

KIC 002853320

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})
002853320-01	OBS	No	5.065332	135.027682	59.4	8.011	11.6	12.1	4.53	11357	3.81	39970.78
002853320-02	OBS	No	1.013035	131.547695	35.9	3.934	11.5	12.5	4.53	11357	3.09	341759.26
002853320-03	OBS	No	5.065570	132.286300	46.4	20.431	9.5	9.6	4.53	11357	3.39	39968.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002853320-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002853320-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
002853320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—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.

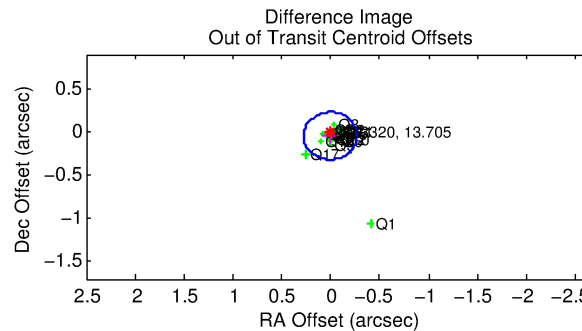
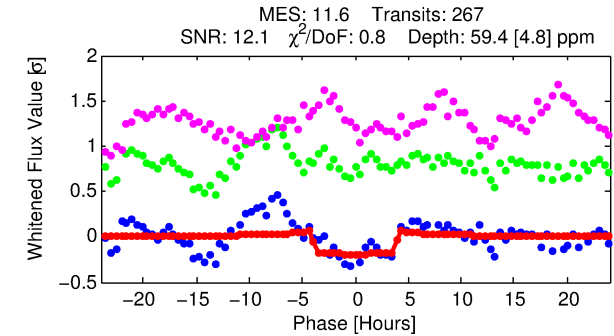
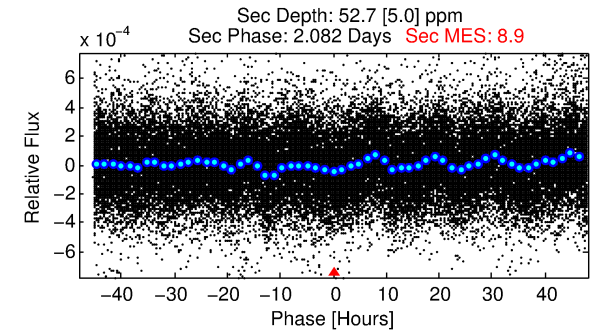
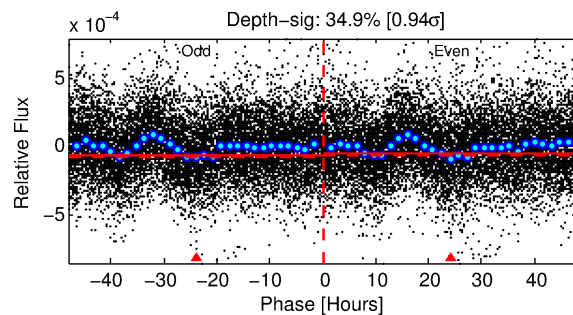
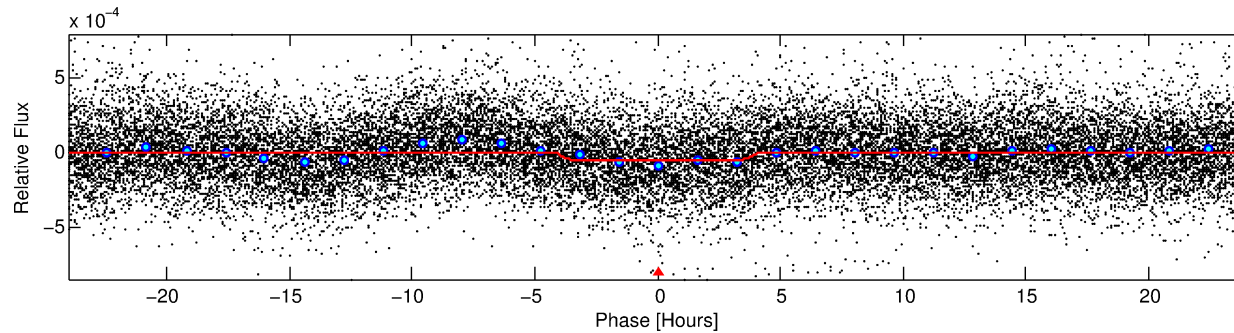
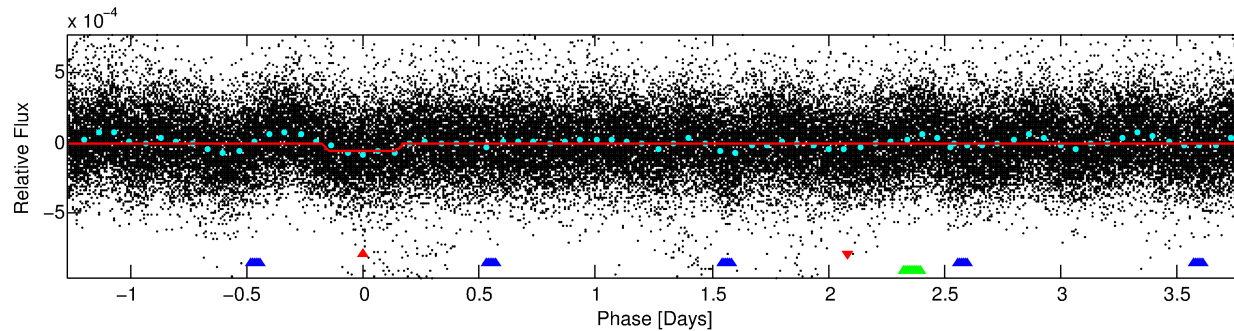
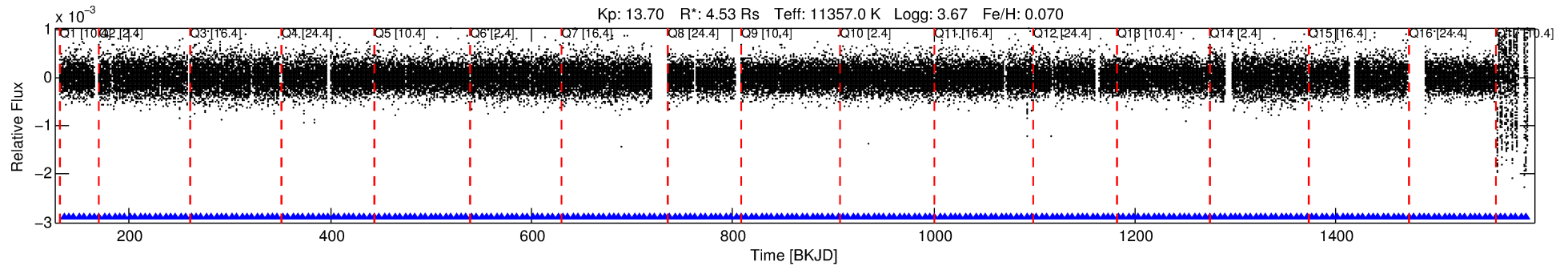
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002853320-01

No Significant Match Found

DV One-Page Summary

KIC: 2853320 Candidate: 1 of 3 Period: 5.065 d



DV Fit Results:

Period = 5.06533 [0.00004] d
Epoch = 135.0277 [0.0055] BKJD
Rp/R* = 0.0077 [0.0012]
a/R* = 3.24 [3.76]
b = 0.77 [0.67]
Seff = 39970.78 [39442.43]
Teq = 3605 [889] K
Rp = 3.81 [2.04] Re
a = 0.0874 [0.0423] AU
Ag = 15.29 [12.78] [1.12 σ]
Teff = 11023 [1940] K [3.48 σ]

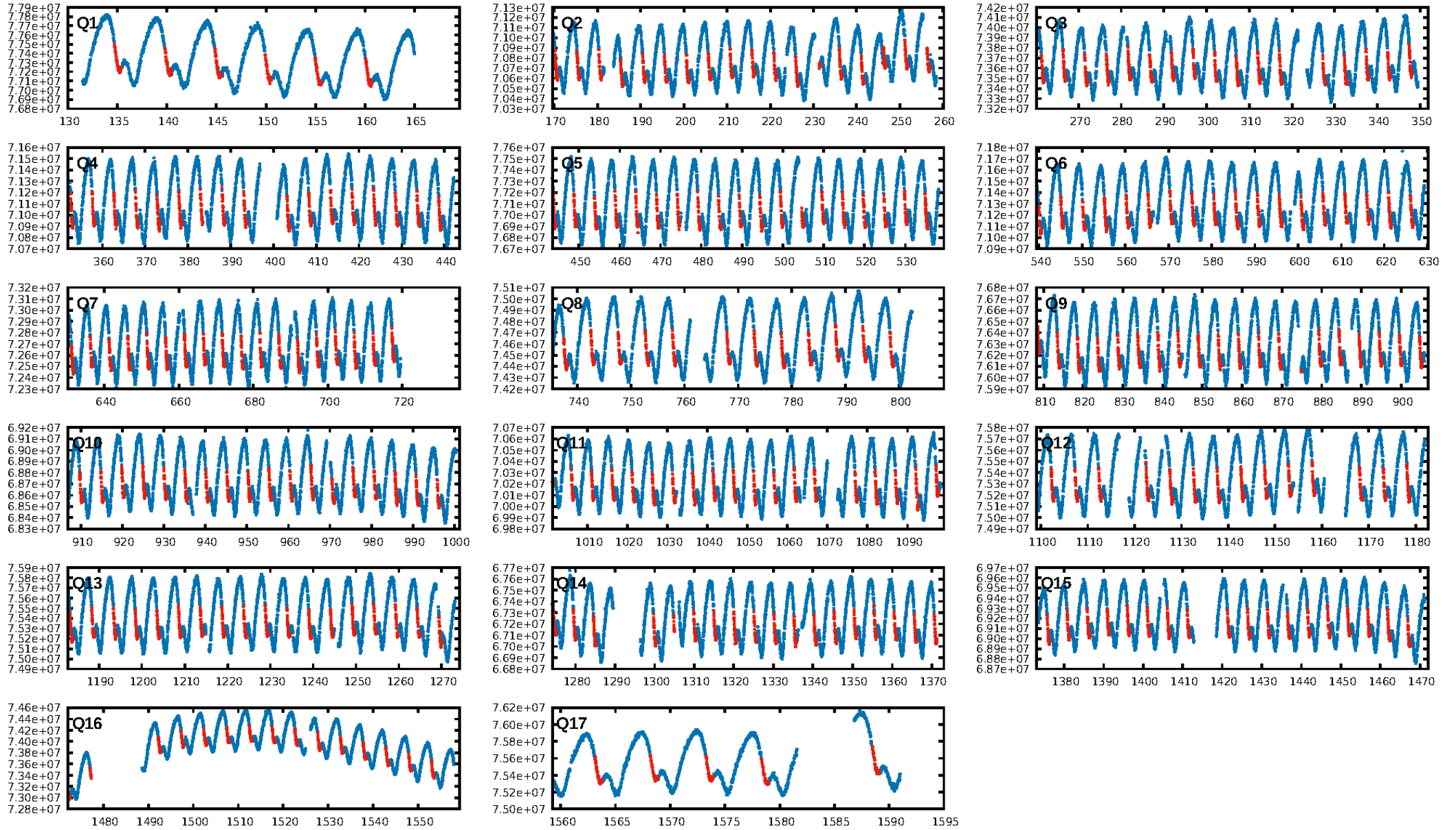
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.90 σ]
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.33e-31
RollingBand-fgt: 1.00 [256/256]
GhostDiagnostic-chr: 0.7606
Centroid-sig: 0.0%
Centroid-so: 3.208 arcsec [3.66 σ]
OotOffset-rm: 0.044 arcsec [0.48 σ]
KicOffset-rm: 0.031 arcsec [0.33 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

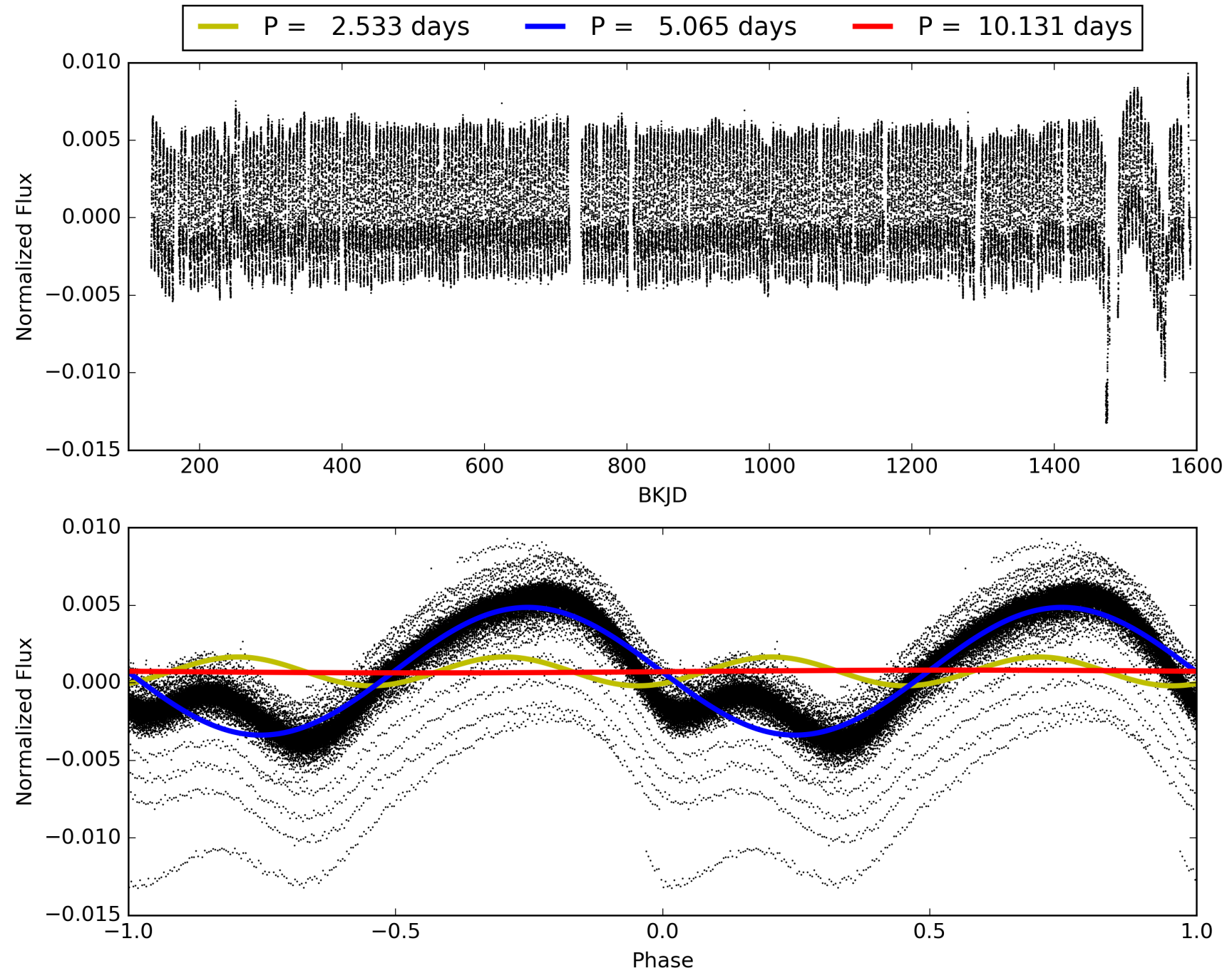
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:18:57 Z

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

TCE 002853320-01, PDC Light Curves

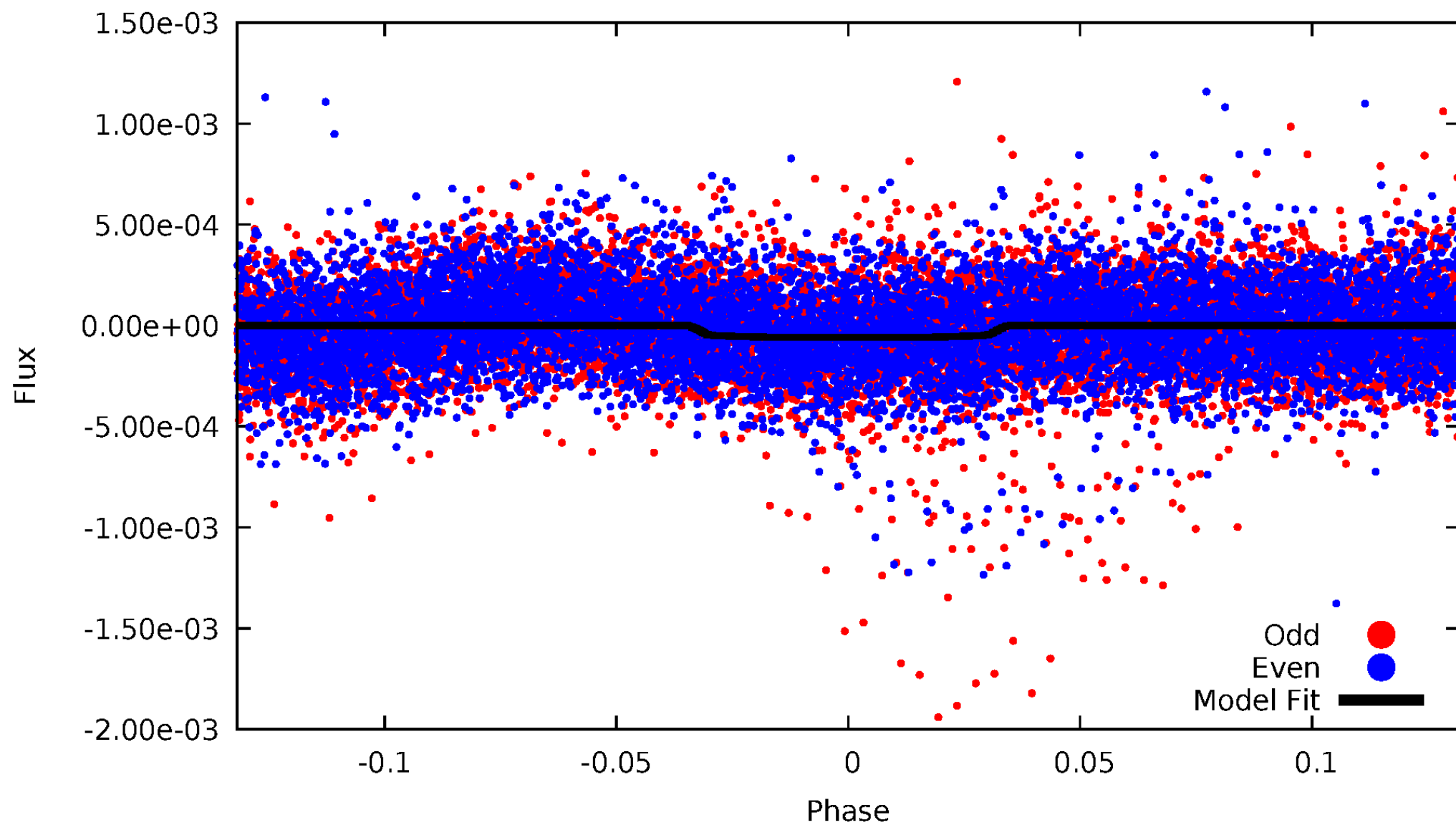


TCE 002853320-01



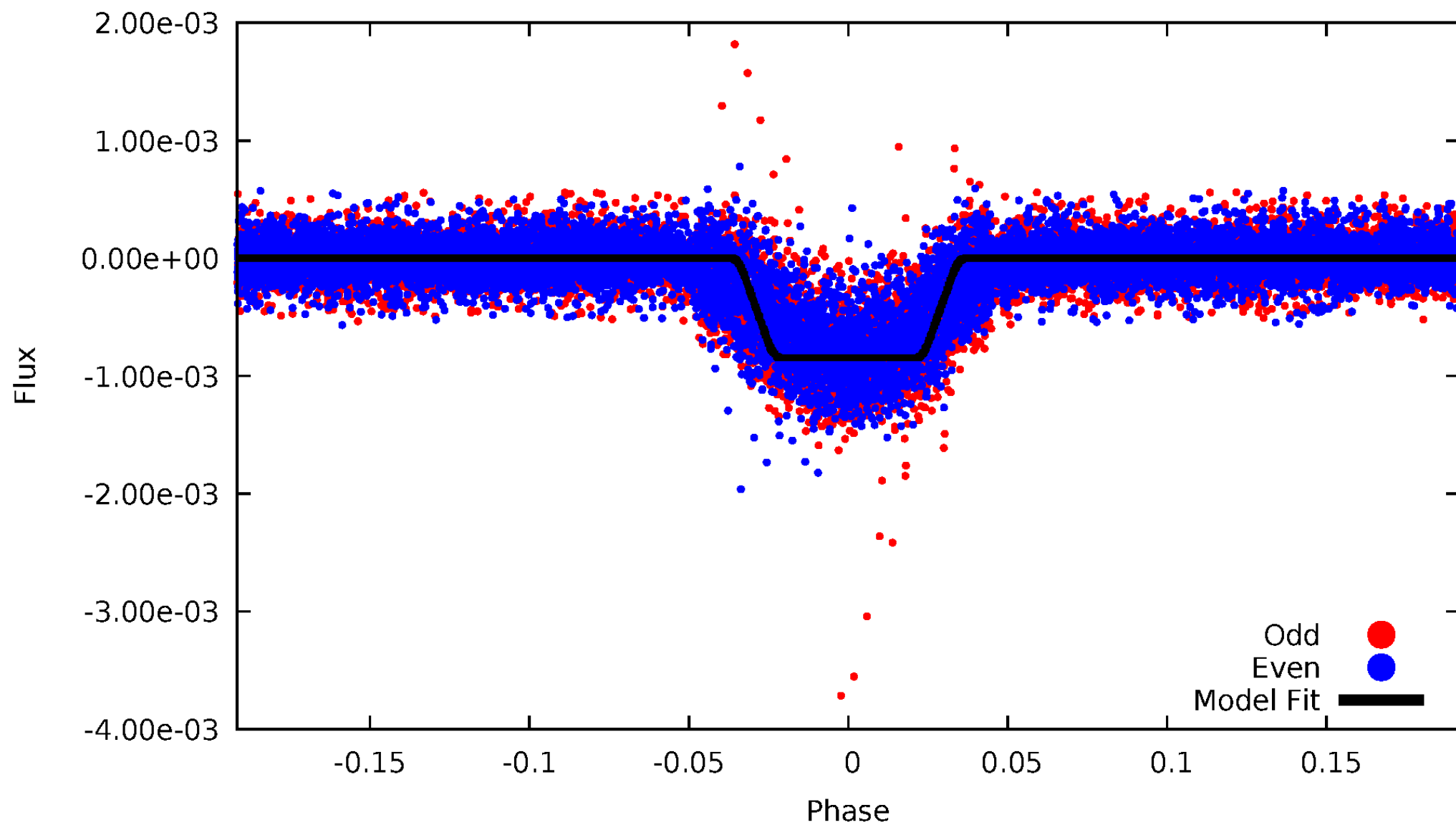
DV Odd/Even

TCE 002853320-01

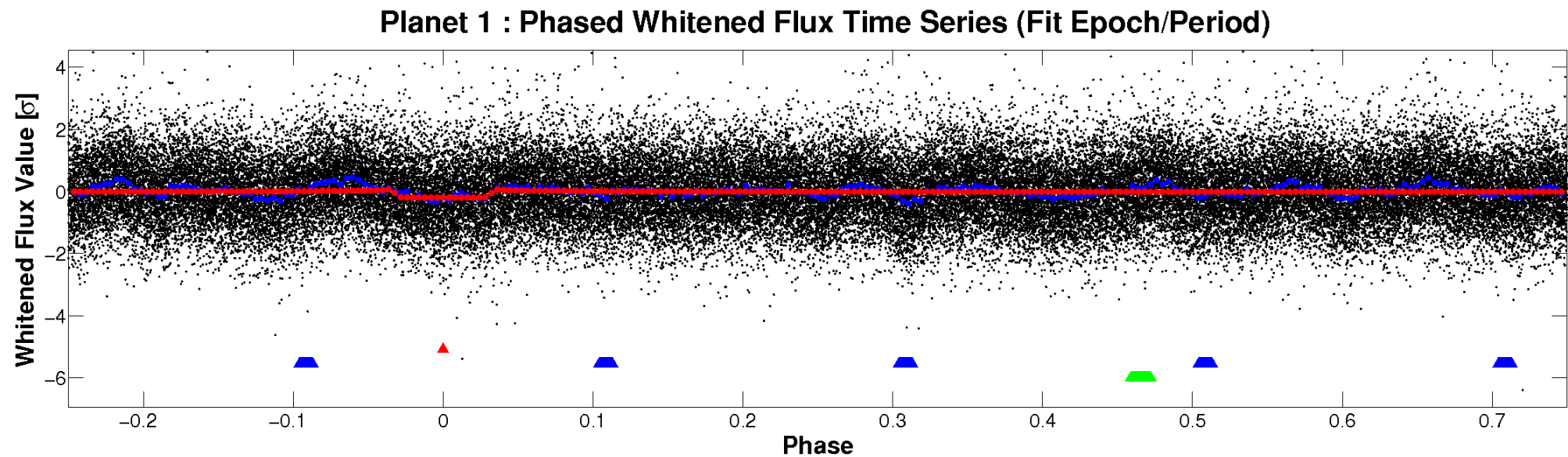
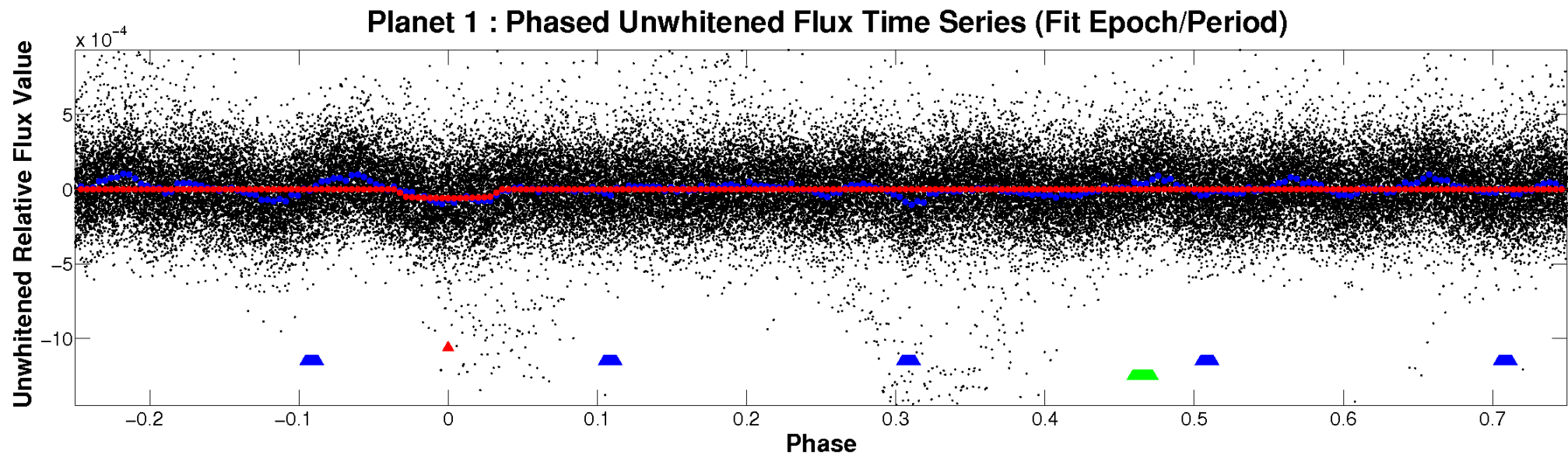


ALT Odd/Even

TCE 002853320-01

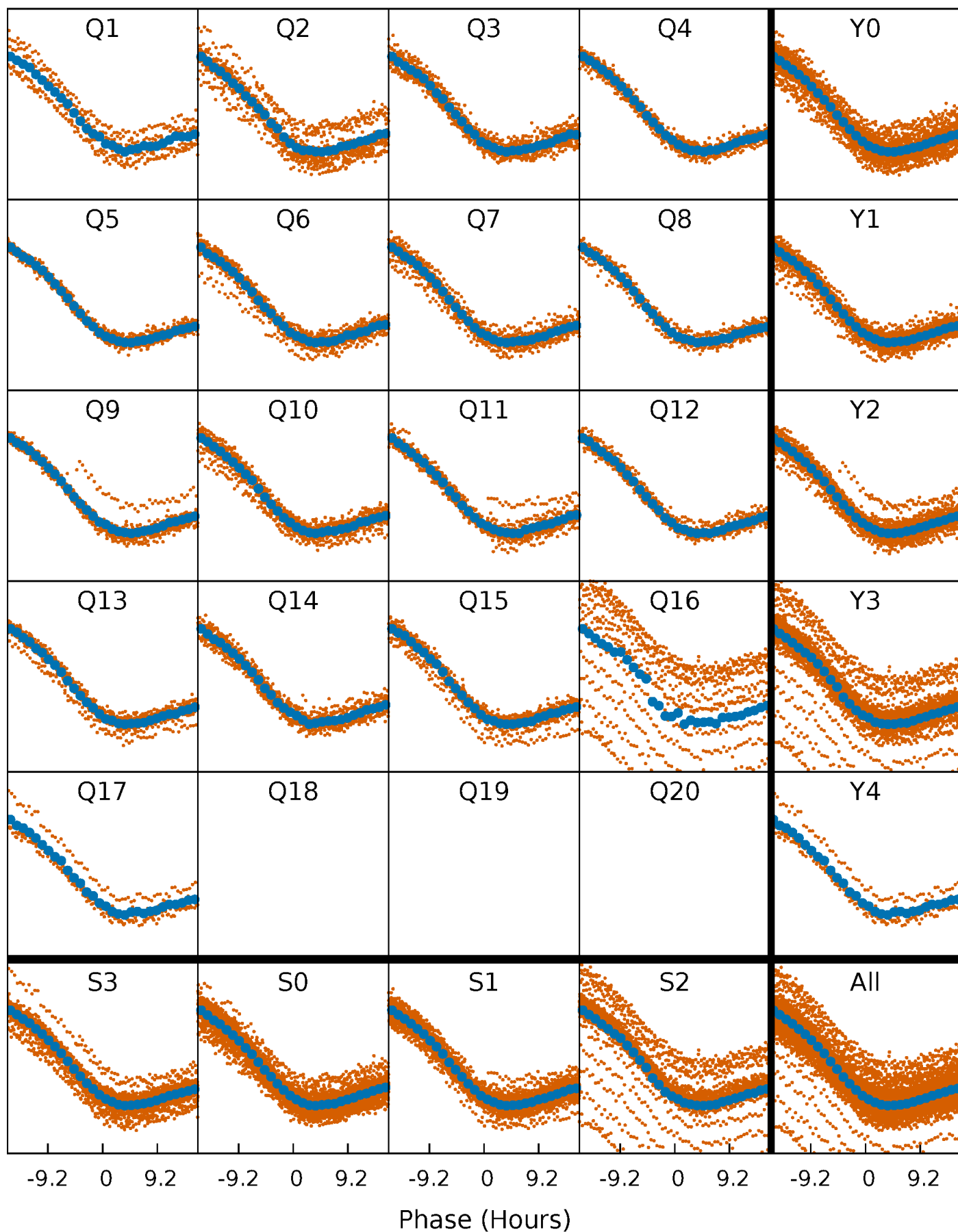


Non-Whitened Vs. Whitened Light Curve



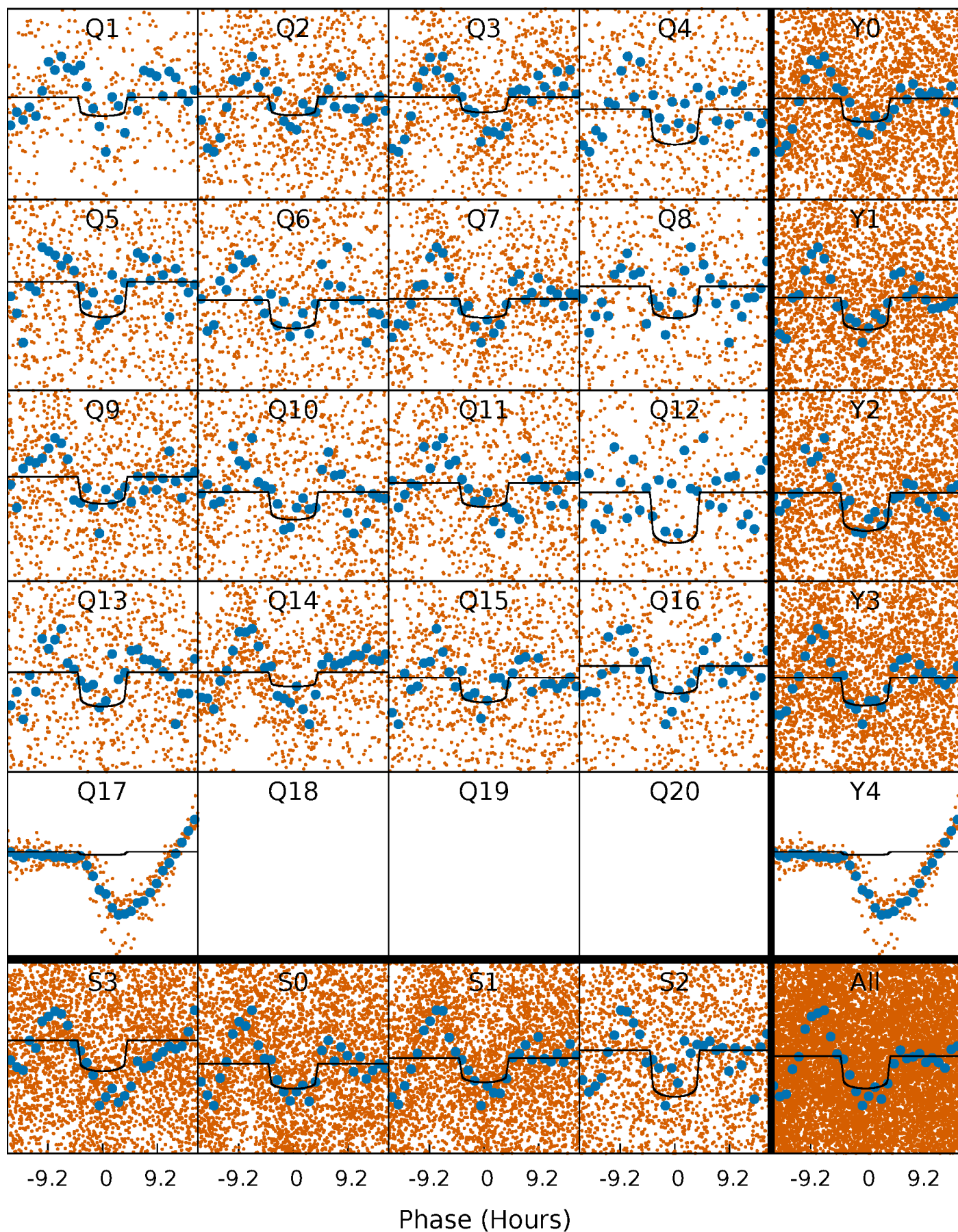
PDC Quarter-Phased Transit Curves

TCE 002853320-01 P= 5.065332 Days $T_0=135.027682$ (BKJD)



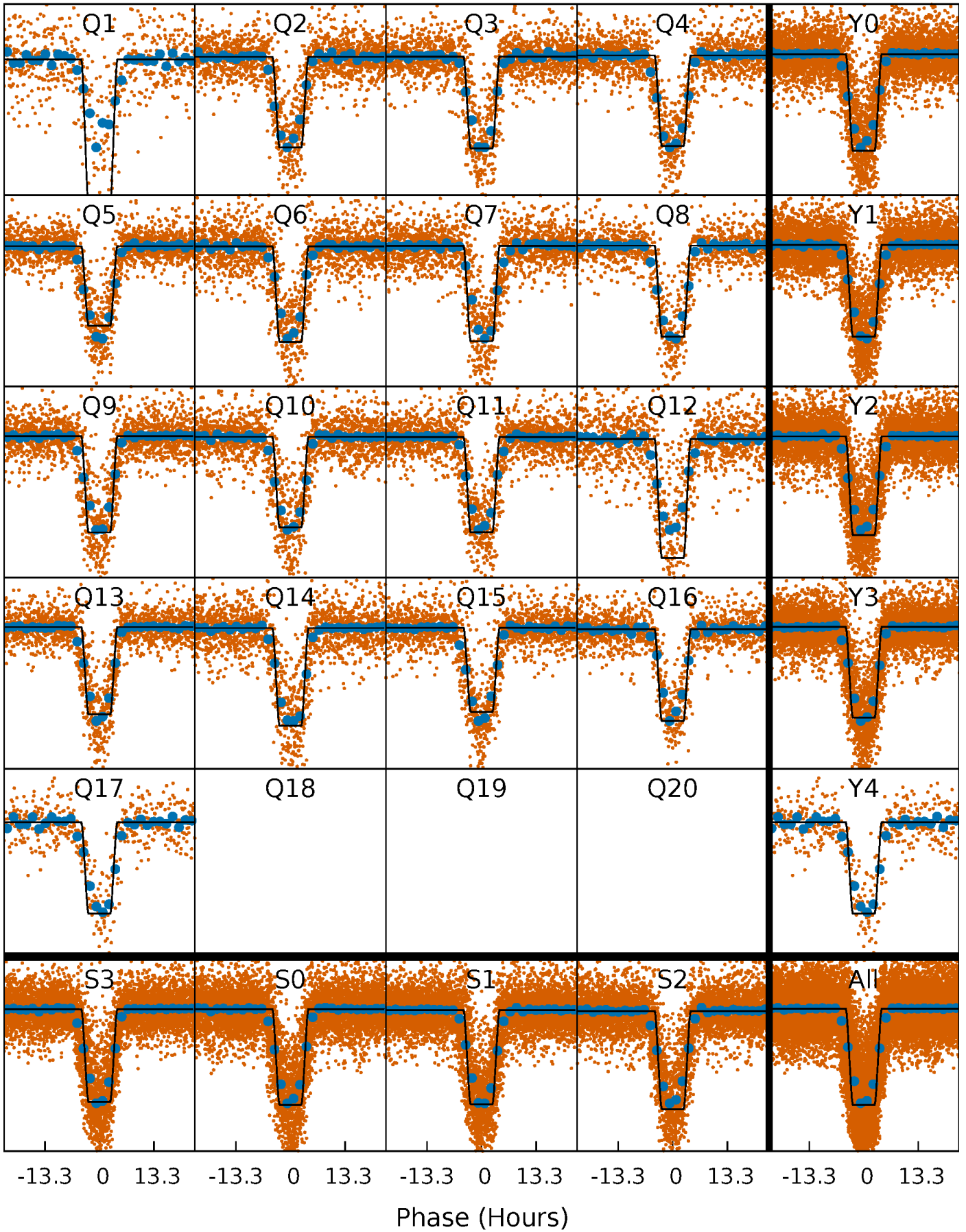
DV Quarter-Phased Transit Curves

TCE 002853320-01 P= 5.065332 Days $T_0=135.027682$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

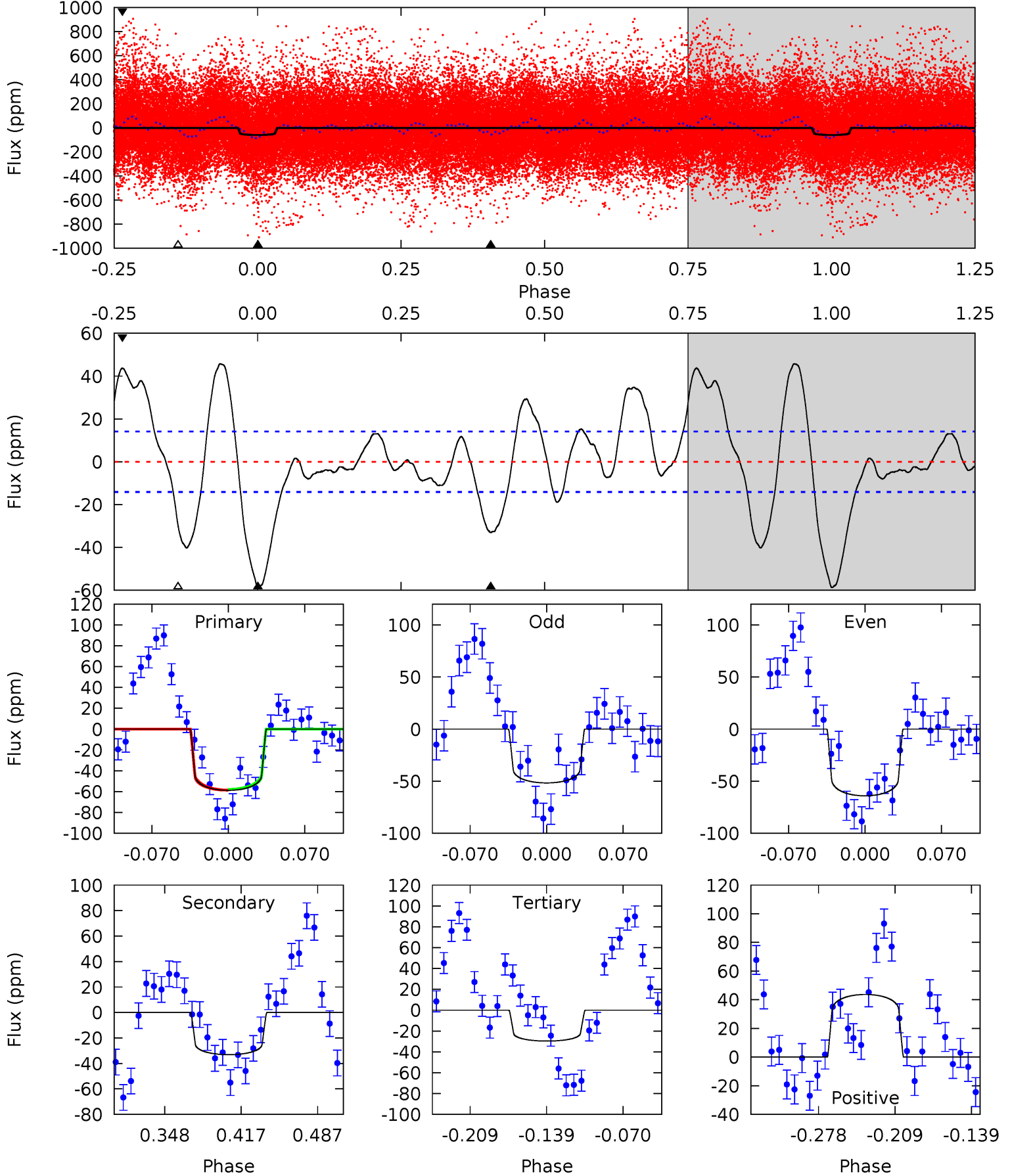
TCE 002853320-01 P= 5.065185 Days $T_0=135.067213$ (BKJD)



DV Model-Shift Uniqueness Test

002853320-01, P = 5.065332 Days, E = 129.962350 Days

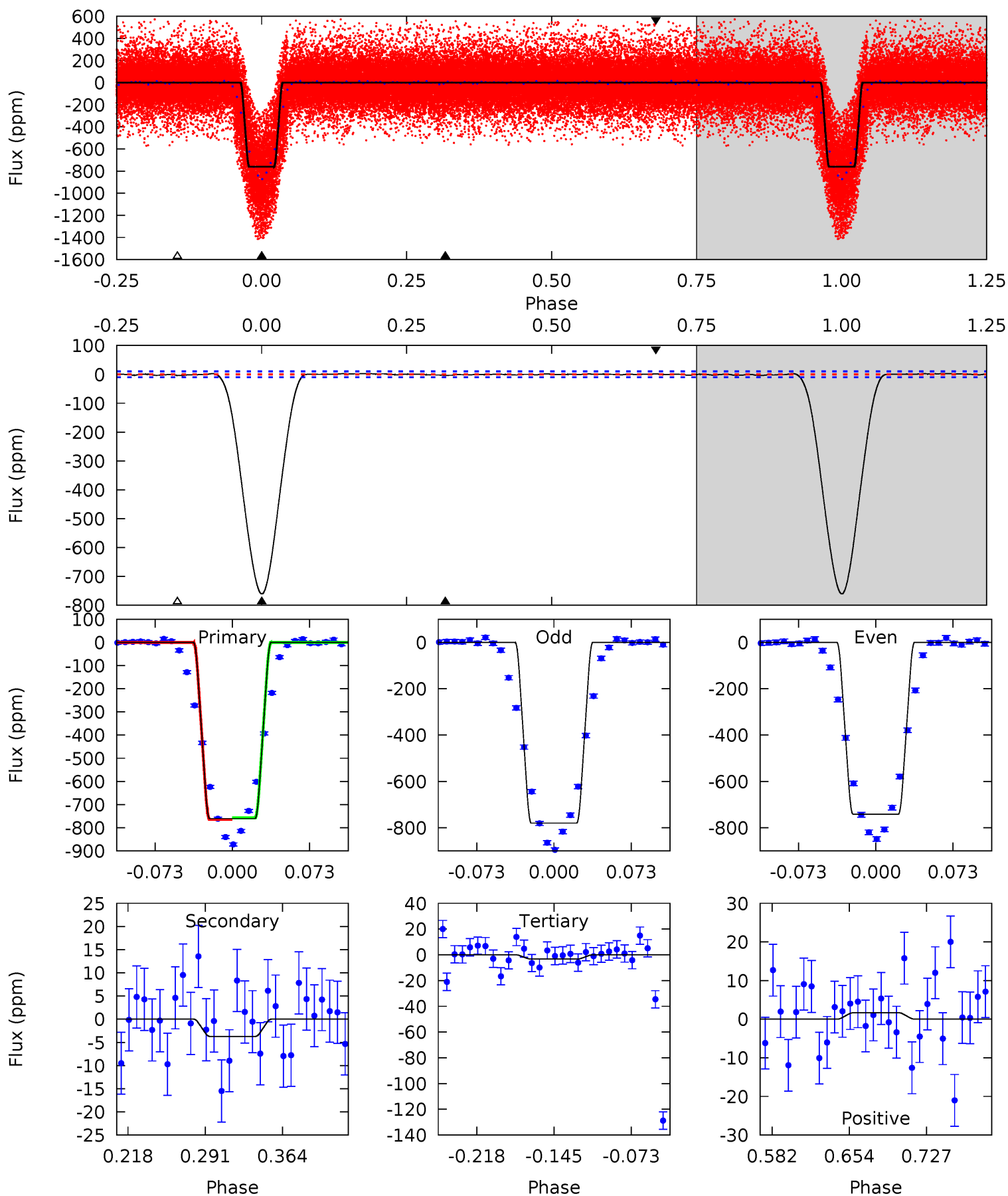
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	10.9	9.72	14.3	4.64	1.81	5.87	9.57	4.95	1.13	-3.48	2.04	1.21	0.44	0.11



Alt Model-Shift Uniqueness Test

002853320-01, P = 5.065185 Days, E = 130.002028 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
350.9	1.72	1.56	0.76	4.63	1.79	0.66	349.4	350.2	0.16	0.96	8.99	1.00	0.00	1.62



Stellar Parameters For KIC 002853320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	11357^{+587}_{-1762}	$3.667^{+0.448}_{-0.112}$	$0.070^{+0.150}_{-0.600}$	$4.528^{+0.578}_{-2.310}$	$3.472^{+0.058}_{-1.105}$	$0.053^{+0.262}_{-0.014}$
	+5%/-16%	+12%/-3%	+214%/-857%	+13%/-51%	+2%/-32%	+497%/-27%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002853320-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-33 ± 3	$3.55^{+0.86}_{-0.97}$	4764^{+564}_{-855}	8717^{+1465}_{-1278}	11^{+8}_{-4}
Alt.	-4 ± 2	$13.99^{+1.67}_{-3.64}$	4767^{+587}_{-844}	-3624^{+454}_{-324}	$0.083^{+0.074}_{-0.049}$

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

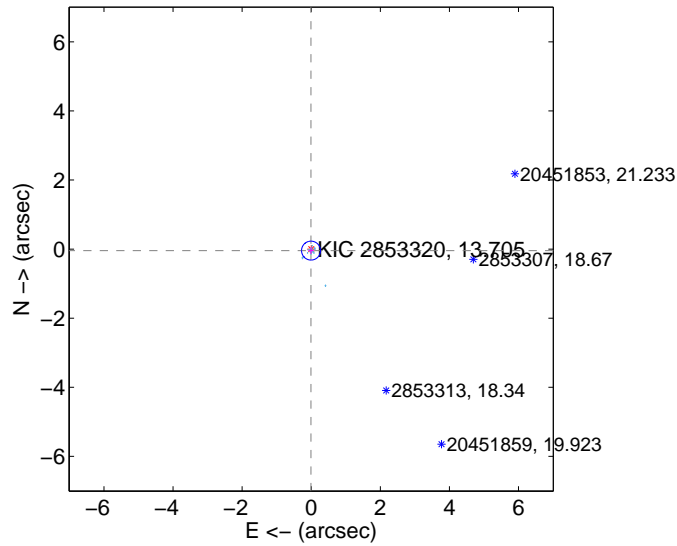
Supplemental centroid analysis for 002853320-01. Kepler magnitude: 13.71. Transit SNR 12.11

There are 17 quarters with good PRF difference image offsets

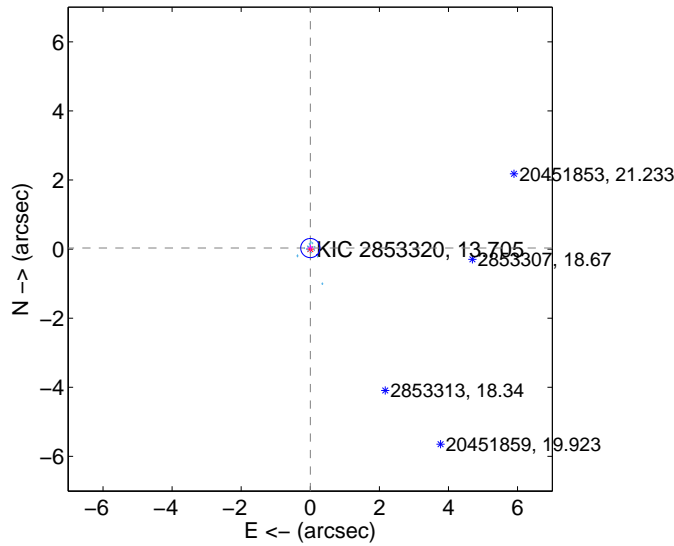
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.044 ± 0.091	0.48	0.007 ± 0.074	-0.044 ± 0.094
PRF-fit source offset from KIC position	0.031 ± 0.093	0.33	-0.000 ± 0.077	0.031 ± 0.093
photometric centroid source offset	3.21 ± 0.88	3.66	2.81 ± 0.85	-1.55 ± 0.95

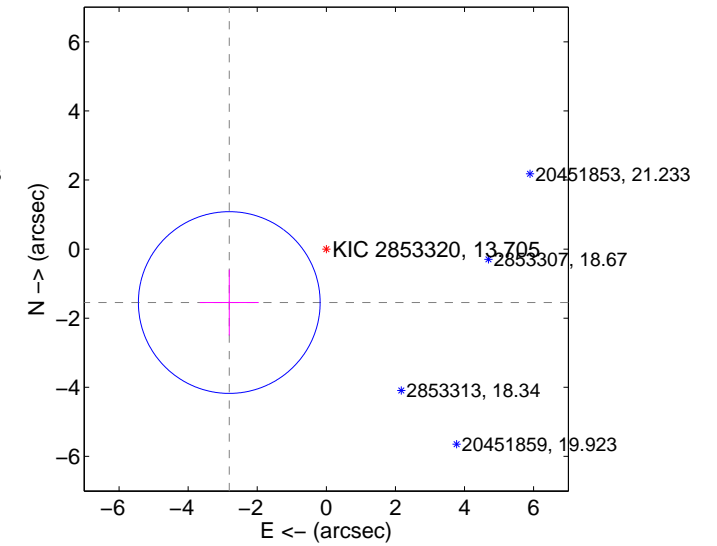
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

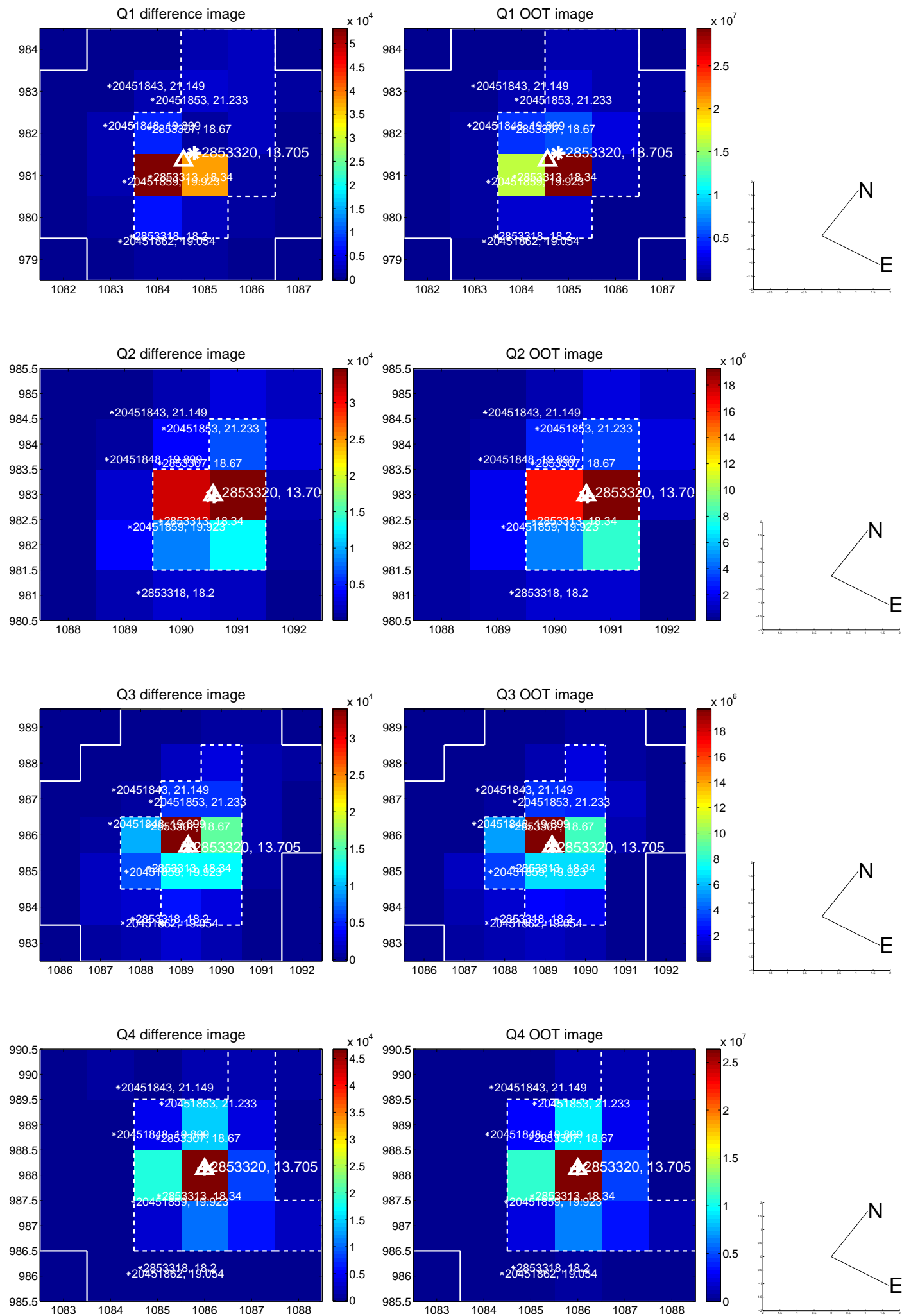


offset from photometric centroids

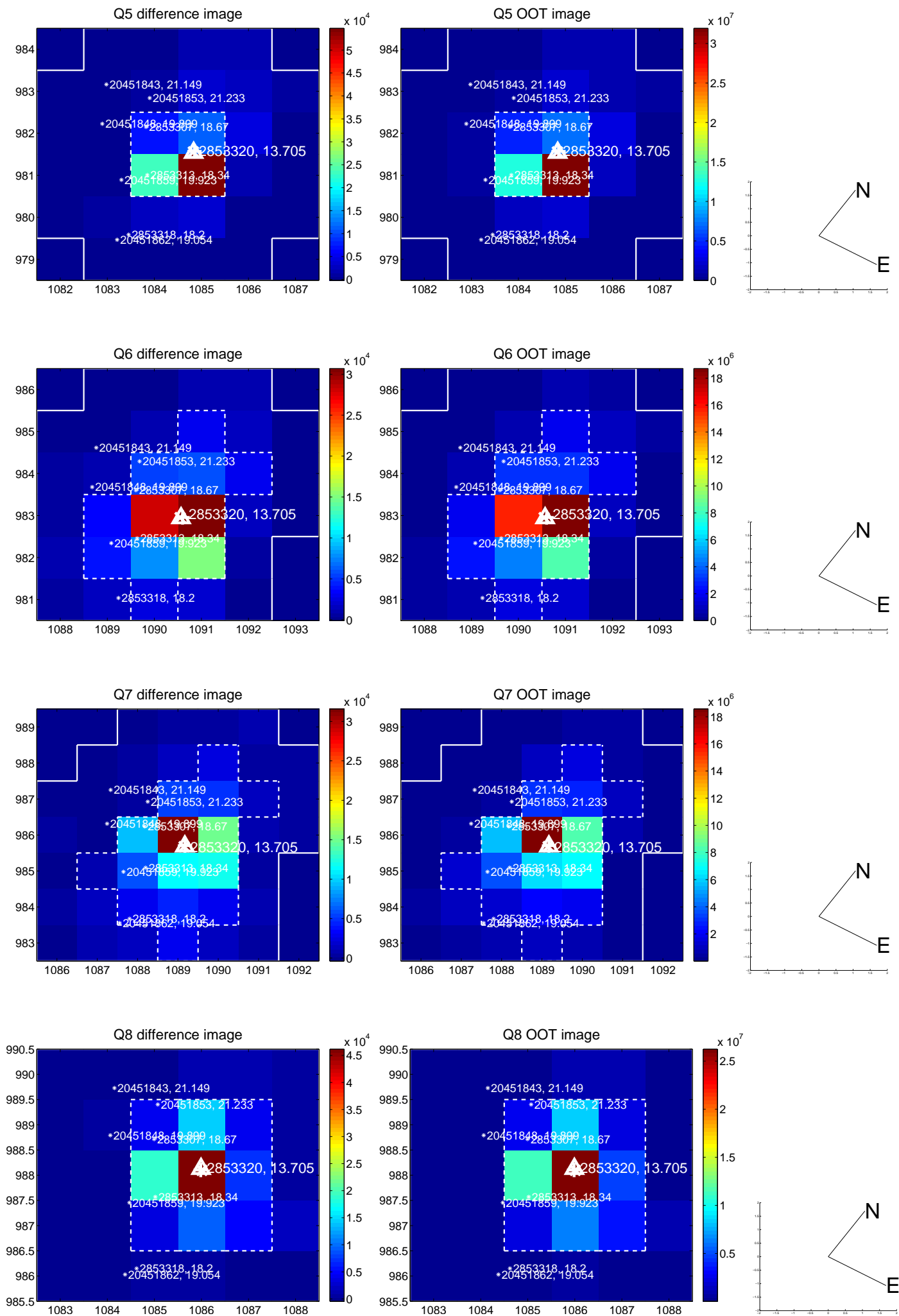


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

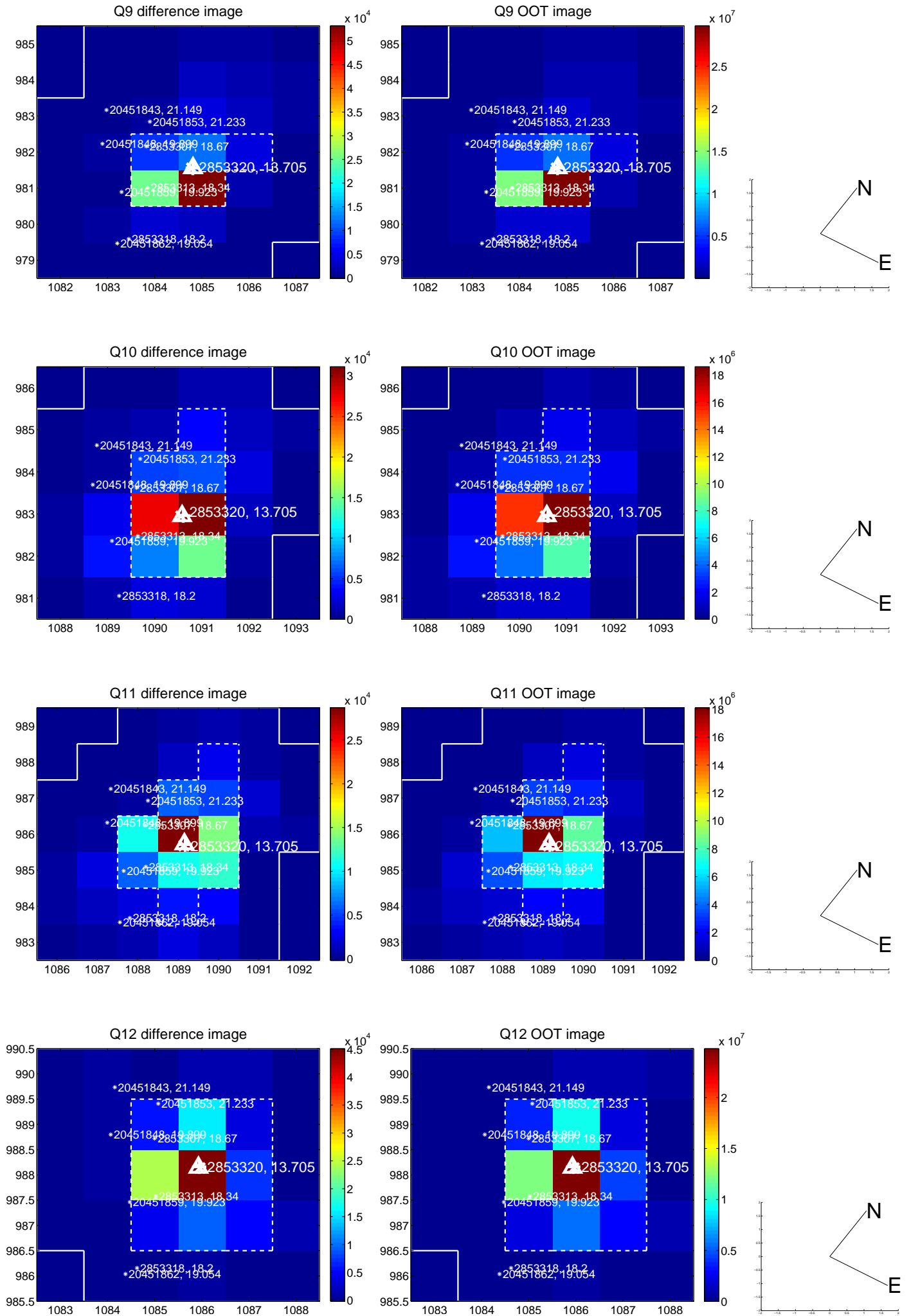
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



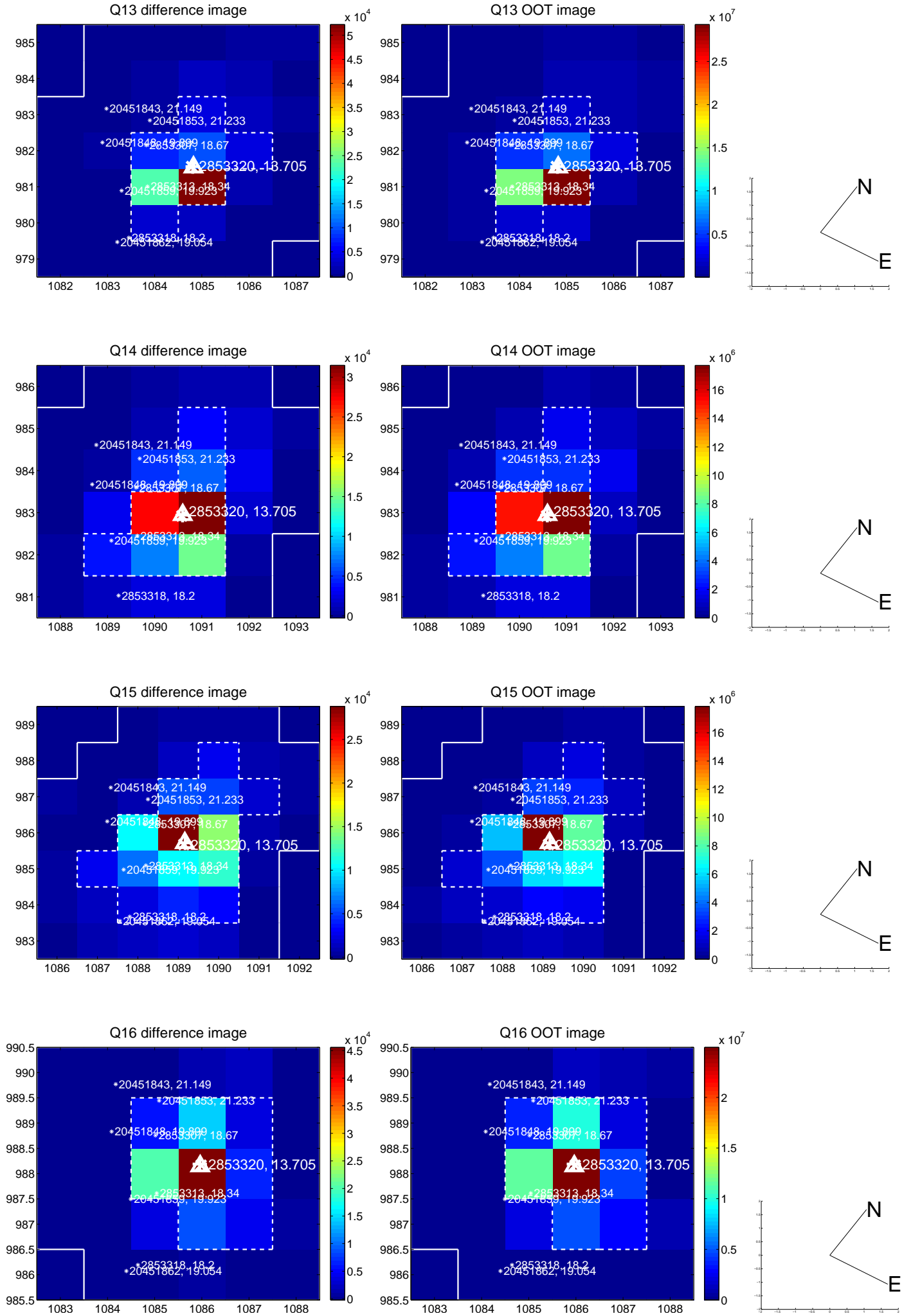
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



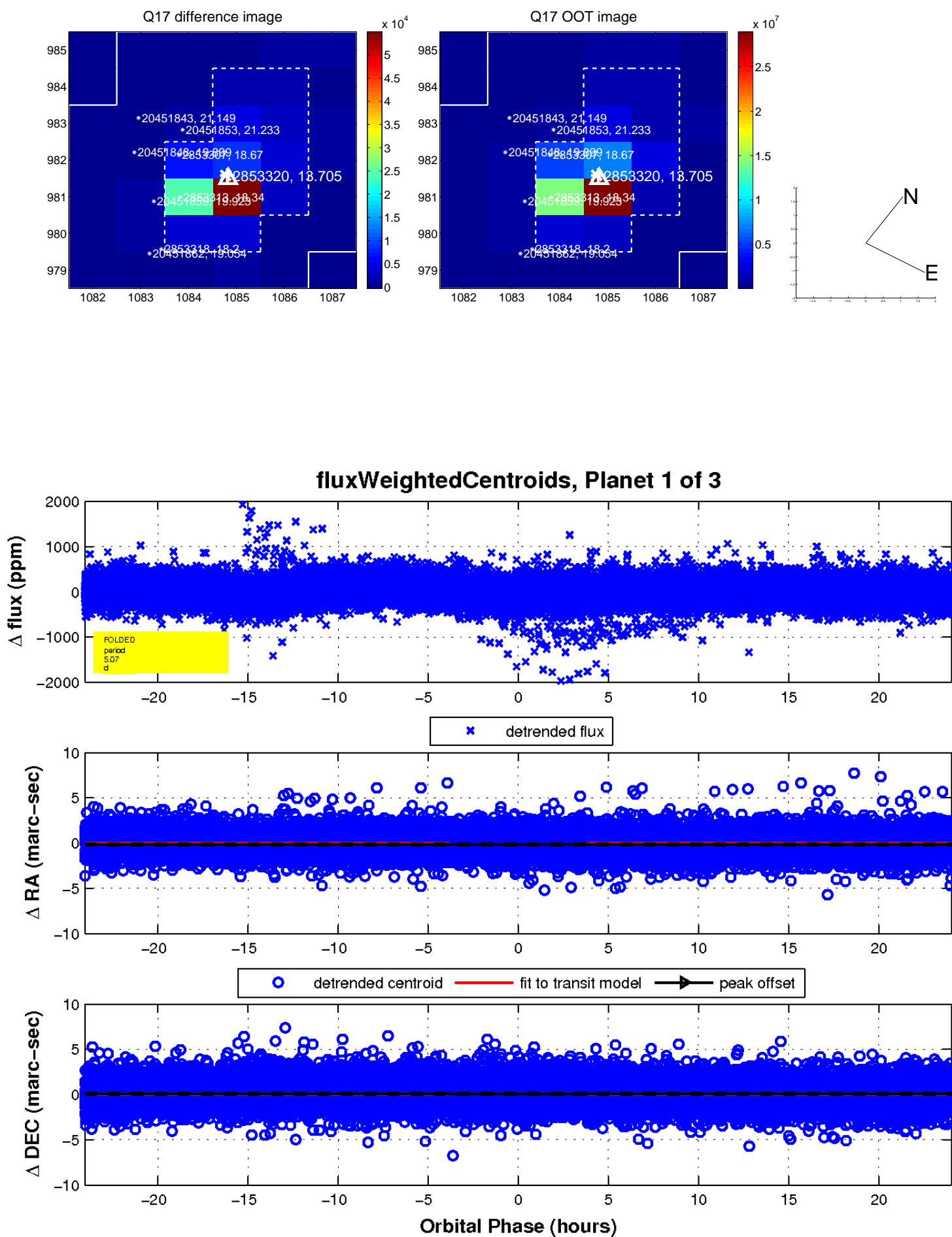
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

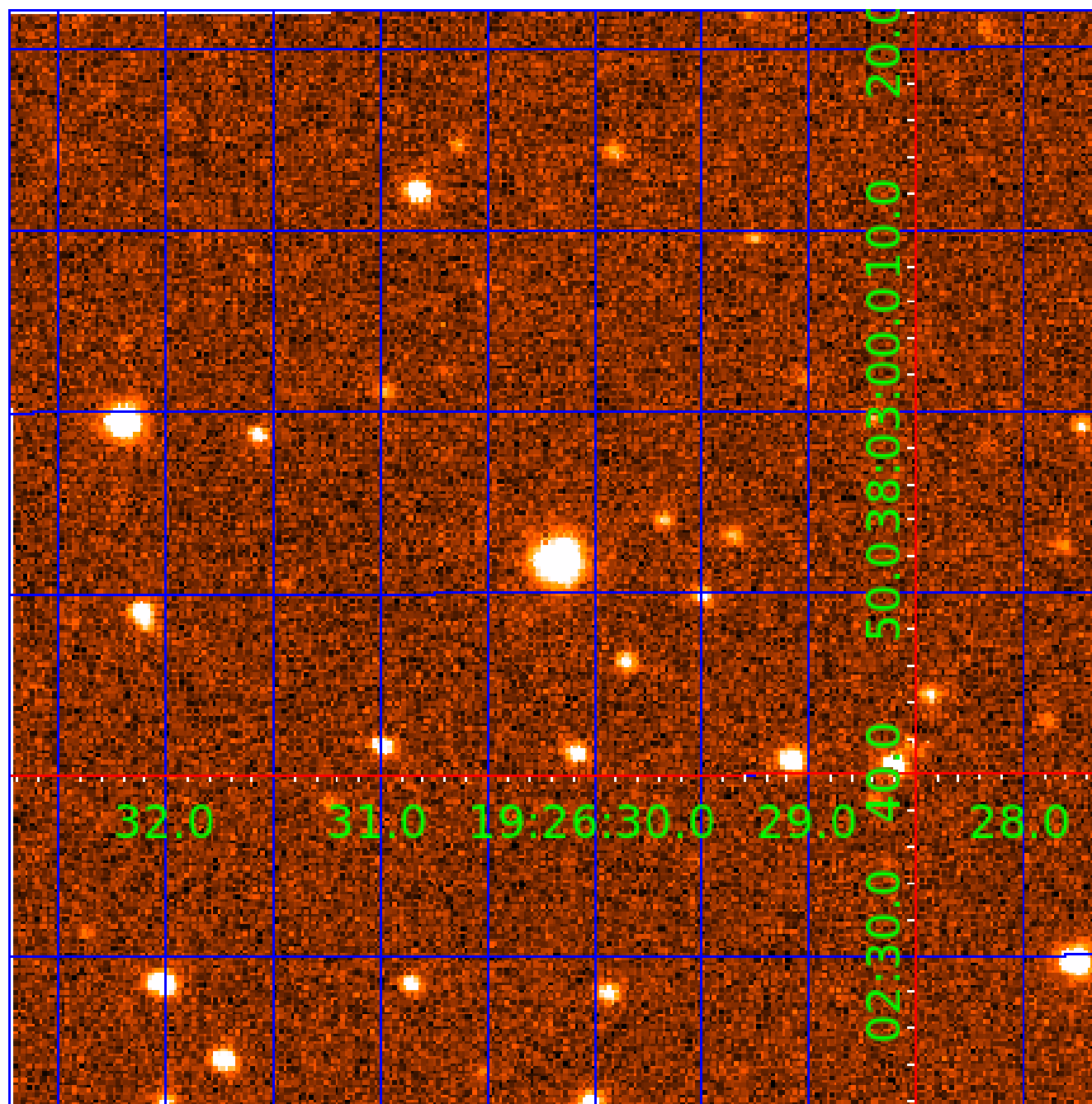


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002853320

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})
002853320-01	OBS	No	5.065332	135.027682	59.4	8.011	11.6	12.1	4.53	11357	3.81	39970.78
002853320-02	OBS	No	1.013035	131.547695	35.9	3.934	11.5	12.5	4.53	11357	3.09	341759.26
002853320-03	OBS	No	5.065570	132.286300	46.4	20.431	9.5	9.6	4.53	11357	3.39	39968.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002853320-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002853320-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
002853320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—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.

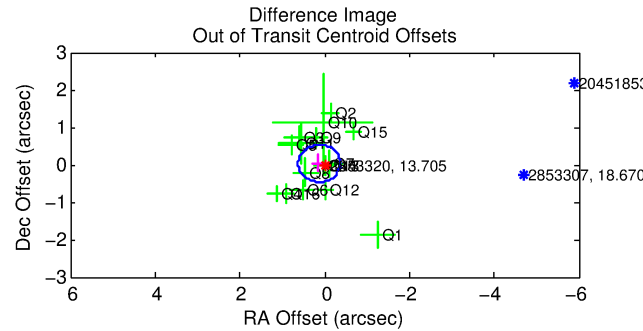
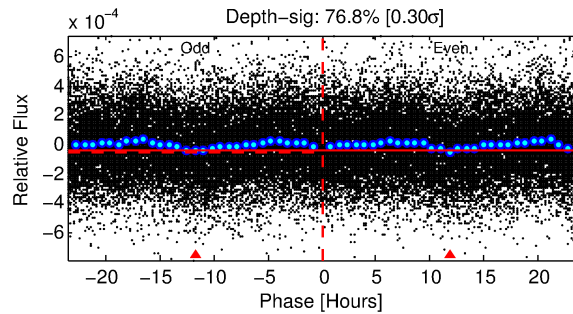
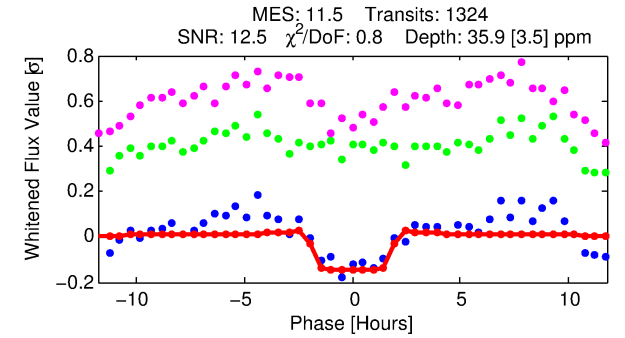
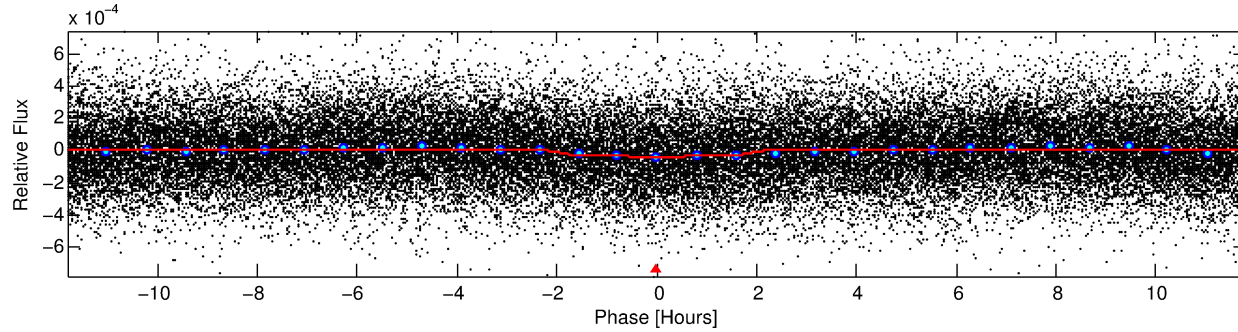
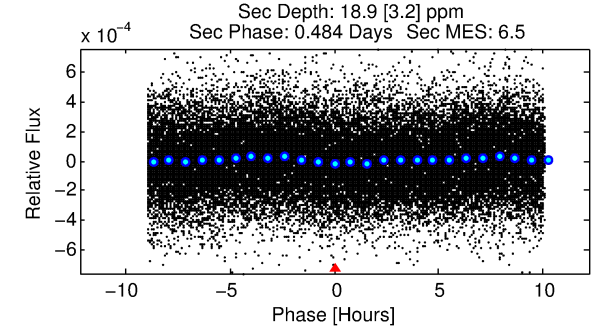
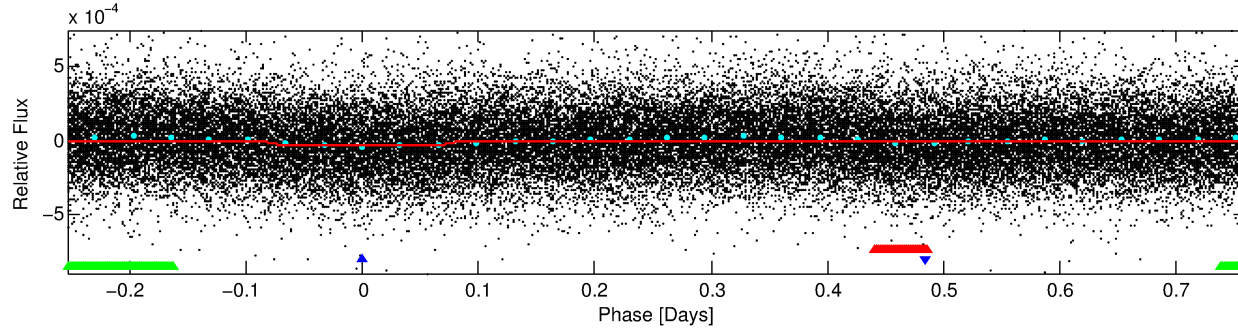
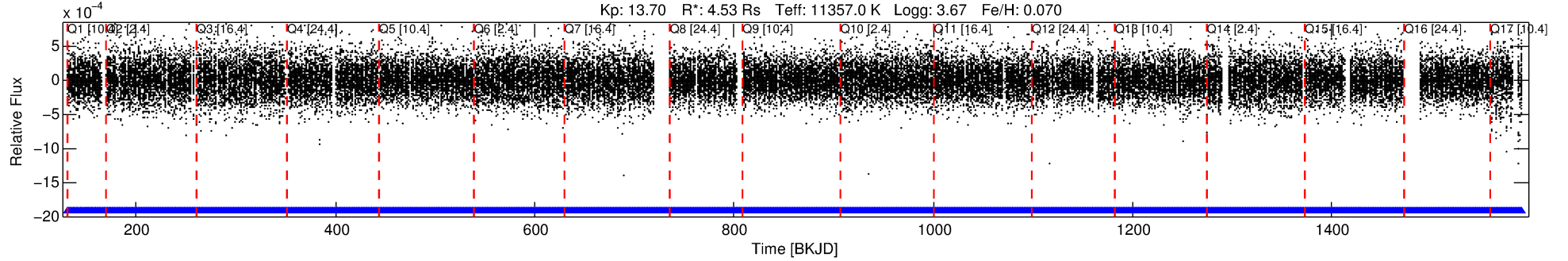
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002853320-02

No Significant Match Found

DV One-Page Summary

KIC: 2853320 Candidate: 2 of 3 Period: 1.013 d



DV Fit Results:

Period = 1.01304 [0.00001] d
Epoch = 131.5477 [0.0031] BKJD
Rp/R* = 0.0062 [0.0012]
a/R* = 1.30 [0.91]
b = 0.89 [0.39]
Seff = 341759.26 [337241.82]
Teq = 6165 [1521] K
Rp = 3.09 [1.69] Re
a = 0.0299 [0.0145] AU
Ag = 0.98 [0.86] [-0.03σ]
Teffp = 9480 [1792] K [1.41σ]

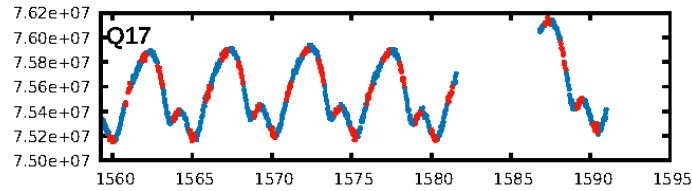
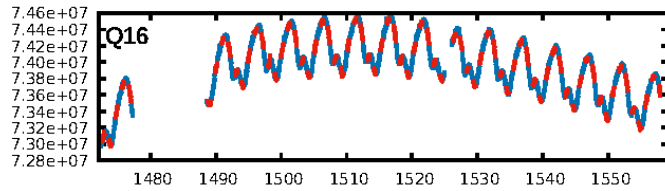
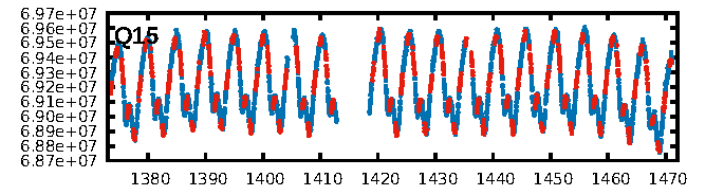
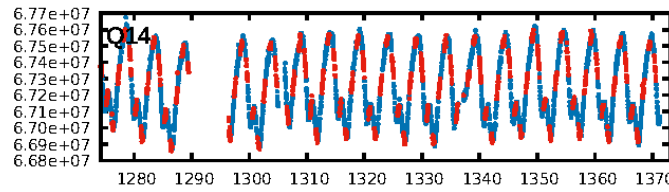
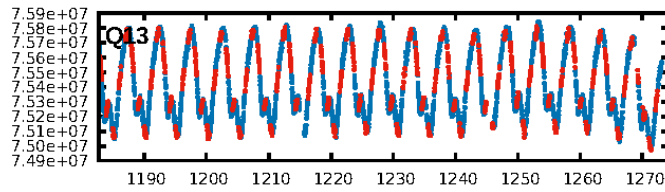
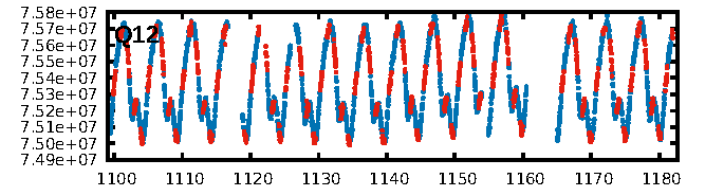
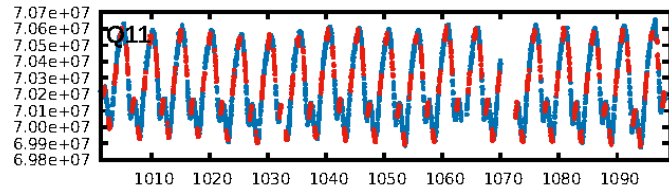
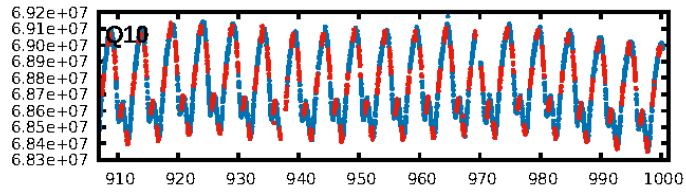
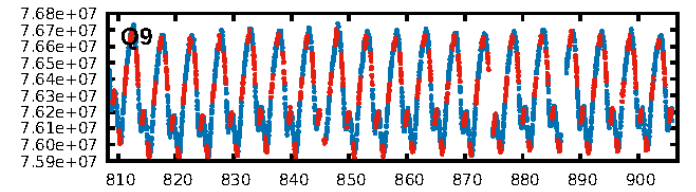
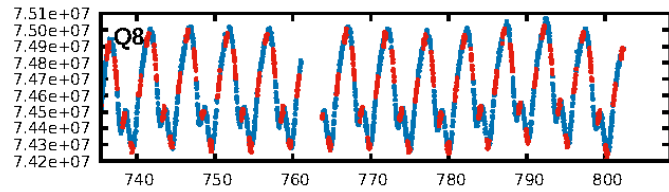
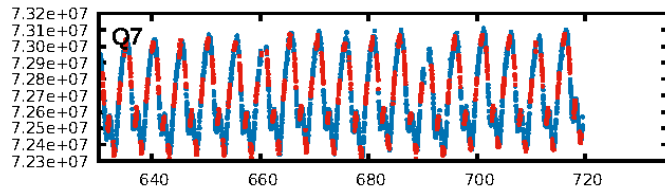
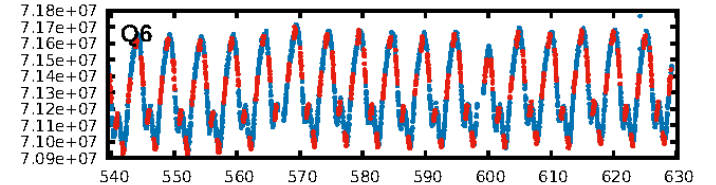
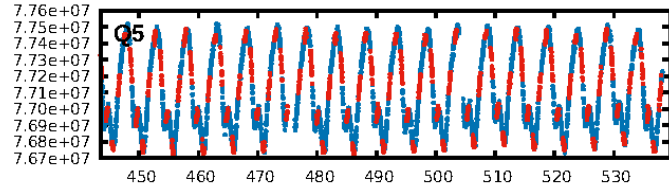
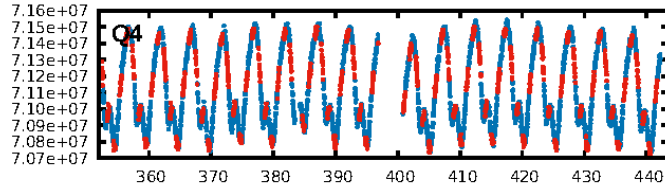
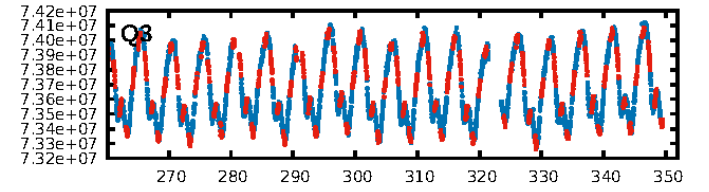
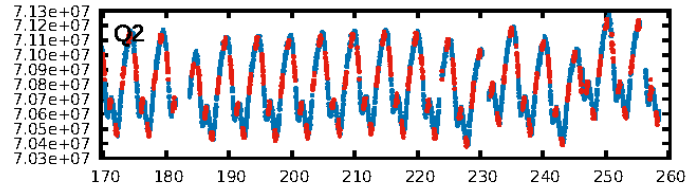
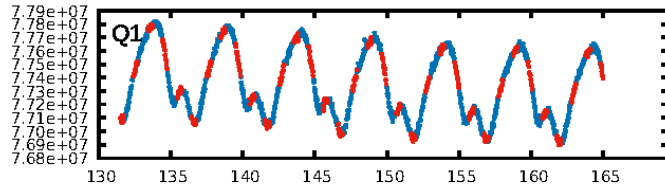
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [10.90σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.78e-33
RollingBand-fgt: 1.00 [1264/1264]
GhostDiagnostic-chr: 5.584
Centroid-sig: 45.8%
Centroid-so: 0.449 arcsec [0.52σ]
OotOffset-rm: 0.137 arcsec [0.83σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.219 arcsec [1.30σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.47 [8/17]
DiffImageOverlap-fno: 1.00 [17/17]

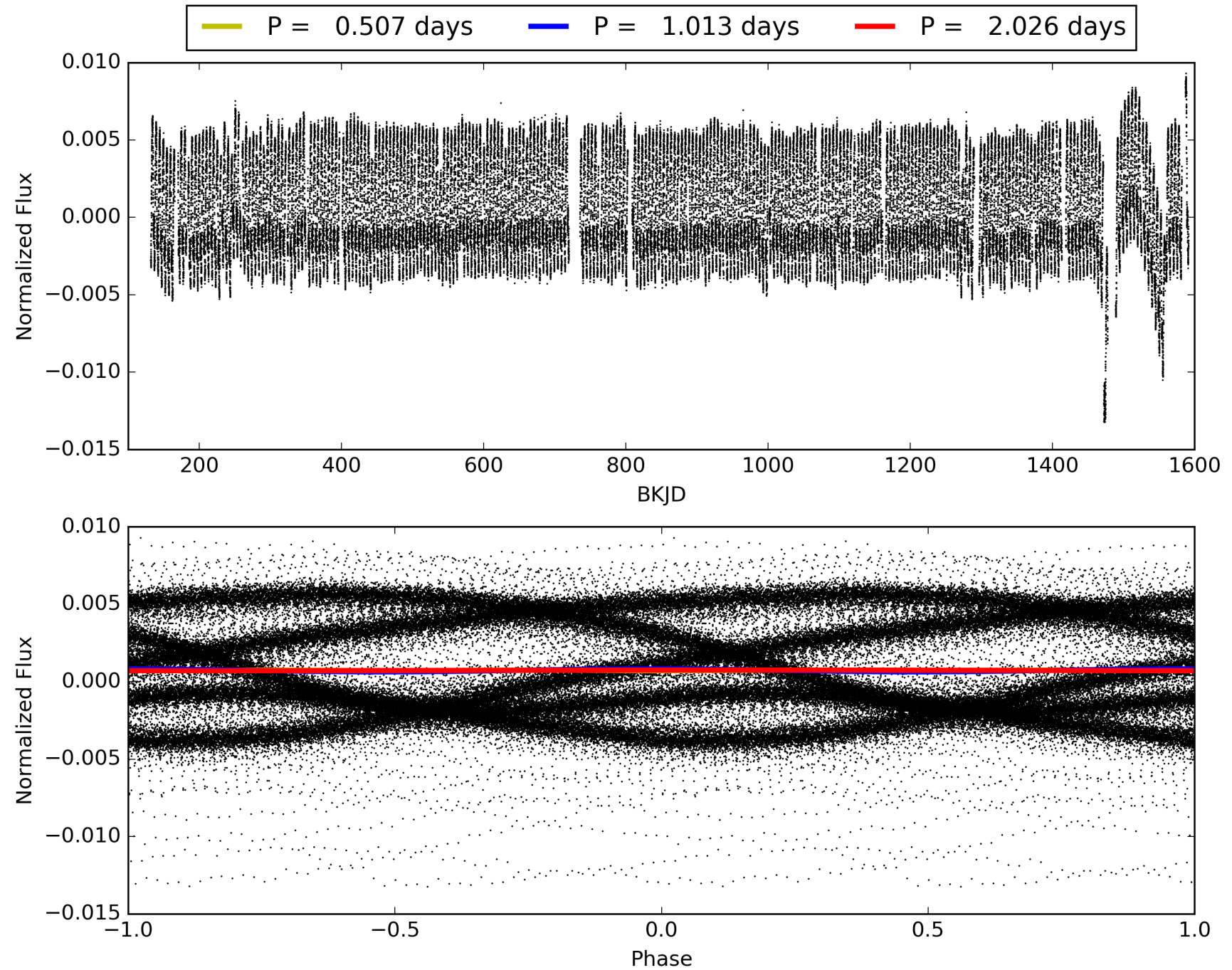
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:19:08 Z

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

TCE 002853320-02, PDC Light Curves

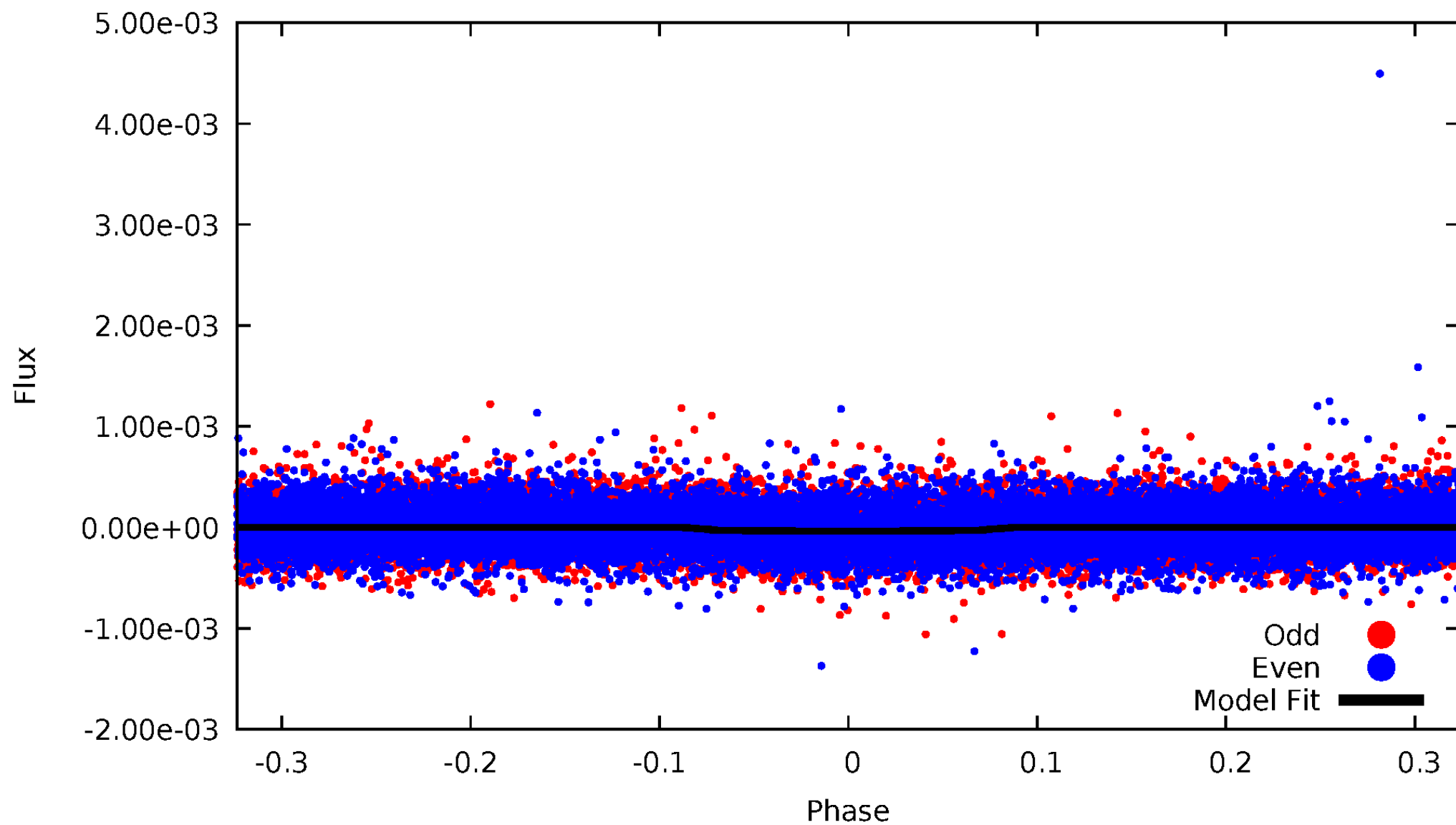


TCE 002853320-02



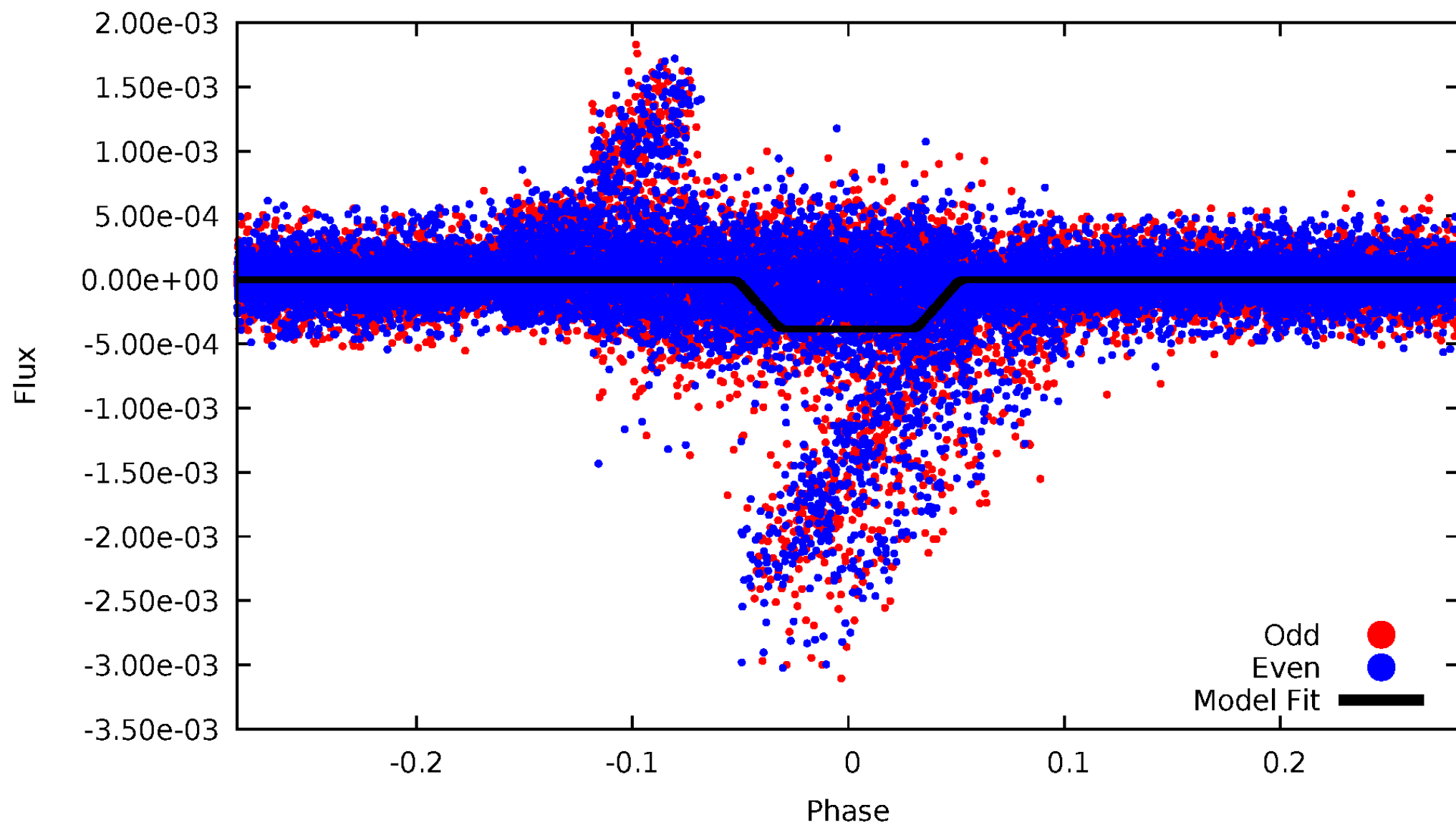
DV Odd/Even

TCE 002853320-02



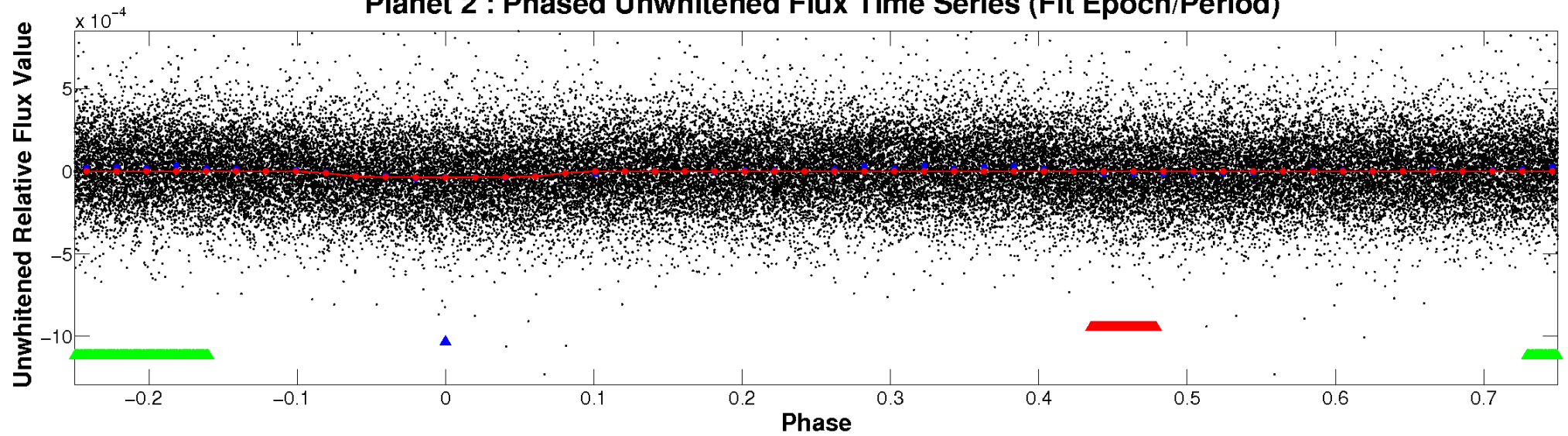
ALT Odd/Even

TCE 002853320-02

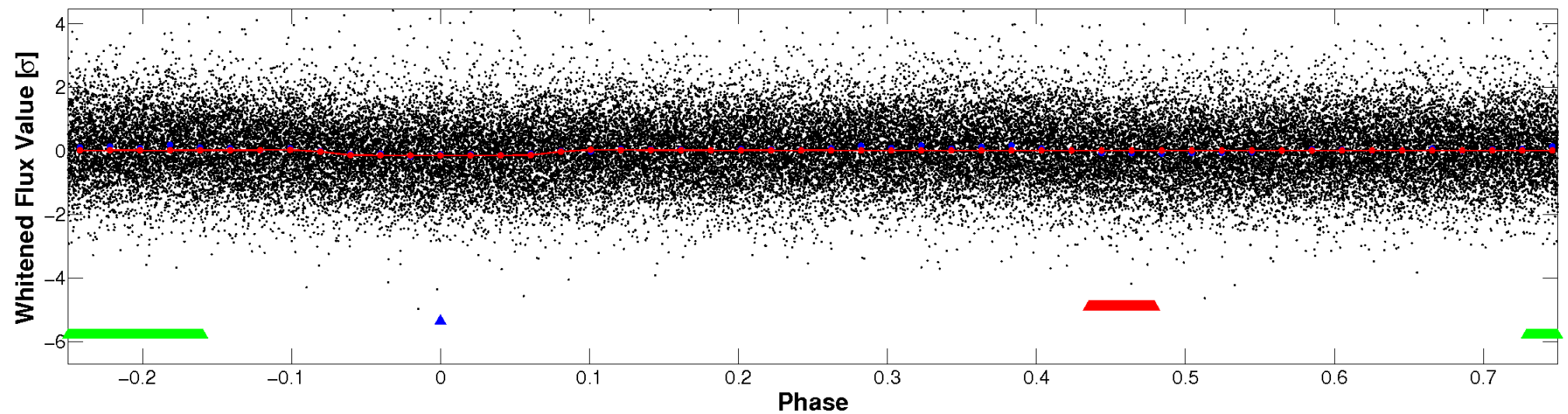


Non-Whitened Vs. Whitened Light Curve

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

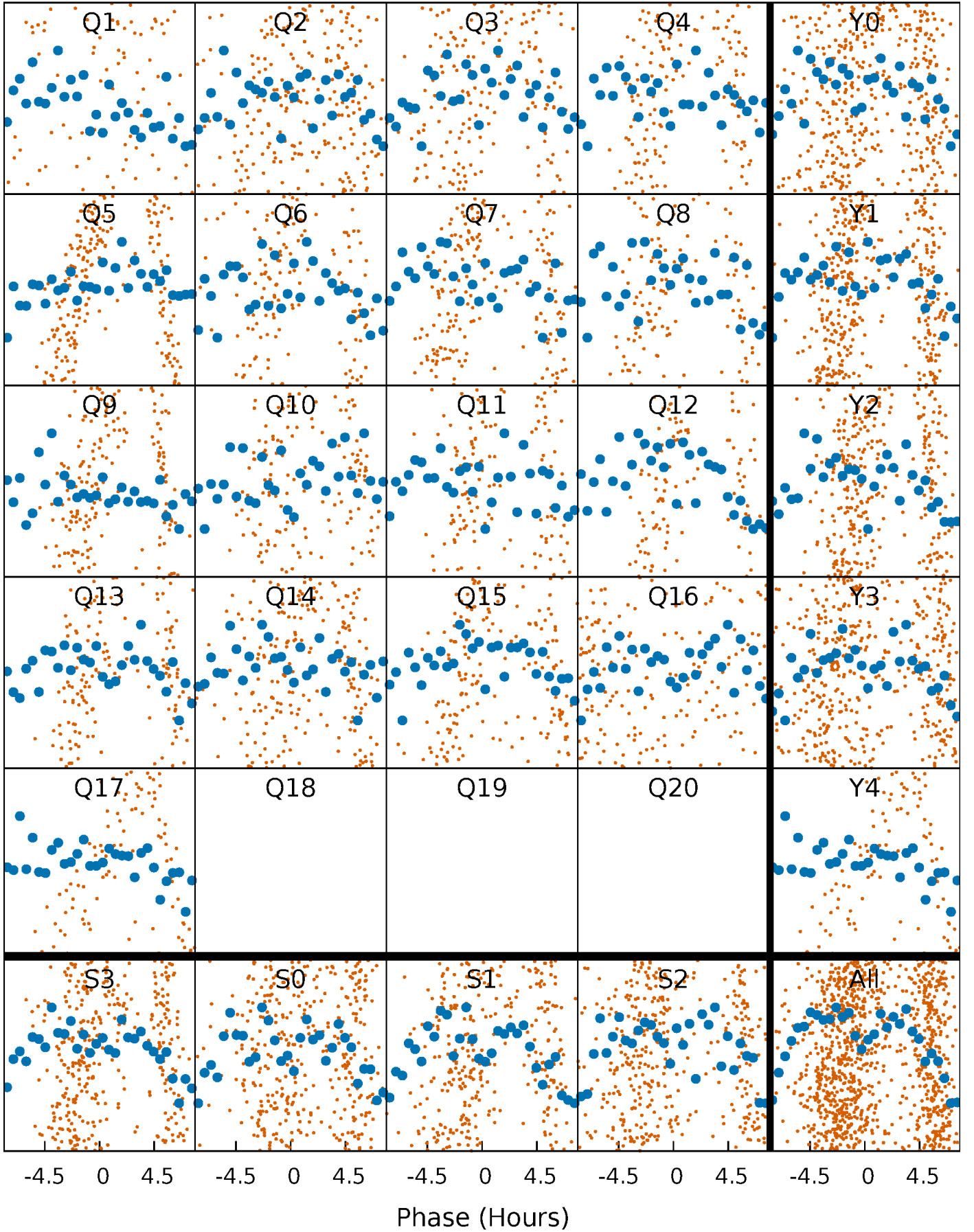


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



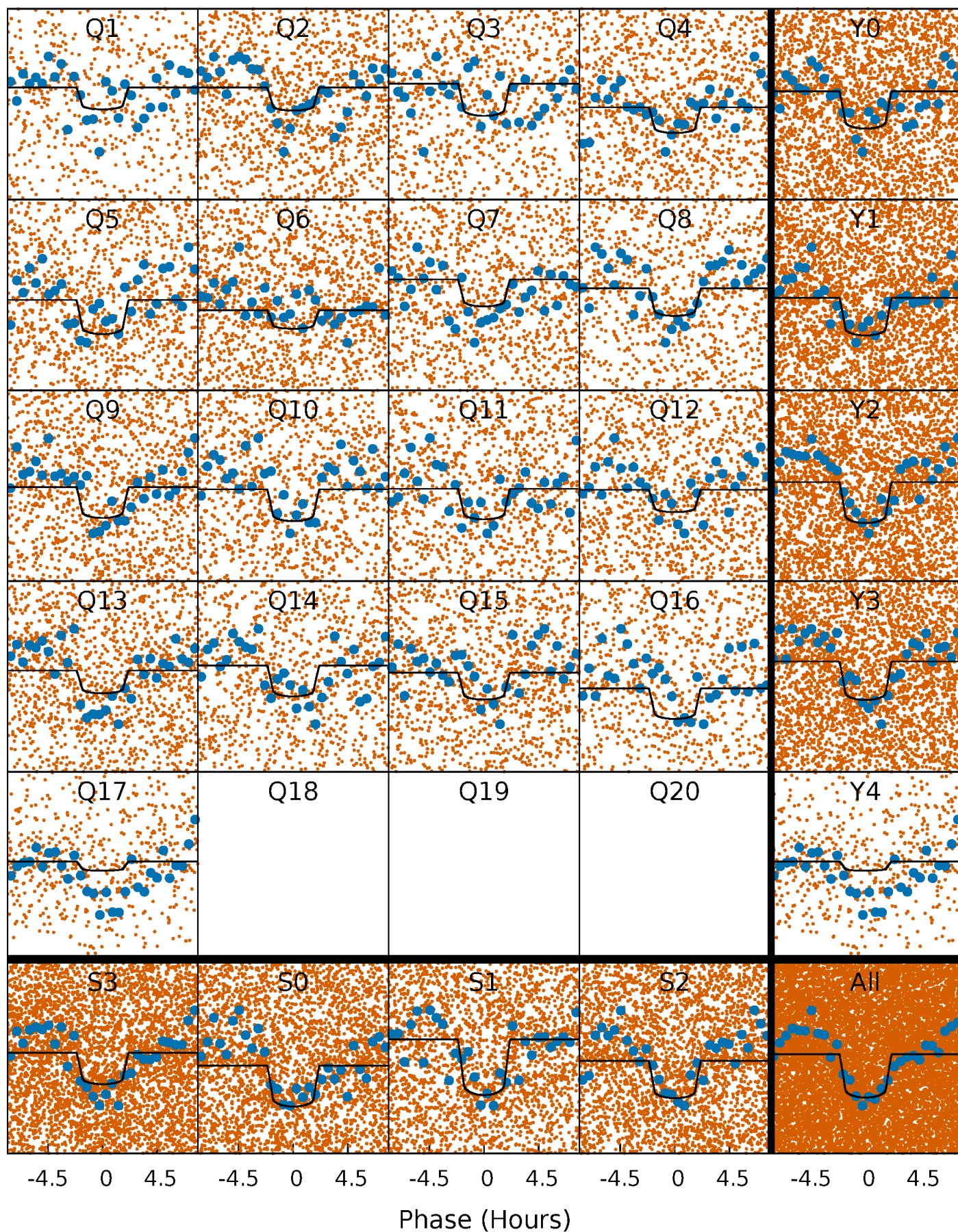
PDC Quarter-Phased Transit Curves

TCE 002853320-02 P= 1.013035 Days $T_0=131.547696$ (BKJD)



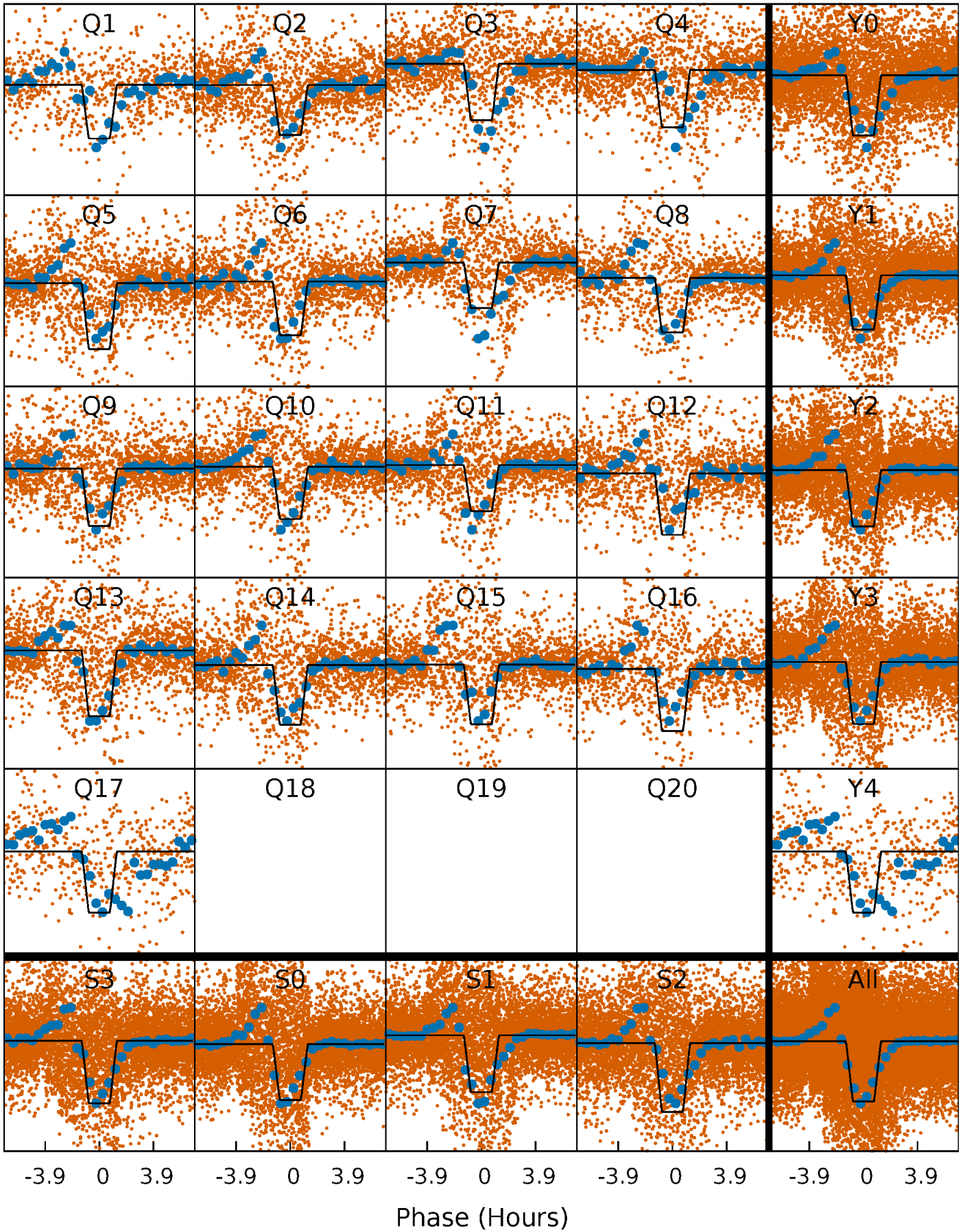
DV Quarter-Phased Transit Curves

TCE 002853320-02 P= 1.013035 Days $T_0=131.547696$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

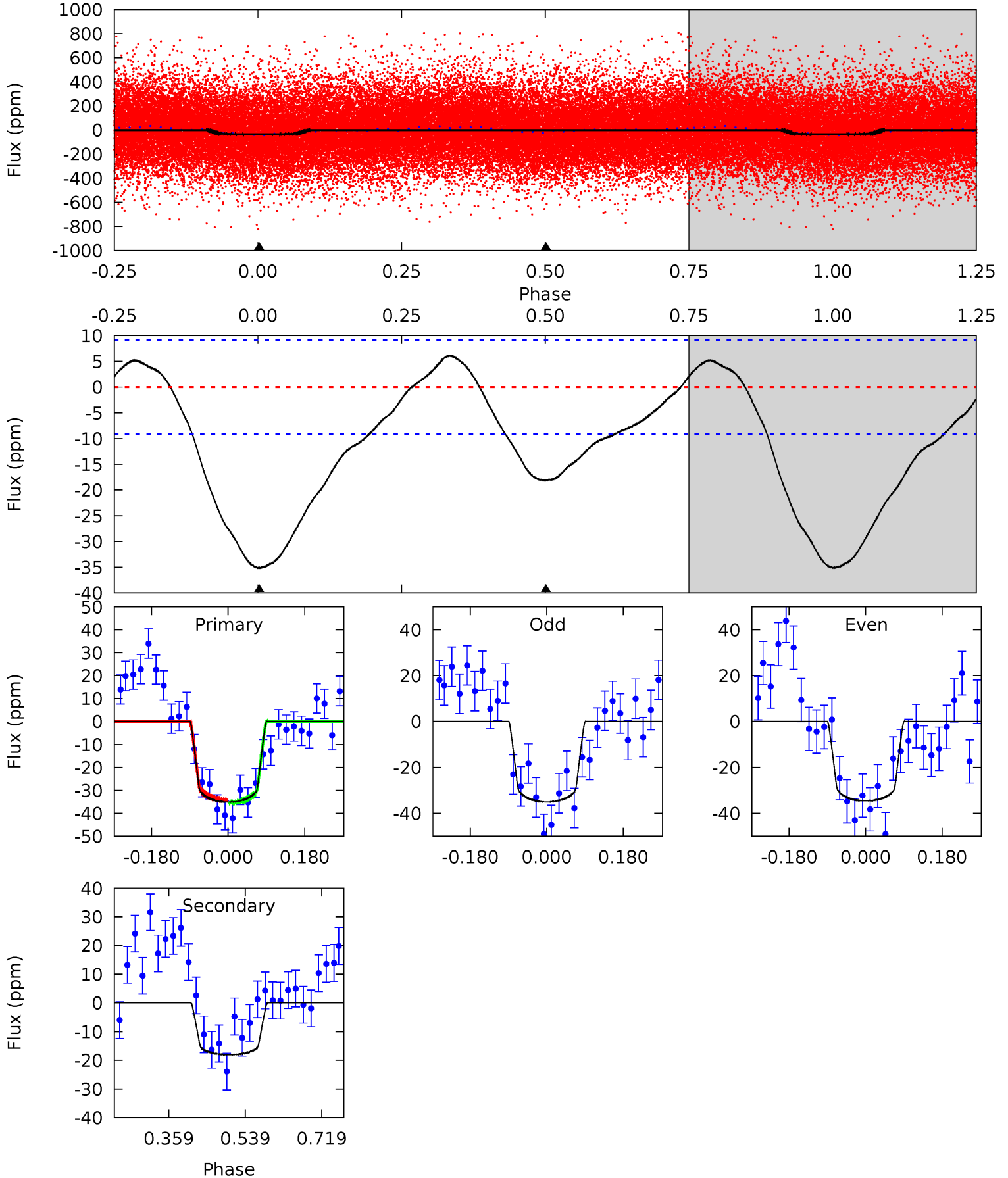
TCE 002853320-02 $P = 1.013074$ Days $T_0 = 131.544351$ (BKJD)



DV Model-Shift Uniqueness Test

002853320-02, P = 1.013035 Days, E = 130.534661 Days

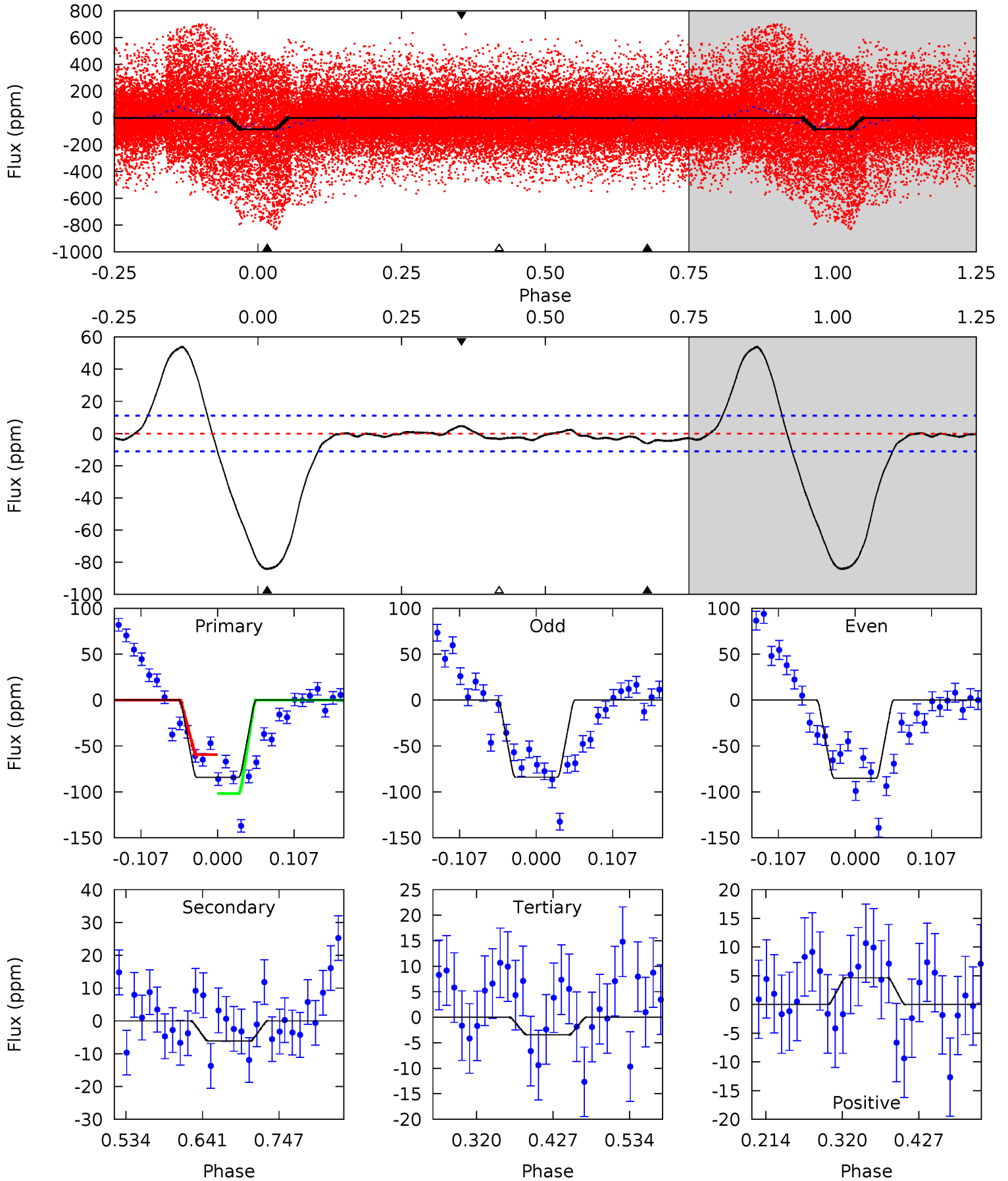
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	8.83	0	0	4.44	1.34	2.16	17.1	17.1	8.83	8.83	0.10	0.95	0.15	0.27



Alt Model-Shift Uniqueness Test

002853320-02, P = 1.013074 Days, E = 130.531277 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.4	2.51	1.40	1.91	4.55	1.61	6.27	33.0	32.5	1.10	0.59	0.22	3.05	0.39	8.87



Stellar Parameters For KIC 002853320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	11357^{+587}_{-1762}	$3.667^{+0.448}_{-0.112}$	$0.070^{+0.150}_{-0.600}$	$4.528^{+0.578}_{-2.310}$	$3.472^{+0.058}_{-1.105}$	$0.053^{+0.262}_{-0.014}$
	+5%/-16%	+12%/-3%	+214%/-857%	+13%/-51%	+2%/-32%	+497%/-27%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002853320-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-18 ± 2	$2.78^{+0.79}_{-0.81}$	8084^{+1021}_{-1314}	7618^{+1839}_{-1383}	$1.147^{+0.977}_{-0.488}$
Alt.	-6 ± 2	$9.17^{+1.40}_{-2.47}$	8015^{+1065}_{-1273}	-5683^{+792}_{-631}	$0.035^{+0.029}_{-0.015}$

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 $A_{obs} \gg 1.0$

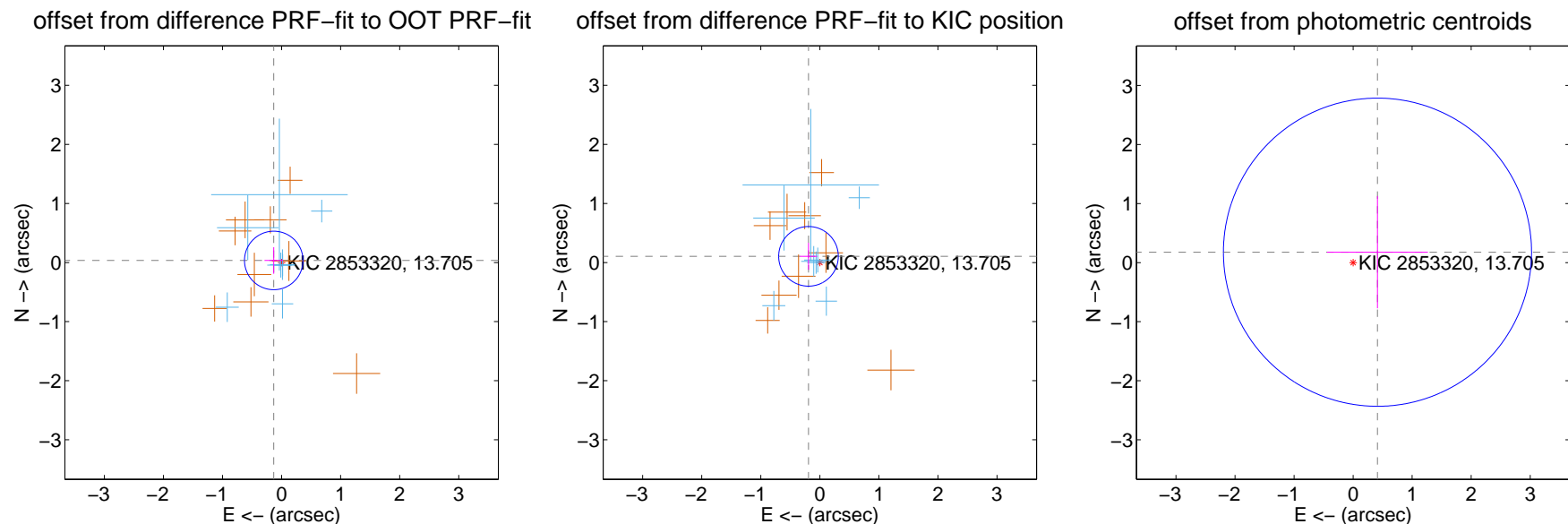
DV Centroid Data

Supplemental centroid analysis for 002853320-02. Kepler magnitude: 13.71. Transit SNR 12.46

There are 8 quarters with good PRF difference image offsets

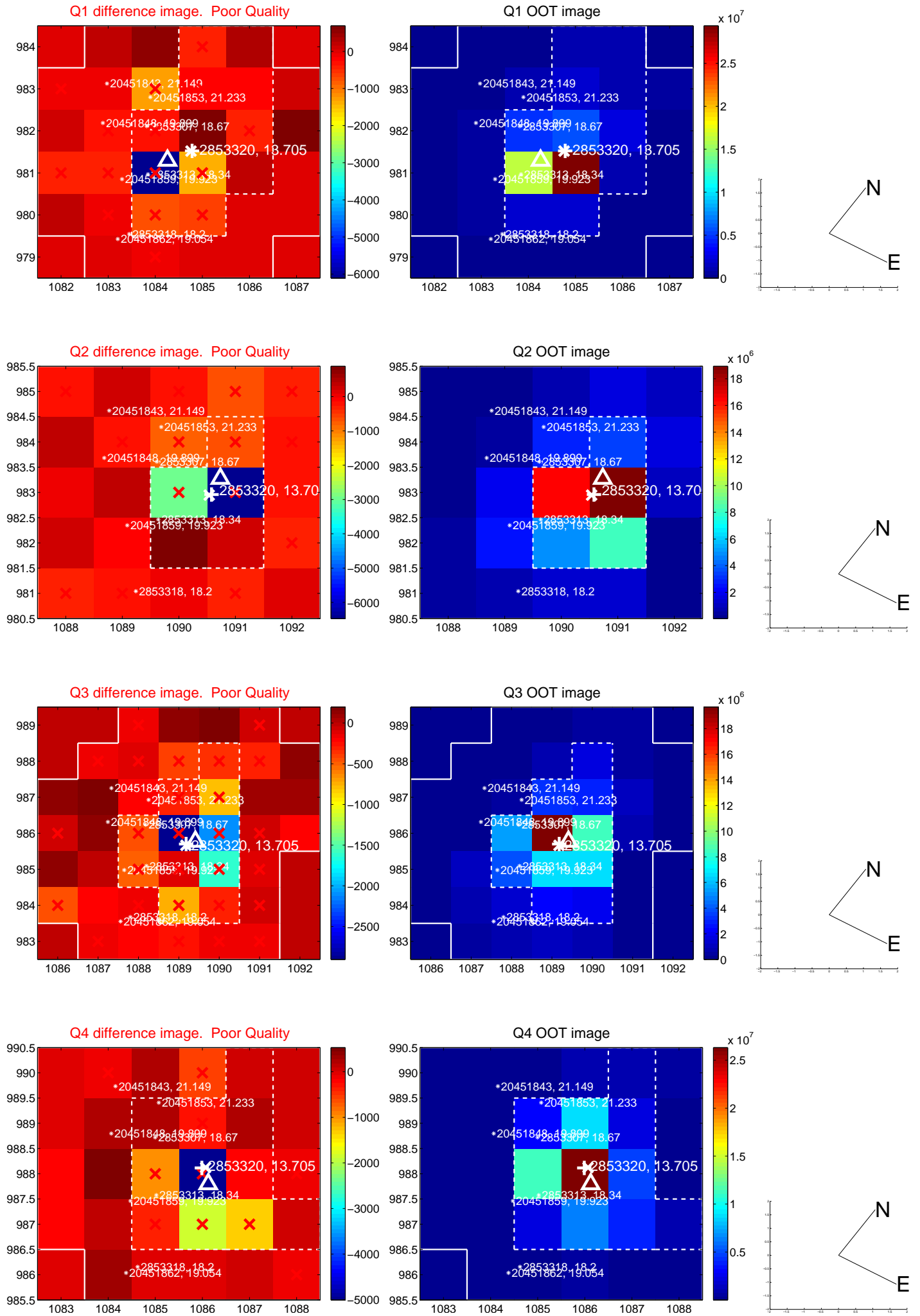
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.137 ± 0.165	0.83	0.133 ± 0.156	0.035 ± 0.225
PRF-fit source offset from KIC position	0.219 ± 0.168	1.30	0.192 ± 0.146	0.105 ± 0.228
photometric centroid source offset	0.45 ± 0.87	0.52	-0.41 ± 0.85	0.18 ± 0.95

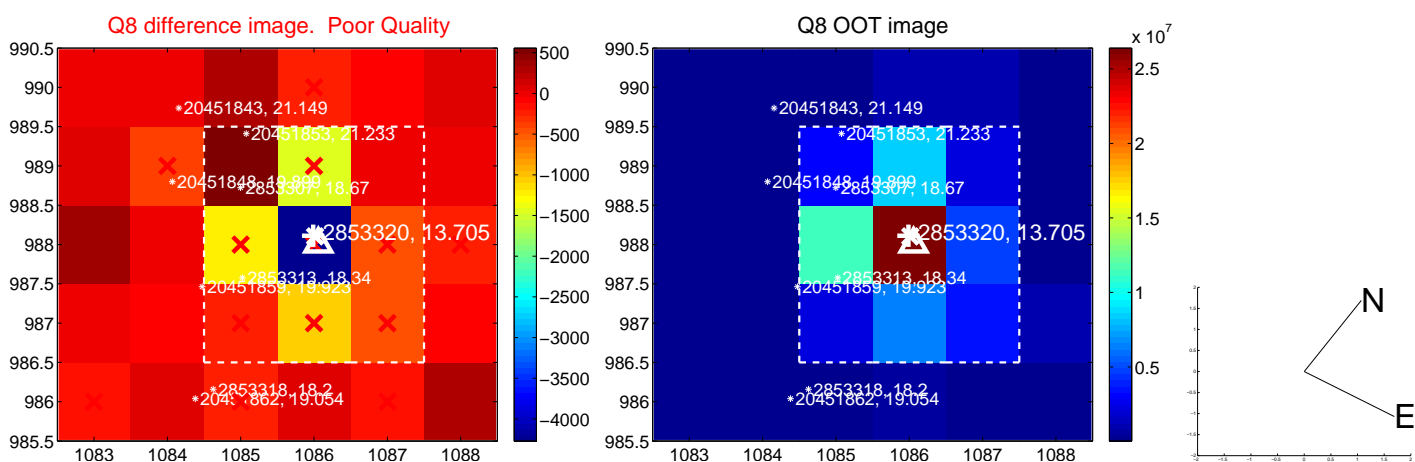
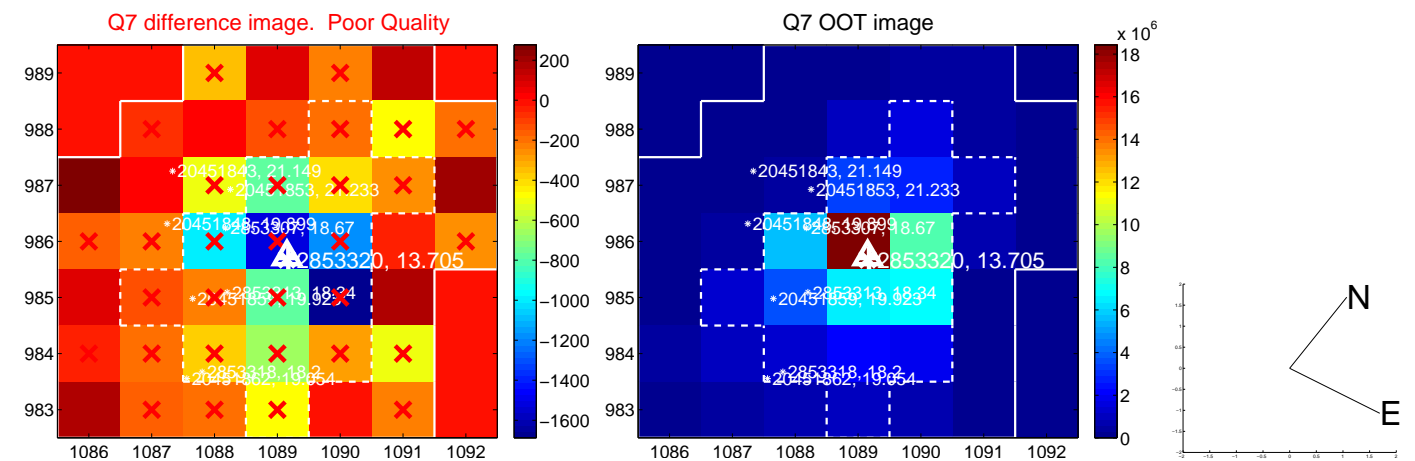
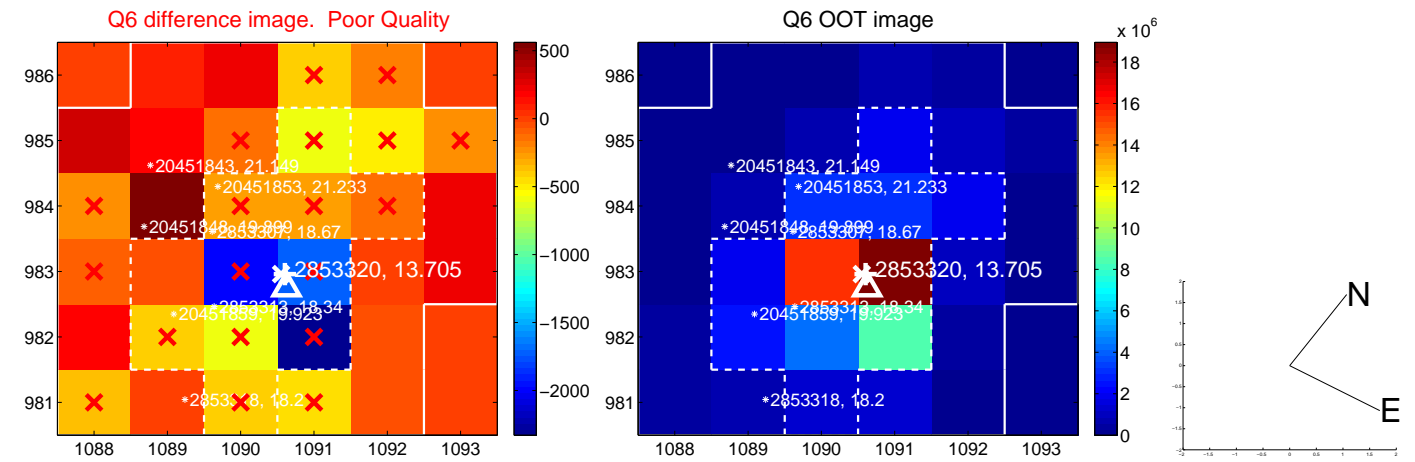
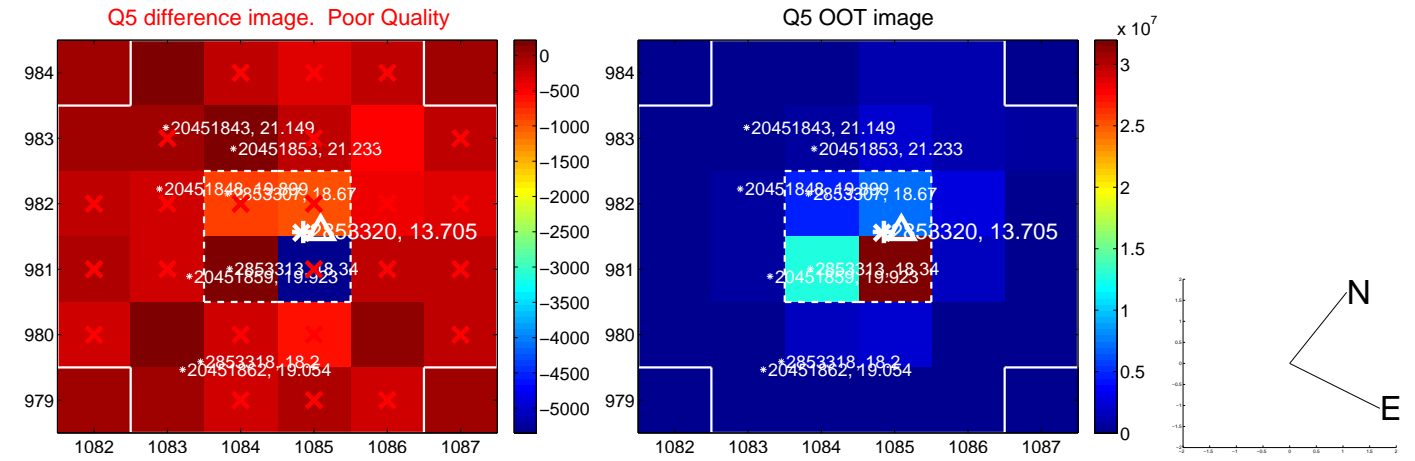


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

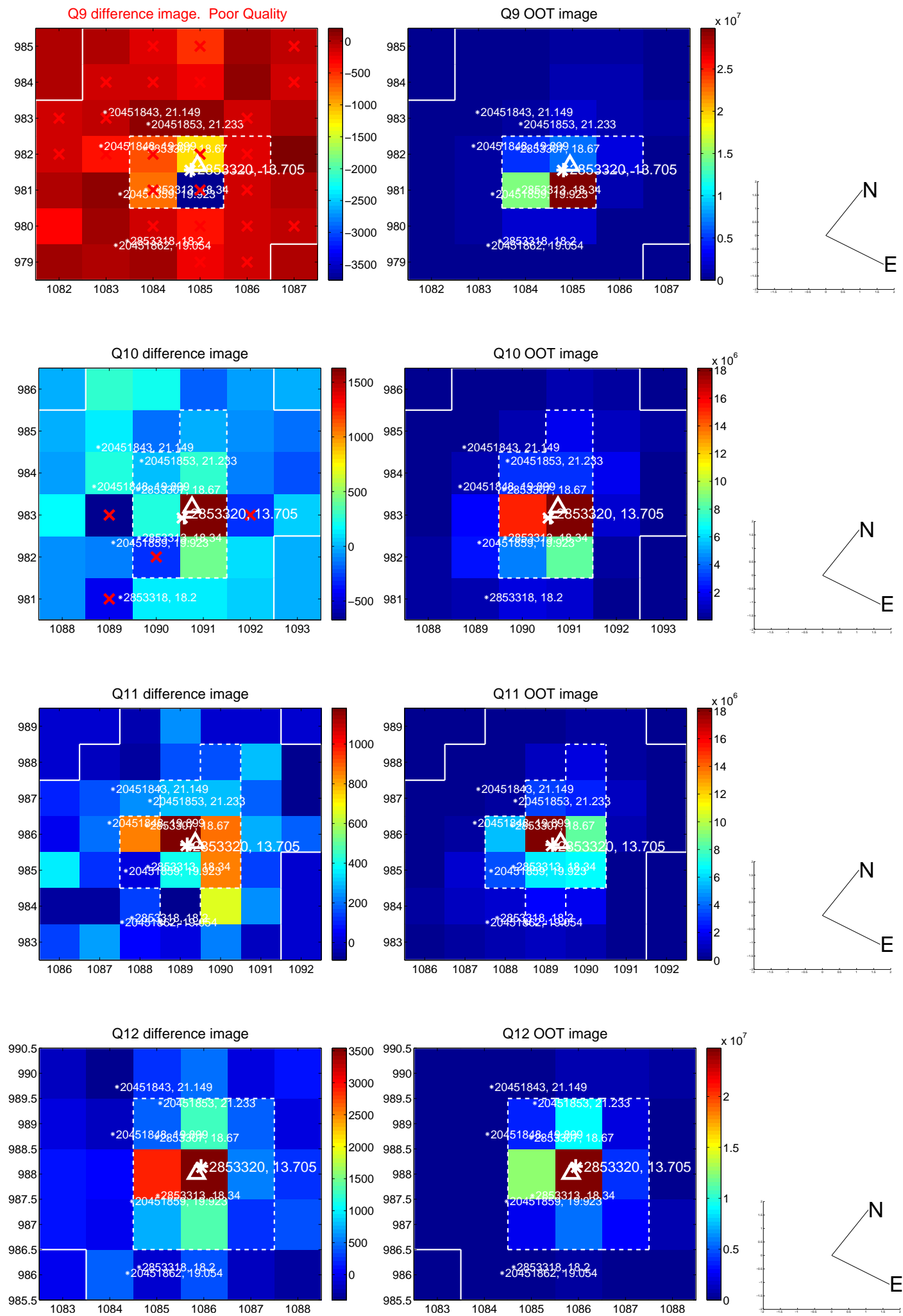
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



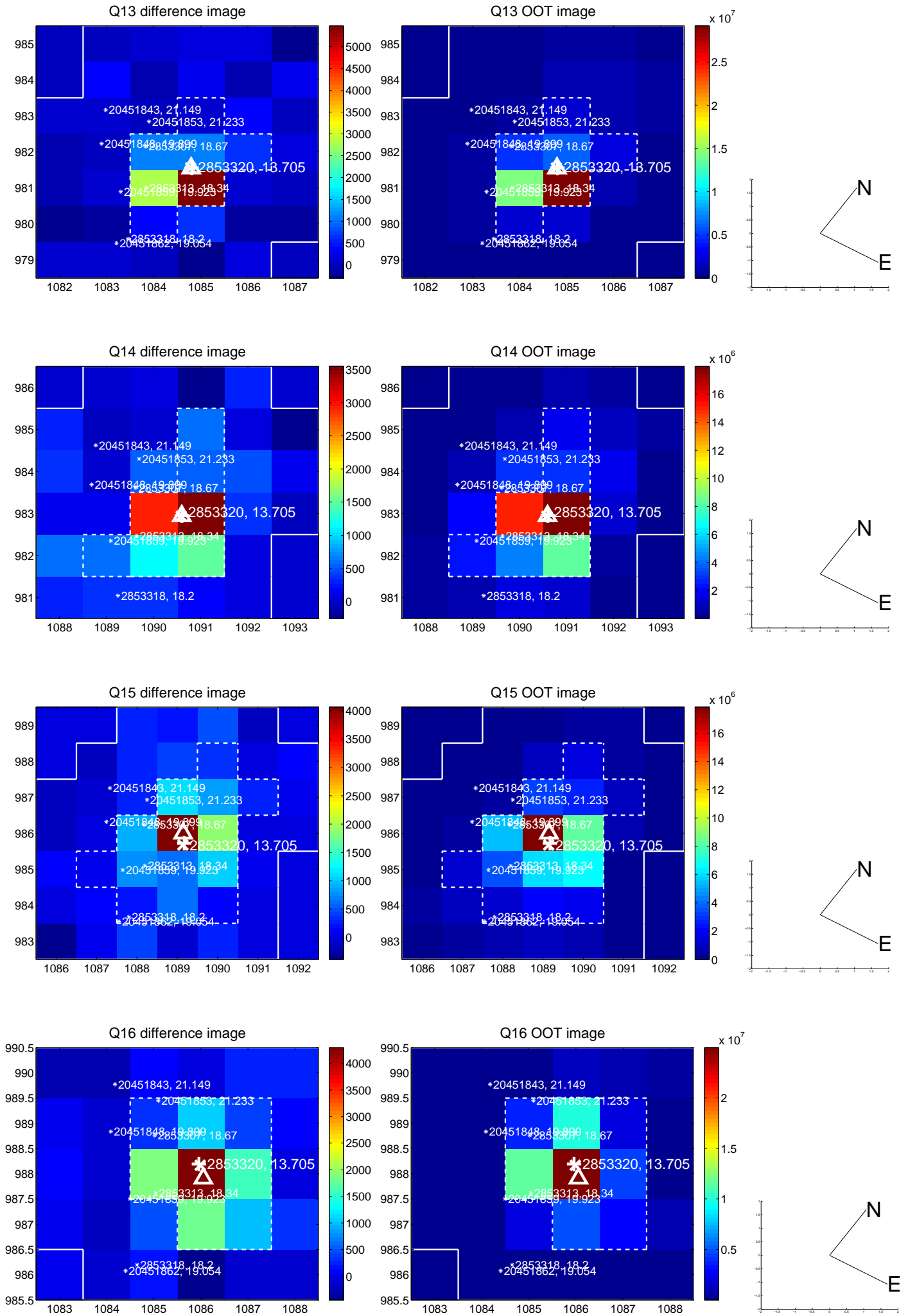
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



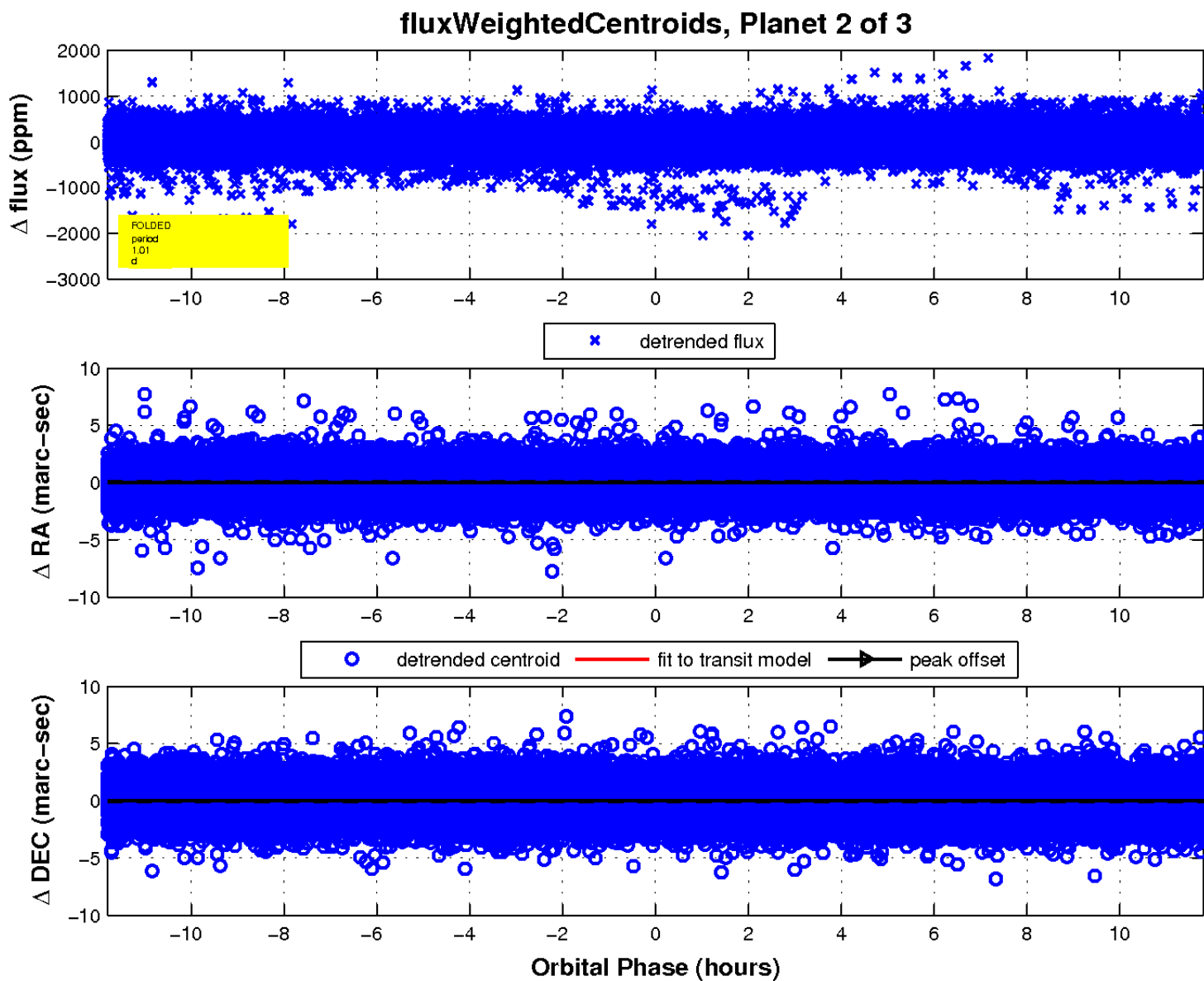
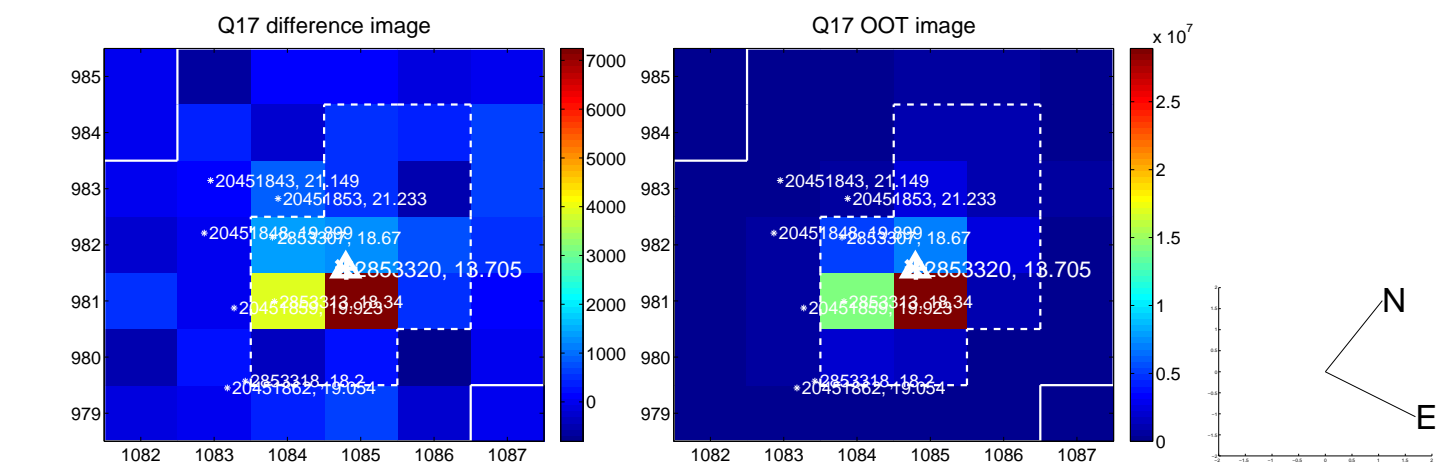
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

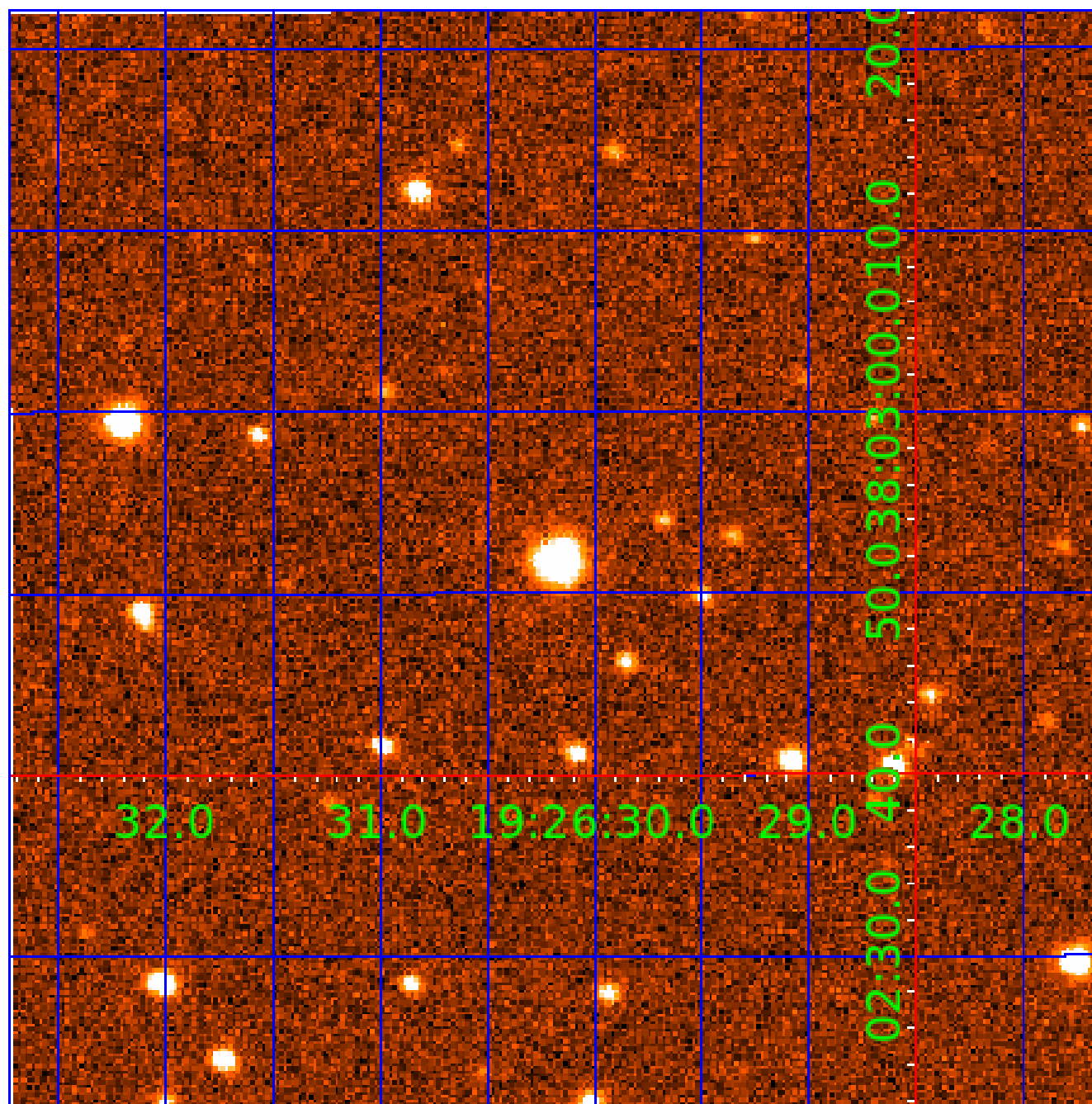


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002853320

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})
002853320-01	OBS	No	5.065332	135.027682	59.4	8.011	11.6	12.1	4.53	11357	3.81	39970.78
002853320-02	OBS	No	1.013035	131.547695	35.9	3.934	11.5	12.5	4.53	11357	3.09	341759.26
002853320-03	OBS	No	5.065570	132.286300	46.4	20.431	9.5	9.6	4.53	11357	3.39	39968.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002853320-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002853320-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
002853320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—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.

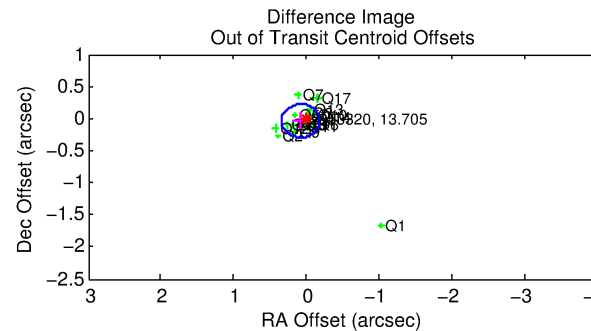
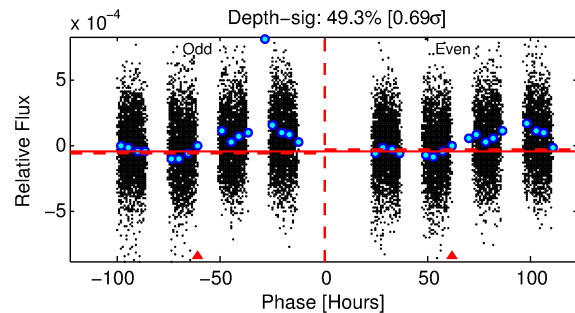
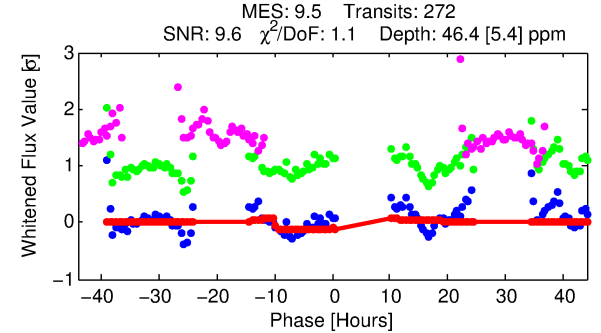
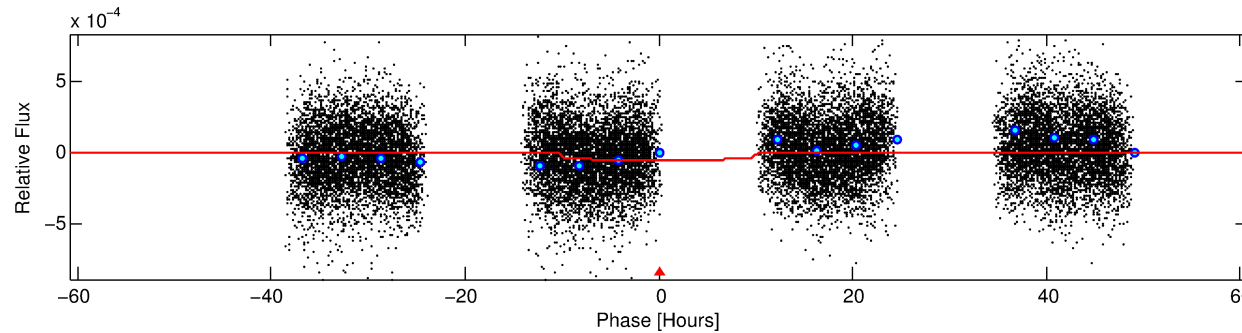
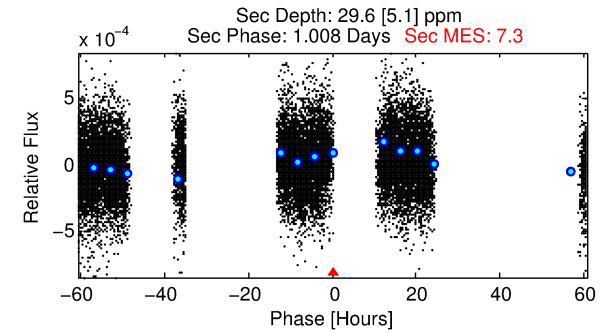
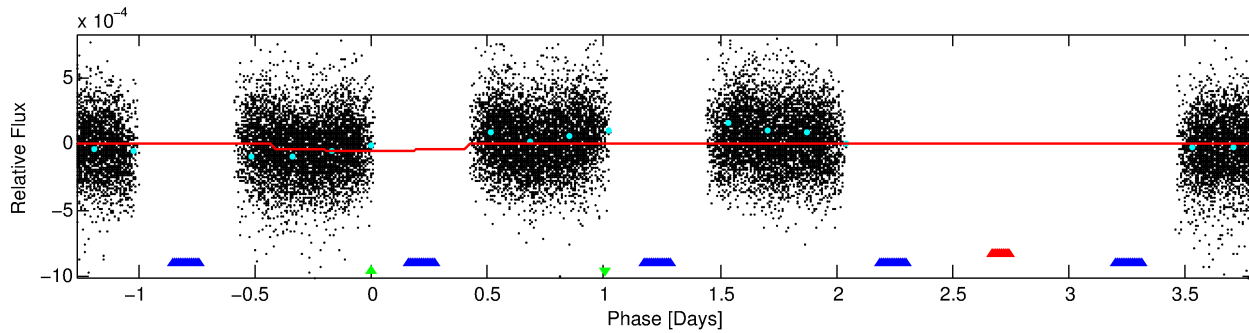
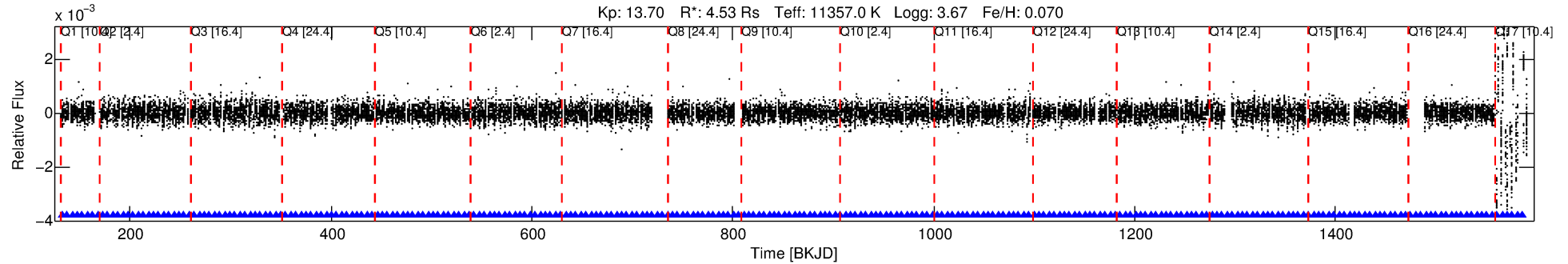
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002853320-03

No Significant Match Found

DV One-Page Summary

KIC: 2853320 Candidate: 3 of 3 Period: 5.066 d



DV Fit Results:

Period = 5.06557 [0.00008] d
Epoch = 132.2863 [0.0311] BKJD
Rp/R* = 0.0069 [0.0009]
a/R* = 1.45 [0.76]
b = 0.80 [0.47]
Seff = 39968.28 [39439.97]
Teq = 3605 [889] K
Rp = 3.39 [1.79] Re
a = 0.0874 [0.0423] AU
Ag = 10.86 [9.02] [1.09σ]
Teffp = 10119 [1766] K [3.29σ]

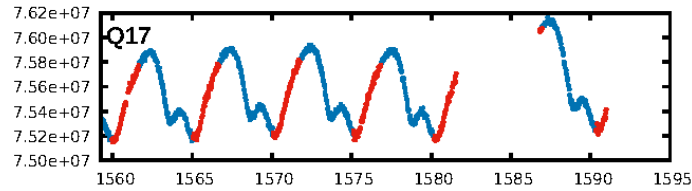
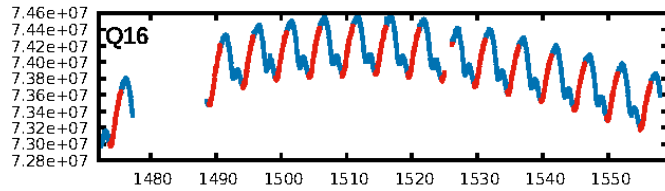
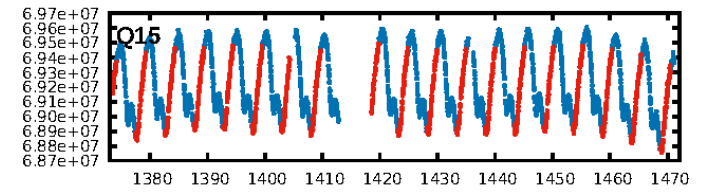
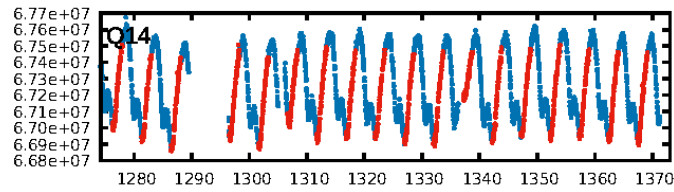
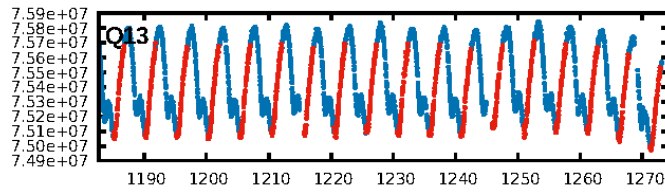
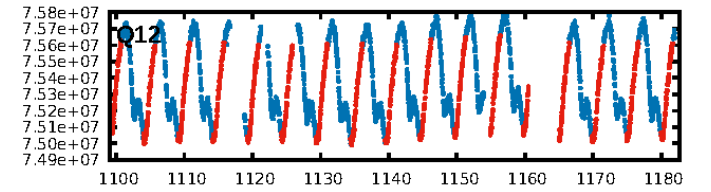
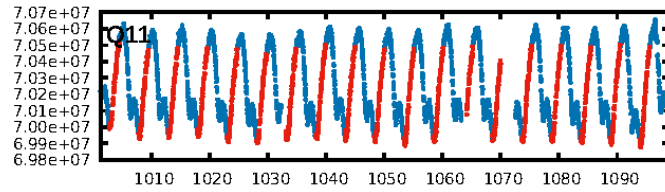
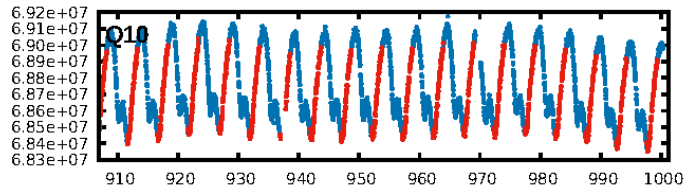
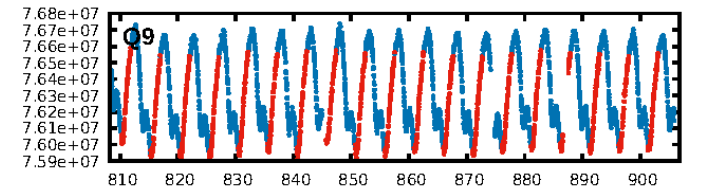
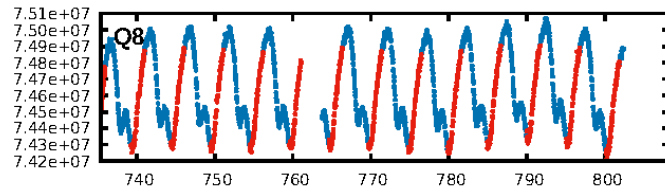
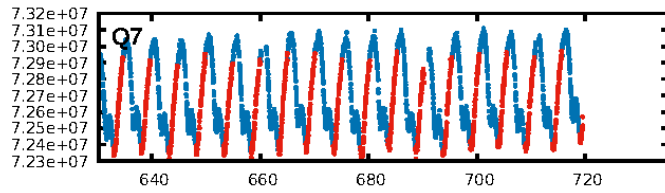
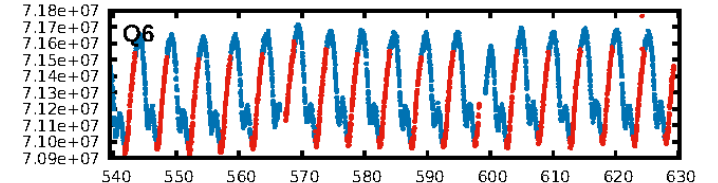
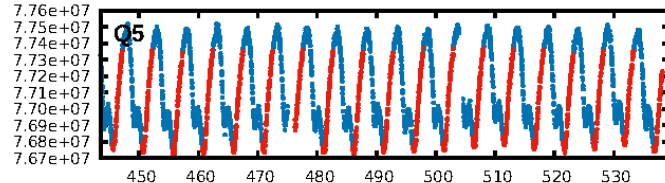
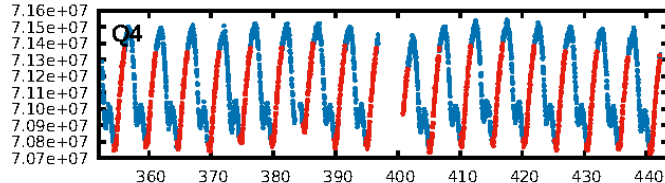
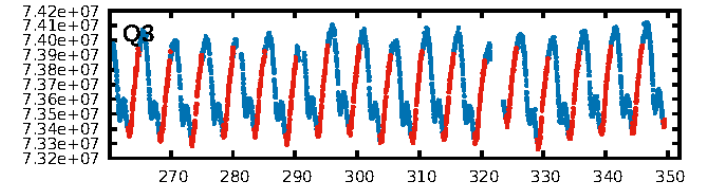
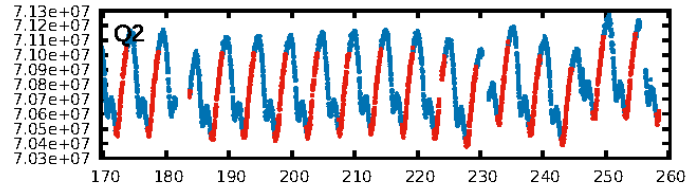
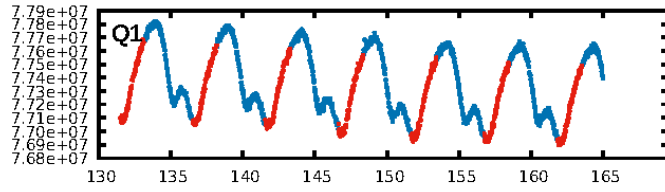
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.64e-23
RollingBand-fgt: 1.00 [259/259]
GhostDiagnostic-chr: 0.5961
Centroid-sig: 0.3%
Centroid-so: 1.885 arcsec [2.24σ]
OotOffset-rm: 0.089 arcsec [1.03σ]
KicOffset-rm: 0.088 arcsec [0.74σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

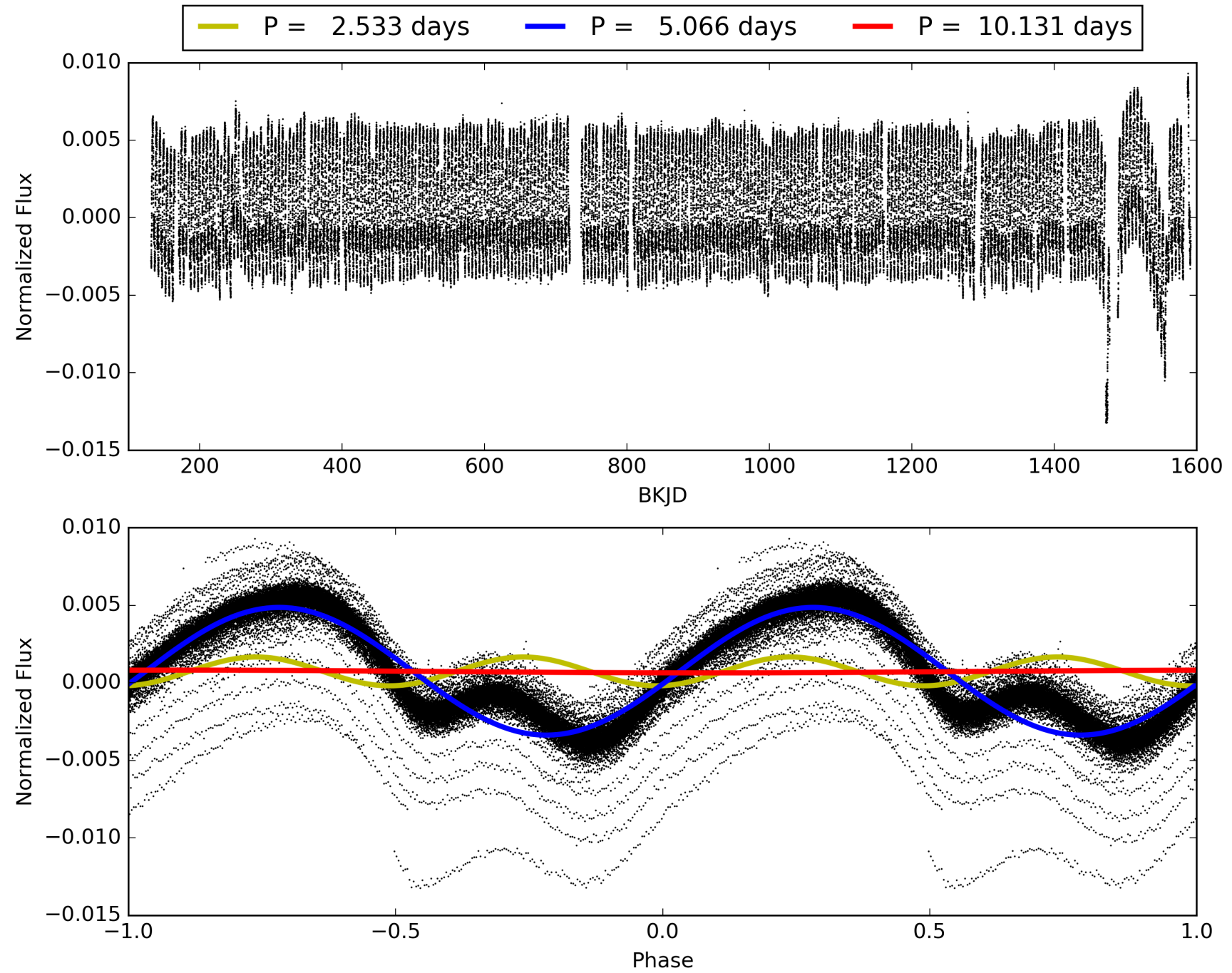
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:19:20 Z

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

TCE 002853320-03, PDC Light Curves

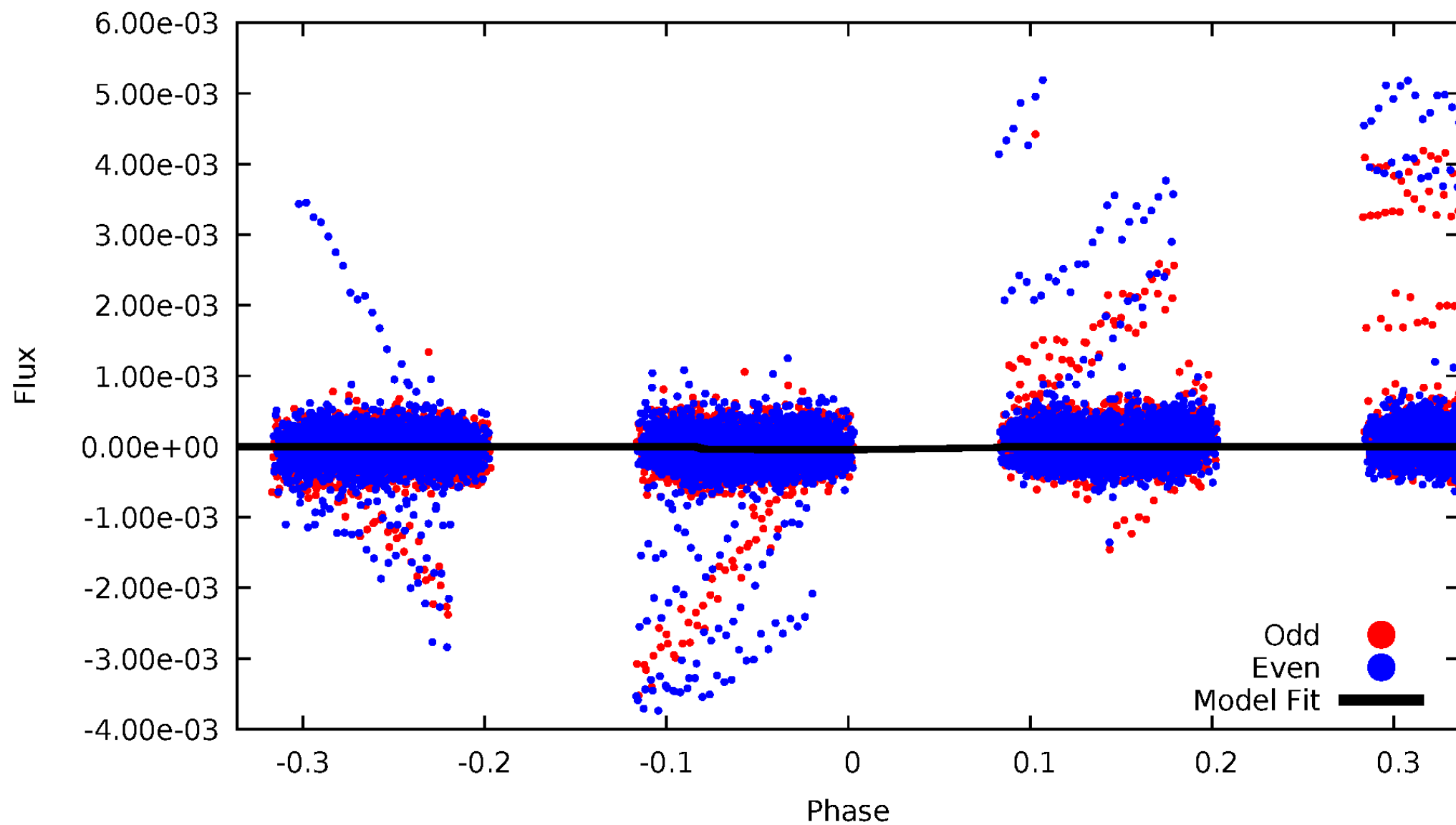


TCE 002853320-03



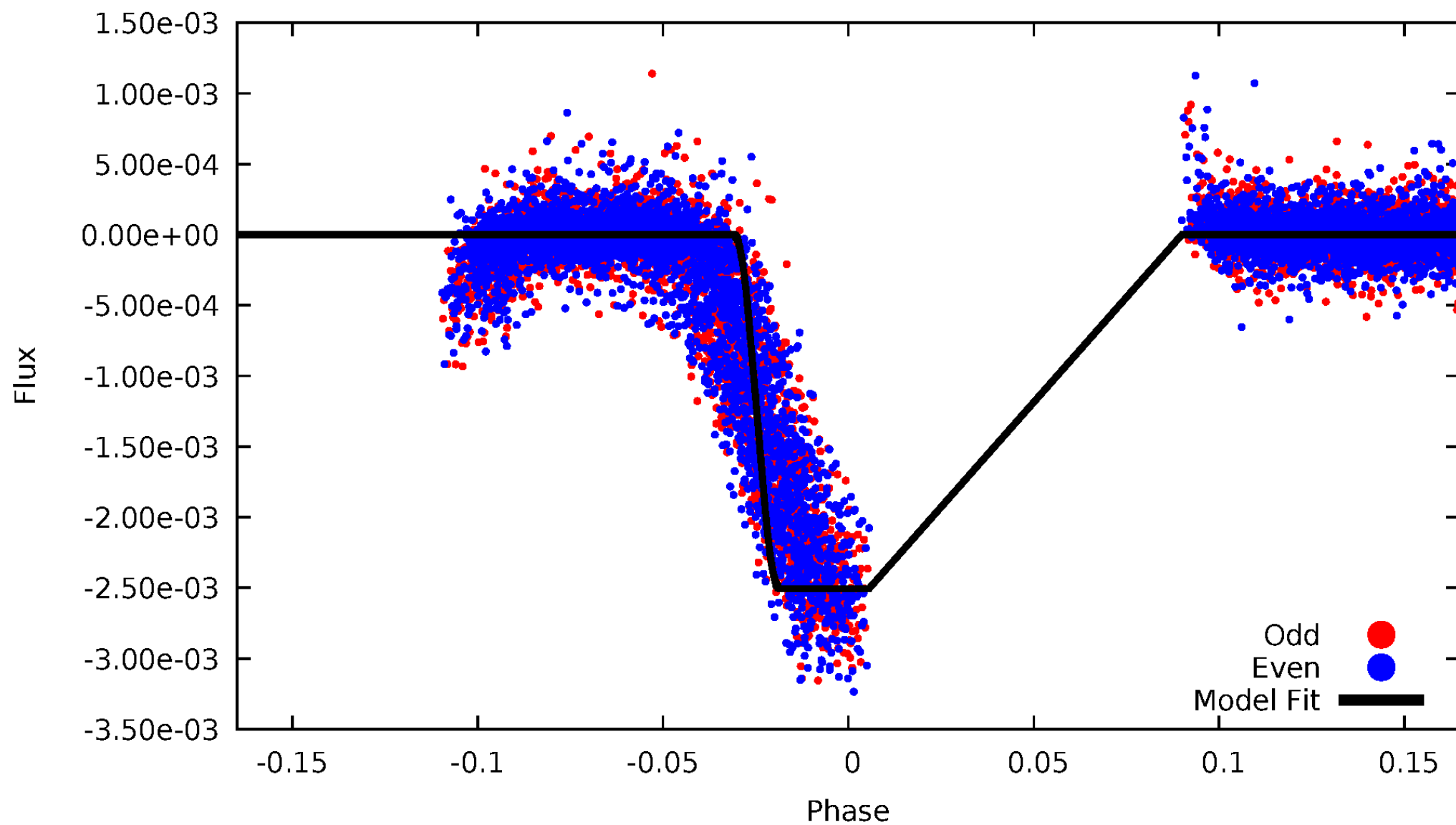
DV Odd/Even

TCE 002853320-03



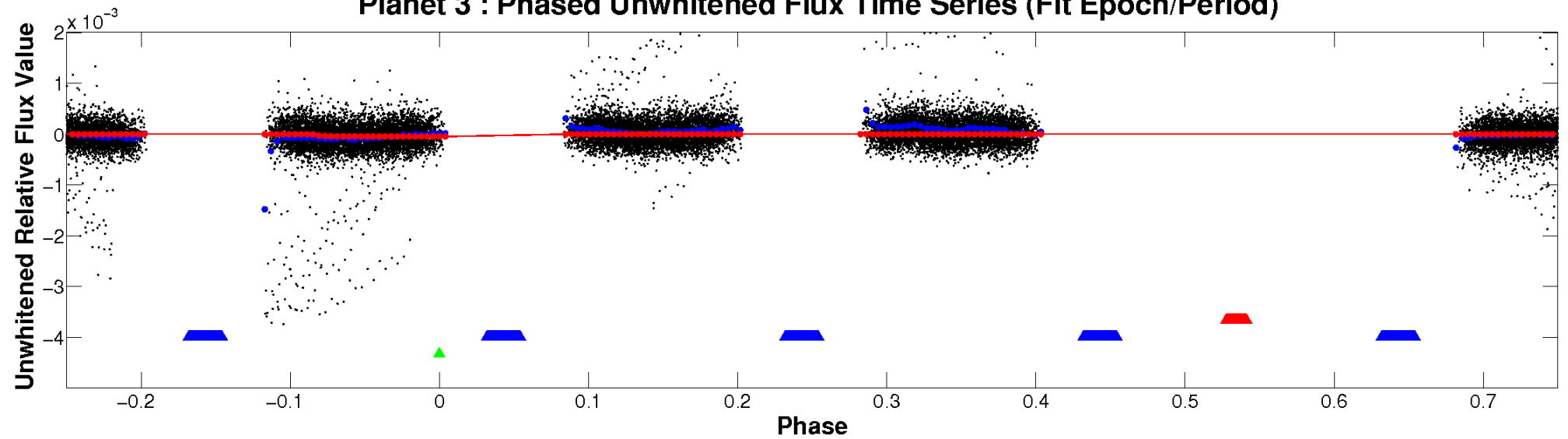
ALT Odd/Even

TCE 002853320-03

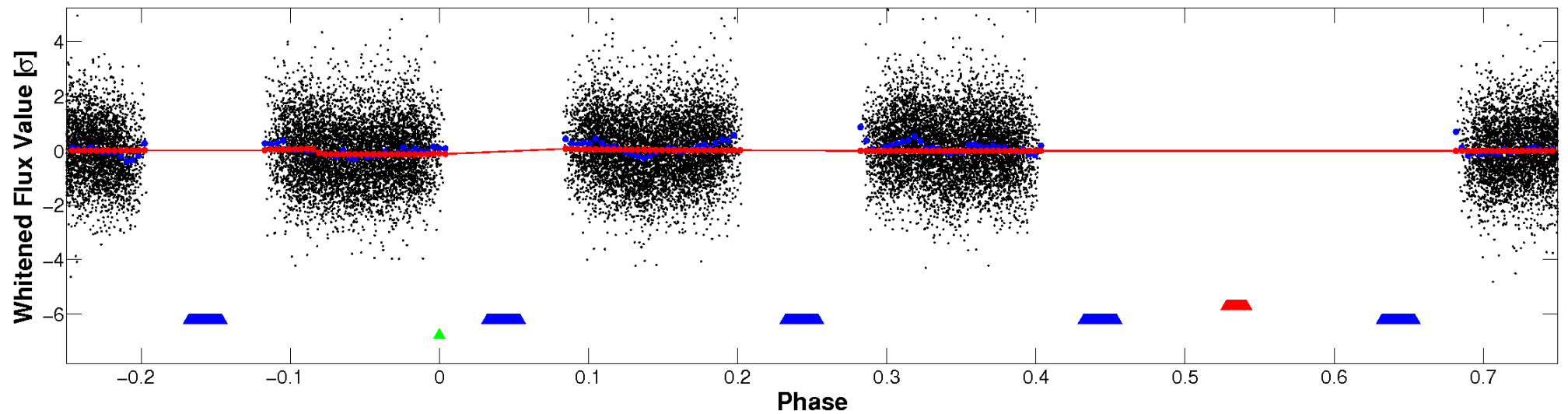


Non-Whitened Vs. Whitened Light Curve

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

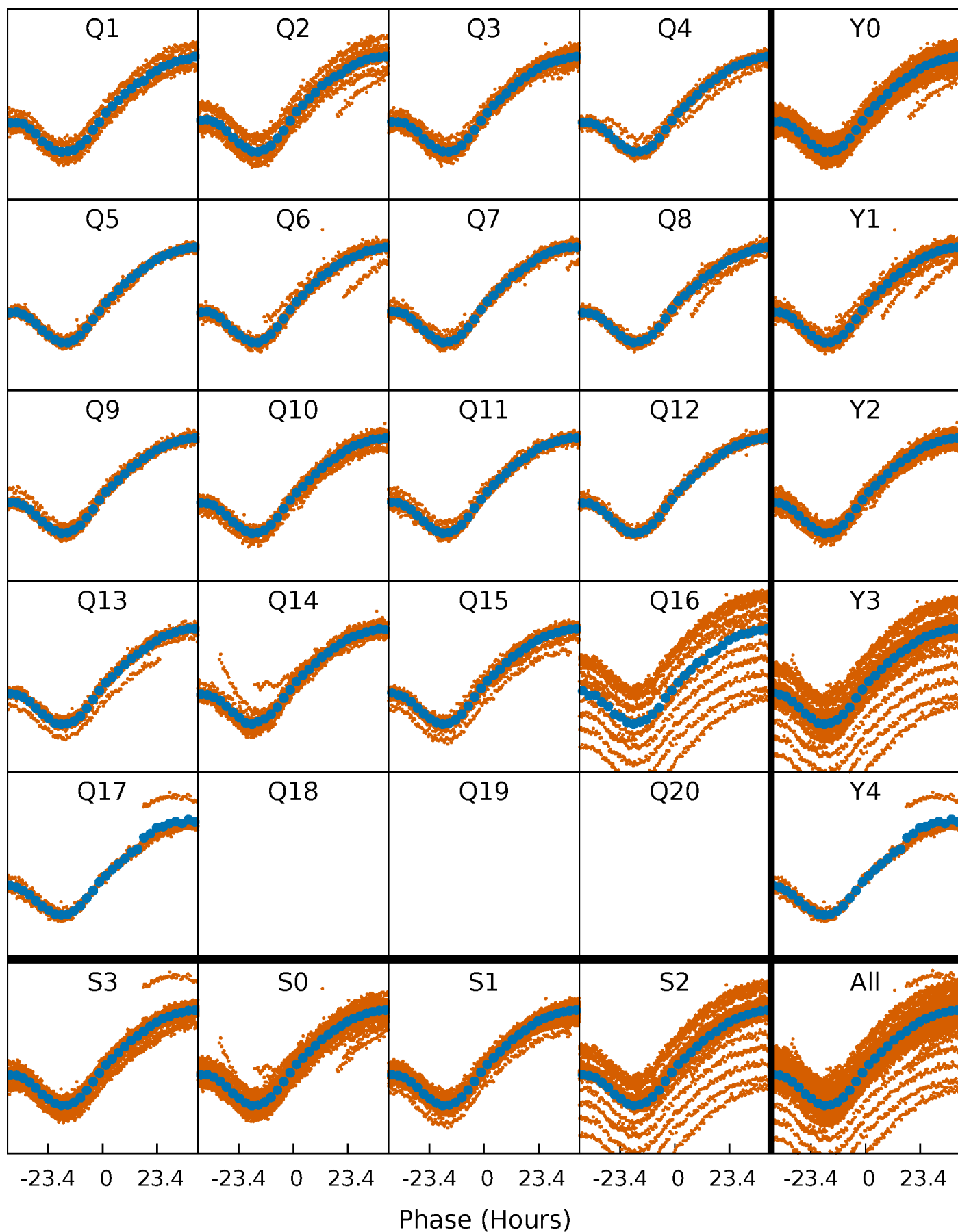


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



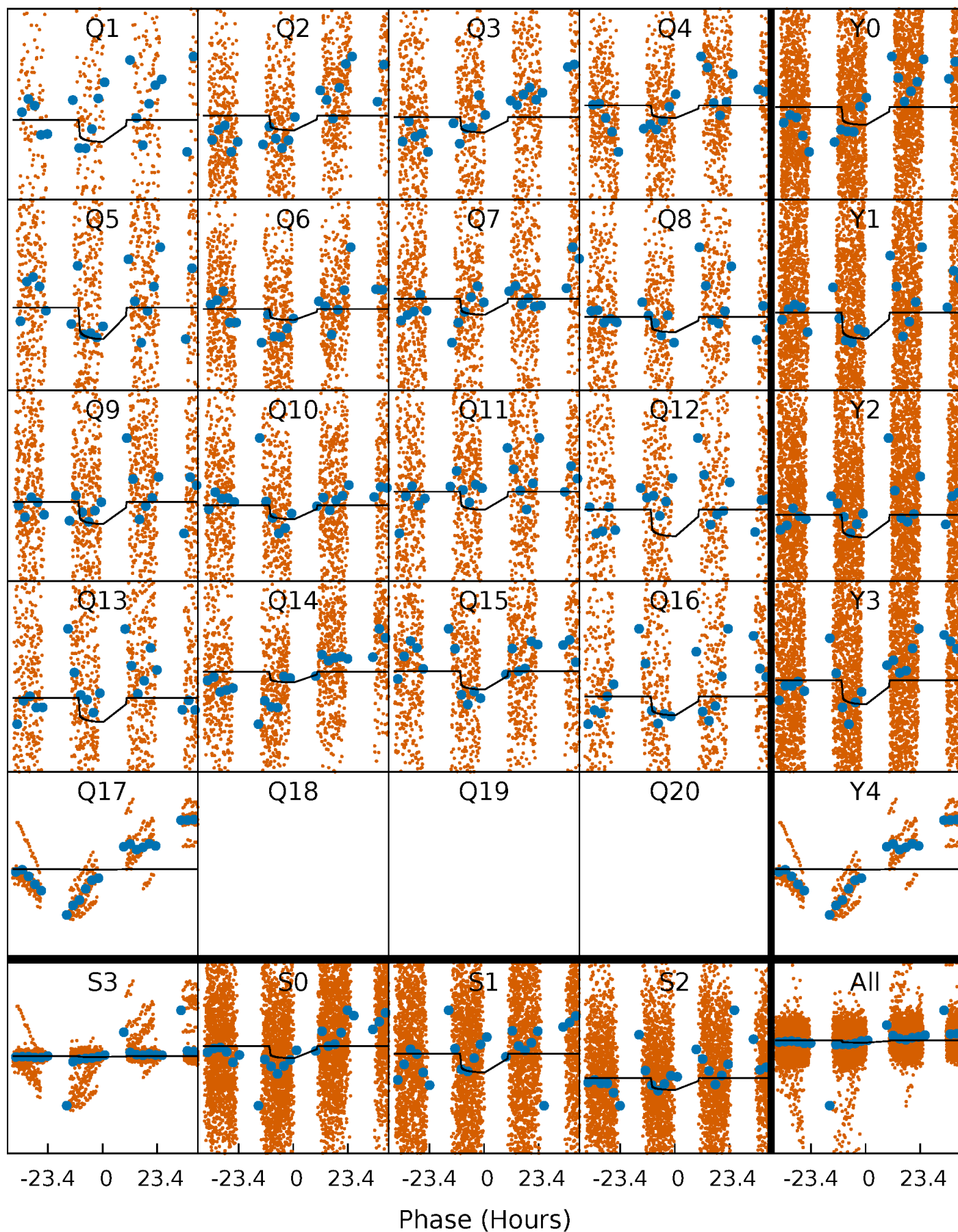
PDC Quarter-Phased Transit Curves

TCE 002853320-03 P= 5.065570 Days $T_0=132.286300$ (BKJD)



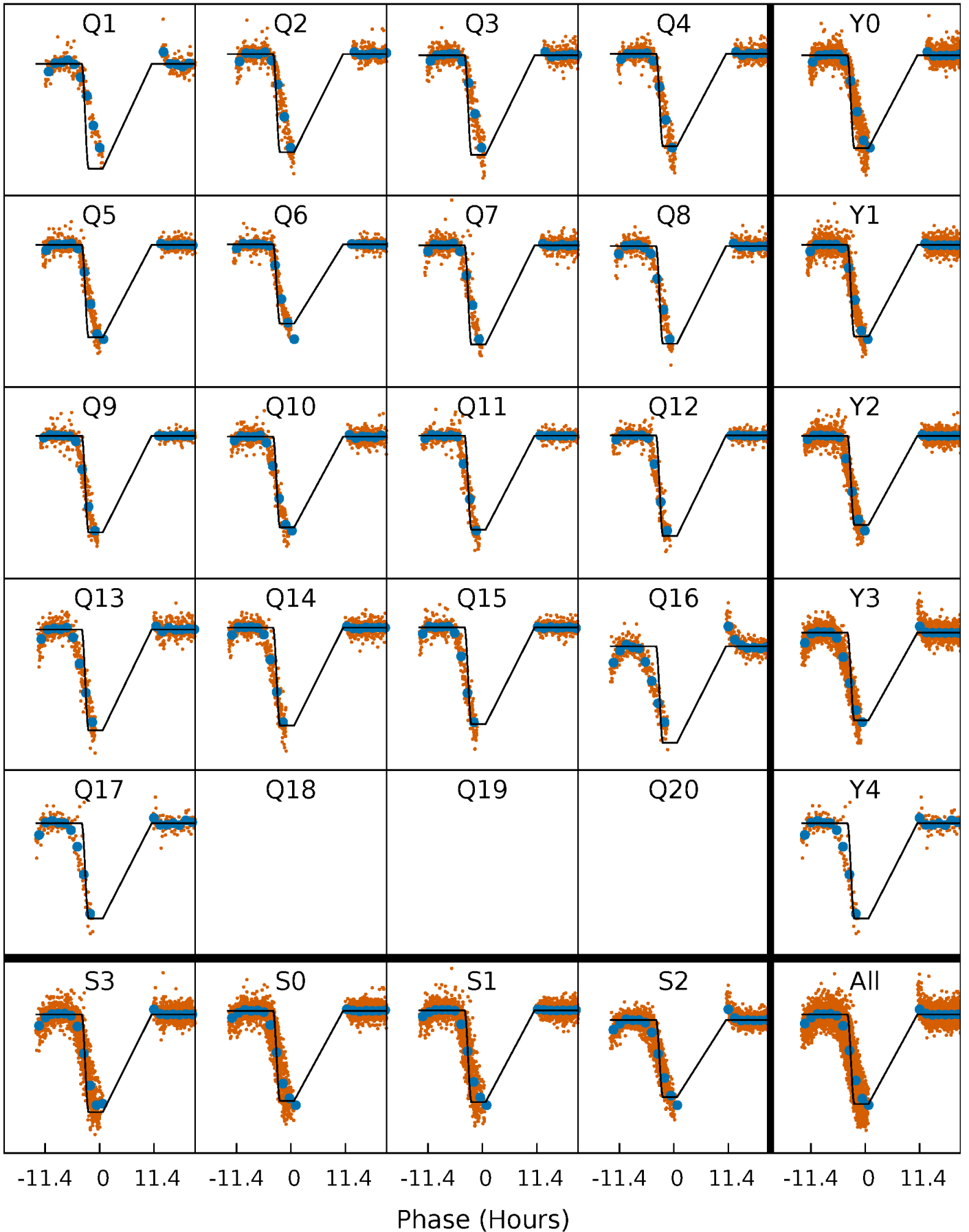
DV Quarter-Phased Transit Curves

TCE 002853320-03 P= 5.065570 Days $T_0=132.286300$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

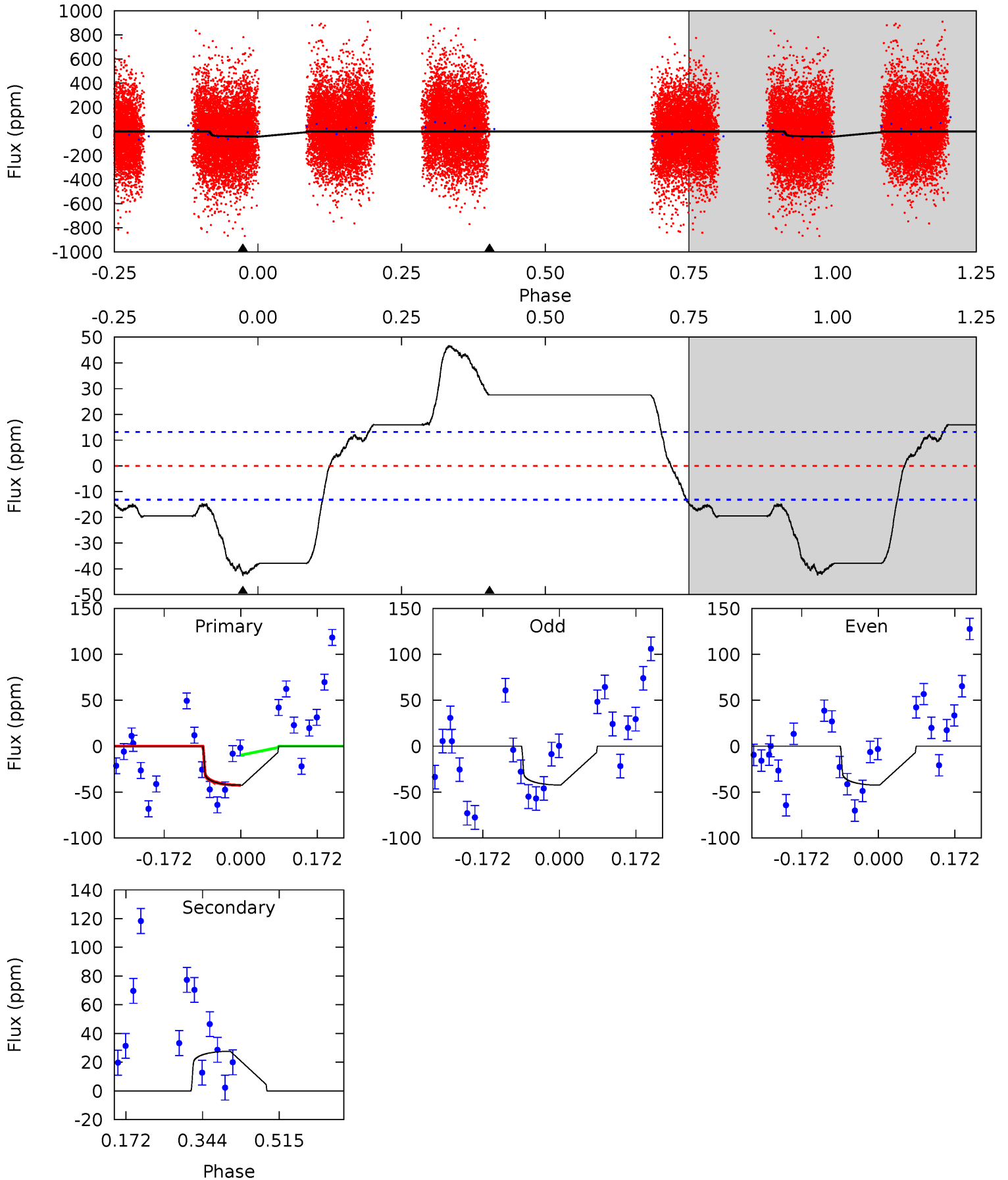
TCE 002853320-03 $P = 5.065484$ Days $T_0 = 132.274381$ (BKJD)



DV Model-Shift Uniqueness Test

002853320-03, P = 5.065570 Days, E = 127.220730 Days

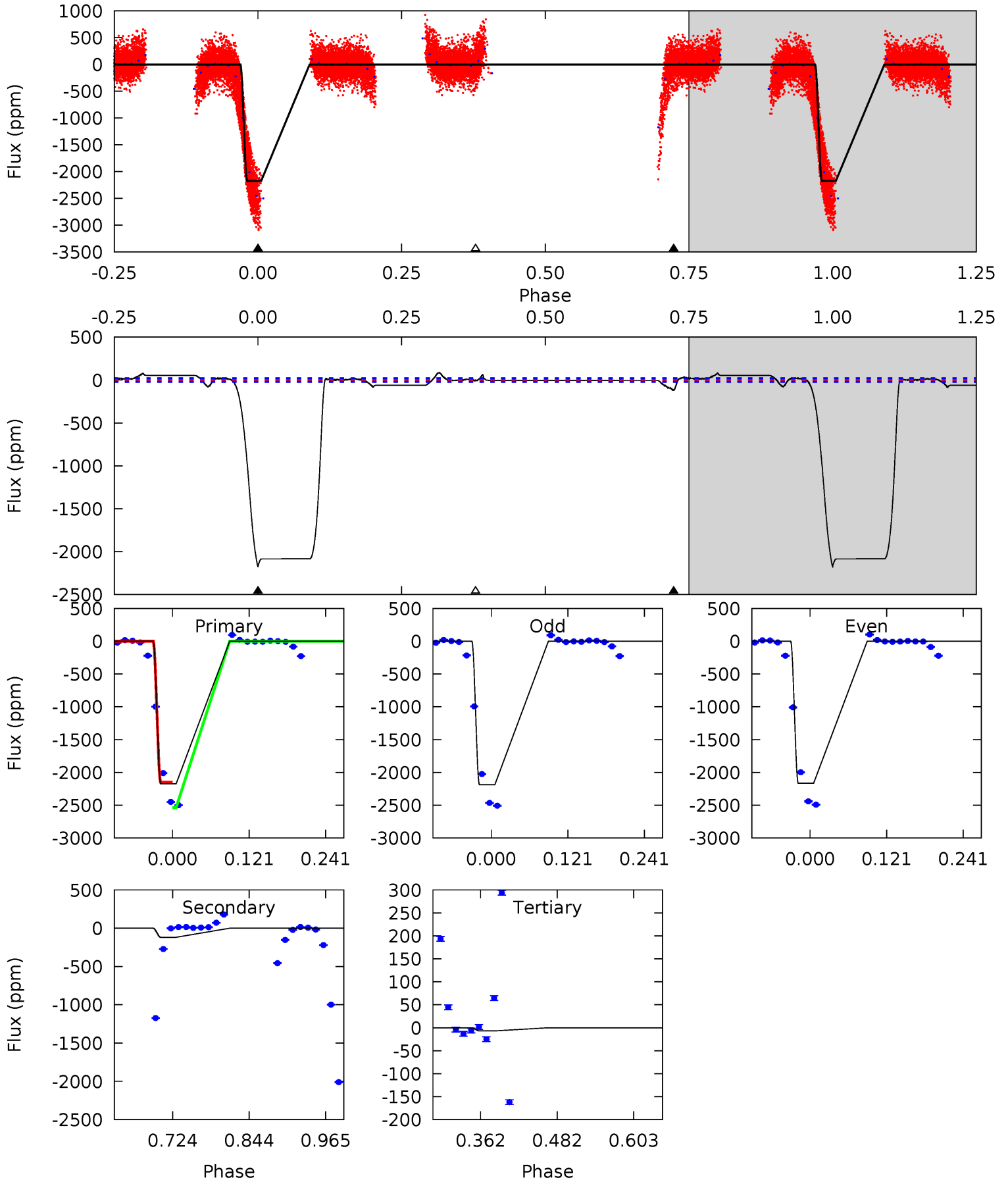
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	-9.32	0	0	4.45	1.37	4.22	14.4	14.4	-9.32	-9.32	0.03	1.70	0.52	0.94



Alt Model-Shift Uniqueness Test

002853320-03, P = 5.065484 Days, E = 127.208897 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
467.5	25.5	1.50	0	4.53	1.55	7.27	466.0	467.5	24.0	25.5	2.43	1.00	0.04	16.4



Stellar Parameters For KIC 002853320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	11357^{+587}_{-1762}	$3.667^{+0.448}_{-0.112}$	$0.070^{+0.150}_{-0.600}$	$4.528^{+0.578}_{-2.310}$	$3.472^{+0.058}_{-1.105}$	$0.053^{+0.262}_{-0.014}$
	+5%/-16%	+12%/-3%	+214%/-857%	+13%/-51%	+2%/-32%	+497%/-27%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002853320-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	28 ± 3	$3.14^{+0.74}_{-0.85}$	4738^{+593}_{-797}	-9106^{+1170}_{-1376}	$-11.286^{+3.804}_{-8.234}$
Alt.	-119 ± 5	$24.12^{+2.37}_{-6.41}$	4742^{+600}_{-793}	4375^{+246}_{-323}	$0.850^{+0.598}_{-0.154}$

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

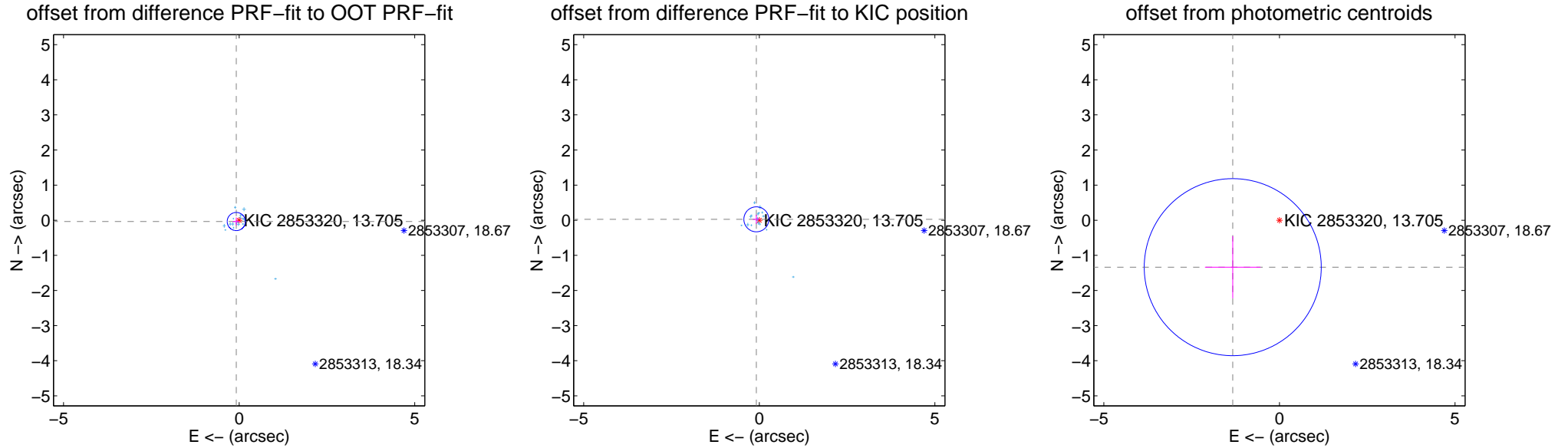
DV Centroid Data

Supplemental centroid analysis for 002853320-03. Kepler magnitude: 13.71. Transit SNR 9.64

There are 17 quarters with good PRF difference image offsets

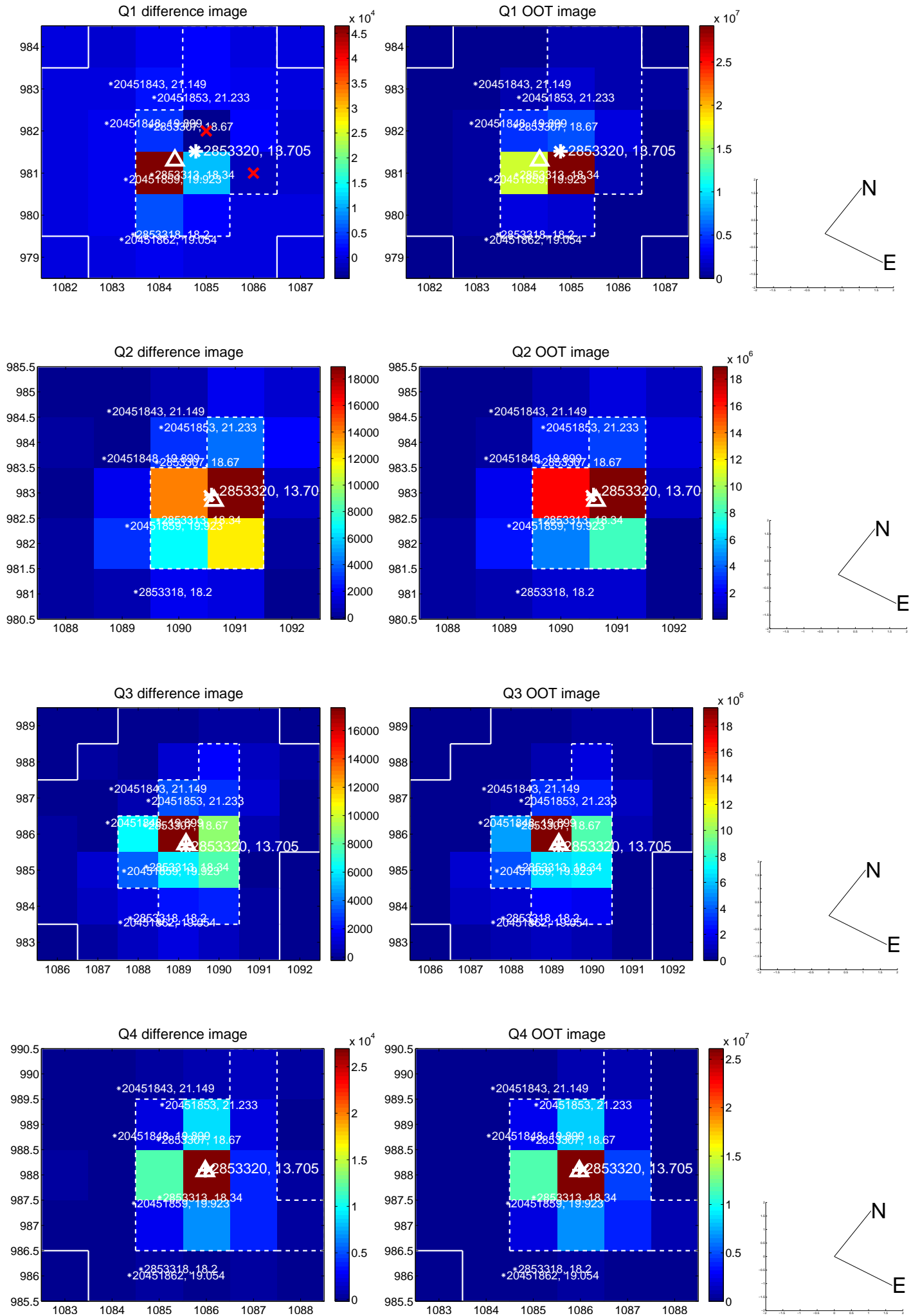
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.089 ± 0.086	1.03	0.081 ± 0.099	-0.036 ± 0.116
PRF-fit source offset from KIC position	0.088 ± 0.119	0.74	0.084 ± 0.100	0.026 ± 0.129
photometric centroid source offset	1.89 ± 0.84	2.24	1.33 ± 0.79	-1.34 ± 0.89

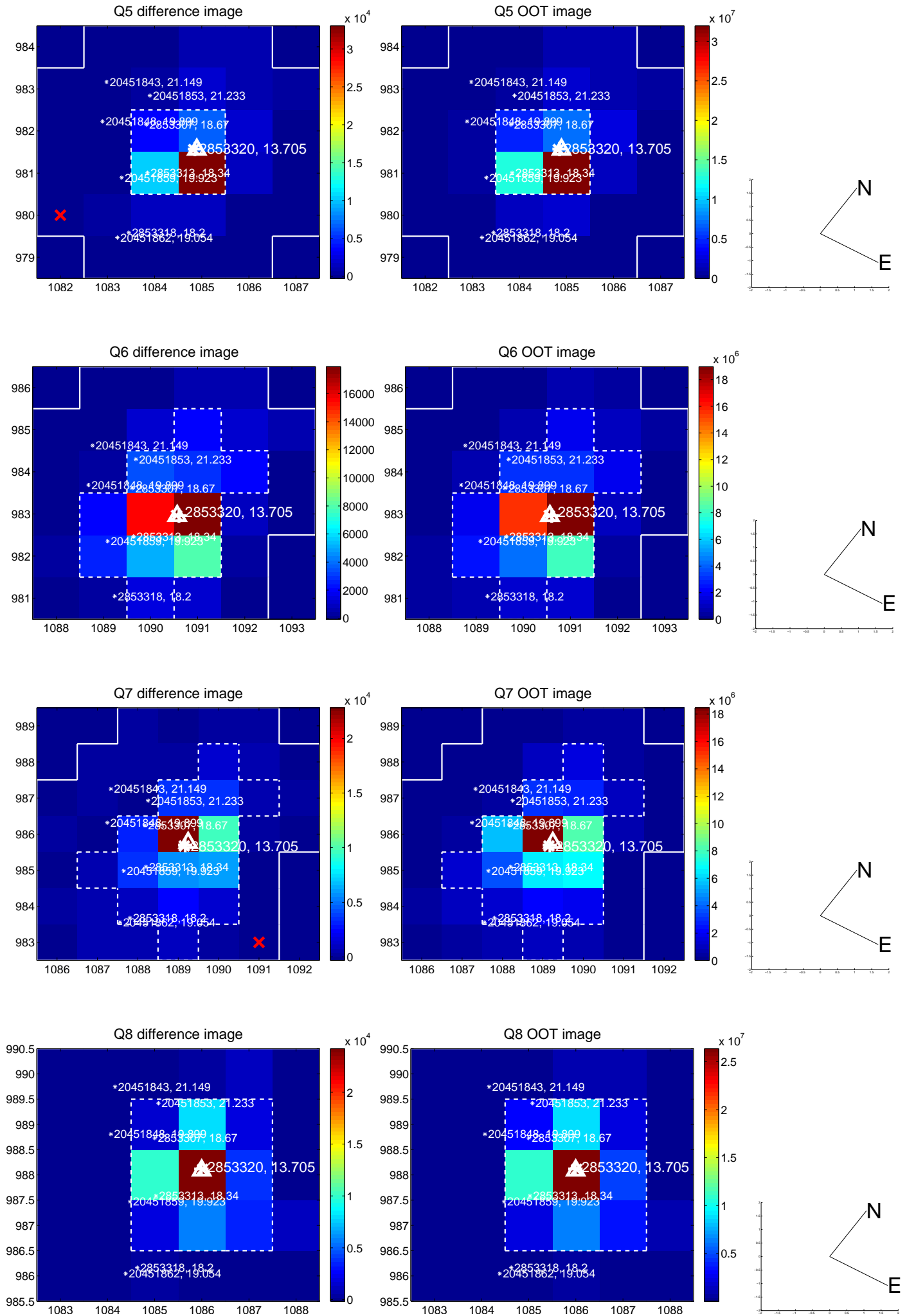


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

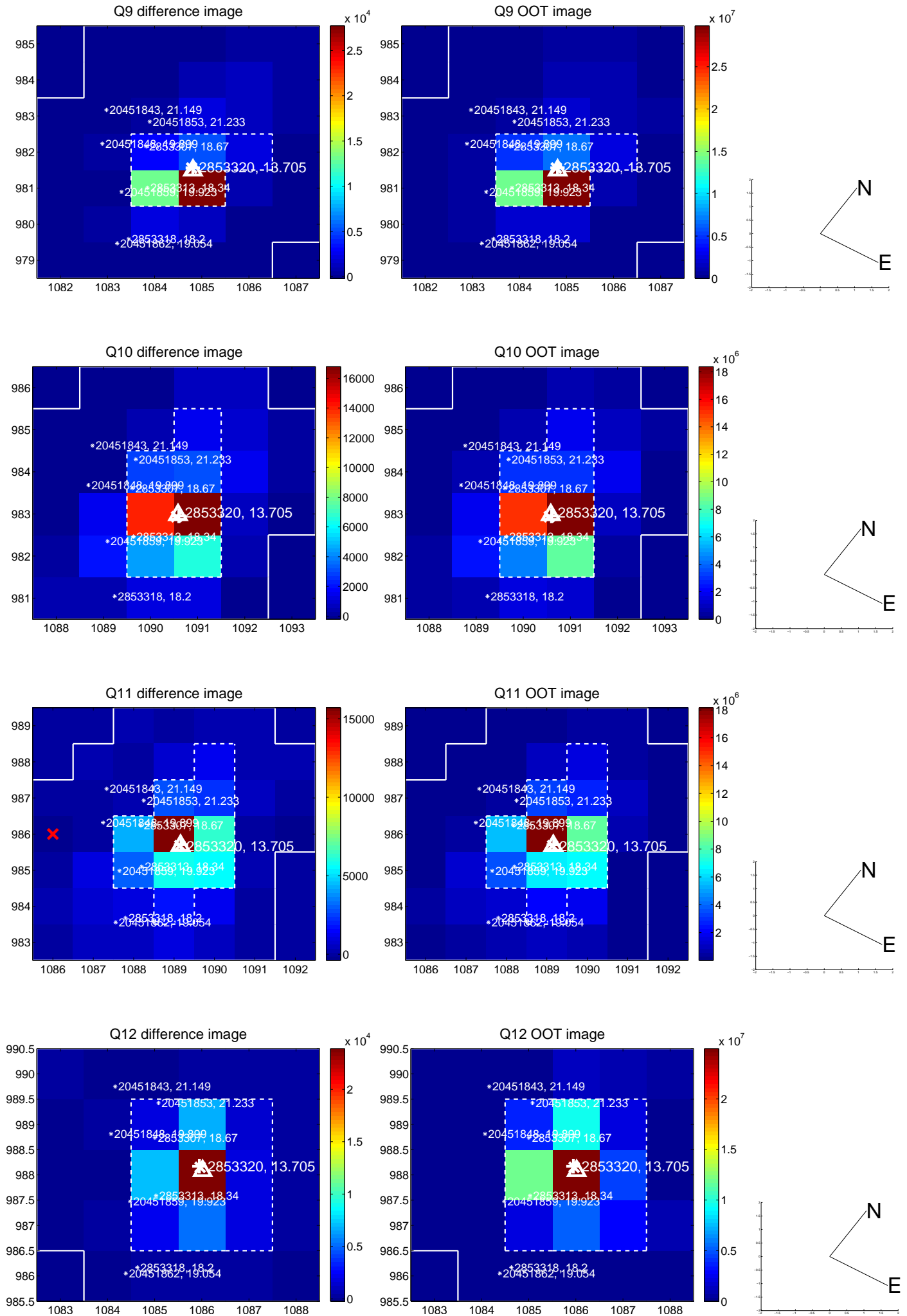
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



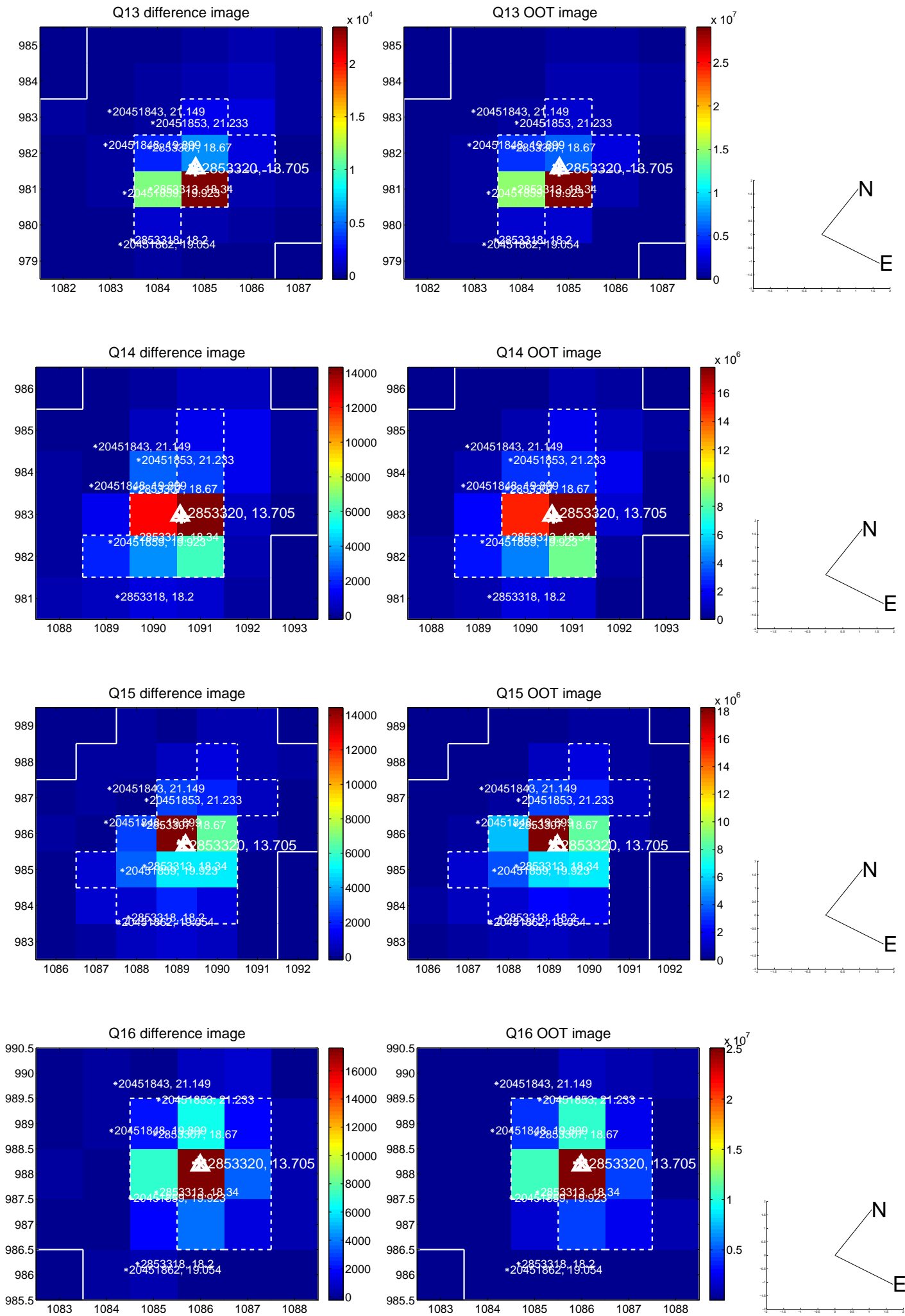
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

