

KIC 007449554

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007449554-01 | OBS | 2357.01 | 2.420882 | 133.578866 | 212.6 | 2.793 | 17.8 | 18.9 | 1.53 | 5583 | 2.64 | 1615.08 |
| 007449554-02 | OBS | 2357.02 | 15.904114 | 147.404891 | 1019.0 | 2.000 | 10.2 | -1.0 | 1.53 | 5583 | 4.82 | 131.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|-------------|
| 007449554-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 007449554-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_NOFITS |

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 007449554-01

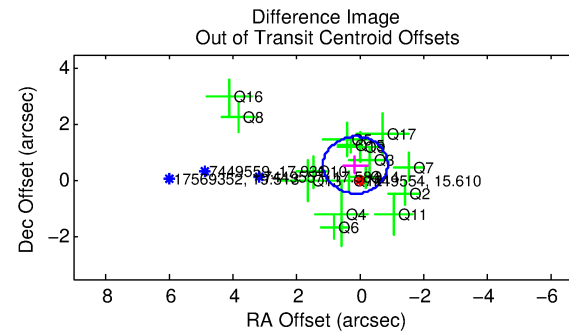
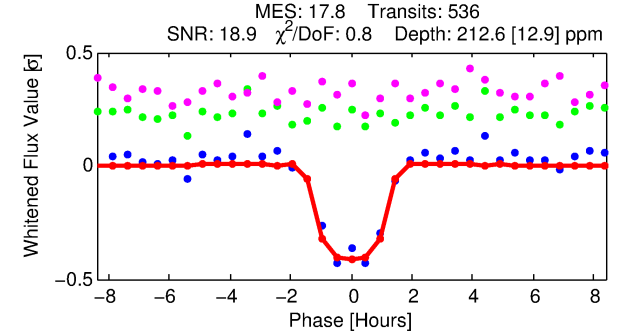
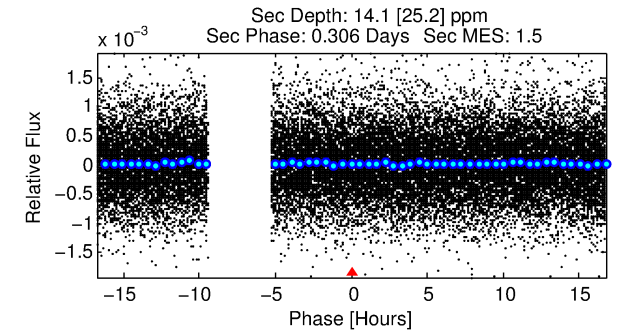
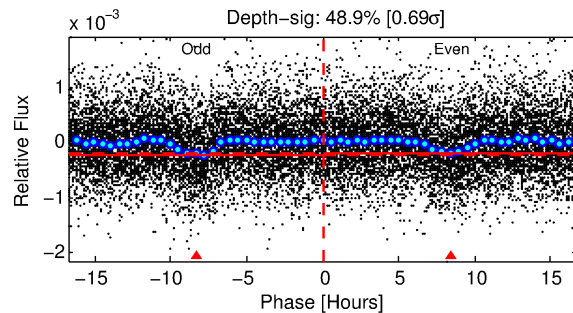
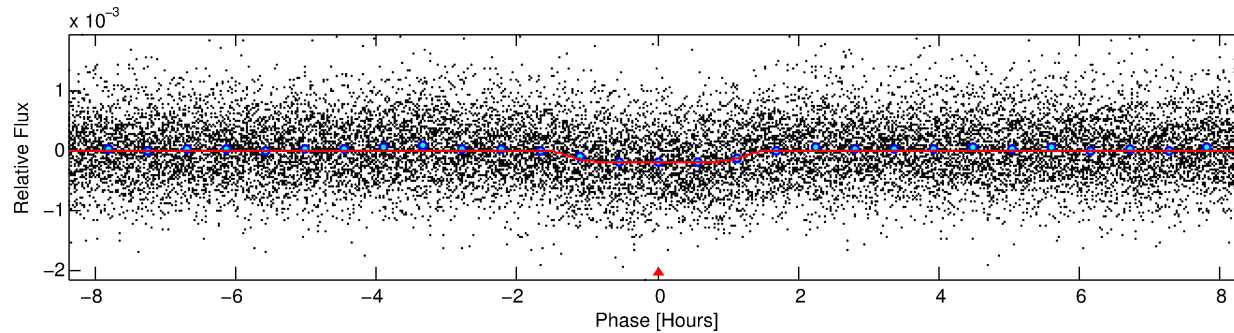
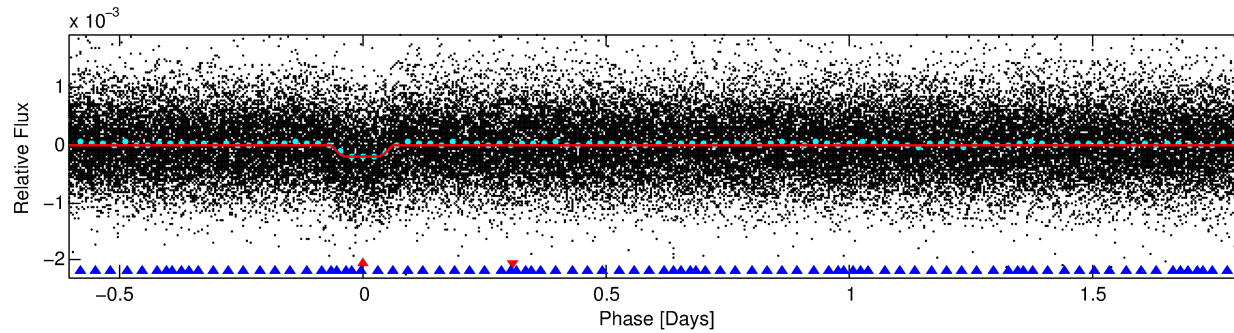
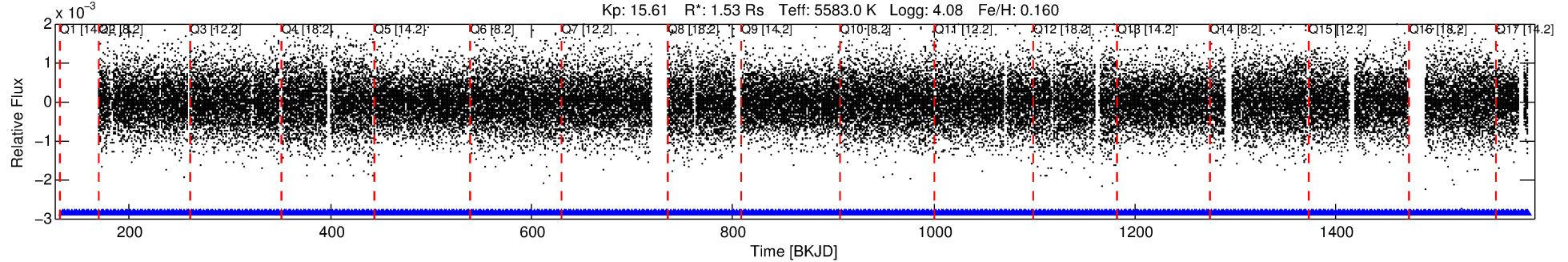
No Significant Match Found

DV One-Page Summary

KIC: 7449554 Candidate: 1 of 2 Period: 2.421 d

KOI: K02357.01 Corr: 0.967

Kp: 15.61 R*: 1.53 Rs Teff: 5583.0 K Logg: 4.08 Fe/H: 0.160



DV Fit Results:

Period = 2.42088 [0.00001] d
Epoch = 133.5789 [0.0023] BKJD
Rp/R* = 0.0158 [0.0067]
a/R* = 3.41 [5.87]
b = 0.89 [0.46]
Seff = 1615.08 [585.41]
Teq = 1616 [146] K
Rp = 2.64 [1.27] Re
a = 0.0355 [0.0079] AU
Ag = 1.40 [2.82] [0.14σ]
Teffp = 2720 [1346] K [0.82σ]

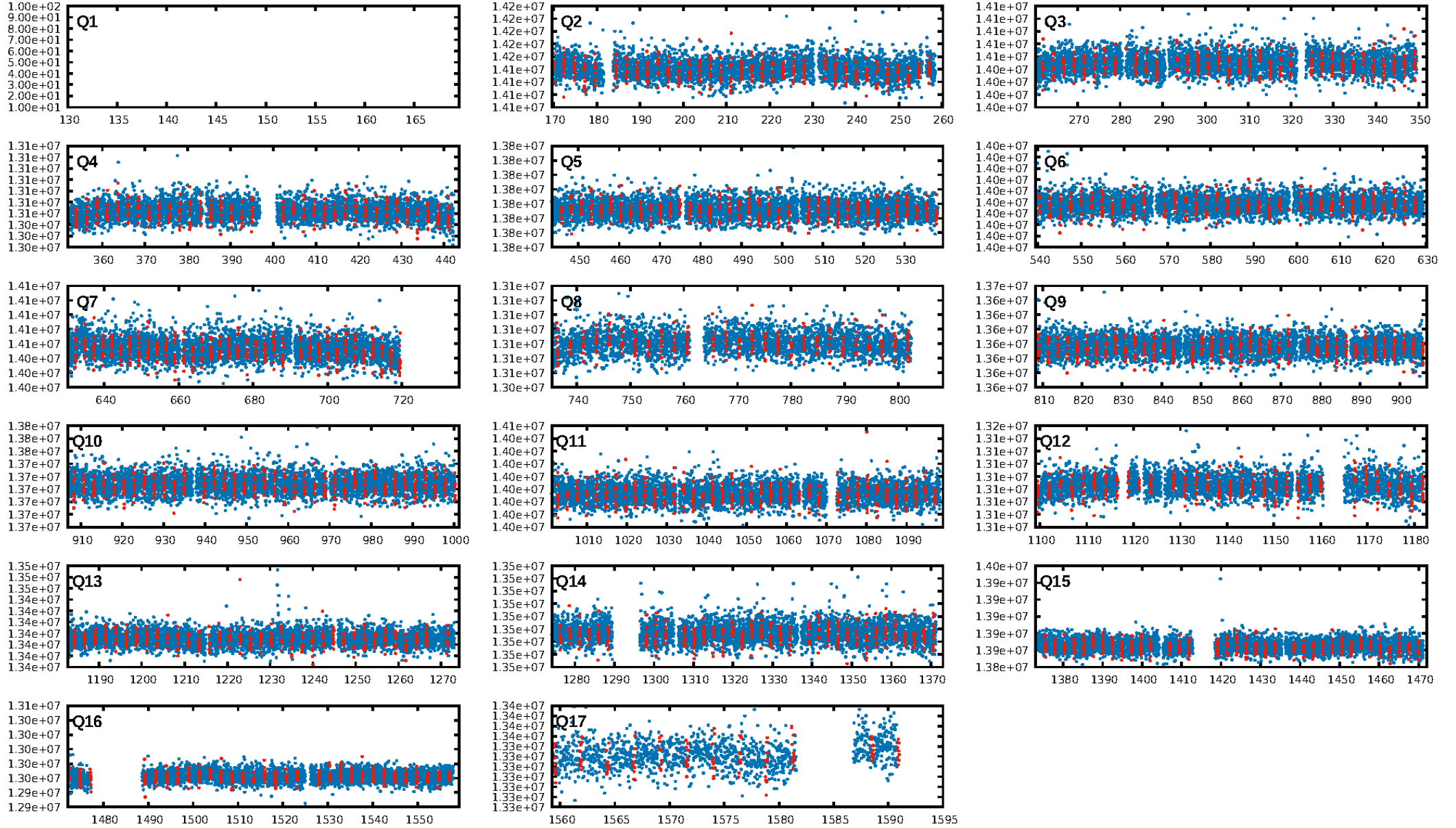
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [94.19σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.88e-69
RollingBand-fgt: 1.00 [524/524]
GhostDiagnostic-chr: 3.881
Centroid-sig: 0.0%
Centroid-so: 3.056 arcsec [3.82σ]
OotOffset-rm: 0.574 arcsec [1.70σ]
KicOffset-rm: 0.555 arcsec [1.60σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [16/16]

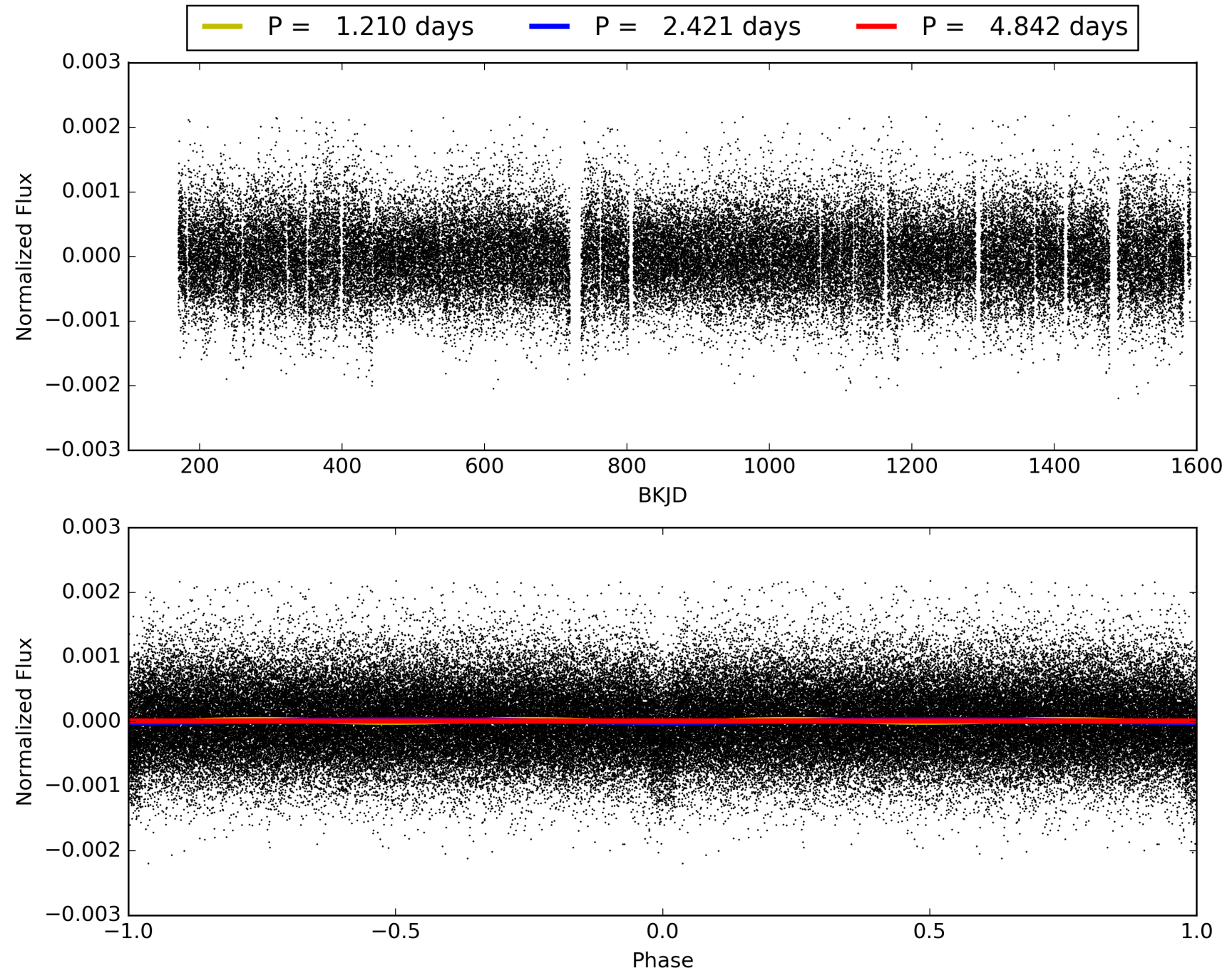
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:40:35 Z

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

TCE 007449554-01, PDC Light Curves

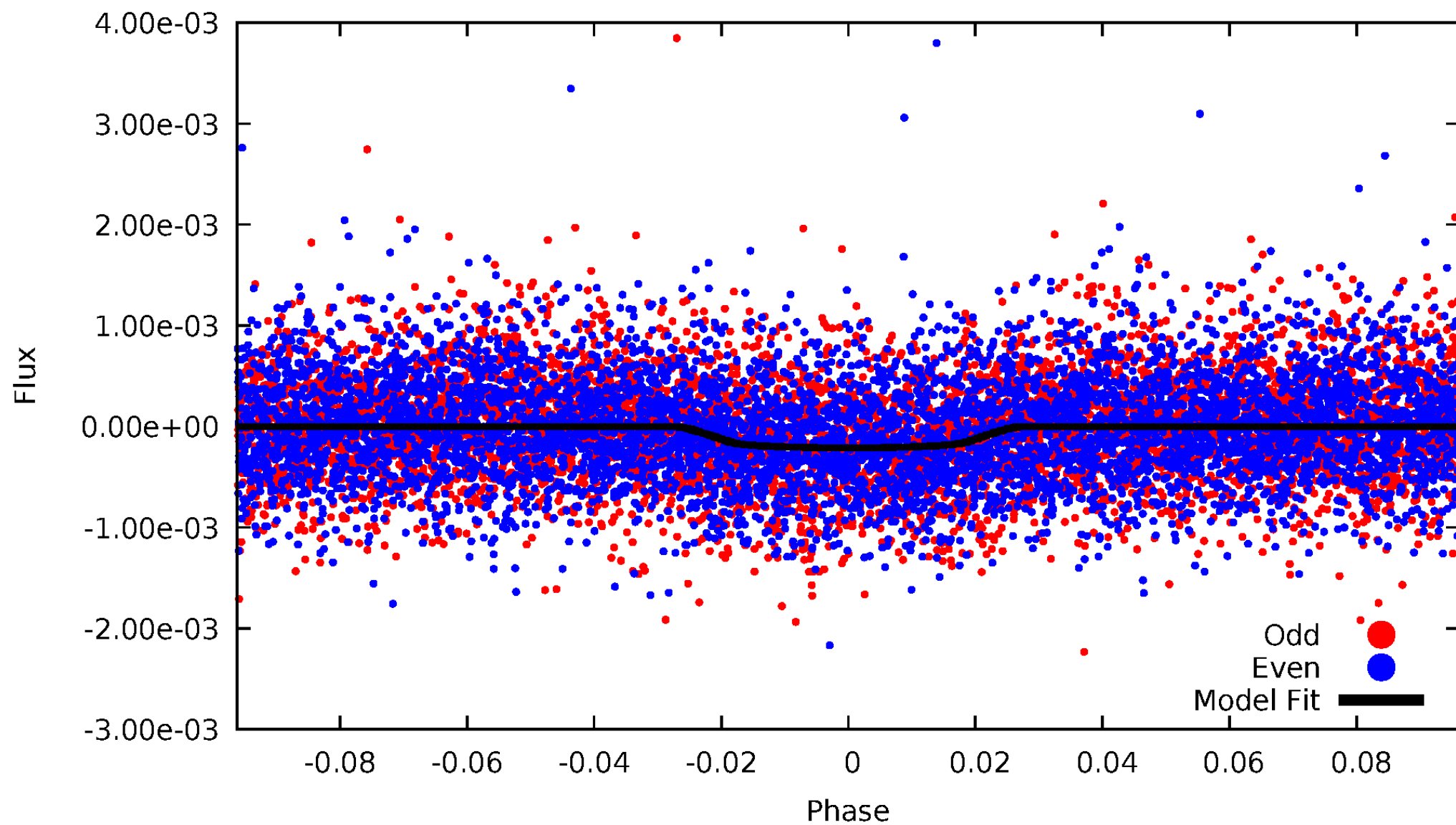


TCE 007449554-01



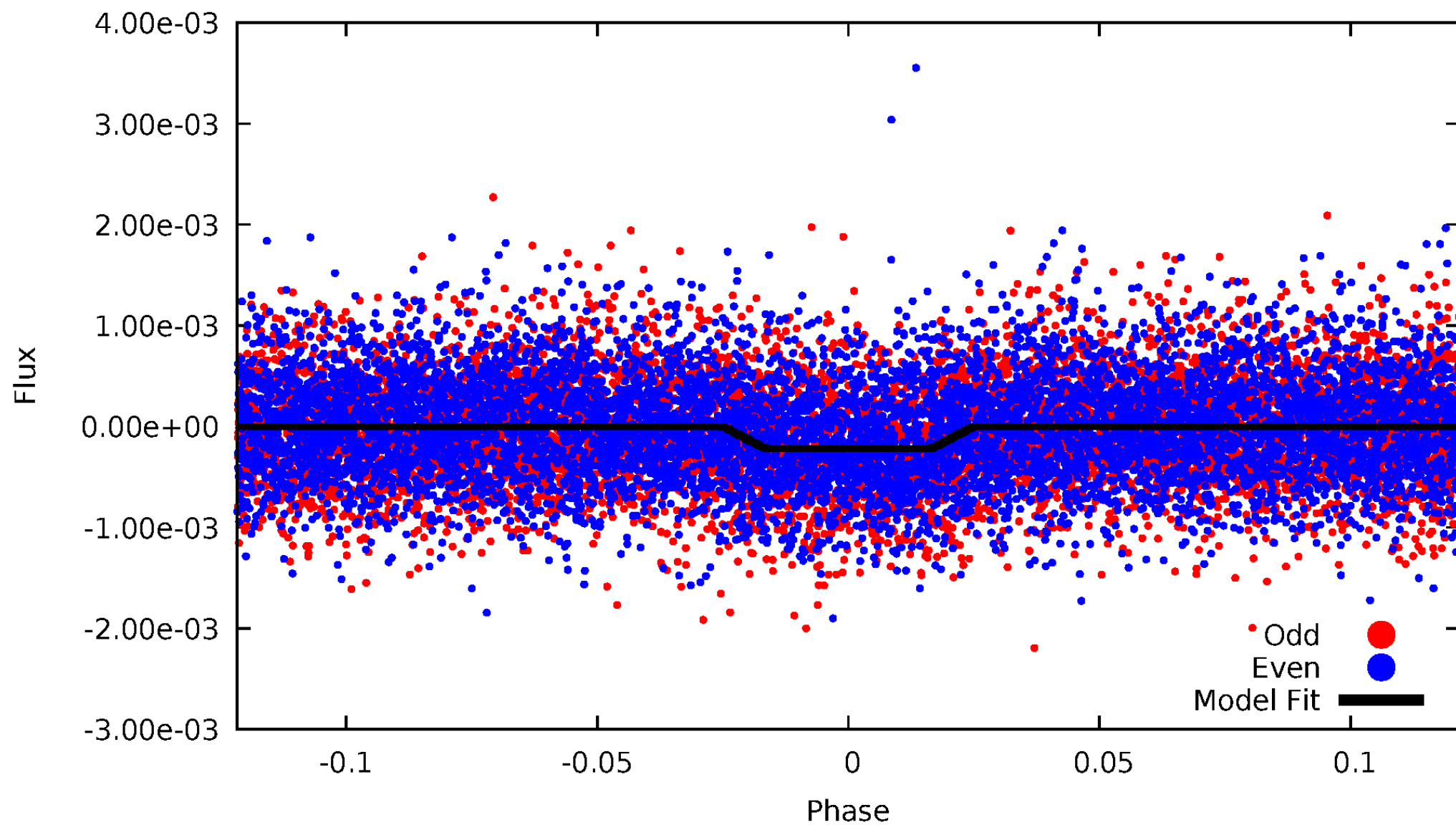
DV Odd/Even

TCE 007449554-01

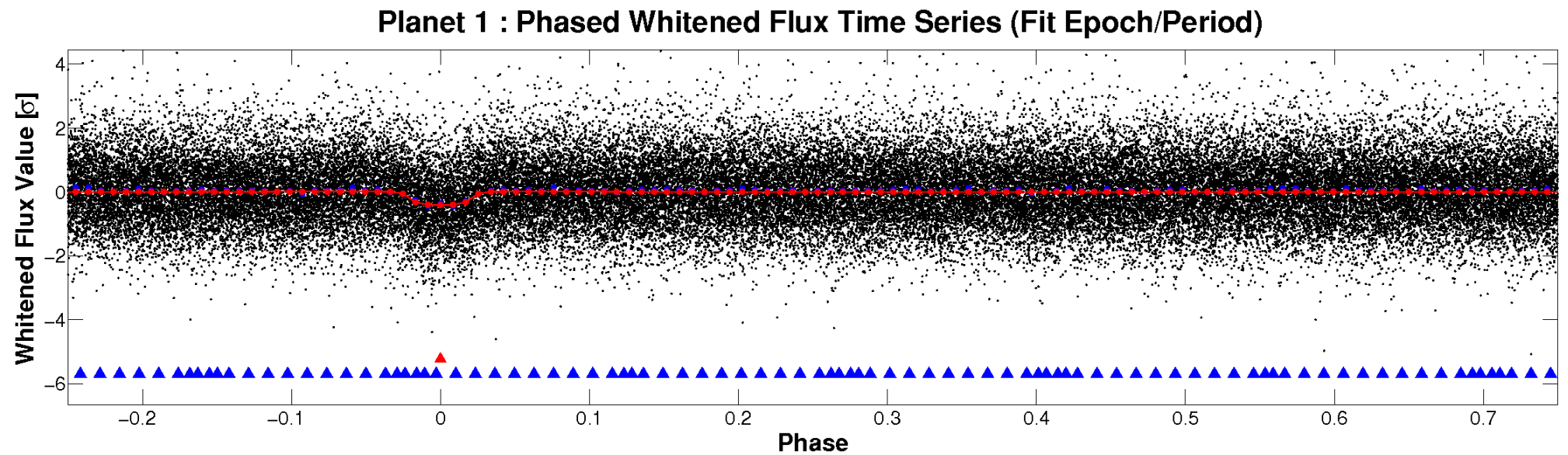
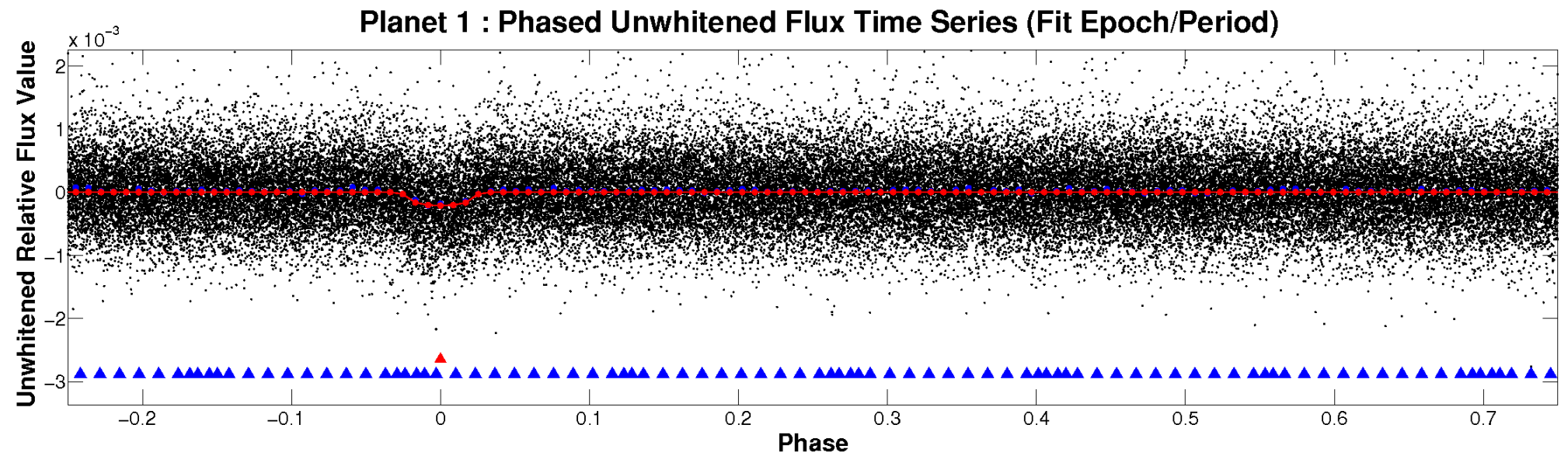


ALT Odd/Even

TCE 007449554-01

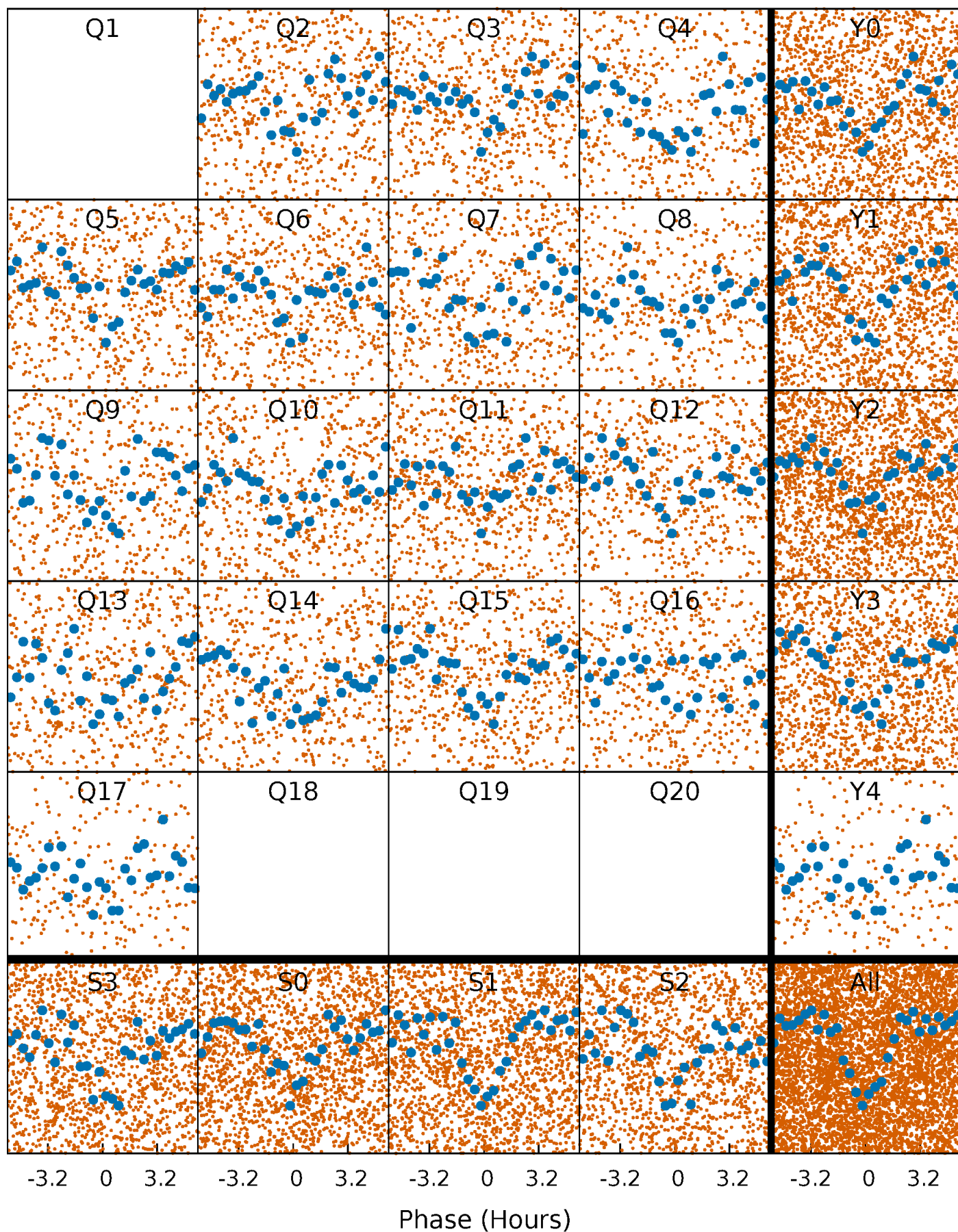


Non-Whitened Vs. Whitened Light Curve



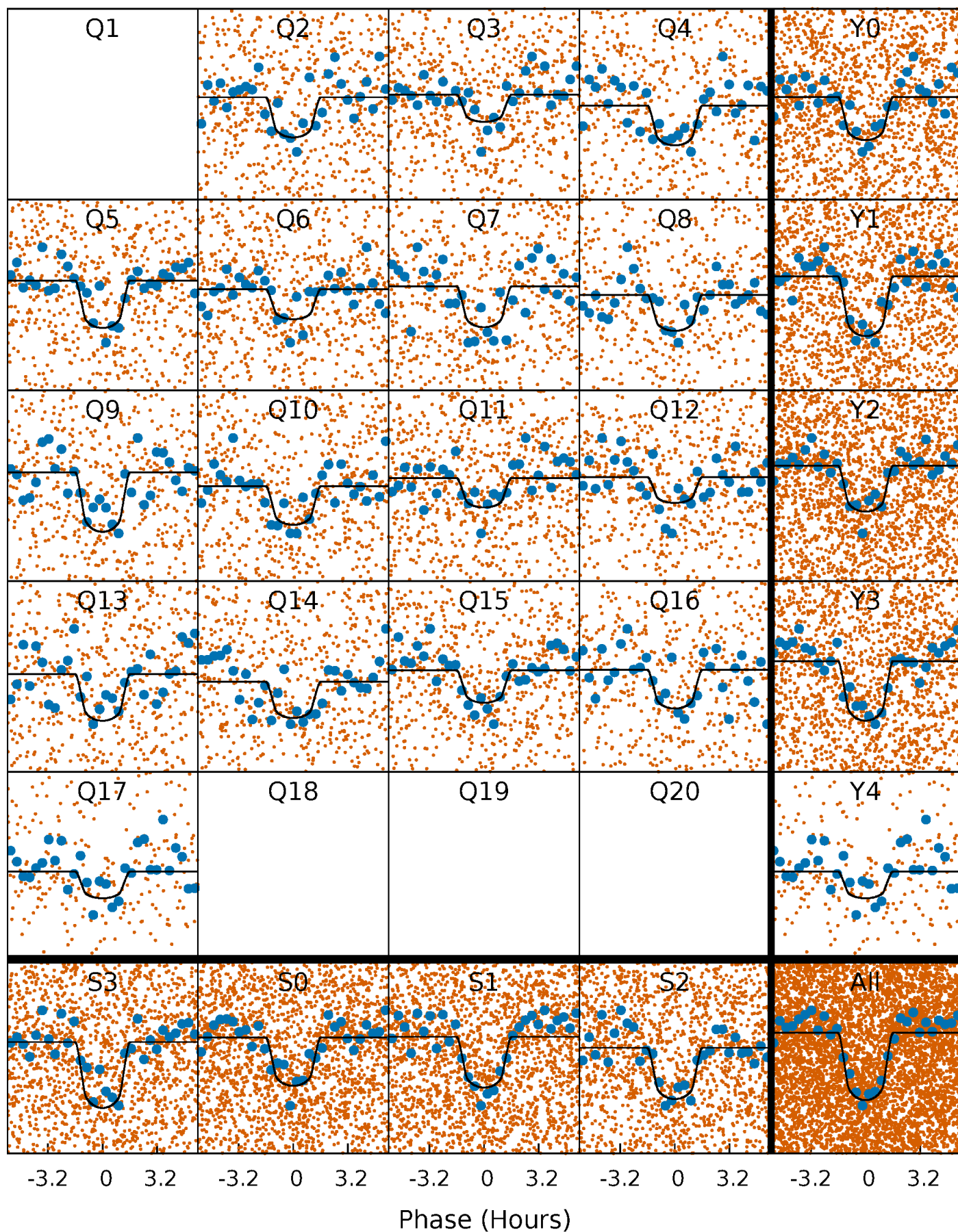
PDC Quarter-Phased Transit Curves

TCE 007449554-01 P= 2.420882 Days $T_0=133.578866$ (BKJD)



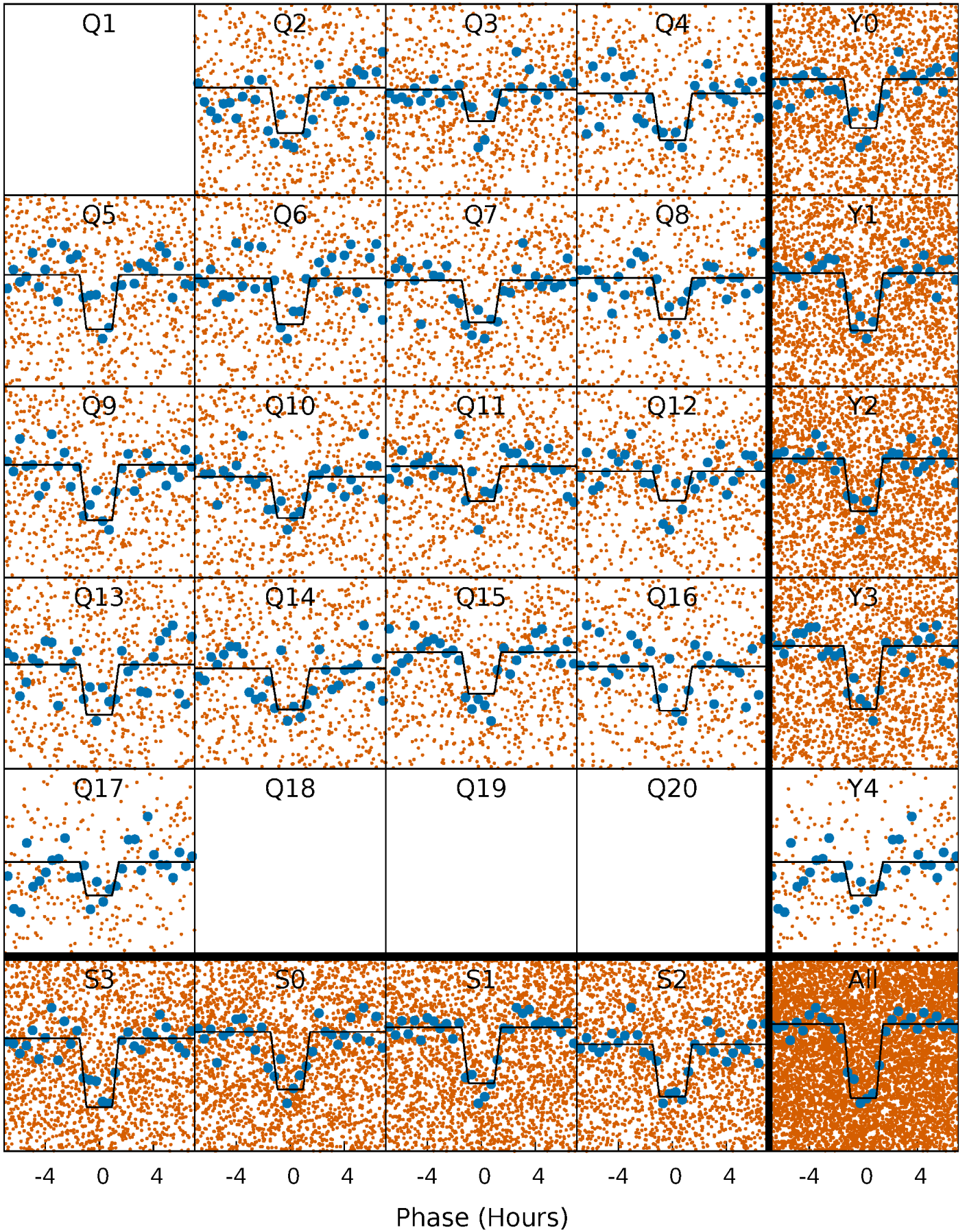
DV Quarter-Phased Transit Curves

TCE 007449554-01 P= 2.420882 Days $T_0=133.578866$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

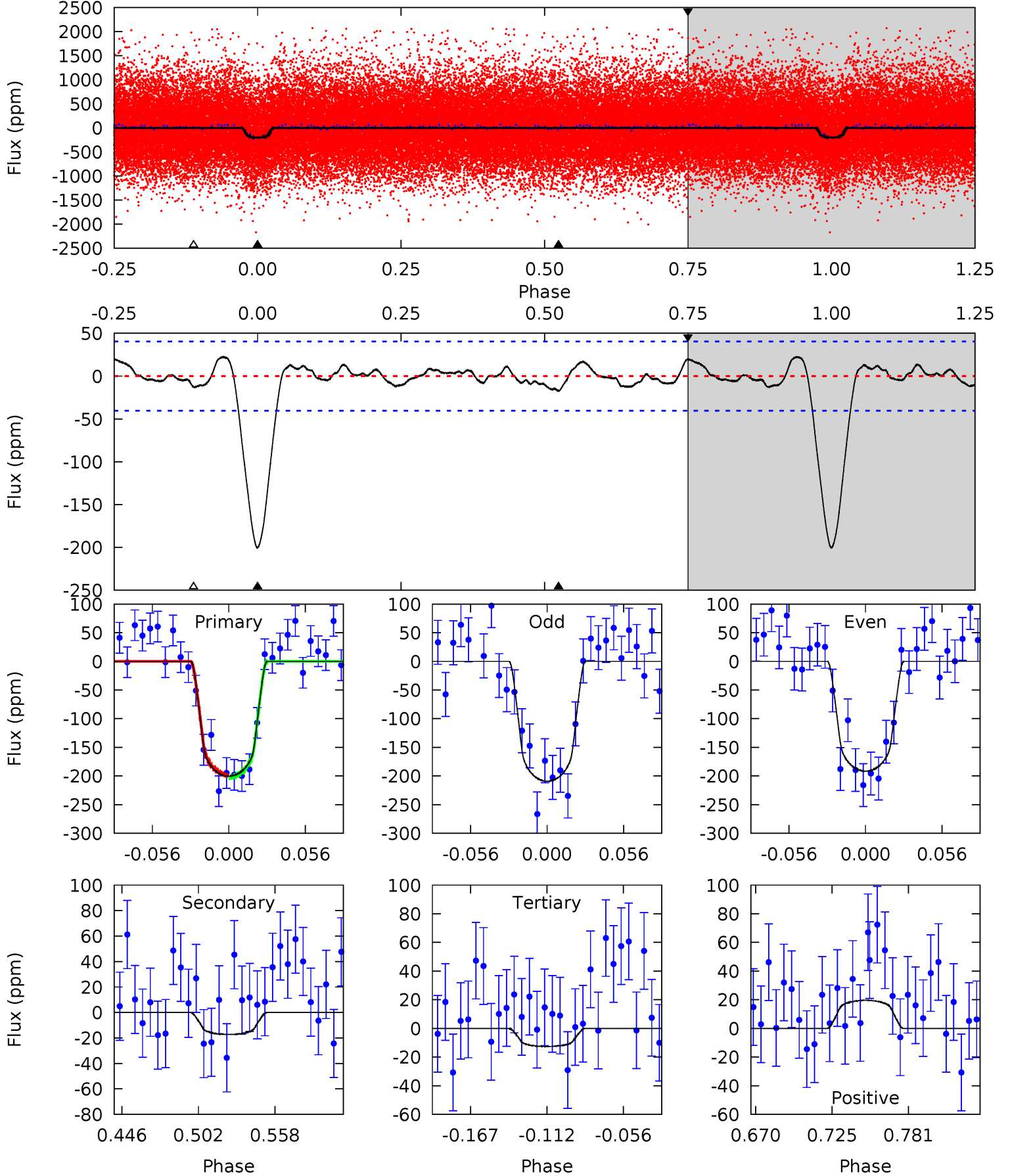
TCE 007449554-01 P= 2.420881 Days $T_0=133.579800$ (BKJD)



DV Model-Shift Uniqueness Test

007449554-01, P = 2.420882 Days, E = 133.578866 Days

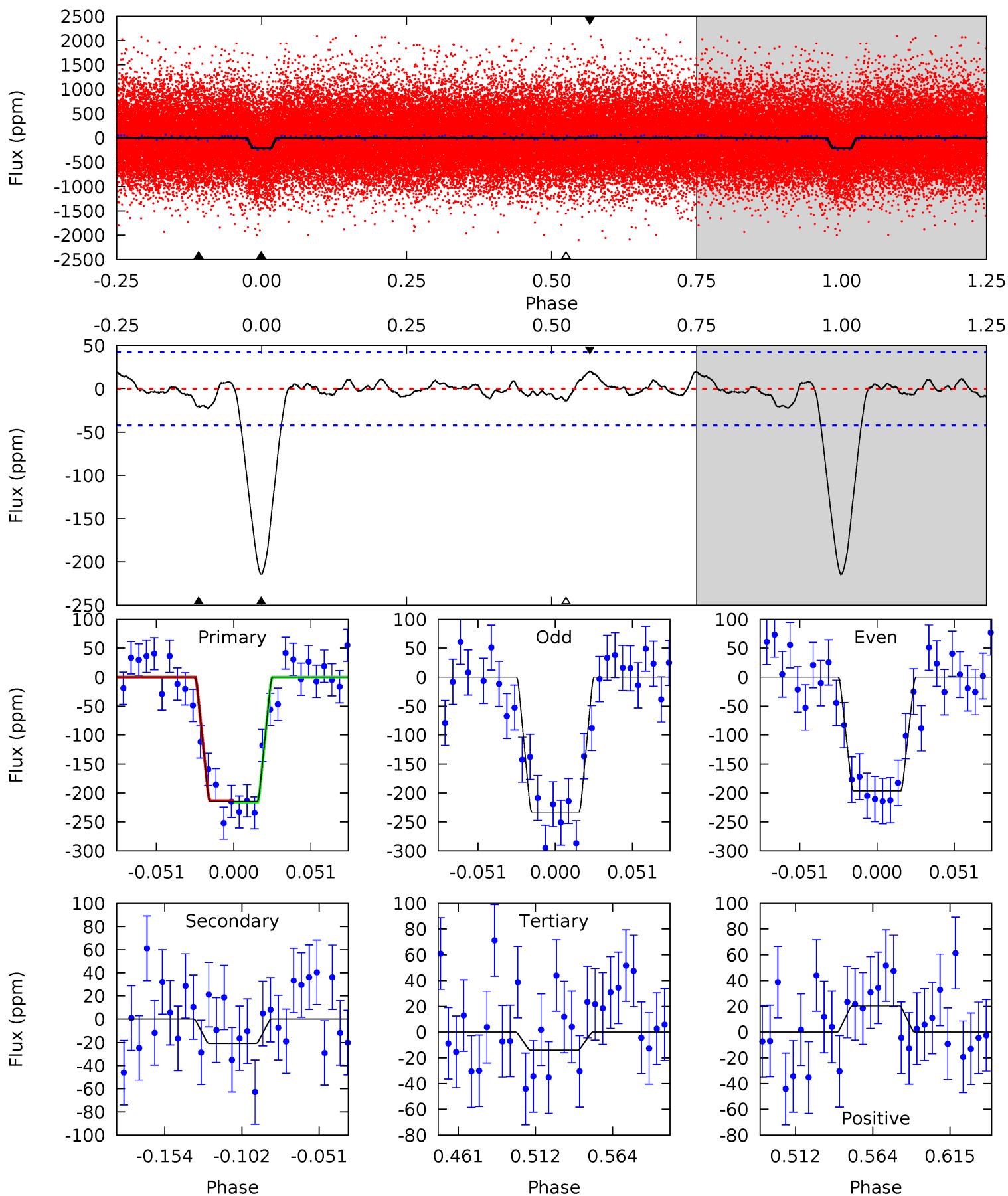
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.2 | 2.00 | 1.46 | 2.27 | 4.69 | 1.91 | 0.89 | 21.7 | 20.9 | 0.54 | -0.27 | 1.02 | 0.96 | 0.10 | 0.22 |



Alt Model-Shift Uniqueness Test

007449554-01, P = 2.420881 Days, E = 133.579800 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.8 | 2.31 | 1.55 | 2.25 | 4.70 | 1.95 | 0.78 | 22.3 | 21.6 | 0.76 | 0.07 | 2.03 | 0.99 | 0.09 | 0.15 |



Stellar Parameters For KIC 007449554

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5583^{+83}_{-75} | $4.077^{+0.210}_{-0.090}$ | $0.160^{+0.150}_{-0.150}$ | $1.530^{+0.237}_{-0.355}$ | $1.017^{+0.084}_{-0.084}$ | $0.401^{+0.470}_{-0.114}$ |
| | +1%/-1% | +5%/-2% | +94%/-94% | +15%/-23% | +8%/-8% | +117%/-28% |
| 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 007449554-01 / KOI 2357.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -17 ± 9 | $2.51^{+1.23}_{-0.99}$ | 2242^{+106}_{-160} | 3278^{+674}_{-632} | $1.826^{+3.581}_{-1.185}$ |
| Alt. | -21 ± 9 | $2.47^{+1.10}_{-1.04}$ | 2241^{+99}_{-141} | 3407^{+821}_{-499} | $2.304^{+4.787}_{-1.372}$ |

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

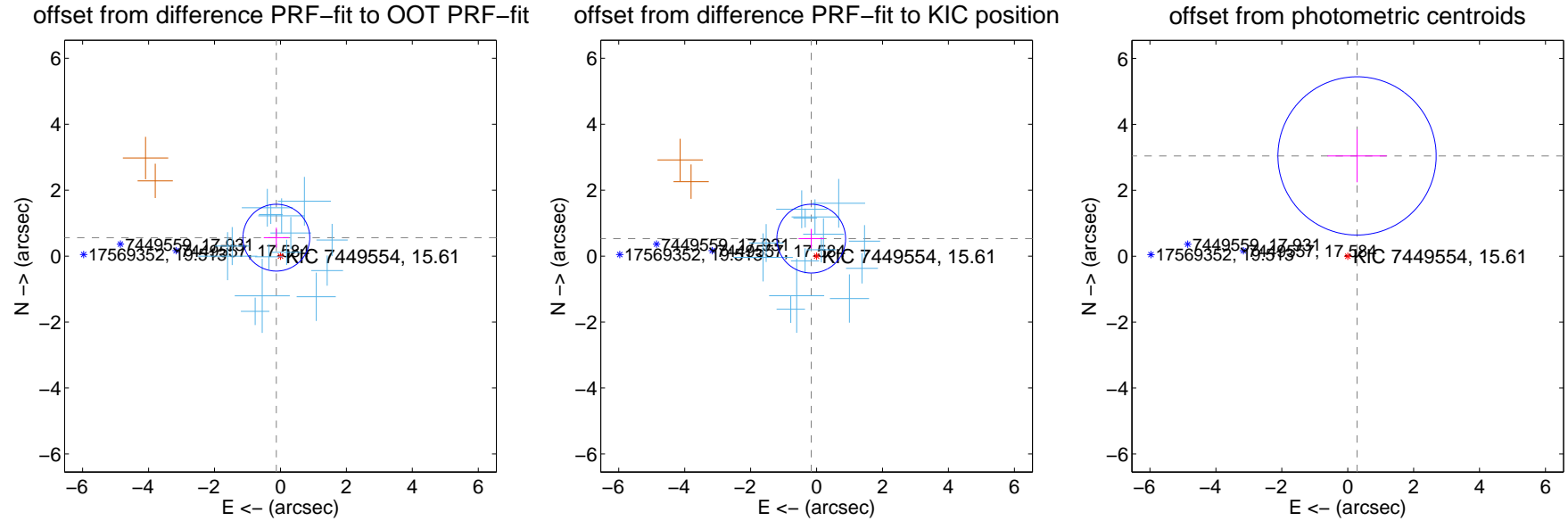
DV Centroid Data

Supplemental centroid analysis for 007449554-01. Kepler magnitude: 15.61. Transit SNR 18.86

There are 14 quarters with good PRF difference image offsets

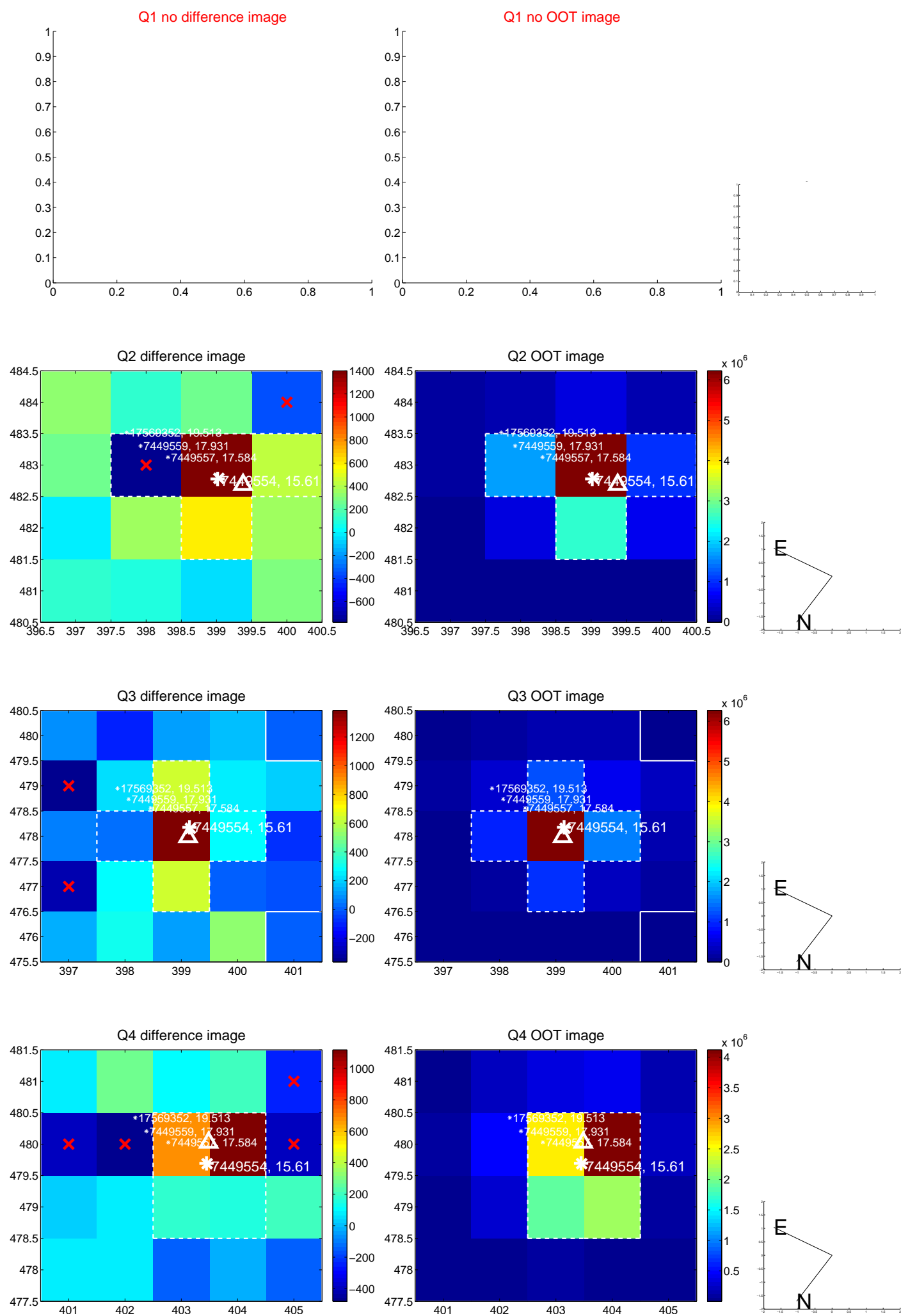
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.574 ± 0.338 | 1.70 | 0.125 ± 0.381 | 0.560 ± 0.302 |
| PRF-fit source offset from KIC position | 0.555 ± 0.348 | 1.60 | 0.162 ± 0.386 | 0.531 ± 0.294 |
| photometric centroid source offset | 3.06 ± 0.80 | 3.82 | -0.28 ± 0.90 | 3.04 ± 0.80 |

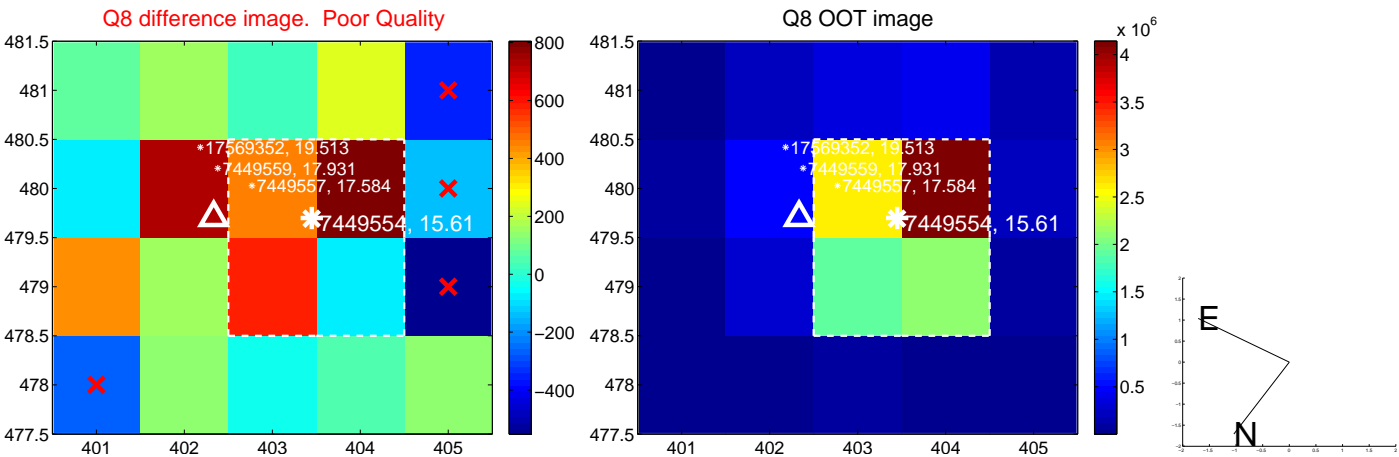
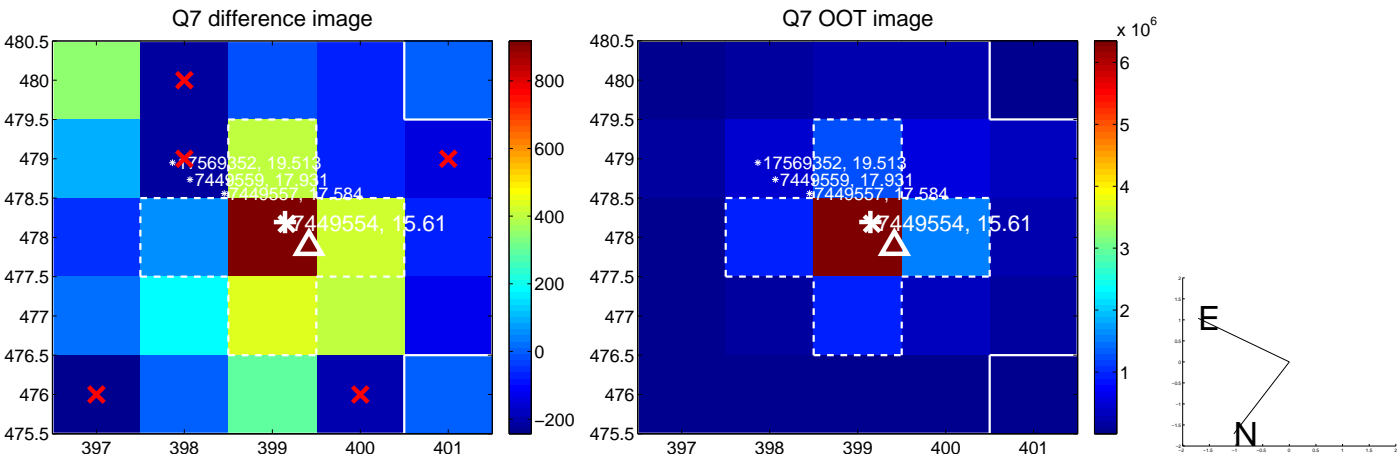
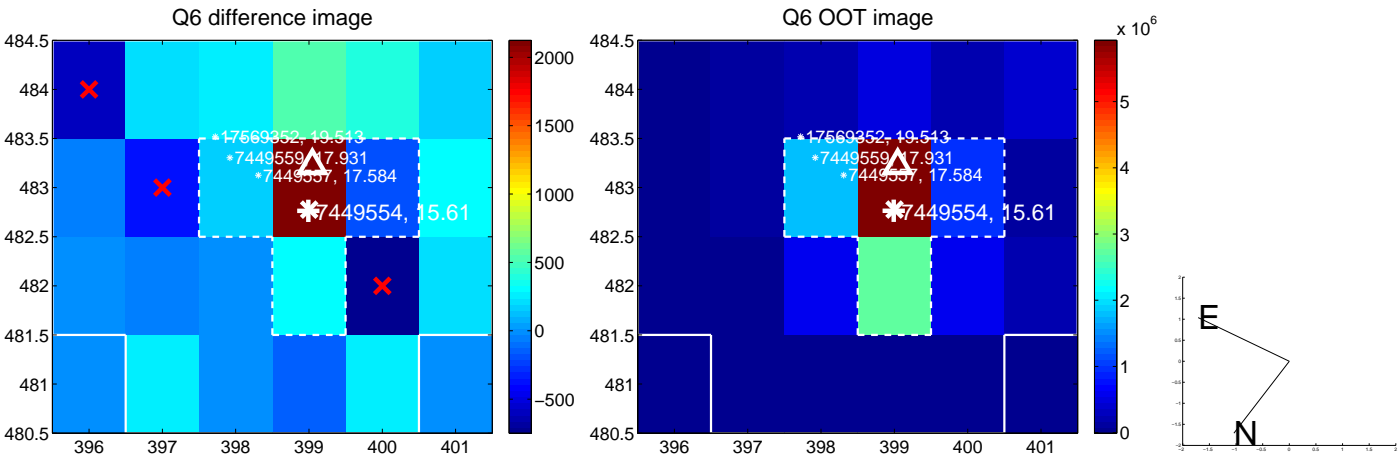
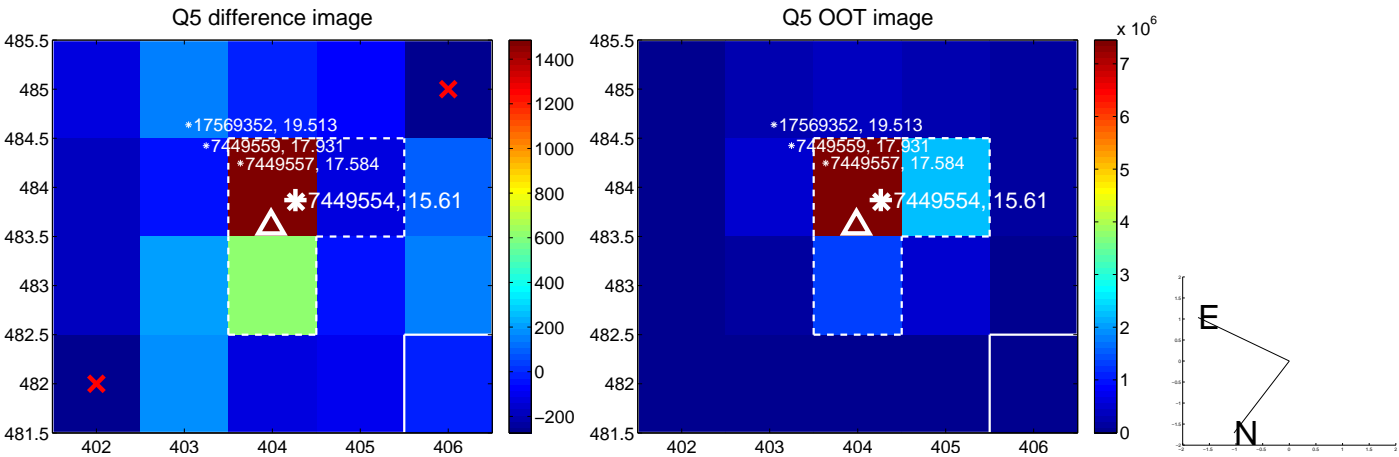


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

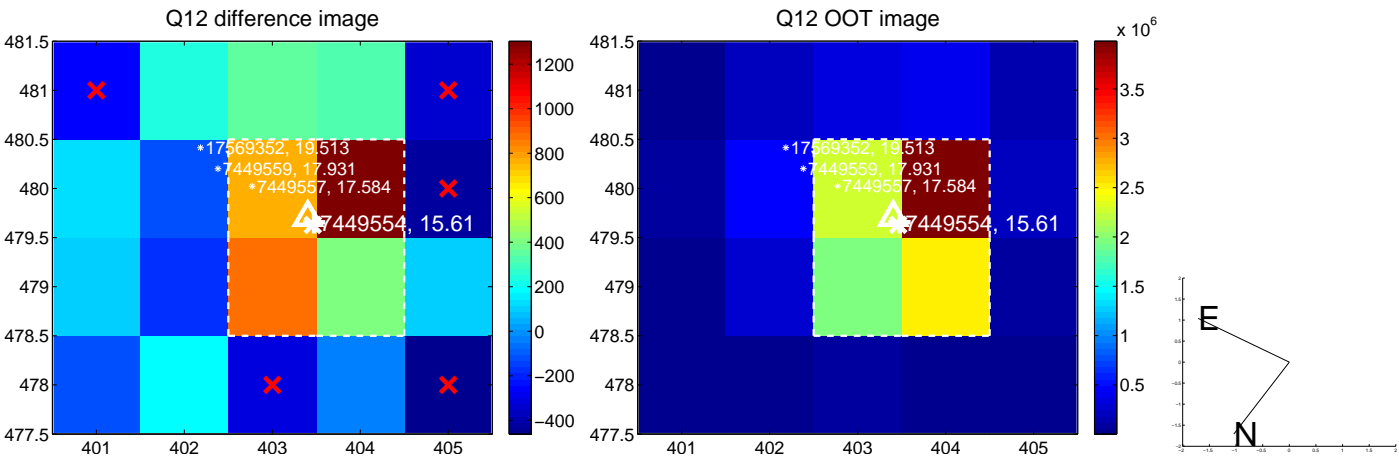
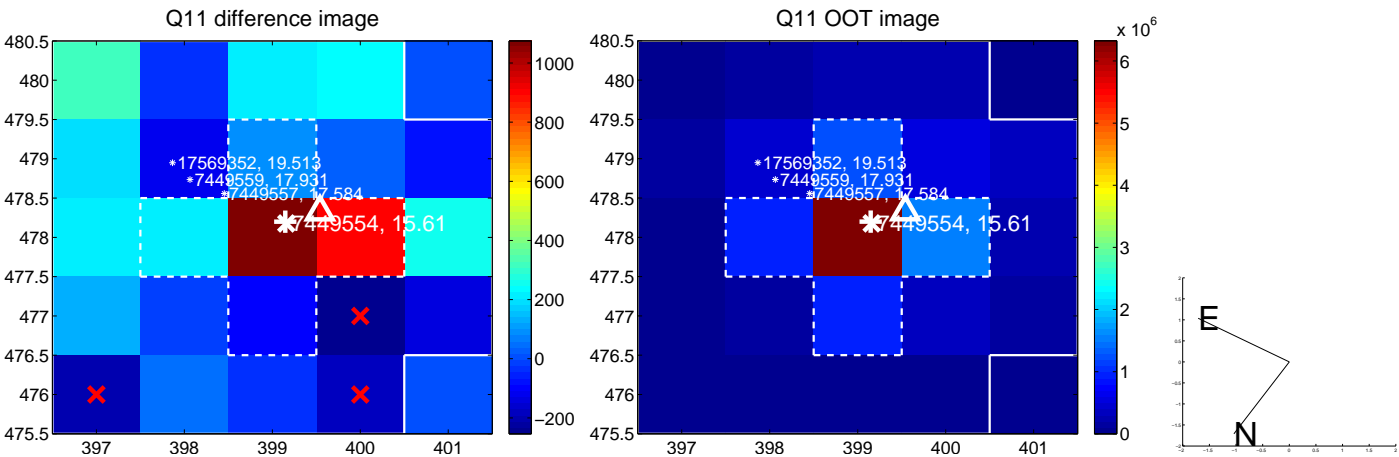
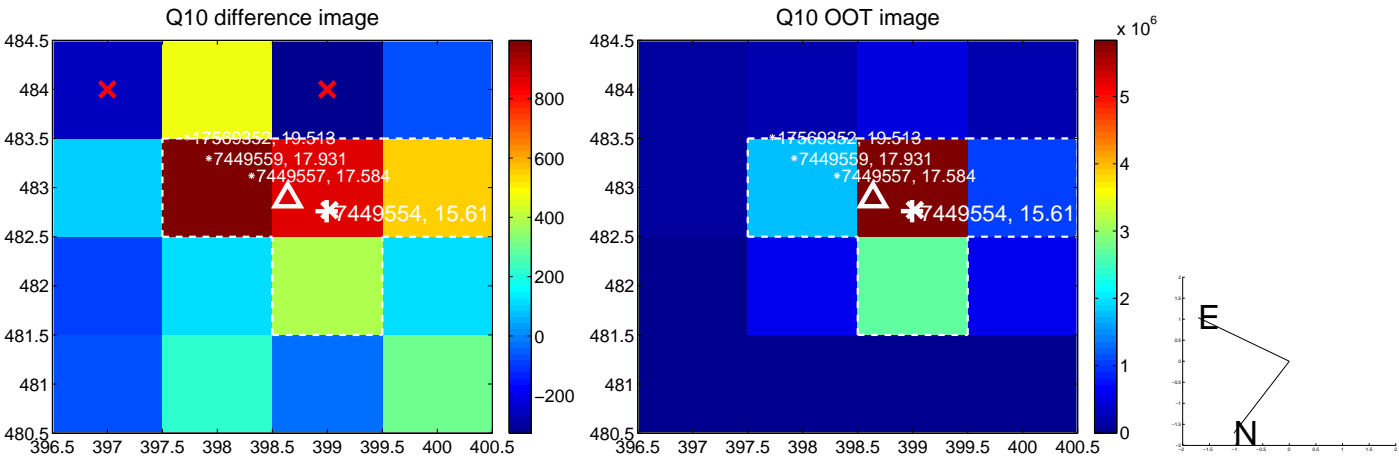
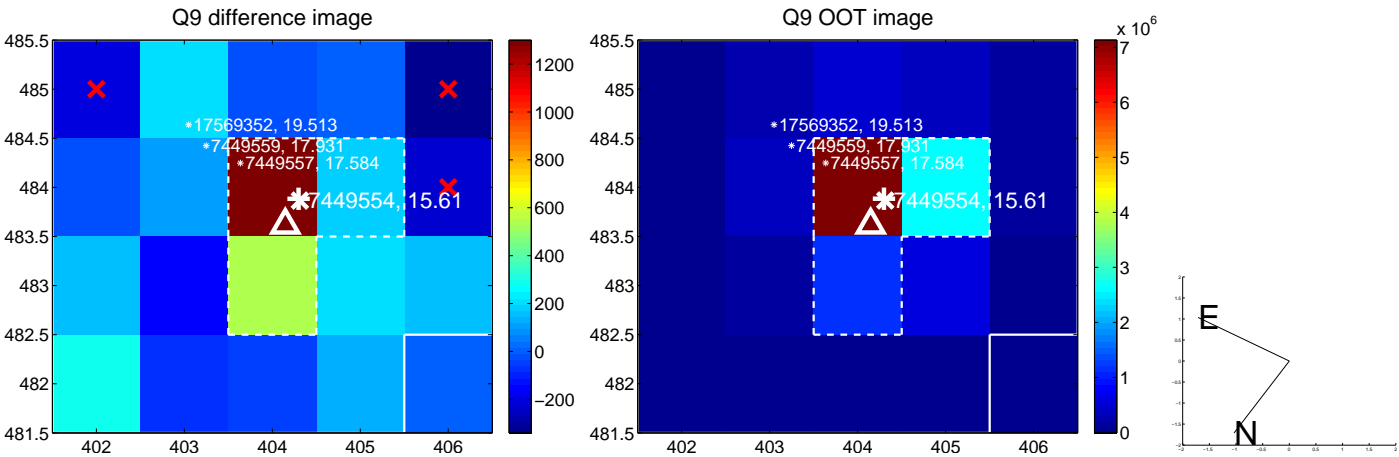
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



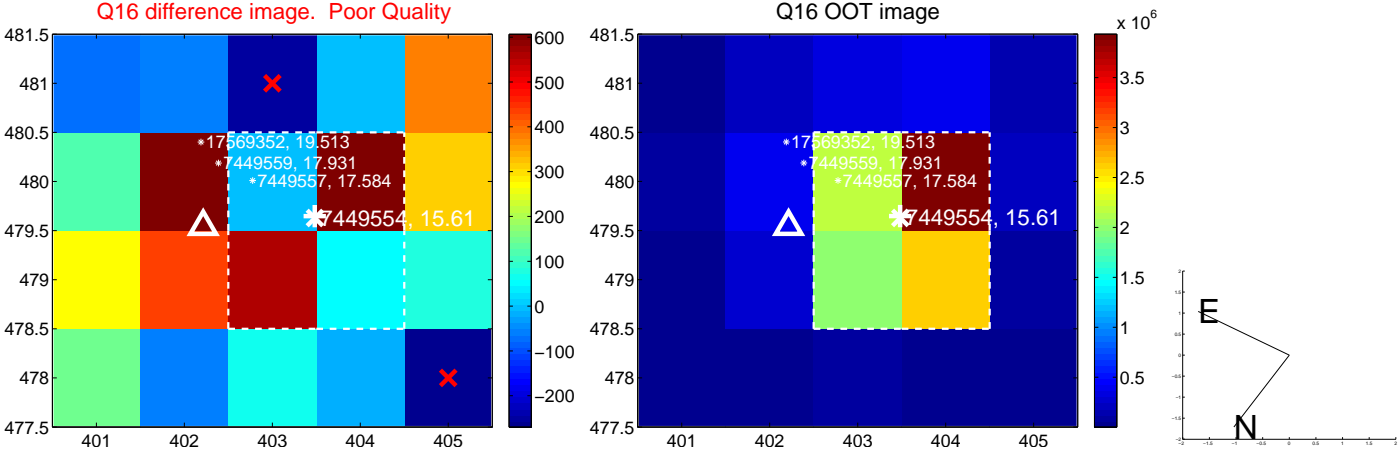
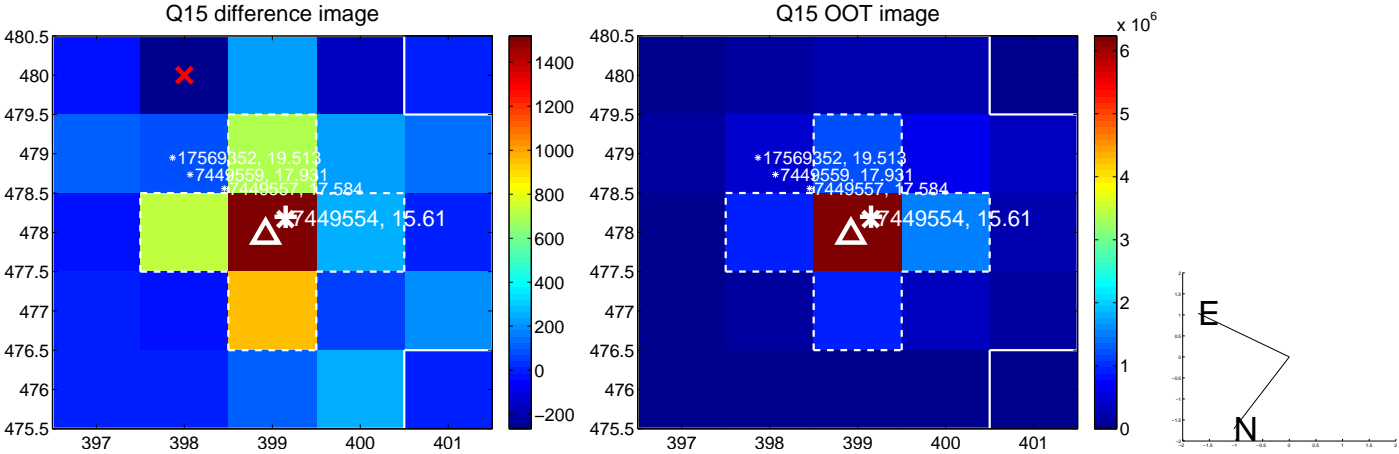
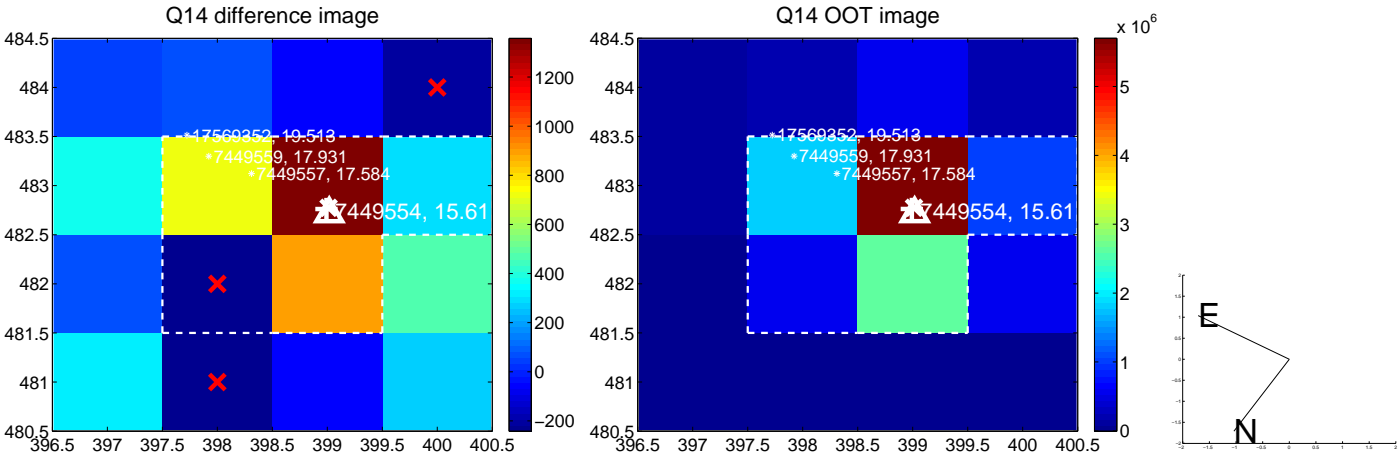
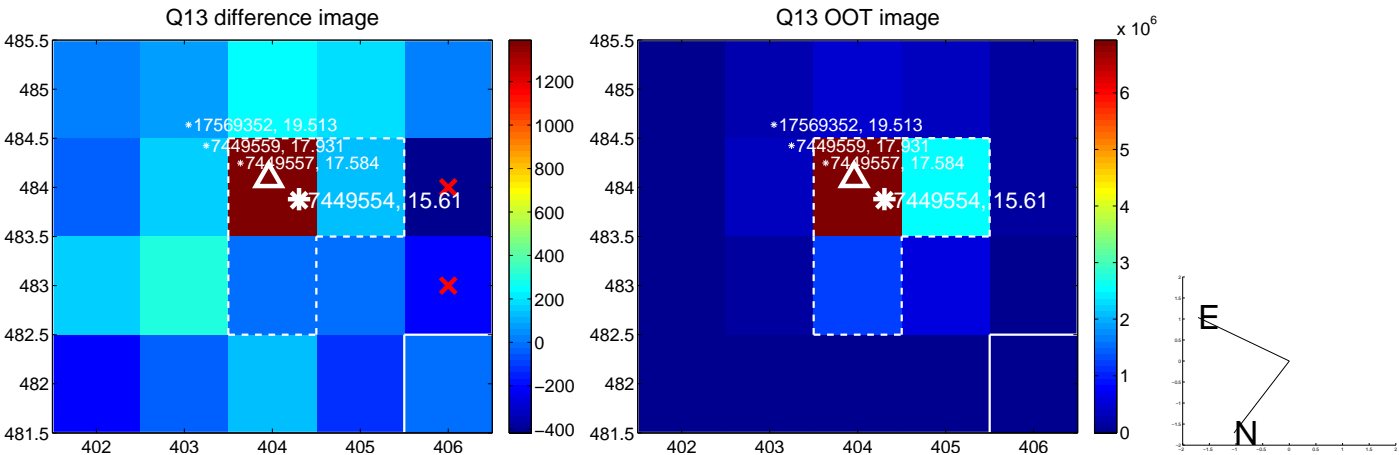
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



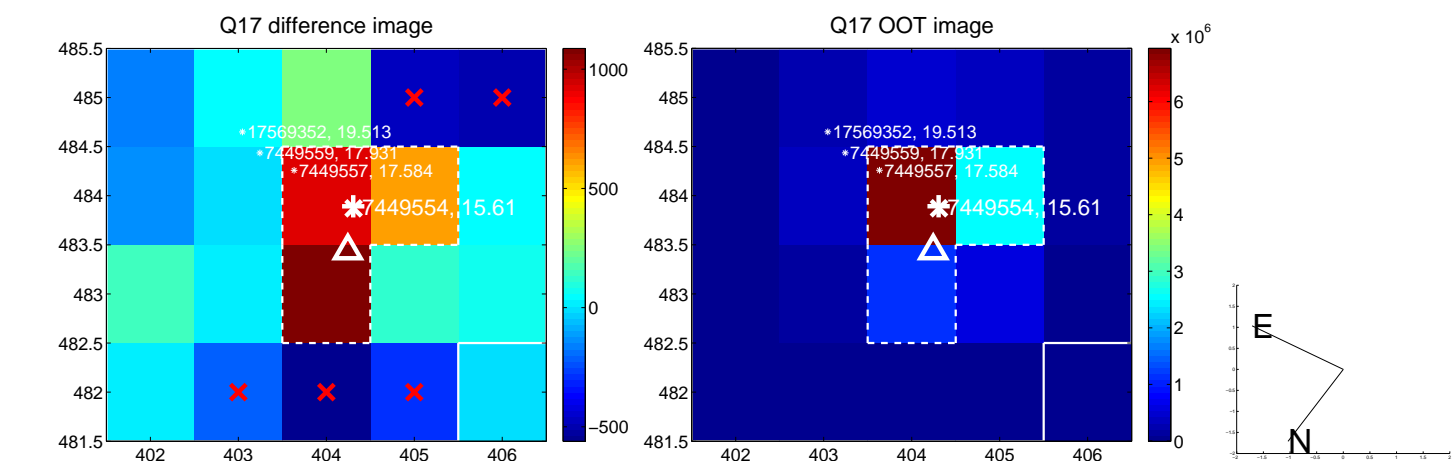
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



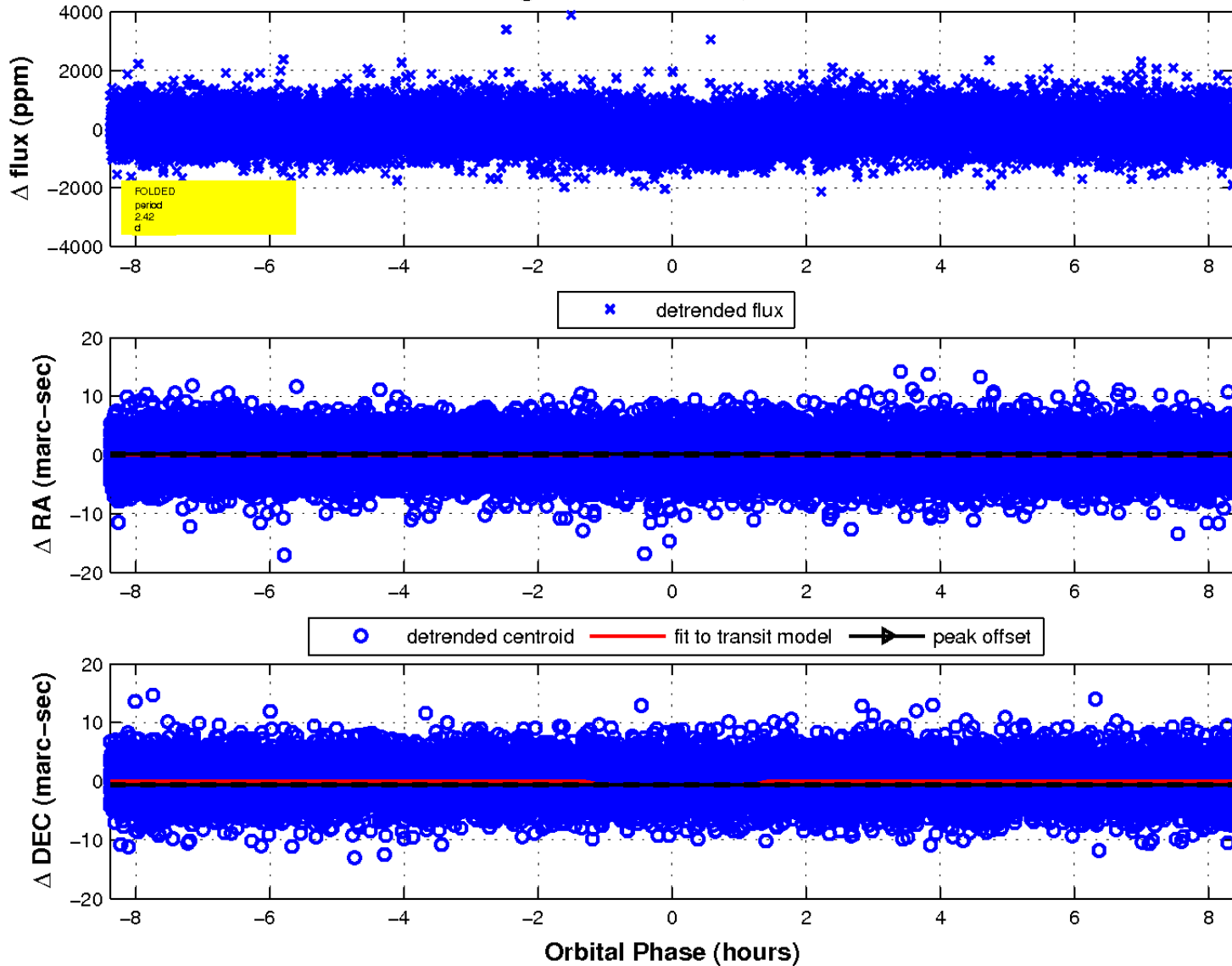
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

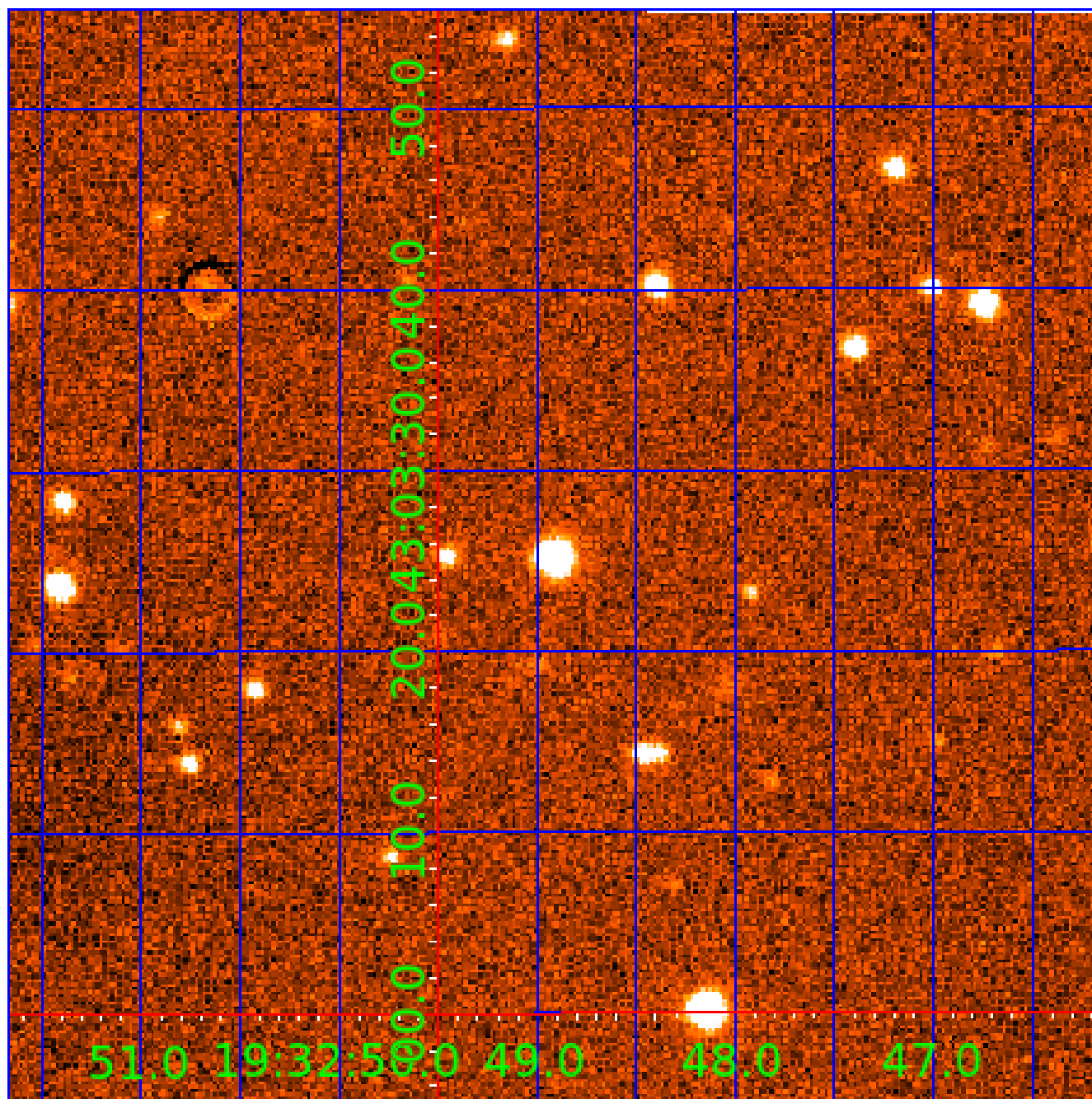


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 007449554

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007449554-01 | OBS | 2357.01 | 2.420882 | 133.578866 | 212.6 | 2.793 | 17.8 | 18.9 | 1.53 | 5583 | 2.64 | 1615.08 |
| 007449554-02 | OBS | 2357.02 | 15.904114 | 147.404891 | 1019.0 | 2.000 | 10.2 | -1.0 | 1.53 | 5583 | 4.82 | 131.26 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|-------------|
| 007449554-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |
| 007449554-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_NOFITS |

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.

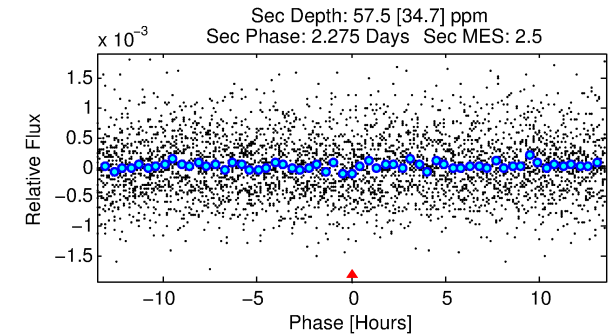
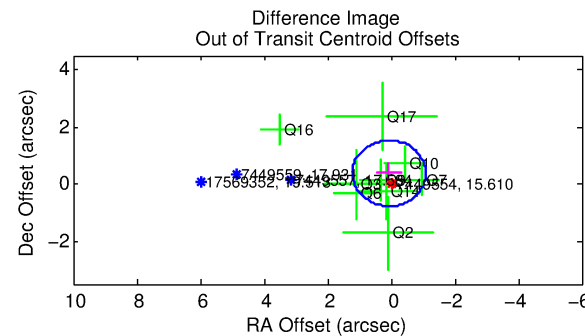
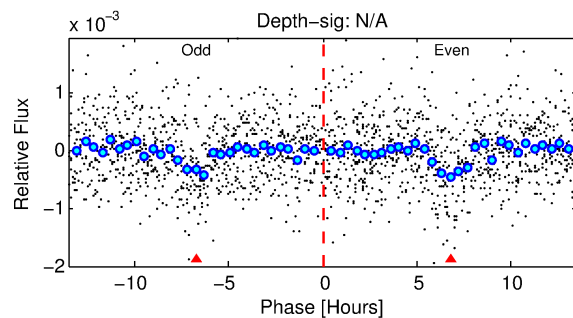
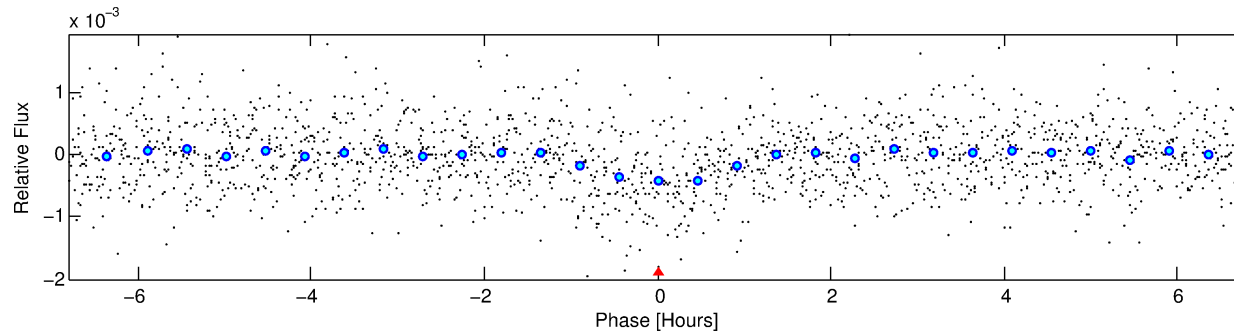
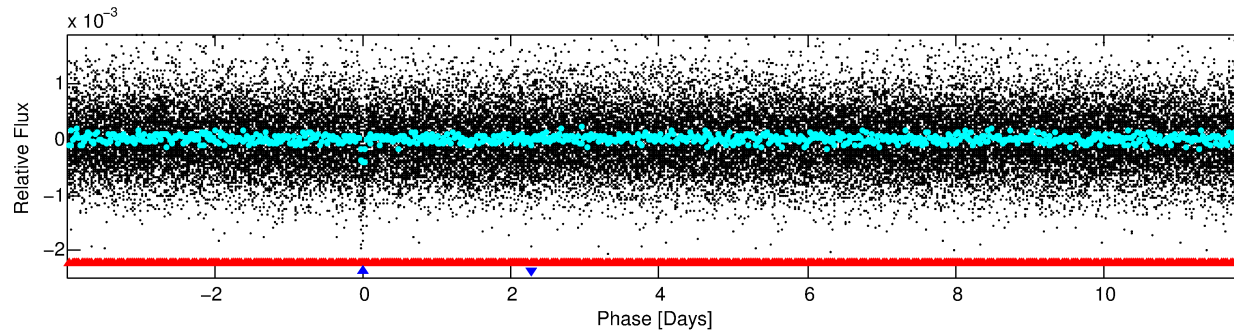
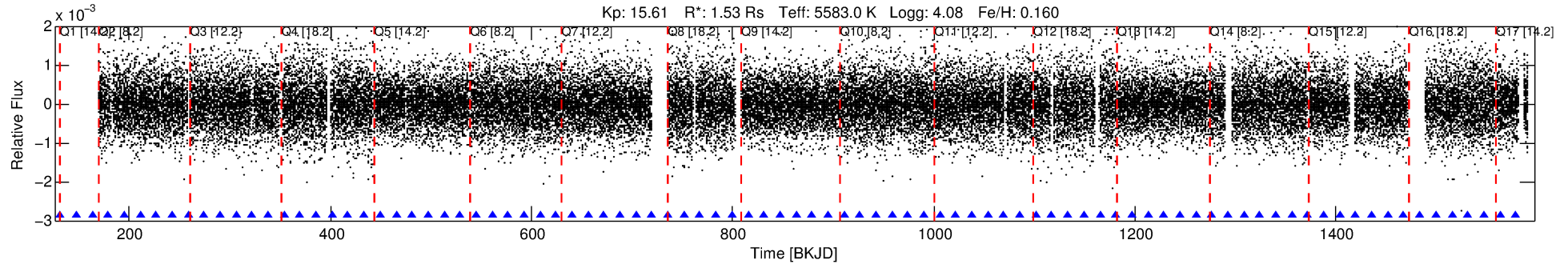
Ephemeris Match Information For 007449554-02

No Significant Match Found

DV One-Page Summary

KIC: 7449554 Candidate: 2 of 2 Period: 15.904 d
KOI: K02357.02 Corr: 0.930

Kp: 15.61 R*: 1.53 Rs Teff: 5583.0 K Logg: 4.08 Fe/H: 0.160



TPS TCE Results:

Period = 15.90411 d
Epoch = 147.4049 BKJD

DV fit results are unavailable

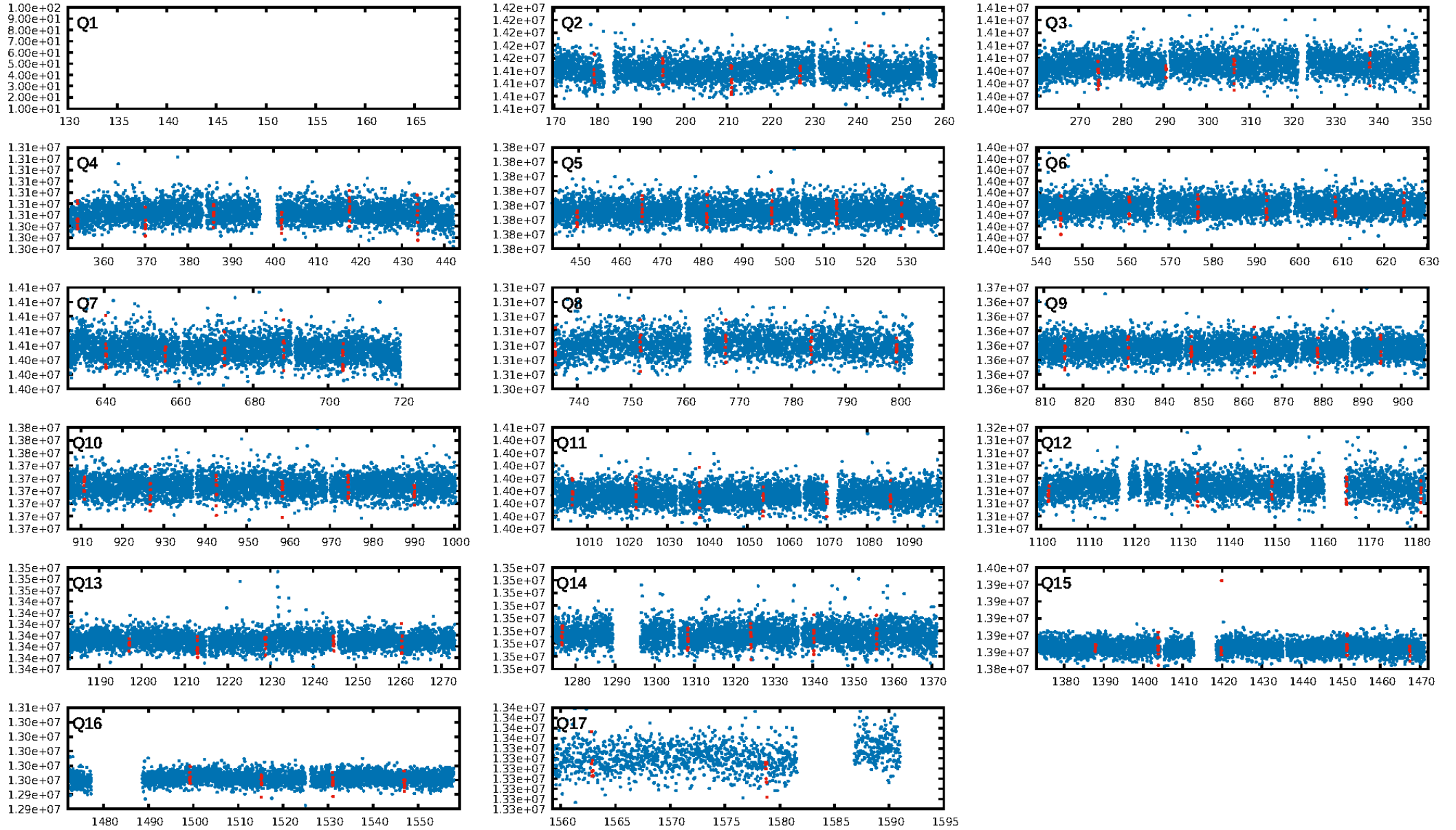
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [94.19σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.09e-24
RollingBand-fgt: 1.00 [70/70]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.382 arcsec [1.00σ]
KicOffset-rm: 0.441 arcsec [1.06σ]
OotOffset-st: 4/2/1/2 [9]
KicOffset-st: 4/2/1/2 [9]
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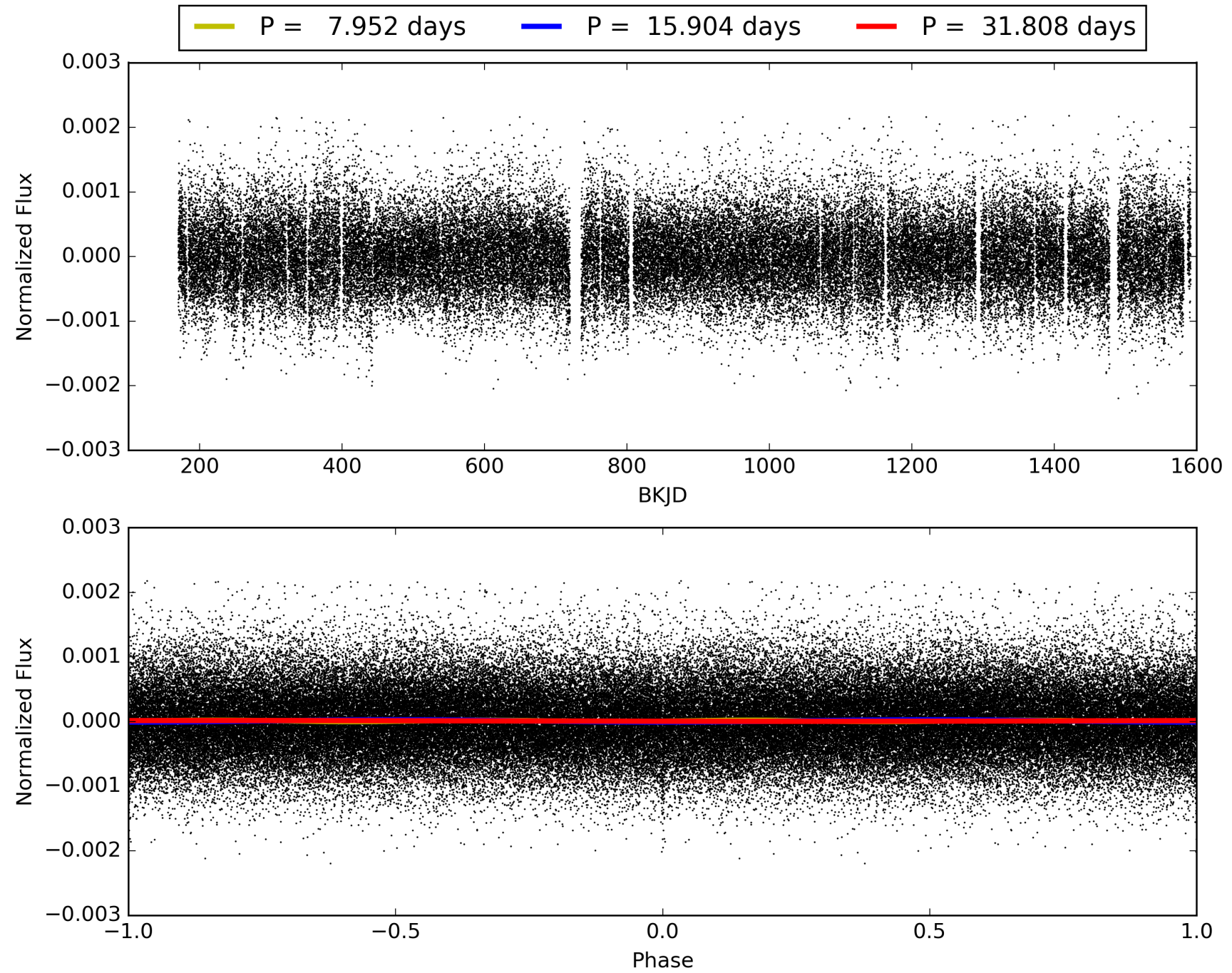
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:40:43 Z

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TCE 007449554-02, PDC Light Curves

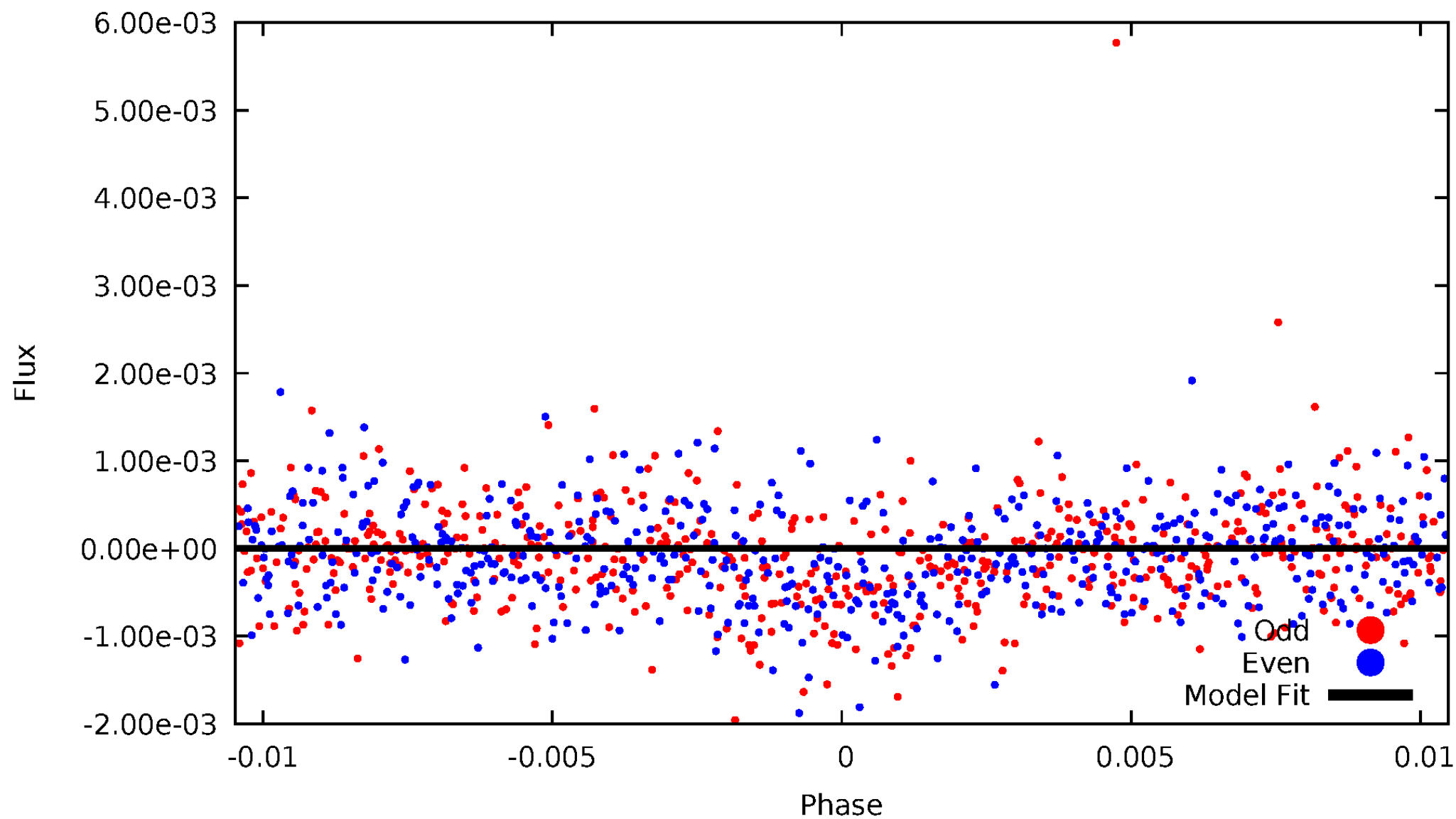


TCE 007449554-02



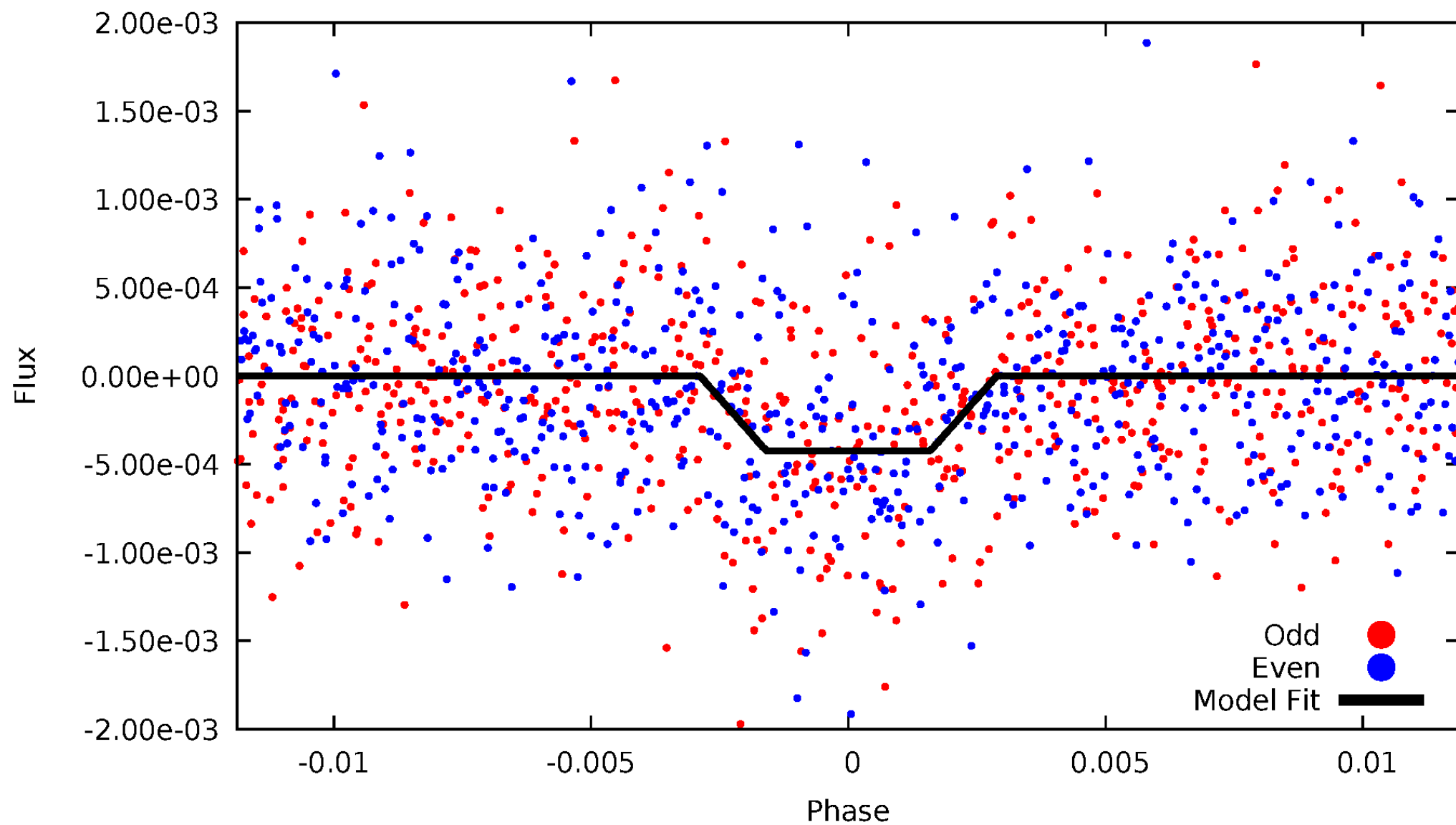
DV Odd/Even

TCE 007449554-02



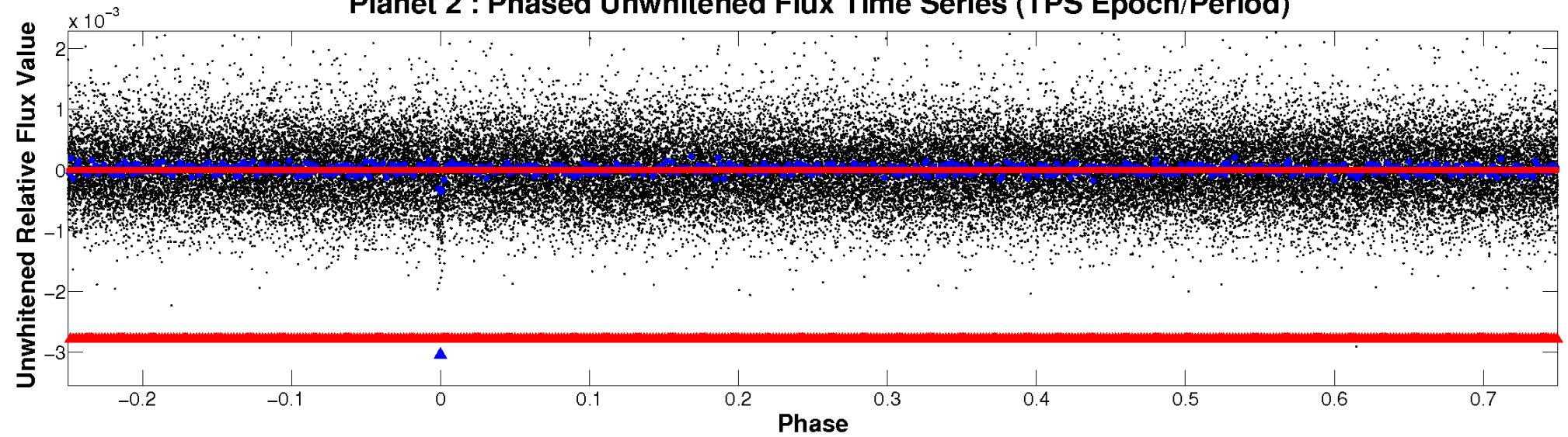
ALT Odd/Even

TCE 007449554-02

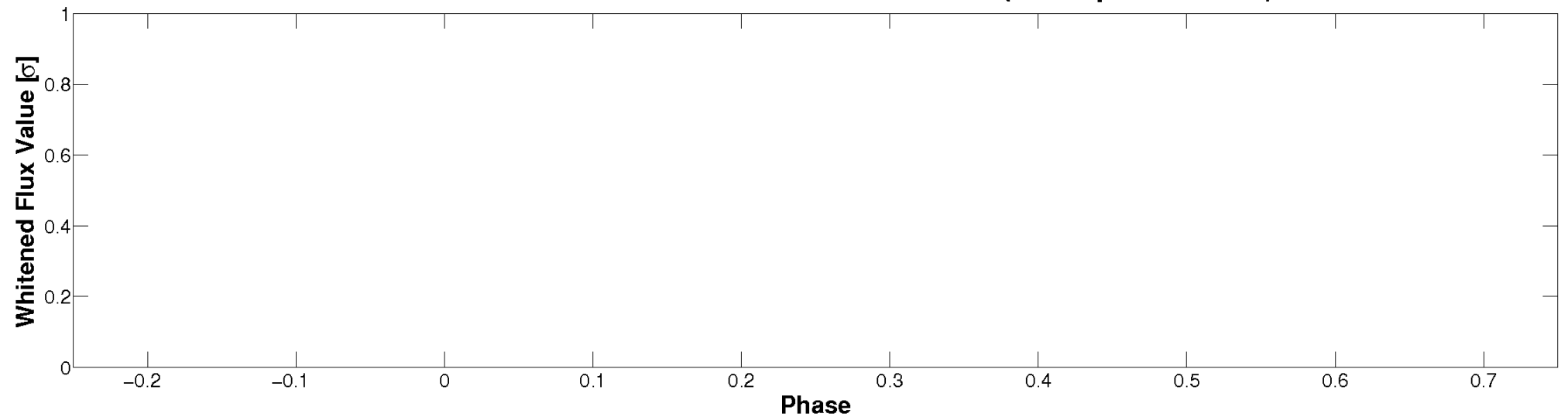


Non-Whitened Vs. Whitened Light Curve

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

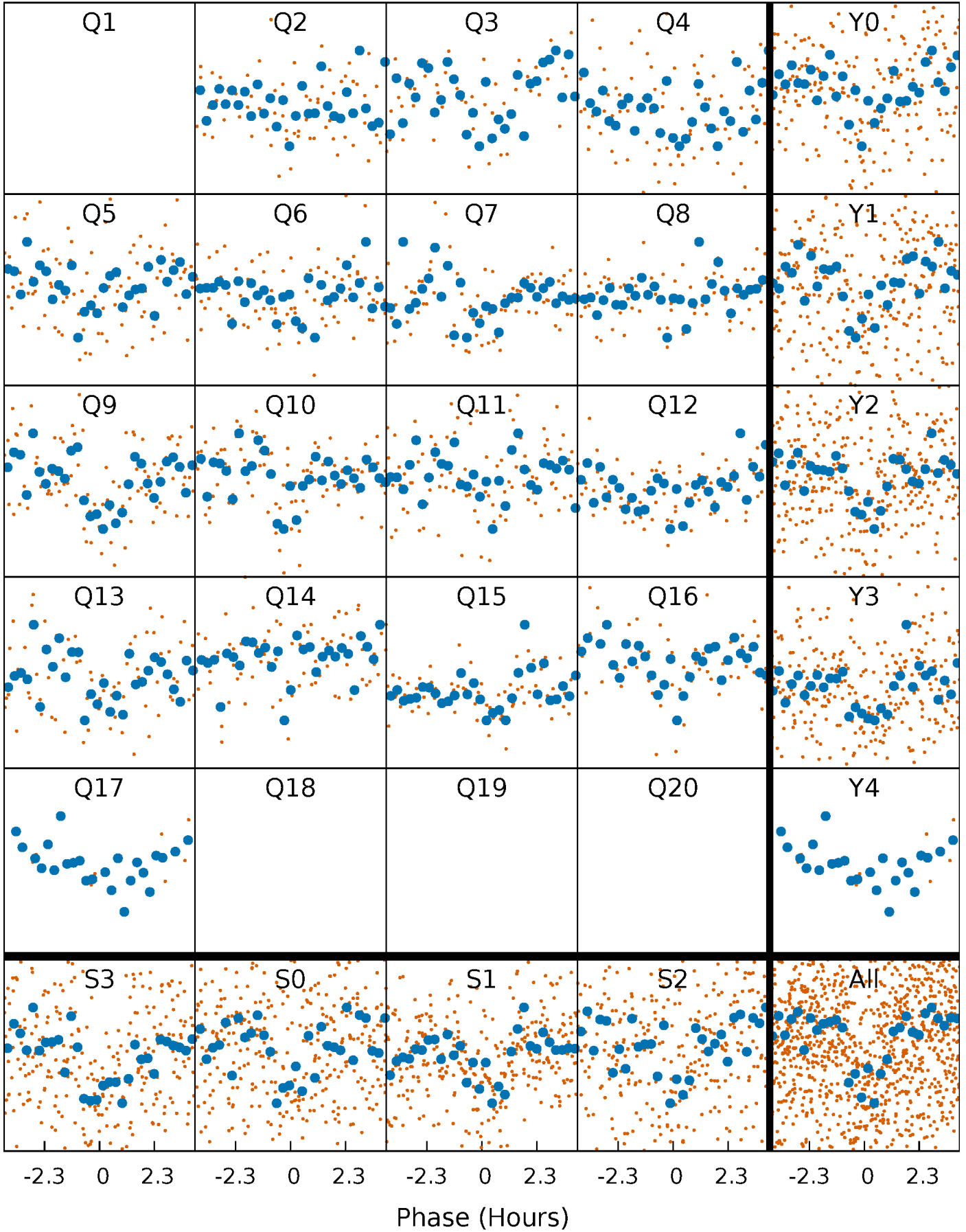


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



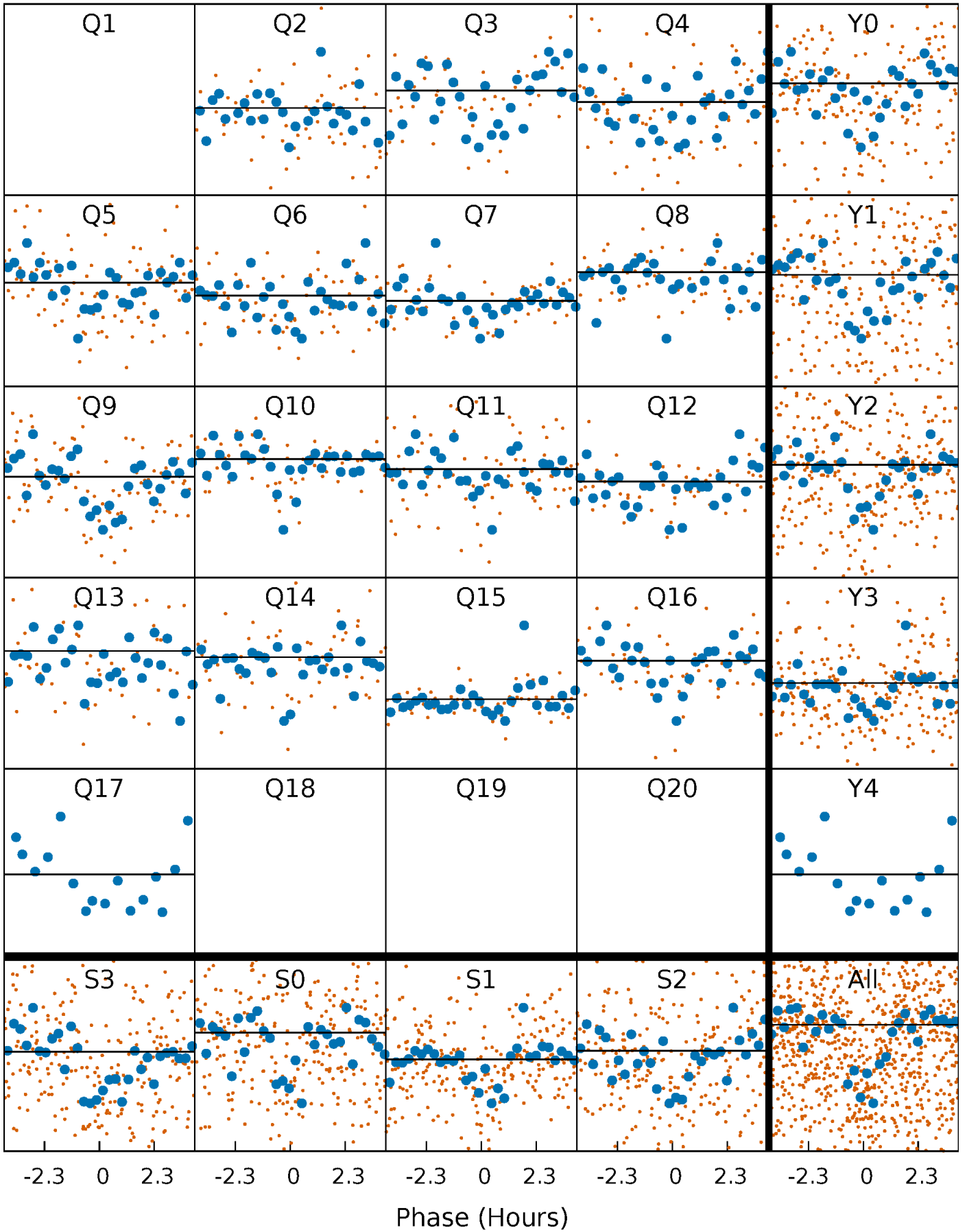
PDC Quarter-Phased Transit Curves

TCE 007449554-02 P= 15.904114 Days $T_0=147.404891$ (BKJD)



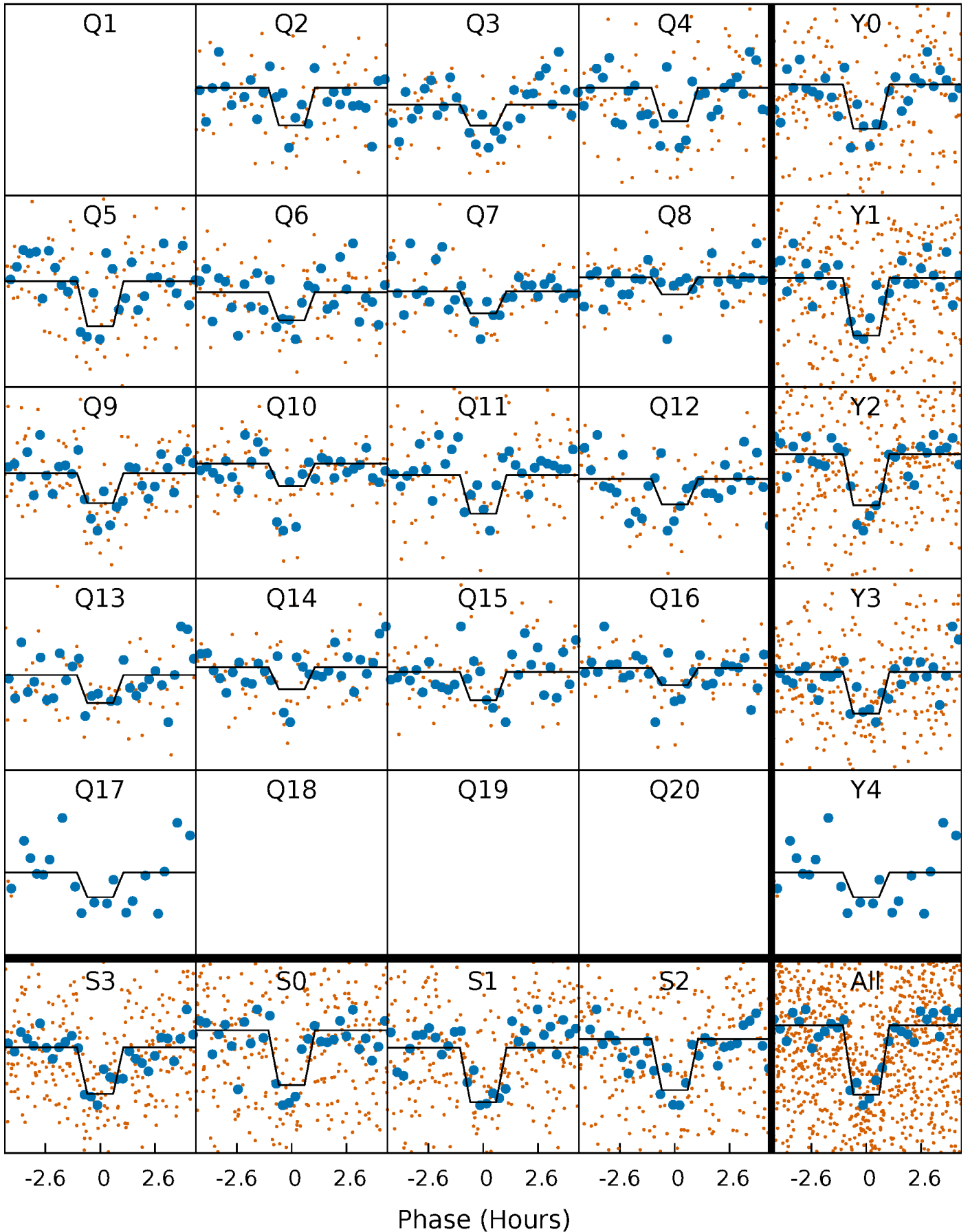
DV Quarter-Phased Transit Curves

TCE 007449554-02 P= 15.904114 Days $T_0=147.404891$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

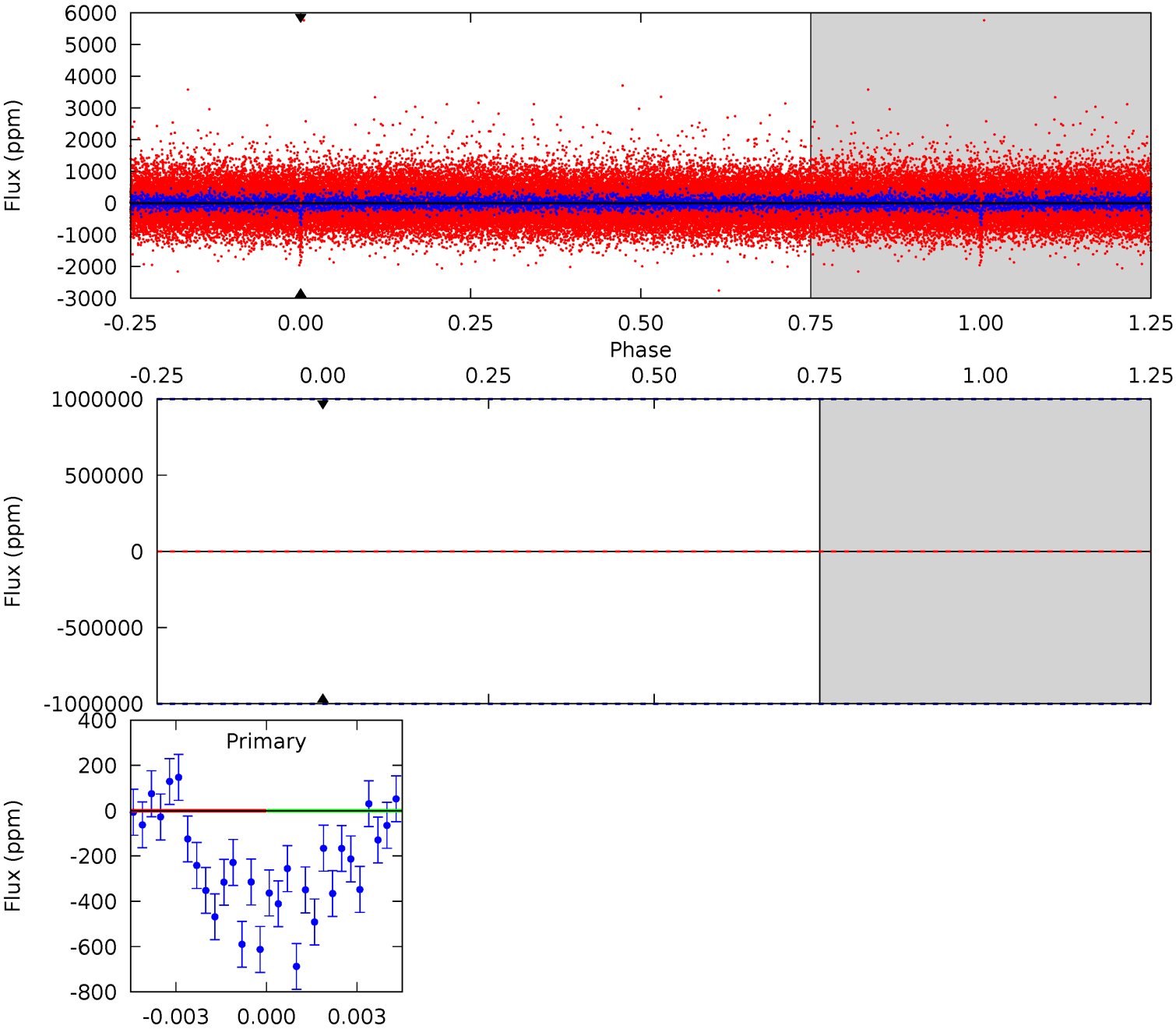
TCE 007449554-02 P= 15.904114 Days $T_0=131.504846$ (BKJD)



DV Model-Shift Uniqueness Test

007449554-02, P = 15.904114 Days, E = 147.404891 Days

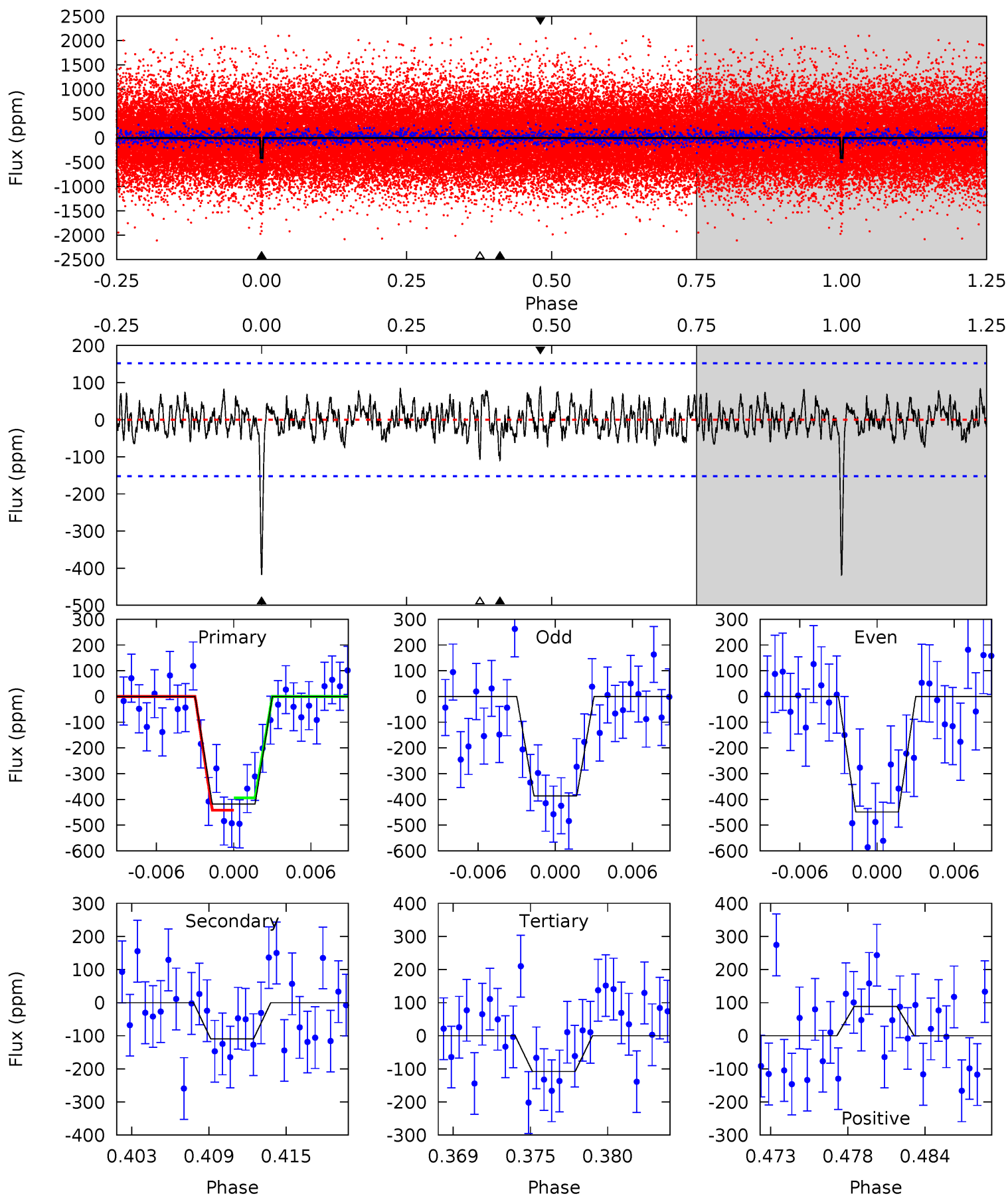
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Alt Model-Shift Uniqueness Test

007449554-02, P = 15.904114 Days, E = 131.504846 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.1 | 3.70 | 3.65 | 2.99 | 5.13 | 2.76 | 1.07 | 10.5 | 11.1 | 0.05 | 0.71 | 1.05 | 1.05 | 0.17 | 0.82 |



Stellar Parameters For KIC 007449554

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5583^{+83}_{-75} | $4.077^{+0.210}_{-0.090}$ | $0.160^{+0.150}_{-0.150}$ | $1.530^{+0.237}_{-0.355}$ | $1.017^{+0.084}_{-0.084}$ | $0.401^{+0.470}_{-0.114}$ |
| | +1%/-1% | +5%/-2% | +94%/-94% | +15%/-23% | +8%/-8% | +117%/-28% |
| 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 007449554-02 / KOI 2357.02

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|--------------------------|----------------------|---------------------------|-----------------------------------|
| DV | 0 ± 1000000 | $13.18^{+12.85}_{-9.00}$ | 1197^{+52}_{-73} | -4265^{+21826}_{-13944} | $-81.953^{+9707.891}_{-9361.086}$ |
| Alt. | -109 ± 30 | $11.91^{+14.89}_{-8.25}$ | 1197^{+57}_{-77} | 2783^{+1230}_{-540} | $6.314^{+61.201}_{-5.035}$ |

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

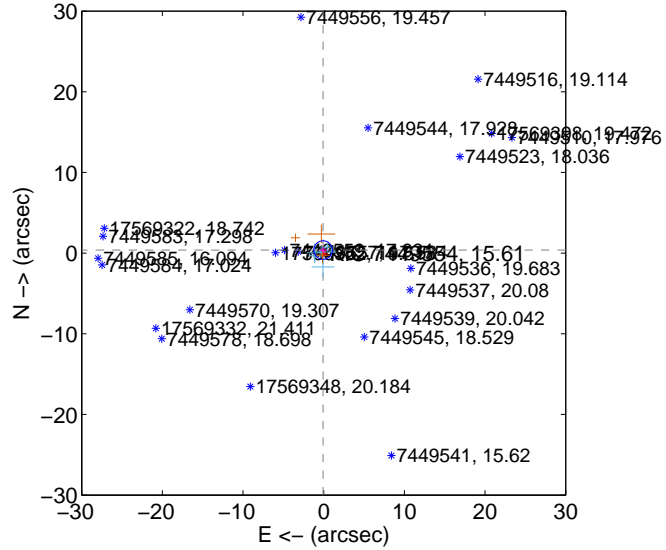
Supplemental centroid analysis for 007449554-02. Kepler magnitude: 15.61. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

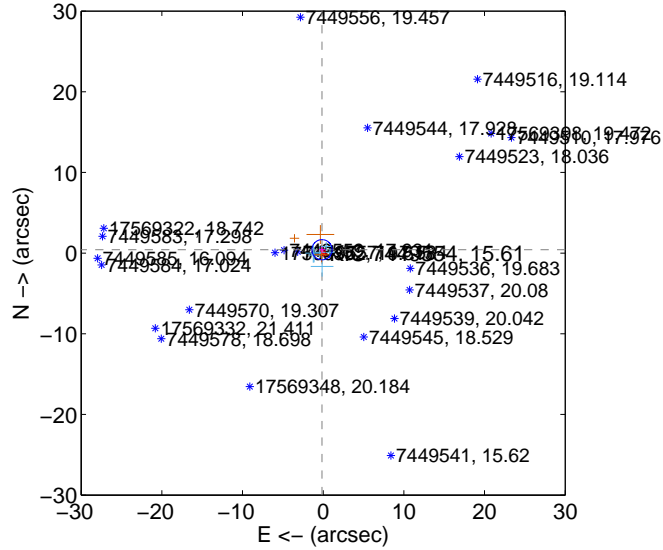
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.382 ± 0.383 | 1.00 | 0.072 ± 0.395 | 0.375 ± 0.352 |
| PRF-fit source offset from KIC position | 0.441 ± 0.417 | 1.06 | 0.144 ± 0.387 | 0.417 ± 0.378 |
| photometric centroid source offset | — | — | — | — |

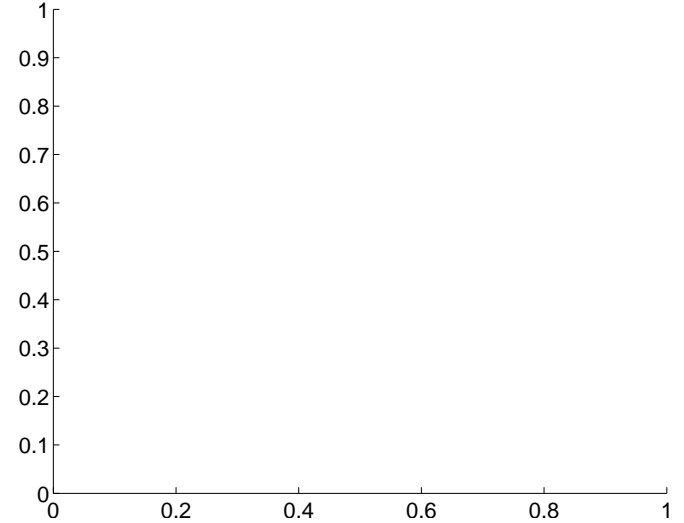
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

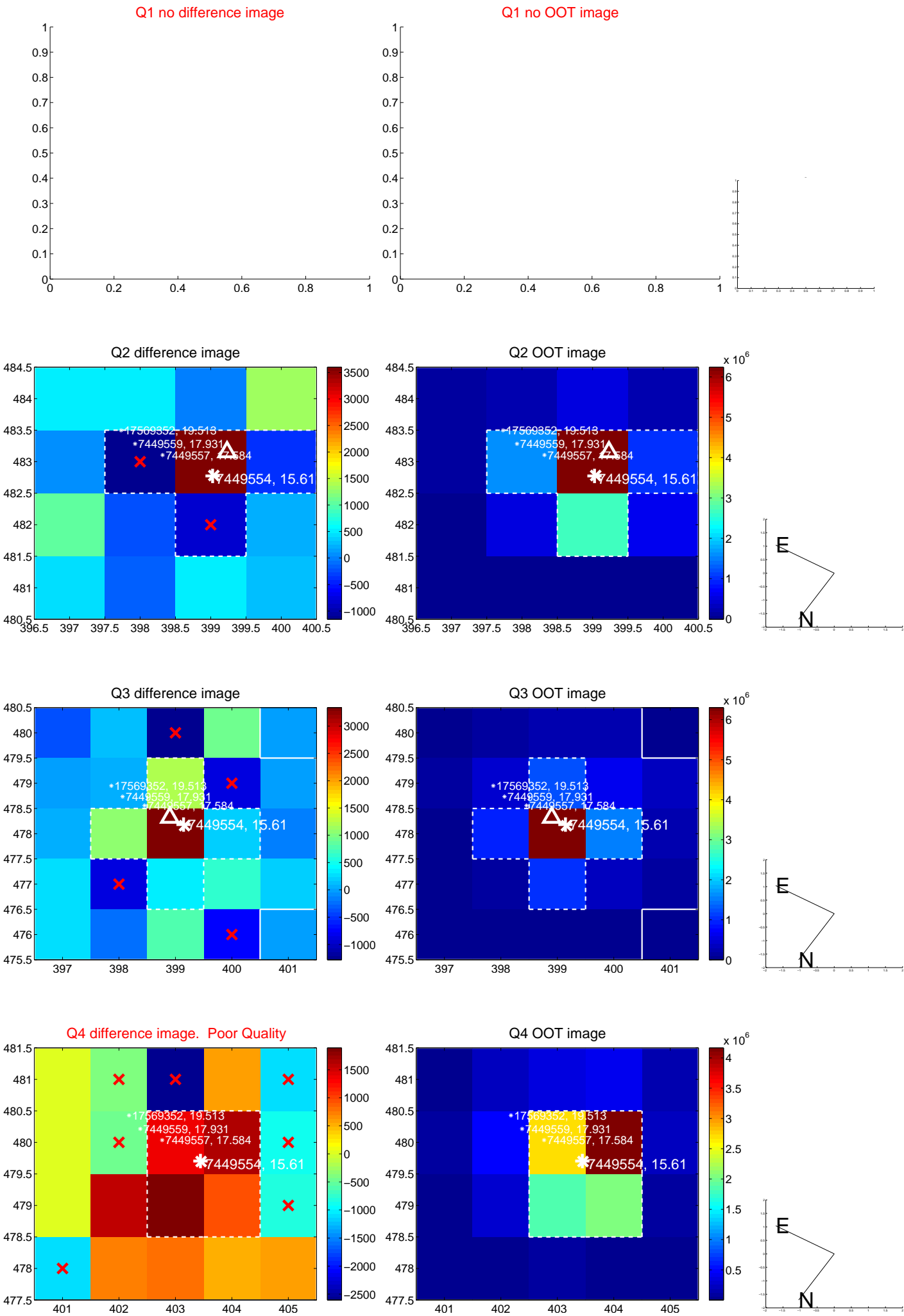


There are no photometric centroids

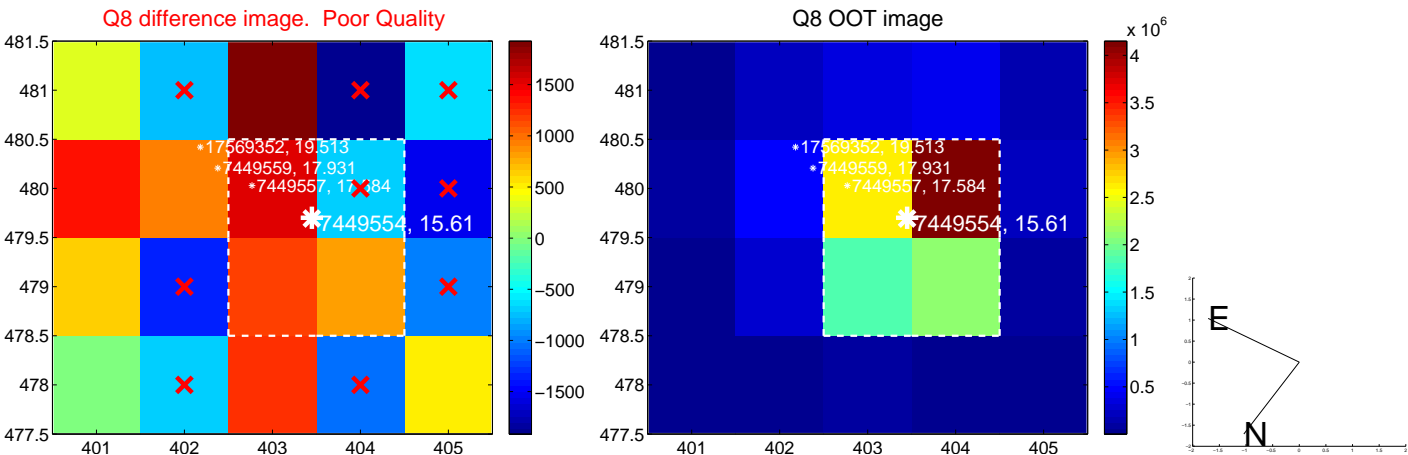
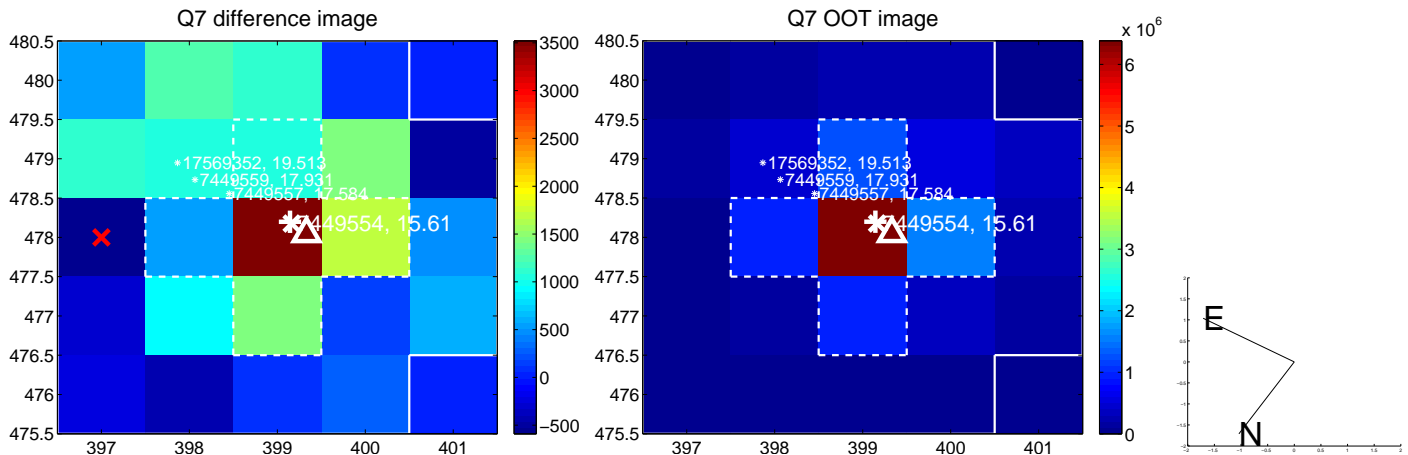
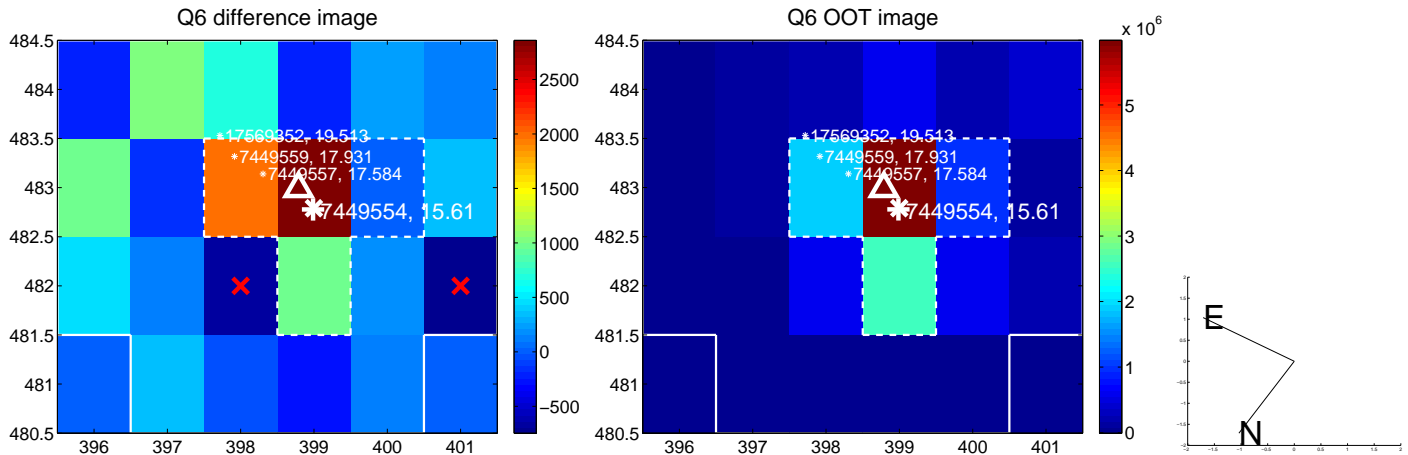
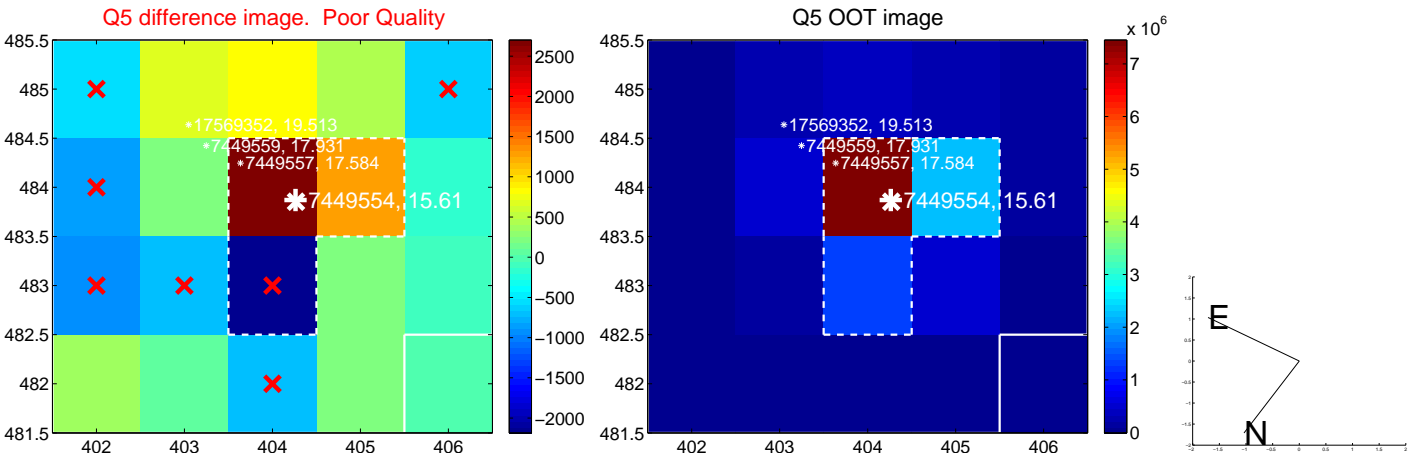


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

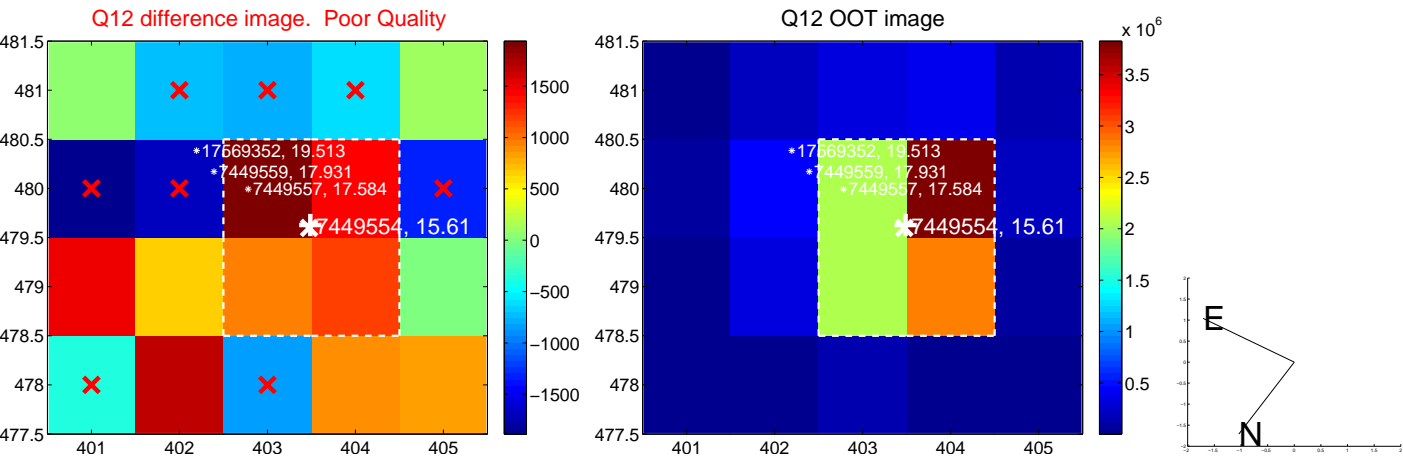
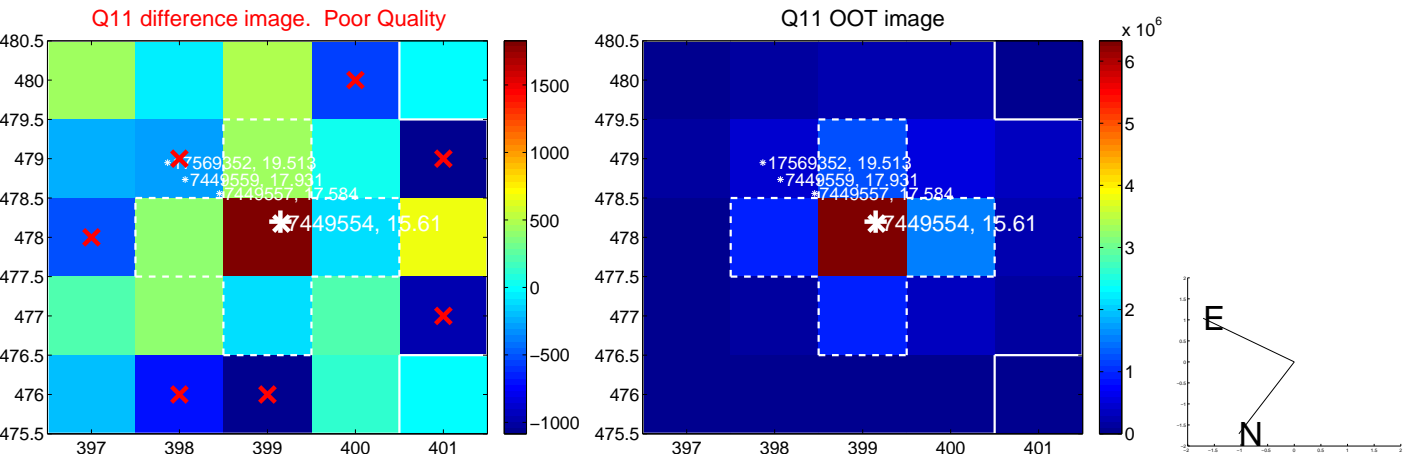
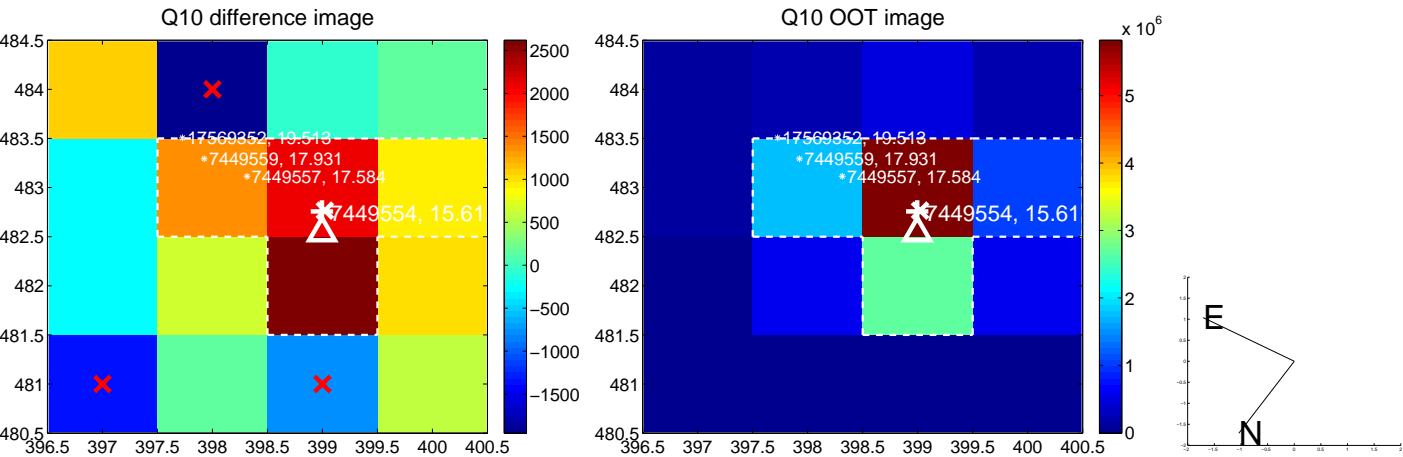
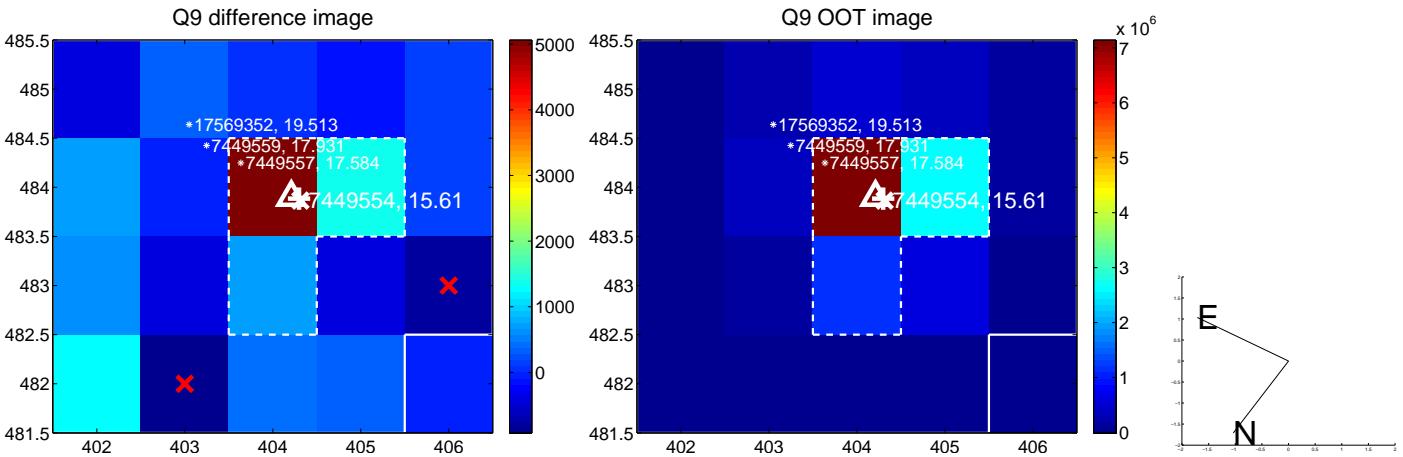
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



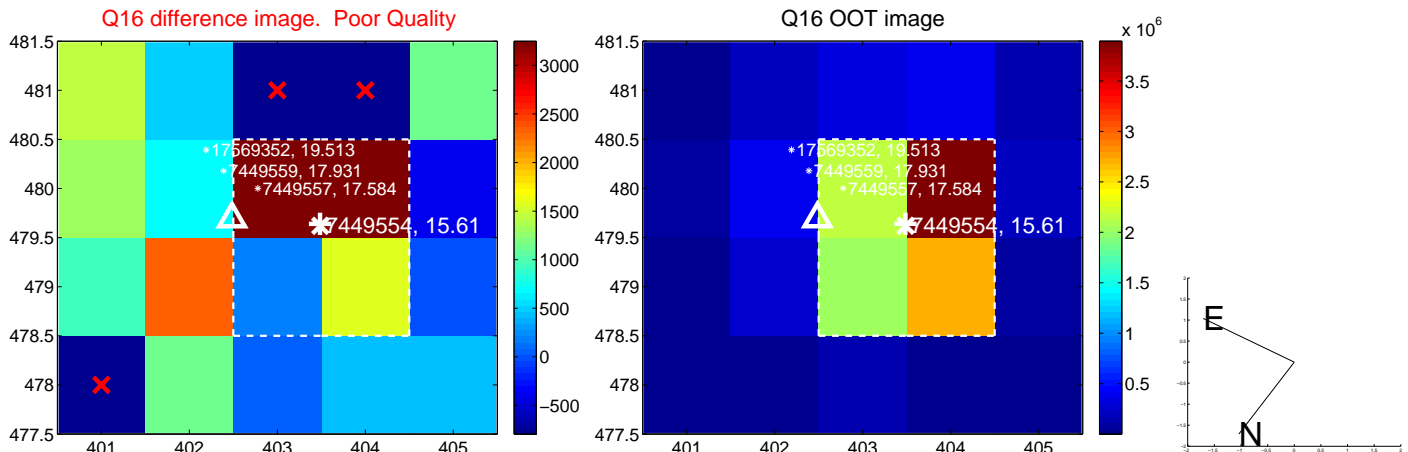
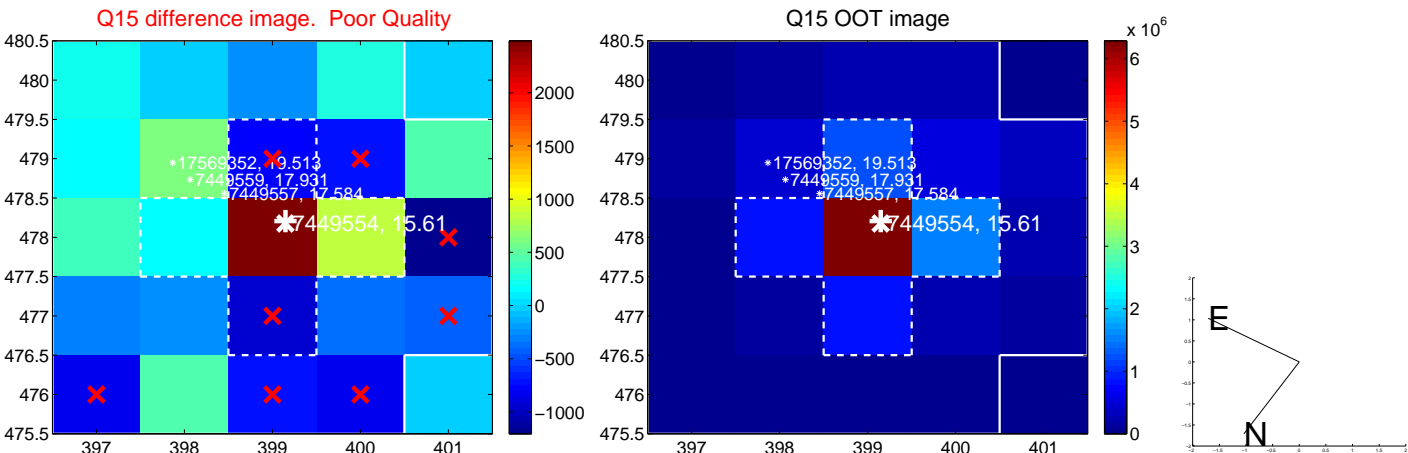
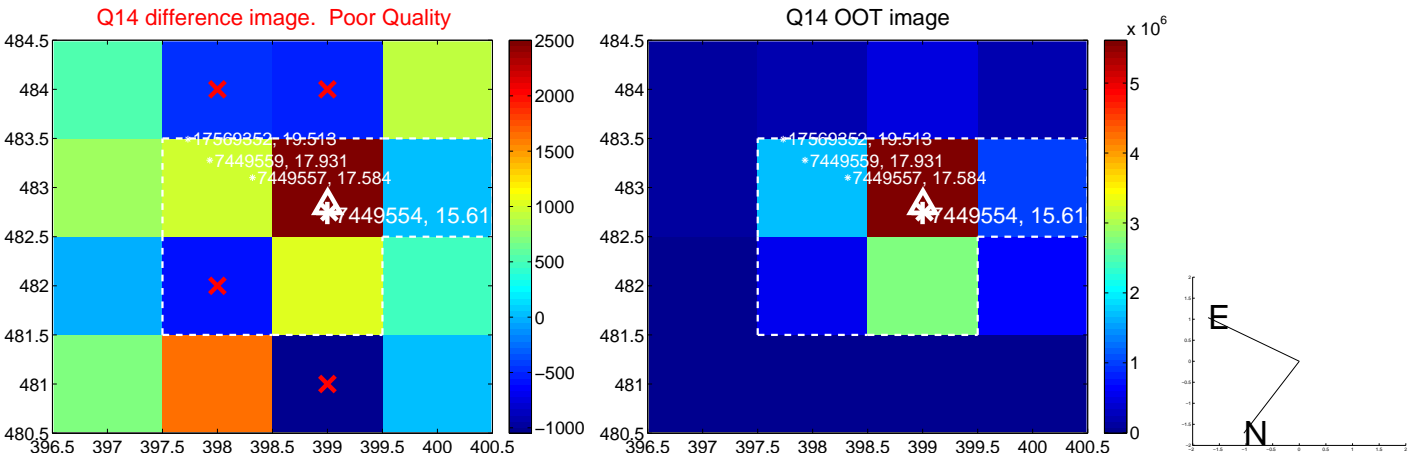
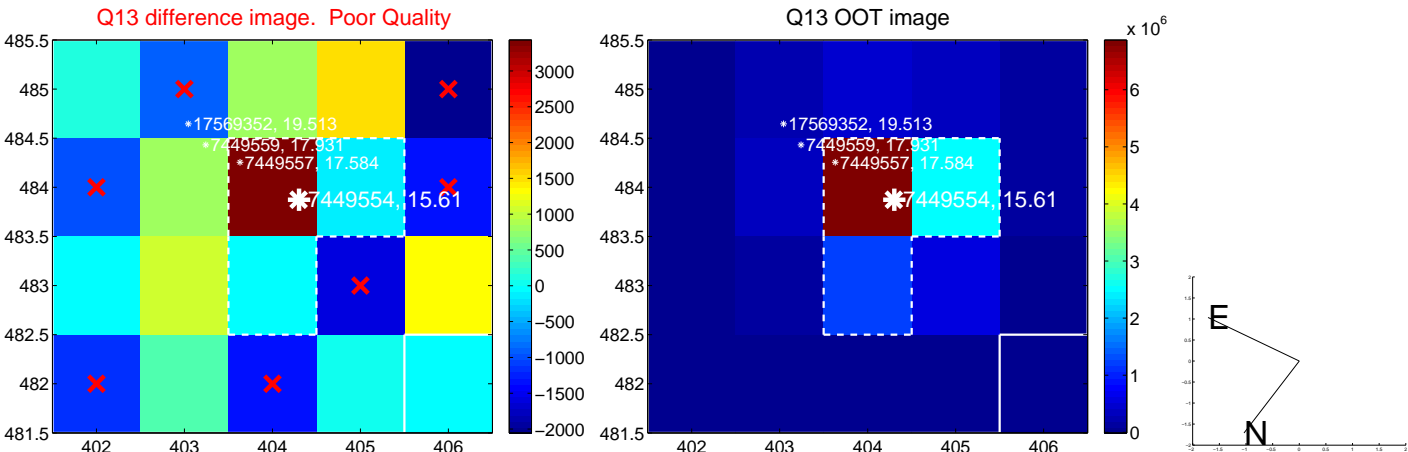
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



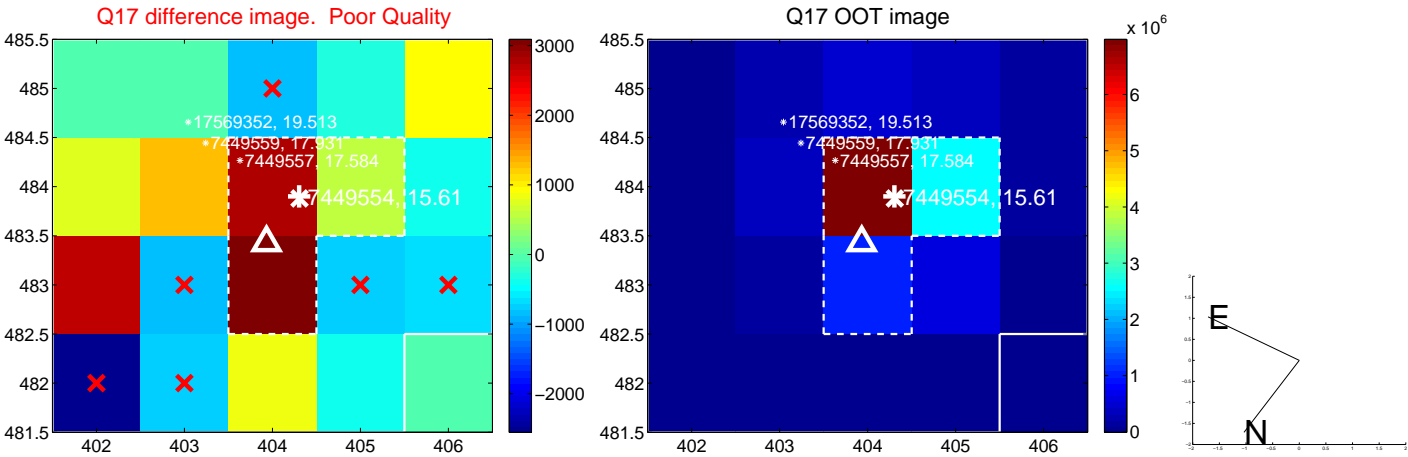
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

Declination

