

KIC 006859813

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})
006859813-01	OBS	6778.01	10.882426	132.676482	205286.4	5.534	19405.7	10769.4	1.04	6200	64.76	151.21
006859813-02	OBS	No	10.882410	136.492715	7199.1	4.347	748.0	748.2	1.04	6200	15.96	151.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006859813-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
006859813-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

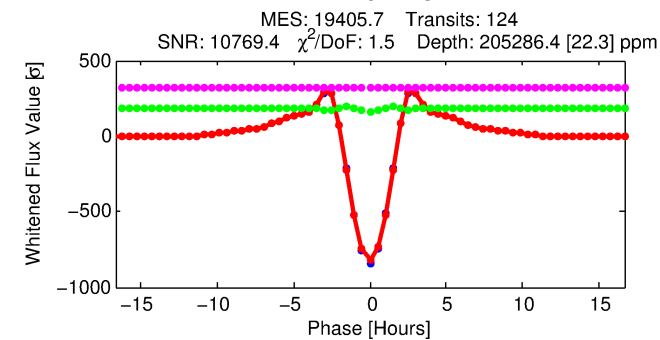
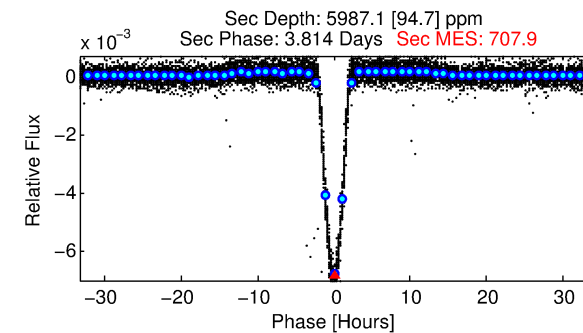
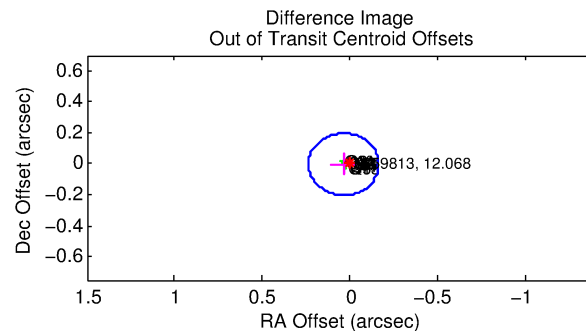
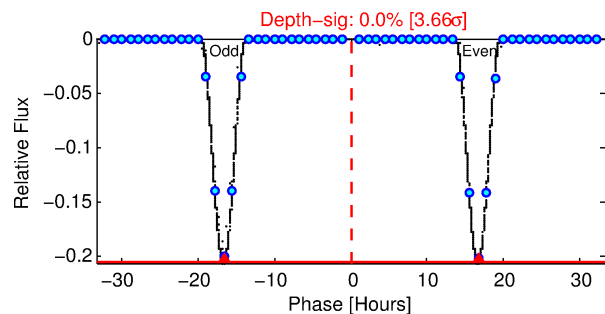
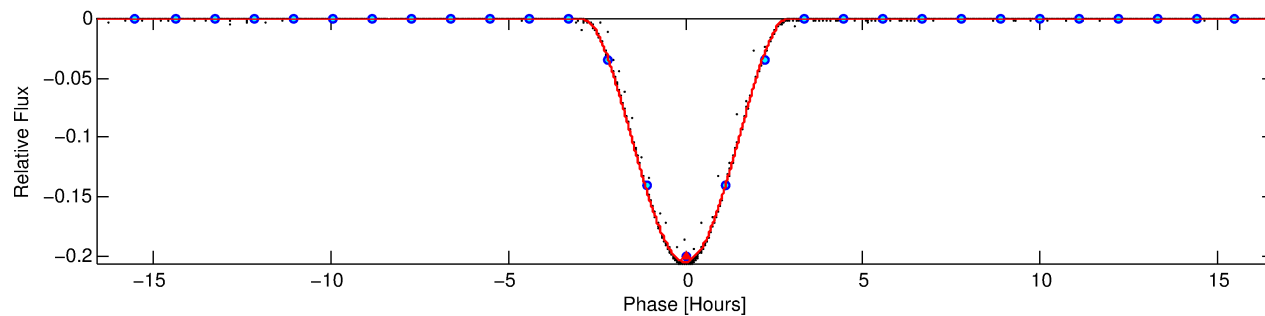
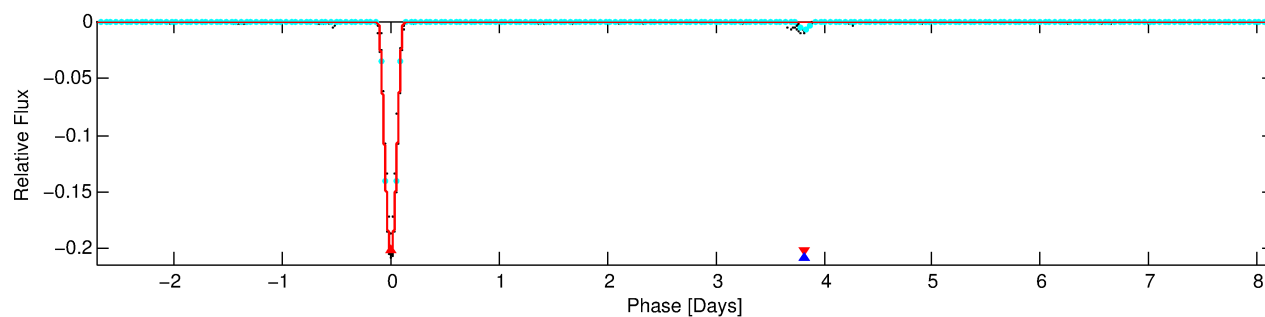
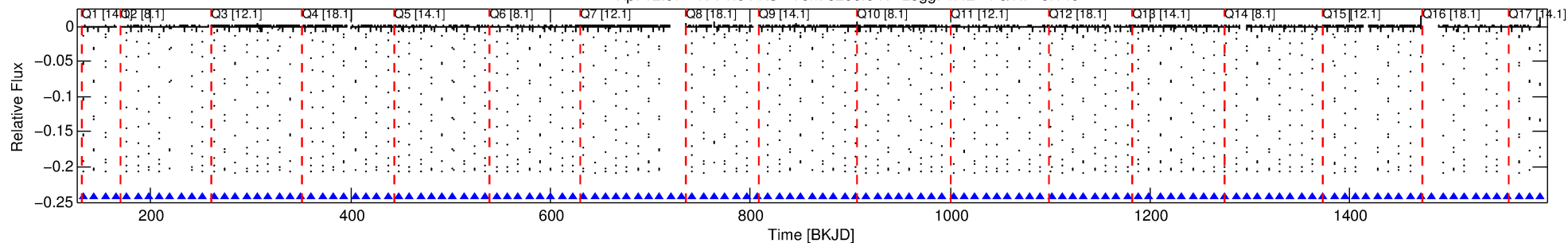
Ephemeris Match Information For 006859813-01

No Significant Match Found

DV One-Page Summary

KIC: 6859813 Candidate: 1 of 2 Period: 10.882 d
KOI: K06778.01 Corr: 0.999

Kp: 12.07 R*: 1.04 Rs Teff: 6200.0 K Logg: 4.42 Fe/H: -0.140



DV Fit Results:

Period = 10.88243 [0.00000] d
Epoch = 132.6765 [0.0000] BKJD
Rp/R* = 0.5679 [0.0046]
a/R* = 20.16 [0.02]
b = 0.81 [0.01]
Seff = 151.21 [45.64]
Teff = 894 [67] K
Rp = 64.76 [14.08] Re
a = 0.0978 [0.0183] AU
Ag = 7.51 [2.09] [3.12σ]
Teffp = 2289 [70] K [14.39σ]

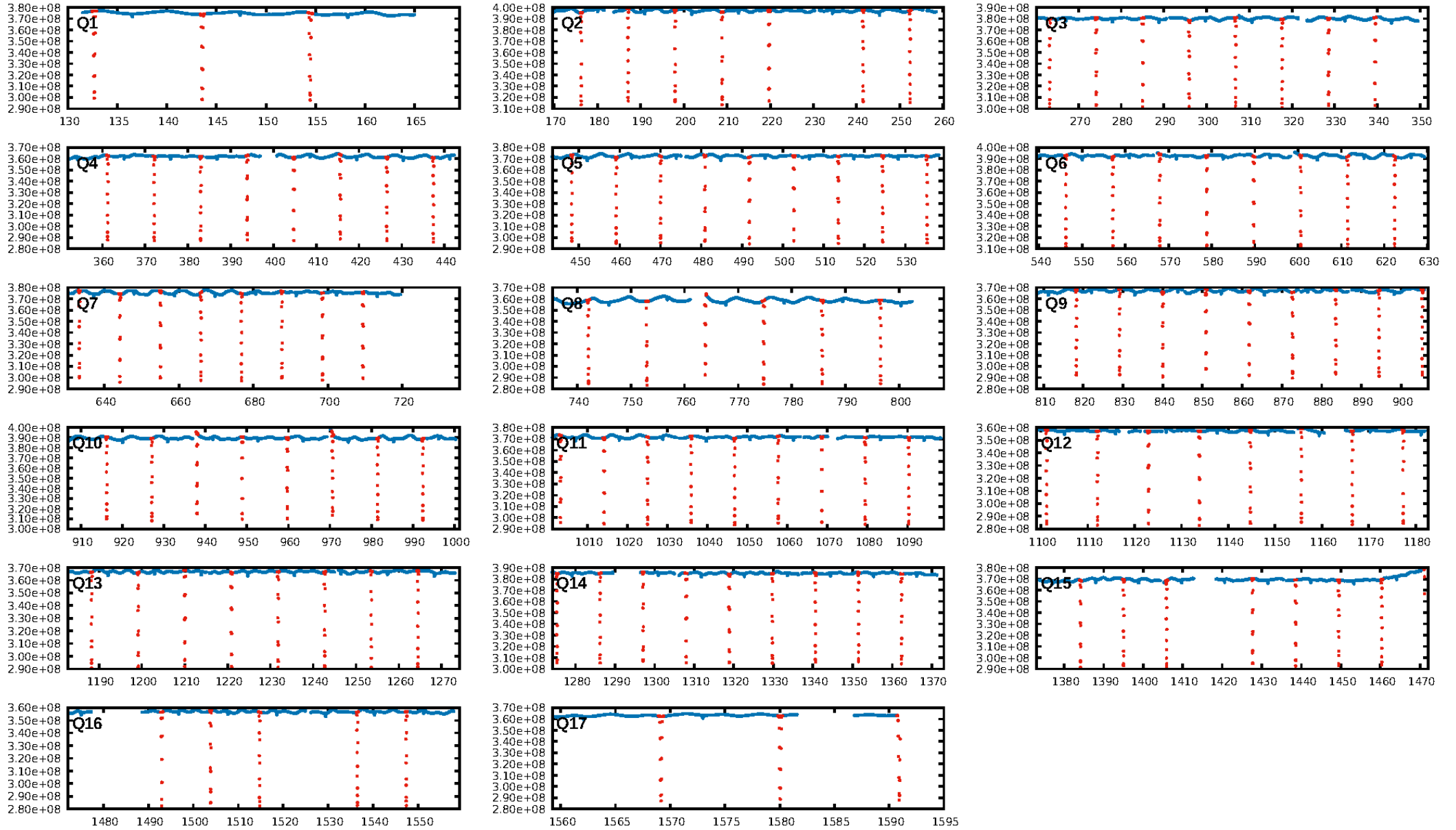
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [118/118]
GhostDiagnostic-chr: 8.569
Centroid-sig: 0.0%
Centroid-so: 0.120 arcsec [527.88σ]
OotOffset-rm: 0.037 arcsec [0.56σ]
KicOffset-rm: 0.197 arcsec [2.90σ]
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]

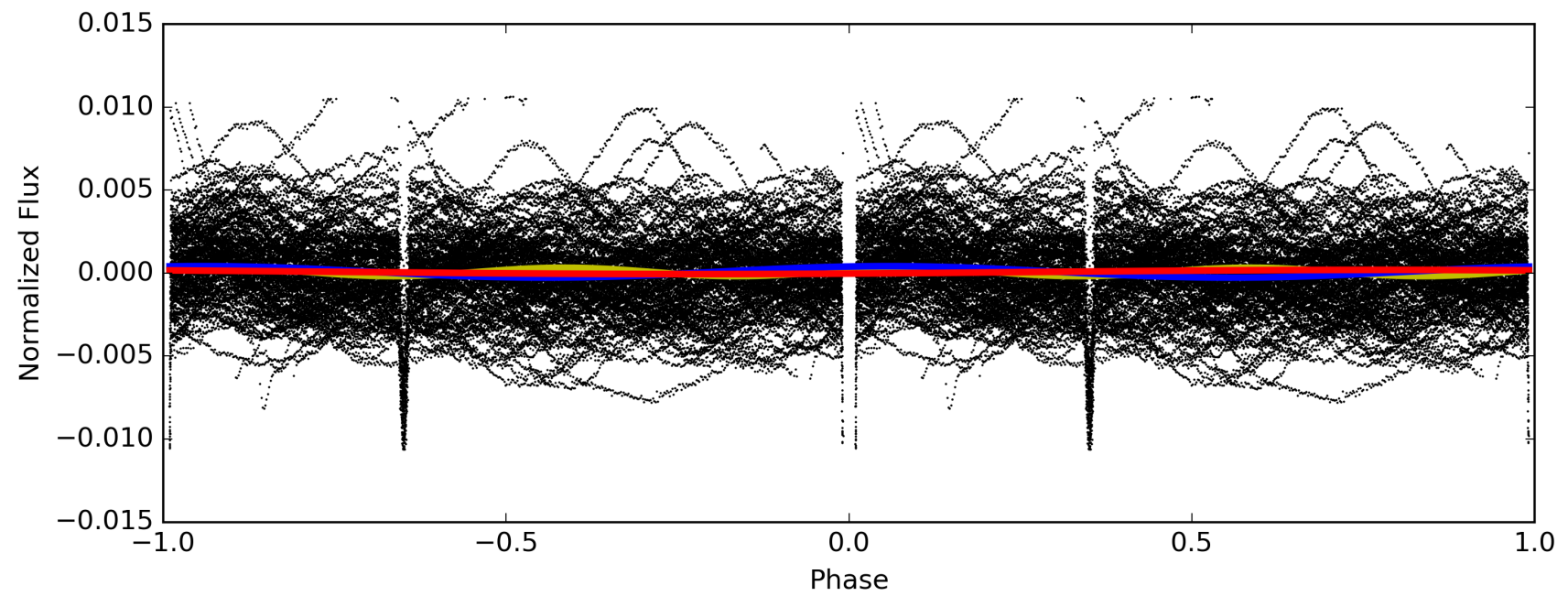
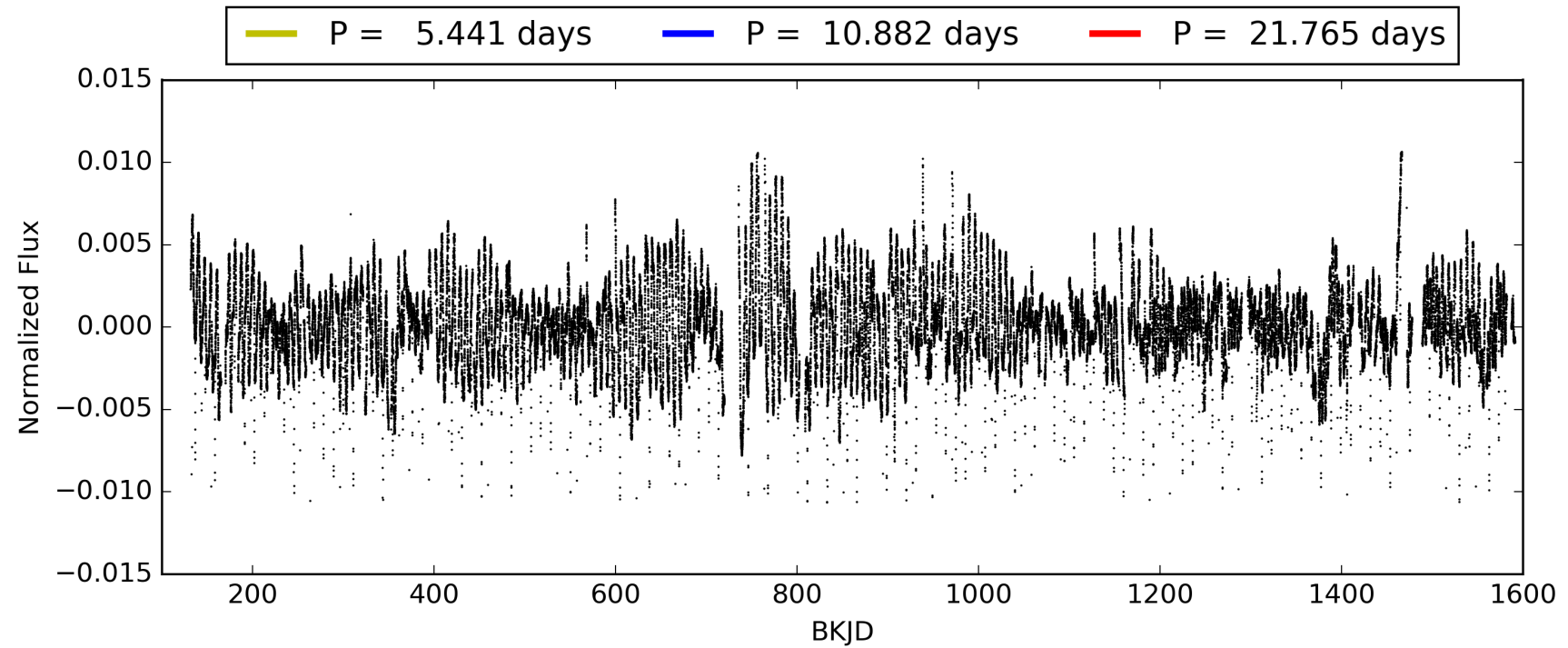
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006859813-01, PDC Light Curves

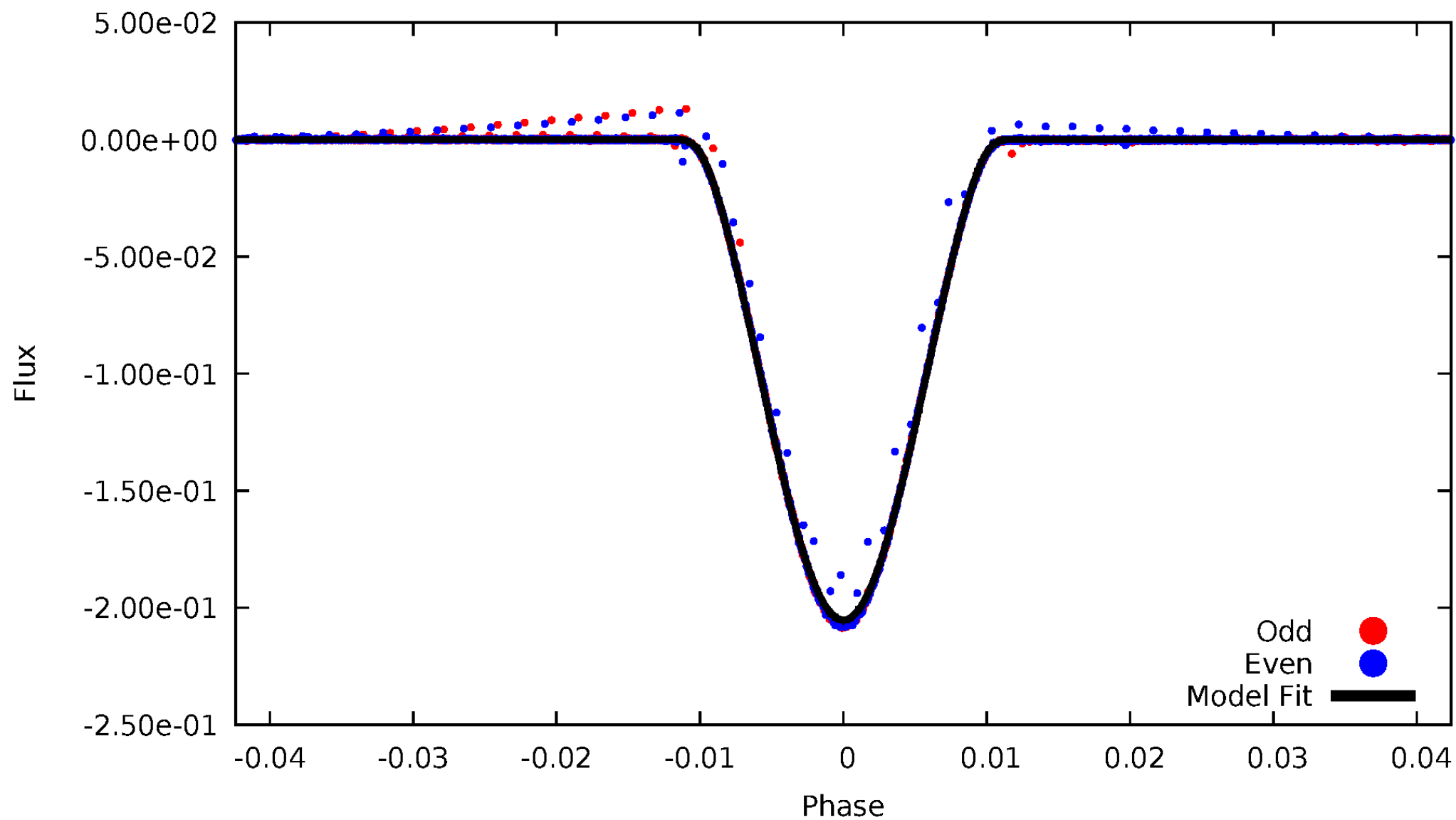


TCE 006859813-01



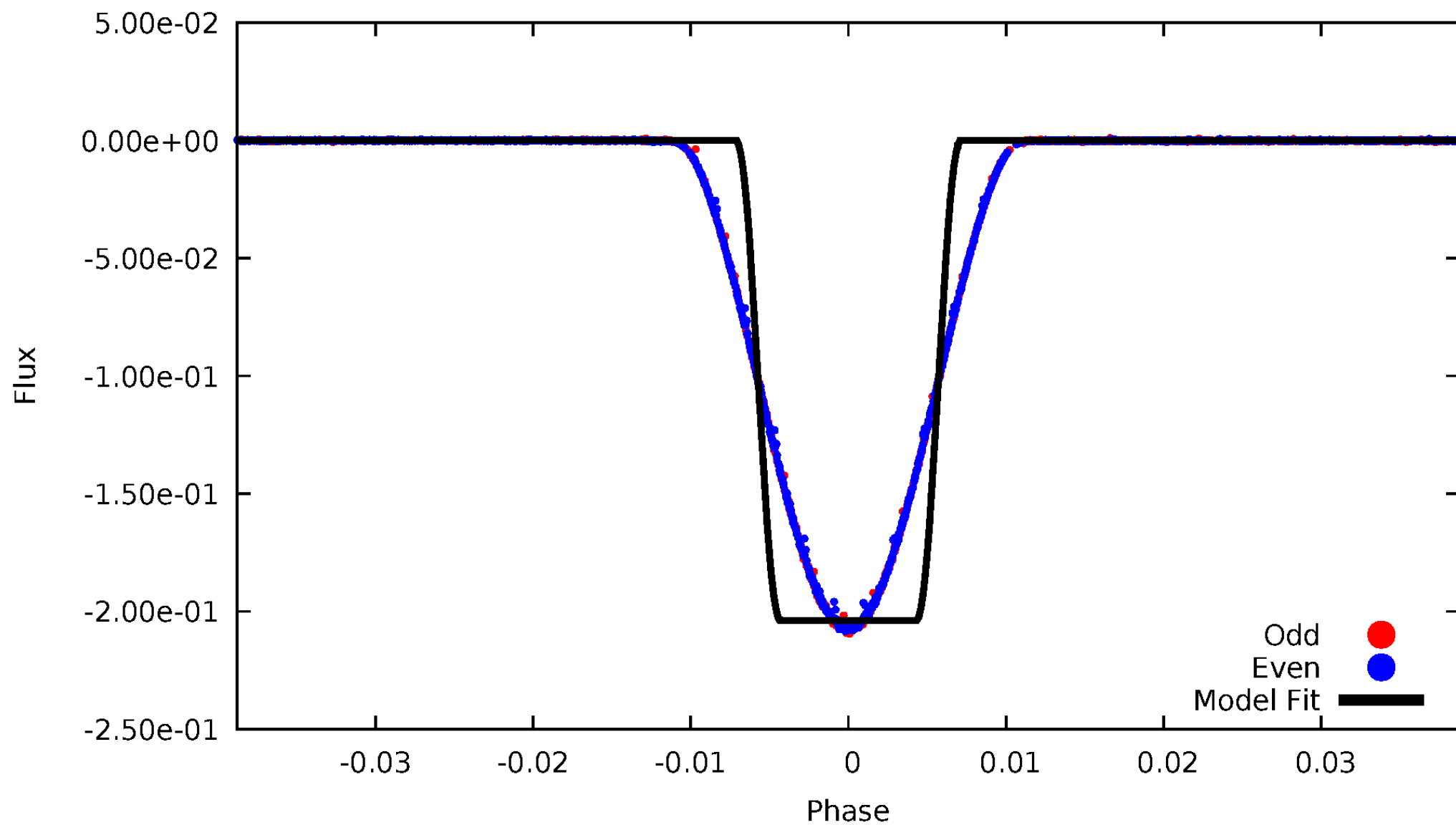
DV Odd/Even

TCE 006859813-01



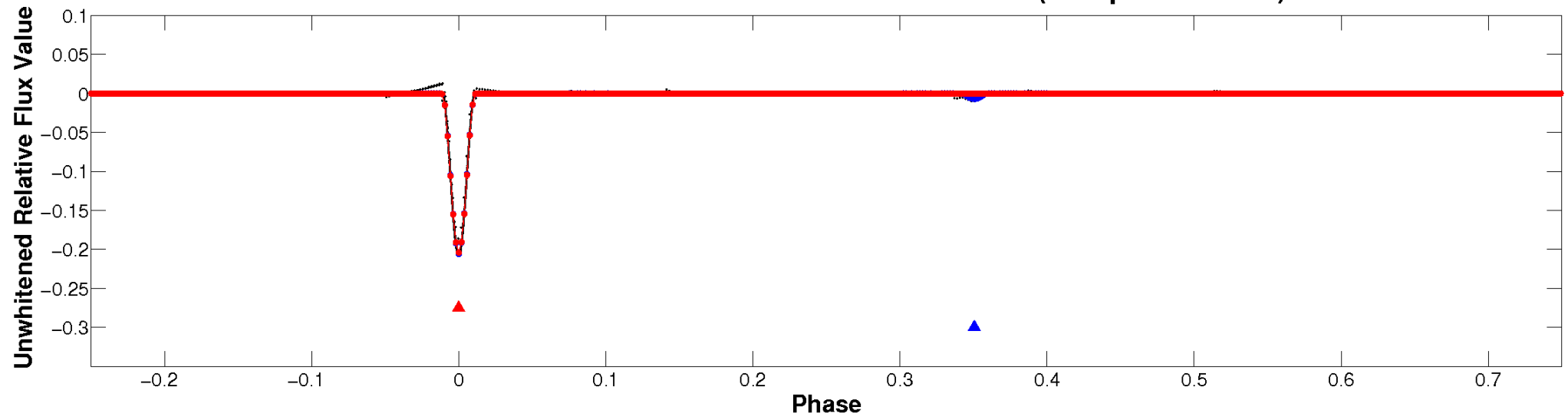
ALT Odd/Even

TCE 006859813-01

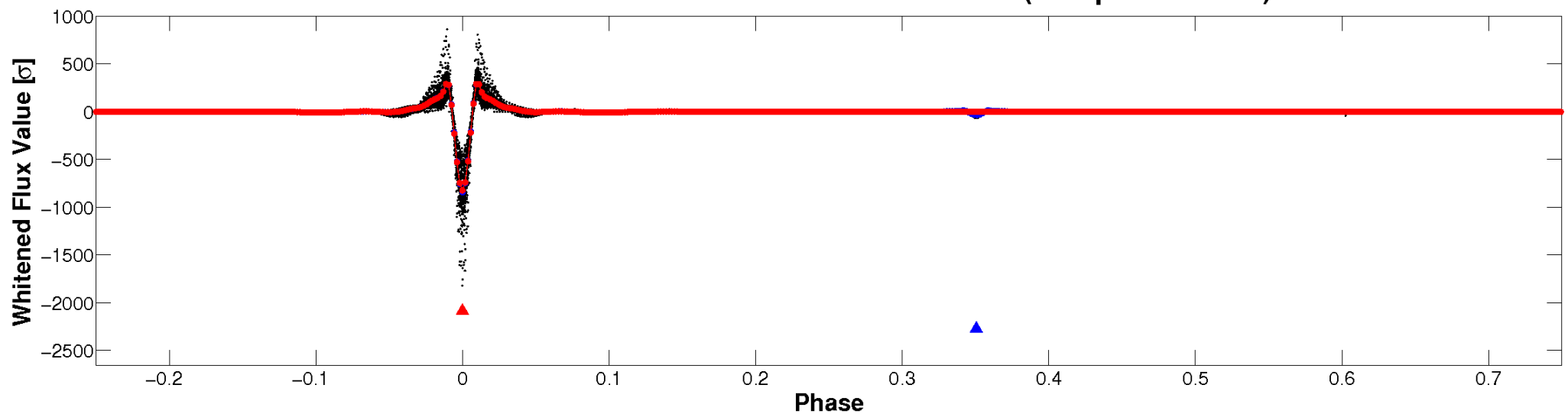


Non-Whitened Vs. Whitened Light Curve

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

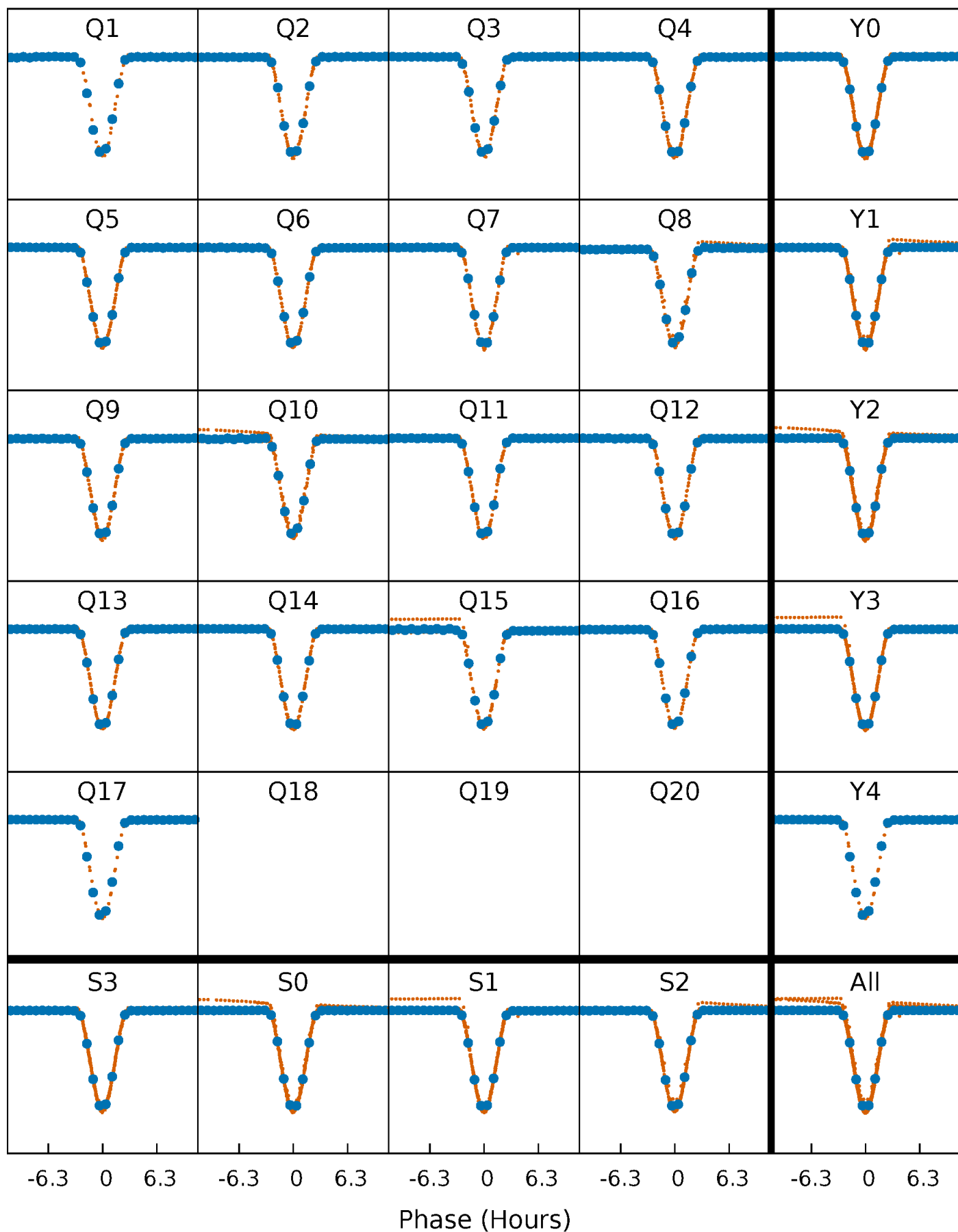


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



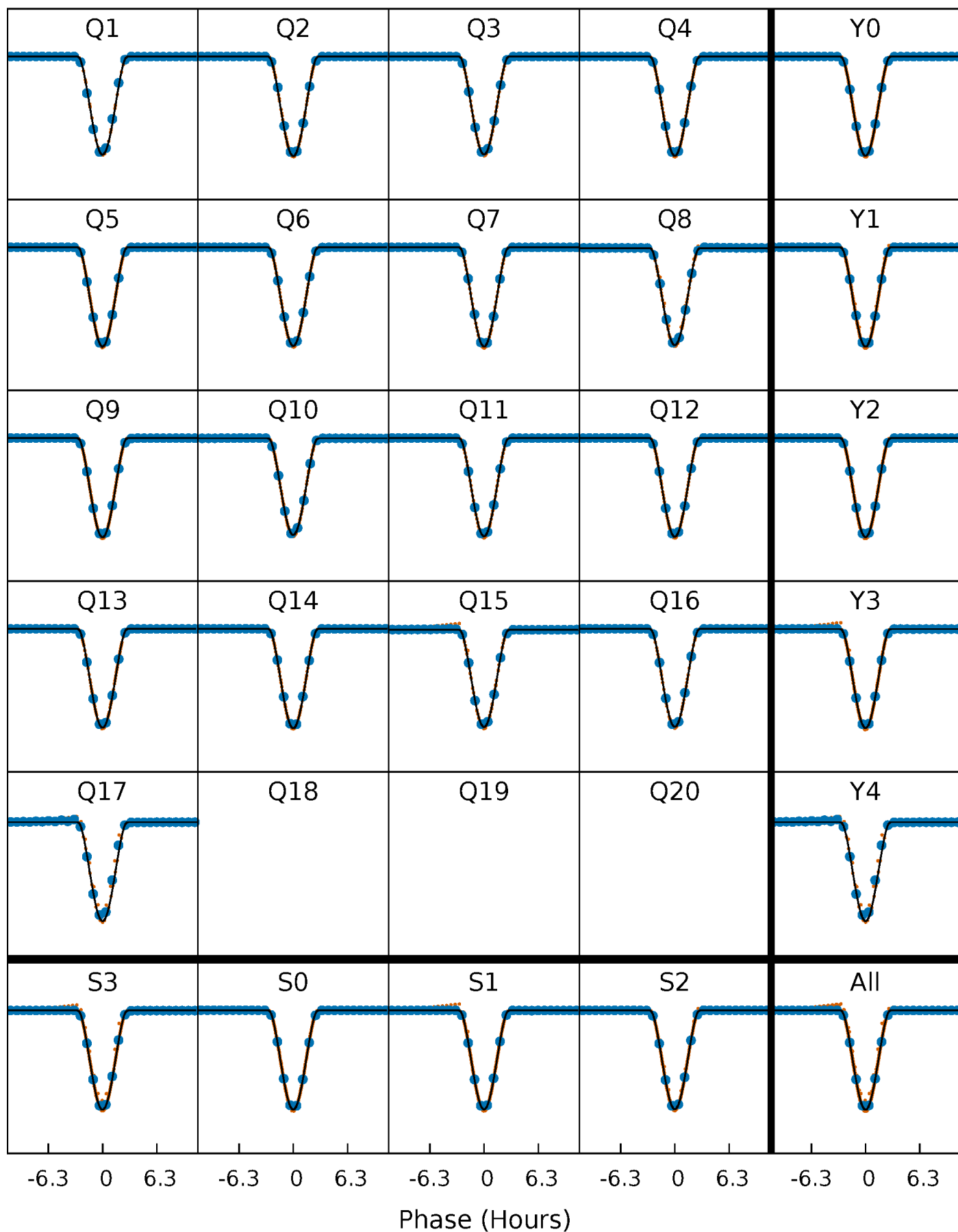
PDC Quarter-Phased Transit Curves

TCE 006859813-01 P= 10.882426 Days $T_0=132.676482$ (BKJD)



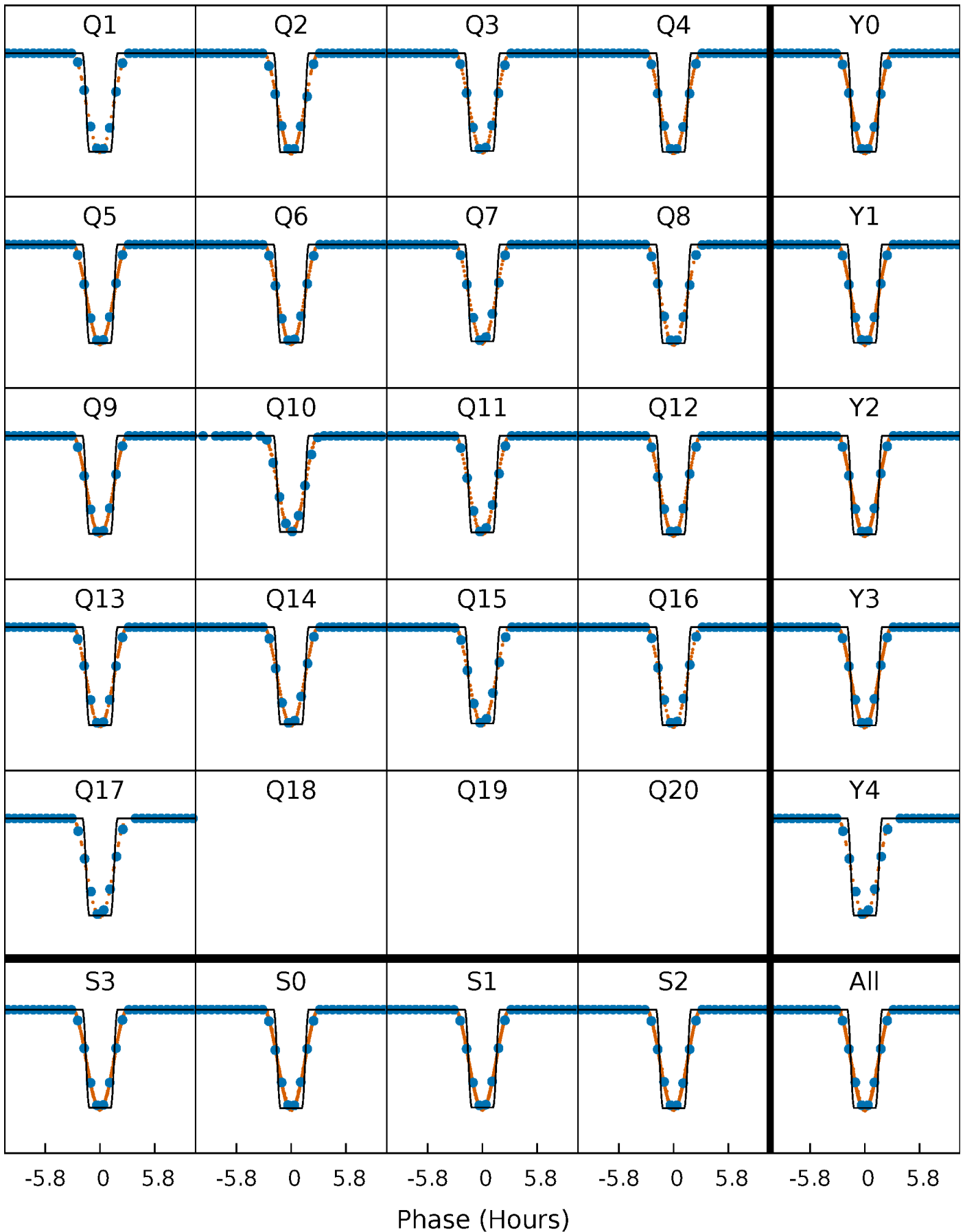
DV Quarter-Phased Transit Curves

TCE 006859813-01 P= 10.882426 Days $T_0=132.676482$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

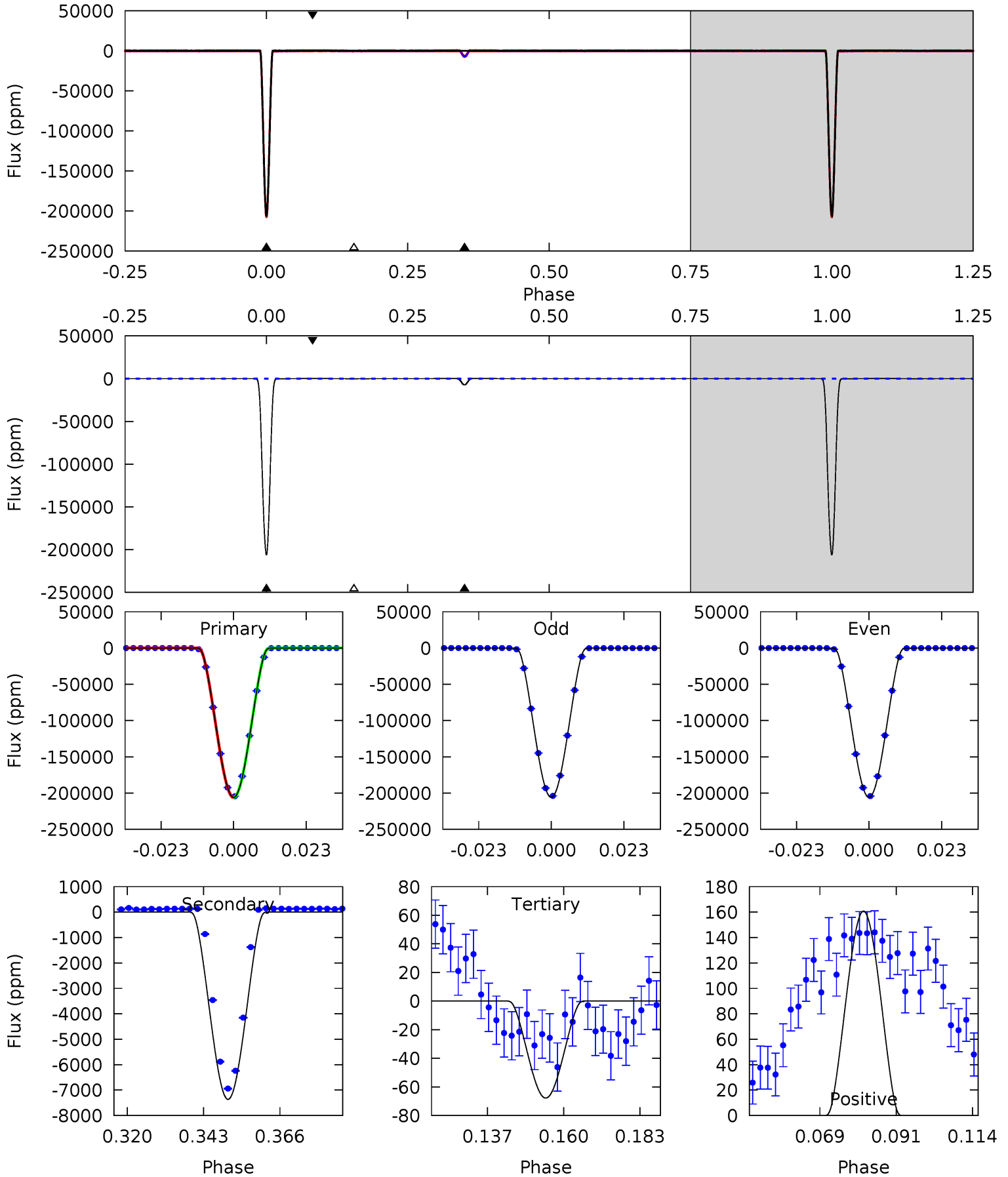
TCE 006859813-01 P= 10.882425 Days $T_0=132.676540$ (BKJD)



DV Model-Shift Uniqueness Test

006859813-01, P = 10.882426 Days, E = 121.794056 Days

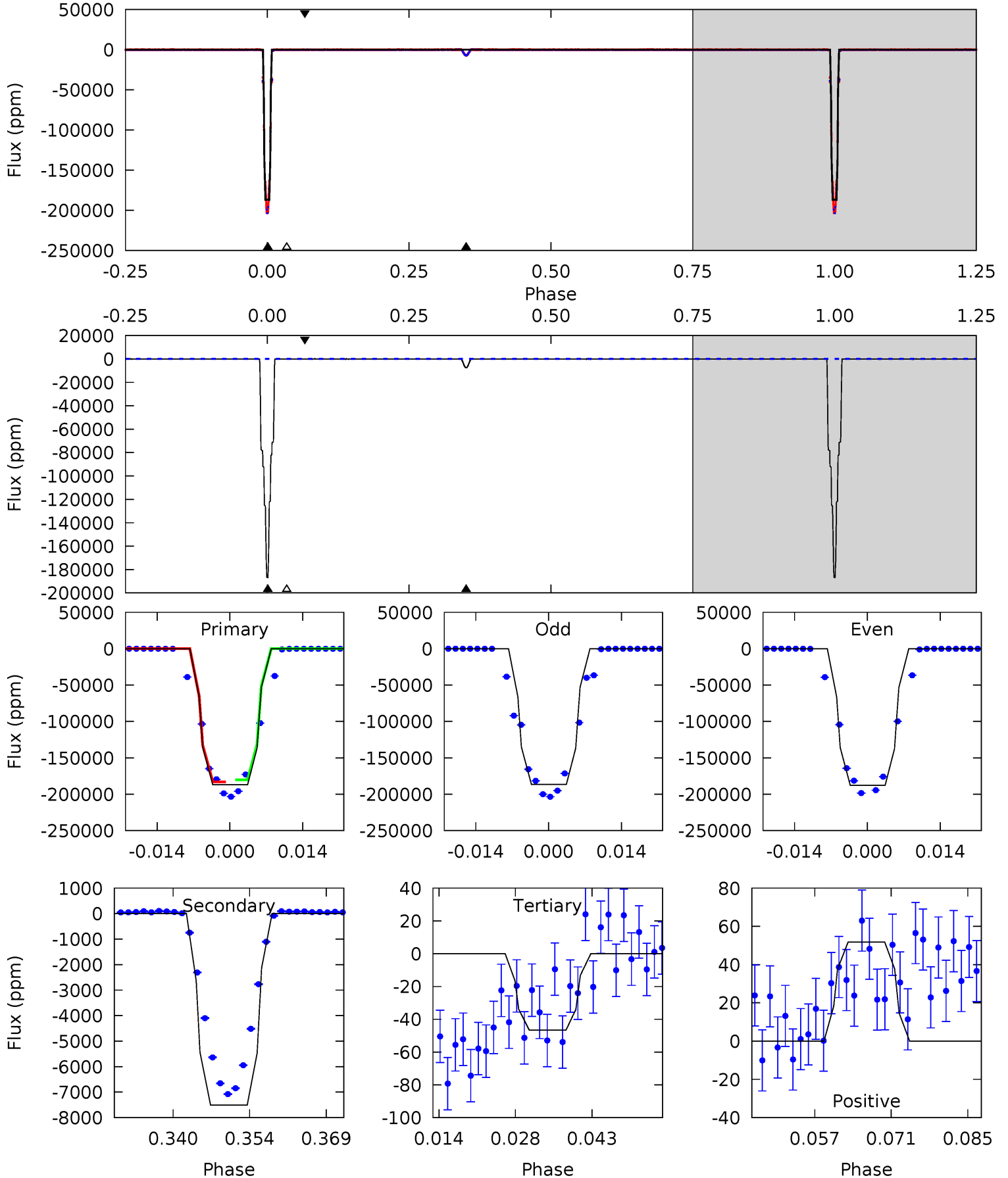
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37754	1350	12.4	29.5	4.87	2.28	9.67	37742	37725	1338	1321	3.80	1.00	0.00	0



Alt Model-Shift Uniqueness Test

006859813-01, P = 10.882425 Days, E = 121.794115 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21340	857.4	5.33	5.92	4.96	2.45	5.19	21335	21334	852.1	851.5	57.4	1.00	0.00	0



Stellar Parameters For KIC 006859813

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6200^{+166}_{-185}	$4.422^{+0.066}_{-0.154}$	$-0.140^{+0.250}_{-0.350}$	$1.045^{+0.227}_{-0.122}$	$1.047^{+0.129}_{-0.129}$	$1.291^{+0.423}_{-0.530}$
	+3%/-3%	+1%/-3%	+179%/-250%	+22%/-12%	+12%/-12%	+33%/-41%
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 006859813-01 / KOI 6778.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7365 ± 5	$65.14^{+7.62}_{-4.35}$	1259^{+74}_{-58}	3044^{+50}_{-51}	$8.957^{+1.274}_{-1.593}$
Alt.	-7509 ± 9	$52.38^{+5.86}_{-4.26}$	1266^{+74}_{-58}	3275^{+56}_{-61}	14^{+2}_{-3}

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 $A_{obs} \gg 1.0$

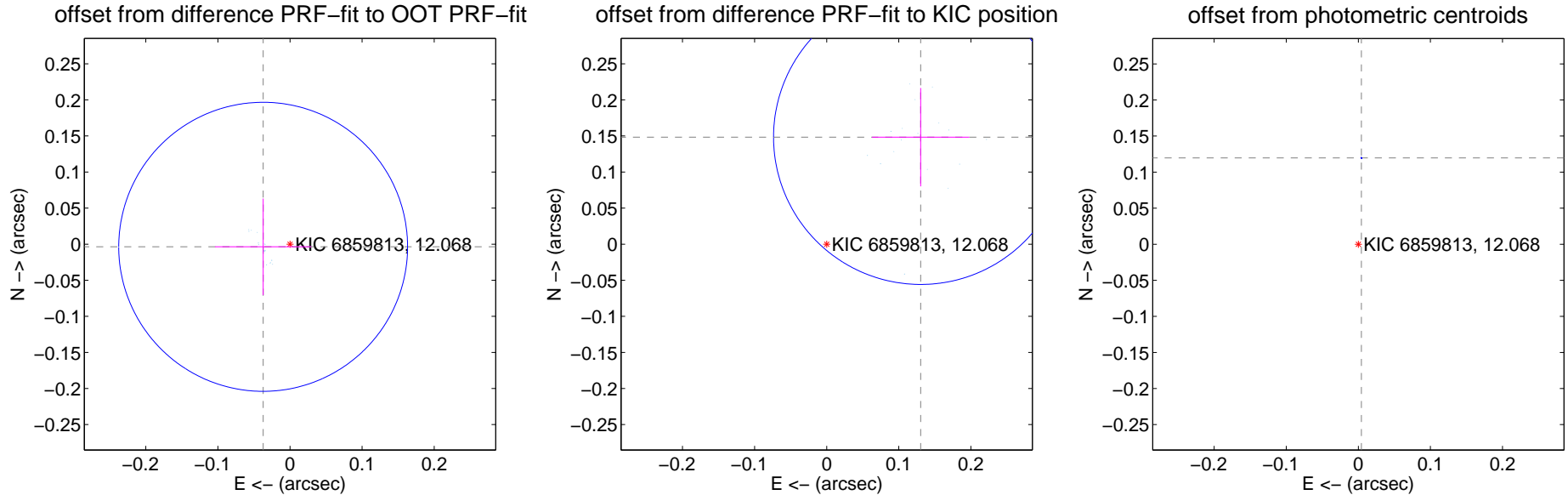
DV Centroid Data

Supplemental centroid analysis for 006859813-01. Kepler magnitude: 12.07. Transit SNR 10769.35

There are 17 quarters with good PRF difference image offsets

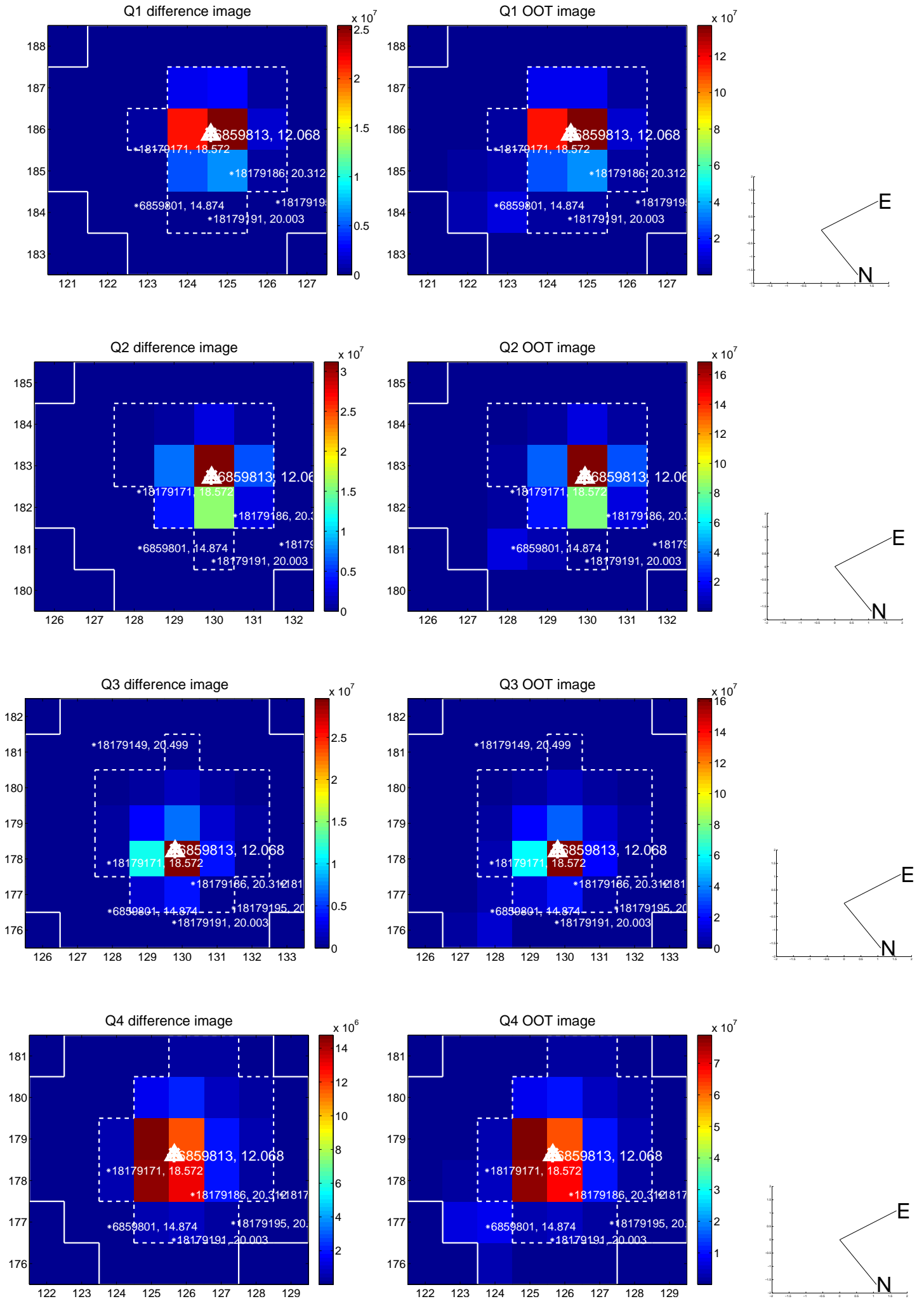
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.037 ± 0.067	0.56	0.037 ± 0.067	-0.004 ± 0.067
PRF-fit source offset from KIC position	0.197 ± 0.068	2.90	-0.130 ± 0.067	0.148 ± 0.068
photometric centroid source offset	0.12 ± 0.00	527.88	-0.00 ± 0.00	0.12 ± 0.00

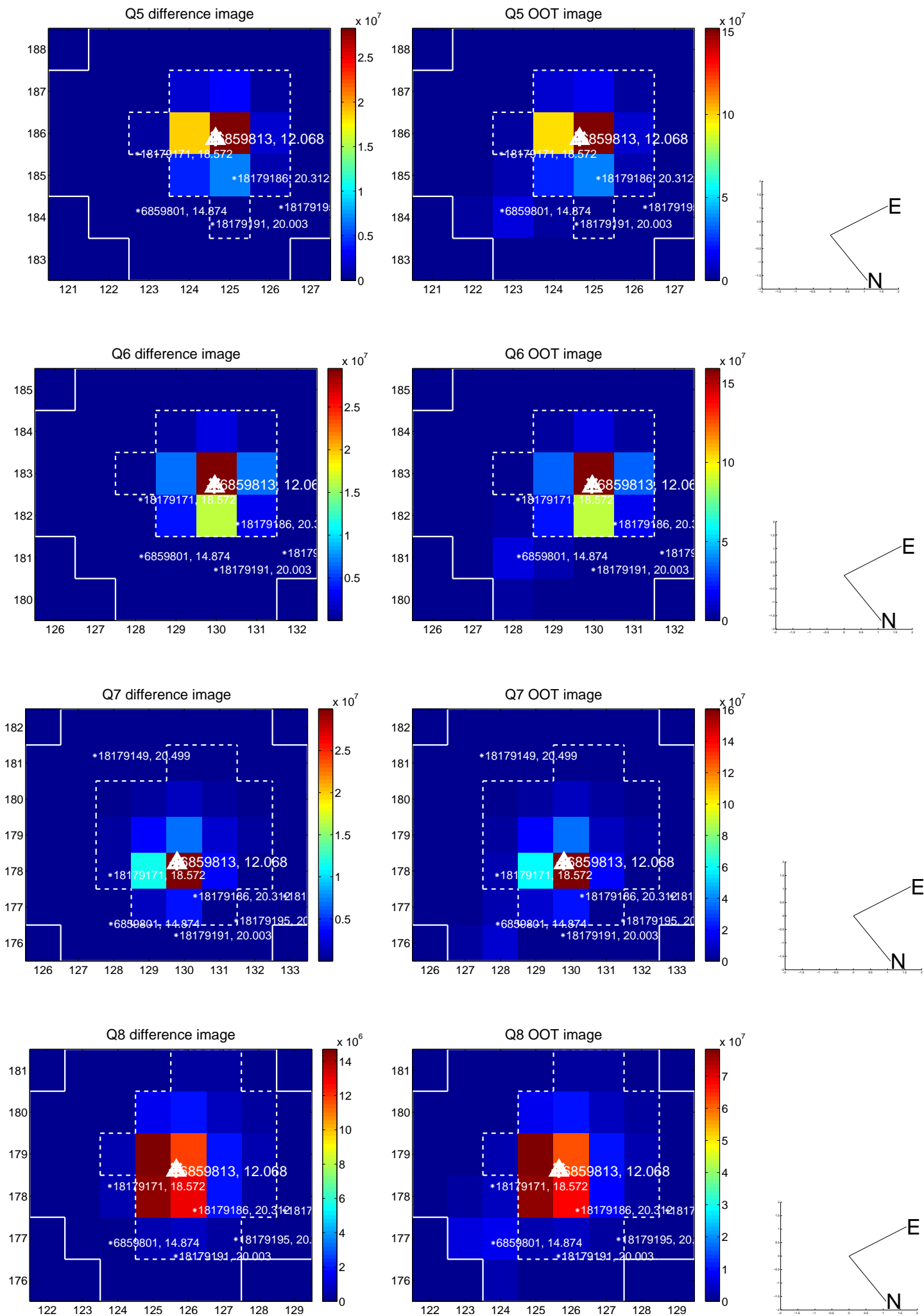


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

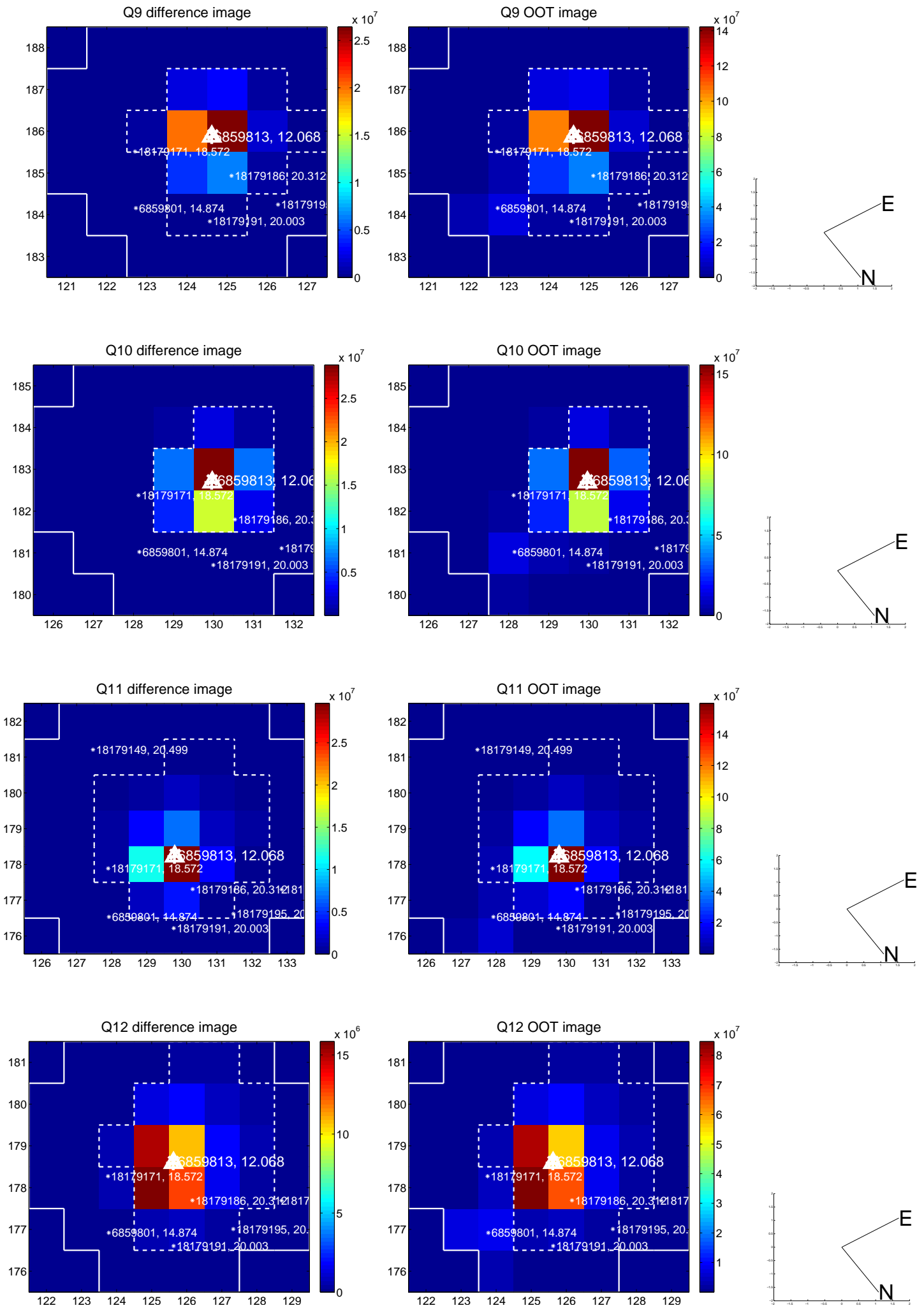
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



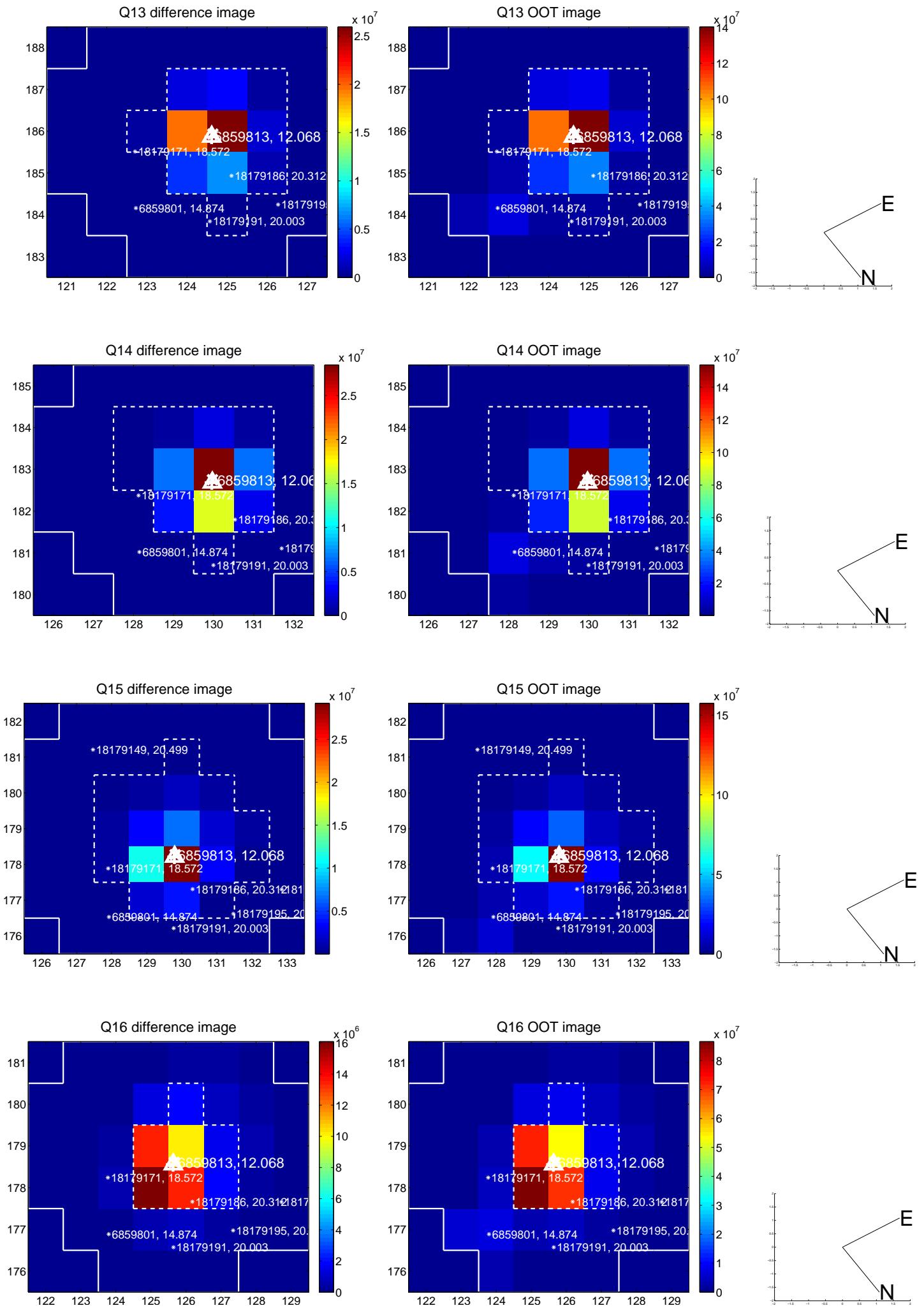
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



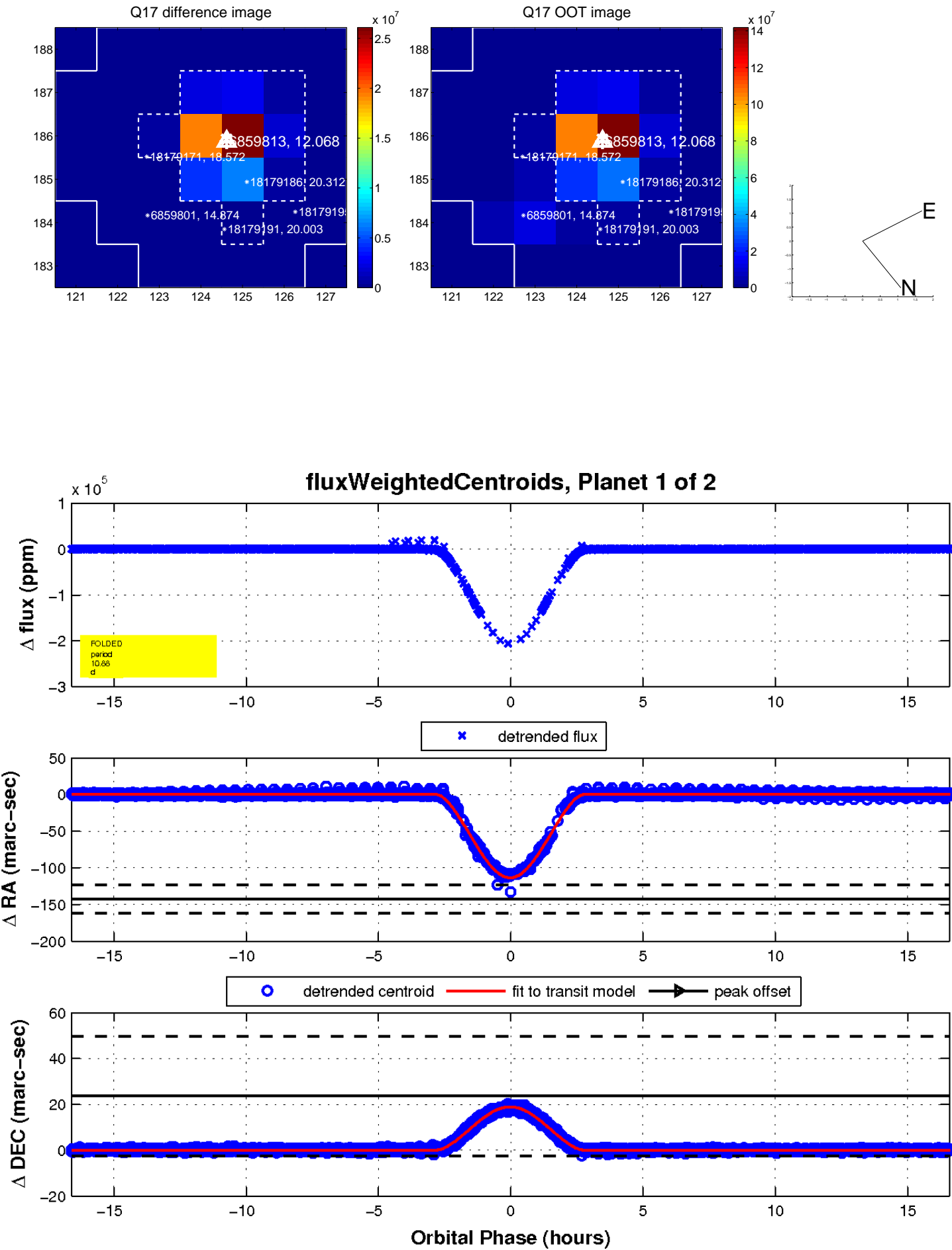
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

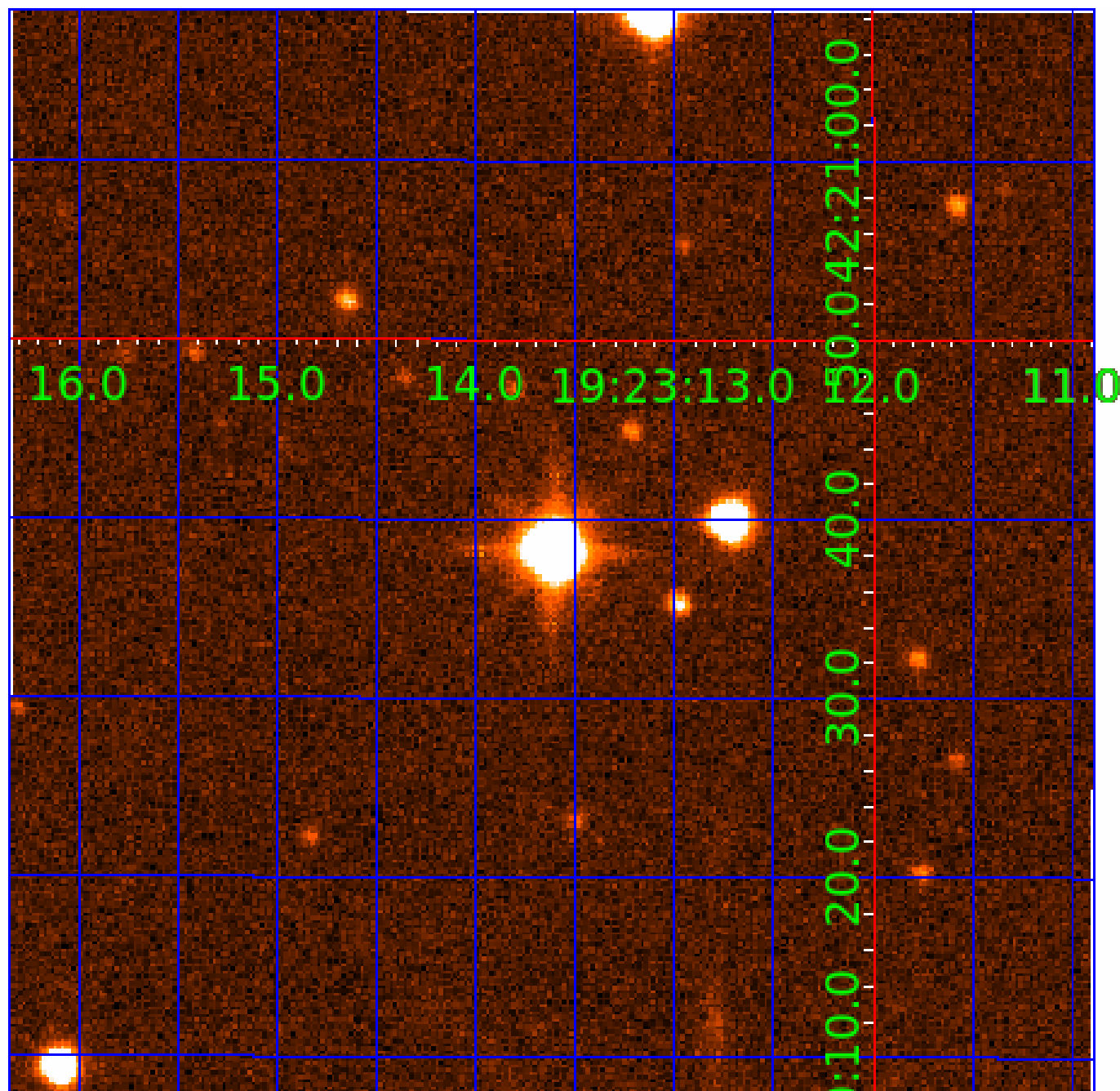


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006859813

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})
006859813-01	OBS	6778.01	10.882426	132.676482	205286.4	5.534	19405.7	10769.4	1.04	6200	64.76	151.21
006859813-02	OBS	No	10.882410	136.492715	7199.1	4.347	748.0	748.2	1.04	6200	15.96	151.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006859813-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
006859813-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

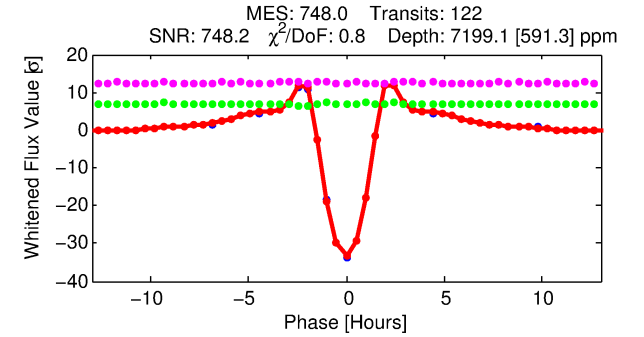
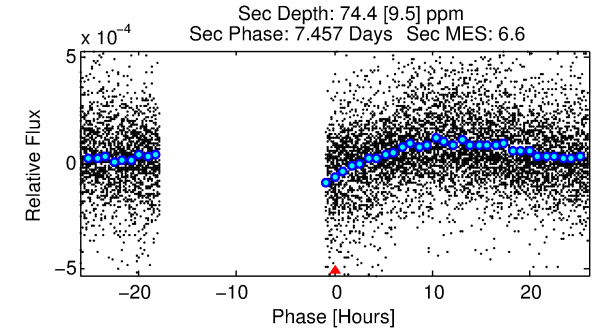
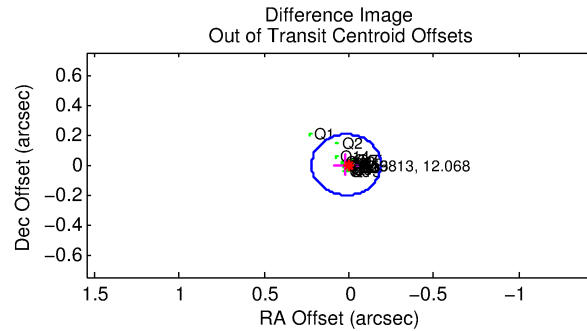
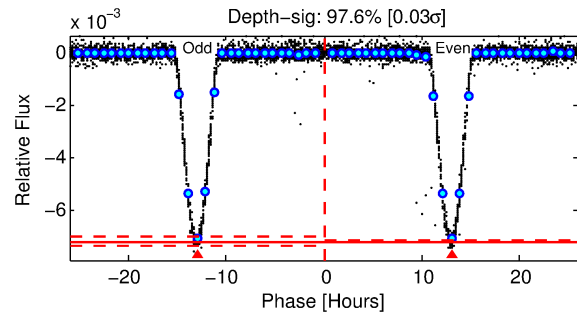
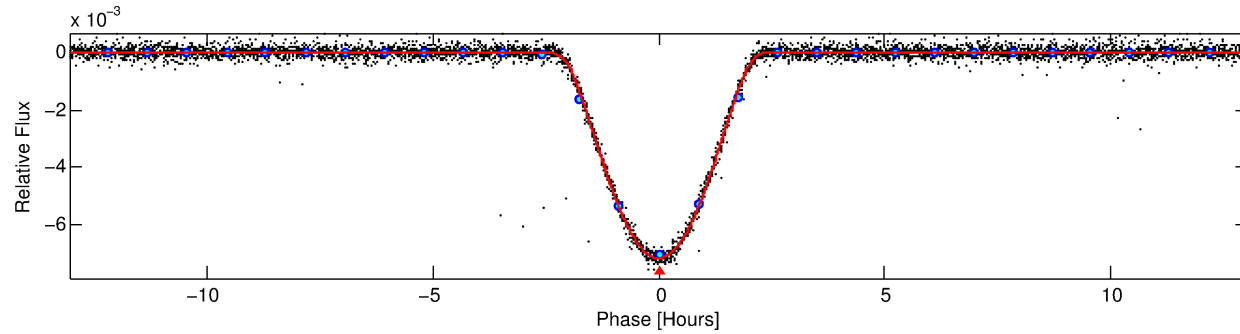
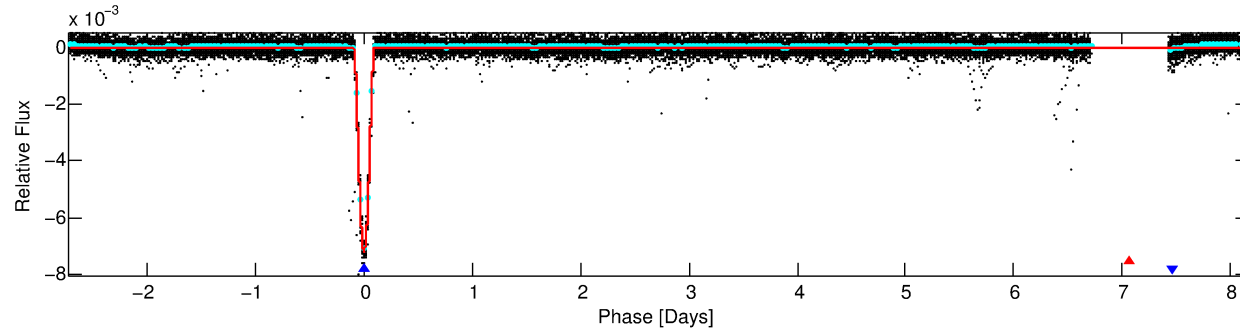
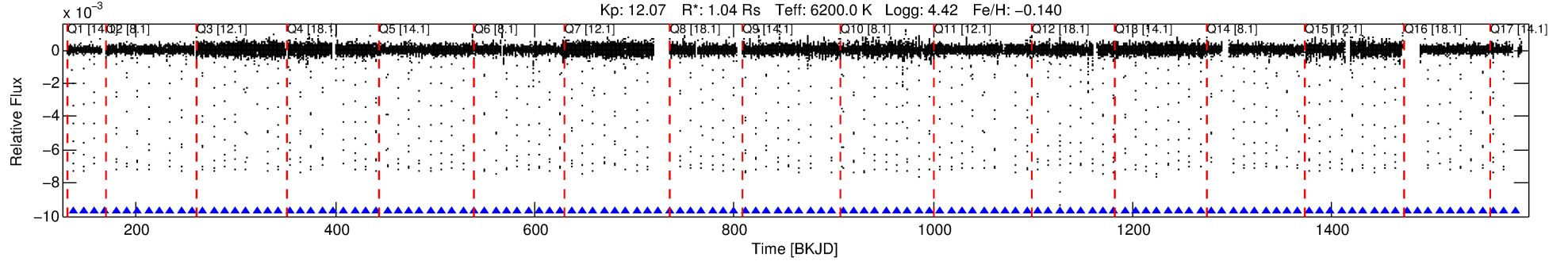
Ephemeris Match Information For 006859813-02

No Significant Match Found

DV One-Page Summary

KIC: 6859813 Candidate: 2 of 2 Period: 10.882 d

KOI: K06778 Corr: No Ephemeris Match



DV Fit Results:

Period = 10.88241 [0.00000] d
Epoch = 136.4927 [0.0001] BKJD
Rp/R* = 0.1400 [0.0049]
a/R* = 10.52 [0.06]
b = 1.00 [0.00]
Seff = 151.21 [45.64]
Teq = 894 [67] K
Rp = 15.96 [3.51] Re
a = 0.0978 [0.0183] AU
Ag = 1.54 [0.48] [1.11 σ]
Teffp = 1539 [72] K [6.51 σ]

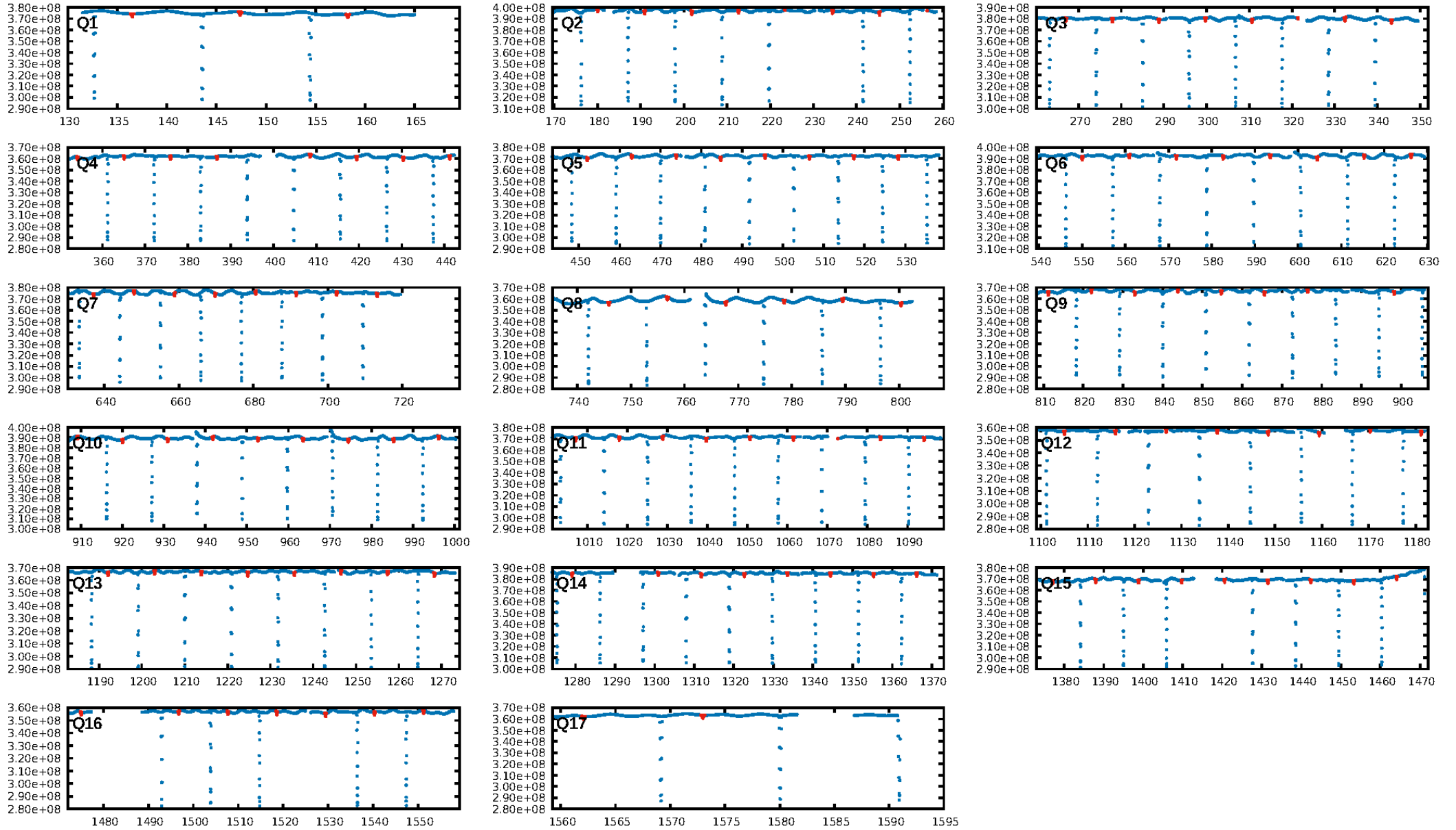
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: 62.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [117/117]
GhostDiagnostic-chr: 5.859
Centroid-sig: 0.0%
Centroid-so: 0.150 arcsec [22.89 σ]
OotOffset-rm: 0.018 arcsec [0.26 σ]
KicOffset-rm: 0.213 arcsec [3.08 σ]
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]

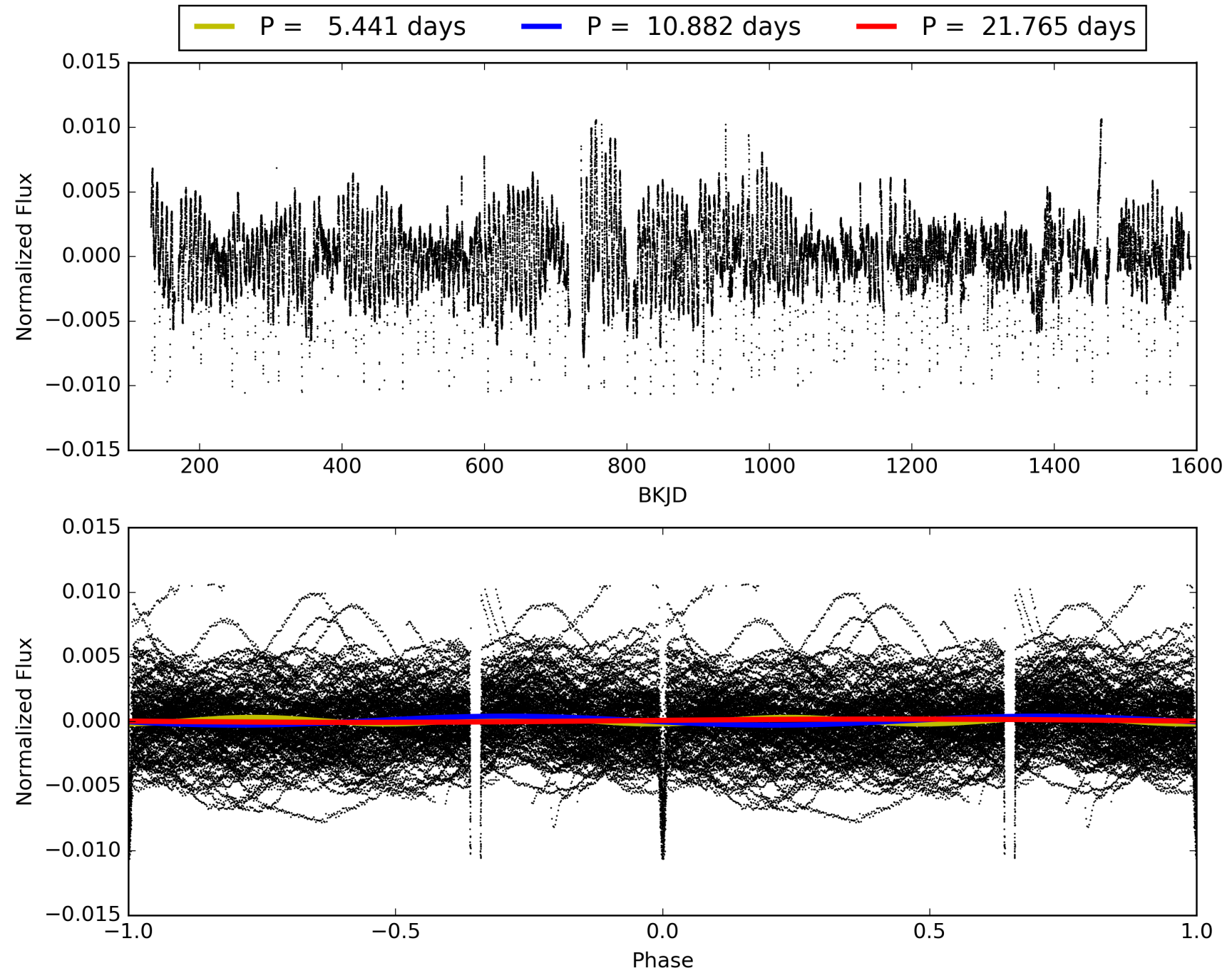
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:45:47 Z

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

TCE 006859813-02, PDC Light Curves

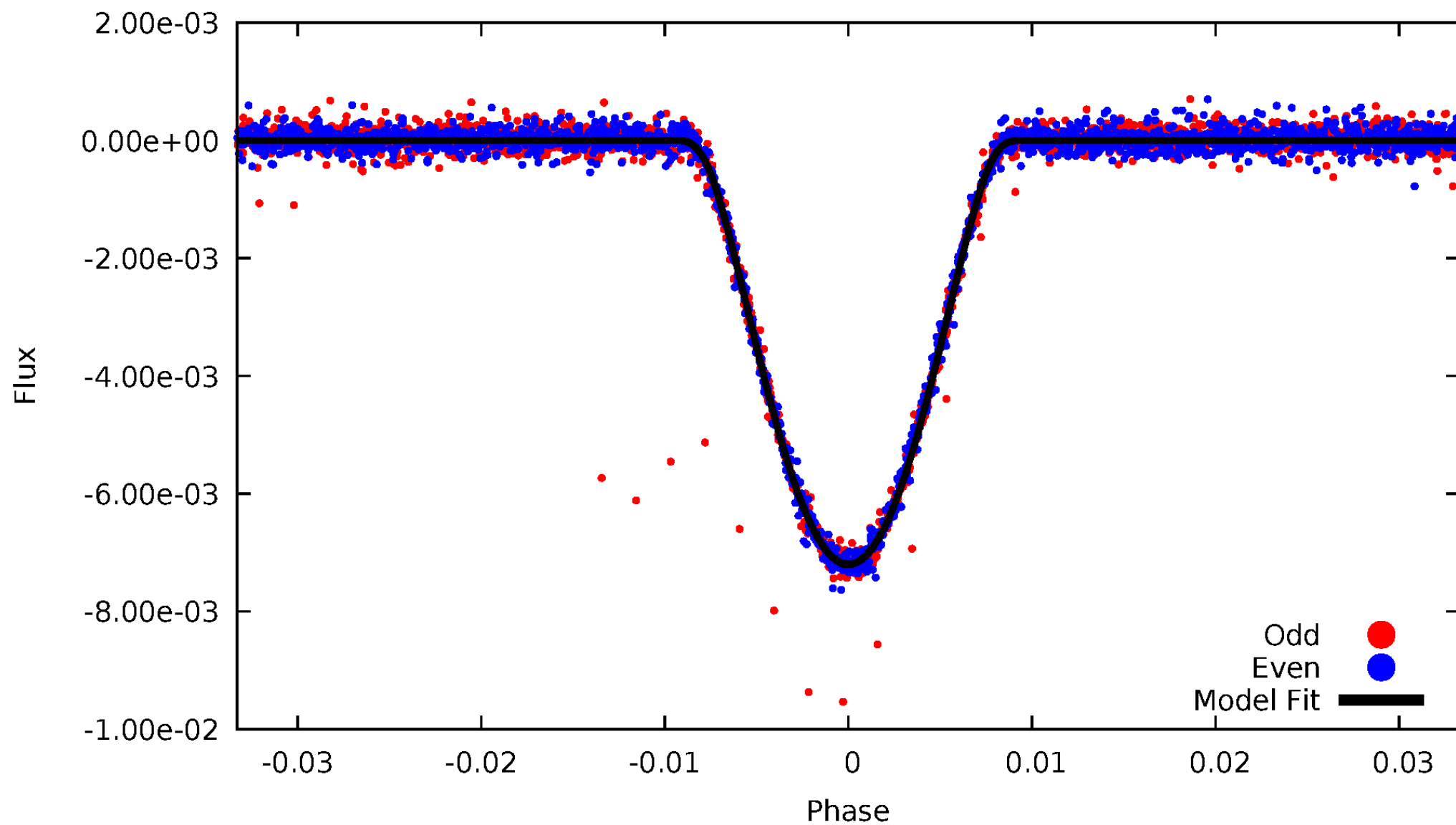


TCE 006859813-02



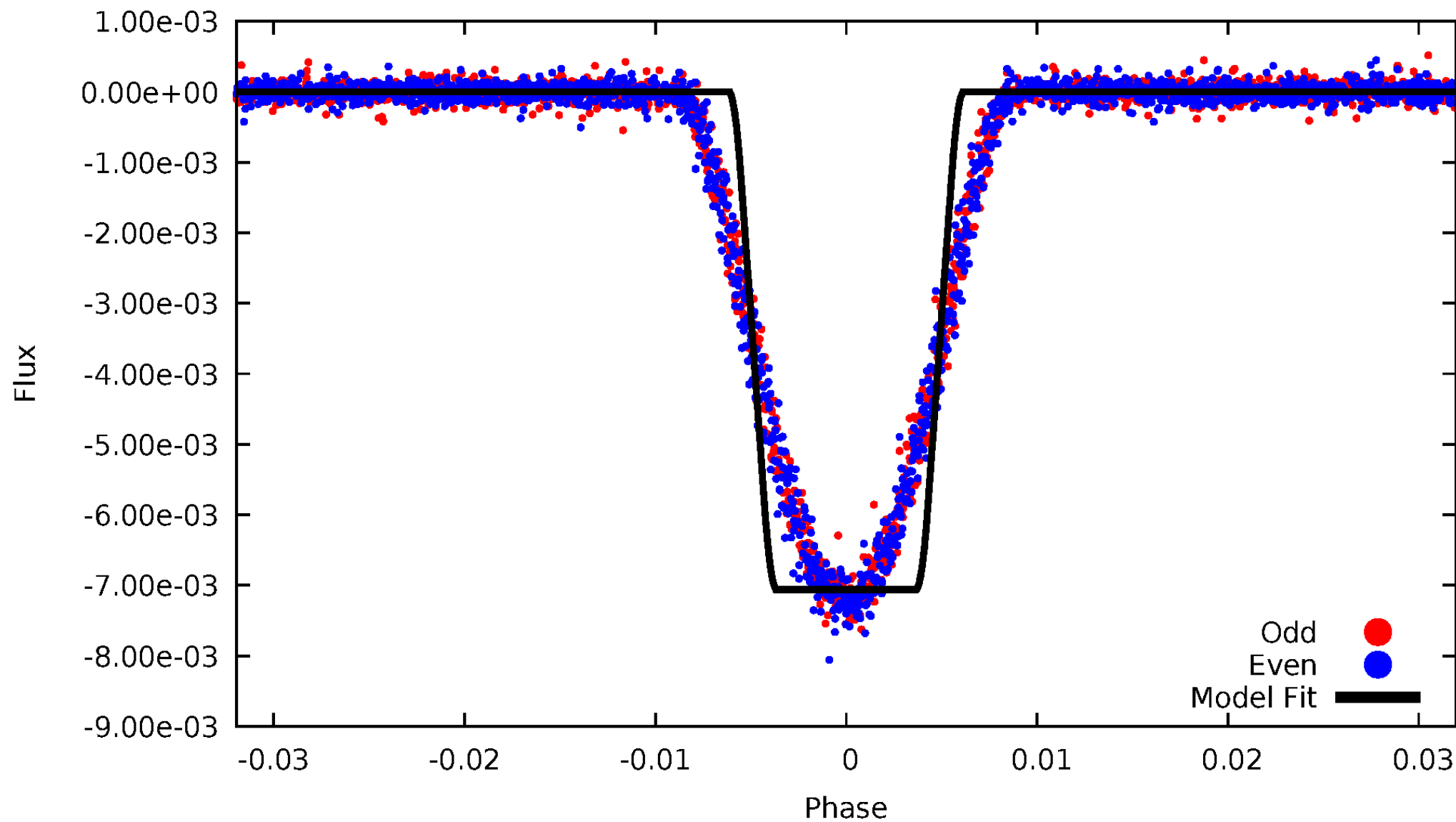
DV Odd/Even

TCE 006859813-02



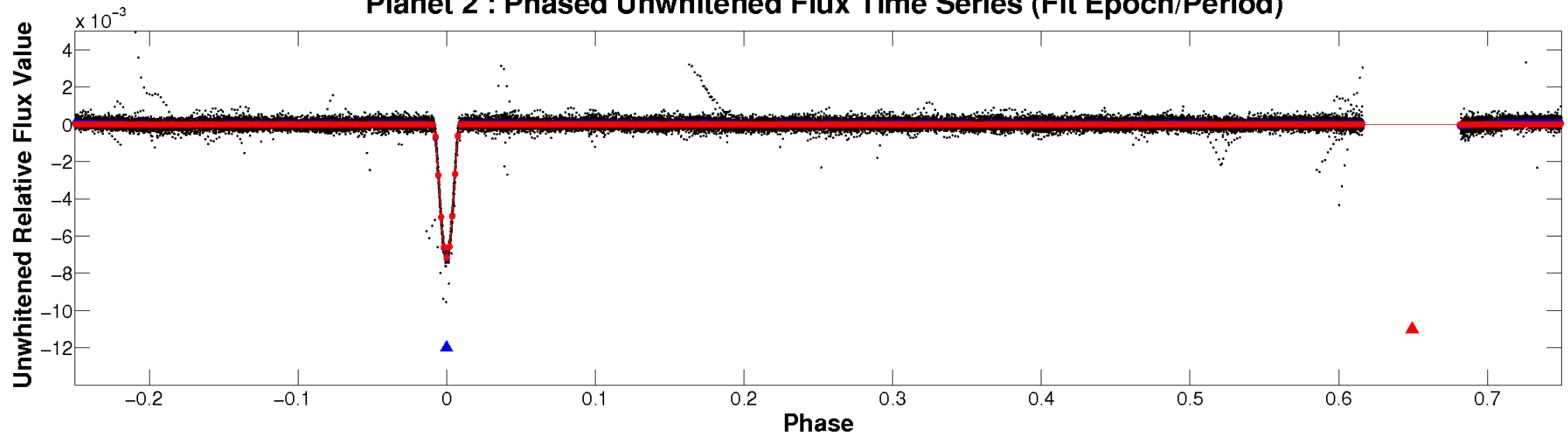
ALT Odd/Even

TCE 006859813-02

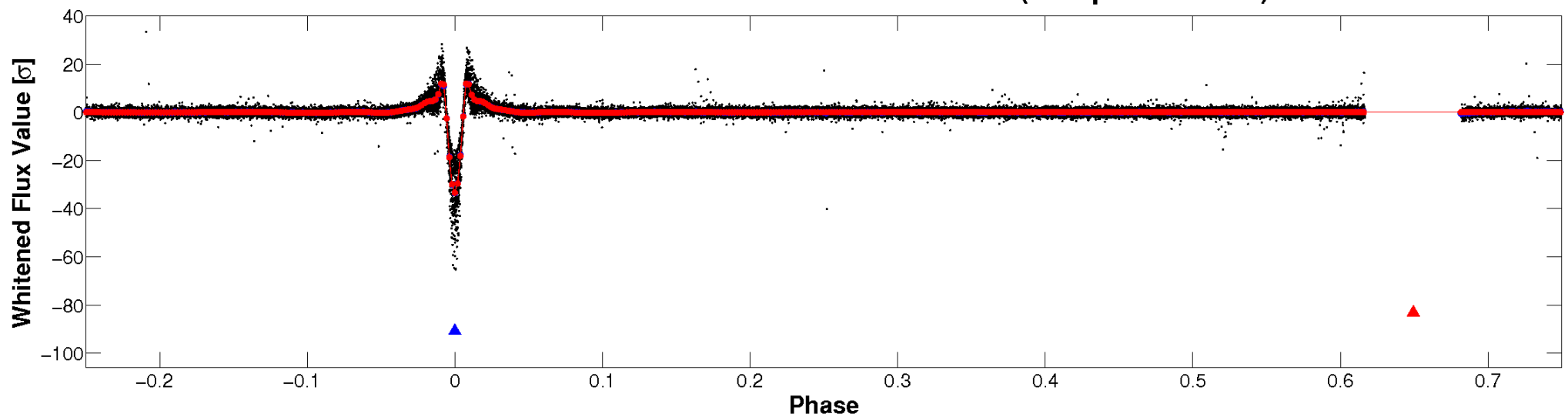


Non-Whitened Vs. Whitened Light Curve

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

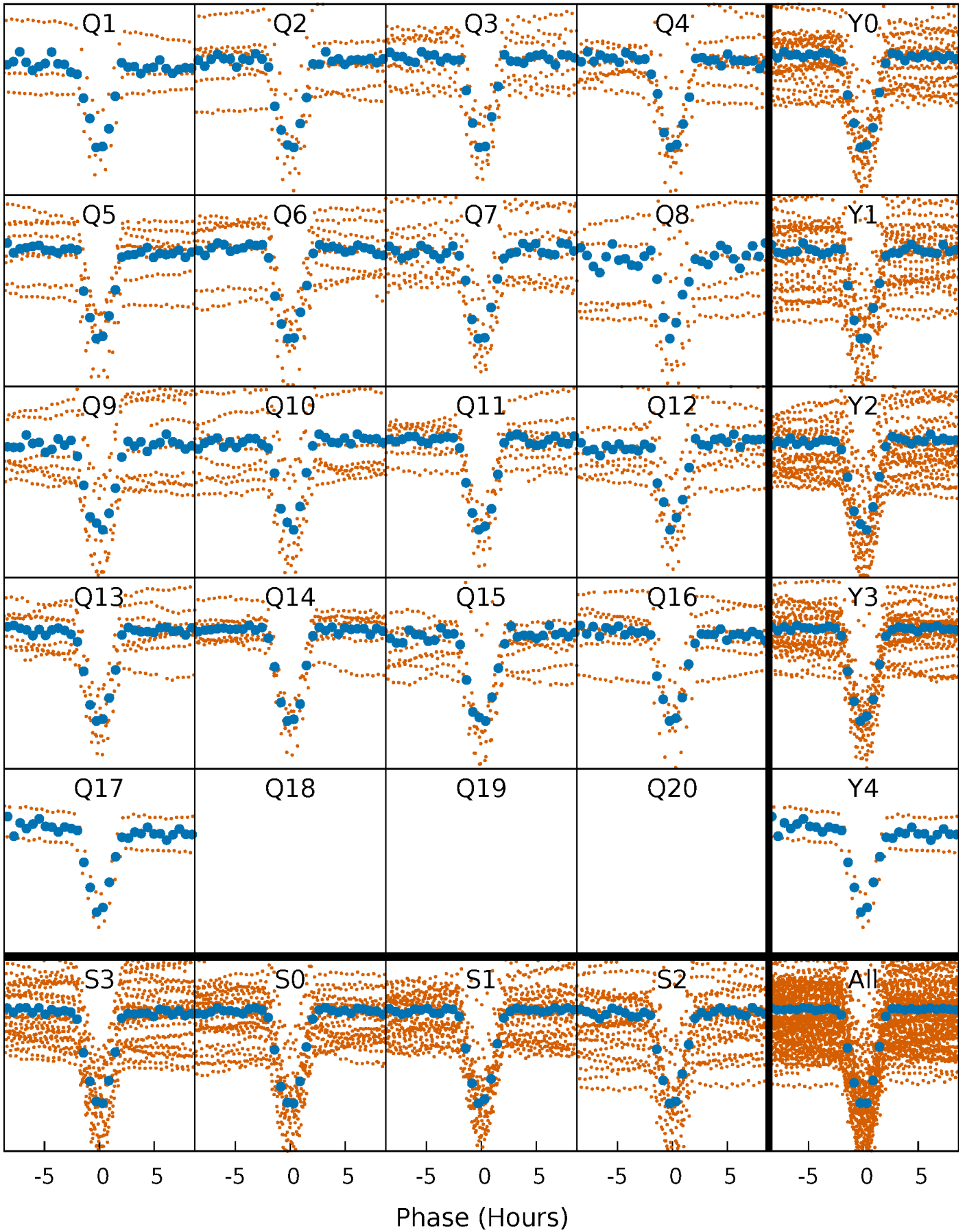


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



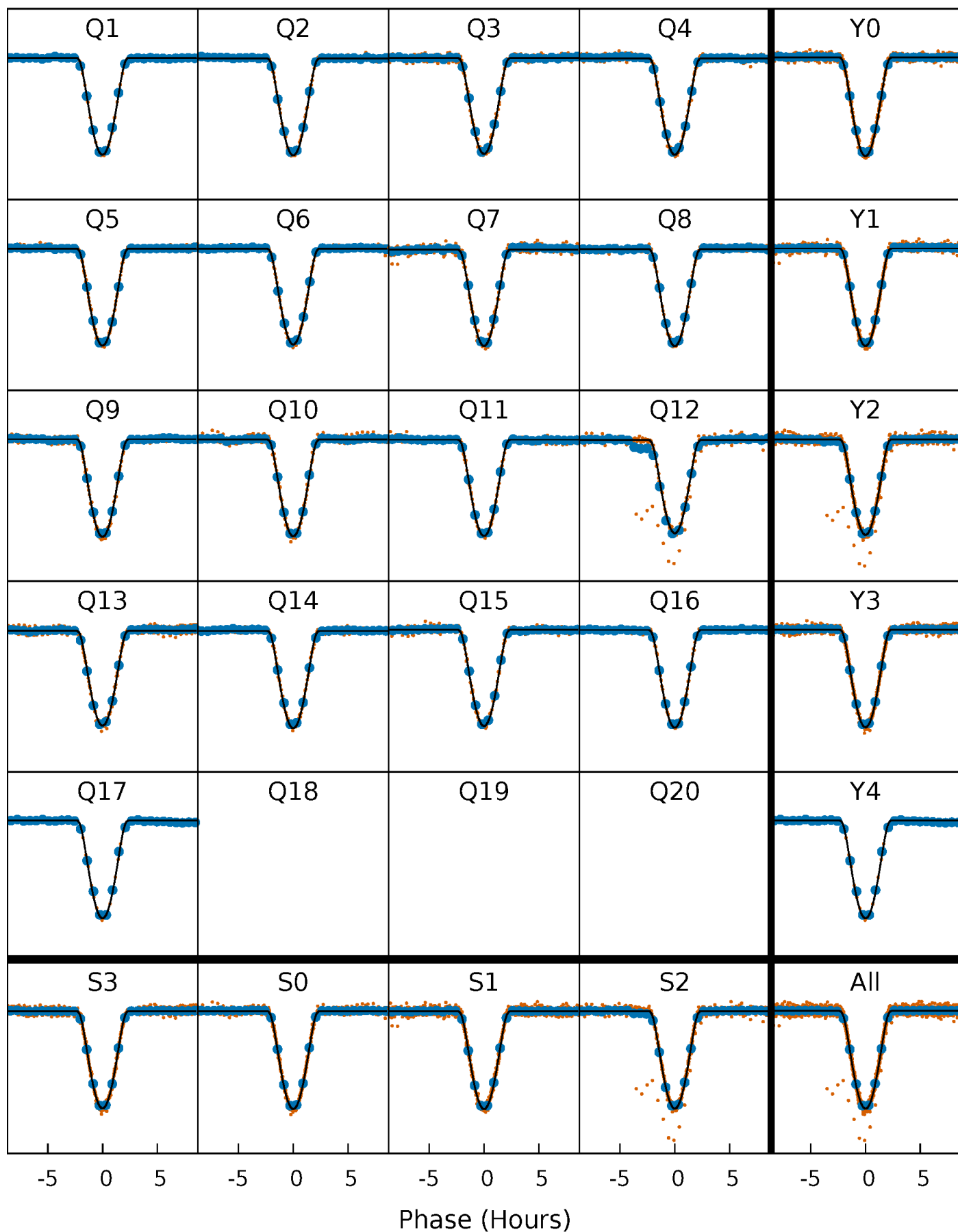
PDC Quarter-Phased Transit Curves

TCE 006859813-02 P= 10.882410 Days $T_0=136.492715$ (BKJD)



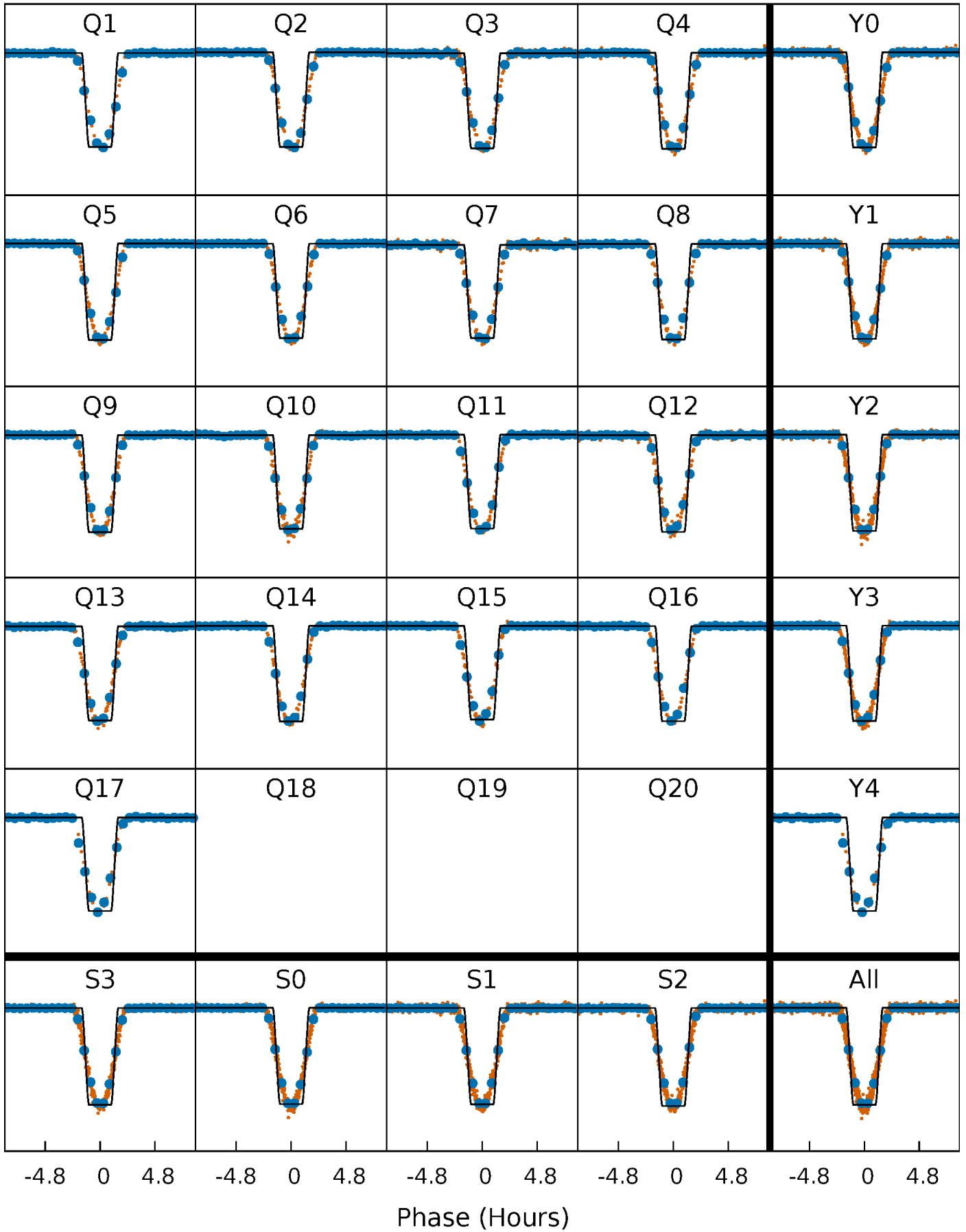
DV Quarter-Phased Transit Curves

TCE 006859813-02 P= 10.882410 Days $T_0=136.492715$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

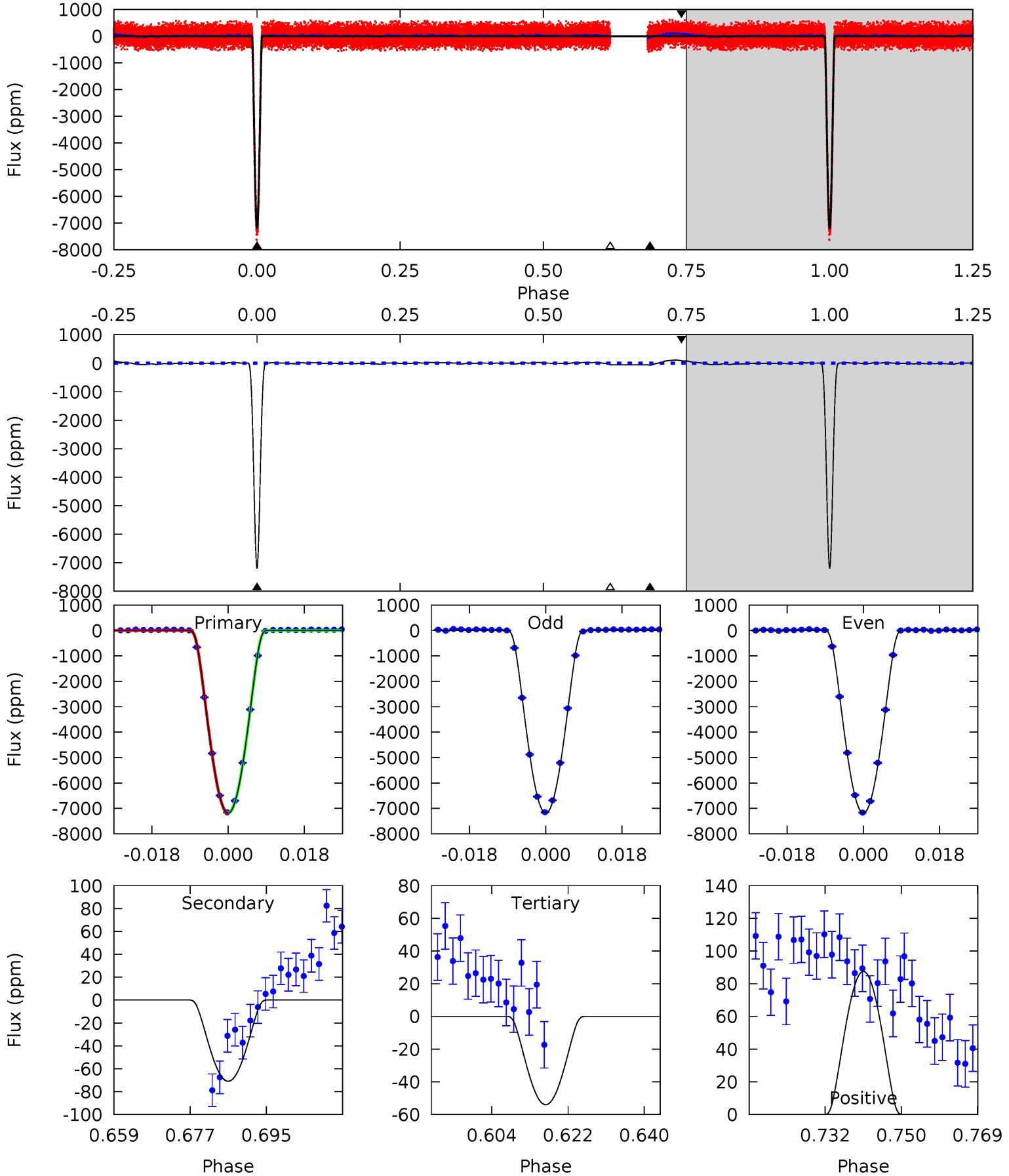
TCE 006859813-02 P= 10.882486 Days $T_0=136.487396$ (BKJD)



DV Model-Shift Uniqueness Test

006859813-02, P = 10.882410 Days, E = 125.610305 Days

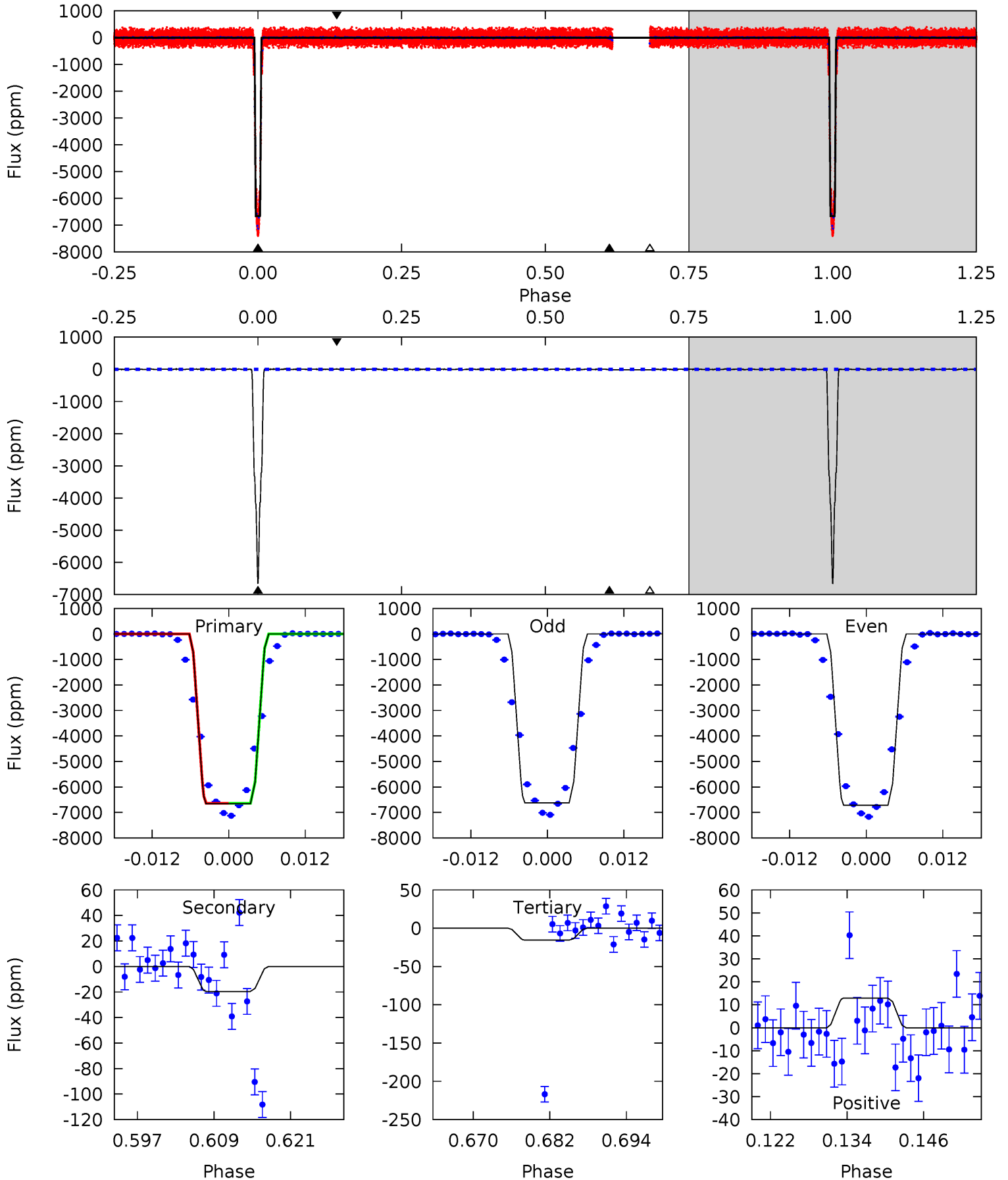
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1565	15.5	11.8	19.1	4.91	2.36	5.62	1553	1546	3.69	-3.62	0.35	1.00	0.01	1.77



Alt Model-Shift Uniqueness Test

006859813-02, P = 10.882486 Days, E = 125.604910 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1366	4.01	3.19	2.66	4.99	2.51	0.96	1363	1363	0.82	1.35	10.00	1.00	0.00	0



Stellar Parameters For KIC 006859813

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6200^{+166}_{-185}	$4.422^{+0.066}_{-0.154}$	$-0.140^{+0.250}_{-0.350}$	$1.045^{+0.227}_{-0.122}$	$1.047^{+0.129}_{-0.129}$	$1.291^{+0.423}_{-0.530}$
	+3%/-3%	+1%/-3%	+179%/-250%	+22%/-12%	+12%/-12%	+33%/-41%
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 006859813-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-71 ± 5	$16.18^{+2.06}_{-1.33}$	1265^{+76}_{-60}	2338^{+46}_{-48}	$1.387^{+0.268}_{-0.268}$
Alt.	-20 ± 5	$9.77^{+1.32}_{-0.93}$	1267^{+76}_{-56}	2238^{+98}_{-116}	$1.031^{+0.362}_{-0.327}$

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

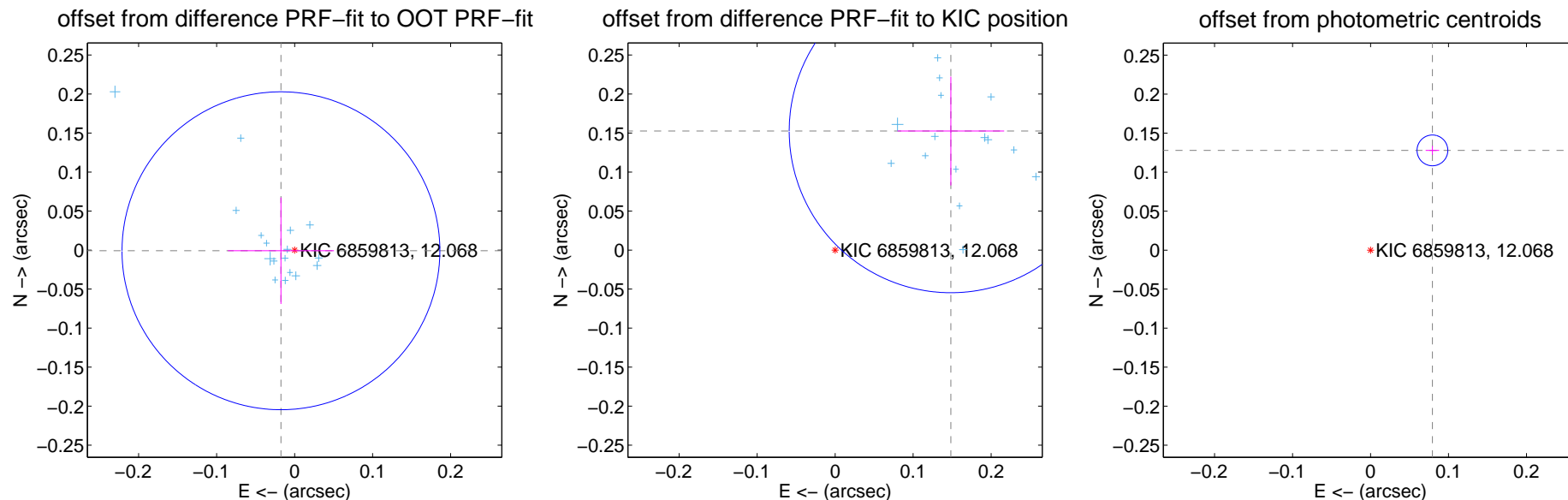
DV Centroid Data

Supplemental centroid analysis for 006859813-02. Kepler magnitude: 12.07. Transit SNR 748.21

There are 17 quarters with good PRF difference image offsets

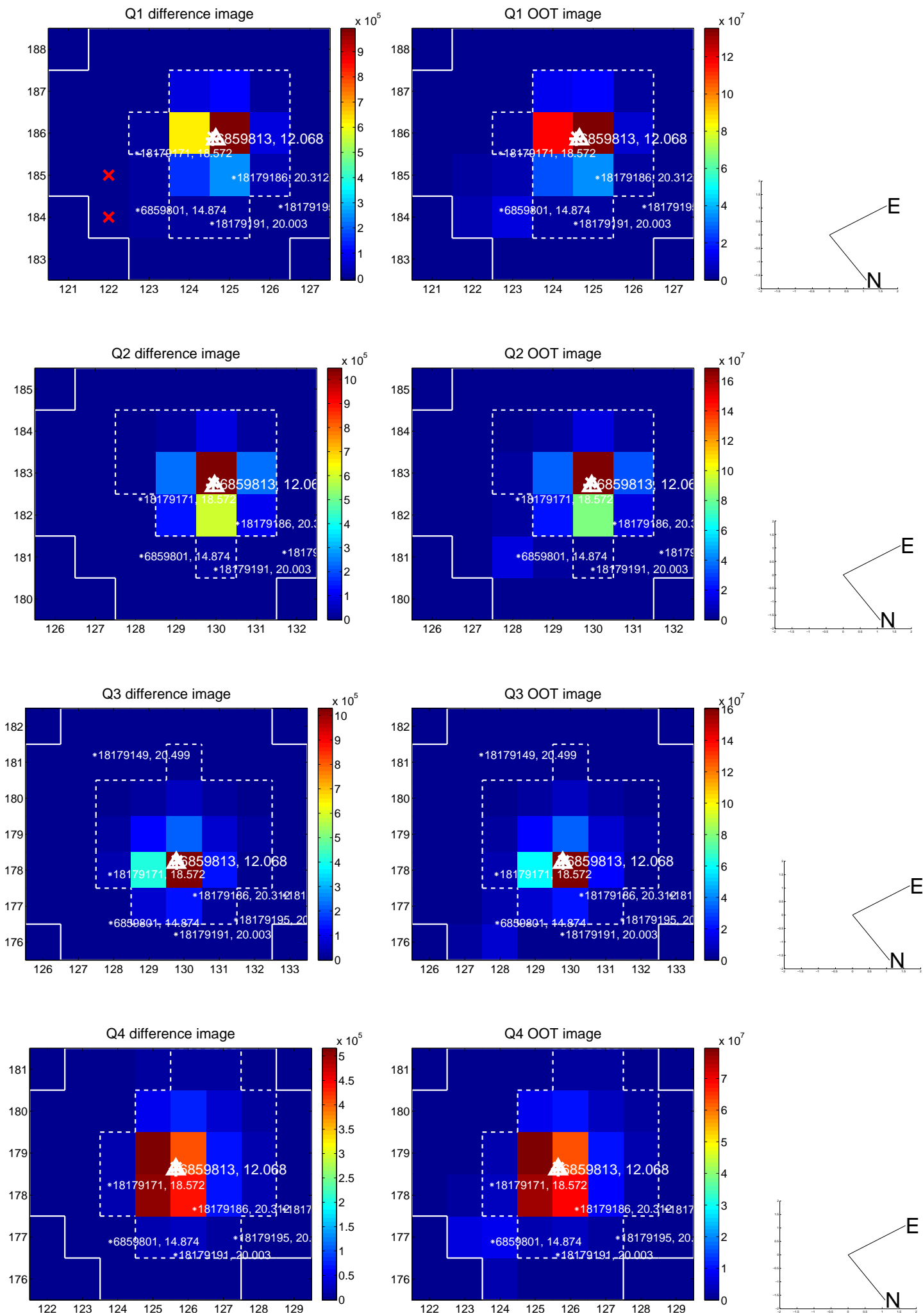
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.018 ± 0.068	0.26	0.018 ± 0.068	-0.001 ± 0.068
PRF-fit source offset from KIC position	0.213 ± 0.069	3.08	-0.148 ± 0.068	0.153 ± 0.070
photometric centroid source offset	0.15 ± 0.01	22.89	-0.08 ± 0.01	0.13 ± 0.01

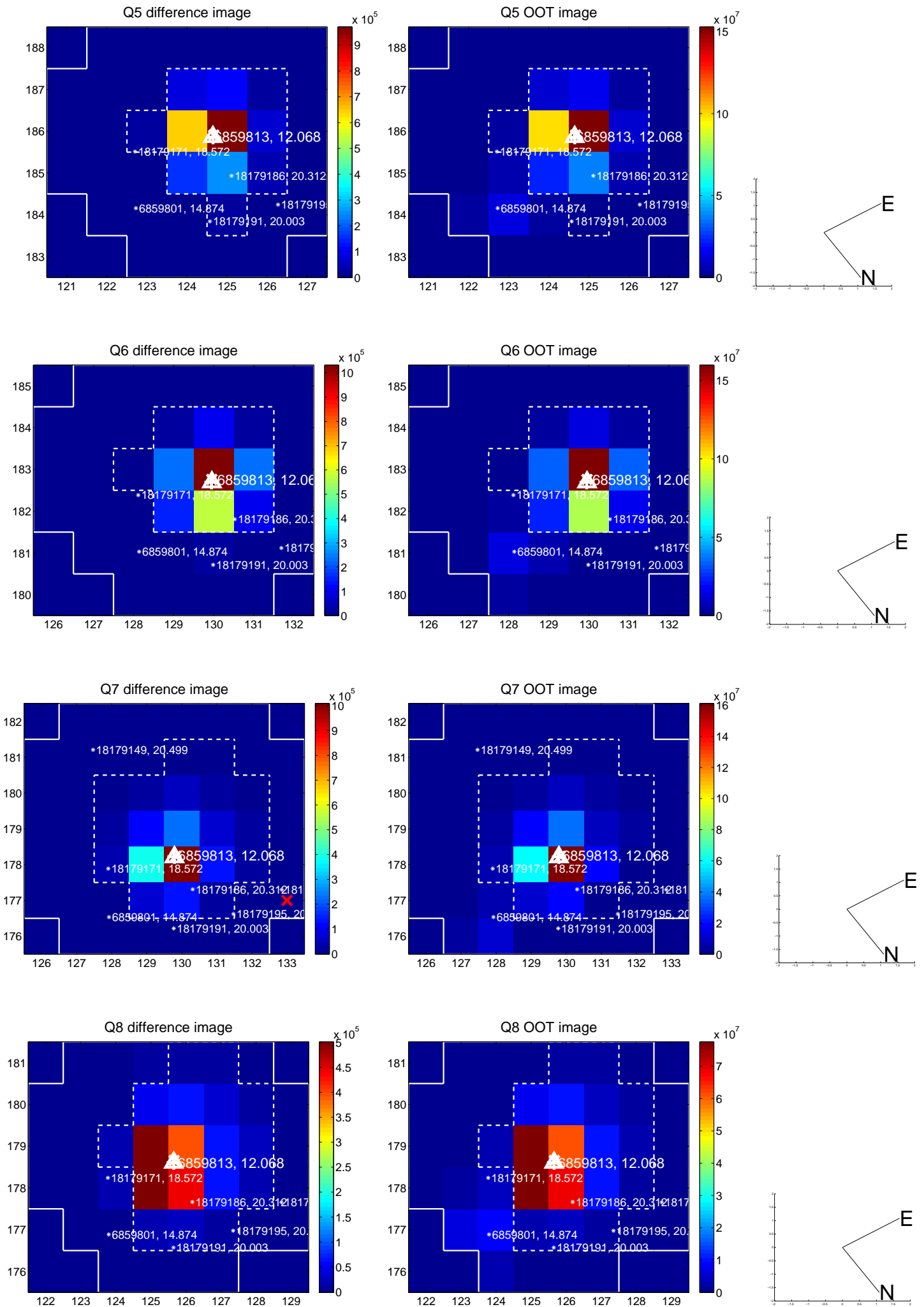


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

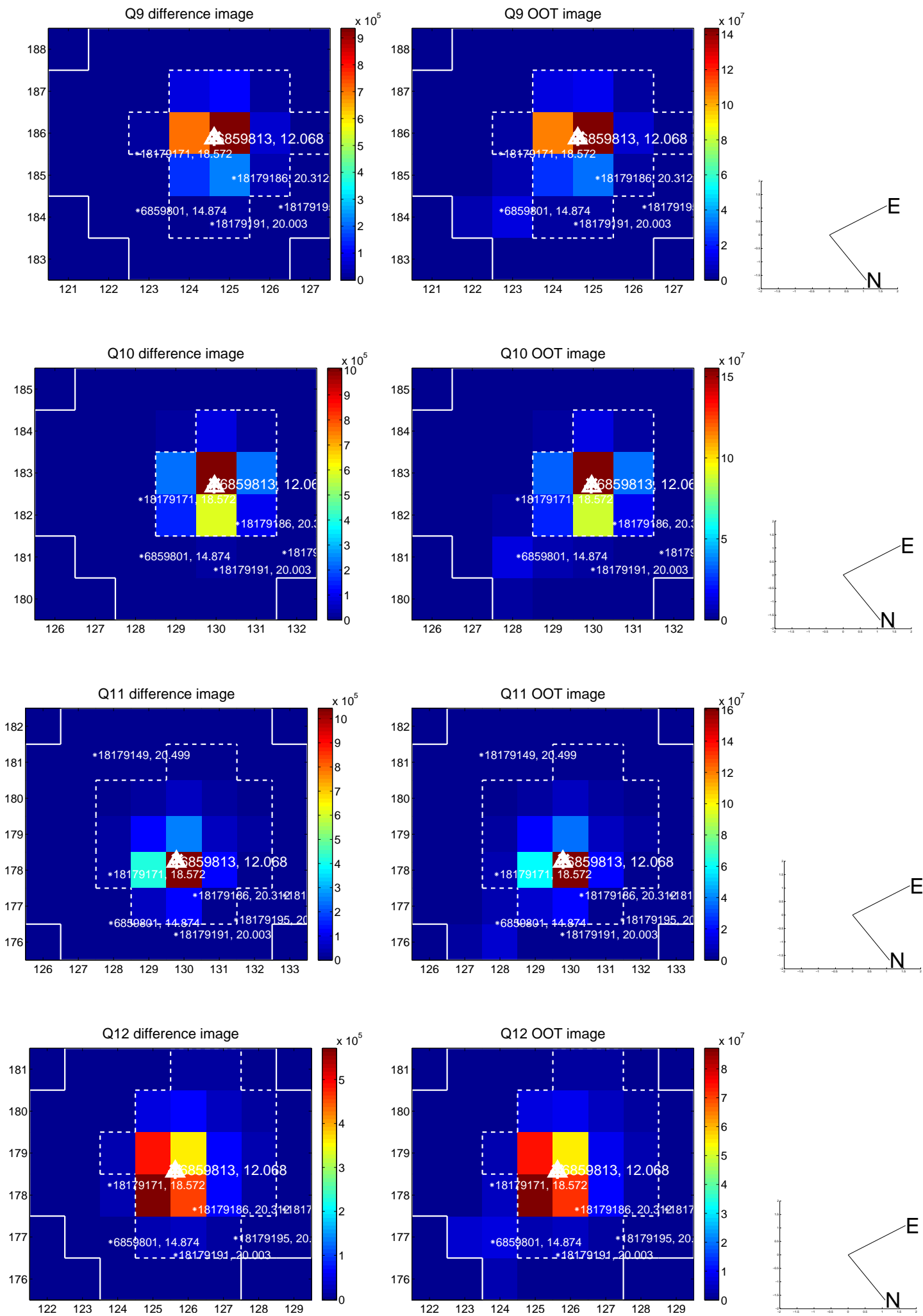
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



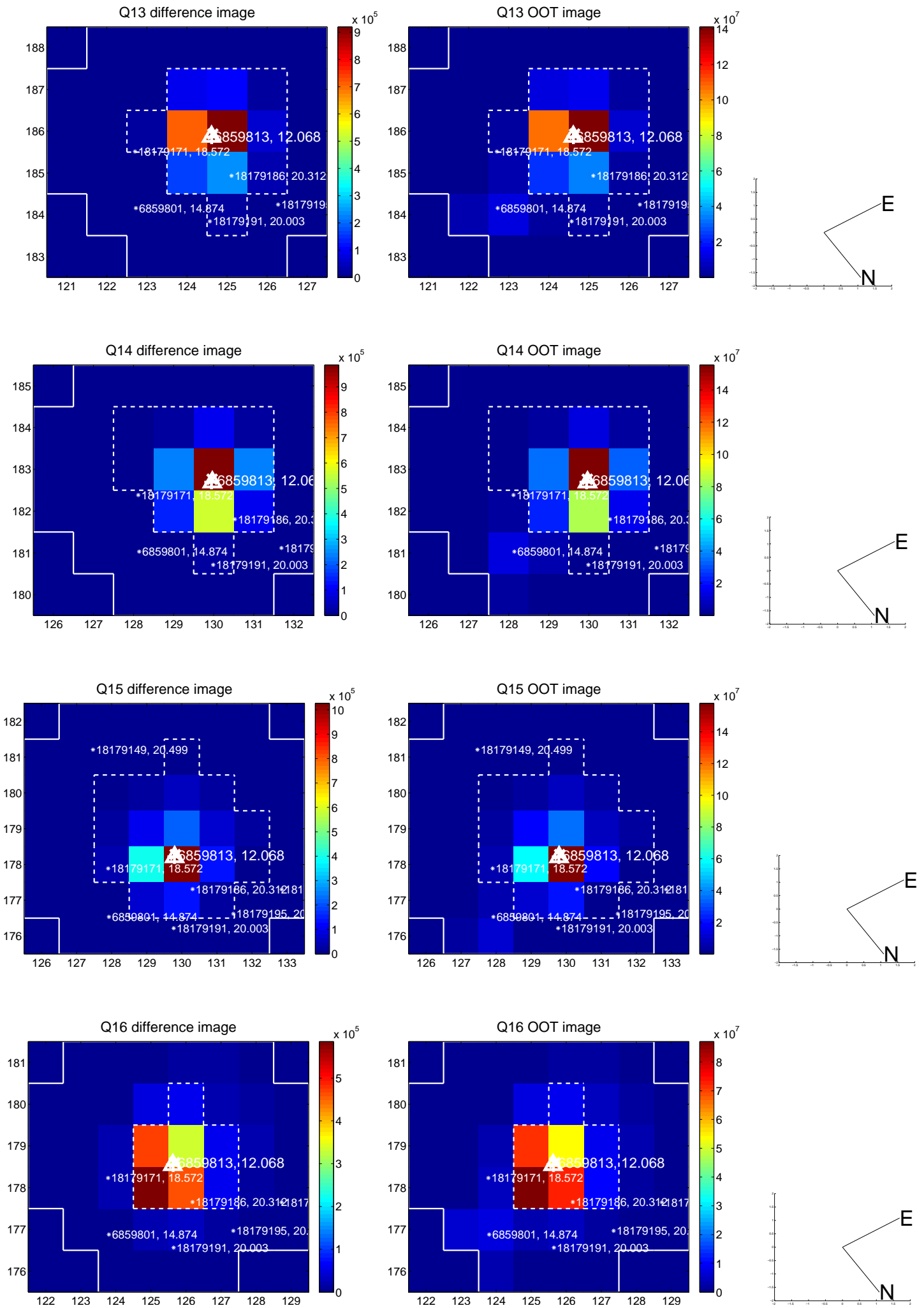
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

