

KIC 007219502

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007219502-01 | OBS | No | 2.676527 | 132.916649 | 63.1 | 5.743 | 11.7 | 11.7 | 1.74 | 7267 | 1.60 | 4052.78 |
| 007219502-02 | OBS | No | 0.535329 | 131.852196 | 34.4 | 4.213 | 8.9 | 11.2 | 1.74 | 7267 | 1.03 | 34648.70 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 007219502-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007219502-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS |

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

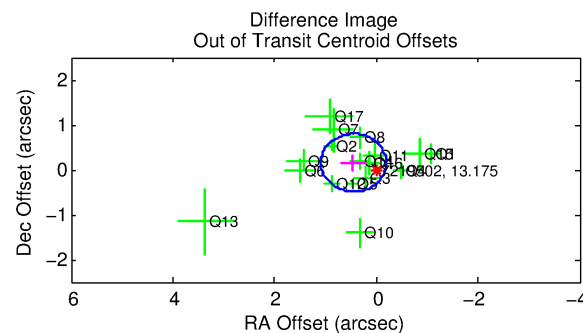
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 007219502-01

No Significant Match Found

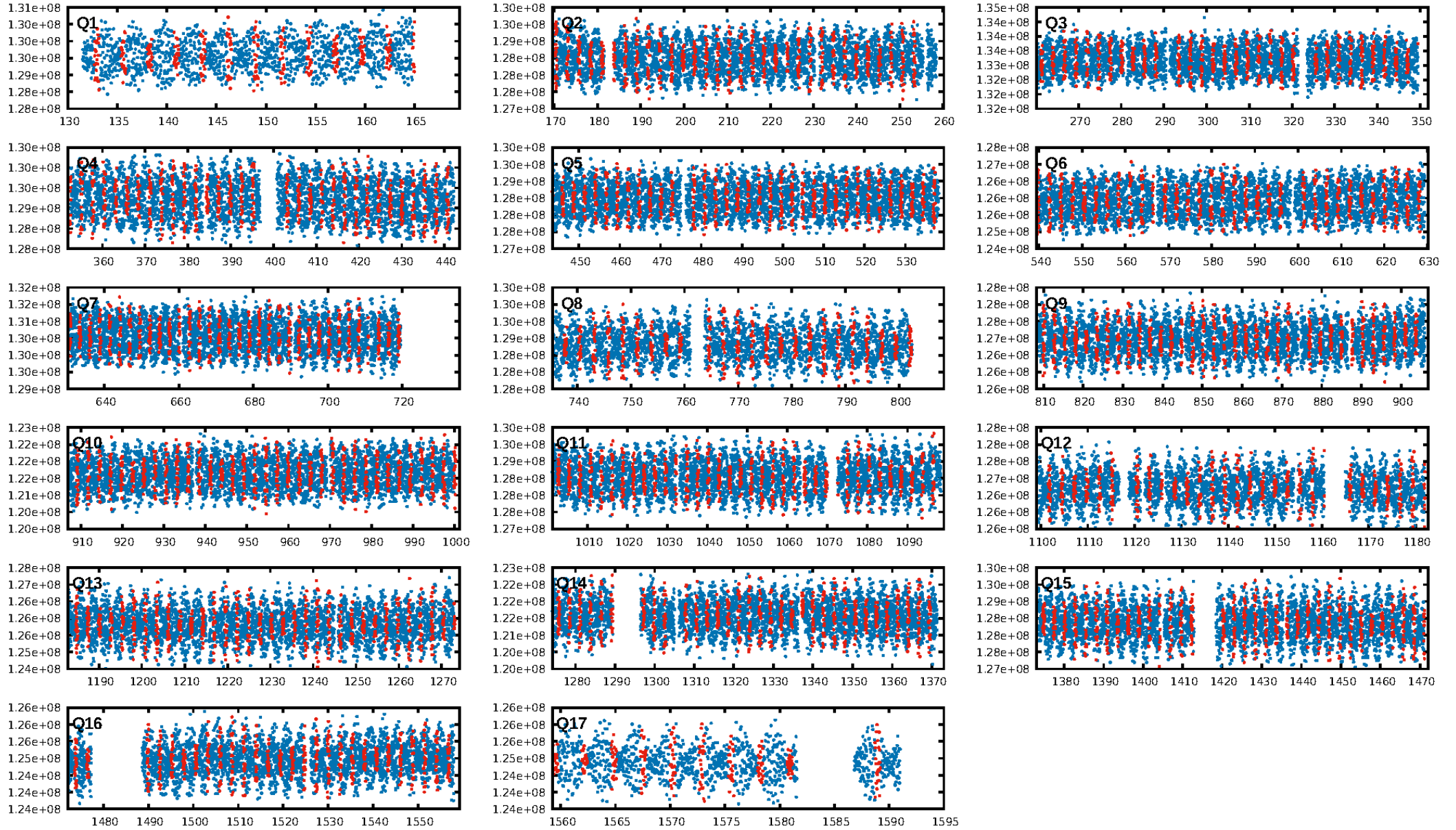
KIC: 7219502 Candidate: 1 of 2 Period: 2.677 d



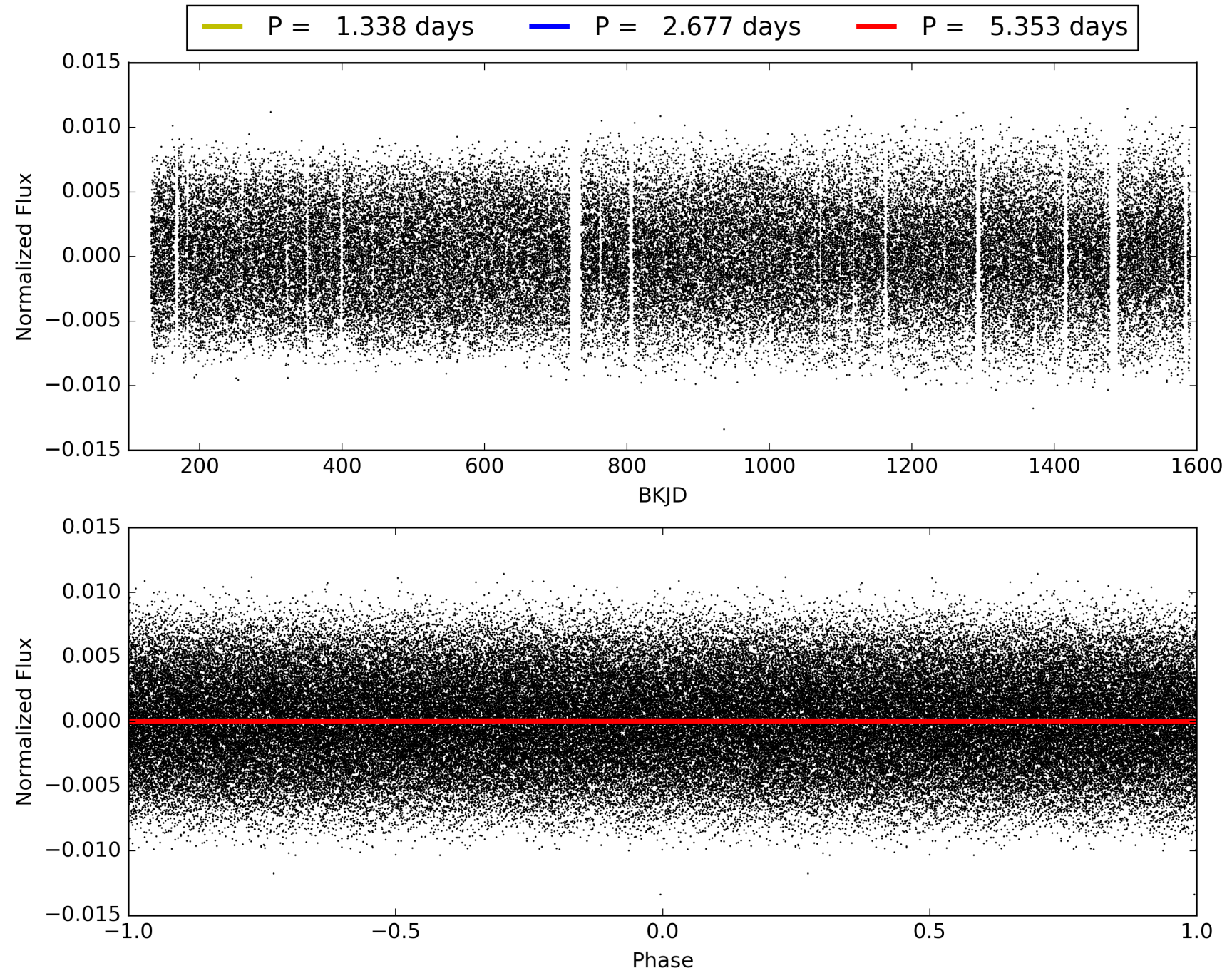
ShortPeriod-sig: 100.0% [7.22σ]
 LongPeriod-sig: N/A
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: N/A
 RollingBand-fgt: 1.00 [481/481]
 GhostDiagnostic-chr: 9.821
Centroid-sig: 0.0%
 Centroid-so: 0.913 arcsec [2.32σ]
 OotOffset-rm: 0.476 arcsec [2.21σ]
 KicOffset-rm: 0.500 arcsec [2.55σ]
 OotOffset-st: 4/4/4/5 [17]
 KicOffset-st: 4/4/4/5 [17]
 DiffImageQuality-fgm: 0.94 [16/17]
 DiffImageOverlap-fno: 0.00 [0/17]

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

TCE 007219502-01, PDC Light Curves

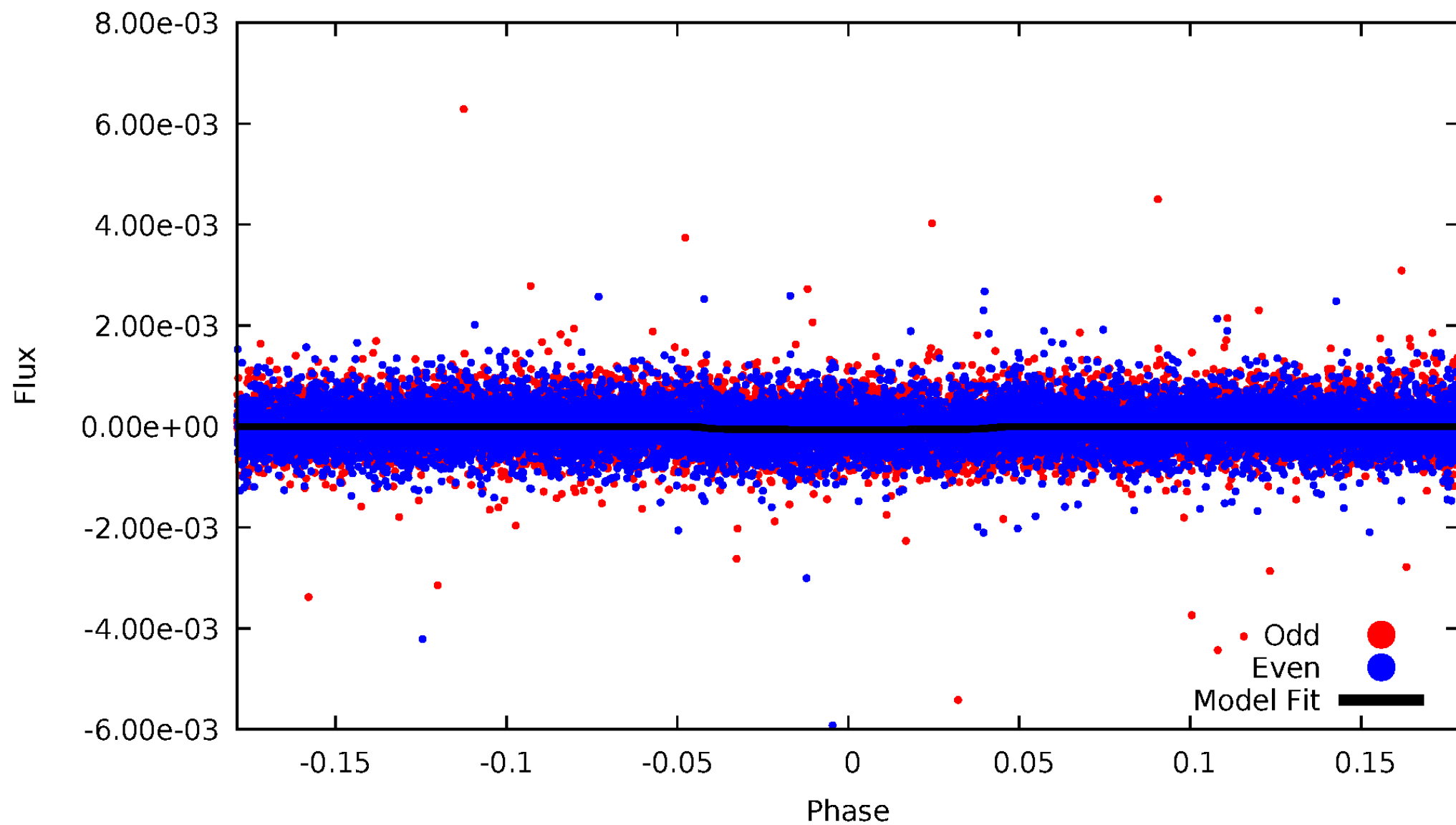


TCE 007219502-01



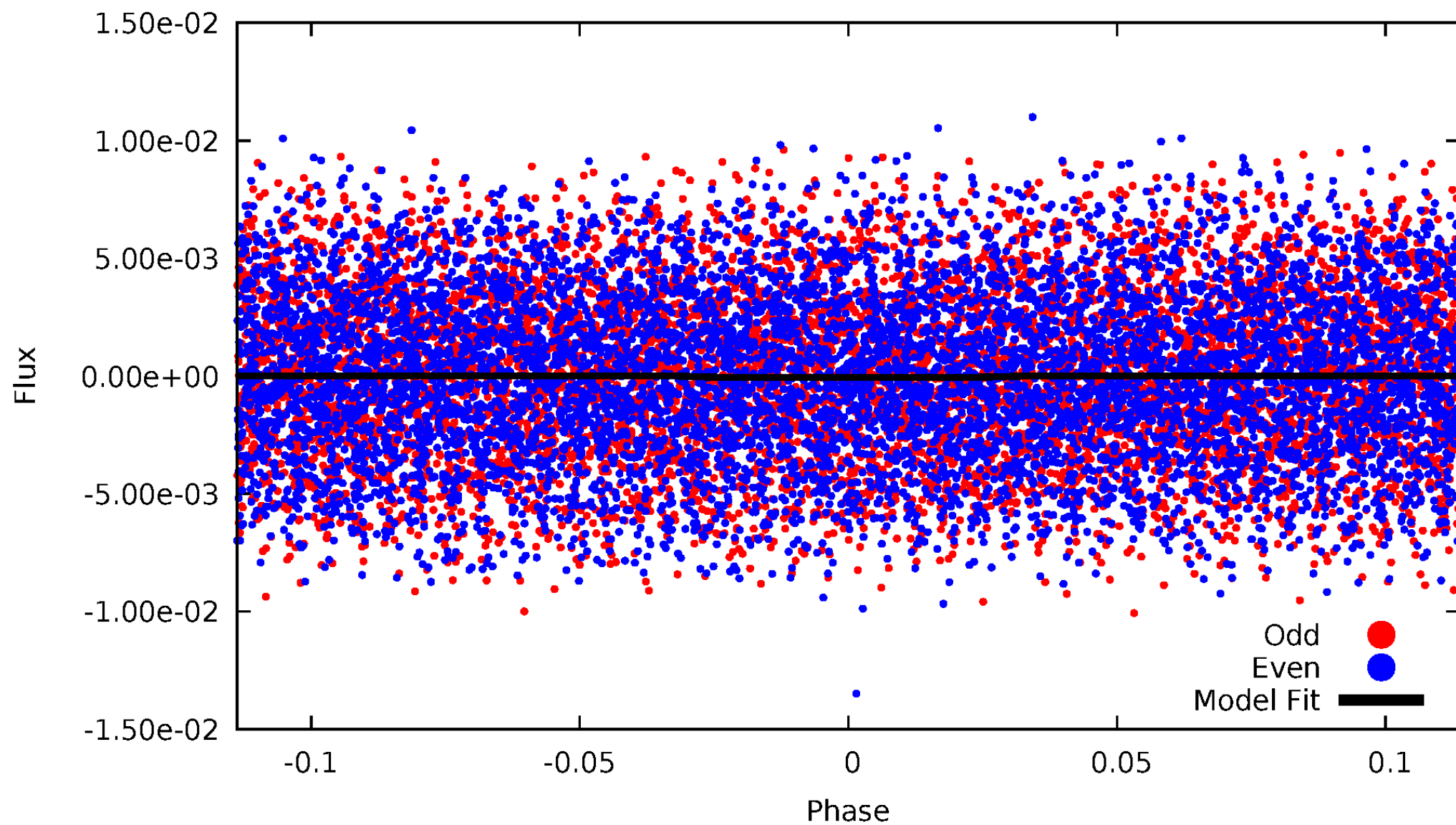
DV Odd/Even

TCE 007219502-01



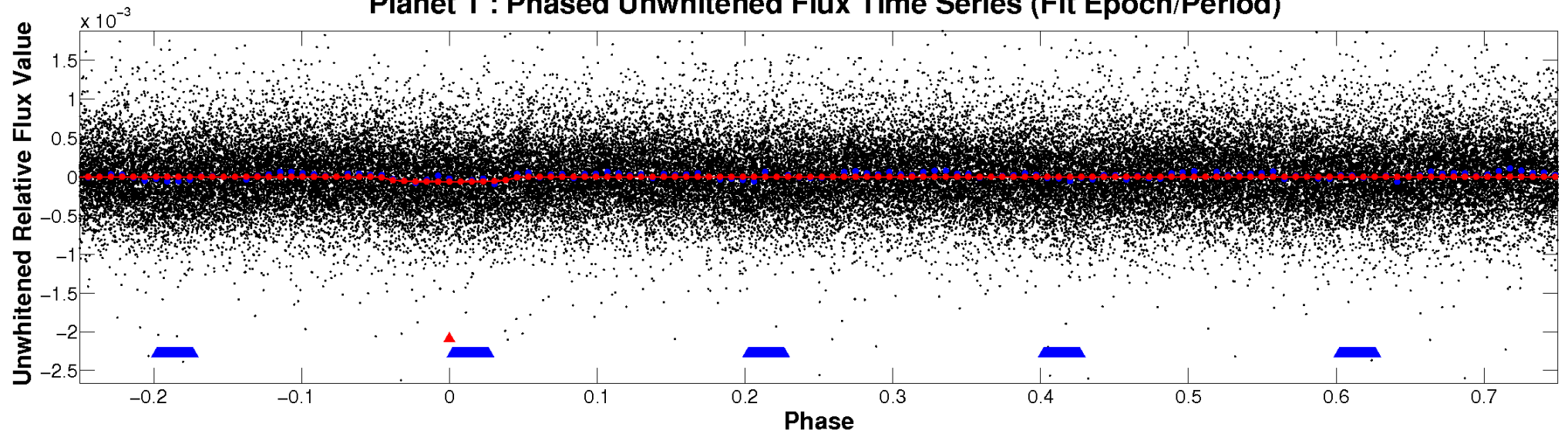
ALT Odd/Even

TCE 007219502-01

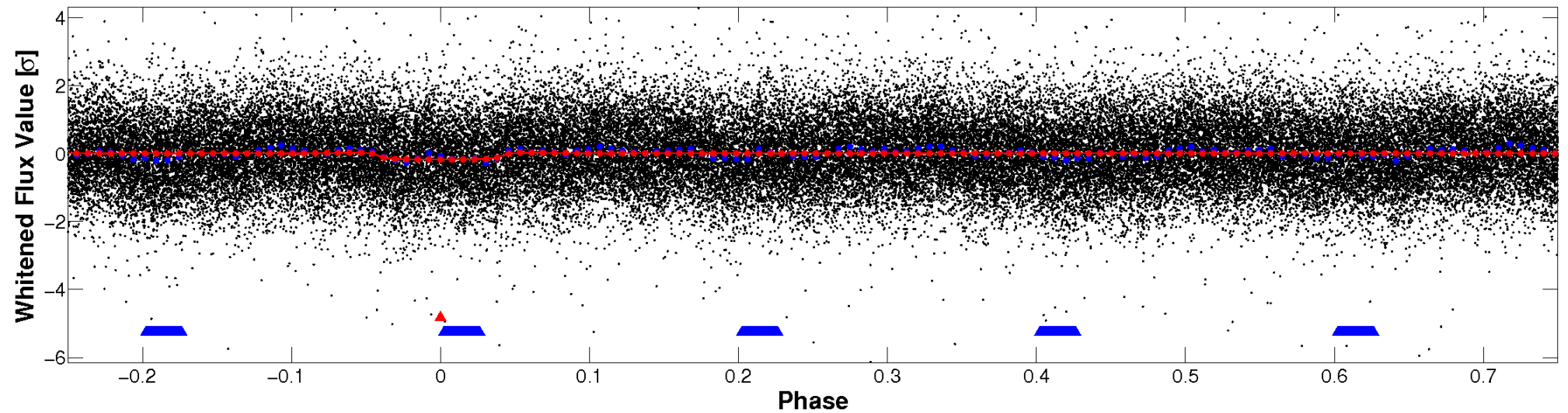


Non-Whitened Vs. Whitened Light Curve

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

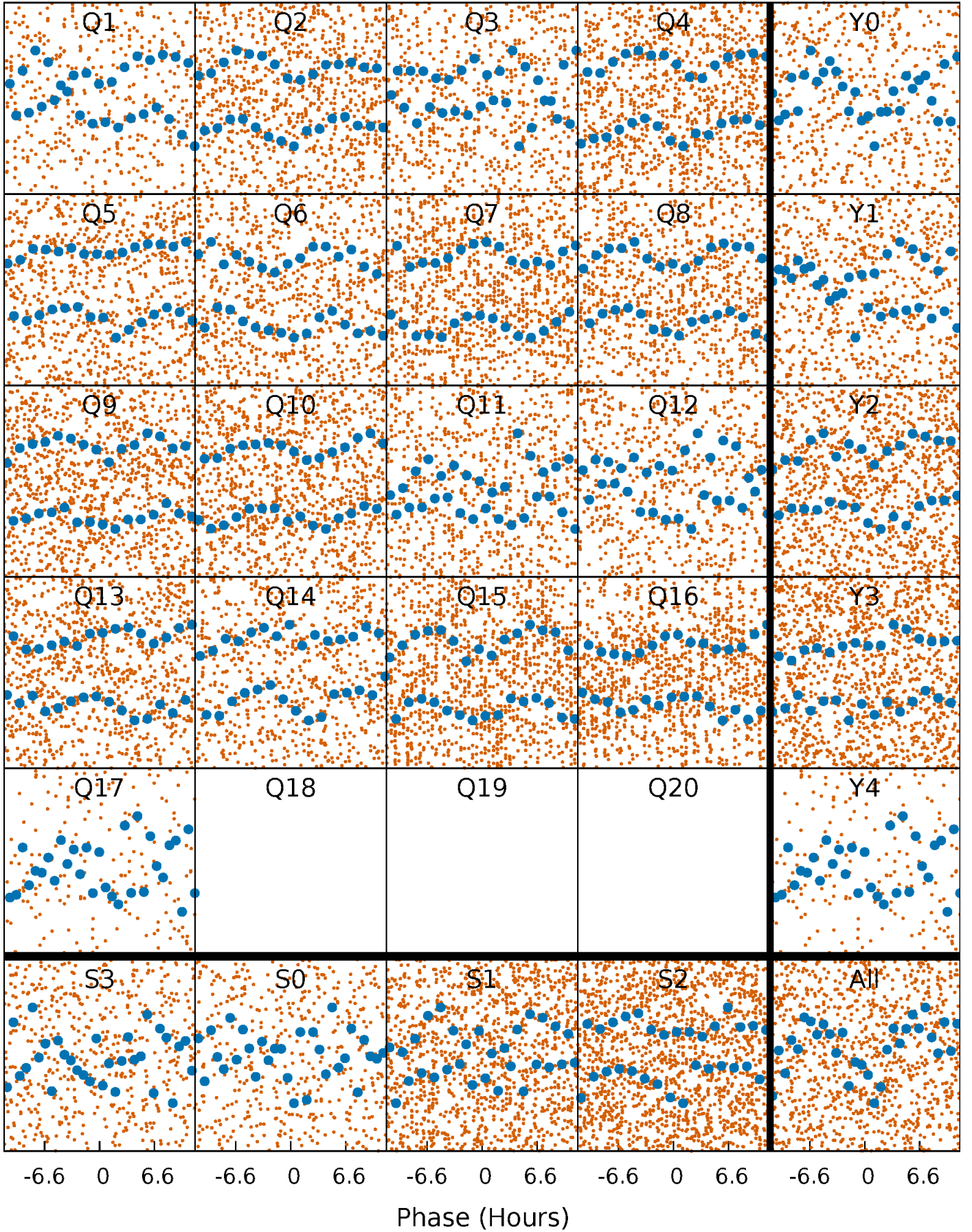


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



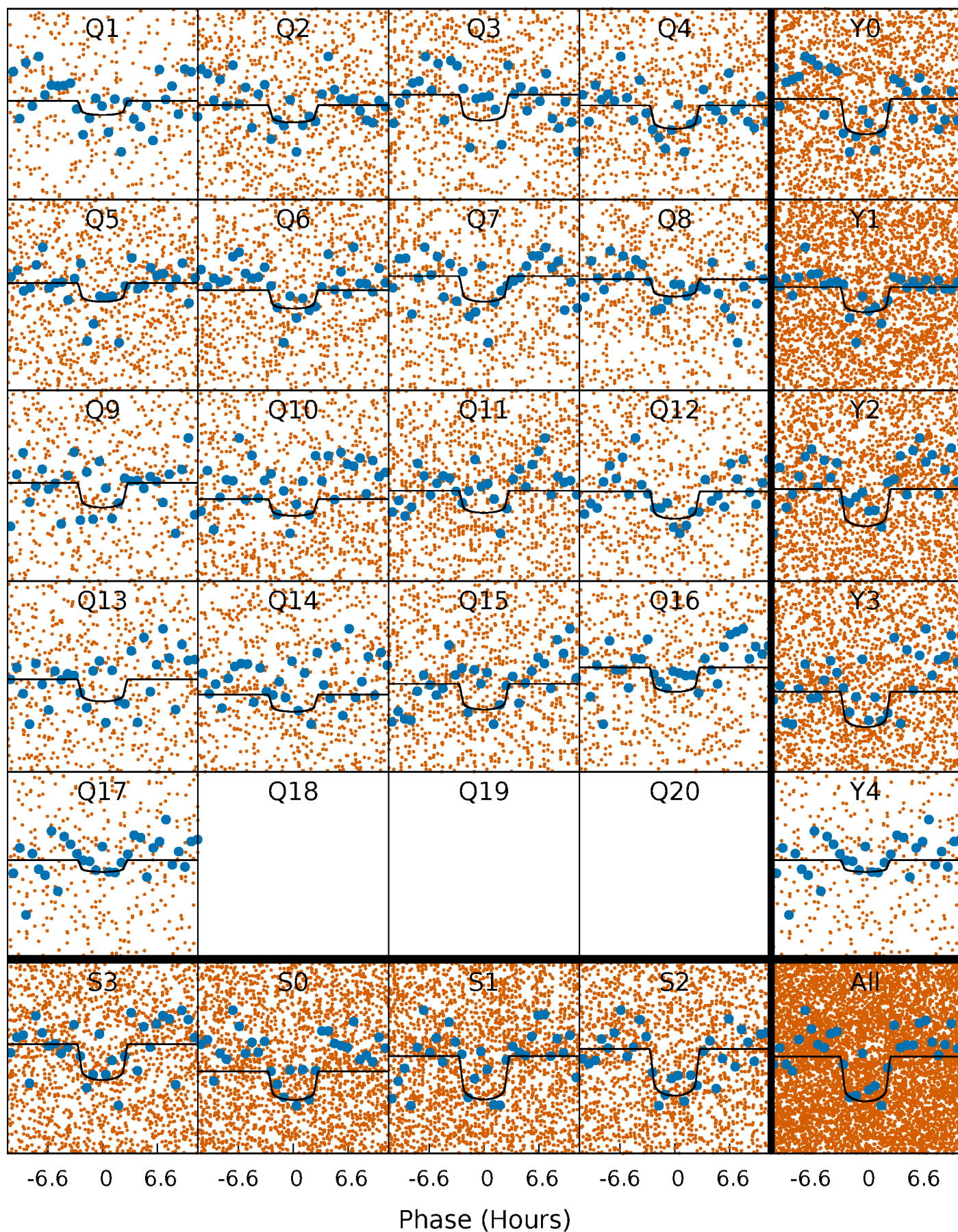
PDC Quarter-Phased Transit Curves

TCE 007219502-01 P= 2.676527 Days $T_0=132.916650$ (BKJD)



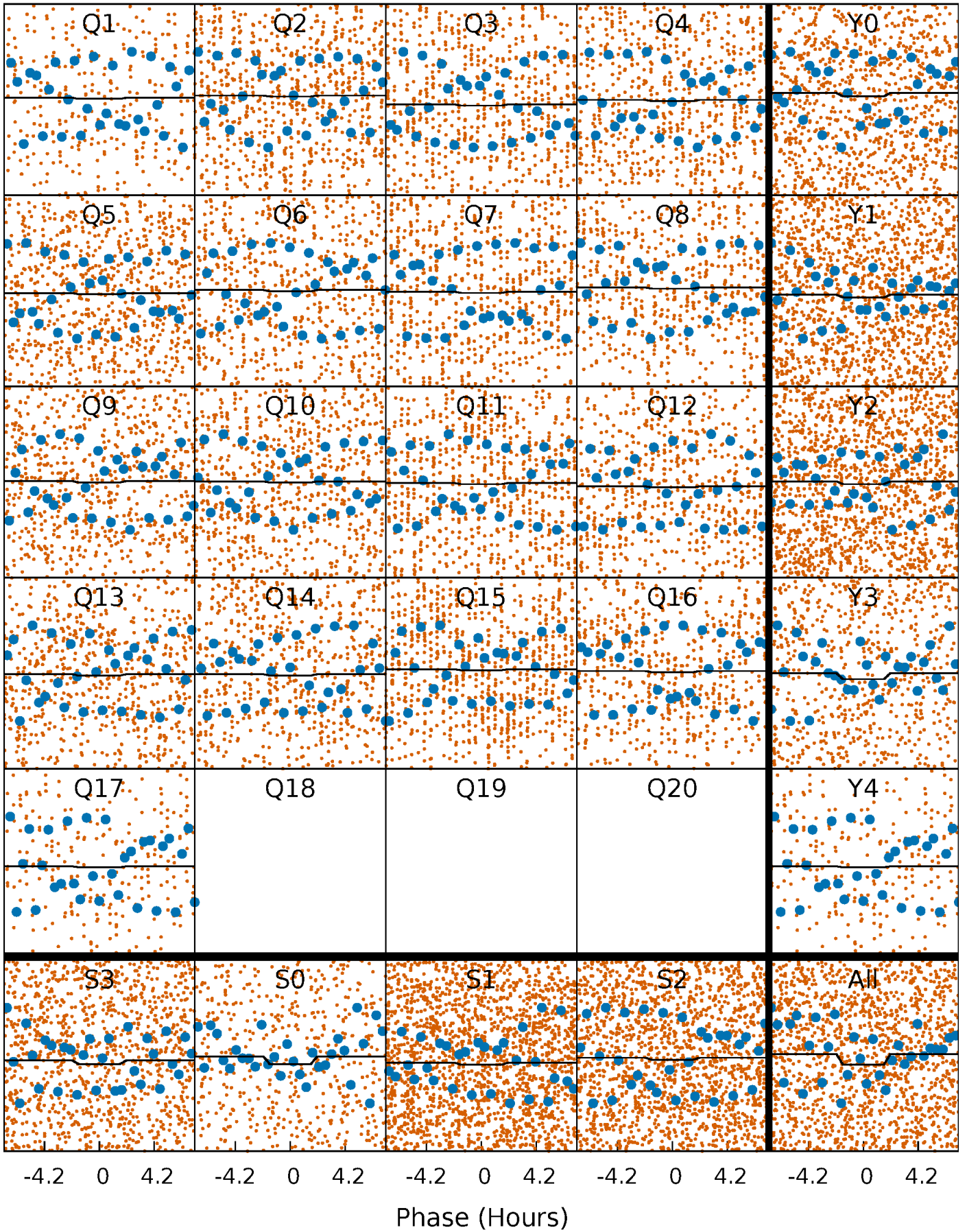
DV Quarter-Phased Transit Curves

TCE 007219502-01 P= 2.676527 Days $T_0=132.916650$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

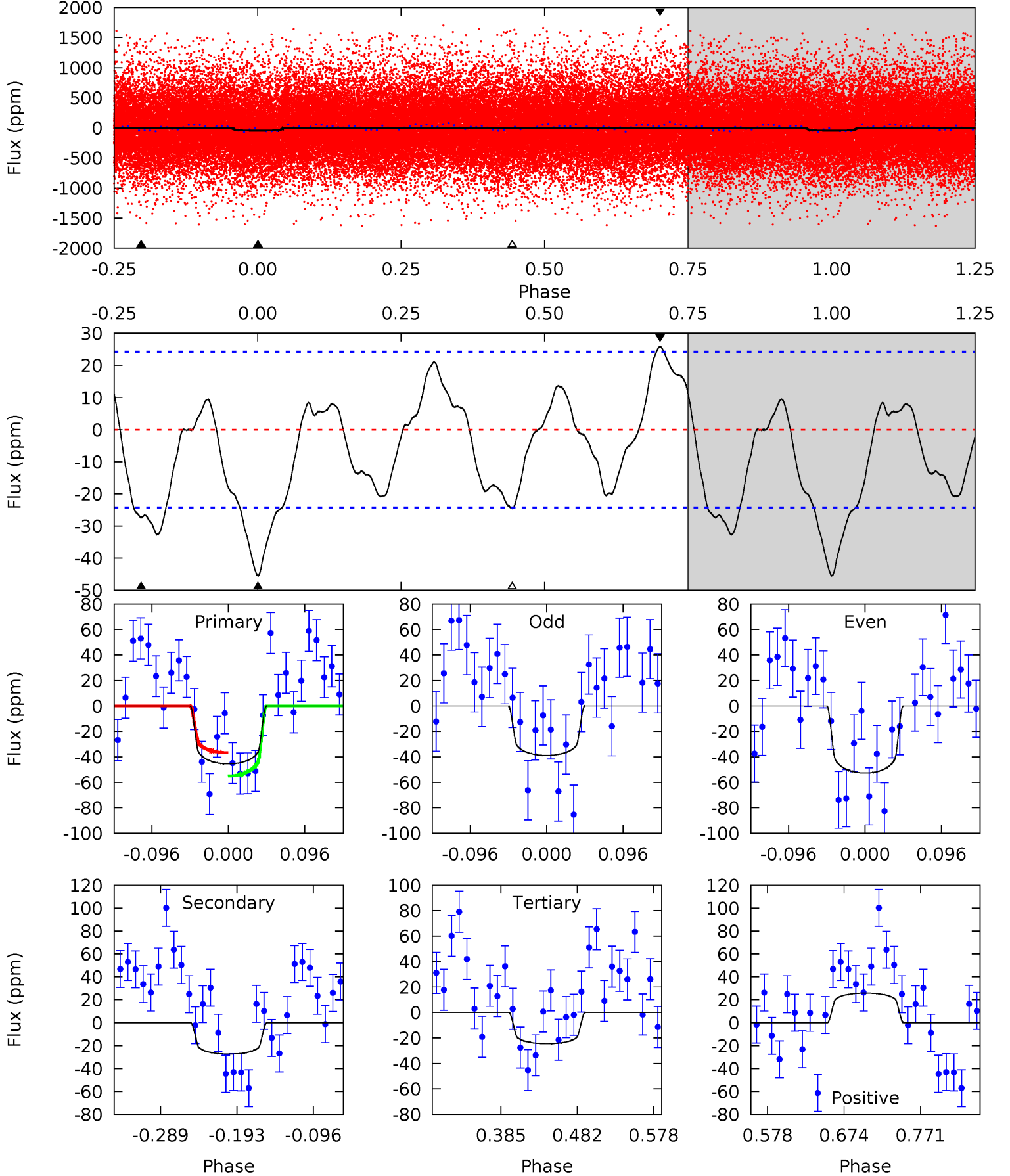
TCE 007219502-01 P= 2.676572 Days $T_0=132.886848$ (BKJD)



DV Model-Shift Uniqueness Test

007219502-01, P = 2.676527 Days, E = 130.240123 Days

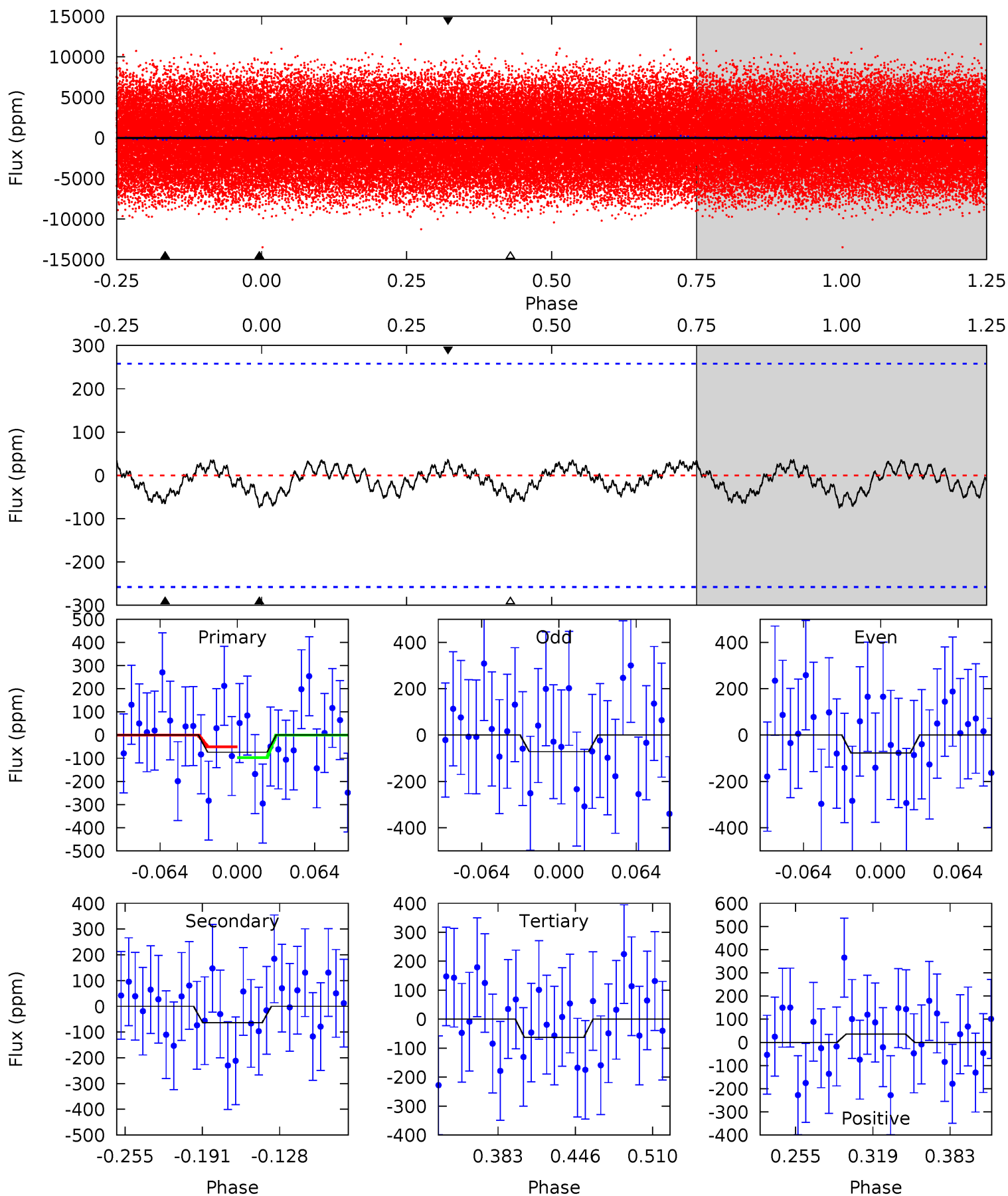
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.58 | 5.16 | 4.63 | 4.87 | 4.57 | 1.66 | 2.51 | 3.95 | 3.71 | 0.53 | 0.29 | 1.32 | 1.11 | 0.36 | 1.73 |



Alt Model-Shift Uniqueness Test

007219502-01, P = 2.676572 Days, E = 130.210276 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1.34 | 1.16 | 1.13 | 0.65 | 4.66 | 1.85 | 0.41 | 0.21 | 0.69 | 0.03 | 0.51 | 0.05 | 1.15 | 0.33 | 0.42 |



Stellar Parameters For KIC 007219502

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7267^{+230}_{-345} | $4.133^{+0.132}_{-0.182}$ | $-0.100^{+0.250}_{-0.350}$ | $1.739^{+0.541}_{-0.361}$ | $1.497^{+0.212}_{-0.236}$ | $0.401^{+0.271}_{-0.206}$ |
| | +3%/-5% | +3%/-4% | +250%/-350% | +31%/-21% | +14%/-16% | +68%/-52% |
| 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 007219502-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|------------------------|------------------|
| DV | -27 ± 5 | $1.61^{+0.58}_{-0.51}$ | 2860^{+224}_{-204} | 5597^{+1234}_{-685} | 11^{+13}_{-5} |
| Alt. | -64 ± 55 | $1.37^{+0.56}_{-0.50}$ | 2852^{+203}_{-201} | 7672^{+3325}_{-3151} | 33^{+67}_{-29} |

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 $A_{obs} \gg 1.0$

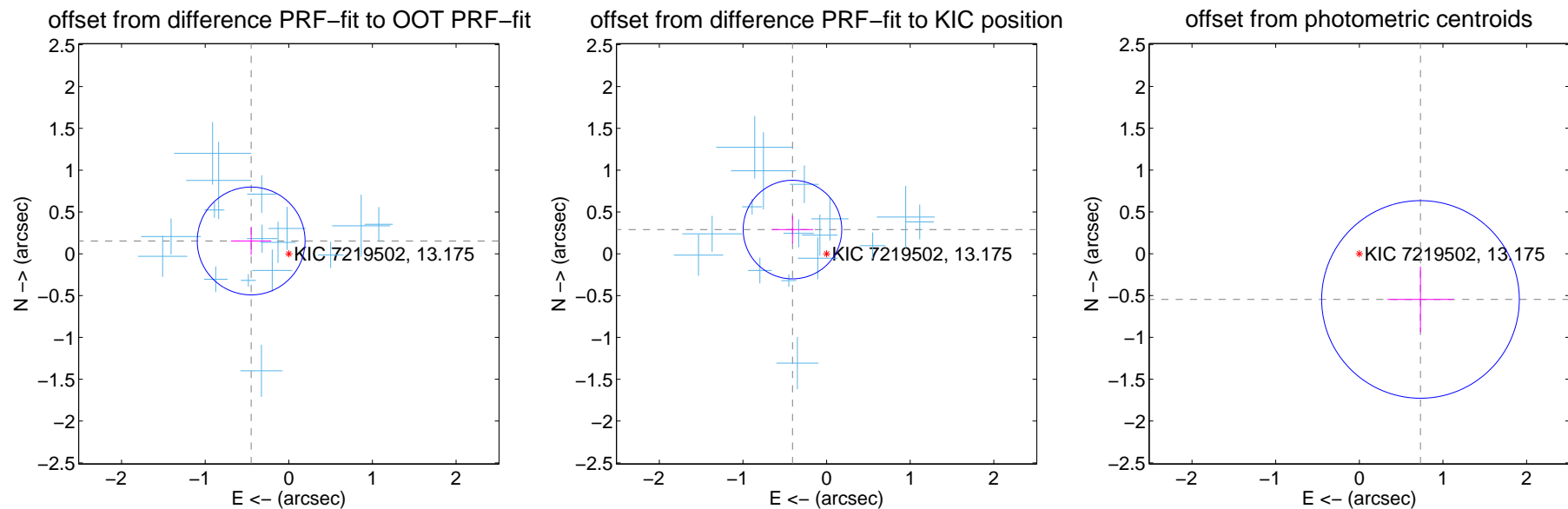
DV Centroid Data

Supplemental centroid analysis for 007219502-01. Kepler magnitude: 13.18. Transit SNR 11.75

There are 16 quarters with good PRF difference image offsets

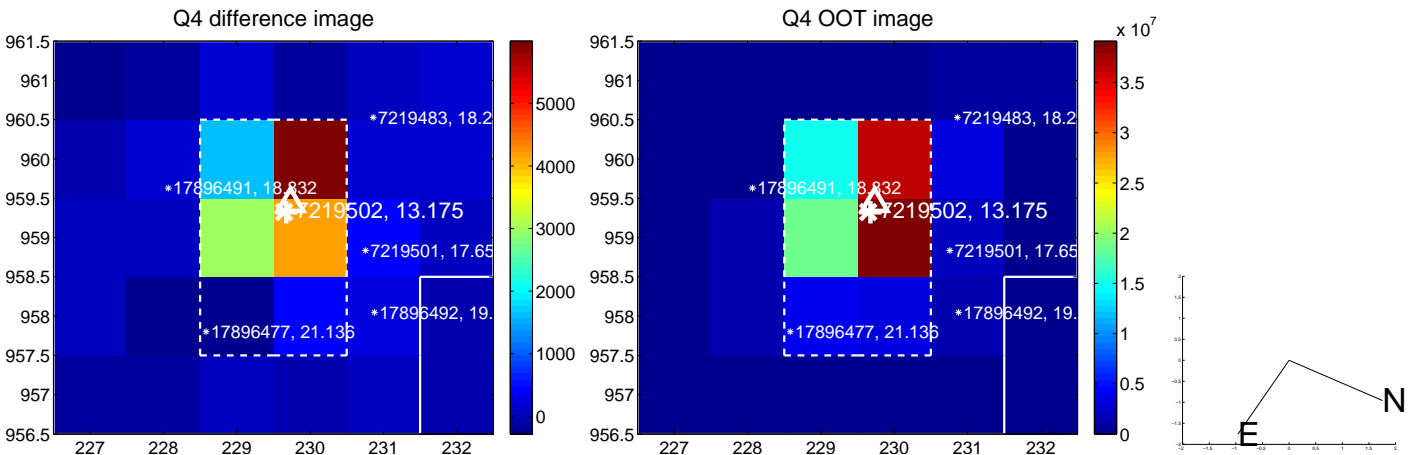
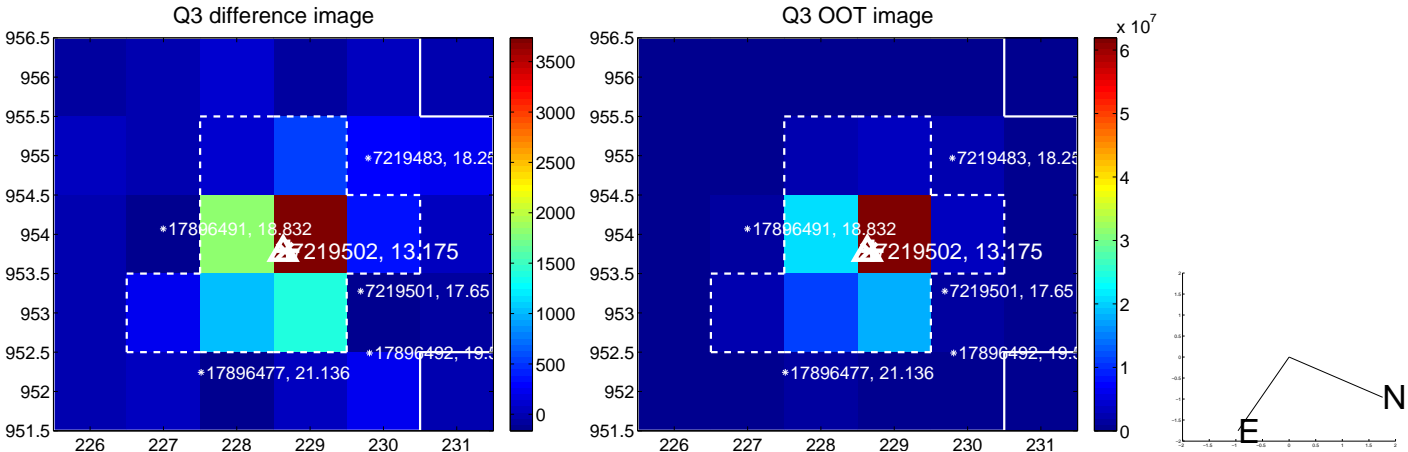
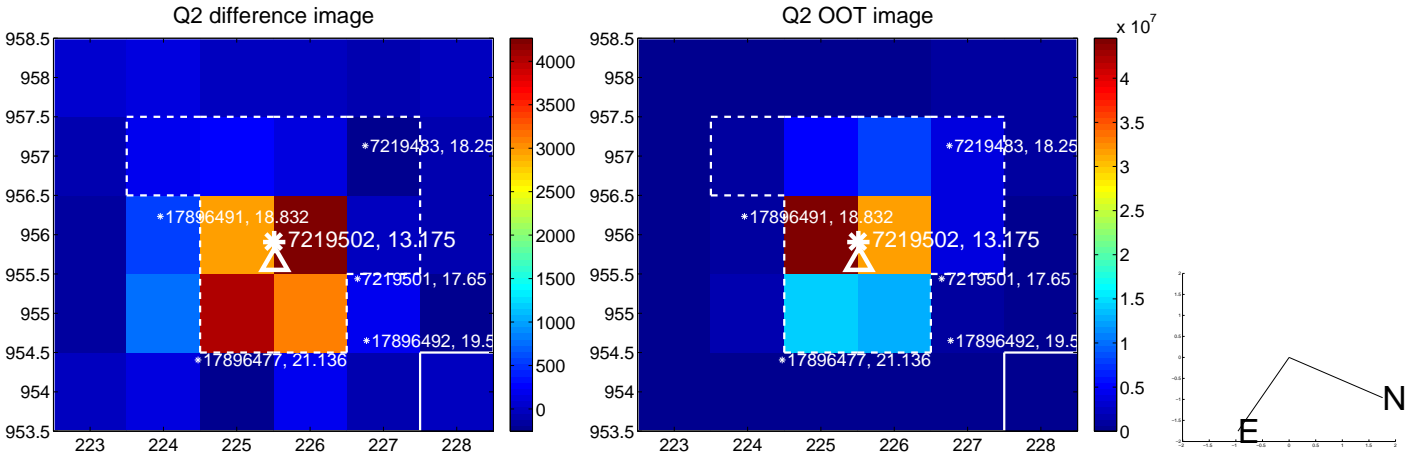
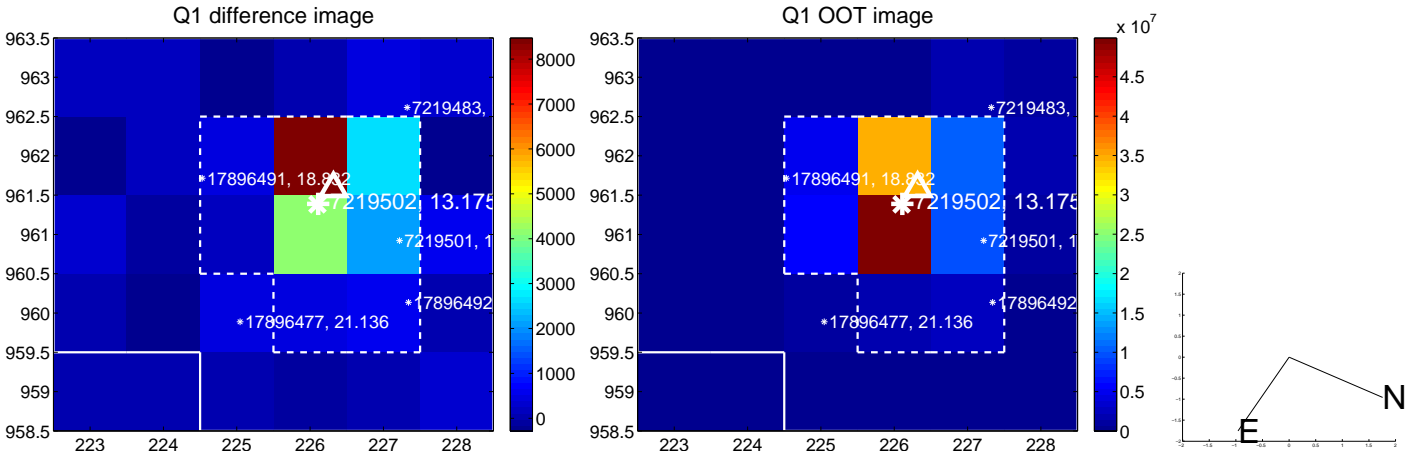
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.476 ± 0.215 | 2.21 | 0.450 ± 0.241 | 0.153 ± 0.169 |
| PRF-fit source offset from KIC position | 0.500 ± 0.196 | 2.55 | 0.408 ± 0.248 | 0.290 ± 0.163 |
| photometric centroid source offset | 0.91 ± 0.39 | 2.32 | -0.73 ± 0.39 | -0.55 ± 0.39 |

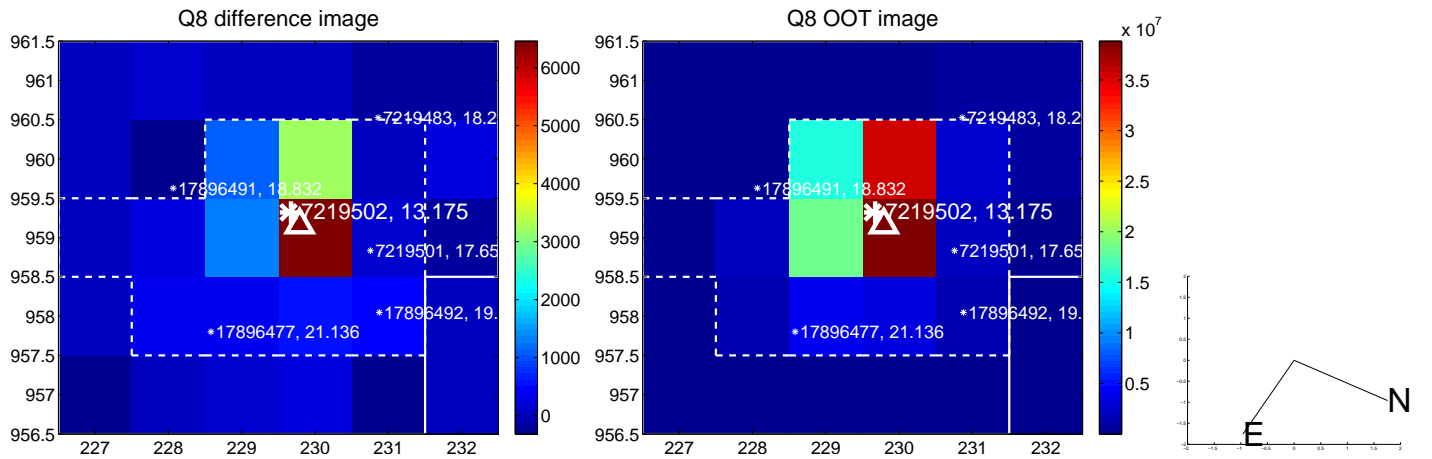
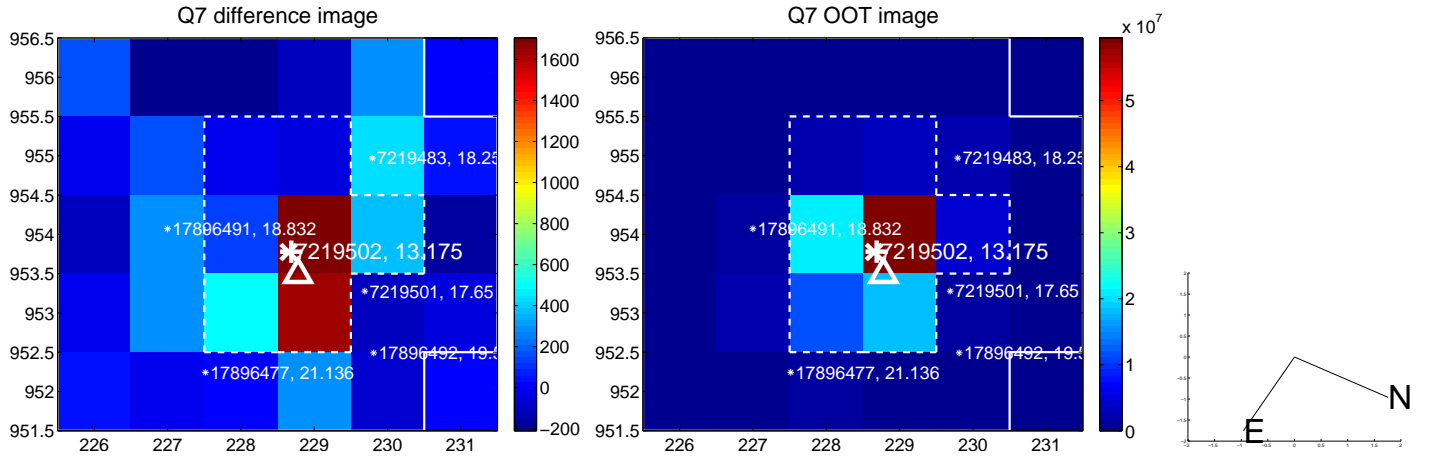
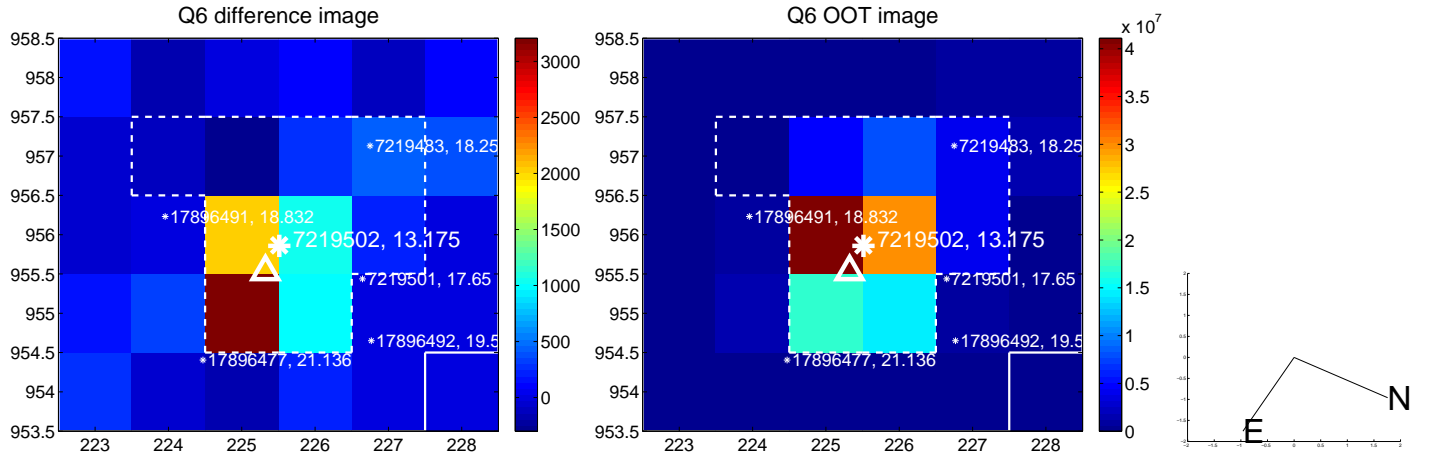
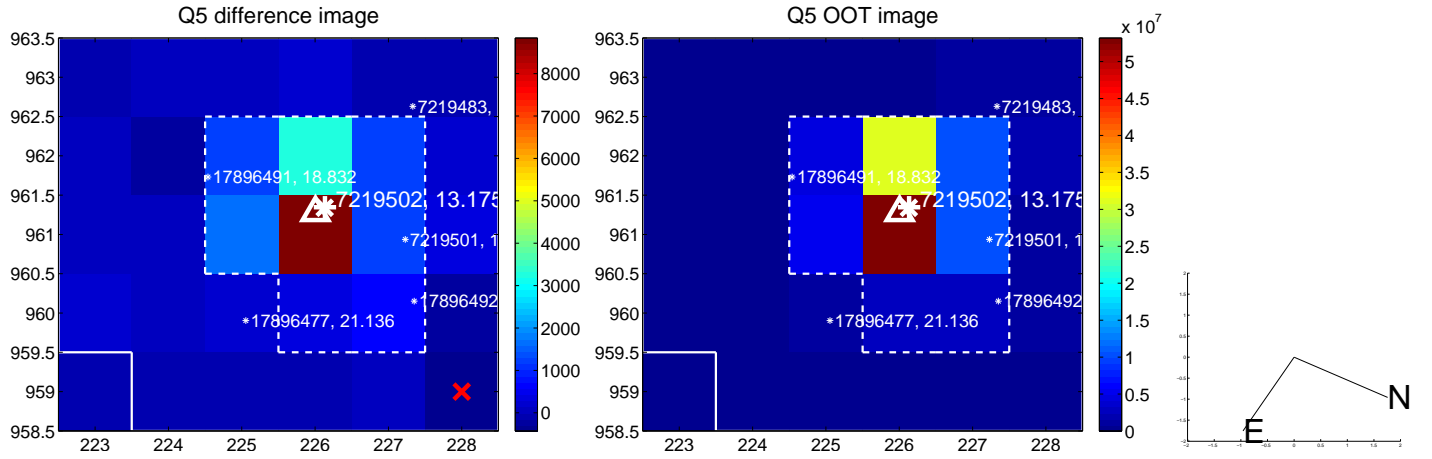


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

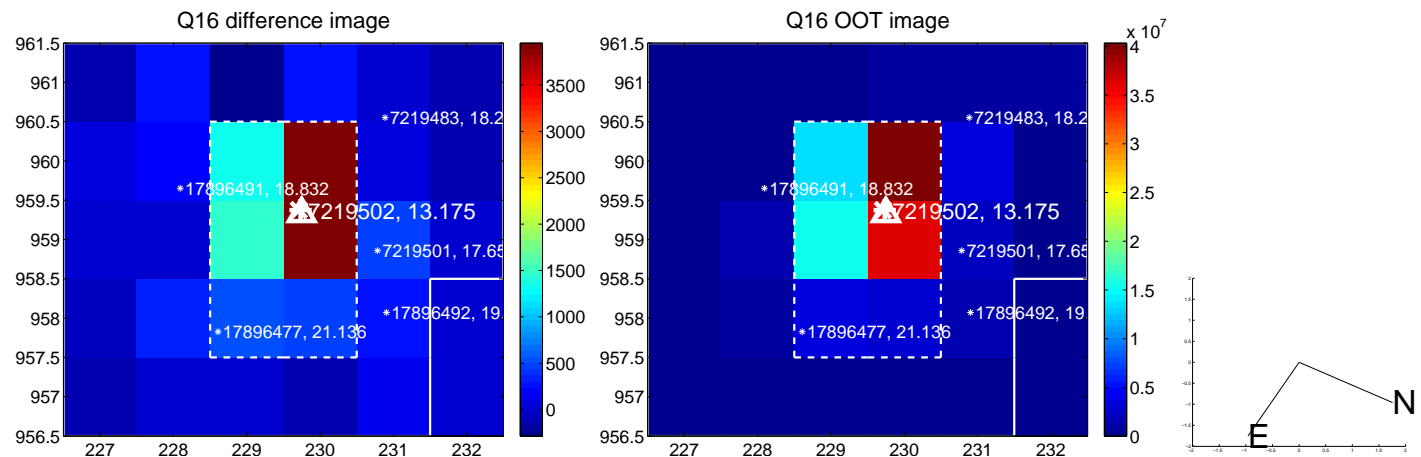
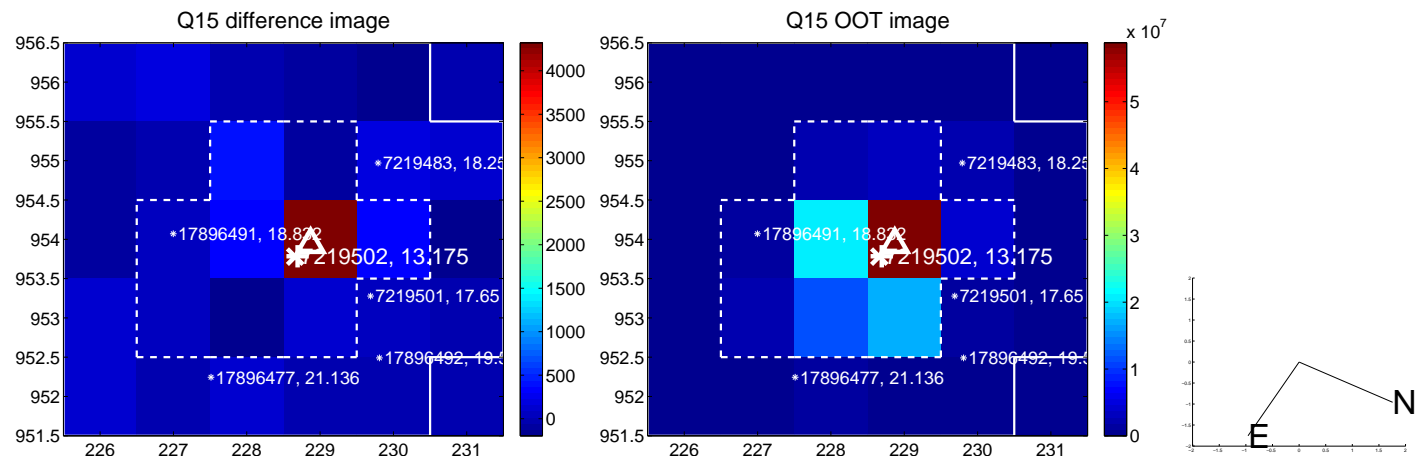
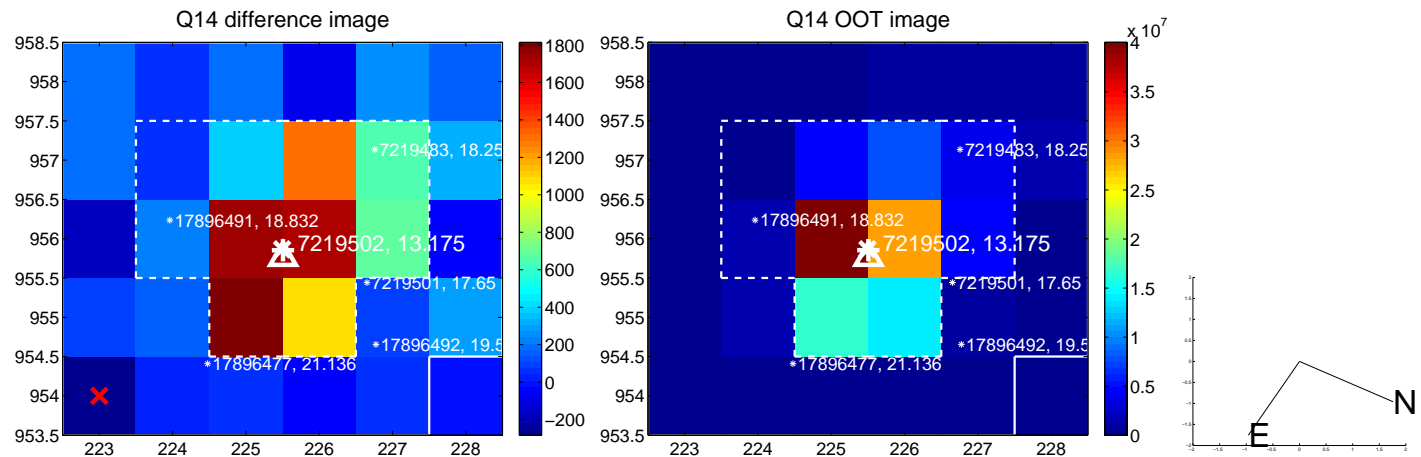
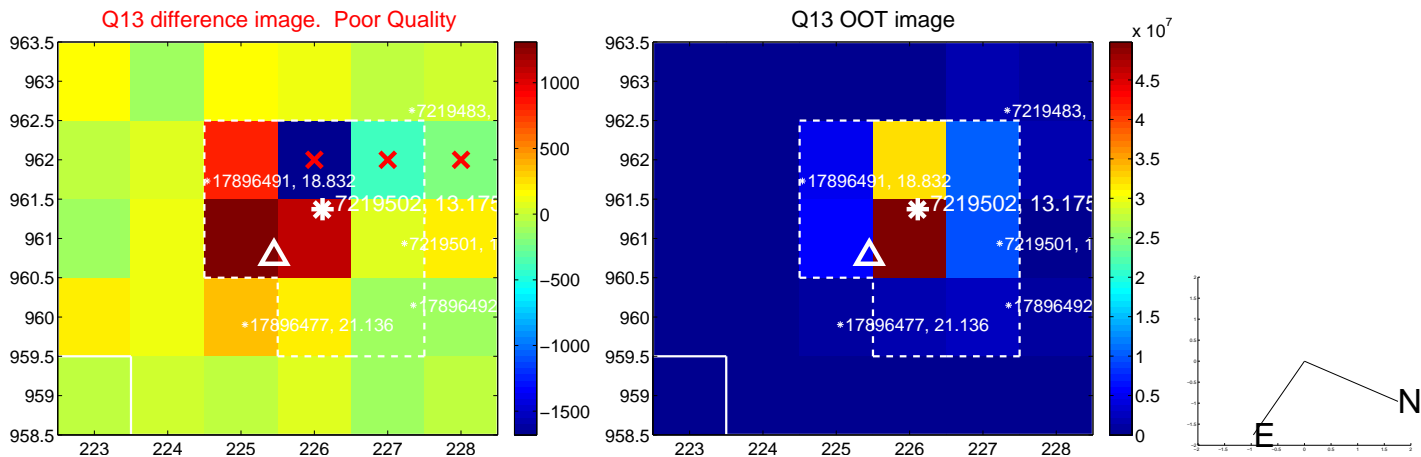
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



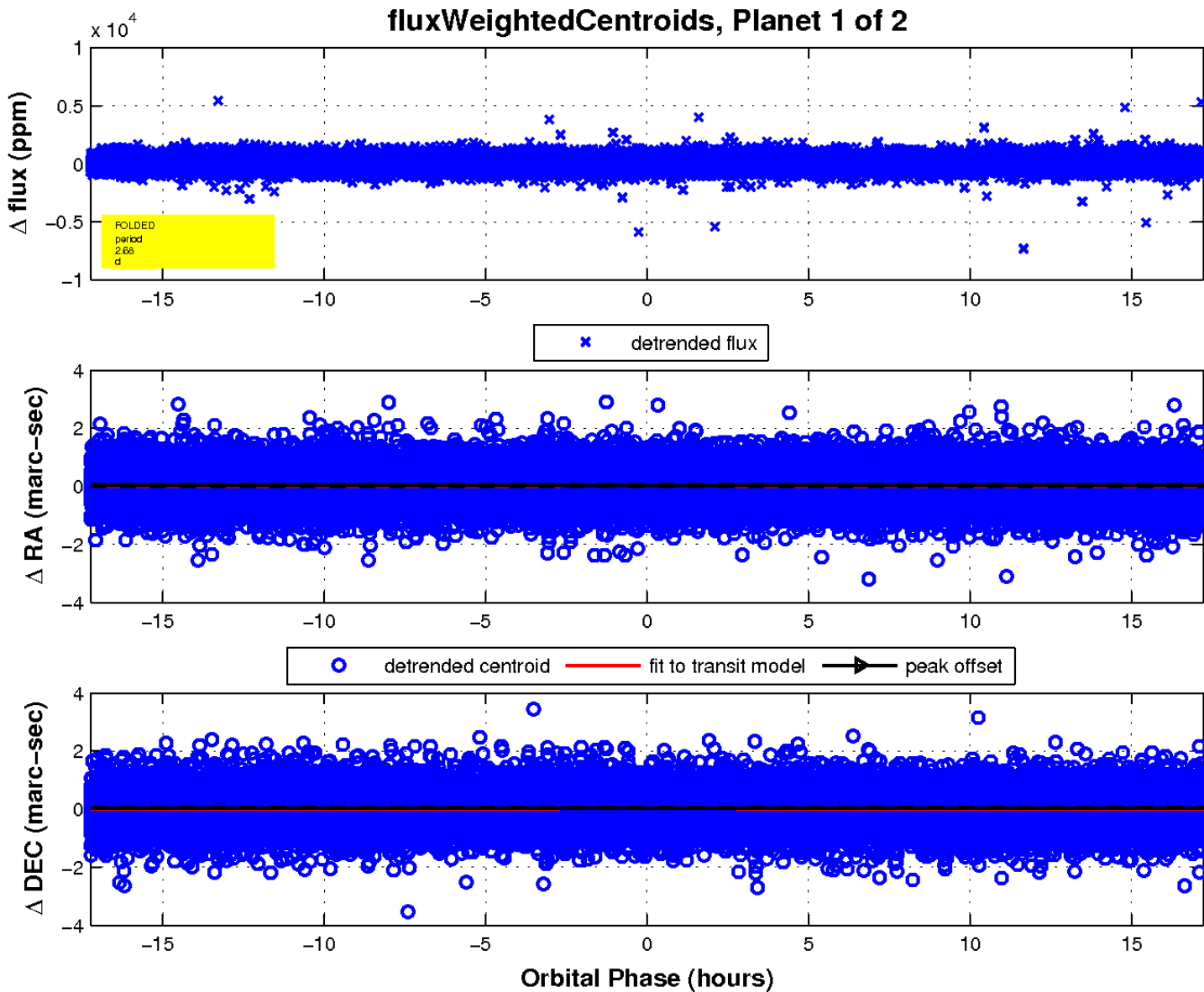
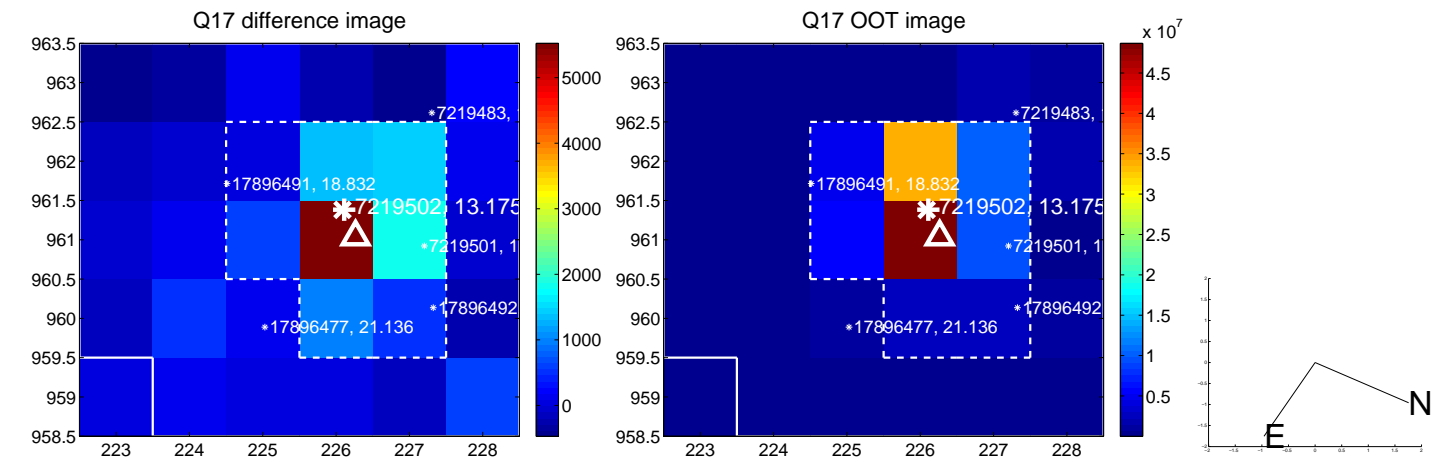
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

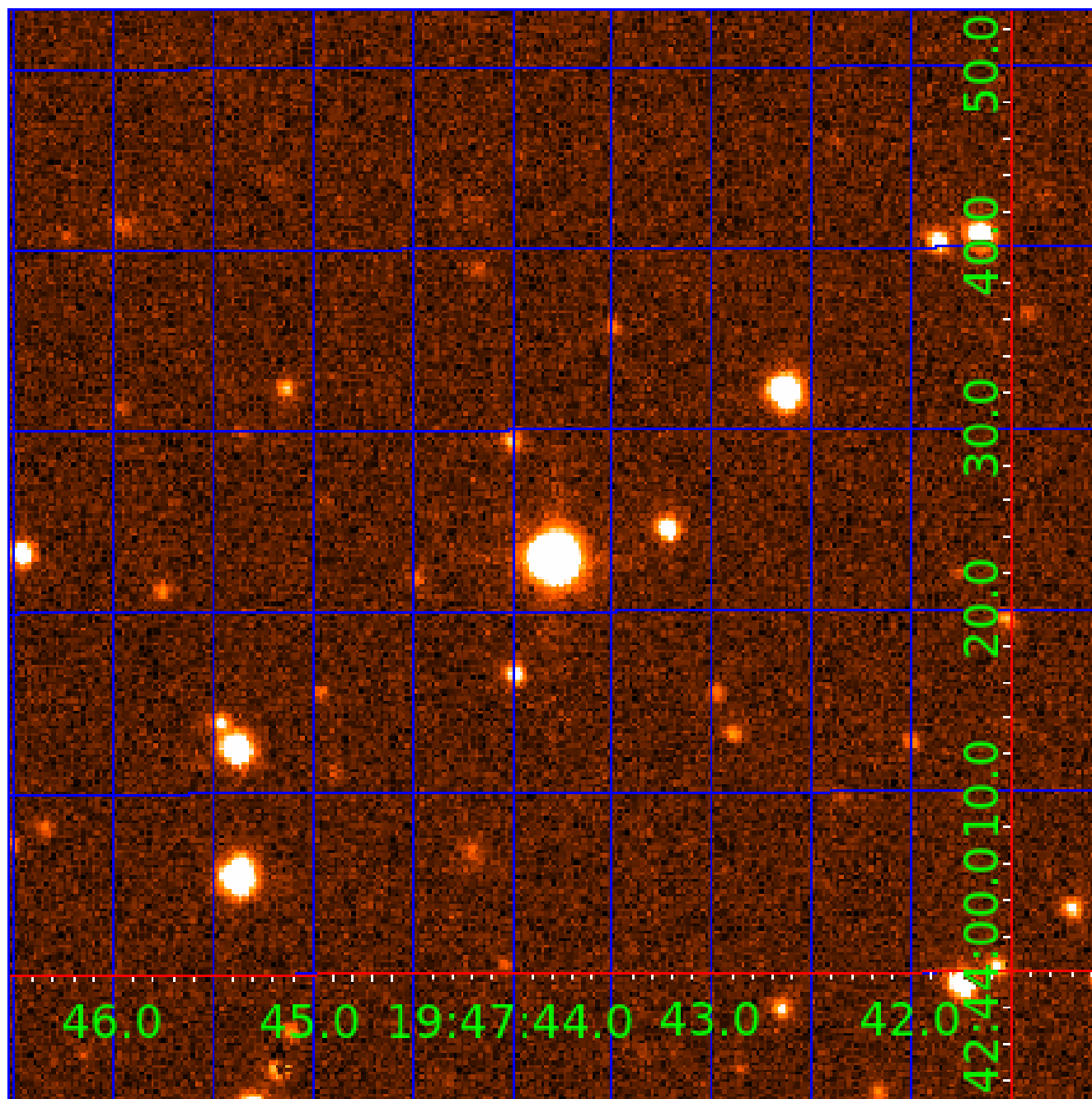


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007219502

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007219502-01 | OBS | No | 2.676527 | 132.916649 | 63.1 | 5.743 | 11.7 | 11.7 | 1.74 | 7267 | 1.60 | 4052.78 |
| 007219502-02 | OBS | No | 0.535329 | 131.852196 | 34.4 | 4.213 | 8.9 | 11.2 | 1.74 | 7267 | 1.03 | 34648.70 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 007219502-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007219502-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS |

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

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

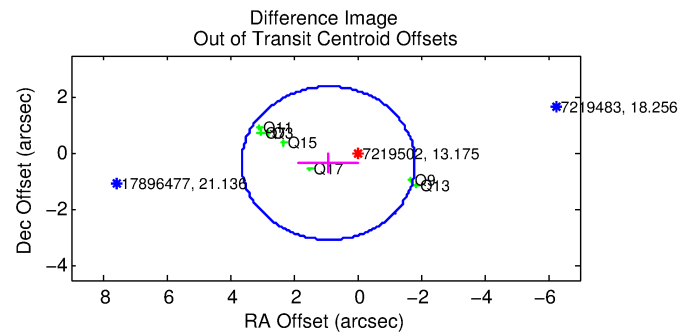
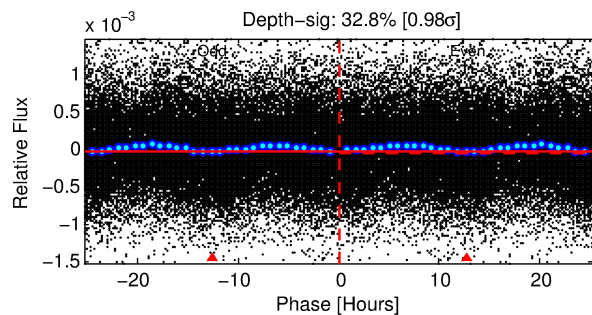
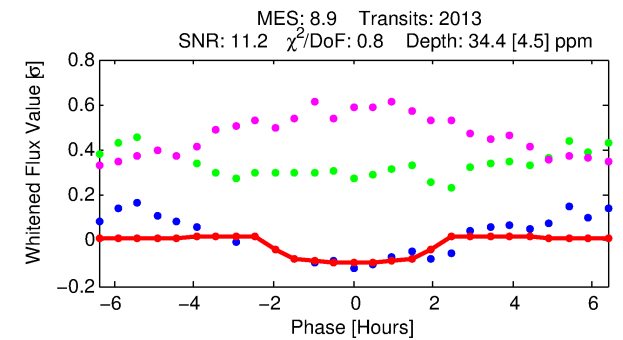
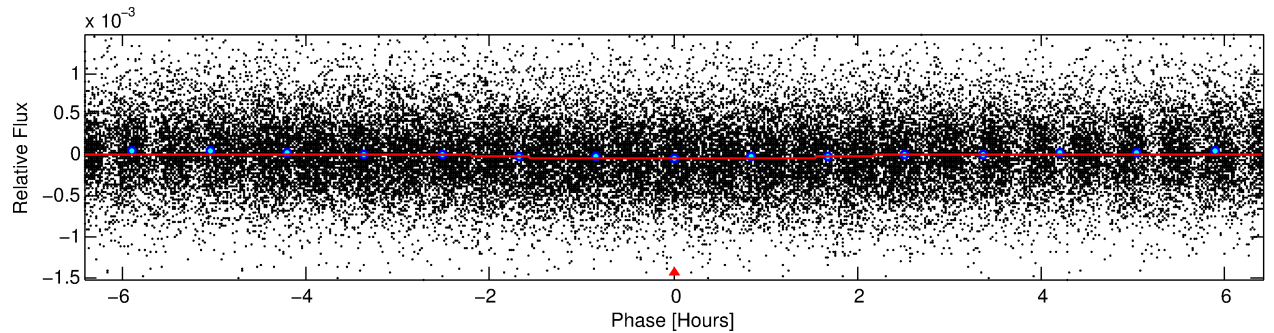
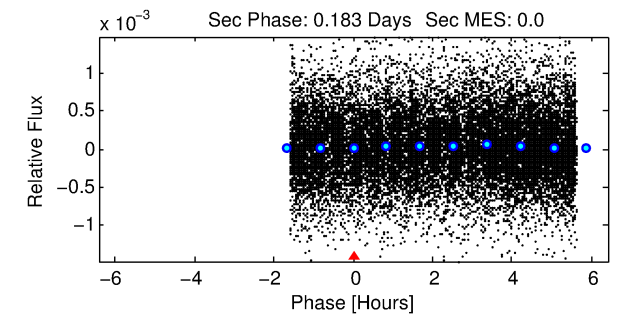
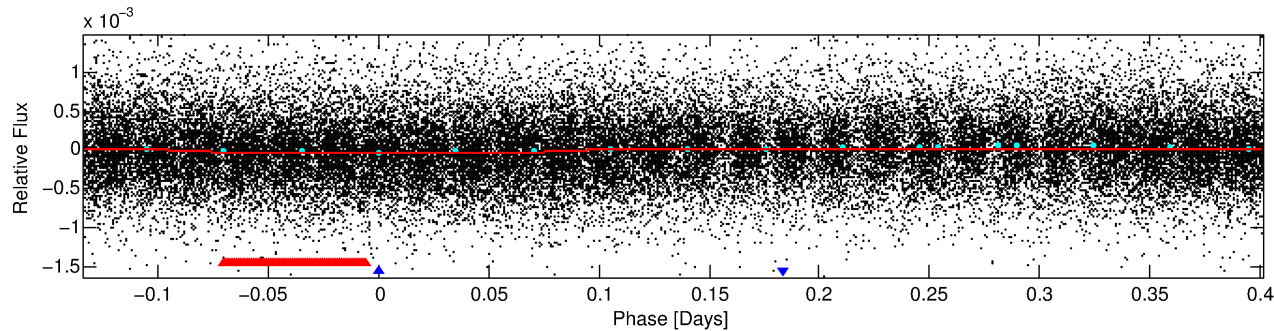
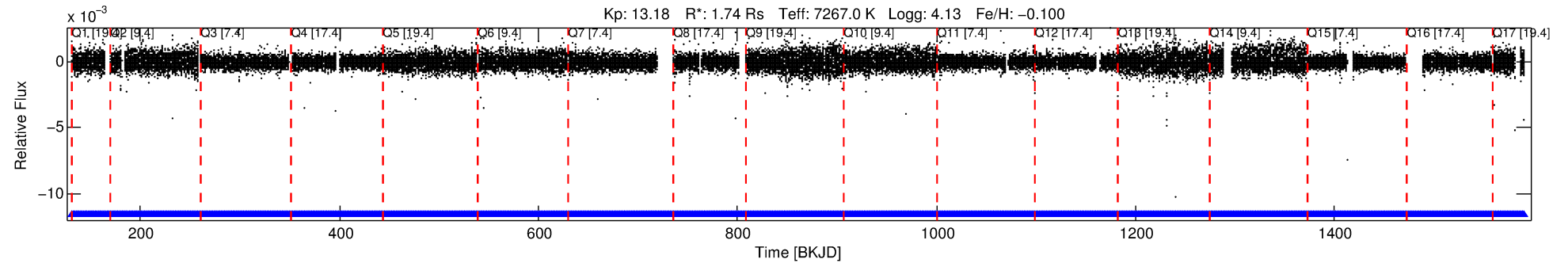
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007219502-02

No Significant Match Found

DV One-Page Summary

KIC: 7219502 Candidate: 2 of 2 Period: 0.535 d



DV Fit Results:

Period = 0.53533 [0.00001] d
 Epoch = 131.8522 [0.0040] BKJD
 Rp/R* = 0.0054 [0.0049]
 a/R* = 1.17 [1.67]
 b = 0.00 [2119.42]
 Seff = 34648.70 [13734.59]
 Teq = 3479 [345] K
 Rp = 1.03 [0.98] Re
 a = 0.0148 [0.0037] AU
 Ag = N/A
 Teffp = N/A

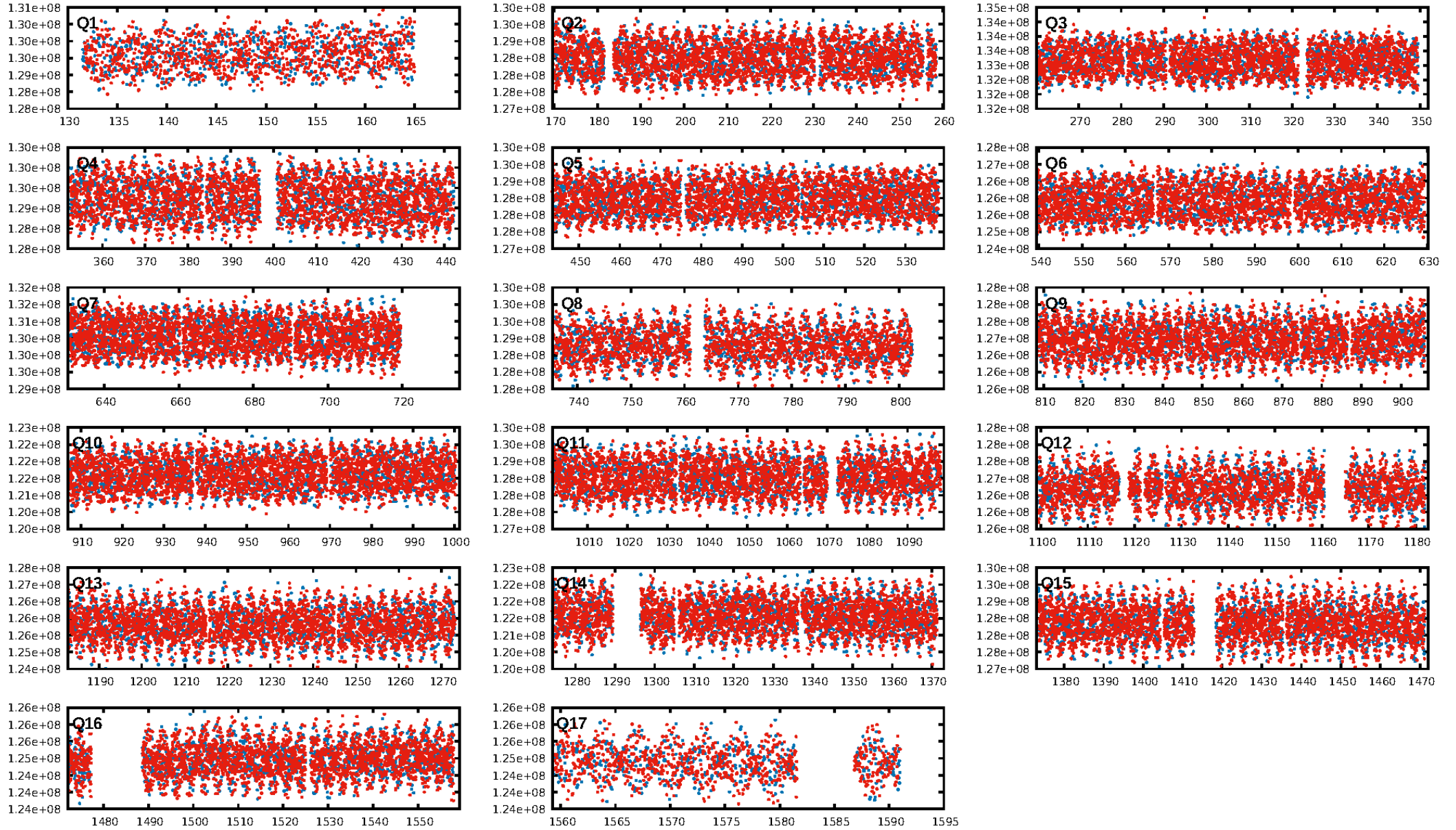
DV Diagnostic Results:

ShortPeriod-sig: N/A
 LongPeriod-sig: 100.0% [7.23σ]
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: N/A
 RollingBand-fgt: 1.00 [1923/1923]
 GhostDiagnostic-chr: 2.943
 Centroid-sig: 0.0%
 Centroid-so: 0.820 arcsec [2.23σ]
 OotOffset-rm: 0.968 arcsec [1.06σ]
 KicOffset-rm: 0.893 arcsec [0.97σ]
 OotOffset-st: 0/4/0/3 [7]
 KicOffset-st: 0/4/0/3 [7]
 DiffImageQuality-fgm: 0.57 [4/7]
 DiffImageOverlap-fno: 1.00 [17/17]

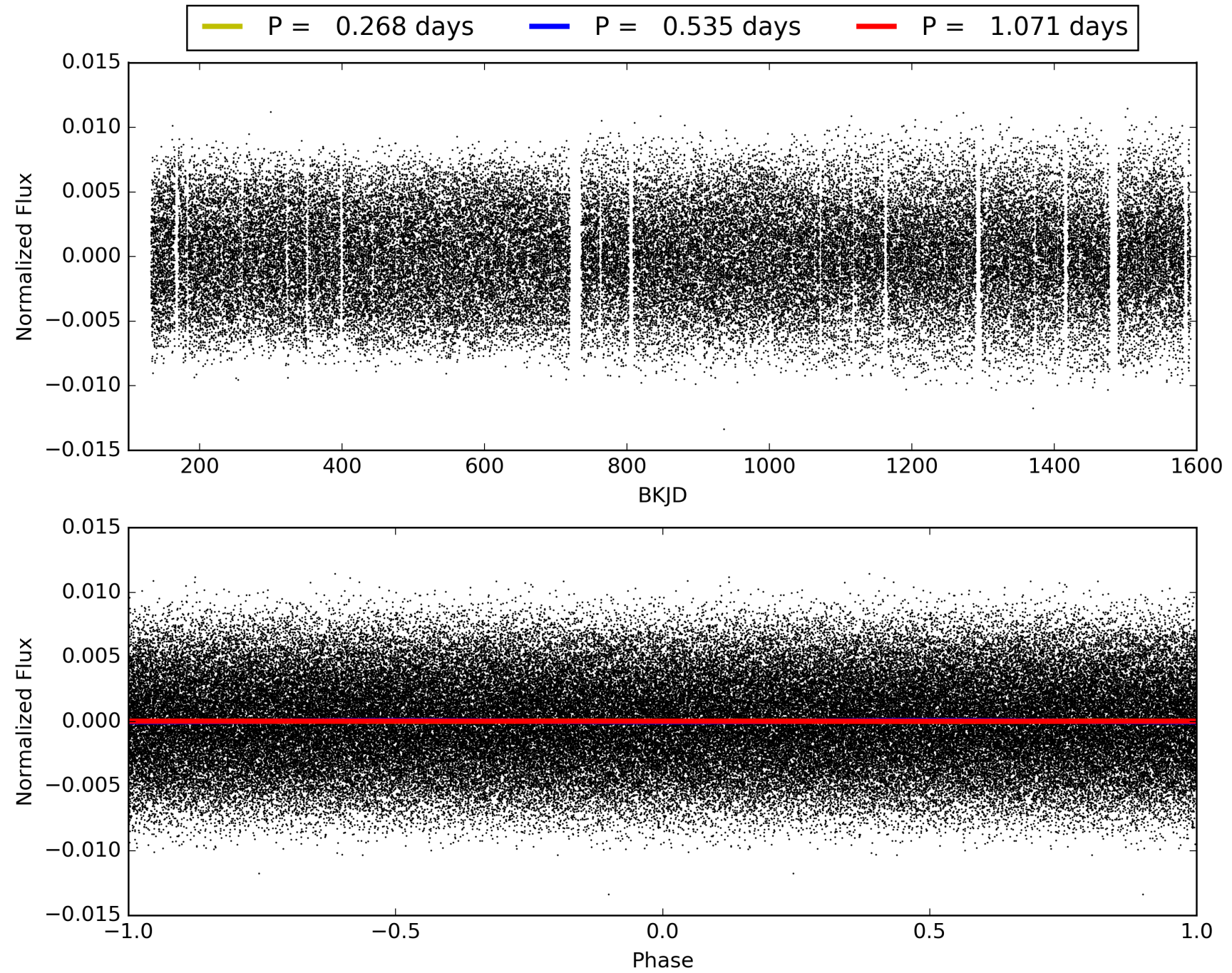
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:58:46 Z

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

TCE 007219502-02, PDC Light Curves

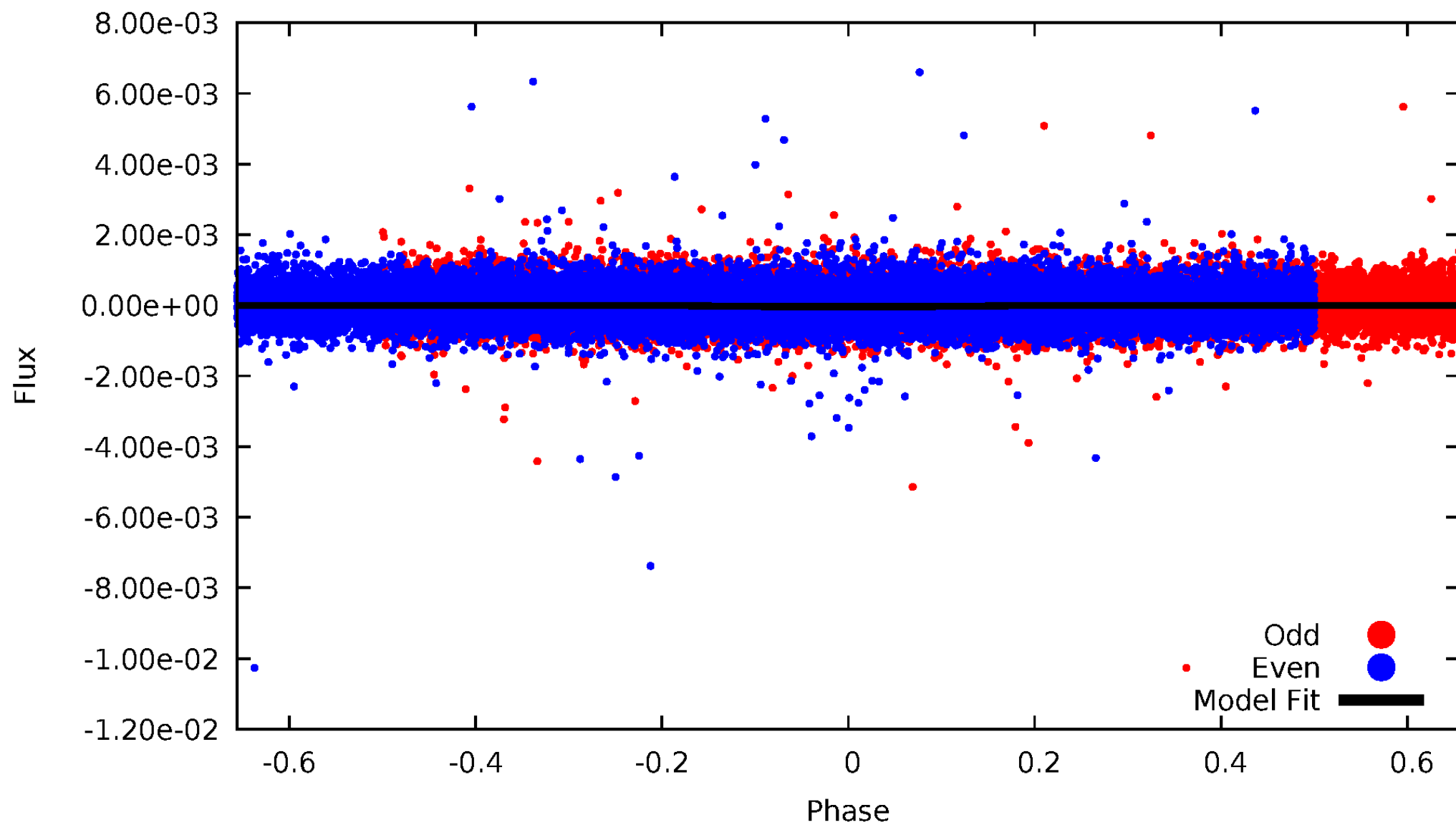


TCE 007219502-02



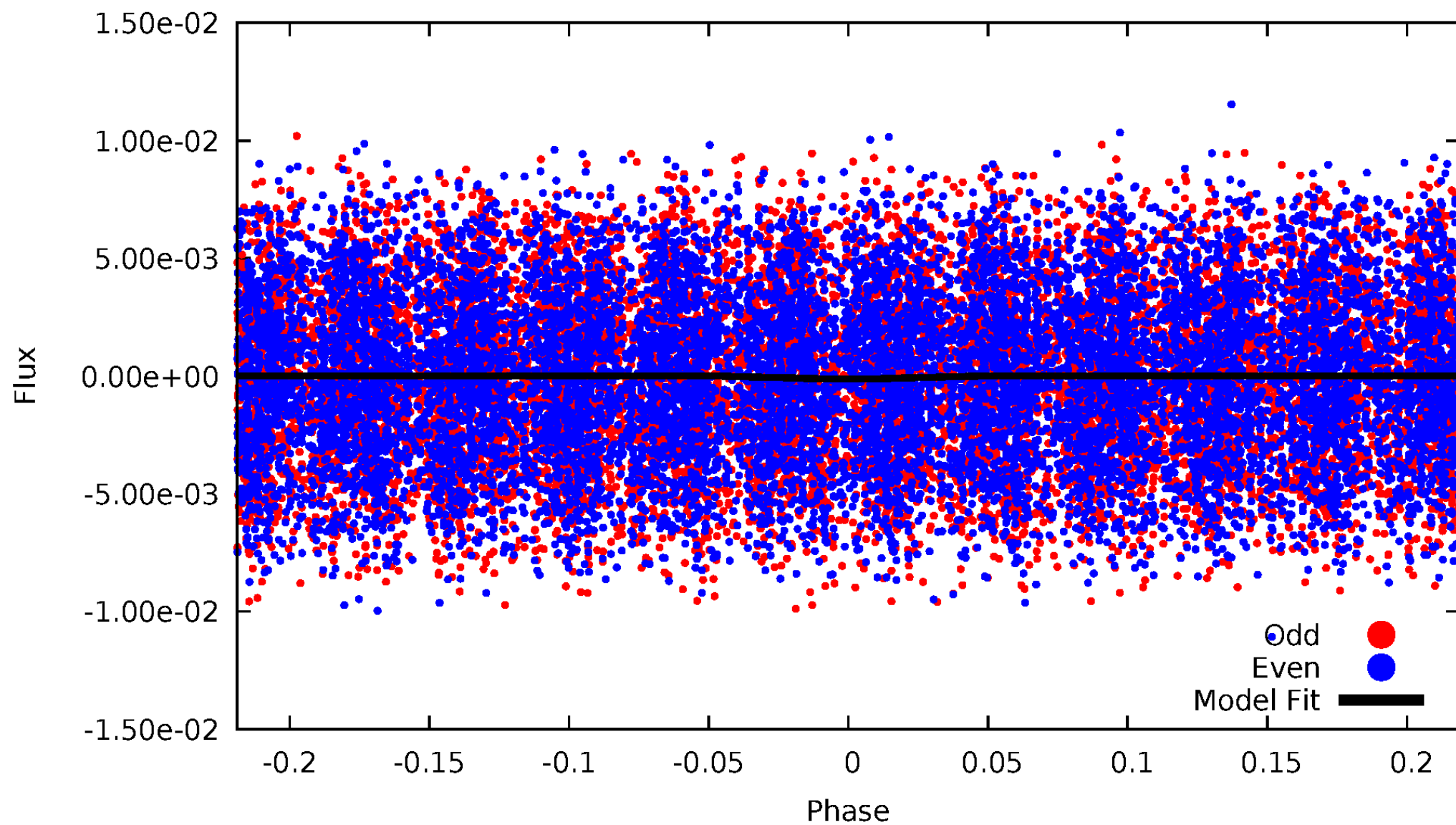
DV Odd/Even

TCE 007219502-02



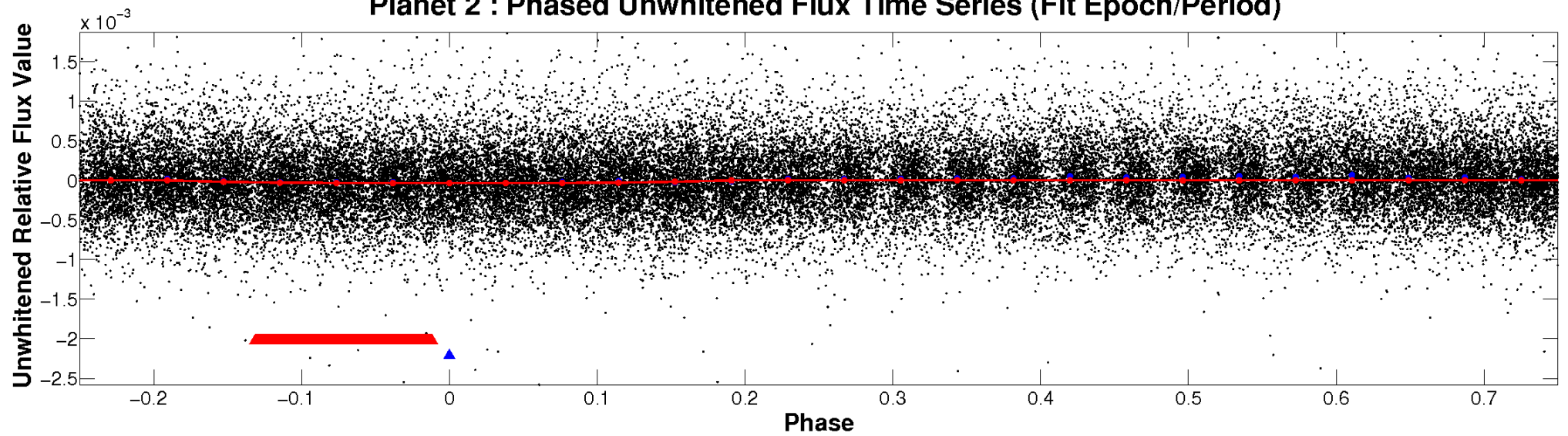
ALT Odd/Even

TCE 007219502-02

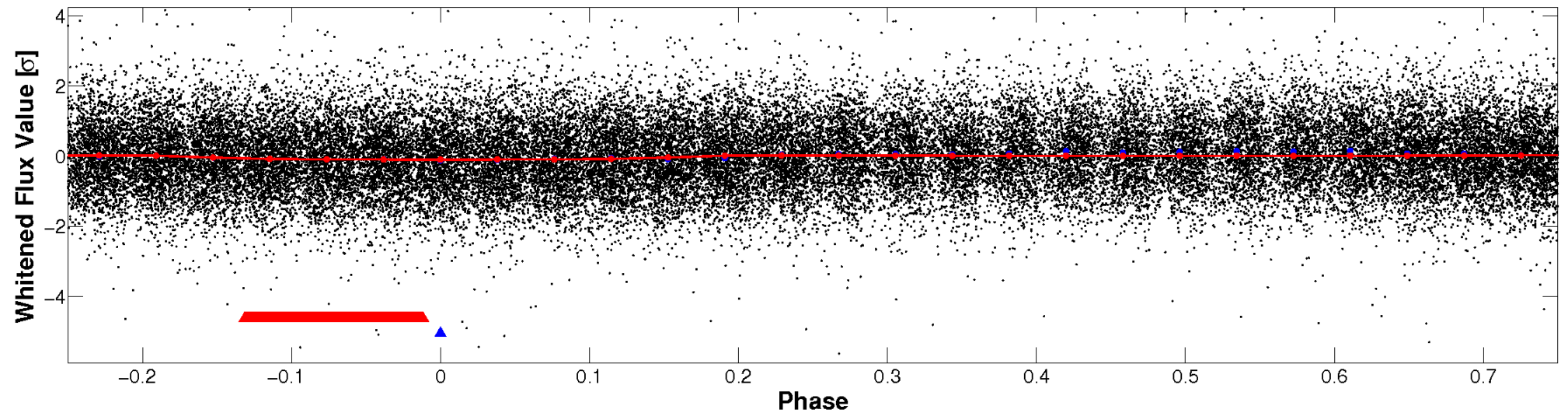


Non-Whitened Vs. Whitened Light Curve

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

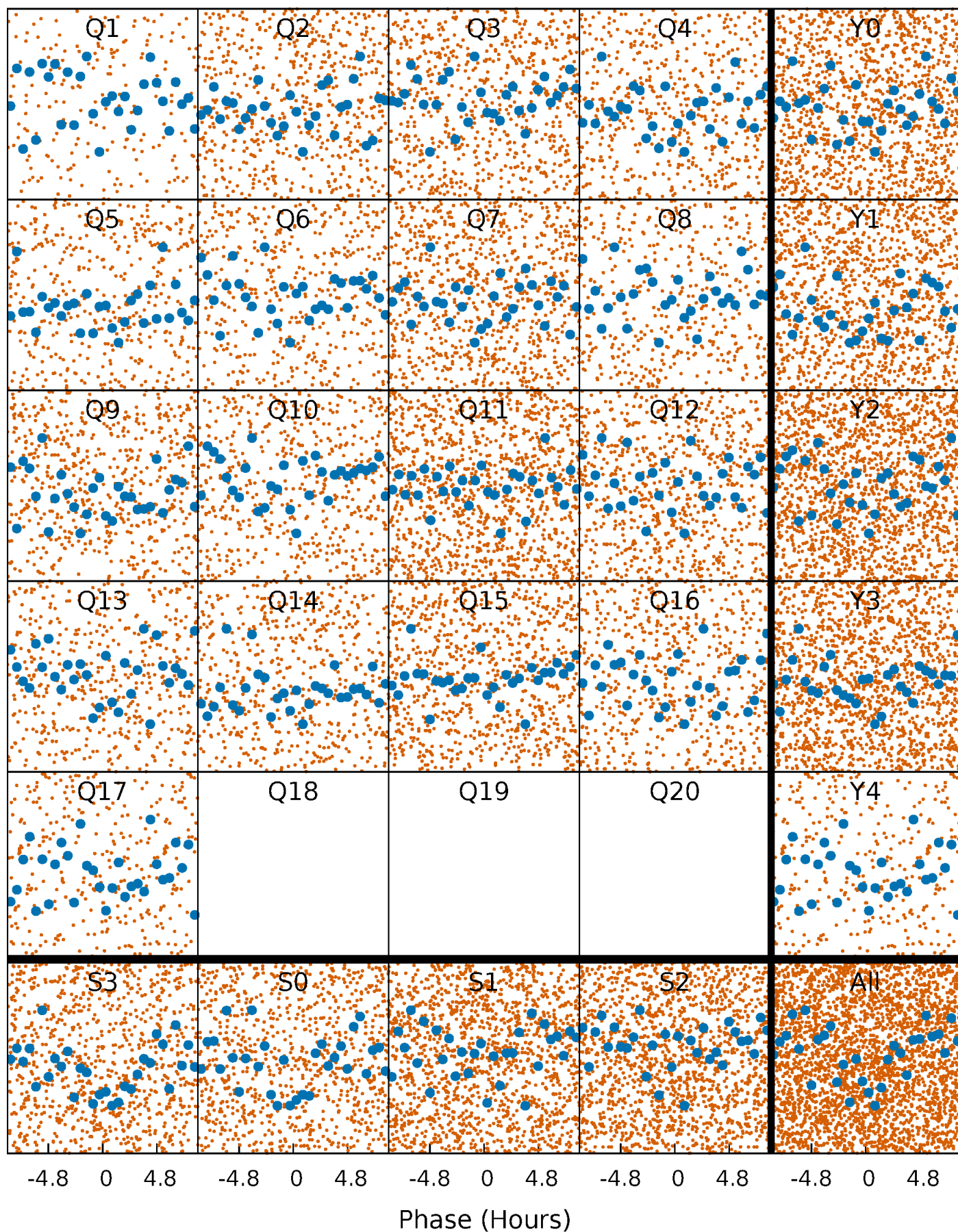


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



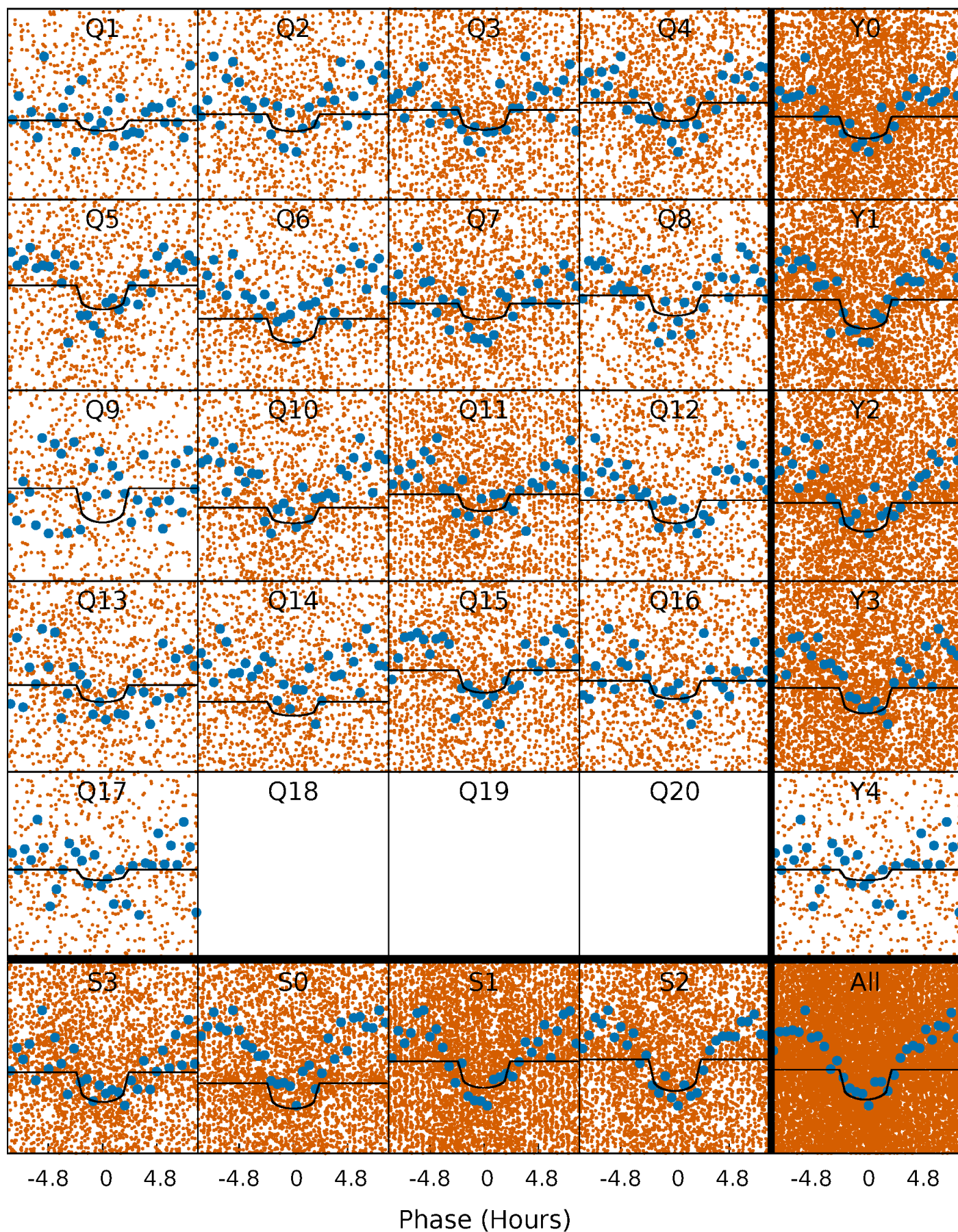
PDC Quarter-Phased Transit Curves

TCE 007219502-02 $P = 0.535329$ Days $T_0 = 131.852196$ (BKJD)



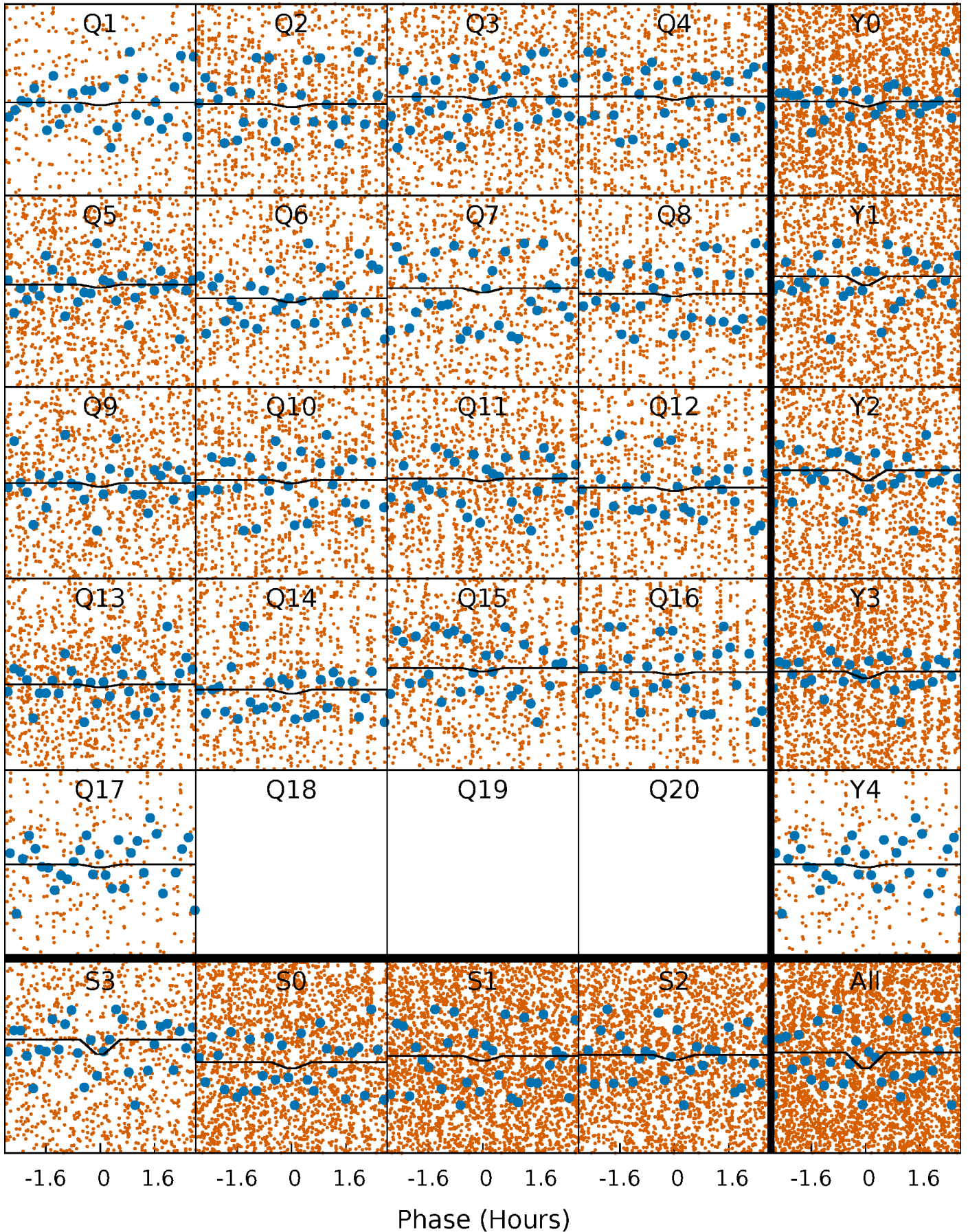
DV Quarter-Phased Transit Curves

TCE 007219502-02 P= 0.535329 Days $T_0=131.852196$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

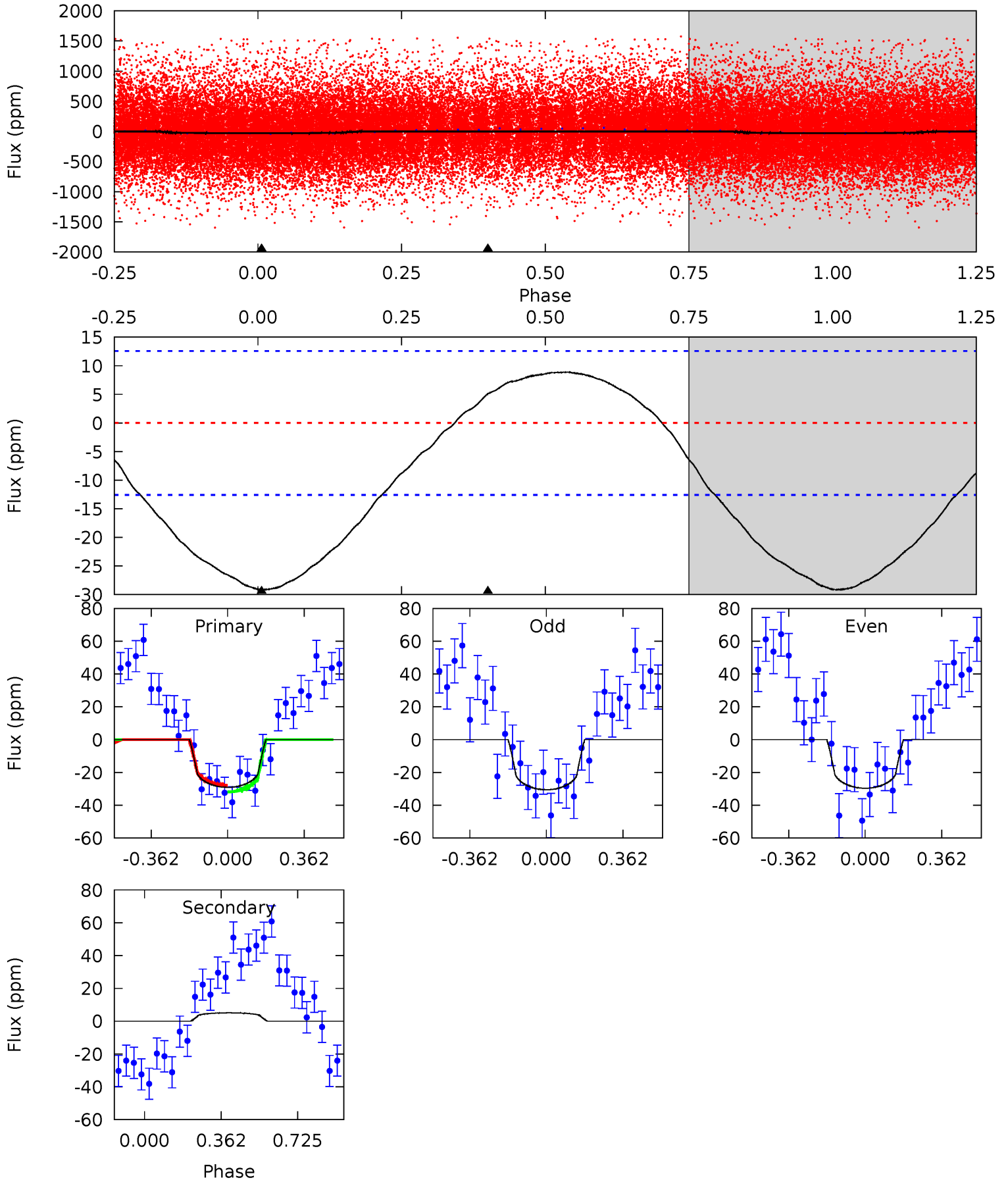
TCE 007219502-02 $P = 0.535357$ Days $T_0 = 131.836429$ (BKJD)



DV Model-Shift Uniqueness Test

007219502-02, P = 0.535329 Days, E = 131.316867 Days

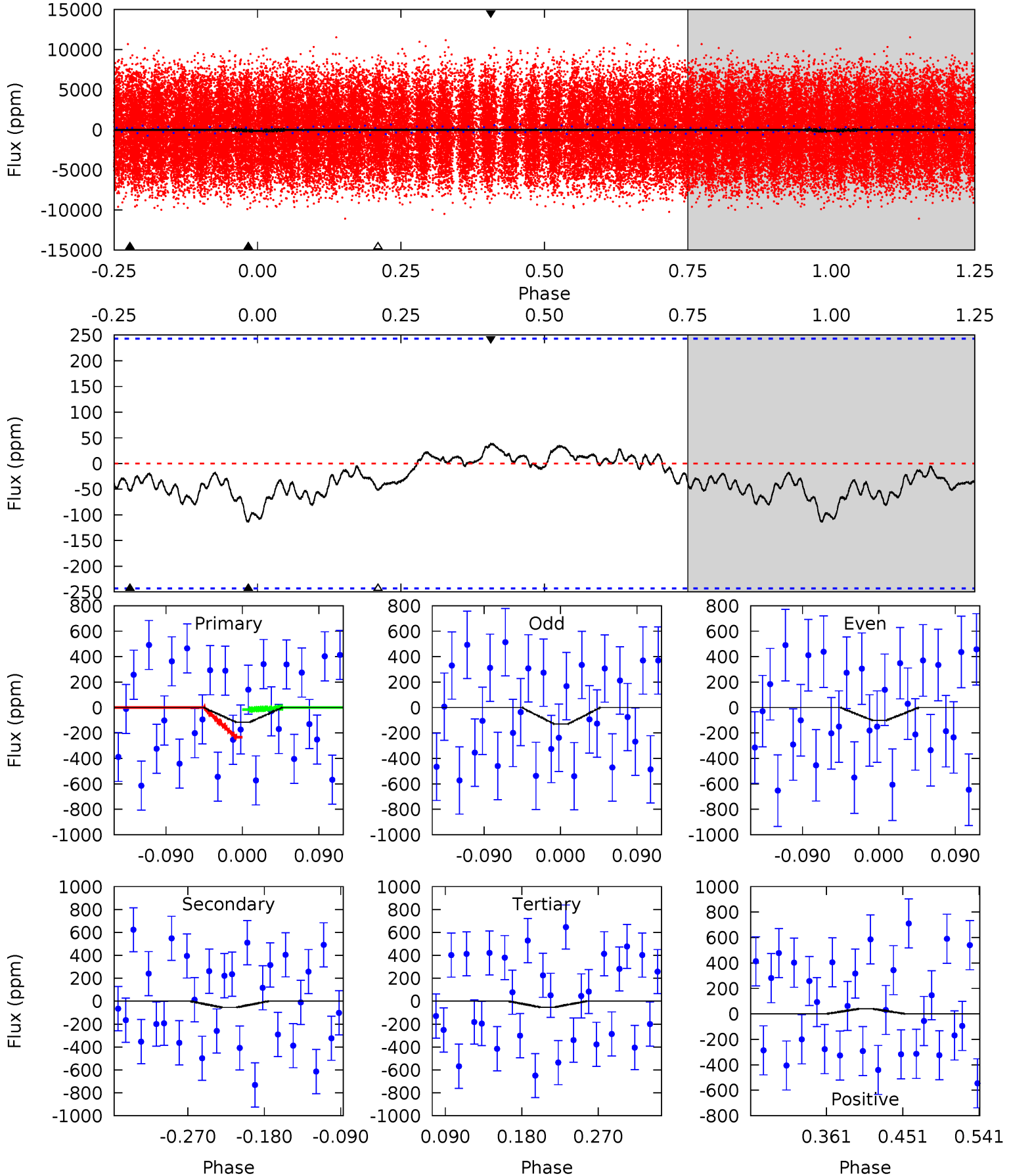
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.94 | -1.74 | 0 | 0 | 4.29 | 0.91 | 1.04 | 9.94 | 9.94 | -1.74 | -1.74 | 0.16 | 0.83 | 0.23 | 0.68 |



Alt Model-Shift Uniqueness Test

007219502-02, P = 0.535357 Days, E = 131.301072 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.17 | 1.03 | 1.00 | 0.75 | 4.59 | 1.69 | 0.55 | 1.17 | 1.42 | 0.04 | 0.28 | 0.27 | 0.92 | 0.26 | 2.04 |



Stellar Parameters For KIC 007219502

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7267^{+230}_{-345} | $4.133^{+0.132}_{-0.182}$ | $-0.100^{+0.250}_{-0.350}$ | $1.739^{+0.541}_{-0.361}$ | $1.497^{+0.212}_{-0.236}$ | $0.401^{+0.271}_{-0.206}$ |
| | +3%/-5% | +3%/-4% | +250%/-350% | +31%/-21% | +14%/-16% | +68%/-52% |
| 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 007219502-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|------------------------|----------------------------|
| DV | 5 ± 3 | $1.19^{+0.94}_{-0.73}$ | 4866^{+396}_{-325} | -4978^{+555}_{-2140} | $-0.380^{+0.301}_{-2.352}$ |
| Alt. | -55 ± 53 | $2.18^{+0.96}_{-0.98}$ | 4903^{+325}_{-343} | 5164^{+2766}_{-9363} | $1.137^{+3.488}_{-1.136}$ |

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 $A_{obs} \gg 1.0$

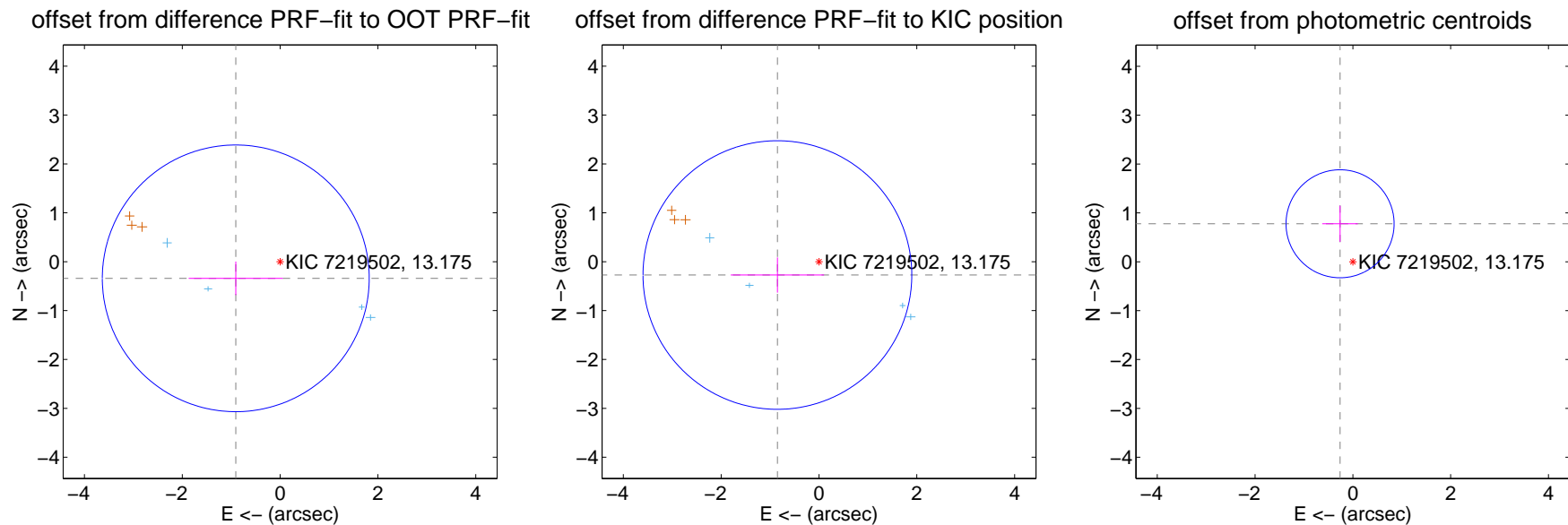
DV Centroid Data

Supplemental centroid analysis for 007219502-02. Kepler magnitude: 13.18. Transit SNR 11.22

There are 4 quarters with good PRF difference image offsets

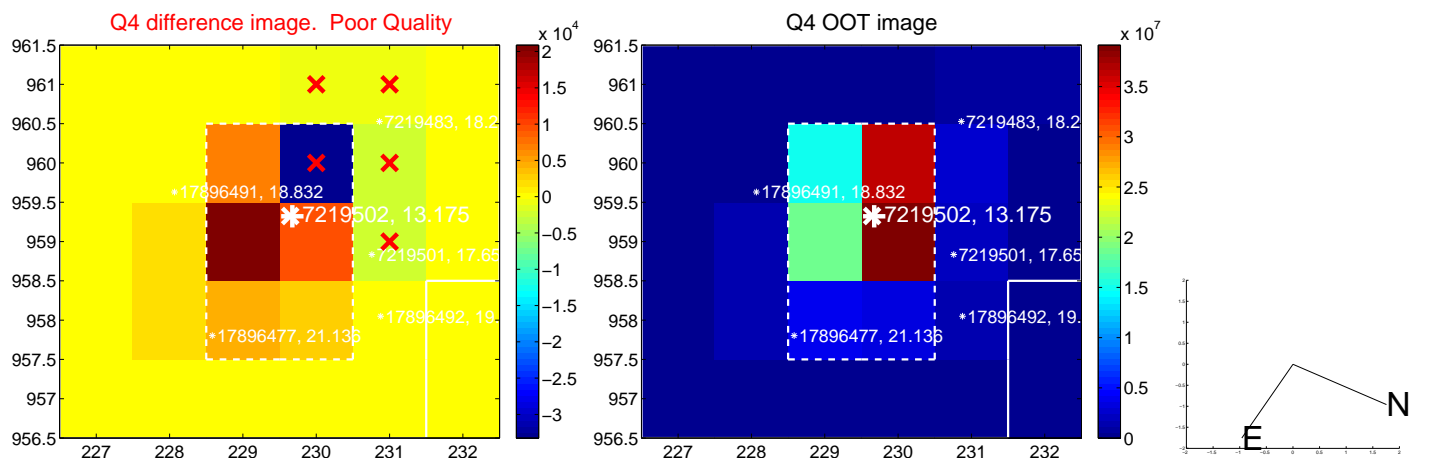
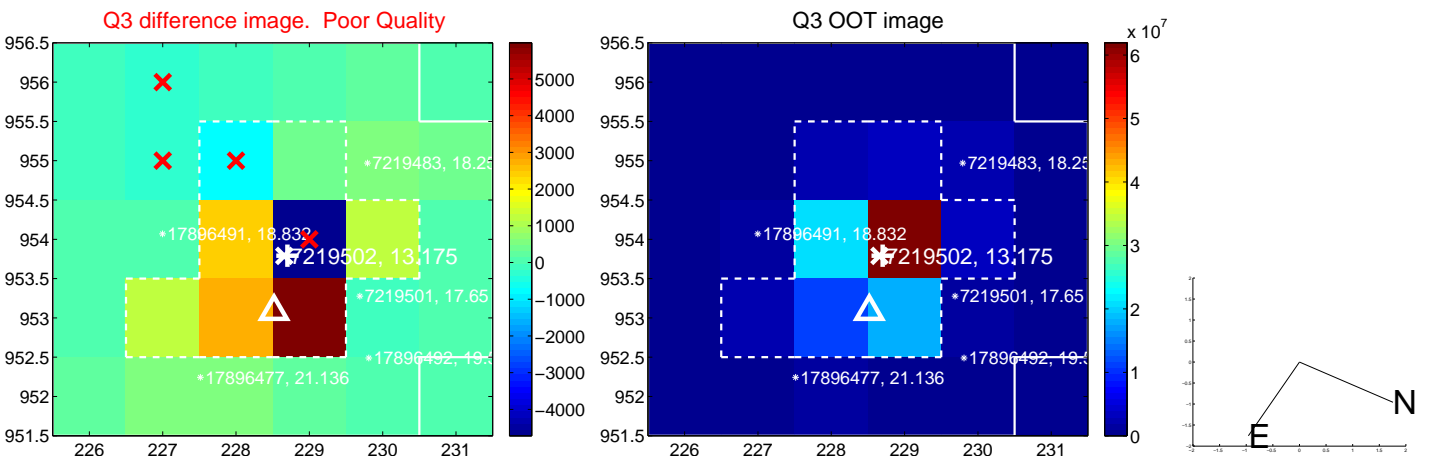
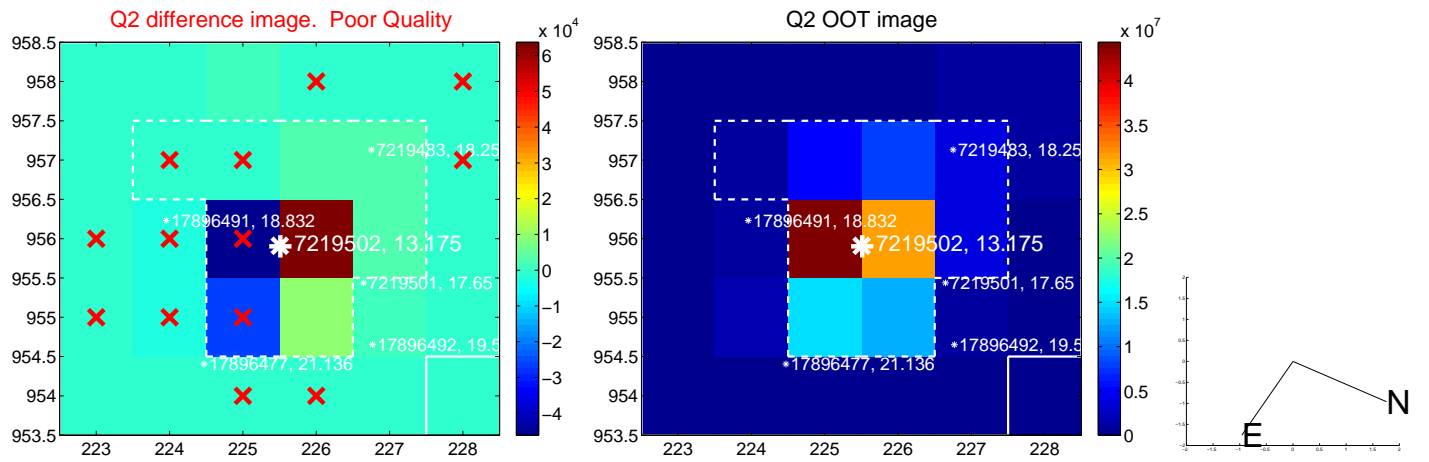
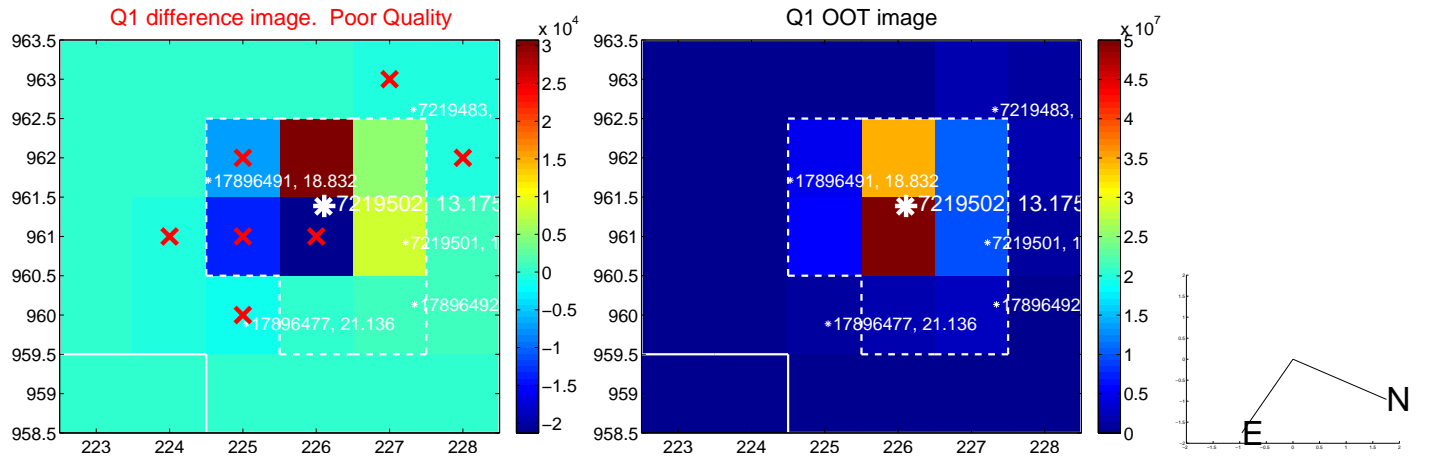
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.968 ± 0.909 | 1.06 | 0.906 ± 0.963 | -0.341 ± 0.343 |
| PRF-fit source offset from KIC position | 0.893 ± 0.916 | 0.97 | 0.850 ± 0.955 | -0.273 ± 0.360 |
| photometric centroid source offset | 0.82 ± 0.37 | 2.23 | 0.26 ± 0.36 | 0.78 ± 0.37 |

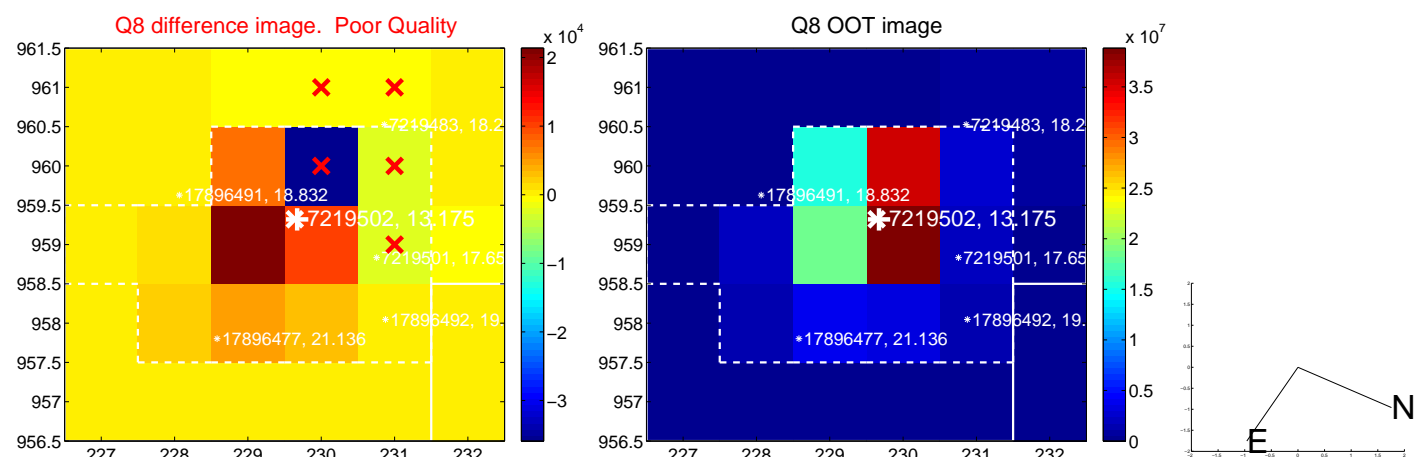
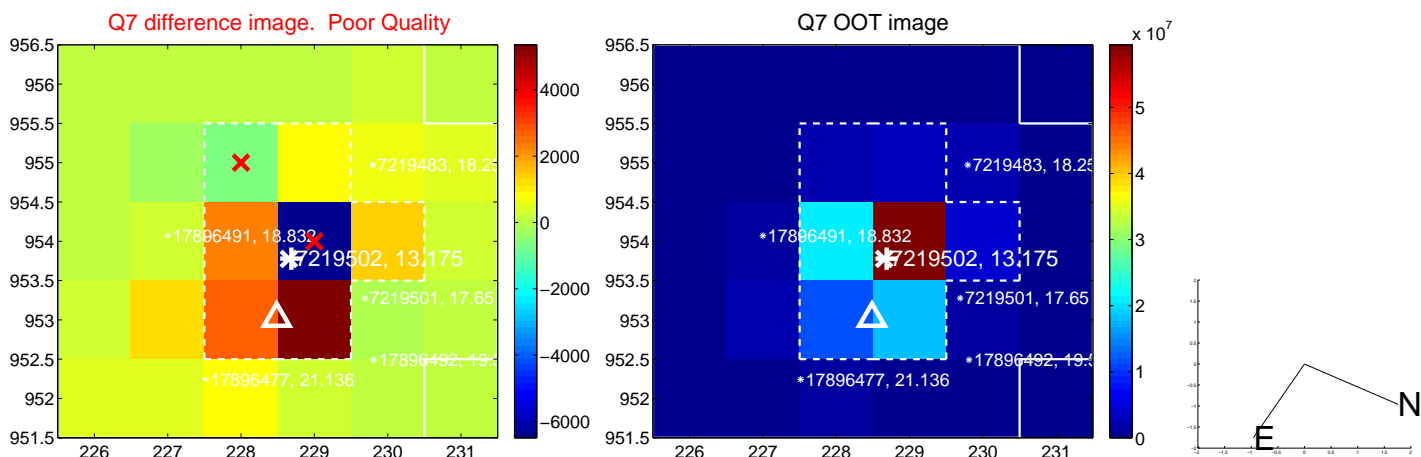
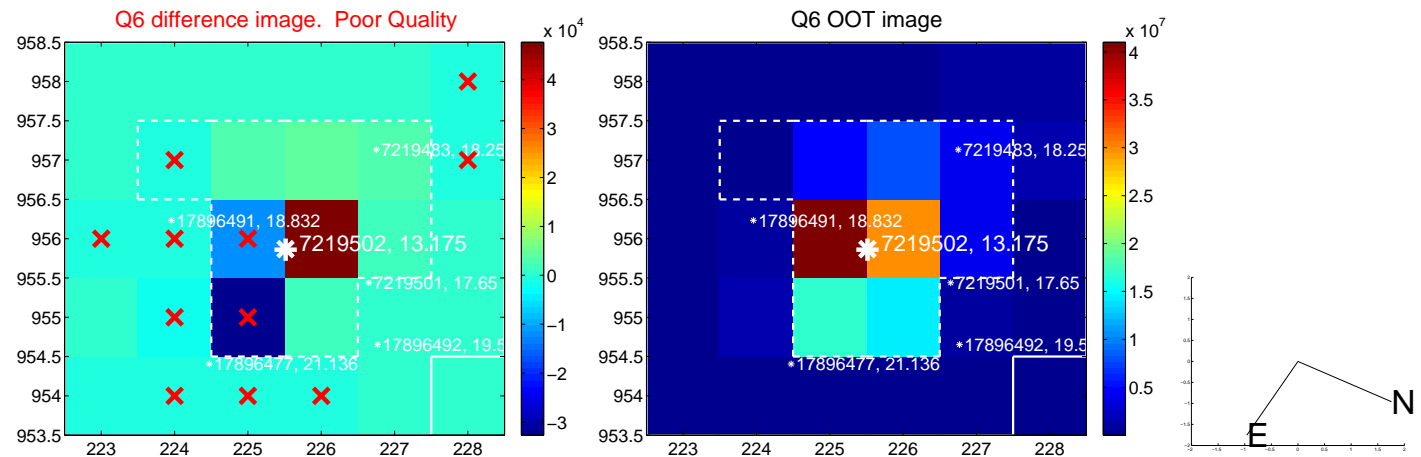
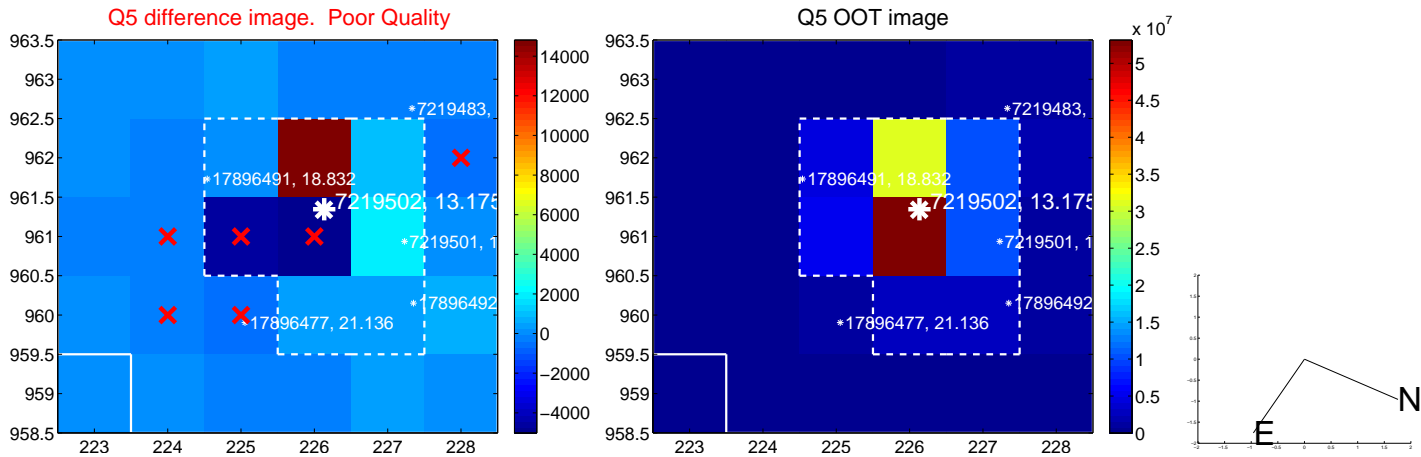


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

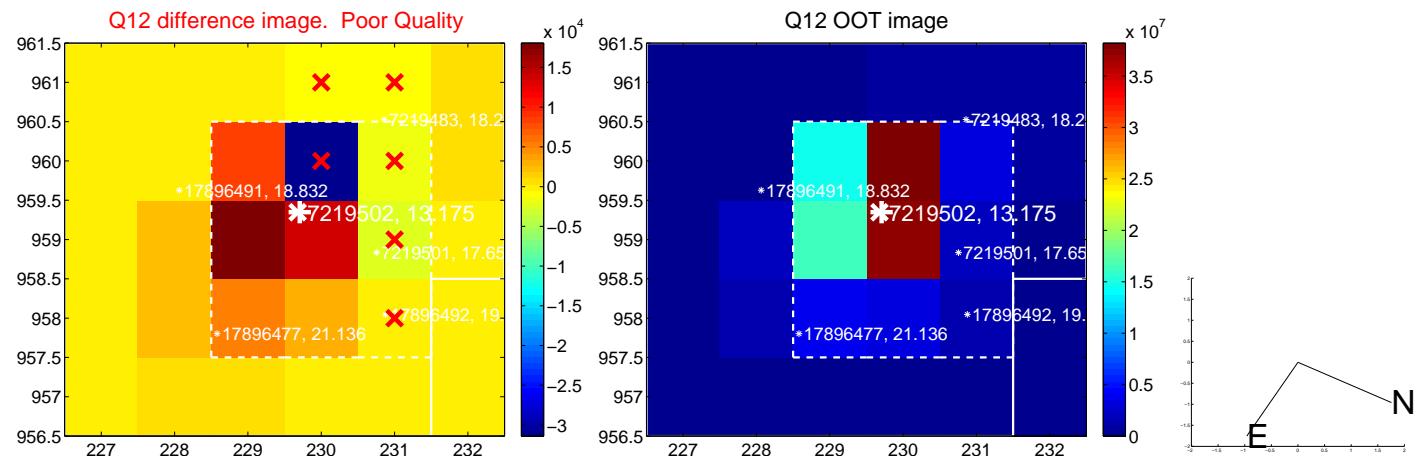
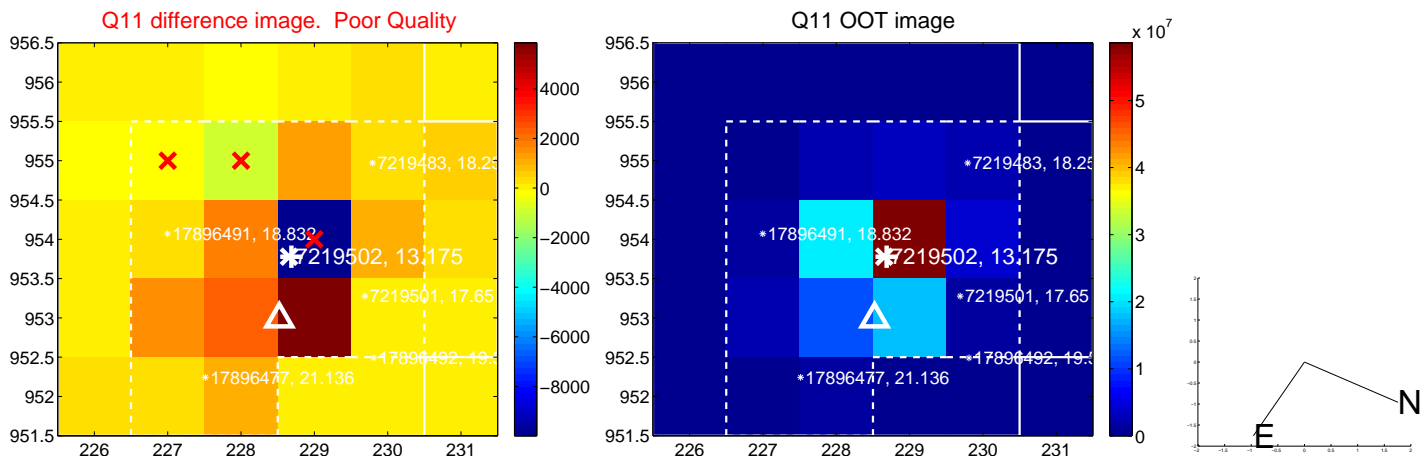
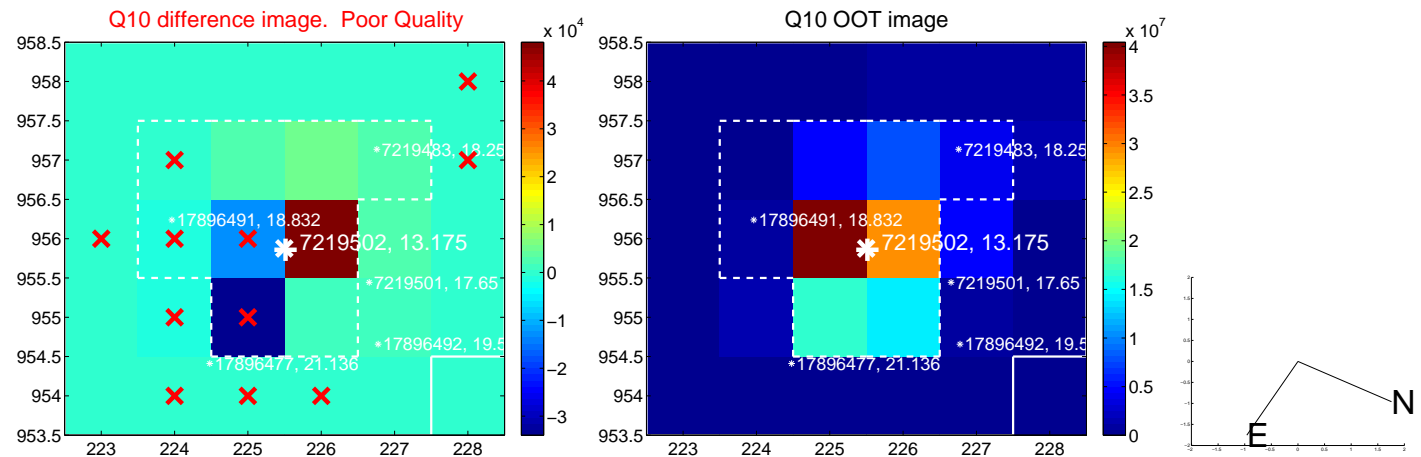
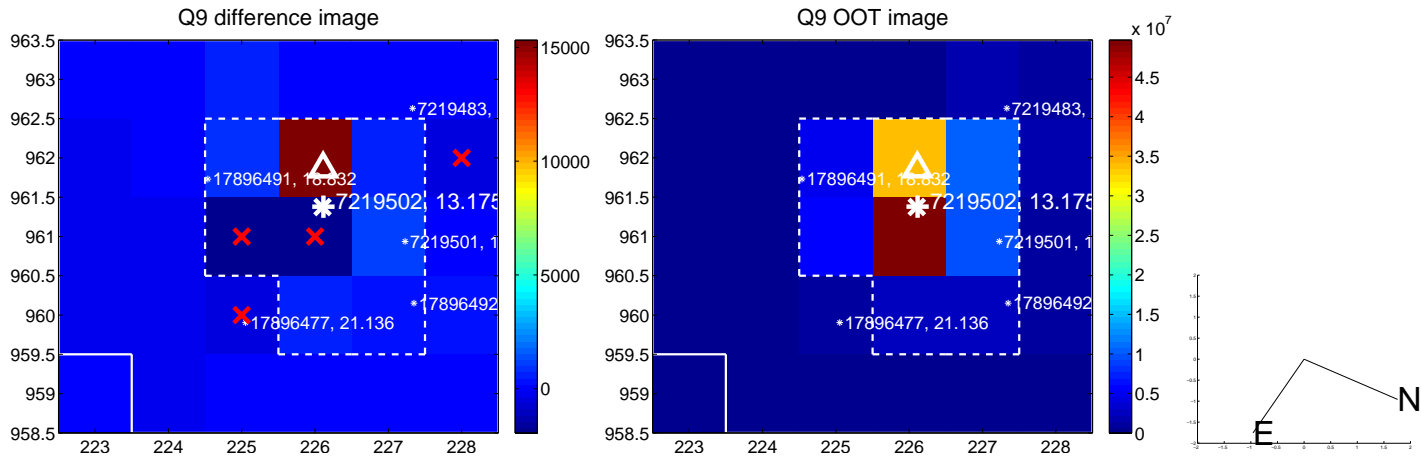
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



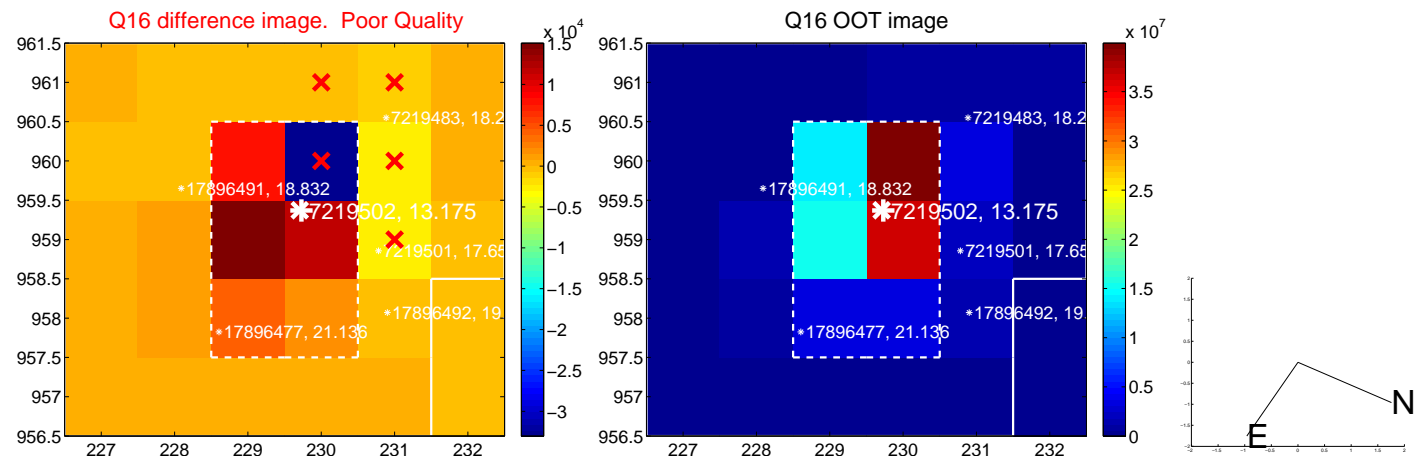
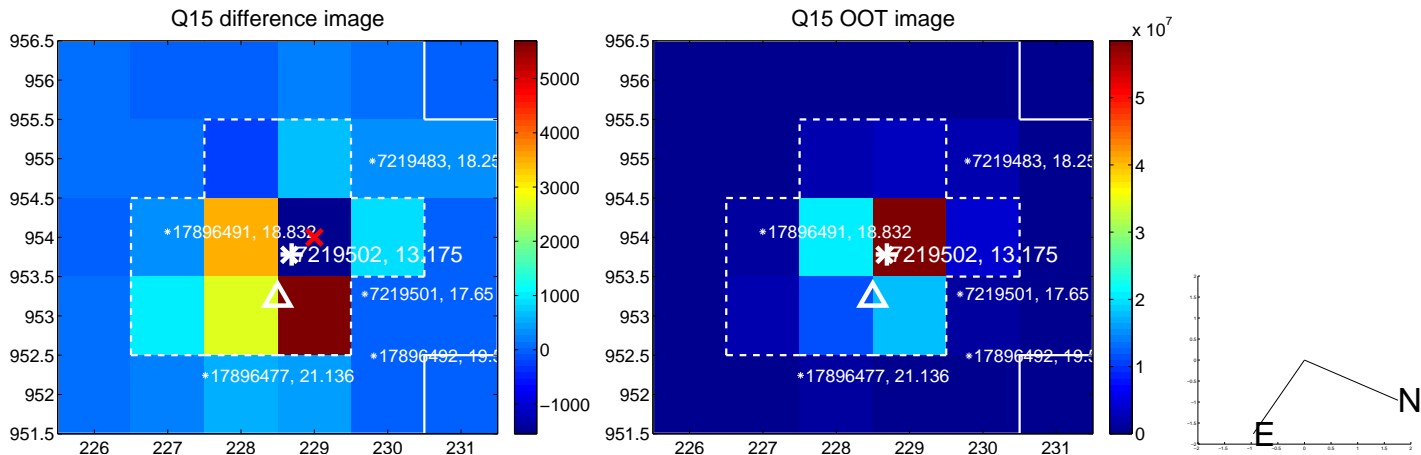
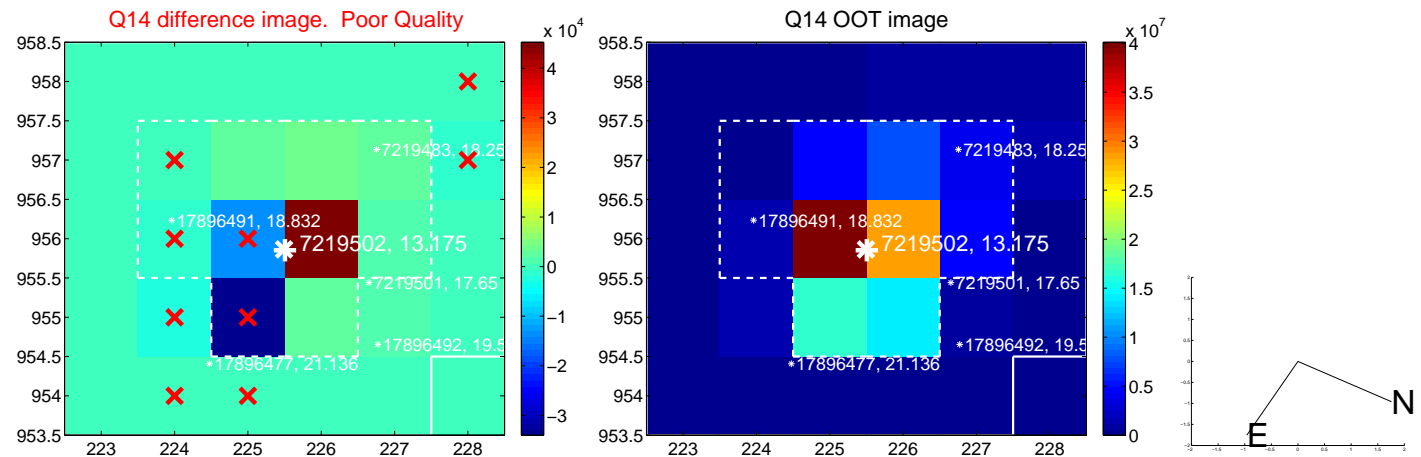
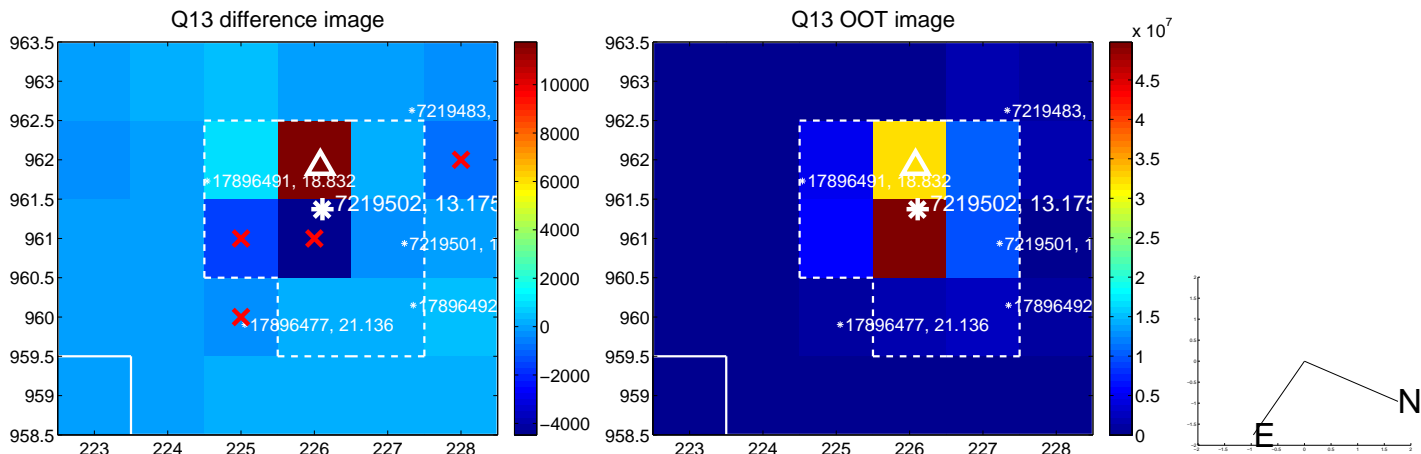
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



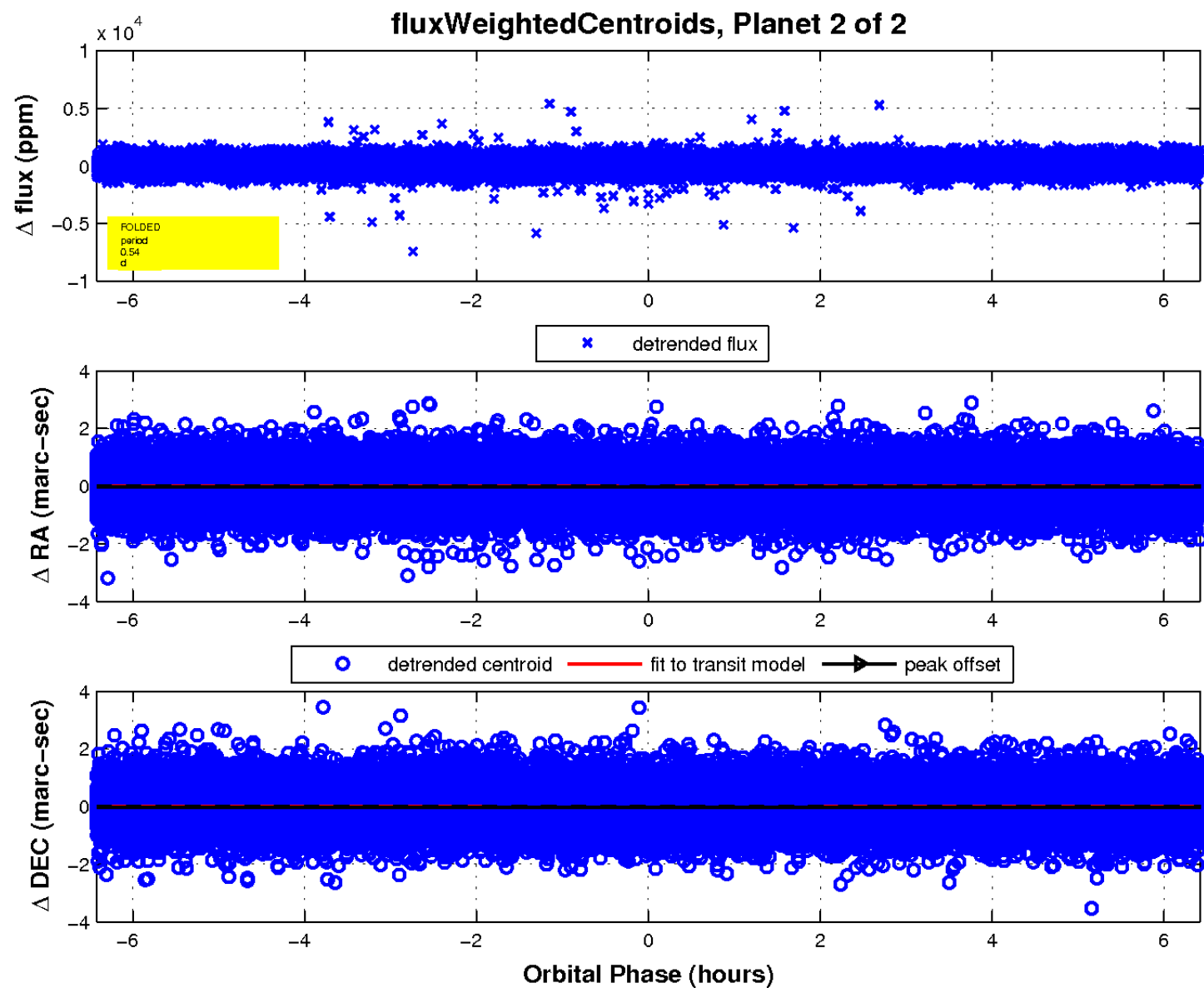
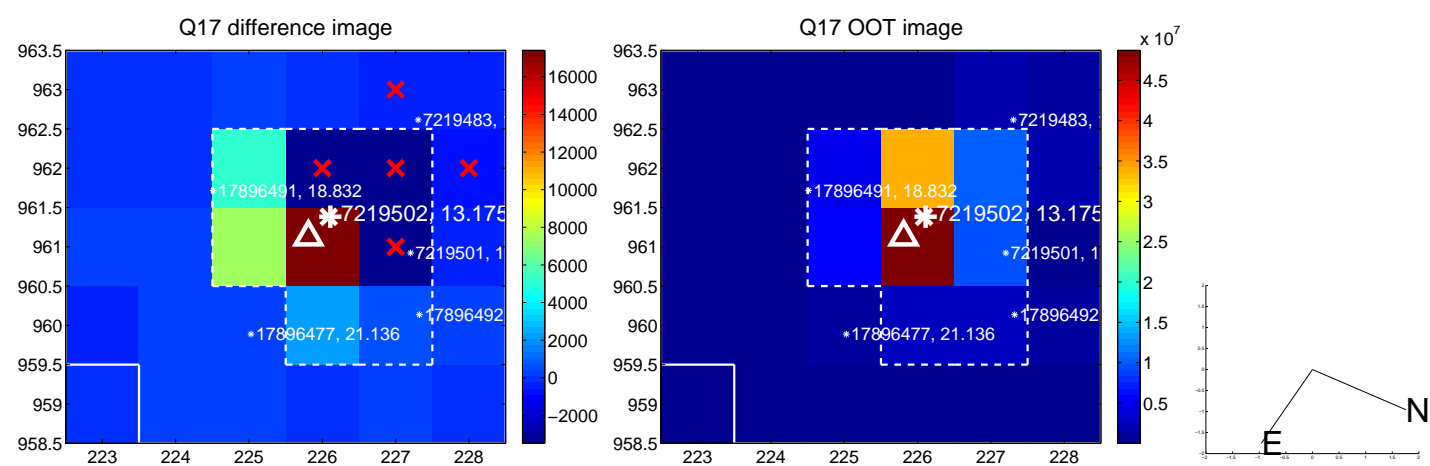
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

