

KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

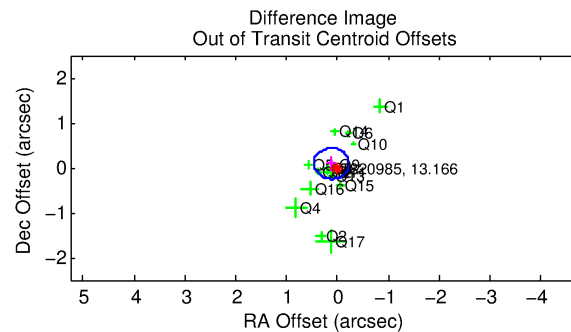
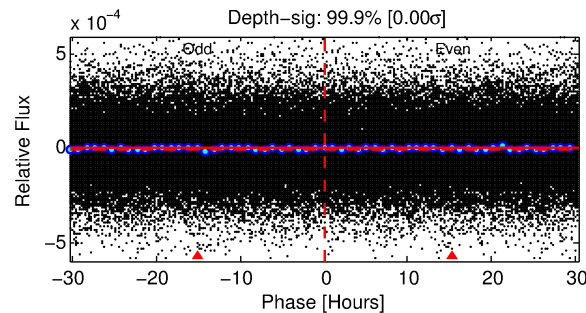
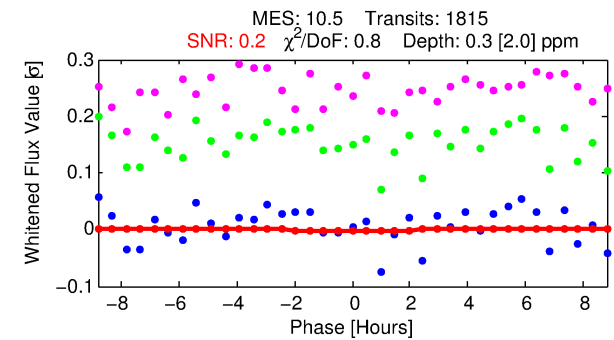
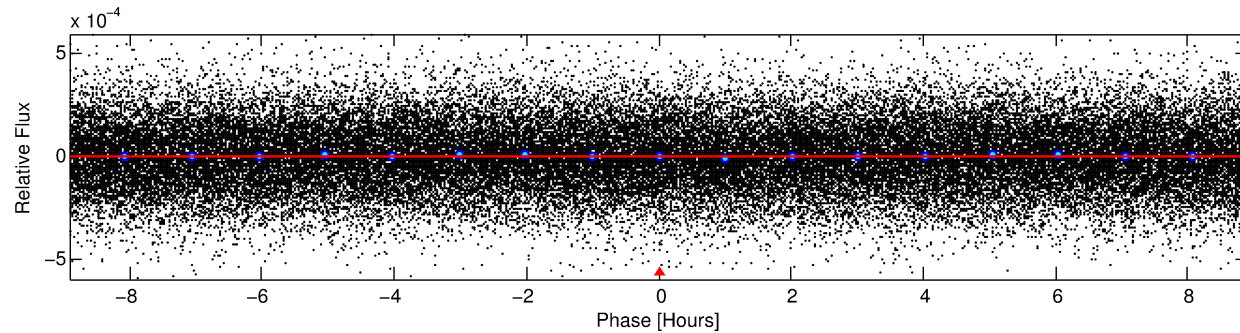
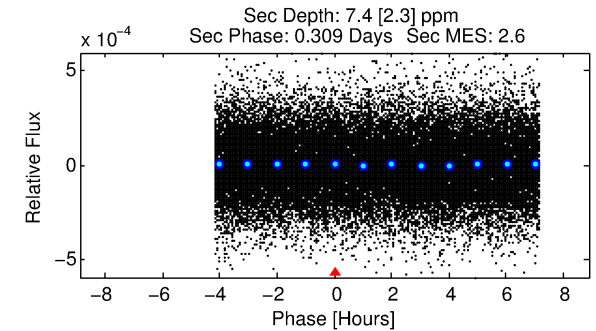
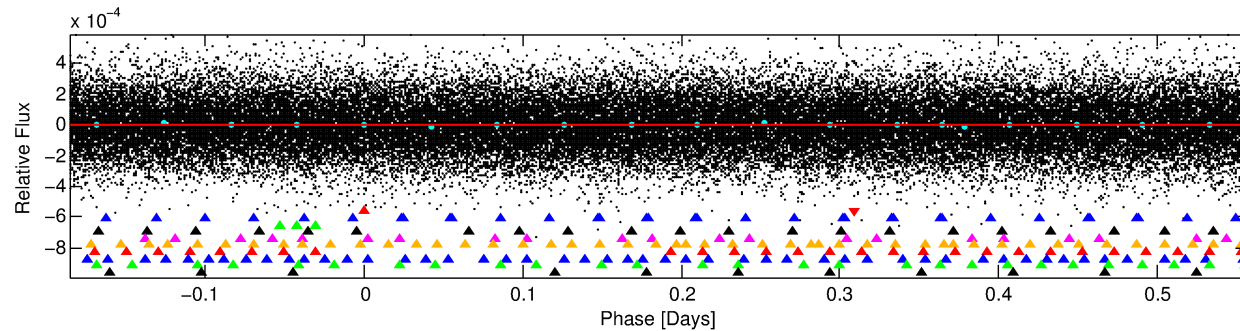
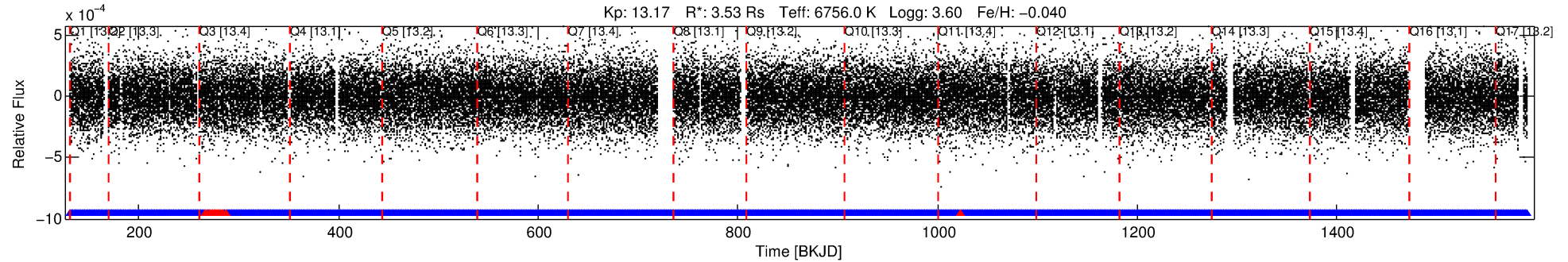
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-01

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 1 of 10 Period: 0.743 d



DV Fit Results:

Period = 0.74277 [0.00068] d
Epoch = 131.7841 [0.2528] BKJD
Rp/R* = 0.0005 [0.0117]
a/R* = 1.28 [64.32]
b = 0.21 [606.03]
Seff = 61145.25 [34328.22]
Teq = 4010 [563] K
Rp = 0.19 [4.52] Re
a = 0.0195 [0.0066] AU
Ag = 41.46 [1936.08] [0.02σ]
Teffp = 15732 [183625] K [0.06σ]

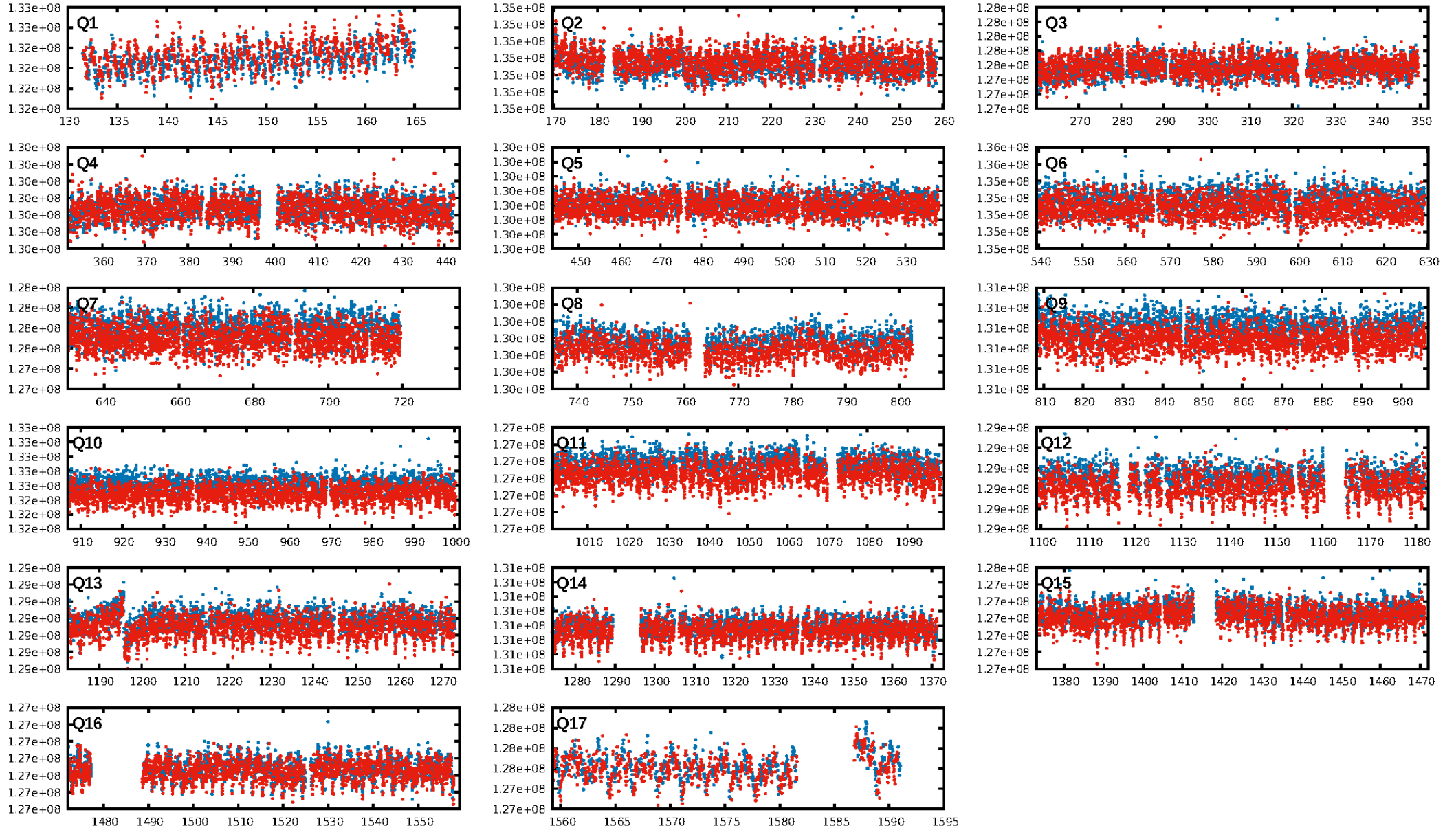
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [137.49σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1712/1733]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.154 arcsec [1.34σ]
KicOffset-rm: 0.233 arcsec [1.78σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [17/17]

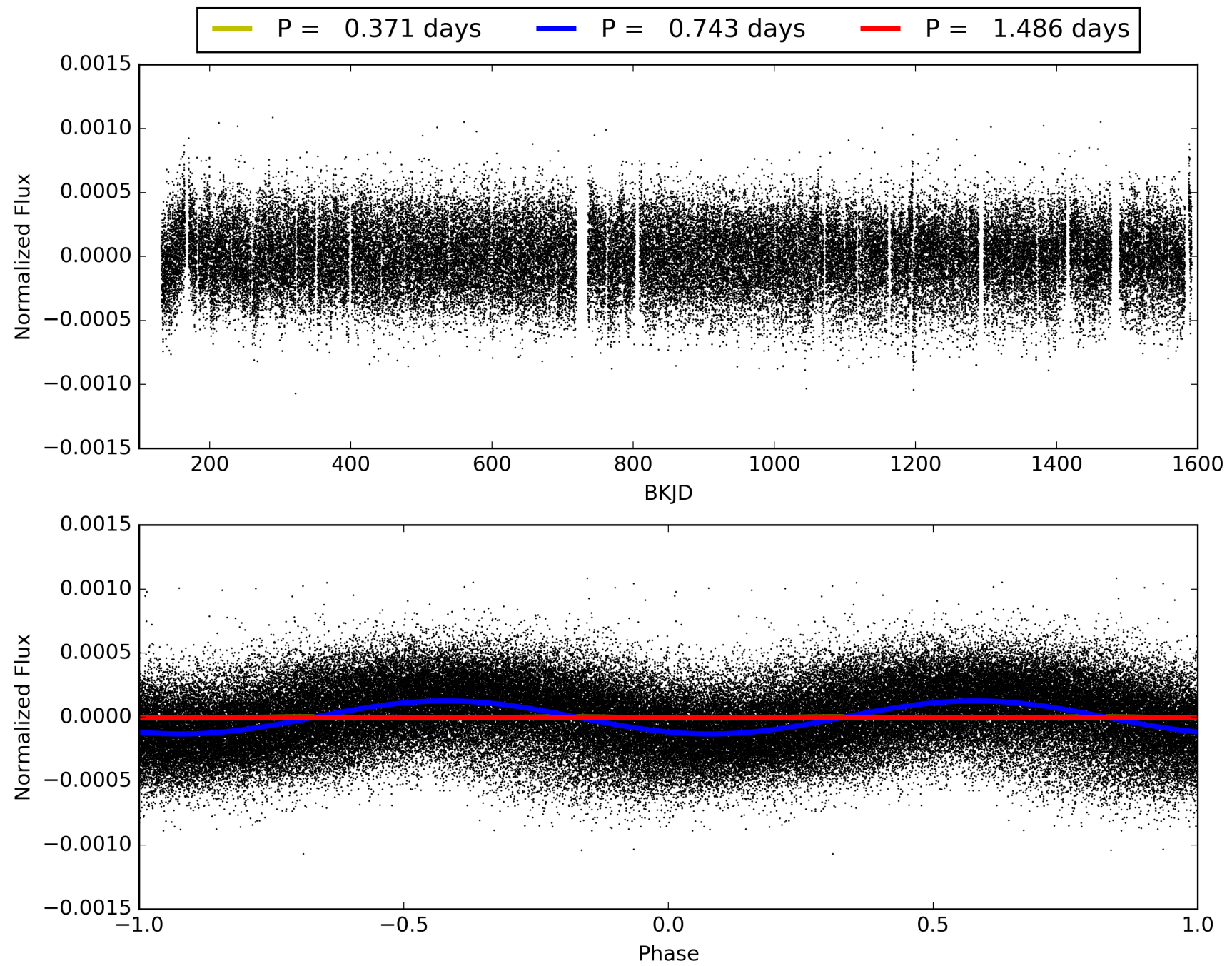
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:26 Z

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

TCE 007820985-01, PDC Light Curves

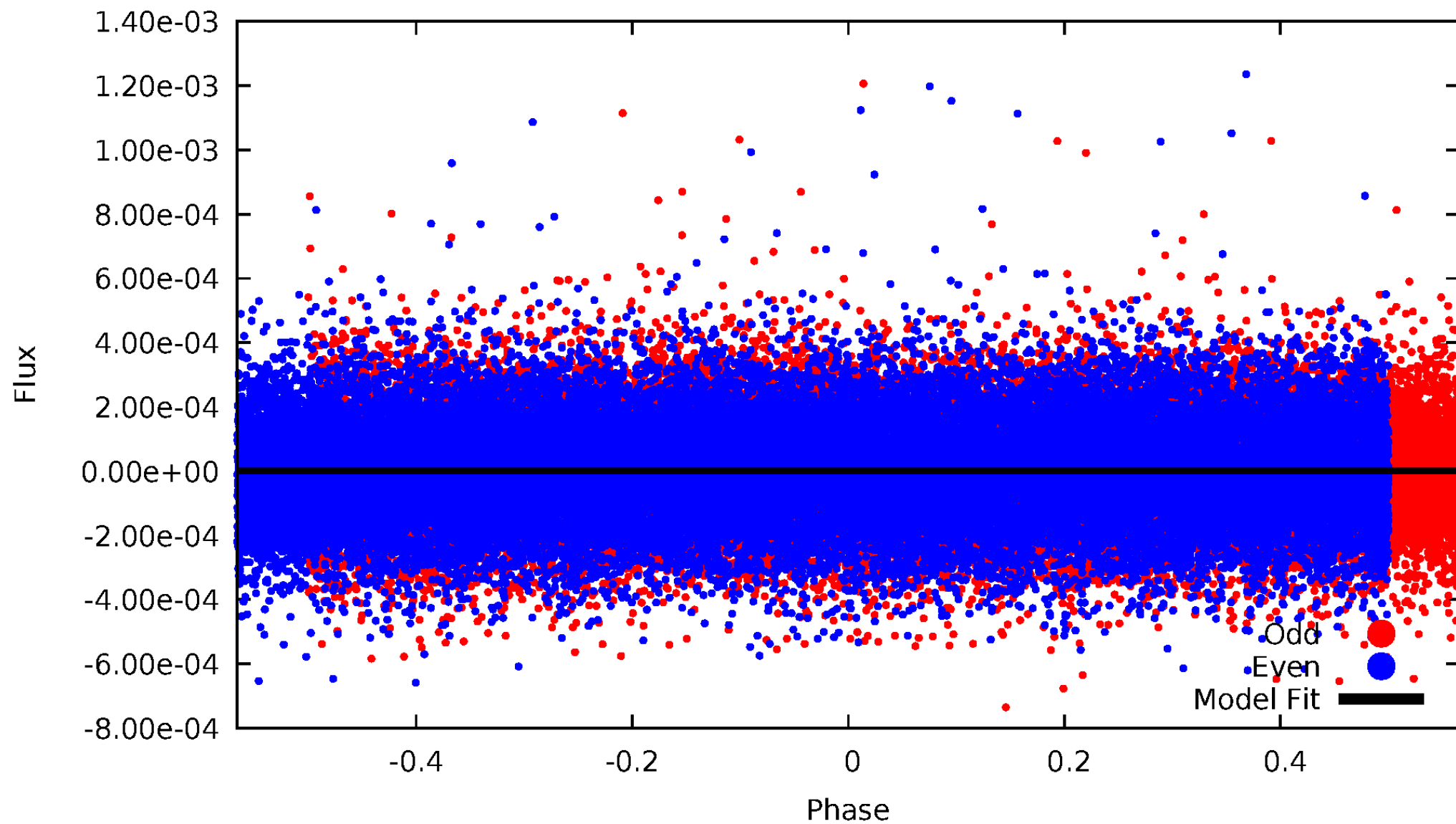


TCE 007820985-01



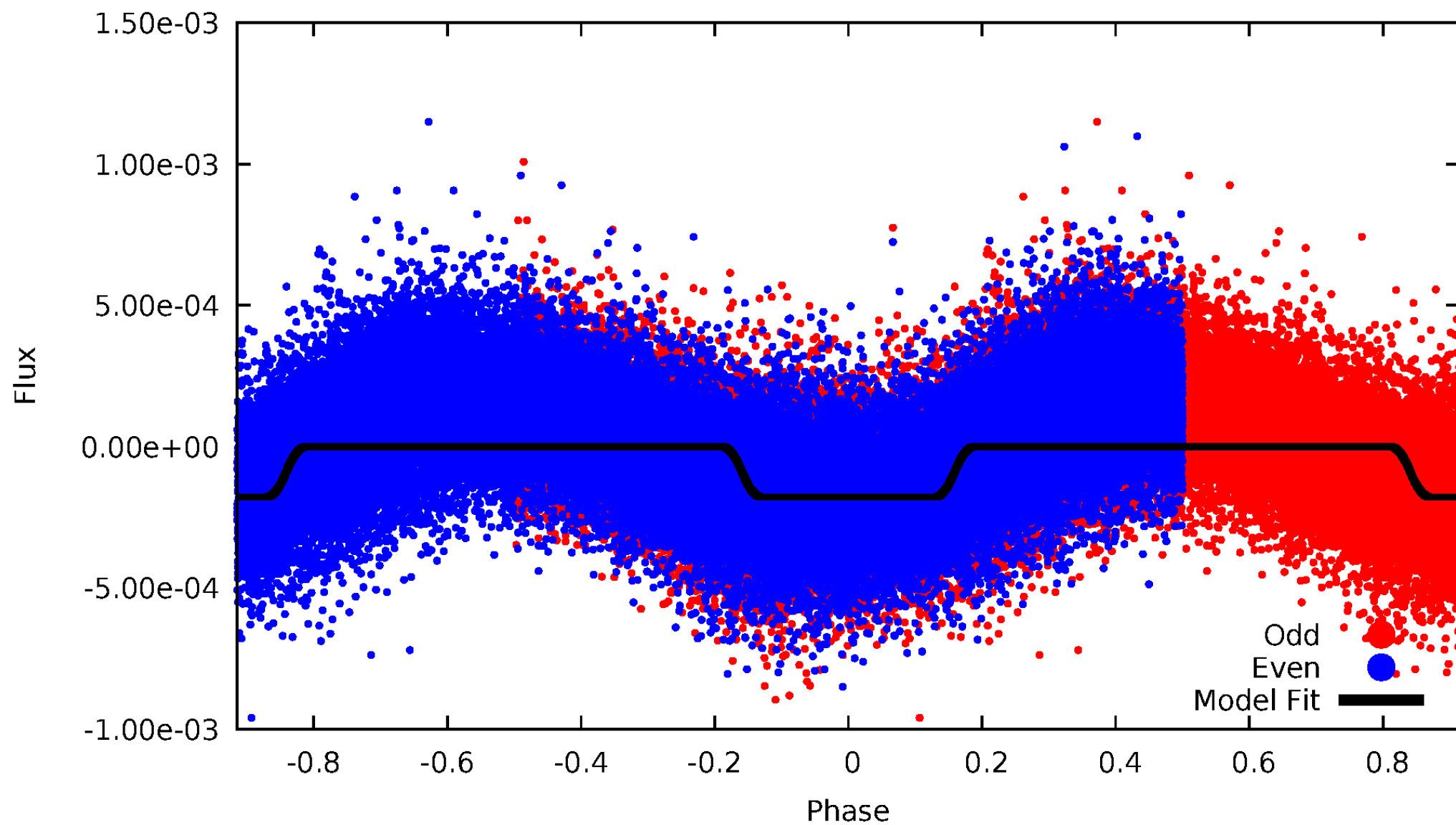
DV Odd/Even

TCE 007820985-01



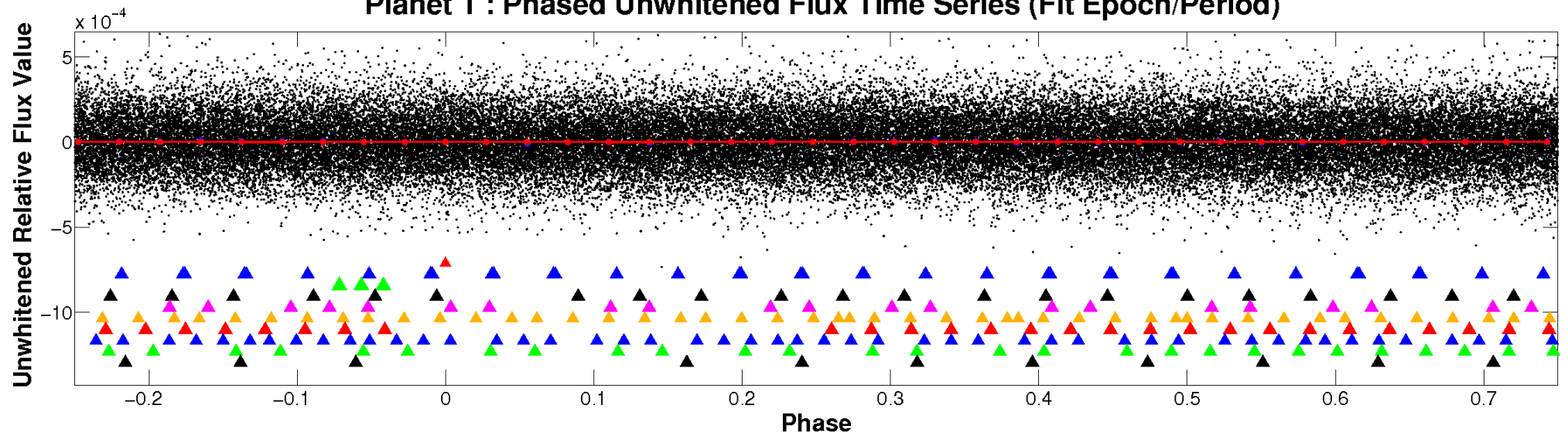
ALT Odd/Even

TCE 007820985-01

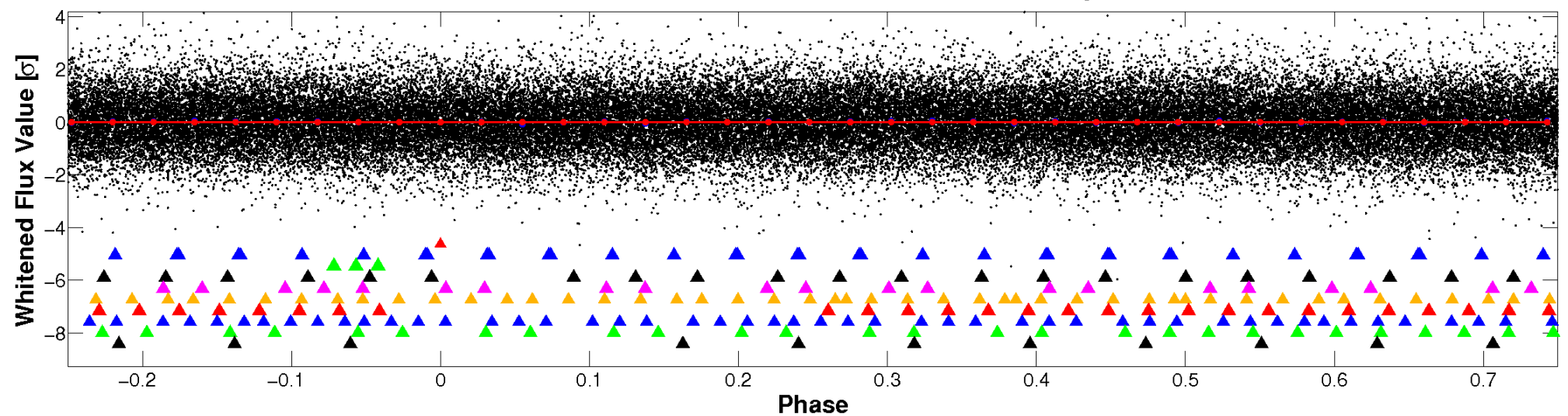


Non-Whitened Vs. Whitened Light Curve

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

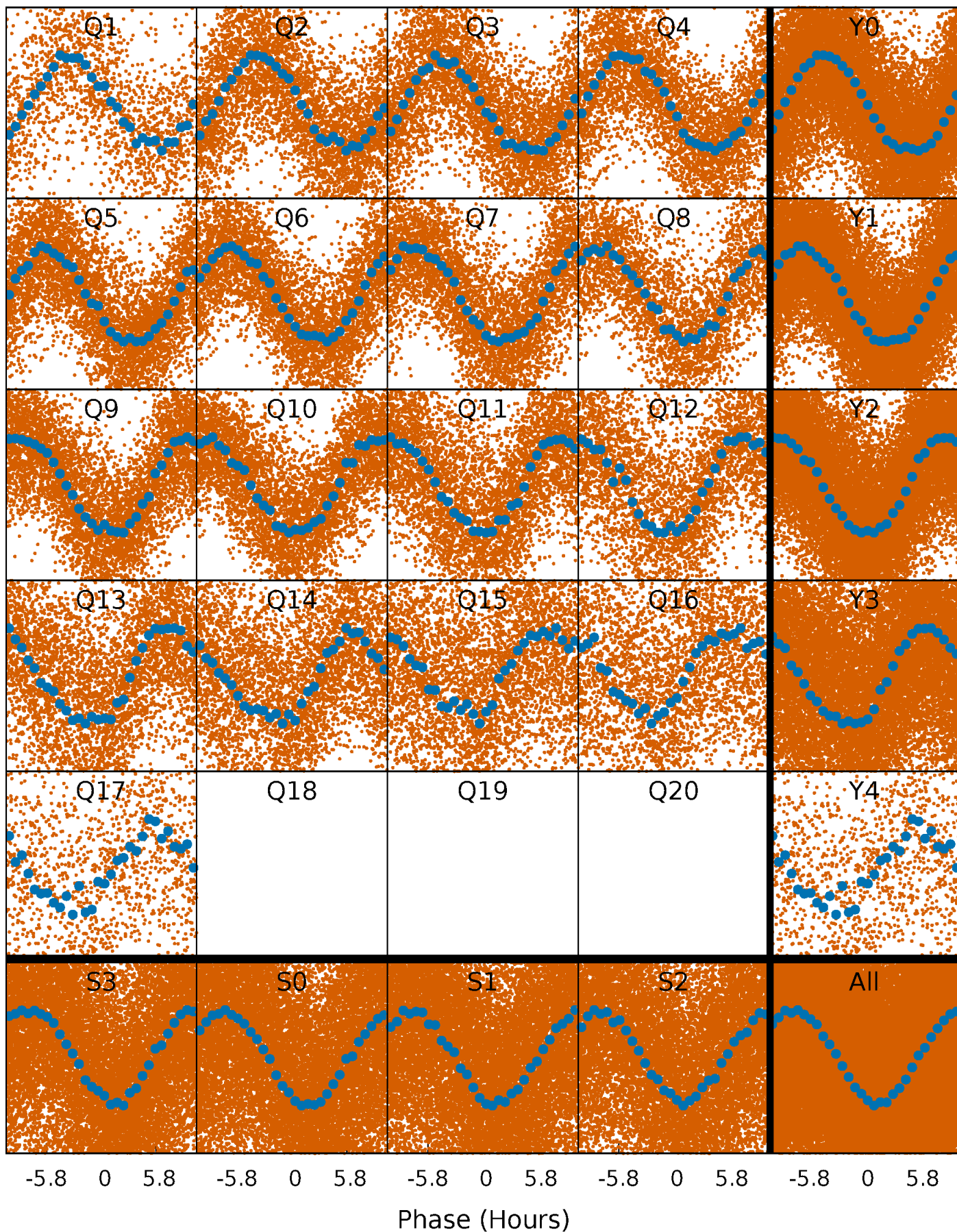


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



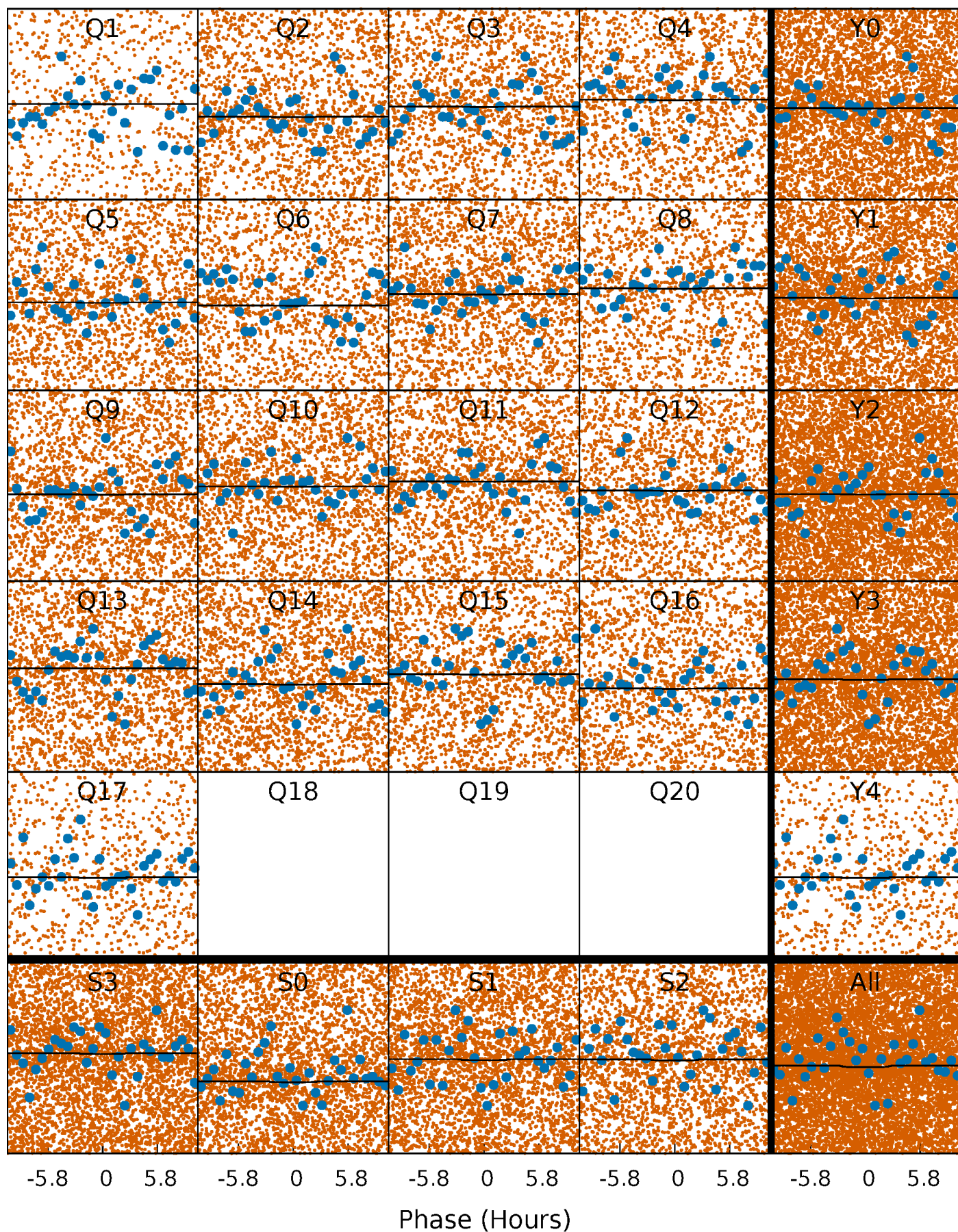
PDC Quarter-Phased Transit Curves

TCE 007820985-01 P= 0.742771 Days $T_0=131.784093$ (BKJD)



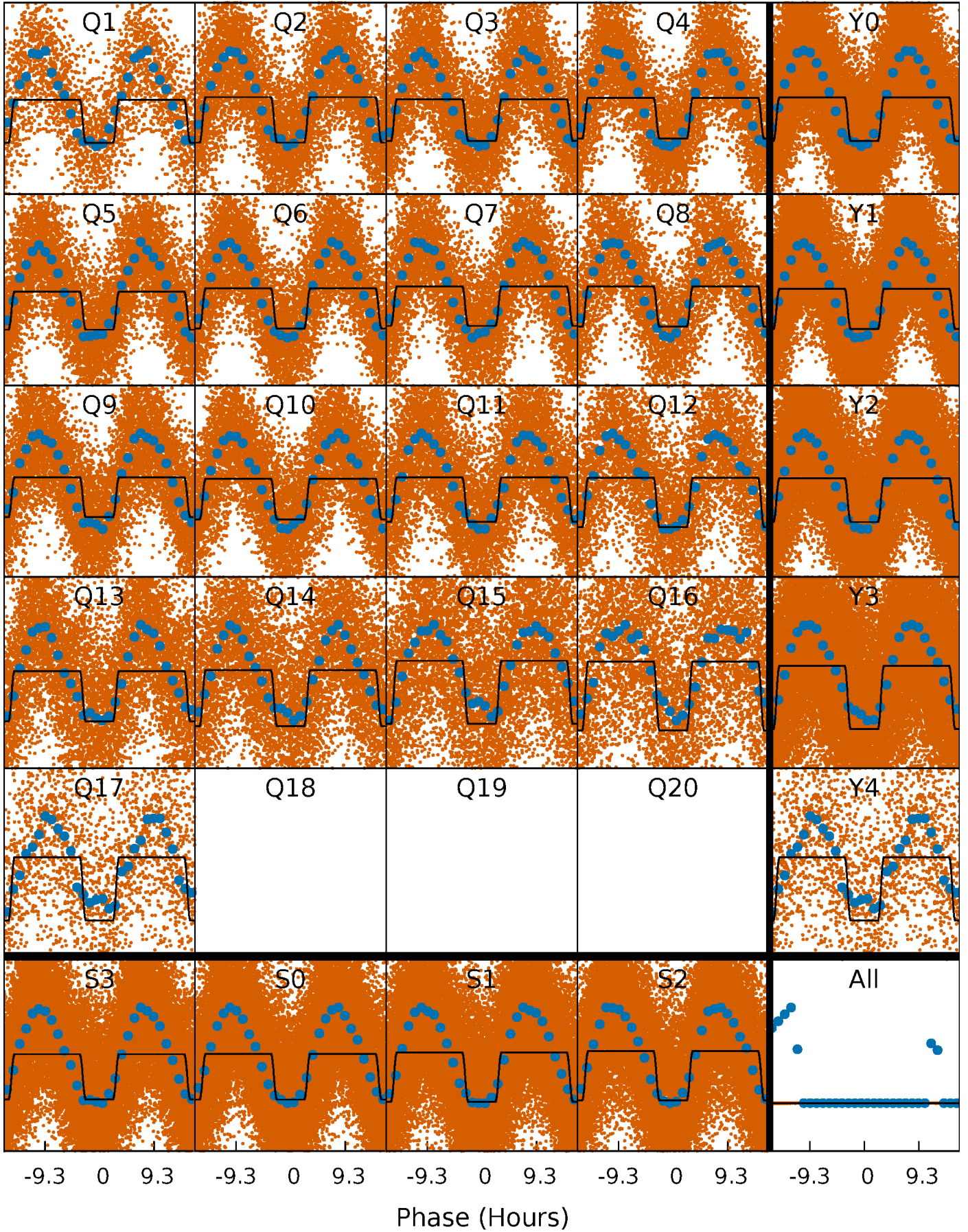
DV Quarter-Phased Transit Curves

TCE 007820985-01 P= 0.742771 Days $T_0=131.784093$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

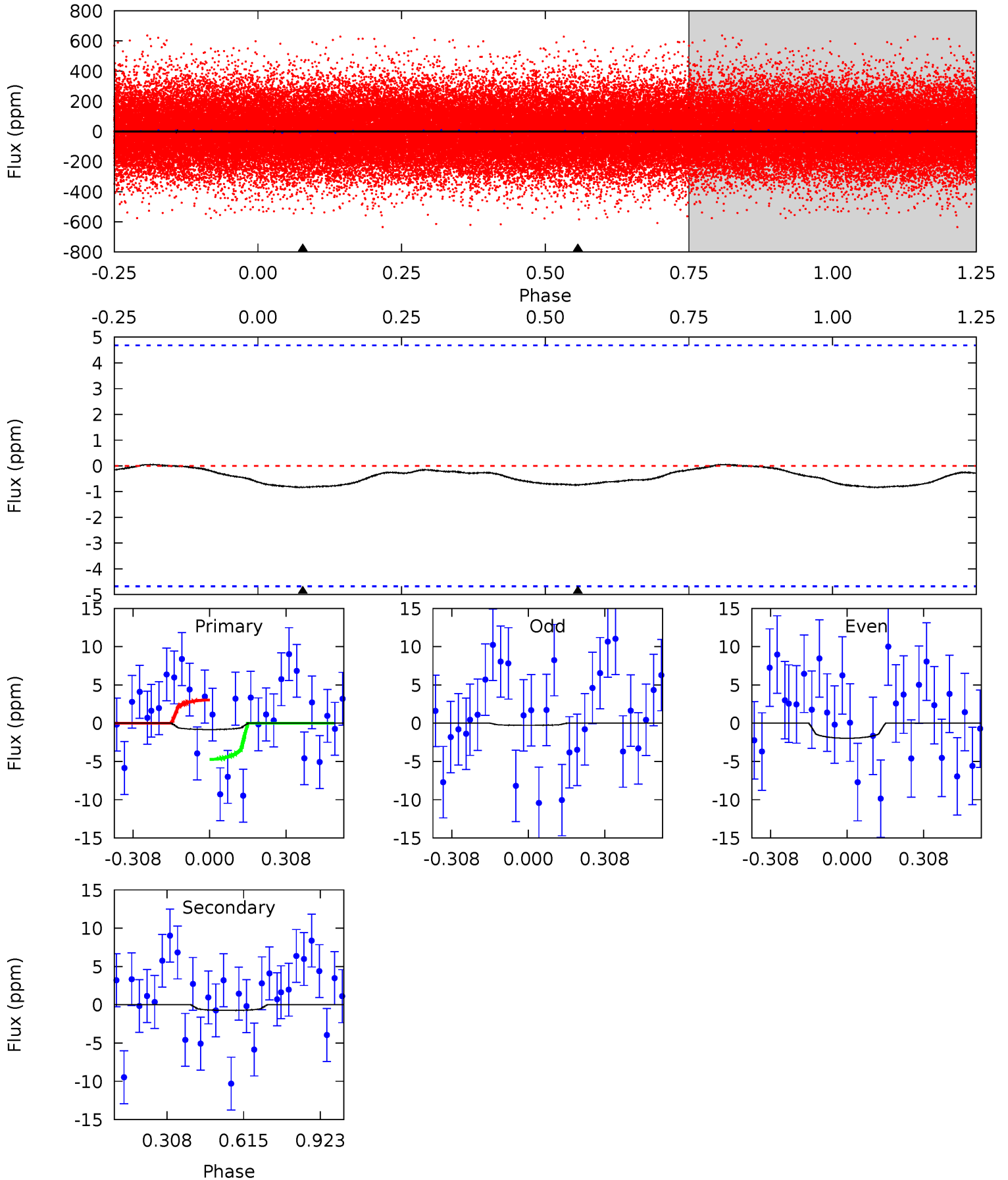
TCE 007820985-01 P= 0.742545 Days $T_0=132.078373$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-01, $P = 0.742771$ Days, $E = 131.041322$ Days

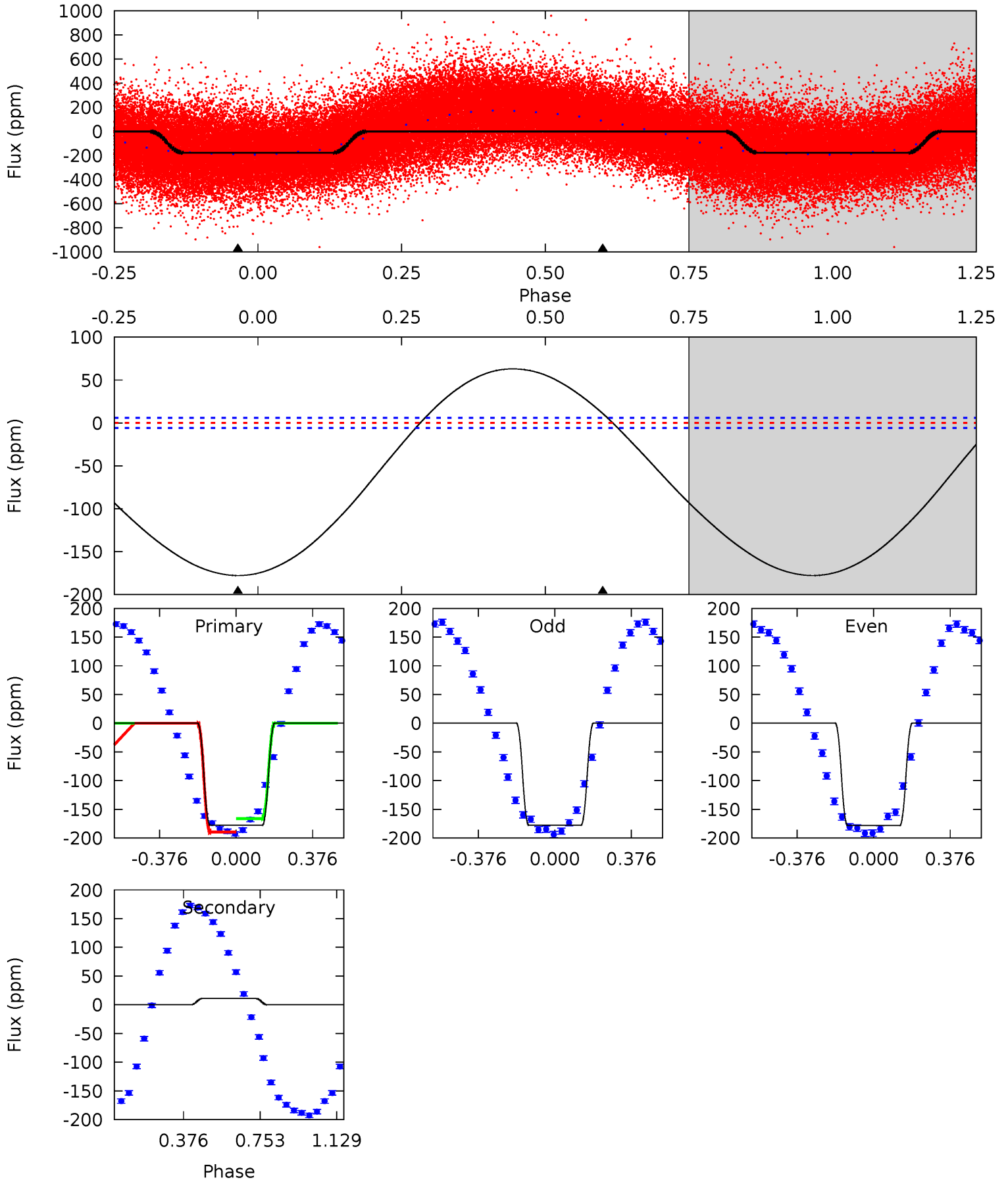
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.77 | 0.68 | 0 | 0 | 4.32 | 1.02 | 0.09 | 0.77 | 0.77 | 0.68 | 0.68 | 0.78 | 0.42 | 0.06 | 0.77 |



Alt Model-Shift Uniqueness Test

007820985-01, P = 0.742545 Days, E = 131.335828 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 130.2 | -8.04 | 0 | 0 | 4.28 | 0.88 | 15.2 | 130.2 | 130.2 | -8.04 | -8.04 | 0.22 | 1.01 | 0.26 | 9.57 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | -1 ± 1 | $2.97^{+3.19}_{-2.02}$ | 5455^{+274}_{-526} | -4510^{+671}_{-273} | $0.010^{+0.128}_{-0.015}$ |
| Alt. | 11 ± 1 | $5.36^{+4.05}_{-3.21}$ | 5464^{+286}_{-503} | -4895^{+341}_{-736} | $-0.080^{+0.055}_{-0.382}$ |

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

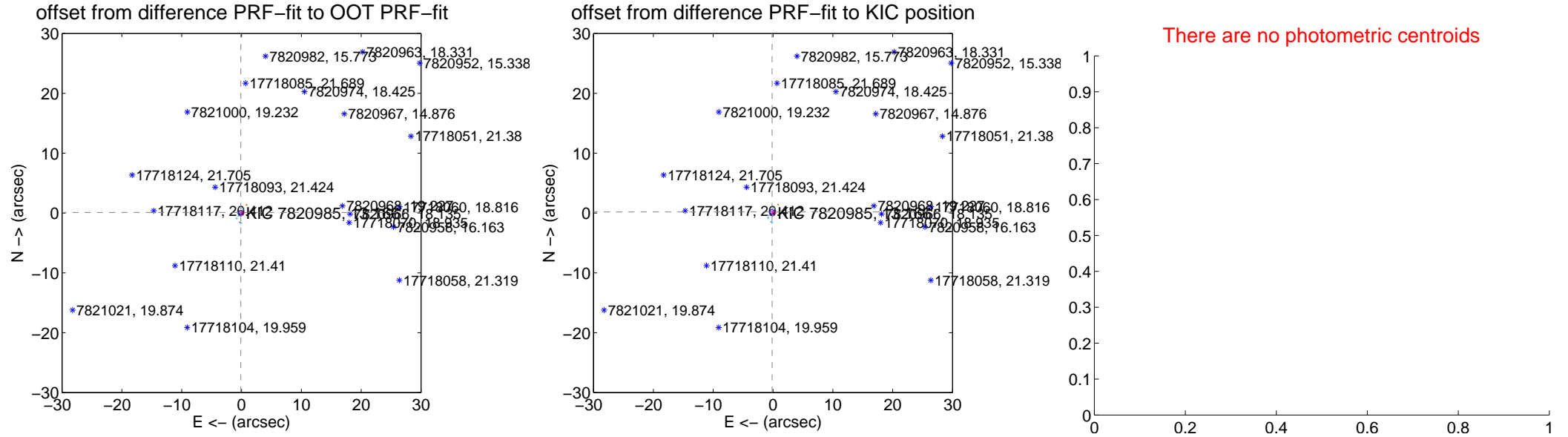
DV Centroid Data

Supplemental centroid analysis for 007820985-01. Kepler magnitude: 13.17. Transit SNR 0.18

There are 14 quarters with good PRF difference image offsets

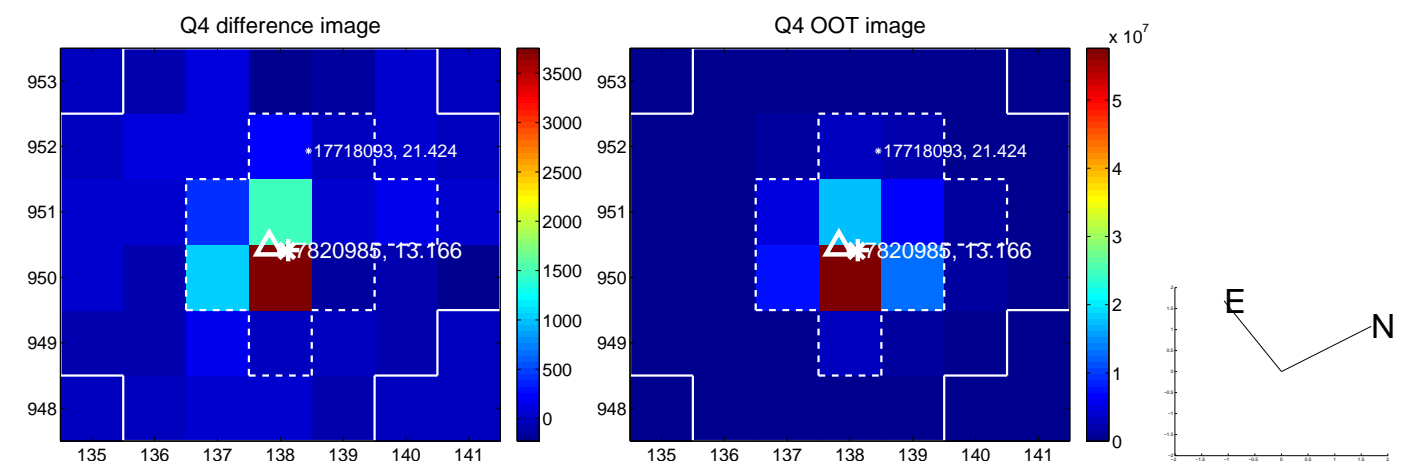
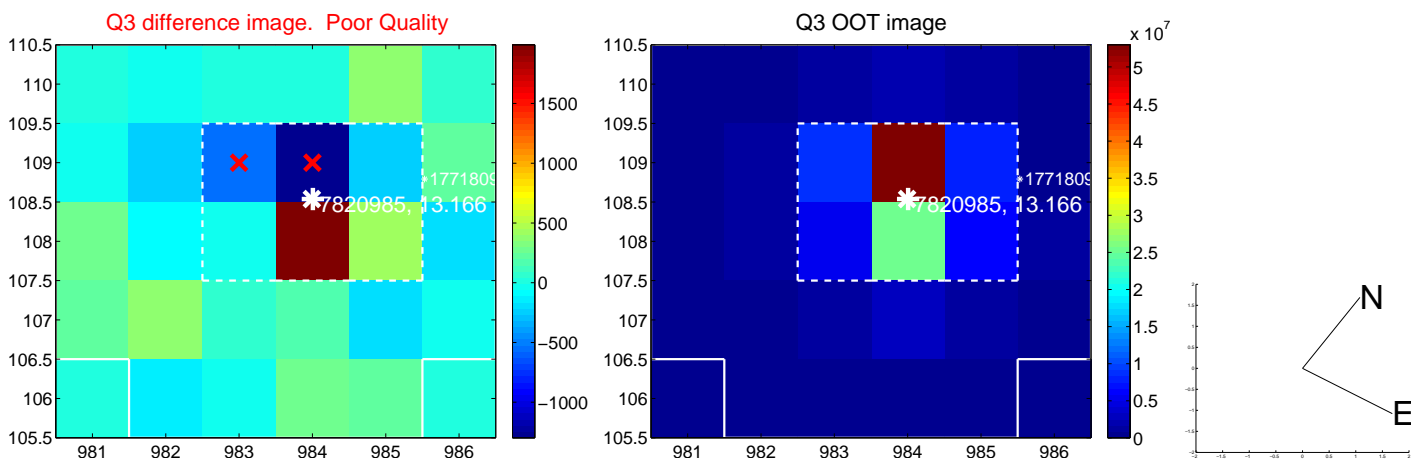
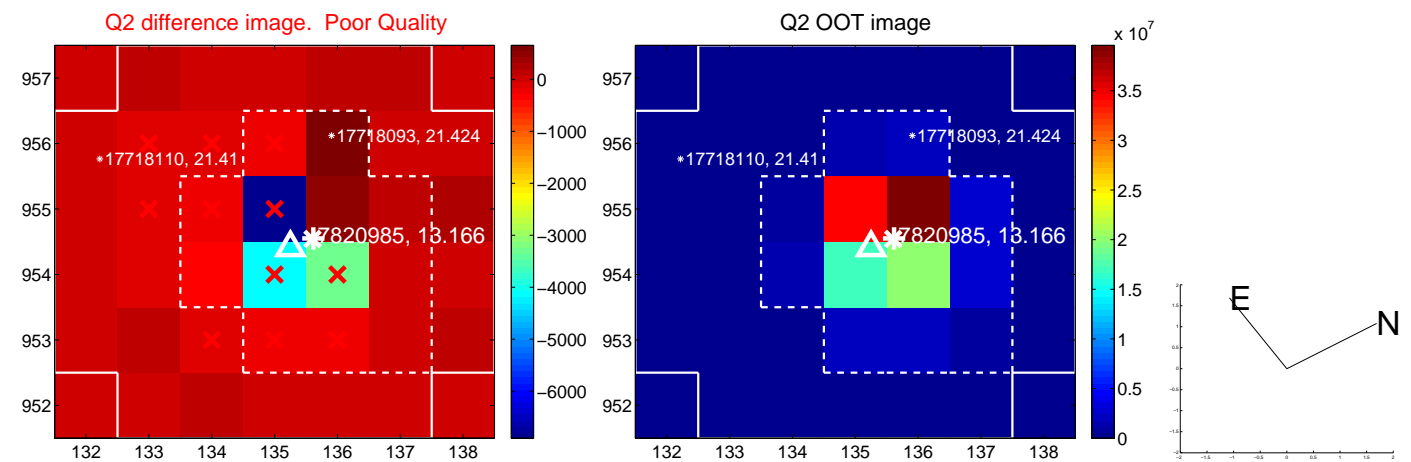
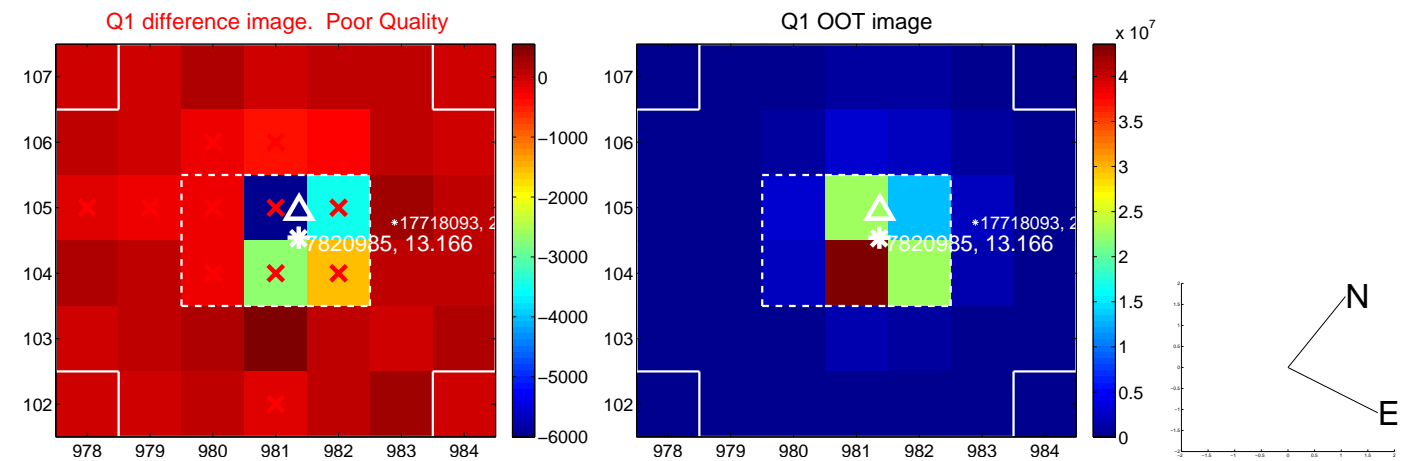
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.154 ± 0.115 | 1.34 | 0.123 ± 0.090 | 0.093 ± 0.149 |
| PRF-fit source offset from KIC position | 0.233 ± 0.131 | 1.78 | 0.156 ± 0.121 | 0.174 ± 0.206 |
| photometric centroid source offset | — | — | — | — |

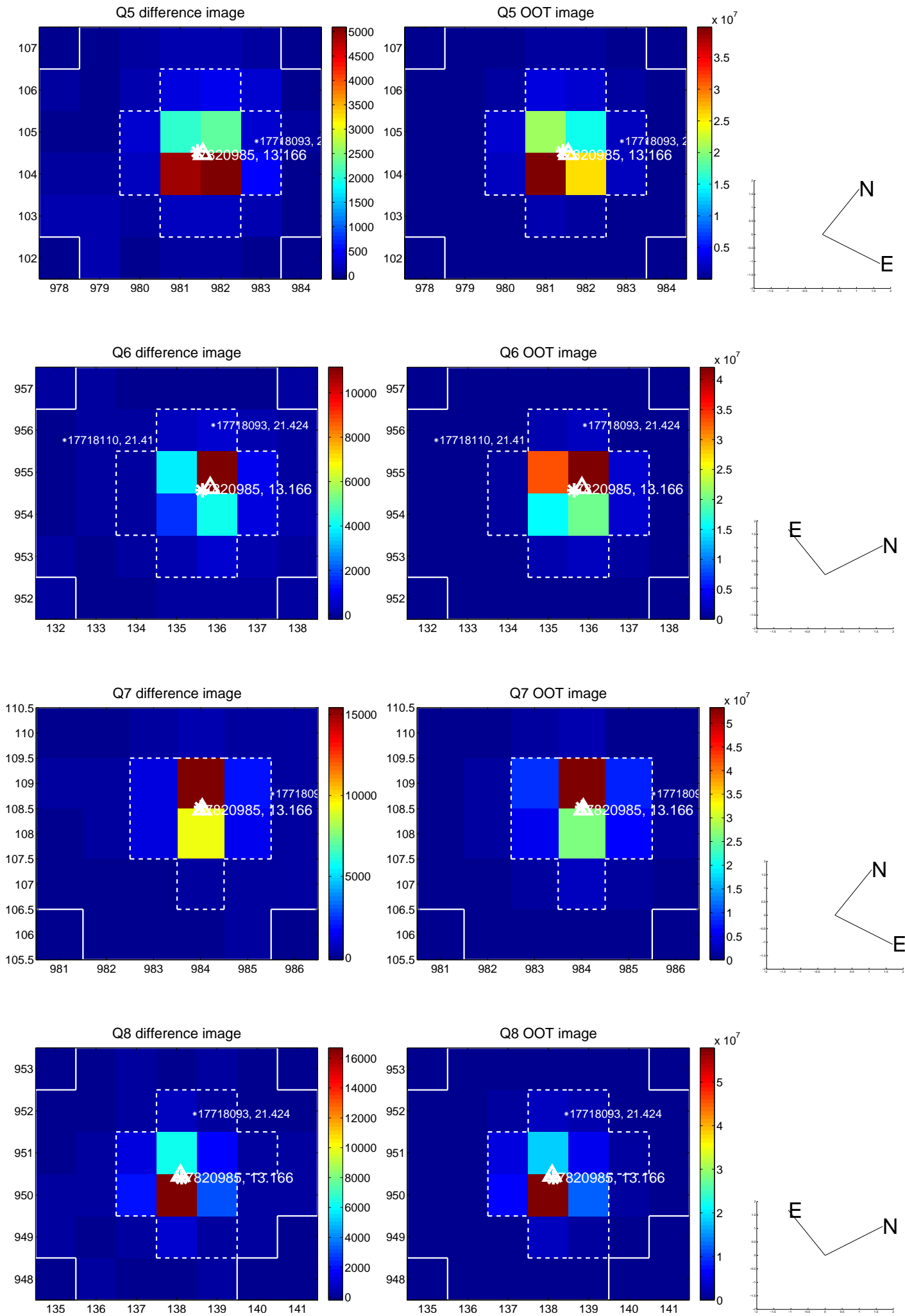


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

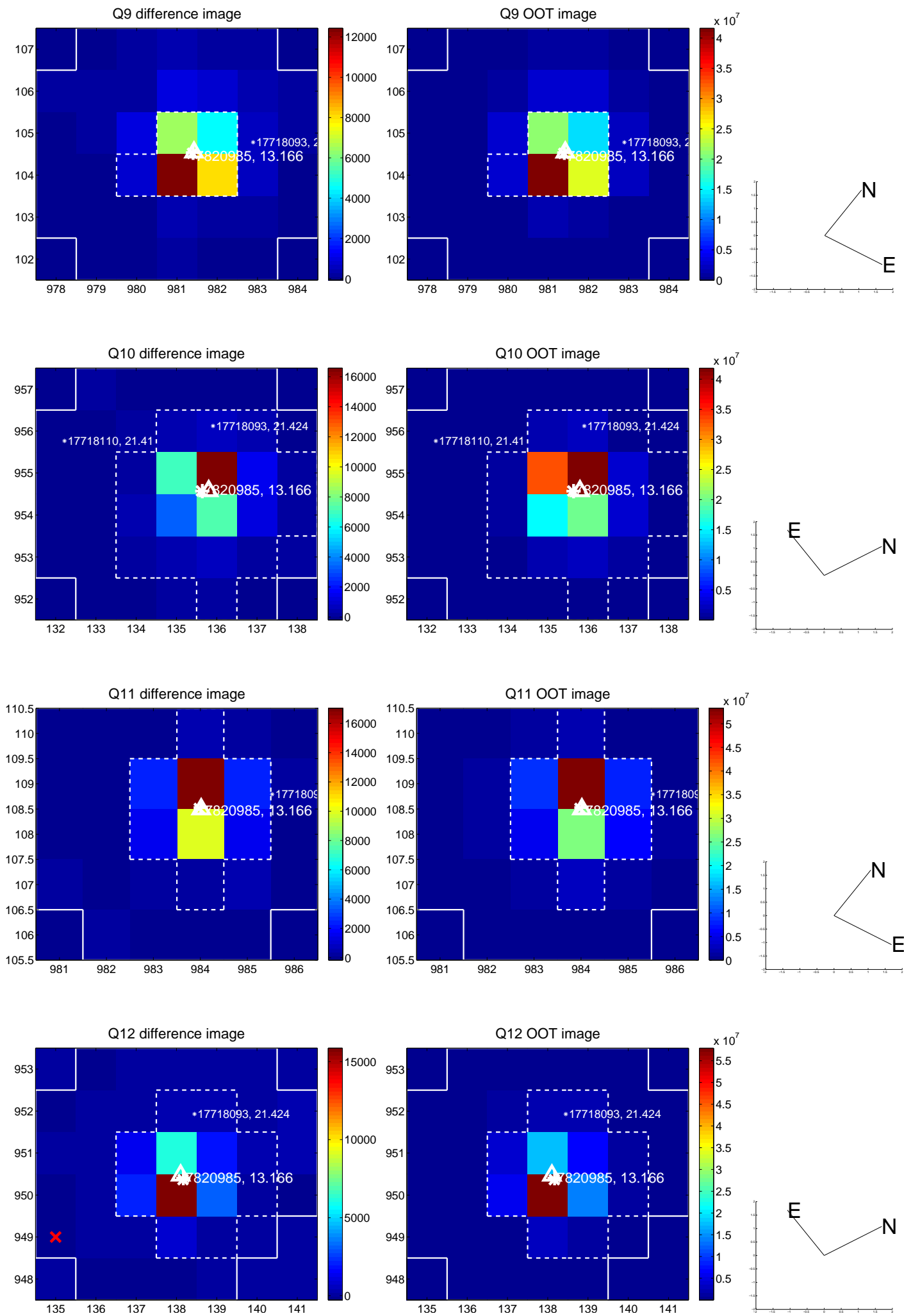
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



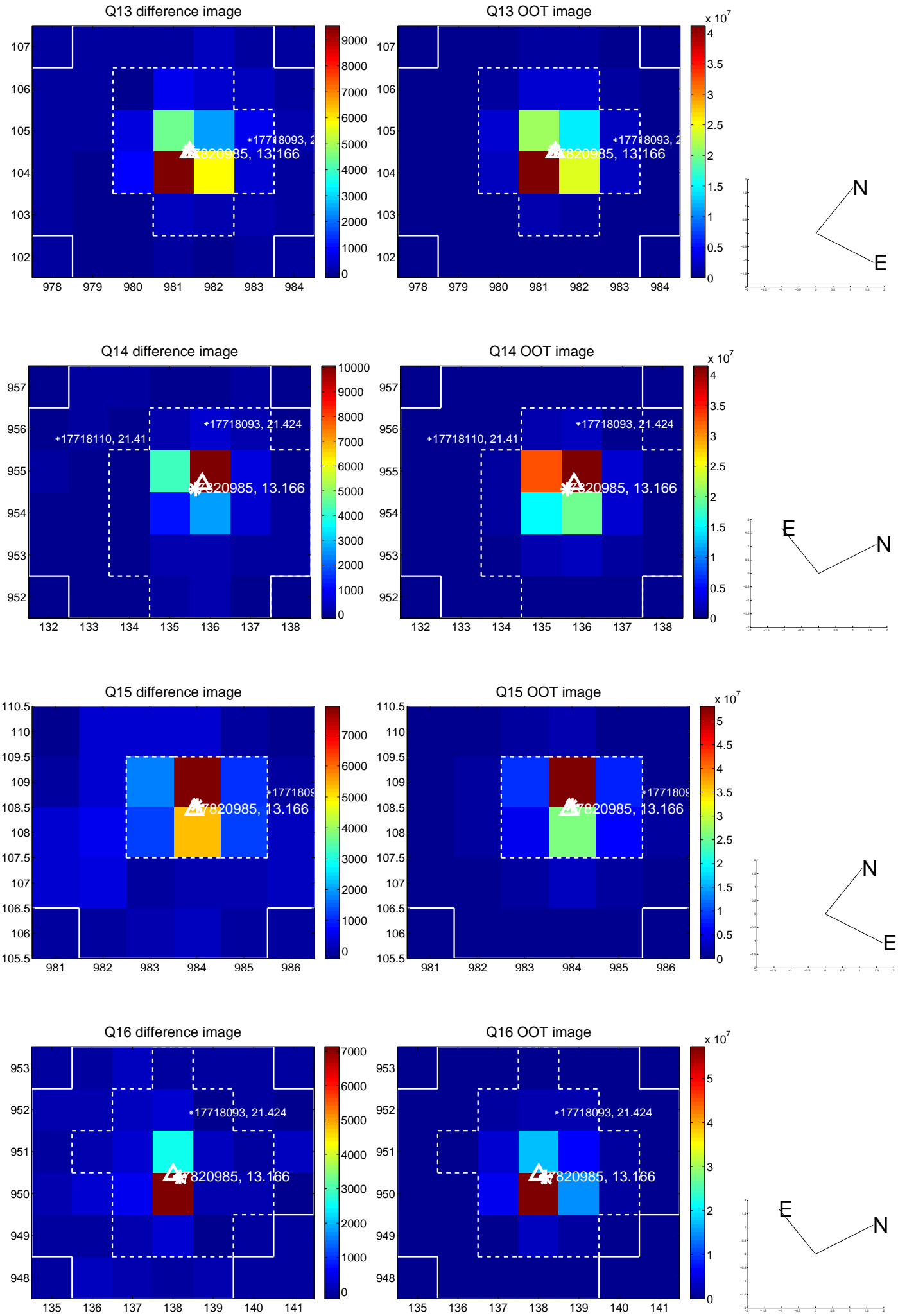
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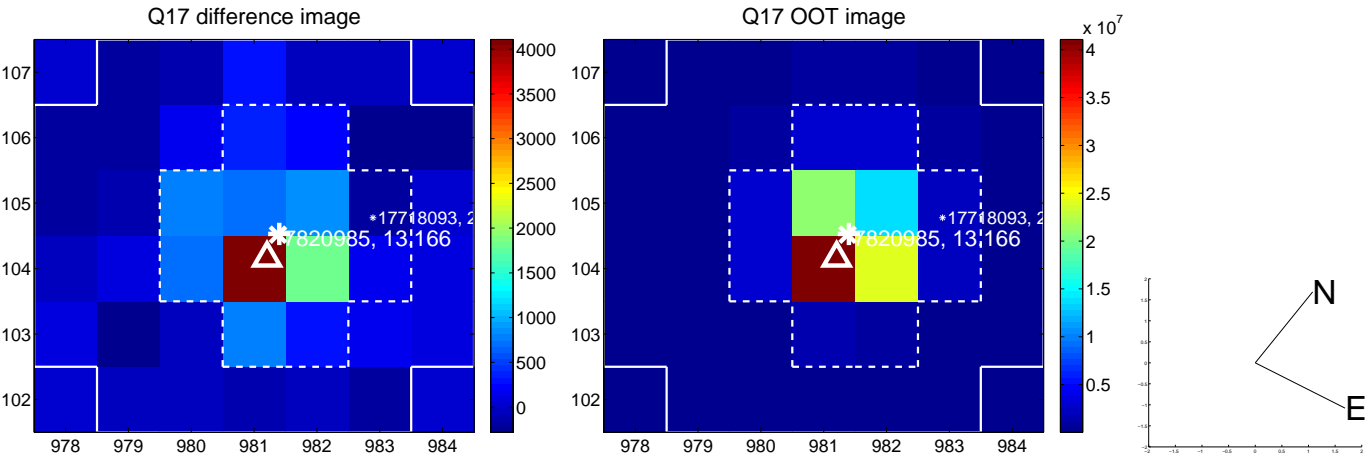
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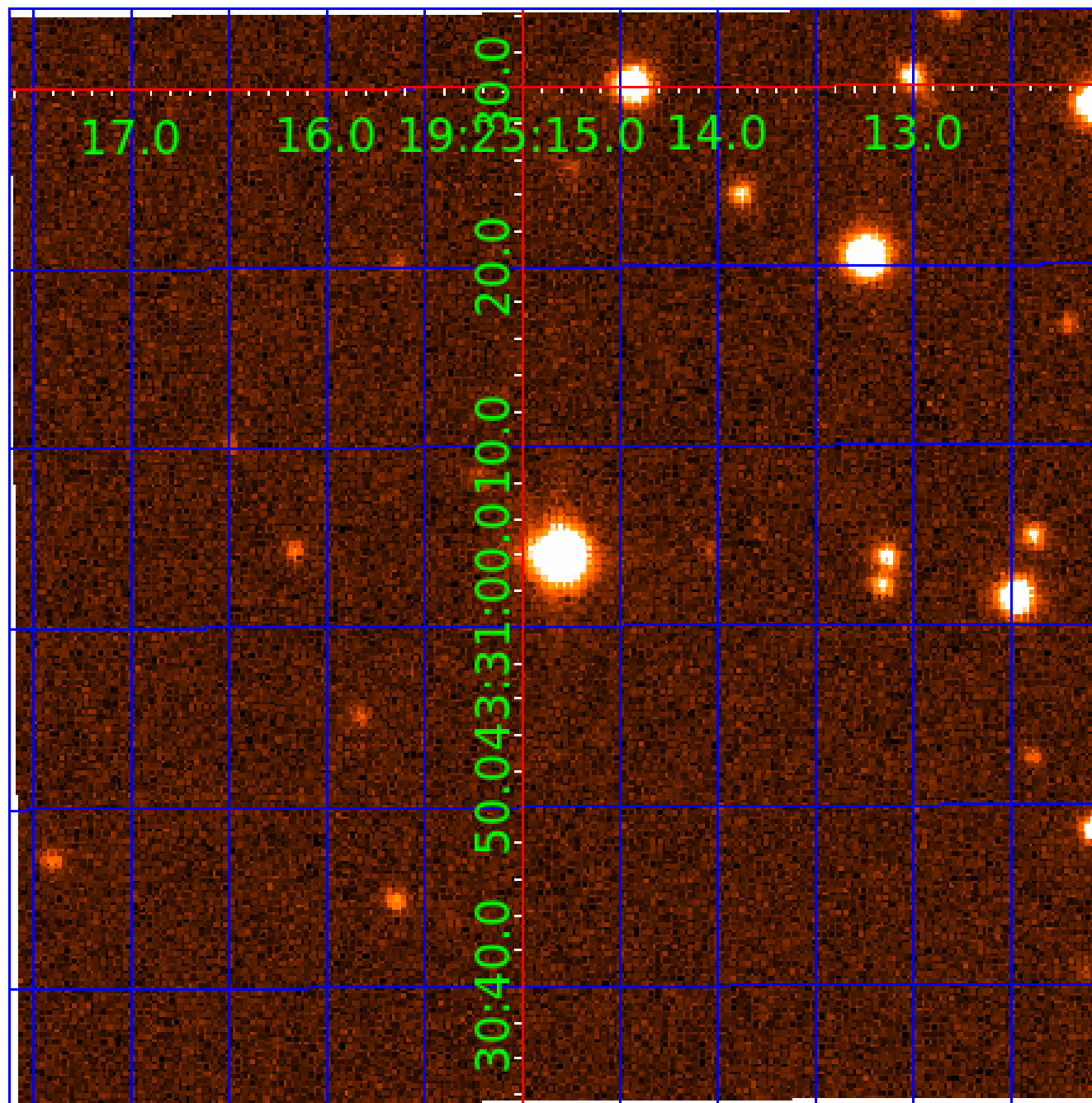
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 007820985

Q1-17 DR25 TCE Parameters

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| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

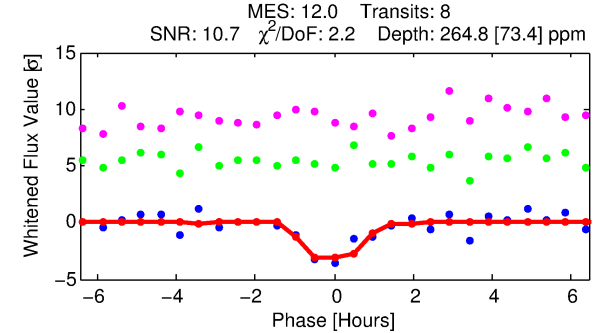
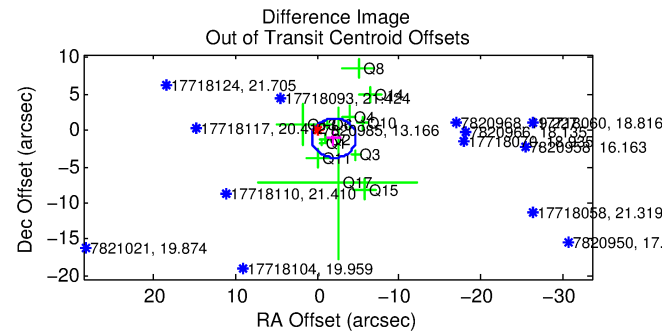
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 007820985-02

No Significant Match Found

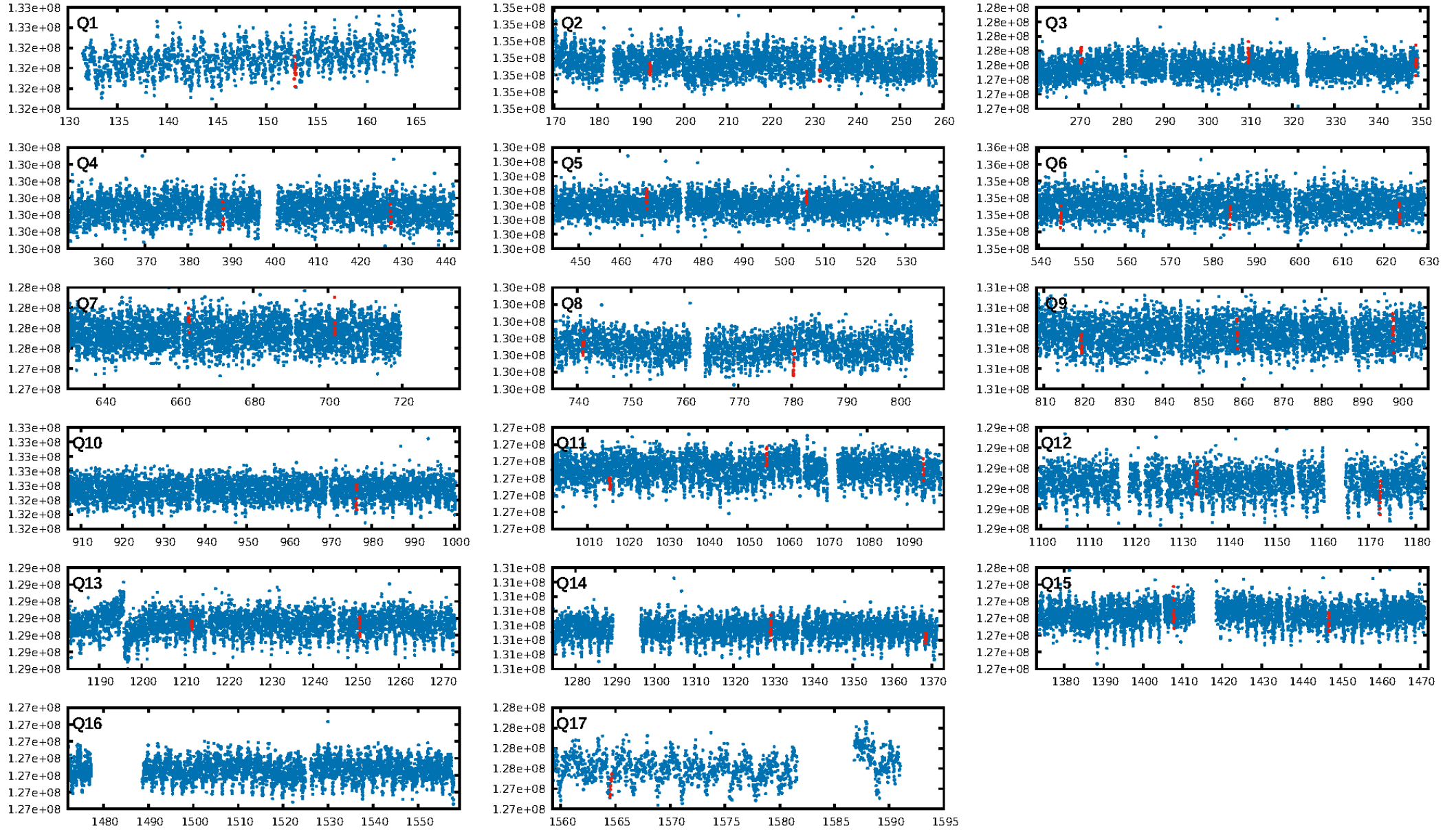
KIC: 7820985 Candidate: 2 of 10 Period: 39.212 d



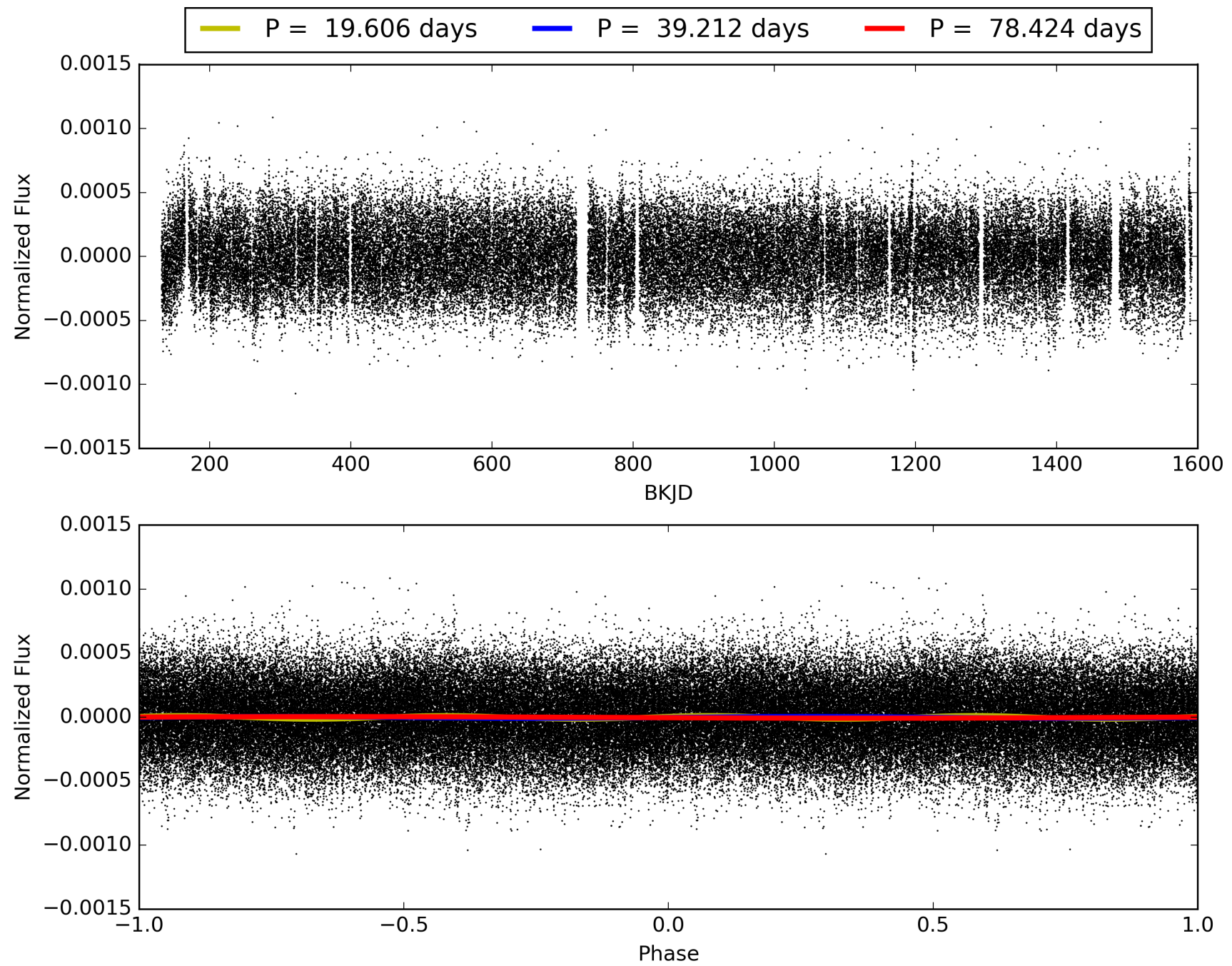
ShortPeriod-sig: 100.0% [88.39σ]
 LongPeriod-sig: 100.0% [119.96σ]
 ModelChiSquare2-sig: 0.3%
 ModelChiSquareGof-sig: 68.9%
 Bootstrap-pfa: N/A
 RollingBand-fgt: 1.00 [7/7]
 GhostDiagnostic-chr: -1.286

Centroid-sig: 11.1%
 Centroid-so: 1.177 arcsec [1.67σ]
 OotOffset-rm: 2.292 arcsec [2.53σ]
 KicOffset-rm: 2.379 arcsec [2.63σ]
 OotOffset-st: 4/3/2/3 [12]
 KicOffset-st: 4/3/2/3 [12]
 DiffImageQuality-fgm: 0.25 [3/12]
 DiffImageOverlap-fno: 0.00 [0/16]

TCE 007820985-02, PDC Light Curves

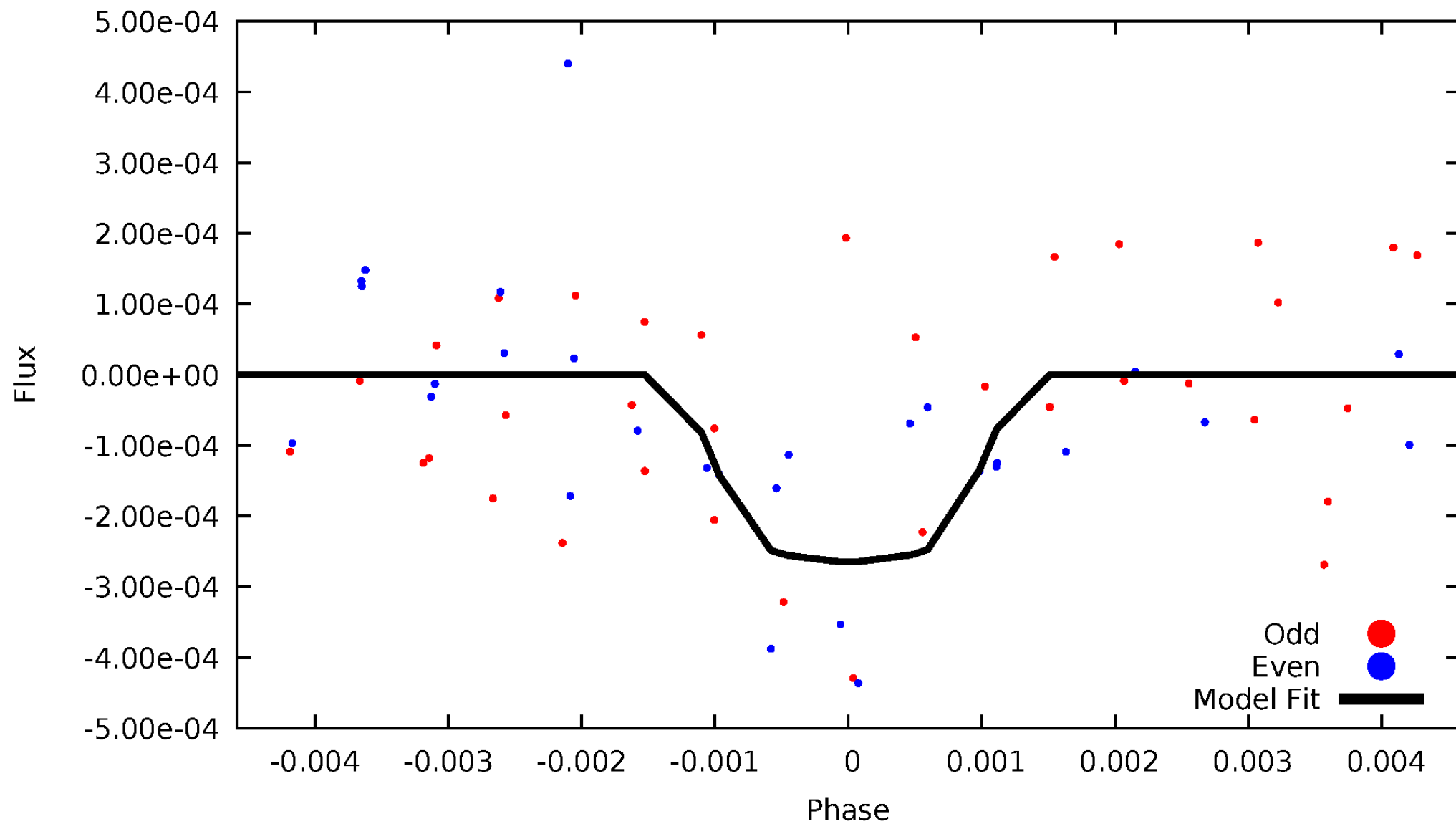


TCE 007820985-02



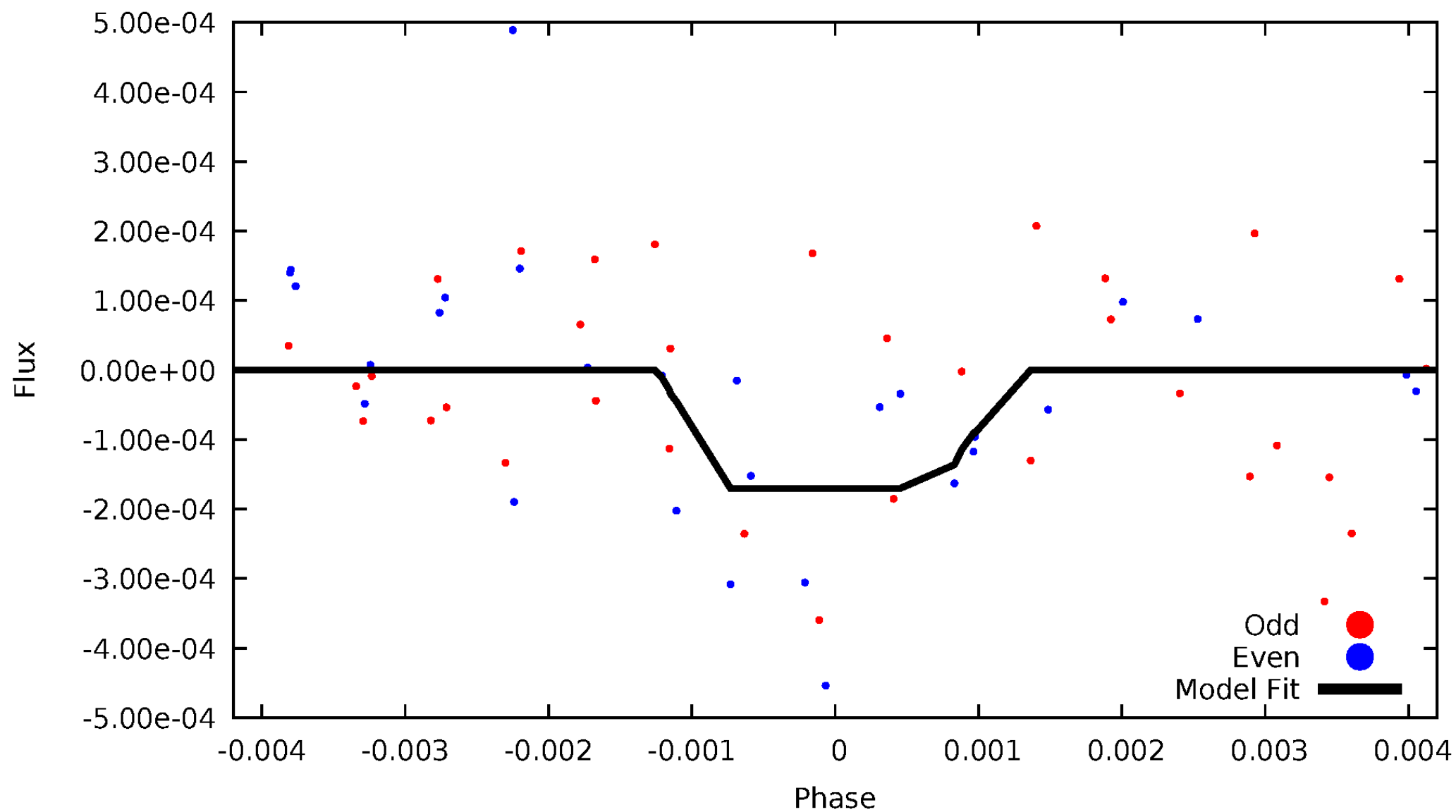
DV Odd/Even

TCE 007820985-02



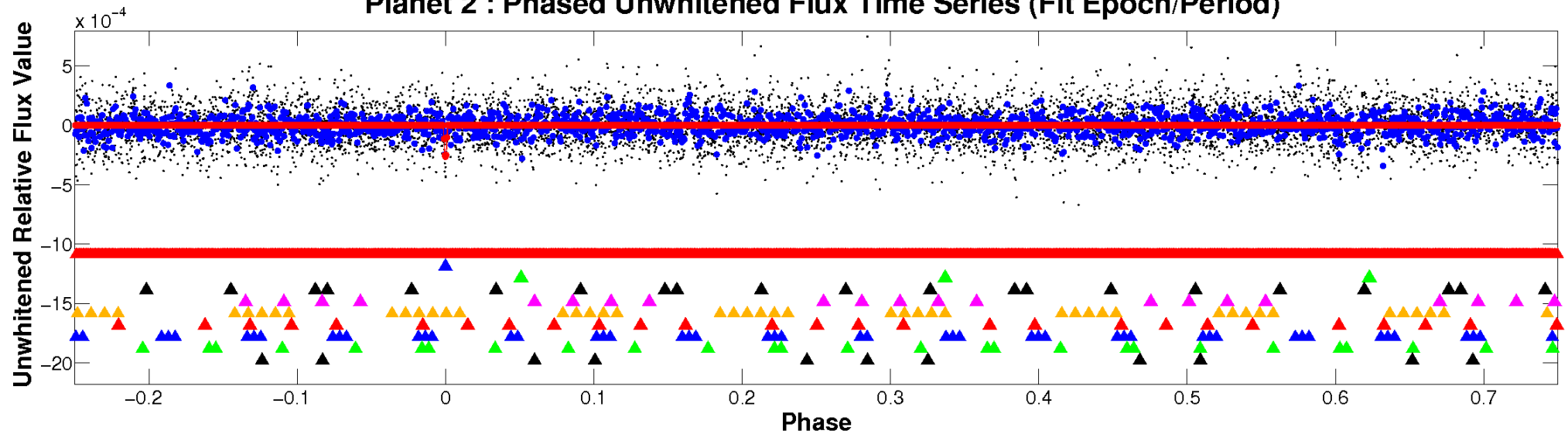
ALT Odd/Even

TCE 007820985-02

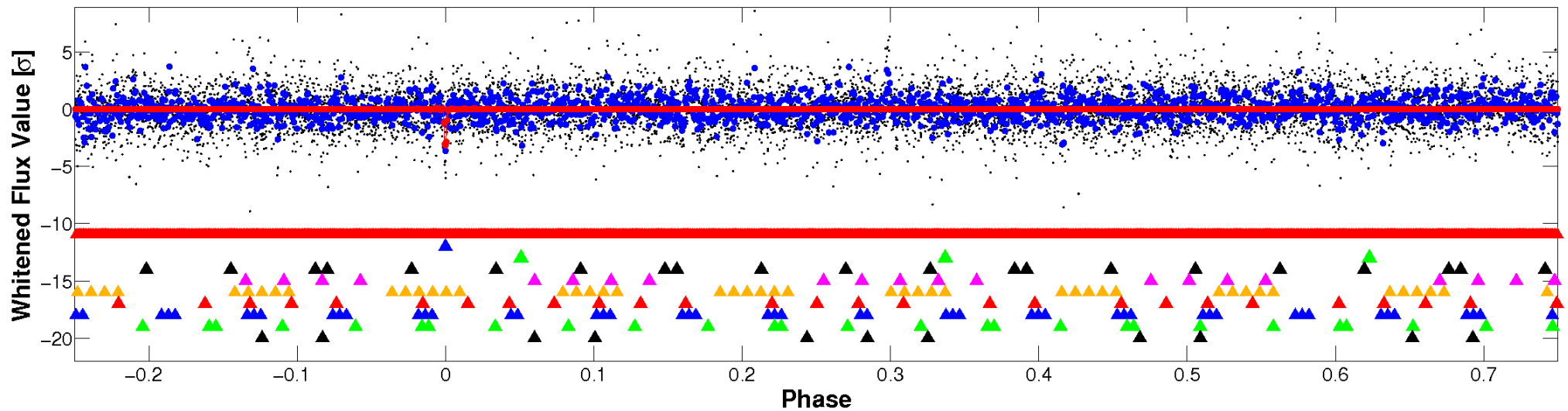


Non-Whitened Vs. Whitened Light Curve

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

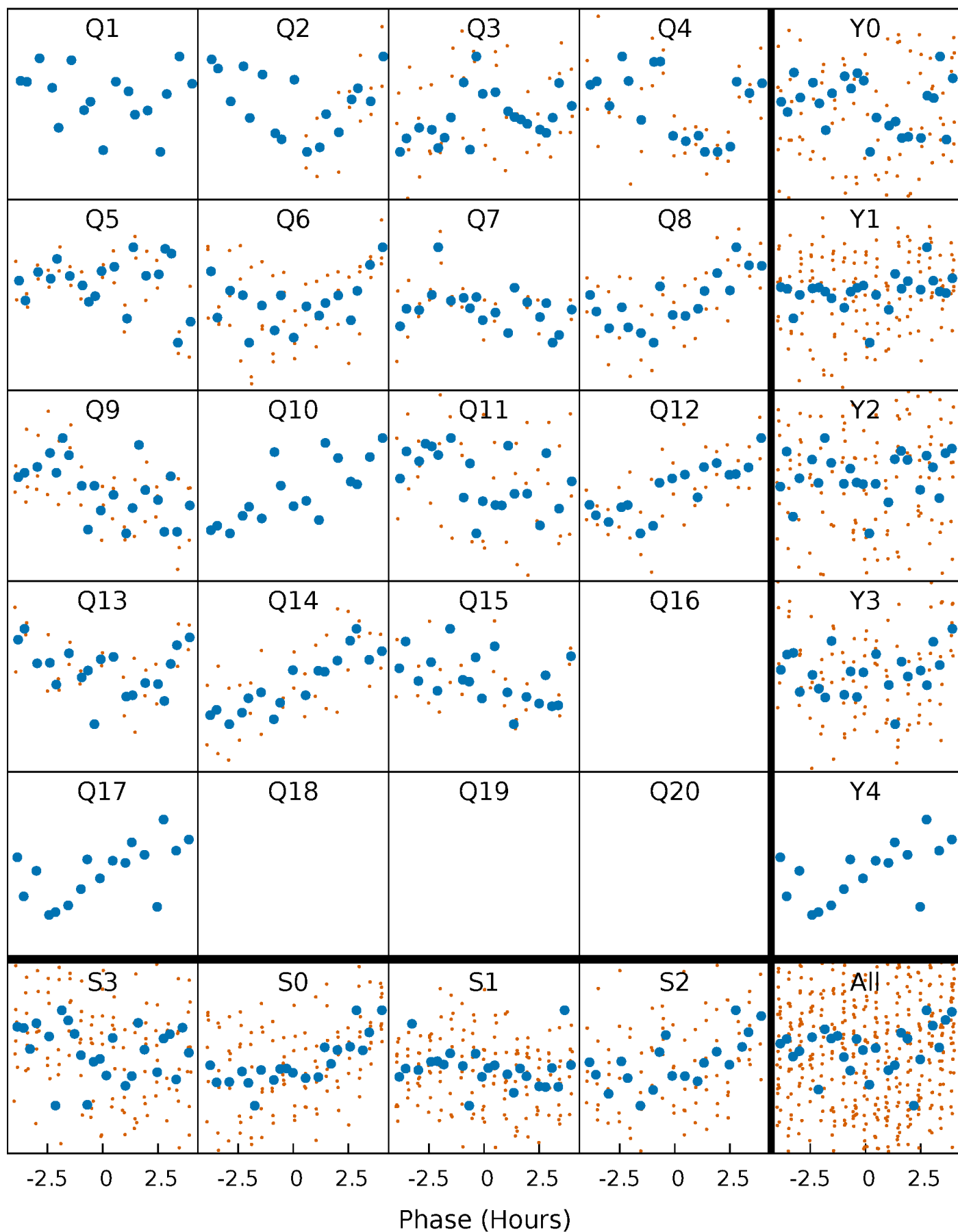


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



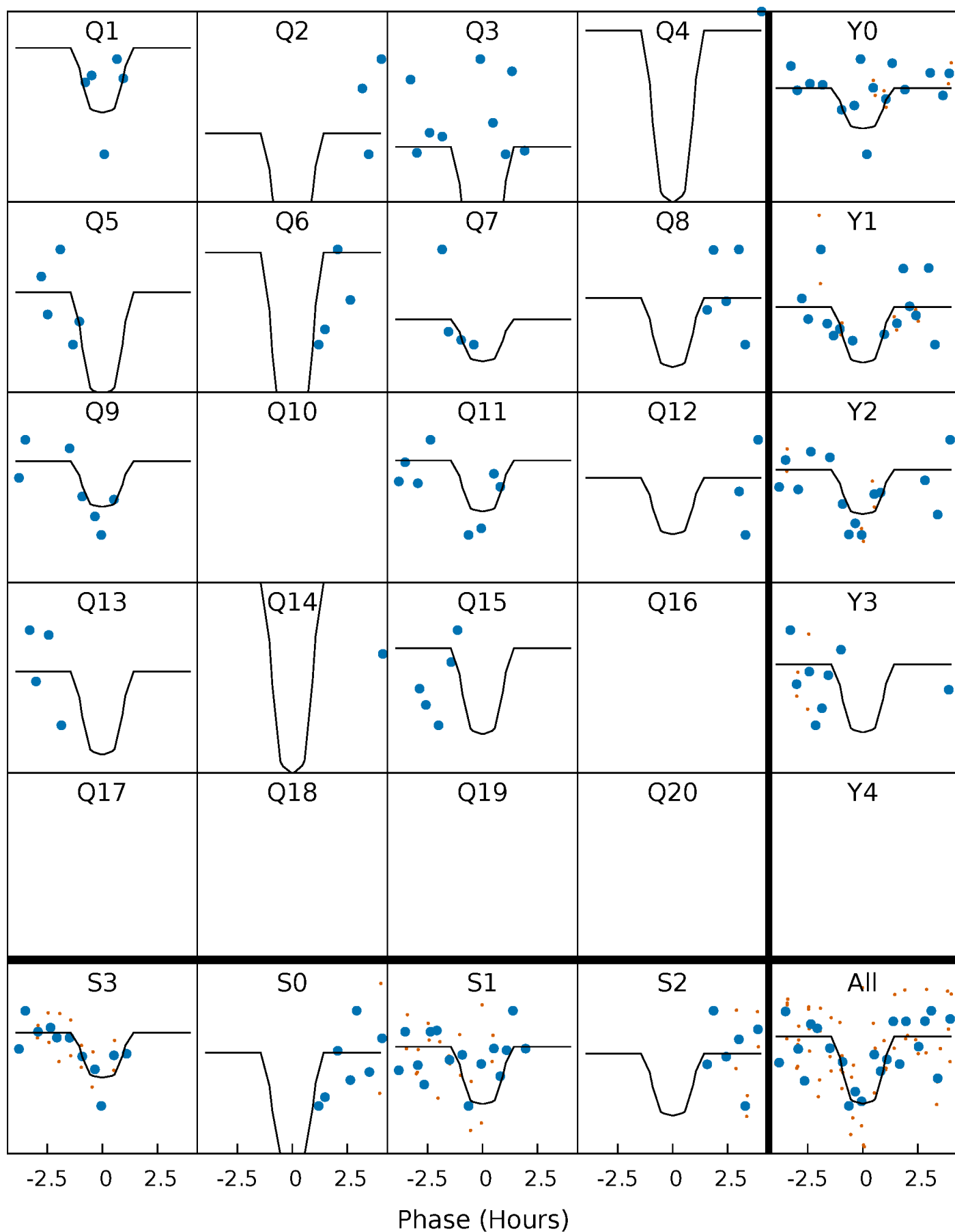
PDC Quarter-Phased Transit Curves

TCE 007820985-02 P= 39.212161 Days $T_0=152.945128$ (BKJD)



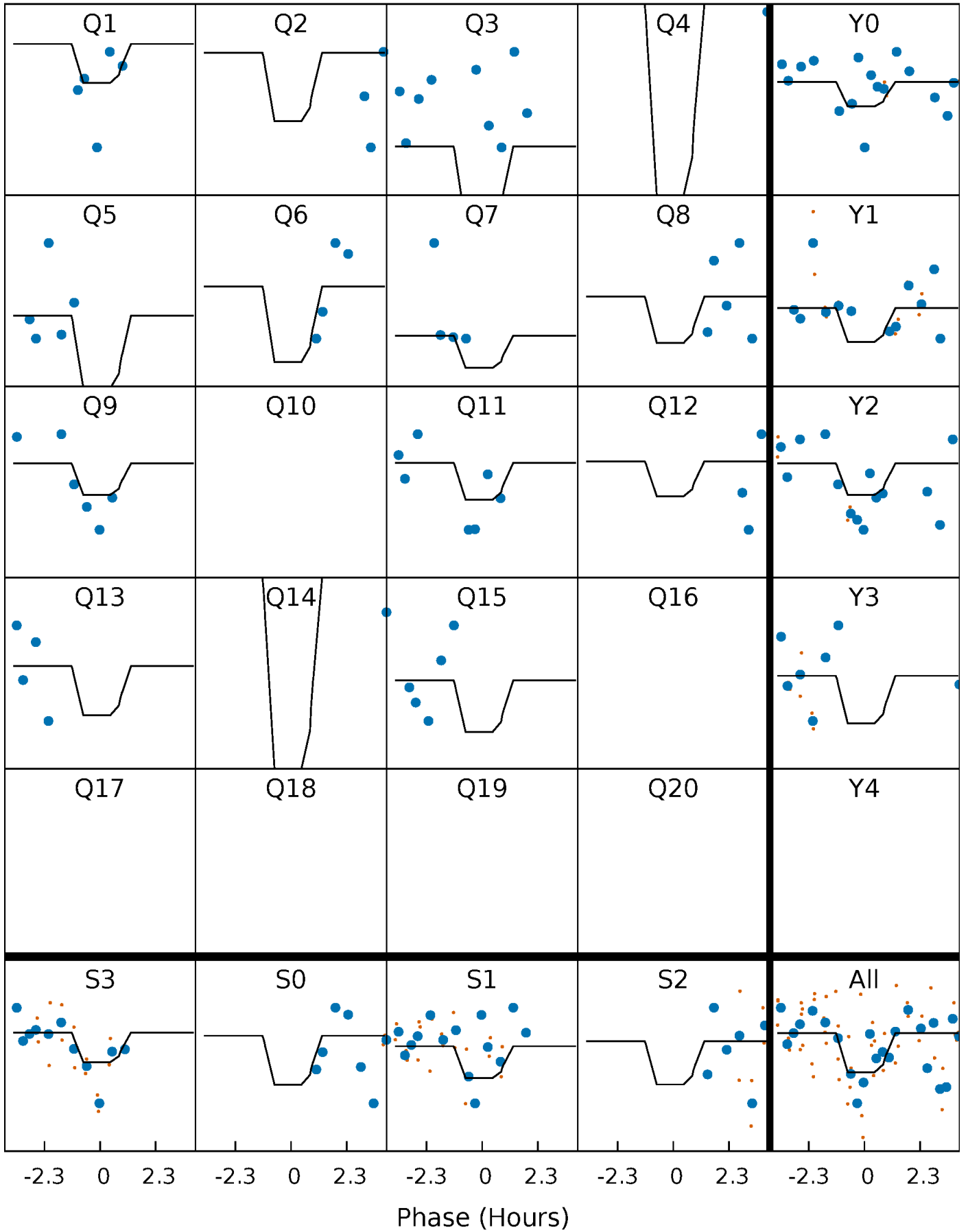
DV Quarter-Phased Transit Curves

TCE 007820985-02 P= 39.212161 Days $T_0=152.945128$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

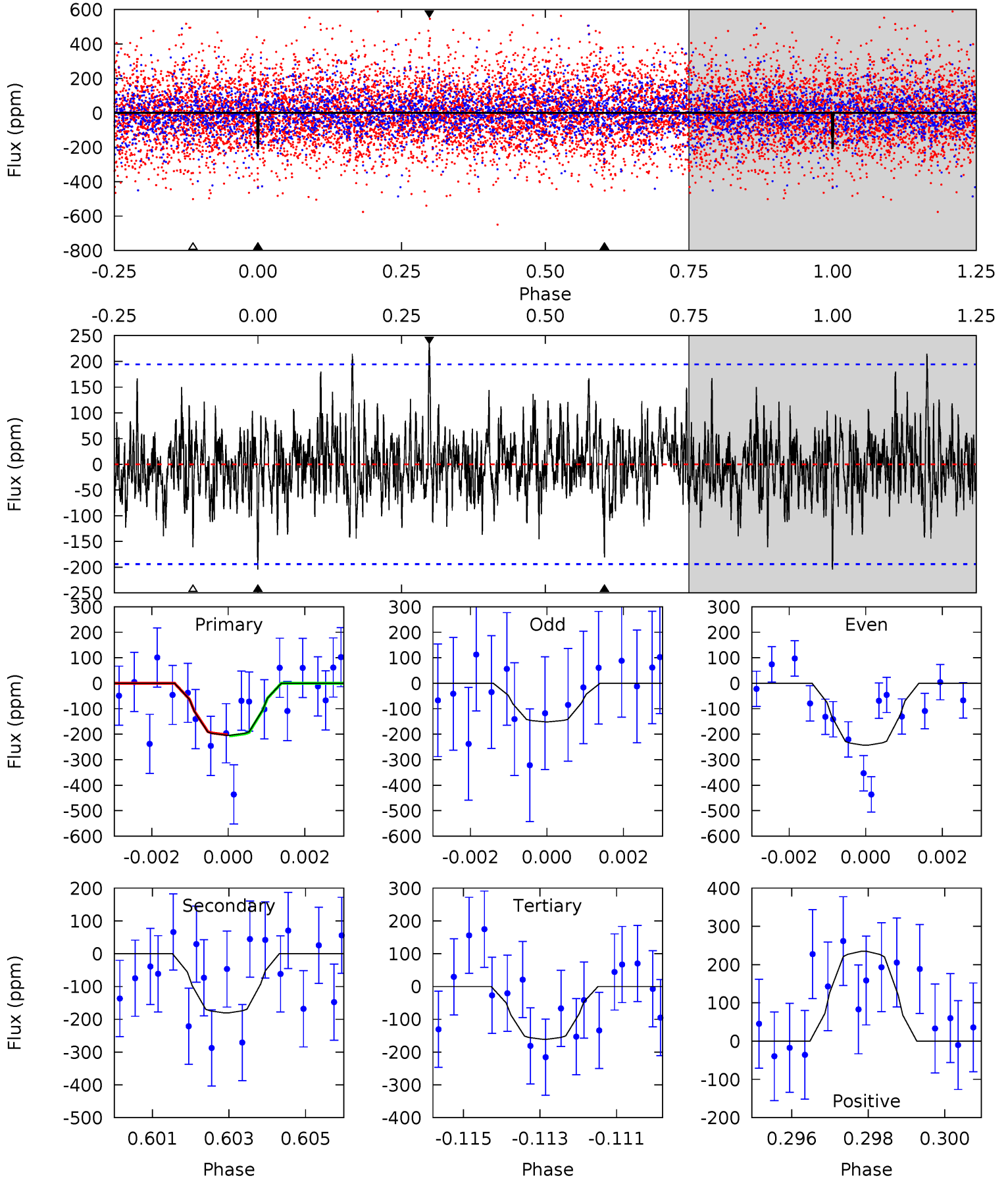
TCE 007820985-02 P= 39.212179 Days $T_0=152.950630$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-02, $P = 39.212161$ Days, $E = 113.732967$ Days

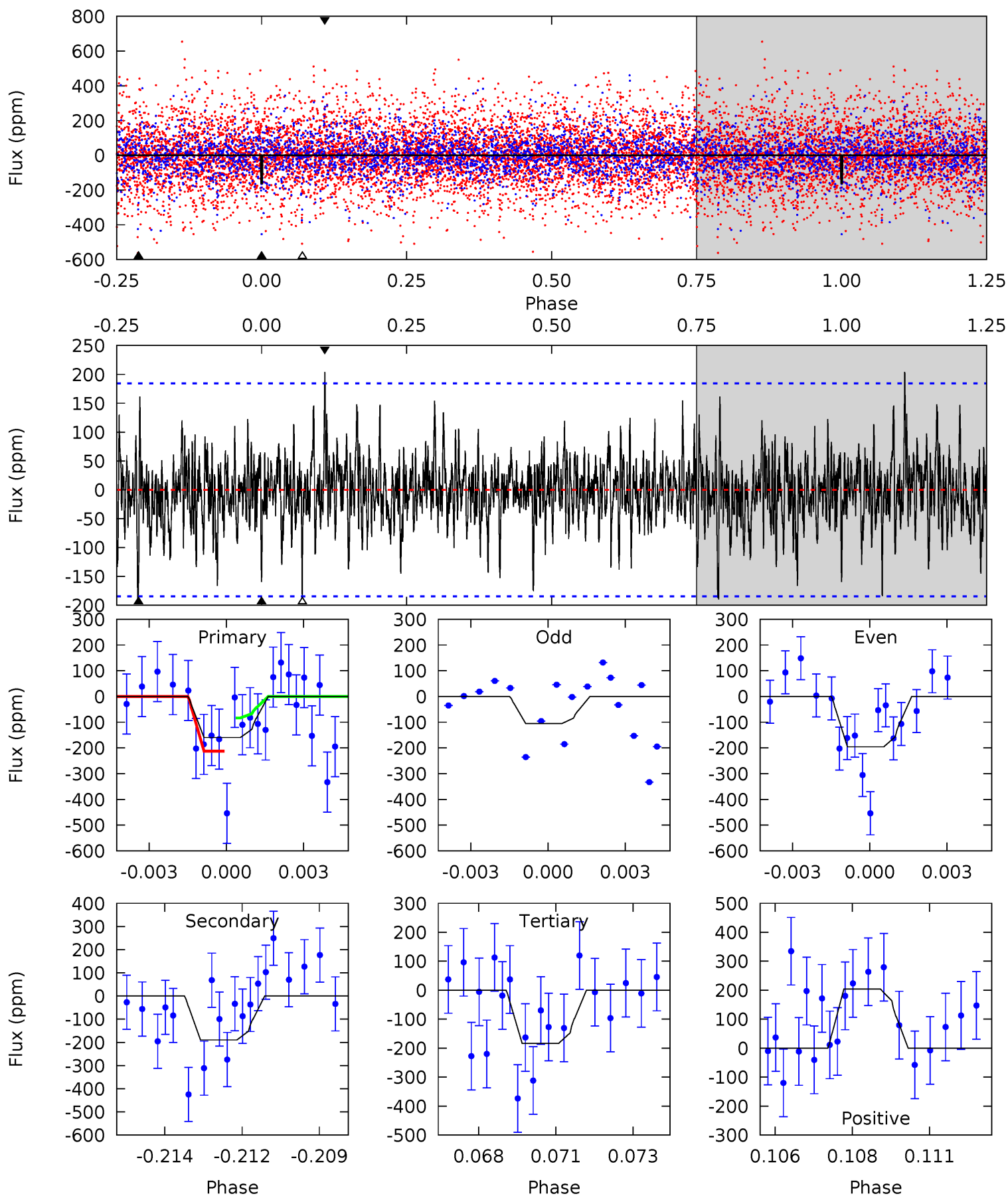
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.59 | 4.94 | 4.41 | 6.43 | 5.31 | 3.06 | 1.42 | 1.18 | -0.85 | 0.54 | -1.49 | 1.25 | 0.84 | 0.54 | 0.06 |



Alt Model-Shift Uniqueness Test

007820985-02, P = 39.212179 Days, E = 113.738451 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.57 | 5.43 | 5.27 | 5.85 | 5.28 | 3.02 | 1.33 | -0.70 | -1.28 | 0.16 | -0.42 | 1.26 | 0.58 | 0.52 | 1.85 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|---------------------------|----------------------|-----------------------|-------------------|
| DV | -181 ± 37 | $22.74^{+23.82}_{-15.81}$ | 1446^{+84}_{-132} | 3548^{+2044}_{-697} | 15^{+133}_{-11} |
| Alt. | -190 ± 35 | $20.51^{+23.00}_{-15.02}$ | 1453^{+79}_{-124} | 3673^{+2705}_{-756} | 18^{+240}_{-14} |

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

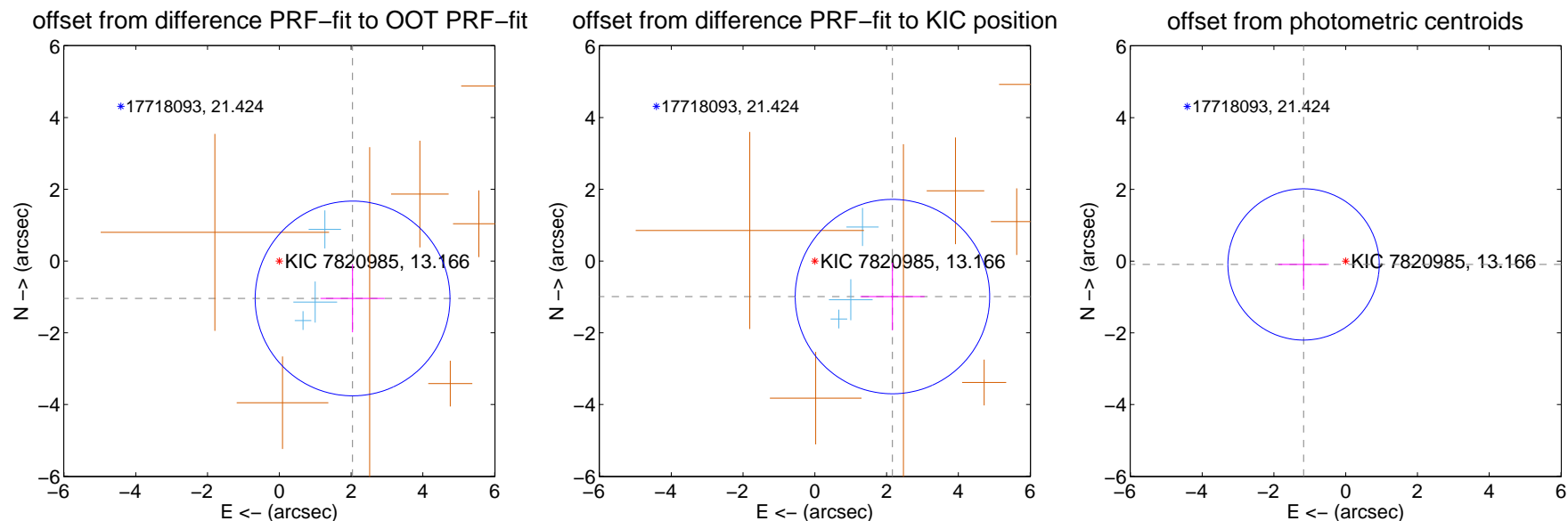
DV Centroid Data

Supplemental centroid analysis for 007820985-02. Kepler magnitude: 13.17. Transit SNR 10.71

There are 3 quarters with good PRF difference image offsets

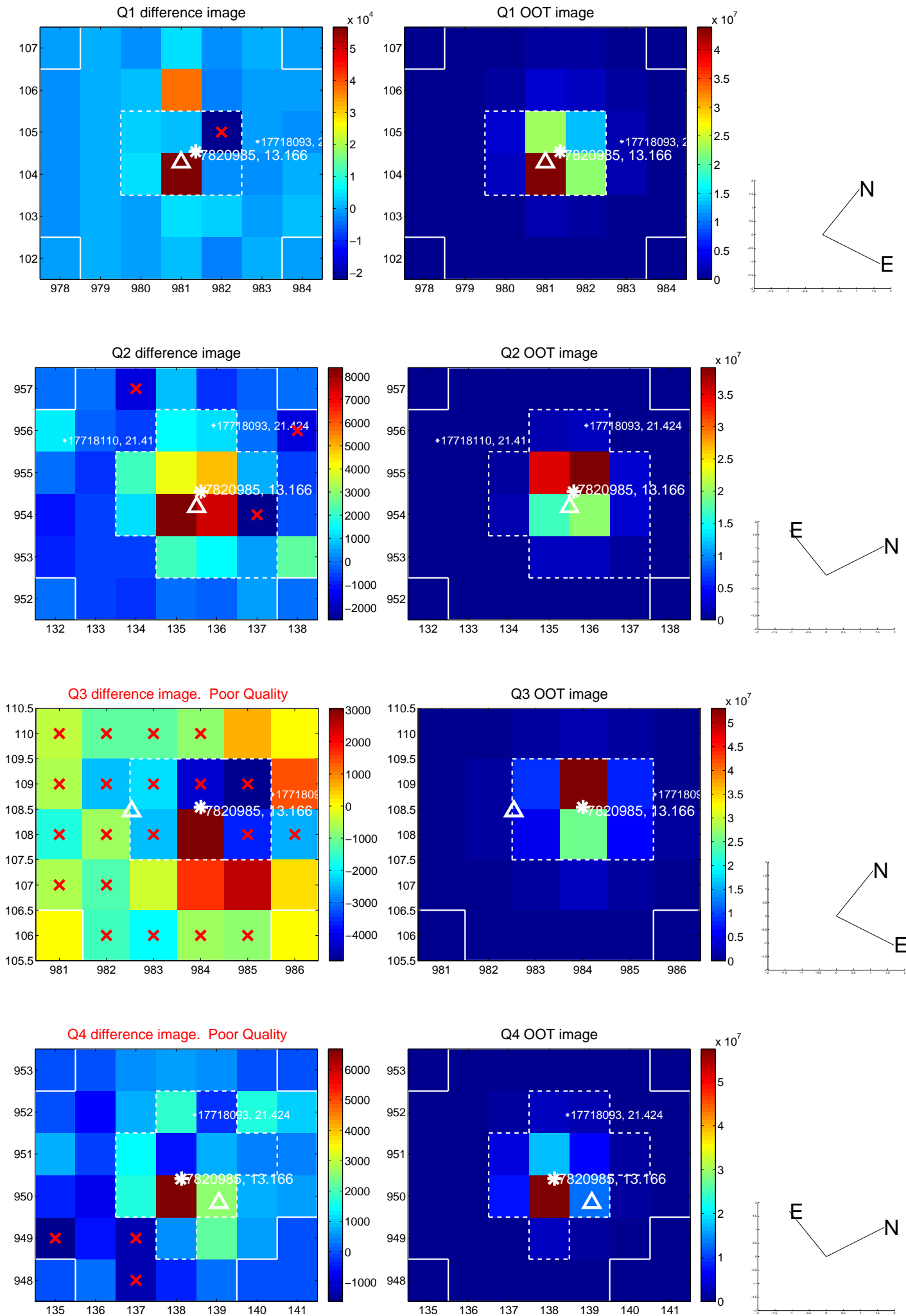
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 2.292 ± 0.905 | 2.53 | -2.041 ± 0.895 | -1.043 ± 0.942 |
| PRF-fit source offset from KIC position | 2.379 ± 0.903 | 2.63 | -2.163 ± 0.895 | -0.991 ± 0.942 |
| photometric centroid source offset | 1.18 ± 0.70 | 1.67 | 1.17 ± 0.70 | -0.09 ± 0.71 |

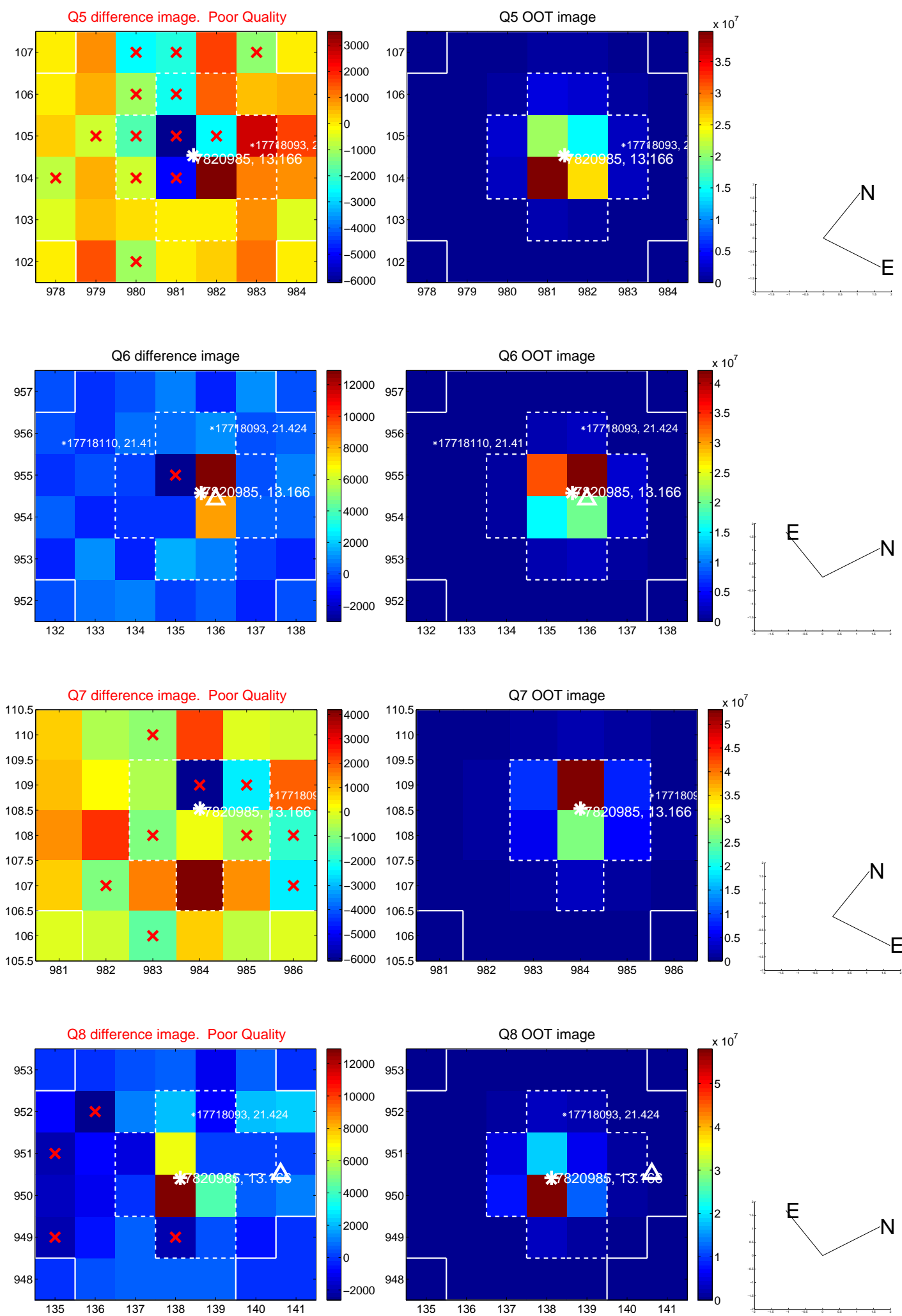


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

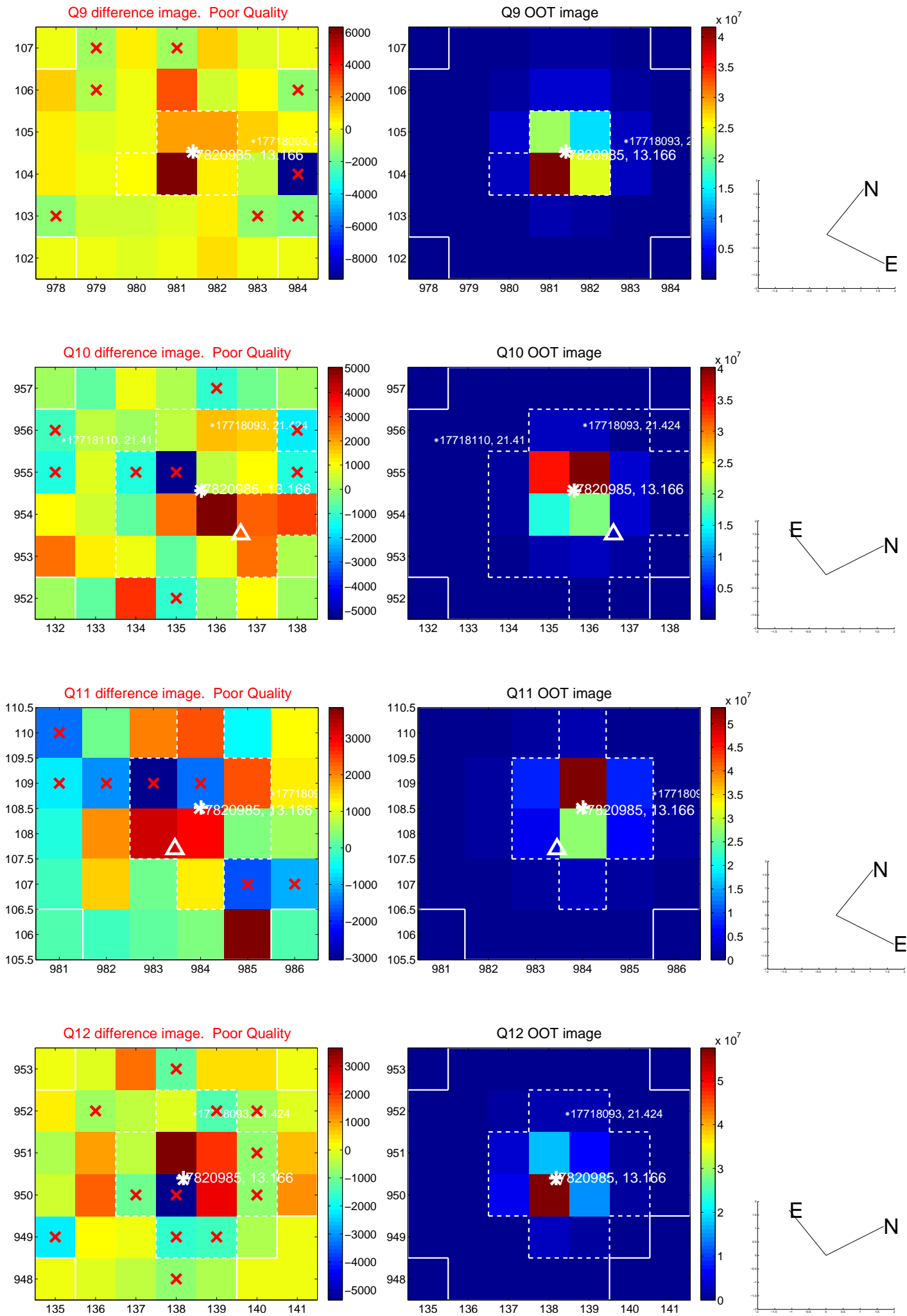
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



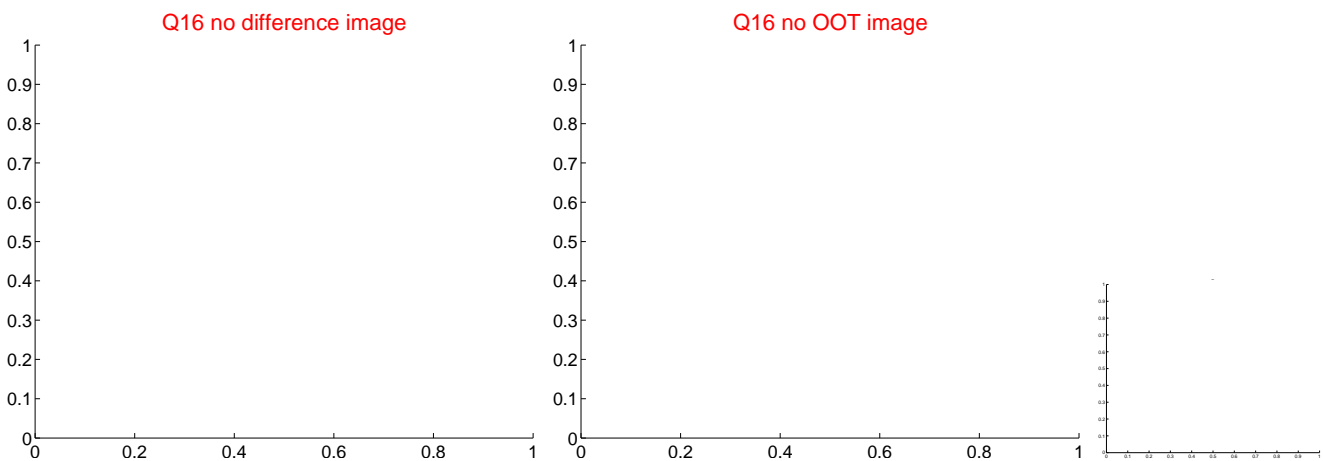
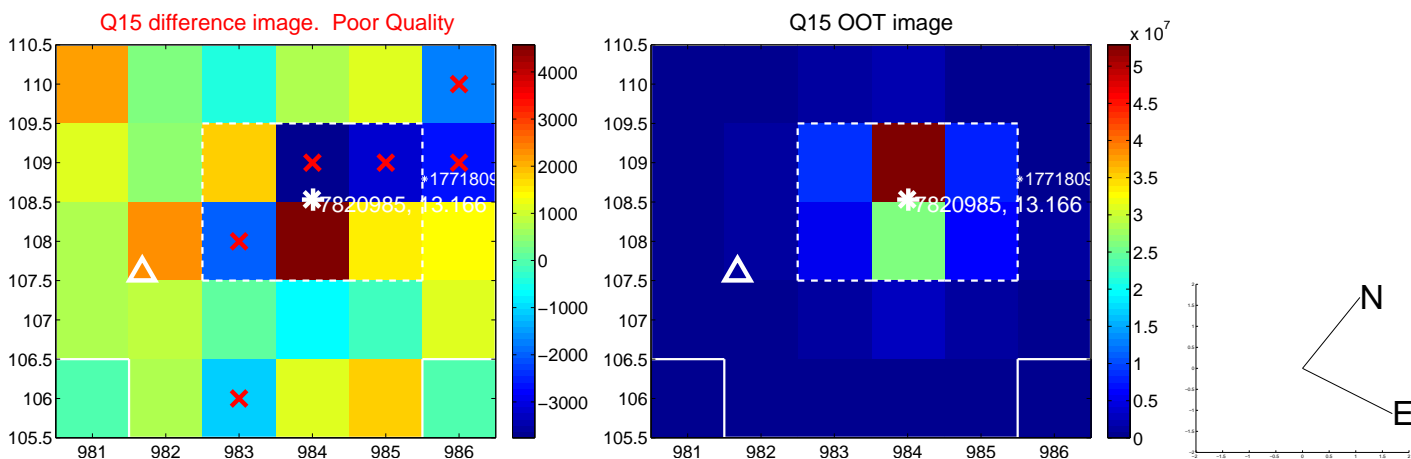
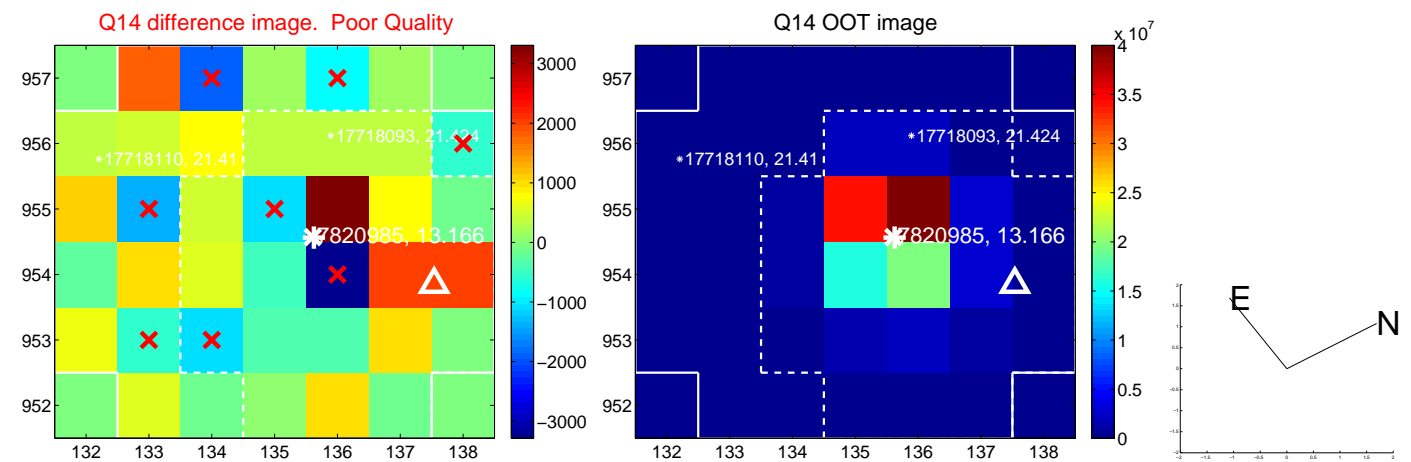
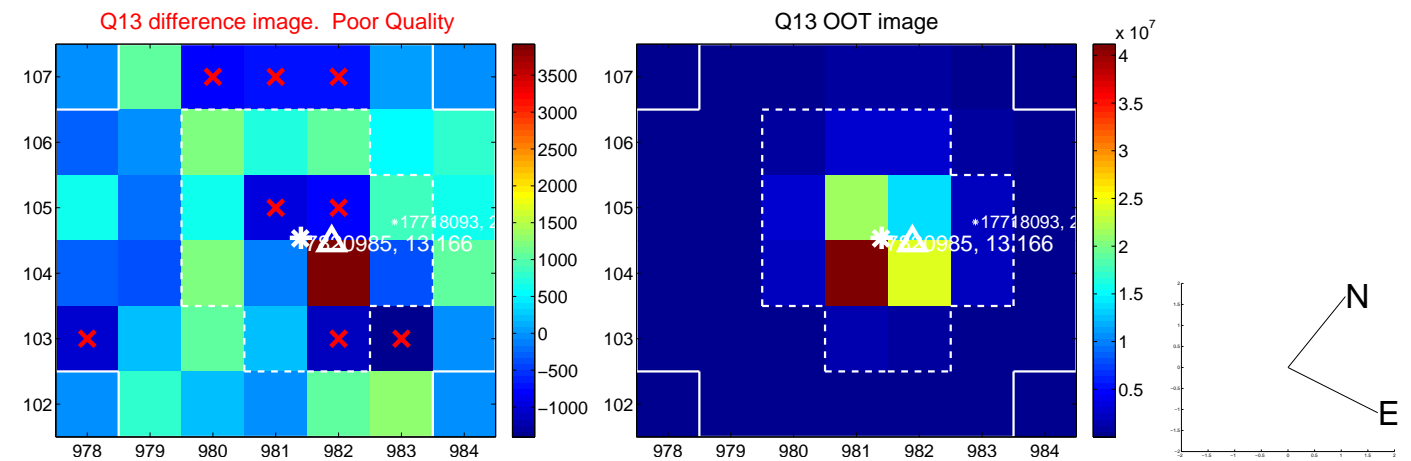
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



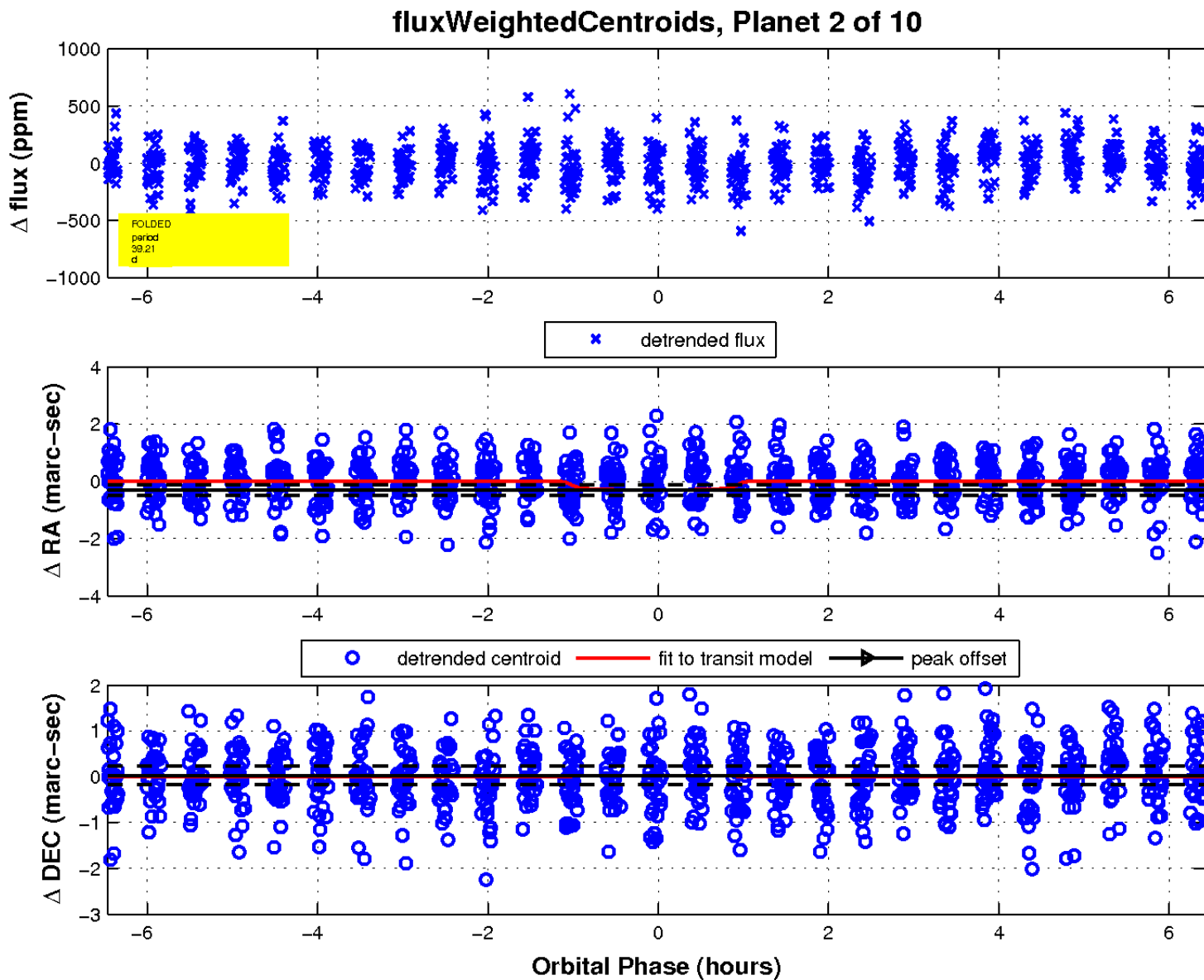
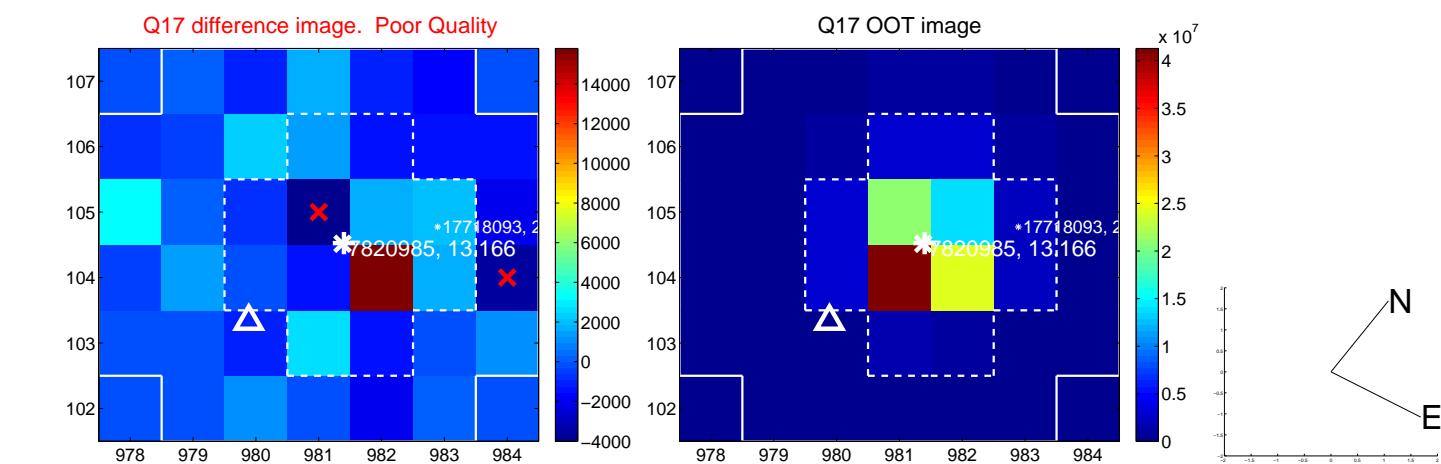
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

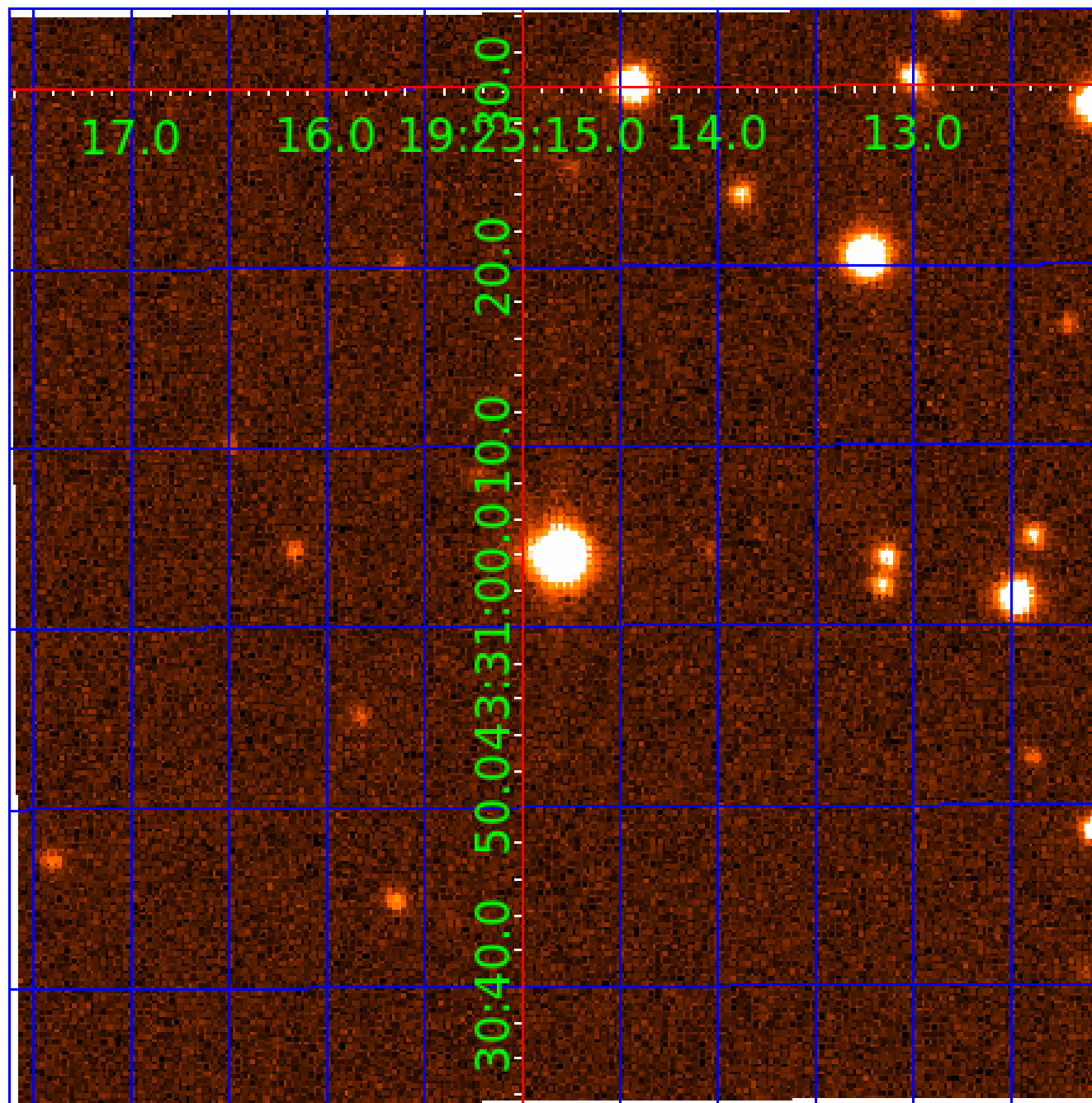


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

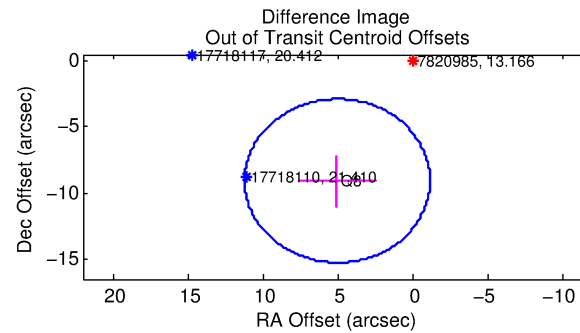
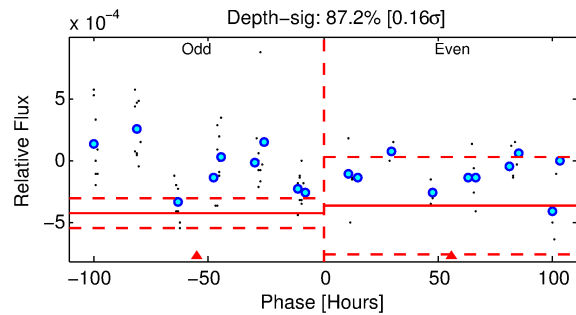
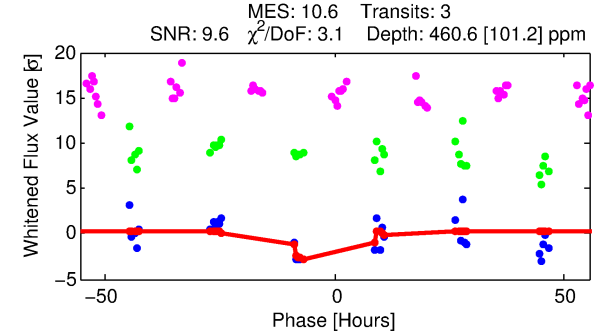
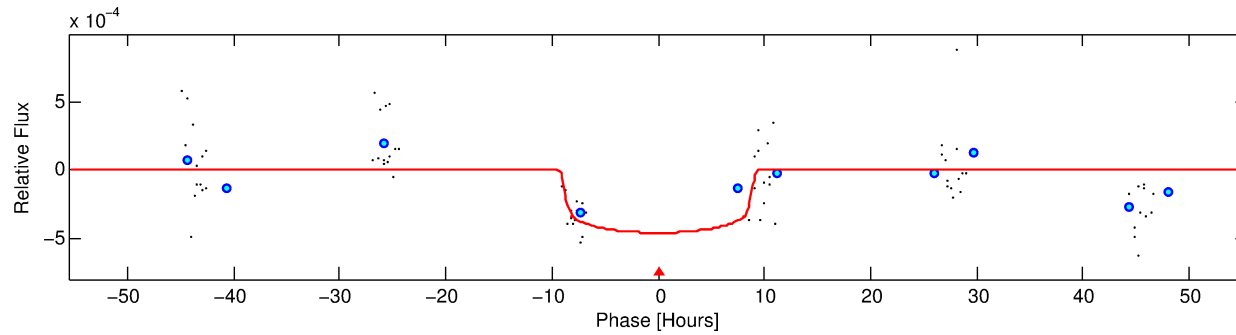
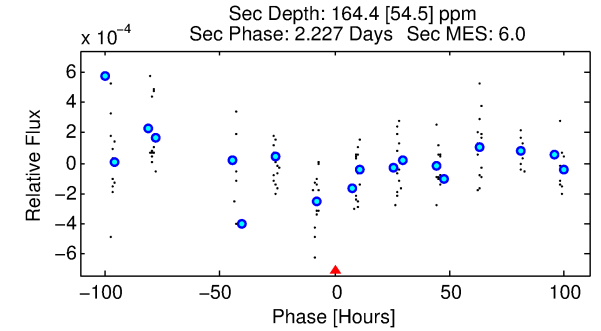
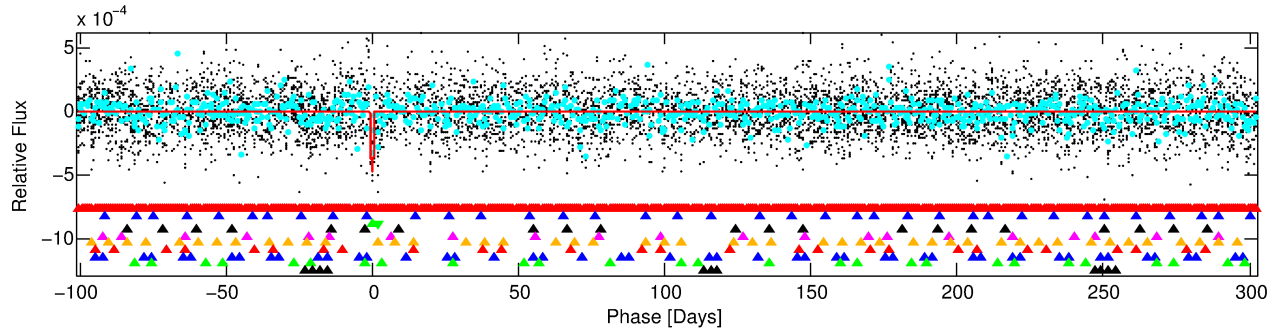
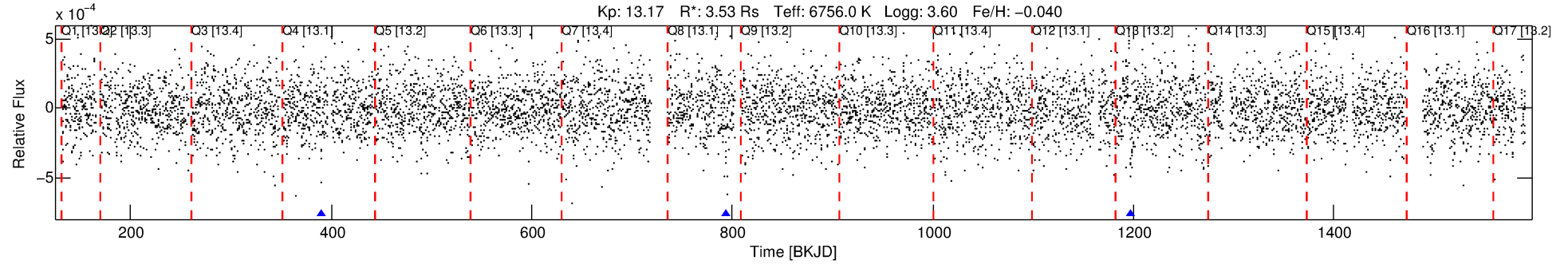
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-03

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 3 of 10 Period: 403.336 d



DV Fit Results:

Period = 403.33570 [0.01374] d
Epoch = 390.2153 [0.0204] BKJD
Rp/R* = 0.0213 [0.0043]
a/R* = 117.29 [106.54]
b = 0.74 [0.56]
Seff = 13.80 [7.75]
Teq = 491 [69] K
Rp = 8.20 [3.29] Re
a = 1.2981 [0.4409] AU
Ag = 2268.55 [1719.64] [1.32σ]
Teffp = 5244 [704] K [6.72σ]

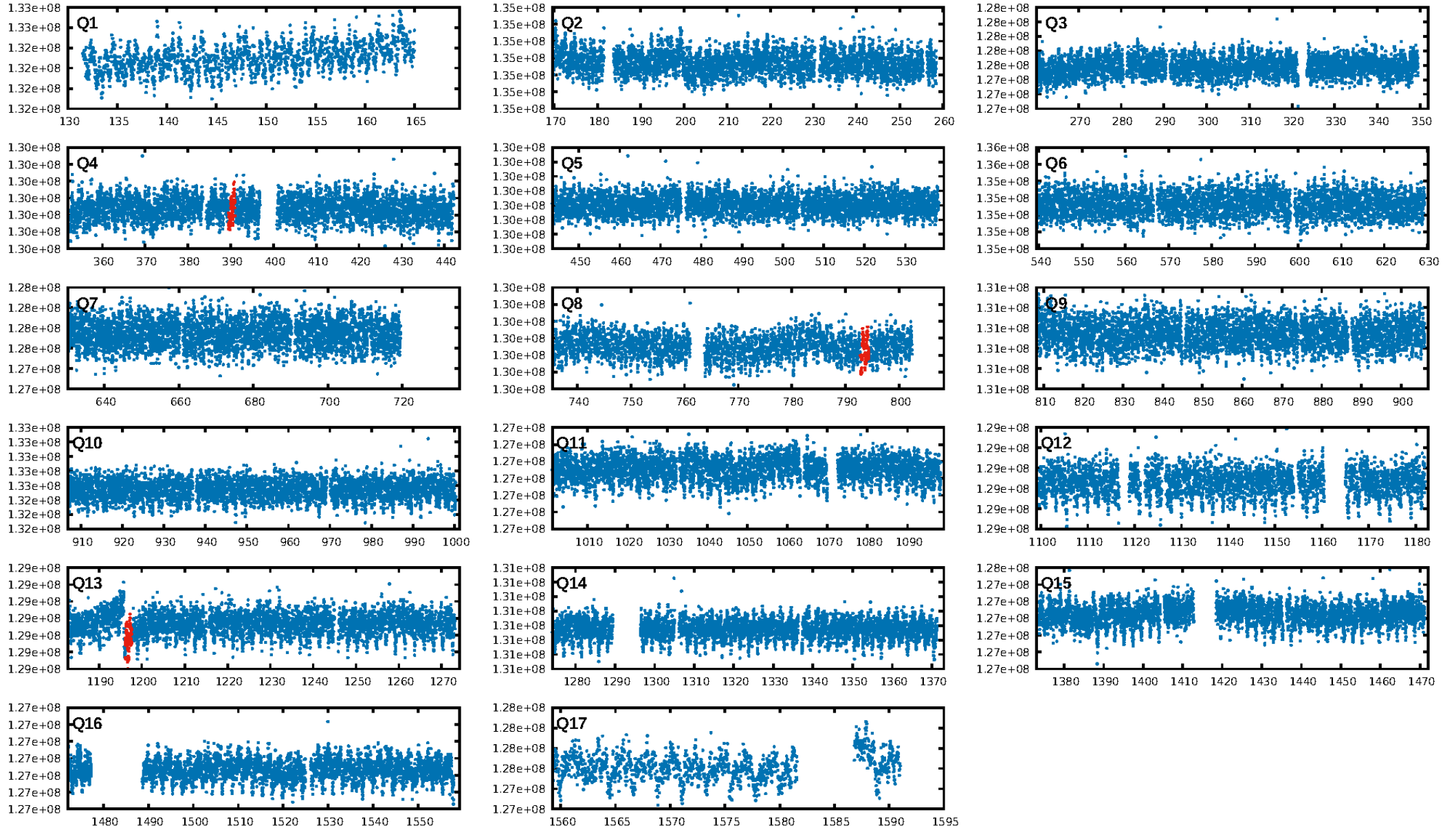
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [271.63σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 30.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.2378
Centroid-sig: 15.4%
Centroid-so: 0.762 arcsec [1.34σ]
OotOffset-rm: 10.365 arcsec [5.02σ]
KicOffset-rm: 10.351 arcsec [5.00σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/2]

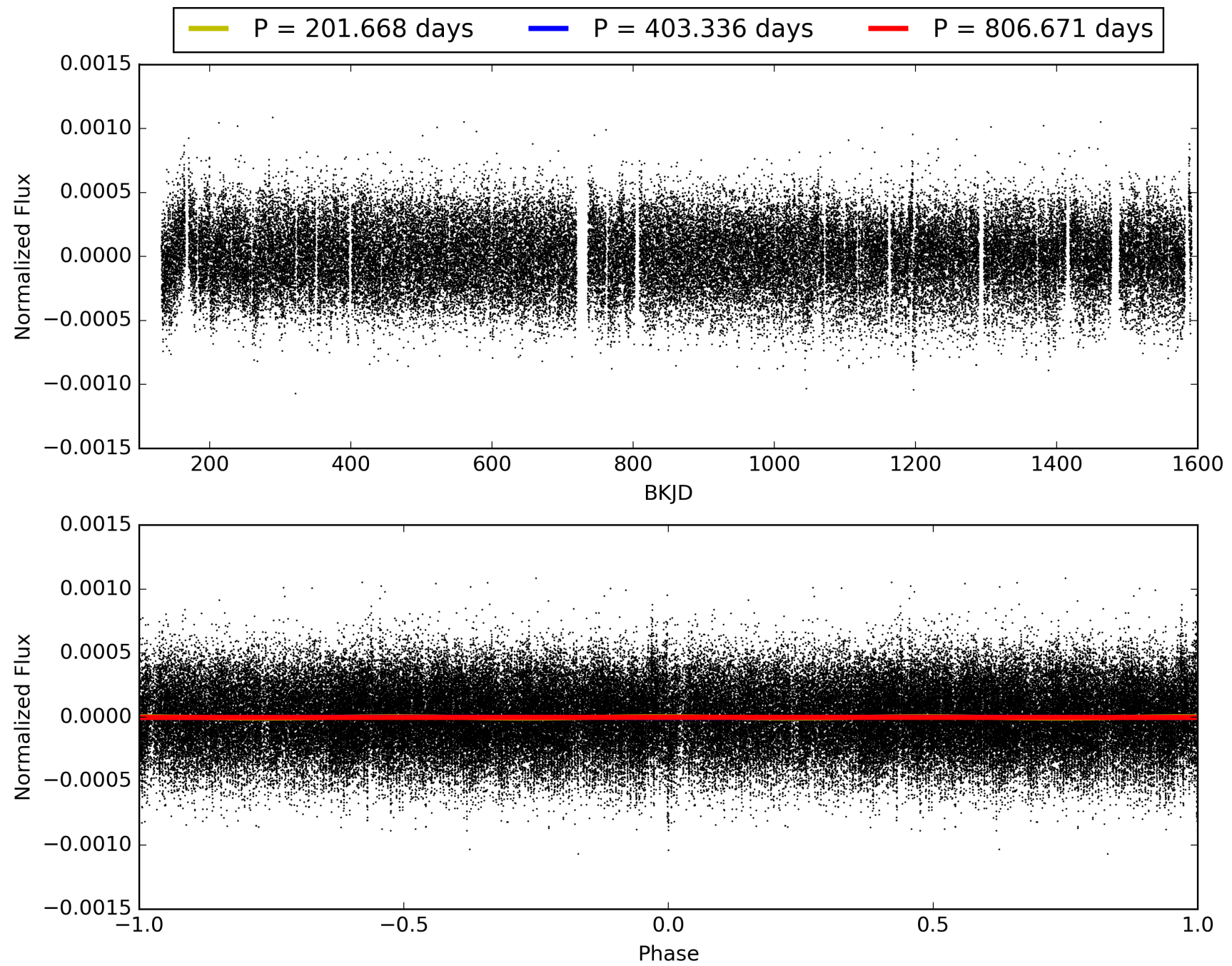
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:42 Z

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

TCE 007820985-03, PDC Light Curves

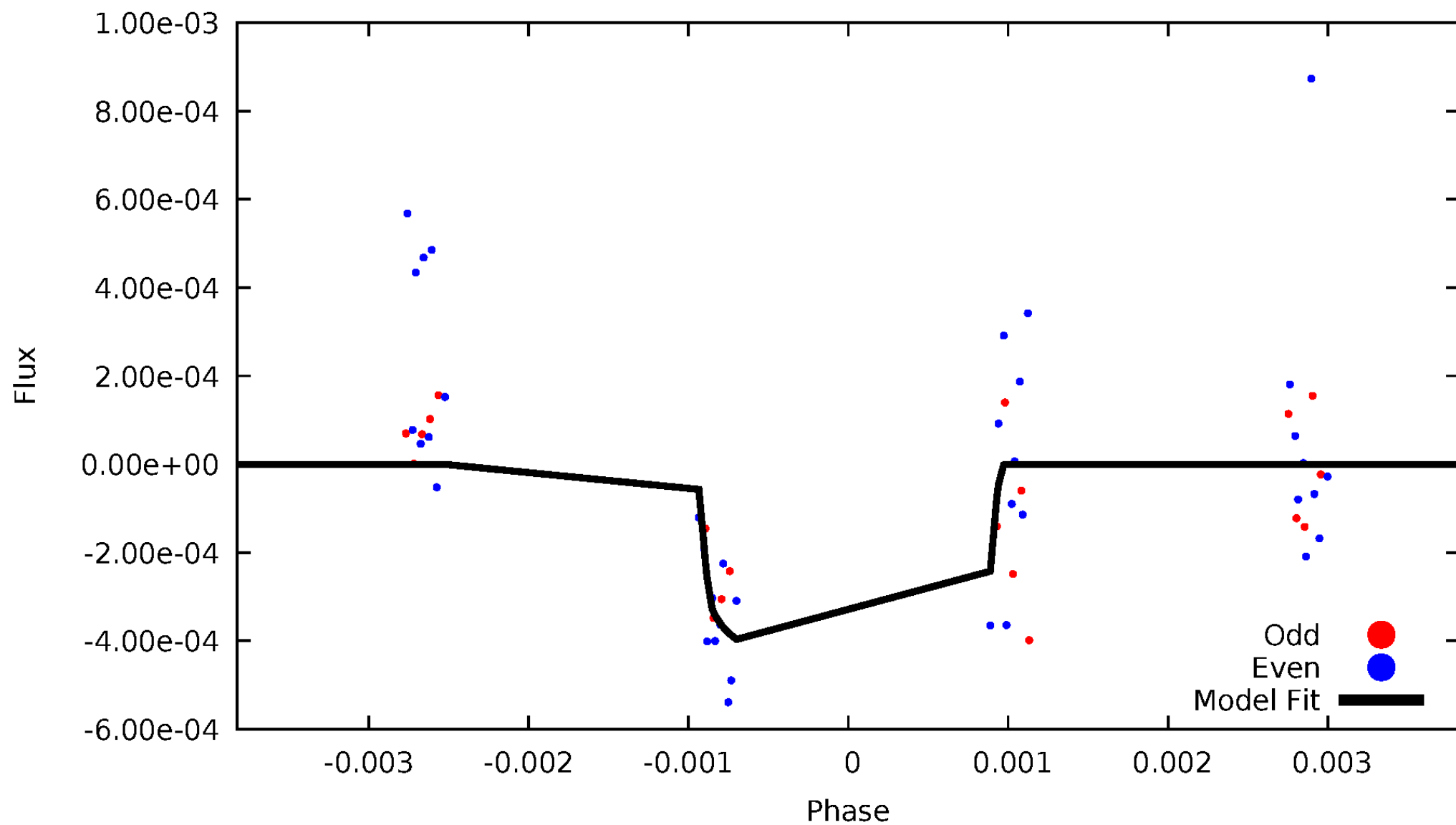


TCE 007820985-03



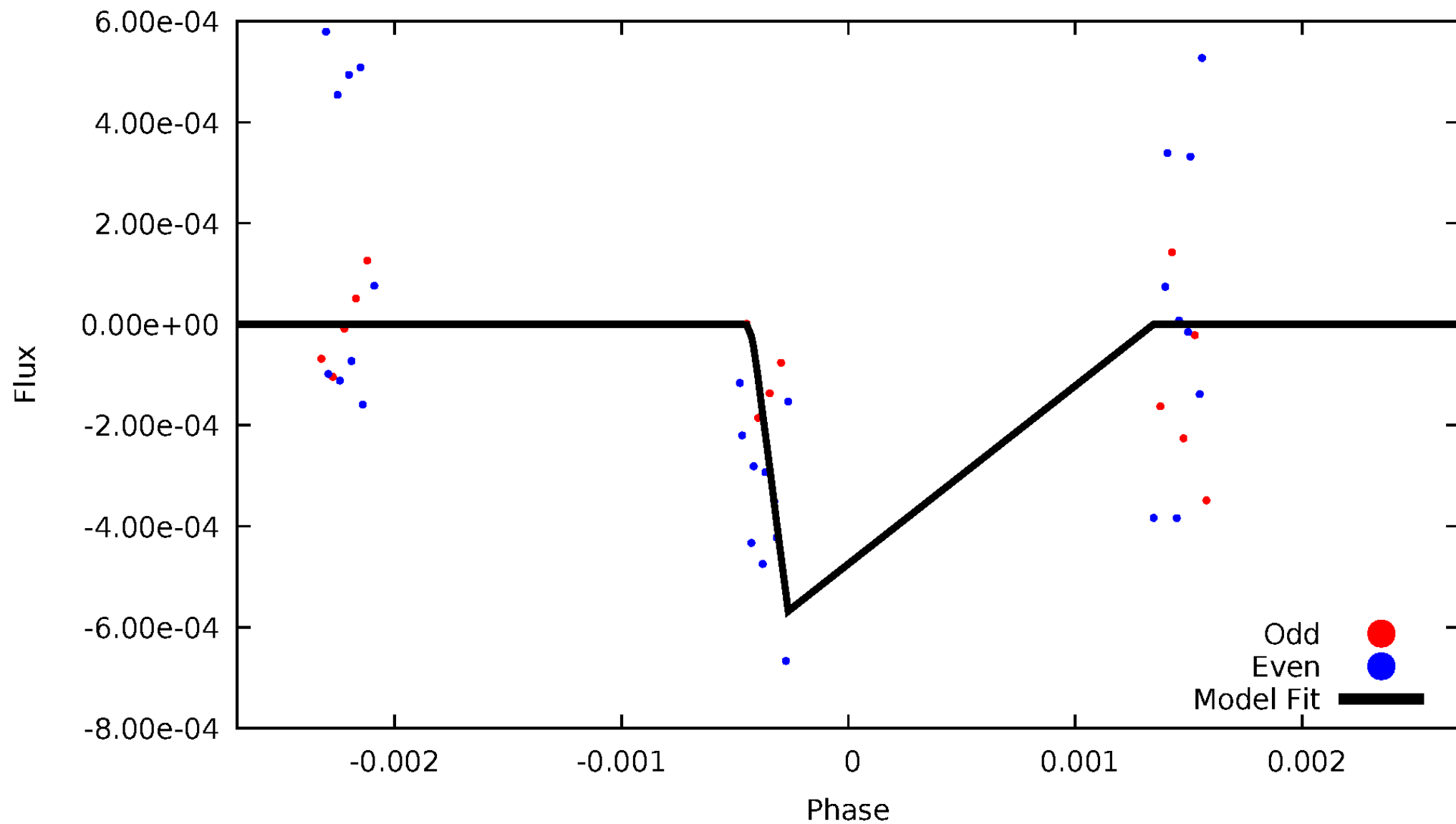
DV Odd/Even

TCE 007820985-03



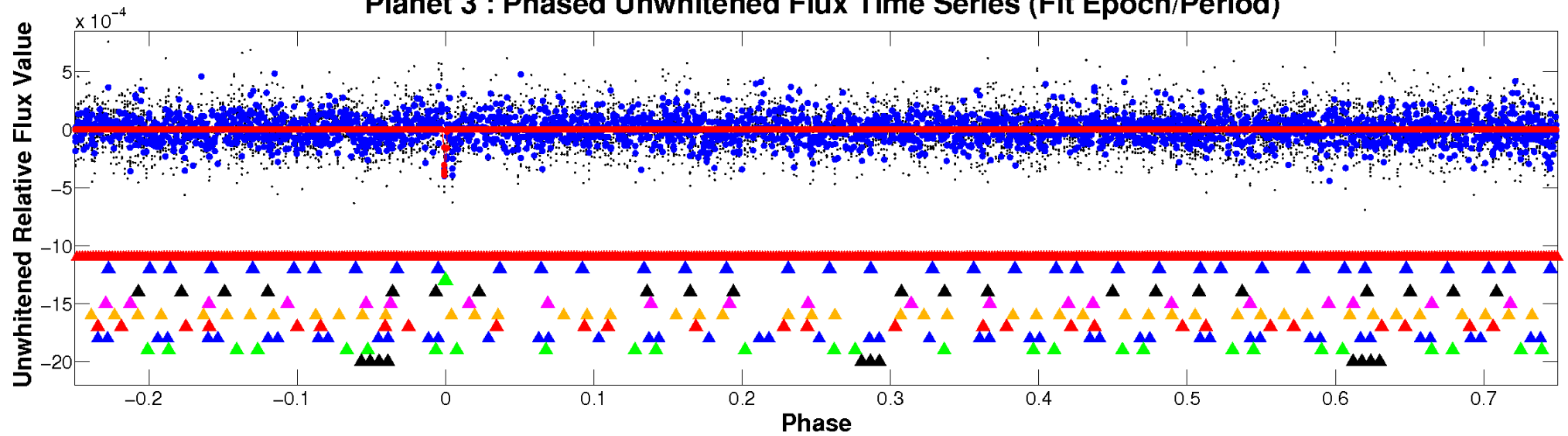
ALT Odd/Even

TCE 007820985-03

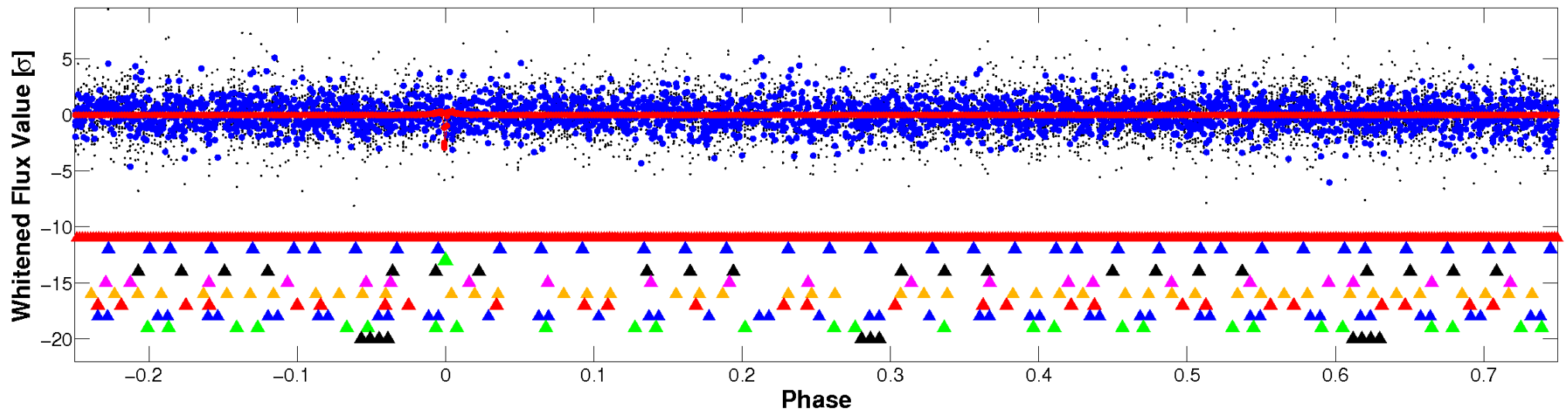


Non-Whitened Vs. Whitened Light Curve

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

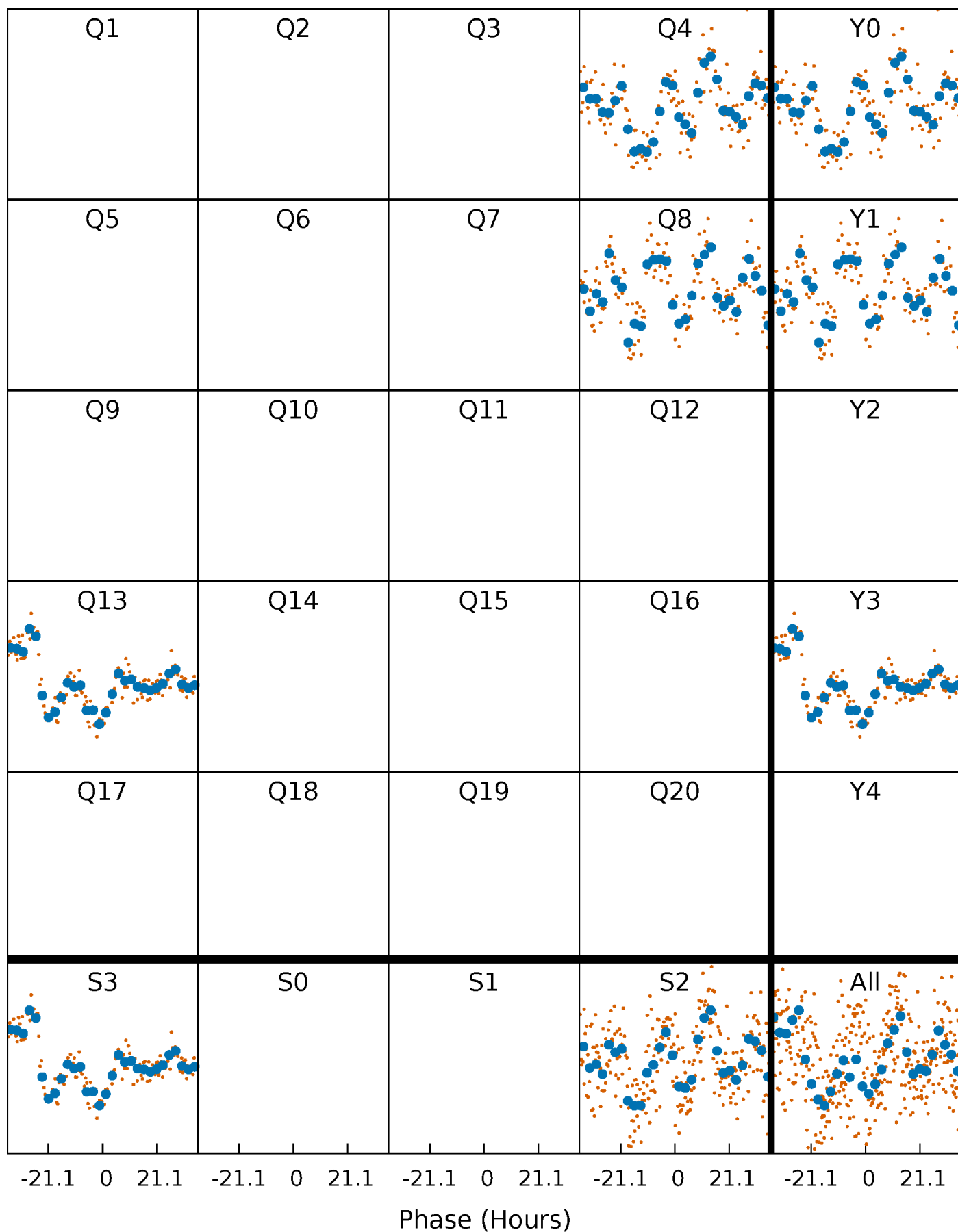


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



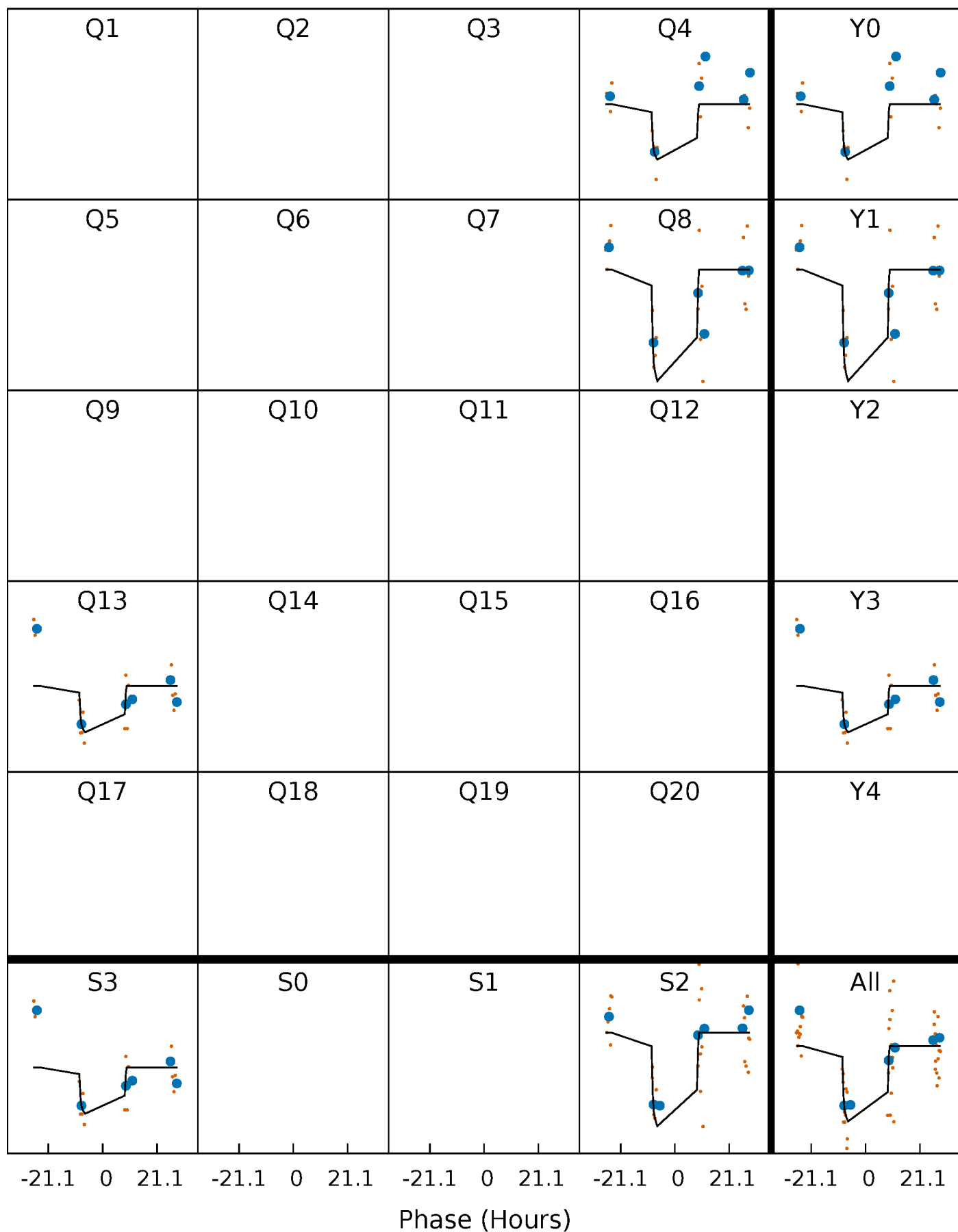
PDC Quarter-Phased Transit Curves

TCE 007820985-03 $P=403.335700$ Days $T_0=390.215297$ (BKJD)



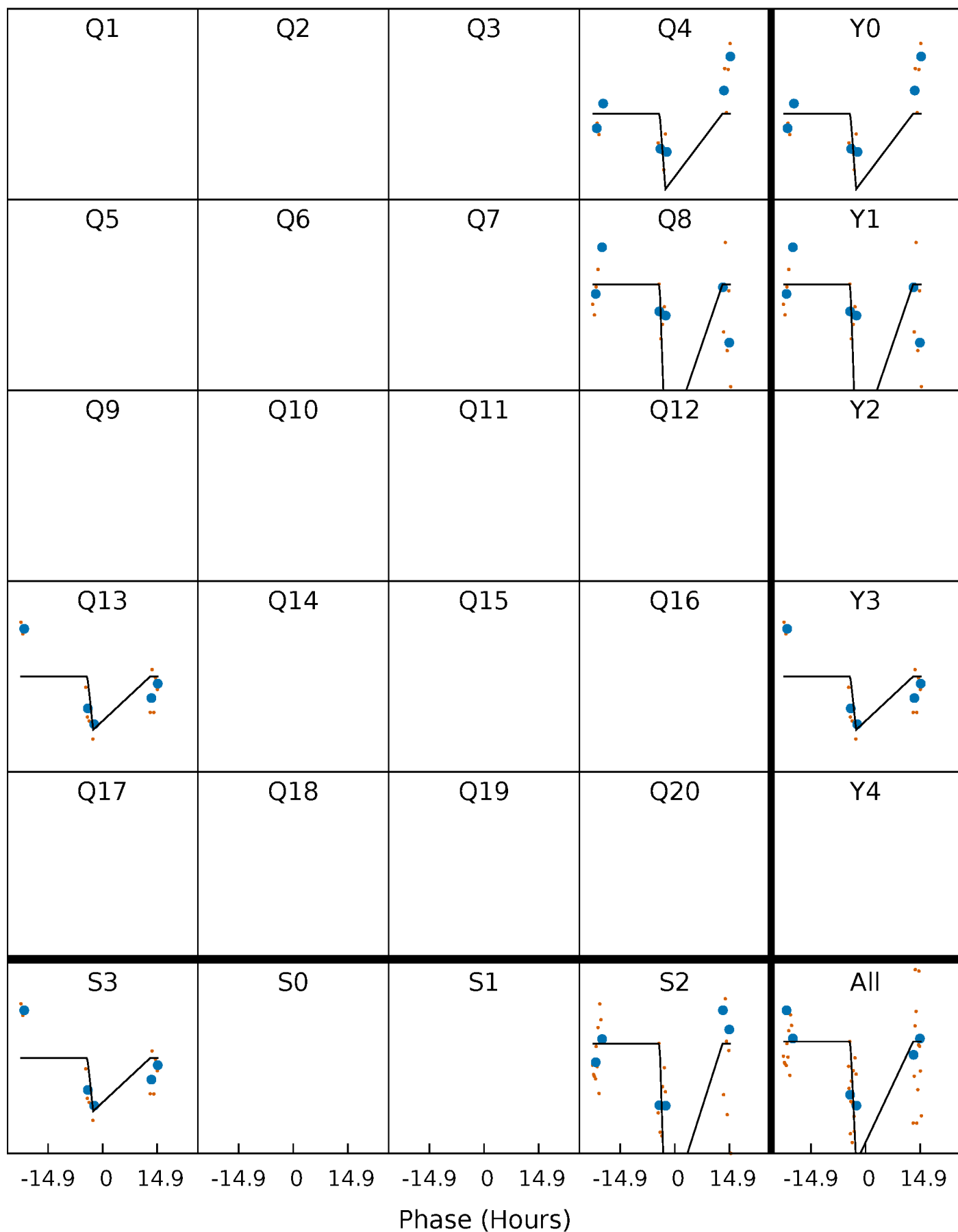
DV Quarter-Phased Transit Curves

TCE 007820985-03 P=403.335700 Days $T_0=390.215297$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

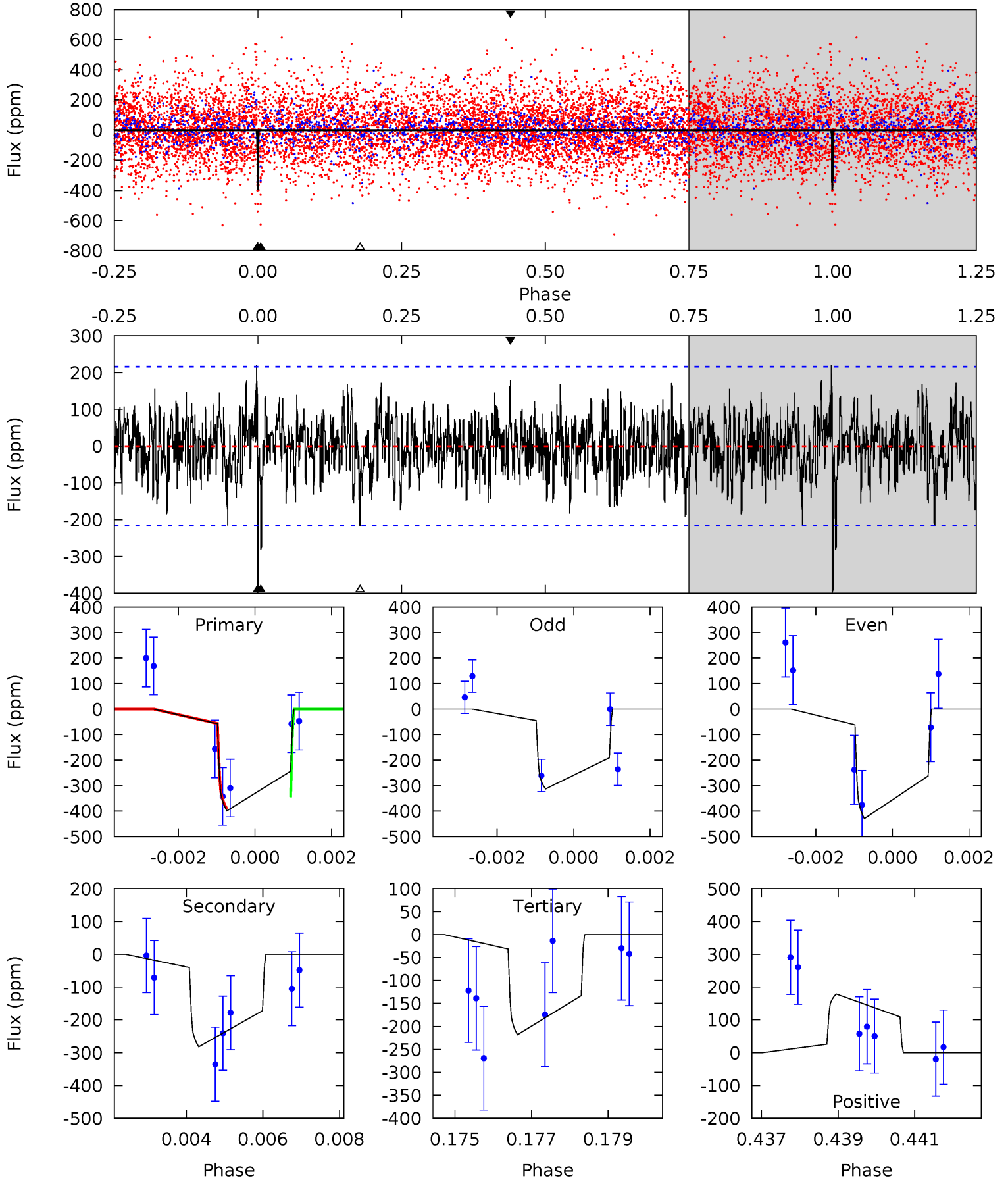
TCE 007820985-03 P=403.331230 Days $T_0=390.039866$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-03, P = 403.335700 Days, E = 390.215297 Days

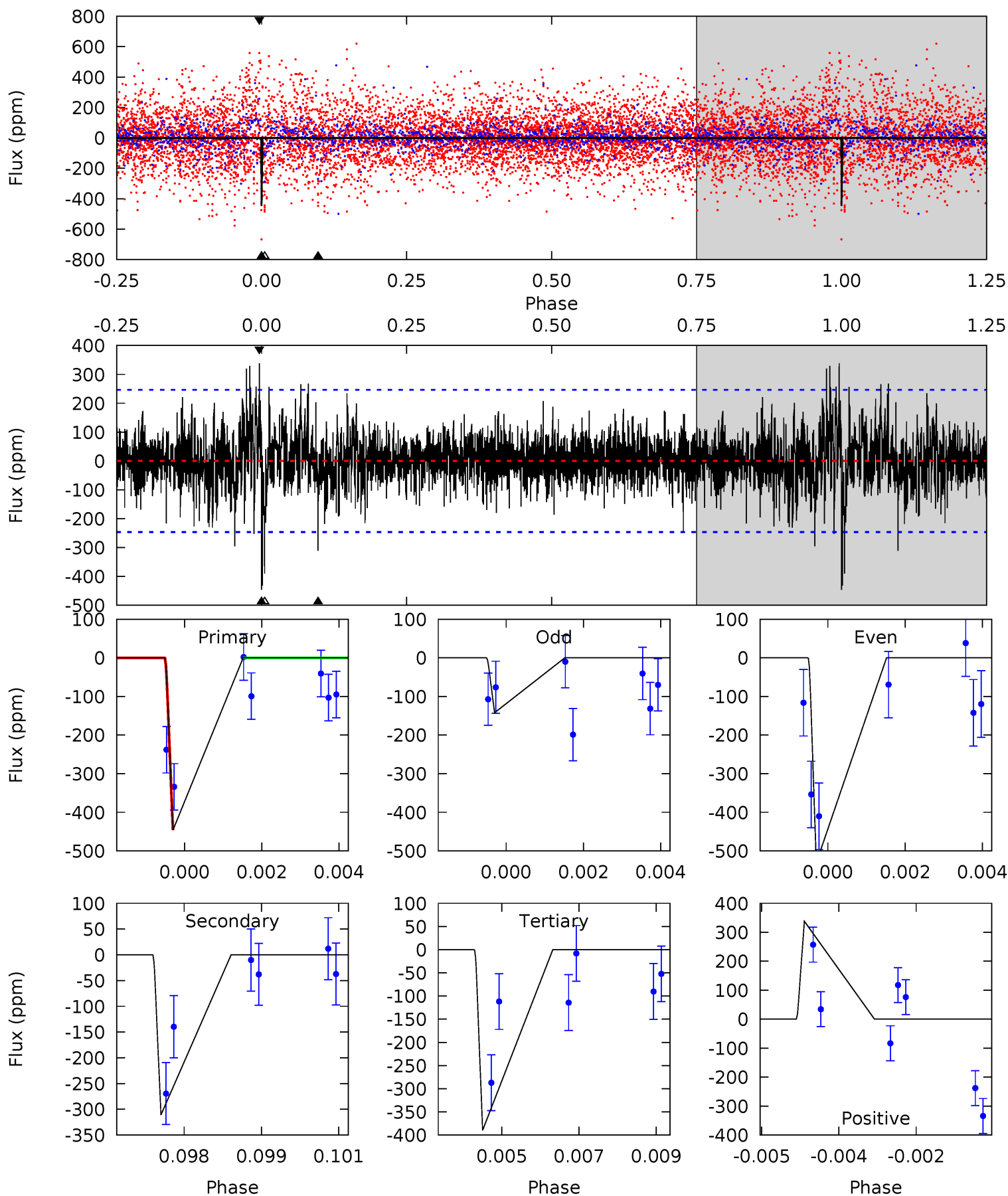
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.85 | 6.97 | 5.39 | 4.42 | 5.34 | 3.10 | 1.56 | 4.46 | 5.43 | 1.58 | 2.55 | 1.35 | 0.96 | 0.36 | 0.46 |



Alt Model-Shift Uniqueness Test

007820985-03, P = 403.331230 Days, E = 390.039866 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 9.68 | 6.75 | 8.46 | 7.34 | 5.35 | 3.13 | 1.50 | 1.22 | 2.34 | -1.71 | -0.59 | 4.00 | 0 | 0.43 | 0 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|----------------------|------------------------|
| DV | -282 ± 40 | $7.52^{+1.99}_{-1.94}$ | 666^{+38}_{-58} | 5961^{+831}_{-533} | 4635^{+3857}_{-1766} |
| Alt. | -311 ± 46 | $9.05^{+1.90}_{-2.02}$ | 666^{+38}_{-55} | 5632^{+598}_{-440} | 3532^{+2324}_{-1192} |

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 $A_{obs} \gg 1.0$

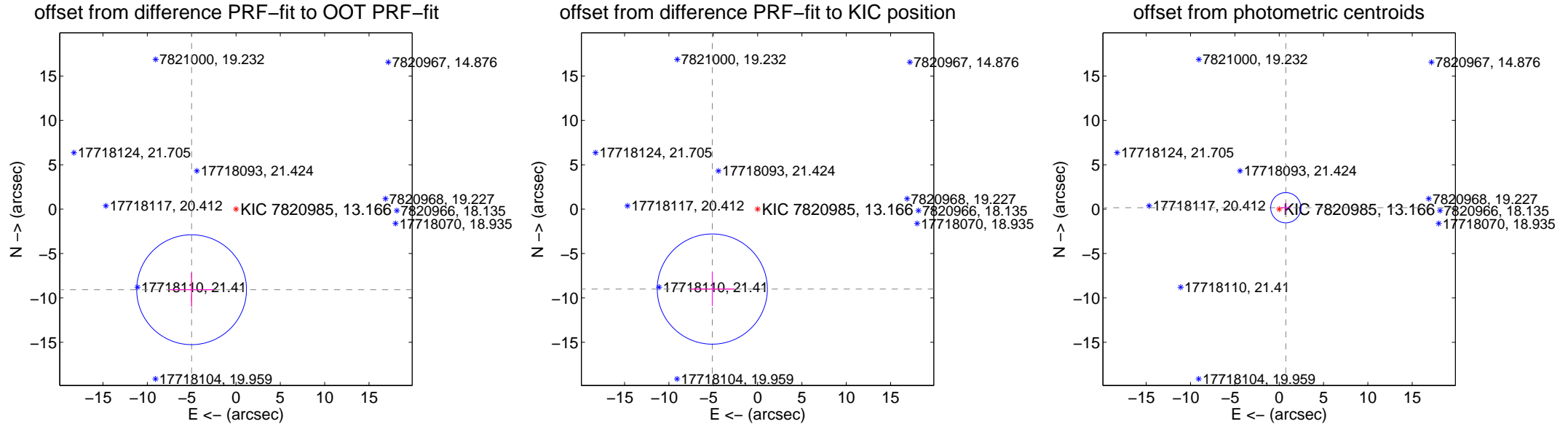
DV Centroid Data

Supplemental centroid analysis for 007820985-03. Kepler magnitude: 13.17. Transit SNR 9.57

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 10.365 ± 2.063 | 5.02 | 5.006 ± 2.512 | -9.076 ± 1.906 |
| PRF-fit source offset from KIC position | 10.351 ± 2.070 | 5.00 | 5.107 ± 2.512 | -9.004 ± 1.906 |
| photometric centroid source offset | 0.76 ± 0.57 | 1.34 | -0.75 ± 0.57 | 0.16 ± 0.60 |



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.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



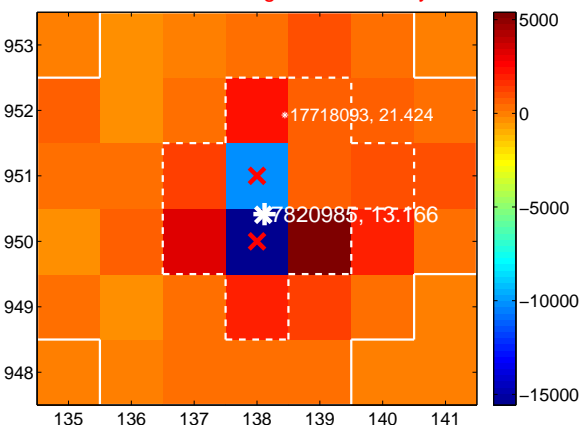
Q3 no difference image



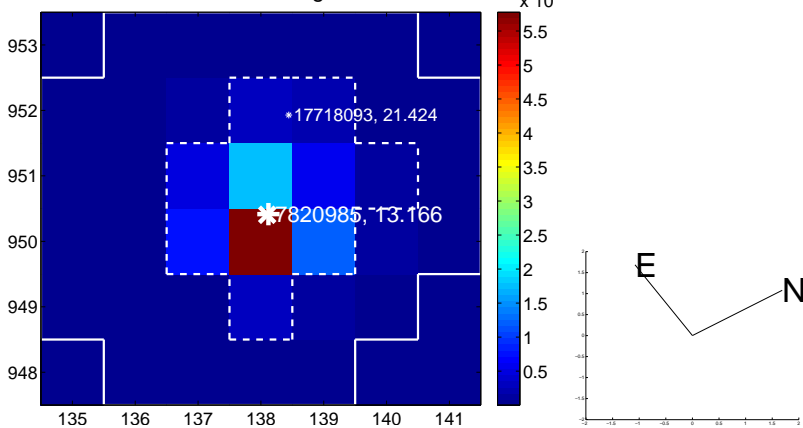
Q3 no OOT image



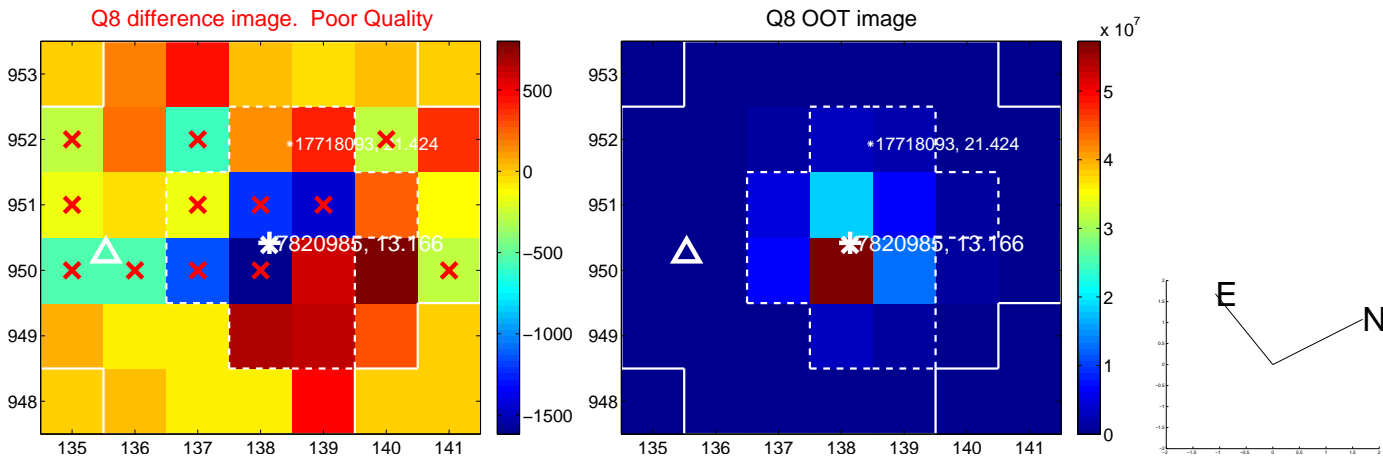
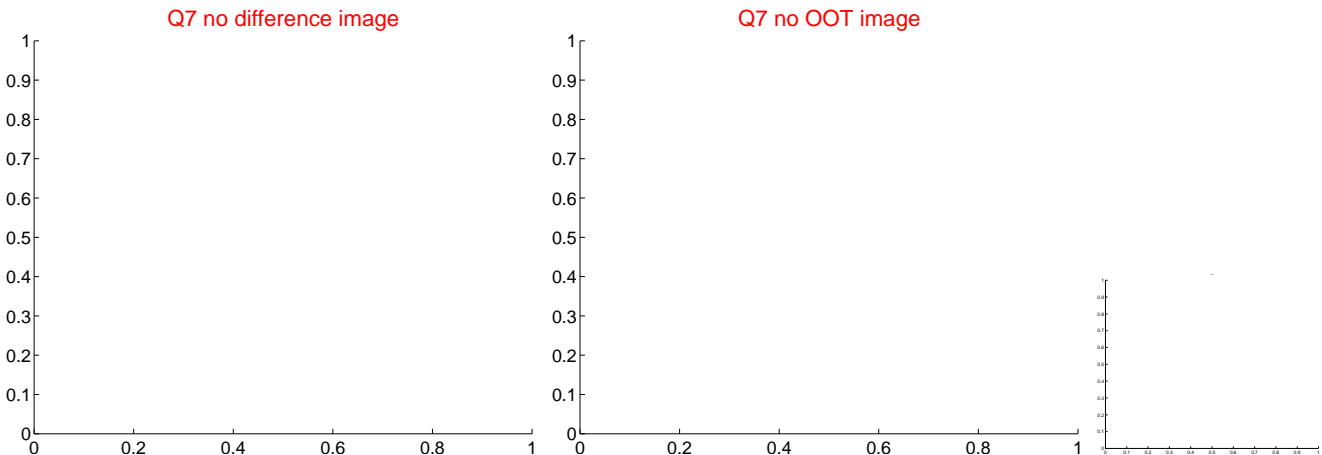
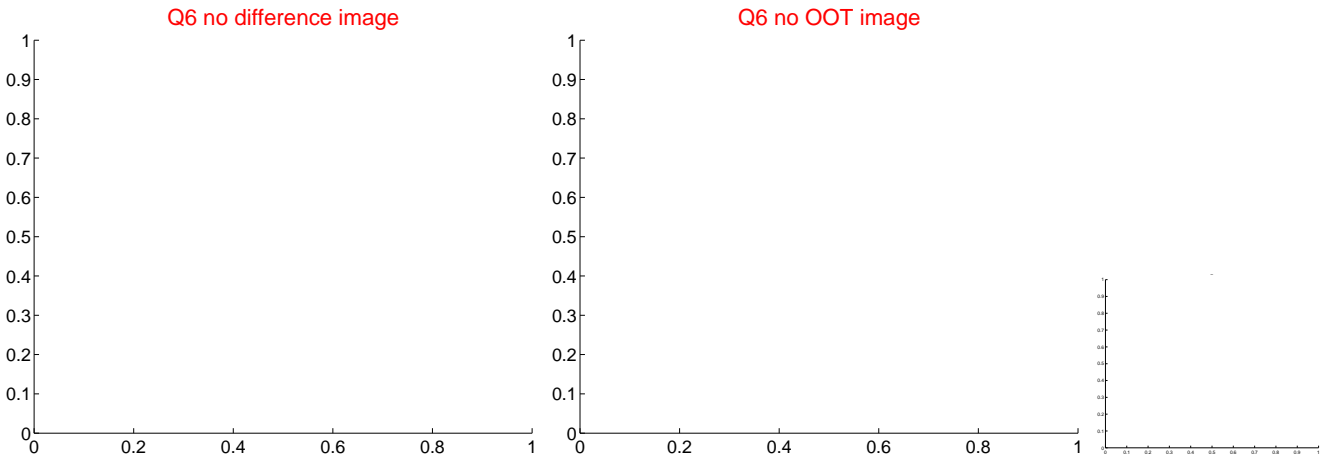
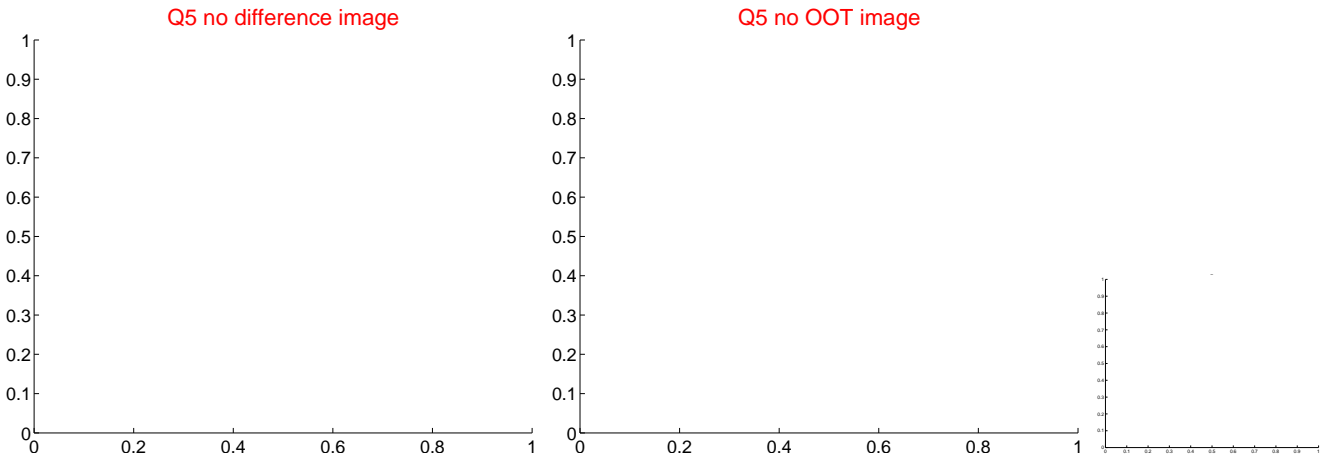
Q4 difference image. Poor Quality



Q4 OOT image



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



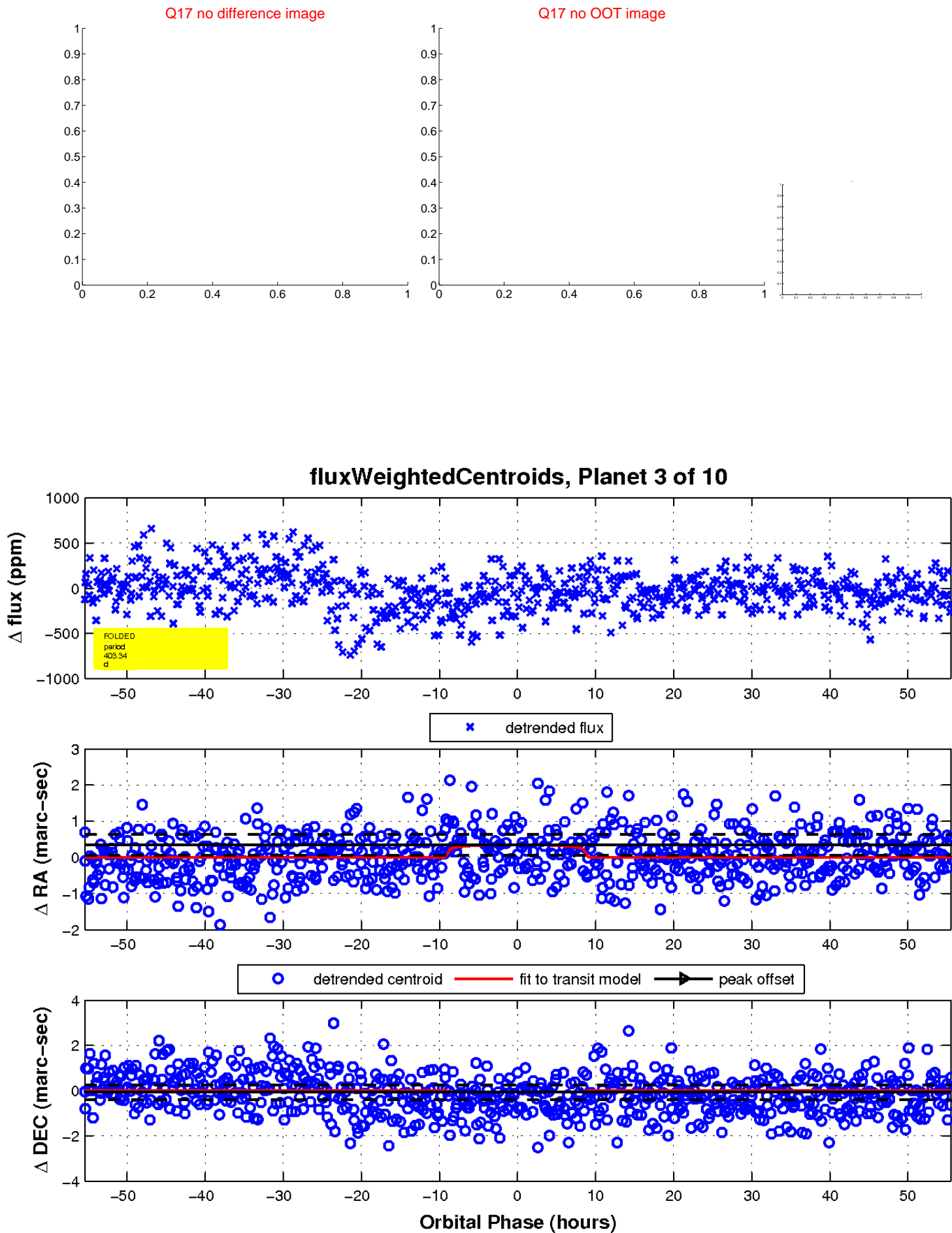
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

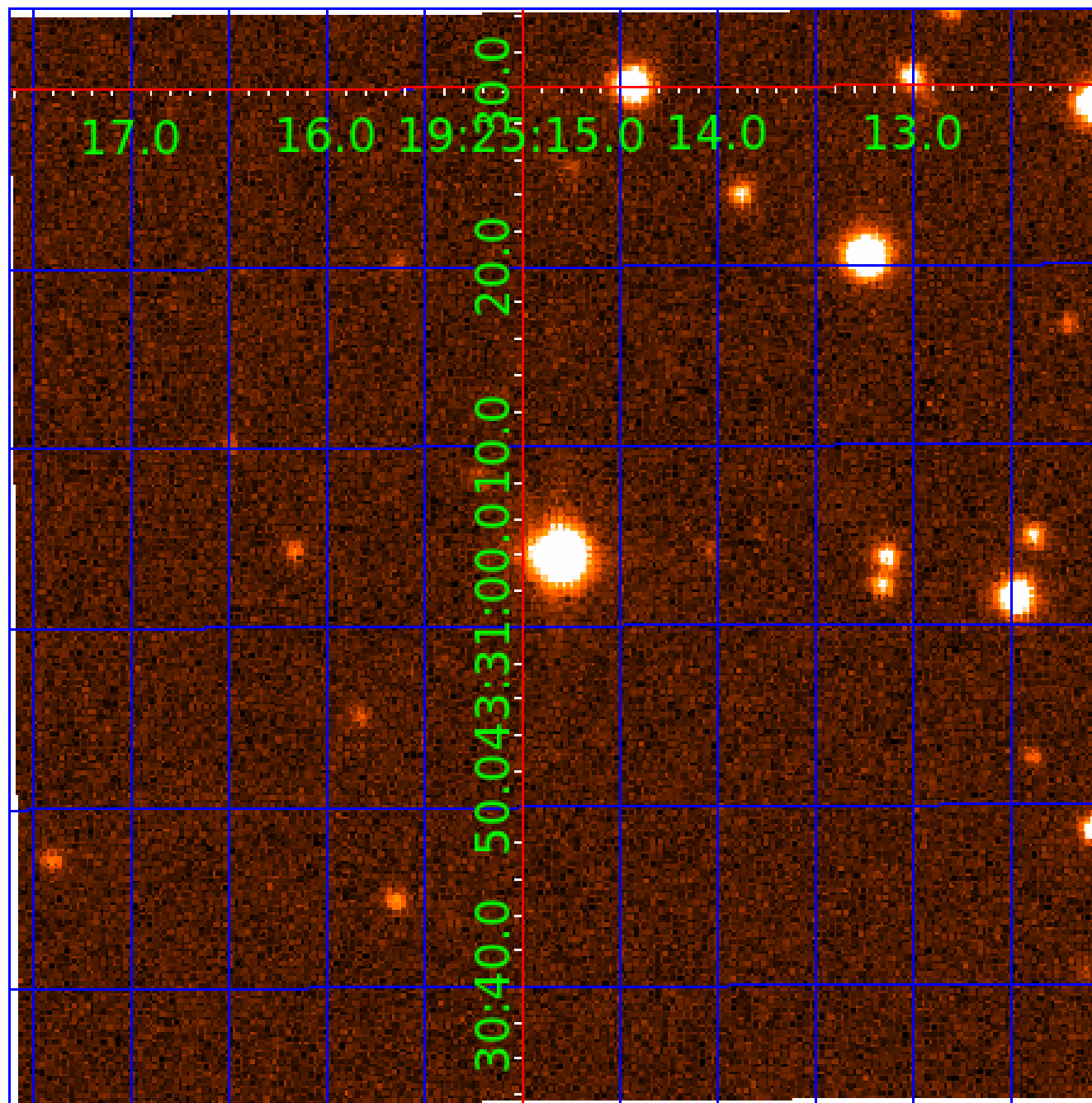


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

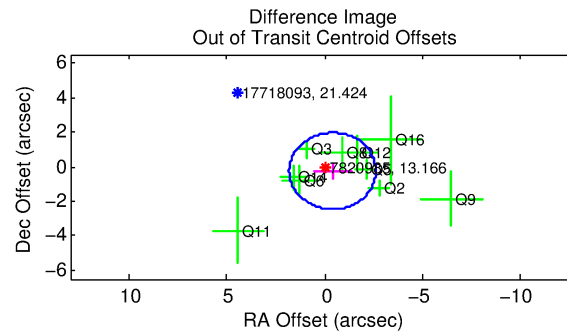
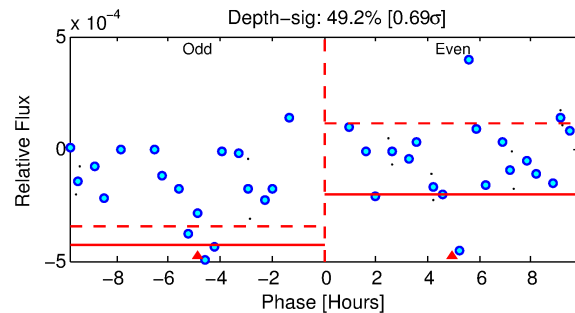
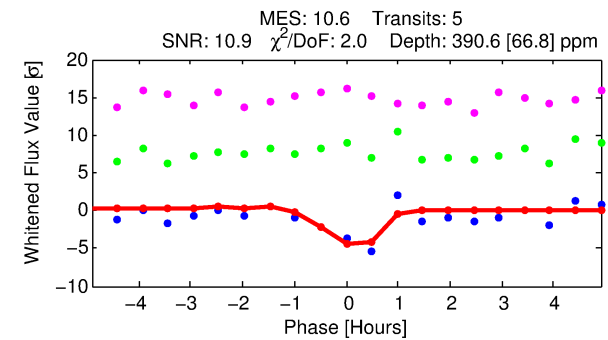
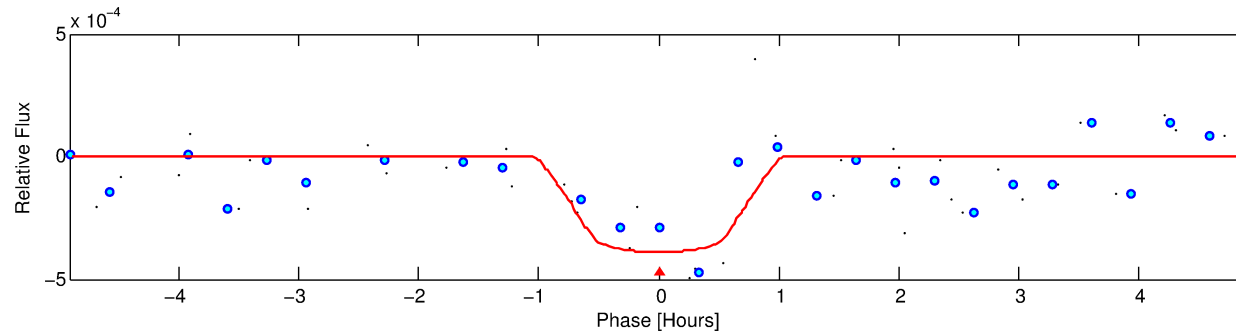
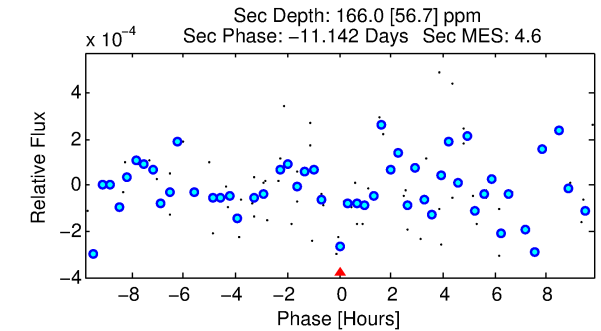
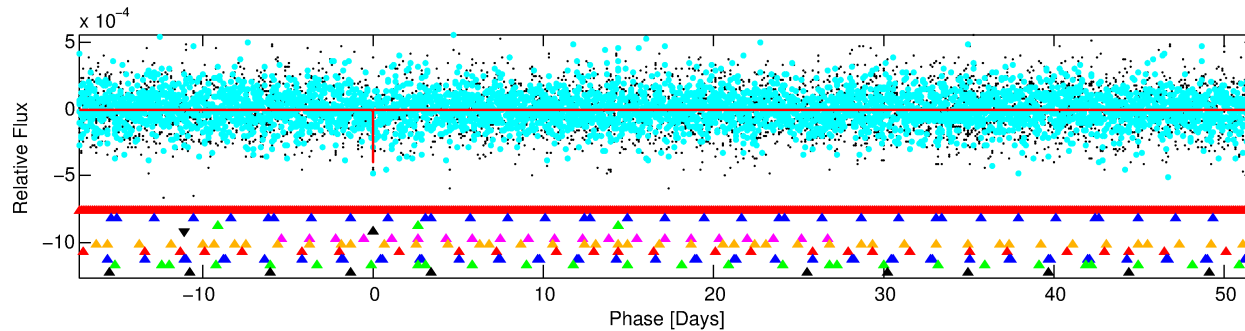
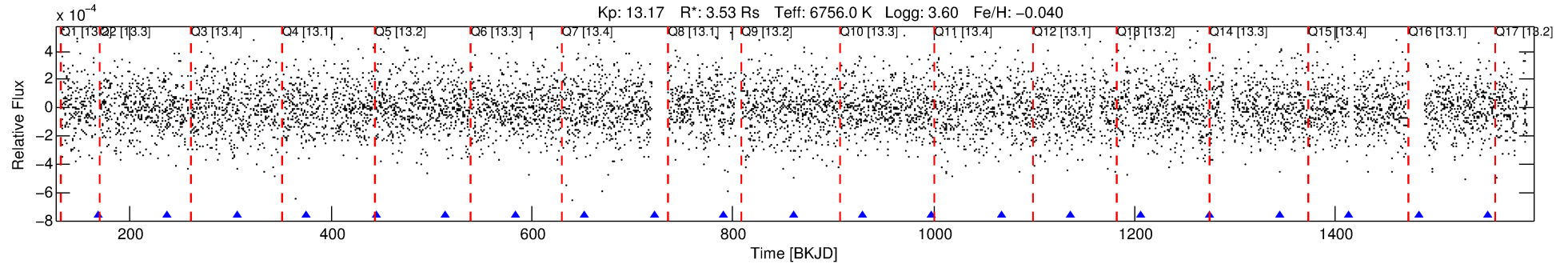
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-04

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 4 of 10 Period: 69.179 d



DV Fit Results:

Period = 69.17942 [0.00059] d
Epoch = 168.3080 [0.0068] BKJD
Rp/R* = 0.0196 [0.0205]
a/R* = 230.98 [1347.88]
b = 0.73 [3.81]
Seff = 144.83 [81.31]
Teff = 885 [124] K
Rp = 7.54 [8.30] Re
a = 0.4007 [0.1361] AU
Ag = 257.71 [563.42] [0.46 σ]
Teffp = 5480 [2904] K [1.58 σ]

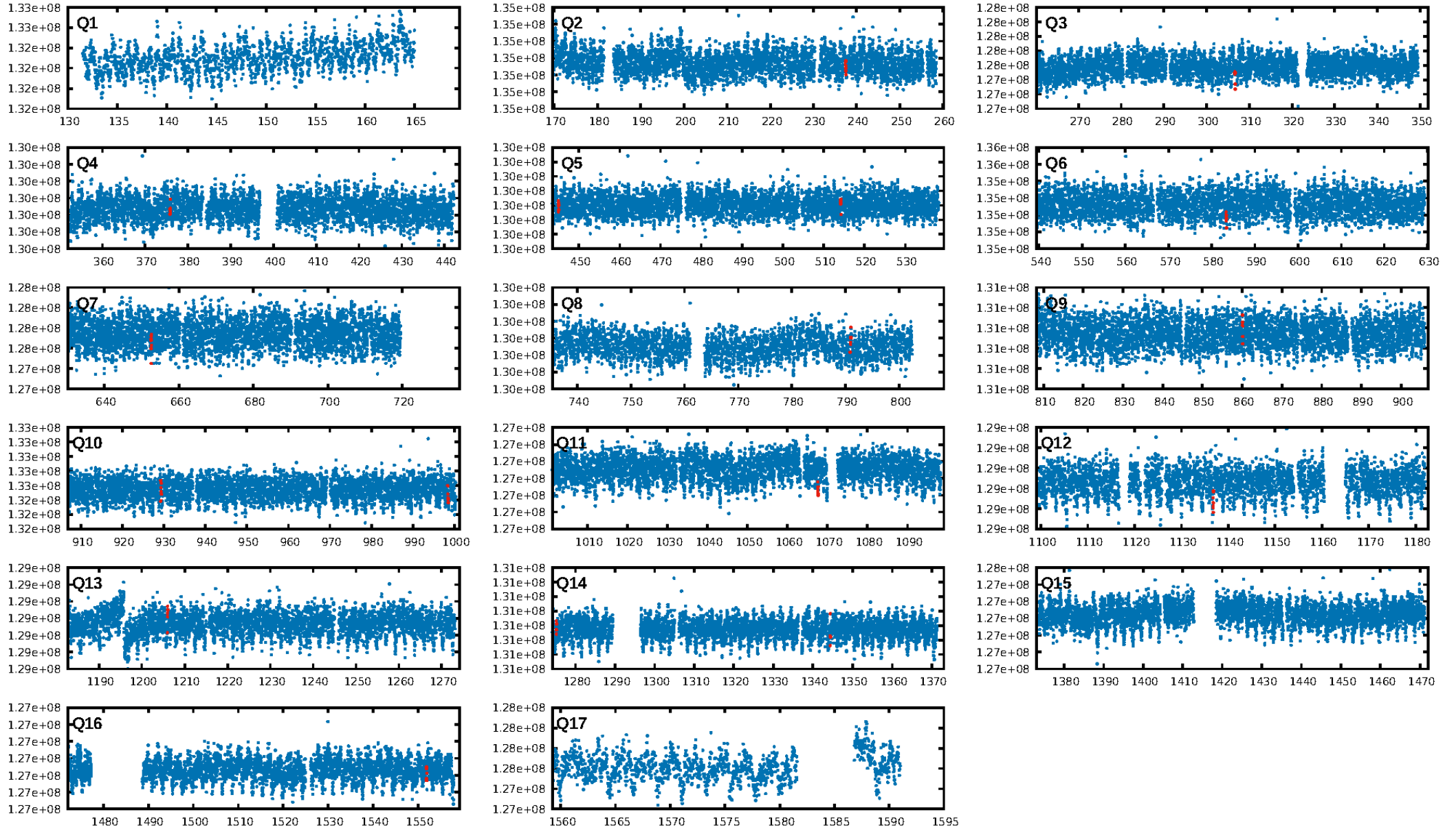
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [120.22 σ]
LongPeriod-sig: 100.0% [15.15 σ]
ModelChiSquare2-sig: 58.8%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -10.4
Centroid-sig: 0.4%
Centroid-so: 1.444 arcsec [1.93 σ]
OotOffset-rm: 0.467 arcsec [0.63 σ]
KicOffset-rm: 0.414 arcsec [0.49 σ]
OotOffset-st: 3/2/3/2 [10]
KicOffset-st: 3/2/3/2 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 0.15 [2/13]

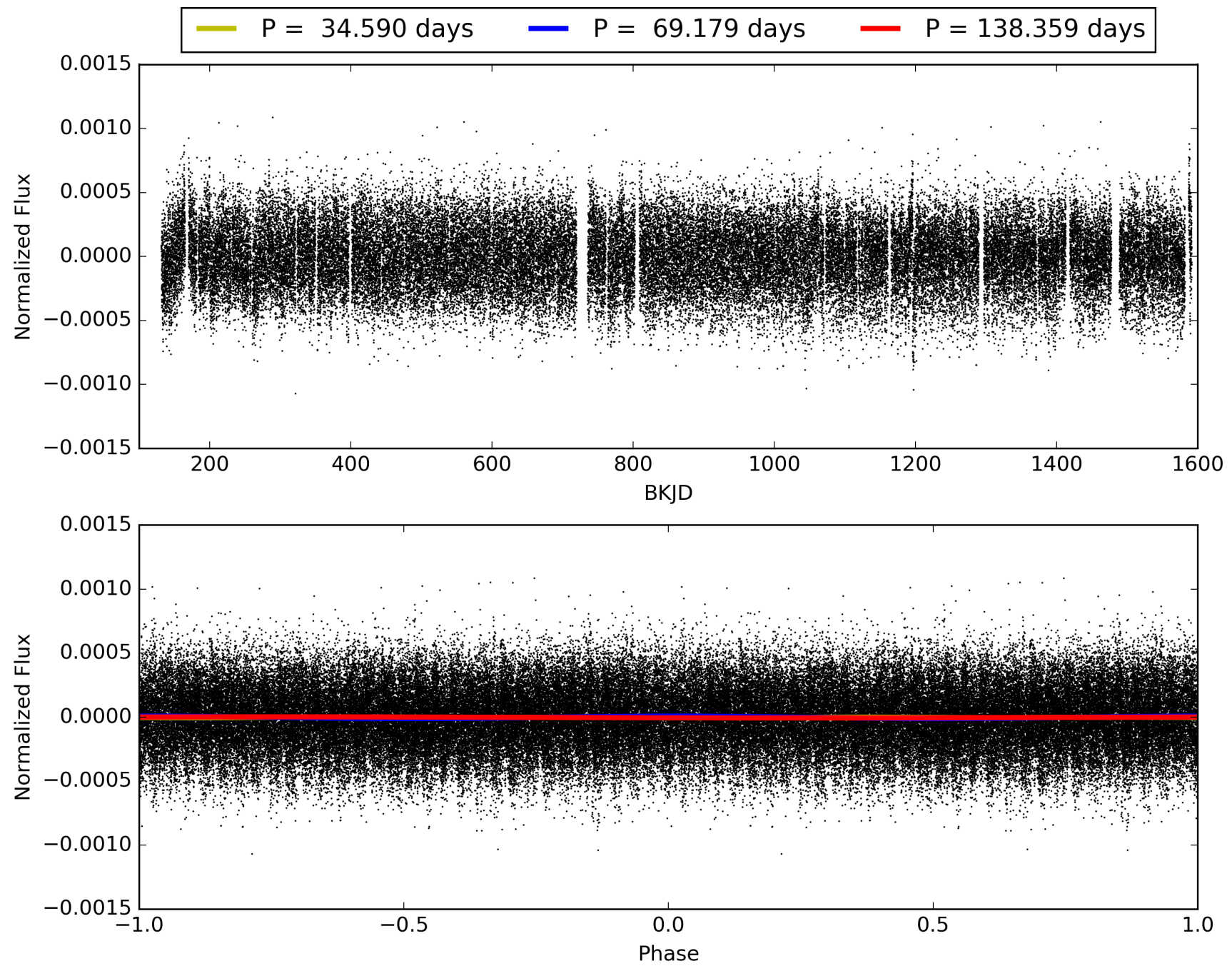
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:45 Z

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

TCE 007820985-04, PDC Light Curves

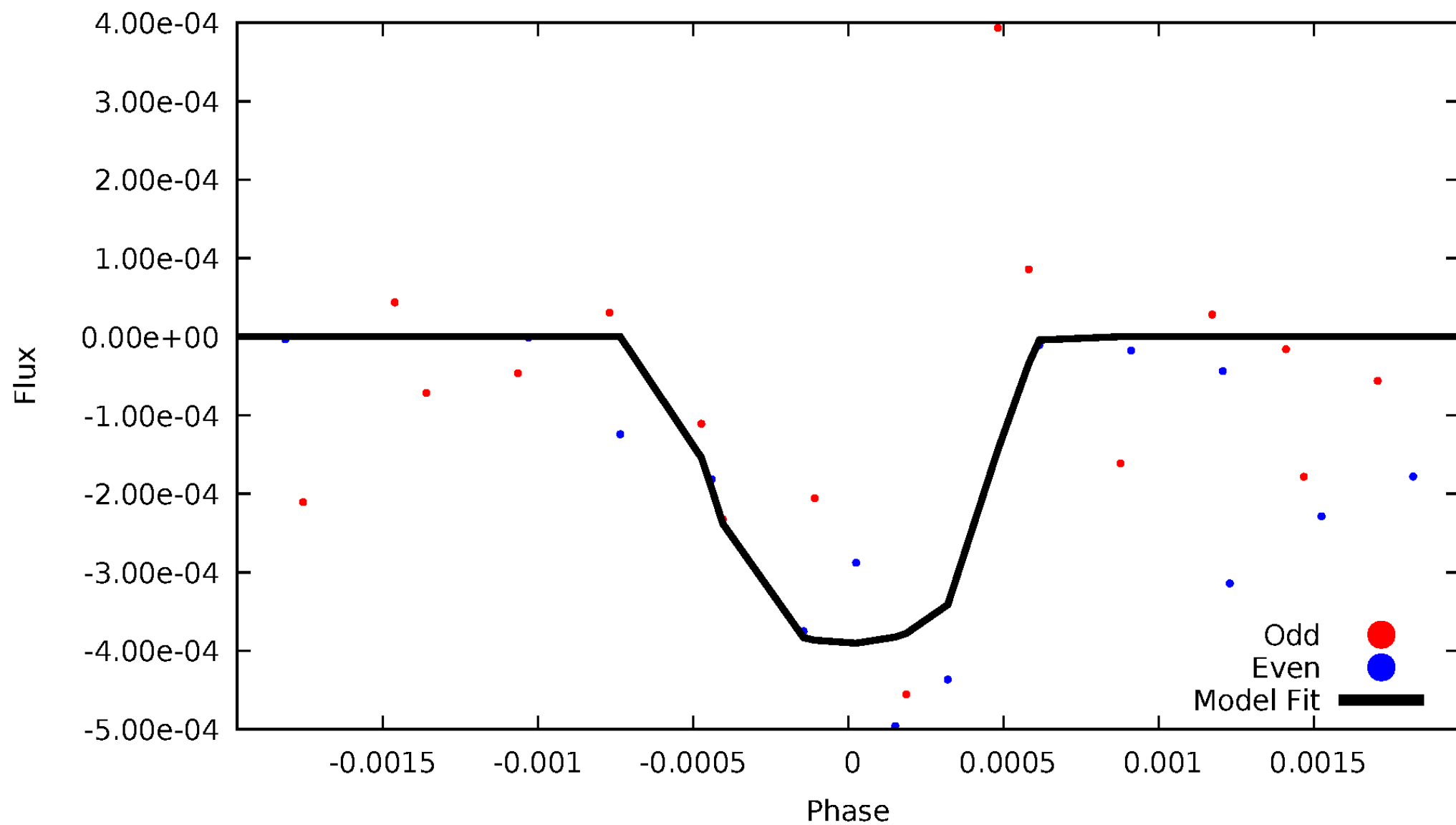


TCE 007820985-04



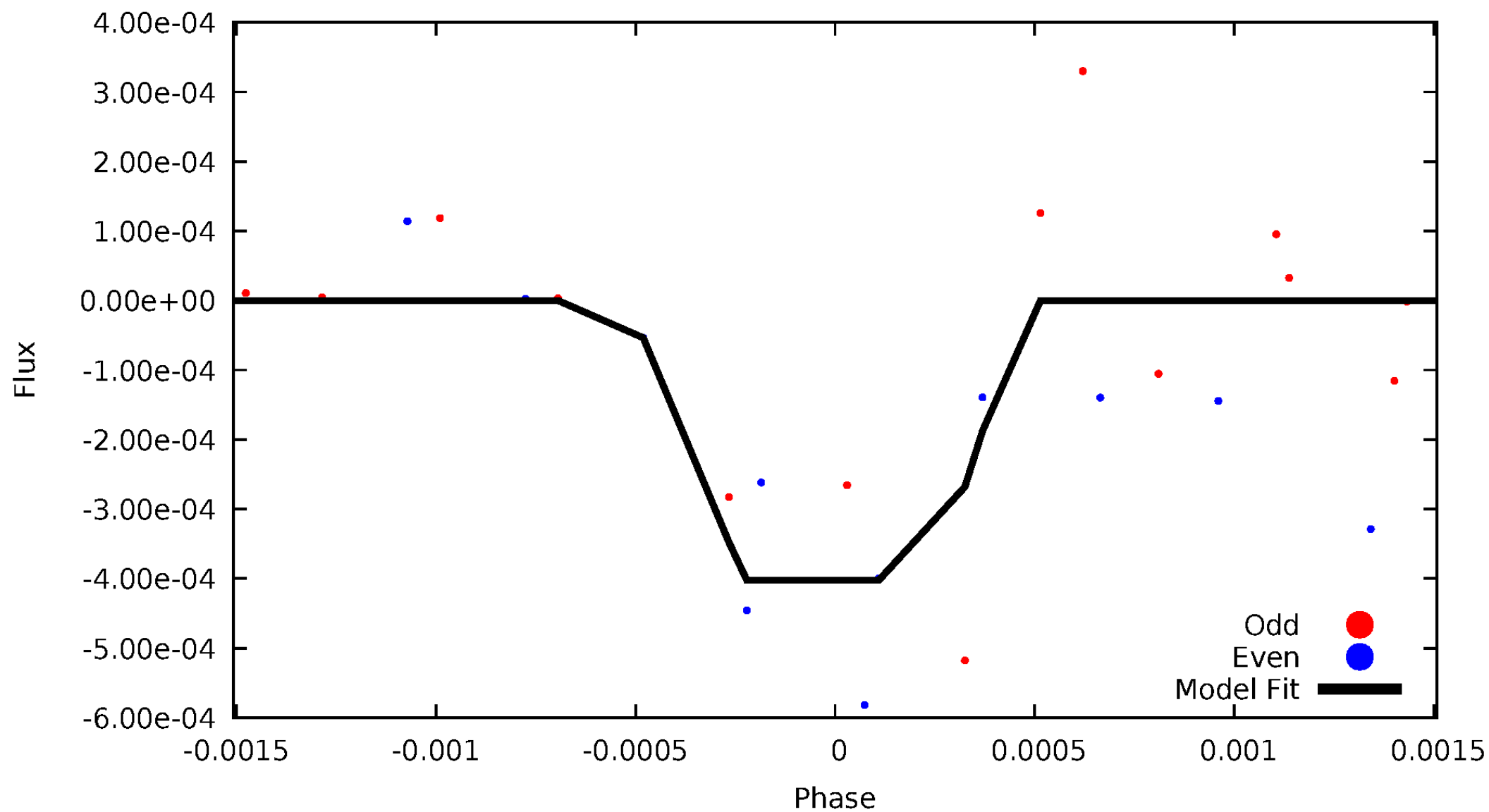
DV Odd/Even

TCE 007820985-04



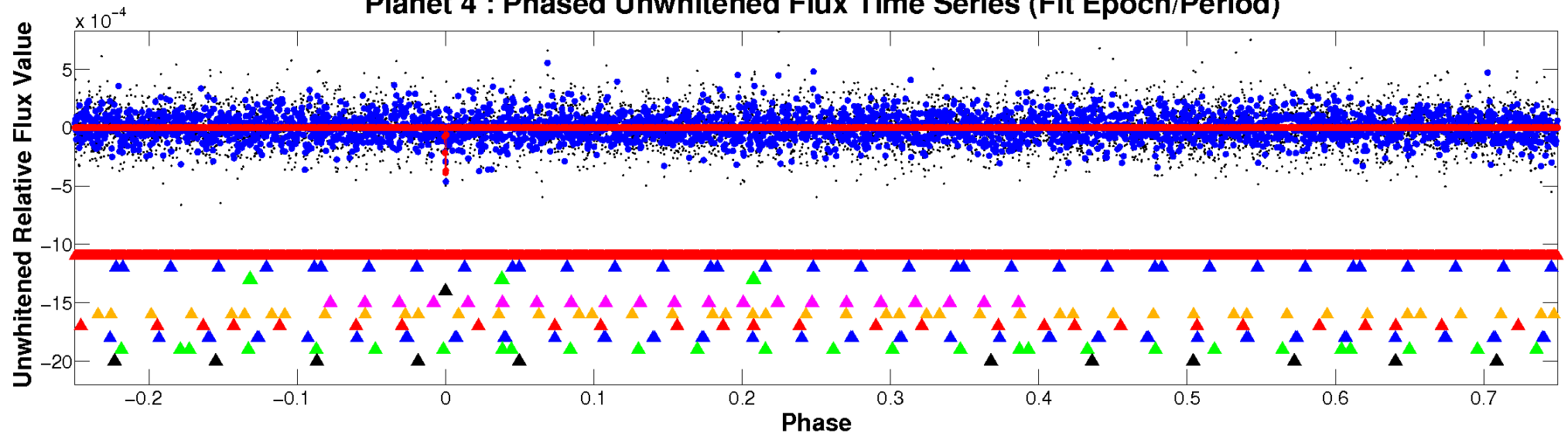
ALT Odd/Even

TCE 007820985-04

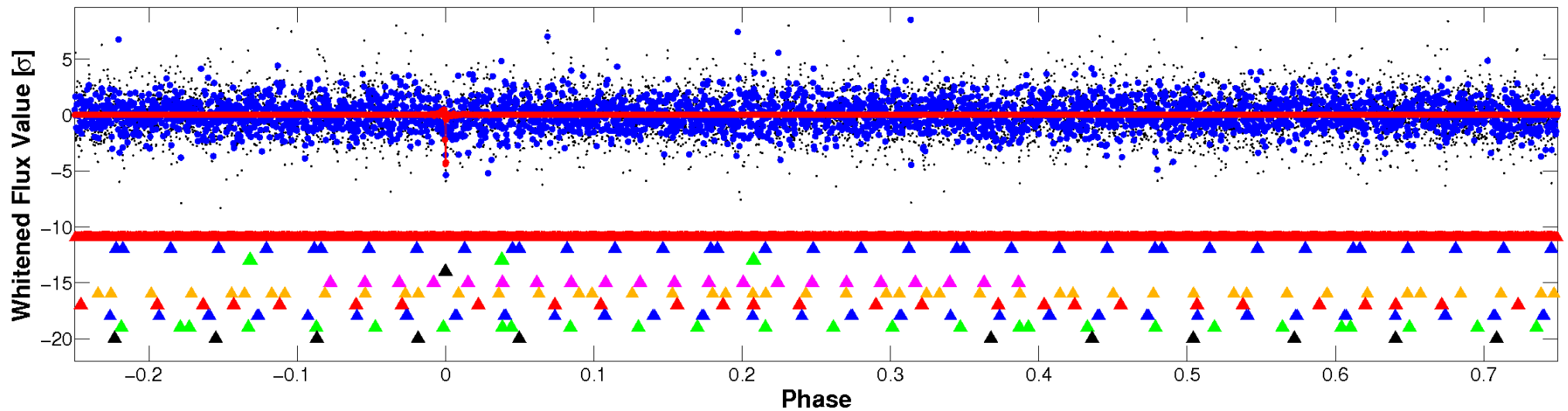


Non-Whitened Vs. Whitened Light Curve

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

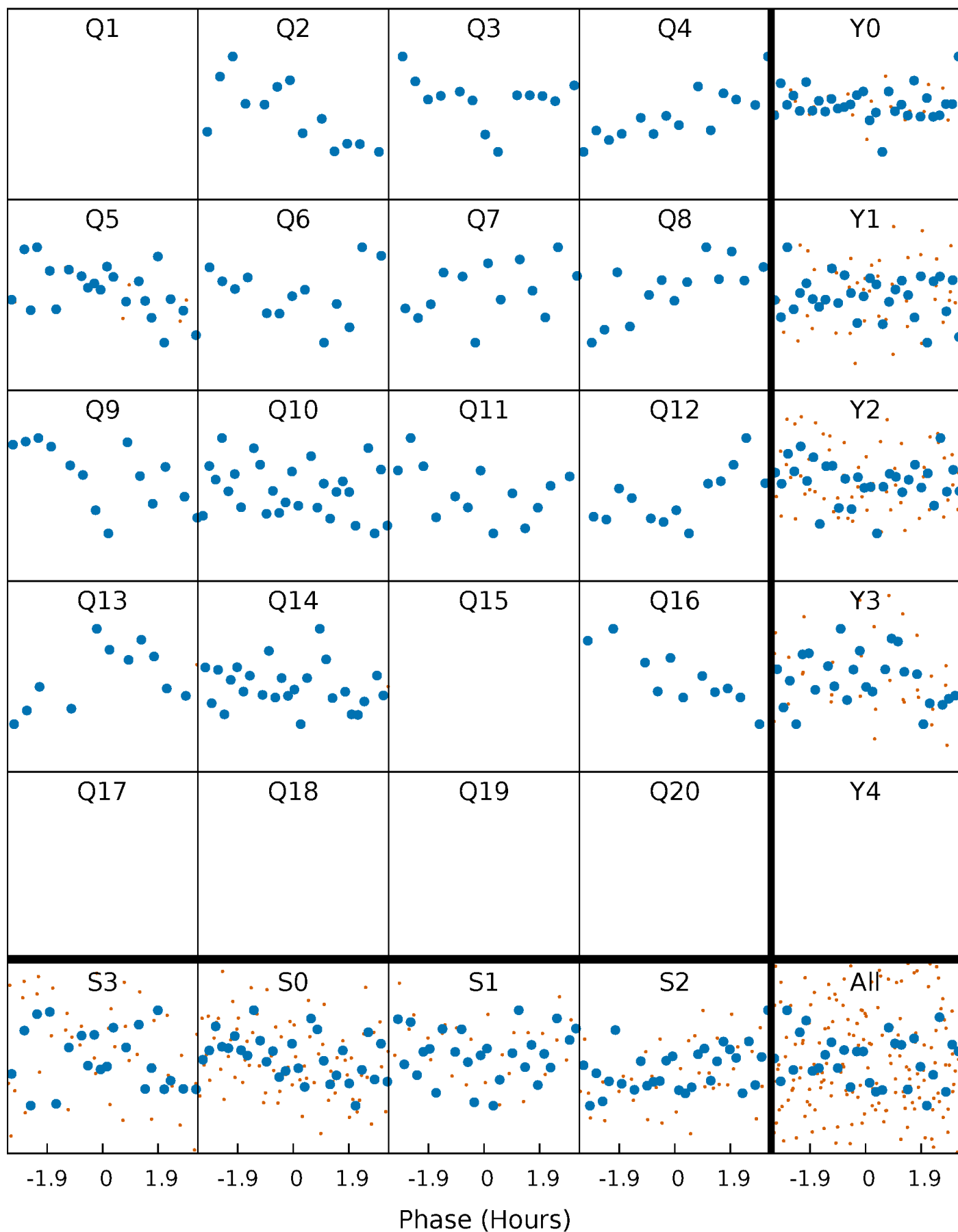


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



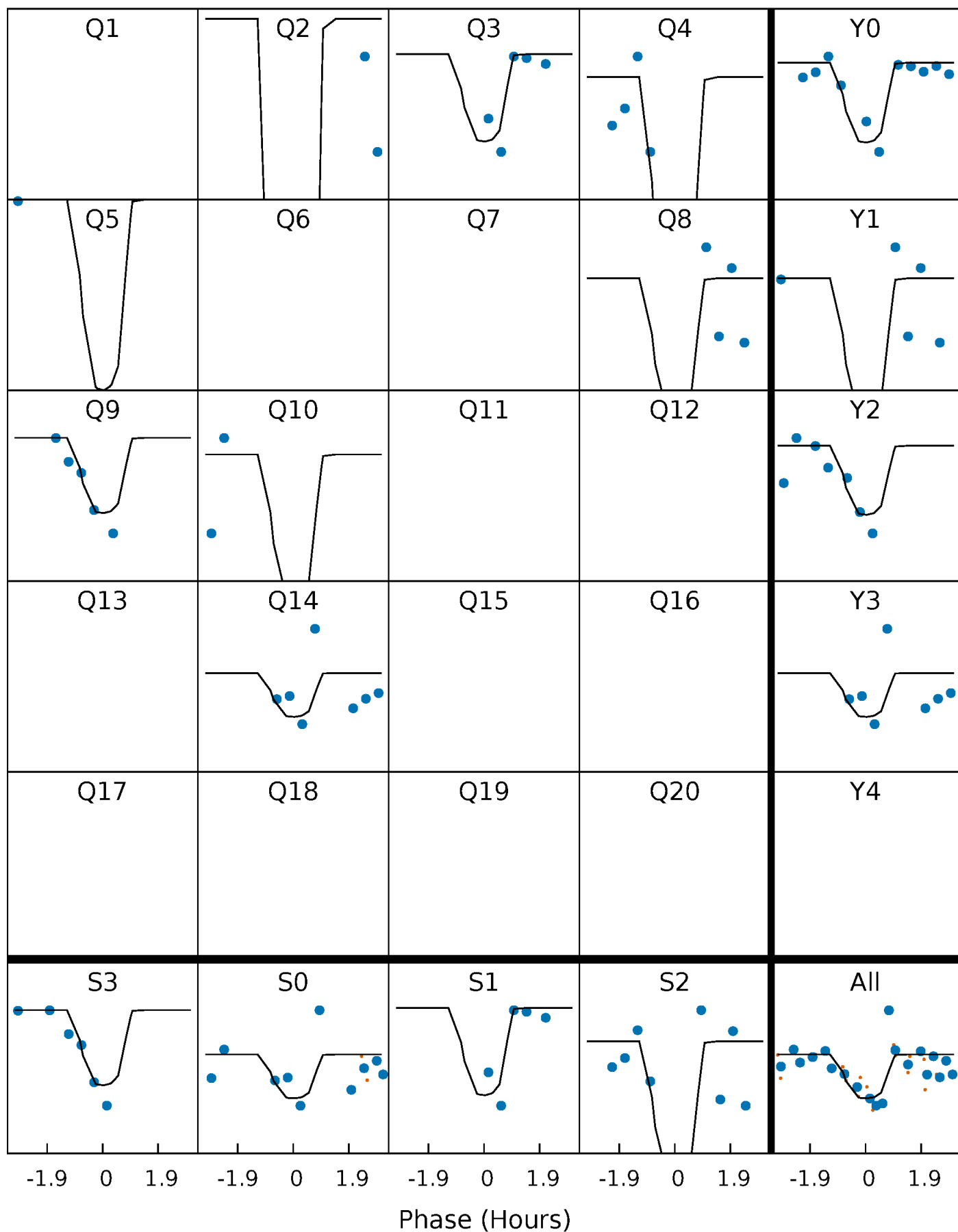
PDC Quarter-Phased Transit Curves

TCE 007820985-04 P= 69.179417 Days $T_0=168.307978$ (BKJD)



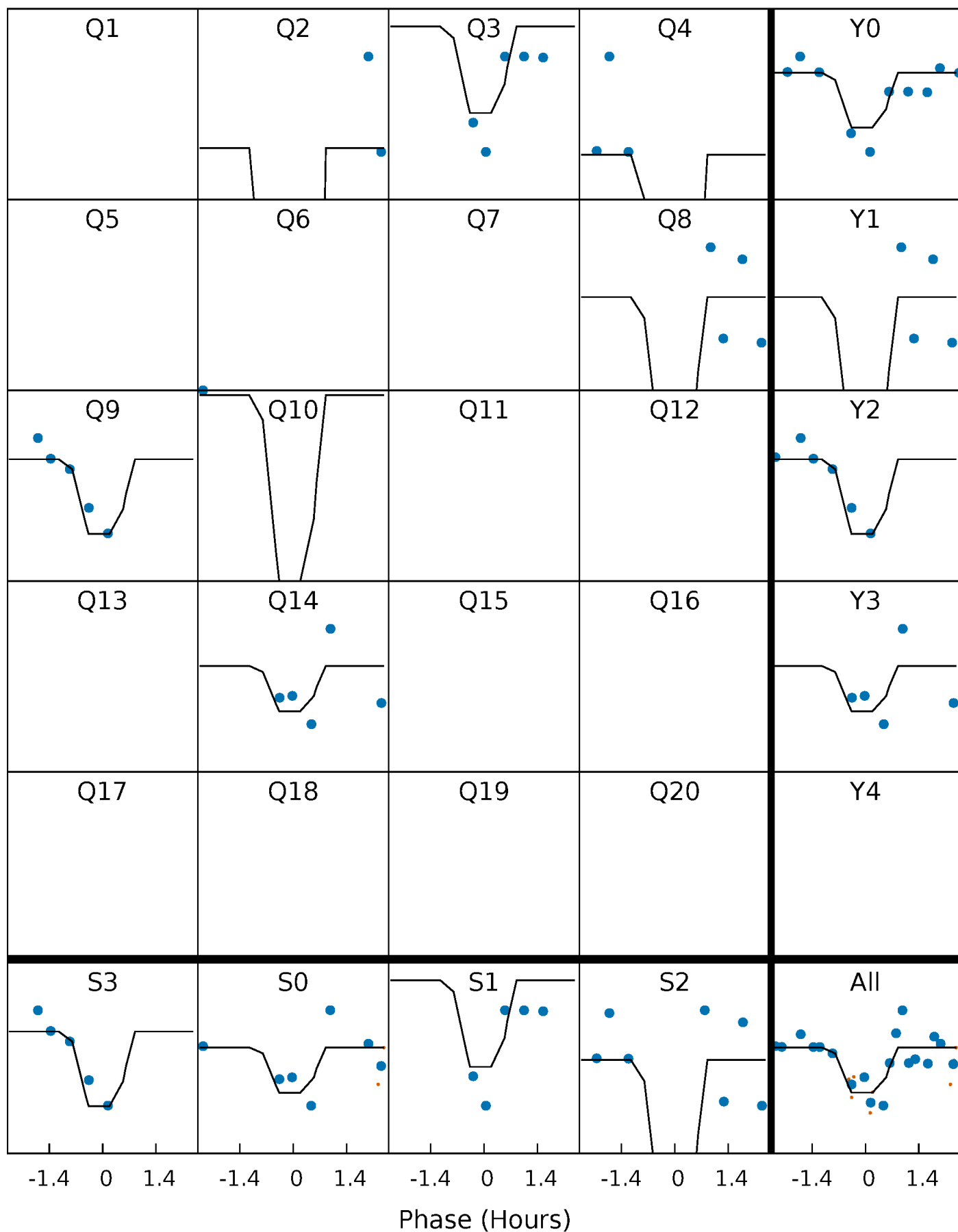
DV Quarter-Phased Transit Curves

TCE 007820985-04 P= 69.179417 Days $T_0=168.307978$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

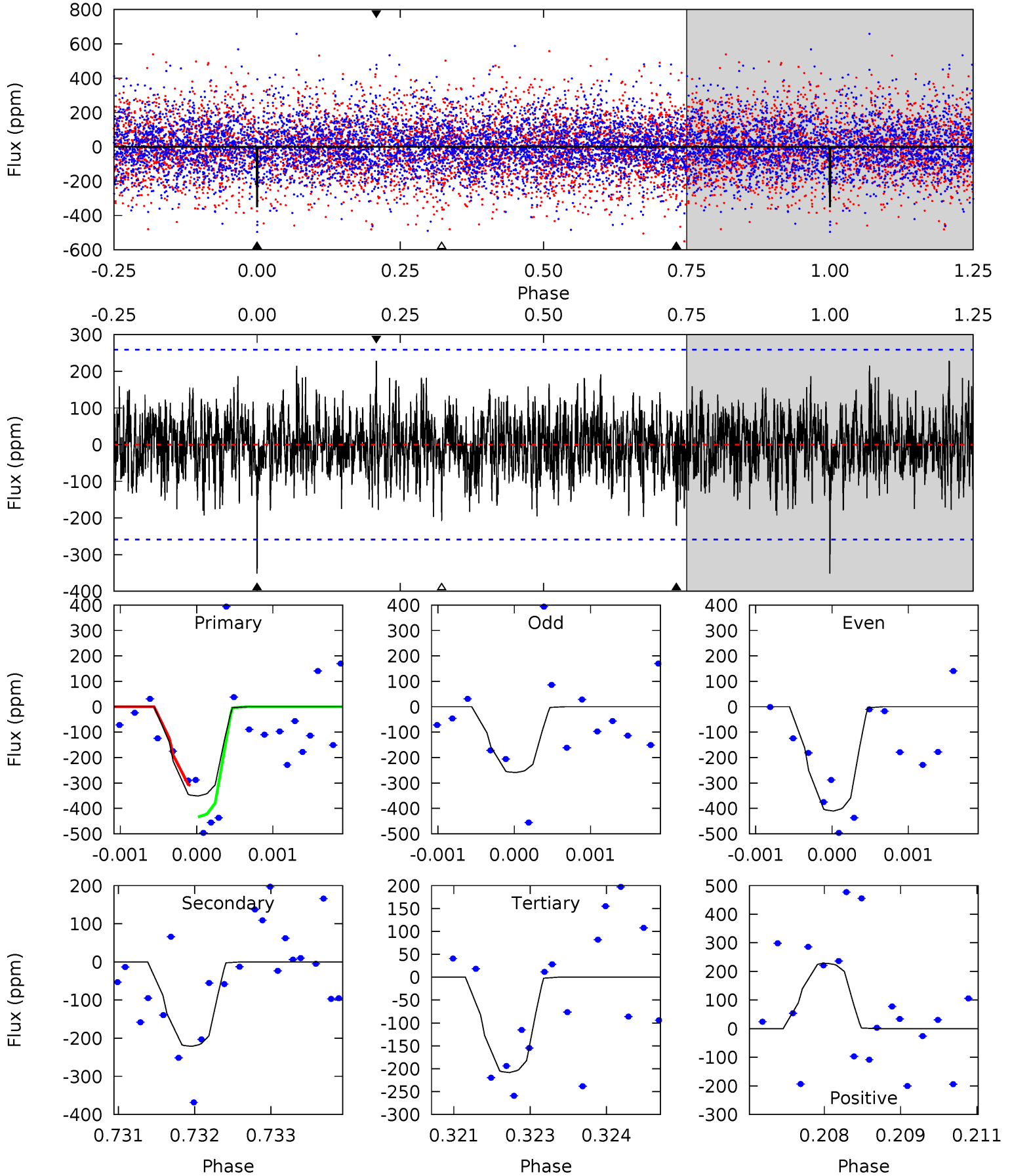
TCE 007820985-04 P= 69.177637 Days $T_0=168.328629$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-04, P = 69.179417 Days, E = 99.128561 Days

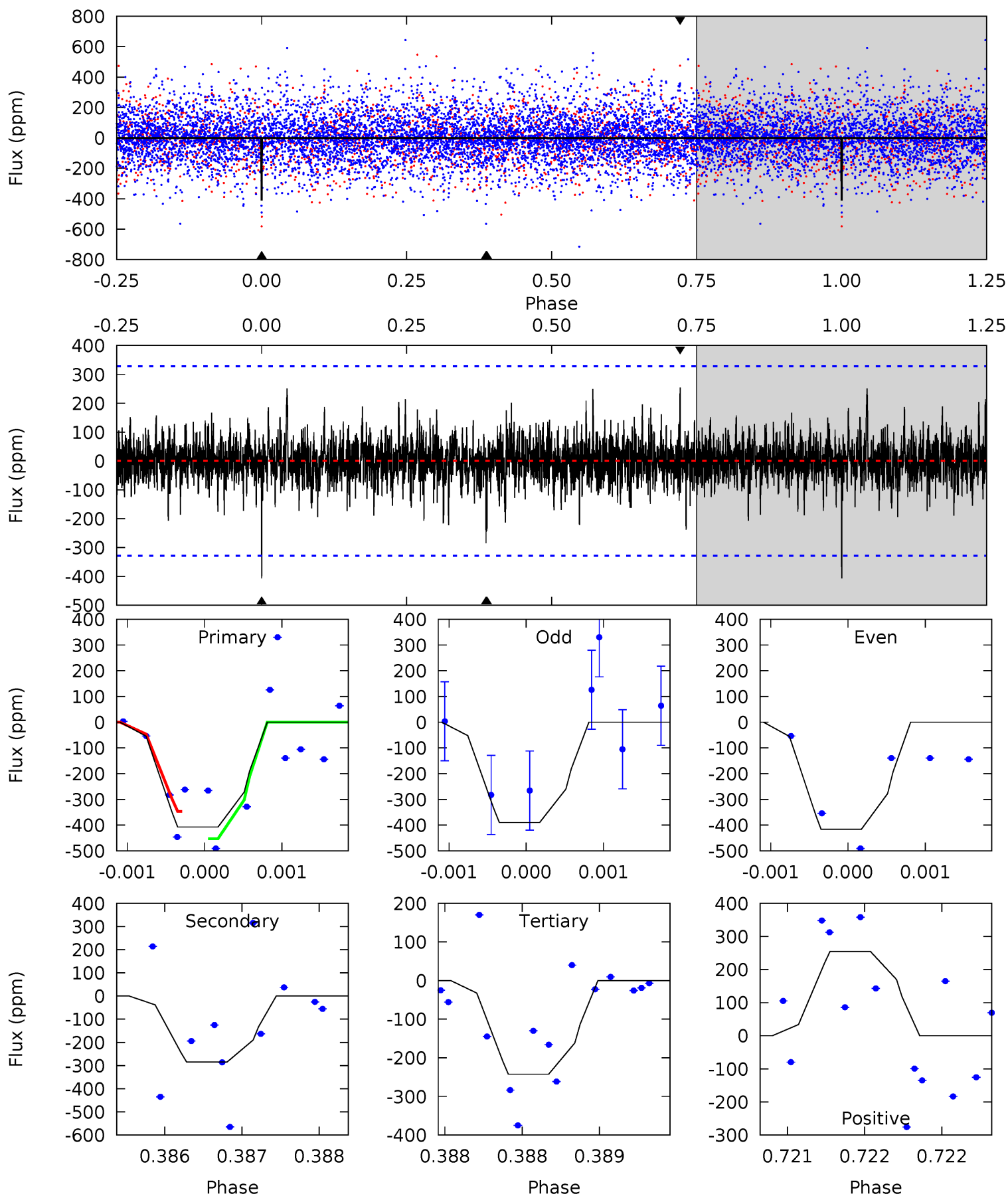
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.33 | 4.62 | 4.35 | 4.77 | 5.40 | 3.21 | 1.36 | 2.98 | 2.56 | 0.27 | -0.15 | 1.64 | 0.95 | 0.39 | 1.16 |



Alt Model-Shift Uniqueness Test

007820985-04, P = 69.177637 Days, E = 99.150992 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.86 | 4.80 | 4.08 | 4.29 | 5.53 | 3.42 | 0.99 | 2.77 | 2.57 | 0.72 | 0.51 | 0.21 | 1.04 | 0.38 | 0.85 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|----------------------|
| DV | -221 ± 48 | $7.90^{+7.11}_{-5.02}$ | 1202^{+64}_{-115} | 5438^{+4016}_{-1192} | 305^{+2032}_{-223} |
| Alt. | -285 ± 59 | $8.80^{+6.99}_{-5.57}$ | 1198^{+68}_{-98} | 5554^{+4335}_{-1215} | 331^{+2116}_{-237} |

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

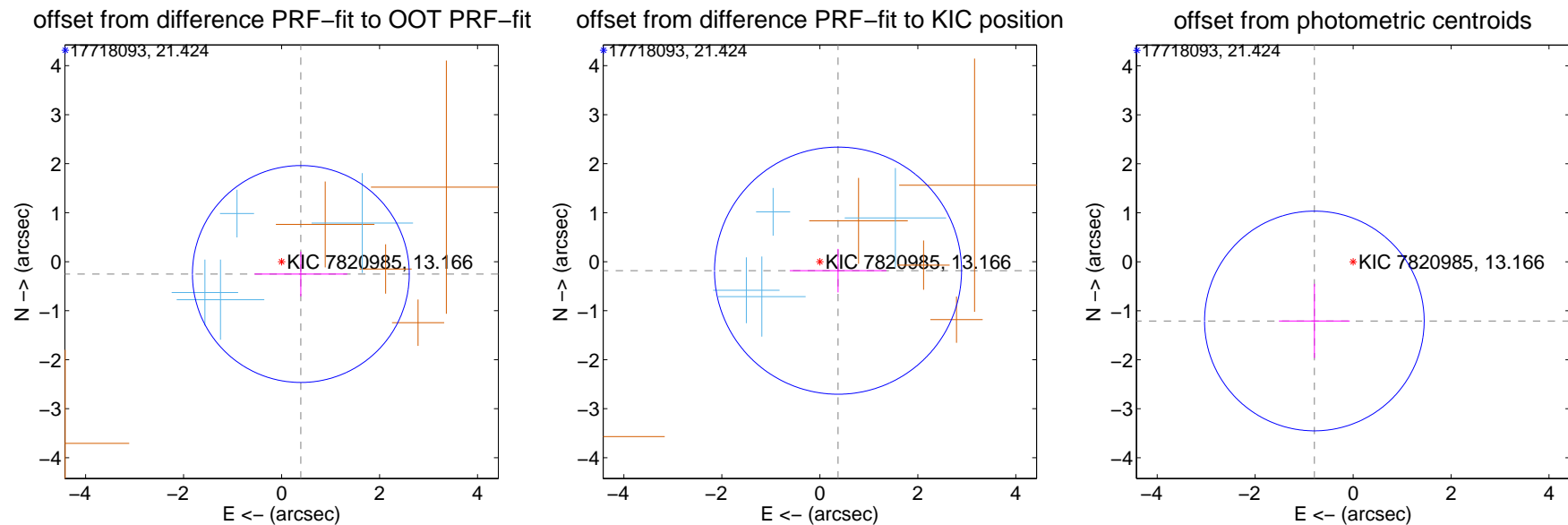
DV Centroid Data

Supplemental centroid analysis for 007820985-04. Kepler magnitude: 13.17. Transit SNR 10.86

There are 4 quarters with good PRF difference image offsets

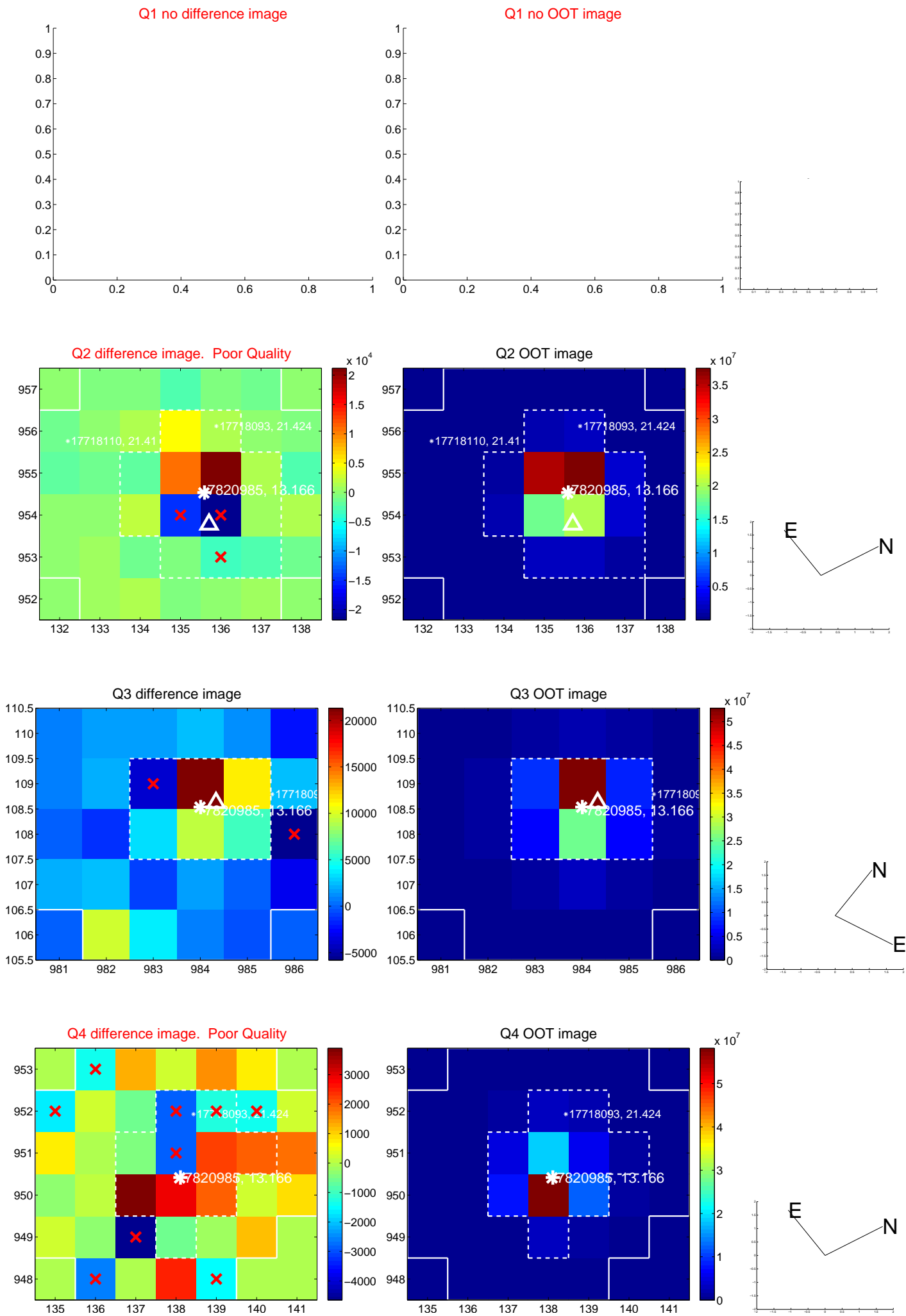
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.467 ± 0.738 | 0.63 | -0.393 ± 0.948 | -0.251 ± 0.455 |
| PRF-fit source offset from KIC position | 0.414 ± 0.840 | 0.49 | -0.372 ± 0.986 | -0.183 ± 0.443 |
| photometric centroid source offset | 1.44 ± 0.75 | 1.93 | 0.79 ± 0.72 | -1.21 ± 0.76 |

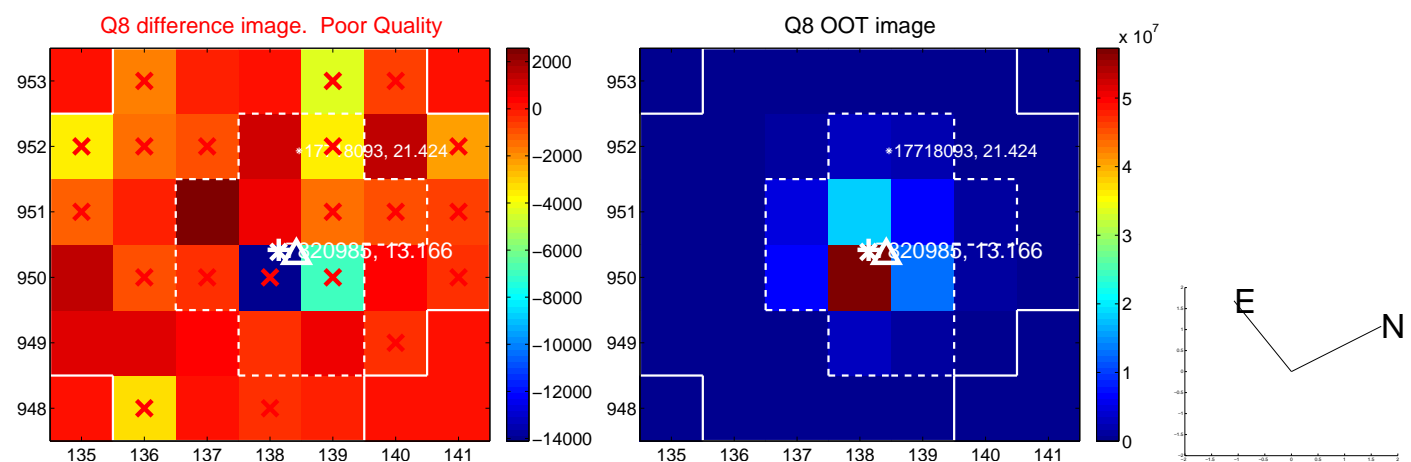
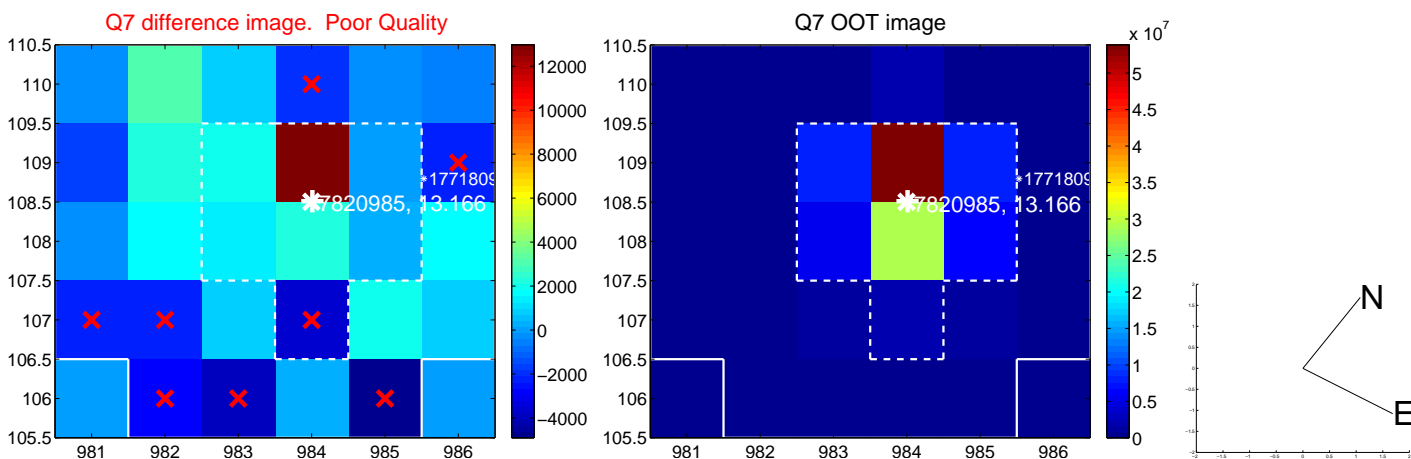
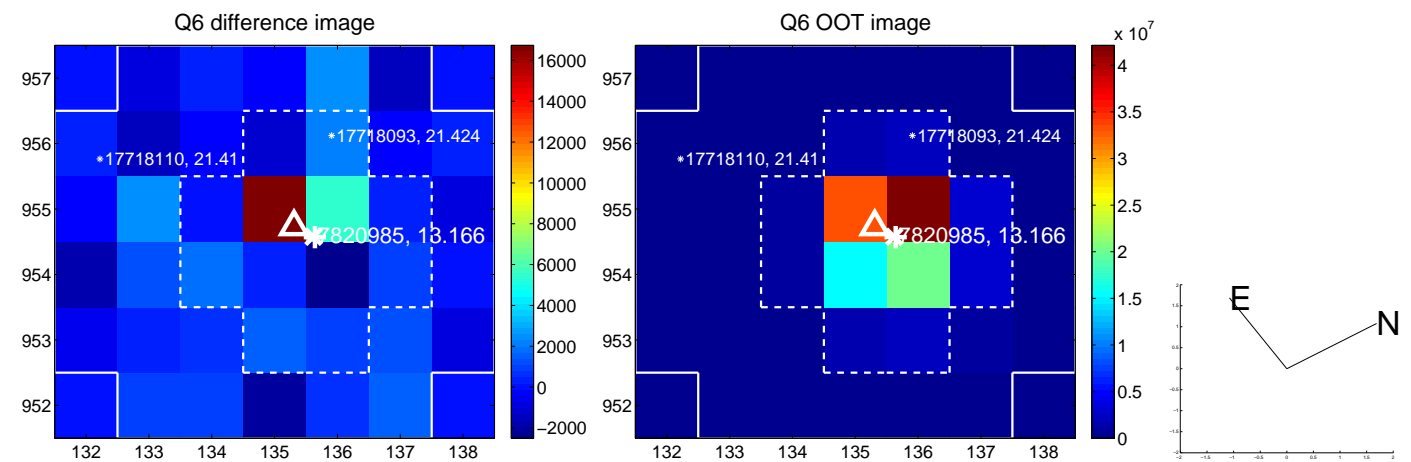
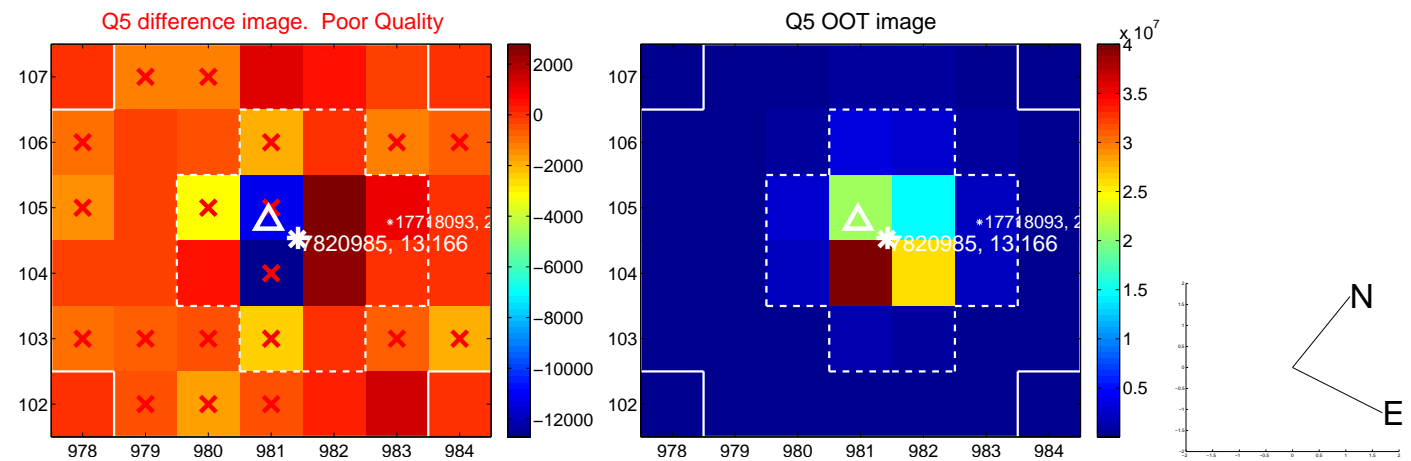


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

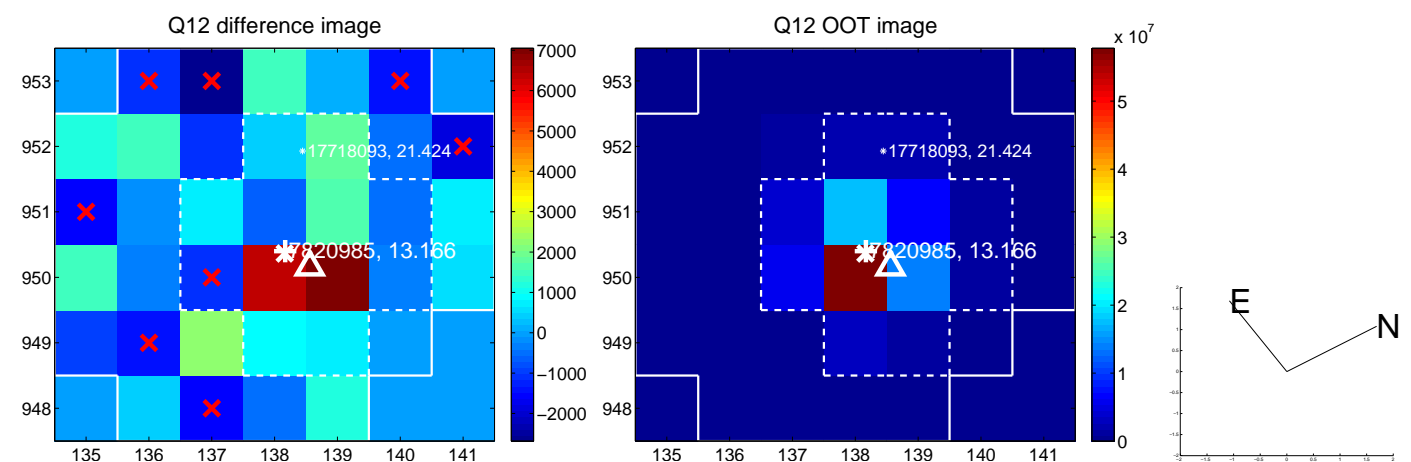
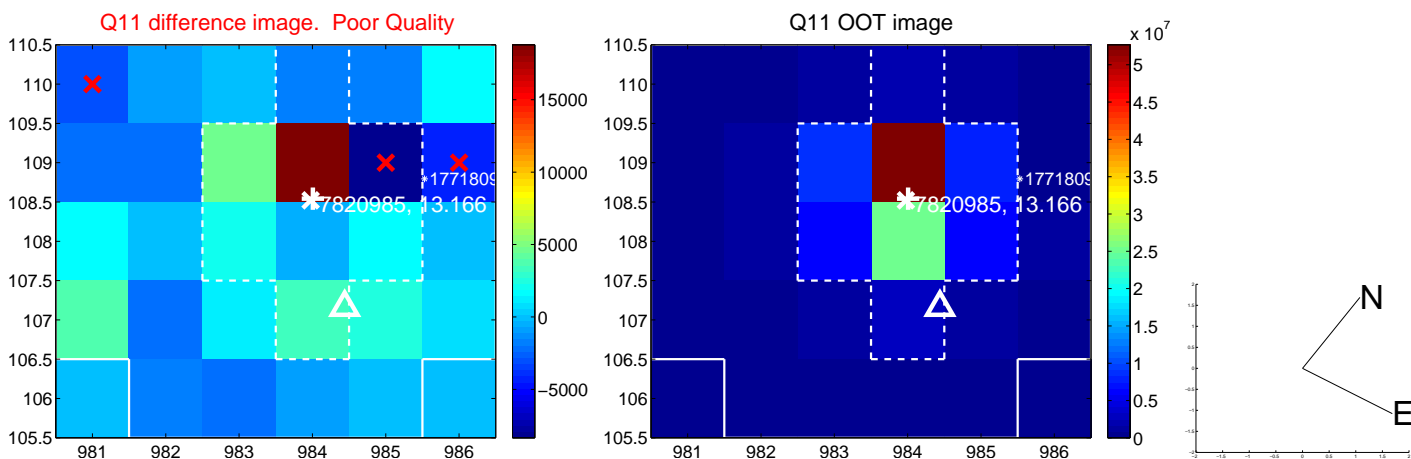
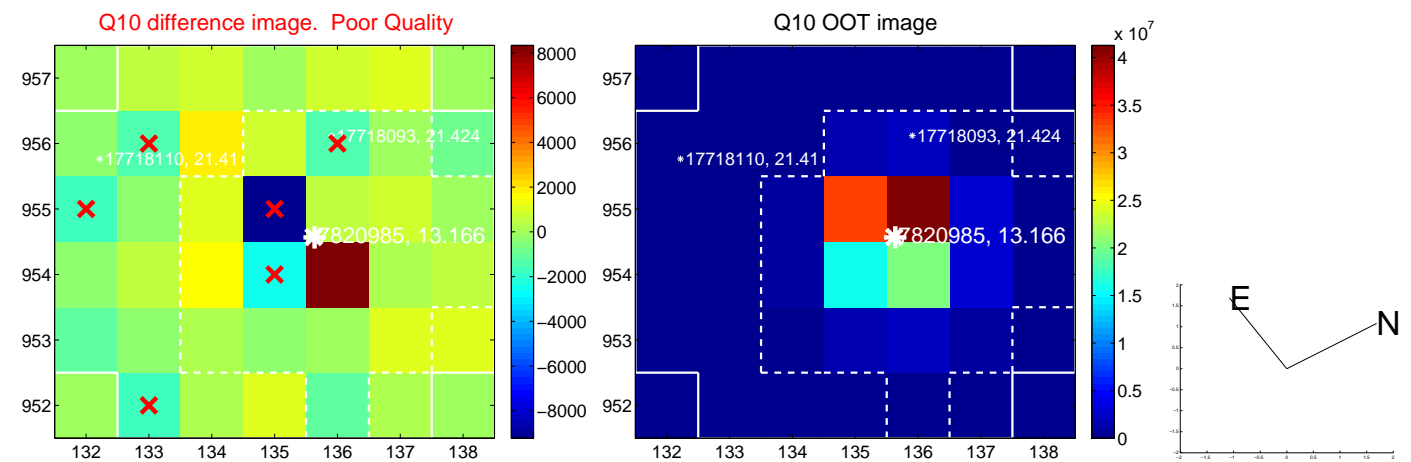
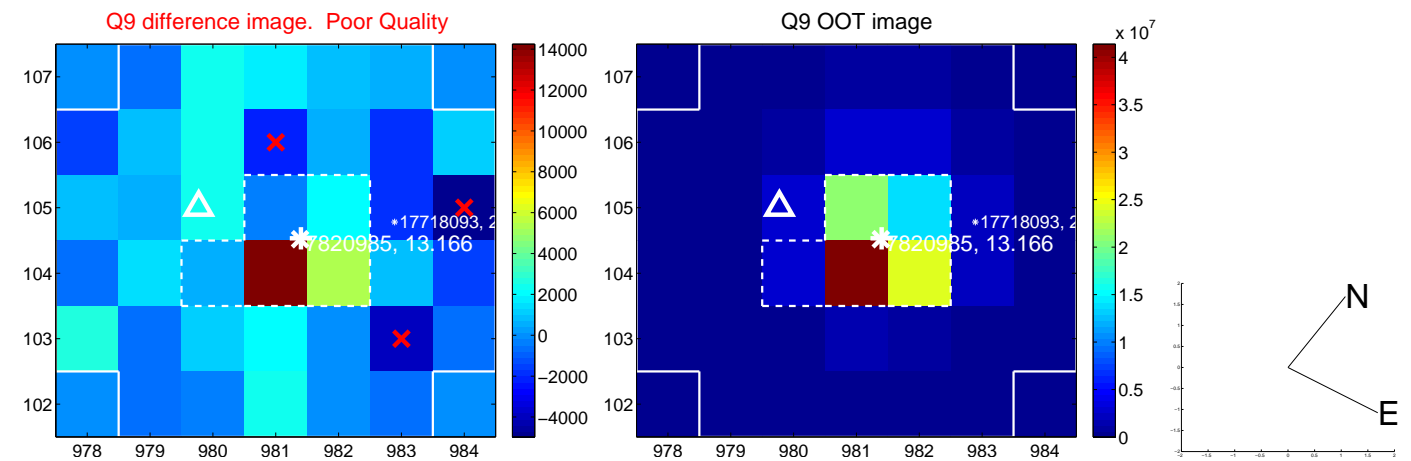
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

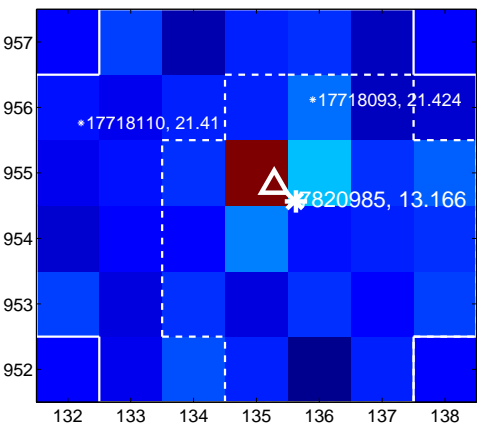
Q13 no difference image



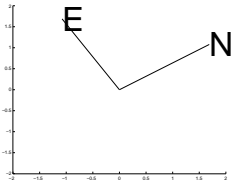
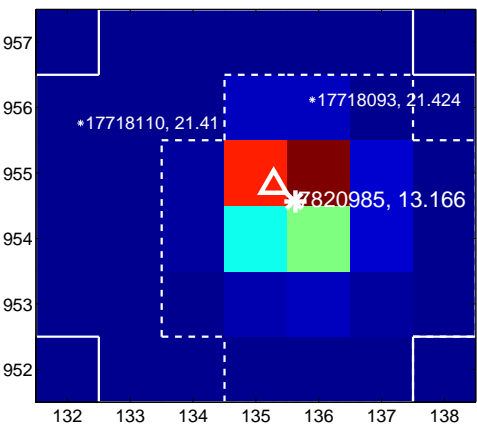
Q13 no OOT image



Q14 difference image



Q14 OOT image



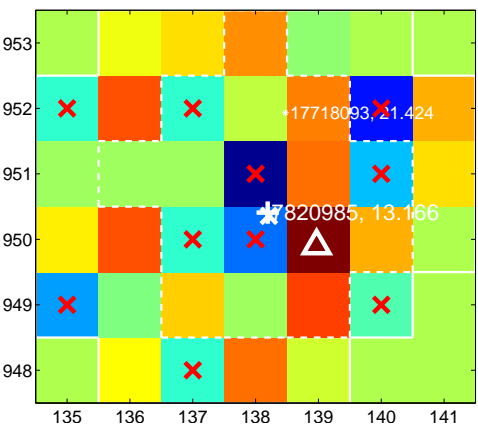
Q15 no difference image



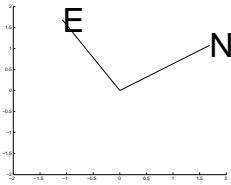
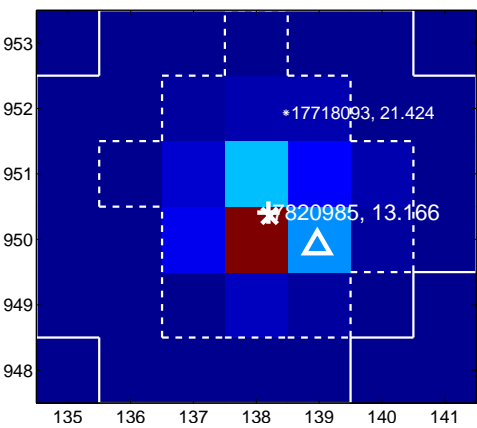
Q15 no OOT image



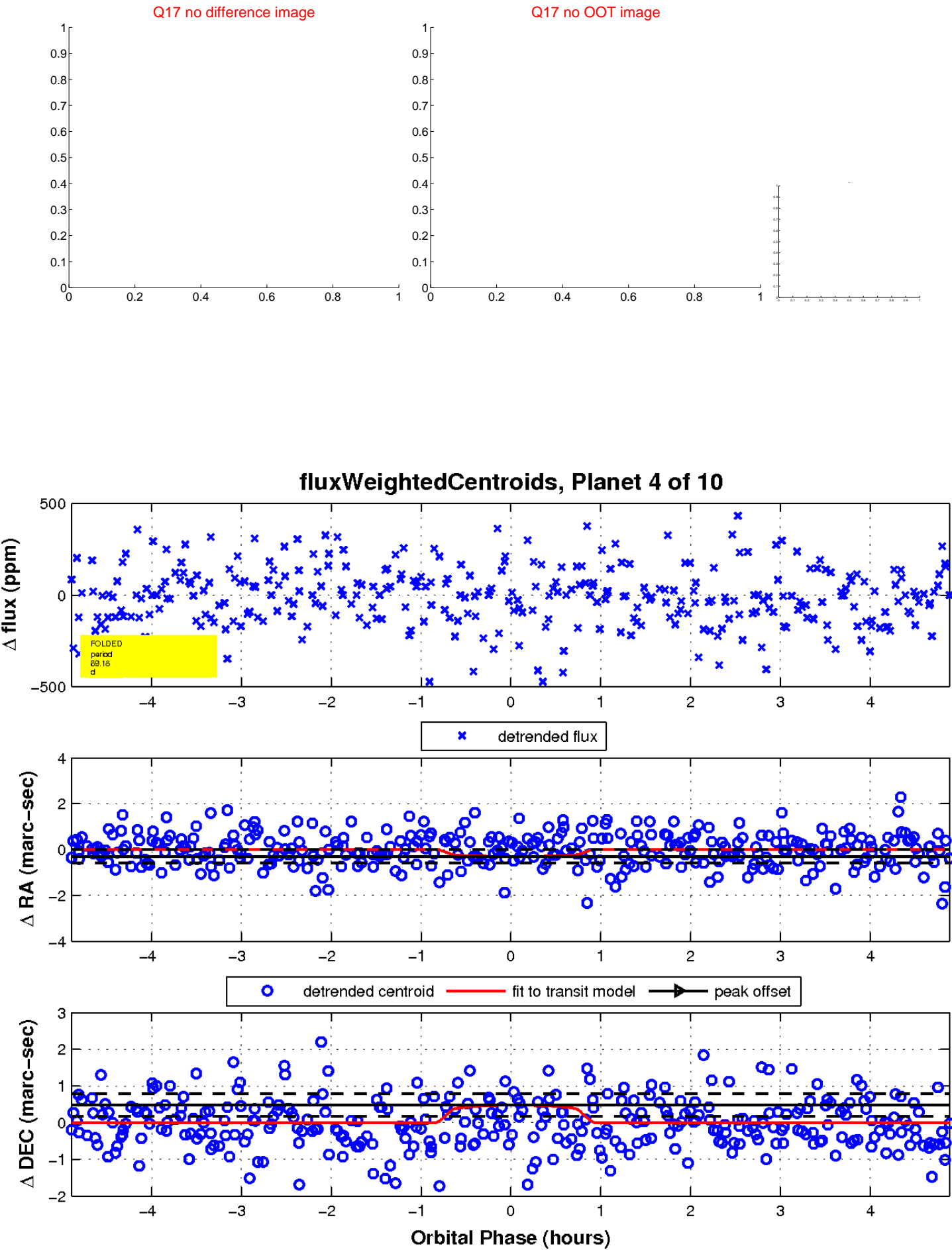
Q16 difference image. Poor Quality



Q16 OOT image

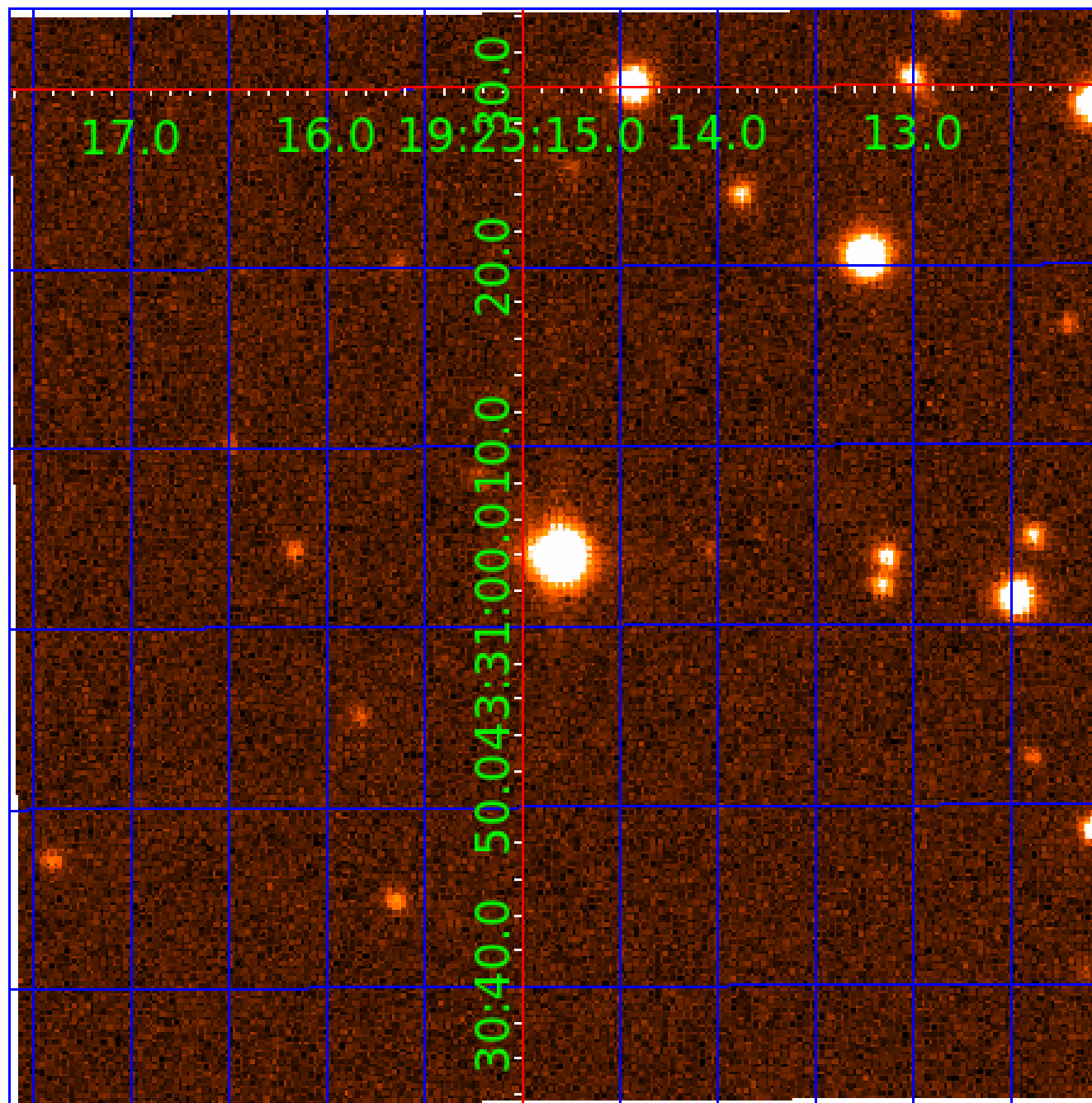


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

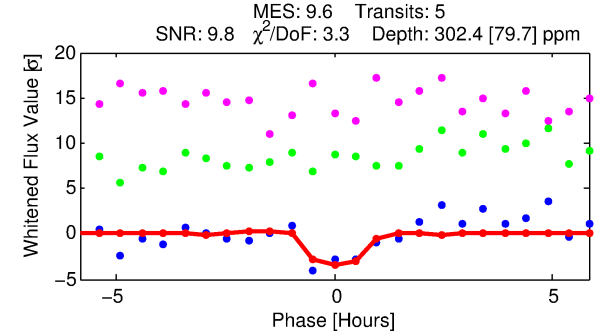
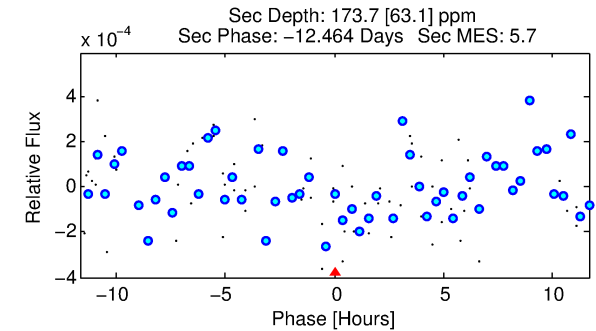
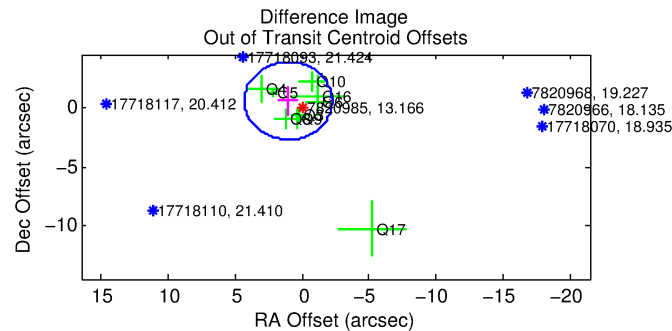
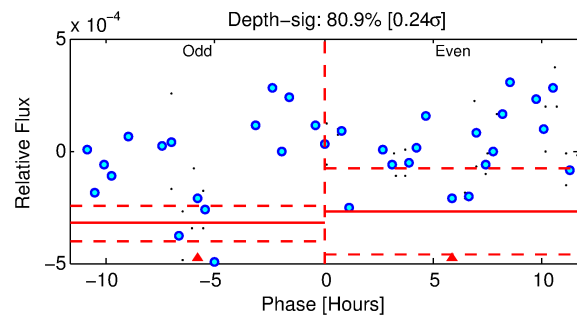
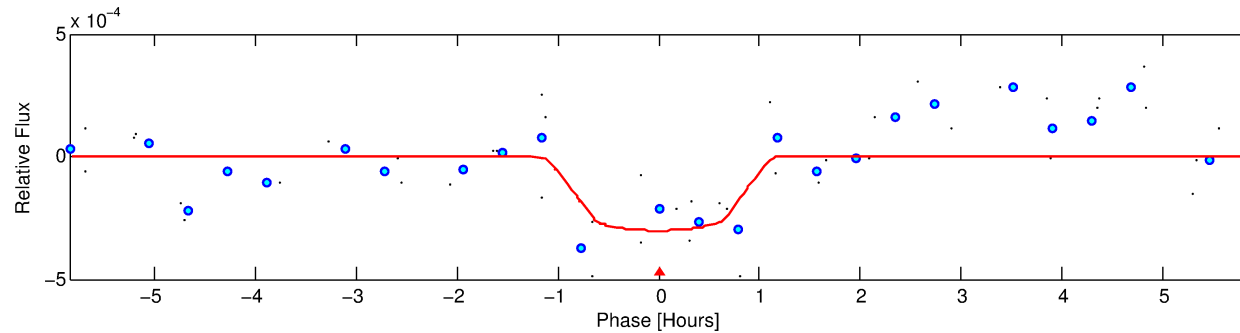
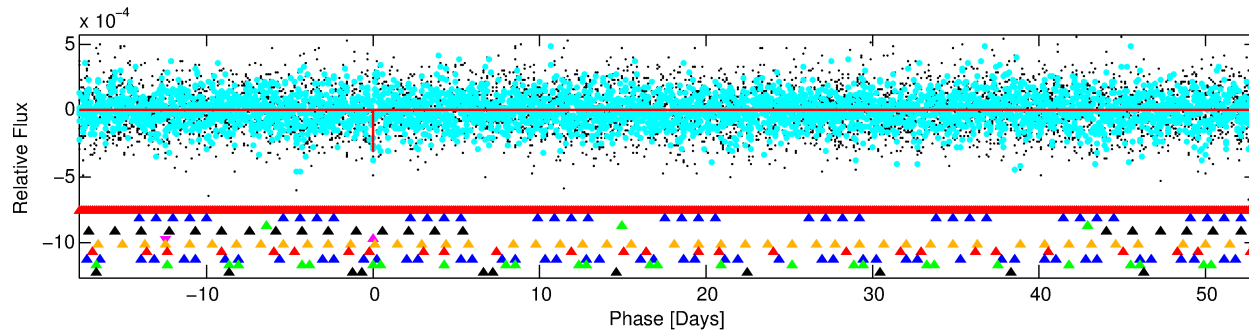
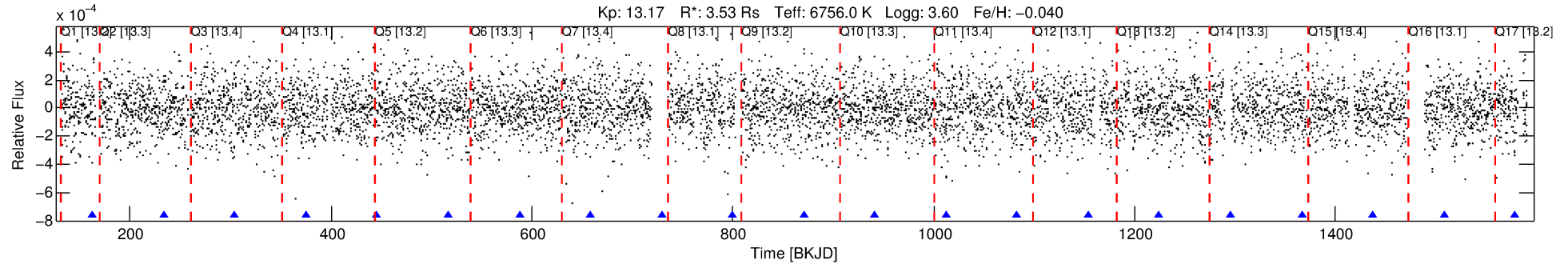
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-05

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 5 of 10 Period: 70.784 d



DV Fit Results:

Period = 70.78415 [0.00143] d
Epoch = 162.9417 [0.0133] BKJD
Rp/R* = 0.0185 [0.0132]
a/R* = 134.89 [536.56]
b = 0.90 [0.90]
Seff = 140.47 [78.86]
Teq = 878 [123] K
Rp = 7.13 [5.64] Re
a = 0.4069 [0.1382] AU
Ag = 310.90 [486.59] [0.64 σ]
Teffp = 5699 [2095] K [2.30 σ]

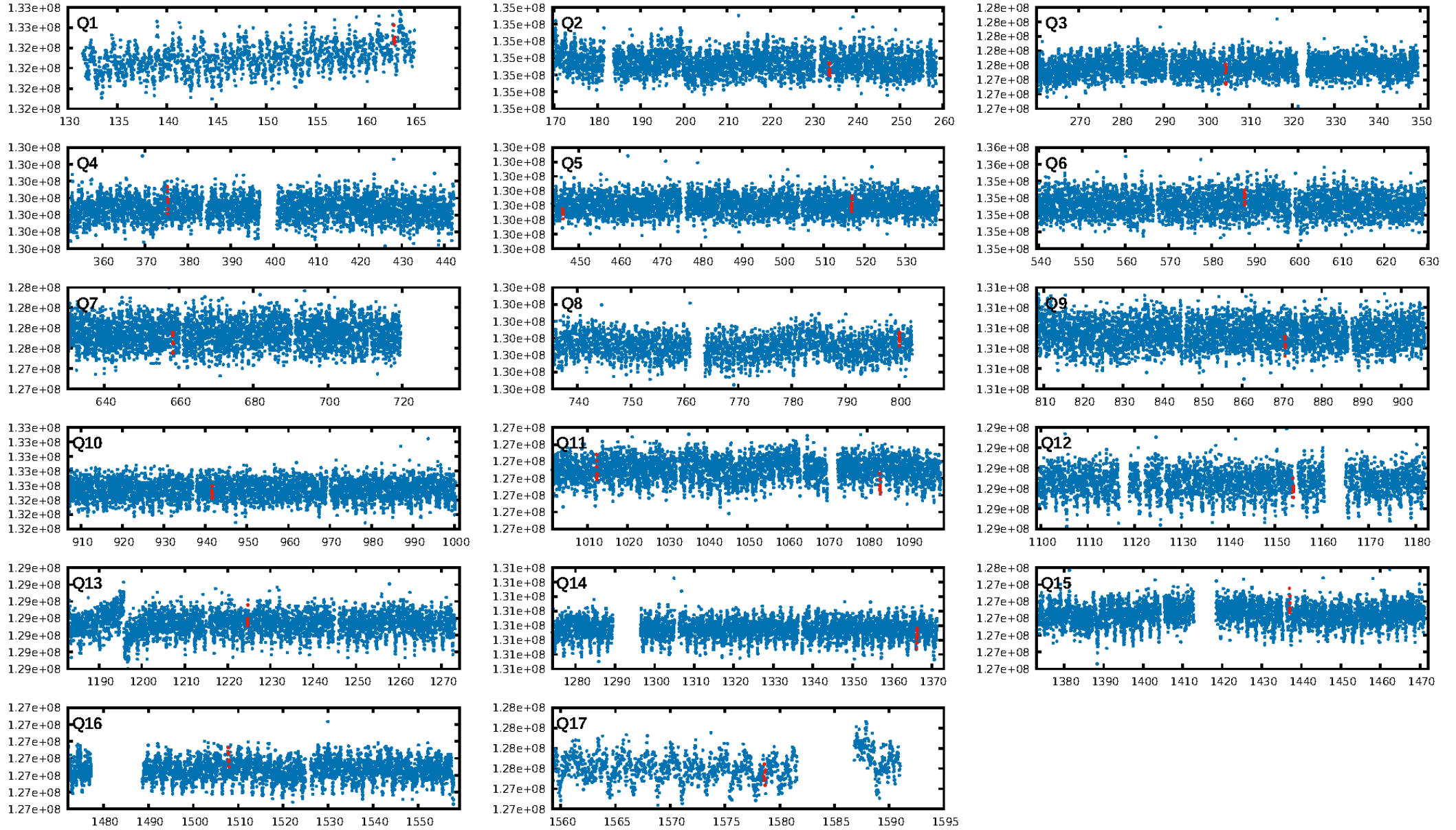
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.15 σ]
LongPeriod-sig: 100.0% [99.65 σ]
ModelChiSquare2-sig: 18.1%
ModelChiSquareGof-sig: 13.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 4.513
Centroid-sig: 25.0%
Centroid-so: 0.913 arcsec [1.08 σ]
OotOffset-rm: 1.189 arcsec [1.09 σ]
KicOffset-rm: 1.233 arcsec [1.01 σ]
OotOffset-st: 2/1/3/3 [9]
KicOffset-st: 2/1/3/3 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 0.07 [1/15]

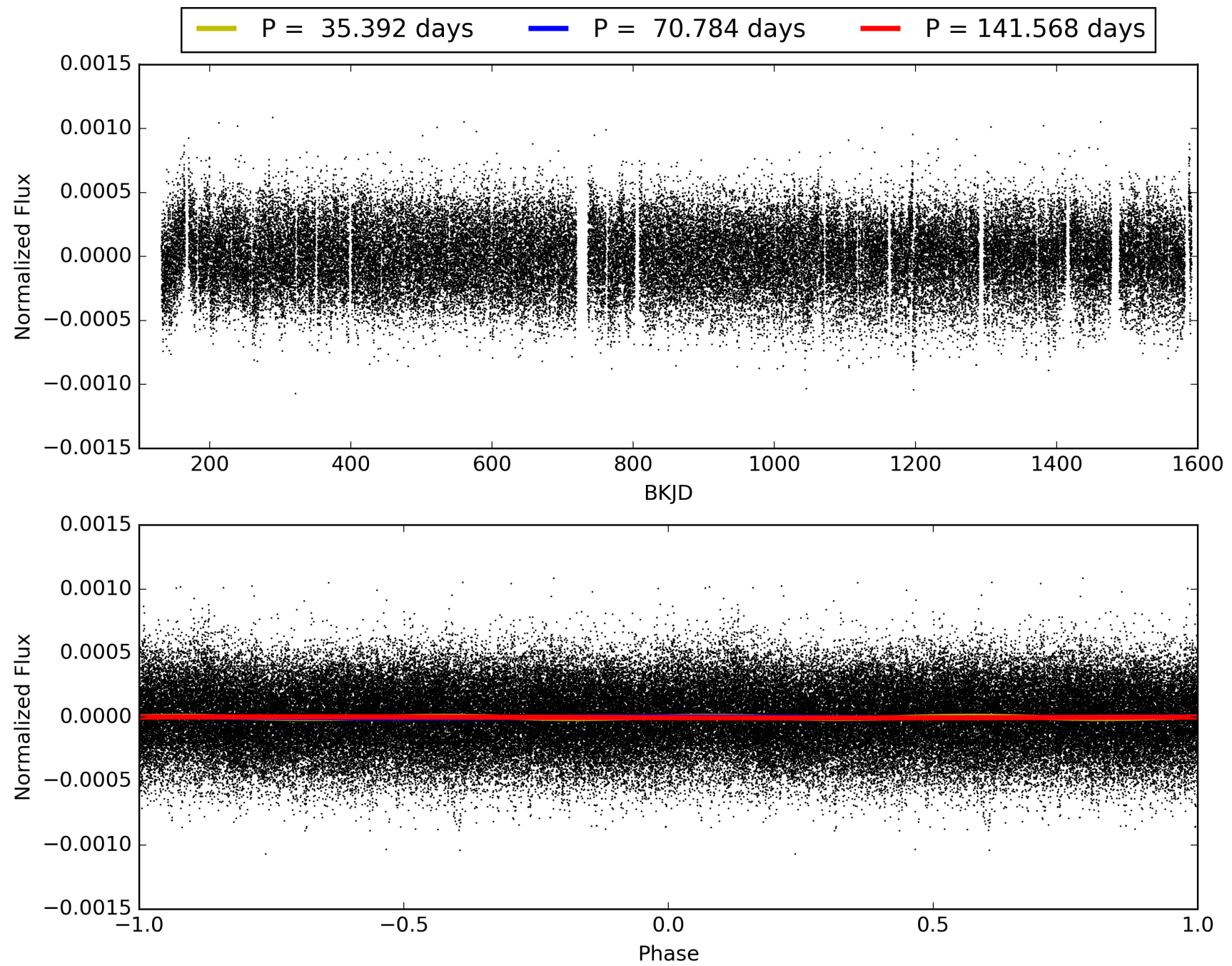
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:49 Z

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

TCE 007820985-05, PDC Light Curves

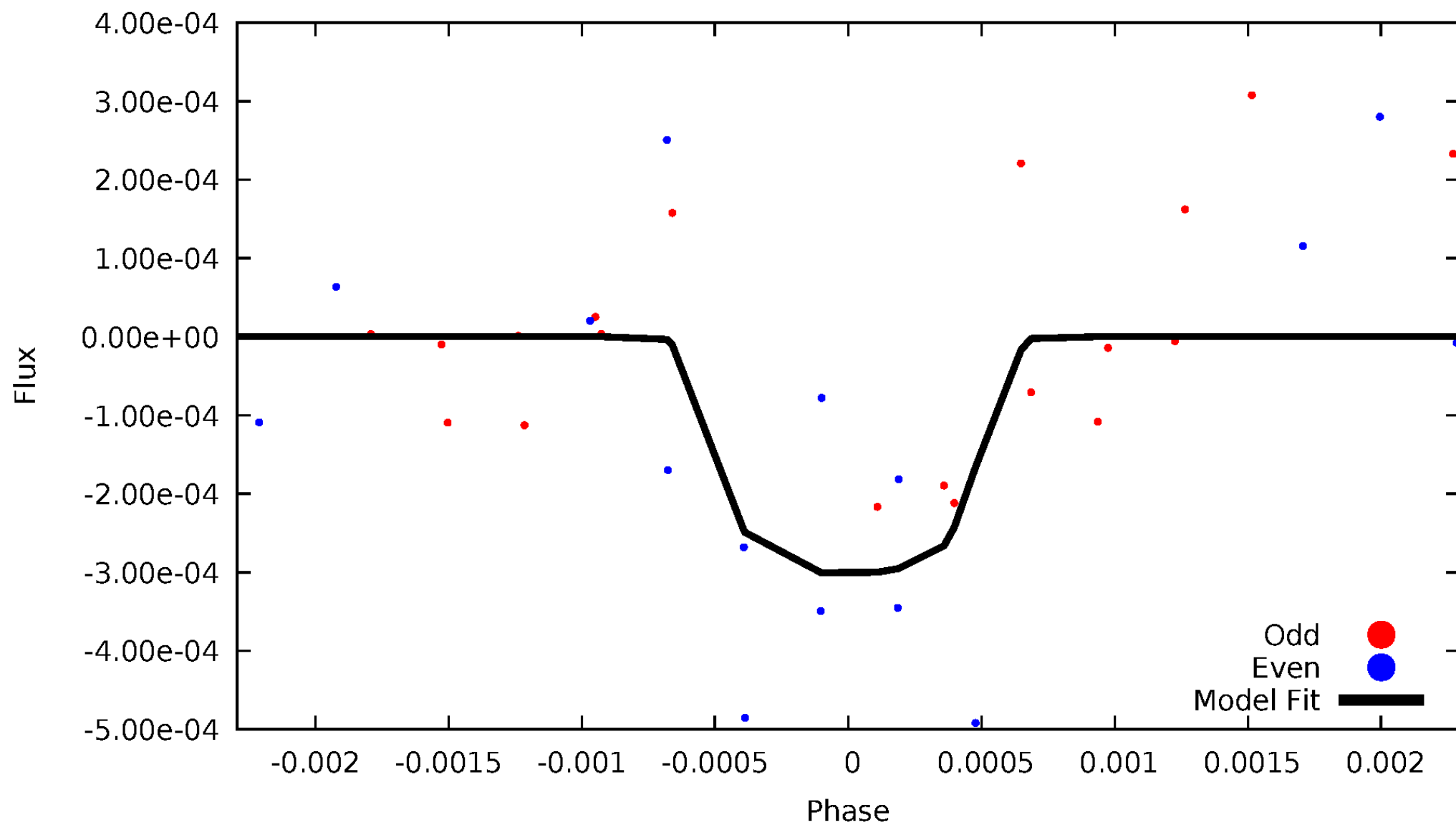


TCE 007820985-05



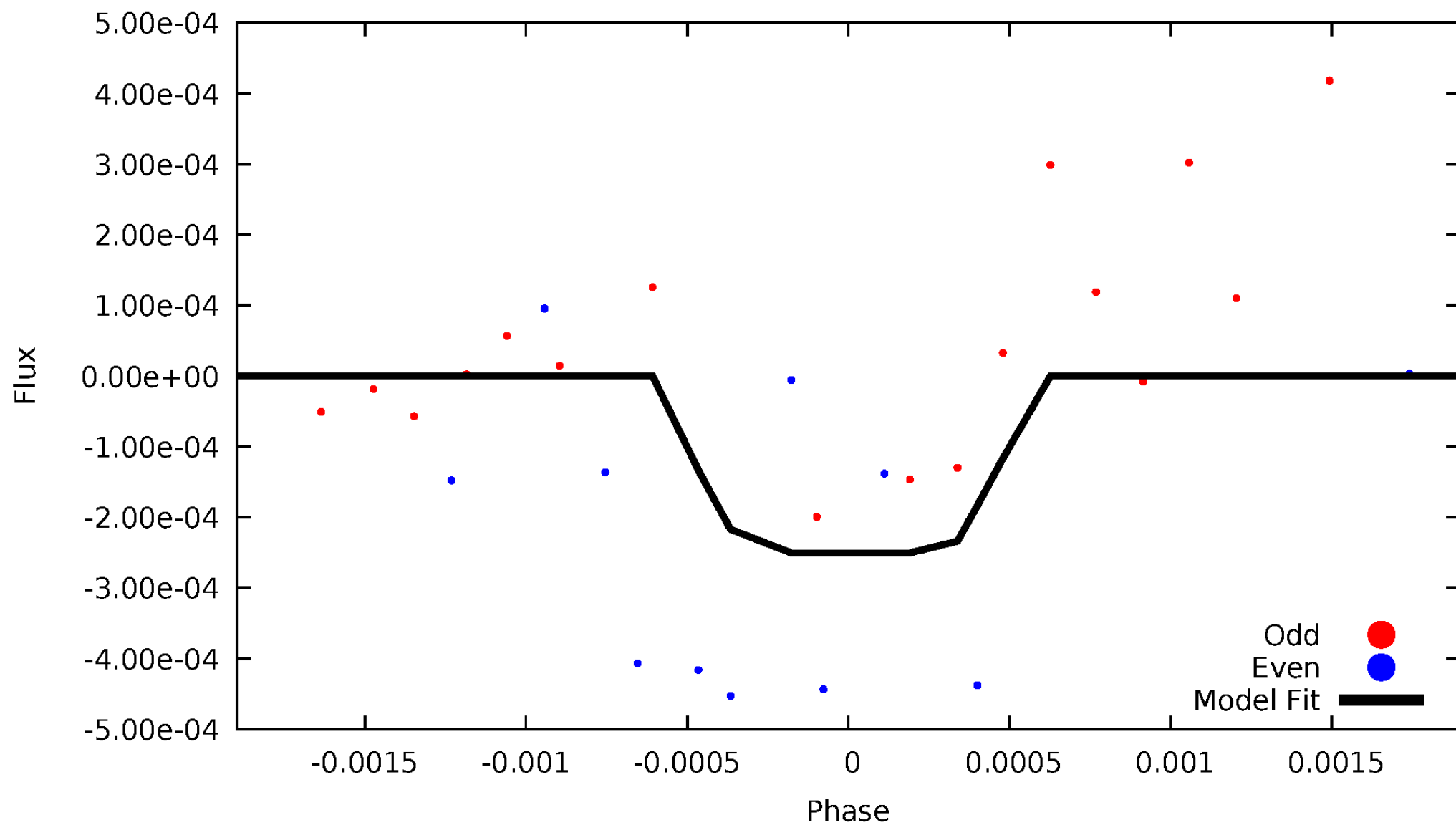
DV Odd/Even

TCE 007820985-05

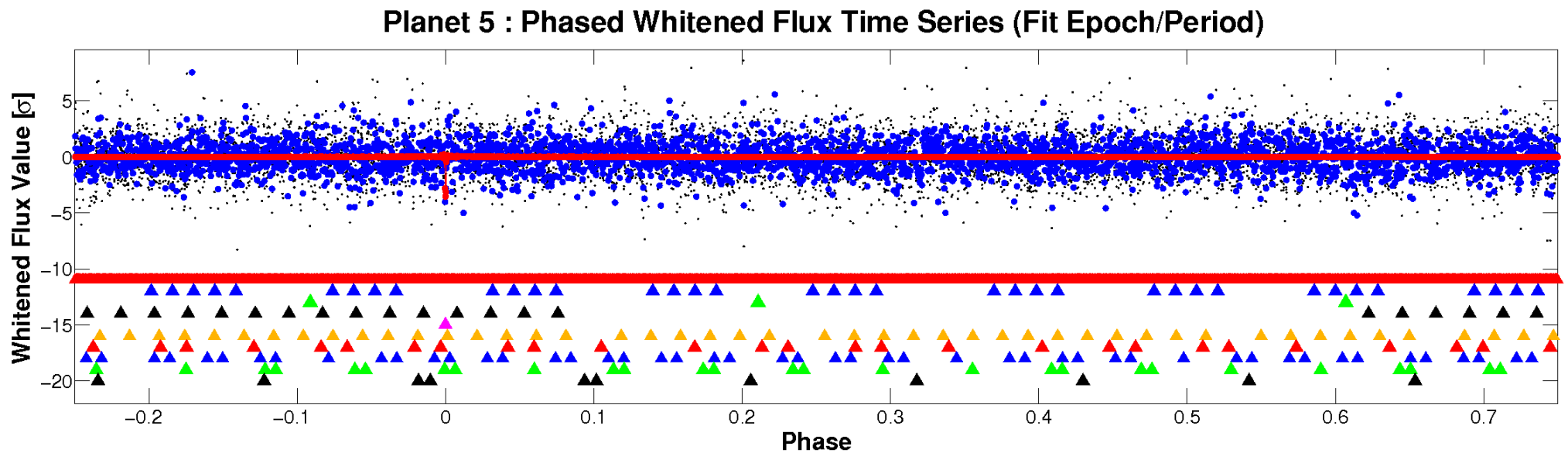
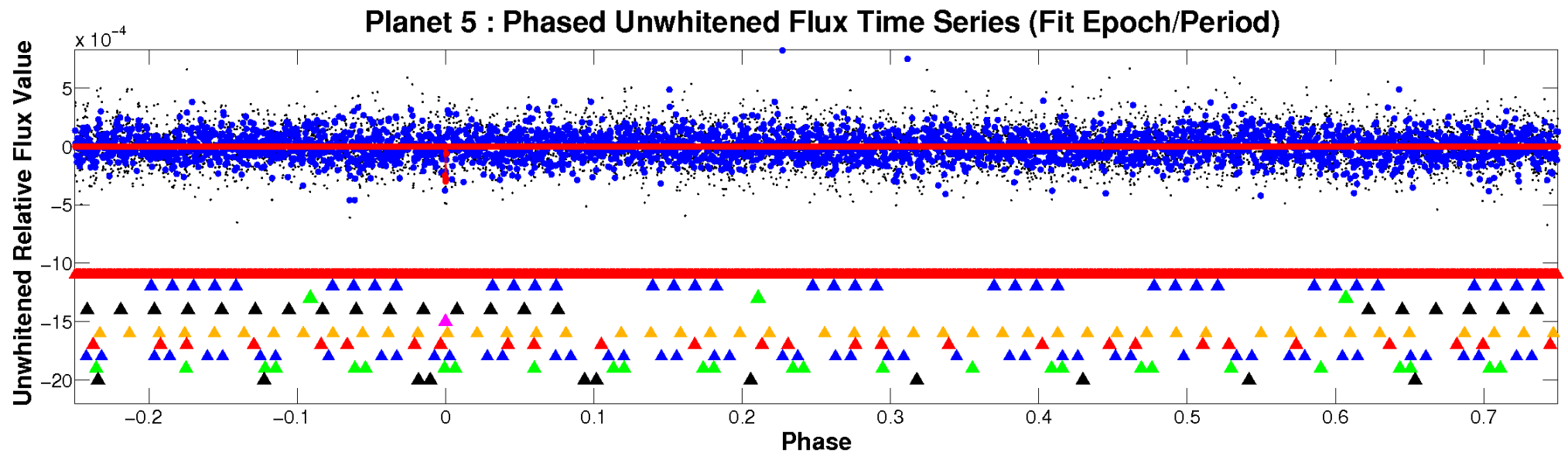


ALT Odd/Even

TCE 007820985-05

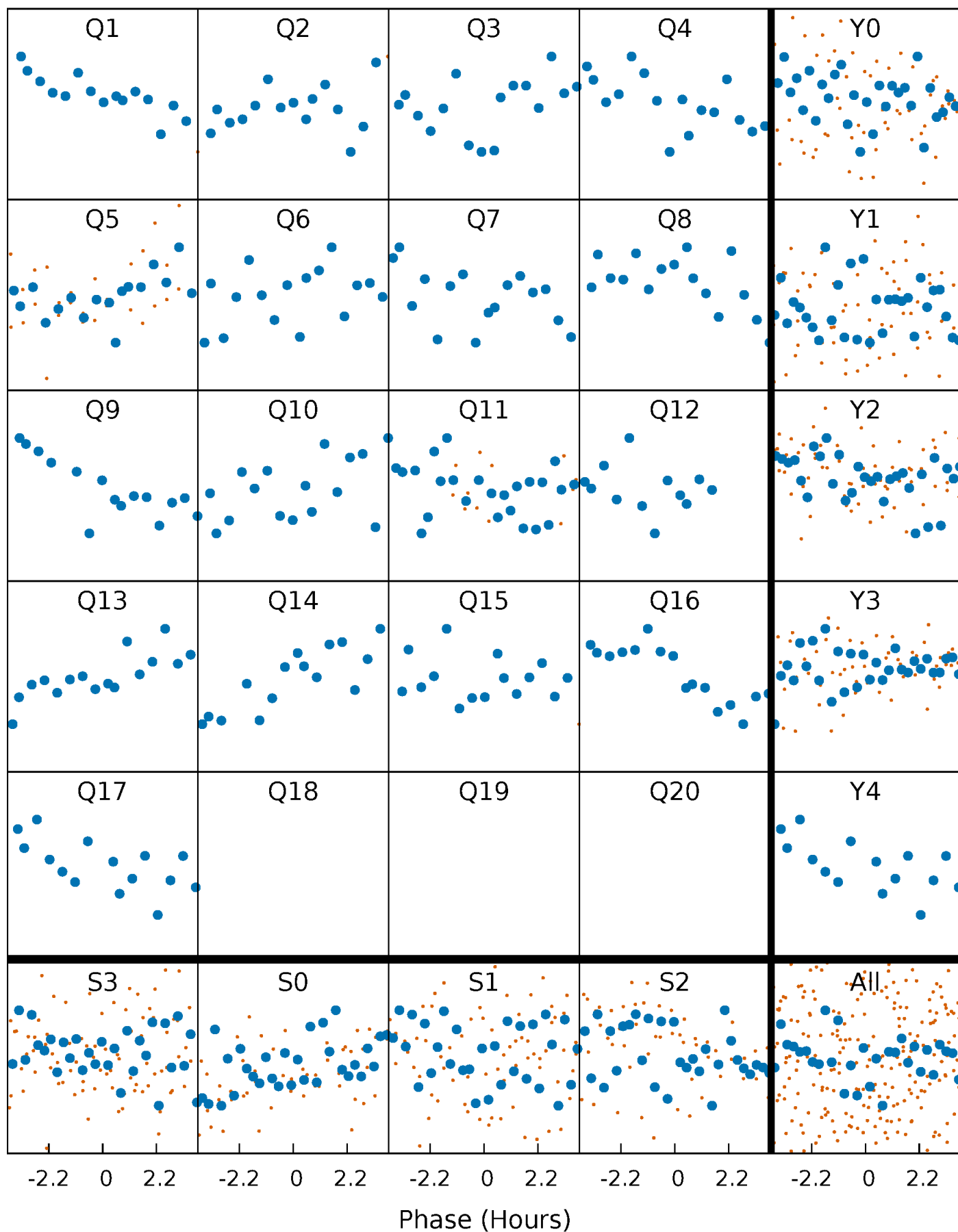


Non-Whitened Vs. Whitened Light Curve



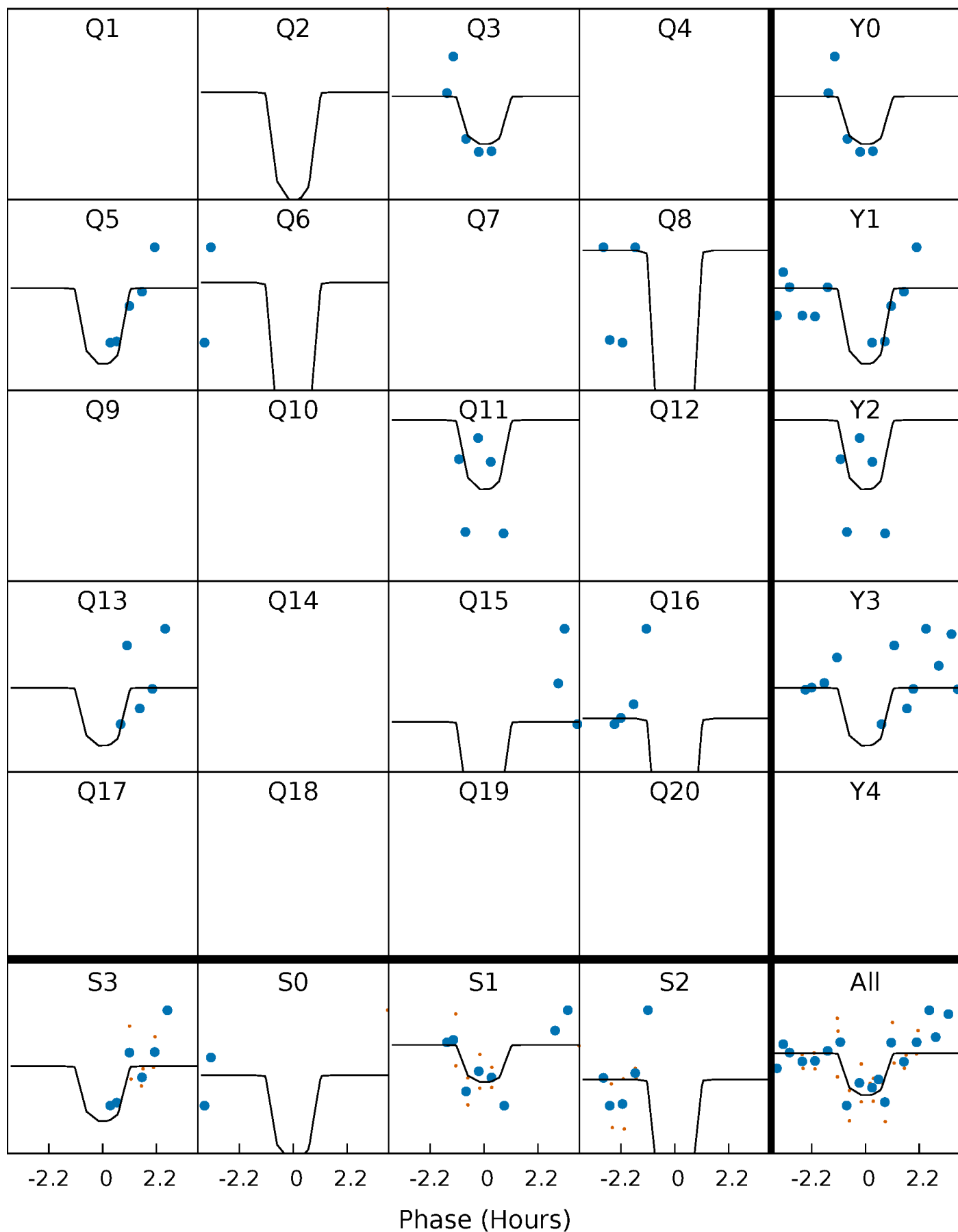
PDC Quarter-Phased Transit Curves

TCE 007820985-05 P= 70.784151 Days $T_0=162.941720$ (BKJD)



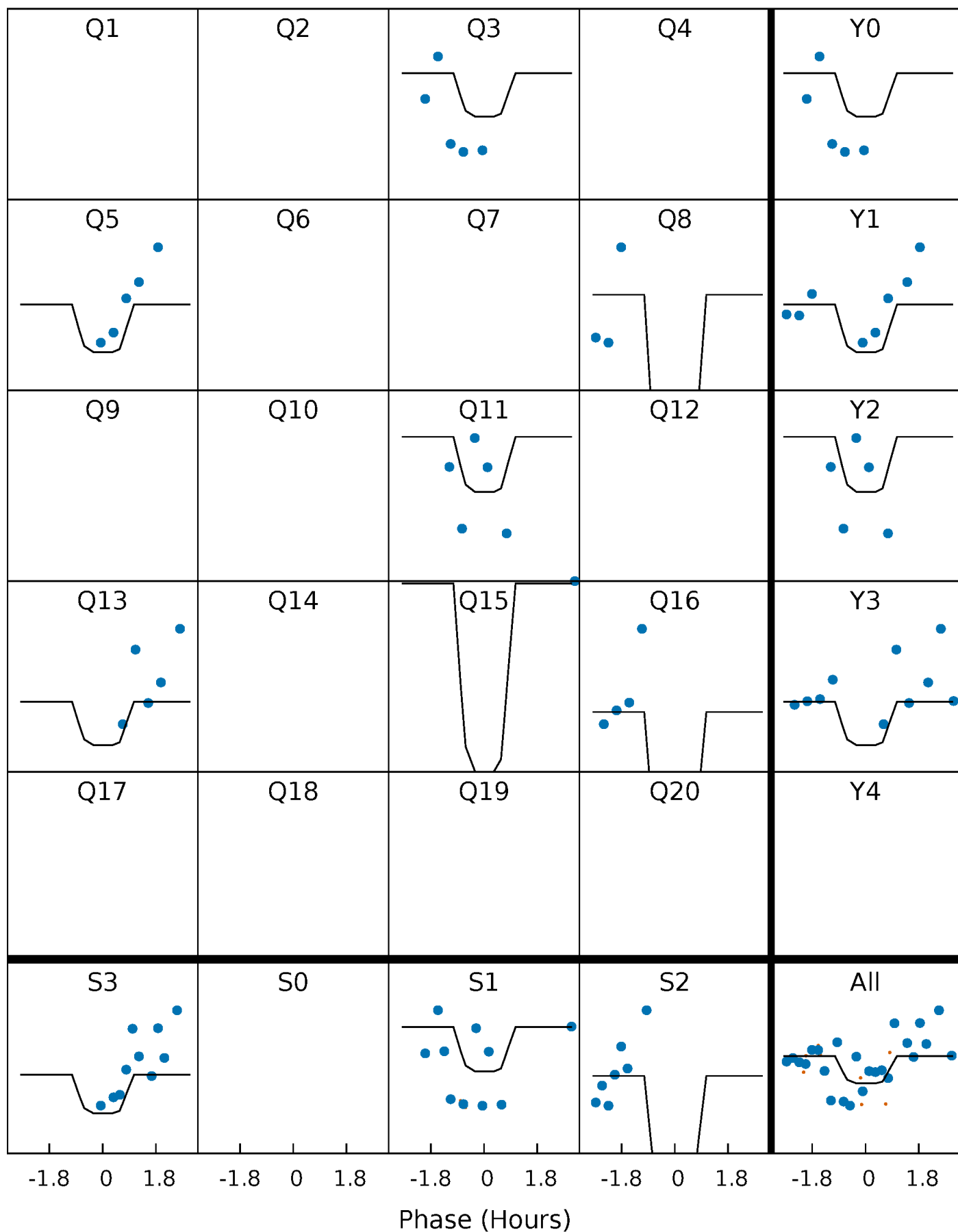
DV Quarter-Phased Transit Curves

TCE 007820985-05 $P = 70.784151$ Days $T_0 = 162.941720$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

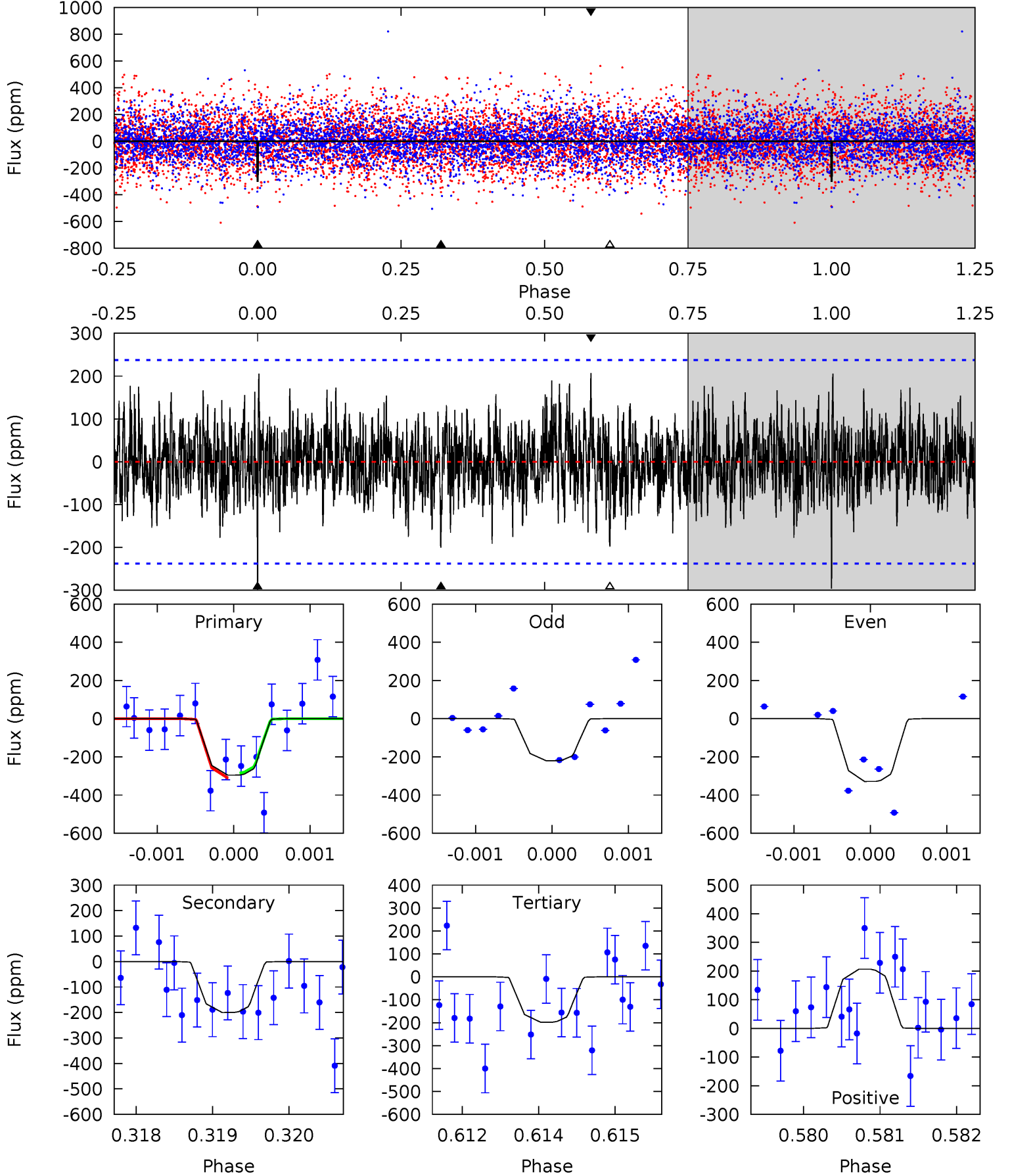
TCE 007820985-05 P= 70.782839 Days $T_0=162.962888$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-05, P = 70.784151 Days, E = 92.157569 Days

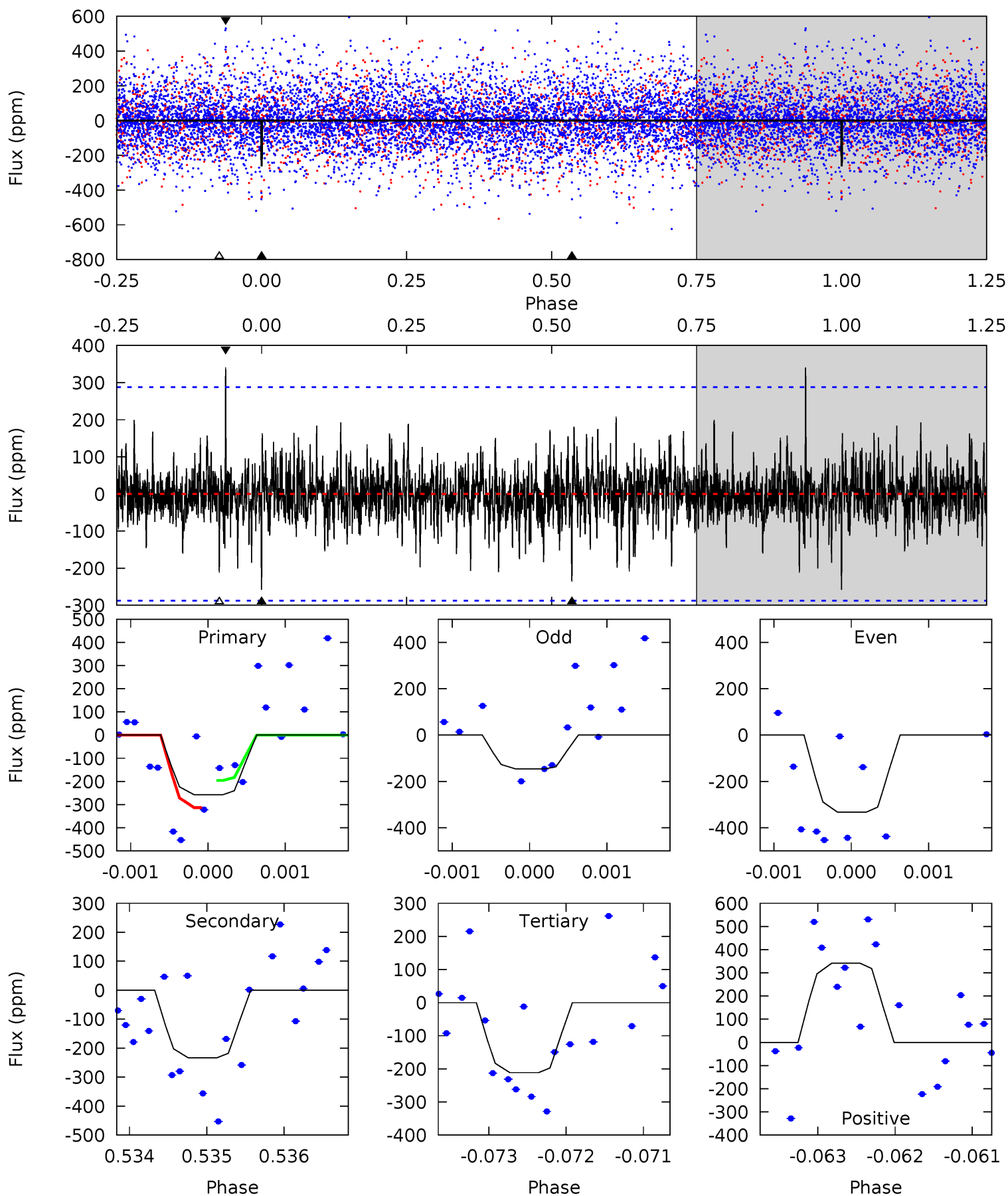
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.72 | 4.55 | 4.50 | 4.69 | 5.40 | 3.20 | 1.37 | 2.22 | 2.02 | 0.05 | -0.15 | 1.21 | 0.99 | 0.41 | 0.29 |



Alt Model-Shift Uniqueness Test

007820985-05, P = 70.782839 Days, E = 92.180049 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.89 | 4.43 | 4.01 | 6.47 | 5.45 | 3.29 | 1.06 | 0.87 | -1.58 | 0.41 | -2.04 | 1.85 | 1.19 | 0.57 | 1.08 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|---------------------|------------------------|----------------------|
| DV | -200 ± 44 | $6.68^{+4.64}_{-3.80}$ | 1196^{+63}_{-105} | 5698^{+3462}_{-1103} | 395^{+1747}_{-263} |
| Alt. | -233 ± 53 | $6.35^{+4.45}_{-4.04}$ | 1192^{+66}_{-105} | 6226^{+5586}_{-1353} | 542^{+3294}_{-362} |

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 $A_{obs} \gg 1.0$

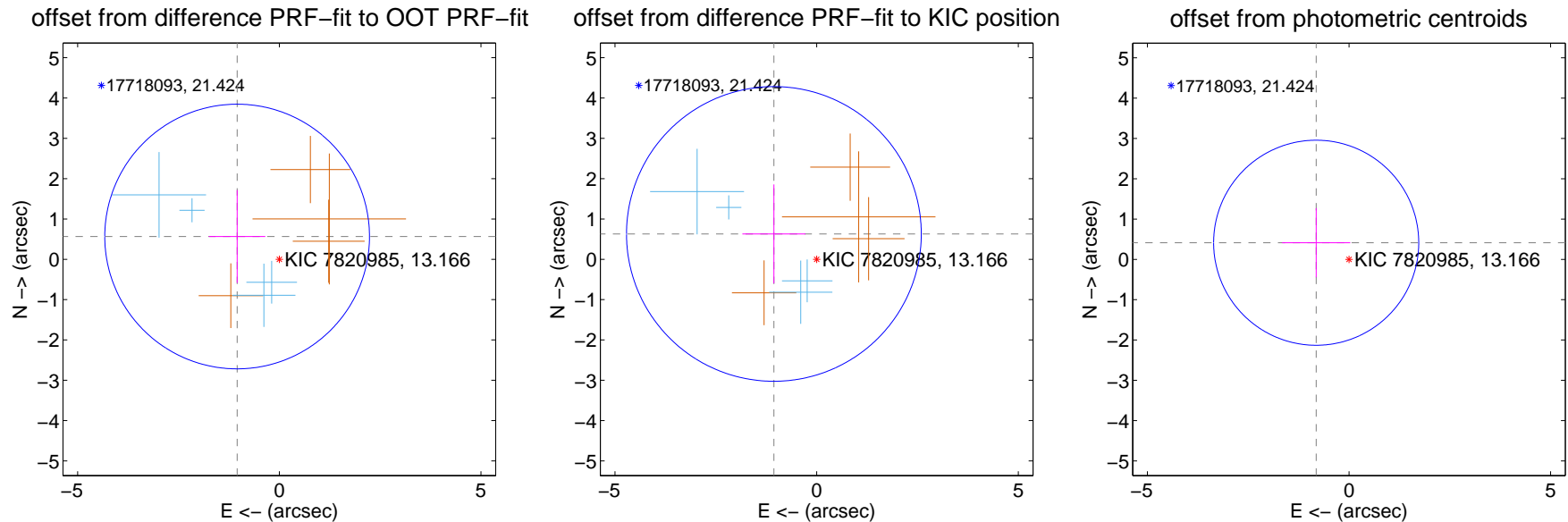
DV Centroid Data

Supplemental centroid analysis for 007820985-05. Kepler magnitude: 13.17. Transit SNR 9.80

There are 4 quarters with good PRF difference image offsets

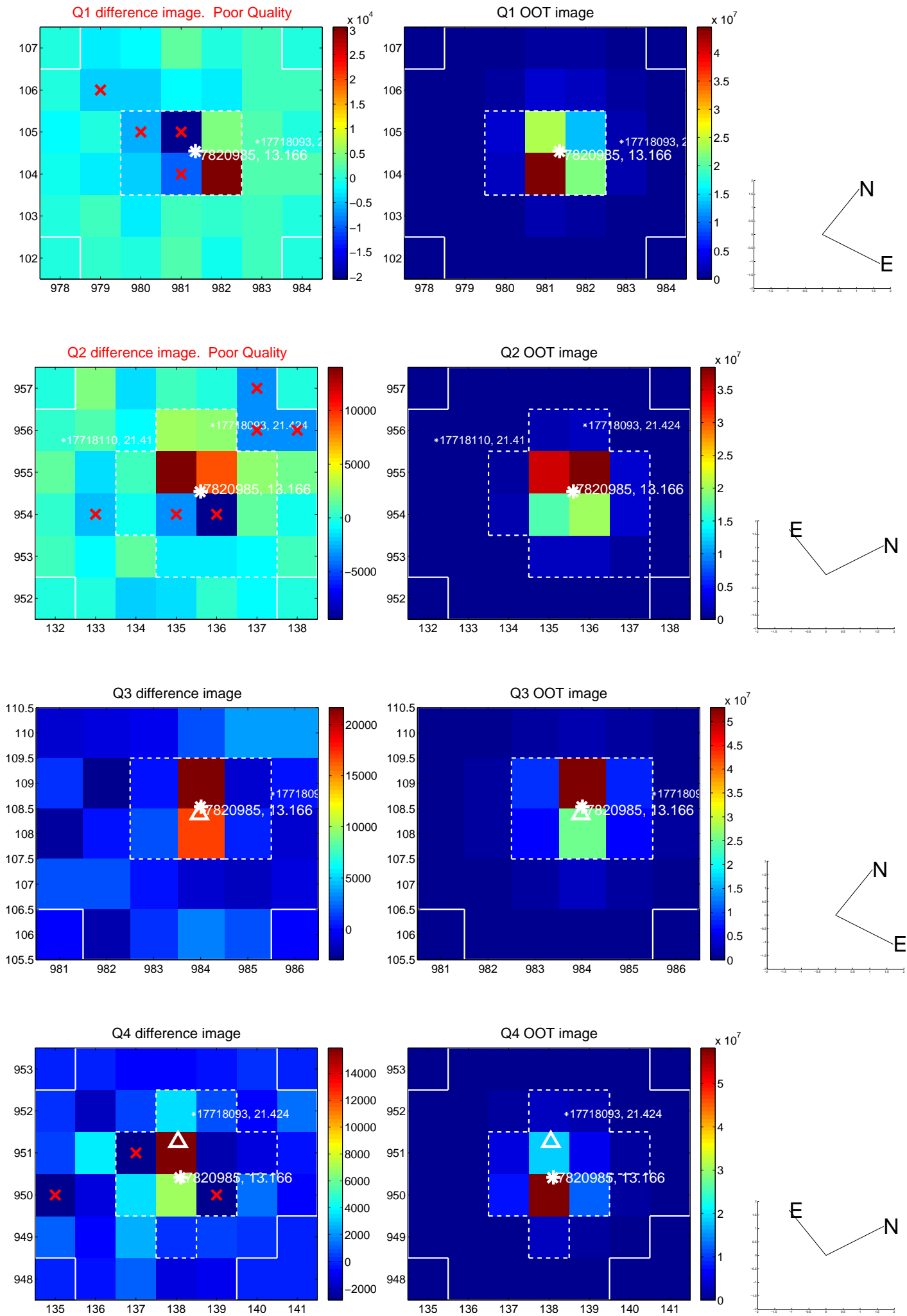
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.189 ± 1.094 | 1.09 | 1.046 ± 0.700 | 0.565 ± 1.150 |
| PRF-fit source offset from KIC position | 1.233 ± 1.218 | 1.01 | 1.060 ± 0.781 | 0.629 ± 1.227 |
| photometric centroid source offset | 0.91 ± 0.85 | 1.08 | 0.81 ± 0.85 | 0.41 ± 0.86 |

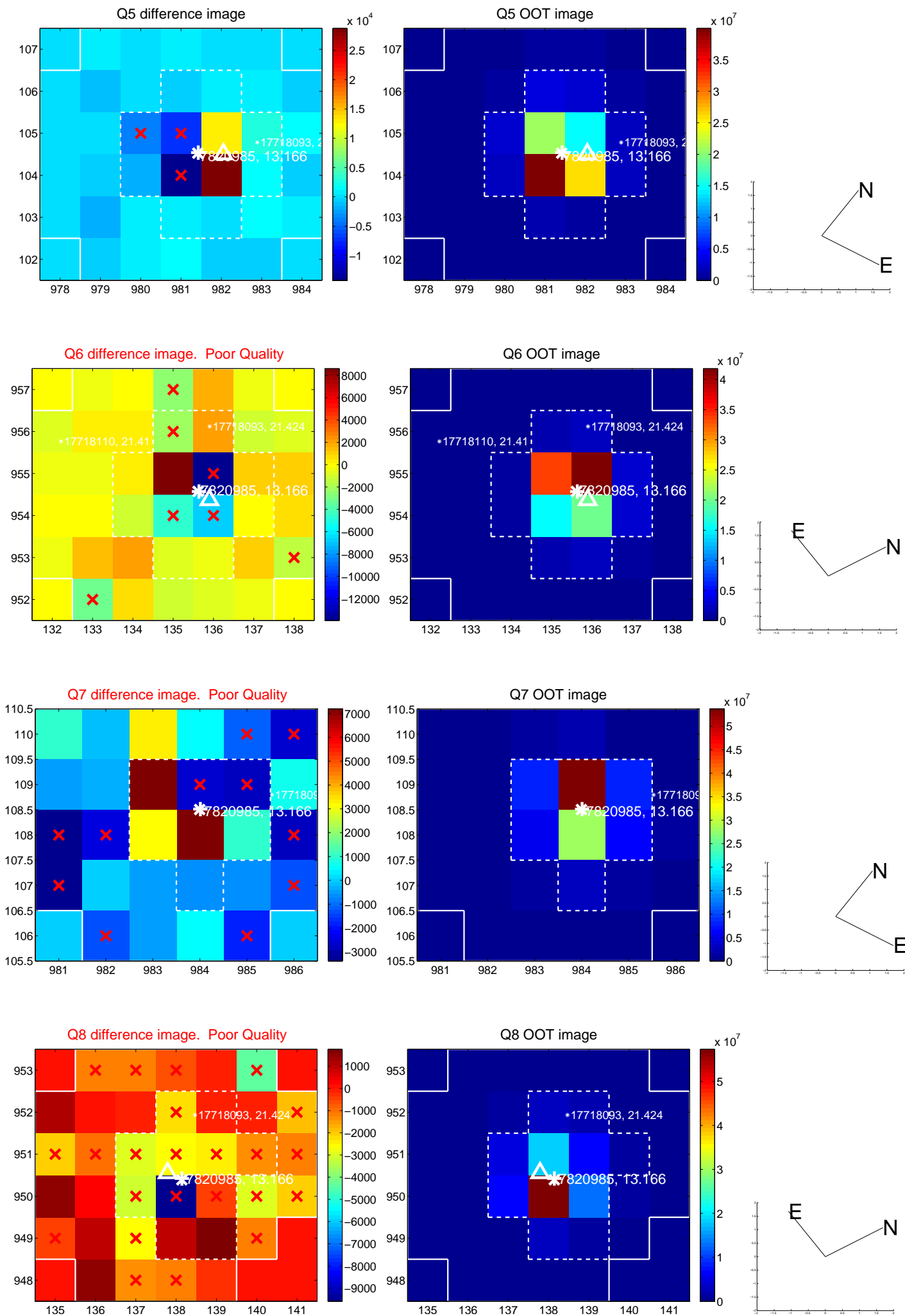


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

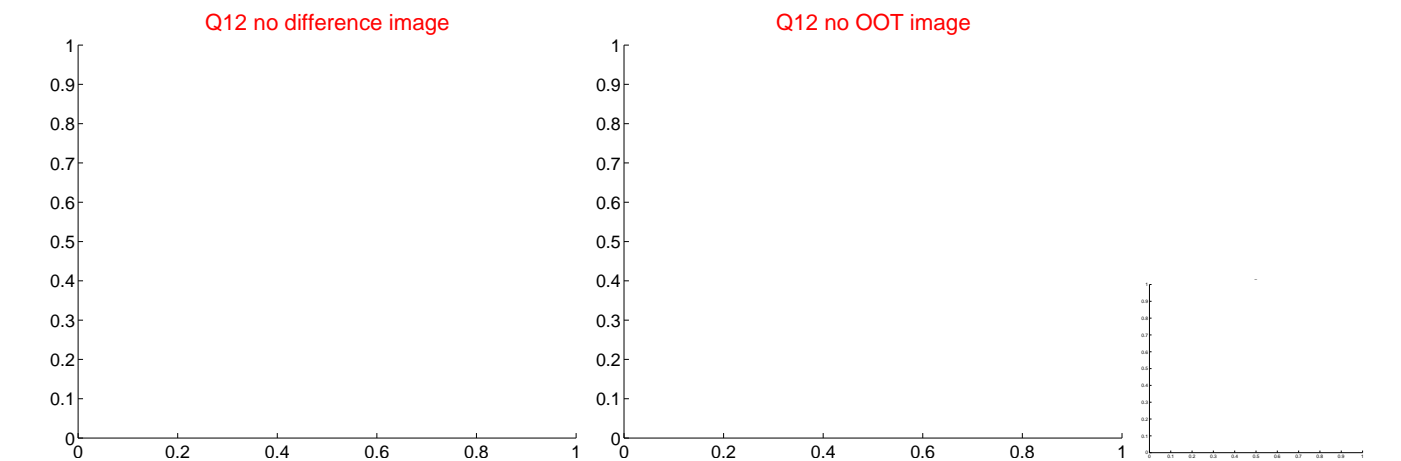
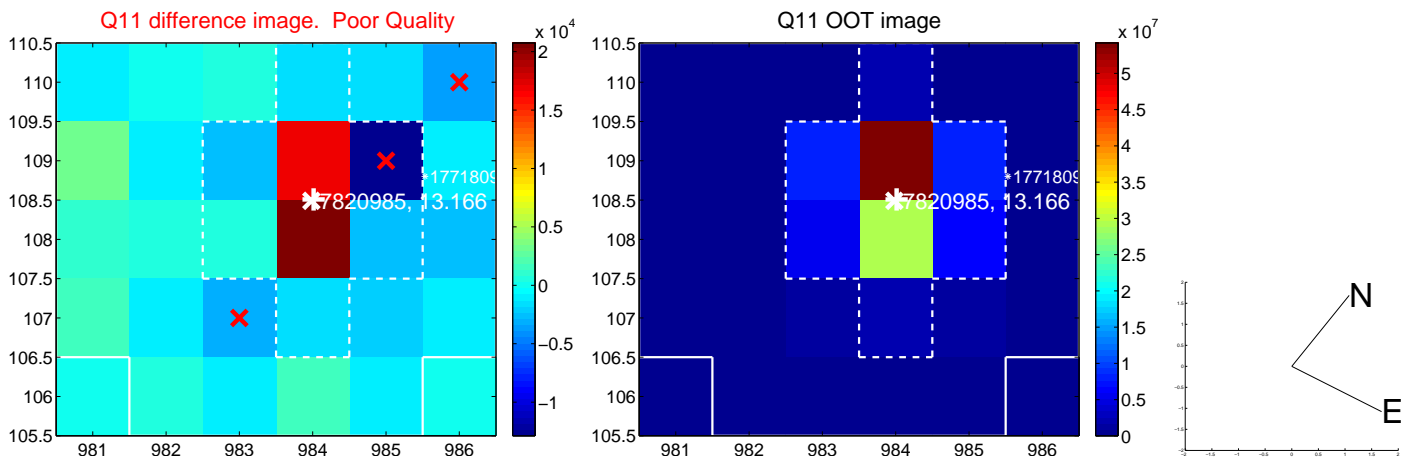
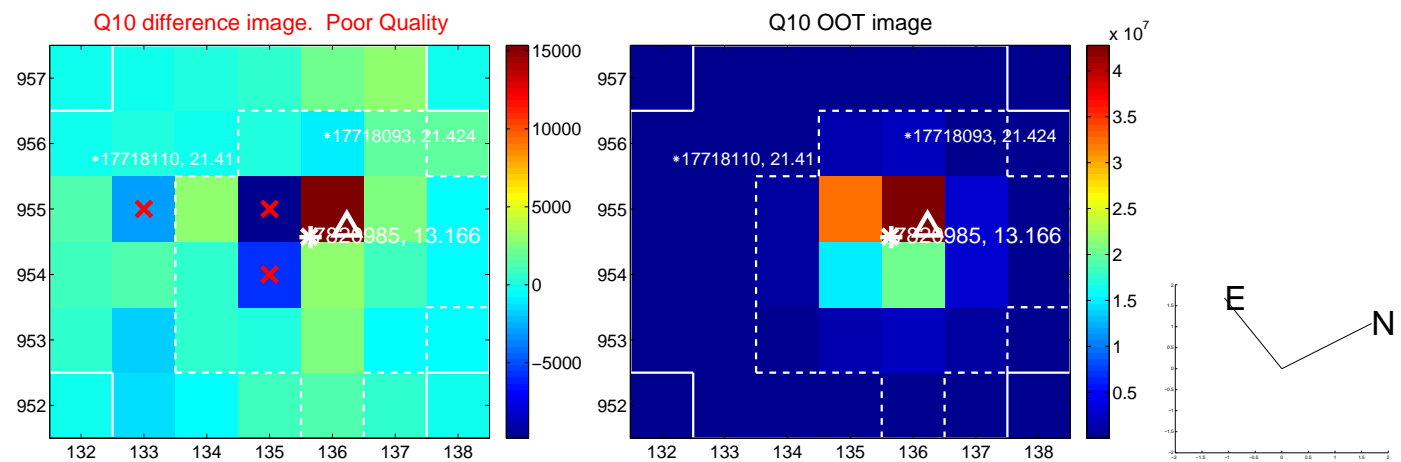
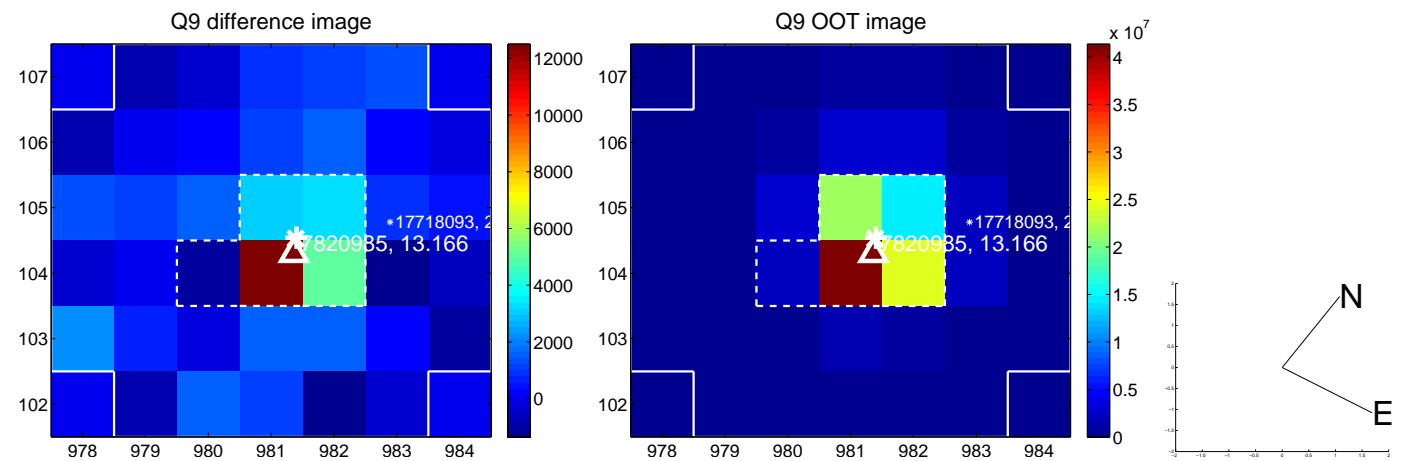
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



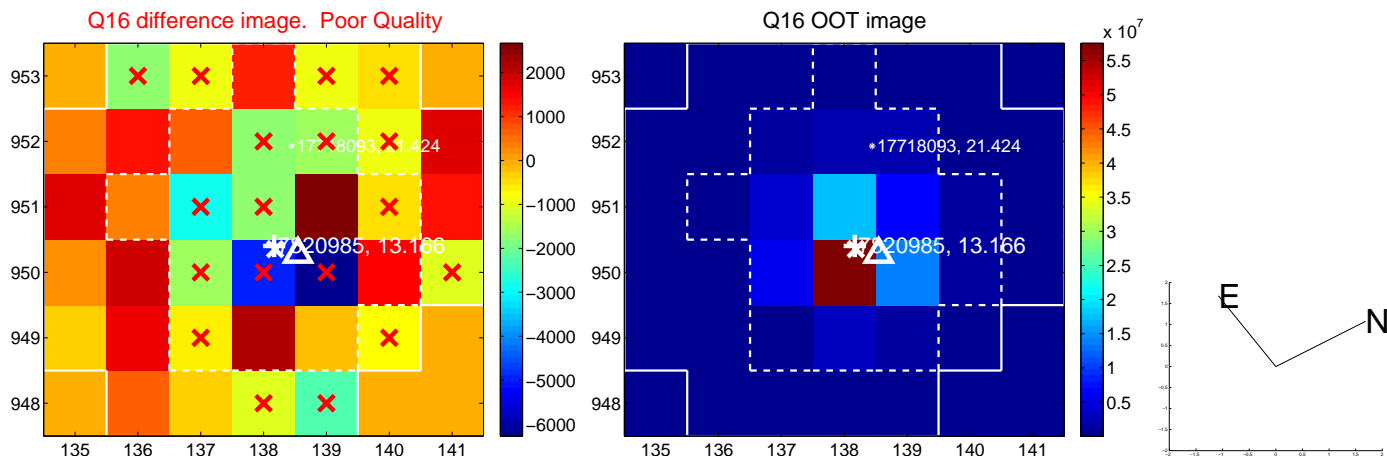
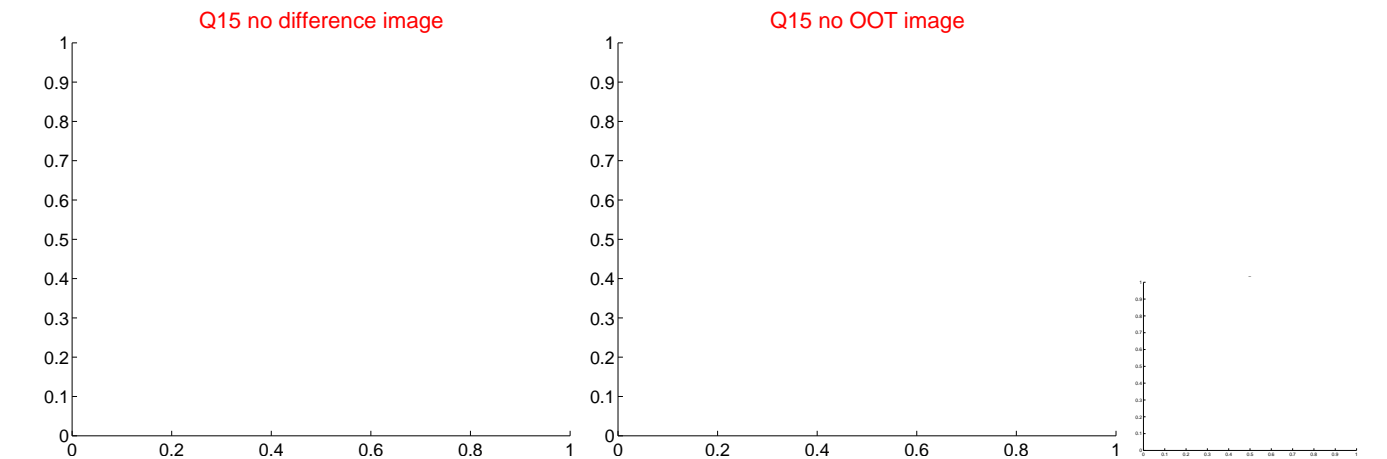
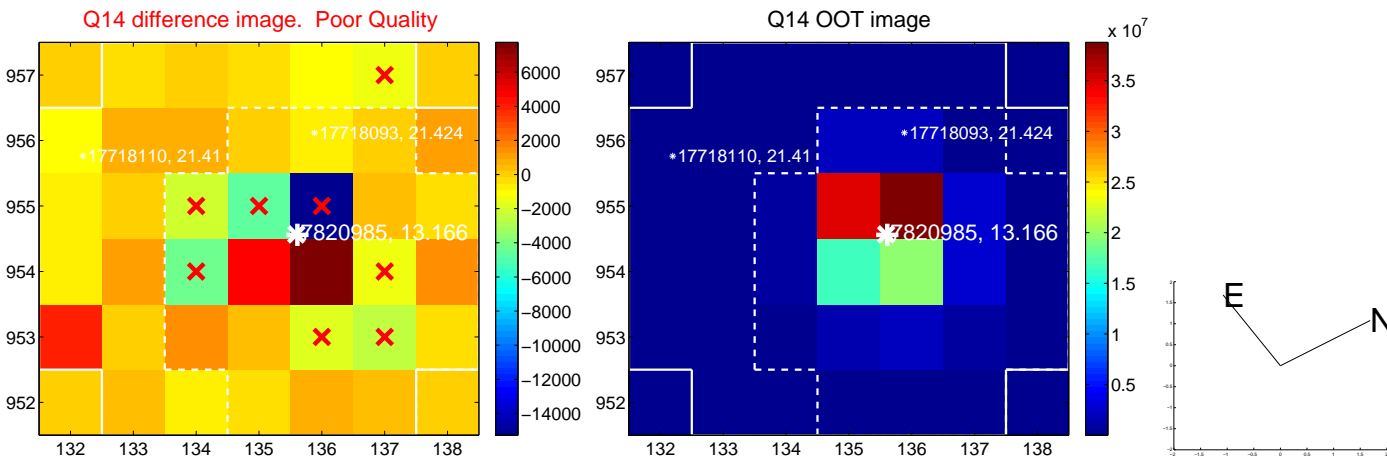
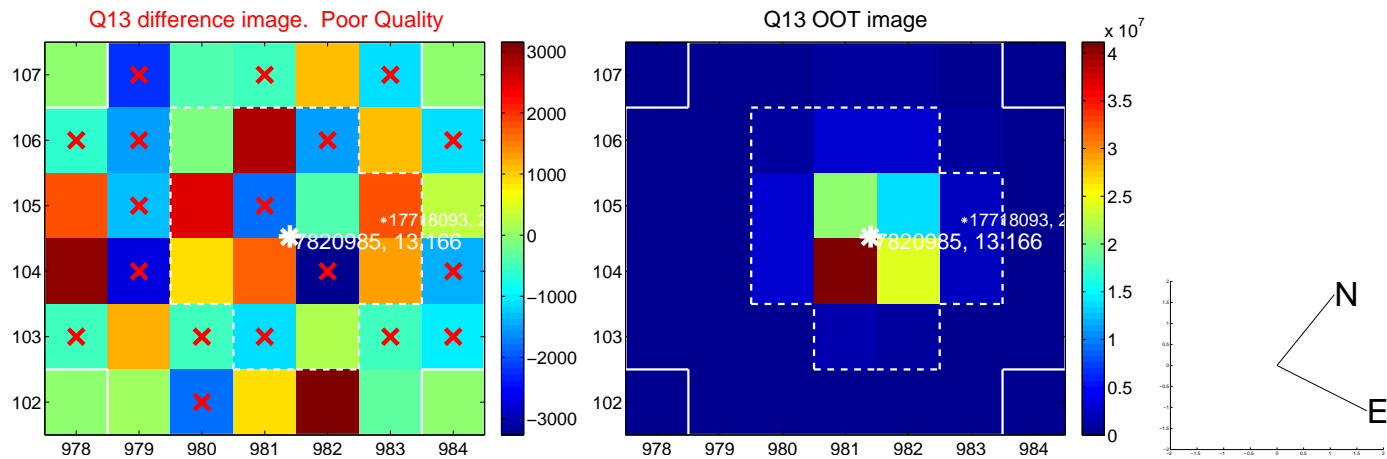
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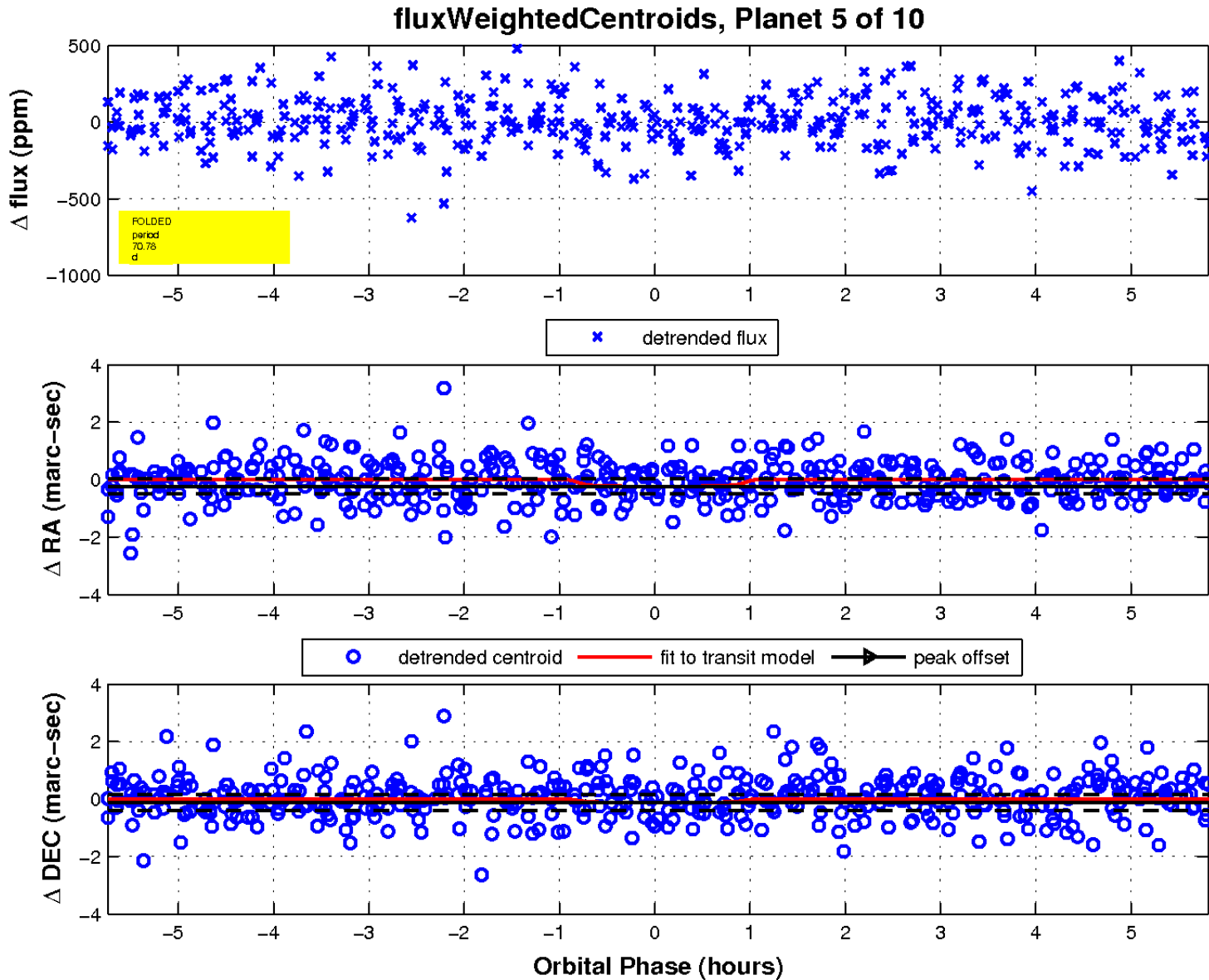
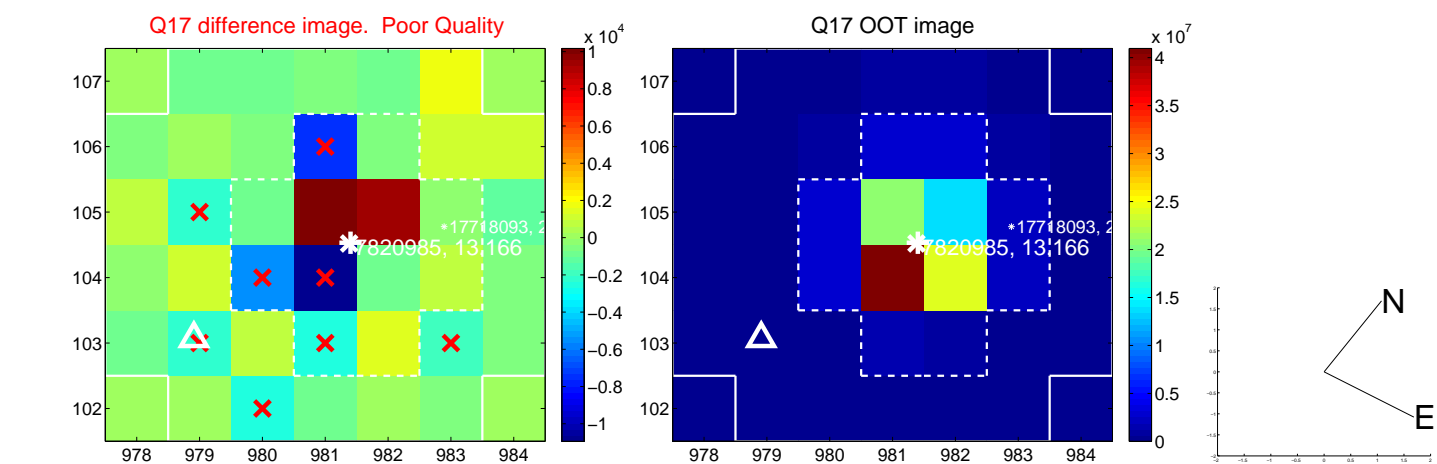
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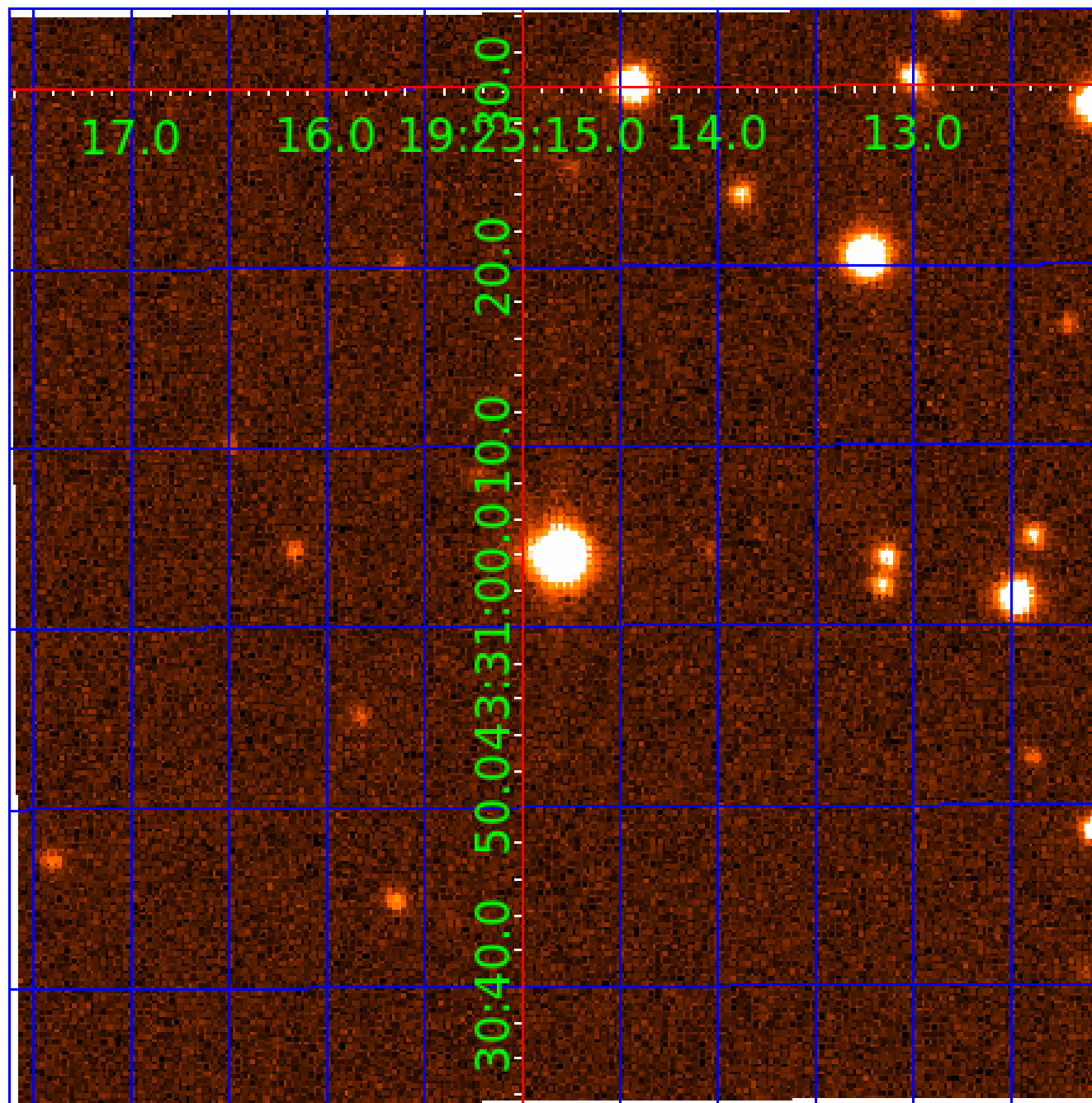


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

Q1-17 DR25 TCE Parameters

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| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

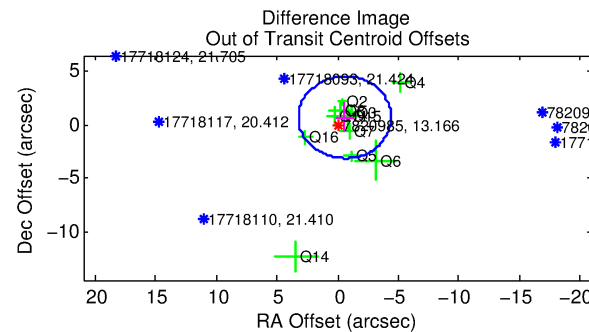
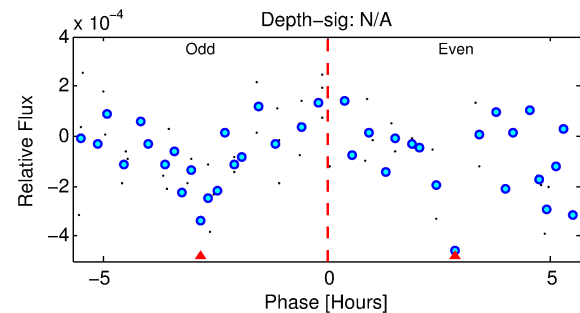
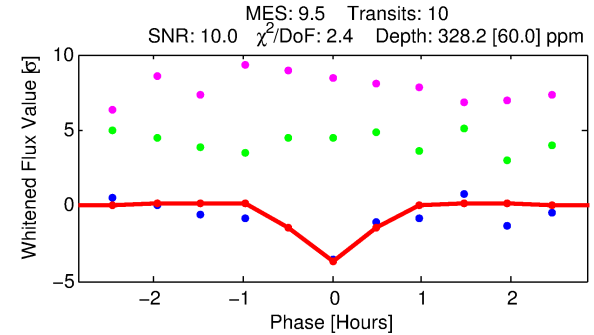
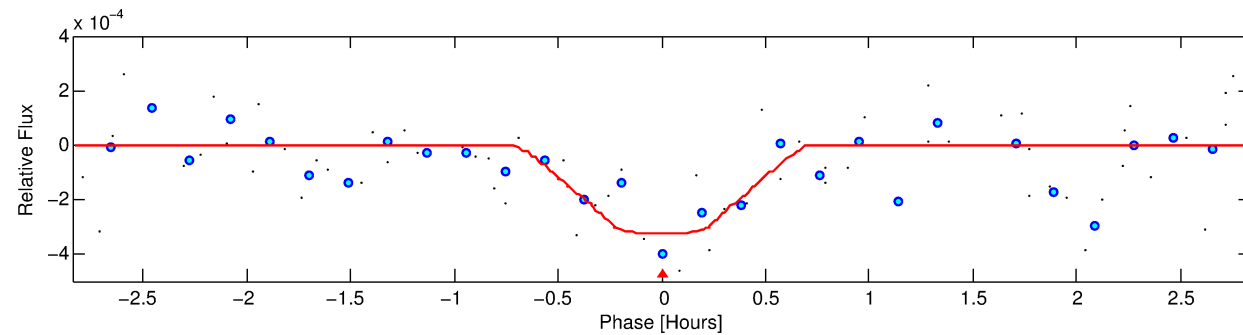
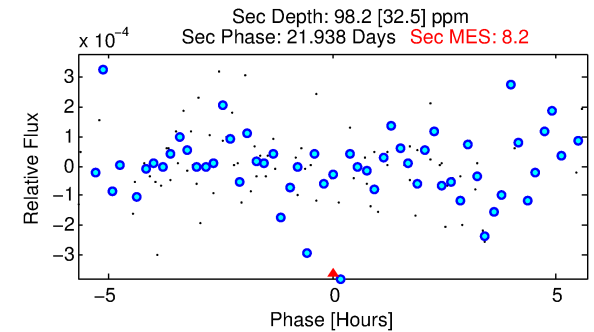
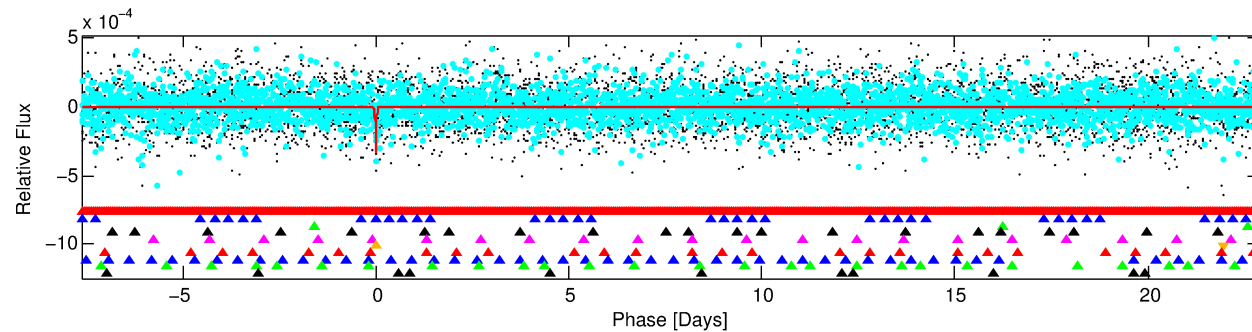
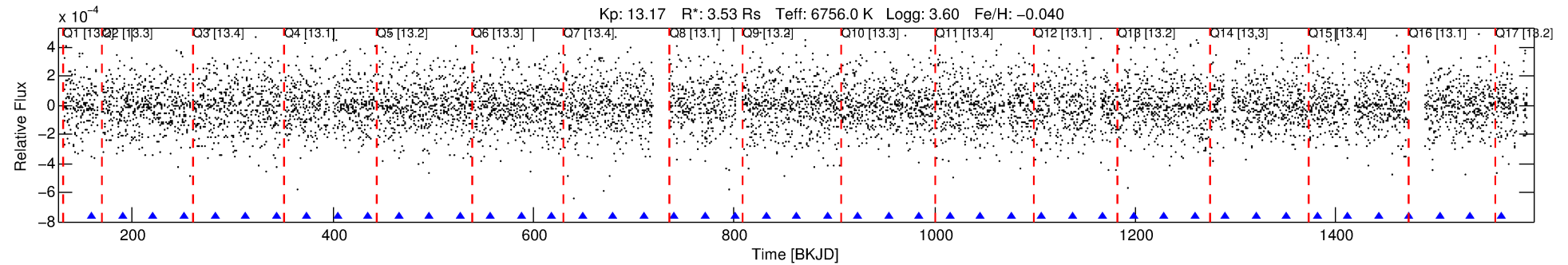
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-06

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 6 of 10 Period: 30.538 d



DV Fit Results:

Period = 30.53815 [0.00022] d
Epoch = 160.2062 [0.0047] BKJD
Rp/R* = 0.0173 [0.0171]
a/R* = 219.58 [1198.33]
b = 0.49 [8.38]
Seff = 430.90 [241.92]
Teq = 1162 [163] K
Rp = 6.67 [6.97] Re
a = 0.2323 [0.0789] AU
Ag = 65.56 [135.99] [0.47σ]
Teffp = 5111 [2561] K [1.54σ]

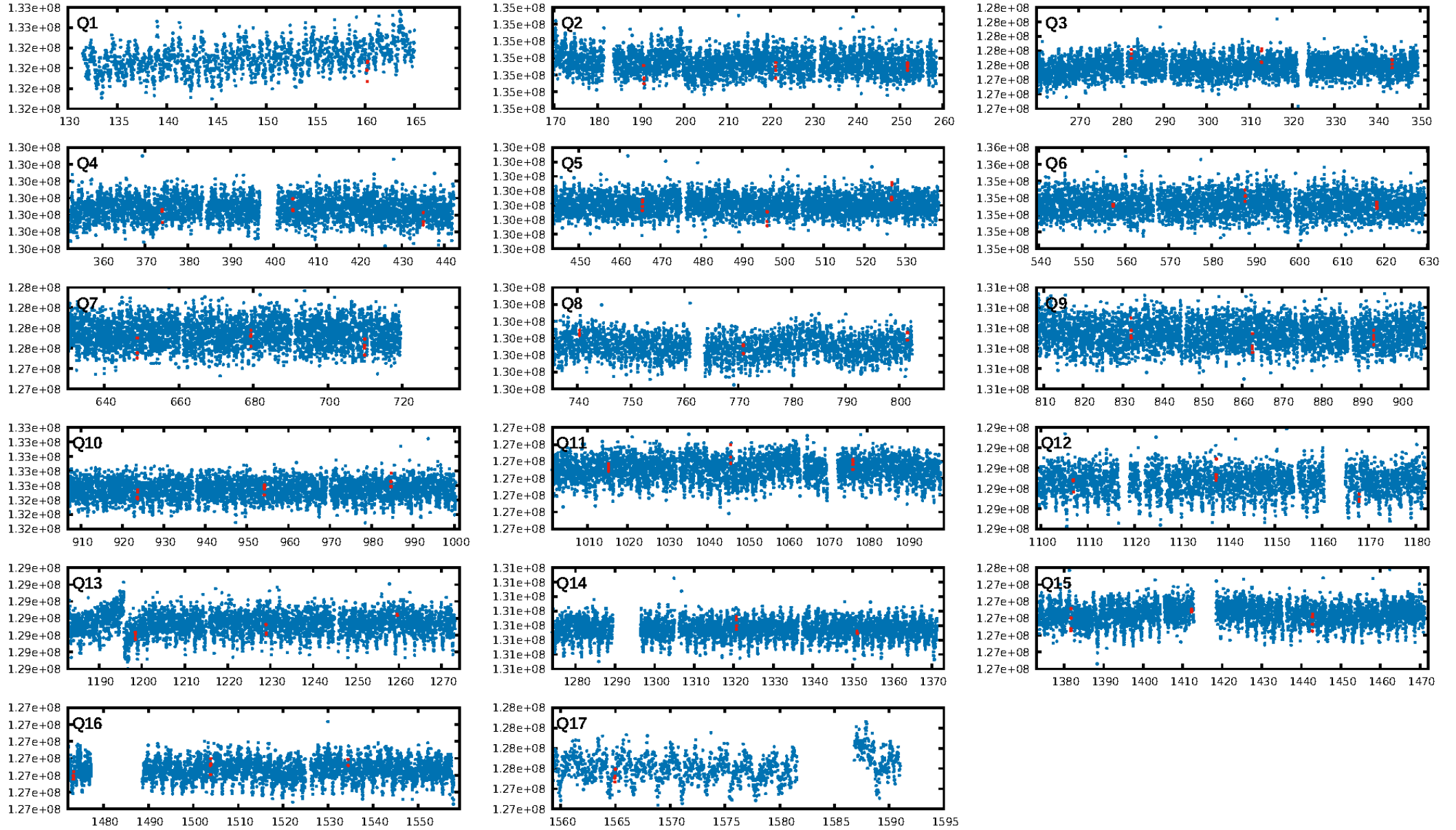
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.94σ]
LongPeriod-sig: 100.0% [88.39σ]
ModelChiSquare2-sig: 5.5%
ModelChiSquareGof-sig: 78.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -10.54
Centroid-sig: 96.9%
Centroid-so: 0.091 arcsec [0.13σ]
OotOffset-rm: 0.919 arcsec [0.72σ]
KicOffset-rm: 0.935 arcsec [0.80σ]
OotOffset-st: 3/4/3/1 [11]
KicOffset-st: 3/4/3/1 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.18 [3/17]

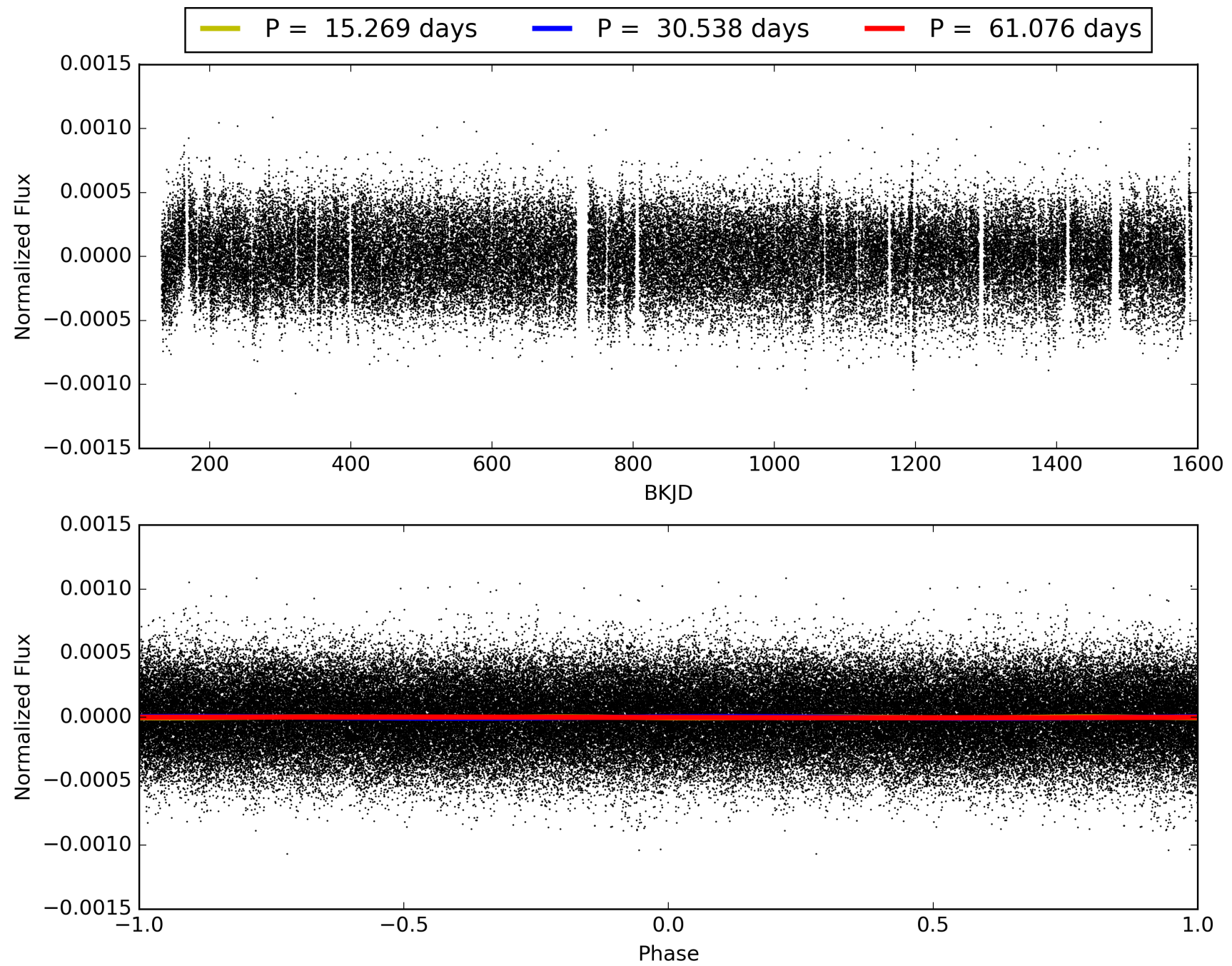
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:53 Z

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

TCE 007820985-06, PDC Light Curves

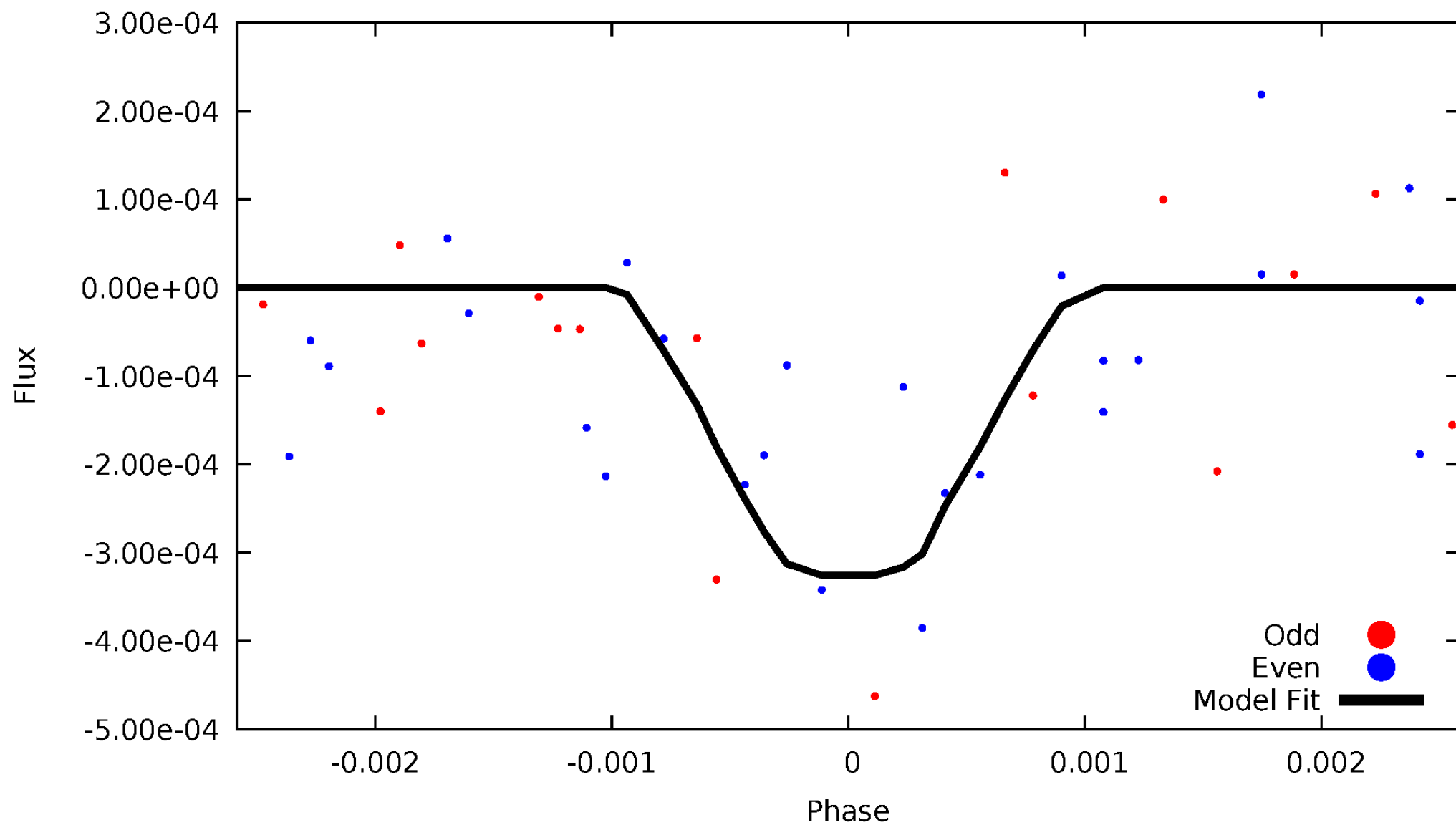


TCE 007820985-06



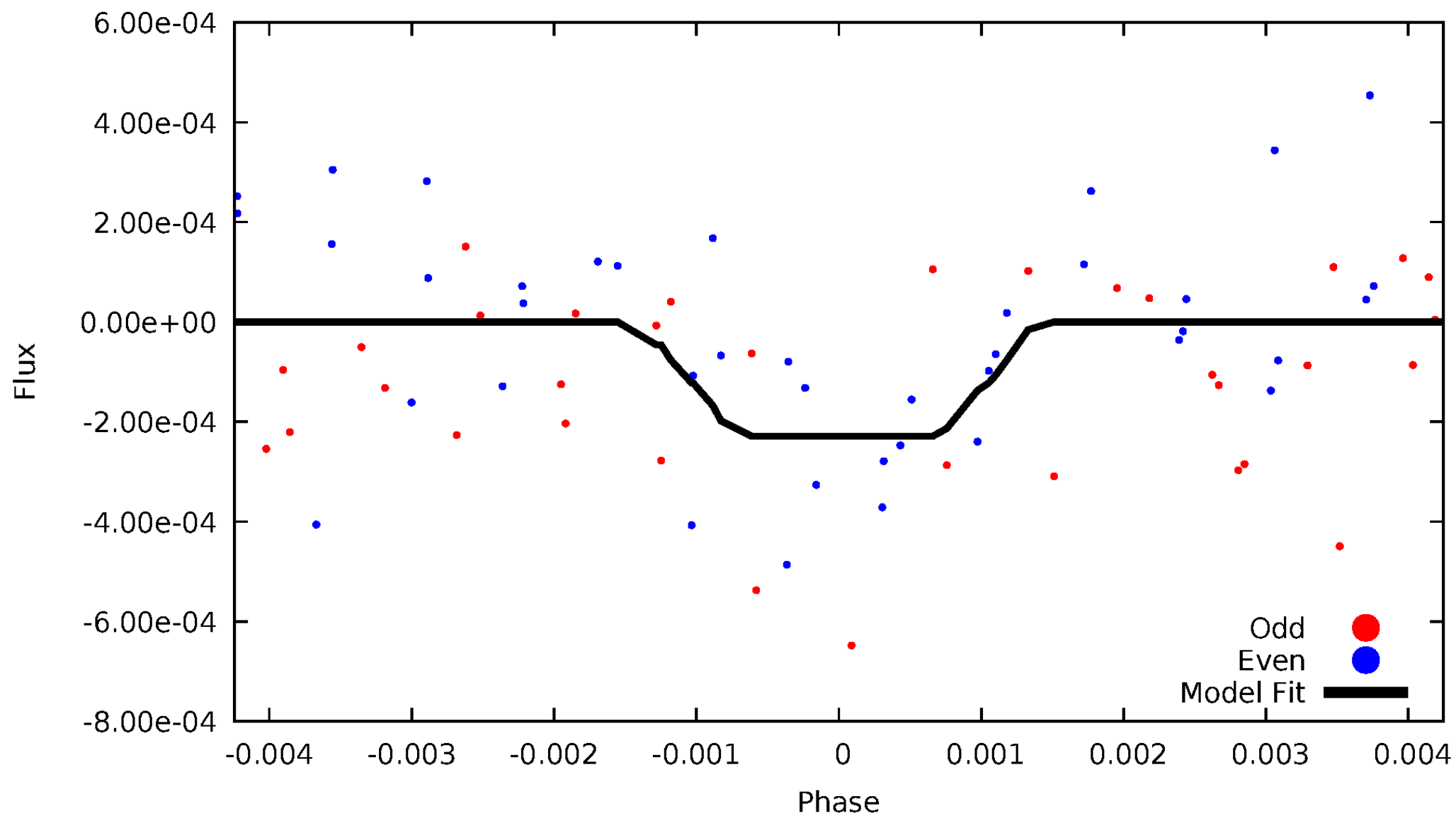
DV Odd/Even

TCE 007820985-06



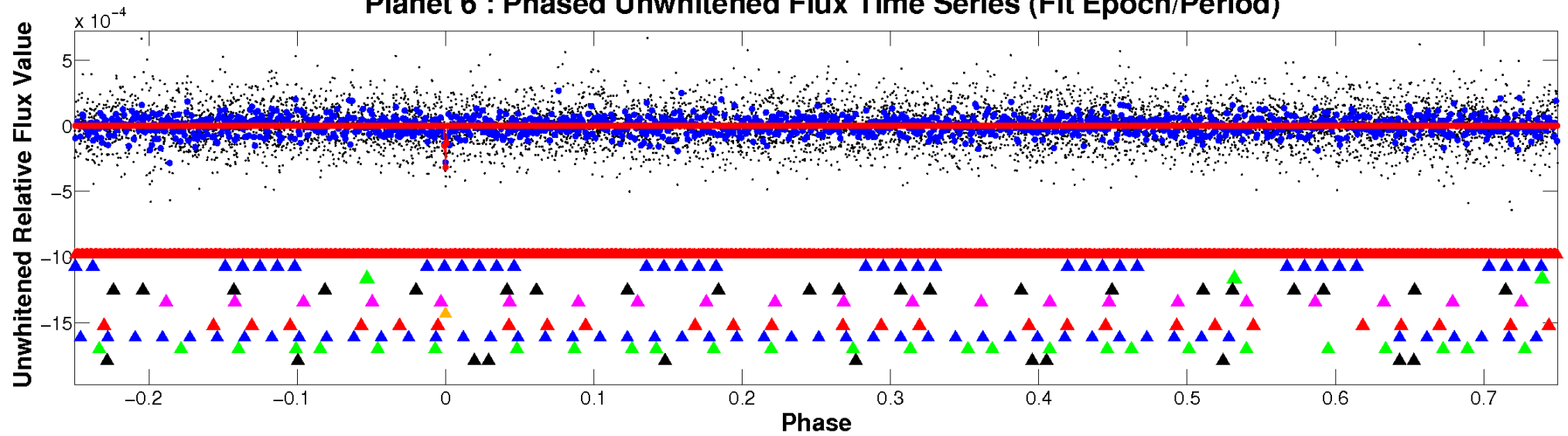
ALT Odd/Even

TCE 007820985-06

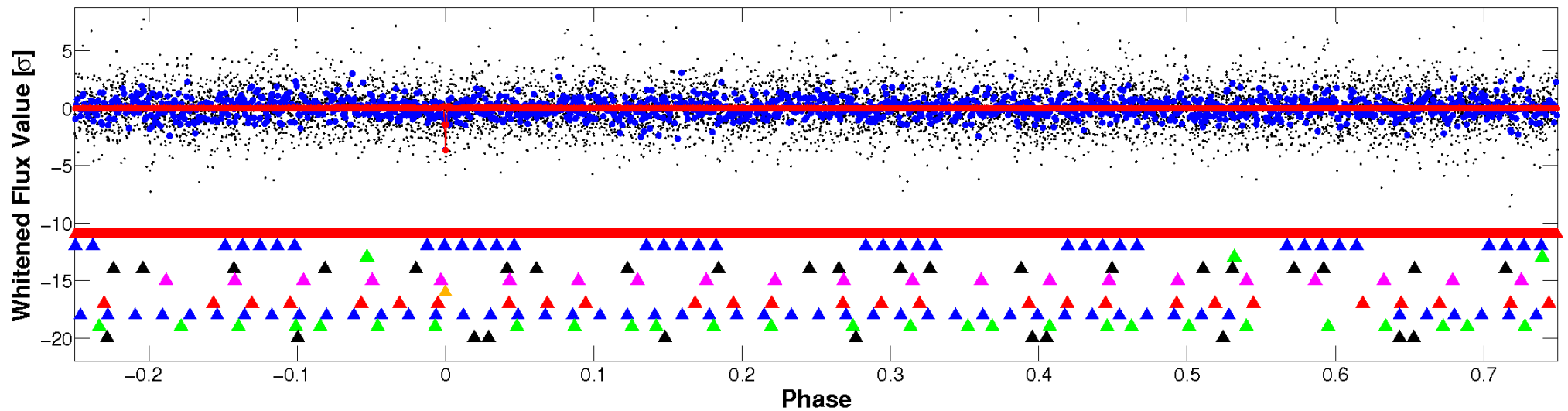


Non-Whitened Vs. Whitened Light Curve

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

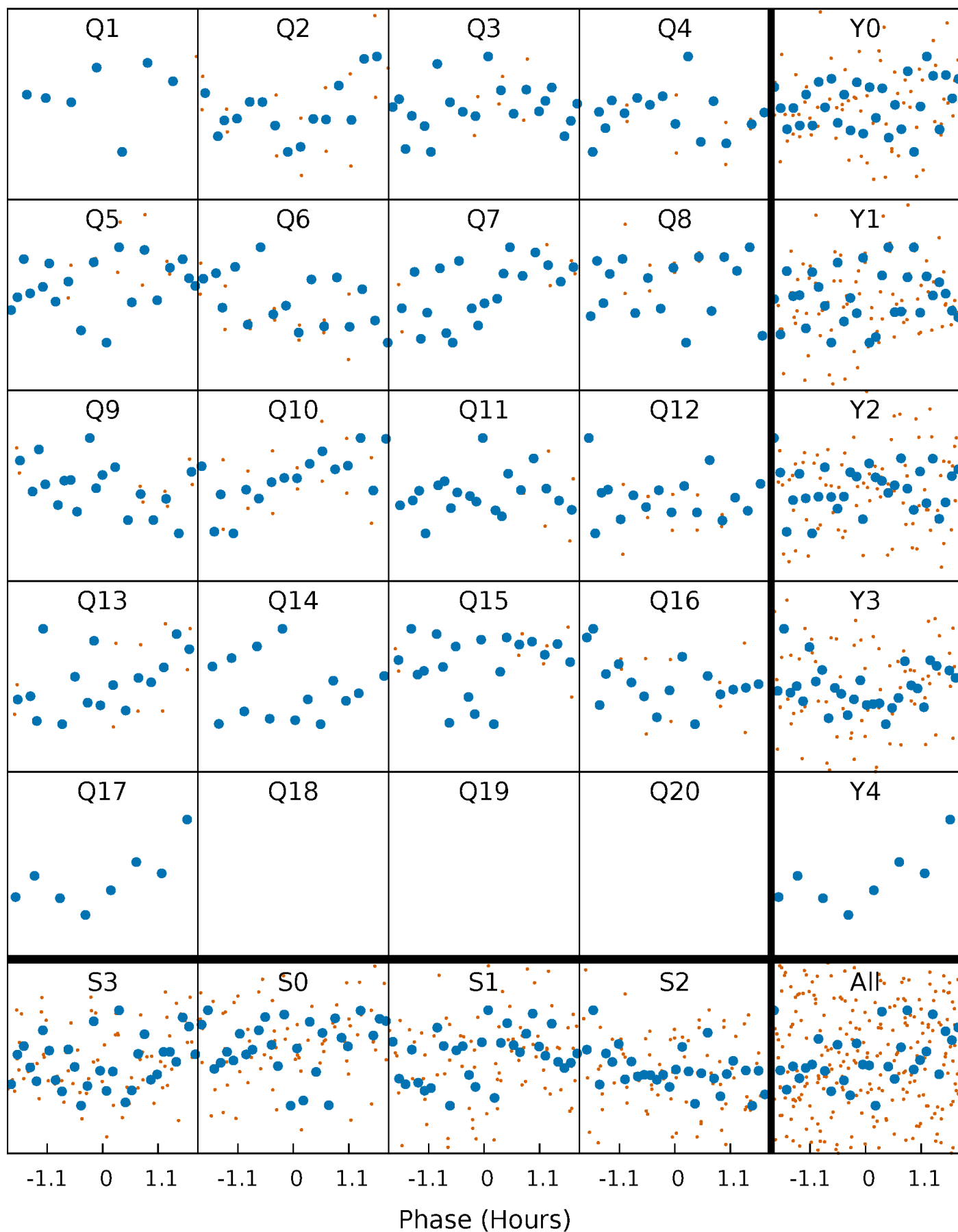


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



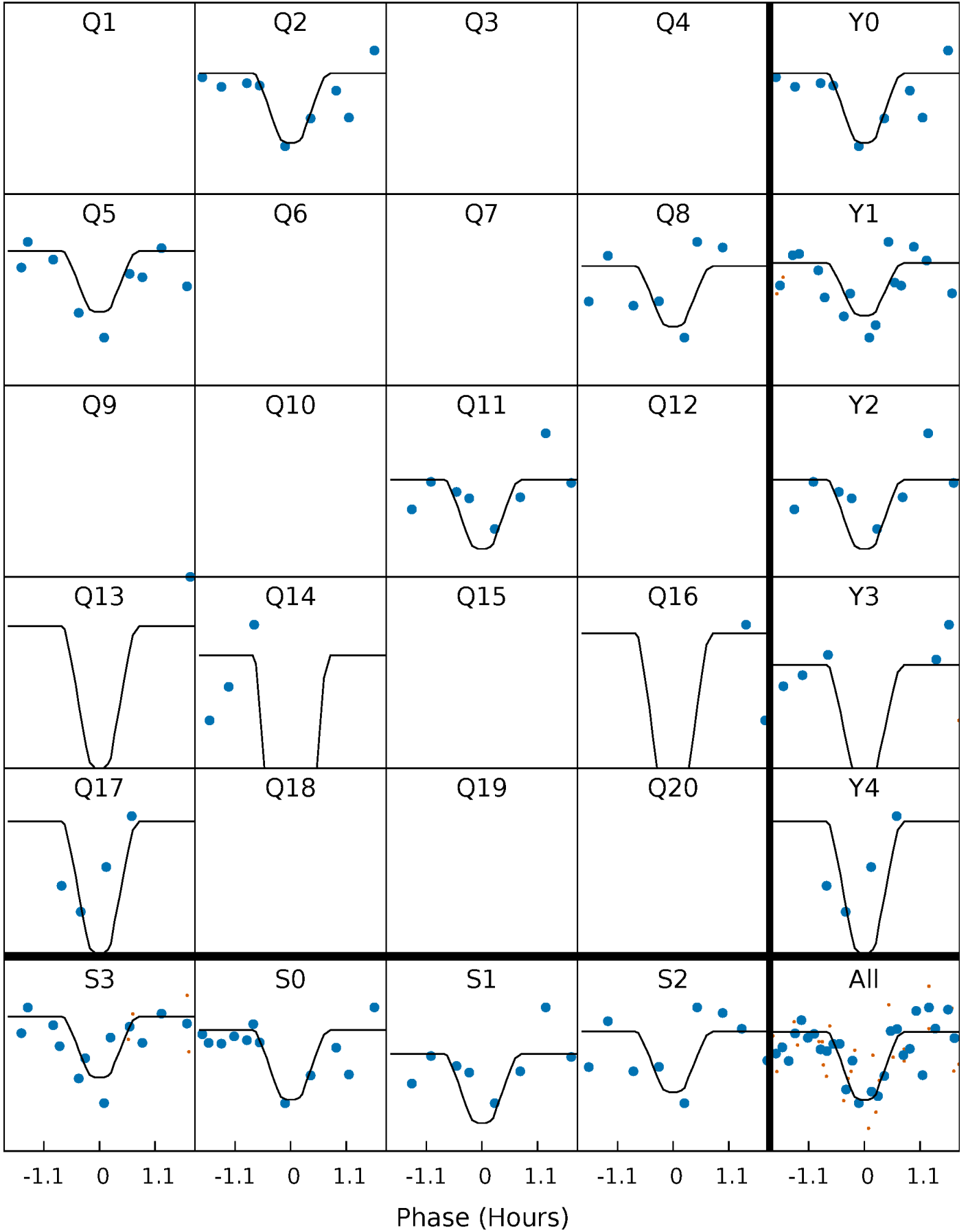
PDC Quarter-Phased Transit Curves

TCE 007820985-06 P= 30.538145 Days $T_0=160.206230$ (BKJD)



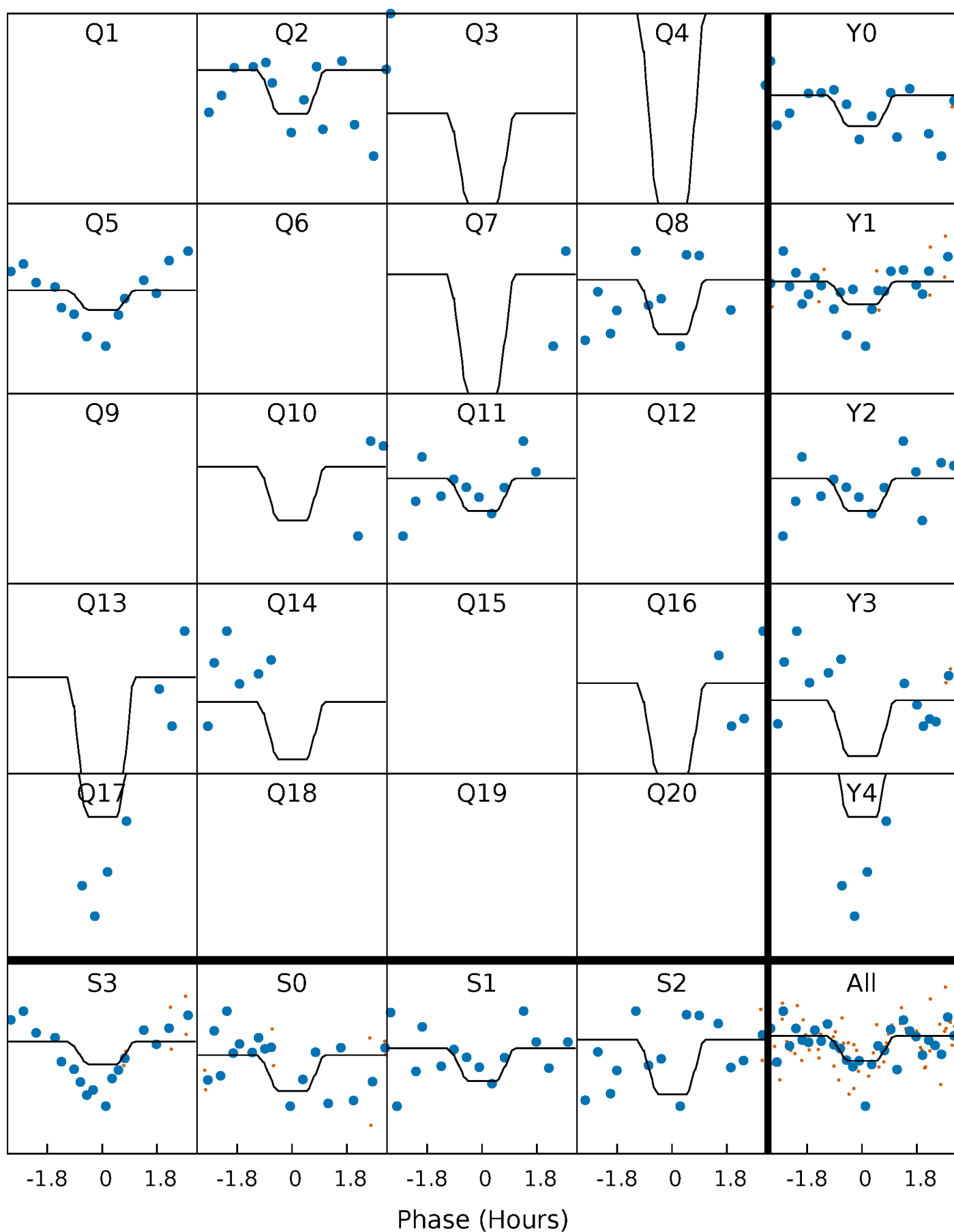
DV Quarter-Phased Transit Curves

TCE 007820985-06 $P = 30.538145$ Days $T_0 = 160.206230$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

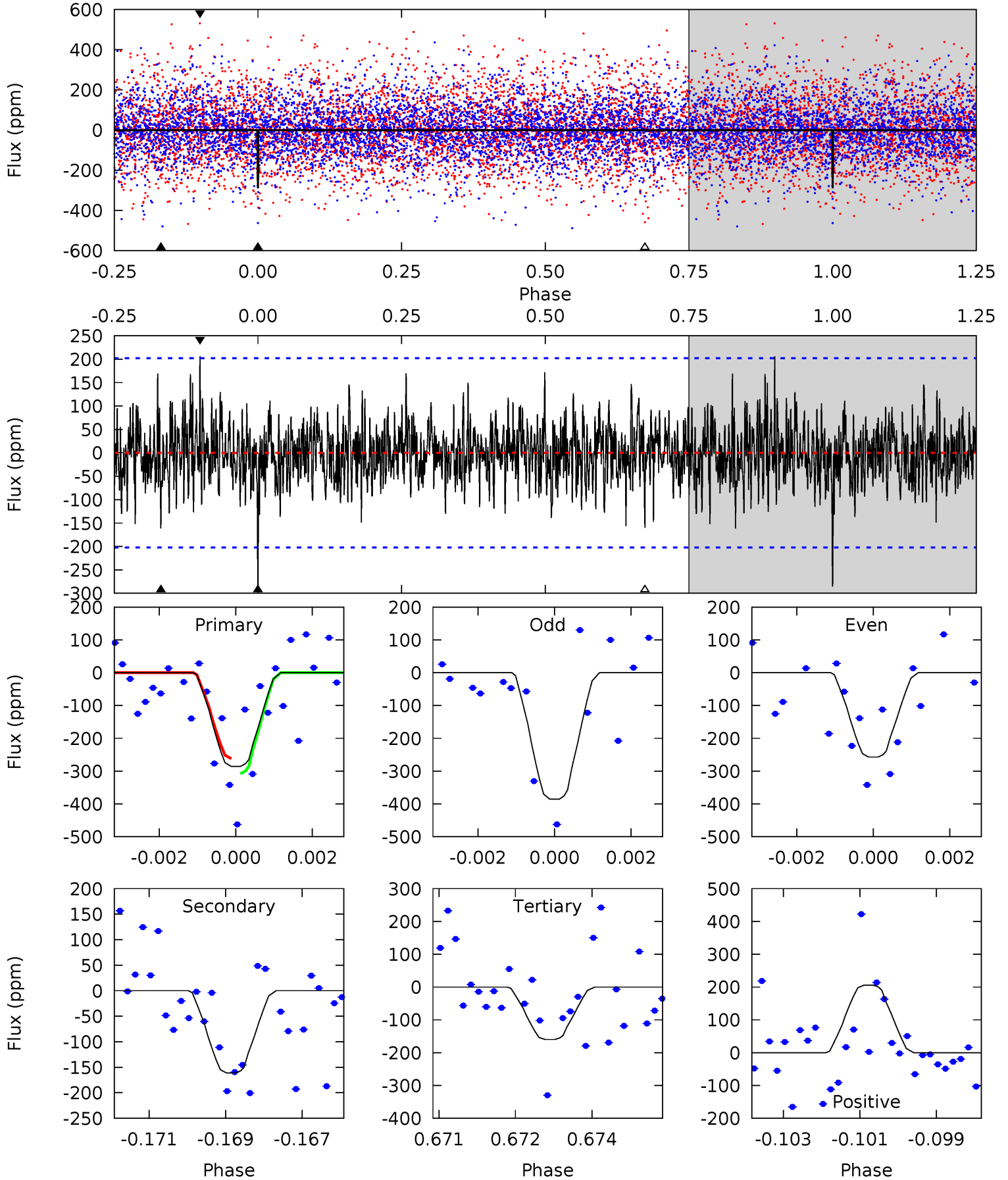
TCE 007820985-06 P= 30.538062 Days $T_0=160.207830$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-06, P = 30.538145 Days, E = 129.668085 Days

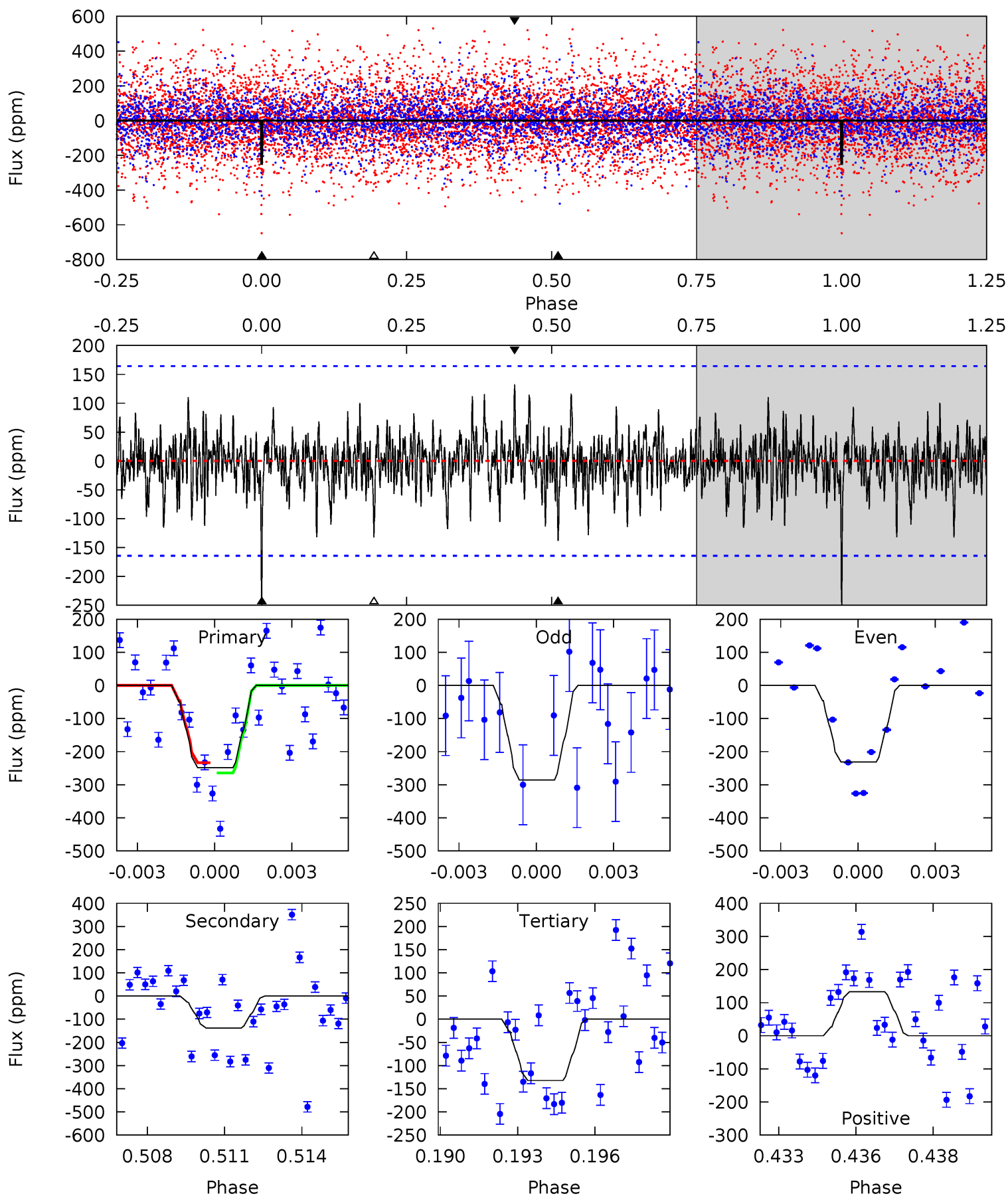
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.55 | 4.26 | 4.23 | 5.45 | 5.34 | 3.12 | 1.34 | 3.32 | 2.10 | 0.03 | -1.18 | 1.64 | 0.93 | 0.42 | 0.61 |



Alt Model-Shift Uniqueness Test

007820985-06, P = 30.538062 Days, E = 129.669768 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.97 | 4.42 | 4.24 | 4.25 | 5.27 | 2.99 | 1.19 | 3.73 | 3.72 | 0.18 | 0.17 | 0.82 | 1.15 | 0.35 | 0.50 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-06 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|-------------------|
| DV | -161 ± 38 | $7.05^{+6.17}_{-4.53}$ | 1572^{+92}_{-132} | 5394^{+4033}_{-1265} | 96^{+658}_{-69} |
| Alt. | -138 ± 31 | $6.92^{+5.77}_{-4.41}$ | 1573^{+90}_{-138} | 5214^{+3462}_{-1104} | 83^{+522}_{-58} |

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

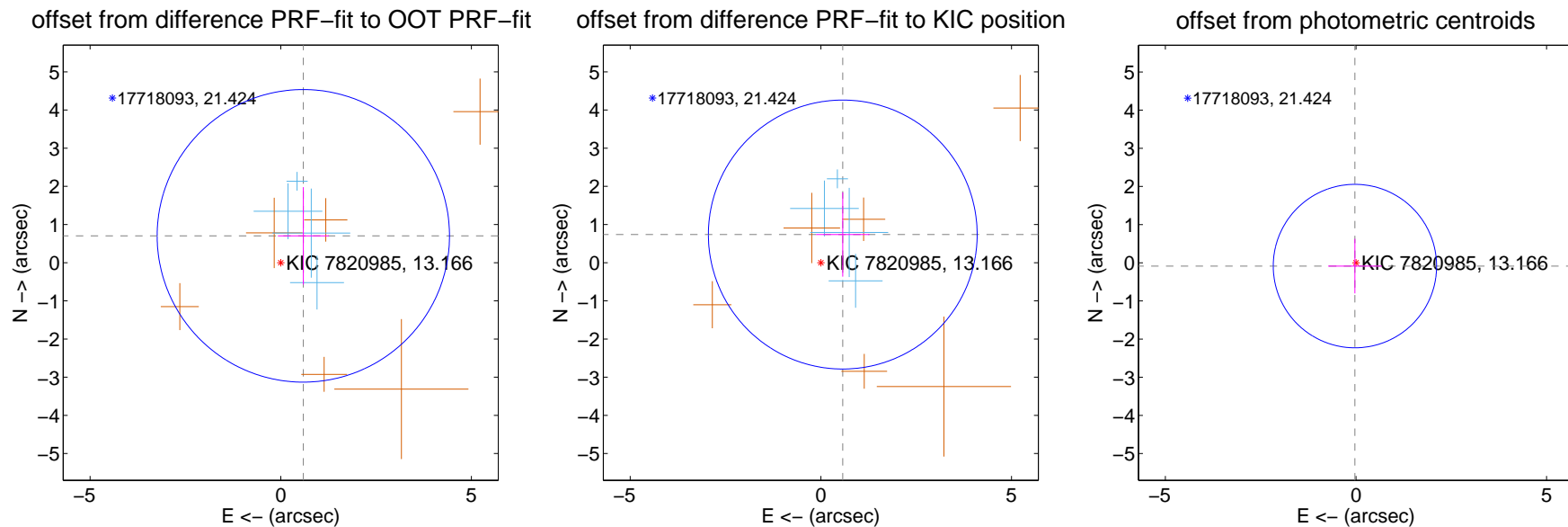
DV Centroid Data

Supplemental centroid analysis for 007820985-06. Kepler magnitude: 13.17. Transit SNR 10.00

There are 4 quarters with good PRF difference image offsets

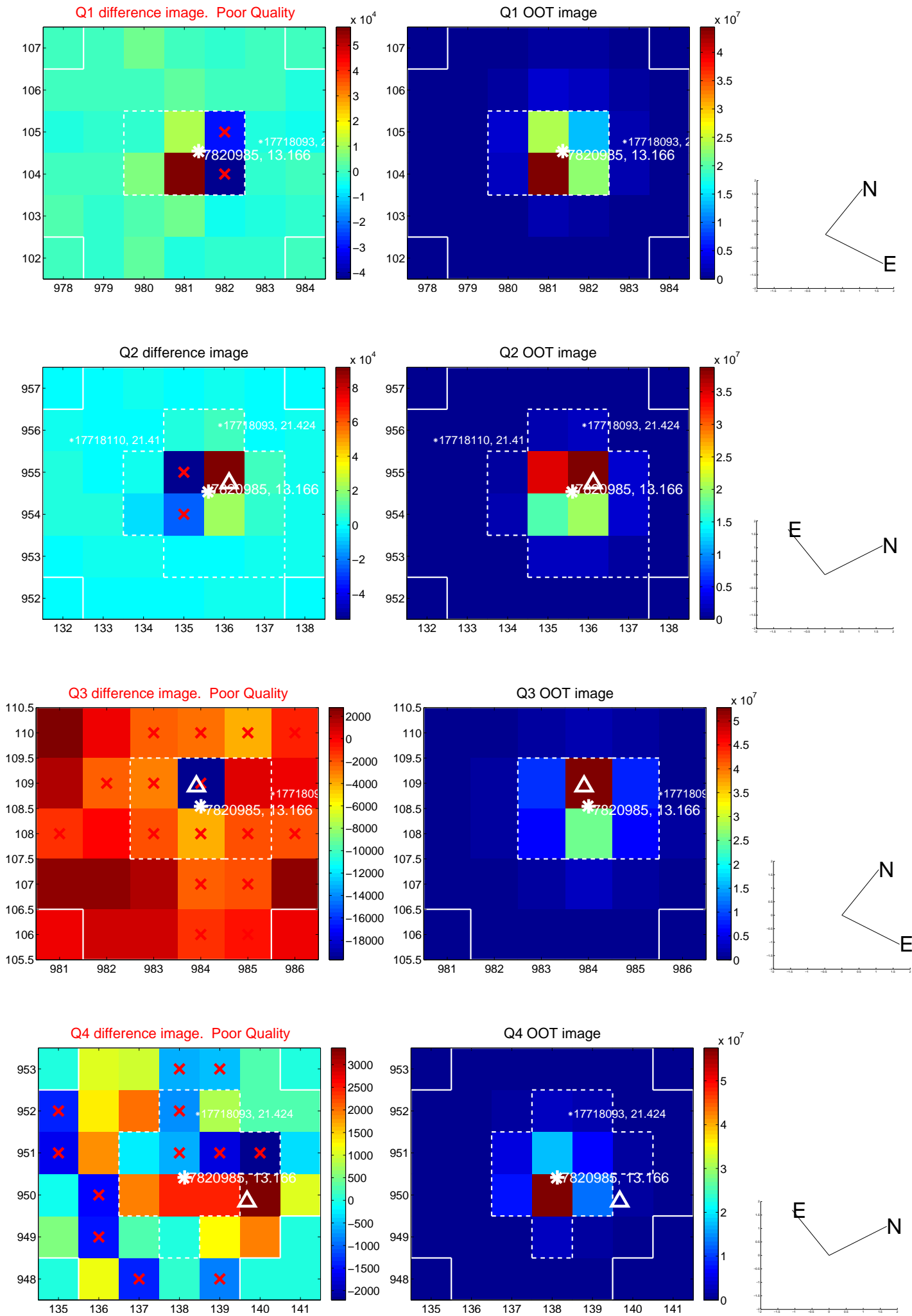
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.919 ± 1.278 | 0.72 | -0.592 ± 0.667 | 0.703 ± 1.276 |
| PRF-fit source offset from KIC position | 0.935 ± 1.174 | 0.80 | -0.575 ± 0.701 | 0.737 ± 1.103 |
| photometric centroid source offset | 0.09 ± 0.71 | 0.13 | 0.03 ± 0.70 | -0.09 ± 0.72 |

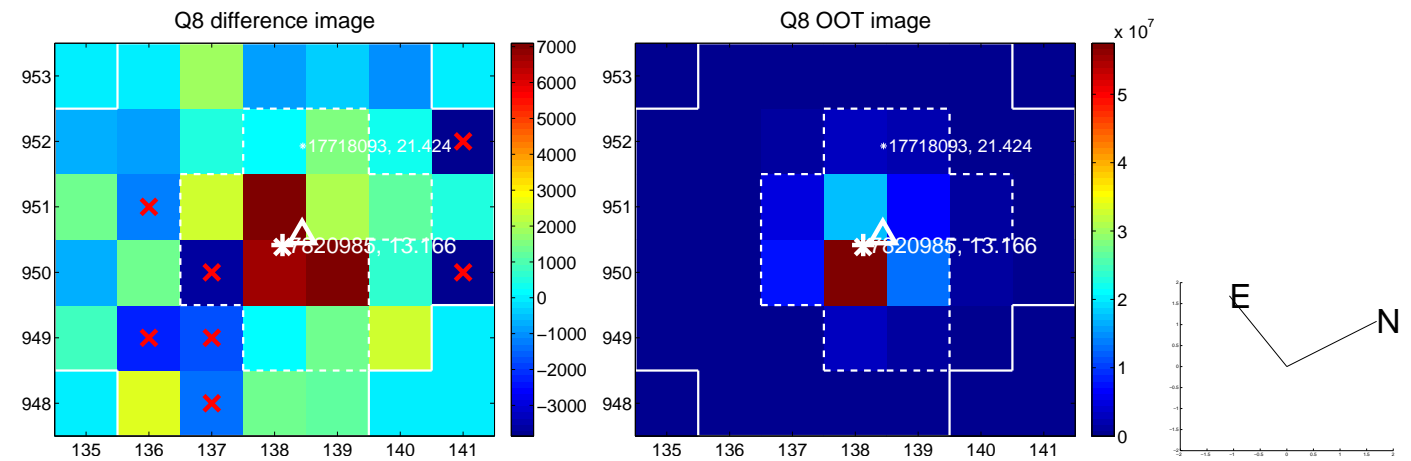
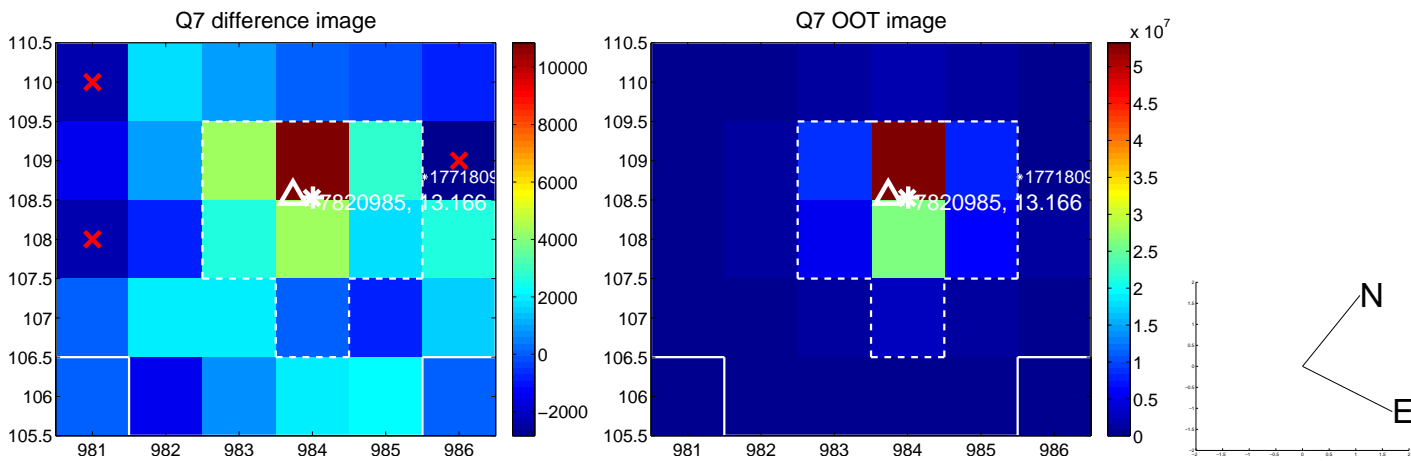
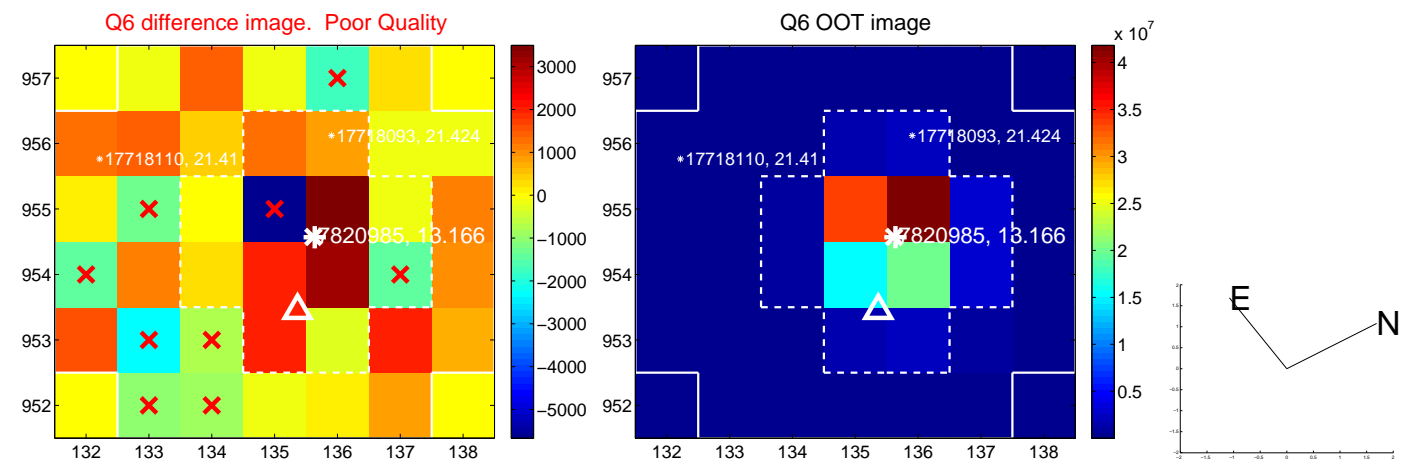
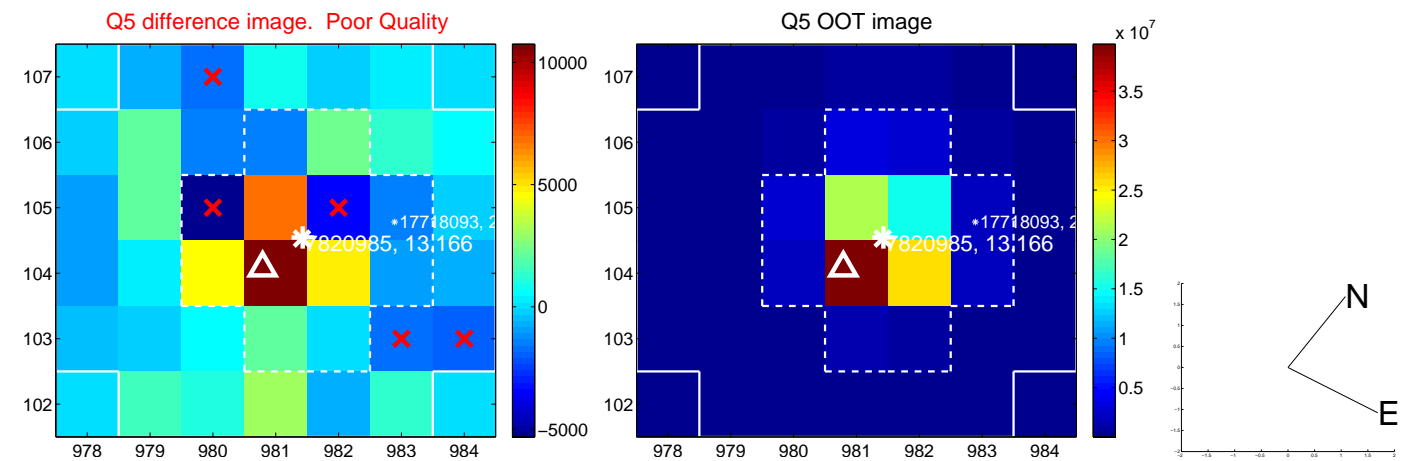


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

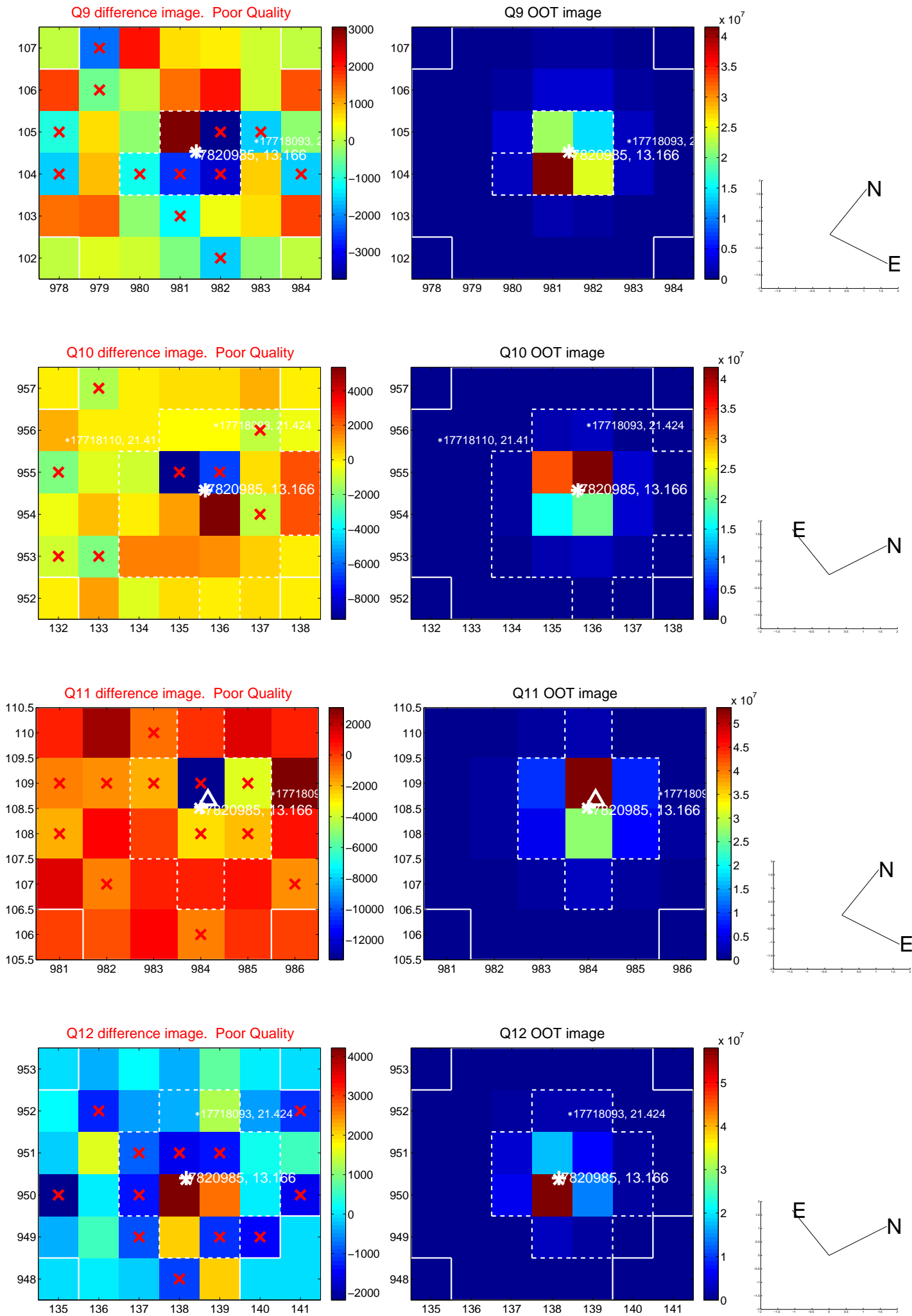
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



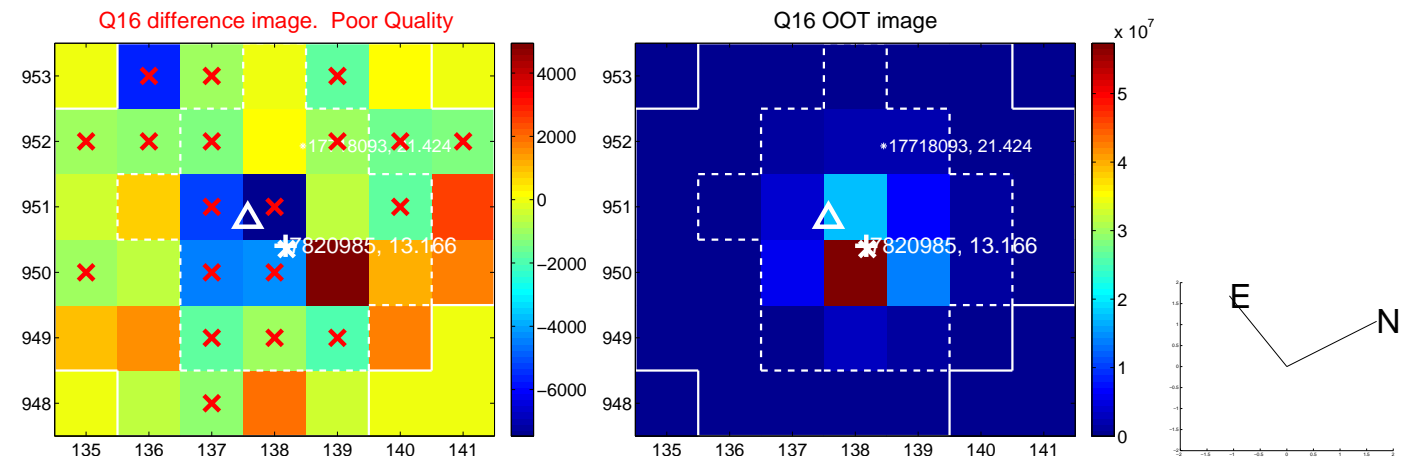
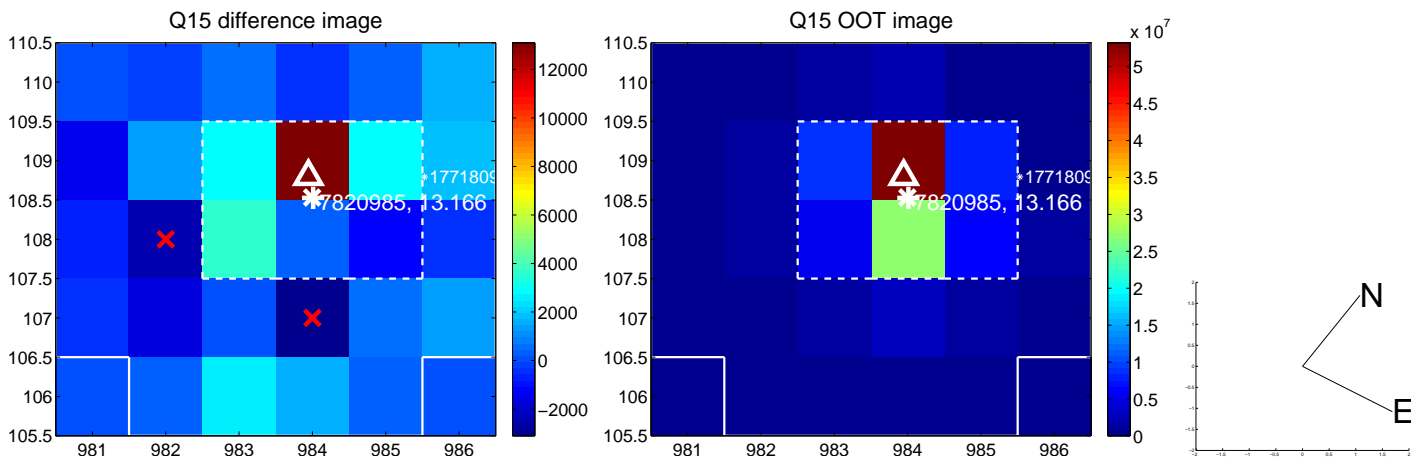
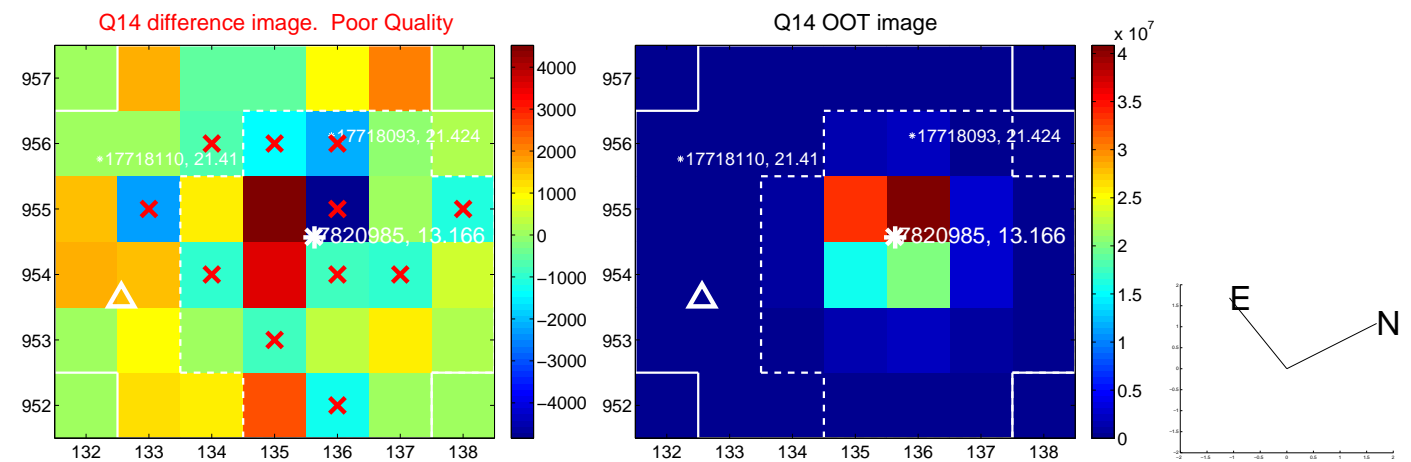
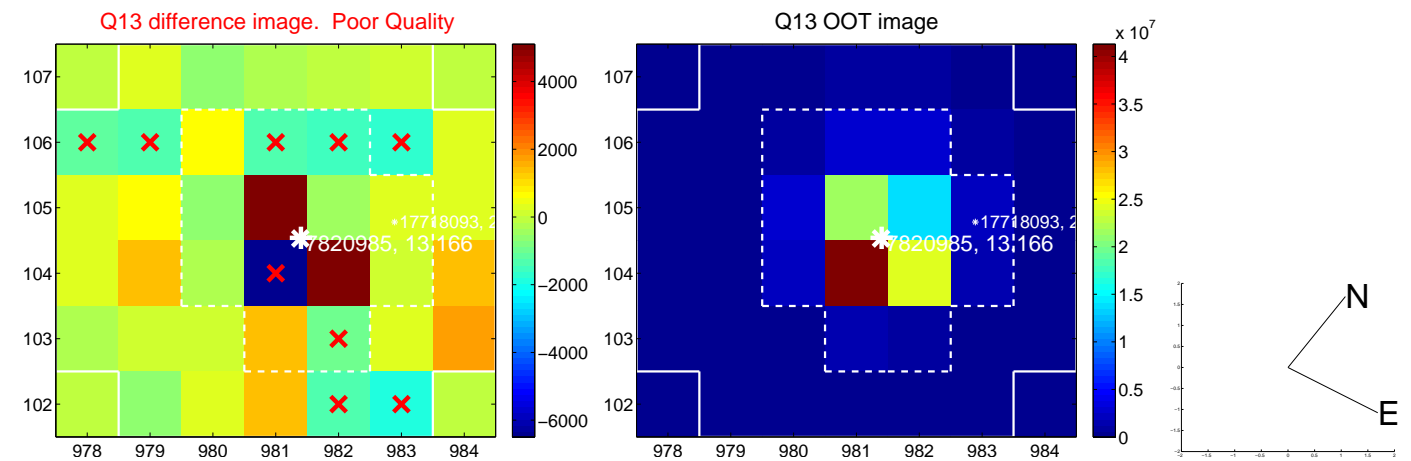
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



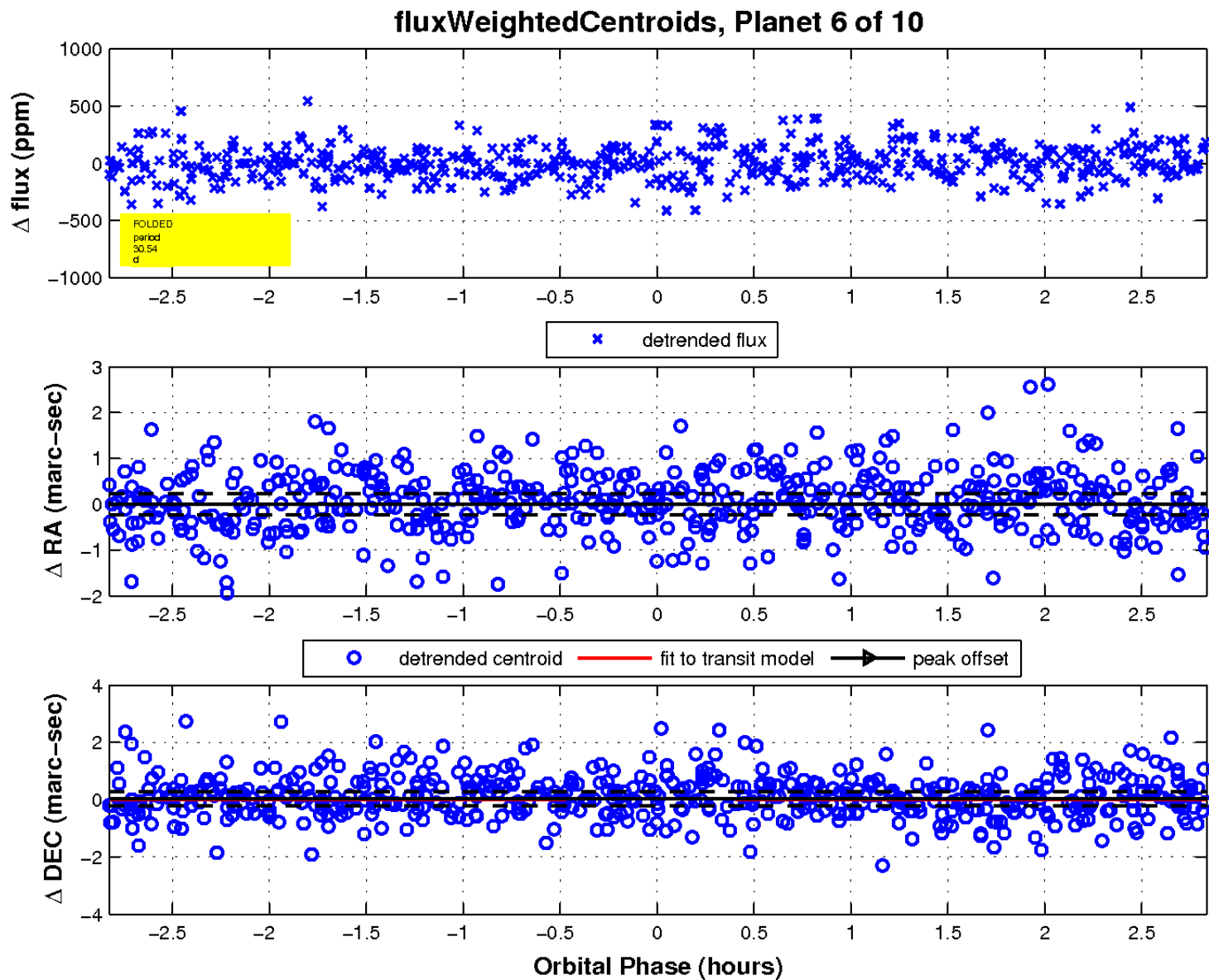
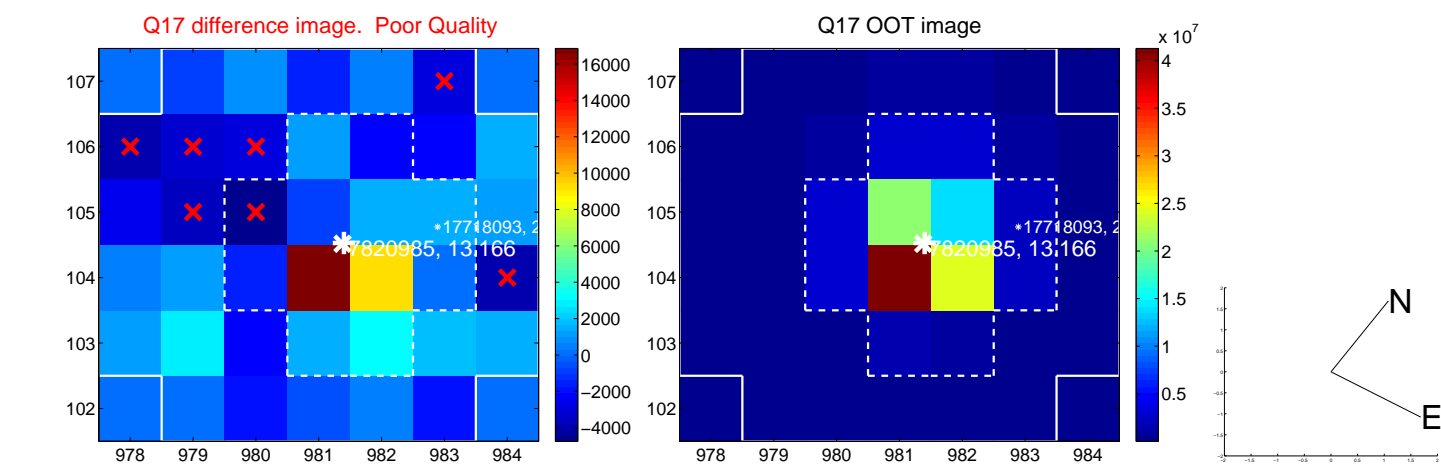
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

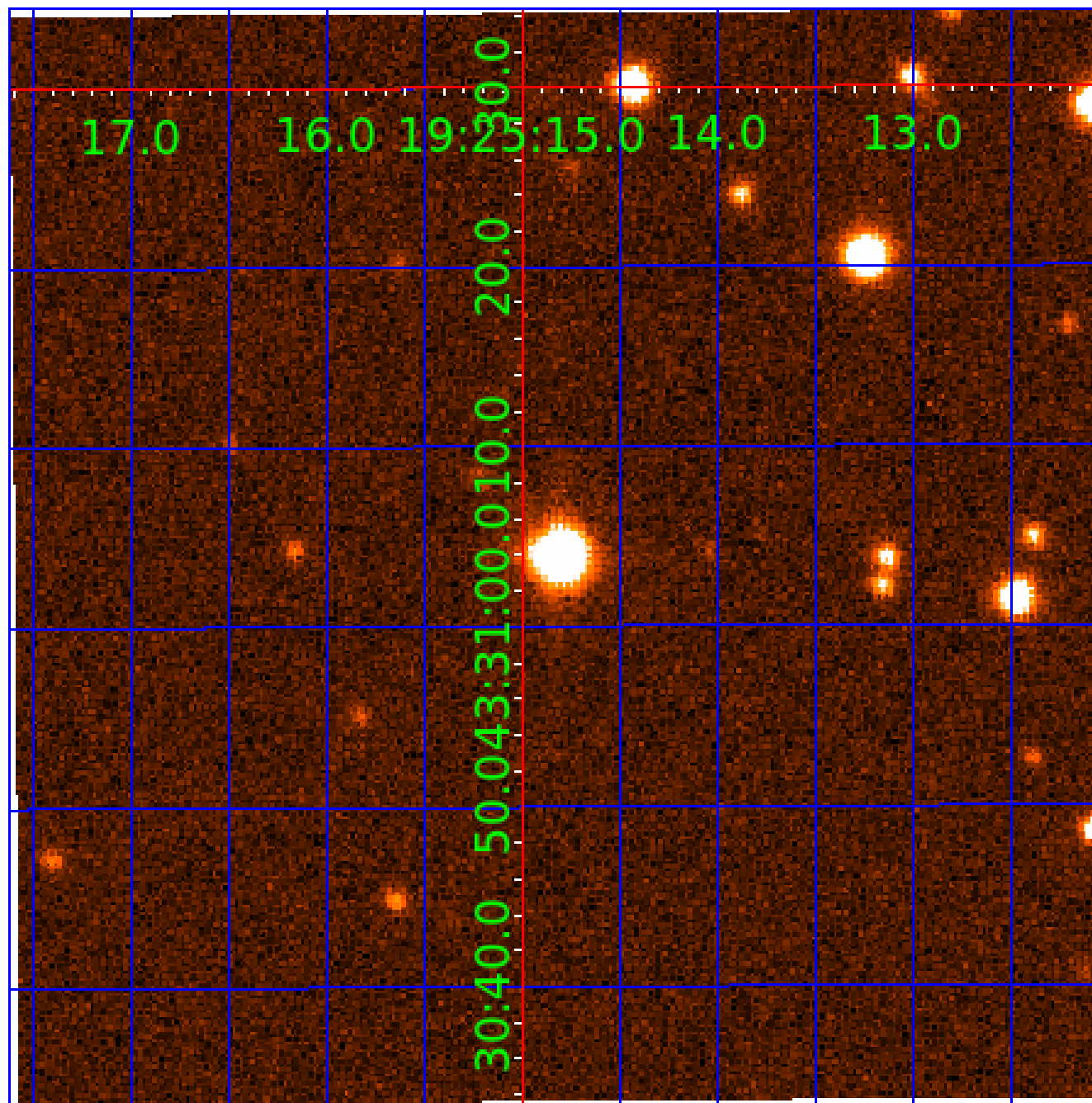


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

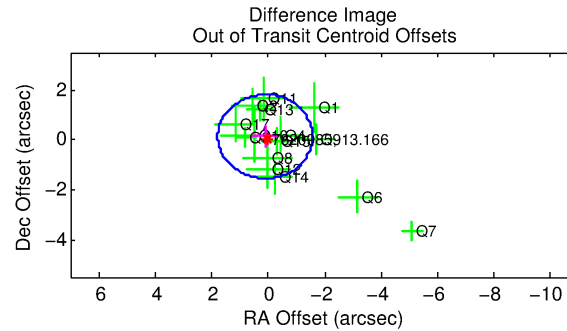
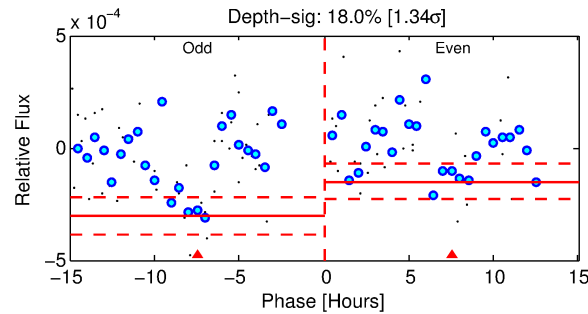
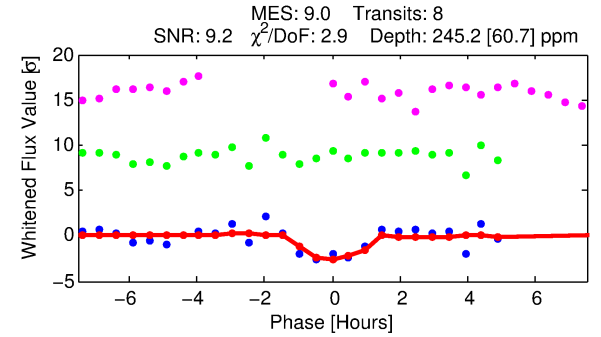
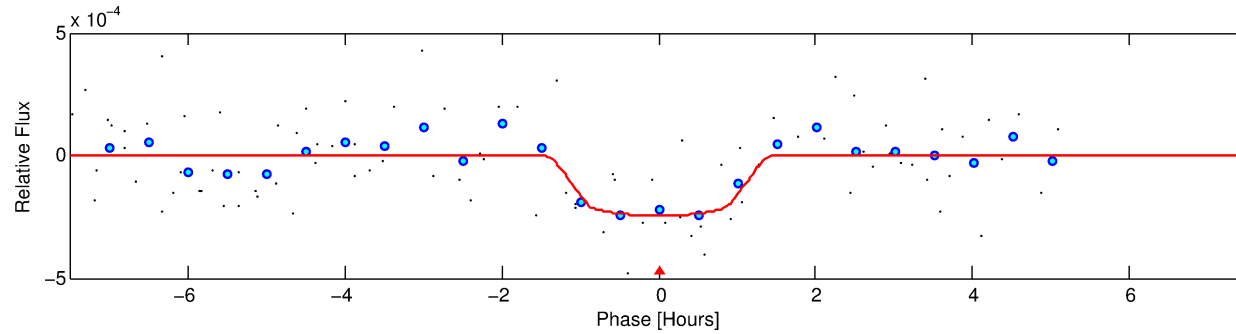
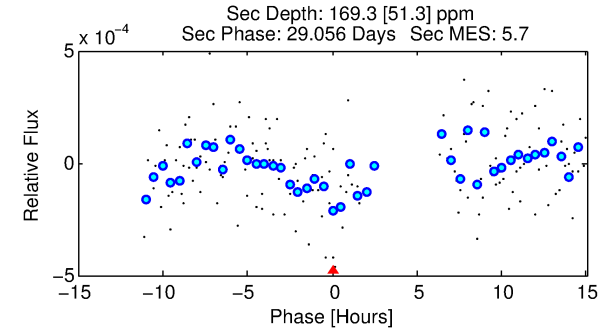
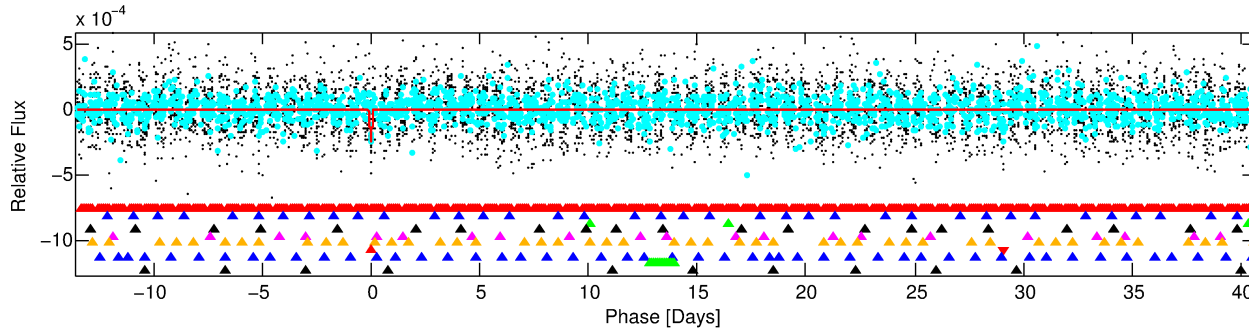
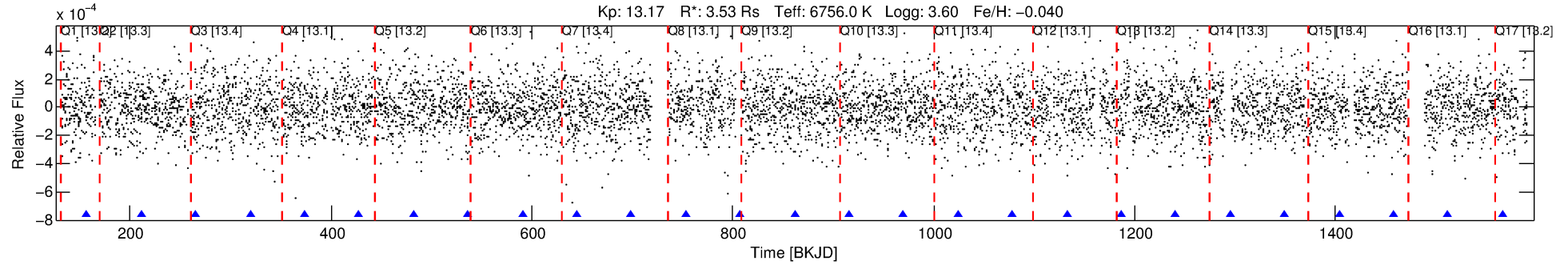
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-07

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 7 of 10 Period: 54.202 d



DV Fit Results:

Period = 54.20232 [0.00440] d
Epoch = 157.0079 [0.0767] BKJD
Rp/R* = 0.0167 [0.0317]
a/R* = 78.32 [892.68]
b = 0.90 [2.45]
Seff = 200.51 [112.57]
Teq = 960 [135] K
Rp = 6.44 [12.42] Re
a = 0.3406 [0.1157] AU
Ag = 260.46 [1001.27] [0.26σ]
Teffp = 5960 [5672] K [0.88σ]

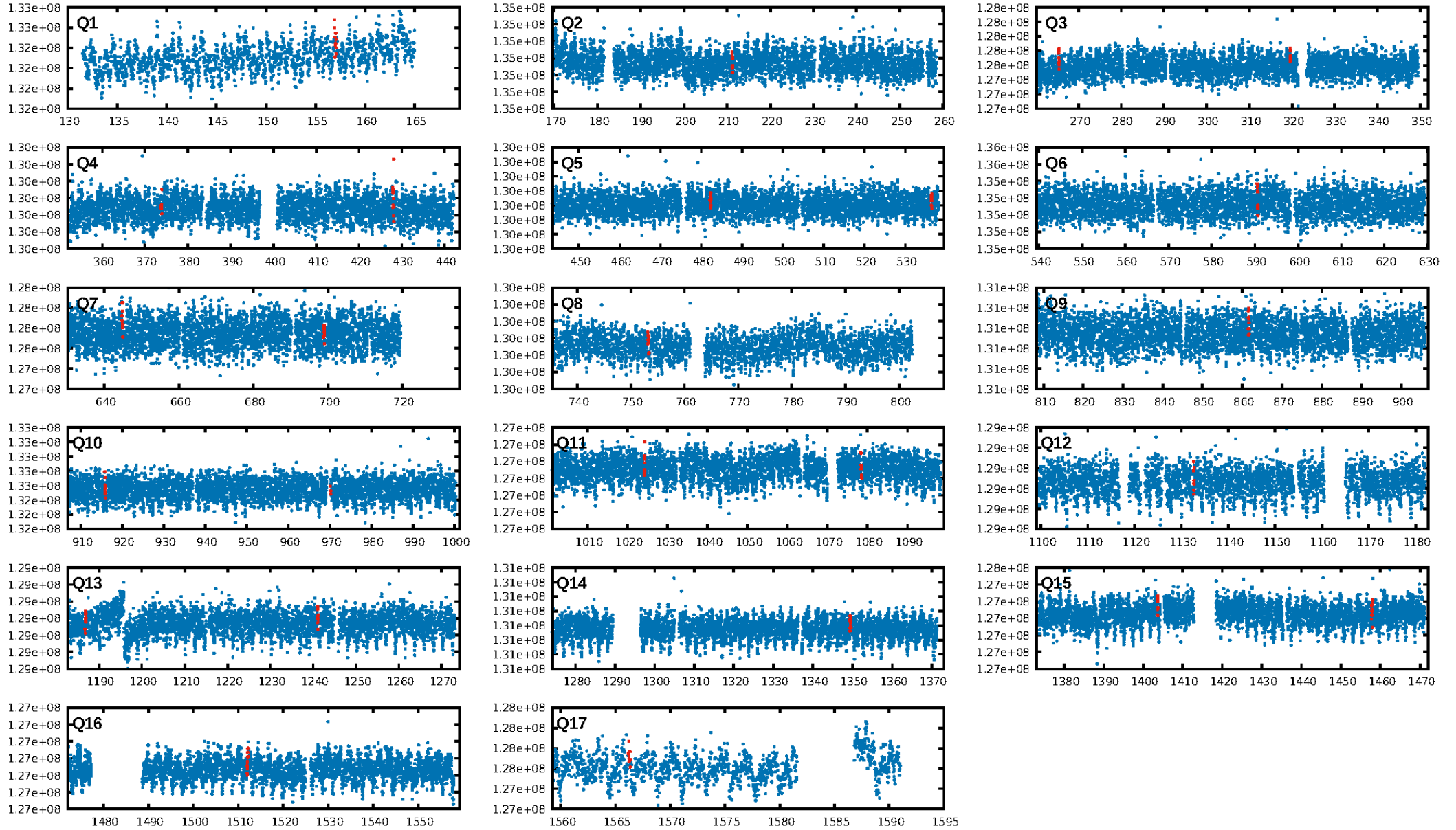
DV Diagnostic Results:

ShortPeriod-sig: 25.4% [0.32σ]
LongPeriod-sig: 100.0% [120.22σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 94.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.8661
Centroid-sig: 0.2%
Centroid-so: 1.532 arcsec [1.83σ]
OotOffset-rm: 0.165 arcsec [0.29σ]
KicOffset-rm: 0.222 arcsec [0.45σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.07 [1/15]
DiffImageOverlap-fno: 0.00 [0/17]

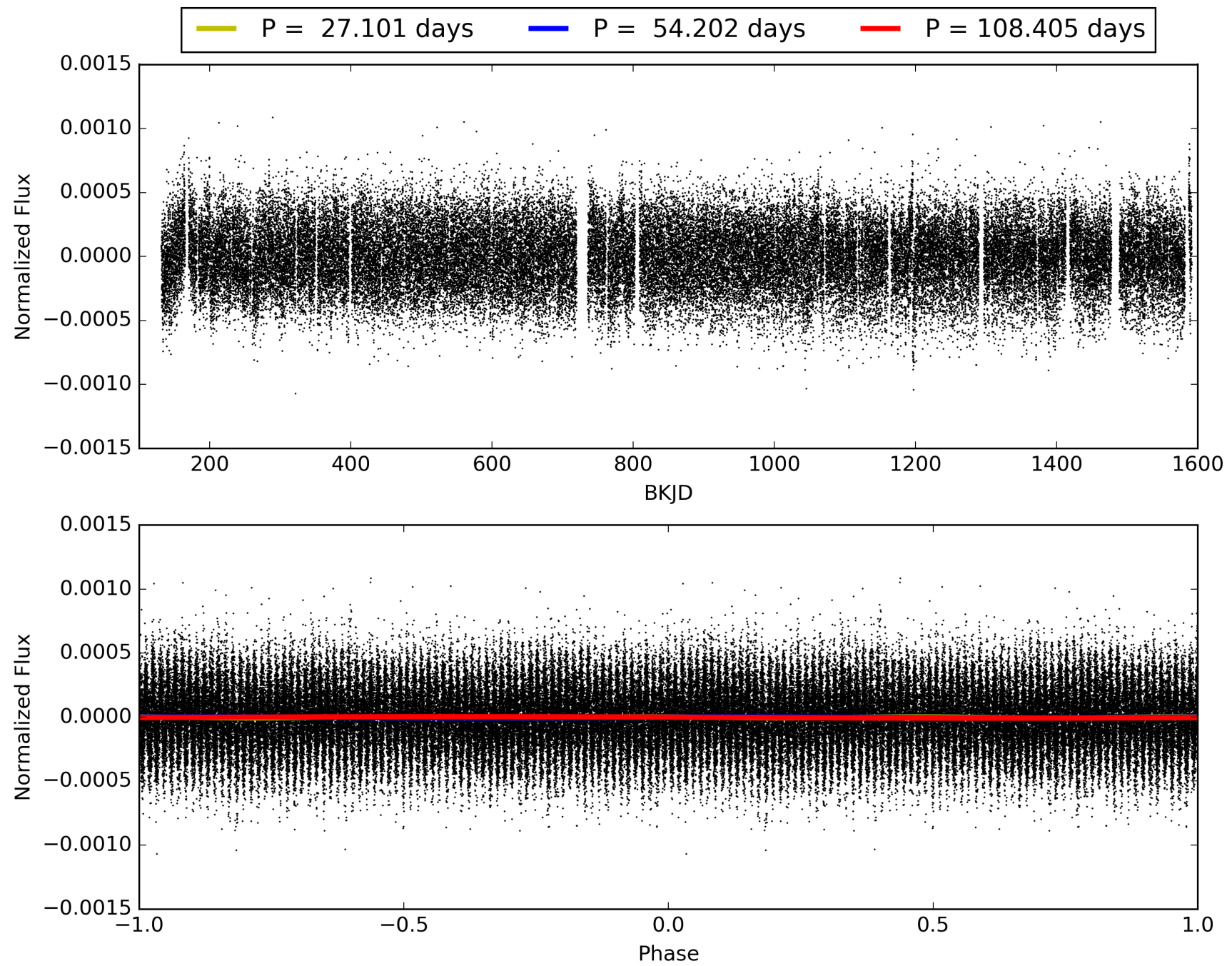
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:57 Z

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

TCE 007820985-07, PDC Light Curves

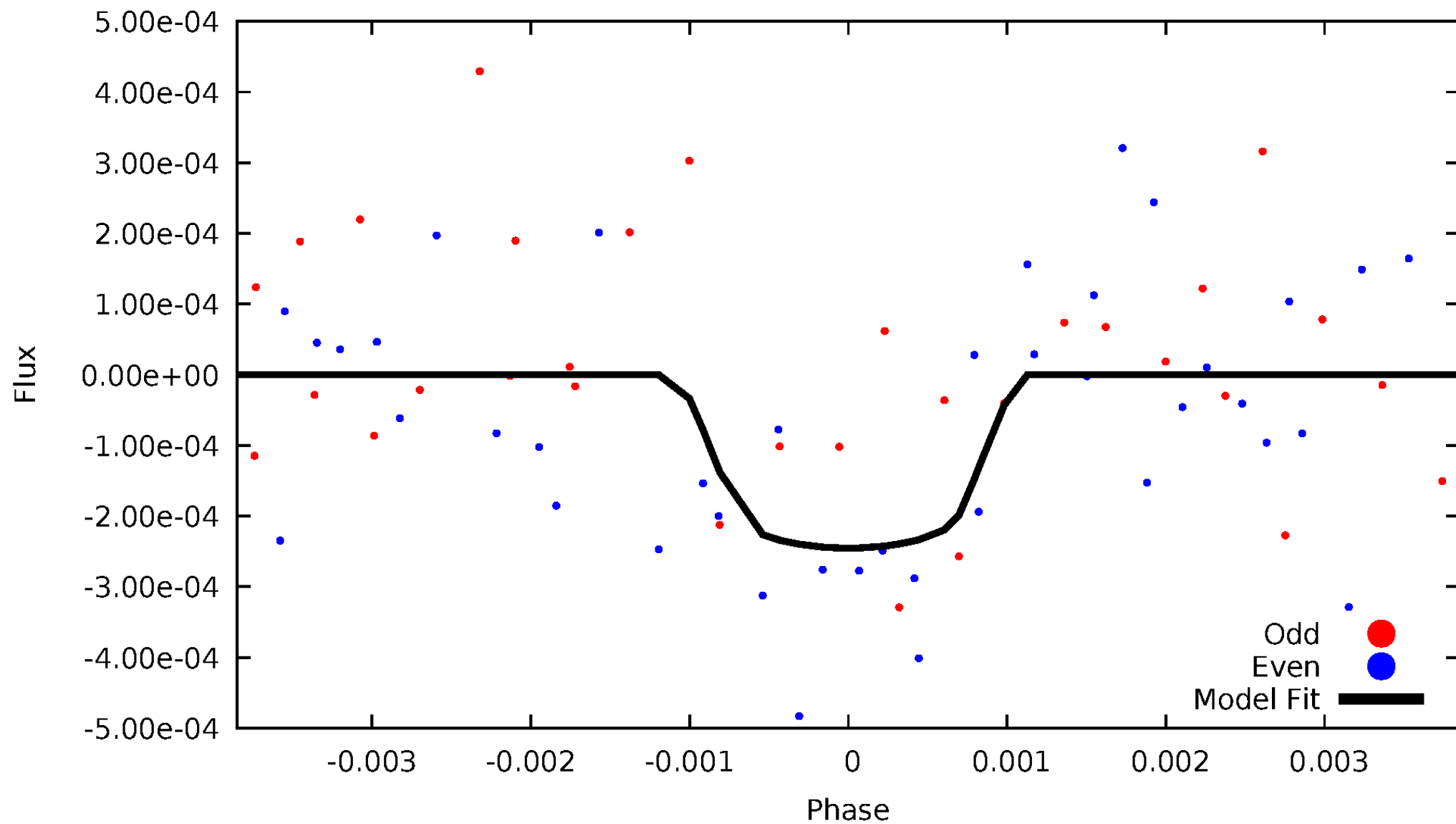


TCE 007820985-07



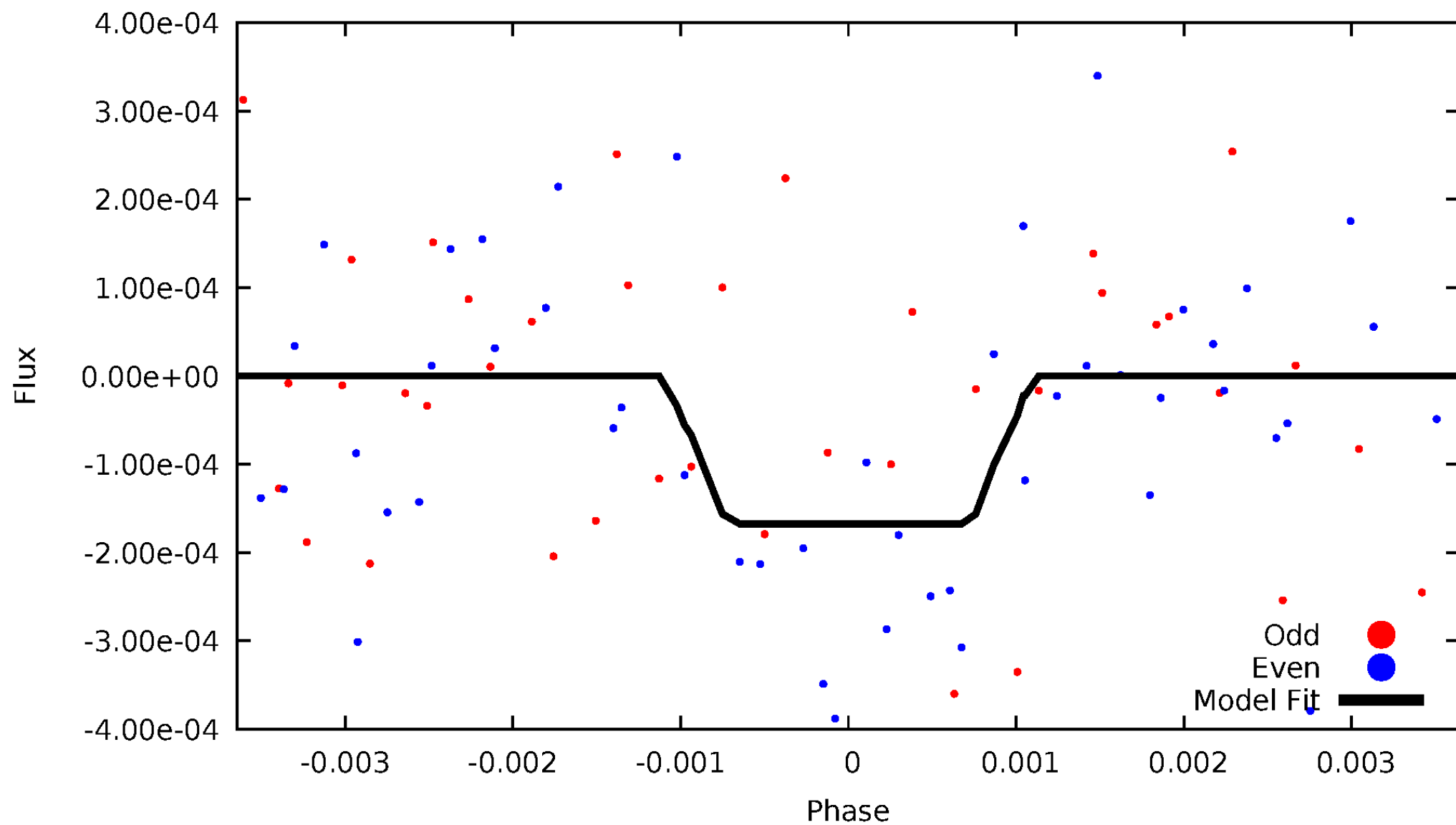
DV Odd/Even

TCE 007820985-07



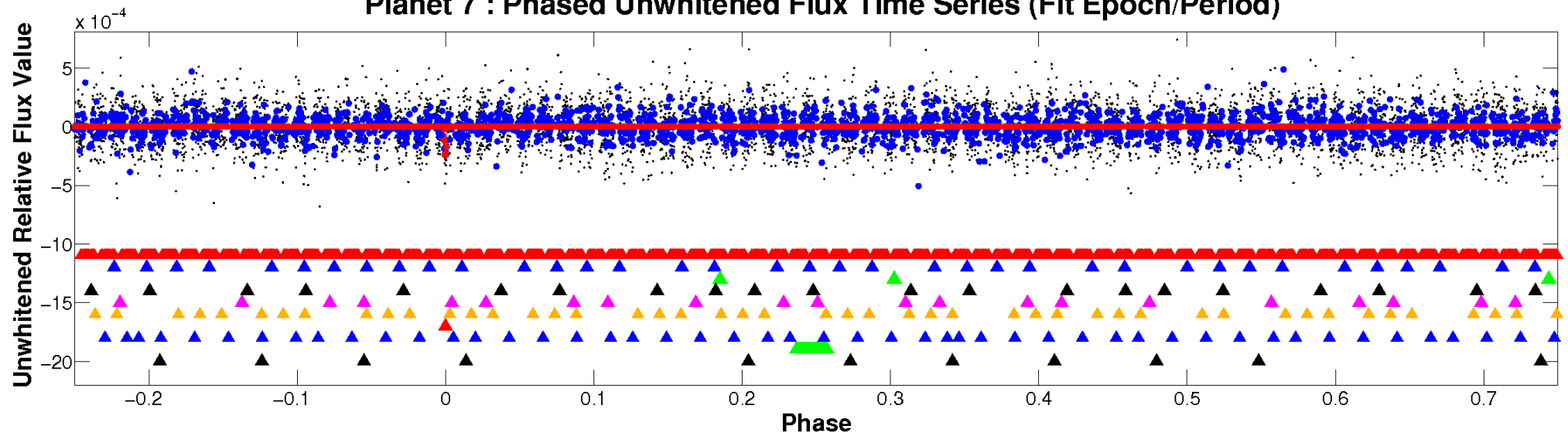
ALT Odd/Even

TCE 007820985-07

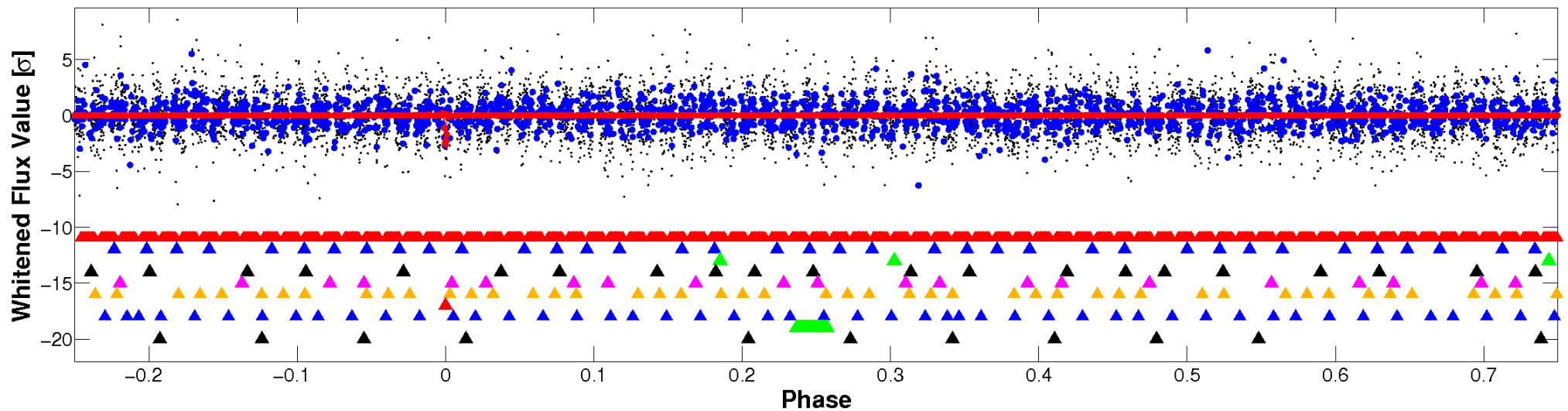


Non-Whitened Vs. Whitened Light Curve

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

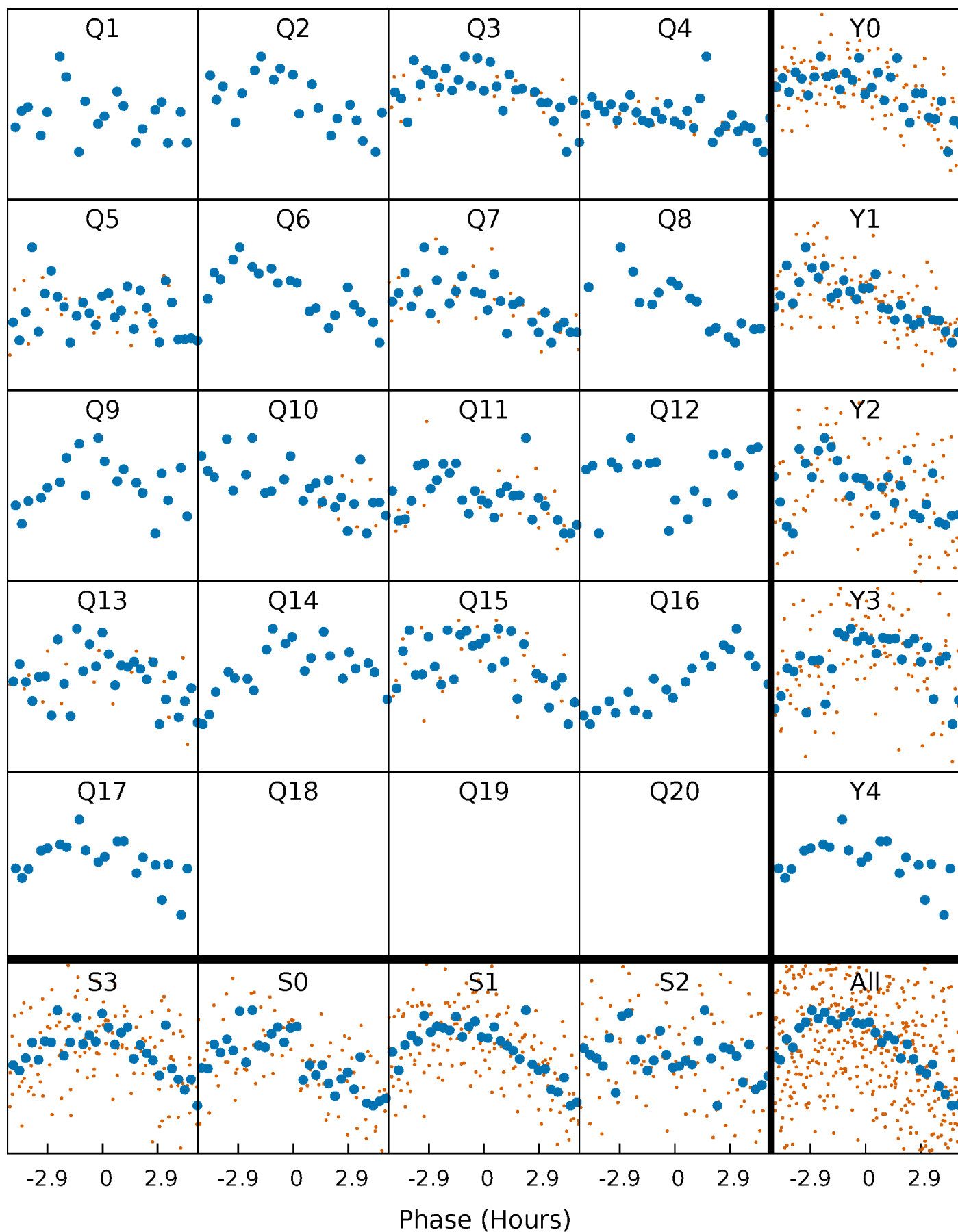


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



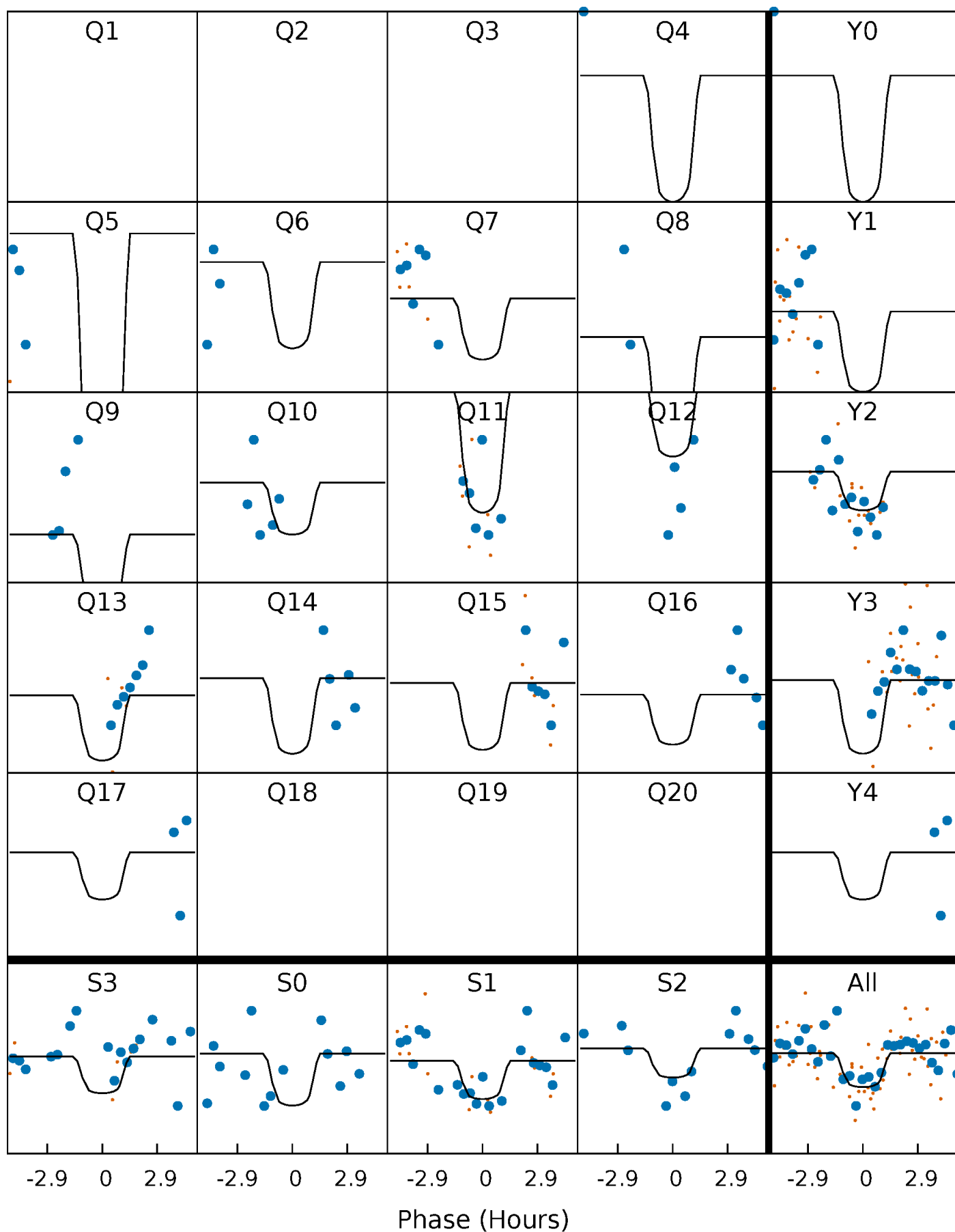
PDC Quarter-Phased Transit Curves

TCE 007820985-07 $P = 54.202325$ Days $T_0 = 157.007930$ (BKJD)



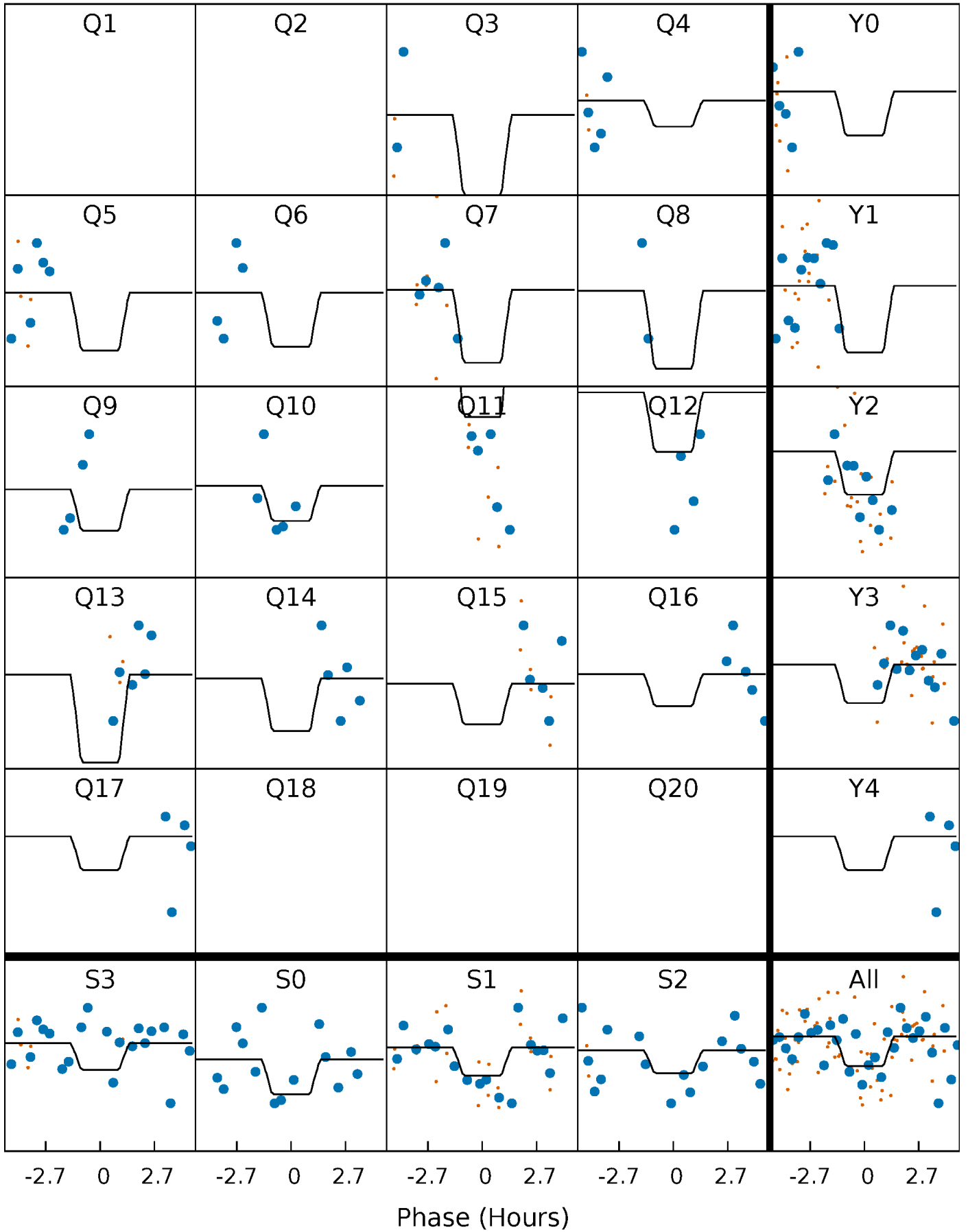
DV Quarter-Phased Transit Curves

TCE 007820985-07 P= 54.202325 Days $T_0=157.007930$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

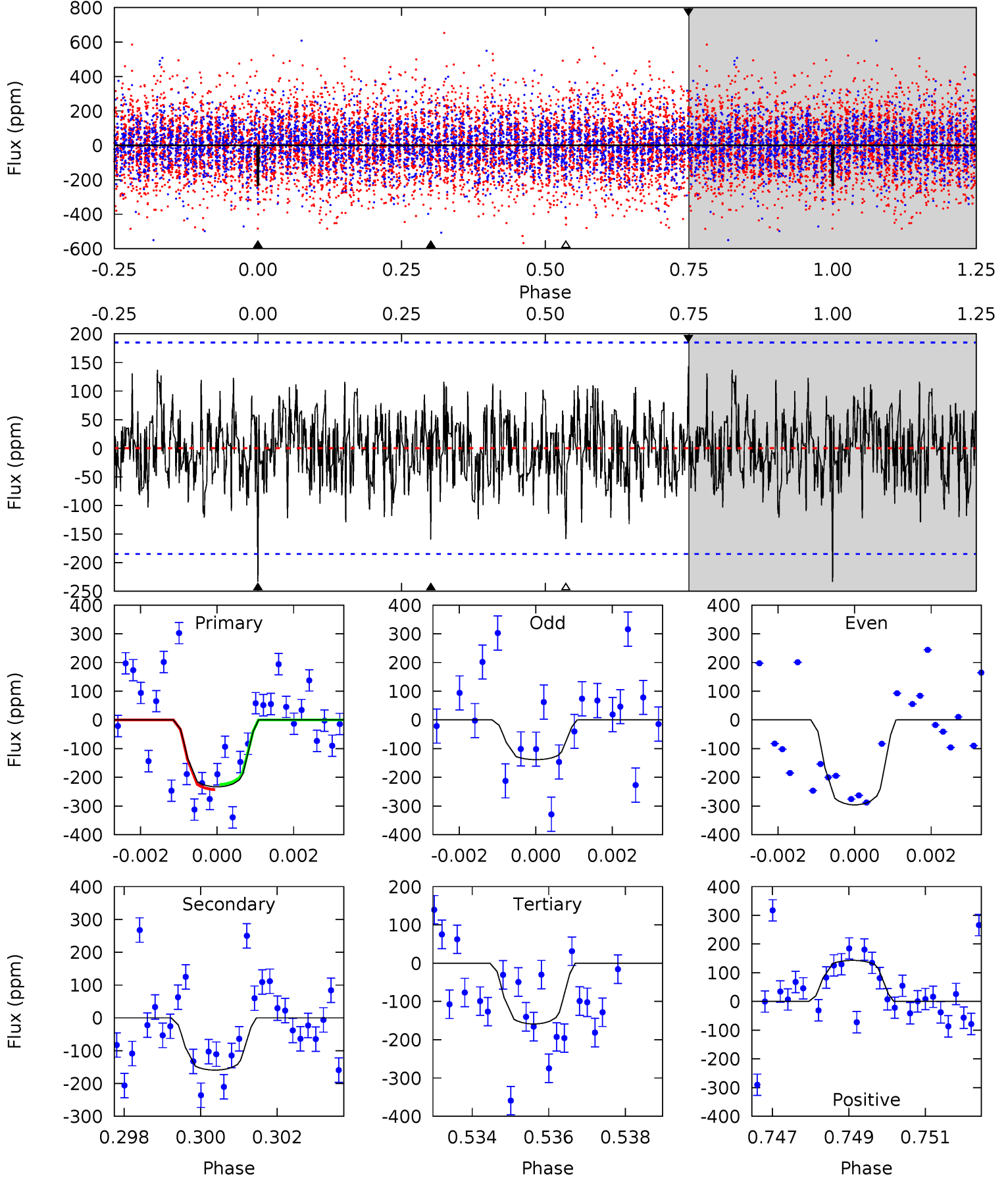
TCE 007820985-07 $P = 54.206601$ Days $T_0 = 156.918380$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-07, P = 54.202325 Days, E = 102.805605 Days

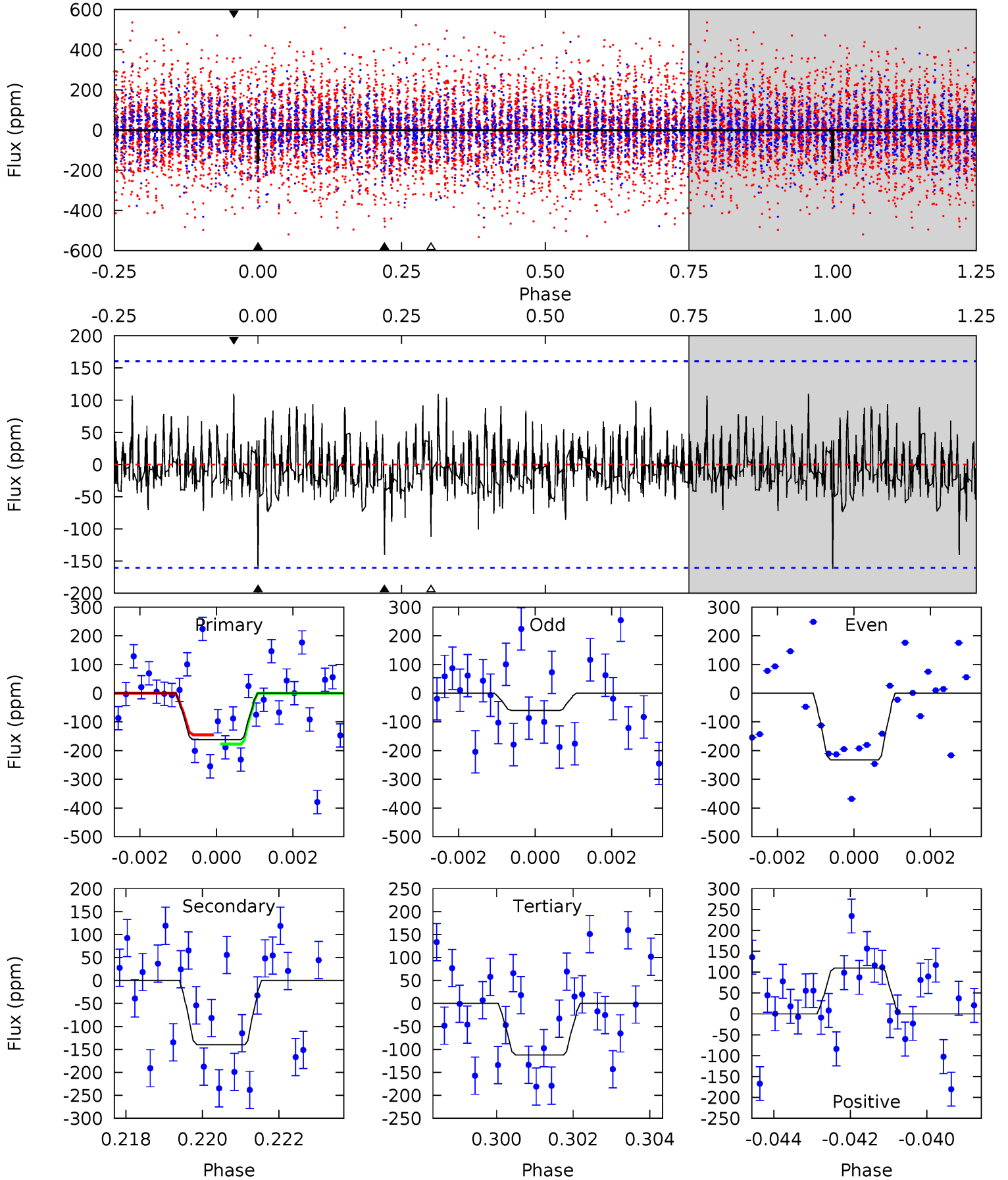
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.72 | 4.58 | 4.57 | 4.12 | 5.32 | 3.08 | 1.35 | 2.15 | 2.60 | 0.01 | 0.47 | 2.23 | 0.98 | 0.38 | 0.25 |



Alt Model-Shift Uniqueness Test

007820985-07, $P = 54.206601$ Days, $E = 102.711779$ 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 | 4.63 | 3.71 | 3.63 | 5.32 | 3.07 | 1.05 | 1.66 | 1.74 | 0.92 | 1.00 | 2.81 | 0.74 | 0.40 | 0.53 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-07 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|-------------------------|---------------------|------------------------|--------------------|
| DV | -159 ± 35 | $9.79^{+10.06}_{-6.48}$ | 1308^{+64}_{-120} | 4640^{+3228}_{-1041} | 102^{+826}_{-78} |
| Alt. | -140 ± 30 | $9.59^{+9.77}_{-6.55}$ | 1306^{+73}_{-120} | 4539^{+3321}_{-967} | 95^{+863}_{-72} |

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 $A_{obs} \gg 1.0$

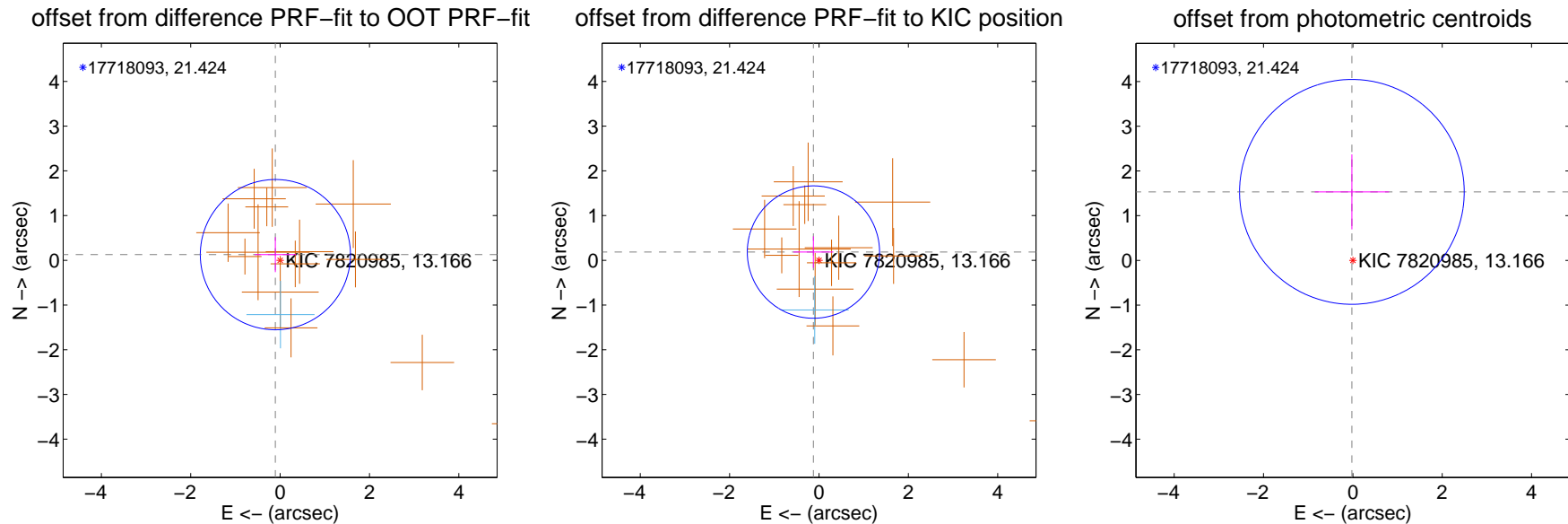
DV Centroid Data

Supplemental centroid analysis for 007820985-07. Kepler magnitude: 13.17. Transit SNR 9.16

There are 1 quarters with good PRF difference image offsets

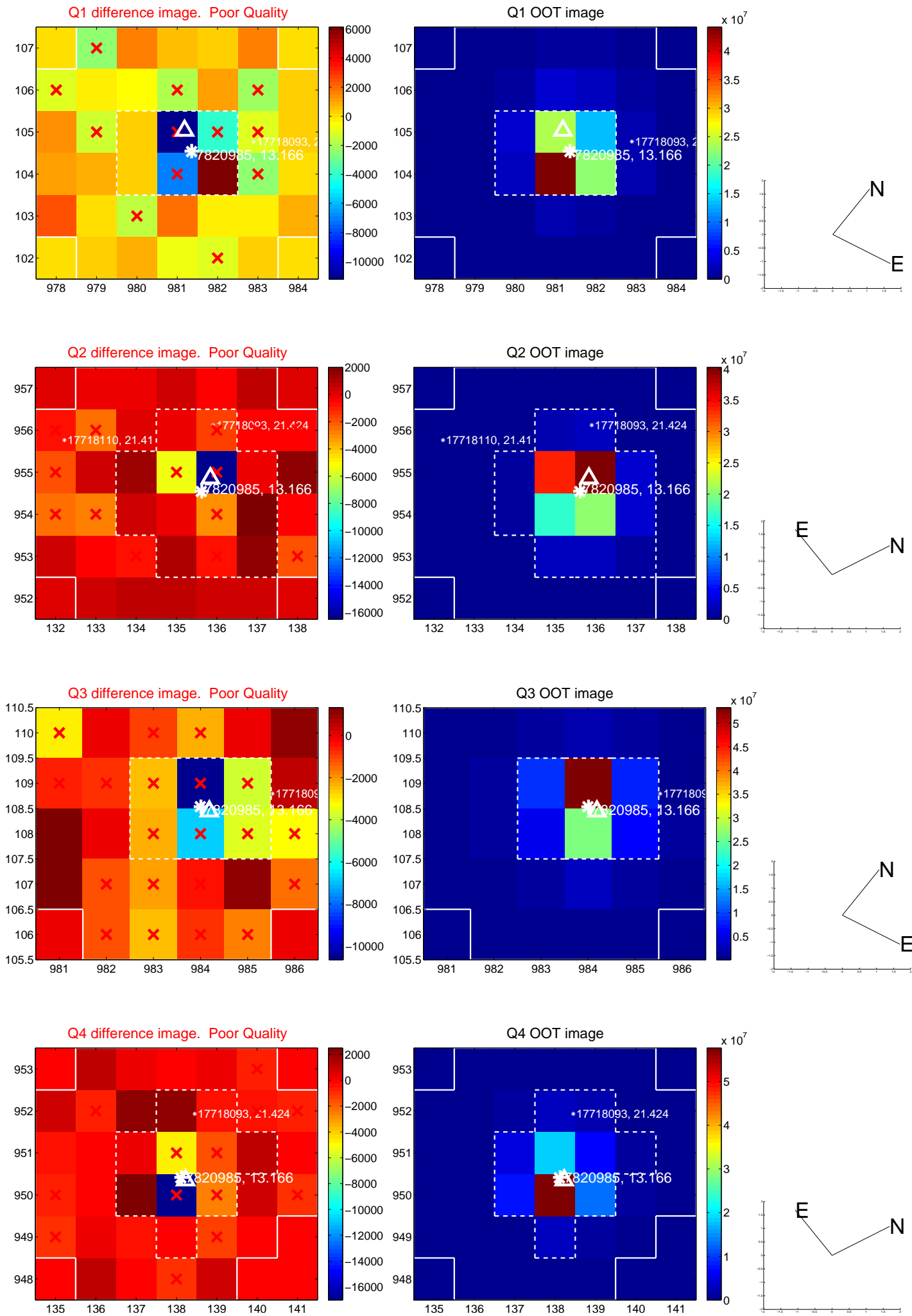
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.165 ± 0.560 | 0.29 | 0.106 ± 0.463 | 0.126 ± 0.391 |
| PRF-fit source offset from KIC position | 0.222 ± 0.493 | 0.45 | 0.124 ± 0.447 | 0.184 ± 0.353 |
| photometric centroid source offset | 1.53 ± 0.84 | 1.83 | 0.02 ± 0.83 | 1.53 ± 0.84 |

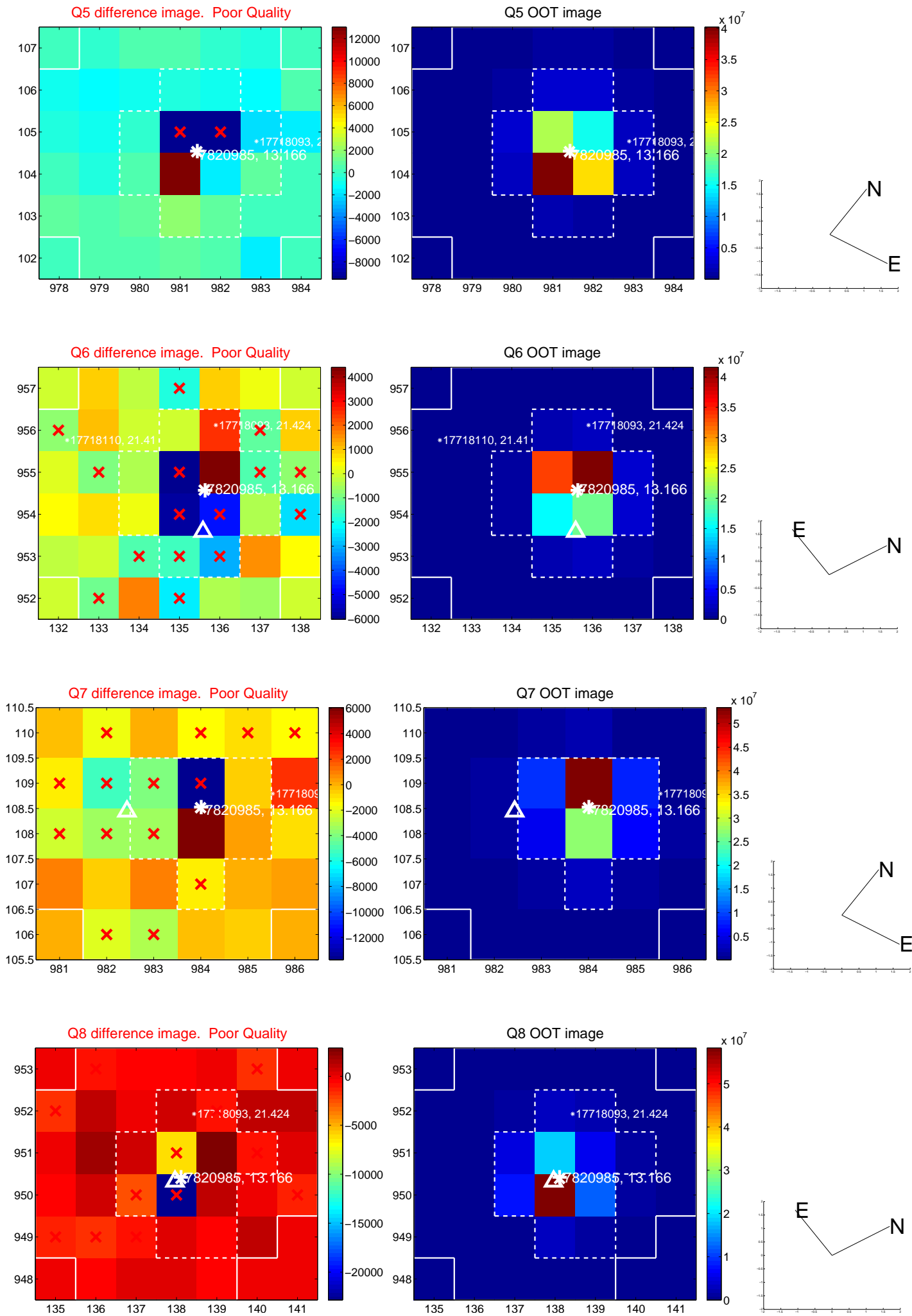


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

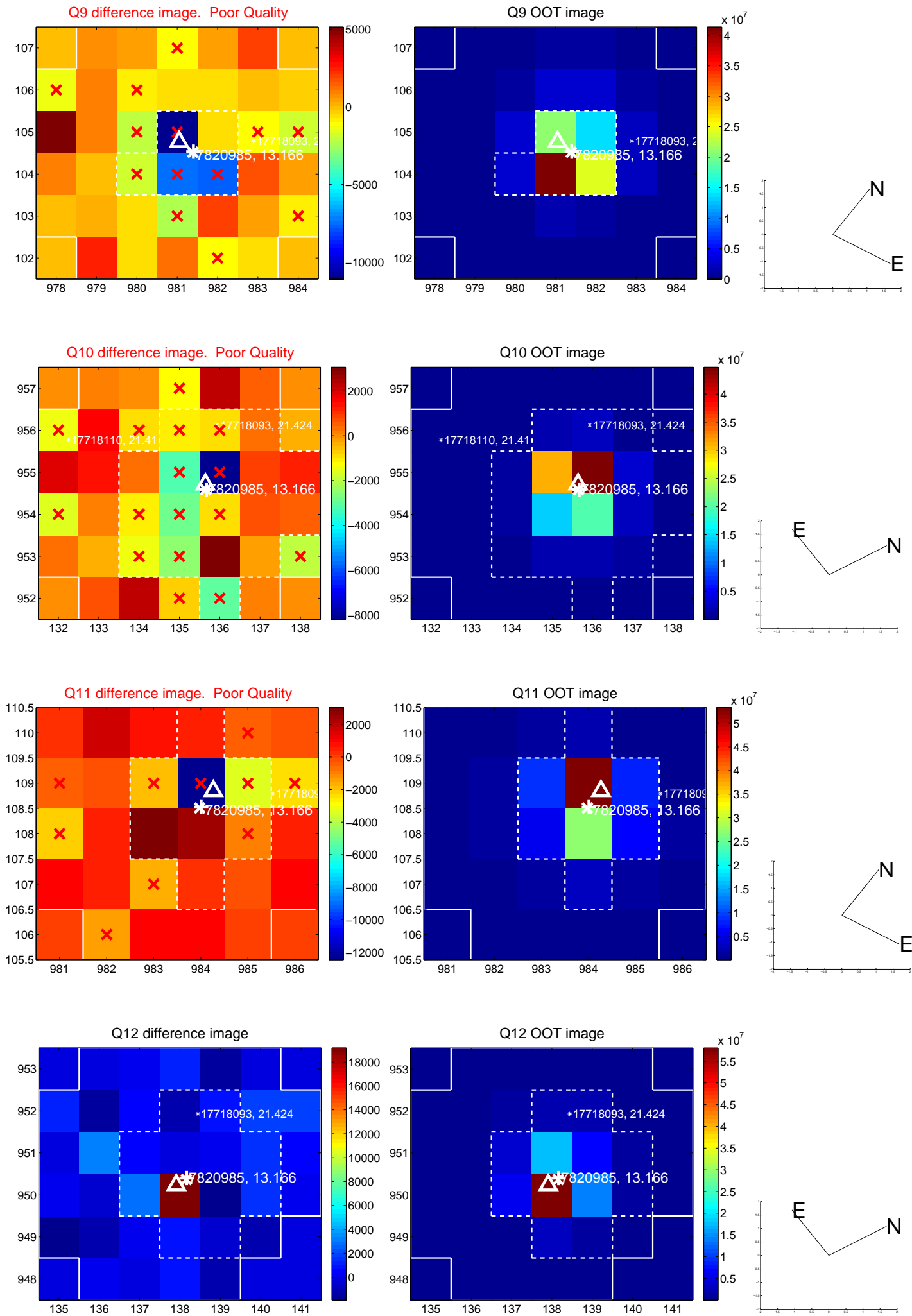
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



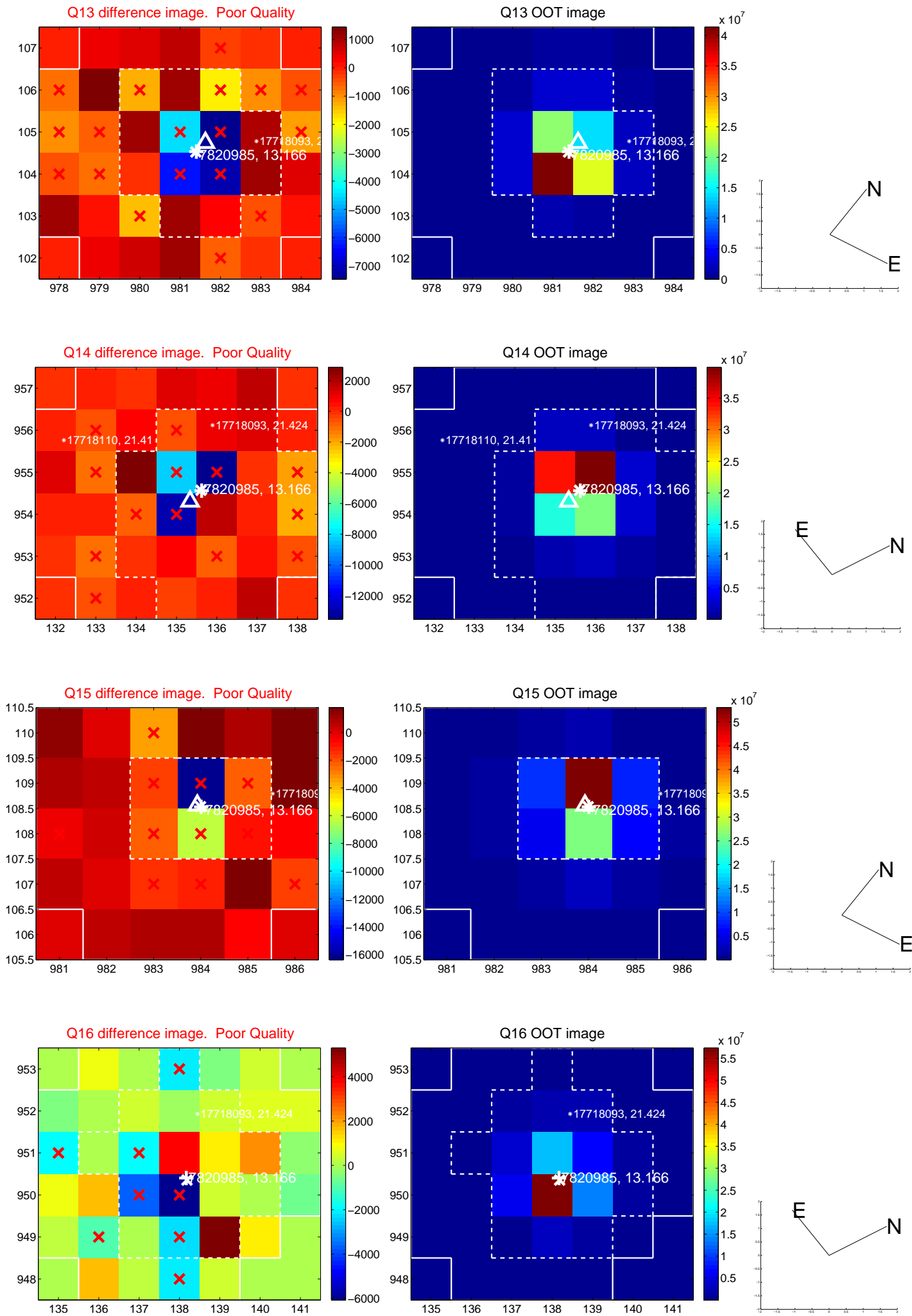
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

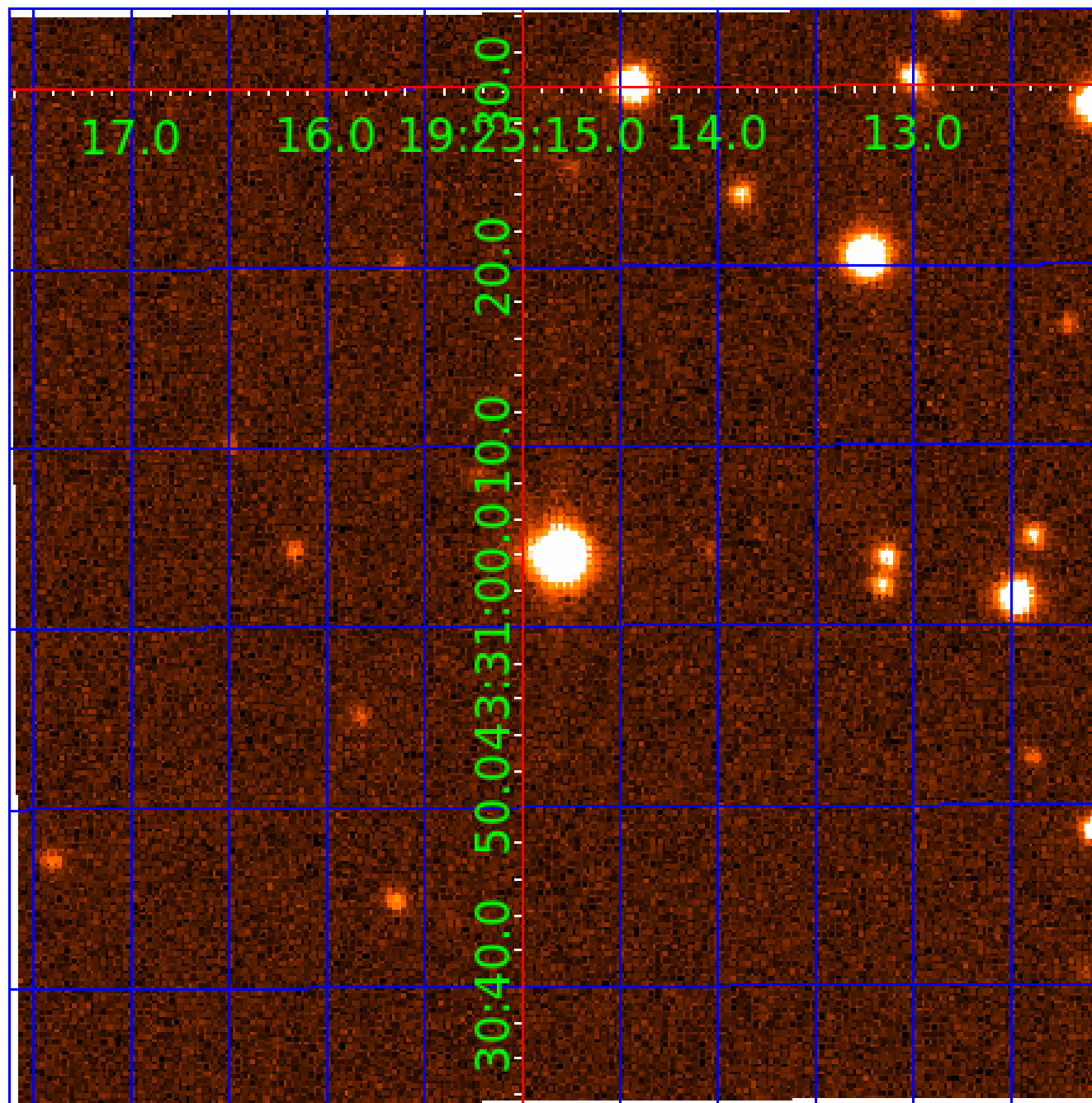


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

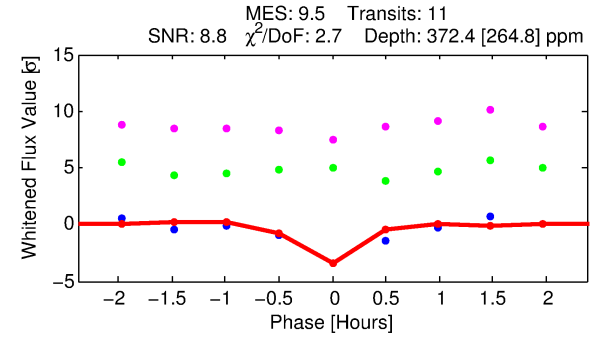
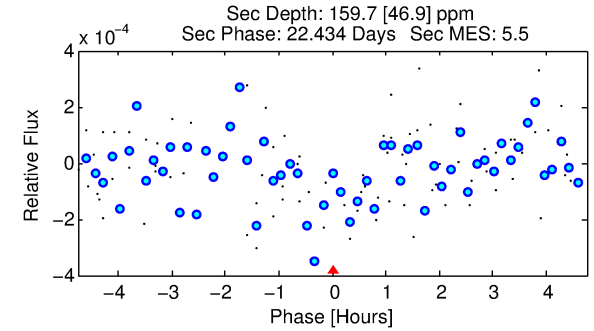
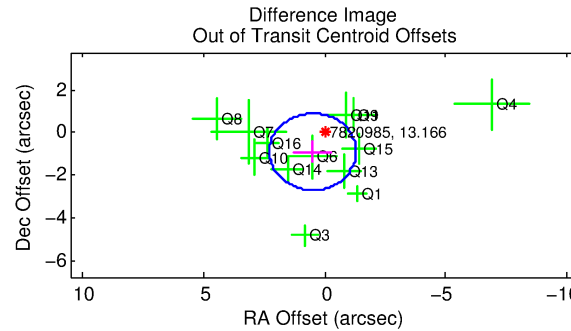
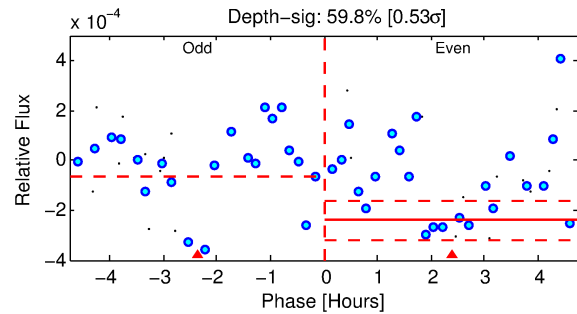
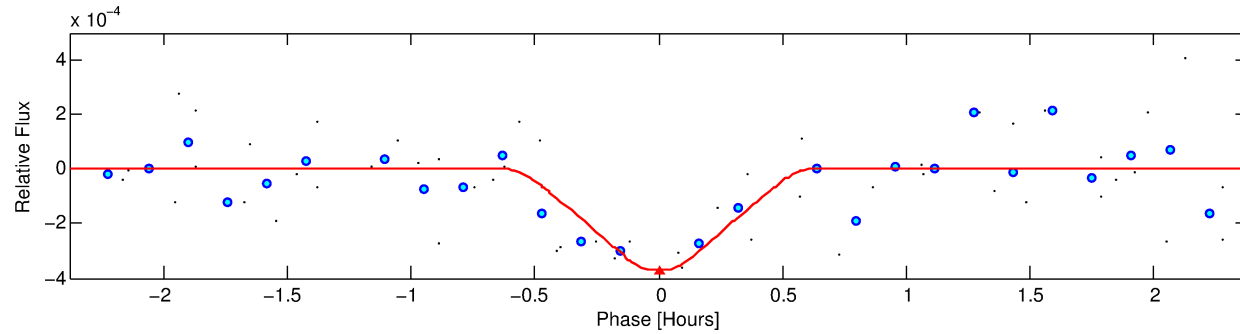
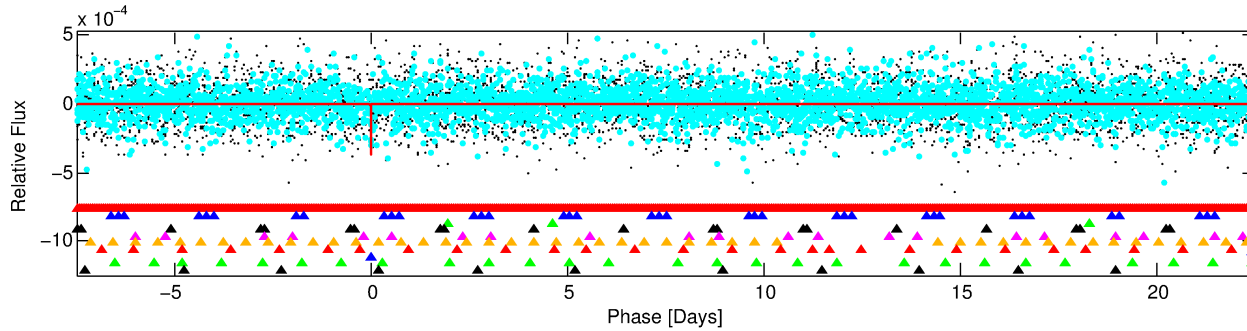
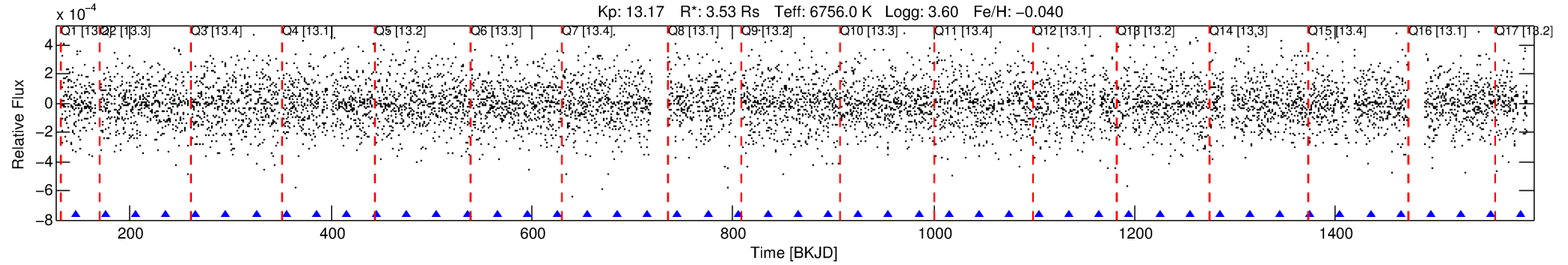
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-08

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 8 of 10 Period: 29.975 d



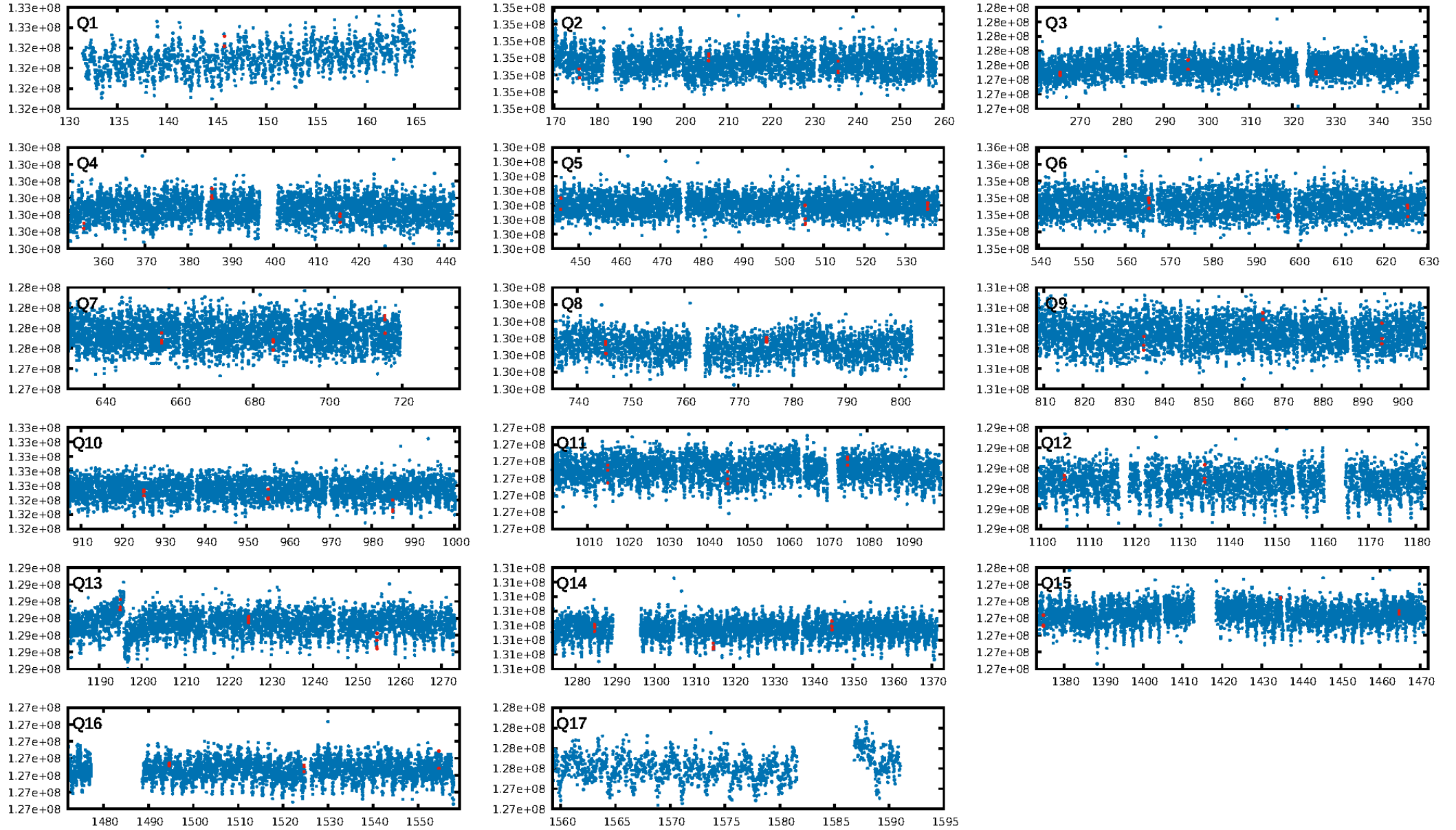
DV Fit Results:

Period = 29.97515 [0.00024] d
Epoch = 145.7989 [0.0066] BKJD
Rp/R* = 0.0222 [0.0233]
a/R* = 107.51 [474.82]
b = 0.95 [0.48]
Seff = 441.73 [247.99]
Teq = 1169 [164] K
Rp = 8.56 [9.44] Re
a = 0.2295 [0.0779] AU
Ag = 63.17 [138.07] [0.45σ]
Teffp = 5095 [2700] K [1.45σ]

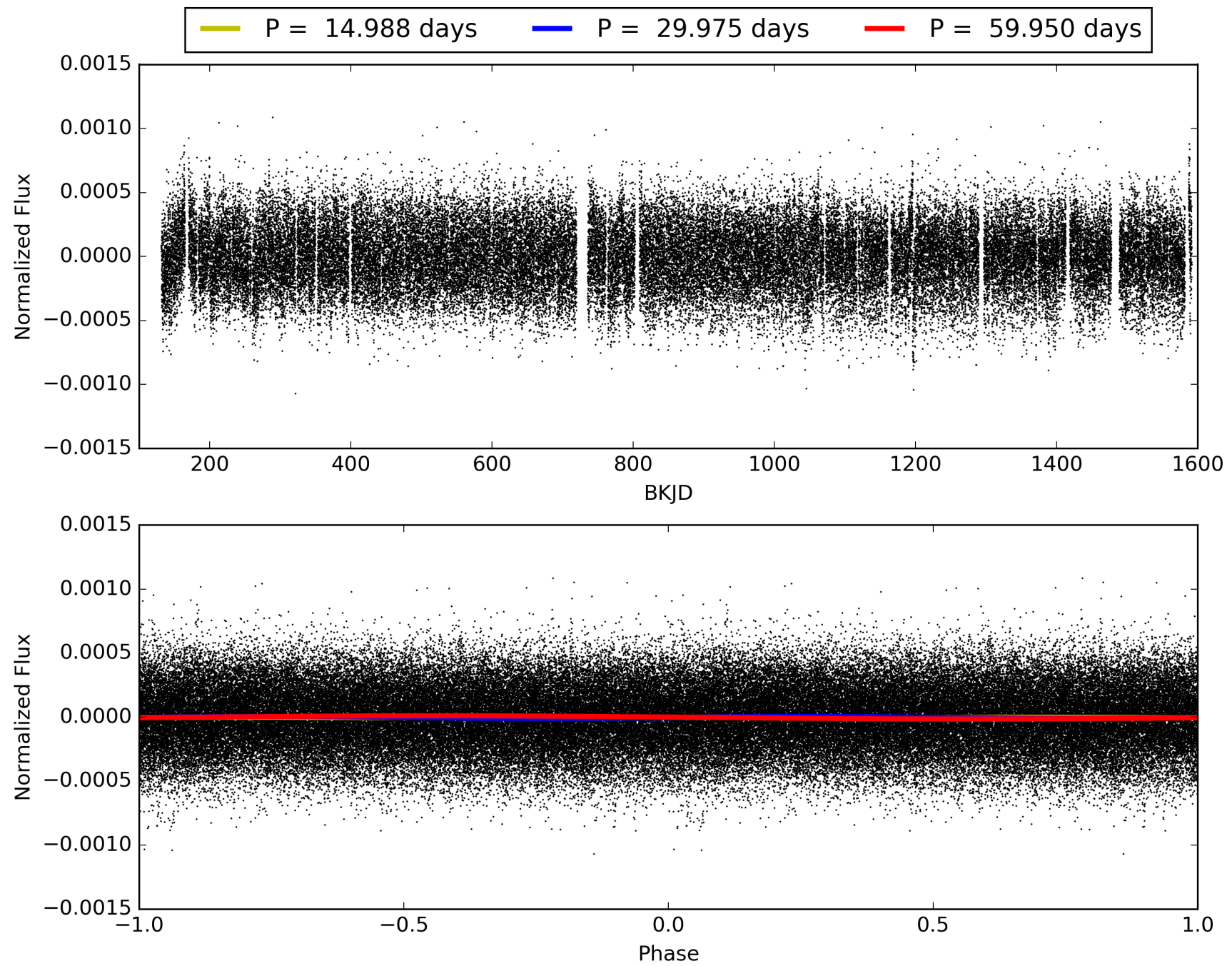
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [137.49σ]
LongPeriod-sig: 100.0% [10.94σ]
ModelChiSquare2-sig: 29.6%
ModelChiSquareGof-sig: 77.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: -1.542
Centroid-sig: 31.8%
Centroid-so: 0.629 arcsec [0.80σ]
OotOffset-rm: 1.028 arcsec [1.72σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-rm: 1.063 arcsec [1.86σ]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.31 [4/13]
DiffImageOverlap-fno: 0.20 [3/15]

TCE 007820985-08, PDC Light Curves

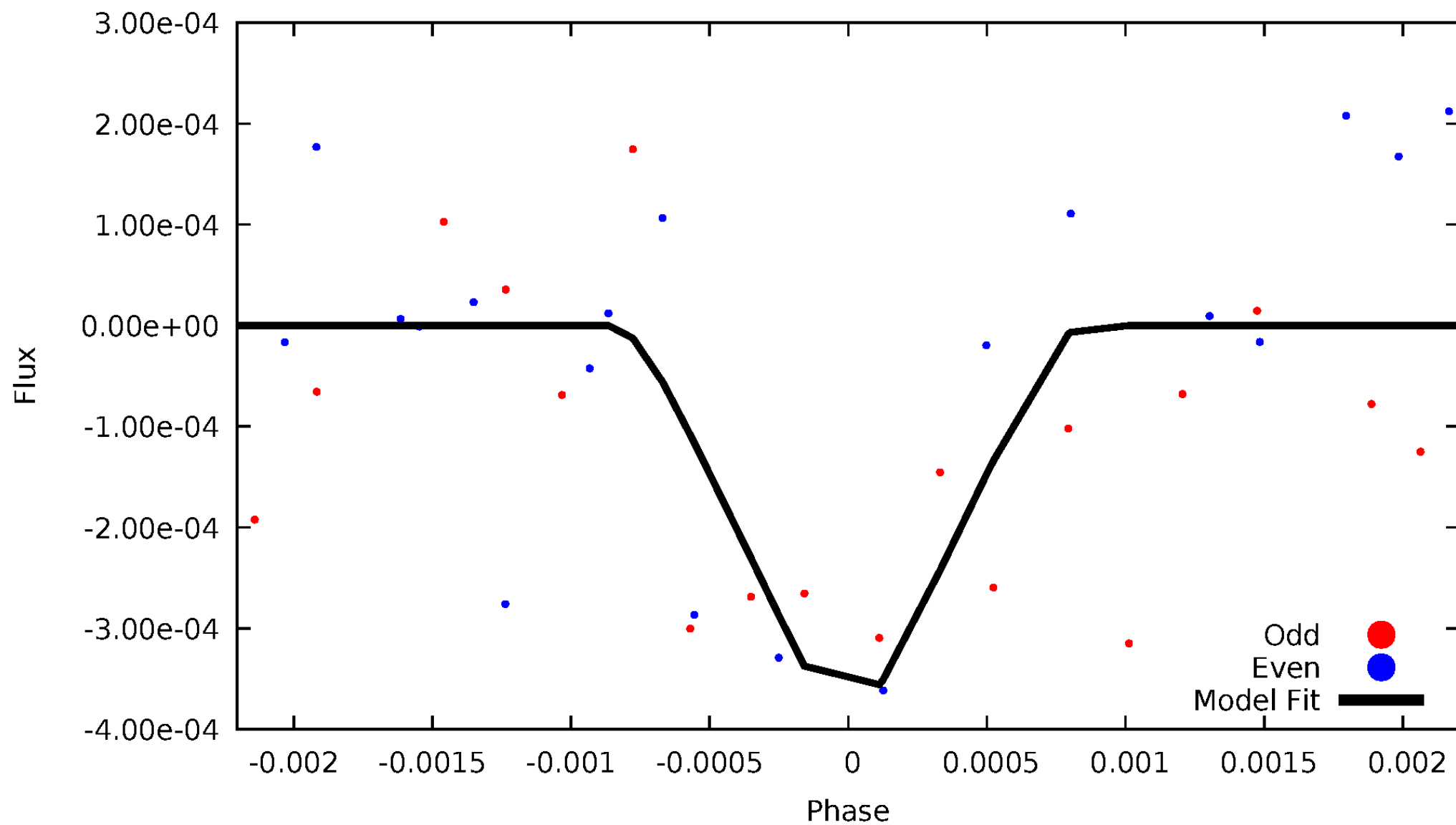


TCE 007820985-08



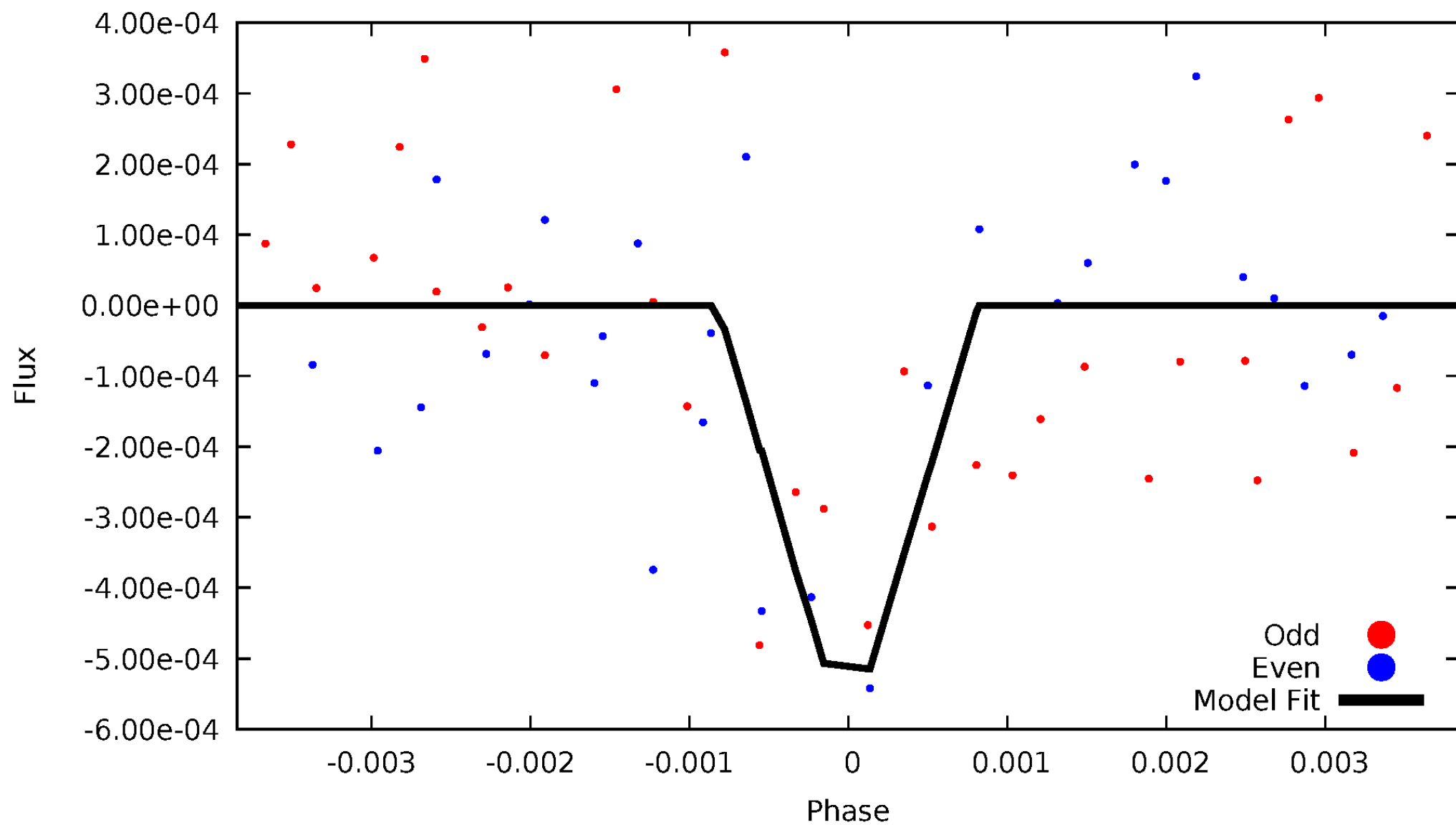
DV Odd/Even

TCE 007820985-08



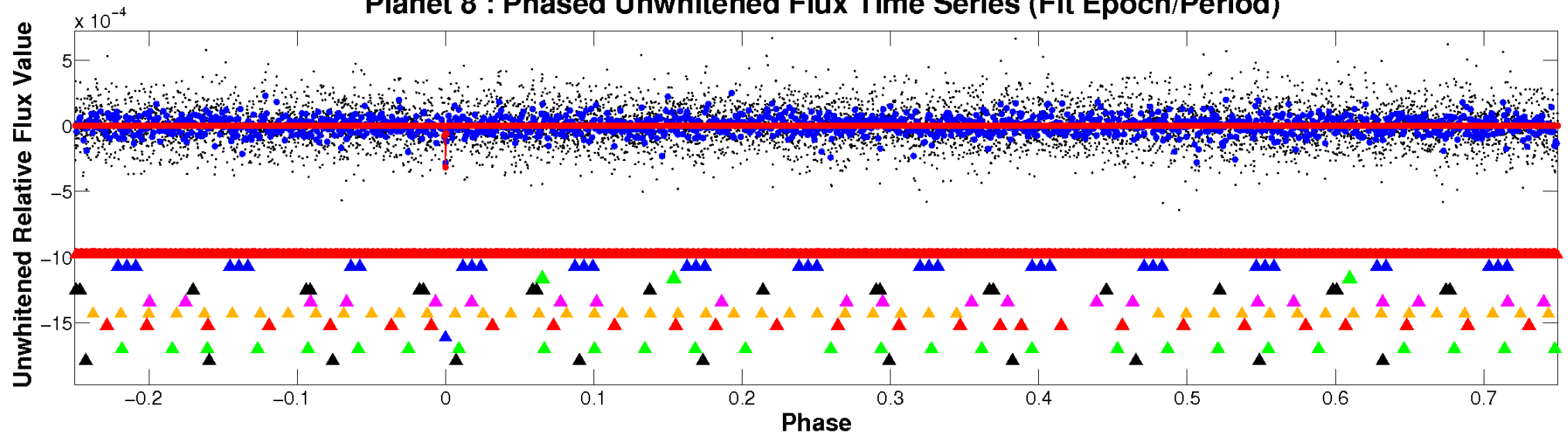
ALT Odd/Even

TCE 007820985-08

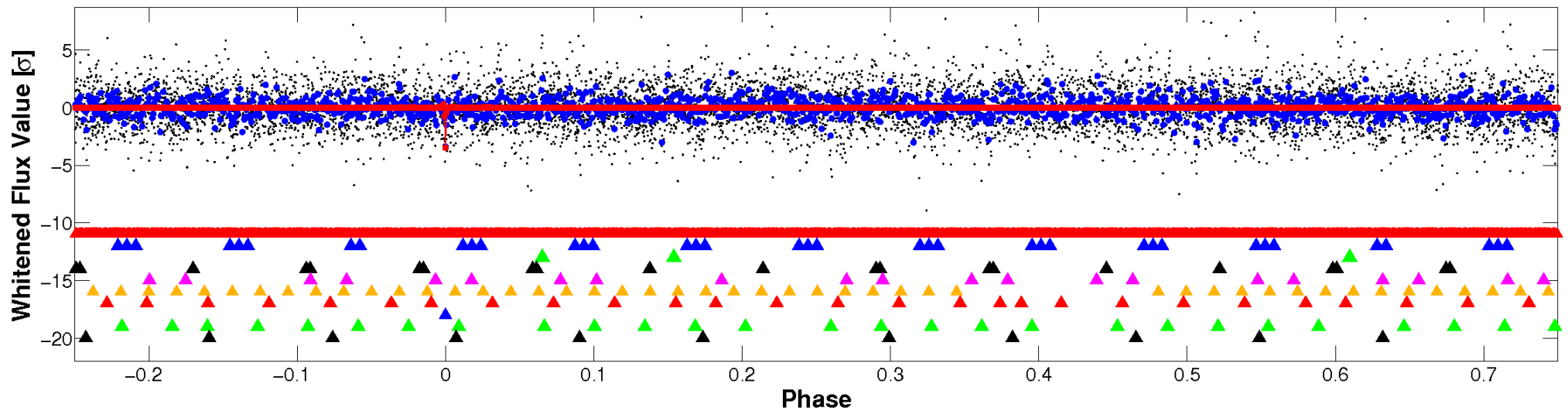


Non-Whitened Vs. Whitened Light Curve

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

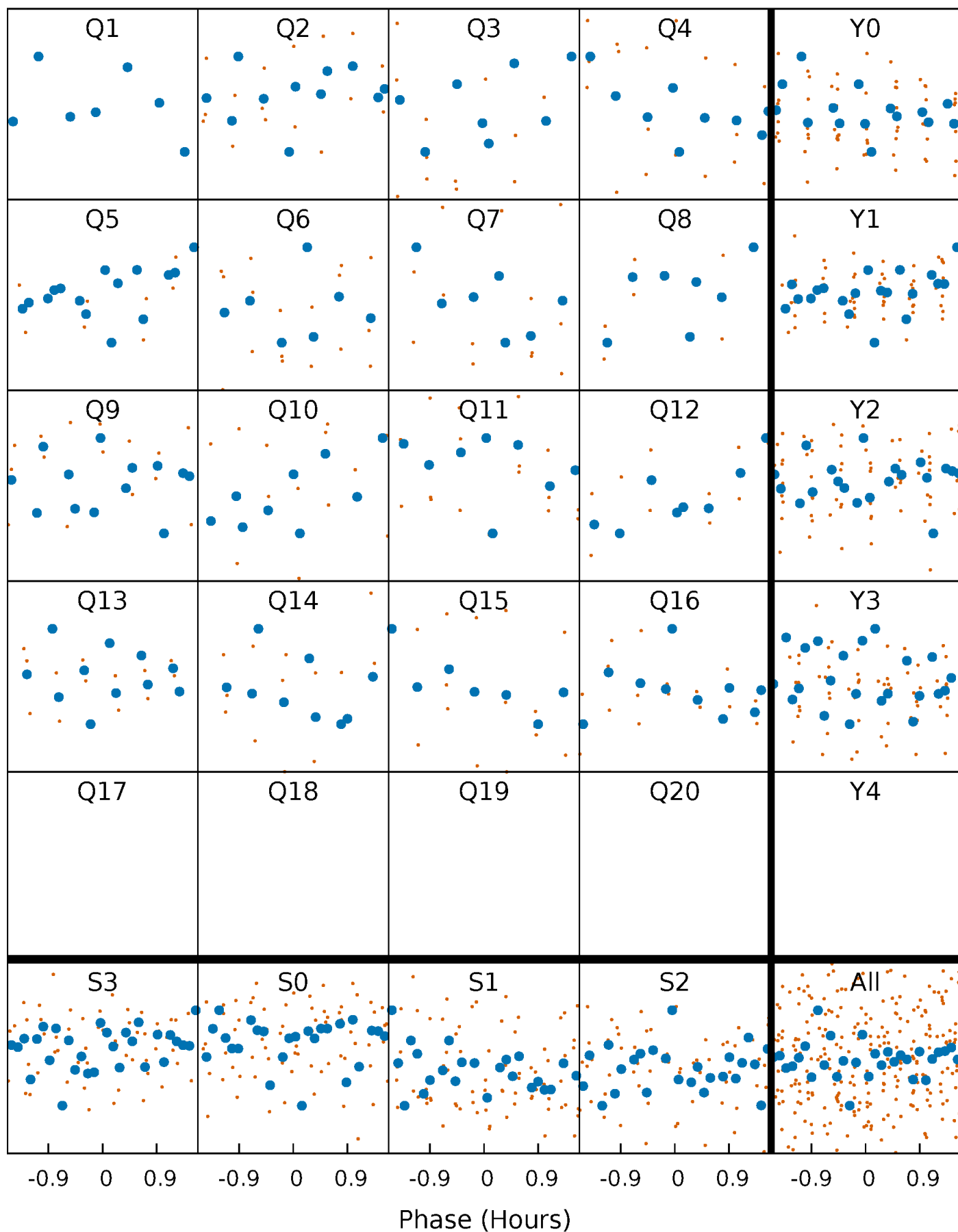


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



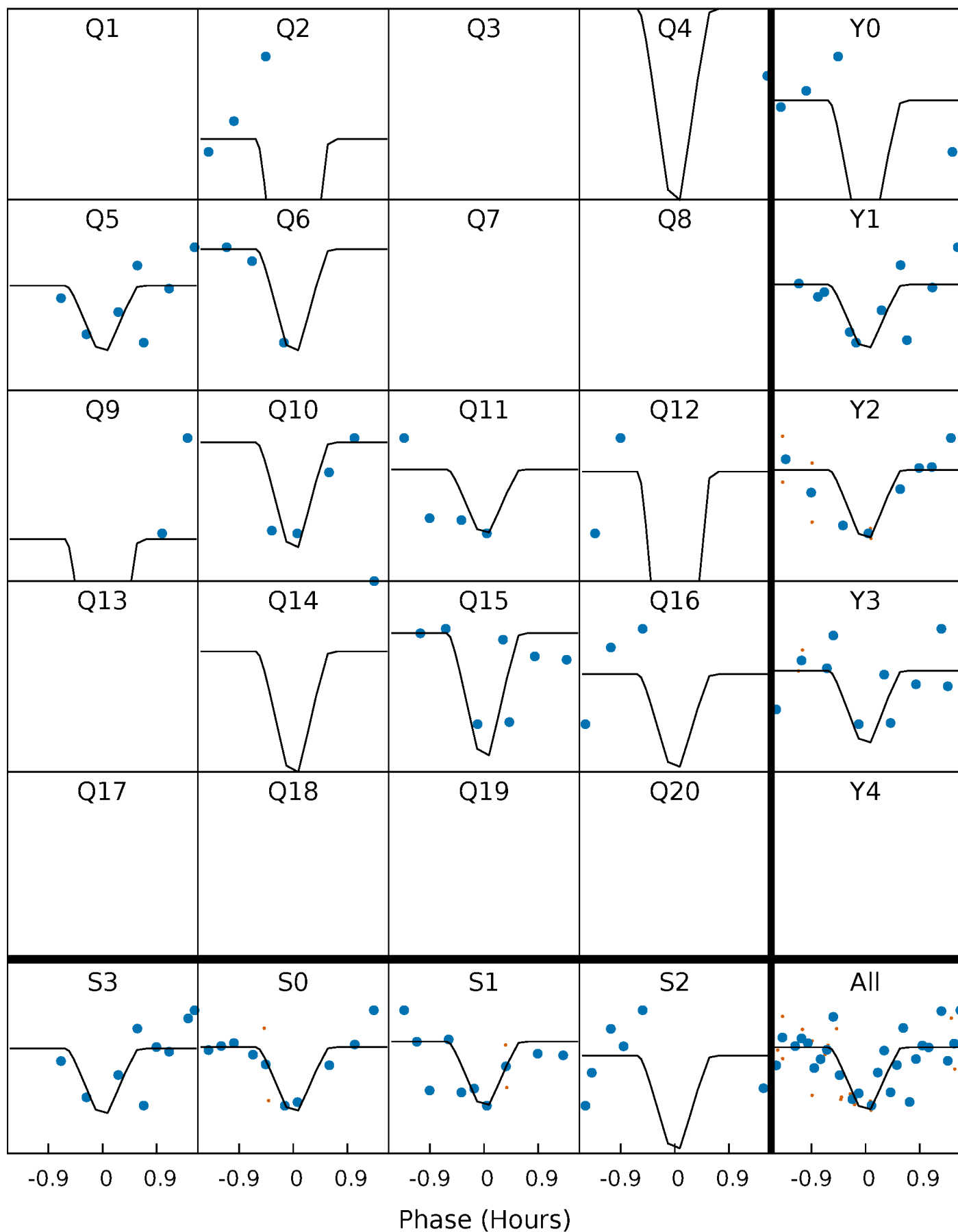
PDC Quarter-Phased Transit Curves

TCE 007820985-08 $P = 29.975155$ Days $T_0 = 145.798903$ (BKJD)



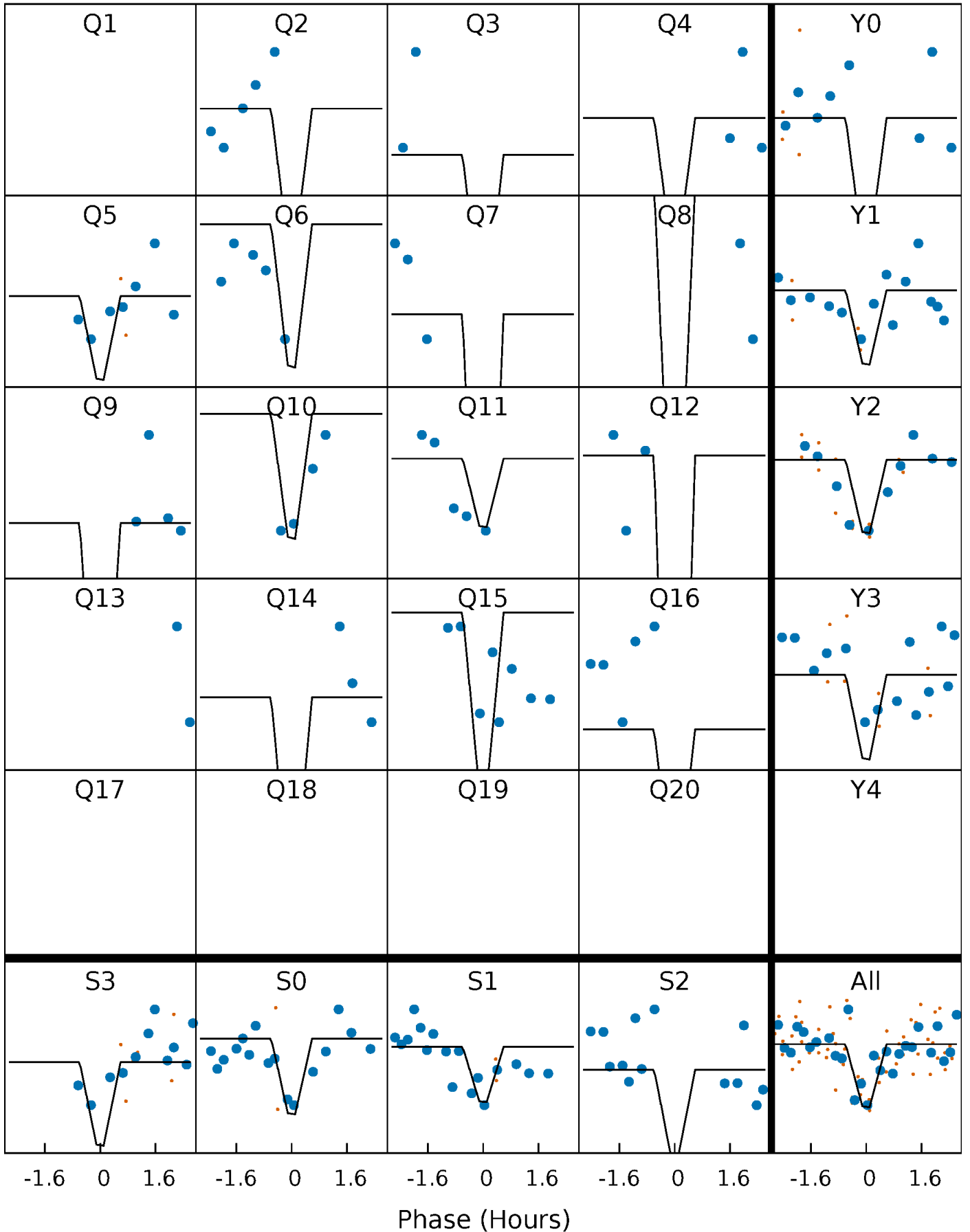
DV Quarter-Phased Transit Curves

TCE 007820985-08 P= 29.975155 Days $T_0=145.798903$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

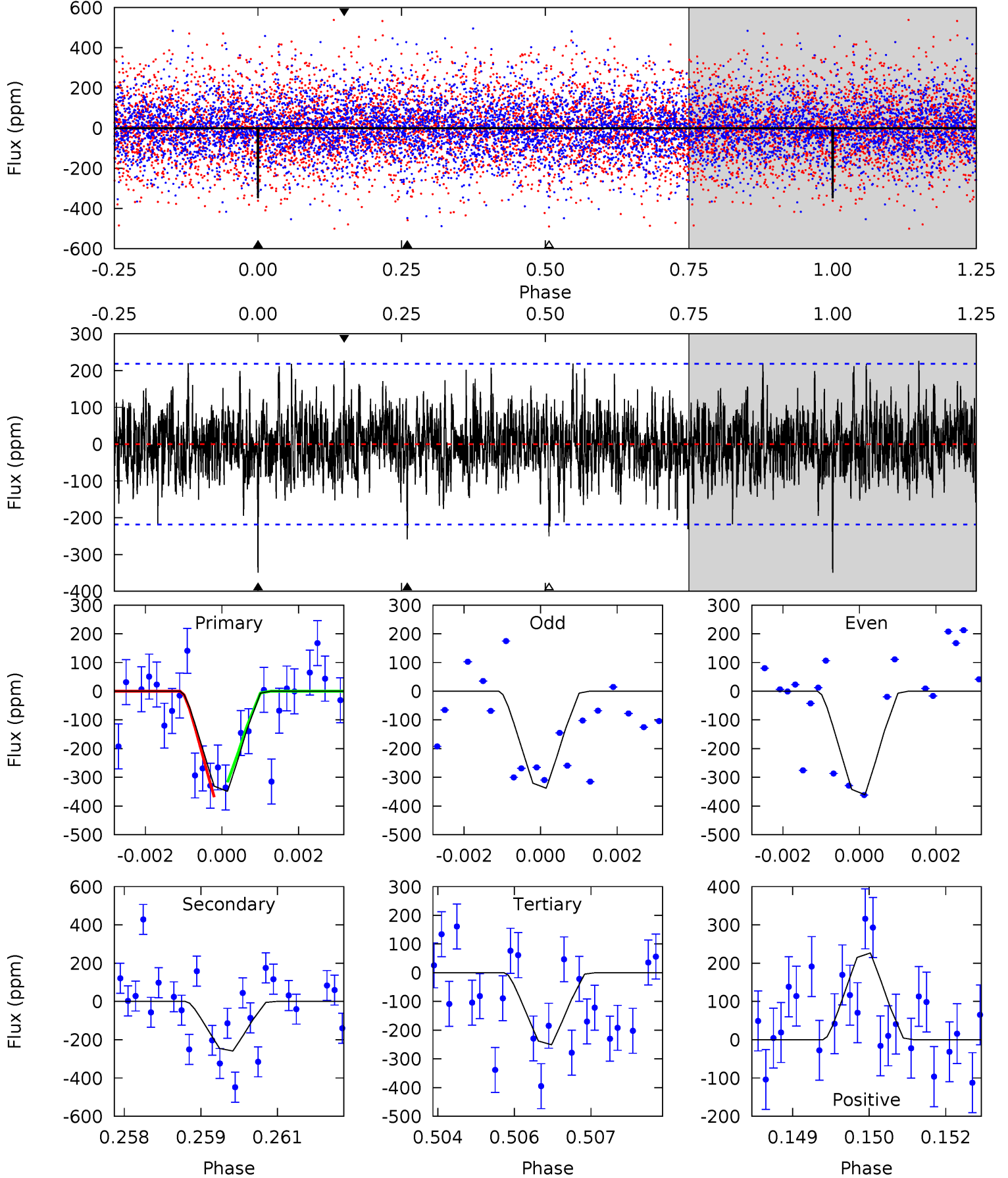
TCE 007820985-08 P= 29.975172 Days $T_0=145.798066$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-08, P = 29.975155 Days, E = 115.823748 Days

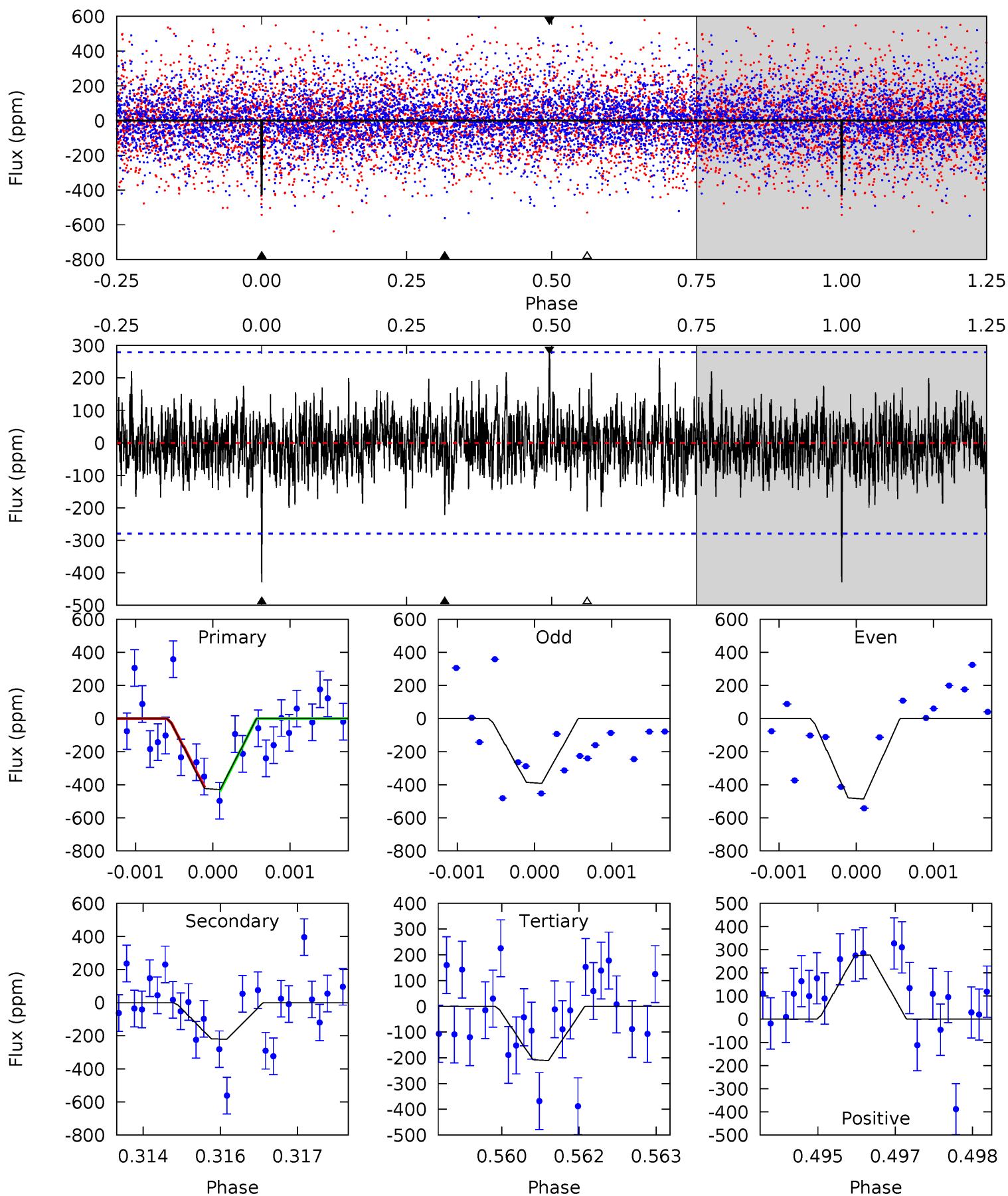
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.56 | 6.35 | 6.15 | 5.56 | 5.37 | 3.16 | 1.60 | 2.41 | 3.00 | 0.20 | 0.79 | 0.28 | 1.02 | 0.39 | 0.65 |



Alt Model-Shift Uniqueness Test

007820985-08, P = 29.975172 Days, E = 115.822894 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.28 | 4.28 | 4.06 | 5.35 | 5.39 | 3.18 | 1.28 | 4.22 | 2.93 | 0.21 | -1.07 | 0.90 | 0.97 | 0.39 | 0.19 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-08 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|-------------------|
| DV | -259 ± 41 | $9.52^{+8.26}_{-6.07}$ | 1581^{+89}_{-146} | 5190^{+3802}_{-1081} | 81^{+558}_{-57} |
| Alt. | -222 ± 52 | $9.66^{+7.27}_{-6.18}$ | 1584^{+89}_{-137} | 5054^{+3364}_{-1055} | 67^{+463}_{-46} |

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

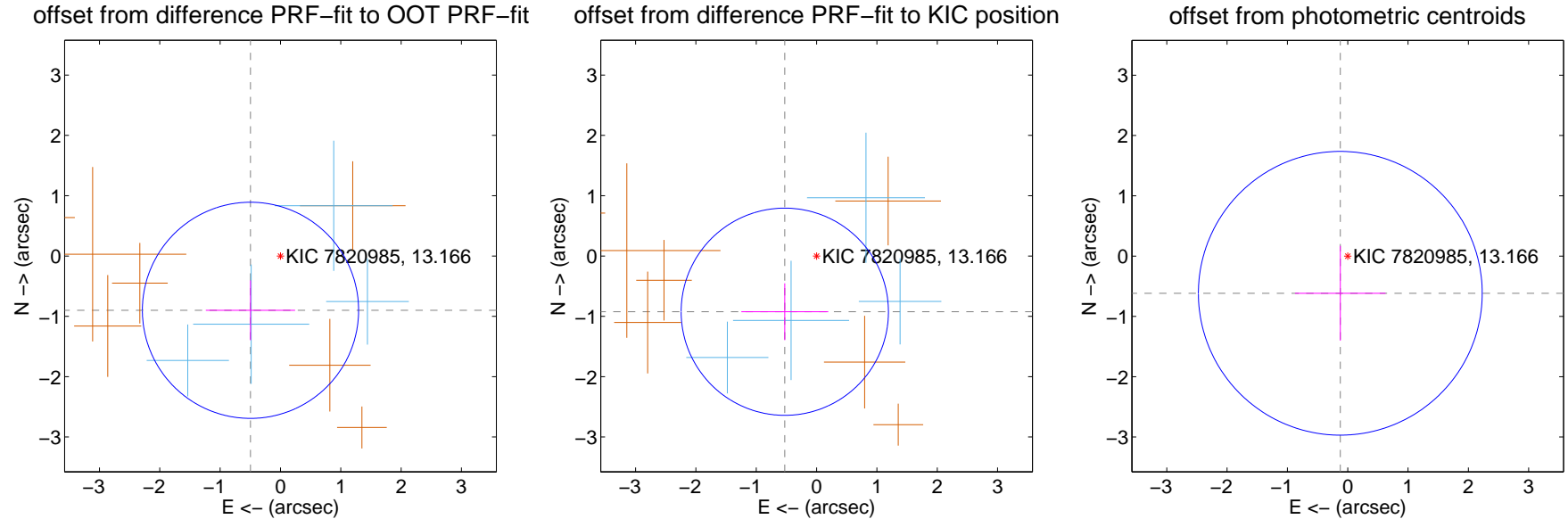
DV Centroid Data

Supplemental centroid analysis for 007820985-08. Kepler magnitude: 13.17. Transit SNR 8.79

There are 4 quarters with good PRF difference image offsets

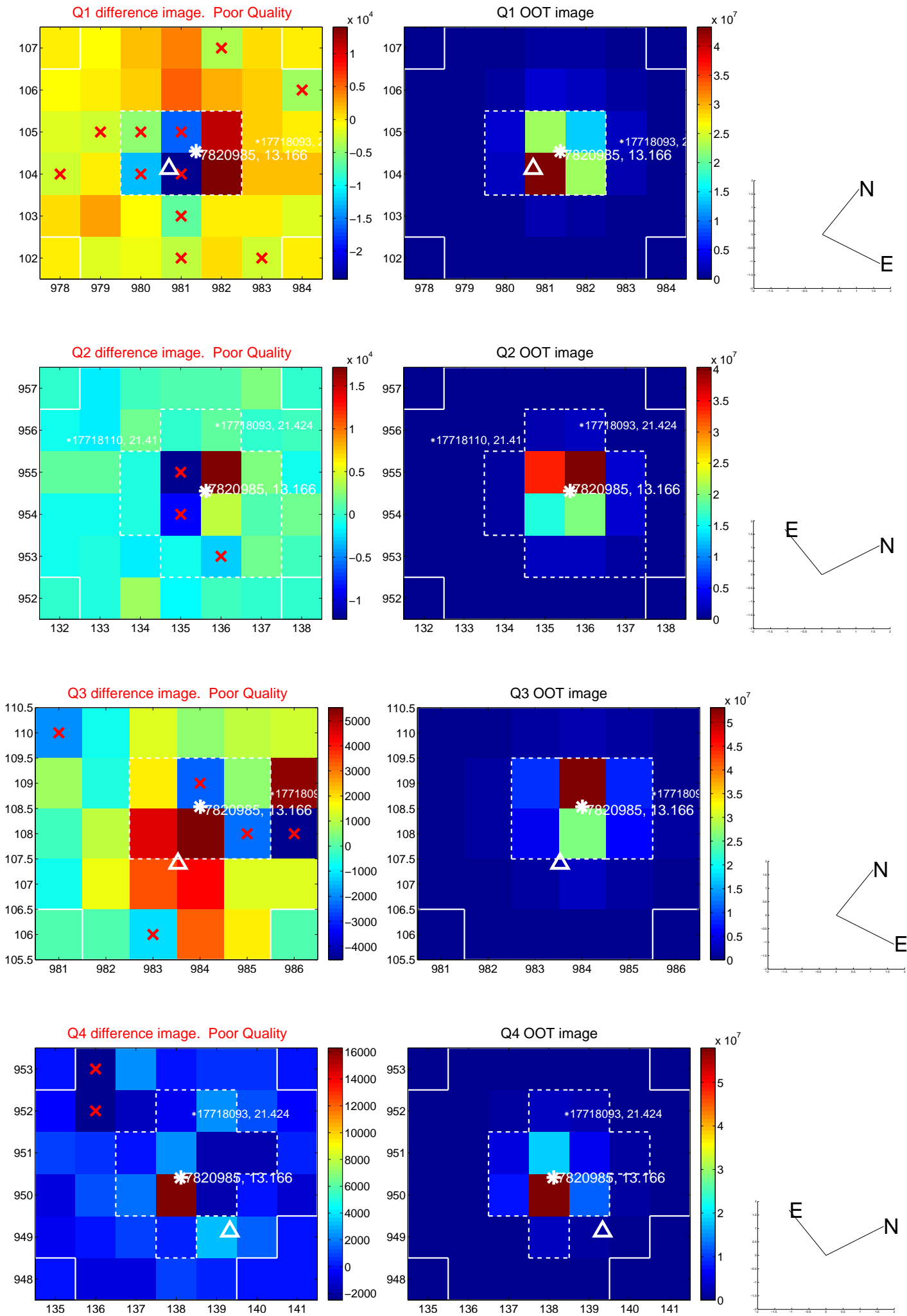
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.028 ± 0.597 | 1.72 | 0.497 ± 0.740 | -0.900 ± 0.496 |
| PRF-fit source offset from KIC position | 1.063 ± 0.573 | 1.86 | 0.527 ± 0.721 | -0.924 ± 0.471 |
| photometric centroid source offset | 0.63 ± 0.78 | 0.80 | 0.12 ± 0.75 | -0.62 ± 0.79 |

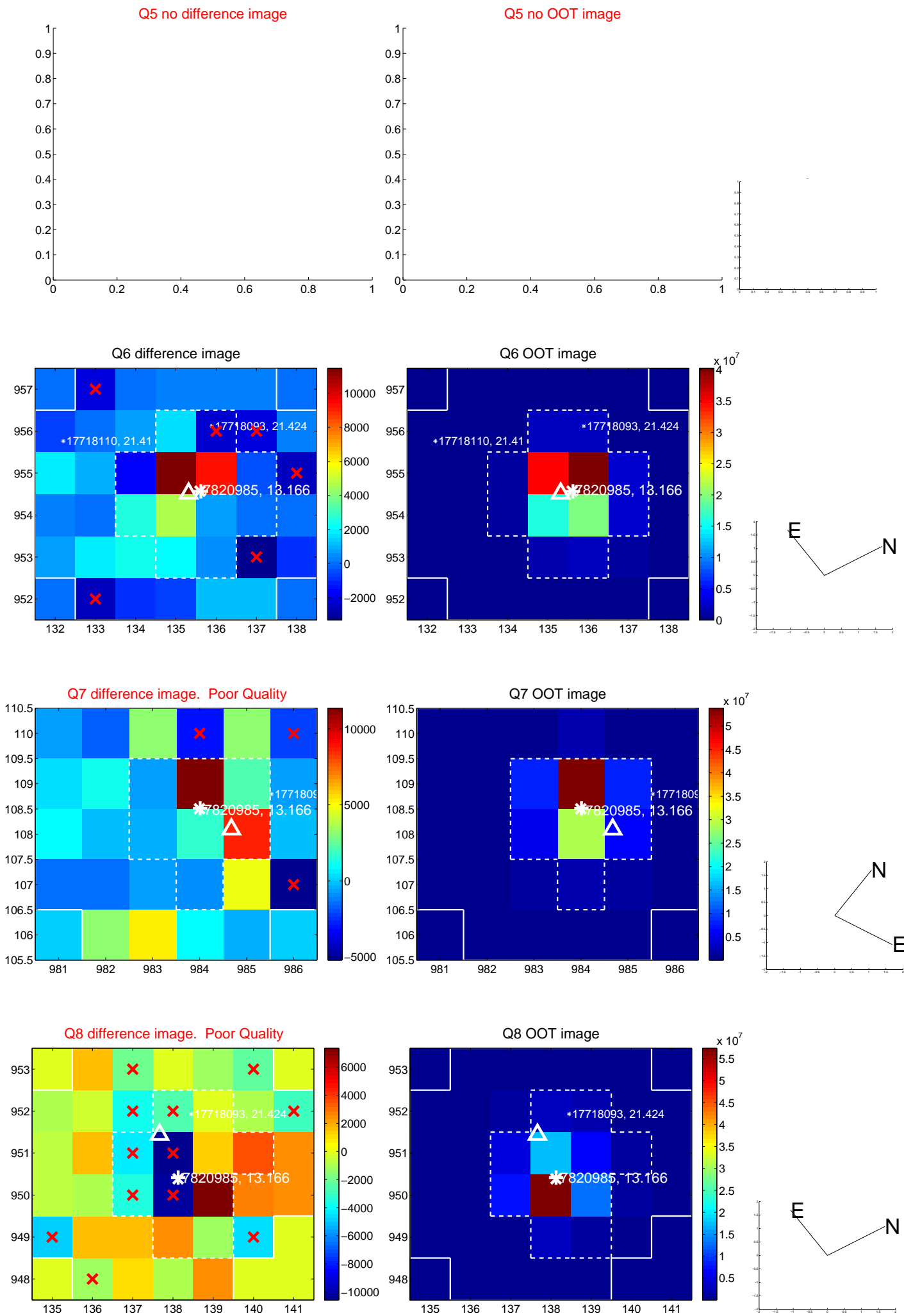


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

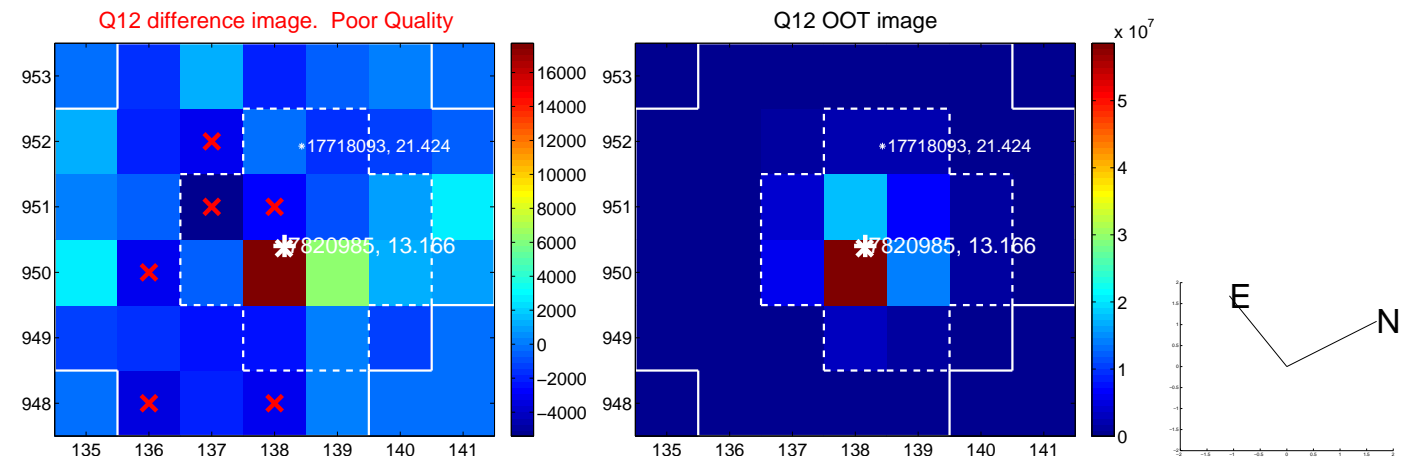
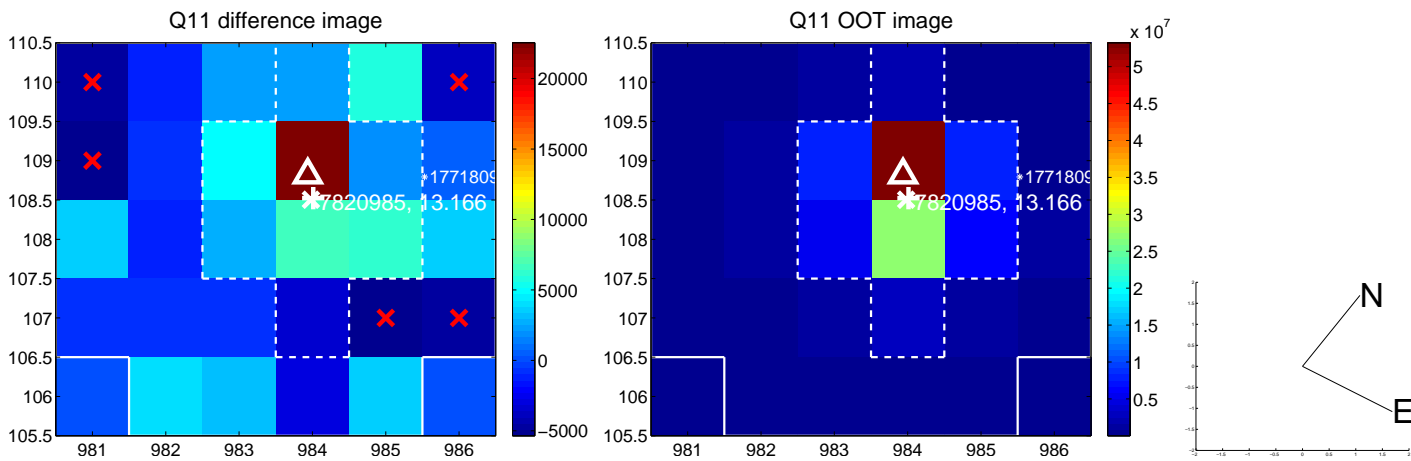
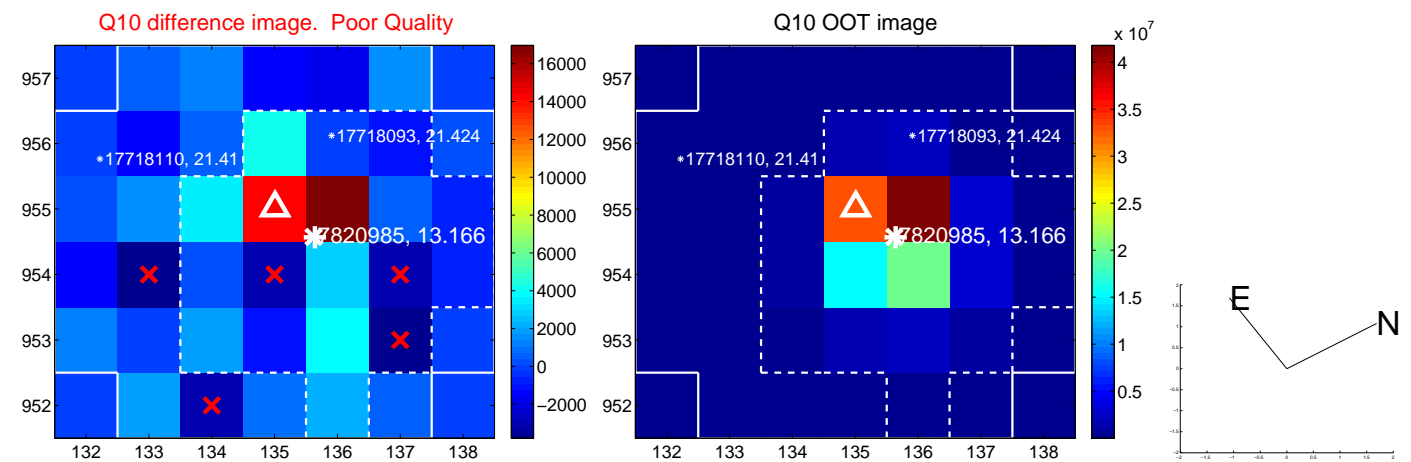
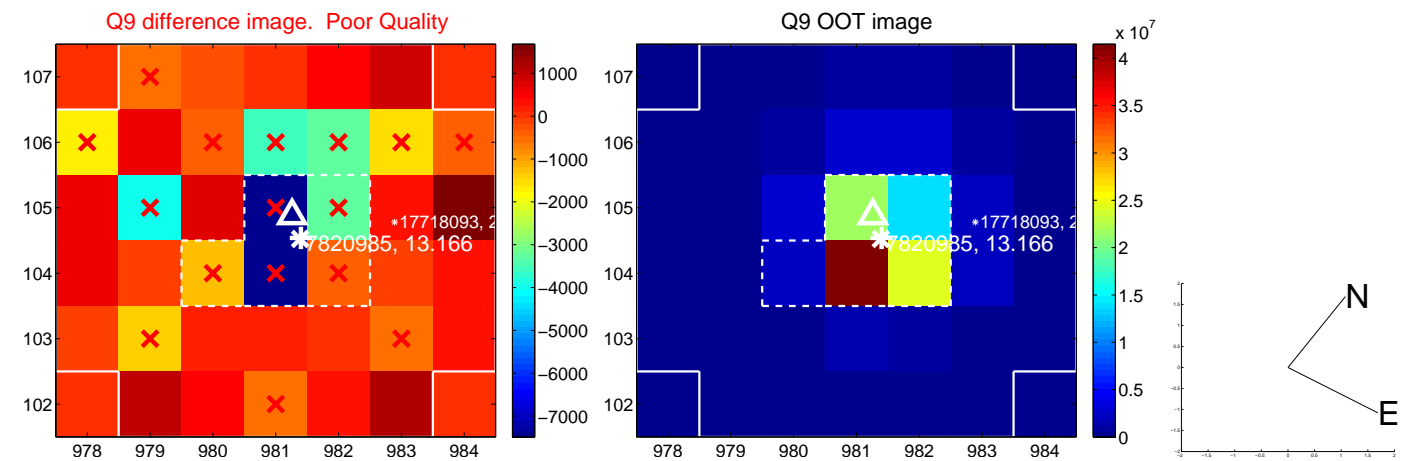
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



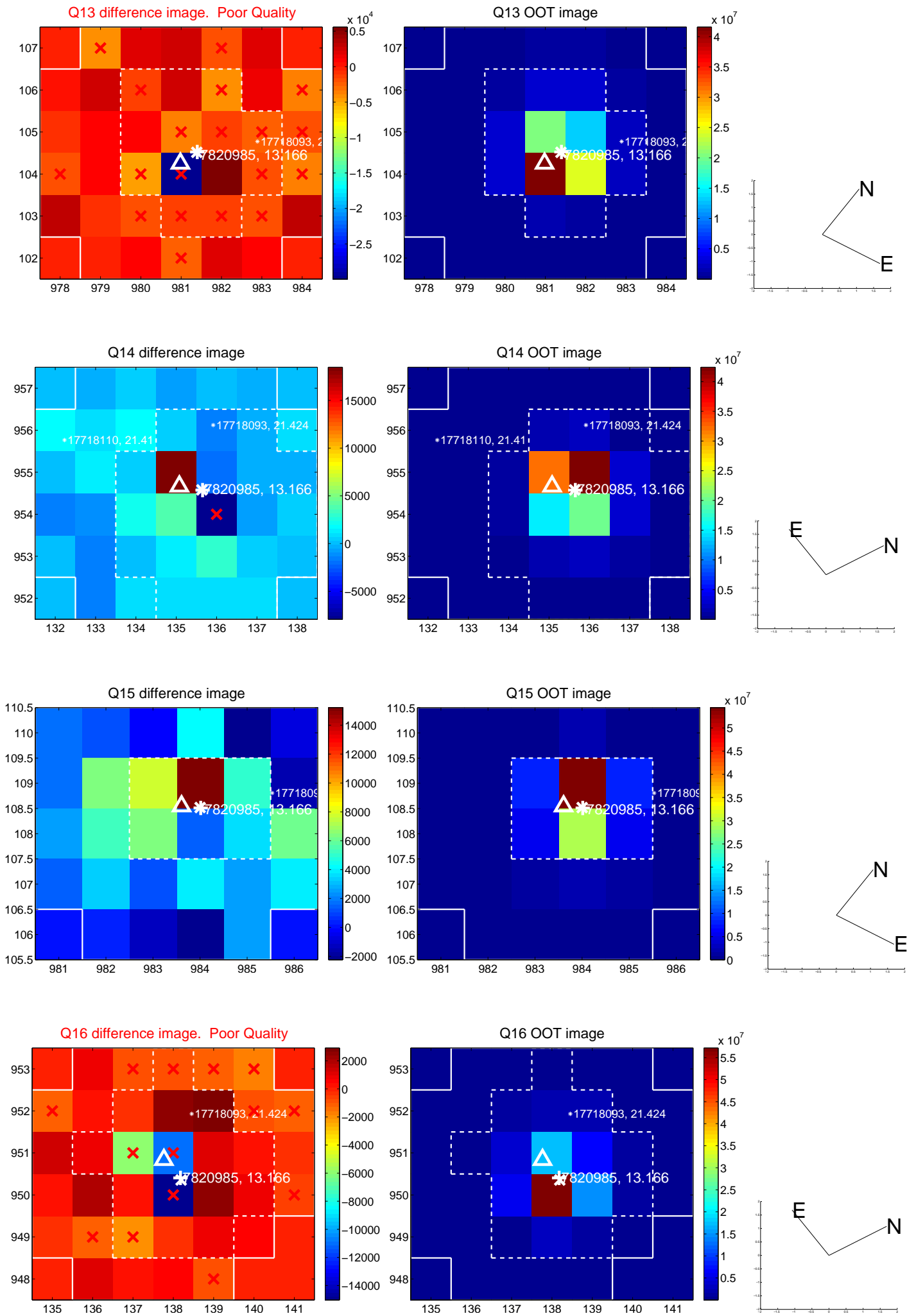
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



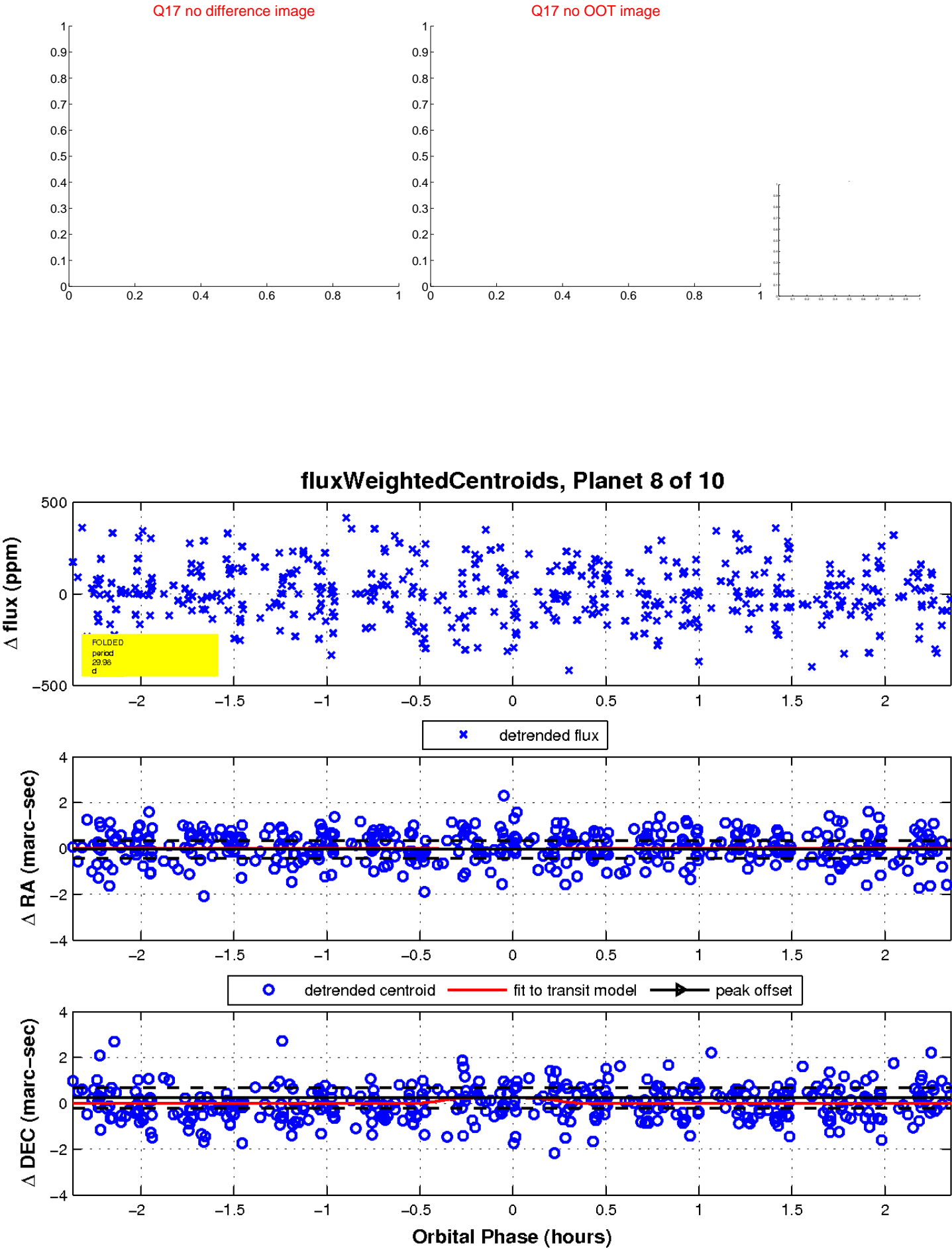
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

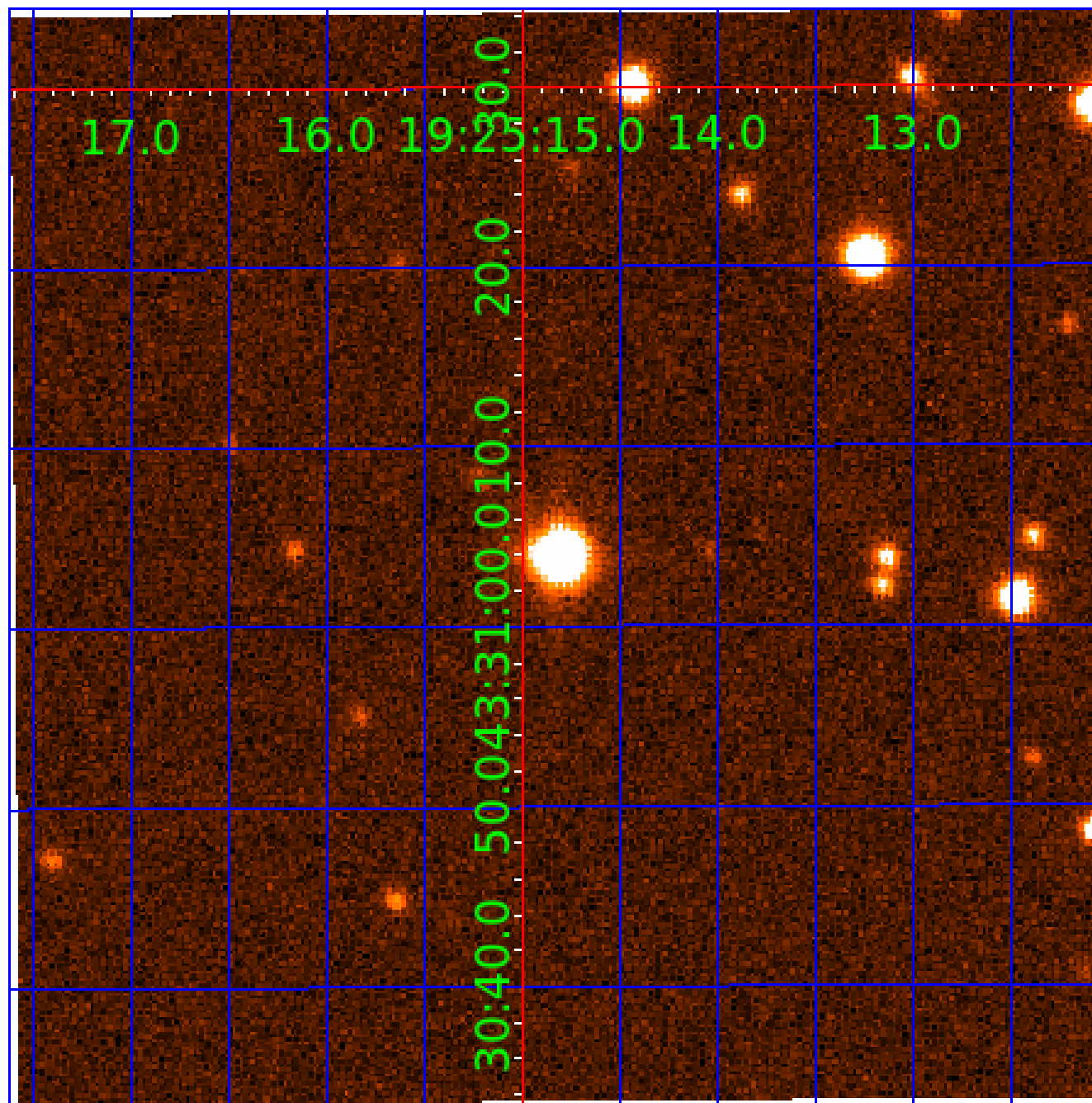


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

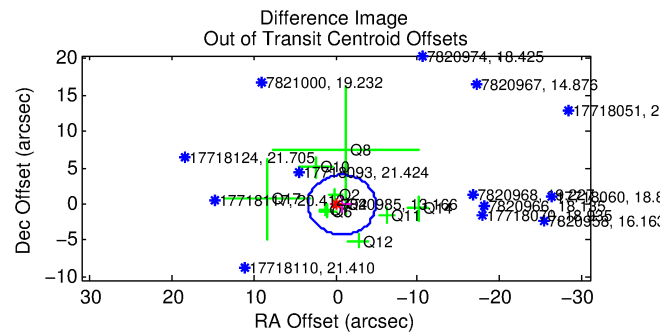
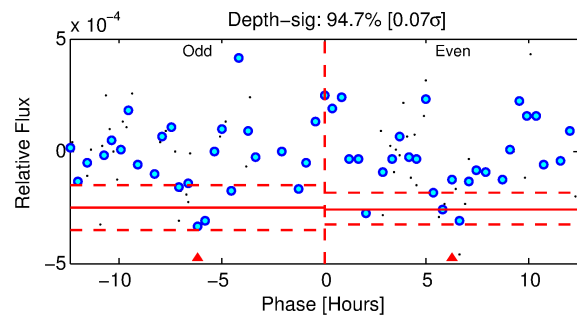
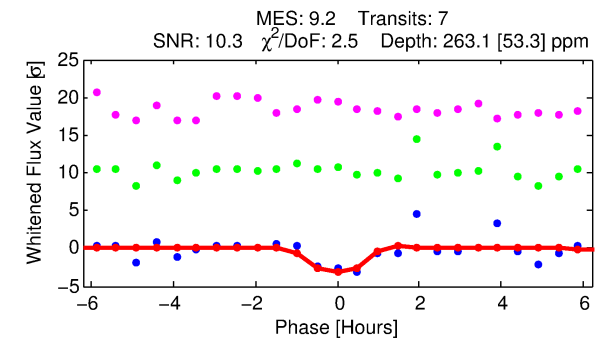
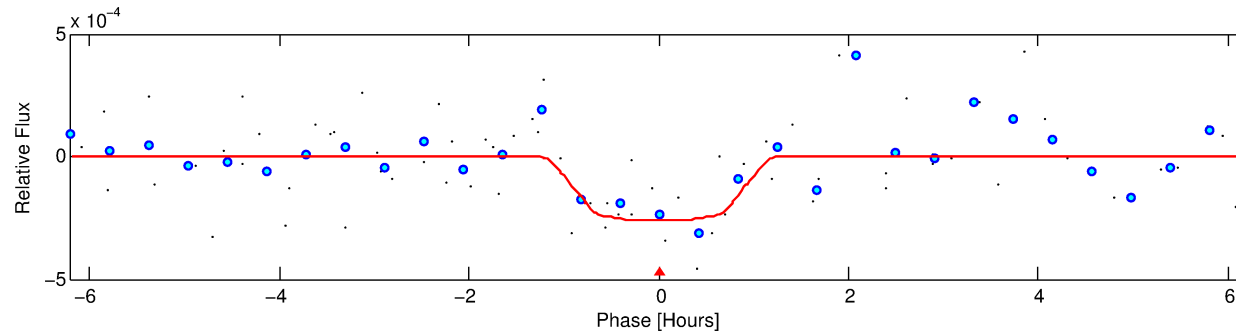
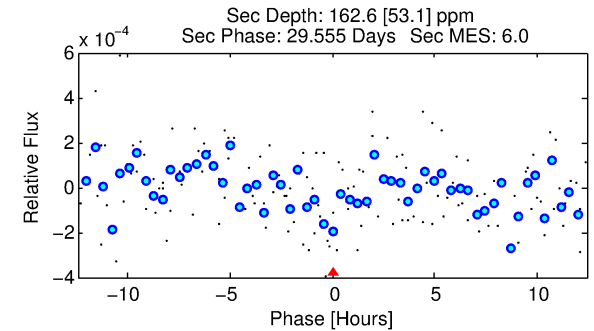
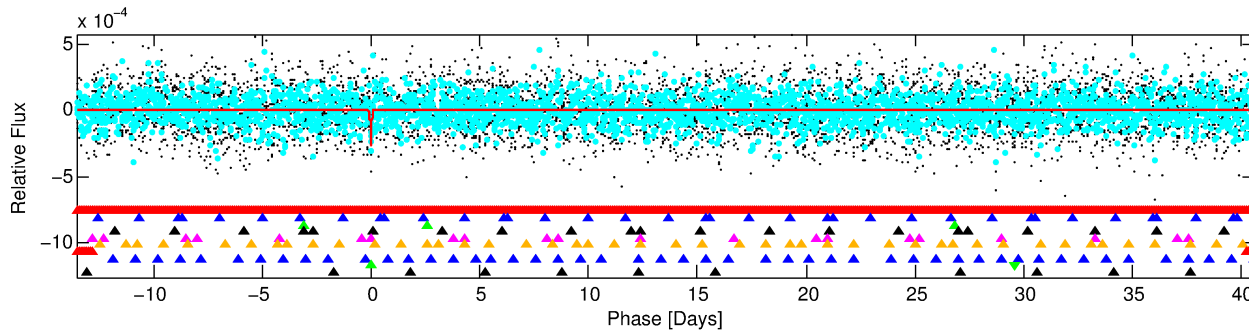
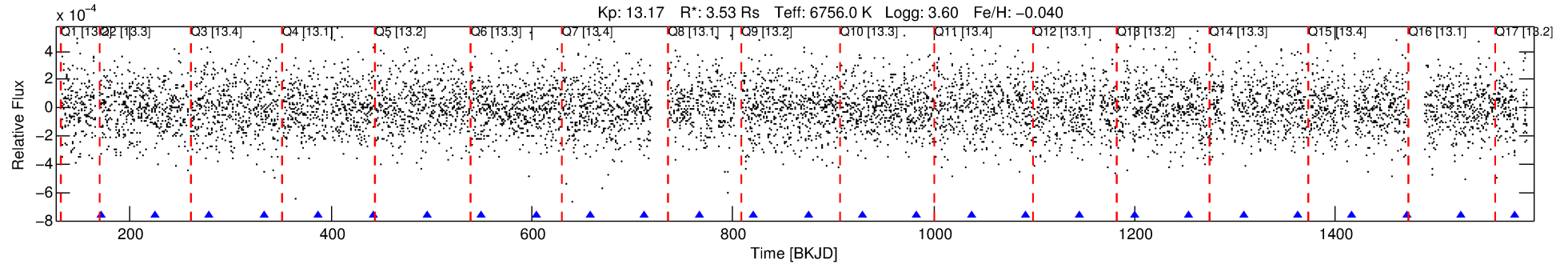
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-09

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 9 of 10 Period: 54.159 d



DV Fit Results:

Period = 54.15854 [0.00069] d
Epoch = 170.9630 [0.0107] BKJD
Rp/R* = 0.0173 [0.0109]
a/R* = 94.81 [343.14]
b = 0.90 [0.77]
Seff = 200.73 [112.69]
Teff = 960 [135] K
Rp = 6.68 [4.81] Re
a = 0.3404 [0.1156] AU
Ag = 232.55 [329.03] [0.70σ]
Teffp = 5795 [1897] K [2.54σ]

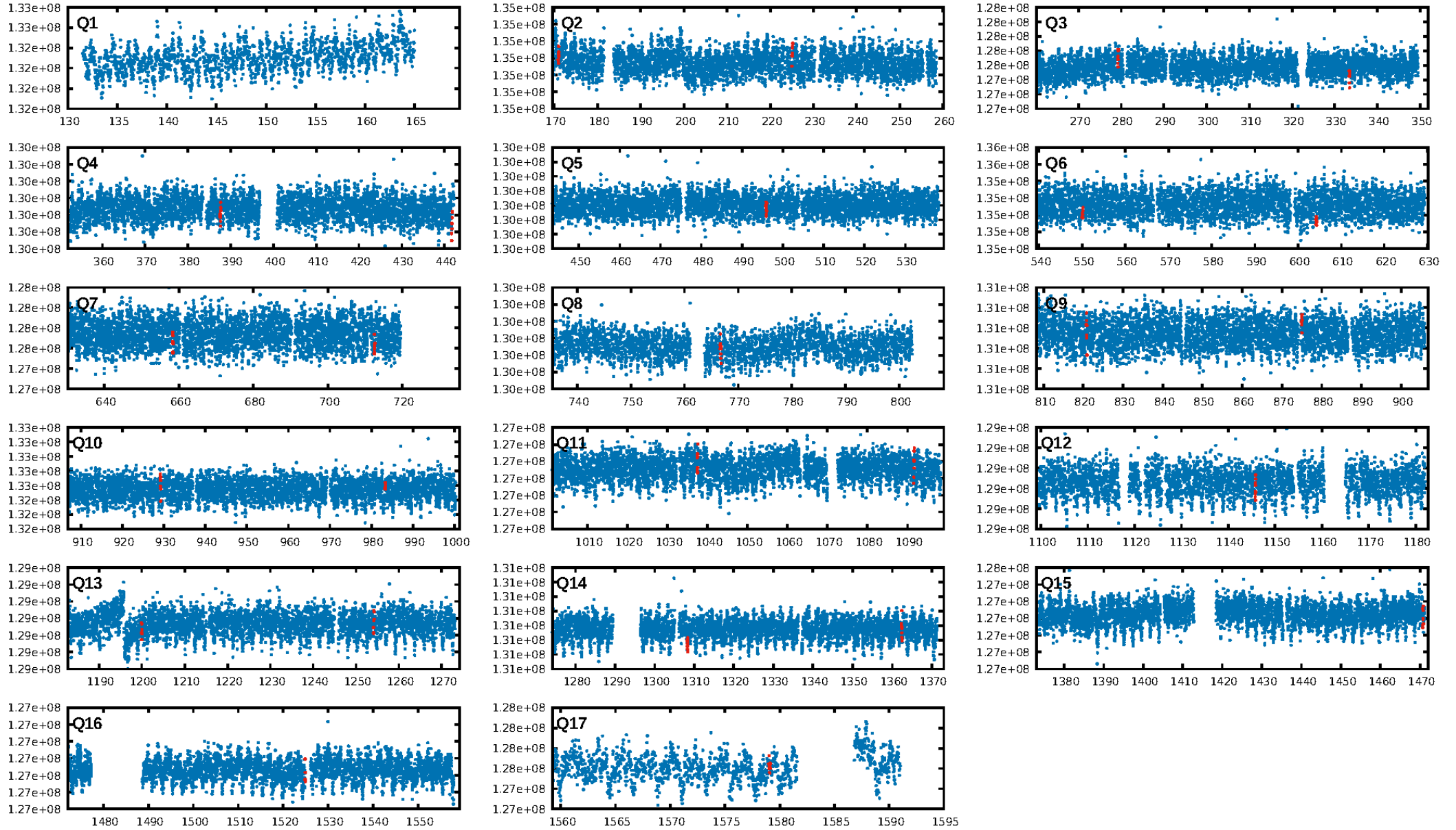
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [119.96σ]
LongPeriod-sig: 25.4% [0.32σ]
ModelChiSquare2-sig: 12.7%
ModelChiSquareGof-sig: 91.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -4.9
Centroid-sig: 27.5%
Centroid-so: 0.837 arcsec [1.02σ]
OotOffset-rm: 0.745 arcsec [0.54σ]
KicOffset-rm: 0.695 arcsec [0.47σ]
OotOffset-st: 4/2/3/1 [10]
KicOffset-st: 4/2/3/1 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/15]

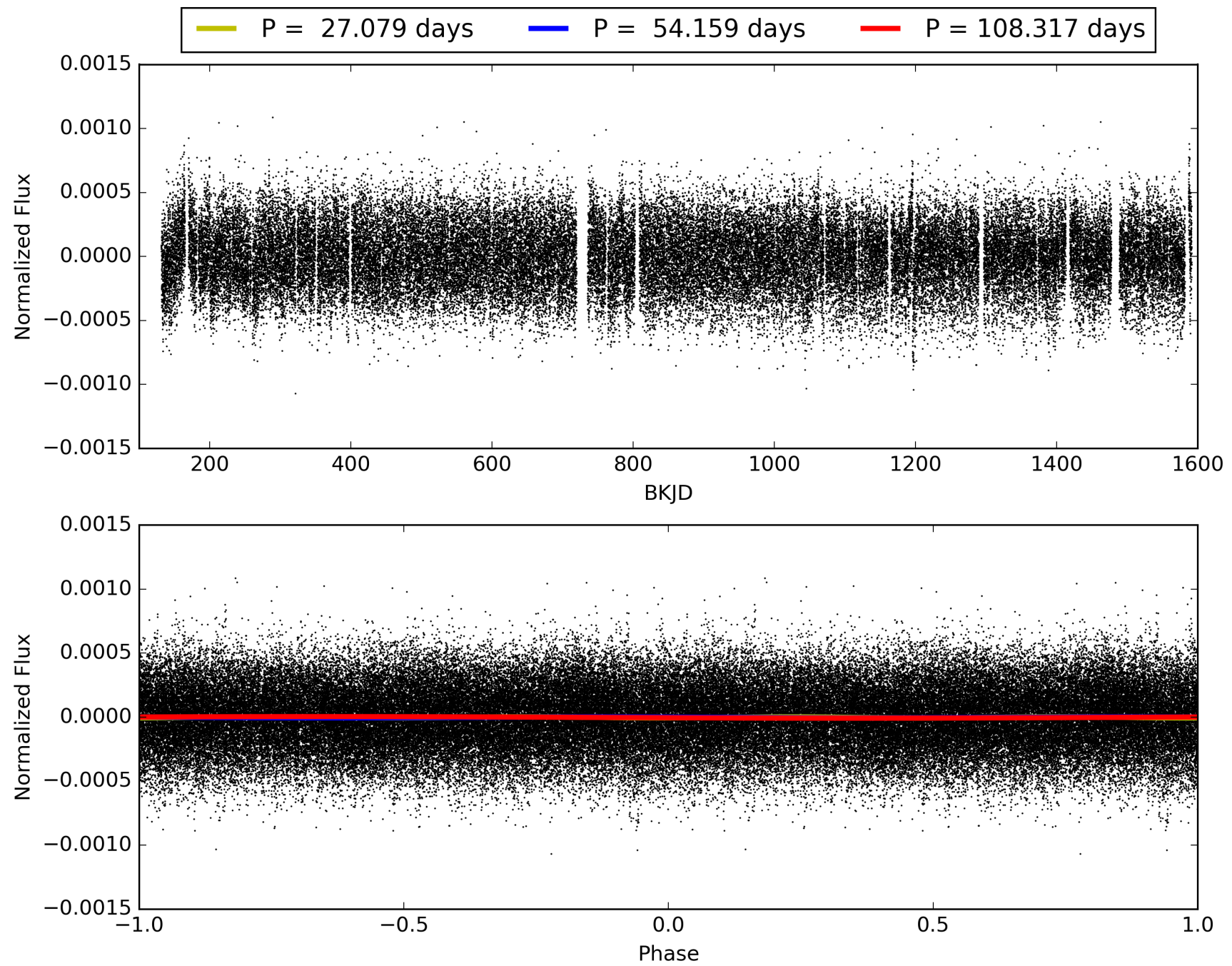
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:14:05 Z

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

TCE 007820985-09, PDC Light Curves

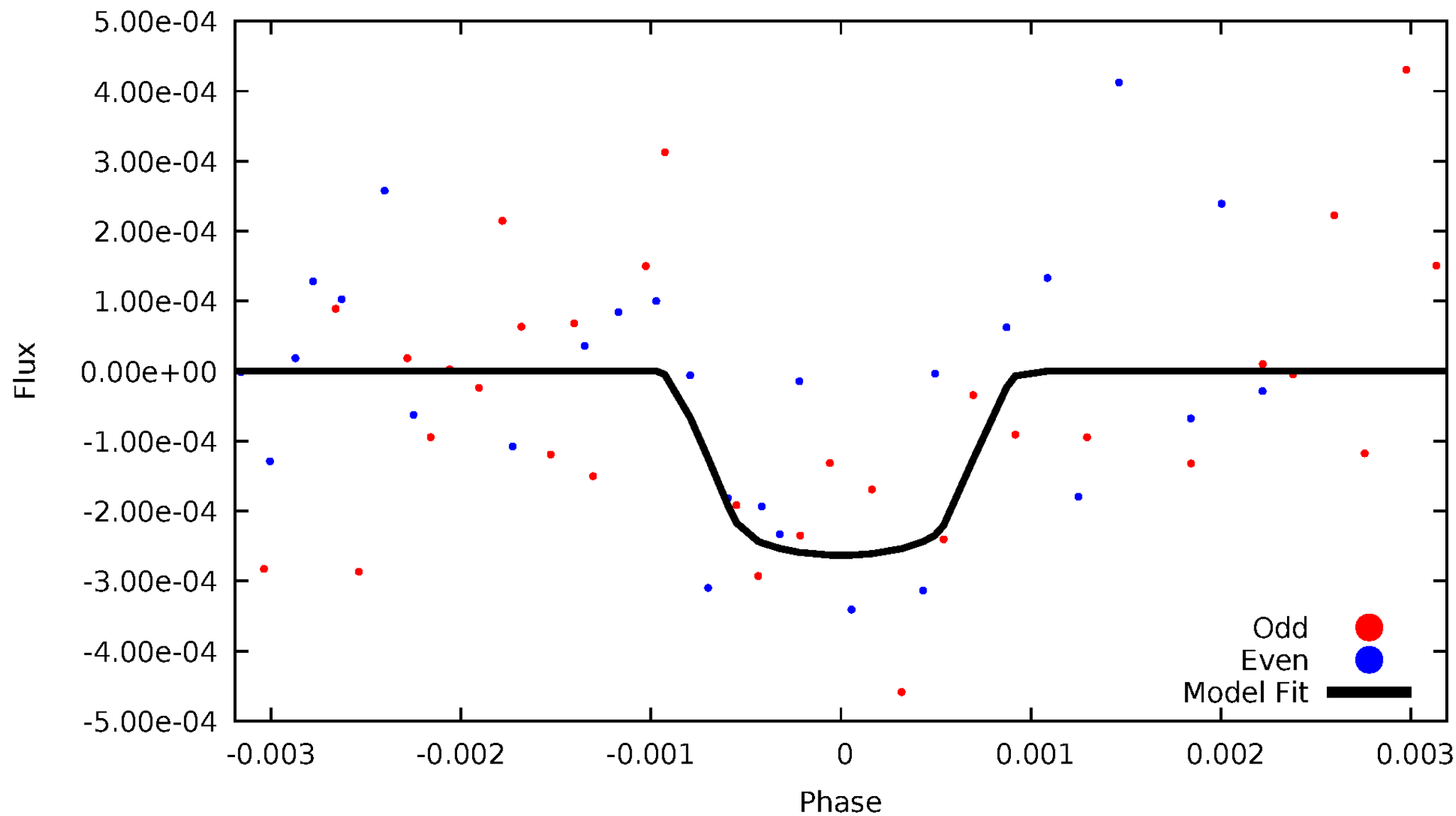


TCE 007820985-09



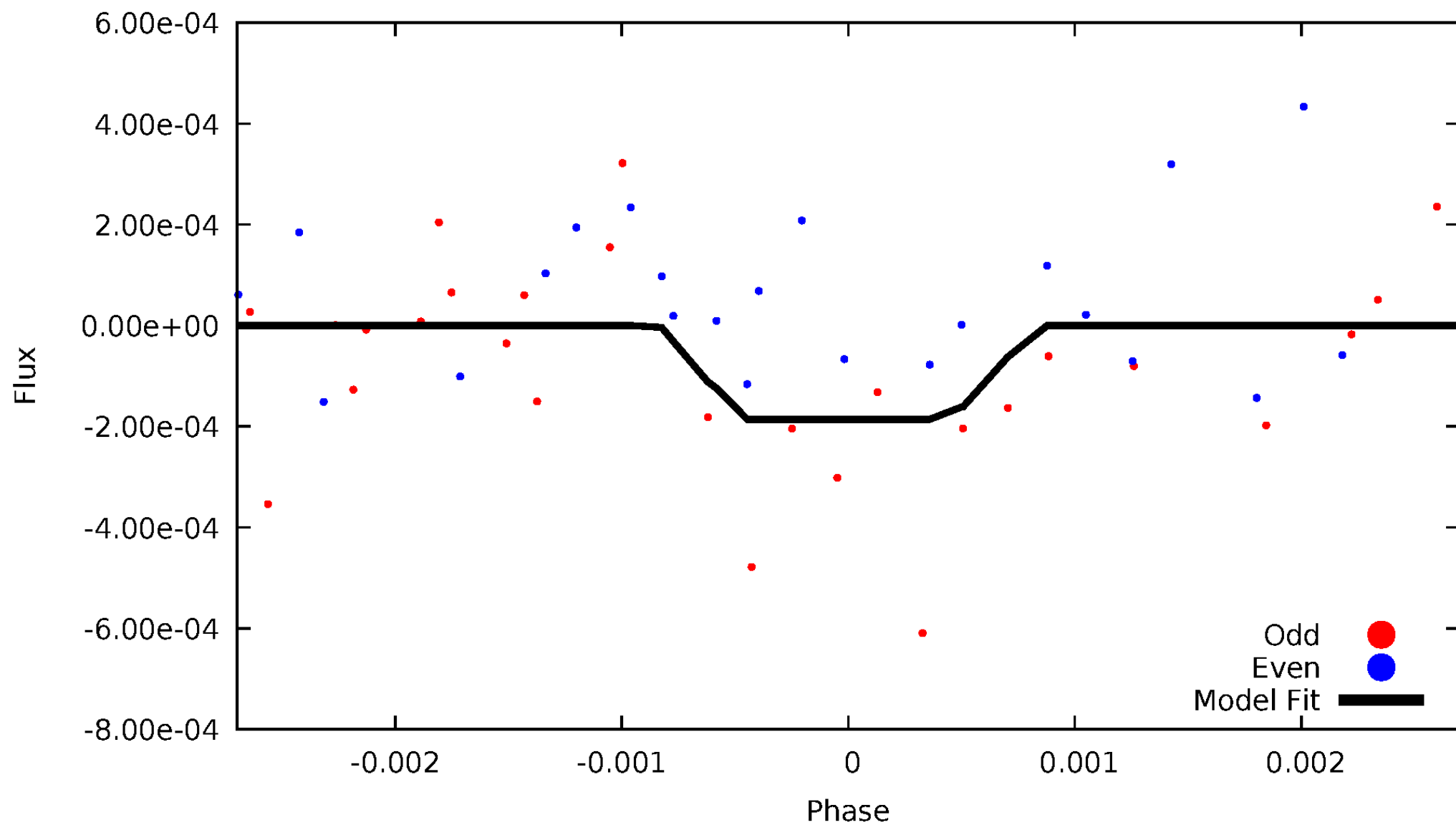
DV Odd/Even

TCE 007820985-09

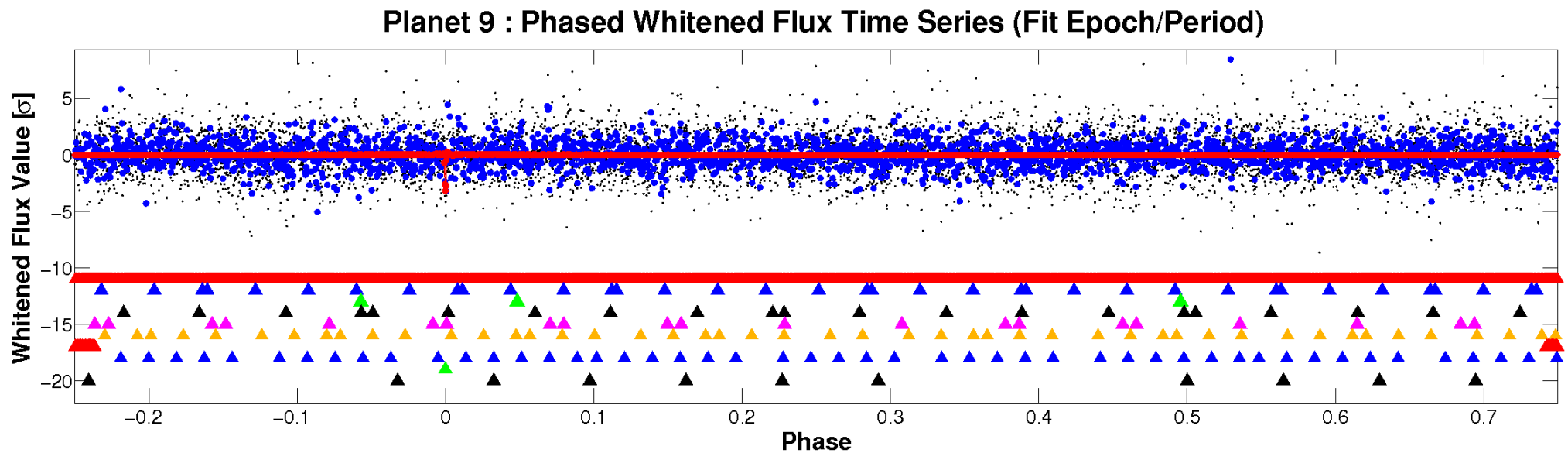
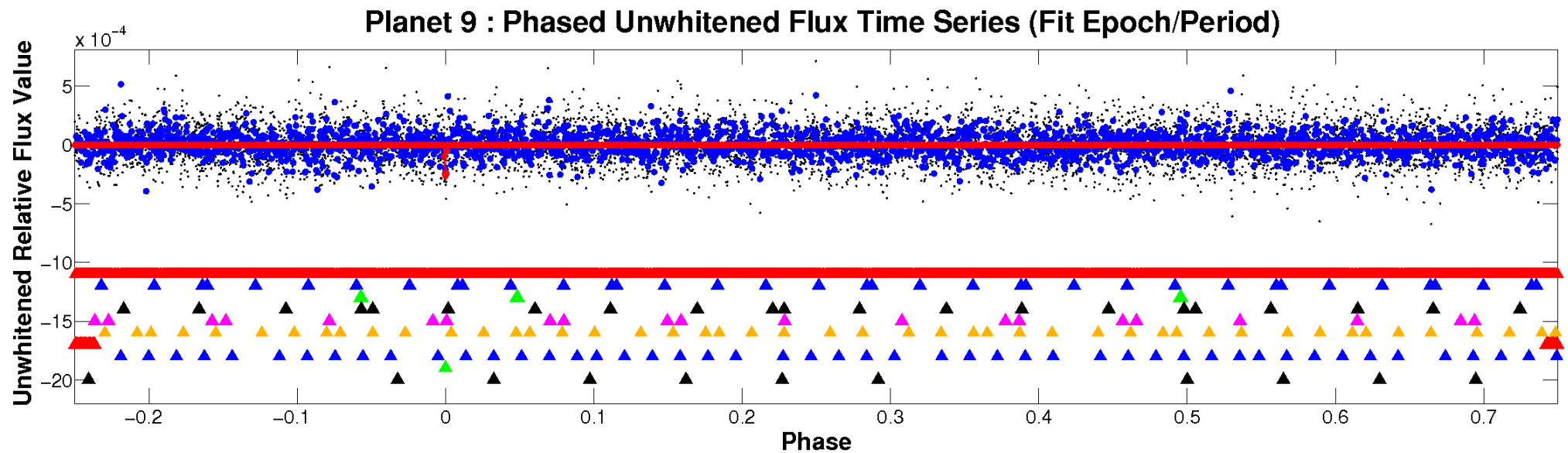


ALT Odd/Even

TCE 007820985-09

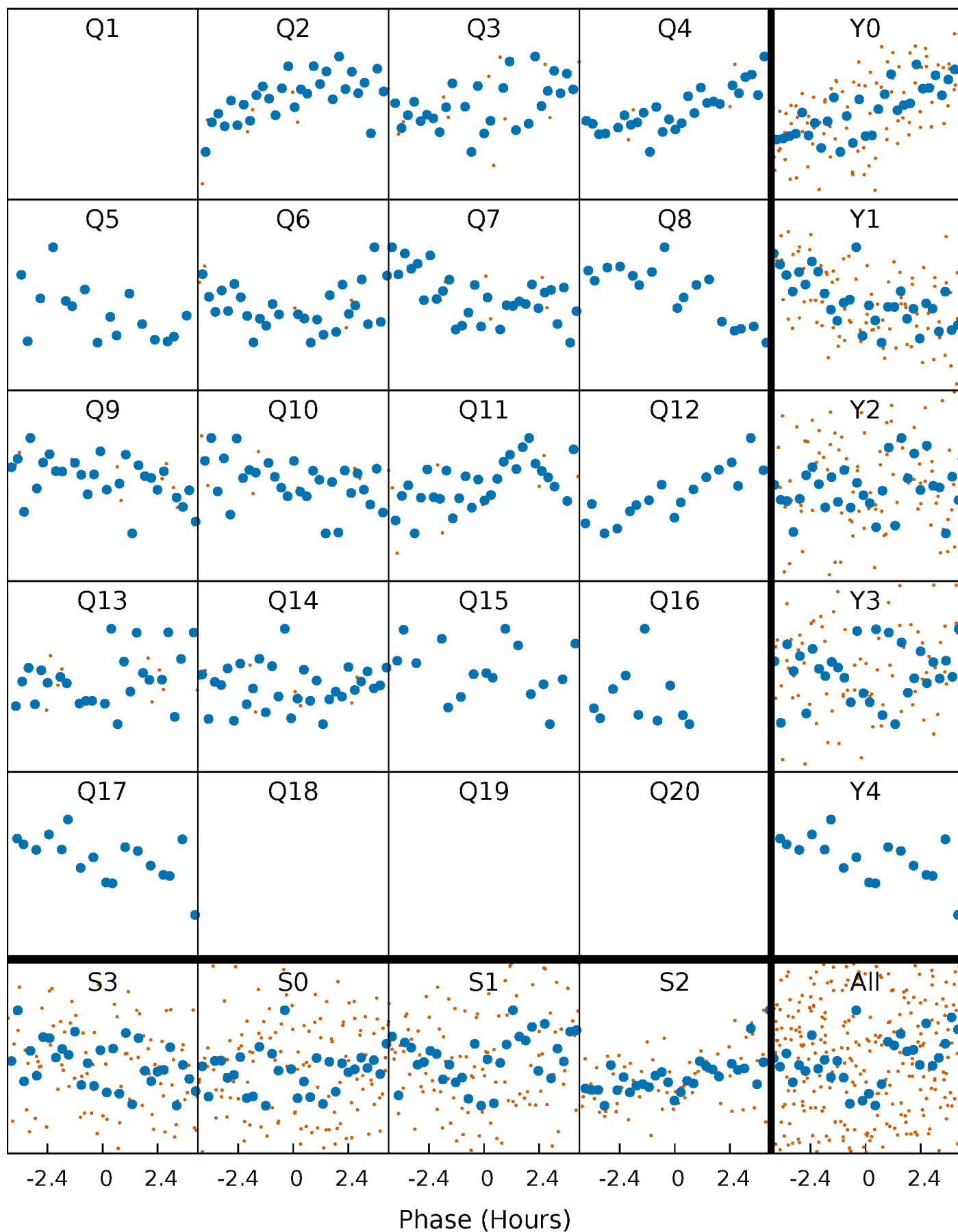


Non-Whitened Vs. Whitened Light Curve



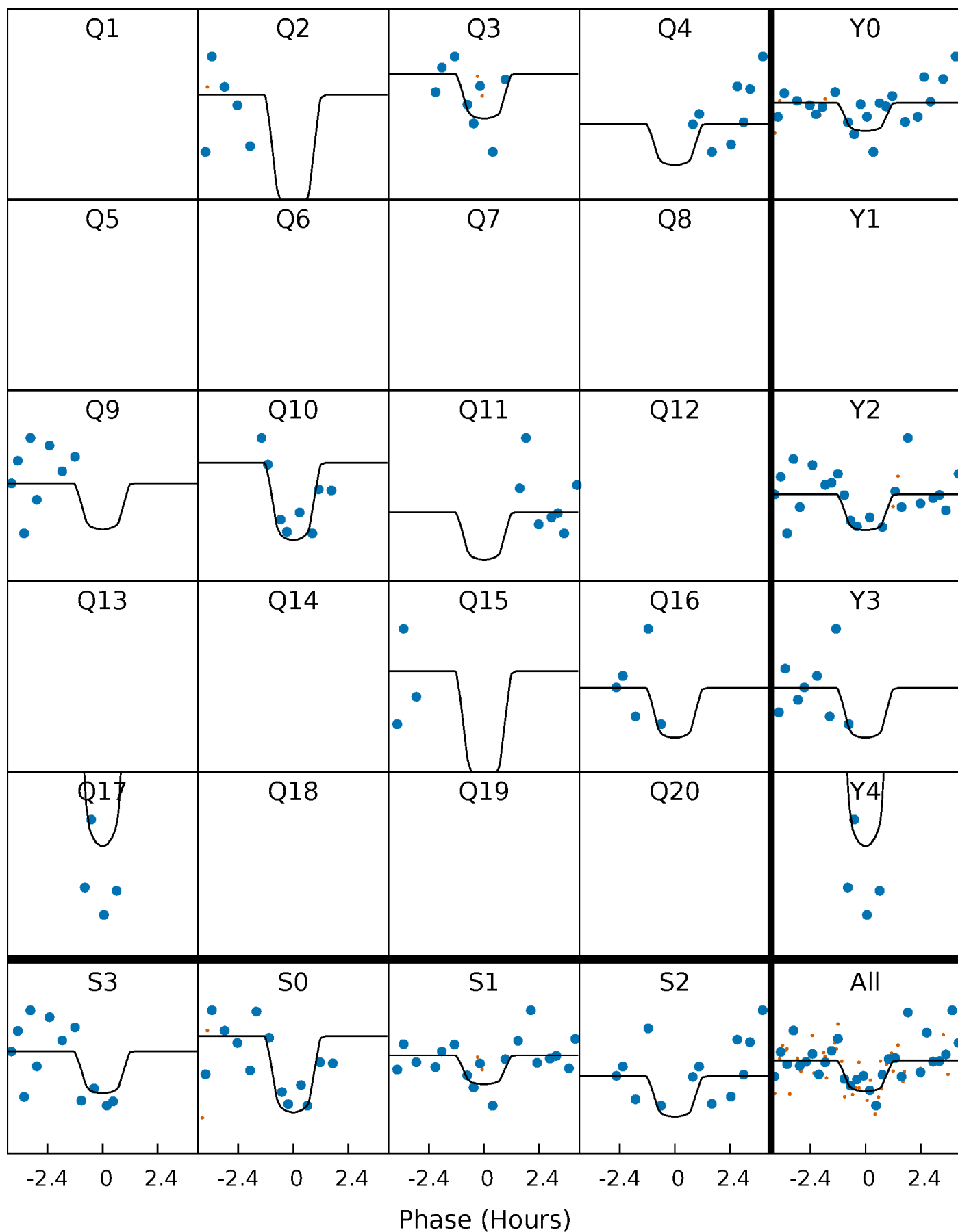
PDC Quarter-Phased Transit Curves

TCE 007820985-09 P= 54.158543 Days $T_0=170.962984$ (BKJD)



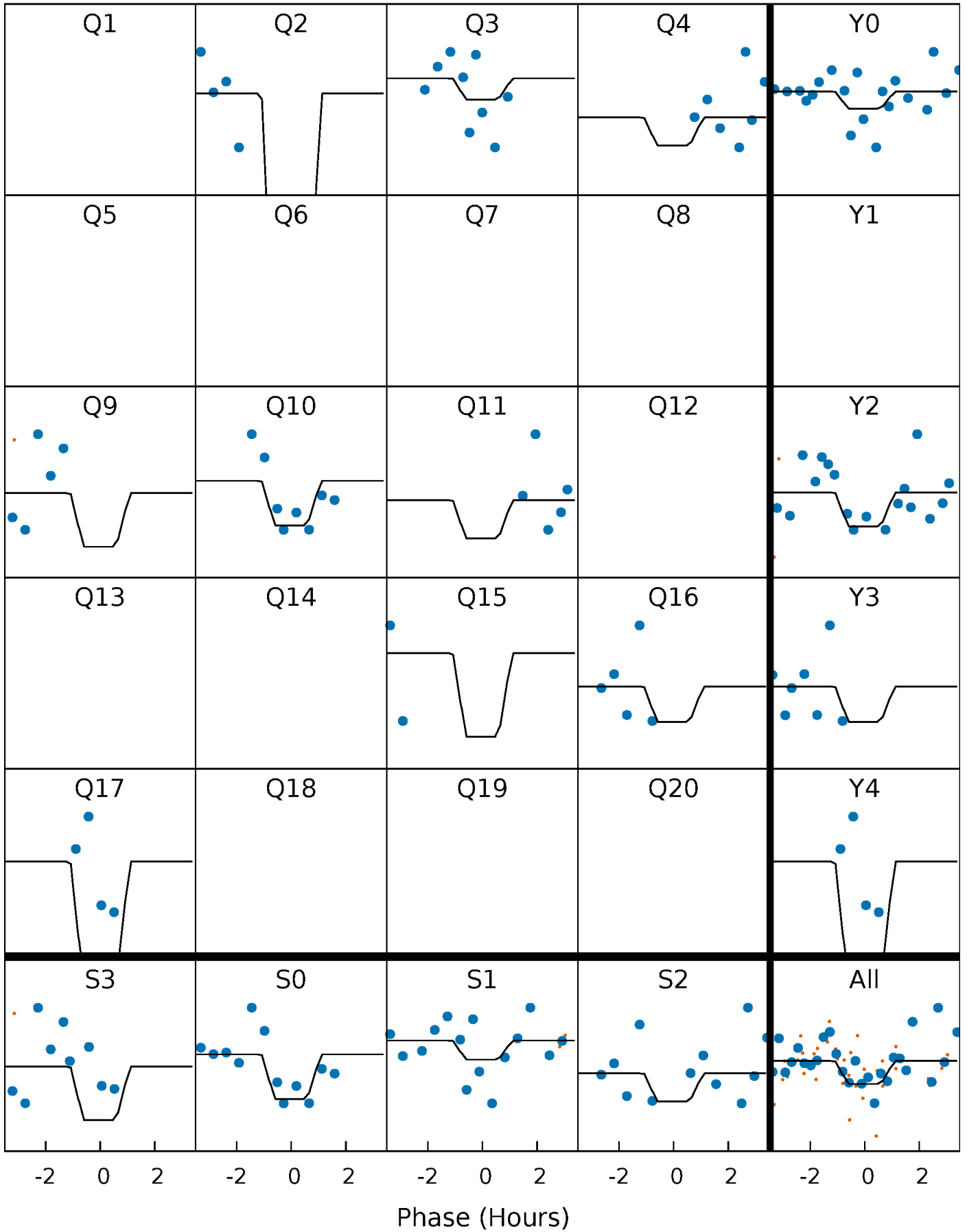
DV Quarter-Phased Transit Curves

TCE 007820985-09 P= 54.158543 Days $T_0=170.962984$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

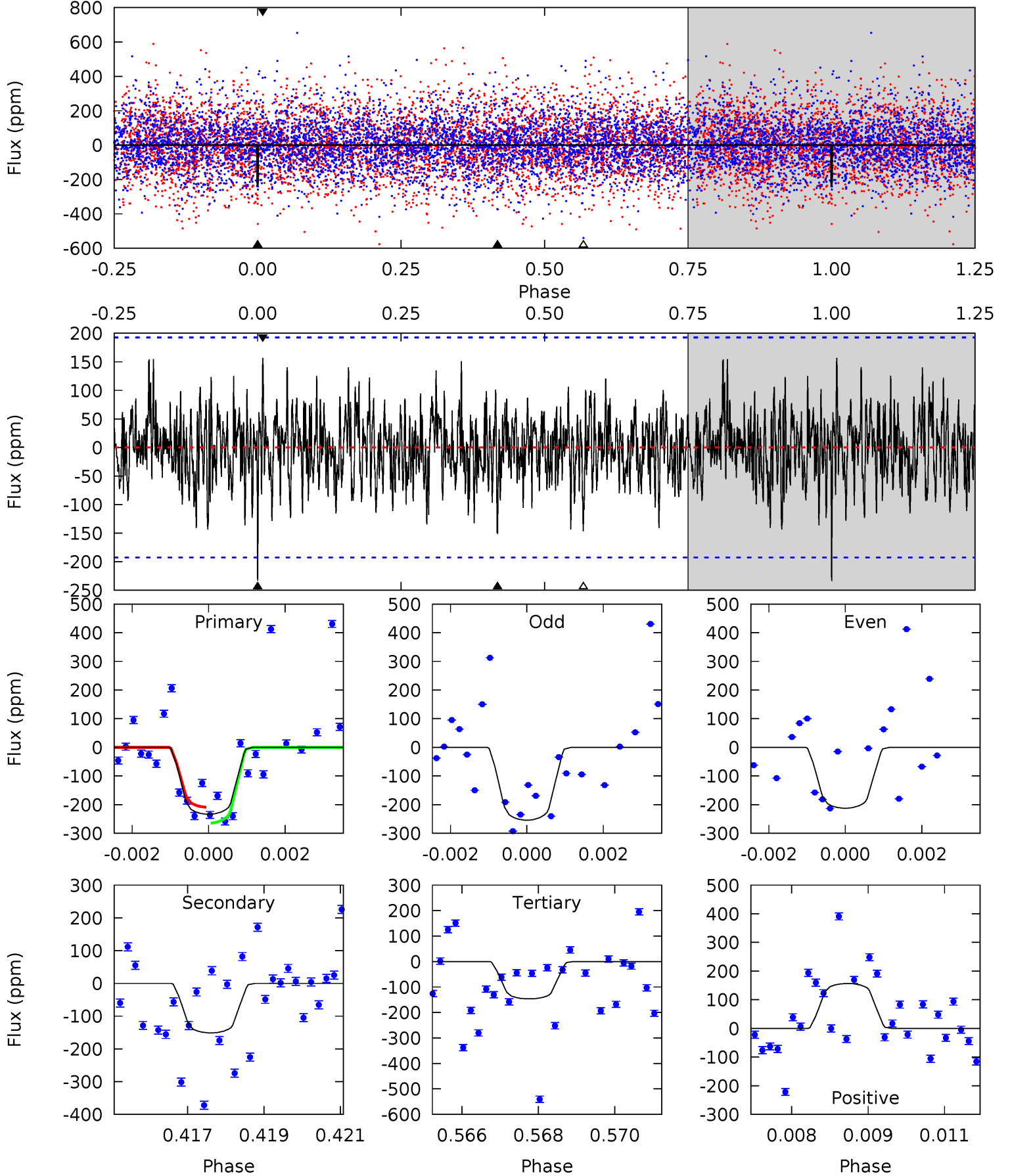
TCE 007820985-09 P= 54.158739 Days $T_0=170.961898$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-09, P = 54.158543 Days, E = 116.804441 Days

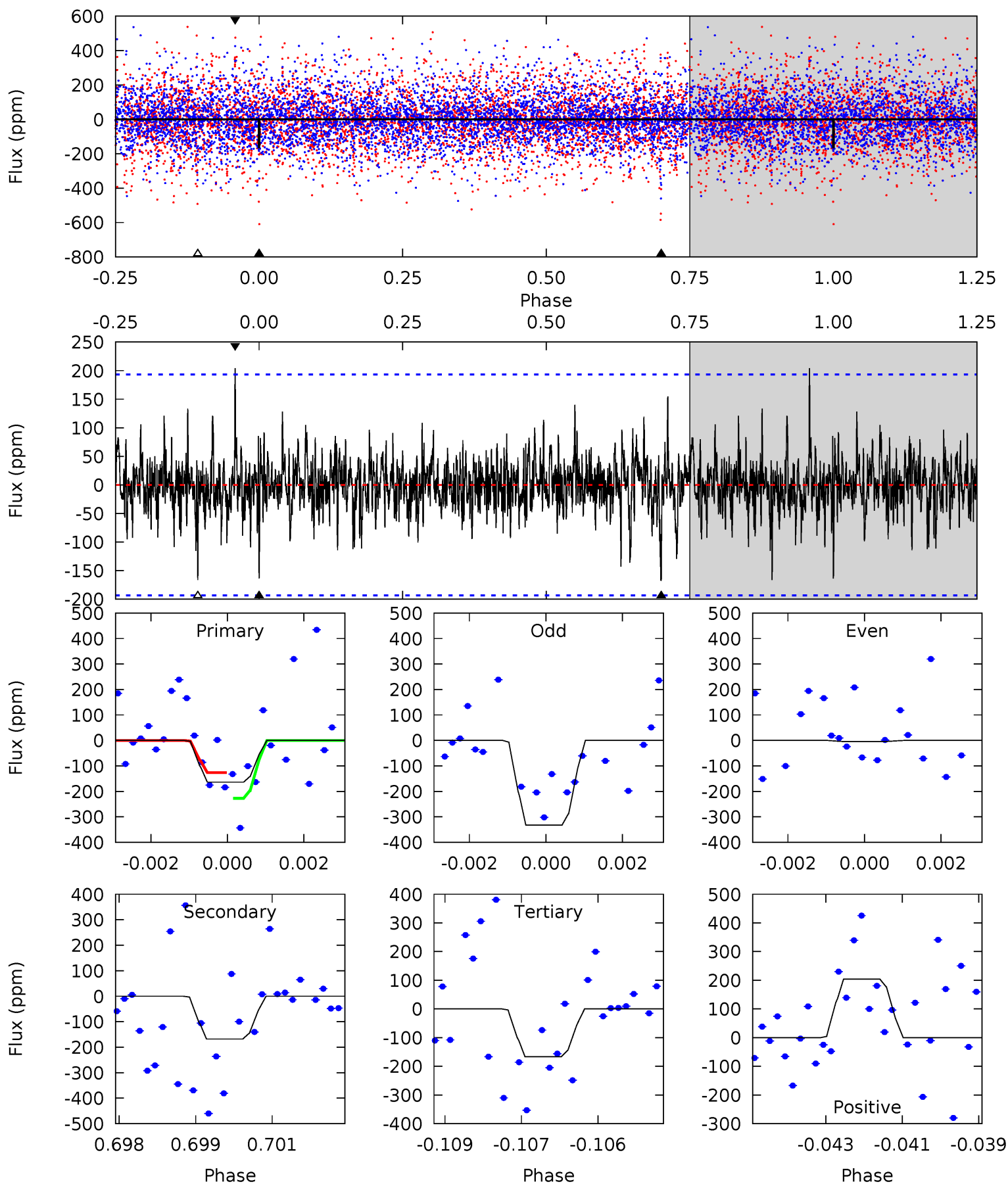
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.47 | 4.19 | 4.06 | 4.34 | 5.34 | 3.11 | 1.34 | 2.41 | 2.13 | 0.13 | -0.16 | 0.58 | 0.87 | 0.40 | 0.77 |



Alt Model-Shift Uniqueness Test

007820985-09, P = 54.158739 Days, E = 116.803159 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.53 | 4.65 | 4.61 | 5.66 | 5.36 | 3.14 | 1.09 | -0.08 | -1.12 | 0.04 | -1.00 | 4.66 | 1.12 | 0.55 | 1.37 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-09 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|----------------------|
| DV | -151 ± 36 | $6.31^{+4.02}_{-3.54}$ | 1304^{+72}_{-117} | 5526^{+3008}_{-971} | 239^{+1021}_{-149} |
| Alt. | -168 ± 36 | $5.34^{+3.78}_{-3.19}$ | 1306^{+71}_{-111} | 6245^{+4246}_{-1372} | 386^{+1769}_{-267} |

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

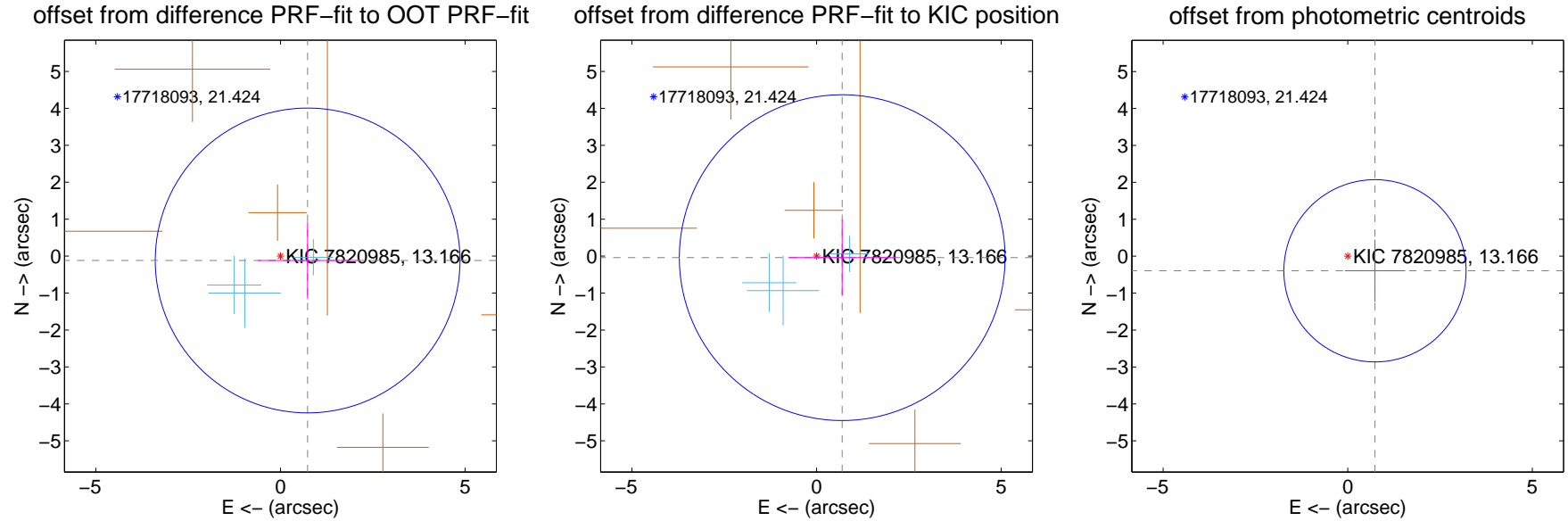
DV Centroid Data

Supplemental centroid analysis for 007820985-09. Kepler magnitude: 13.17. Transit SNR 10.29

There are 3 quarters with good PRF difference image offsets

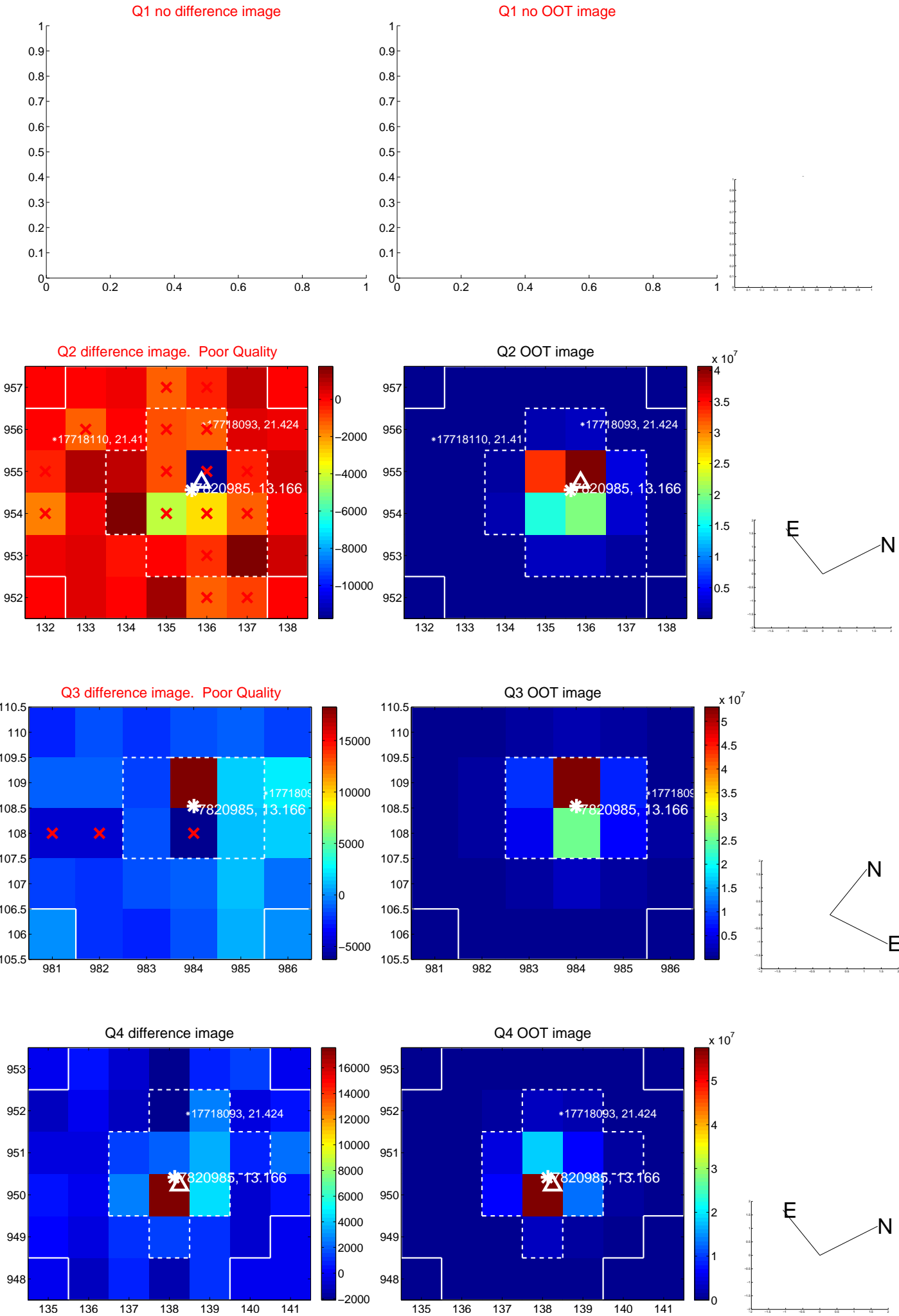
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.745 ± 1.375 | 0.54 | -0.735 ± 1.350 | -0.118 ± 1.038 |
| PRF-fit source offset from KIC position | 0.695 ± 1.470 | 0.47 | -0.694 ± 1.459 | -0.041 ± 1.029 |
| photometric centroid source offset | 0.84 ± 0.82 | 1.02 | -0.74 ± 0.82 | -0.39 ± 0.84 |

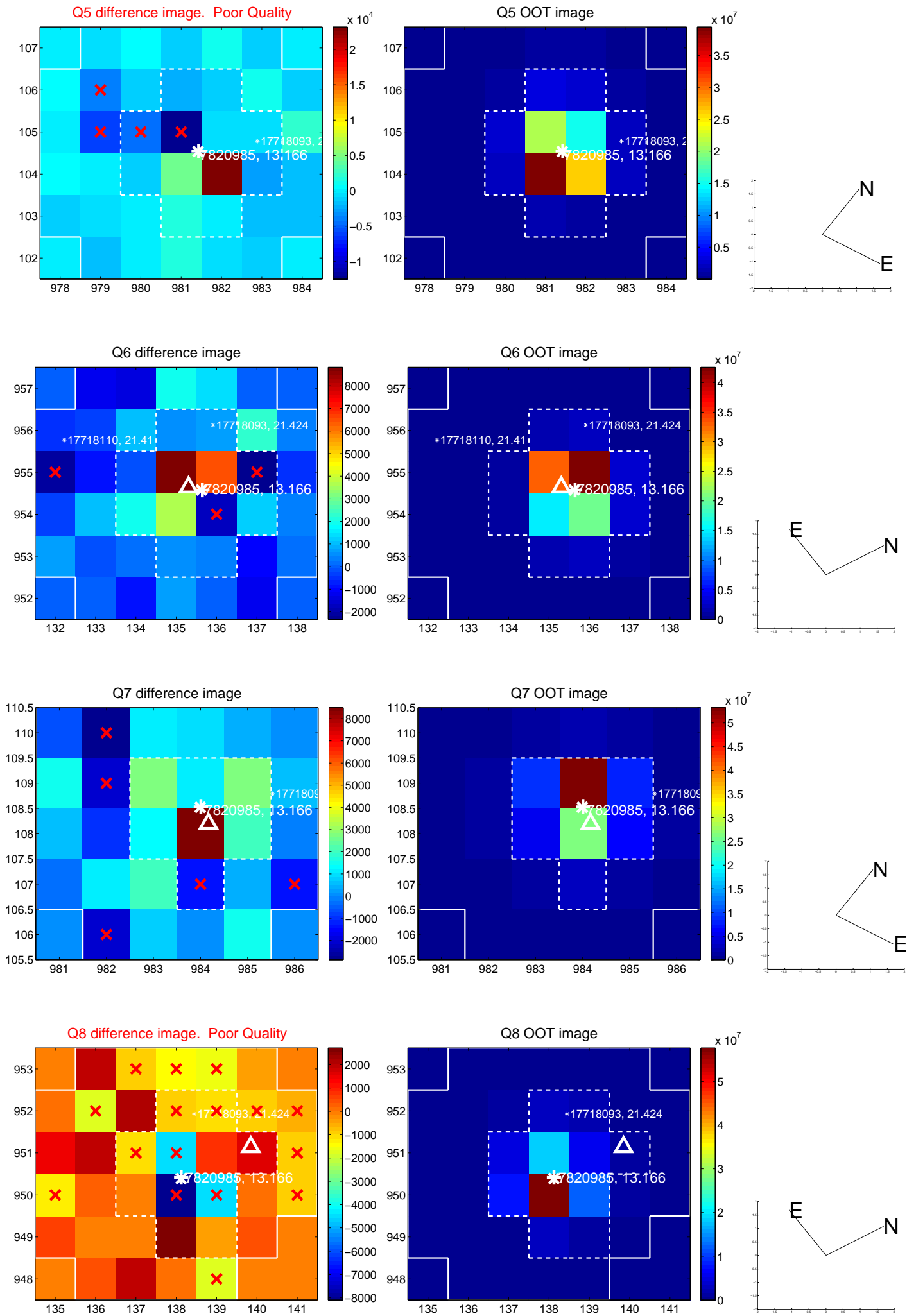


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

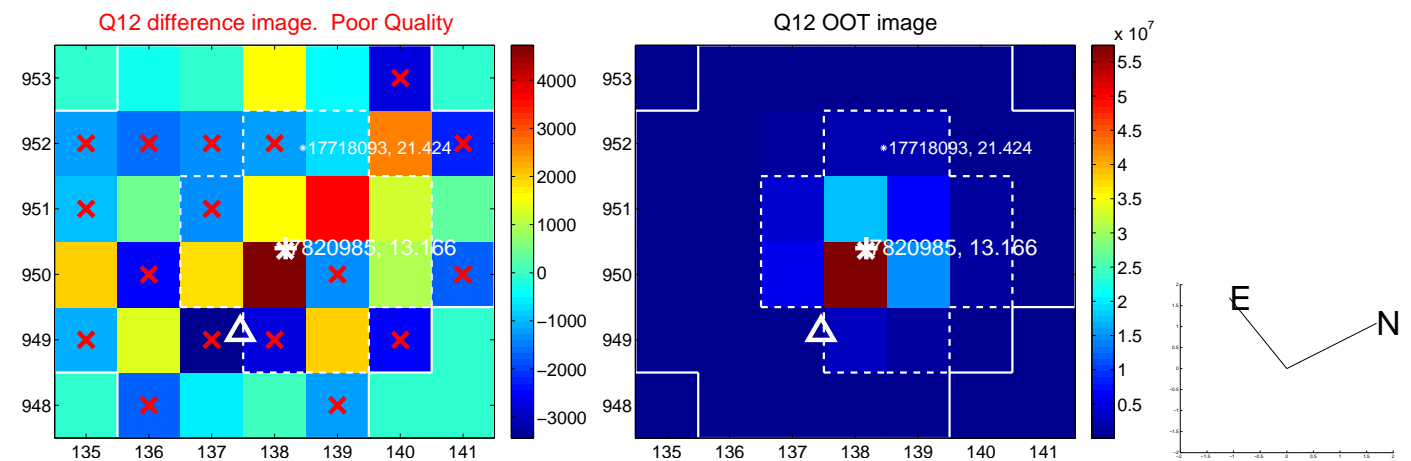
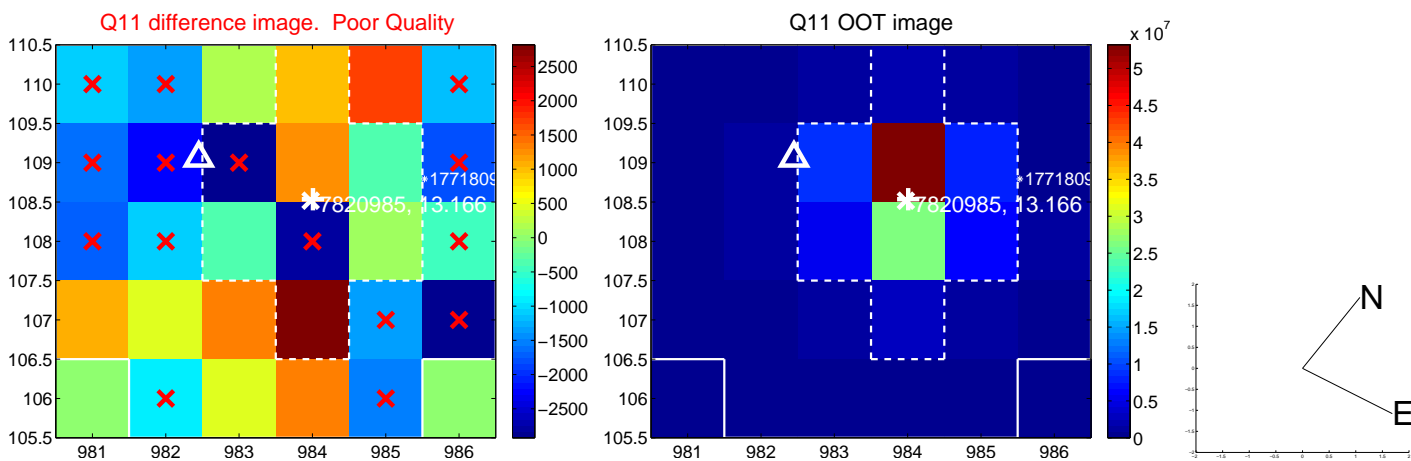
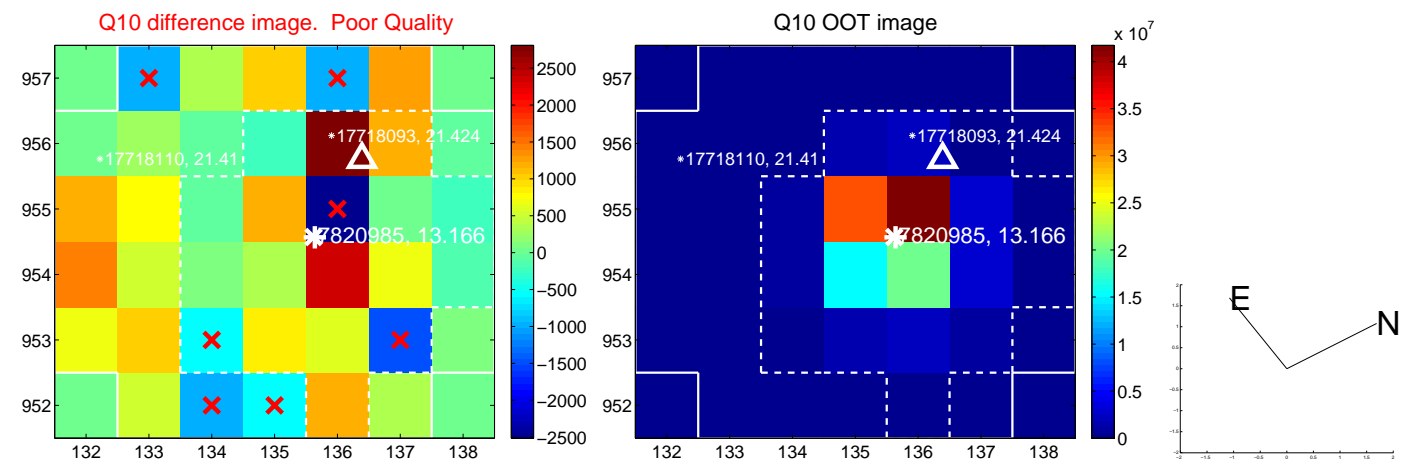
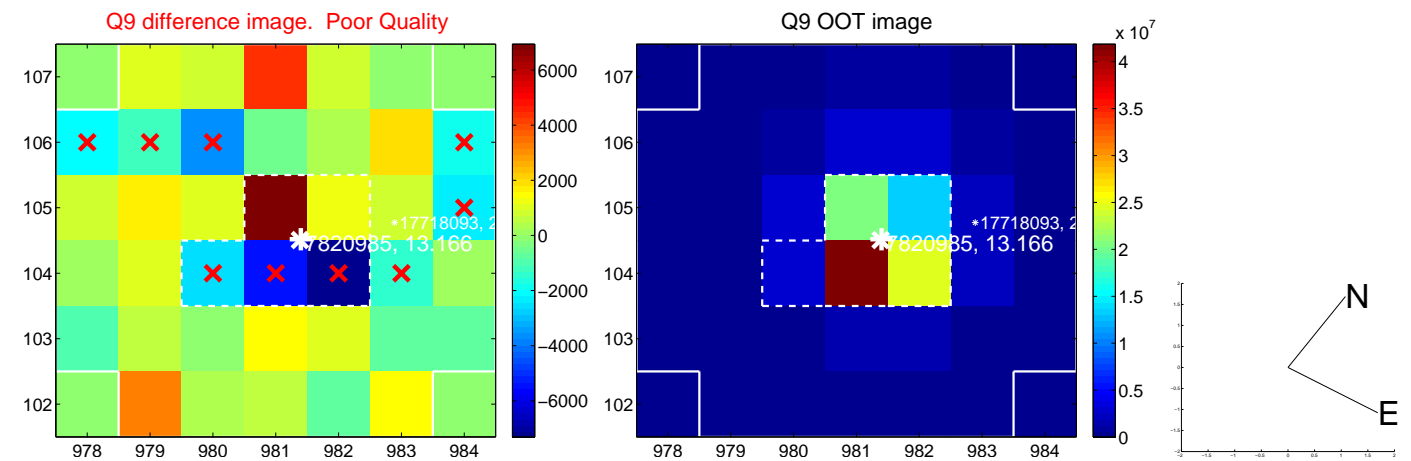
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



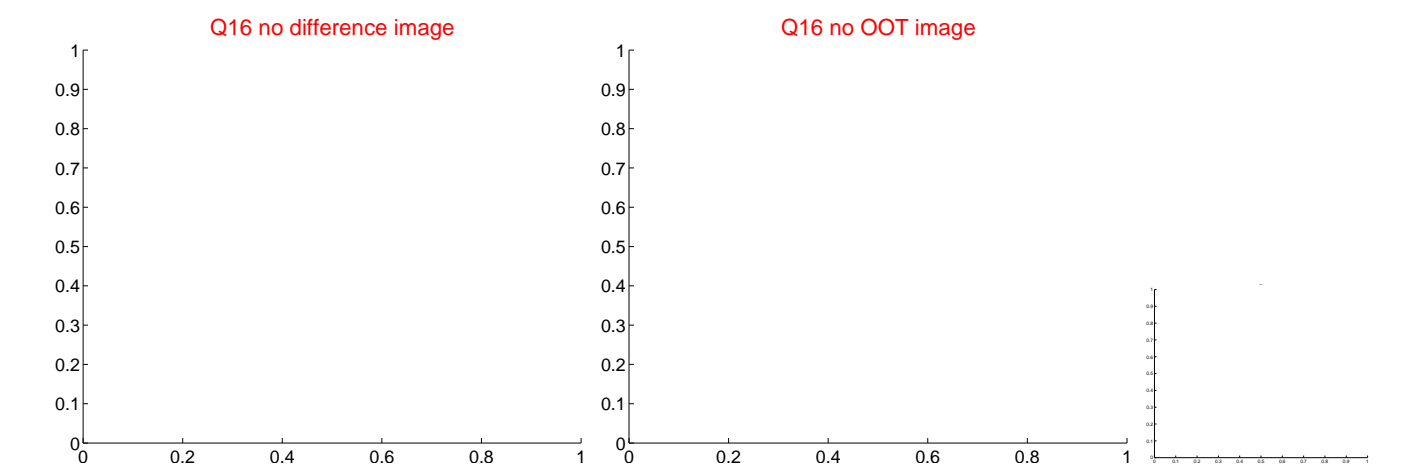
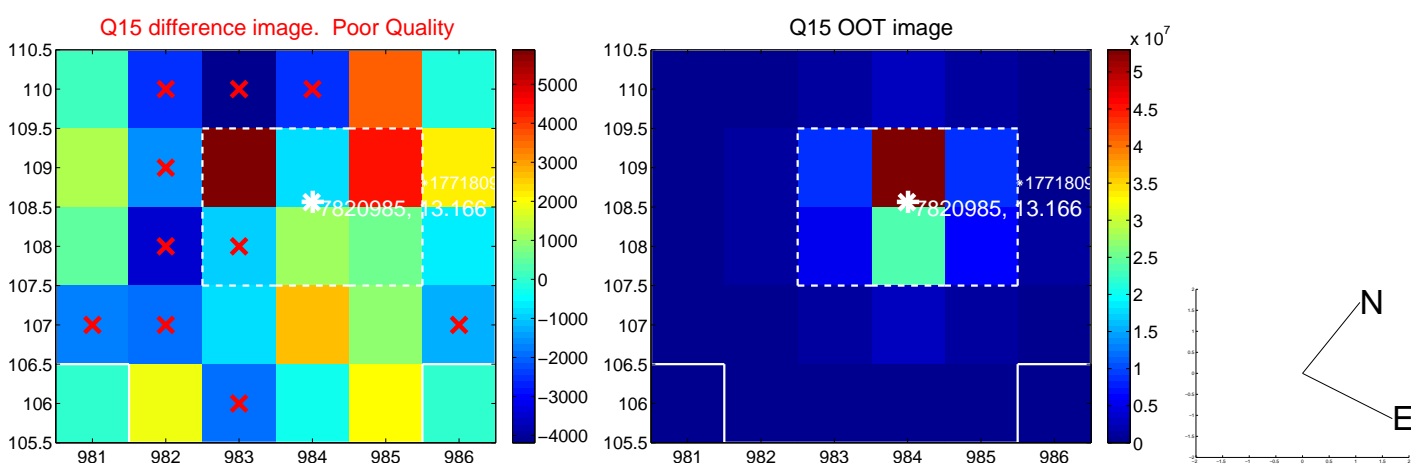
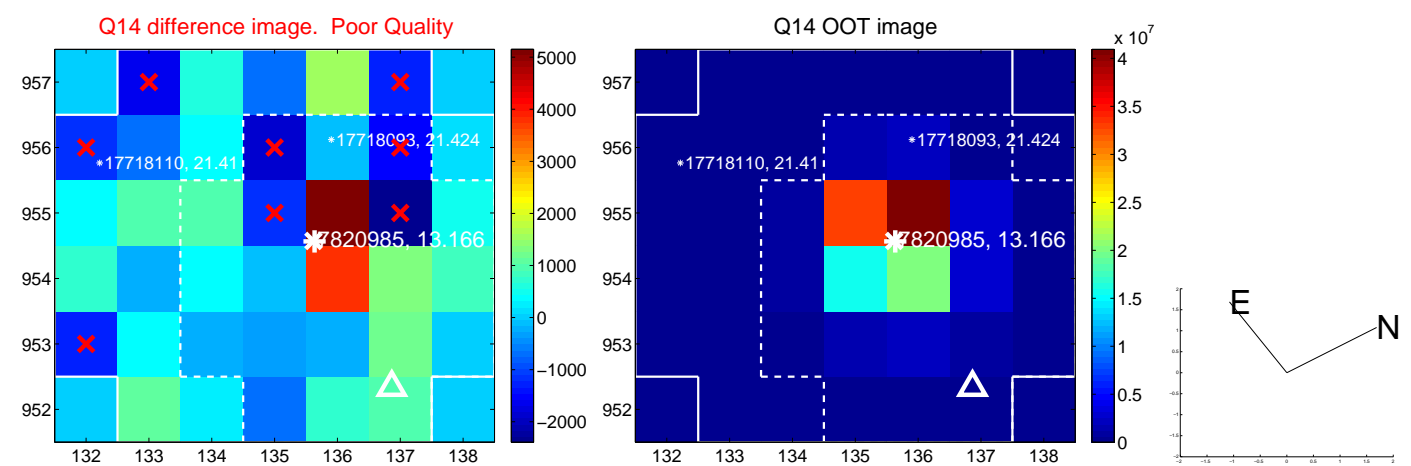
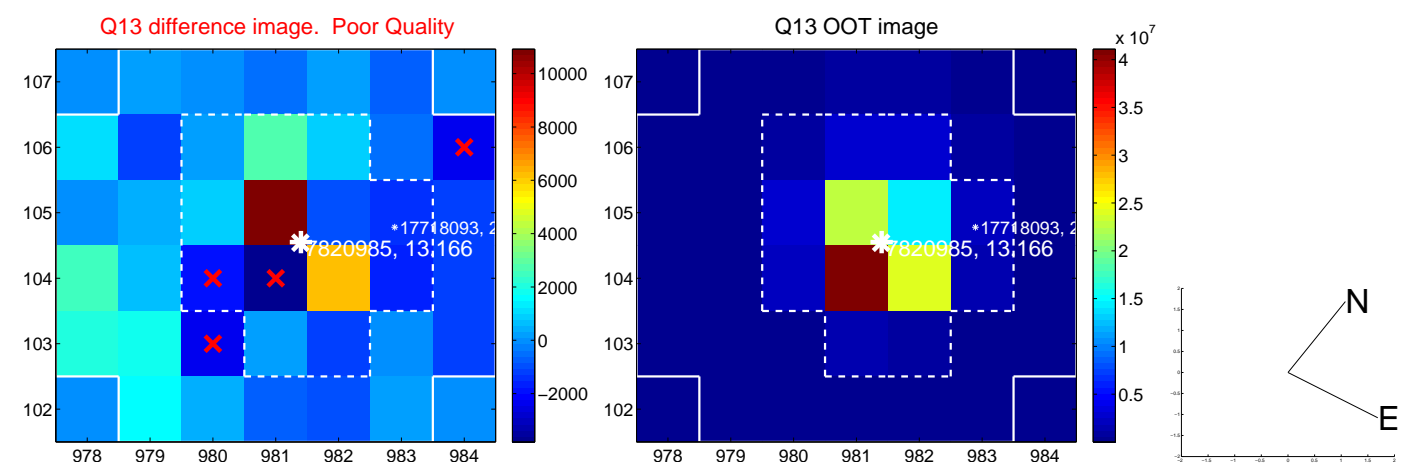
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



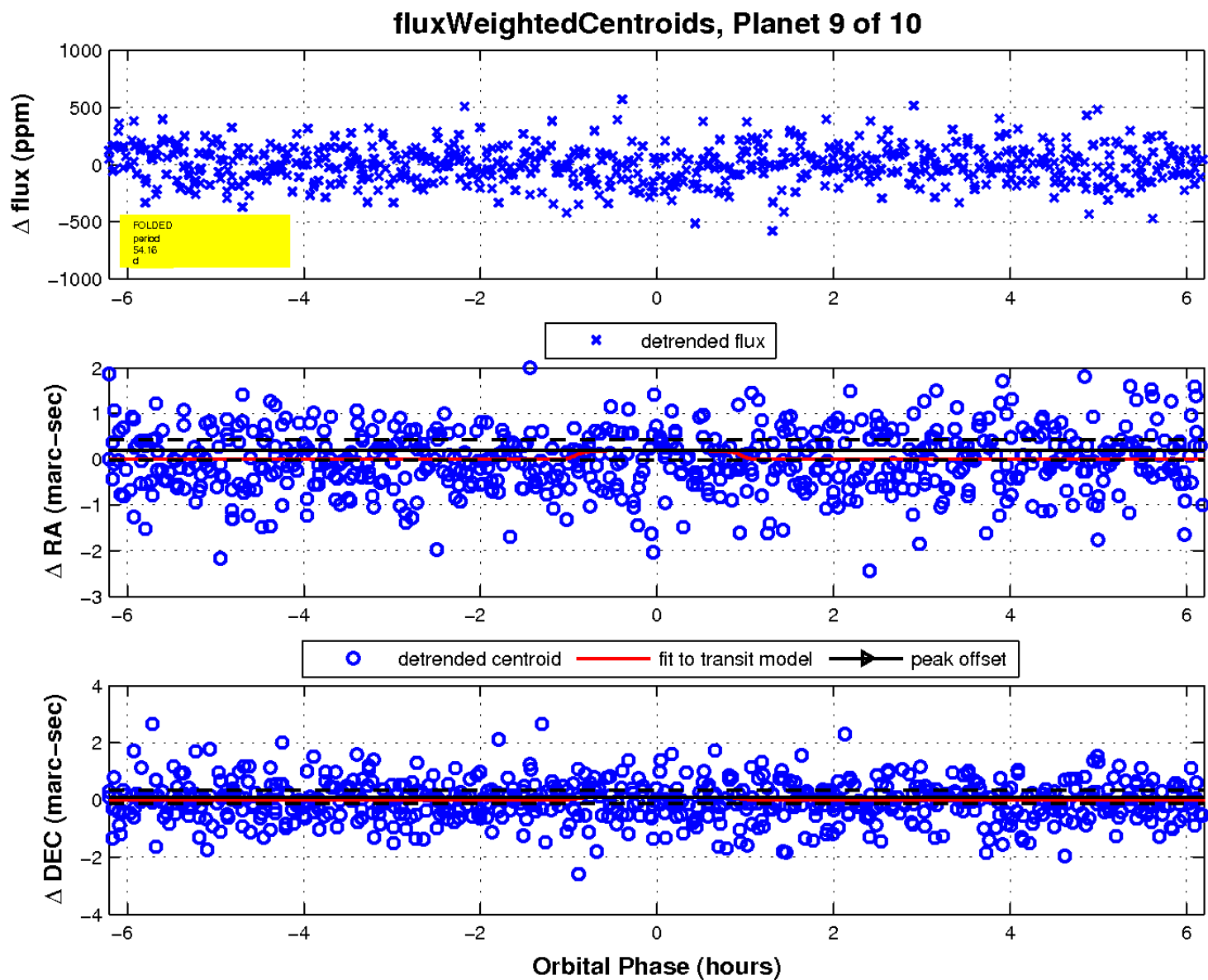
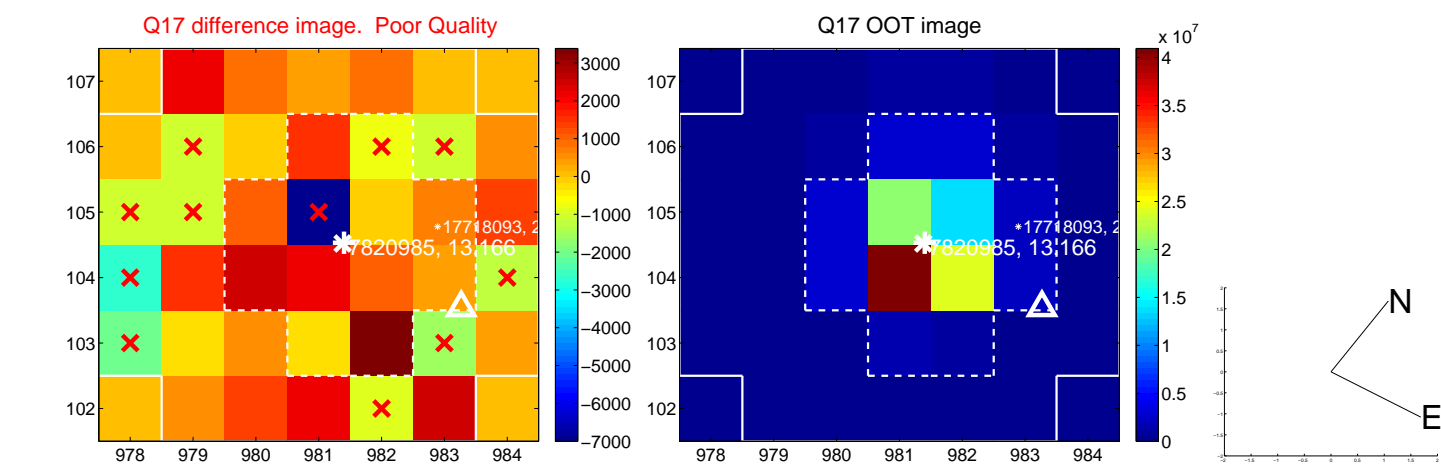
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

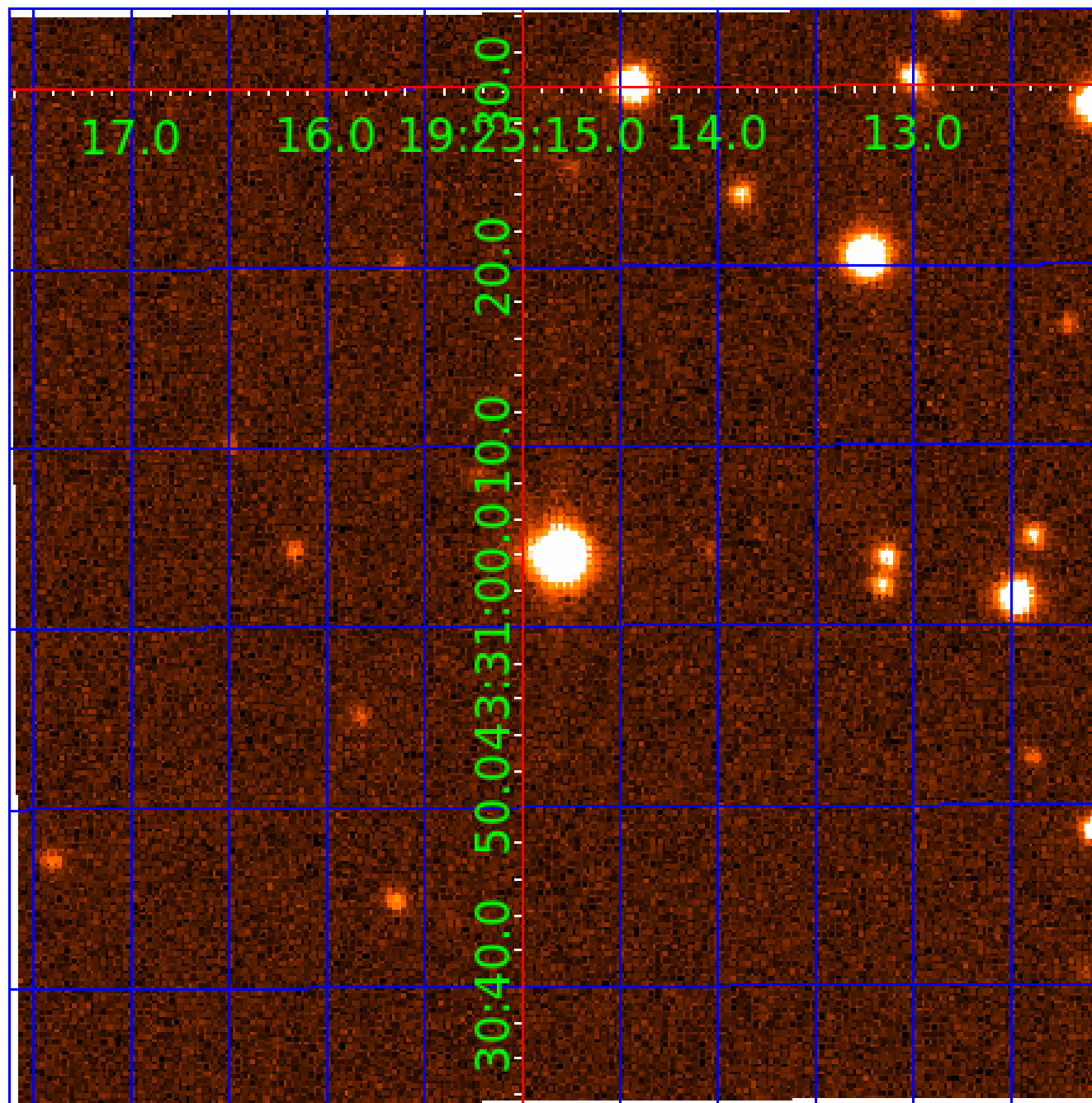


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007820985

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007820985-01 | OBS | No | 0.742771 | 131.784093 | 0.3 | 5.041 | 10.5 | 0.2 | 3.53 | 6756 | 0.19 | 61145.25 |
| 007820985-02 | OBS | No | 39.212161 | 152.945128 | 264.8 | 2.156 | 12.0 | 10.7 | 3.53 | 6756 | 6.69 | 308.75 |
| 007820985-03 | OBS | No | 403.335700 | 390.215297 | 460.6 | 18.506 | 10.6 | 9.6 | 3.53 | 6756 | 8.20 | 13.80 |
| 007820985-04 | OBS | No | 69.179417 | 168.307978 | 390.6 | 1.634 | 10.6 | 10.9 | 3.53 | 6756 | 7.54 | 144.83 |
| 007820985-05 | OBS | No | 70.784151 | 162.941720 | 302.4 | 1.948 | 9.6 | 9.8 | 3.53 | 6756 | 7.13 | 140.47 |
| 007820985-06 | OBS | No | 30.538145 | 160.206230 | 328.2 | 0.947 | 9.5 | 10.0 | 3.53 | 6756 | 6.67 | 430.90 |
| 007820985-07 | OBS | No | 54.202325 | 157.007930 | 245.2 | 2.504 | 9.0 | 9.2 | 3.53 | 6756 | 6.44 | 200.51 |
| 007820985-08 | OBS | No | 29.975155 | 145.798903 | 372.4 | 0.793 | 9.5 | 8.8 | 3.53 | 6756 | 8.56 | 441.73 |
| 007820985-09 | OBS | No | 54.158543 | 170.962984 | 263.1 | 2.071 | 9.2 | 10.3 | 3.53 | 6756 | 6.68 | 200.73 |
| 007820985-10 | OBS | No | 133.641094 | 240.926511 | 169.8 | 15.012 | 8.7 | 8.4 | 3.53 | 6756 | 5.05 | 60.20 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007820985-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT |
| 007820985-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST |
| 007820985-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-06 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-07 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS |
| 007820985-08 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT |
| 007820985-09 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |
| 007820985-10 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |

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

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

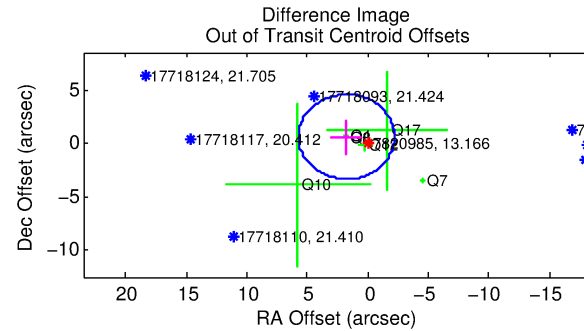
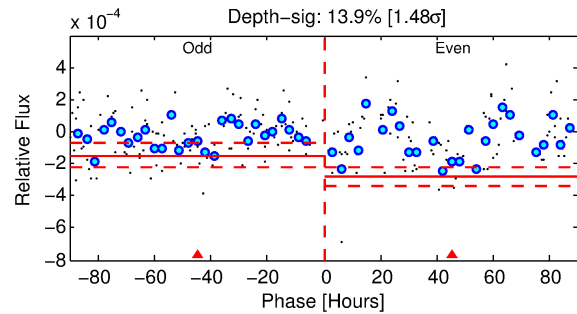
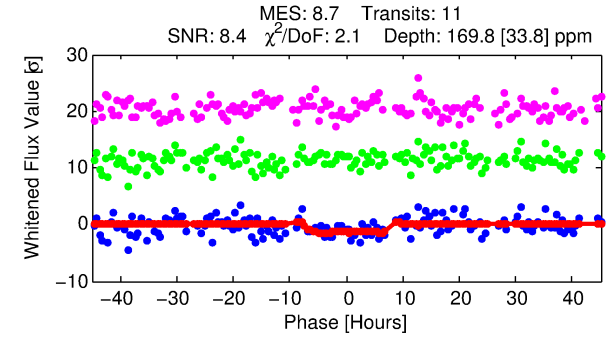
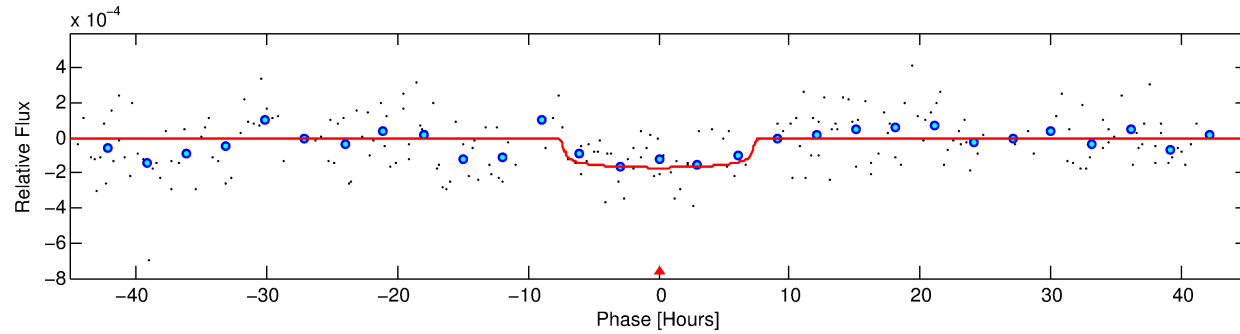
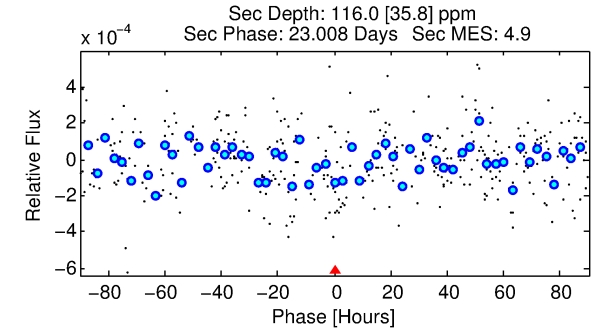
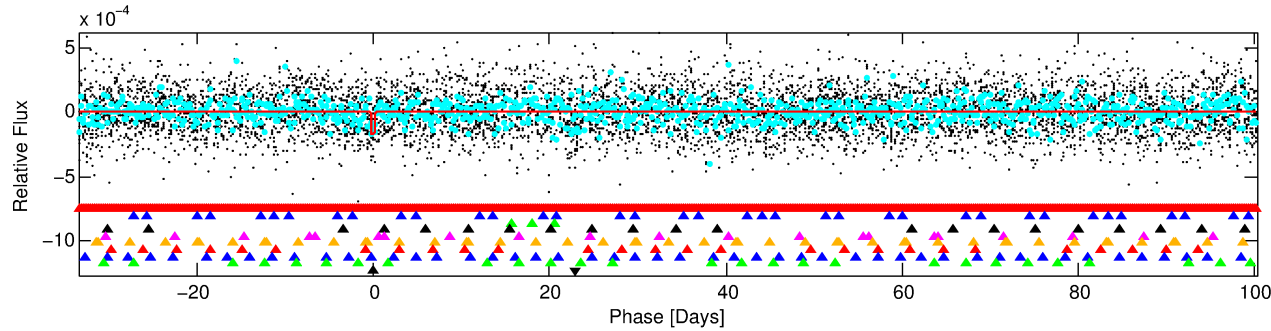
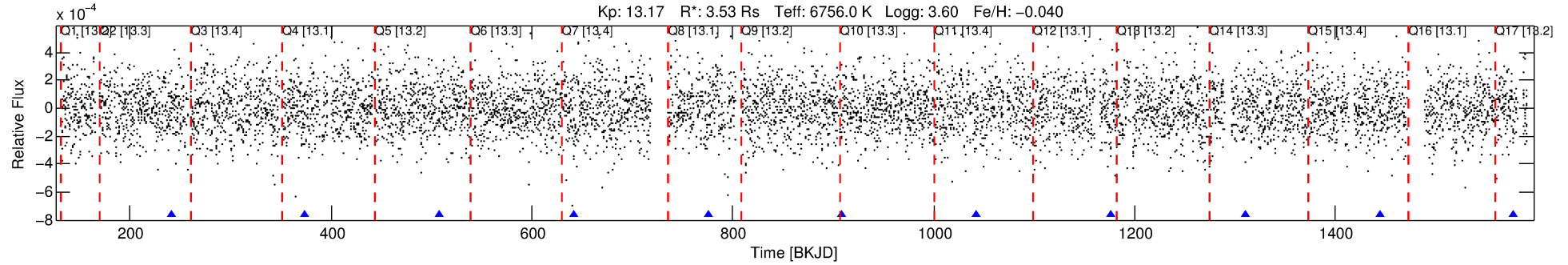
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007820985-10

No Significant Match Found

DV One-Page Summary

KIC: 7820985 Candidate: 10 of 10 Period: 133.641 d



DV Fit Results:

Period = 133.64109 [0.02691] d
Epoch = 240.9265 [0.1449] BKJD
Rp/R* = 0.0131 [0.0085]
a/R* = 43.60 [152.50]
b = 0.78 [1.90]
Seff = 60.20 [33.80]
Teq = 710 [100] K
Rp = 5.05 [3.72] Re
a = 0.6216 [0.2111] AU
Ag = 968.04 [1400.28] [0.69 σ]
Teffp = 6125 [2058] K [2.63 σ]

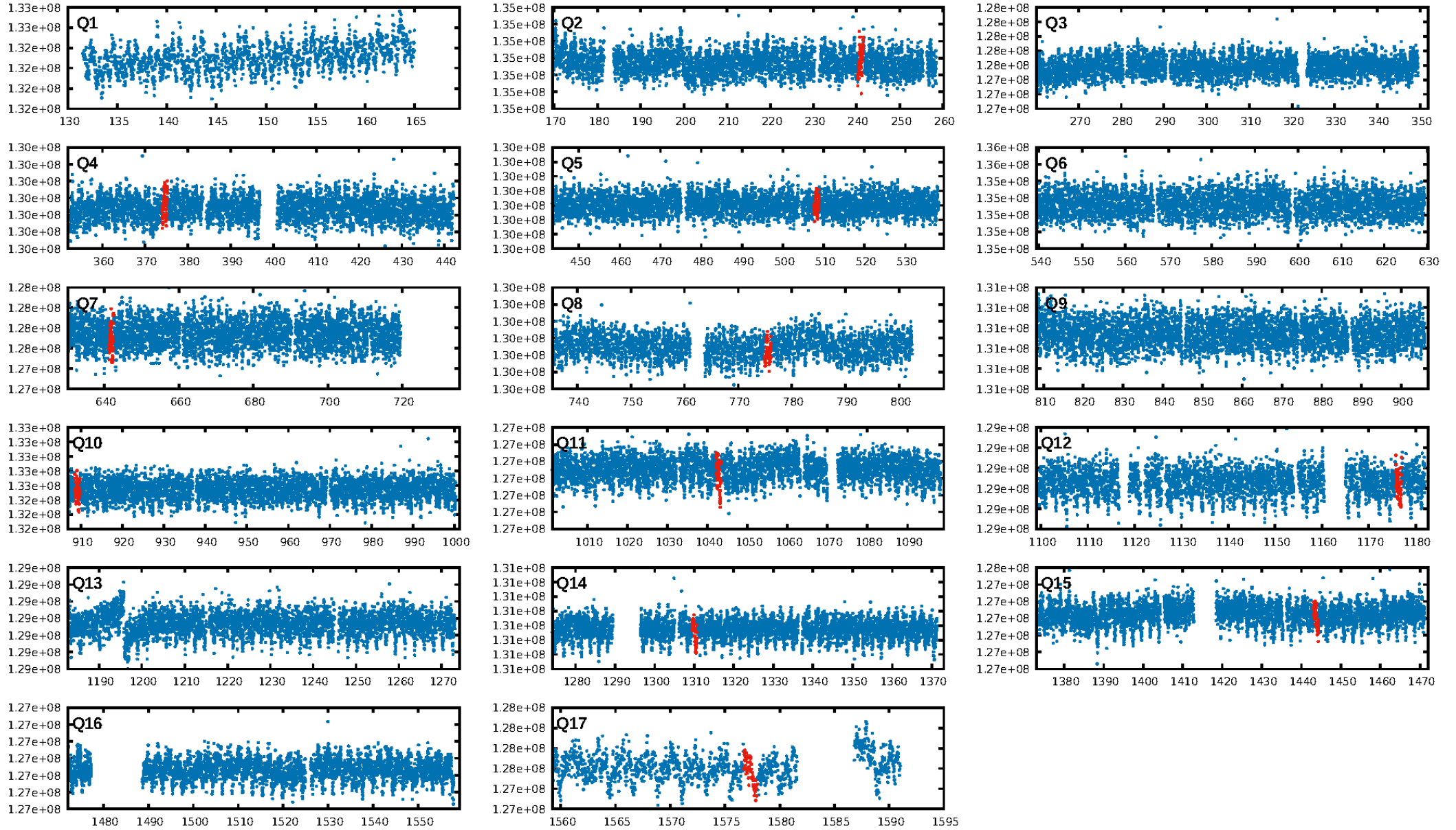
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [99.65 σ]
LongPeriod-sig: 100.0% [271.63 σ]
ModelChiSquare2-sig: 37.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 7.203
Centroid-sig: 3.3%
Centroid-so: 1.162 arcsec [1.38 σ]
OotOffset-rm: 1.881 arcsec [1.43 σ]
KicOffset-rm: 1.931 arcsec [1.46 σ]
OotOffset-st: 1/1/3/1 [6]
KicOffset-st: 1/1/3/1 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/11]

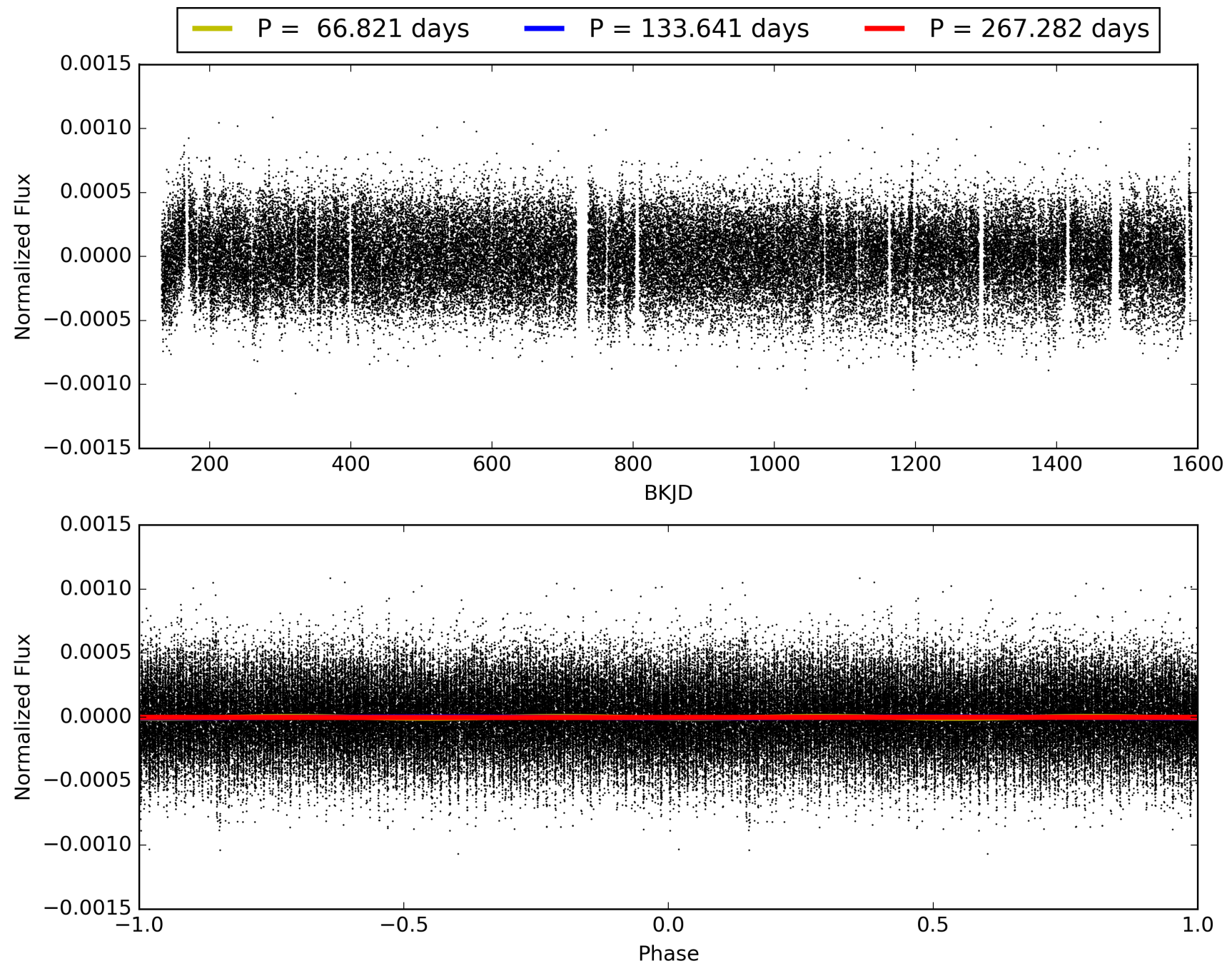
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:14:08 Z

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

TCE 007820985-10, PDC Light Curves

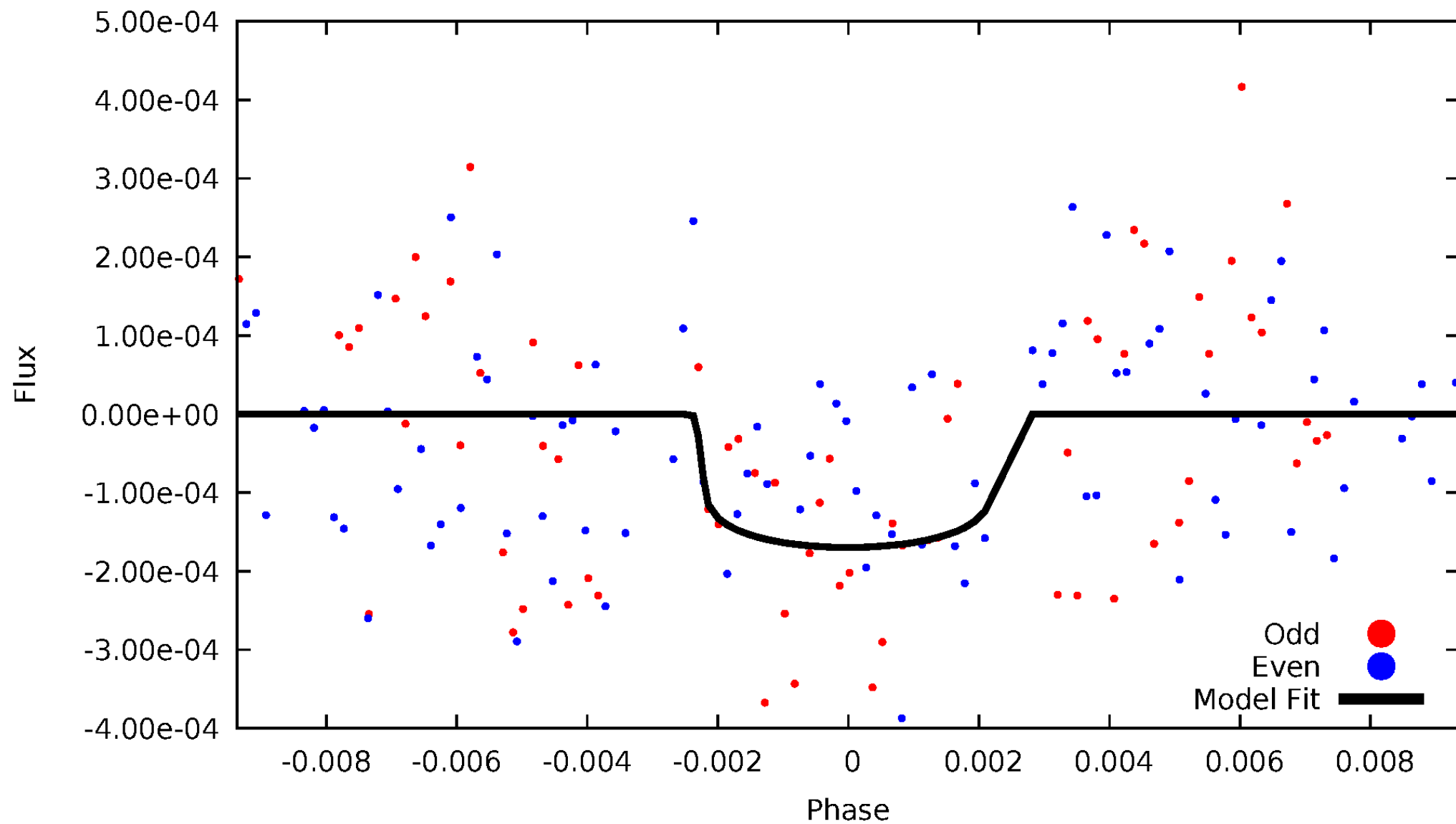


TCE 007820985-10



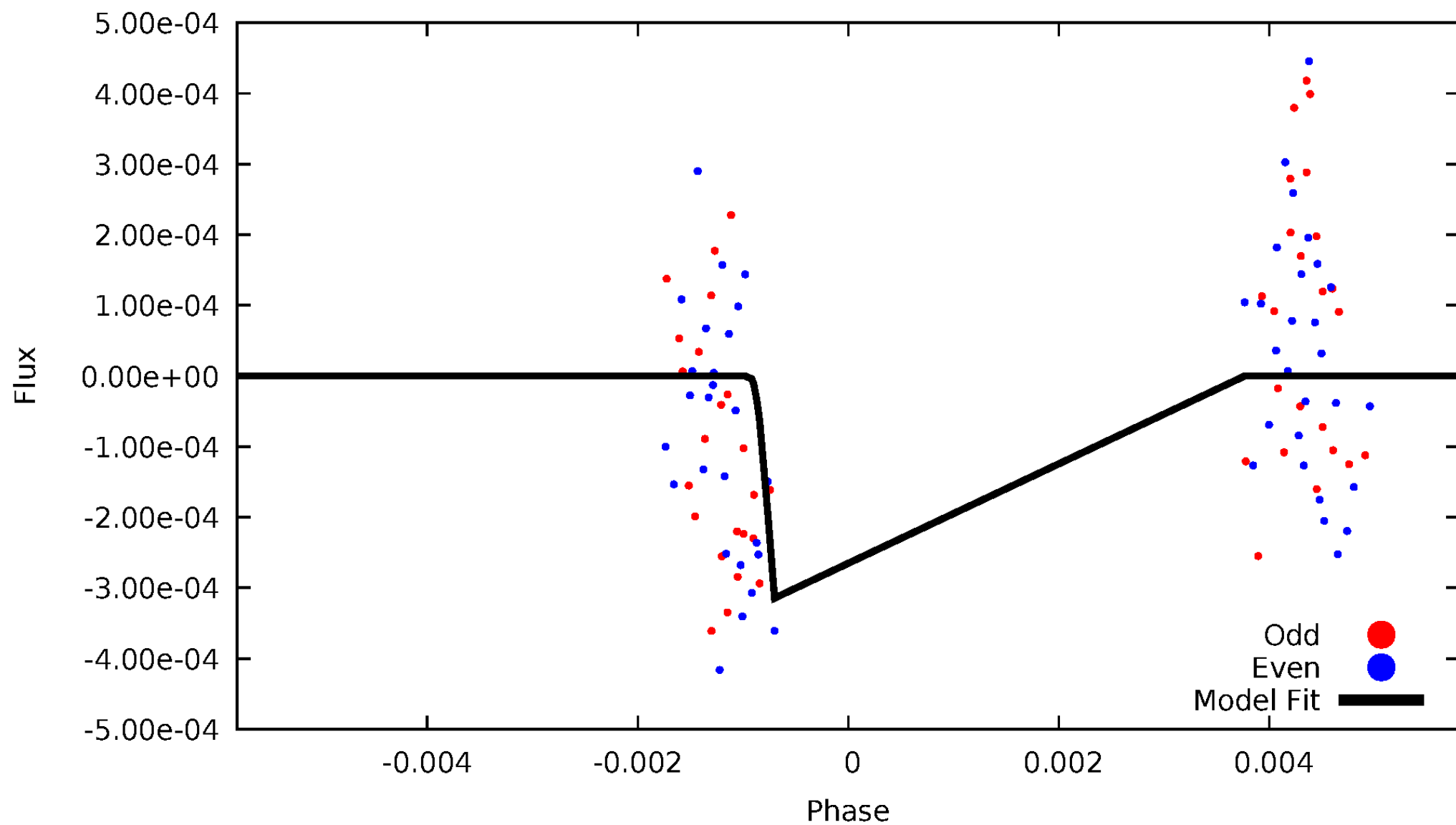
DV Odd/Even

TCE 007820985-10



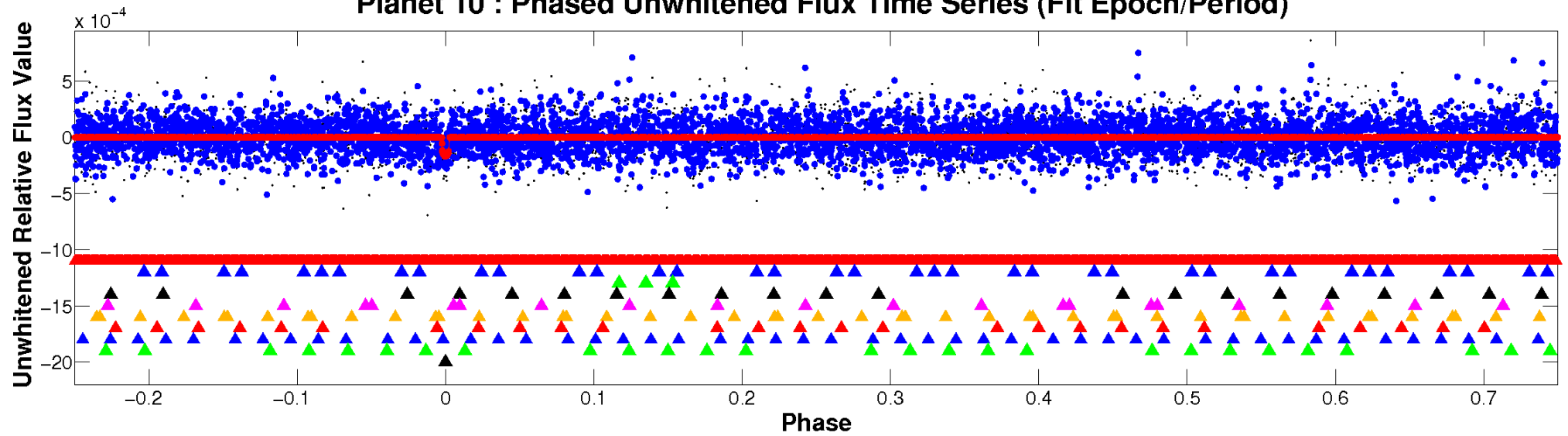
ALT Odd/Even

TCE 007820985-10

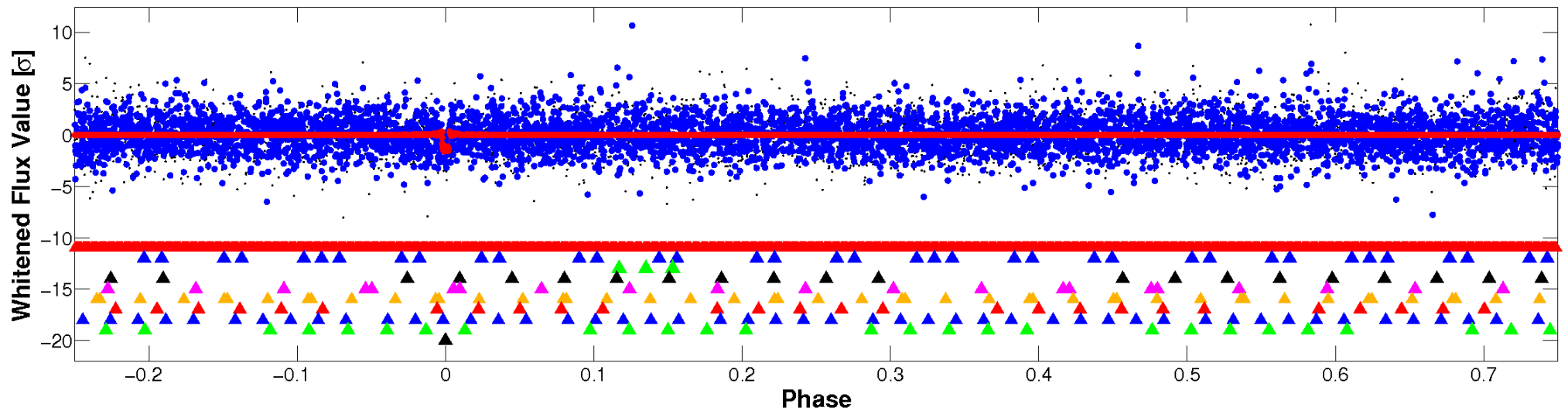


Non-Whitened Vs. Whitened Light Curve

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

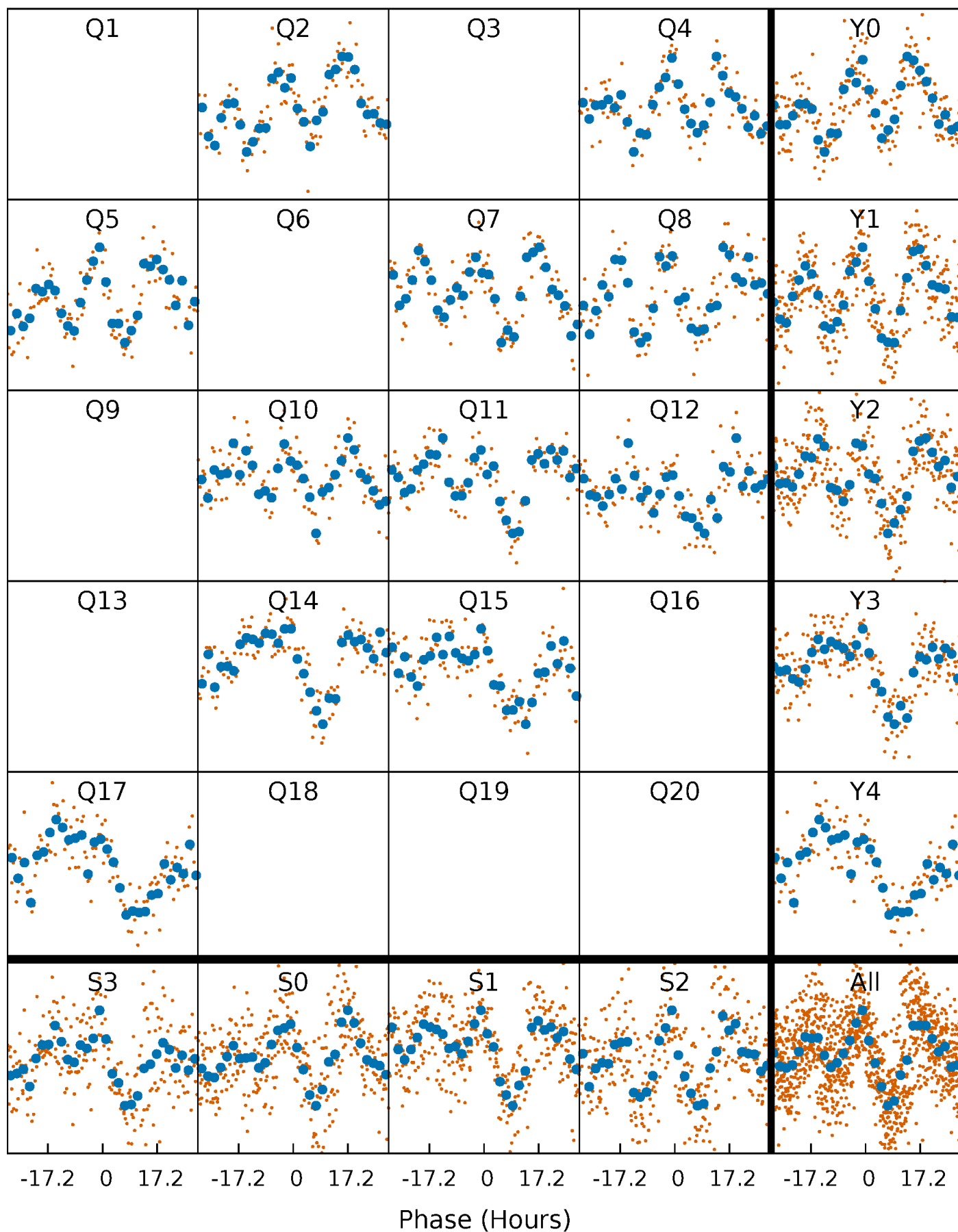


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



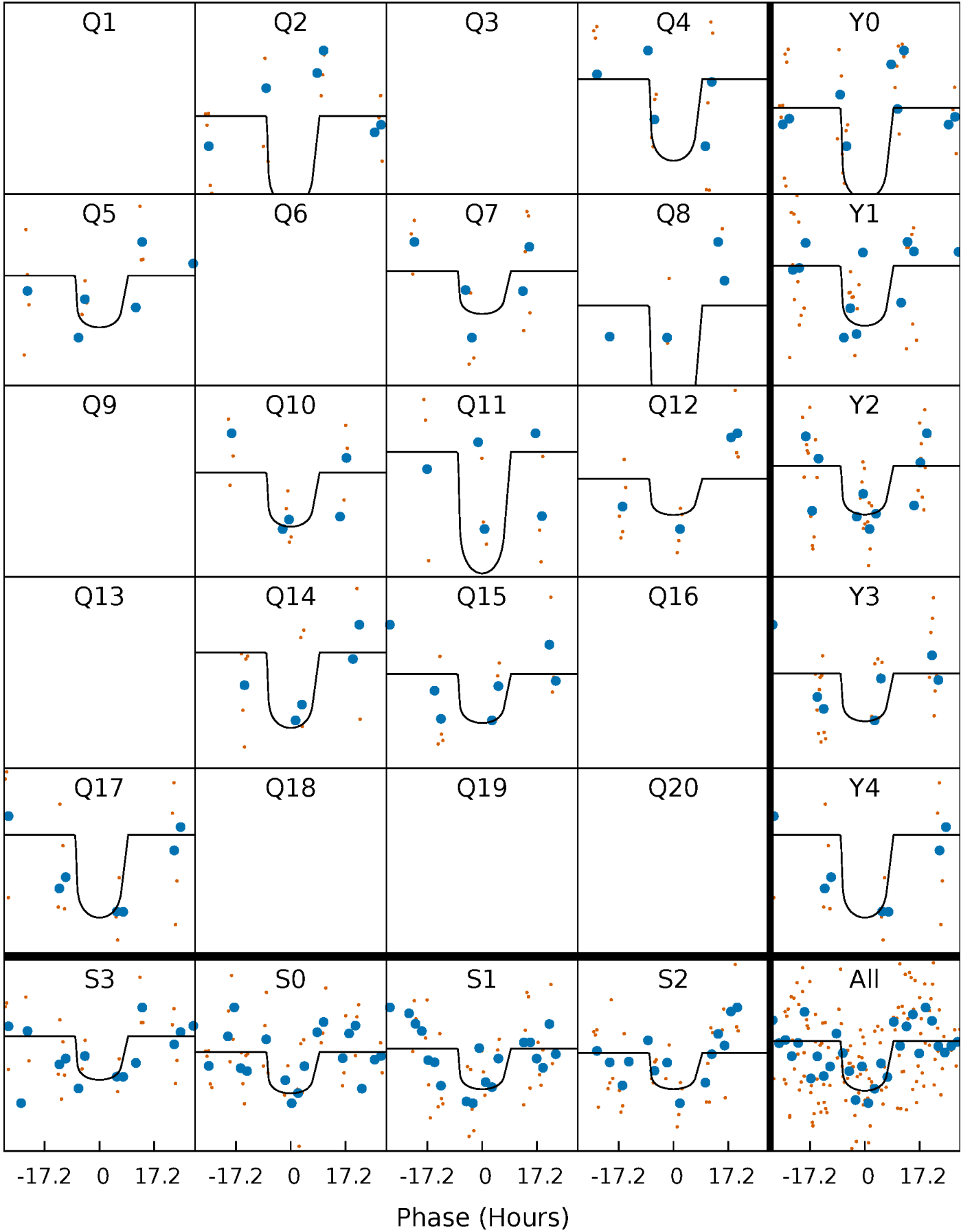
PDC Quarter-Phased Transit Curves

TCE 007820985-10 P=133.641094 Days $T_0=240.926511$ (BKJD)



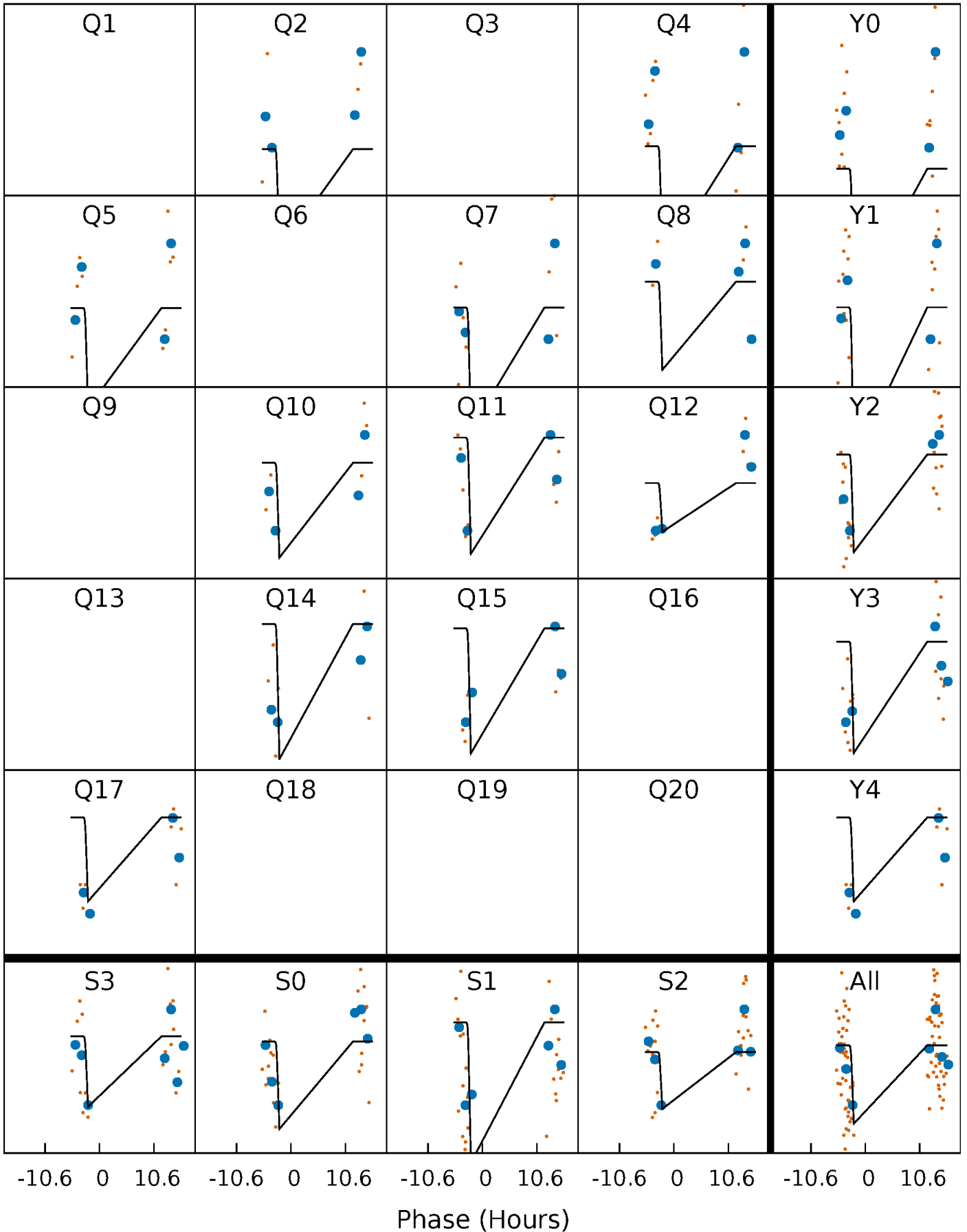
DV Quarter-Phased Transit Curves

TCE 007820985-10 $P=133.641094$ Days $T_0=240.926511$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

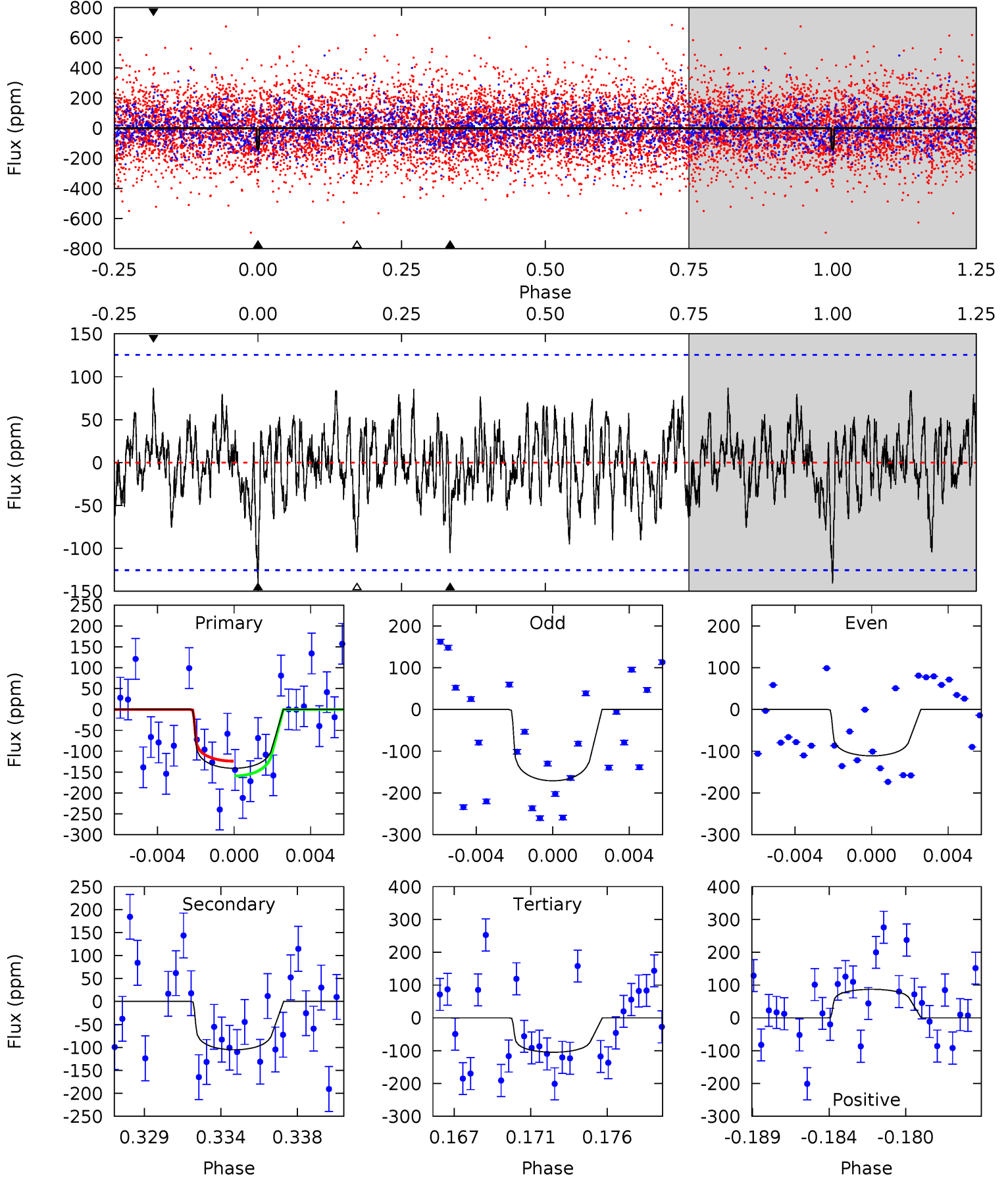
TCE 007820985-10 P=133.691023 Days $T_0=240.800366$ (BKJD)



DV Model-Shift Uniqueness Test

007820985-10, P = 133.641094 Days, E = 107.285417 Days

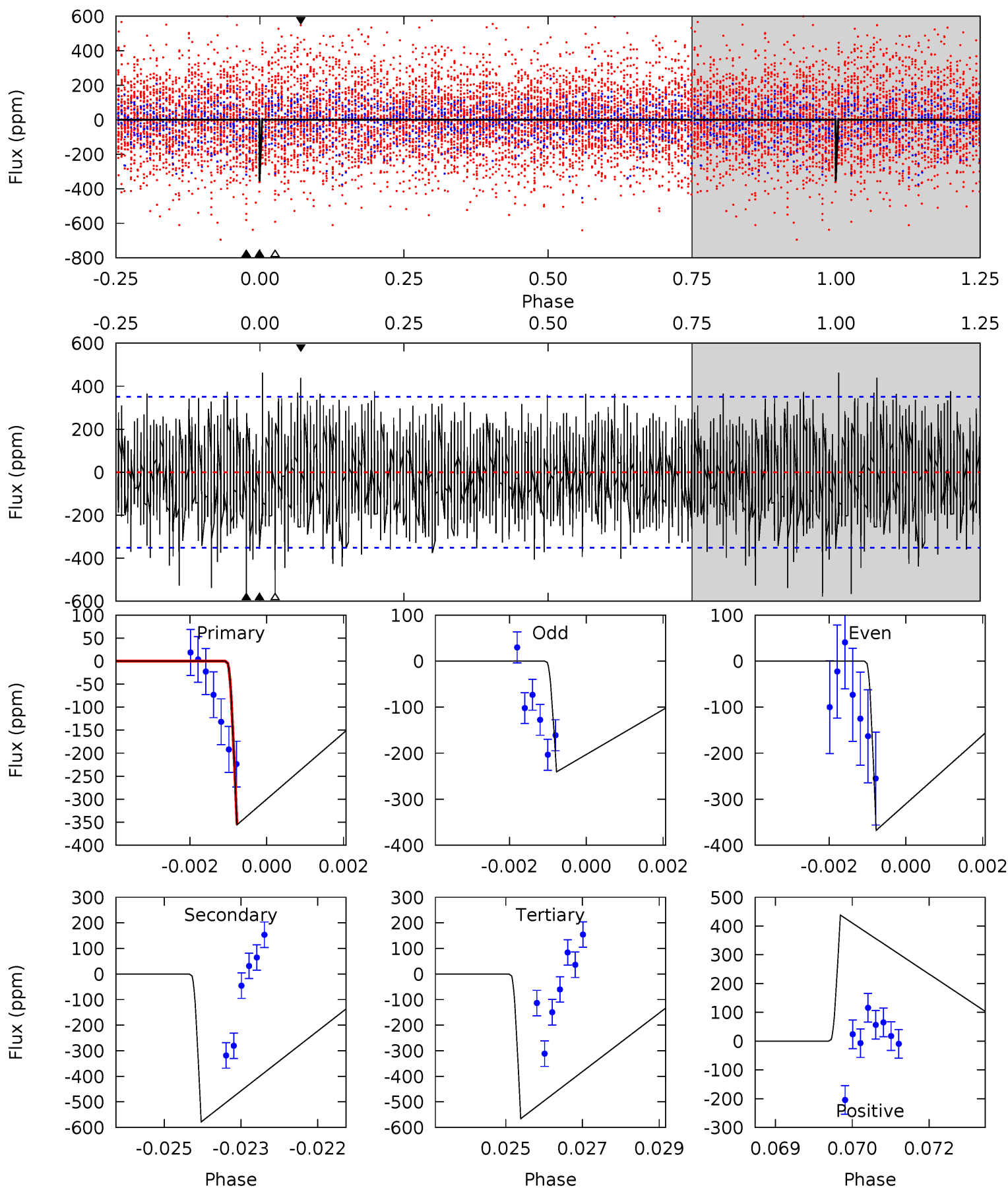
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.81 | 4.34 | 4.32 | 3.59 | 5.18 | 2.85 | 1.33 | 1.49 | 2.22 | 0.02 | 0.75 | 1.23 | 1.07 | 0.38 | 0.73 |



Alt Model-Shift Uniqueness Test

007820985-10, P = 133.691023 Days, E = 107.109343 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 5.41 | 8.80 | 8.61 | 6.66 | 5.35 | 3.12 | 1.99 | -3.20 | -1.25 | 0.19 | 2.14 | 0.96 | 0 | 0.44 | 0 |



Stellar Parameters For KIC 007820985

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6756^{+182}_{-202} | $3.596^{+0.324}_{-0.054}$ | $-0.040^{+0.250}_{-0.250}$ | $3.530^{+0.408}_{-1.225}$ | $1.793^{+0.173}_{-0.320}$ | $0.057^{+0.125}_{-0.010}$ |
| | +3%/-3% | +9%/-2% | +625%/-625% | +12%/-35% | +10%/-18% | +218%/-18% |
| Source | PHO1 | FLK73 | 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 007820985-10 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|------------------------|------------------------|
| DV | -105 ± 24 | $4.80^{+3.11}_{-2.61}$ | 962^{+50}_{-97} | 5760^{+3138}_{-1117} | 943^{+3784}_{-597} |
| Alt. | -578 ± 66 | $7.96^{+3.61}_{-3.04}$ | 962^{+53}_{-90} | 6885^{+2362}_{-1050} | 1944^{+3013}_{-1025} |

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

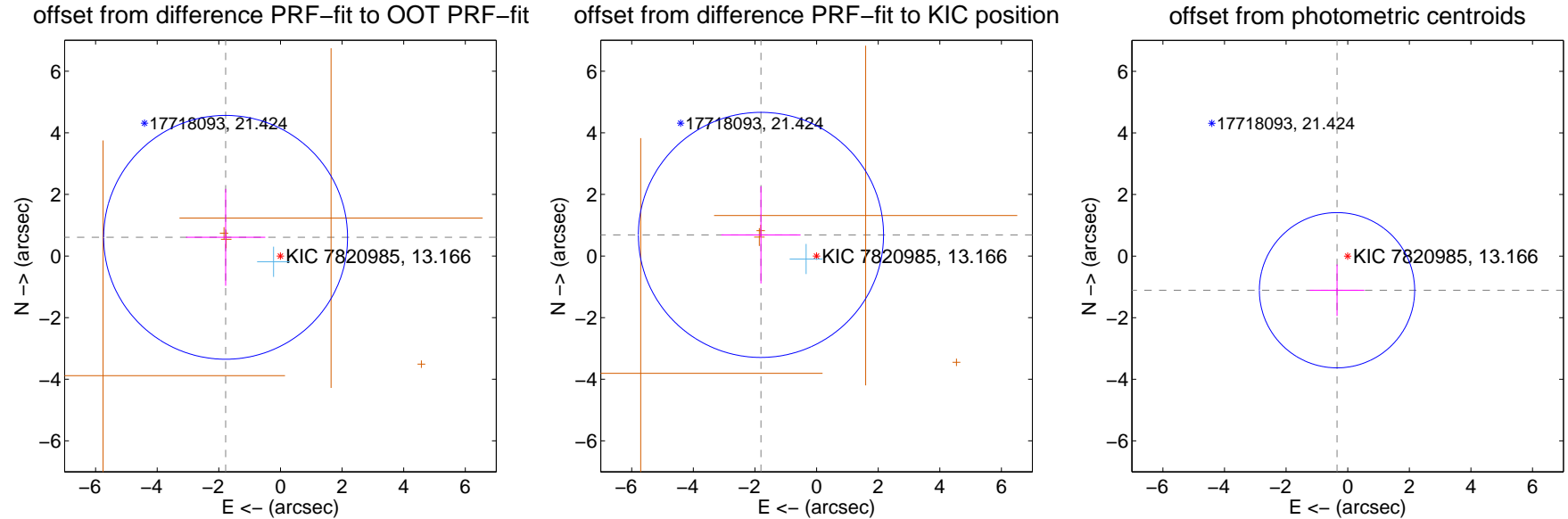
DV Centroid Data

Supplemental centroid analysis for 007820985-10. Kepler magnitude: 13.17. Transit SNR 8.40

There are 1 quarters with good PRF difference image offsets

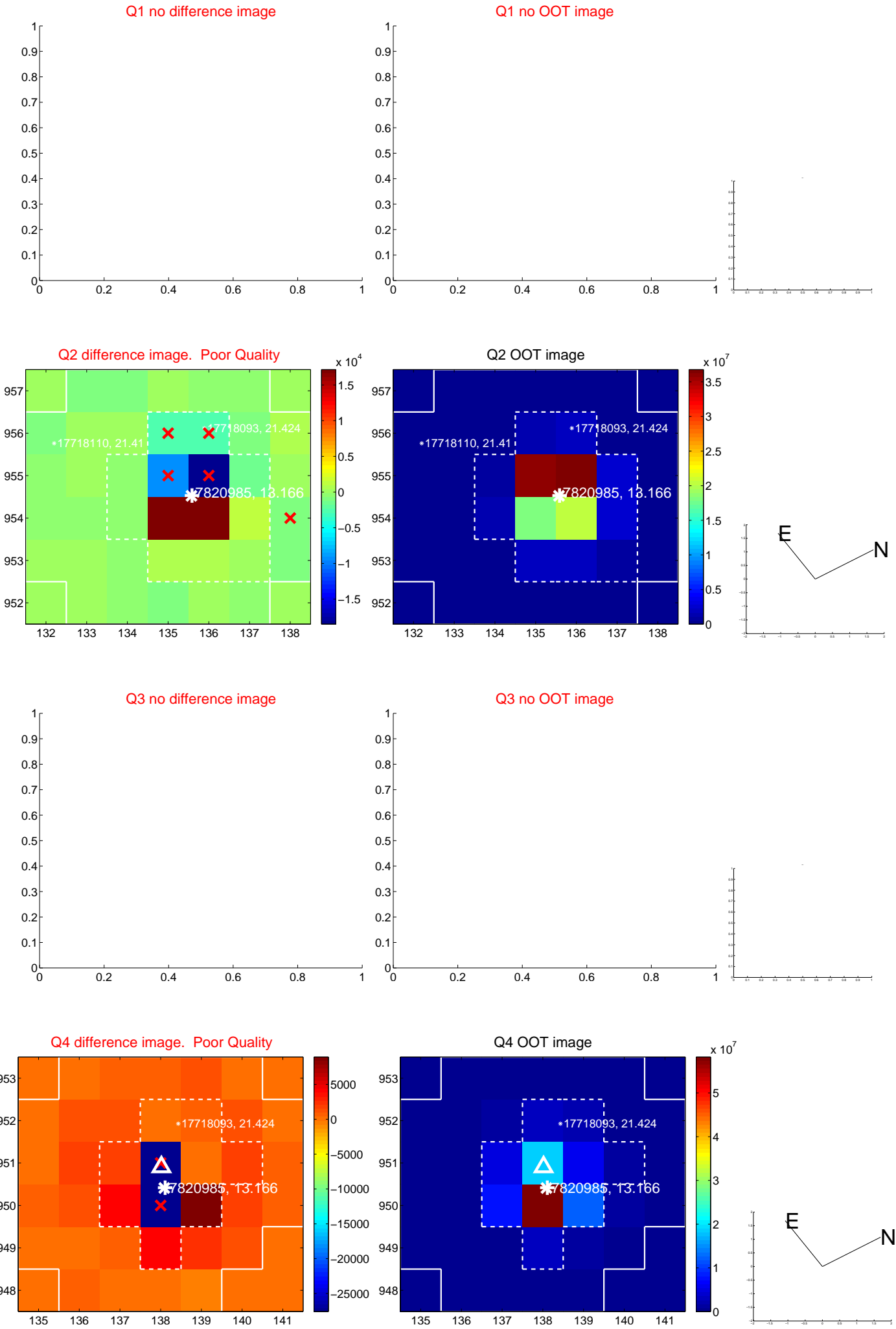
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.881 ± 1.319 | 1.43 | 1.780 ± 1.286 | 0.607 ± 1.575 |
| PRF-fit source offset from KIC position | 1.931 ± 1.326 | 1.46 | 1.805 ± 1.286 | 0.686 ± 1.575 |
| photometric centroid source offset | 1.16 ± 0.84 | 1.38 | 0.35 ± 0.89 | -1.11 ± 0.84 |

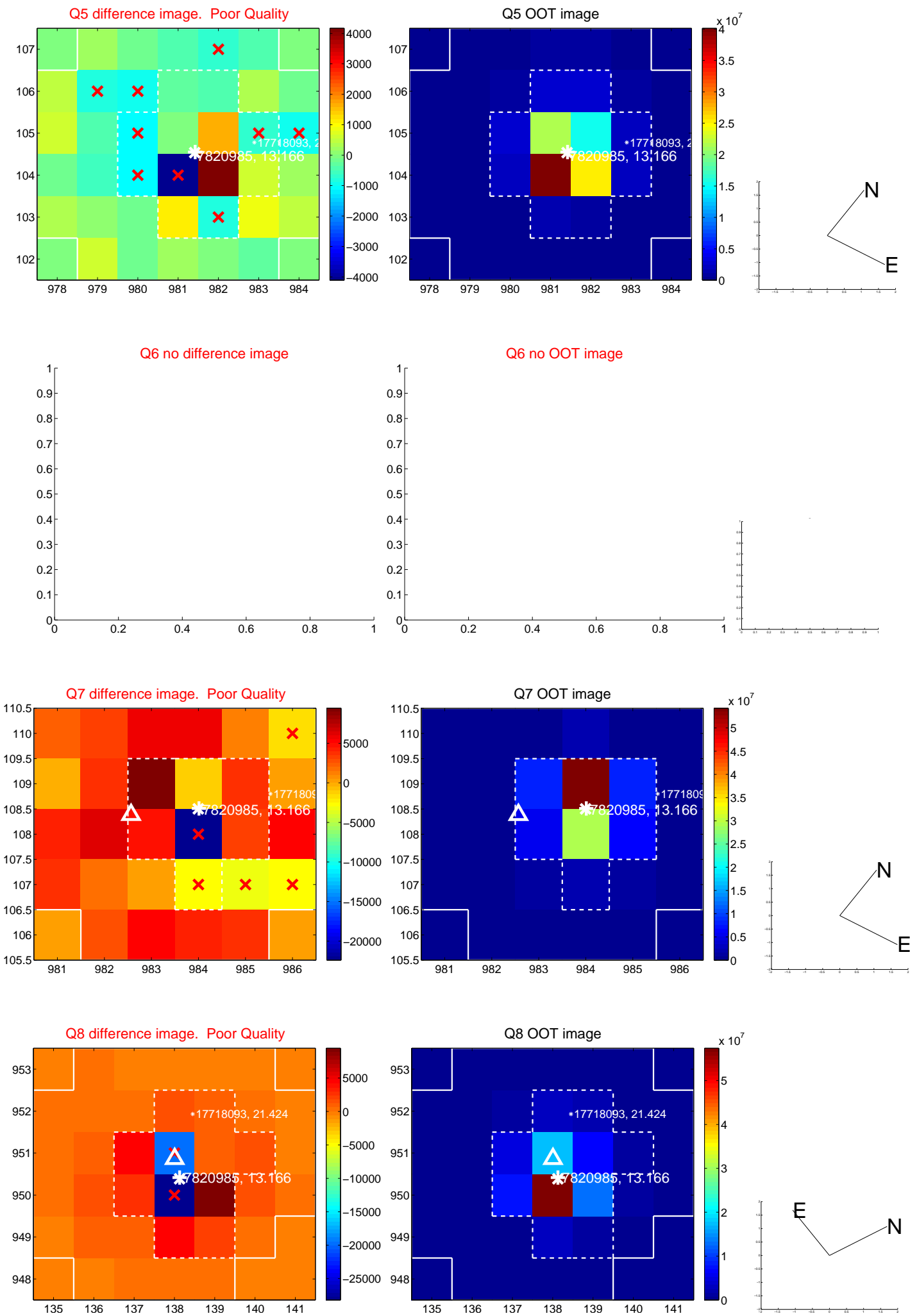


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

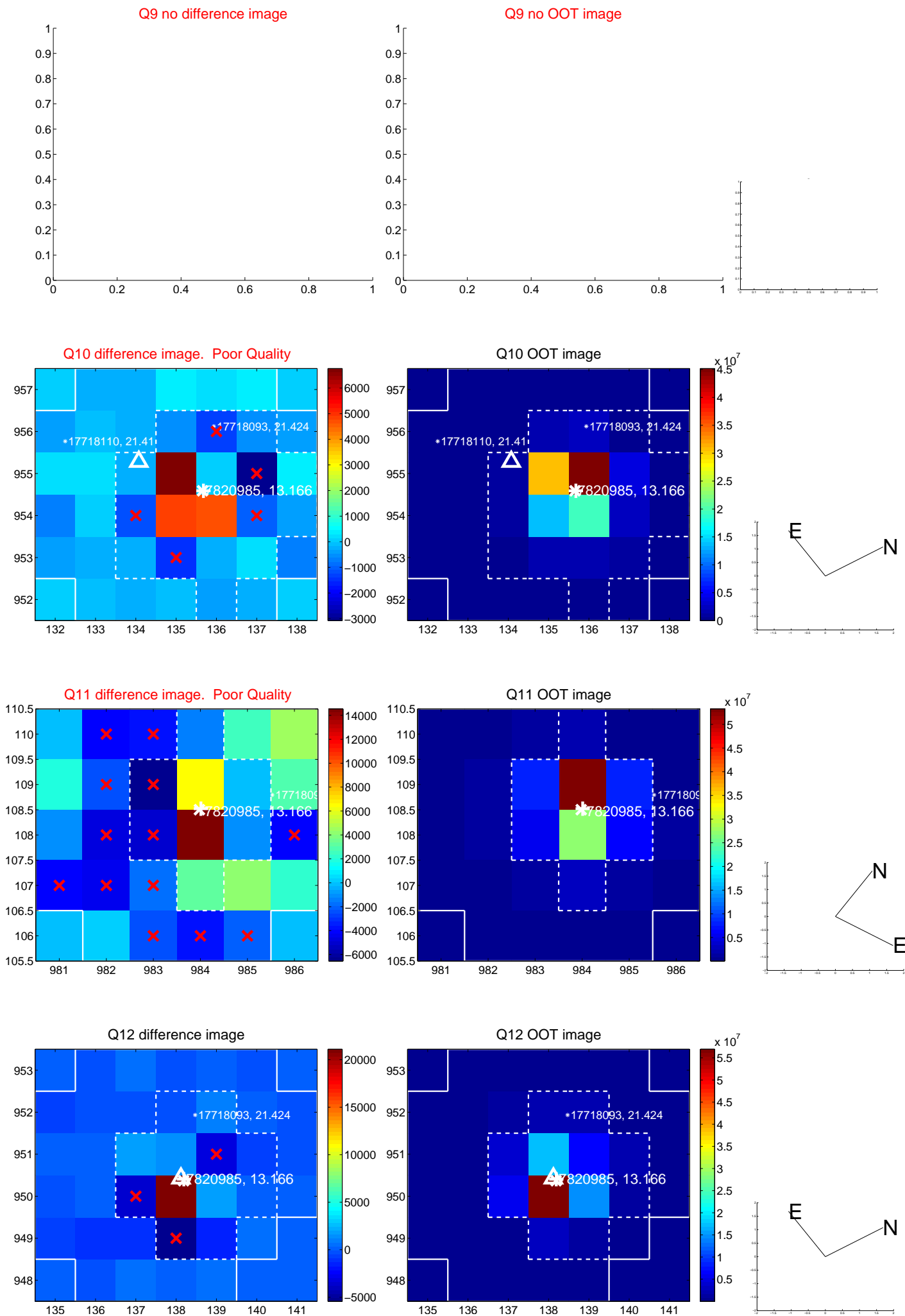
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

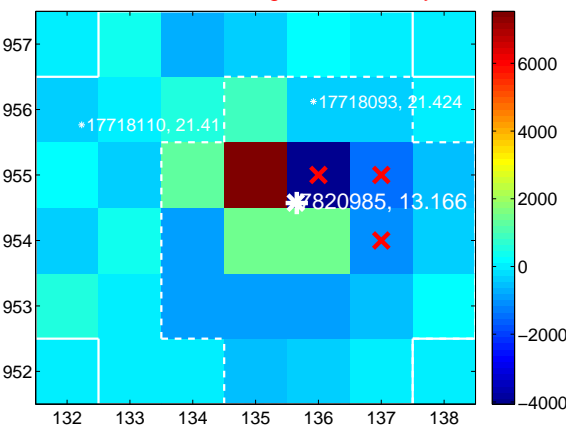
Q13 no difference image



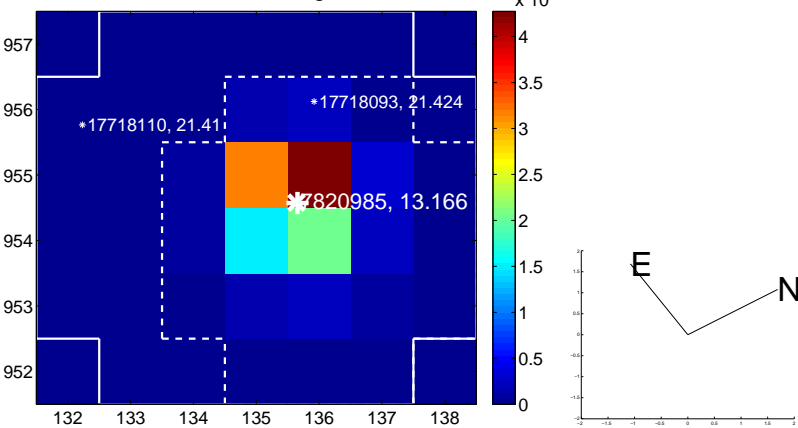
Q13 no OOT image



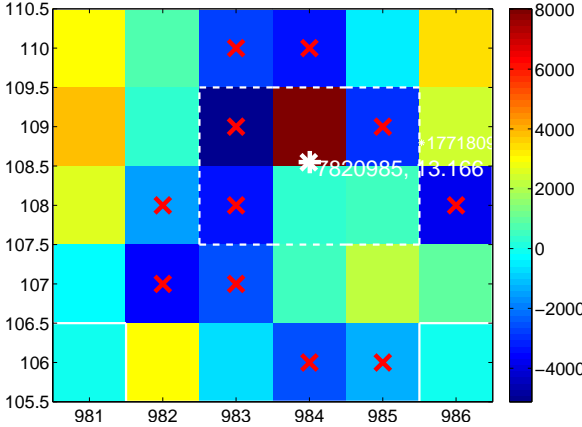
Q14 difference image. Poor Quality



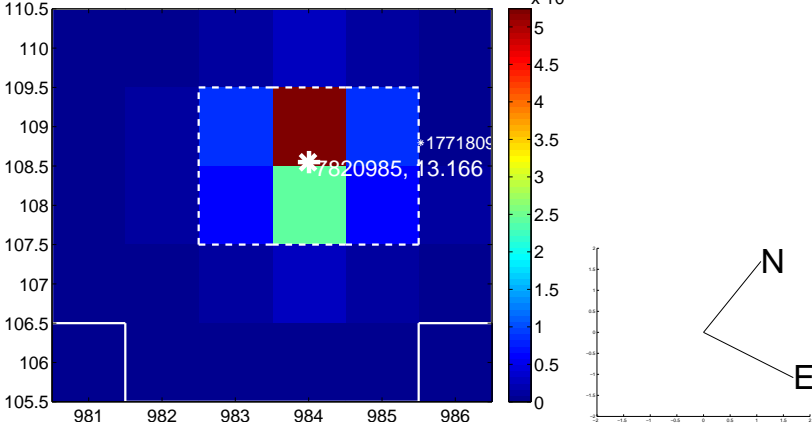
Q14 OOT image



Q15 difference image. Poor Quality



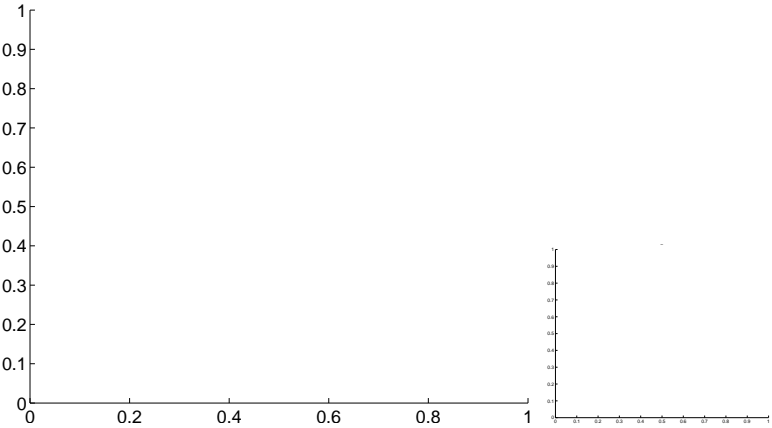
Q15 OOT image



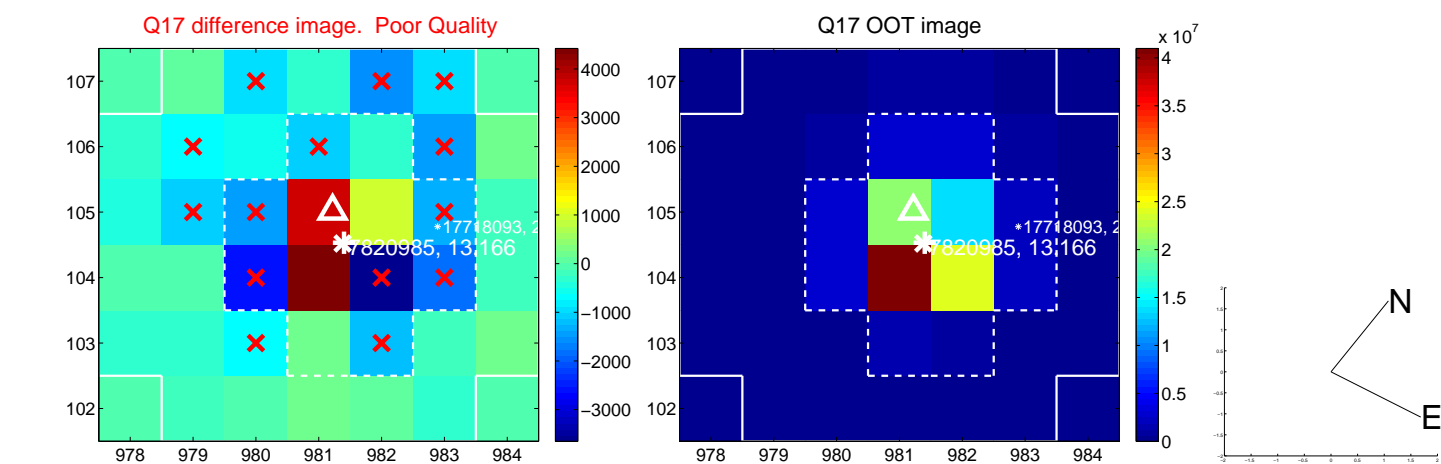
Q16 no difference image



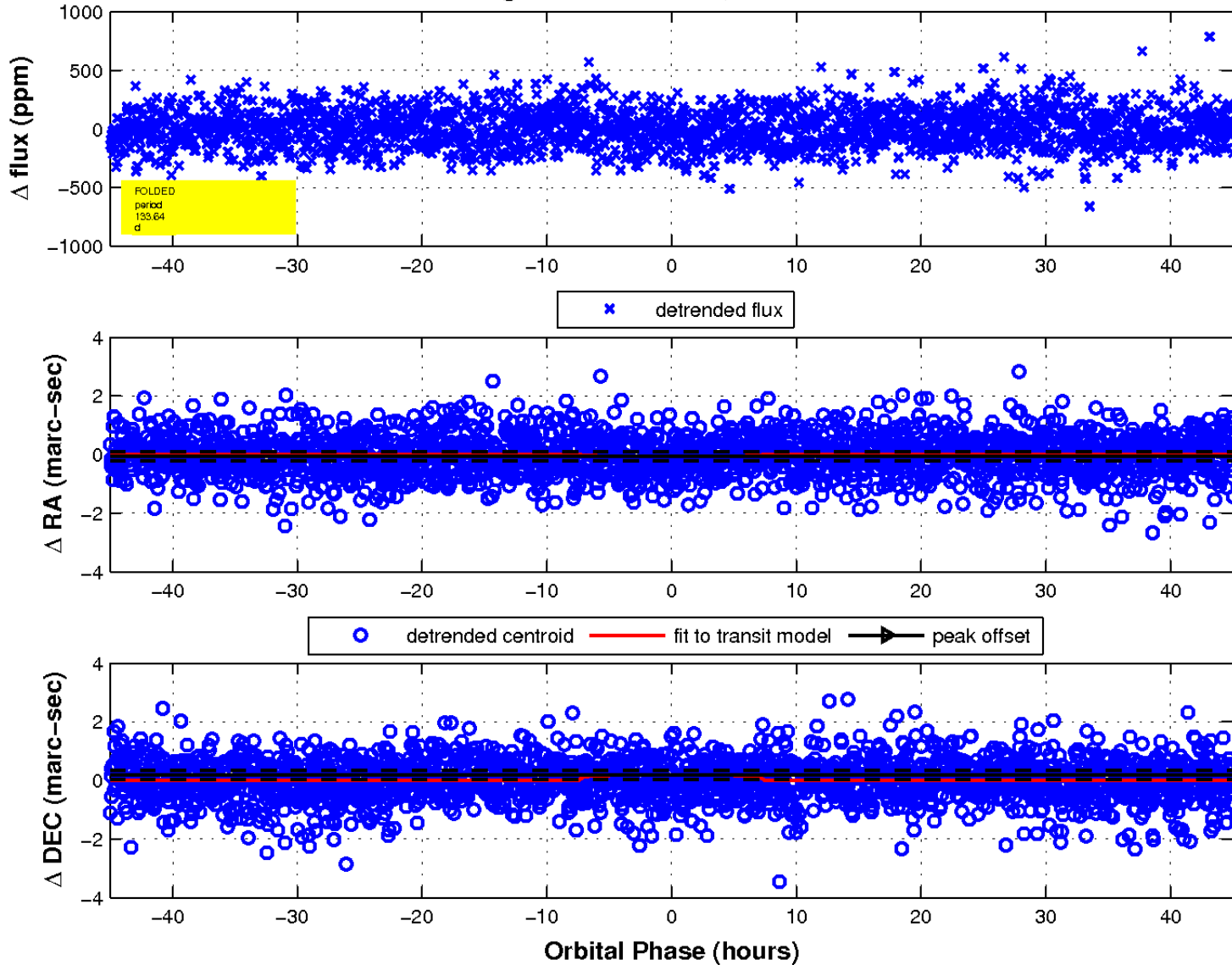
Q16 no OOT image



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



fluxWeightedCentroids, Planet 10 of 10



UKIRT Image

Declination

