

KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

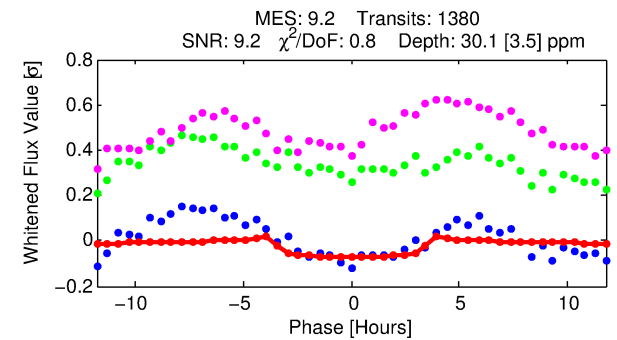
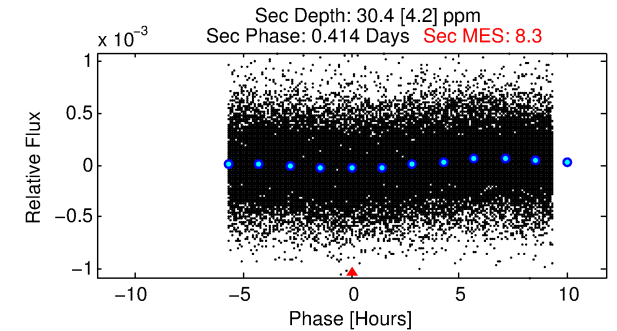
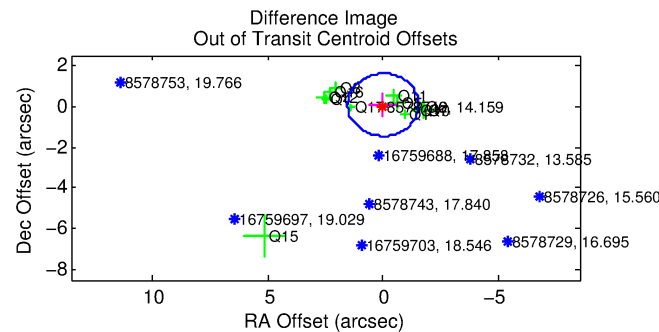
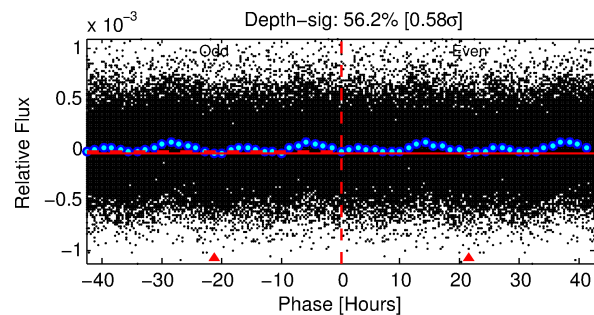
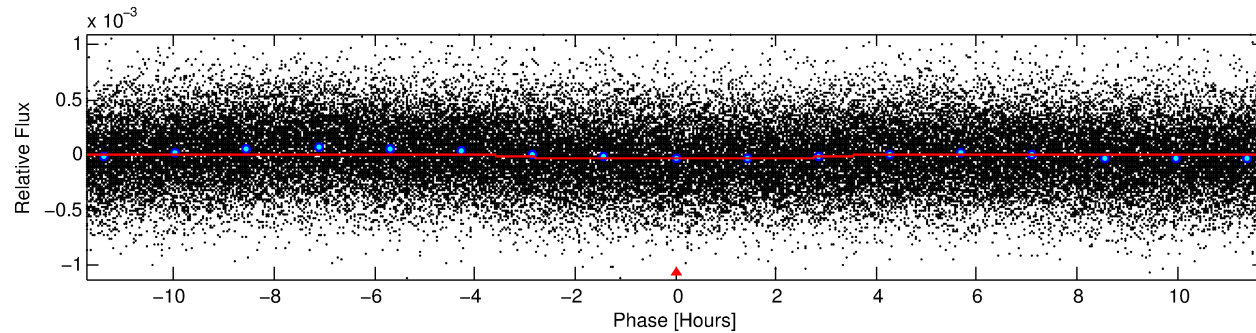
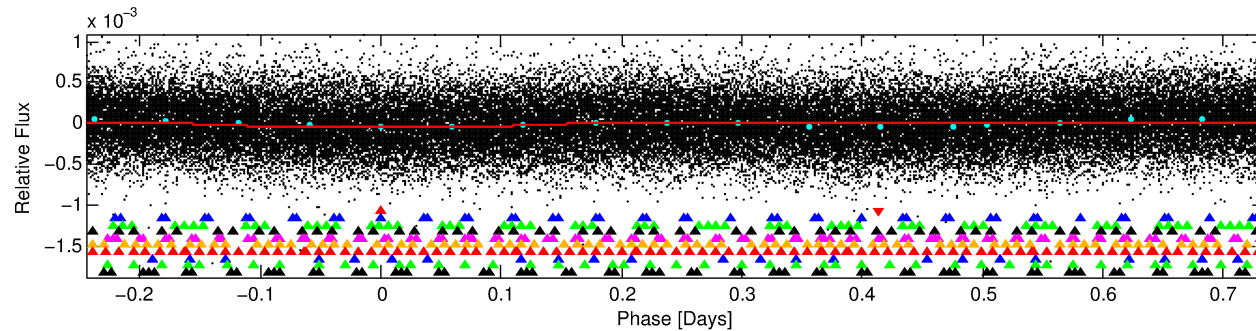
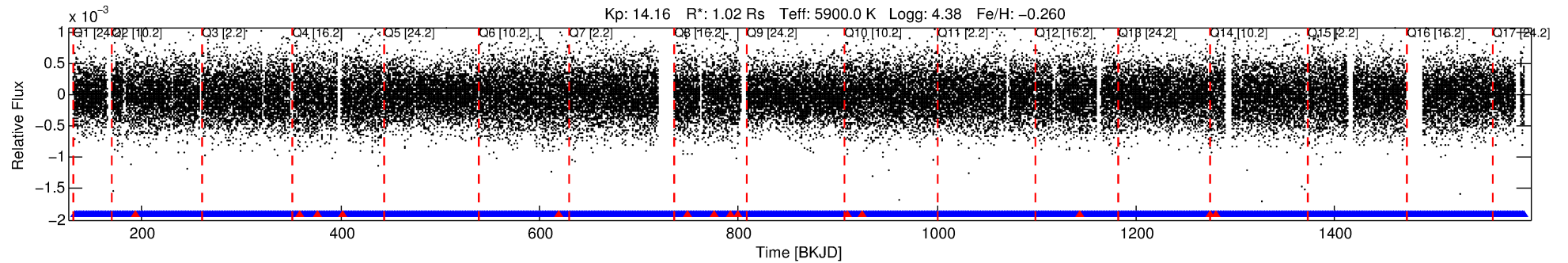
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-01

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 1 of 10 Period: 0.979 d



DV Fit Results:

Period = 0.97928 [0.00002] d
Epoch = 132.4998 [0.0060] BKJD
Rp/R* = 0.0050 [0.0064]
a/R* = 1.23 [2.55]
b = 0.01 [468.25]
Seff = 3257.68 [1190.89]
Teq = 1926 [176] K
Rp = 0.56 [0.73] Re
a = 0.0187 [0.0044] AU
Ag = 18.69 [48.29] [0.37 σ]
Teffp = 6193 [3969] K [1.07 σ]

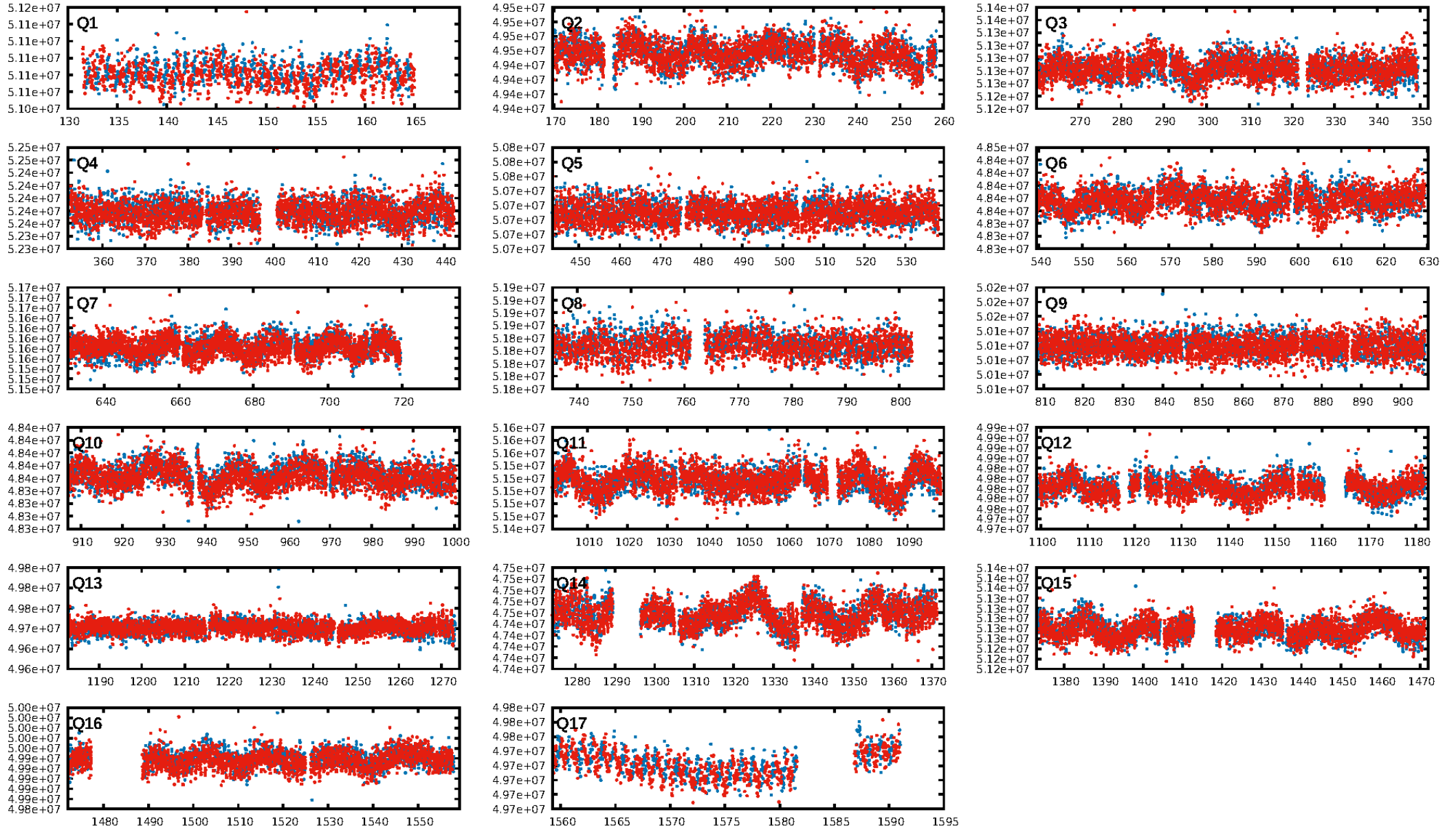
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [43.01 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1303/1317]
GhostDiagnostic-chr: 2.331
Centroid-sig: 0.0%
Centroid-so: 2.398 arcsec [2.21 σ]
OotOffset-rm: 0.078 arcsec [0.15 σ]
KicOffset-rm: 0.079 arcsec [0.14 σ]
OotOffset-st: 2/3/4/3 [12]
KicOffset-st: 2/3/4/3 [12]
DiffImageQuality-fgm: 0.83 [10/12]
DiffImageOverlap-fno: 1.00 [17/17]

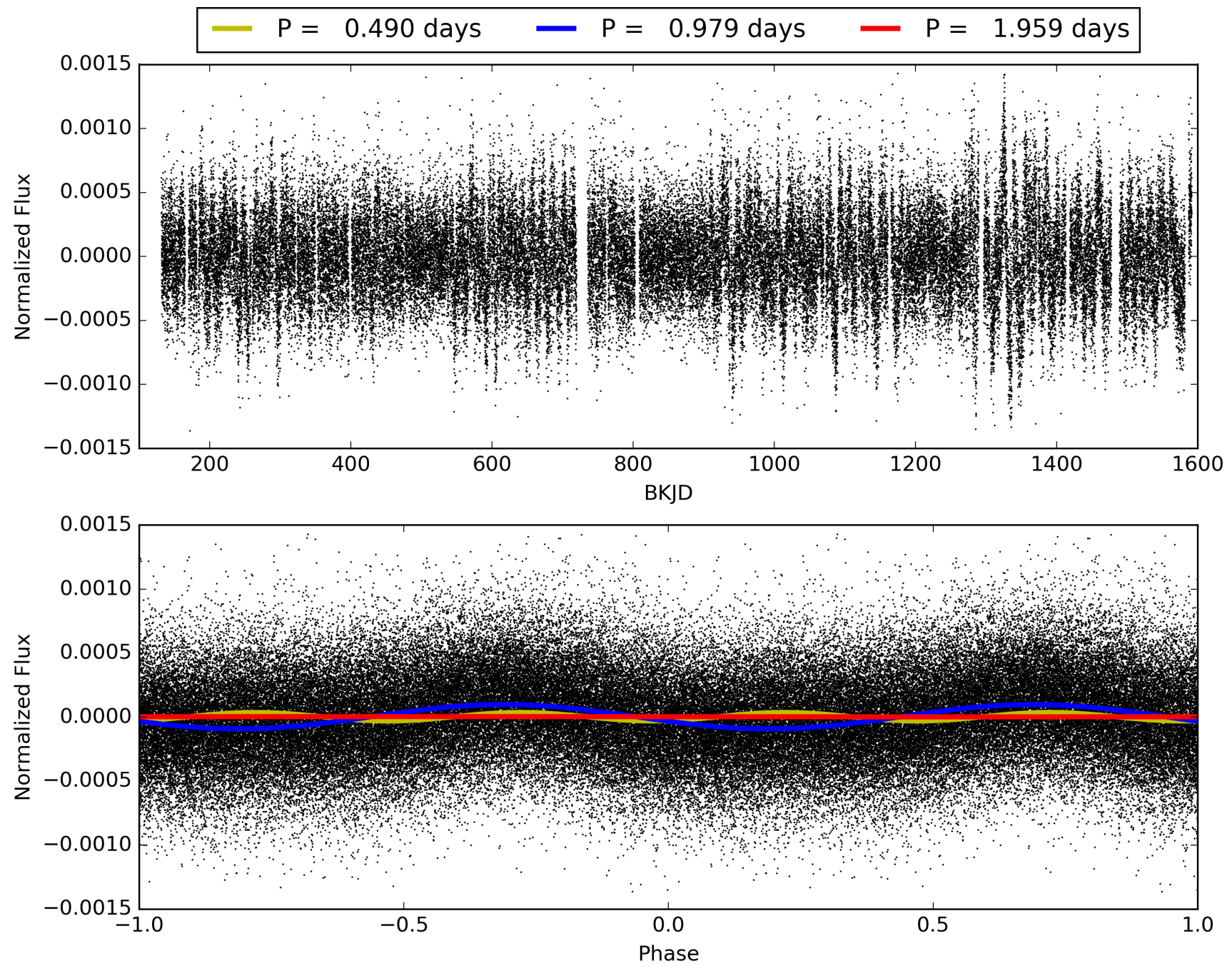
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:14 Z

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

TCE 008578742-01, PDC Light Curves

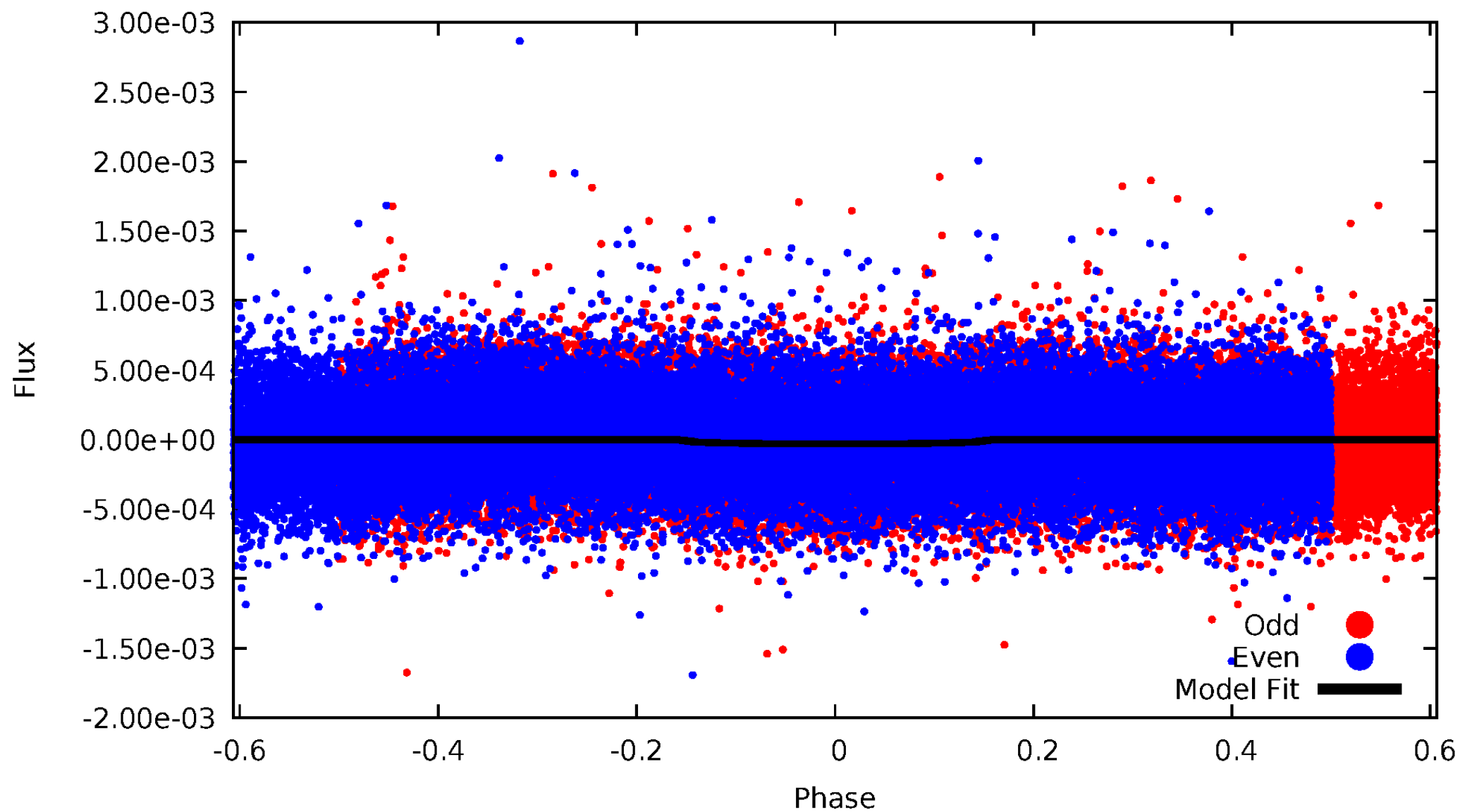


TCE 008578742-01



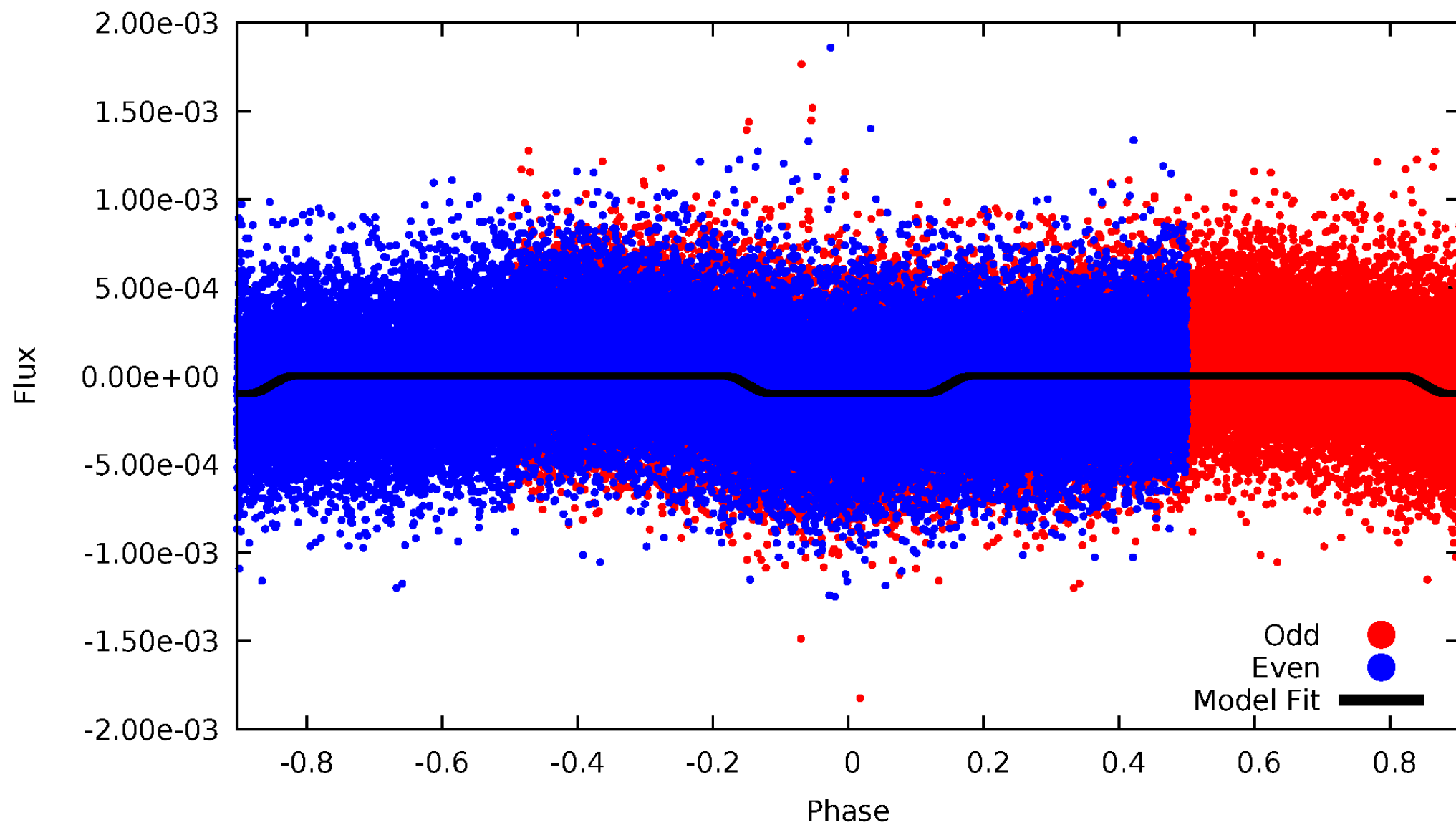
DV Odd/Even

TCE 008578742-01



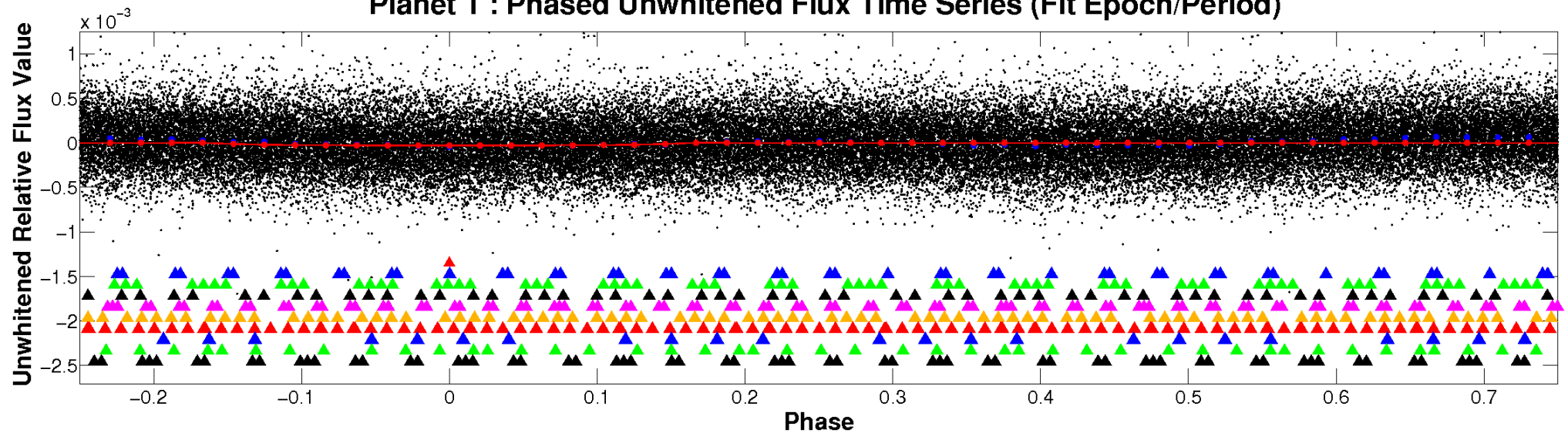
ALT Odd/Even

TCE 008578742-01

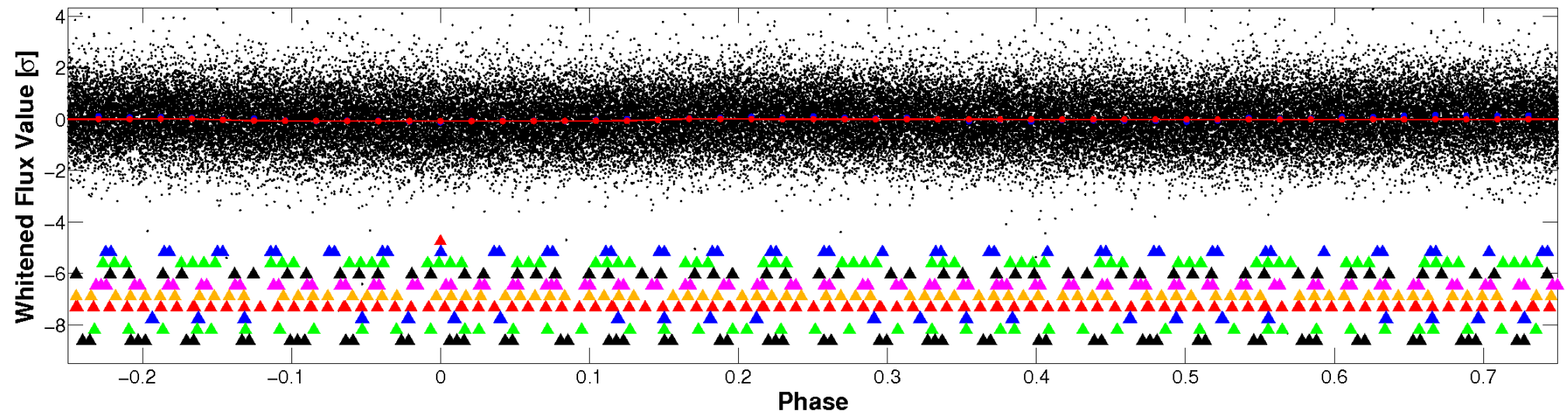


Non-Whitened Vs. Whitened Light Curve

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

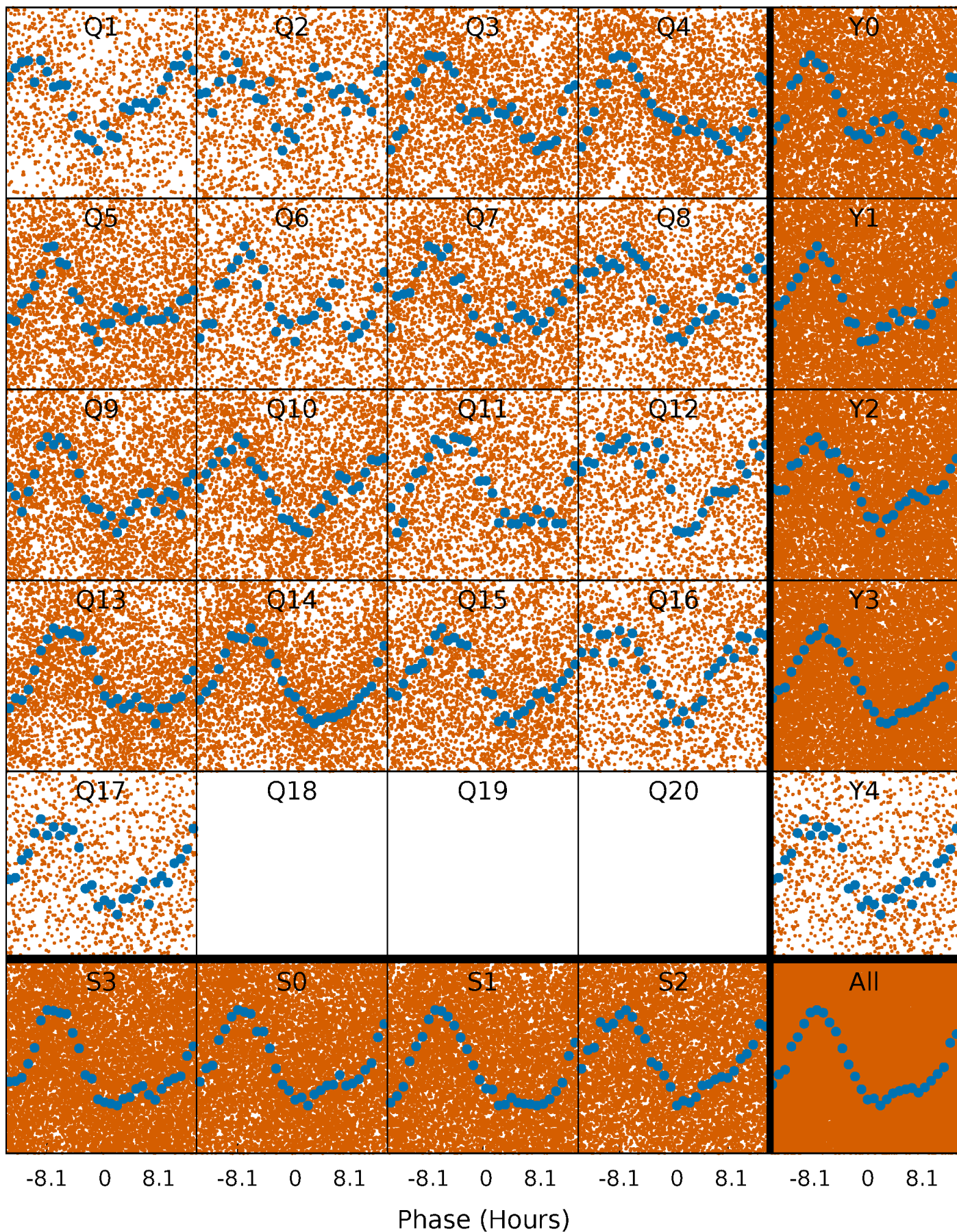


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



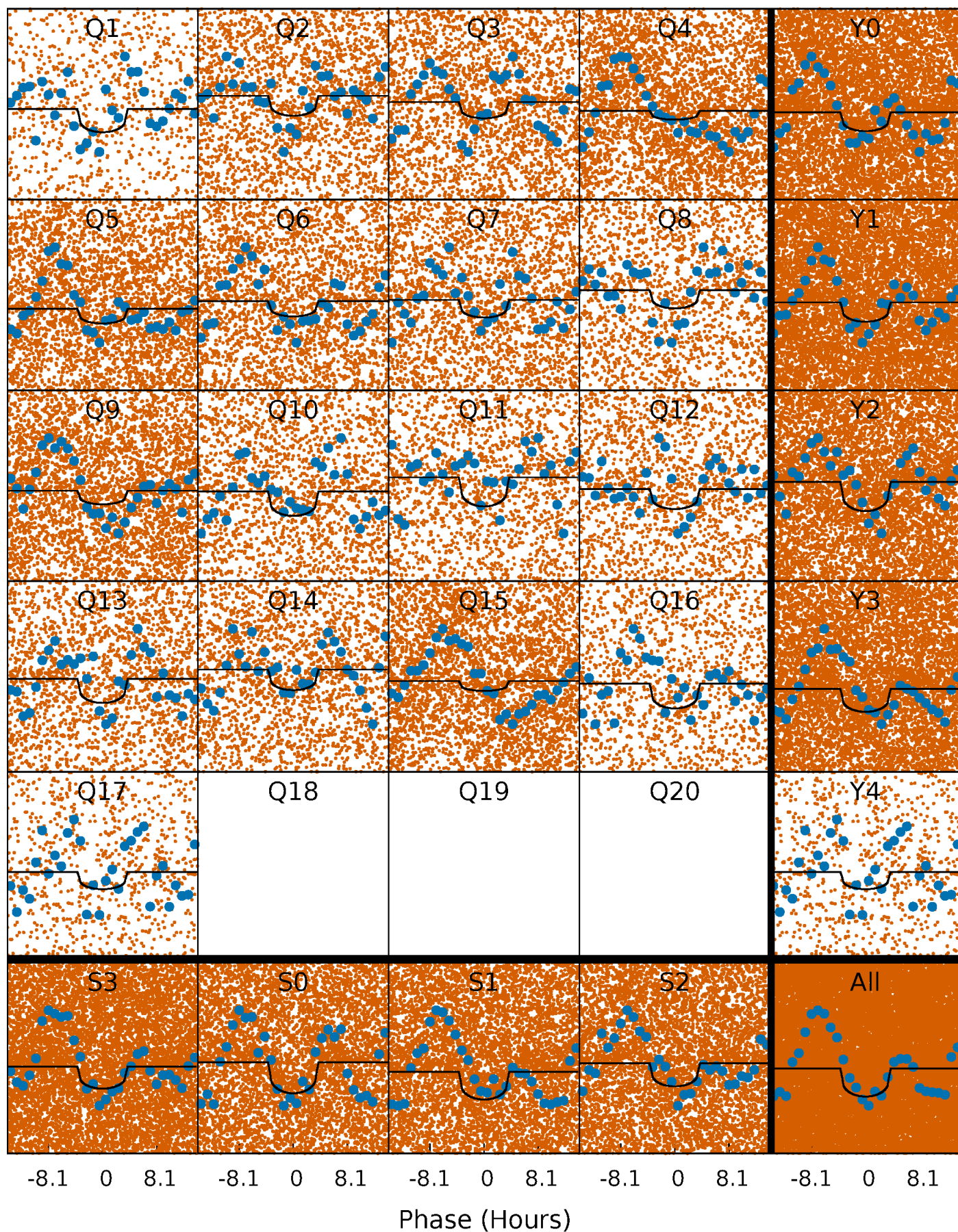
PDC Quarter-Phased Transit Curves

TCE 008578742-01 P= 0.979282 Days $T_0=132.499821$ (BKJD)



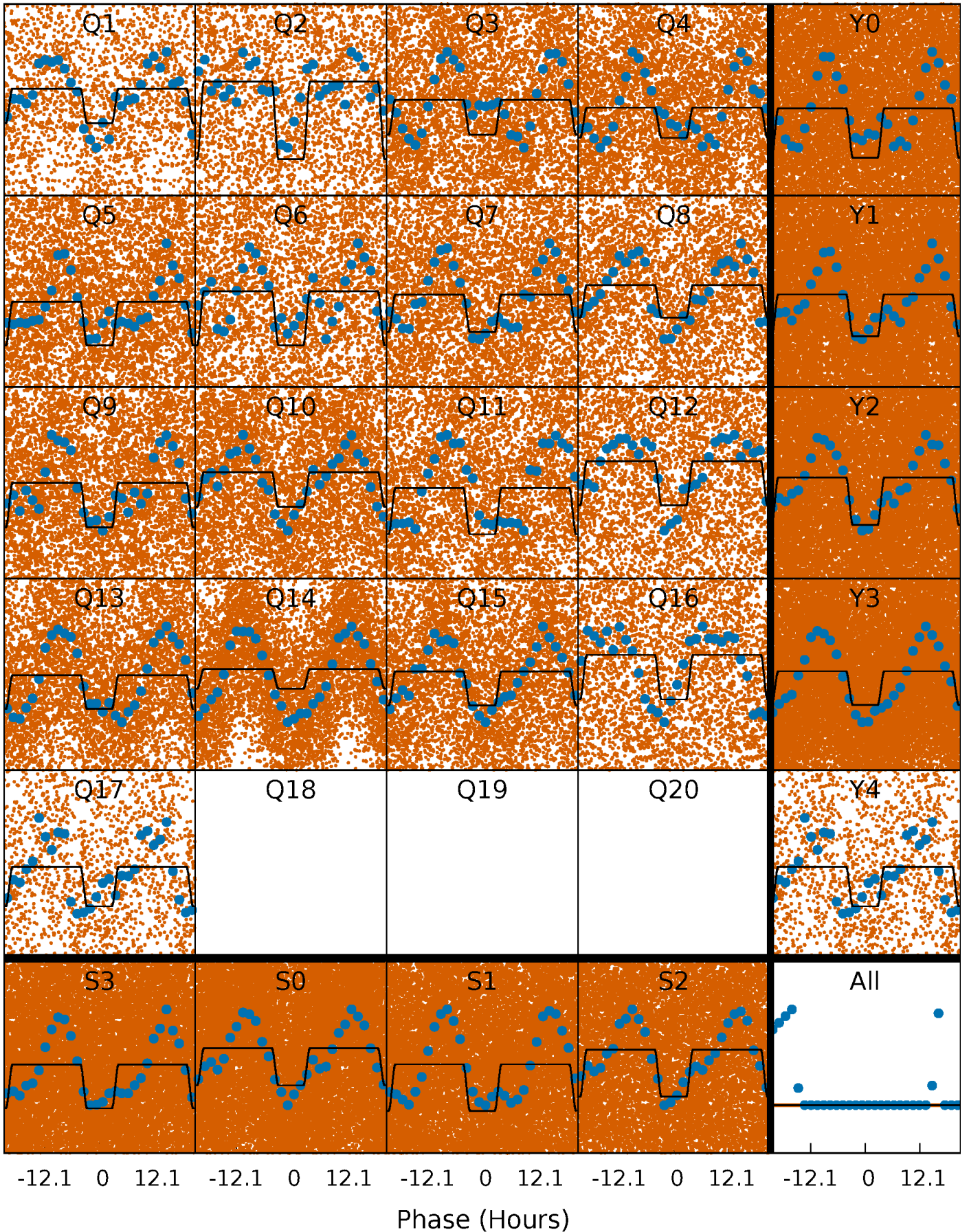
DV Quarter-Phased Transit Curves

TCE 008578742-01 P= 0.979282 Days $T_0=132.499821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

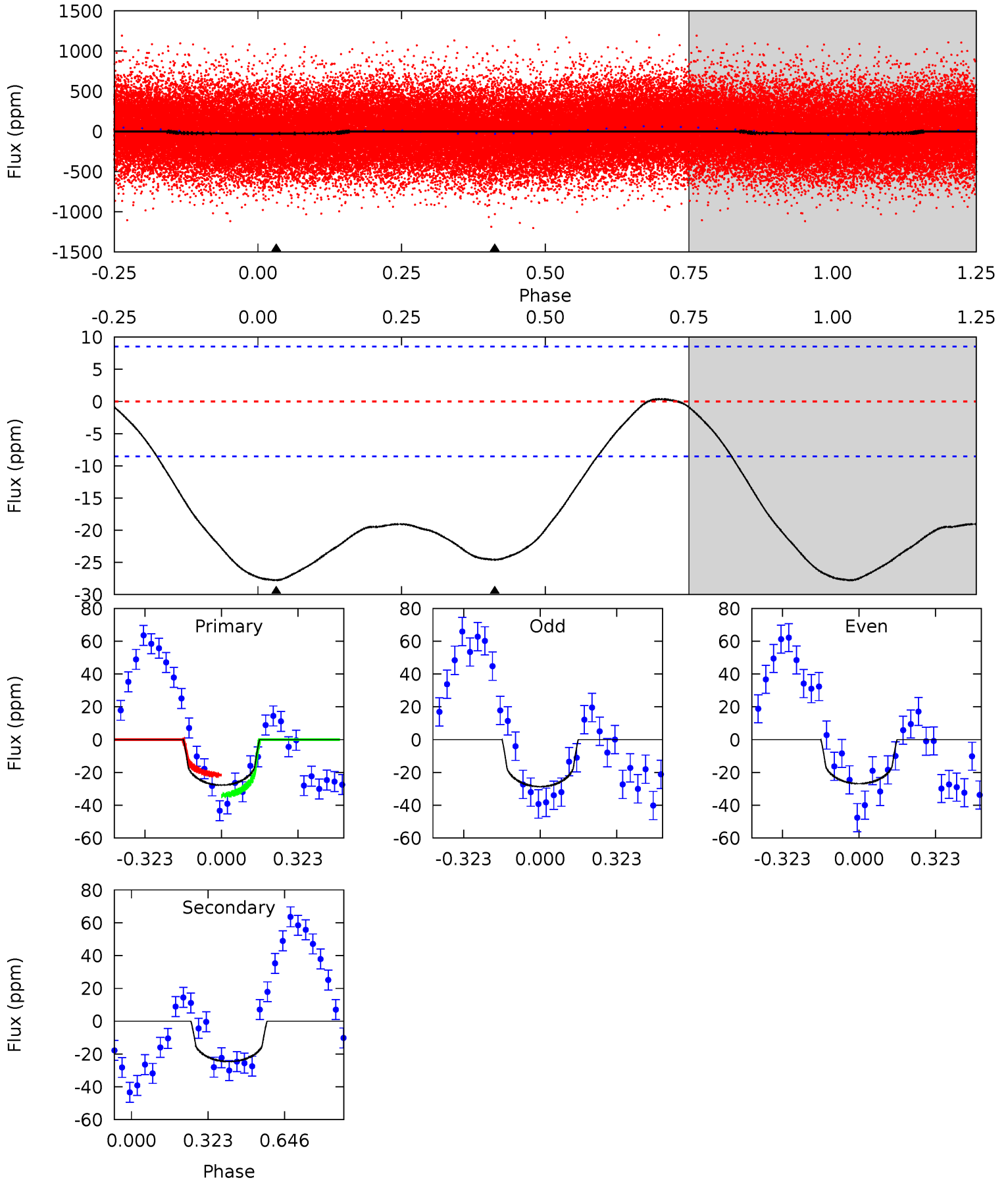
TCE 008578742-01 P= 0.979404 Days $T_0=132.496327$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-01, P = 0.979282 Days, E = 130.541257 Days

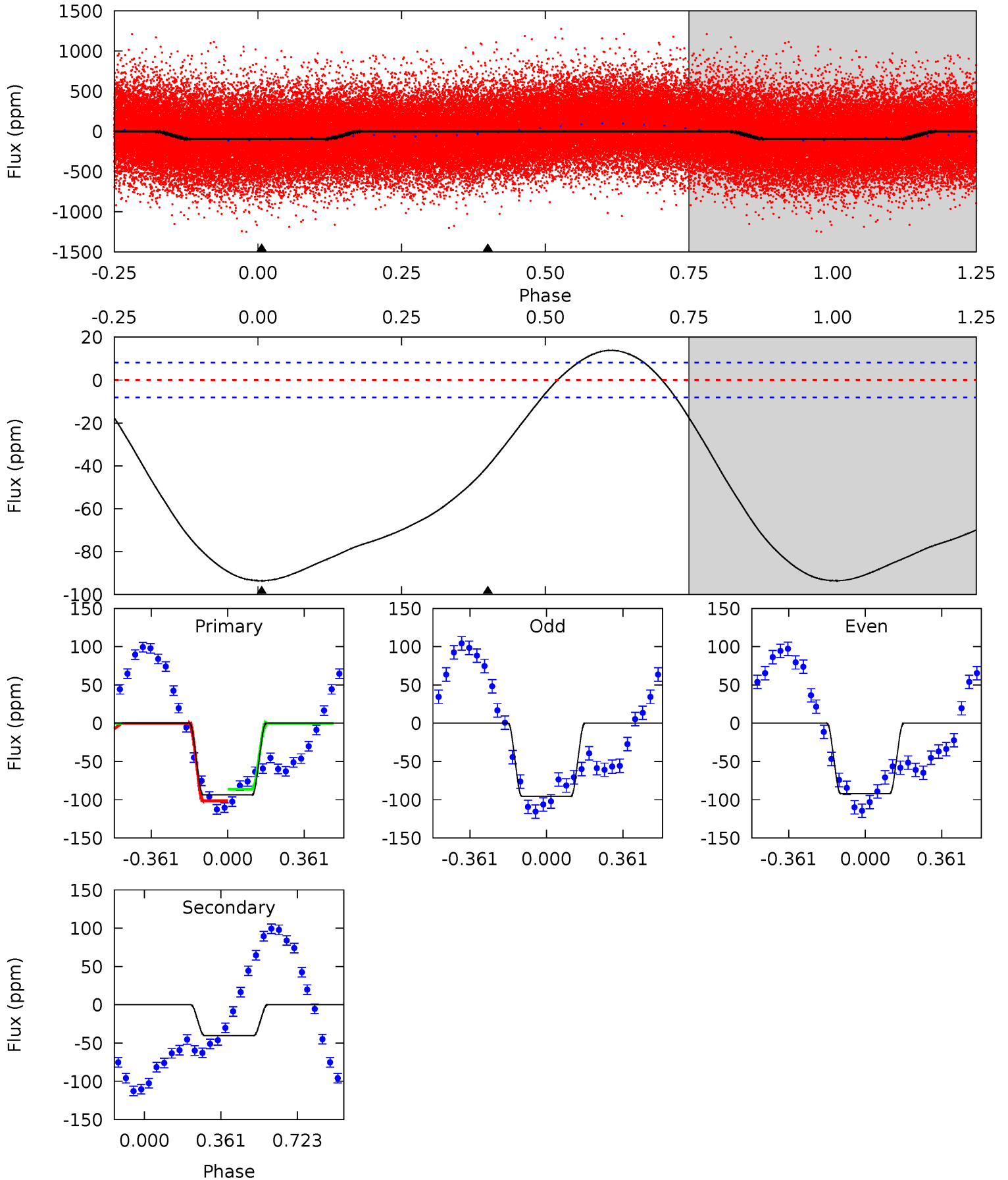
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.0 | 12.4 | 0 | 0 | 4.31 | 0.99 | 0.44 | 14.0 | 14.0 | 12.4 | 12.4 | 0.46 | 0.99 | 0.01 | 3.16 |



Alt Model-Shift Uniqueness Test

008578742-01, P = 0.979404 Days, E = 130.537519 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 49.3 | 21.2 | 0 | 0 | 4.29 | 0.91 | 4.72 | 49.3 | 49.3 | 21.2 | 21.2 | 0.96 | 1.03 | 0.13 | 4.12 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -25 ± 2 | $0.76^{+0.67}_{-0.51}$ | 2701^{+201}_{-147} | 5114^{+4221}_{-1172} | $8.171^{+66.465}_{-5.769}$ |
| Alt. | -40 ± 2 | $1.20^{+0.77}_{-0.61}$ | 2719^{+191}_{-166} | 4645^{+1784}_{-813} | $5.265^{+16.392}_{-3.296}$ |

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

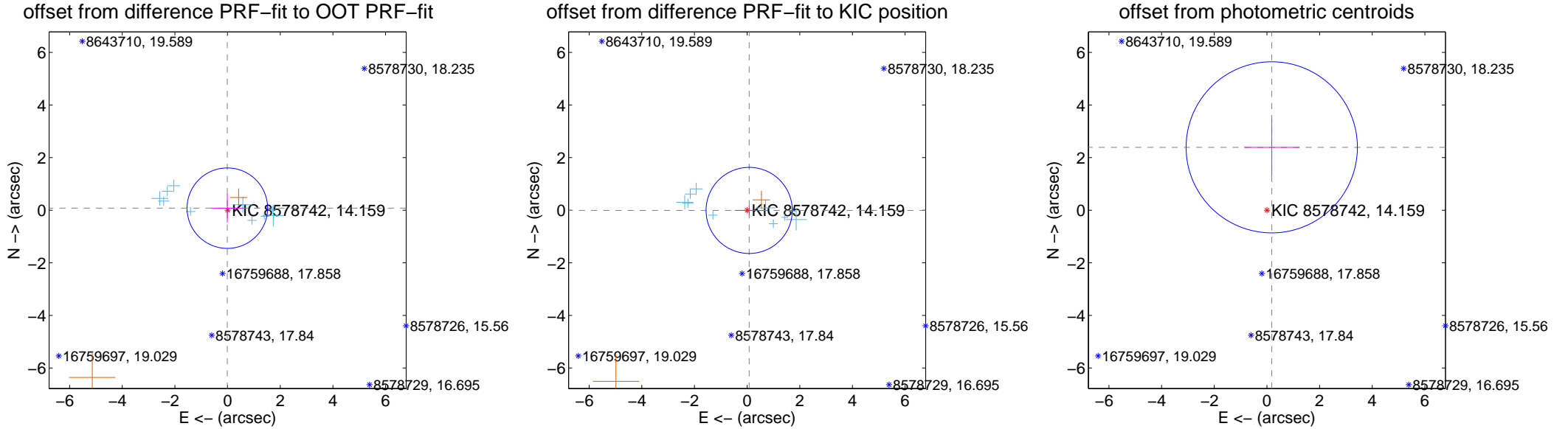
DV Centroid Data

Supplemental centroid analysis for 008578742-01. Kepler magnitude: 14.16. Transit SNR 9.19

There are 10 quarters with good PRF difference image offsets

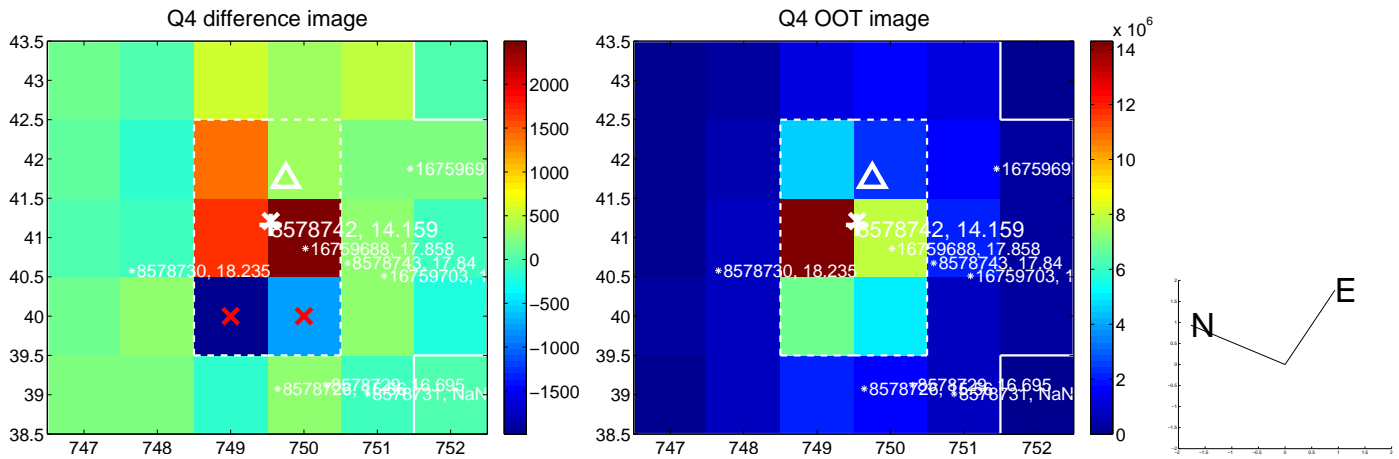
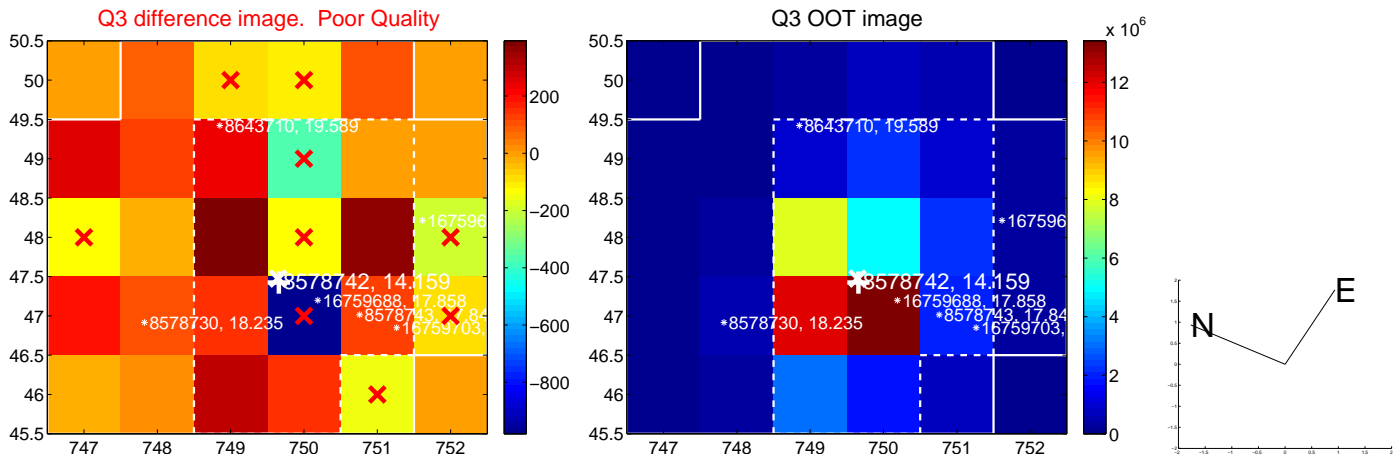
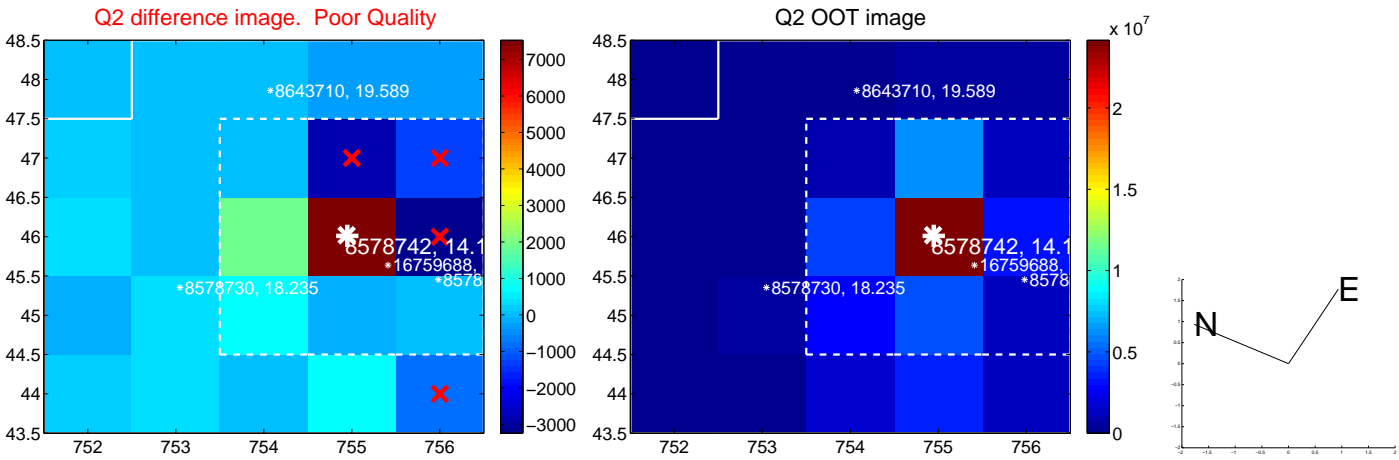
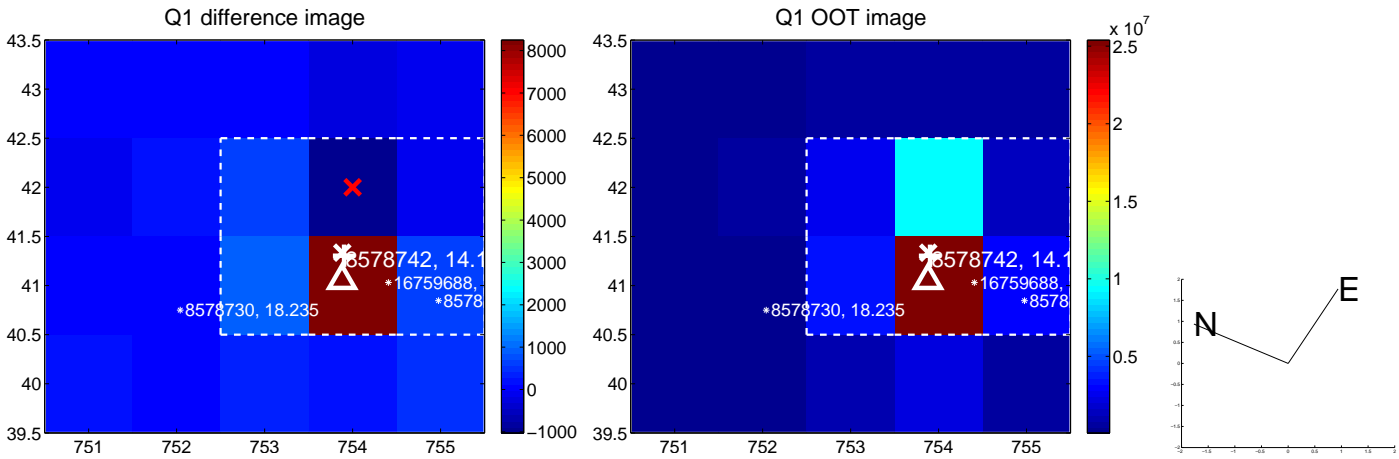
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.078 ± 0.510 | 0.15 | 0.010 ± 0.613 | 0.077 ± 0.544 |
| PRF-fit source offset from KIC position | 0.079 ± 0.546 | 0.14 | -0.078 ± 0.548 | -0.008 ± 0.180 |
| photometric centroid source offset | 2.40 ± 1.08 | 2.21 | -0.18 ± 1.05 | 2.39 ± 1.08 |

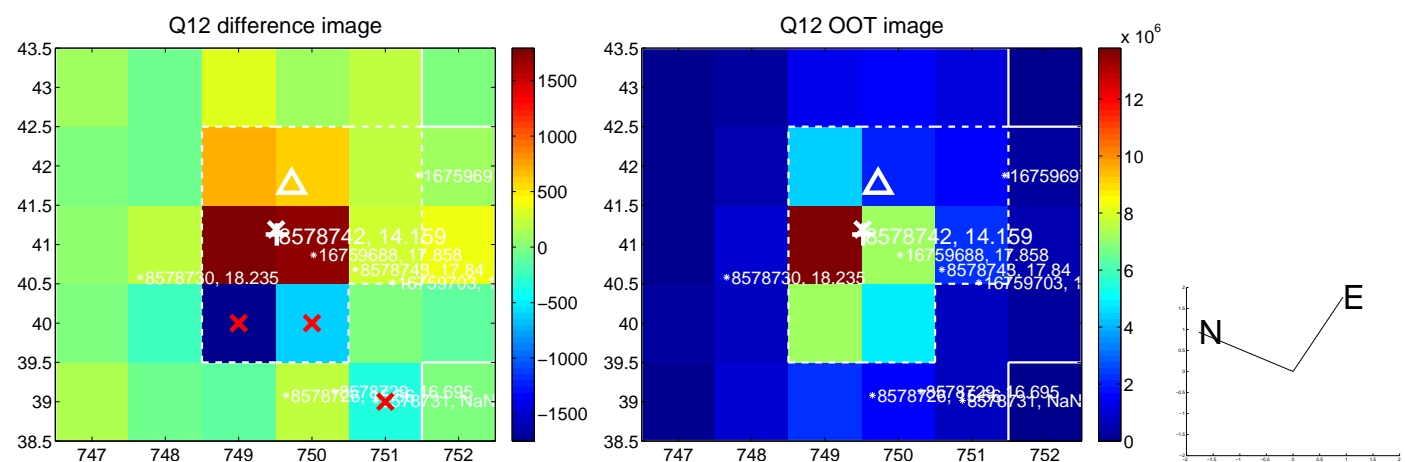
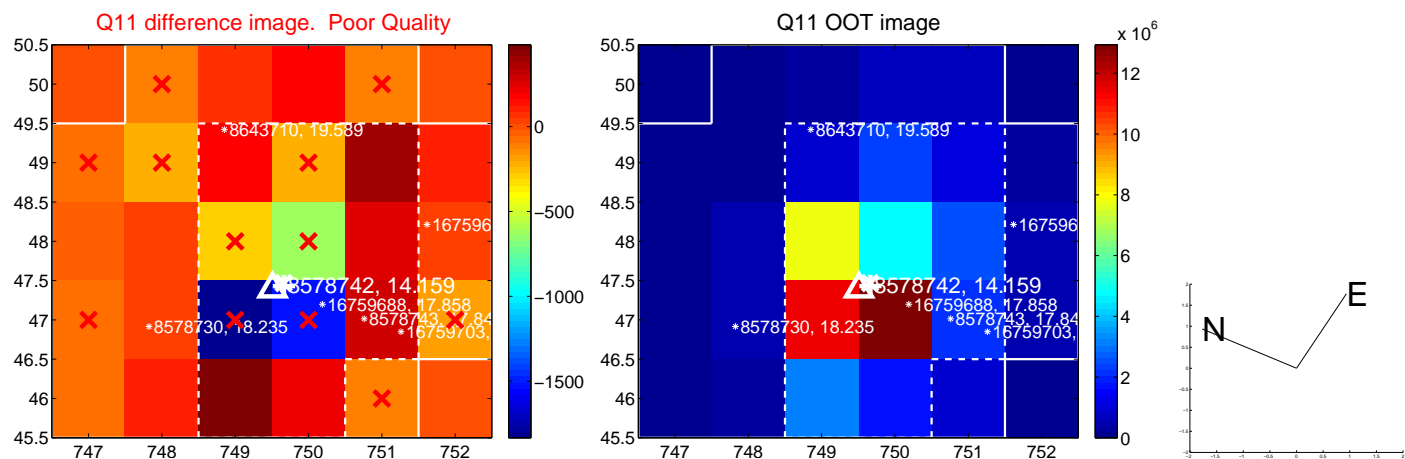
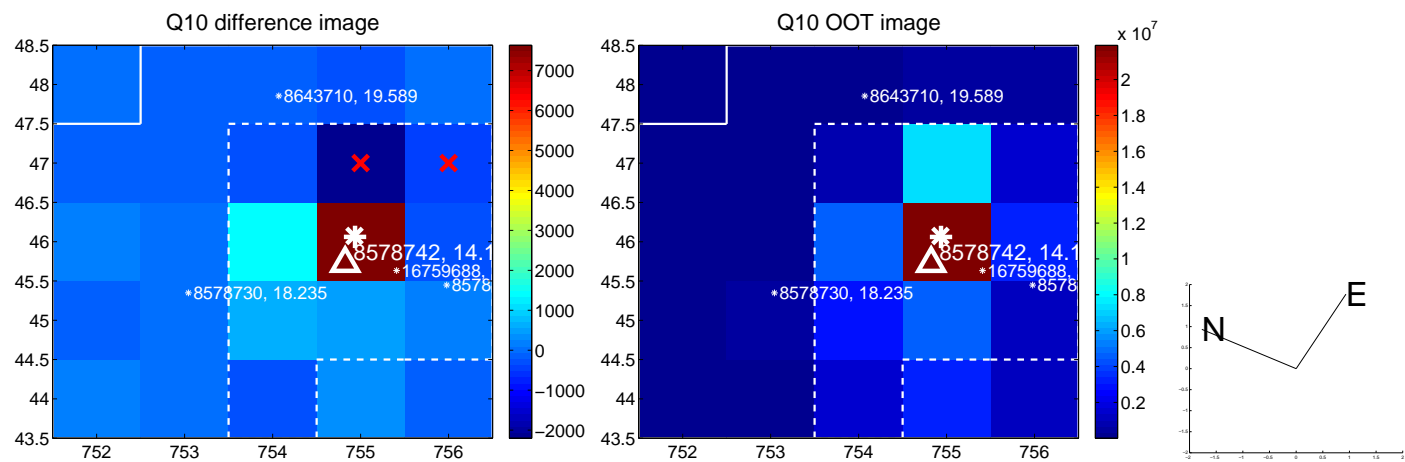
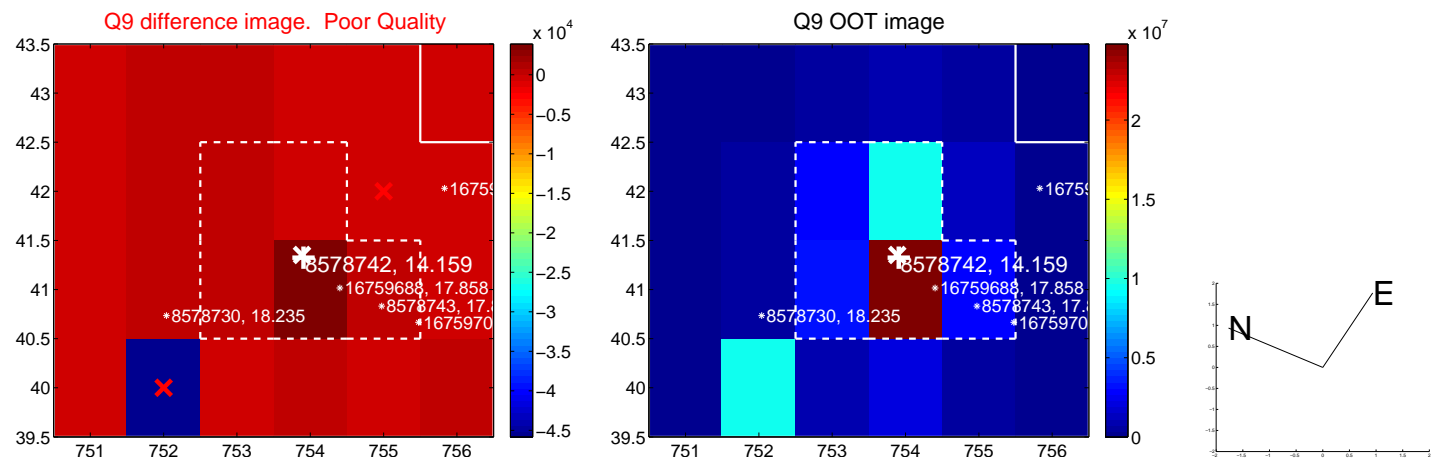


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

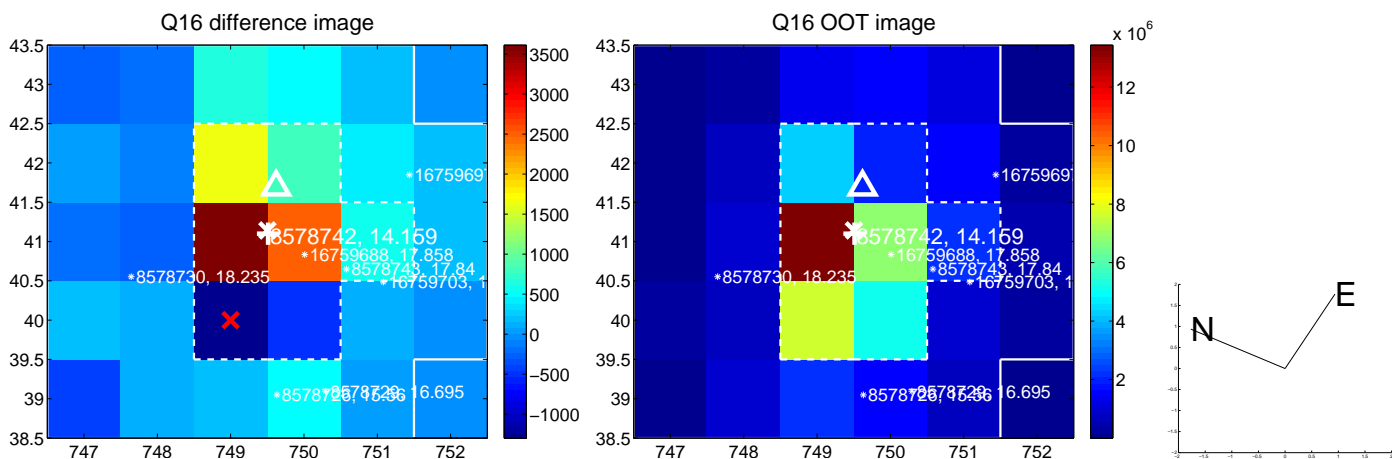
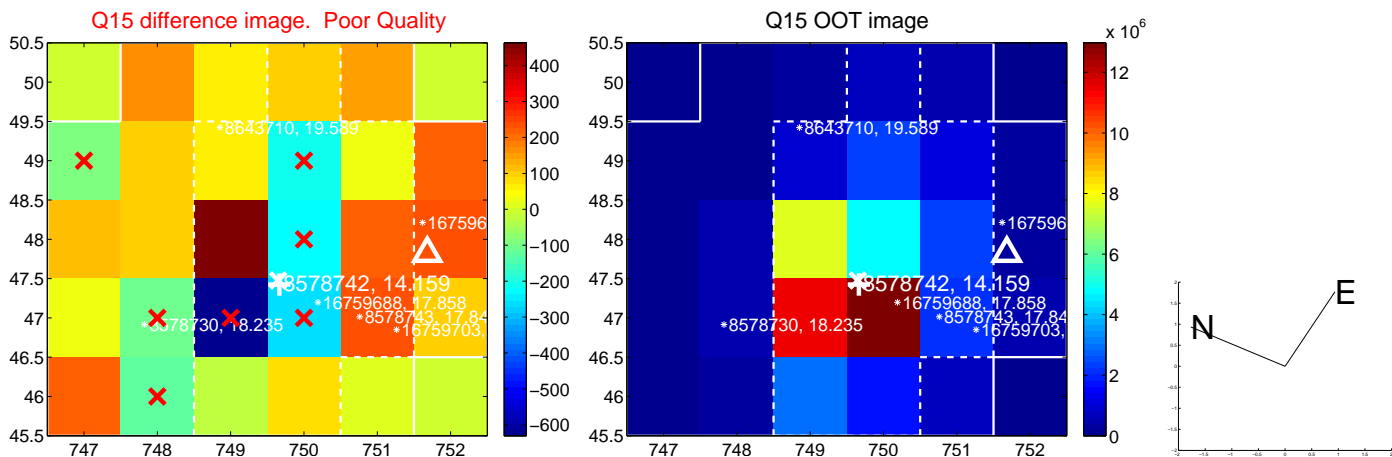
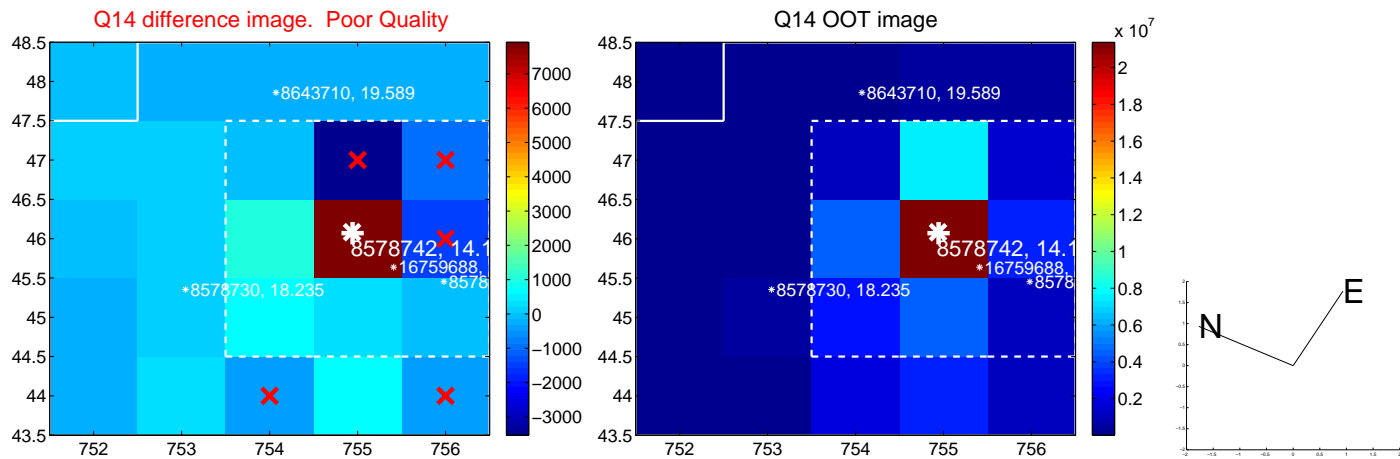
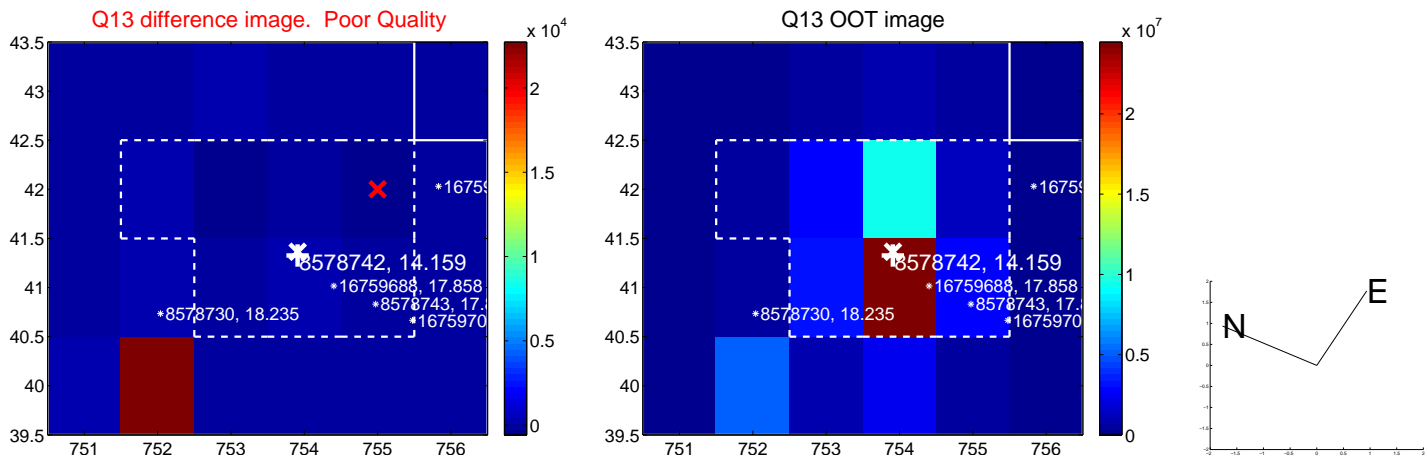
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



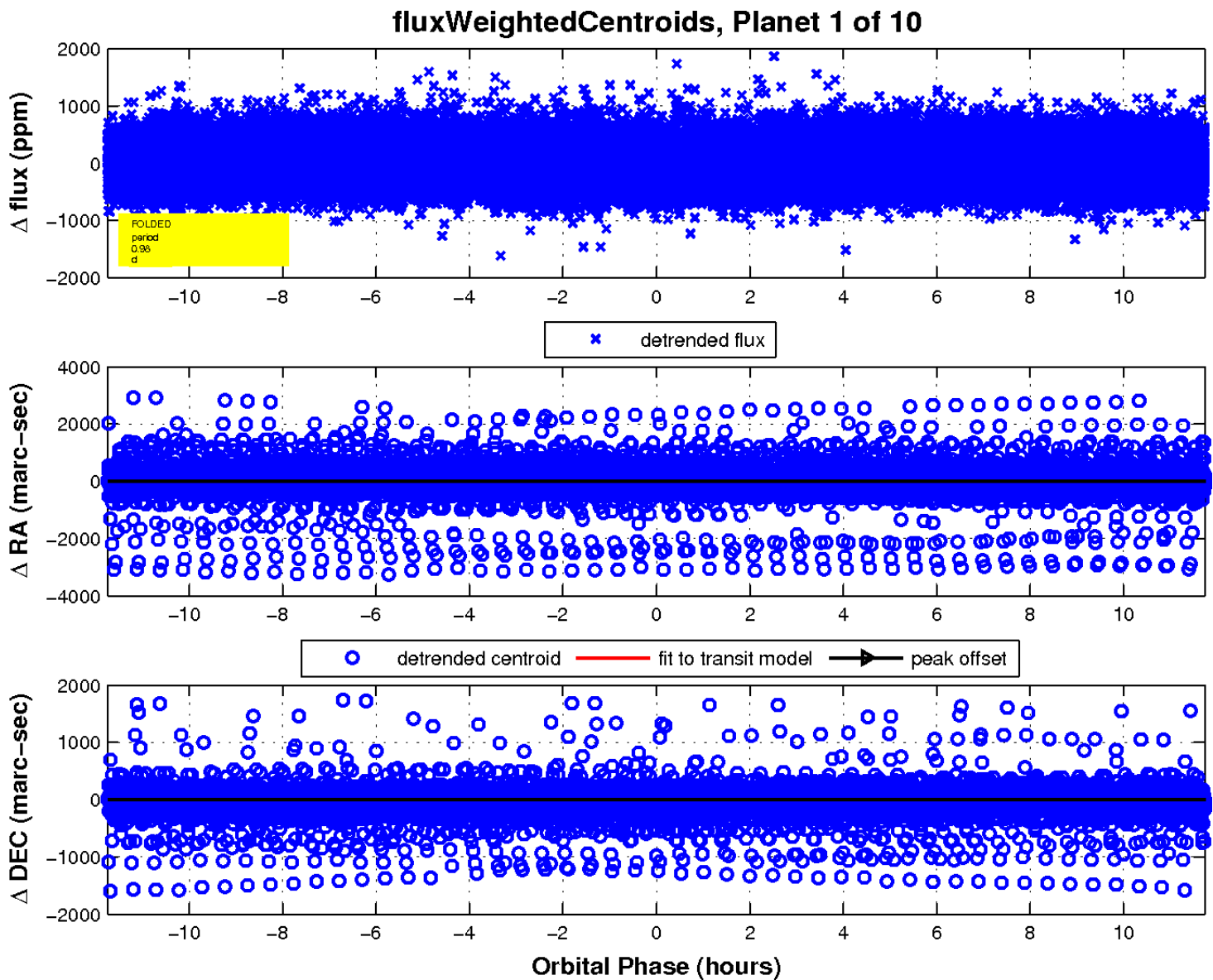
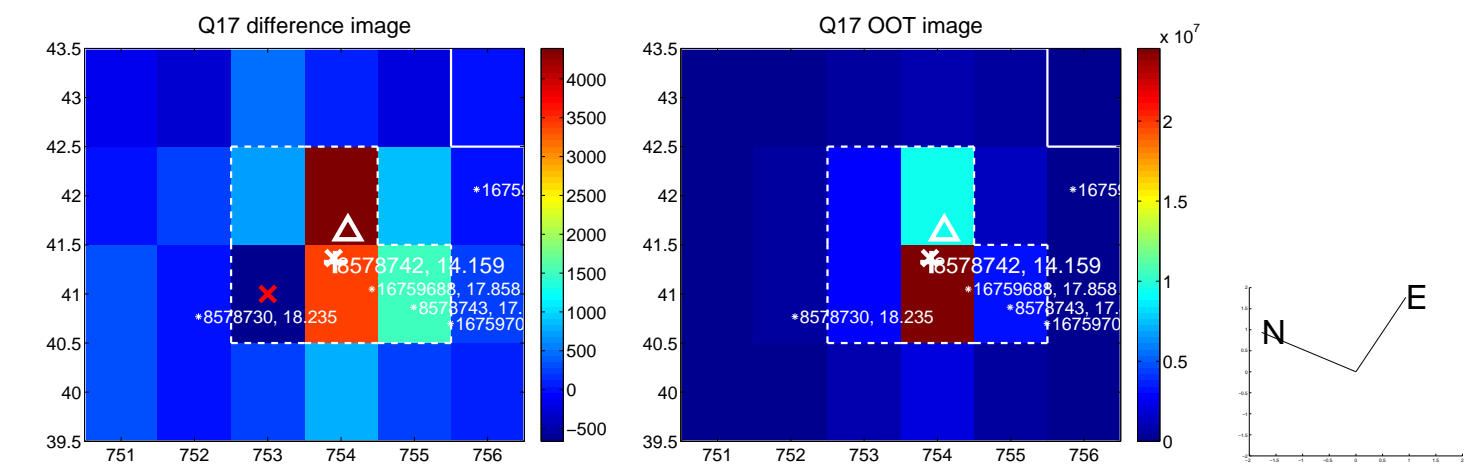
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

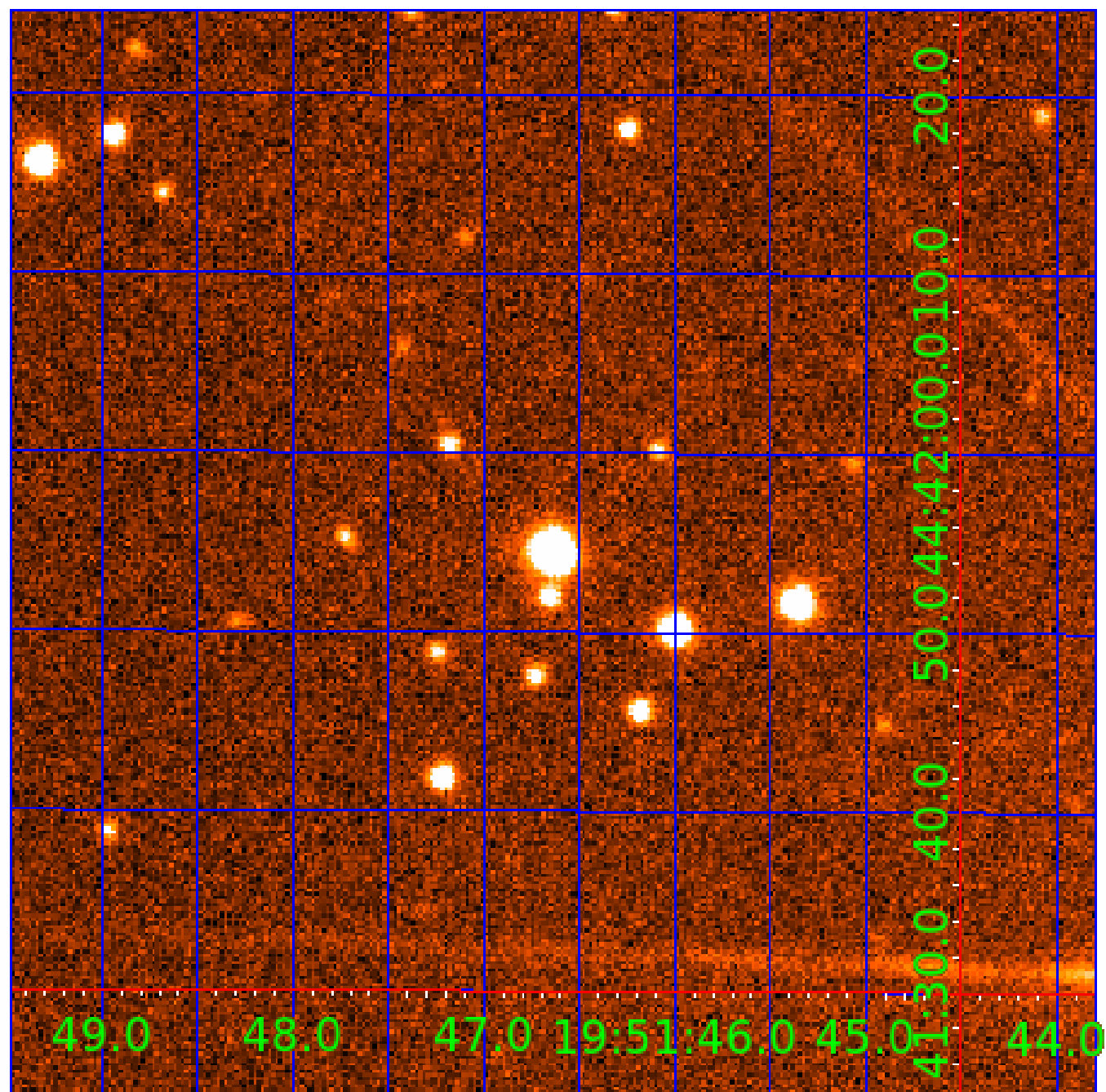


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

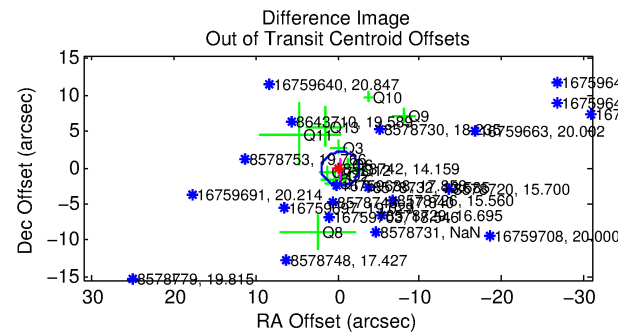
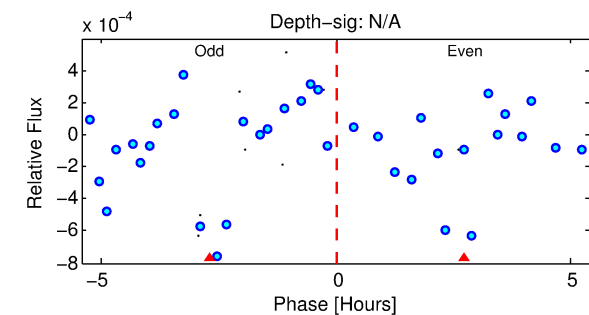
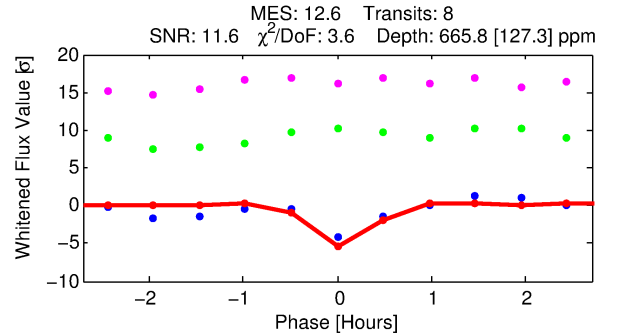
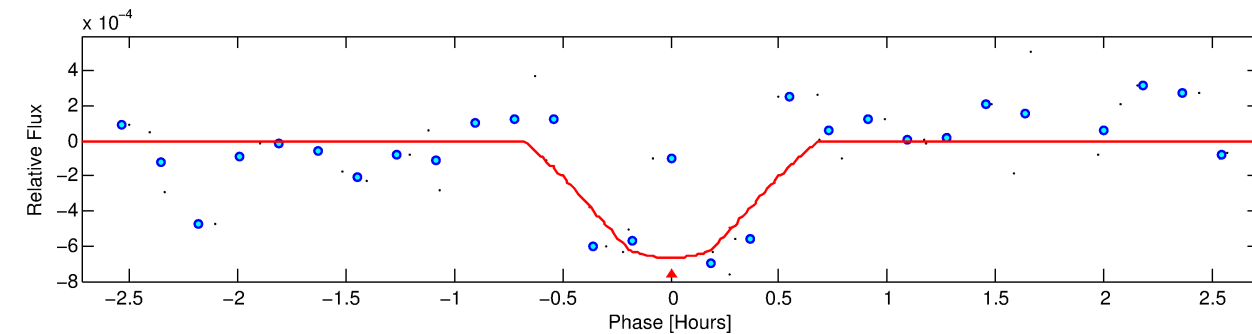
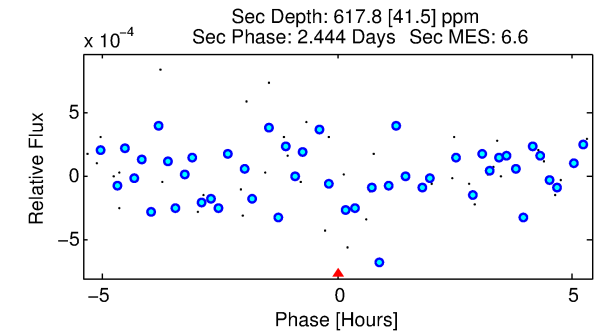
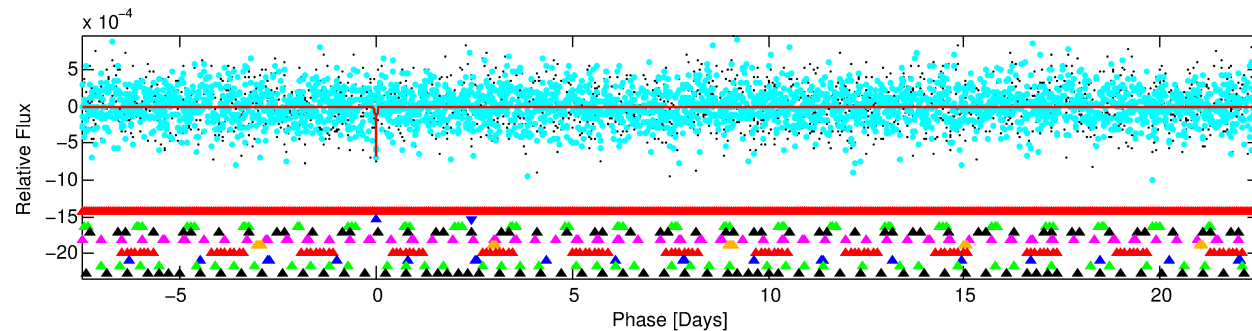
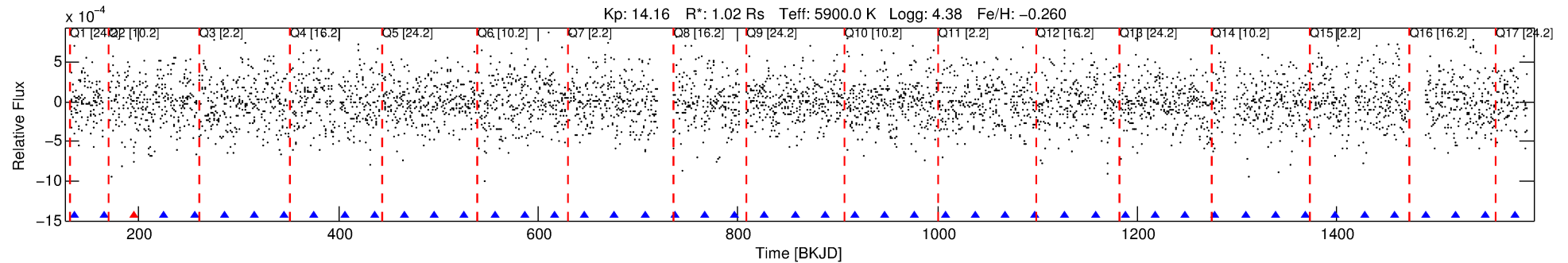
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-02

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 2 of 10 Period: 30.067 d



DV Fit Results:

Period = 30.06744 [0.00018] d
Epoch = 135.5498 [0.0051] BKJD
Rp/R* = 0.0238 [0.0526]
a/R* = 258.47 [2714.06]
b = 0.10 [102.04]
Seff = 33.88 [12.39]
Teq = 615 [56] K
Rp = 2.67 [5.93] Re
a = 0.1835 [0.0428] AU
Ag = 1609.64 [7127.09] [0.23σ]
Teffp = 6025 [6651] K [0.81σ]

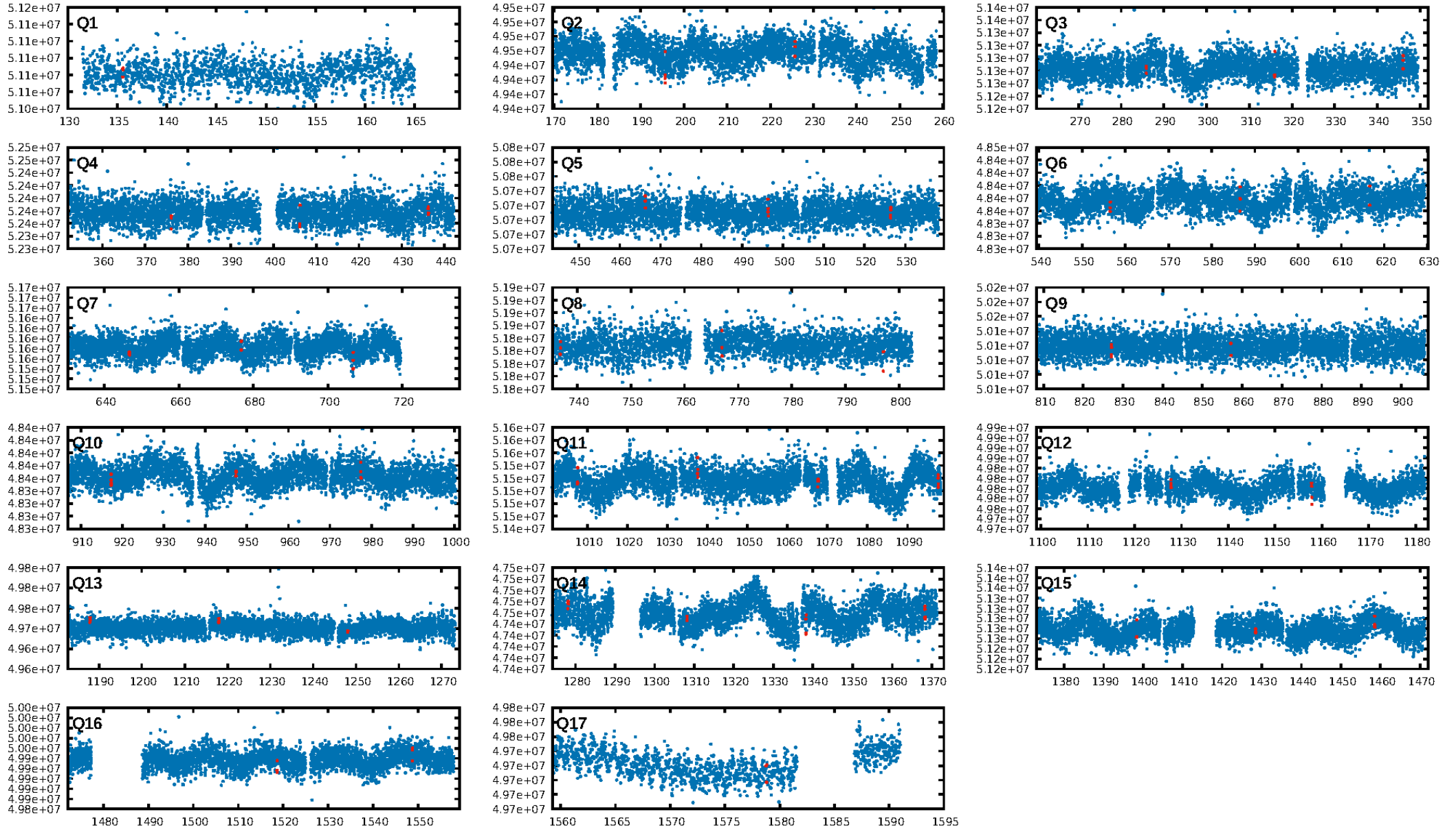
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.03σ]
LongPeriod-sig: 100.0% [27.20σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 48.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.88 [7/8]
GhostDiagnostic-chr: -0.9273
Centroid-sig: 11.4%
Centroid-so: 1.080 arcsec [1.53σ]
OotOffset-rm: 0.348 arcsec [0.45σ]
KicOffset-rm: 0.478 arcsec [0.58σ]
OotOffset-st: 3/3/2/4 [12]
KicOffset-st: 3/3/2/4 [12]
DiffImageQuality-fgm: 0.17 [2/12]
DiffImageOverlap-fno: 0.53 [9/17]

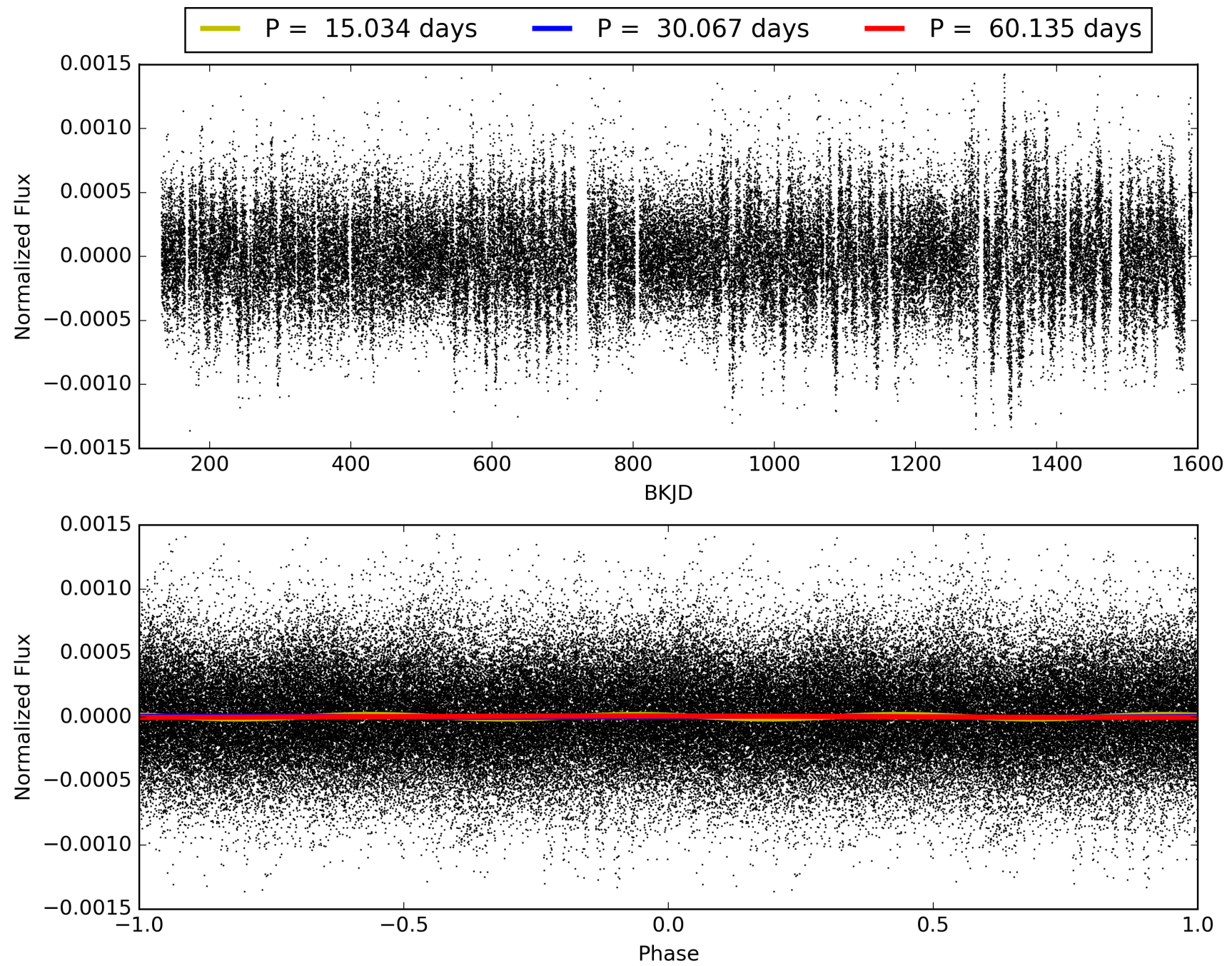
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:26 Z

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

TCE 008578742-02, PDC Light Curves

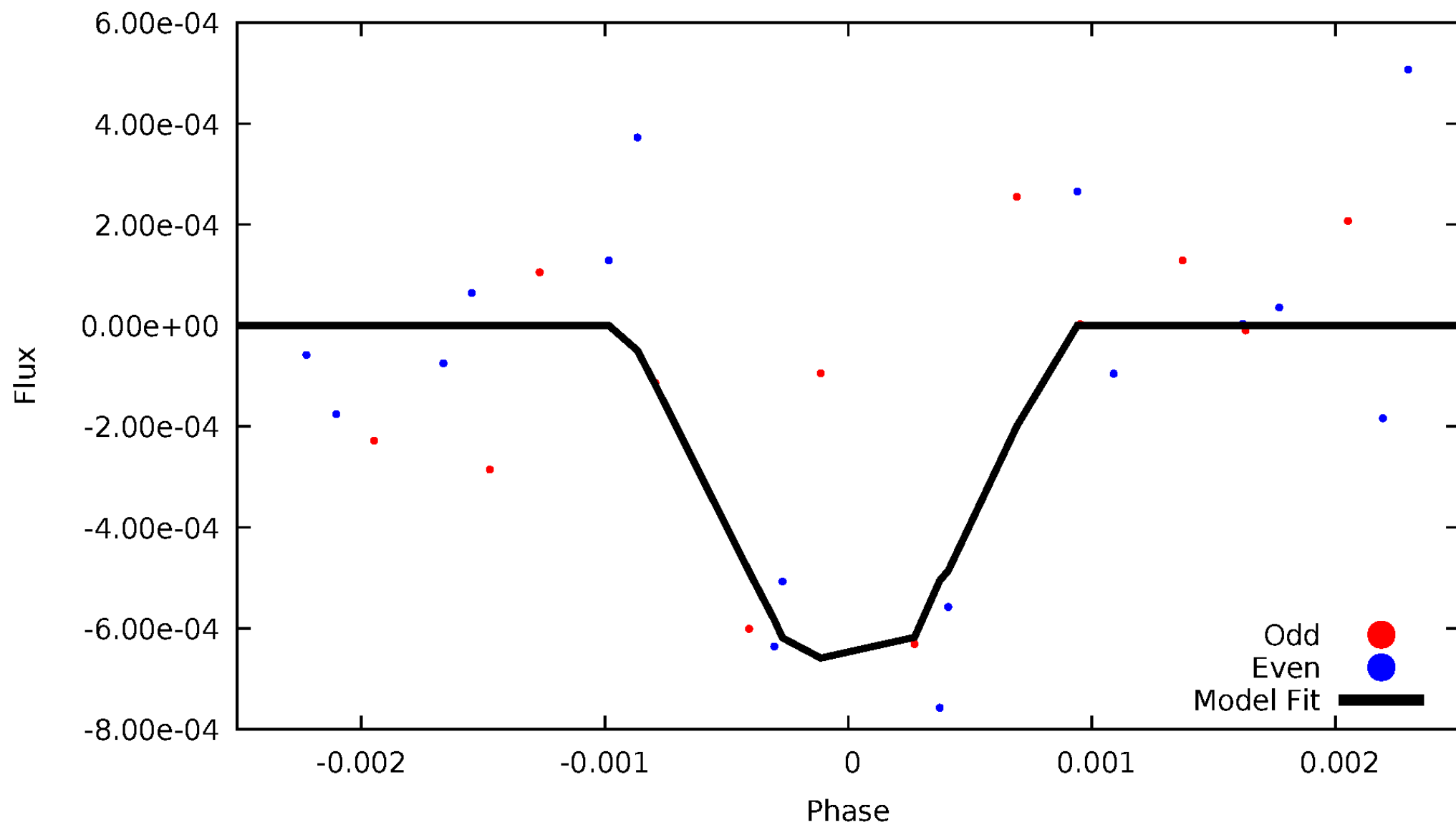


TCE 008578742-02



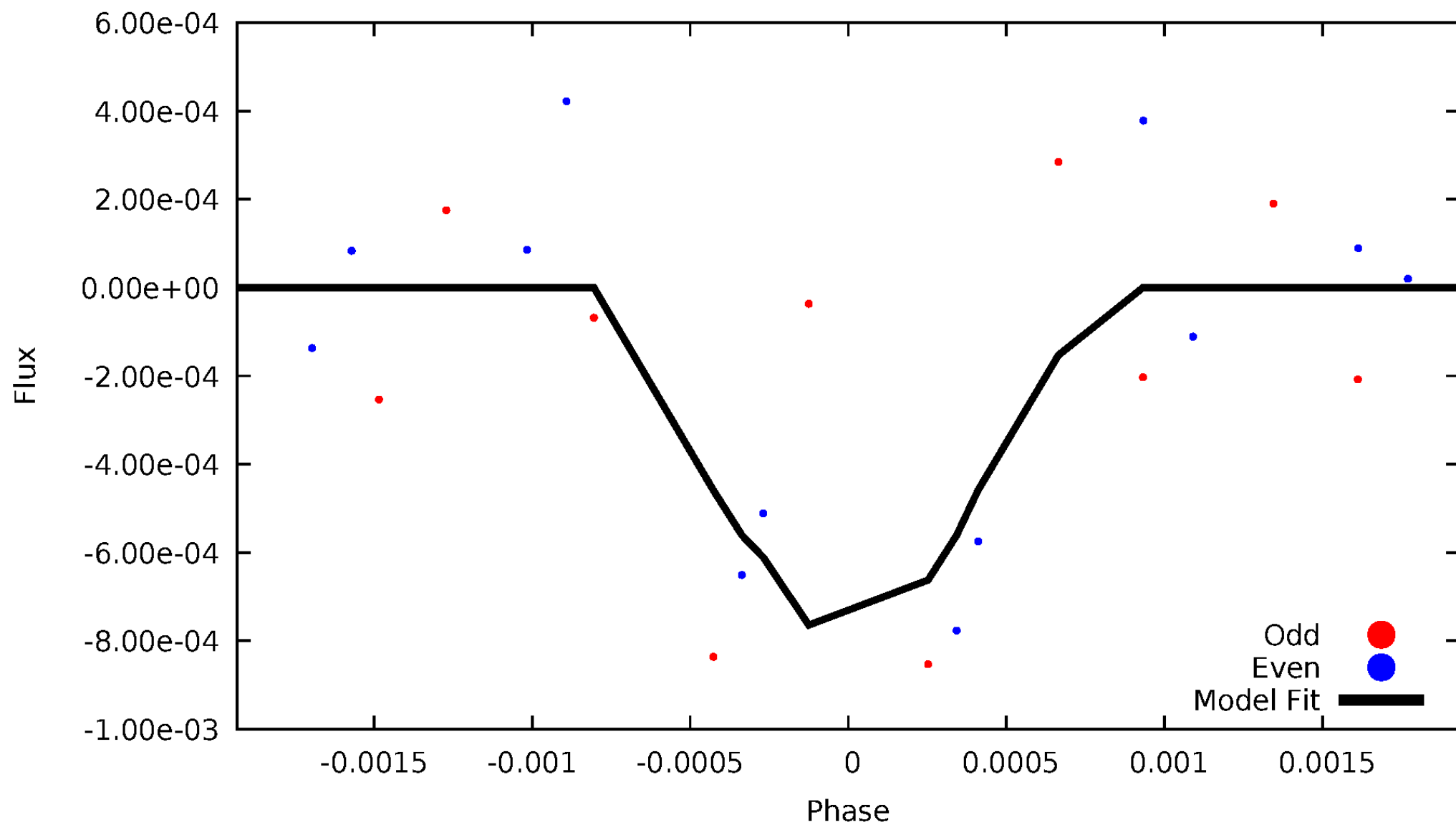
DV Odd/Even

TCE 008578742-02



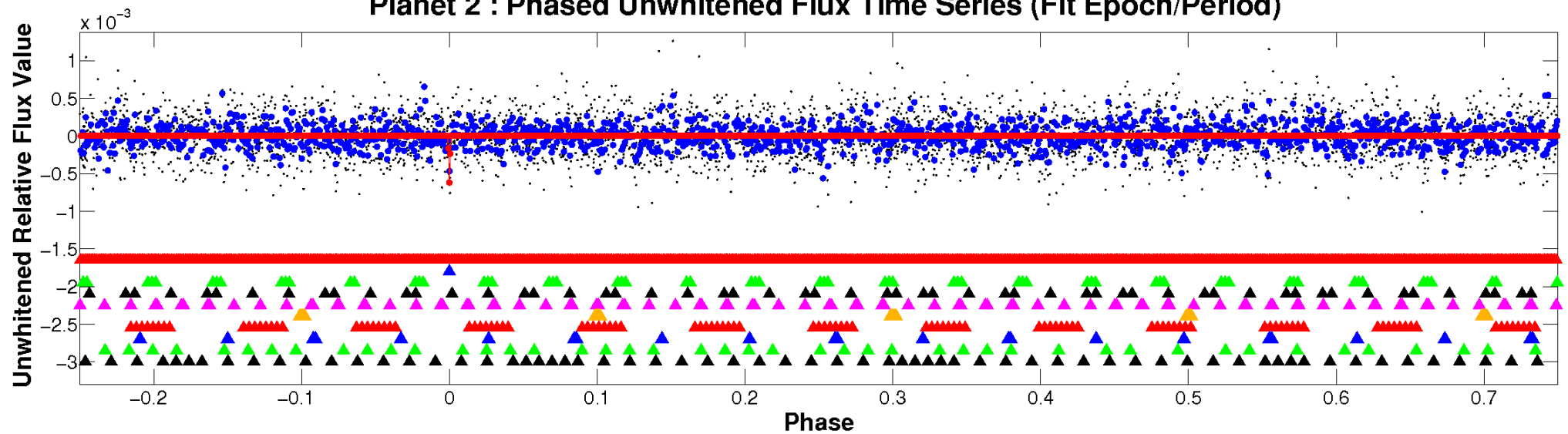
ALT Odd/Even

TCE 008578742-02

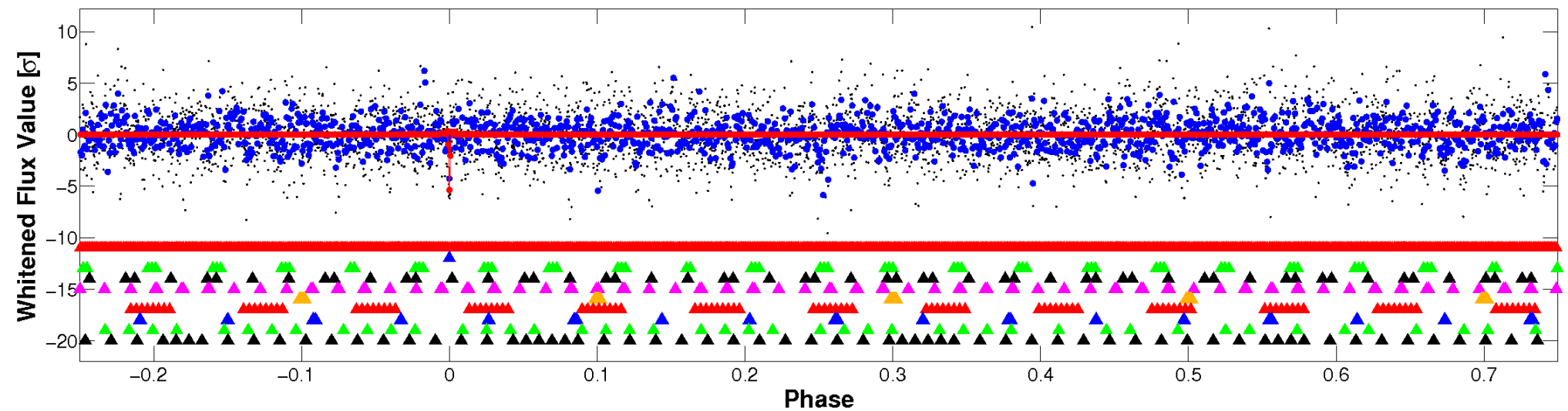


Non-Whitened Vs. Whitened Light Curve

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

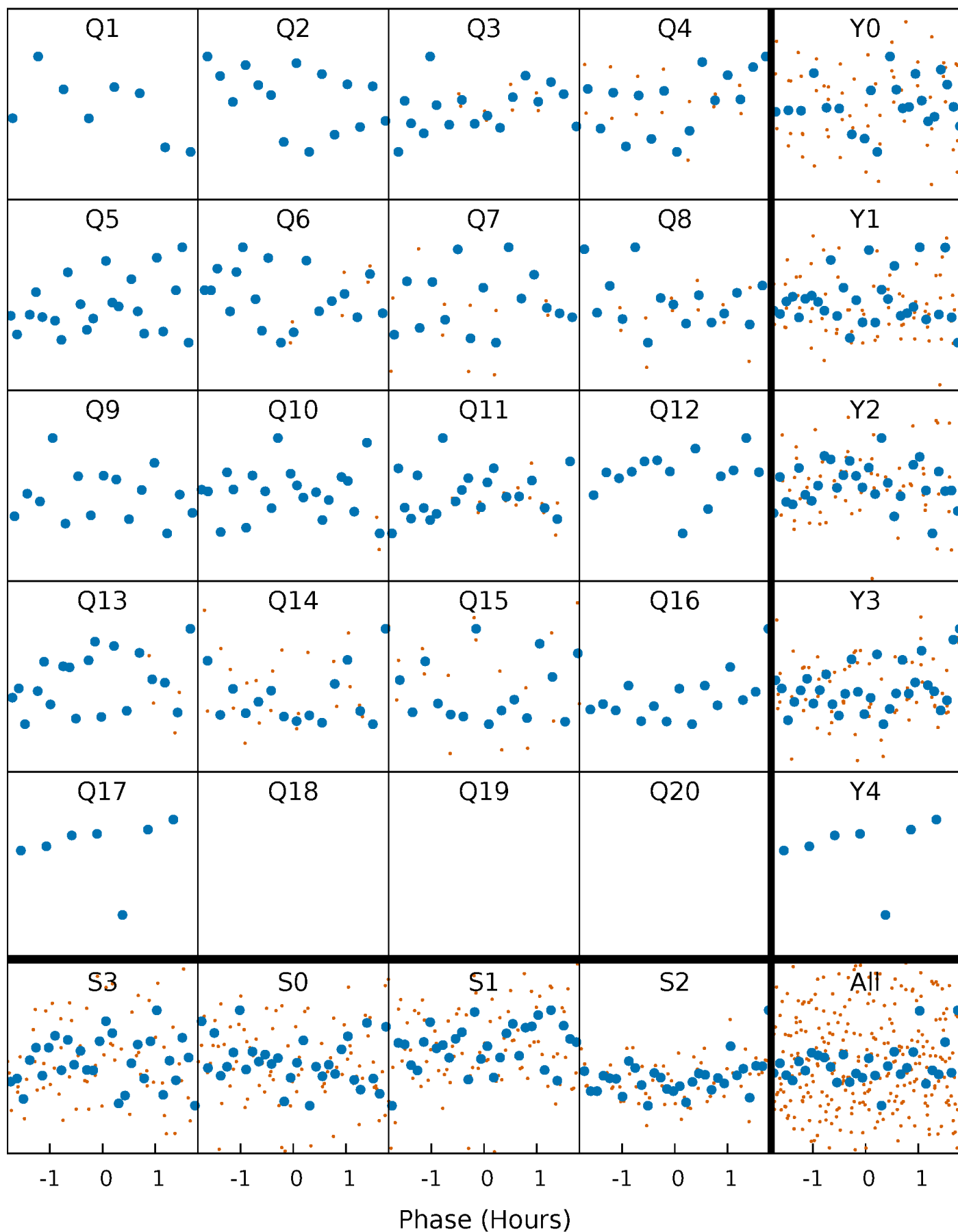


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



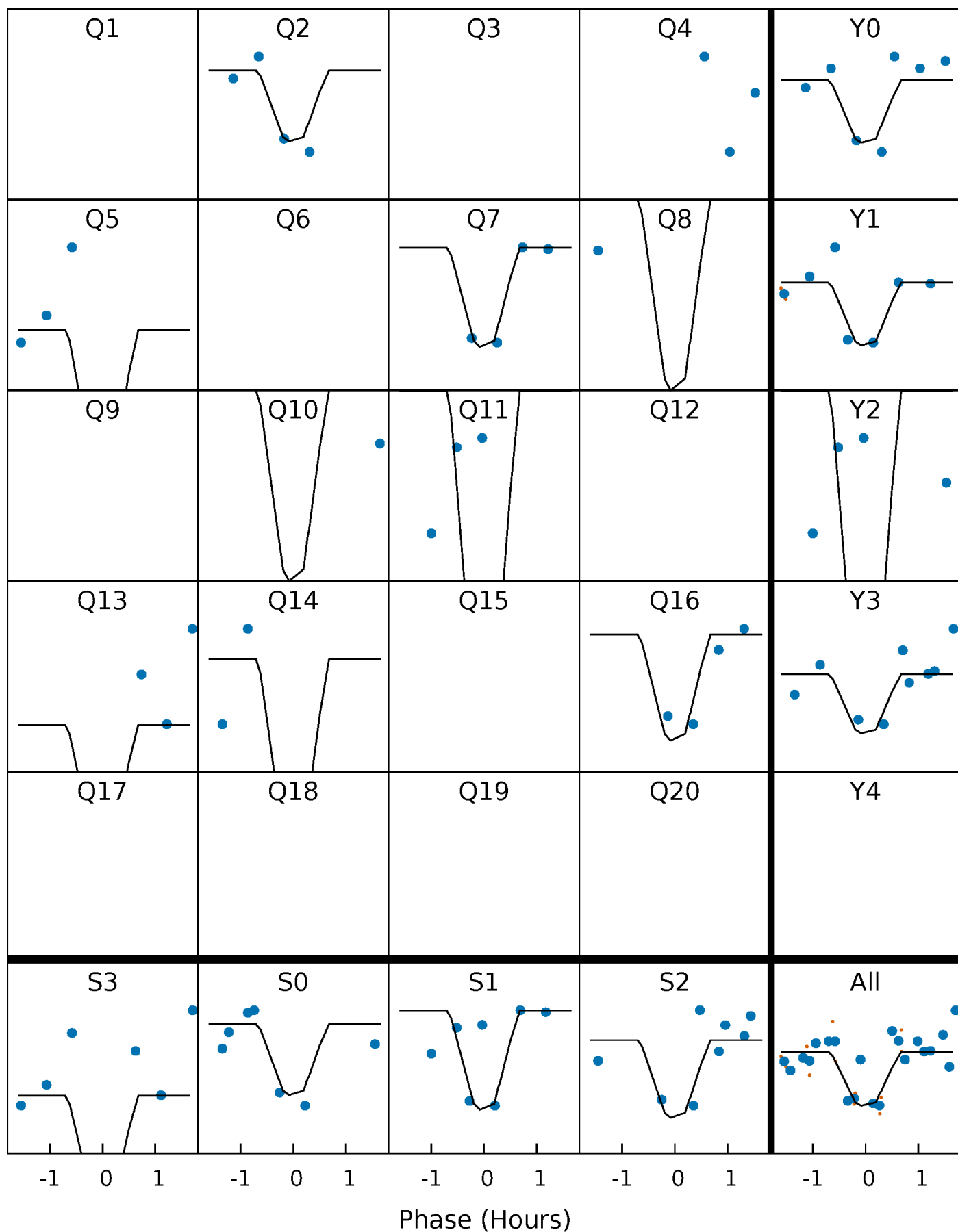
PDC Quarter-Phased Transit Curves

TCE 008578742-02 P= 30.067442 Days $T_0=135.549811$ (BKJD)



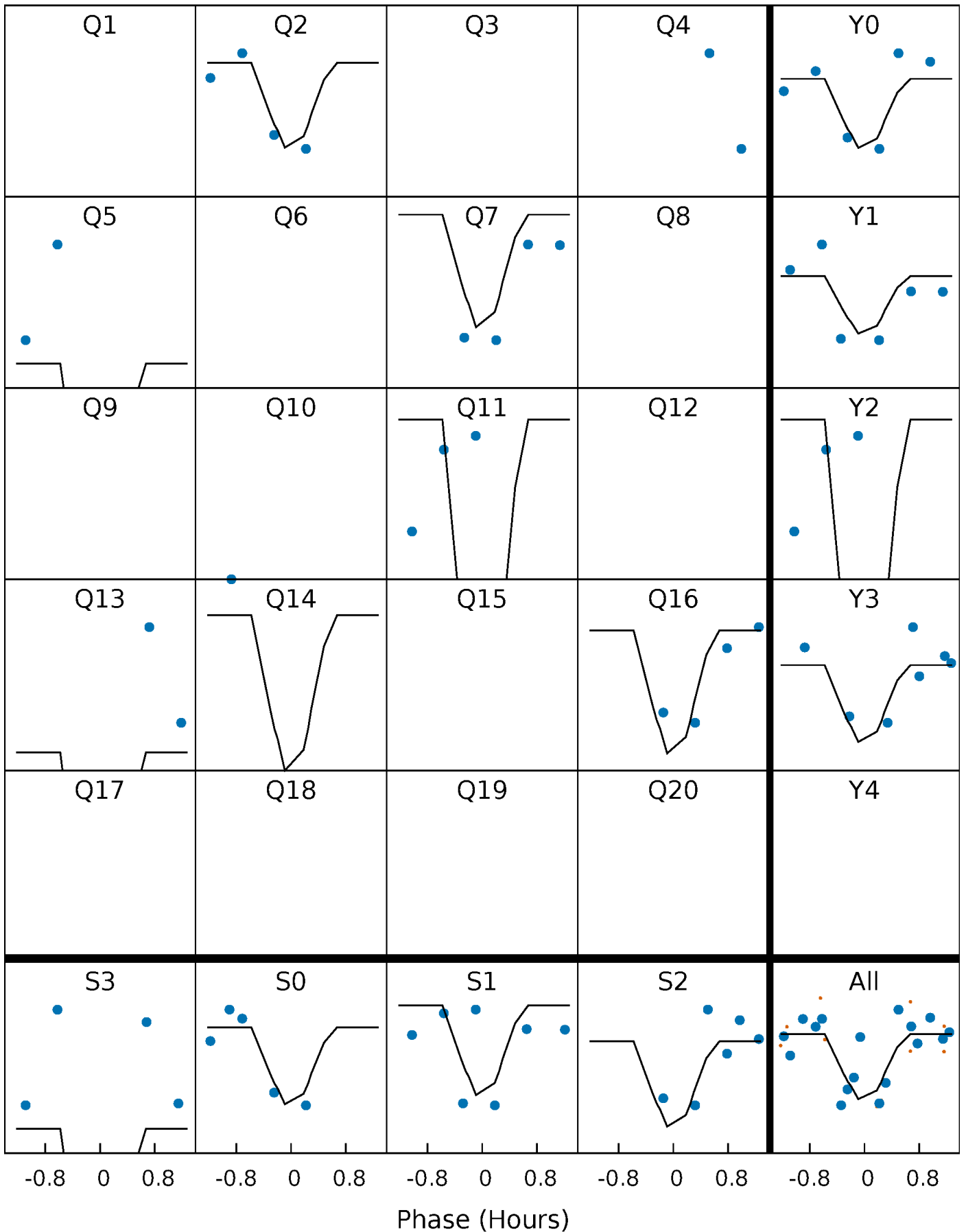
DV Quarter-Phased Transit Curves

TCE 008578742-02 P= 30.067442 Days $T_0=135.549811$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

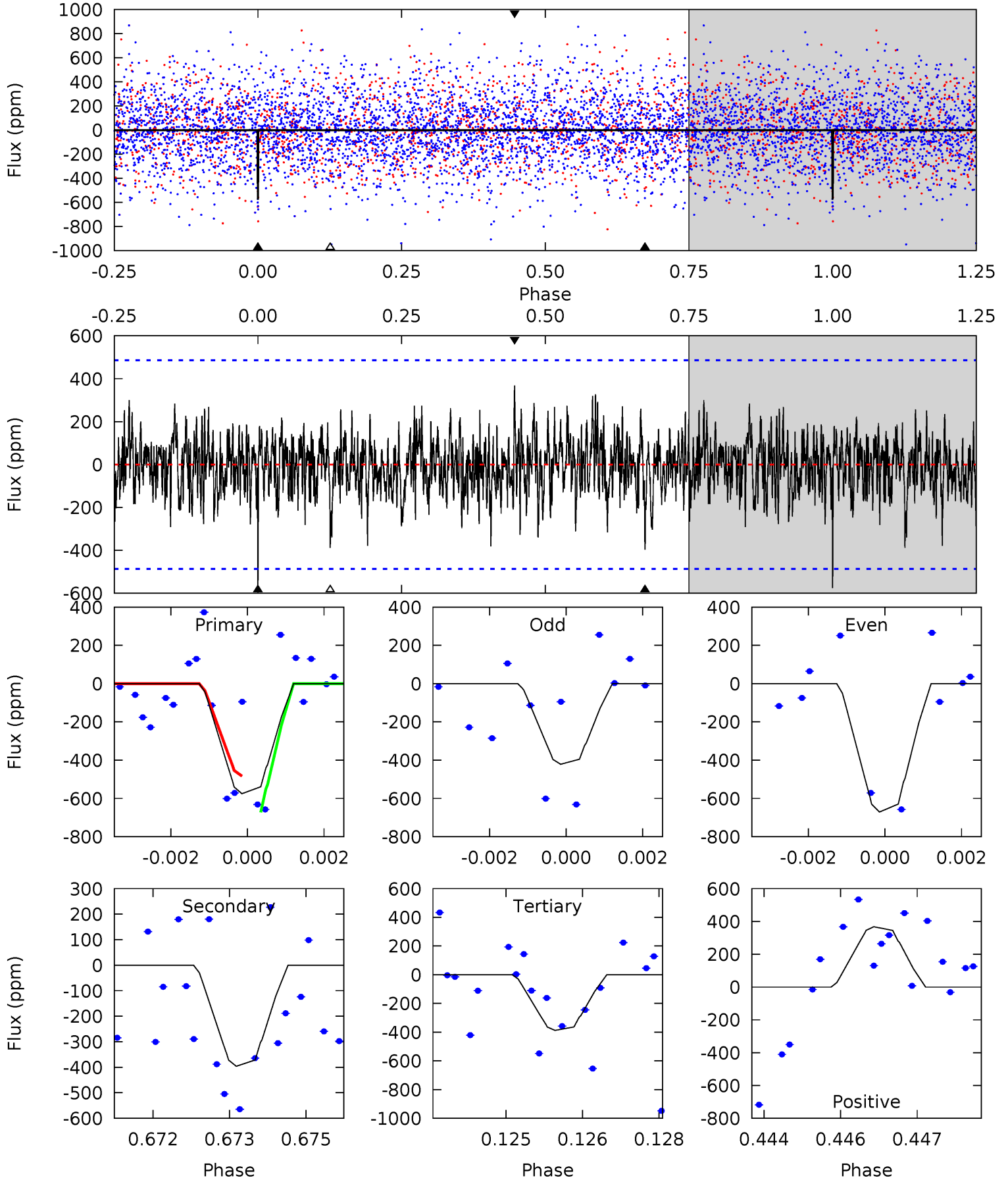
TCE 008578742-02 $P = 30.067419$ Days $T_0 = 135.550849$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-02, $P = 30.067442$ Days, $E = 105.482369$ Days

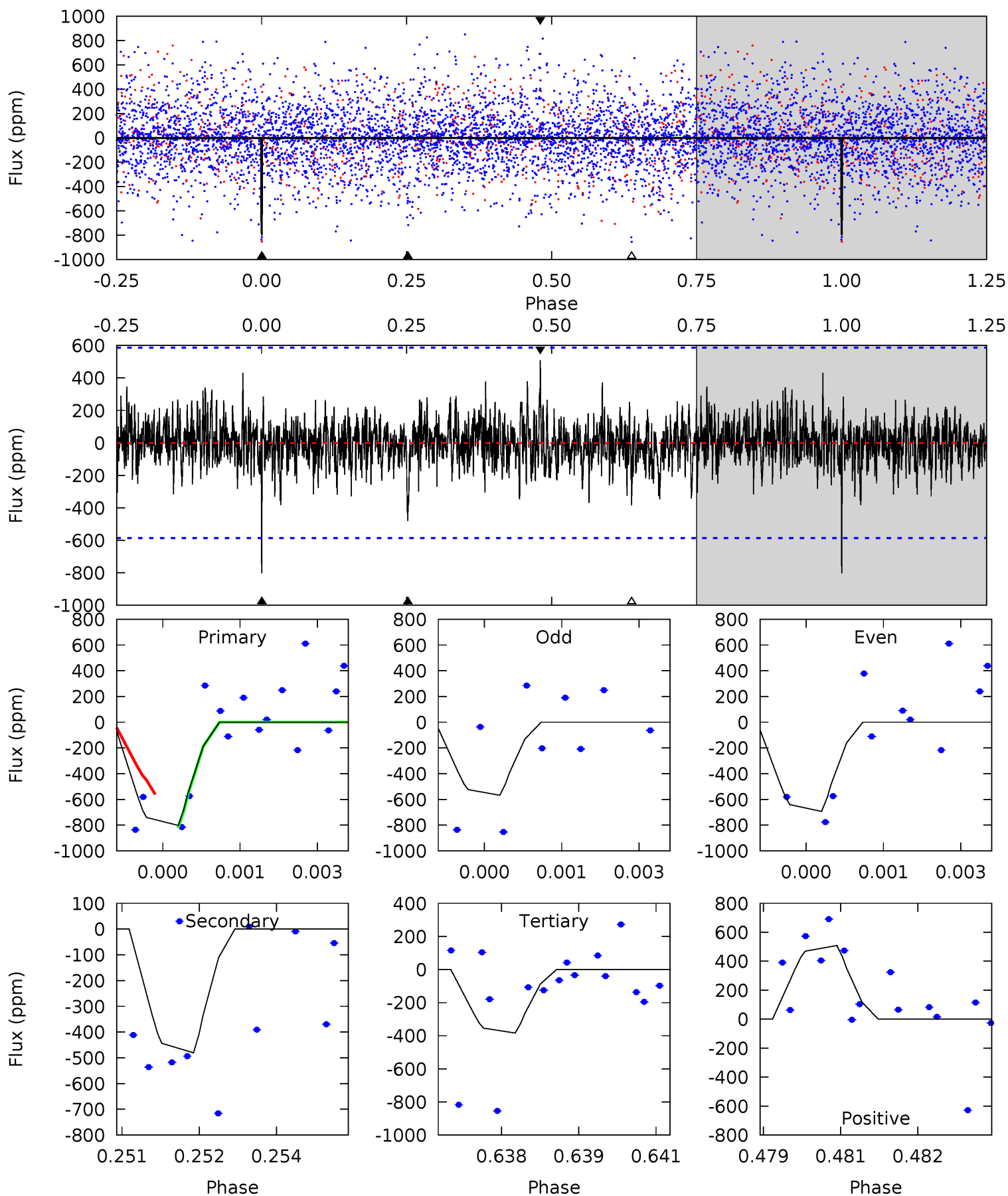
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.35 | 4.38 | 4.29 | 4.06 | 5.37 | 3.16 | 1.24 | 2.07 | 2.29 | 0.09 | 0.31 | 1.45 | 0.85 | 0.39 | 1.01 |



Alt Model-Shift Uniqueness Test

008578742-02, P = 30.067419 Days, E = 105.483430 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.39 | 4.43 | 3.54 | 4.69 | 5.41 | 3.22 | 1.05 | 3.85 | 2.70 | 0.89 | -0.26 | 0.64 | 0.97 | 0.39 | 1.24 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|-------------------|-----------------------|----------------------|
| DV | -396 ± 91 | $5.02^{+5.06}_{-3.38}$ | 864^{+60}_{-49} | 4224^{+2778}_{-906} | 288^{+2384}_{-218} |
| Alt. | -481 ± 108 | $5.23^{+5.23}_{-3.45}$ | 868^{+59}_{-50} | 4311^{+2525}_{-915} | 333^{+2382}_{-251} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

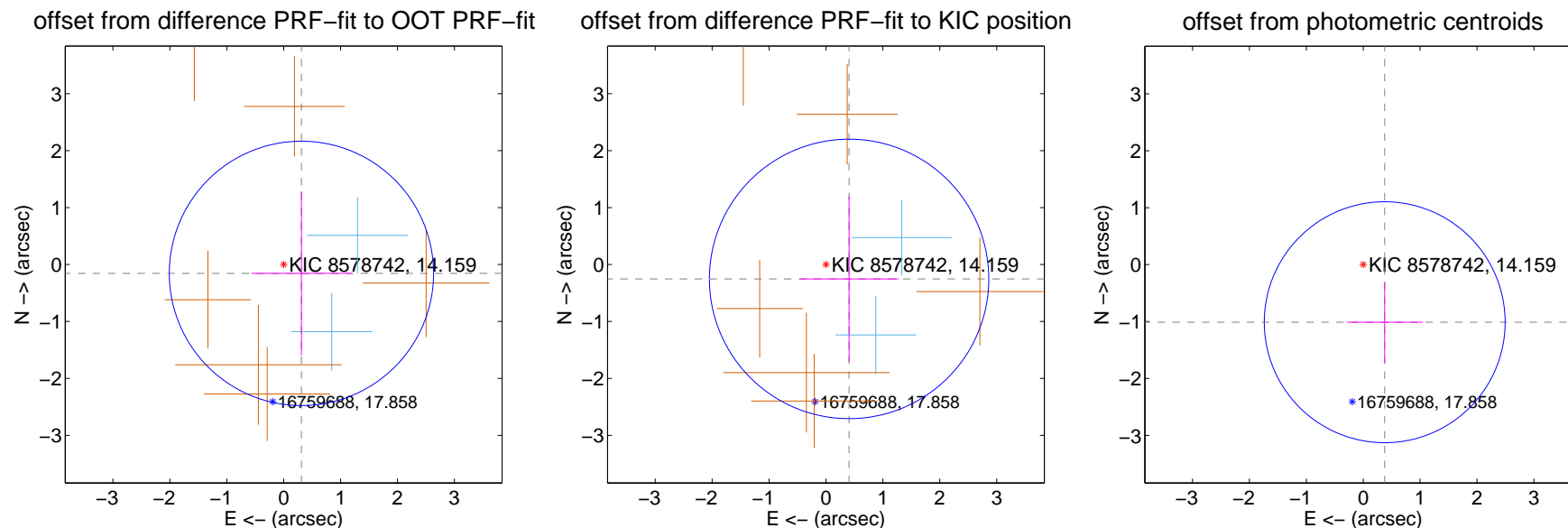
DV Centroid Data

Supplemental centroid analysis for 008578742-02. Kepler magnitude: 14.16. Transit SNR 11.59

There are 2 quarters with good PRF difference image offsets

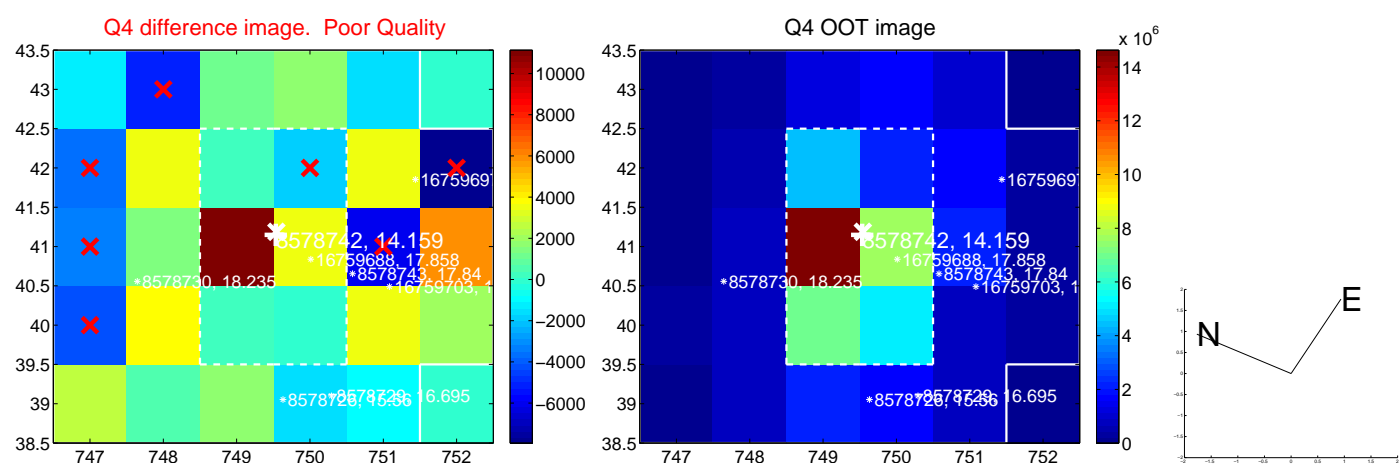
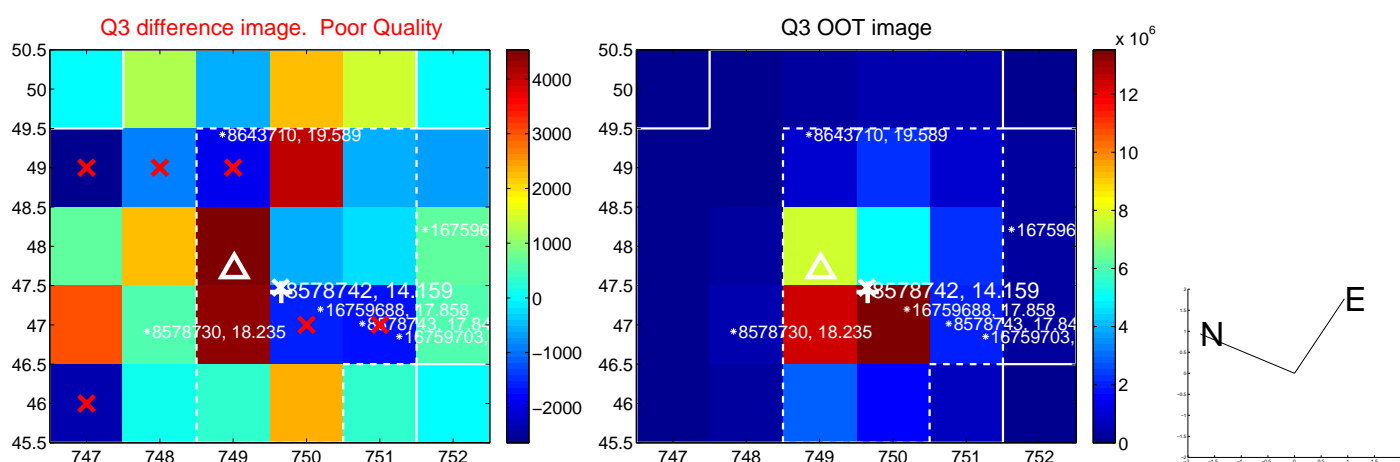
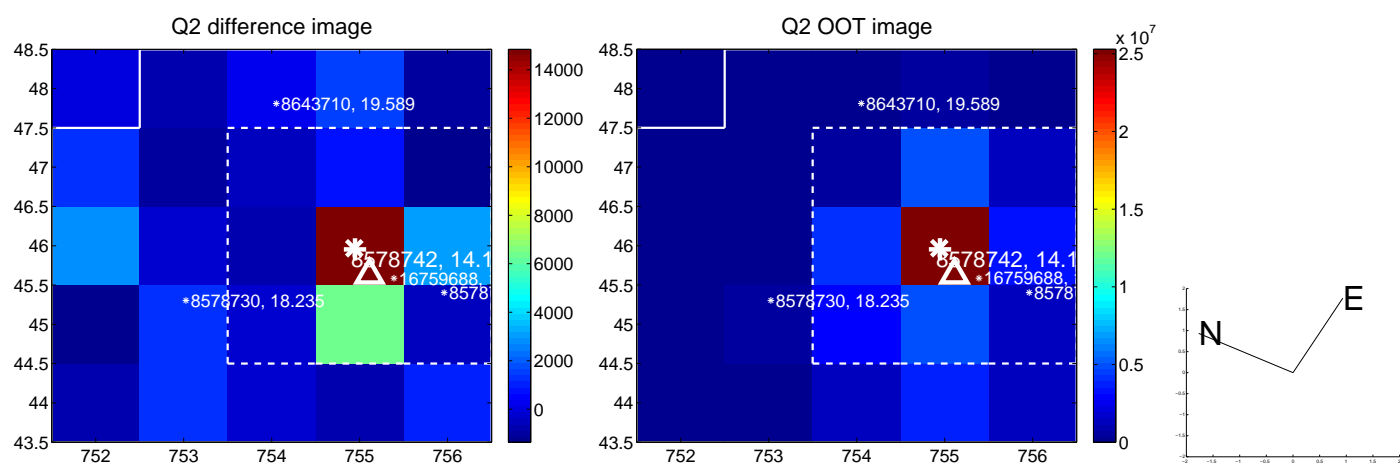
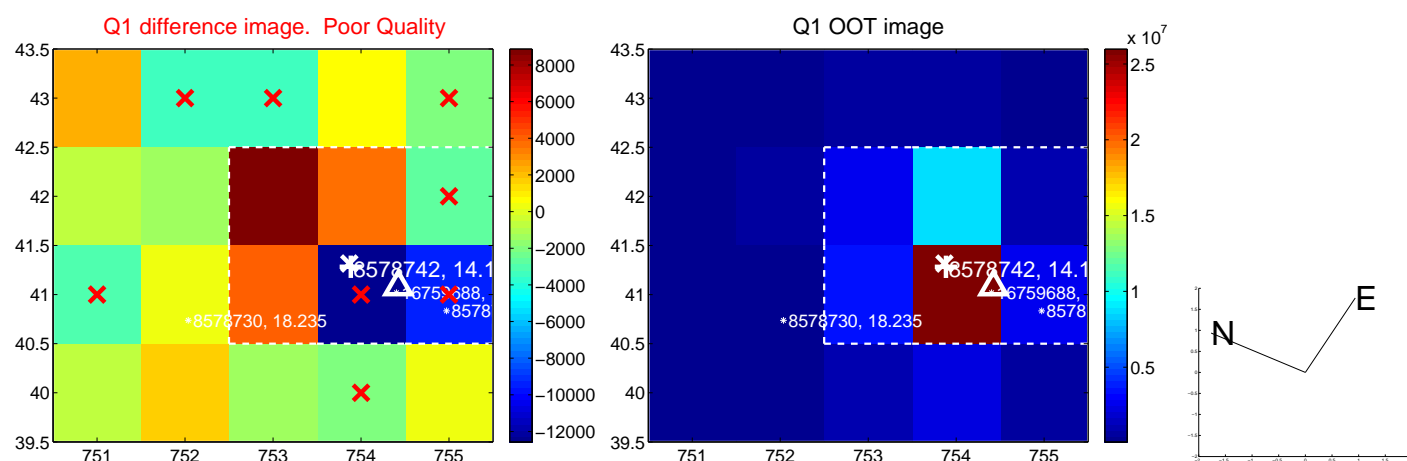
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.348 ± 0.774 | 0.45 | -0.312 ± 0.878 | -0.155 ± 1.437 |
| PRF-fit source offset from KIC position | 0.478 ± 0.818 | 0.58 | -0.406 ± 0.868 | -0.253 ± 1.449 |
| photometric centroid source offset | 1.08 ± 0.71 | 1.53 | -0.38 ± 0.67 | -1.01 ± 0.71 |

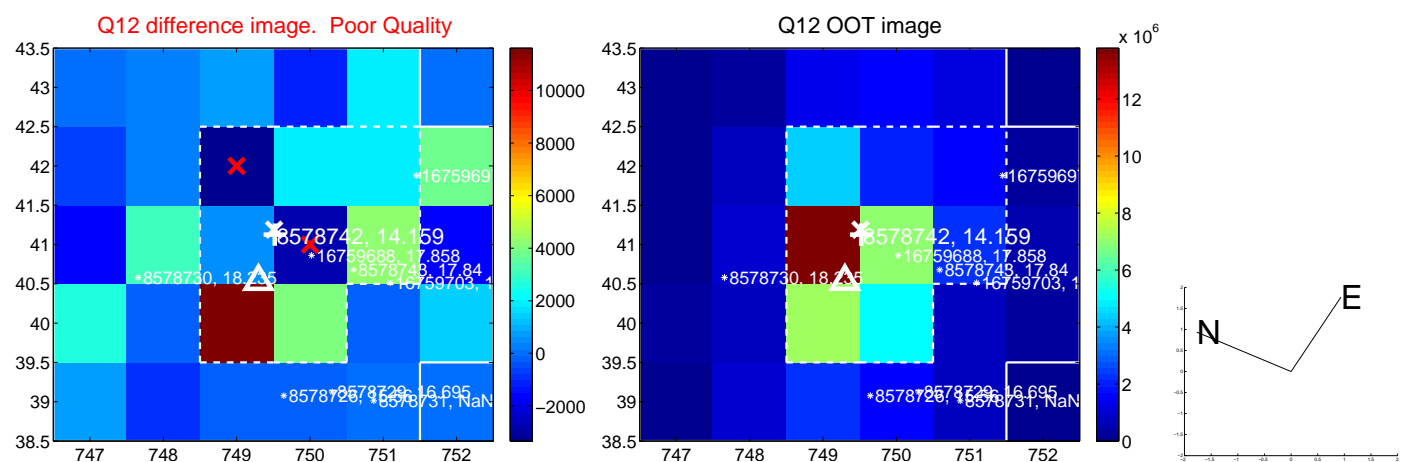
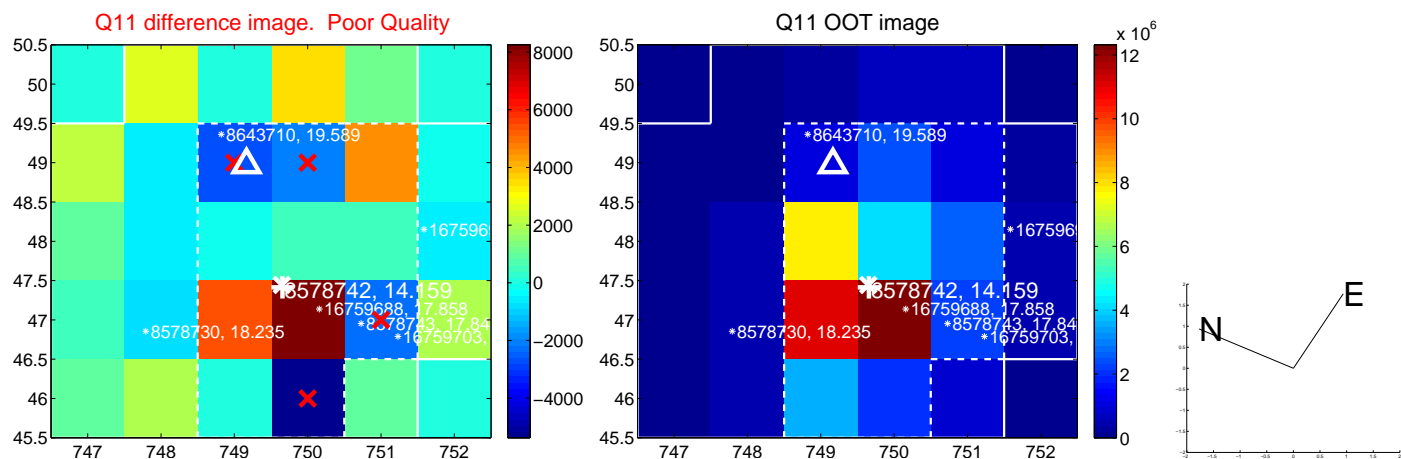
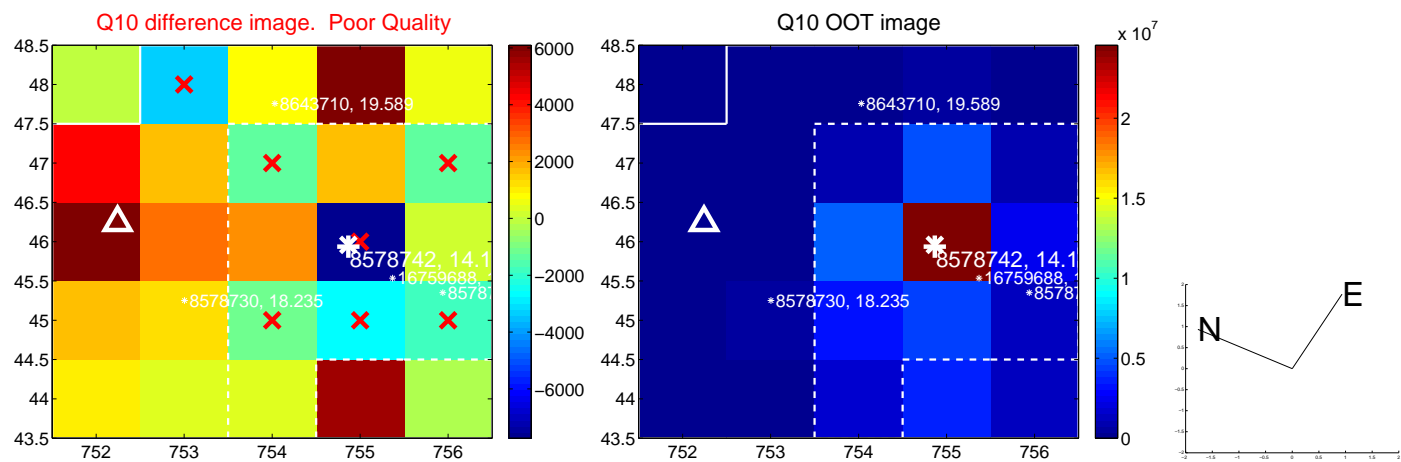
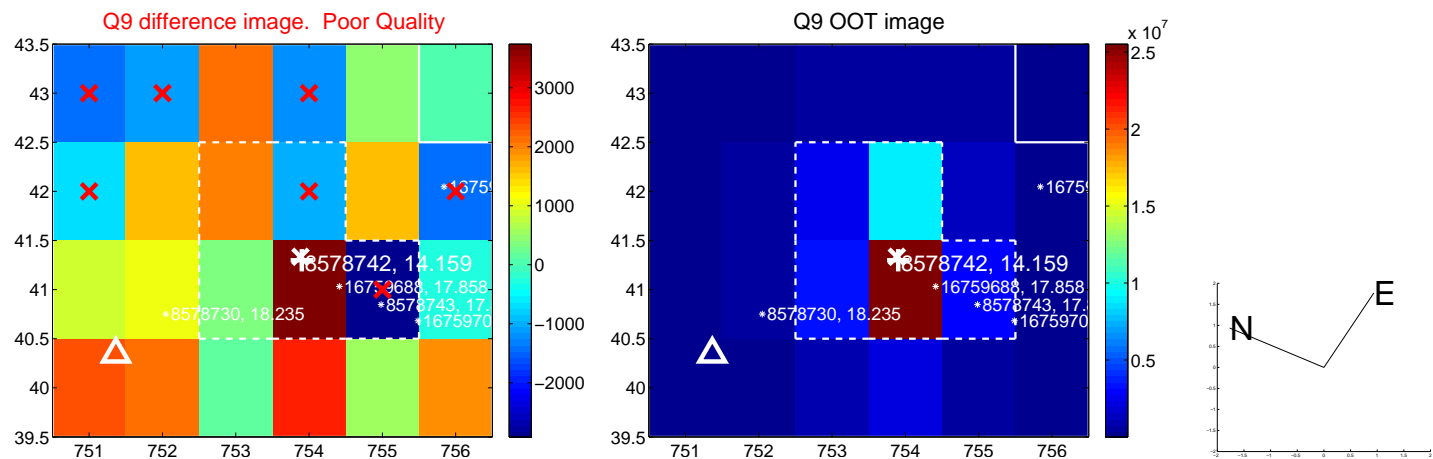


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

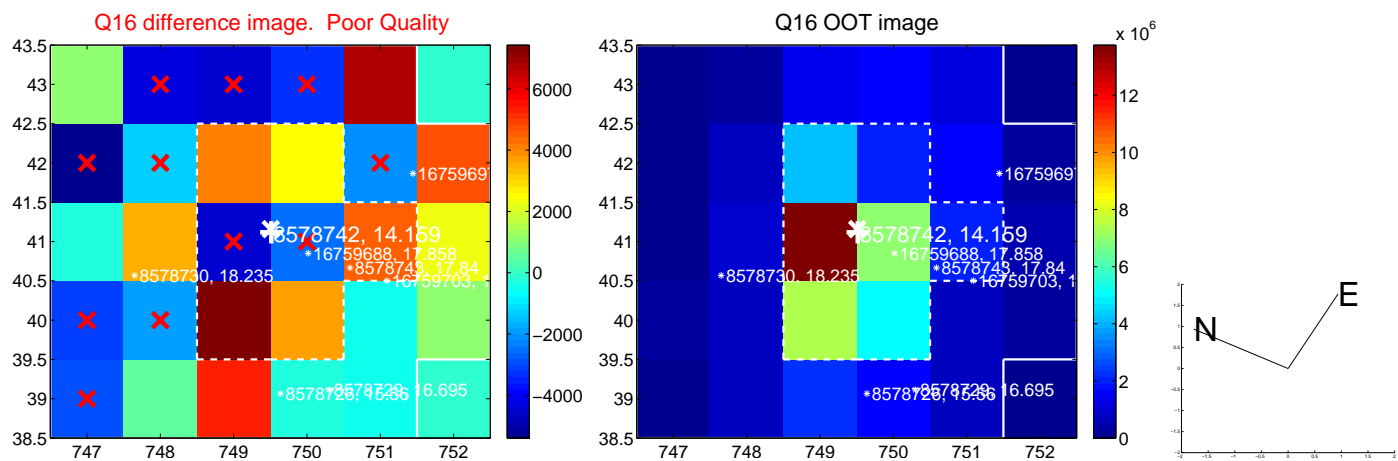
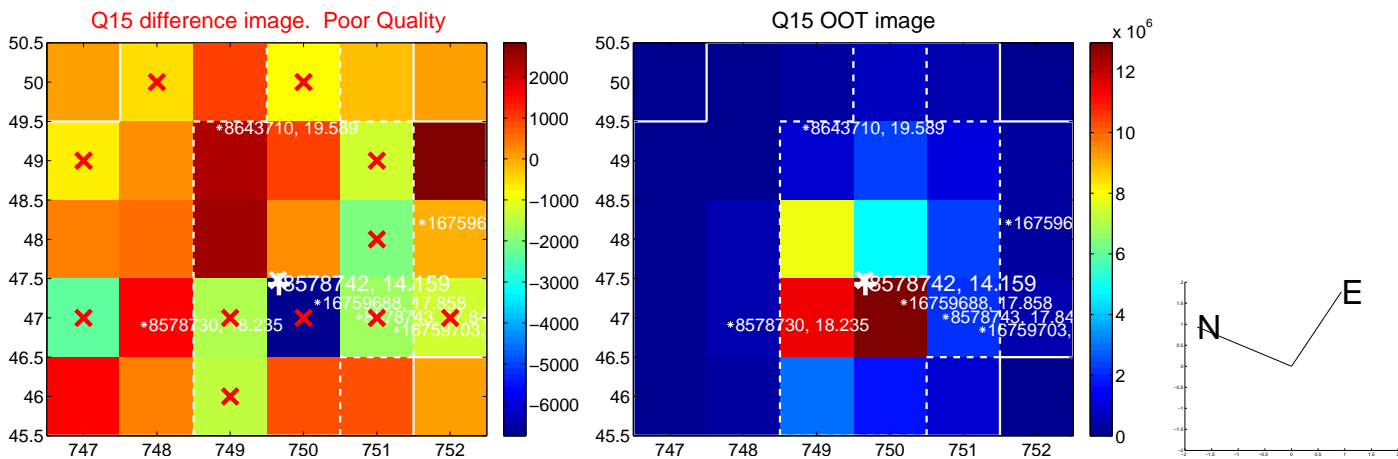
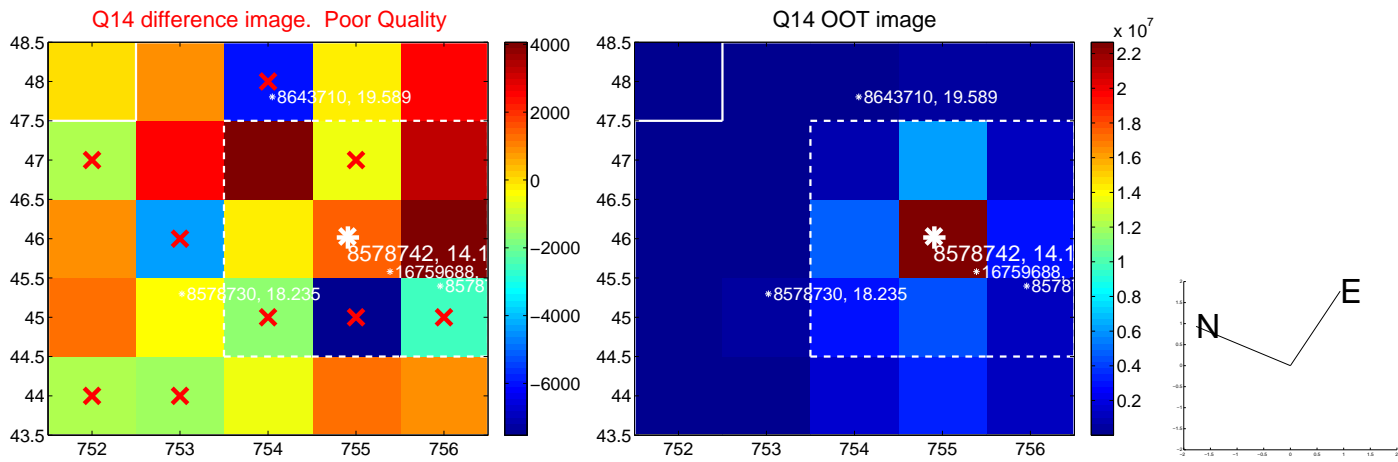
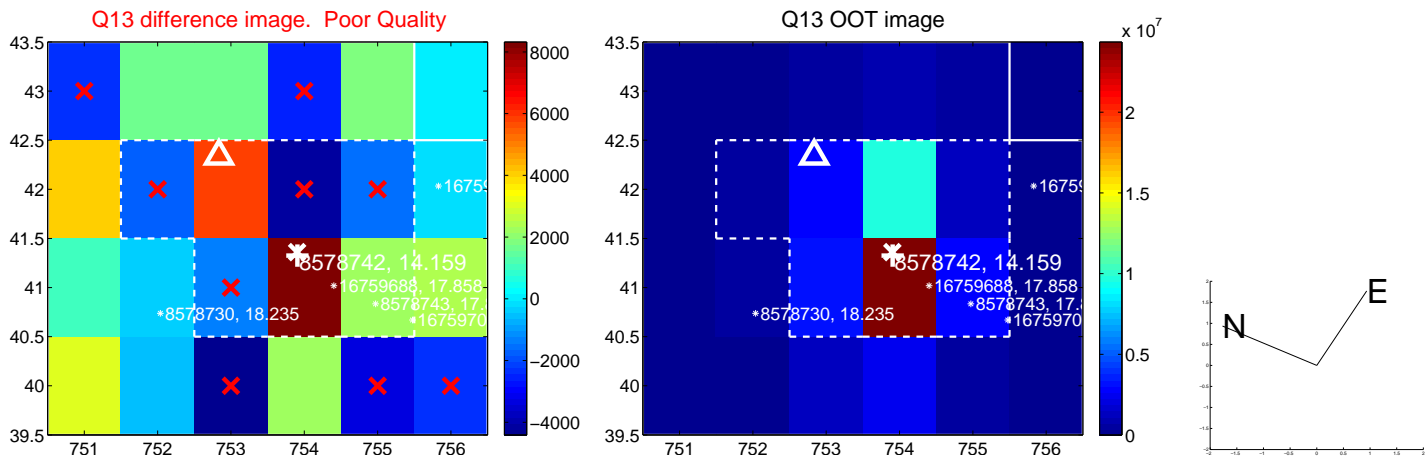
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



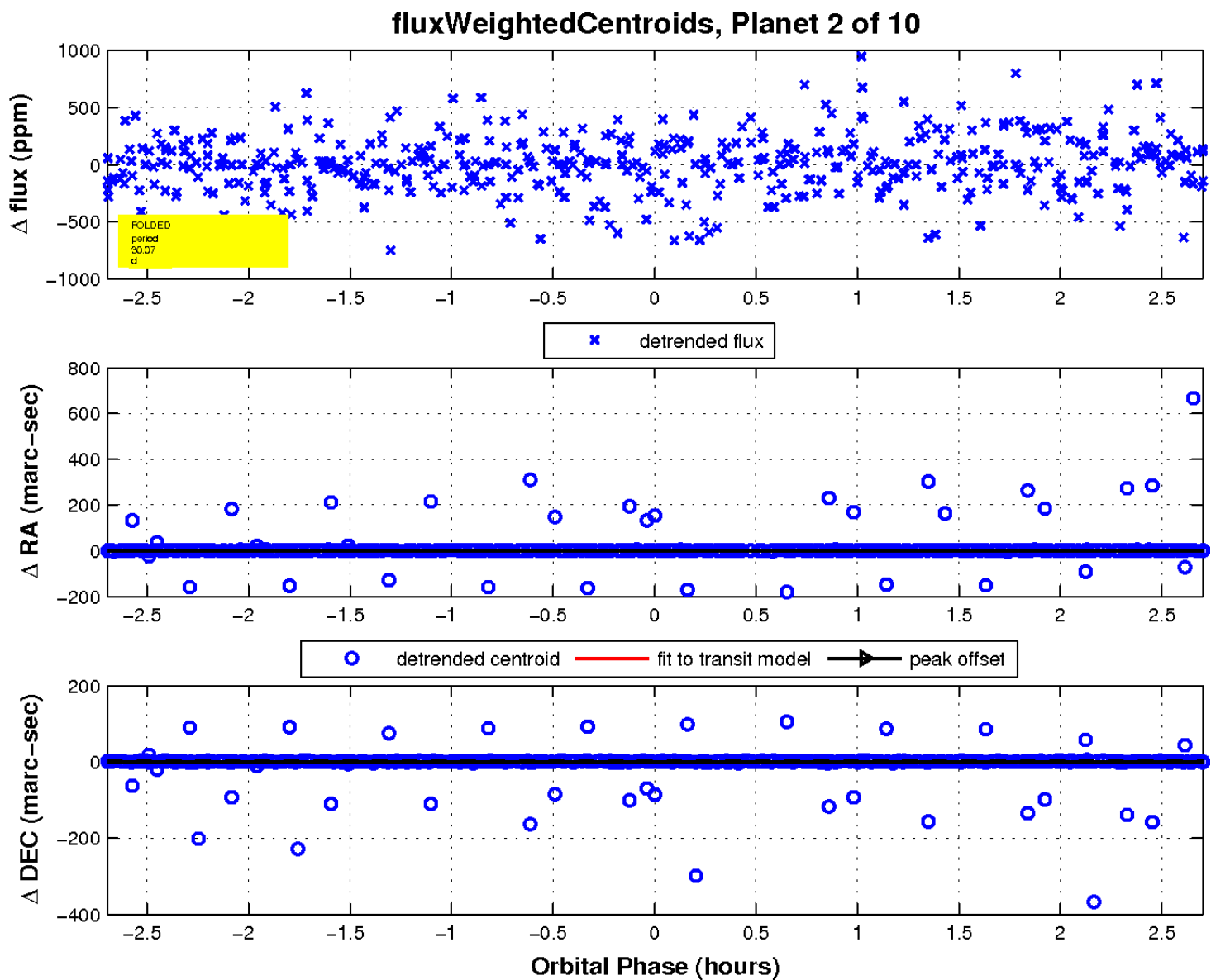
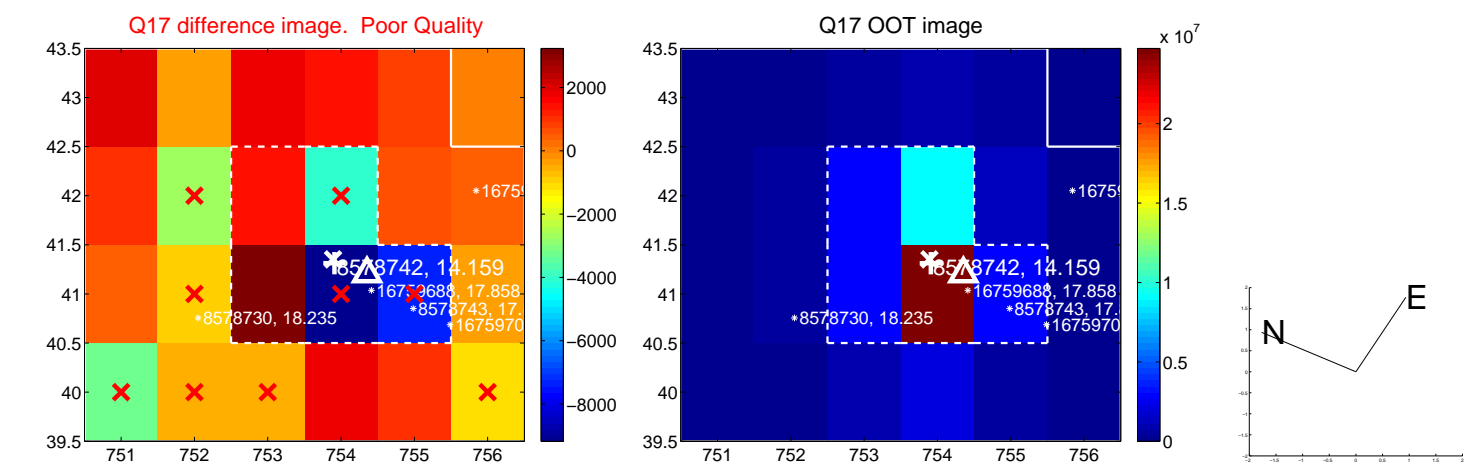
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

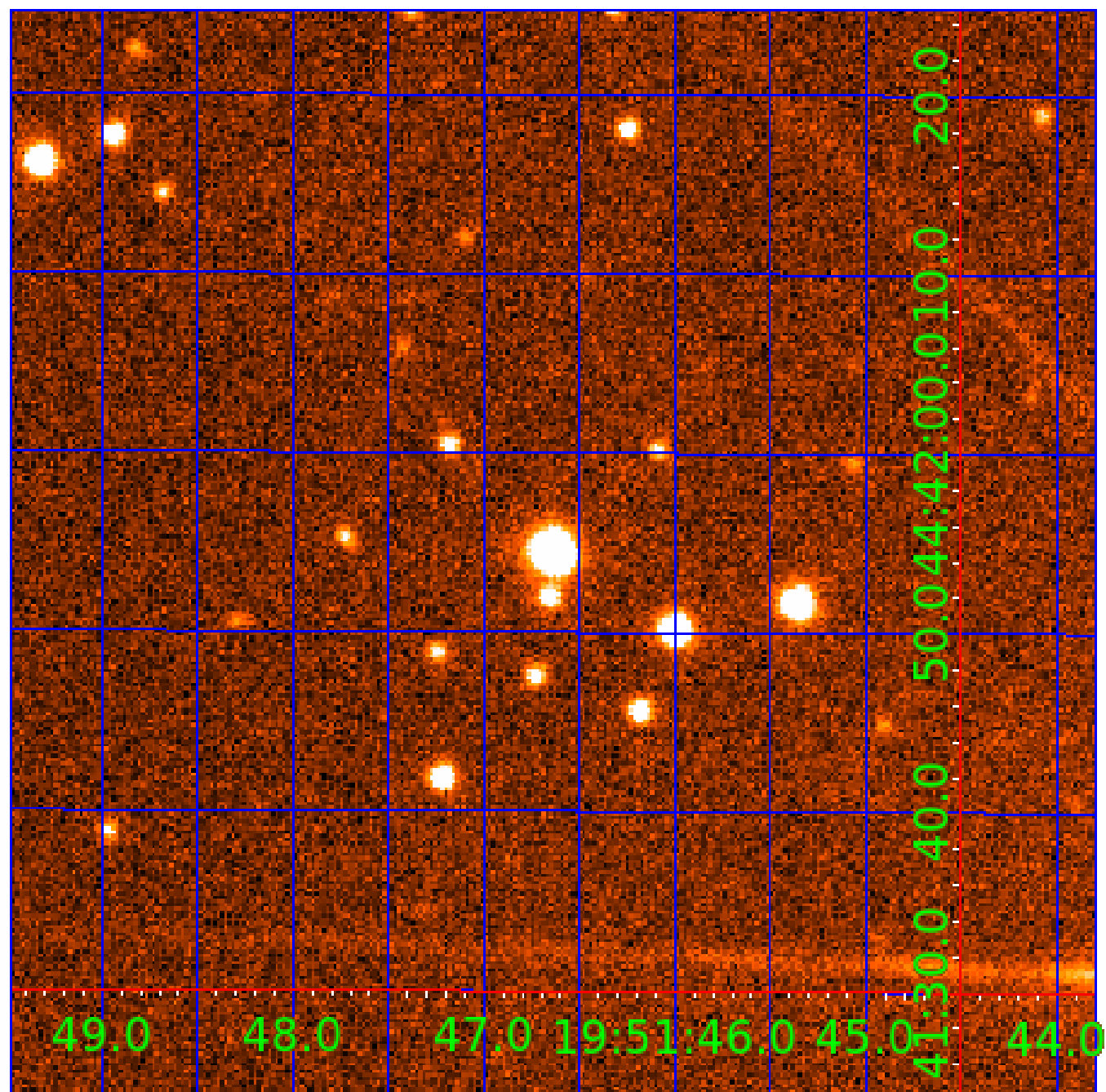


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

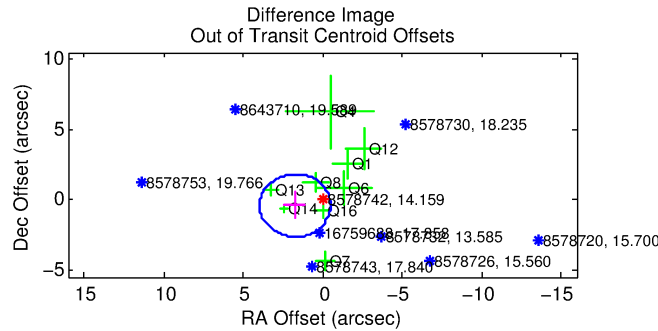
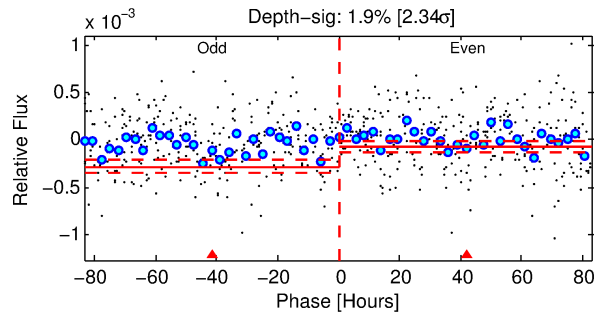
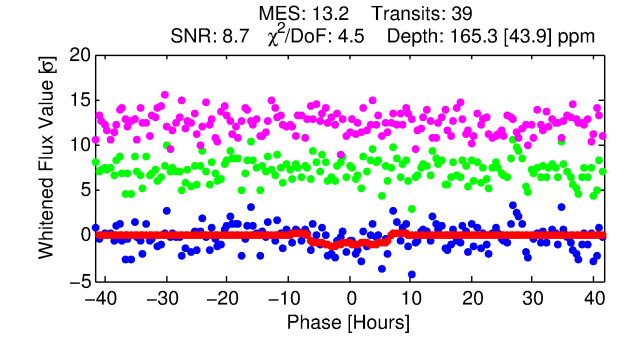
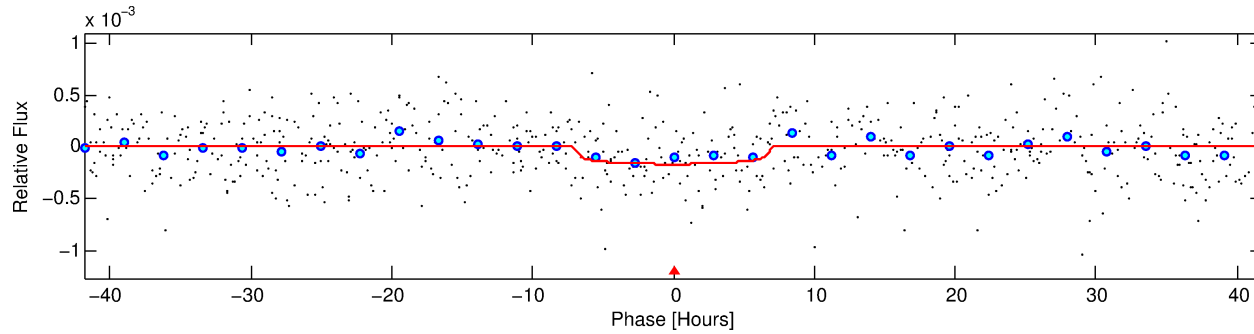
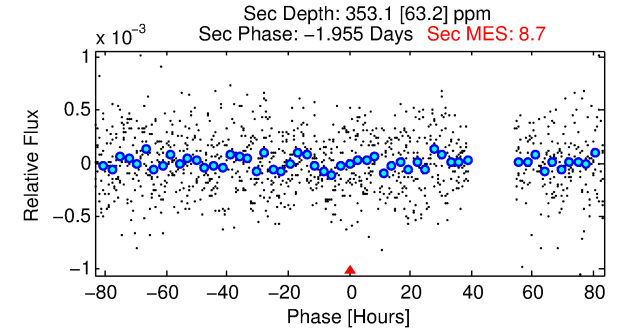
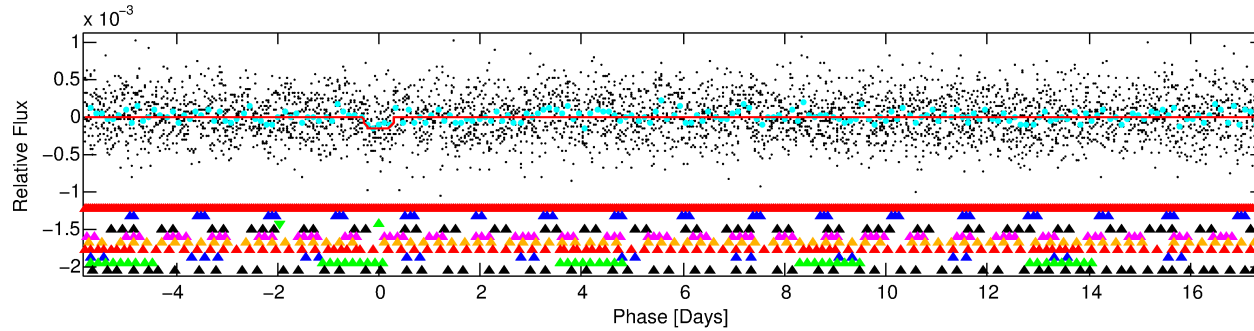
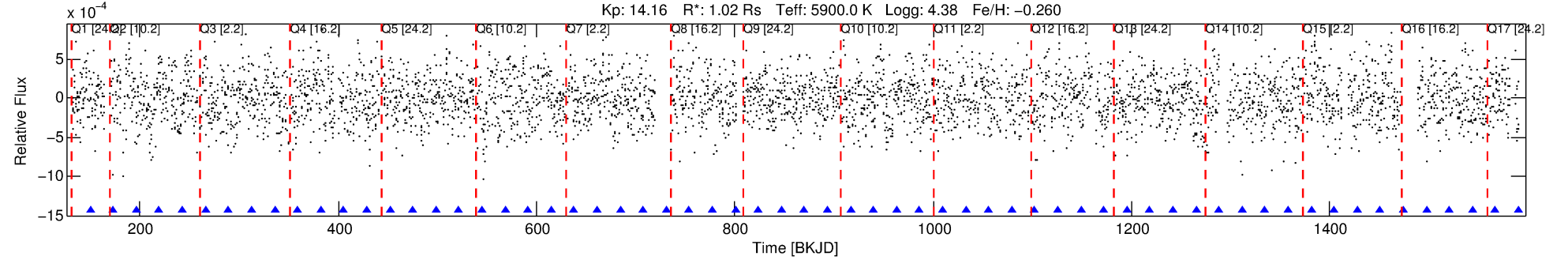
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-03

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 3 of 10 Period: 23.230 d



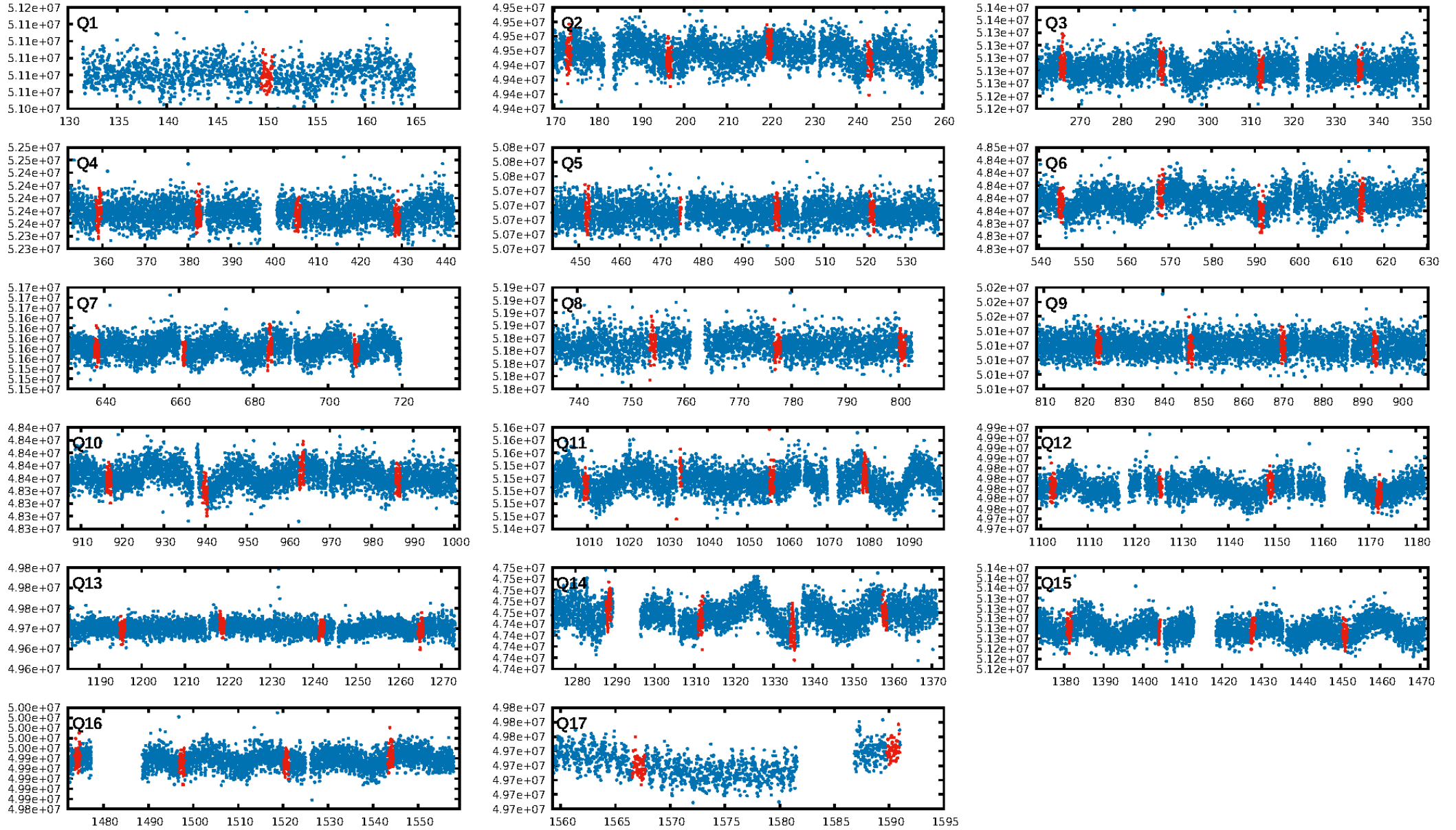
DV Fit Results:

Period = 23.23032 [0.00149] d
Epoch = 150.0892 [0.0557] BKJD
Rp/R* = 0.0129 [0.0096]
a/R* = 8.49 [29.69]
b = 0.77 [1.94]
Seff = 47.79 [17.47]
Teff = 670 [61] K
Rp = 1.44 [1.14] Re
a = 0.1545 [0.0360] AU
Ag = 2242.06 [3453.01] [0.65 σ]
Teffp = 7133 [2685] K [2.41 σ]

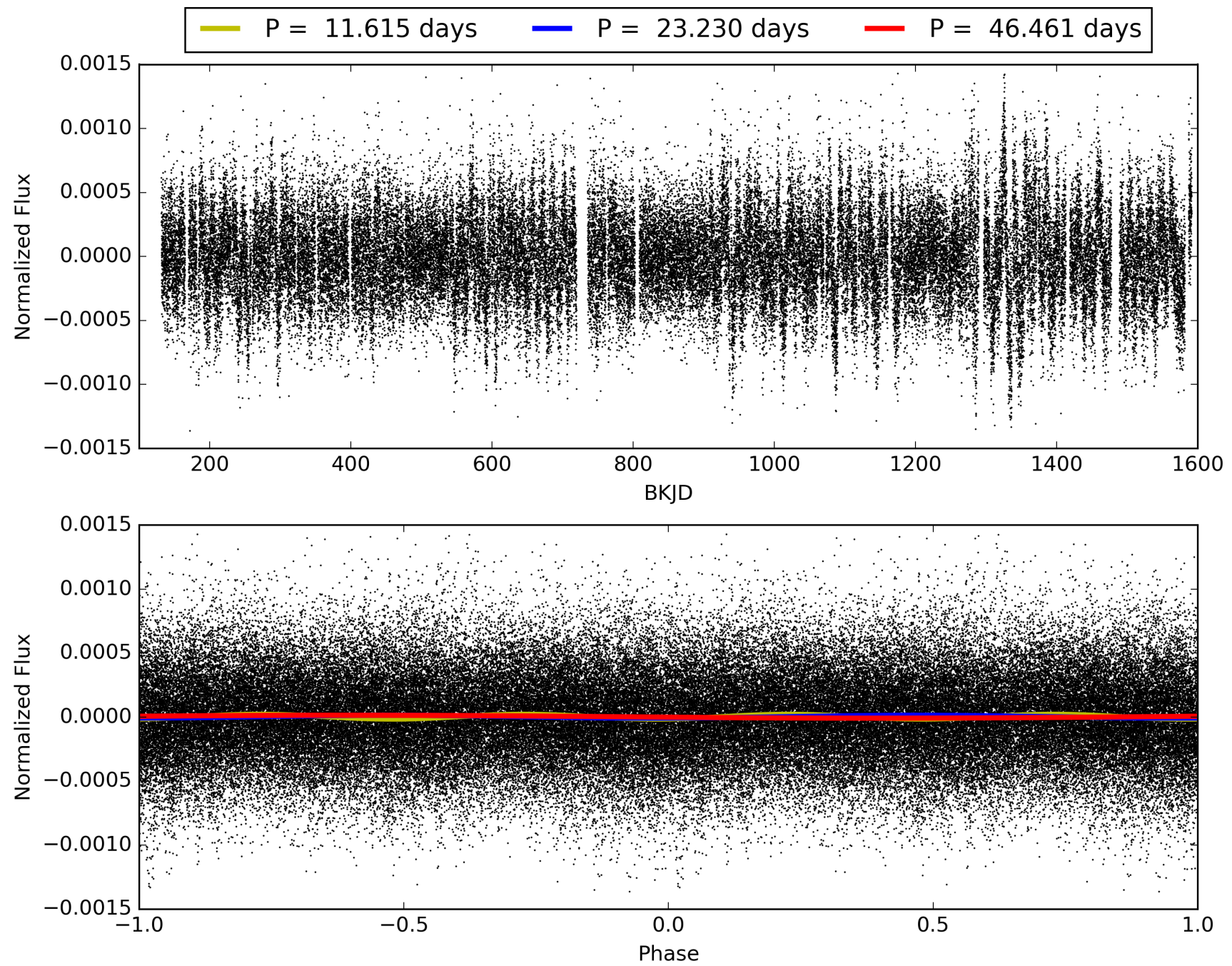
DV Diagnostic Results:

ShortPeriod-sig: 83.3% [1.38 σ]
LongPeriod-sig: 100.0% [4.77 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [38/38]
GhostDiagnostic-chr: 5.443
Centroid-sig: 37.0%
Centroid-so: 1.110 arcsec [1.33 σ]
OotOffset-rm: 1.776 arcsec [2.39 σ]
KicOffset-rm: 1.724 arcsec [2.42 σ]
OotOffset-st: 2/1/4/2 [9]
KicOffset-st: 2/1/4/2 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 008578742-03, PDC Light Curves

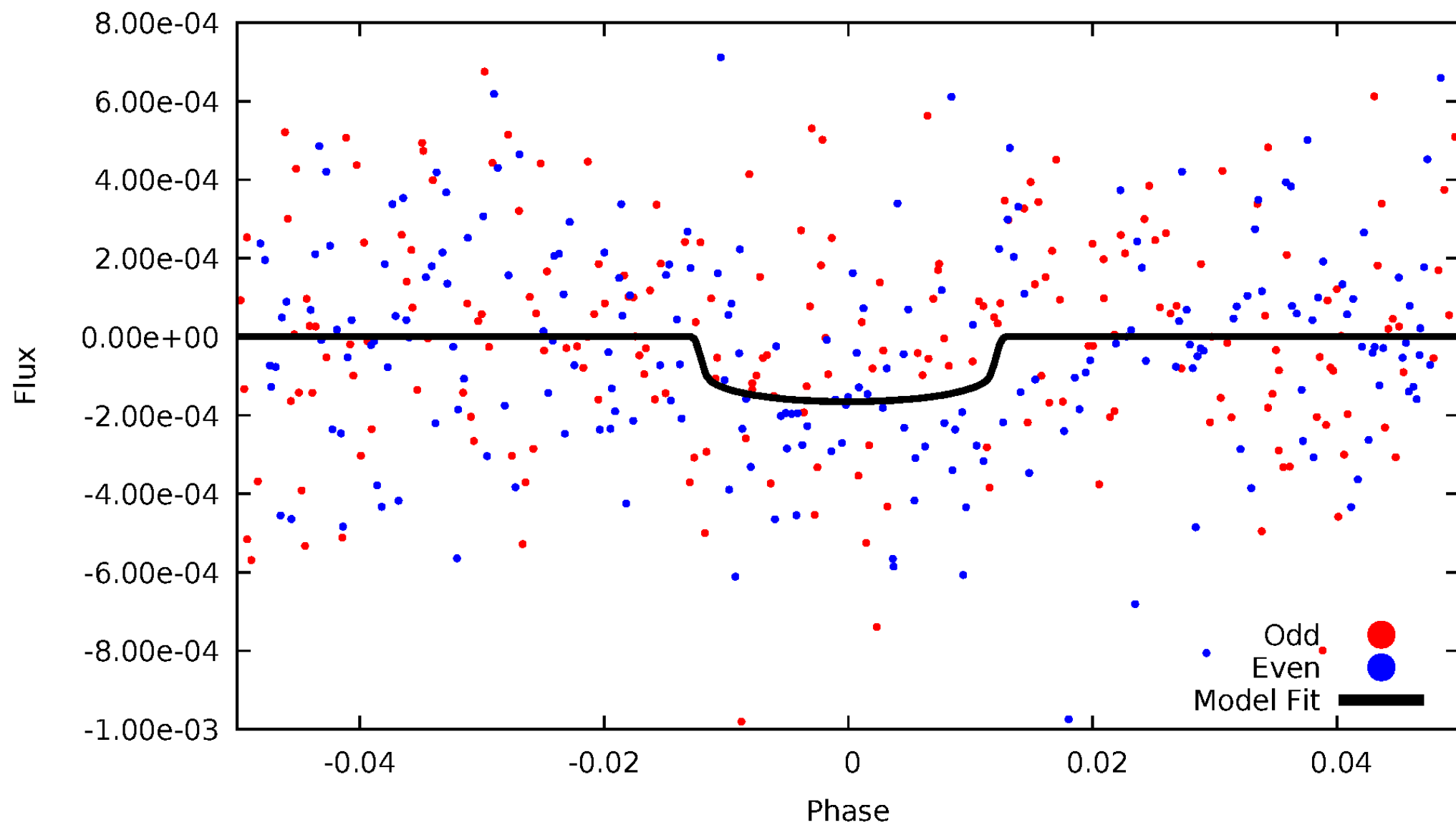


TCE 008578742-03



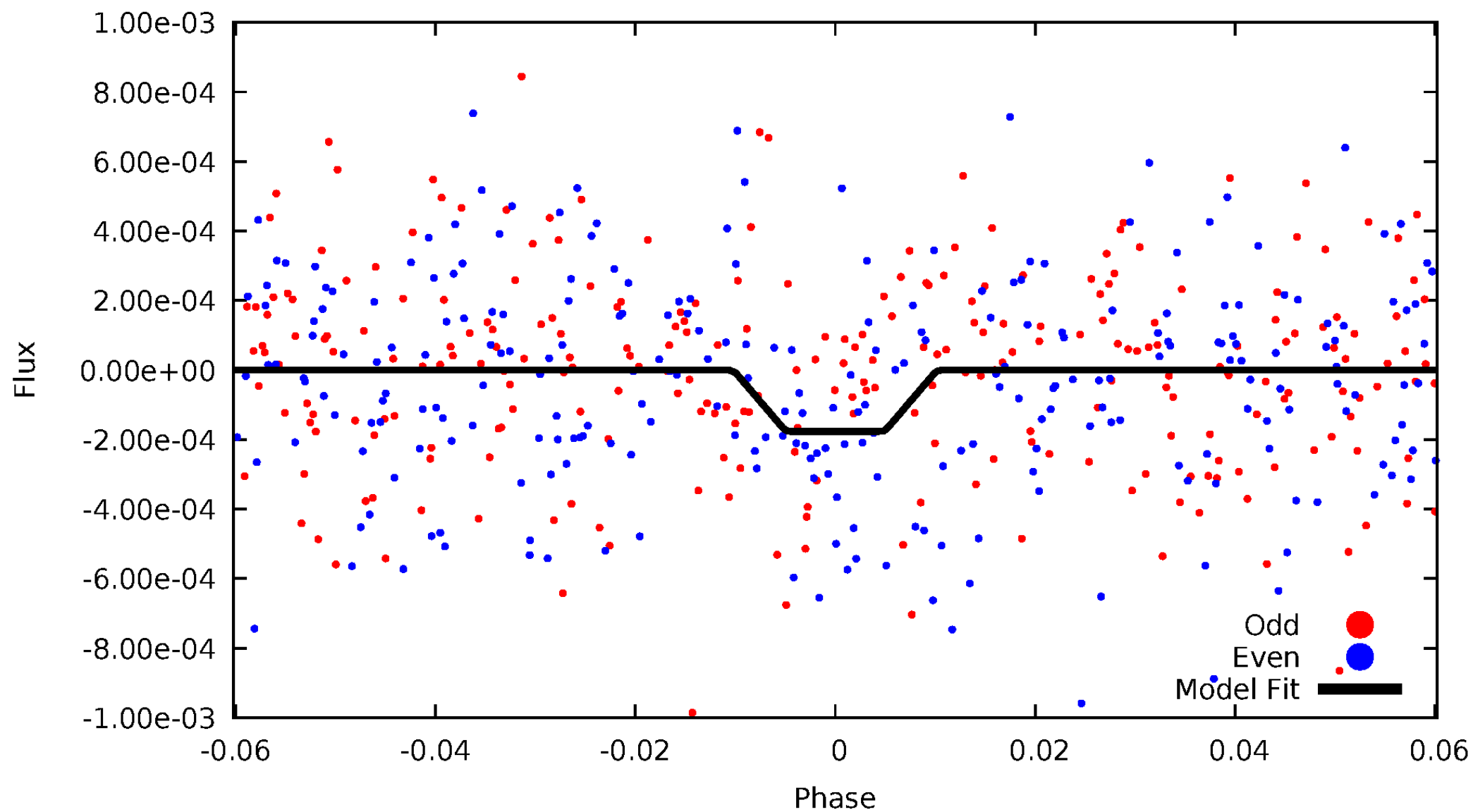
DV Odd/Even

TCE 008578742-03



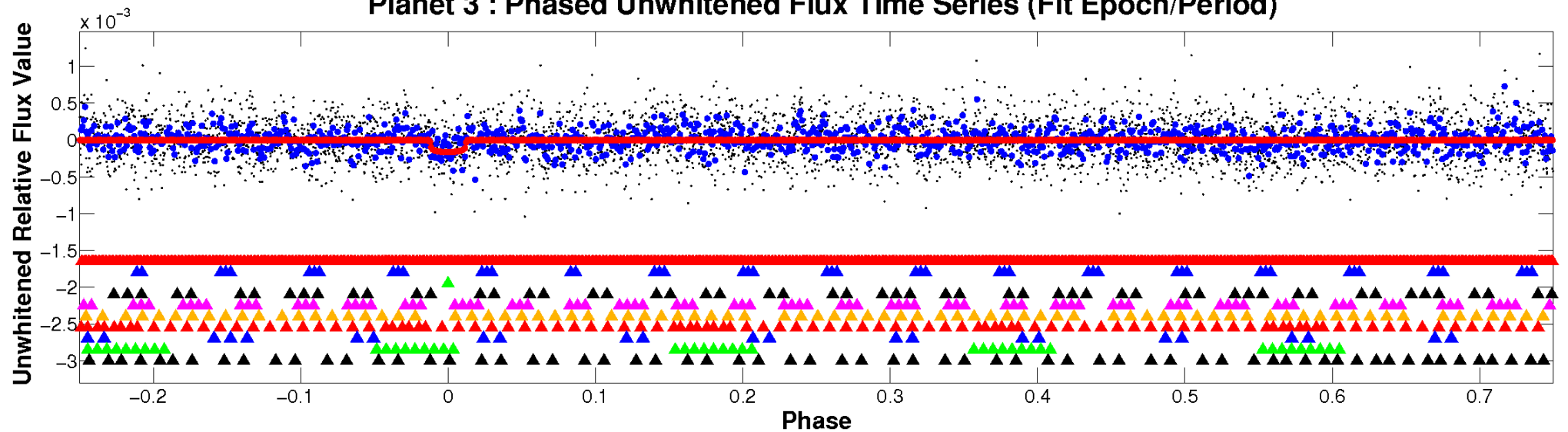
ALT Odd/Even

TCE 008578742-03

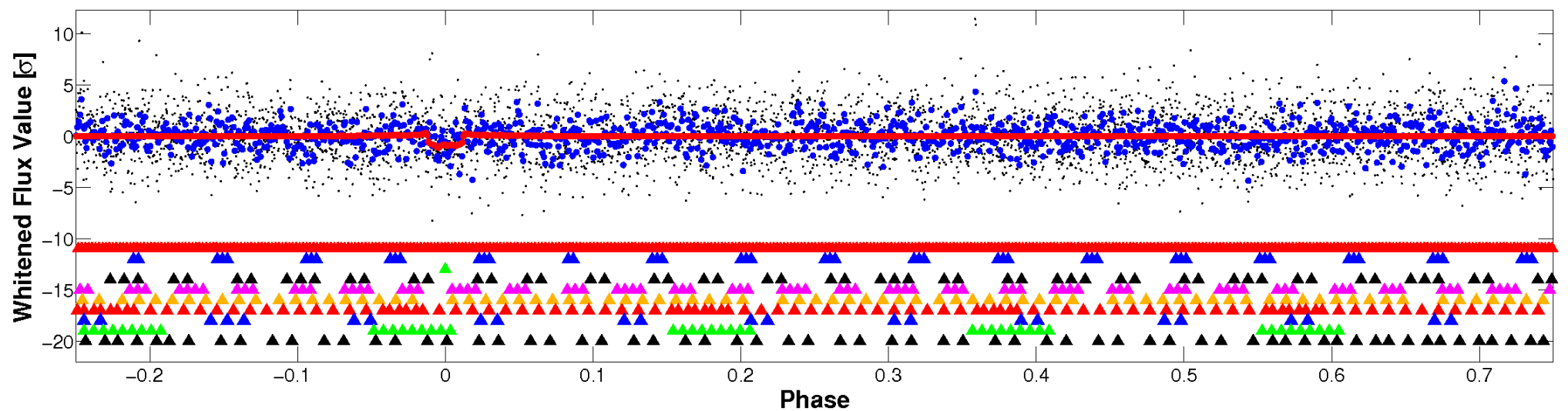


Non-Whitened Vs. Whitened Light Curve

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

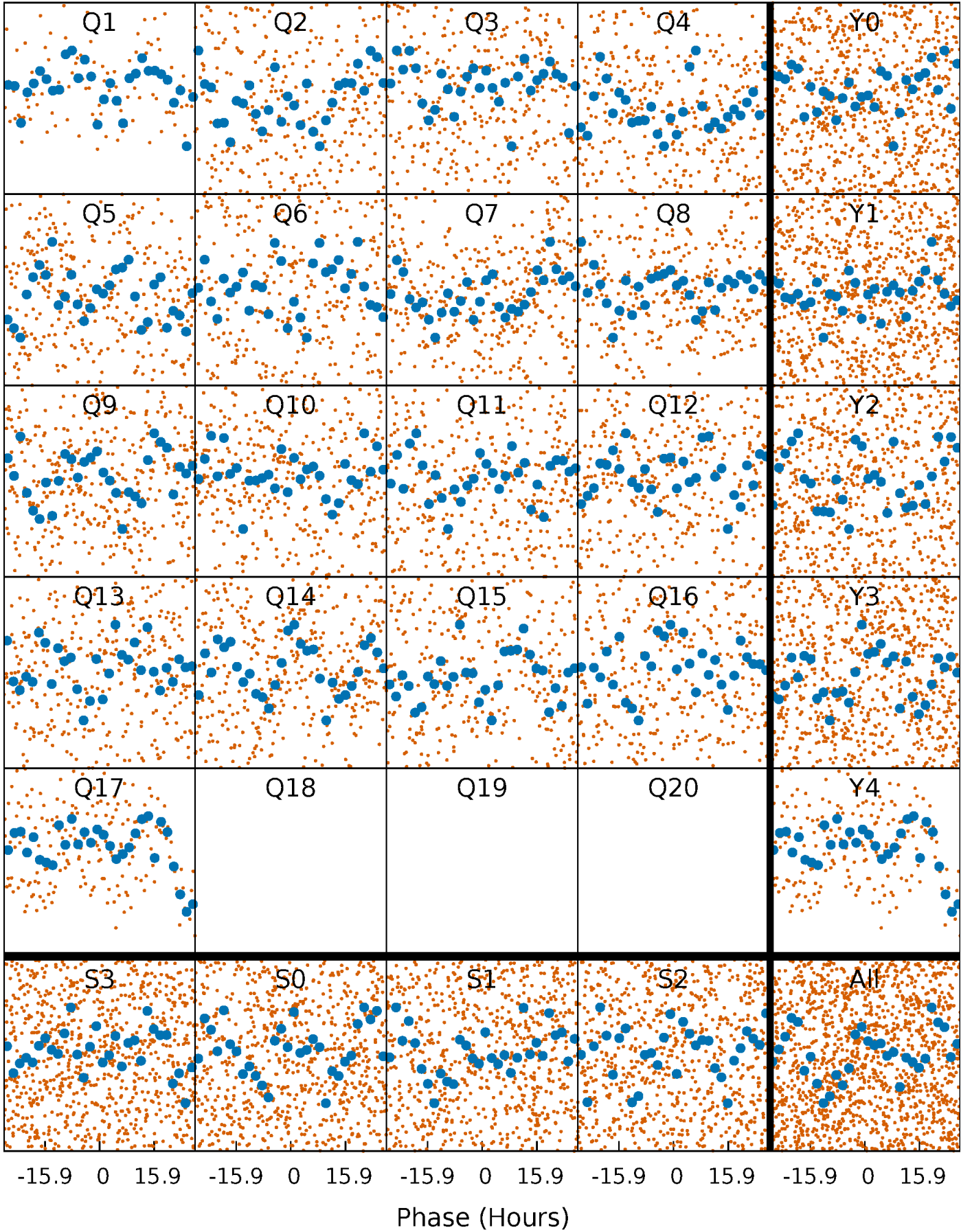


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



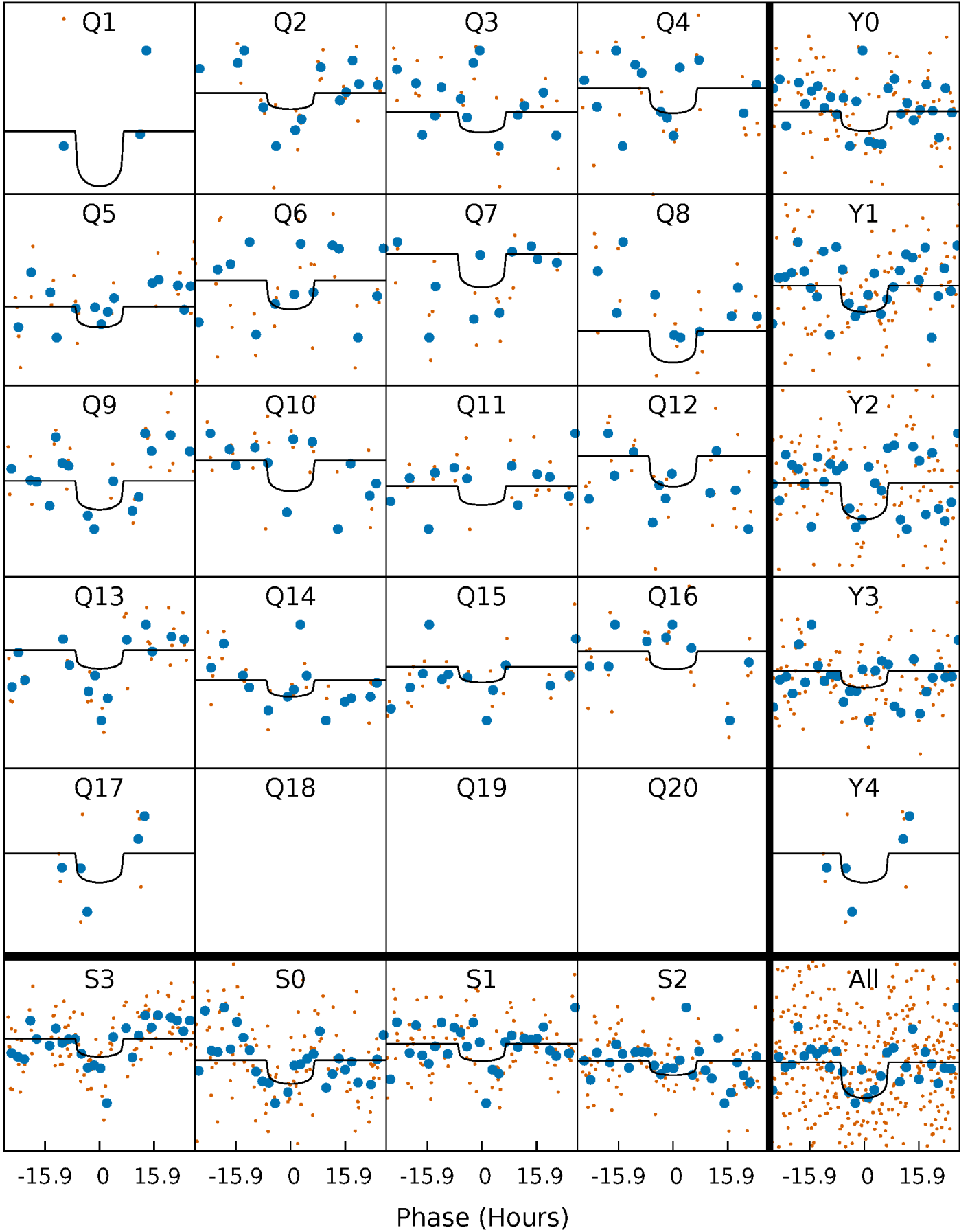
PDC Quarter-Phased Transit Curves

TCE 008578742-03 P= 23.230322 Days $T_0=150.089242$ (BKJD)



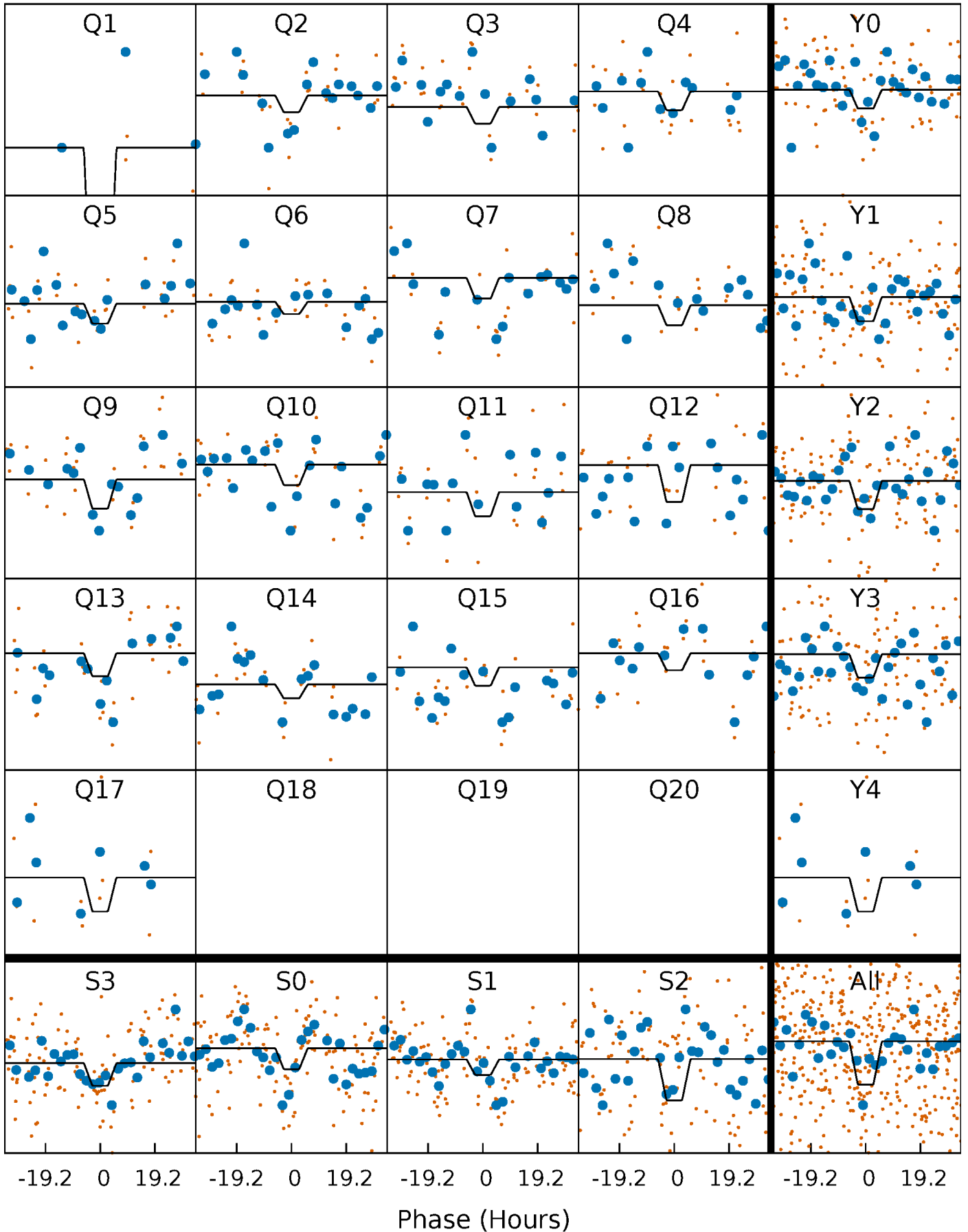
DV Quarter-Phased Transit Curves

TCE 008578742-03 P= 23.230322 Days $T_0=150.089242$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

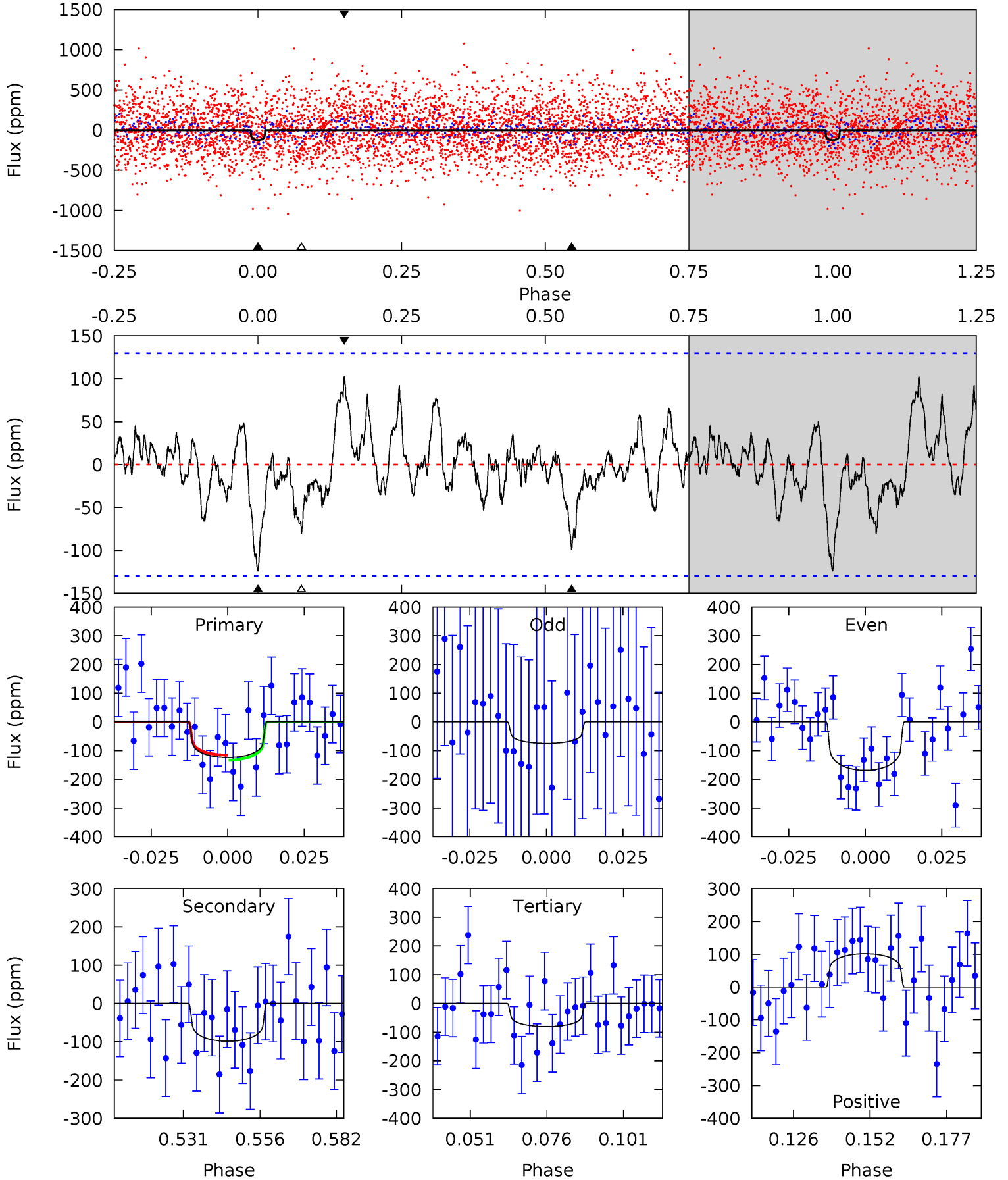
TCE 008578742-03 $P = 23.224576$ Days $T_0 = 150.223783$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-03, P = 23.230322 Days, E = 126.858920 Days

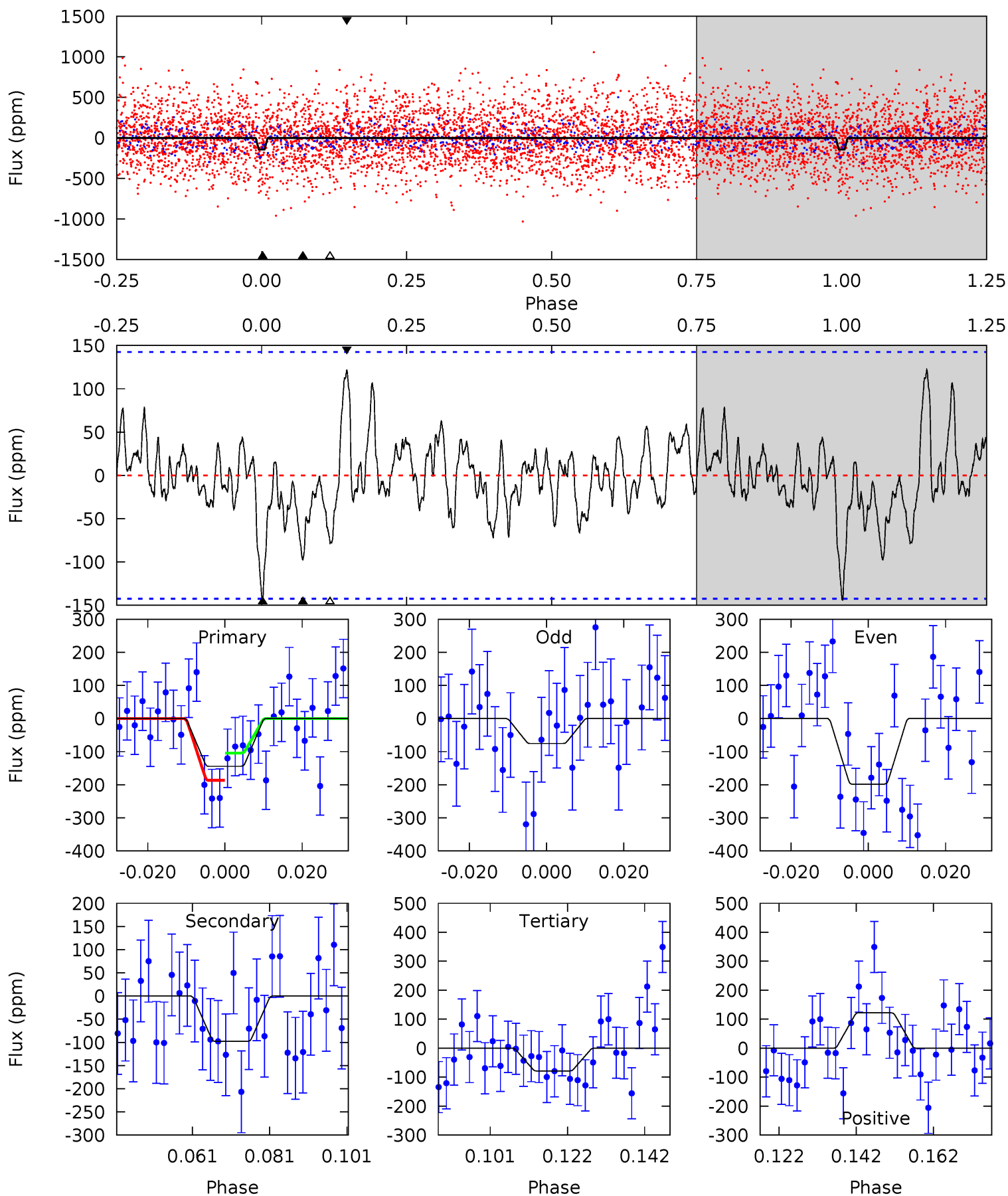
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.64 | 3.69 | 3.02 | 3.81 | 4.85 | 2.24 | 1.14 | 1.62 | 0.83 | 0.68 | -0.11 | 1.76 | 0.84 | 0.45 | 0.33 |



Alt Model-Shift Uniqueness Test

008578742-03, P = 23.224576 Days, E = 126.999207 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 4.95 | 3.36 | 2.70 | 4.19 | 4.89 | 2.32 | 1.15 | 2.25 | 0.76 | 0.65 | -0.83 | 2.11 | -0.31 | 0.46 | 1.41 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|--------------|------------------------|-------------------|------------------------|----------------------|
| DV | -99 ± 27 | $1.58^{+1.15}_{-0.90}$ | 946^{+68}_{-58} | 5106^{+2768}_{-1003} | 525^{+2476}_{-365} |
| Alt. | -98 ± 29 | $1.64^{+1.09}_{-0.91}$ | 944^{+72}_{-57} | 4878^{+2699}_{-830} | 464^{+1937}_{-309} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

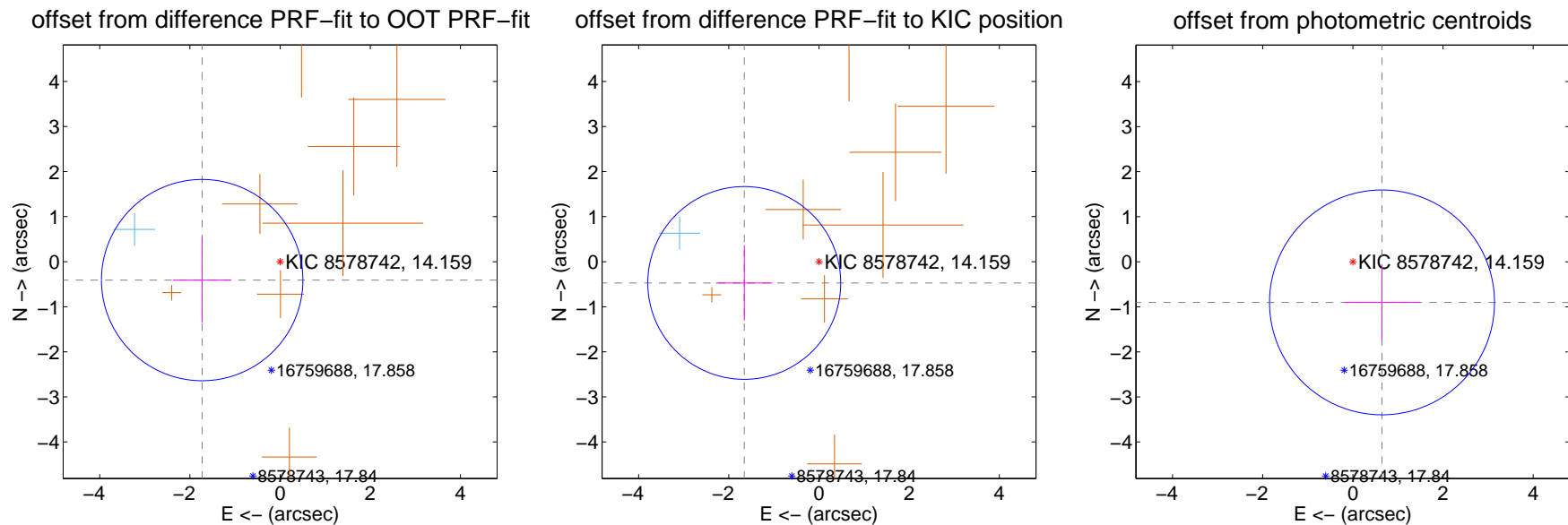
DV Centroid Data

Supplemental centroid analysis for 008578742-03. Kepler magnitude: 14.16. Transit SNR 8.68

There are 1 quarters with good PRF difference image offsets

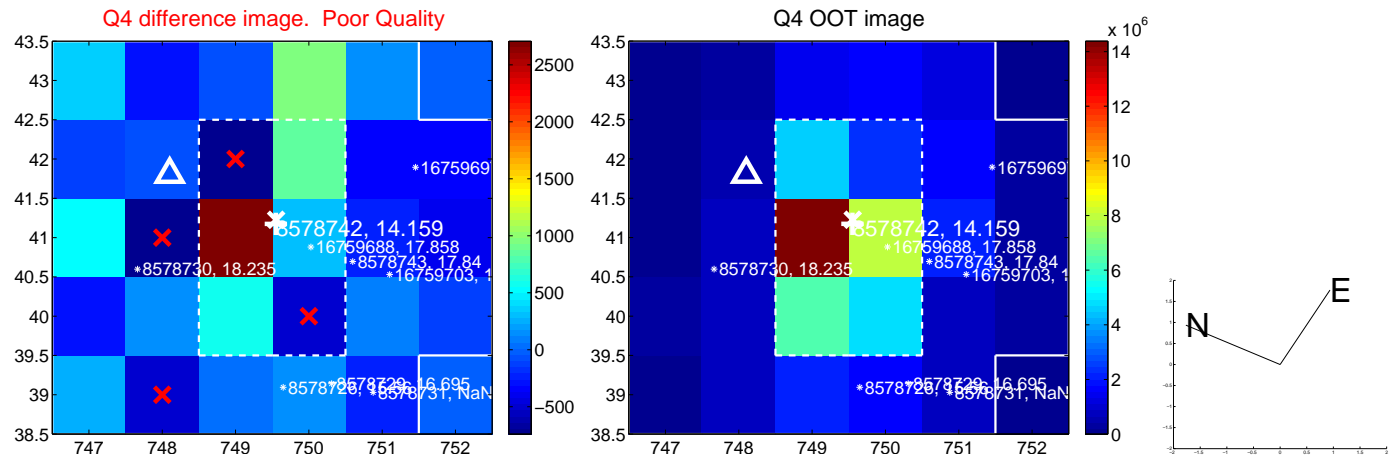
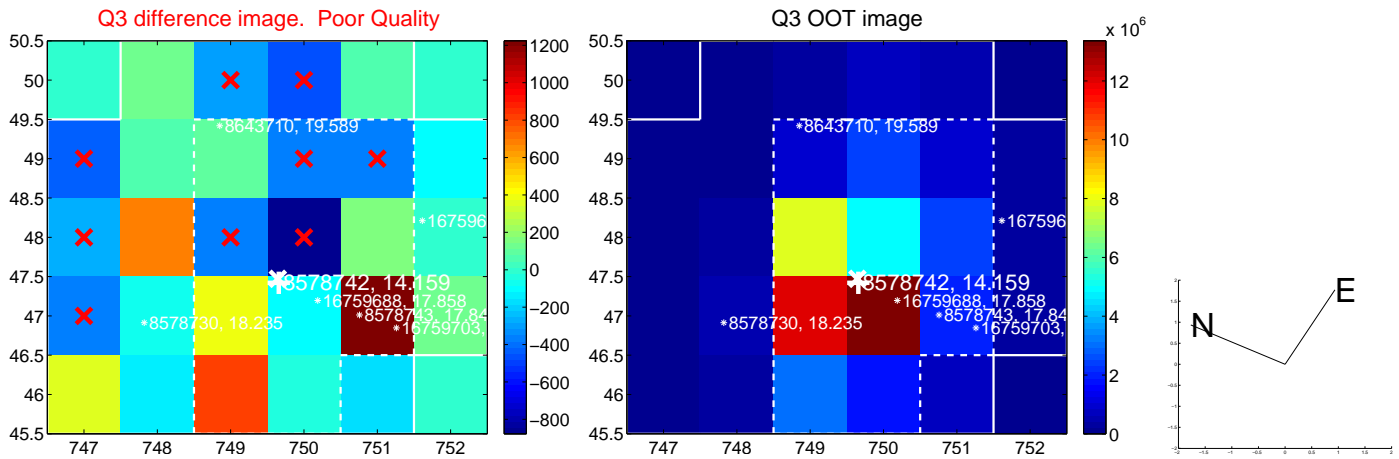
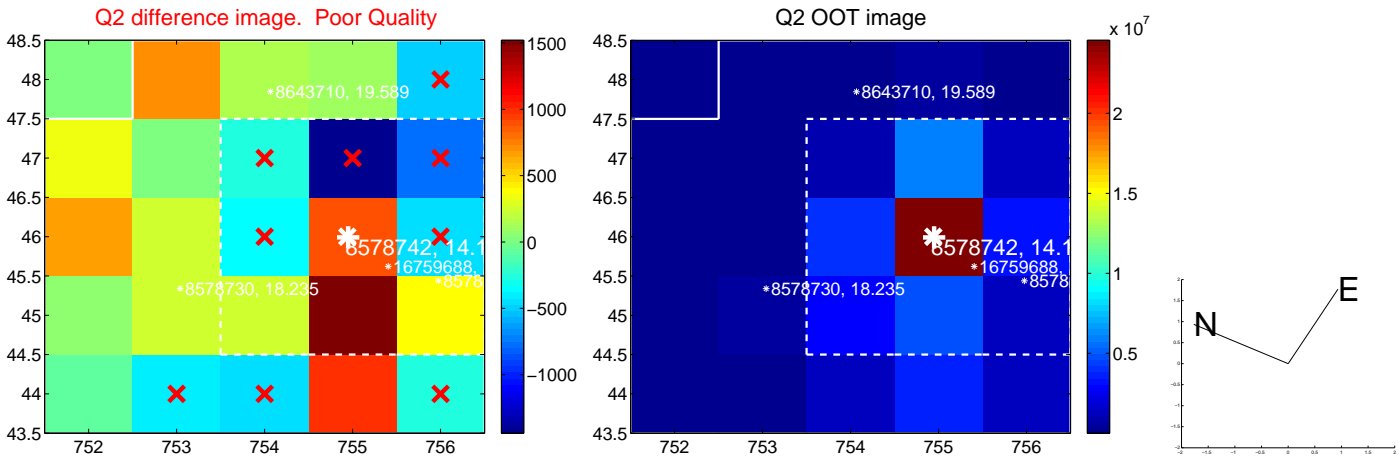
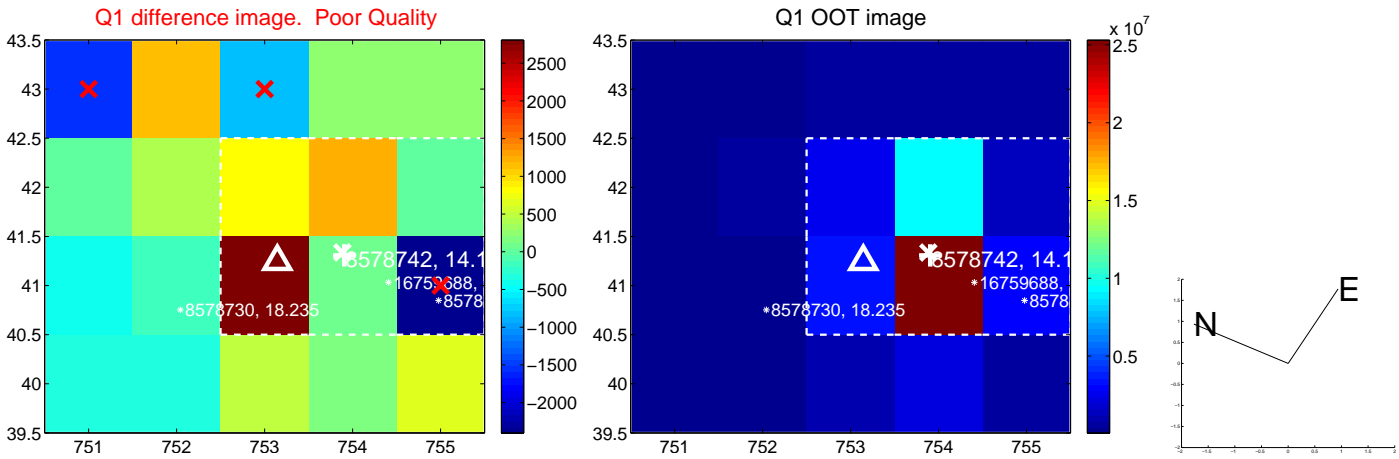
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.776 ± 0.745 | 2.39 | 1.729 ± 0.649 | -0.408 ± 0.945 |
| PRF-fit source offset from KIC position | 1.724 ± 0.713 | 2.42 | 1.658 ± 0.628 | -0.472 ± 0.836 |
| photometric centroid source offset | 1.11 ± 0.83 | 1.33 | -0.65 ± 0.84 | -0.90 ± 0.83 |

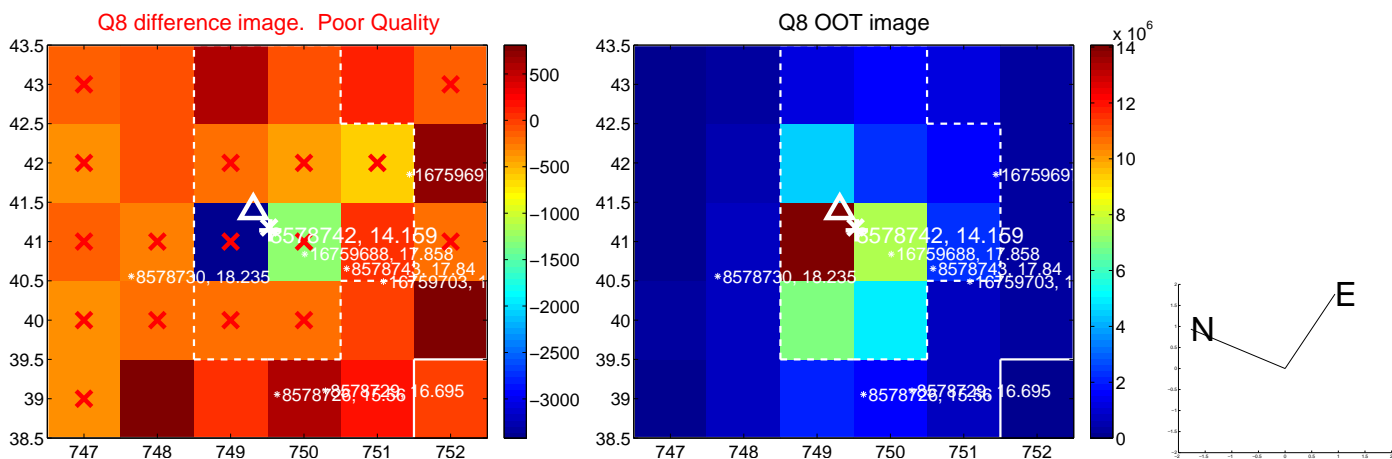
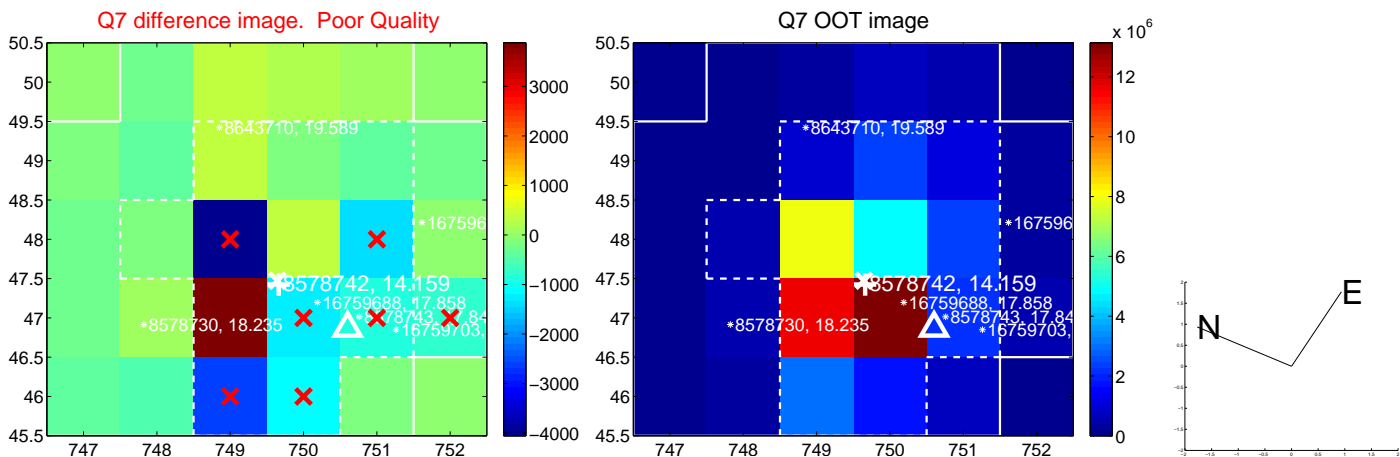
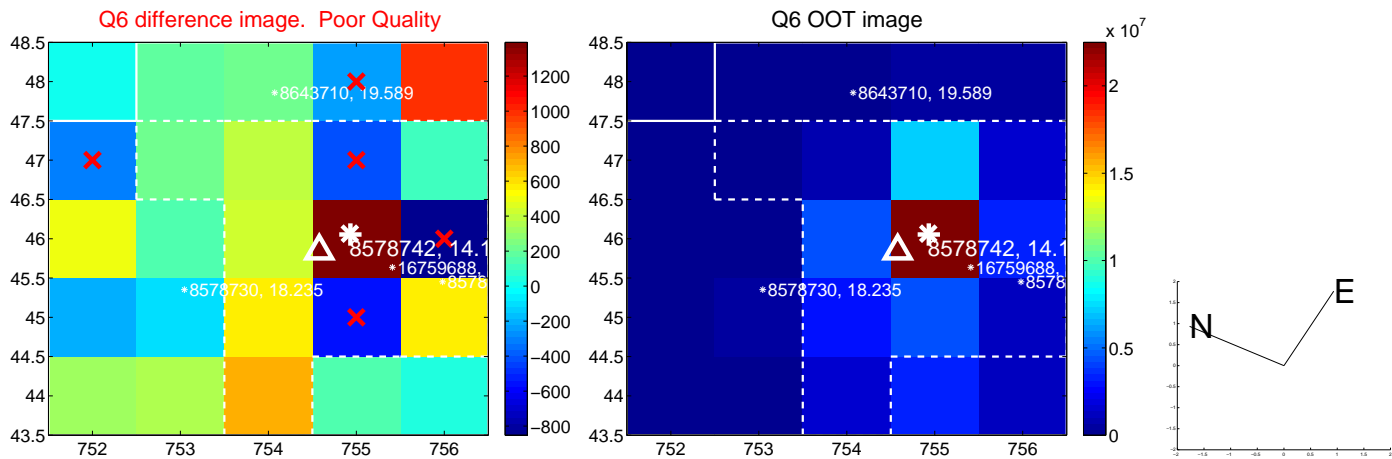
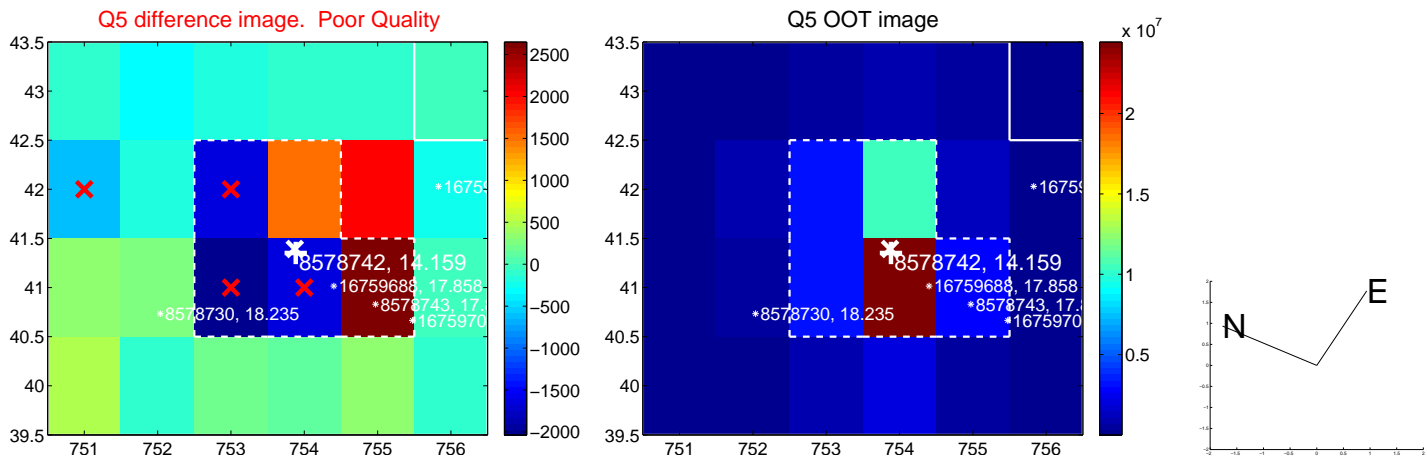


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

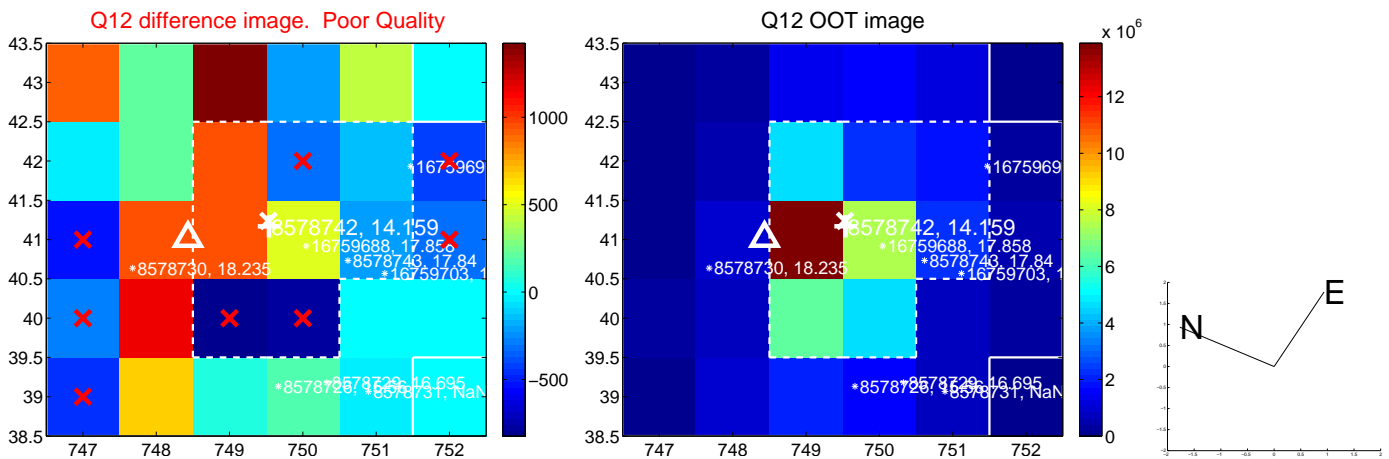
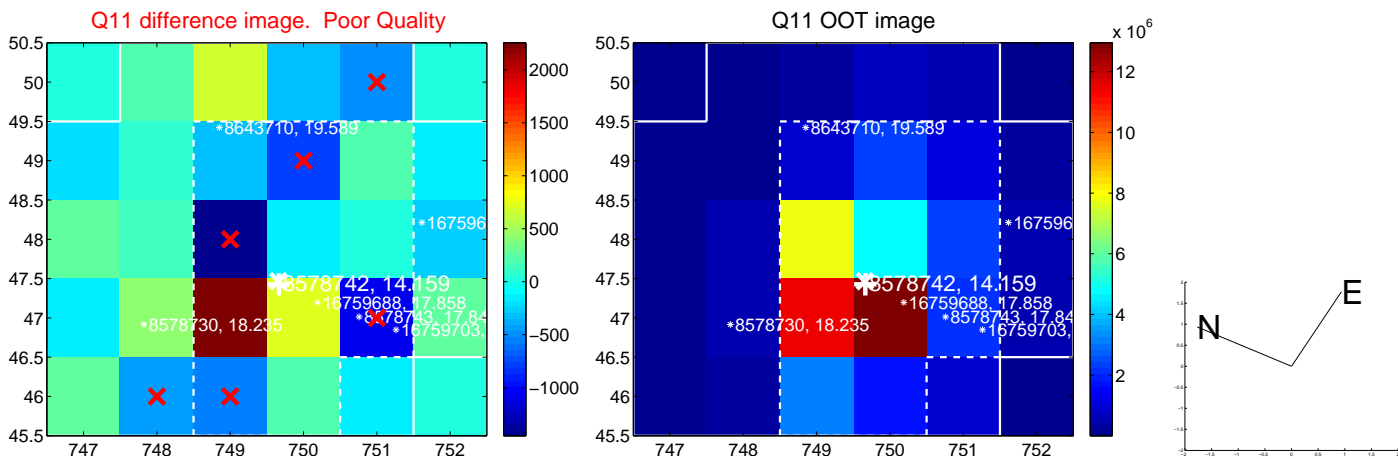
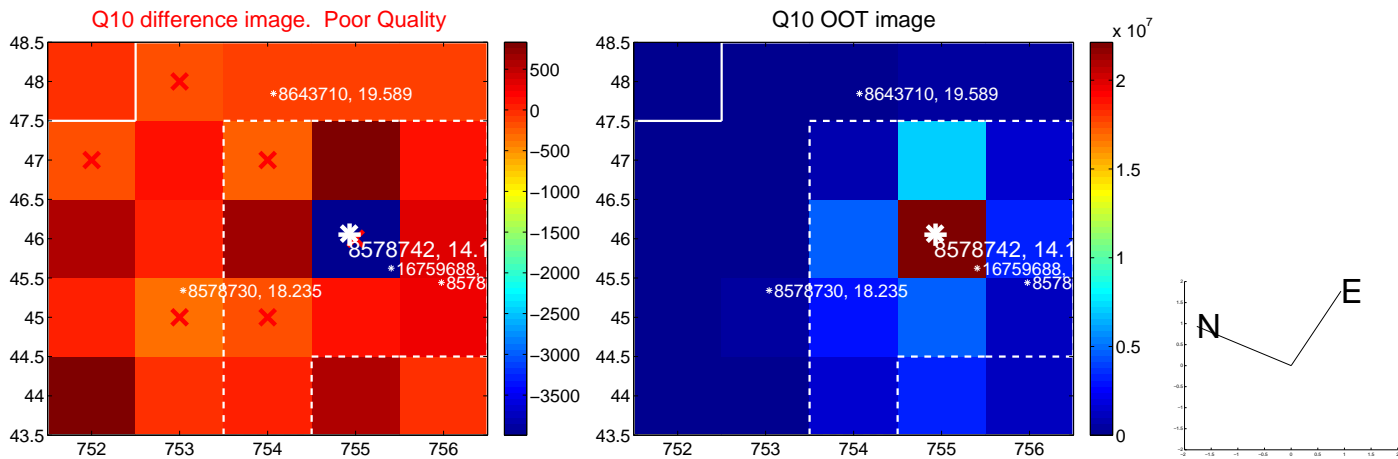
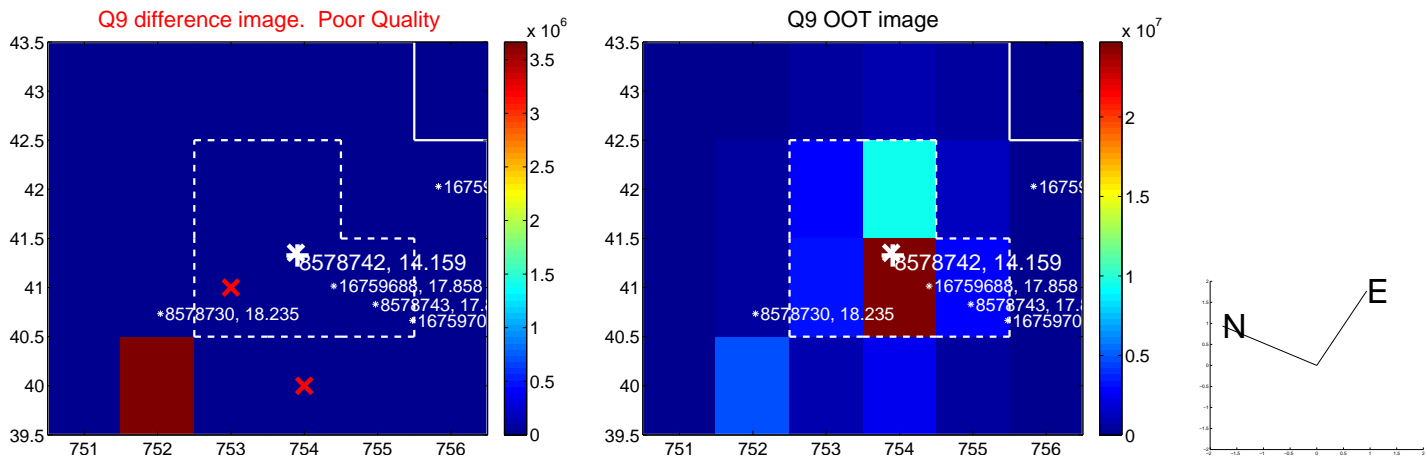
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



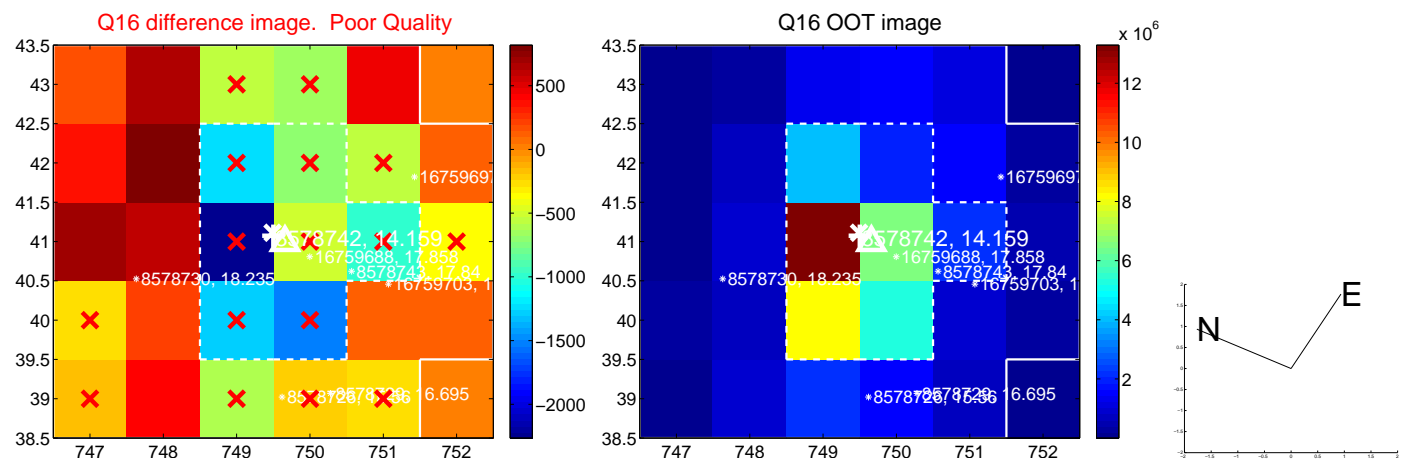
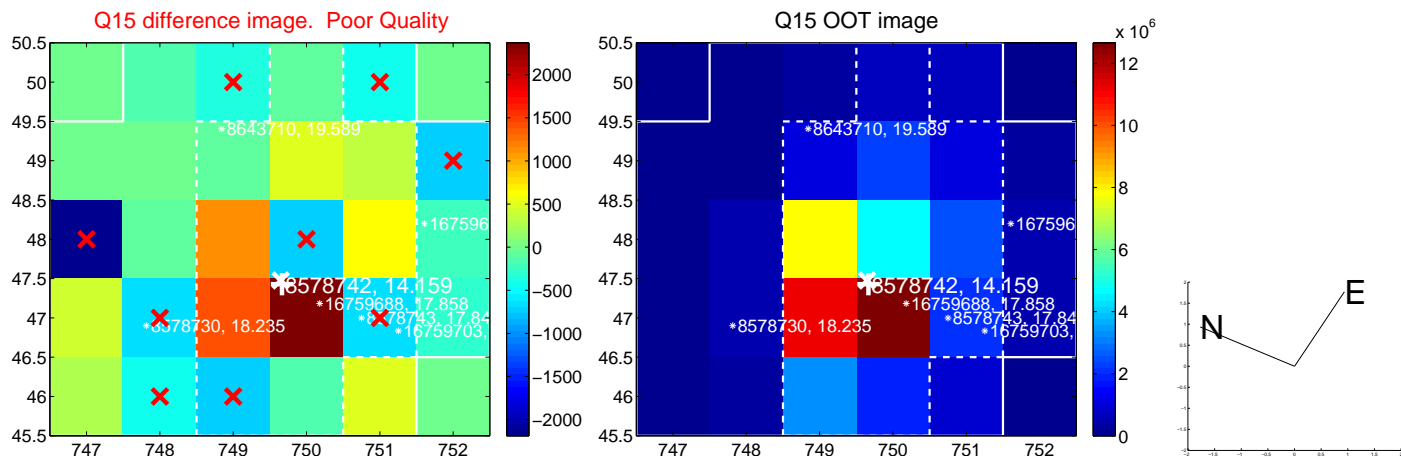
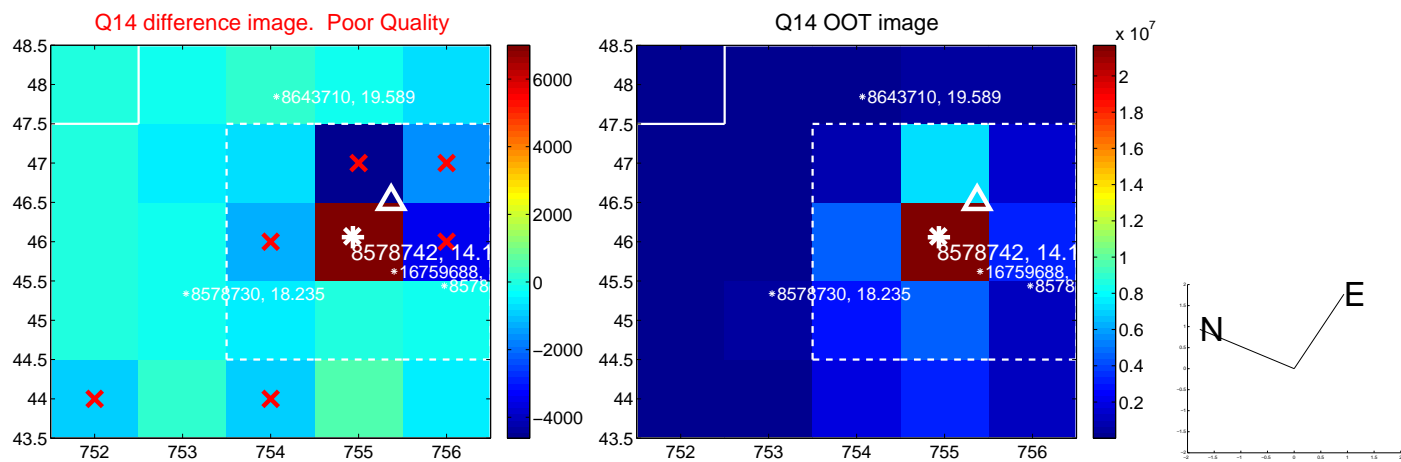
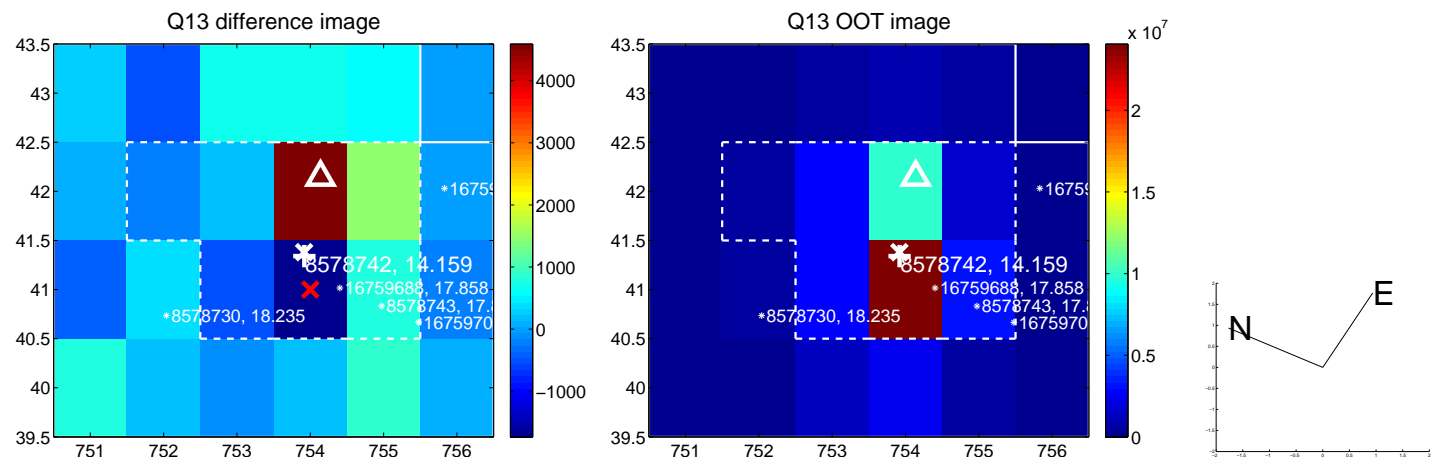
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



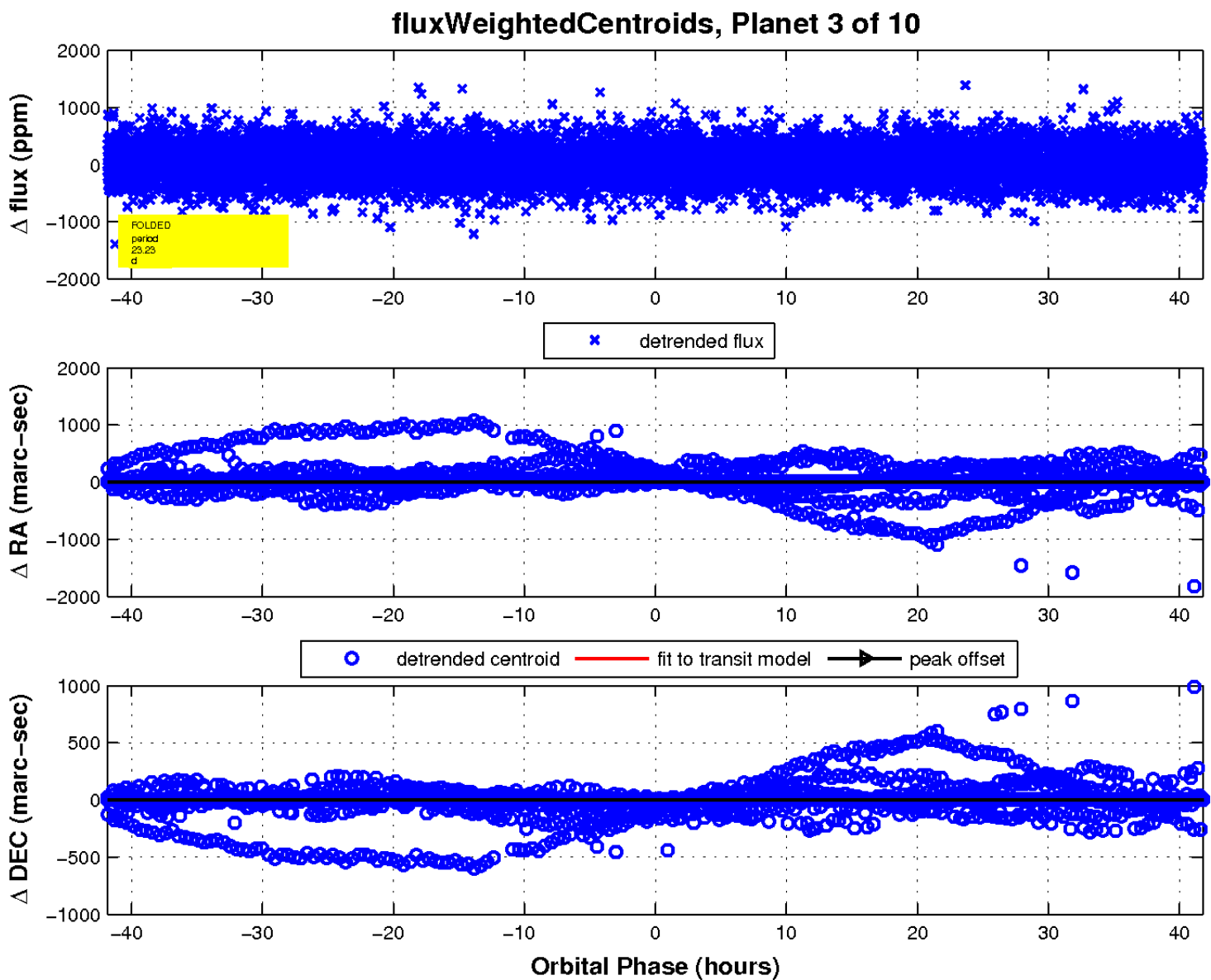
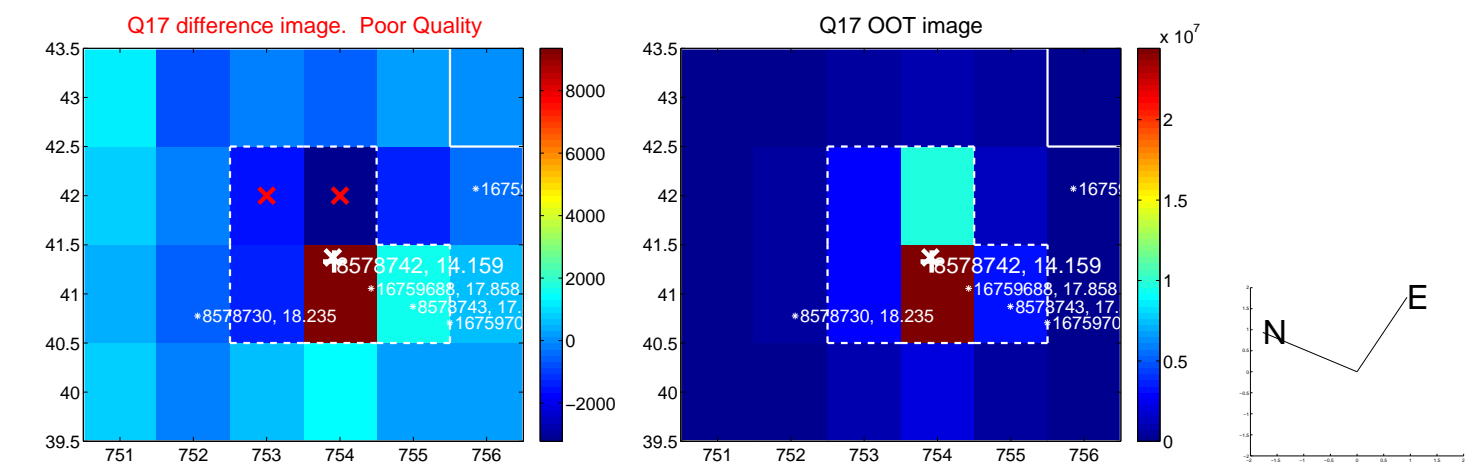
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

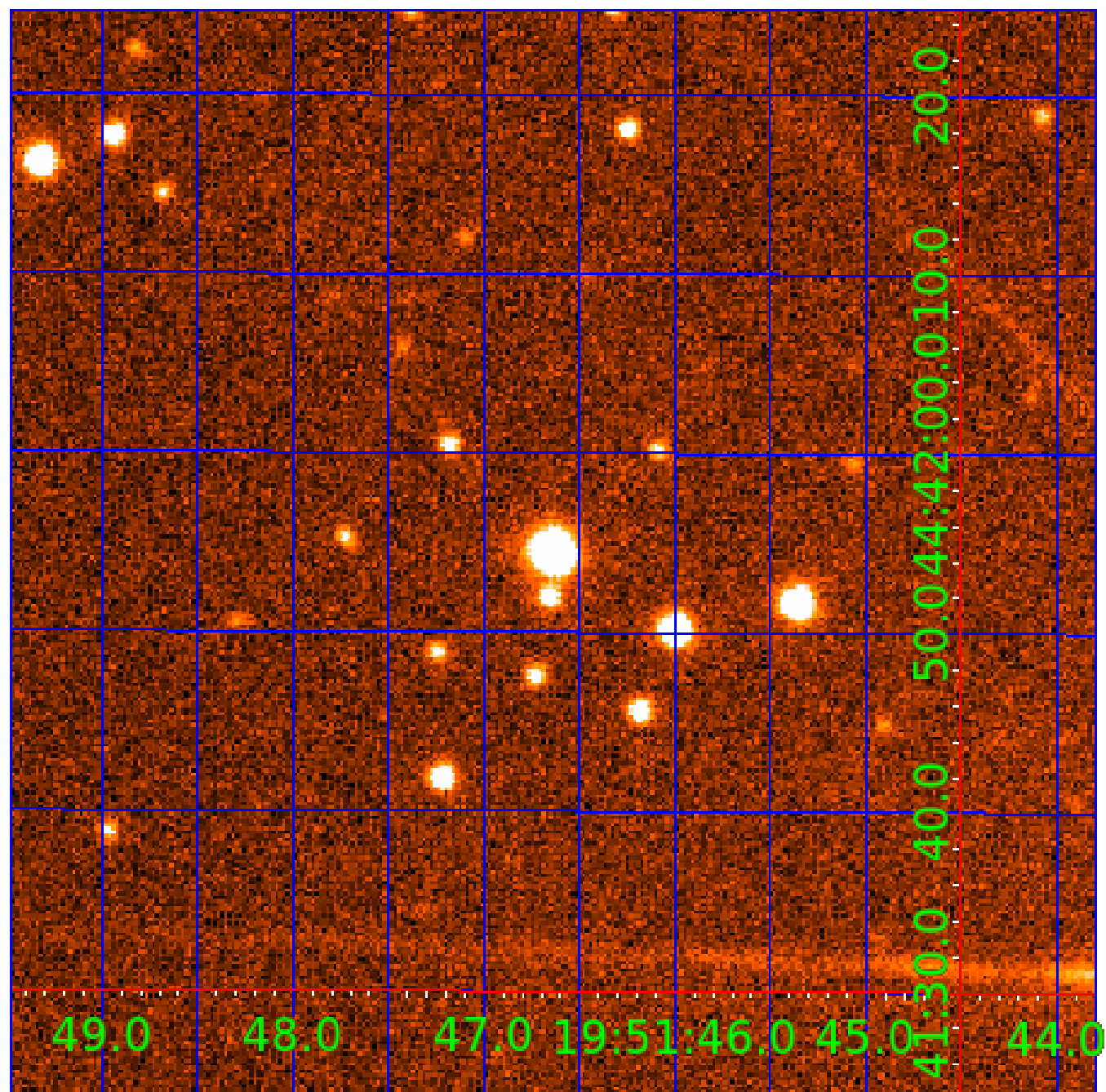


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

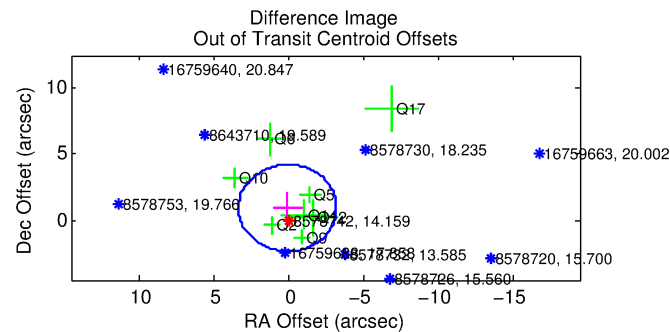
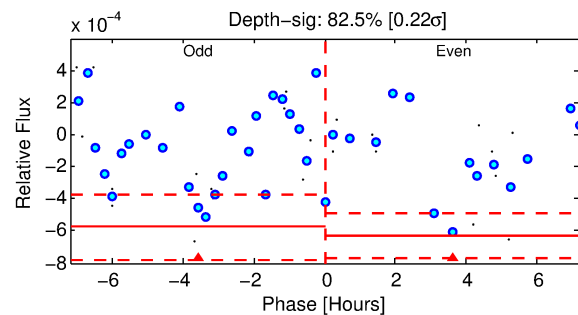
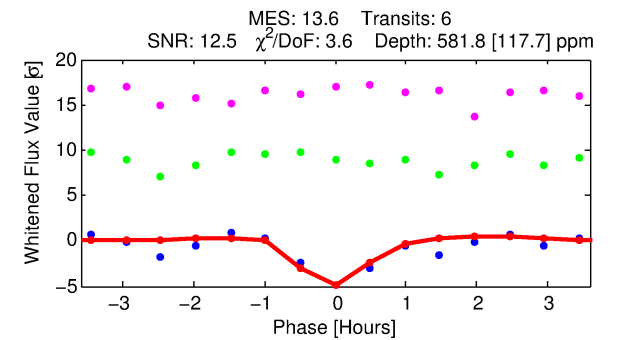
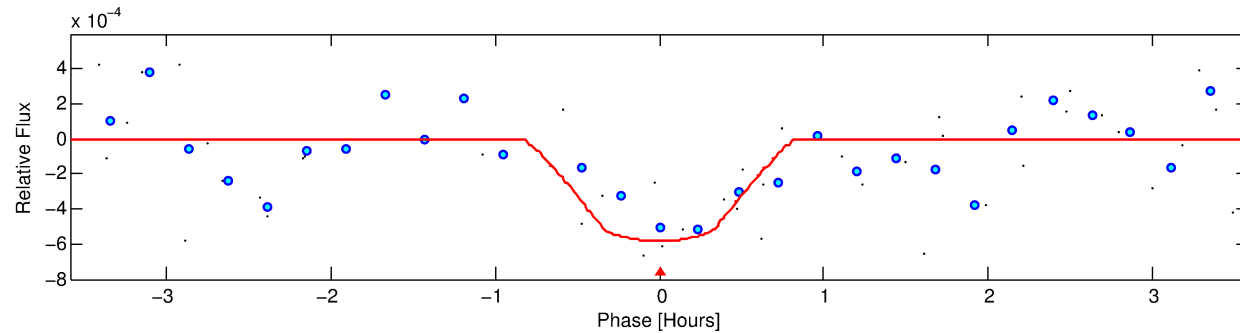
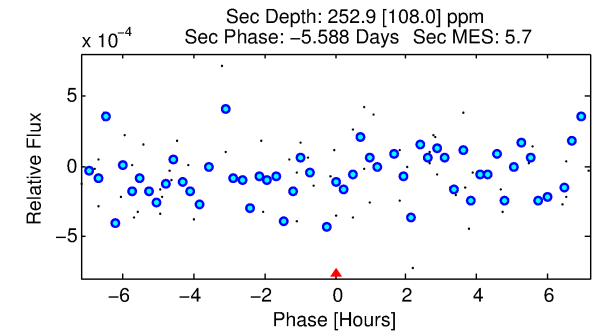
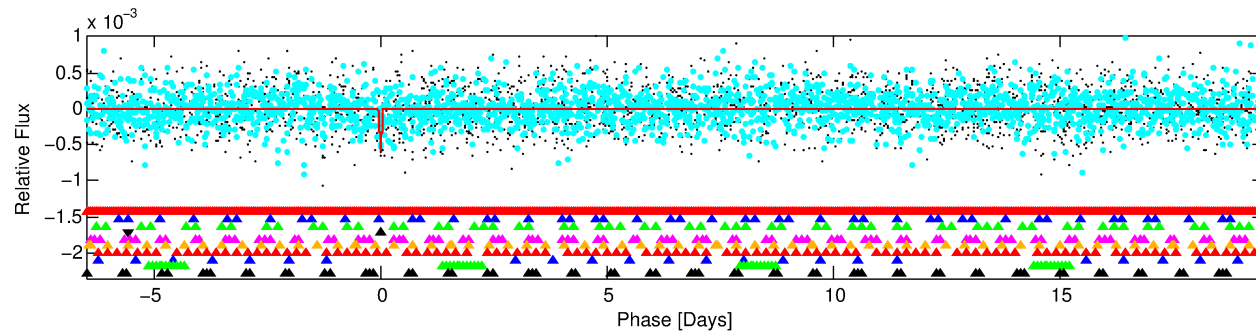
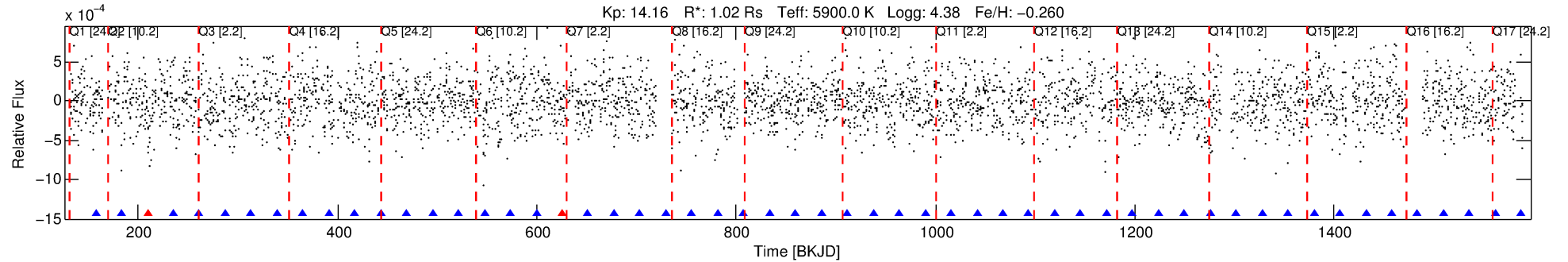
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-04

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 4 of 10 Period: 26.009 d



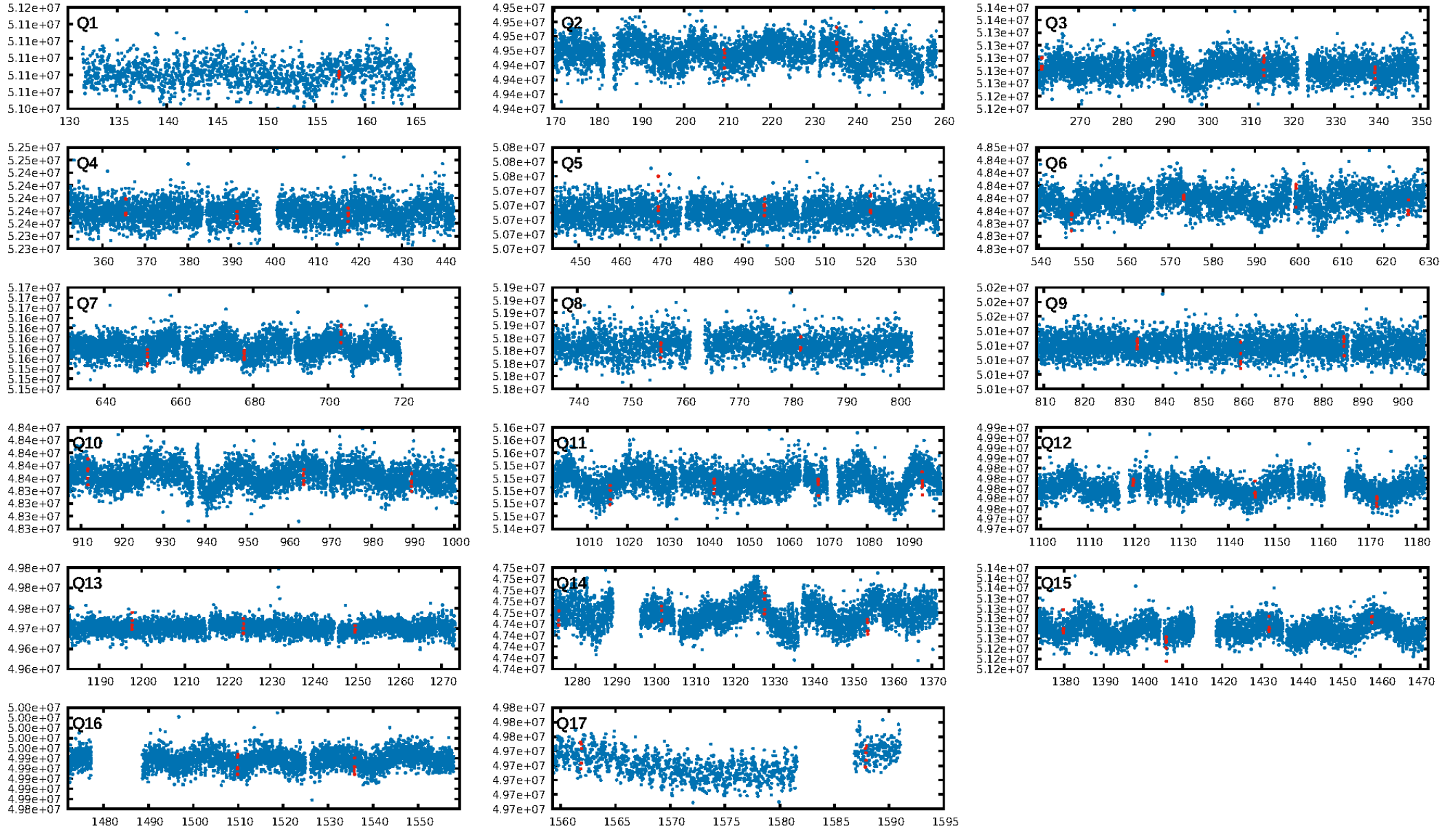
DV Fit Results:

Period = 26.00922 [0.00027] d
Epoch = 157.3722 [0.0071] BKJD
Rp/R* = 0.0224 [0.0489]
a/R* = 160.18 [1643.45]
b = 0.35 [26.29]
Seff = 41.11 [15.03]
Teq = 646 [59] K
Rp = 2.51 [5.51] Re
a = 0.1666 [0.0389] AU
Ag = 612.78 [2692.43] [0.23 σ]
Teffp = 4967 [5441] K [0.79 σ]

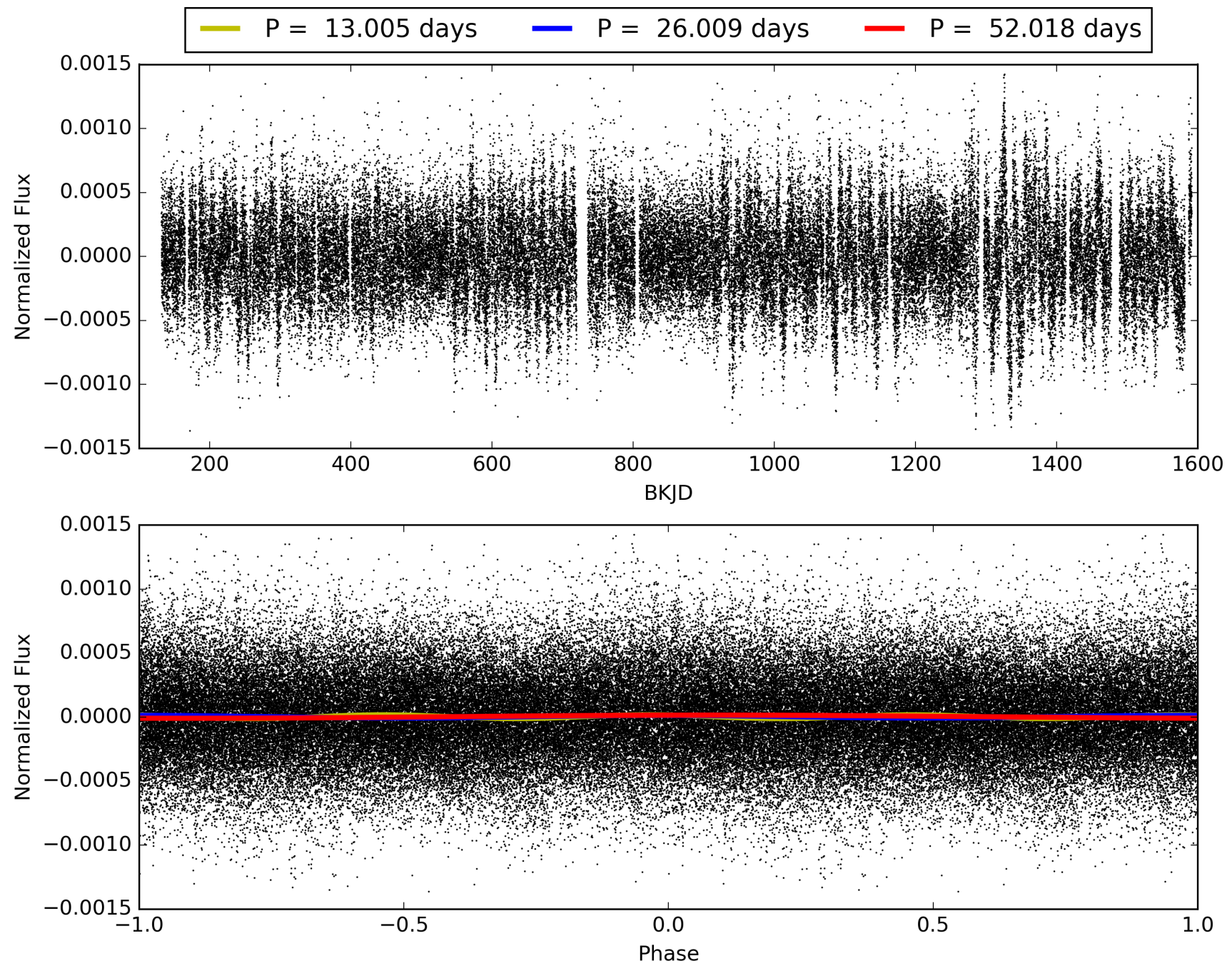
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.77 σ]
LongPeriod-sig: 100.0% [65.03 σ]
ModelChiSquare2-sig: 24.7%
ModelChiSquareGof-sig: 45.3%
Bootstrap-pfa: N/A
RollingBand-igt: 0.67 [4/6]
GhostDiagnostic-chr: 0.2498
Centroid-sig: 89.4%
Centroid-so: 0.651 arcsec [1.01 σ]
OotOffset-rm: 0.945 arcsec [0.86 σ]
KicOffset-rm: 0.853 arcsec [0.86 σ]
OotOffset-st: 4/0/1/3 [8]
KicOffset-st: 4/0/1/3 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.59 [10/17]

TCE 008578742-04, PDC Light Curves

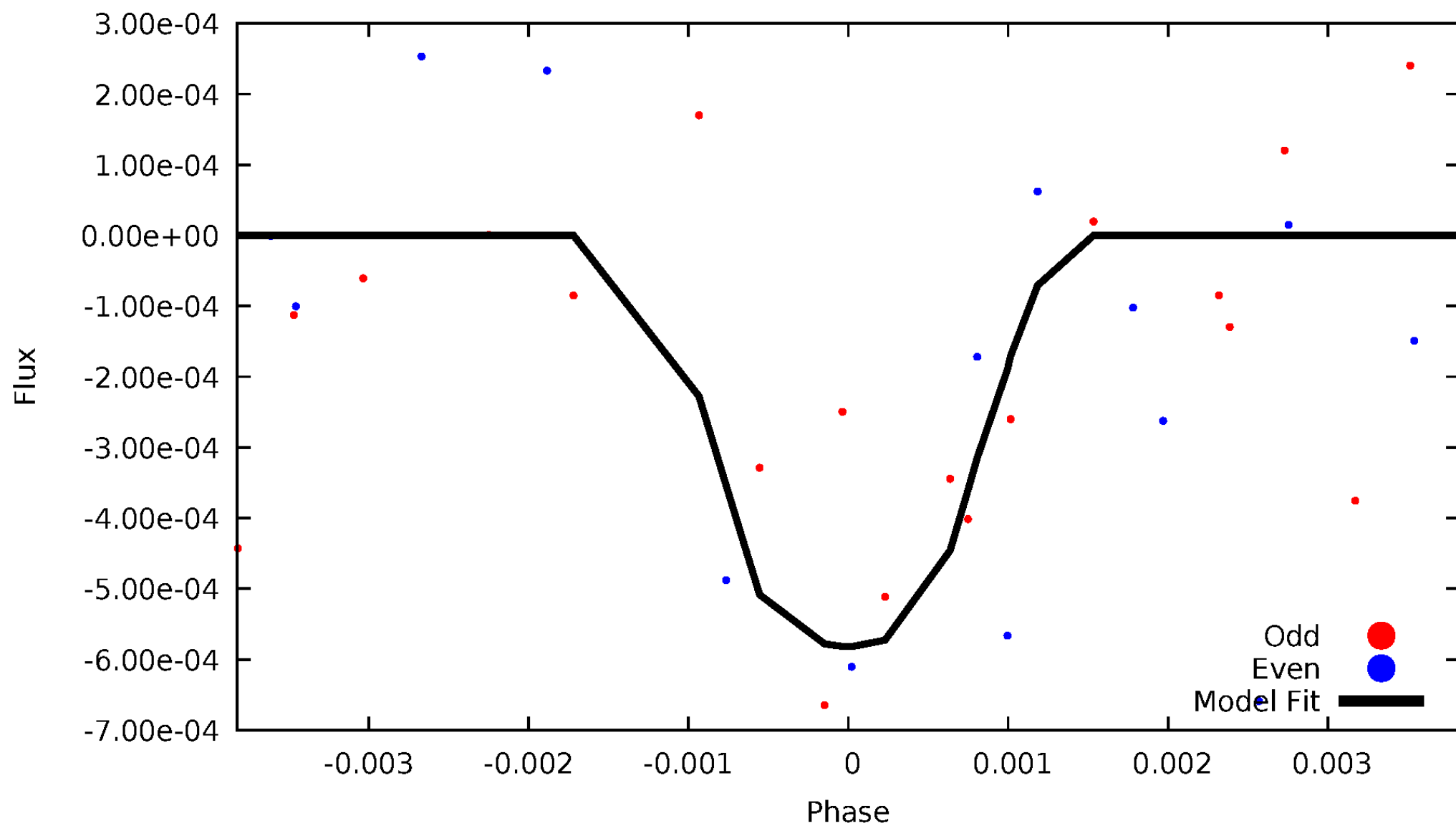


TCE 008578742-04



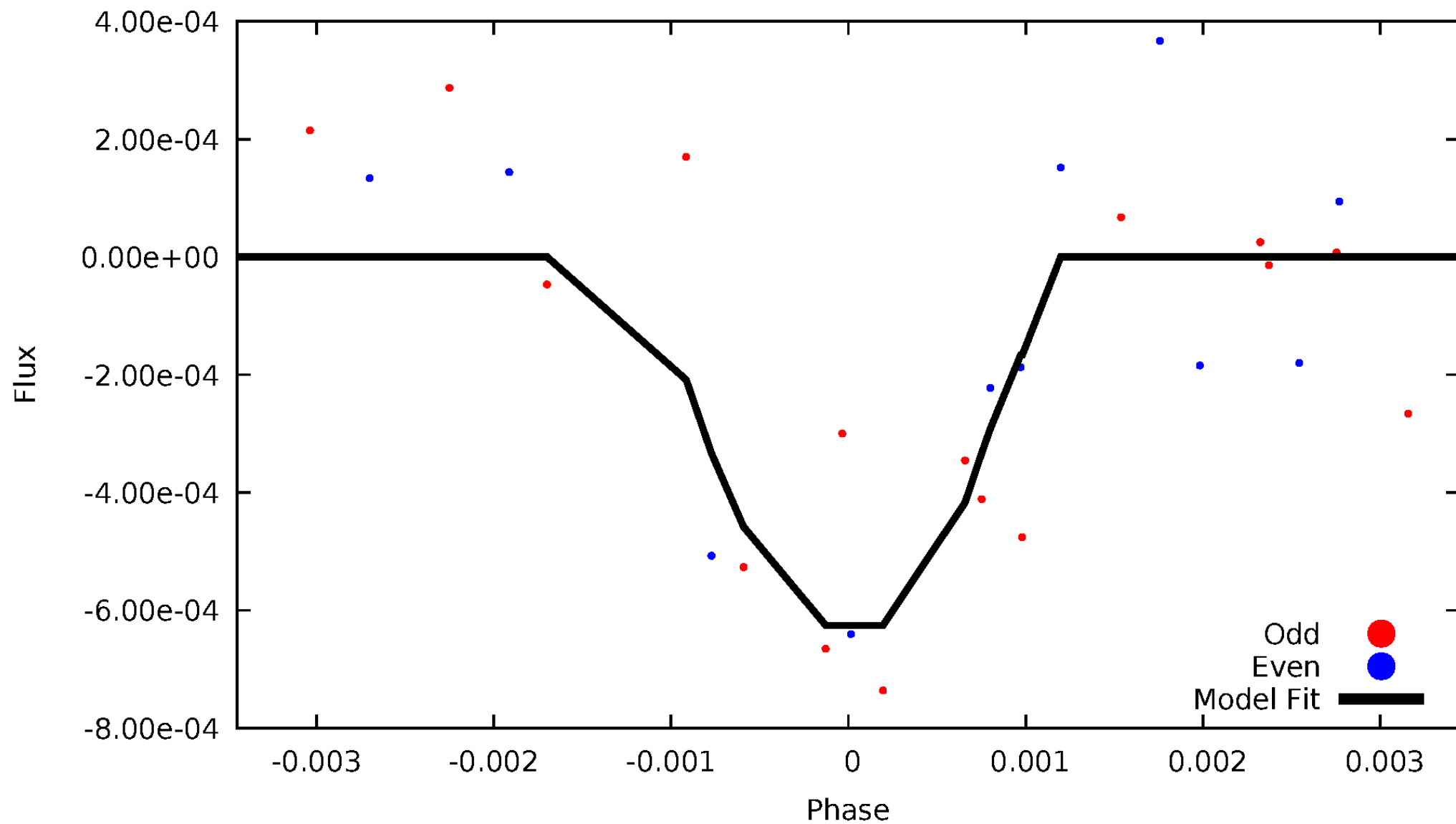
DV Odd/Even

TCE 008578742-04



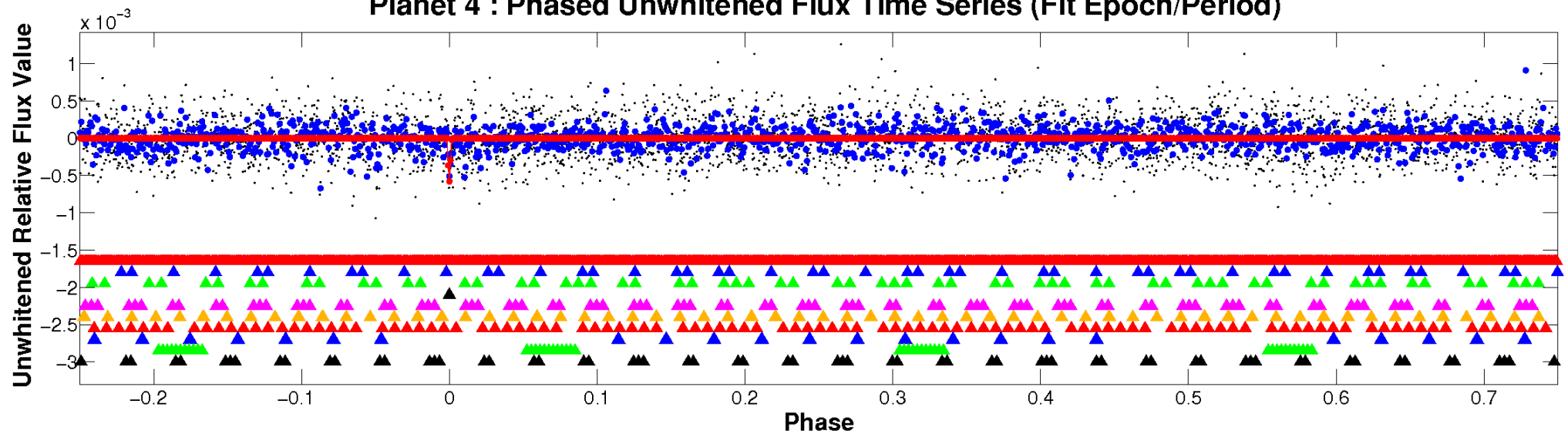
ALT Odd/Even

TCE 008578742-04

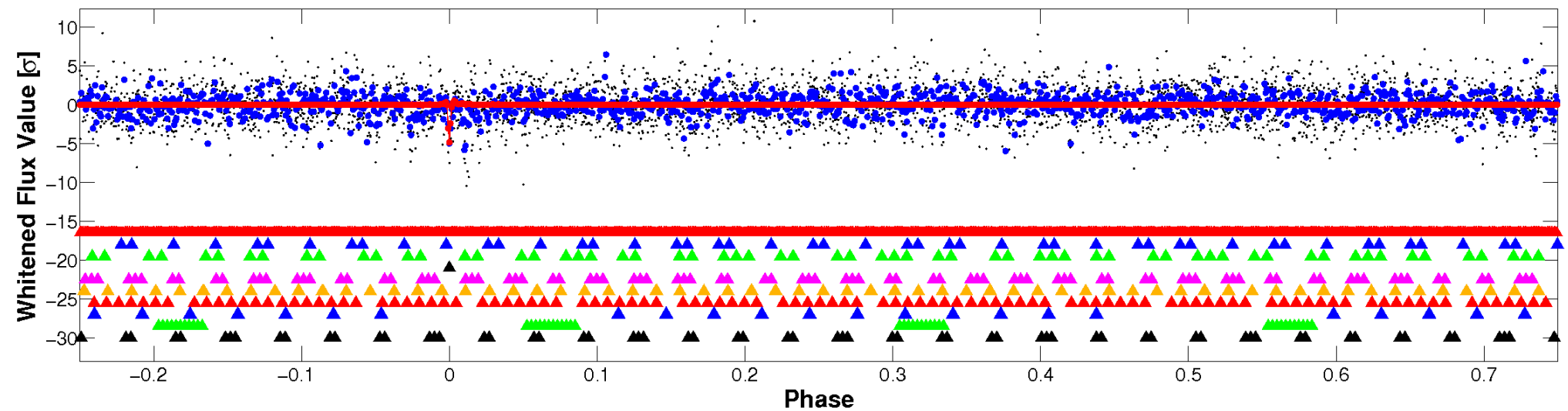


Non-Whitened Vs. Whitened Light Curve

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

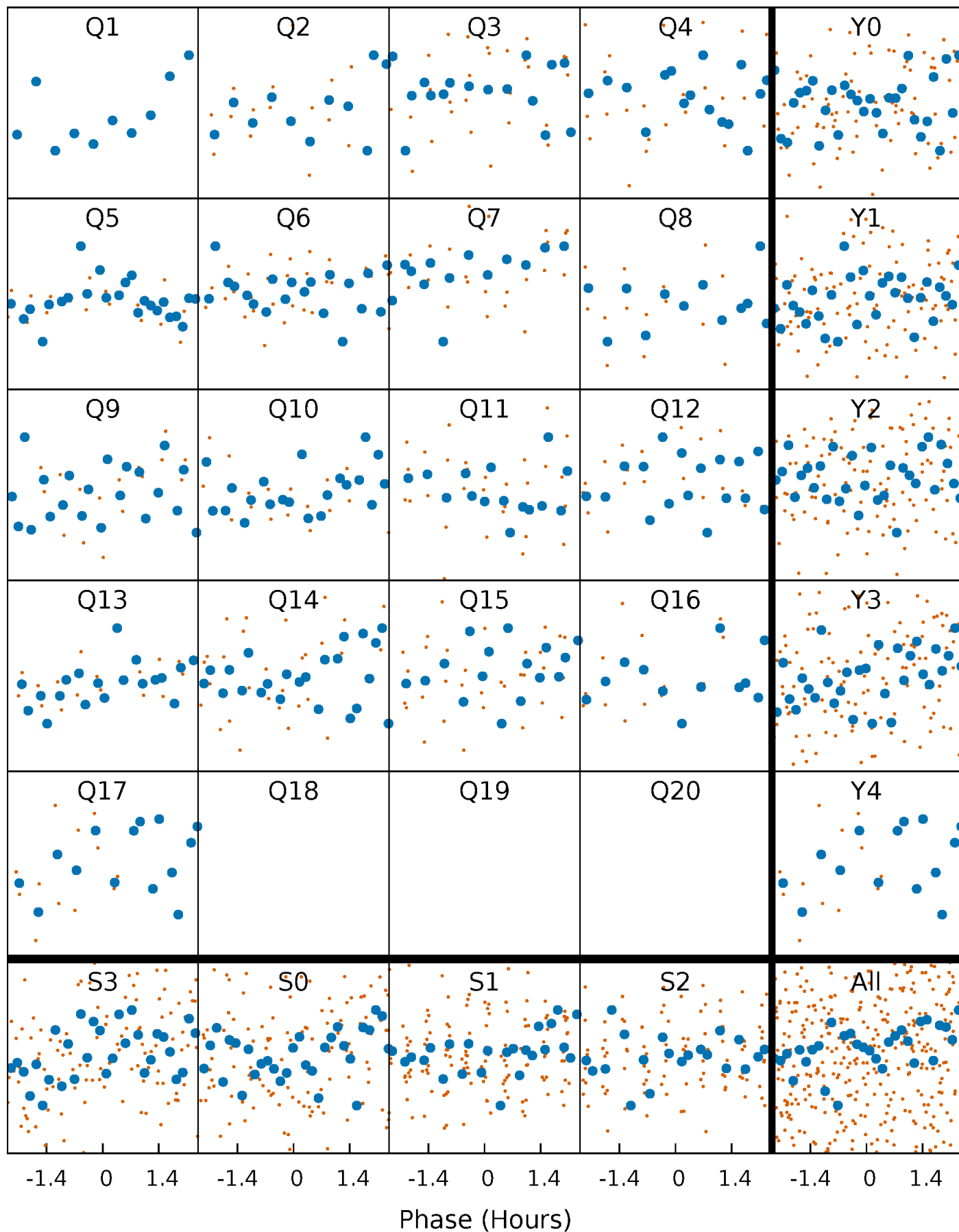


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



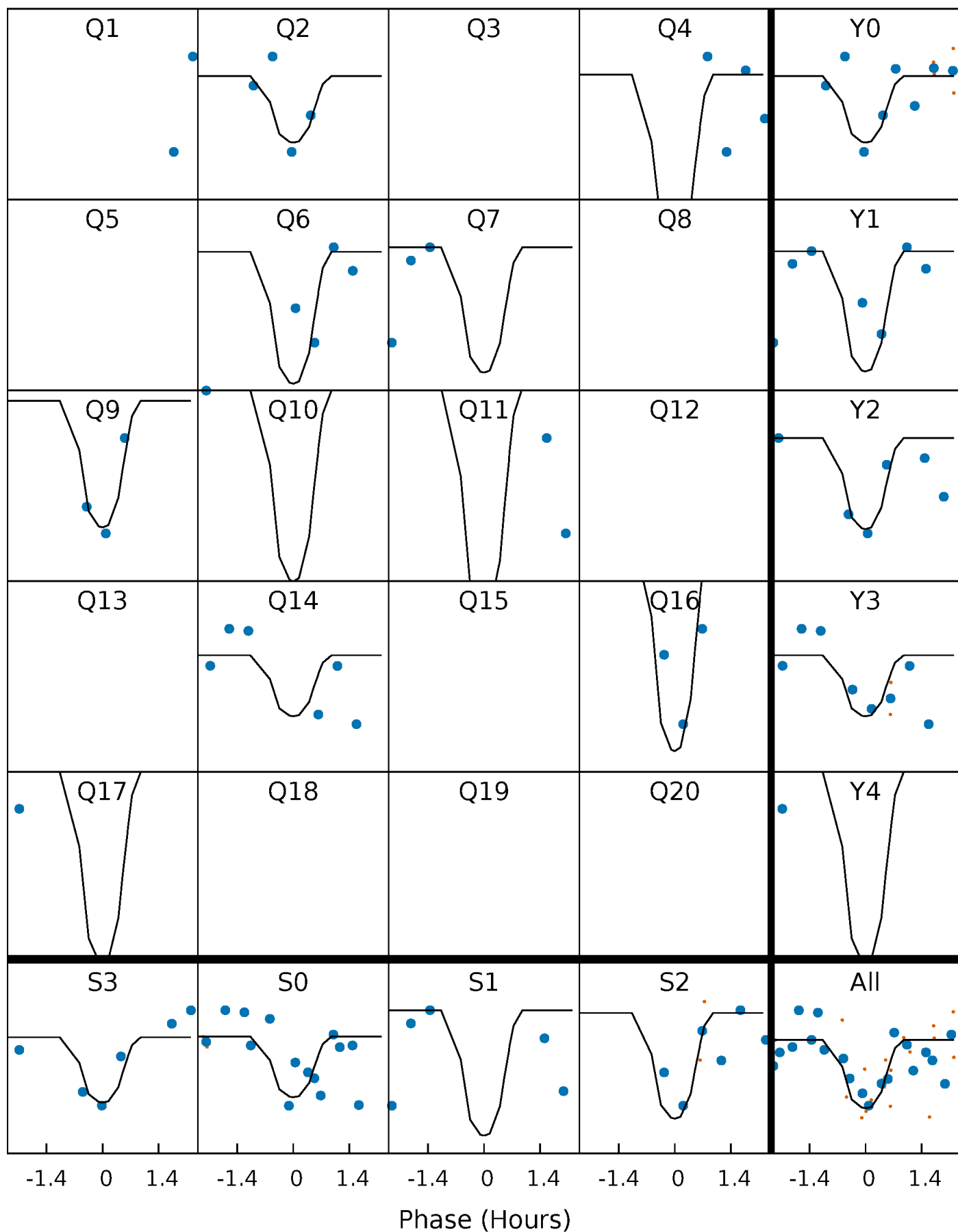
PDC Quarter-Phased Transit Curves

TCE 008578742-04 P= 26.009221 Days $T_0=157.372152$ (BKJD)



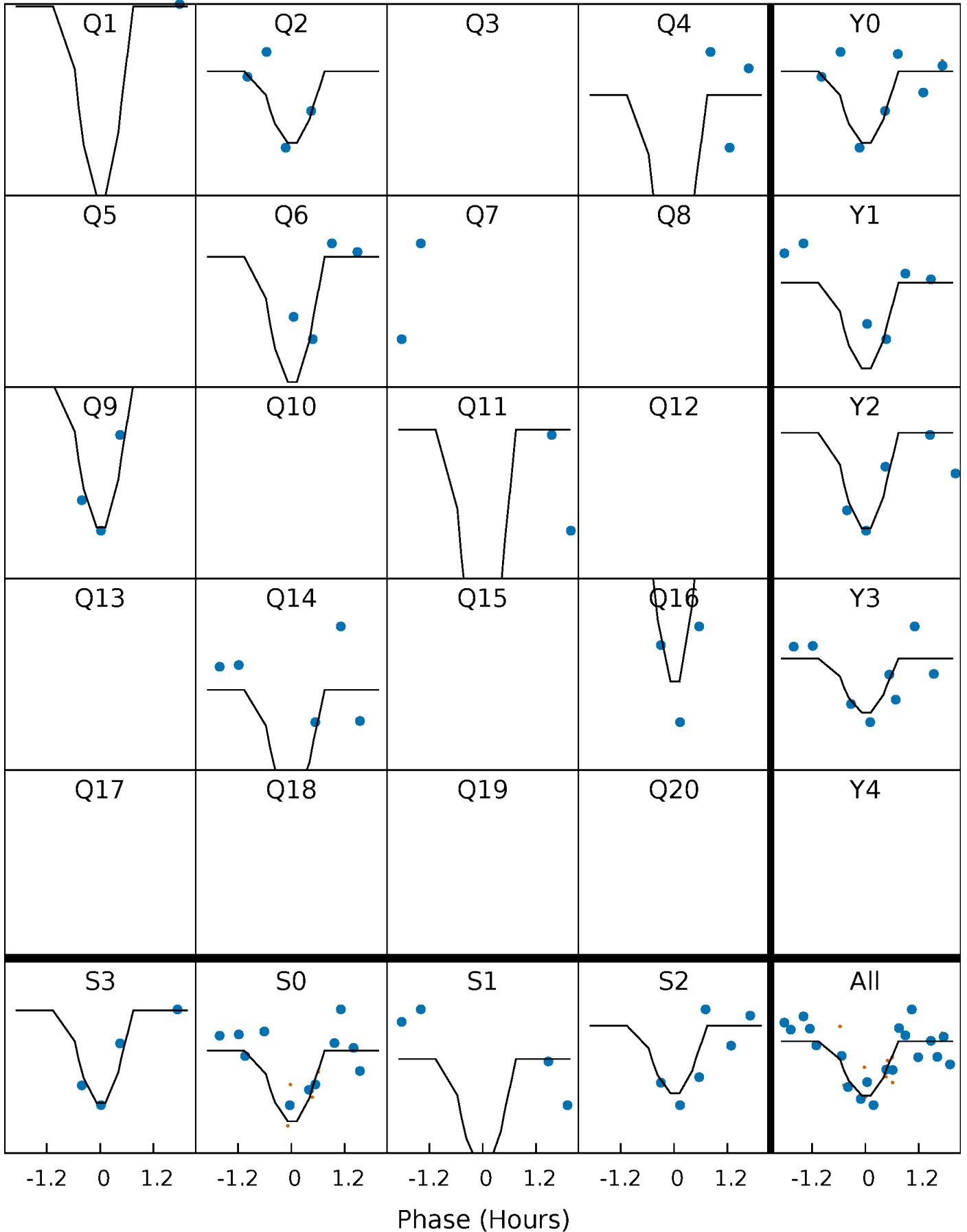
DV Quarter-Phased Transit Curves

TCE 008578742-04 P= 26.009221 Days $T_0=157.372152$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

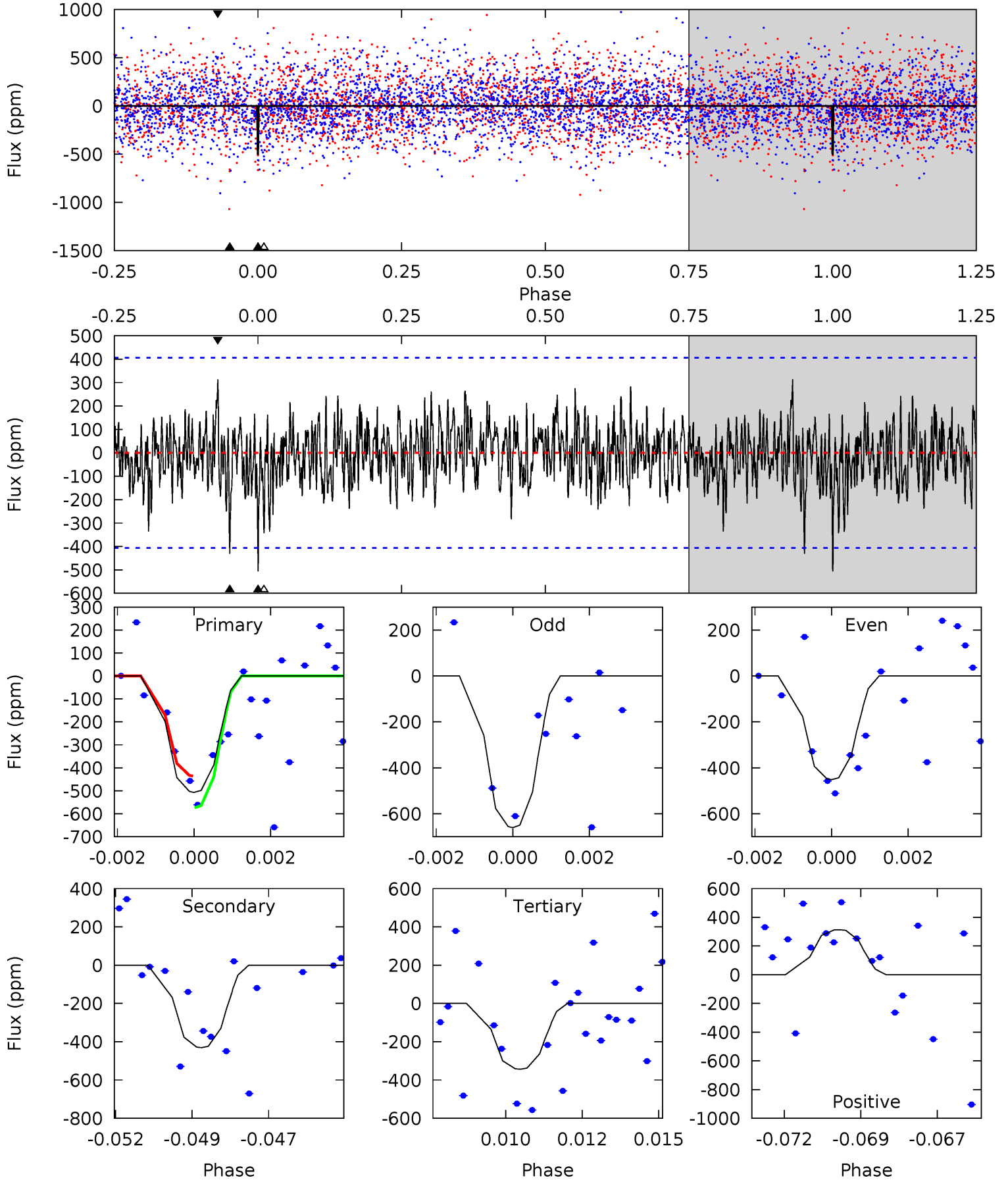
TCE 008578742-04 $P = 26.009250$ Days $T_0 = 157.371553$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-04, P = 26.009221 Days, E = 131.362931 Days

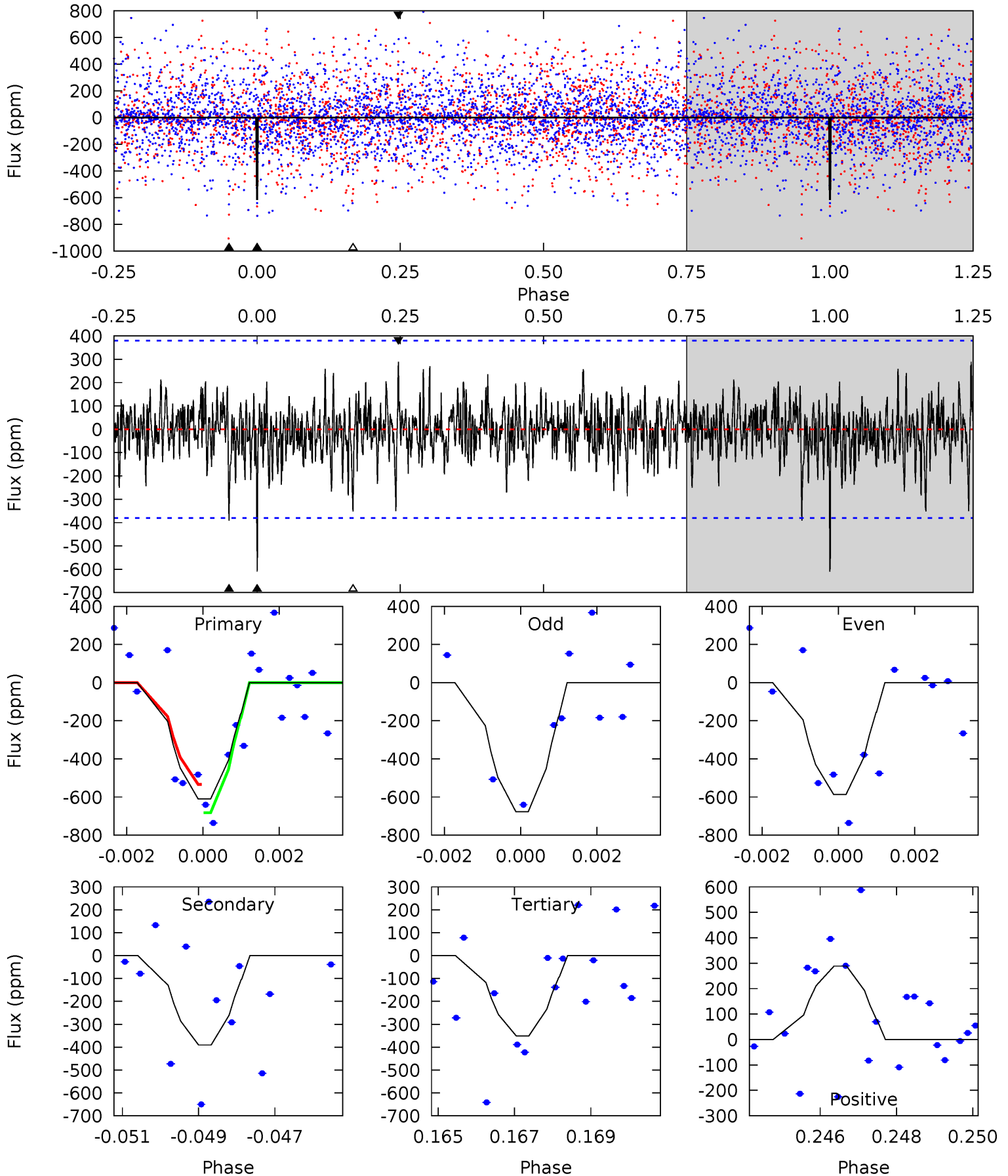
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.59 | 5.61 | 4.47 | 4.09 | 5.29 | 3.03 | 1.34 | 2.12 | 2.51 | 1.14 | 1.52 | 1.33 | 0.99 | 0.38 | 0.85 |



Alt Model-Shift Uniqueness Test

008578742-04, P = 26.009250 Days, E = 131.362303 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.55 | 5.48 | 4.92 | 4.05 | 5.33 | 3.09 | 1.26 | 3.62 | 4.50 | 0.55 | 1.43 | 0.58 | 0.99 | 0.32 | 0.97 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|----------------------|
| DV | -431 ± 77 | $4.86^{+4.94}_{-3.33}$ | 910^{+62}_{-55} | 4323^{+3002}_{-918} | 280^{+2478}_{-213} |
| Alt. | -391 ± 71 | $4.89^{+4.92}_{-3.32}$ | 906^{+67}_{-51} | 4260^{+2737}_{-892} | 258^{+1950}_{-195} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

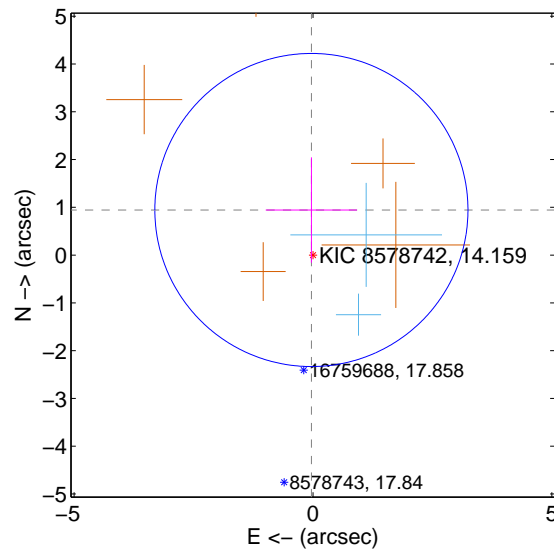
Supplemental centroid analysis for 008578742-04. Kepler magnitude: 14.16. Transit SNR 12.51

There are 2 quarters with good PRF difference image offsets

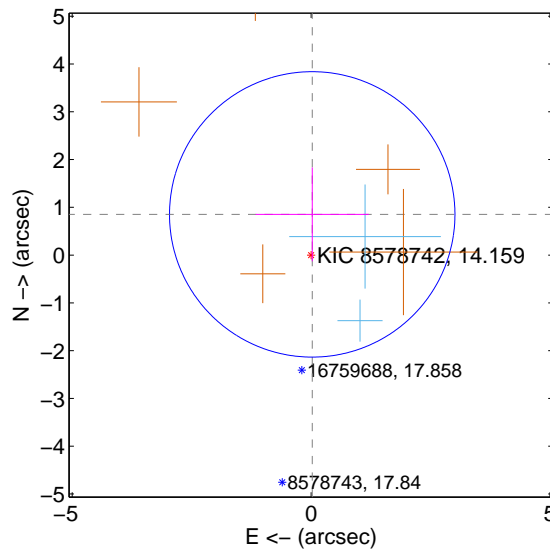
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.945 ± 1.092 | 0.86 | 0.033 ± 0.956 | 0.944 ± 1.103 |
| PRF-fit source offset from KIC position | 0.853 ± 0.996 | 0.86 | -0.024 ± 1.185 | 0.852 ± 0.983 |
| photometric centroid source offset | 0.65 ± 0.65 | 1.01 | -0.64 ± 0.64 | -0.13 ± 0.67 |

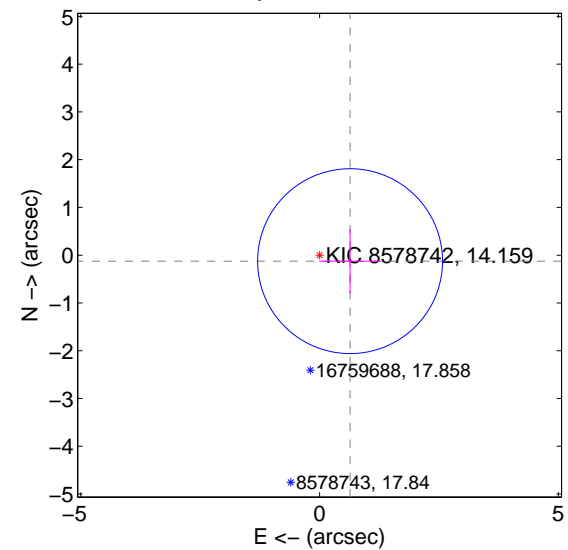
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

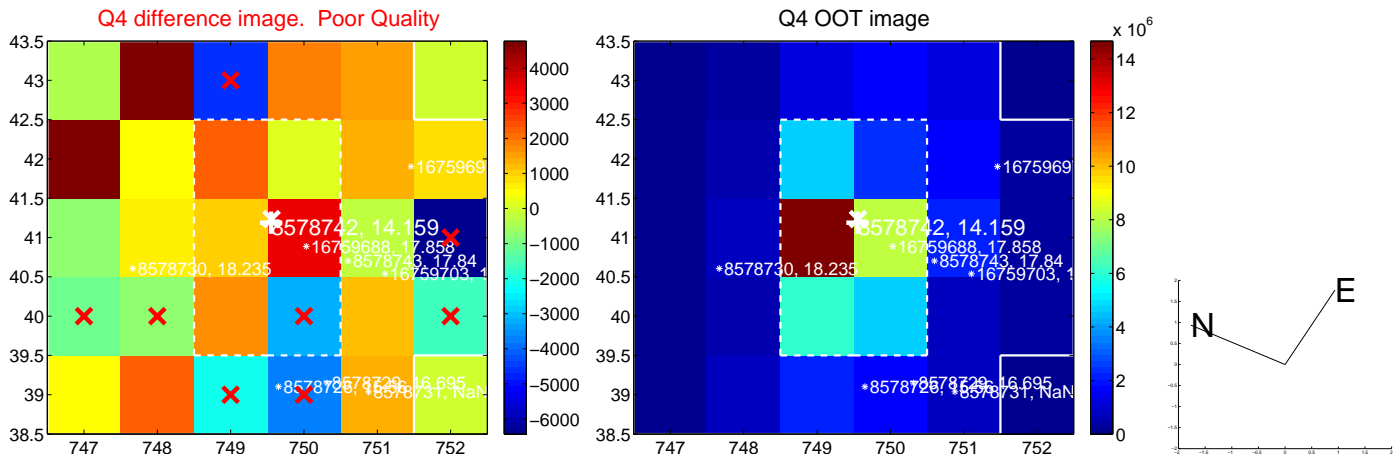
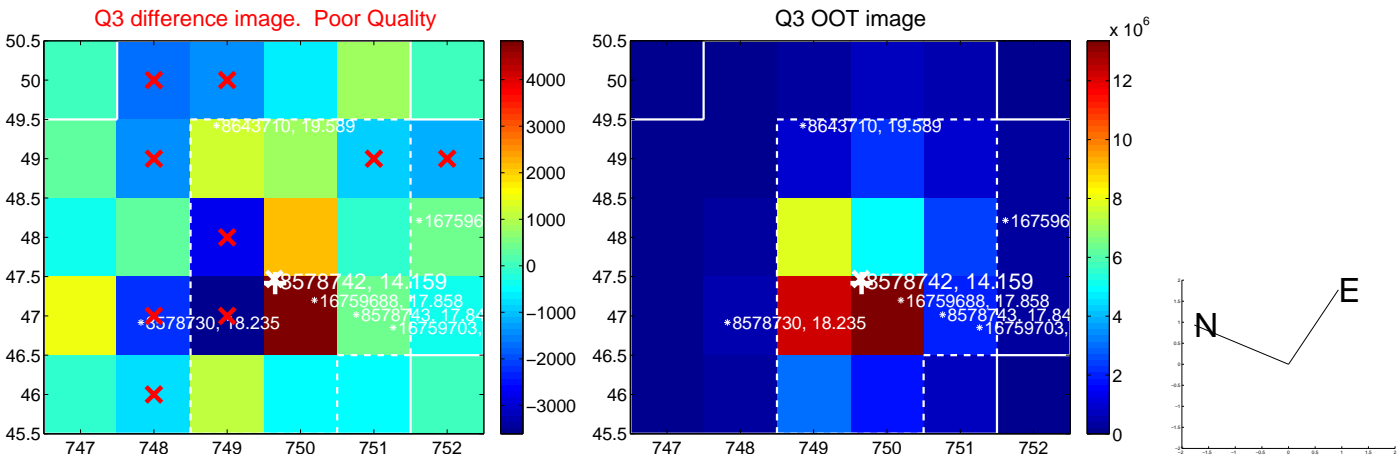
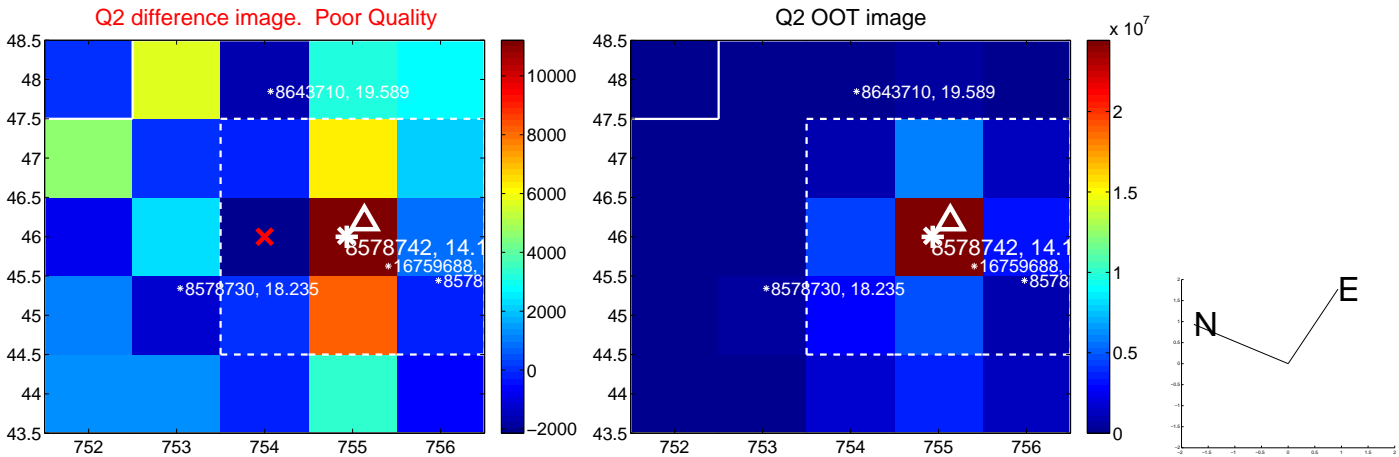
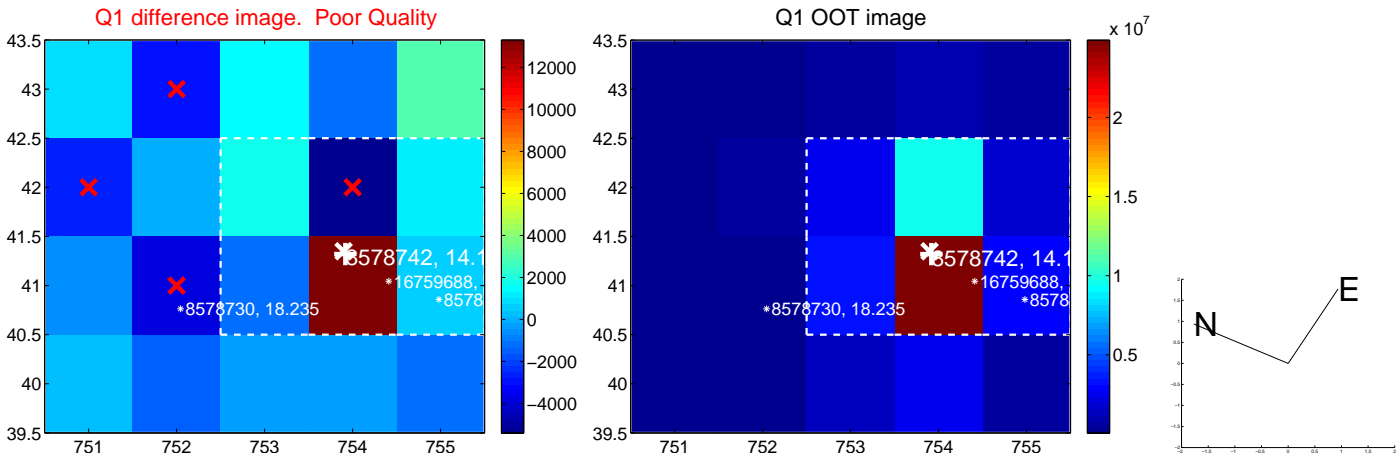


offset from photometric centroids

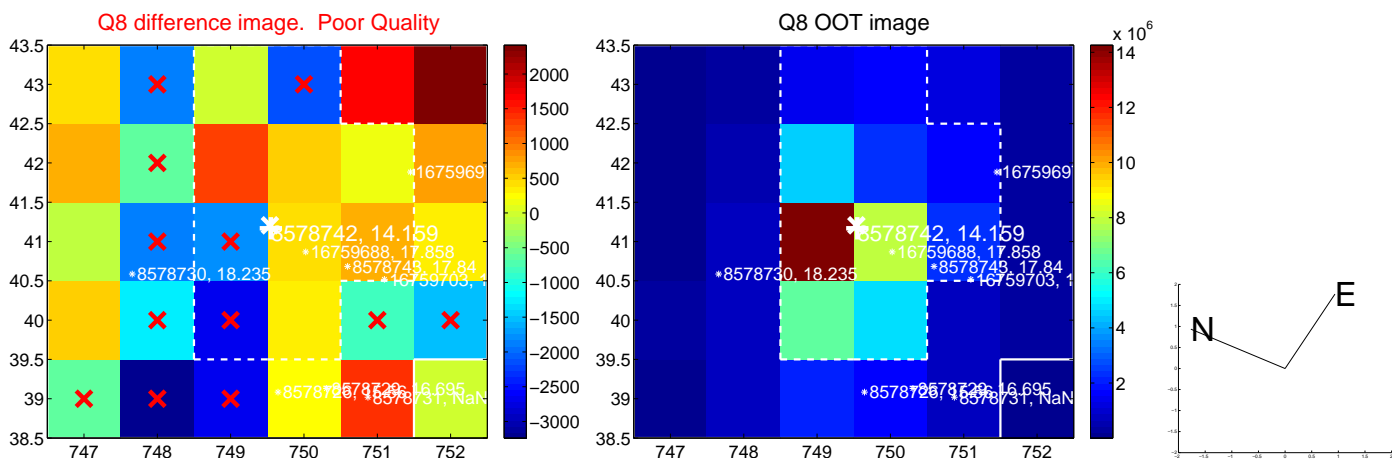
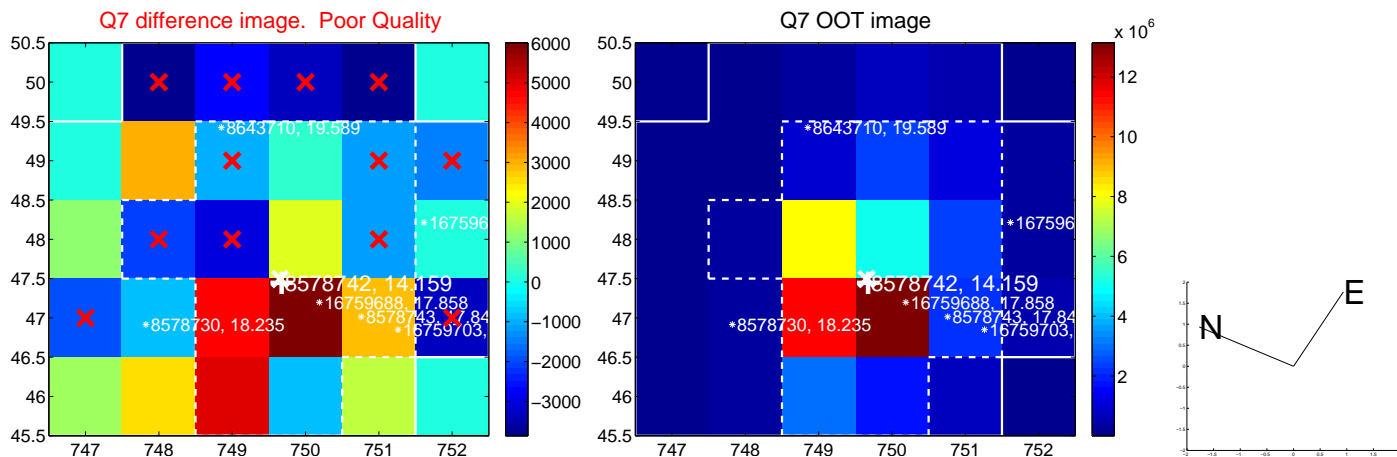
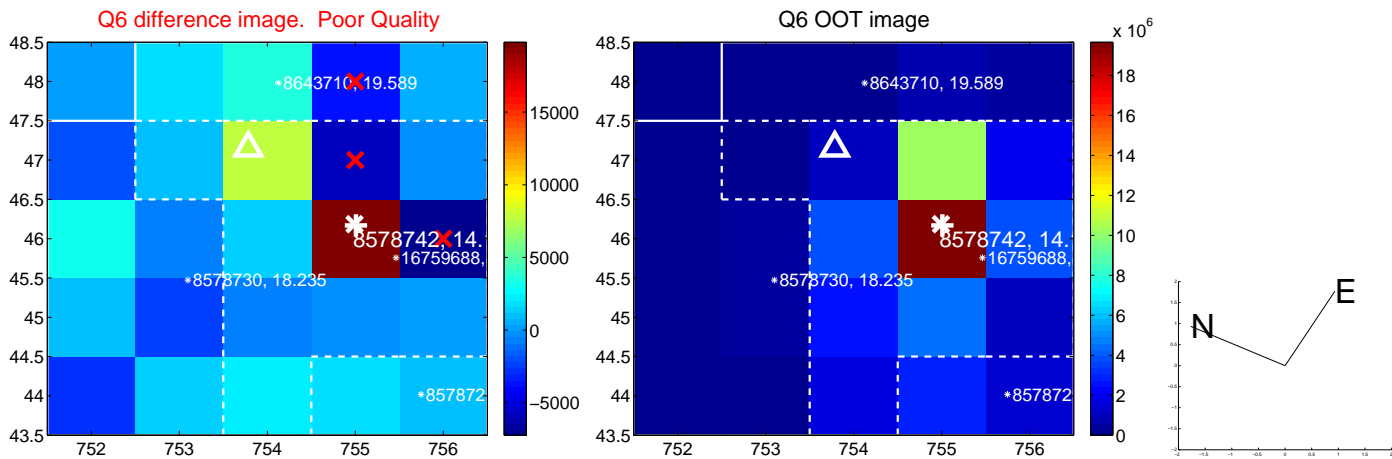
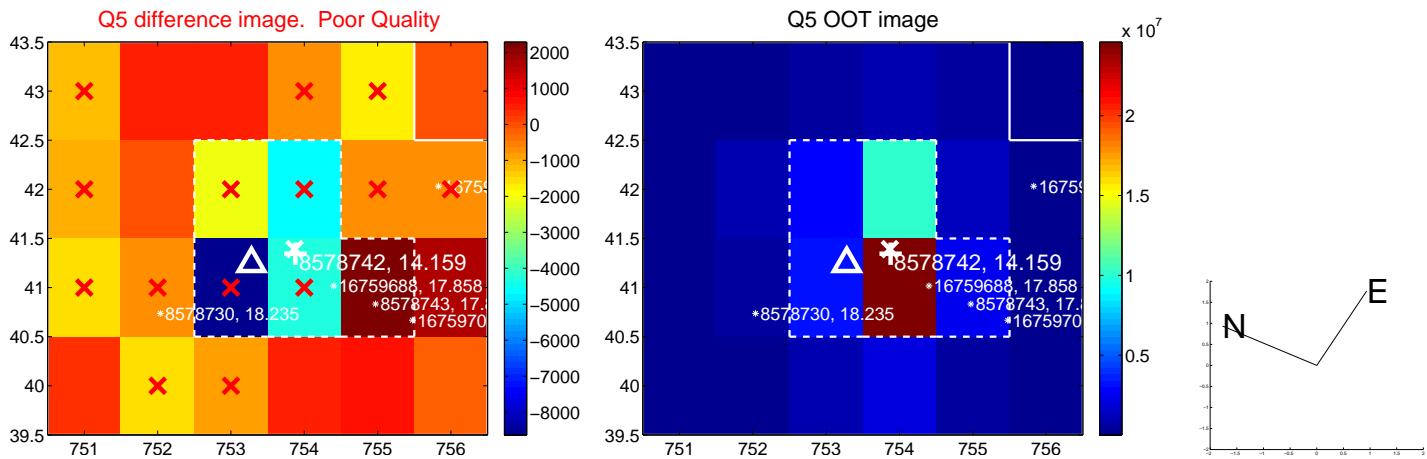


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

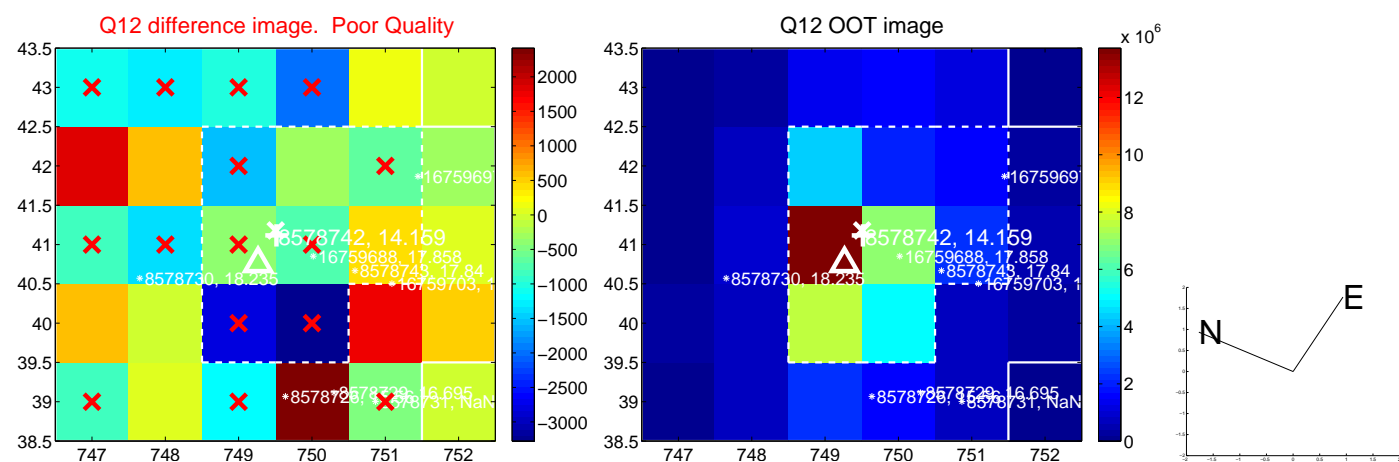
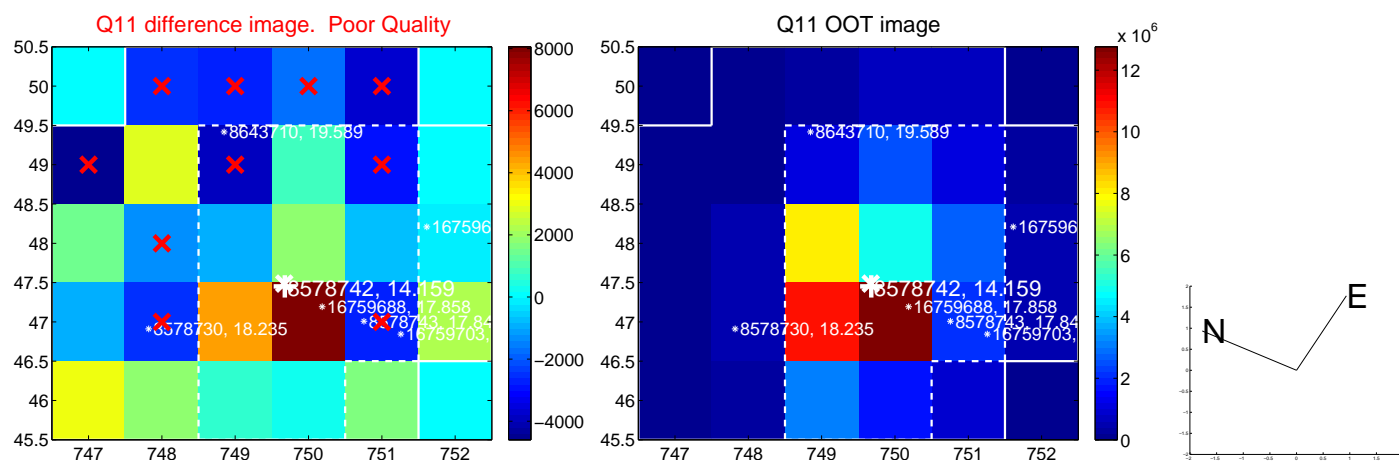
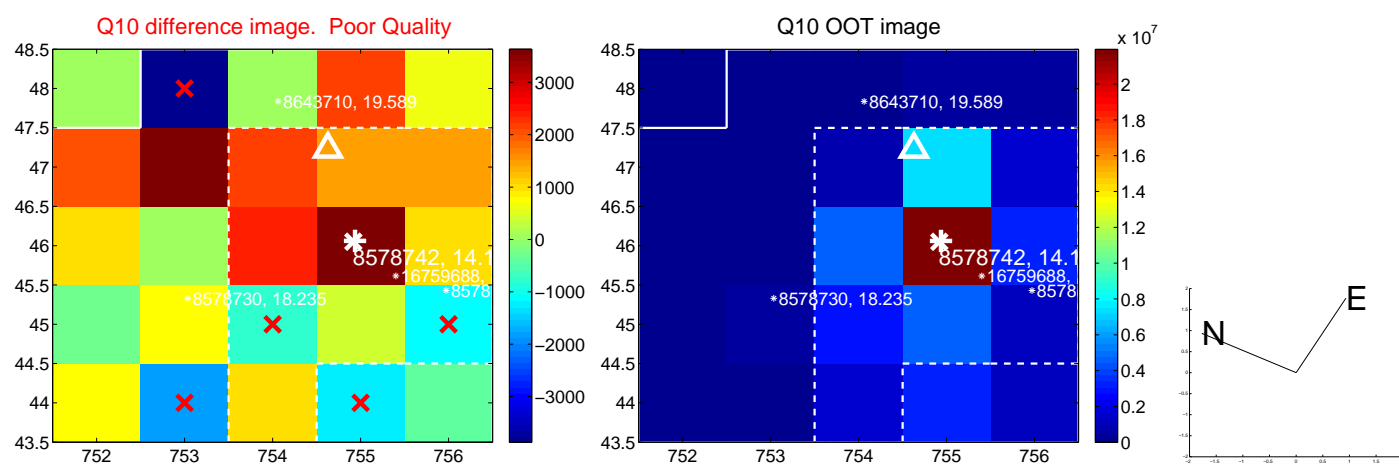
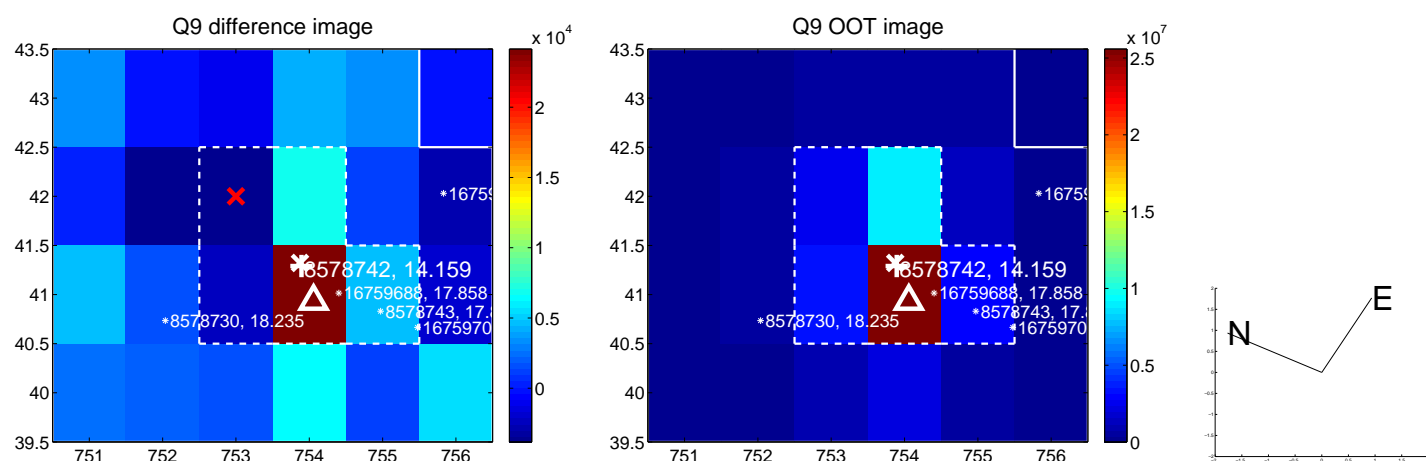
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



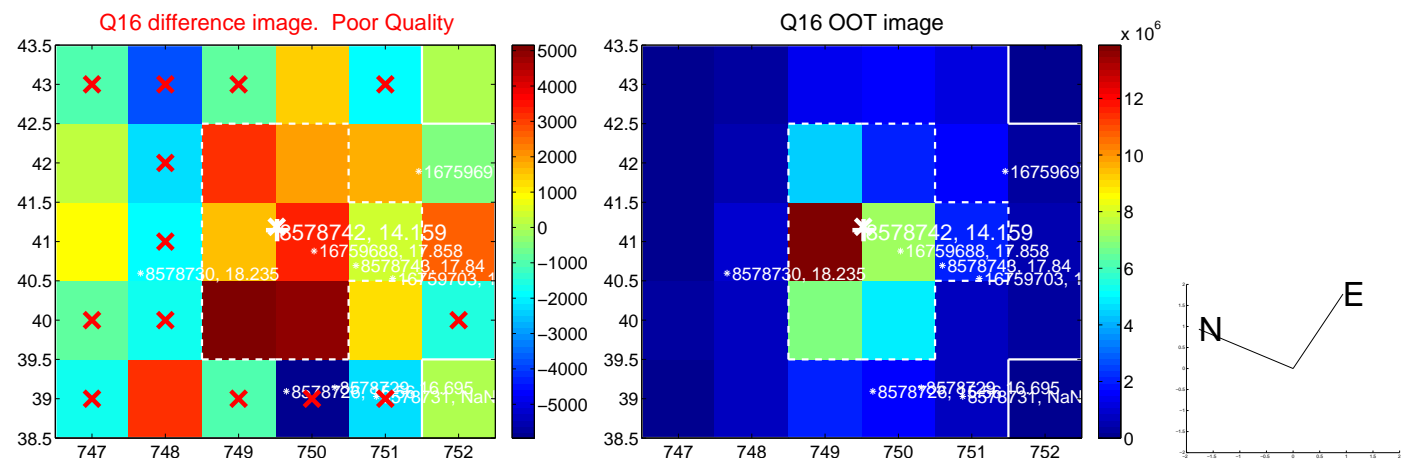
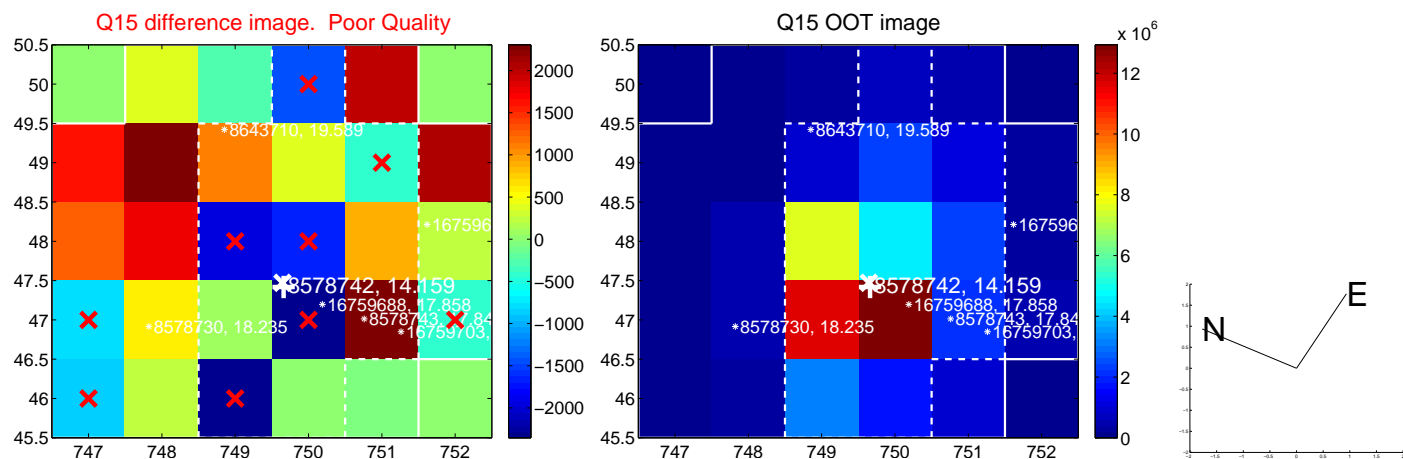
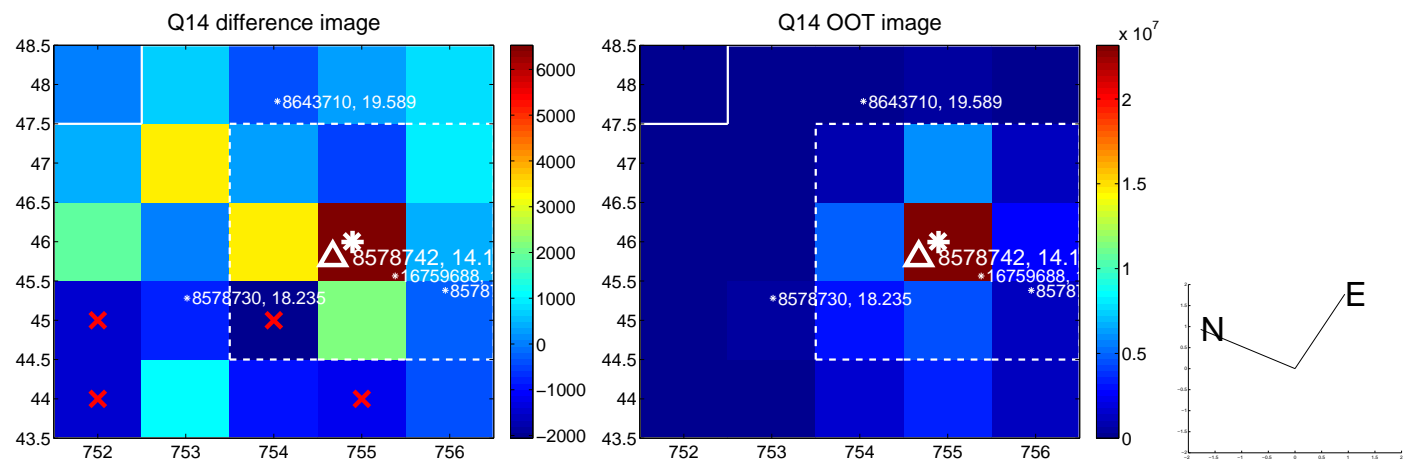
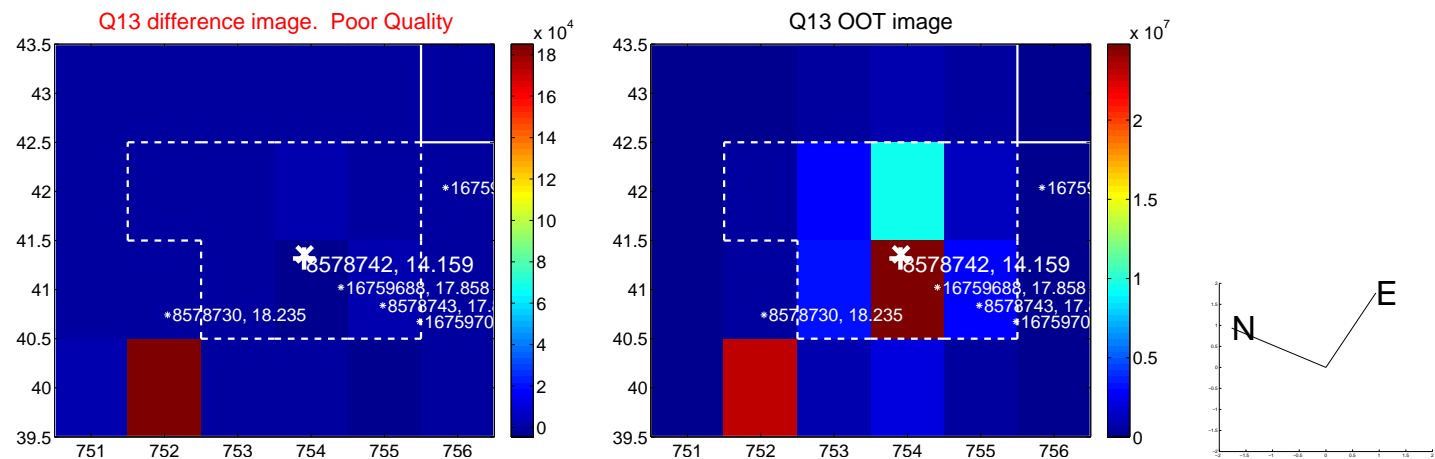
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



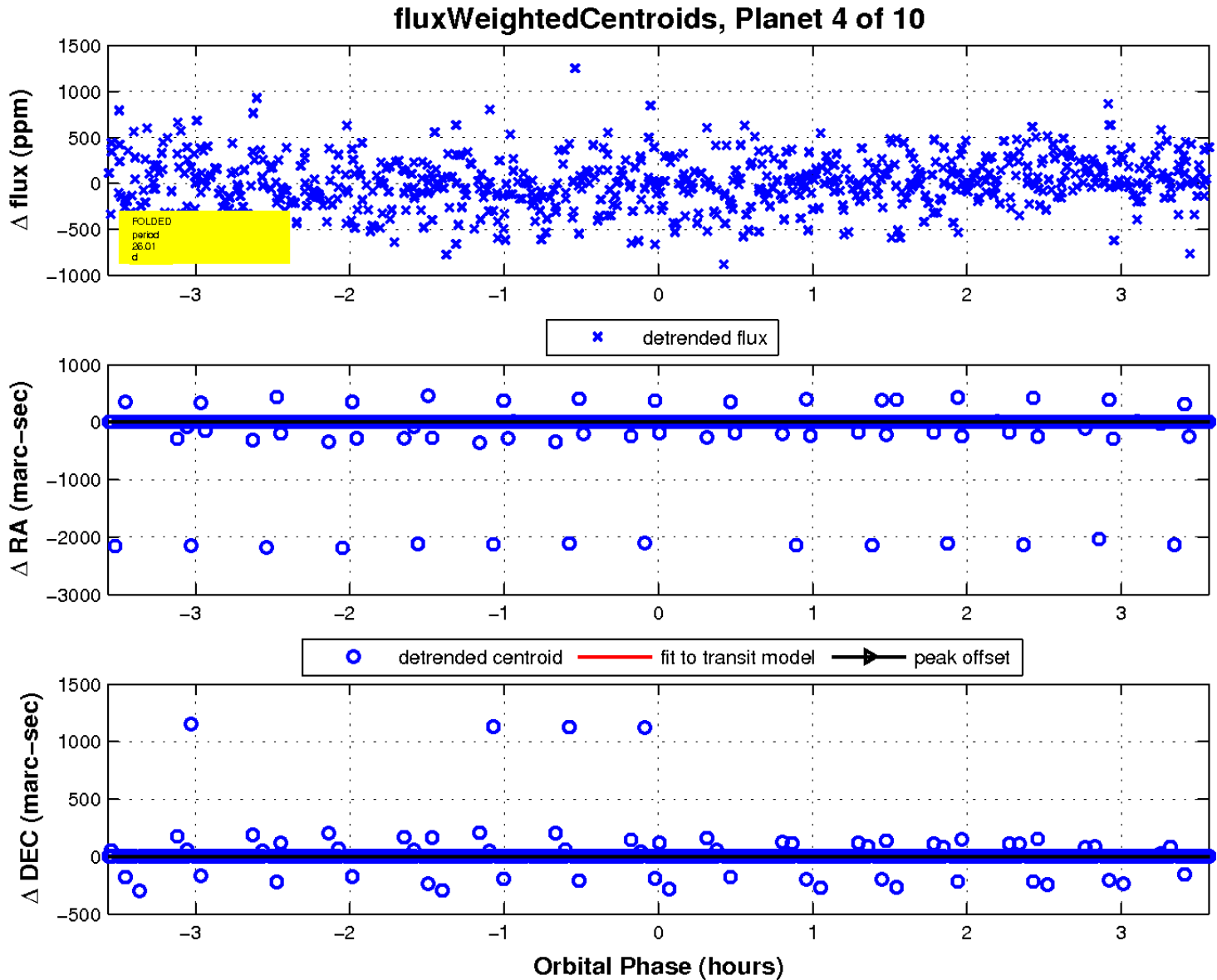
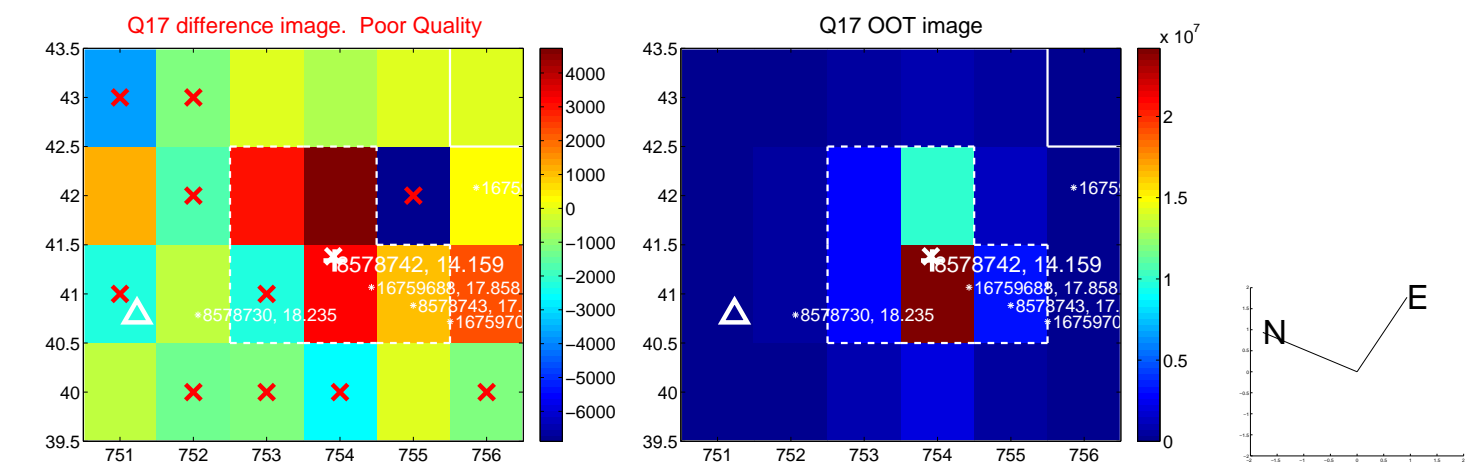
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

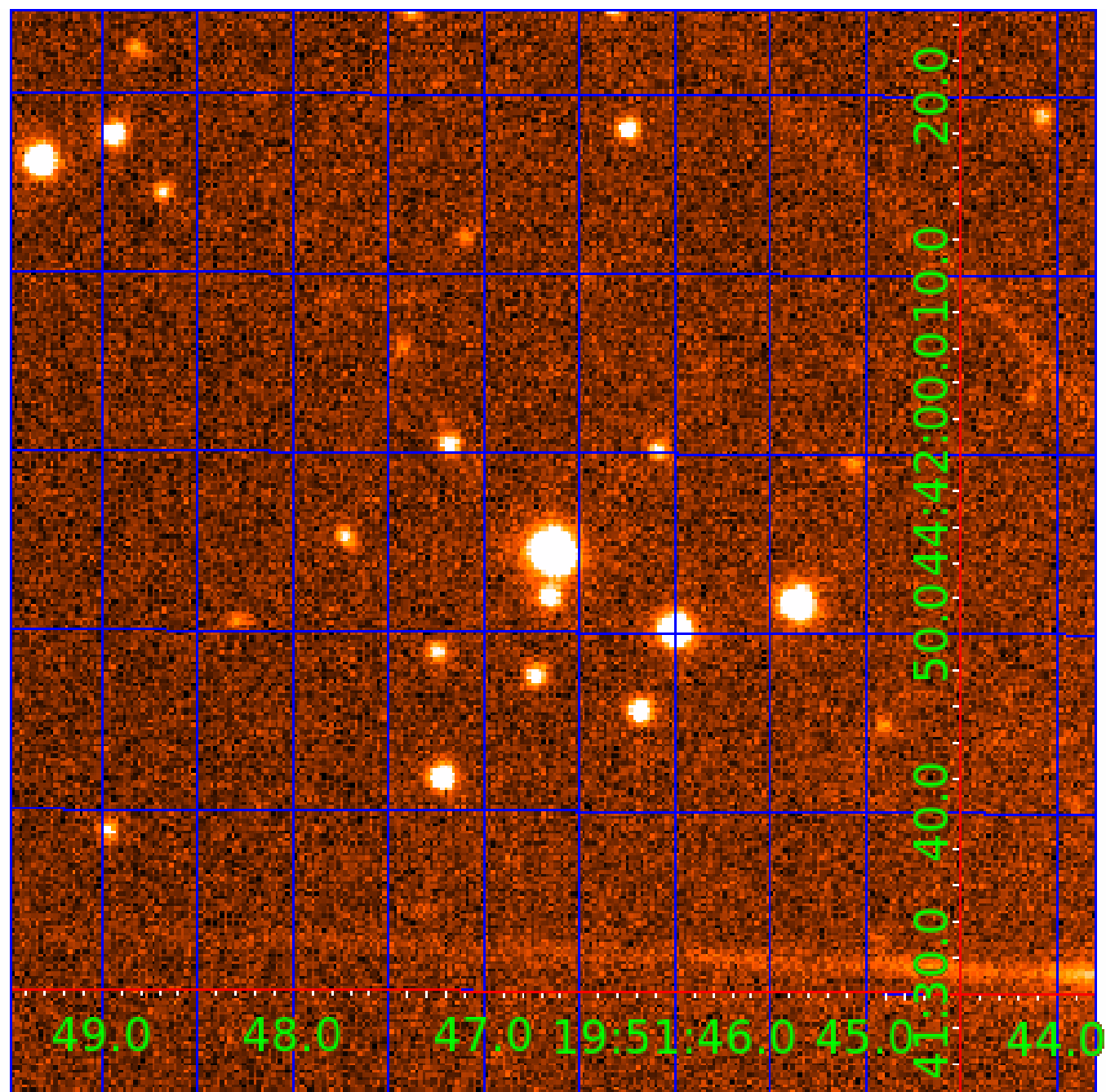


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

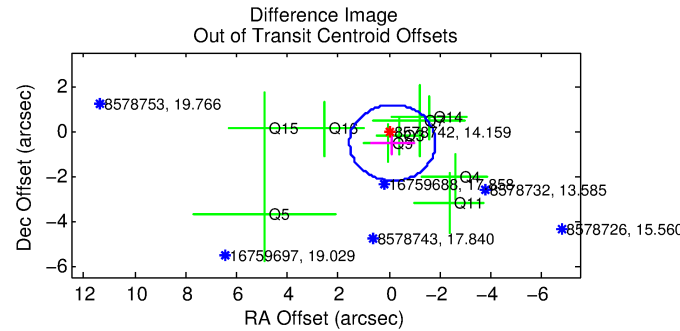
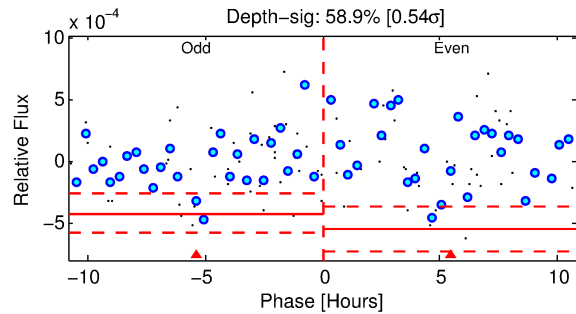
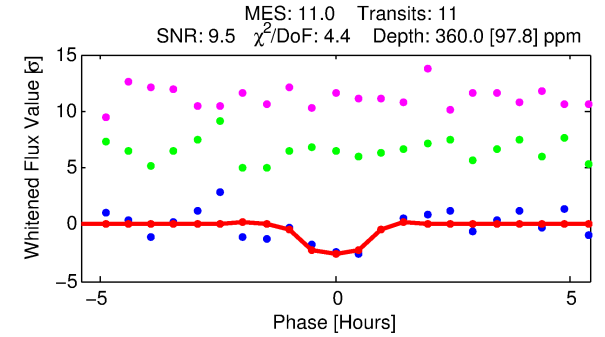
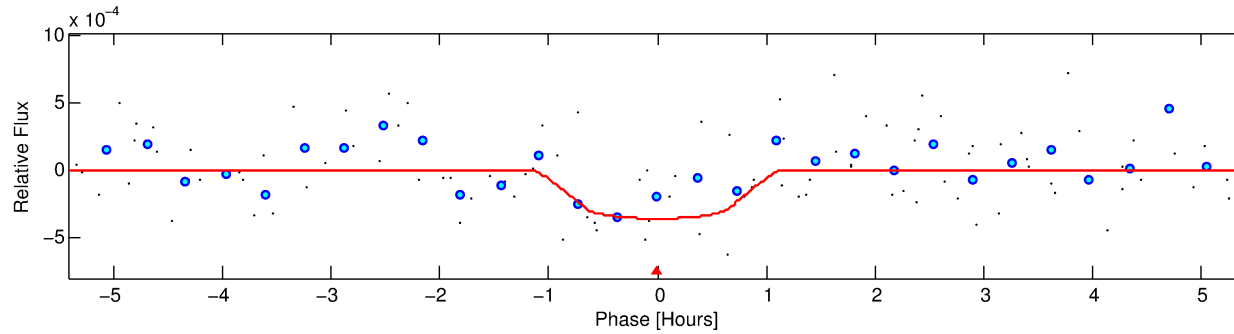
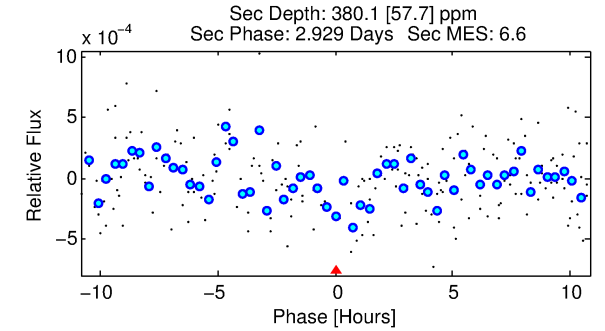
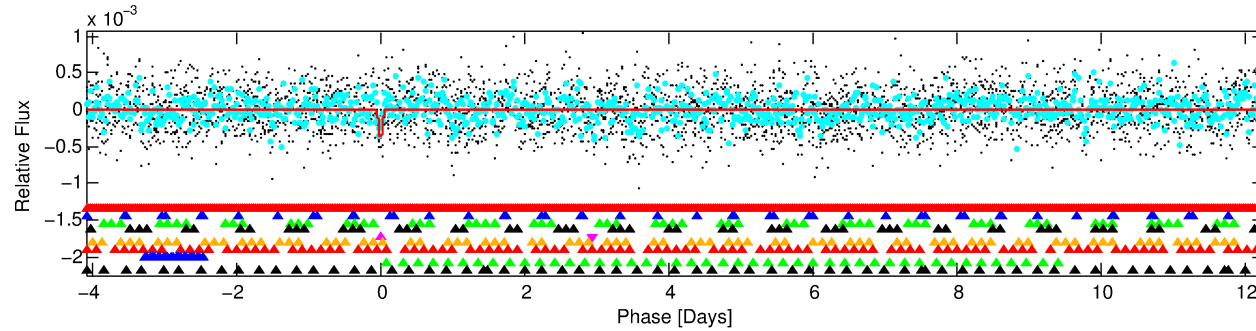
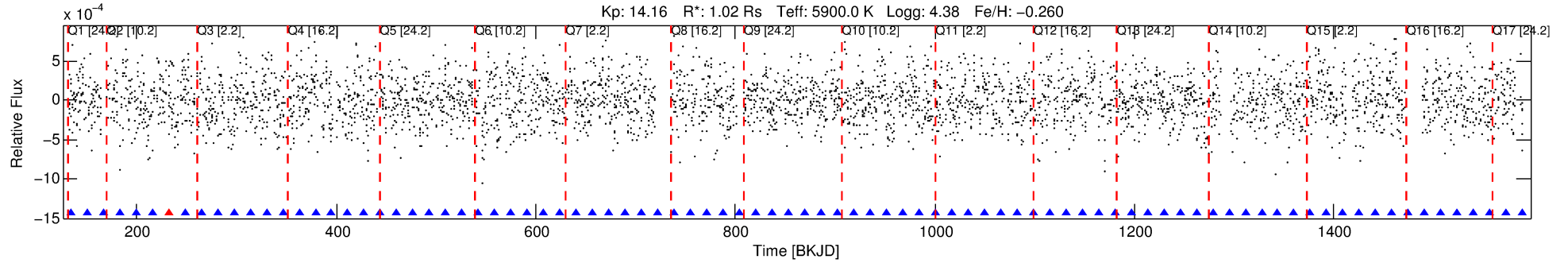
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-05

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 5 of 10 Period: 16.352 d



DV Fit Results:

Period = 16.35180 [0.00023] d
Epoch = 133.8447 [0.0124] BKJD
Rp/R* = 0.0174 [0.0657]
a/R* = 68.67 [1223.11]
b = 0.21 [79.66]
Seff = 76.33 [27.90]
Teq = 754 [69] K
Rp = 1.95 [7.36] Re
a = 0.1222 [0.0285] AU
Ag = 821.75 [6198.20] [0.13 sigma]
Teffp = 6239 [11754] K [0.47 sigma]

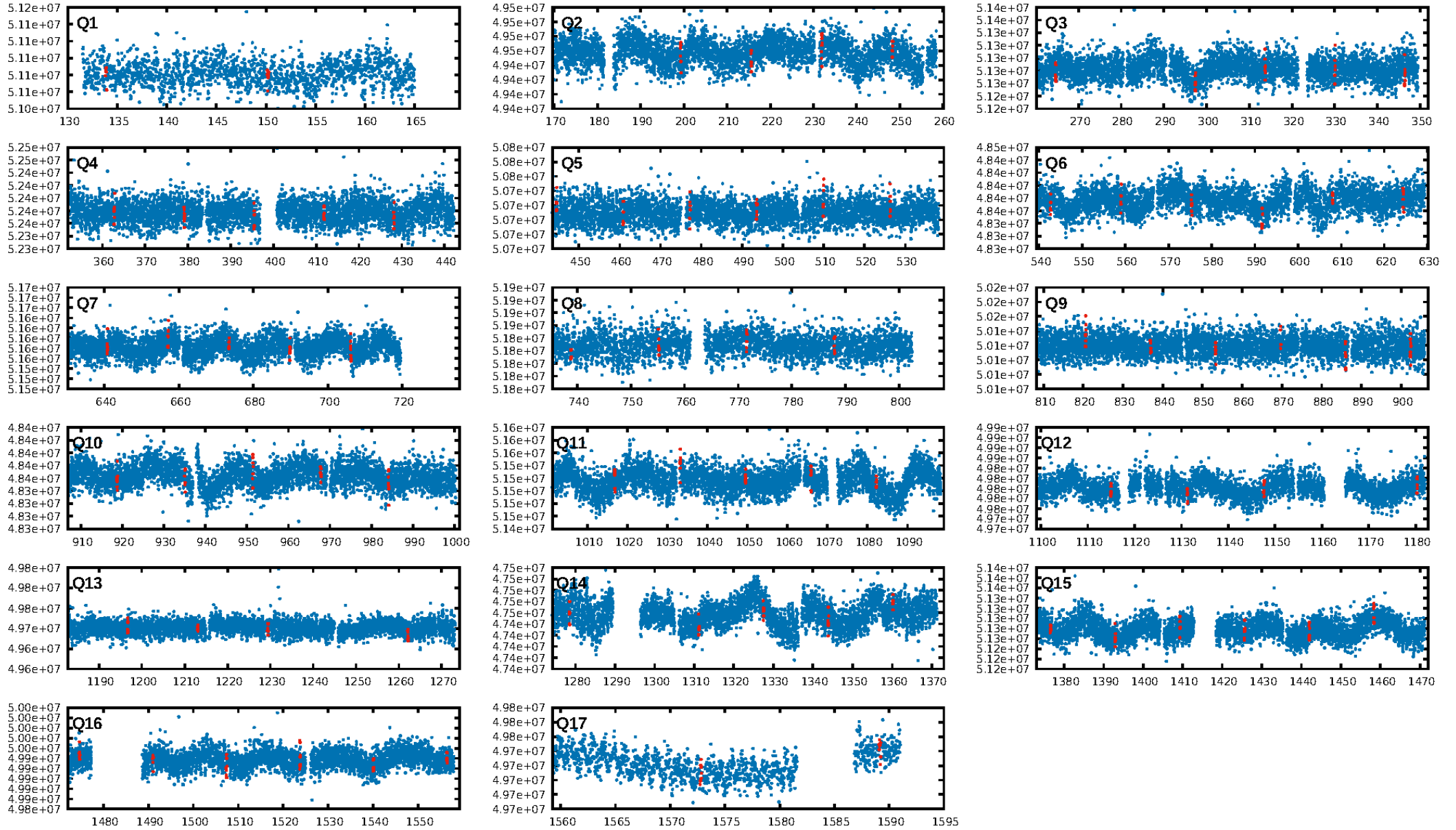
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.26 sigma]
LongPeriod-sig: 100.0% [17.15 sigma]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 18.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.90 [9/10]
GhostDiagnostic-chr: 1.145
Centroid-sig: 5.2%
Centroid-so: 1.732 arcsec [2.54 sigma]
OotOffset-rm: 0.544 arcsec [0.97 sigma]
KicOffset-rm: 0.675 arcsec [1.11 sigma]
OotOffset-st: 1/4/2/2 [9]
KicOffset-st: 1/4/2/2 [9]
DiffImageQuality-fgm: 0.22 [2/9]
DiffImageOverlap-fno: 0.59 [10/17]

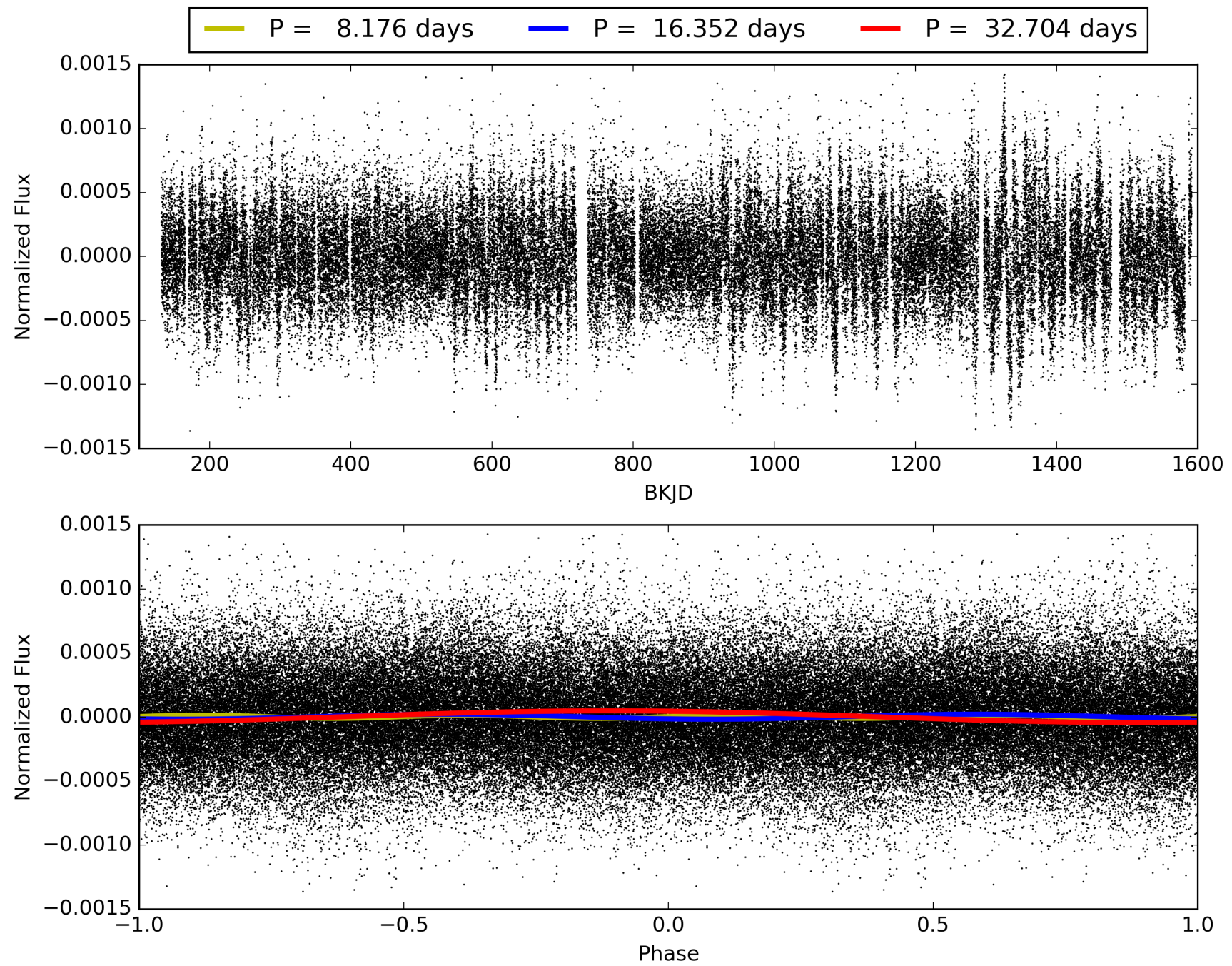
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:36 Z

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

TCE 008578742-05, PDC Light Curves

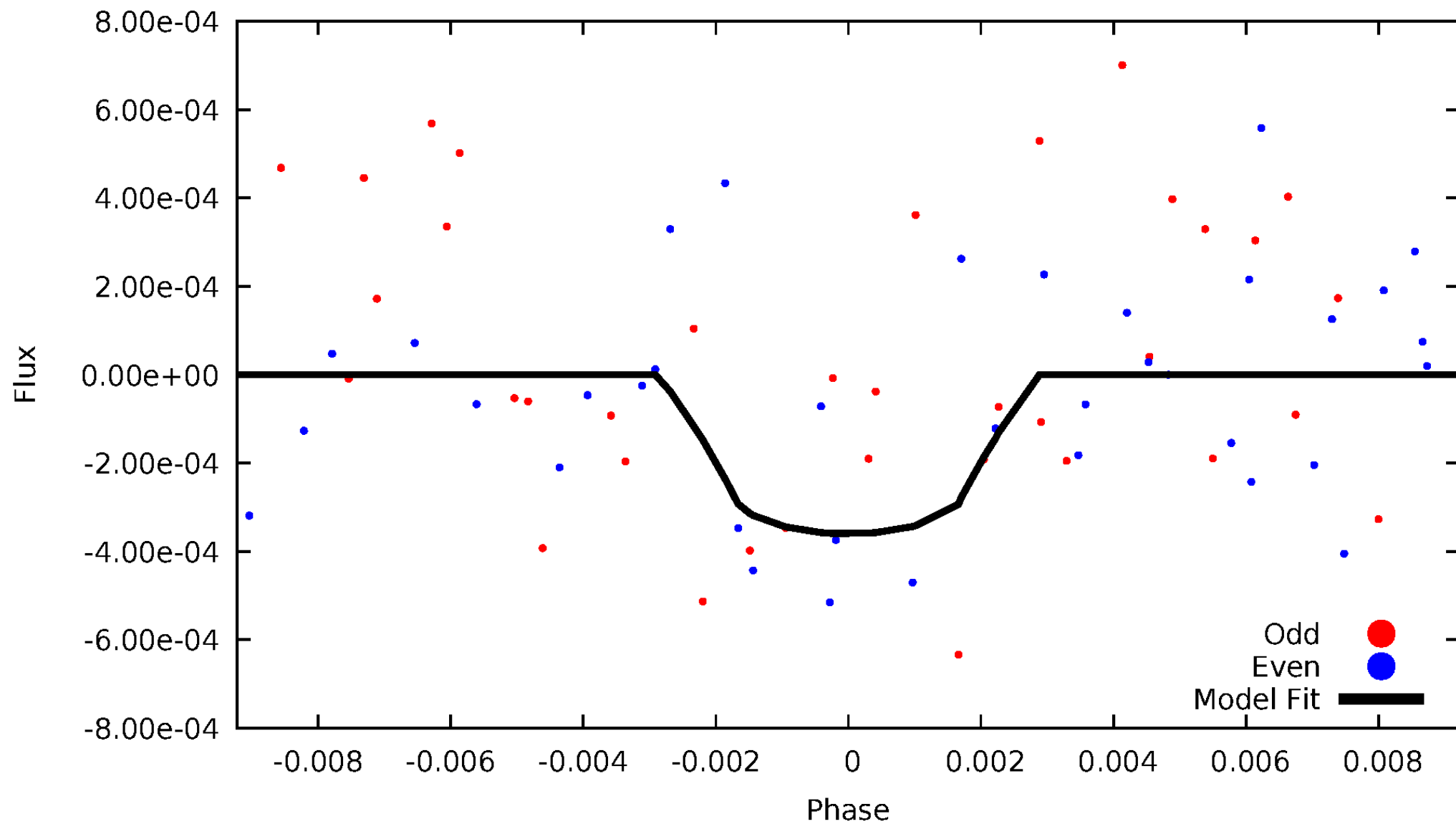


TCE 008578742-05



DV Odd/Even

TCE 008578742-05

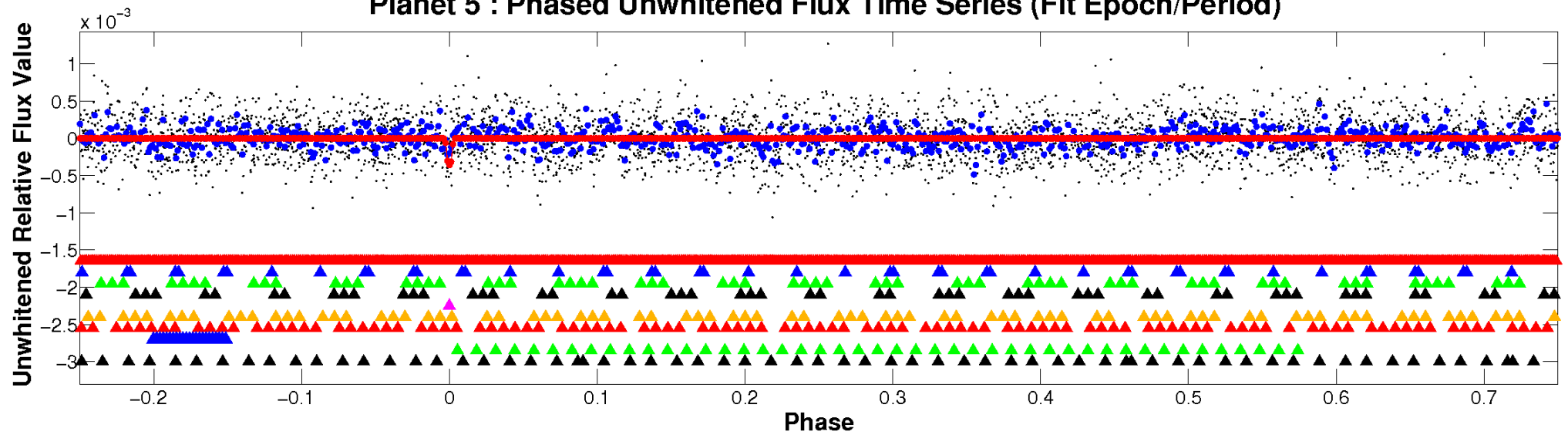


ALT Odd/Even

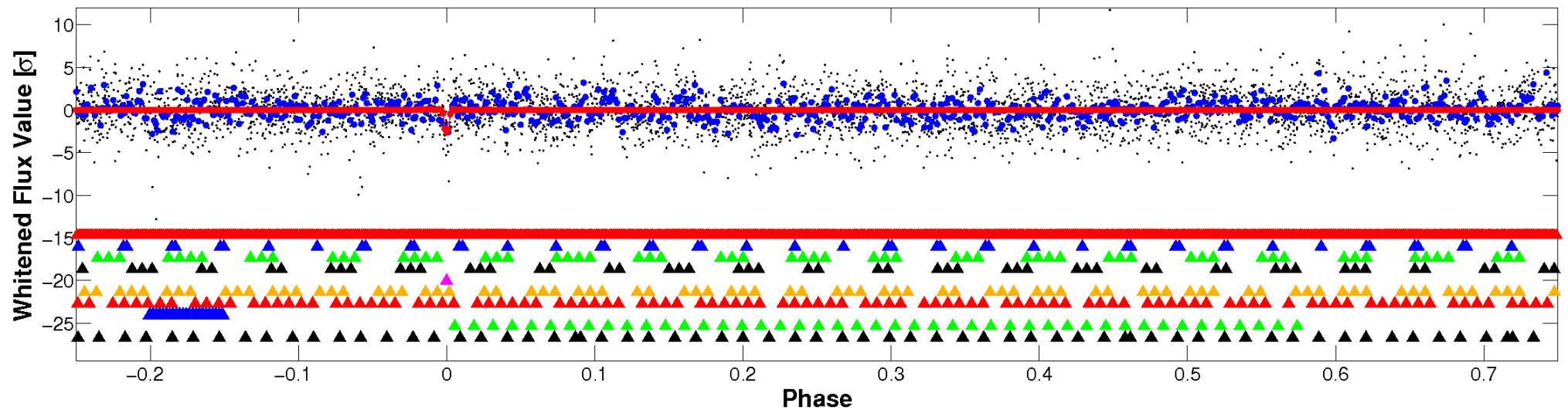
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

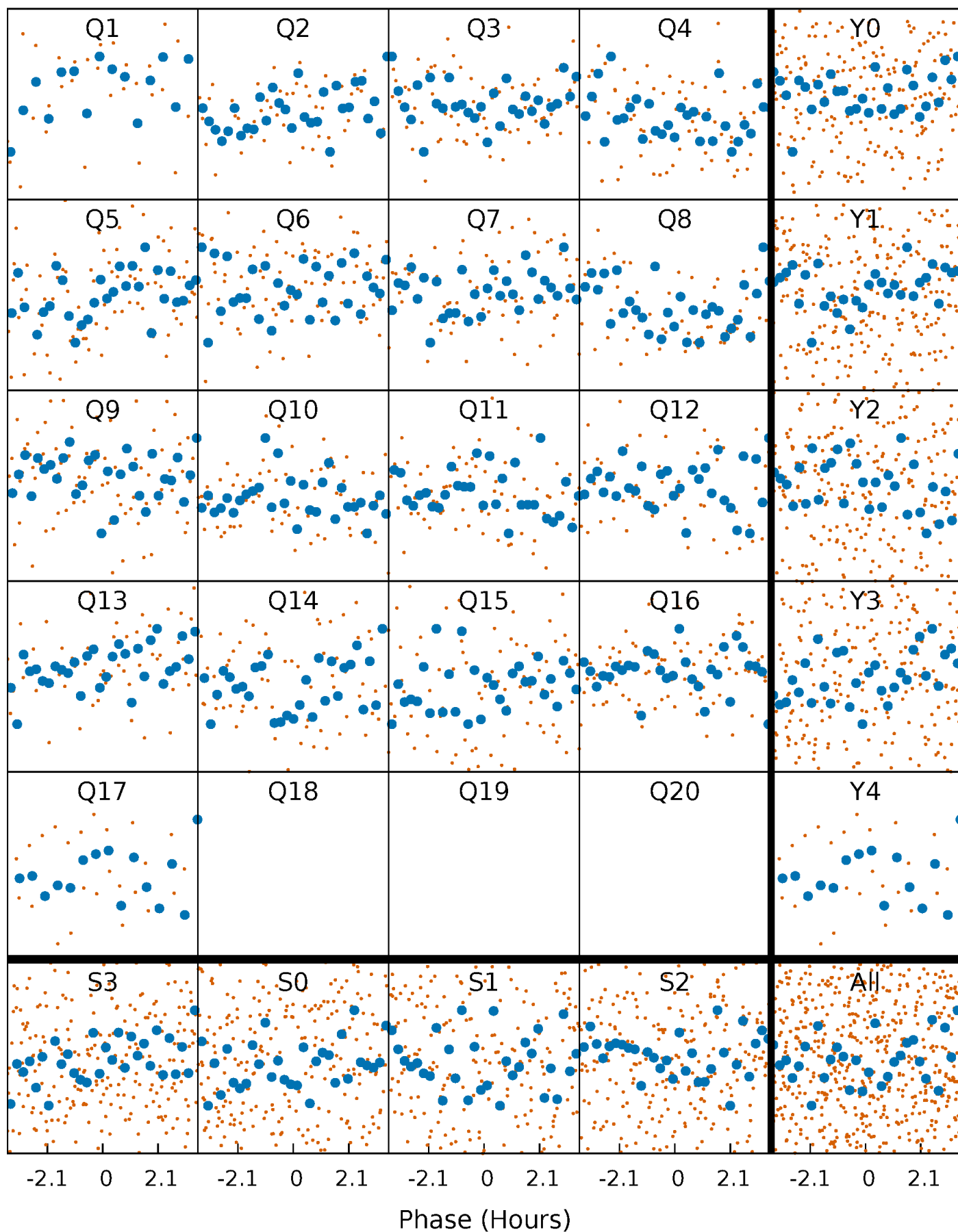


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



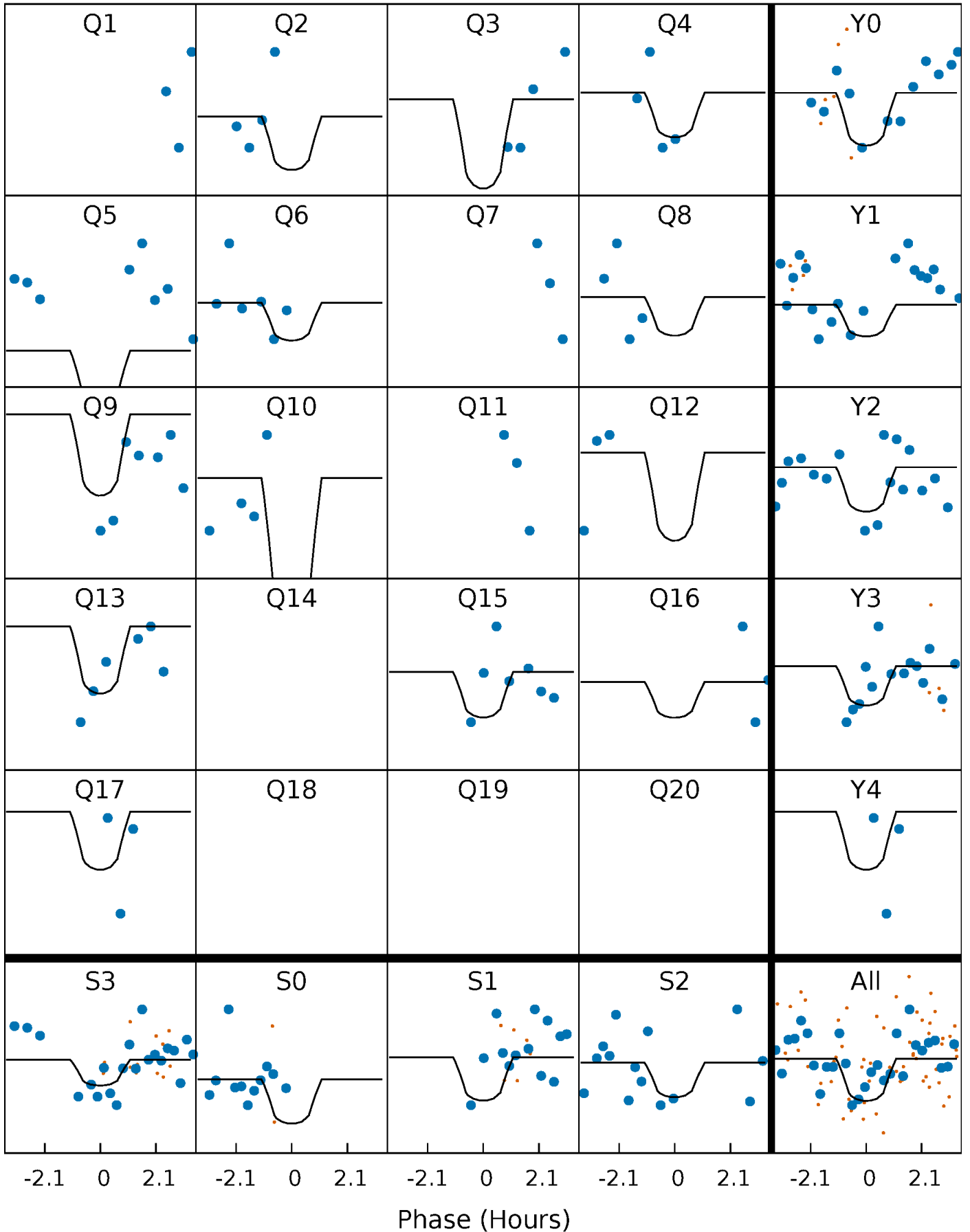
PDC Quarter-Phased Transit Curves

TCE 008578742-05 P= 16.351802 Days $T_0=133.844665$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008578742-05 P= 16.351802 Days $T_0=133.844665$ (BKJD)

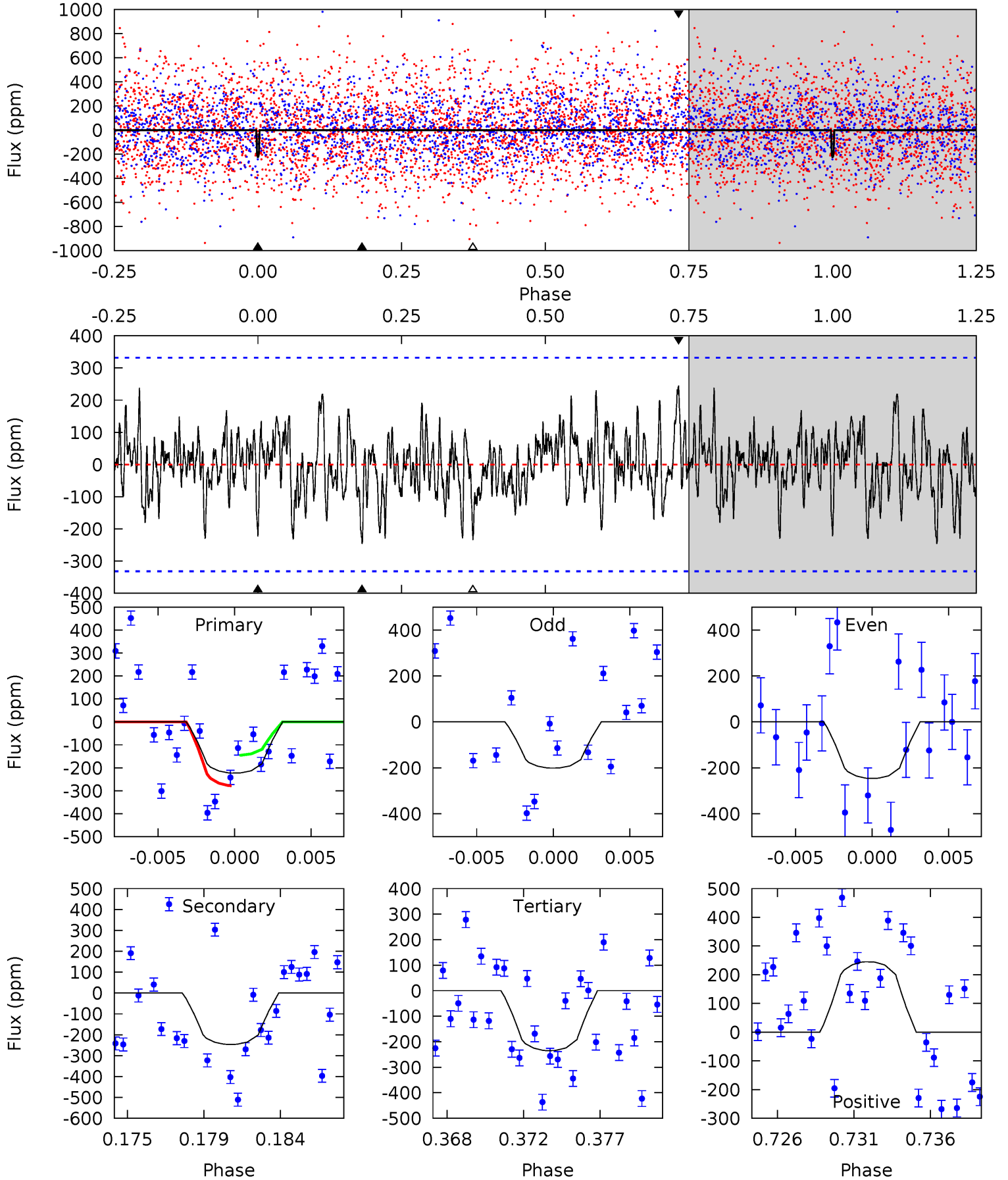


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008578742-05, P = 16.351802 Days, E = 117.492863 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.48 | 3.84 | 3.66 | 3.82 | 5.17 | 2.83 | 1.27 | -0.18 | -0.34 | 0.18 | 0.02 | 0.35 | 0.88 | 0.50 | 1.03 |



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|-------------------|
| DV | -246 ± 64 | $6.16^{+6.88}_{-4.26}$ | 1062^{+76}_{-58} | 3617^{+1995}_{-714} | 56^{+472}_{-44} |
| Alt. | N/A | N/A | N/A | N/A | N/A |

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

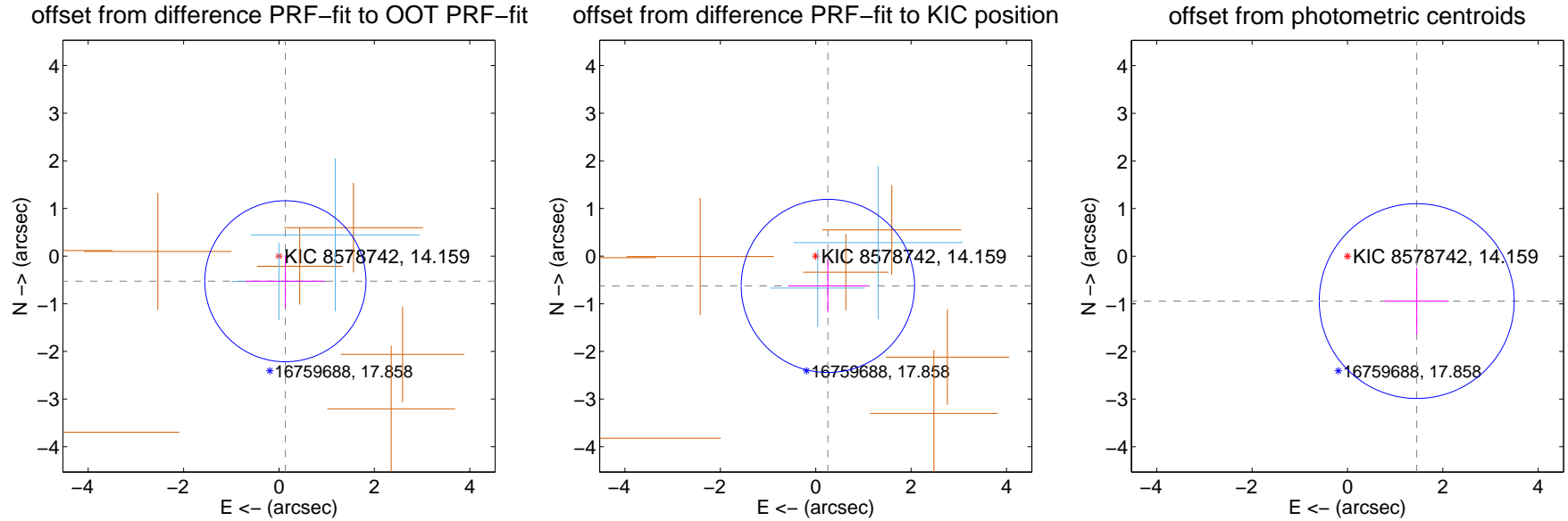
DV Centroid Data

Supplemental centroid analysis for 008578742-05. Kepler magnitude: 14.16. Transit SNR 9.48

There are 2 quarters with good PRF difference image offsets

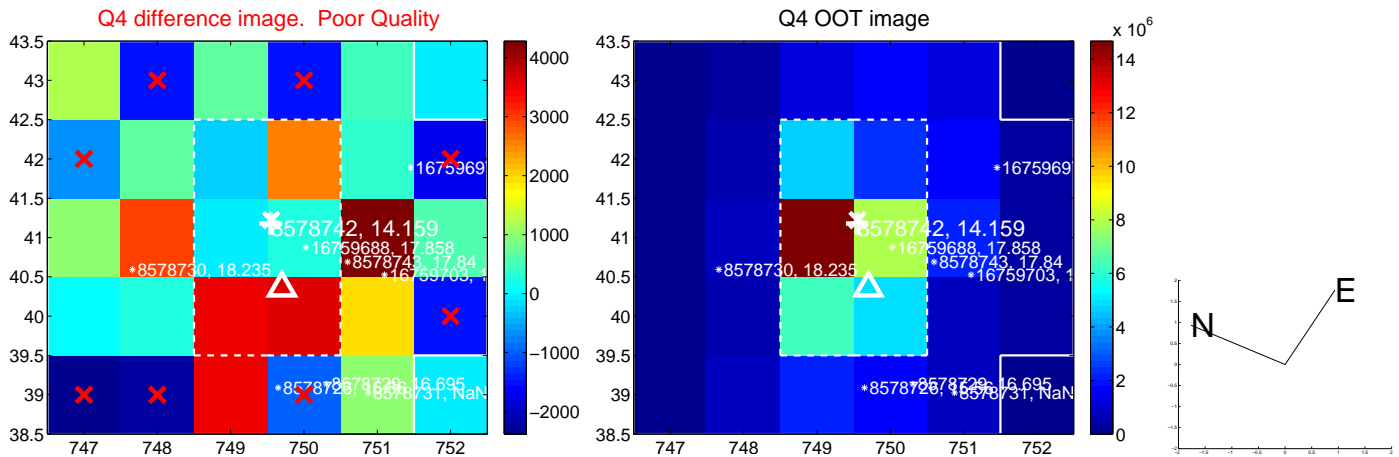
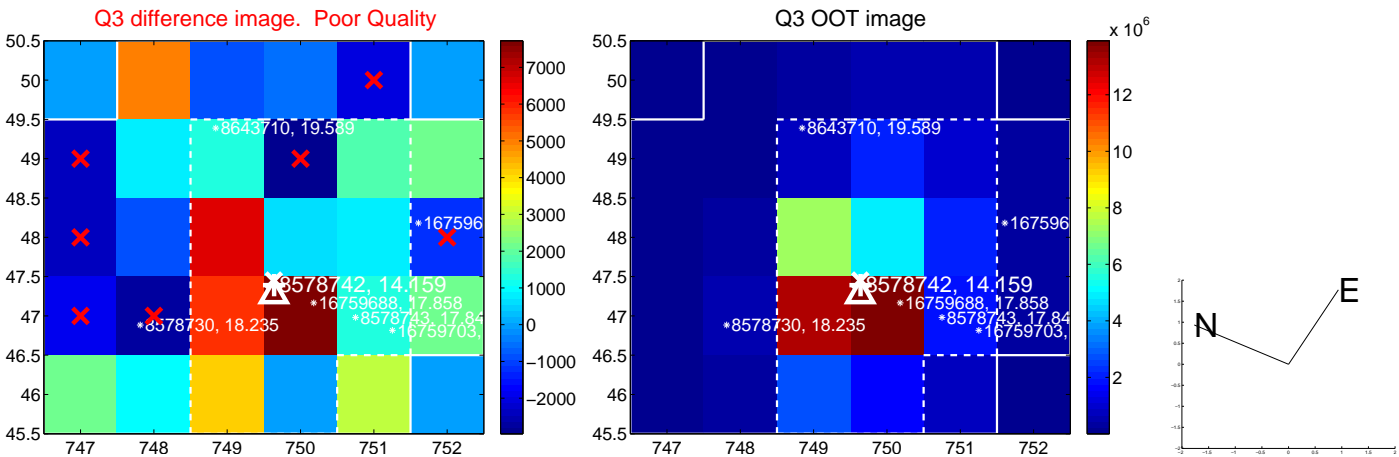
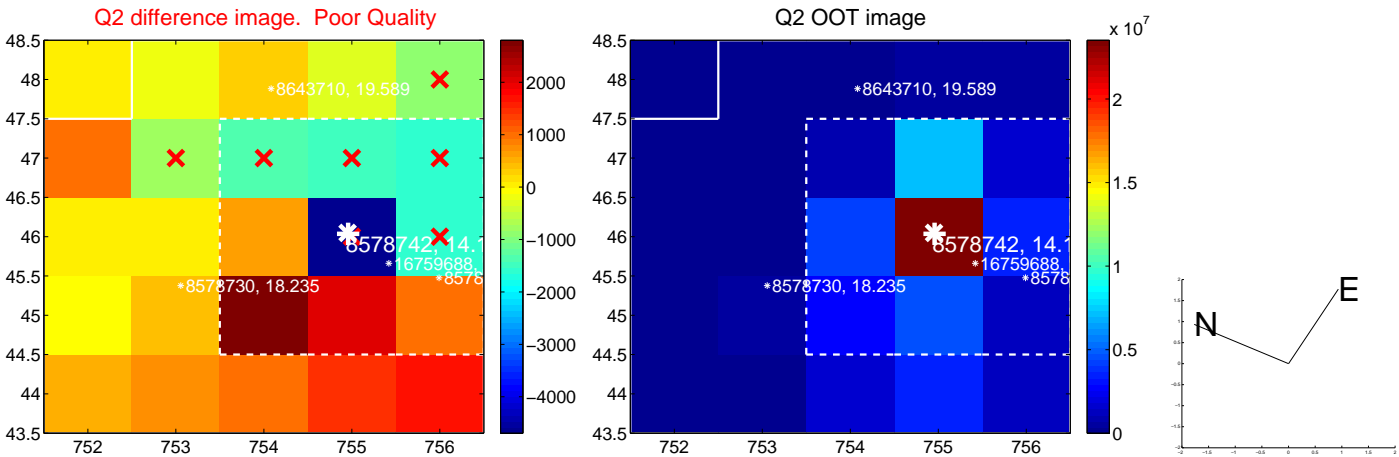
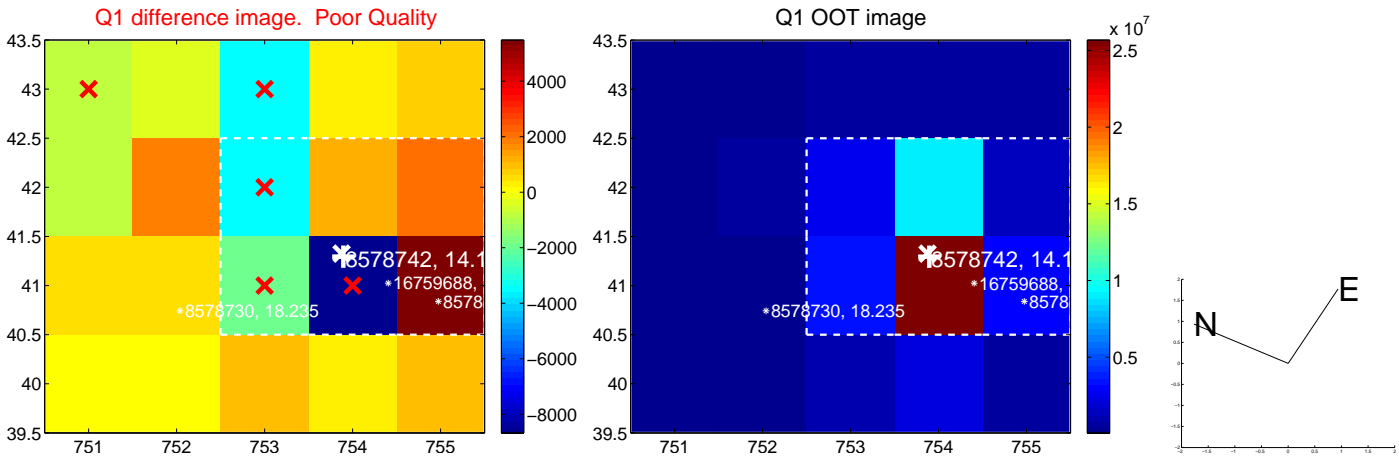
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.544 ± 0.563 | 0.97 | -0.134 ± 0.833 | -0.527 ± 0.541 |
| PRF-fit source offset from KIC position | 0.675 ± 0.606 | 1.11 | -0.255 ± 0.835 | -0.625 ± 0.559 |
| photometric centroid source offset | 1.73 ± 0.68 | 2.54 | -1.45 ± 0.67 | -0.94 ± 0.71 |

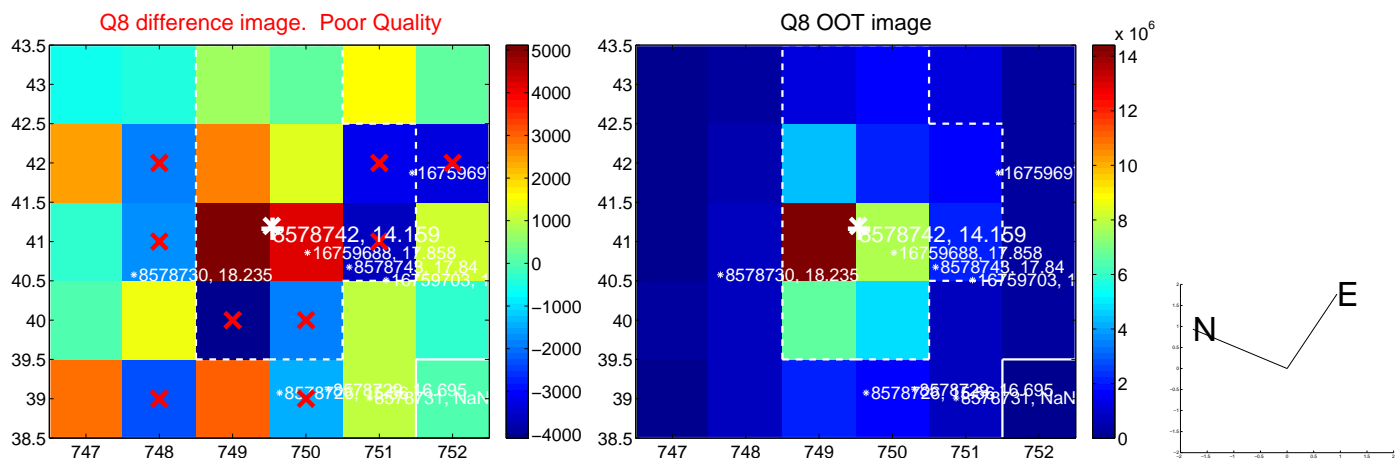
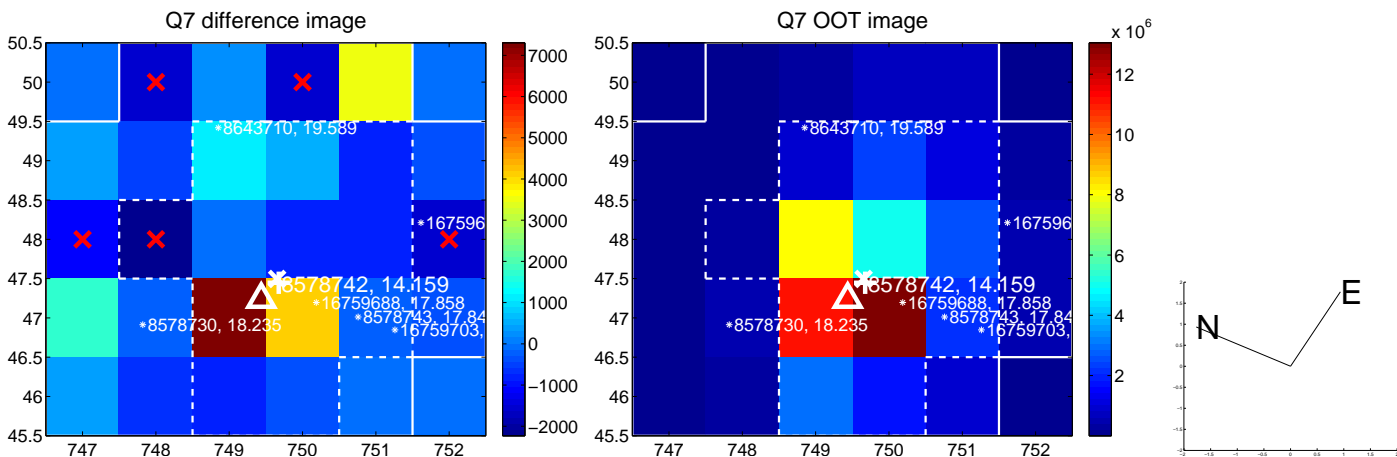
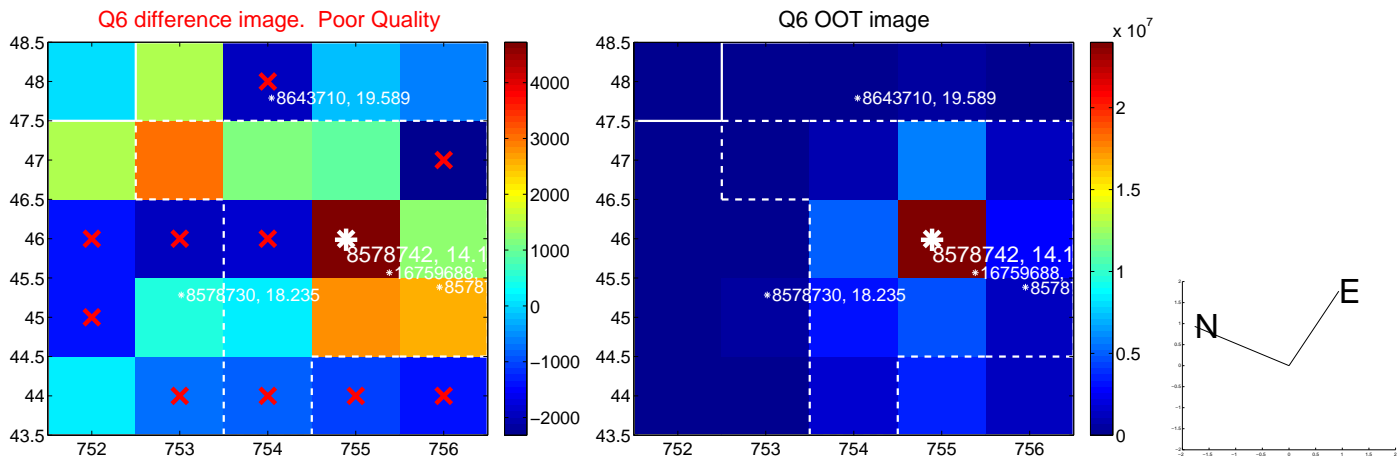
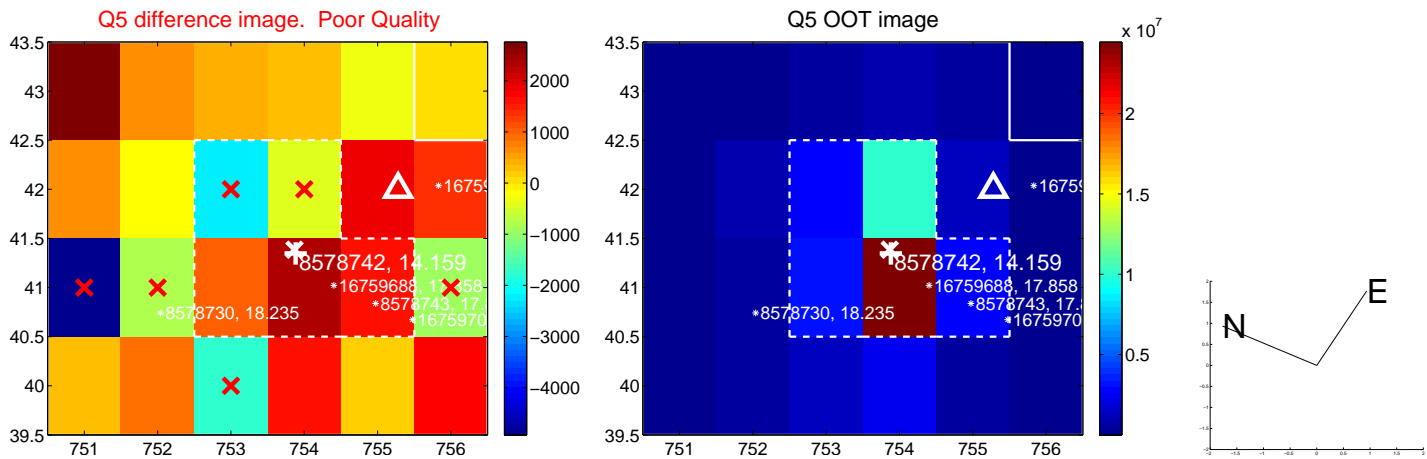


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

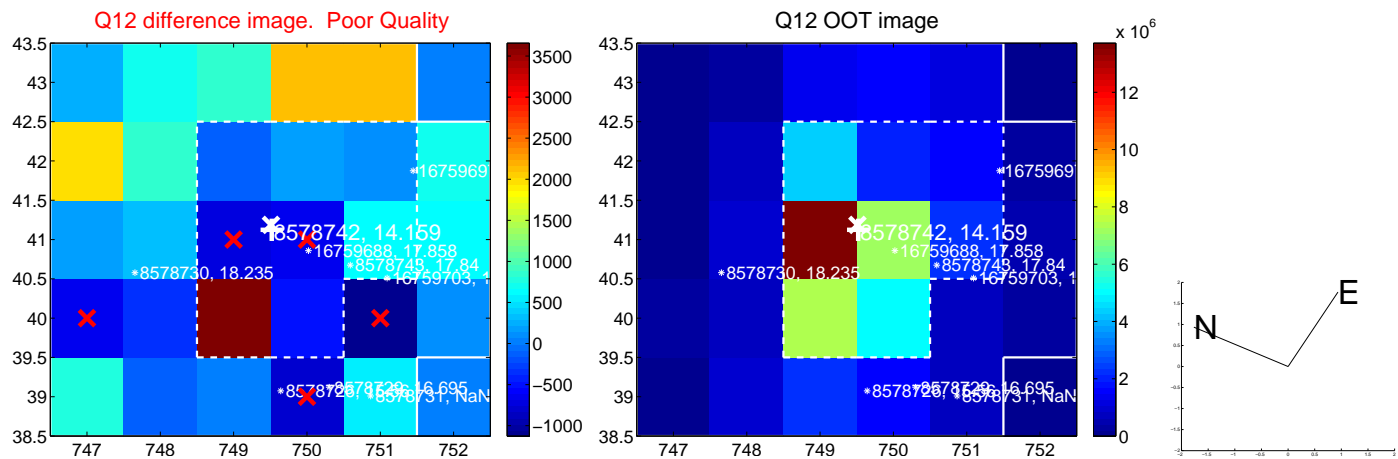
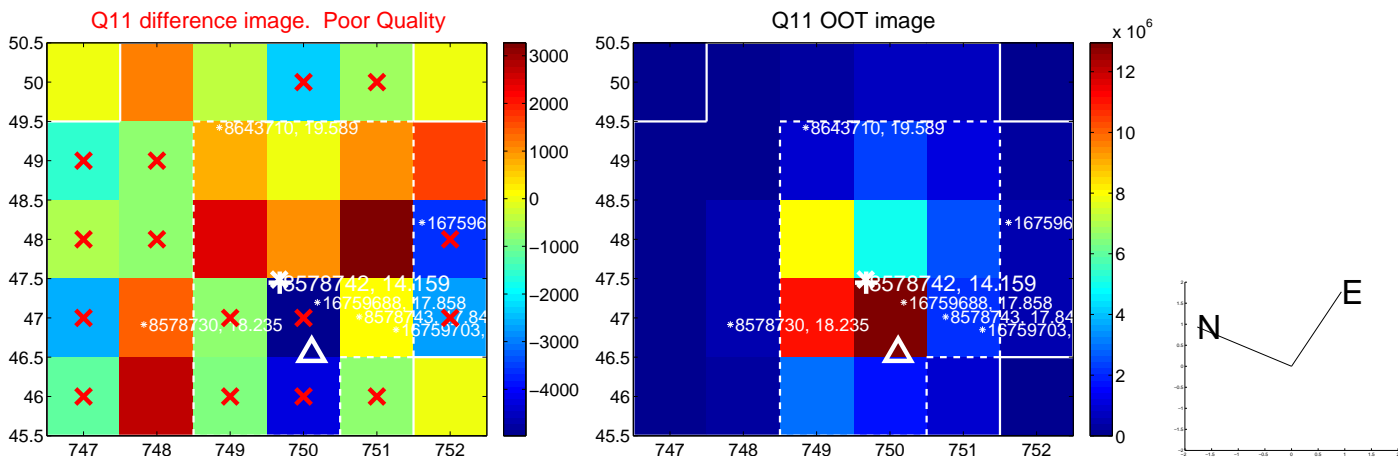
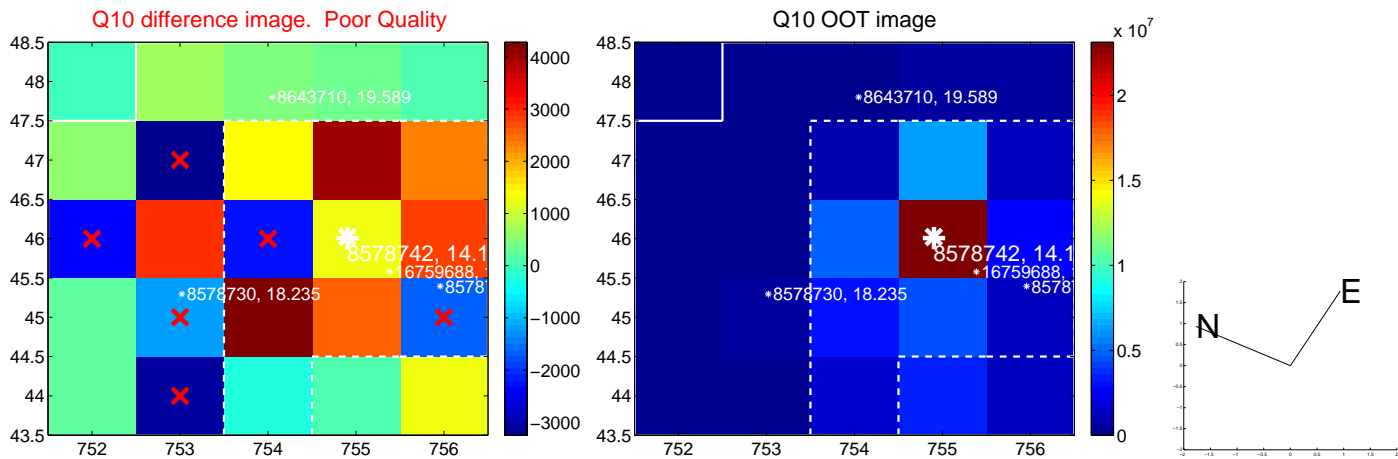
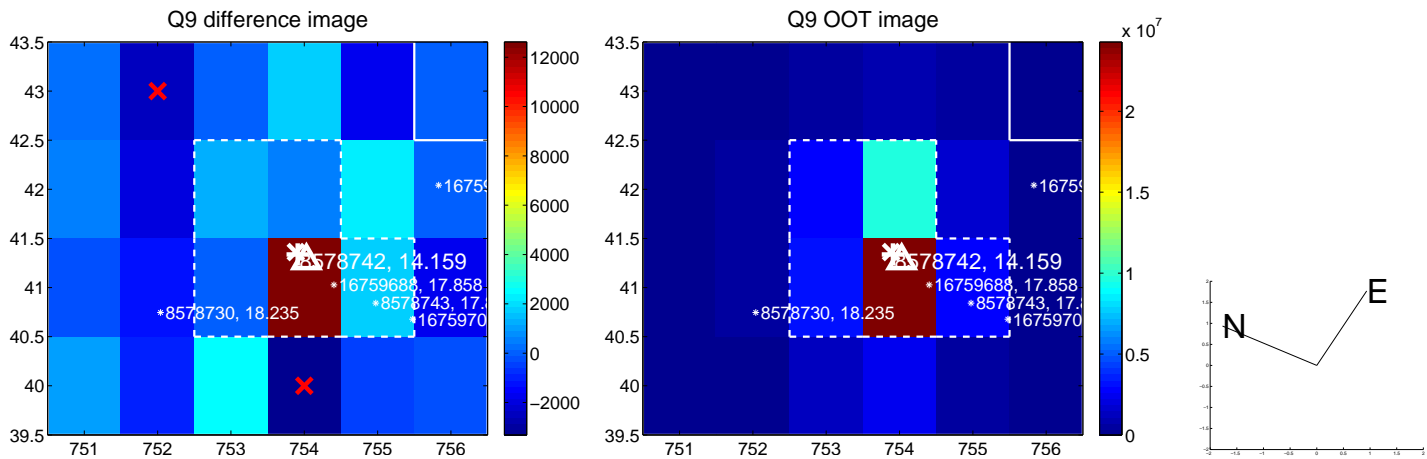
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



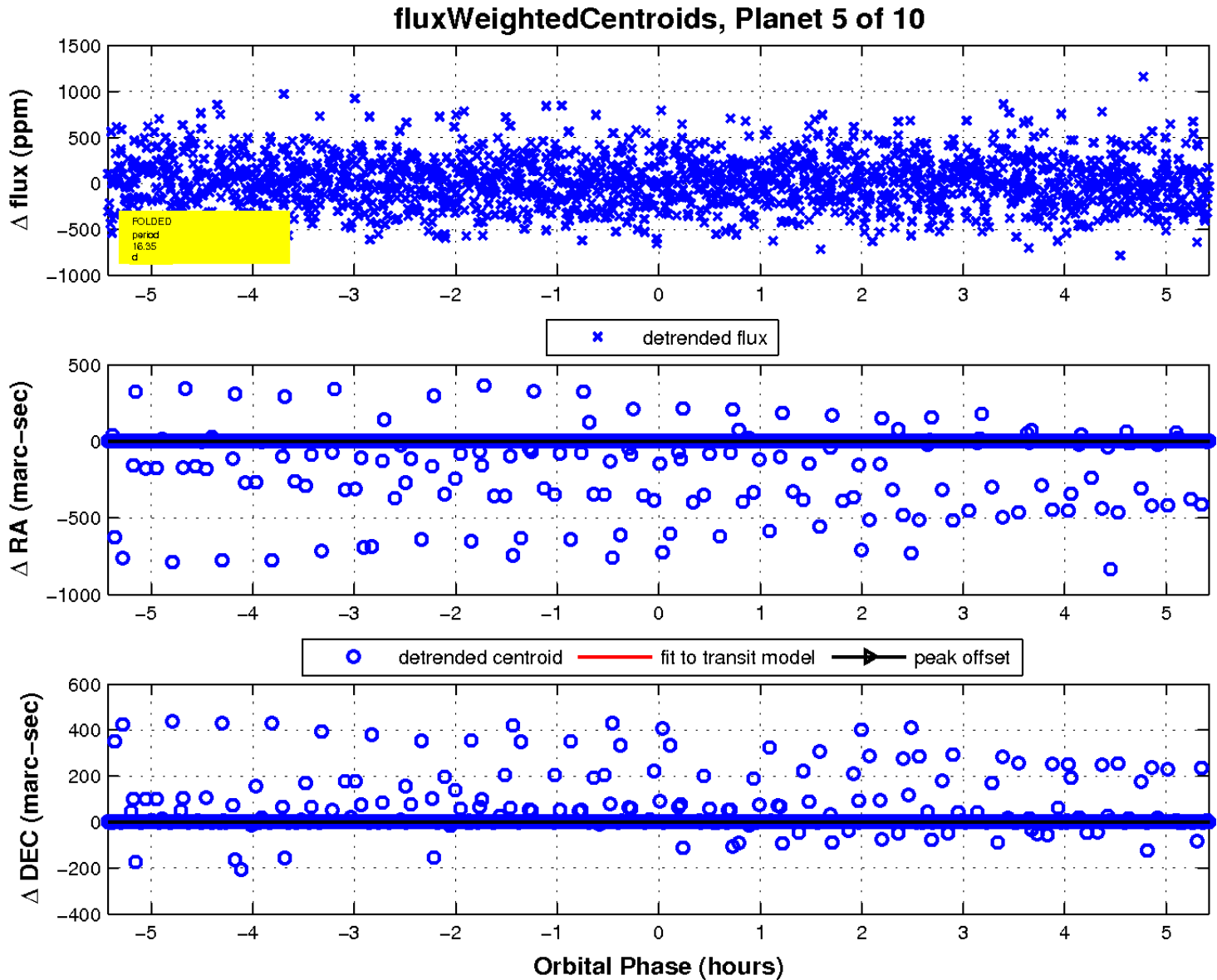
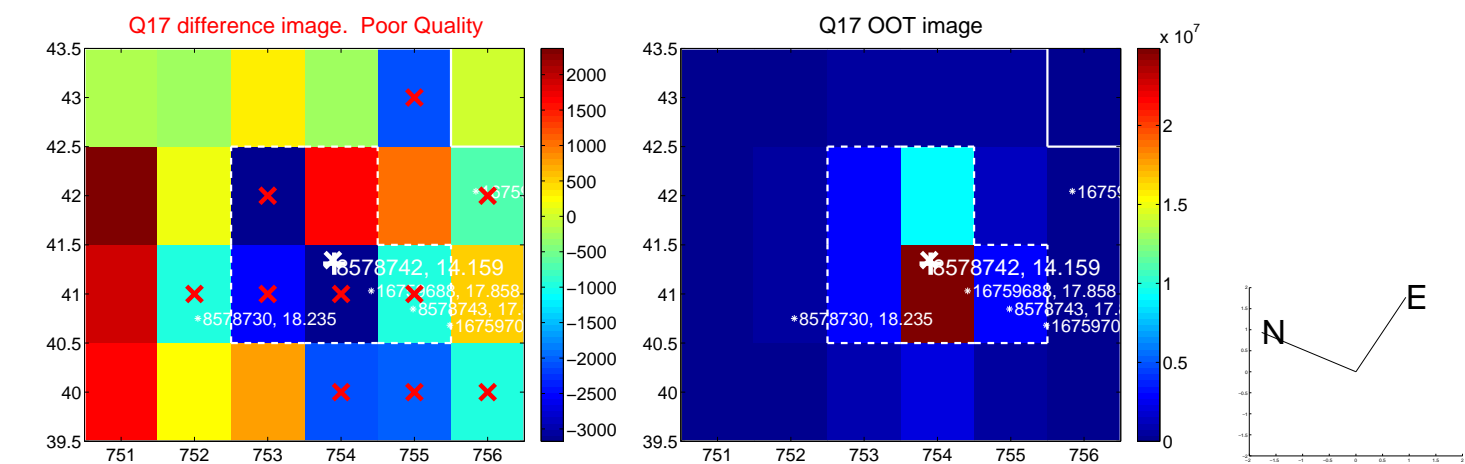
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

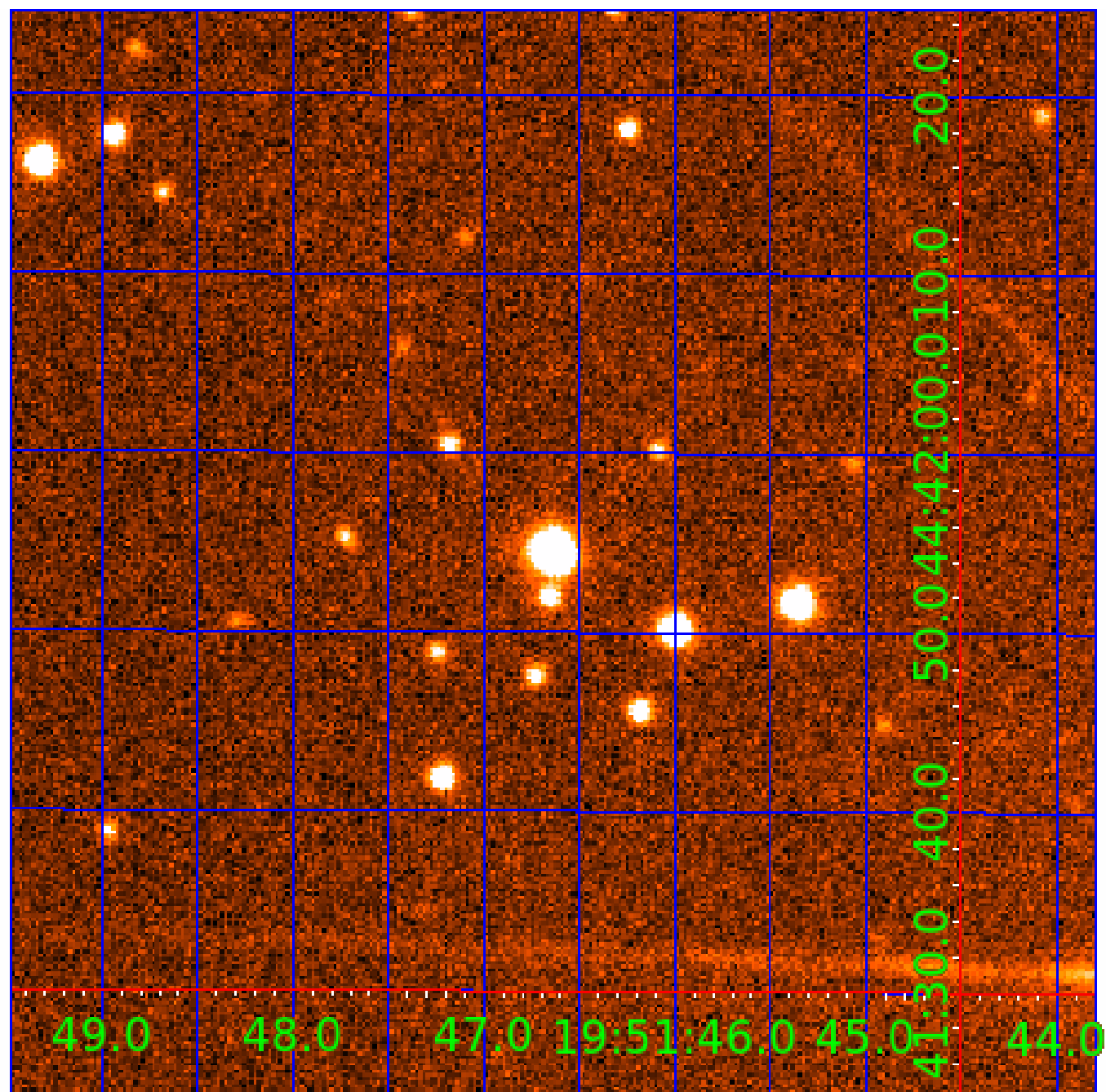


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

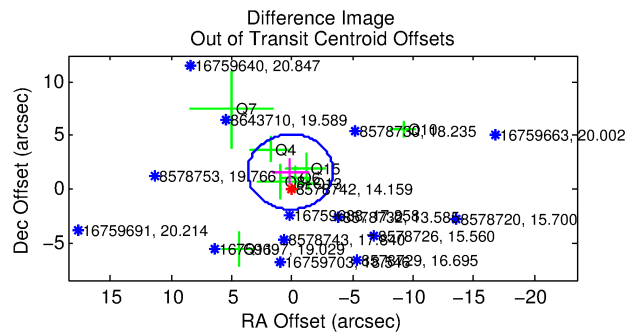
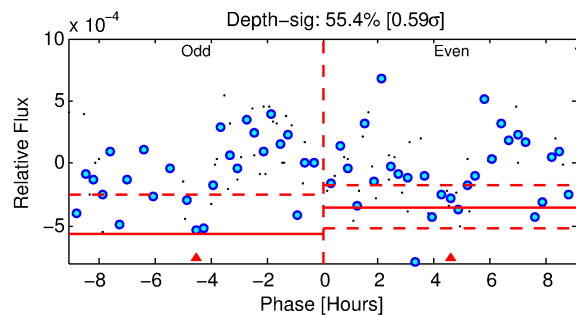
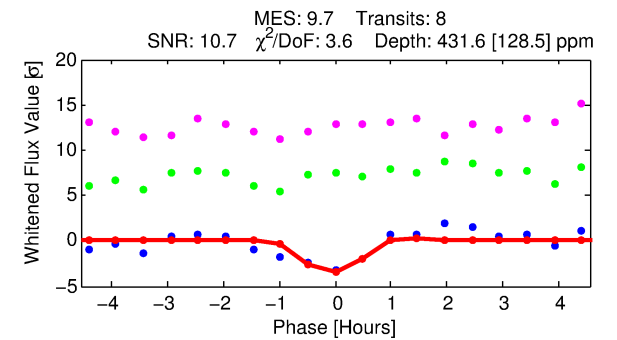
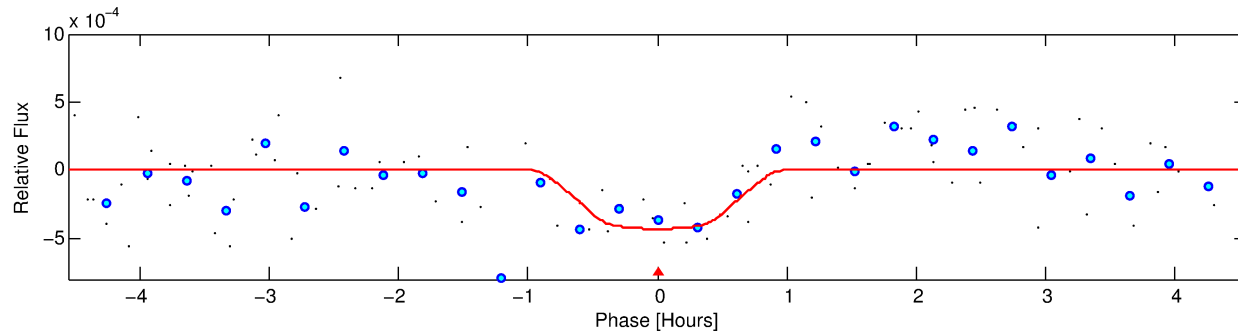
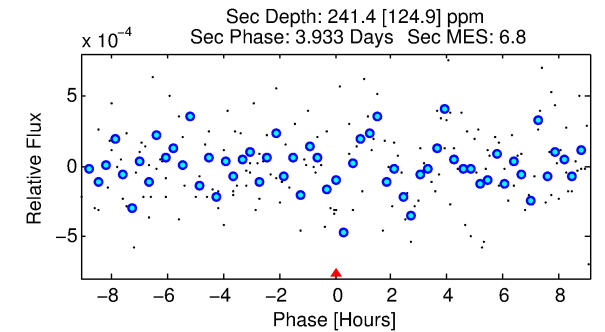
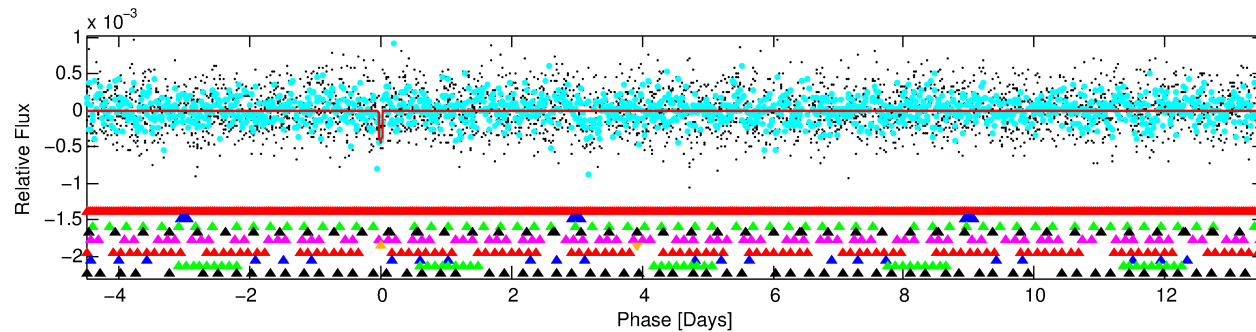
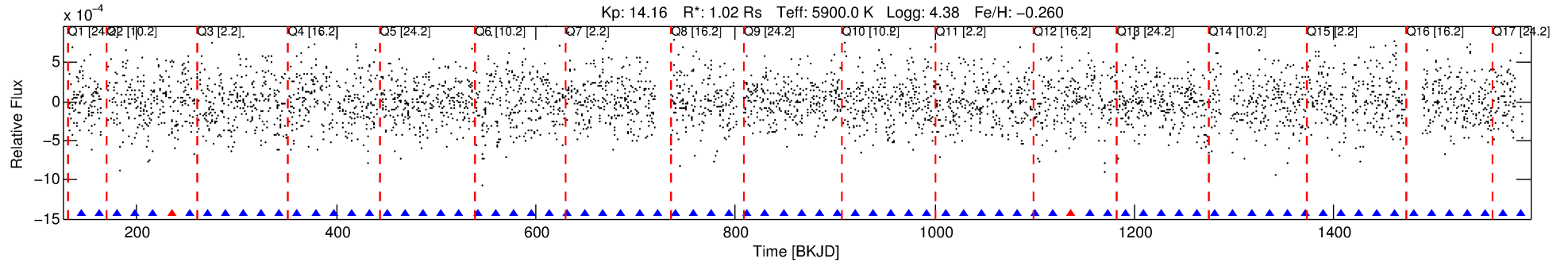
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-06

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 6 of 10 Period: 18.039 d



DV Fit Results:

Period = 18.03888 [0.00024] d
Epoch = 144.6441 [0.0095] BKJD
Rp/R* = 0.0227 [0.0268]
a/R* = 42.72 [241.90]
b = 0.91 [1.13]
Seff = 66.96 [24.48]
Teq = 729 [67] K
Rp = 2.54 [3.08] Re
a = 0.1305 [0.0304] AU
Ag = 349.47 [851.77] [0.41 σ]
Teff = 4876 [2945] K [1.41 σ]

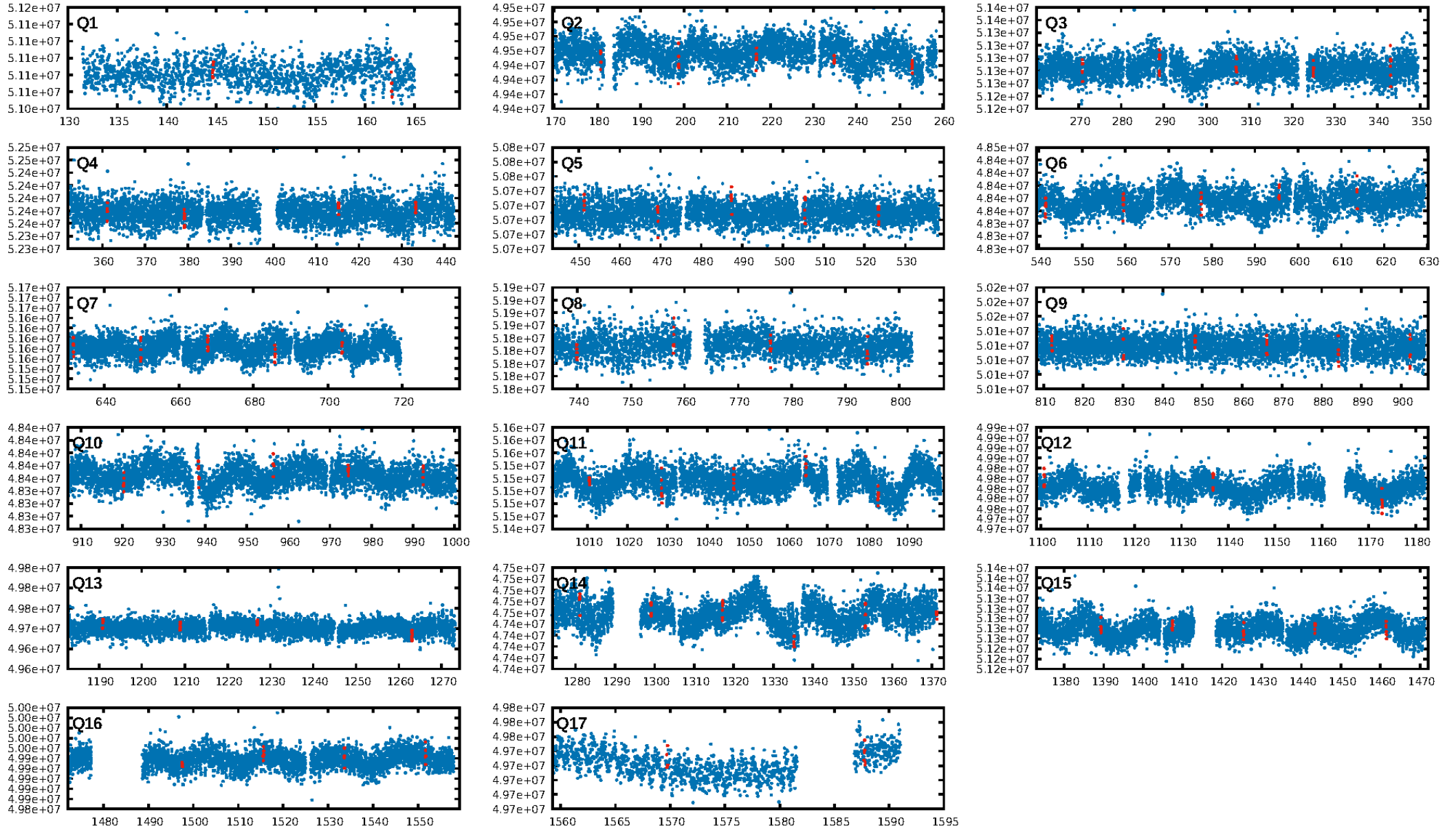
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.15 σ]
LongPeriod-sig: 100.0% [41.87 σ]
ModelChiSquare2-sig: 47.9%
ModelChiSquareGof-sig: 97.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.75 [6/8]
GhostDiagnostic-chr: 2.276
Centroid-sig: 81.2%
Centroid-so: 0.480 arcsec [0.74 σ]
OotOffset-rm: 1.616 arcsec [1.38 σ]
KicOffset-rm: 1.502 arcsec [1.17 σ]
OotOffset-st: 2/3/2/1 [8]
KicOffset-st: 2/3/2/1 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 0.82 [14/17]

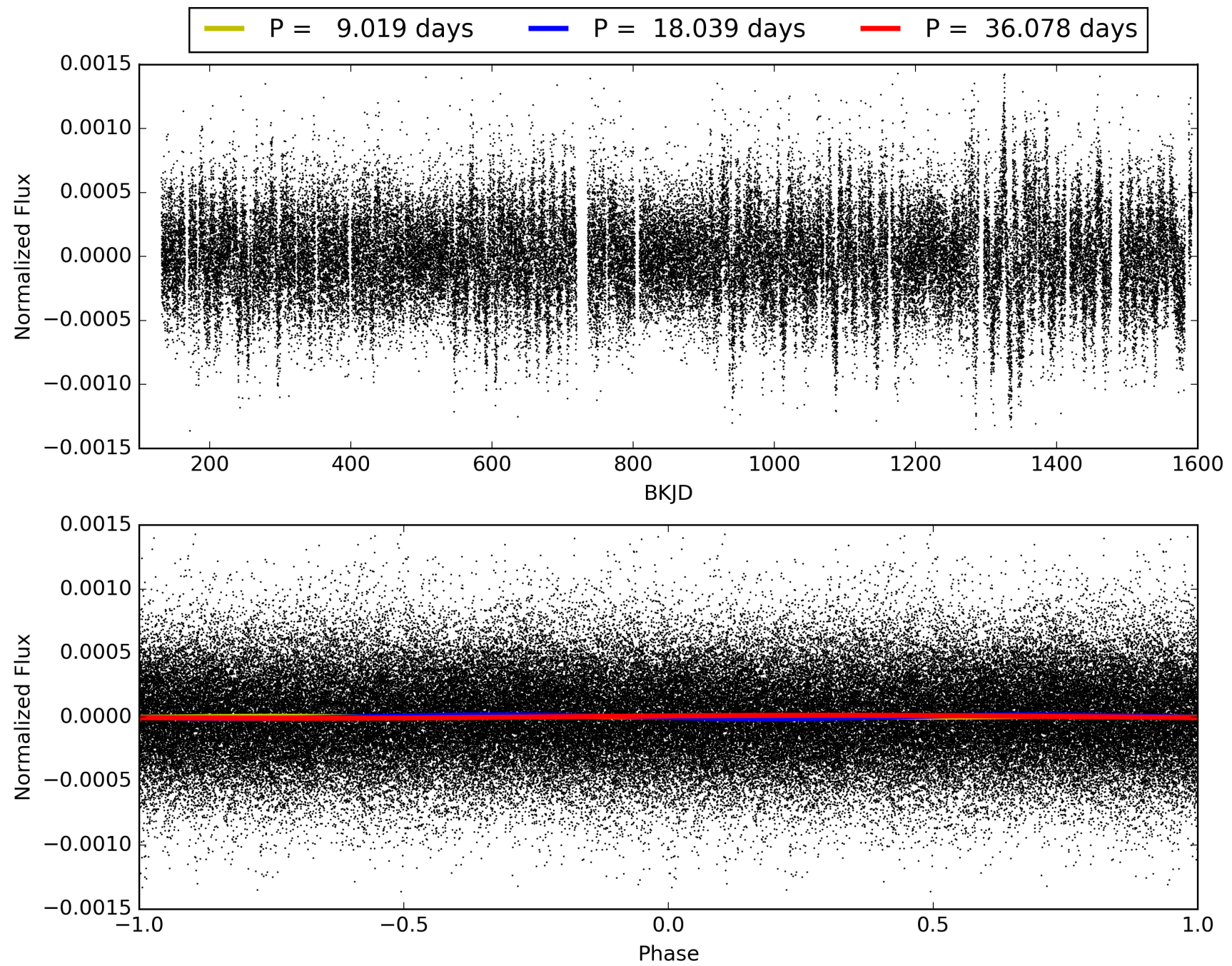
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:39 Z

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

TCE 008578742-06, PDC Light Curves

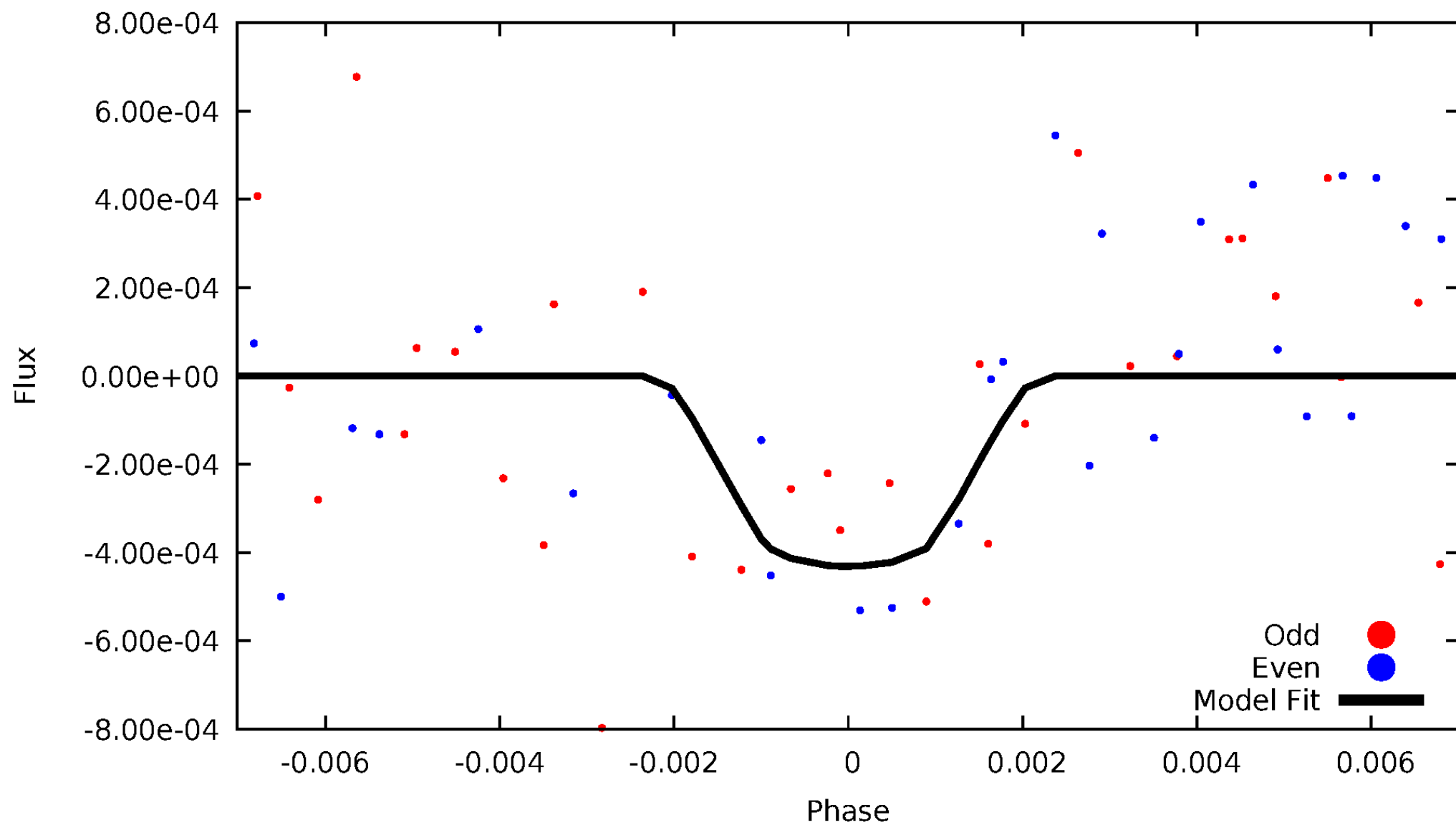


TCE 008578742-06



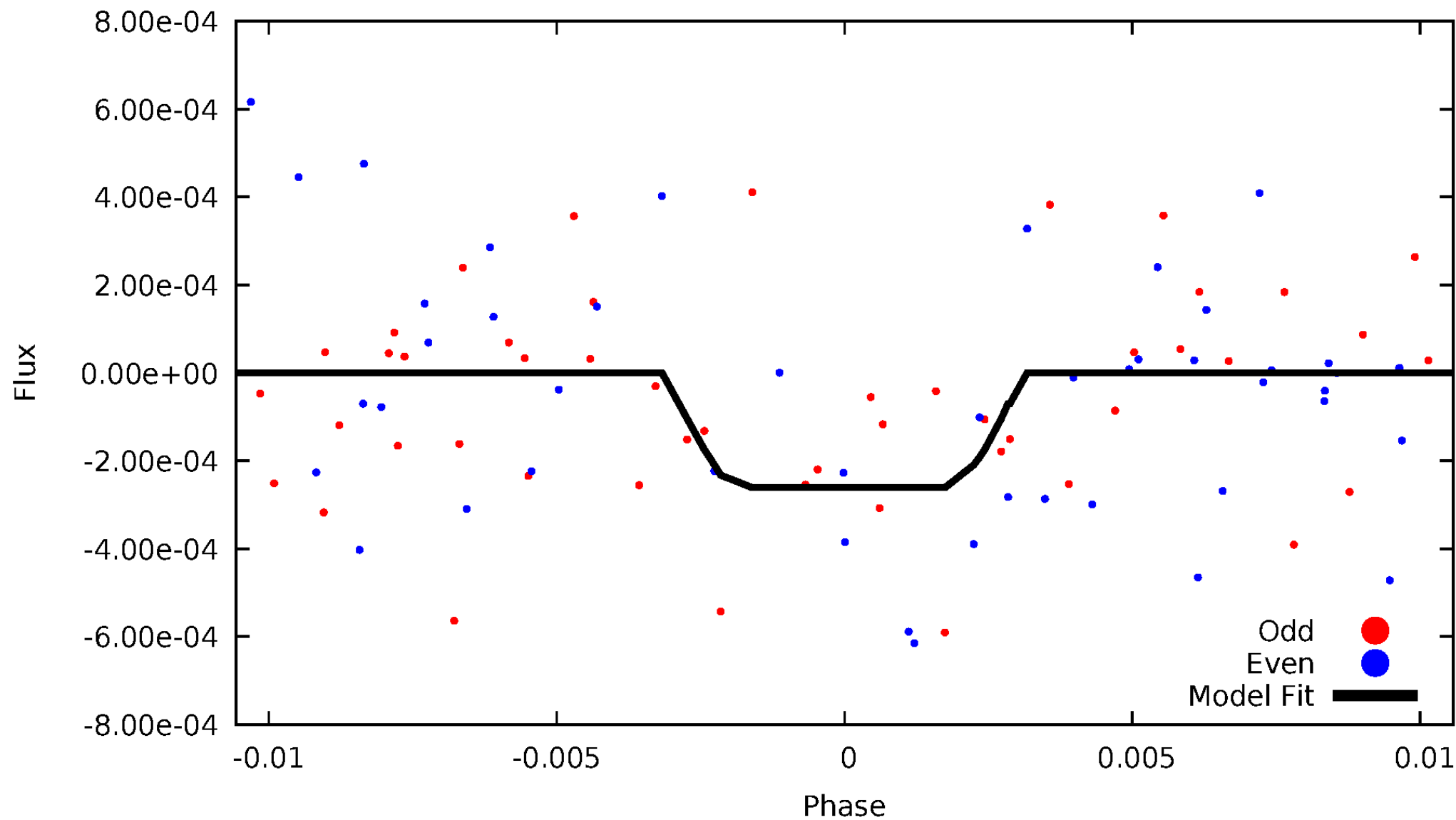
DV Odd/Even

TCE 008578742-06



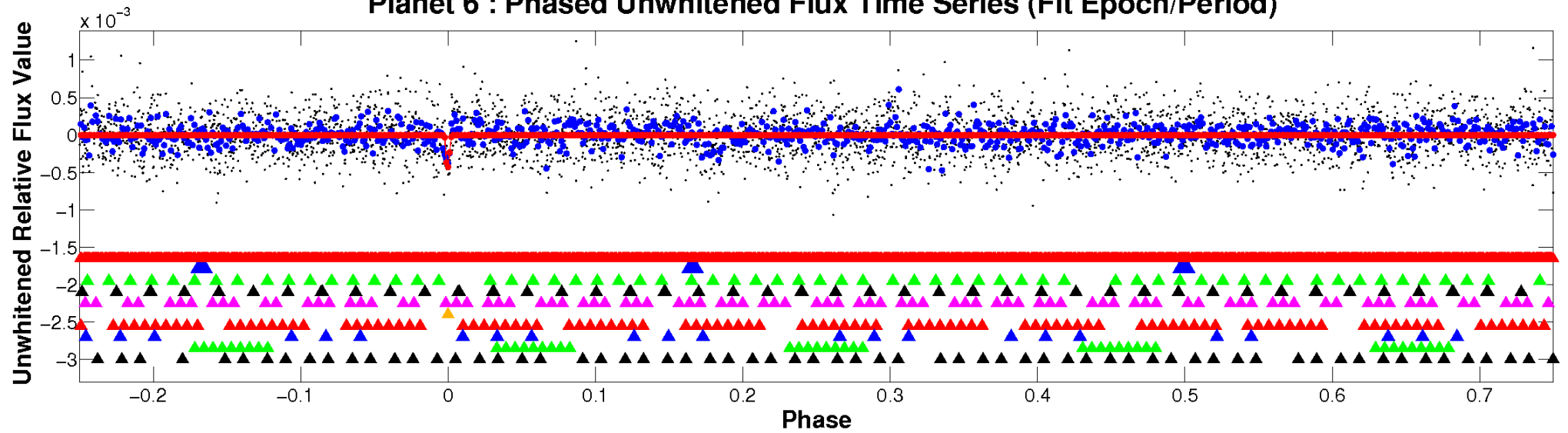
ALT Odd/Even

TCE 008578742-06

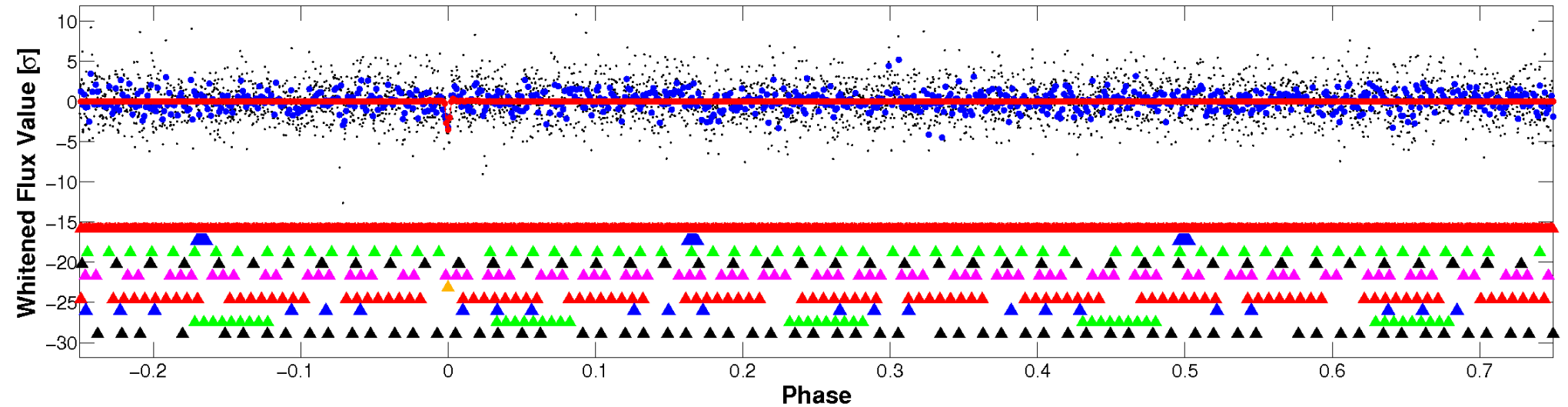


Non-Whitened Vs. Whitened Light Curve

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

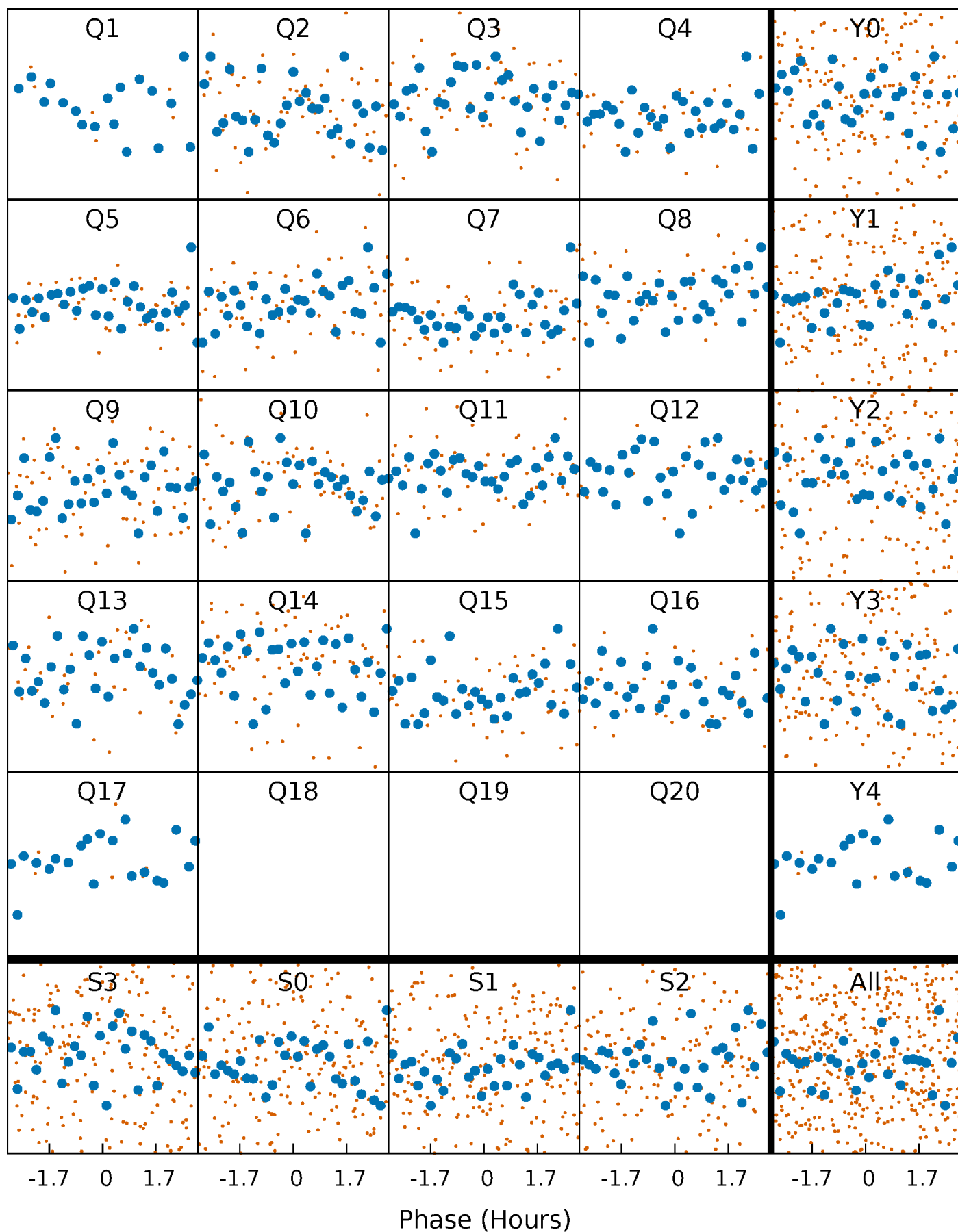


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



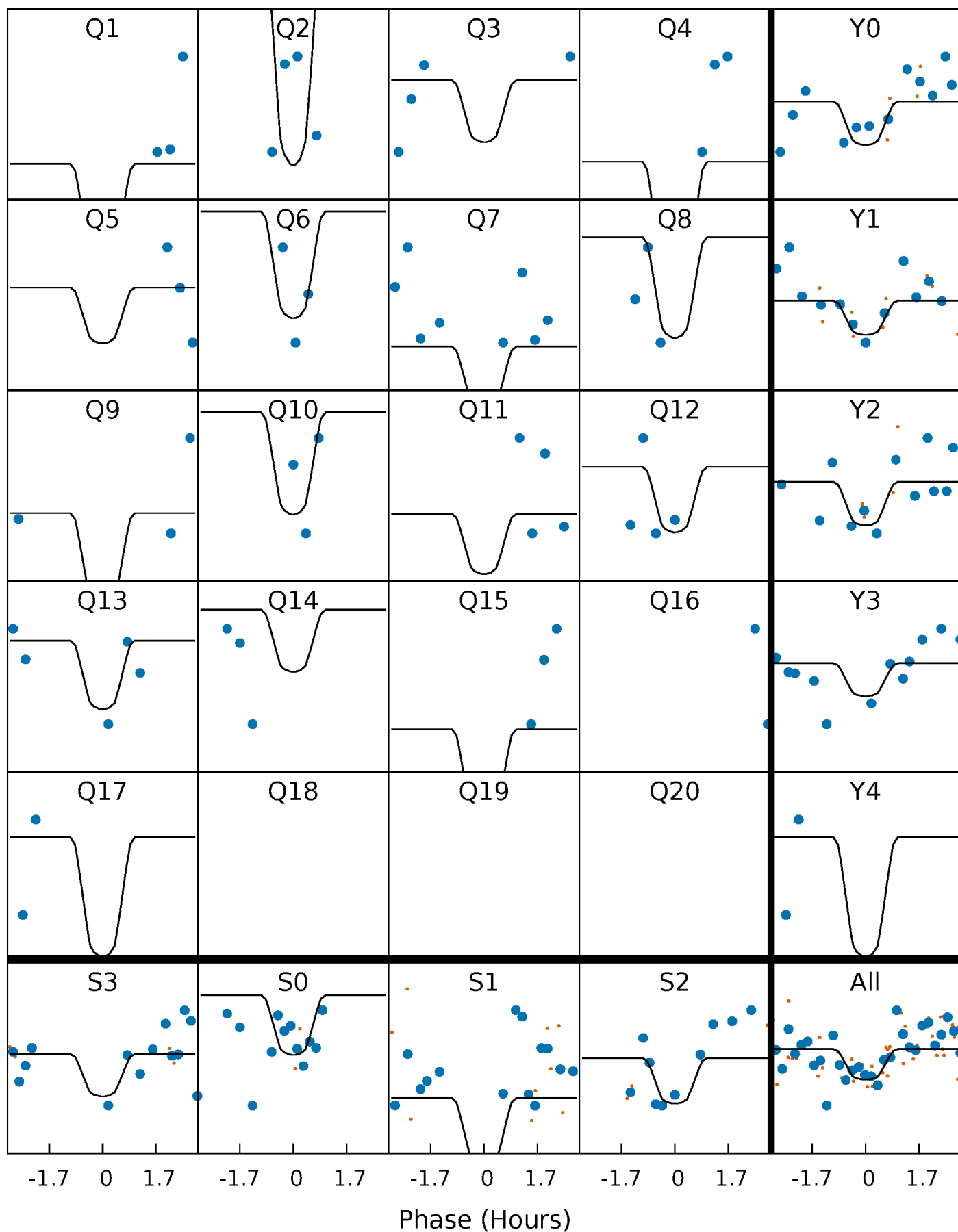
PDC Quarter-Phased Transit Curves

TCE 008578742-06 P= 18.038884 Days $T_0=144.644087$ (BKJD)



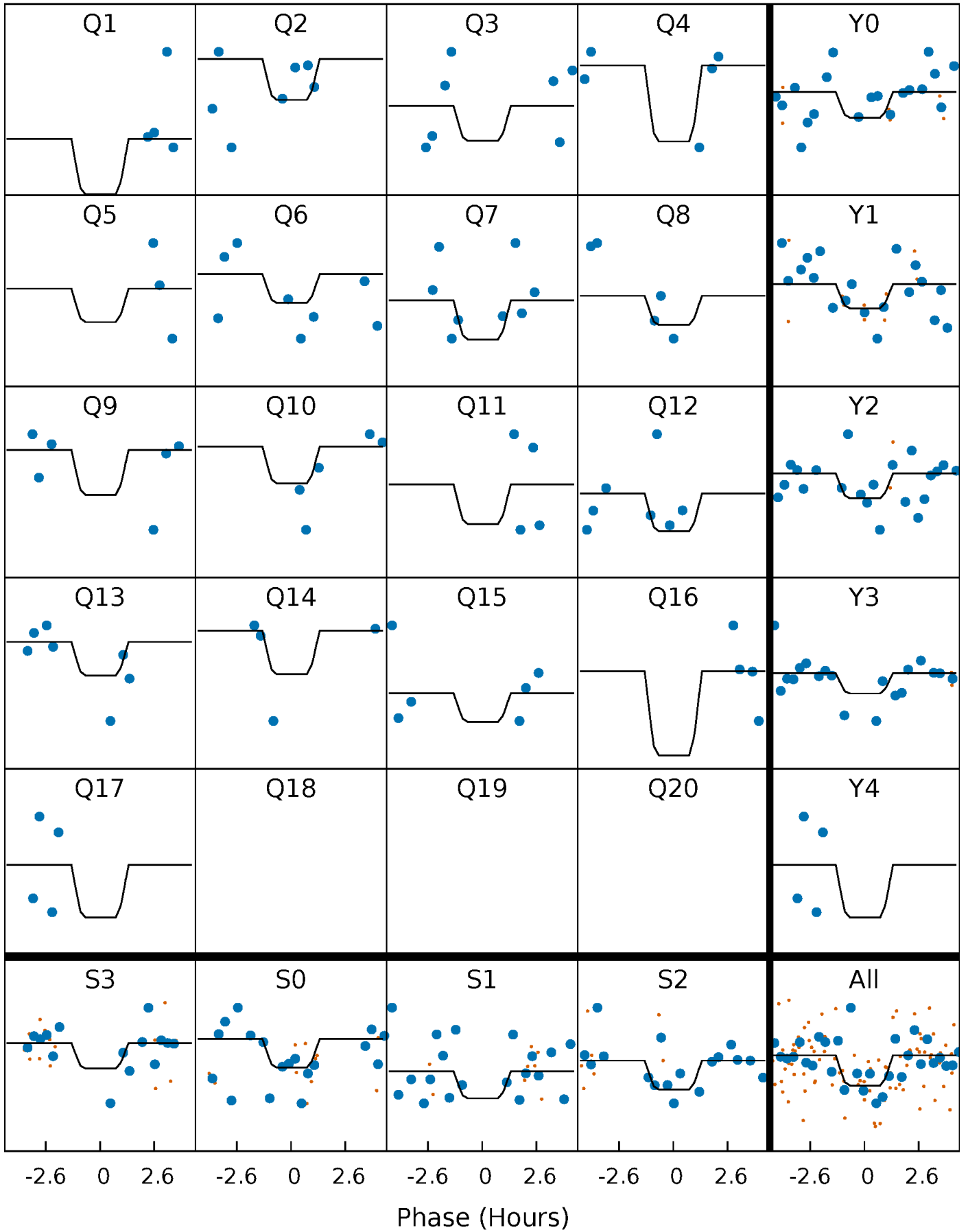
DV Quarter-Phased Transit Curves

TCE 008578742-06 P= 18.038884 Days $T_0=144.644087$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

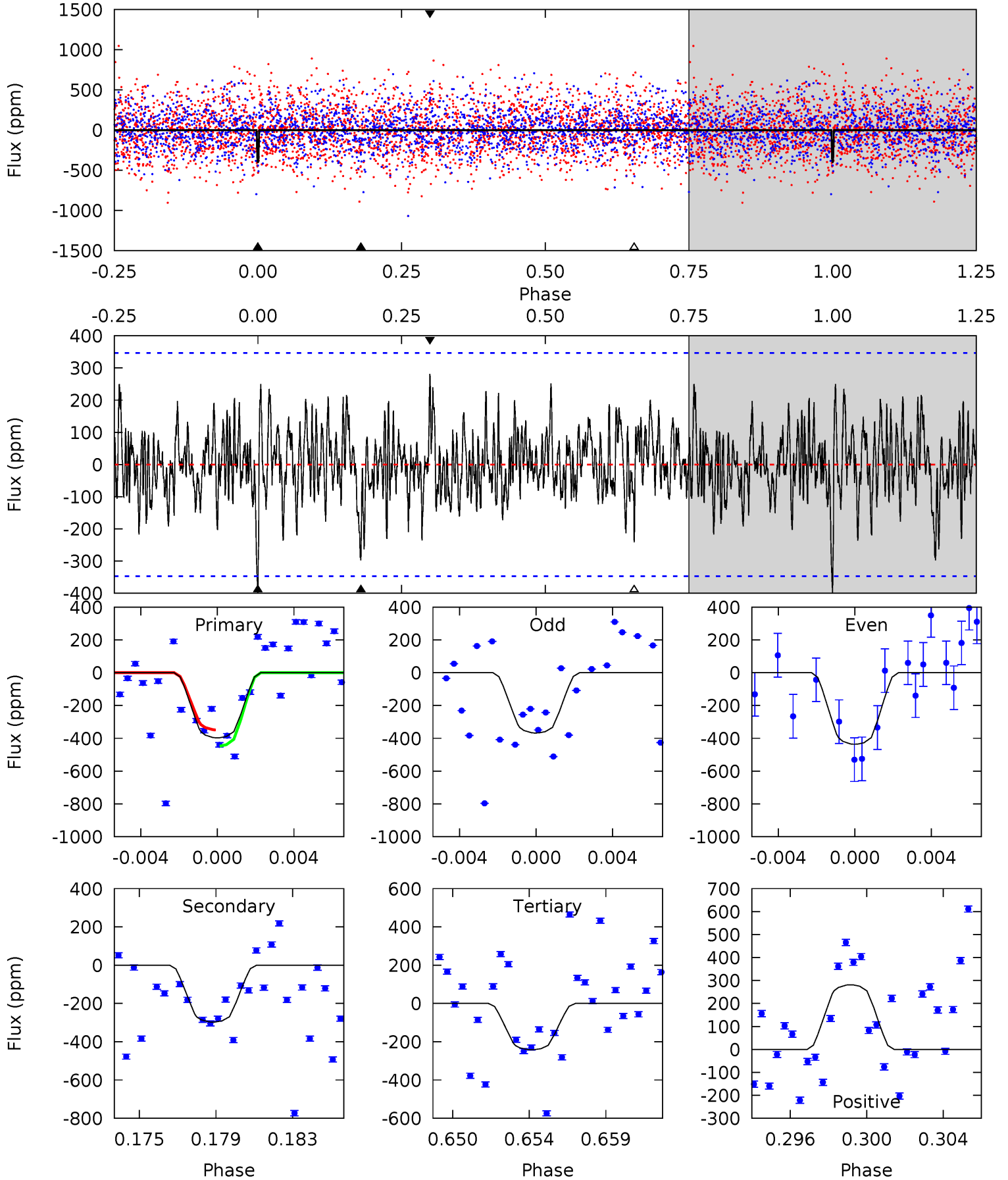
TCE 008578742-06 P= 18.039011 Days $T_0=144.623376$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-06, P = 18.038884 Days, E = 126.605203 Days

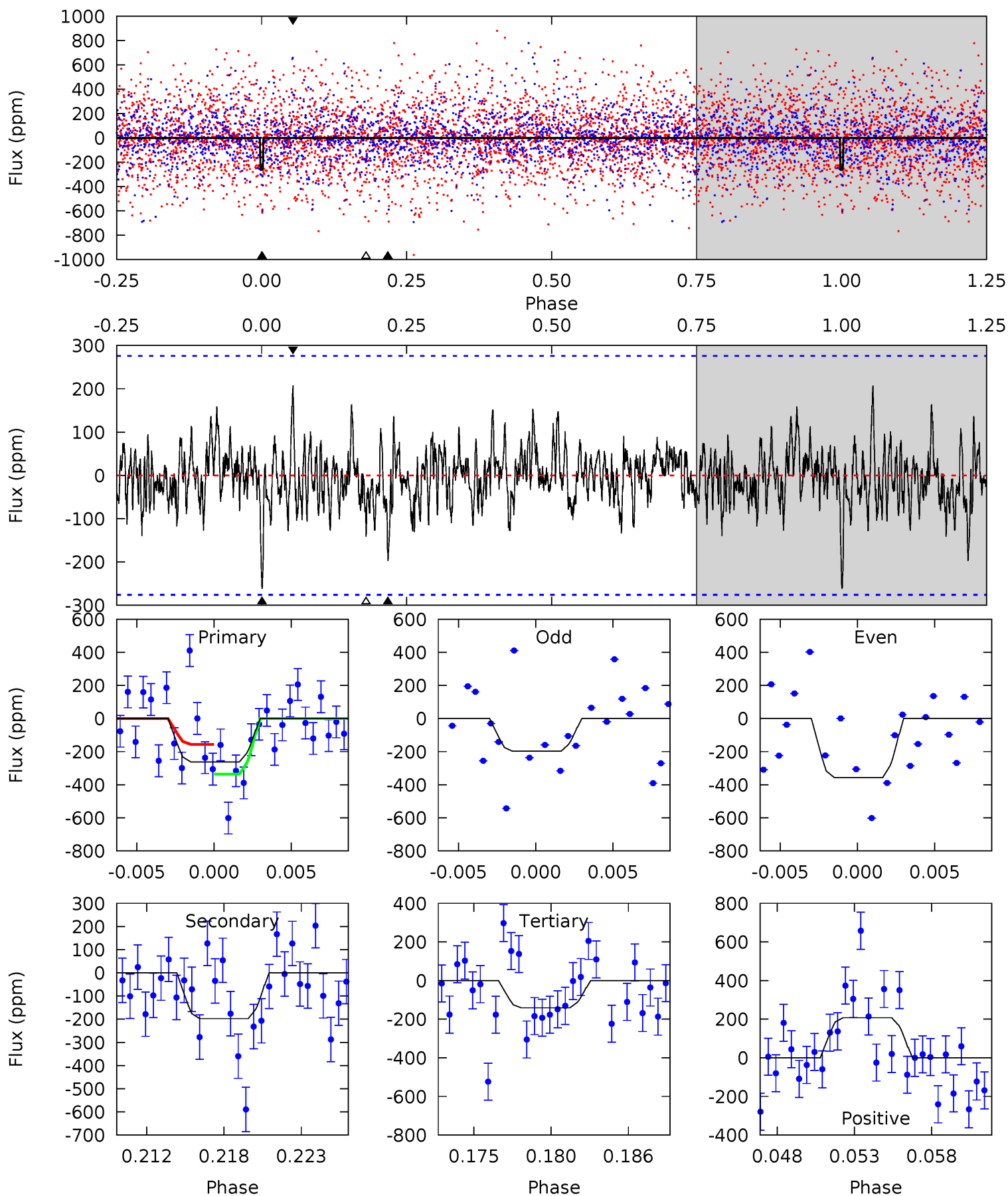
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.95 | 4.45 | 3.62 | 4.21 | 5.19 | 2.87 | 1.30 | 2.33 | 1.74 | 0.83 | 0.24 | 0.51 | 1.00 | 0.41 | 0.72 |



Alt Model-Shift Uniqueness Test

008578742-06, P = 18.039011 Days, E = 126.584365 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.88 | 3.68 | 2.64 | 3.87 | 5.15 | 2.79 | 1.00 | 2.25 | 1.01 | 1.04 | -0.19 | 1.49 | 0.87 | 0.44 | 1.62 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-06 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|--------------------|-----------------------|----------------------|
| DV | -297 ± 67 | $3.23^{+3.00}_{-2.06}$ | 1028^{+79}_{-57} | 4713^{+3007}_{-964} | 264^{+1778}_{-190} |
| Alt. | -197 ± 54 | $2.84^{+2.63}_{-1.82}$ | 1025^{+77}_{-58} | 4584^{+2570}_{-981} | 230^{+1306}_{-172} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

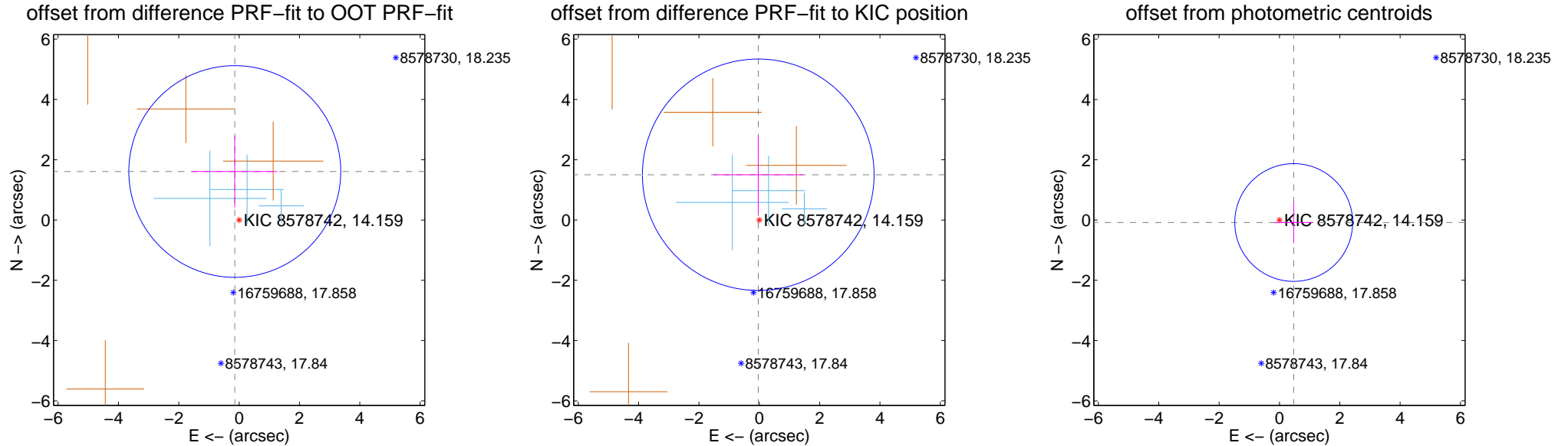
DV Centroid Data

Supplemental centroid analysis for 008578742-06. Kepler magnitude: 14.16. Transit SNR 10.73

There are 3 quarters with good PRF difference image offsets

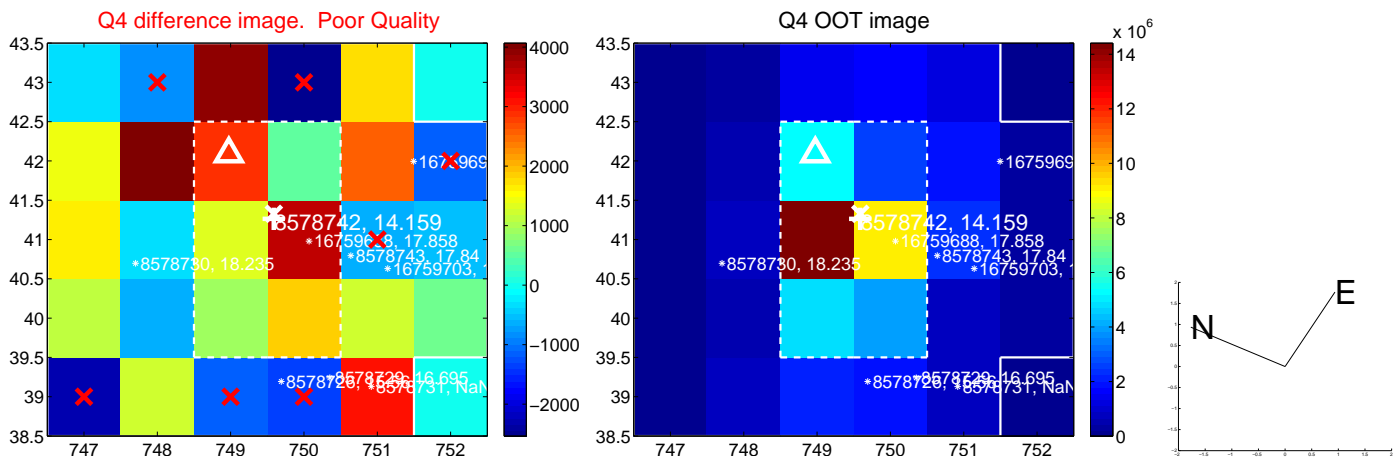
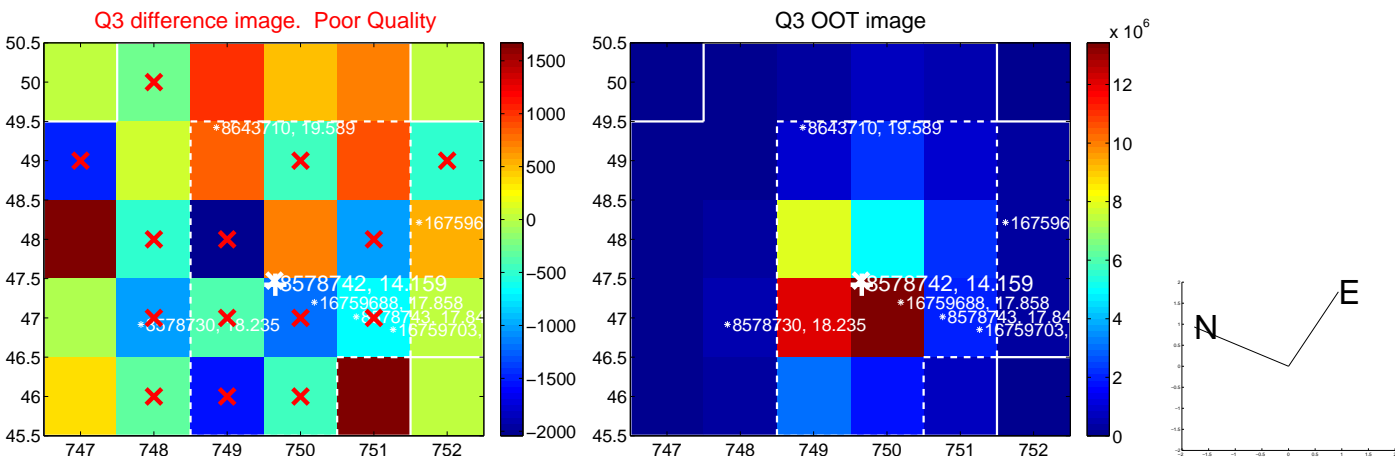
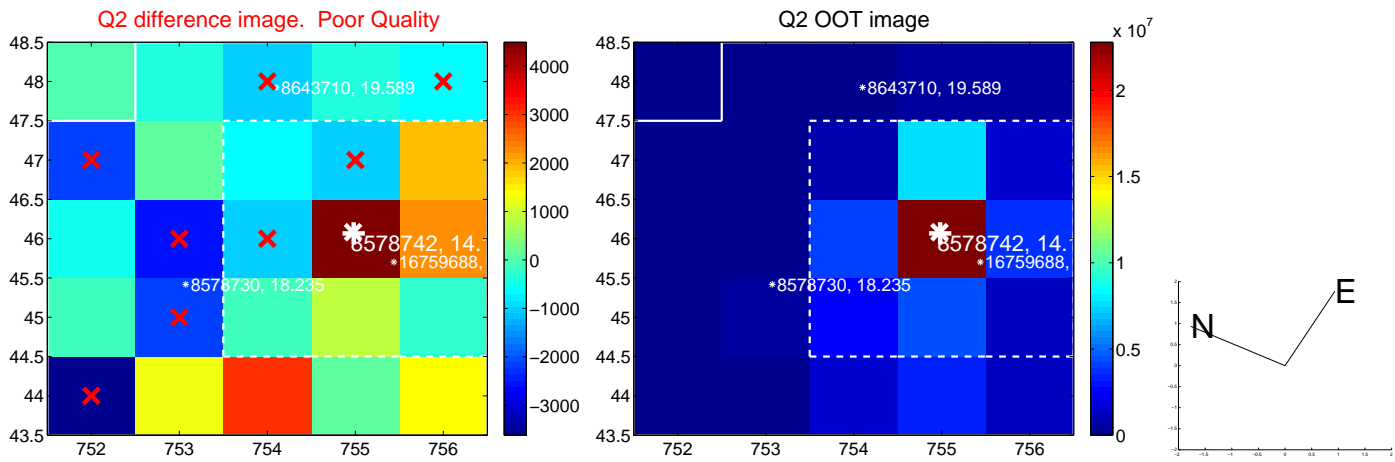
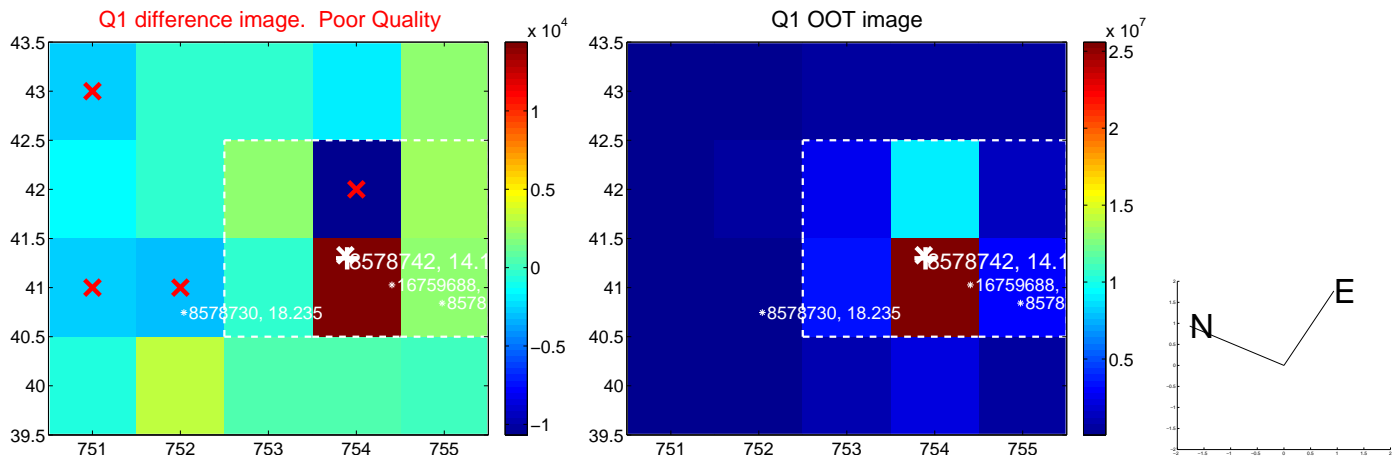
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.616 ± 1.171 | 1.38 | 0.144 ± 1.413 | 1.610 ± 1.185 |
| PRF-fit source offset from KIC position | 1.502 ± 1.280 | 1.17 | 0.034 ± 1.486 | 1.502 ± 1.287 |
| photometric centroid source offset | 0.48 ± 0.65 | 0.74 | -0.47 ± 0.65 | -0.08 ± 0.68 |

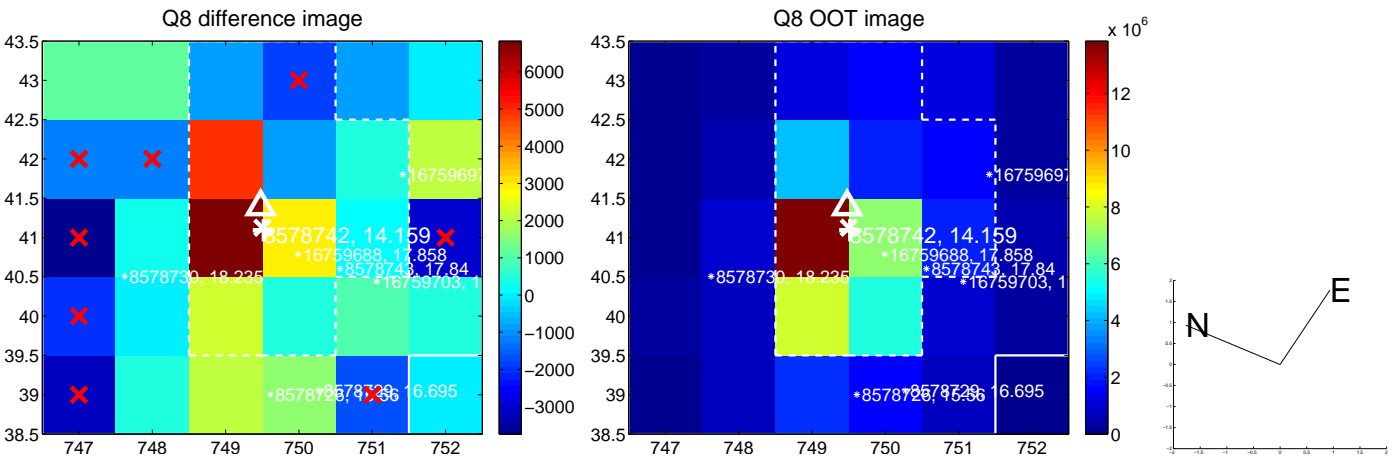
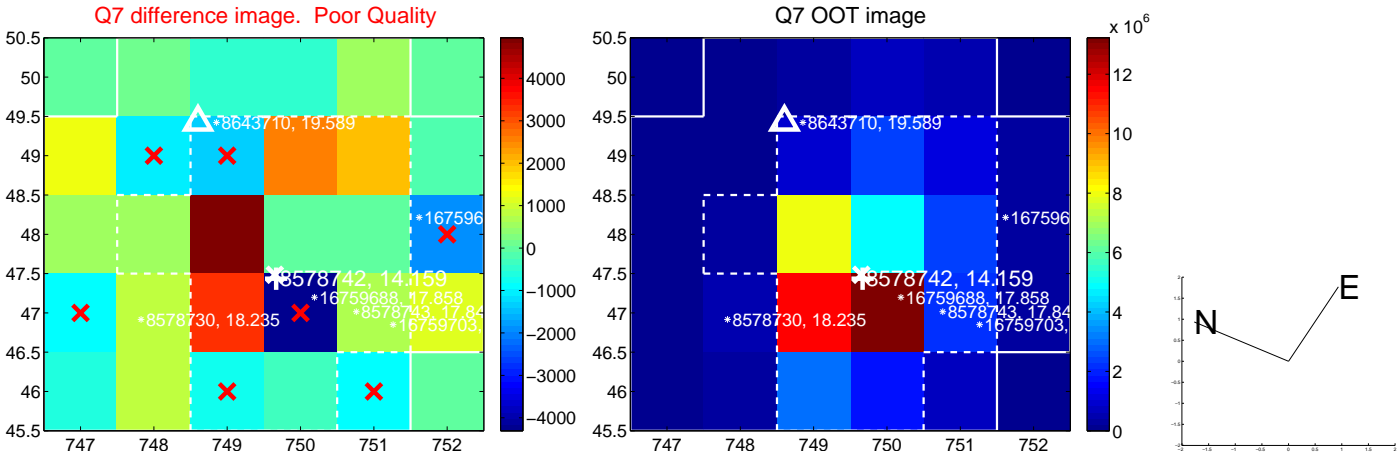
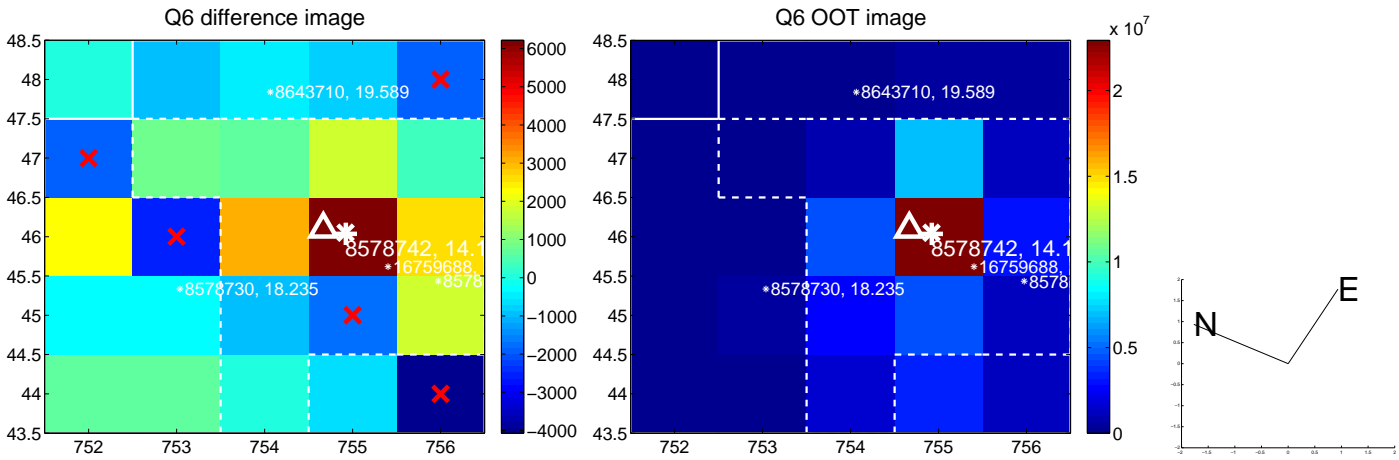
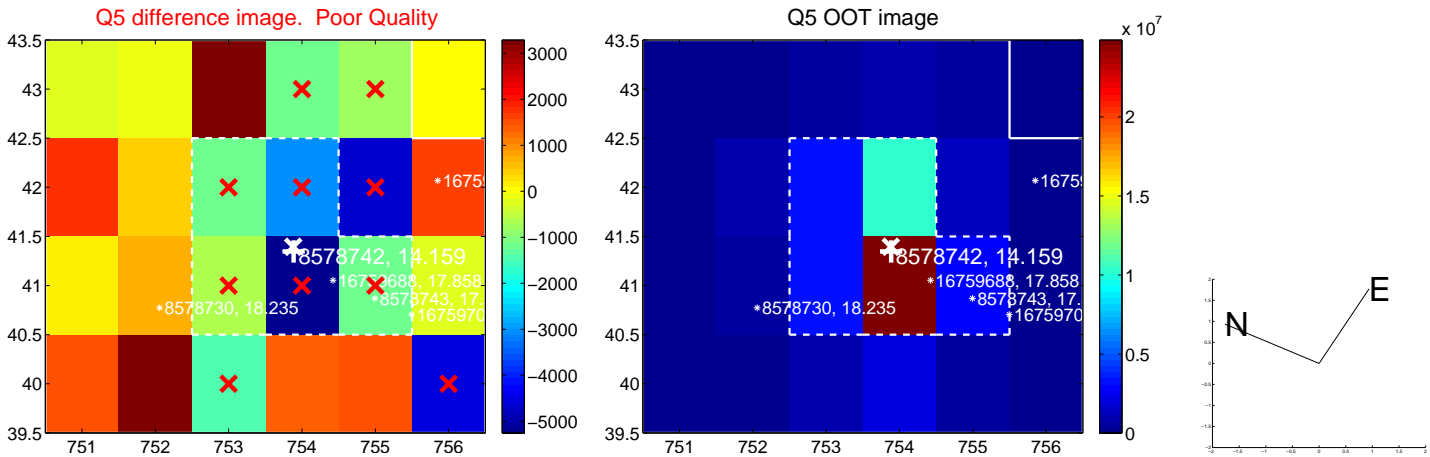


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

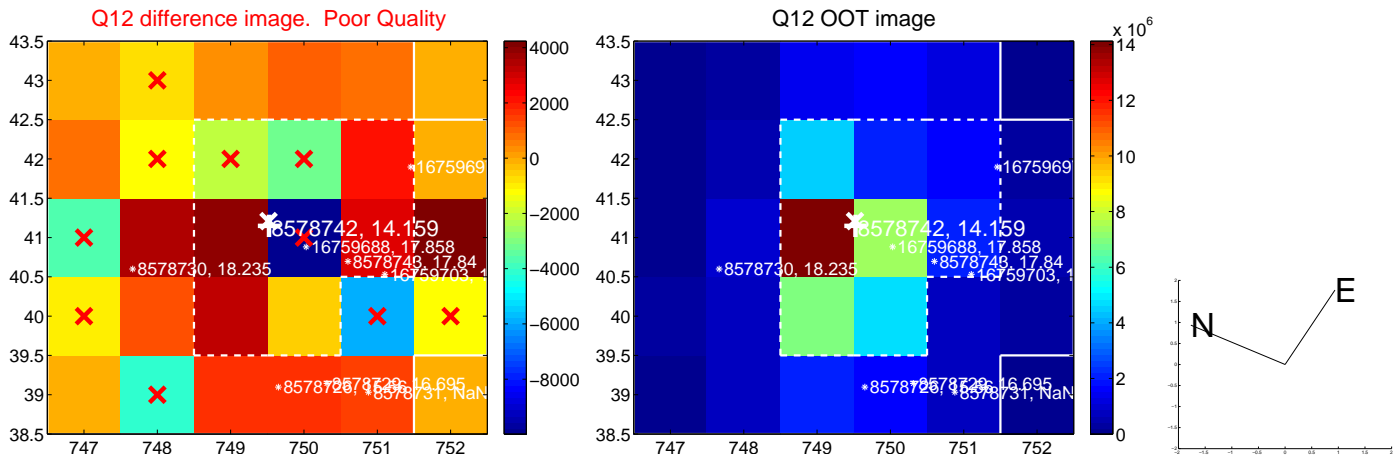
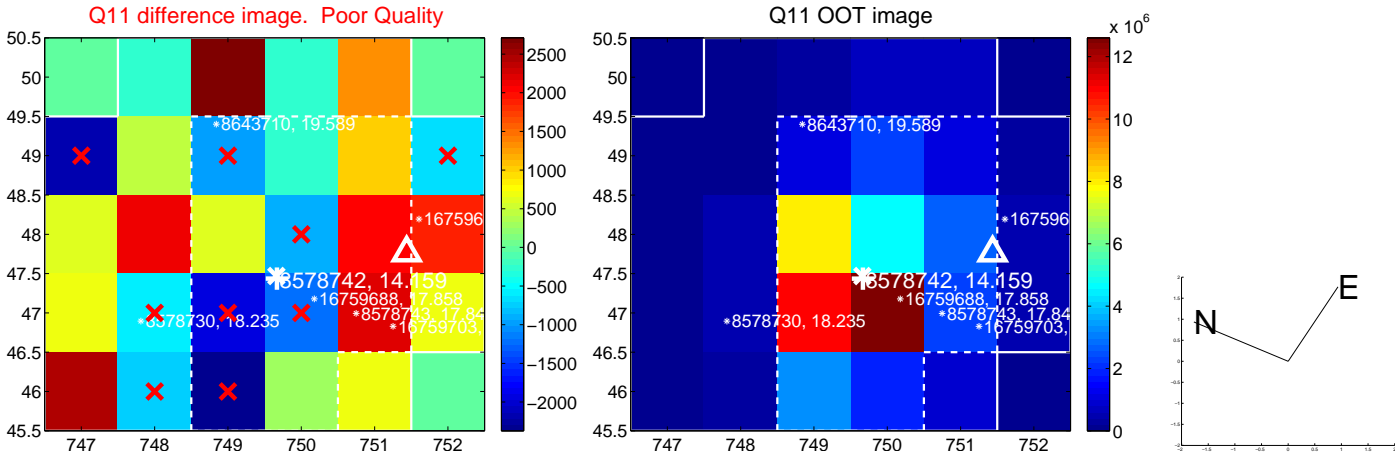
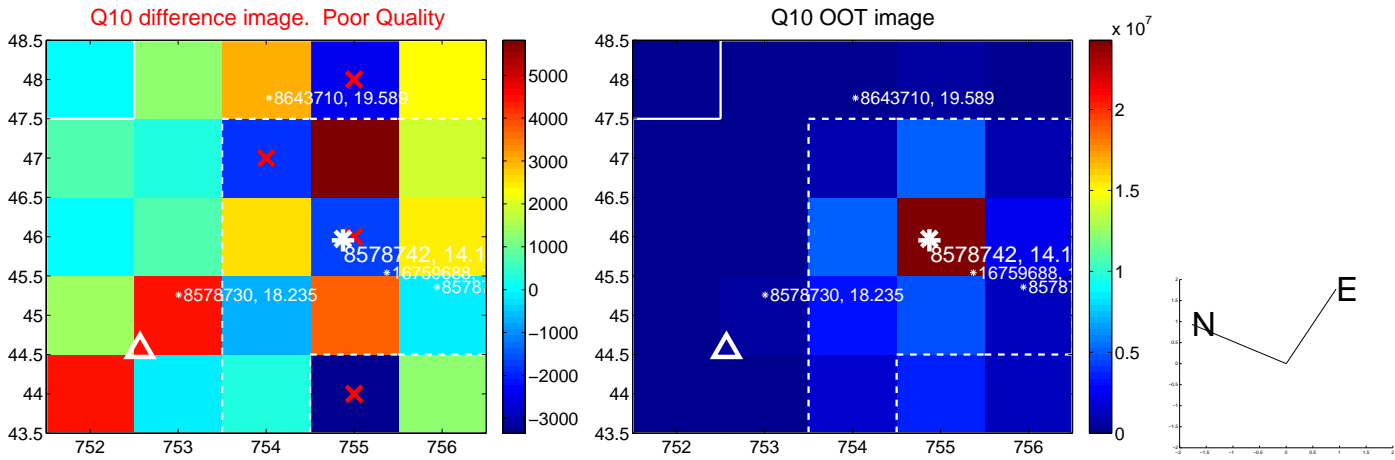
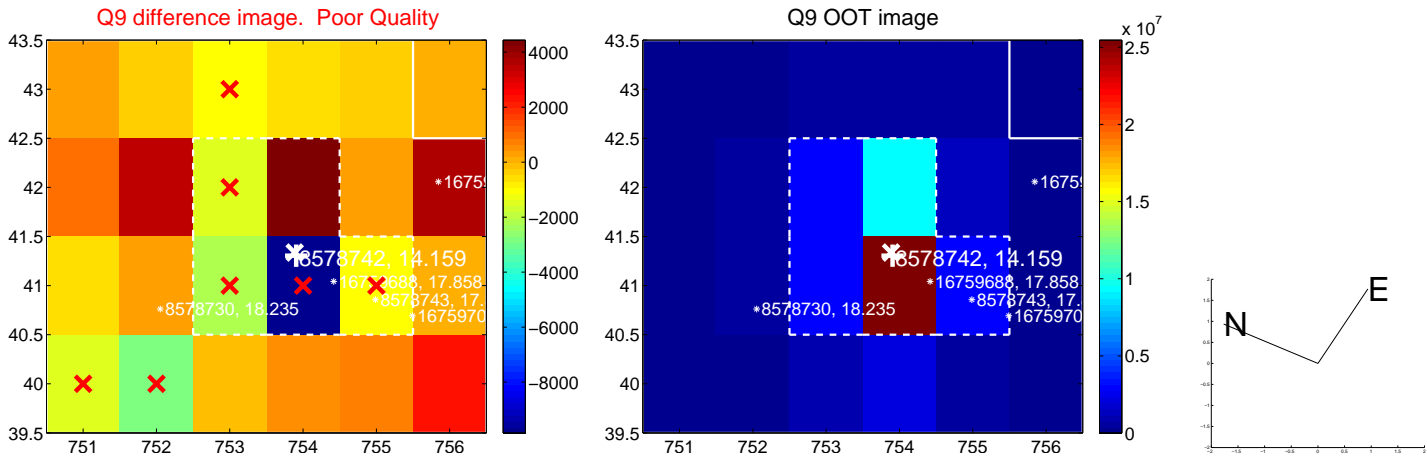
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



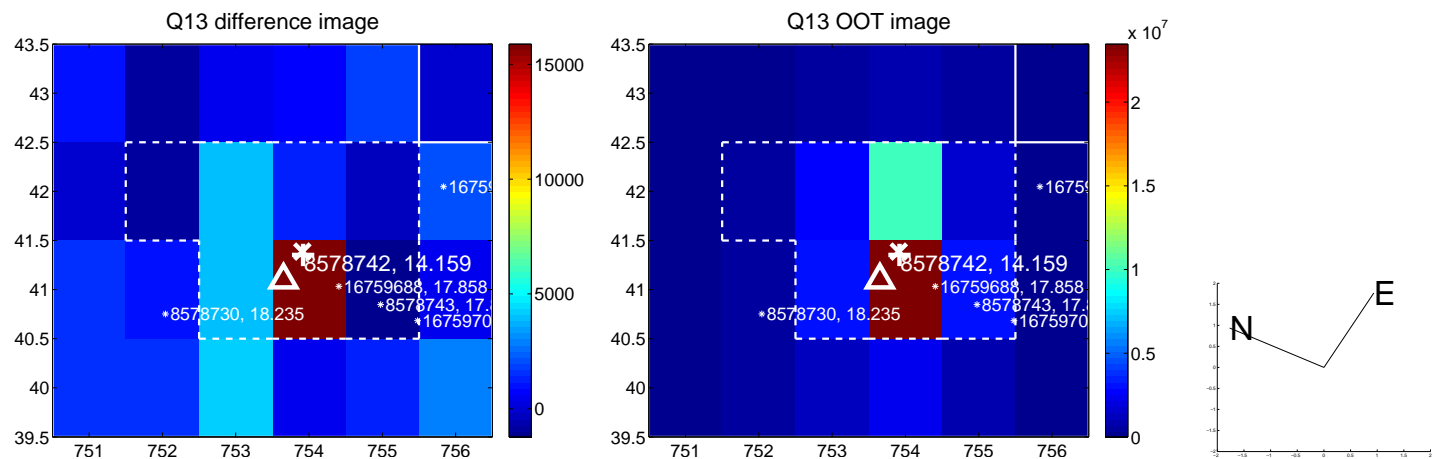
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



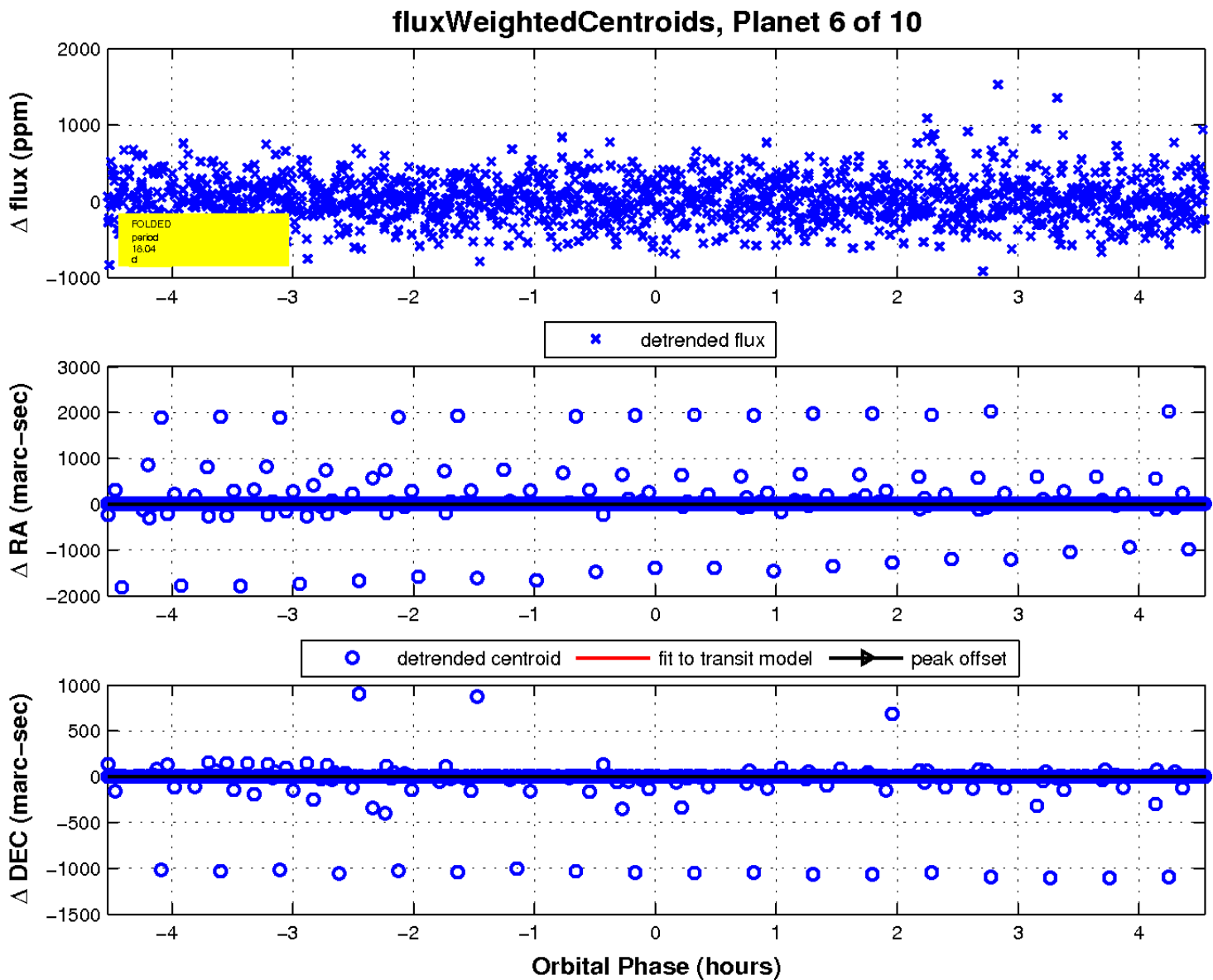
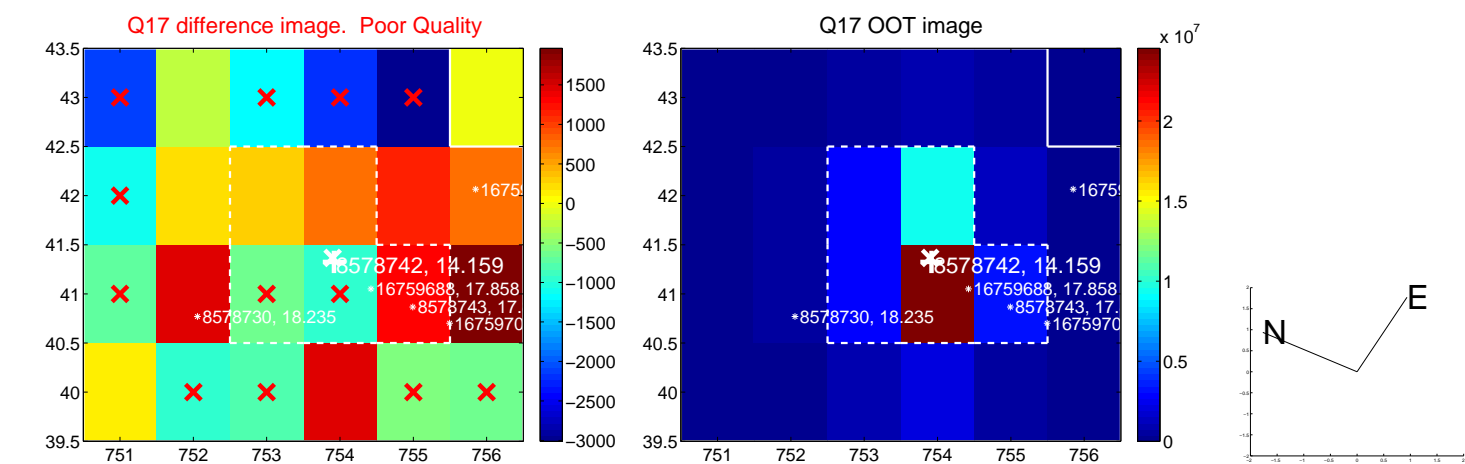
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

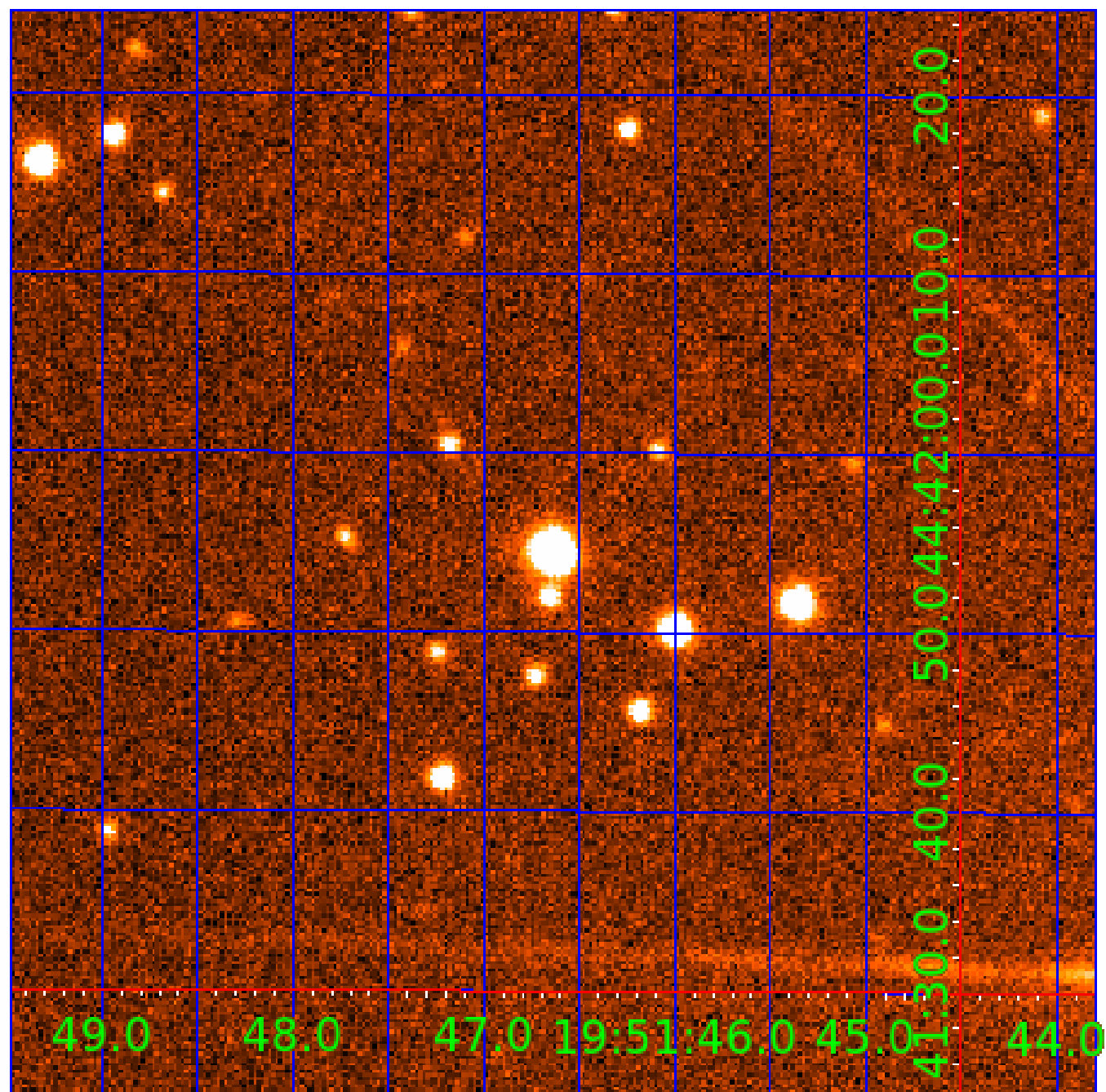


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

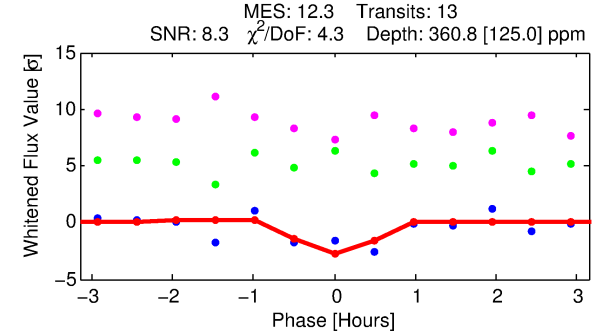
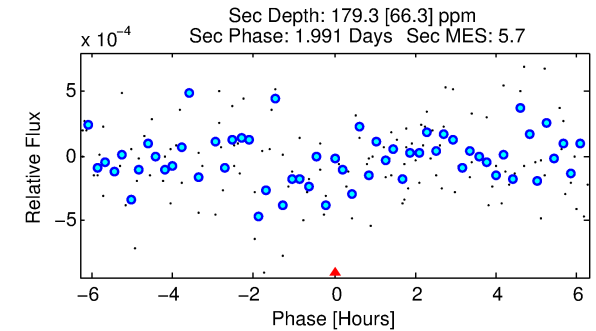
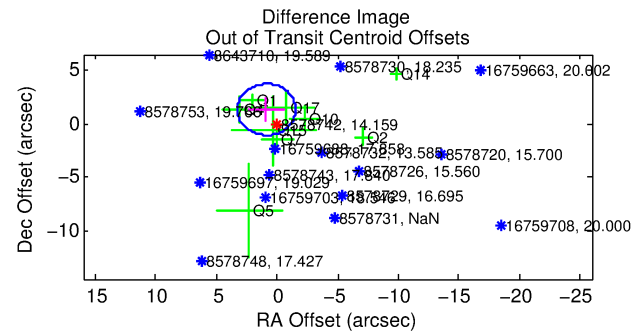
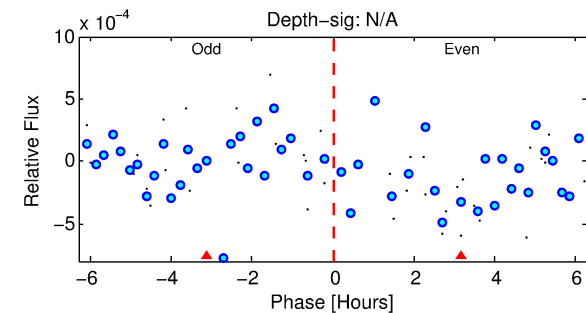
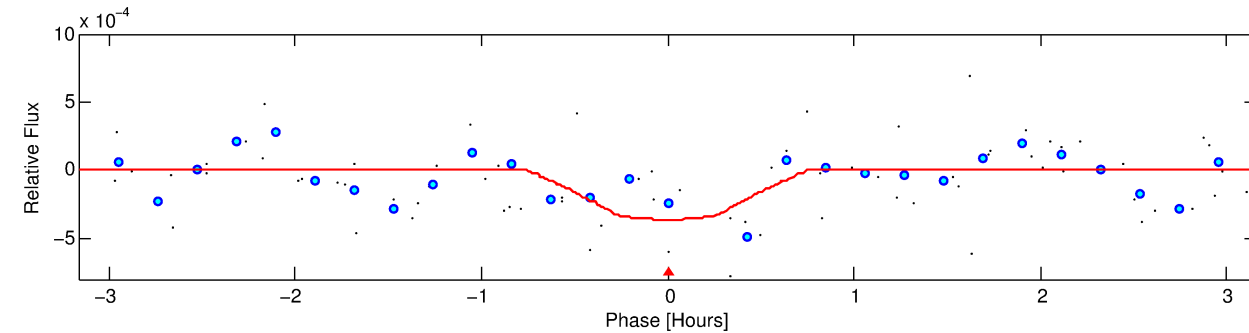
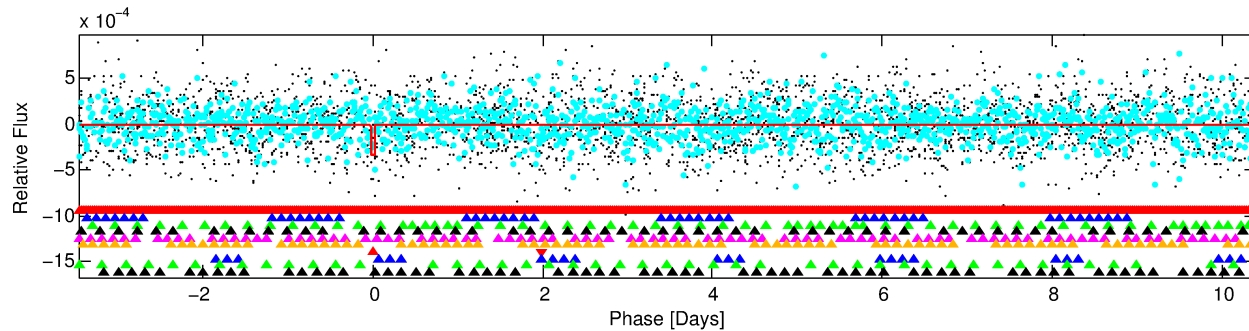
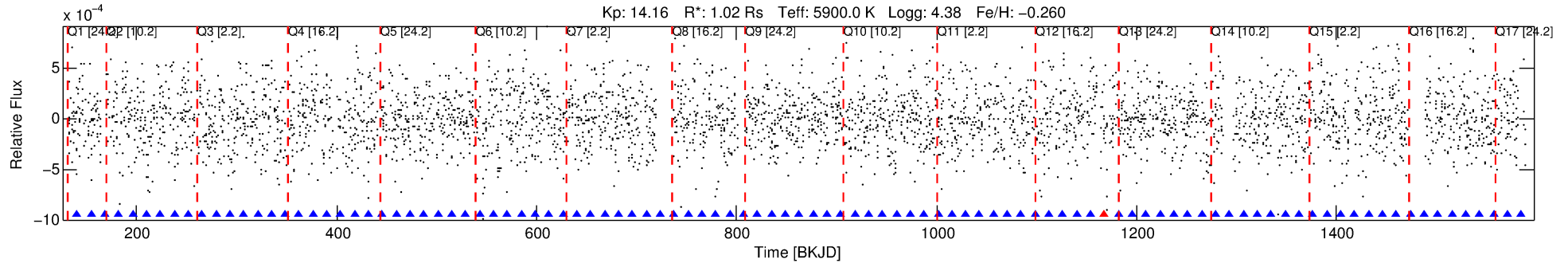
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-07

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 7 of 10 Period: 13.886 d



DV Fit Results:

Period = 13.88598 [0.00021] d
Epoch = 140.5466 [0.0122] BKJD
Rp/R* = 0.0175 [0.0549]
a/R* = 102.38 [1471.97]
b = 0.03 [448.65]
Seff = 94.92 [34.70]
Teq = 796 [73] K
Rp = 1.95 [6.16] Re
a = 0.1096 [0.0256] AU
Ag = 310.58 [1957.47] [0.16σ]
Teffp = 5166 [8129] K [0.54σ]

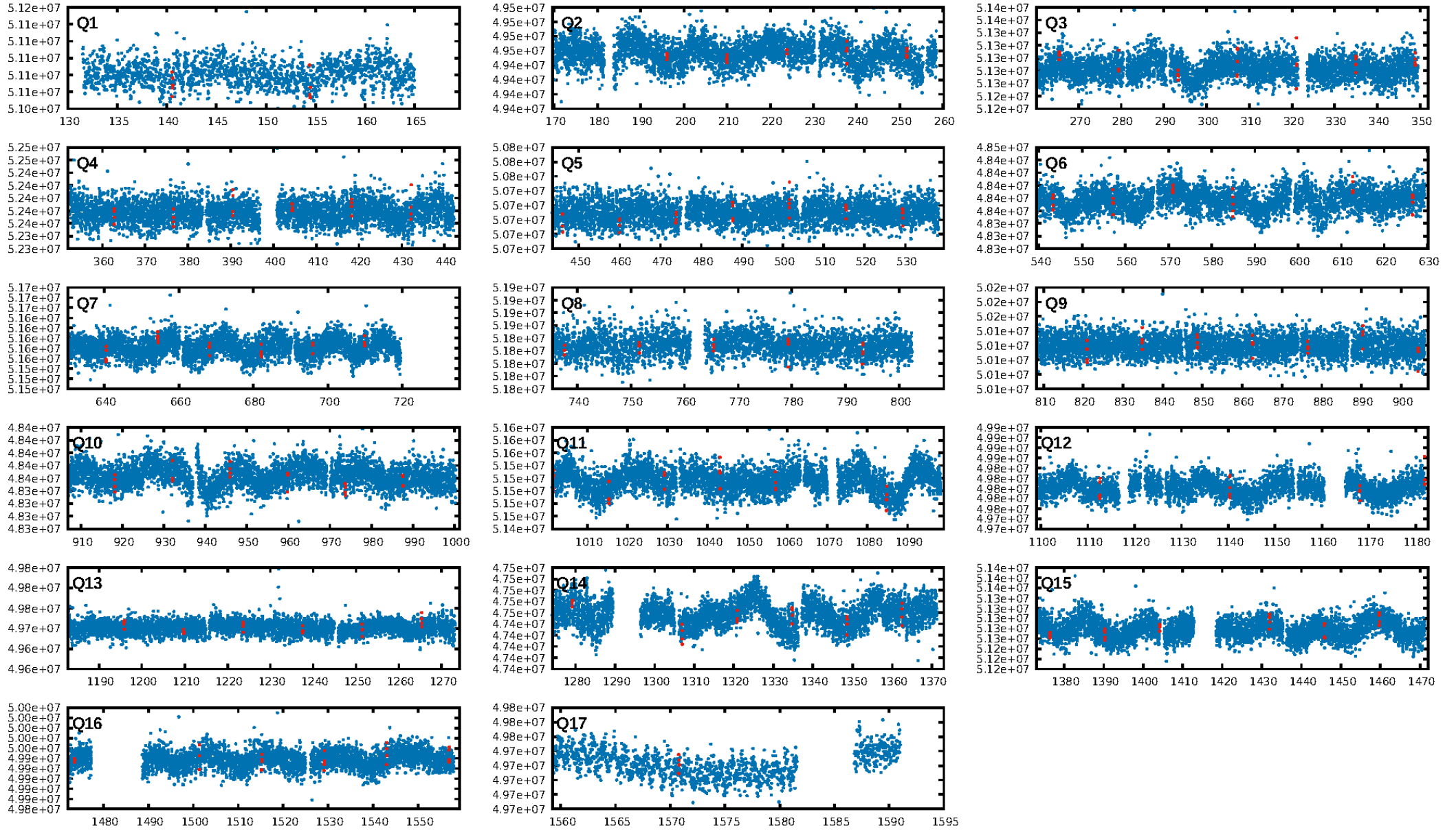
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.01σ]
LongPeriod-sig: 100.0% [28.26σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 2.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [12/13]
GhostDiagnostic-chr: 2.081
Centroid-sig: 8.6%
Centroid-so: 1.732 arcsec [2.05σ]
OotOffset-rm: 1.602 arcsec [2.00σ]
KicOffset-rm: 1.432 arcsec [1.43σ]
OotOffset-st: 3/2/1/3 [9]
KicOffset-st: 3/2/1/3 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 0.71 [12/17]

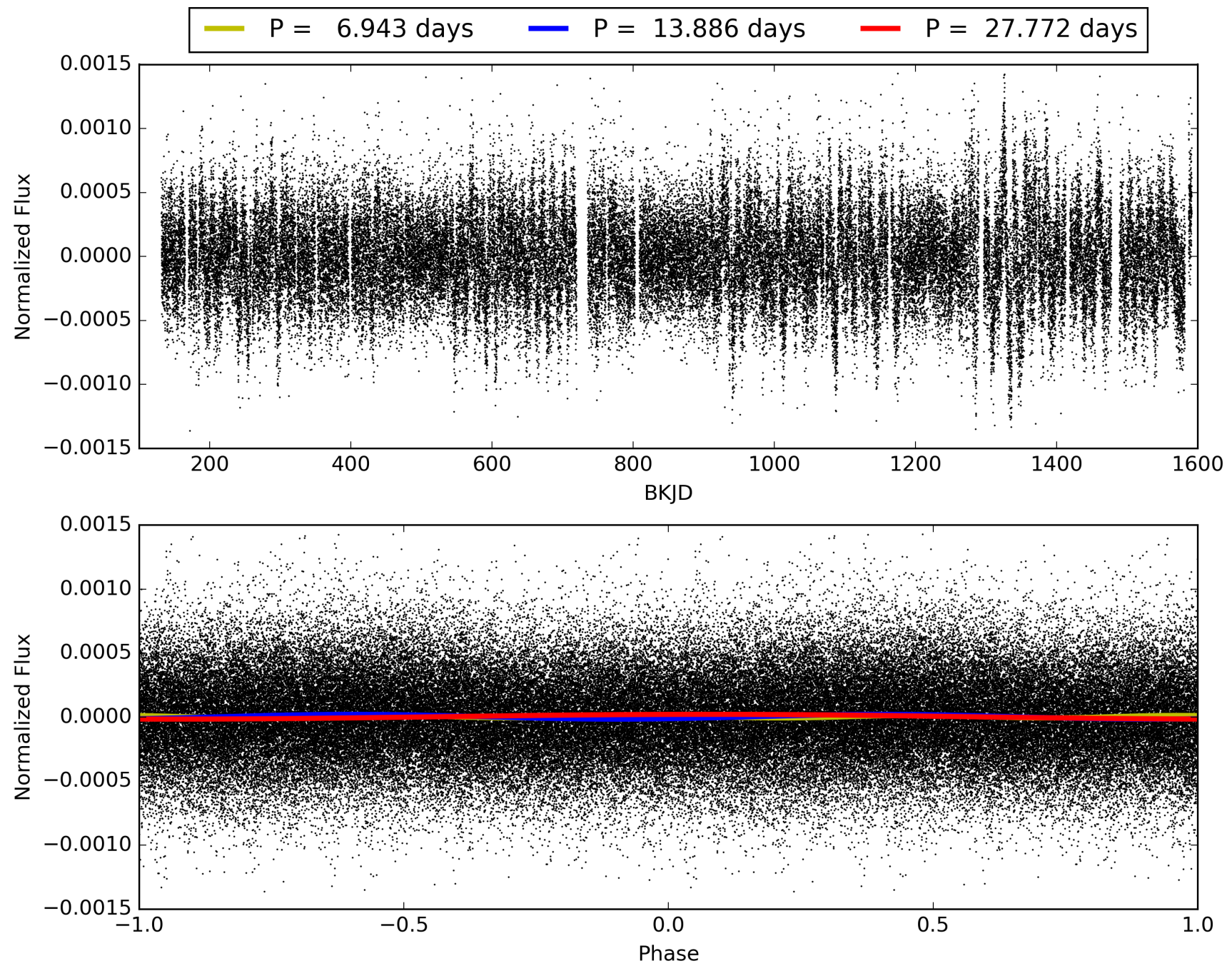
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:42 Z

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

TCE 008578742-07, PDC Light Curves

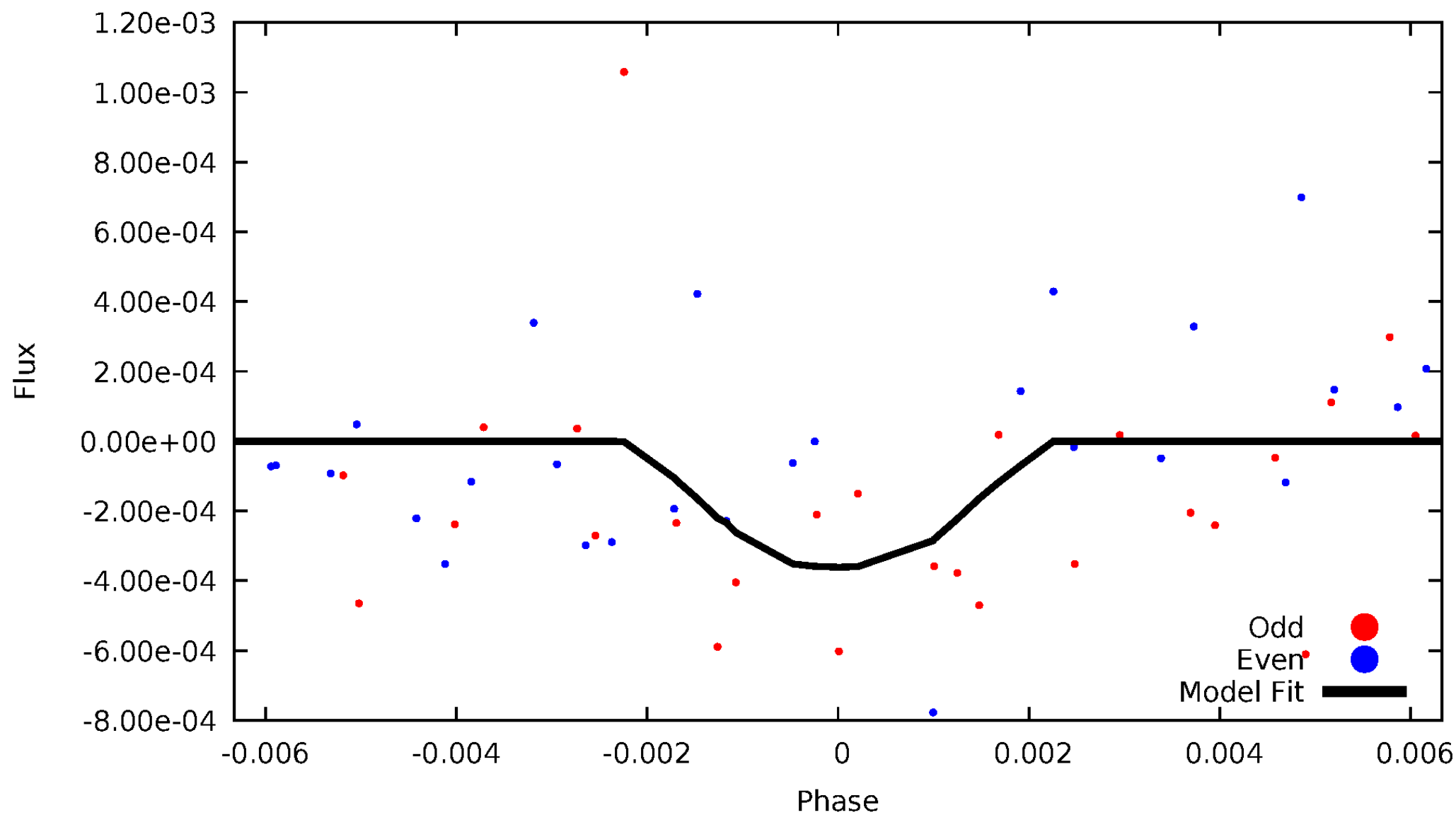


TCE 008578742-07



DV Odd/Even

TCE 008578742-07

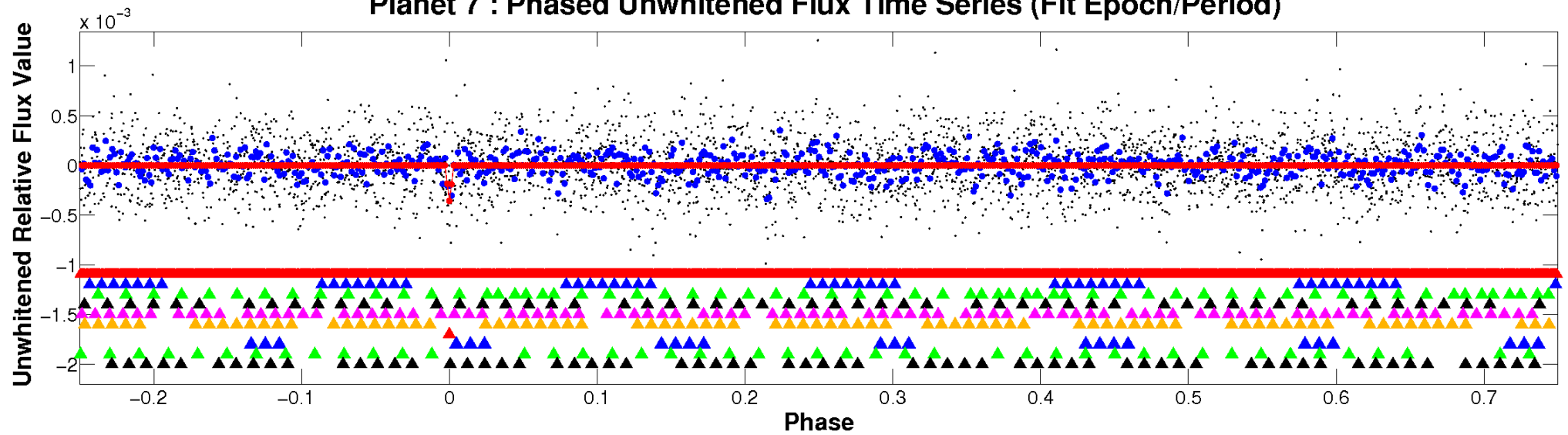


ALT Odd/Even

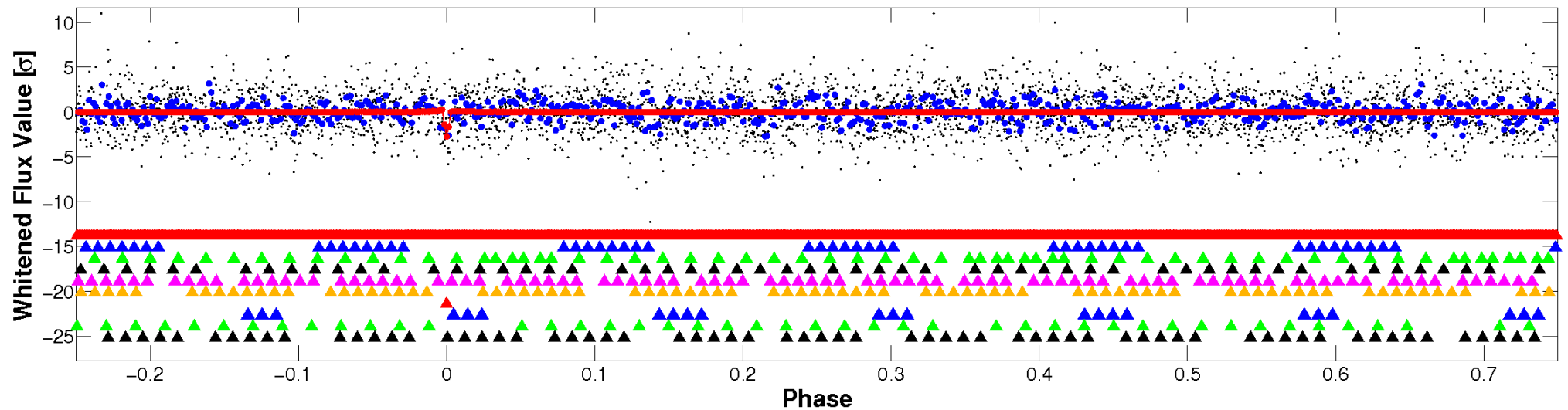
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

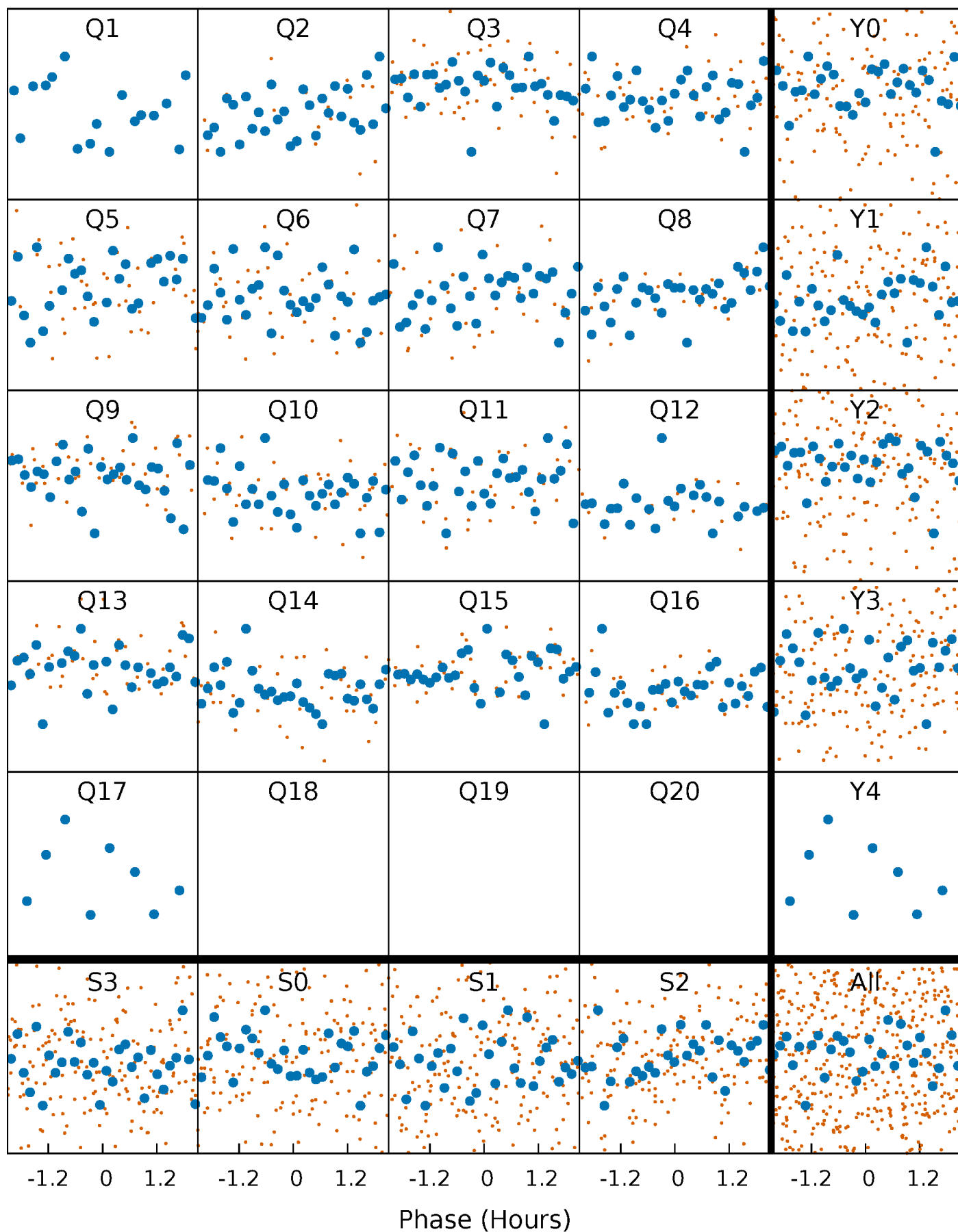


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



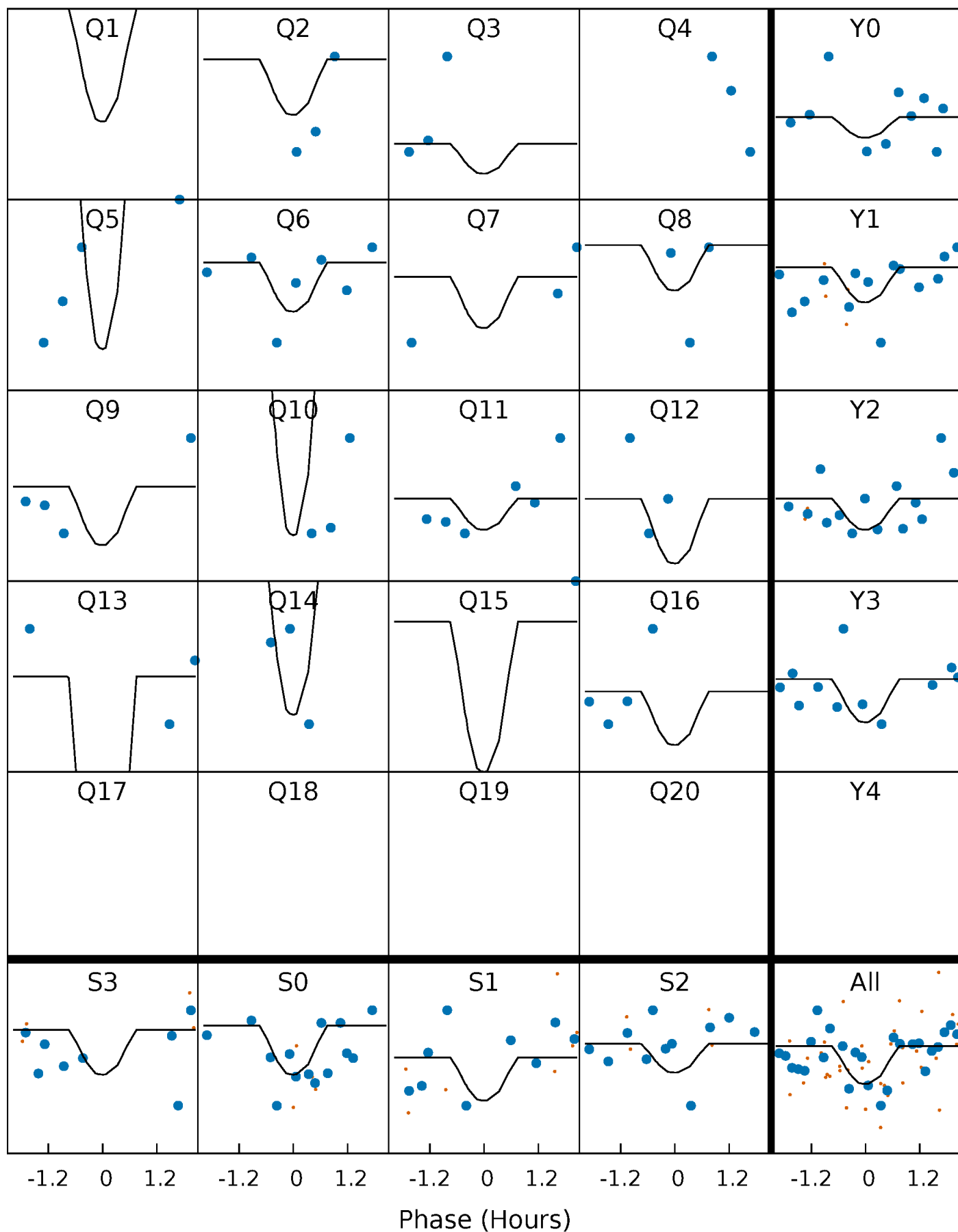
PDC Quarter-Phased Transit Curves

TCE 008578742-07 P= 13.885980 Days $T_0=140.546605$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008578742-07 $P = 13.885980$ Days $T_0 = 140.546605$ (BKJD)

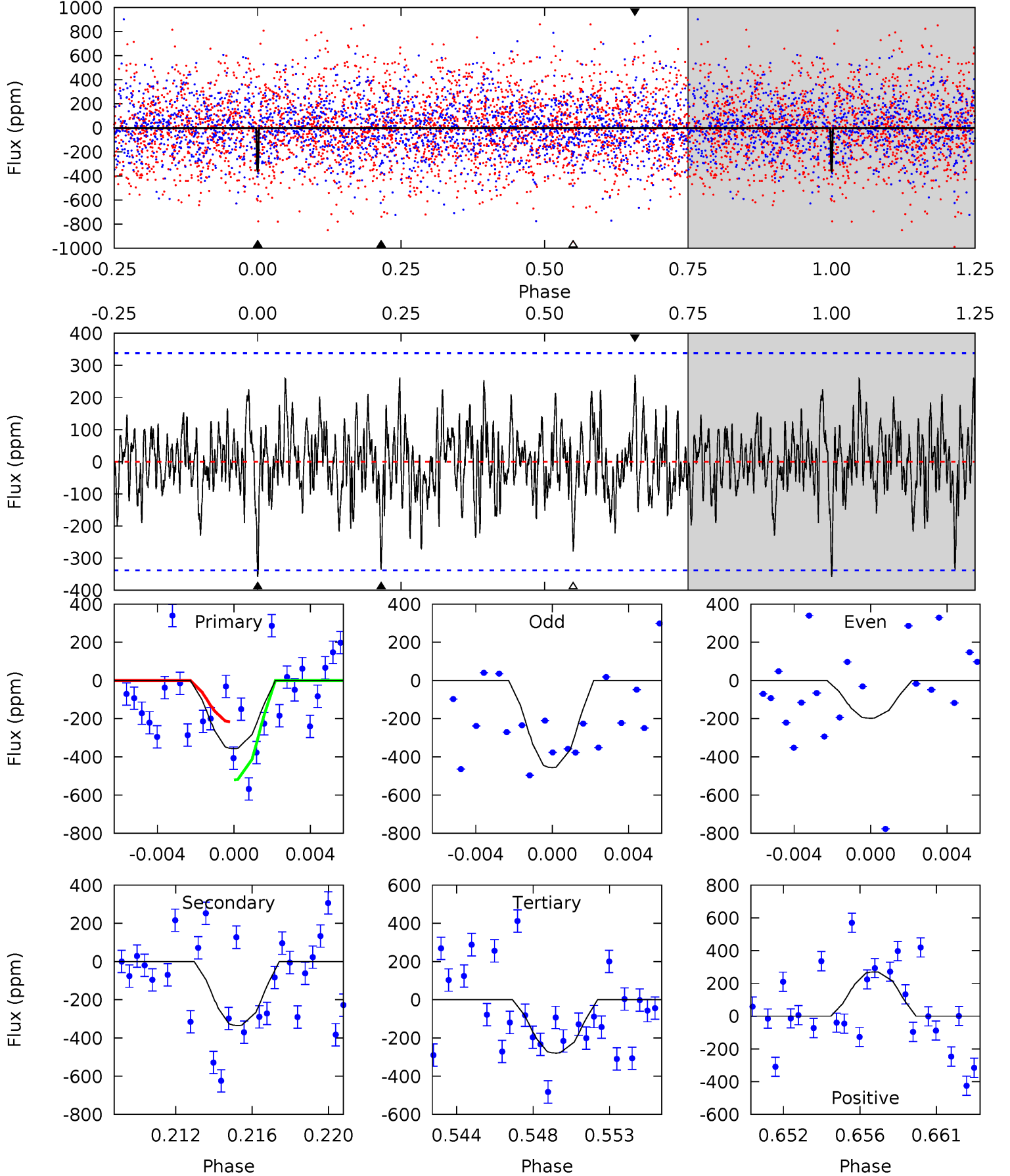


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008578742-07, P = 13.885980 Days, E = 126.660625 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.49 | 5.15 | 4.29 | 4.15 | 5.19 | 2.87 | 1.40 | 1.20 | 1.34 | 0.86 | 1.00 | 1.93 | 1.06 | 0.43 | 2.33 |



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-07 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|-------------------|
| DV | -335 ± 65 | $5.35^{+4.89}_{-3.69}$ | 1124^{+80}_{-62} | 4002^{+2674}_{-770} | 76^{+729}_{-56} |
| Alt. | N/A | N/A | N/A | N/A | N/A |

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

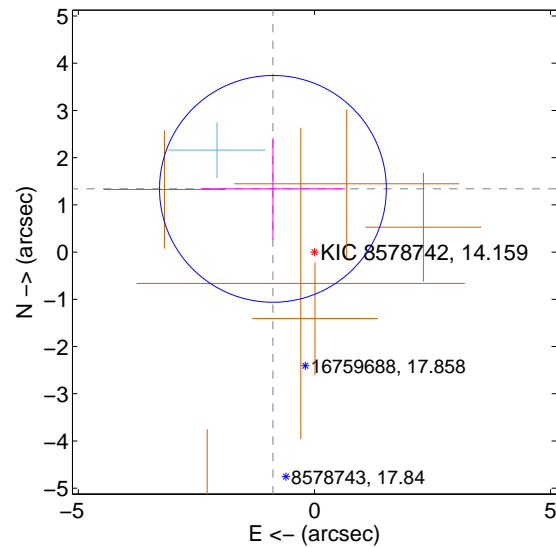
Supplemental centroid analysis for 008578742-07. Kepler magnitude: 14.16. Transit SNR 8.32

There are 1 quarters with good PRF difference image offsets

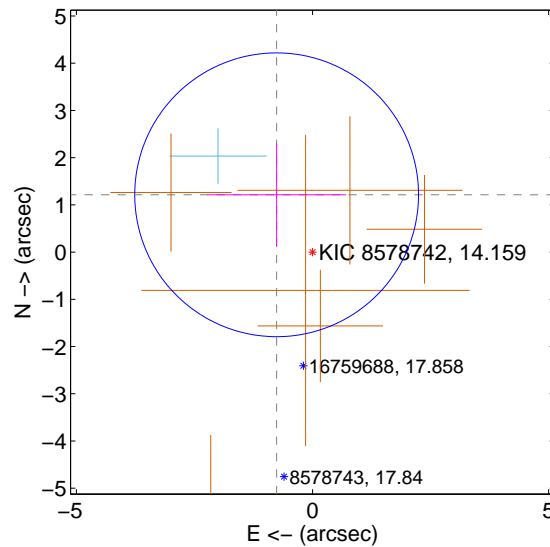
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.602 ± 0.800 | 2.00 | 0.879 ± 1.526 | 1.339 ± 1.075 |
| PRF-fit source offset from KIC position | 1.432 ± 1.002 | 1.43 | 0.760 ± 1.470 | 1.213 ± 1.091 |
| photometric centroid source offset | 1.73 ± 0.85 | 2.05 | -1.28 ± 0.83 | -1.17 ± 0.86 |

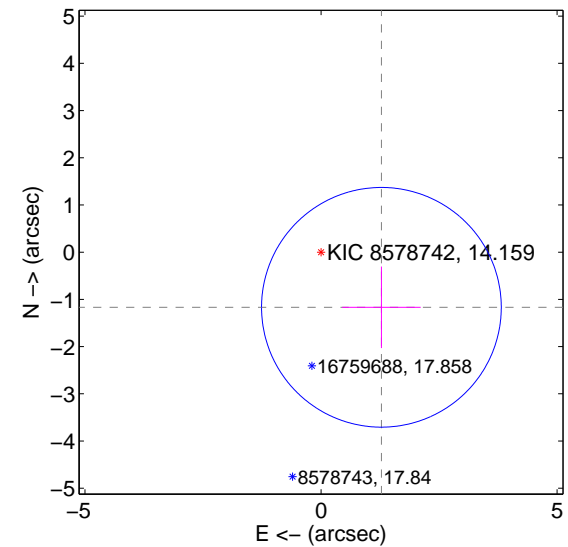
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

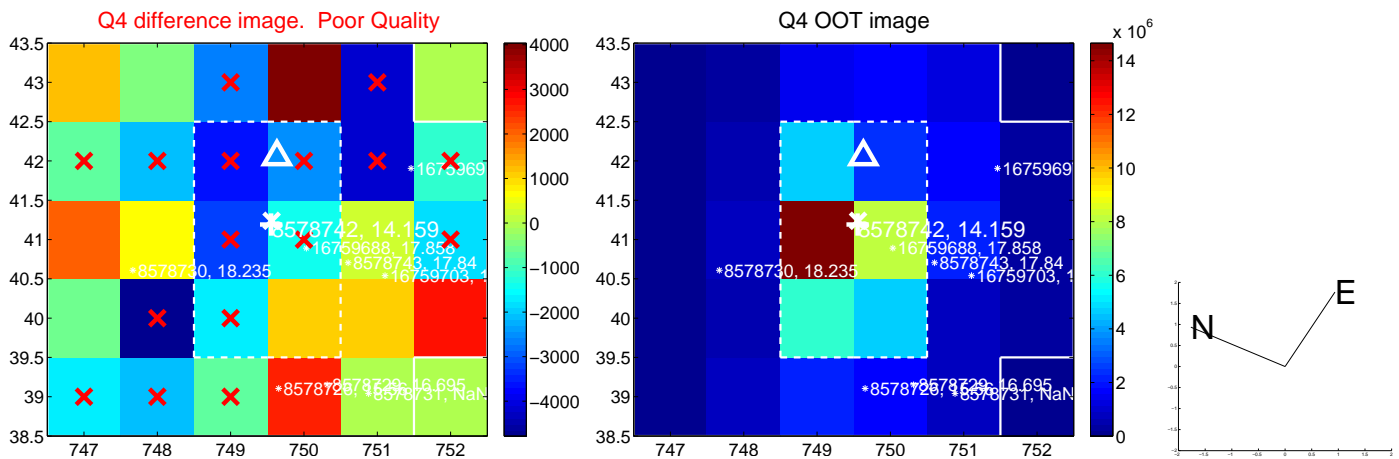
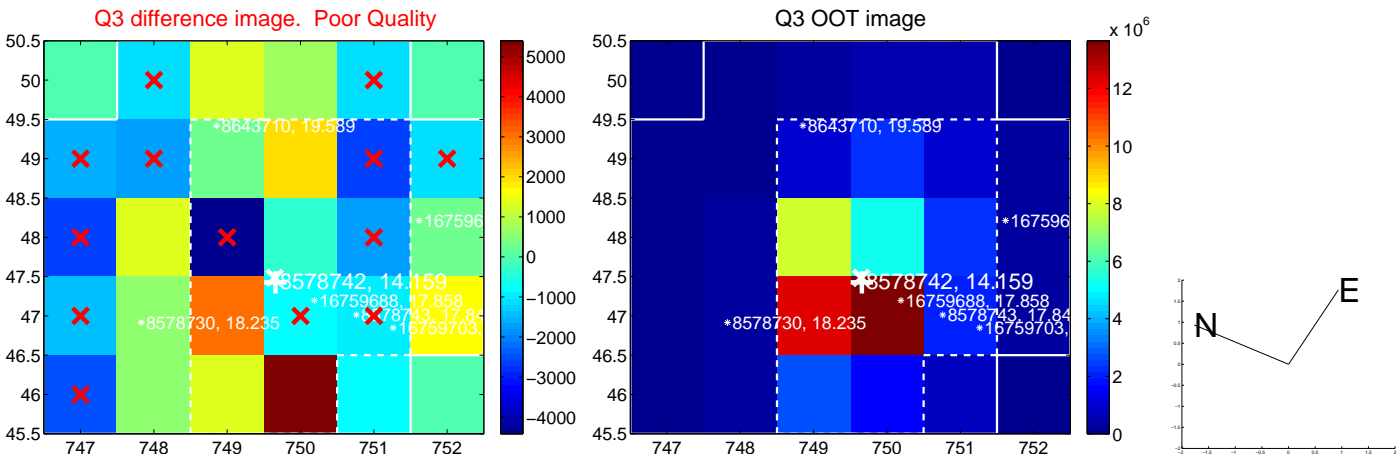
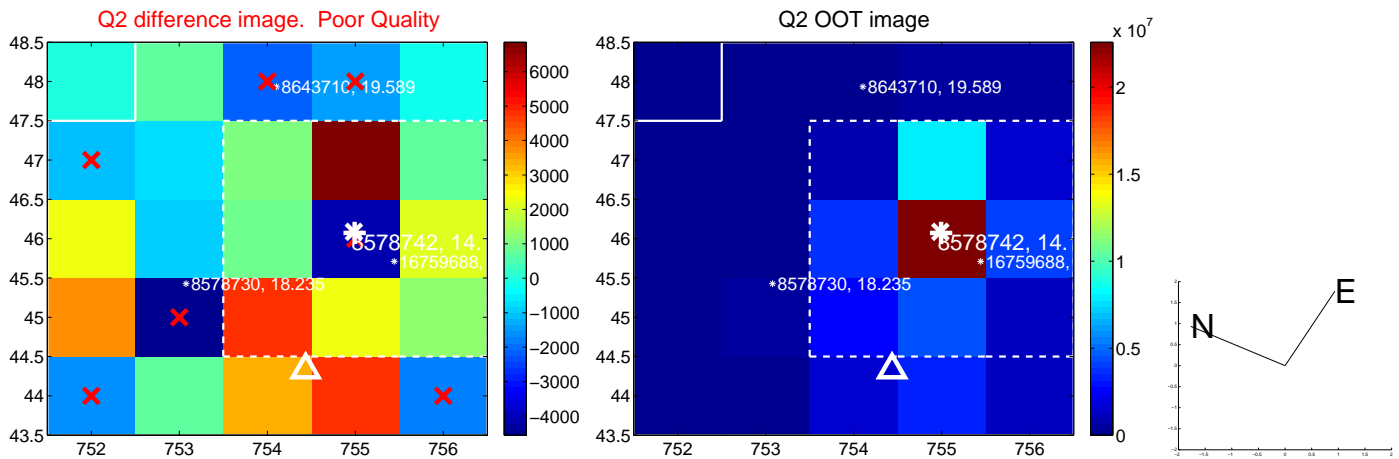
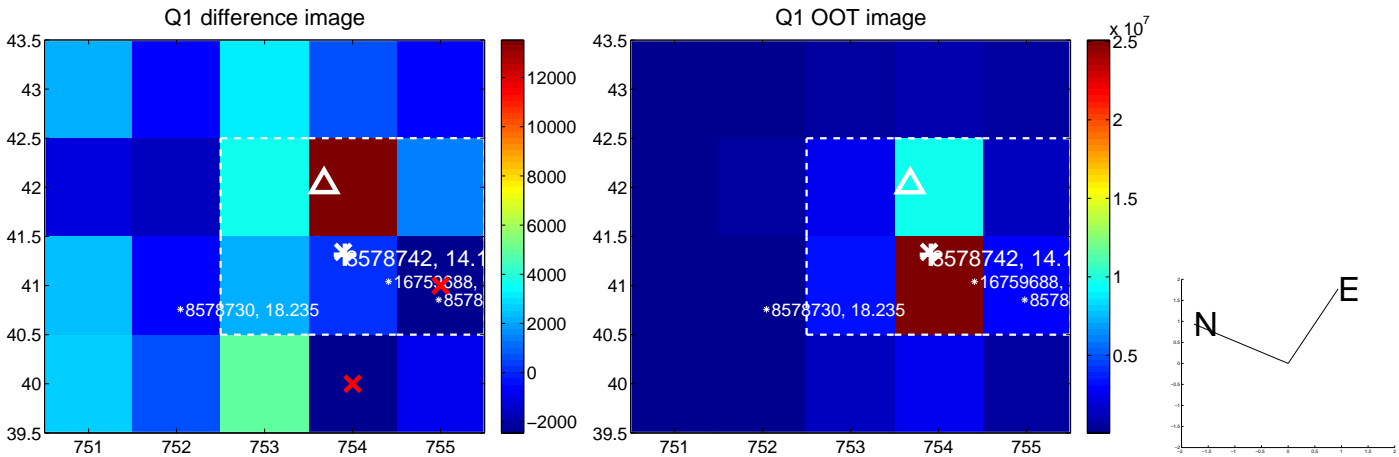


offset from photometric centroids

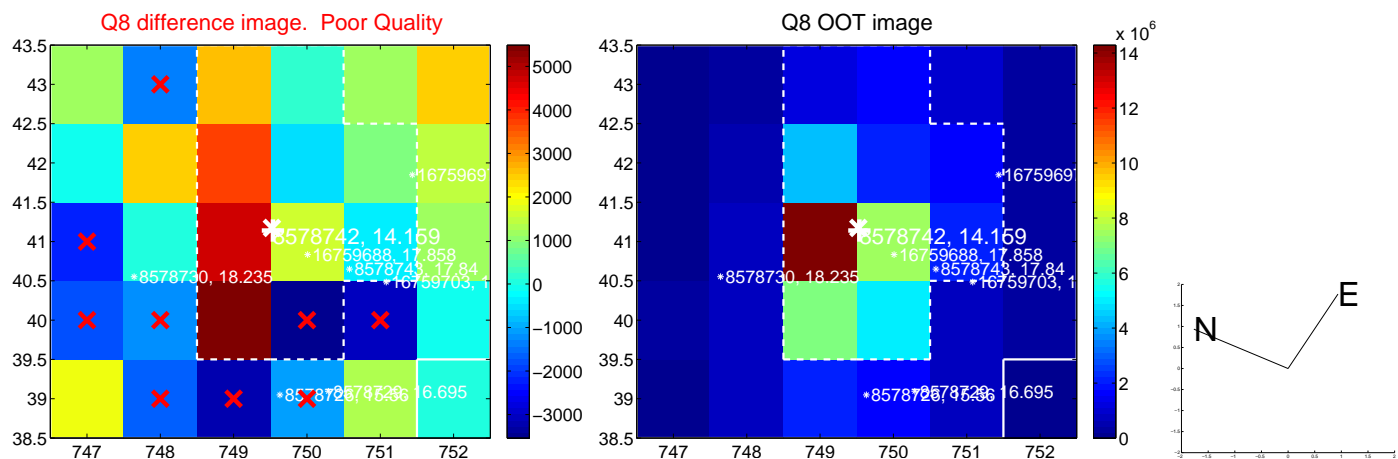
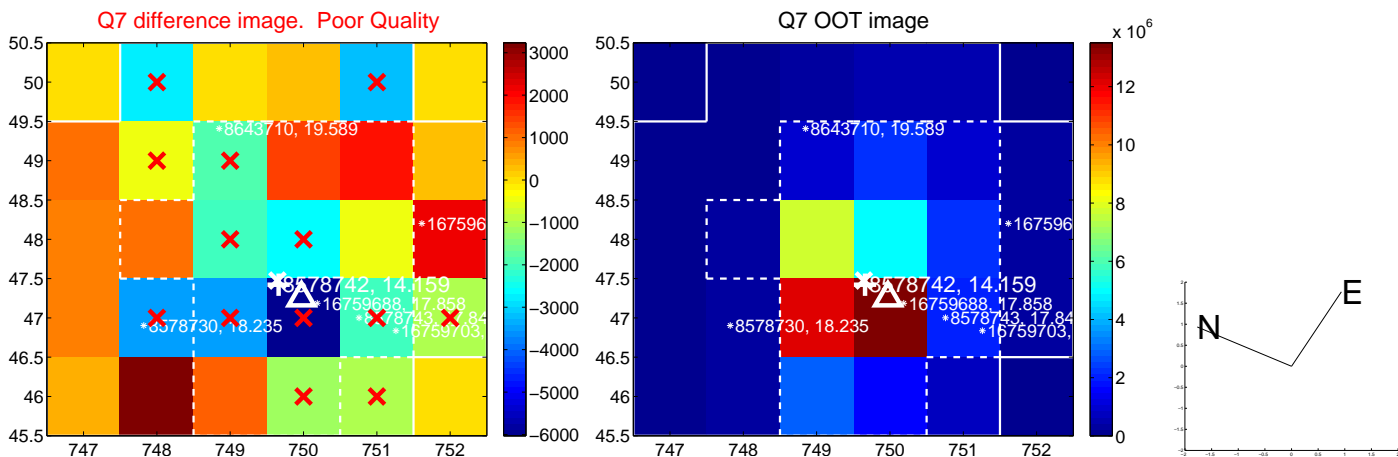
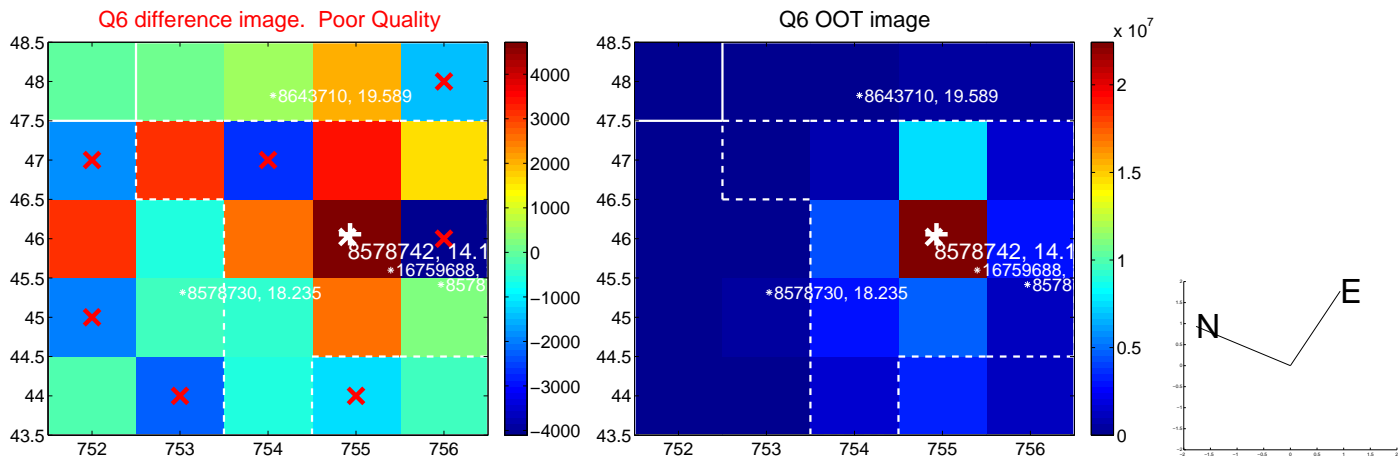
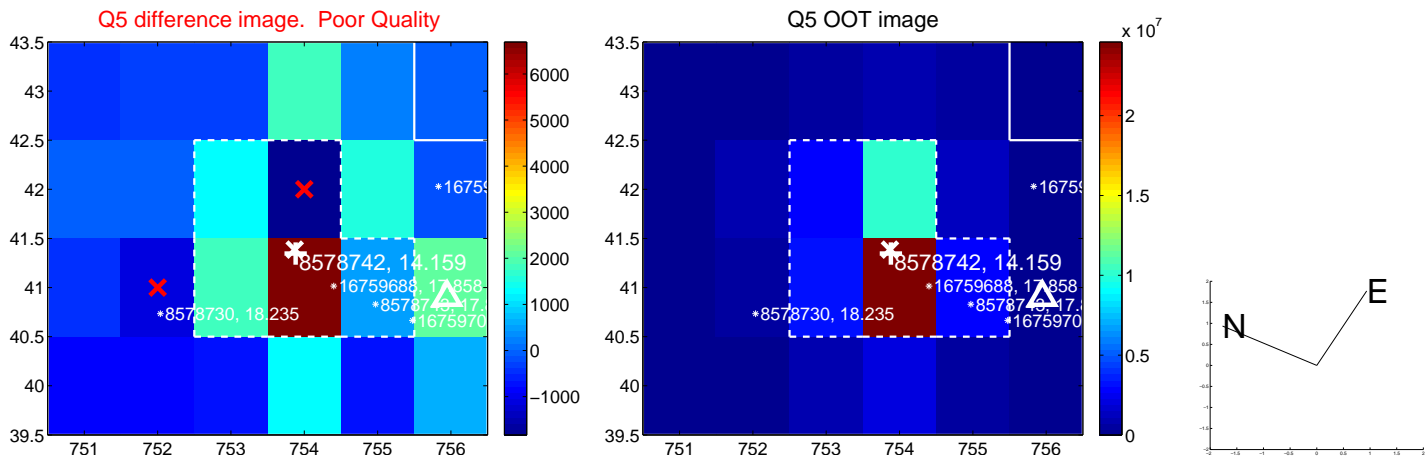


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

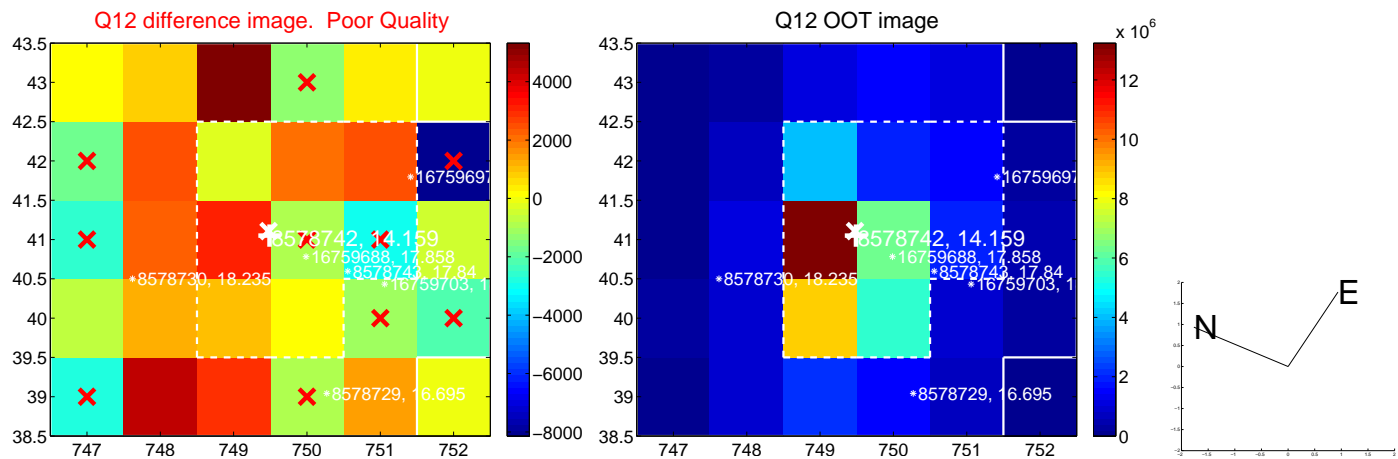
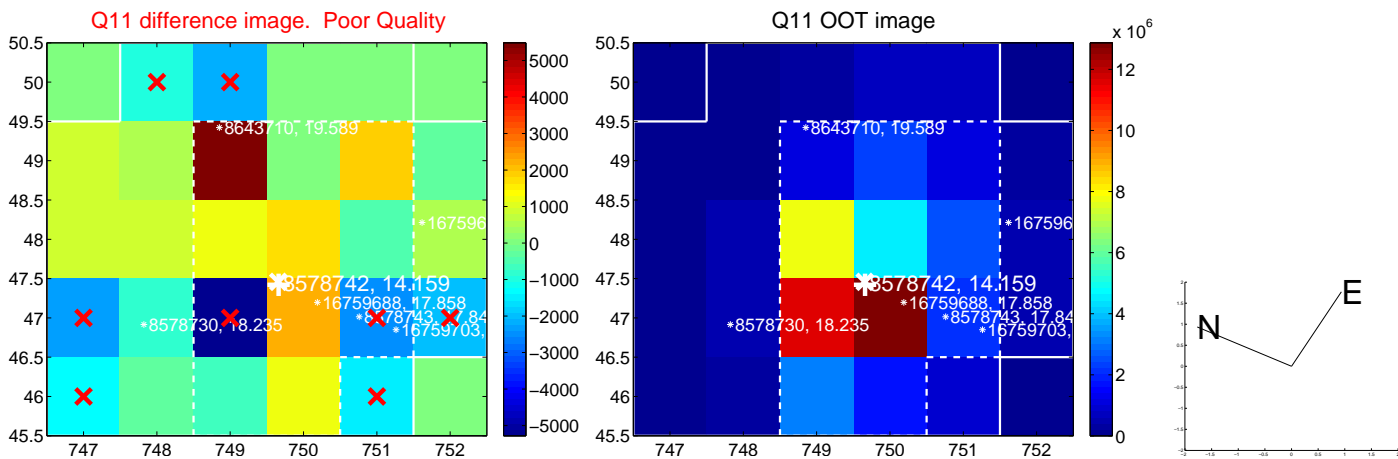
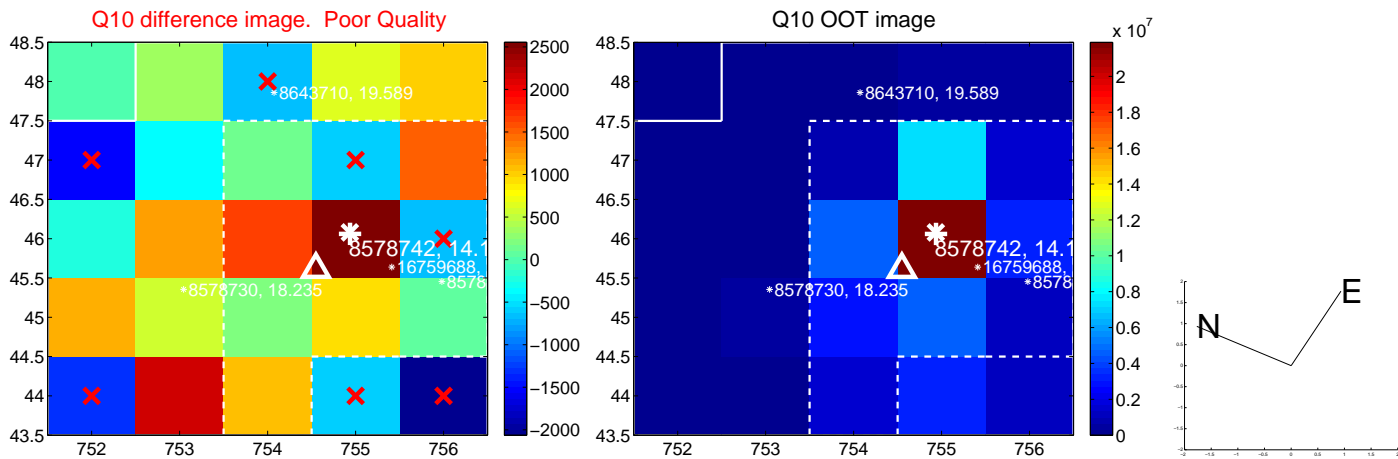
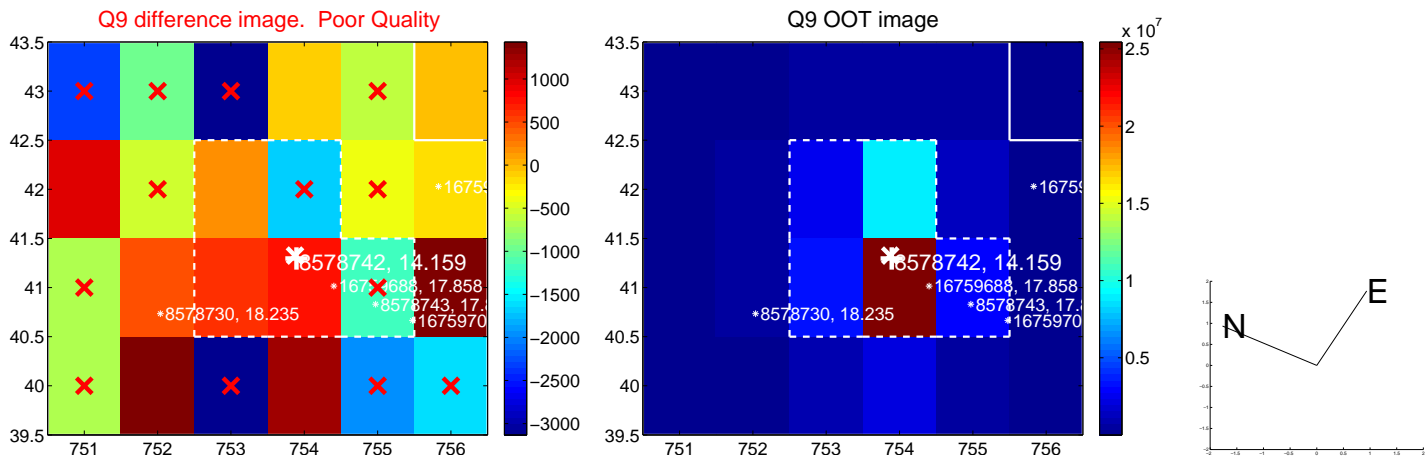
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



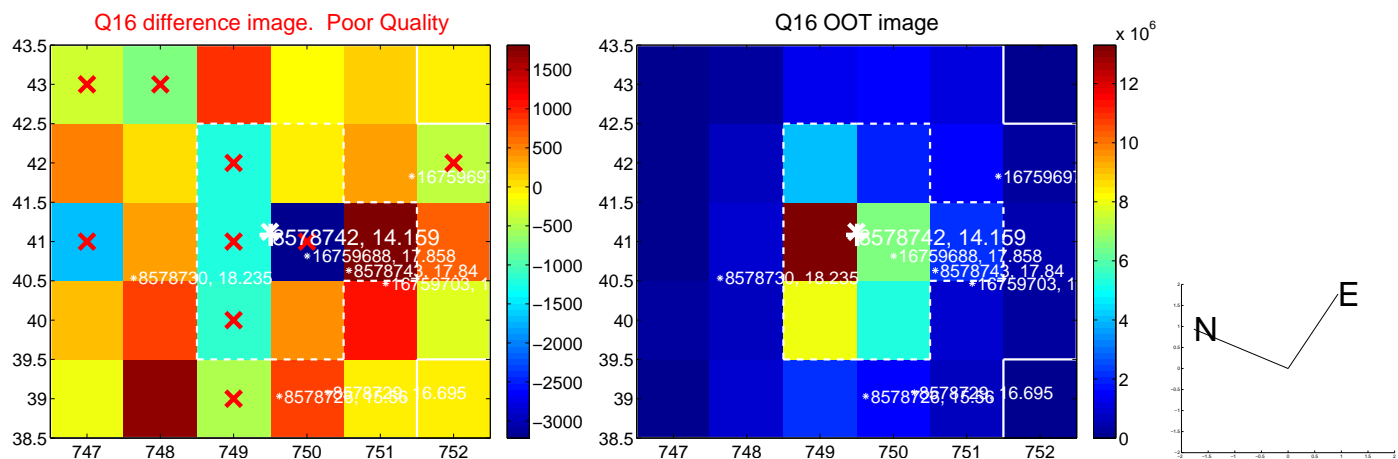
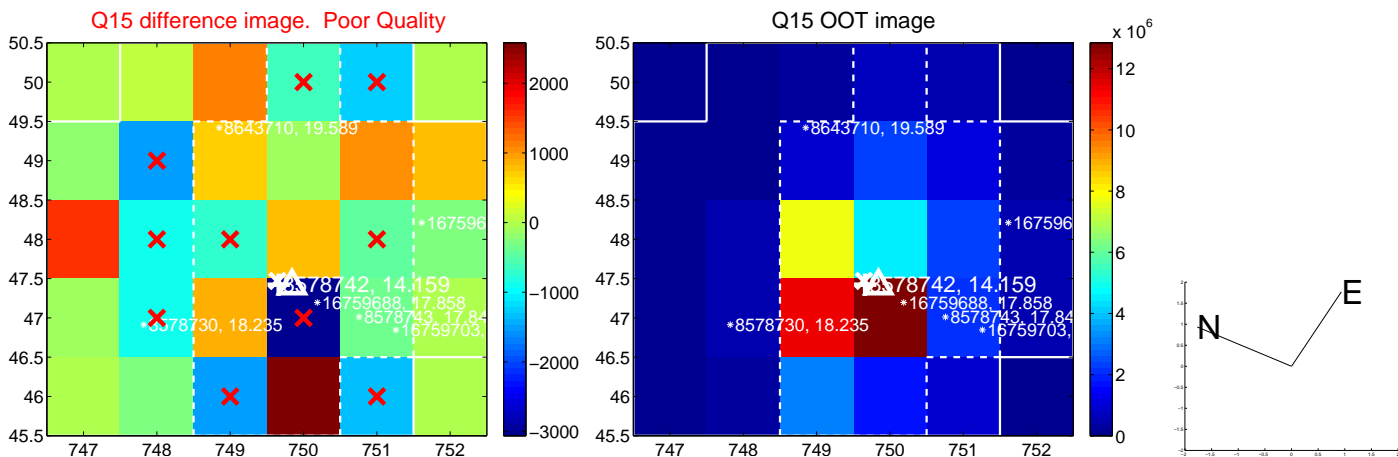
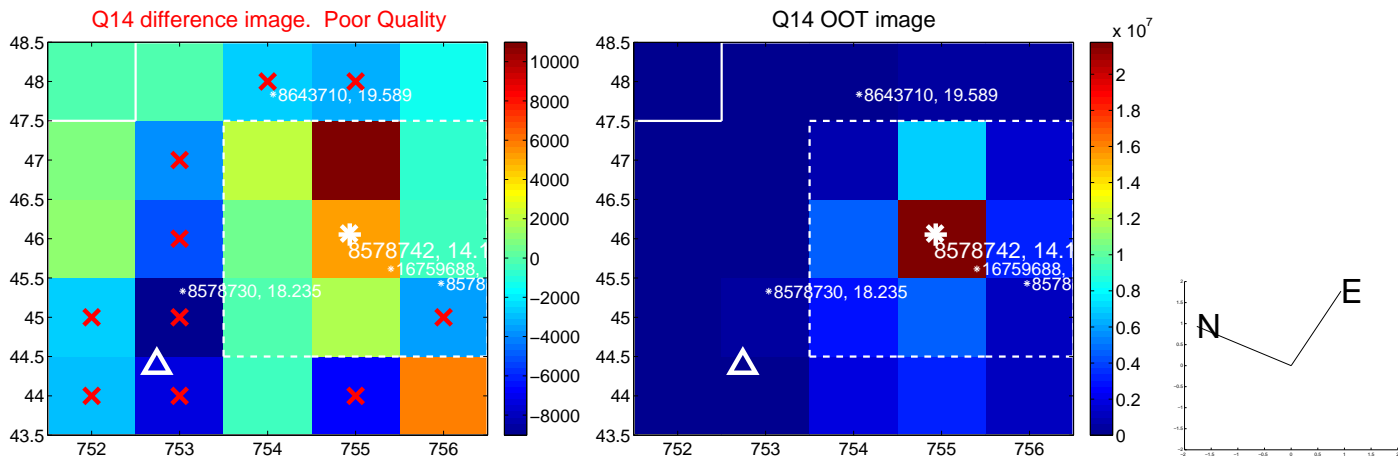
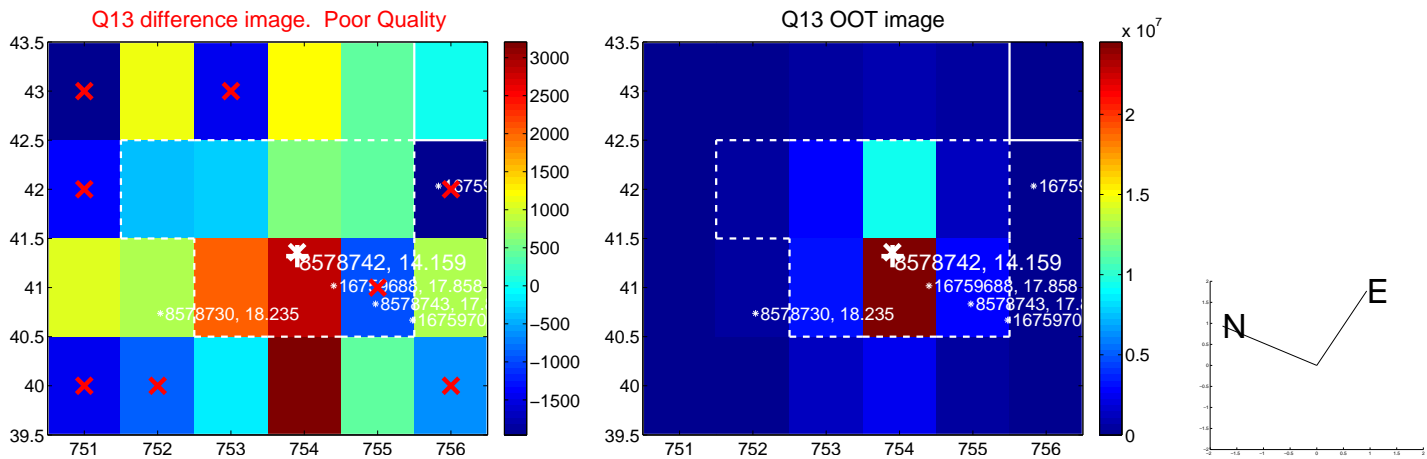
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



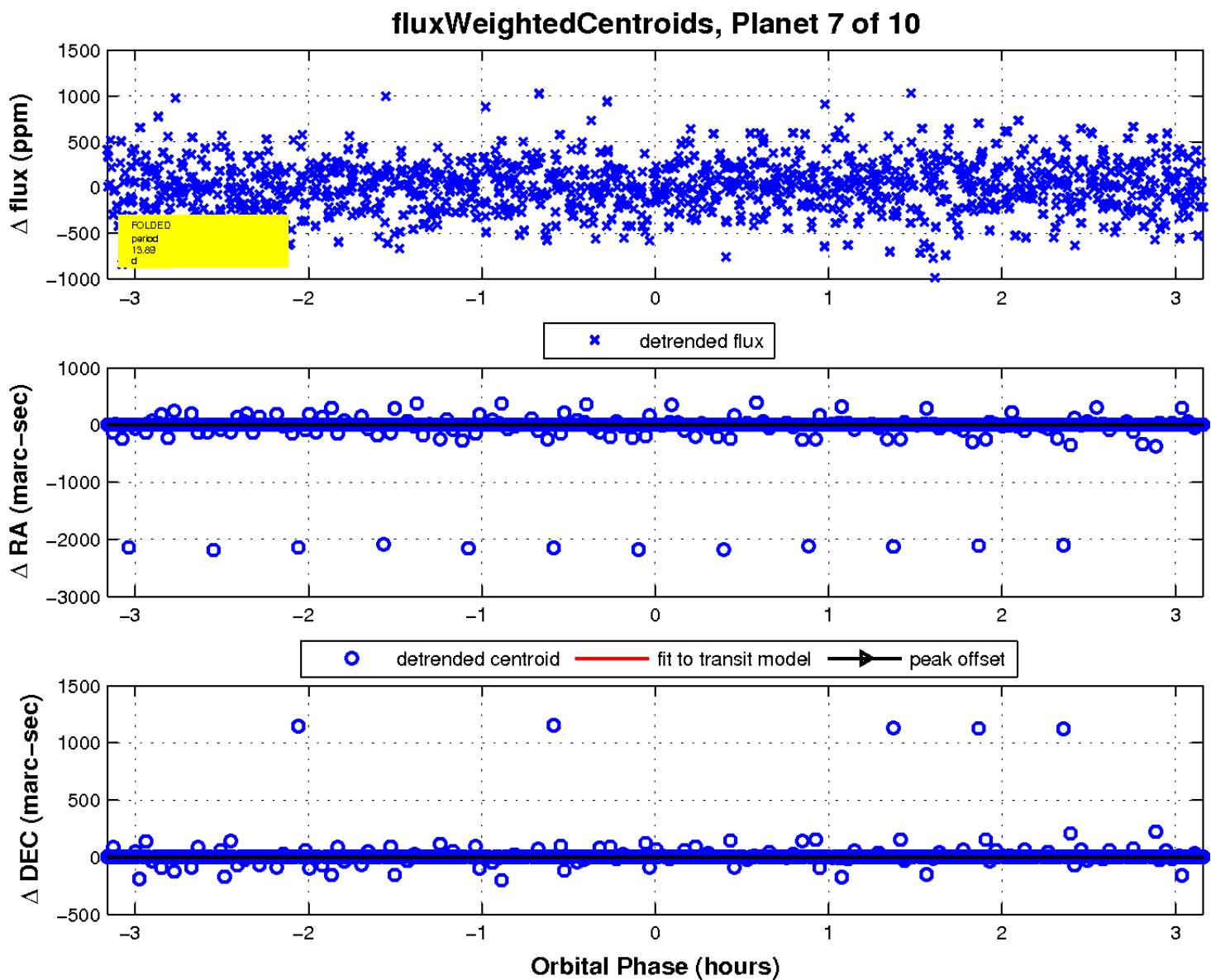
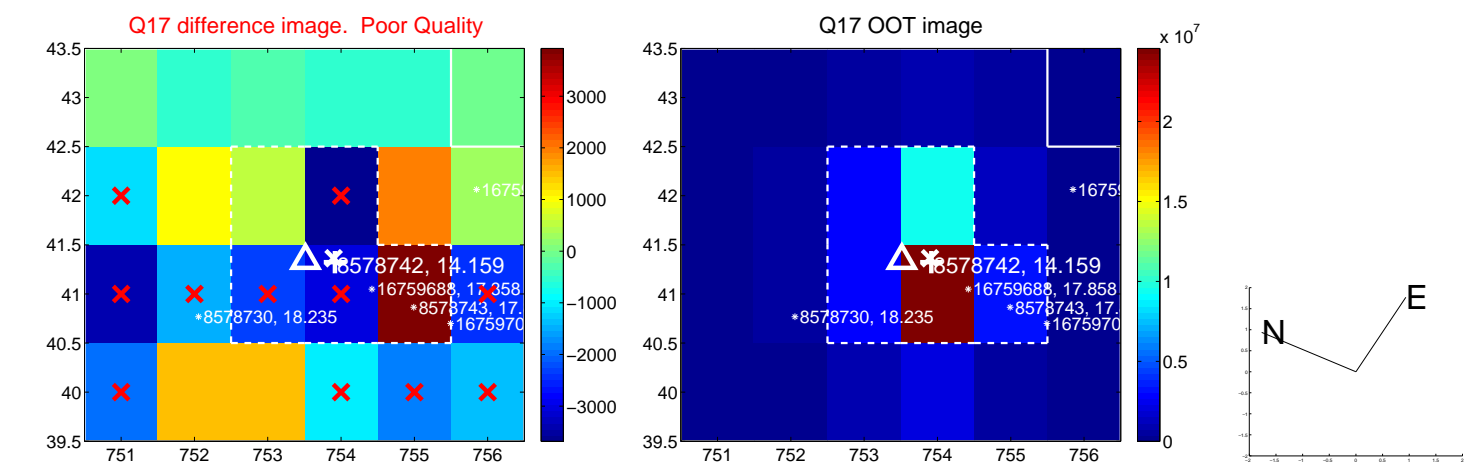
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

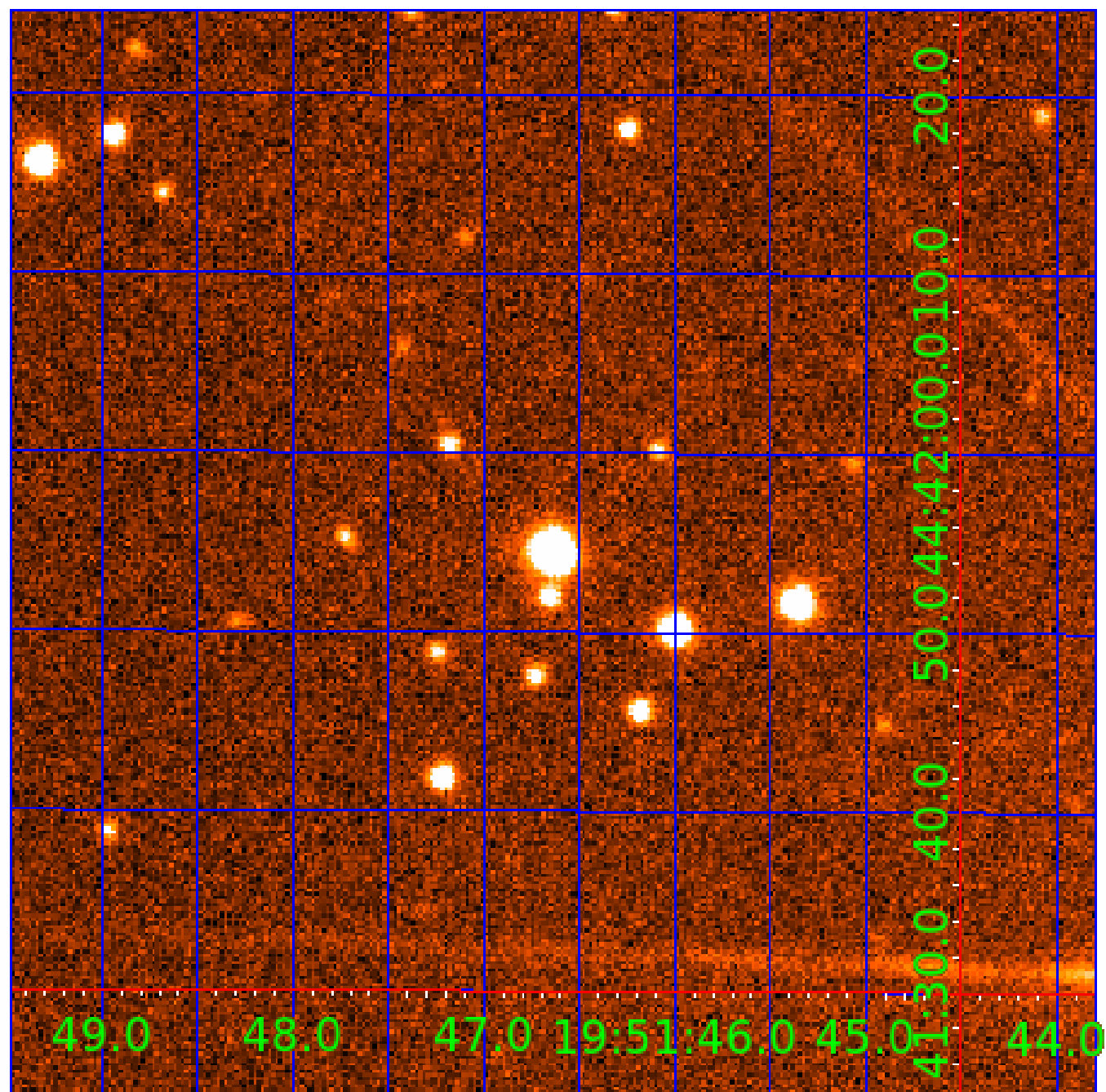


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

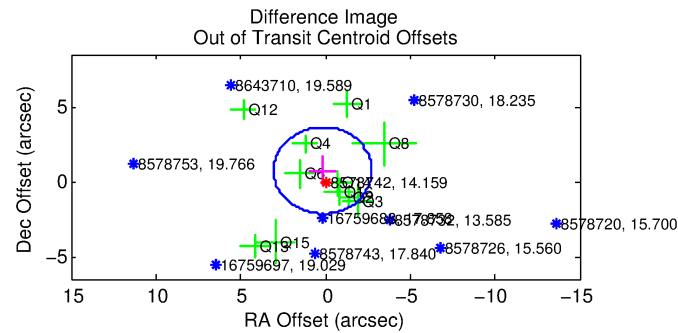
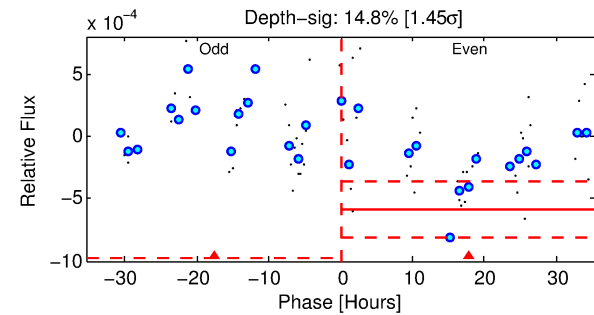
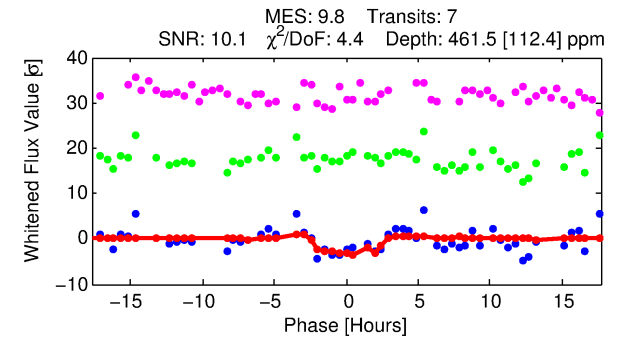
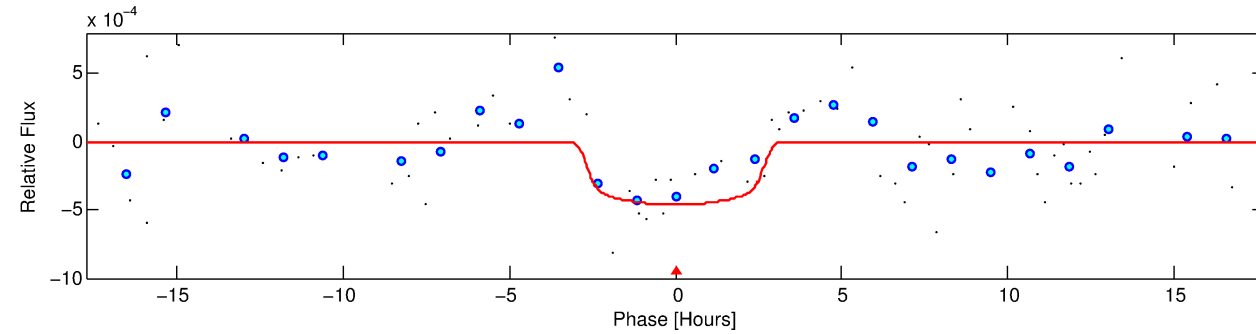
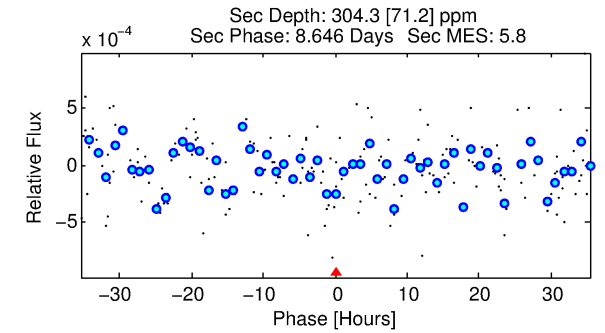
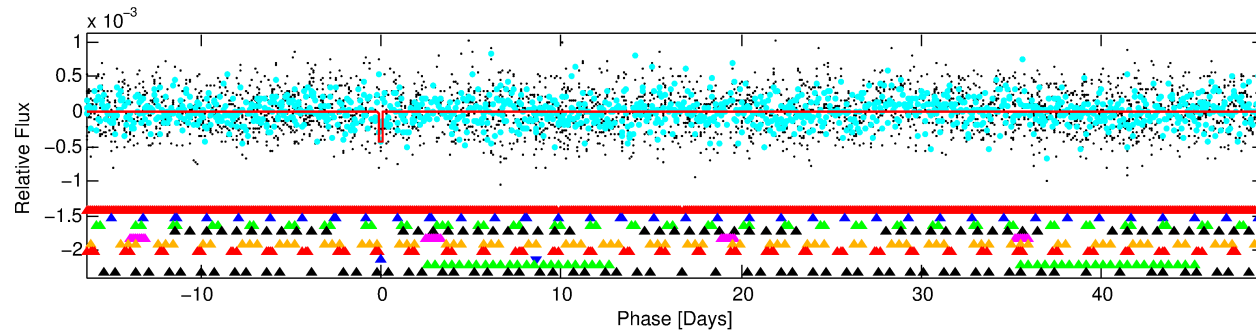
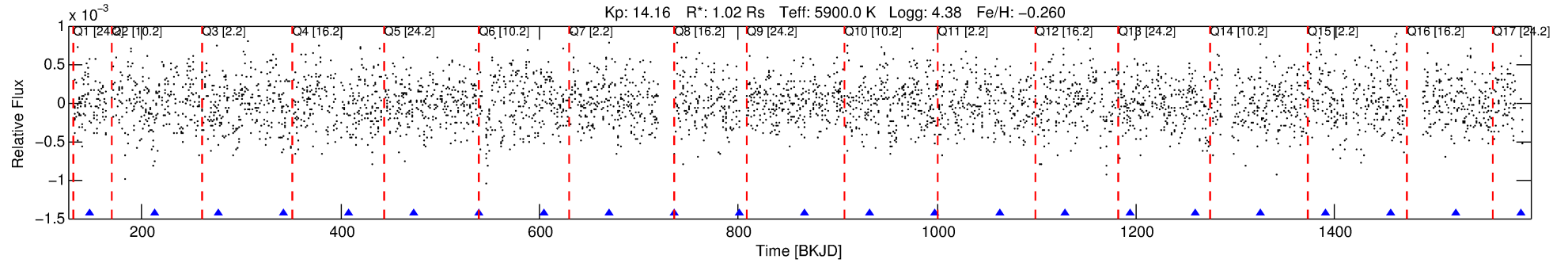
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-08

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 8 of 10 Period: 65.444 d



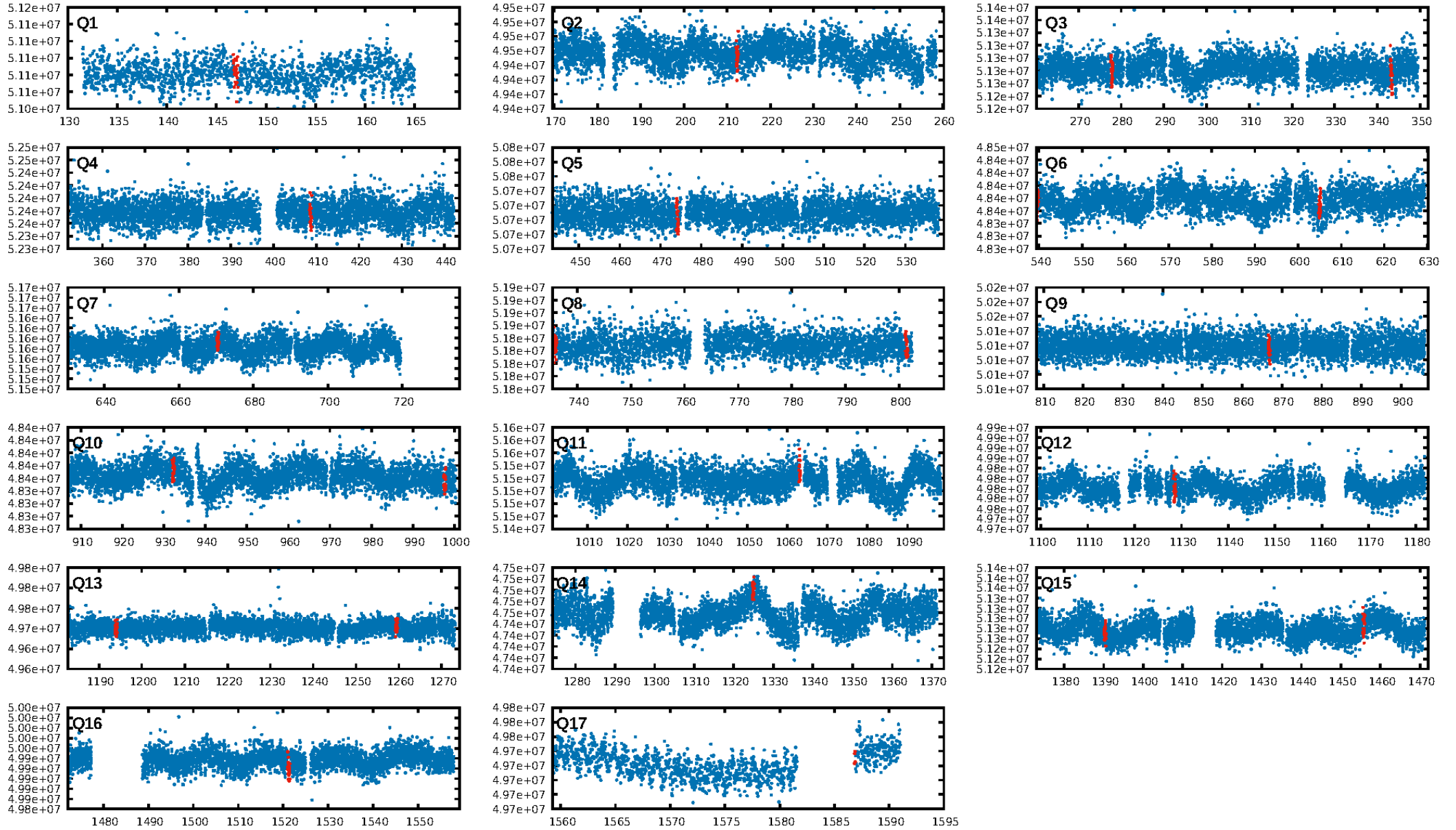
DV Fit Results:

Period = 65.44360 [0.00615] d
Epoch = 146.9223 [0.0642] BKJD
Rp/R* = 0.0227 [0.0223]
a/R* = 45.56 [207.00]
b = 0.87 [1.36]
Seff = 12.01 [4.39]
Teff = 475 [43] K
Rp = 2.54 [2.59] Re
a = 0.3081 [0.0719] AU
Ag = 2470.73 [4971.78] [0.50σ]
Teffp = 5175 [2569] K [1.83σ]

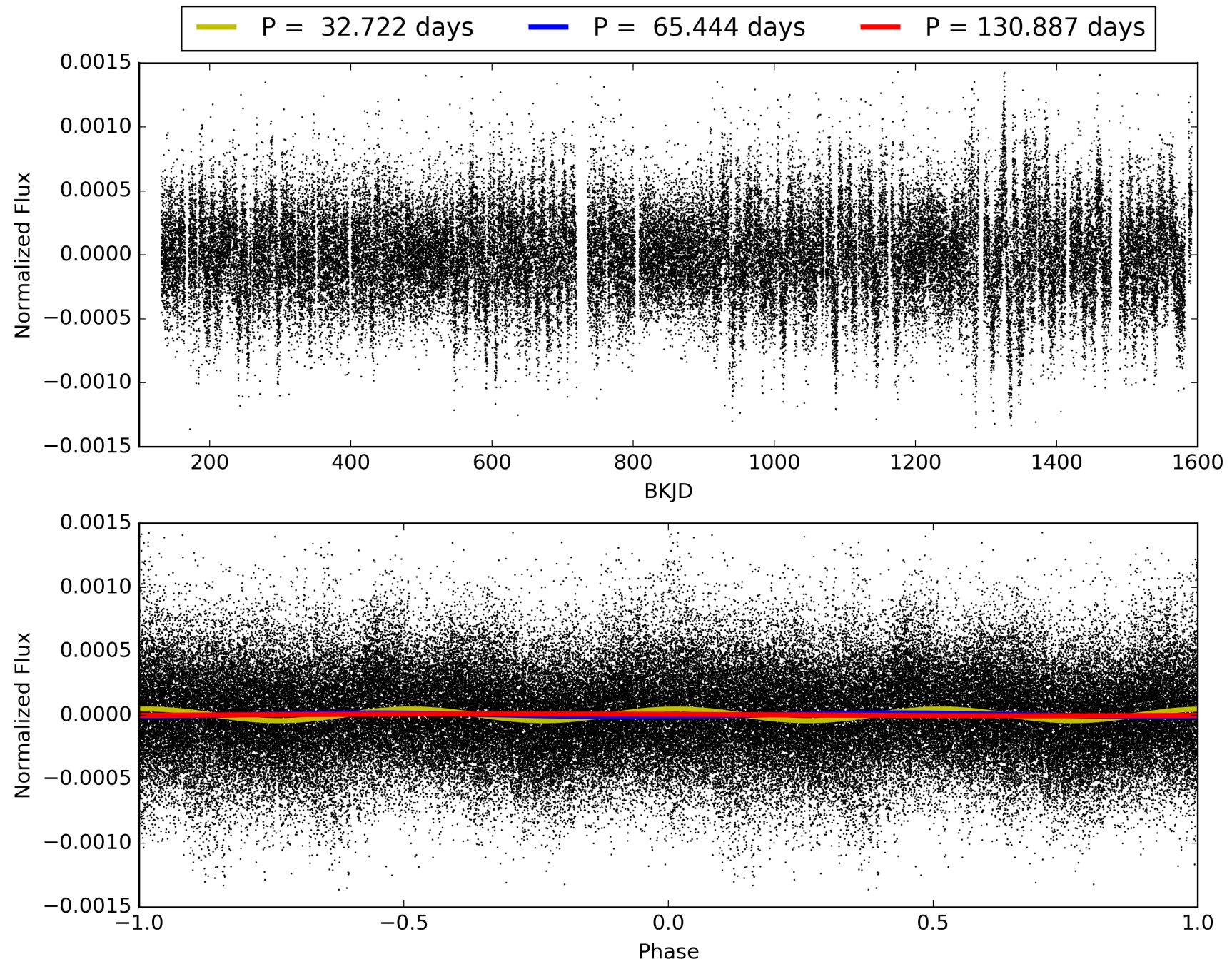
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [127.10σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 78.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.5582
Centroid-sig: 42.2%
Centroid-so: 1.263 arcsec [2.02σ]
OotOffset-rm: 0.754 arcsec [0.78σ]
KicOffset-rm: 0.662 arcsec [0.69σ]
OotOffset-st: 3/2/4/2 [11]
KicOffset-st: 3/2/4/2 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 008578742-08, PDC Light Curves

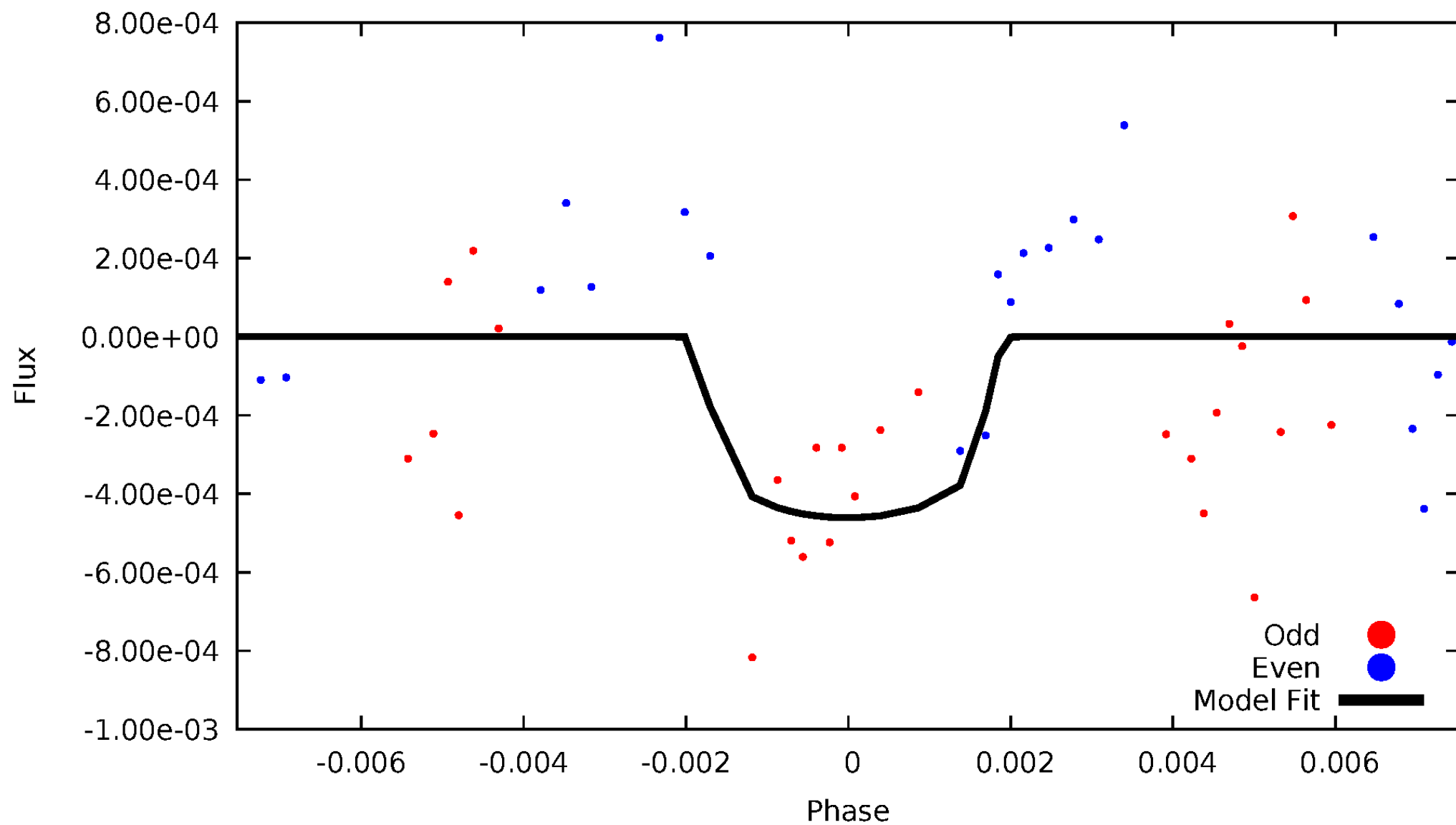


TCE 008578742-08



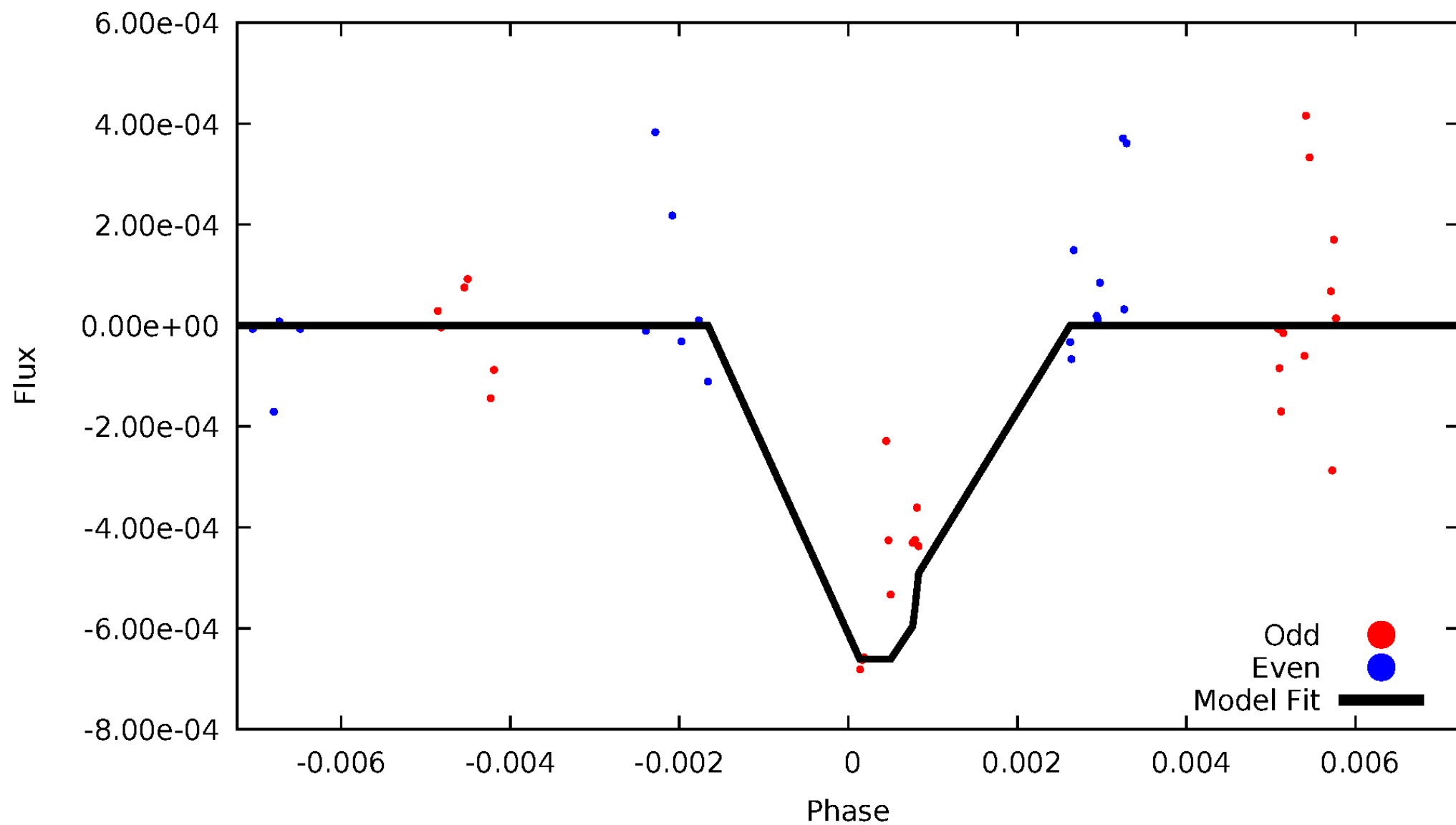
DV Odd/Even

TCE 008578742-08



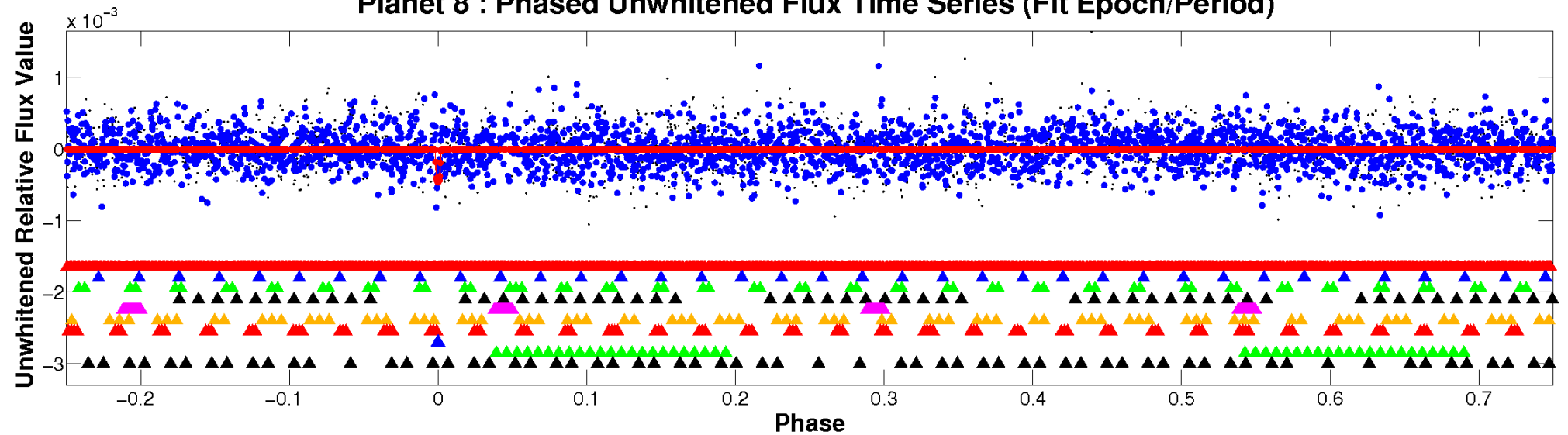
ALT Odd/Even

TCE 008578742-08

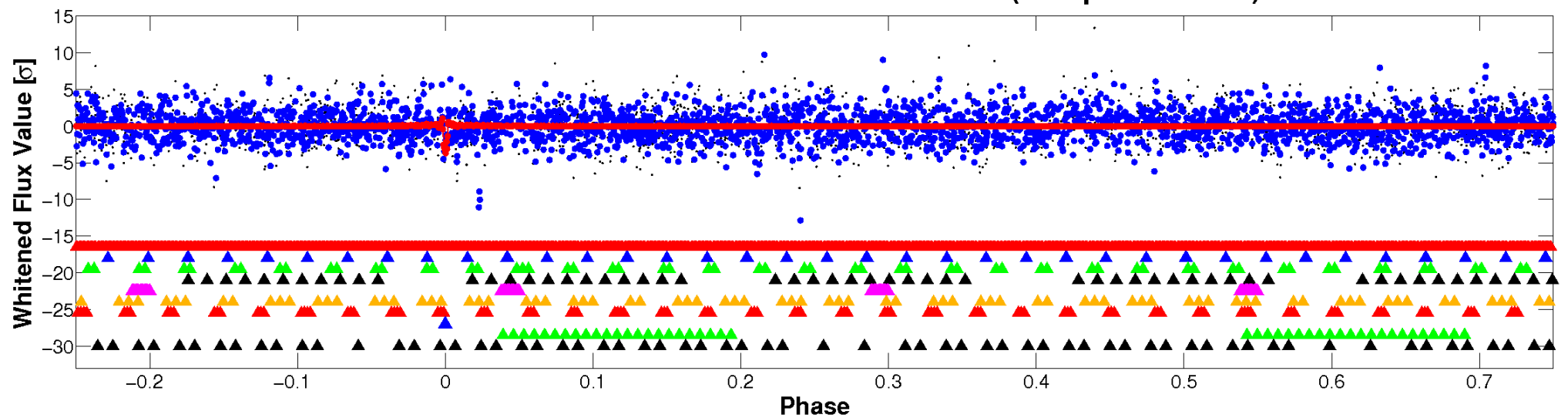


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

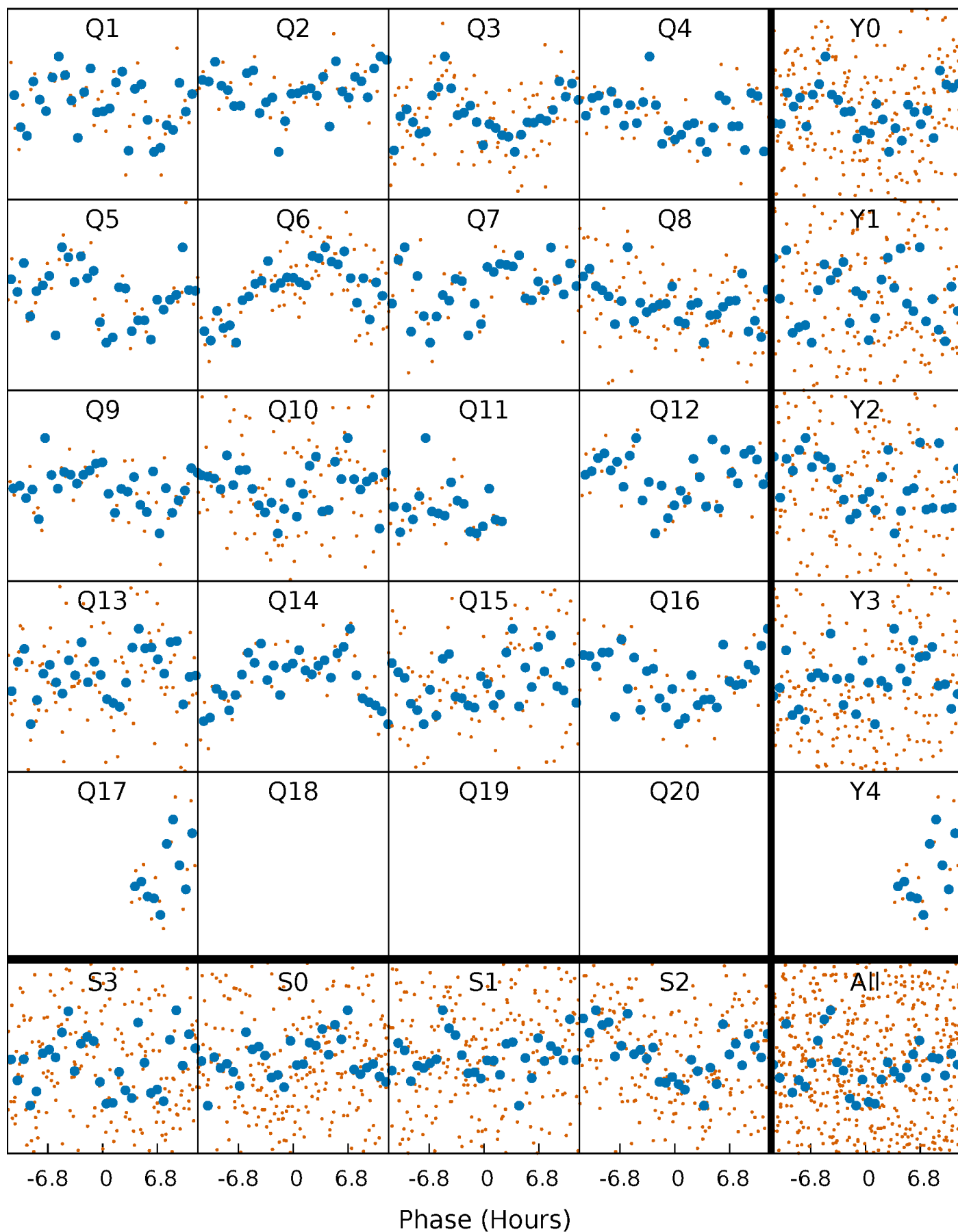


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



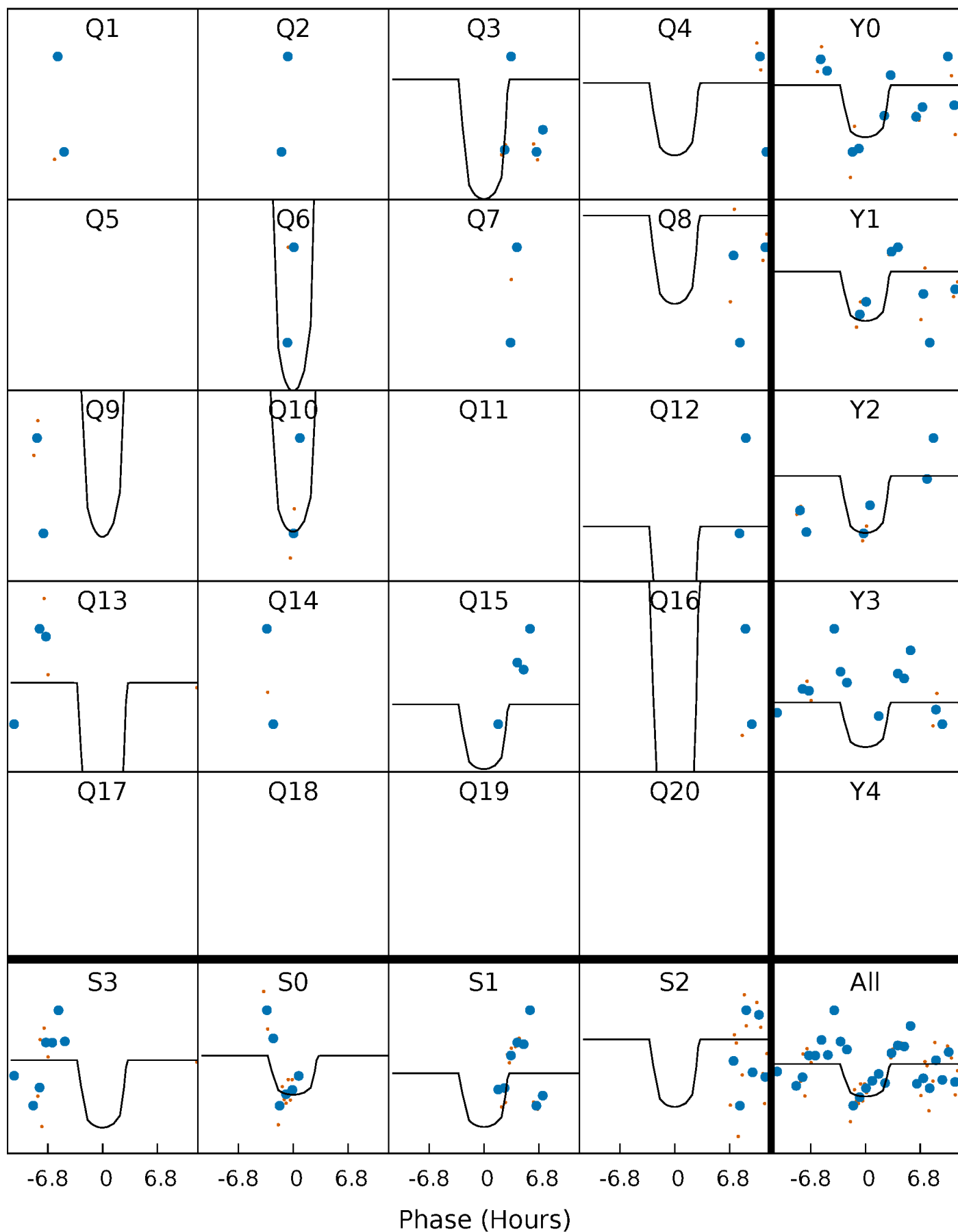
PDC Quarter-Phased Transit Curves

TCE 008578742-08 P= 65.443597 Days $T_0=146.922259$ (BKJD)



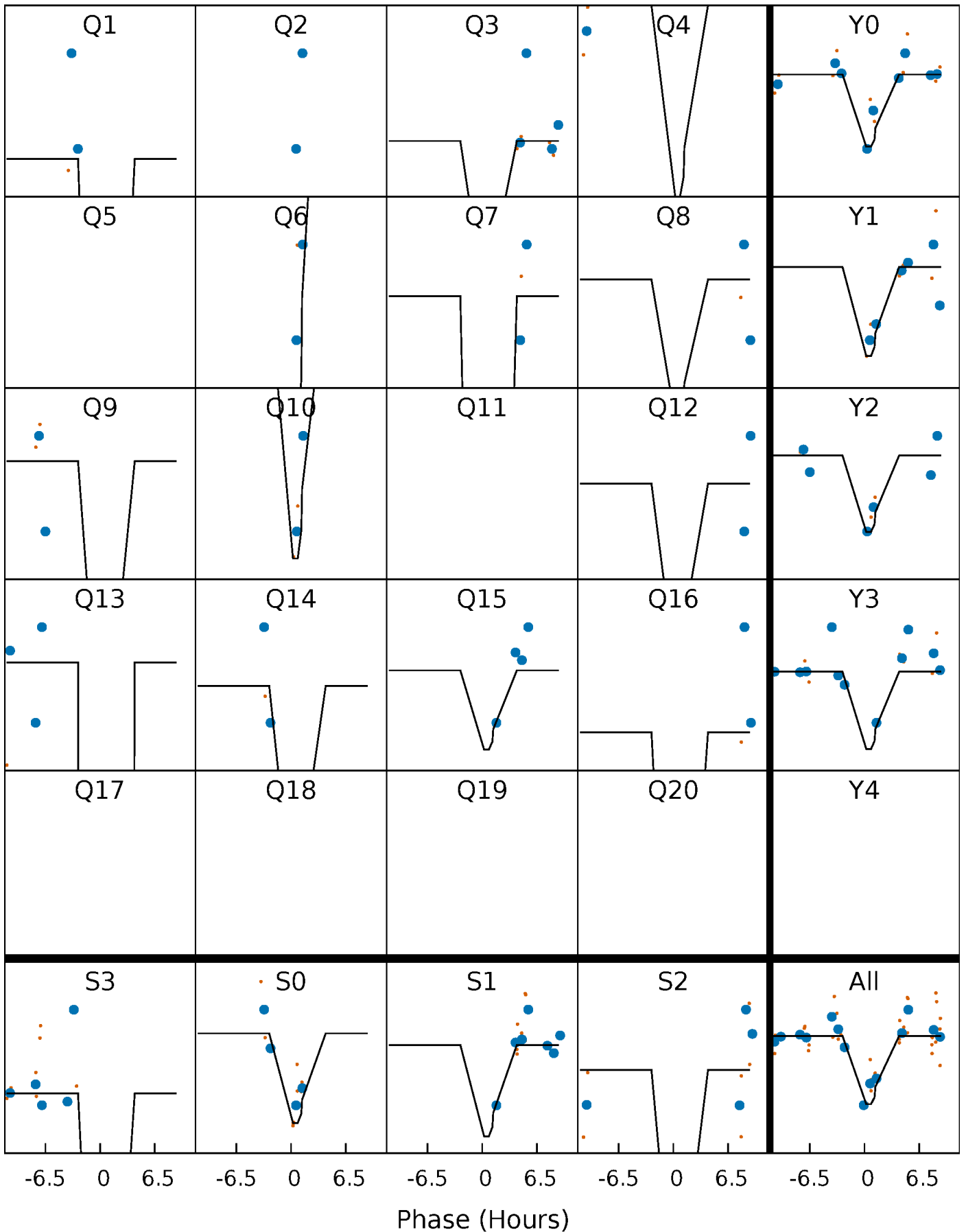
DV Quarter-Phased Transit Curves

TCE 008578742-08 $P = 65.443597$ Days $T_0 = 146.922259$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

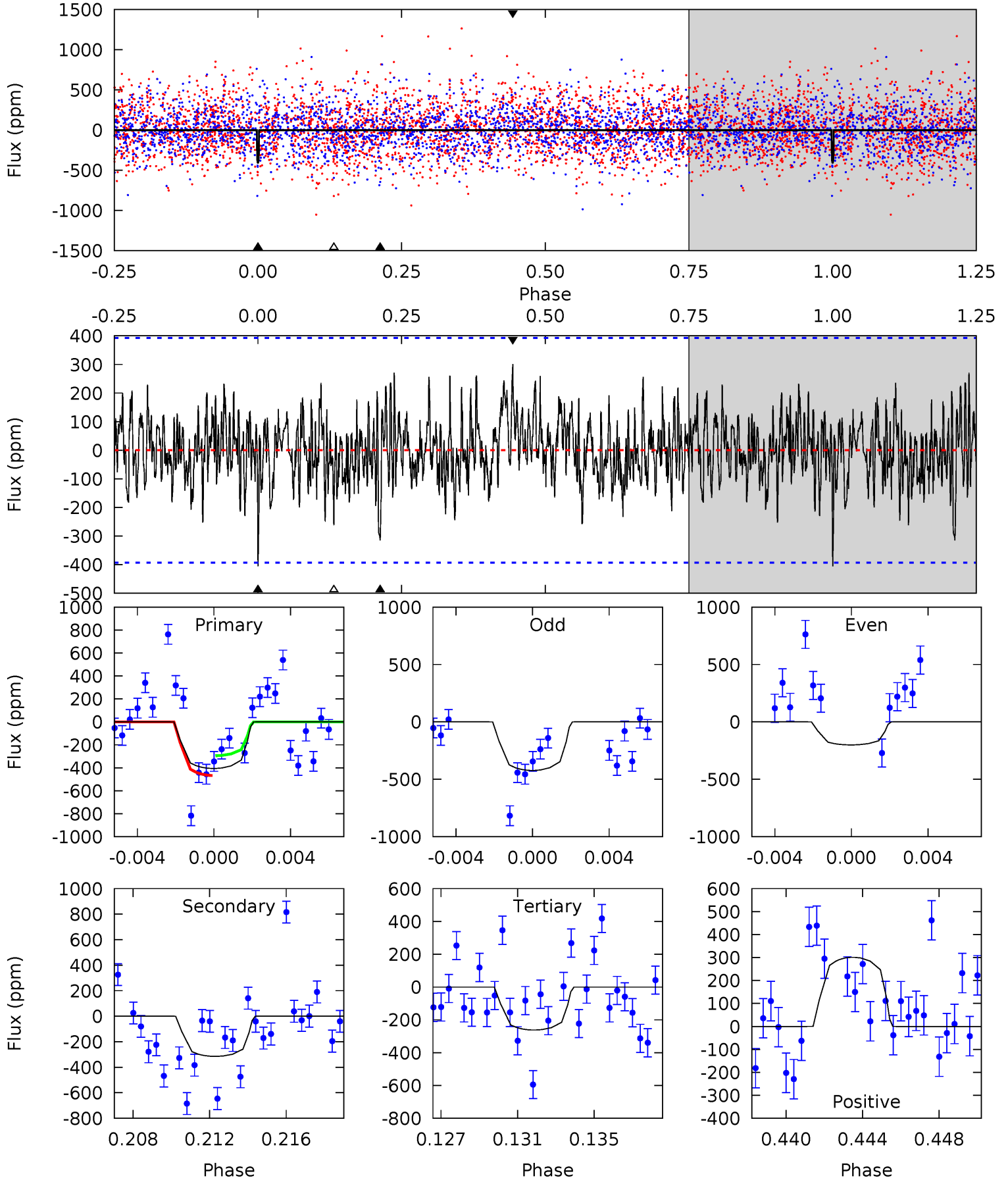
TCE 008578742-08 $P = 65.448519$ Days $T_0 = 146.830875$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-08, P = 65.443597 Days, E = 81.478662 Days

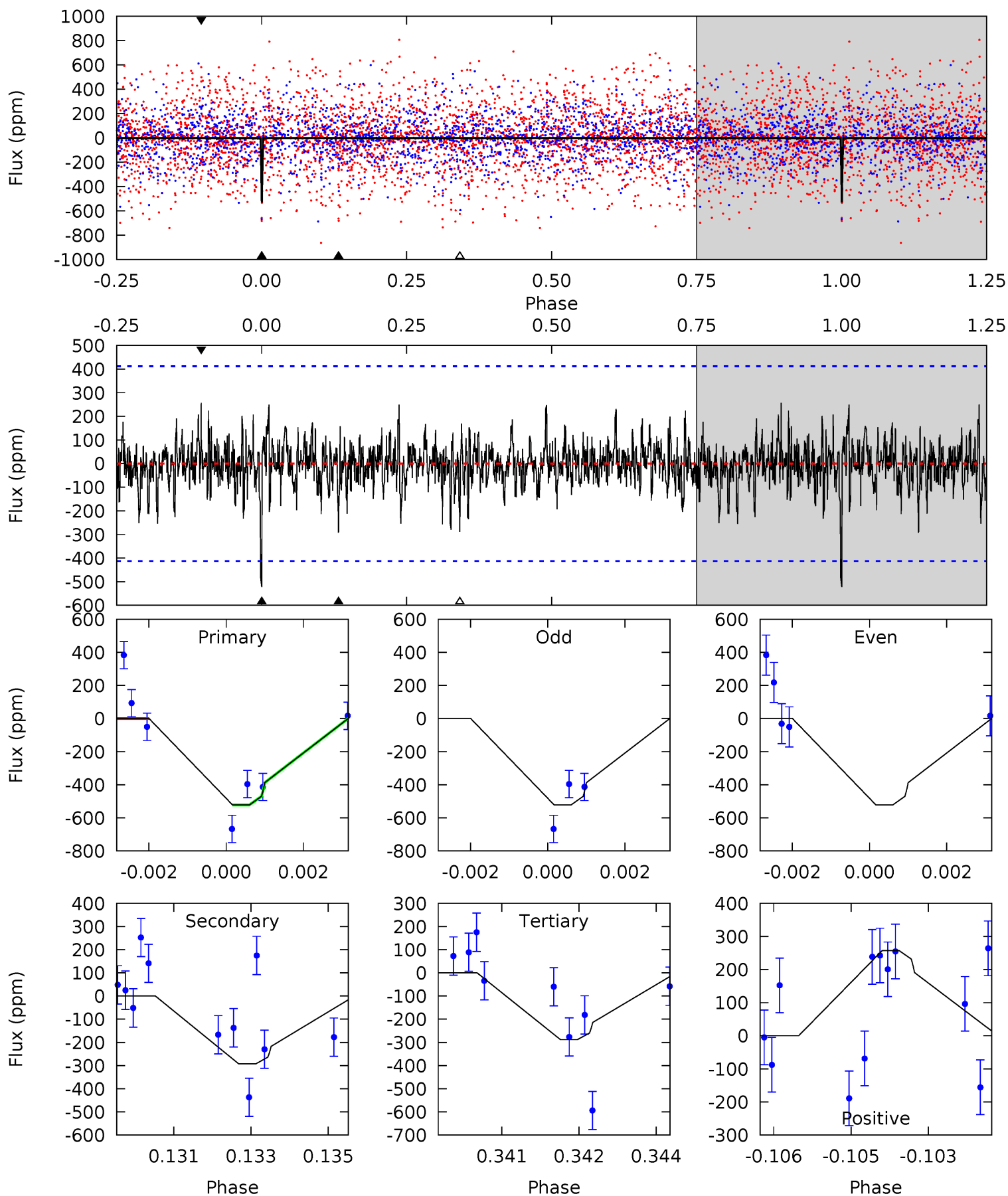
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.37 | 4.17 | 3.47 | 3.99 | 5.21 | 2.89 | 1.27 | 1.90 | 1.39 | 0.70 | 0.18 | 1.33 | 0.64 | 0.43 | 1.13 |



Alt Model-Shift Uniqueness Test

008578742-08, P = 65.448519 Days, E = 81.382356 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 6.79 | 3.81 | 3.75 | 3.34 | 5.36 | 3.14 | 0.98 | 3.04 | 3.45 | 0.06 | 0.46 | 0 | 0.97 | 0.33 | 0 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-08 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|------------------------|
| DV | -315 ± 75 | $3.19^{+2.41}_{-2.01}$ | 667^{+50}_{-39} | 4805^{+2830}_{-919} | 1619^{+9948}_{-1127} |
| Alt. | -293 ± 77 | $3.40^{+2.32}_{-1.98}$ | 667^{+48}_{-36} | 4648^{+2290}_{-836} | 1393^{+5901}_{-950} |

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

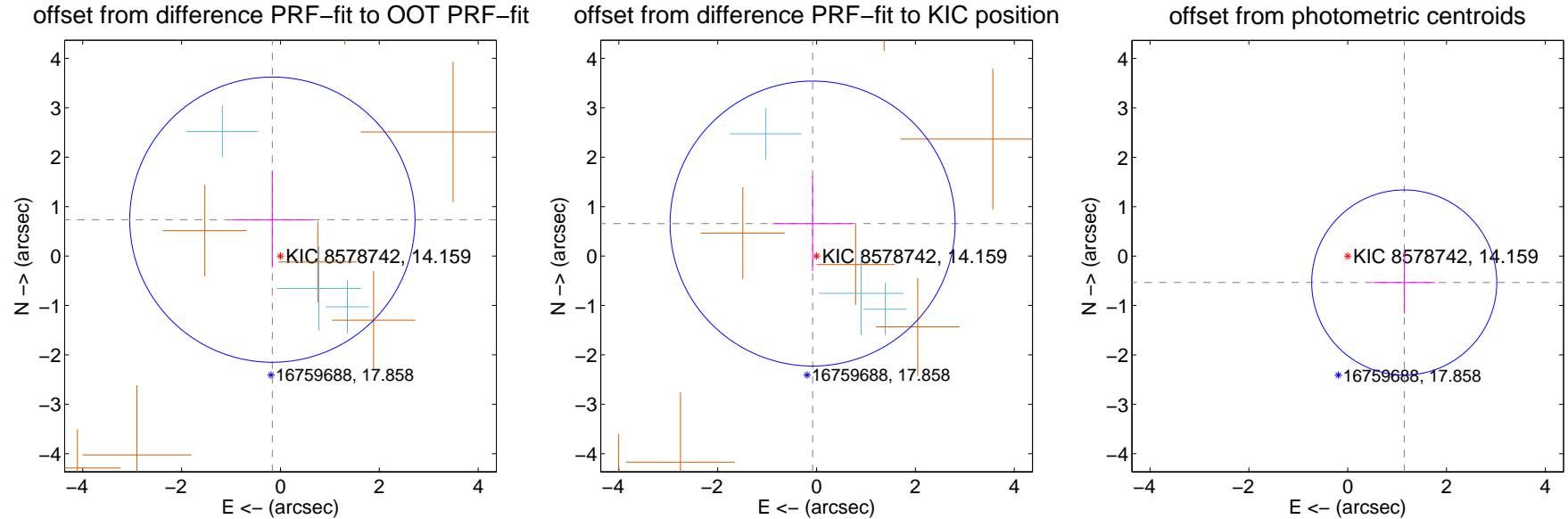
DV Centroid Data

Supplemental centroid analysis for 008578742-08. Kepler magnitude: 14.16. Transit SNR 10.13

There are 3 quarters with good PRF difference image offsets

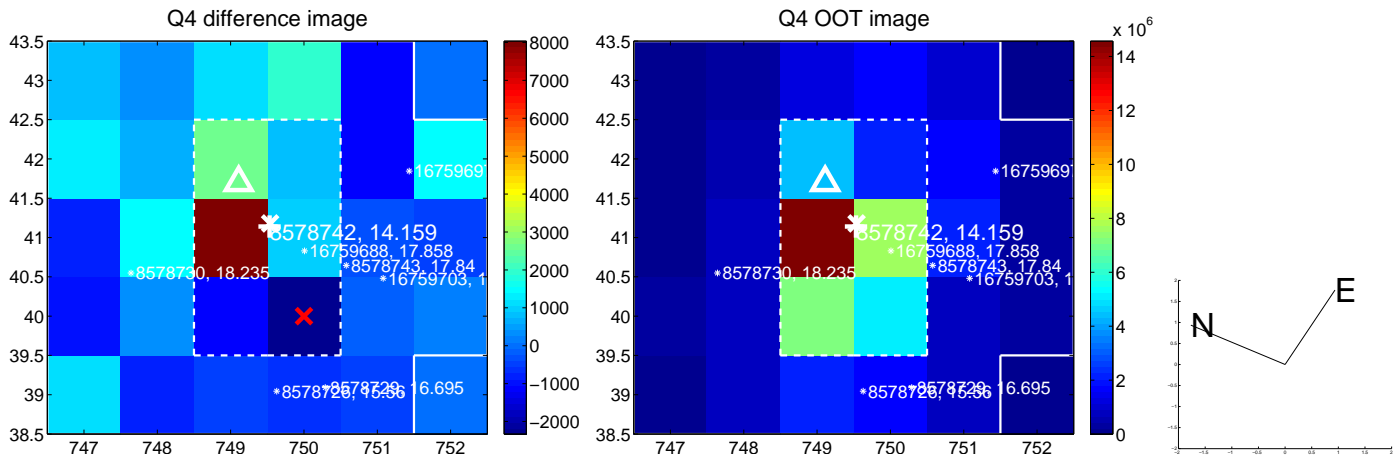
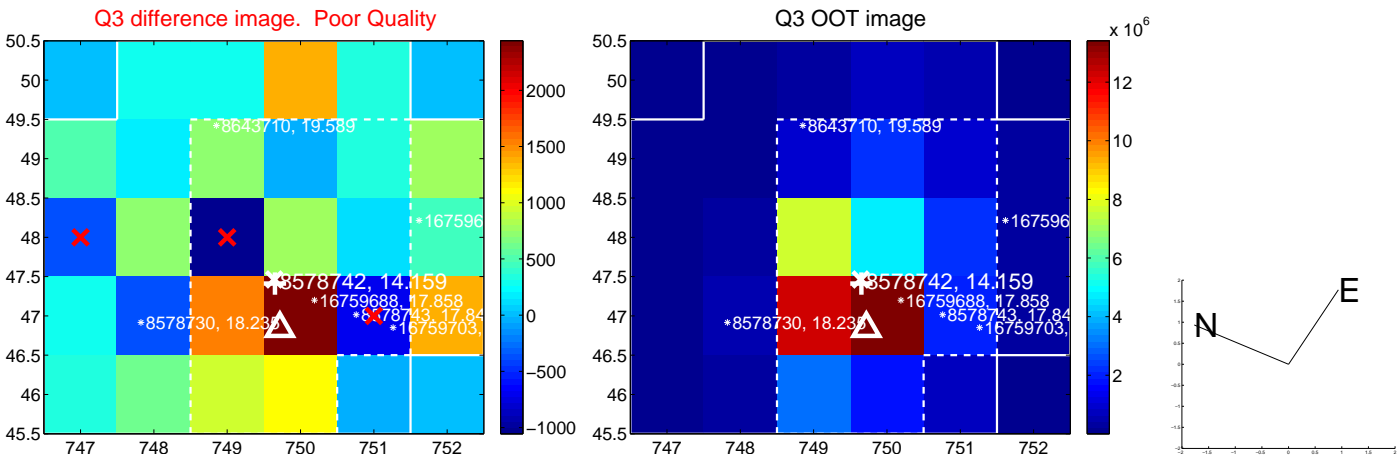
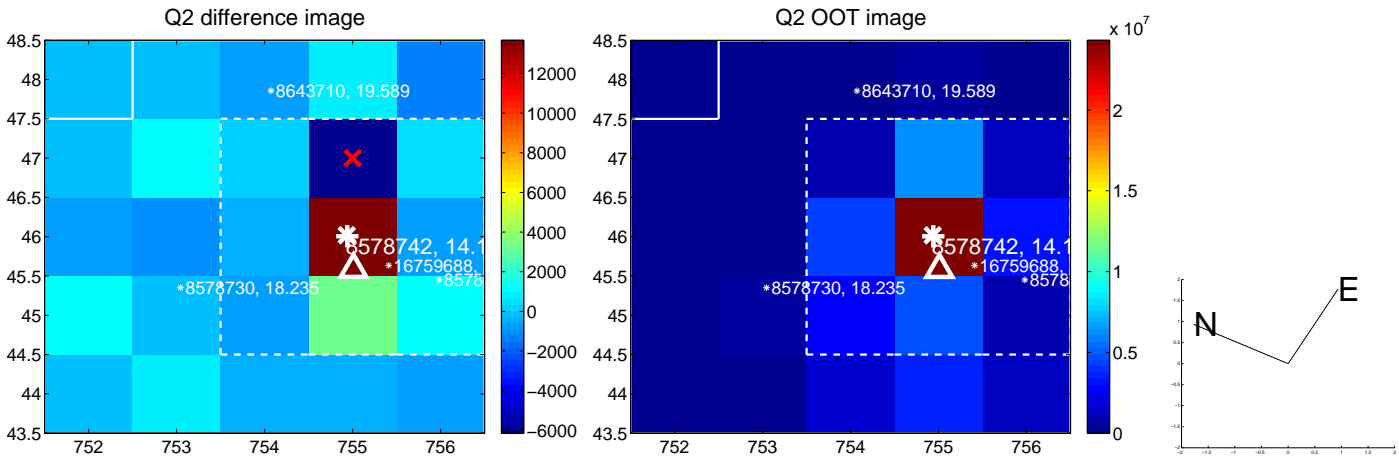
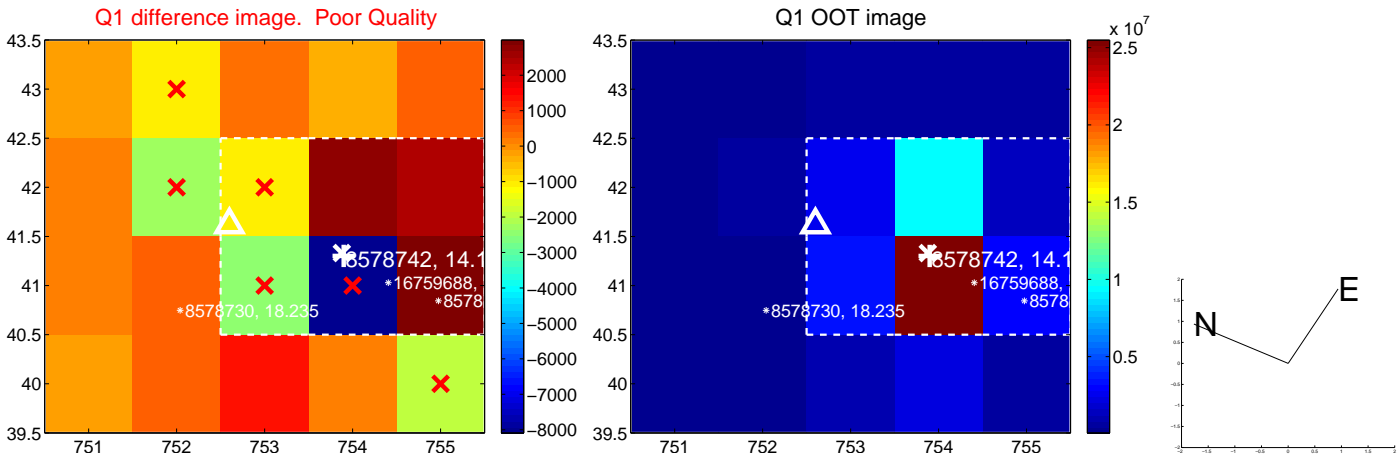
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.754 ± 0.962 | 0.78 | 0.163 ± 0.816 | 0.736 ± 0.969 |
| PRF-fit source offset from KIC position | 0.662 ± 0.961 | 0.69 | 0.080 ± 0.805 | 0.657 ± 0.963 |
| photometric centroid source offset | 1.26 ± 0.62 | 2.02 | -1.14 ± 0.62 | -0.53 ± 0.63 |

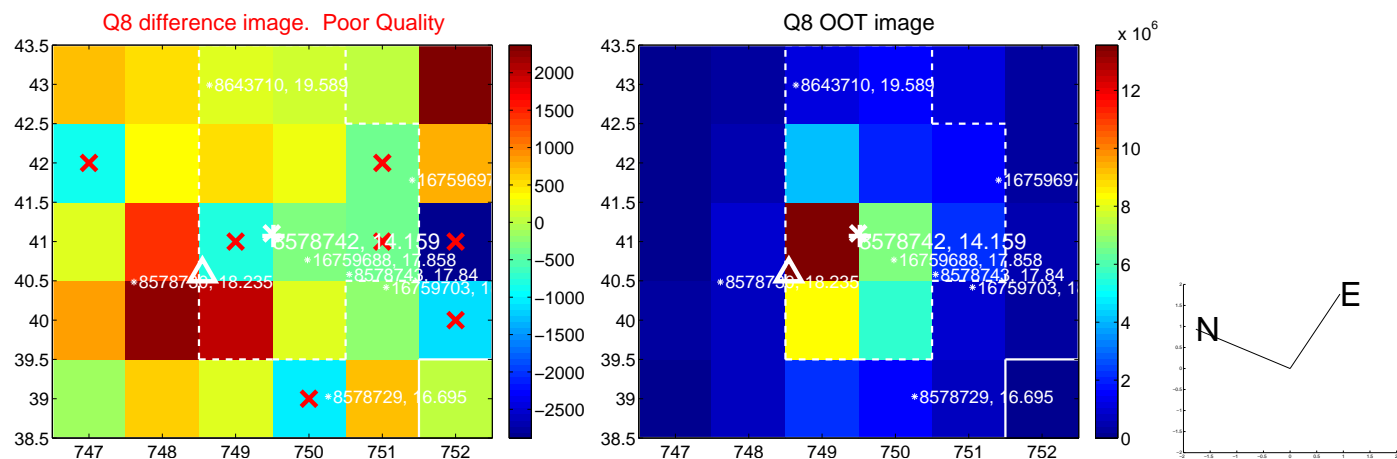
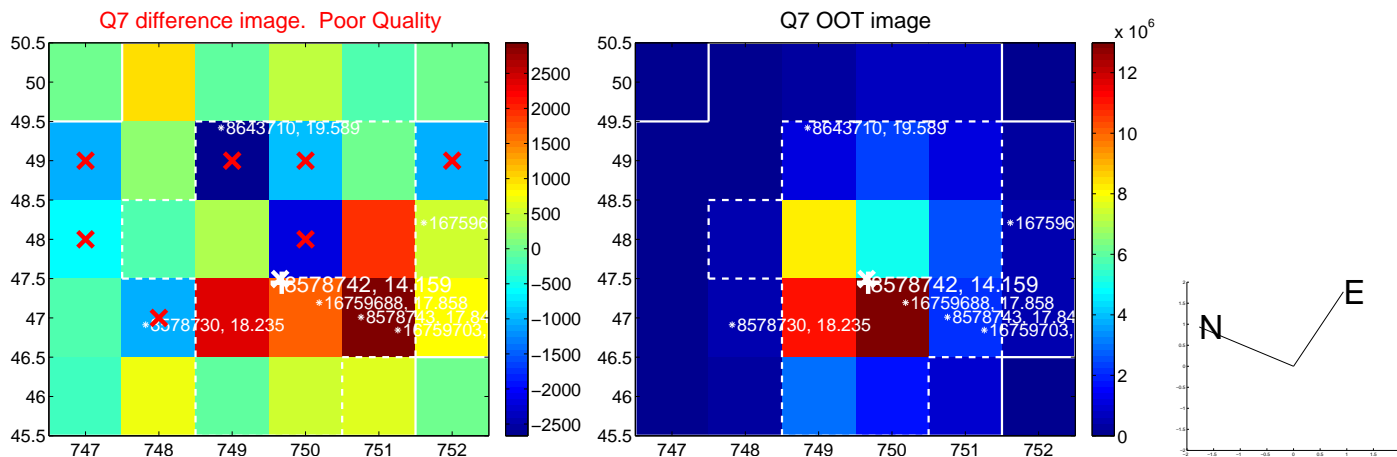
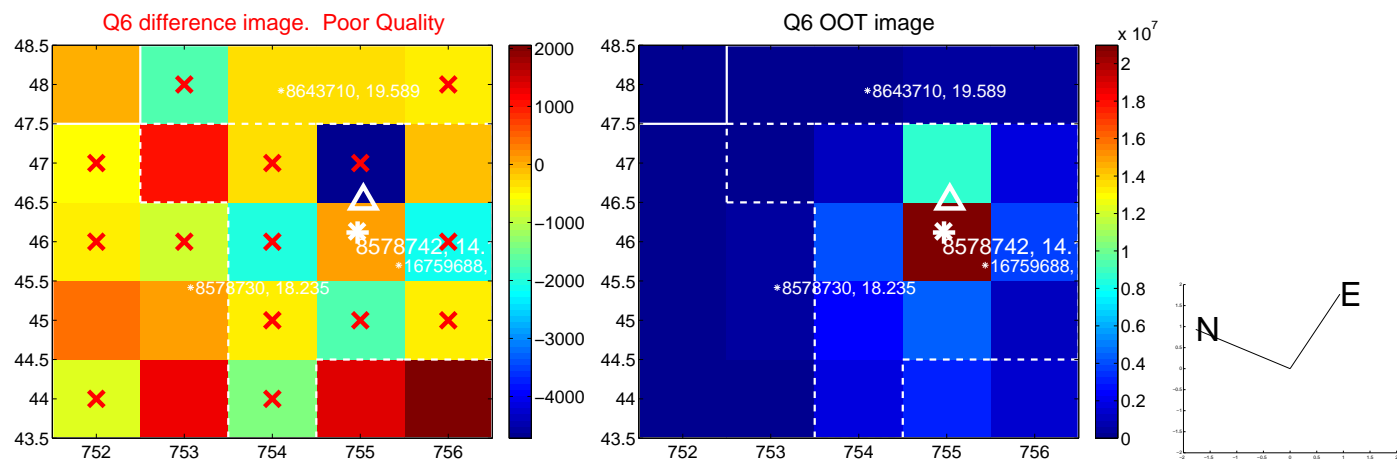
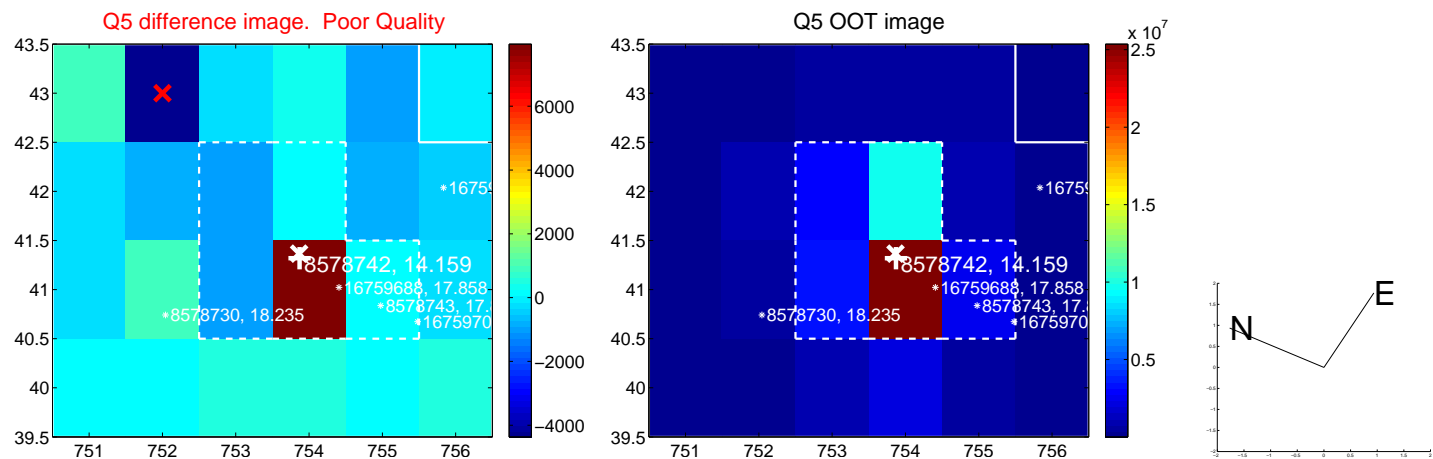


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

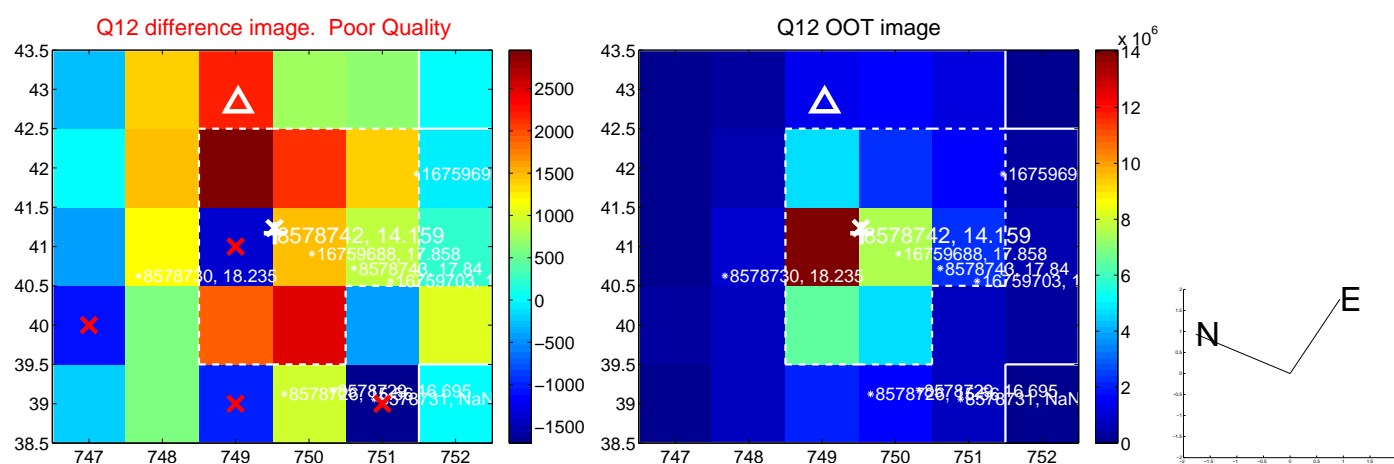
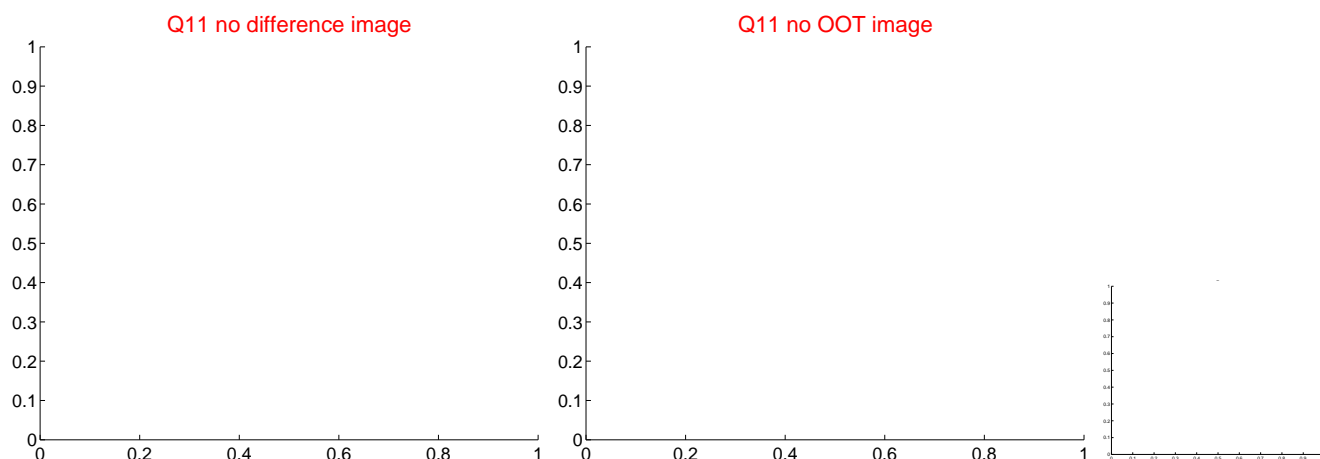
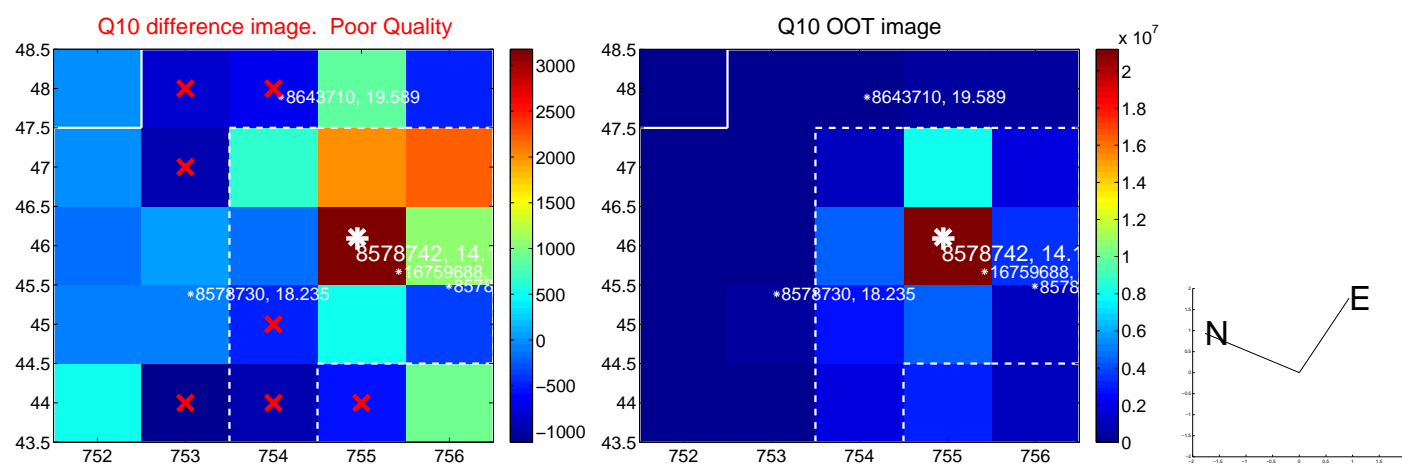
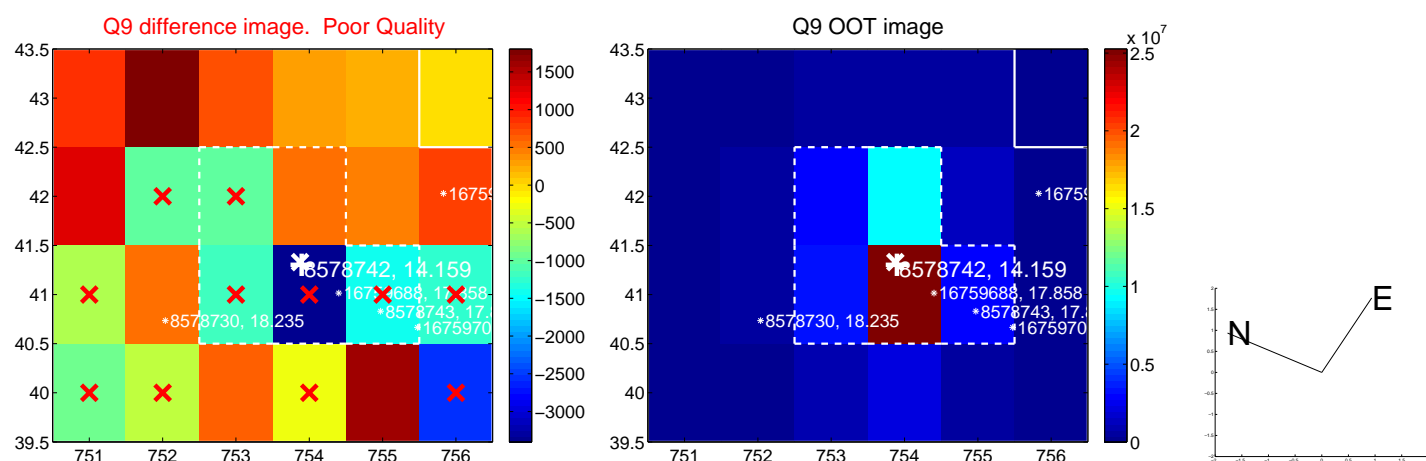
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



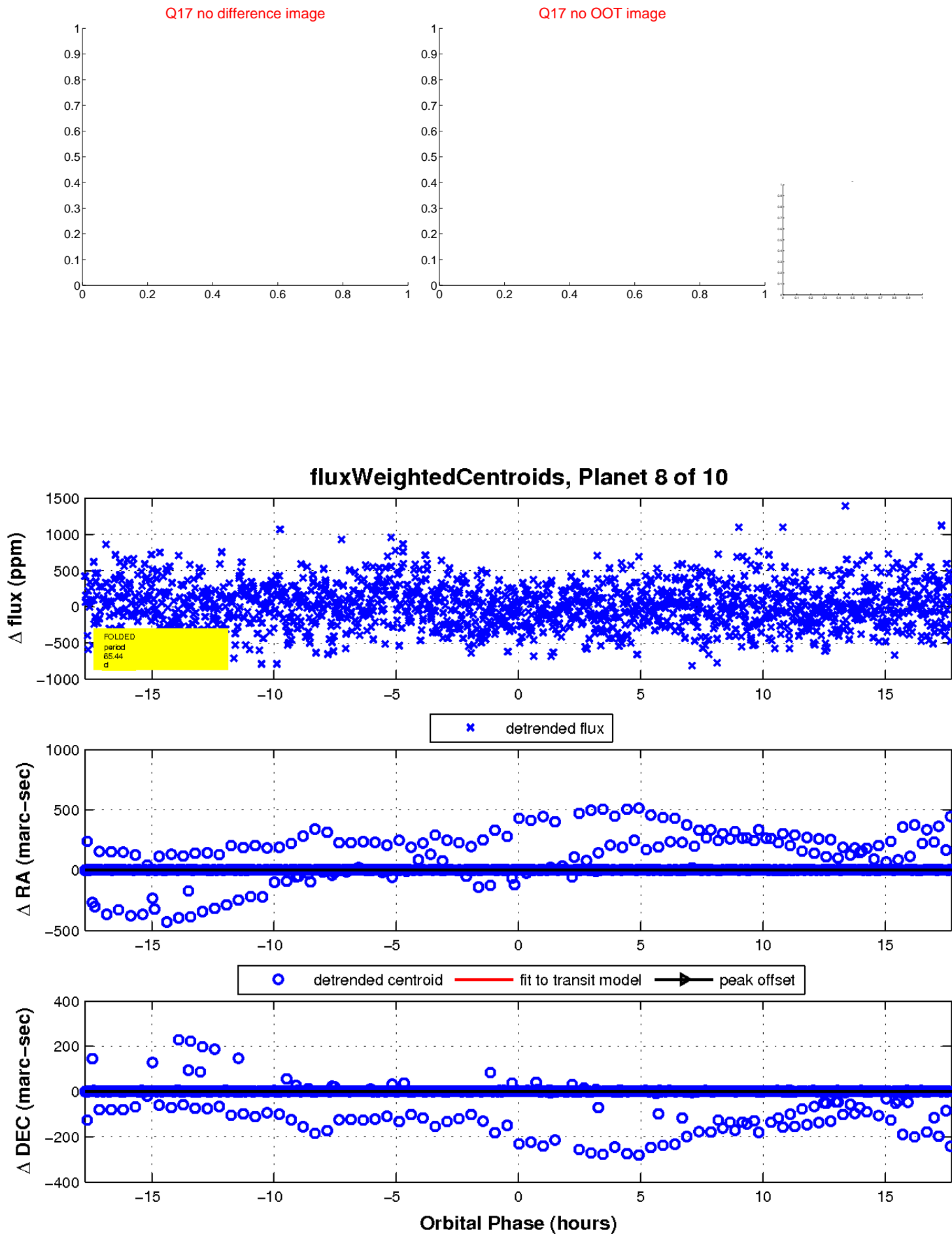
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

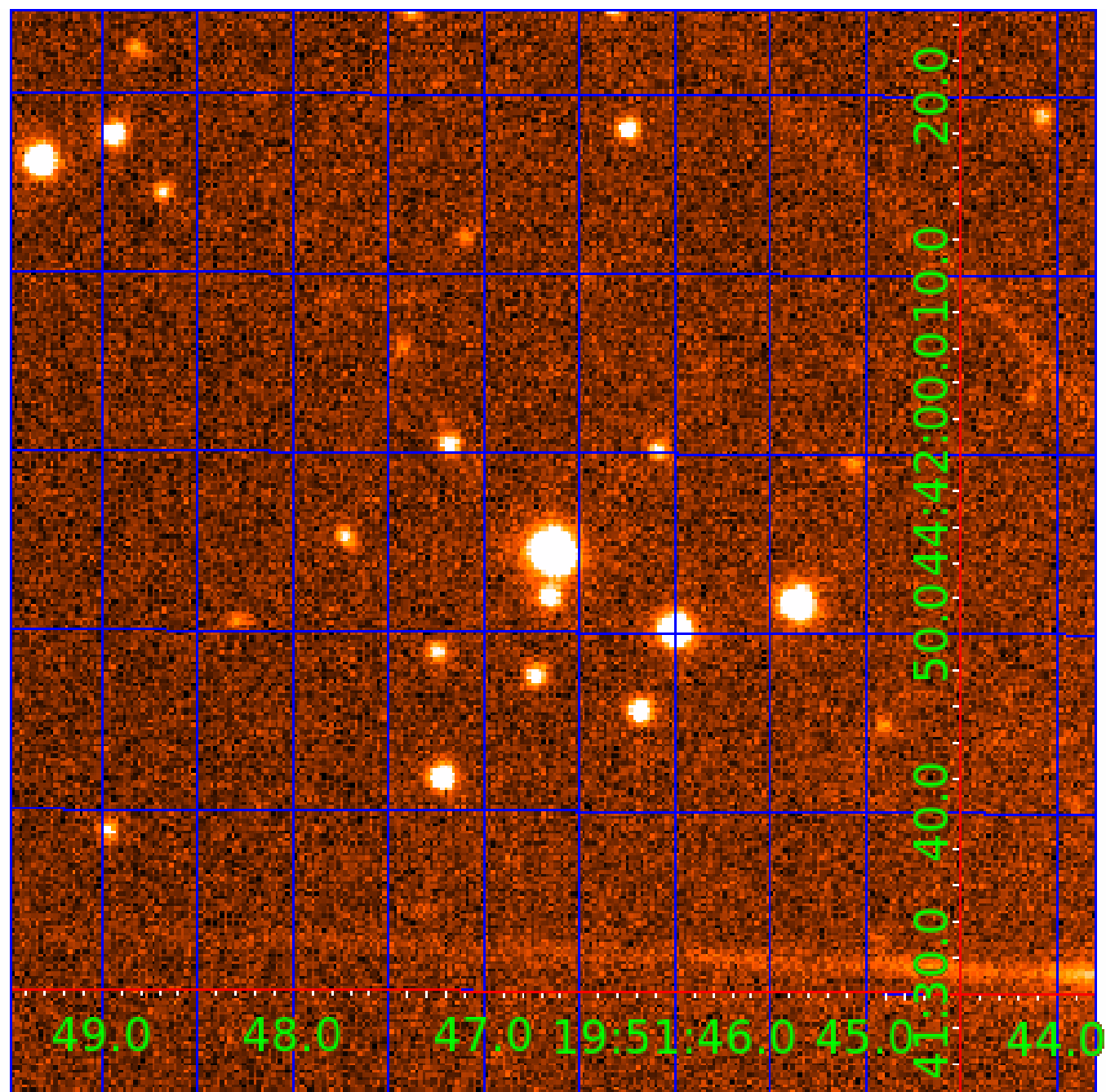


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

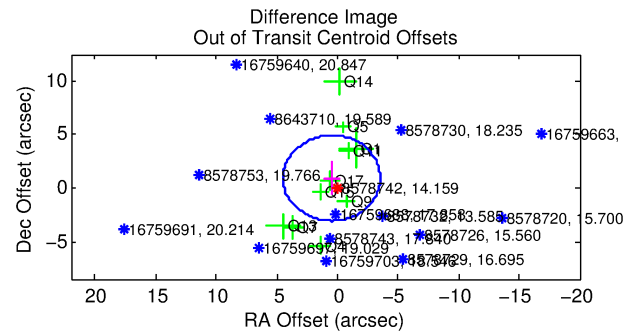
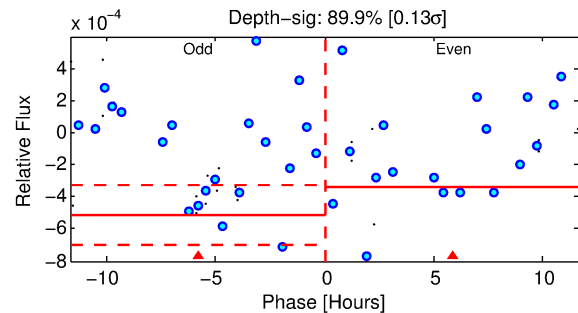
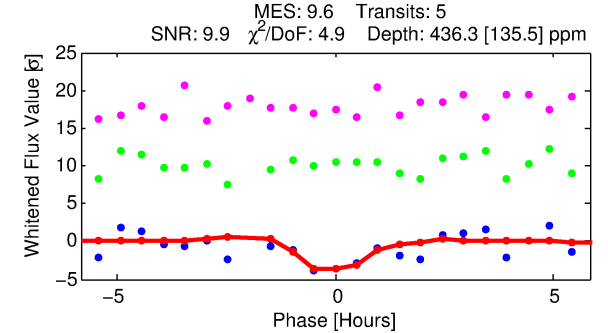
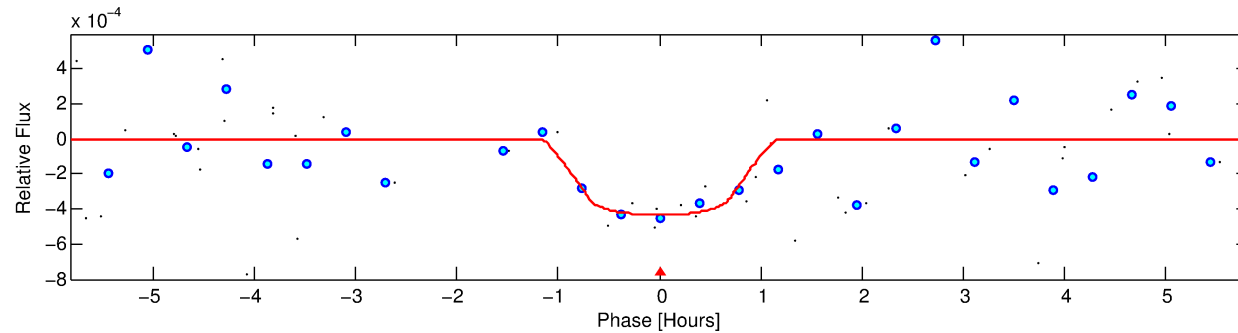
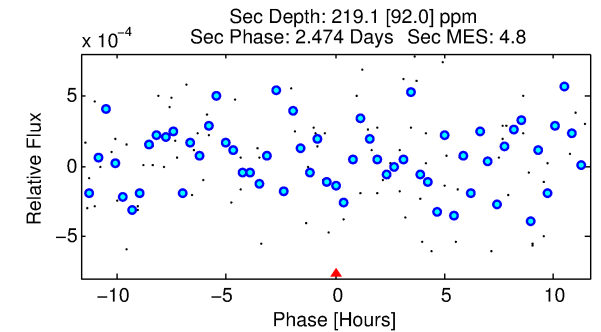
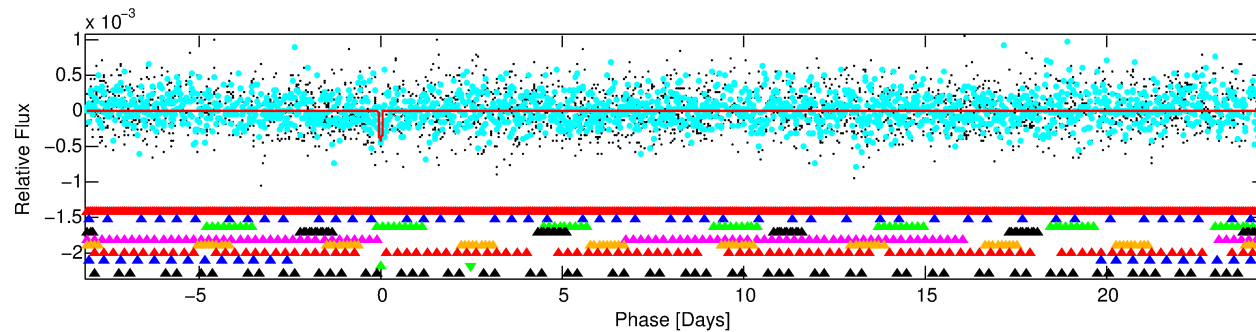
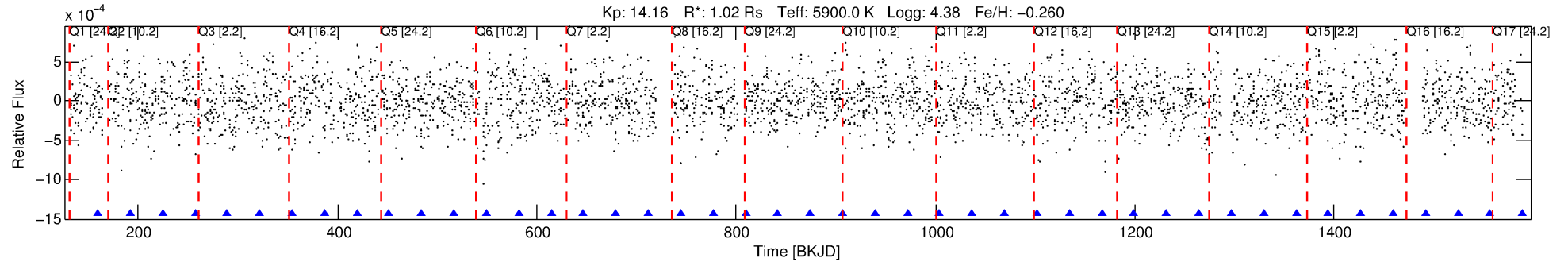
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-09

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 9 of 10 Period: 32.492 d



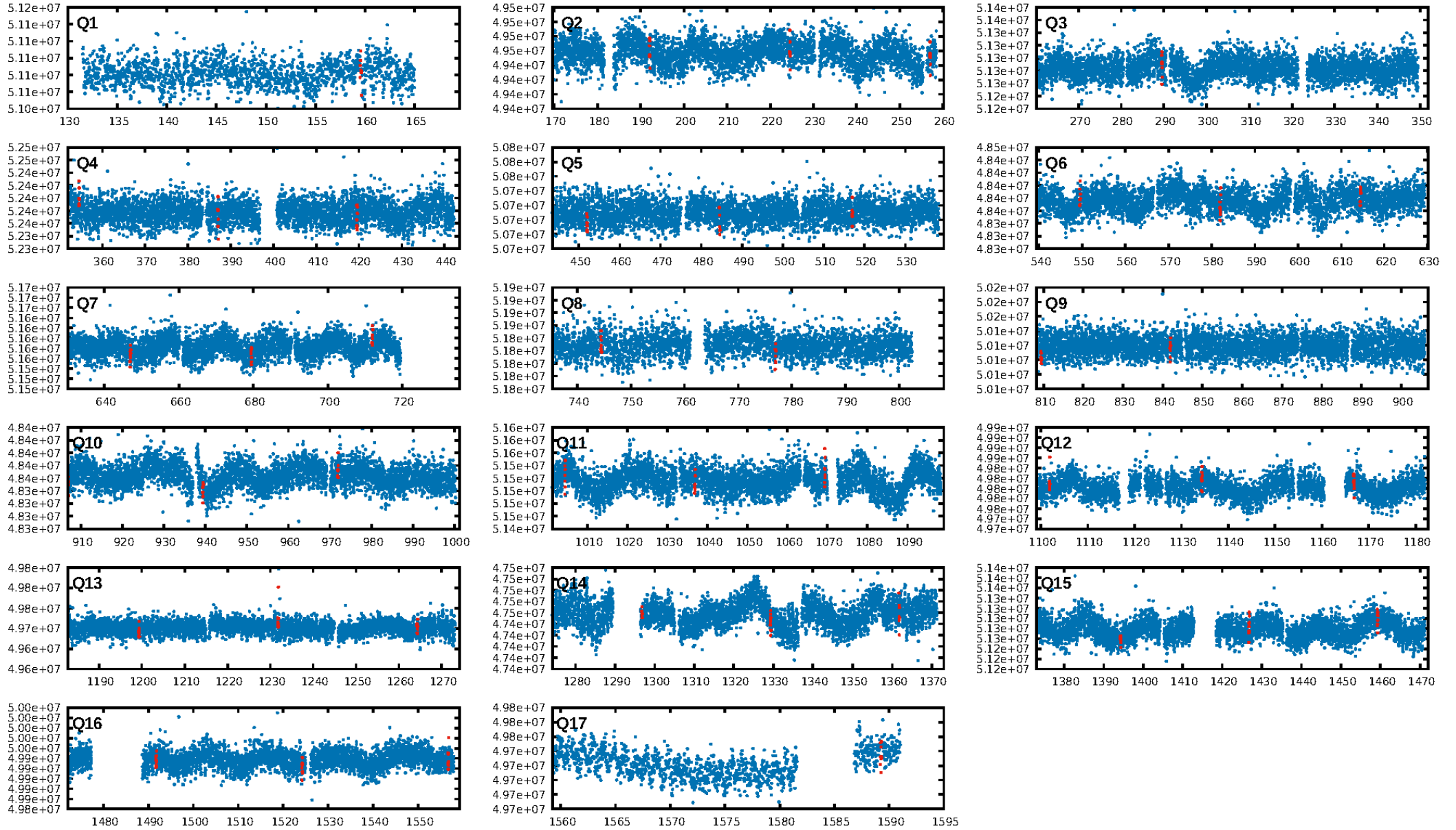
DV Fit Results:

Period = 32.49230 [0.00074] d
Epoch = 159.5837 [0.0194] BKJD
Rp/R* = 0.0214 [0.2029]
a/R* = 78.45 [3632.89]
b = 0.82 [19.02]
Seff = 30.55 [11.17]
Teff = 600 [55] K
Rp = 2.40 [22.70] Re
a = 0.1932 [0.0451] AU
Ag = 783.36 [14839.84] [0.05 σ]
Teffp = 4904 [23220] K [0.19 σ]

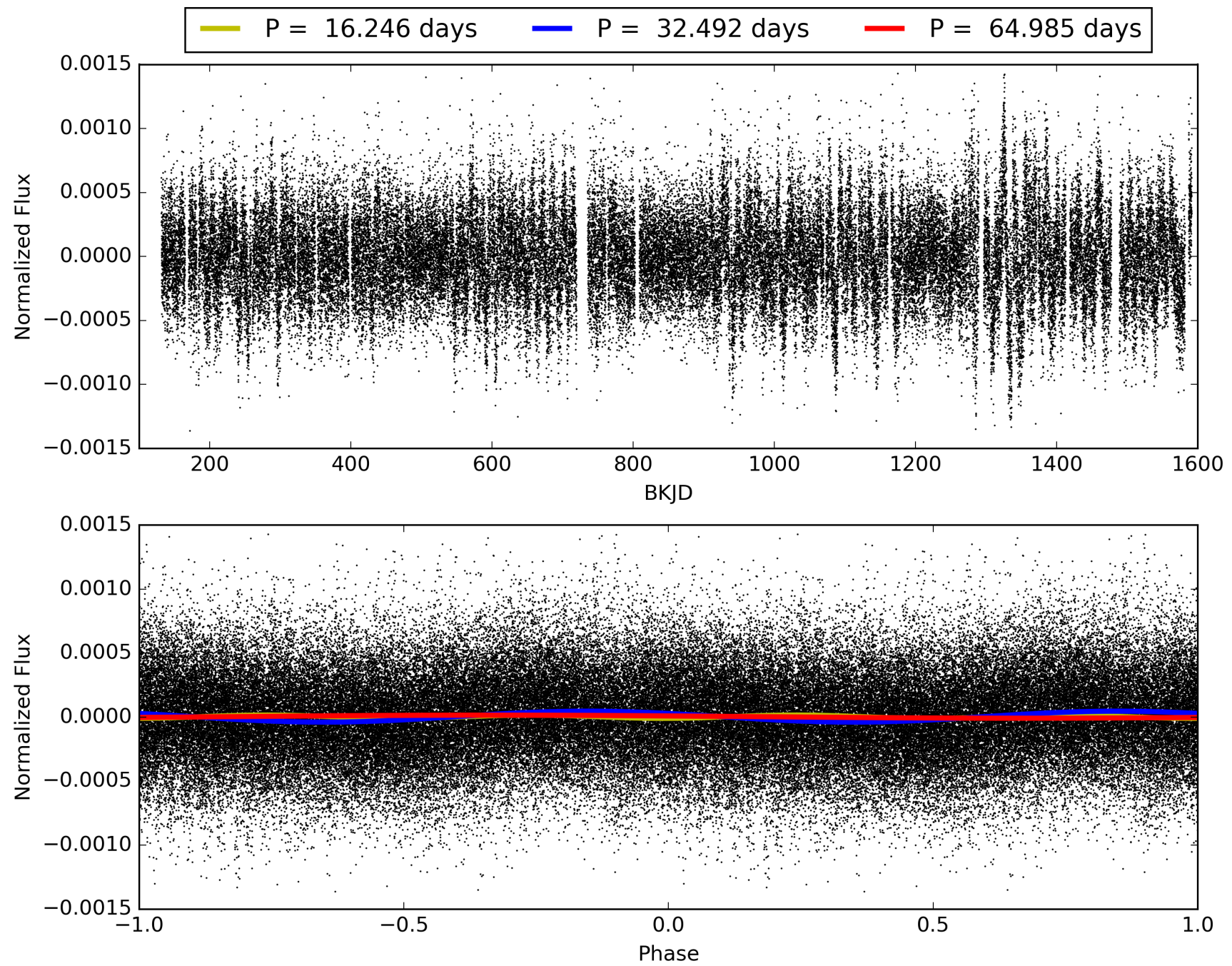
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.20 σ]
LongPeriod-sig: 100.0% [127.10 σ]
ModelChiSquare2-sig: 11.8%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.35
Centroid-sig: 60.0%
Centroid-so: 0.134 arcsec [0.18 σ]
OotOffset-rm: 1.052 arcsec [0.79 σ]
KicOffset-rm: 0.895 arcsec [0.65 σ]
OotOffset-st: 1/3/1/5 [10]
KicOffset-st: 1/3/1/5 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 0.29 [5/17]

TCE 008578742-09, PDC Light Curves

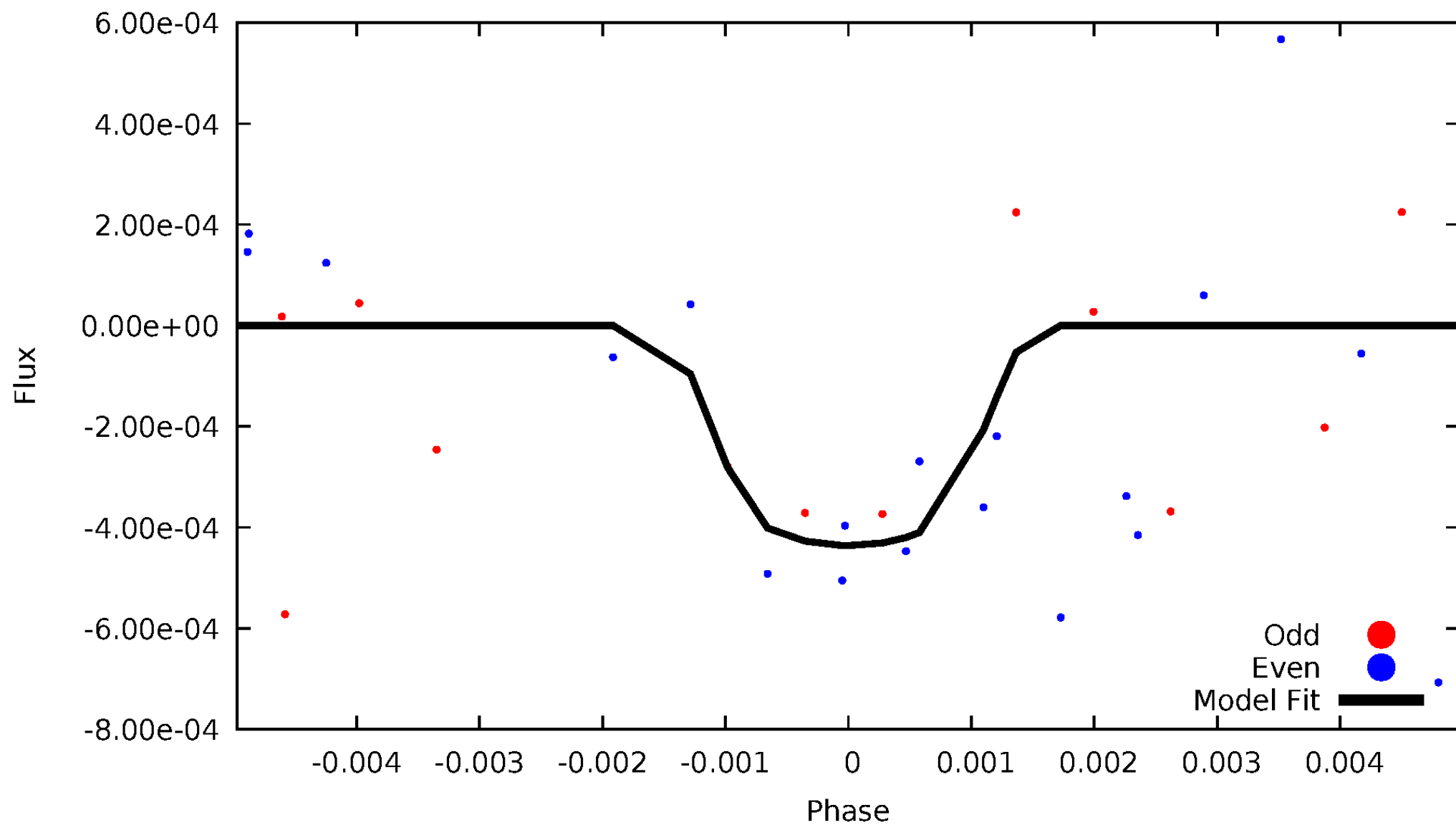


TCE 008578742-09



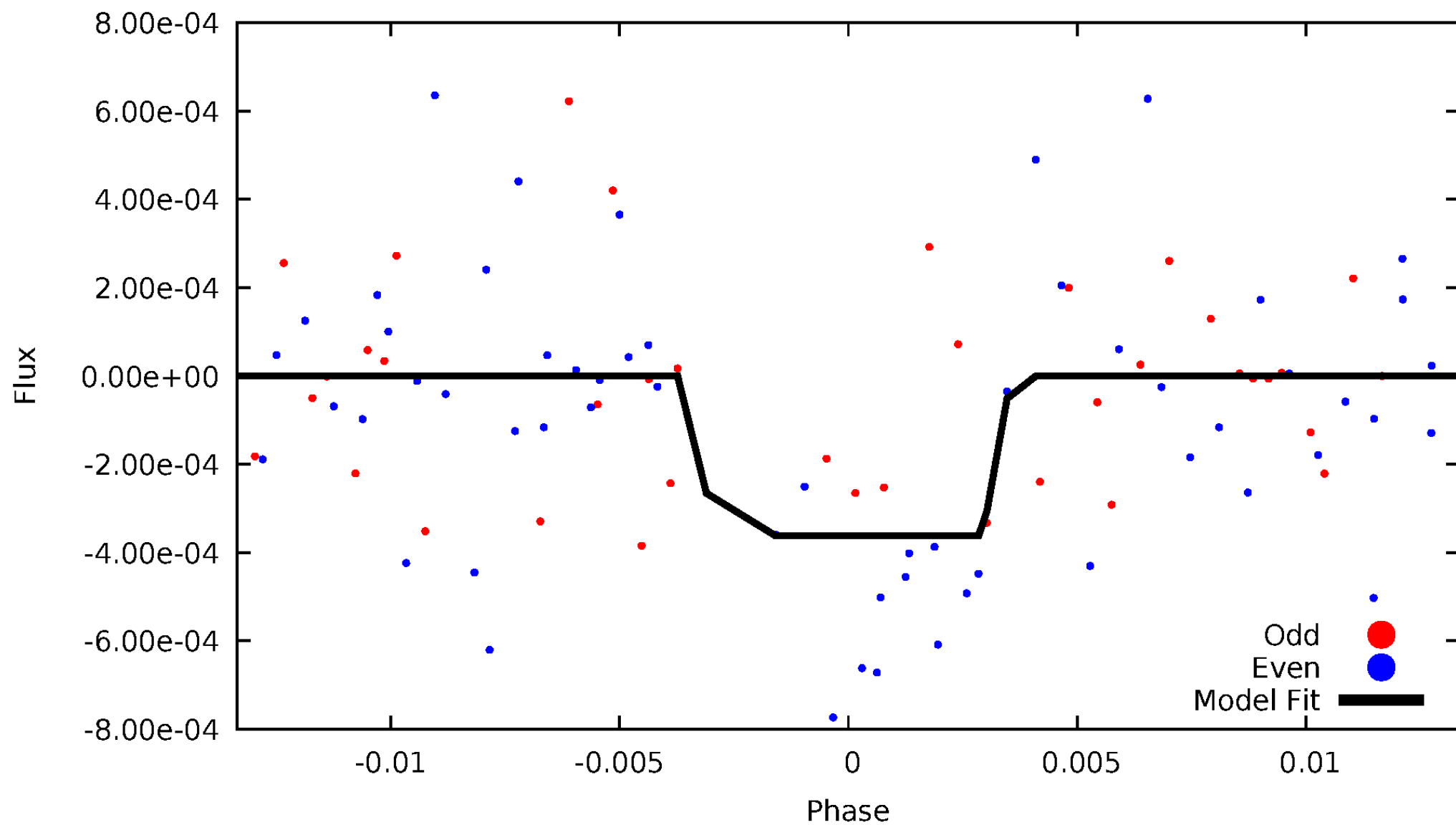
DV Odd/Even

TCE 008578742-09



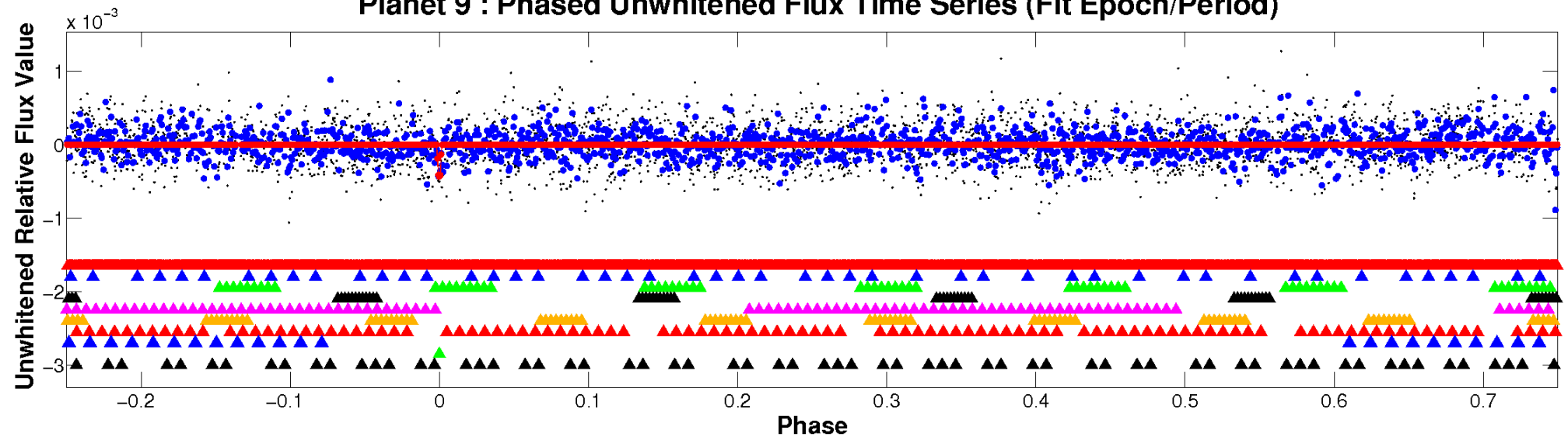
ALT Odd/Even

TCE 008578742-09

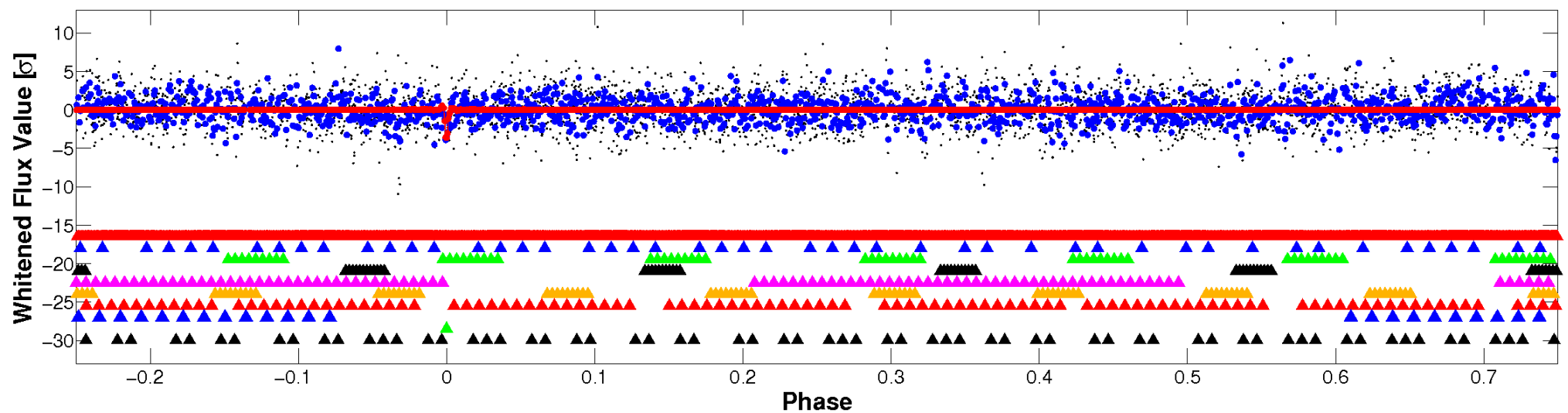


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

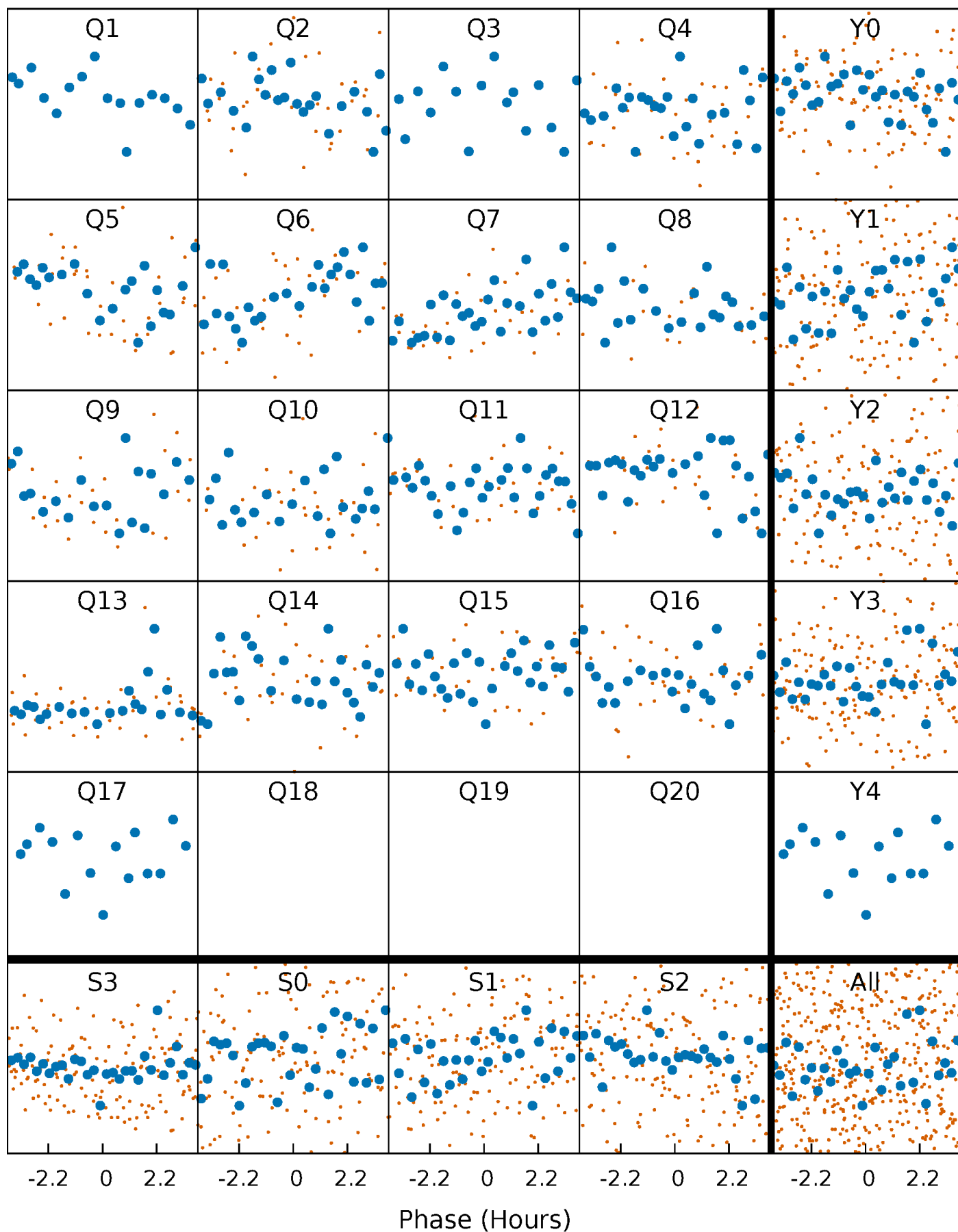


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



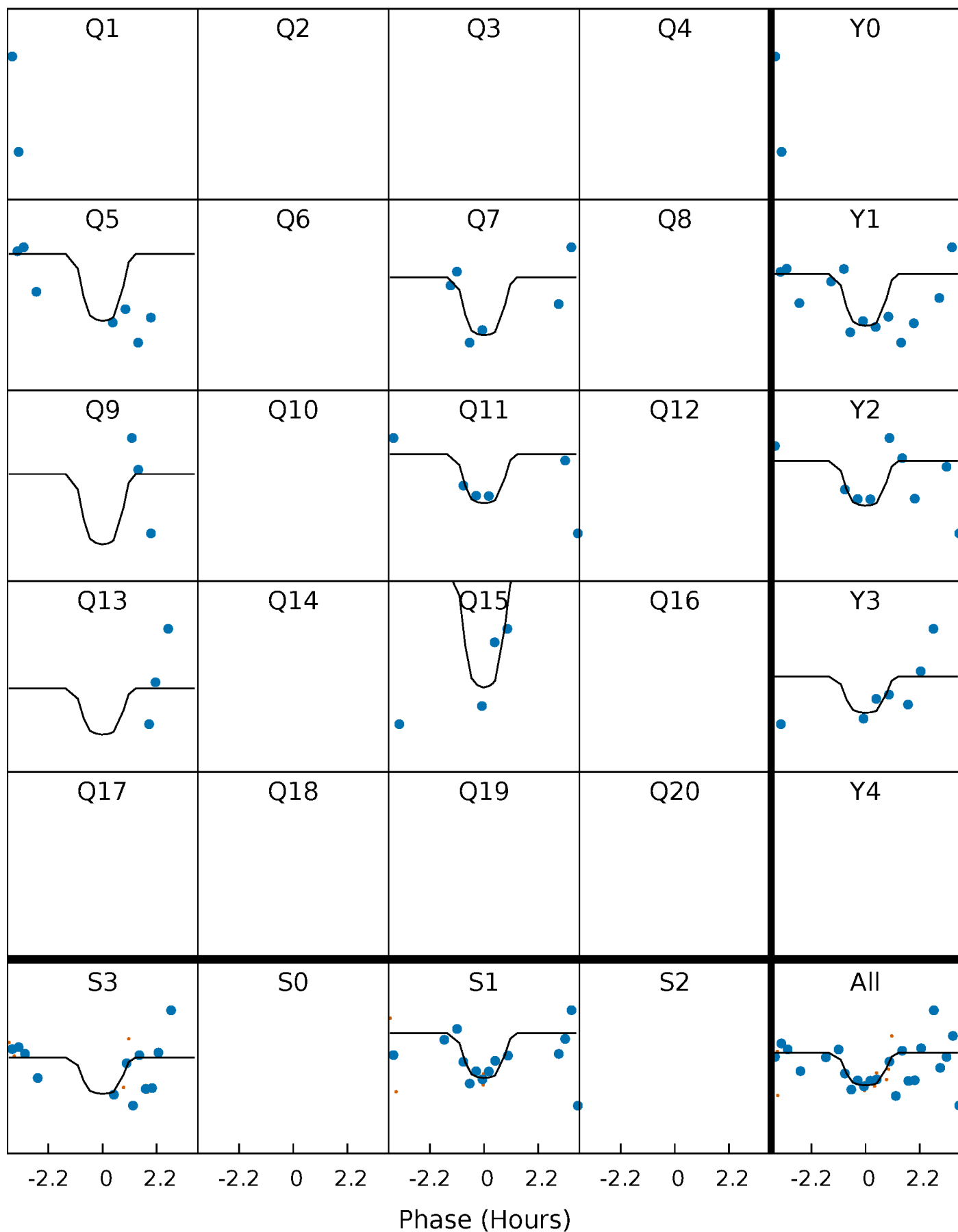
PDC Quarter-Phased Transit Curves

TCE 008578742-09 $P = 32.492296$ Days $T_0 = 159.583745$ (BKJD)



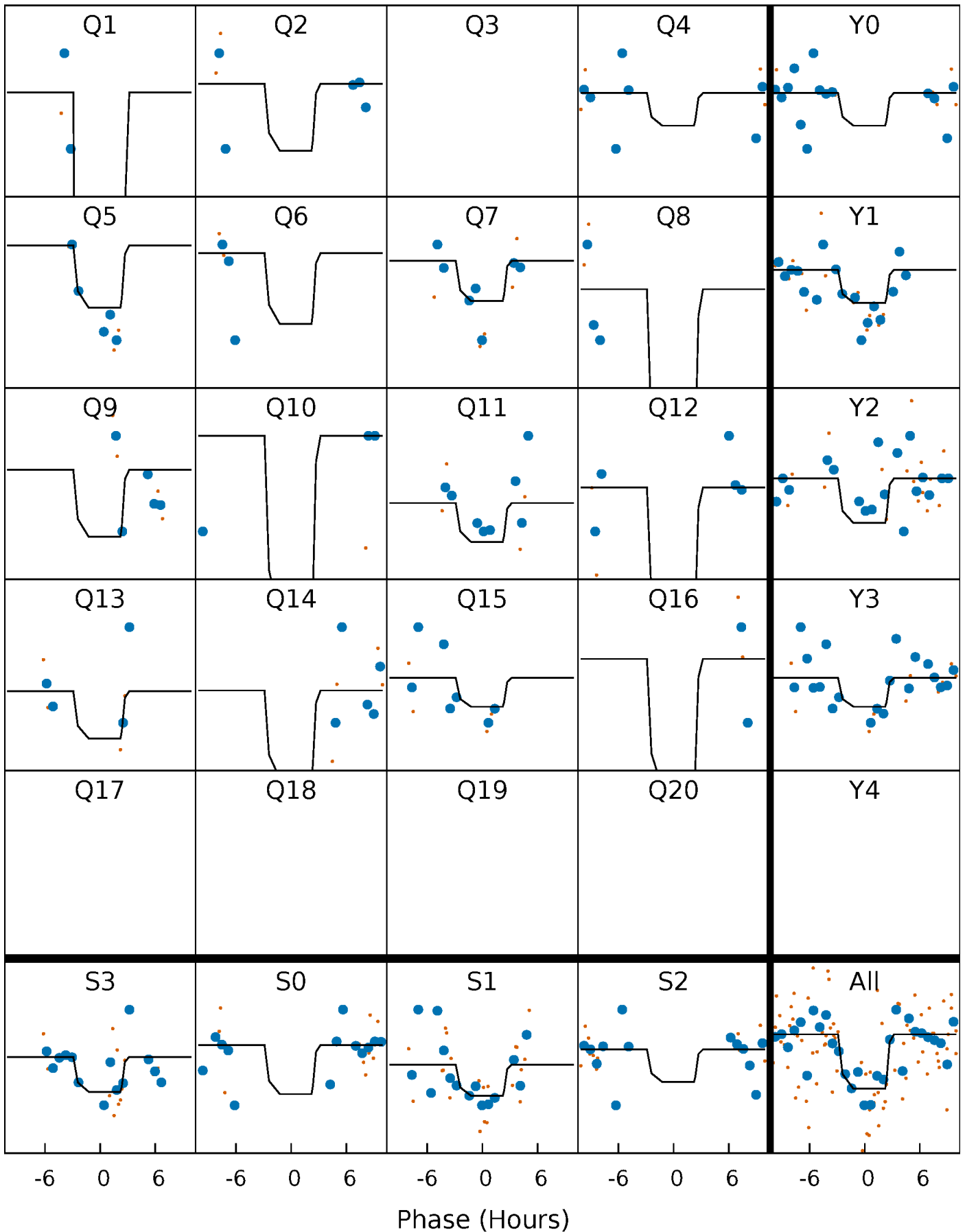
DV Quarter-Phased Transit Curves

TCE 008578742-09 $P = 32.492296$ Days $T_0 = 159.583745$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

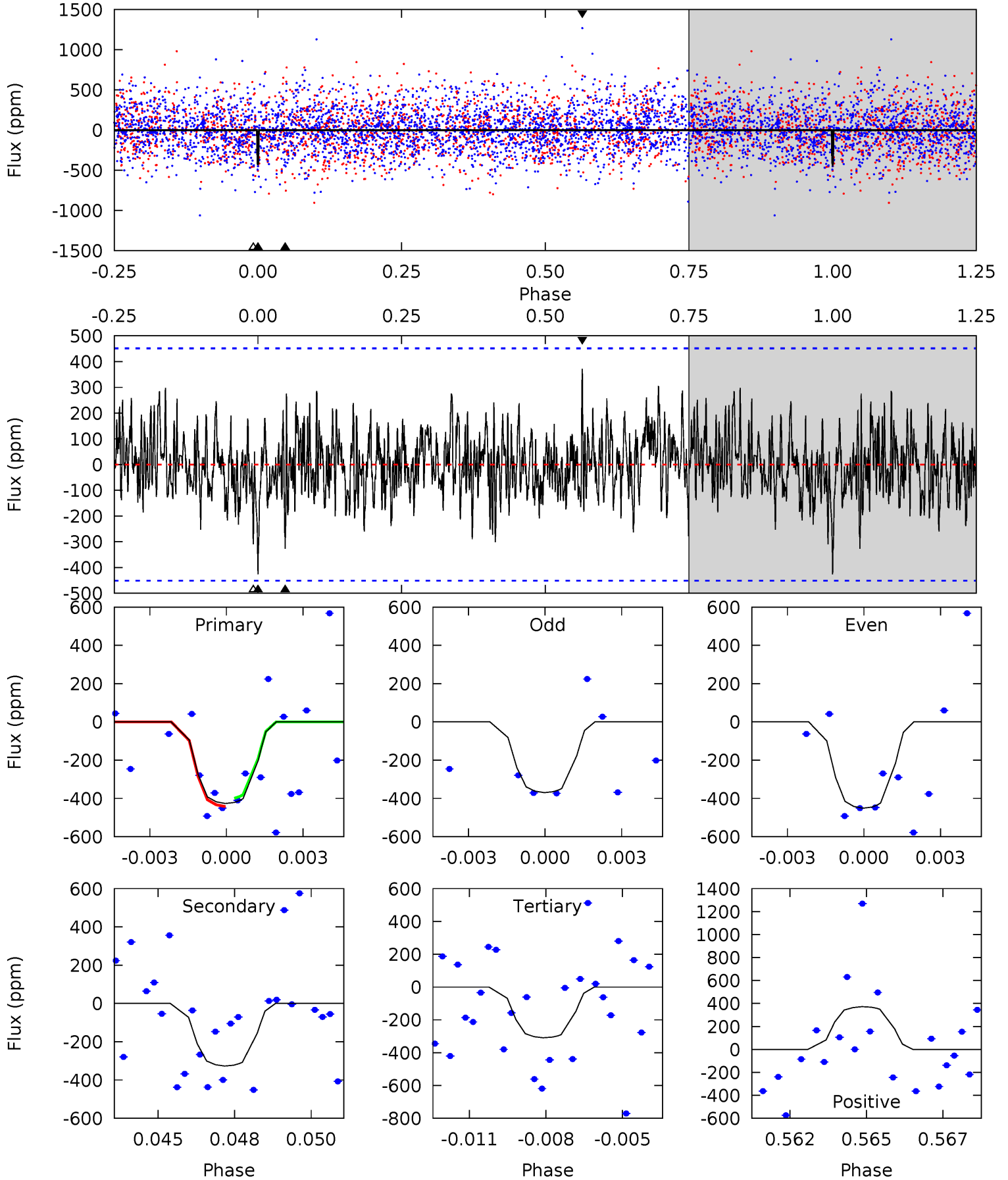
TCE 008578742-09 P= 32.491781 Days $T_0=159.581356$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-09, P = 32.492296 Days, E = 127.091449 Days

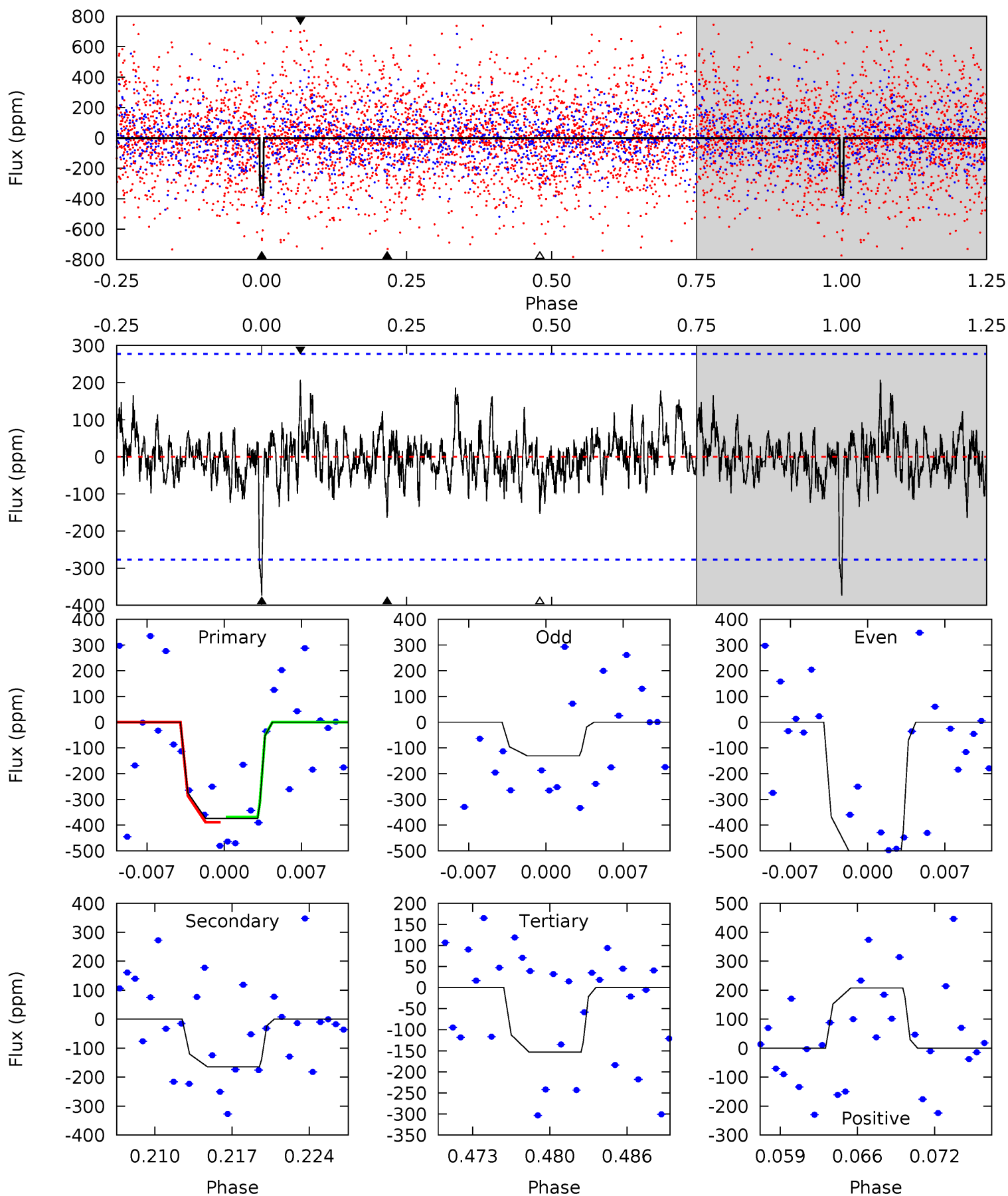
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.98 | 3.82 | 3.61 | 4.35 | 5.28 | 3.01 | 1.22 | 1.37 | 0.64 | 0.21 | -0.53 | 0.44 | 1.03 | 0.47 | 0.25 |



Alt Model-Shift Uniqueness Test

008578742-09, P = 32.491781 Days, E = 127.089575 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.88 | 3.02 | 2.82 | 3.83 | 5.11 | 2.72 | 0.98 | 4.07 | 3.06 | 0.21 | -0.80 | 3.24 | 0.76 | 0.36 | 0.16 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-09 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|---------------------------|----------------------|-----------------------|-------------------|
| DV | -327 ± 86 | $17.74^{+18.08}_{-12.49}$ | 842^{+60}_{-47} | 2749^{+1213}_{-455} | 21^{+224}_{-16} |
| Alt. | -164 ± 54 | $16.76^{+16.90}_{-11.82}$ | 839^{+66}_{-49} | 2563^{+1075}_{-442} | 12^{+126}_{-9} |

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

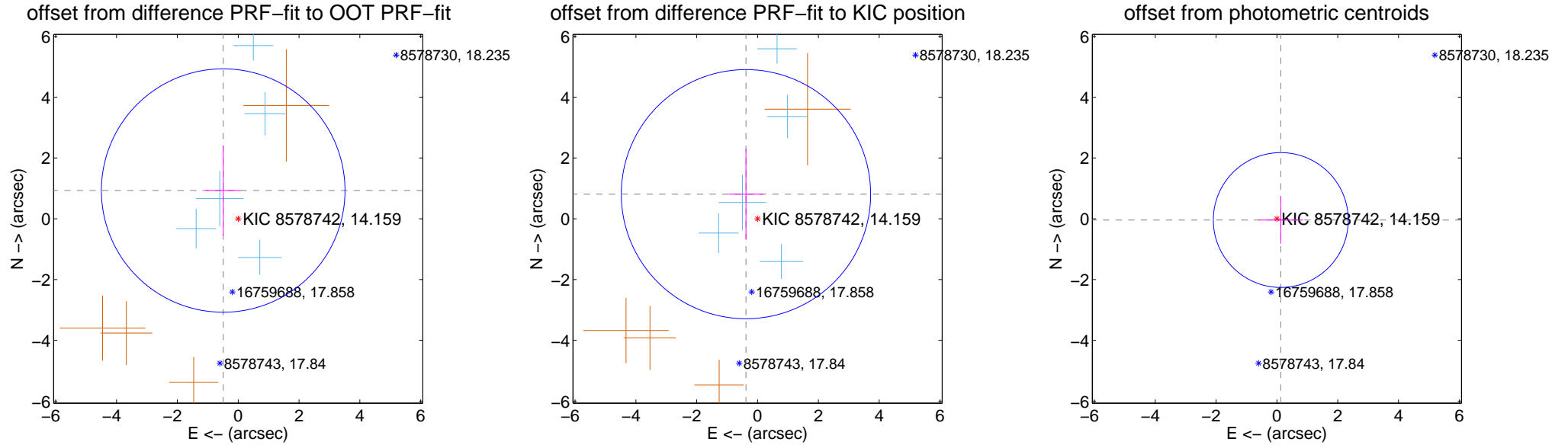
DV Centroid Data

Supplemental centroid analysis for 008578742-09. Kepler magnitude: 14.16. Transit SNR 9.91

There are 5 quarters with good PRF difference image offsets

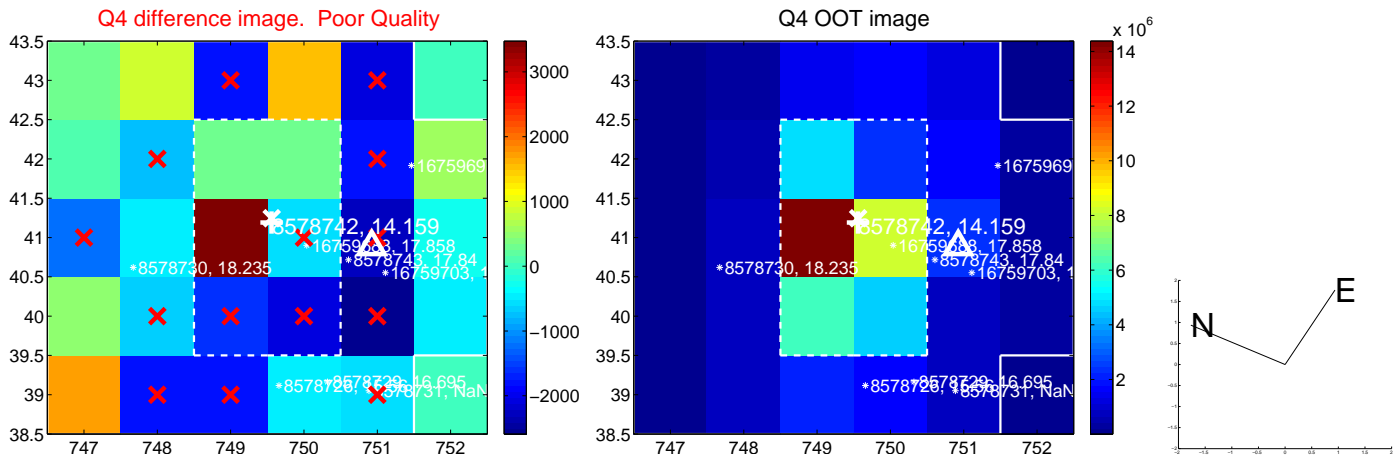
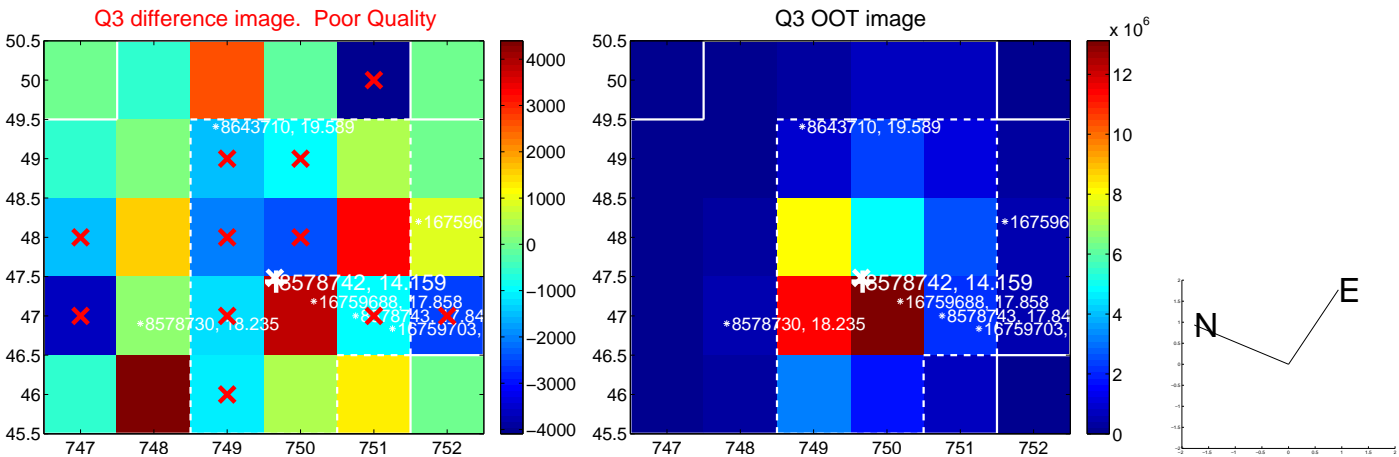
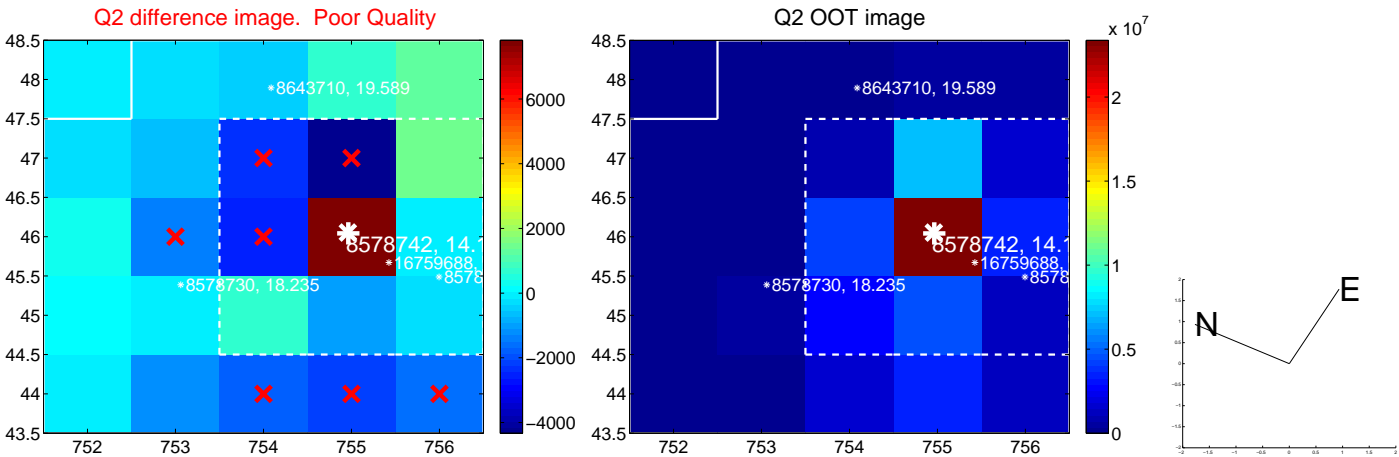
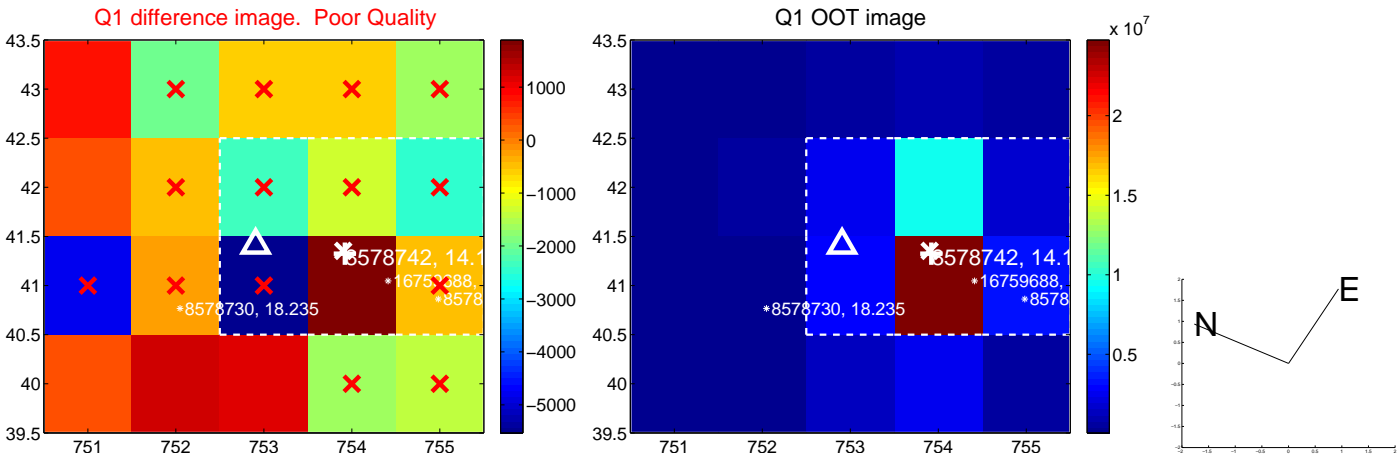
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.052 ± 1.335 | 0.79 | 0.493 ± 0.577 | 0.929 ± 1.480 |
| PRF-fit source offset from KIC position | 0.895 ± 1.366 | 0.65 | 0.381 ± 0.567 | 0.810 ± 1.486 |
| photometric centroid source offset | 0.13 ± 0.74 | 0.18 | -0.13 ± 0.74 | -0.04 ± 0.77 |

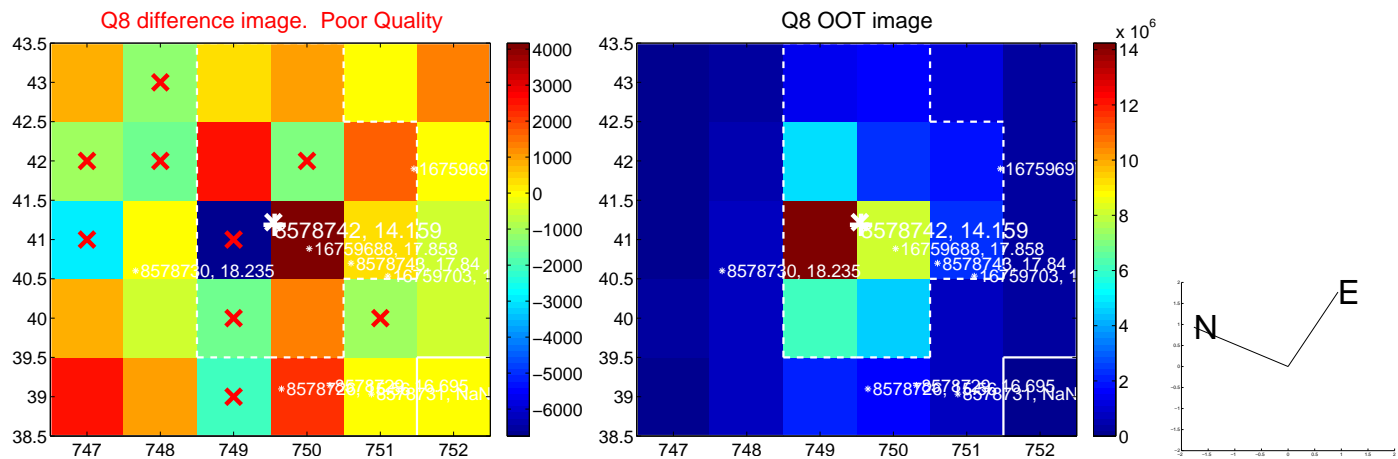
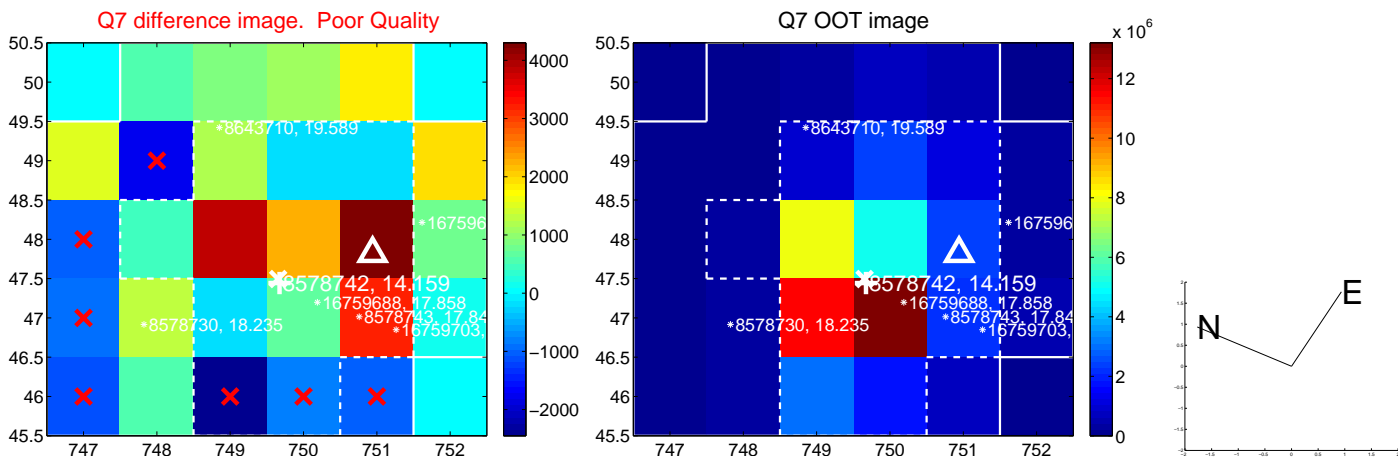
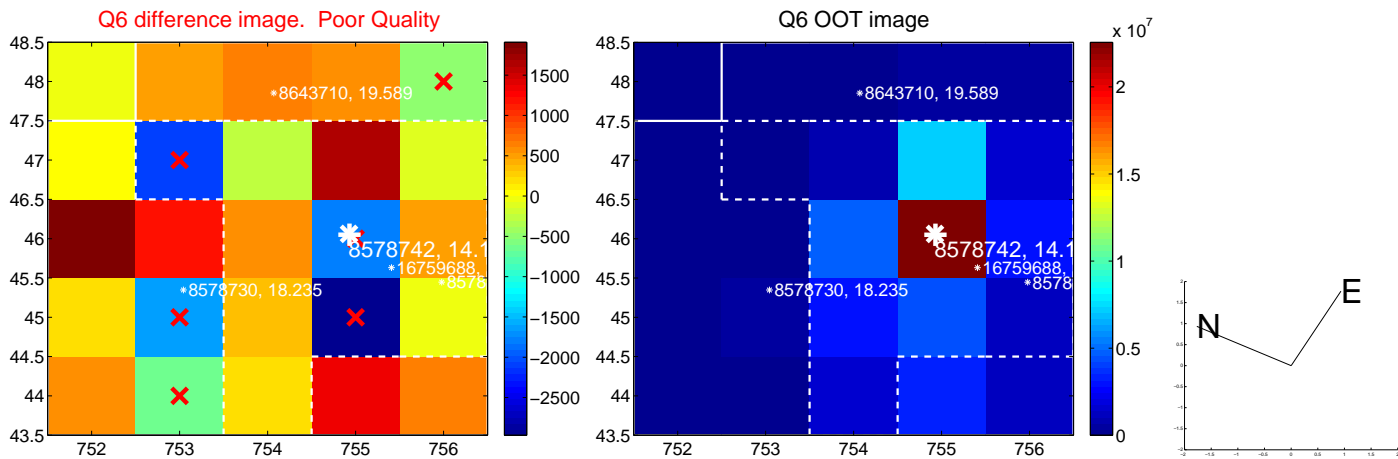
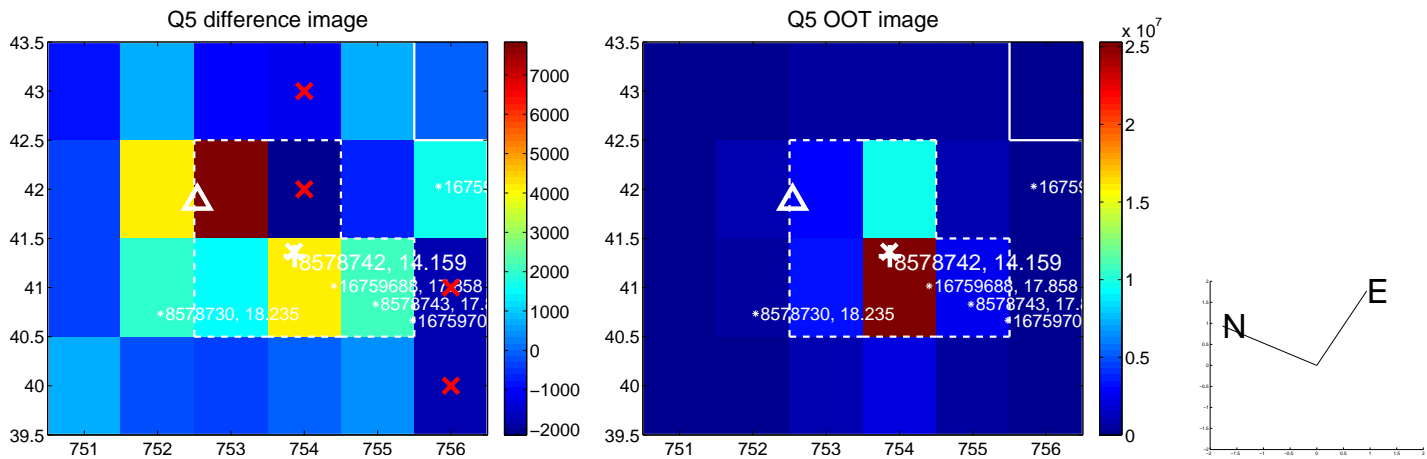


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

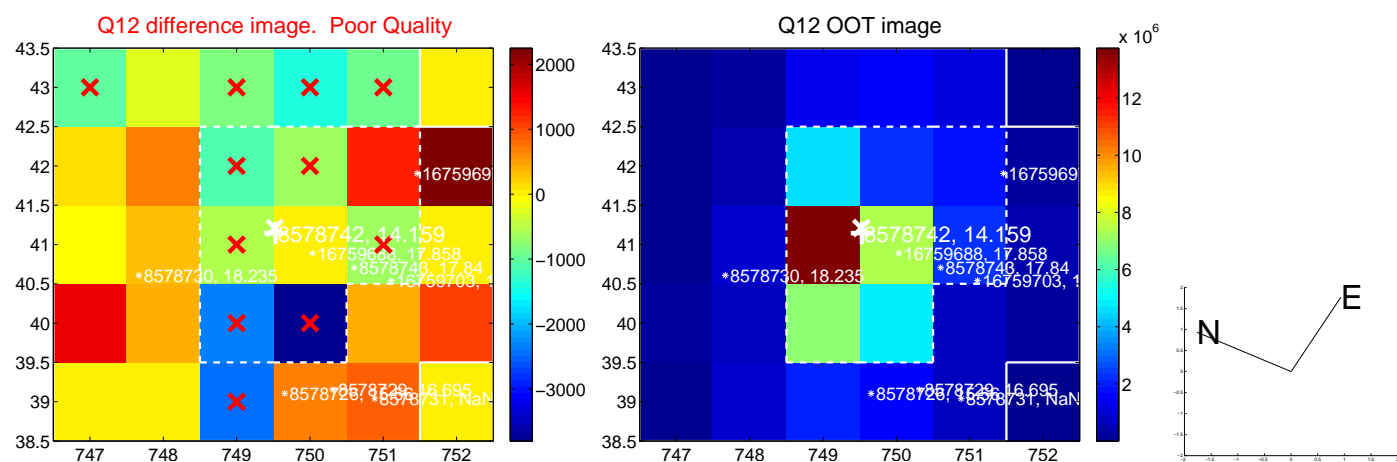
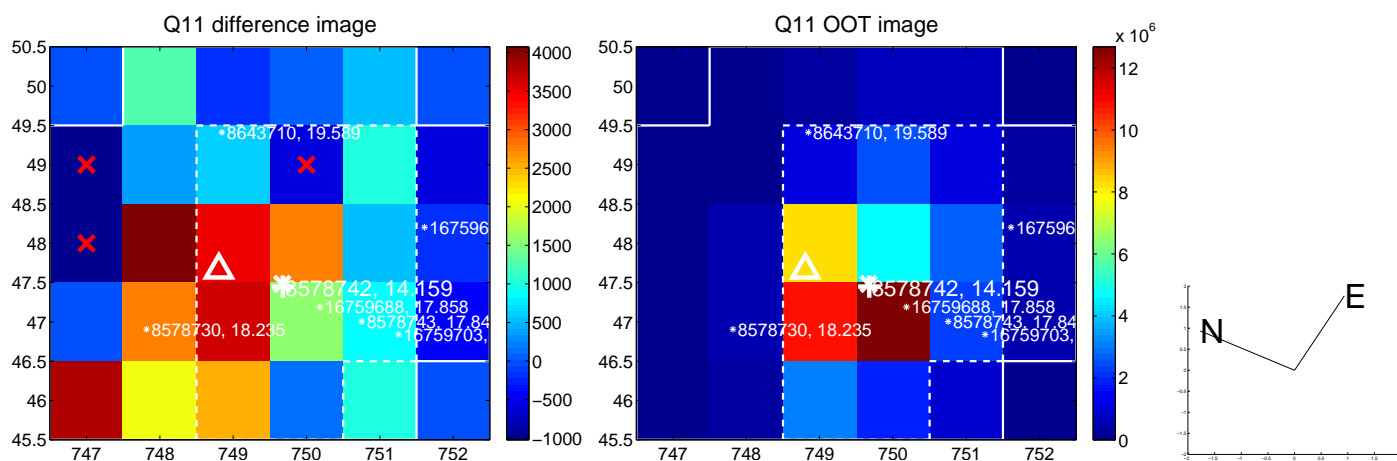
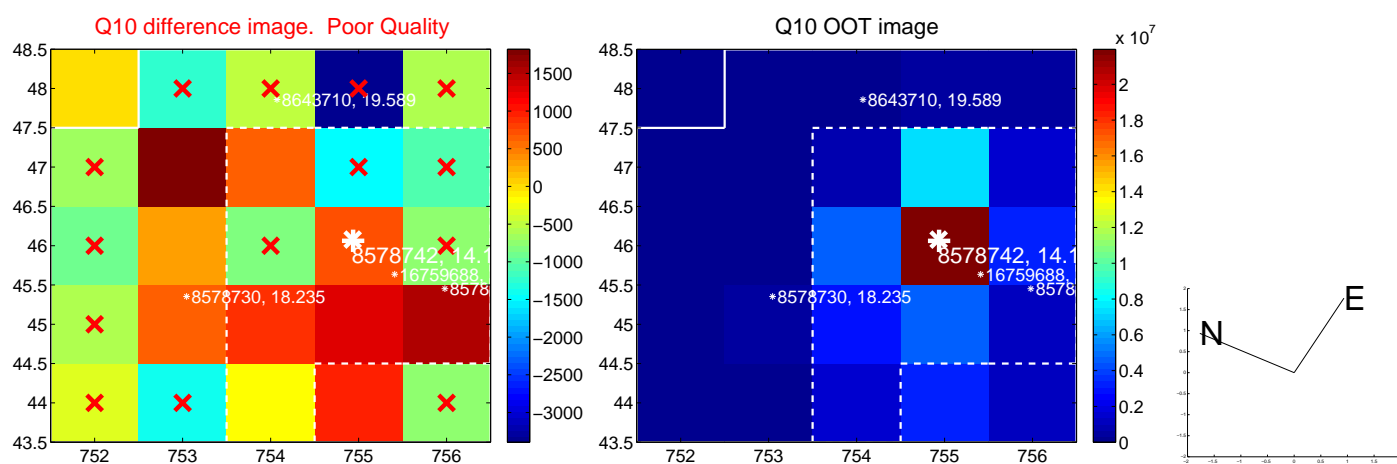
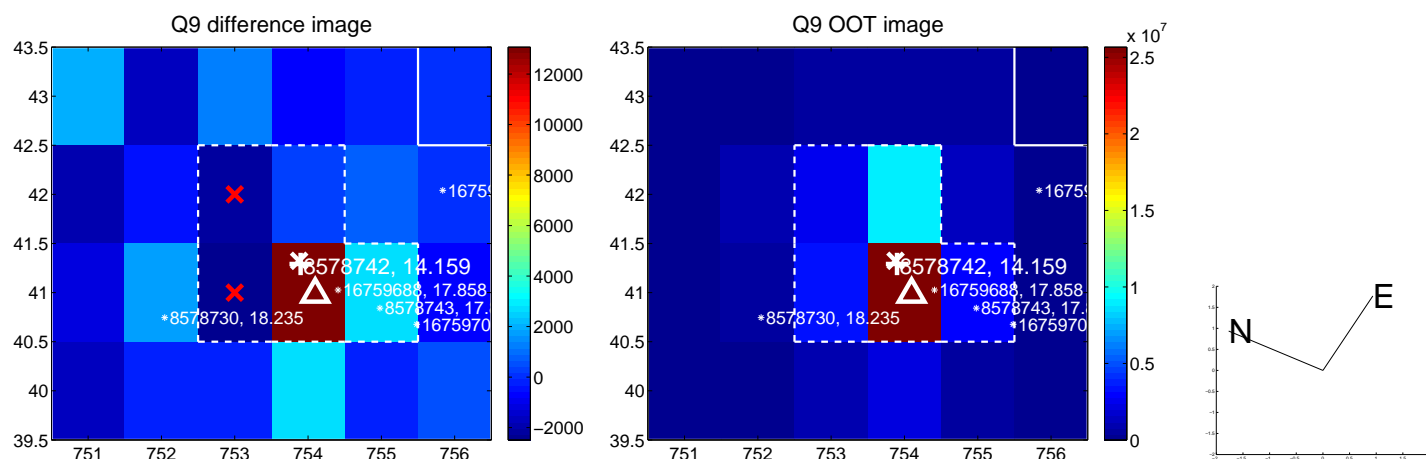
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



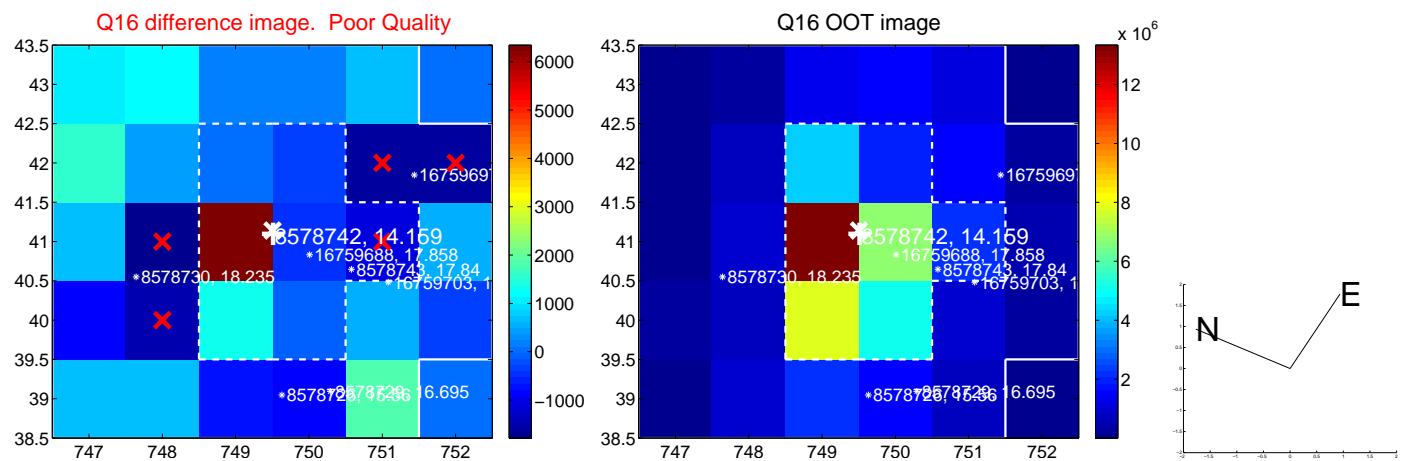
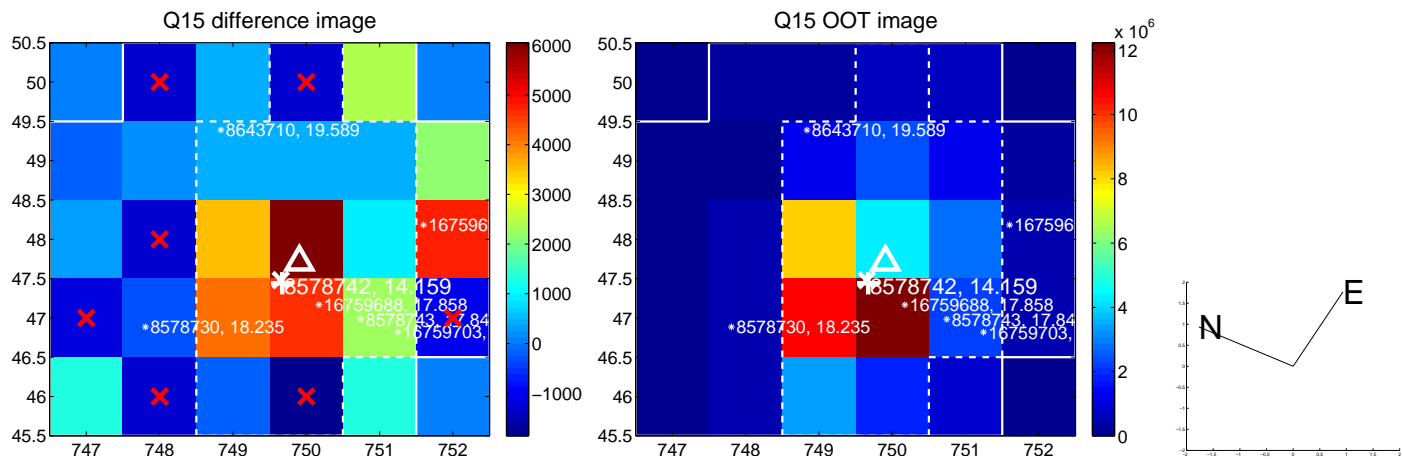
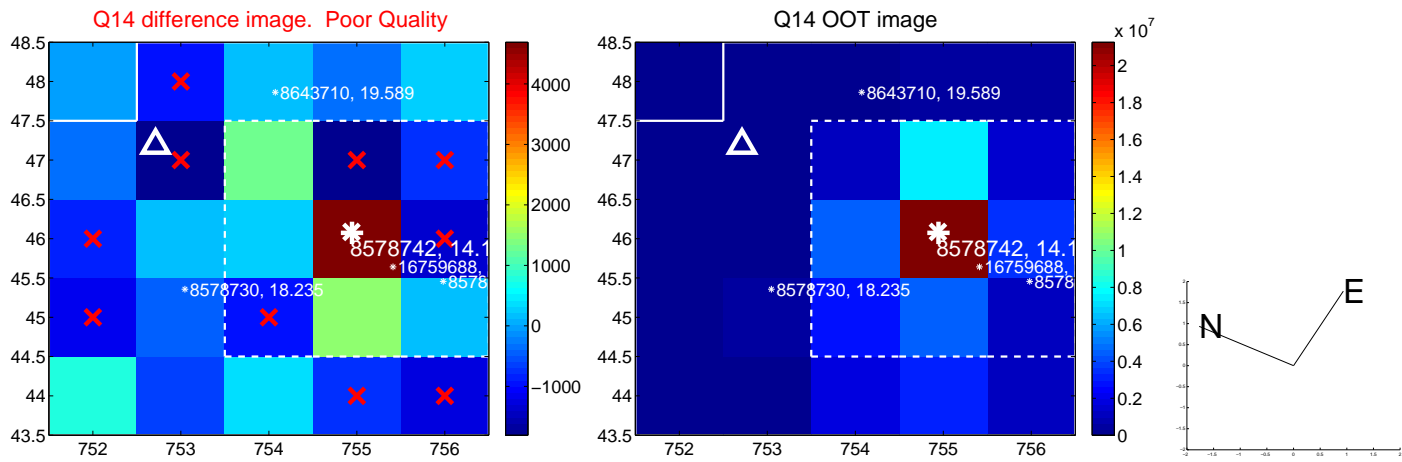
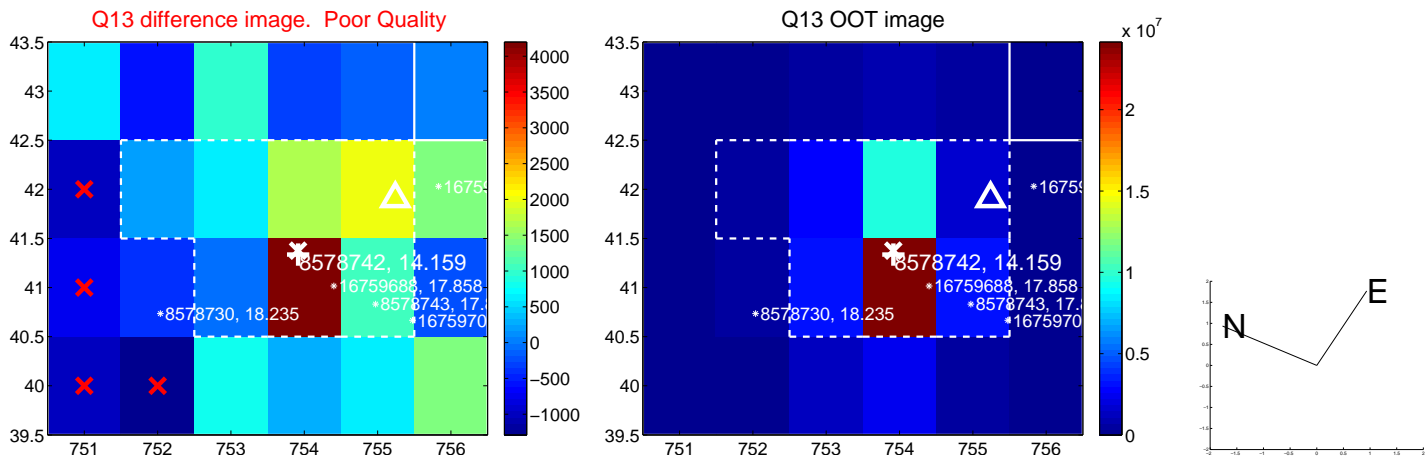
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



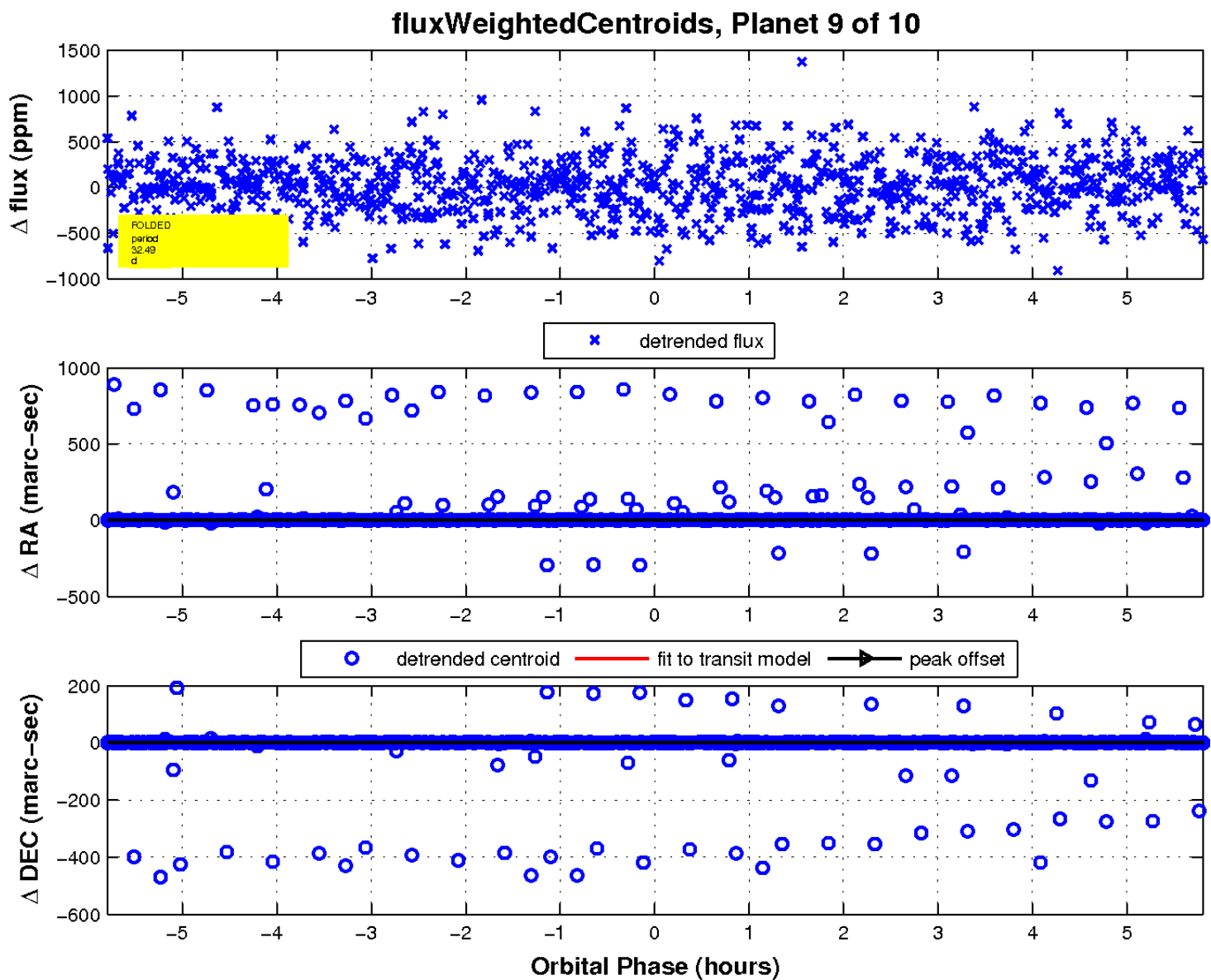
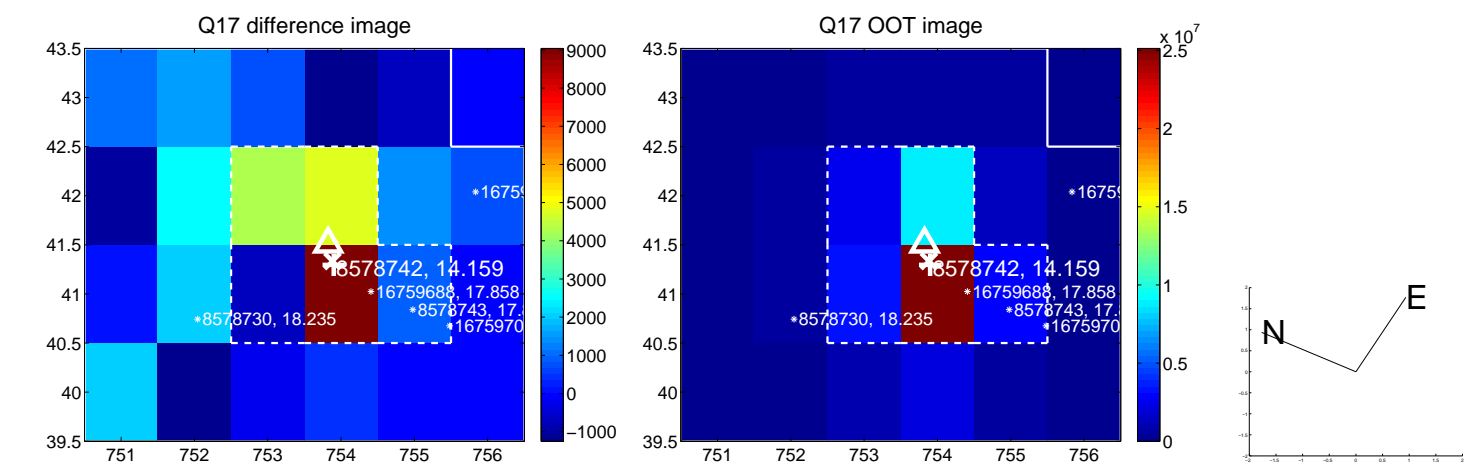
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

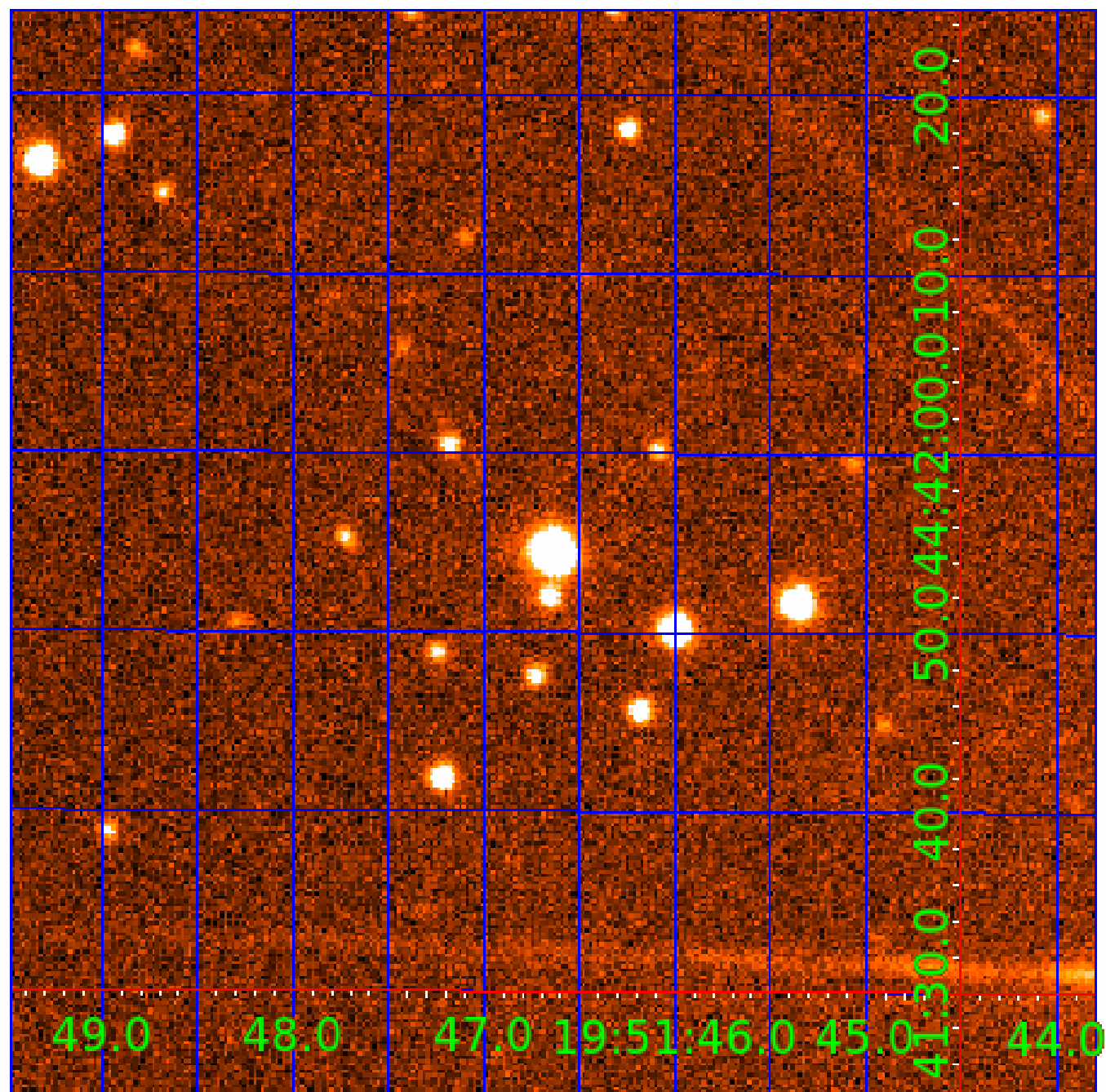


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008578742

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008578742-01 | OBS | No | 0.979282 | 132.499822 | 30.1 | 7.124 | 9.2 | 9.2 | 1.02 | 5900 | 0.56 | 3257.68 |
| 008578742-02 | OBS | No | 30.067442 | 135.549811 | 665.8 | 0.905 | 12.6 | 11.6 | 1.02 | 5900 | 2.67 | 33.88 |
| 008578742-03 | OBS | No | 23.230322 | 150.089242 | 165.3 | 13.942 | 13.2 | 8.7 | 1.02 | 5900 | 1.44 | 47.80 |
| 008578742-04 | OBS | No | 26.009221 | 157.372152 | 581.8 | 1.193 | 13.6 | 12.5 | 1.02 | 5900 | 2.51 | 41.11 |
| 008578742-05 | OBS | No | 16.351802 | 133.844665 | 360.0 | 1.809 | 11.0 | 9.5 | 1.02 | 5900 | 1.95 | 76.33 |
| 008578742-06 | OBS | No | 18.038884 | 144.644087 | 431.6 | 1.518 | 9.7 | 10.7 | 1.02 | 5900 | 2.54 | 66.96 |
| 008578742-07 | OBS | No | 13.885980 | 140.546605 | 360.8 | 1.054 | 12.3 | 8.3 | 1.02 | 5900 | 1.95 | 94.92 |
| 008578742-08 | OBS | No | 65.443597 | 146.922259 | 461.5 | 5.913 | 9.8 | 10.1 | 1.02 | 5900 | 2.54 | 12.01 |
| 008578742-09 | OBS | No | 32.492296 | 159.583745 | 436.3 | 1.938 | 9.6 | 9.9 | 1.02 | 5900 | 2.40 | 30.55 |
| 008578742-10 | OBS | No | 22.418721 | 145.550780 | 709.6 | 2.000 | 9.9 | -1.0 | 1.02 | 5900 | 2.73 | 50.12 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008578742-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 008578742-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 008578742-04 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 008578742-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV |
| 008578742-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT |
| 008578742-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS |
| 008578742-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 008578742-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS |

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

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

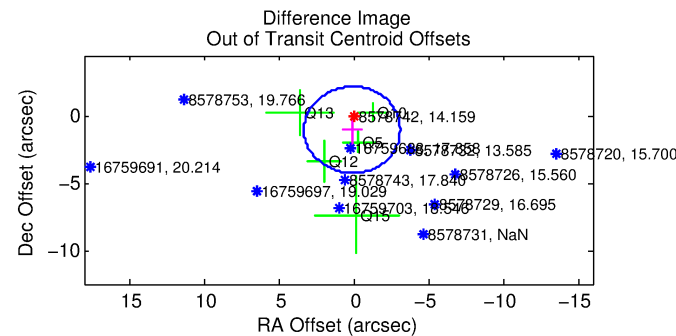
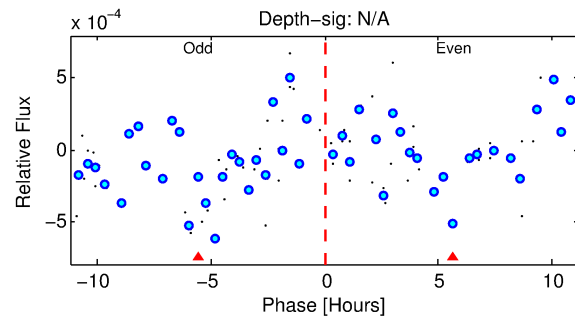
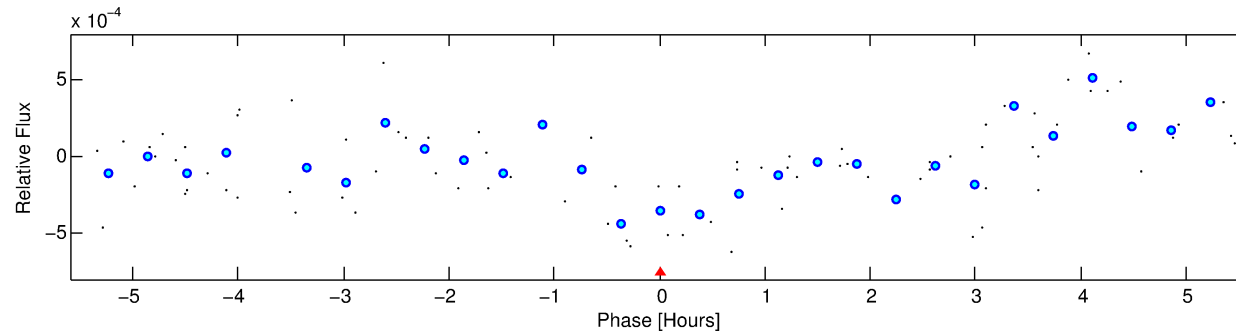
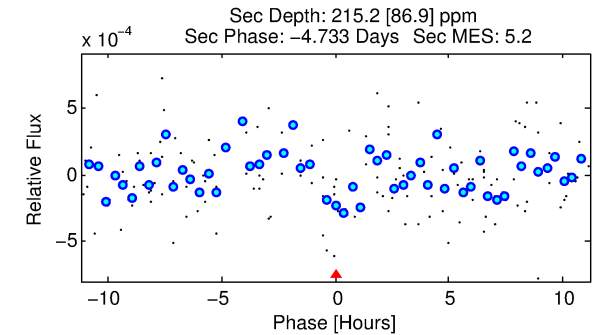
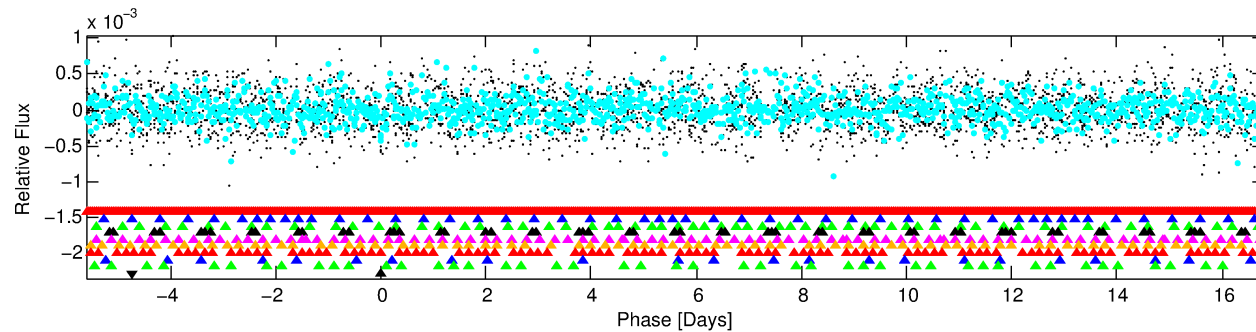
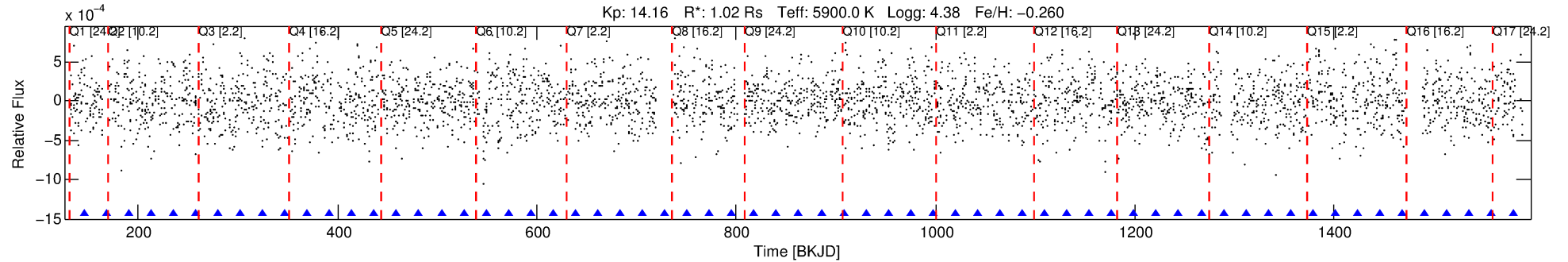
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008578742-10

No Significant Match Found

DV One-Page Summary

KIC: 8578742 Candidate: 10 of 10 Period: 22.419 d



TPS TCE Results:

Period = 22.41872 d
Epoch = 145.5508 BKJD

DV fit results are unavailable

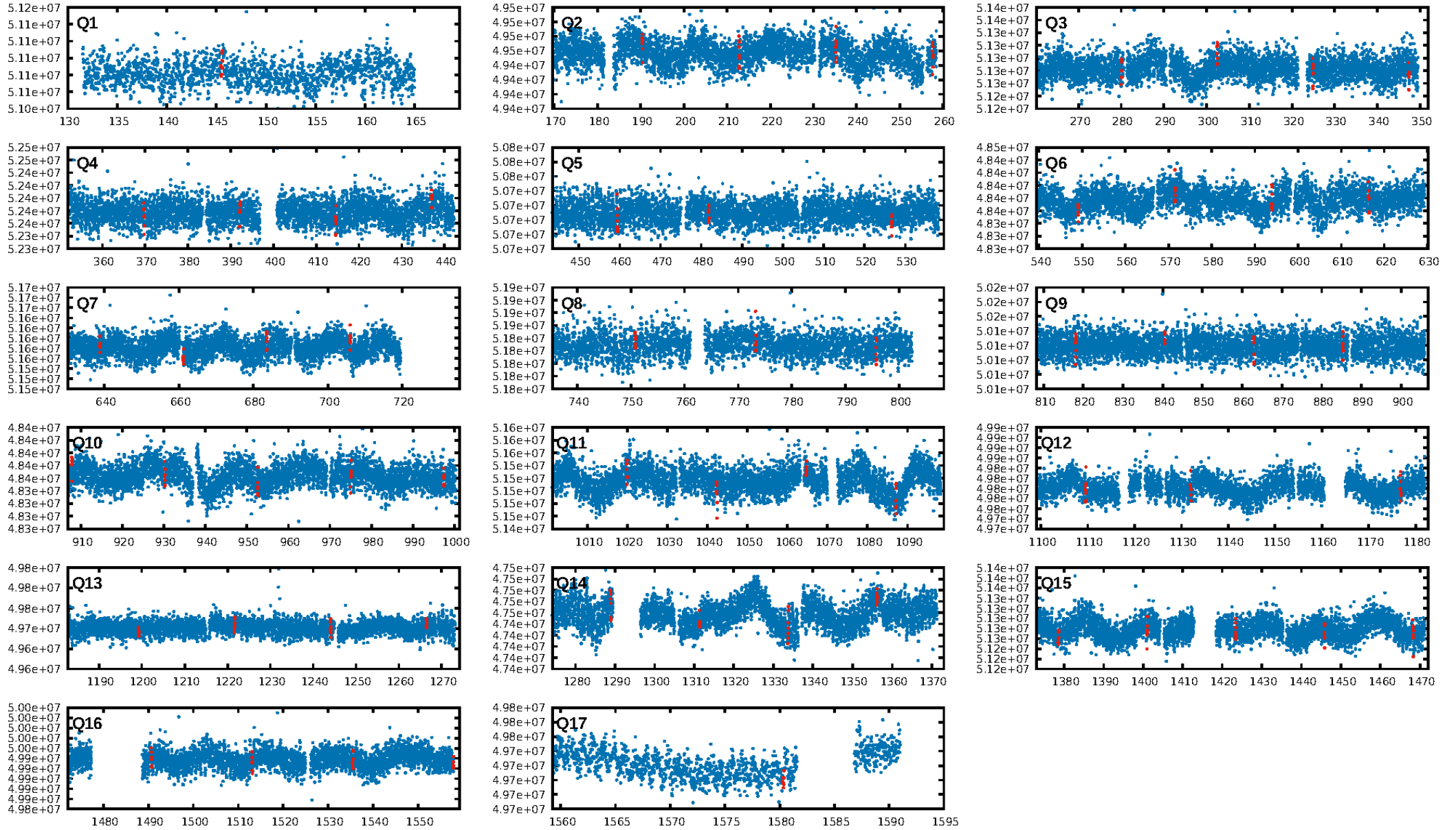
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.87 σ]
LongPeriod-sig: 83.3% [1.38 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.9156
Centroid-sig: 0.7%
Centroid-so: 1.301 arcsec [2.32 σ]
OotOffset-rm: 1.030 arcsec [0.96 σ]
KicOffset-rm: 1.106 arcsec [0.74 σ]
OotOffset-st: 1/1/1/2 [5]
KicOffset-st: 1/1/1/2 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.41 [7/17]

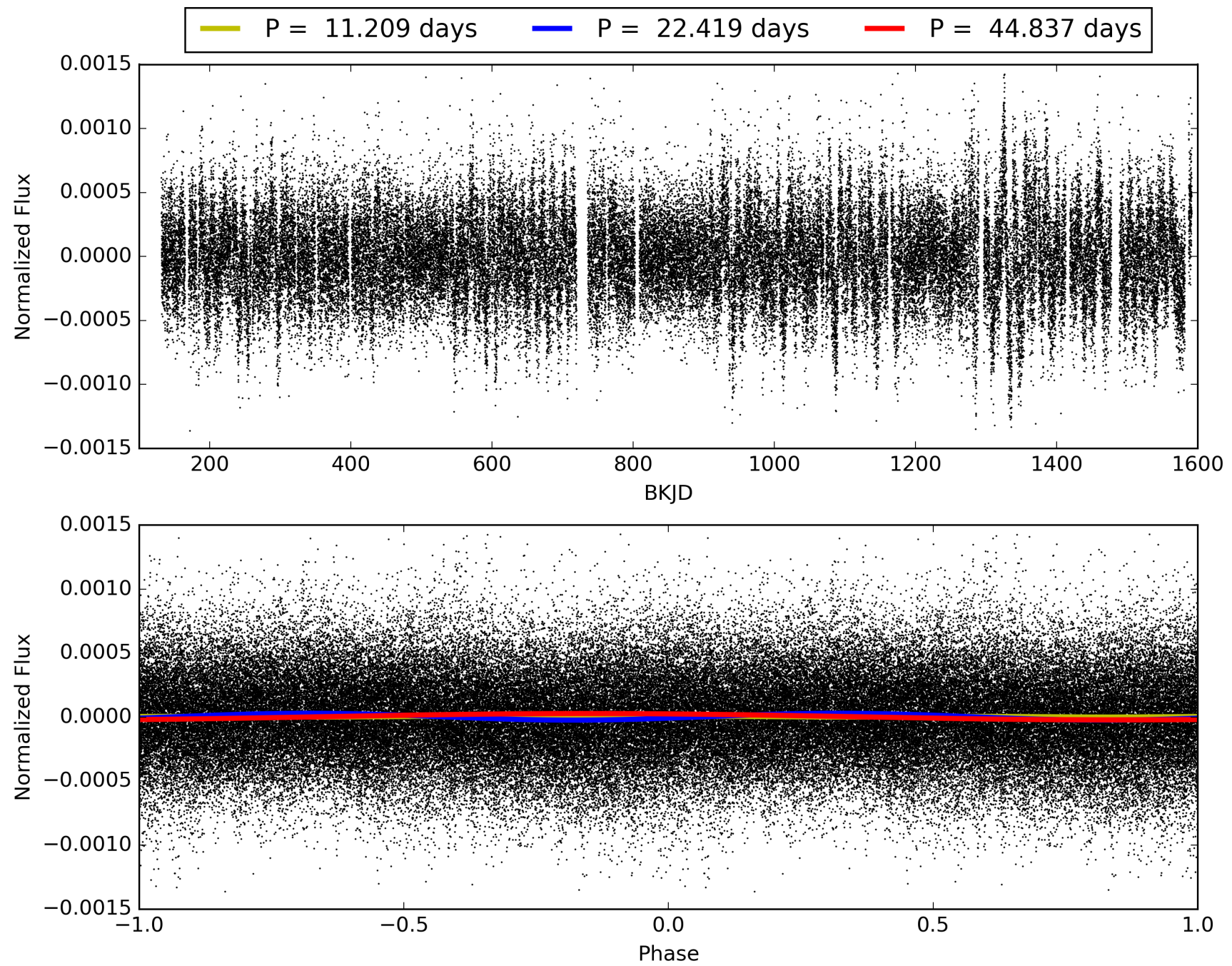
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:28:51 Z

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

TCE 008578742-10, PDC Light Curves

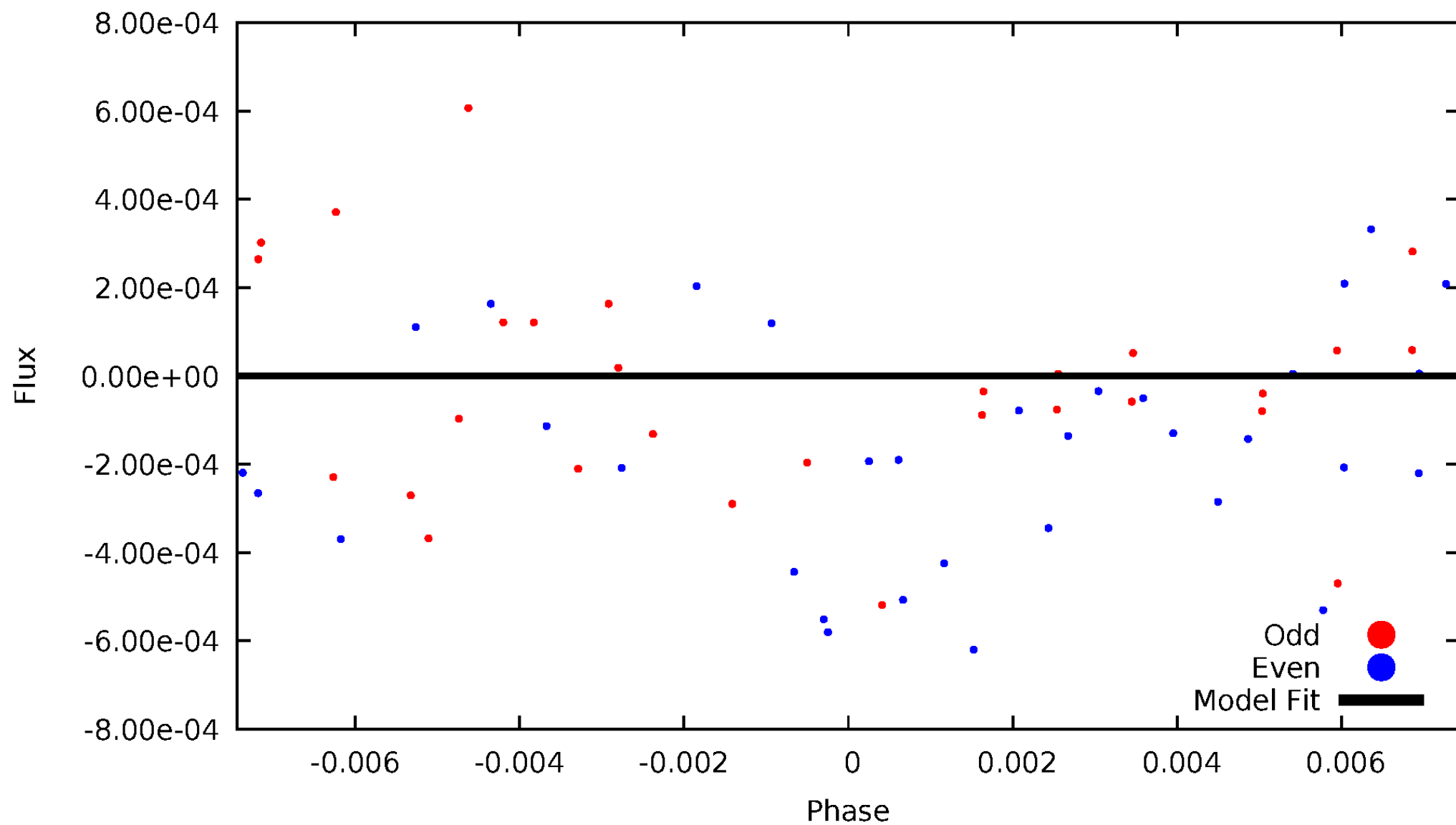


TCE 008578742-10



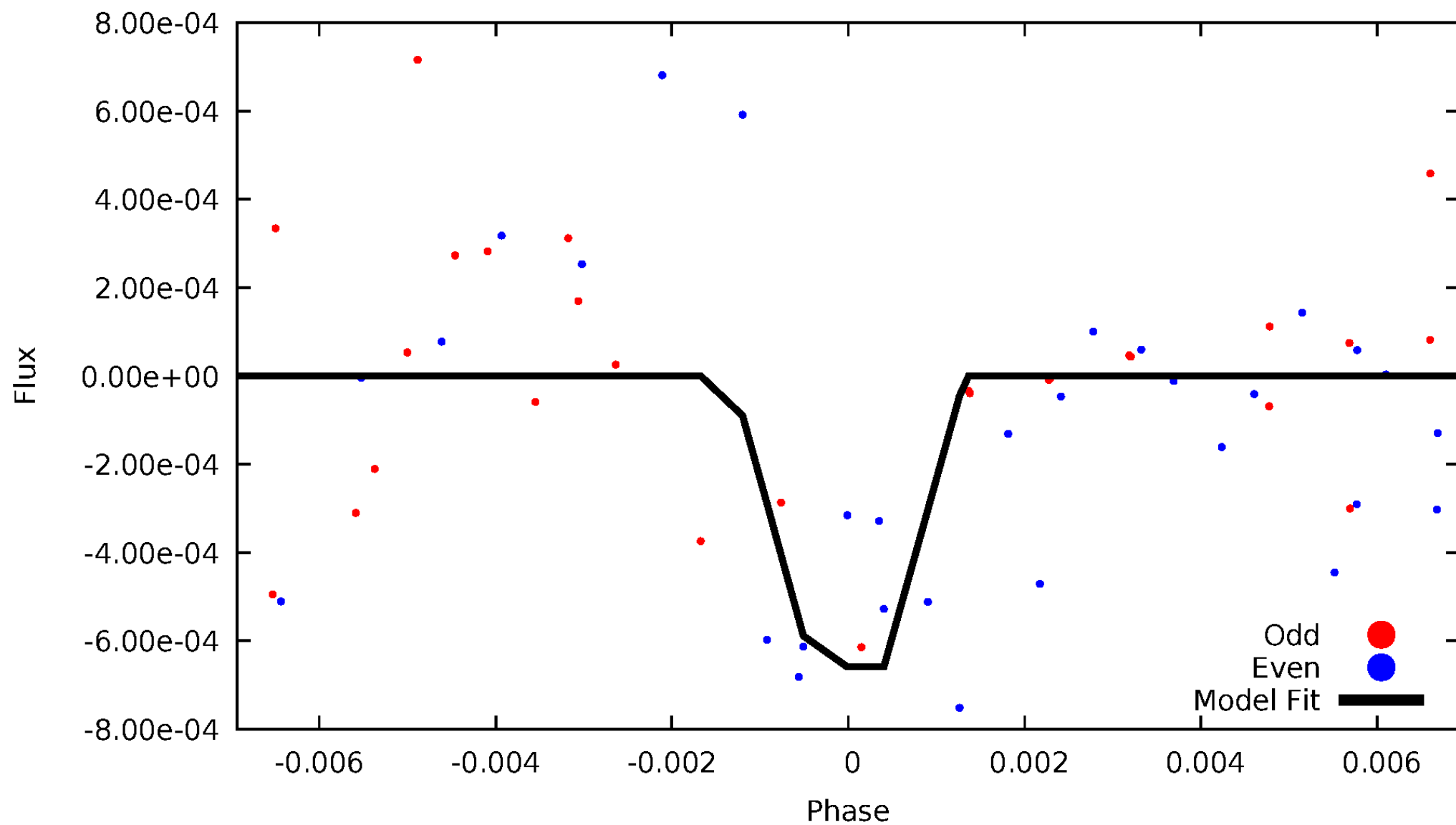
DV Odd/Even

TCE 008578742-10



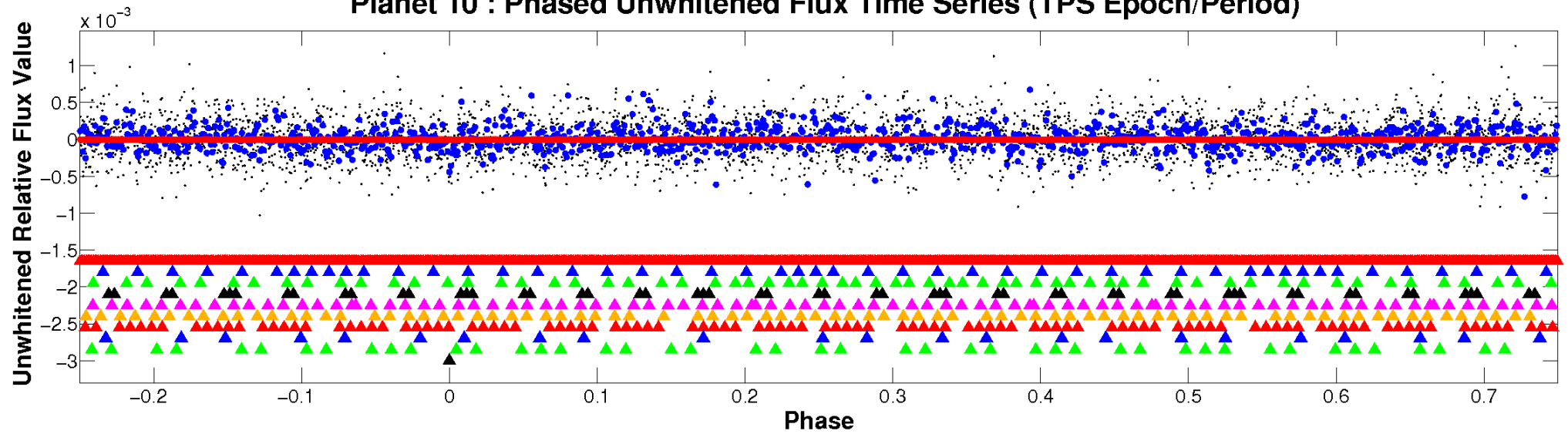
ALT Odd/Even

TCE 008578742-10

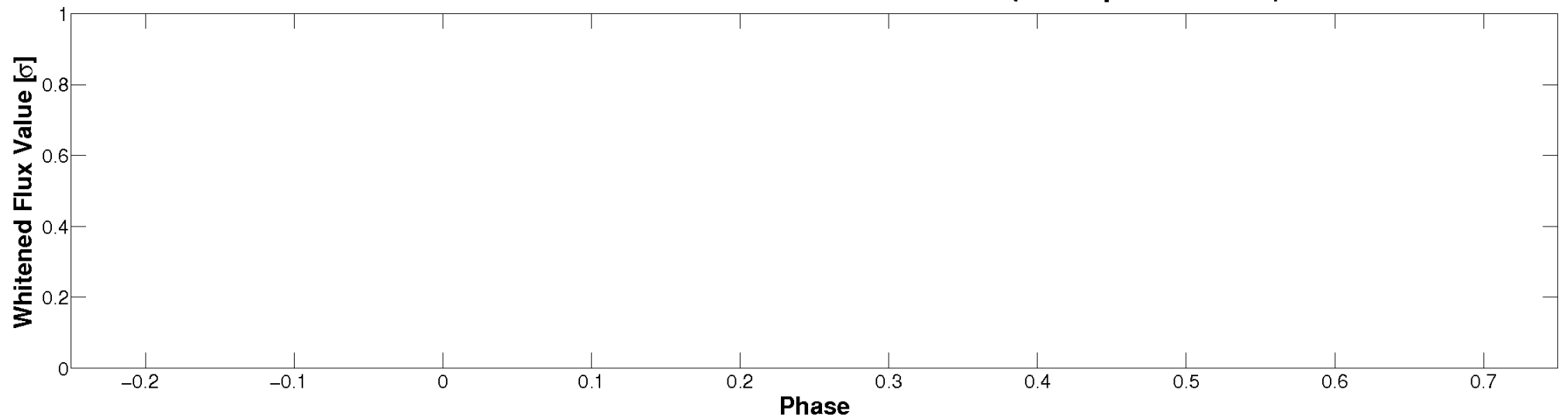


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

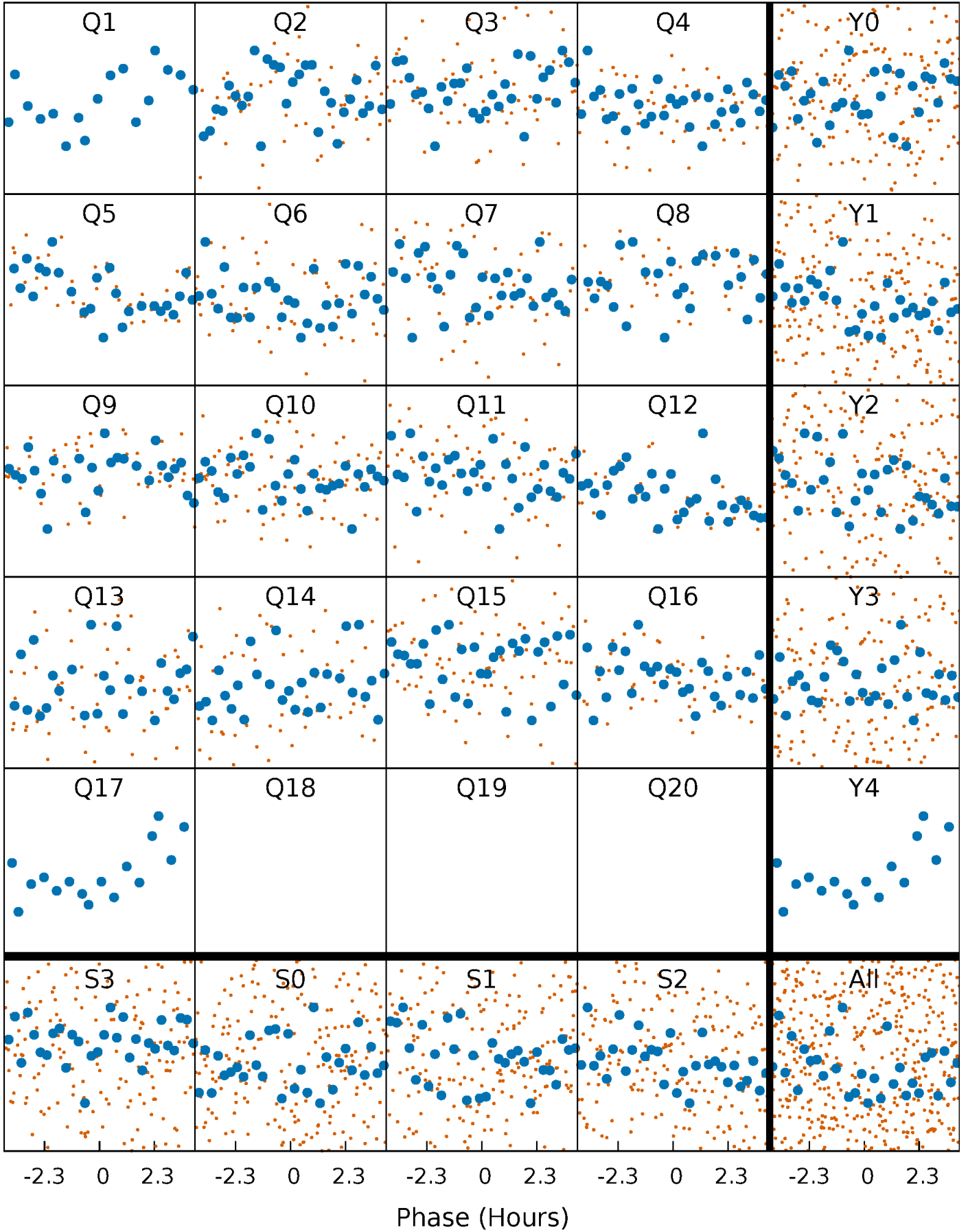


Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)



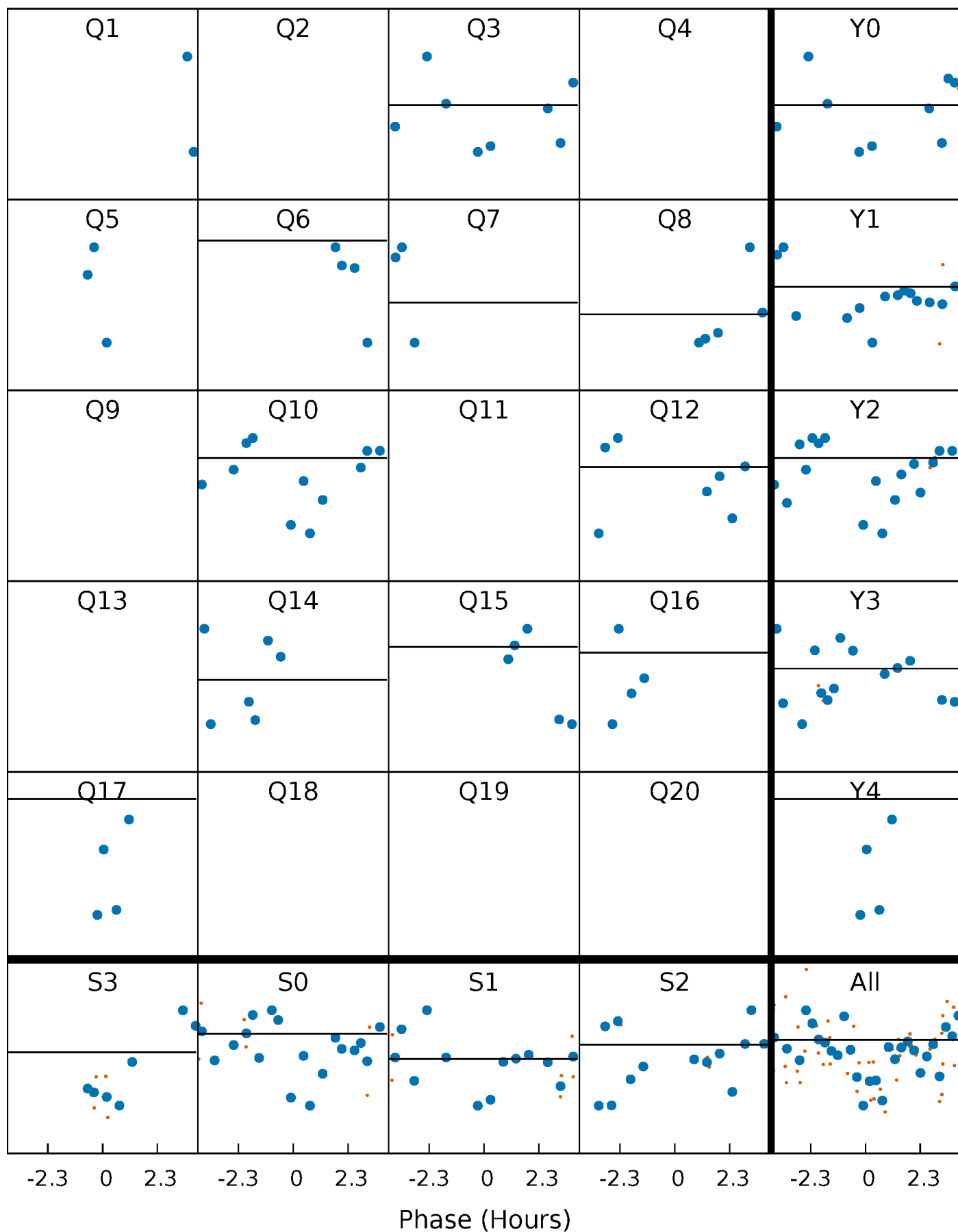
PDC Quarter-Phased Transit Curves

TCE 008578742-10 P= 22.418721 Days $T_0=145.550780$ (BKJD)



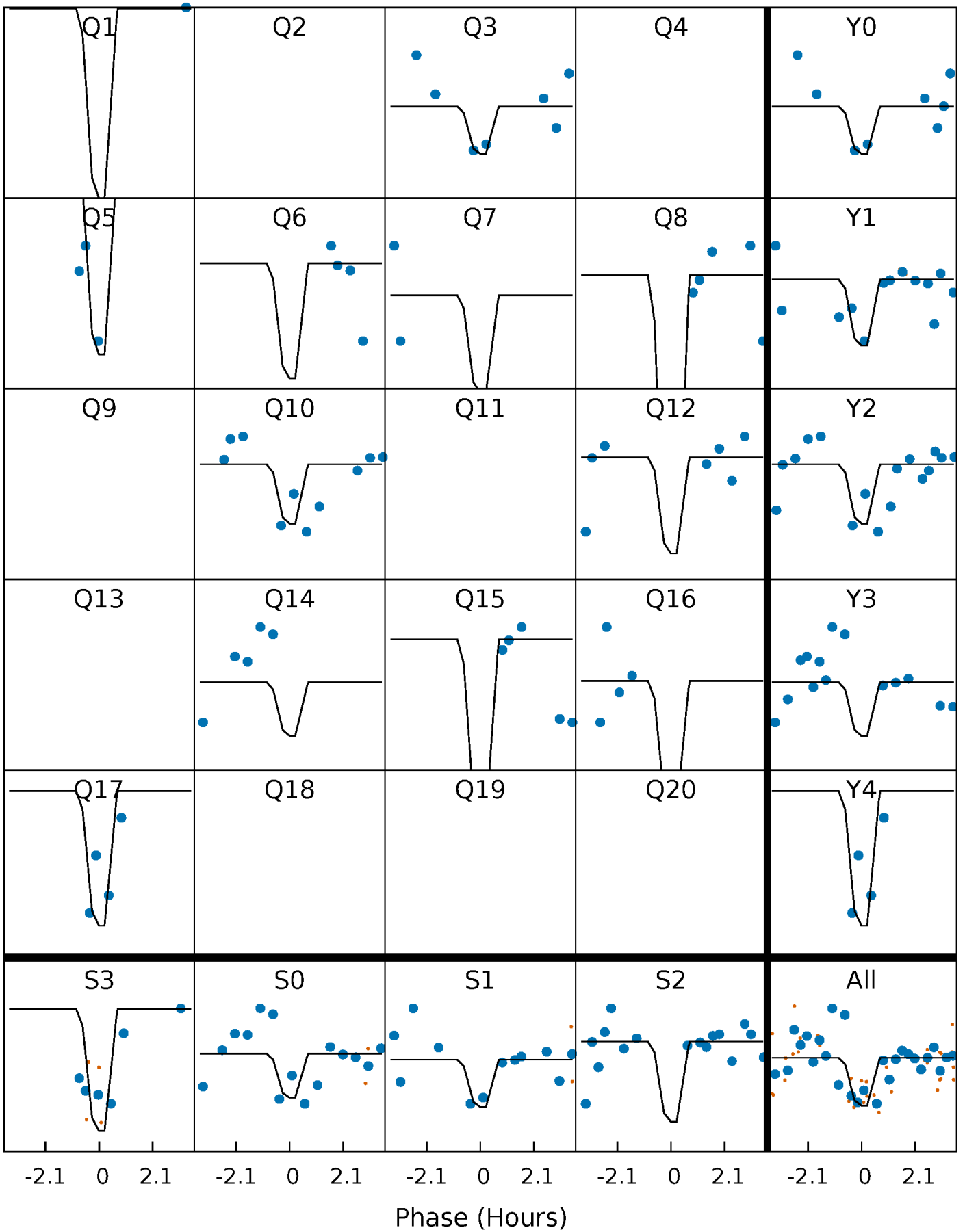
DV Quarter-Phased Transit Curves

TCE 008578742-10 P= 22.418721 Days $T_0=145.550780$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

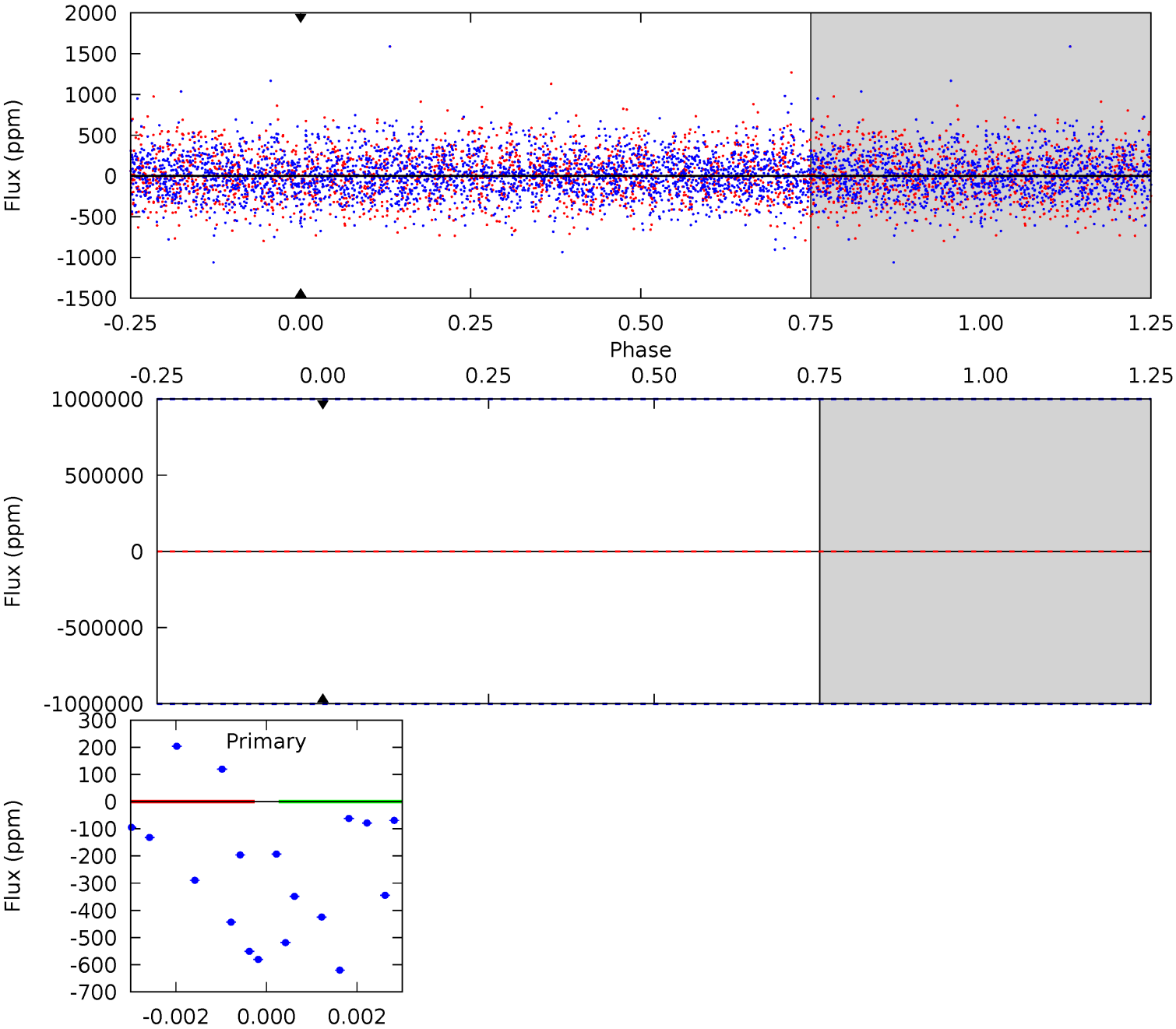
TCE 008578742-10 P= 22.418721 Days $T_0=145.556658$ (BKJD)



DV Model-Shift Uniqueness Test

008578742-10, P = 22.418721 Days, E = 123.132059 Days

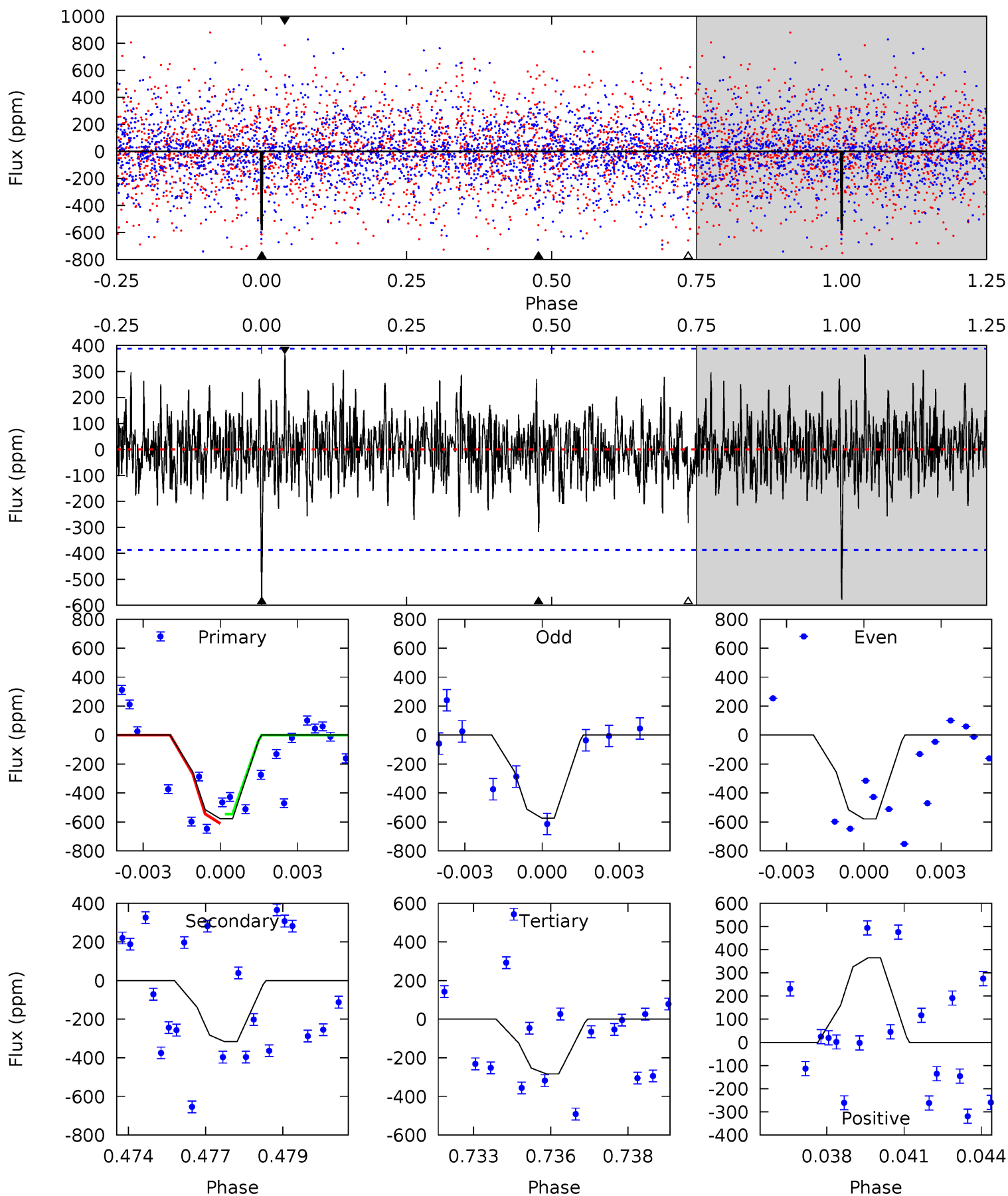
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00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



Alt Model-Shift Uniqueness Test

008578742-10, P = 22.418721 Days, E = 123.137937 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.86 | 4.31 | 3.86 | 4.97 | 5.28 | 3.02 | 1.24 | 4.00 | 2.89 | 0.45 | -0.66 | 0.03 | 1.00 | 0.39 | 0.44 |



Stellar Parameters For KIC 008578742

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5900^{+158}_{-175} | $4.376^{+0.128}_{-0.192}$ | $-0.260^{+0.300}_{-0.300}$ | $1.025^{+0.278}_{-0.162}$ | $0.913^{+0.129}_{-0.097}$ | $1.192^{+0.791}_{-0.581}$ |
| | +3%/-3% | +3%/-4% | +115%/-115% | +27%/-16% | +14%/-11% | +66%/-49% |
| Source | PHO1 | KIC0 | KIC0 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008578742-10 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|------------------------|-------------------|--------------------------|-------------------------|
| DV | 0 ± 1000000 | $8.41^{+8.98}_{-5.59}$ | 957^{+68}_{-52} | 4411^{+18018}_{-26358} | 281^{+31110}_{-33598} |
| Alt. | -317 ± 73 | $9.17^{+9.33}_{-6.54}$ | 954^{+77}_{-56} | 3313^{+1837}_{-598} | 48^{+504}_{-36} |

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
 A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

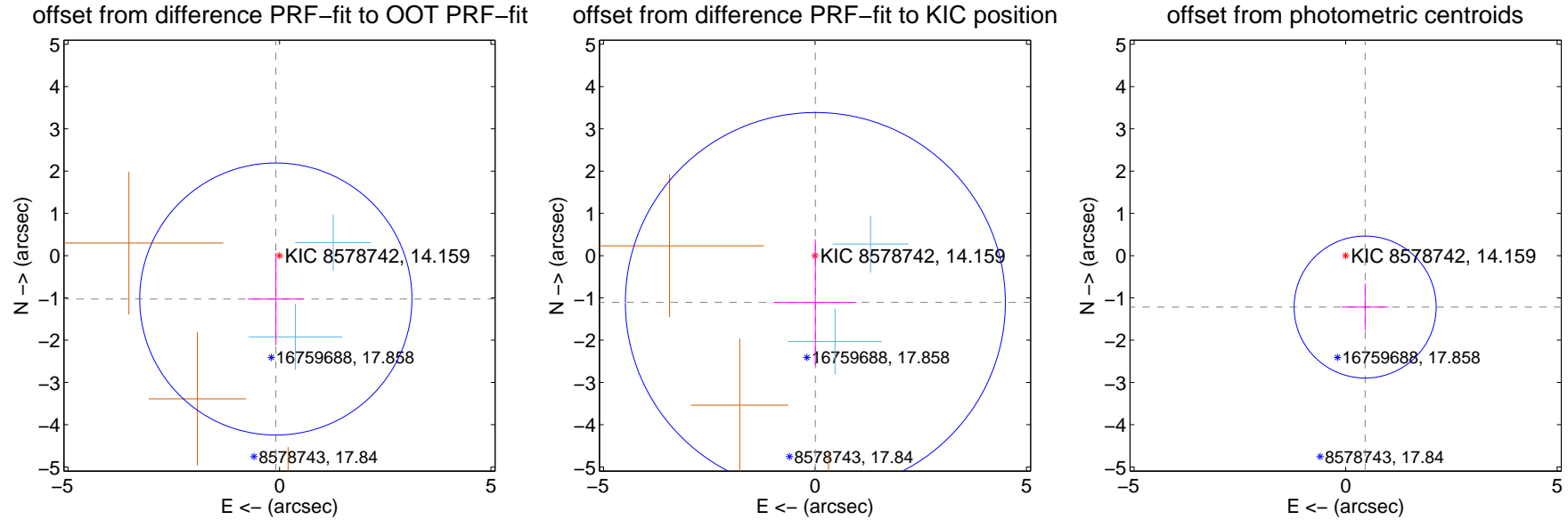
DV Centroid Data

Supplemental centroid analysis for 008578742-10. Kepler magnitude: 14.16. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

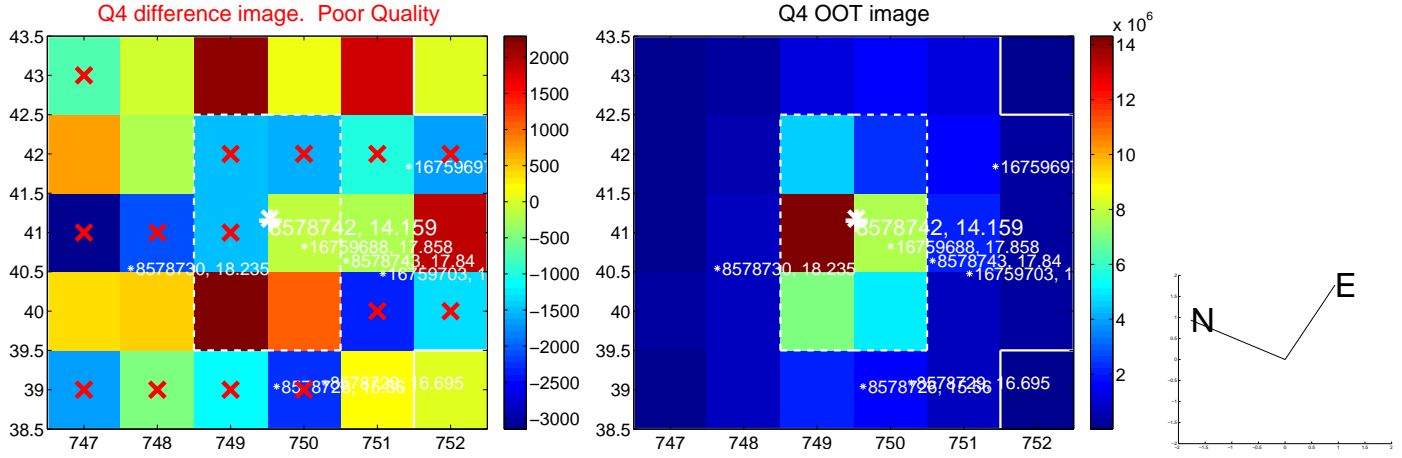
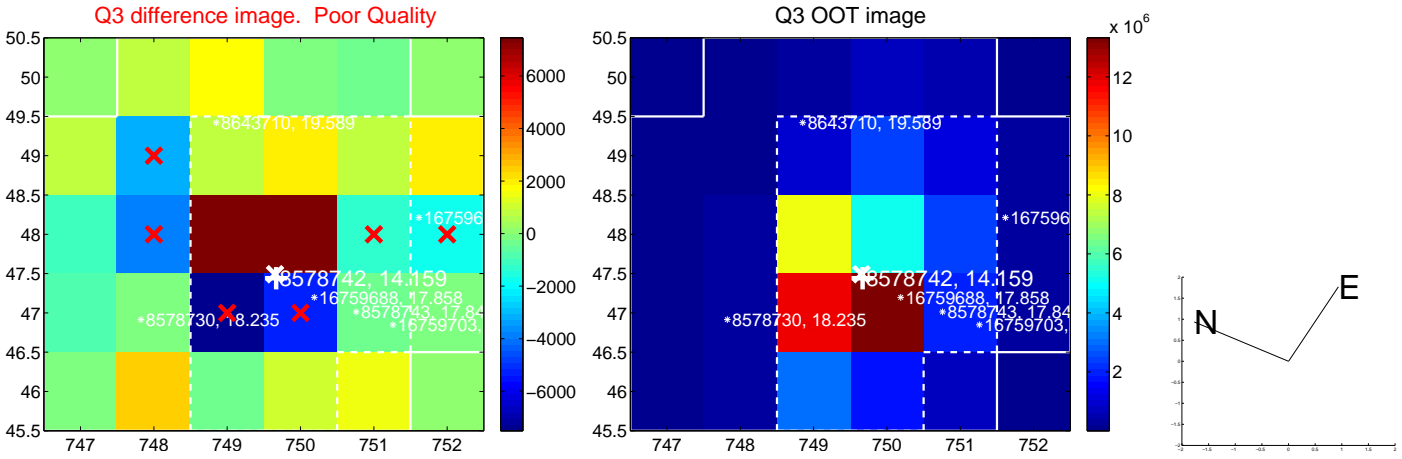
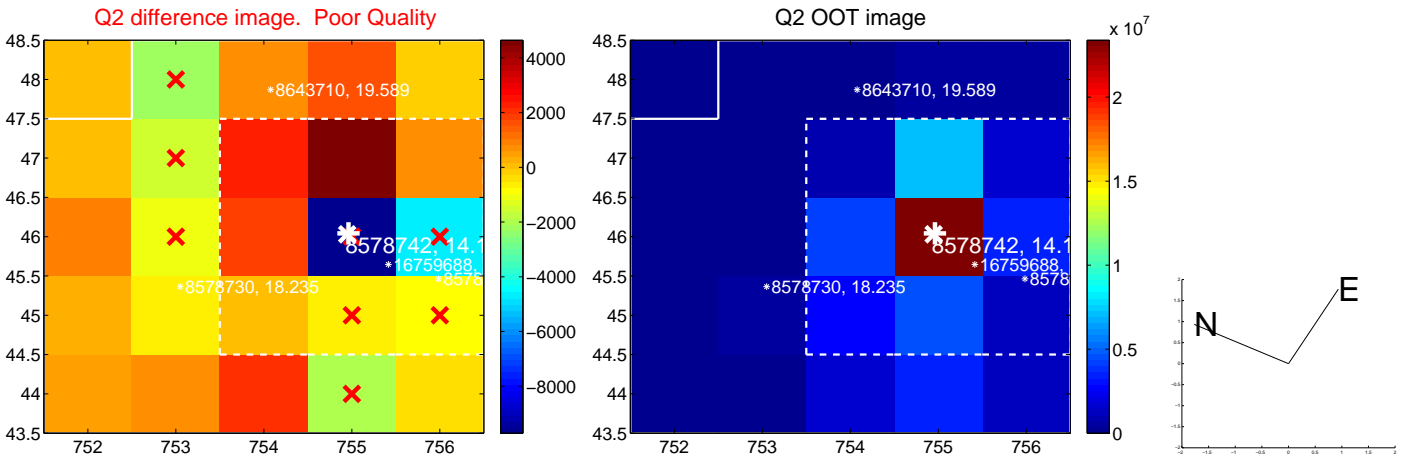
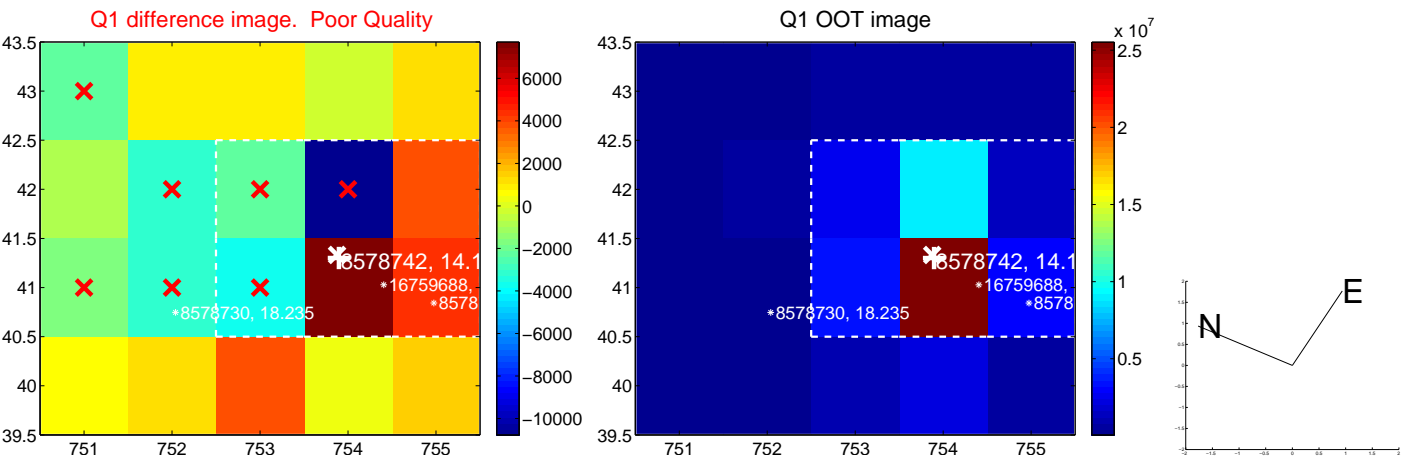
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.030 ± 1.073 | 0.96 | 0.087 ± 0.662 | -1.027 ± 1.091 |
| PRF-fit source offset from KIC position | 1.106 ± 1.498 | 0.74 | -0.009 ± 0.970 | -1.106 ± 1.494 |
| photometric centroid source offset | 1.30 ± 0.56 | 2.32 | -0.46 ± 0.55 | -1.22 ± 0.56 |

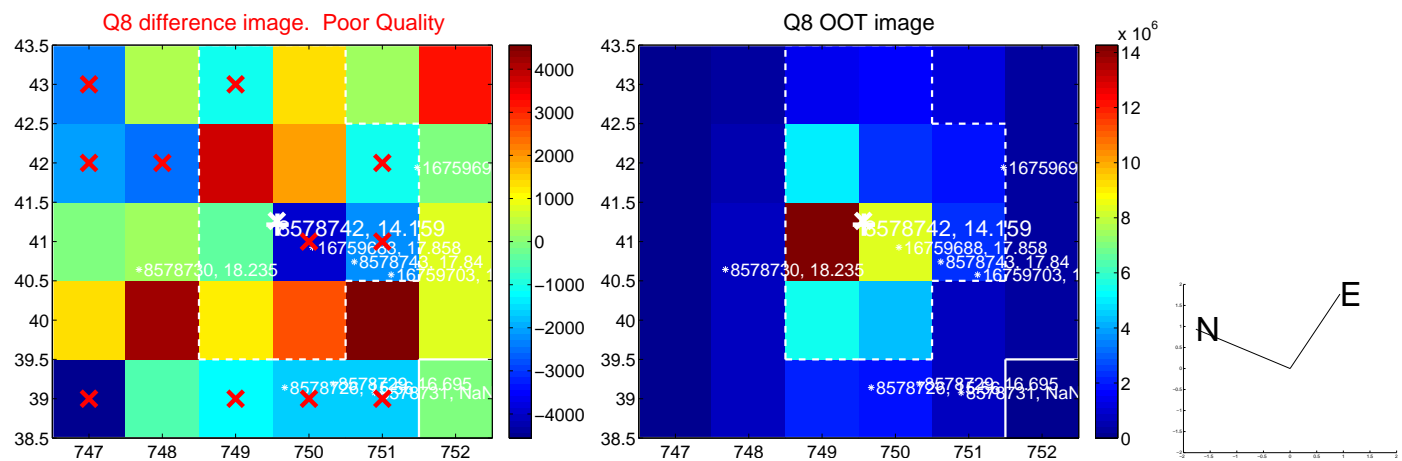
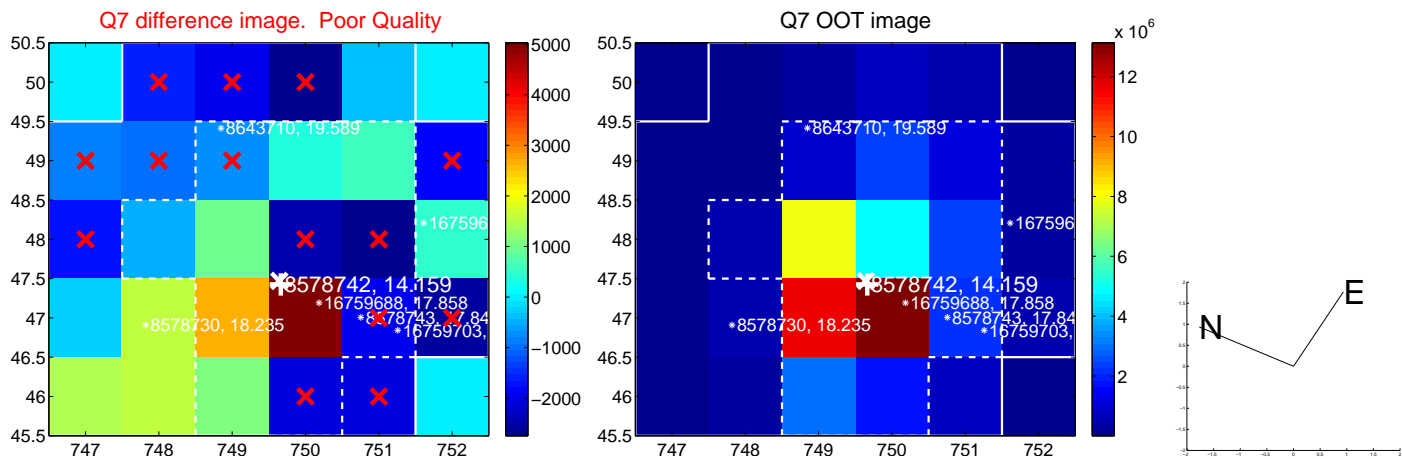
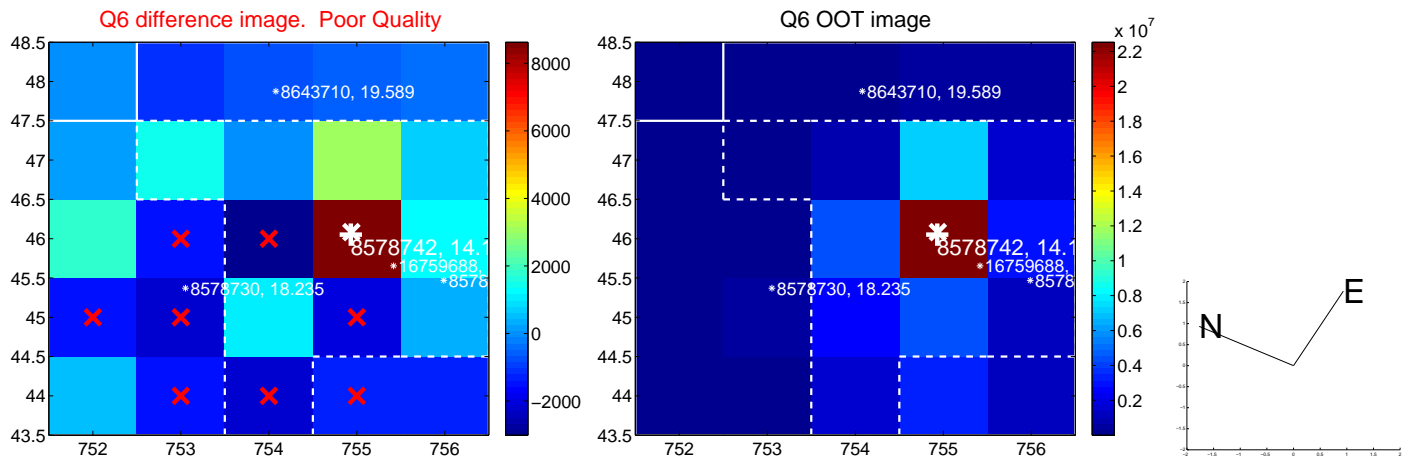
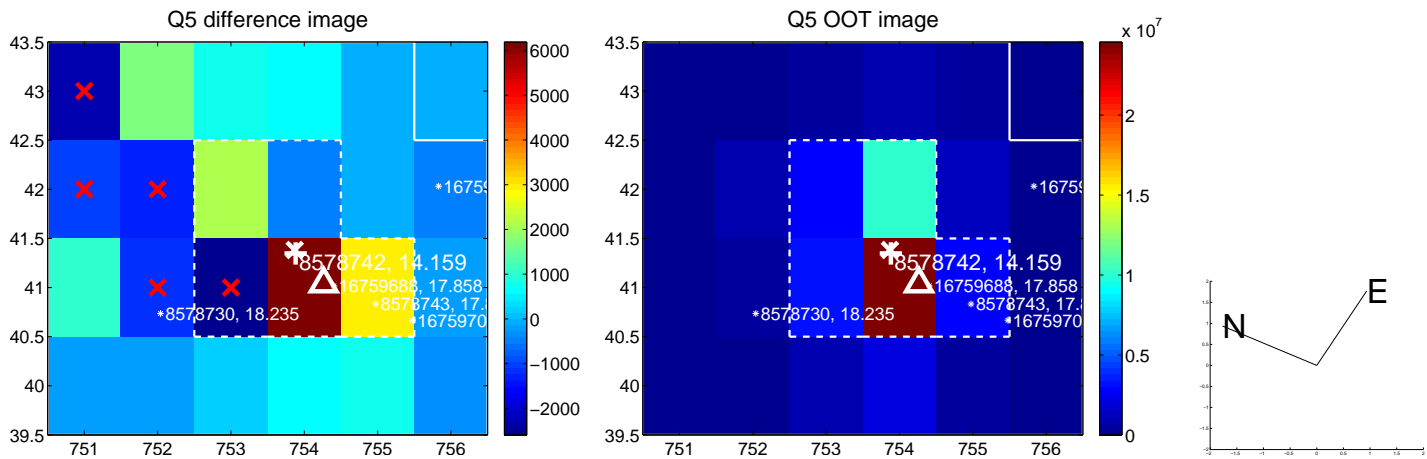


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

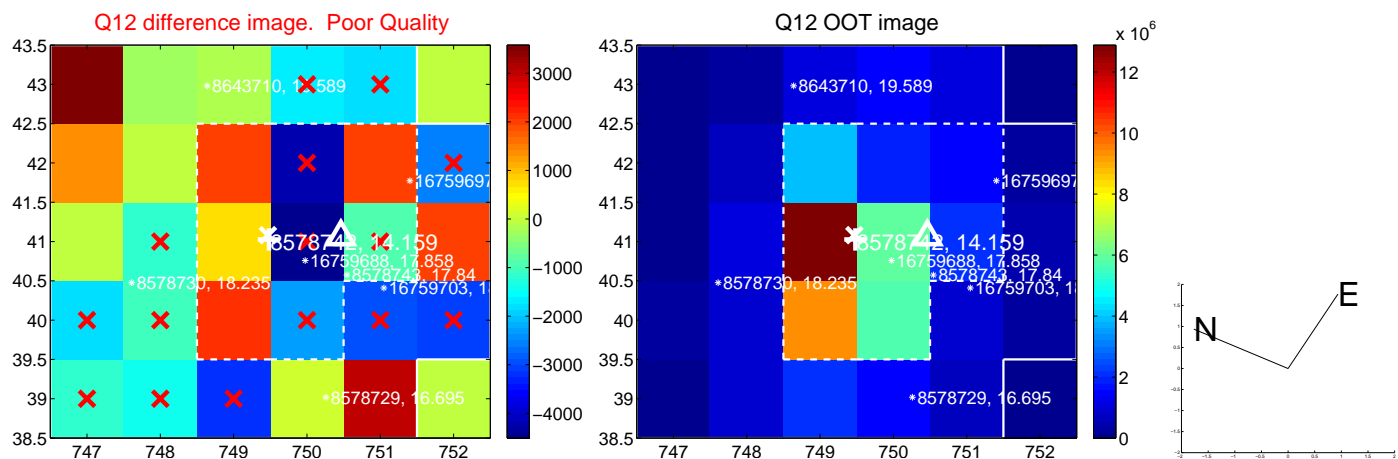
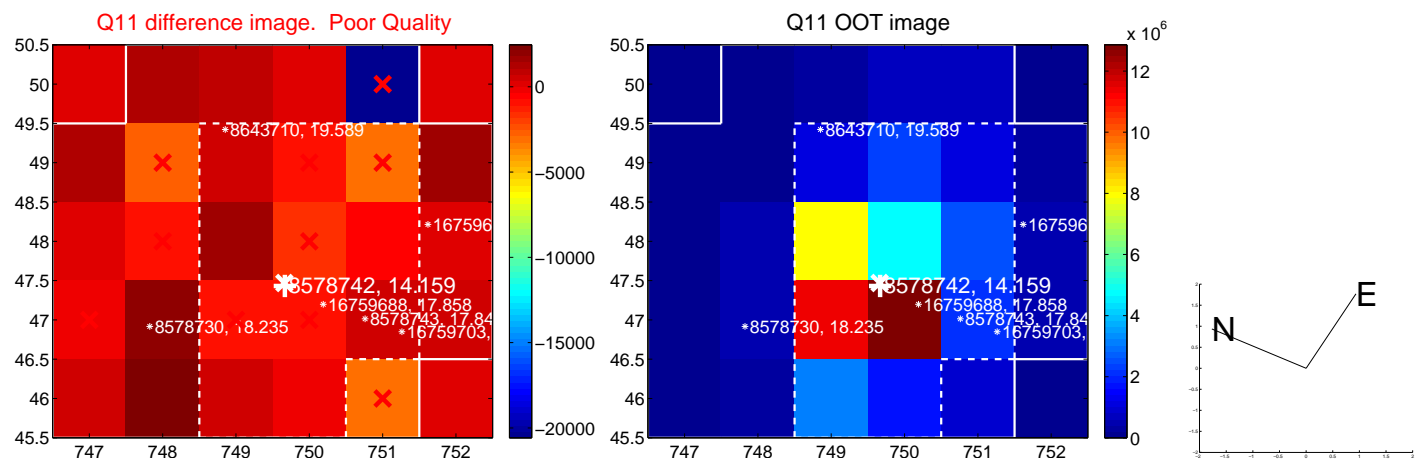
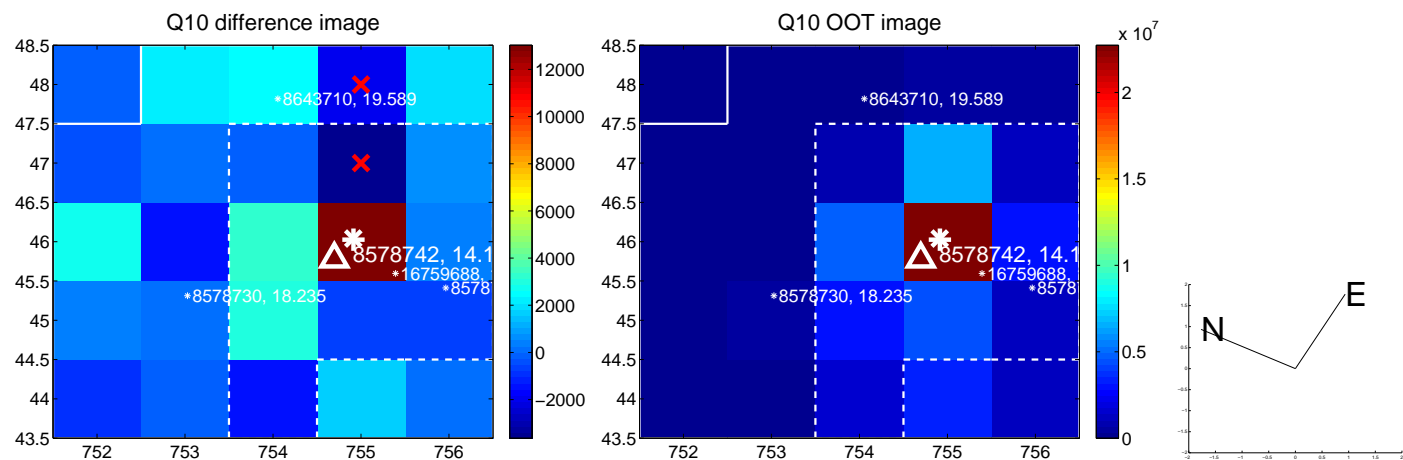
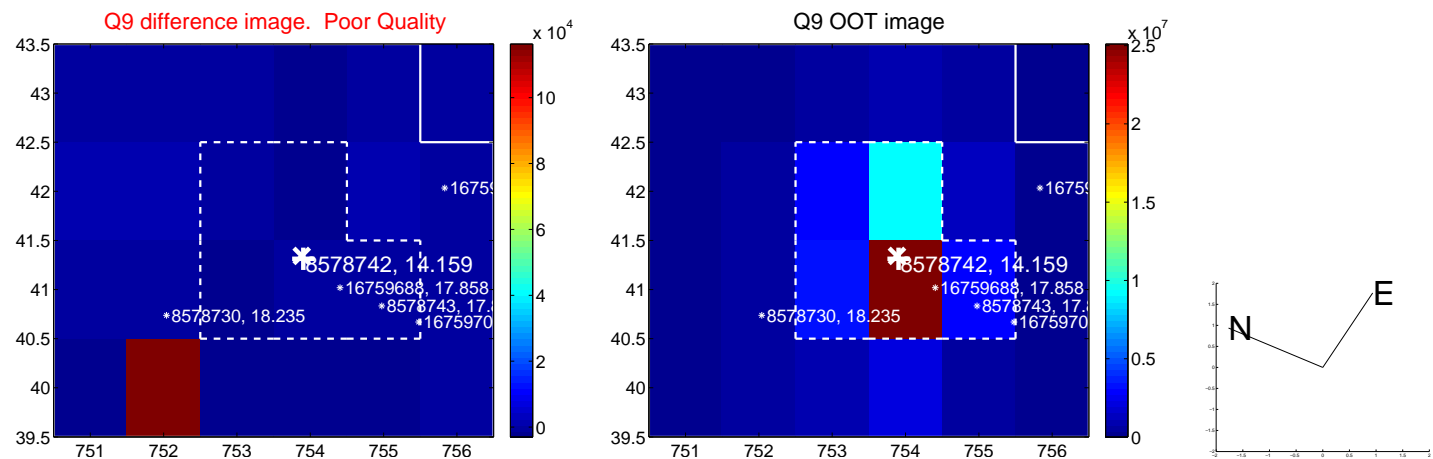
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



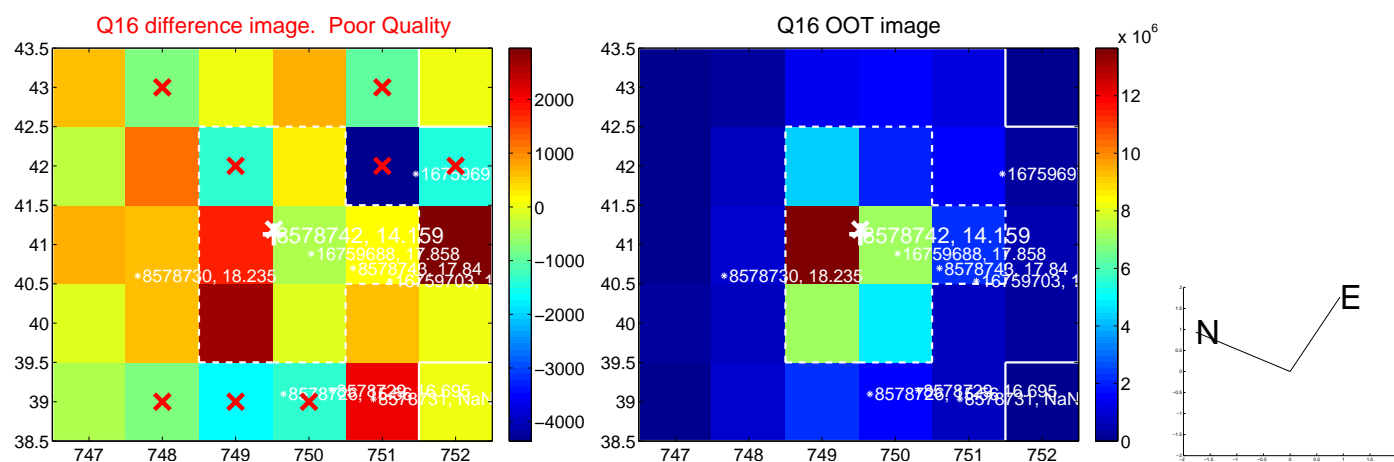
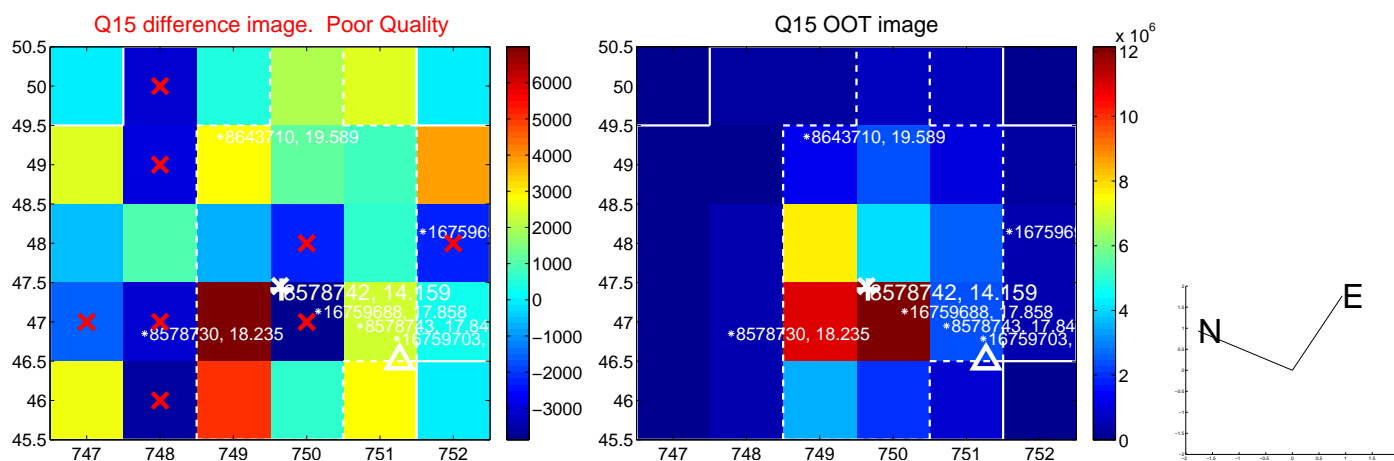
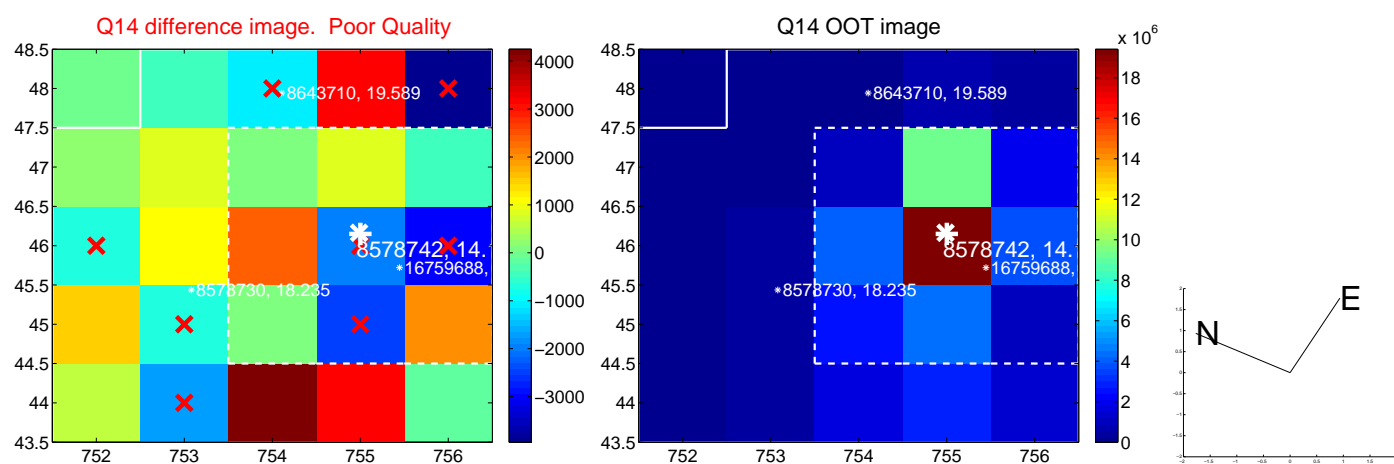
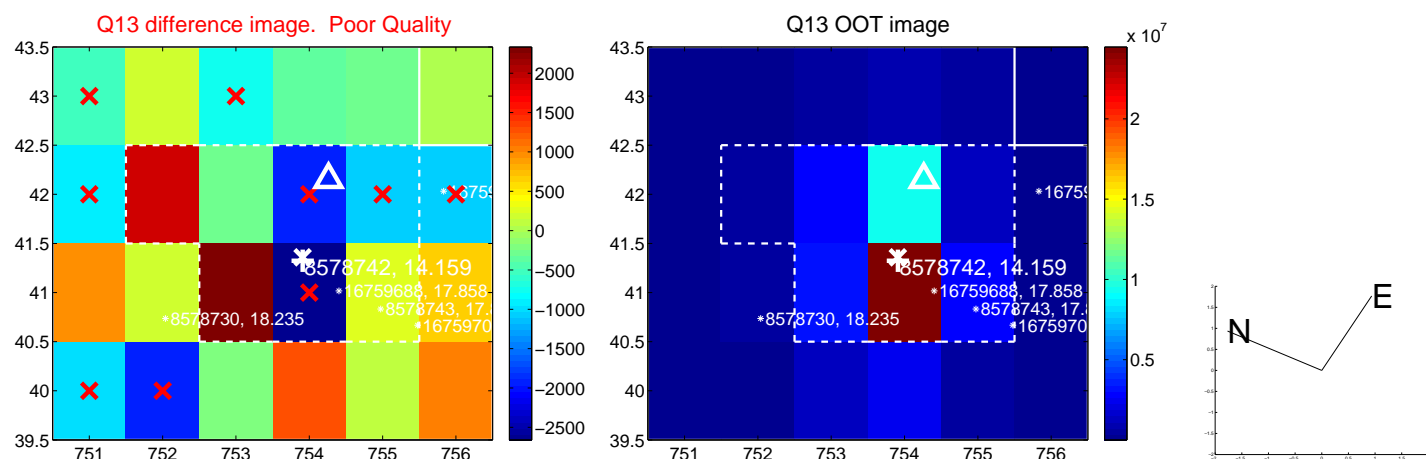
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



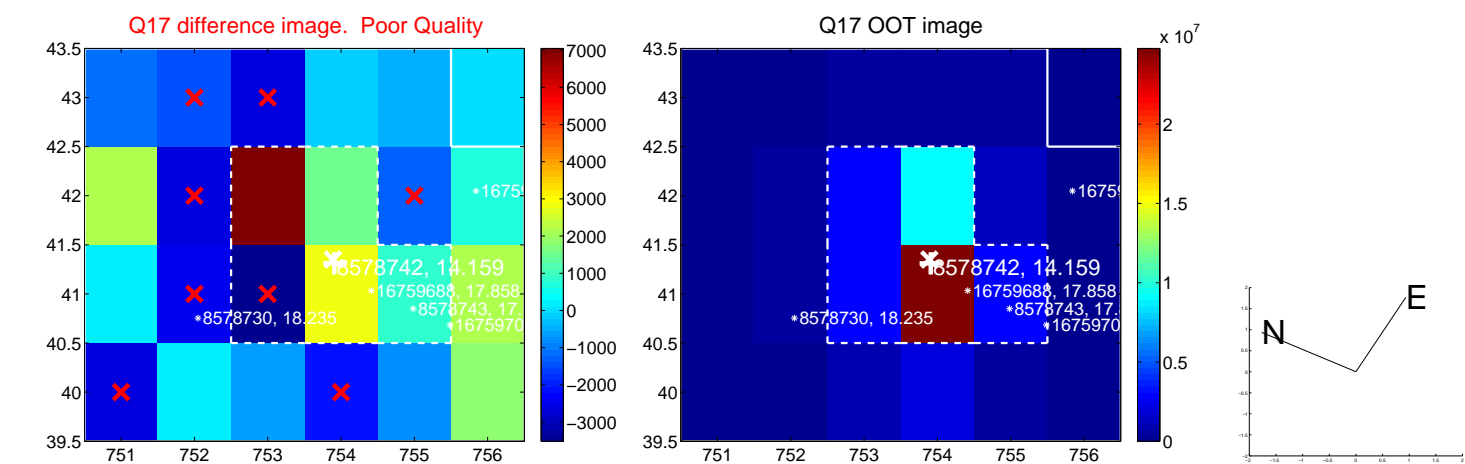
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



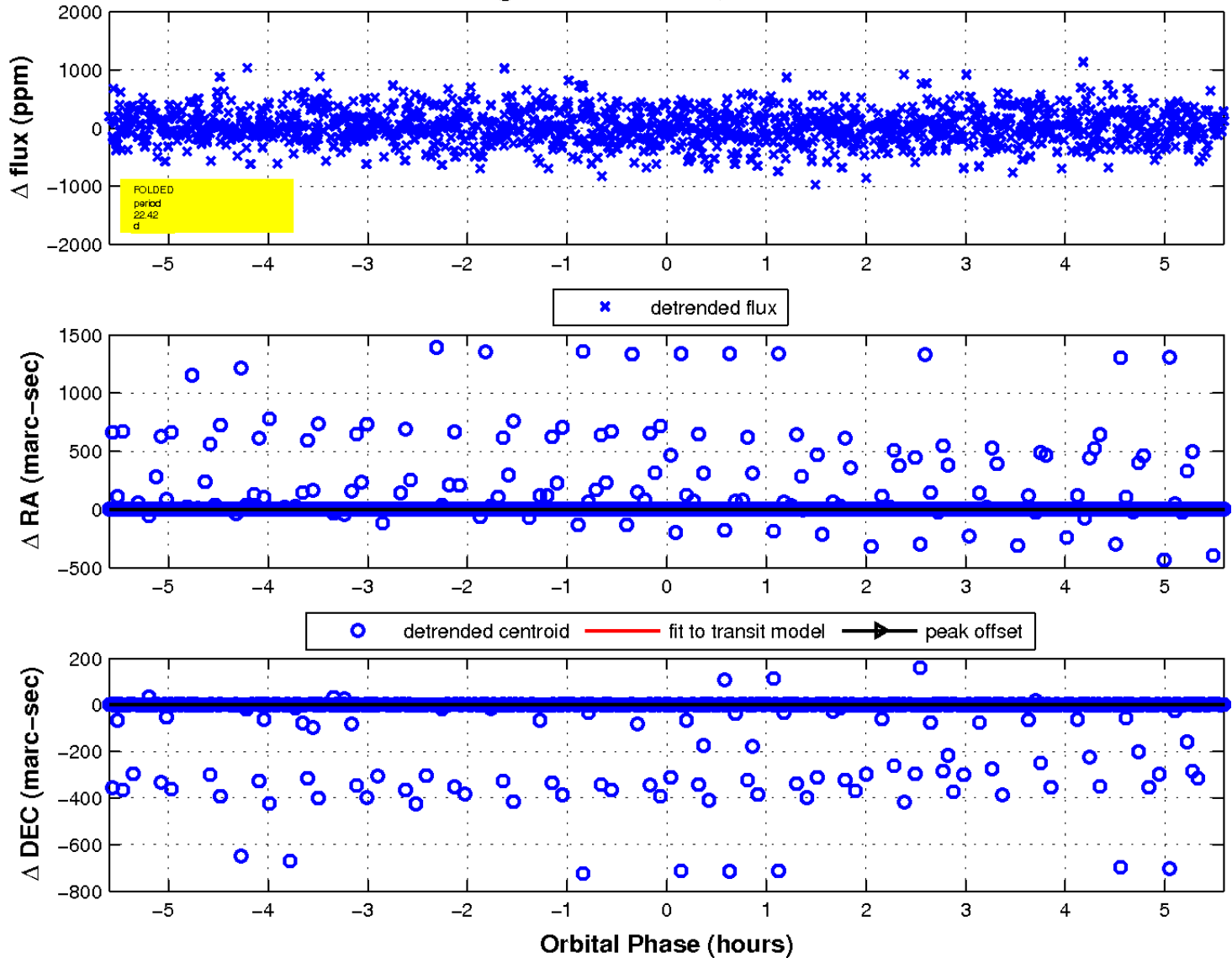
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 10 of 10



UKIRT Image

Declination

