

KIC 004927495

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004927495-01 | OBS | No | 0.767782 | 132.213478 | 77.9 | 3.299 | 13.4 | 12.6 | 2.66 | 7696 | 2.78 | 53238.43 |
| 004927495-02 | OBS | No | 153.049880 | 251.574889 | 5812.4 | 2.669 | 21.1 | 19.9 | 2.66 | 7696 | 29.92 | 45.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004927495-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 004927495-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST |

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

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

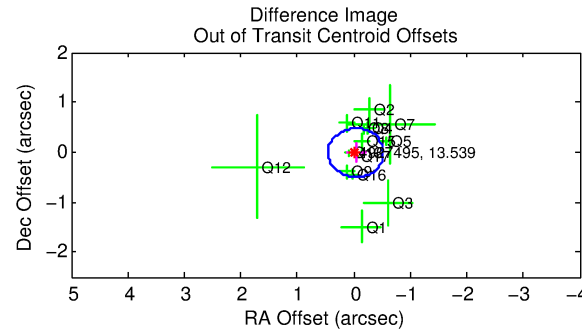
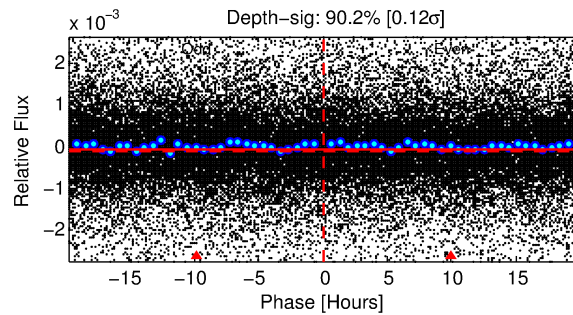
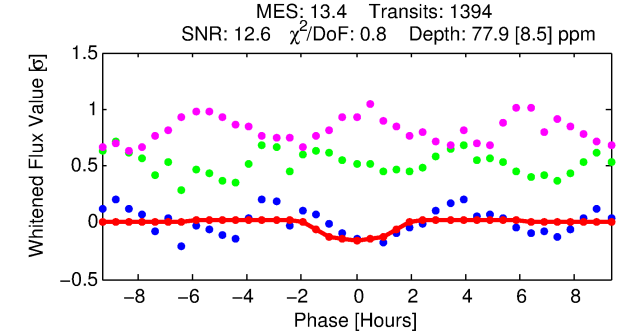
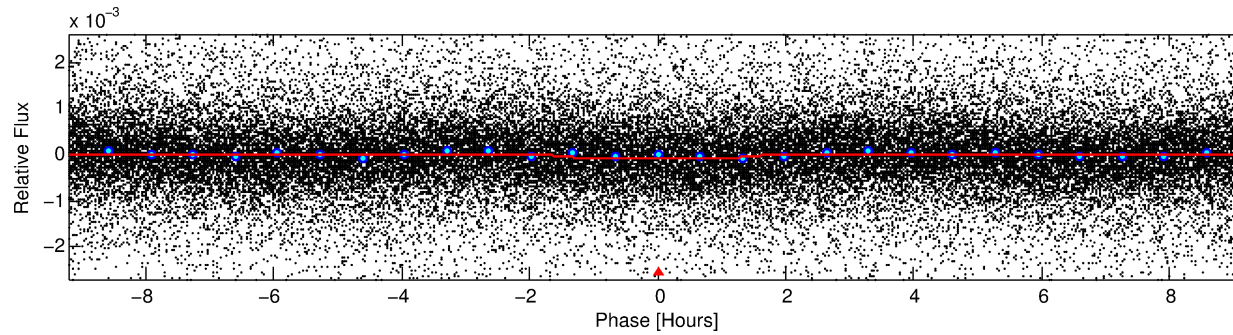
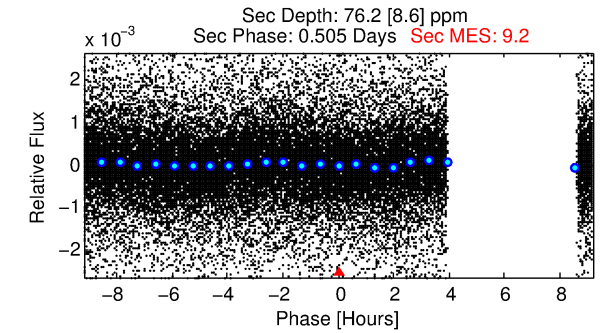
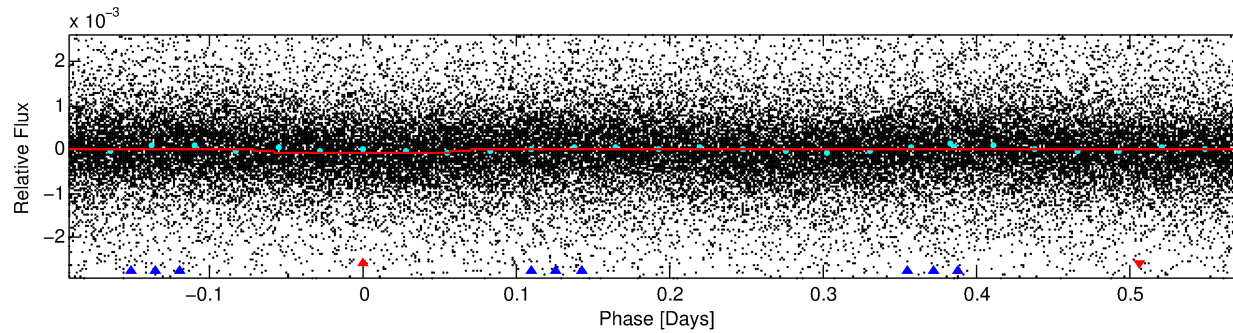
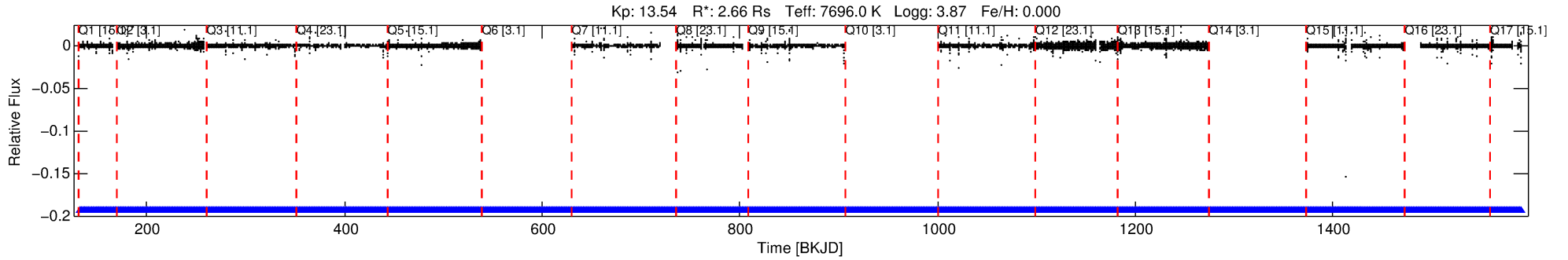
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004927495-01

No Significant Match Found

DV One-Page Summary

KIC: 4927495 Candidate: 1 of 2 Period: 0.768 d



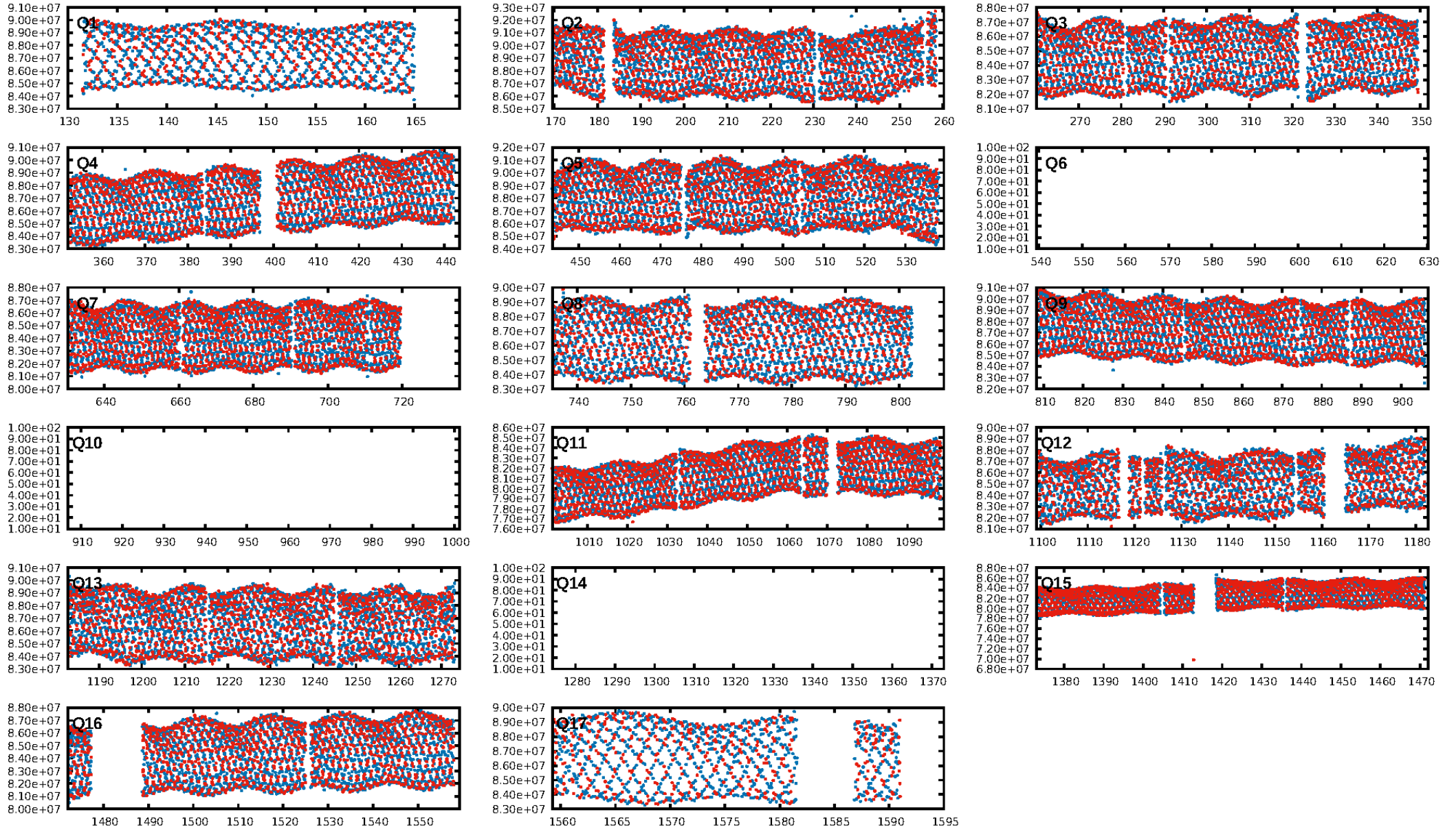
DV Fit Results:

Period = 0.76778 [0.00001] d
Epoch = 132.2135 [0.0034] BKJD
Rp/R* = 0.0096 [0.0036]
a/R* = 1.20 [0.88]
b = 0.92 [0.39]
Seff = 53238.42 [28373.68]
Teq = 3873 [516] K
Rp = 2.78 [1.46] Re
a = 0.0204 [0.0068] AU
Ag = 2.27 [2.06] [0.62σ]
Teffp = 7354 [1419] K [2.30σ]

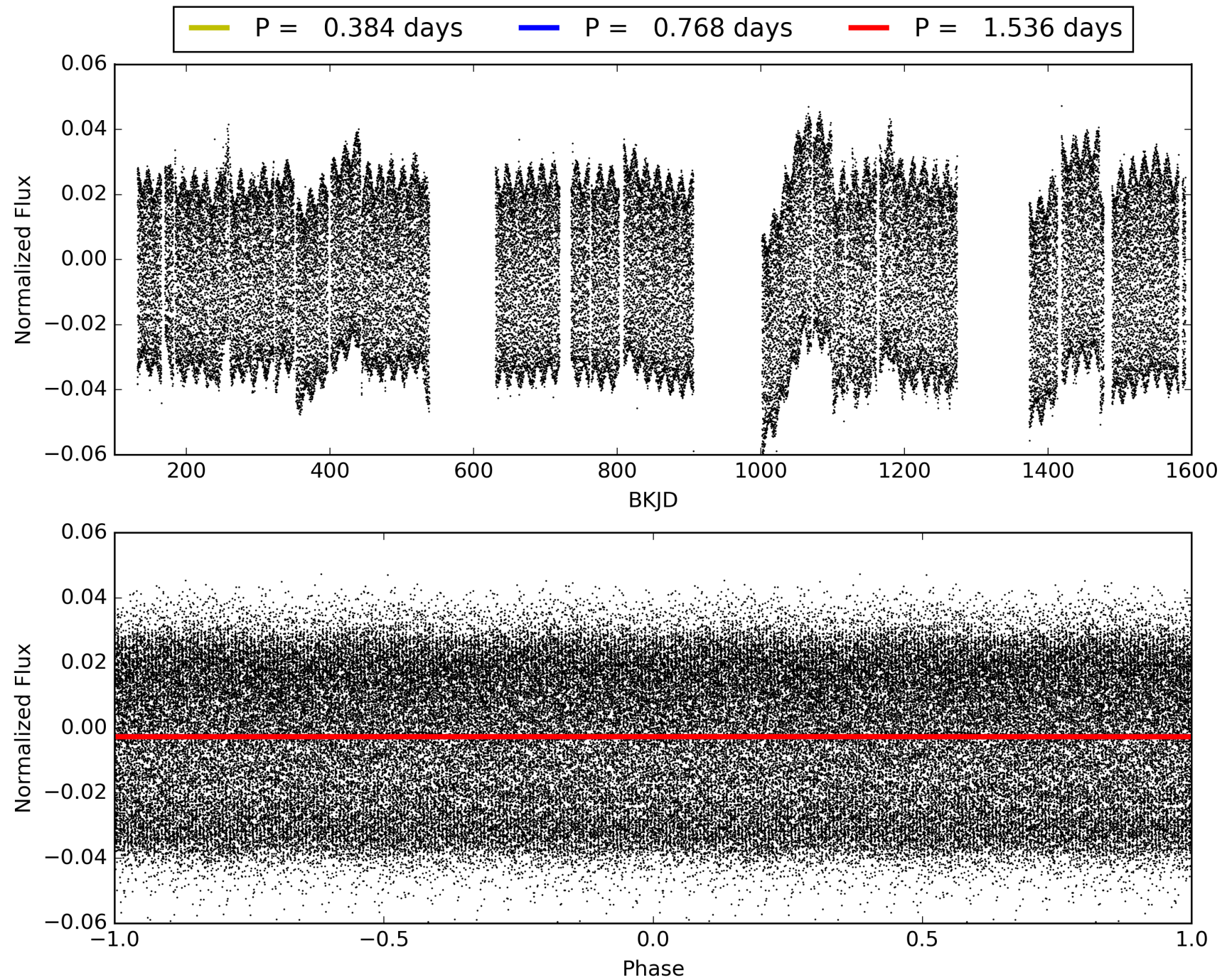
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [861.21σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.10e-27
RollingBand-fgt: 1.00 [1315/1315]
GhostDiagnostic-chr: 2.351
Centroid-sig: 0.0%
Centroid-so: 0.645 arcsec [2.11σ]
OotOffset-rm: 0.036 arcsec [0.22σ]
KicOffset-rm: 0.107 arcsec [0.70σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.36 [5/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004927495-01, PDC Light Curves

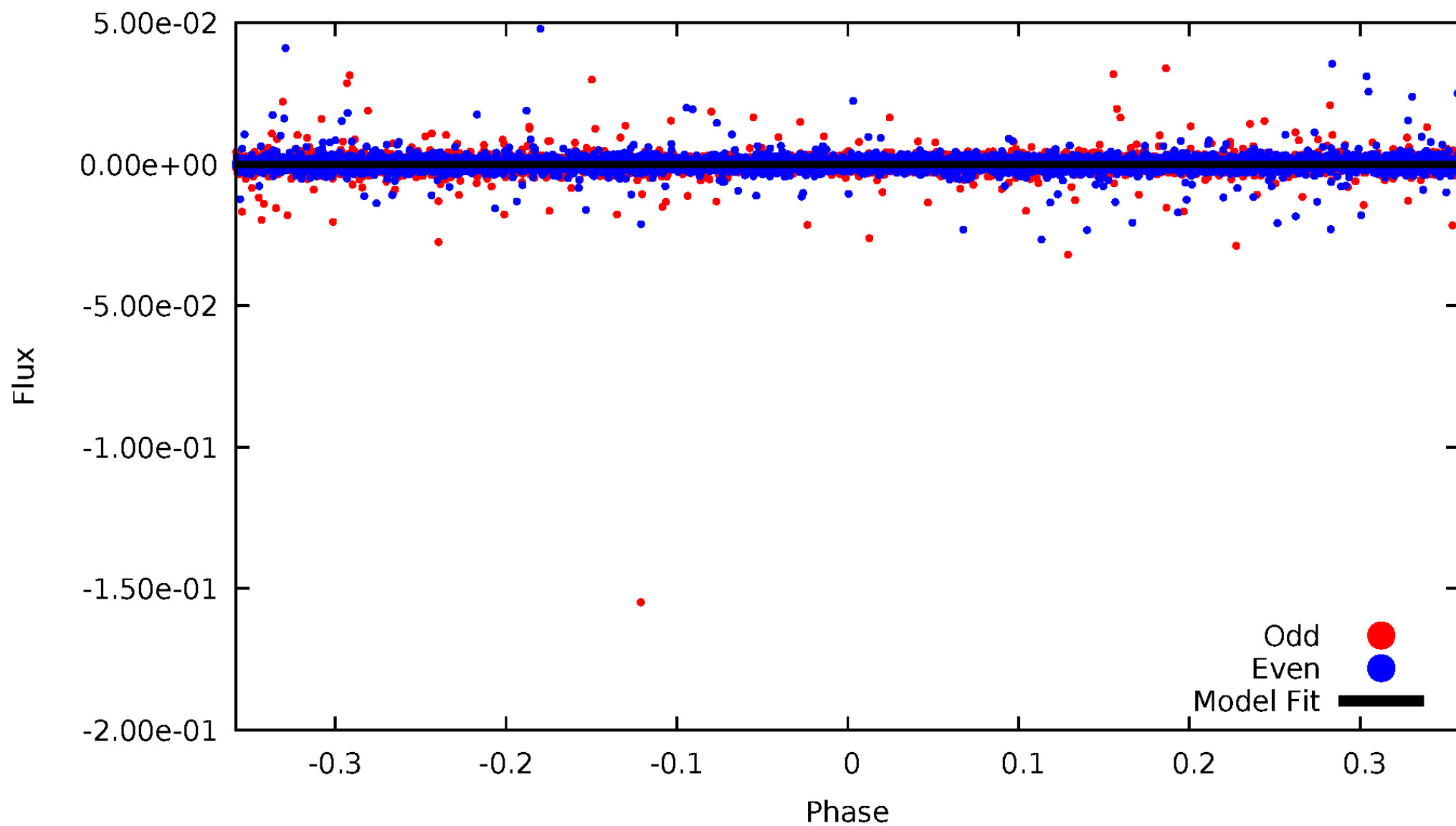


TCE 004927495-01



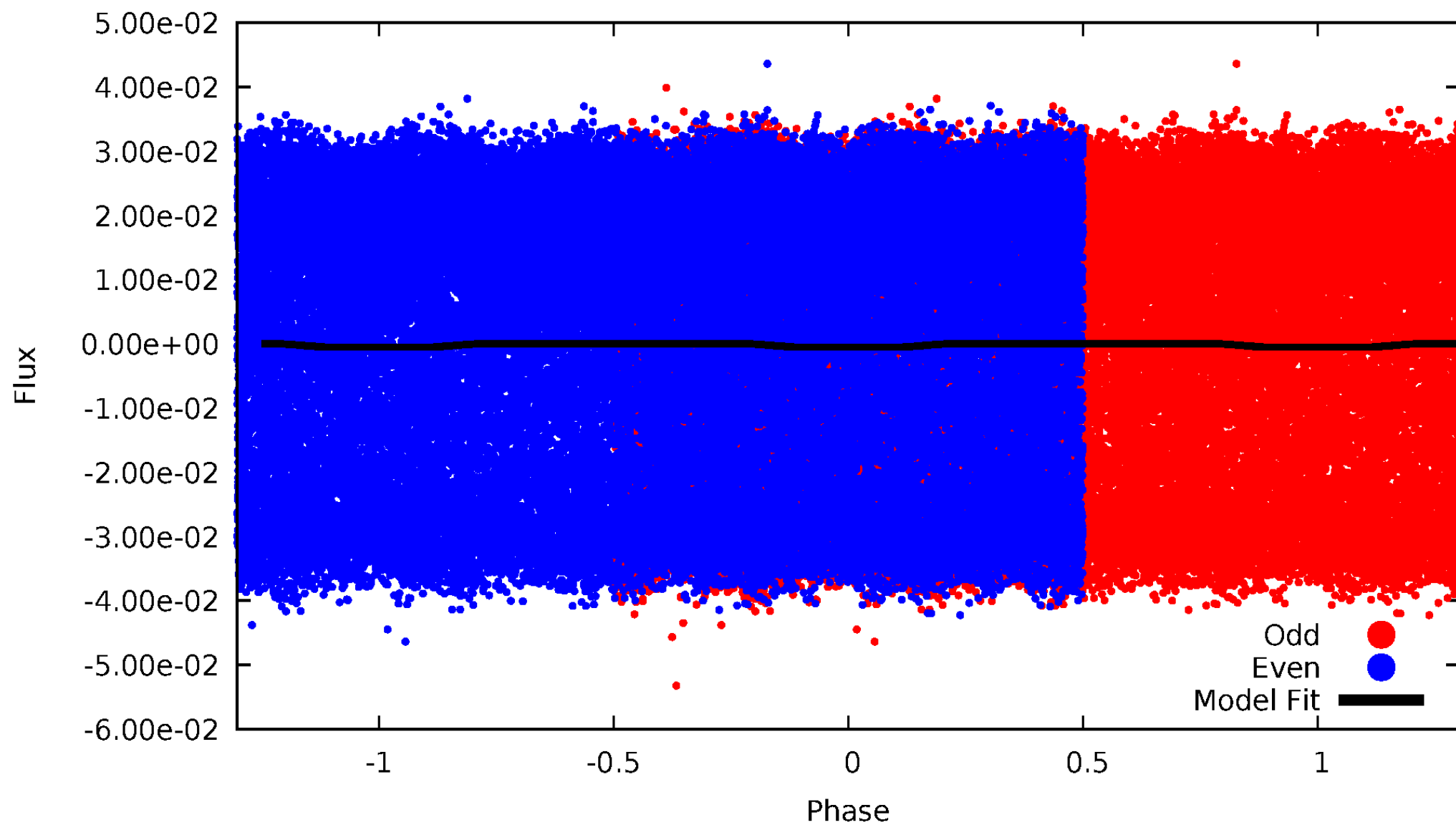
DV Odd/Even

TCE 004927495-01



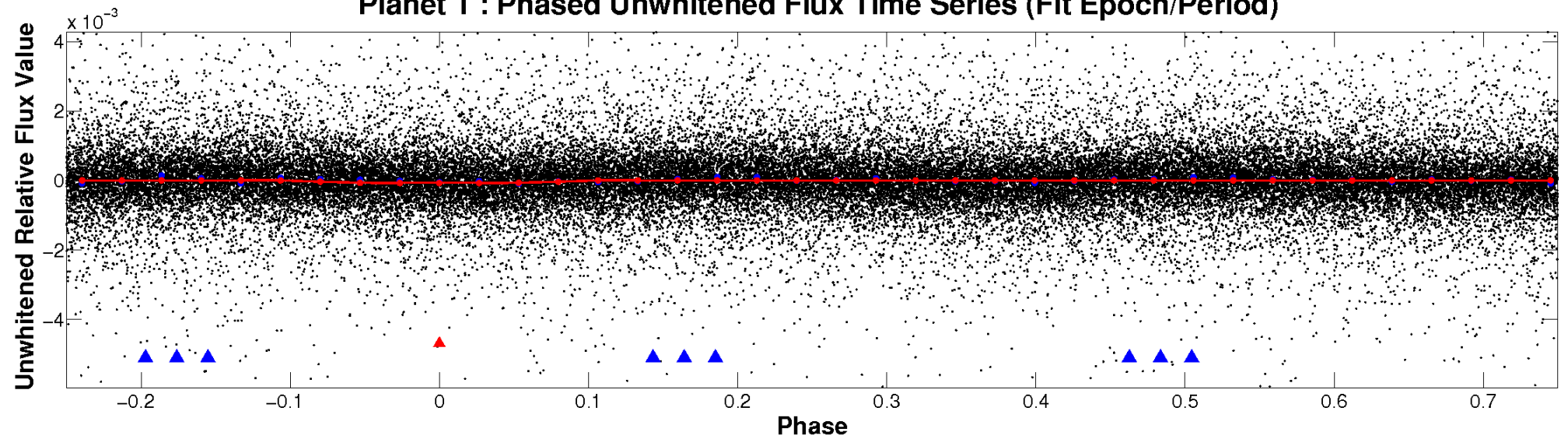
ALT Odd/Even

TCE 004927495-01

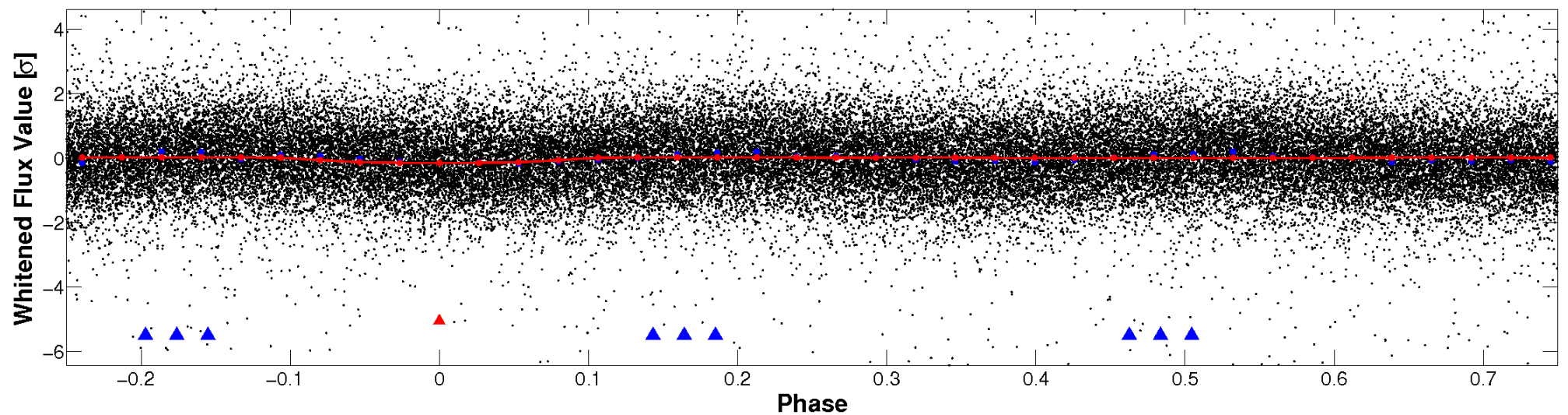


Non-Whitened Vs. Whitened Light Curve

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

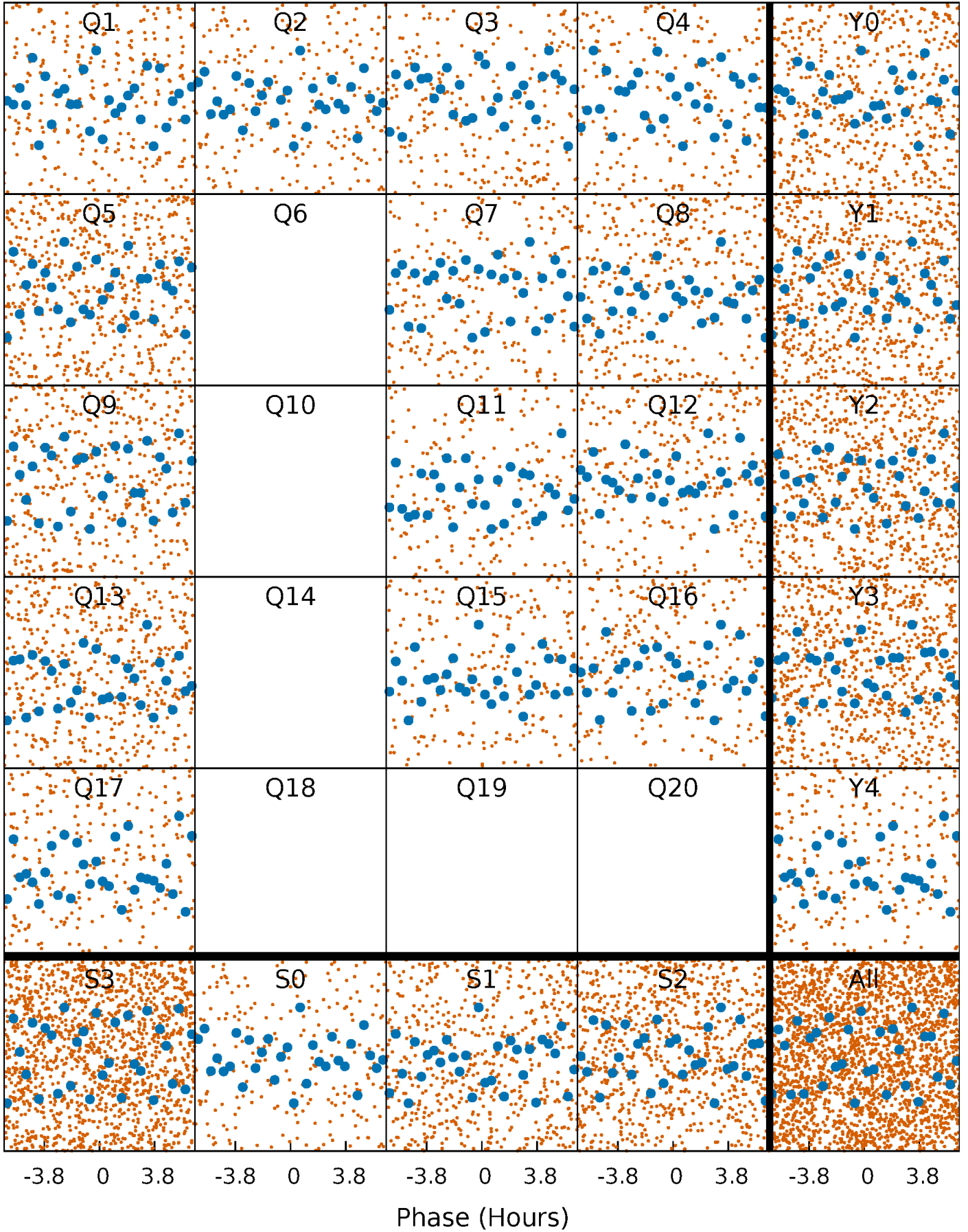


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



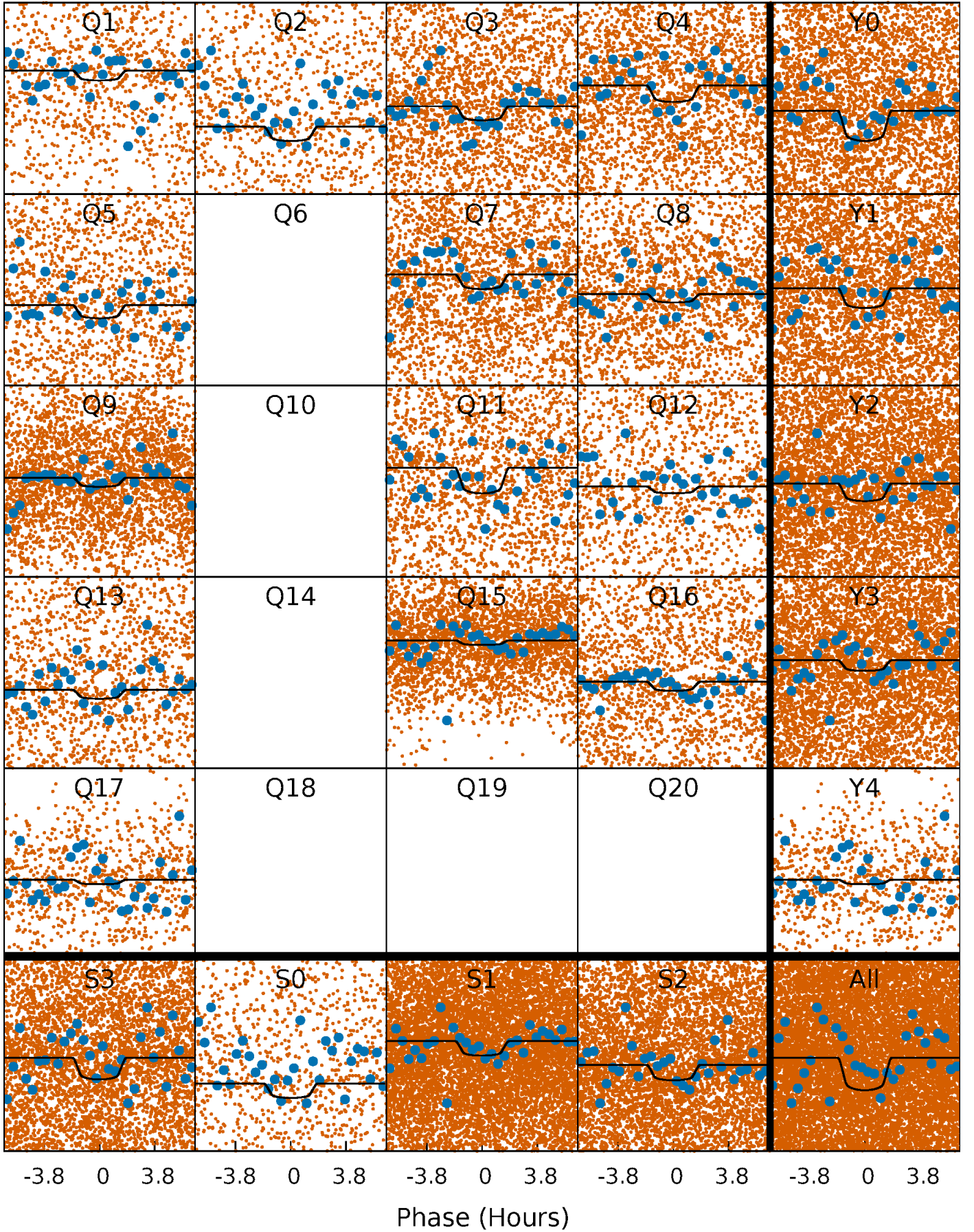
PDC Quarter-Phased Transit Curves

TCE 004927495-01 P= 0.767782 Days $T_0=132.213479$ (BKJD)



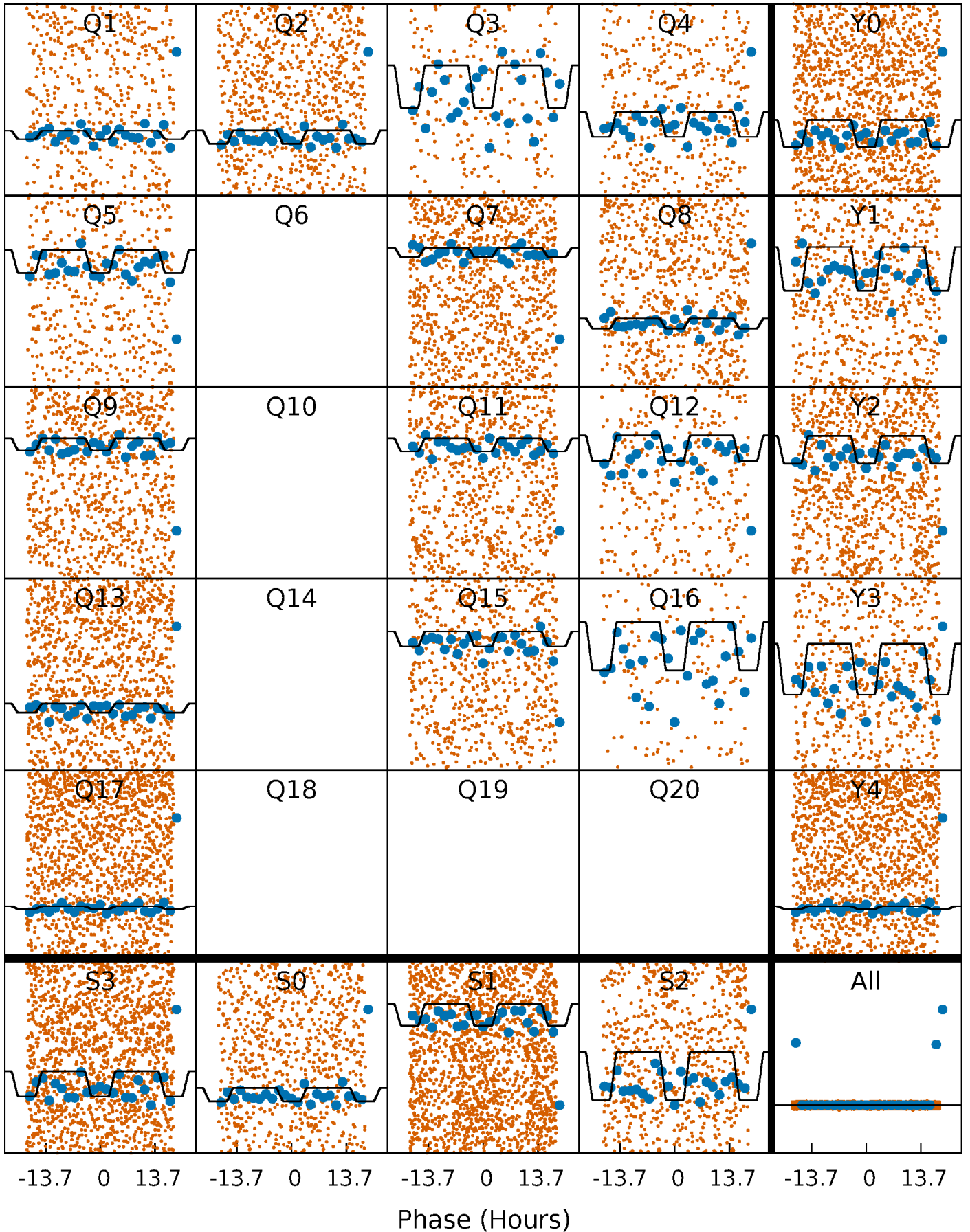
DV Quarter-Phased Transit Curves

TCE 004927495-01 P= 0.767782 Days $T_0=132.213479$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

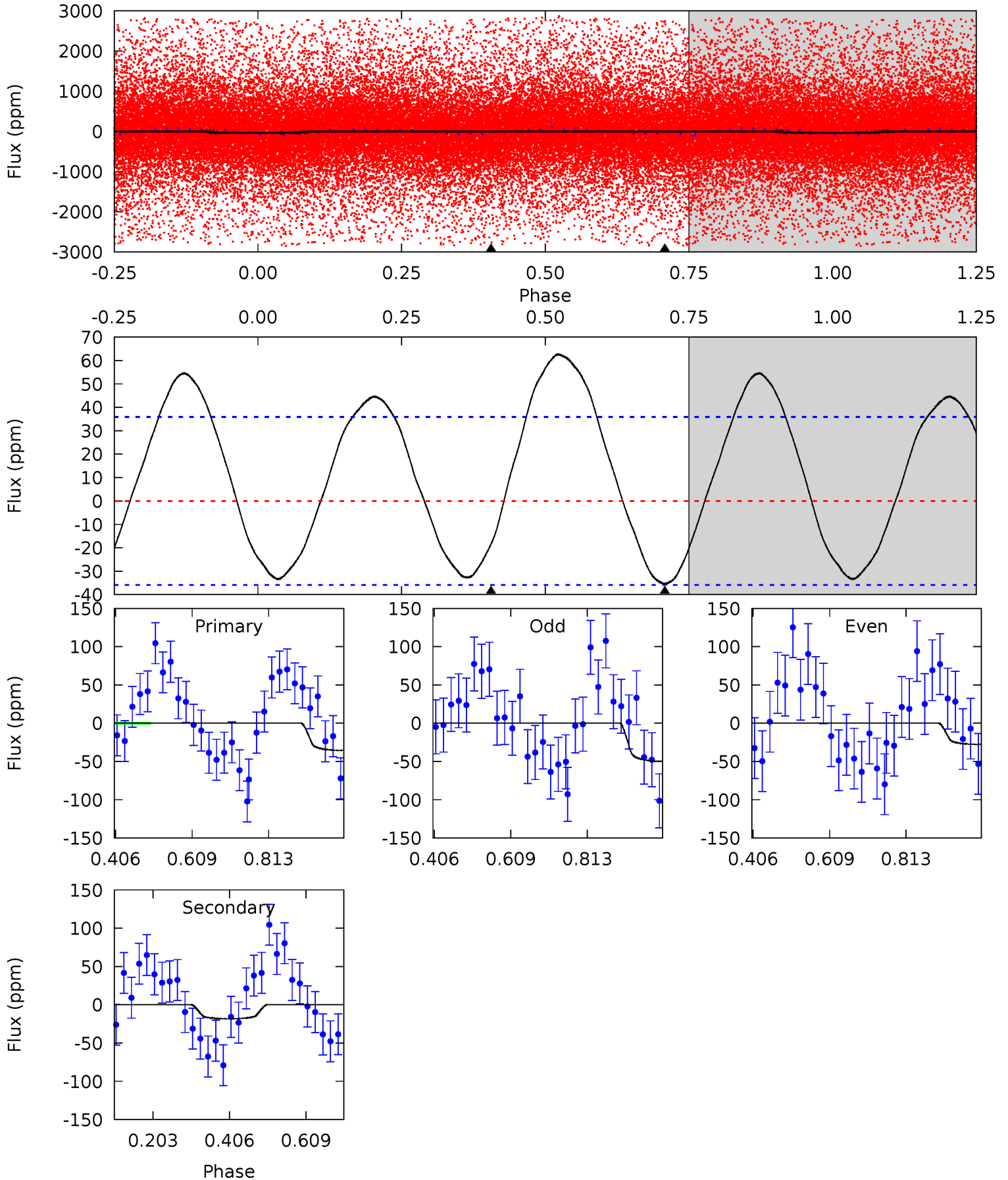
TCE 004927495-01 $P = 0.767830$ Days $T_0 = 132.195017$ (BKJD)



DV Model-Shift Uniqueness Test

004927495-01, P = 0.767782 Days, E = 131.445697 Days

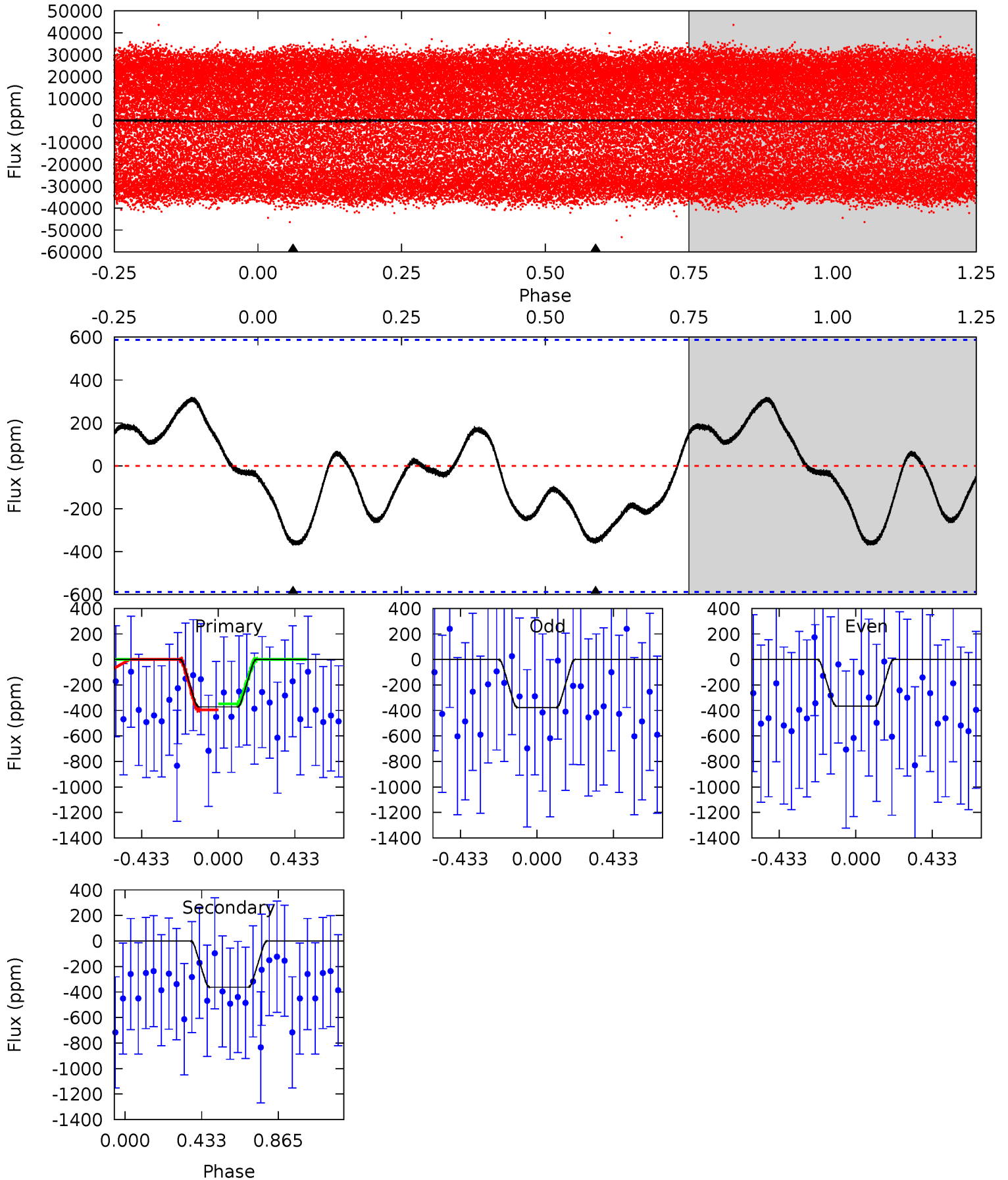
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.36 | 2.26 | 0 | 0 | 4.41 | 1.27 | 3.24 | 4.36 | 4.36 | 2.26 | 2.26 | 1.36 | 0.84 | 0.64 | 2.67 |



Alt Model-Shift Uniqueness Test

004927495-01, P = 0.767830 Days, E = 131.427187 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.69 | 2.62 | 0 | 0 | 4.25 | 0.78 | 0.49 | 2.69 | 2.69 | 2.62 | 2.62 | 0.04 | 1.31 | 0.46 | 0.17 |



Stellar Parameters For KIC 004927495

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 7696^{+214}_{-322} | $3.874^{+0.287}_{-0.123}$ | $0.000^{+0.200}_{-0.350}$ | $2.660^{+0.426}_{-0.993}$ | $1.933^{+0.082}_{-0.467}$ | $0.145^{+0.322}_{-0.047}$ |
| | +3%/-4% | +7%/-3% | +inf%/-inf% | +16%/-37% | +4%/-24% | +222%/-32% |
| Source | KIC0 | 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 004927495-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|---------------------------|
| DV | -18 ± 8 | $2.59^{+1.10}_{-0.99}$ | 5333^{+356}_{-491} | 4437^{+1488}_{-7838} | $0.599^{+1.060}_{-0.359}$ |
| Alt. | -363 ± 138 | $6.15^{+1.36}_{-1.41}$ | 5354^{+334}_{-482} | 6710^{+1118}_{-1078} | $2.116^{+1.739}_{-0.976}$ |

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 $A_{obs} \gg 1.0$

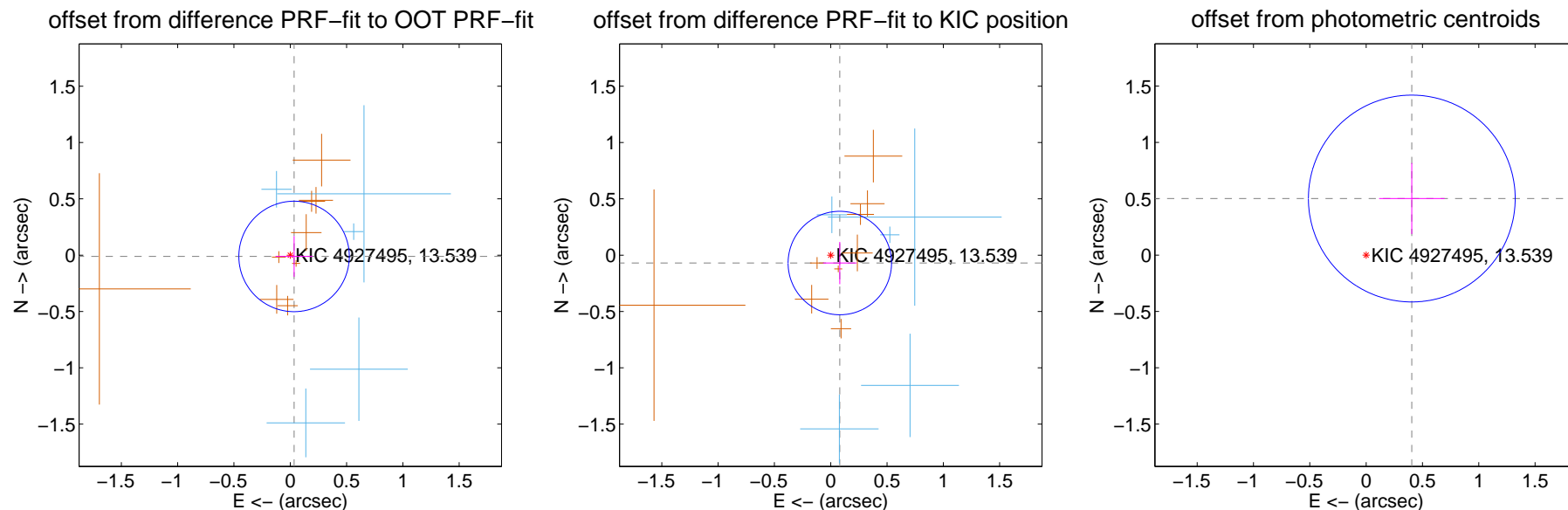
DV Centroid Data

Supplemental centroid analysis for 004927495-01. Kepler magnitude: 13.54. Transit SNR 12.62

There are 5 quarters with good PRF difference image offsets

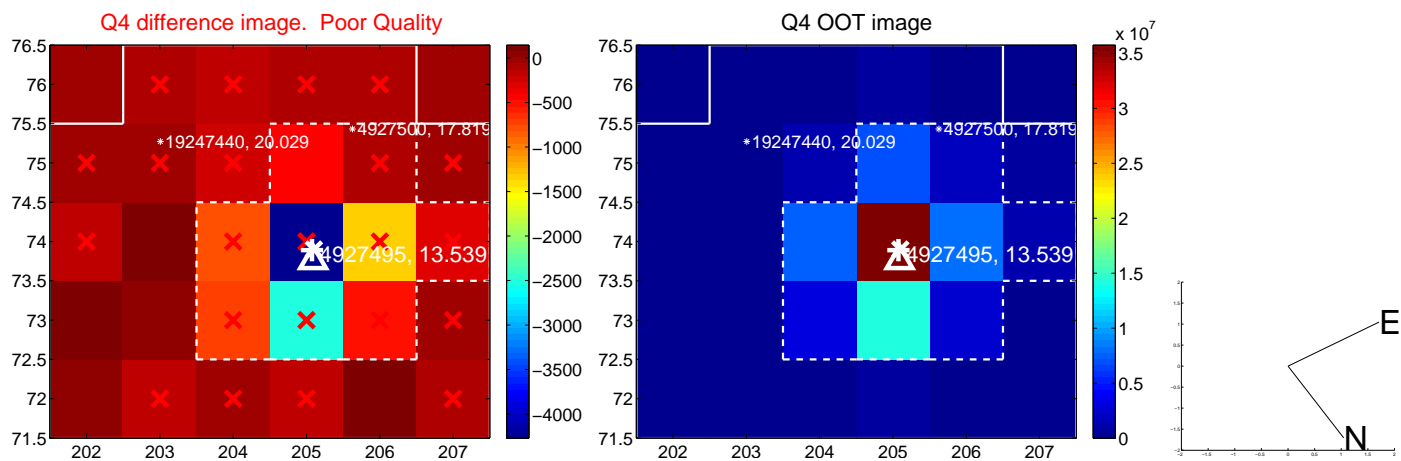
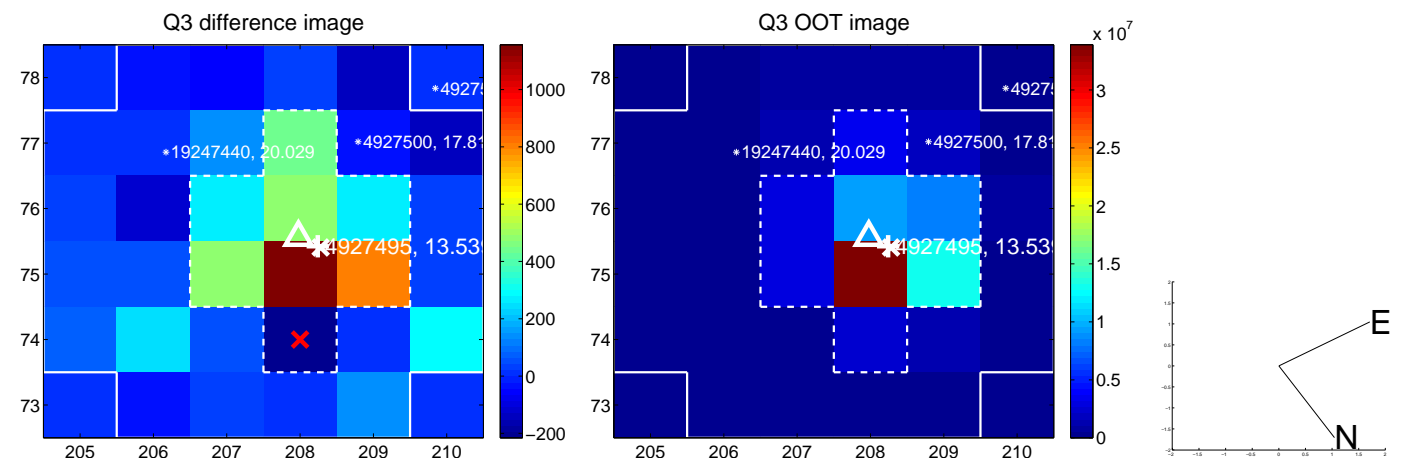
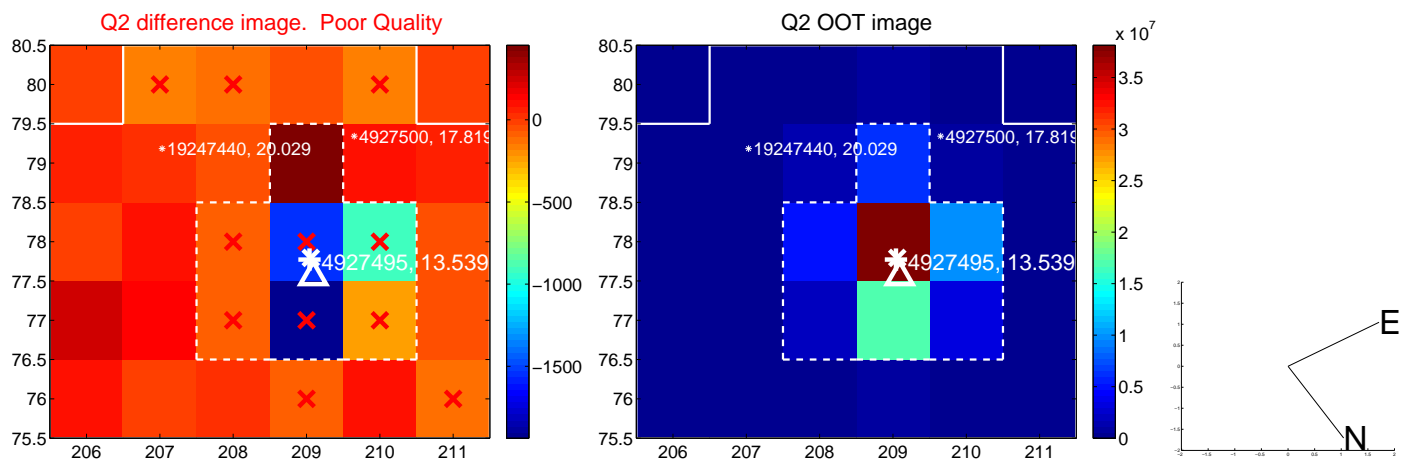
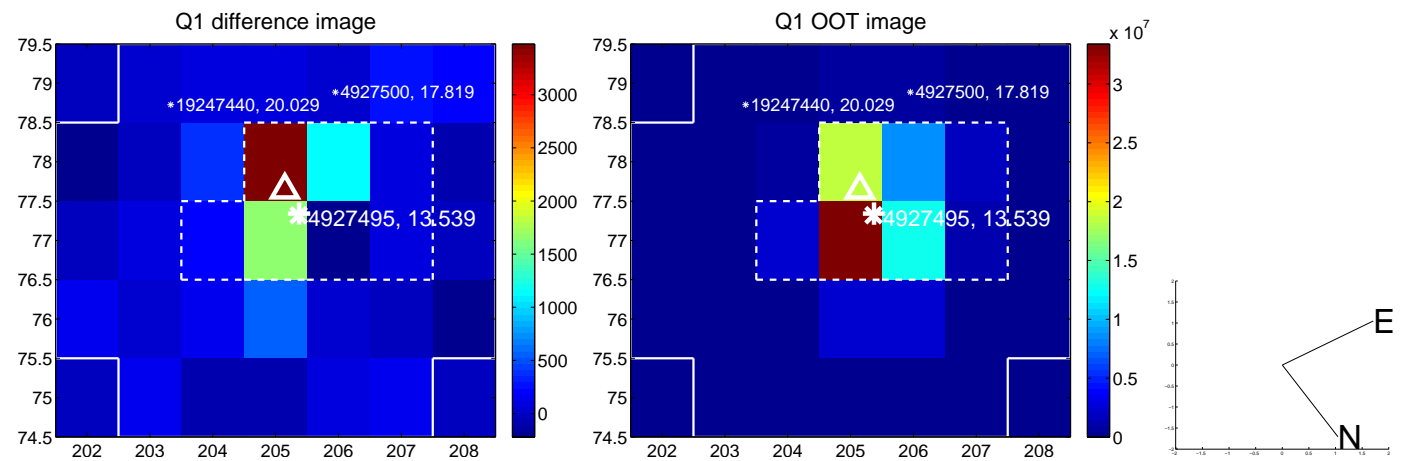
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.036 ± 0.163 | 0.22 | -0.034 ± 0.165 | -0.011 ± 0.181 |
| PRF-fit source offset from KIC position | 0.107 ± 0.153 | 0.70 | -0.081 ± 0.149 | -0.070 ± 0.188 |
| photometric centroid source offset | 0.65 ± 0.31 | 2.11 | -0.41 ± 0.29 | 0.50 ± 0.32 |

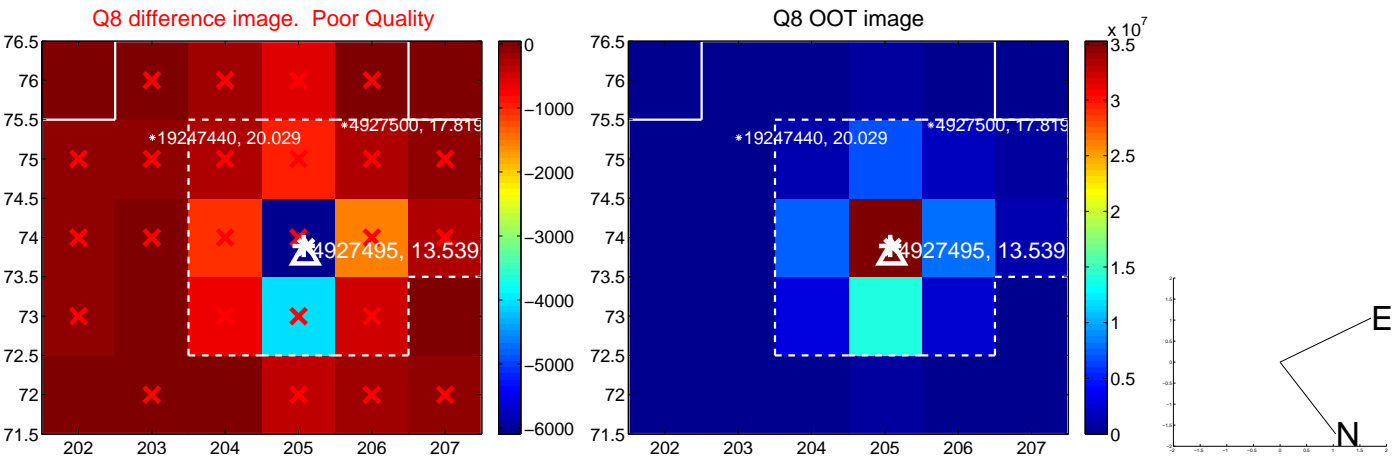
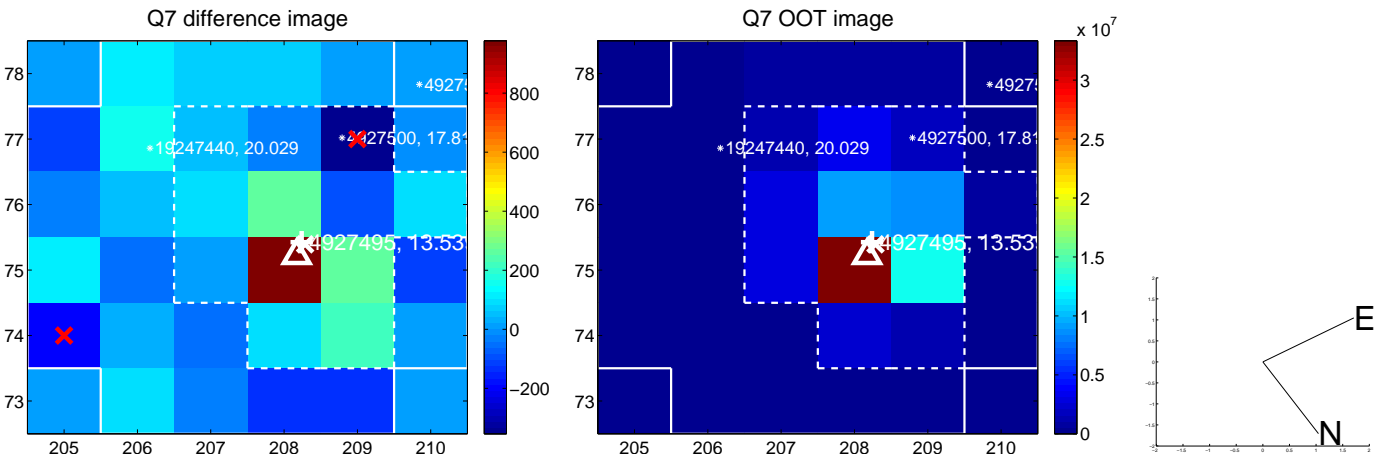
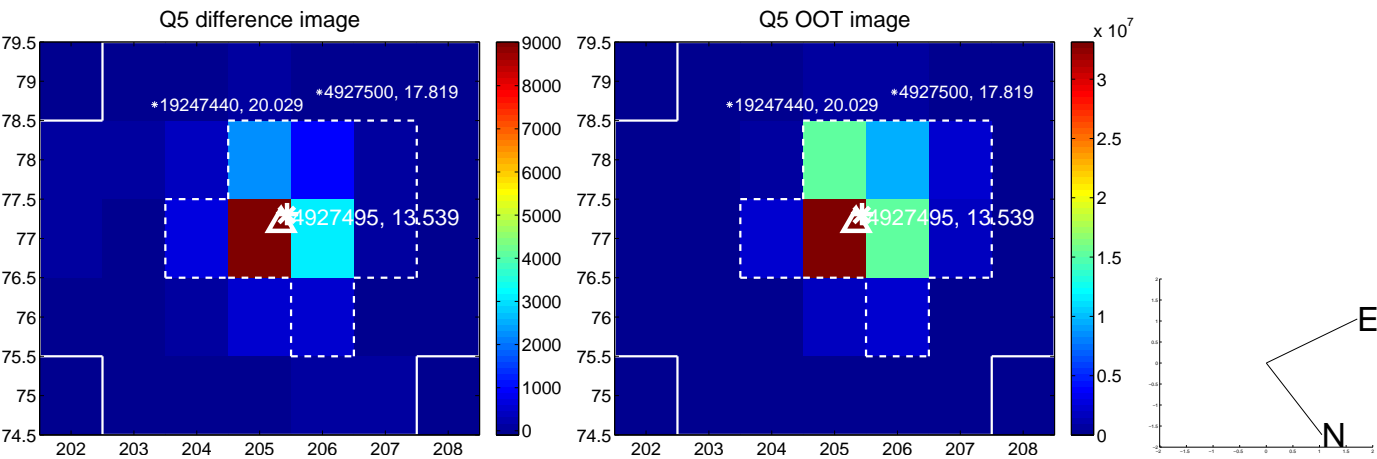


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

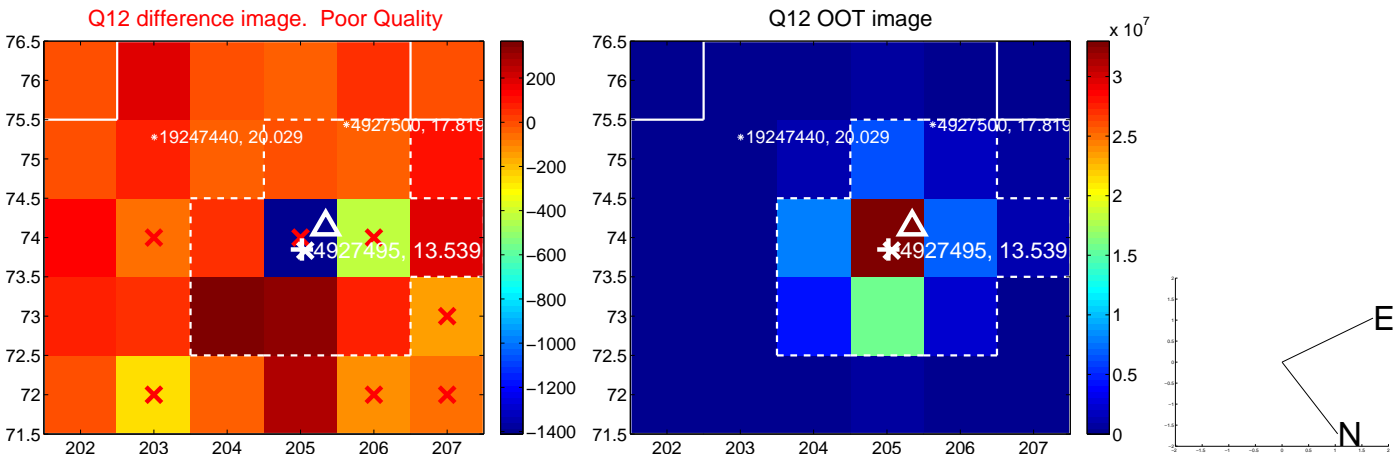
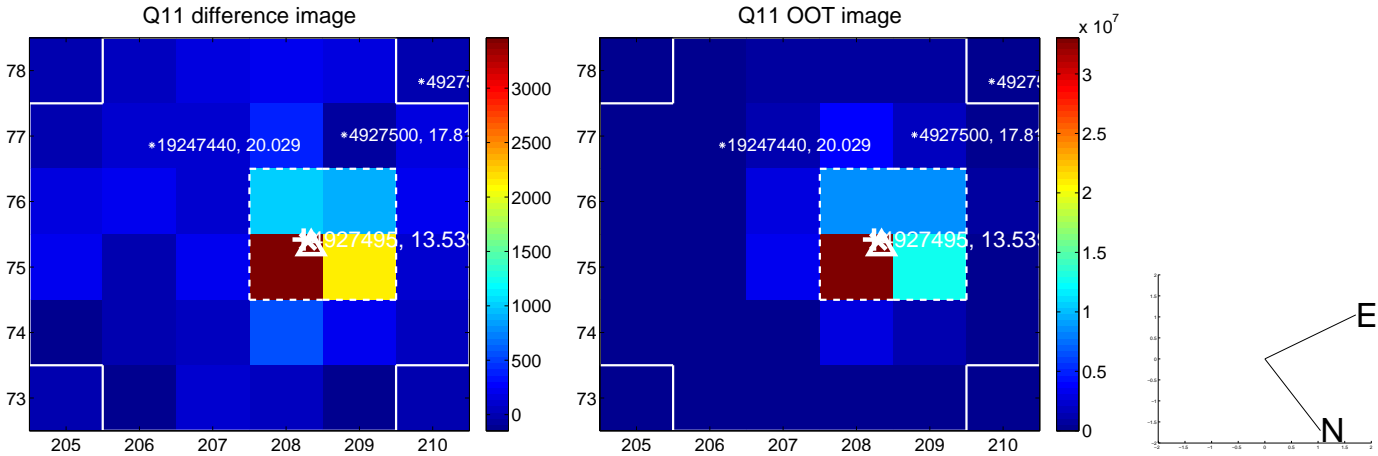
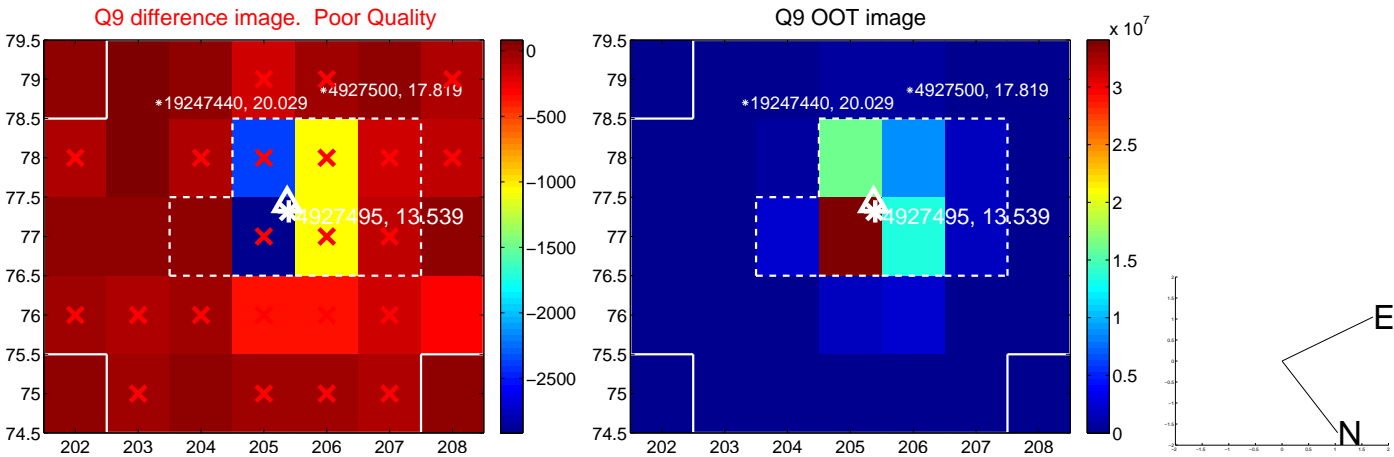
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



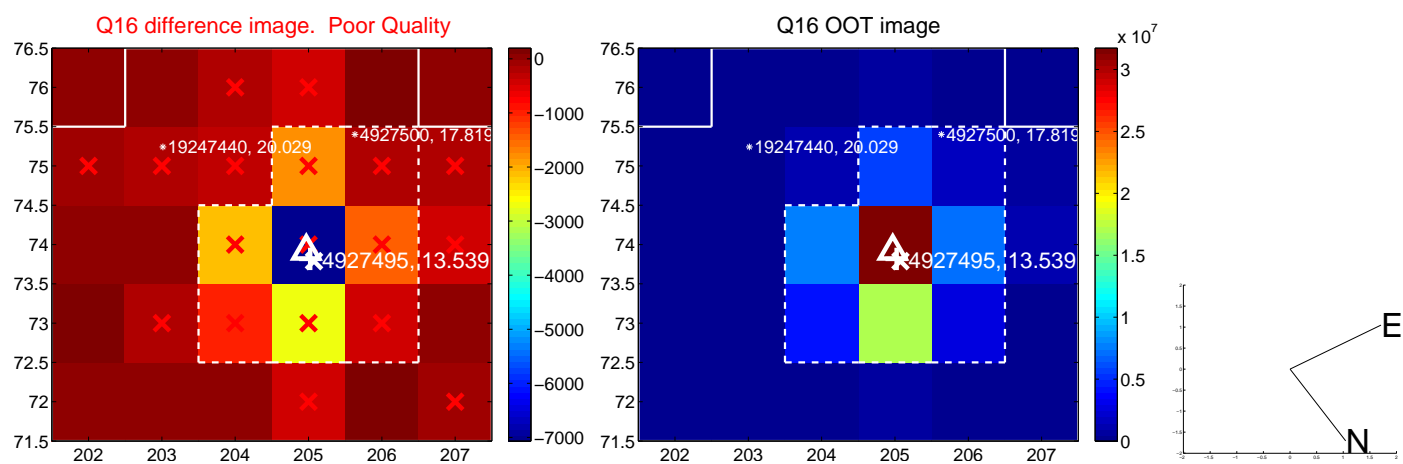
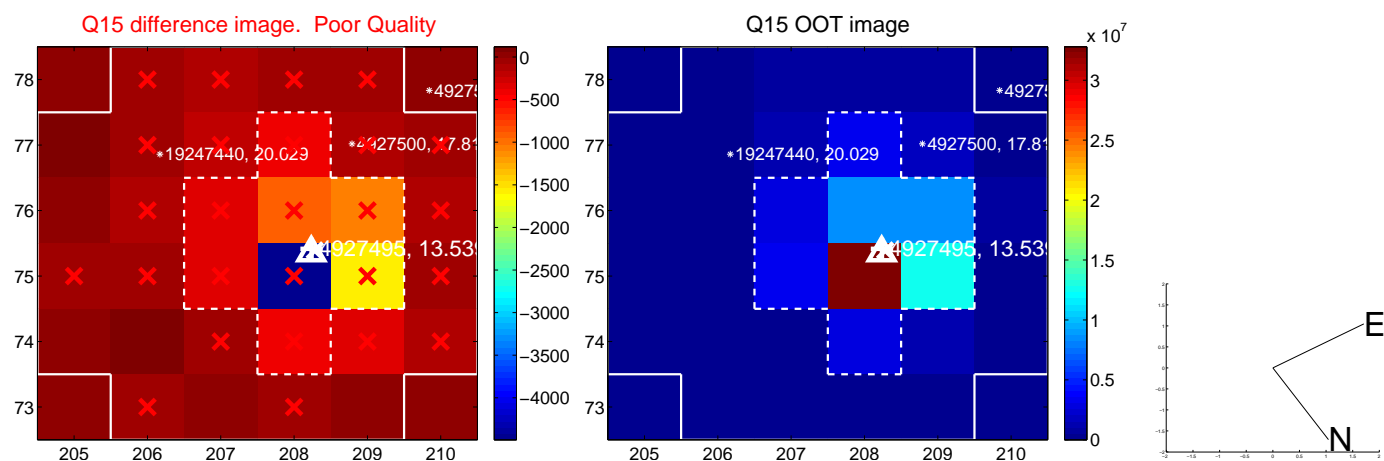
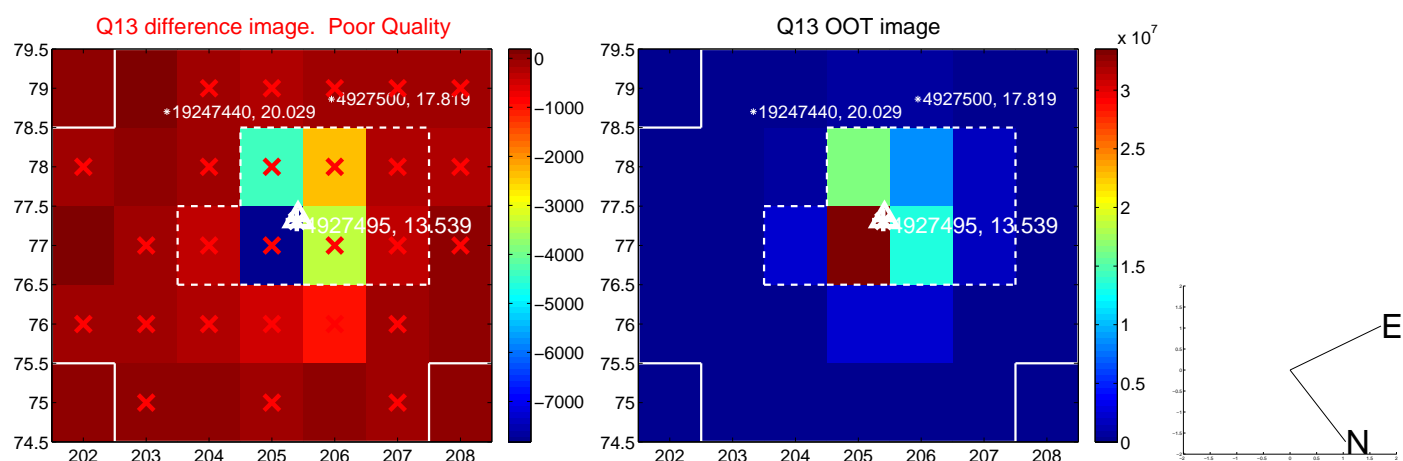
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



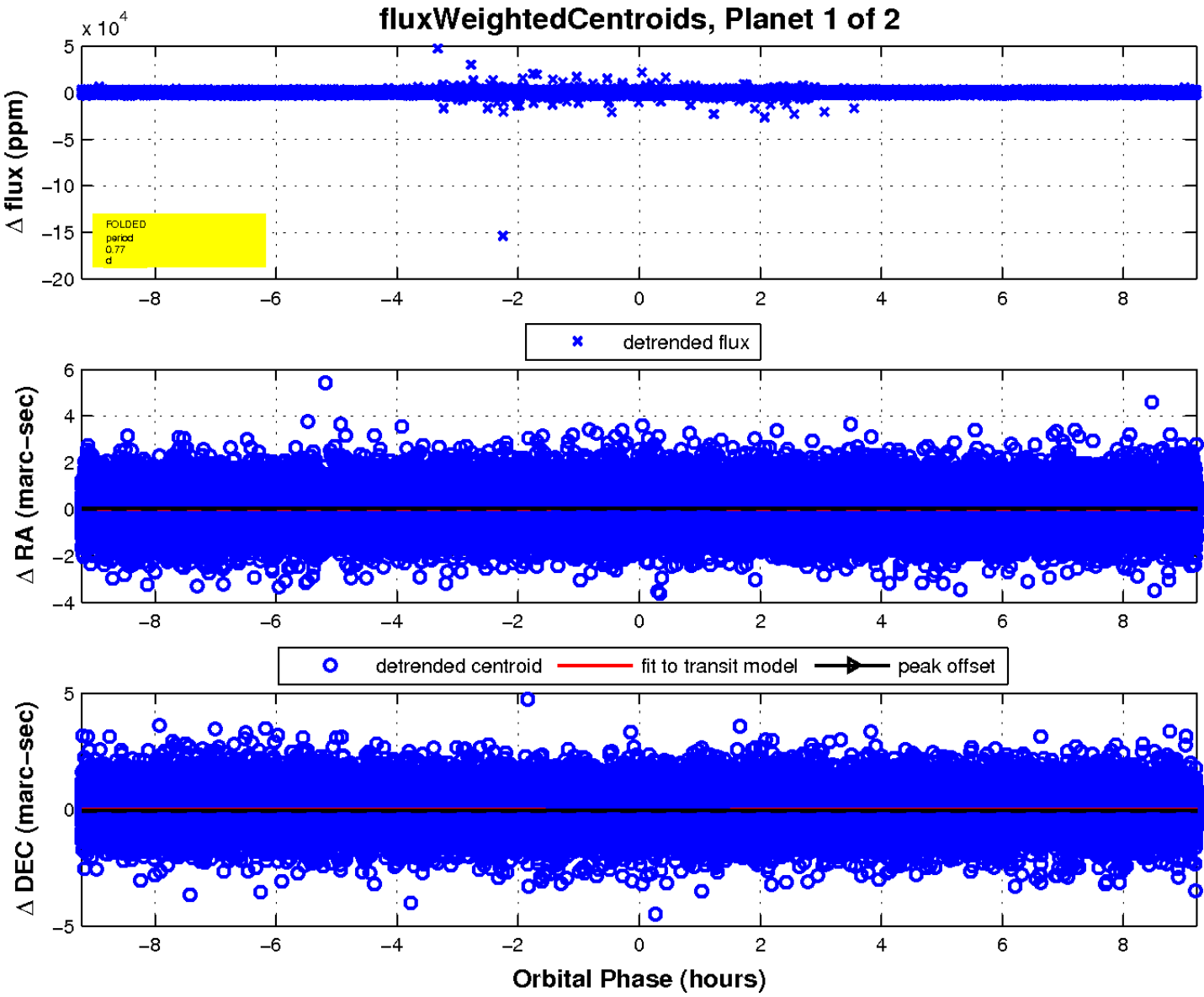
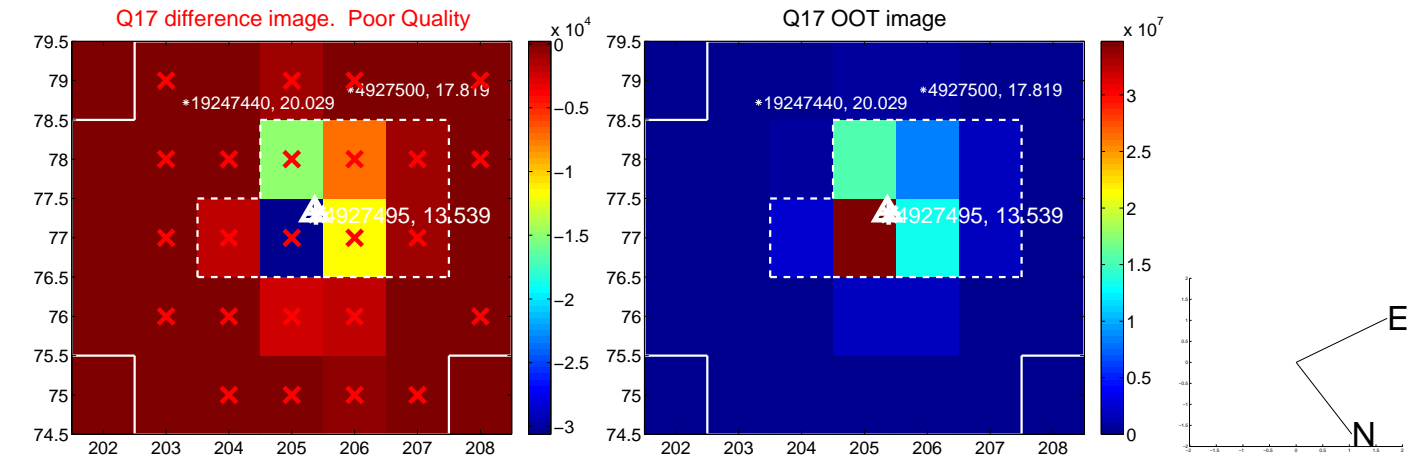
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

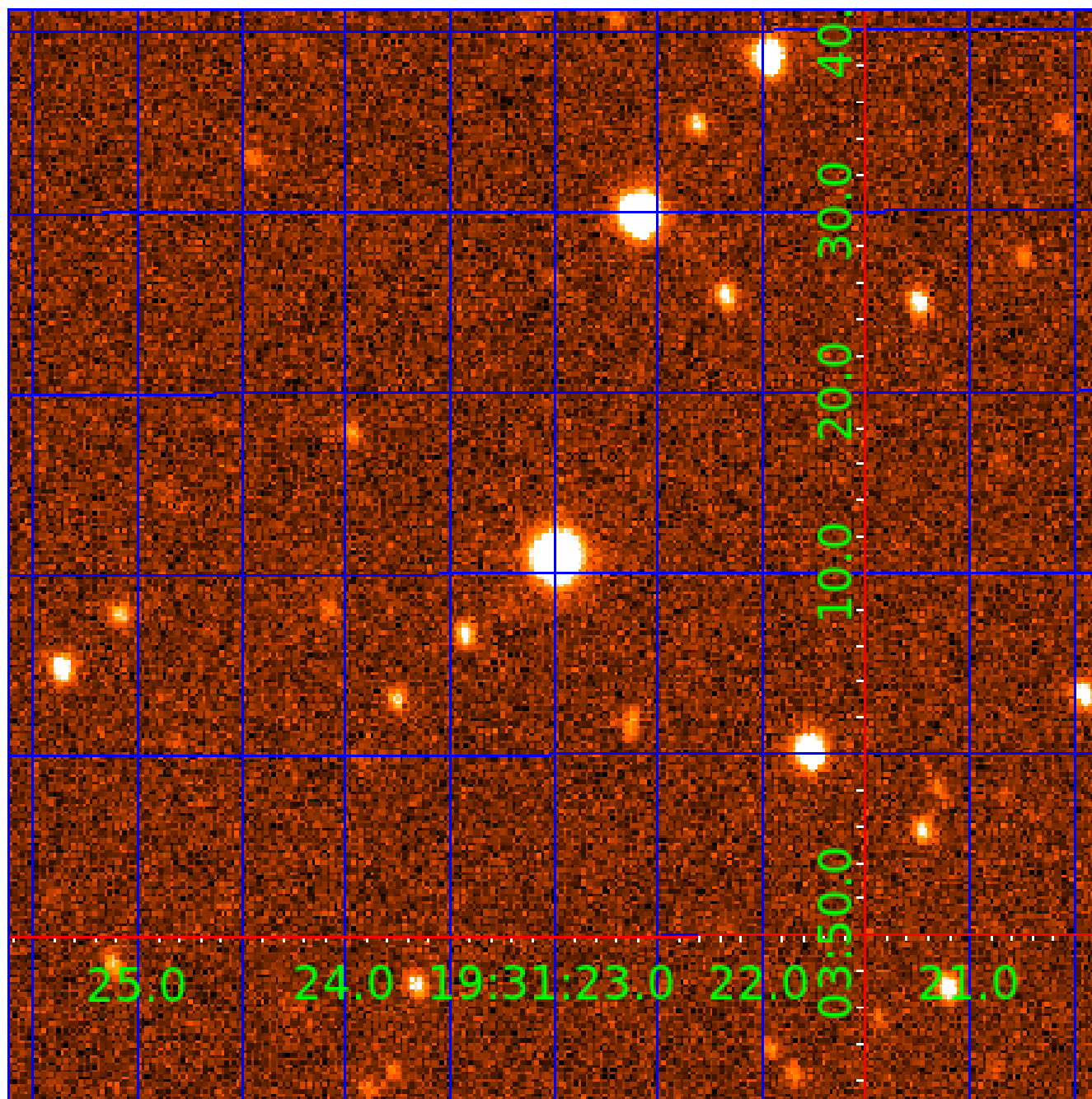


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004927495

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 004927495-01 | OBS | No | 0.767782 | 132.213478 | 77.9 | 3.299 | 13.4 | 12.6 | 2.66 | 7696 | 2.78 | 53238.43 |
| 004927495-02 | OBS | No | 153.049880 | 251.574889 | 5812.4 | 2.669 | 21.1 | 19.9 | 2.66 | 7696 | 29.92 | 45.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004927495-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 004927495-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST |

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

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

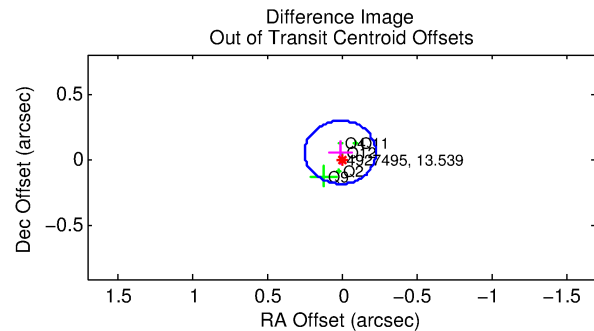
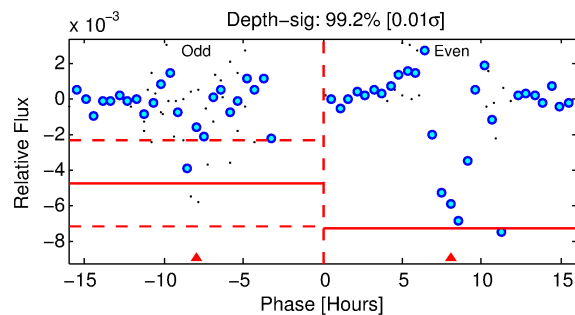
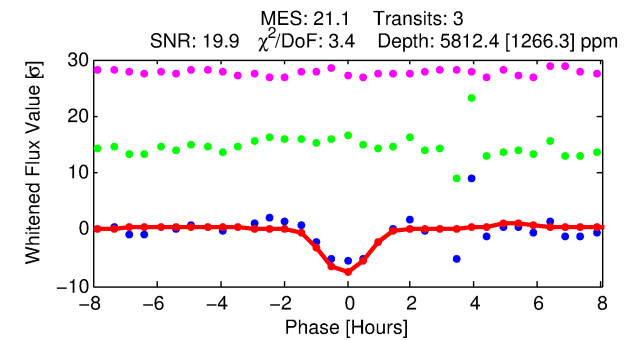
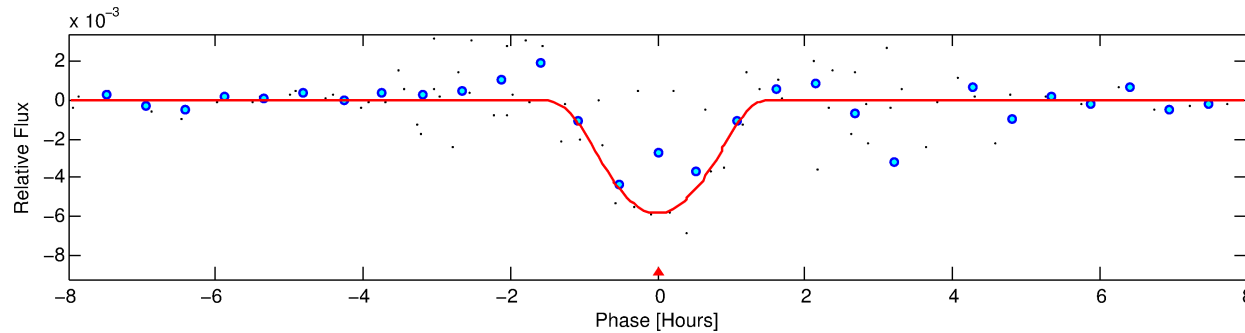
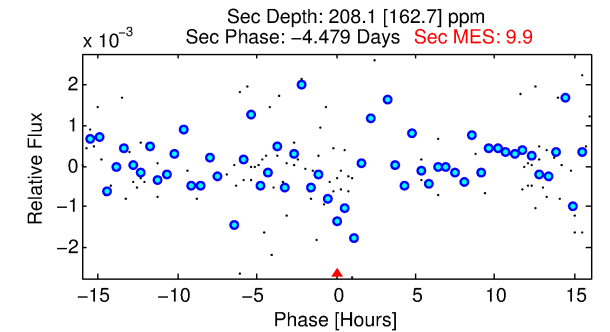
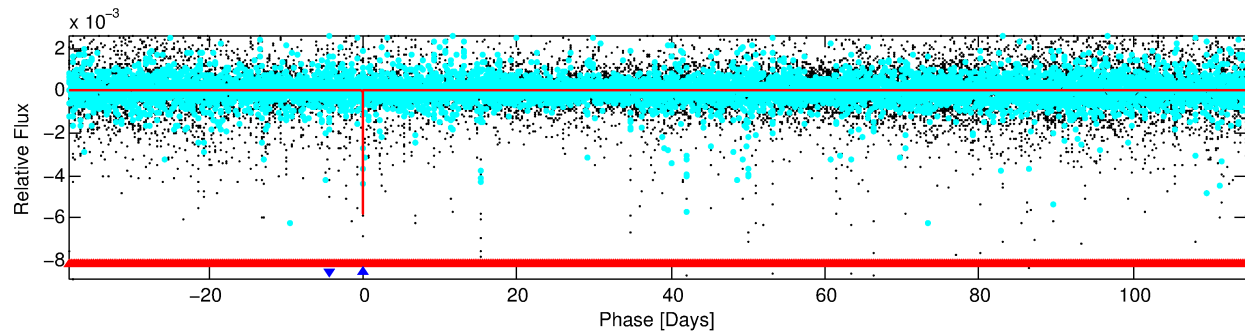
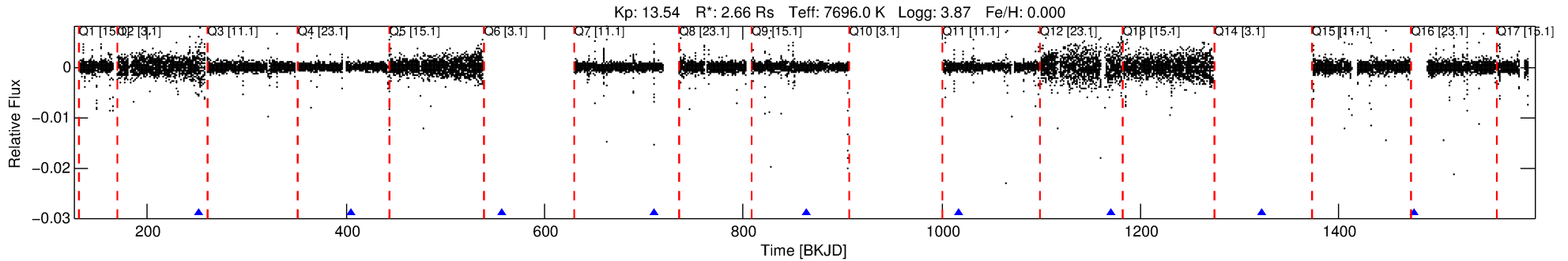
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004927495-02

No Significant Match Found

DV One-Page Summary

KIC: 4927495 Candidate: 2 of 2 Period: 153.050 d



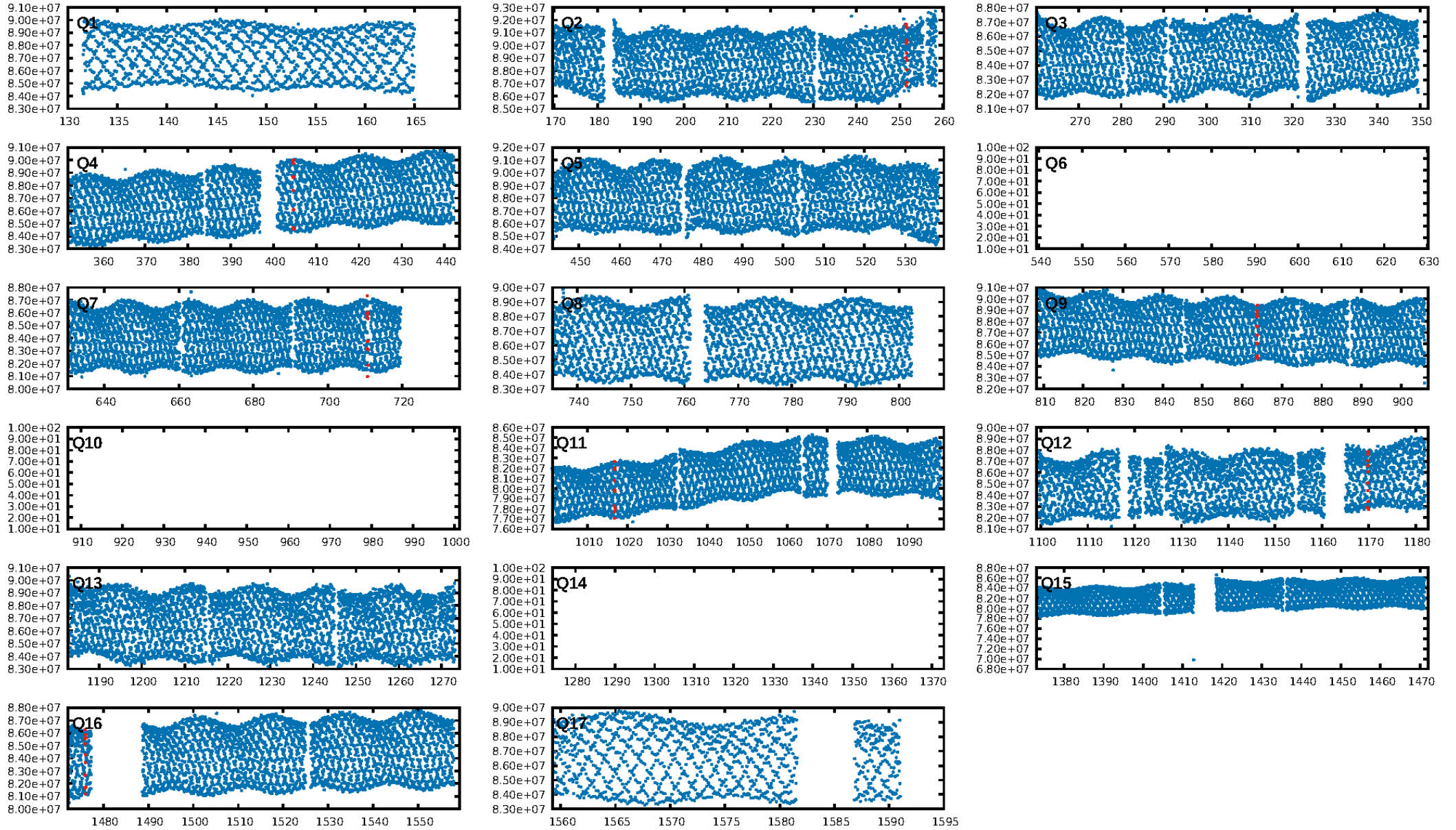
DV Fit Results:

Period = 153.04988 [0.00251] d
Epoch = 251.5749 [0.0087] BKJD
Rp/R* = 0.1031 [0.4595]
a/R* = 233.35 [303.63]
b = 0.97 [0.81]
Seff = 45.72 [24.37]
Teq = 663 [88] K
Rp = 29.92 [133.85] Re
a = 0.6974 [0.2318] AU
Ag = 62.20 [557.54] [0.11σ]
Teffp = 2879 [6443] K [0.34σ]

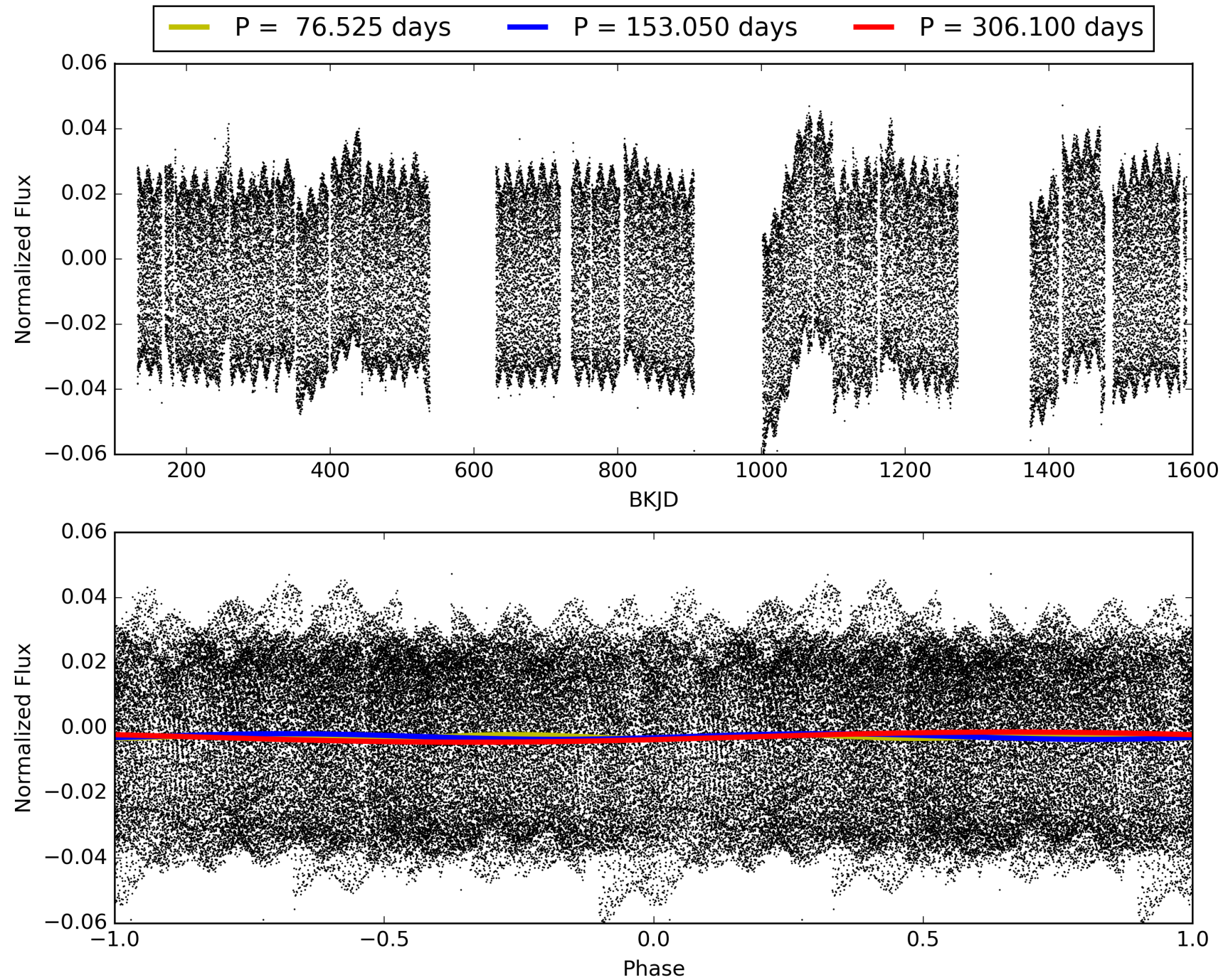
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [861.21σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 2.2%
Bootstrap-pfa: 1.33e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.1161
Centroid-sig: 94.1%
Centroid-so: 0.206 arcsec [2.26σ]
OotOffset-rm: 0.059 arcsec [0.74σ]
KicOffset-rm: 0.118 arcsec [1.41σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.20 [1/5]

TCE 004927495-02, PDC Light Curves

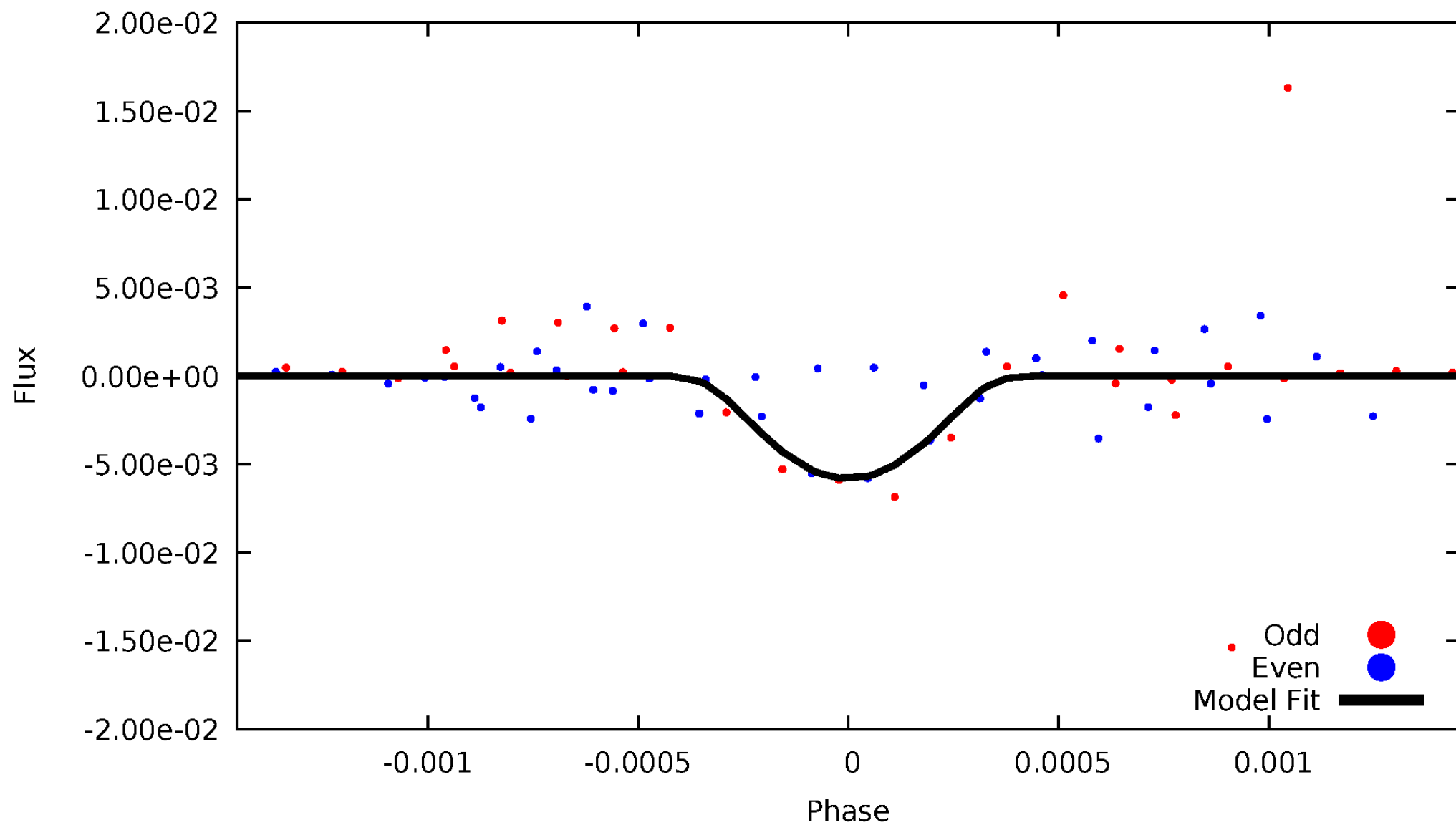


TCE 004927495-02



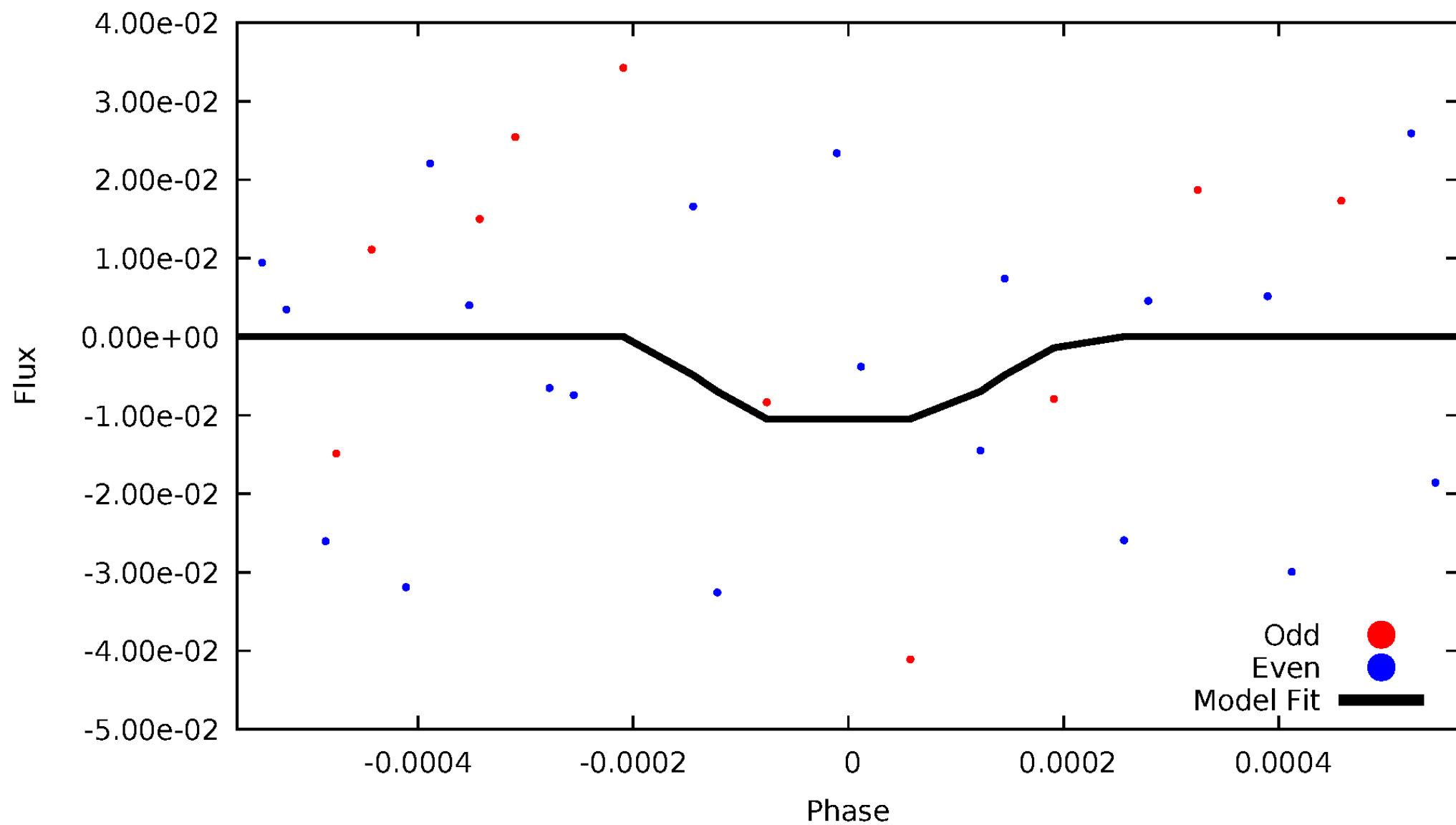
DV Odd/Even

TCE 004927495-02



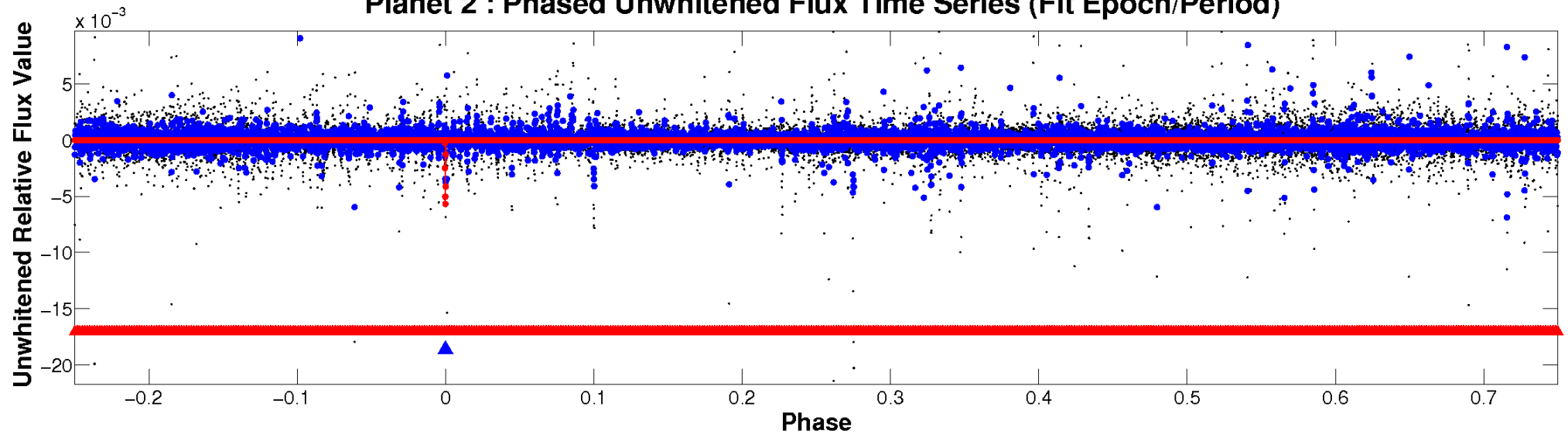
ALT Odd/Even

TCE 004927495-02

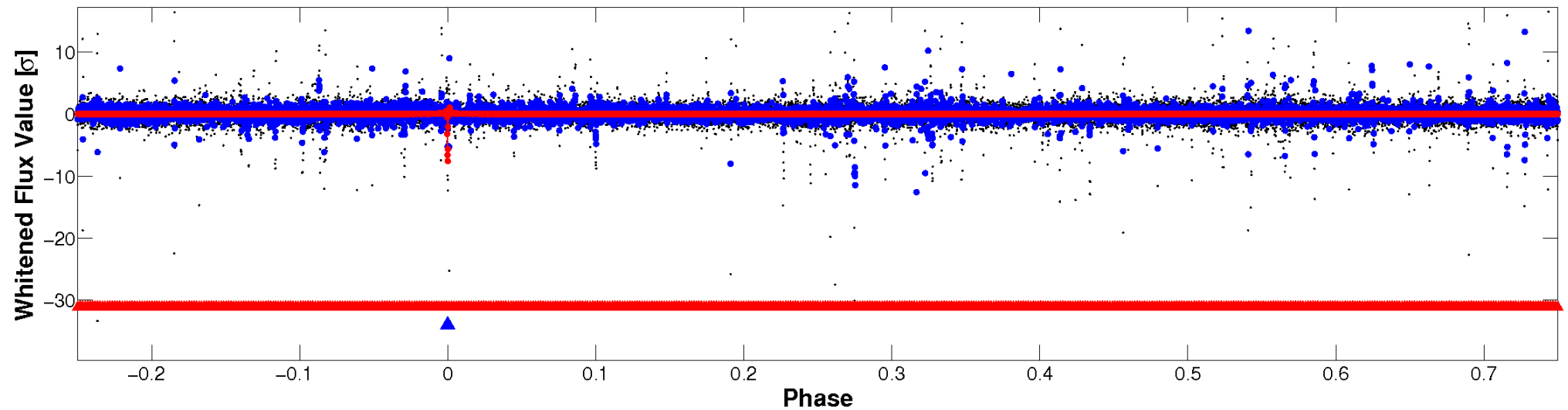


Non-Whitened Vs. Whitened Light Curve

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

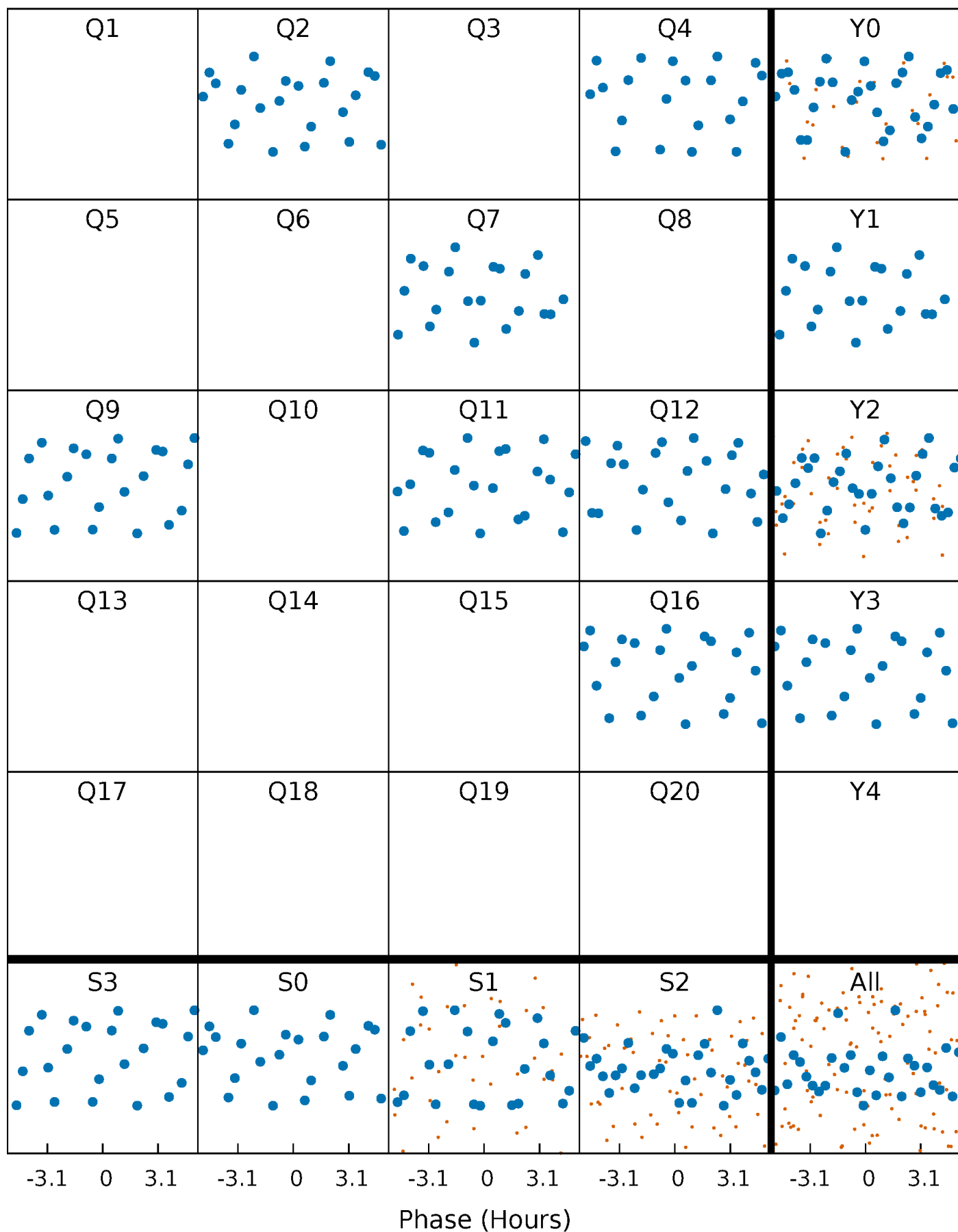


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



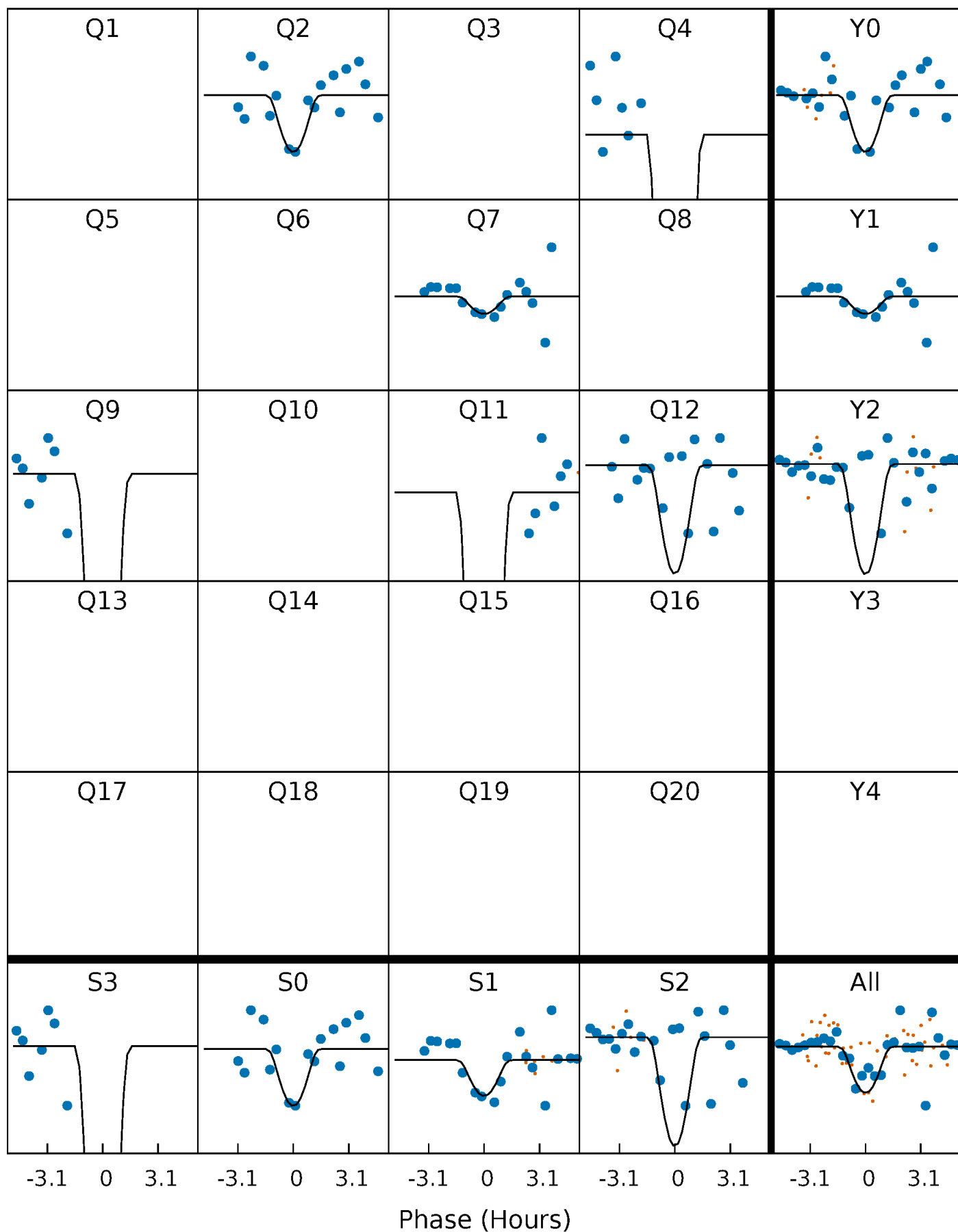
PDC Quarter-Phased Transit Curves

TCE 004927495-02 P=153.049880 Days $T_0=251.574889$ (BKJD)



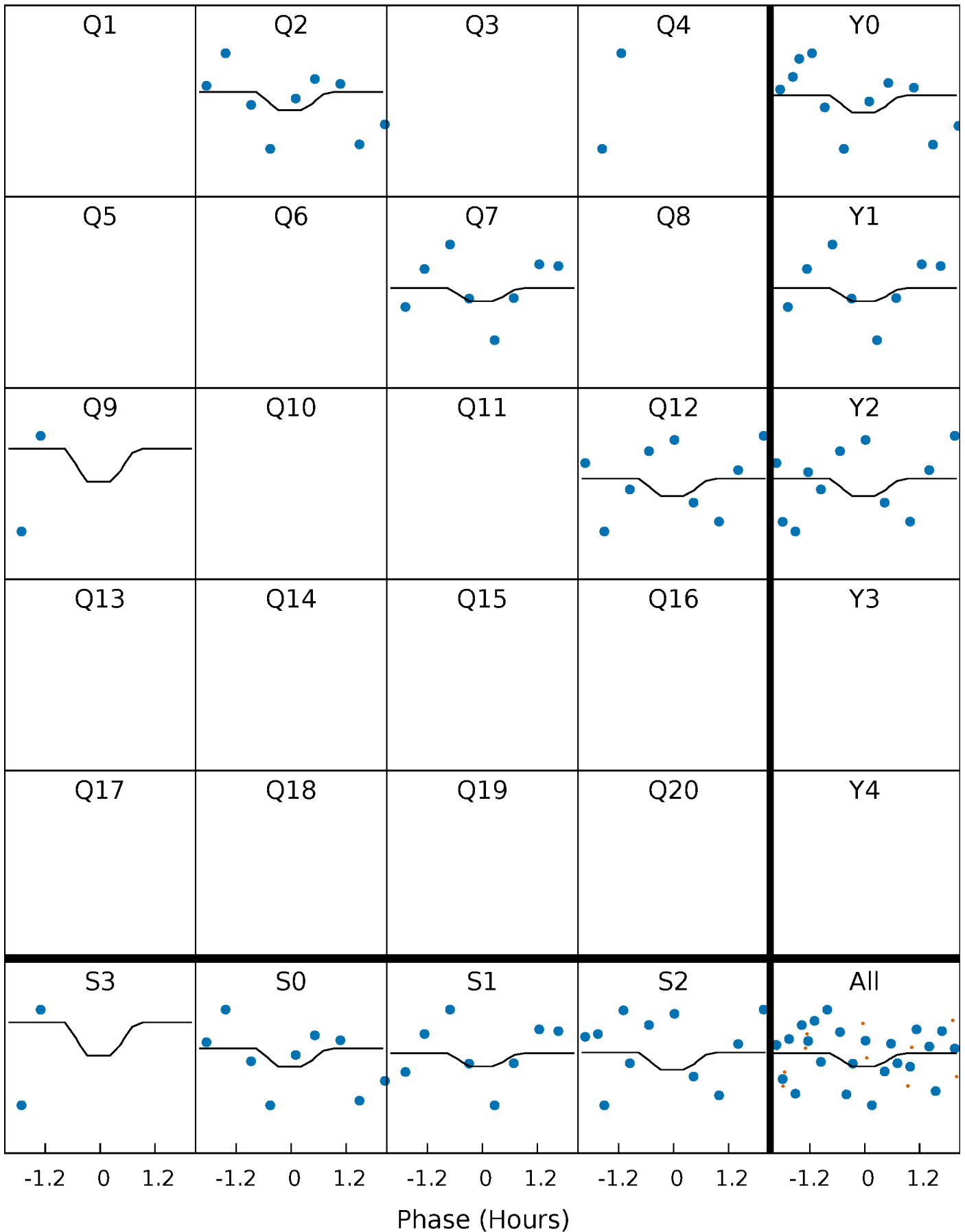
DV Quarter-Phased Transit Curves

TCE 004927495-02 P=153.049880 Days $T_0=251.574889$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

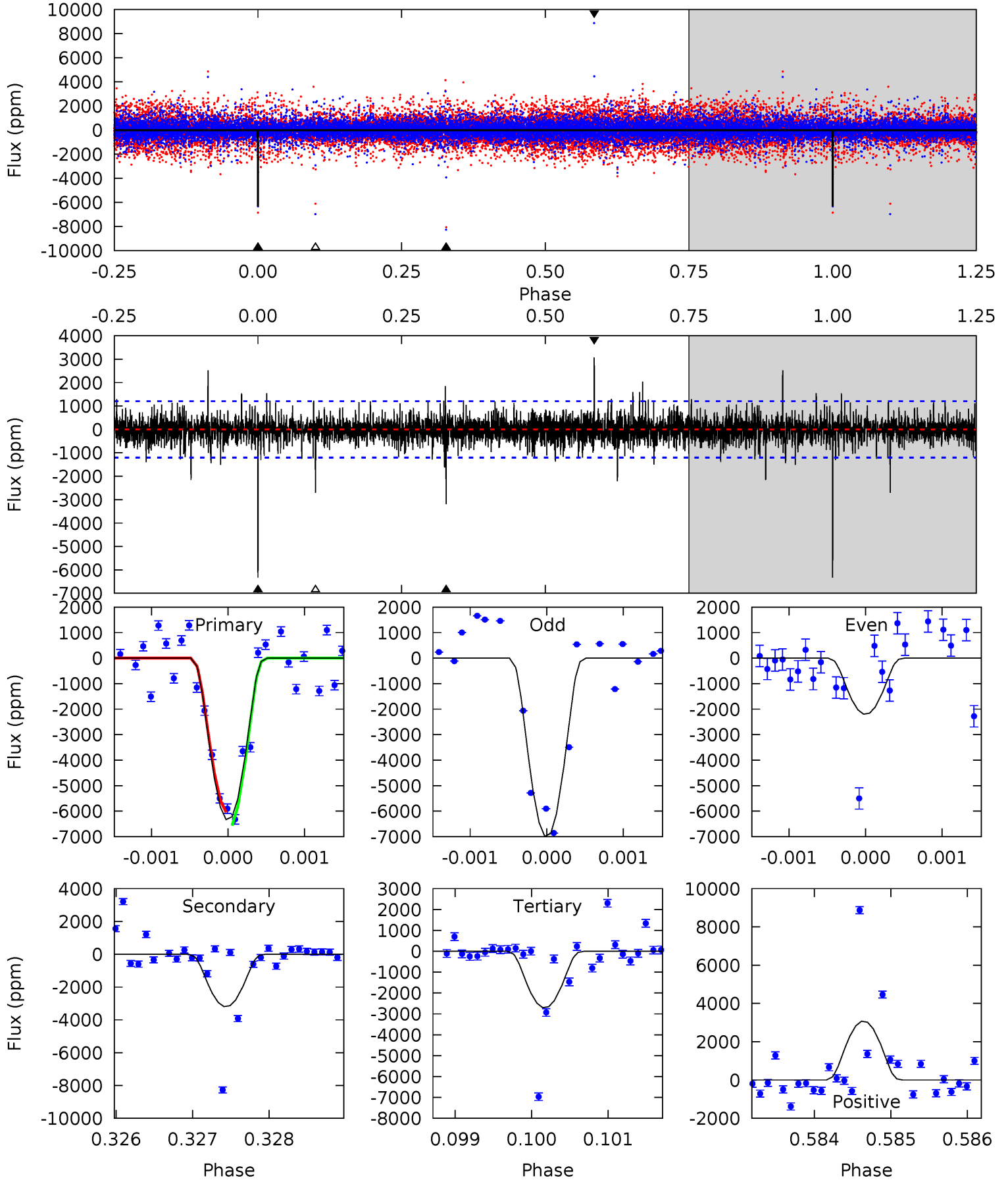
TCE 004927495-02 P=153.050835 Days $T_0=251.539261$ (BKJD)



DV Model-Shift Uniqueness Test

004927495-02, P = 153.049880 Days, E = 98.525009 Days

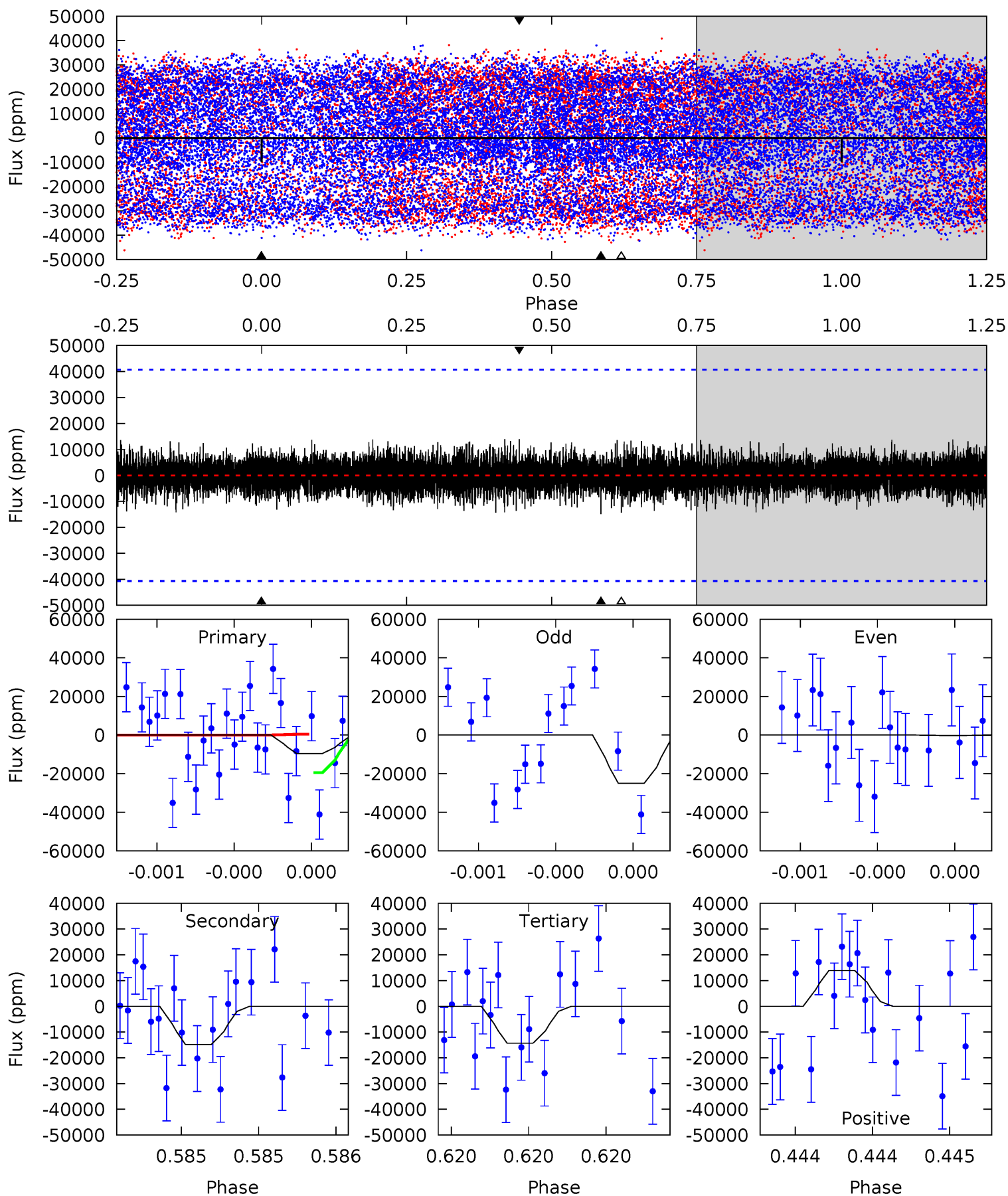
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 28.7 | 14.5 | 12.3 | 13.9 | 5.48 | 3.33 | 1.65 | 16.5 | 14.8 | 2.23 | 0.55 | 11.0 | 0.92 | 0.33 | 1.20 |



Alt Model-Shift Uniqueness Test

004927495-02, $P = 153.050835$ Days, $E = 98.488426$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1.32 | 2.05 | 1.98 | 1.92 | 5.61 | 3.54 | 0.59 | -0.66 | -0.60 | 0.07 | 0.13 | 1.66 | 0.64 | 0.48 | 1.27 |



Stellar Parameters For KIC 004927495

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 7696^{+214}_{-322} | $3.874^{+0.287}_{-0.123}$ | $0.000^{+0.200}_{-0.350}$ | $2.660^{+0.426}_{-0.993}$ | $1.933^{+0.082}_{-0.467}$ | $0.145^{+0.322}_{-0.047}$ |
| | +3%/-4% | +7%/-3% | +inf%/-inf% | +16%/-37% | +4%/-24% | +222%/-32% |
| Source | KIC0 | 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 004927495-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|----------------------------|----------------------|------------------------|----------------------|
| DV | -3193±220 | $92.45^{+103.26}_{-61.95}$ | 911^{+61}_{-81} | 3532^{+1784}_{-703} | 96^{+780}_{-74} |
| Alt. | -14843±7251 | $94.35^{+101.50}_{-65.78}$ | 916^{+60}_{-81} | 4565^{+3879}_{-1072} | 409^{+4151}_{-319} |

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

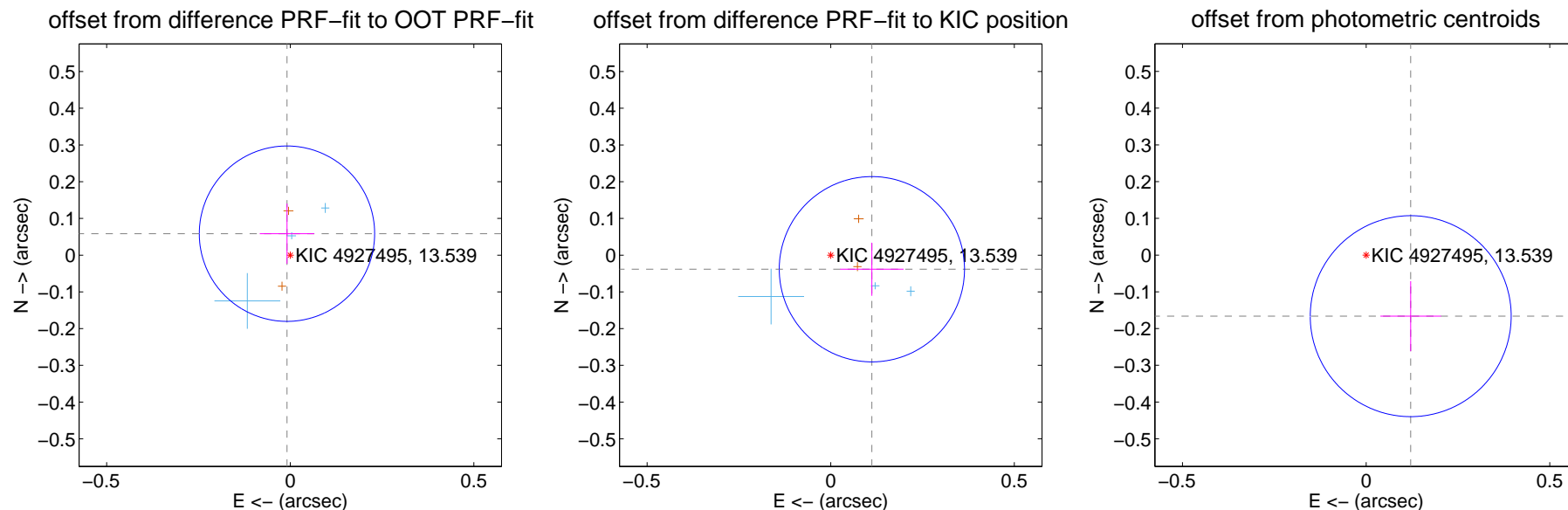
DV Centroid Data

Supplemental centroid analysis for 004927495-02. Kepler magnitude: 13.54. Transit SNR 19.87

There are 3 quarters with good PRF difference image offsets

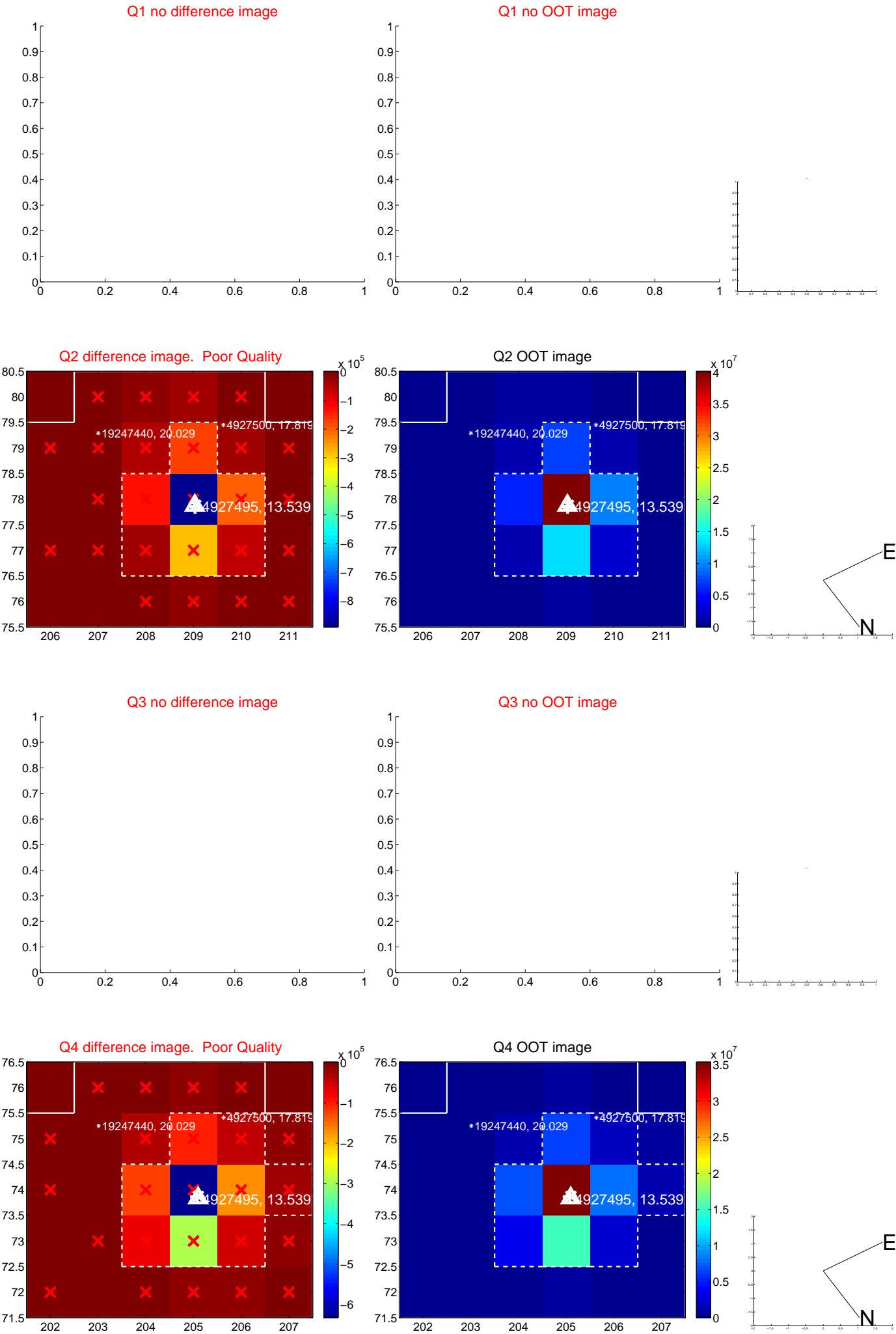
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.059 ± 0.080 | 0.74 | 0.009 ± 0.074 | 0.058 ± 0.082 |
| PRF-fit source offset from KIC position | 0.118 ± 0.084 | 1.41 | -0.112 ± 0.086 | -0.038 ± 0.072 |
| photometric centroid source offset | 0.21 ± 0.09 | 2.26 | -0.12 ± 0.08 | -0.17 ± 0.10 |



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.

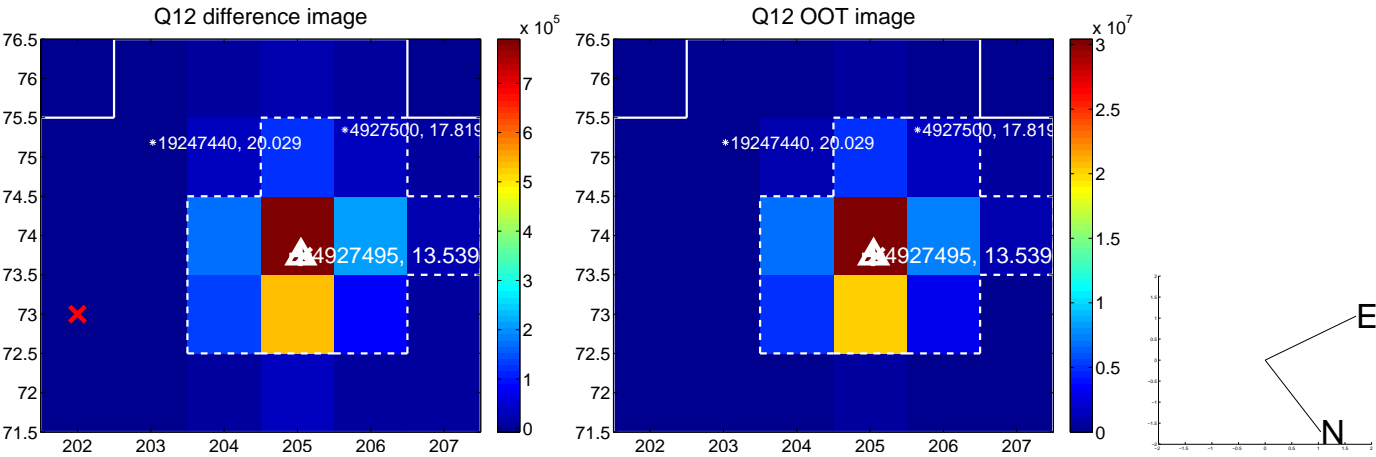
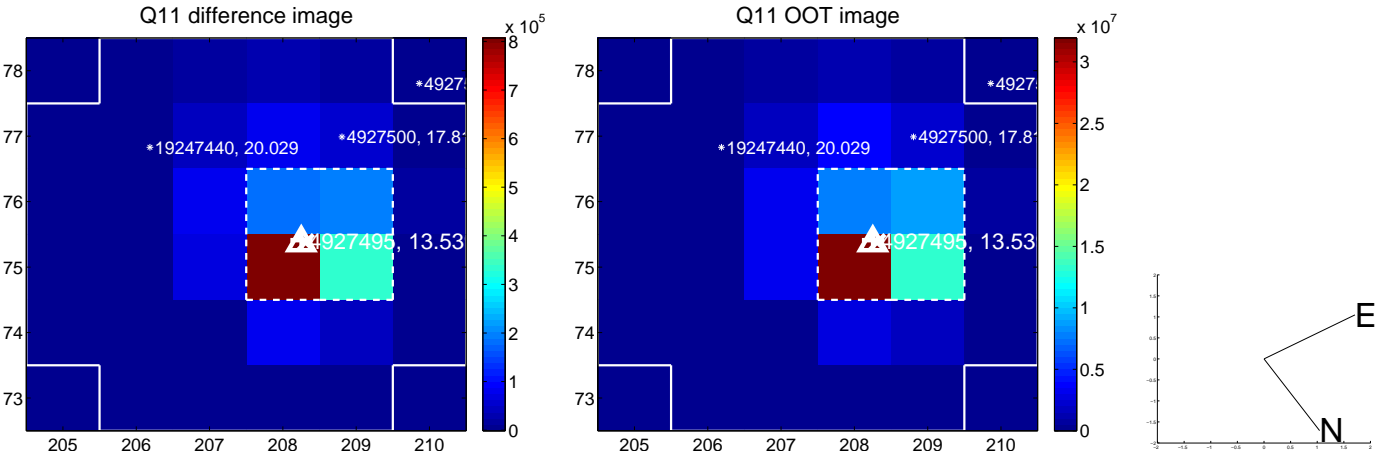
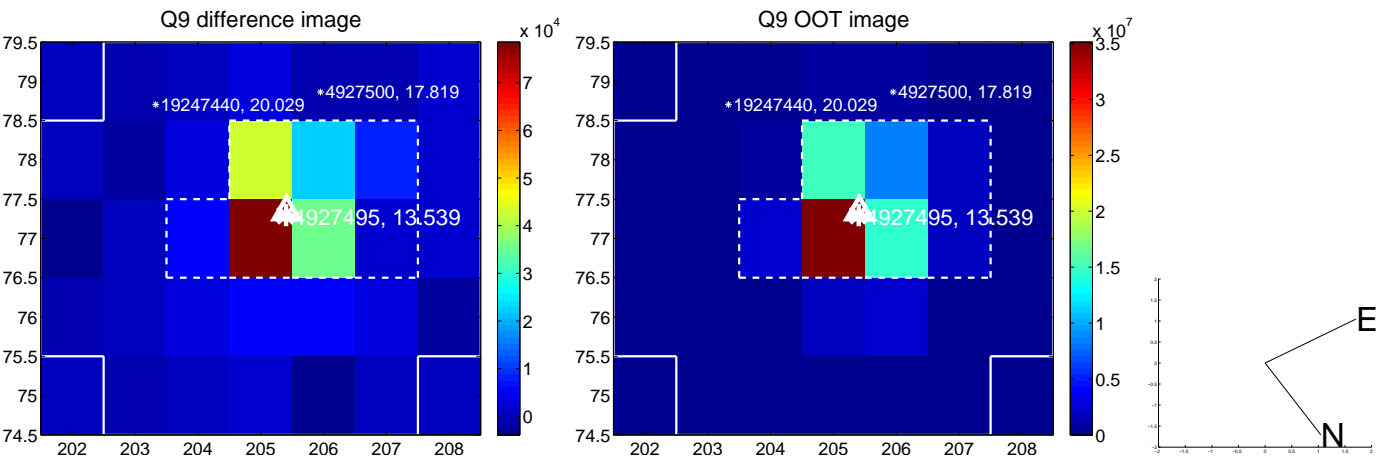
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



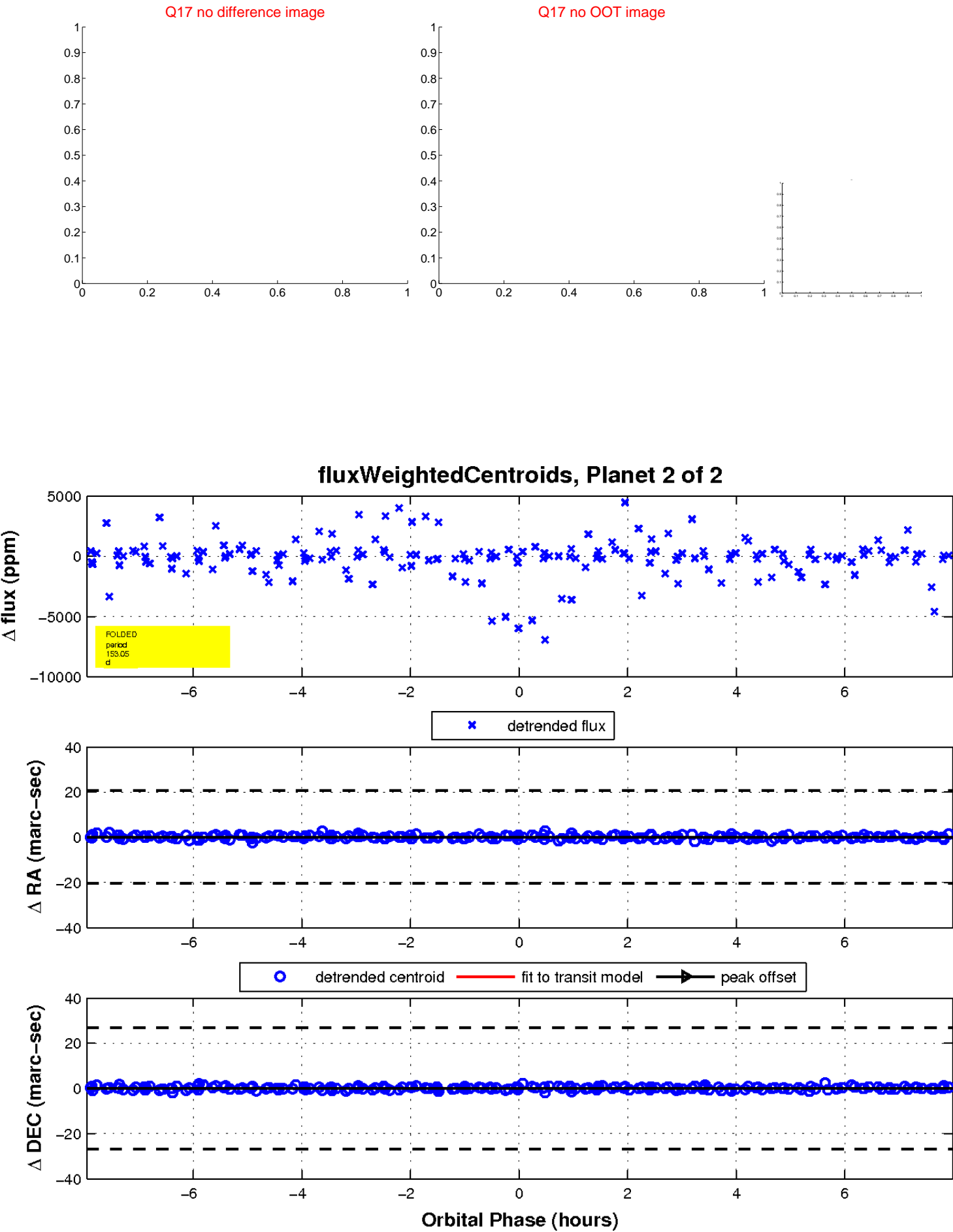
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

