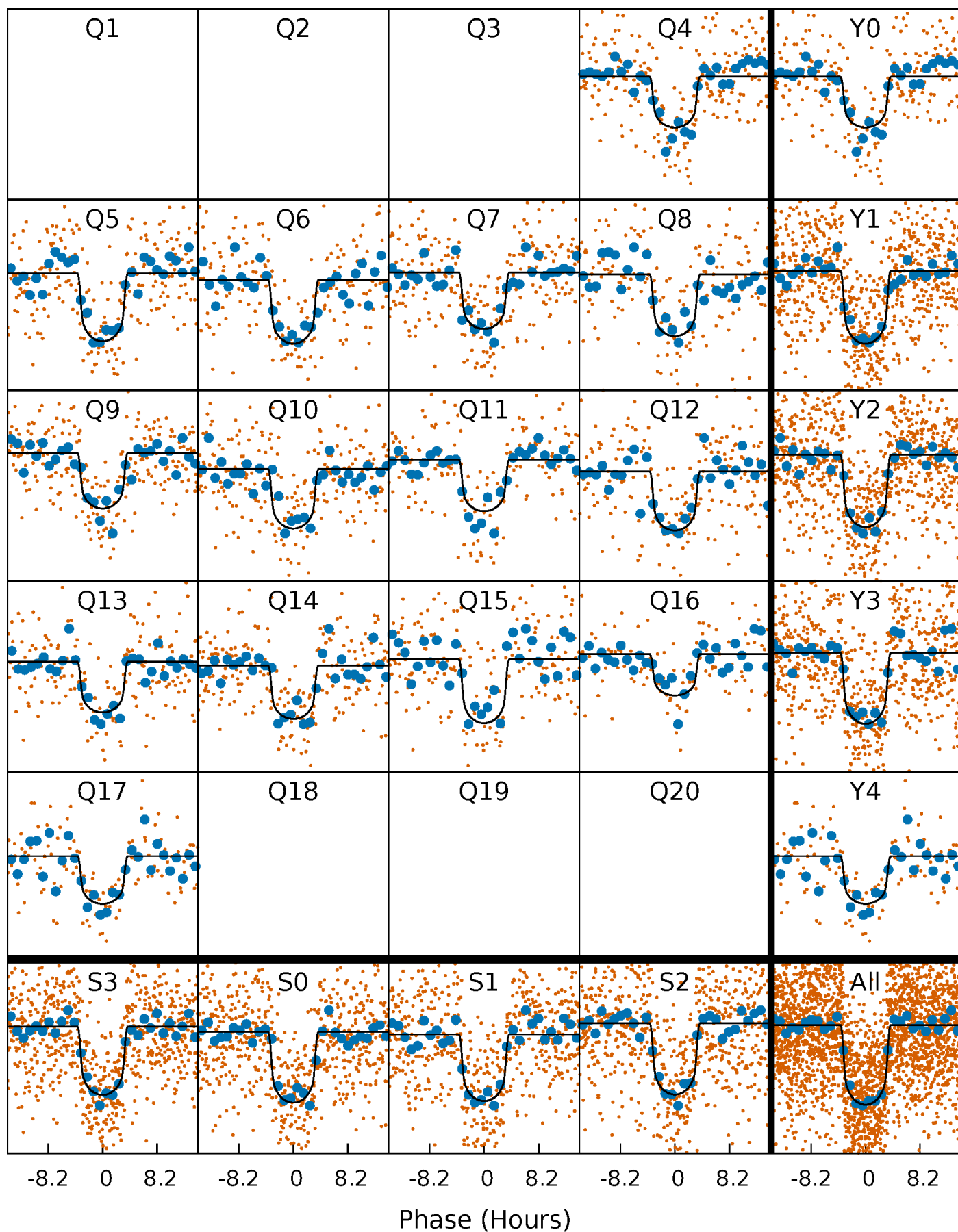
PDC Quarter-Phased Transit Curves

TCE 007265298-01 P= 25.762664 Days $T_0=147.695709$ (BKJD)



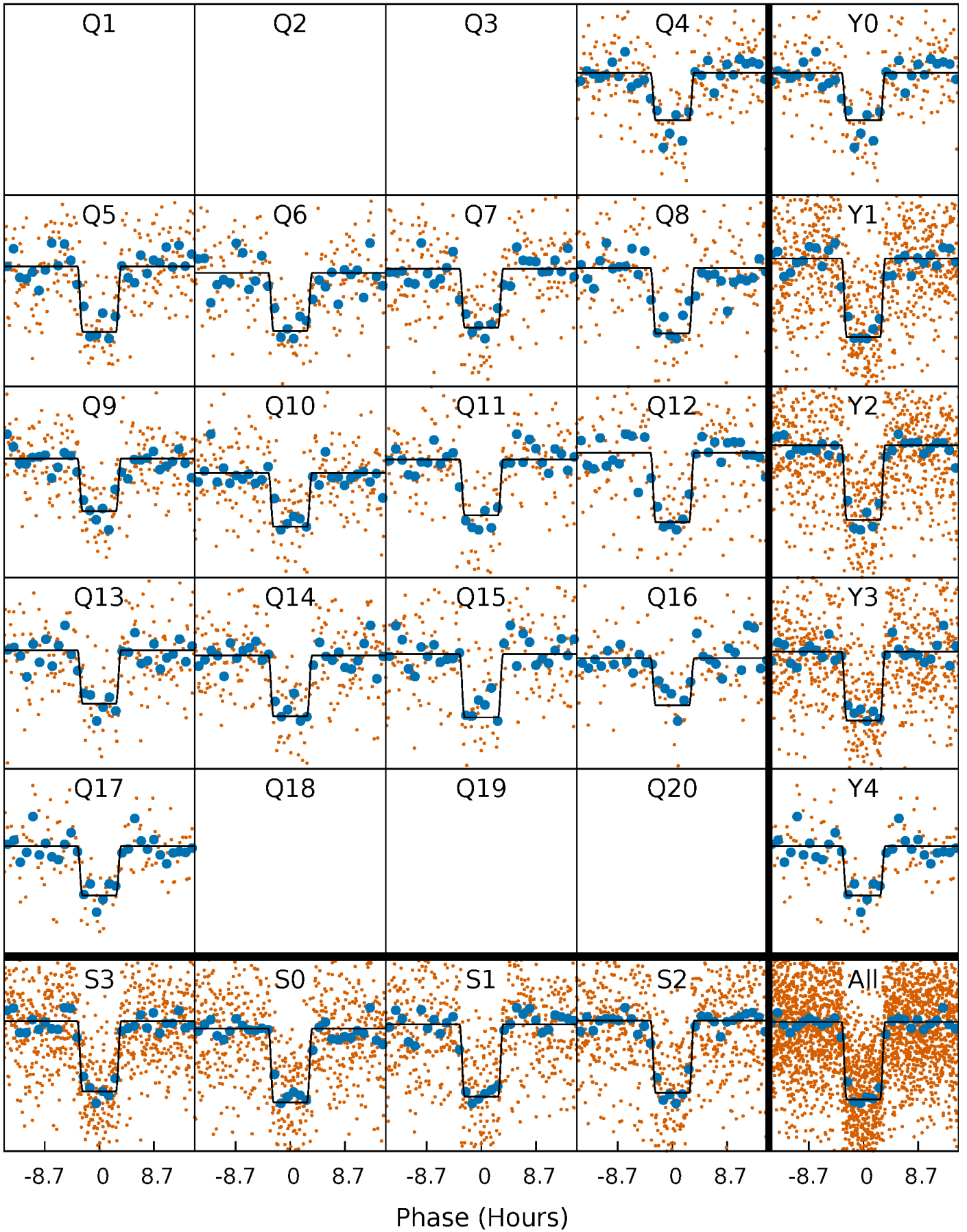
DV Quarter-Phased Transit Curves

TCE 007265298-01 P= 25.762664 Days $T_0=147.695709$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

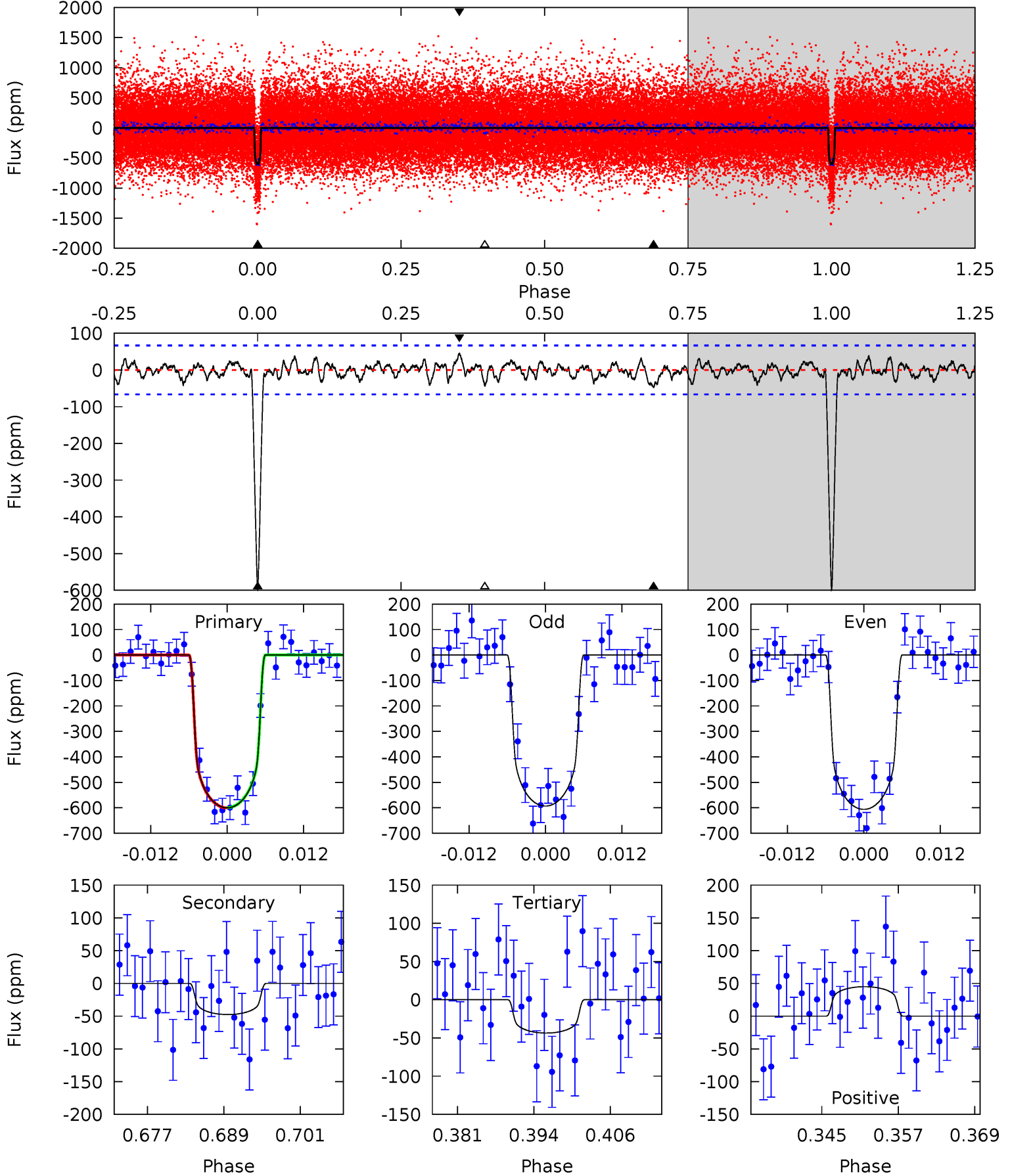
TCE 007265298-01 P= 25.762432 Days $T_0=147.704666$ (BKJD)



DV Model-Shift Uniqueness Test

007265298-01, $P = 25.762664$ Days, $E = 147.695709$ Days

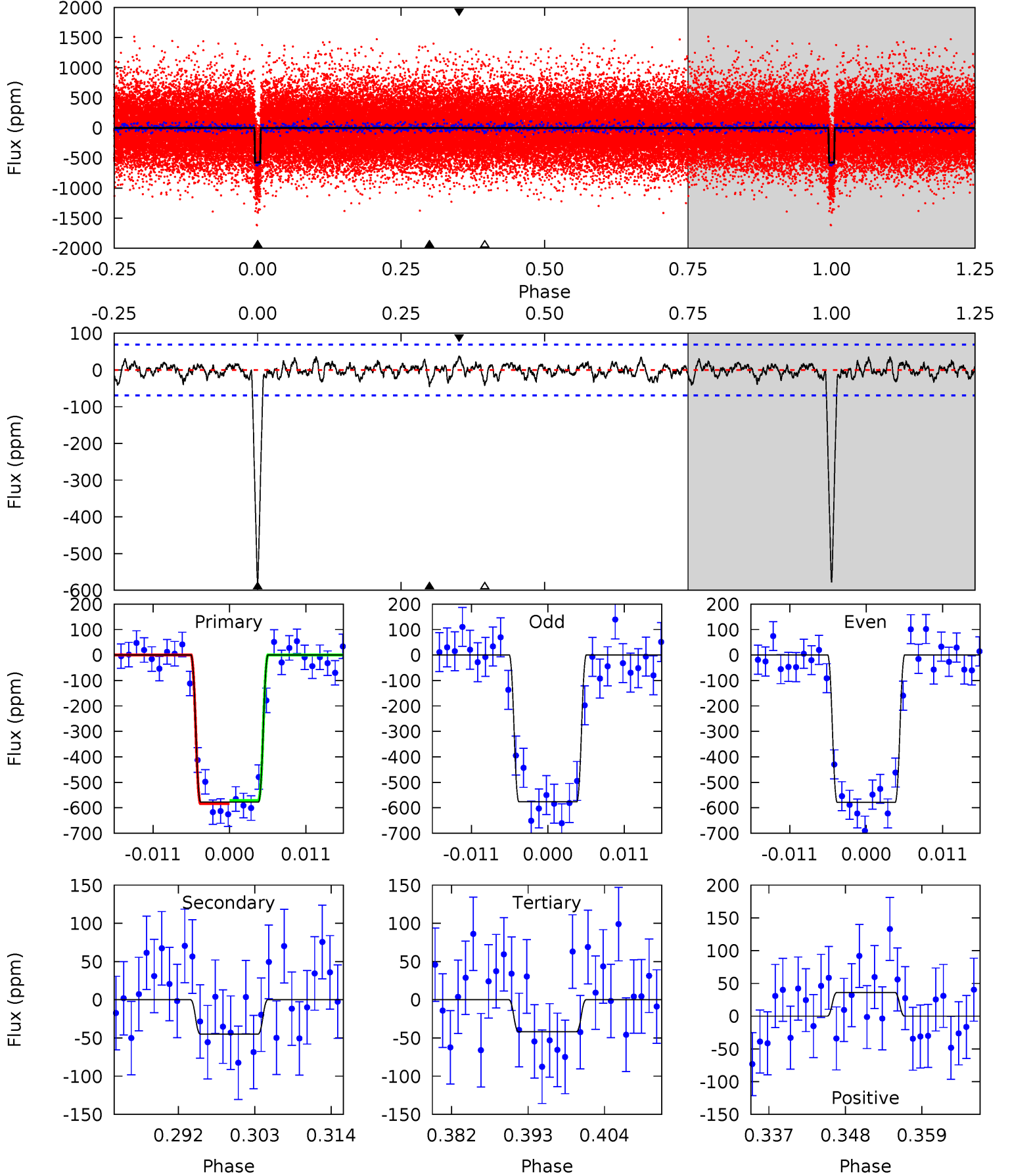
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 45.0 | 3.57 | 3.27 | 3.37 | 4.99 | 2.50 | 1.14 | 41.8 | 41.7 | 0.30 | 0.20 | 0.49 | 0.99 | 0.07 | 0.05 |



Alt Model-Shift Uniqueness Test

007265298-01, $P = 25.762432$ Days, $E = 147.704666$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 41.8 | 3.25 | 3.03 | 2.63 | 5.00 | 2.54 | 0.98 | 38.8 | 39.2 | 0.22 | 0.62 | 0.09 | 0.97 | 0.06 | 0.47 |



Stellar Parameters For KIC 007265298

| | $T_{\text{eff}} (K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5739^{+78}_{-86} | $4.381^{+0.095}_{-0.116}$ | $0.140^{+0.150}_{-0.150}$ | $1.069^{+0.174}_{-0.107}$ | $1.002^{+0.068}_{-0.056}$ | $1.154^{+0.434}_{-0.372}$ |
| | +1%/-1% | +2%/-3% | +107%/-107% | +16%/-10% | +7%/-6% | +38%/-32% |
| Source | SPE90 | SPE90 | SPE90 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 007265298-01 / KOI 2051.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -48 ± 13 | $2.95^{+0.38}_{-0.36}$ | 886^{+39}_{-31} | 3489^{+185}_{-225} | 88^{+35}_{-31} |
| Alt. | -45 ± 14 | $2.85^{+0.40}_{-0.37}$ | 883^{+37}_{-31} | 3478^{+215}_{-211} | 88^{+38}_{-31} |

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 $A_{\text{obs}} \gg 1.0$

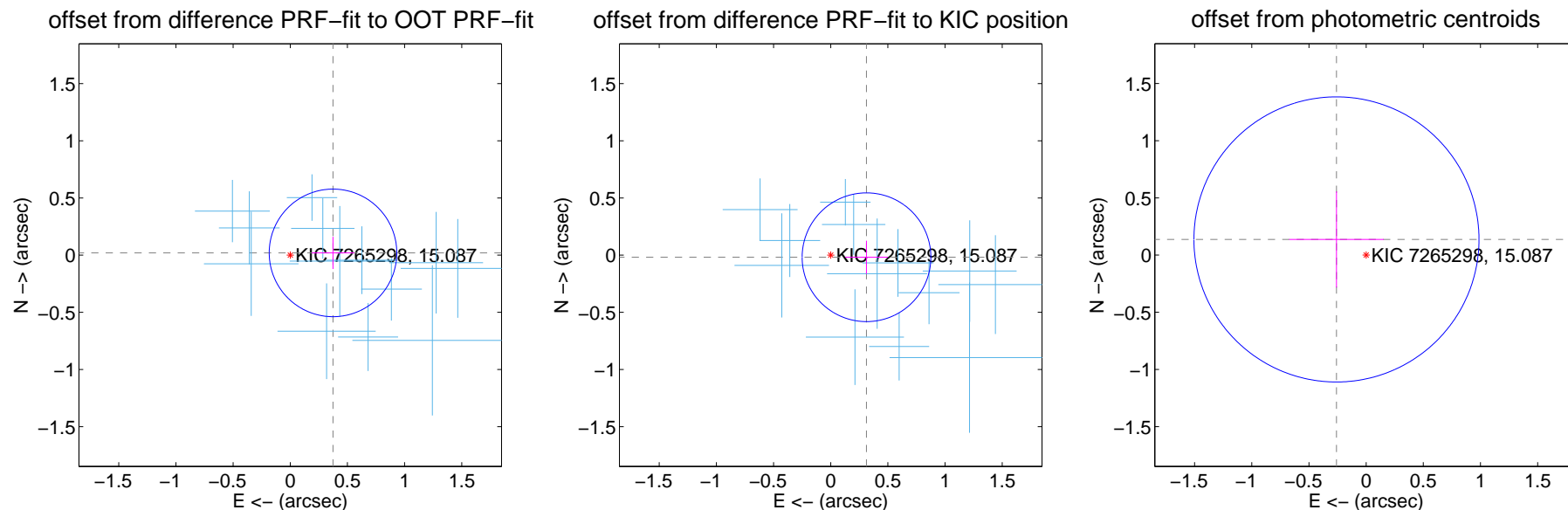
DV Centroid Data

Supplemental centroid analysis for 007265298-01. Kepler magnitude: 15.09. Transit SNR 36.01

There are 13 quarters with good PRF difference image offsets

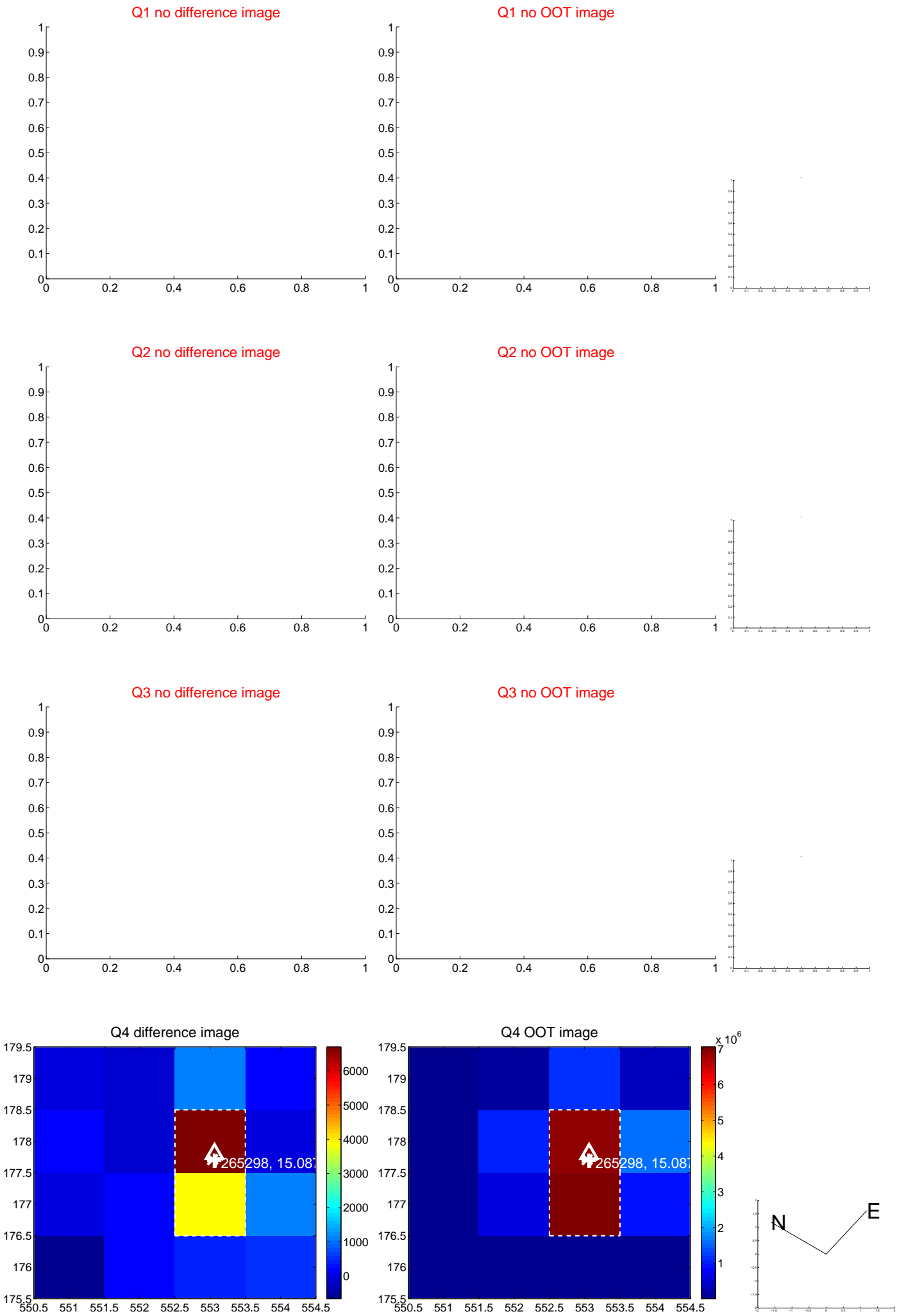
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.374 ± 0.186 | 2.01 | -0.374 ± 0.186 | 0.020 ± 0.141 |
| PRF-fit source offset from KIC position | 0.314 ± 0.188 | 1.67 | -0.313 ± 0.188 | -0.018 ± 0.145 |
| photometric centroid source offset | 0.29 ± 0.42 | 0.71 | 0.26 ± 0.41 | 0.14 ± 0.42 |

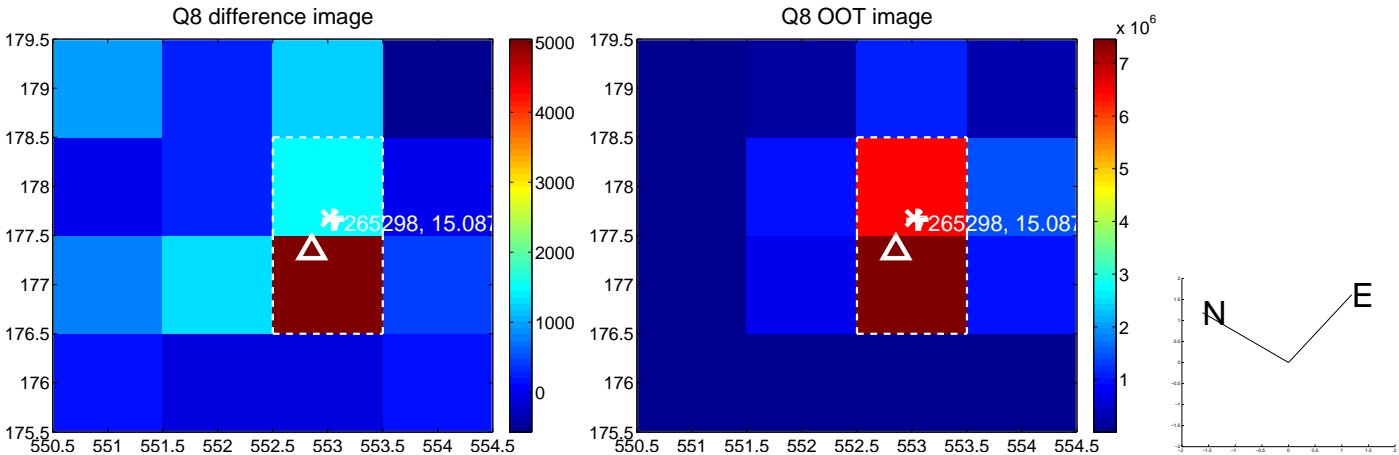
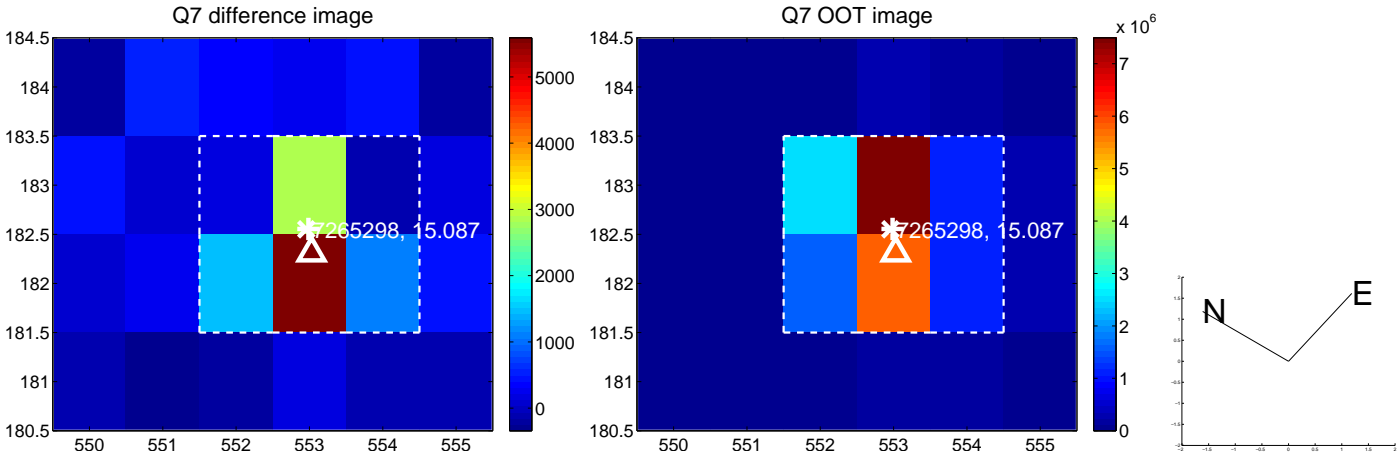
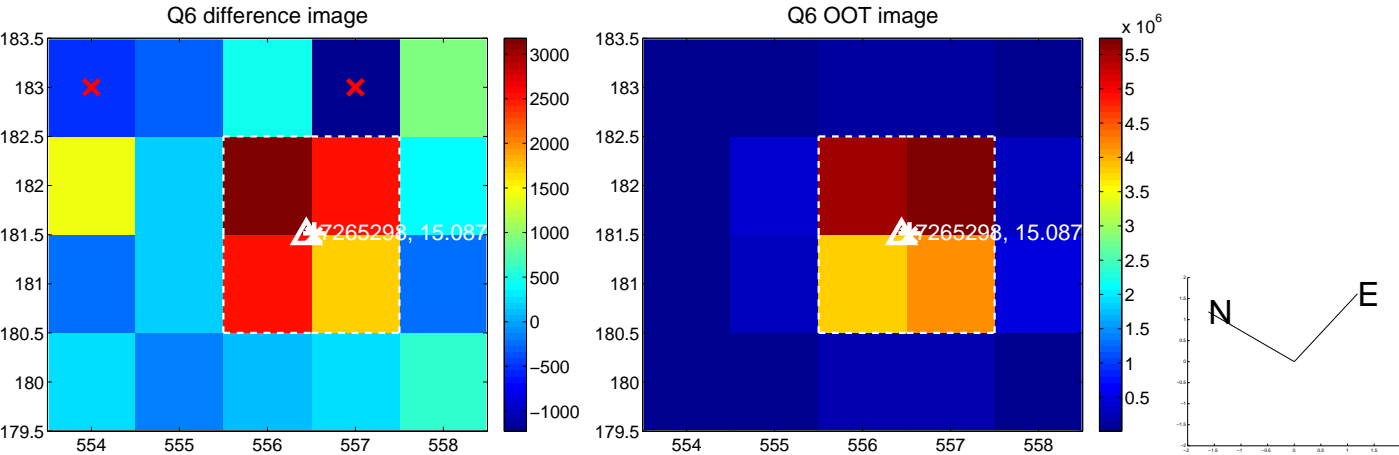
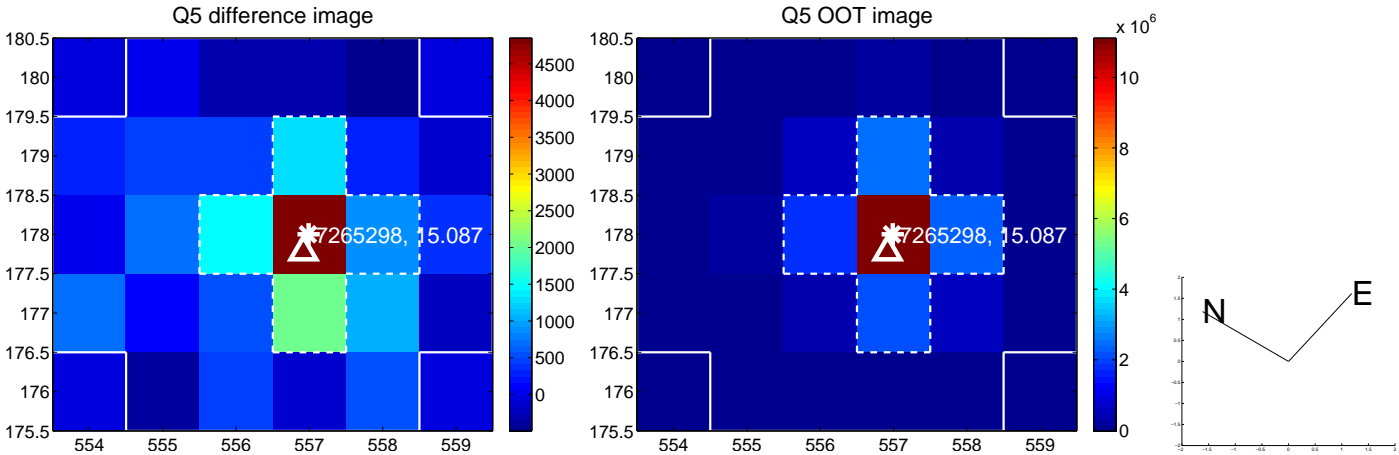


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

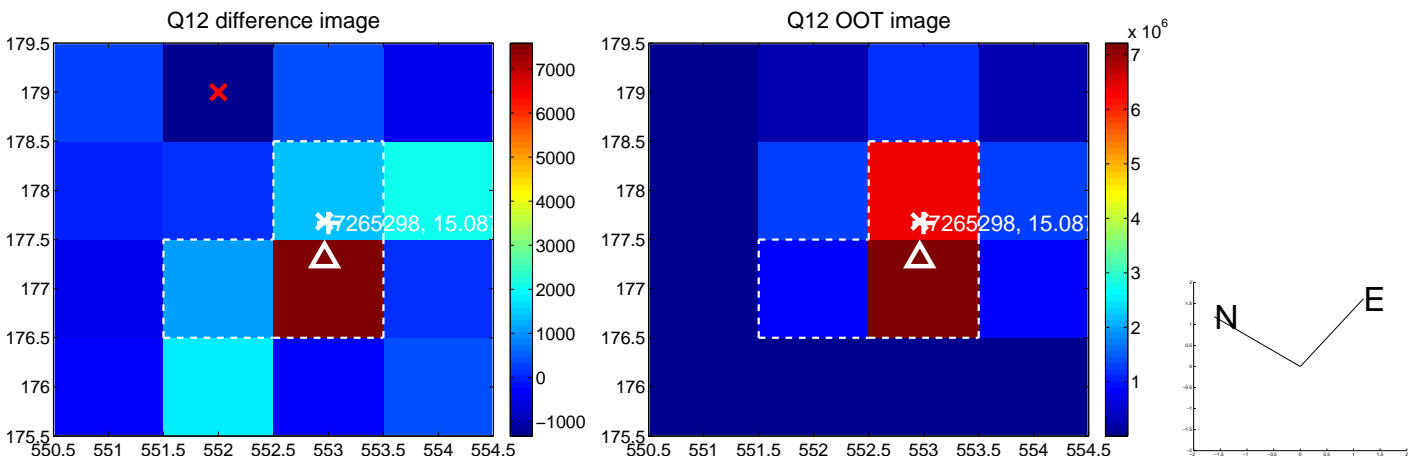
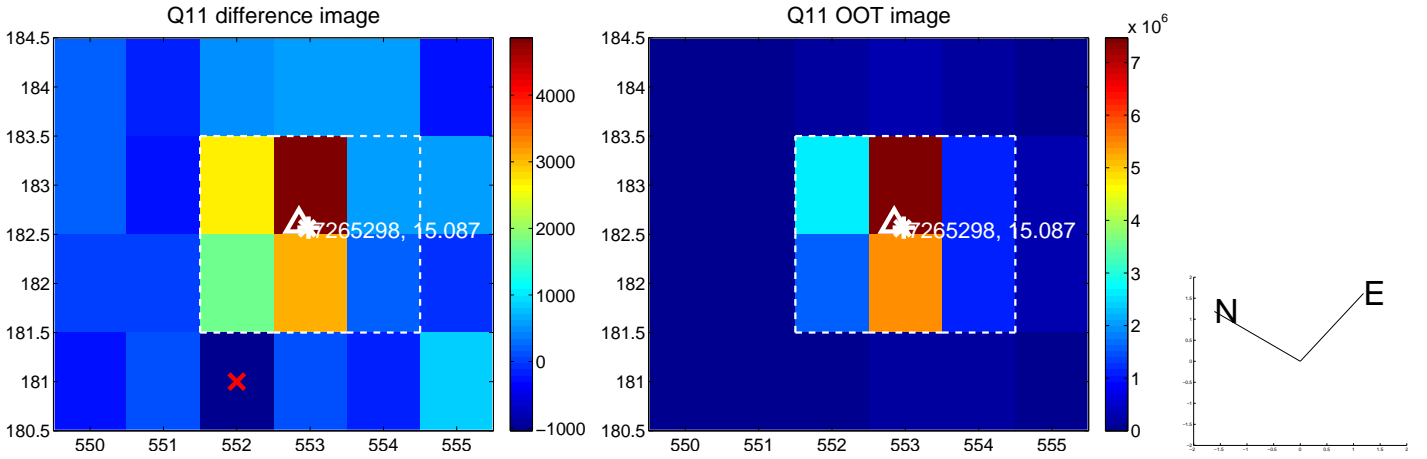
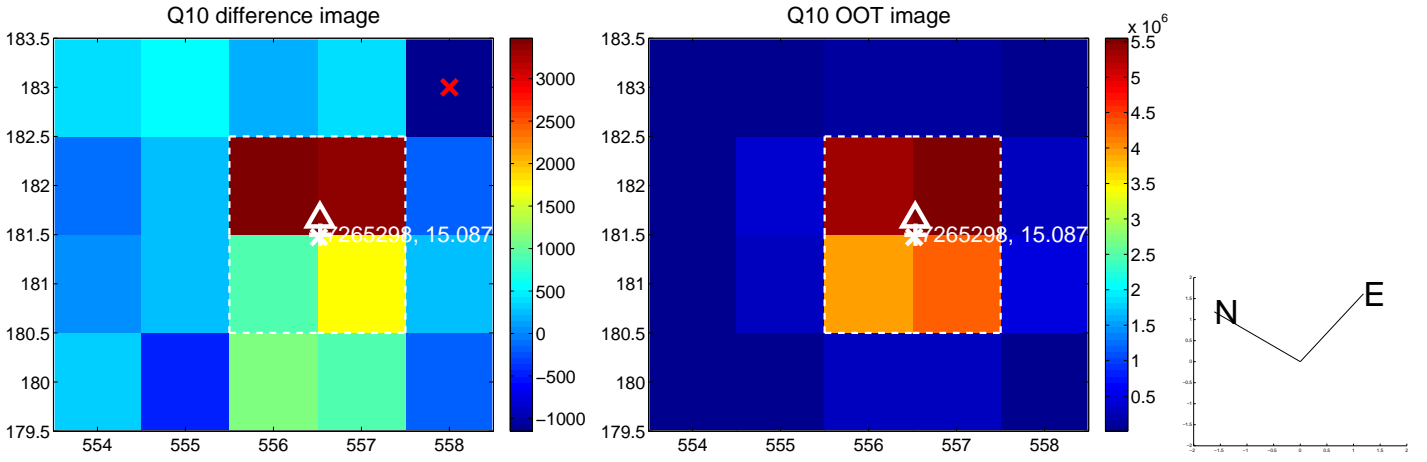
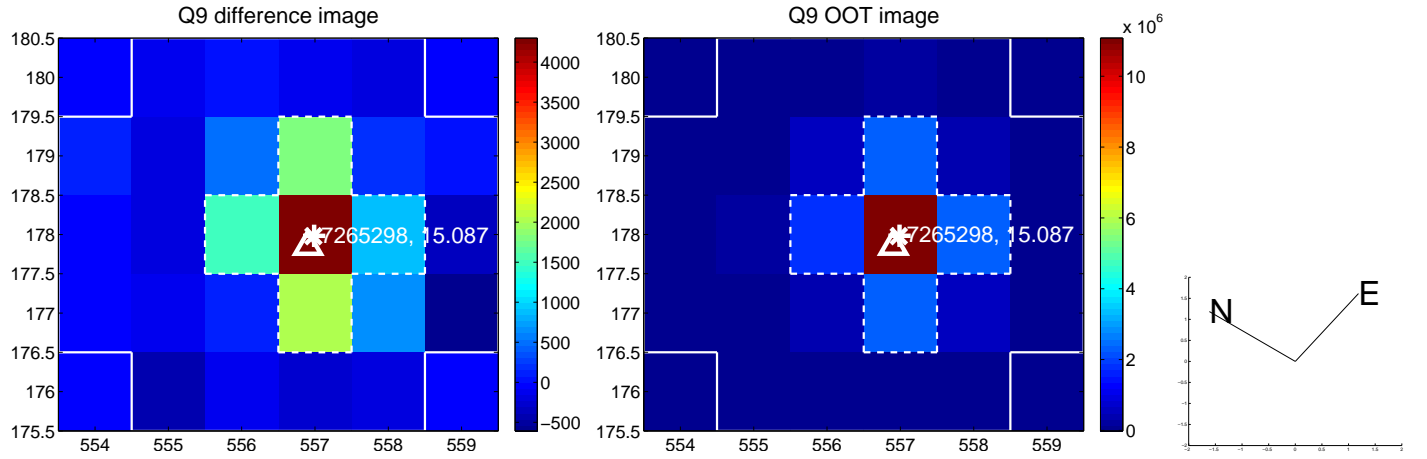
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



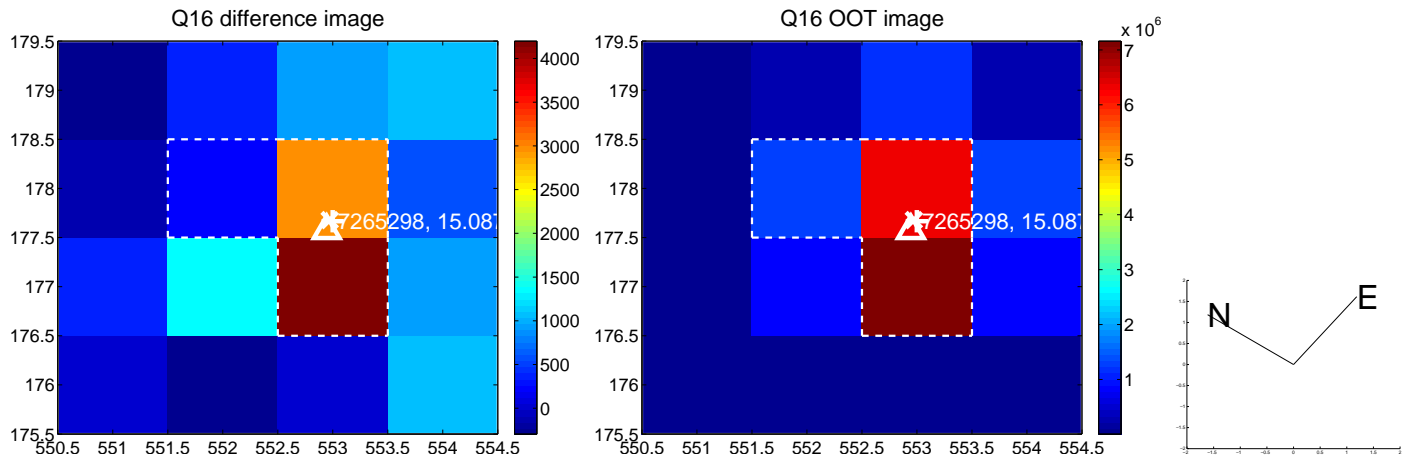
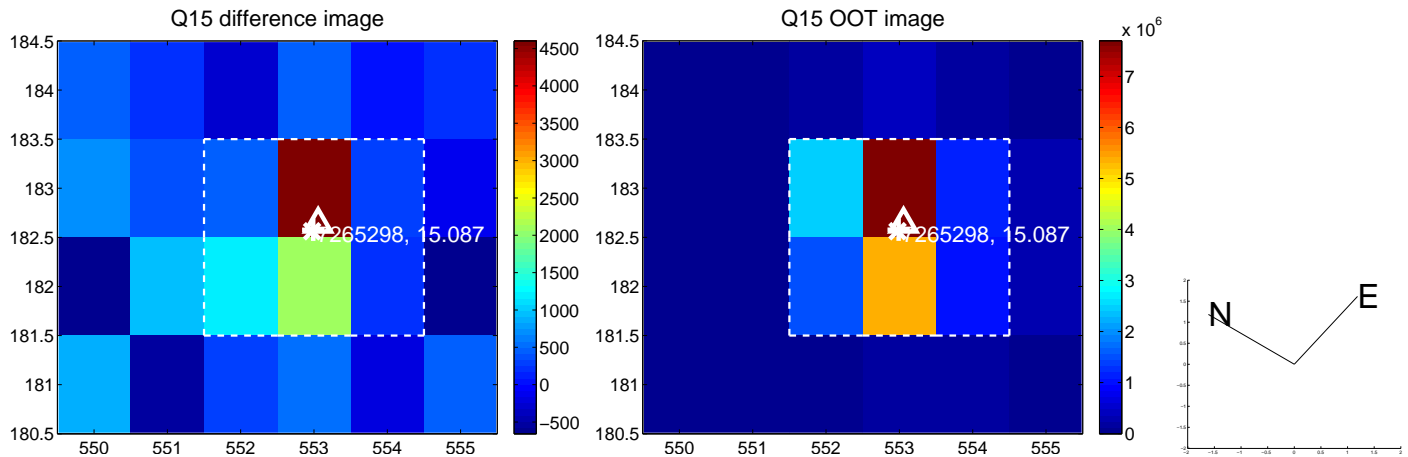
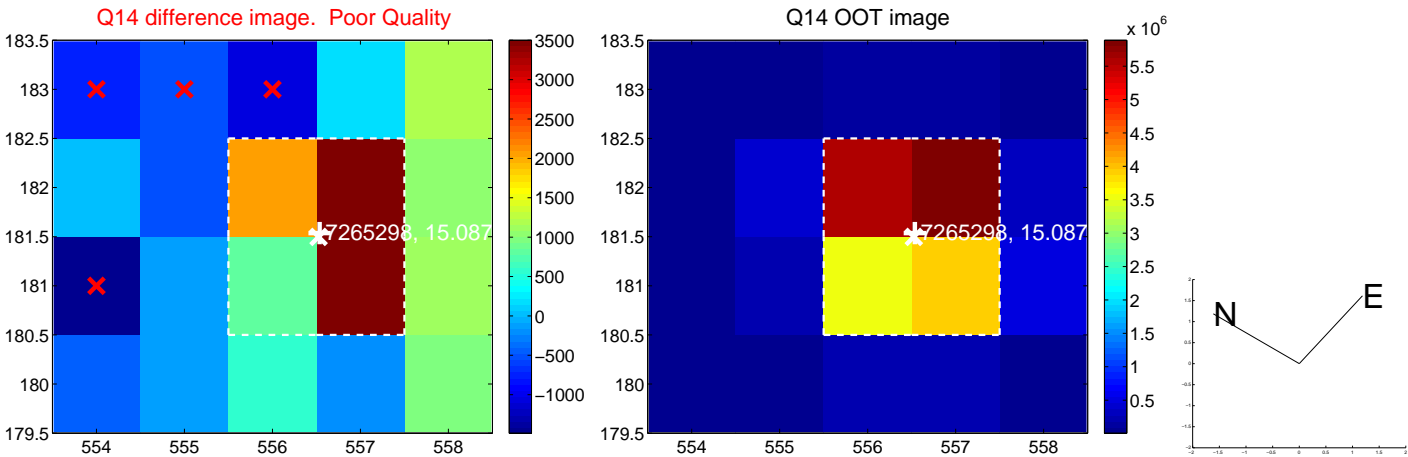
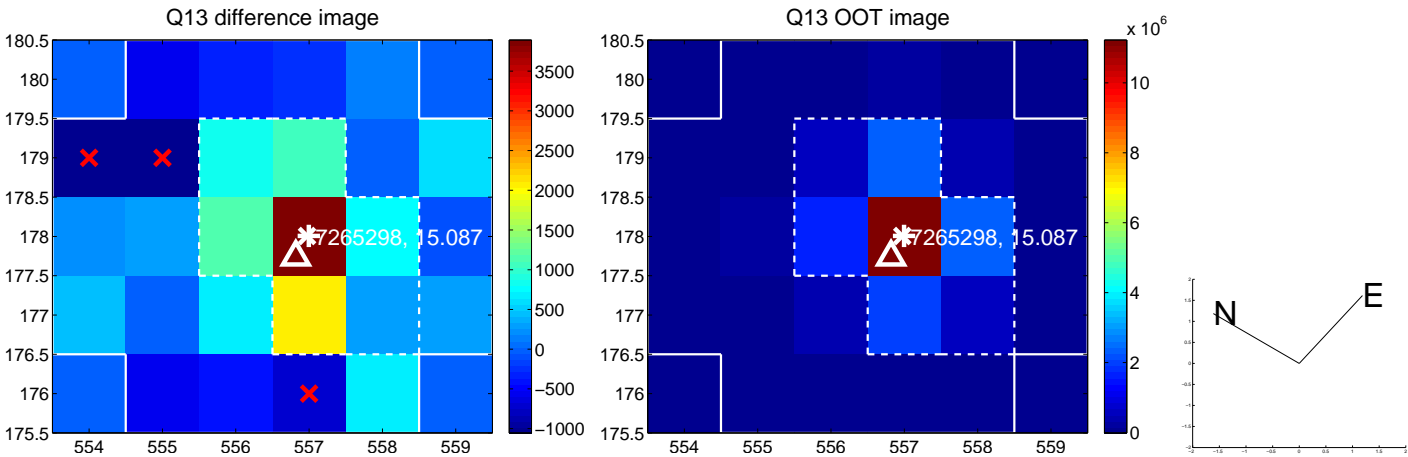
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



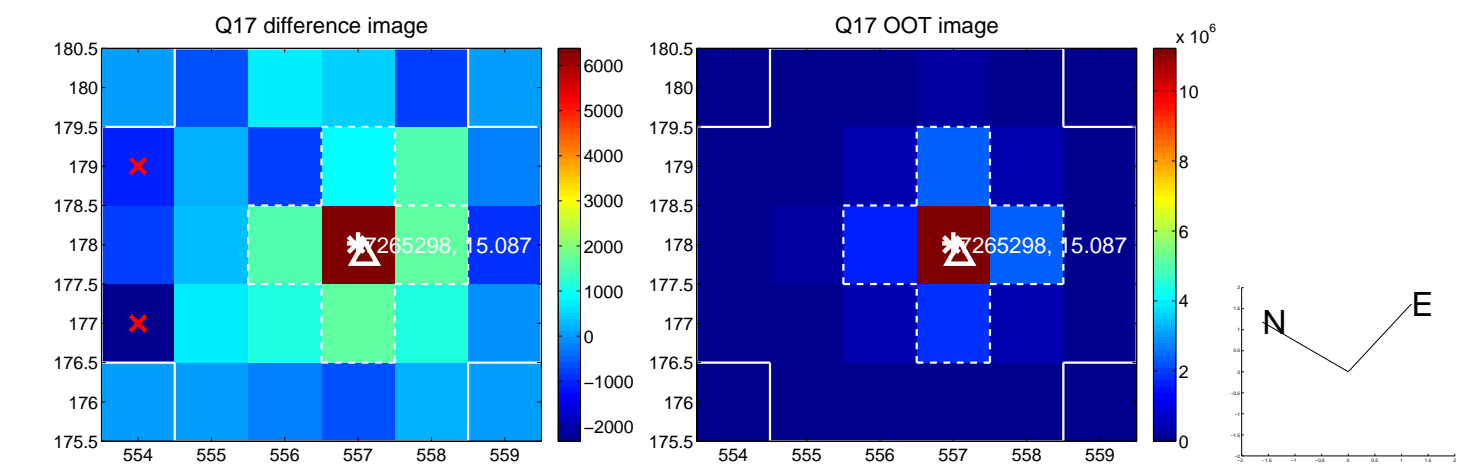
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



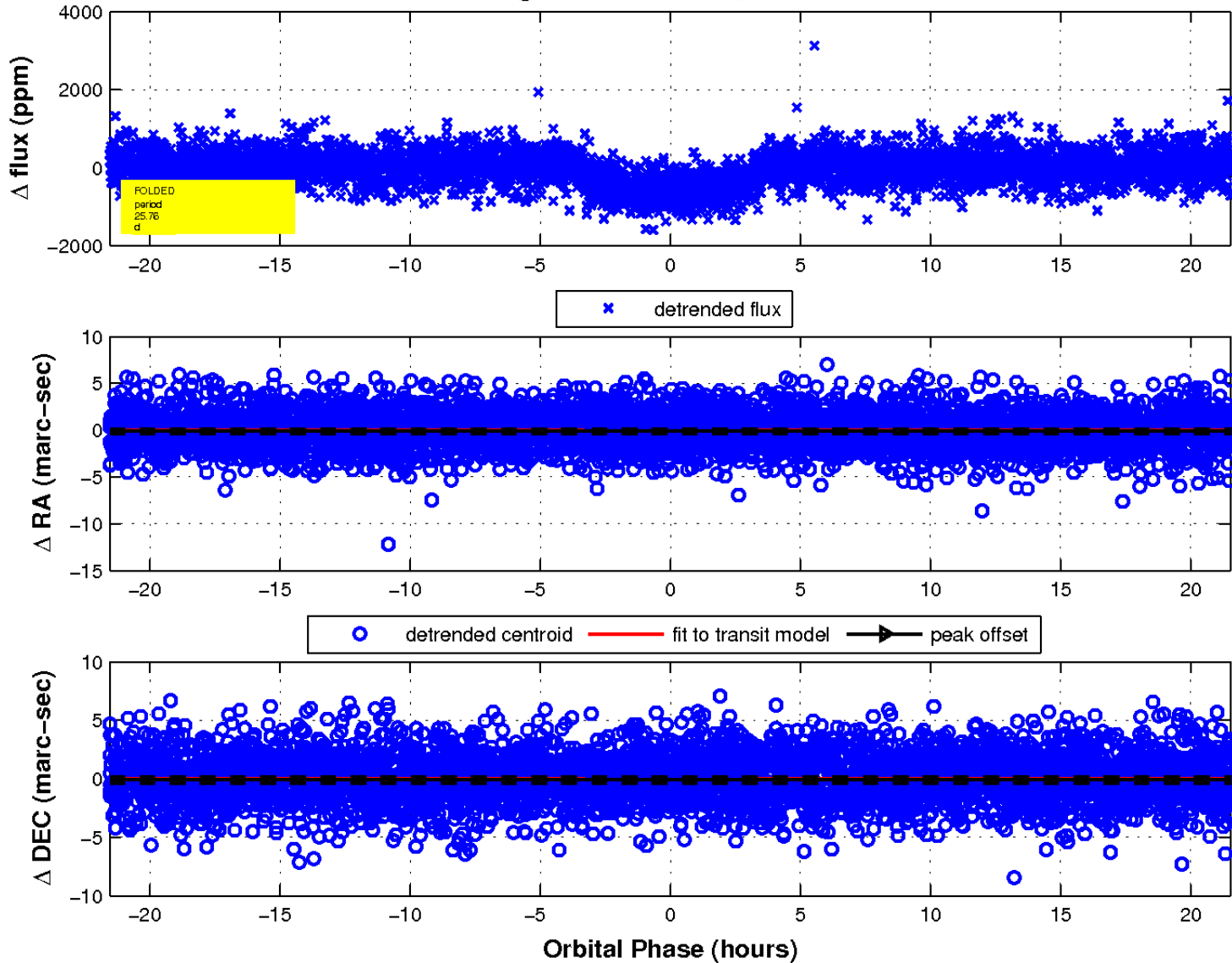
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



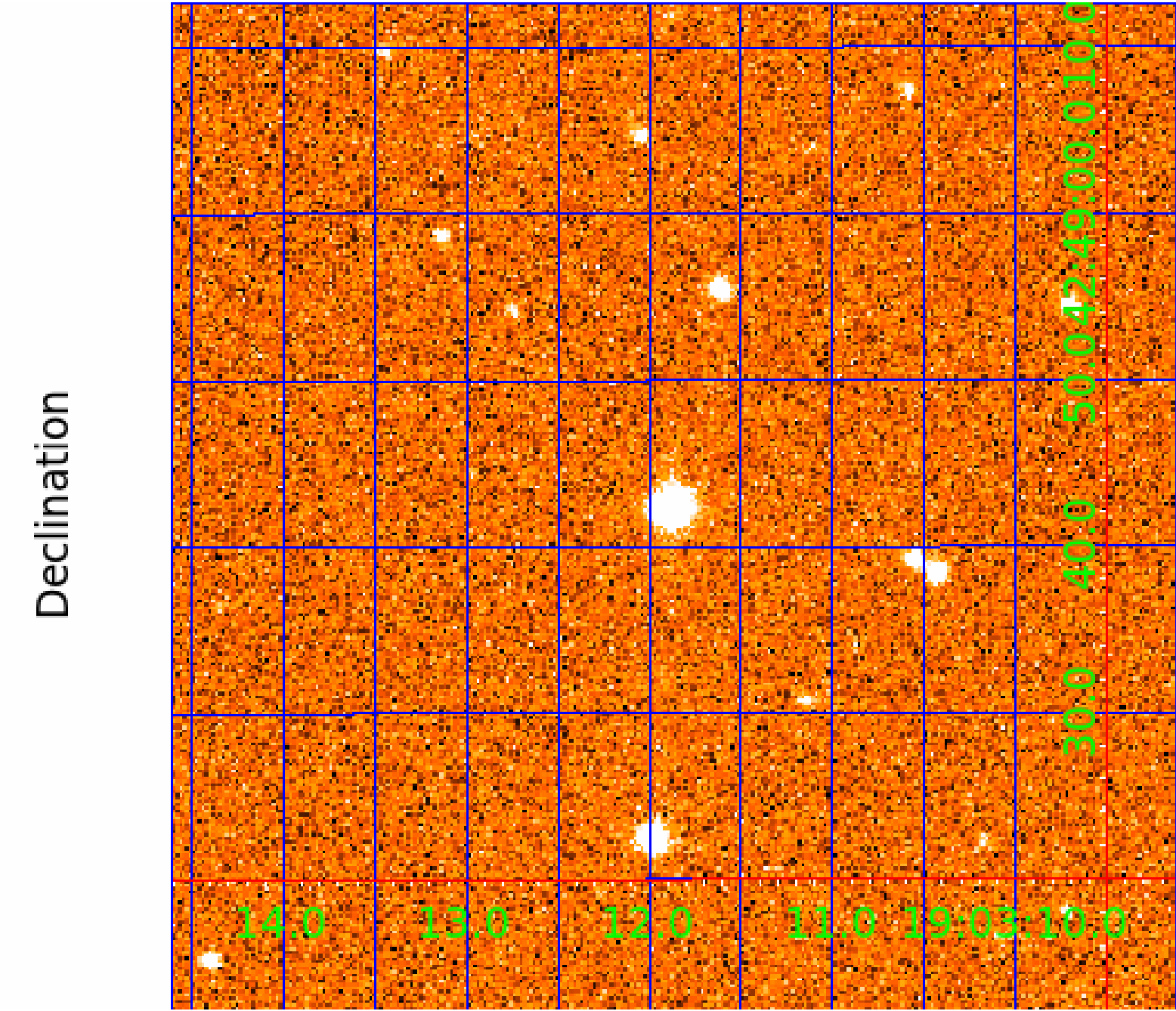
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 007265298

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007265298-01 | OBS | 2051.01 | 25.762664 | 147.695709 | 605.6 | 7.181 | 33.9 | 36.0 | 1.07 | 5739 | 2.93 | 38.04 |
| 007265298-02 | OBS | 2051.02 | 11.032086 | 141.697119 | 188.9 | 6.431 | 13.4 | 14.2 | 1.07 | 5739 | 2.01 | 117.86 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 007265298-01 | OBS | PC | 0.86 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 007265298-02 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | NO_COMMENT |

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

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

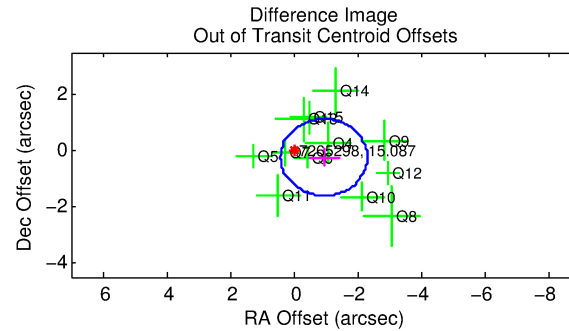
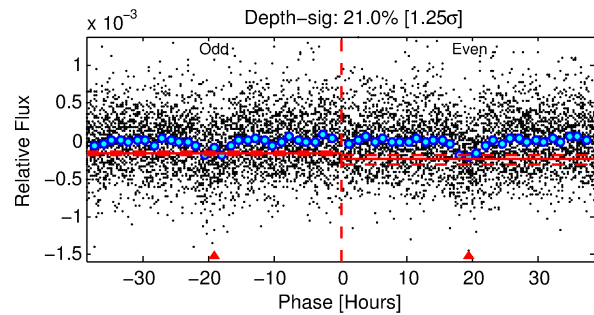
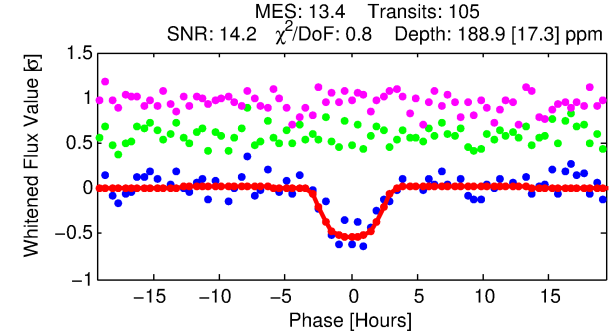
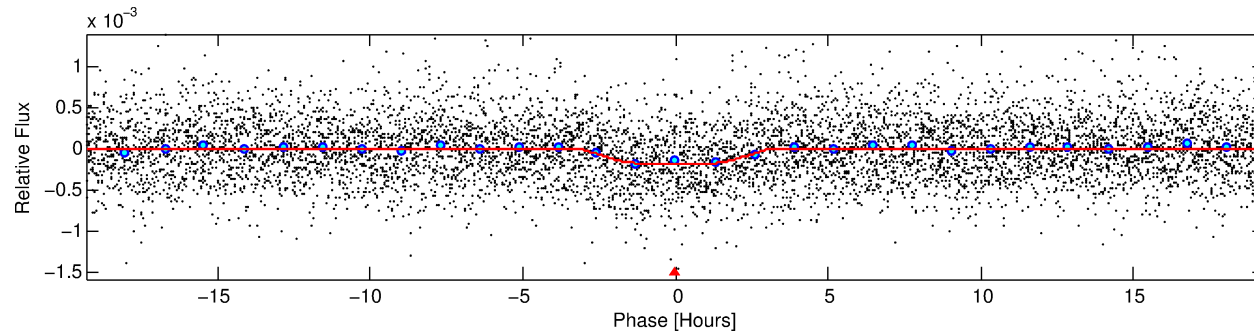
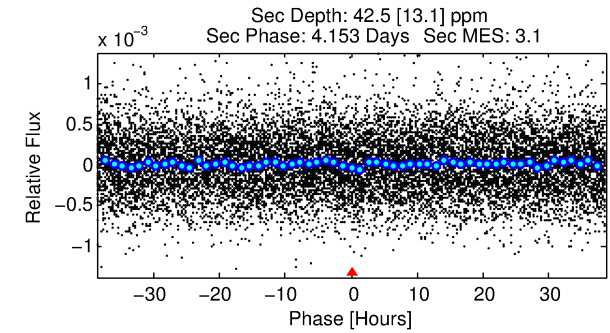
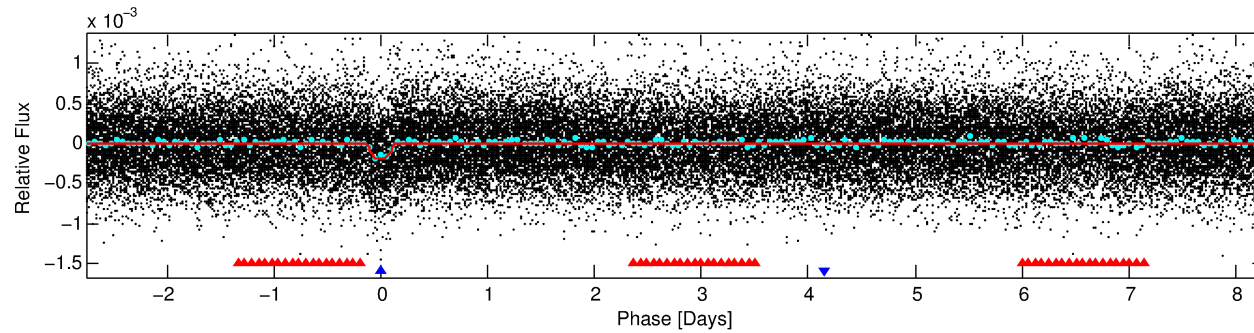
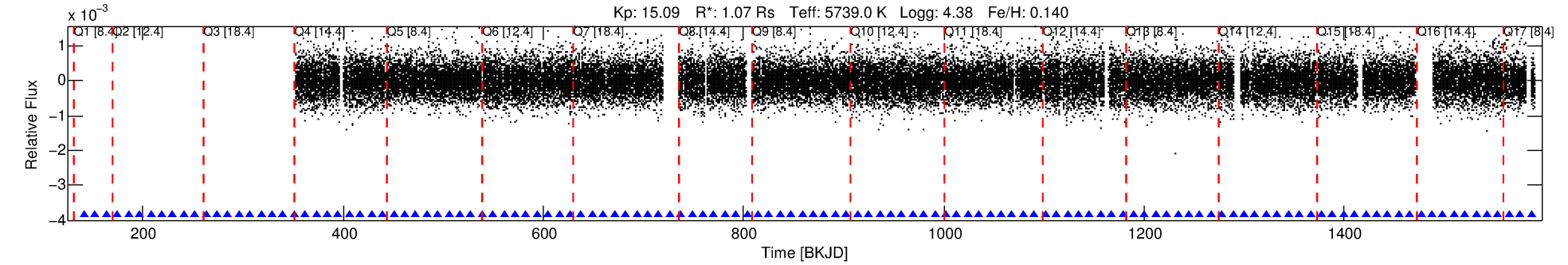
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007265298-02

No Significant Match Found

DV One-Page Summary

KIC: 7265298 Candidate: 2 of 2 Period: 11.032 d
KOI: K02051.02 Name: Kepler-355b Corr: 0.838



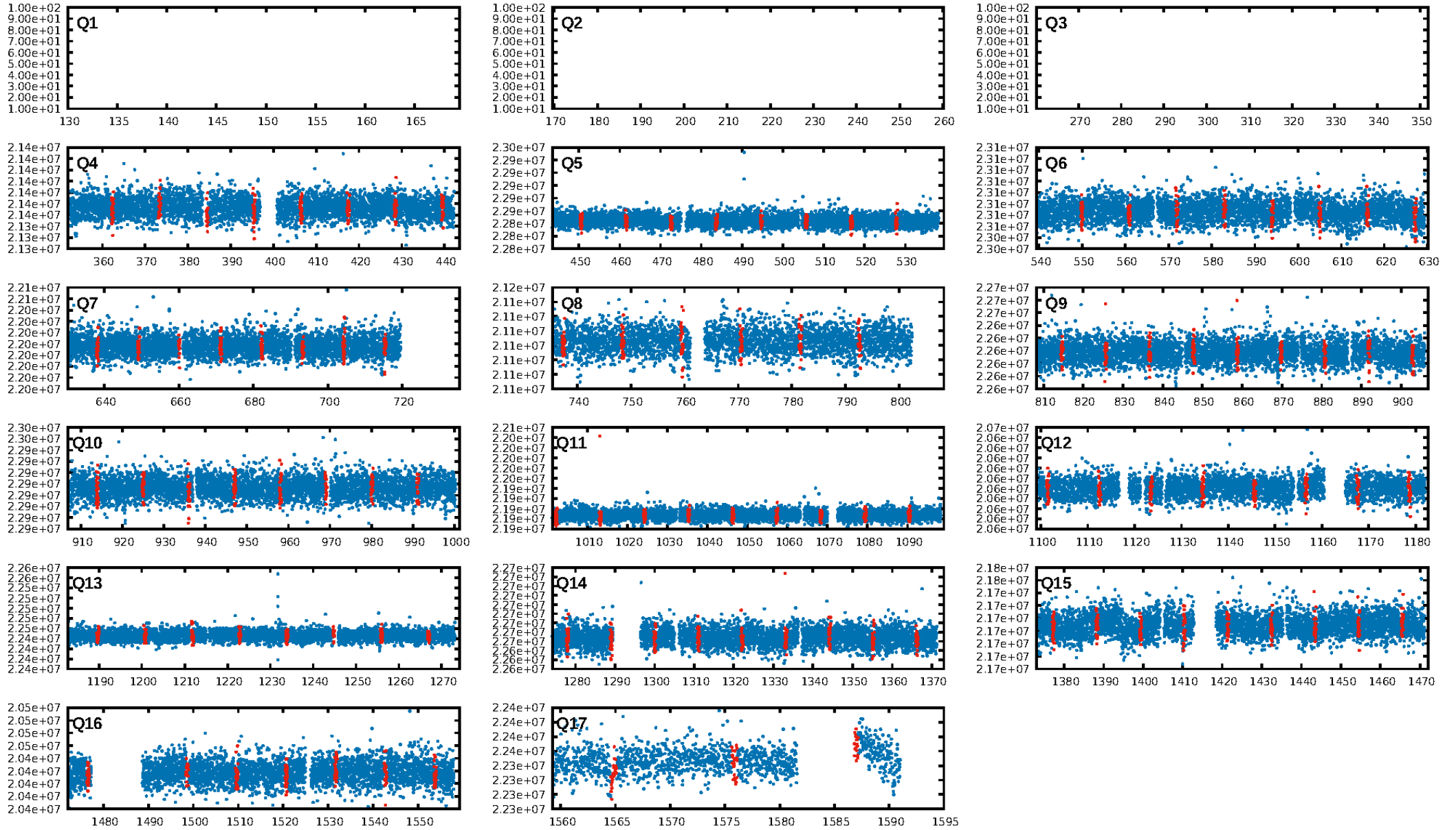
DV Fit Results:

Period = 11.03209 [0.00018] d
Epoch = 141.6971 [0.0140] BKJD
Rp/R* = 0.0172 [0.0012]
a/R* = 3.87 [0.71]
b = 0.98 [0.01]
Seff = 117.85 [25.57]
T_{eq} = 840 [46] K
Rp = 2.01 [0.36] Re
a = 0.0971 [0.0136] AU
Ag = 54.78 [21.81] [2.47σ]
T_{effp} = 3534 [304] K [8.76σ]

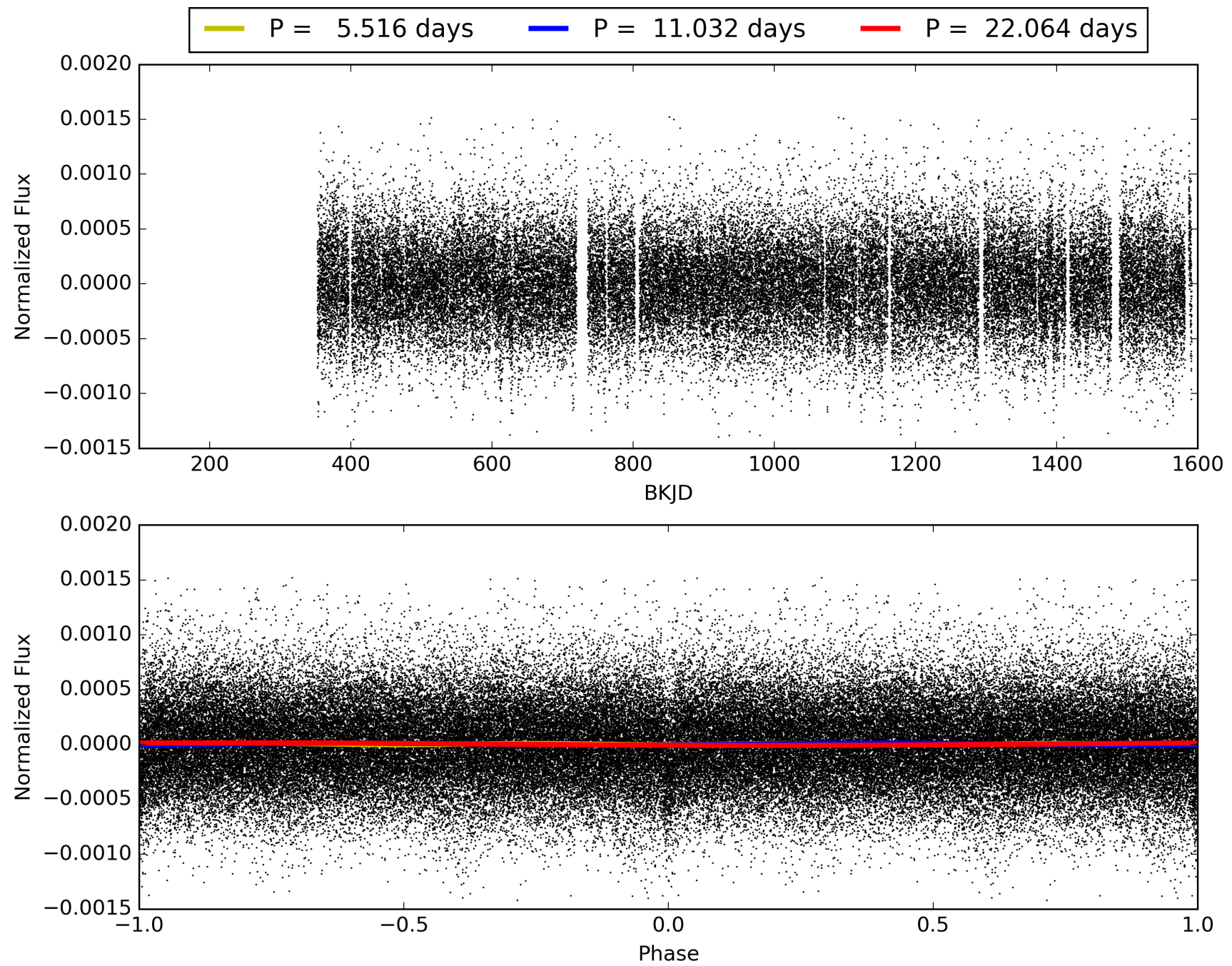
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [36.67σ]
ModelChiSquare2-sig: 90.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.17e-40
RollingBand-fgt: 1.00 [103/103]
GhostDiagnostic-chr: 1.963
Centroid-sig: 0.2%
Centroid-so: 2.189 arcsec [2.04σ]
OotOffset-rm: 0.980 arcsec [2.16σ]
KicOffset-rm: 0.921 arcsec [2.04σ]
OotOffset-st: 3/3/3 [12]
KicOffset-st: 3/3/3 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 007265298-02, PDC Light Curves

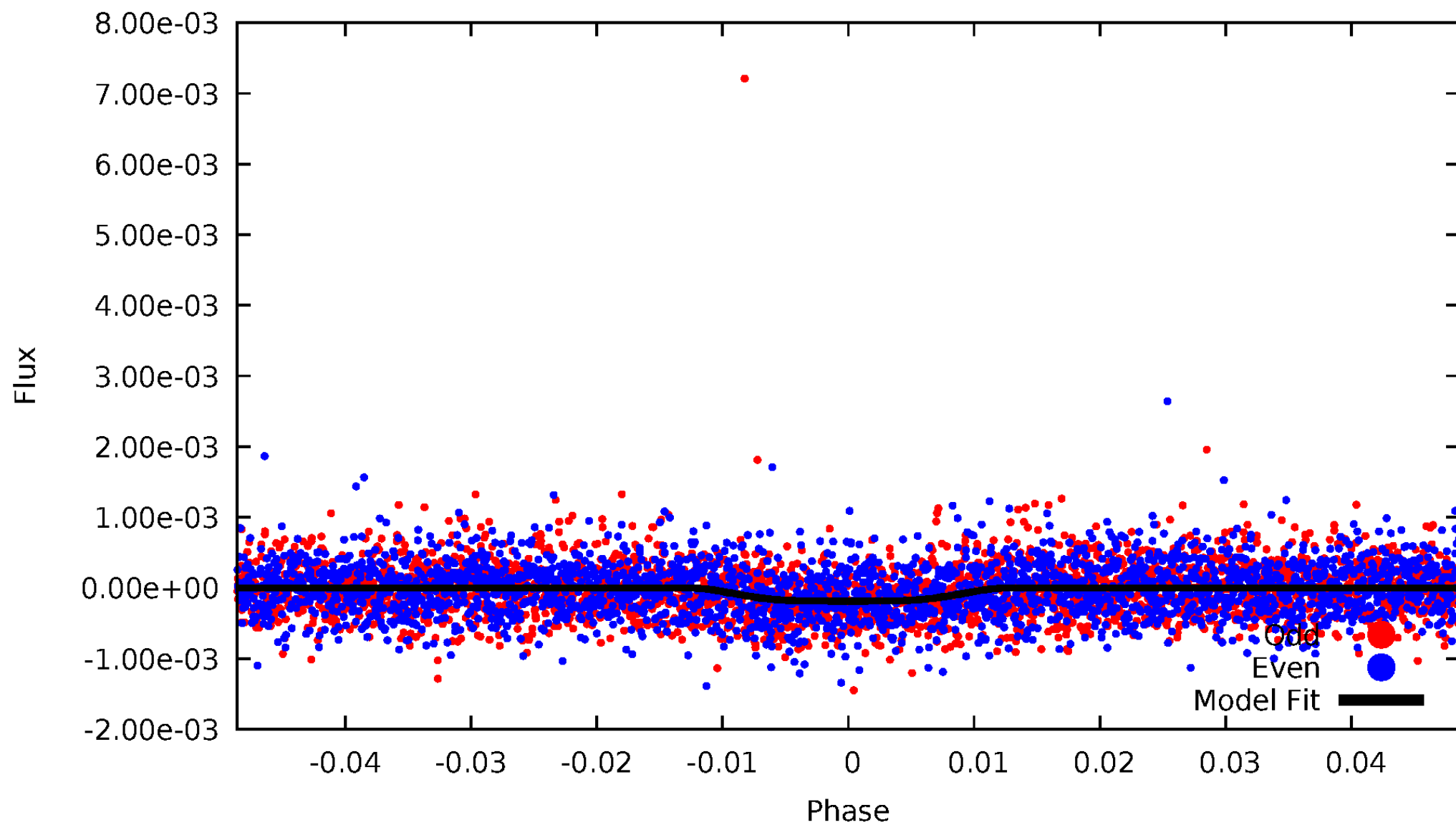


TCE 007265298-02



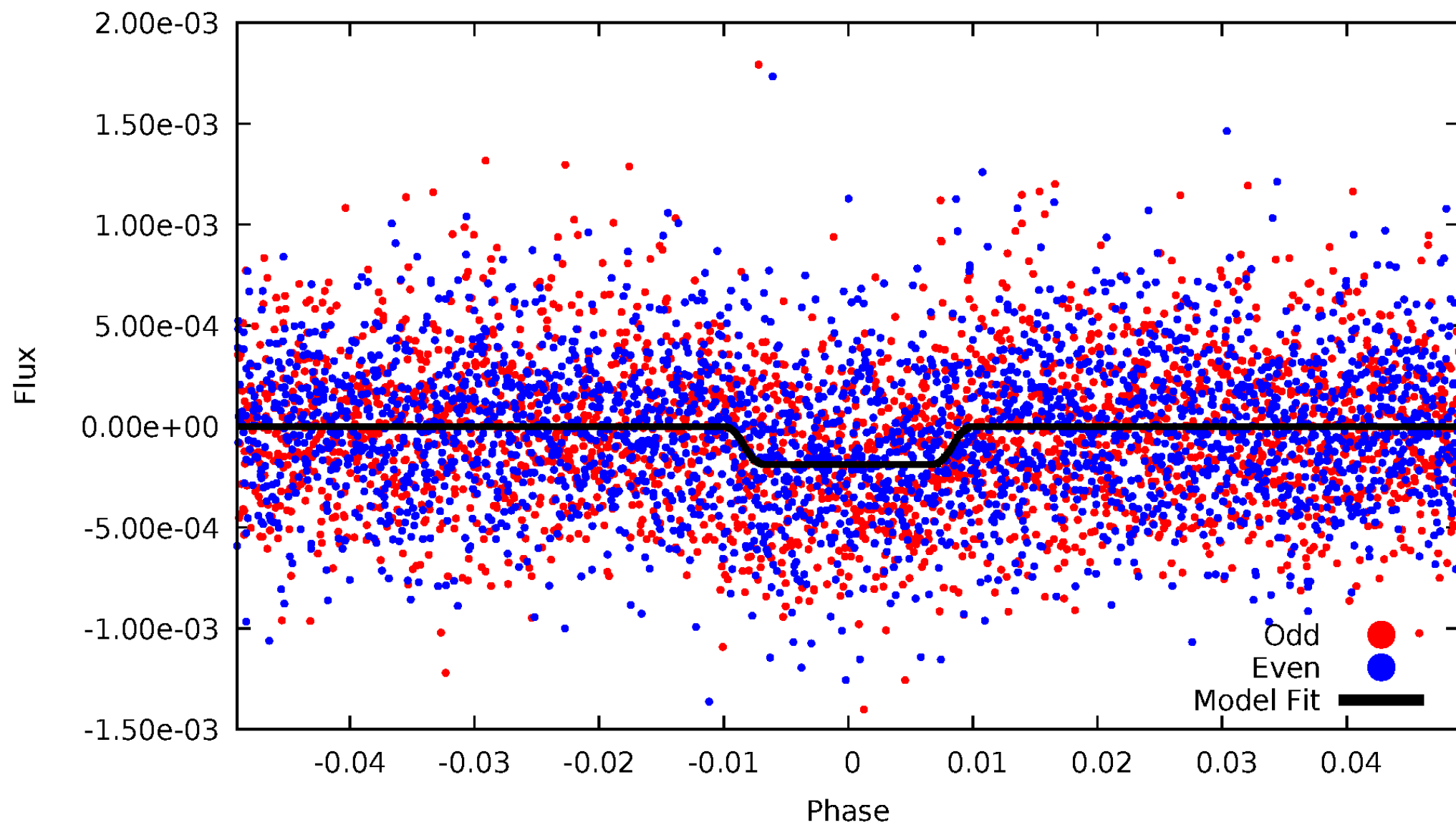
DV Odd/Even

TCE 007265298-02



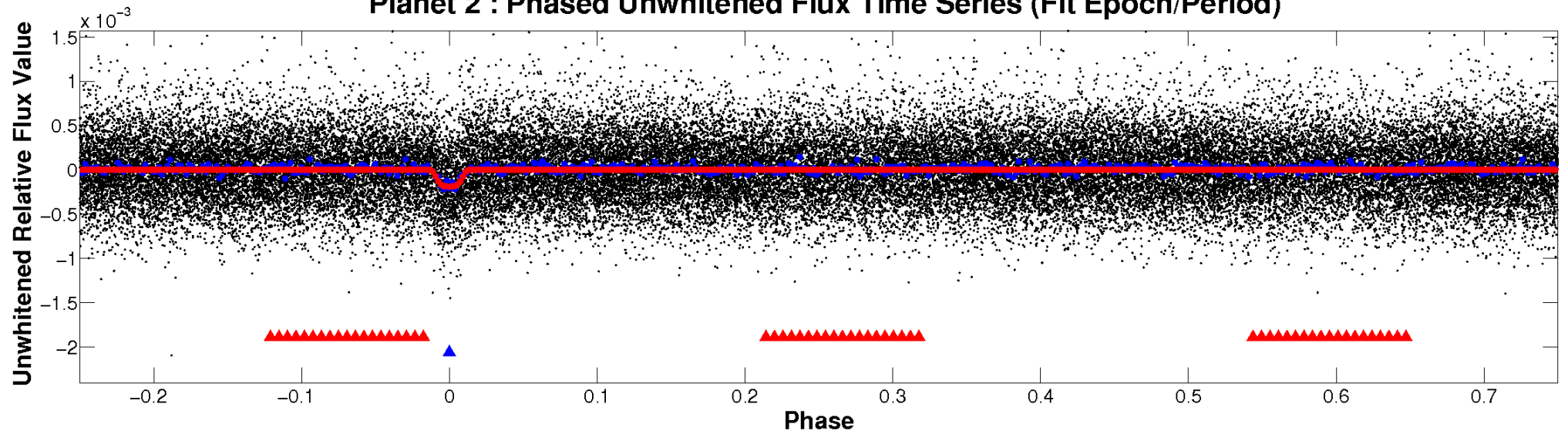
ALT Odd/Even

TCE 007265298-02

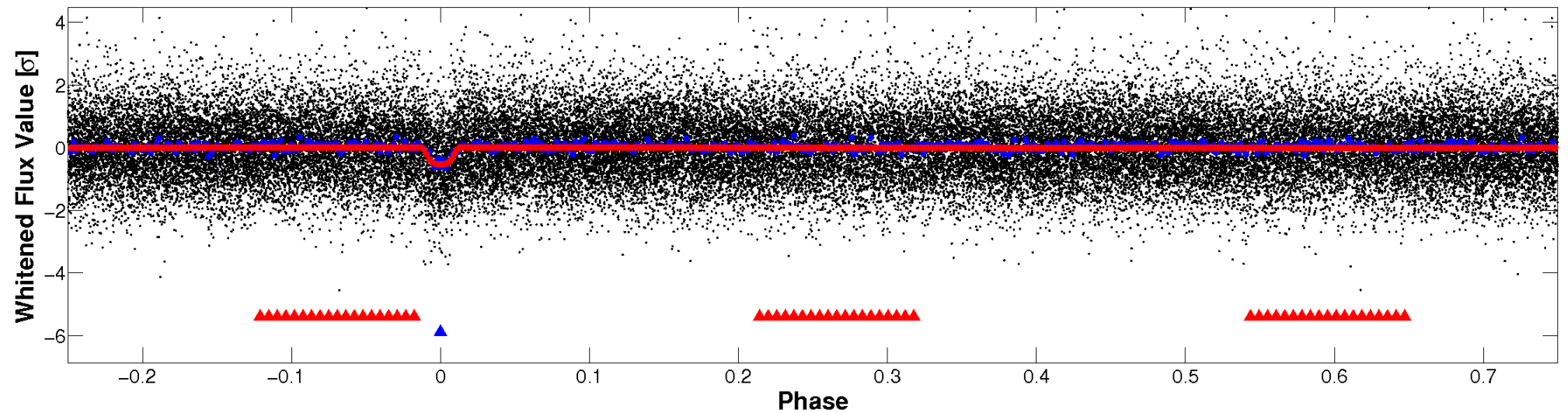


Non-Whitened Vs. Whitened Light Curve

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

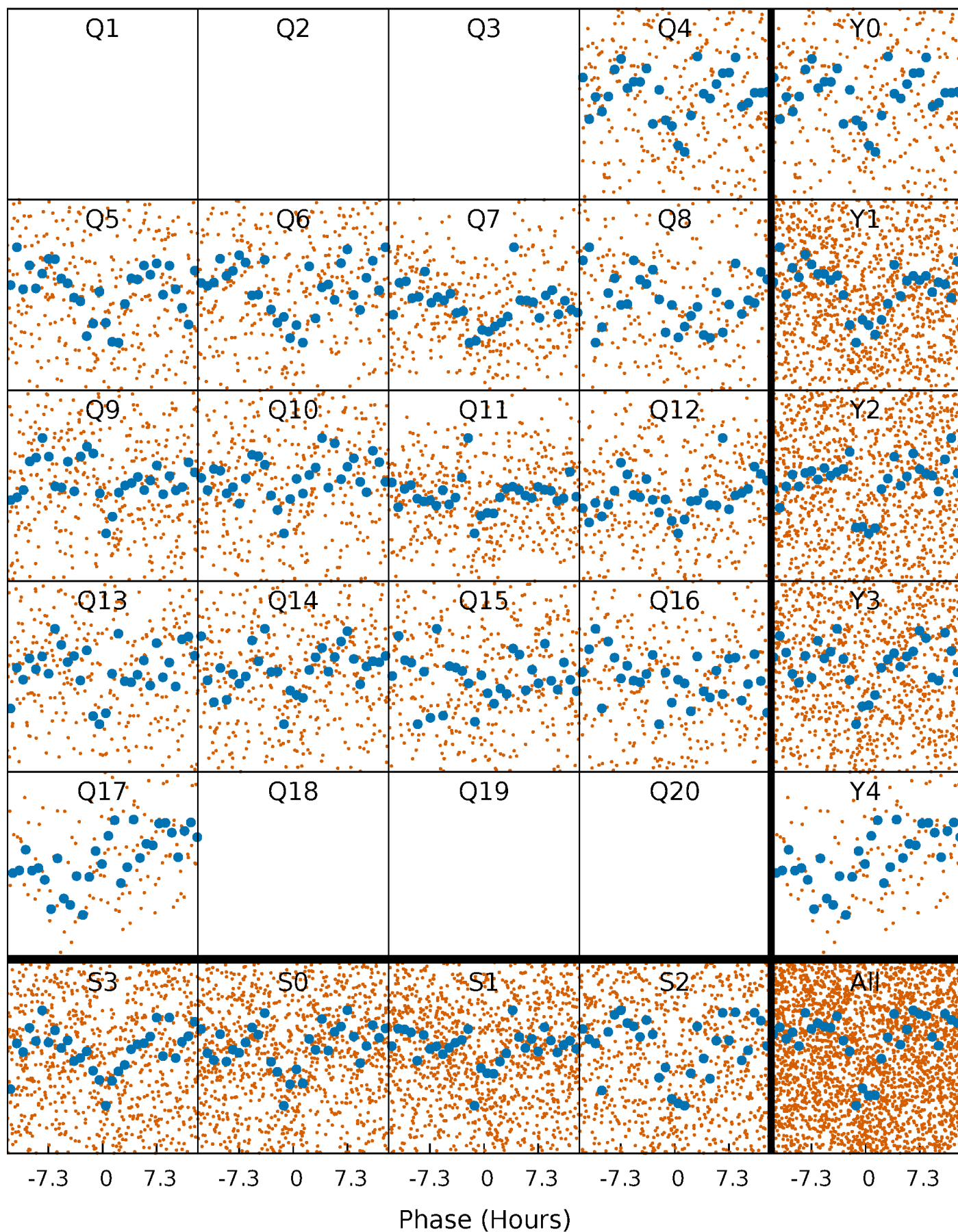


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



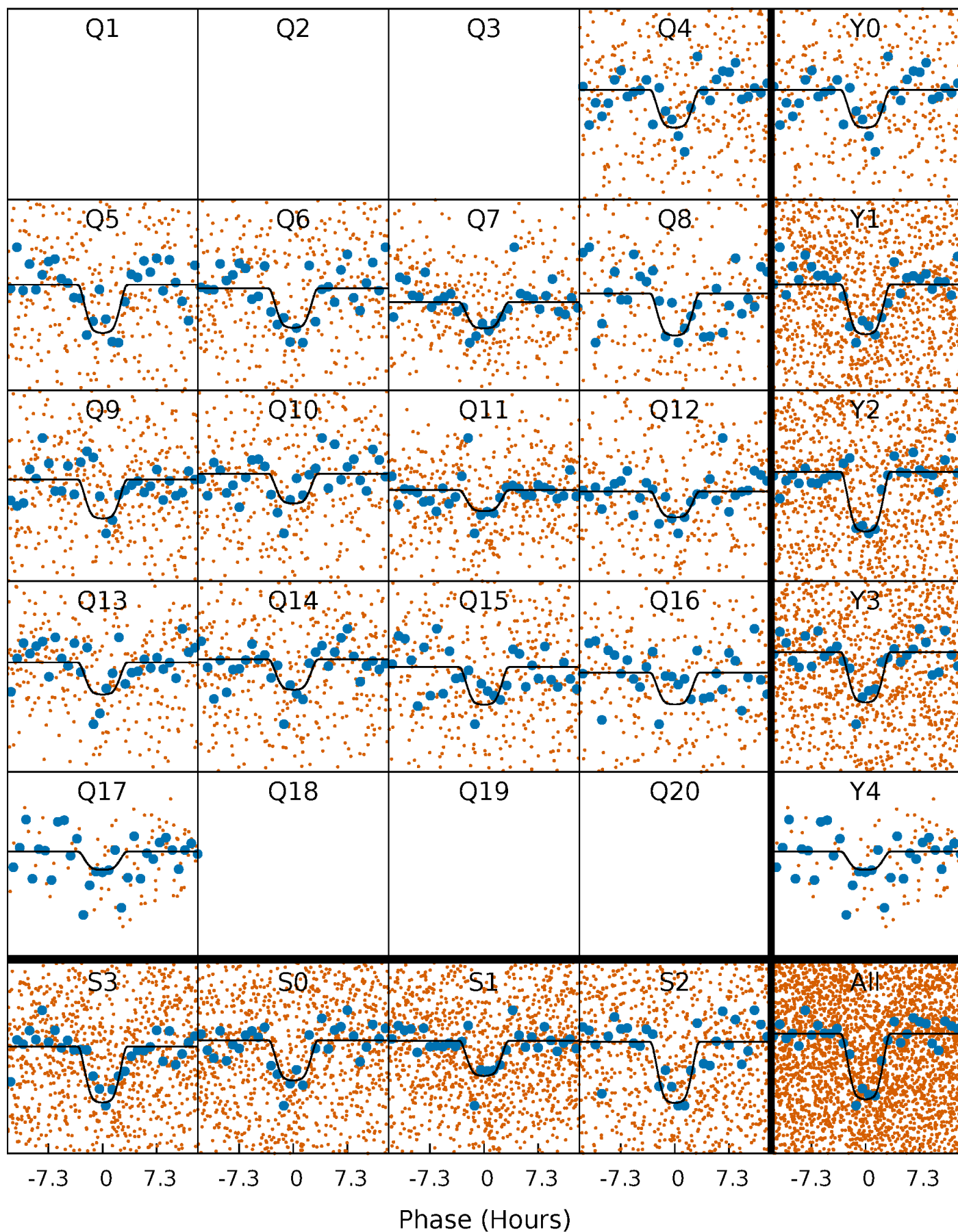
PDC Quarter-Phased Transit Curves

TCE 007265298-02 P= 11.032086 Days $T_0=141.697118$ (BKJD)



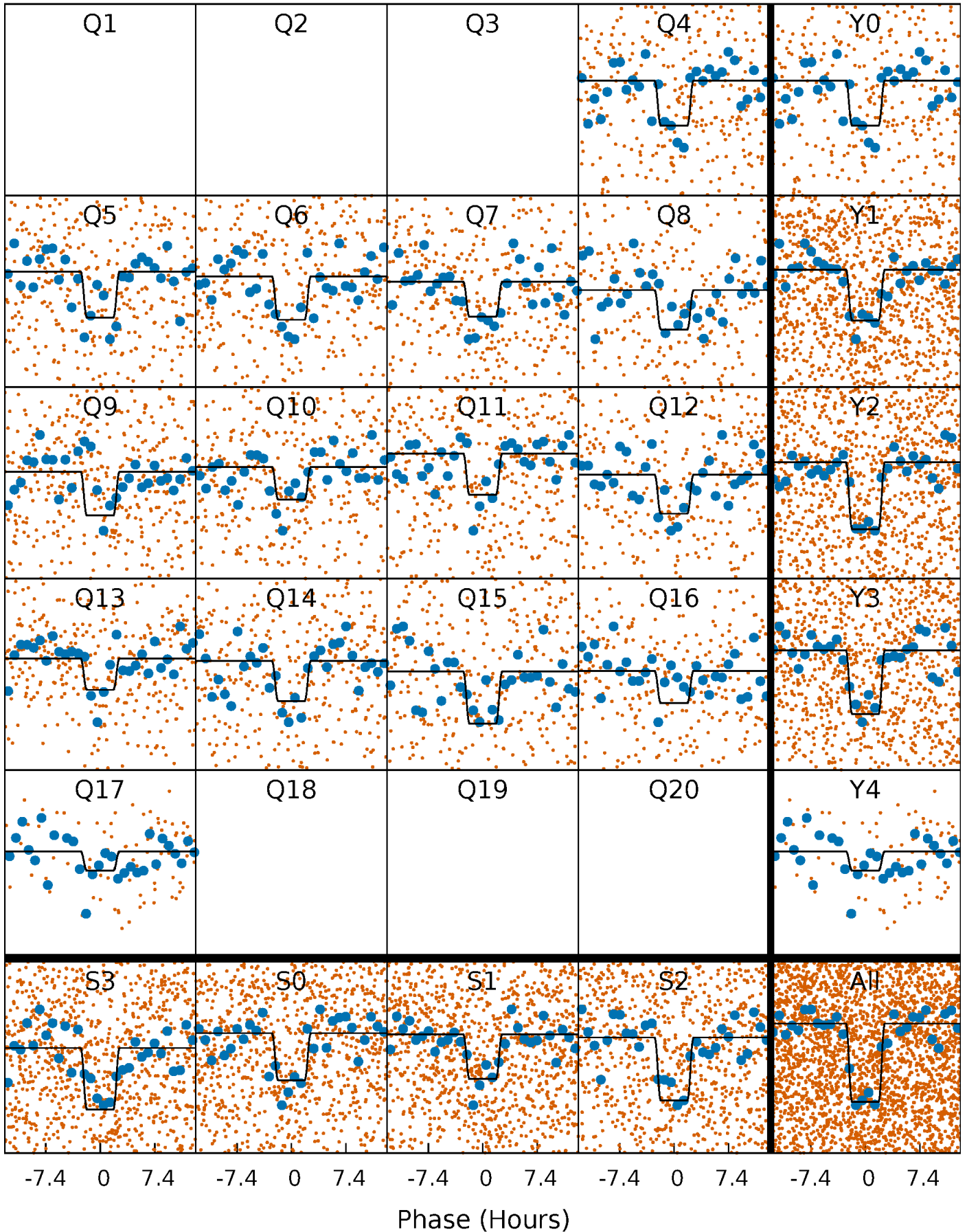
DV Quarter-Phased Transit Curves

TCE 007265298-02 P= 11.032086 Days $T_0=141.697118$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

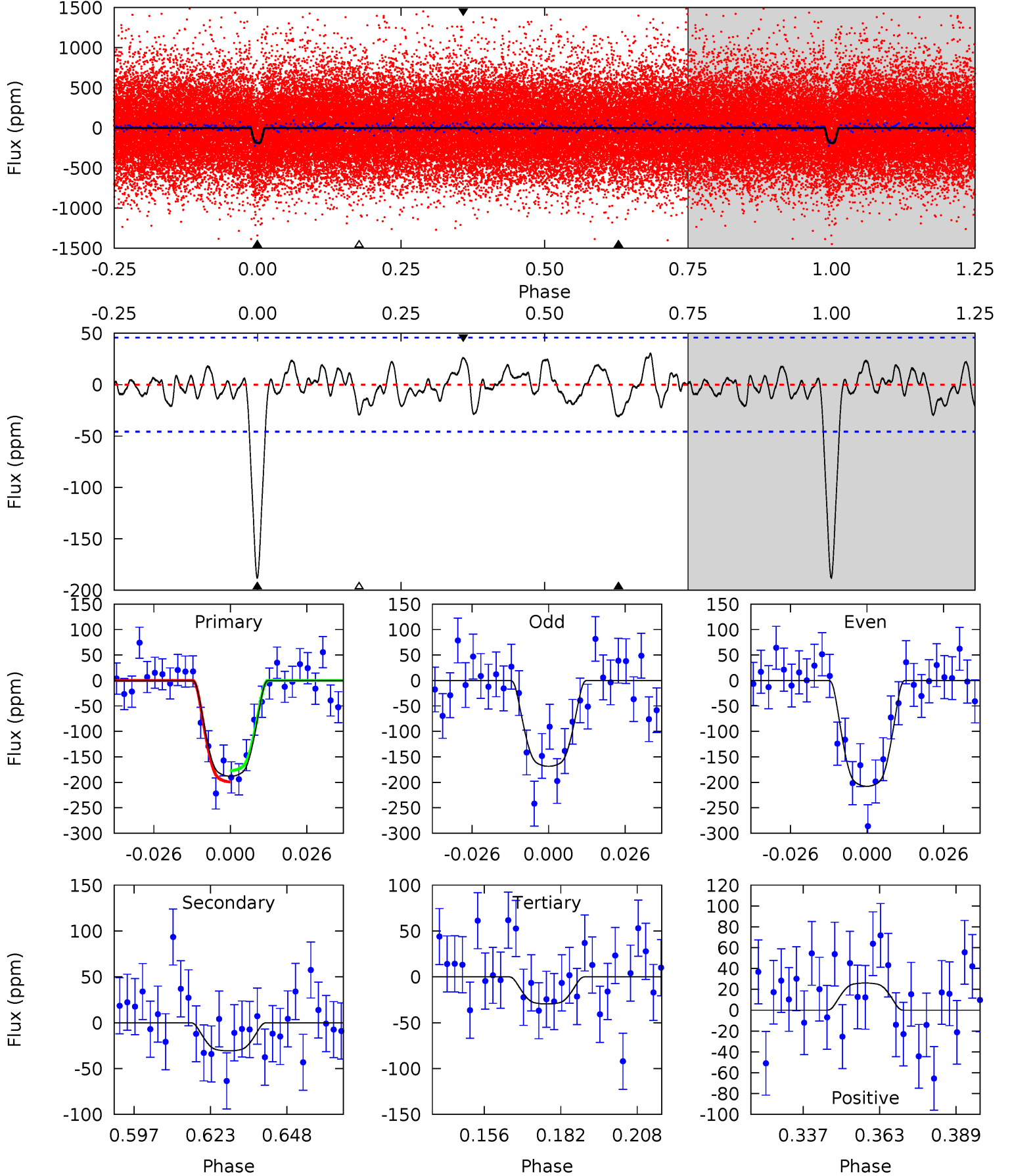
TCE 007265298-02 P= 11.031945 Days $T_0=141.706043$ (BKJD)



DV Model-Shift Uniqueness Test

007265298-02, P = 11.032086 Days, E = 141.697118 Days

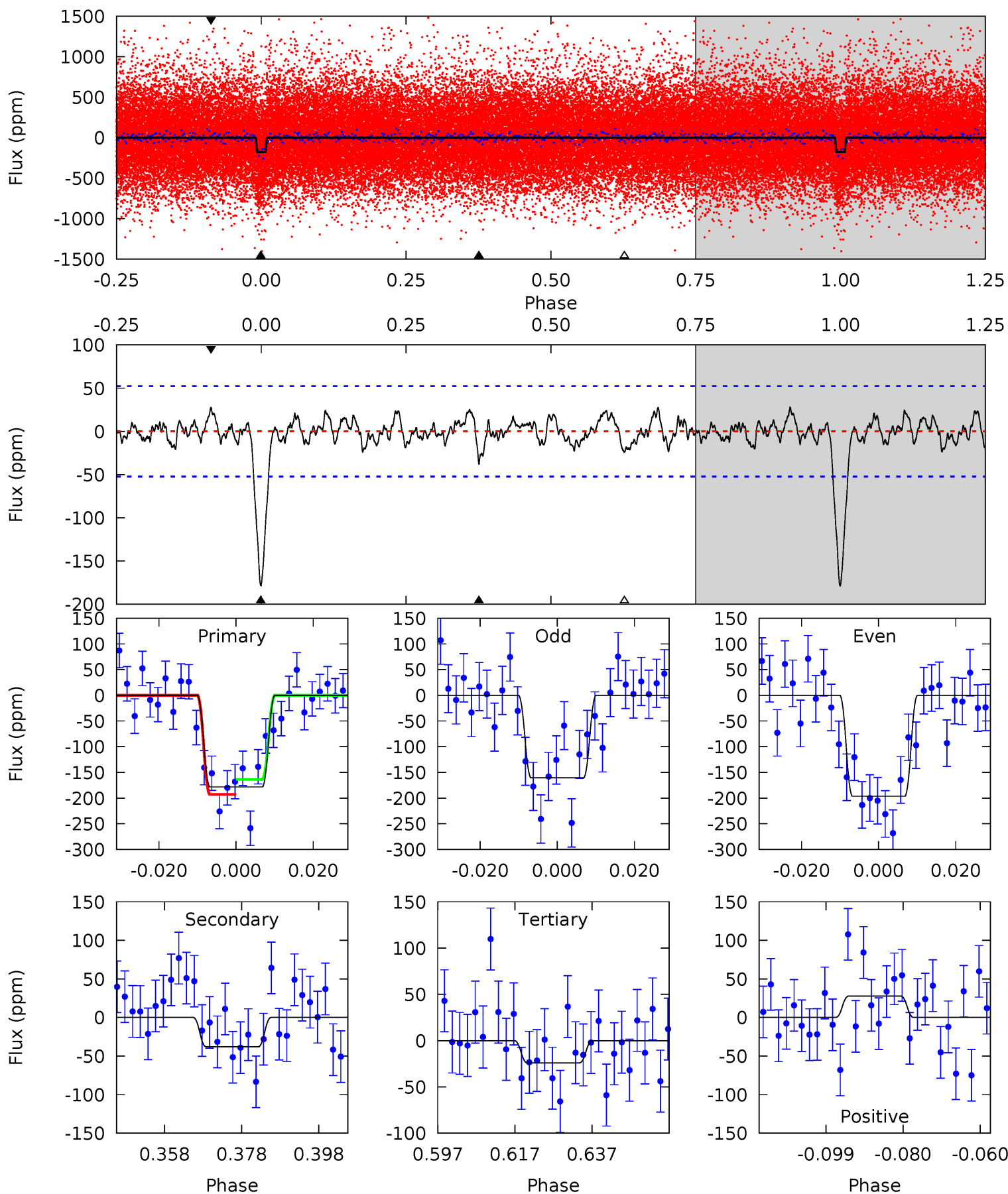
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 19.9 | 3.24 | 3.12 | 2.75 | 4.84 | 2.23 | 1.24 | 16.8 | 17.1 | 0.12 | 0.49 | 2.08 | 0.94 | 0.14 | 1.17 |



Alt Model-Shift Uniqueness Test

007265298-02, P = 11.031945 Days, E = 141.706043 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.7 | 3.56 | 2.25 | 2.59 | 4.89 | 2.33 | 0.98 | 14.4 | 14.1 | 1.31 | 0.96 | 1.67 | 0.99 | 0.13 | 1.37 |



Stellar Parameters For KIC 007265298

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5739^{+78}_{-86} | $4.381^{+0.095}_{-0.116}$ | $0.140^{+0.150}_{-0.150}$ | $1.069^{+0.174}_{-0.107}$ | $1.002^{+0.068}_{-0.056}$ | $1.154^{+0.434}_{-0.372}$ |
| | +1%/-1% | +2%/-3% | +107%/-107% | +16%/-10% | +7%/-6% | +38%/-32% |
| Source | SPE90 | SPE90 | SPE90 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 007265298-02 / KOI 2051.02

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|--------------------|----------------------|------------------|
| DV | -31 ± 9 | $2.03^{+0.23}_{-0.20}$ | 1176^{+51}_{-39} | 3676^{+201}_{-238} | 39^{+16}_{-14} |
| Alt. | -38 ± 11 | $1.60^{+0.20}_{-0.17}$ | 1177^{+51}_{-44} | 4118^{+266}_{-261} | 76^{+32}_{-26} |

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

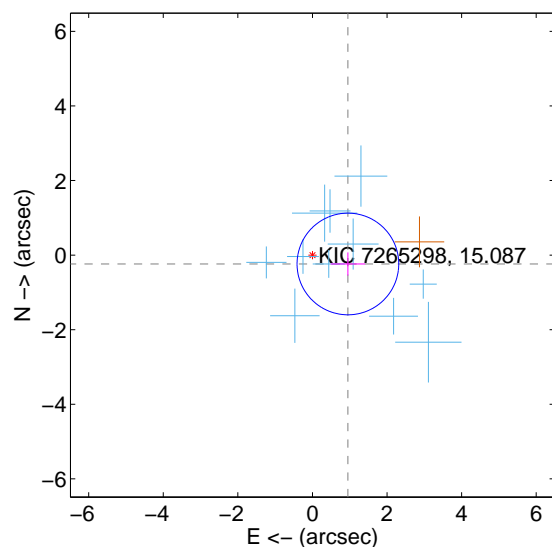
Supplemental centroid analysis for 007265298-02. Kepler magnitude: 15.09. Transit SNR 14.21

There are 11 quarters with good PRF difference image offsets

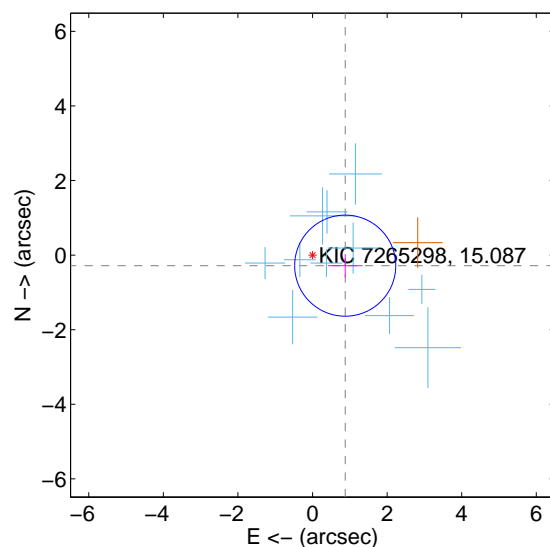
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.980 ± 0.455 | 2.16 | -0.951 ± 0.462 | -0.238 ± 0.311 |
| PRF-fit source offset from KIC position | 0.921 ± 0.452 | 2.04 | -0.877 ± 0.464 | -0.283 ± 0.314 |
| photometric centroid source offset | 2.19 ± 1.07 | 2.04 | 0.35 ± 1.05 | -2.16 ± 1.07 |

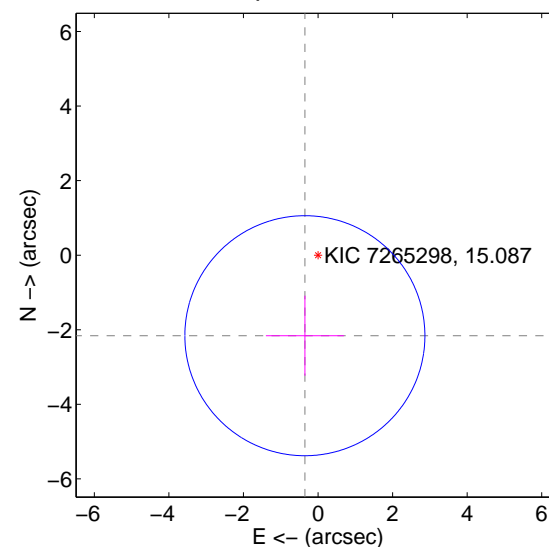
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

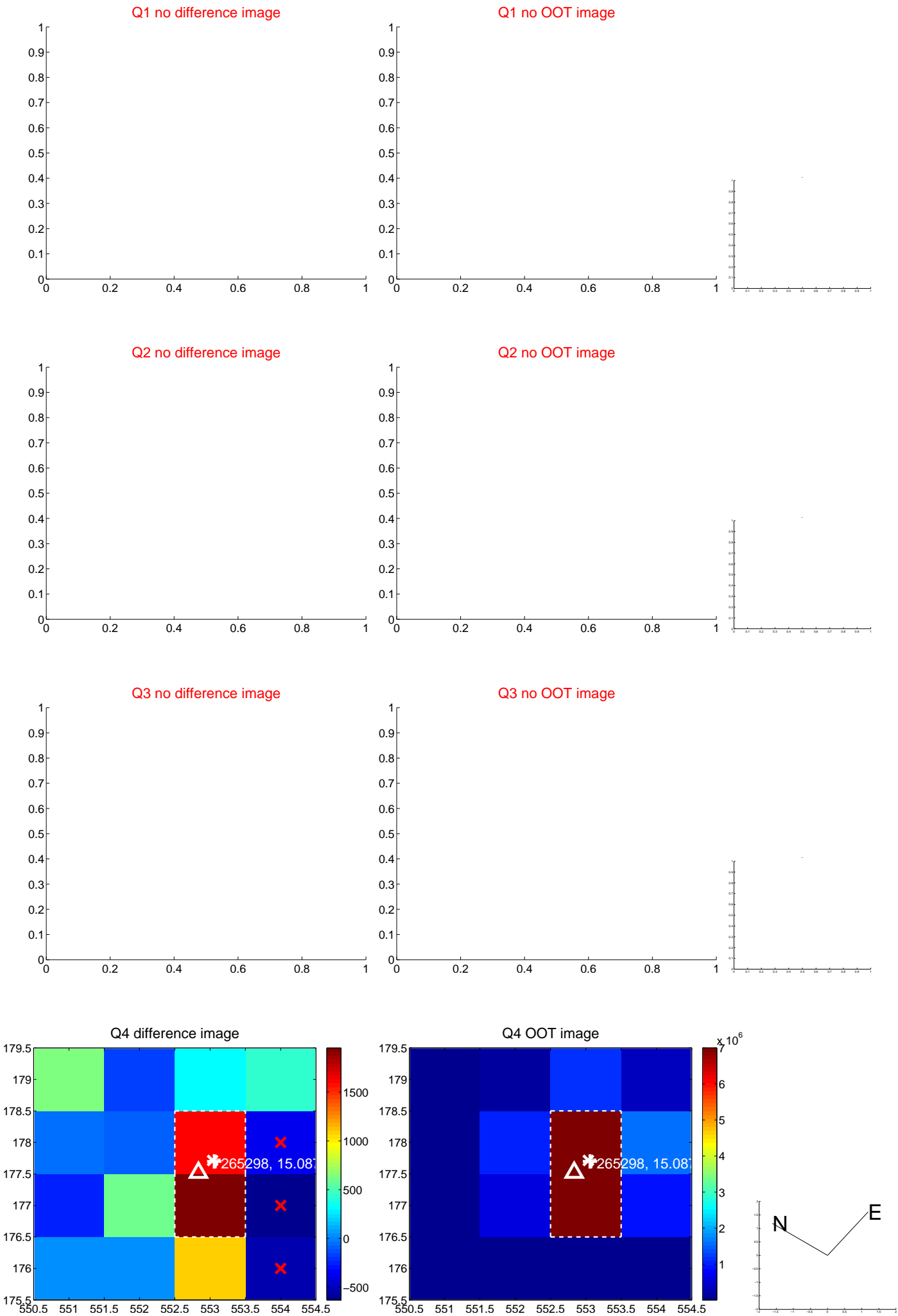


offset from photometric centroids

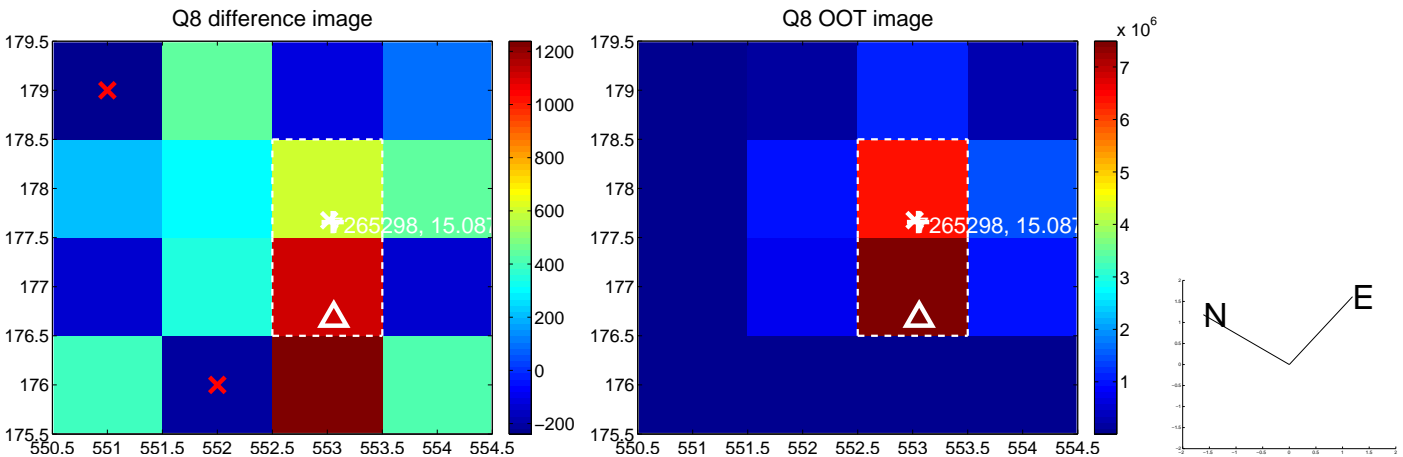
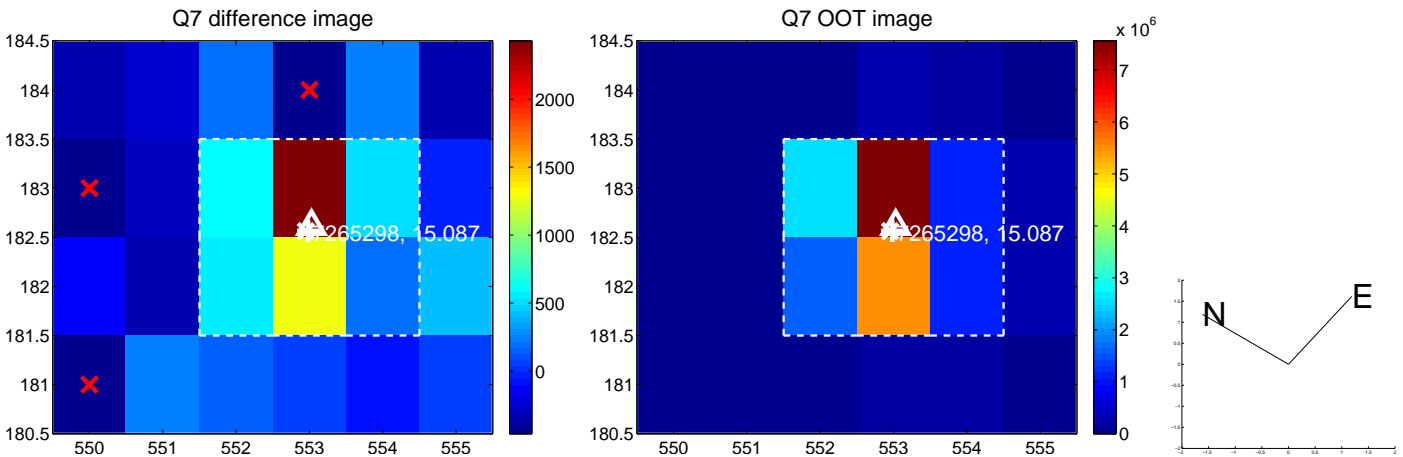
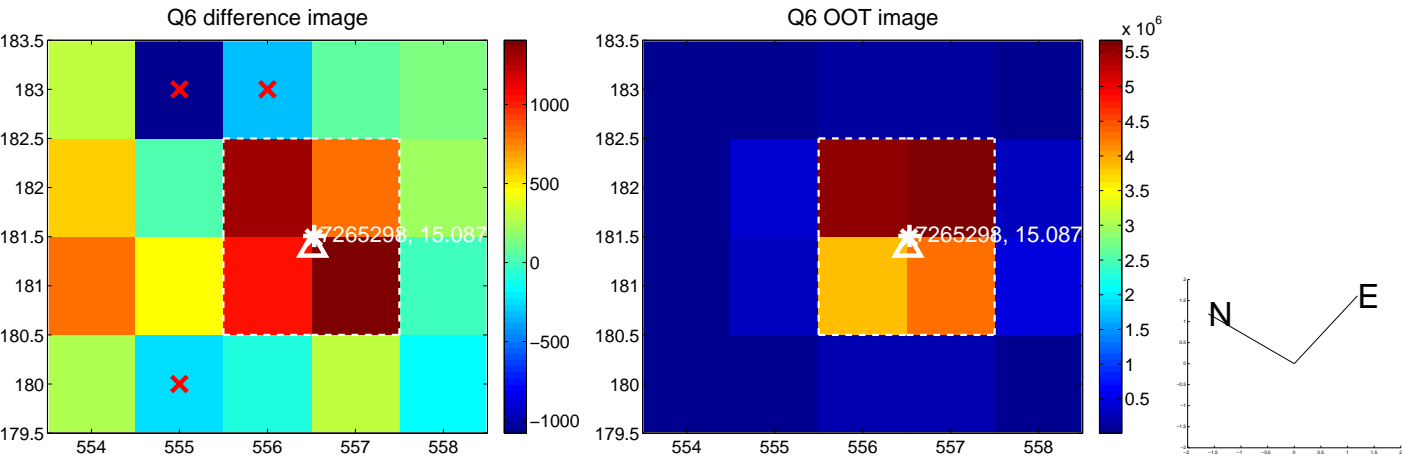
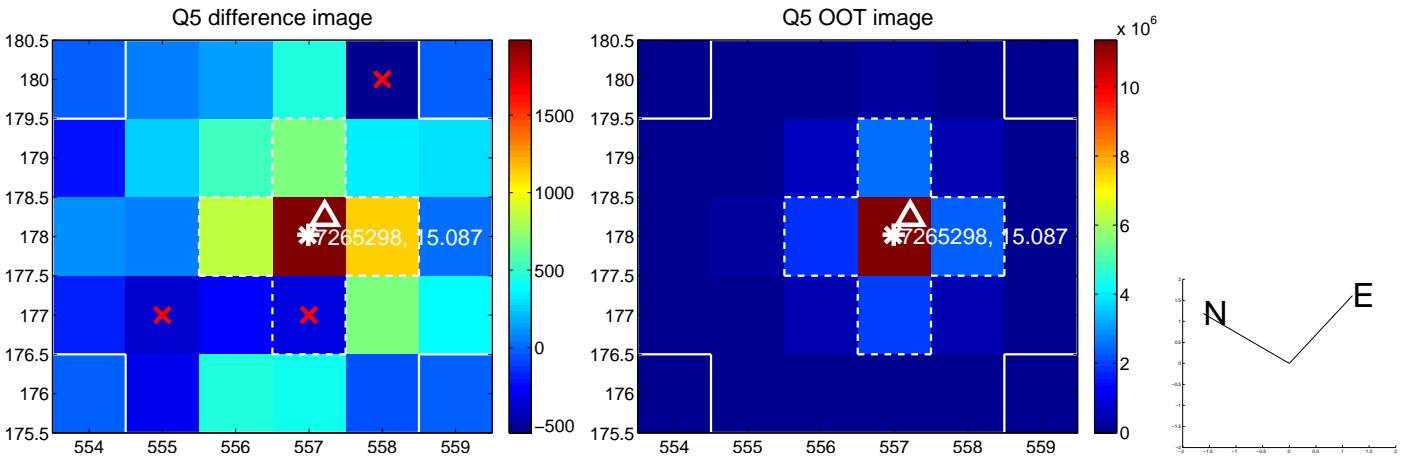


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

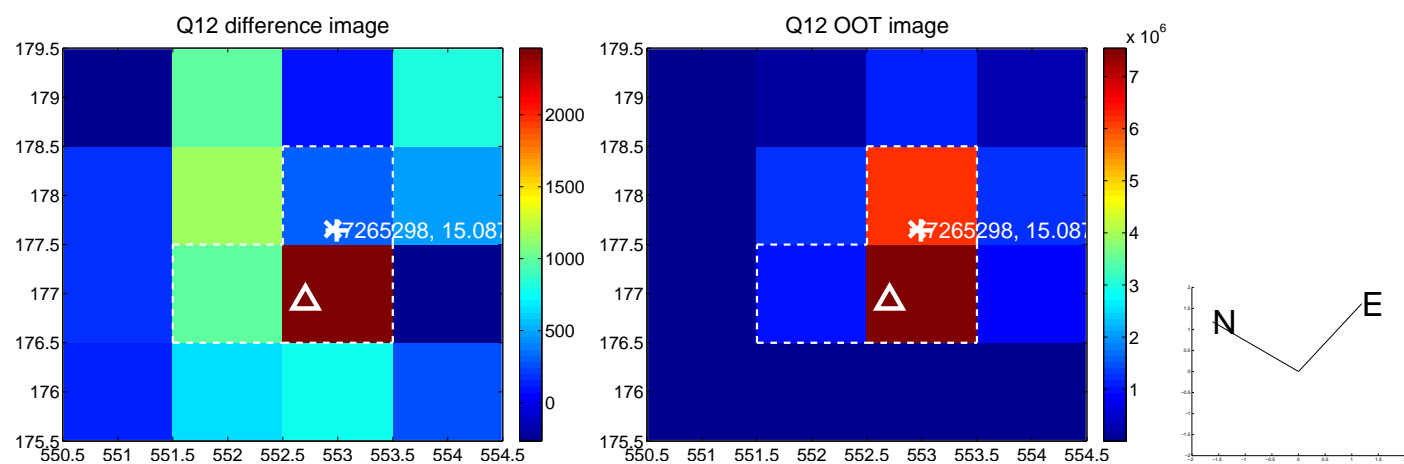
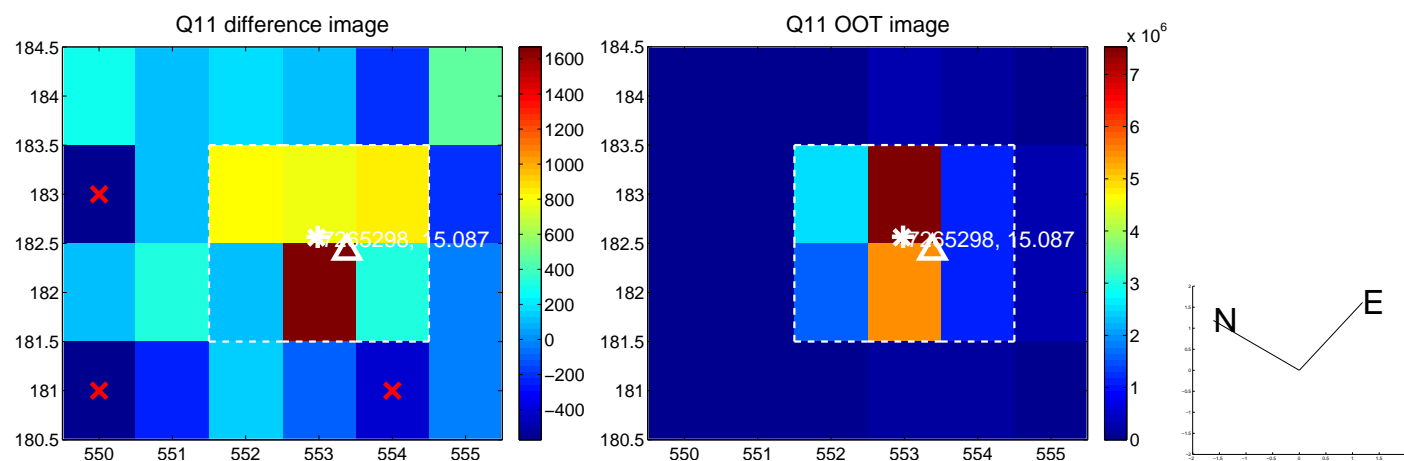
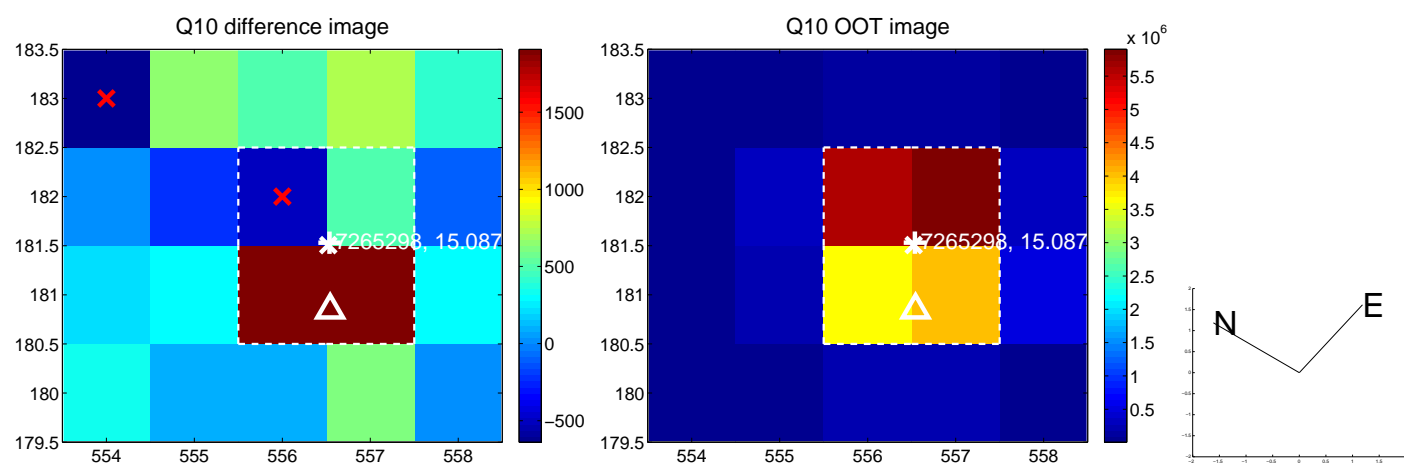
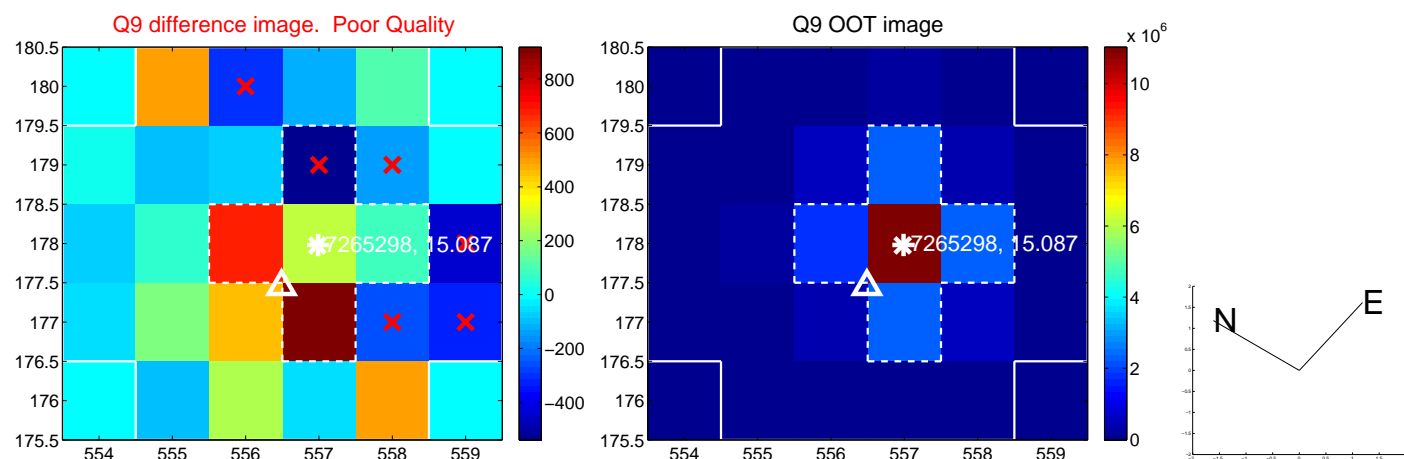
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



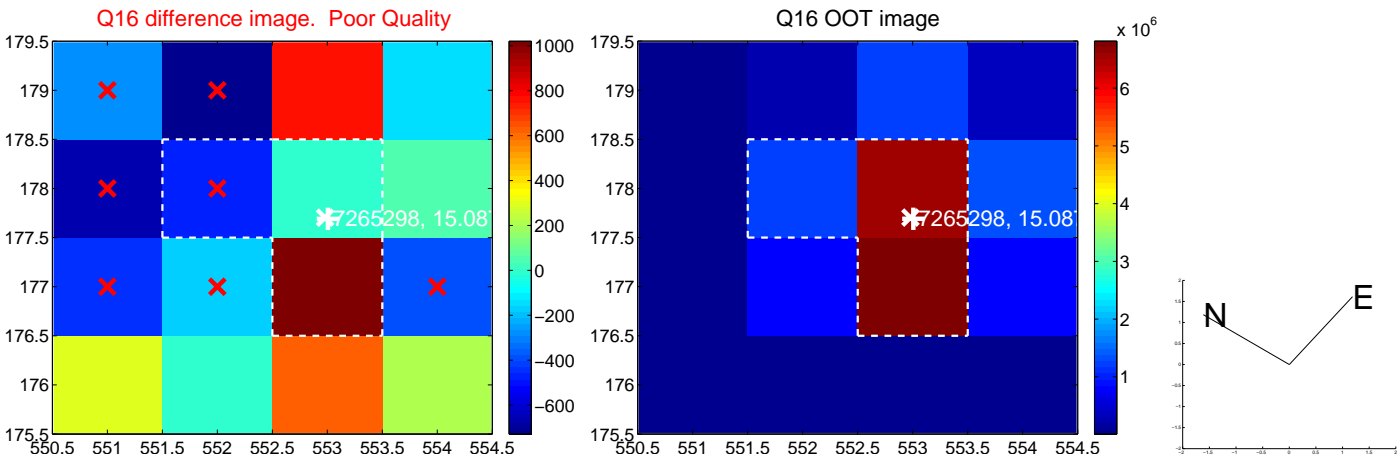
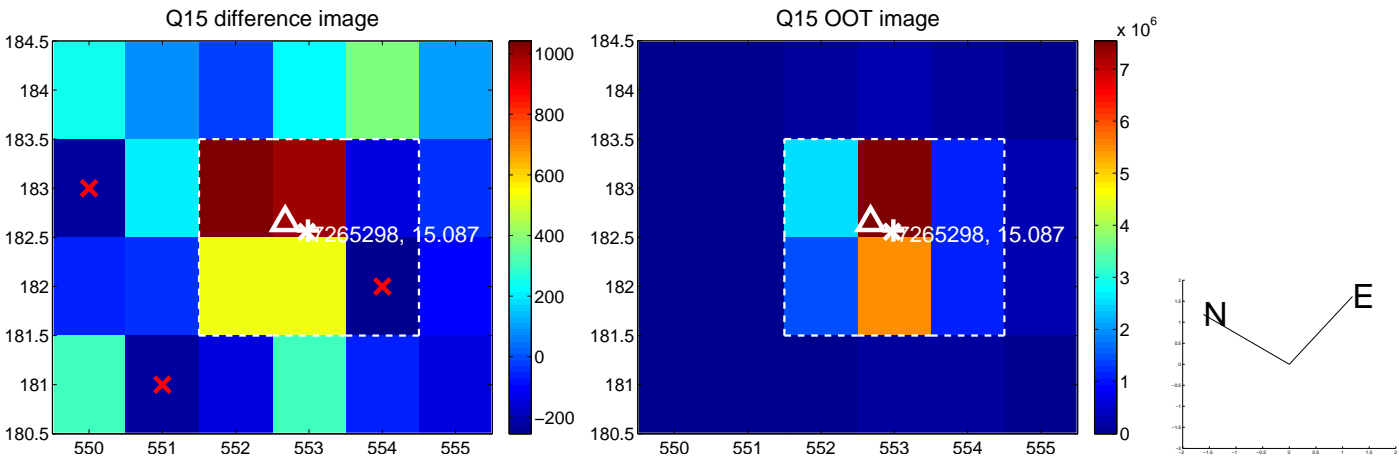
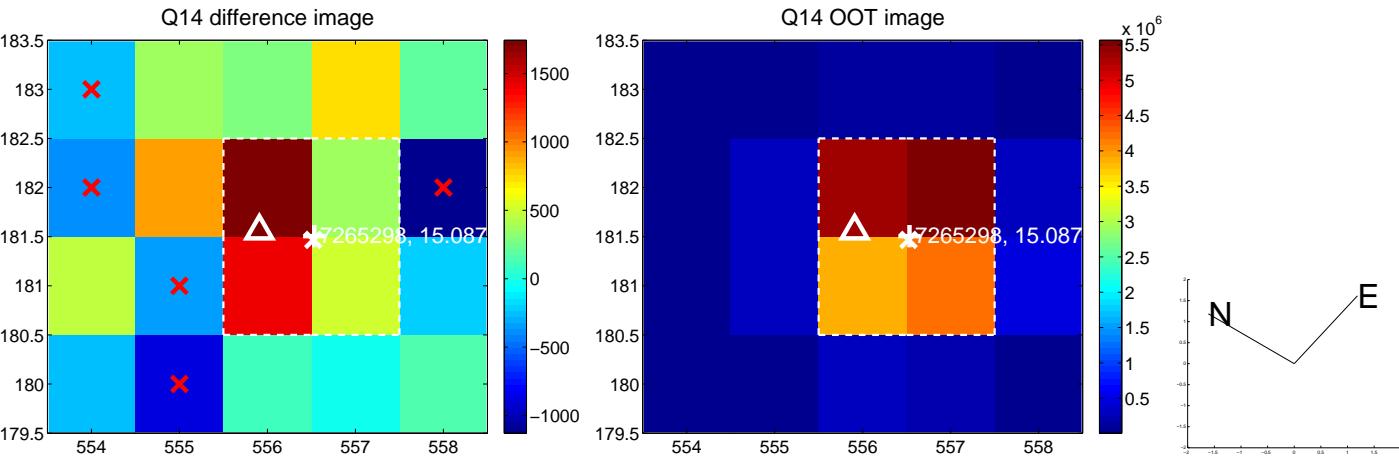
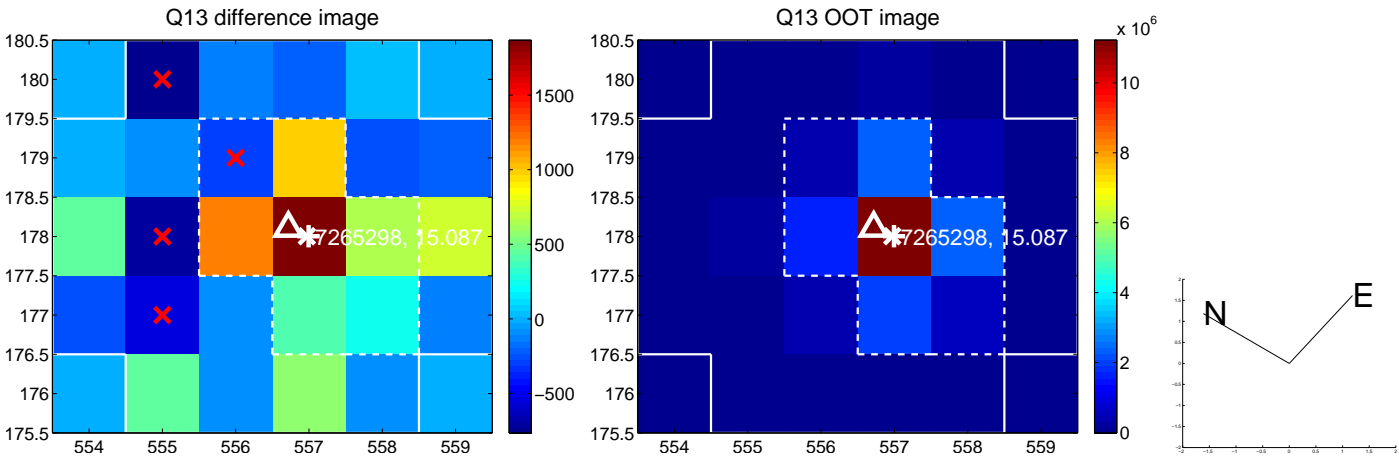
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



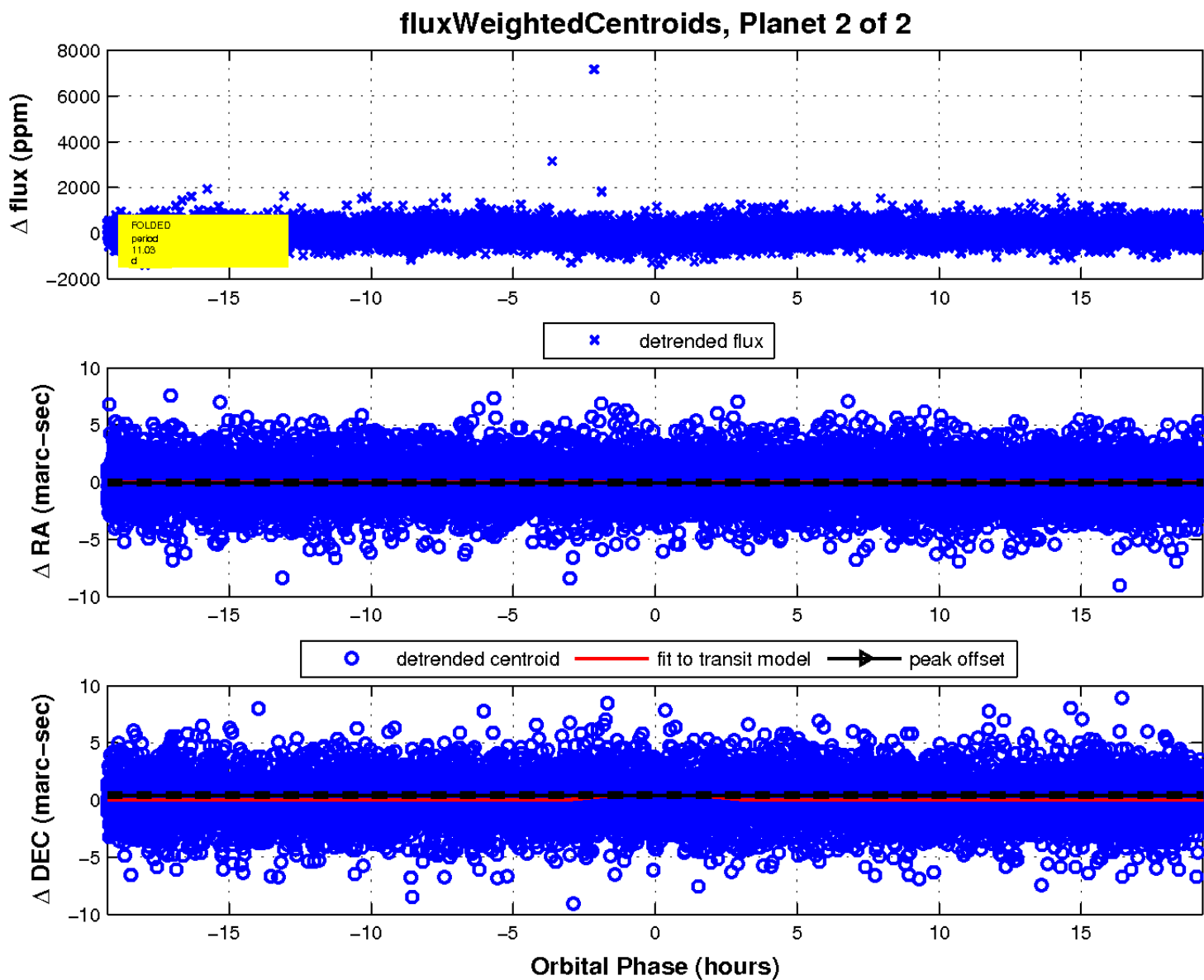
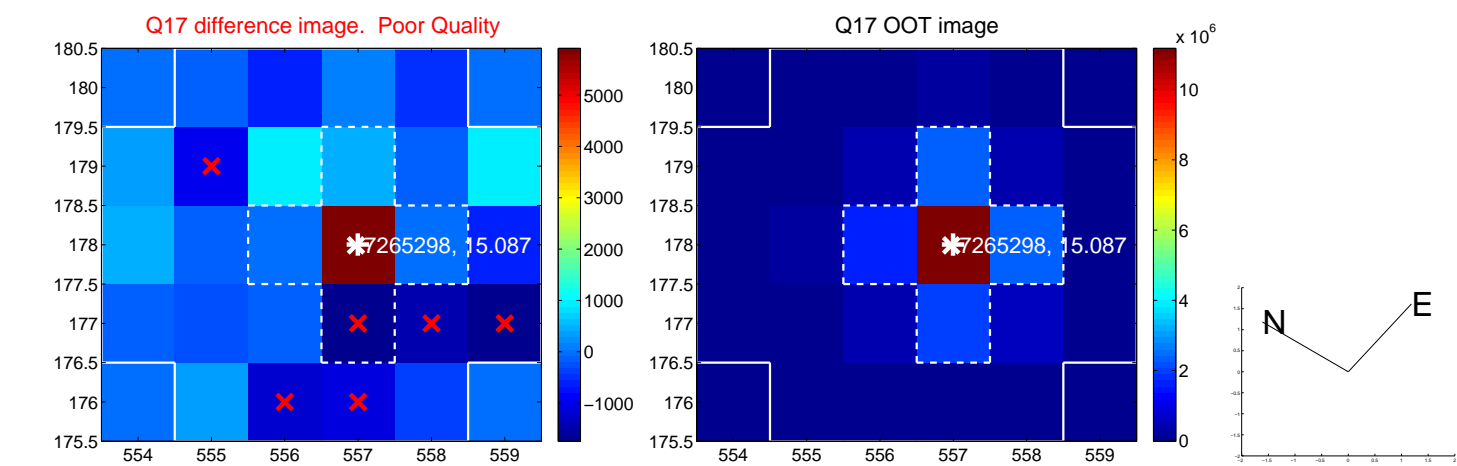
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

