

KIC 008143170

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})
008143170-01	OBS	6976.01	28.785981	137.113301	48972.2	13.711	3179.7	2907.1	3.98	5154	90.75	210.49
008143170-02	OBS	No	28.785362	150.524326	22538.5	15.465	1578.3	1234.1	3.98	5154	63.35	210.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008143170-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008143170-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD

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

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

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

Ephemeris Match Information For 008143170-01

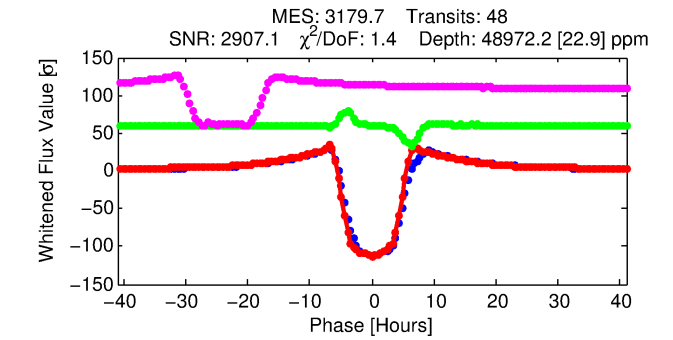
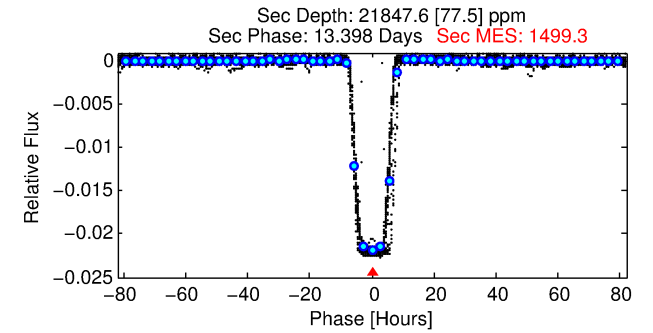
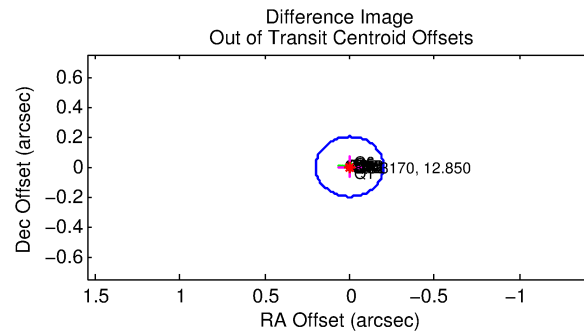
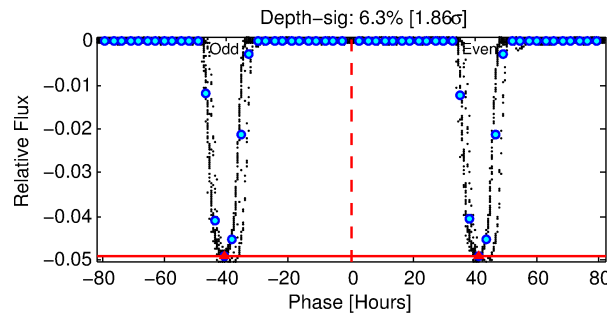
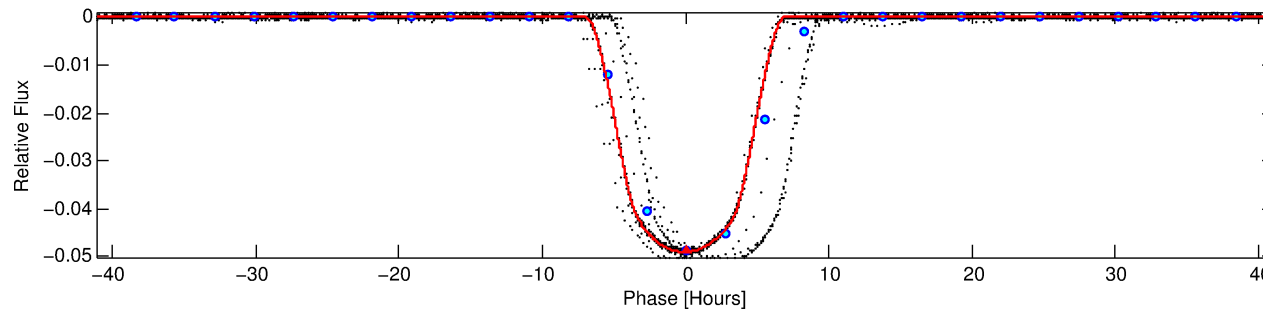
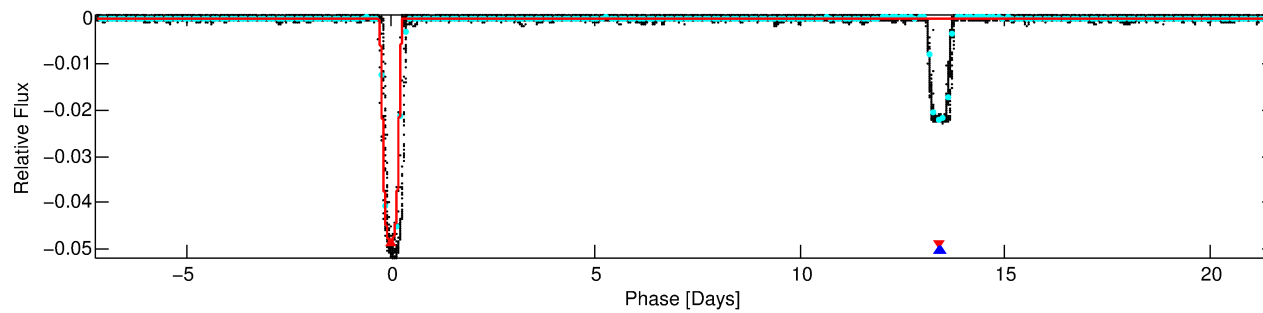
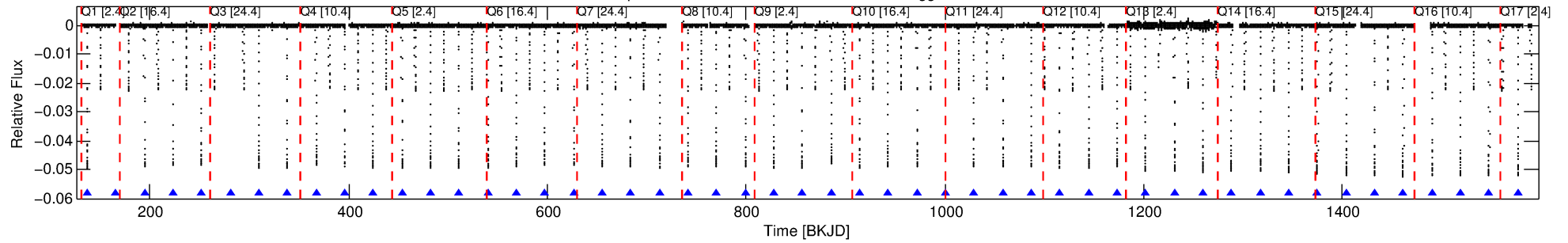
No Significant Match Found

DV One-Page Summary

KIC: 8143170 Candidate: 1 of 2 Period: 28.786 d

KOI: K06976.01 Corr: 0.953

Kp: 12.85 R*: 3.98 Rs Teff: 5154.0 K Logg: 3.46 Fe/H: 0.080



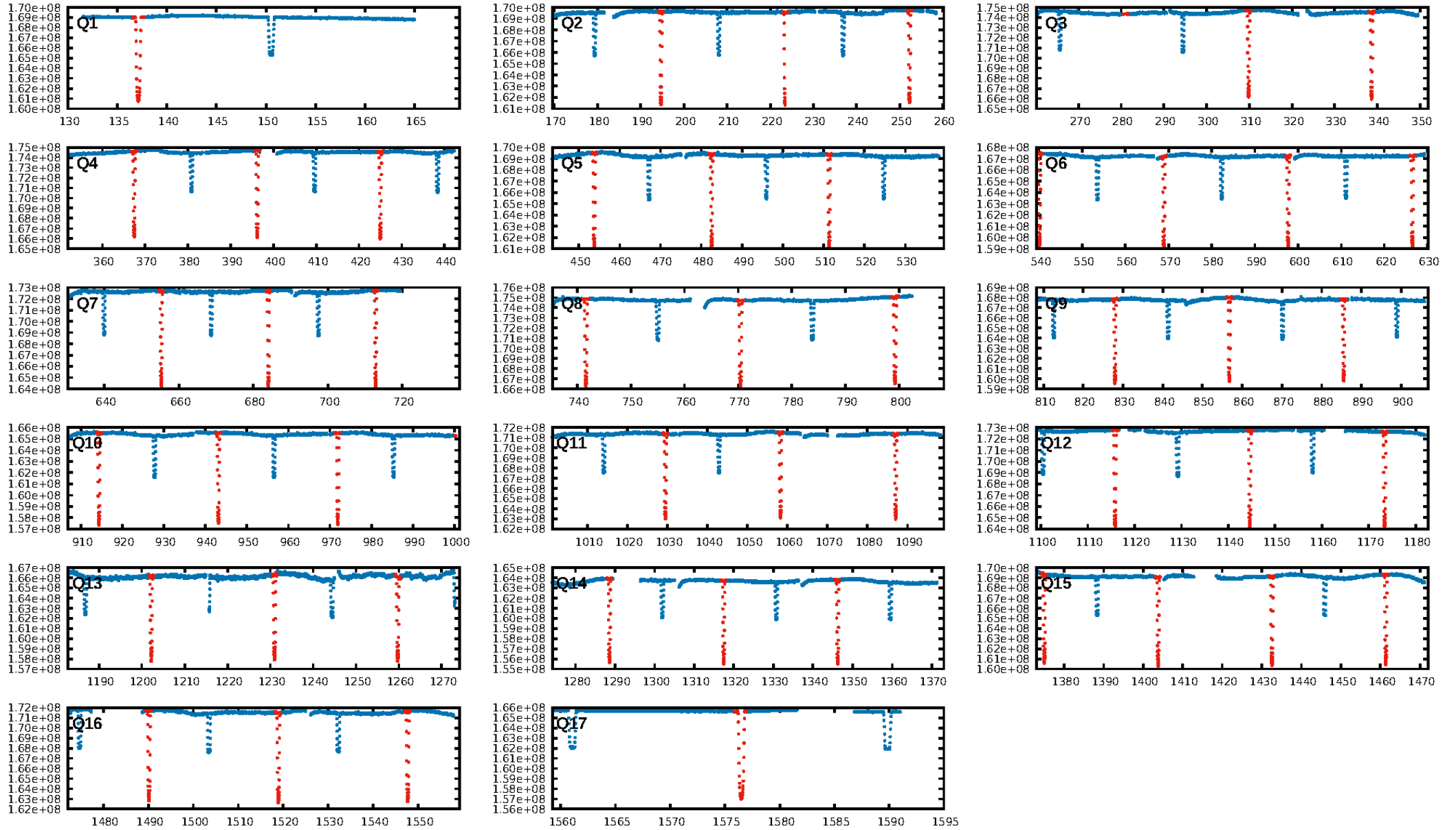
DV Fit Results:

Period = 28.78598 [0.00000] d
Epoch = 137.1133 [0.0001] BKJD
Rp/R* = 0.2089 [0.0001]
a/R* = 17.19 [0.01]
b = 0.56 [0.00]
Seff = 210.49 [91.03]
Teq = 971 [105] K
Rp = 90.74 [30.52] Re
a = 0.2182 [0.0614] AU
Ag = 69.48 [28.34] [2.42σ]
Teffp = 4335 [156] K [17.92σ]

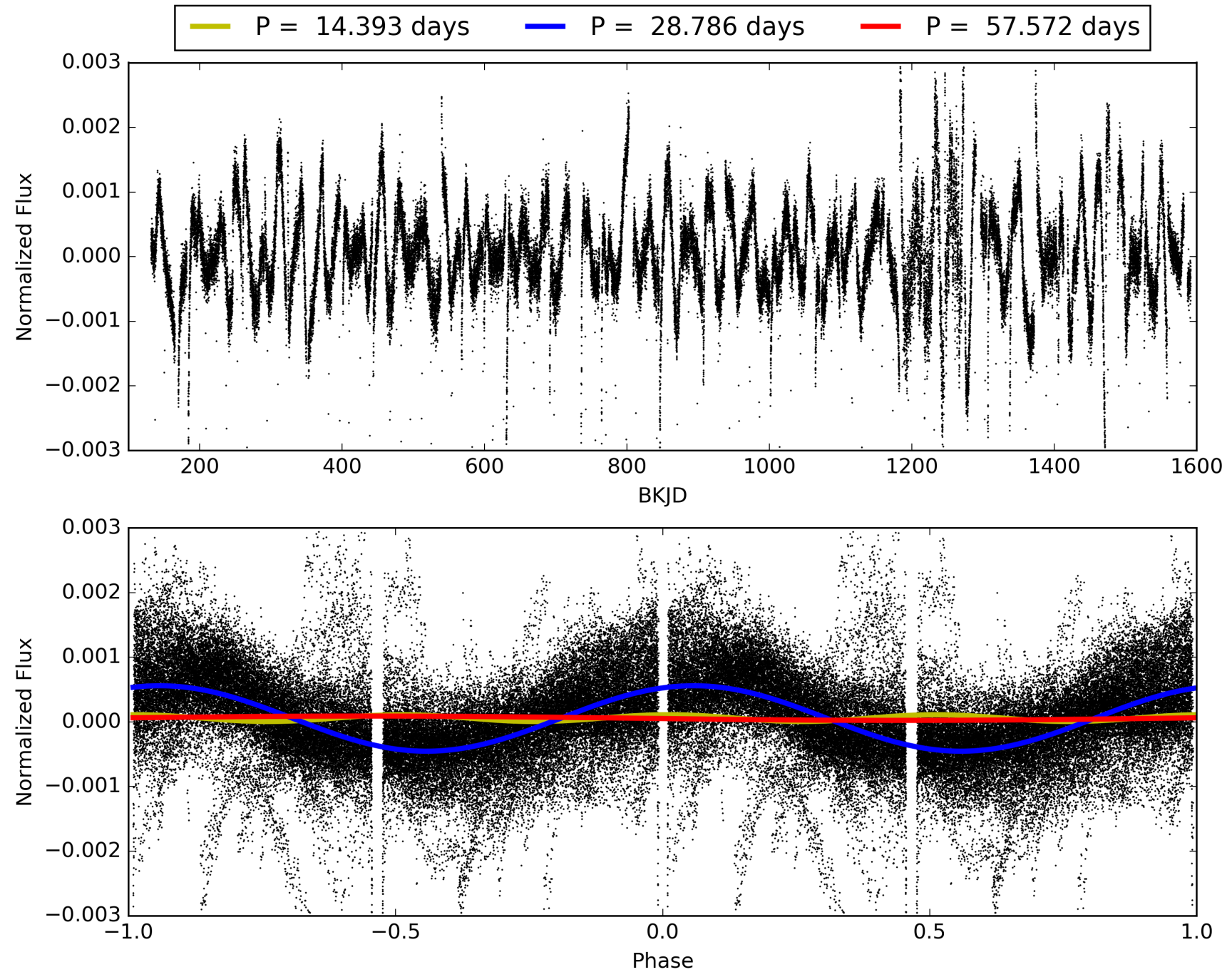
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [46/46]
GhostDiagnostic-chr: 4.889
Centroid-sig: 0.0%
Centroid-so: 0.366 arcsec [211.30σ]
OotOffset-rm: 0.003 arcsec [0.04σ]
KicOffset-rm: 0.307 arcsec [4.45σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008143170-01, PDC Light Curves

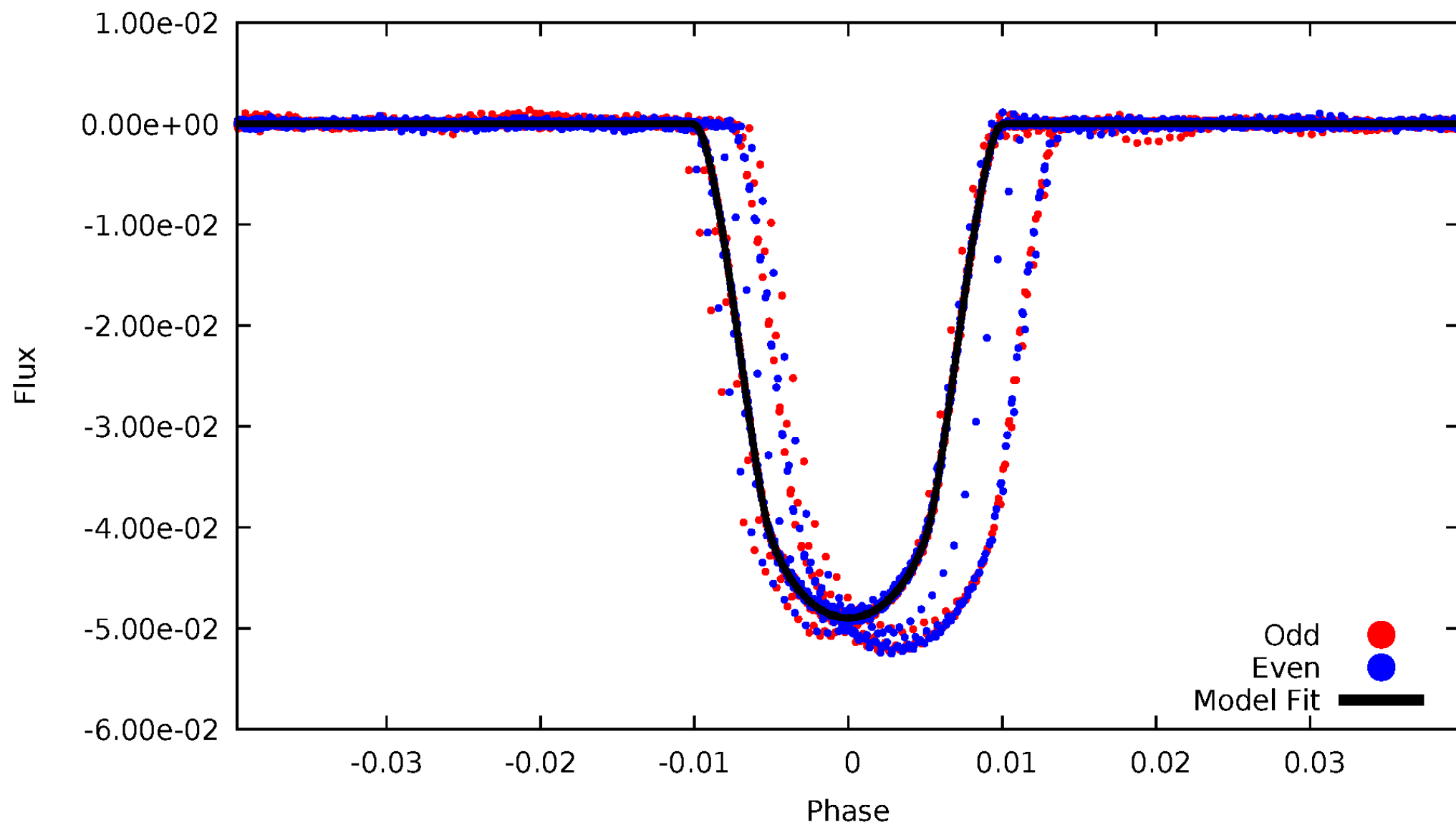


TCE 008143170-01



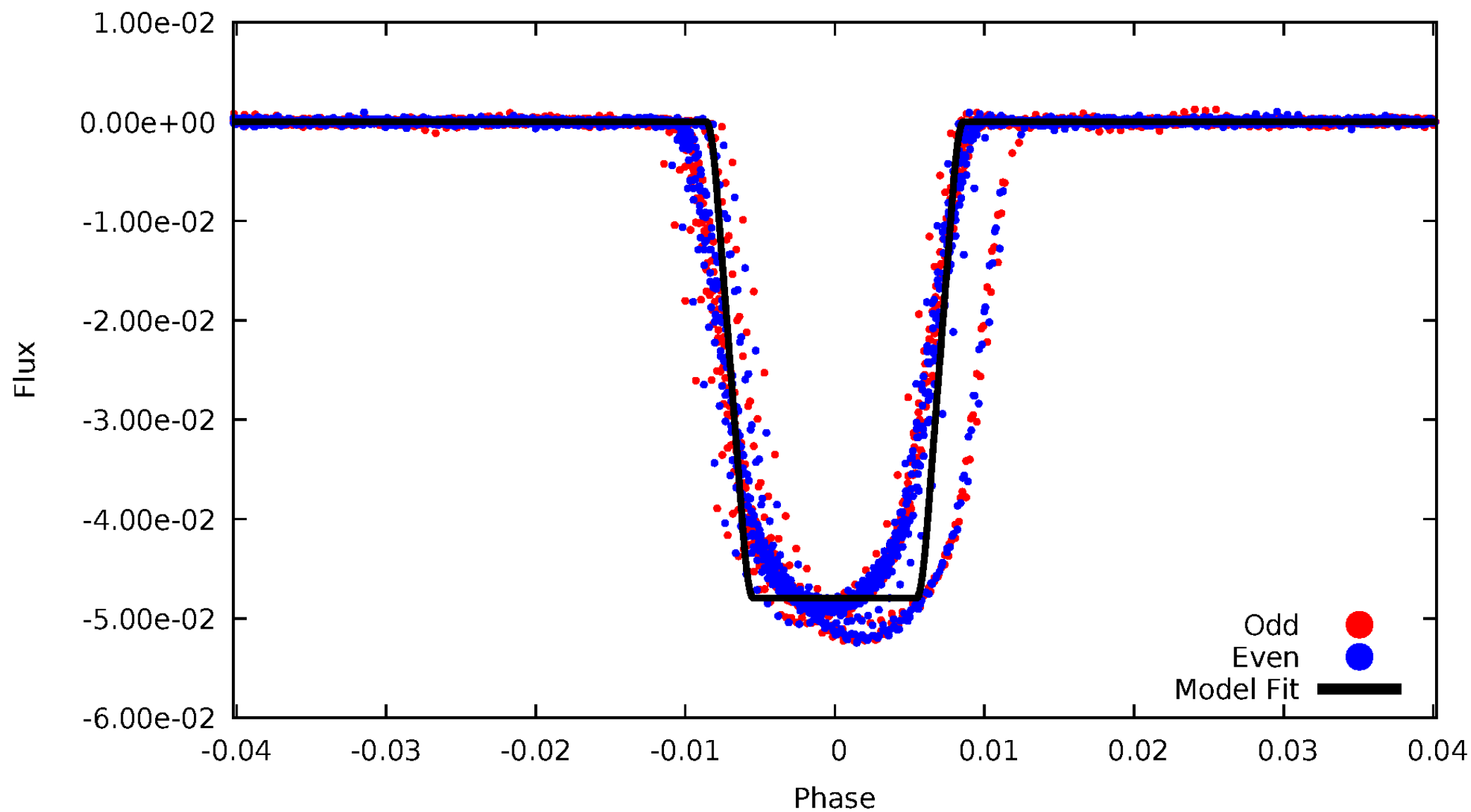
DV Odd/Even

TCE 008143170-01



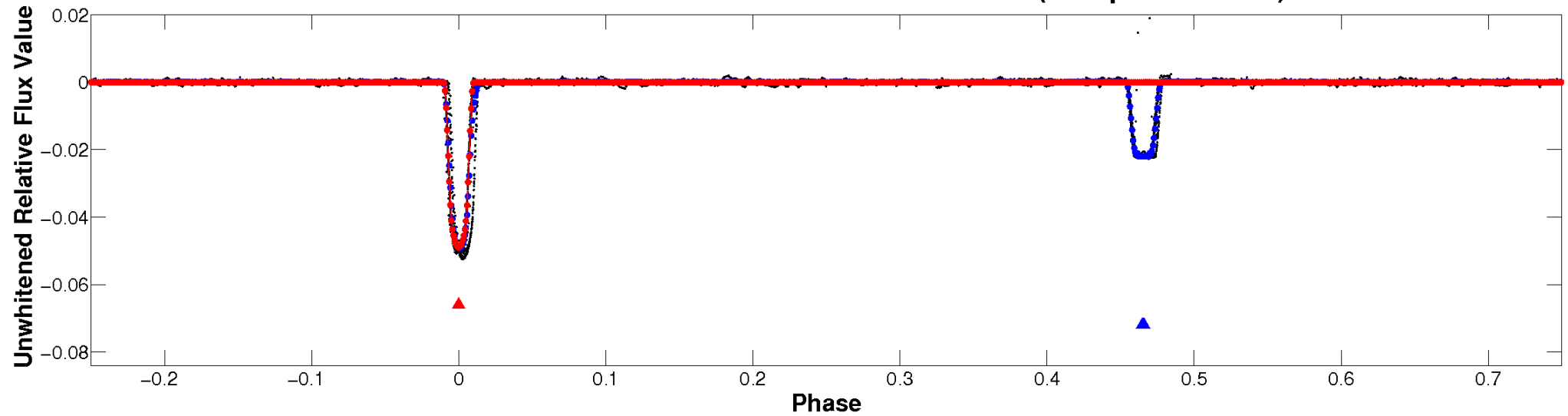
ALT Odd/Even

TCE 008143170-01

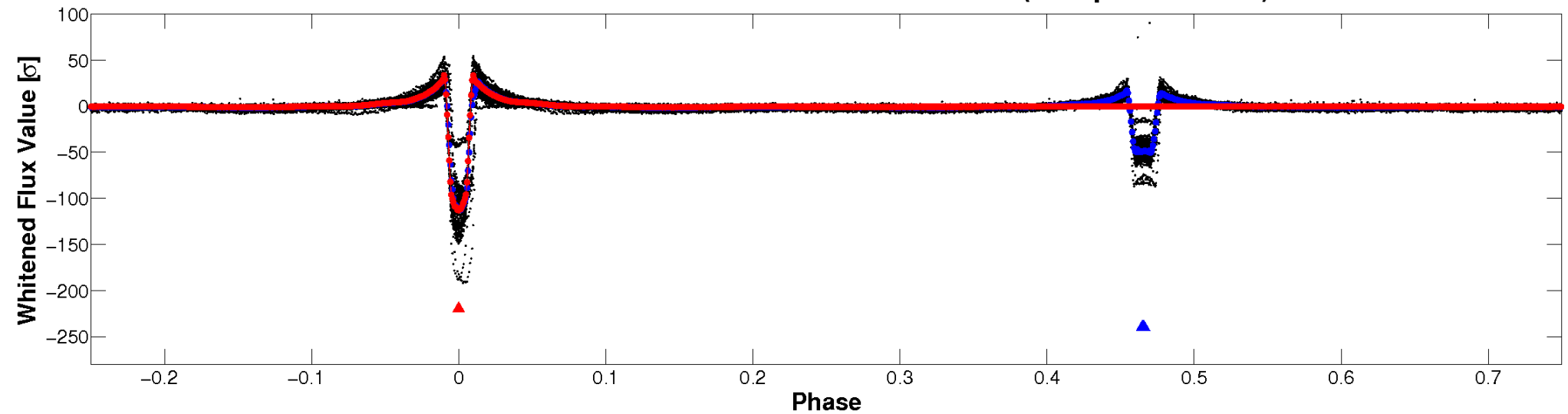


Non-Whitened Vs. Whitened Light Curve

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

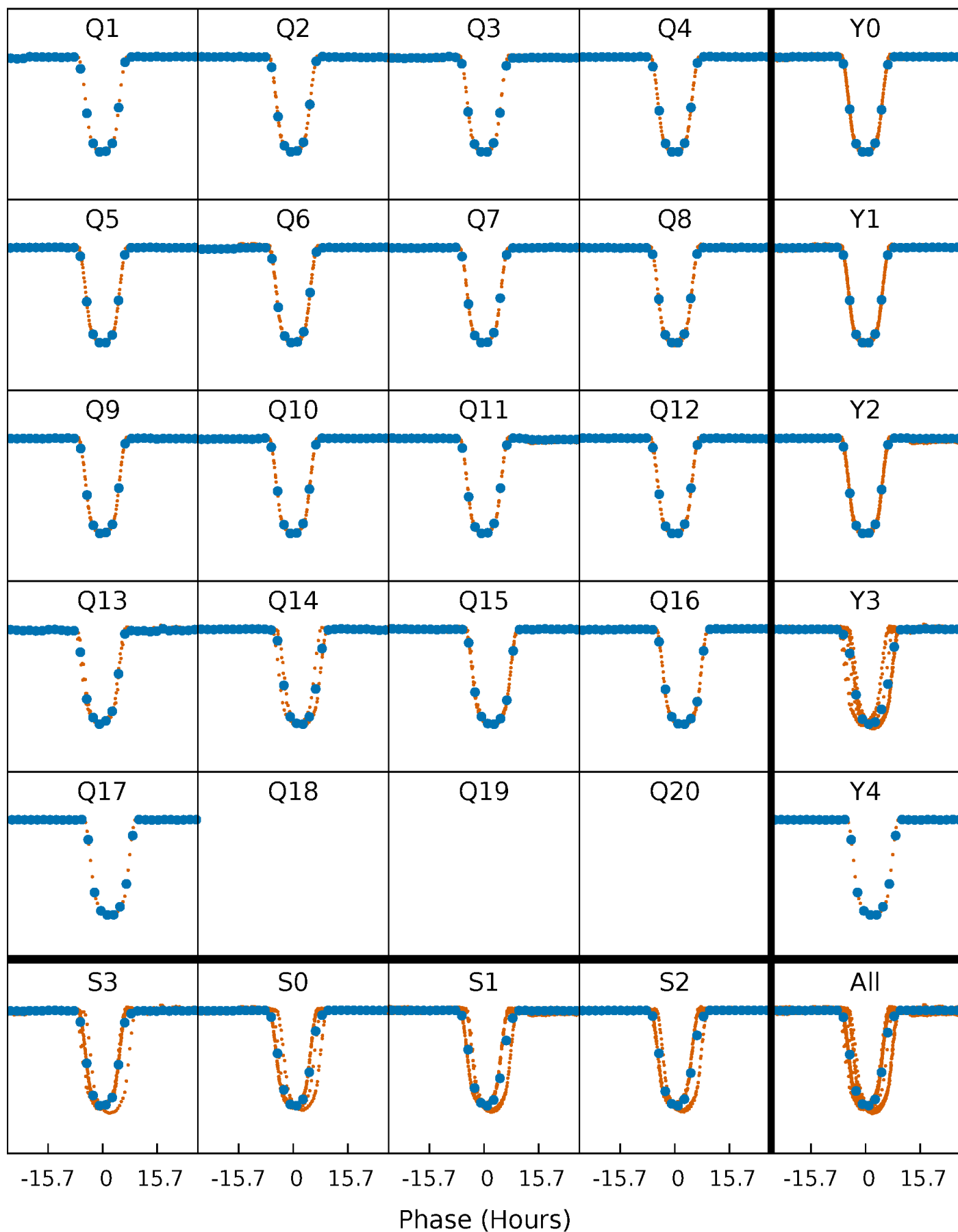


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



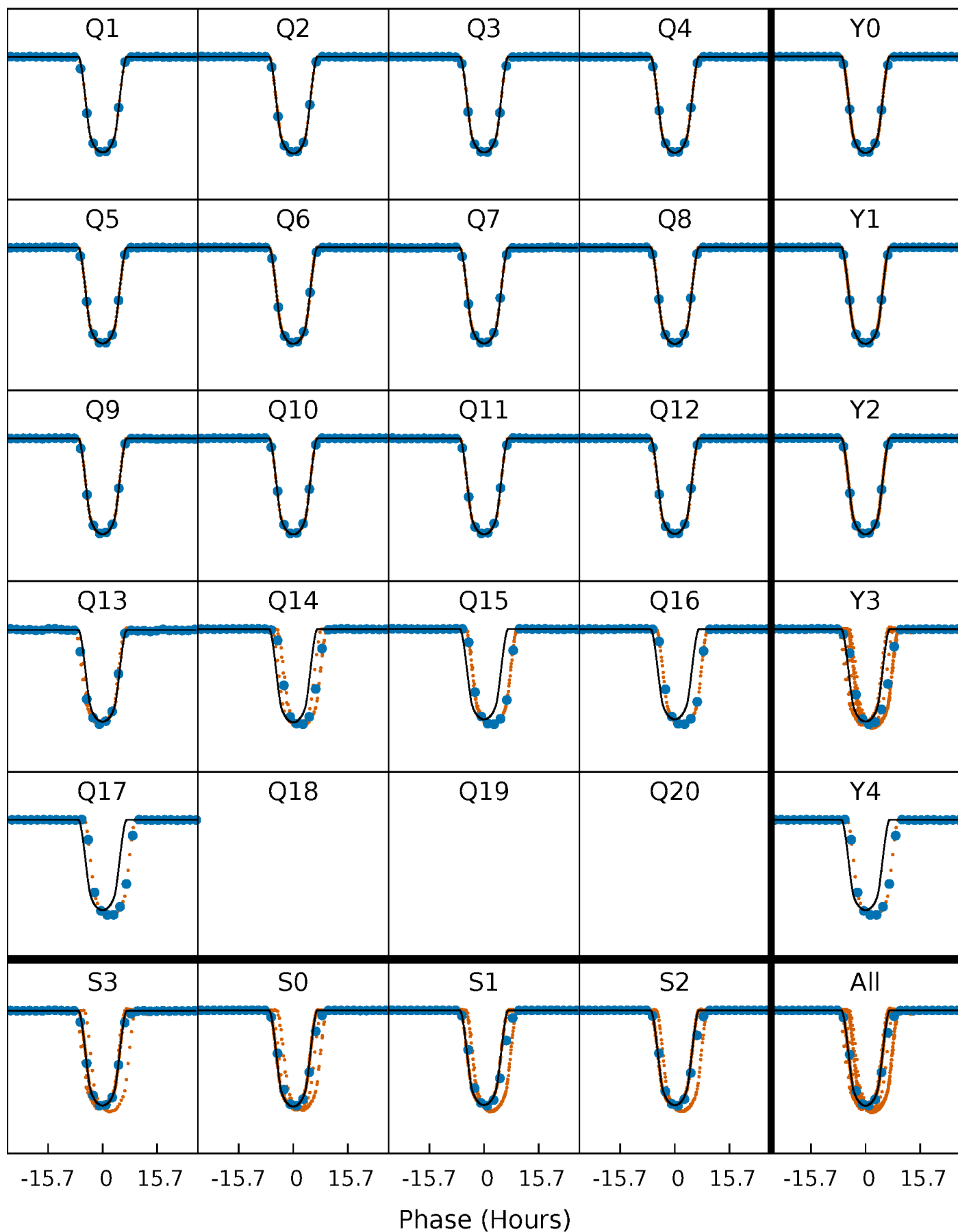
PDC Quarter-Phased Transit Curves

TCE 008143170-01 P= 28.785981 Days $T_0=137.113301$ (BKJD)



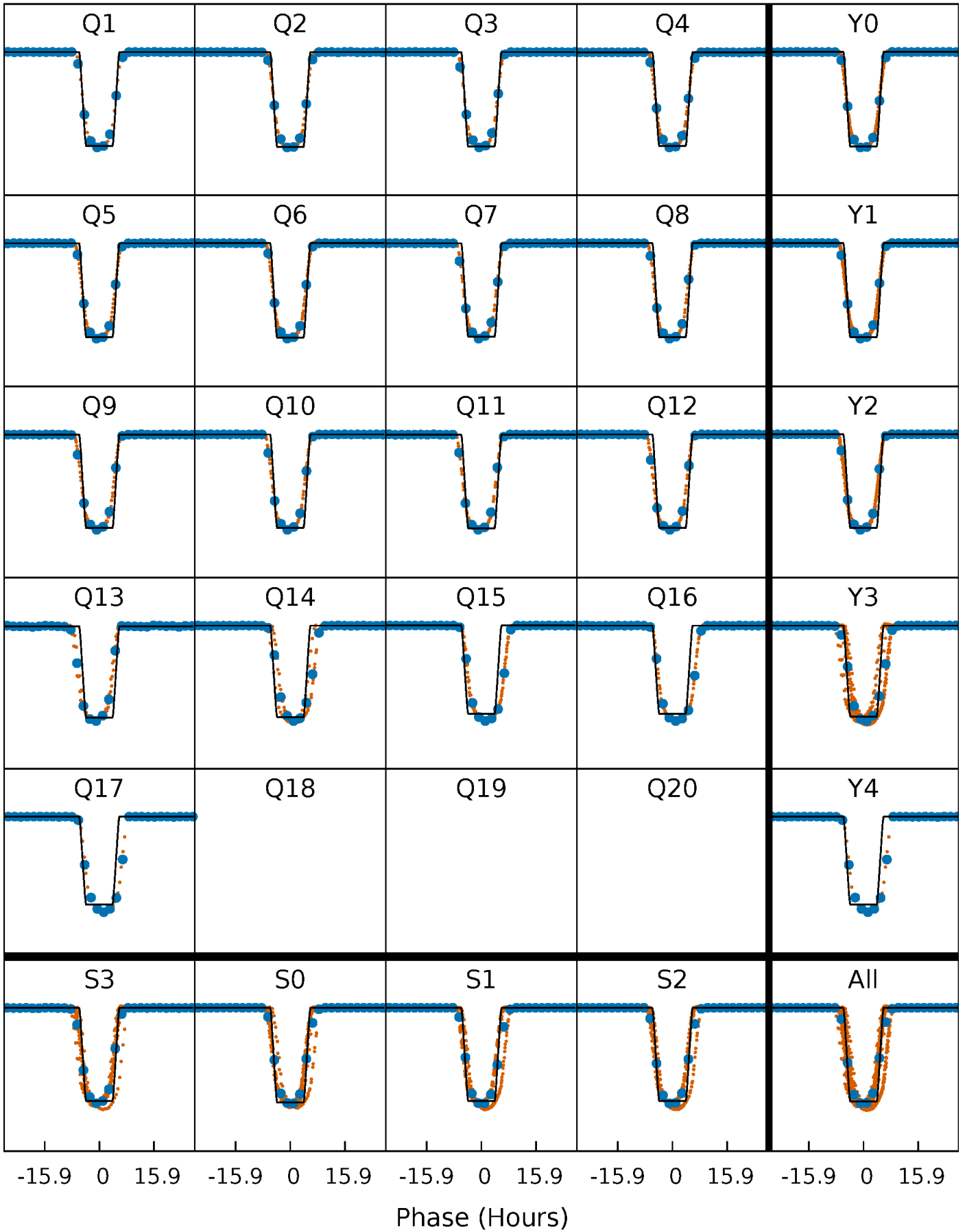
DV Quarter-Phased Transit Curves

TCE 008143170-01 P= 28.785981 Days $T_0=137.113301$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

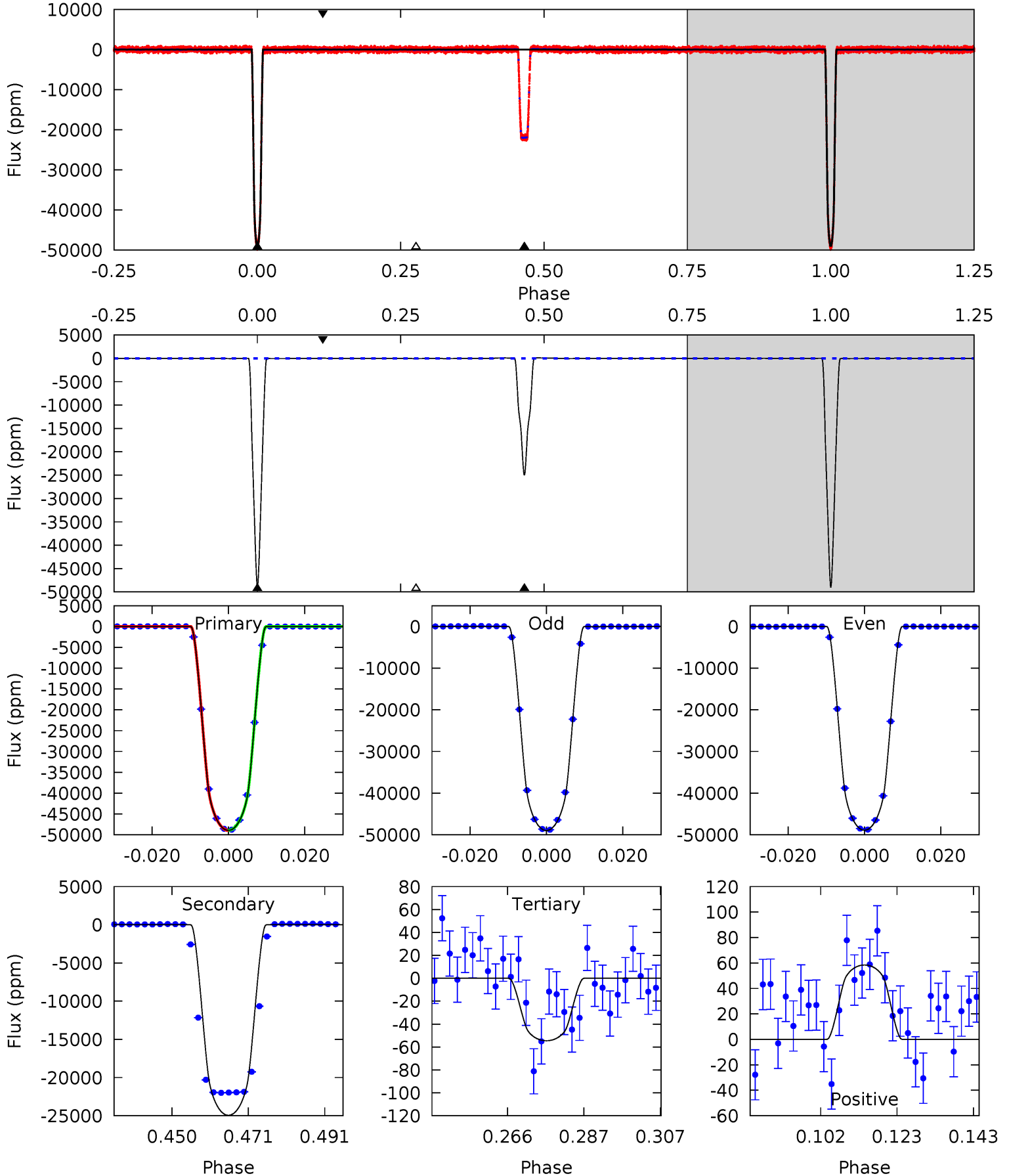
TCE 008143170-01 P= 28.786759 Days $T_0=137.113711$ (BKJD)



DV Model-Shift Uniqueness Test

008143170-01, P = 28.785981 Days, E = 108.327320 Days

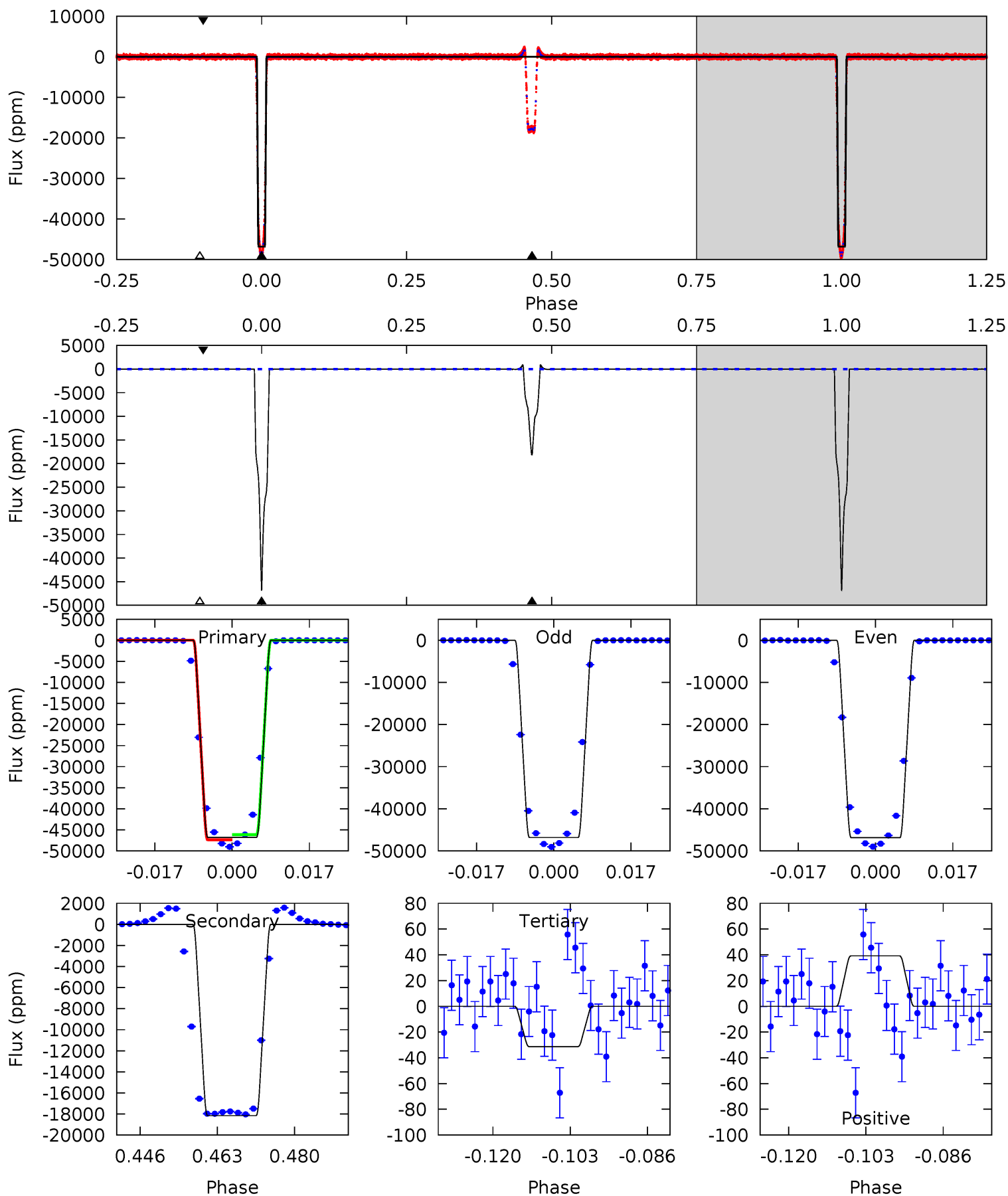
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6813	3472	7.59	8.13	4.89	2.32	4.09	6806	6805	3464	3464	6.13	1.00	0.00	0.06



Alt Model-Shift Uniqueness Test

008143170-01, P = 28.786759 Days, E = 108.326952 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5266	2044	3.53	4.41	4.92	2.38	3.36	5263	5262	2040	2039	3.55	1.01	0.02	7.65



Stellar Parameters For KIC 008143170

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5154^{+108}_{-185}	$3.461^{+0.222}_{-0.148}$	$0.080^{+0.200}_{-0.350}$	$3.981^{+0.721}_{-1.339}$	$1.672^{+0.206}_{-0.617}$	$0.037^{+0.054}_{-0.014}$
	+2%/-4%	+6%/-4%	+250%/-438%	+18%/-34%	+12%/-37%	+144%/-38%
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 008143170-01 / KOI 6976.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24940 ± 7	$91.52^{+11.04}_{-17.55}$	1351^{+86}_{-108}	4614^{+85}_{-146}	81^{+31}_{-17}
Alt.	-18158 ± 9	$96.05^{+10.80}_{-16.31}$	1352^{+81}_{-104}	4250^{+84}_{-142}	53^{+17}_{-10}

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

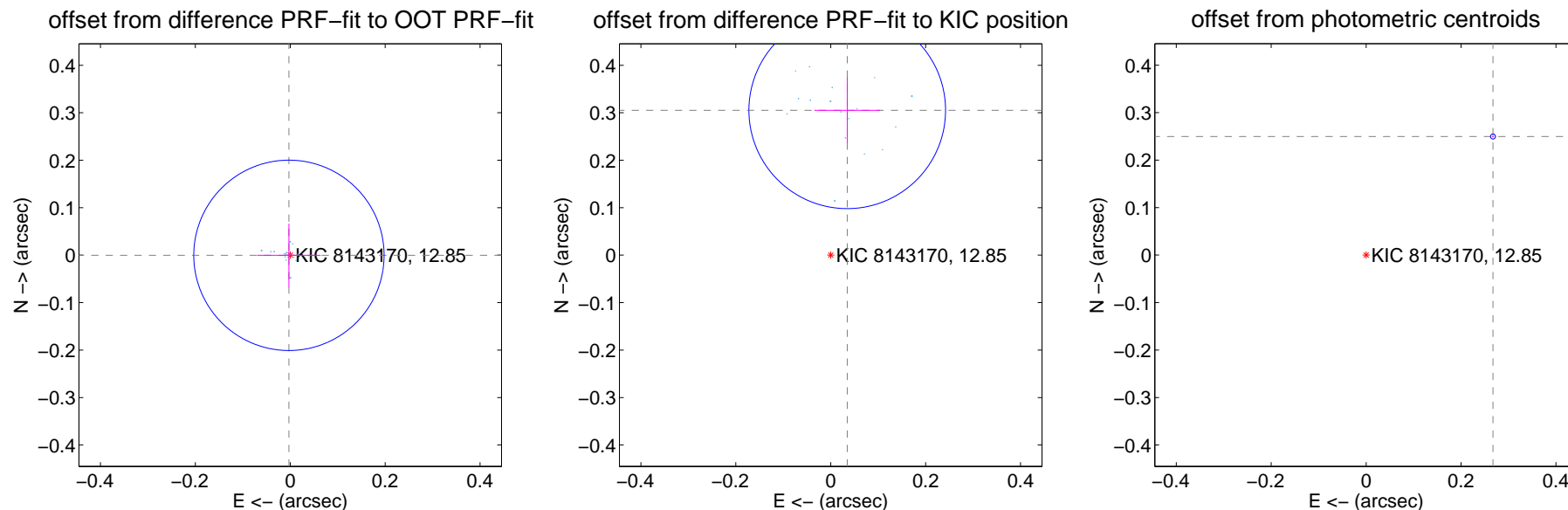
DV Centroid Data

Supplemental centroid analysis for 008143170-01. Kepler magnitude: 12.85. Transit SNR 2907.13

There are 17 quarters with good PRF difference image offsets

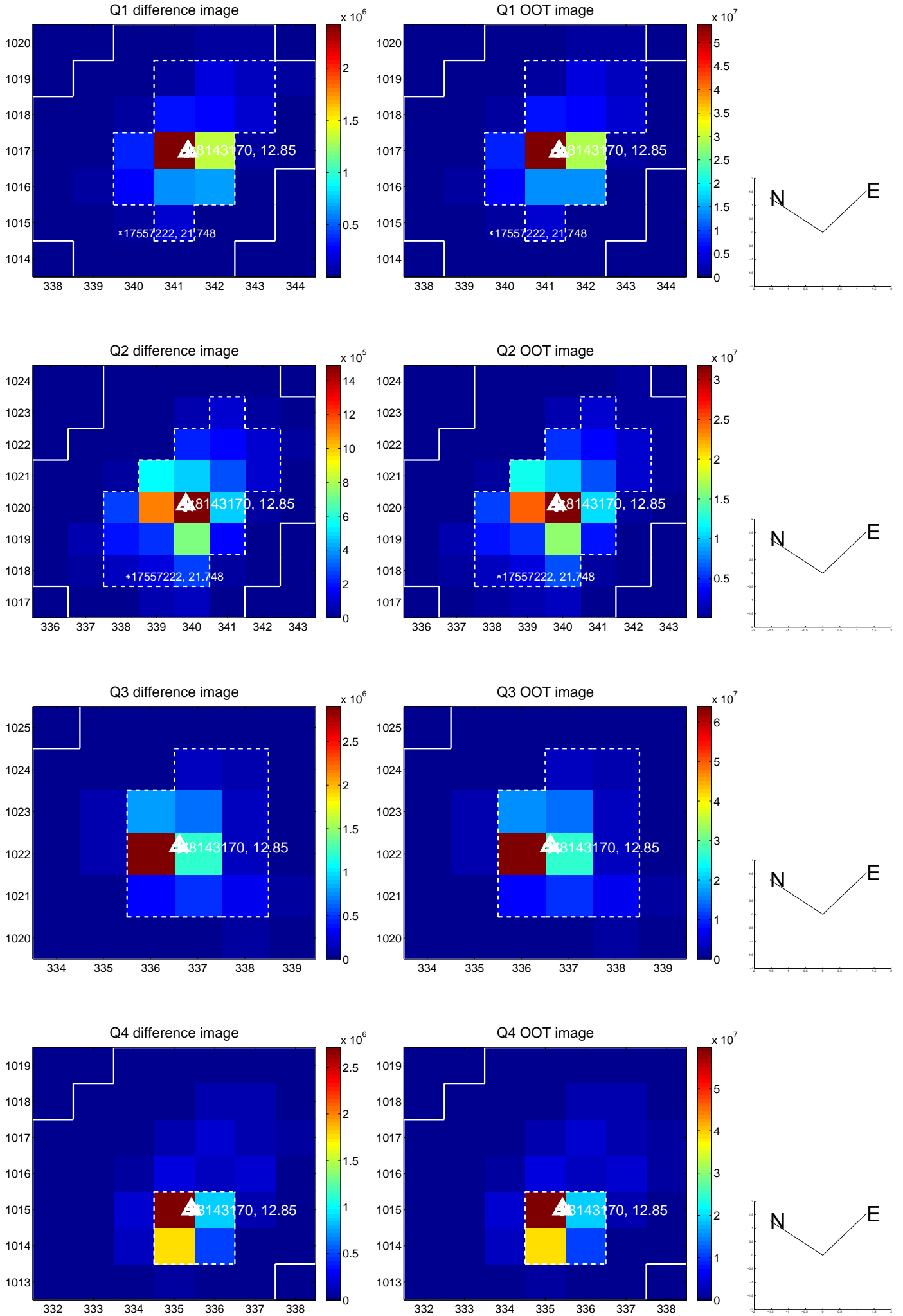
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.003 ± 0.067	0.04	0.003 ± 0.067	-0.000 ± 0.067
PRF-fit source offset from KIC position	0.307 ± 0.069	4.45	-0.035 ± 0.069	0.305 ± 0.069
photometric centroid source offset	0.37 ± 0.00	211.30	-0.27 ± 0.00	0.25 ± 0.00

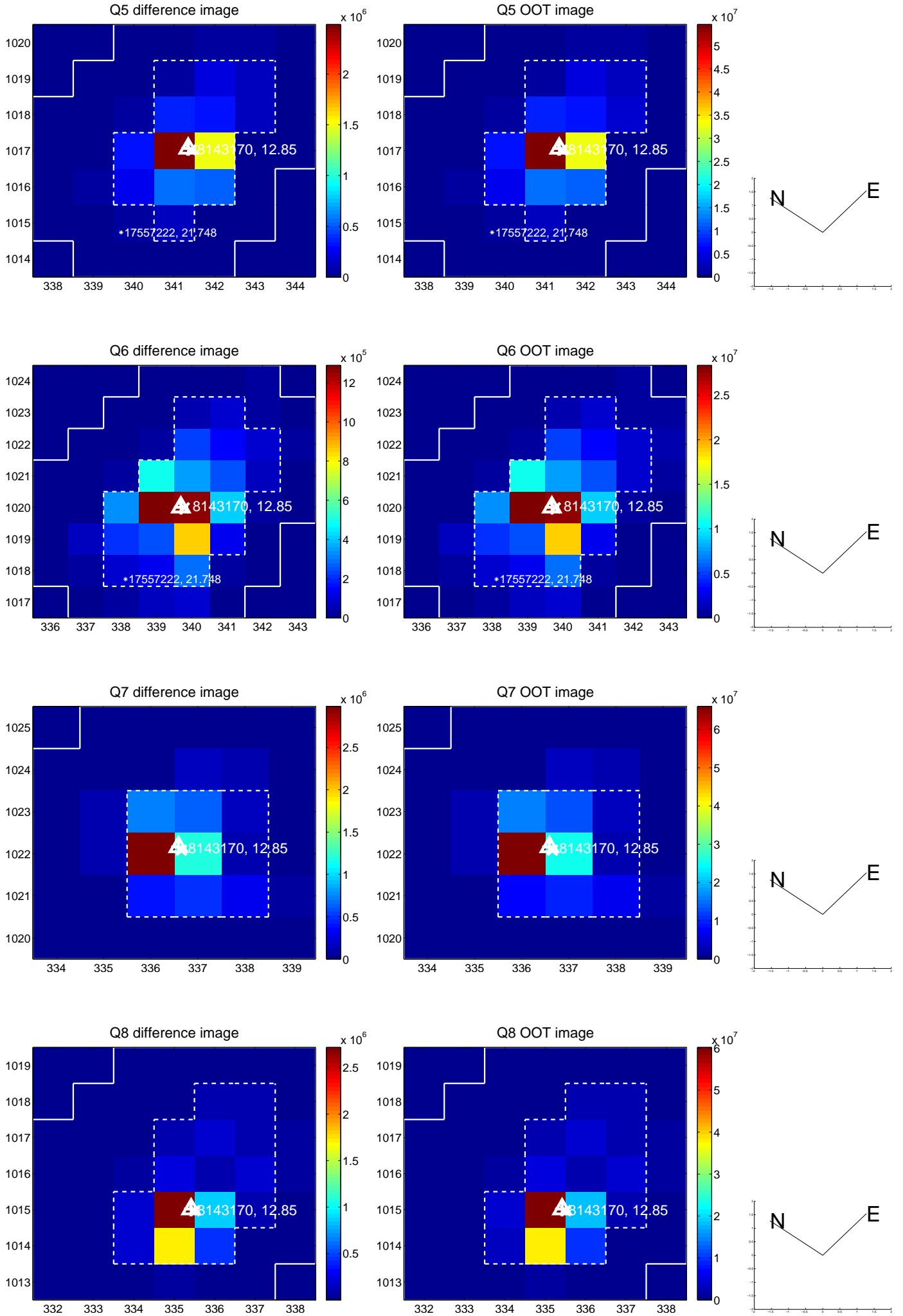


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

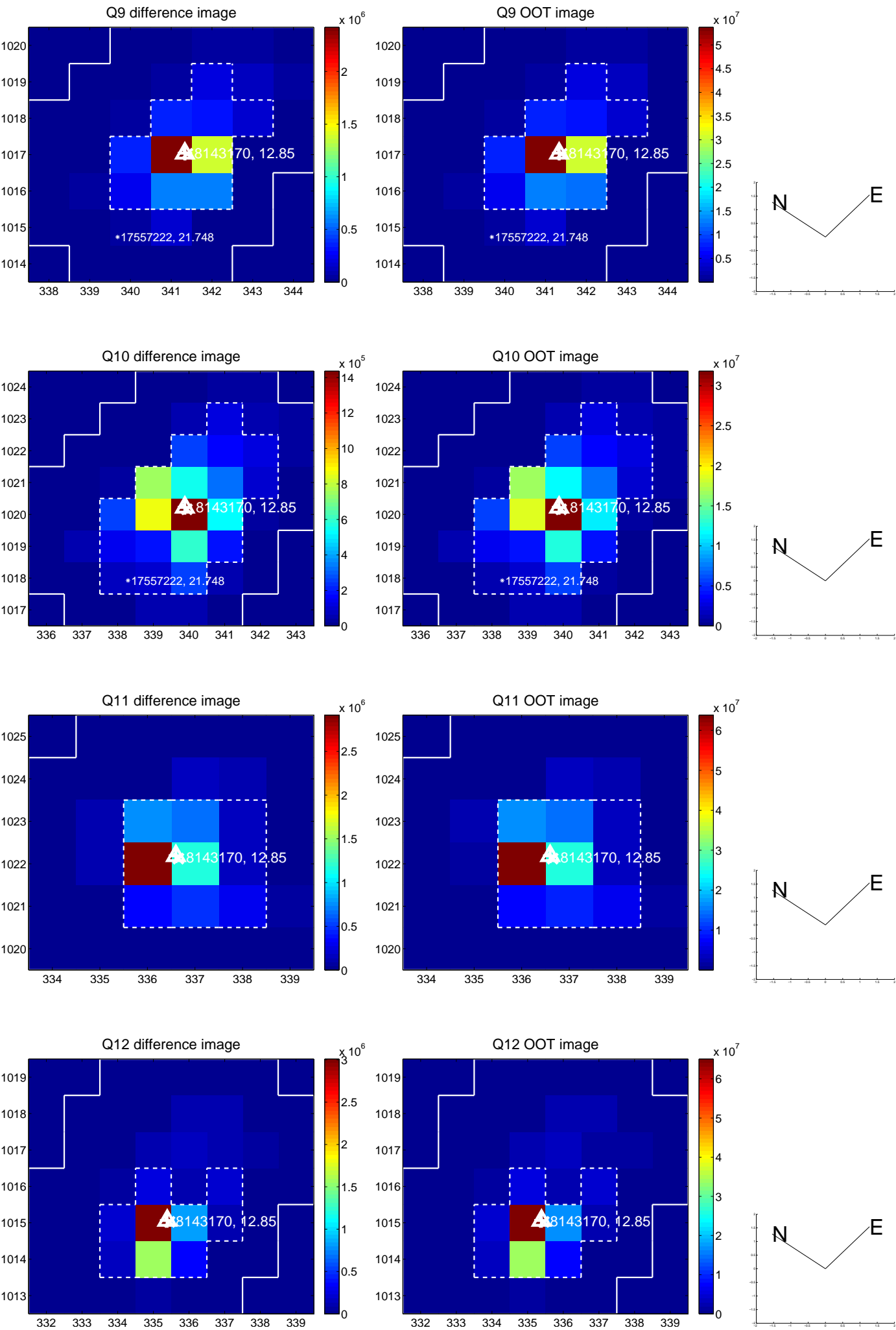
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



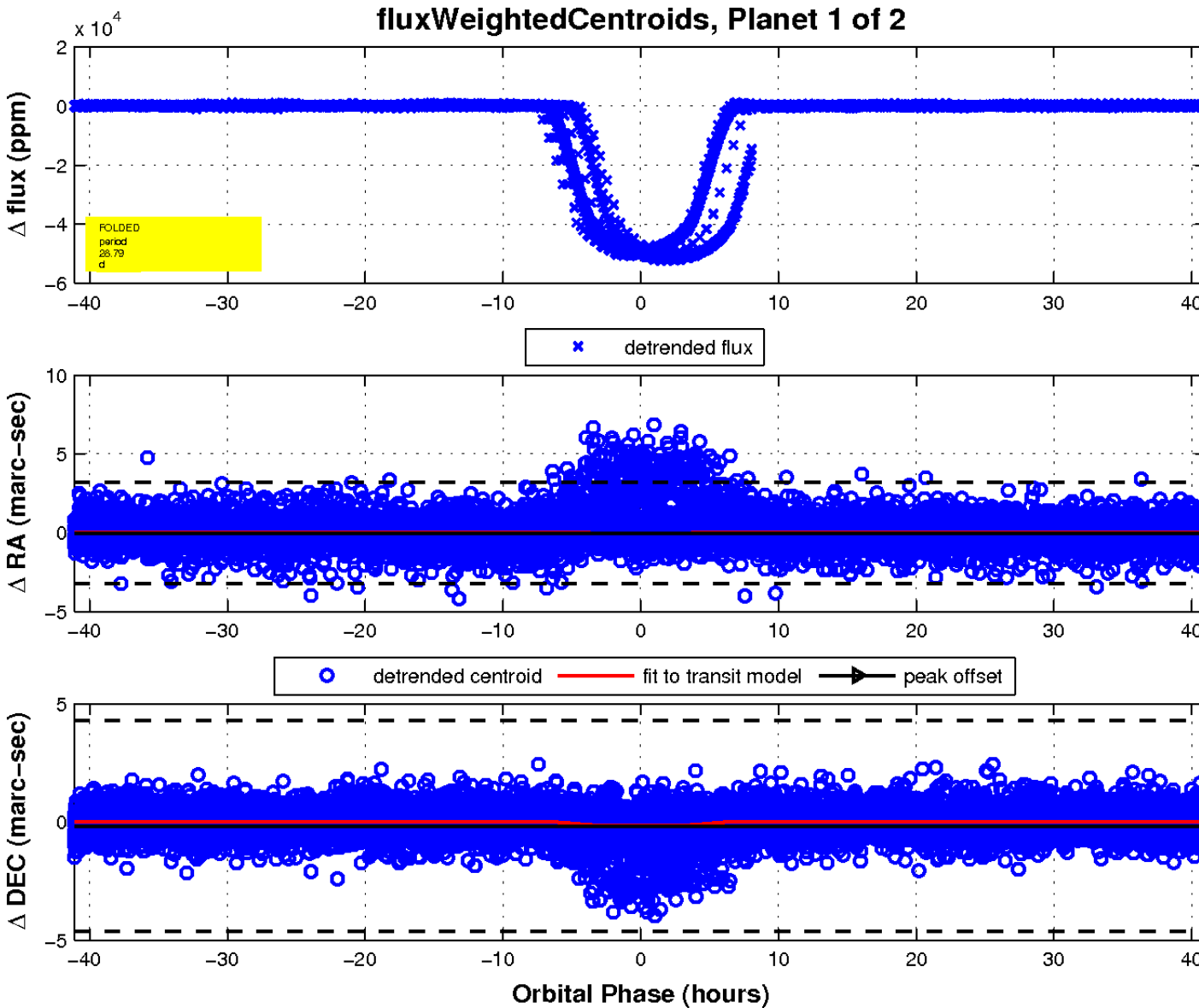
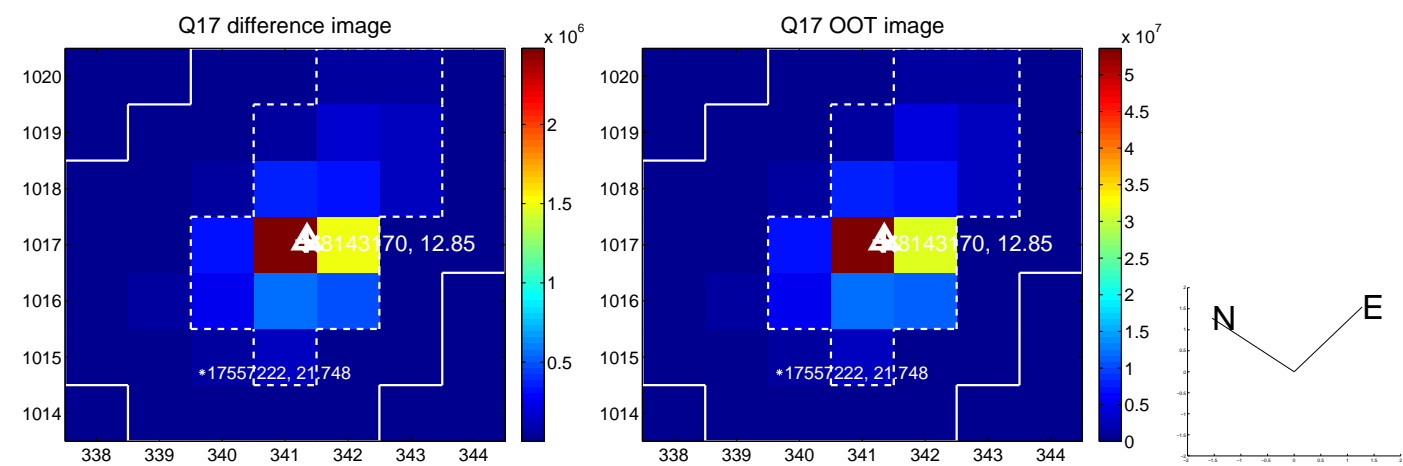
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

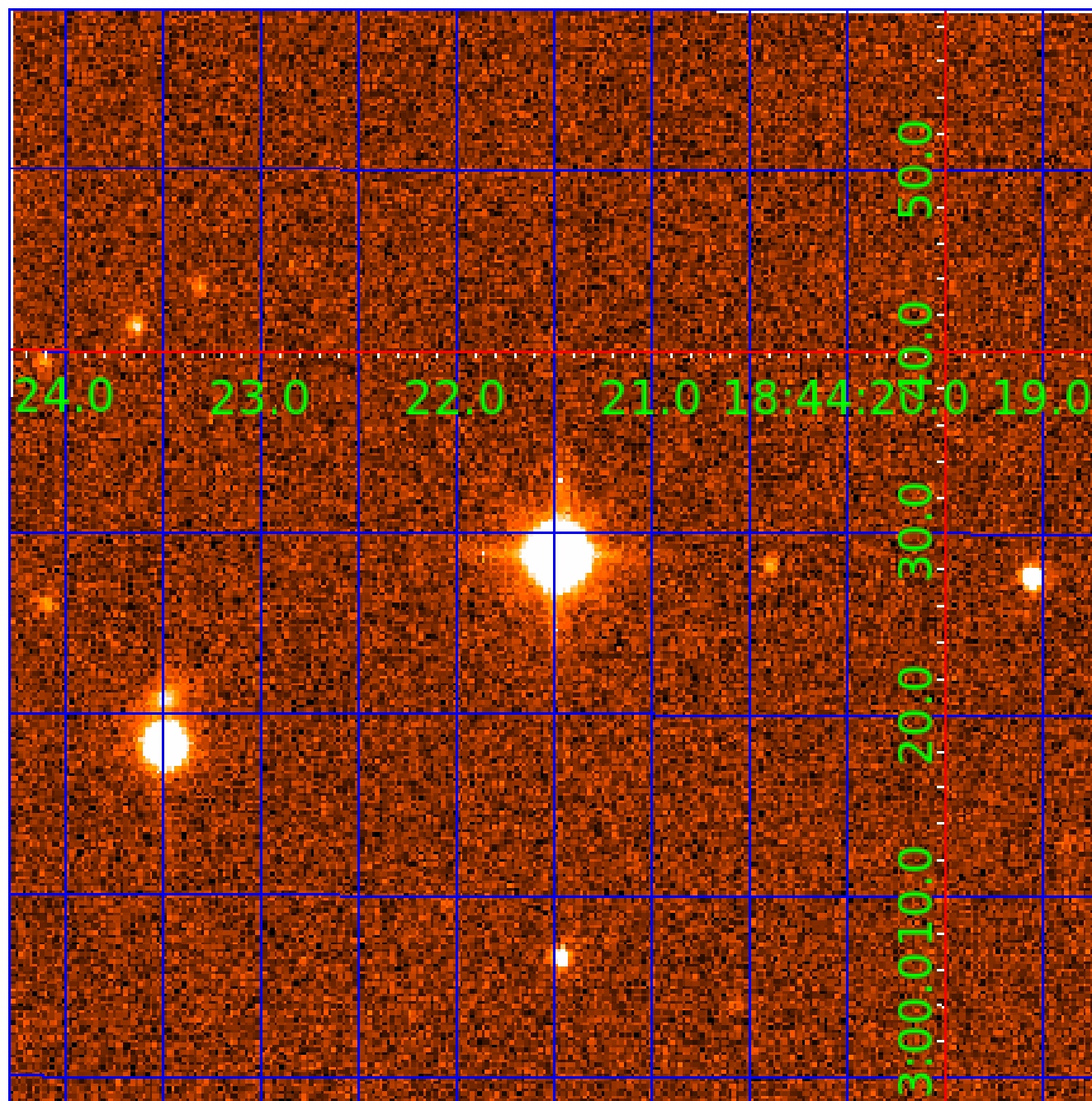


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008143170

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})
008143170-01	OBS	6976.01	28.785981	137.113301	48972.2	13.711	3179.7	2907.1	3.98	5154	90.75	210.49
008143170-02	OBS	No	28.785362	150.524326	22538.5	15.465	1578.3	1234.1	3.98	5154	63.35	210.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008143170-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008143170-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD

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

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

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

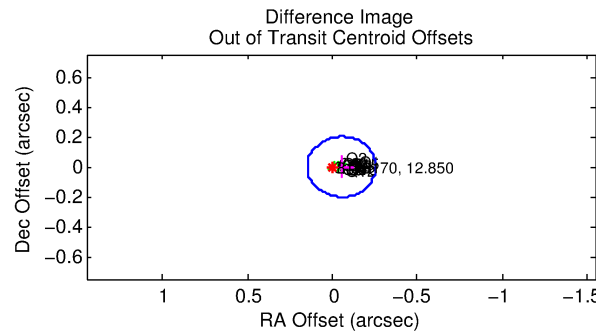
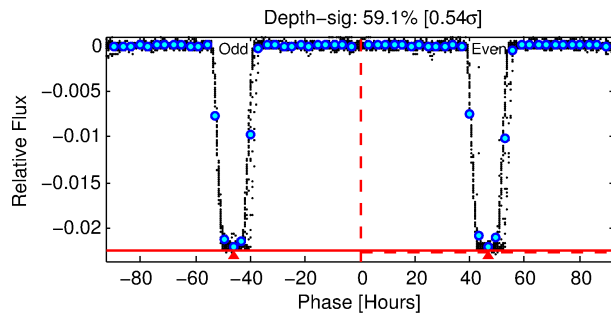
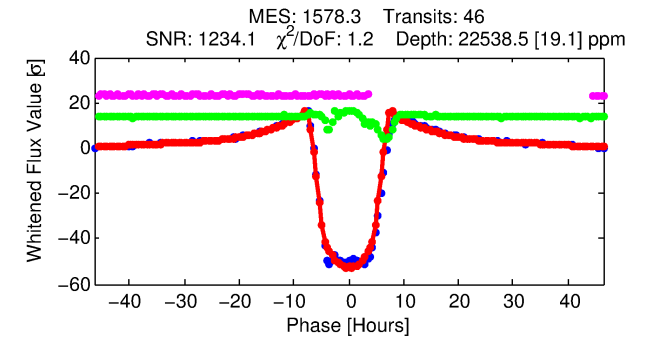
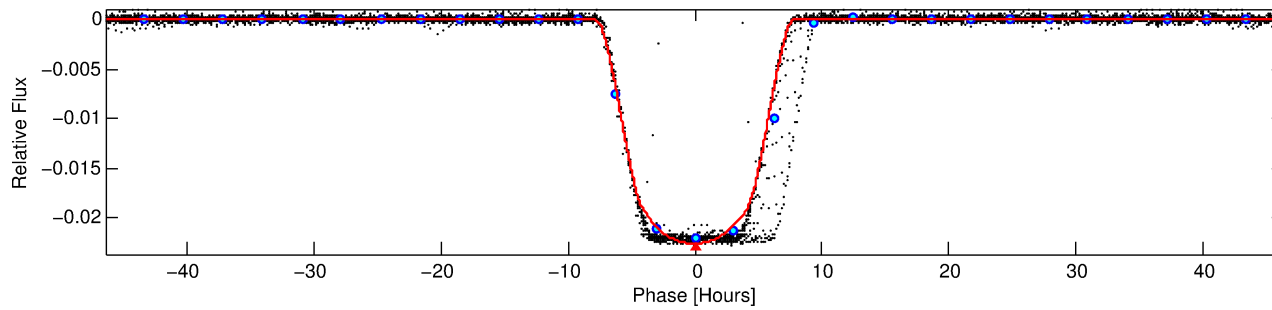
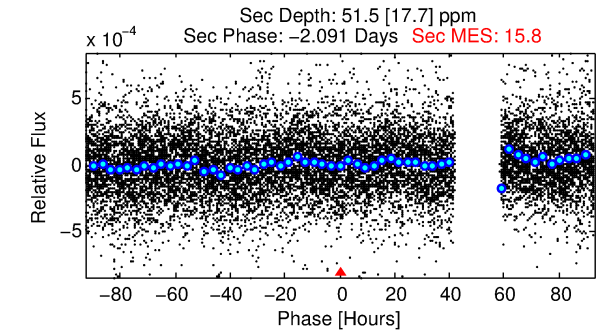
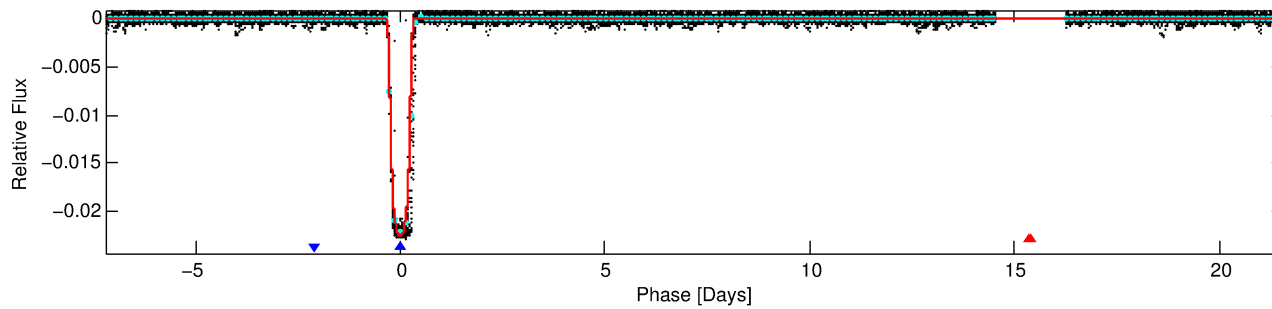
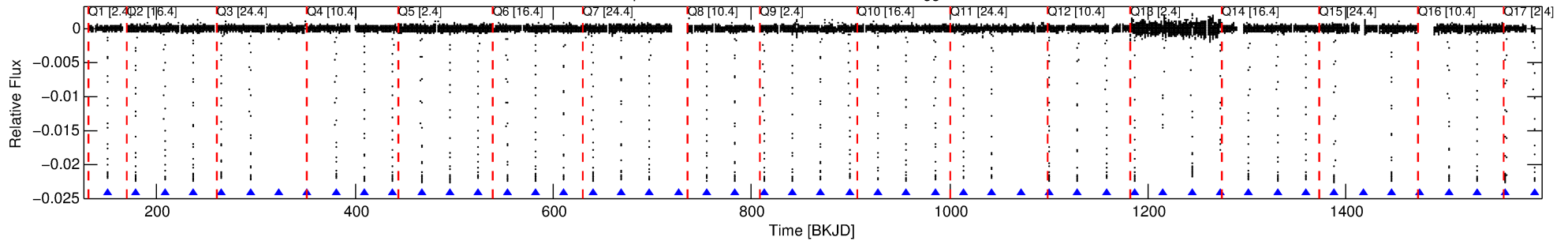
Ephemeris Match Information For 008143170-02

No Significant Match Found

DV One-Page Summary

KIC: 8143170 Candidate: 2 of 2 Period: 28.785 d
KOI: K06976 Corr: No Ephemeris Match

Kp: 12.85 R*: 3.98 Rs Teff: 5154.0 K Logg: 3.46 Fe/H: 0.080



DV Fit Results:

Period = 28.78536 [0.00001] d
Epoch = 150.5243 [0.0002] BKJD
Rp/R* = 0.1458 [0.0001]
a/R* = 13.22 [0.02]
b = 0.67 [0.00]
Seff = 210.49 [91.03]
Teq = 971 [105] K
Rp = 63.35 [21.31] Re
a = 0.2182 [0.0614] AU
Ag = 0.34 [0.18] [-3.70σ]
Teffp = 1143 [106] K [1.15σ]

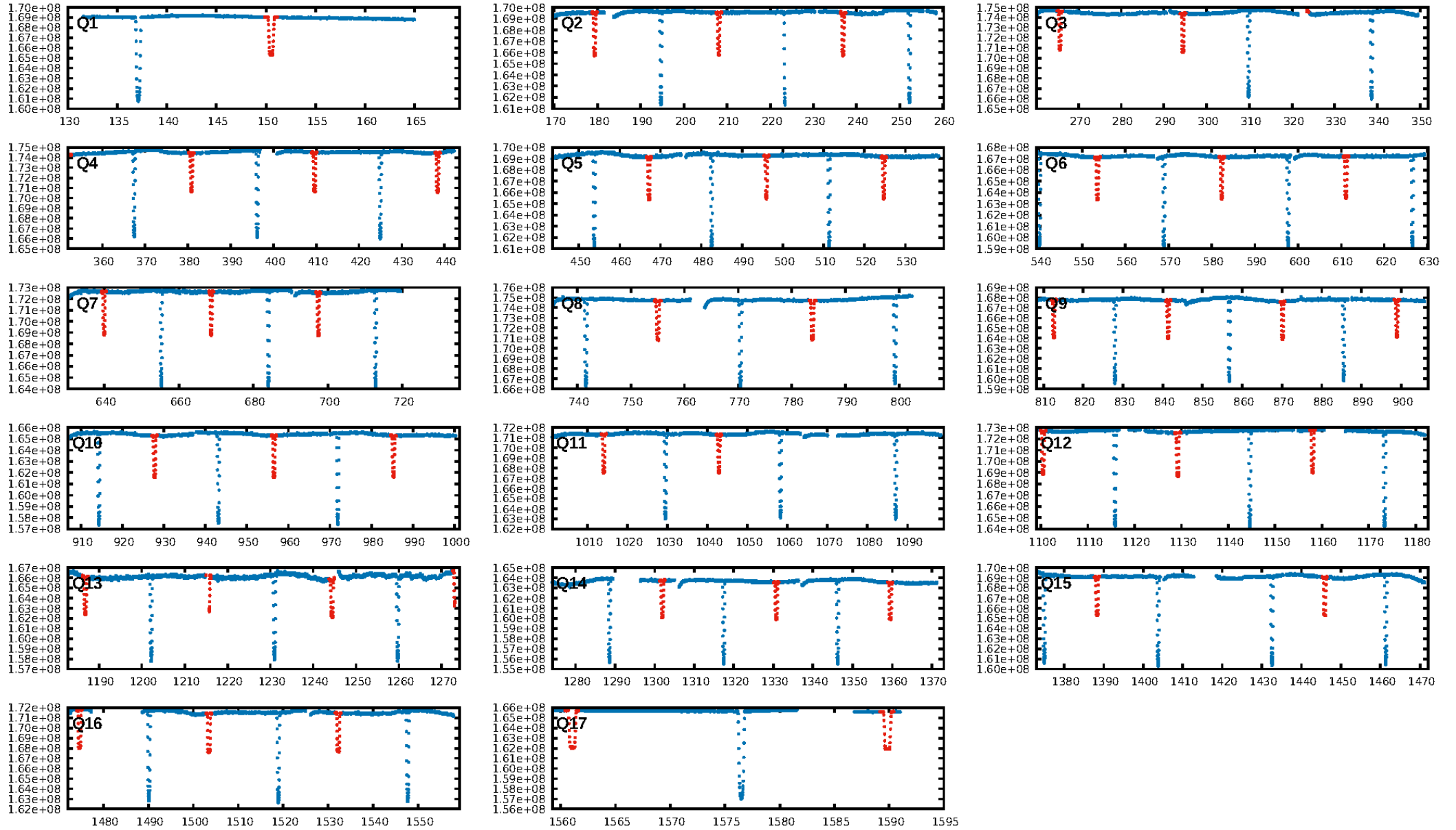
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 45.1%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [43/43]
GhostDiagnostic-chr: 2.815
Centroid-sig: 0.0%
Centroid-so: 0.398 arcsec [107.08σ]
OotOffset-rm: 0.053 arcsec [0.80σ]
KicOffset-rm: 0.320 arcsec [4.54σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

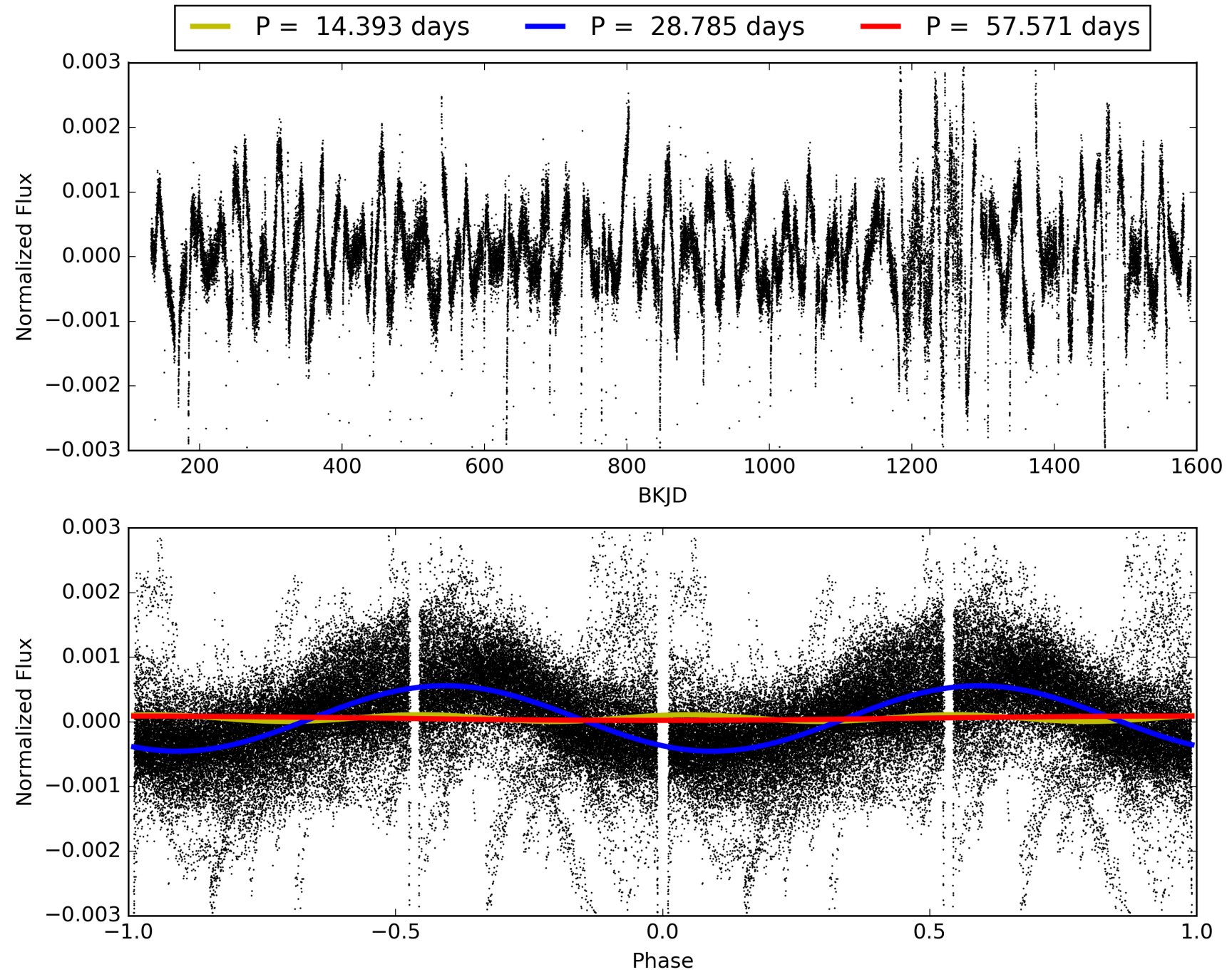
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:18:02 Z

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

TCE 008143170-02, PDC Light Curves

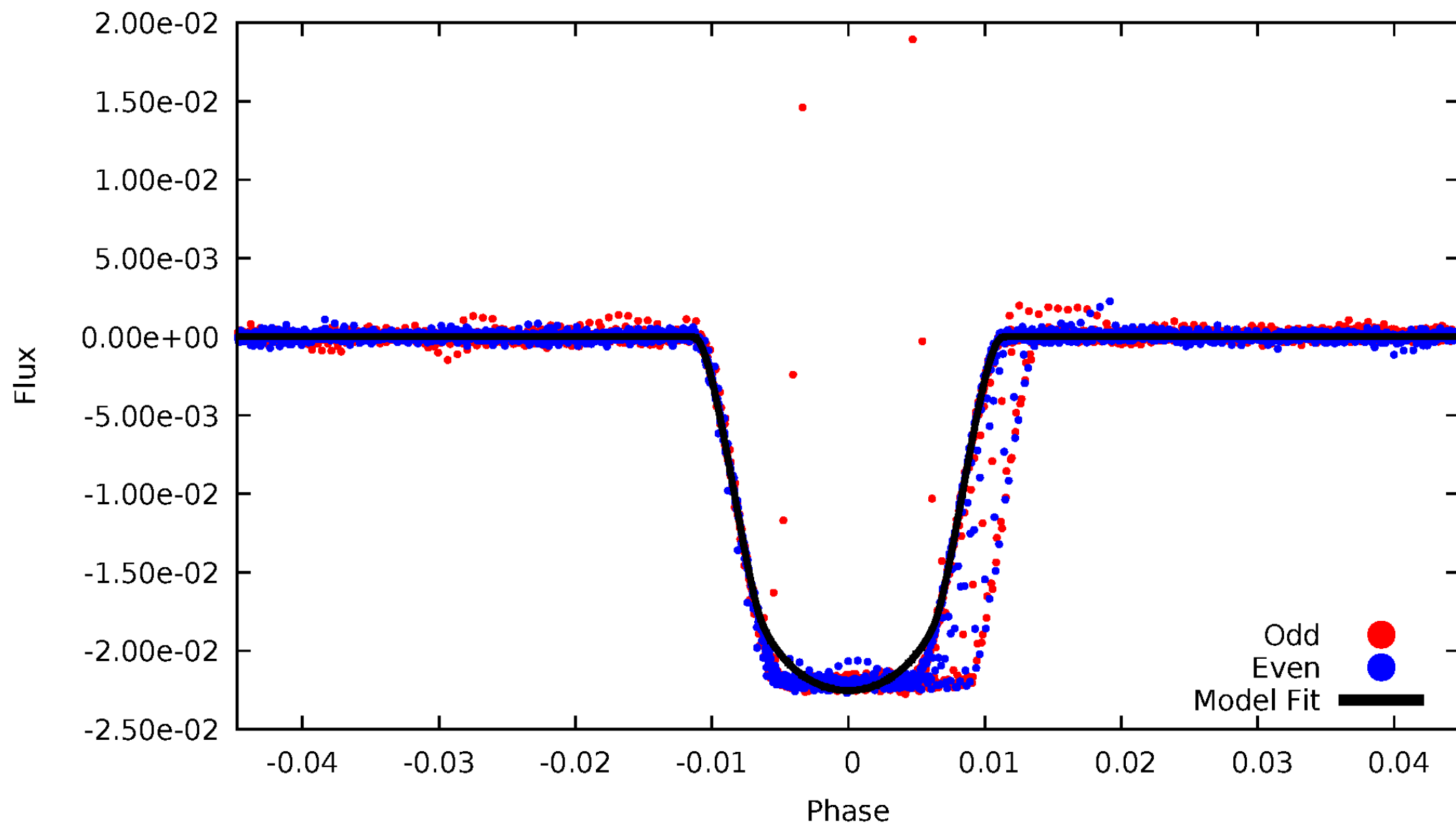


TCE 008143170-02



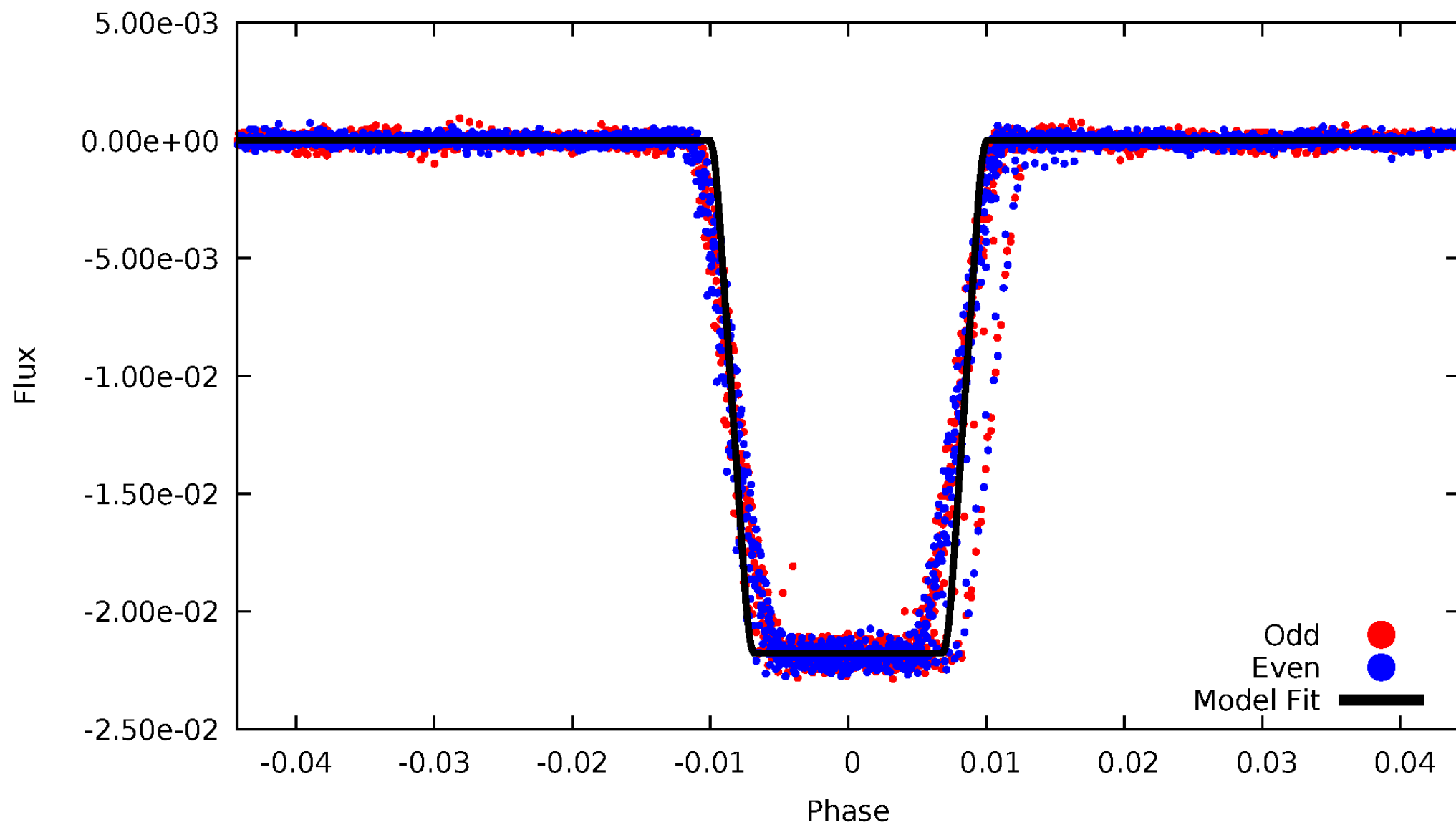
DV Odd/Even

TCE 008143170-02



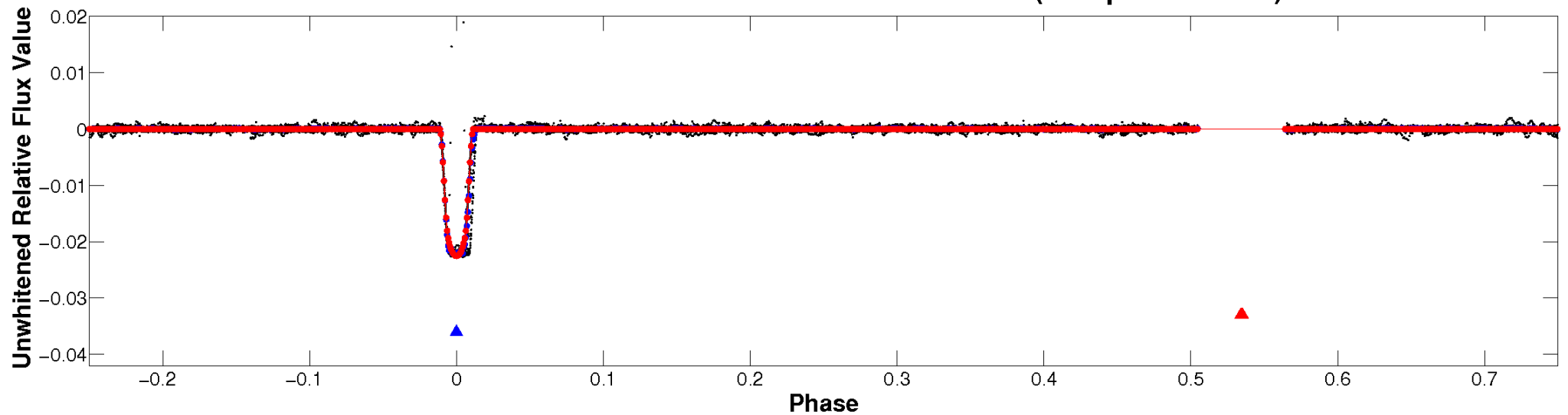
ALT Odd/Even

TCE 008143170-02

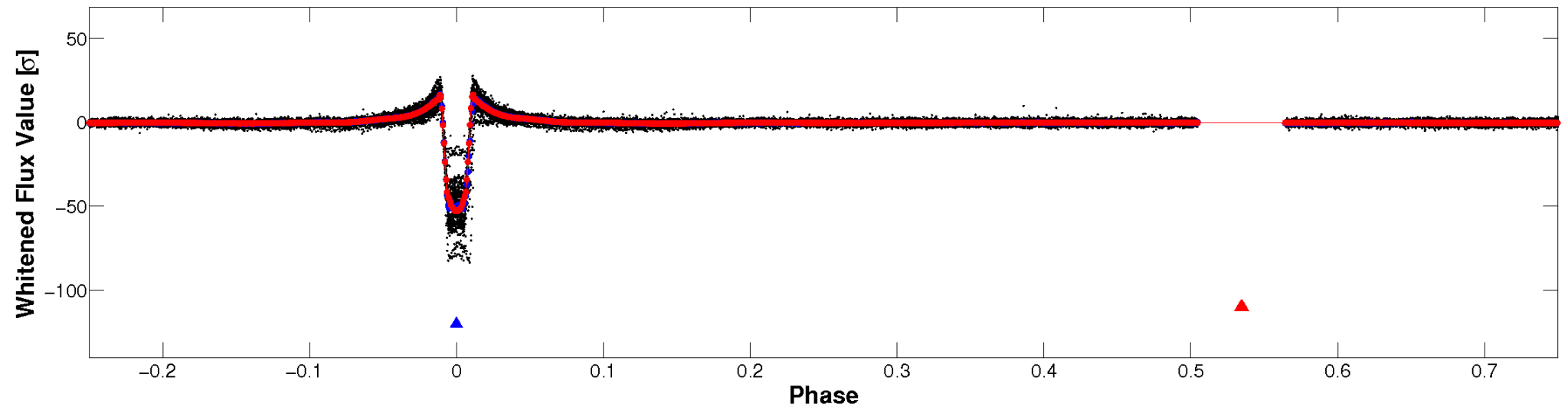


Non-Whitened Vs. Whitened Light Curve

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

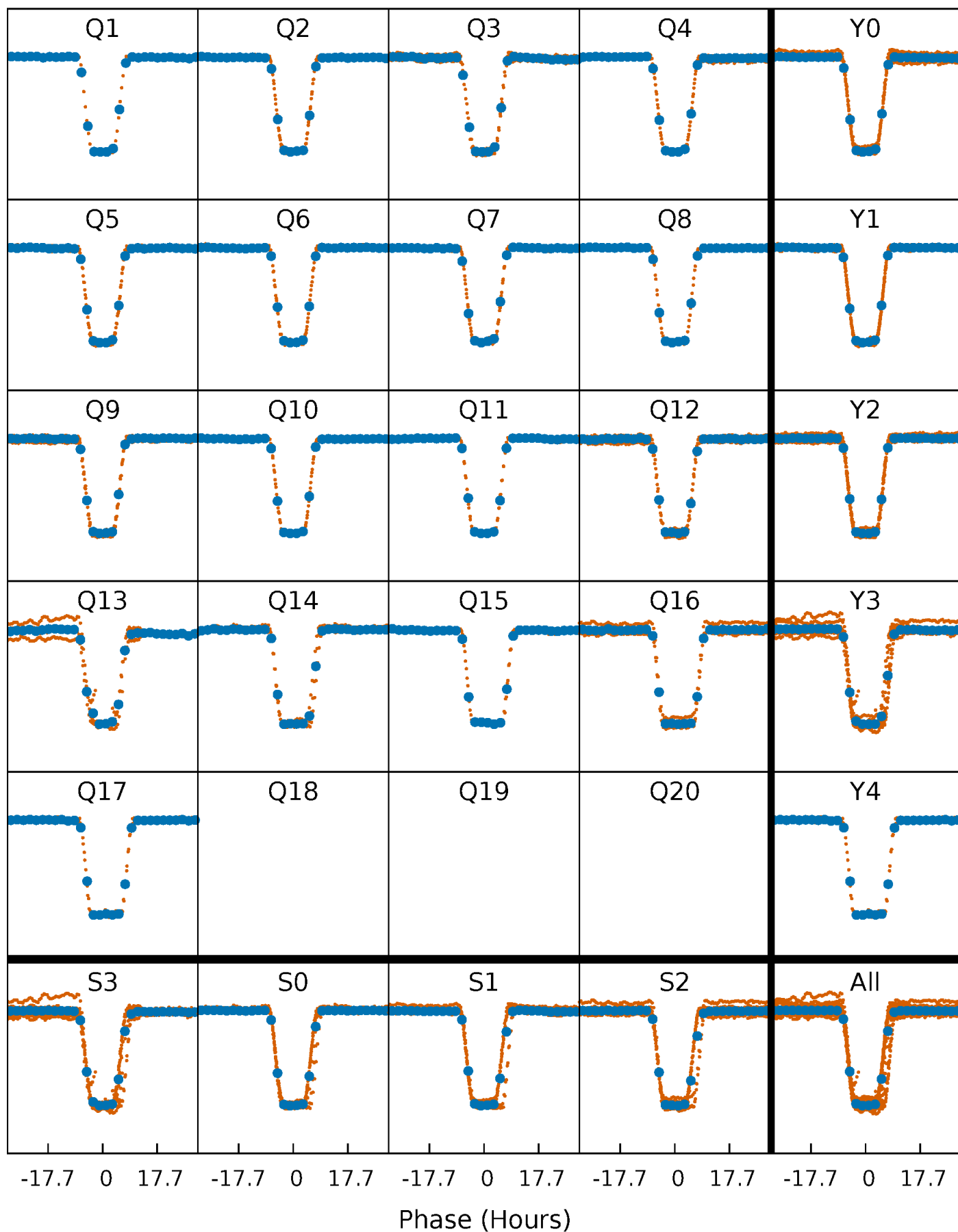


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



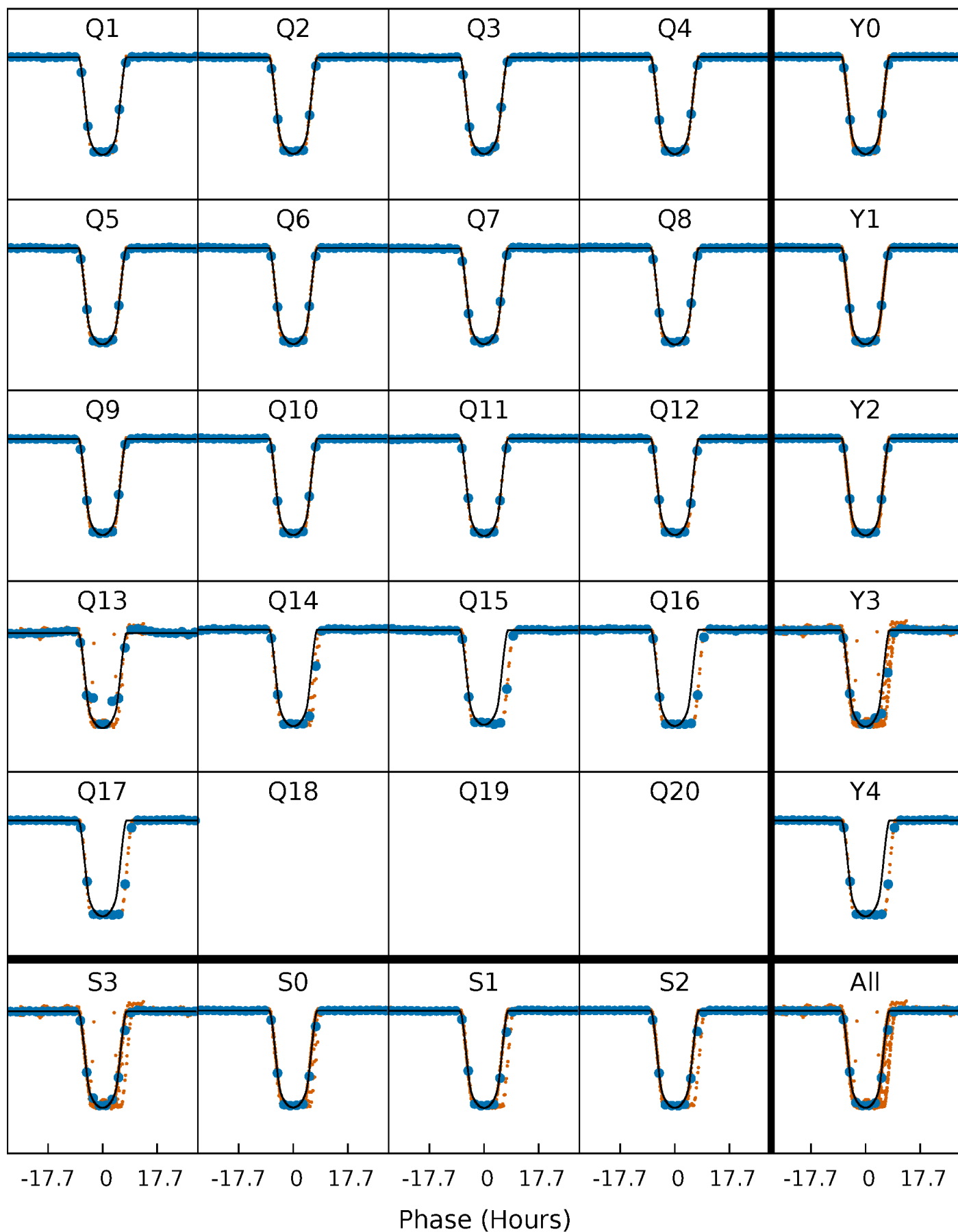
PDC Quarter-Phased Transit Curves

TCE 008143170-02 P= 28.785362 Days $T_0=150.524326$ (BKJD)



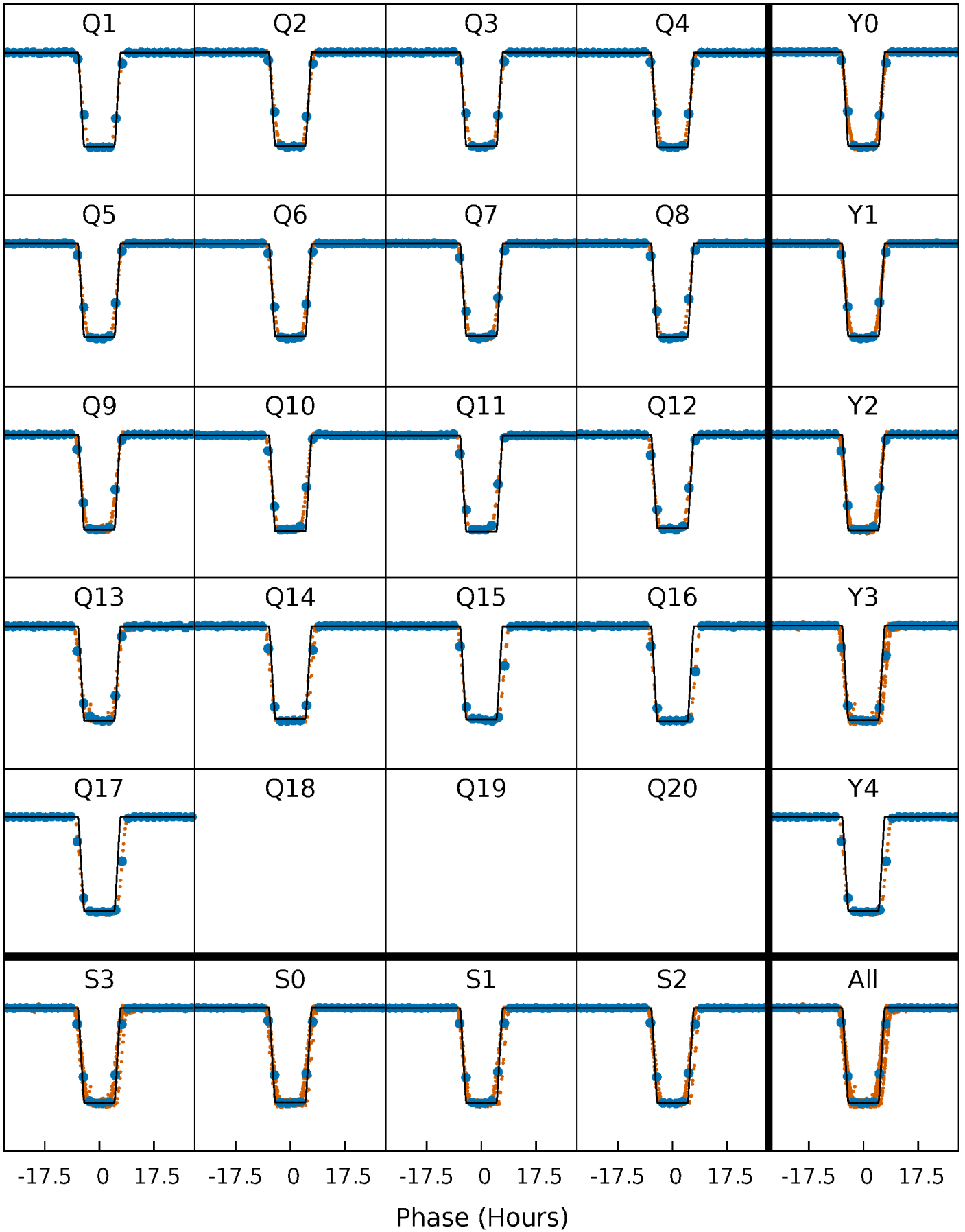
DV Quarter-Phased Transit Curves

TCE 008143170-02 P= 28.785362 Days $T_0=150.524326$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

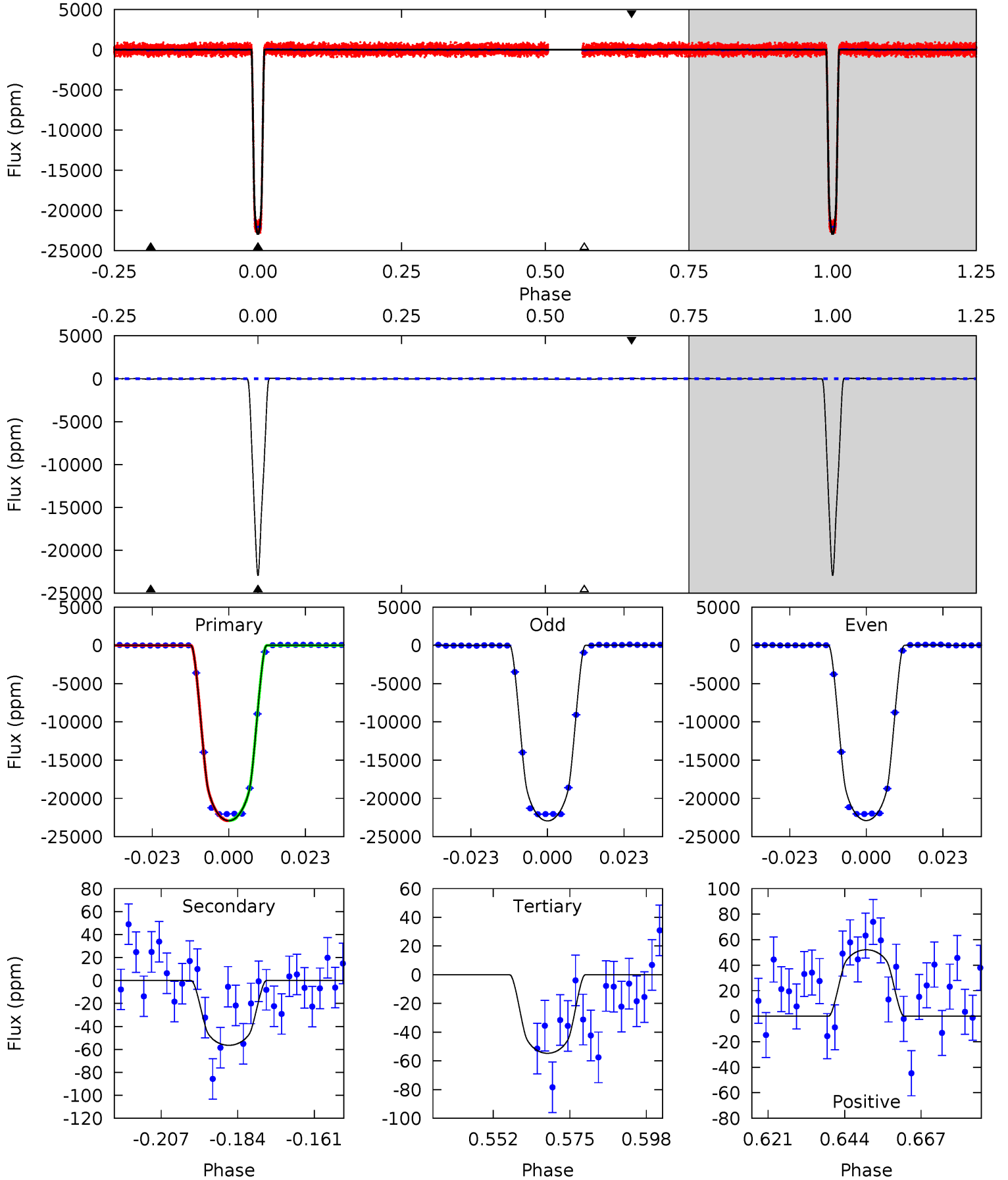
TCE 008143170-02 P= 28.786098 Days $T_0=150.515174$ (BKJD)



DV Model-Shift Uniqueness Test

008143170-02, P = 28.785362 Days, E = 121.738964 Days

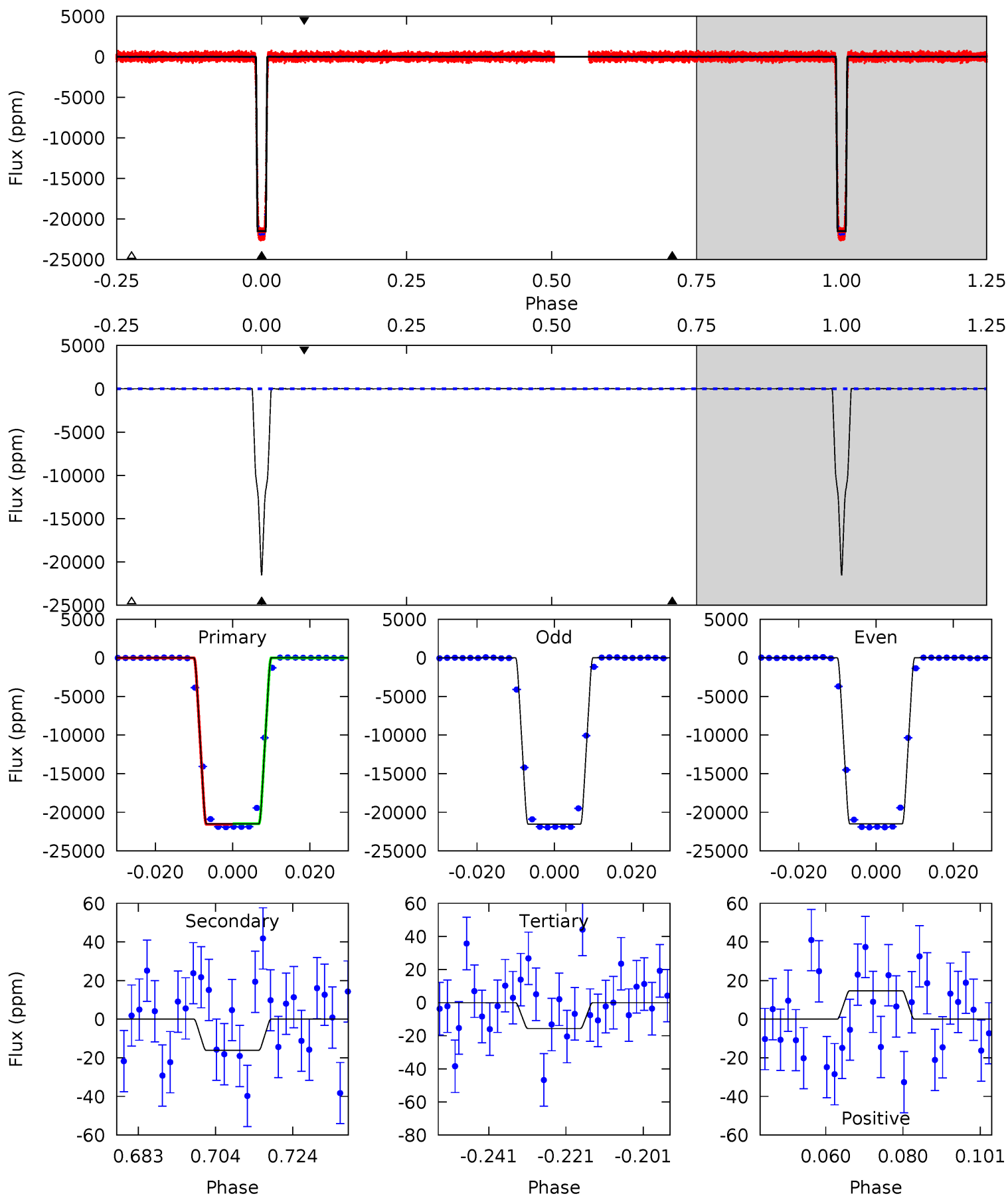
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3589	8.84	8.57	8.16	4.86	2.27	3.06	3581	3581	0.27	0.68	3.97	1.01	0.00	1.73



Alt Model-Shift Uniqueness Test

008143170-02, P = 28.786098 Days, E = 121.729076 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3362	2.52	2.44	2.30	4.89	2.32	0.81	3359	3359	0.08	0.22	3.56	1.01	0.00	6.26



Stellar Parameters For KIC 008143170

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5154^{+108}_{-185}	$3.461^{+0.222}_{-0.148}$	$0.080^{+0.200}_{-0.350}$	$3.981^{+0.721}_{-1.339}$	$1.672^{+0.206}_{-0.617}$	$0.037^{+0.054}_{-0.014}$
	+2%/-4%	+6%/-4%	+250%/-438%	+18%/-34%	+12%/-37%	+144%/-38%
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 008143170-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-56 ± 6	$64.38^{+7.04}_{-12.43}$	1350^{+83}_{-101}	1786^{+163}_{-3389}	$0.367^{+0.145}_{-0.083}$
Alt.	-16 ± 6	$64.87^{+8.10}_{-11.64}$	1351^{+84}_{-107}	-1989^{+109}_{-81}	$0.102^{+0.057}_{-0.044}$

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 $A_{obs} \gg 1.0$

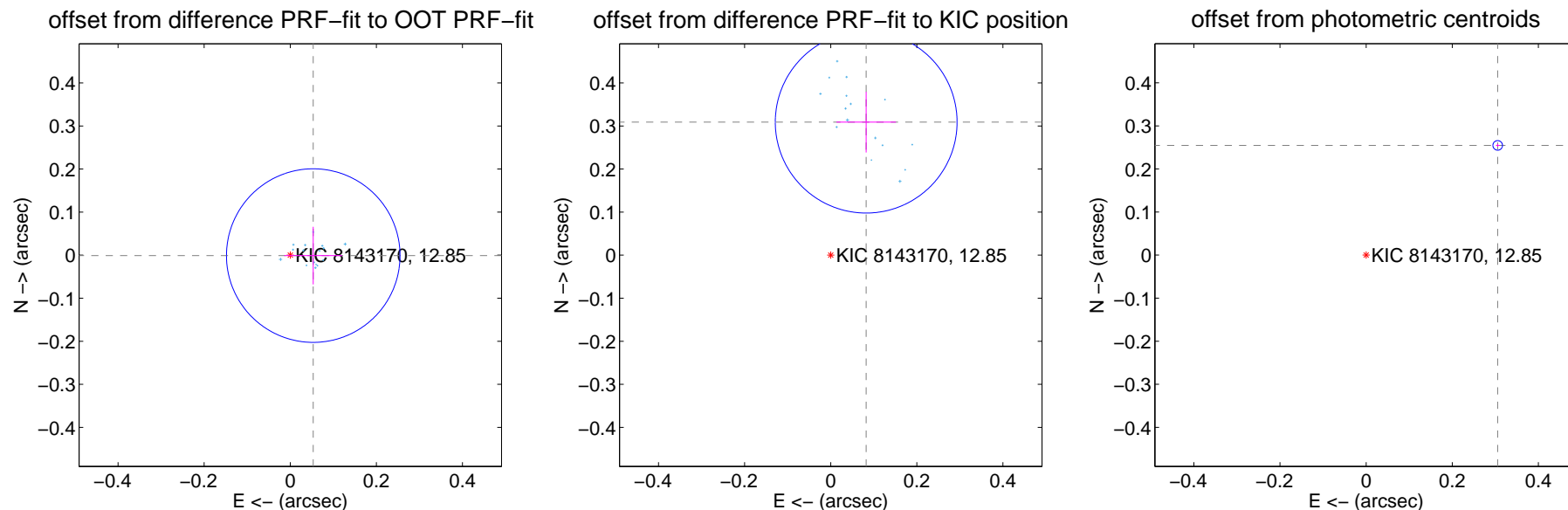
DV Centroid Data

Supplemental centroid analysis for 008143170-02. Kepler magnitude: 12.85. Transit SNR 1234.08

There are 16 quarters with good PRF difference image offsets

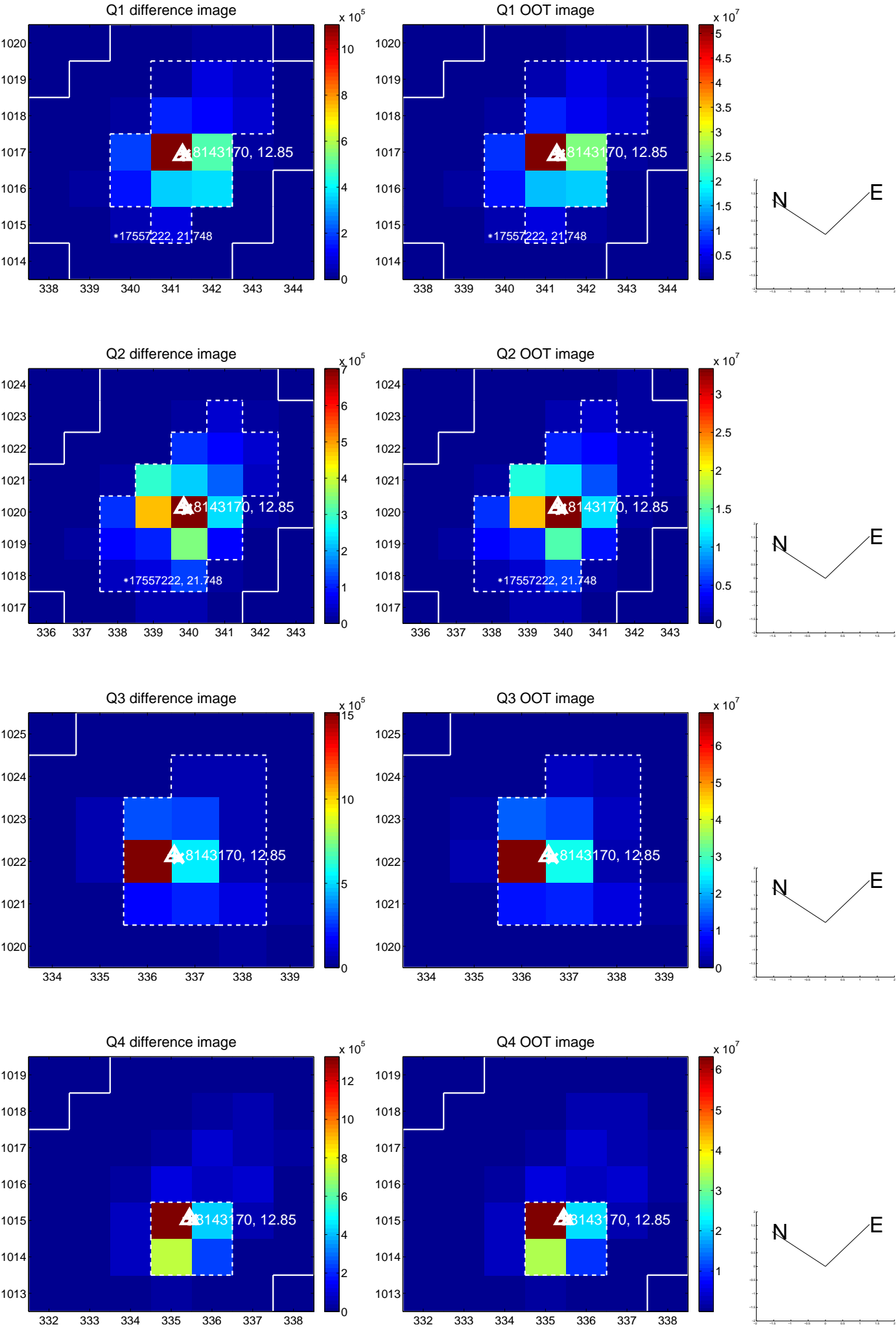
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.053 ± 0.067	0.80	-0.053 ± 0.067	-0.001 ± 0.067
PRF-fit source offset from KIC position	0.320 ± 0.070	4.54	-0.082 ± 0.069	0.309 ± 0.070
photometric centroid source offset	0.40 ± 0.00	107.08	-0.31 ± 0.00	0.25 ± 0.00

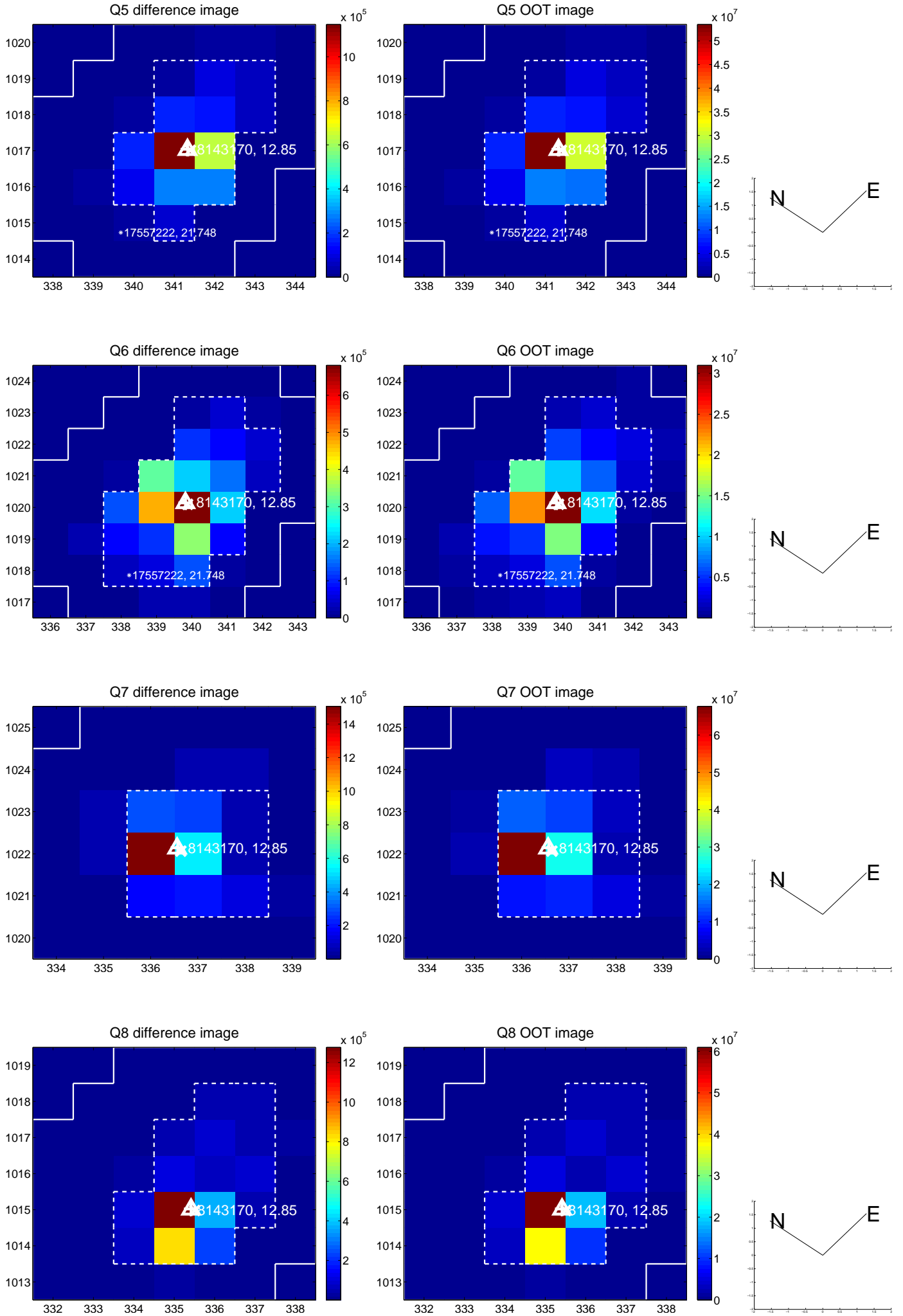


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

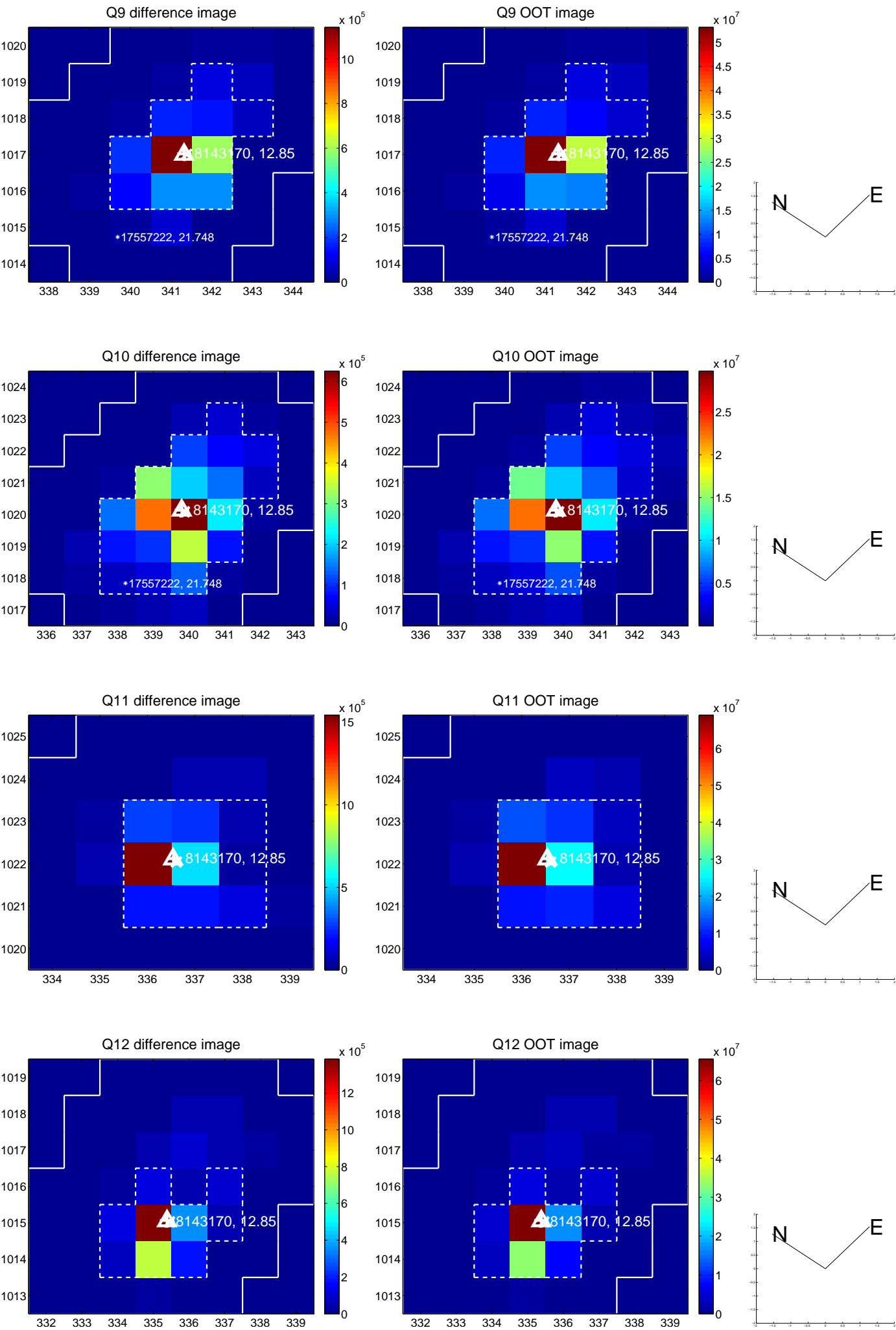
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



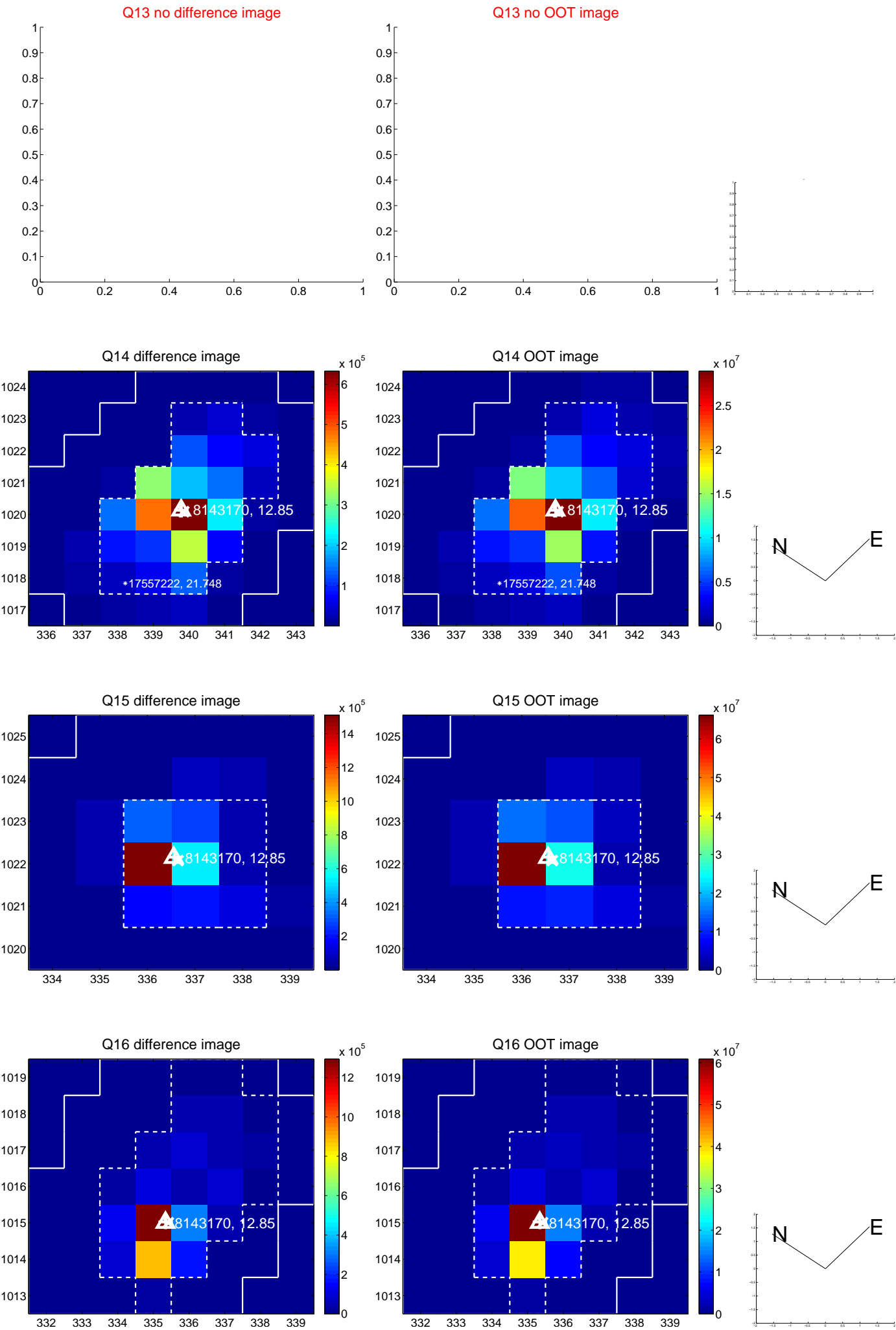
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



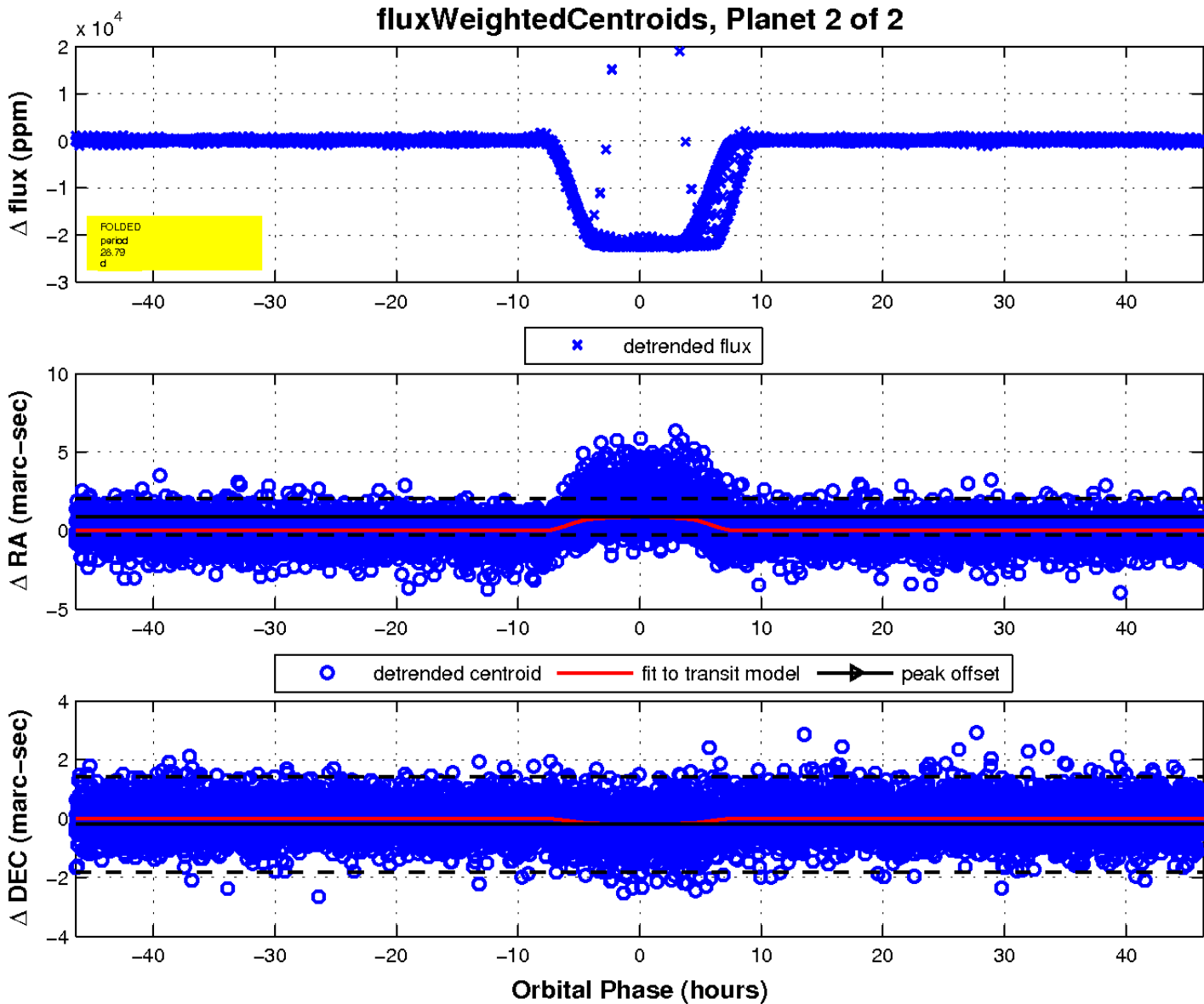
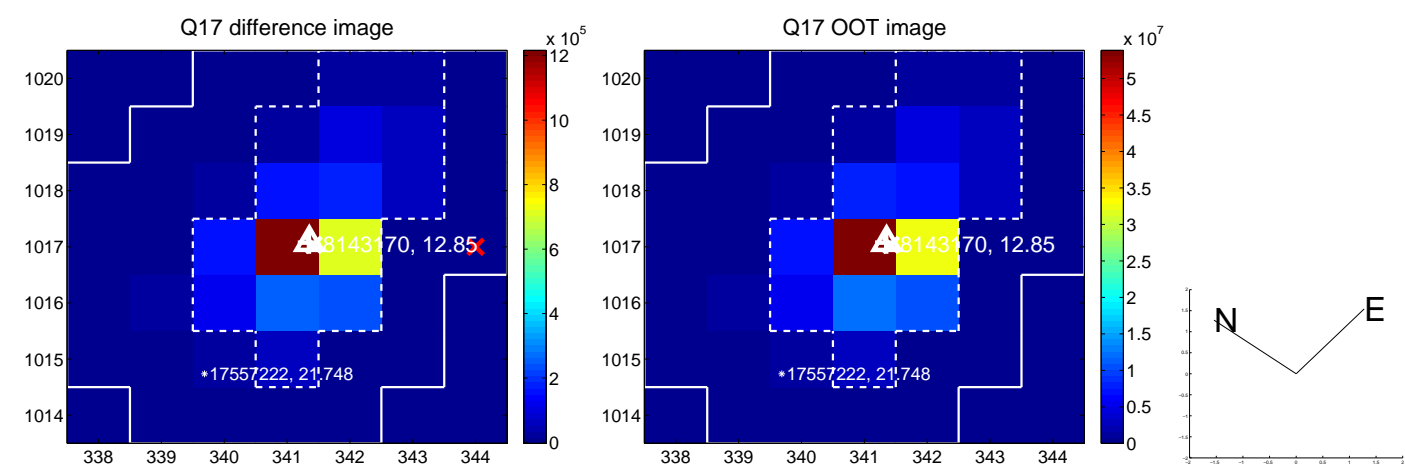
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

