

KIC 009391395

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009391395-01 | OBS | No | 0.782755 | 131.554278 | 15.1 | 5.168 | 10.5 | 5.3 | 2.10 | 7505 | 0.88 | 32950.49 |
| 009391395-02 | OBS | No | 0.533520 | 131.590037 | 47.1 | 1.573 | 12.8 | 10.1 | 2.10 | 7505 | 1.69 | 54932.40 |
| 009391395-03 | OBS | No | 41.110030 | 163.055494 | 222.2 | 1.111 | 11.1 | 4.0 | 2.10 | 7505 | 3.68 | 167.53 |
| 009391395-04 | OBS | No | 160.381416 | 163.993641 | 716.8 | 9.113 | 12.0 | 10.1 | 2.10 | 7505 | 5.80 | 27.28 |
| 009391395-05 | OBS | No | 41.107675 | 163.508498 | 58.4 | 1.565 | 12.5 | 1.4 | 2.10 | 7505 | 1.72 | 167.54 |
| 009391395-06 | OBS | No | 40.556283 | 163.234960 | 220.0 | 2.500 | 12.5 | -1.0 | 2.10 | 7505 | 3.13 | 170.59 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009391395-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 009391395-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST |
| 009391395-05 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED—HALO_GHOST |
| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

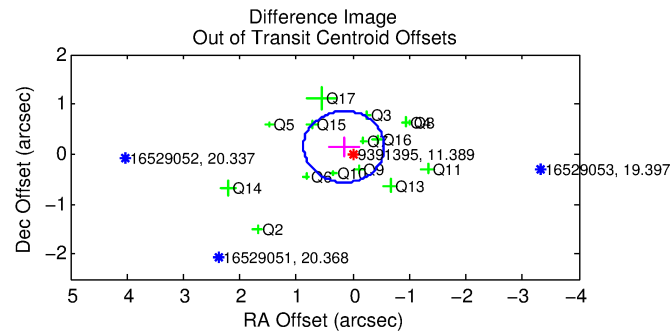
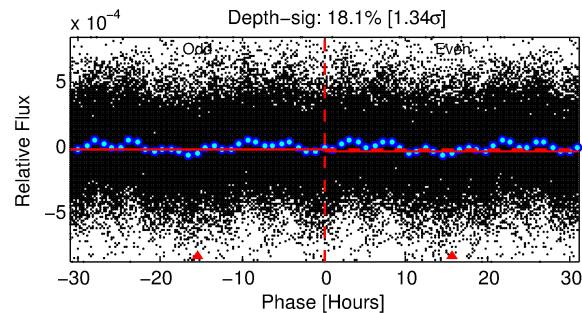
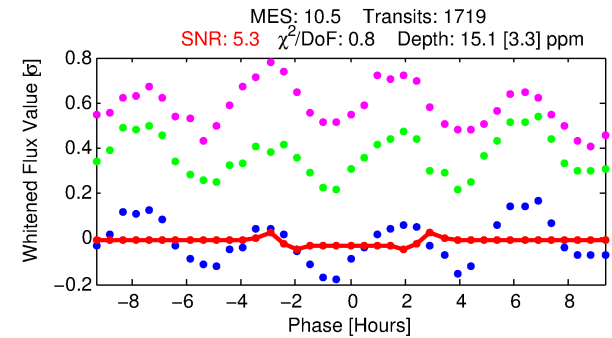
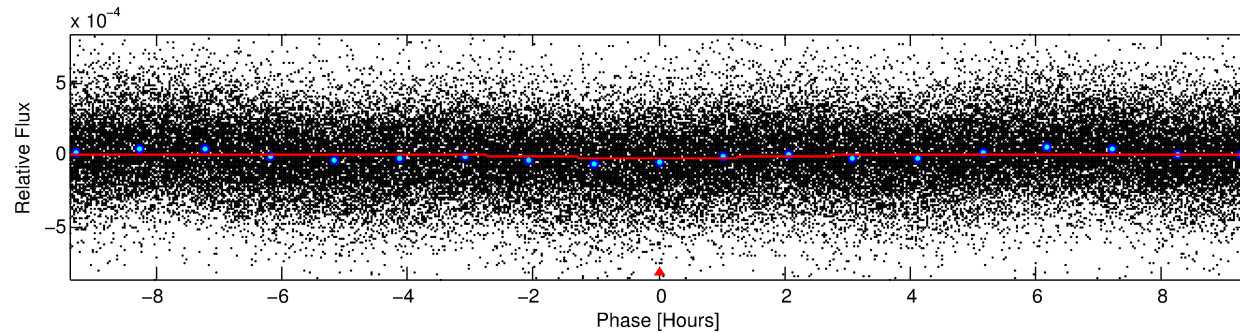
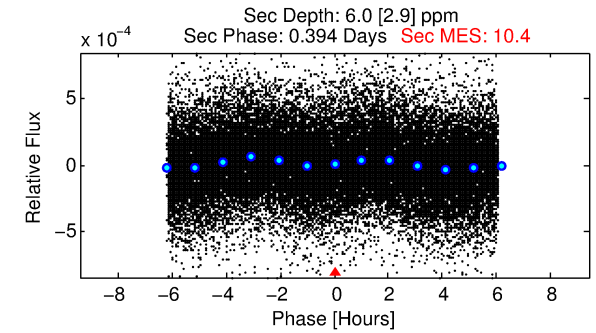
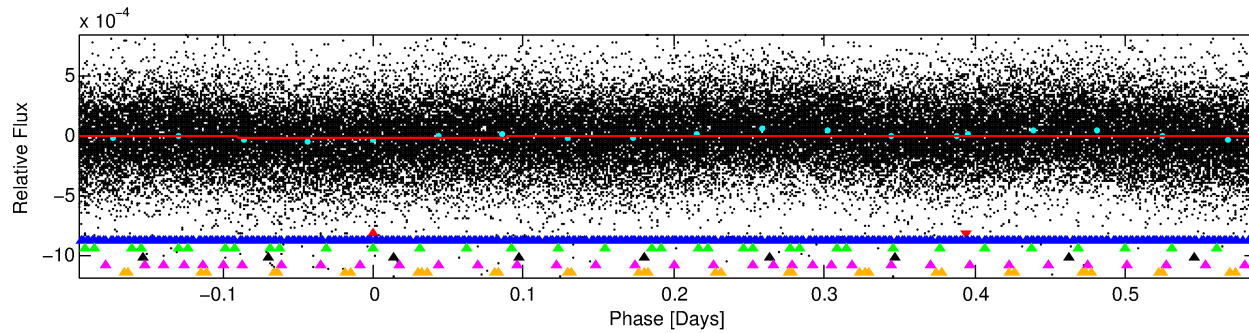
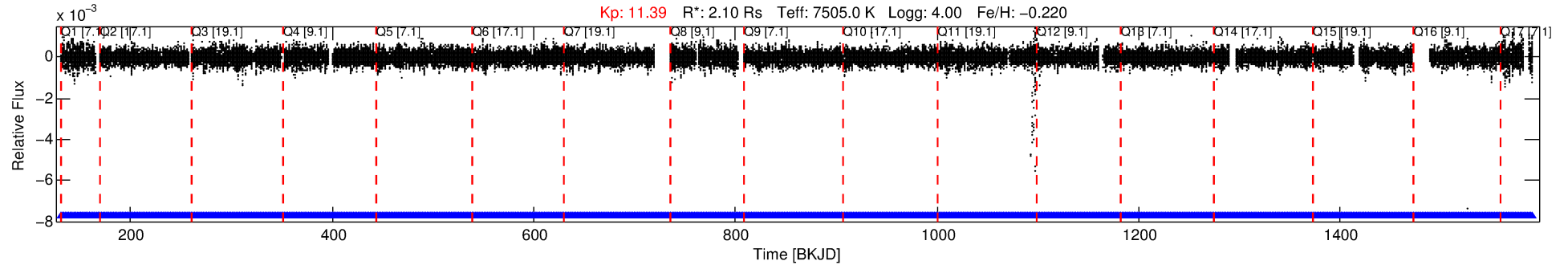
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-01

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 1 of 6 Period: 0.783 d



DV Fit Results:

Period = 0.78275 [0.00002] d
Epoch = 131.5543 [0.0031] BKJD
 R_p/R^* = 0.0038 [0.0013]
 a/R^* = 1.17 [0.58]
 b = 0.72 [1.25]
 Seff = 32950.48 [14239.59]
 T_{eq} = 3436 [371] K
 R_p = 0.88 [0.40] R_e
 a = 0.0195 [0.0052] AU
 A_g = 1.62 [1.52] [0.41σ]
 T_{eff} = 5994 [1288] K [1.91σ]

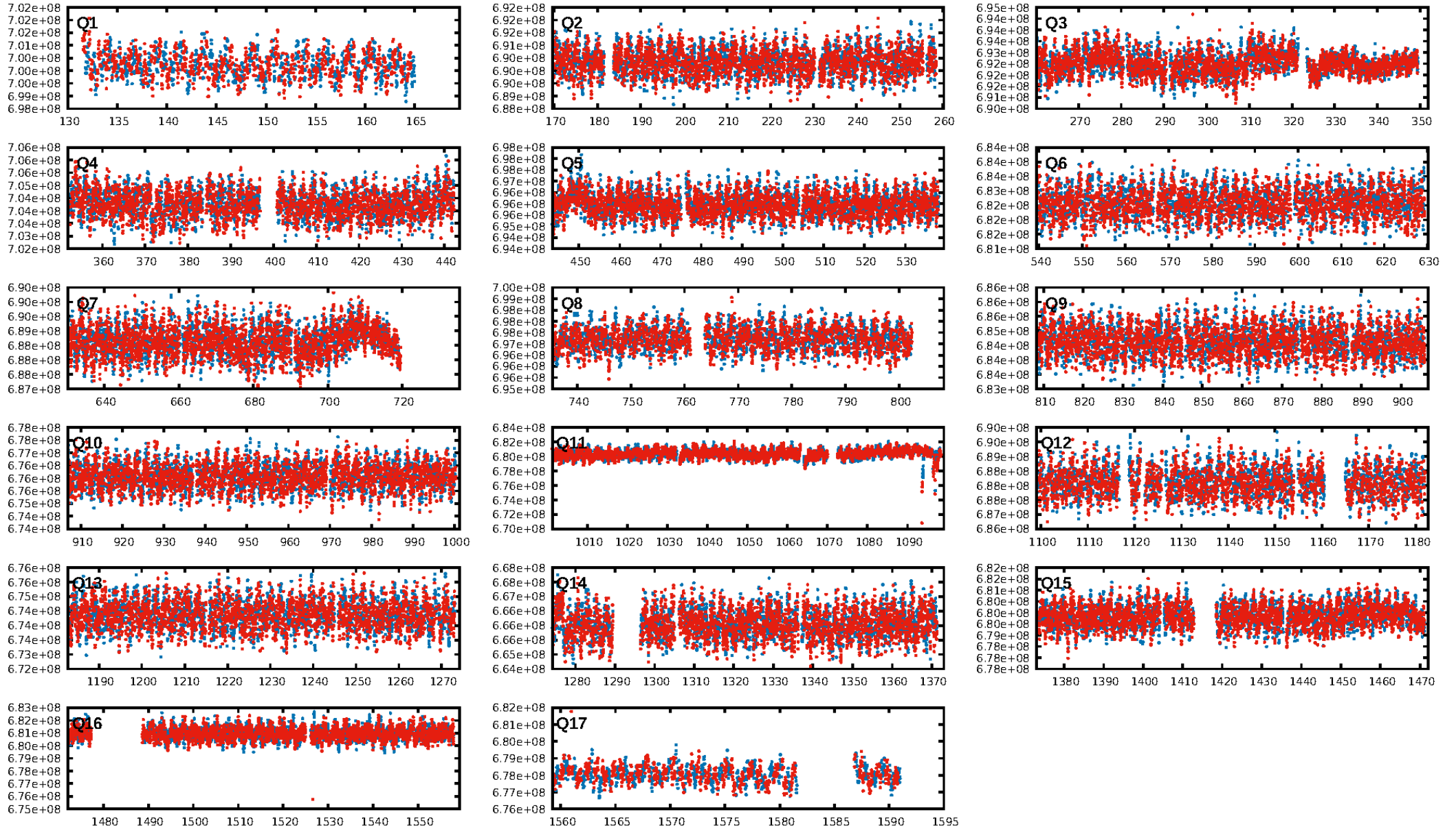
DV Diagnostic Results:

ShortPeriod-sig: 73.2% [1.11σ]
LongPeriod-sig: 100.0% [166.27σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1642/1642]
GhostDiagnostic-chr: 0.9672
Centroid-sig: 0.0%
Centroid-so: 0.707 arcsec [2.11σ]
OotOffset-rm: 0.218 arcsec [0.92σ]
KicOffset-rm: 0.219 arcsec [0.87σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 0.00 [0/17]

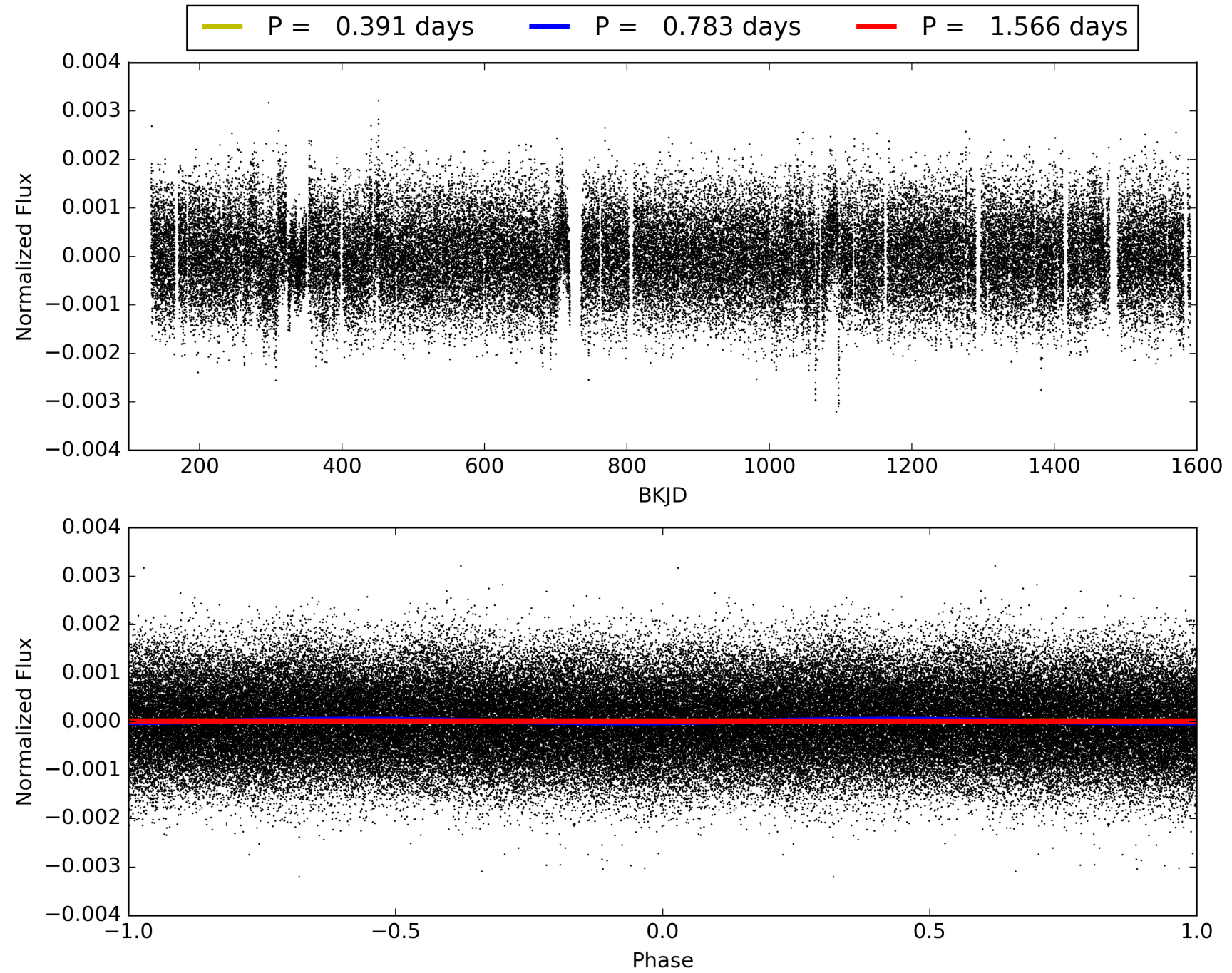
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:25:02 Z

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

TCE 009391395-01, PDC Light Curves

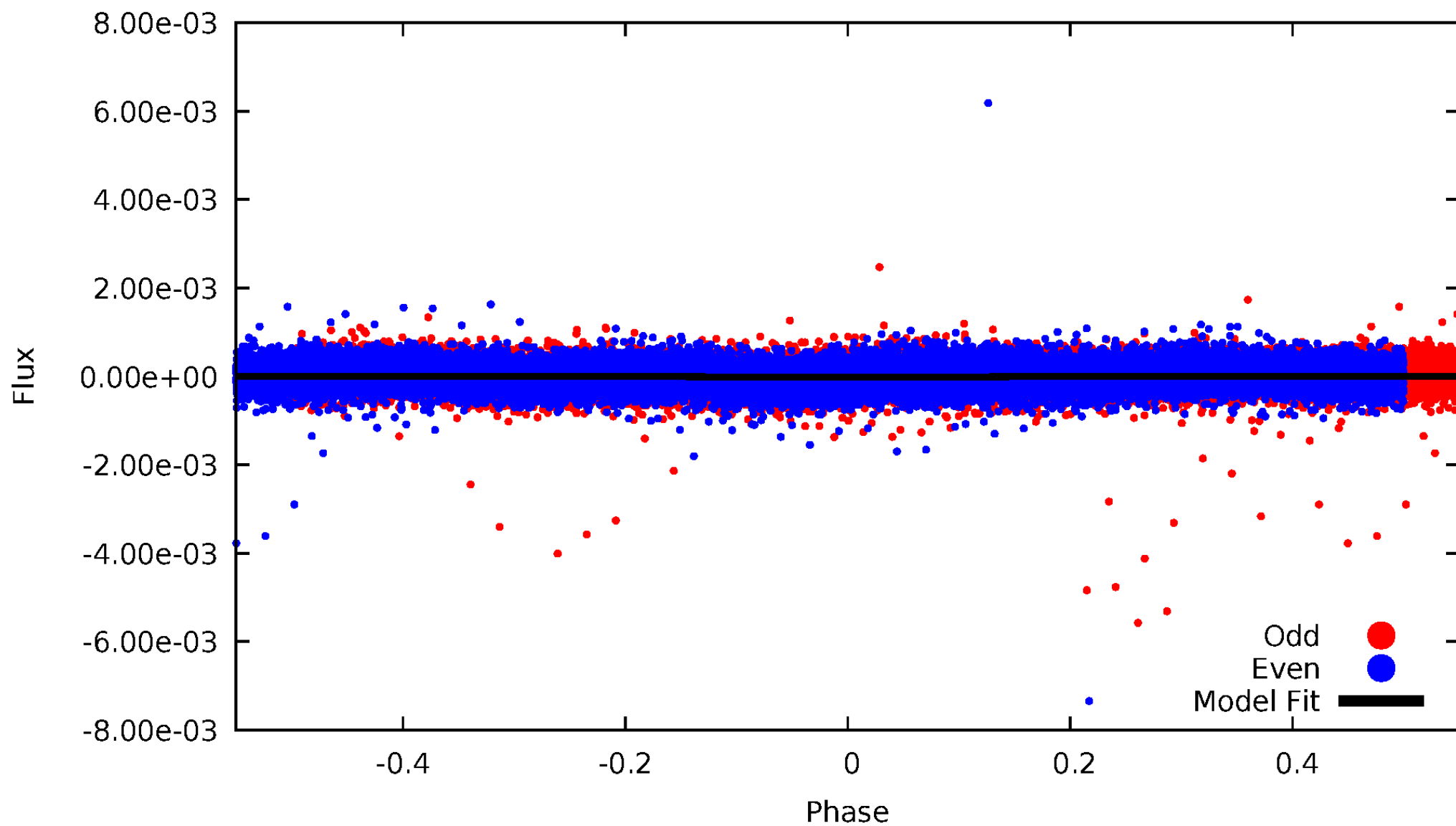


TCE 009391395-01



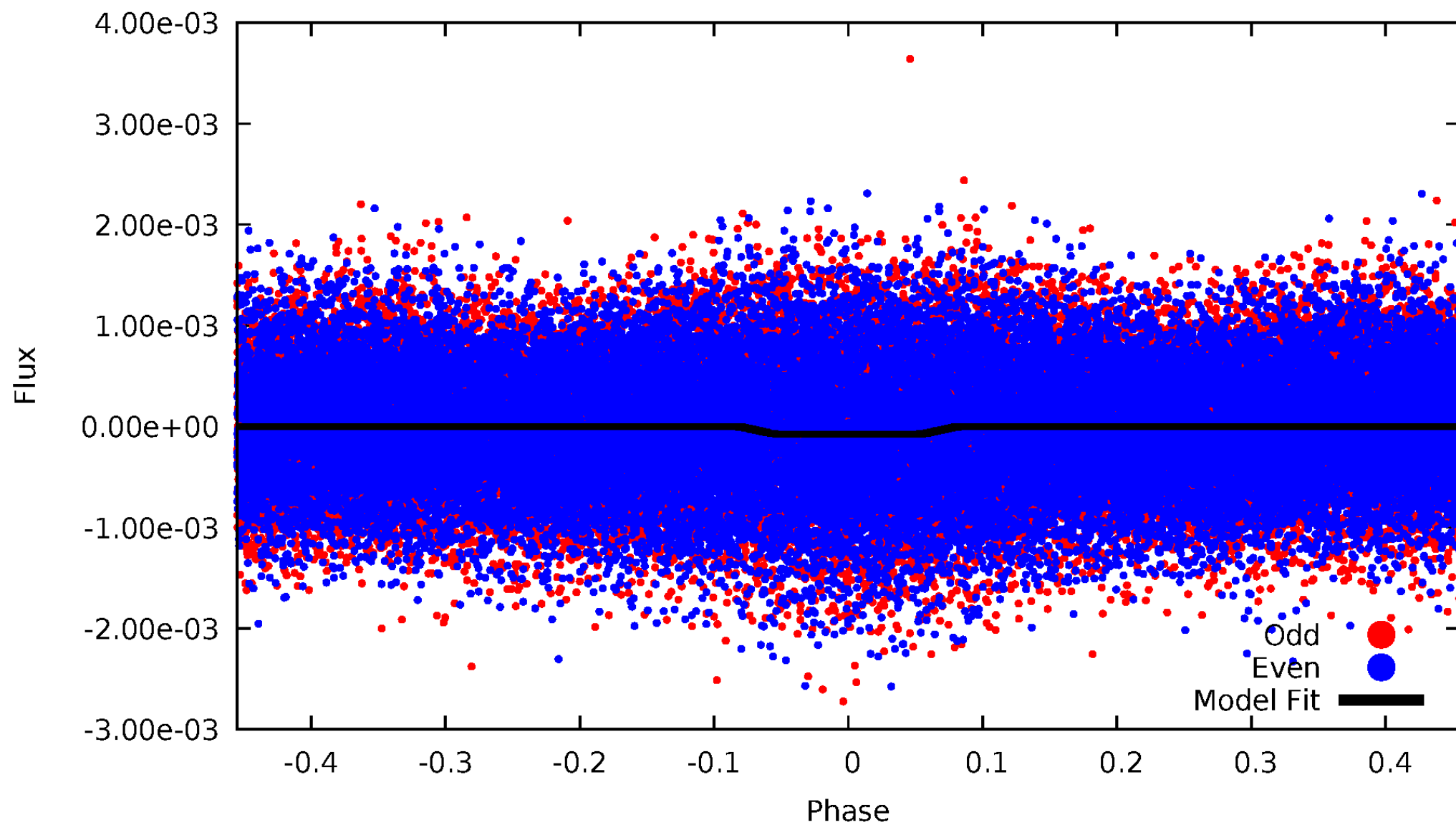
DV Odd/Even

TCE 009391395-01



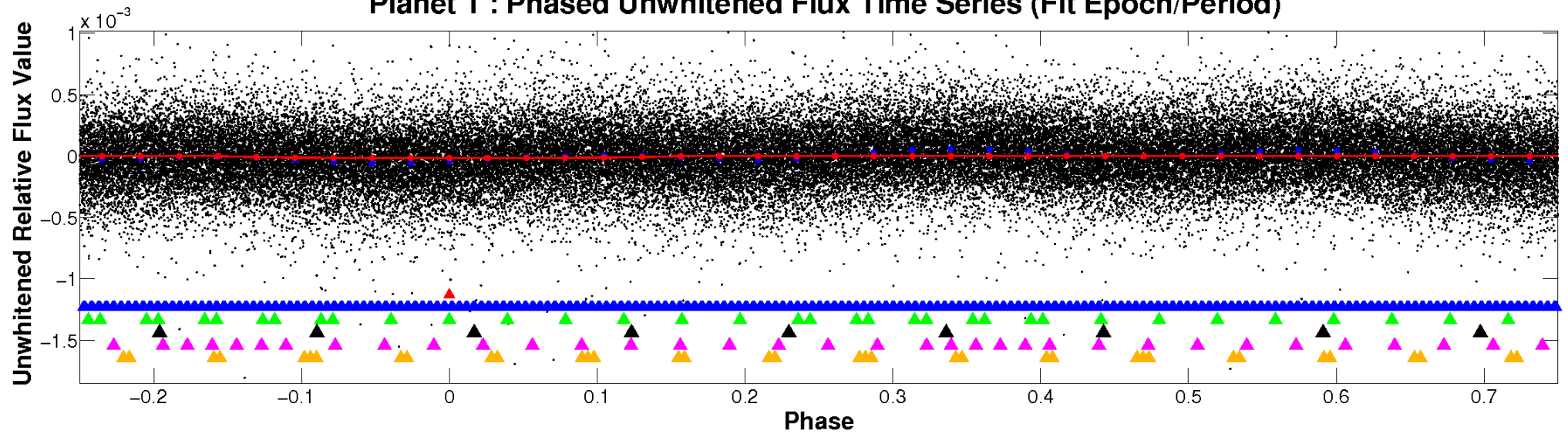
ALT Odd/Even

TCE 009391395-01

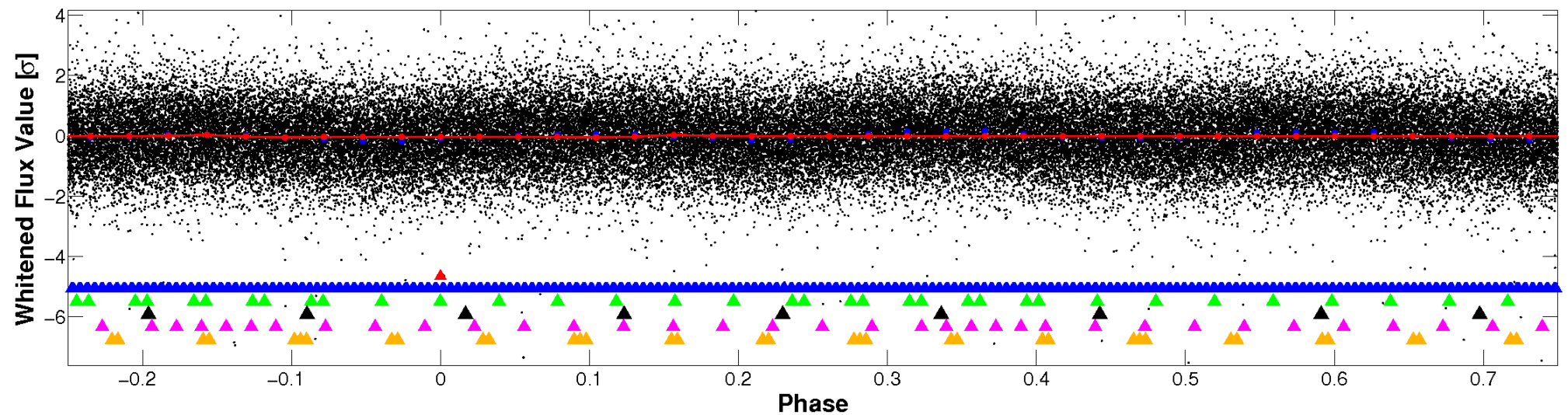


Non-Whitened Vs. Whitened Light Curve

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

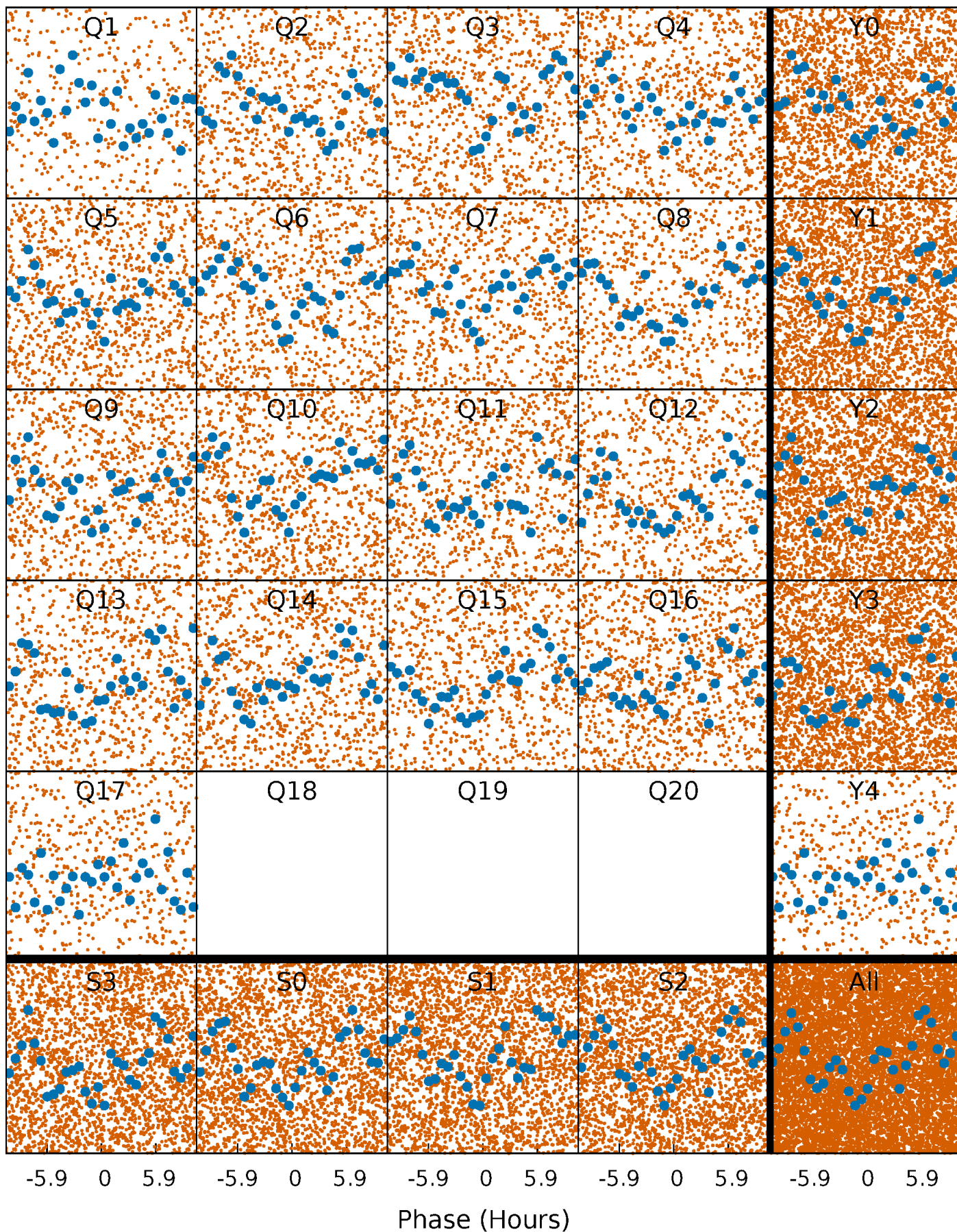


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



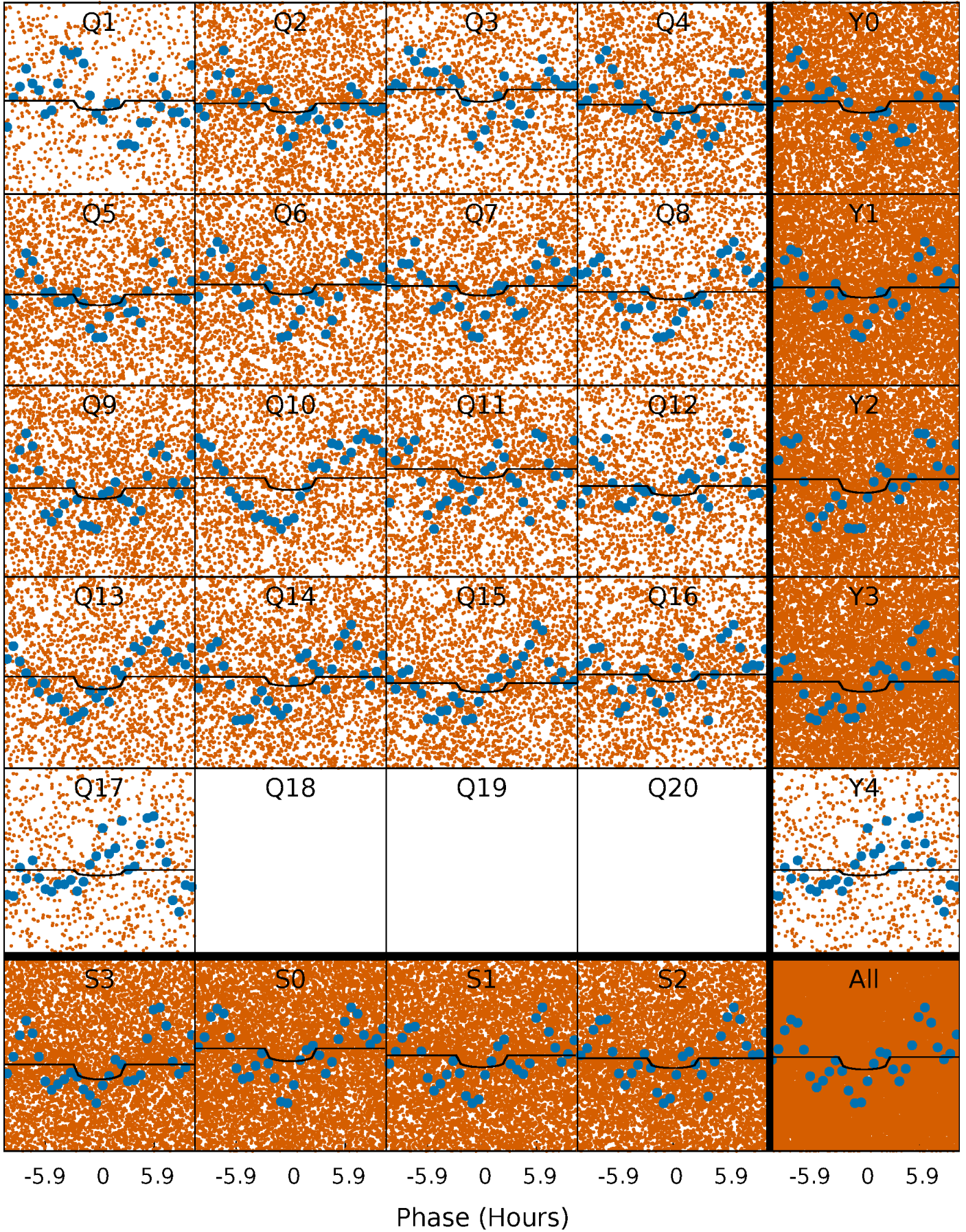
PDC Quarter-Phased Transit Curves

TCE 009391395-01 P= 0.782755 Days $T_0=131.554278$ (BKJD)



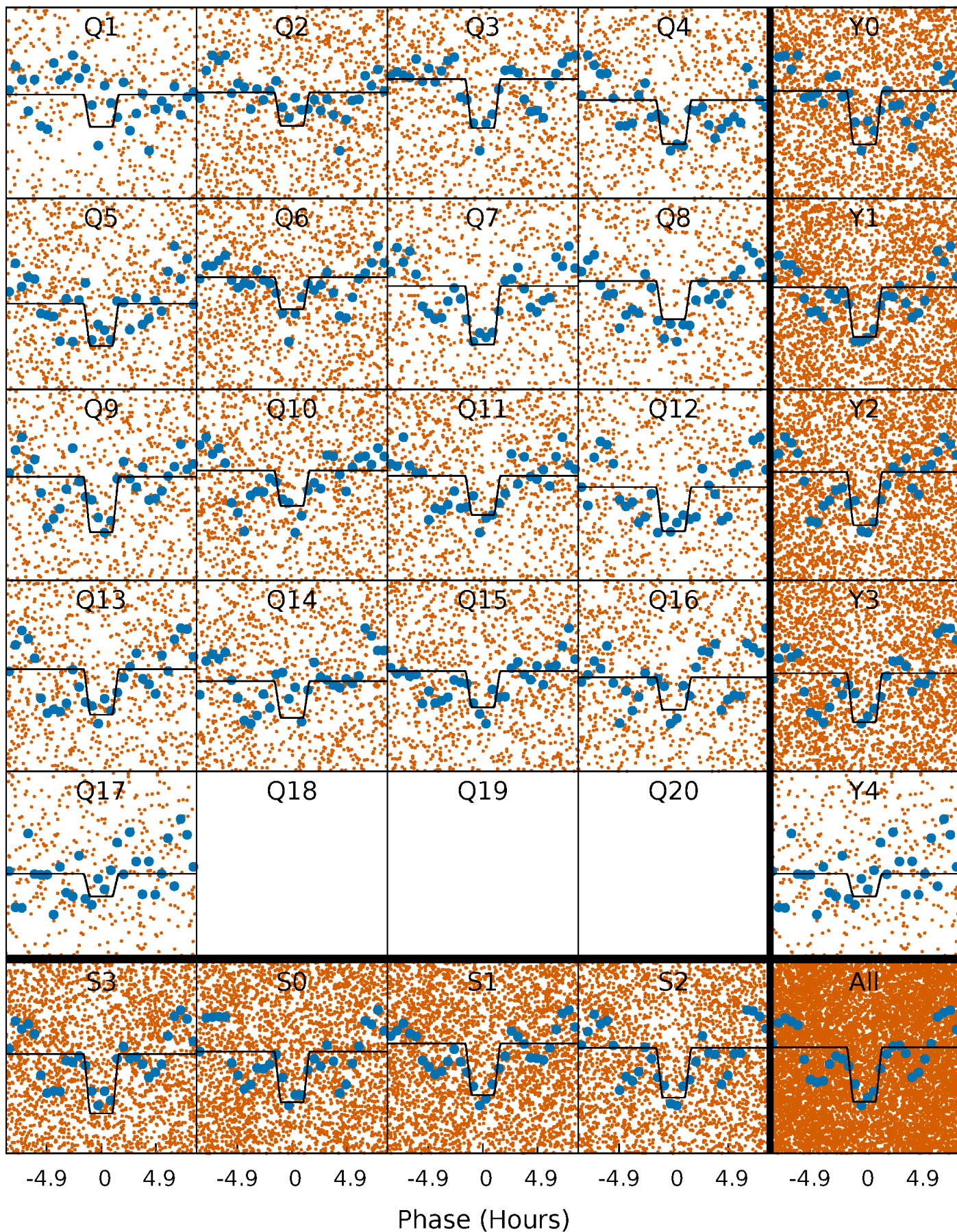
DV Quarter-Phased Transit Curves

TCE 009391395-01 P= 0.782755 Days $T_0=131.554278$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

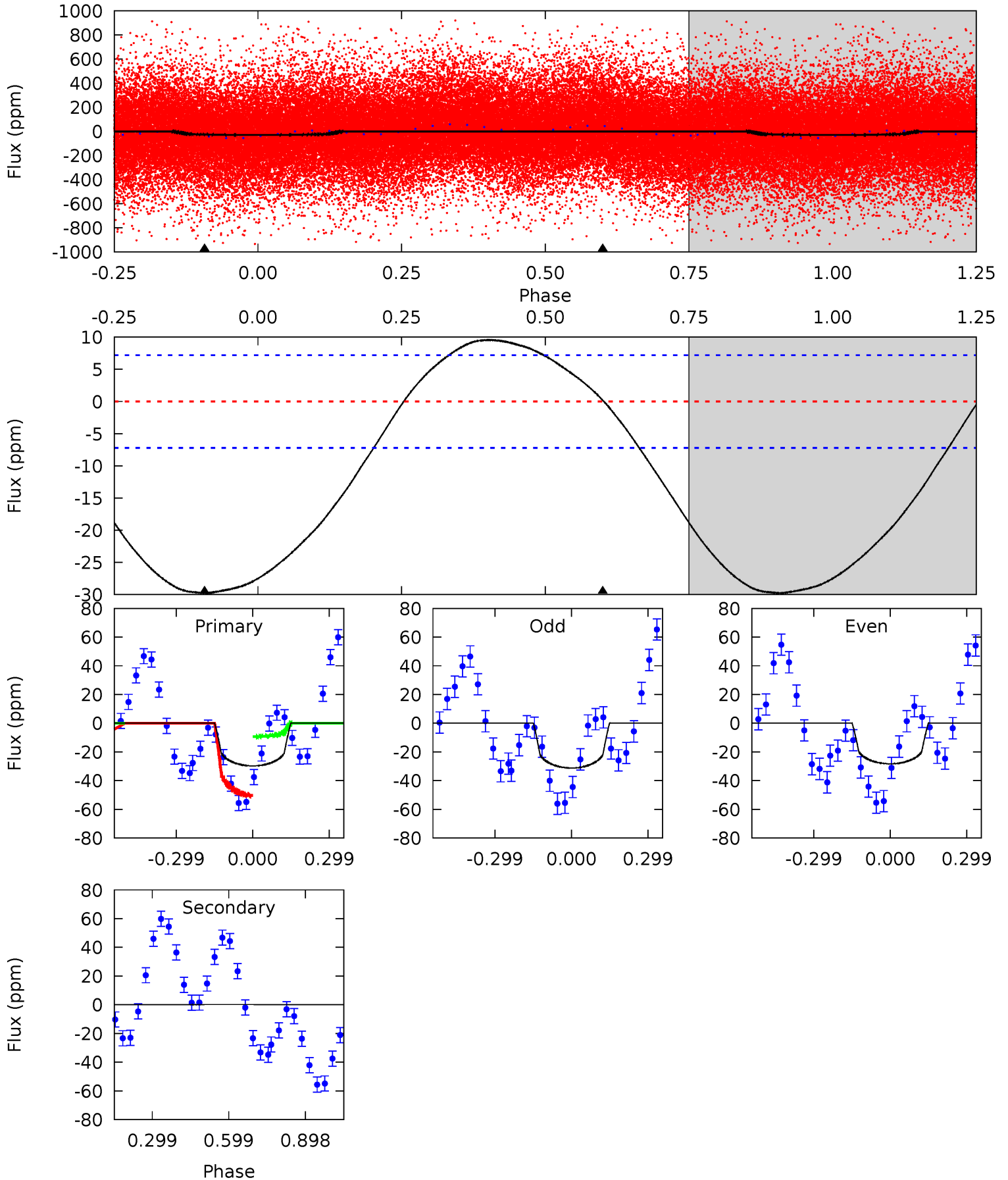
TCE 009391395-01 P= 0.782723 Days $T_0=131.547449$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-01, P = 0.782755 Days, E = 130.771523 Days

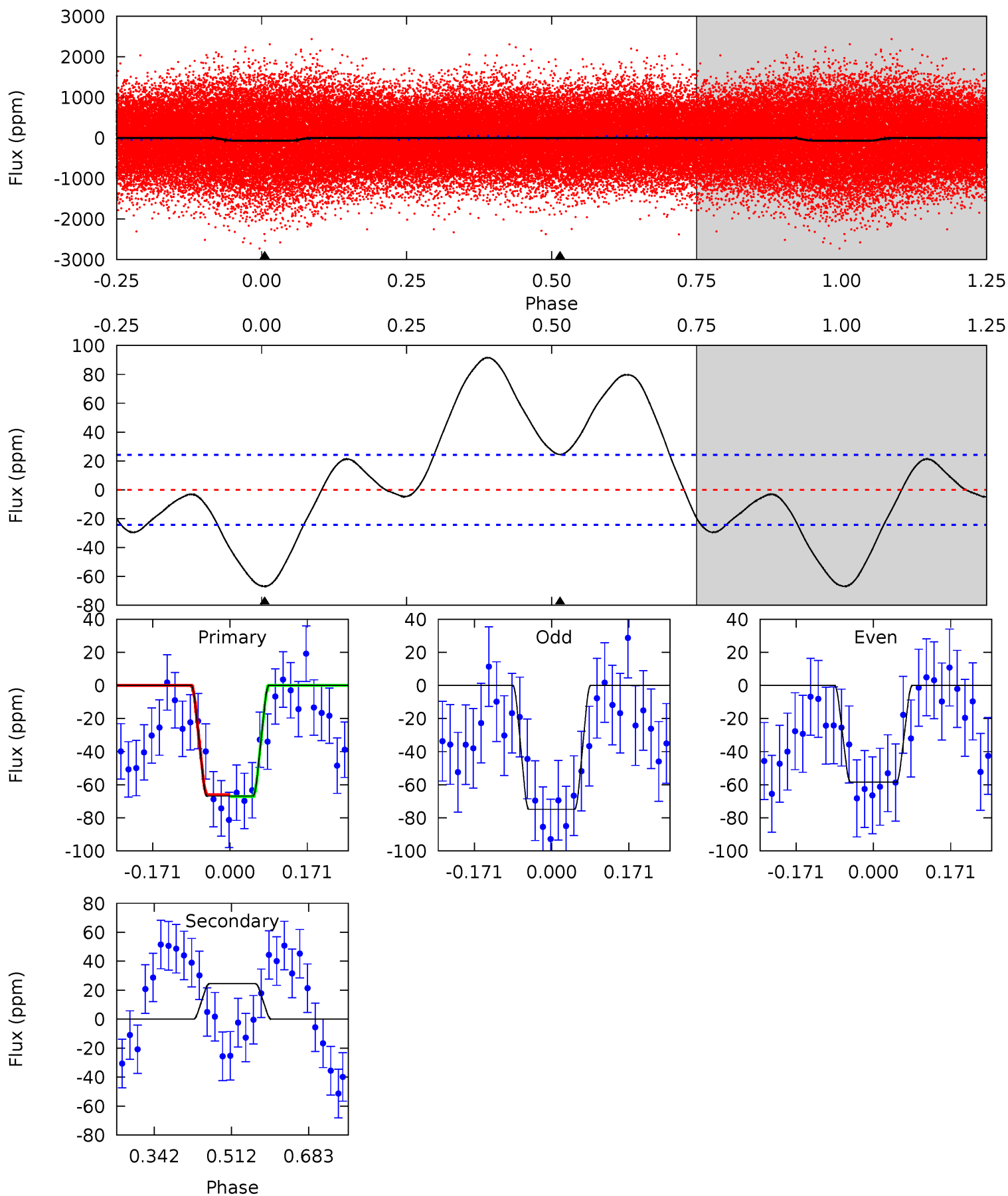
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.9 | -0.10 | 0 | 0 | 4.33 | 1.04 | 2.20 | 17.9 | 17.9 | -0.10 | -0.10 | 0.89 | 1.36 | 0.24 | 12.3 |



Alt Model-Shift Uniqueness Test

009391395-01, P = 0.782723 Days, E = 130.764726 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.3 | -4.50 | 0 | 0 | 4.45 | 1.37 | 4.55 | 12.3 | 12.3 | -4.50 | -4.50 | 1.51 | 0.87 | 0.58 | 0.10 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV | 0 ± 2 | $0.83^{+0.38}_{-0.30}$ | 4757^{+334}_{-357} | -4237^{+8062}_{-901} | $-0.035^{+0.555}_{-0.565}$ |
| Alt. | 24 ± 5 | $1.93^{+0.45}_{-0.39}$ | 4768^{+362}_{-383} | -5890^{+438}_{-531} | $-1.336^{+0.494}_{-0.867}$ |

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

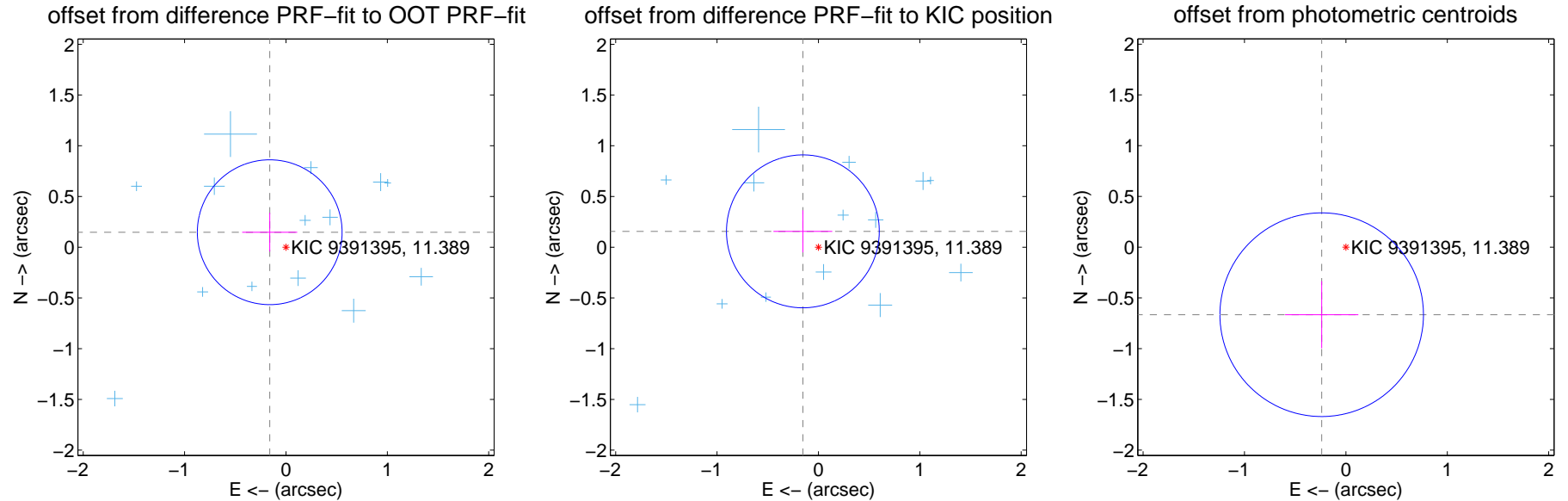
DV Centroid Data

Supplemental centroid analysis for 009391395-01. **Kepler magnitude: 11.39.** Transit SNR 5.34

There are 15 quarters with good PRF difference image offsets

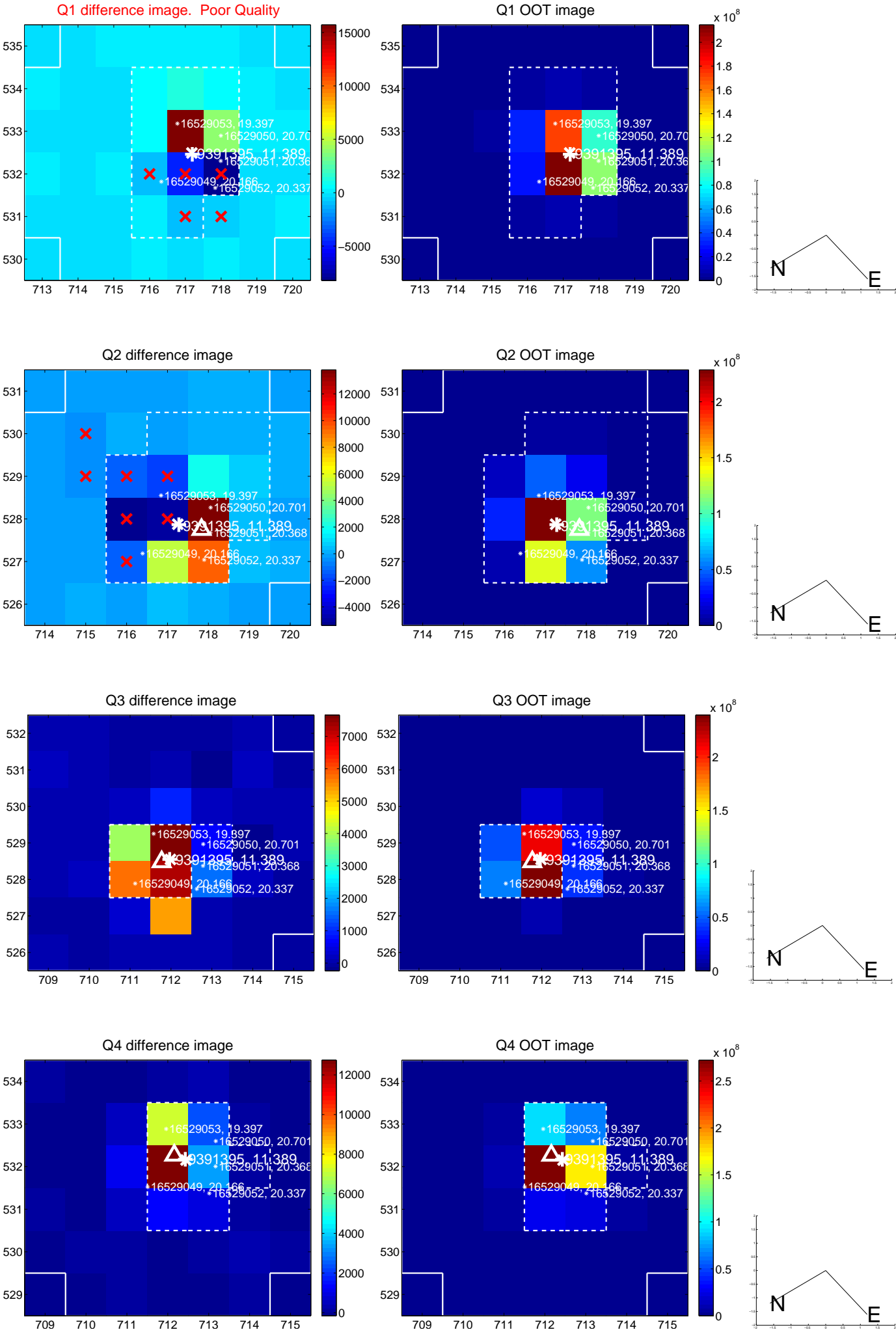
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.218 ± 0.238 | 0.92 | 0.160 ± 0.272 | 0.148 ± 0.191 |
| PRF-fit source offset from KIC position | 0.219 ± 0.251 | 0.87 | 0.153 ± 0.290 | 0.156 ± 0.207 |
| photometric centroid source offset | 0.71 ± 0.33 | 2.11 | 0.24 ± 0.36 | -0.67 ± 0.33 |

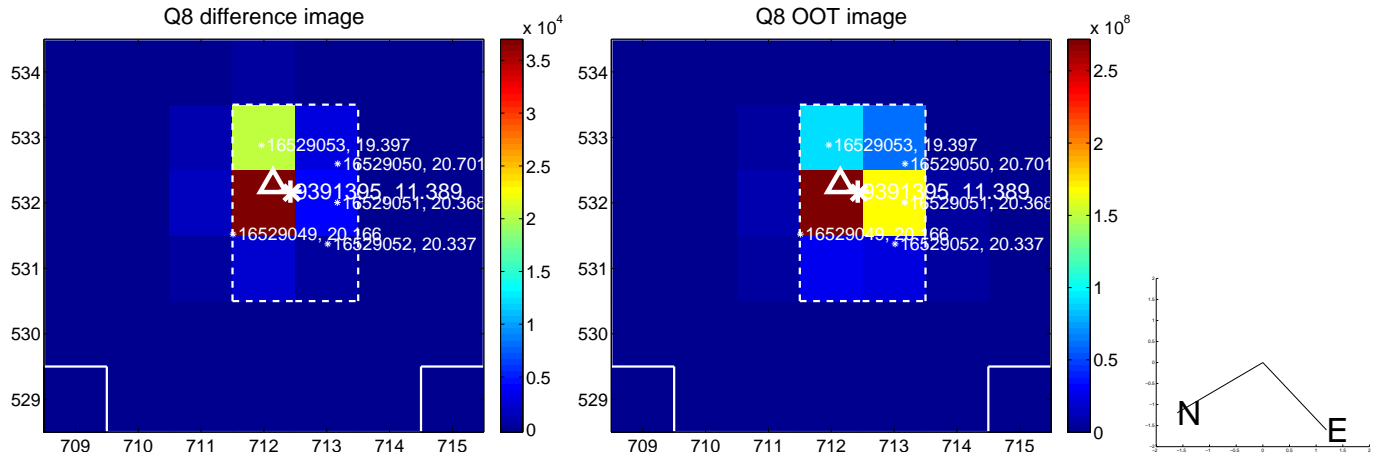
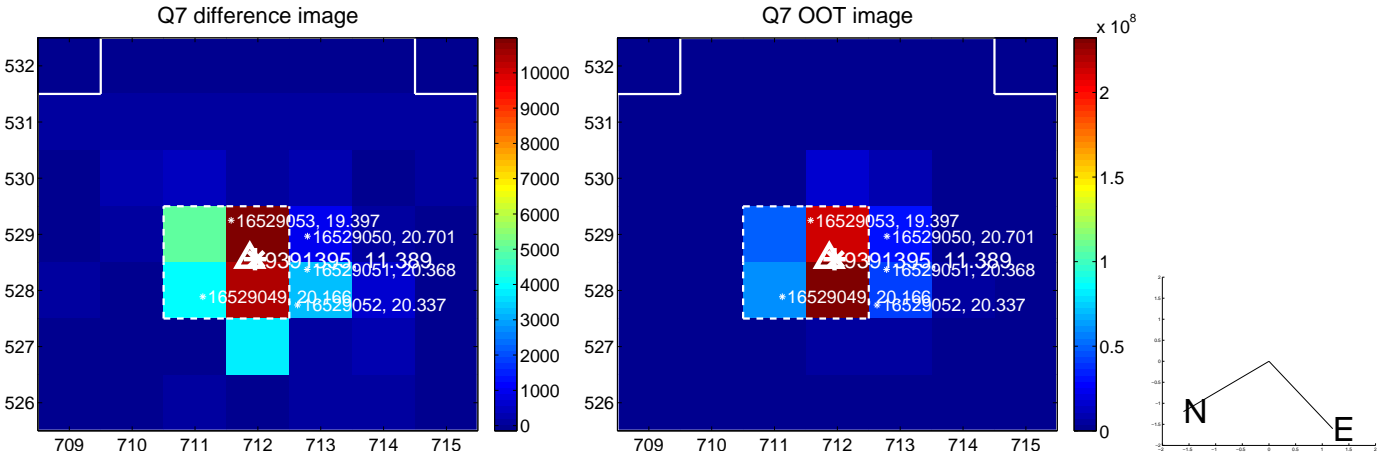
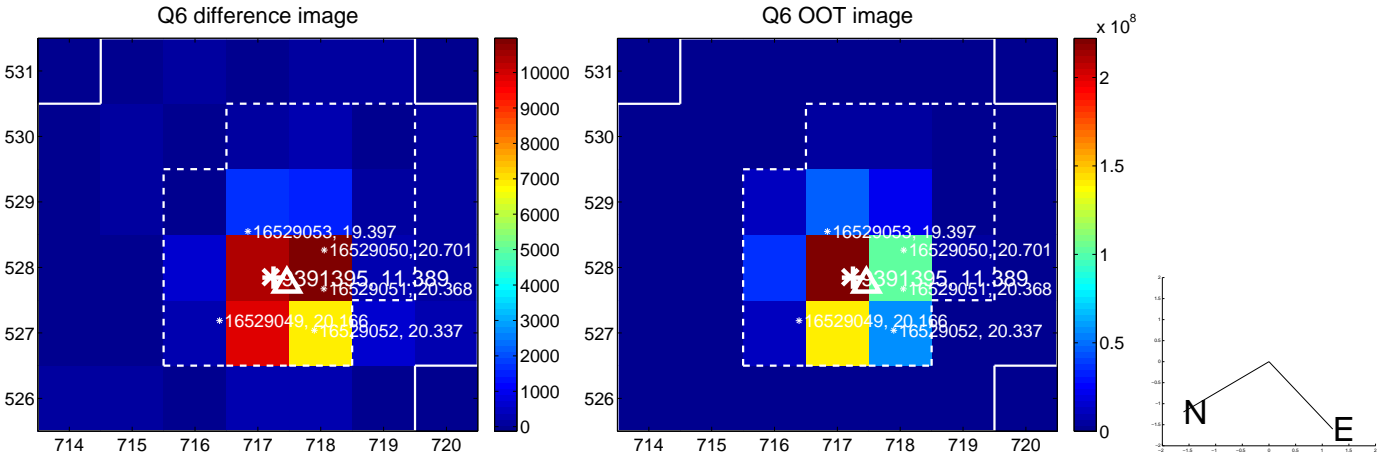
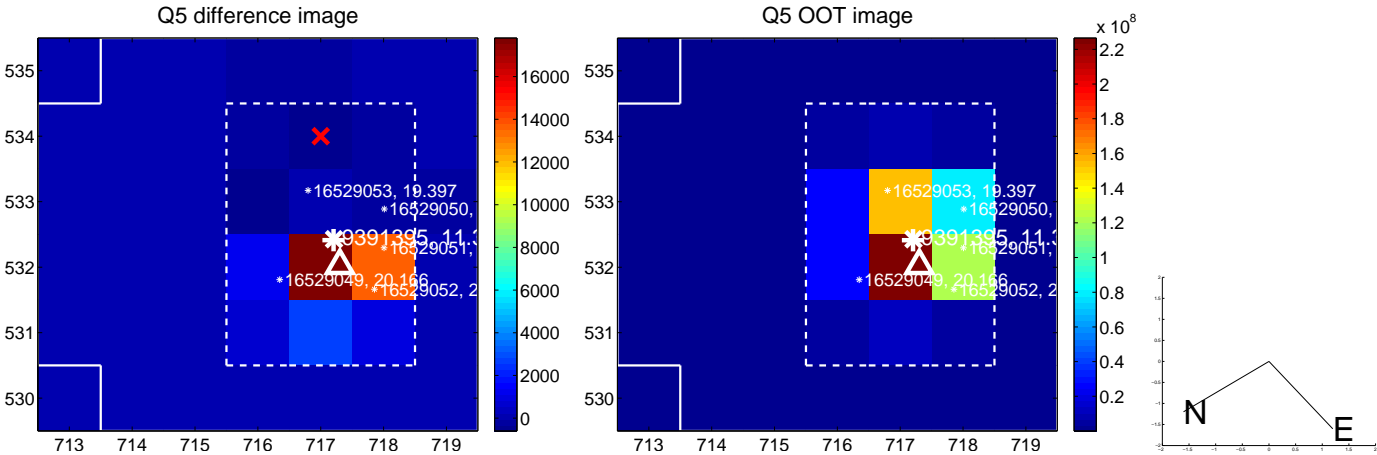


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

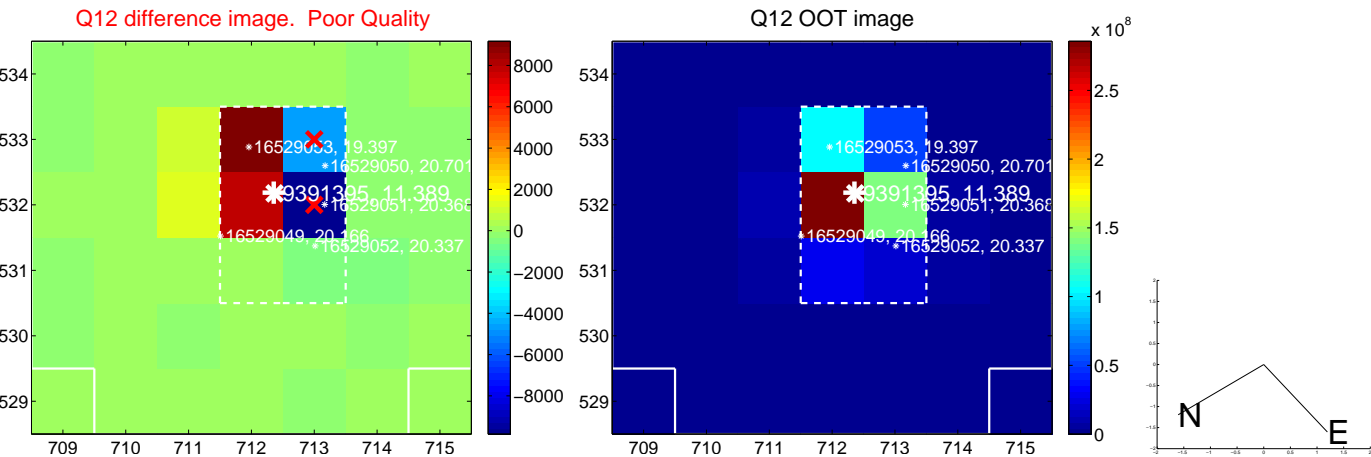
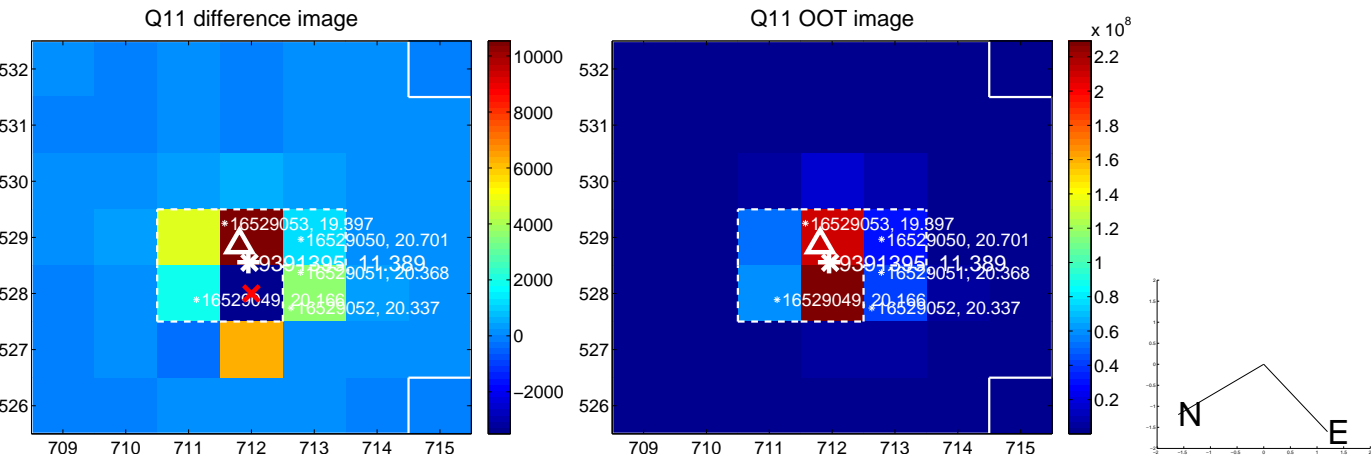
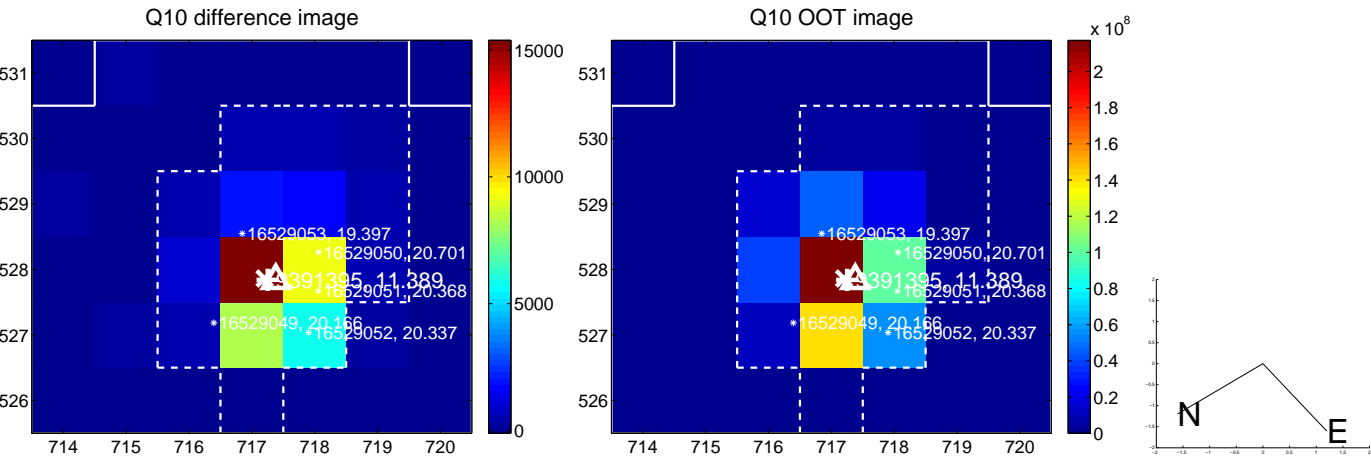
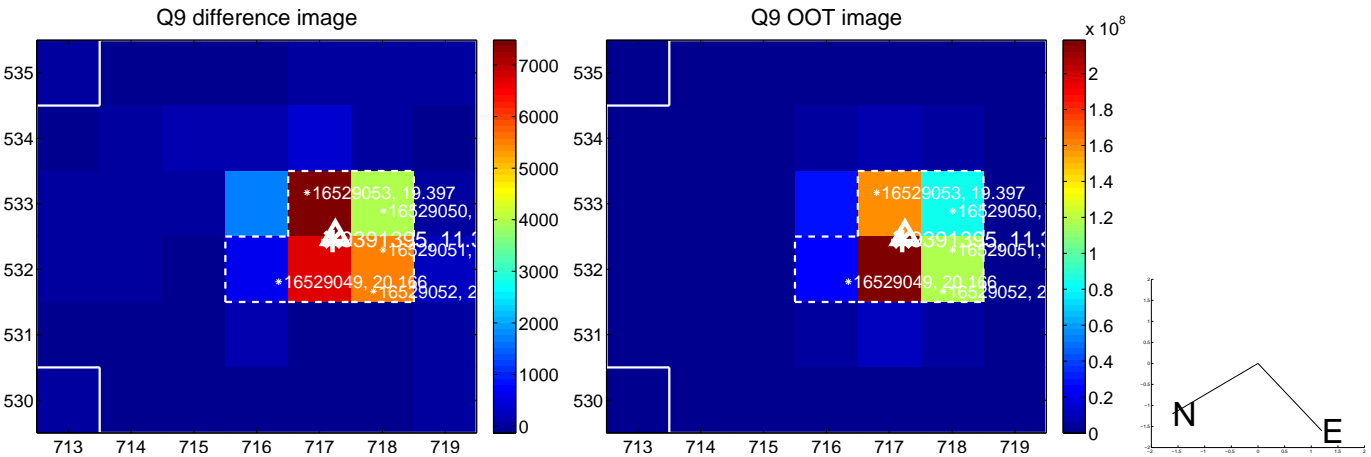
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



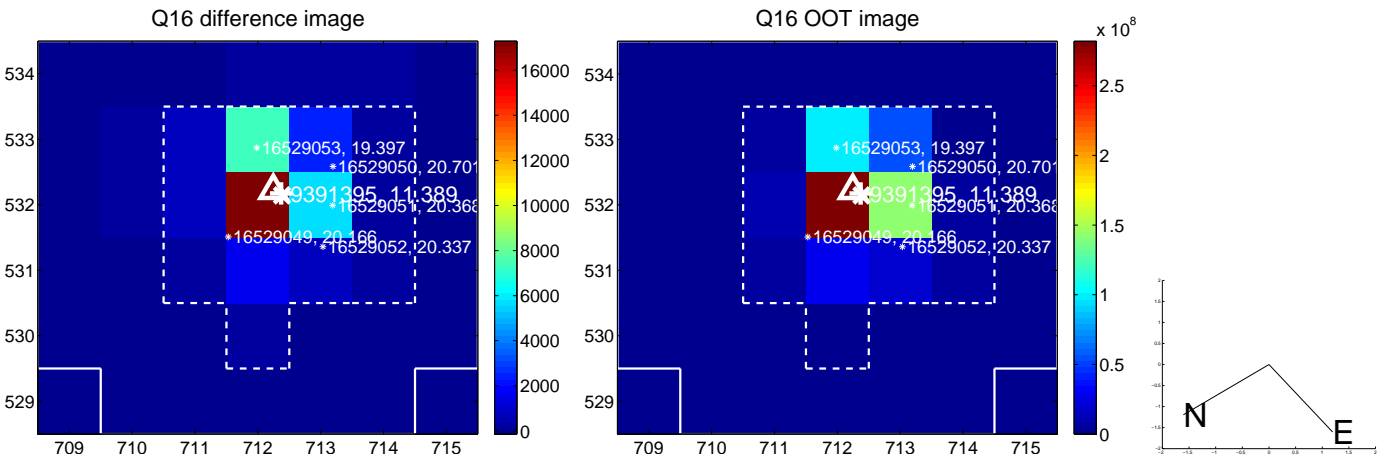
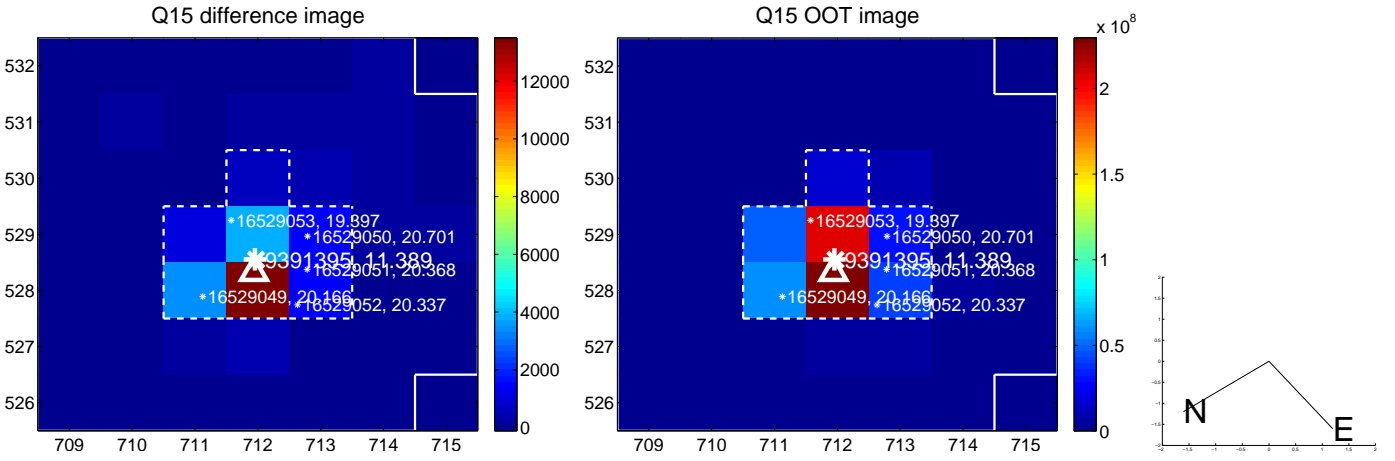
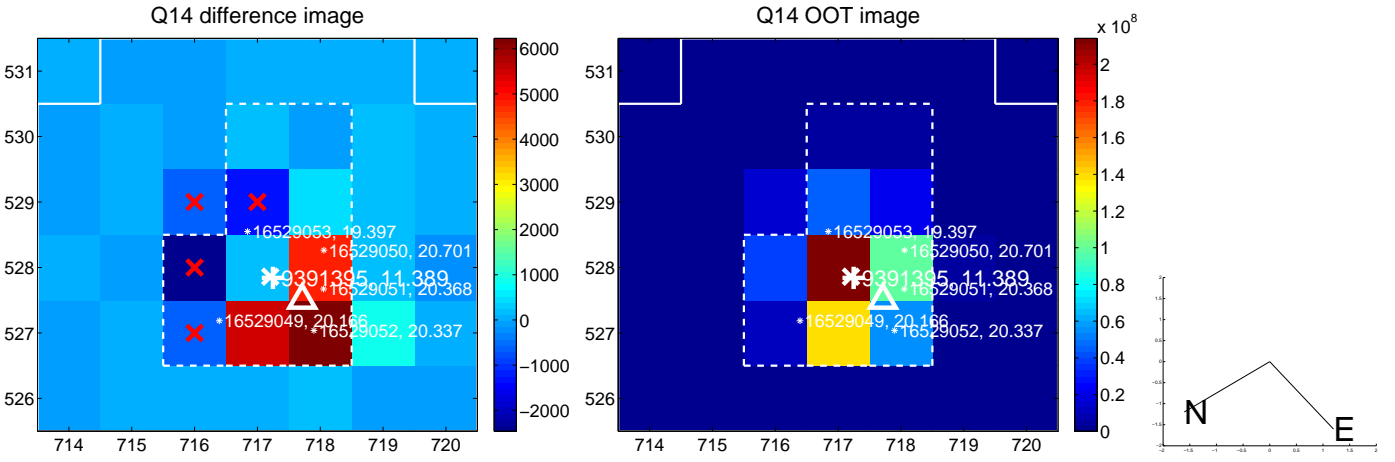
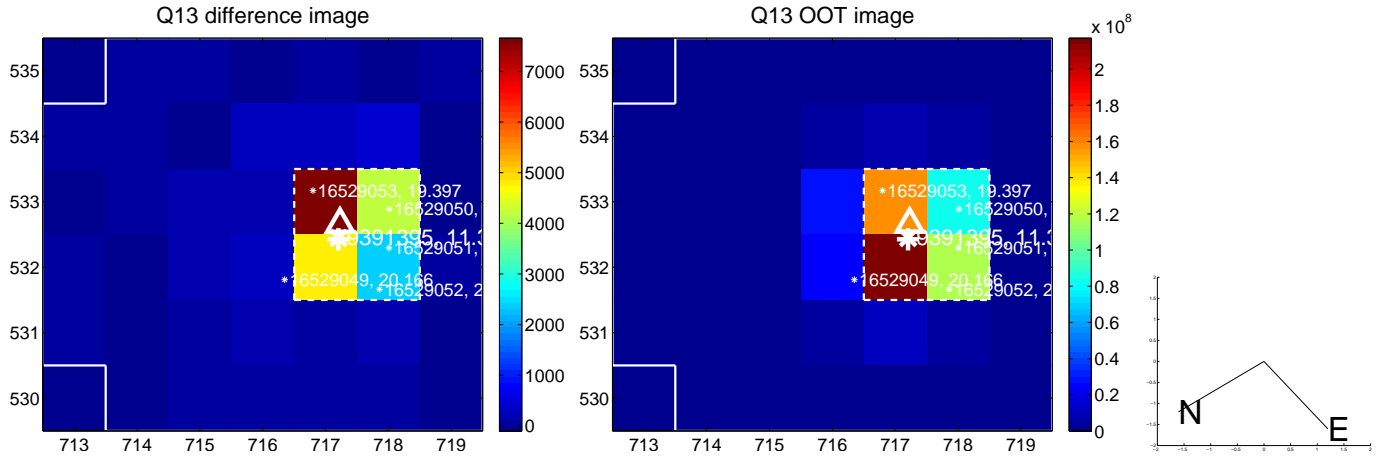
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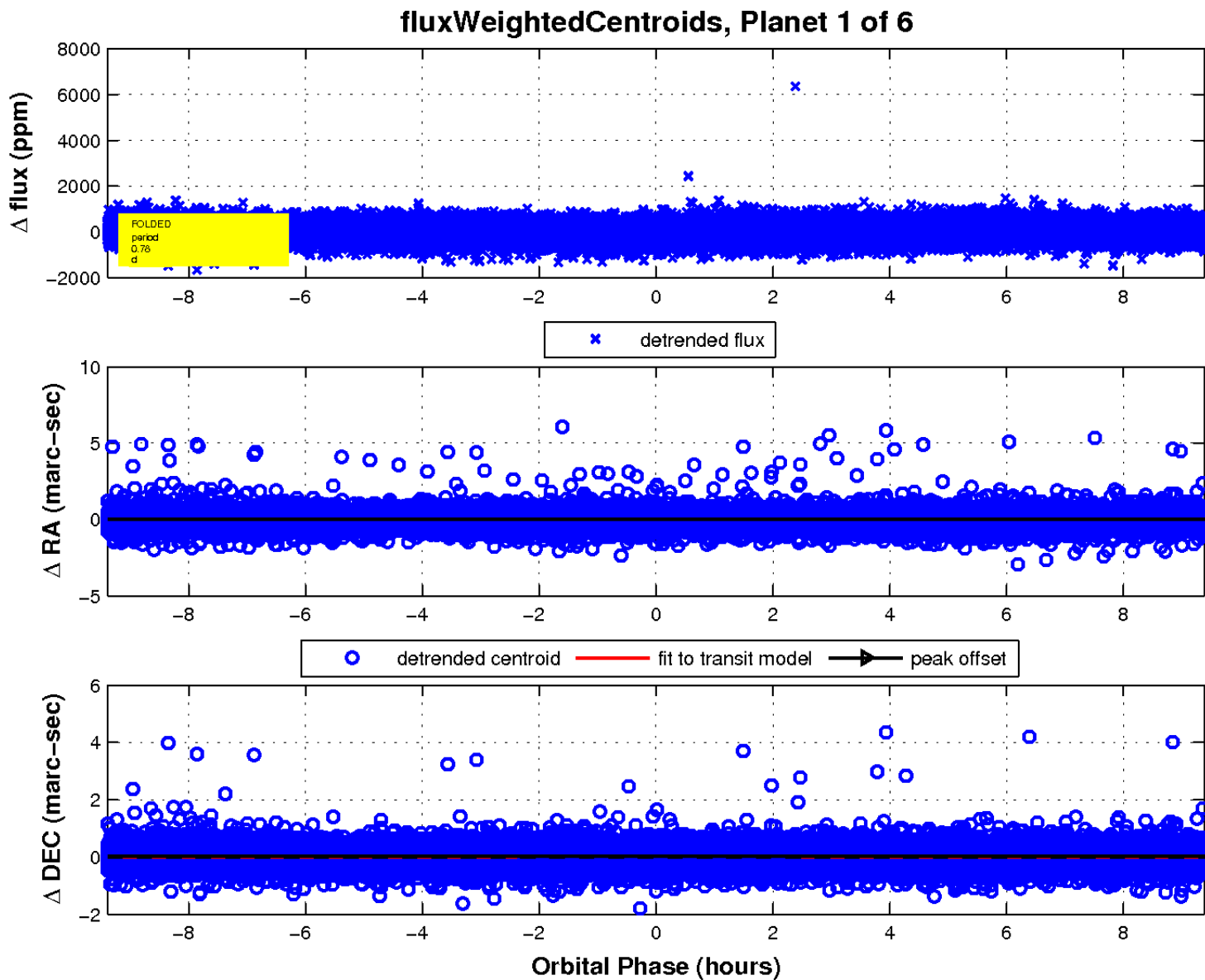
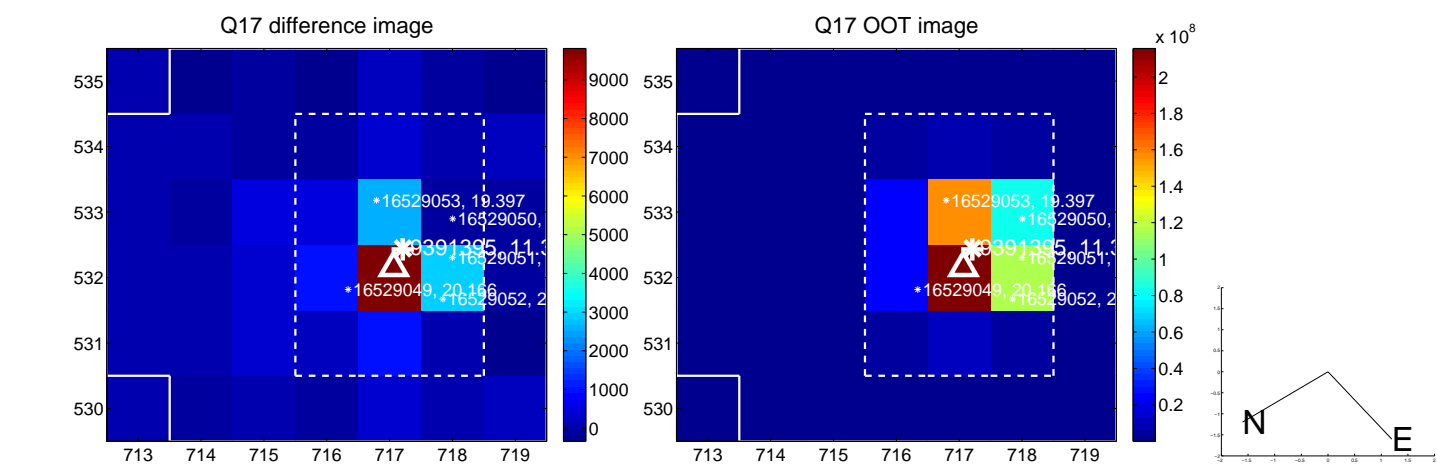
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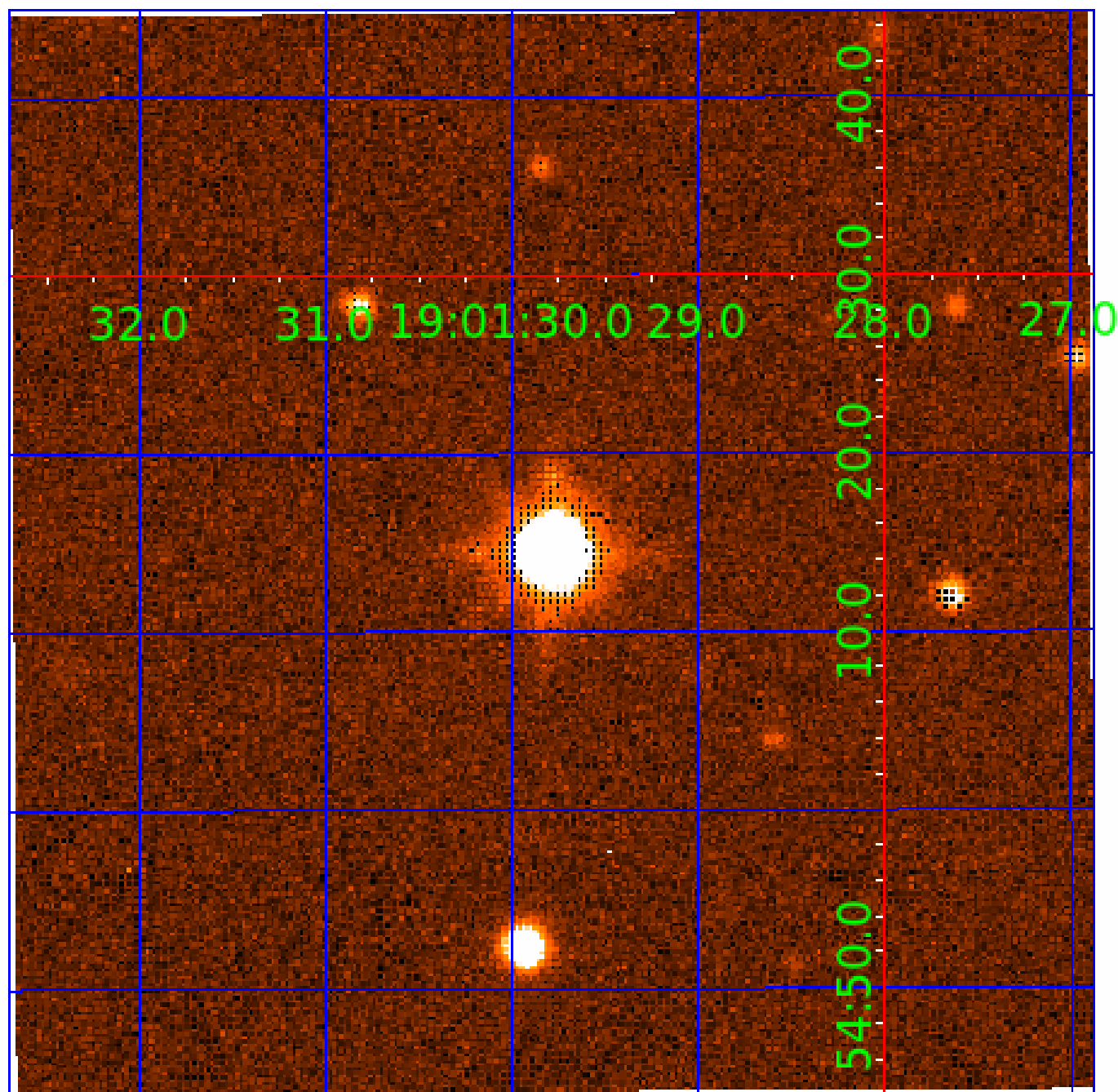


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UKIRT Image

Declination



KIC 009391395

Q1-17 DR25 TCE Parameters

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| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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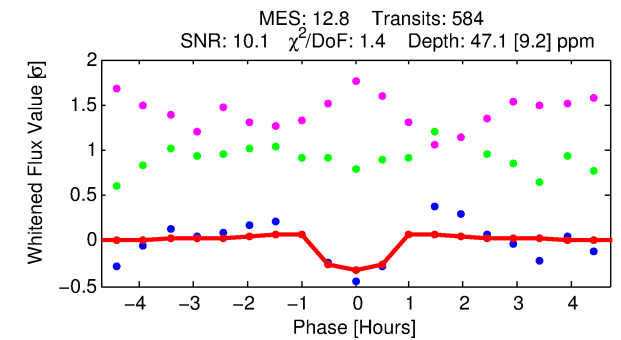
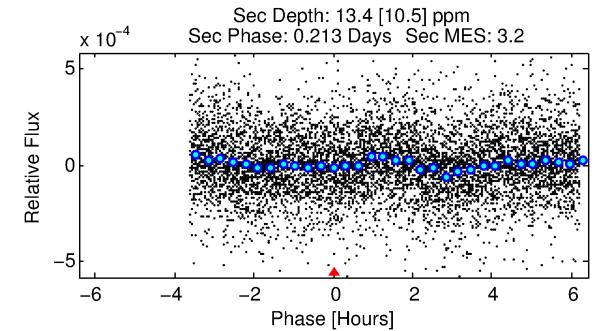
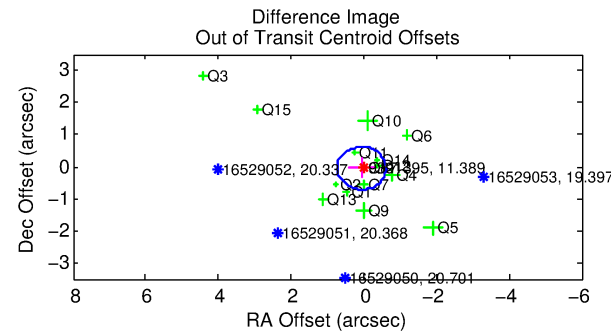
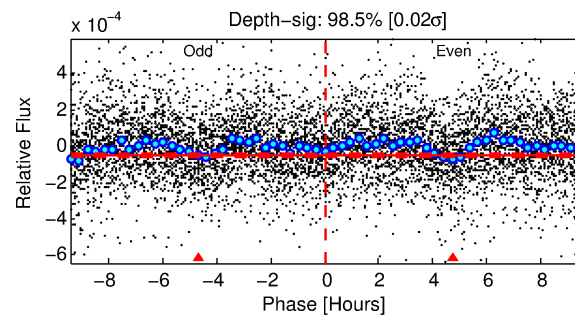
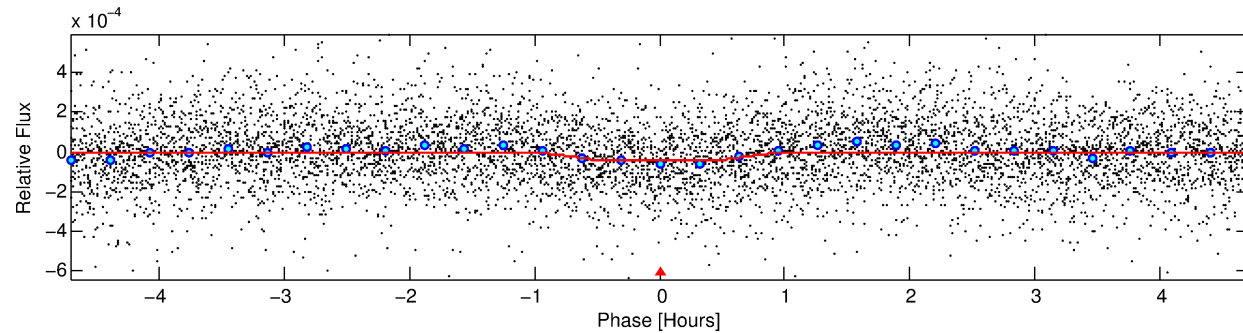
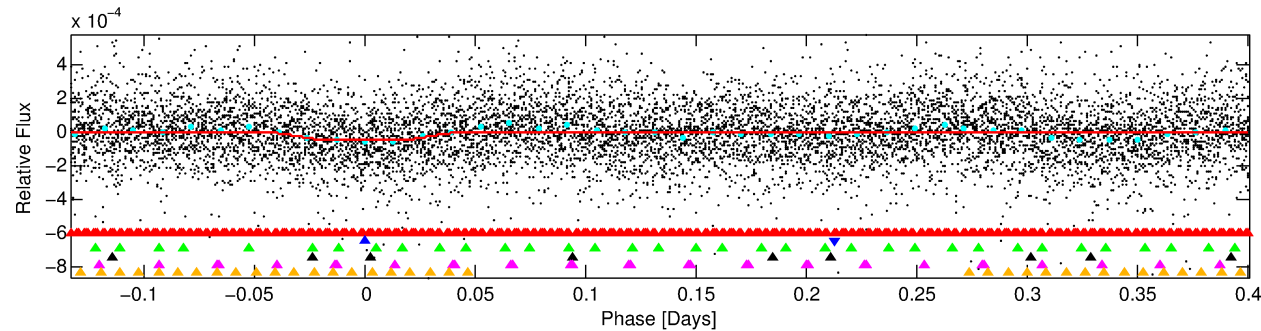
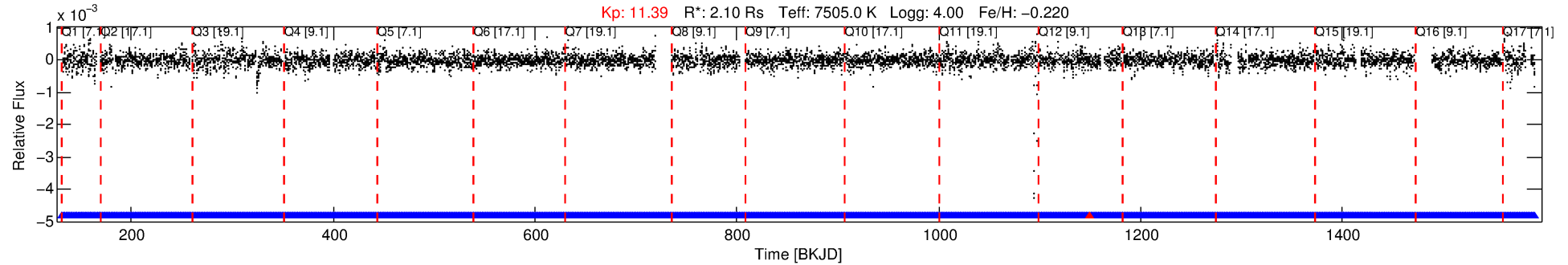
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-02

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 2 of 6 Period: 0.534 d



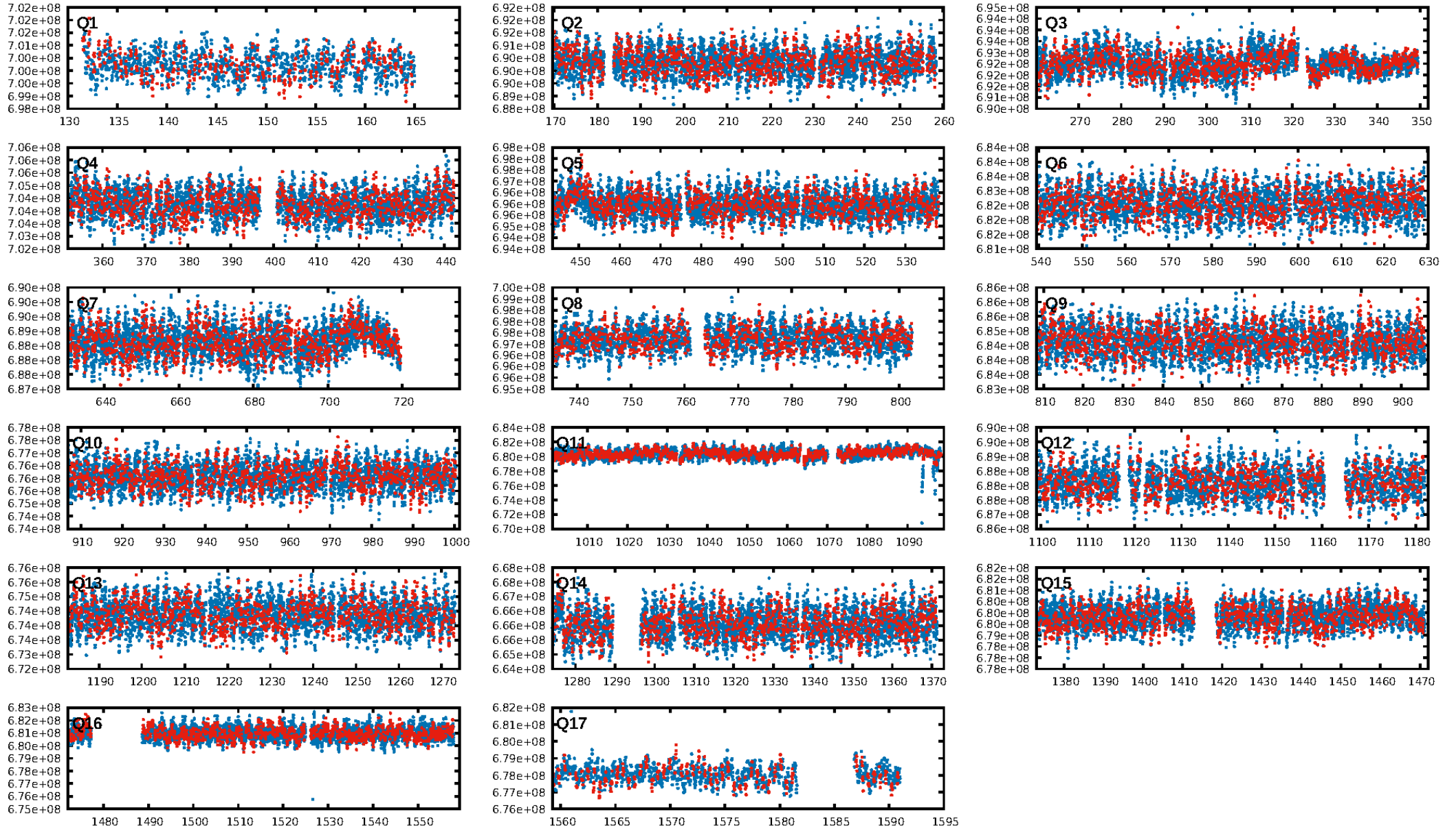
DV Fit Results:

Period = 0.53352 [0.00002] d
Epoch = 131.5900 [0.0024] BKJD
Rp/R* = 0.0074 [0.0043]
a/R* = 1.50 [2.76]
b = 0.90 [0.71]
Seff = 54932.40 [23739.10]
Teq = 3904 [422] K
Rp = 1.69 [1.11] Re
a = 0.0151 [0.0040] AU
Ag = 0.59 [0.85] [-0.49 σ]
Teffp = 5280 [1860] K [0.72 σ]

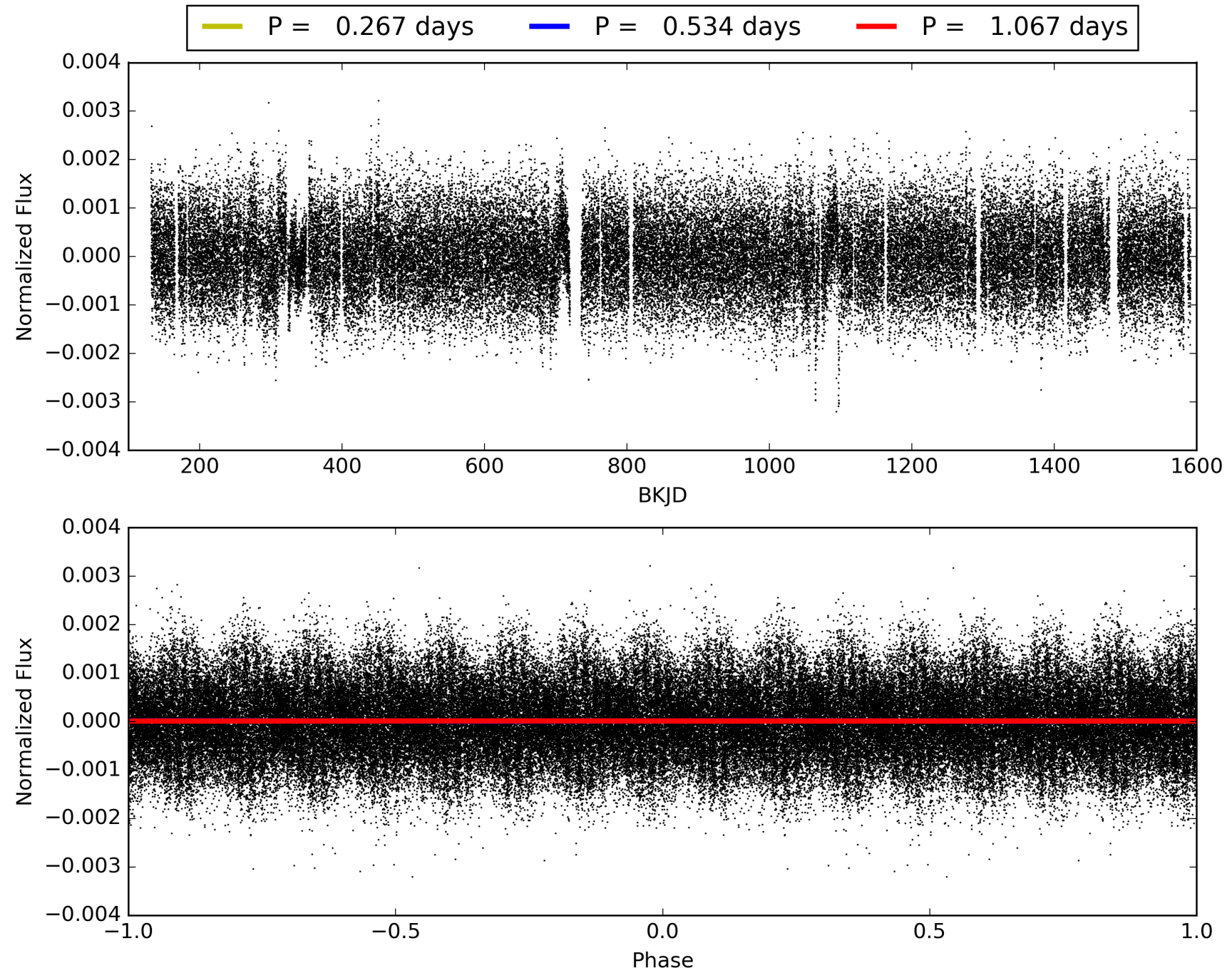
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 73.2% [1.11 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [555/556]
GhostDiagnostic-chr: 0.2793
Centroid-sig: 70.4%
Centroid-so: 0.160 arcsec [1.11 σ]
OotOffset-rm: 0.082 arcsec [0.37 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-rm: 0.134 arcsec [0.47 σ]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009391395-02, PDC Light Curves

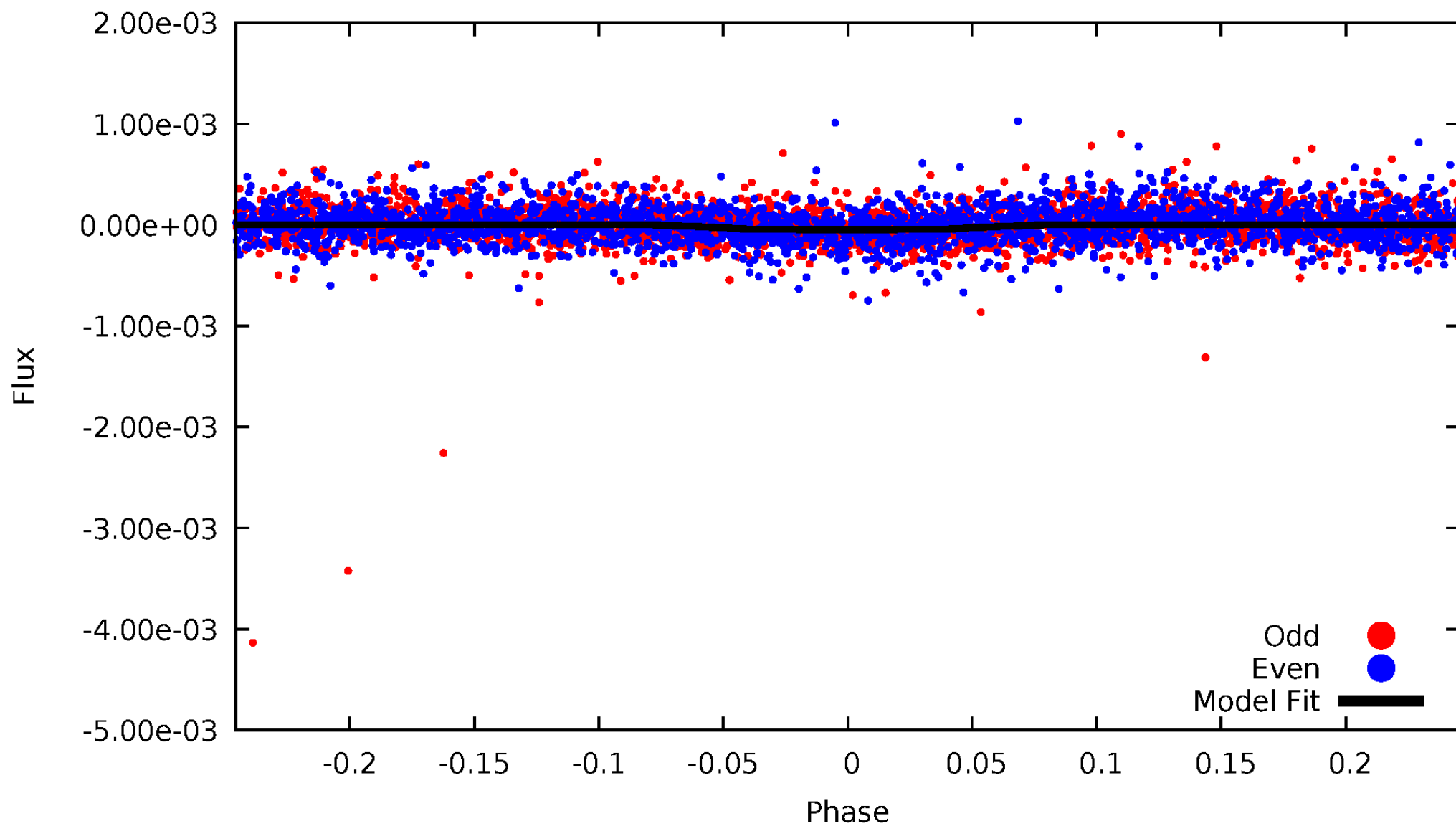


TCE 009391395-02



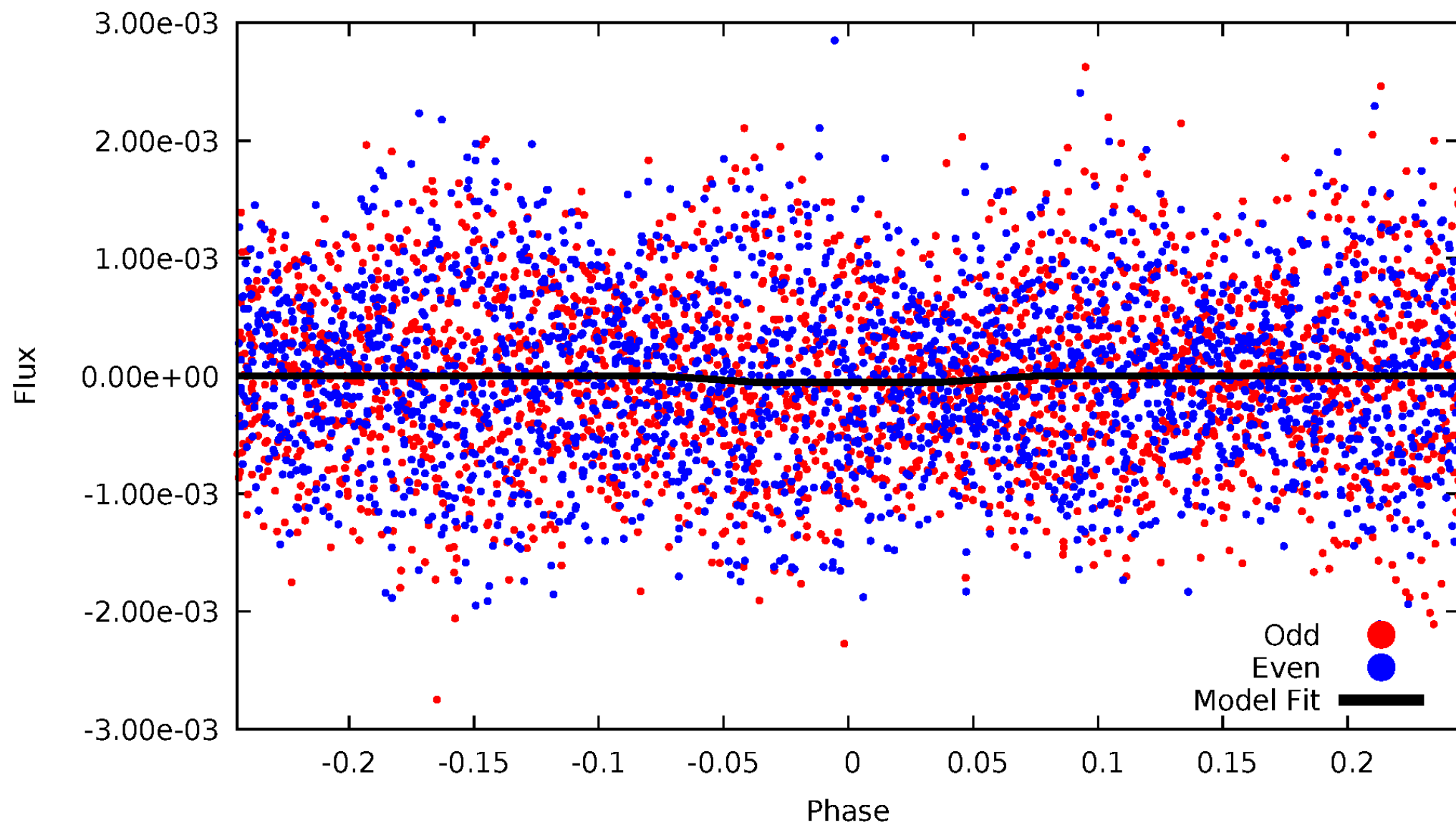
DV Odd/Even

TCE 009391395-02



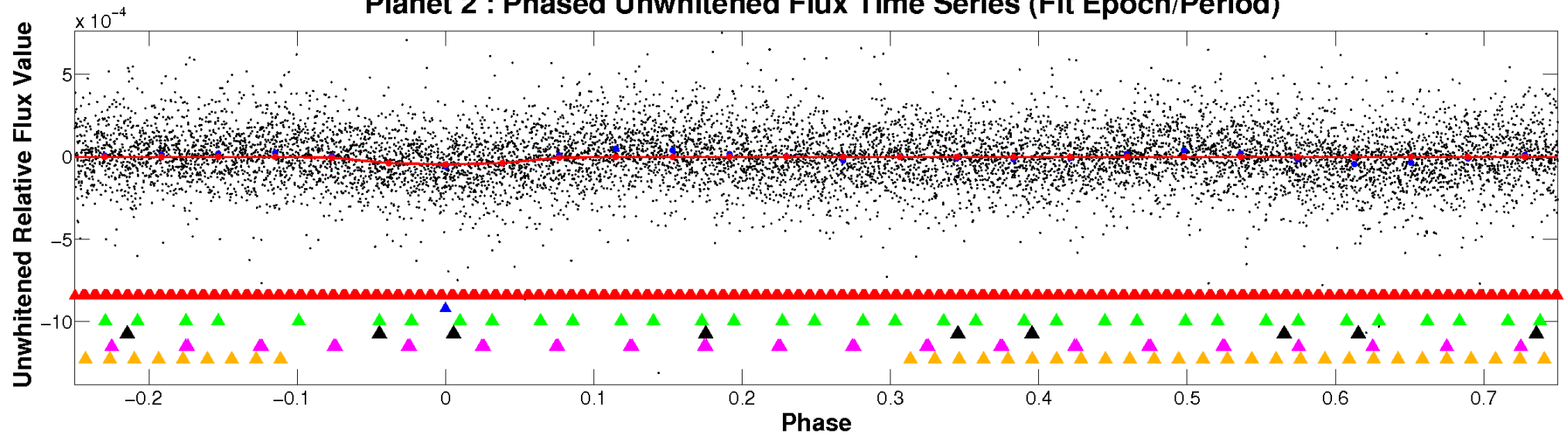
ALT Odd/Even

TCE 009391395-02

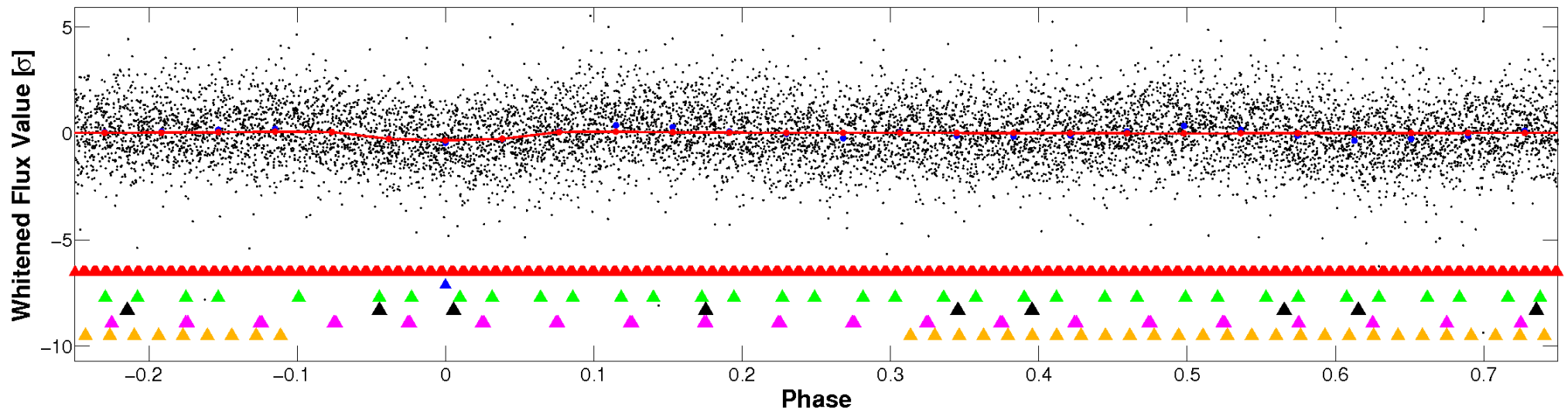


Non-Whitened Vs. Whitened Light Curve

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

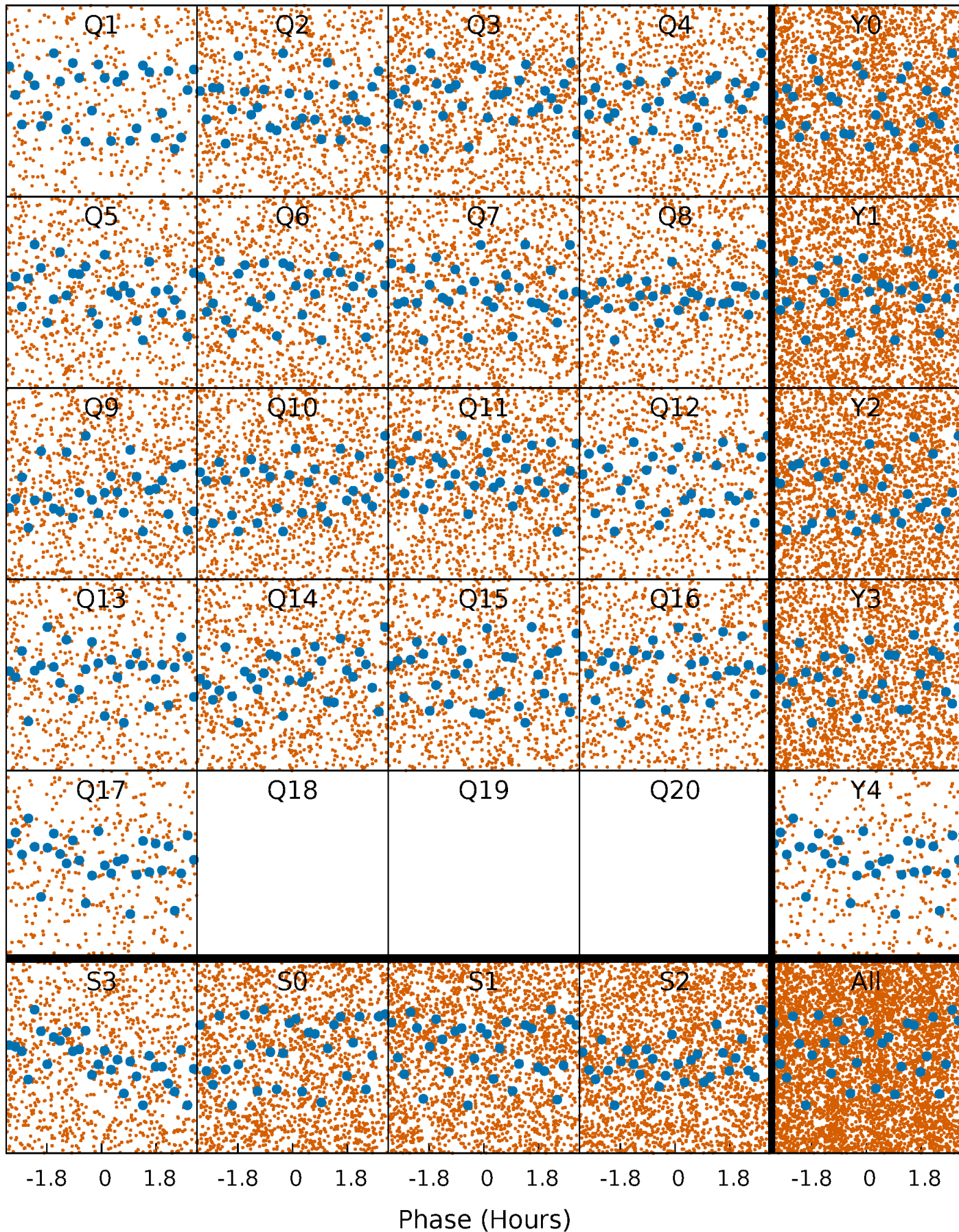


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



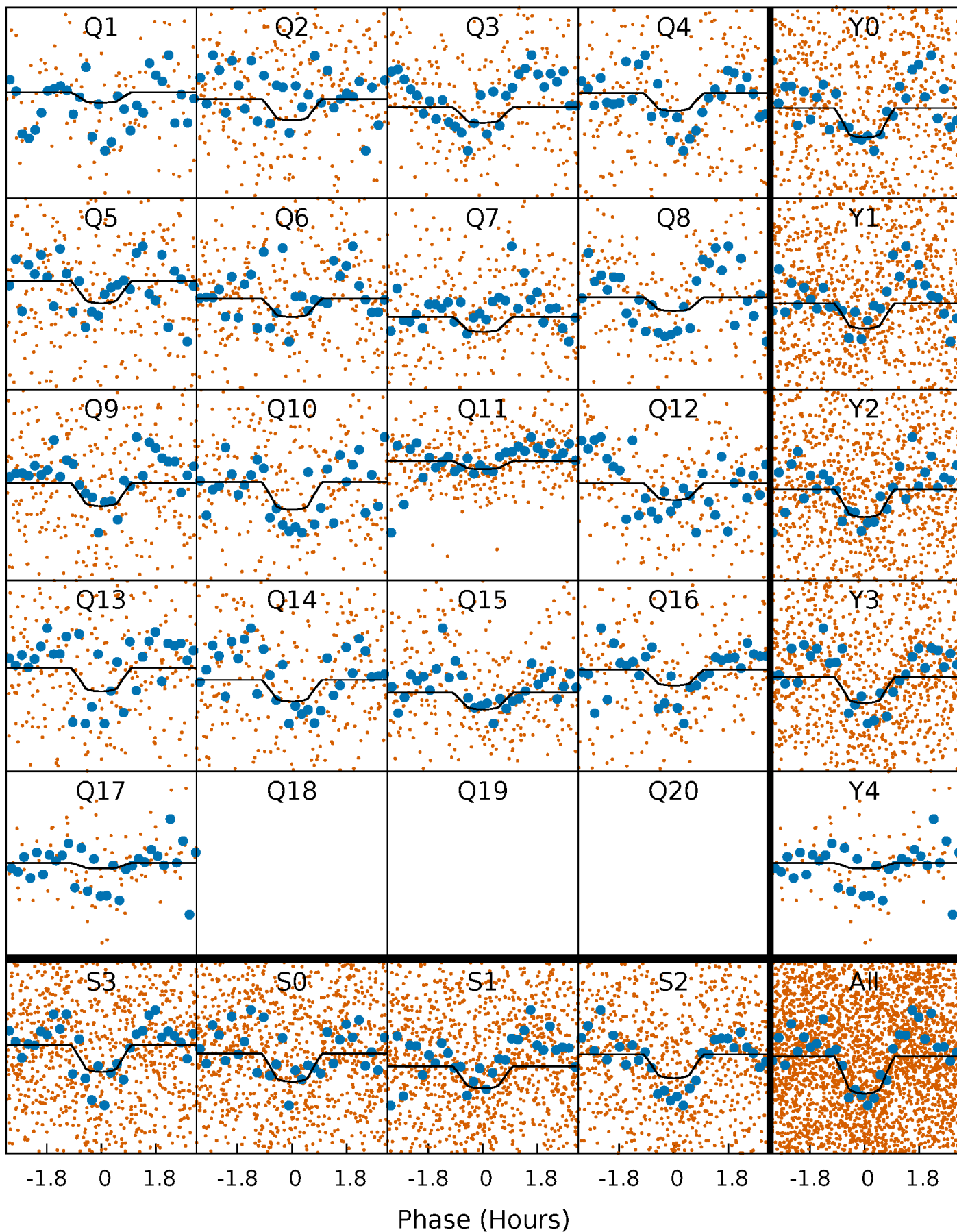
PDC Quarter-Phased Transit Curves

TCE 009391395-02 P= 0.533520 Days $T_0=131.590037$ (BKJD)



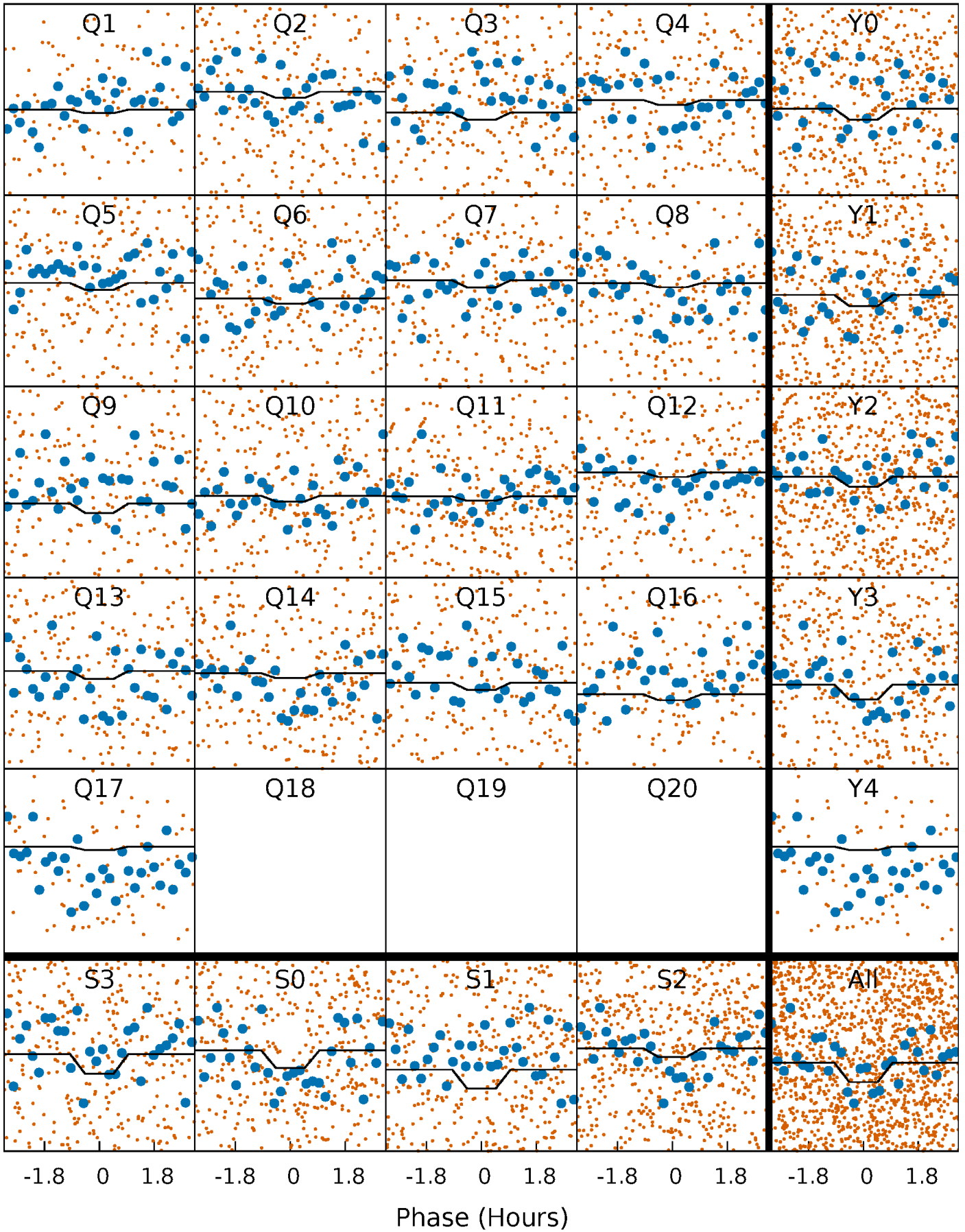
DV Quarter-Phased Transit Curves

TCE 009391395-02 P= 0.533520 Days $T_0=131.590037$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

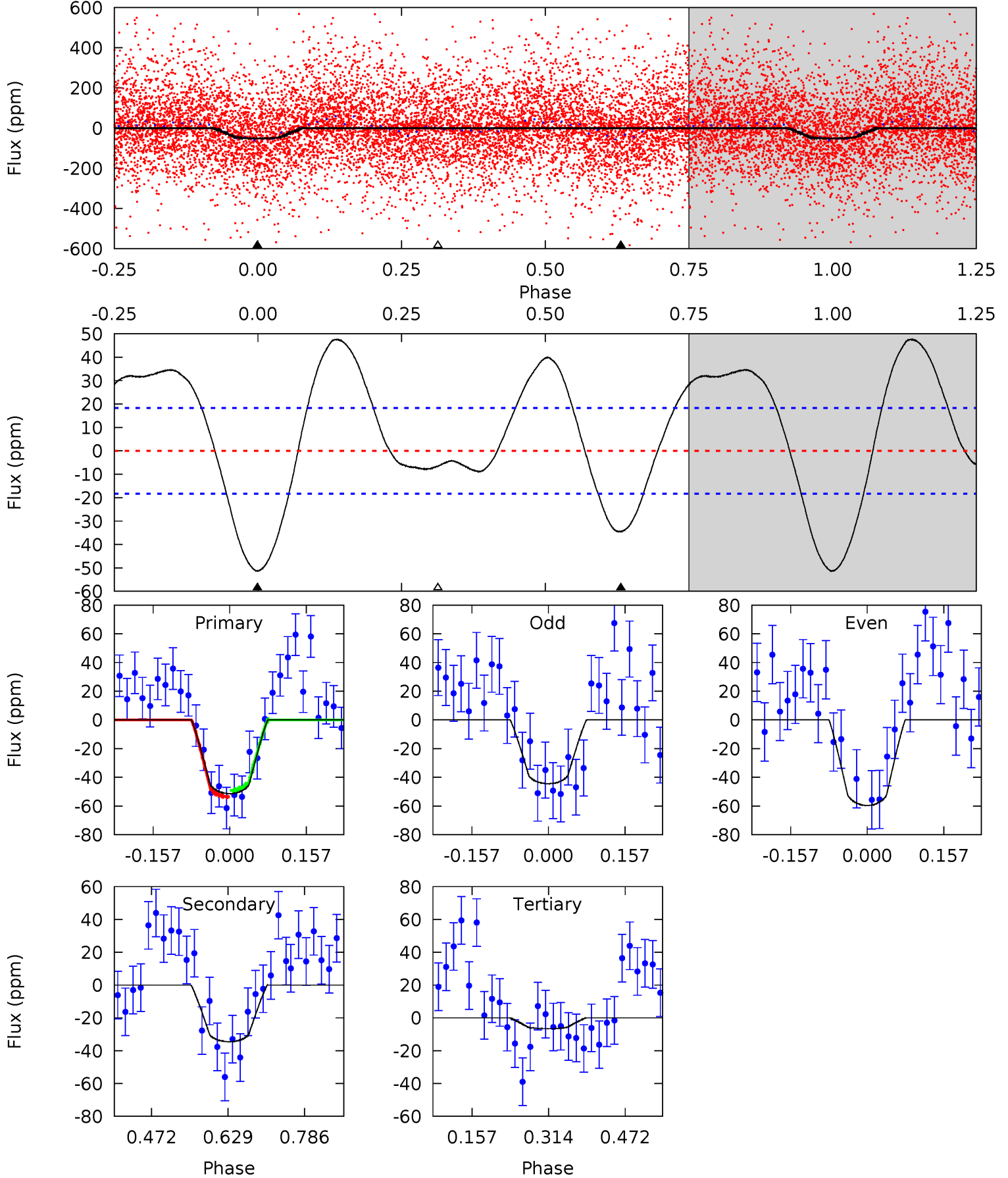
TCE 009391395-02 $P = 0.533521$ Days $T_0 = 131.590059$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-02, P = 0.533520 Days, E = 131.590037 Days

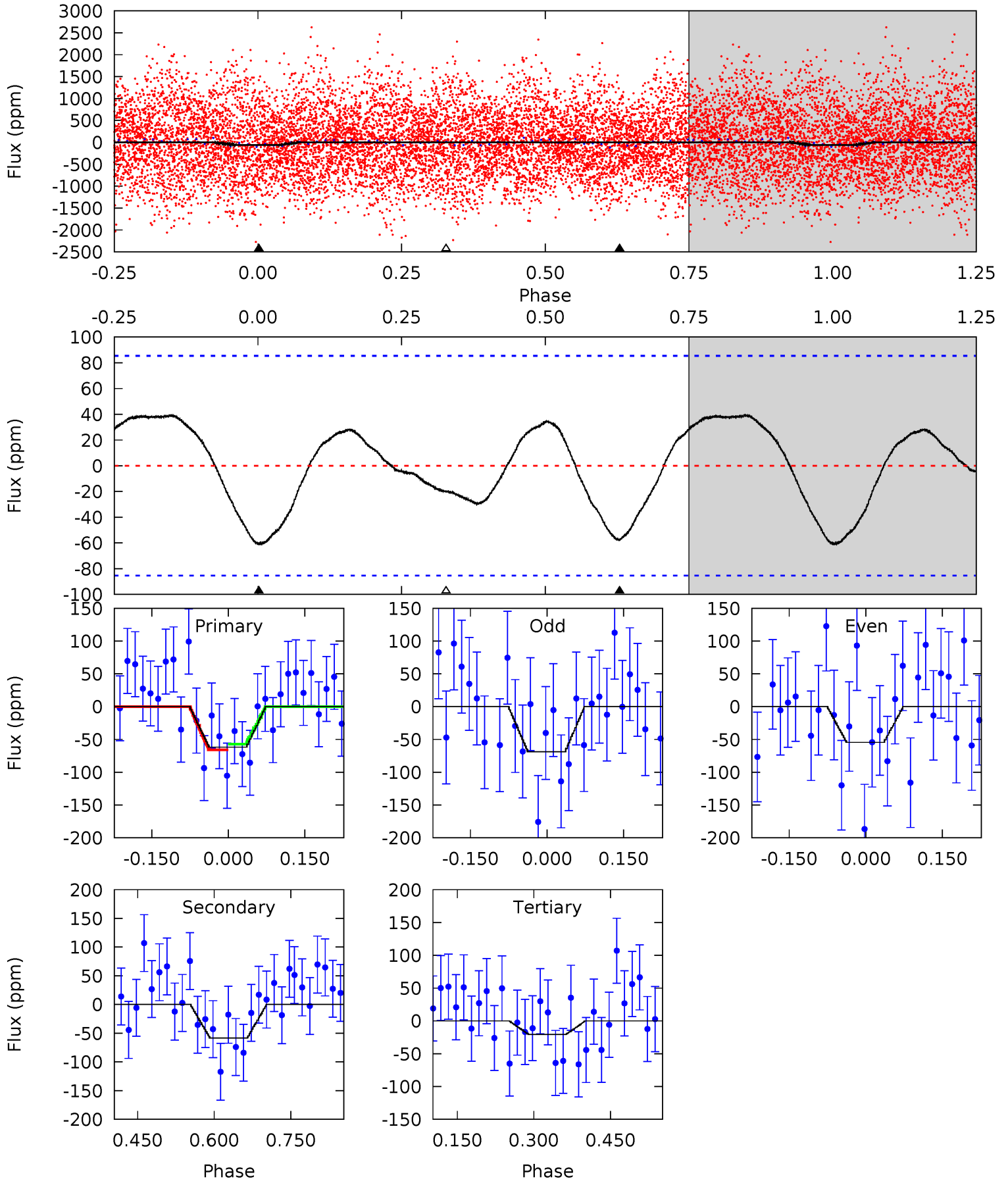
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.5 | 8.43 | 1.60 | 0 | 4.47 | 1.41 | 4.24 | 10.9 | 12.5 | 6.83 | 8.43 | 1.85 | 0.89 | 0.48 | 0.53 |



Alt Model-Shift Uniqueness Test

009391395-02, P = 0.533521 Days, E = 131.590059 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.24 | 3.07 | 1.09 | 0 | 4.48 | 1.44 | 1.20 | 2.15 | 3.24 | 1.98 | 3.07 | 0.38 | 0.52 | 0.39 | 0.22 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|------------------------|---------------------------|
| DV | -35 ± 4 | $1.66^{+1.03}_{-0.87}$ | 5417^{+390}_{-449} | 6170^{+4024}_{-1630} | $1.591^{+5.389}_{-1.003}$ |
| Alt. | -58 ± 19 | $1.67^{+1.02}_{-0.85}$ | 5431^{+407}_{-435} | 7201^{+5525}_{-1997} | $2.505^{+8.764}_{-1.626}$ |

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

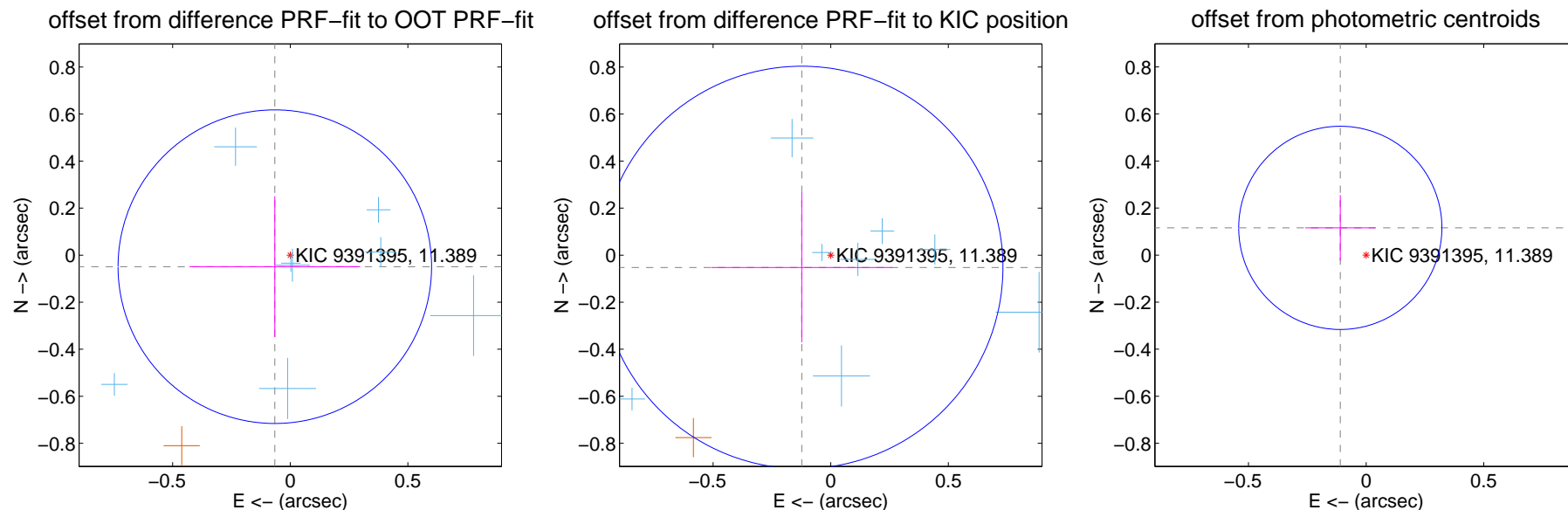
DV Centroid Data

Supplemental centroid analysis for 009391395-02. **Kepler magnitude: 11.39.** Transit SNR 10.08

There are 11 quarters with good PRF difference image offsets

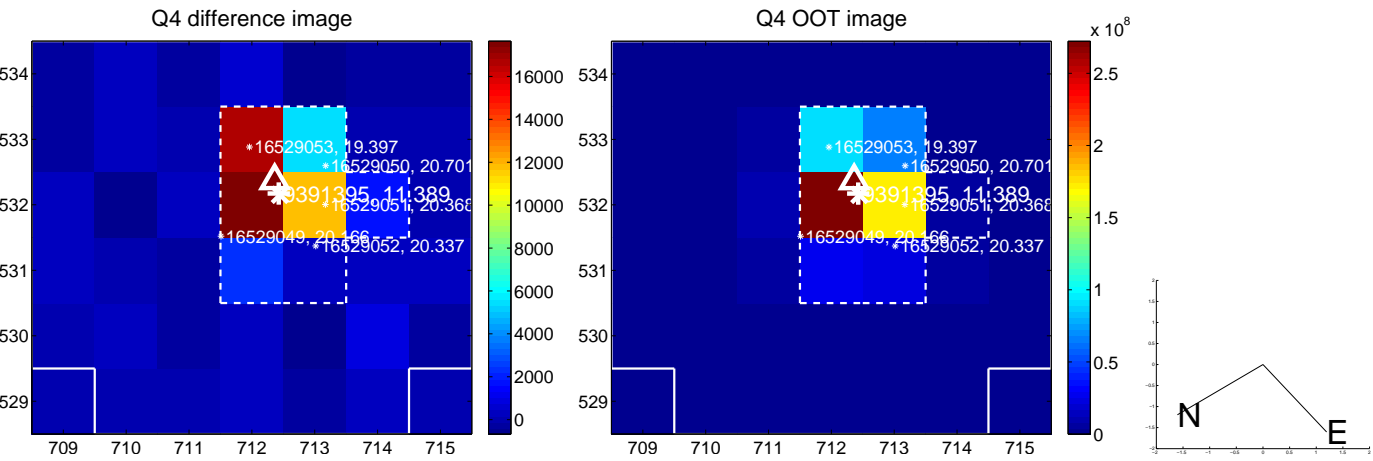
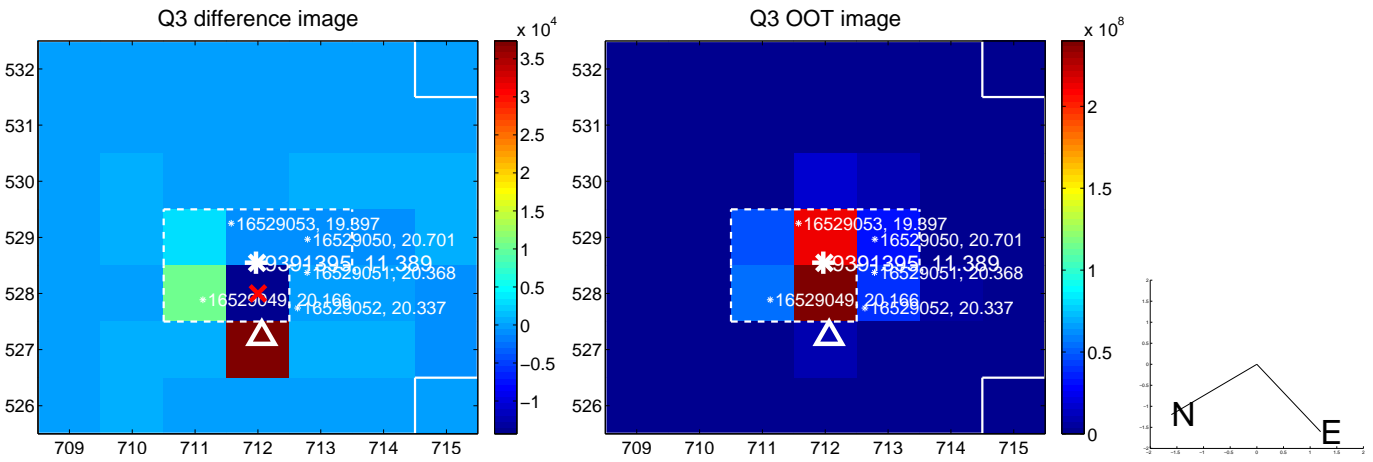
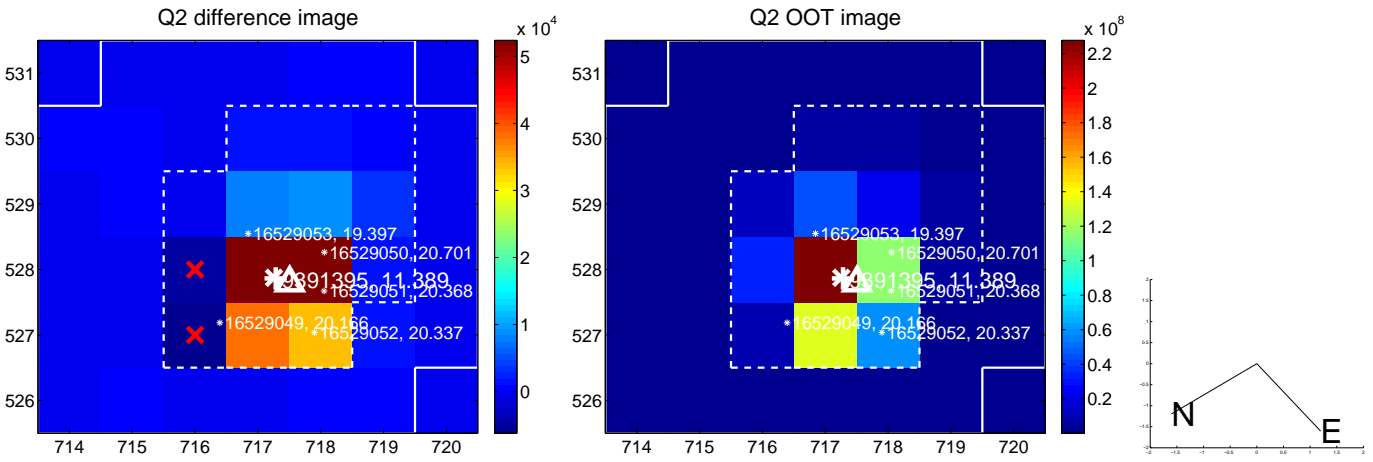
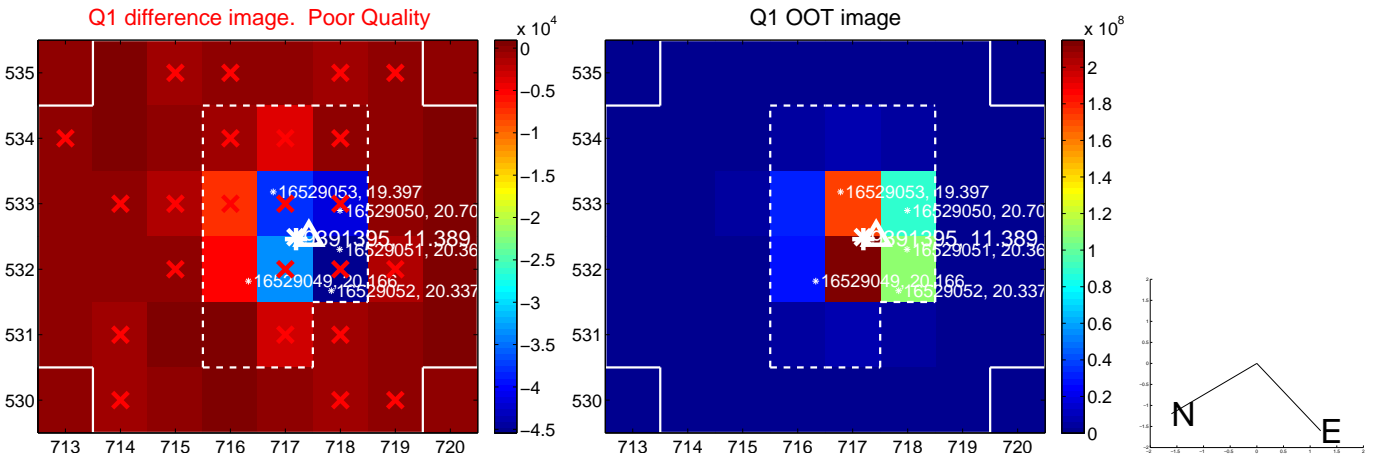
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.082 ± 0.222 | 0.37 | 0.066 ± 0.363 | -0.049 ± 0.300 |
| PRF-fit source offset from KIC position | 0.134 ± 0.285 | 0.47 | 0.123 ± 0.385 | -0.052 ± 0.318 |
| photometric centroid source offset | 0.16 ± 0.14 | 1.11 | 0.11 ± 0.15 | 0.12 ± 0.14 |

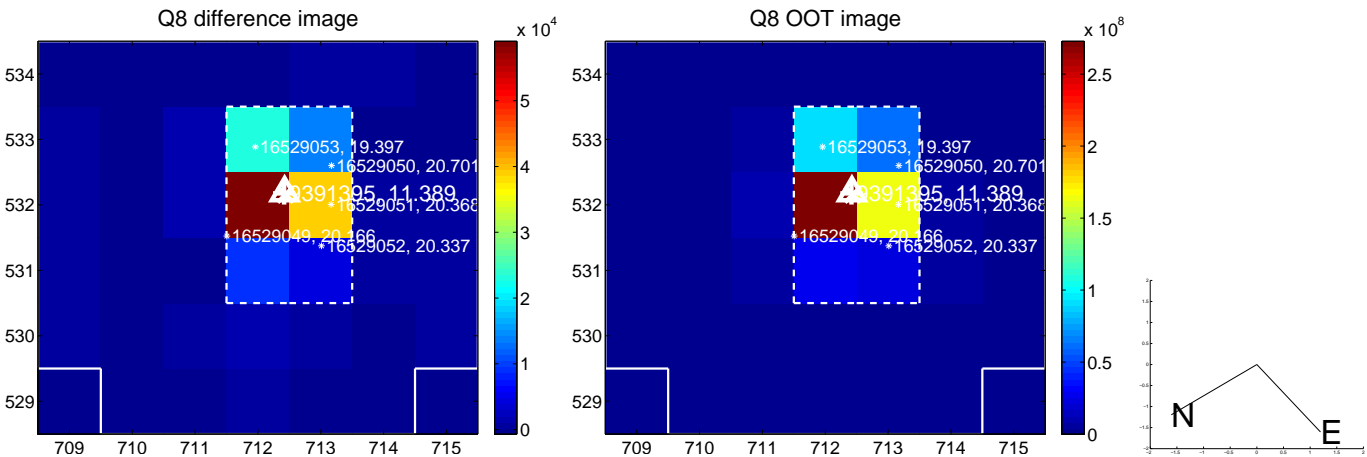
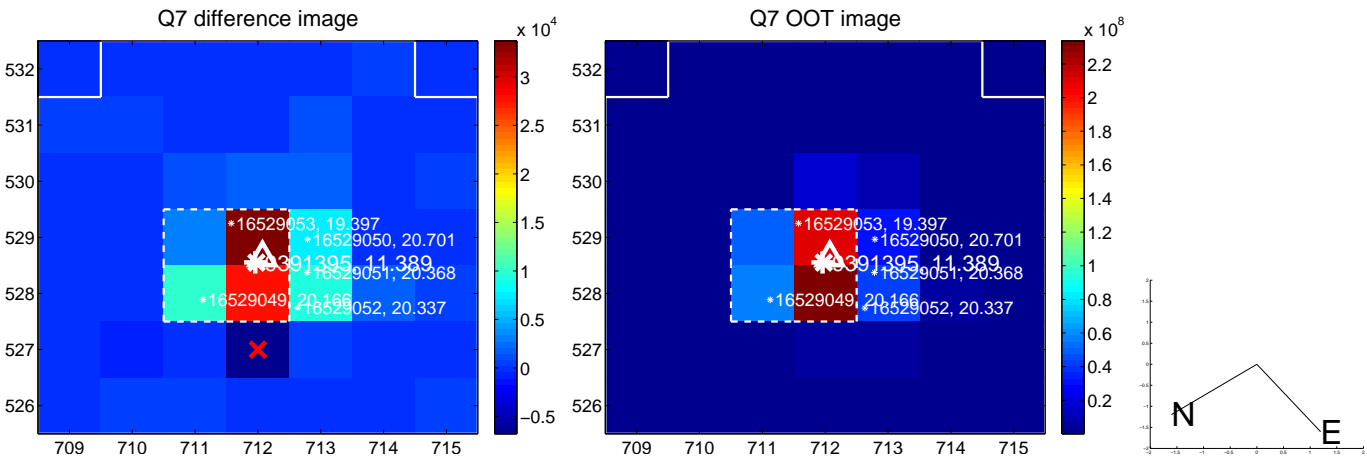
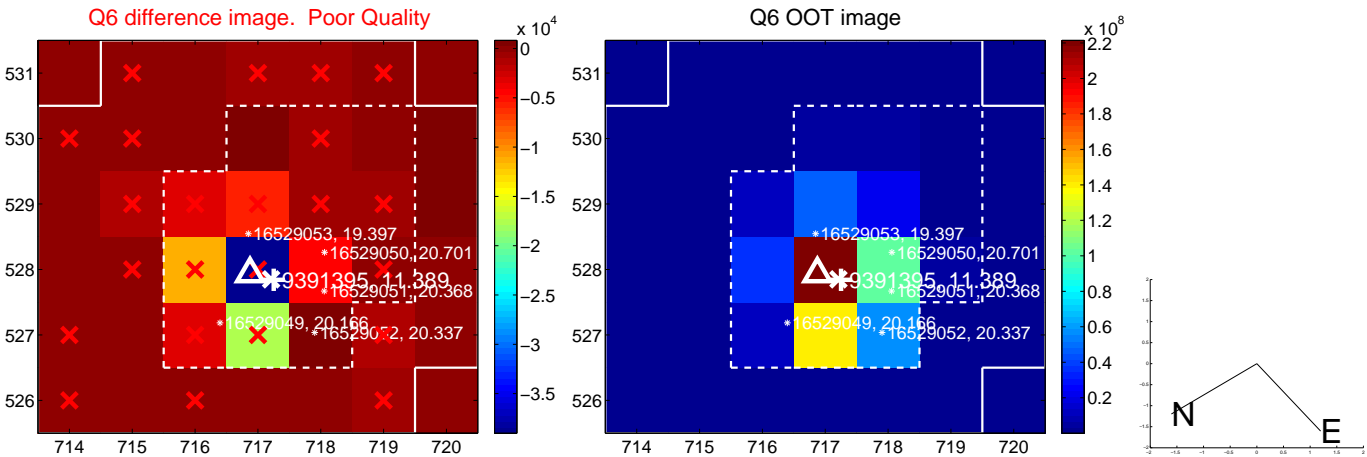
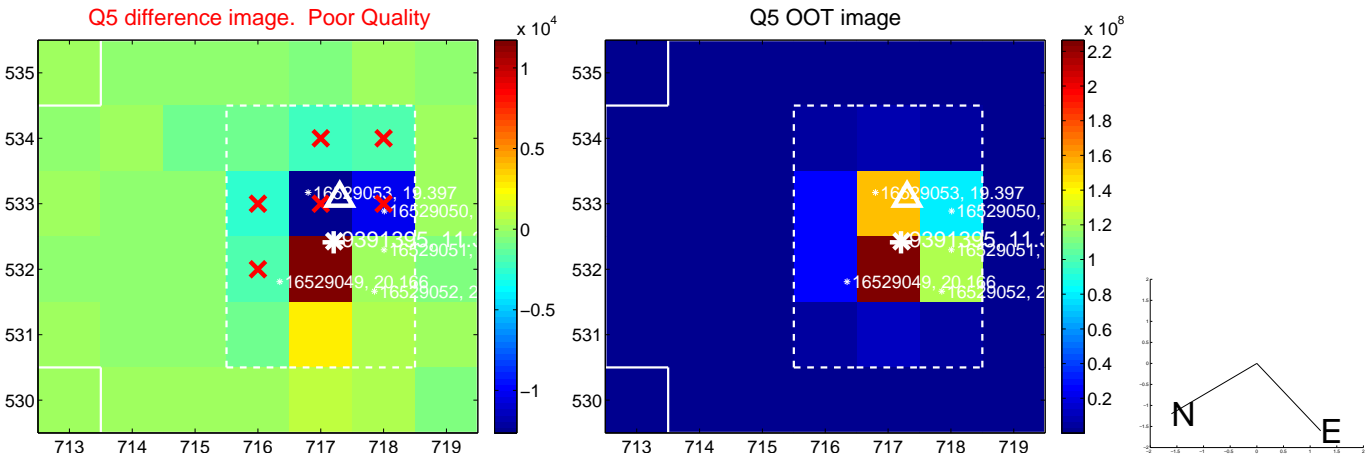


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

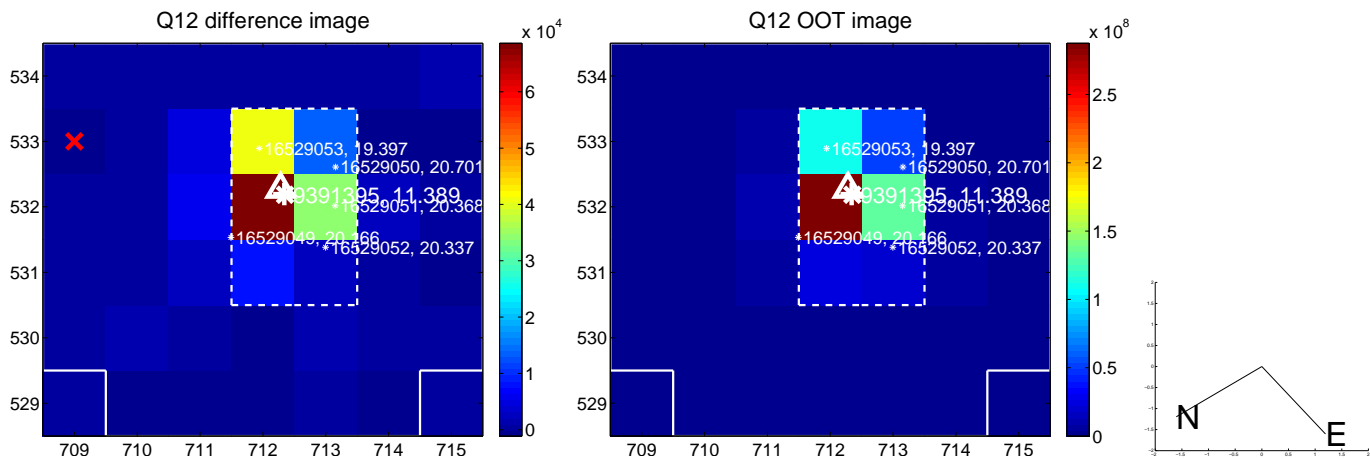
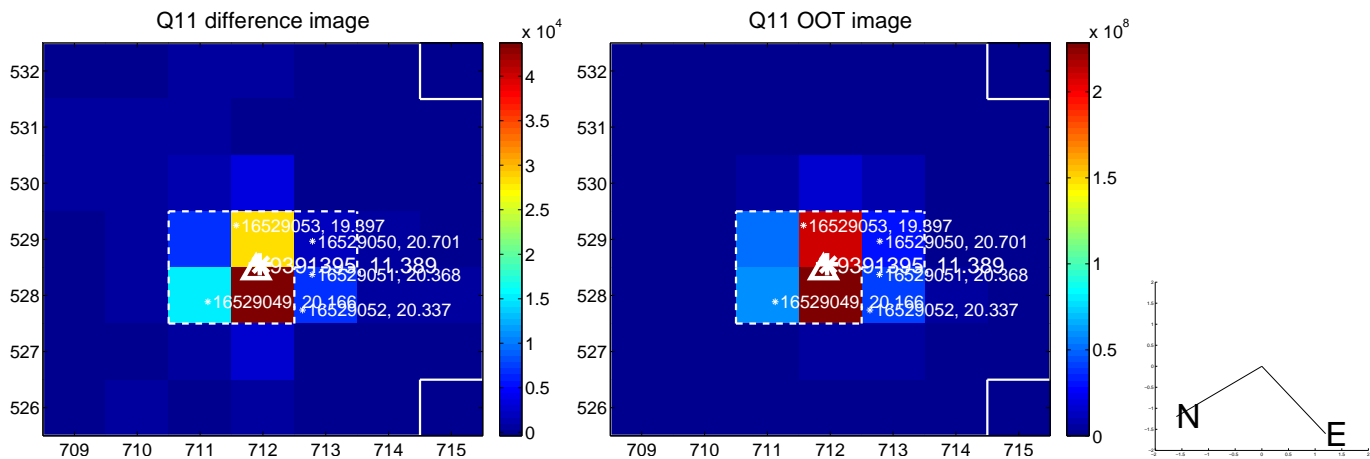
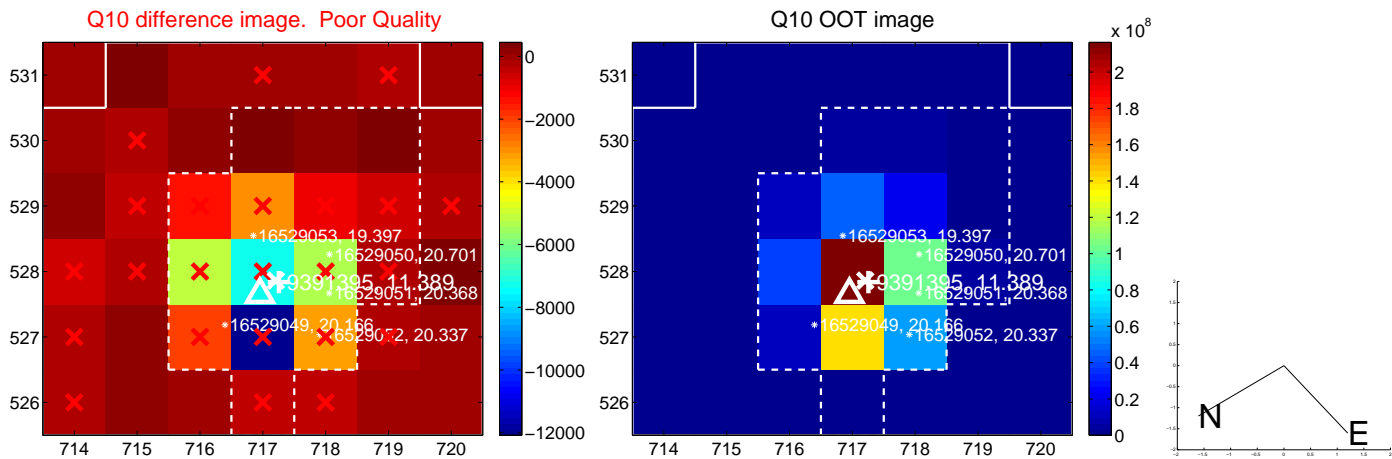
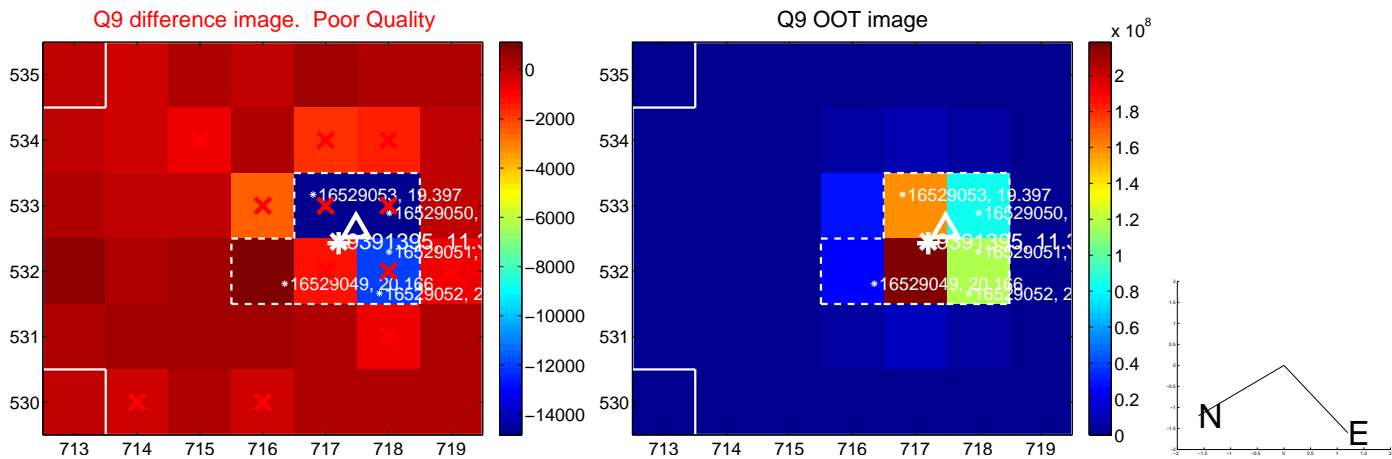
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



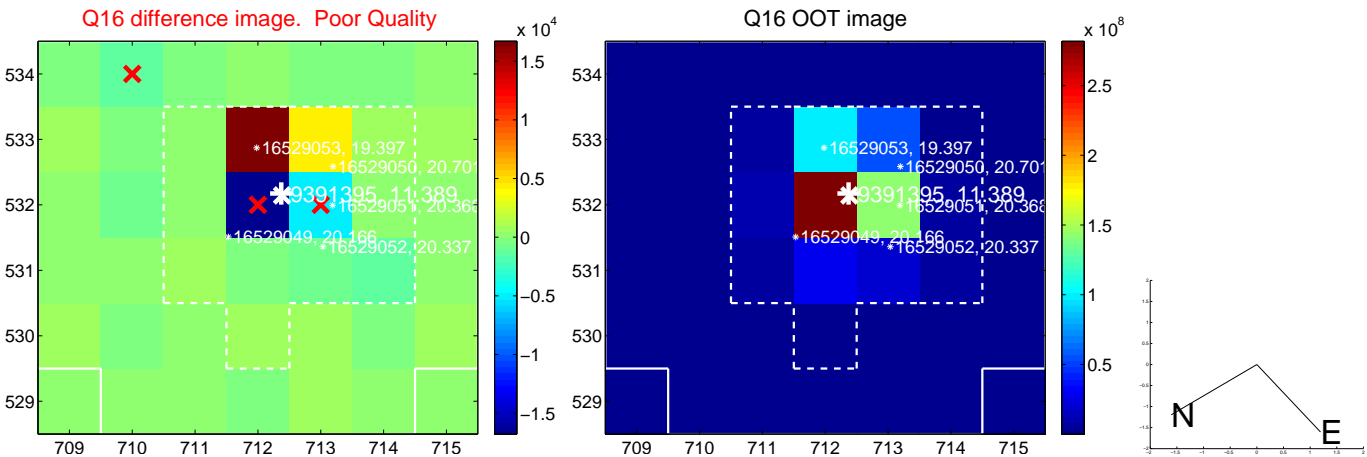
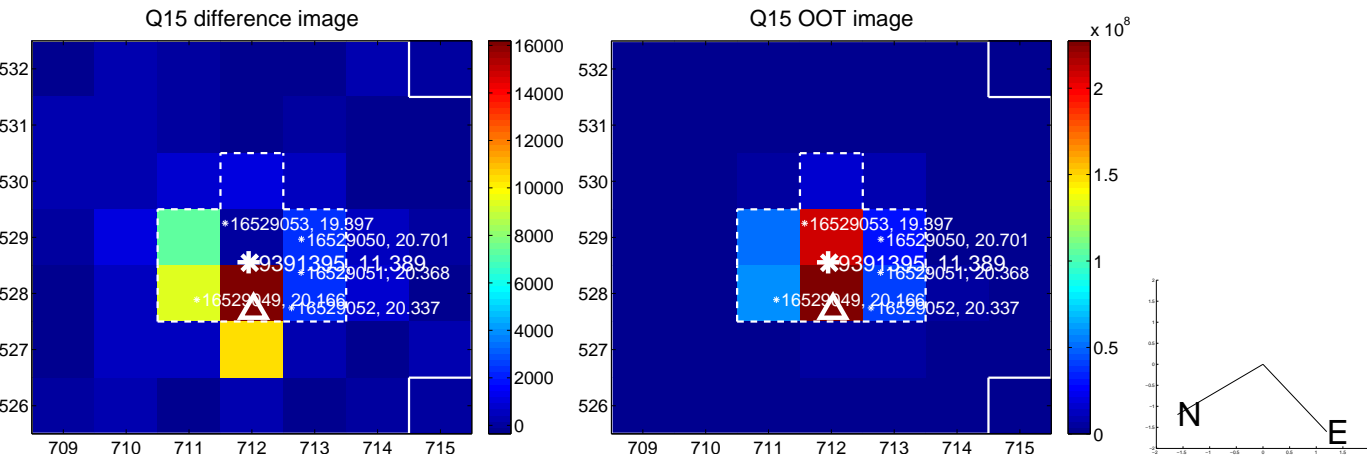
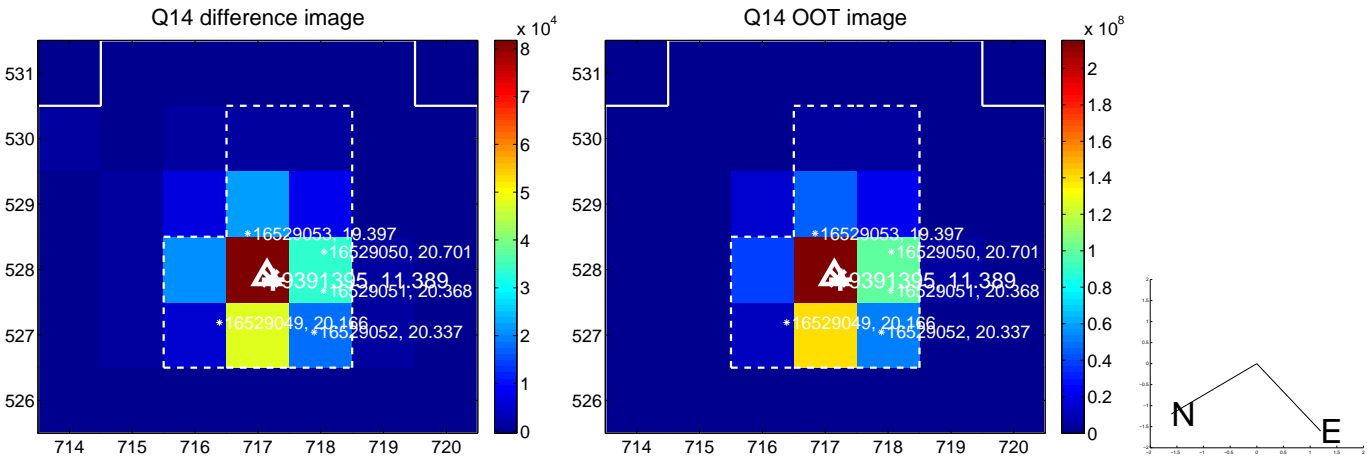
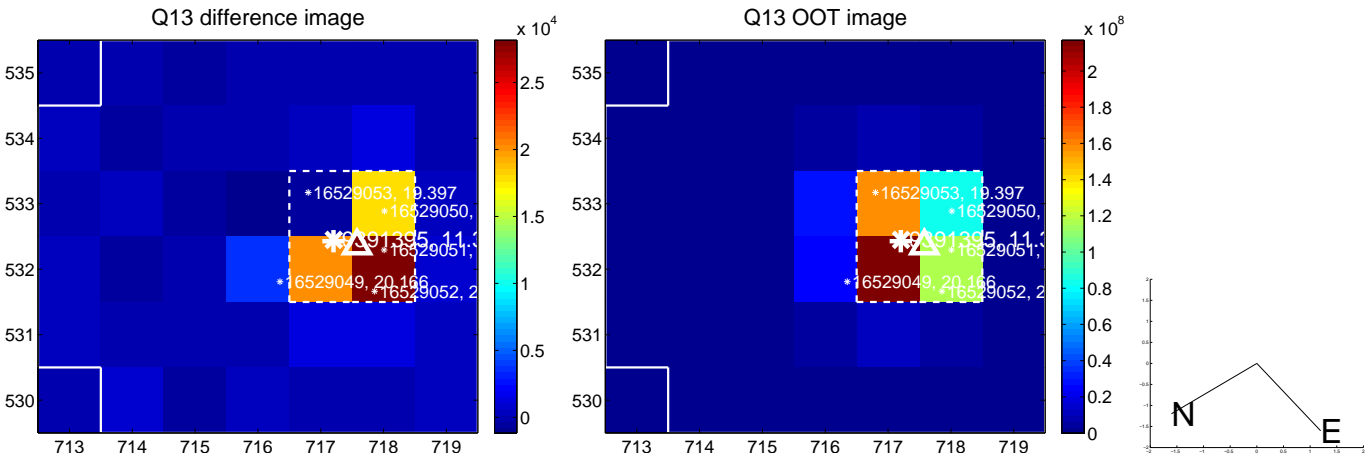
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



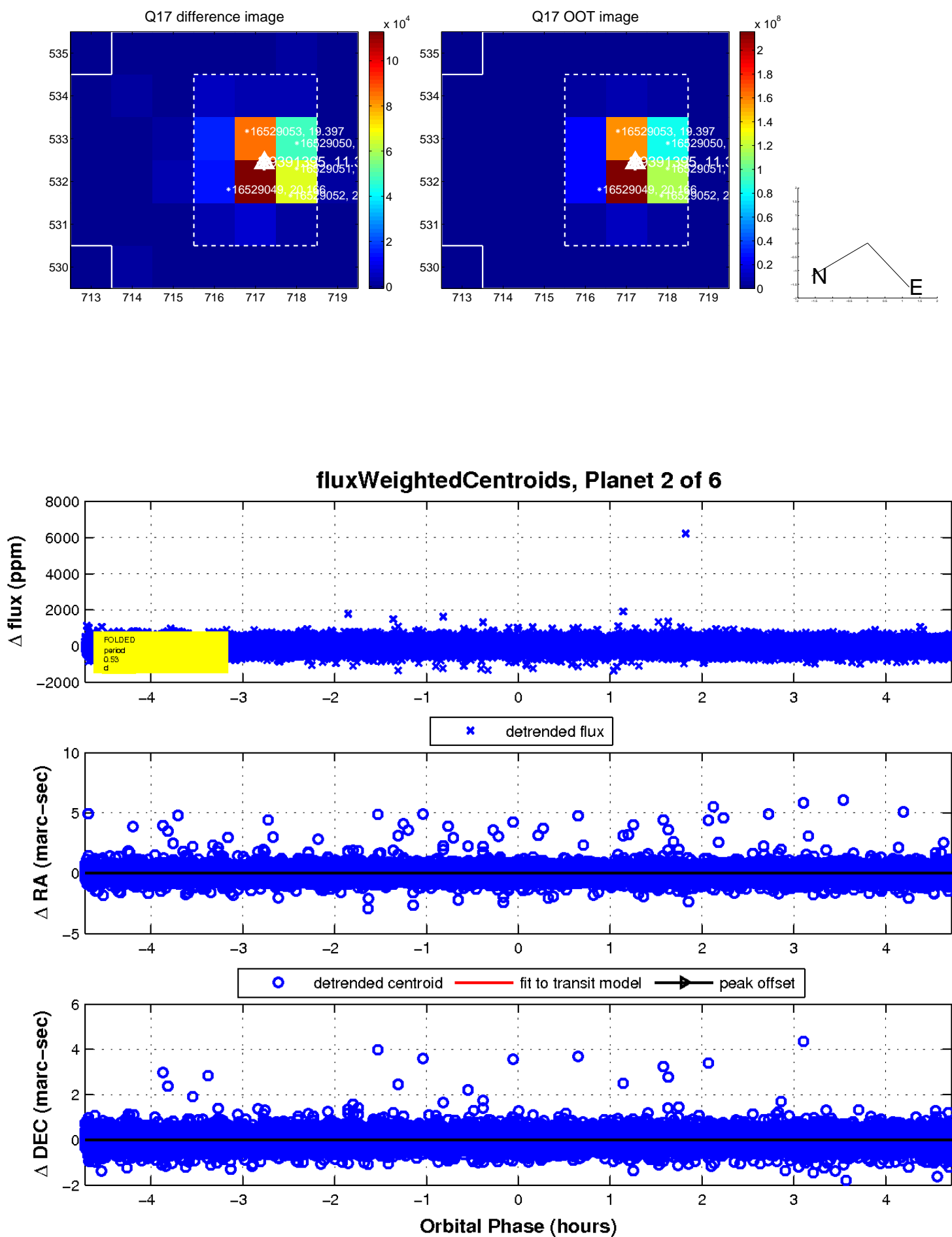
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

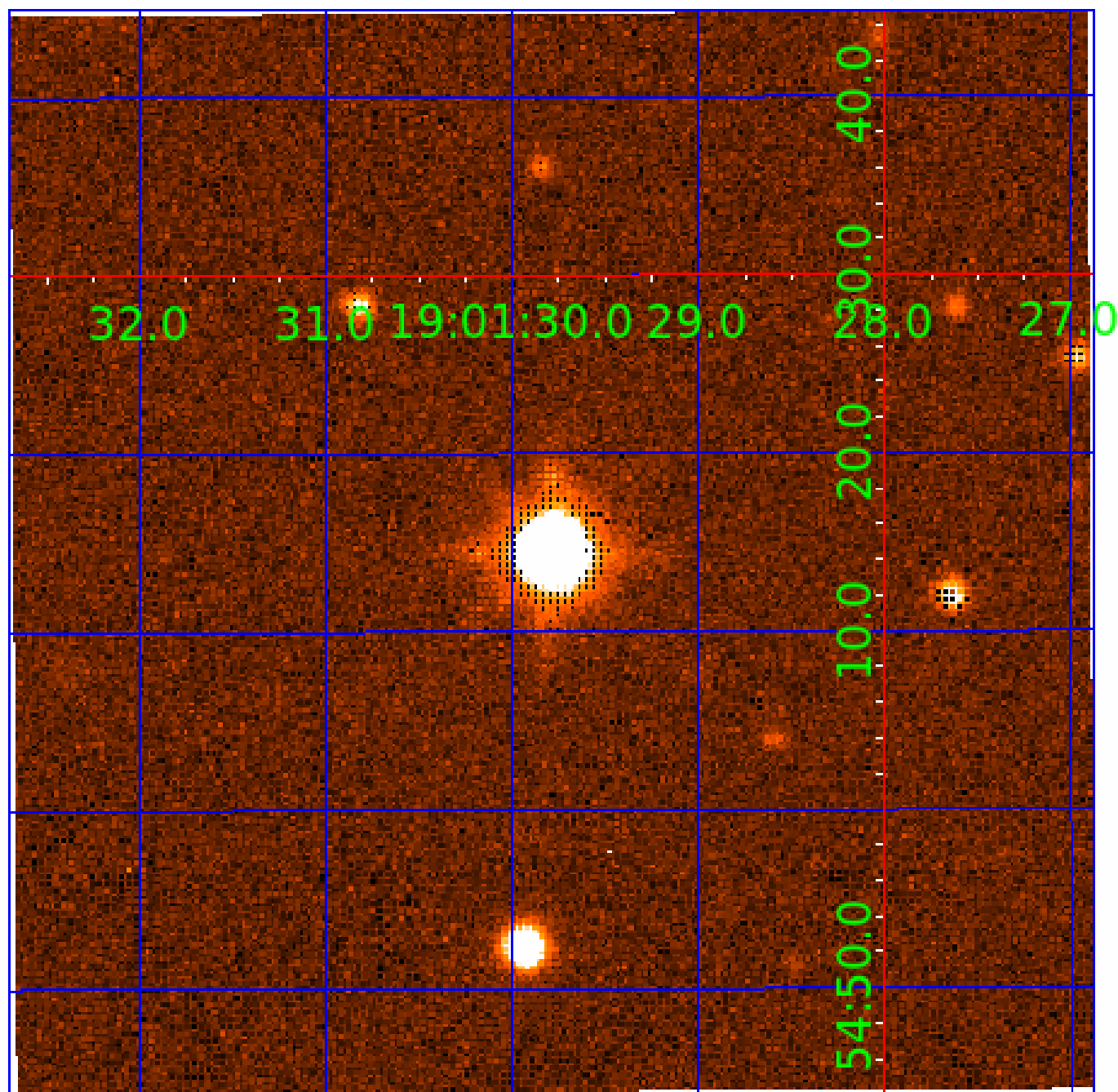


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009391395

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009391395-01 | OBS | No | 0.782755 | 131.554278 | 15.1 | 5.168 | 10.5 | 5.3 | 2.10 | 7505 | 0.88 | 32950.49 |
| 009391395-02 | OBS | No | 0.533520 | 131.590037 | 47.1 | 1.573 | 12.8 | 10.1 | 2.10 | 7505 | 1.69 | 54932.40 |
| 009391395-03 | OBS | No | 41.110030 | 163.055494 | 222.2 | 1.111 | 11.1 | 4.0 | 2.10 | 7505 | 3.68 | 167.53 |
| 009391395-04 | OBS | No | 160.381416 | 163.993641 | 716.8 | 9.113 | 12.0 | 10.1 | 2.10 | 7505 | 5.80 | 27.28 |
| 009391395-05 | OBS | No | 41.107675 | 163.508498 | 58.4 | 1.565 | 12.5 | 1.4 | 2.10 | 7505 | 1.72 | 167.54 |
| 009391395-06 | OBS | No | 40.556283 | 163.234960 | 220.0 | 2.500 | 12.5 | -1.0 | 2.10 | 7505 | 3.13 | 170.59 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009391395-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 009391395-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST |
| 009391395-05 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED—HALO_GHOST |
| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

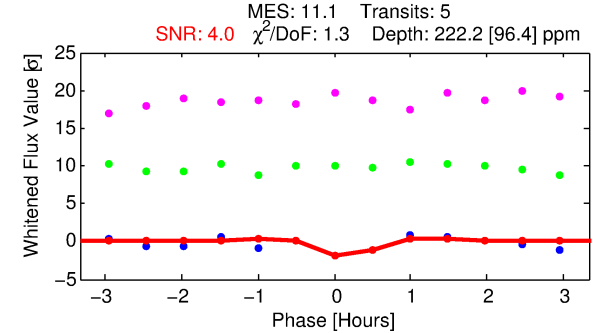
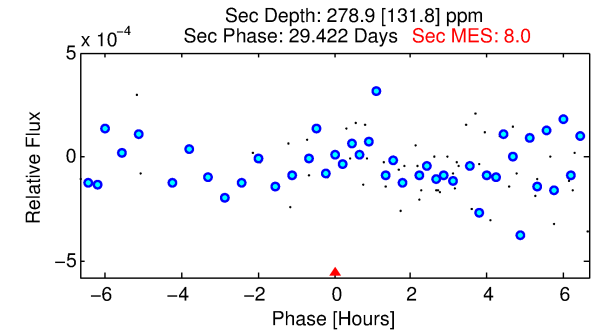
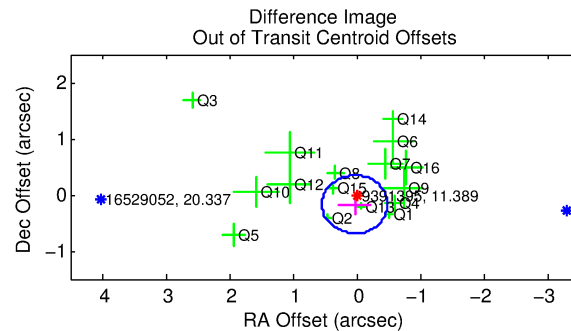
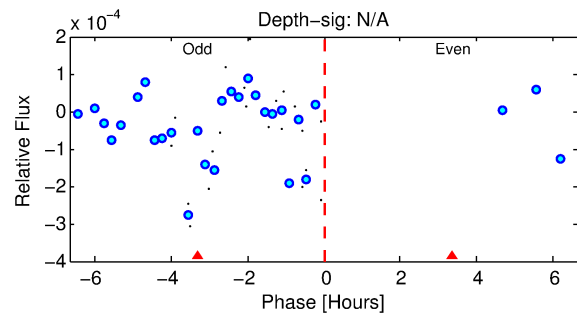
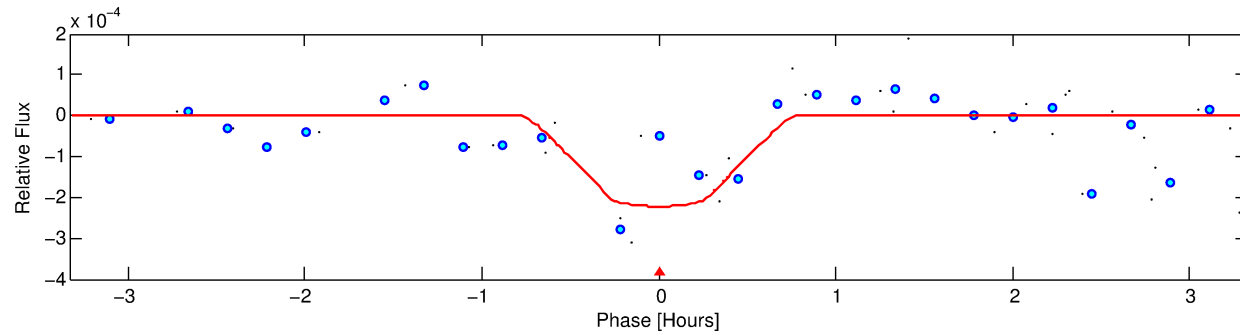
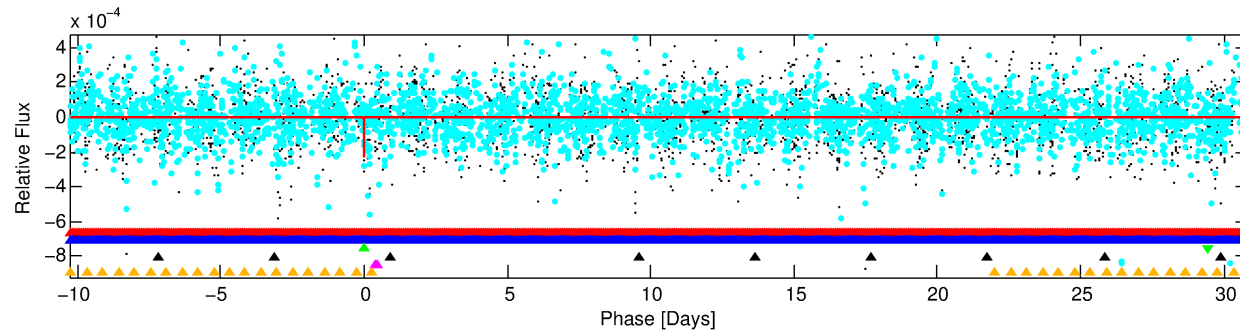
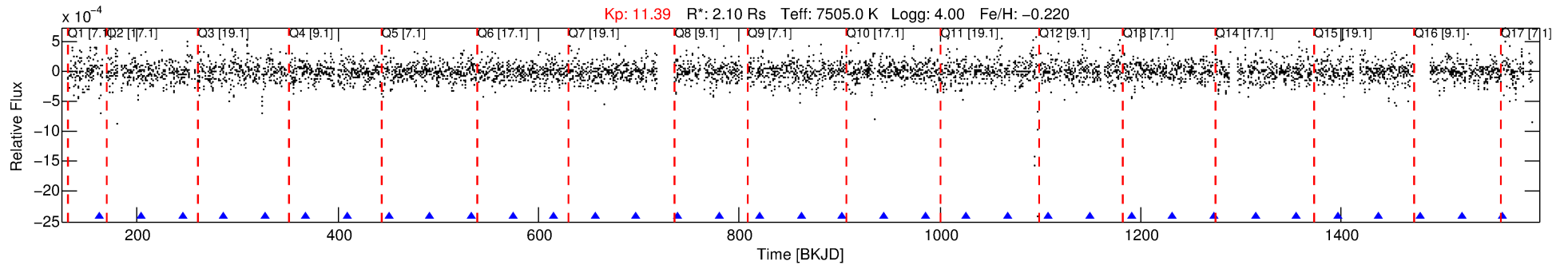
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-03

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 3 of 6 Period: 41.110 d



DV Fit Results:

Period = 41.11003 [0.00152] d
Epoch = 163.0555 [0.0174] BKJD
Rp/R* = 0.0161 [0.0220]
a/R* = 134.96 [1005.80]
b = 0.90 [1.66]
Seff = 167.53 [72.40]
Teq = 917 [99] K
Rp = 3.68 [5.16] Re
a = 0.2731 [0.0728] AU
Ag = 846.25 [2379.17] [0.36σ]
Teffp = 7650 [5329] K [1.26σ]

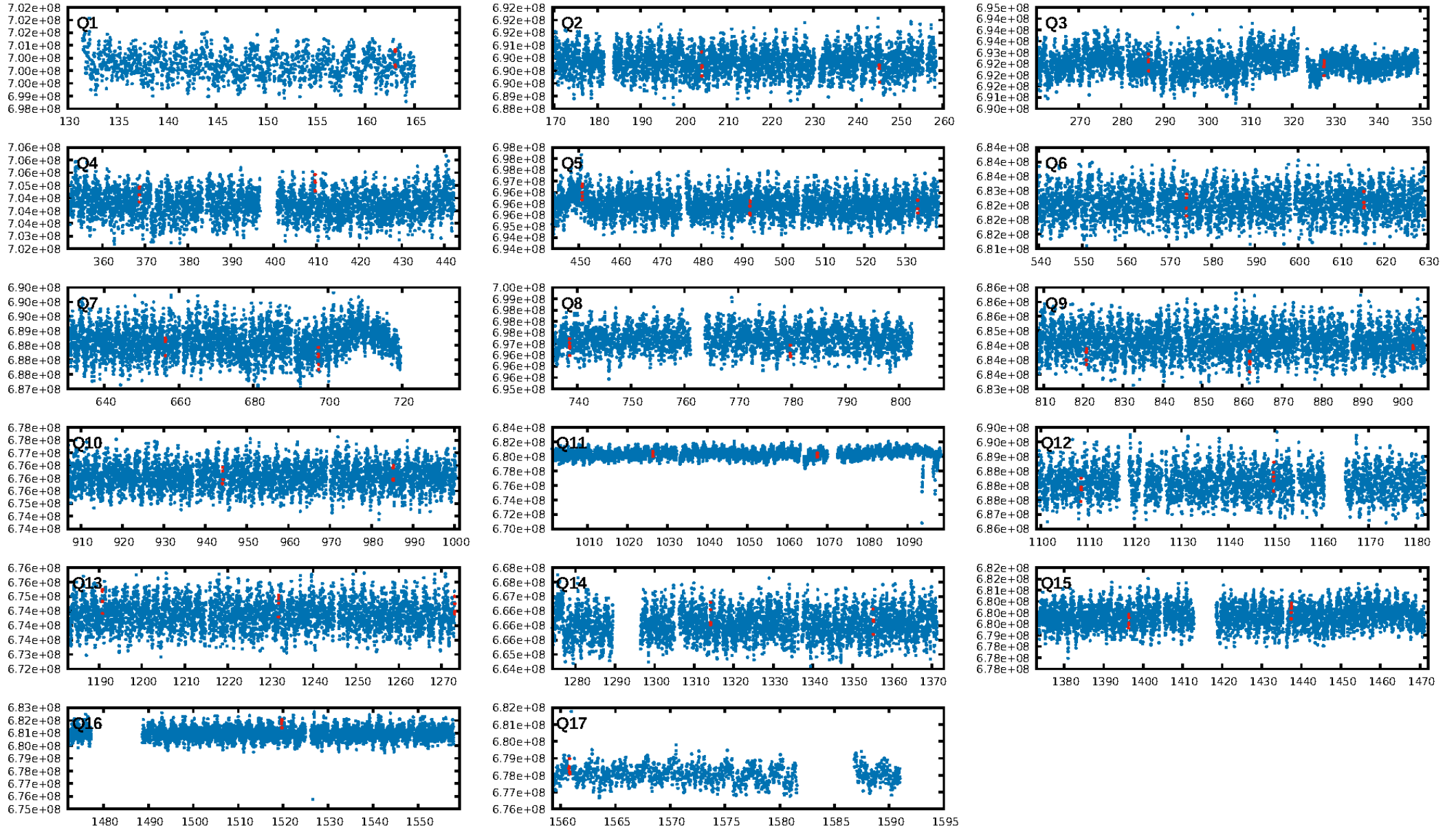
DV Diagnostic Results:

ShortPeriod-sig: 2.3% [0.03σ]
LongPeriod-sig: 100.0% [311.81σ]
ModelChiSquare2-sig: 25.9%
ModelChiSquareGof-sig: 94.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.492
Centroid-sig: 60.2%
Centroid-so: 0.276 arcsec [0.88σ]
OotOffset-rm: 0.175 arcsec [1.02σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.155 arcsec [0.95σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.44 [7/16]
DiffImageOverlap-fno: 0.00 [0/16]

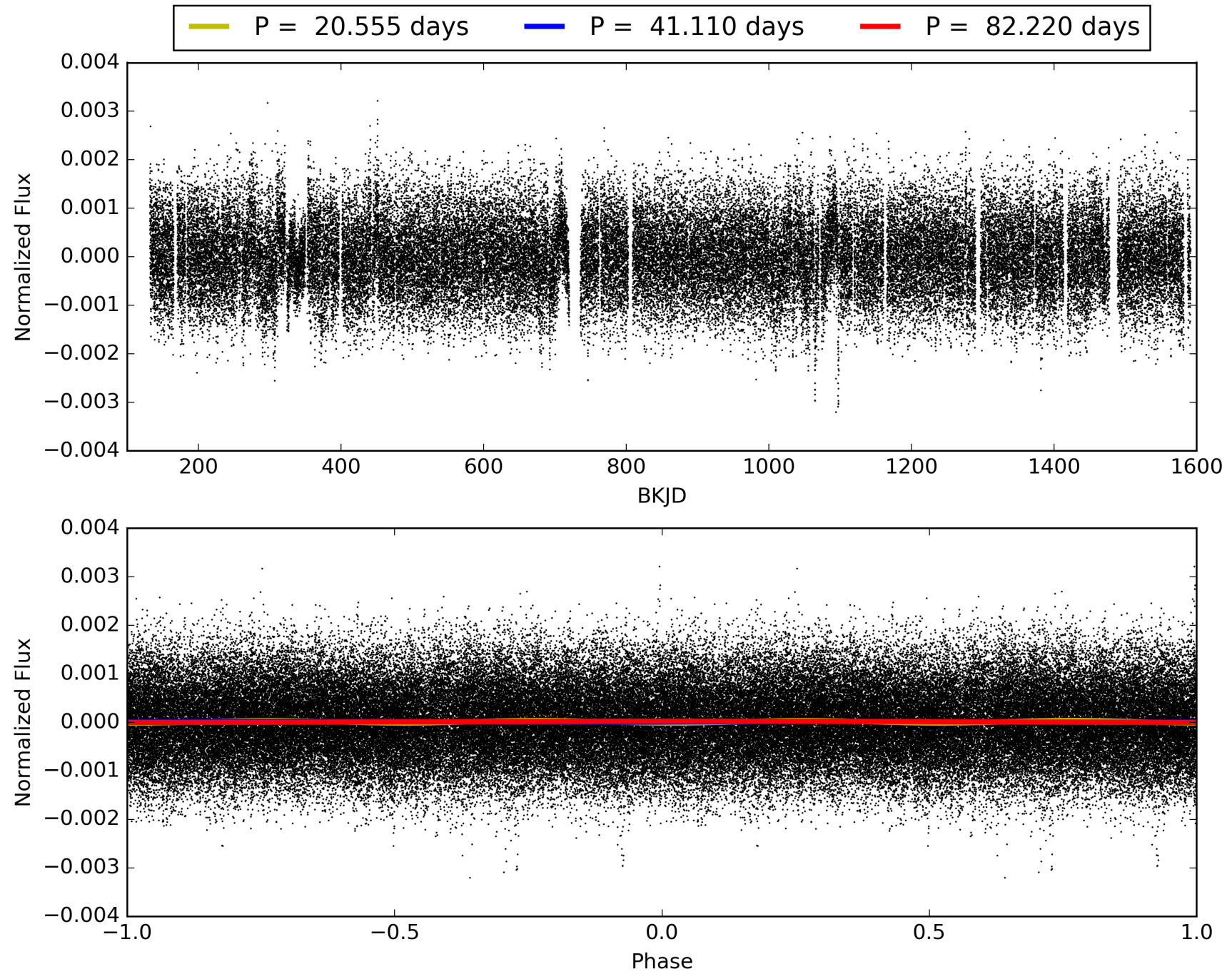
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:25:19 Z

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

TCE 009391395-03, PDC Light Curves

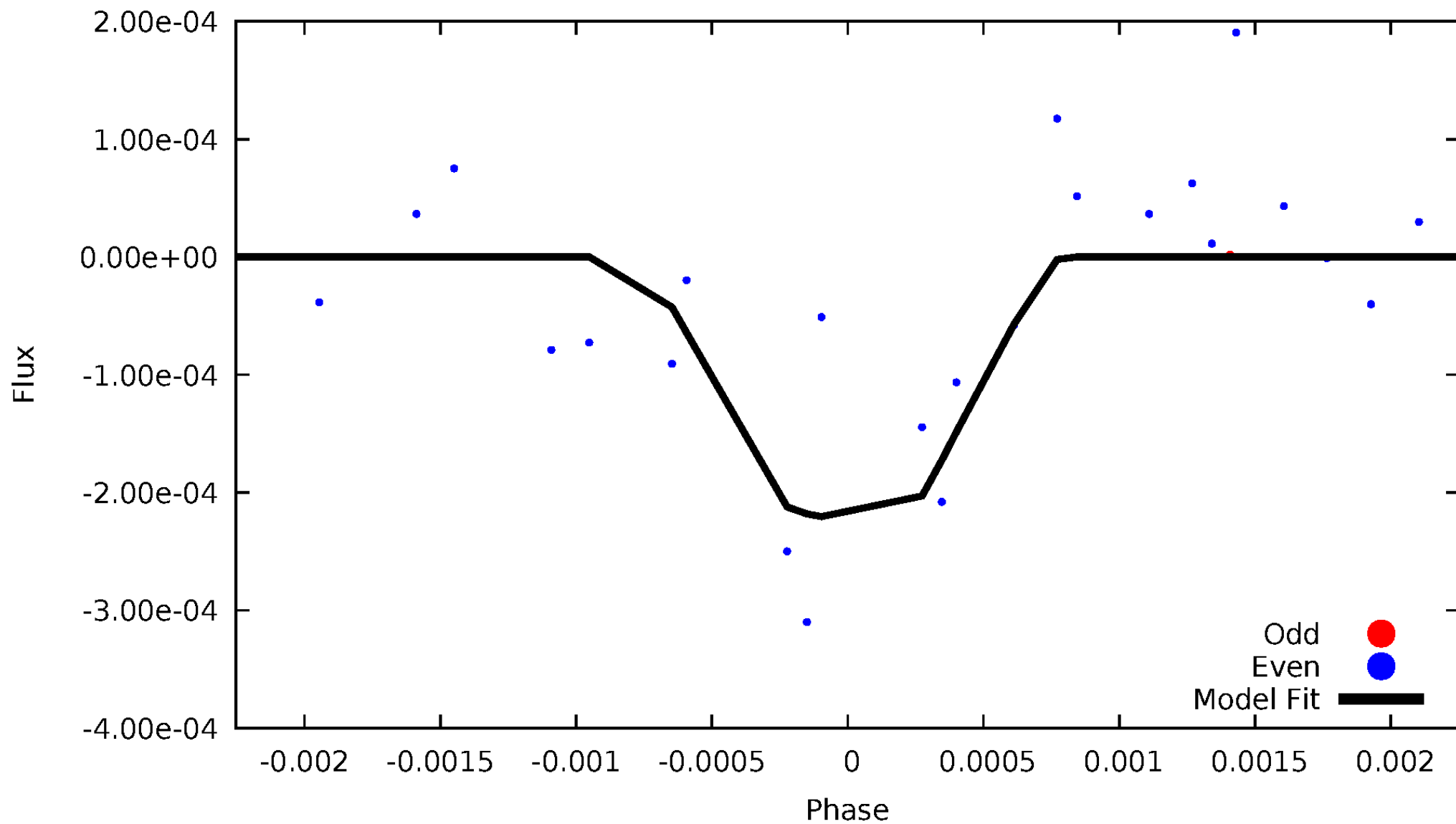


TCE 009391395-03



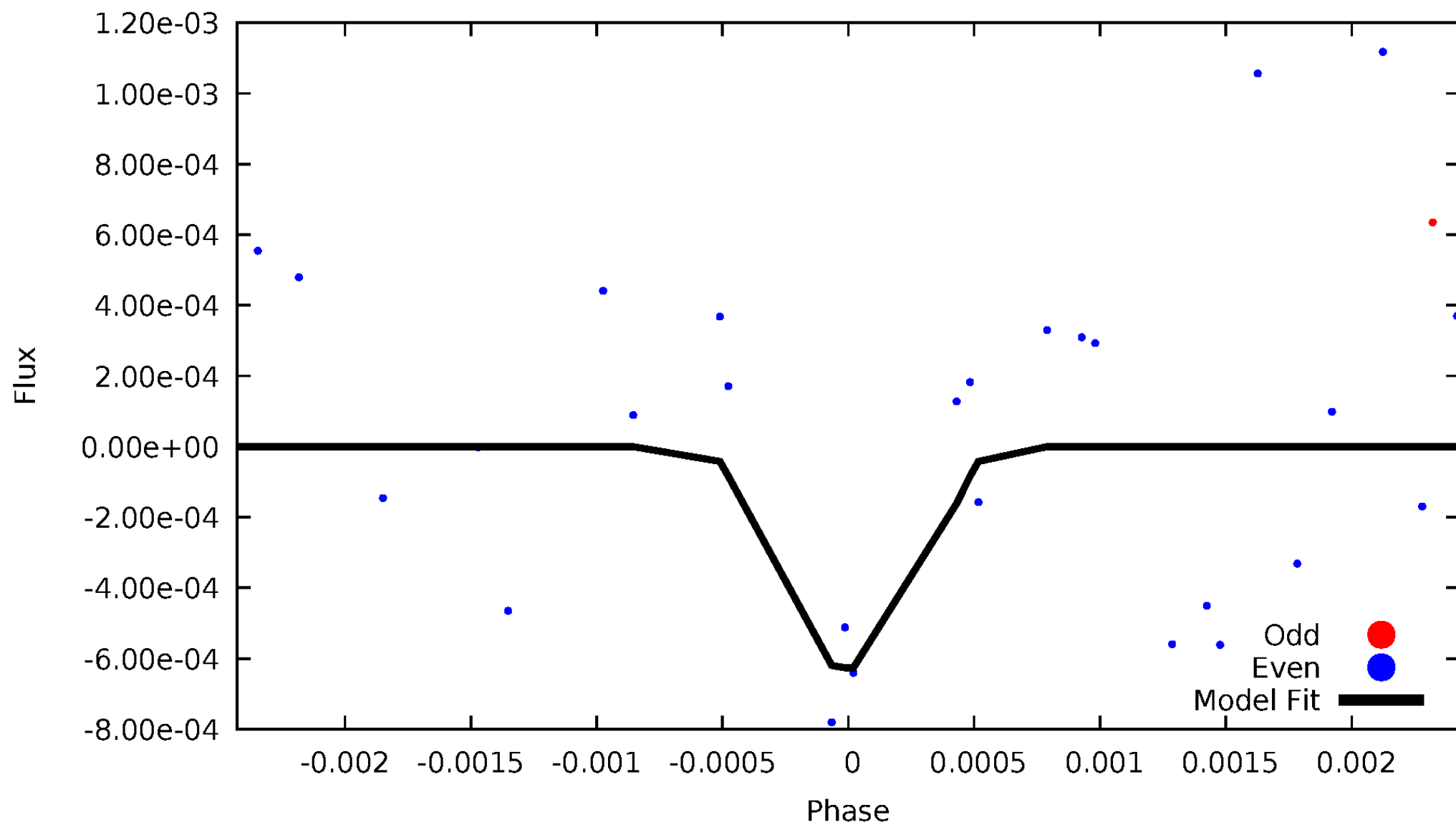
DV Odd/Even

TCE 009391395-03



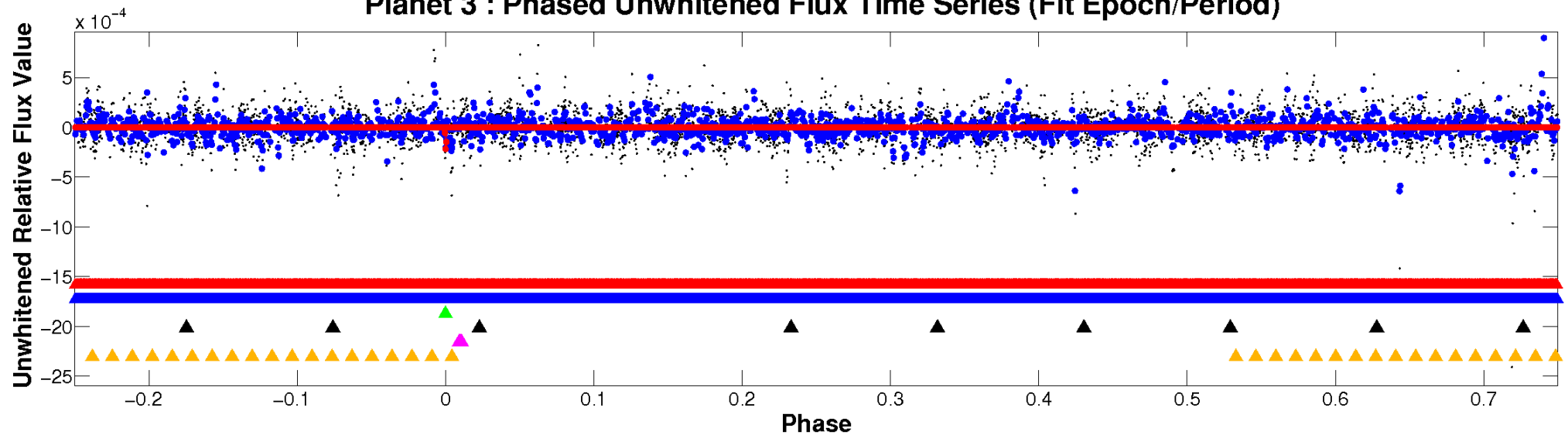
ALT Odd/Even

TCE 009391395-03

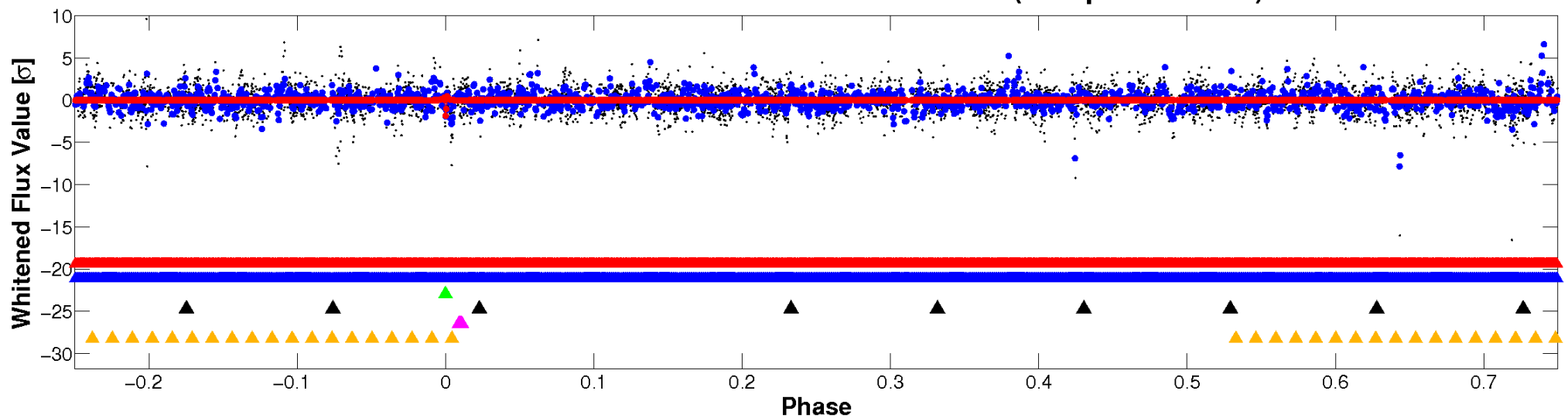


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

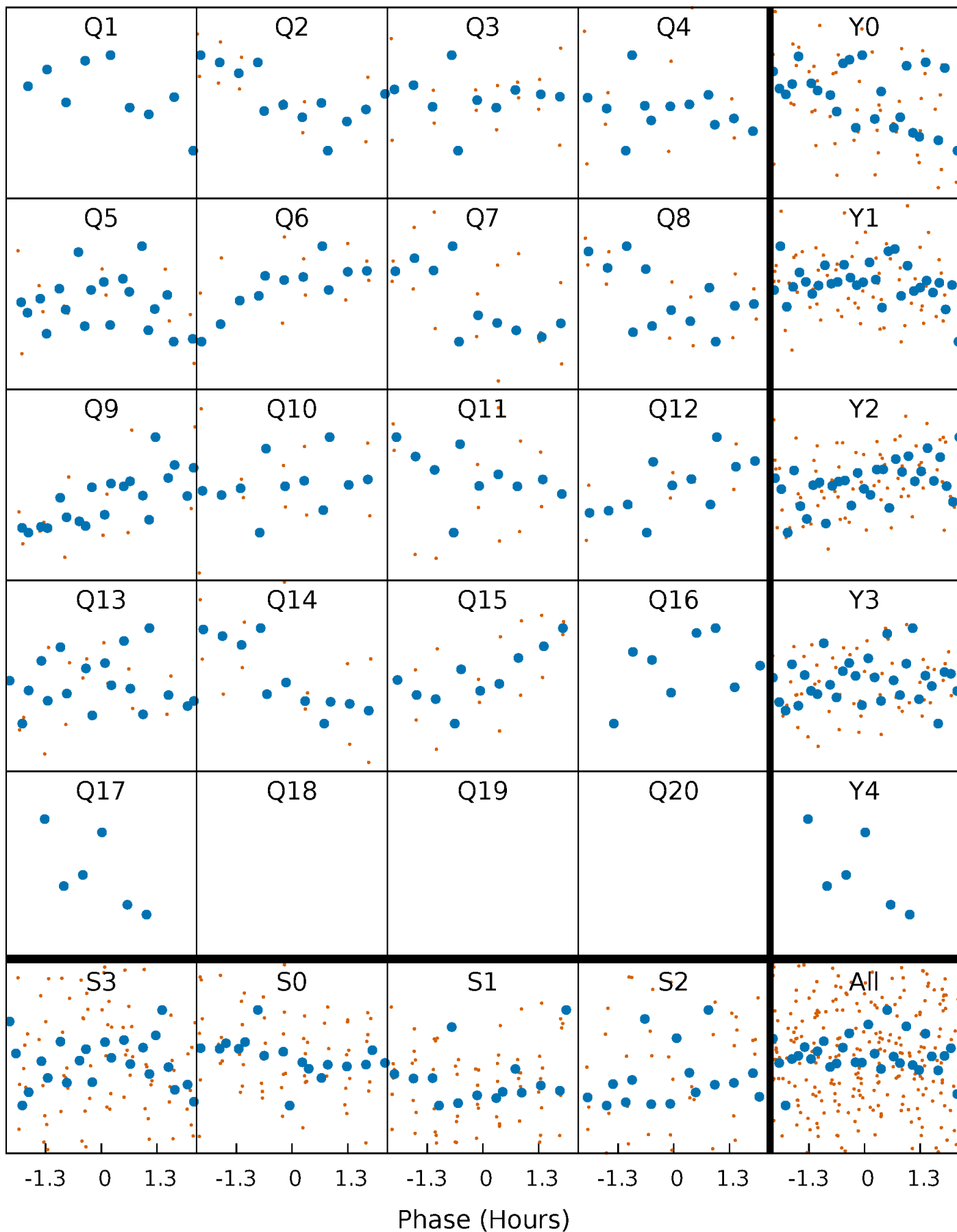


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



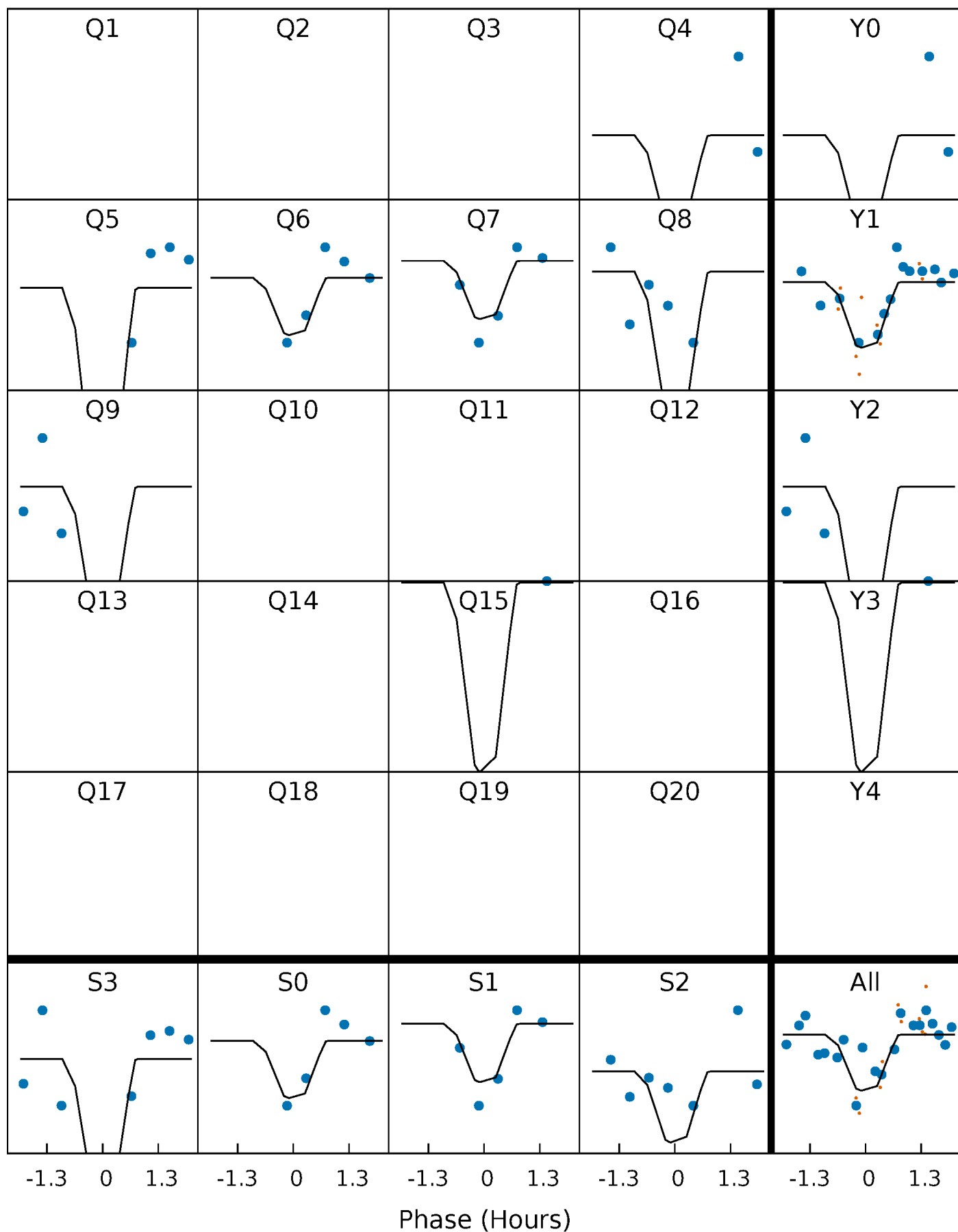
PDC Quarter-Phased Transit Curves

TCE 009391395-03 P= 41.110030 Days $T_0=163.055494$ (BKJD)



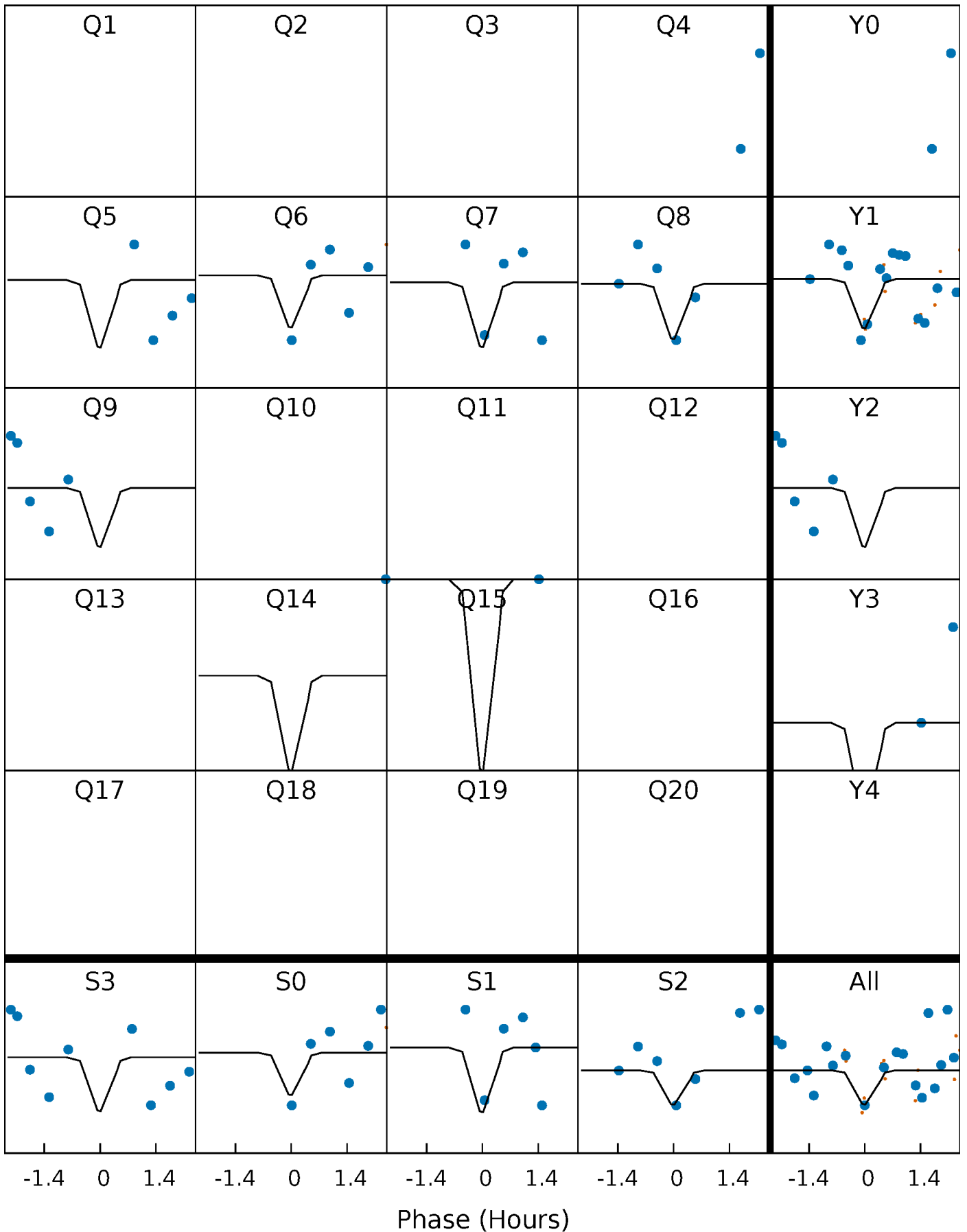
DV Quarter-Phased Transit Curves

TCE 009391395-03 P= 41.110030 Days $T_0=163.055494$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

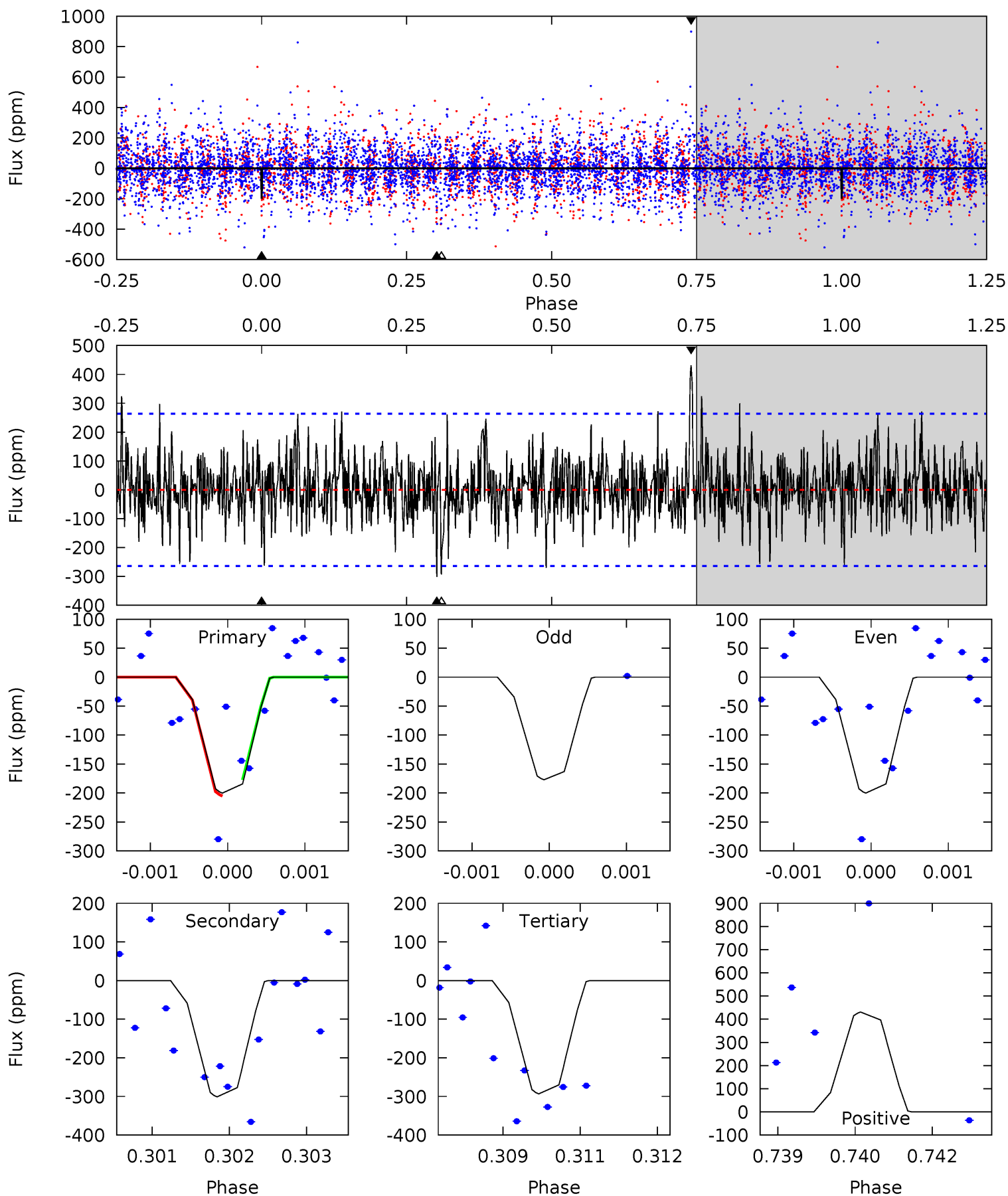
TCE 009391395-03 $P = 41.110441$ Days $T_0 = 163.044937$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-03, P = 41.110030 Days, E = 121.945464 Days

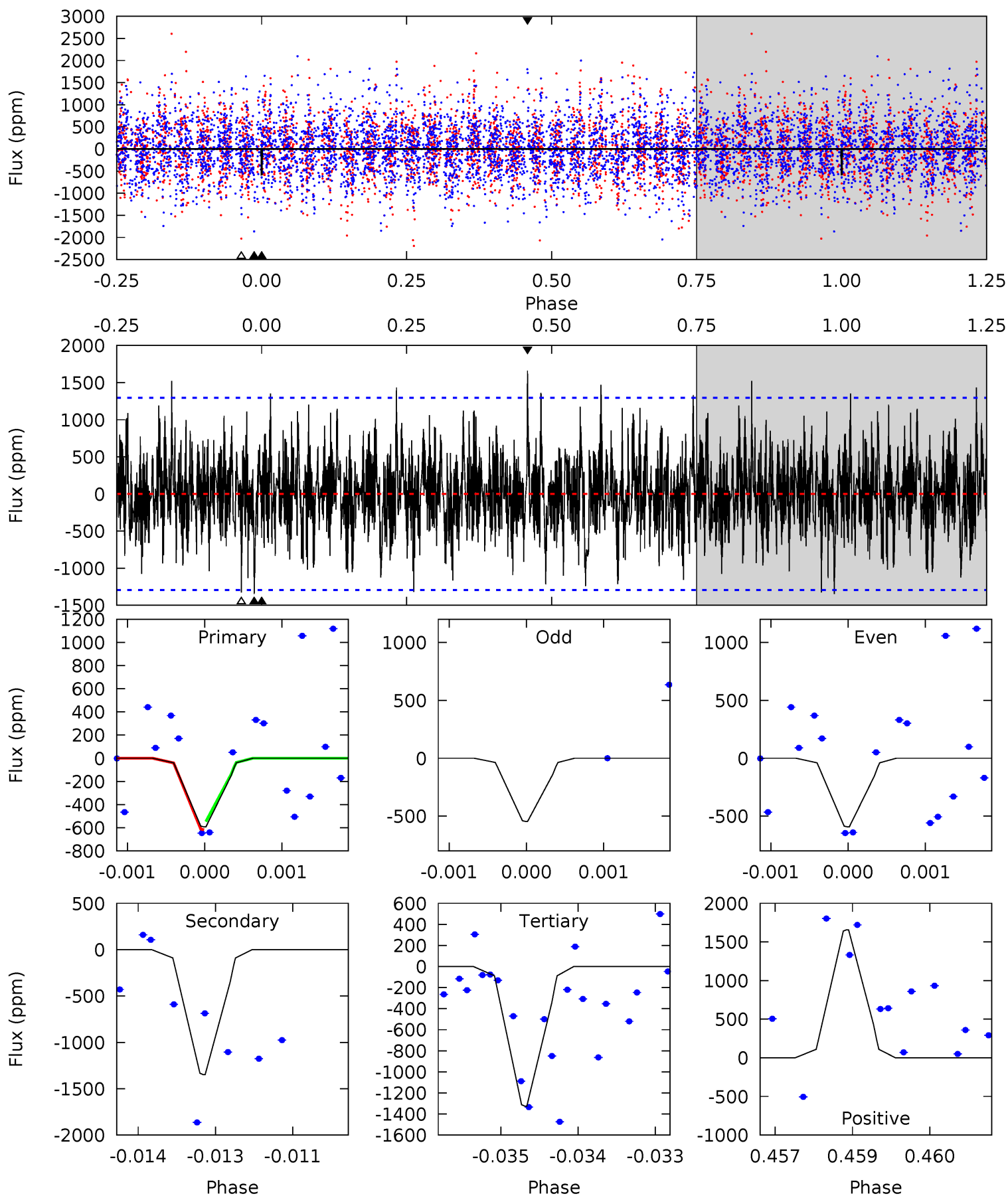
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.09 | 6.16 | 6.00 | 8.81 | 5.39 | 3.19 | 1.60 | -1.90 | -4.72 | 0.16 | -2.65 | 0.28 | 0.94 | 0.59 | 0.29 |



Alt Model-Shift Uniqueness Test

009391395-03, P = 41.110441 Days, E = 121.934496 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 2.47 | 5.63 | 5.54 | 6.93 | 5.41 | 3.22 | 1.71 | -3.06 | -4.45 | 0.09 | -1.30 | 0.13 | 0.96 | 0.55 | 0.14 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|------------------------|----------------------|------------------------|-----------------------|
| DV | -301 ± 49 | $5.11^{+4.61}_{-3.44}$ | 1269^{+102}_{-107} | 6330^{+7056}_{-1537} | 468^{+3805}_{-339} |
| Alt. | -1347 ± 239 | $6.70^{+4.61}_{-4.05}$ | 1275^{+99}_{-106} | 8445^{+9708}_{-2179} | 1212^{+6255}_{-802} |

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

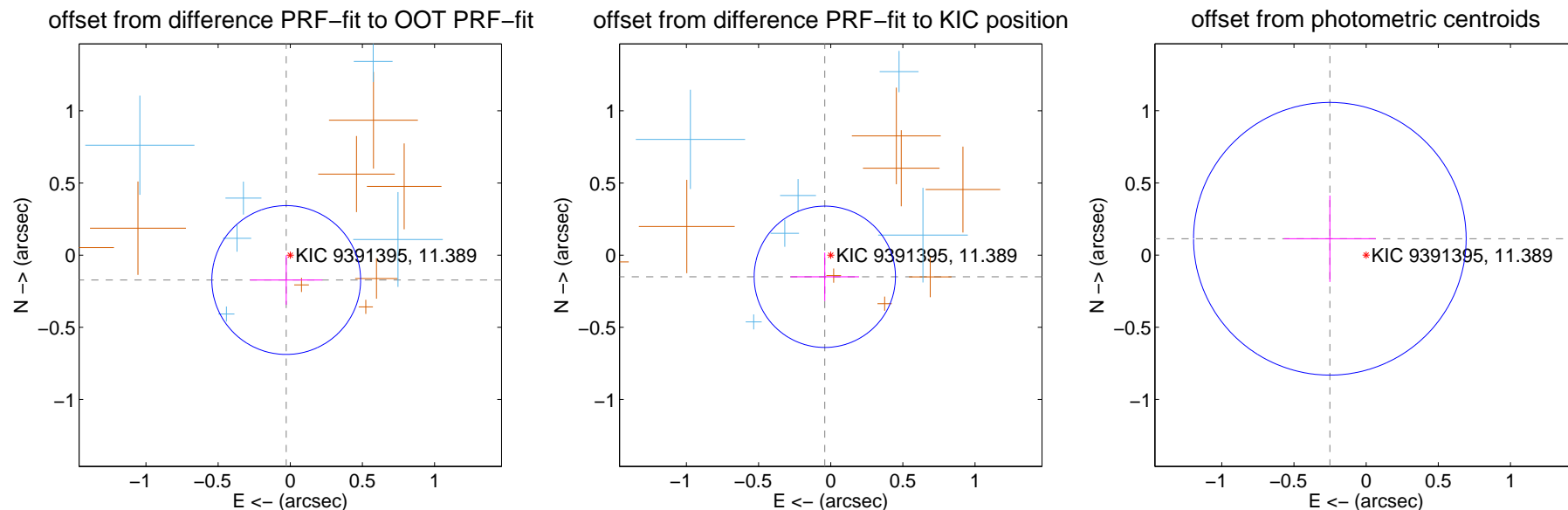
DV Centroid Data

Supplemental centroid analysis for 009391395-03. **Kepler magnitude: 11.39.** Transit SNR 4.02

There are 7 quarters with good PRF difference image offsets

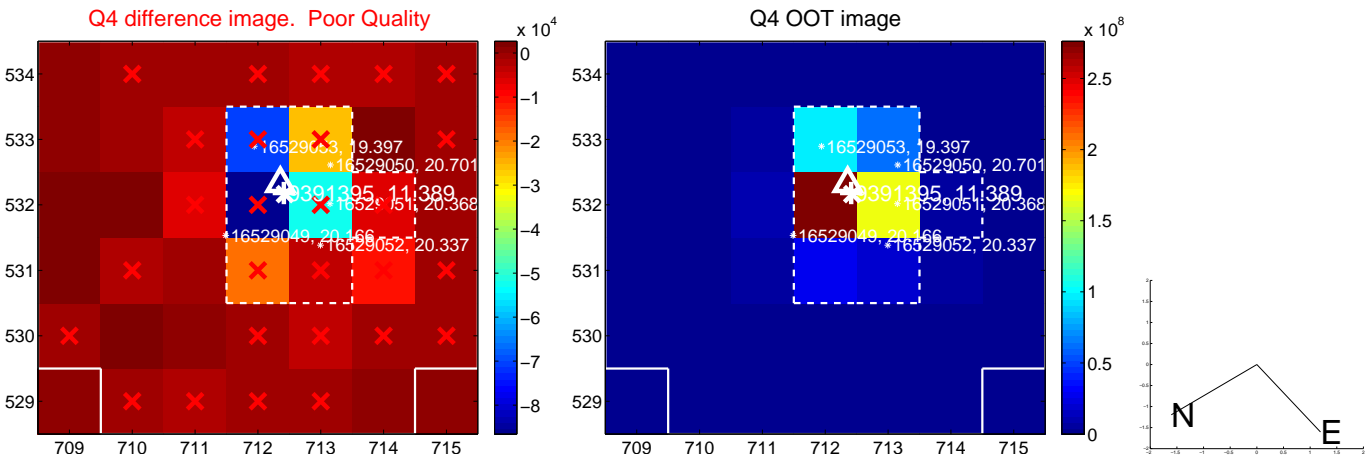
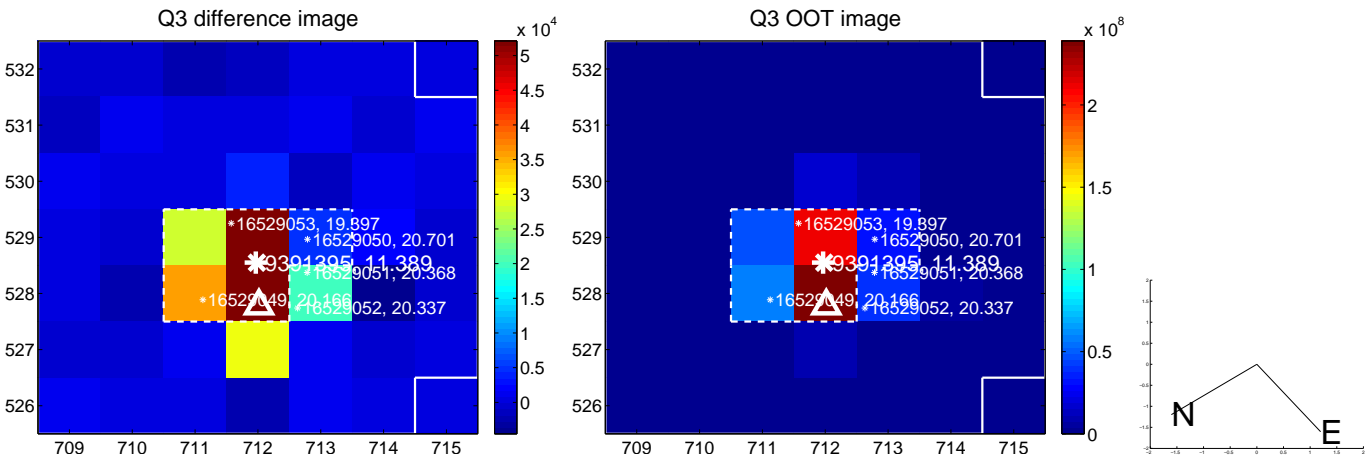
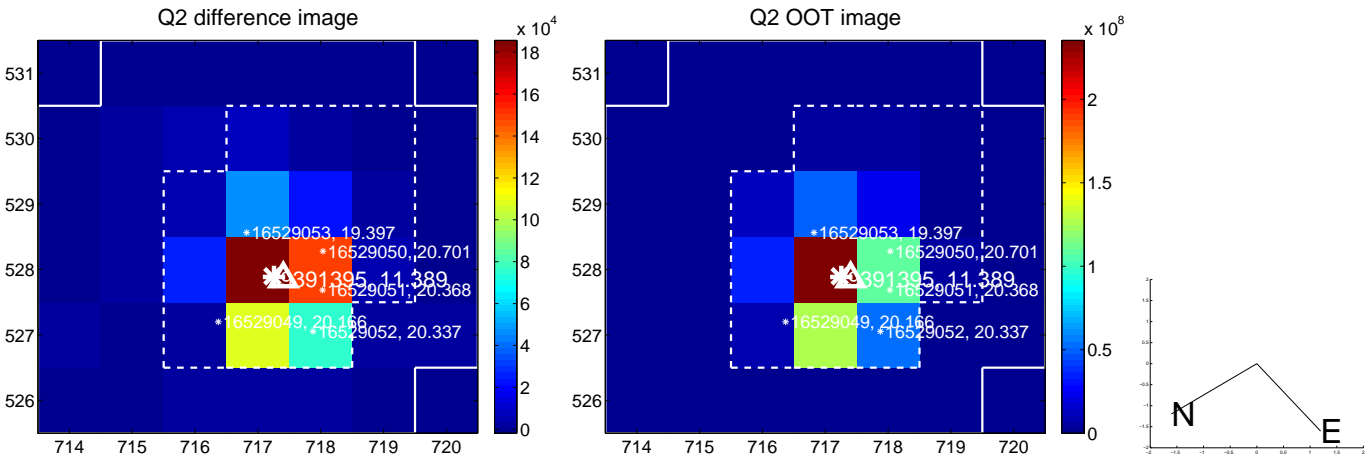
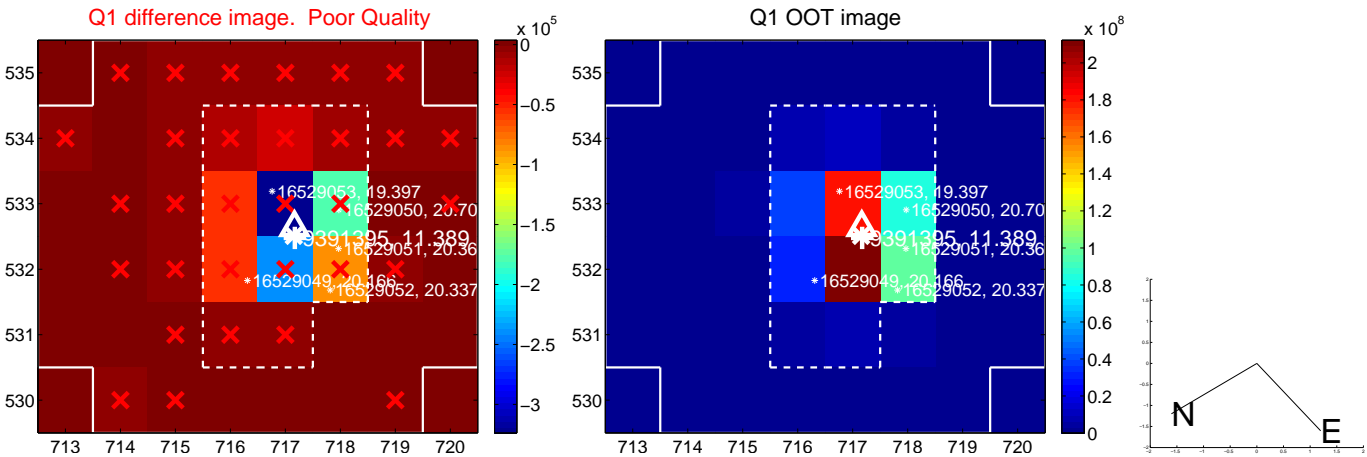
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.175 ± 0.172 | 1.02 | 0.028 ± 0.250 | -0.172 ± 0.171 |
| PRF-fit source offset from KIC position | 0.155 ± 0.163 | 0.95 | 0.041 ± 0.237 | -0.150 ± 0.168 |
| photometric centroid source offset | 0.28 ± 0.31 | 0.88 | 0.25 ± 0.32 | 0.11 ± 0.30 |

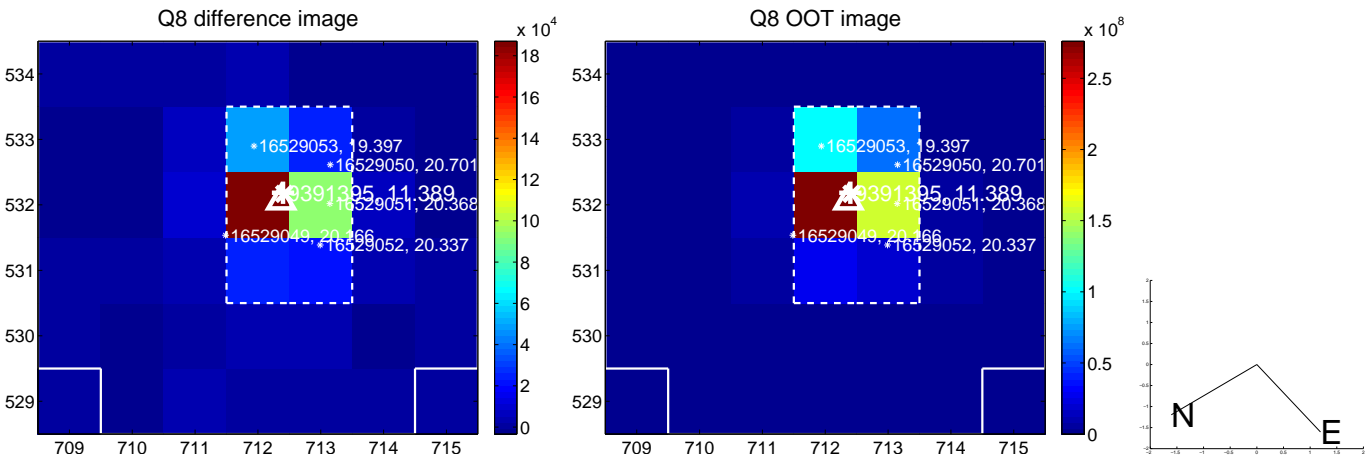
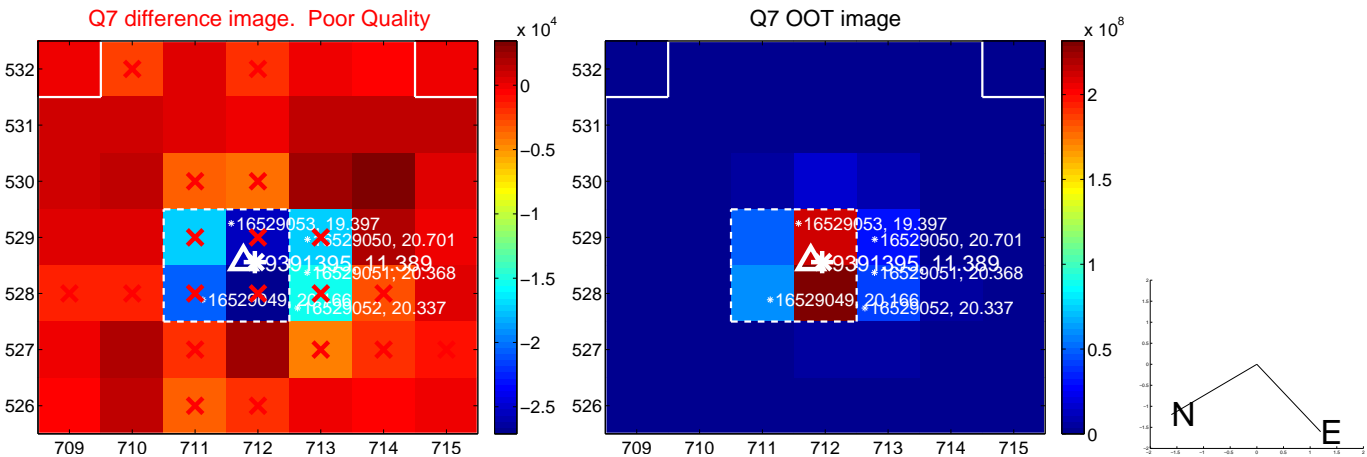
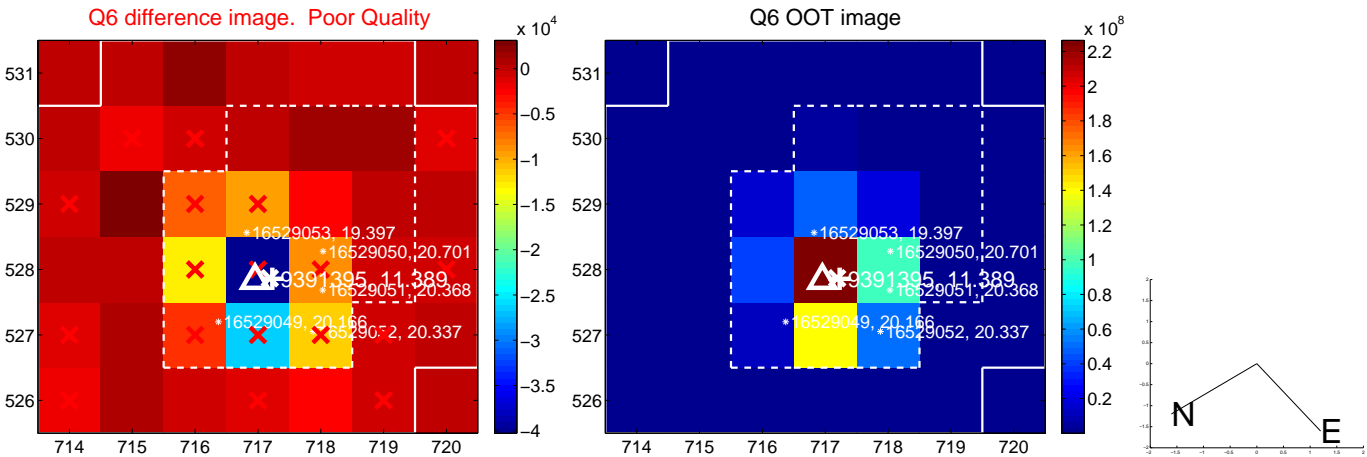
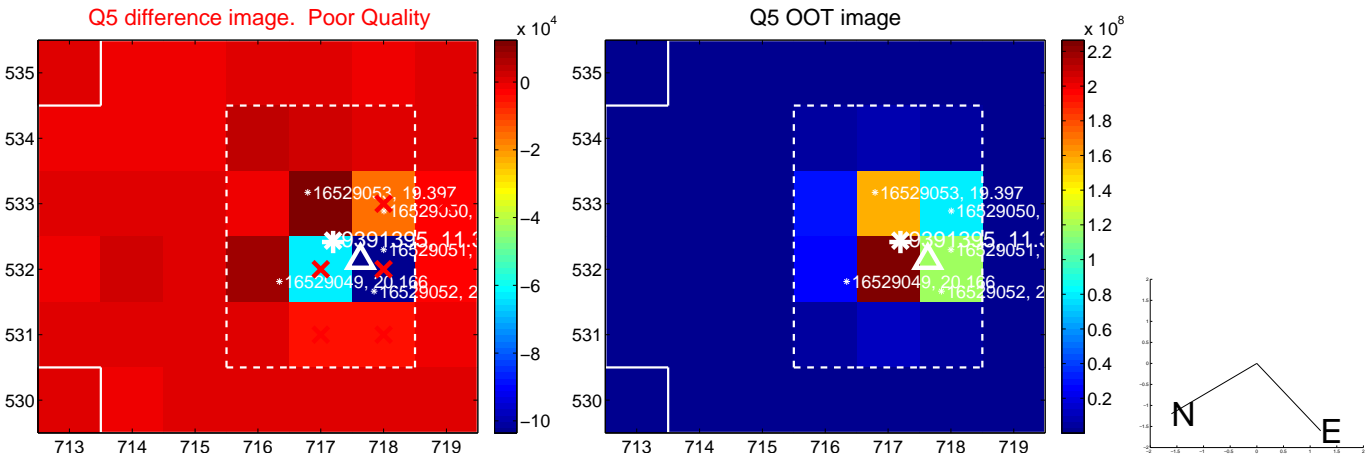


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

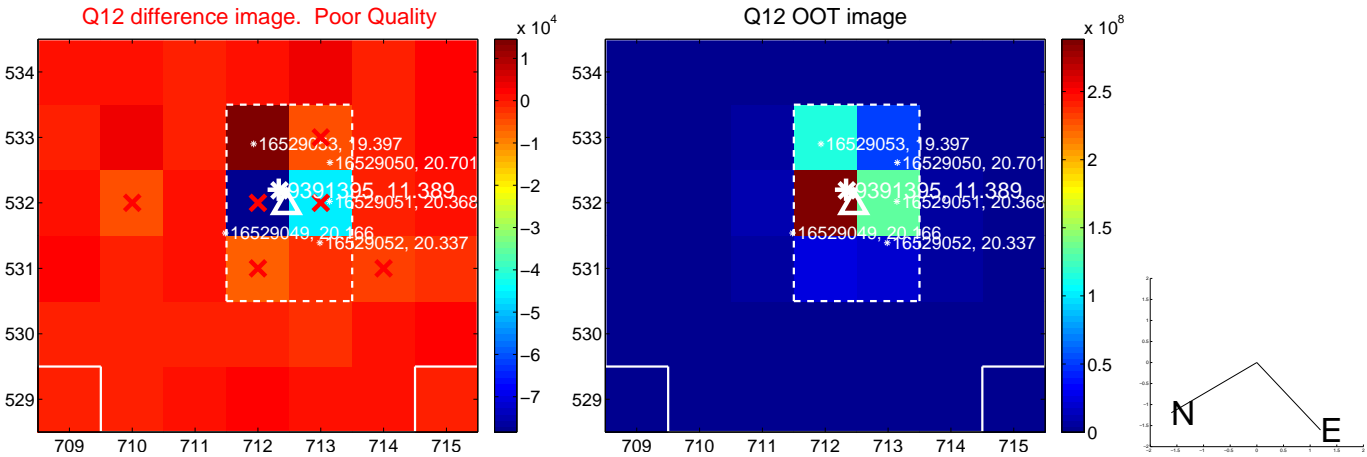
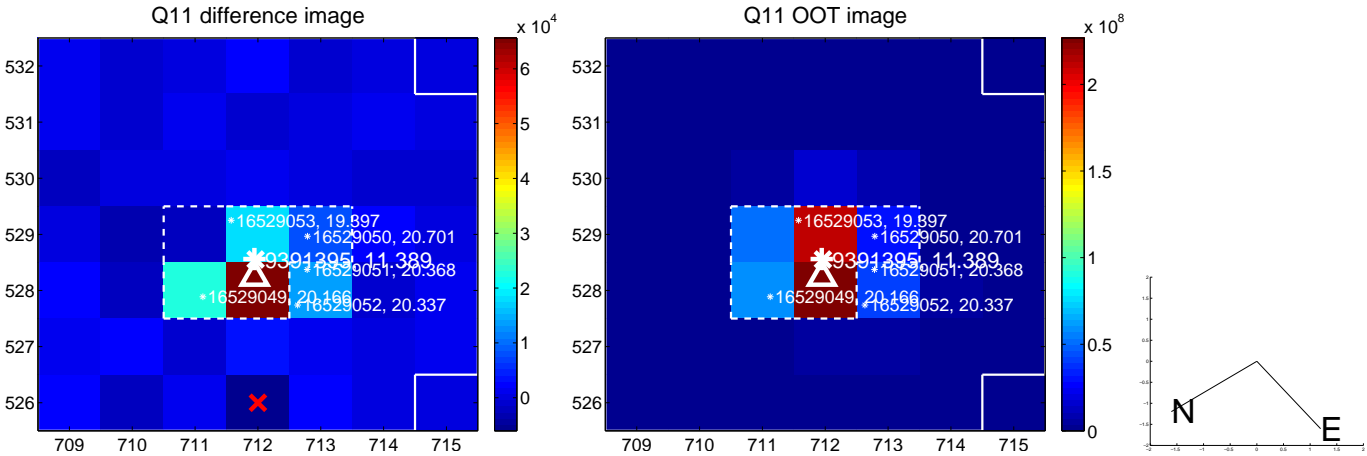
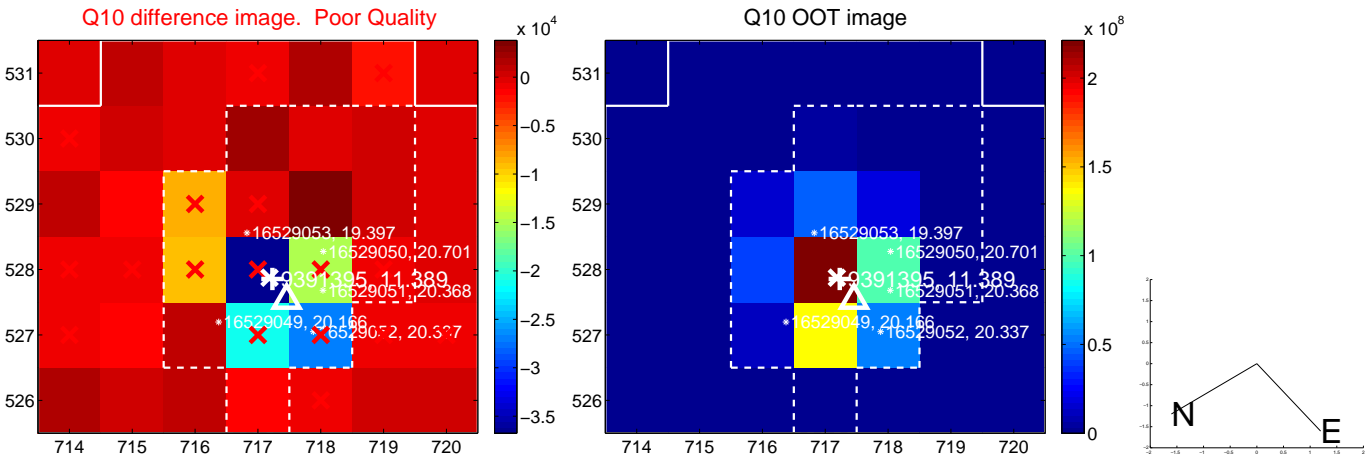
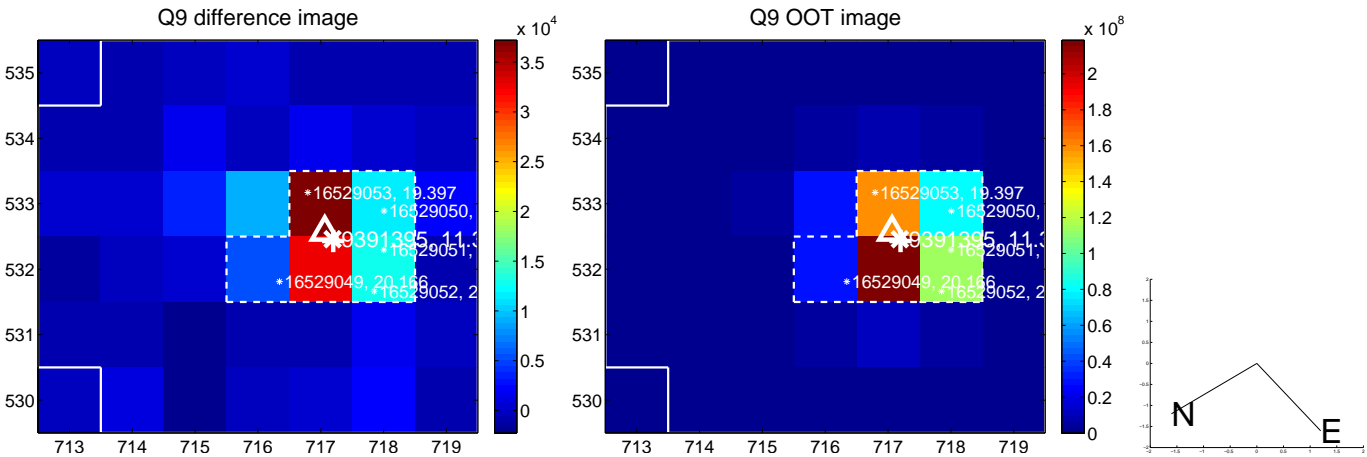
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



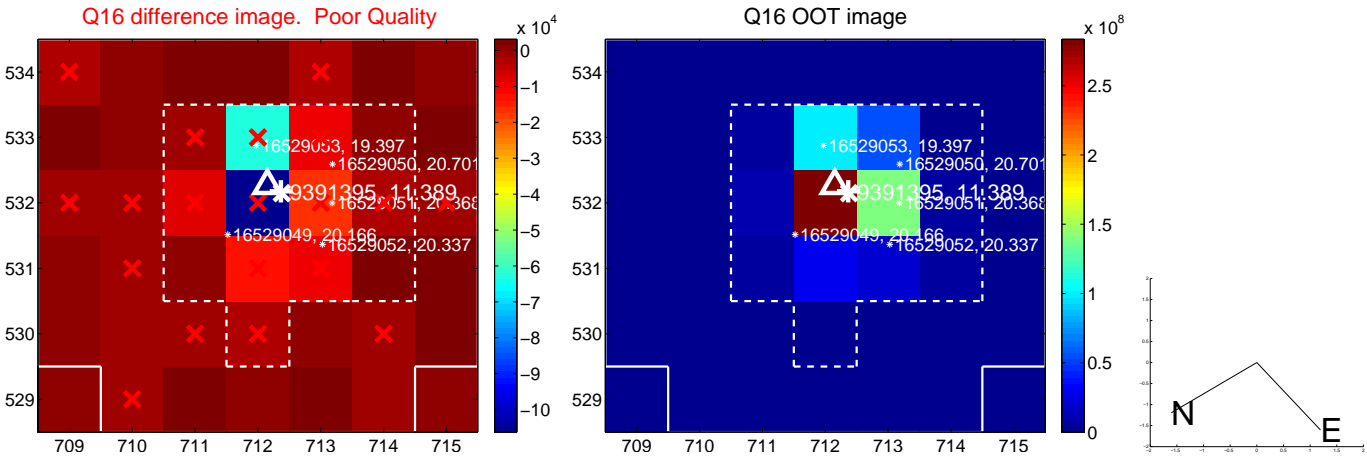
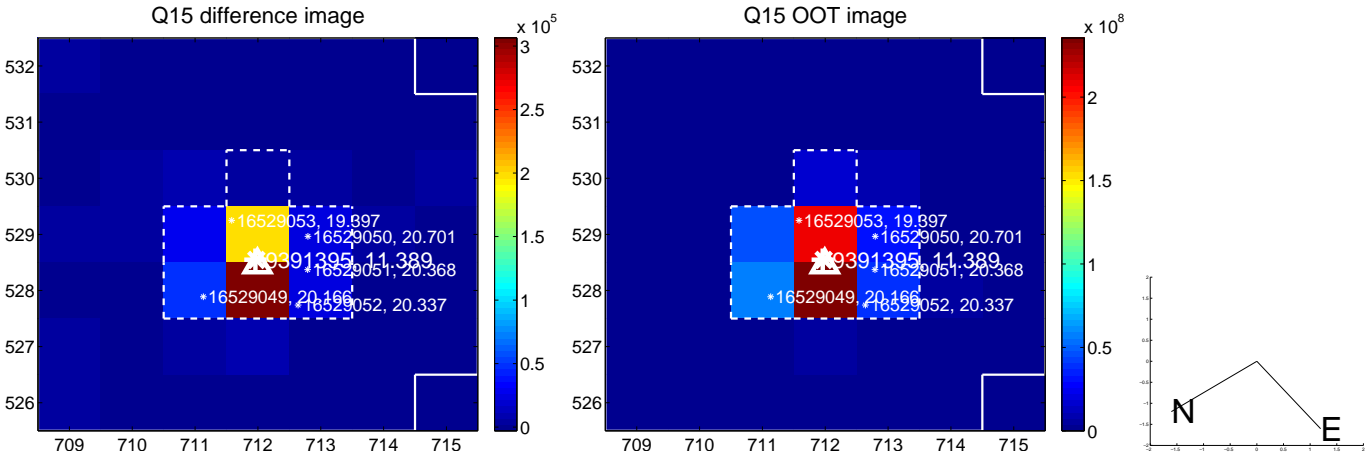
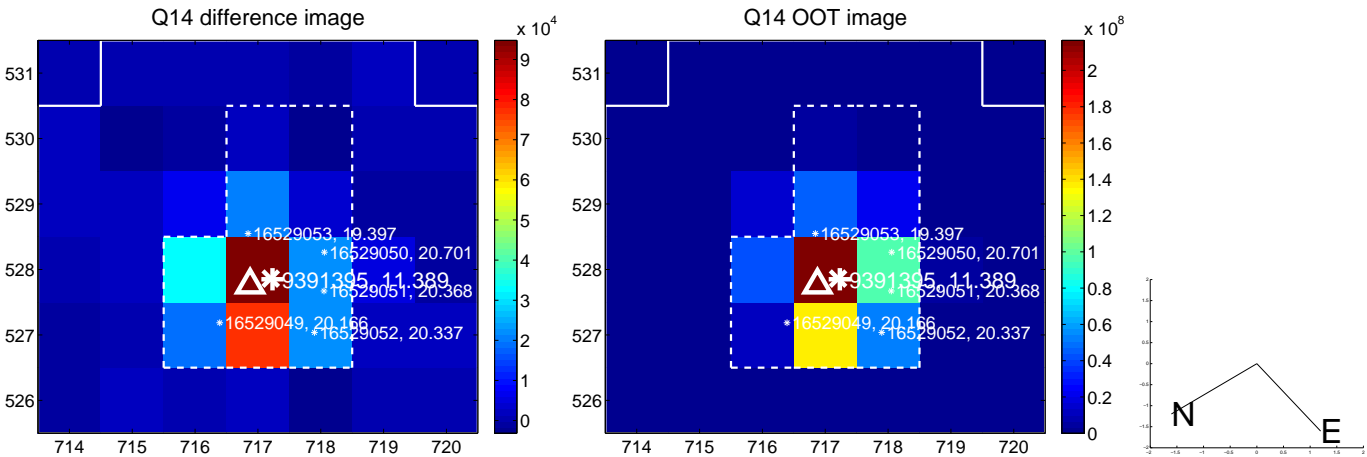
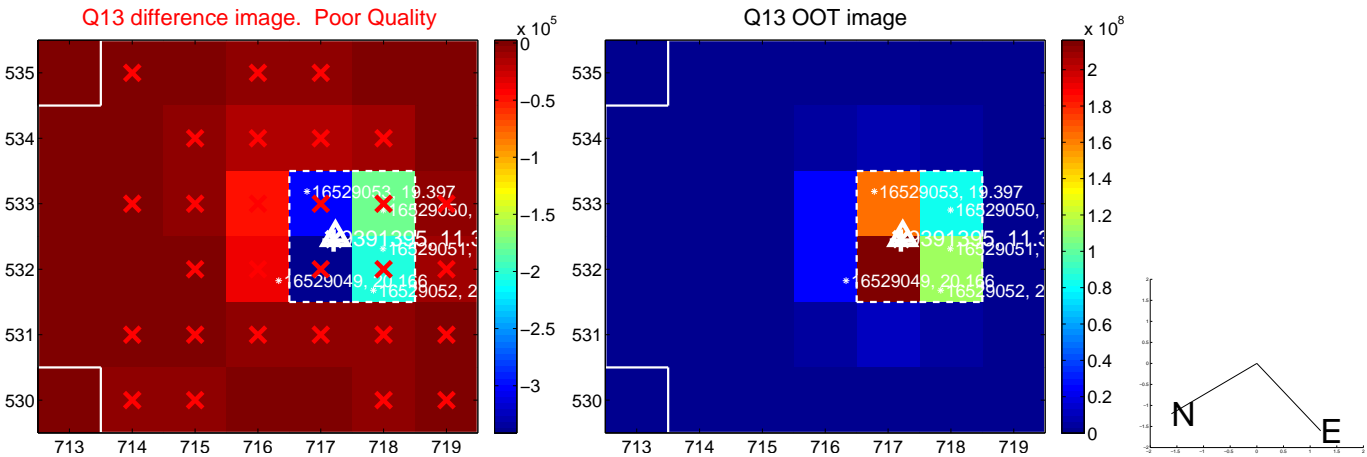
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



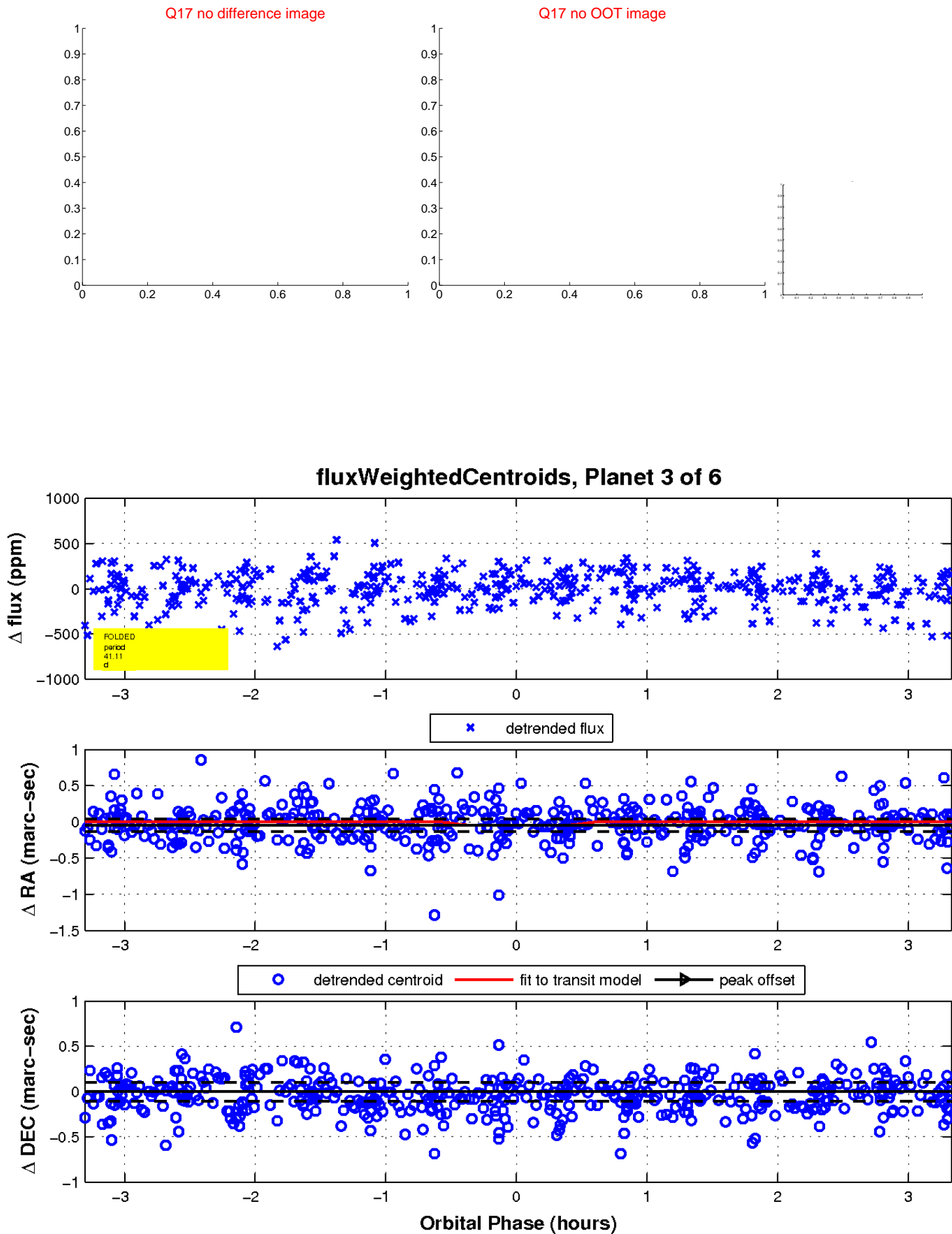
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

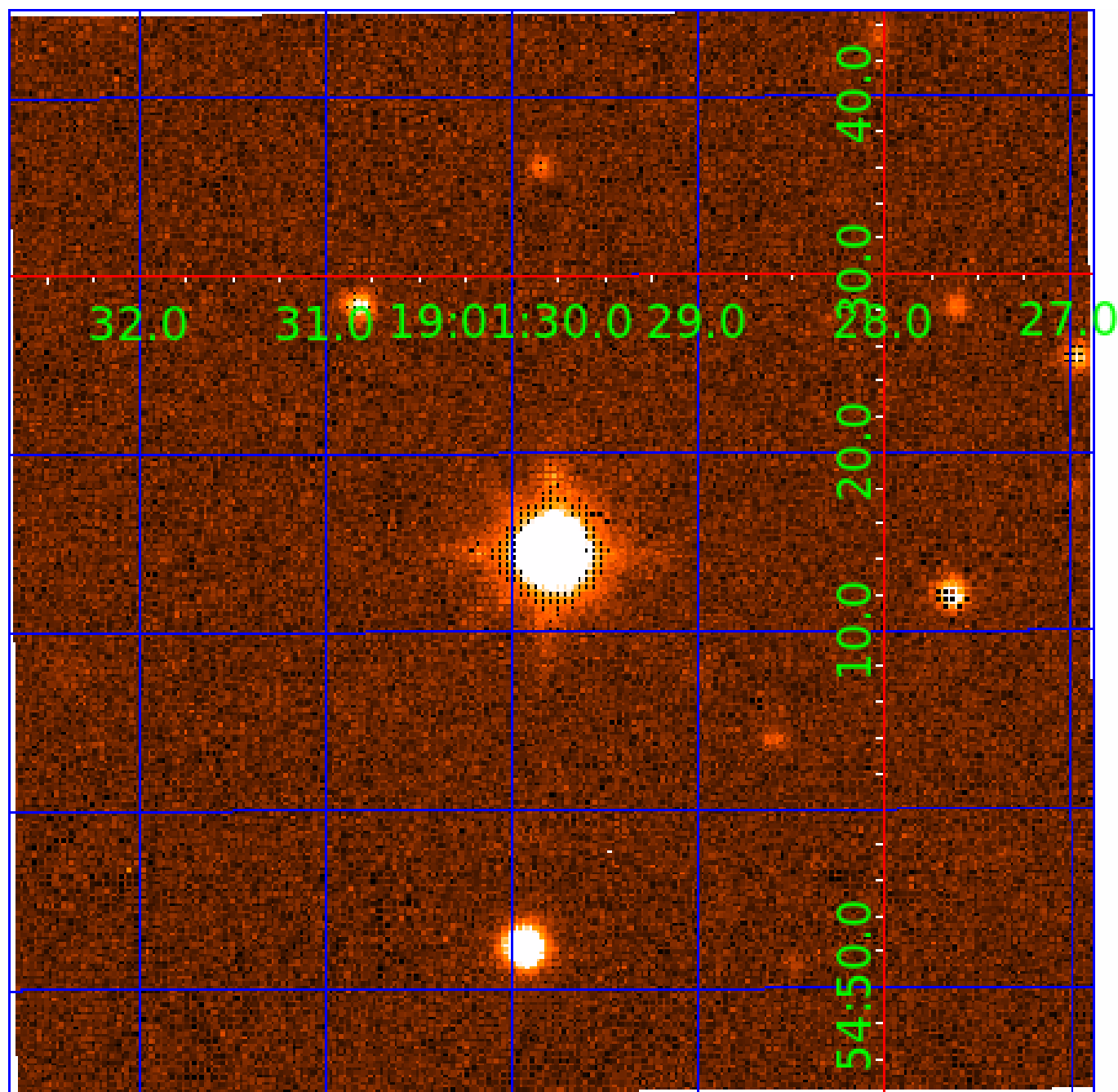


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009391395

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009391395-01 | OBS | No | 0.782755 | 131.554278 | 15.1 | 5.168 | 10.5 | 5.3 | 2.10 | 7505 | 0.88 | 32950.49 |
| 009391395-02 | OBS | No | 0.533520 | 131.590037 | 47.1 | 1.573 | 12.8 | 10.1 | 2.10 | 7505 | 1.69 | 54932.40 |
| 009391395-03 | OBS | No | 41.110030 | 163.055494 | 222.2 | 1.111 | 11.1 | 4.0 | 2.10 | 7505 | 3.68 | 167.53 |
| 009391395-04 | OBS | No | 160.381416 | 163.993641 | 716.8 | 9.113 | 12.0 | 10.1 | 2.10 | 7505 | 5.80 | 27.28 |
| 009391395-05 | OBS | No | 41.107675 | 163.508498 | 58.4 | 1.565 | 12.5 | 1.4 | 2.10 | 7505 | 1.72 | 167.54 |
| 009391395-06 | OBS | No | 40.556283 | 163.234960 | 220.0 | 2.500 | 12.5 | -1.0 | 2.10 | 7505 | 3.13 | 170.59 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009391395-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 009391395-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST |
| 009391395-05 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED—HALO_GHOST |
| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

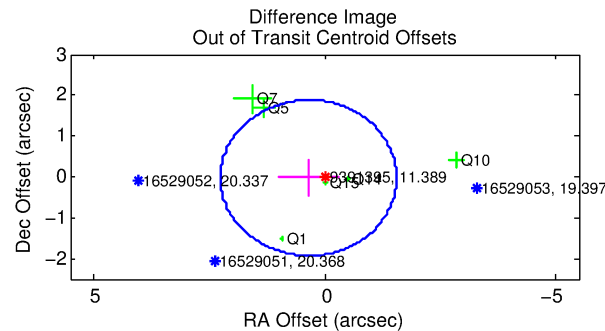
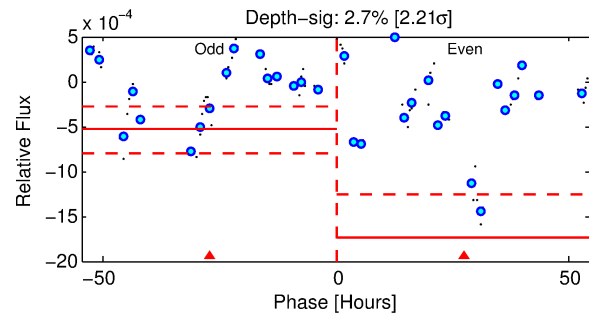
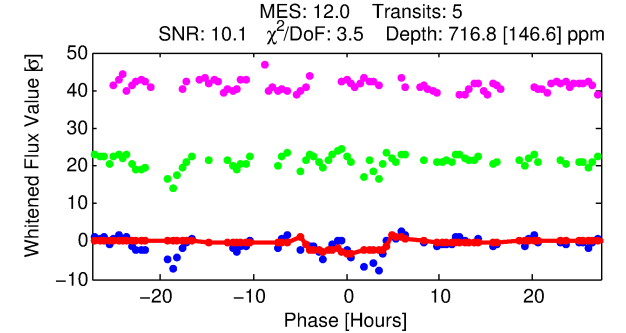
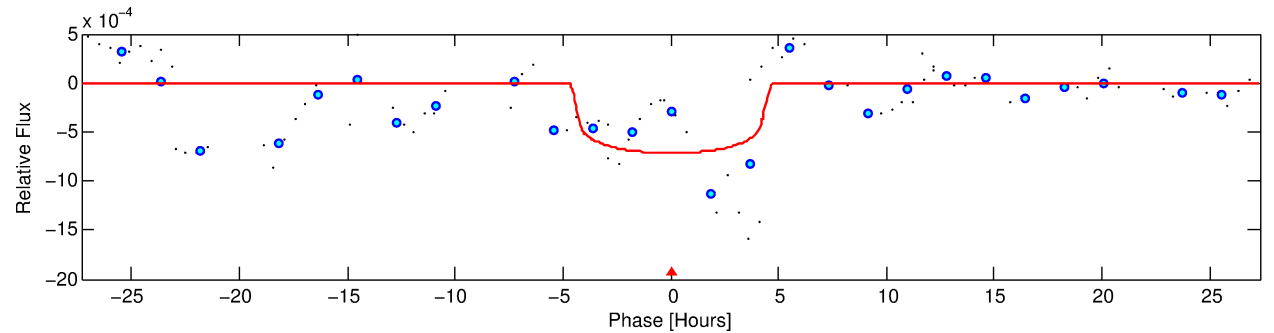
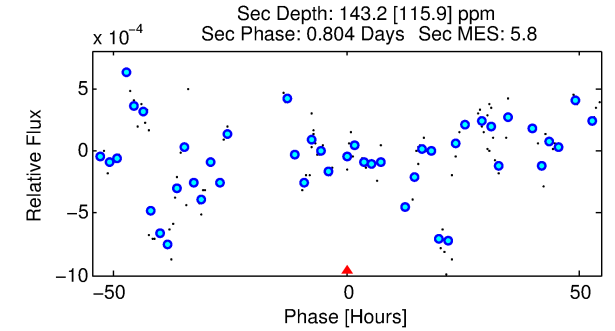
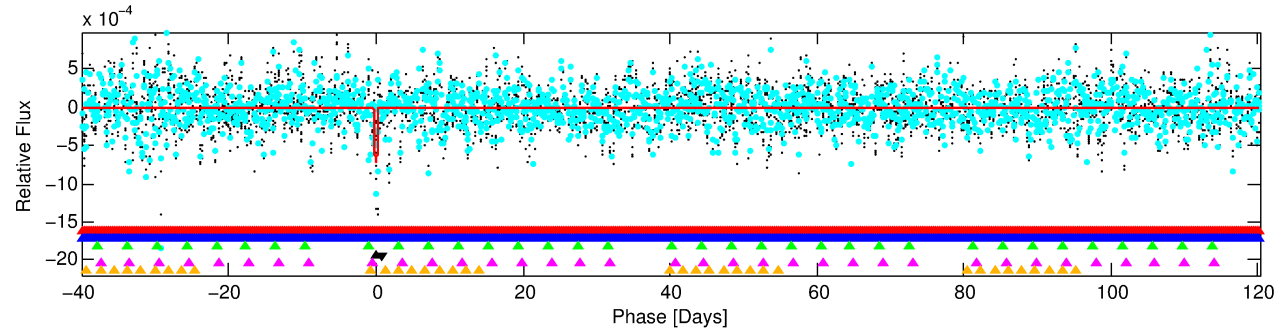
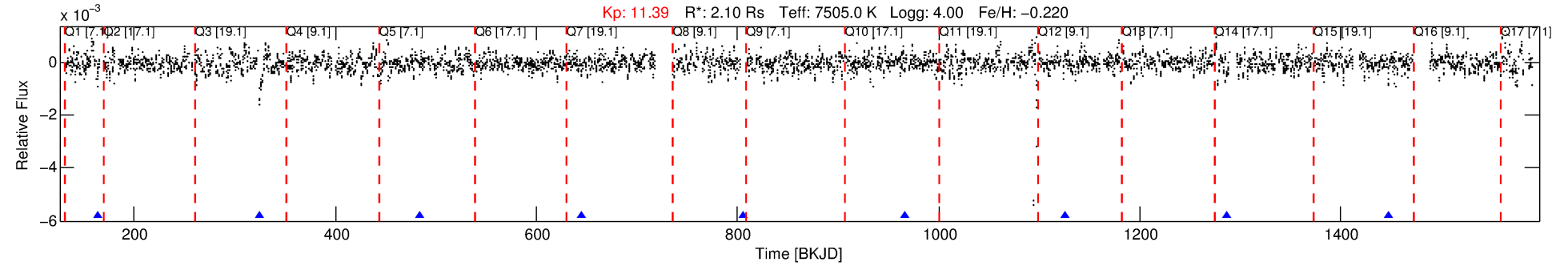
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-04

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 4 of 6 Period: 160.381 d



DV Fit Results:

Period = 160.38142 [0.01742] d
Epoch = 163.9936 [0.0792] BKJD
Rp/R* = 0.0253 [0.0290]
a/R* = 119.56 [736.92]
b = 0.51 [8.68]
Seff = 27.28 [11.79]
Teq = 583 [63] K
Rp = 5.80 [6.87] Re
a = 0.6769 [0.1804] AU
Ag = 1073.80 [2644.71] [0.41σ]
Teffp = 5158 [3139] K [1.46σ]

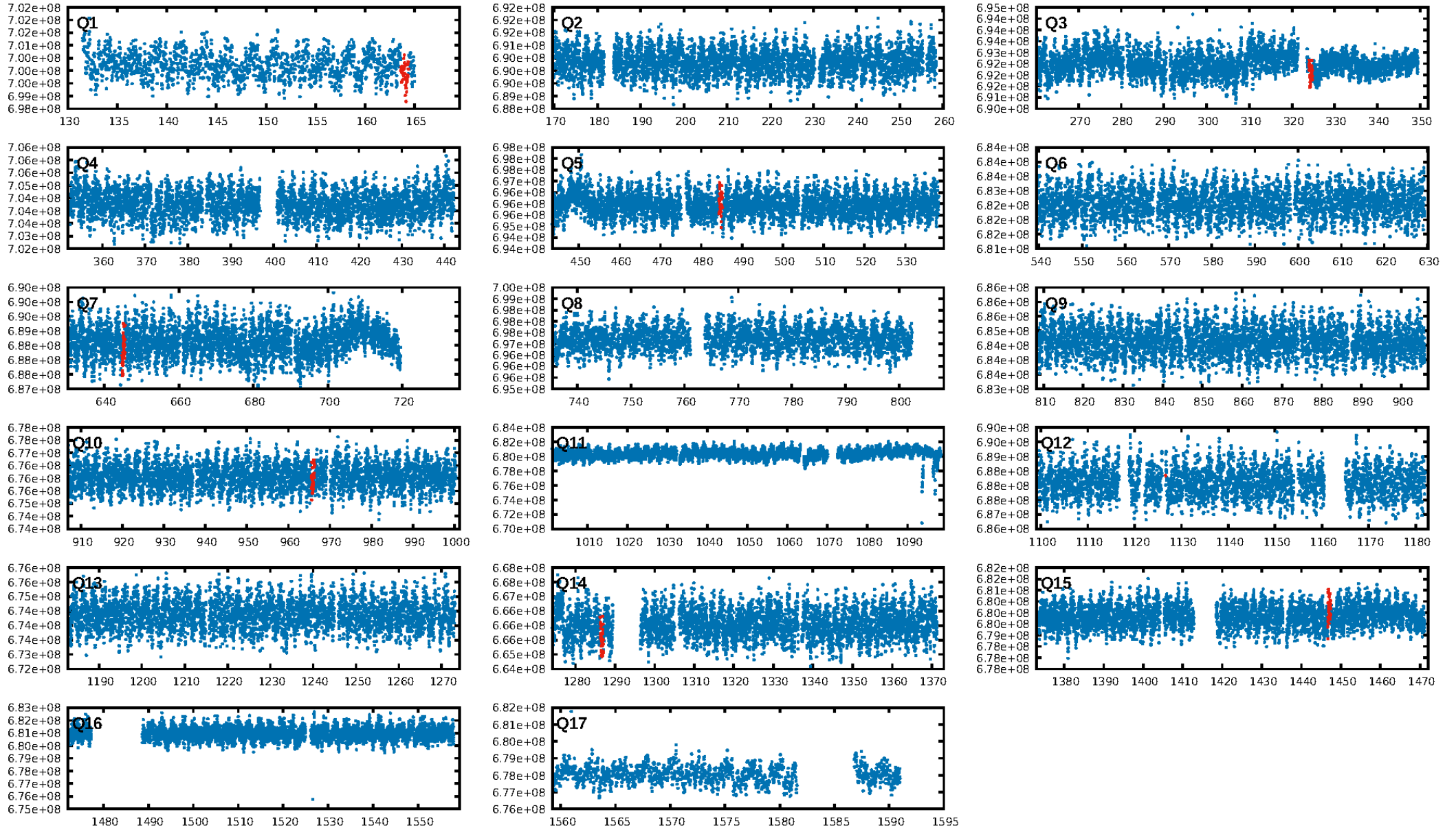
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [311.81σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.08543
Centroid-sig: 8.0%
Centroid-so: 0.154 arcsec [1.09σ]
OotOffset-rm: 0.350 arcsec [0.55σ]
OotOffset-st: 2/2/0/2 [6]
KicOffset-rm: 0.450 arcsec [0.75σ]
KicOffset-st: 2/2/0/2 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 0.00 [0/6]

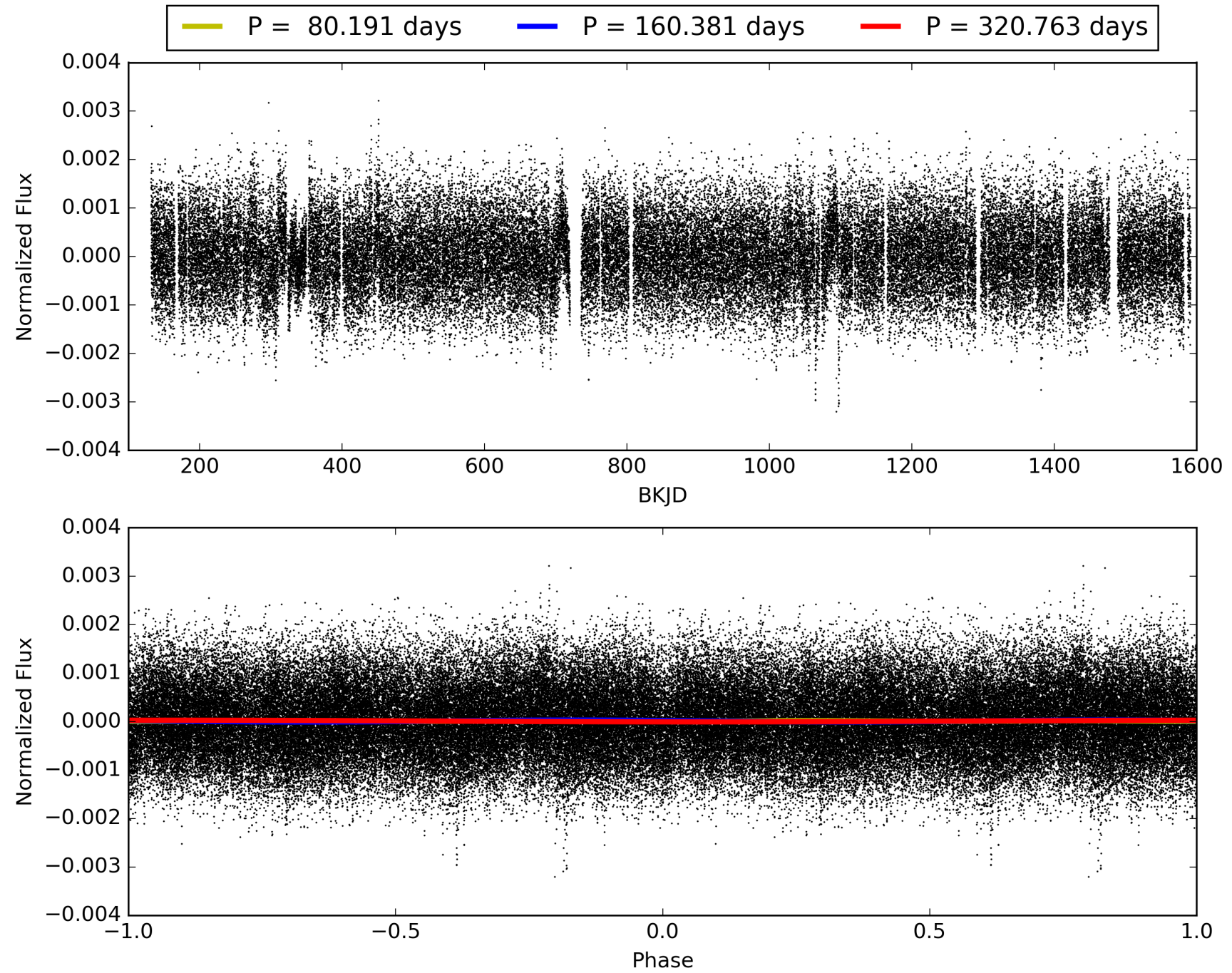
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:25:23 Z

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

TCE 009391395-04, PDC Light Curves

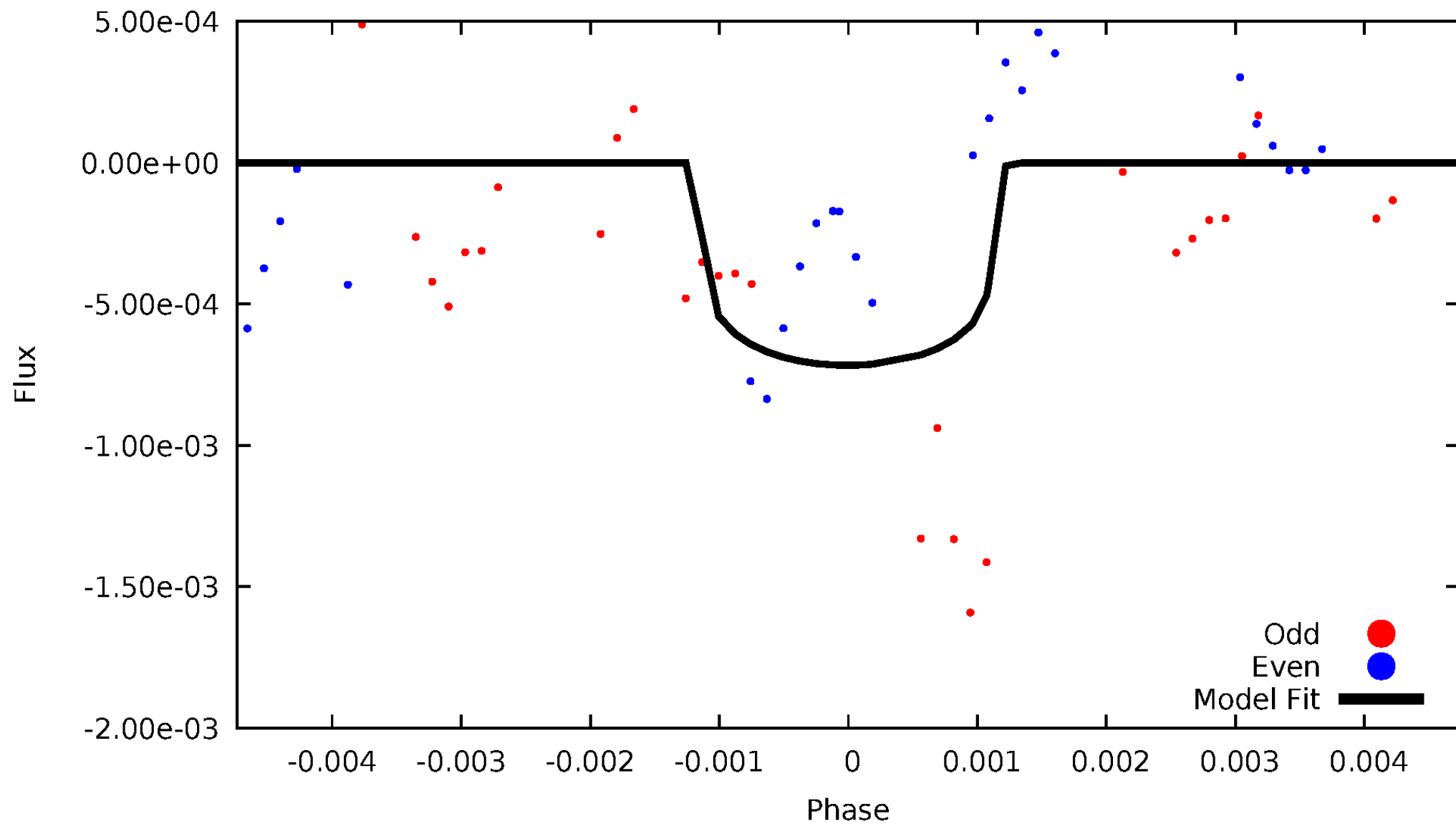


TCE 009391395-04



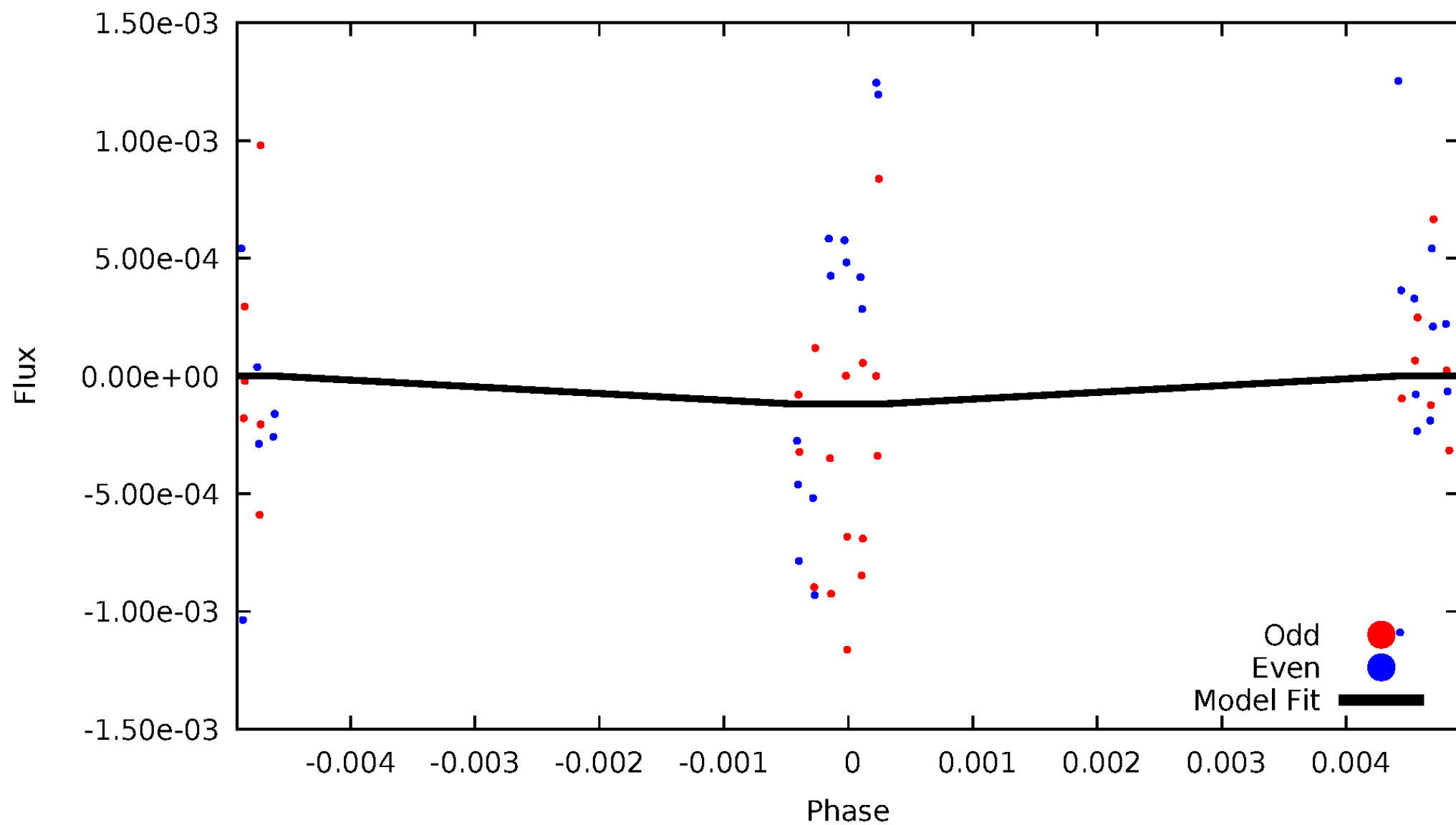
DV Odd/Even

TCE 009391395-04



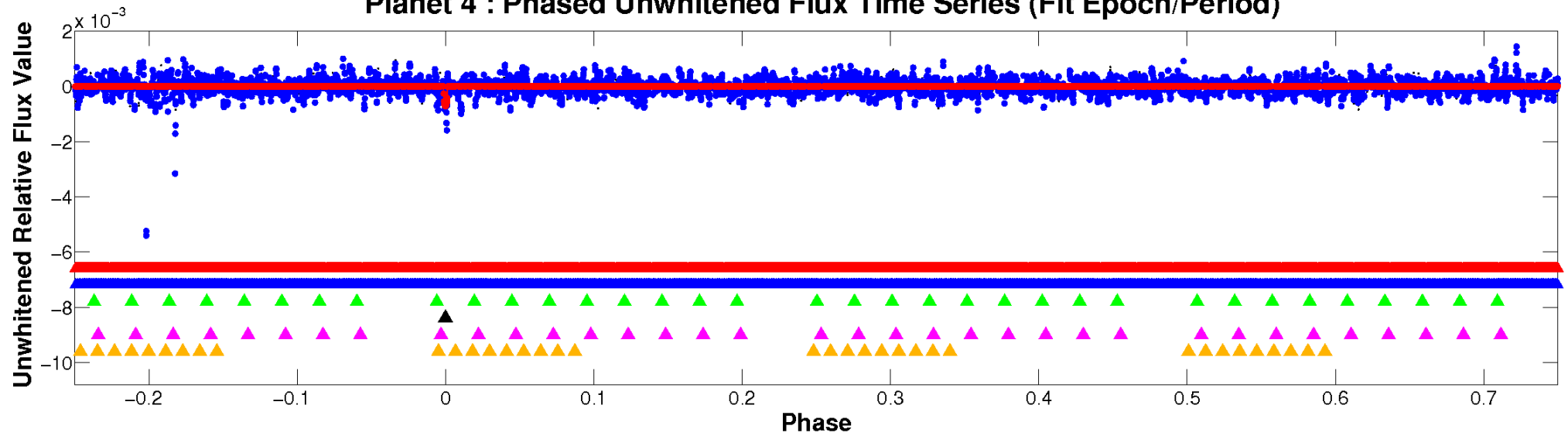
ALT Odd/Even

TCE 009391395-04

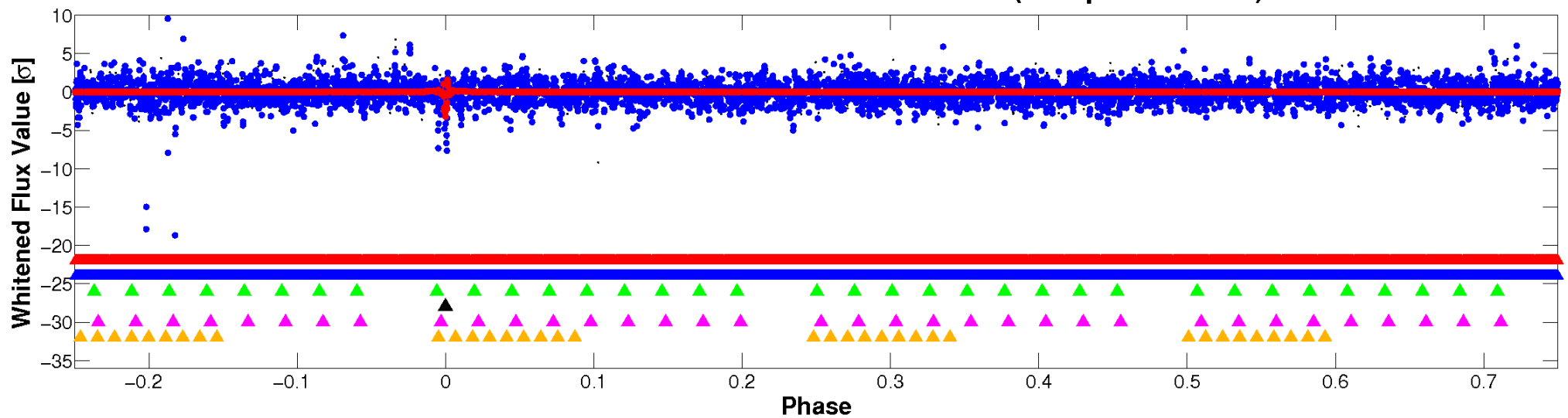


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

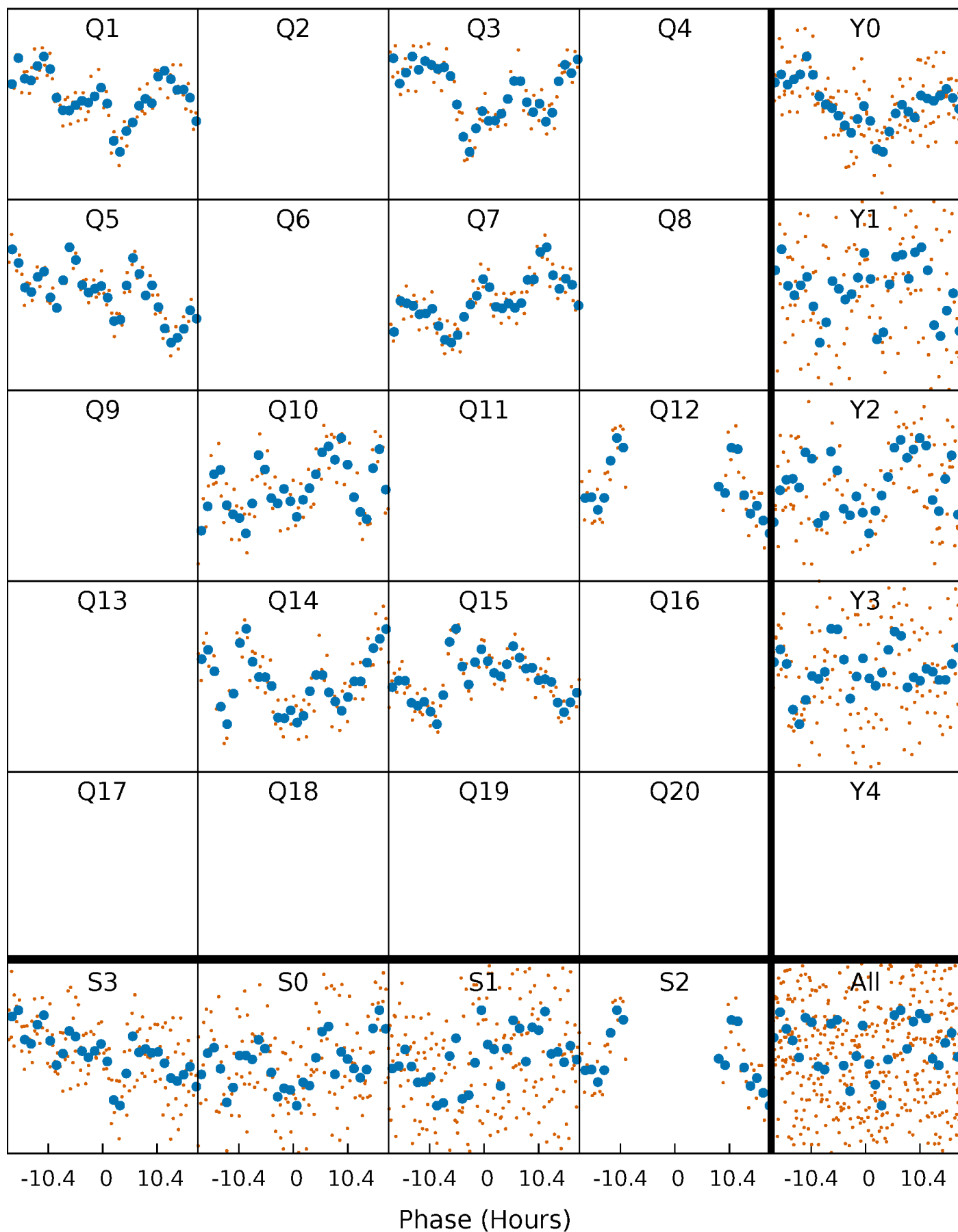


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



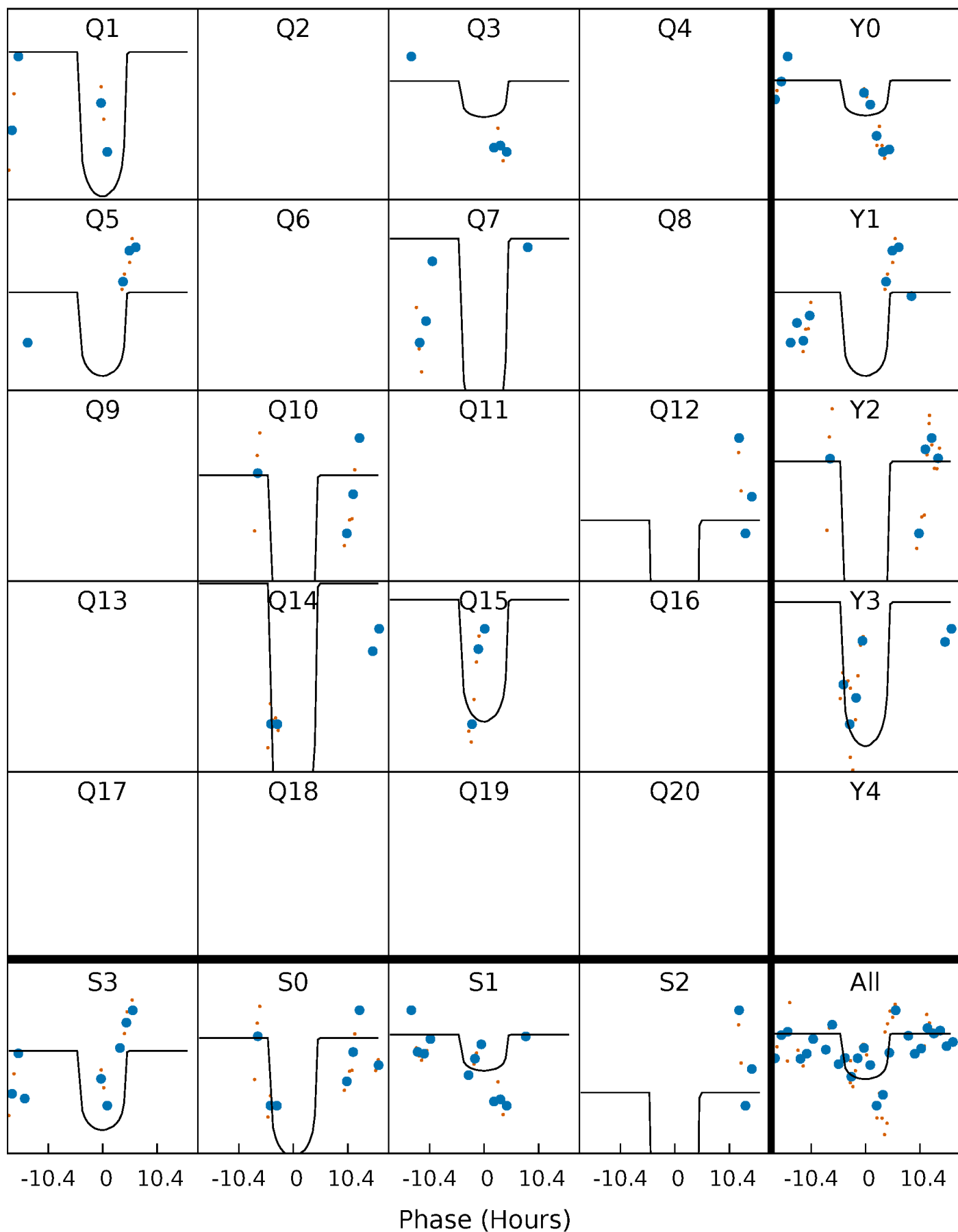
PDC Quarter-Phased Transit Curves

TCE 009391395-04 P=160.381416 Days $T_0=163.993641$ (BKJD)



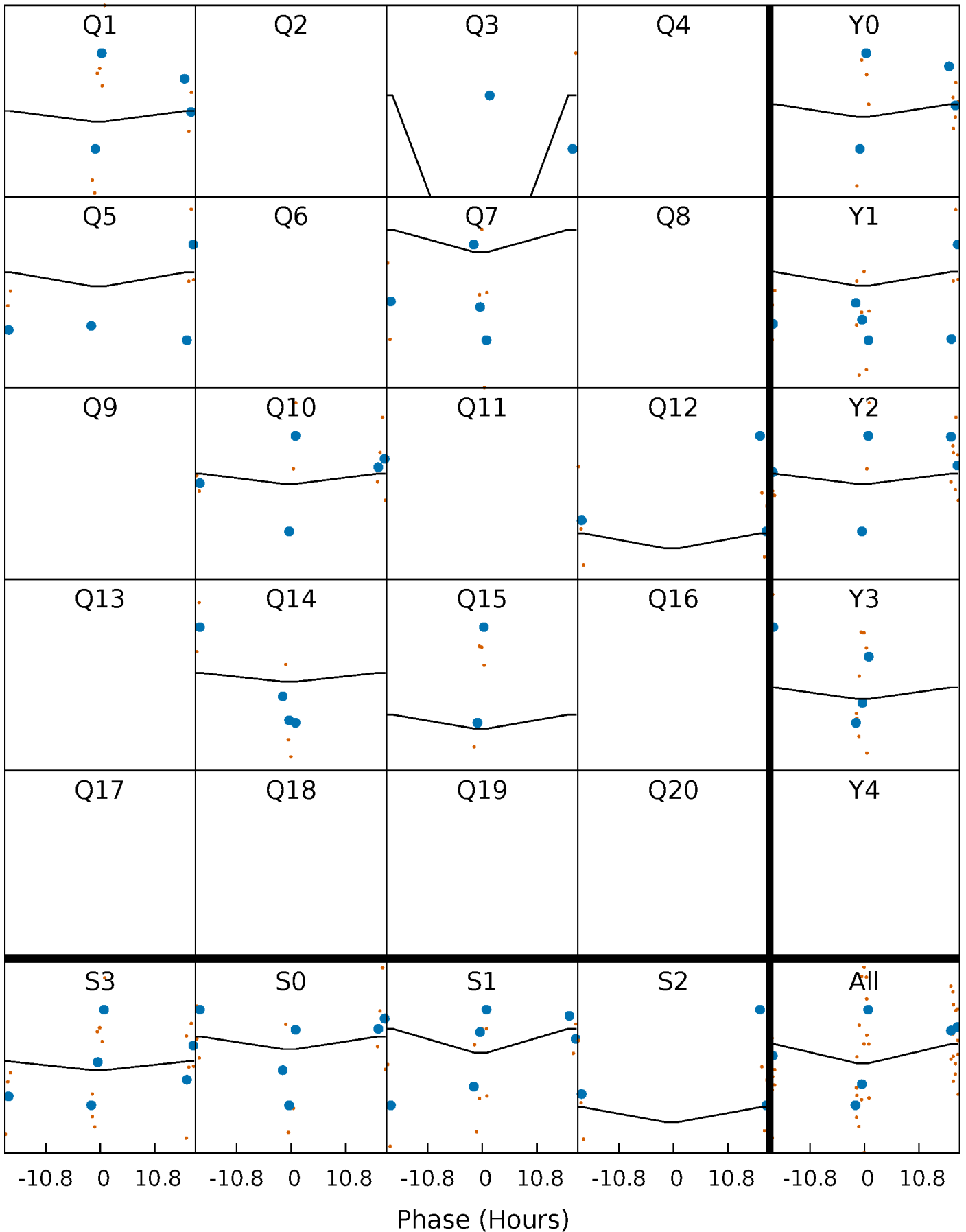
DV Quarter-Phased Transit Curves

TCE 009391395-04 $P=160.381416$ Days $T_0=163.993641$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

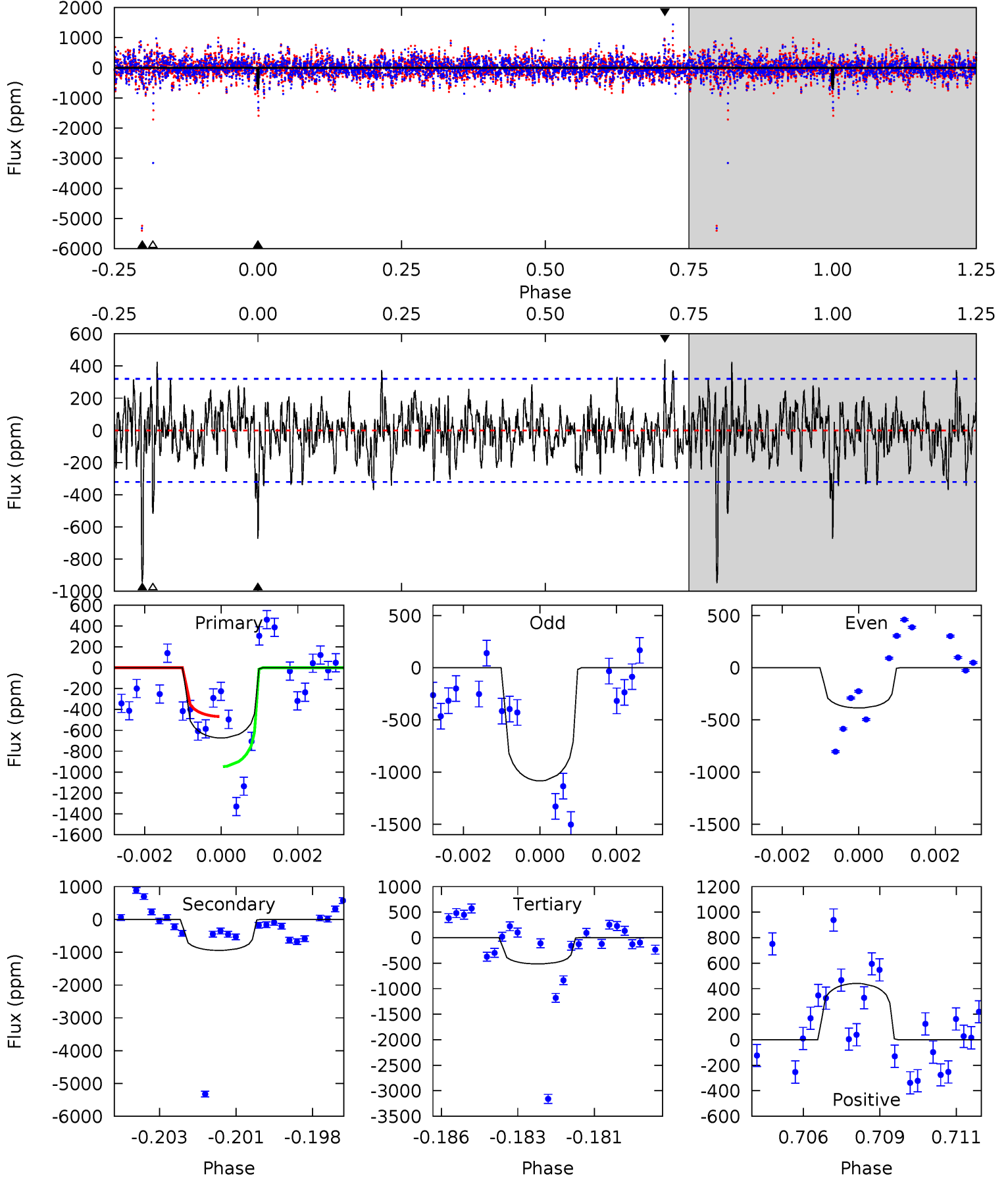
TCE 009391395-04 $P=160.464969$ Days $T_0=163.269790$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-04, P = 160.381416 Days, E = 3.612225 Days

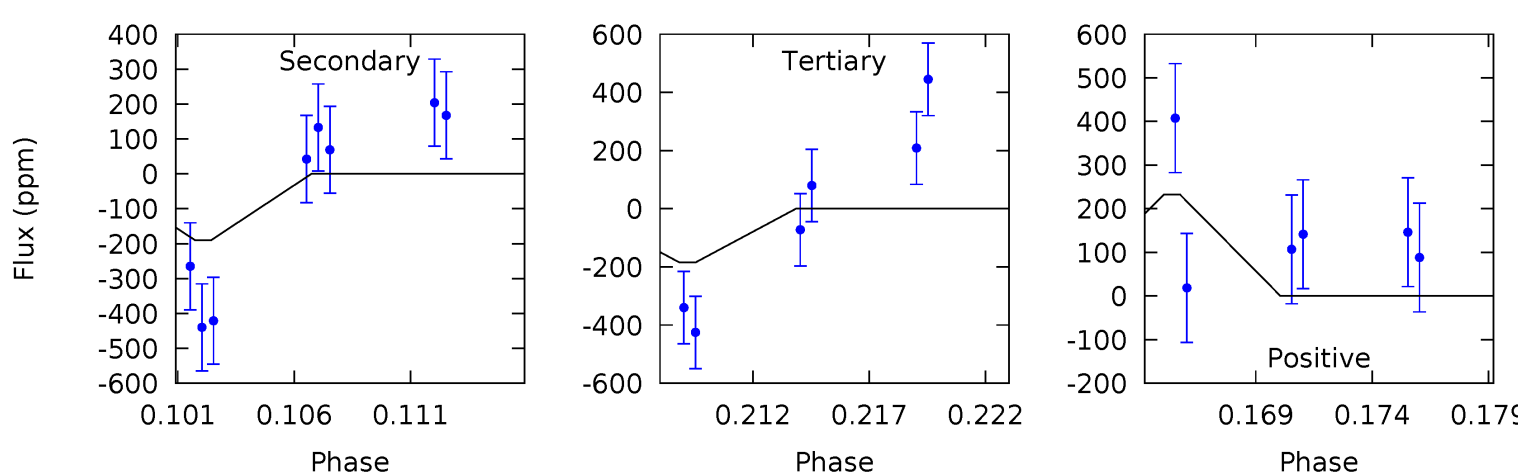
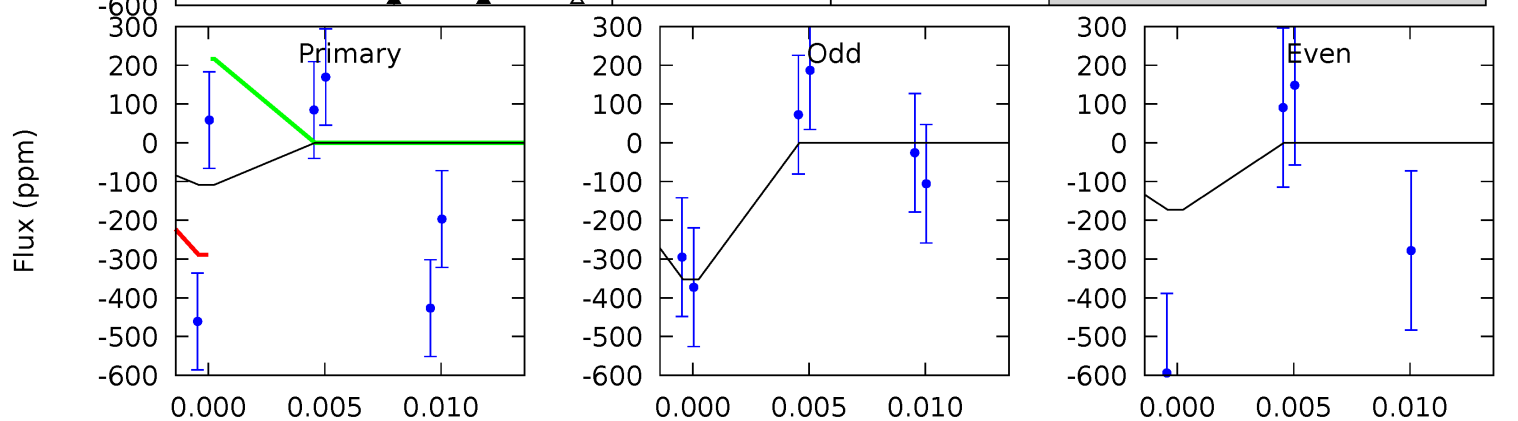
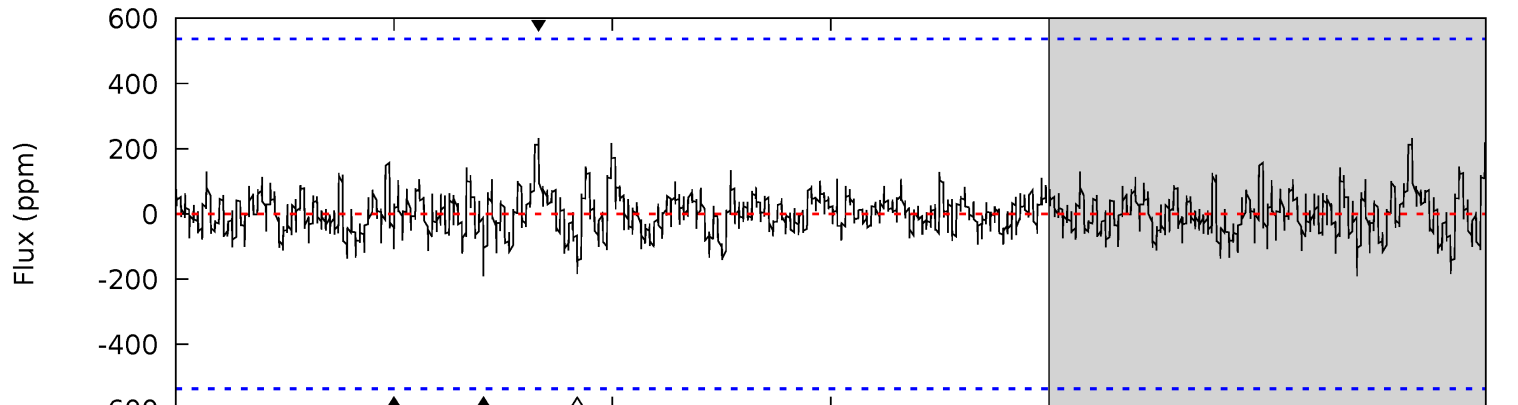
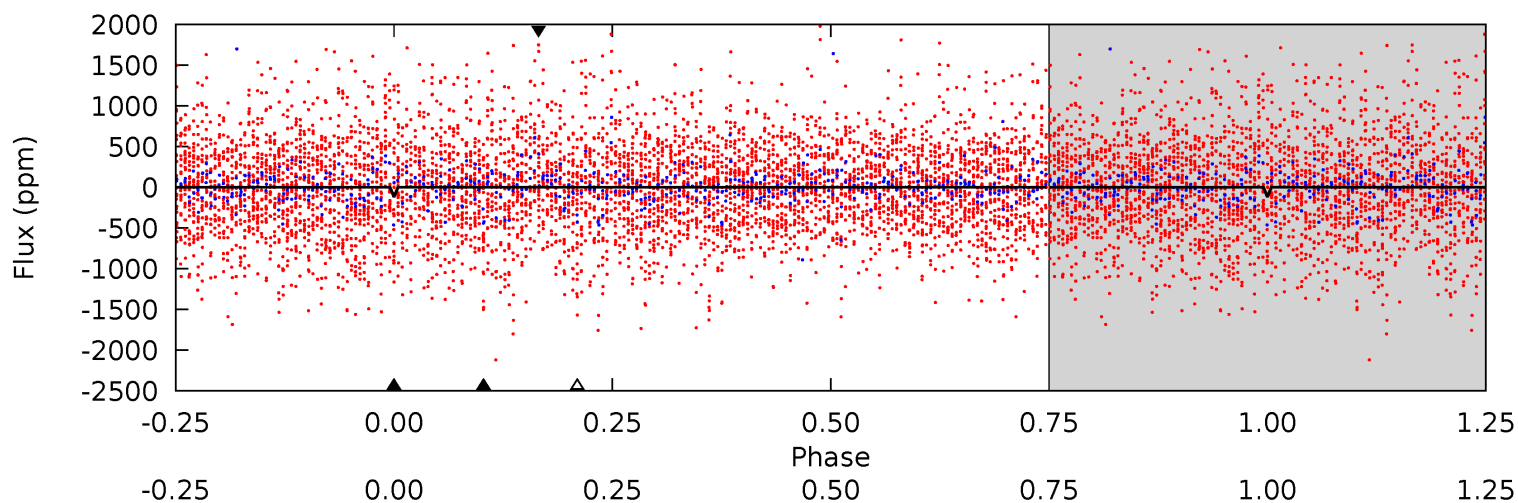
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.1 | 15.6 | 8.50 | 7.28 | 5.29 | 3.03 | 2.00 | 2.61 | 3.83 | 7.10 | 8.32 | 5.68 | 1.10 | 0.32 | 3.99 |



Alt Model-Shift Uniqueness Test

009391395-04, P = 160.464969 Days, E = 2.804821 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 1.04 | 1.83 | 1.78 | 2.24 | 5.16 | 2.82 | 0.50 | -0.73 | -1.20 | 0.05 | -0.41 | 0.85 | -1.41 | 0.55 | 0.34 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|------------------------|-------------------------|
| DV | -945 ± 61 | $6.98^{+6.45}_{-4.42}$ | 812^{+57}_{-68} | 7314^{+8439}_{-1927} | 4648^{+31214}_{-3322} |
| Alt. | -190 ± 104 | $5.27^{+5.24}_{-3.65}$ | 808^{+59}_{-69} | 5449^{+5482}_{-1452} | 1473^{+15079}_{-1173} |

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

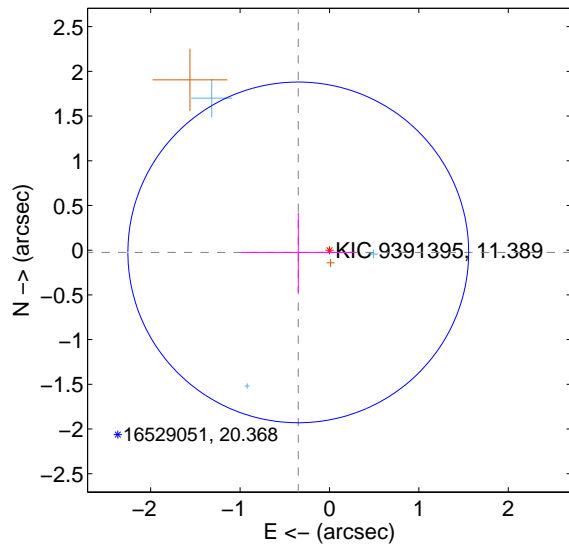
Supplemental centroid analysis for 009391395-04. **Kepler magnitude: 11.39.** Transit SNR 10.13

There are 4 quarters with good PRF difference image offsets

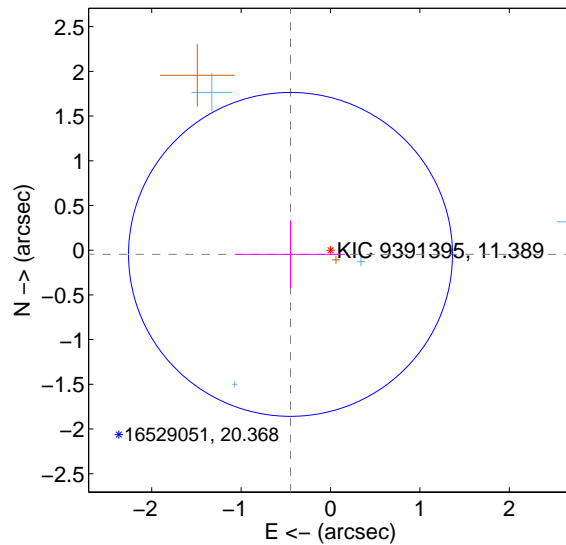
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.350 ± 0.635 | 0.55 | 0.349 ± 0.640 | -0.025 ± 0.445 |
| PRF-fit source offset from KIC position | 0.450 ± 0.604 | 0.75 | 0.447 ± 0.608 | -0.047 ± 0.373 |
| photometric centroid source offset | 0.15 ± 0.14 | 1.09 | -0.15 ± 0.14 | 0.03 ± 0.11 |

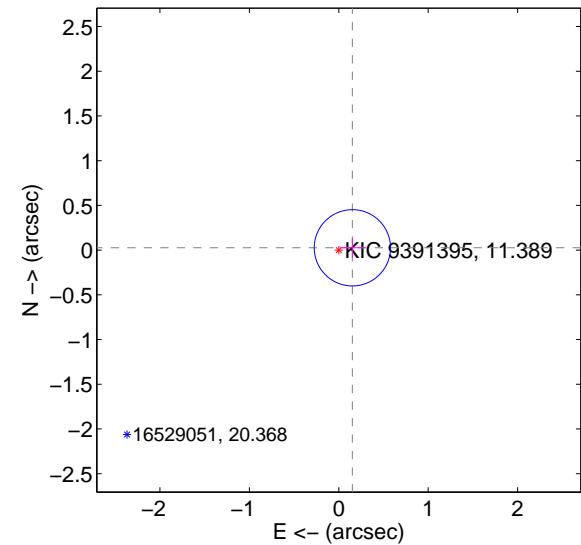
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

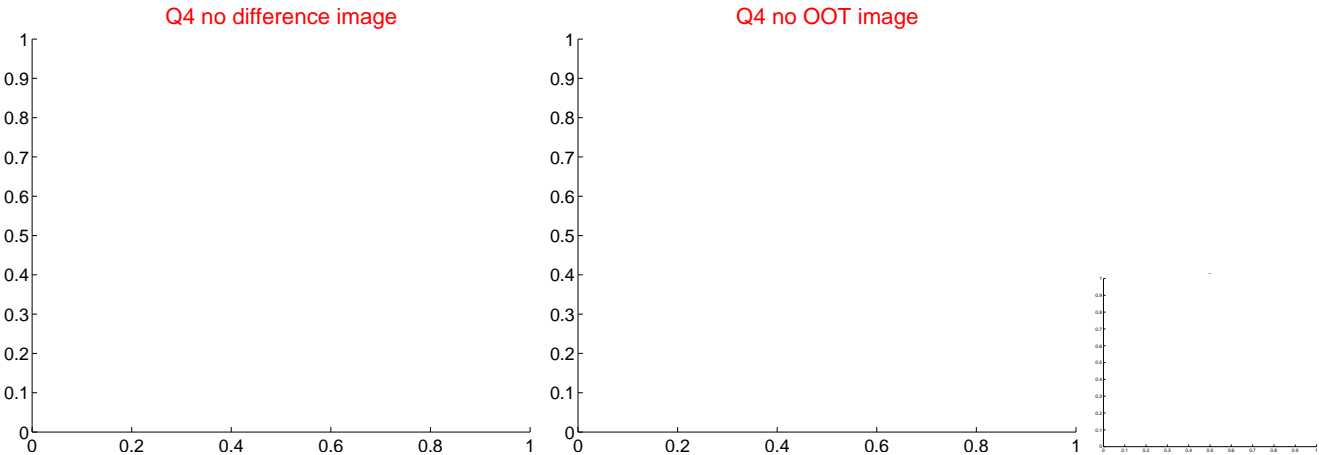
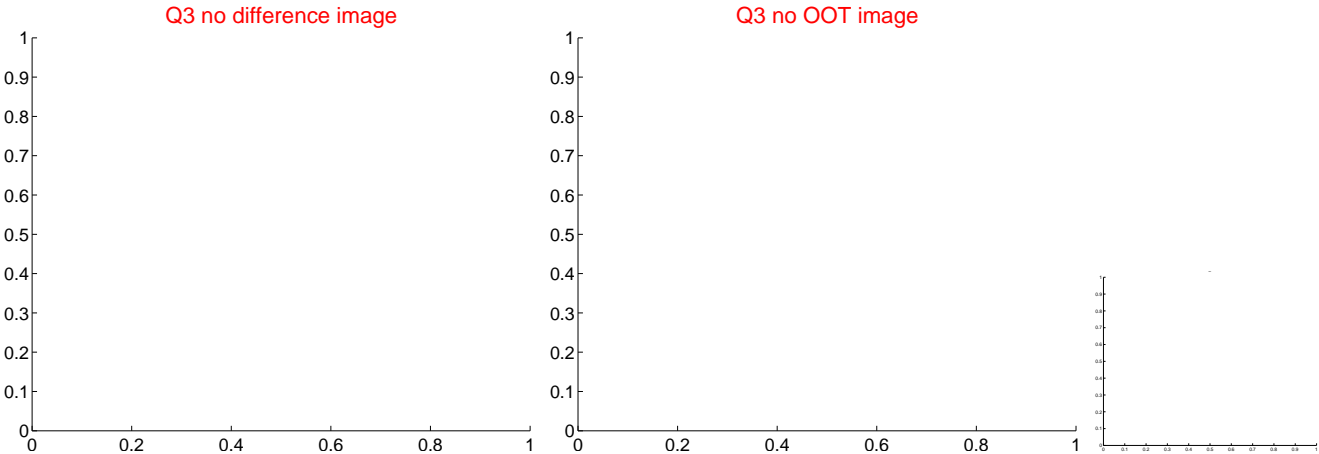
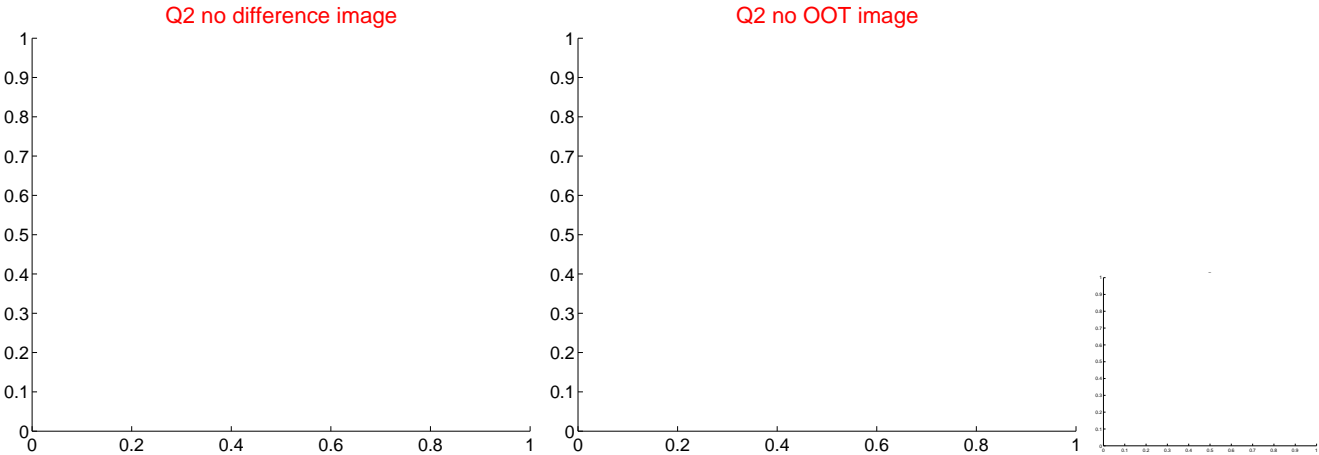
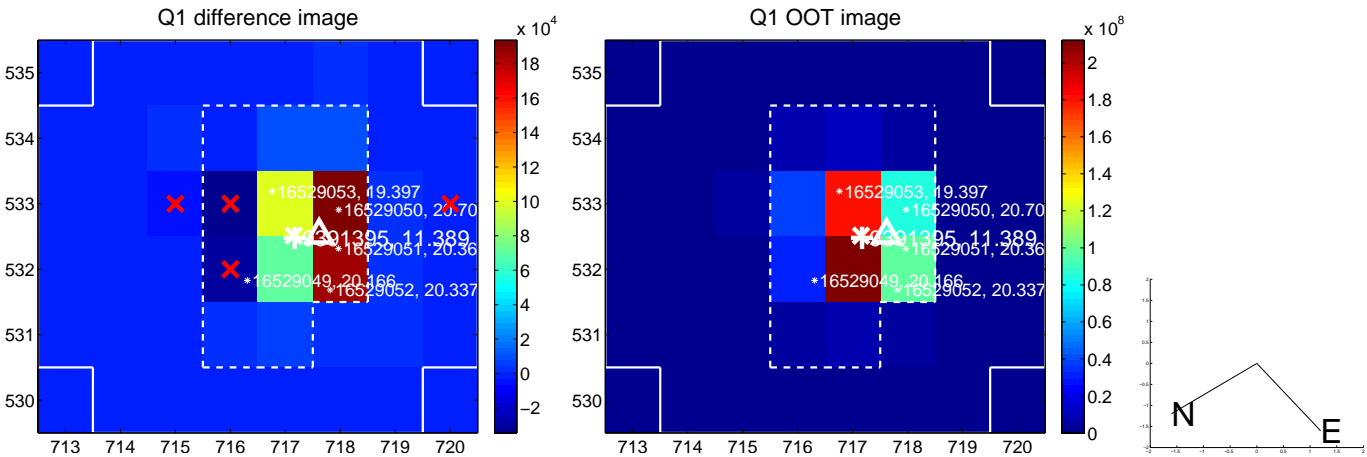


offset from photometric centroids

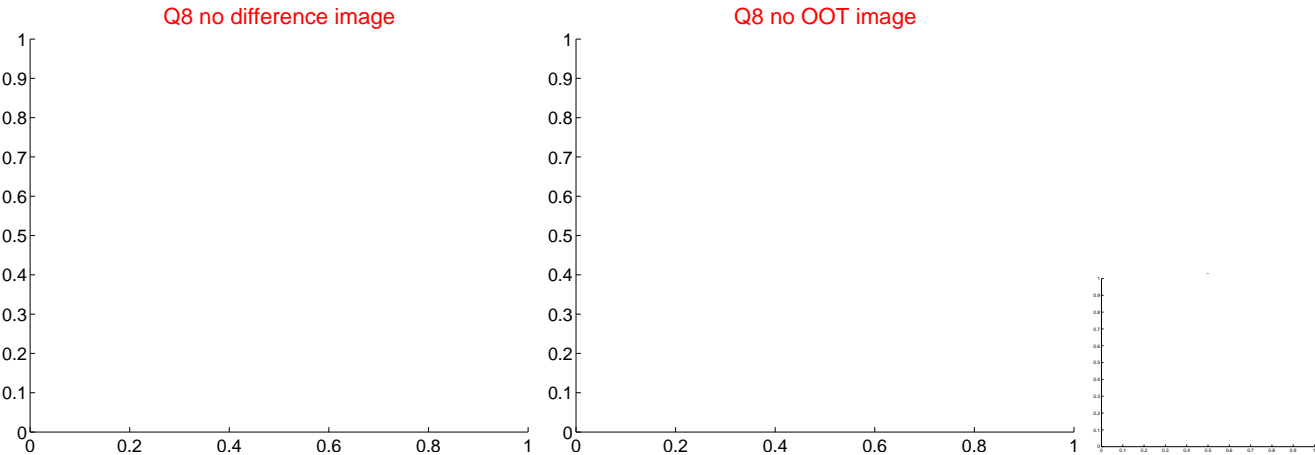
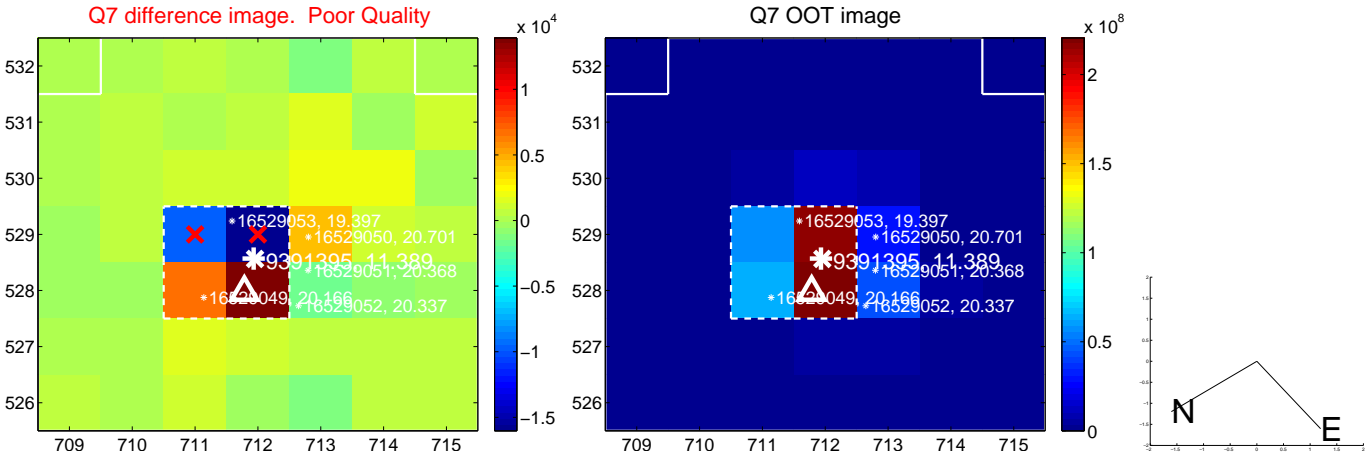
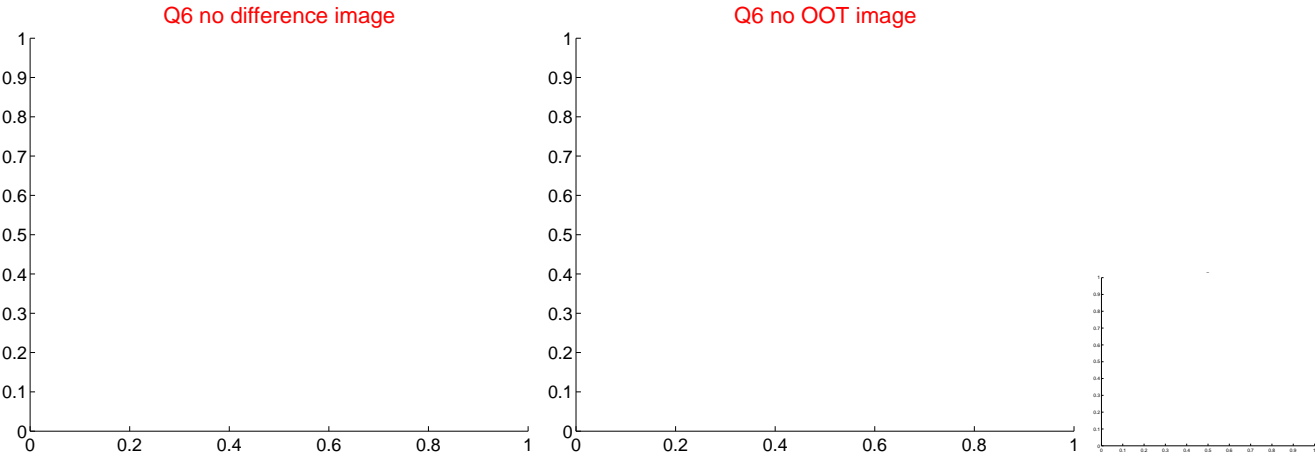
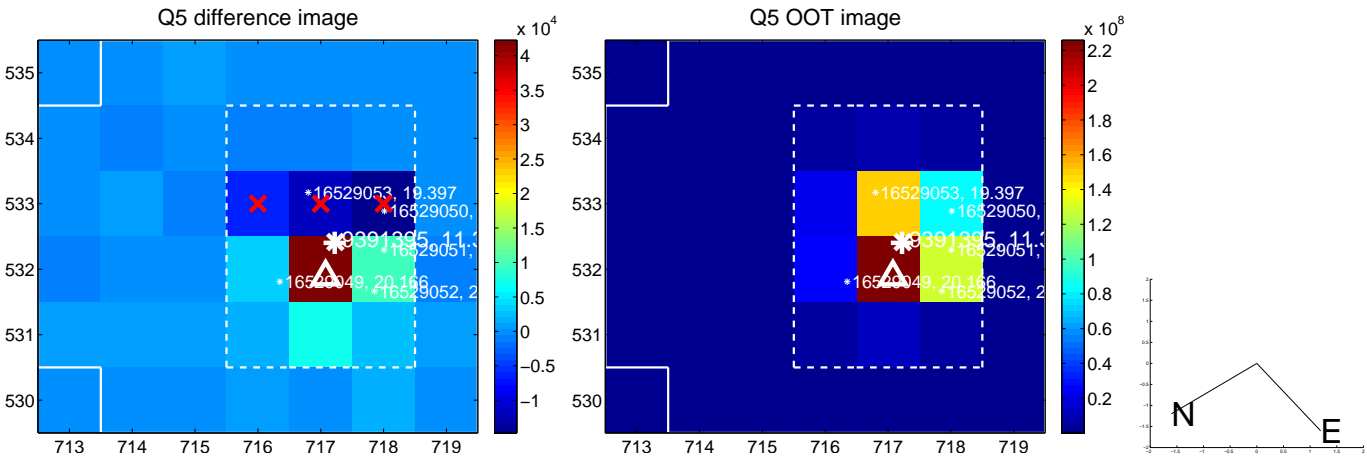


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

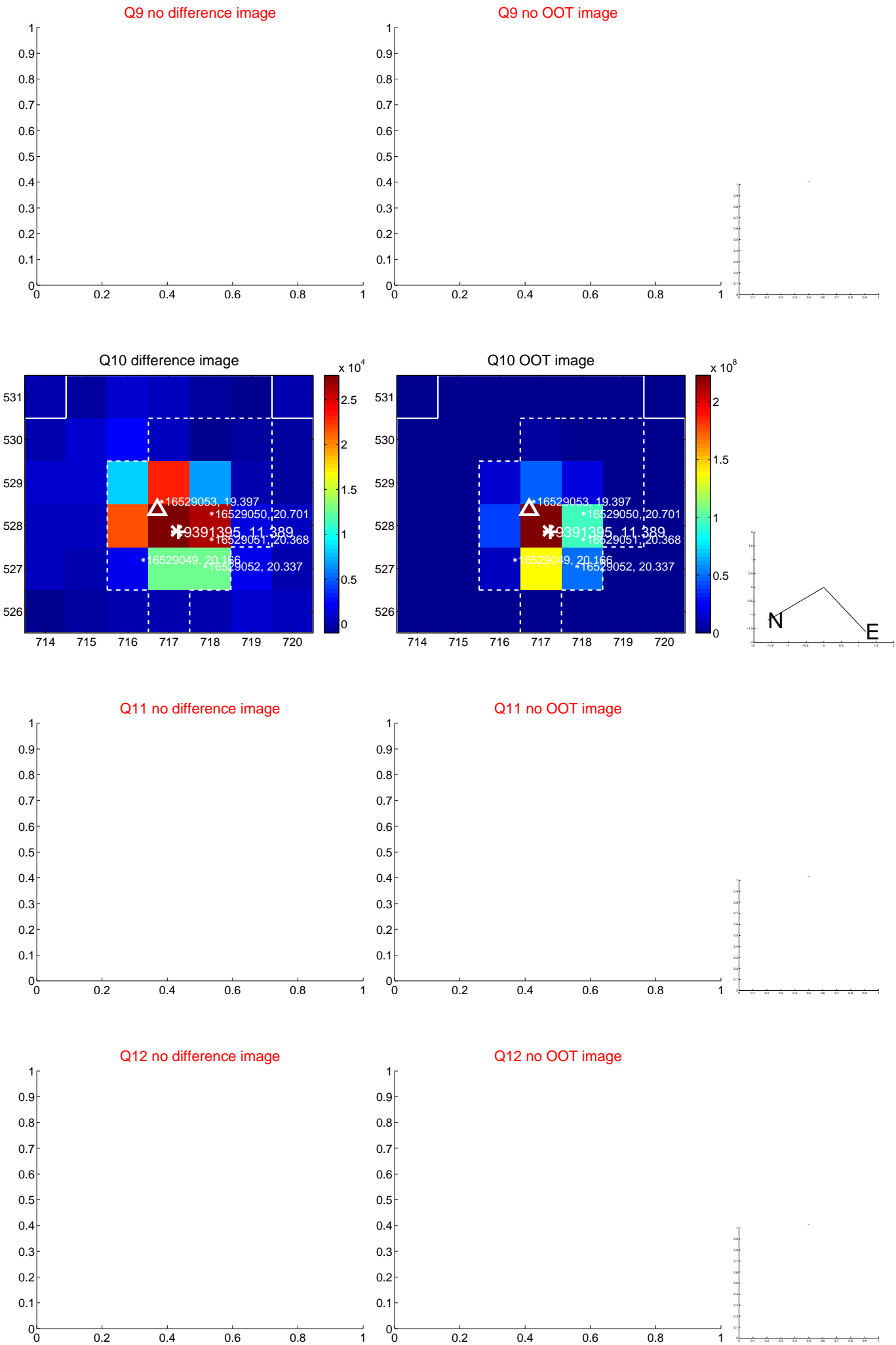
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



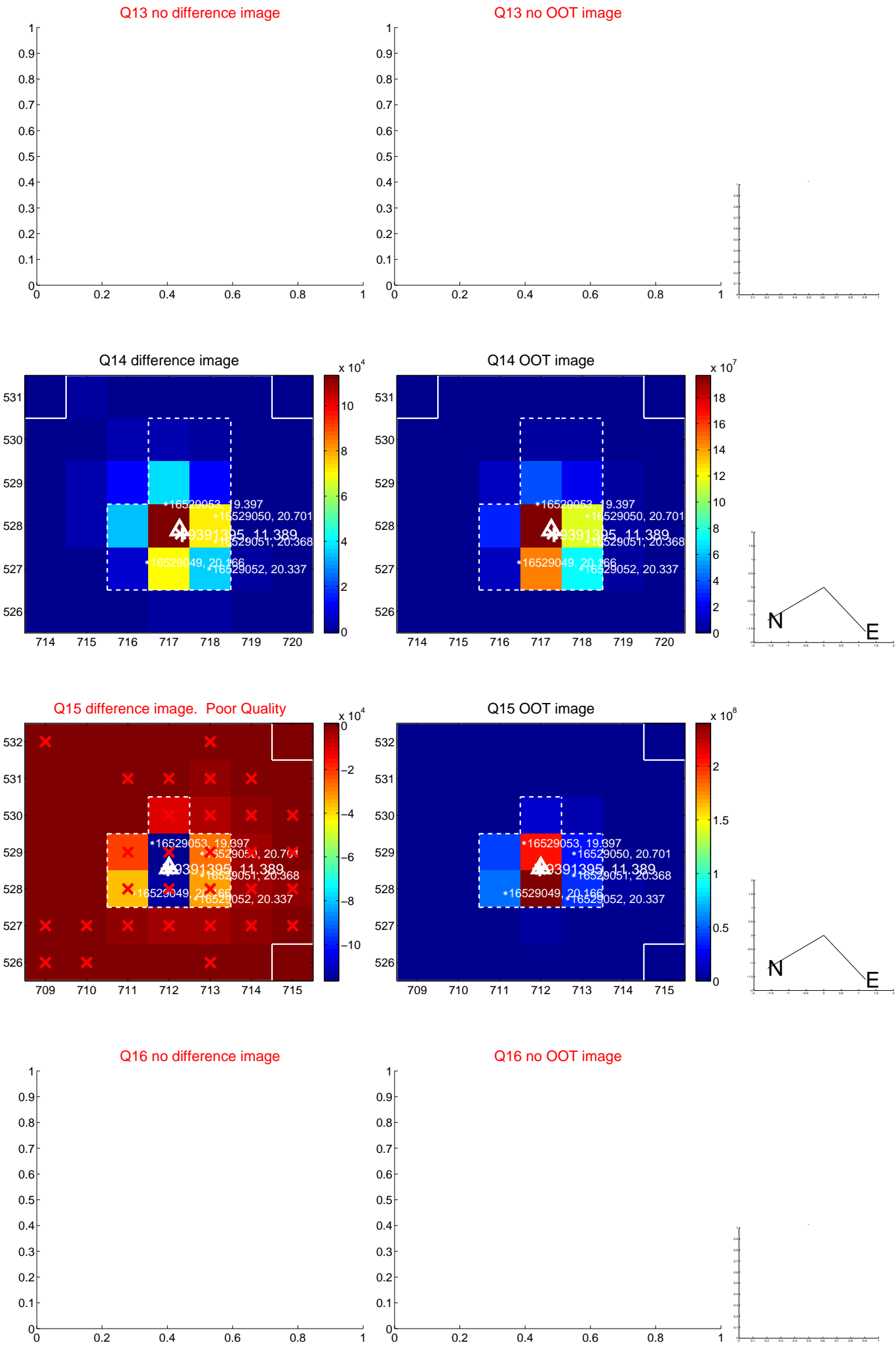
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



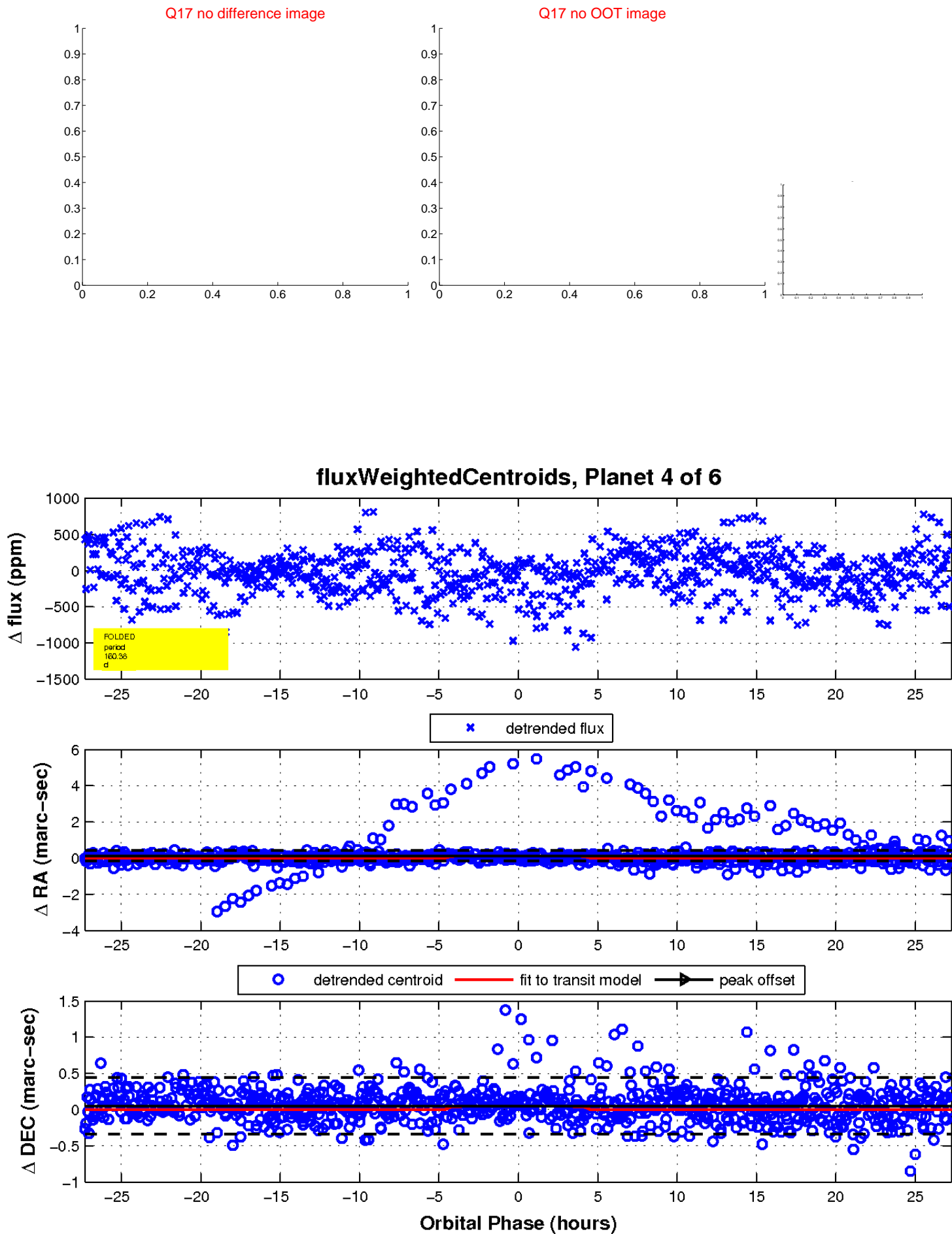
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

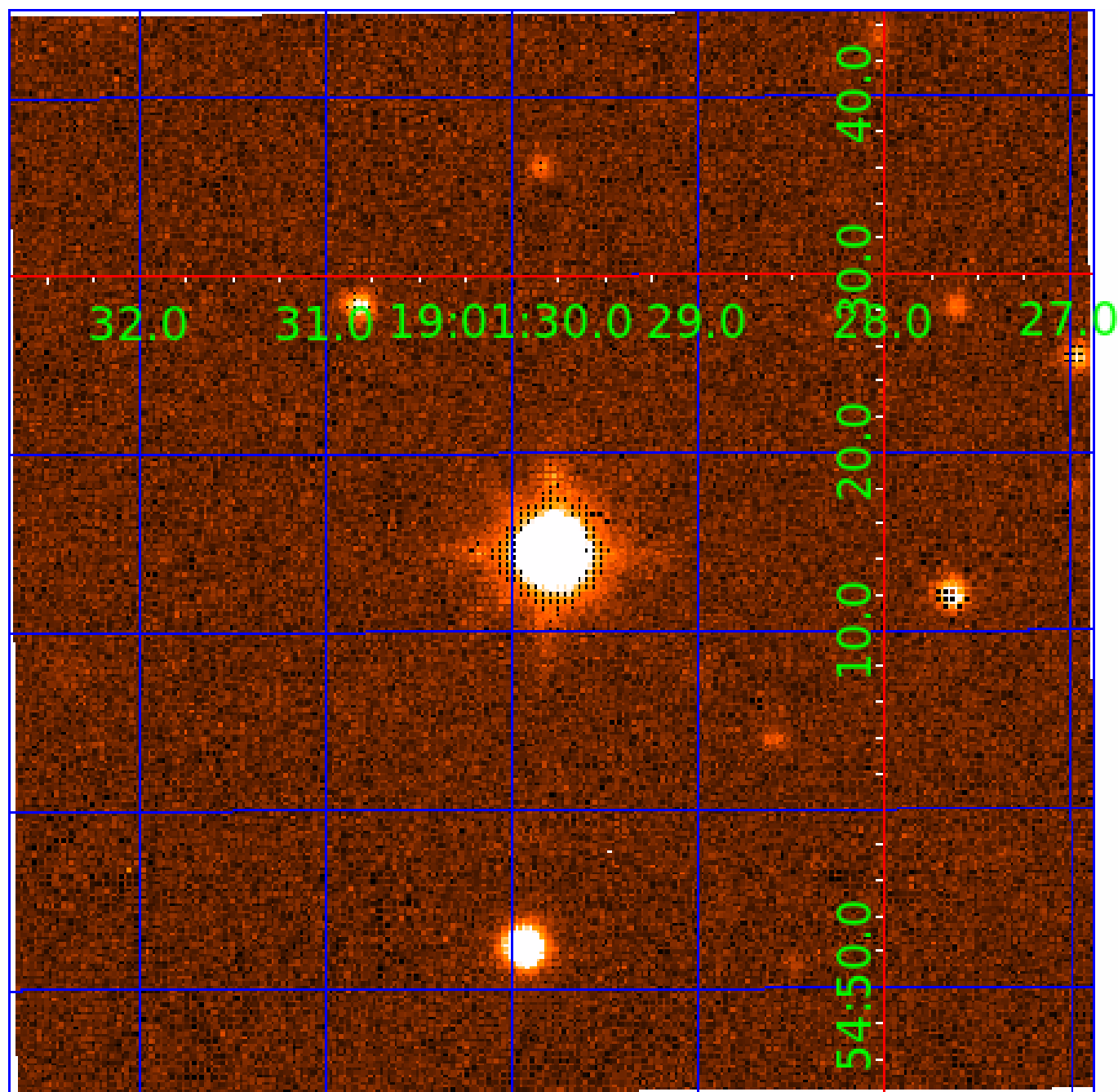


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009391395

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009391395-01 | OBS | No | 0.782755 | 131.554278 | 15.1 | 5.168 | 10.5 | 5.3 | 2.10 | 7505 | 0.88 | 32950.49 |
| 009391395-02 | OBS | No | 0.533520 | 131.590037 | 47.1 | 1.573 | 12.8 | 10.1 | 2.10 | 7505 | 1.69 | 54932.40 |
| 009391395-03 | OBS | No | 41.110030 | 163.055494 | 222.2 | 1.111 | 11.1 | 4.0 | 2.10 | 7505 | 3.68 | 167.53 |
| 009391395-04 | OBS | No | 160.381416 | 163.993641 | 716.8 | 9.113 | 12.0 | 10.1 | 2.10 | 7505 | 5.80 | 27.28 |
| 009391395-05 | OBS | No | 41.107675 | 163.508498 | 58.4 | 1.565 | 12.5 | 1.4 | 2.10 | 7505 | 1.72 | 167.54 |
| 009391395-06 | OBS | No | 40.556283 | 163.234960 | 220.0 | 2.500 | 12.5 | -1.0 | 2.10 | 7505 | 3.13 | 170.59 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009391395-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 009391395-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST |
| 009391395-05 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED—HALO_GHOST |
| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

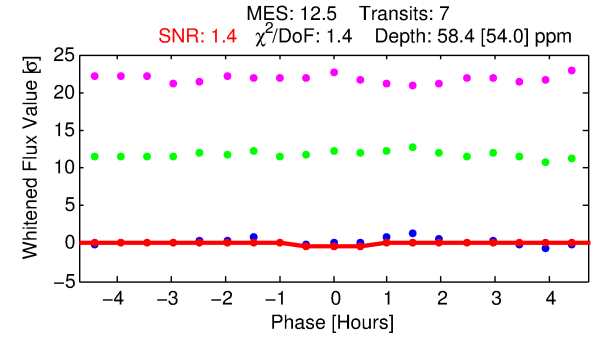
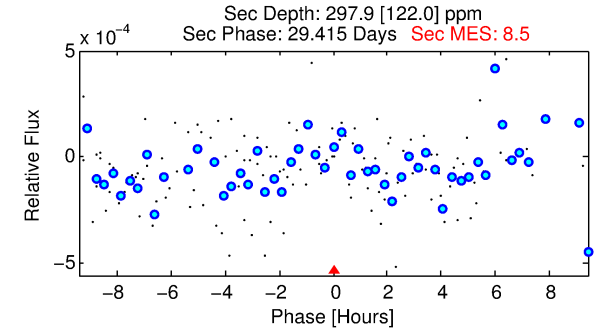
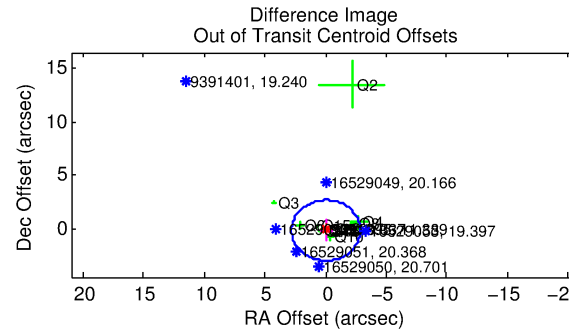
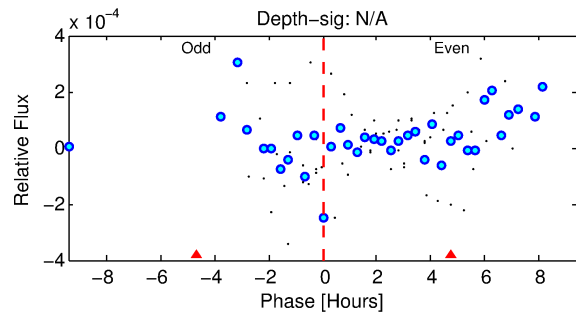
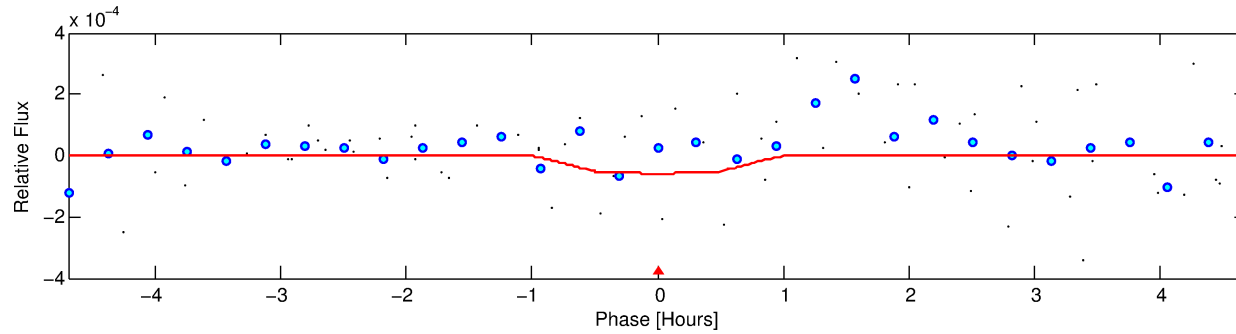
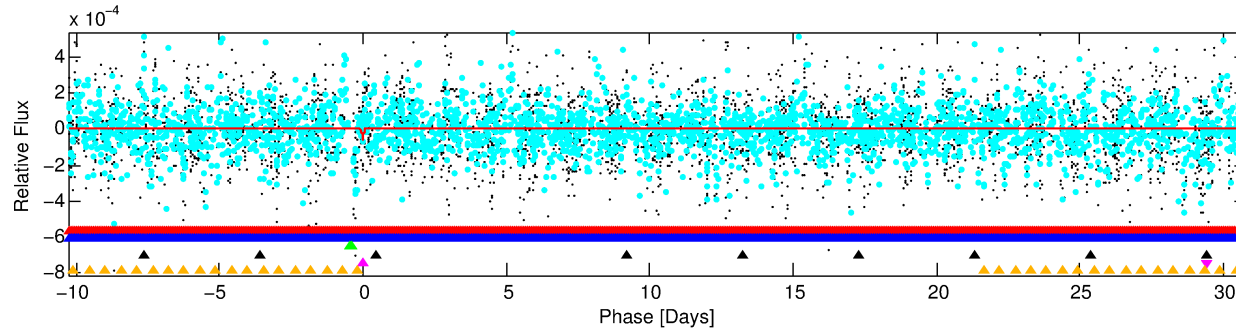
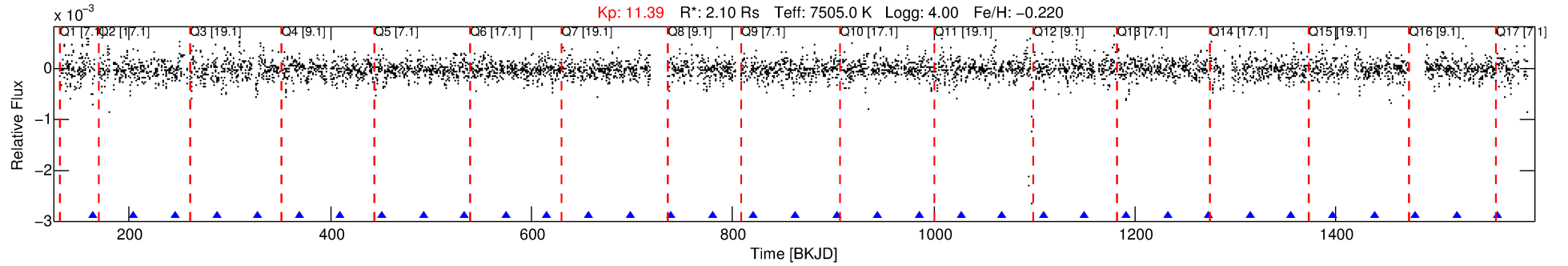
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-05

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 5 of 6 Period: 41.108 d



DV Fit Results:

Period = 41.10767 [0.00312] d
Epoch = 163.5085 [0.0453] BKJD
 $R_p/R^* = 0.0075$ [0.0213]
 $a/R^* = 144.05$ [2149.99]
 $b = 0.71$ [10.51]
 $\text{Seff} = 167.55$ [72.40]
 $T_{\text{eq}} = 917$ [99] K
 $R_p = 1.72$ [4.90] R_e
 $a = 0.2731$ [0.0728] AU
 $A_g = 4119.45$ [23404.65] [0.18 σ]
 $T_{\text{eff}} = 11363$ [16106] K [0.65 σ]

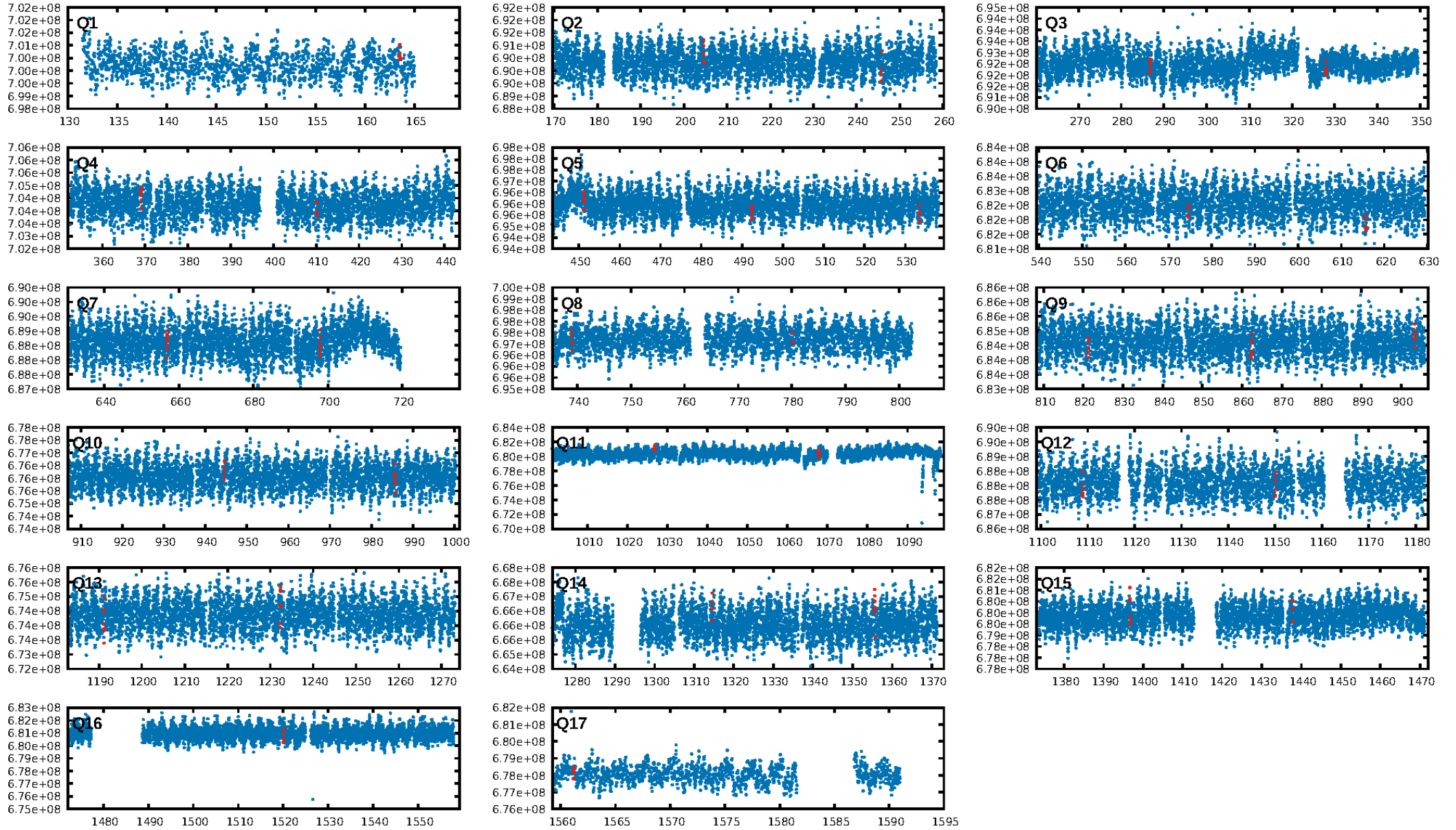
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.49 σ]
LongPeriod-sig: 2.3% [0.03 σ]
ModelChiSquare2-sig: 3.5%
ModelChiSquareGof-sig: 88.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.1364
Centroid-sig: 95.3%
Centroid-so: 0.272 arcsec [0.27 σ]
OotOffset-rm: 0.149 arcsec [0.16 σ]
KicOffset-rm: 0.170 arcsec [0.18 σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.33 [5/15]
DiffImageOverlap-fno: 0.00 [0/17]

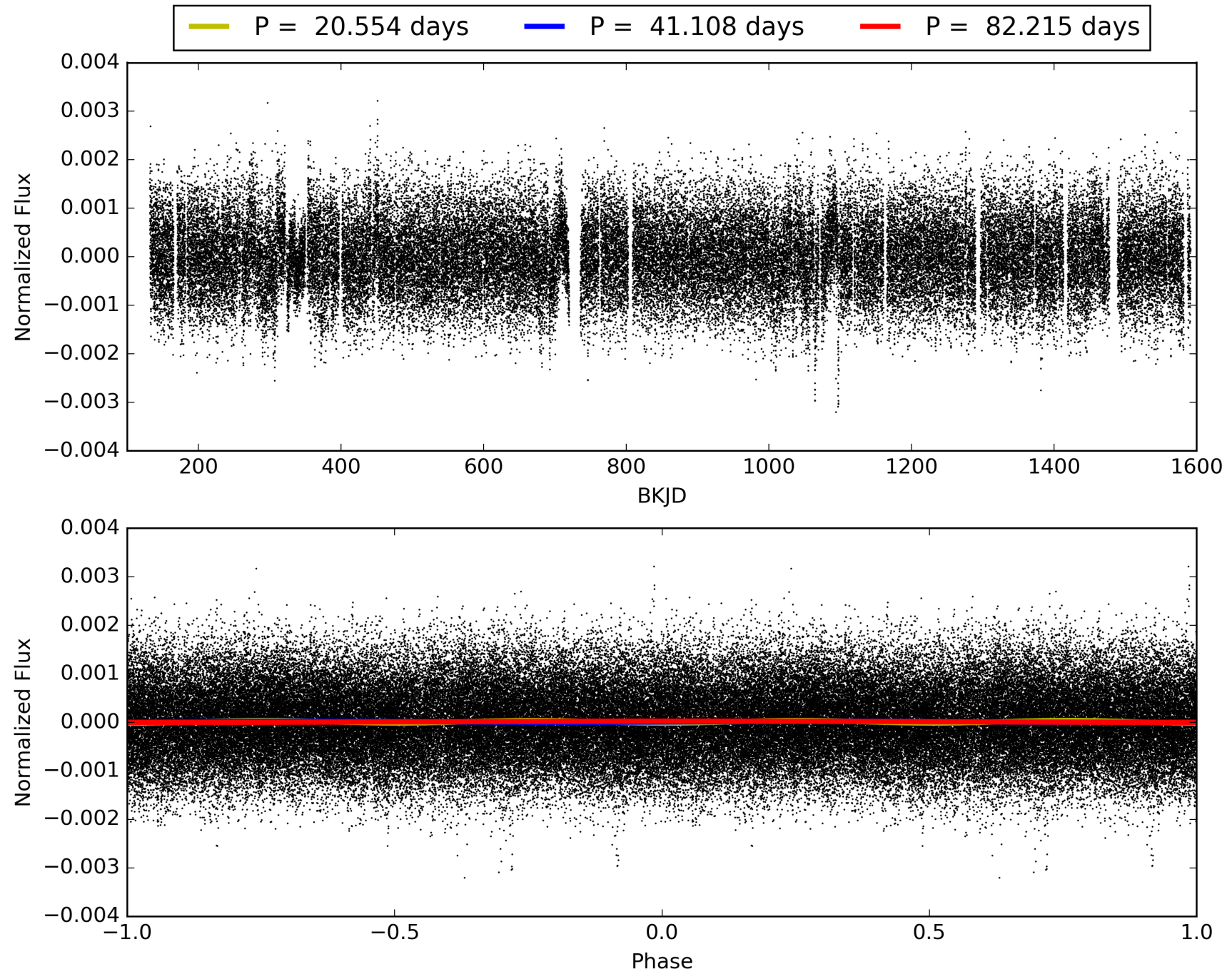
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:25:26 Z

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

TCE 009391395-05, PDC Light Curves

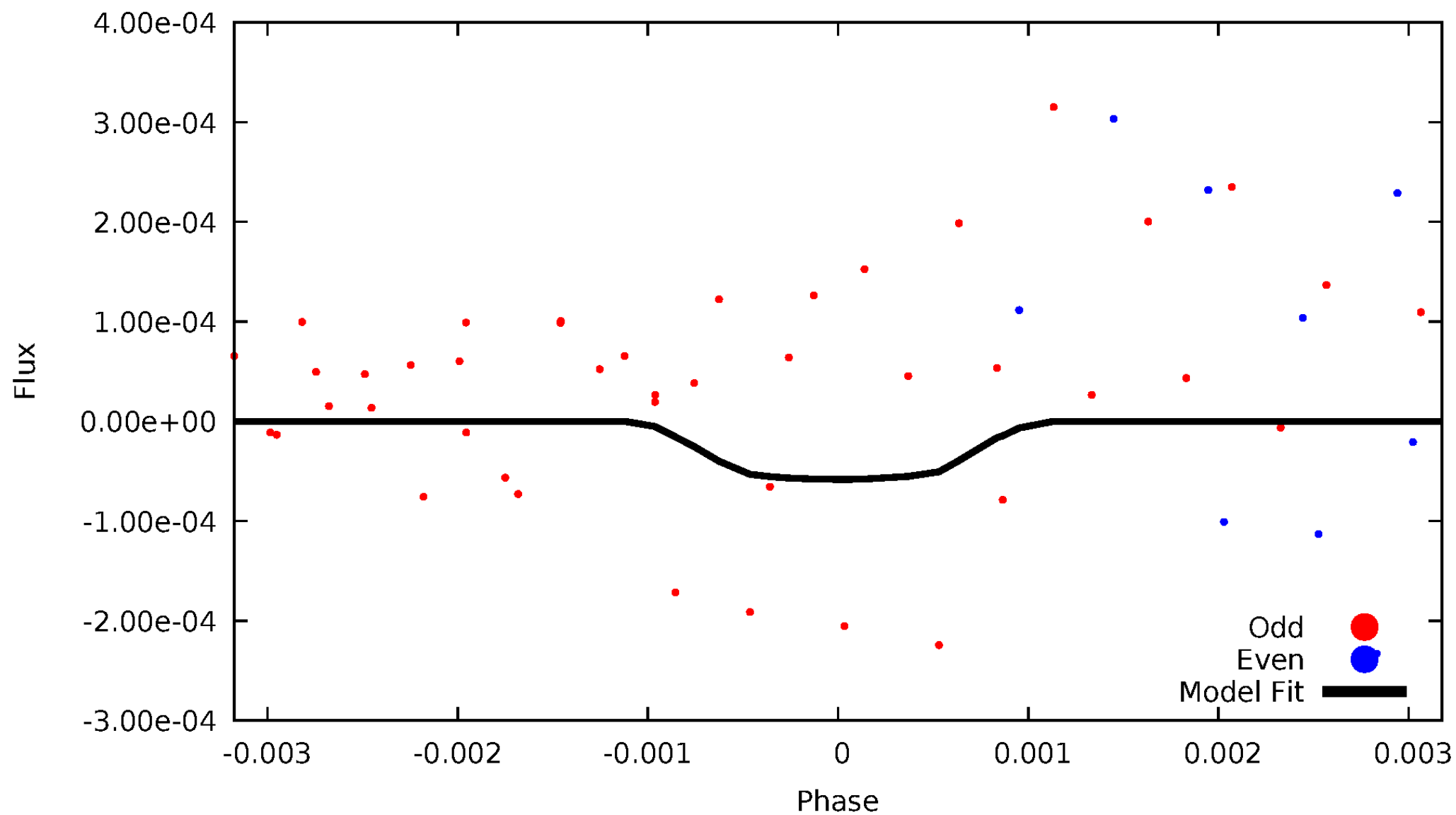


TCE 009391395-05



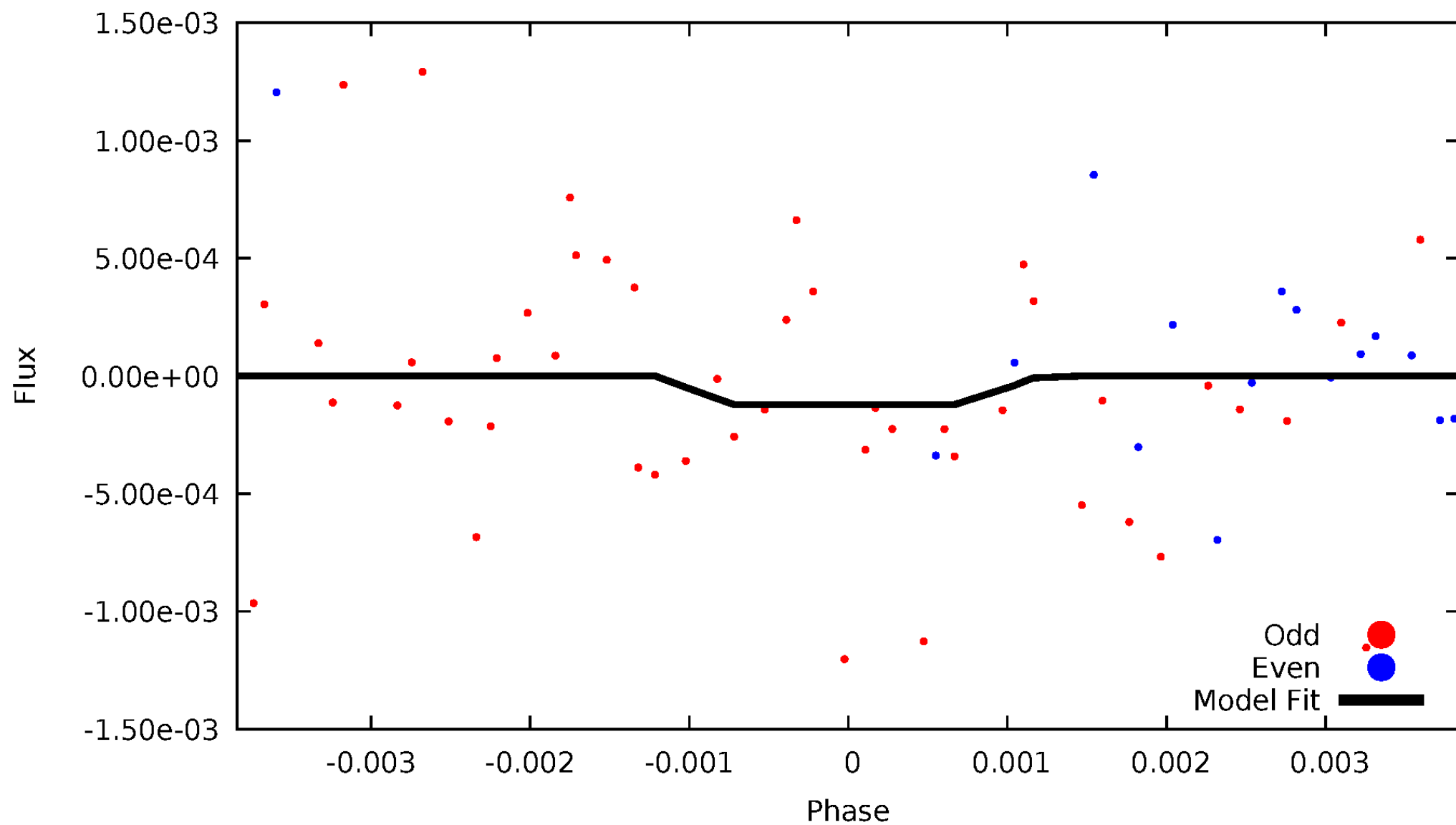
DV Odd/Even

TCE 009391395-05



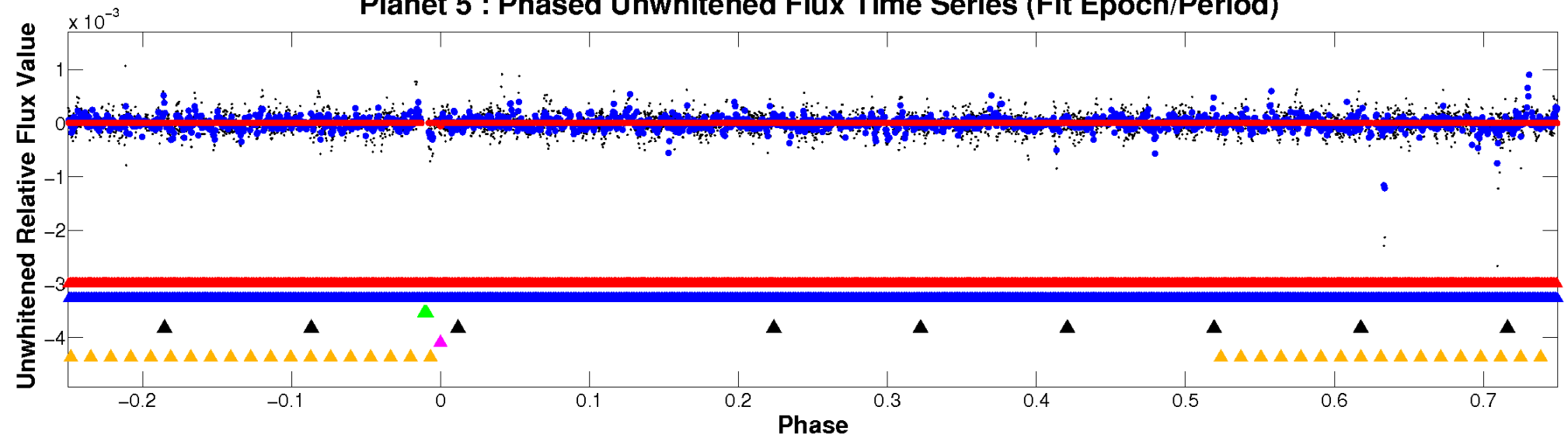
ALT Odd/Even

TCE 009391395-05

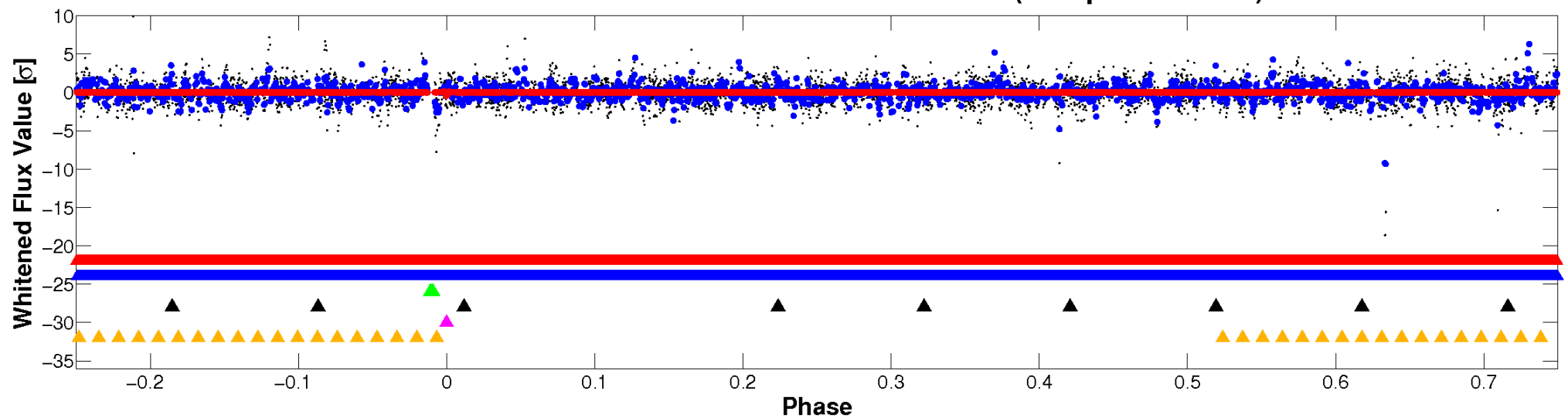


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

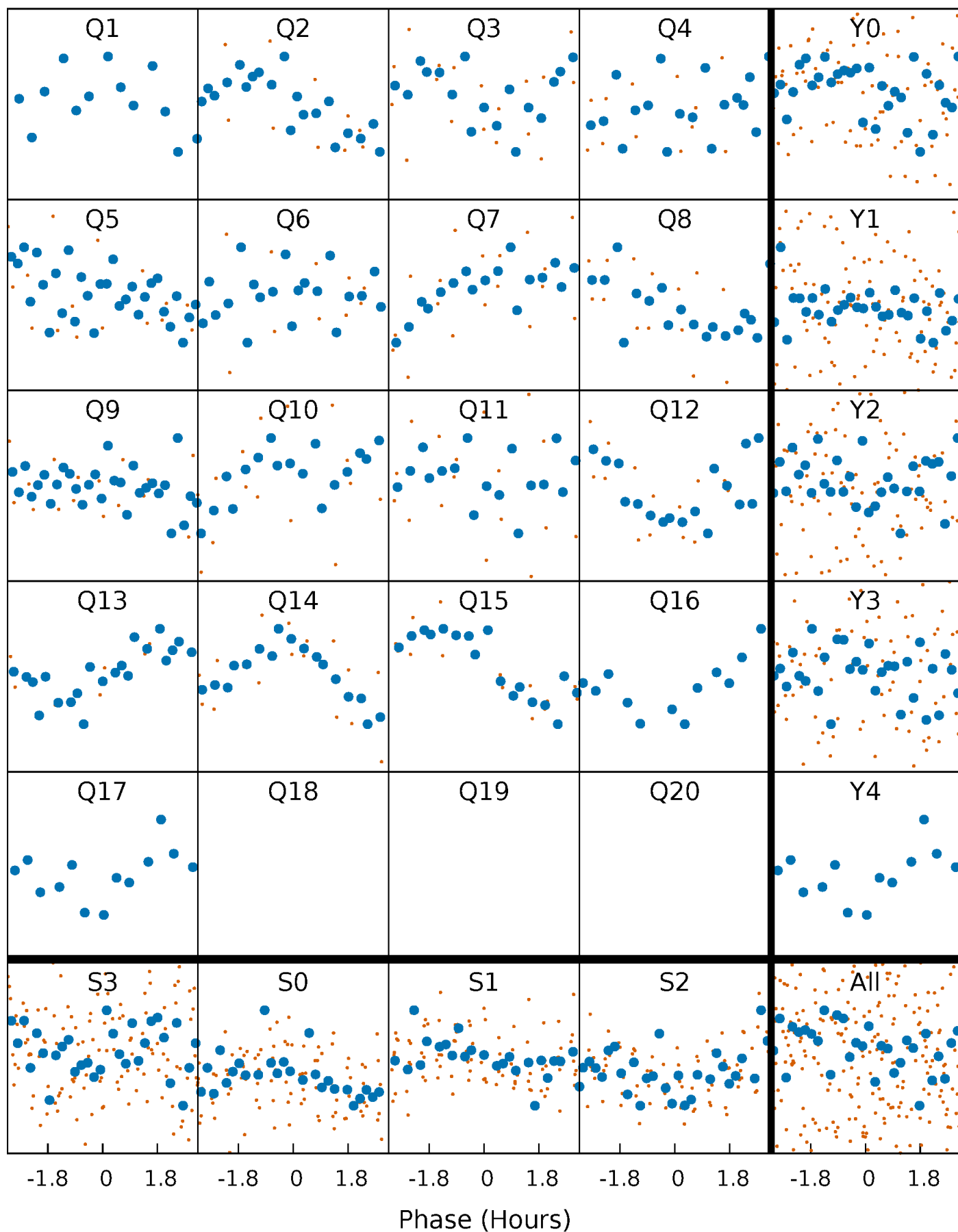


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



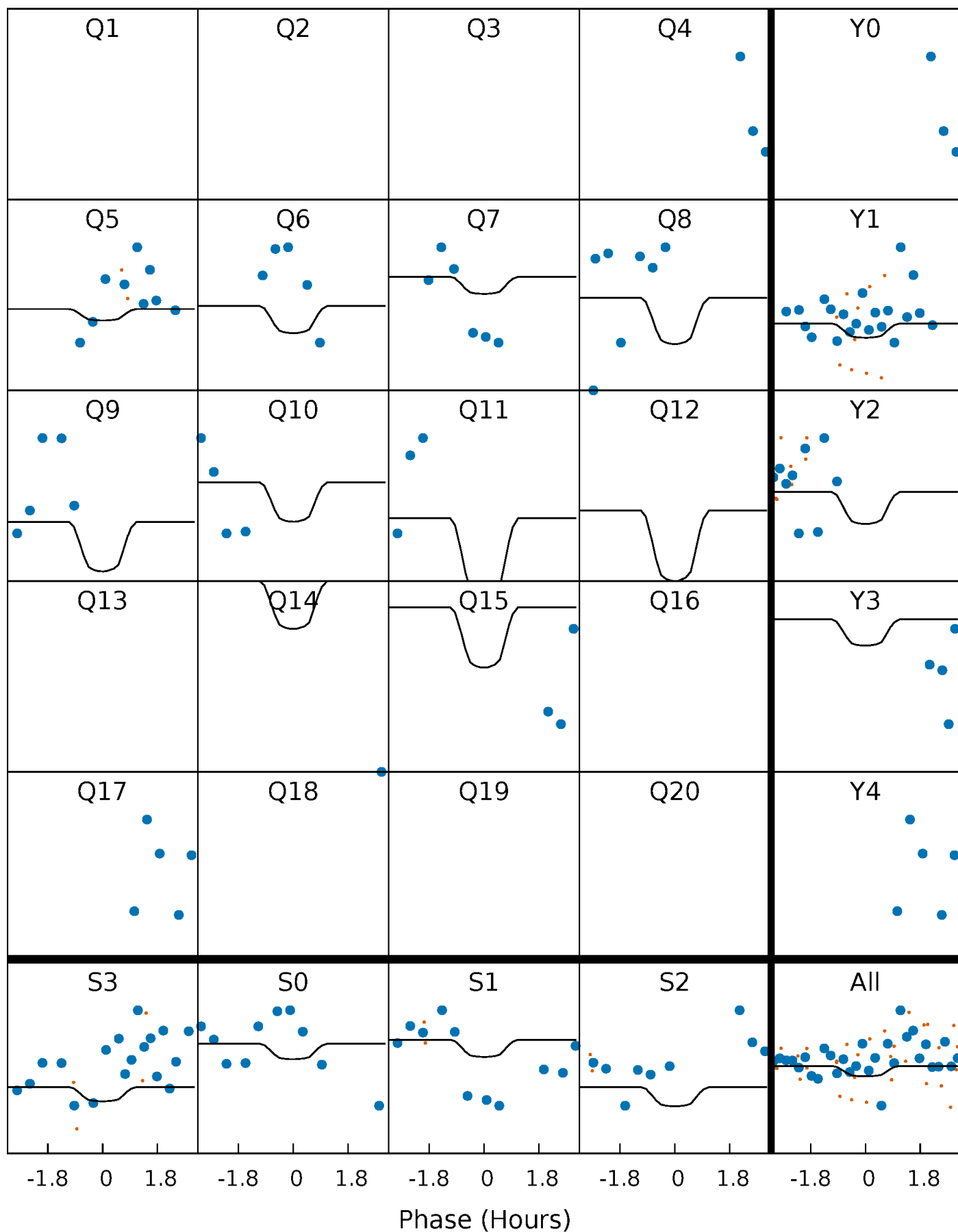
PDC Quarter-Phased Transit Curves

TCE 009391395-05 $P = 41.107675$ Days $T_0 = 163.508498$ (BKJD)



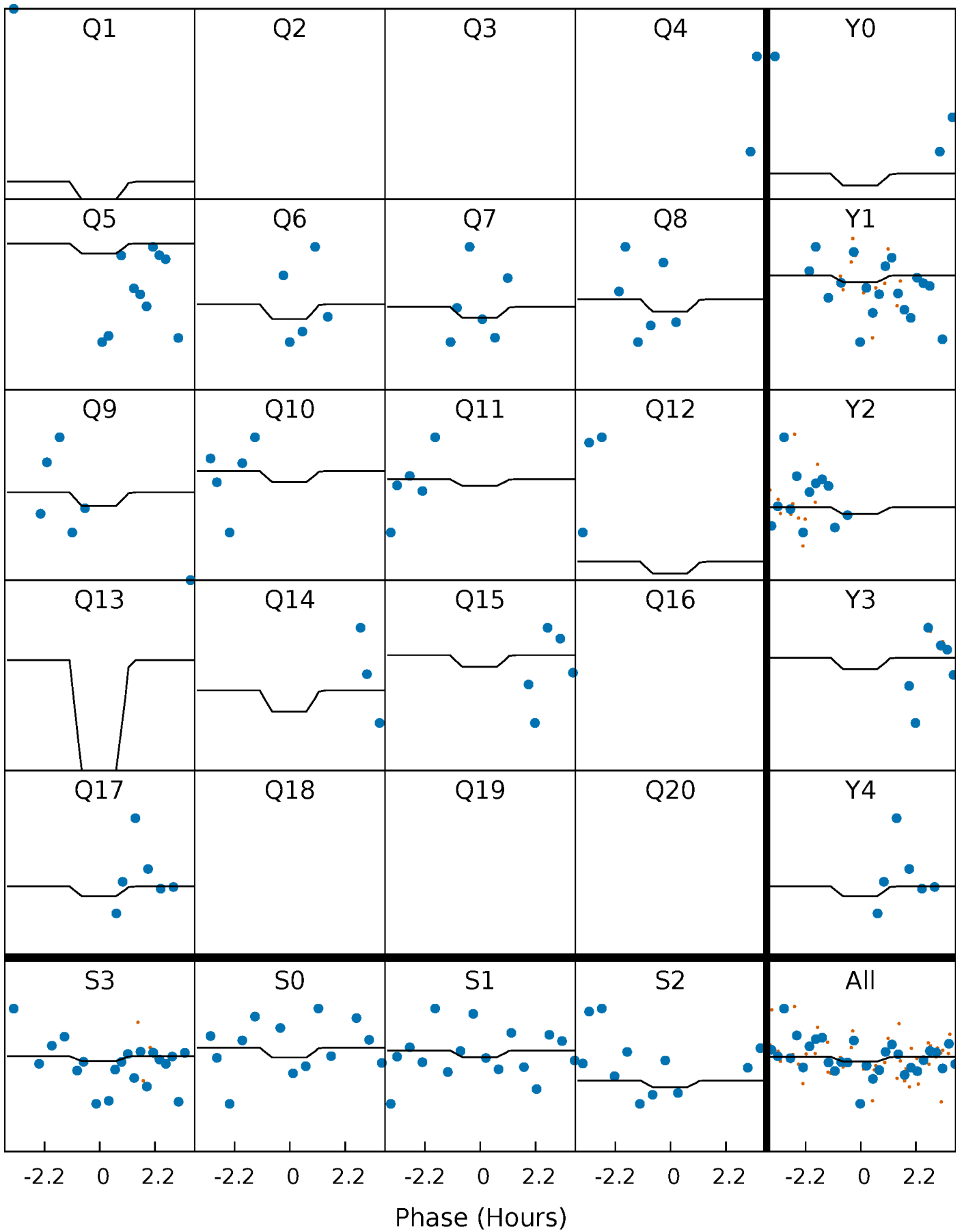
DV Quarter-Phased Transit Curves

TCE 009391395-05 $P = 41.107675$ Days $T_0 = 163.508498$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

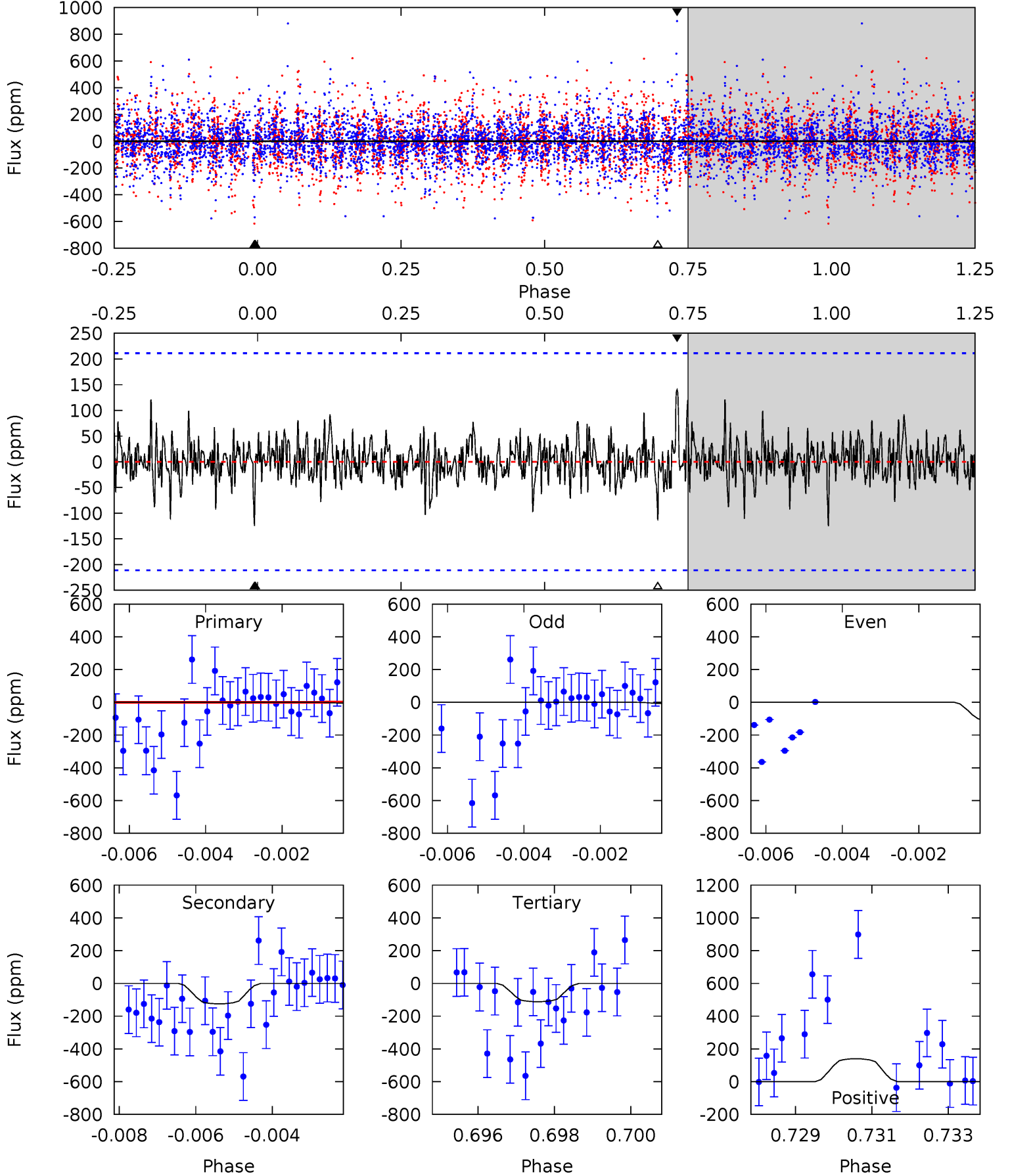
TCE 009391395-05 $P = 41.109703$ Days $T_0 = 163.456068$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-05, P = 41.107675 Days, E = 122.400823 Days

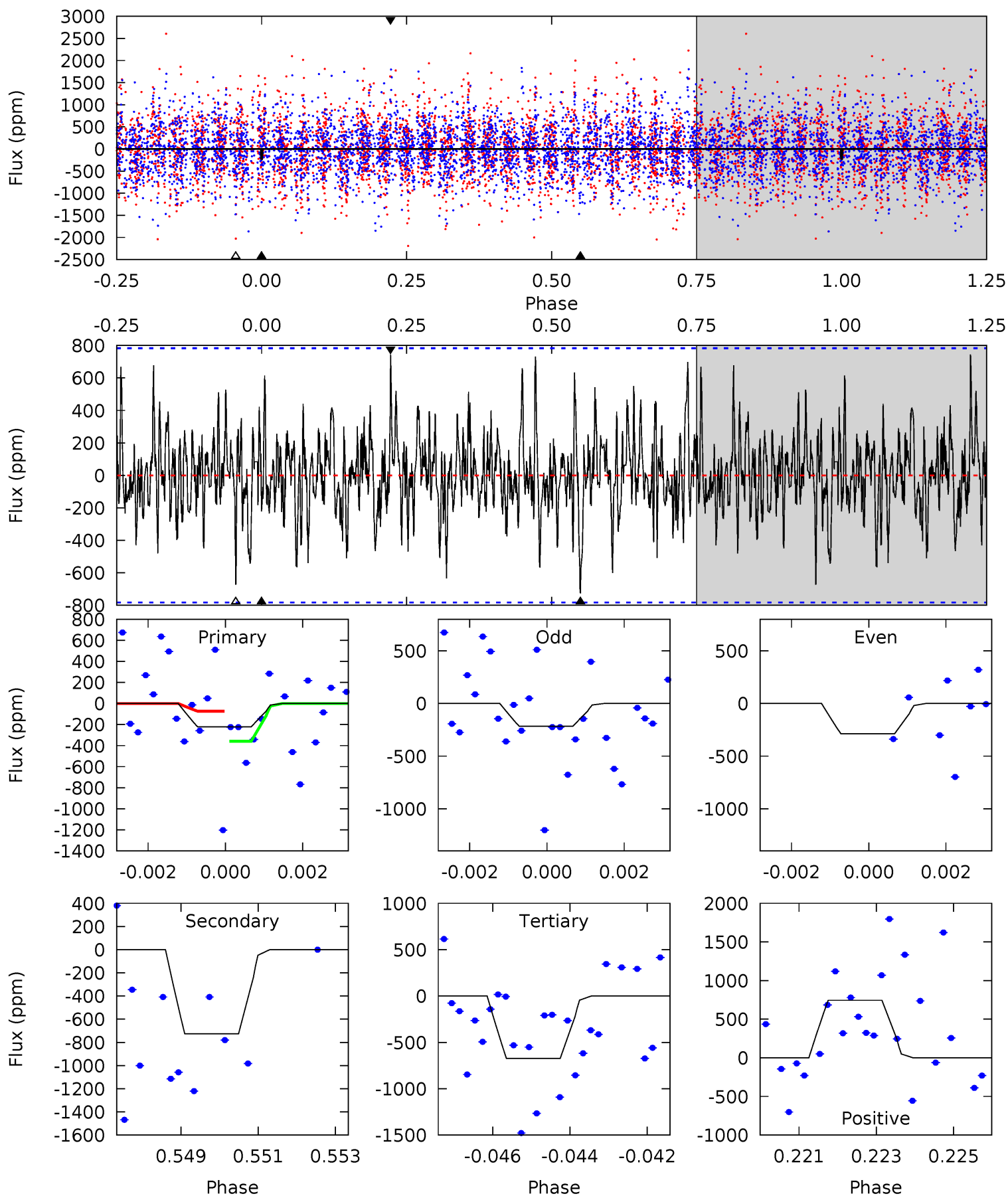
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.15 | 3.15 | 2.82 | 3.53 | 5.32 | 3.08 | 0.77 | -2.67 | -3.38 | 0.33 | -0.39 | 0.64 | 0.06 | 0.53 | 0.16 |



Alt Model-Shift Uniqueness Test

009391395-05, P = 41.109703 Days, E = 122.346365 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1.51 | 4.94 | 4.58 | 5.06 | 5.33 | 3.09 | 1.47 | -3.07 | -3.56 | 0.36 | -0.12 | 0.16 | 1.77 | 0.51 | 0.94 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|-------------------------|-------------------------|
| DV | -125 ± 40 | $3.78^{+3.98}_{-2.67}$ | 1273^{+96}_{-106} | 5807^{+7491}_{-1436} | 325^{+3762}_{-241} |
| Alt. | -726 ± 147 | $4.25^{+4.05}_{-2.89}$ | 1271^{+96}_{-94} | 9438^{+16795}_{-3206} | 1634^{+13885}_{-1206} |

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

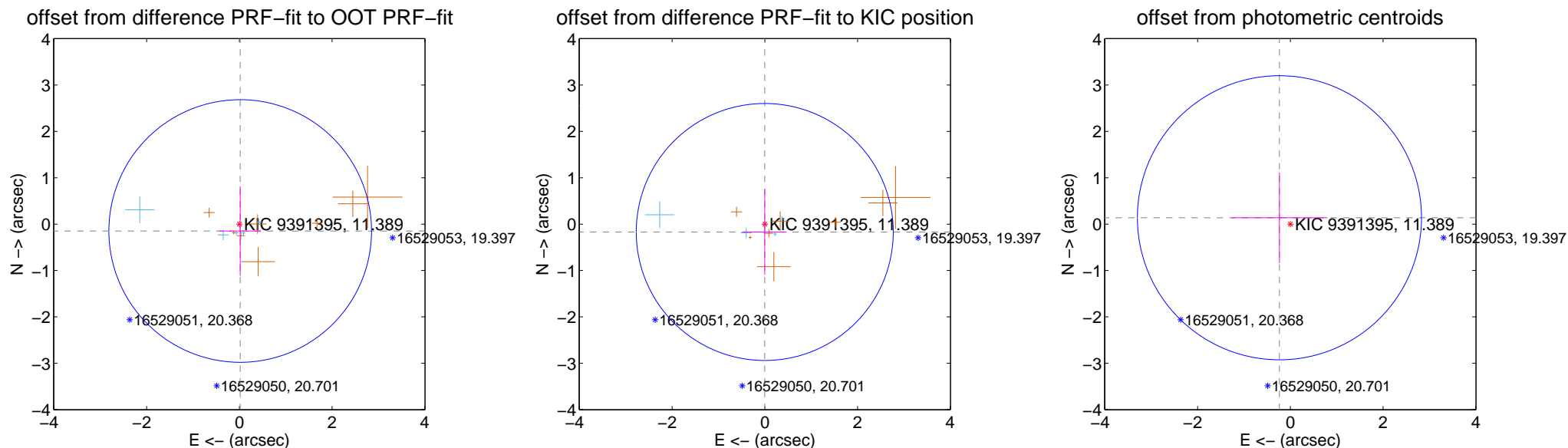
DV Centroid Data

Supplemental centroid analysis for 009391395-05. **Kepler magnitude: 11.39.** Transit SNR 1.35

There are 5 quarters with good PRF difference image offsets

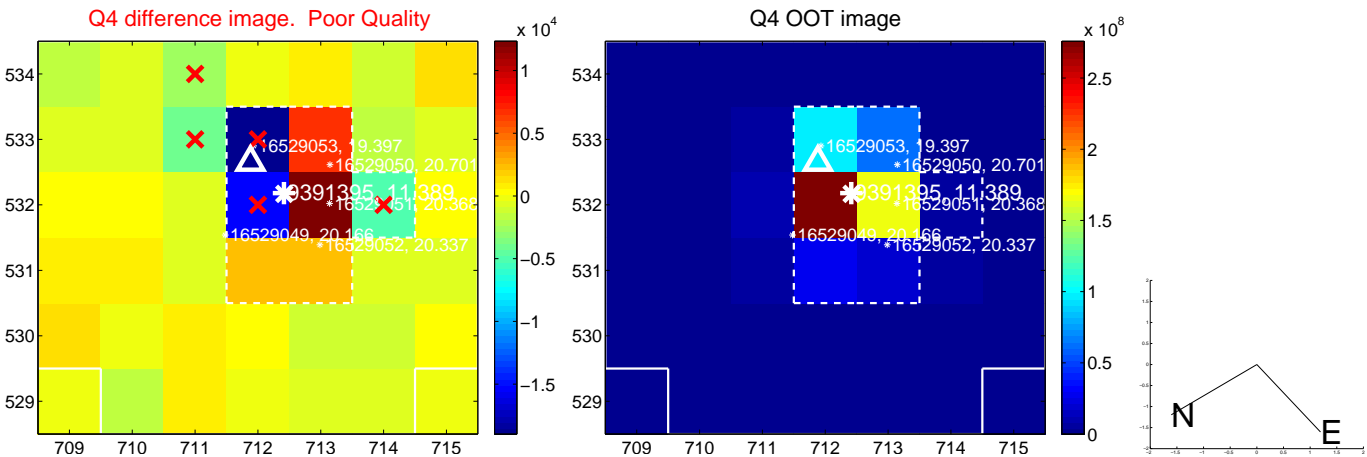
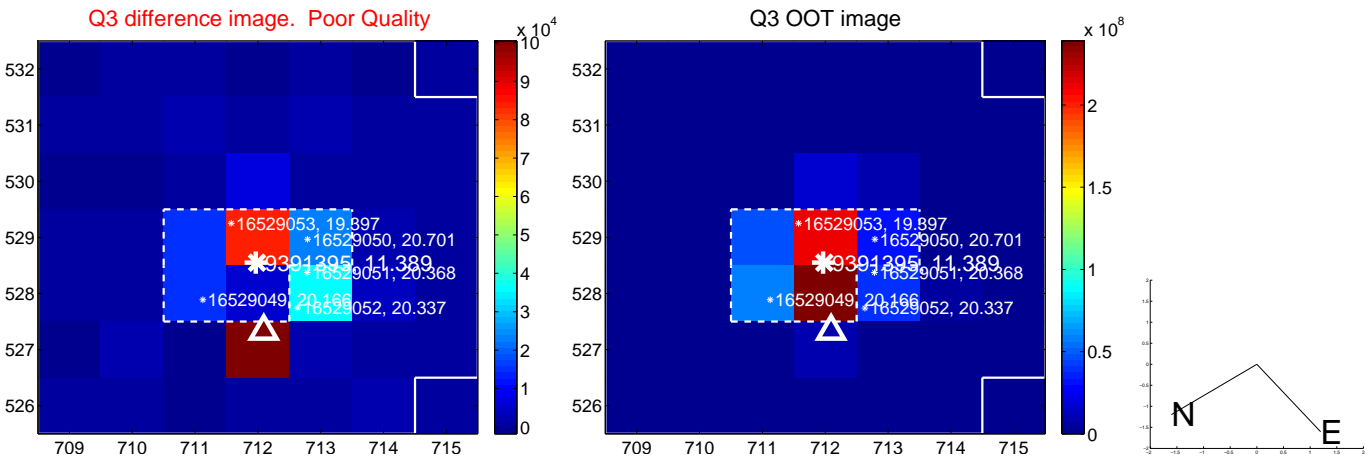
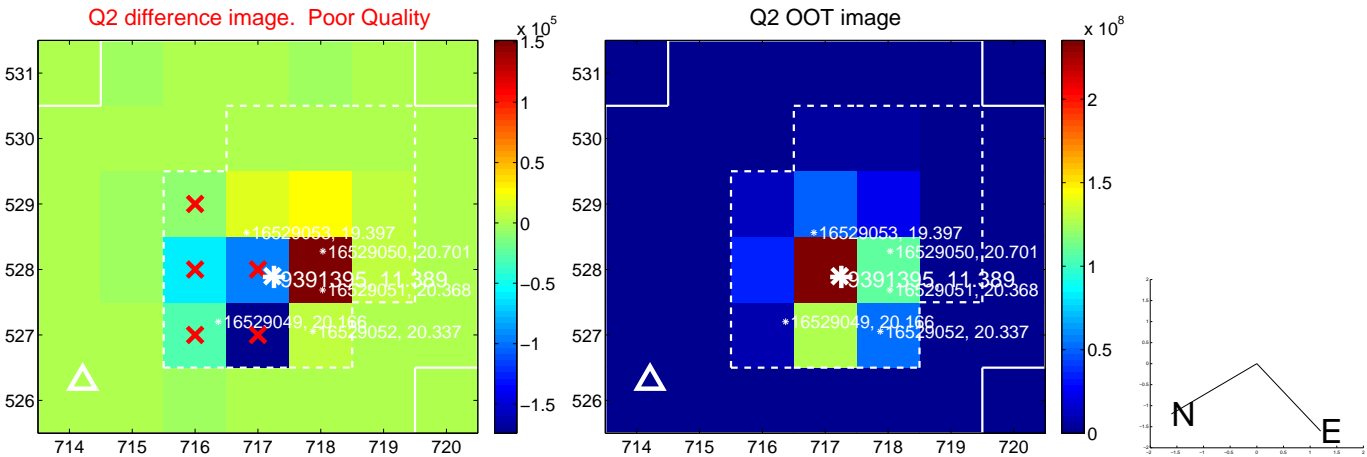
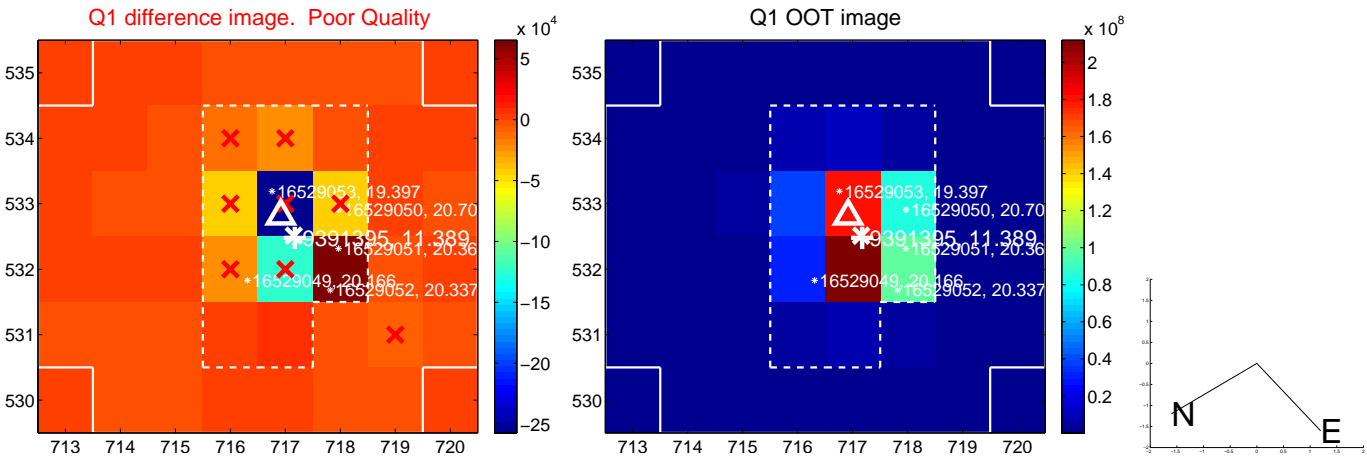
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.149 ± 0.944 | 0.16 | -0.018 ± 0.451 | -0.148 ± 0.966 |
| PRF-fit source offset from KIC position | 0.170 ± 0.924 | 0.18 | 0.002 ± 0.472 | -0.170 ± 0.923 |
| photometric centroid source offset | 0.27 ± 1.02 | 0.27 | 0.24 ± 1.04 | 0.14 ± 0.98 |

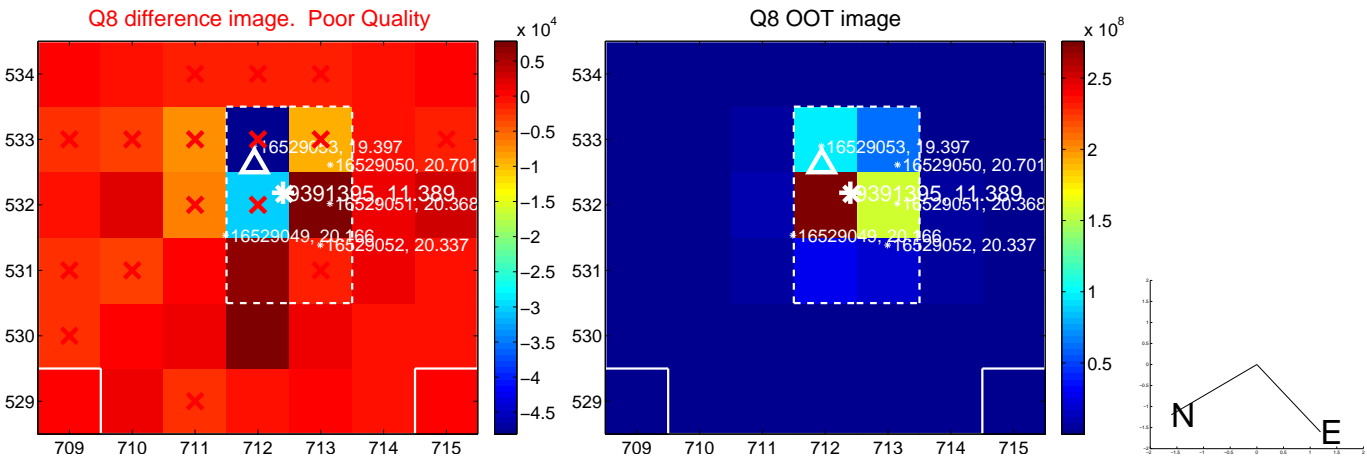
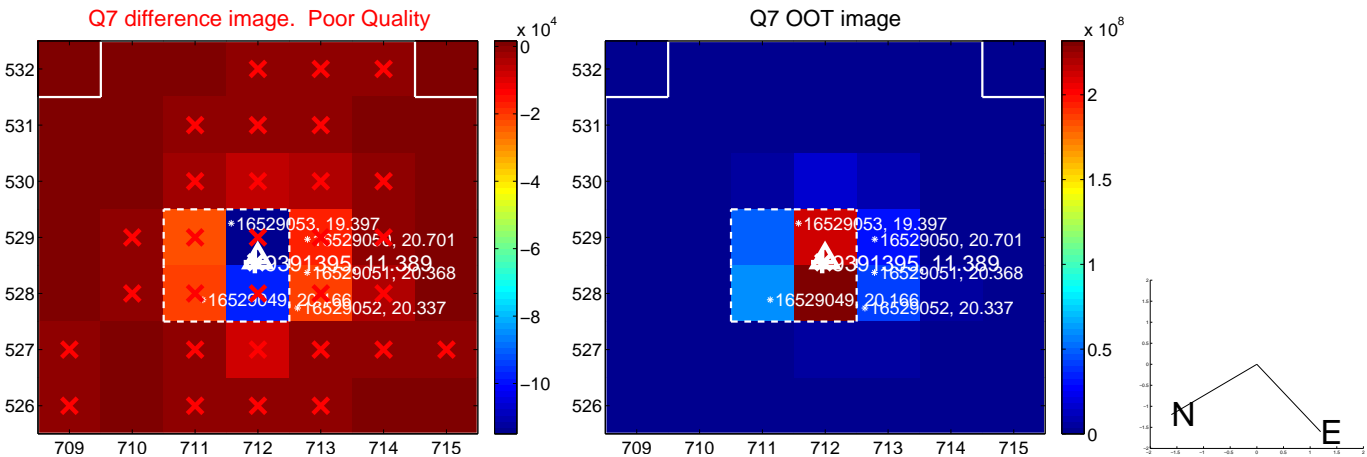
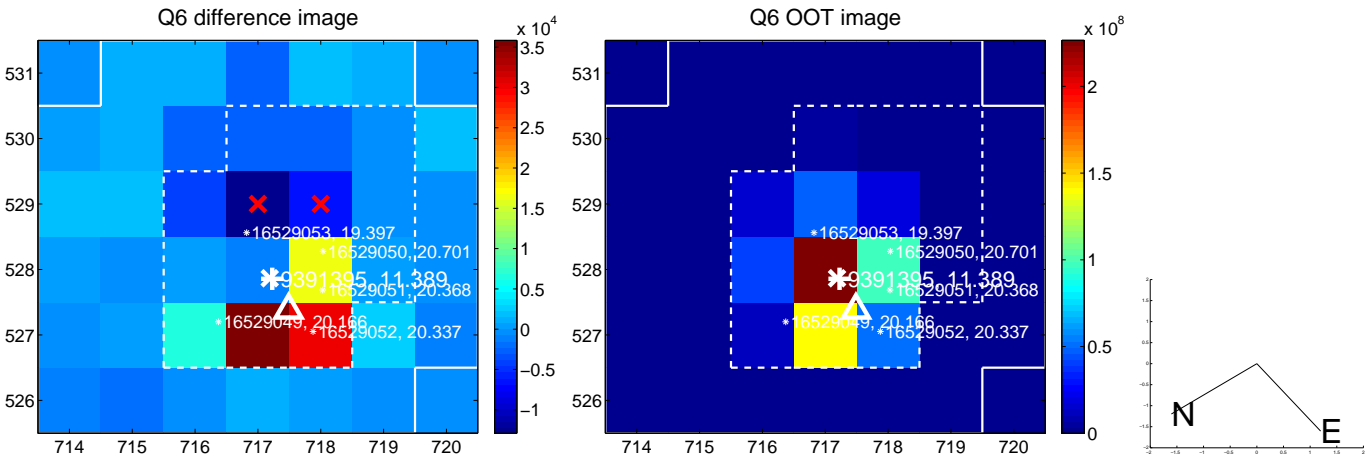
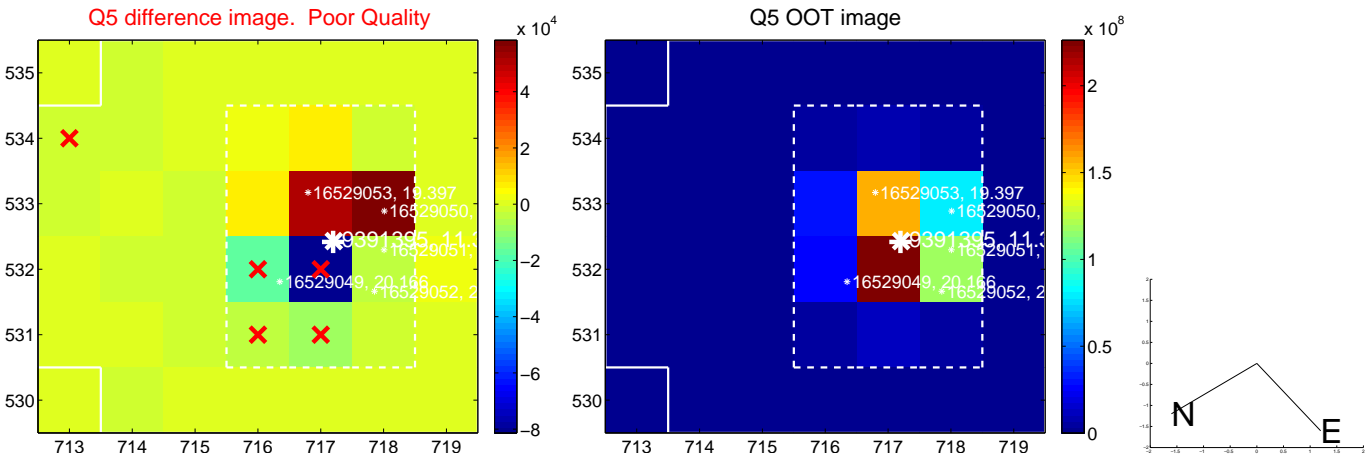


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

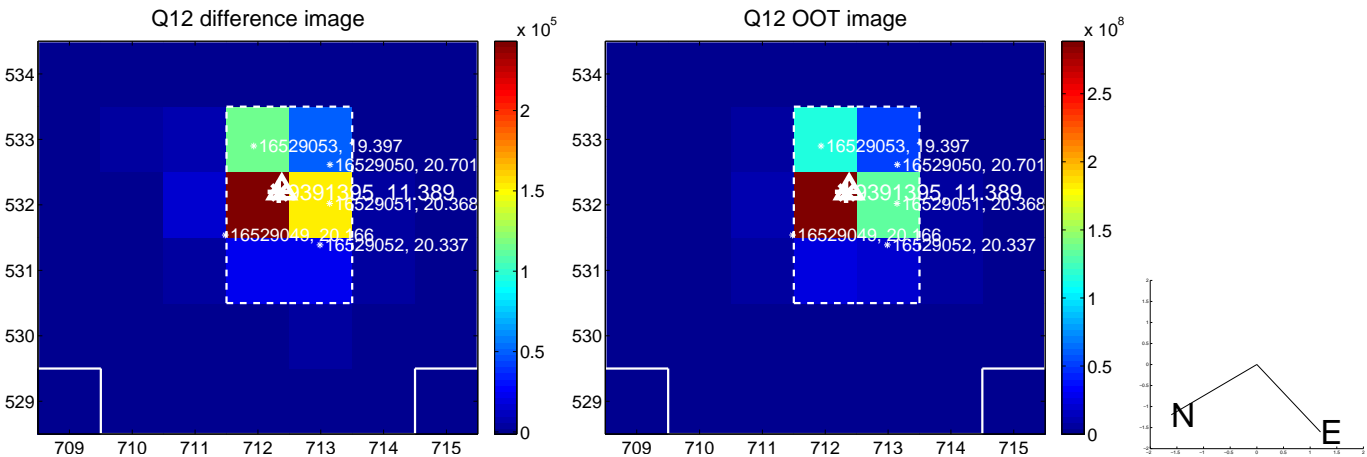
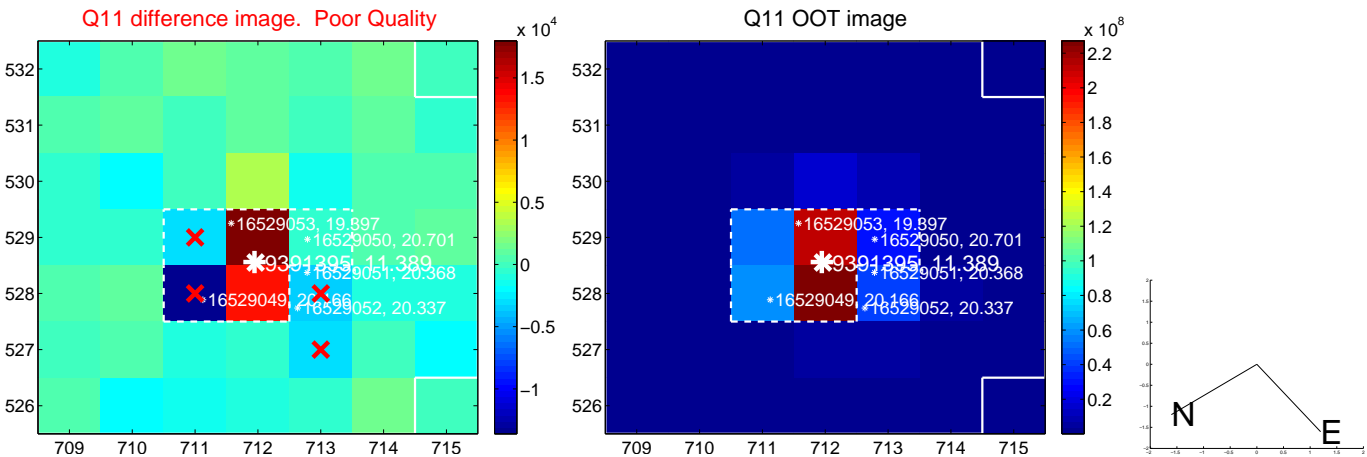
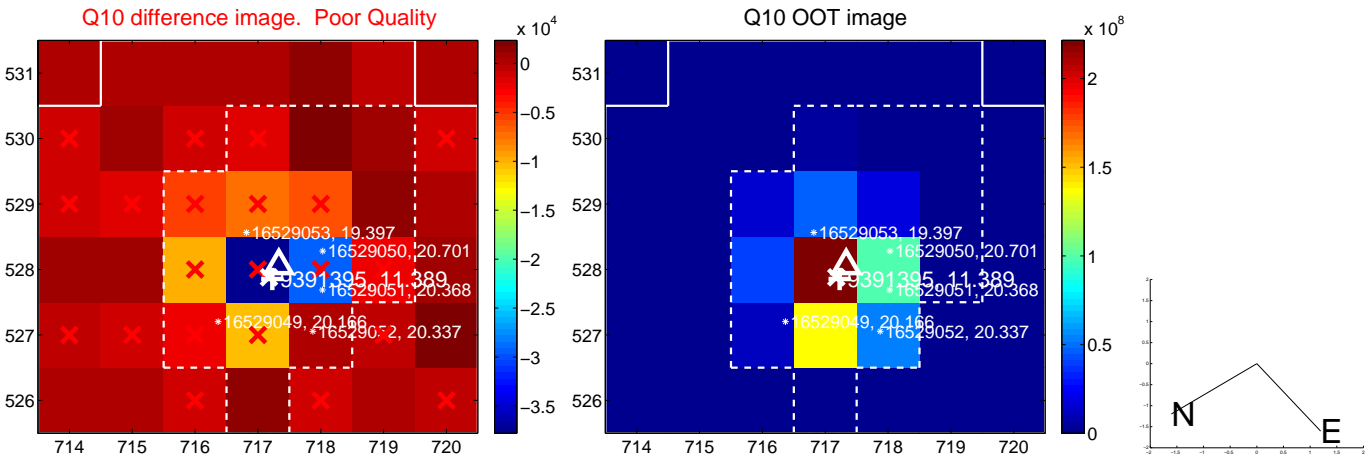
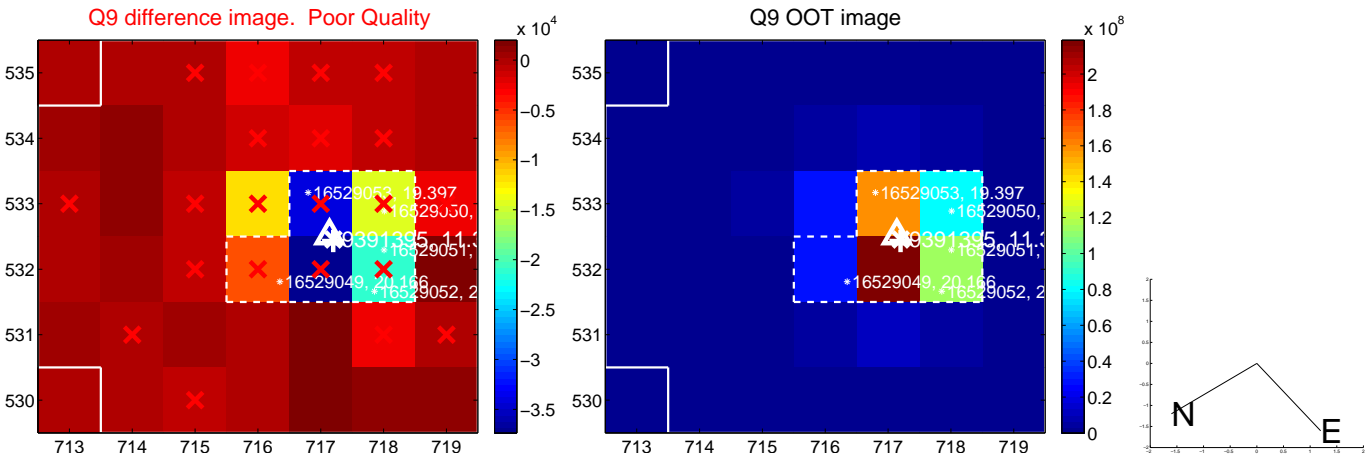
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



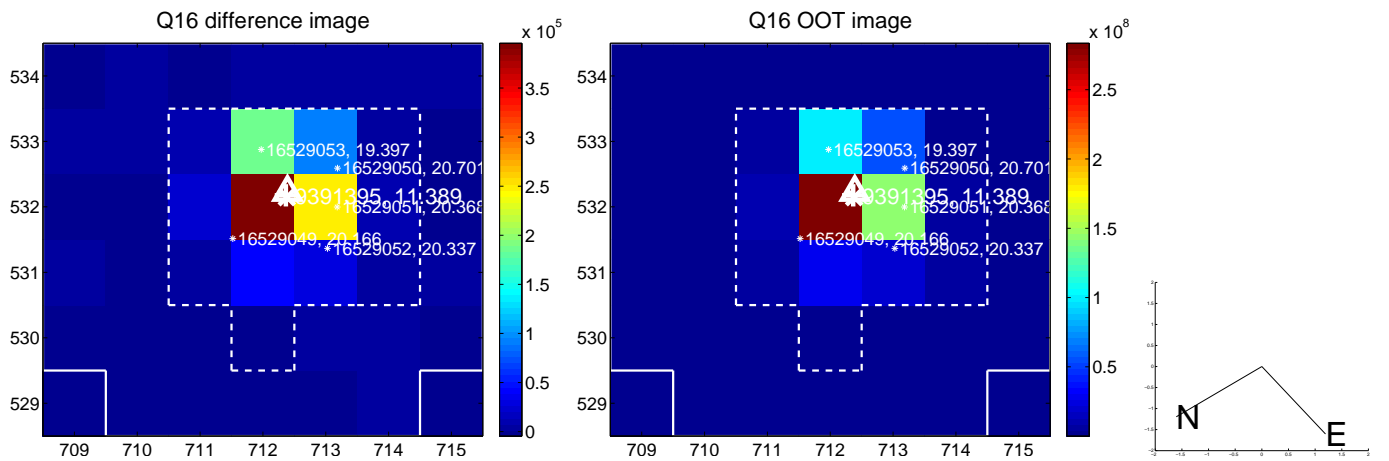
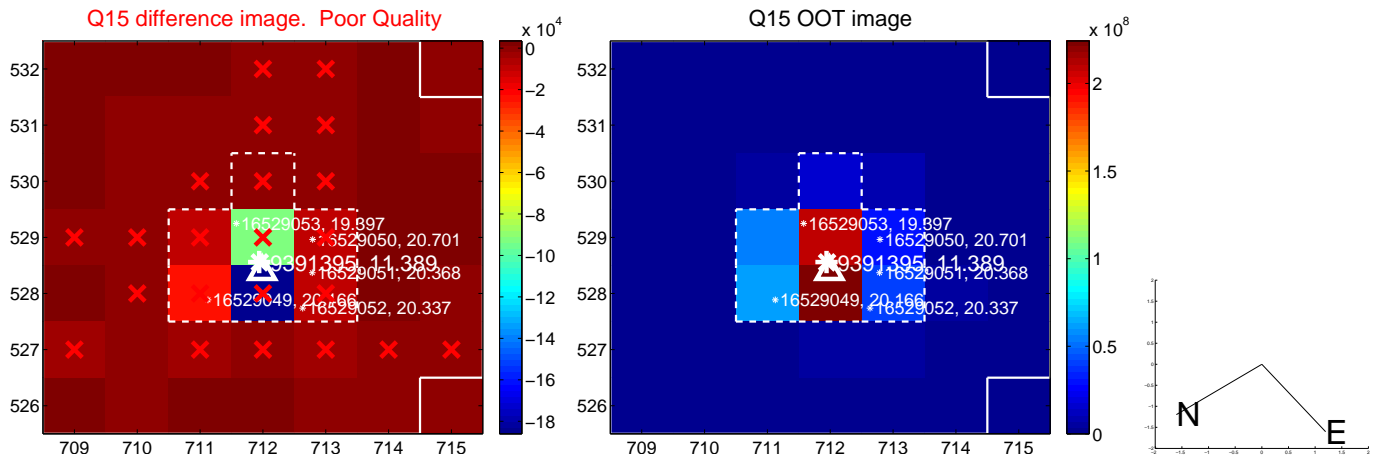
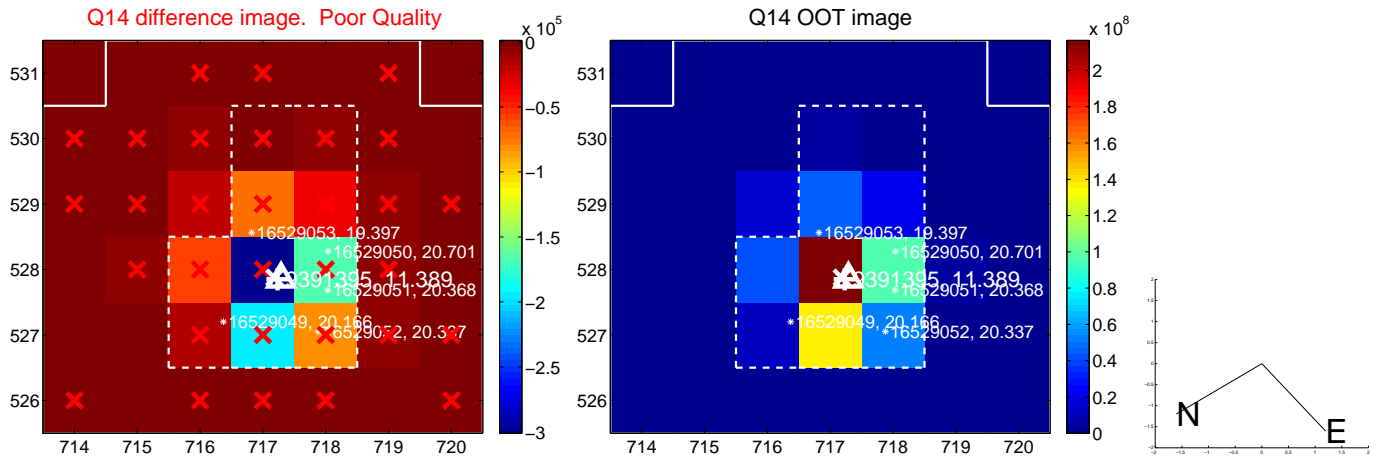
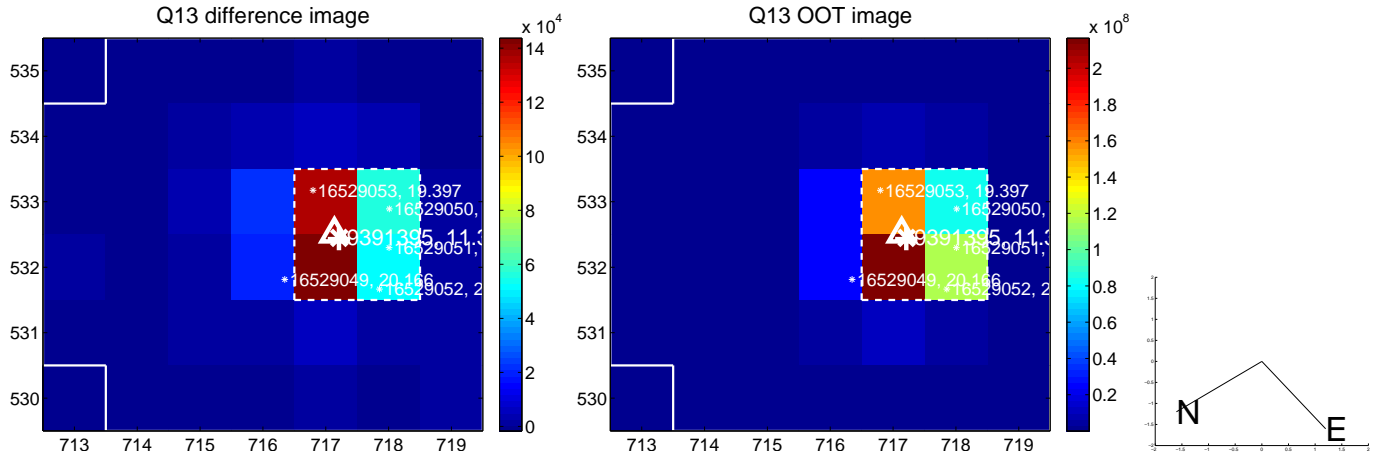
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



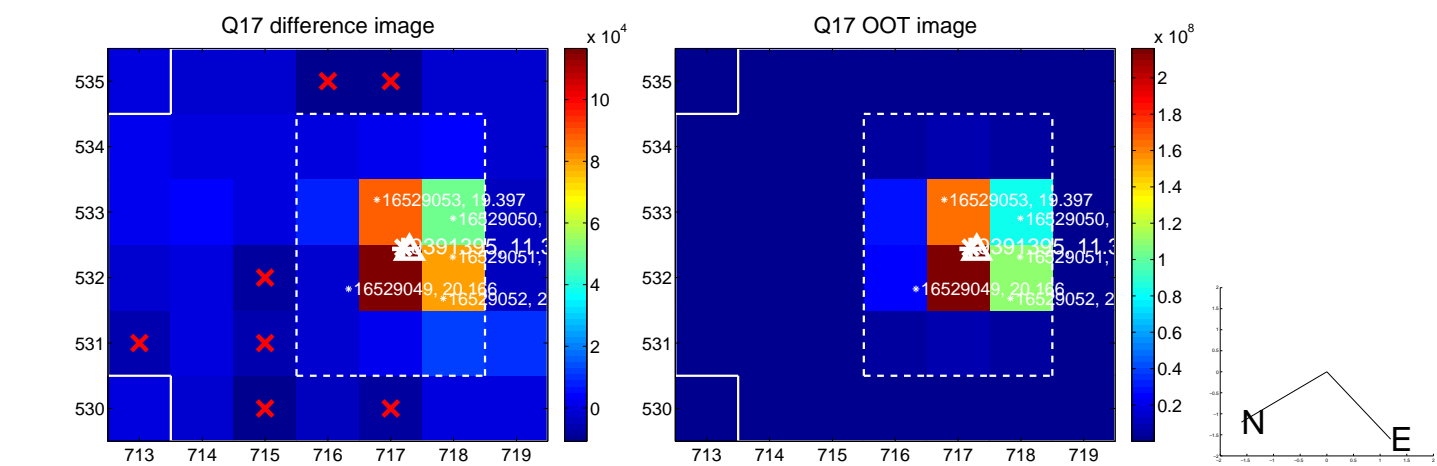
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



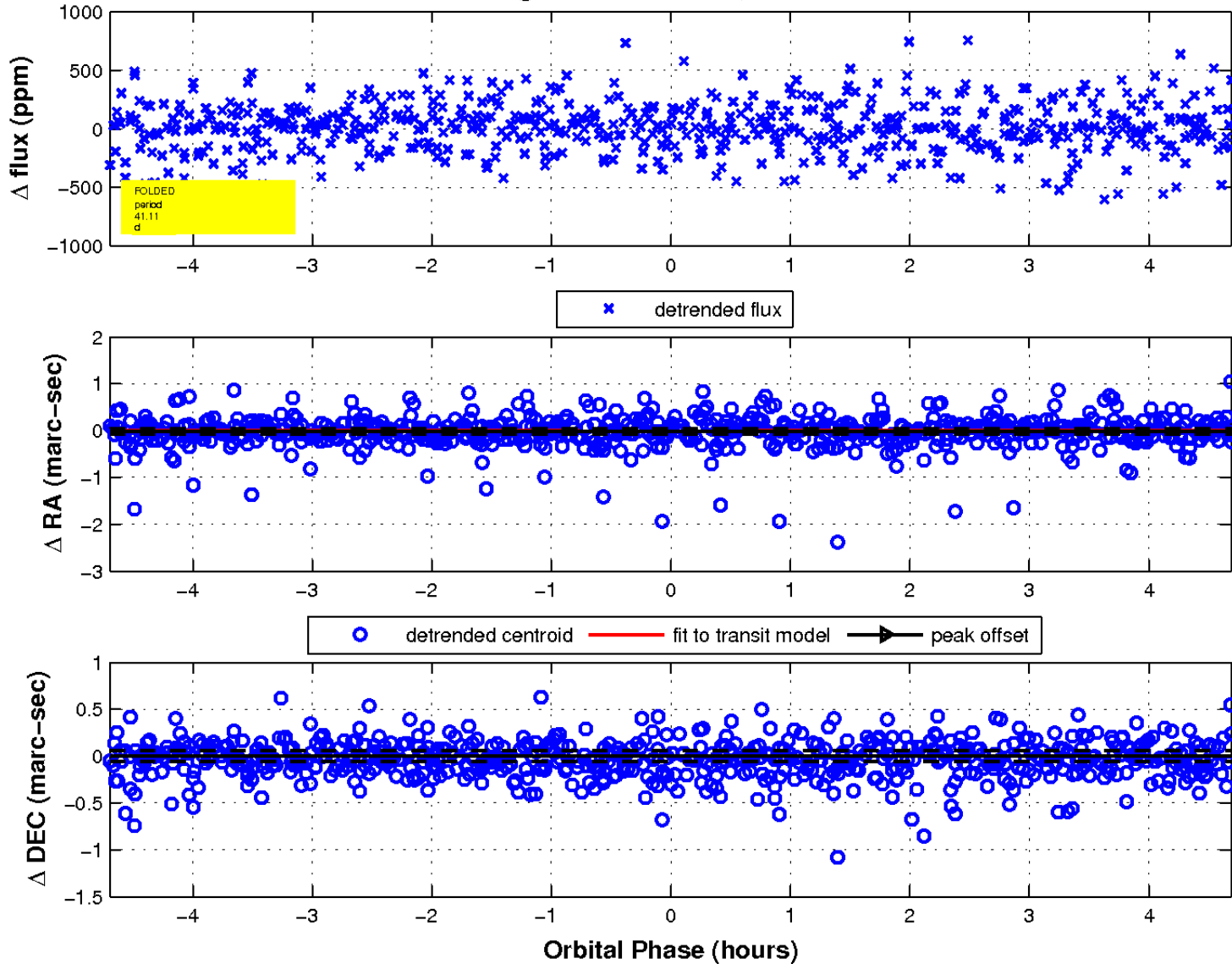
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

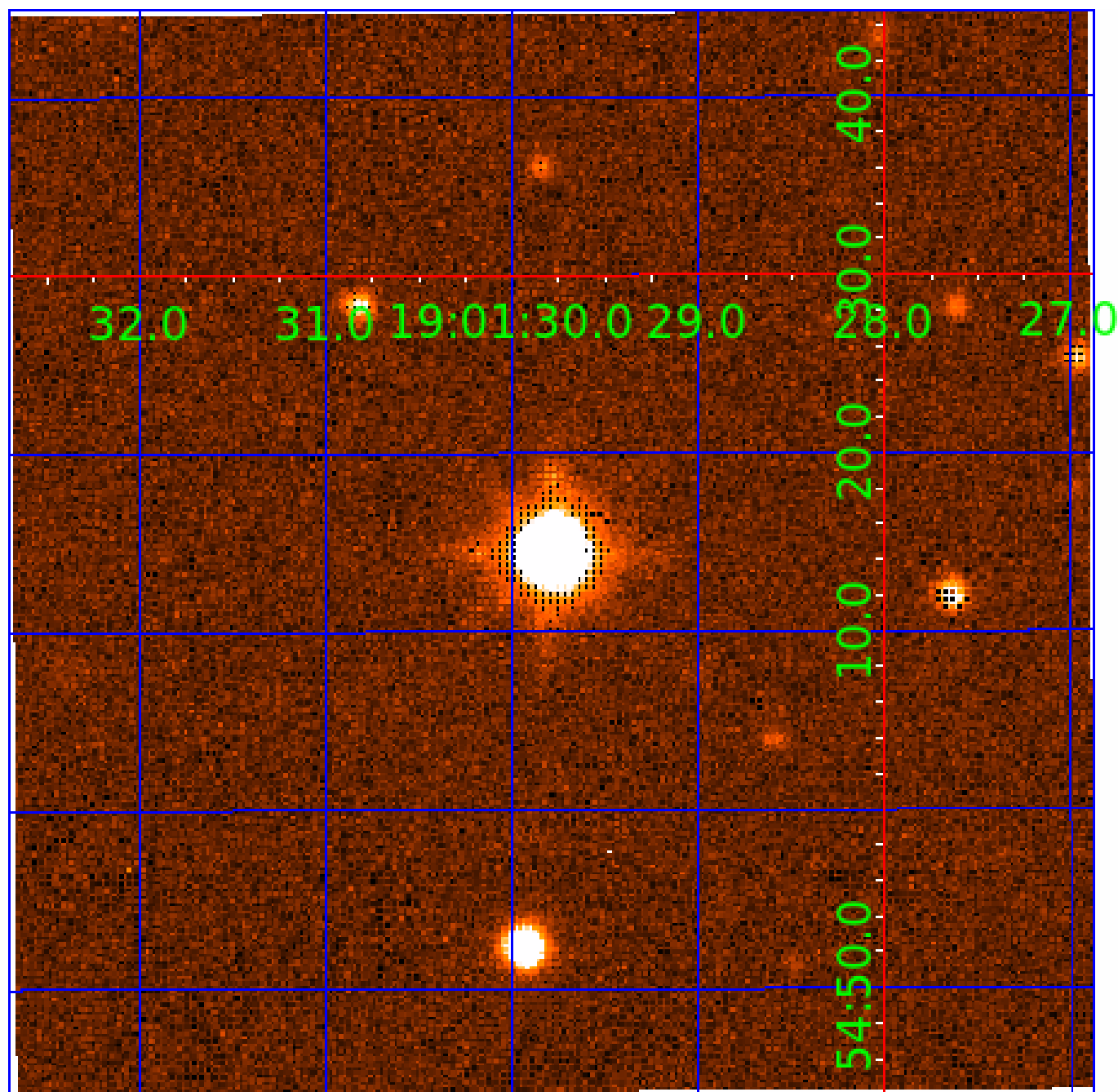


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 009391395

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009391395-01 | OBS | No | 0.782755 | 131.554278 | 15.1 | 5.168 | 10.5 | 5.3 | 2.10 | 7505 | 0.88 | 32950.49 |
| 009391395-02 | OBS | No | 0.533520 | 131.590037 | 47.1 | 1.573 | 12.8 | 10.1 | 2.10 | 7505 | 1.69 | 54932.40 |
| 009391395-03 | OBS | No | 41.110030 | 163.055494 | 222.2 | 1.111 | 11.1 | 4.0 | 2.10 | 7505 | 3.68 | 167.53 |
| 009391395-04 | OBS | No | 160.381416 | 163.993641 | 716.8 | 9.113 | 12.0 | 10.1 | 2.10 | 7505 | 5.80 | 27.28 |
| 009391395-05 | OBS | No | 41.107675 | 163.508498 | 58.4 | 1.565 | 12.5 | 1.4 | 2.10 | 7505 | 1.72 | 167.54 |
| 009391395-06 | OBS | No | 40.556283 | 163.234960 | 220.0 | 2.500 | 12.5 | -1.0 | 2.10 | 7505 | 3.13 | 170.59 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009391395-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED |
| 009391395-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |
| 009391395-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST |
| 009391395-05 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED—HALO_GHOST |
| 009391395-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED |

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

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

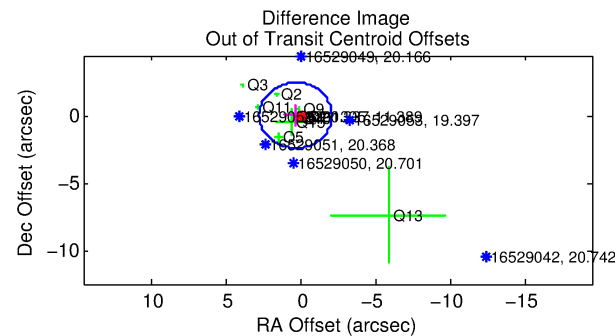
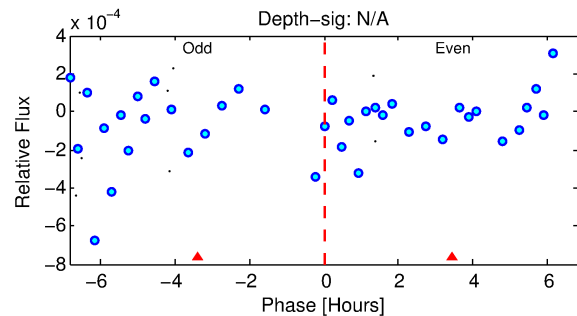
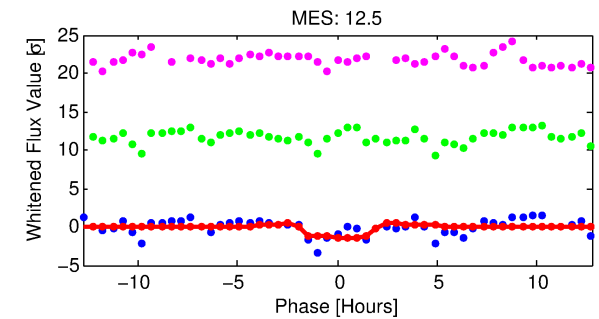
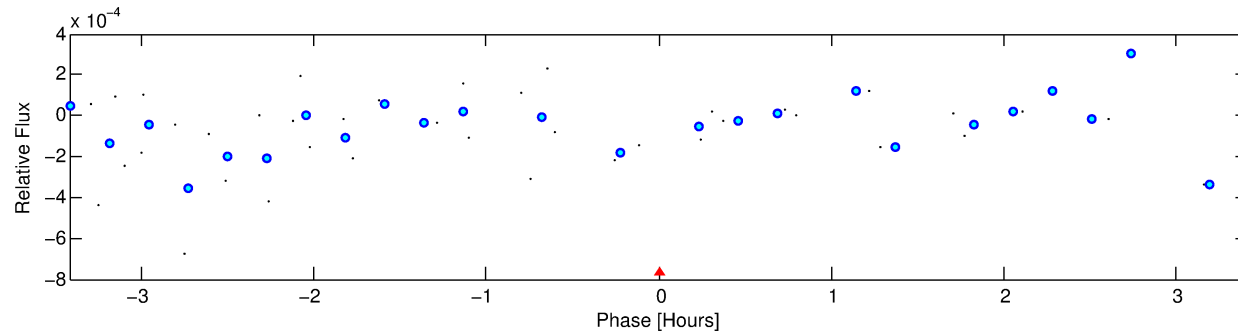
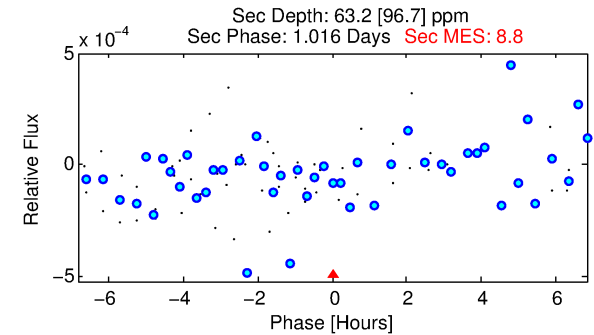
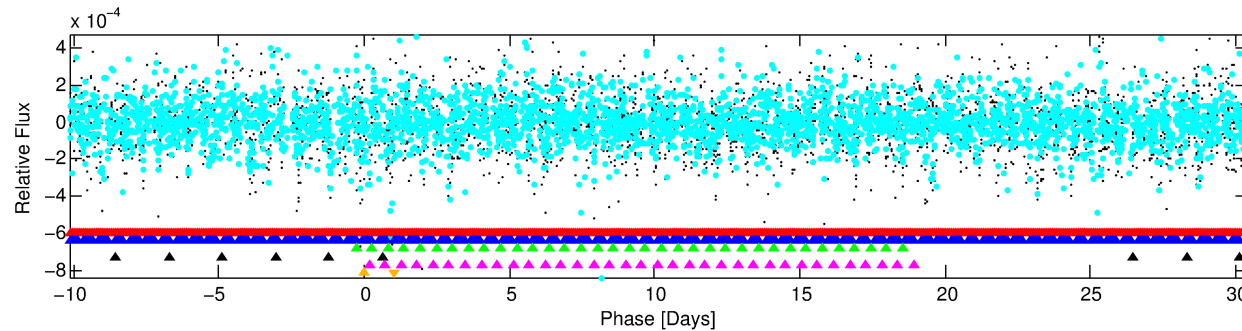
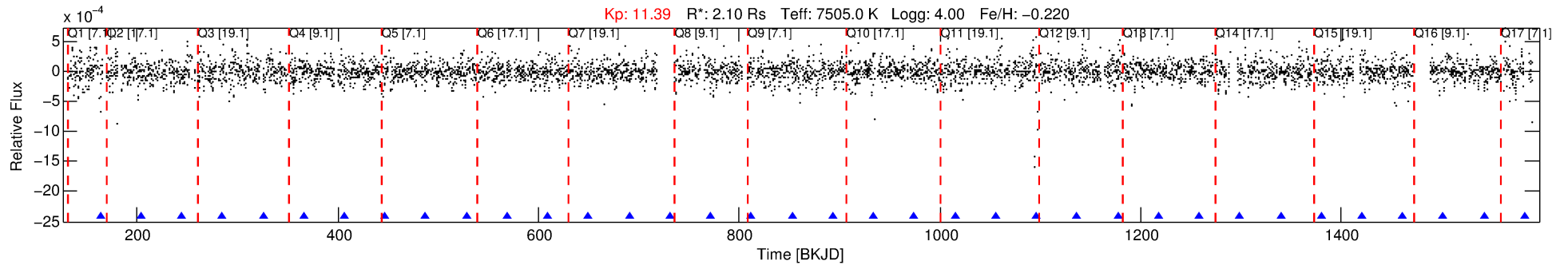
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009391395-06

No Significant Match Found

DV One-Page Summary

KIC: 9391395 Candidate: 6 of 6 Period: 40.556 d



TPS TCE Results:

Period = 40.55628 d
Epoch = 163.2350 BKJD

DV fit results are unavailable

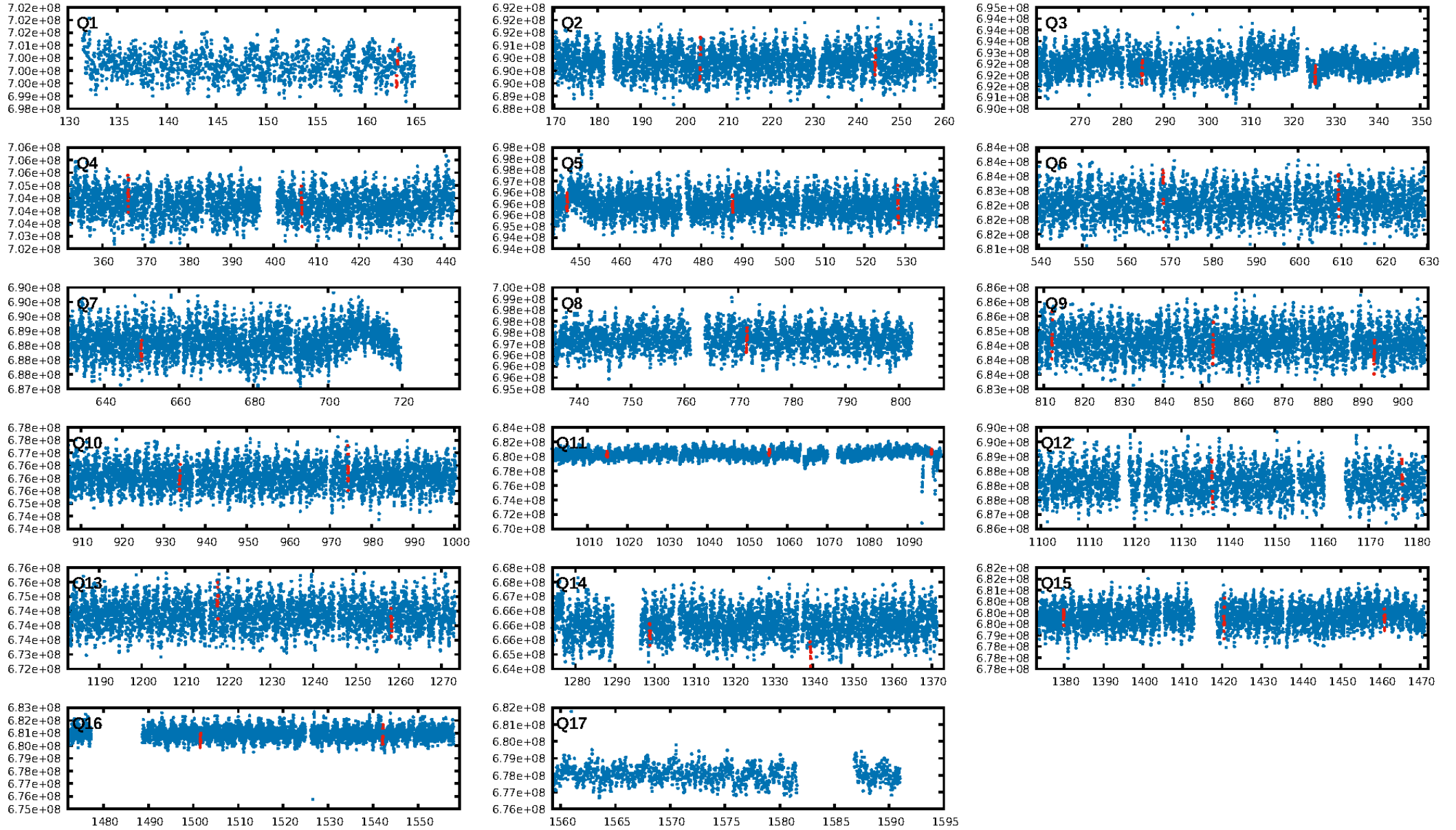
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [166.27σ]
LongPeriod-sig: 100.0% [4.49σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.5179
Centroid-sig: 25.5%
Centroid-so: 0.780 arcsec [1.18σ]
OotOffset-rm: 0.319 arcsec [0.39σ]
KicOffset-rm: 0.397 arcsec [0.48σ]
OotOffset-st: 3/4/1/3 [11]
KicOffset-st: 3/4/1/3 [11]
DiffImageQuality-fgm: 0.18 [2/11]
DiffImageOverlap-fno: 0.00 [0/11]

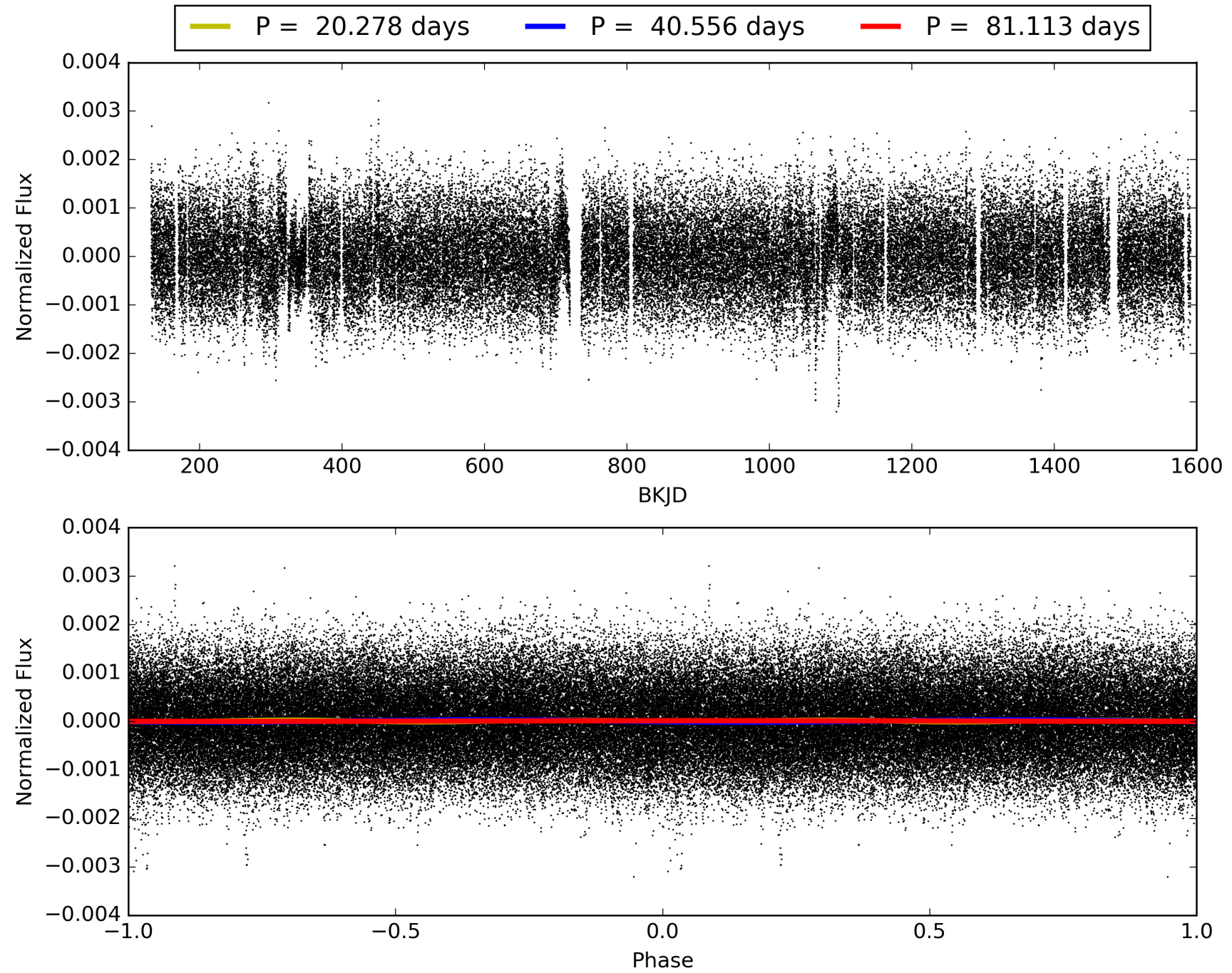
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:25:29 Z

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

TCE 009391395-06, PDC Light Curves

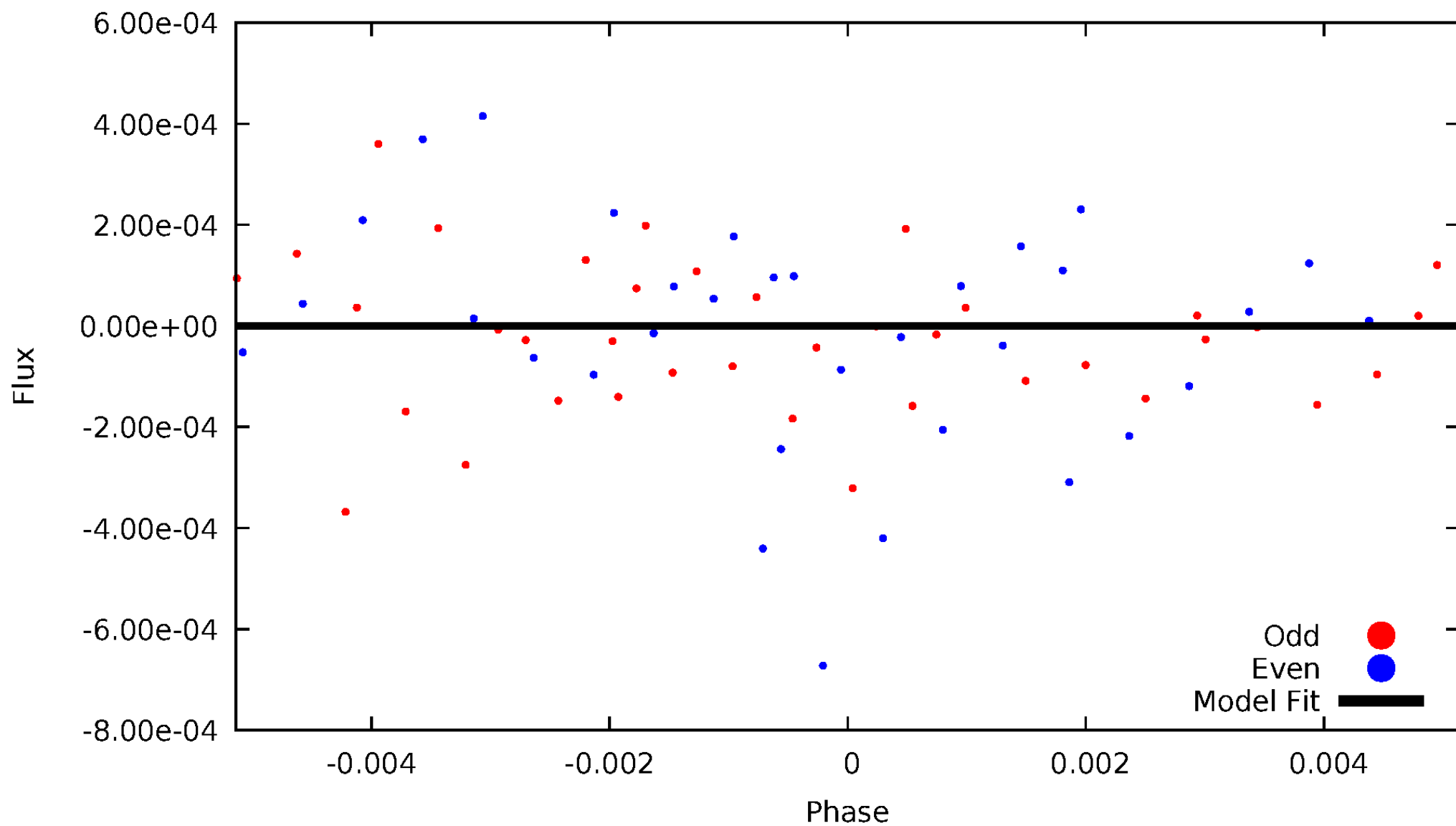


TCE 009391395-06



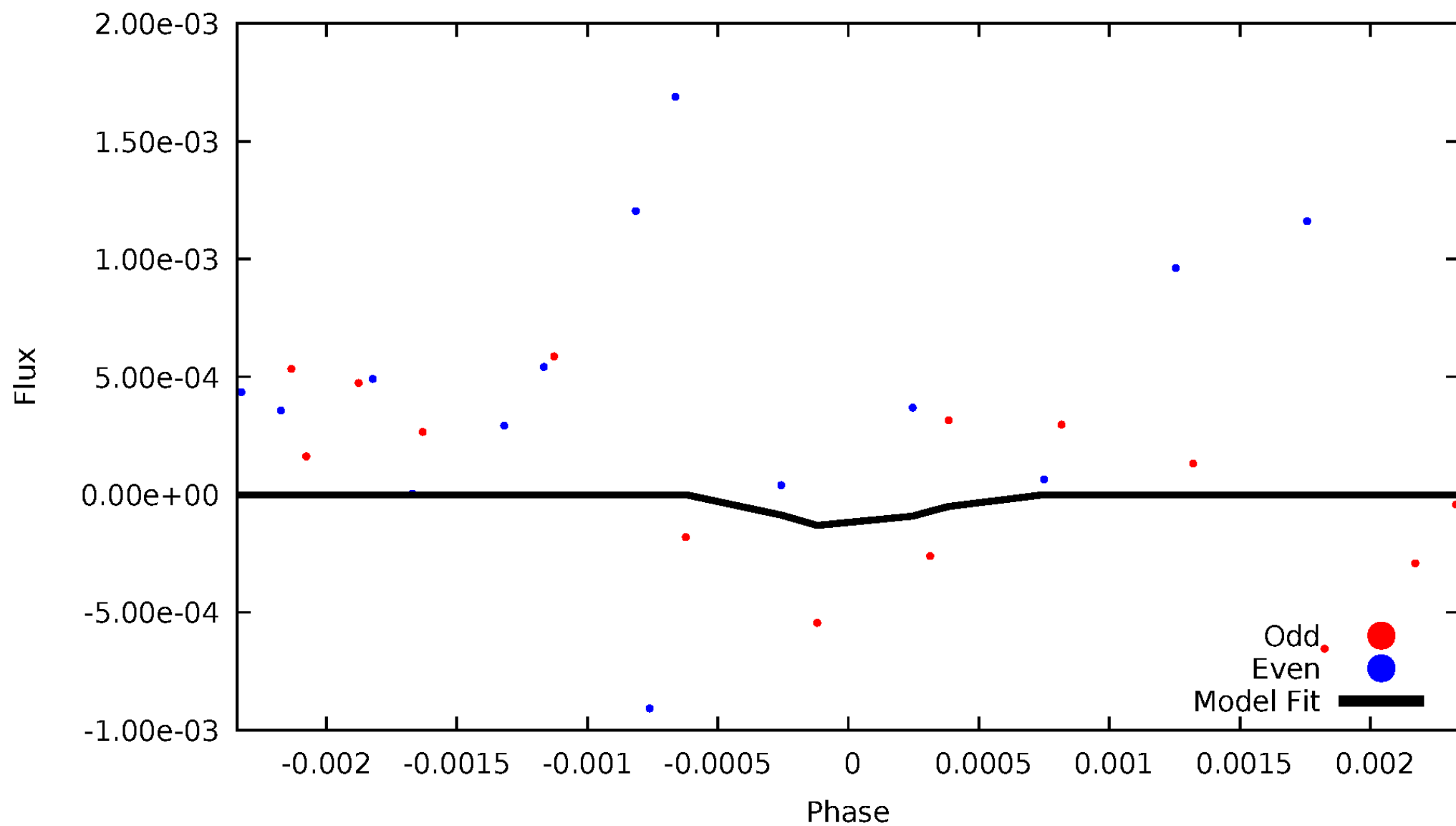
DV Odd/Even

TCE 009391395-06



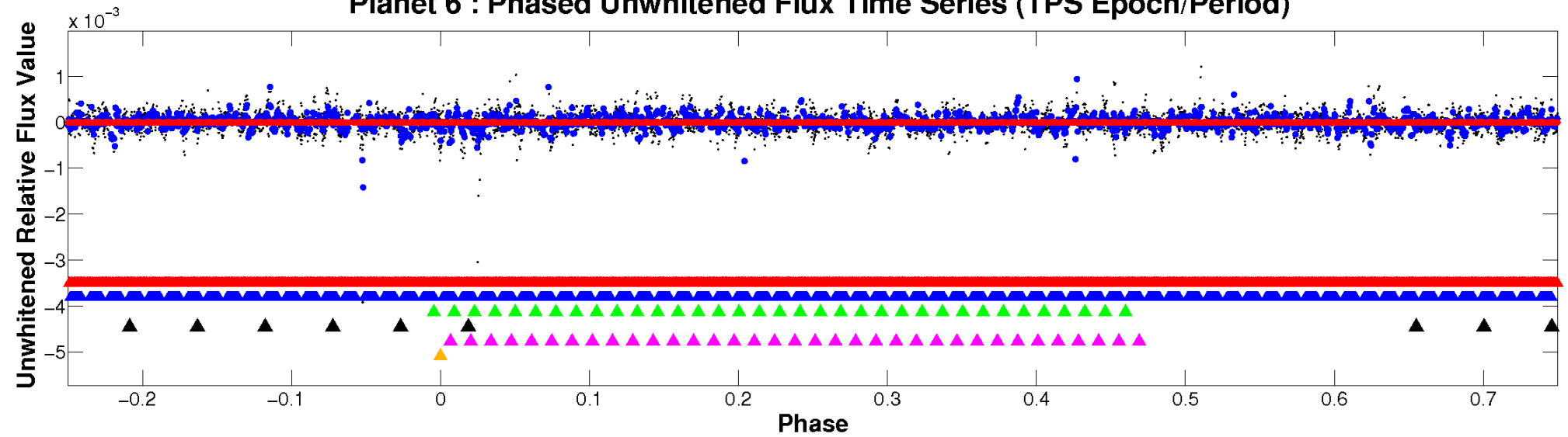
ALT Odd/Even

TCE 009391395-06

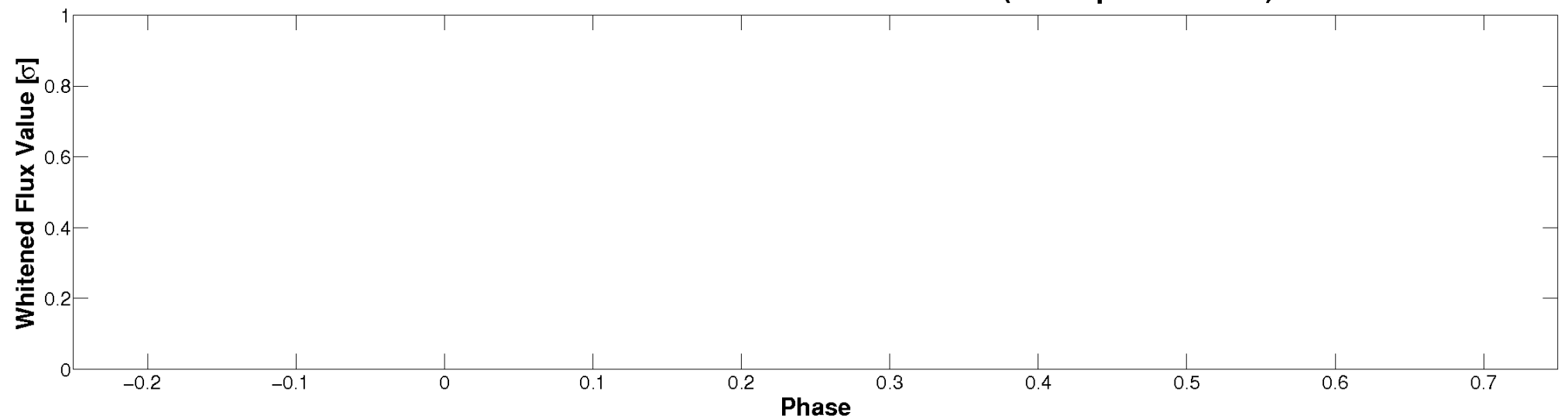


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

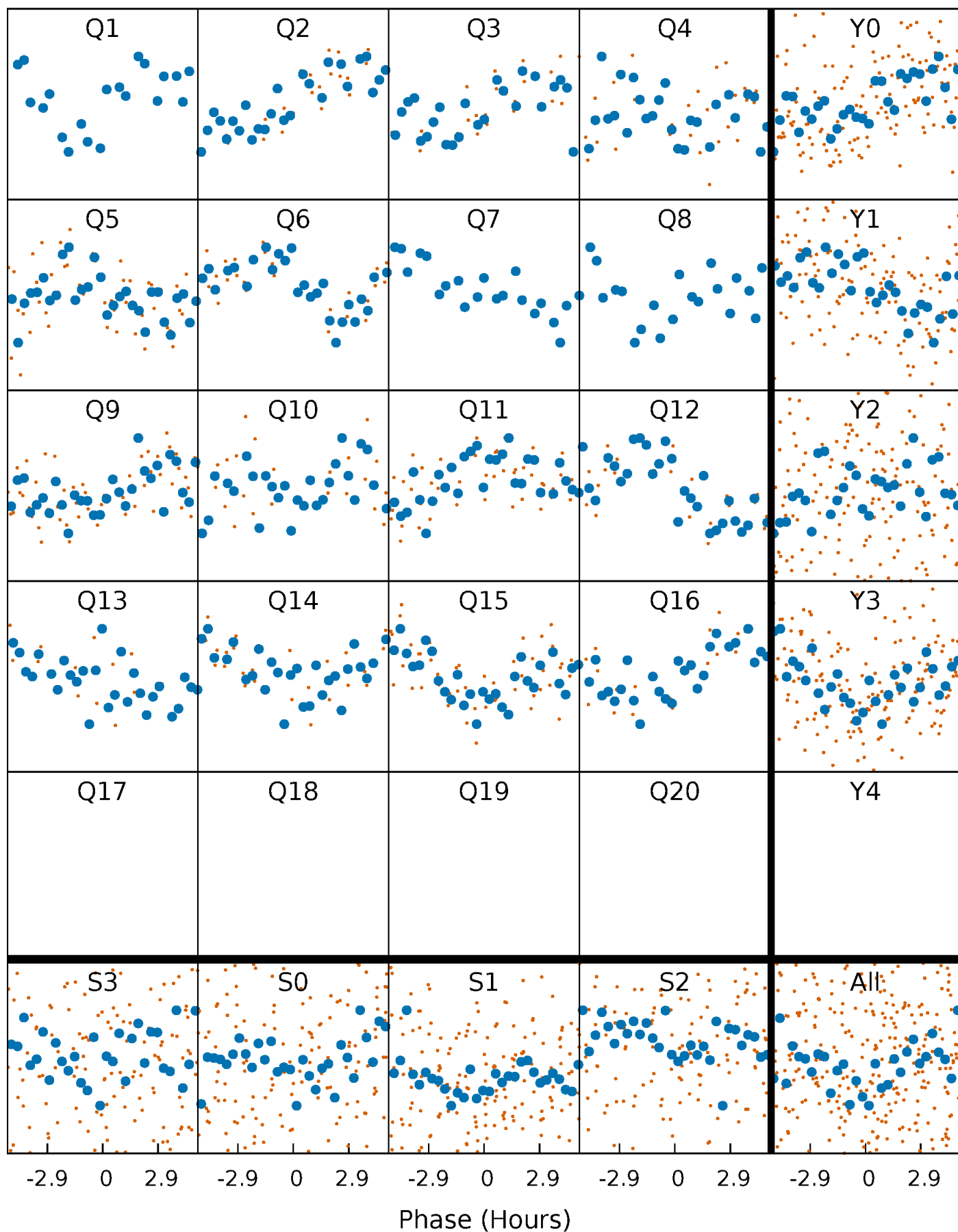


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



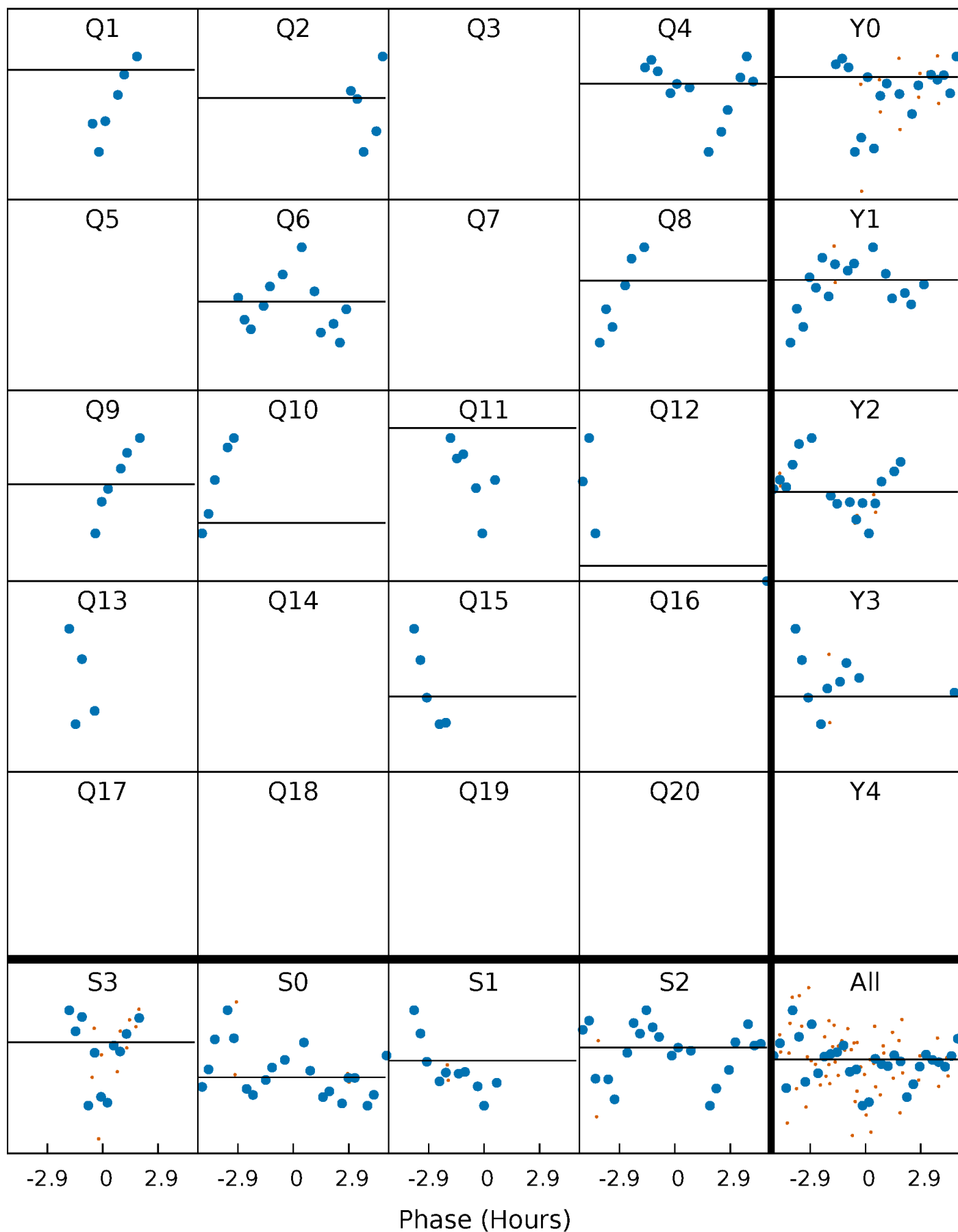
PDC Quarter-Phased Transit Curves

TCE 009391395-06 $P = 40.556283$ Days $T_0 = 163.234960$ (BKJD)



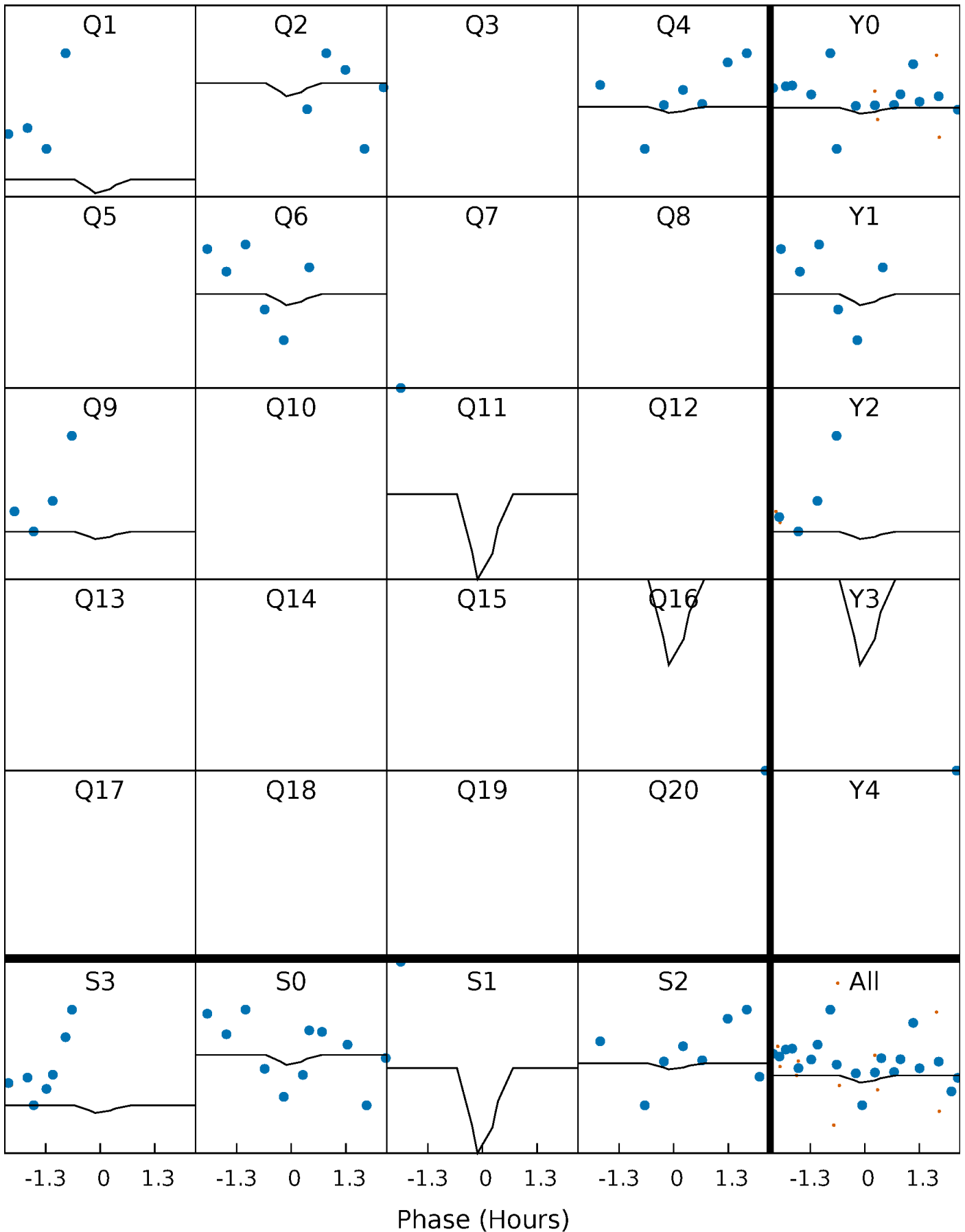
DV Quarter-Phased Transit Curves

TCE 009391395-06 $P = 40.556283$ Days $T_0 = 163.234960$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

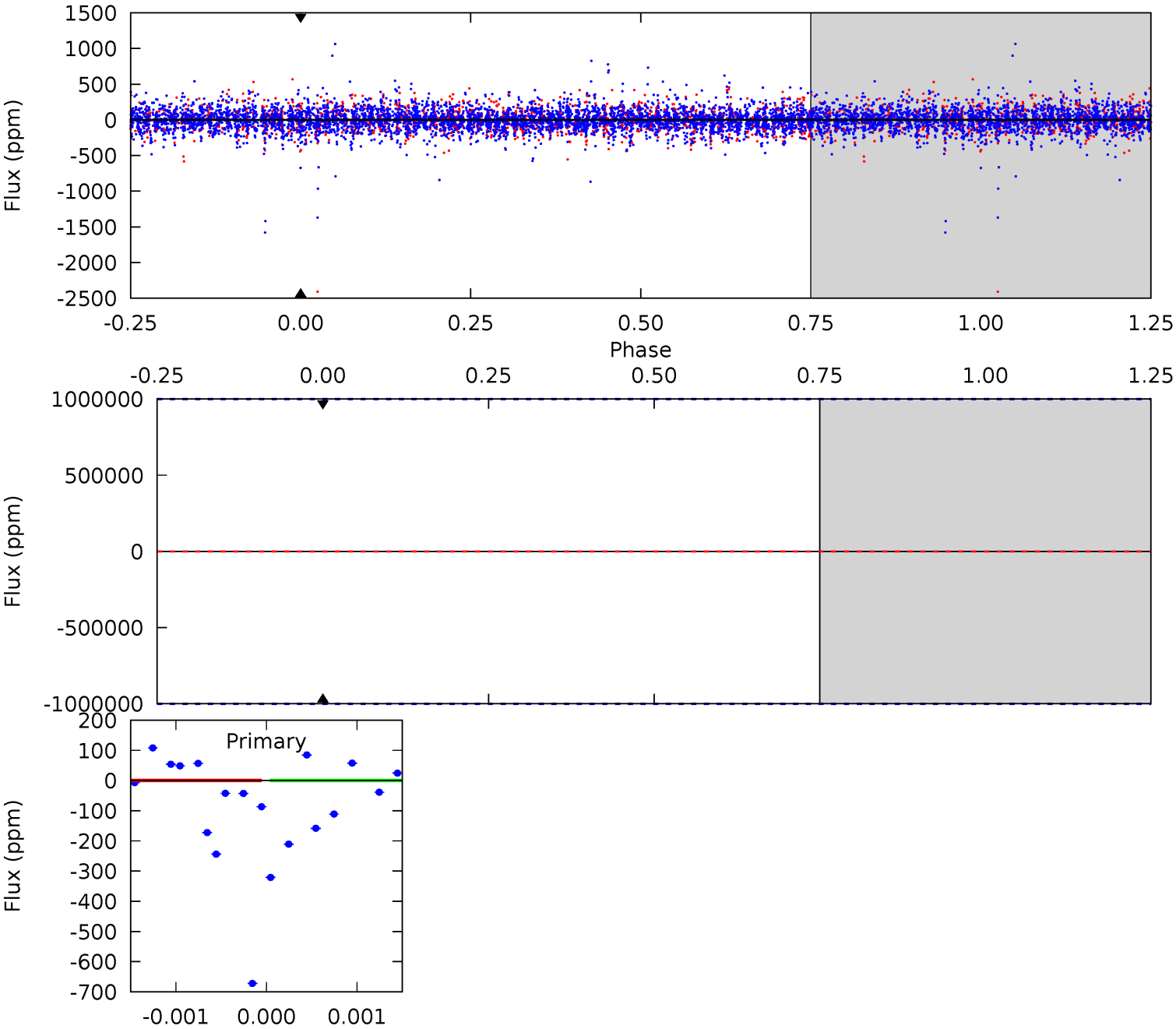
TCE 009391395-06 $P = 40.556283$ Days $T_0 = 163.341255$ (BKJD)



DV Model-Shift Uniqueness Test

009391395-06, P = 40.556283 Days, E = 122.678677 Days

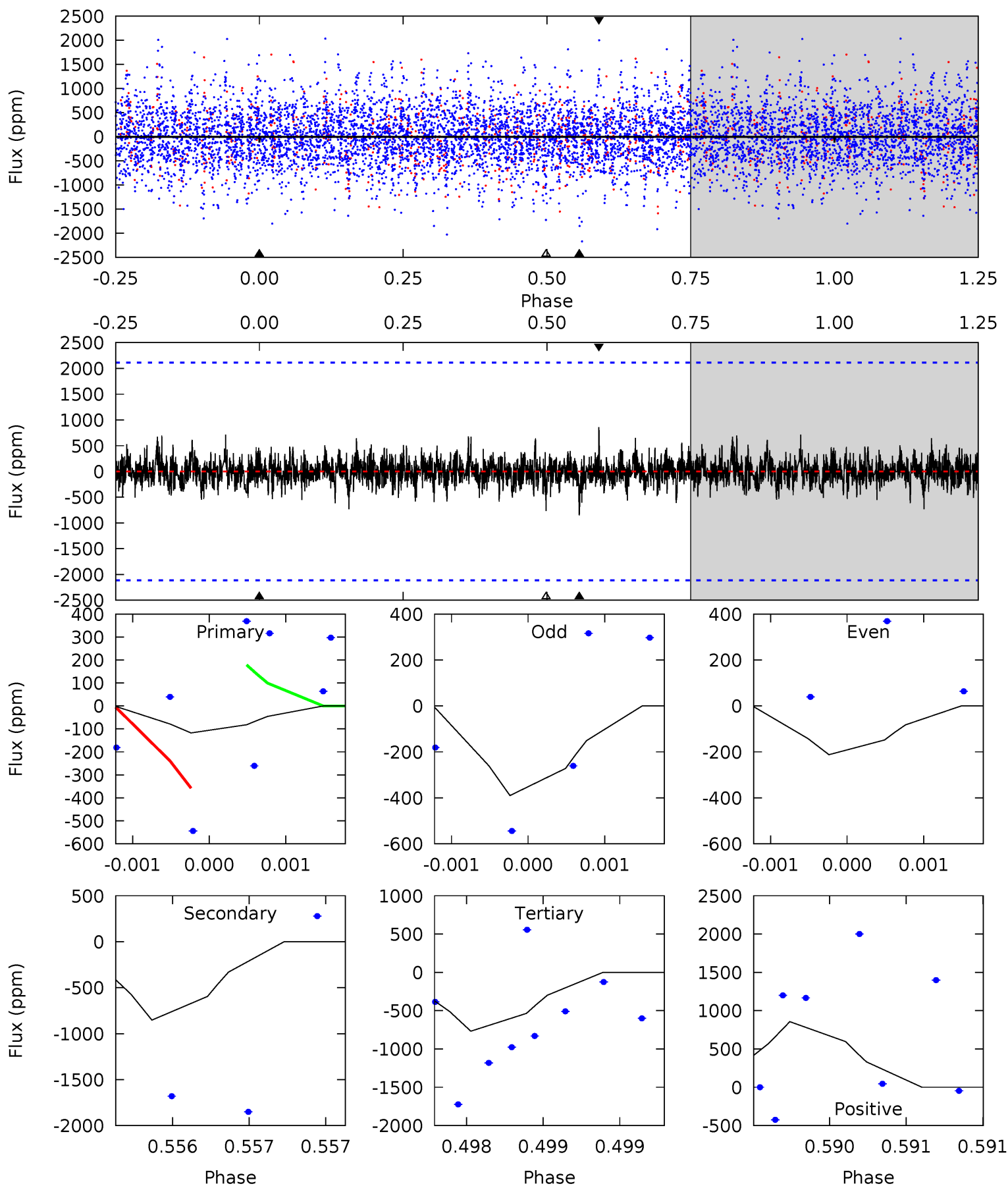
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00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



Alt Model-Shift Uniqueness Test

009391395-06, P = 40.556283 Days, E = 122.784972 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.31 | 2.25 | 2.02 | 2.26 | 5.57 | 3.48 | 0.50 | -1.72 | -1.95 | 0.22 | -0.01 | 0.23 | 1.00 | 0.50 | 0.00 |



Stellar Parameters For KIC 009391395

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 7505^{+237}_{-290} | $4.001^{+0.228}_{-0.152}$ | $-0.220^{+0.250}_{-0.350}$ | $2.097^{+0.517}_{-0.632}$ | $1.604^{+0.198}_{-0.298}$ | $0.245^{+0.345}_{-0.110}$ |
| | +3%/-4% | +6%/-4% | +114%/-159% | +25%/-30% | +12%/-19% | +141%/-45% |
| 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 009391395-06 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-----------------|---------------------------|----------------------|---------------------------|--------------------------------------|
| DV | 0 ± 1000000 | $16.91^{+17.76}_{-11.92}$ | 1274^{+95}_{-94} | -5752^{+44320}_{-33754} | $-309.452^{+28903.226}_{-23348.078}$ |
| Alt. | -853 ± 379 | $15.37^{+17.71}_{-10.22}$ | 1279^{+95}_{-98} | 4794^{+3649}_{-1218} | 132^{+1064}_{-106} |

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

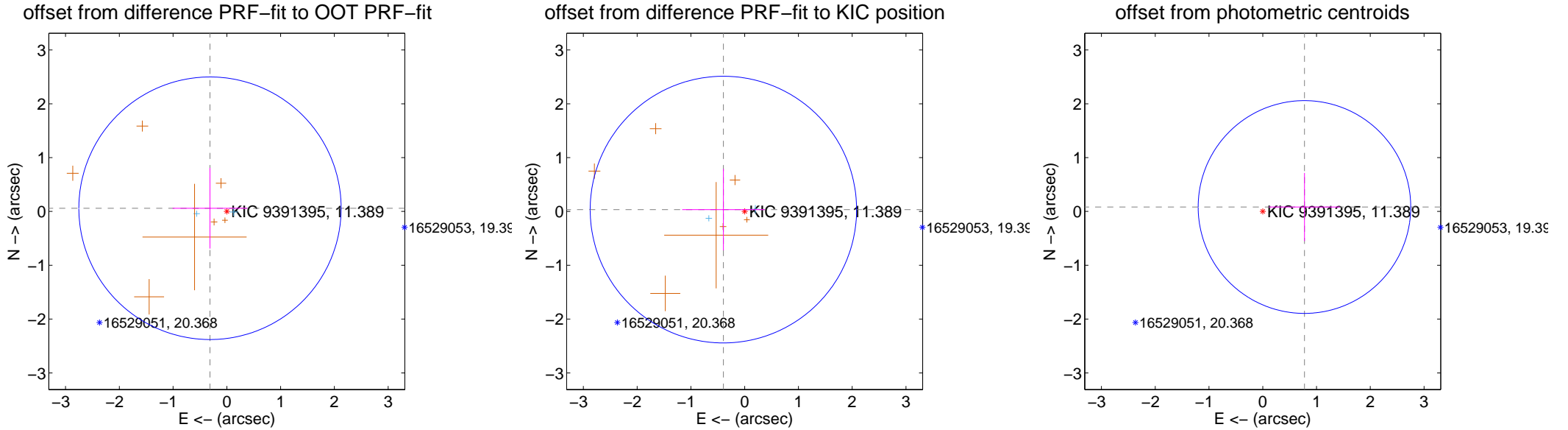
DV Centroid Data

Supplemental centroid analysis for 009391395-06. **Kepler magnitude: 11.39.** Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

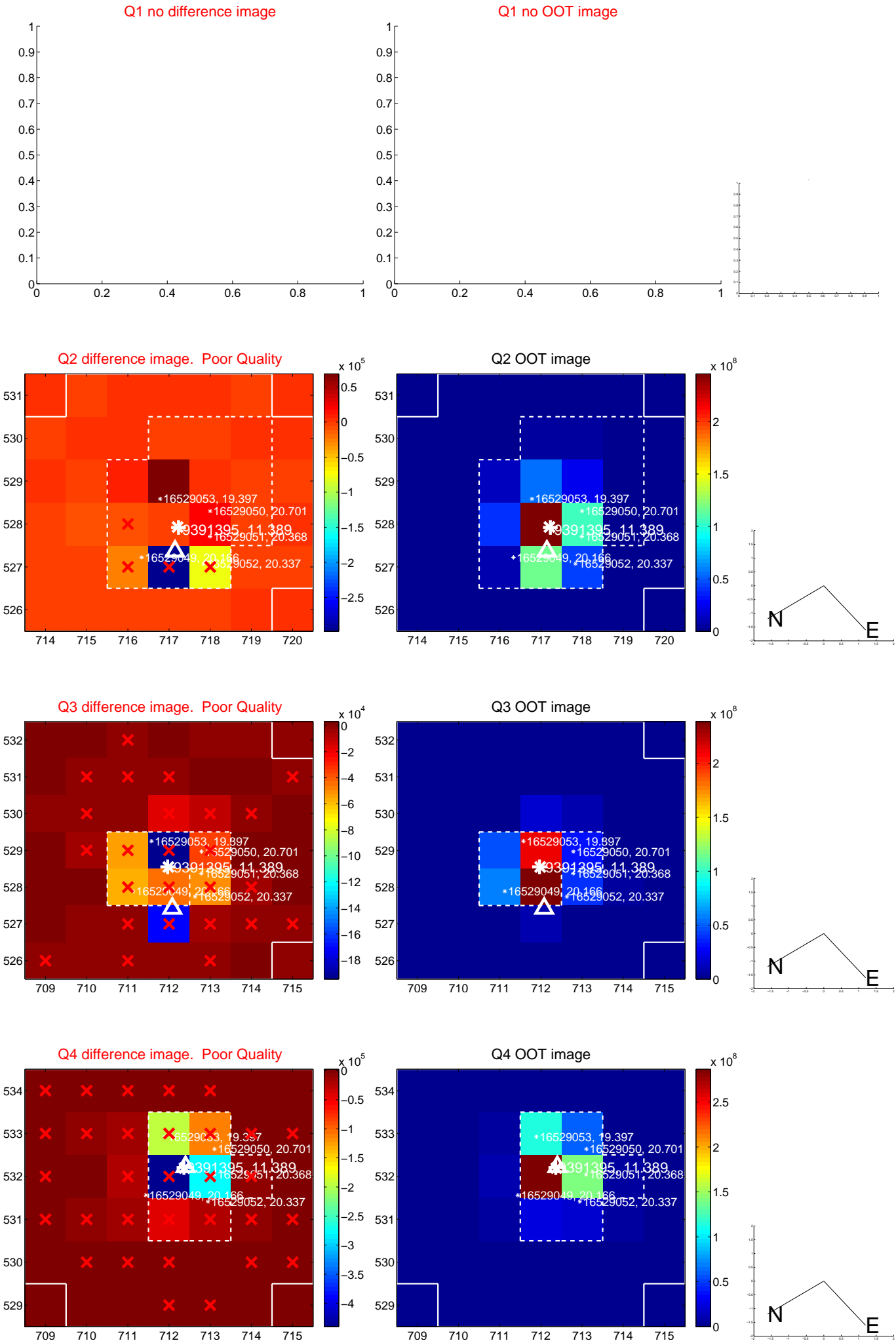
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.319 ± 0.813 | 0.39 | 0.313 ± 0.696 | 0.059 ± 0.749 |
| PRF-fit source offset from KIC position | 0.397 ± 0.826 | 0.48 | 0.396 ± 0.767 | 0.034 ± 0.758 |
| photometric centroid source offset | 0.78 ± 0.66 | 1.18 | -0.78 ± 0.66 | 0.08 ± 0.63 |

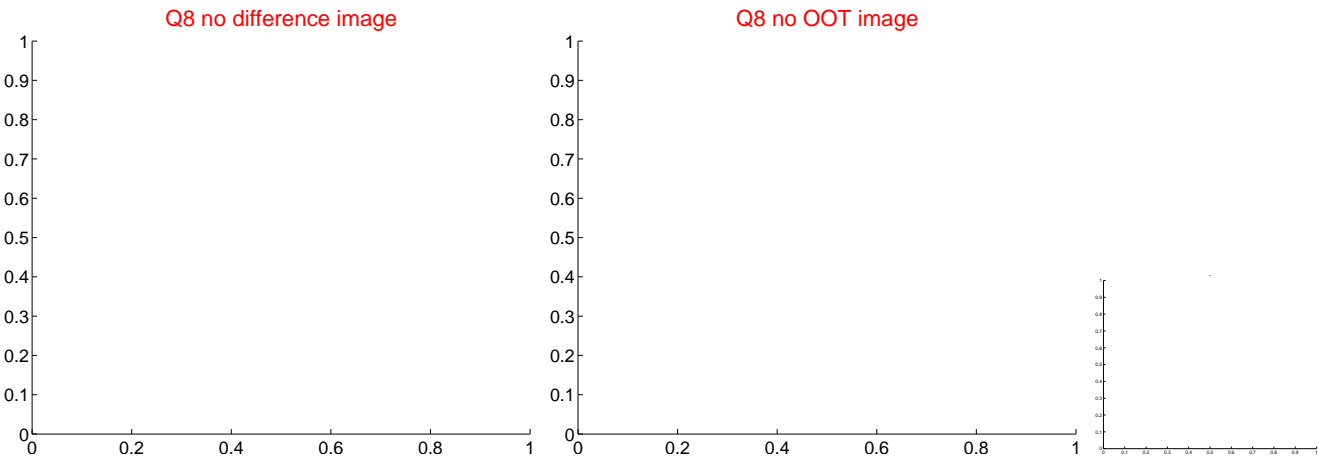
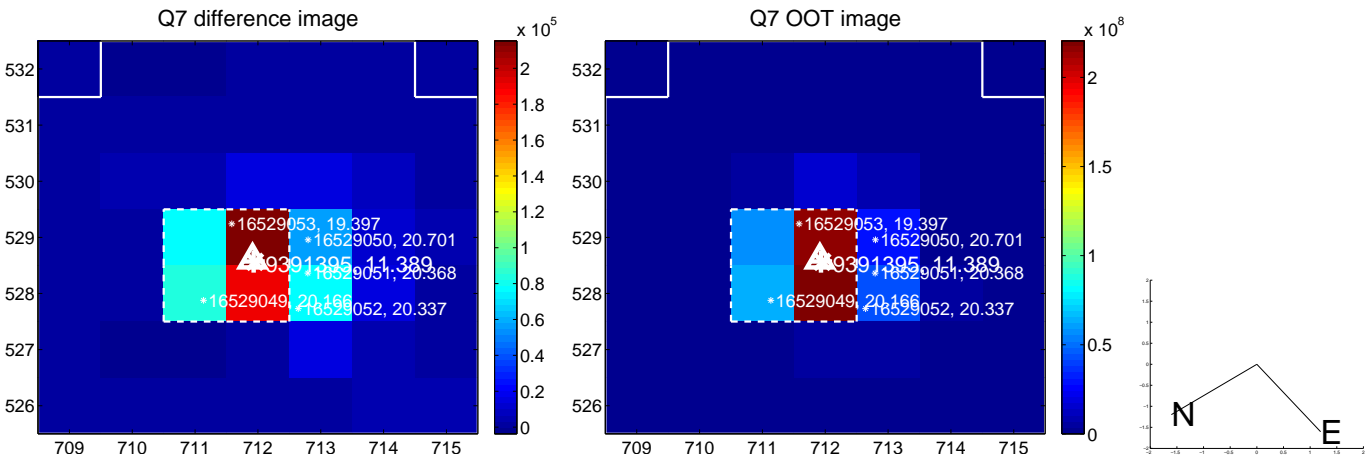
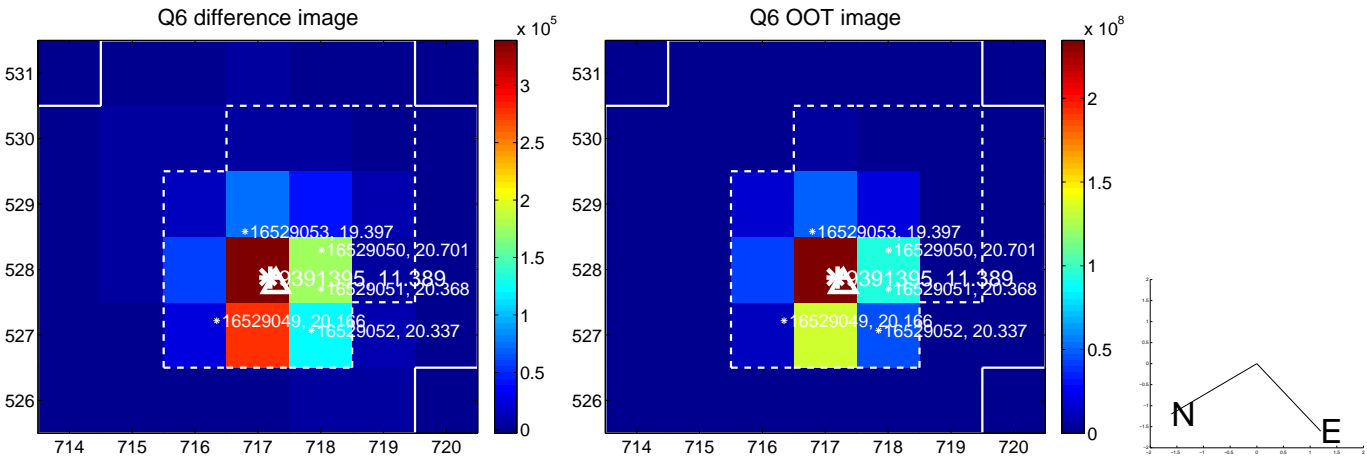
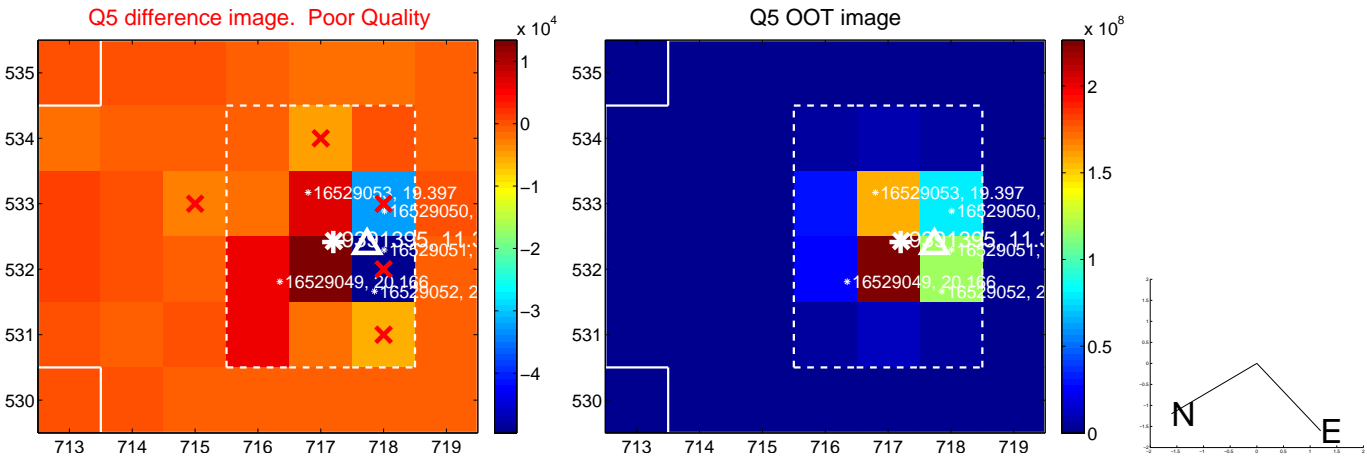


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

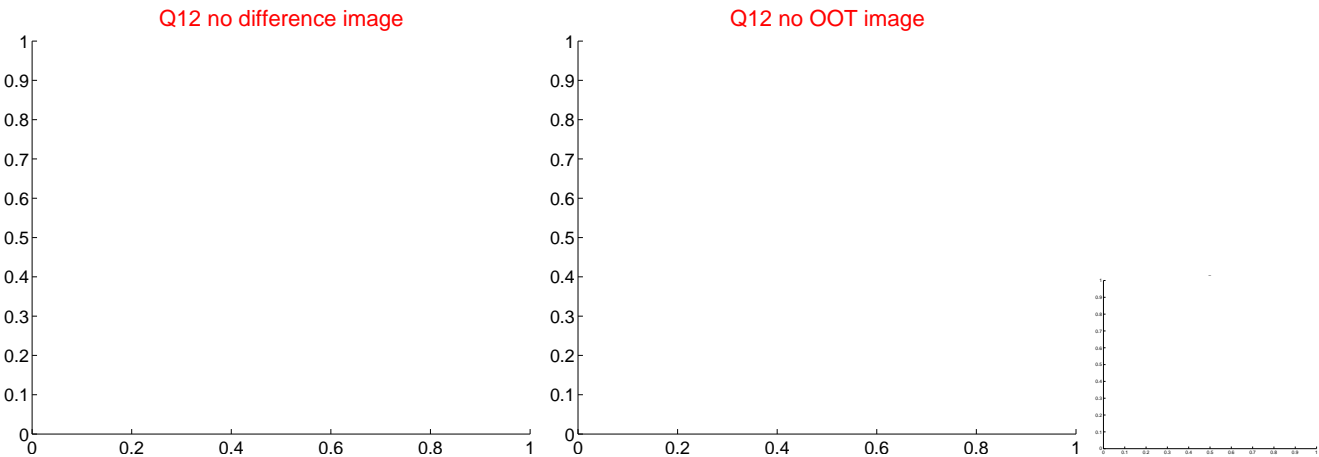
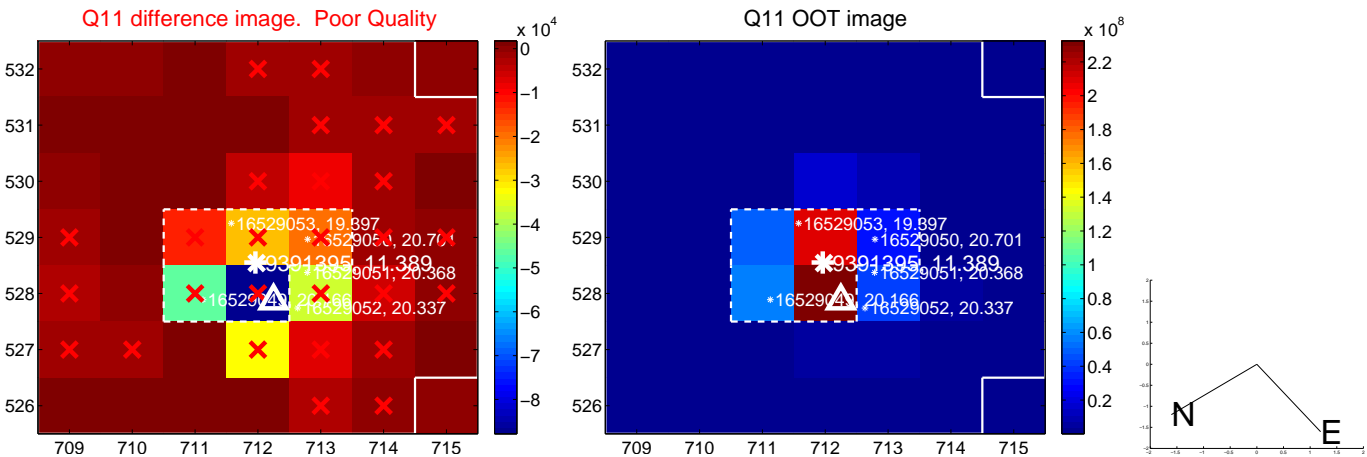
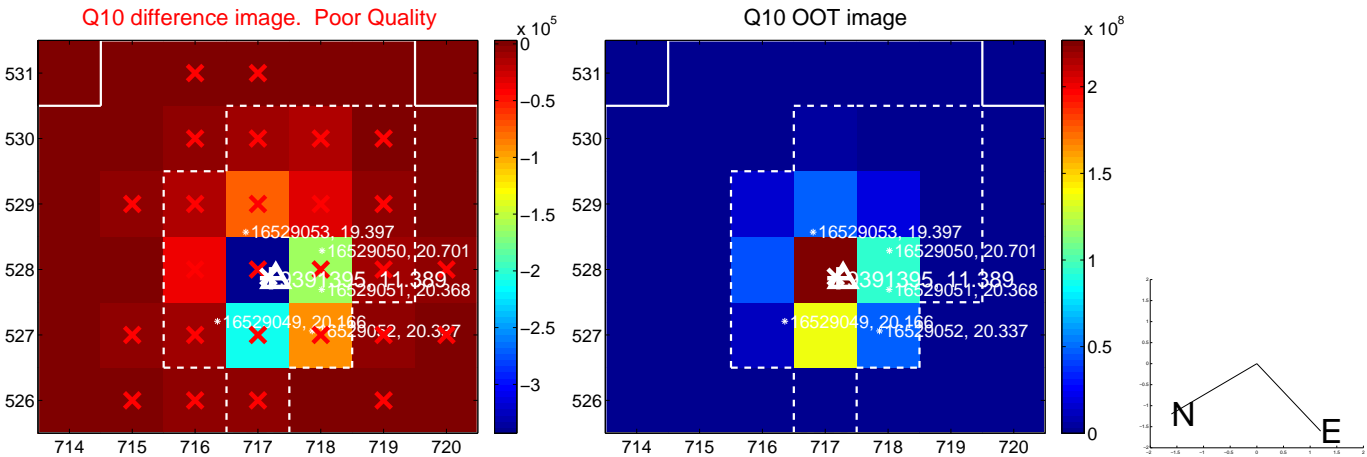
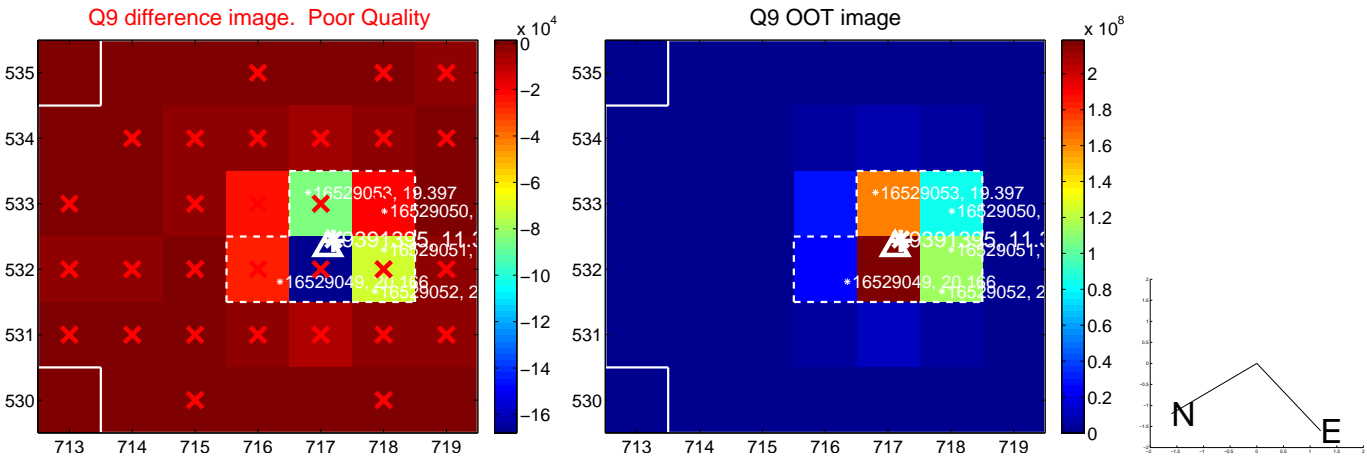
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



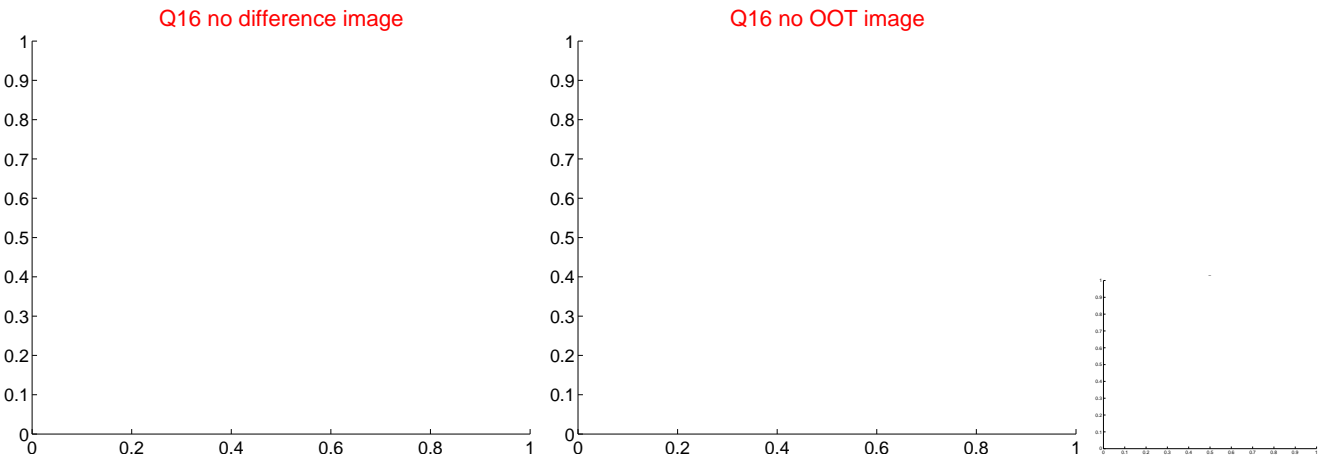
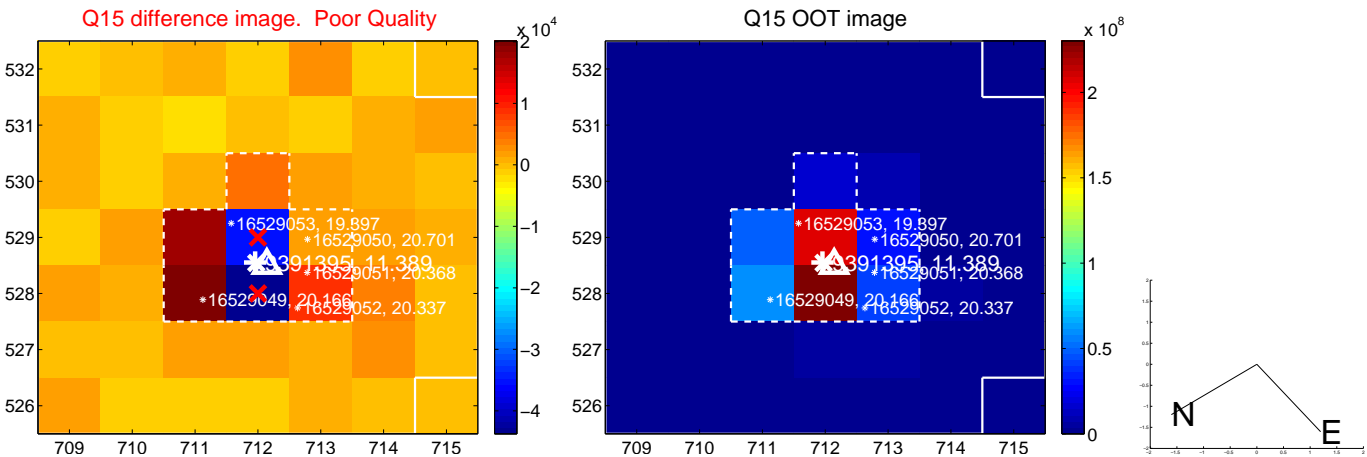
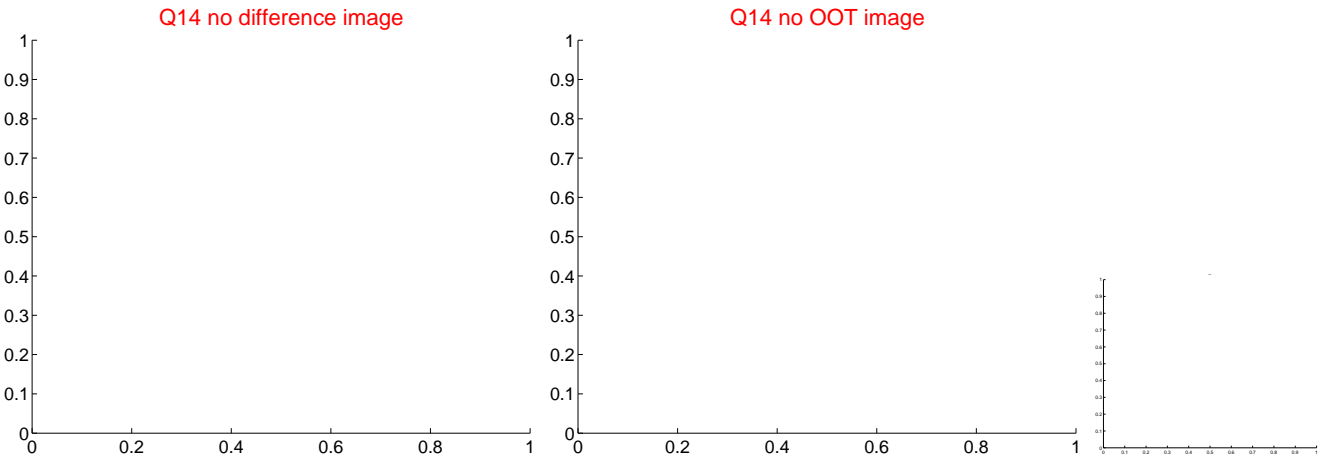
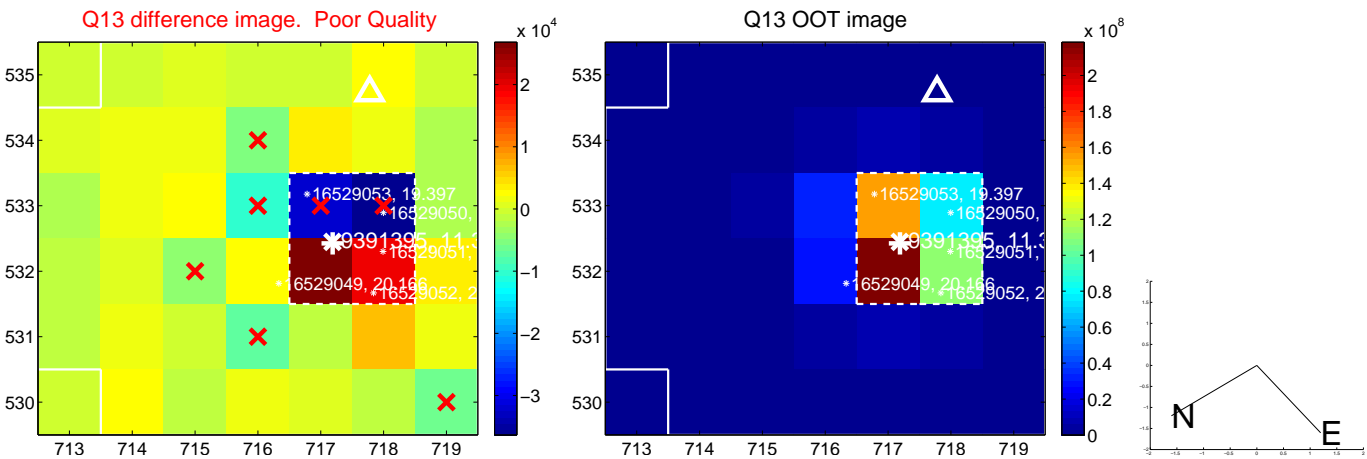
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



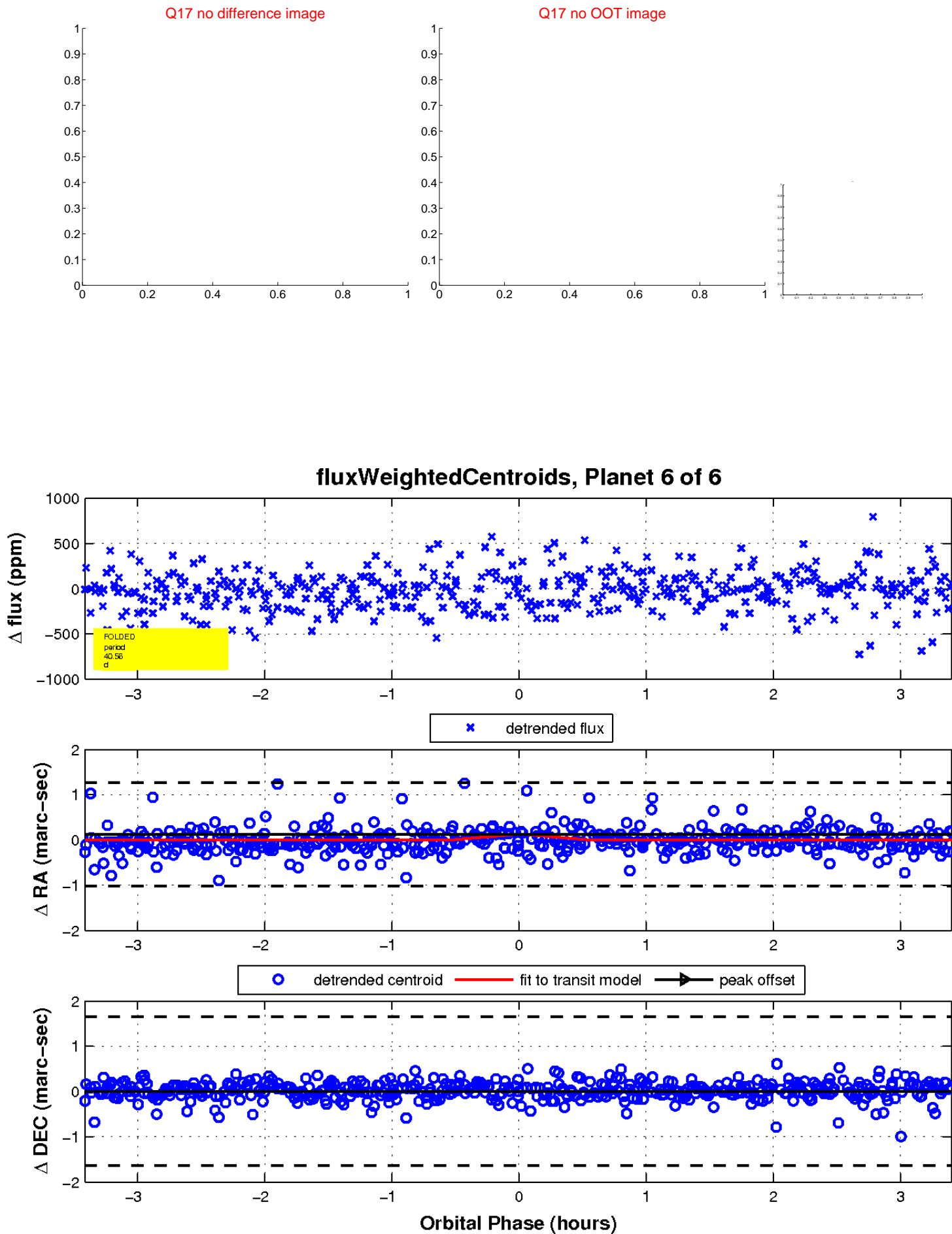
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

