

KIC 005217910

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005217910-01 | OBS | No | 3.553696 | 132.238699 | 87.3 | 12.270 | 13.1 | 10.3 | 1.08 | 5931 | 1.02 | 635.99 |
| 005217910-02 | OBS | No | 3.554525 | 133.501261 | 115.0 | 20.671 | 12.3 | 17.3 | 1.08 | 5931 | 1.16 | 635.79 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005217910-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV |
| 005217910-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD |

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

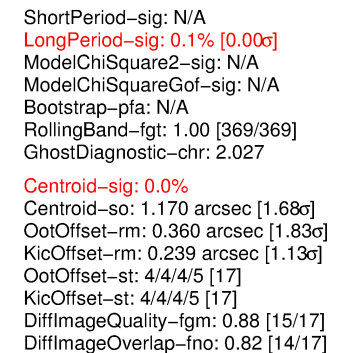
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

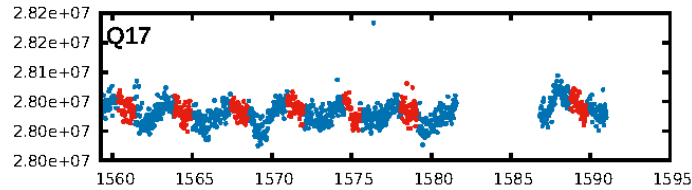
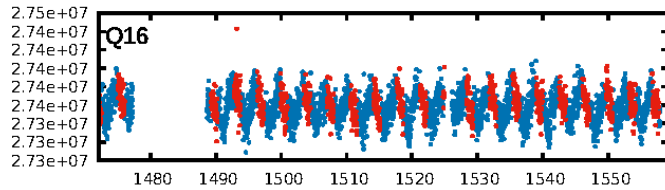
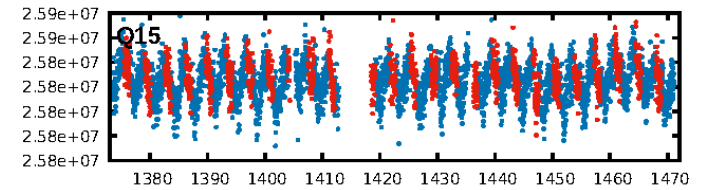
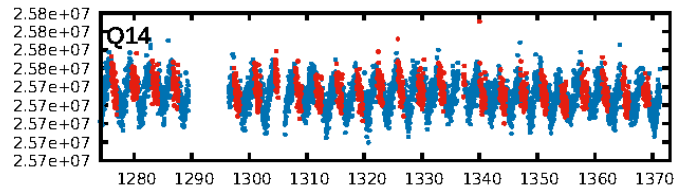
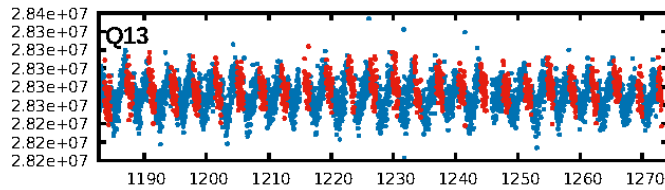
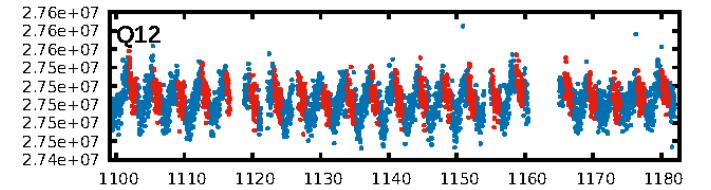
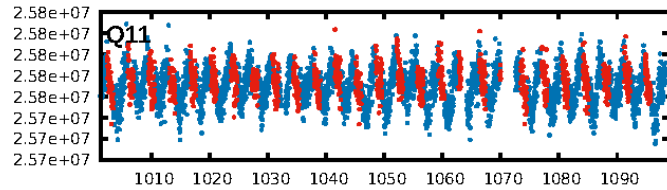
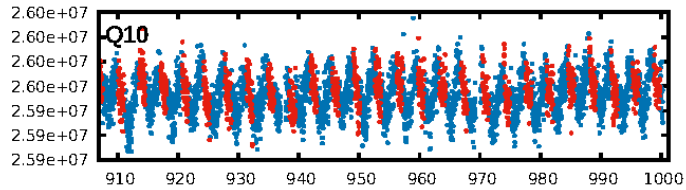
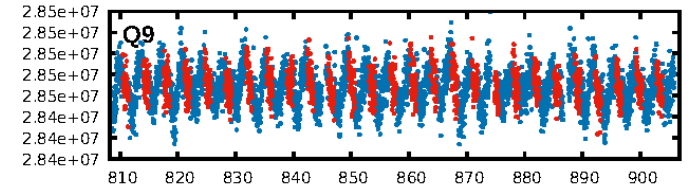
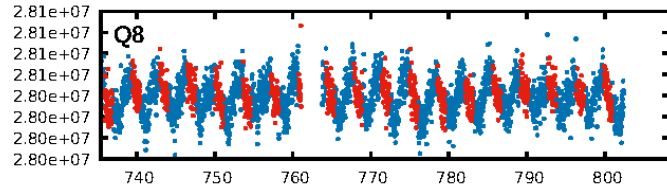
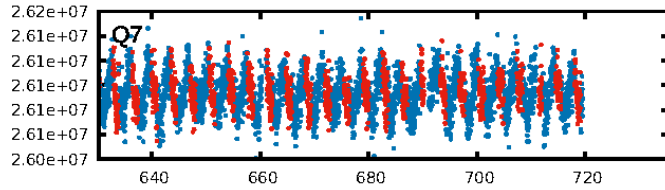
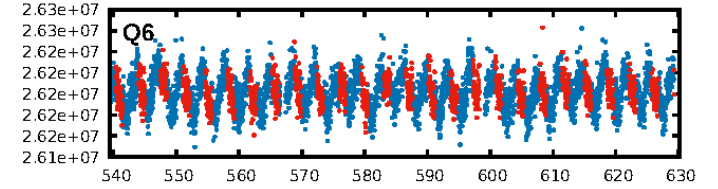
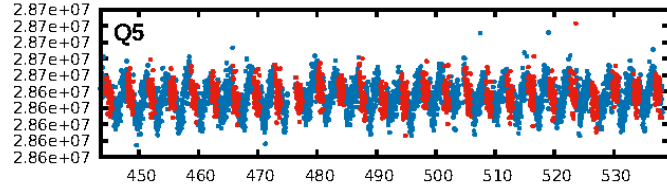
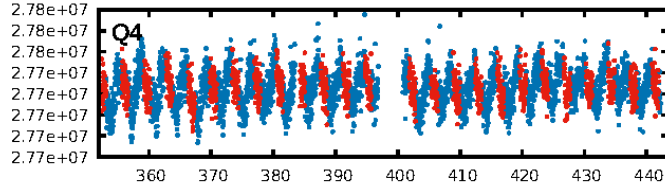
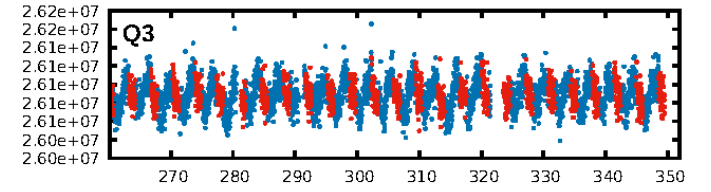
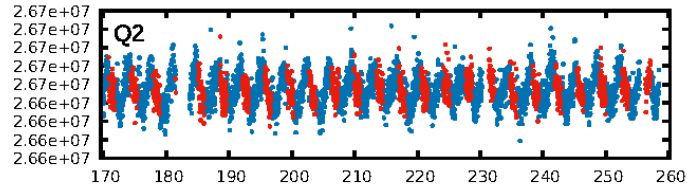
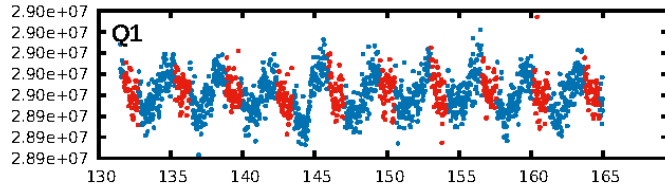
Ephemeris Match Information For 005217910-01

No Significant Match Found

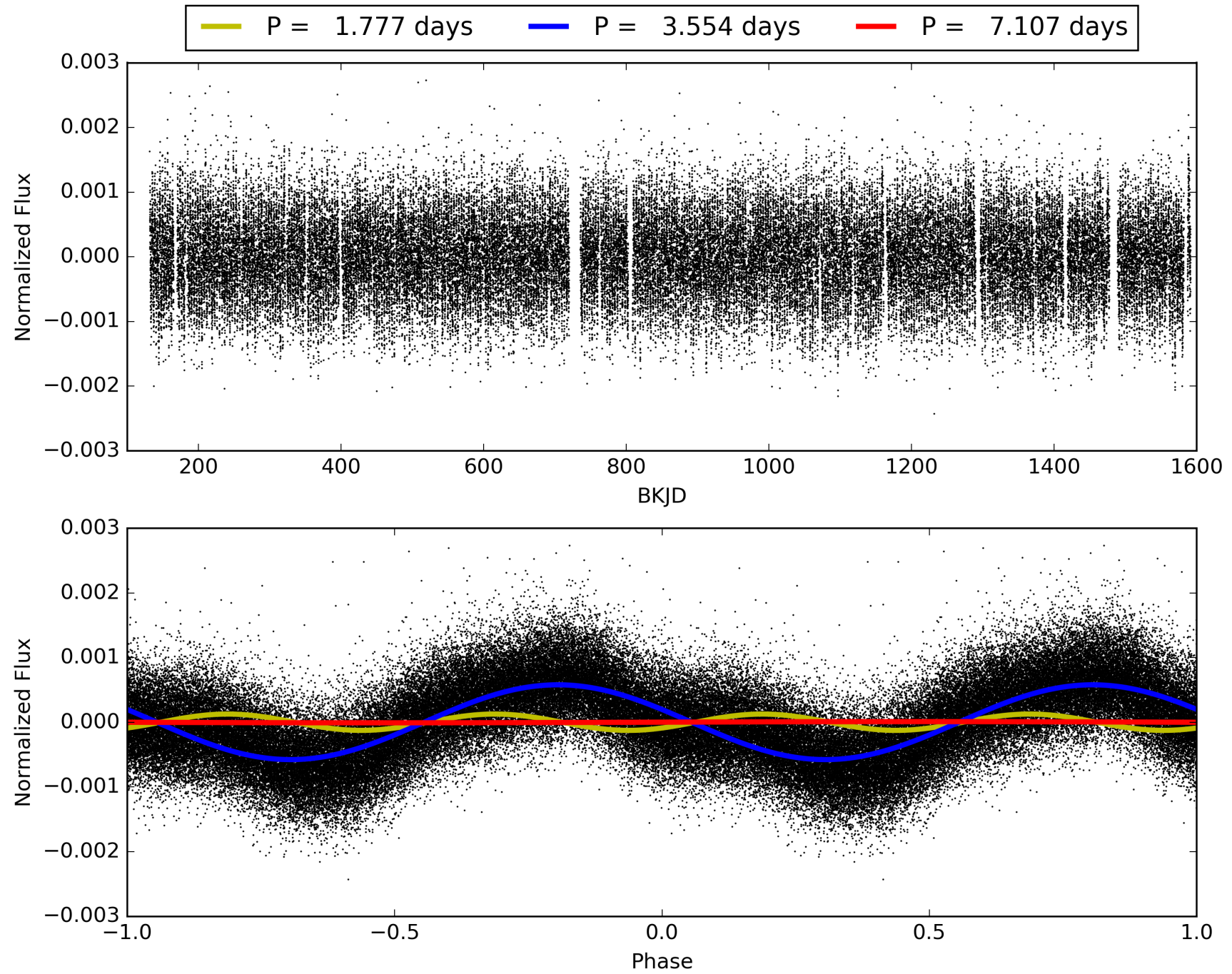
KIC: 5217910 Candidate: 1 of 2 Period: 3.554 d



TCE 005217910-01, PDC Light Curves

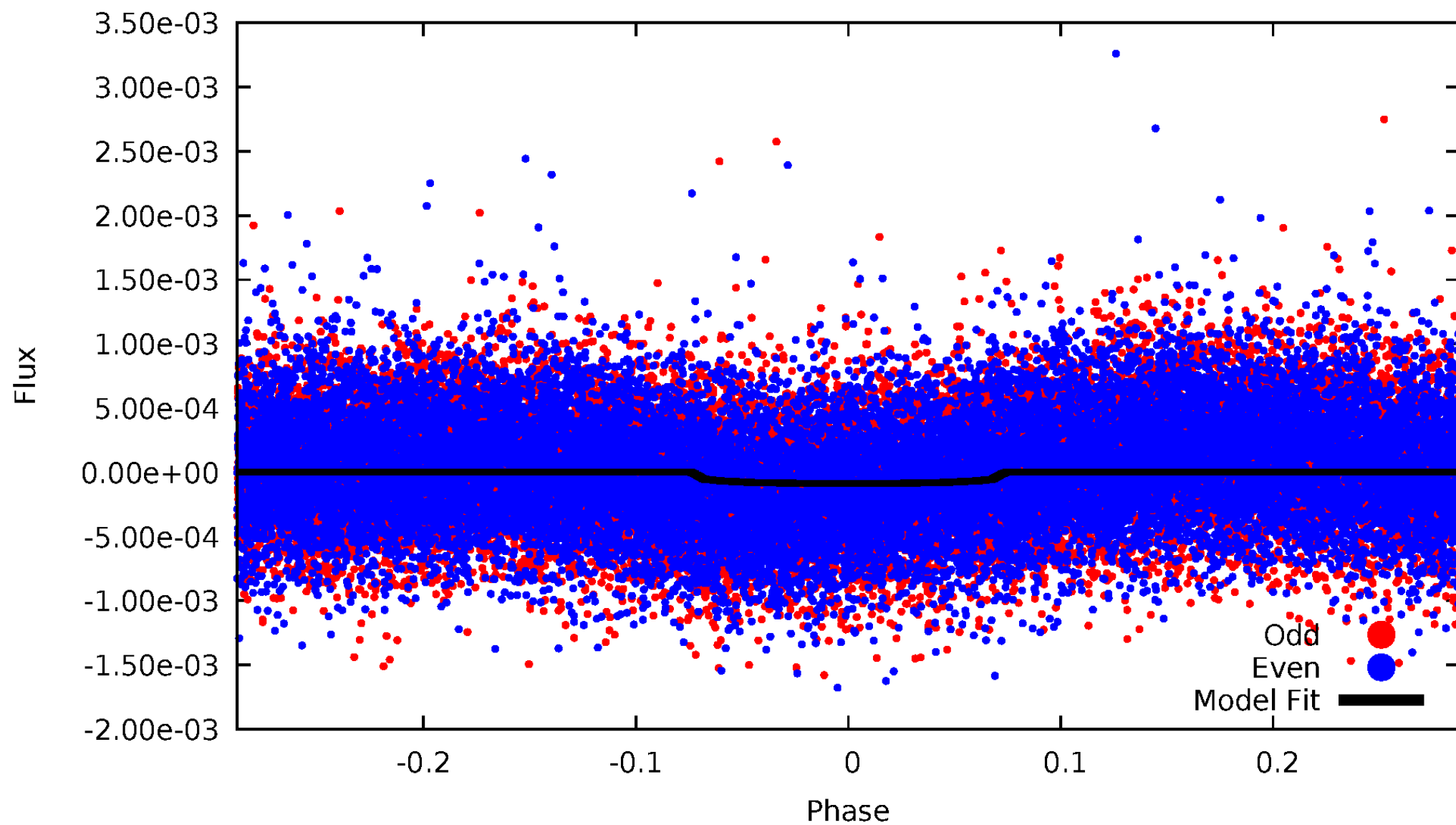


TCE 005217910-01



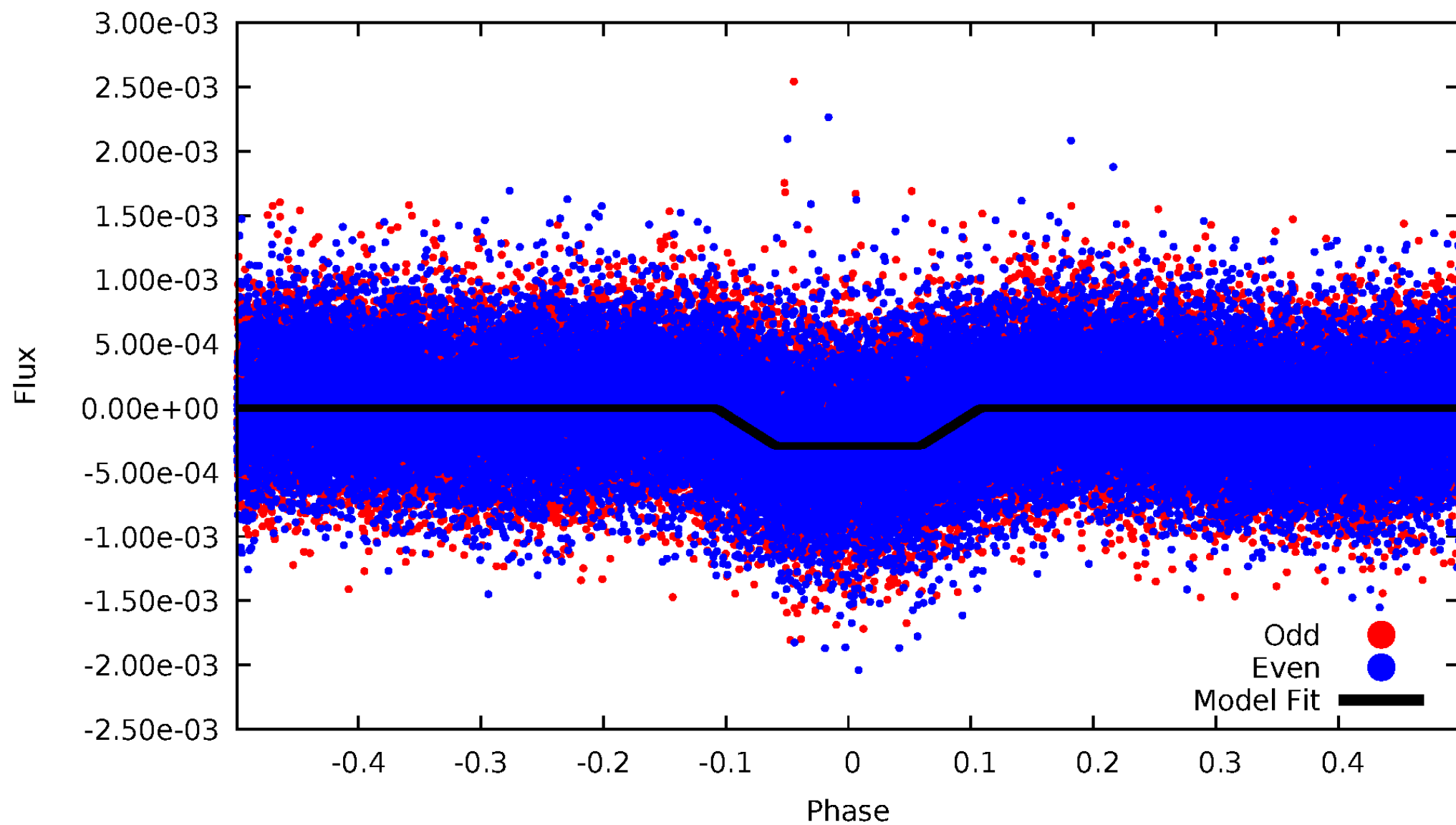
DV Odd/Even

TCE 005217910-01

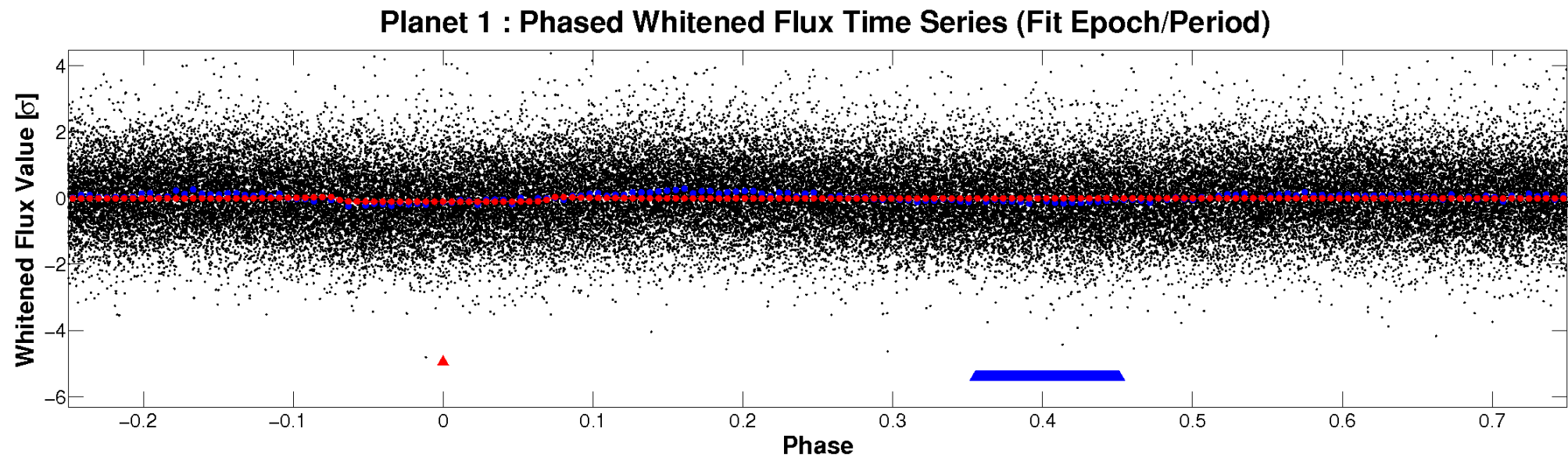
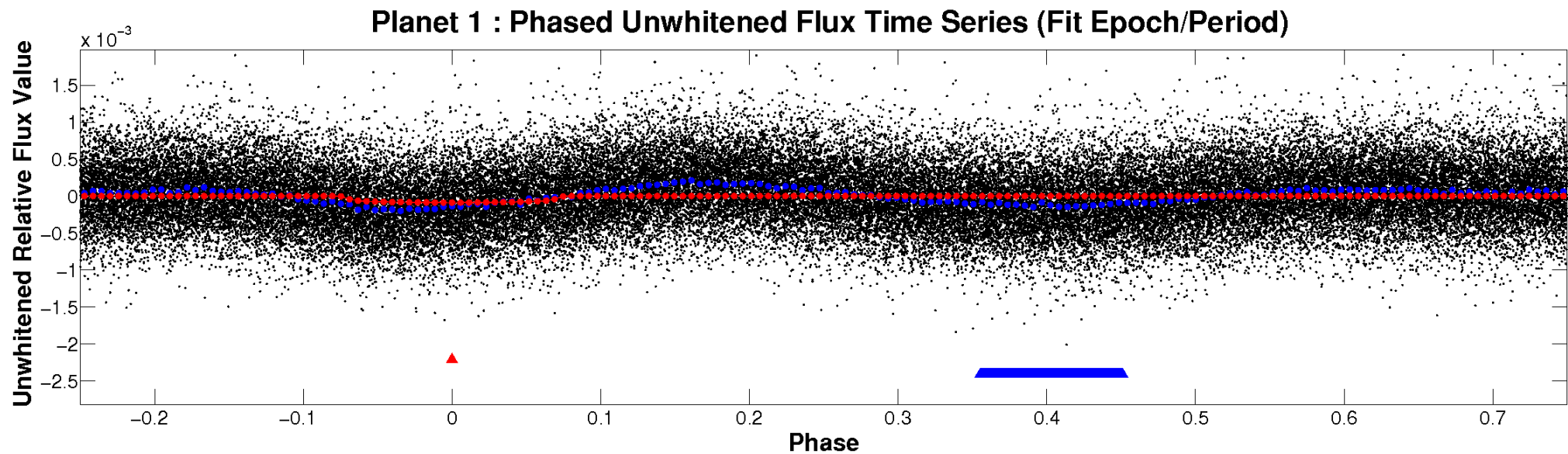


ALT Odd/Even

TCE 005217910-01

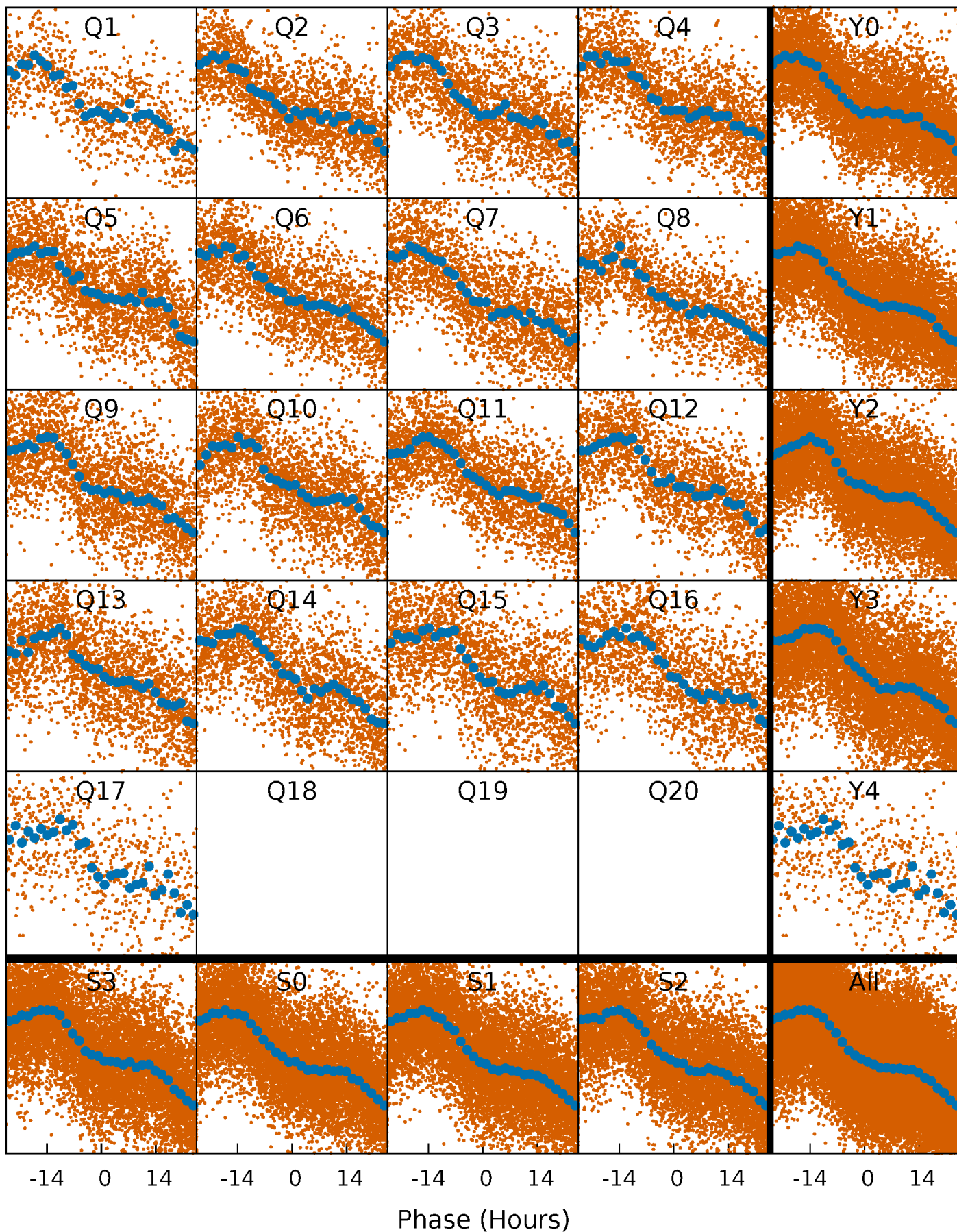


Non-Whitened Vs. Whitened Light Curve



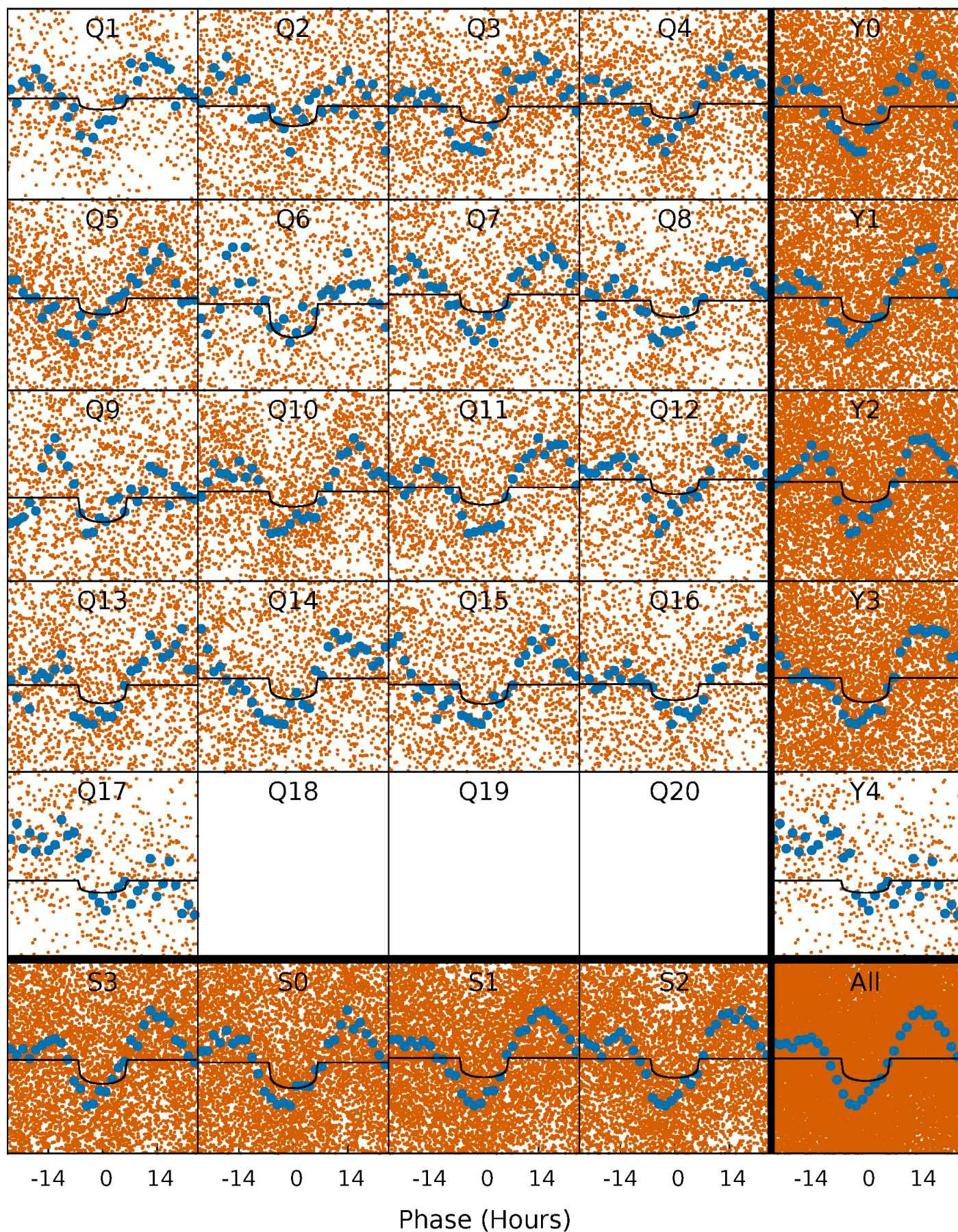
PDC Quarter-Phased Transit Curves

TCE 005217910-01 P= 3.553696 Days $T_0=132.238699$ (BKJD)



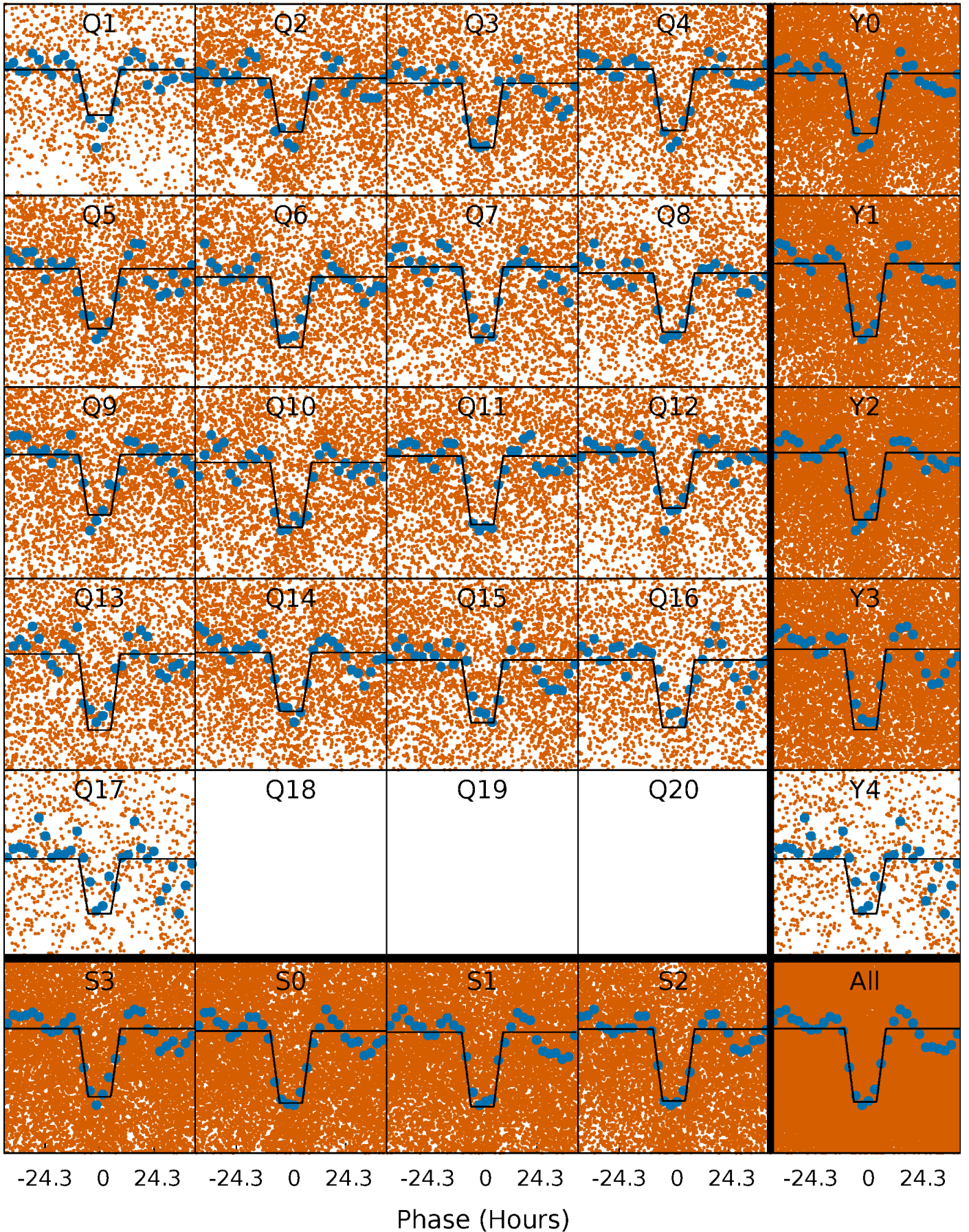
DV Quarter-Phased Transit Curves

TCE 005217910-01 P= 3.553696 Days $T_0=132.238699$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

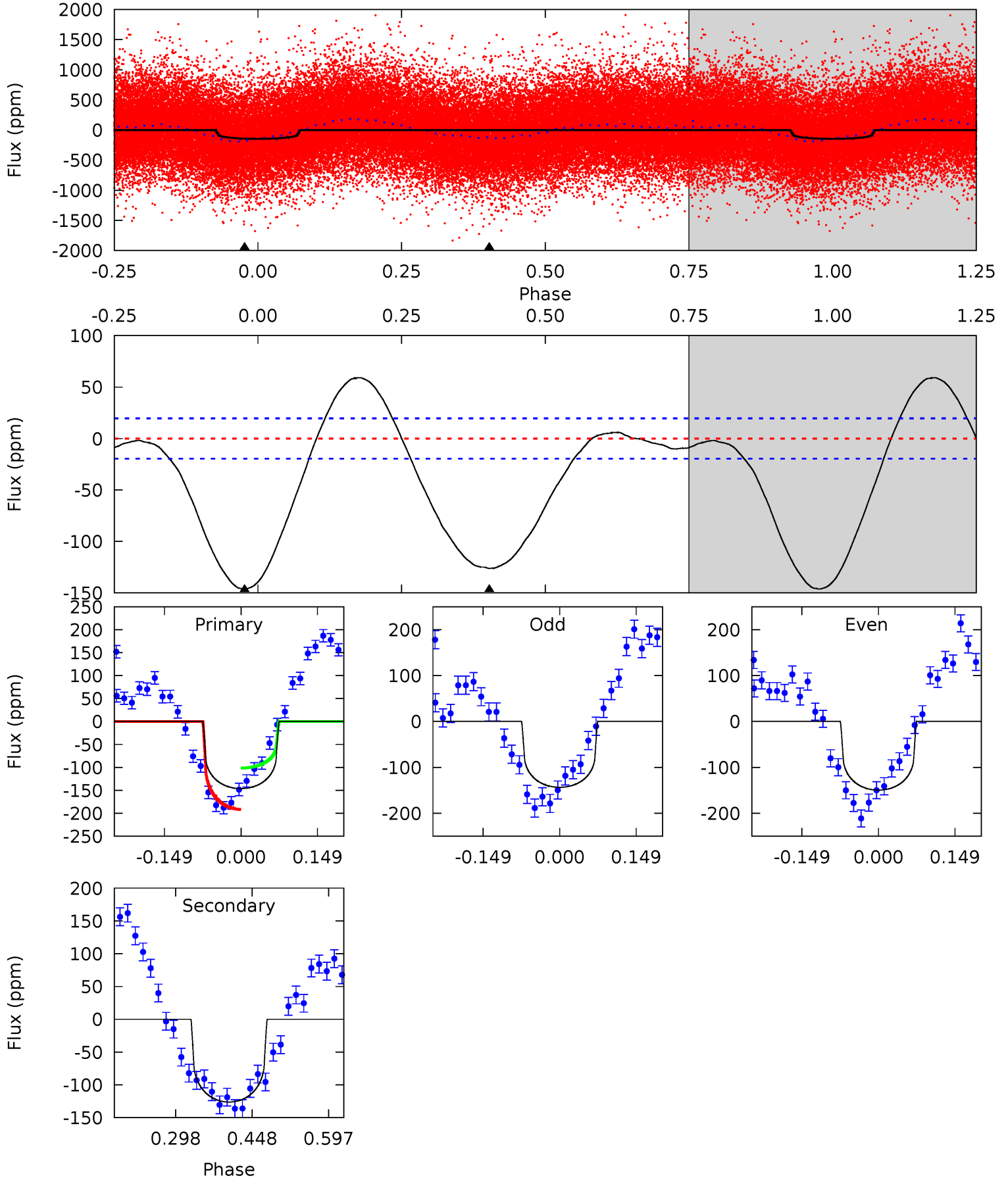
TCE 005217910-01 P= 3.554022 Days $T_0=132.150887$ (BKJD)



DV Model-Shift Uniqueness Test

005217910-01, P = 3.553696 Days, E = 128.685003 Days

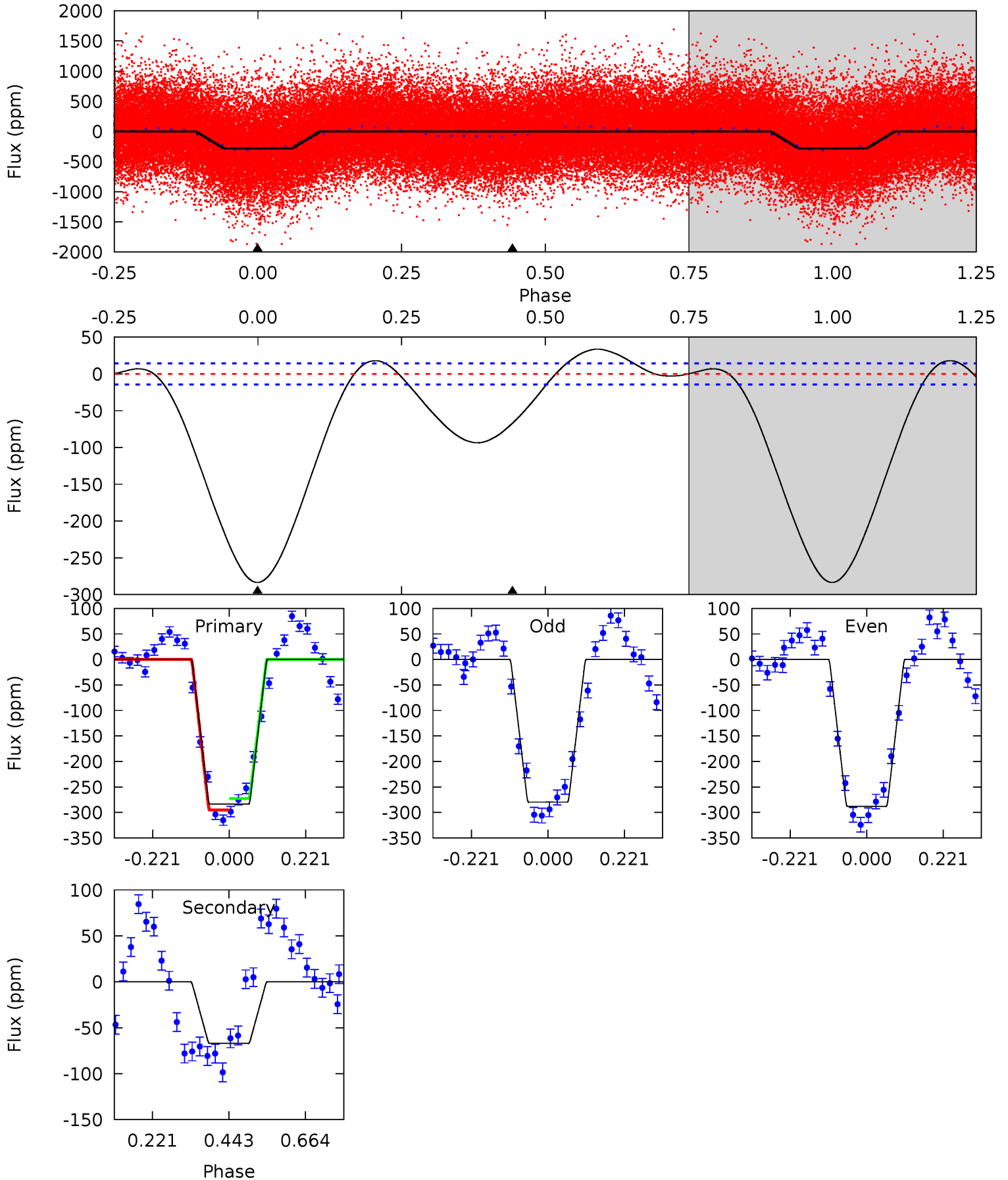
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 33.4 | 28.8 | 0 | 0 | 4.48 | 1.44 | 5.35 | 33.4 | 33.4 | 28.8 | 28.8 | 0.70 | 0.95 | 0.29 | 10.2 |



Alt Model-Shift Uniqueness Test

005217910-01, P = 3.554022 Days, E = 128.596865 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 86.8 | 20.5 | 0 | 0 | 4.40 | 1.22 | 1.09 | 86.8 | 86.8 | 20.5 | 20.5 | 1.26 | 0.97 | 0.11 | 3.40 |



Stellar Parameters For KIC 005217910

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5931^{+184}_{-205} | $4.359^{+0.128}_{-0.192}$ | $-0.100^{+0.300}_{-0.300}$ | $1.085^{+0.322}_{-0.173}$ | $0.982^{+0.140}_{-0.115}$ | $1.082^{+0.652}_{-0.550}$ |
| | +3%/-3% | +3%/-4% | +300%/-300% | +30%/-16% | +14%/-12% | +60%/-51% |
| 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 005217910-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|------------------------|--------------------|
| DV | -126 ± 4 | $1.17^{+0.83}_{-0.67}$ | 1800^{+132}_{-103} | 6410^{+4332}_{-1453} | 106^{+458}_{-71} |
| Alt. | -67 ± 3 | $2.09^{+0.97}_{-0.89}$ | 1802^{+132}_{-115} | 4262^{+1087}_{-473} | 17^{+37}_{-9} |

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

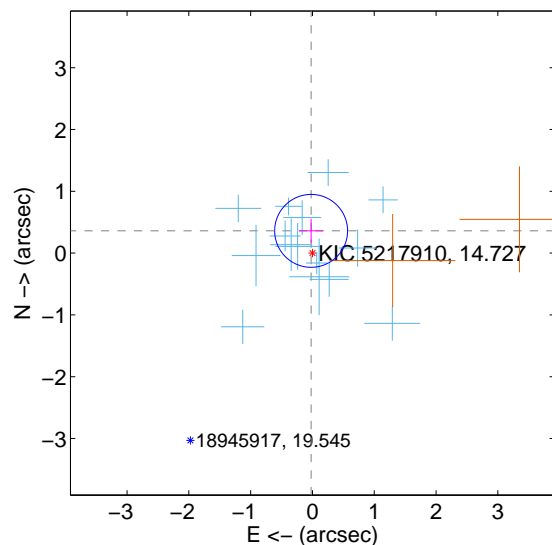
Supplemental centroid analysis for 005217910-01. Kepler magnitude: 14.73. Transit SNR 10.27

There are 15 quarters with good PRF difference image offsets

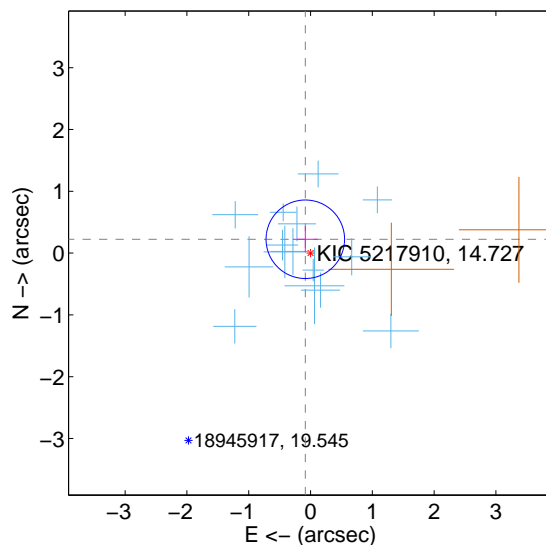
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.360 ± 0.197 | 1.83 | 0.021 ± 0.197 | 0.360 ± 0.197 |
| PRF-fit source offset from KIC position | 0.239 ± 0.212 | 1.13 | 0.084 ± 0.202 | 0.224 ± 0.213 |
| photometric centroid source offset | 1.17 ± 0.70 | 1.68 | 0.05 ± 0.73 | 1.17 ± 0.70 |

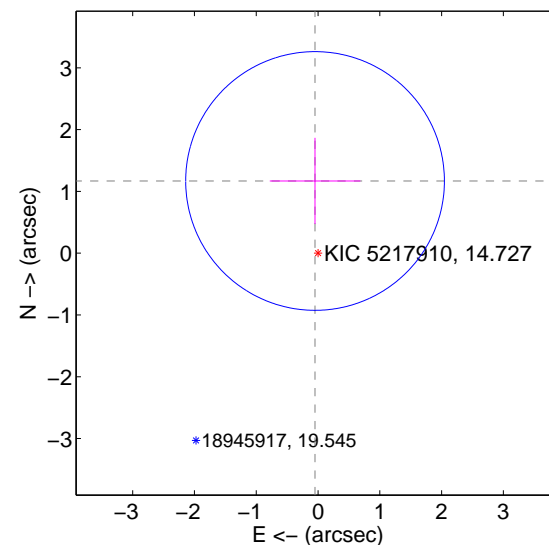
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

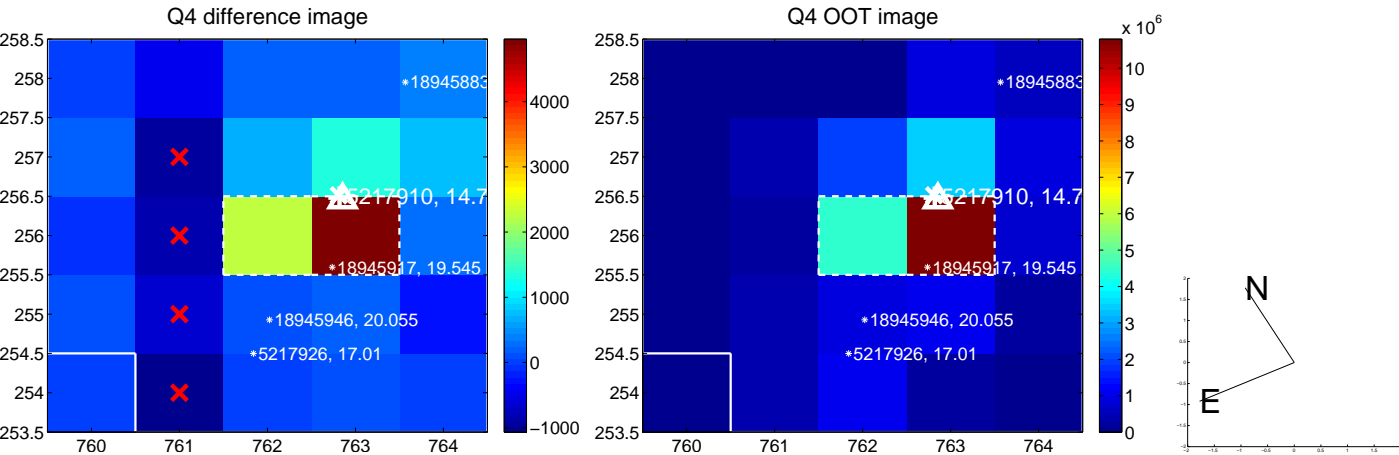
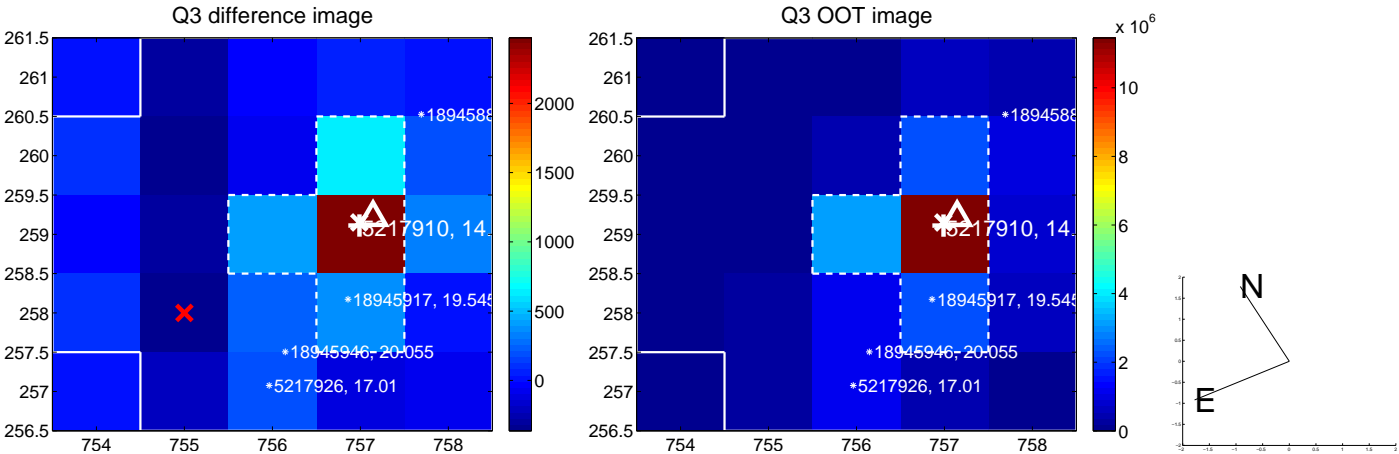
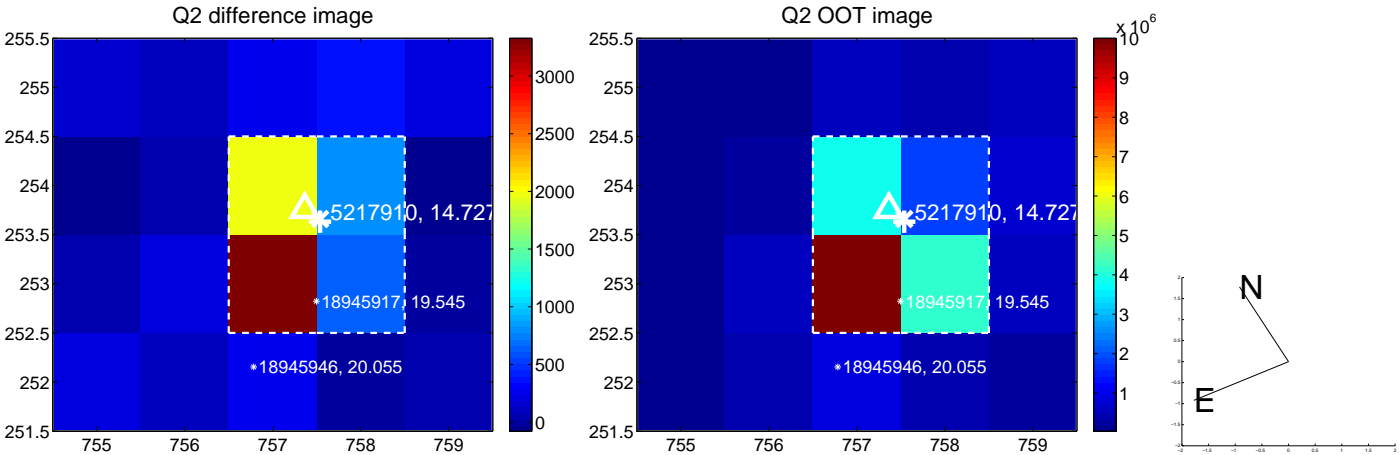
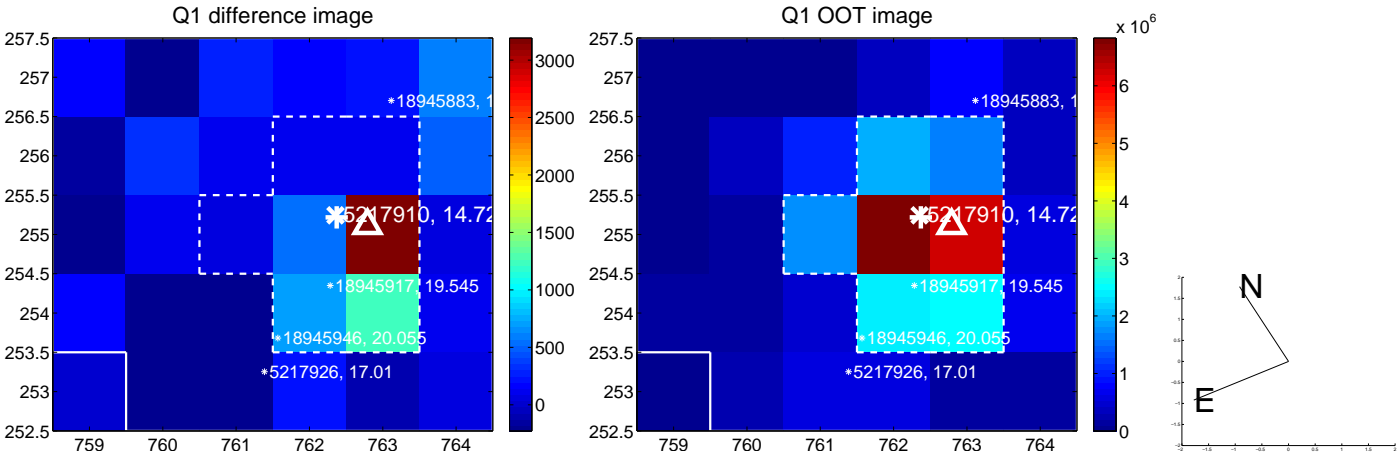


offset from photometric centroids

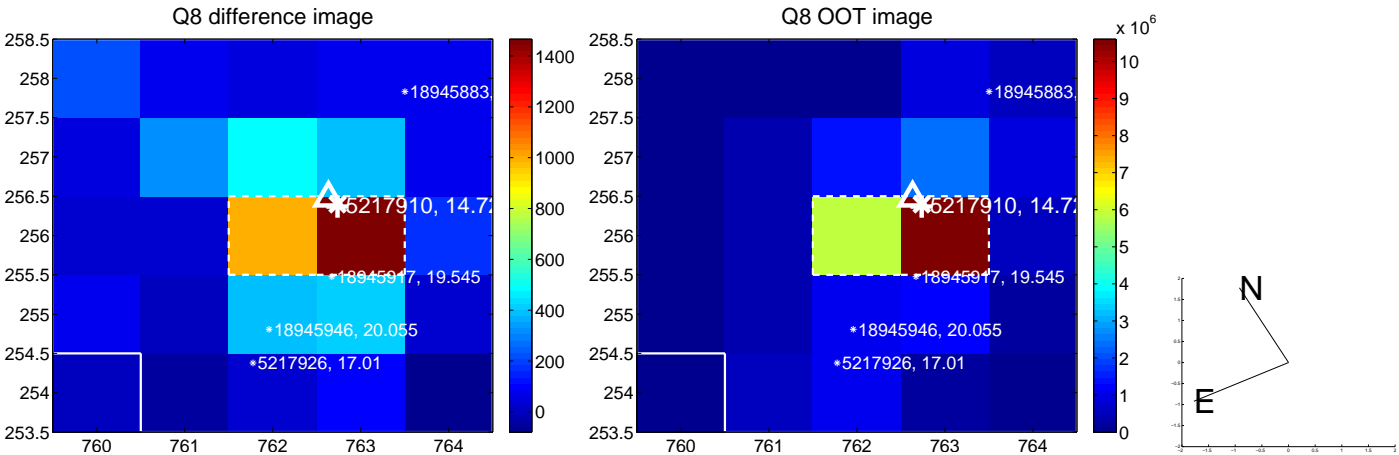
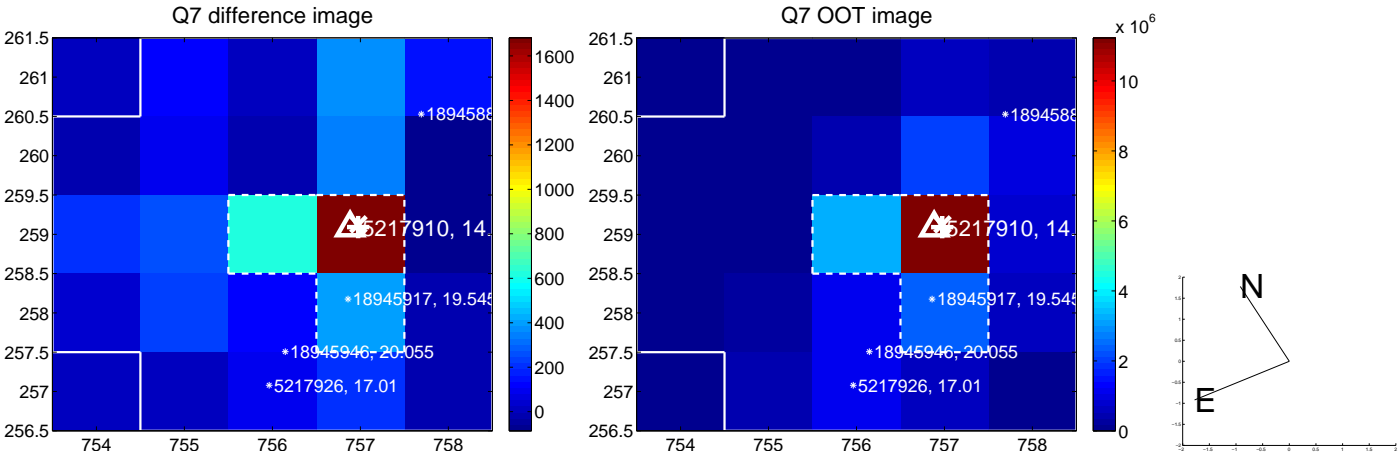
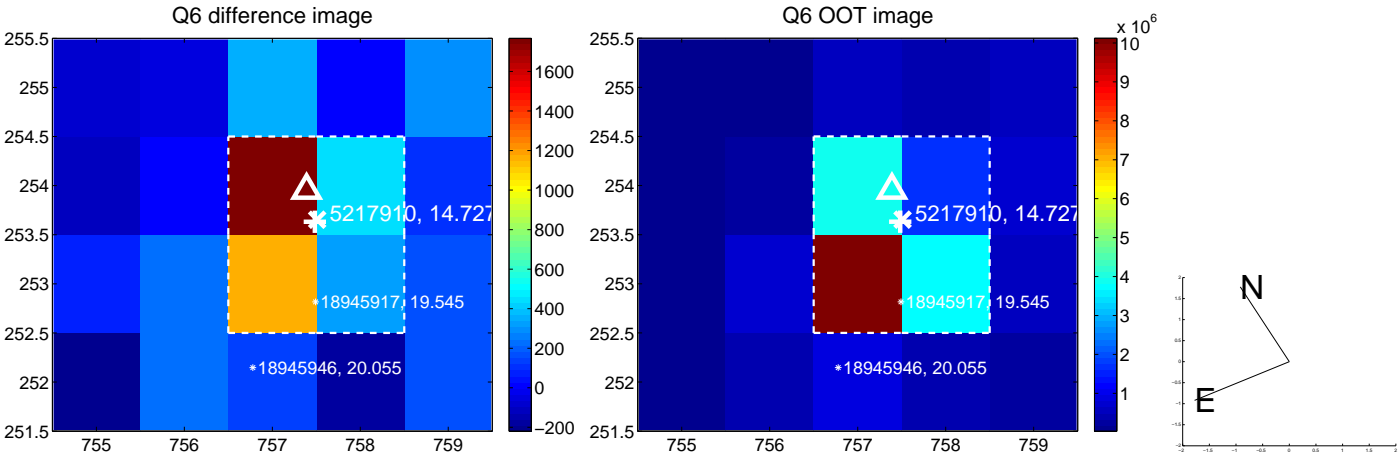
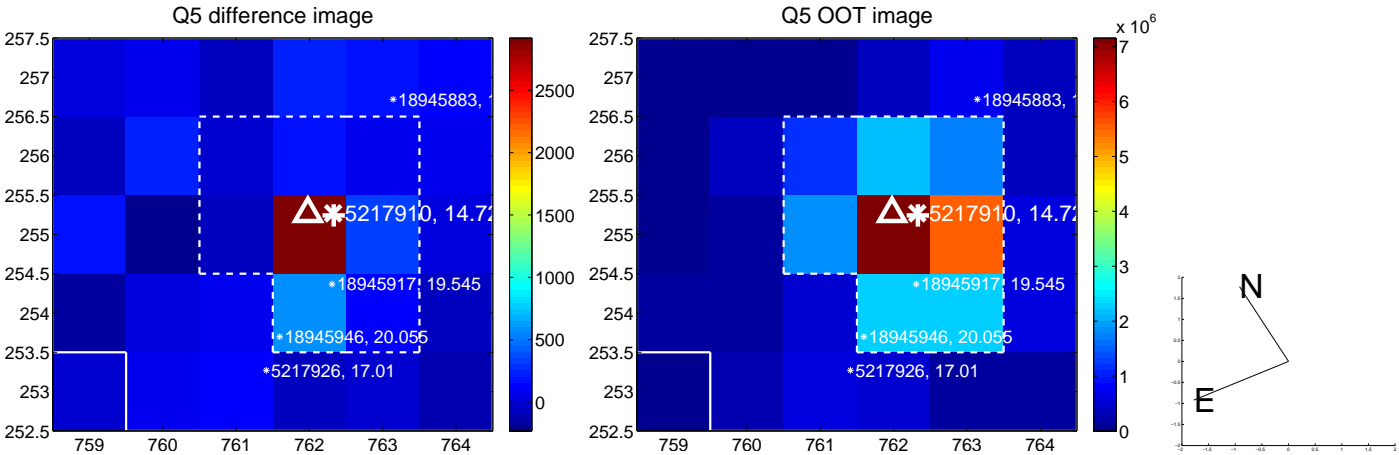


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

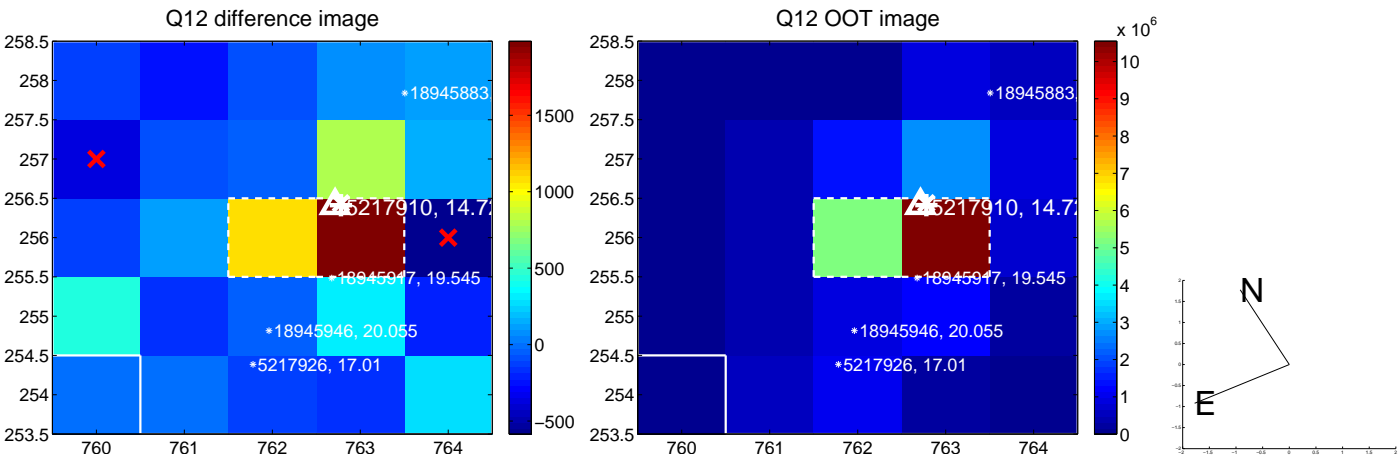
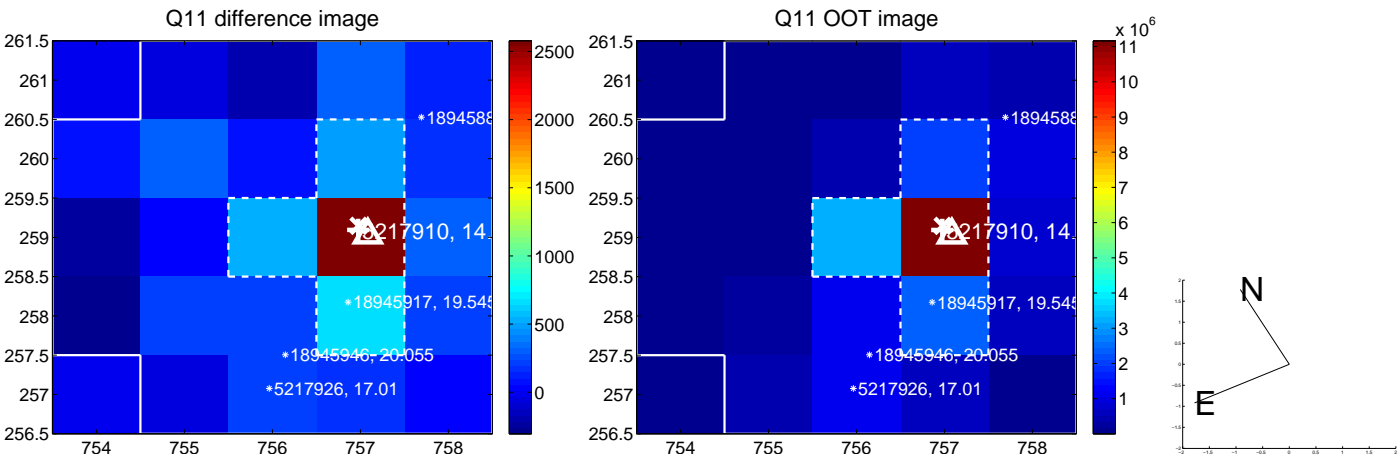
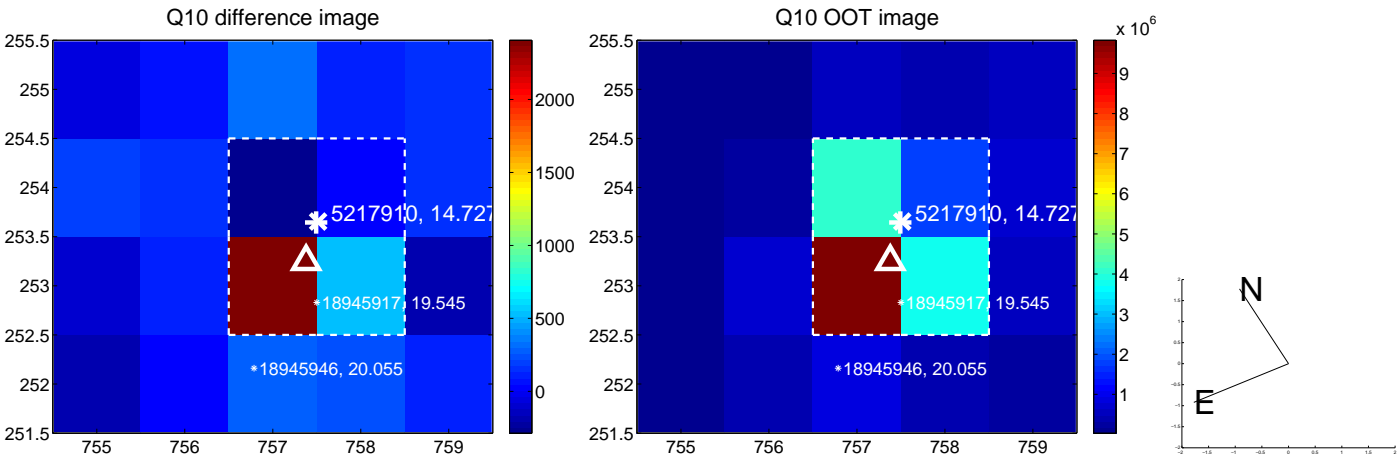
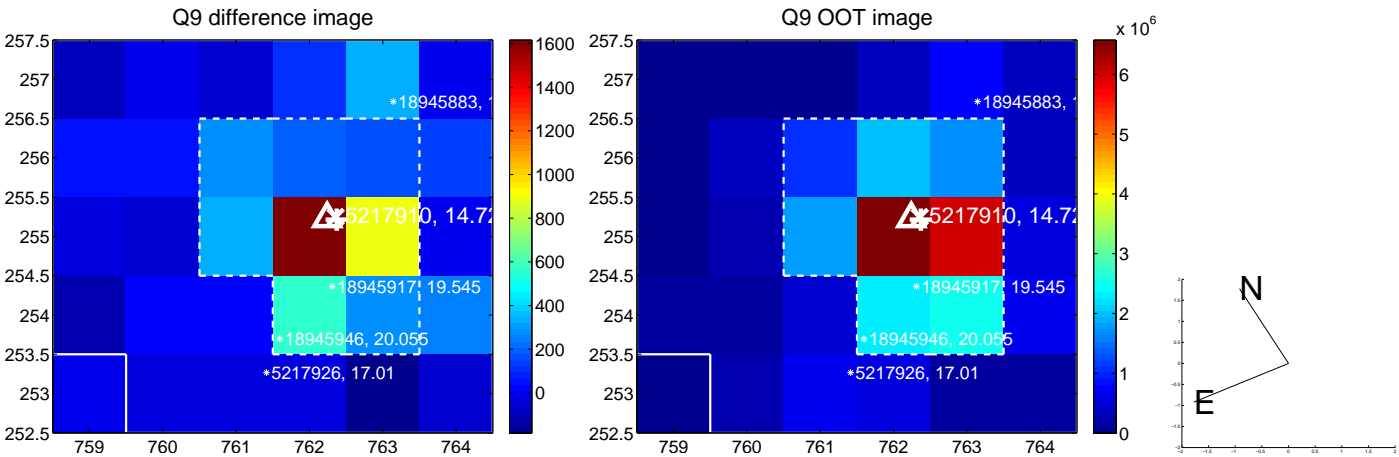
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



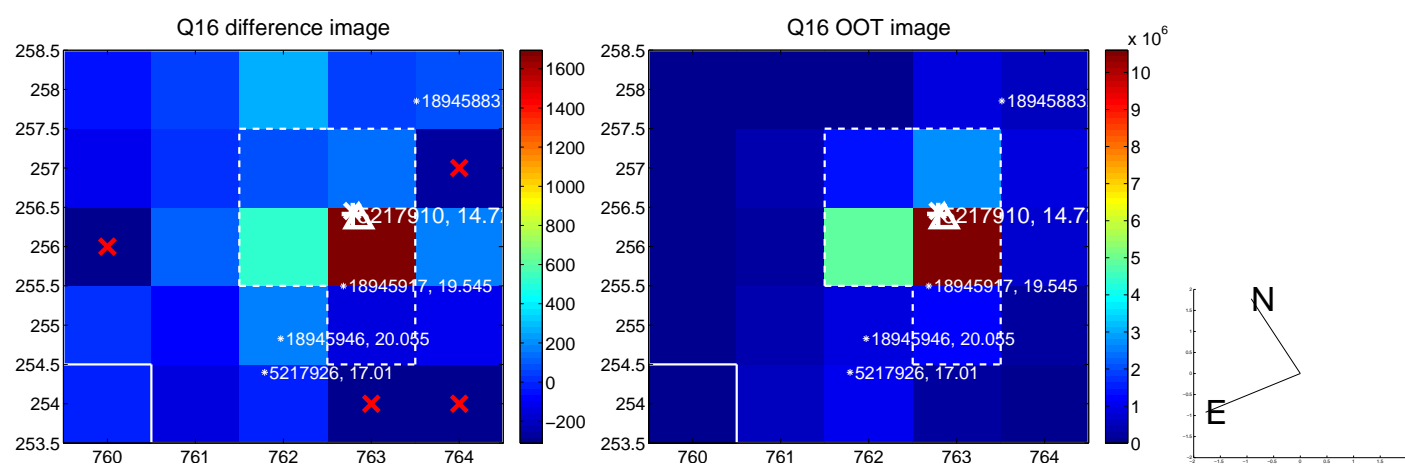
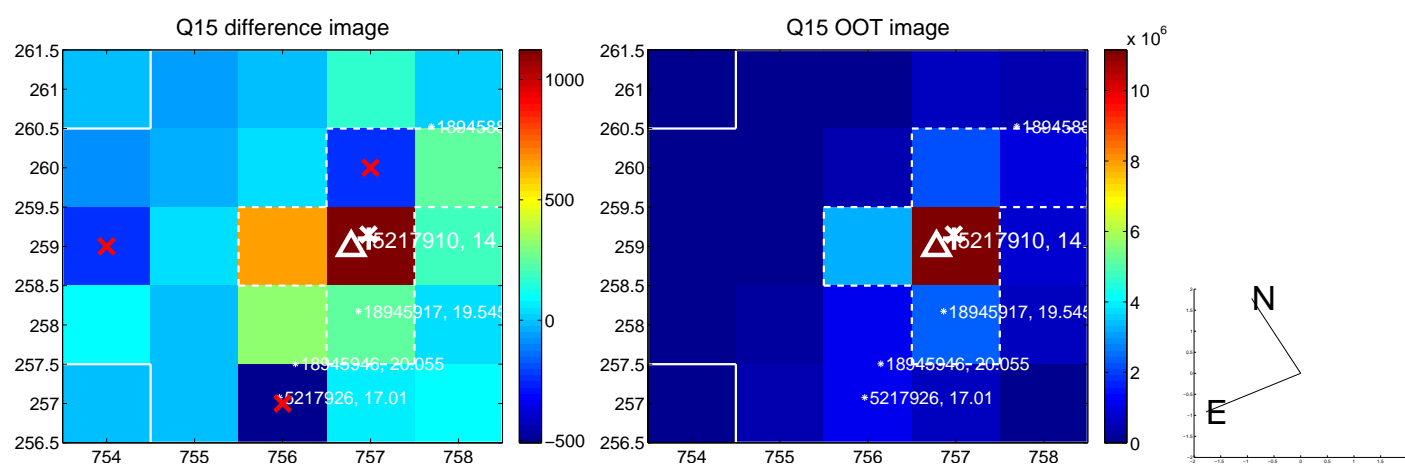
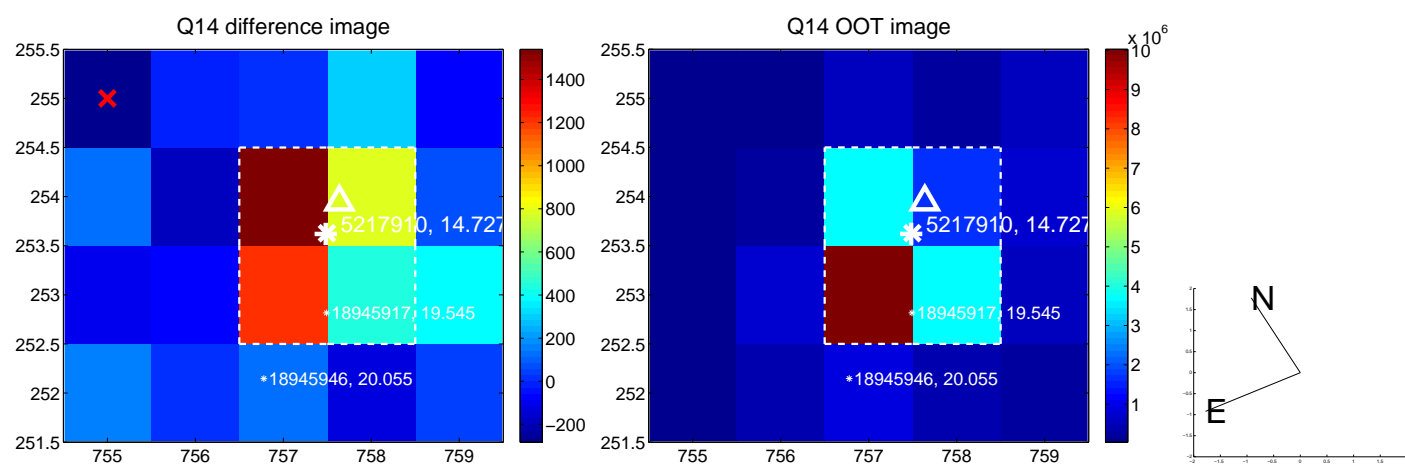
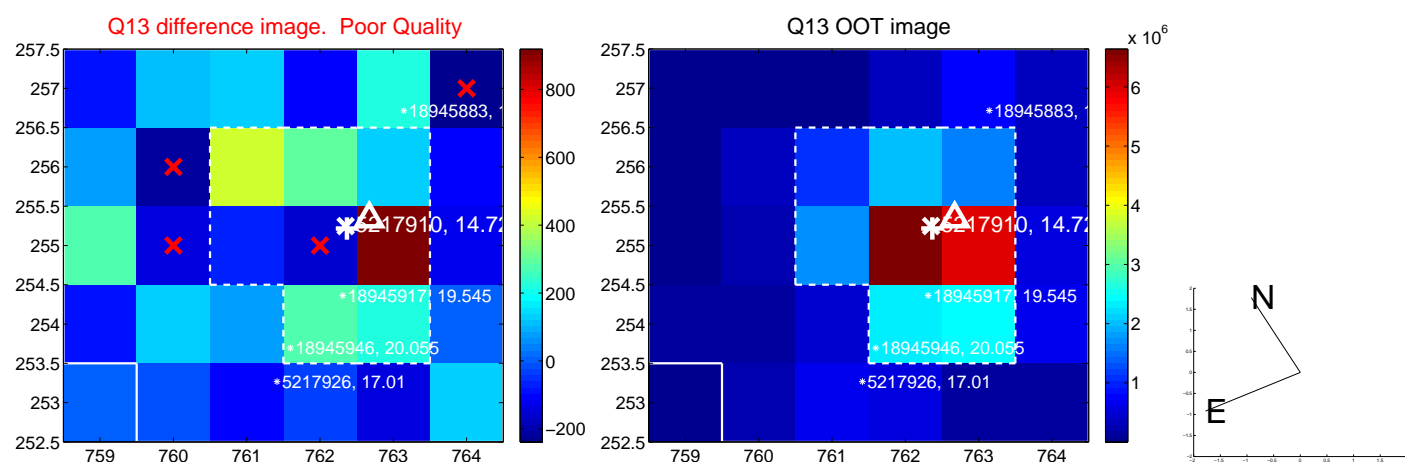
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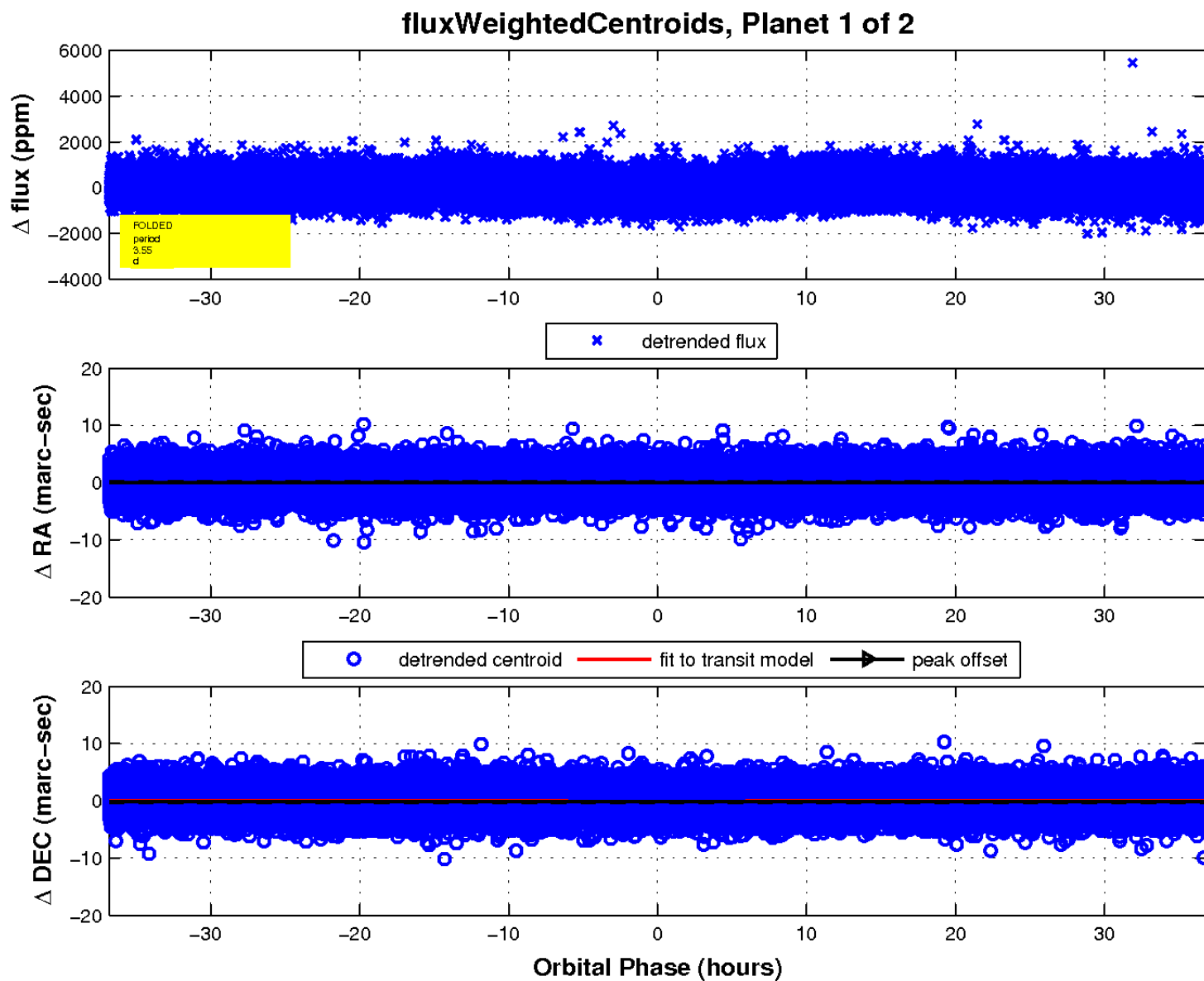
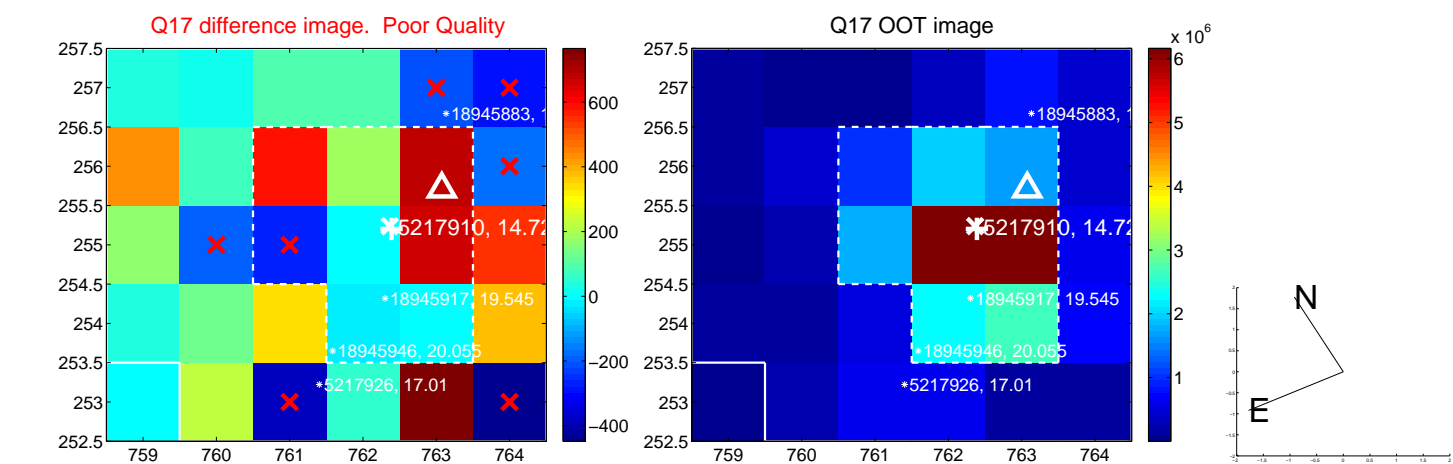
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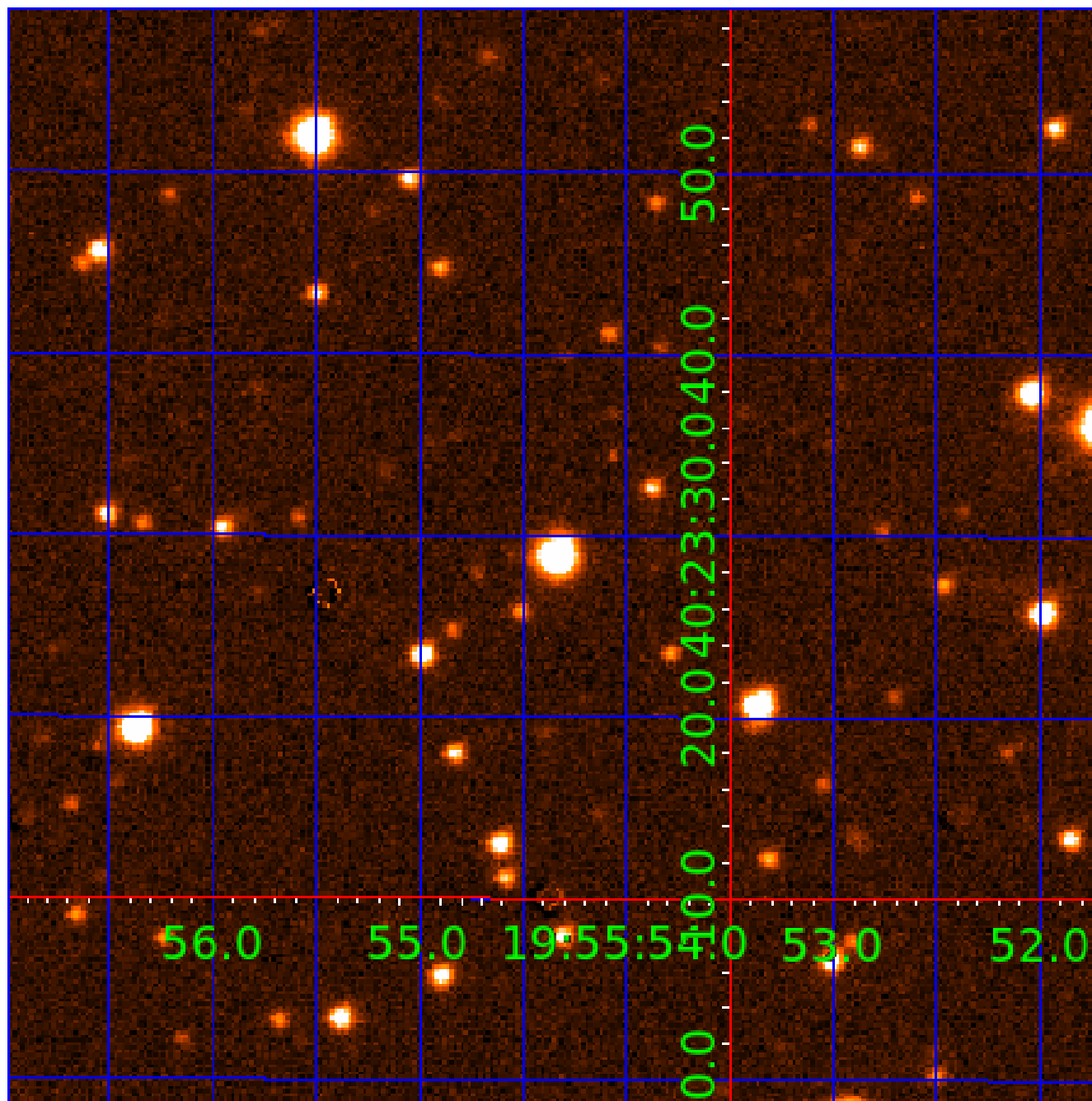


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005217910

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005217910-01 | OBS | No | 3.553696 | 132.238699 | 87.3 | 12.270 | 13.1 | 10.3 | 1.08 | 5931 | 1.02 | 635.99 |
| 005217910-02 | OBS | No | 3.554525 | 133.501261 | 115.0 | 20.671 | 12.3 | 17.3 | 1.08 | 5931 | 1.16 | 635.79 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005217910-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV |
| 005217910-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD |

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

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

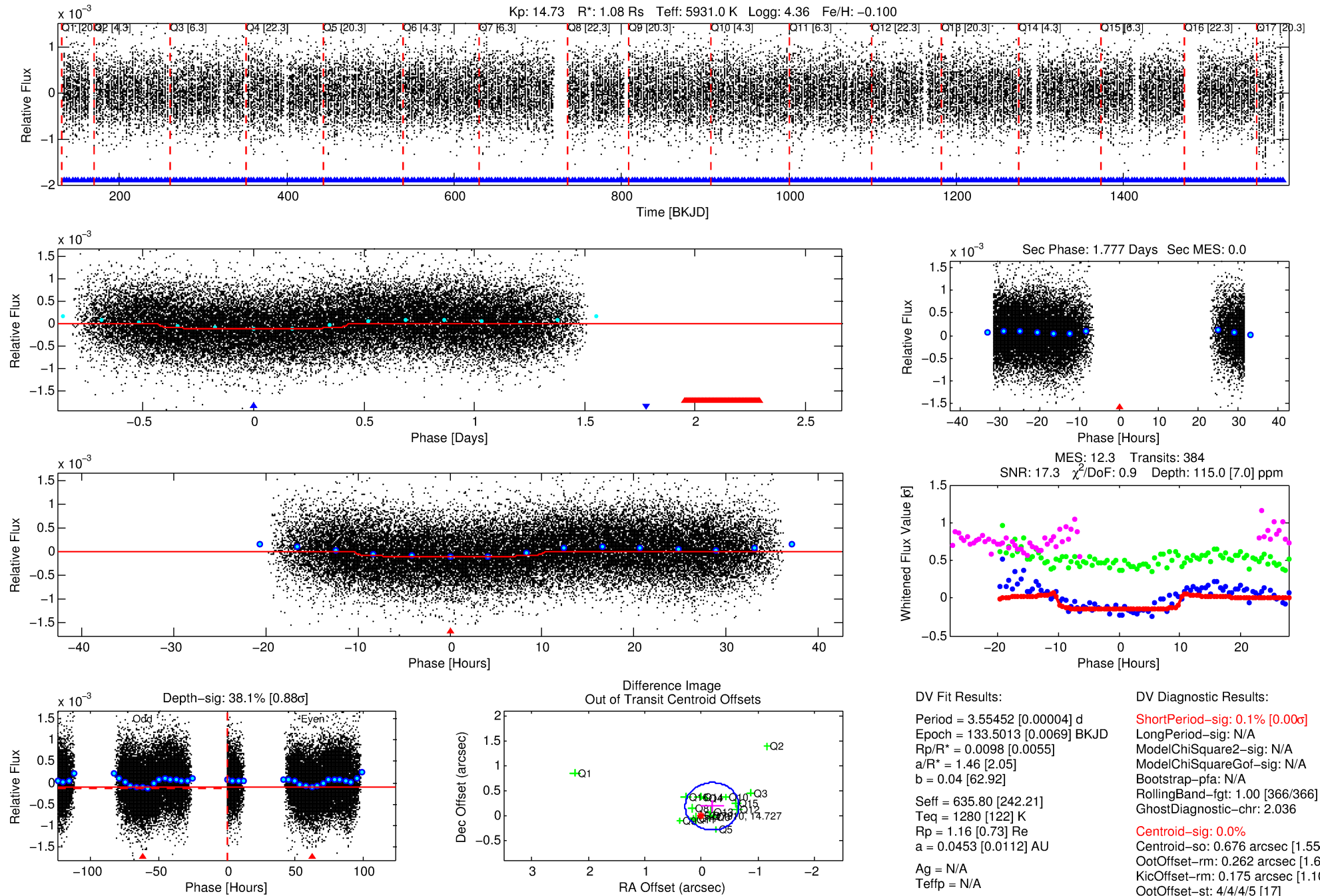
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005217910-02

No Significant Match Found

DV One-Page Summary

KIC: 5217910 Candidate: 2 of 2 Period: 3.555 d



DV Fit Results:

Period = 3.55452 [0.00004] d
Epoch = 133.5013 [0.0069] BKJD
Rp/R* = 0.0098 [0.0055]
a/R* = 1.46 [2.05]
b = 0.04 [62.92]
Seff = 635.80 [242.21]
Teff = 1280 [122] K
Rp = 1.16 [0.73] Re
a = 0.0453 [0.0112] AU
Ag = N/A
Teffp = N/A

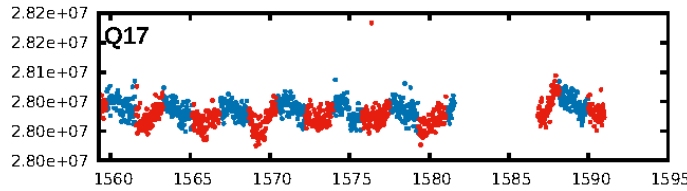
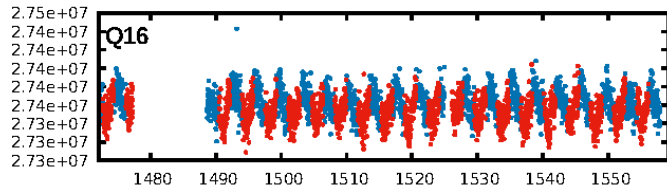
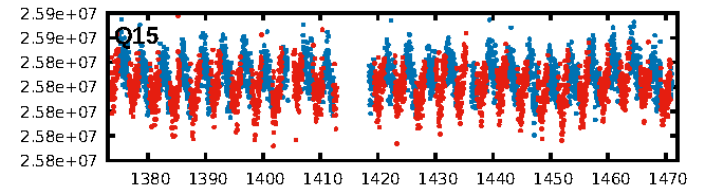
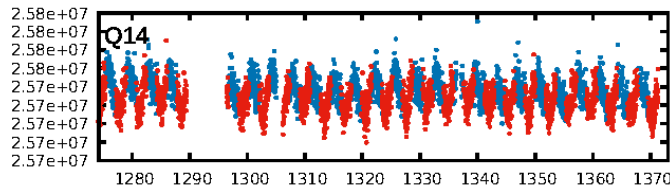
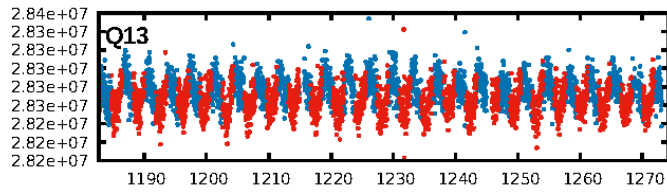
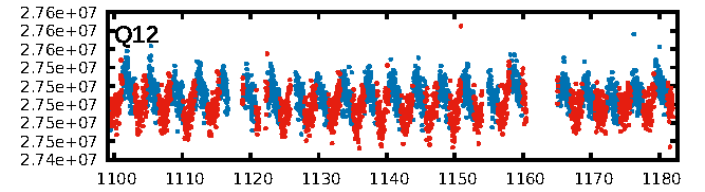
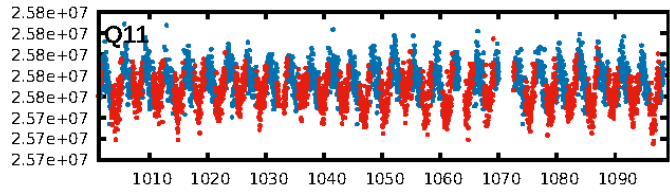
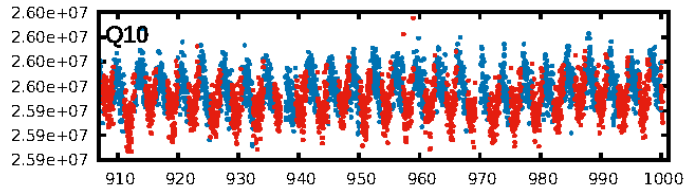
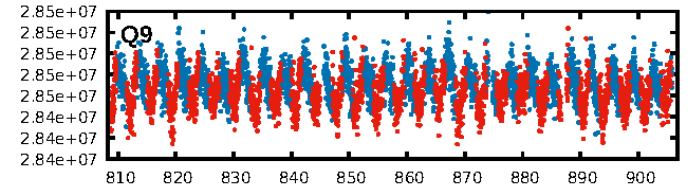
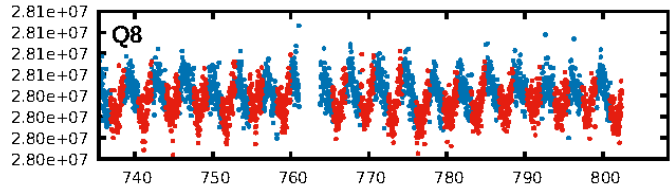
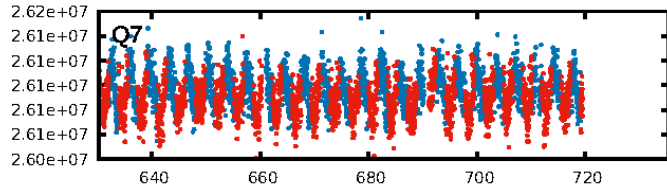
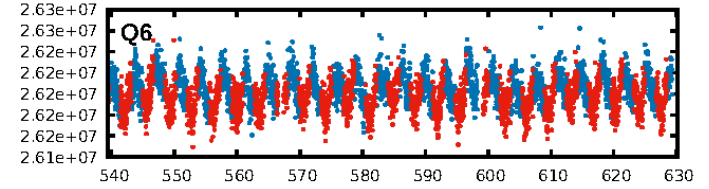
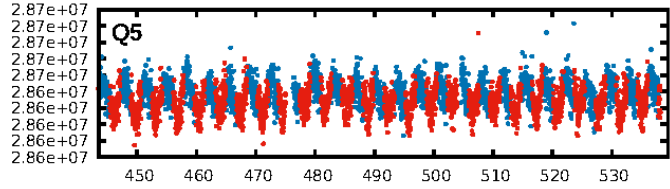
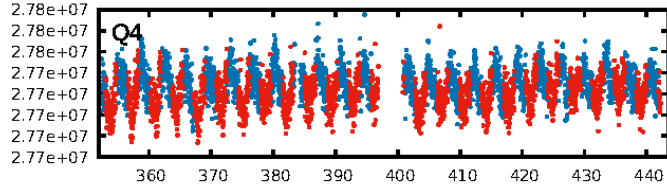
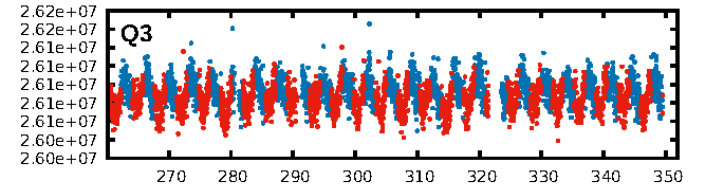
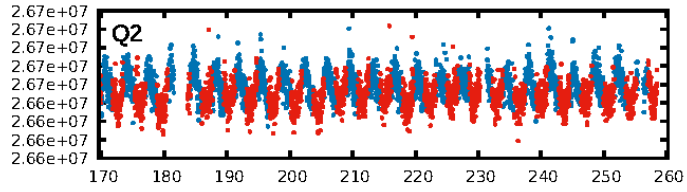
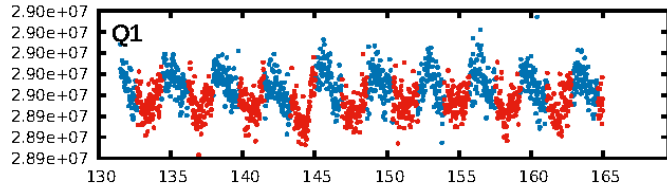
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.006]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [366/366]
GhostDiagnostic-chr: 2.036
Centroid-sig: 0.0%
Centroid-so: 0.676 arcsec [1.55 σ]
OotOffset-rm: 0.262 arcsec [1.65 σ]
KicOffset-rm: 0.175 arcsec [1.10 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

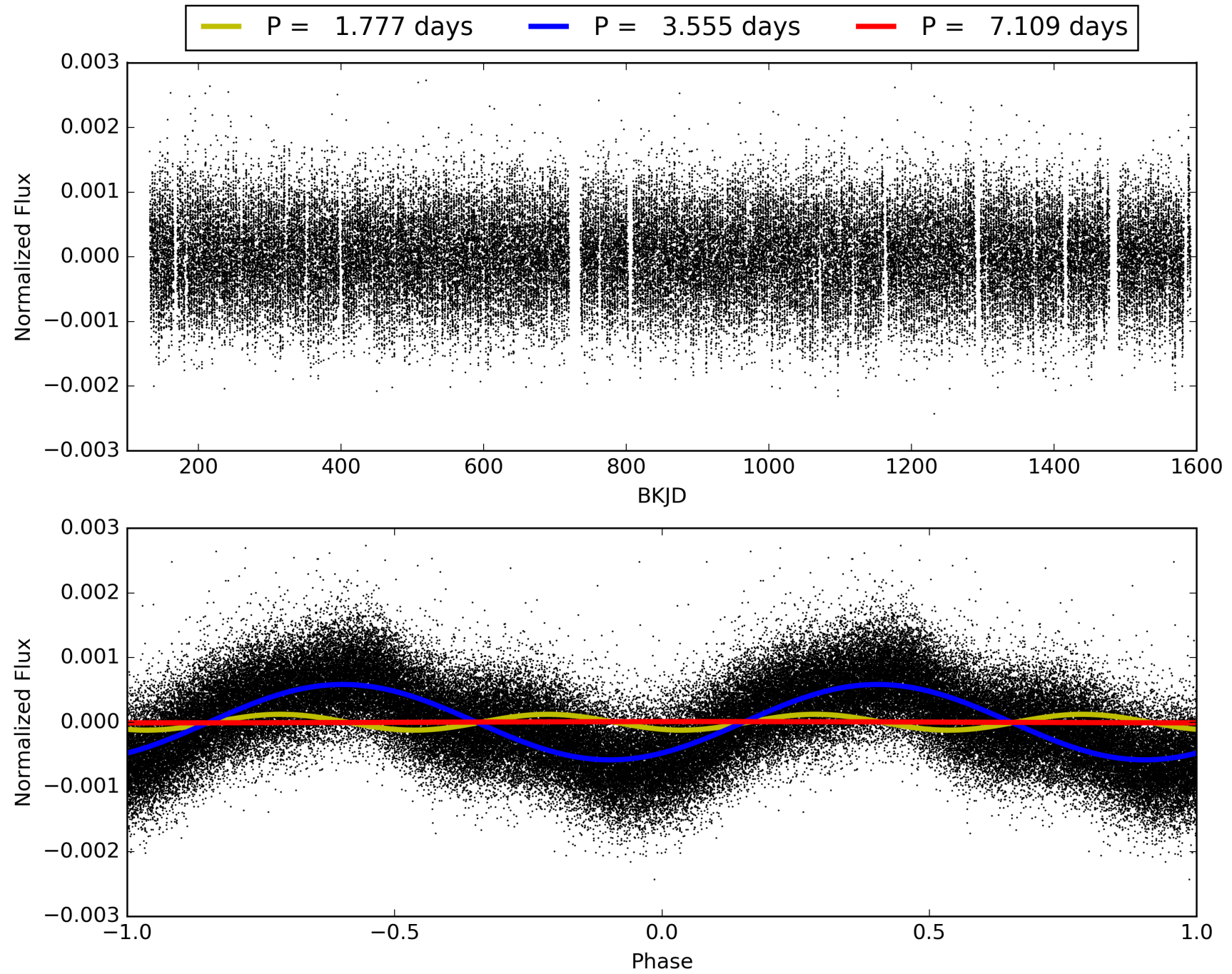
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:18:46 Z

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

TCE 005217910-02, PDC Light Curves

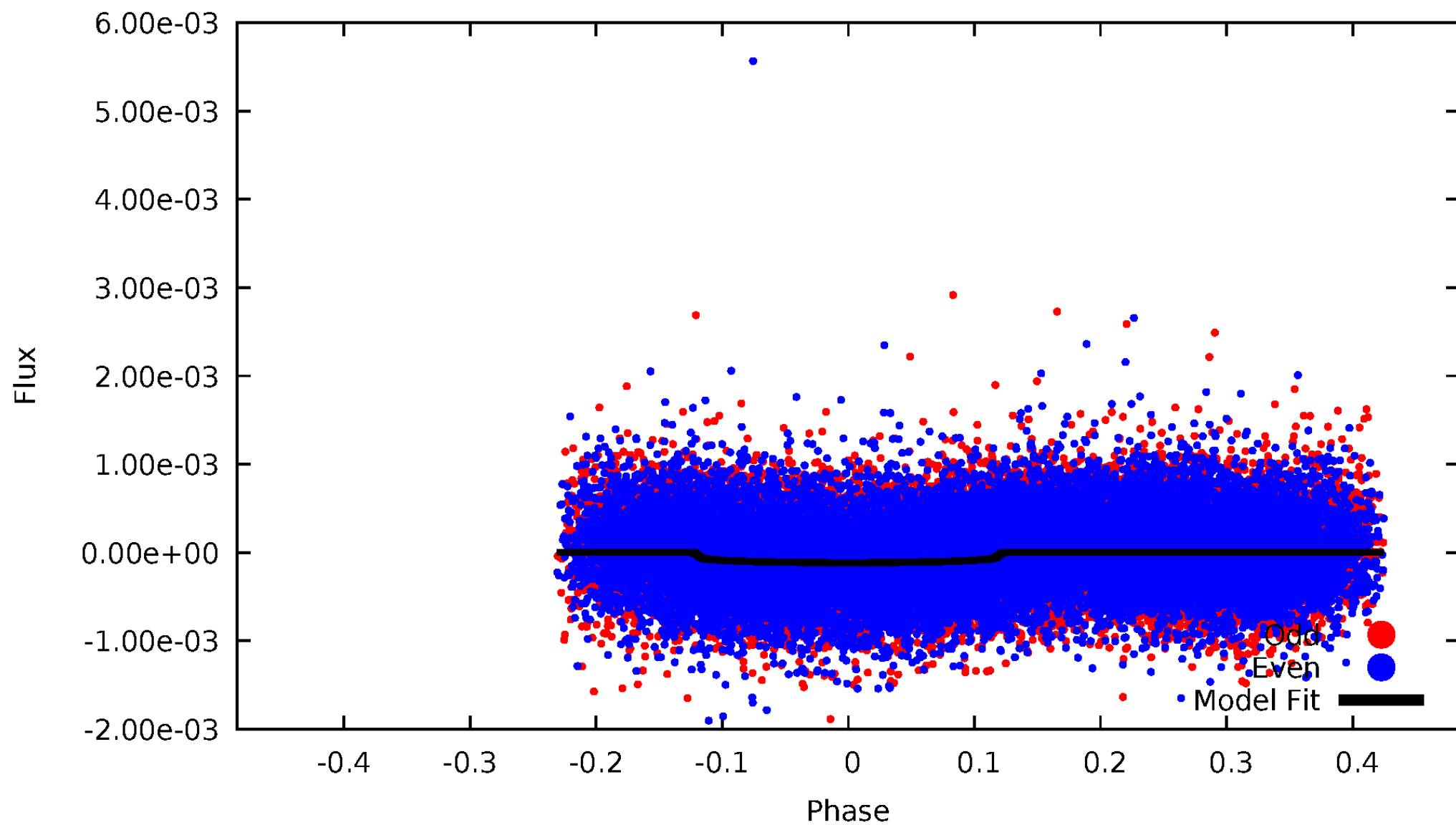


TCE 005217910-02



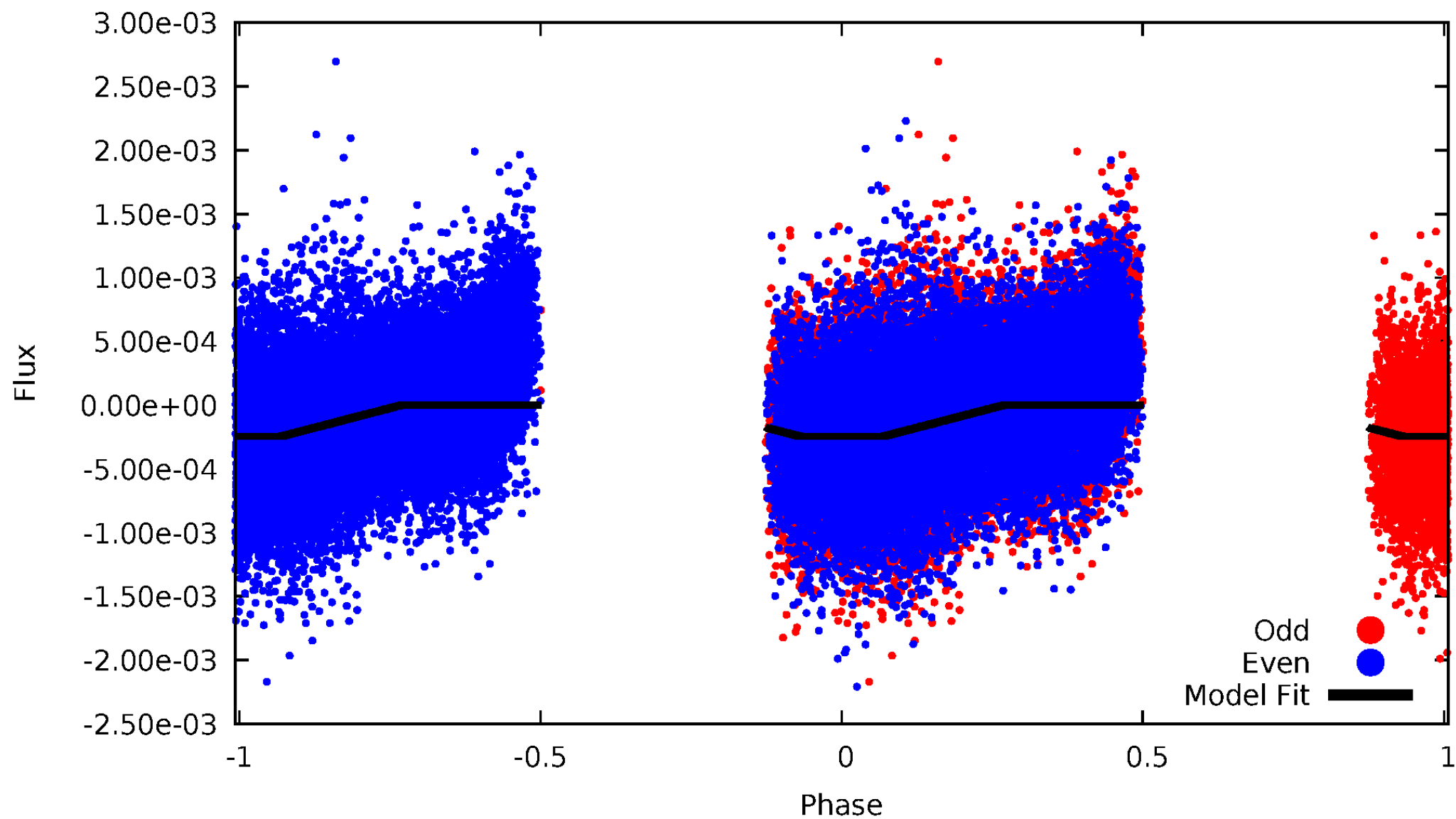
DV Odd/Even

TCE 005217910-02



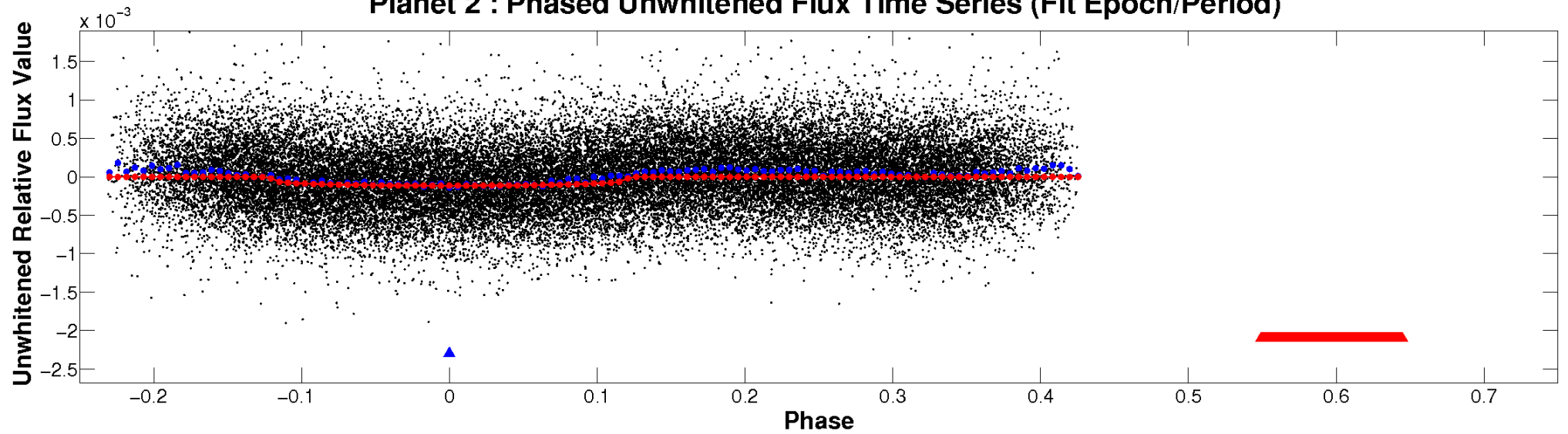
ALT Odd/Even

TCE 005217910-02

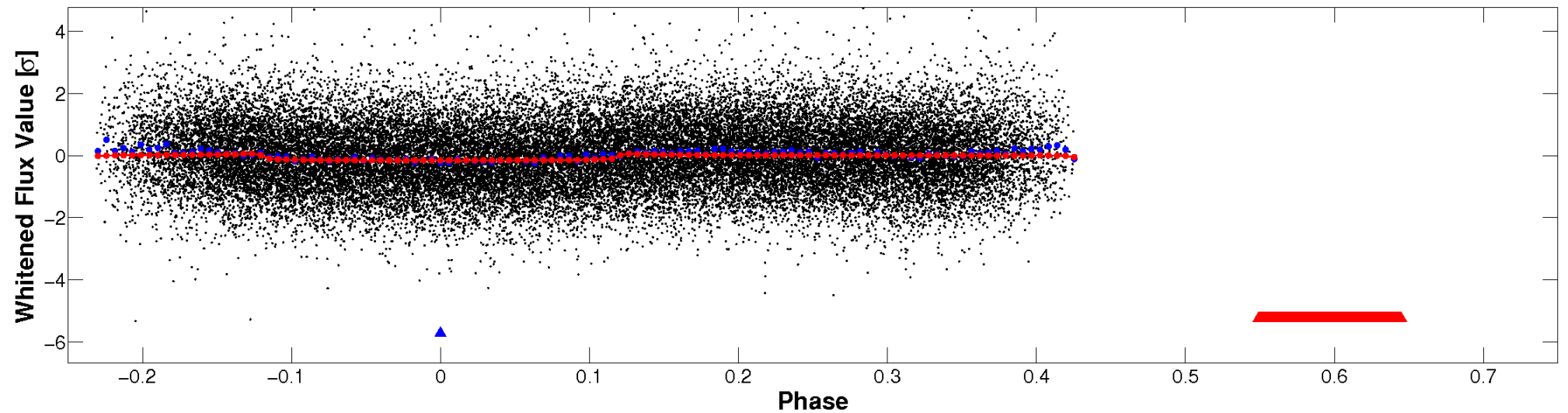


Non-Whitened Vs. Whitened Light Curve

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

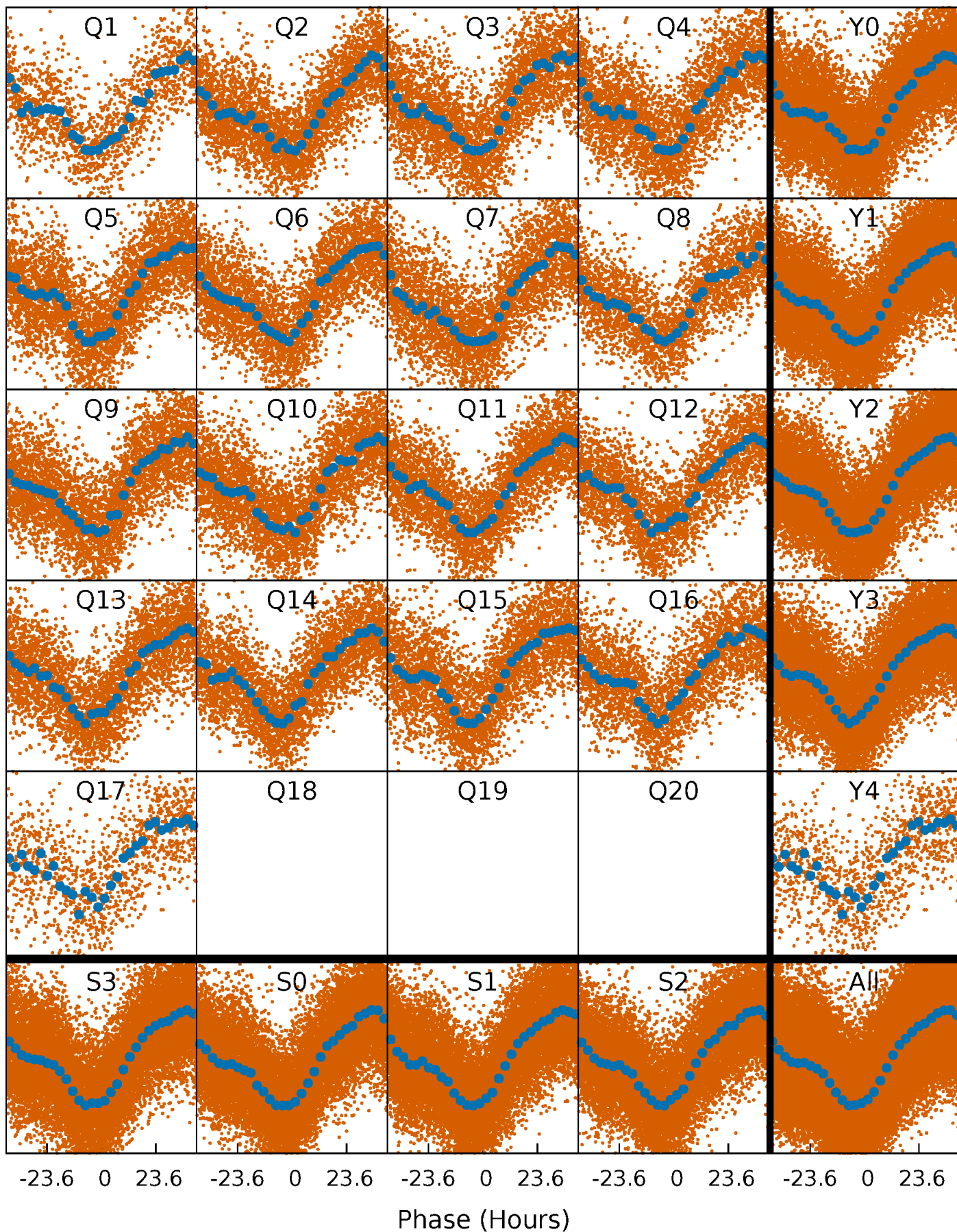


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



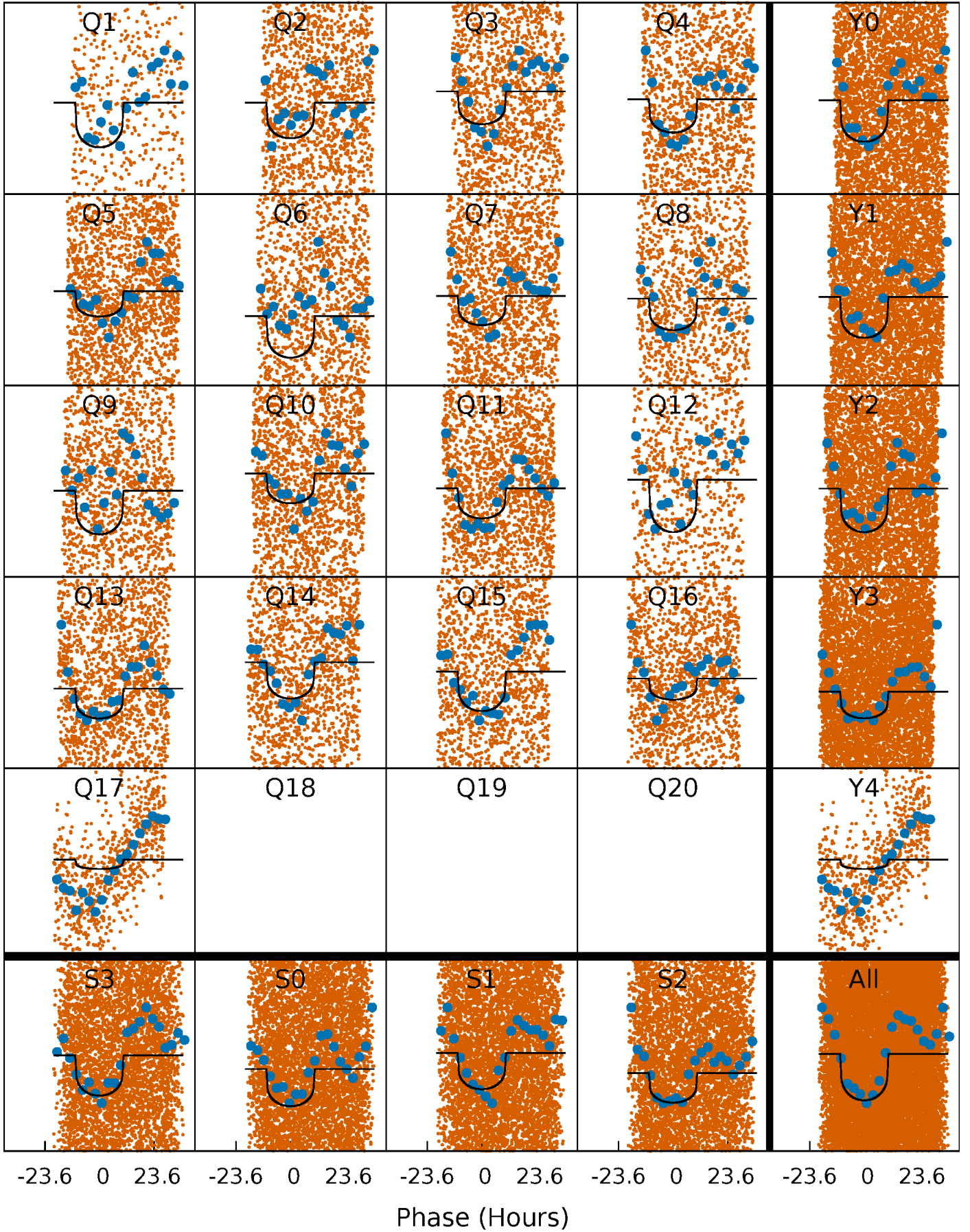
PDC Quarter-Phased Transit Curves

TCE 005217910-02 P= 3.554525 Days $T_0=133.501261$ (BKJD)



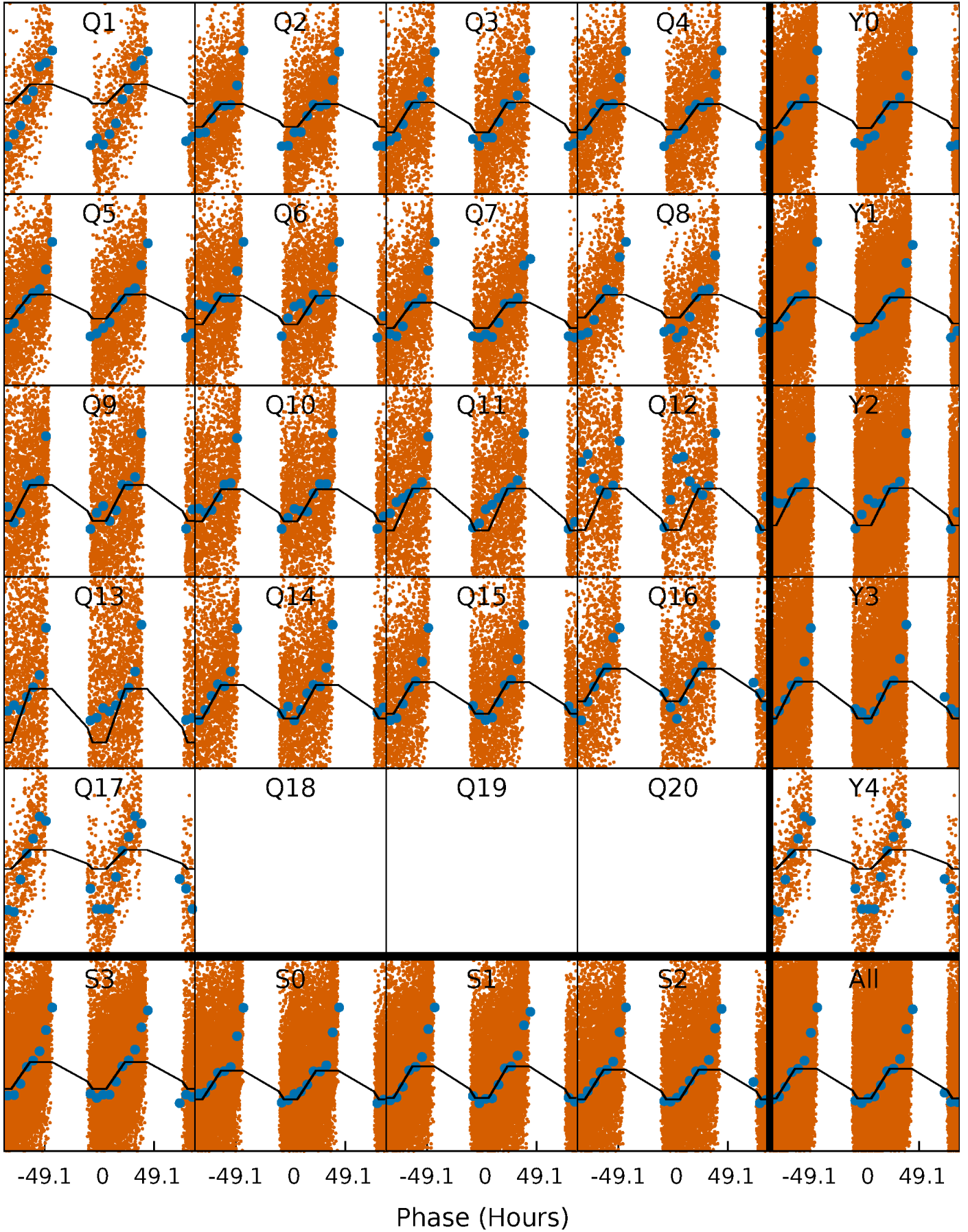
DV Quarter-Phased Transit Curves

TCE 005217910-02 P= 3.554525 Days $T_0=133.501261$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

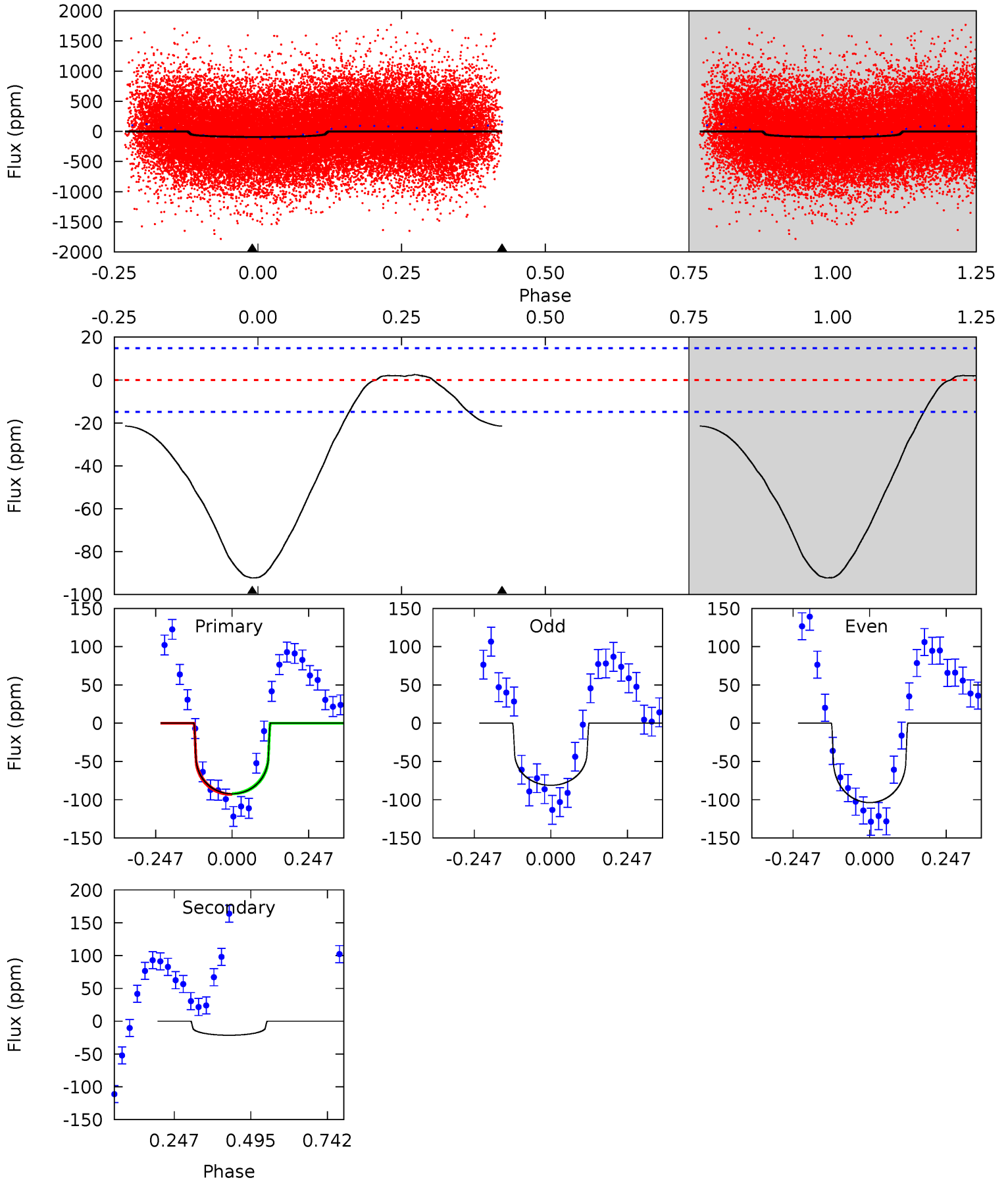
TCE 005217910-02 P= 3.554276 Days $T_0=133.231333$ (BKJD)



DV Model-Shift Uniqueness Test

005217910-02, P = 3.554525 Days, E = 129.946736 Days

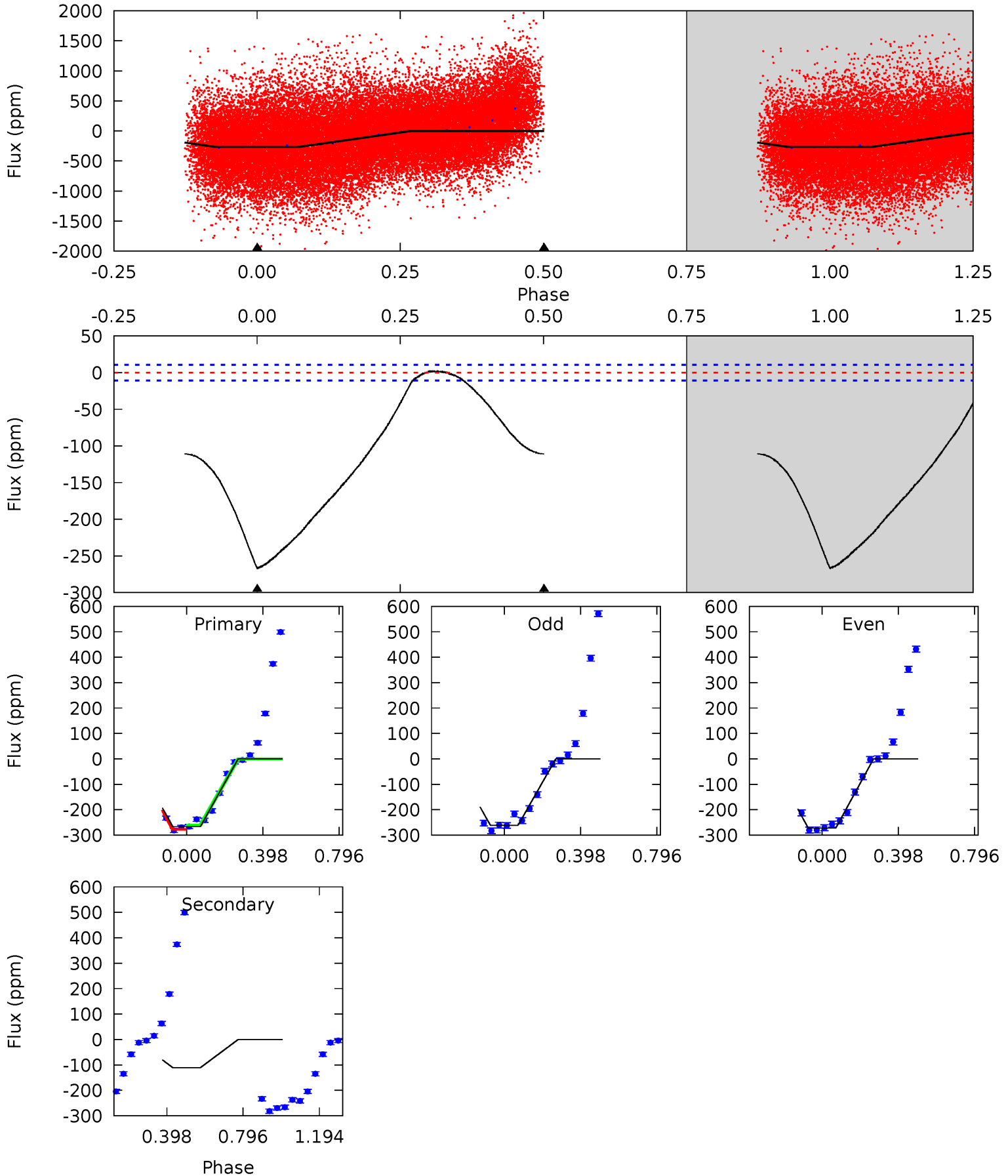
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 27.1 | 6.31 | 0 | 0 | 4.37 | 1.16 | 1.93 | 27.1 | 27.1 | 6.31 | 6.31 | 3.30 | 1.01 | 0.03 | 0.16 |



Alt Model-Shift Uniqueness Test

005217910-02, P = 3.554276 Days, E = 129.677057 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 106.3 | 44.1 | 0 | 0 | 4.27 | 0.85 | 1.47 | 106.3 | 106.3 | 44.1 | 44.1 | 2.14 | 0.98 | 0.01 | 2.70 |



Stellar Parameters For KIC 005217910

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5931^{+184}_{-205} | $4.359^{+0.128}_{-0.192}$ | $-0.100^{+0.300}_{-0.300}$ | $1.085^{+0.322}_{-0.173}$ | $0.982^{+0.140}_{-0.115}$ | $1.082^{+0.652}_{-0.550}$ |
| | +3%/-3% | +3%/-4% | +300%/-300% | +30%/-16% | +14%/-12% | +60%/-51% |
| 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 005217910-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|-----------------------|------------------|
| DV | -21 ± 3 | $1.22^{+0.71}_{-0.60}$ | 1803^{+129}_{-110} | 4228^{+1464}_{-620} | 16^{+45}_{-10} |
| Alt. | -111 ± 3 | $1.89^{+0.75}_{-0.67}$ | 1801^{+131}_{-107} | 4923^{+1075}_{-543} | 35^{+50}_{-17} |

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

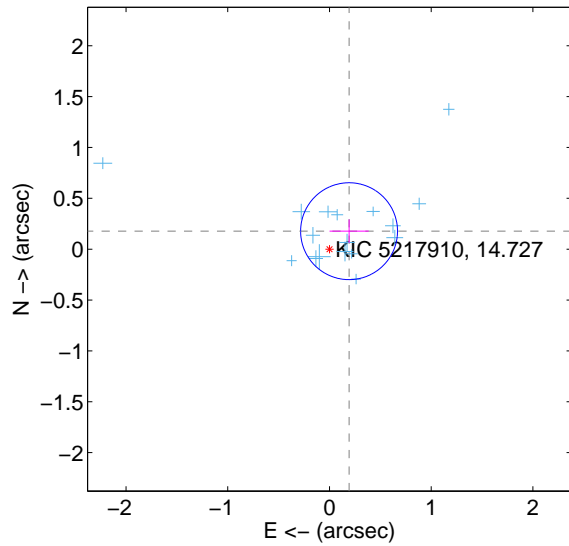
Supplemental centroid analysis for 005217910-02. Kepler magnitude: 14.73. Transit SNR 17.34

There are 17 quarters with good PRF difference image offsets

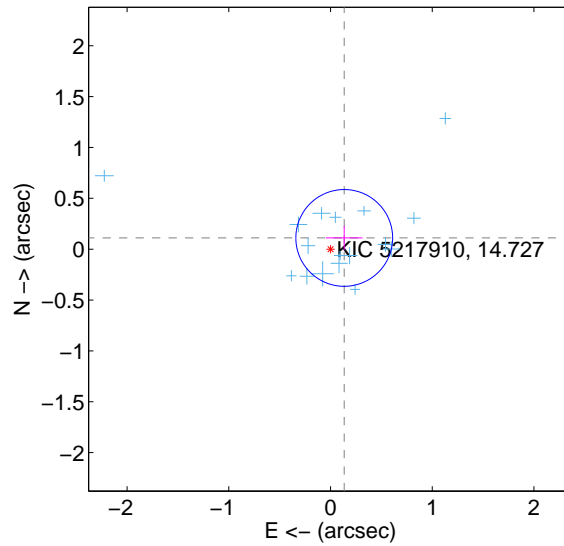
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.262 ± 0.159 | 1.65 | -0.193 ± 0.192 | 0.177 ± 0.115 |
| PRF-fit source offset from KIC position | 0.175 ± 0.159 | 1.10 | -0.135 ± 0.180 | 0.111 ± 0.116 |
| photometric centroid source offset | 0.68 ± 0.44 | 1.55 | -0.28 ± 0.45 | 0.62 ± 0.43 |

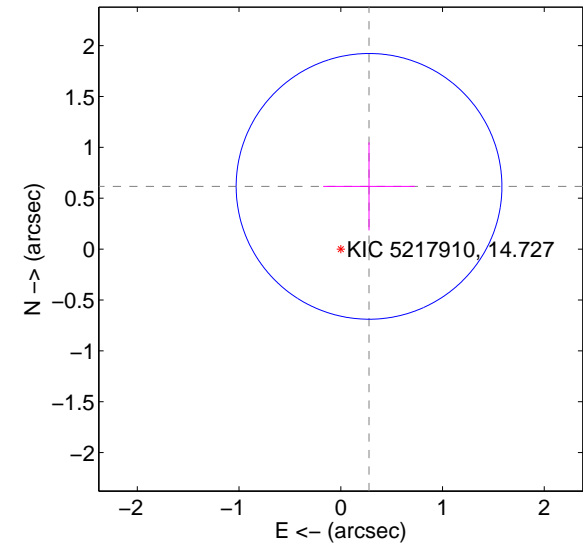
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

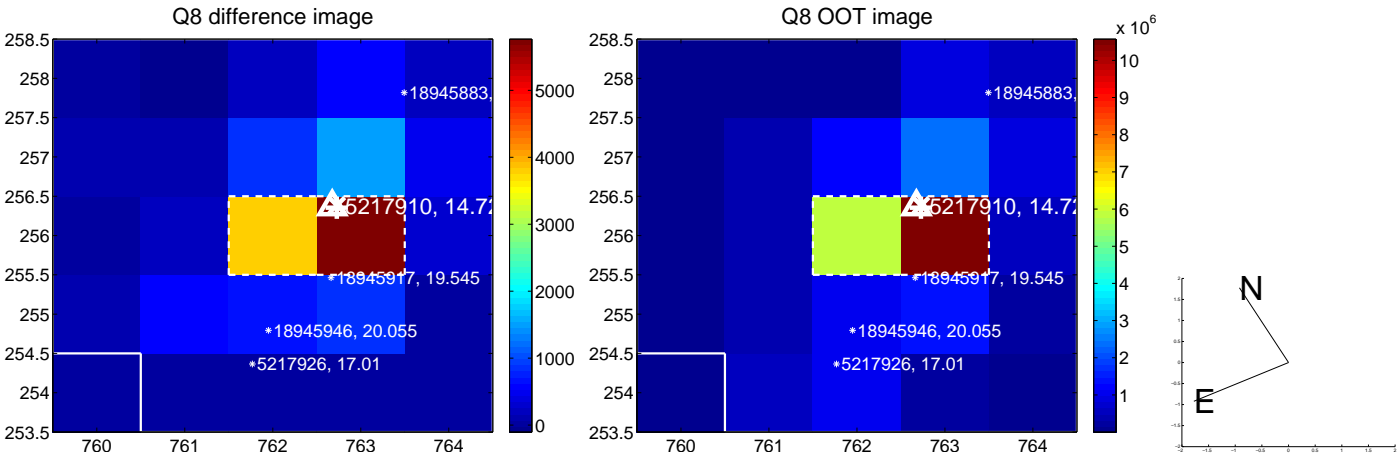
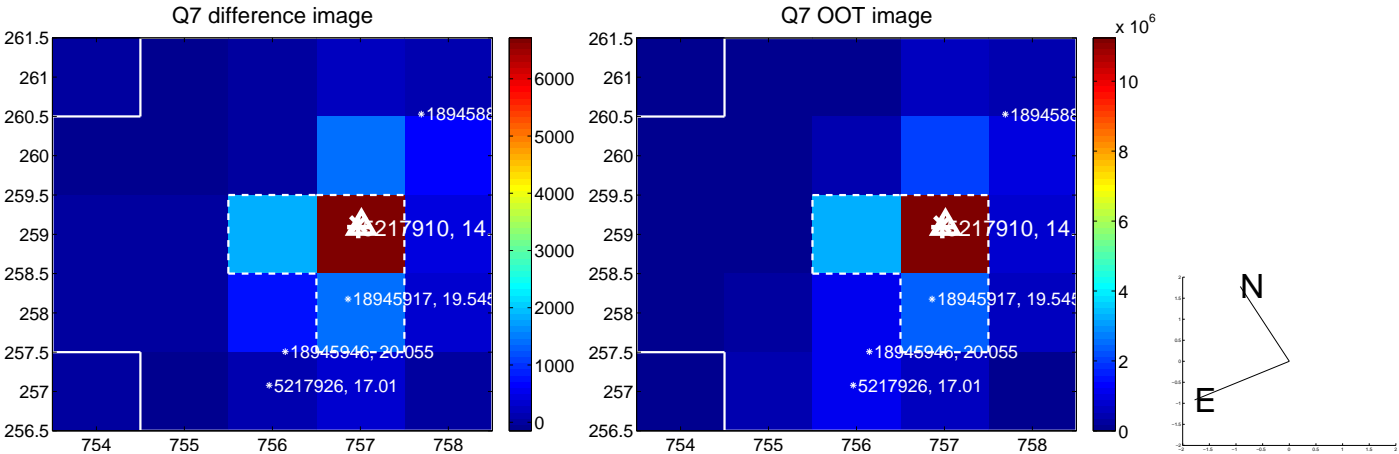
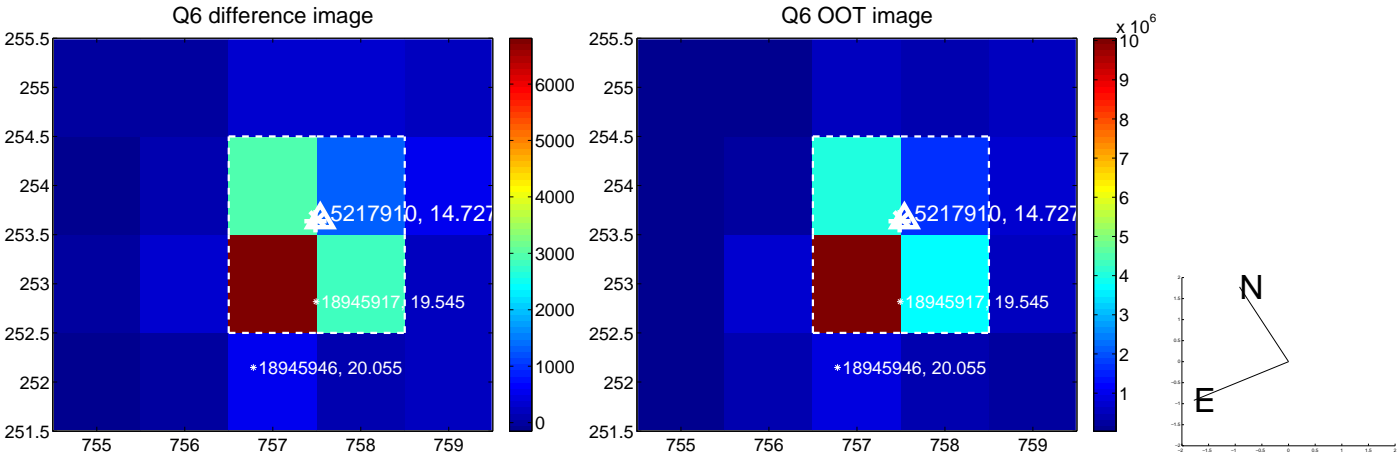
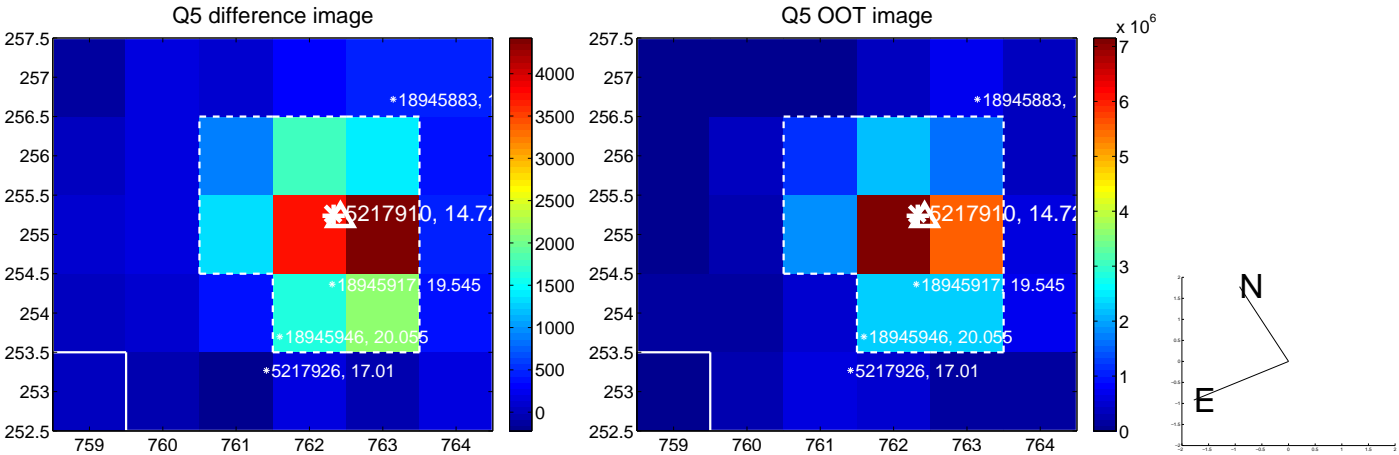


offset from photometric centroids

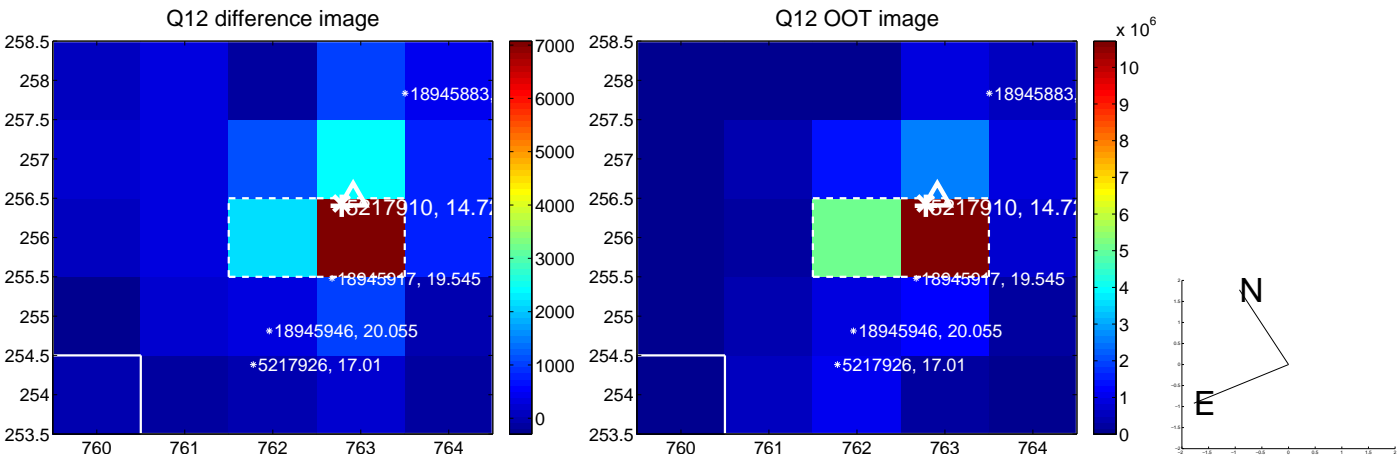
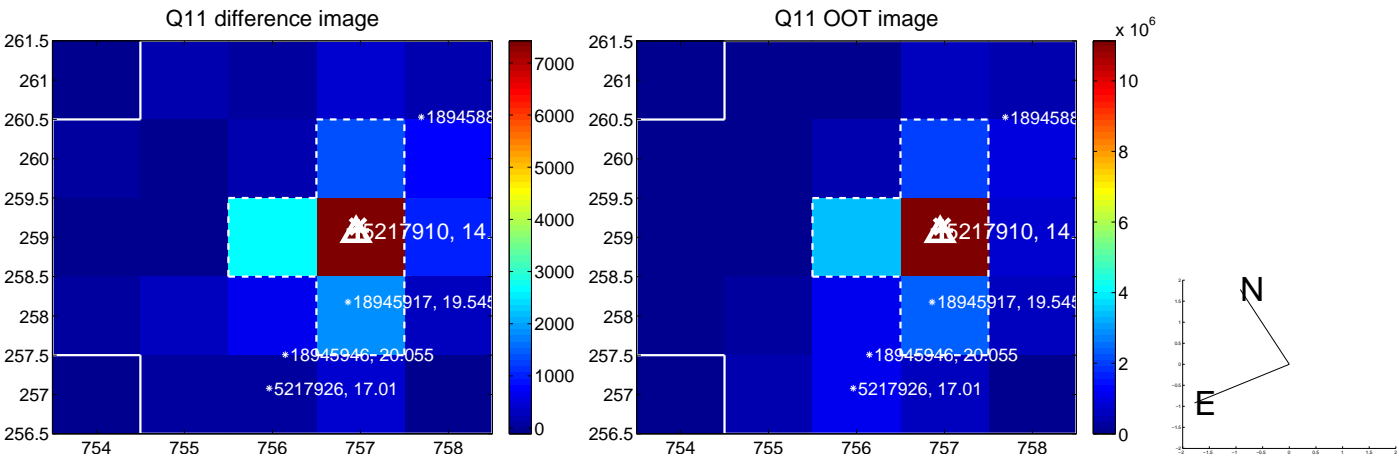
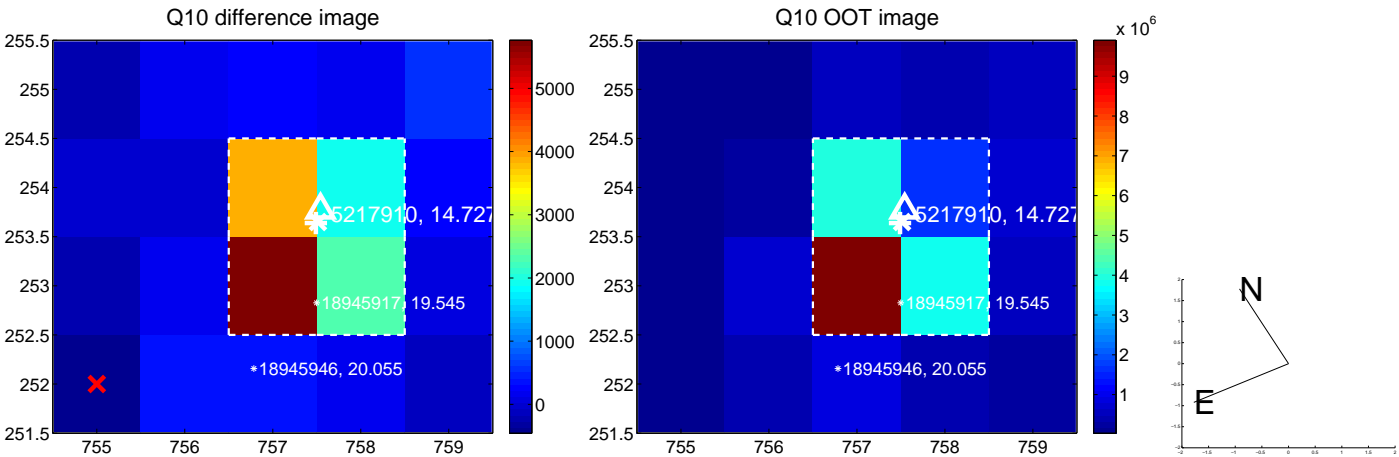
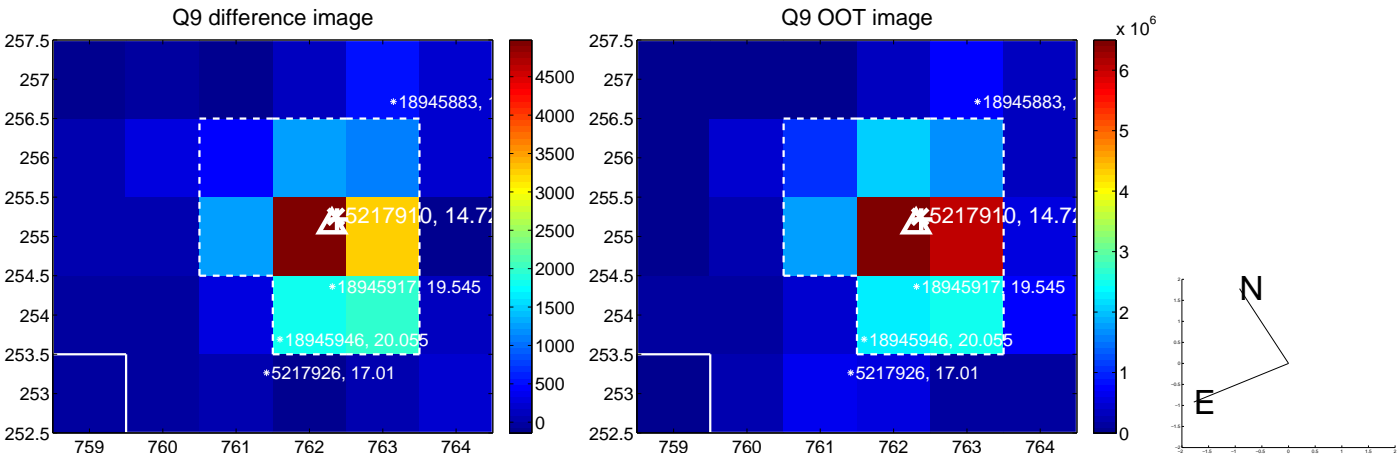


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

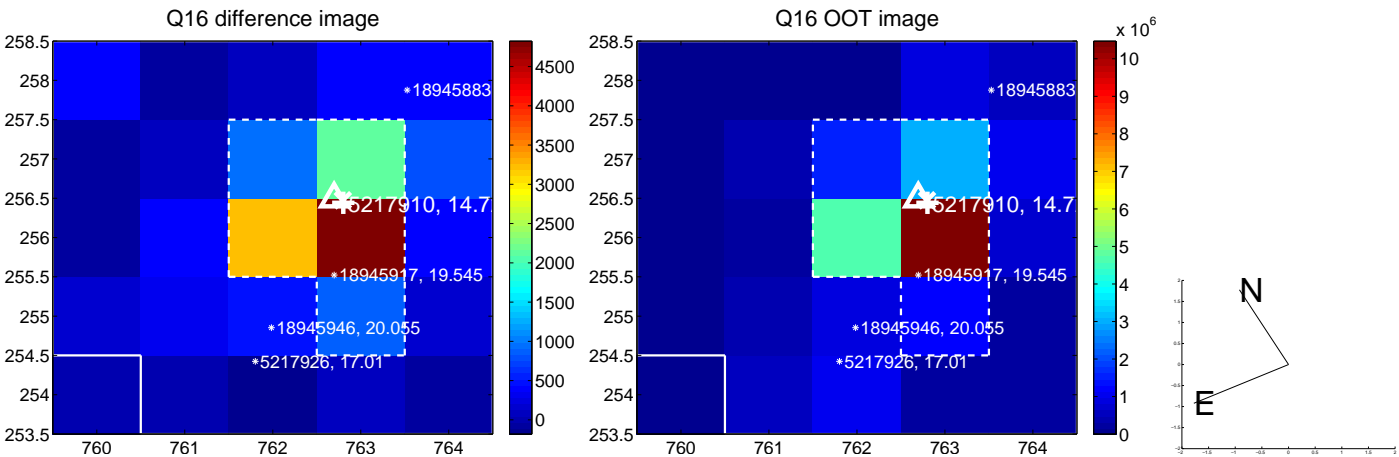
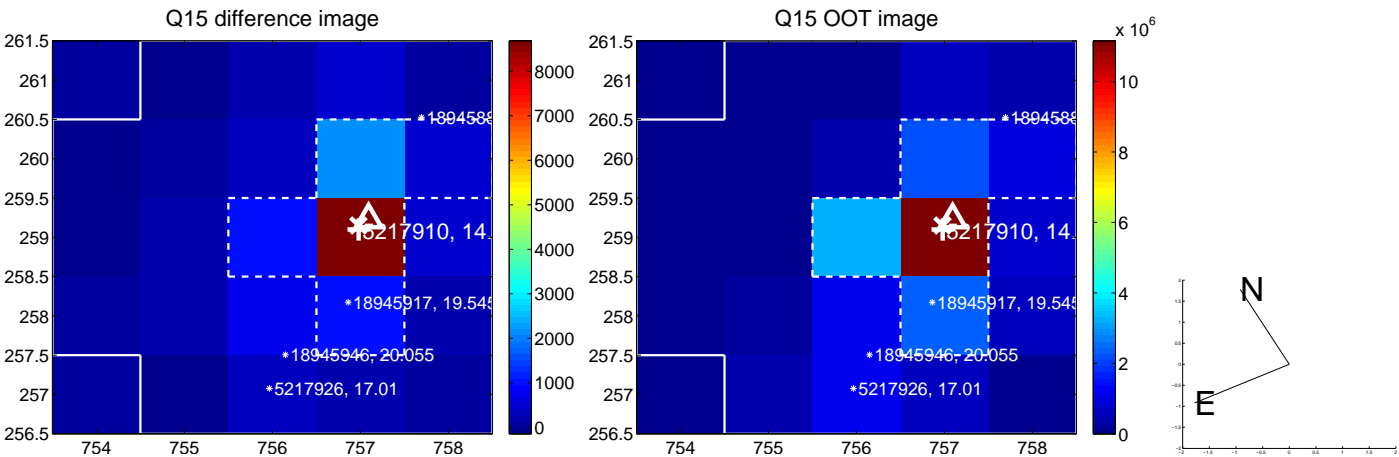
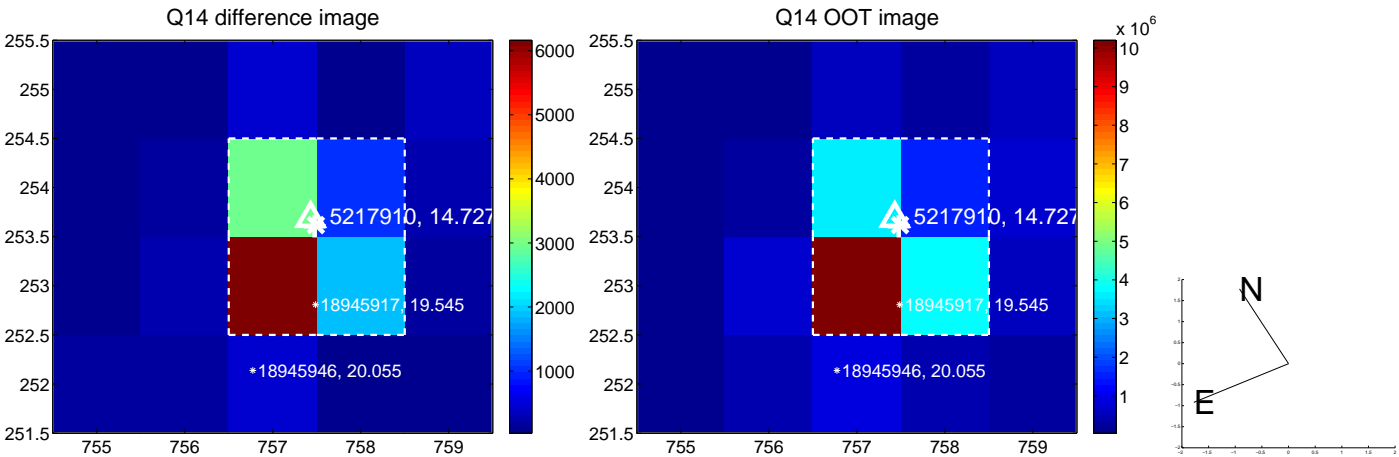
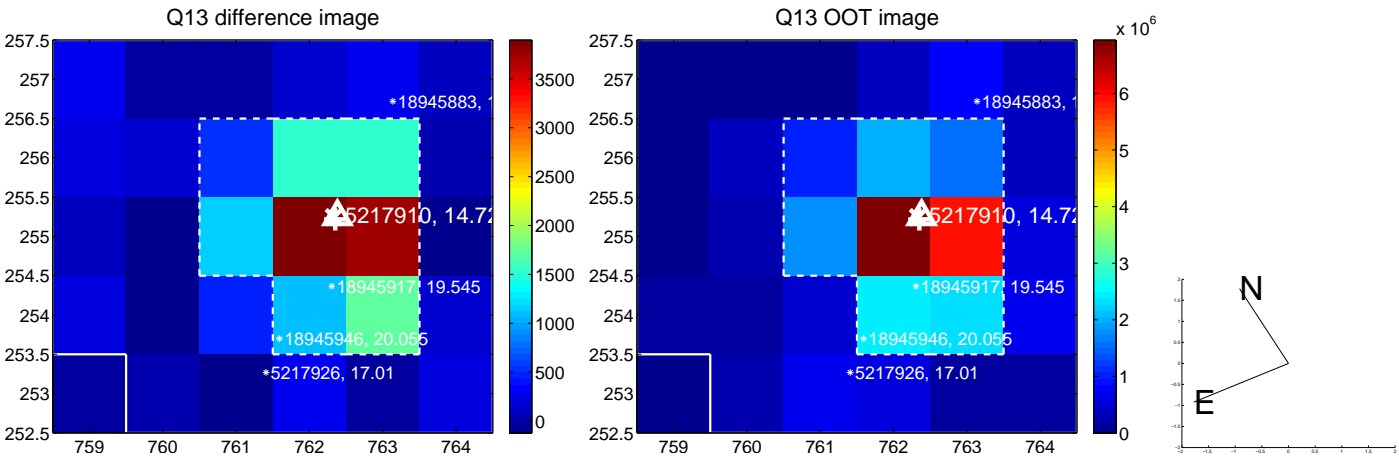
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



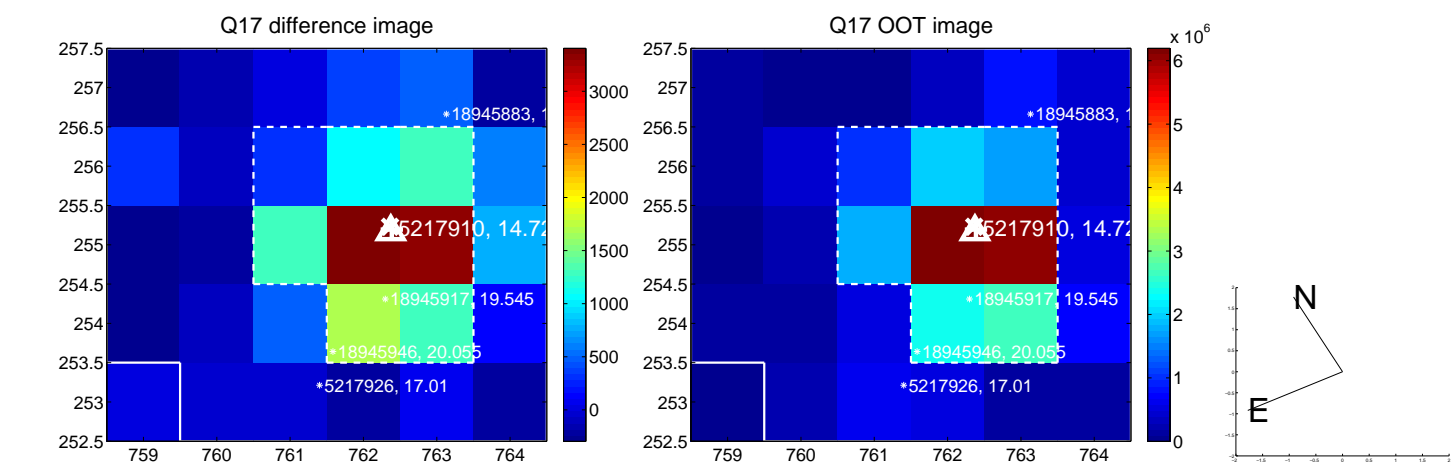
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



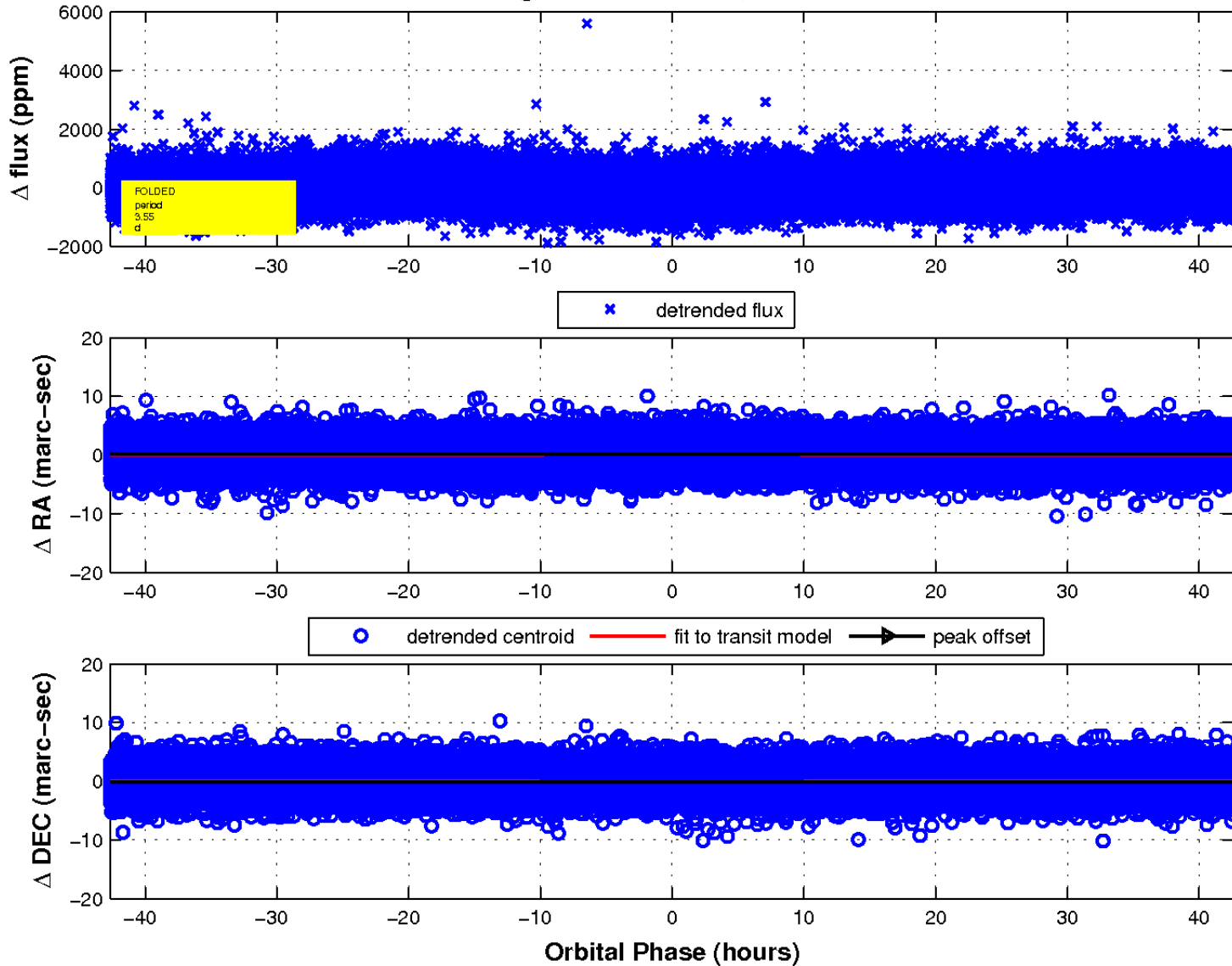
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

