

KIC 002305866

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})
002305866-01	OBS	2610.01	24.107391	145.928272	104.2	11.469	12.2	13.3	2.52	6585	3.28	304.91
002305866-02	OBS	2610.02	115.230801	176.645182	154.8	17.279	9.8	11.8	2.52	6585	3.88	37.87

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002305866-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
002305866-02	OBS	PC	0.44	0	0	0	0	CENT_FEW_DIFFS

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.

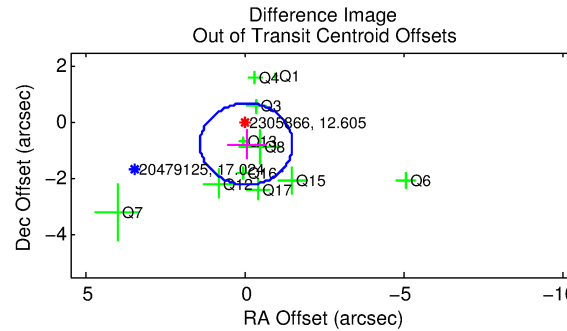
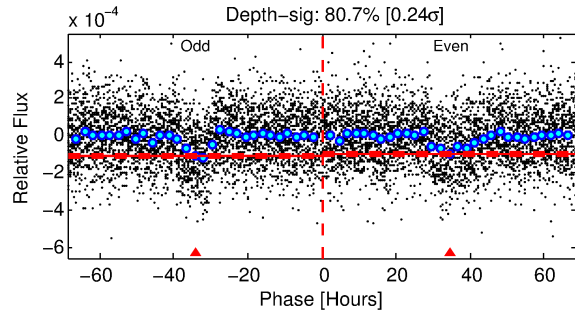
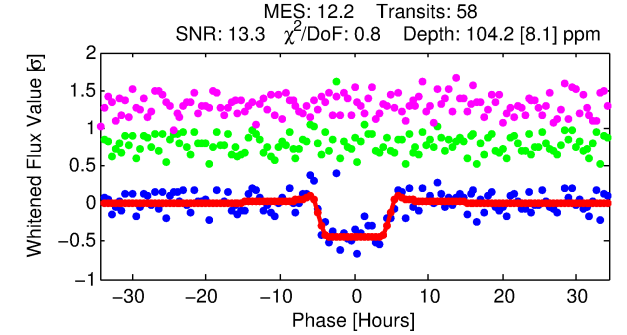
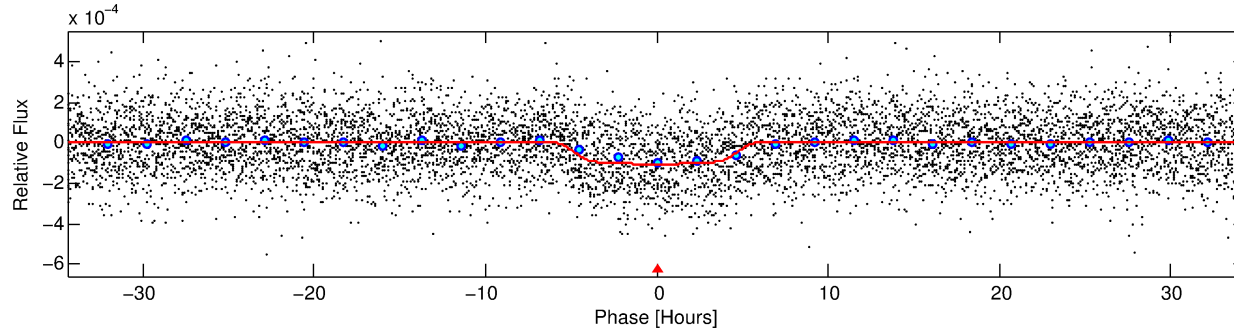
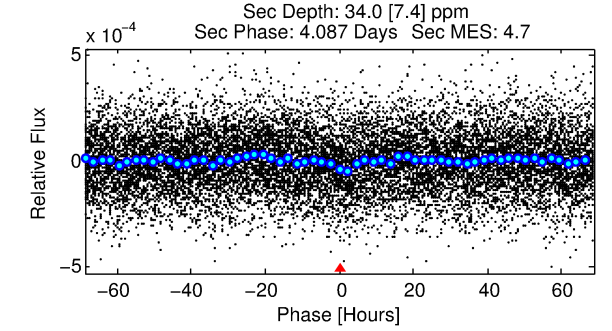
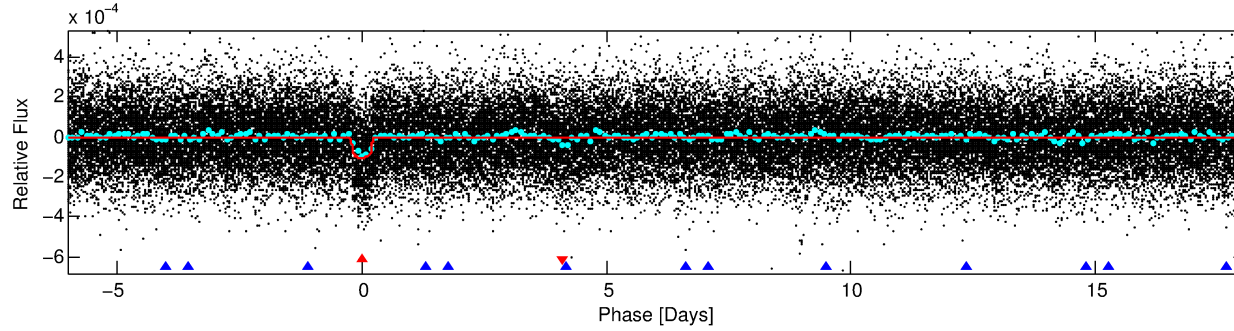
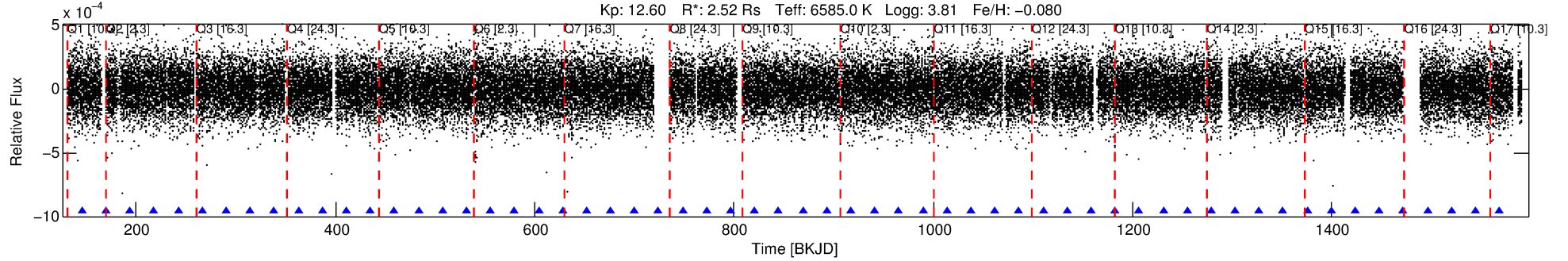
Ephemeris Match Information For 002305866-01

No Significant Match Found

DV One-Page Summary

KIC: 2305866 Candidate: 1 of 2 Period: 24.107 d

KOI: K02610.01 Corr: 0.950



DV Fit Results:

Period = 24.10739 [0.00040] d
Epoch = 145.9283 [0.0134] BKJD
Rp/R* = 0.0120 [0.0006]
a/R* = 4.80 [0.77]
b = 0.97 [0.01]
Seff = 304.91 [235.73]
Teq = 1066 [206] K
Rp = 3.28 [1.58] Re
a = 0.1871 [0.0877] AU
Ag = 60.80 [48.32] [1.24σ]
Teffp = 4600 [325] K [9.18σ]

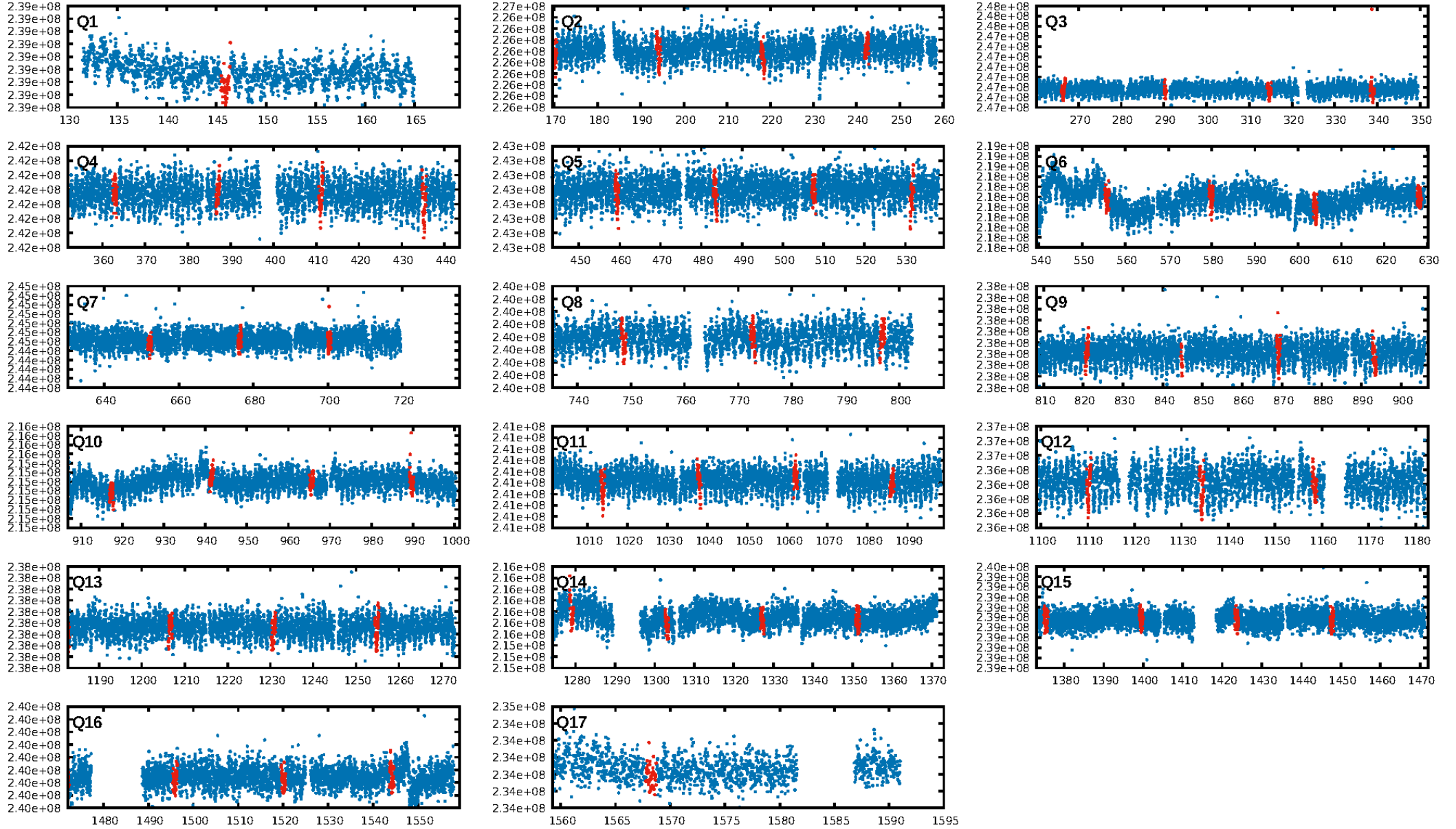
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [105.45σ]
ModelChiSquare2-sig: 71.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.71e-31
RollingBand-fgt: 1.00 [56/56]
GhostDiagnostic-chr: 28.03
Centroid-sig: 15.8%
Centroid-so: 0.686 arcsec [1.09σ]
OotOffset-rm: 0.770 arcsec [1.59σ]
KicOffset-rm: 0.748 arcsec [1.53σ]
OotOffset-st: 1/3/4/3 [11]
KicOffset-st: 1/3/4/3 [11]
DiffImageQuality-fgm: 0.55 [6/11]
DiffImageOverlap-fno: 1.00 [17/17]

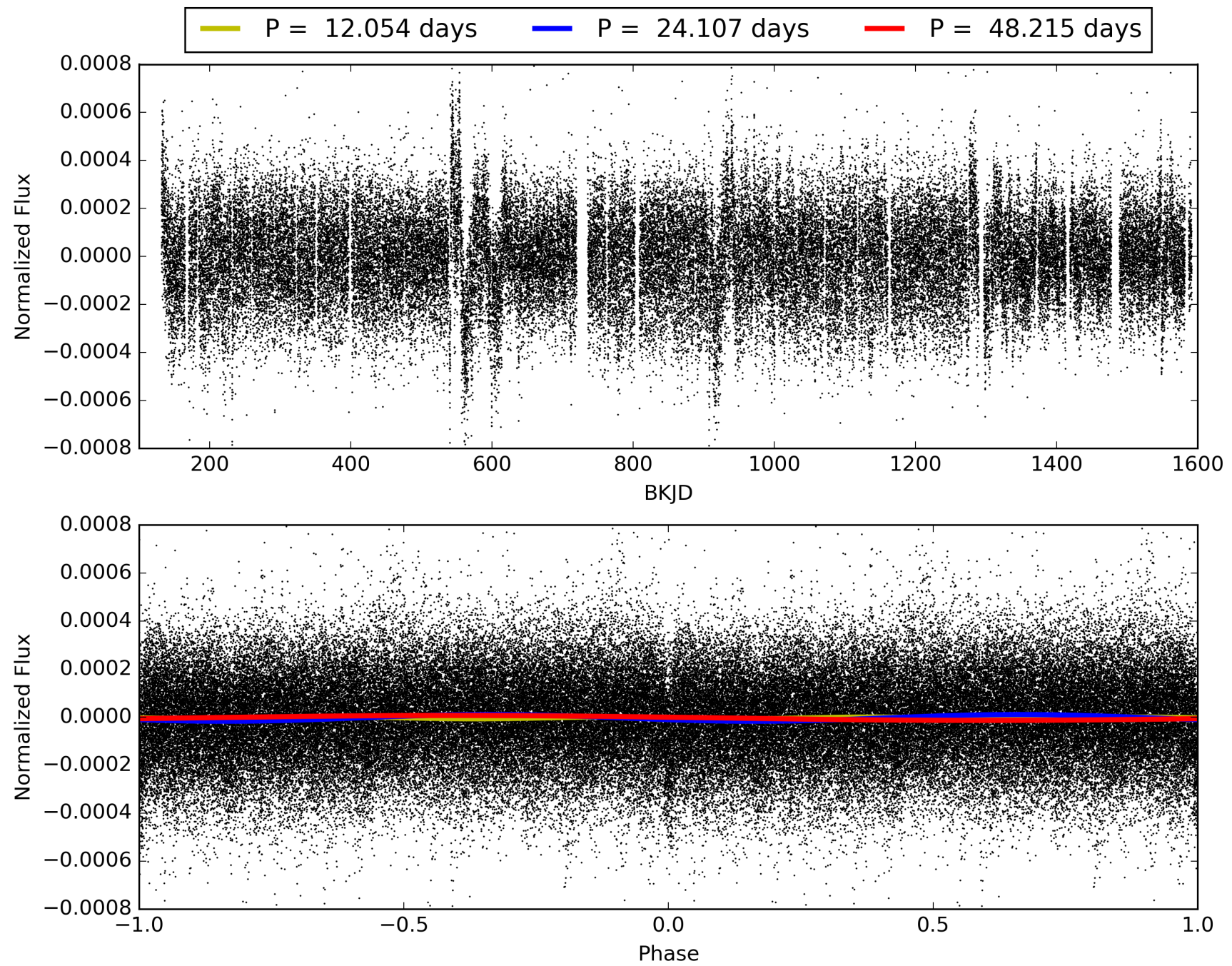
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:49:59 Z

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

TCE 002305866-01, PDC Light Curves

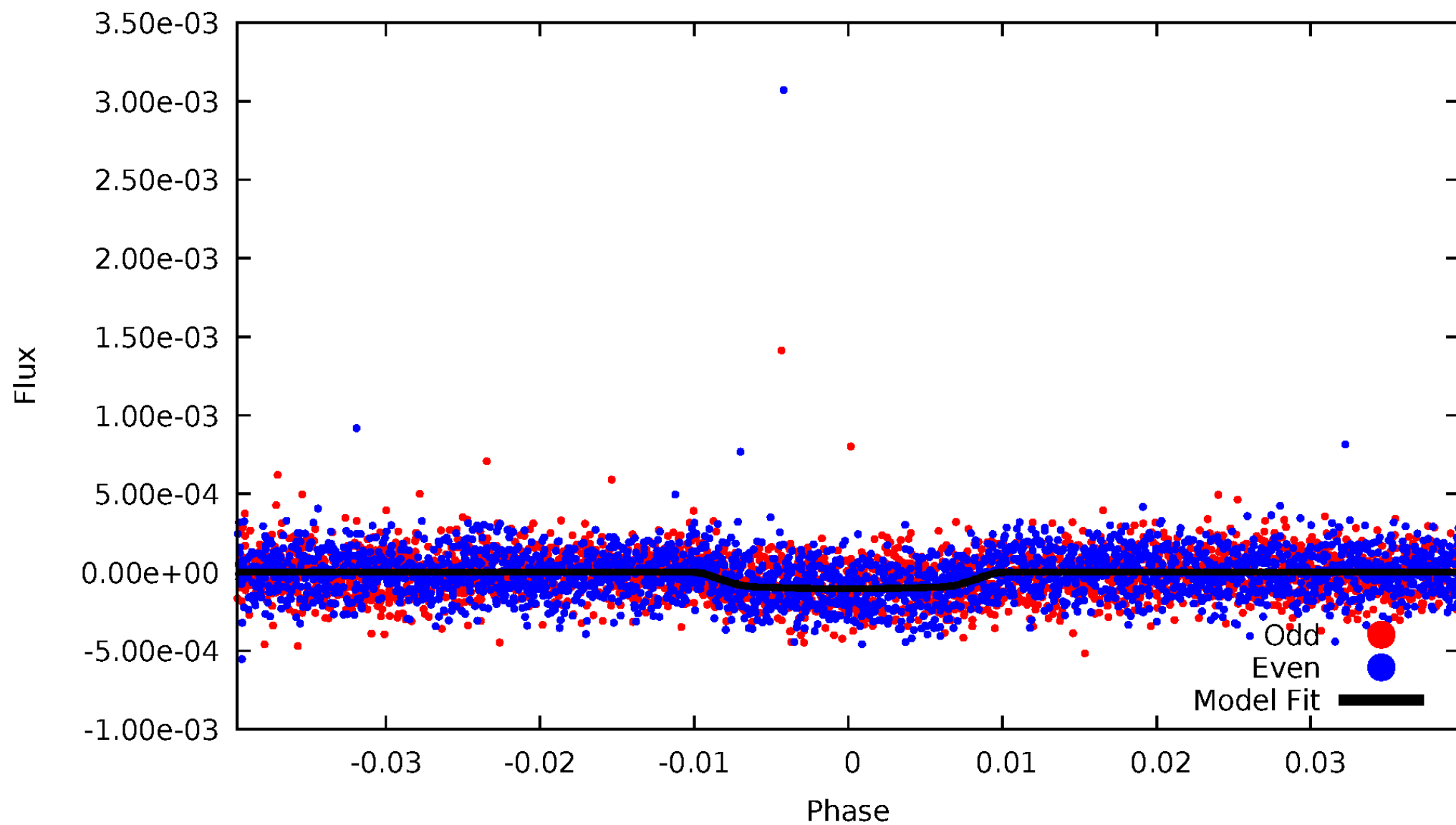


TCE 002305866-01



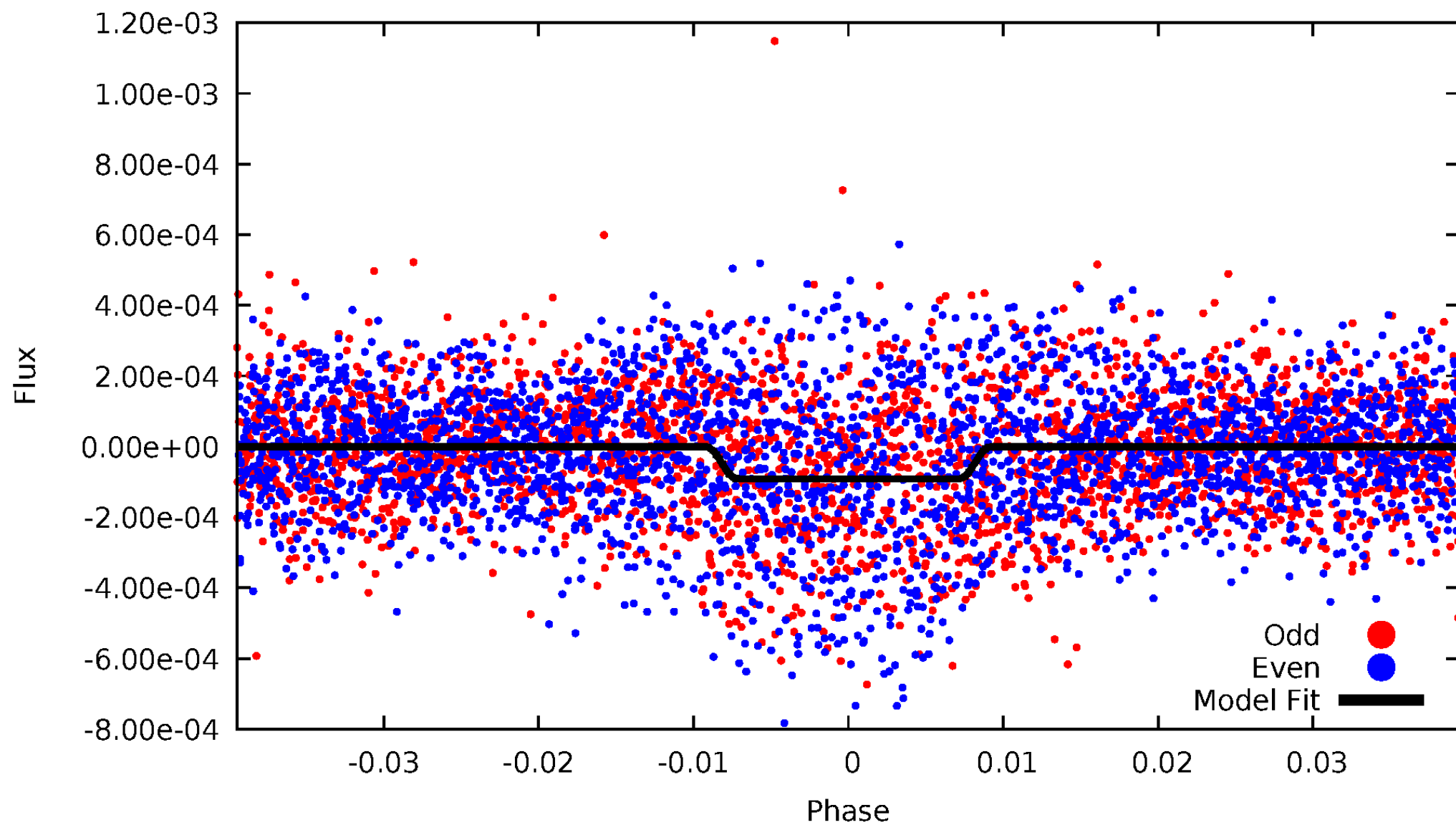
DV Odd/Even

TCE 002305866-01

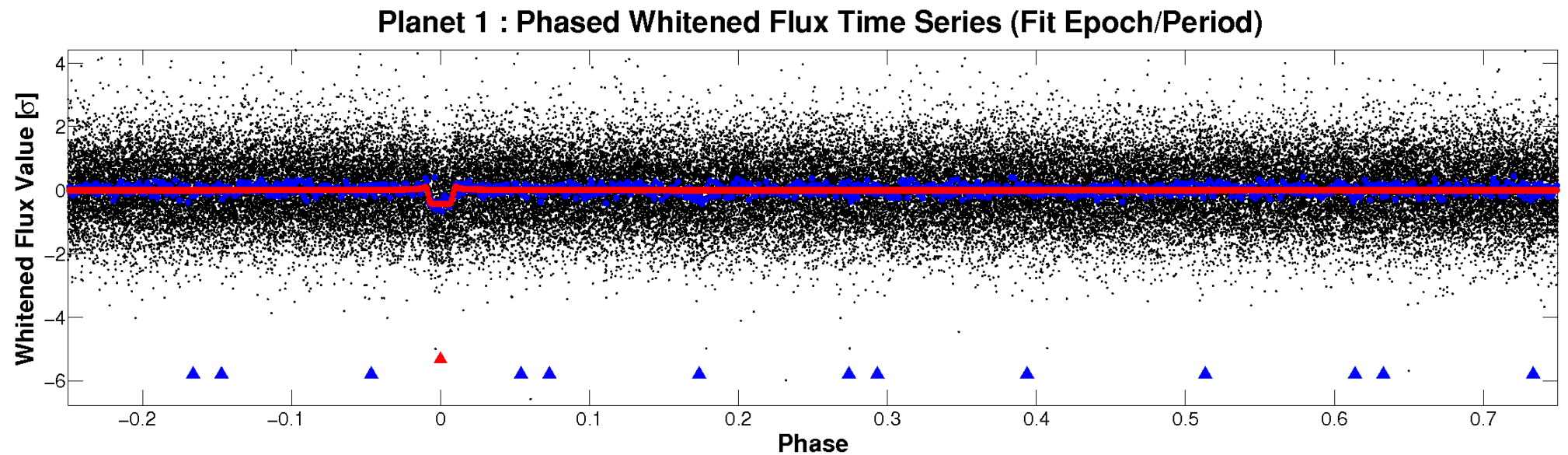
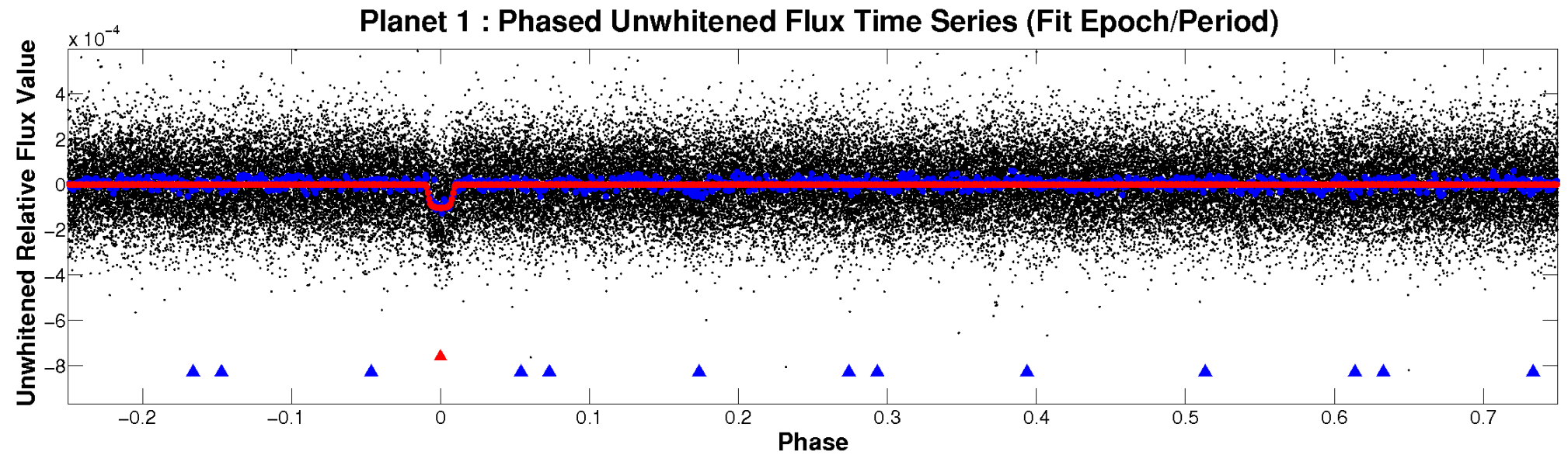


ALT Odd/Even

TCE 002305866-01

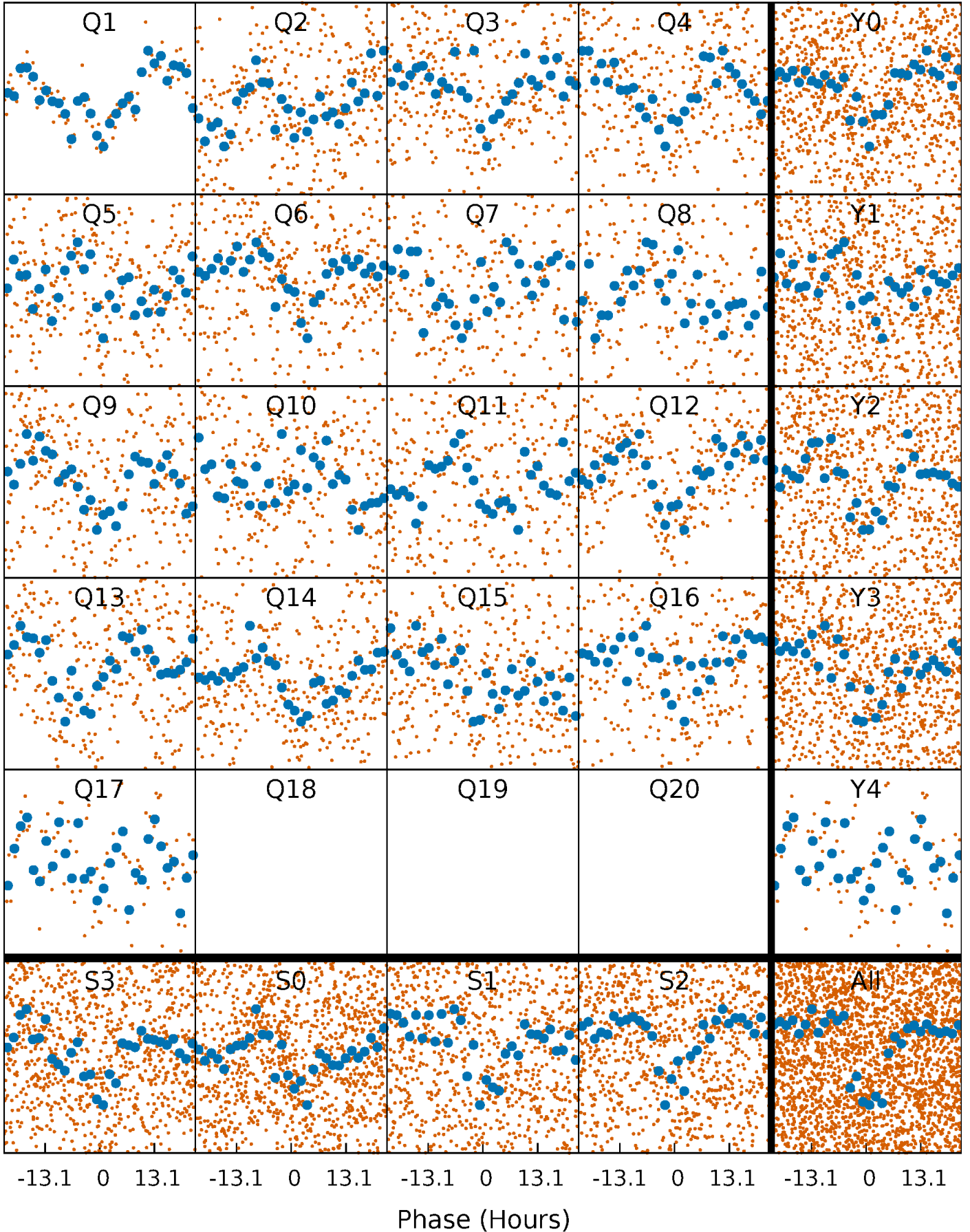


Non-Whitened Vs. Whitened Light Curve



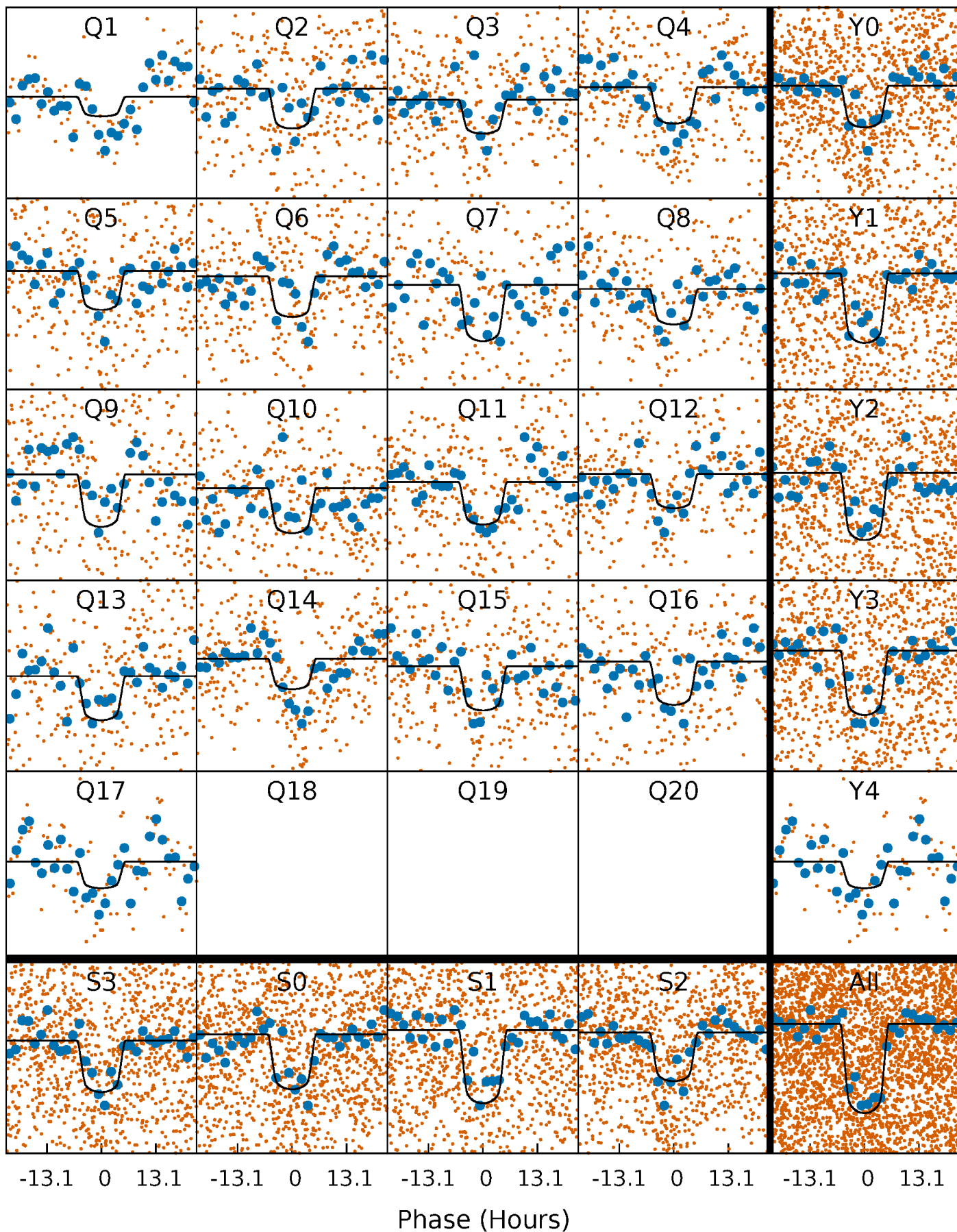
PDC Quarter-Phased Transit Curves

TCE 002305866-01 P= 24.107391 Days $T_0=145.928272$ (BKJD)



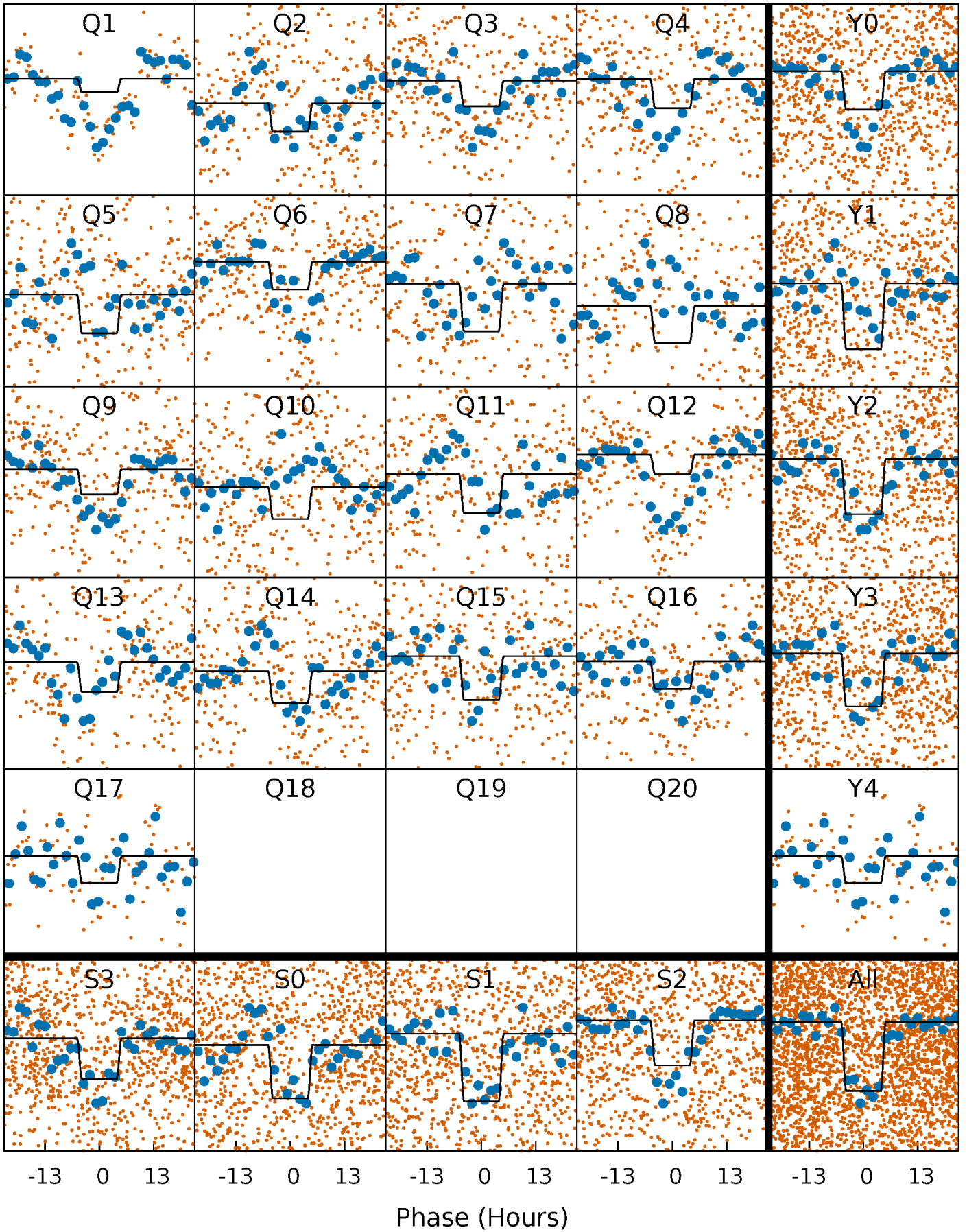
DV Quarter-Phased Transit Curves

TCE 002305866-01 P= 24.107391 Days $T_0=145.928272$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

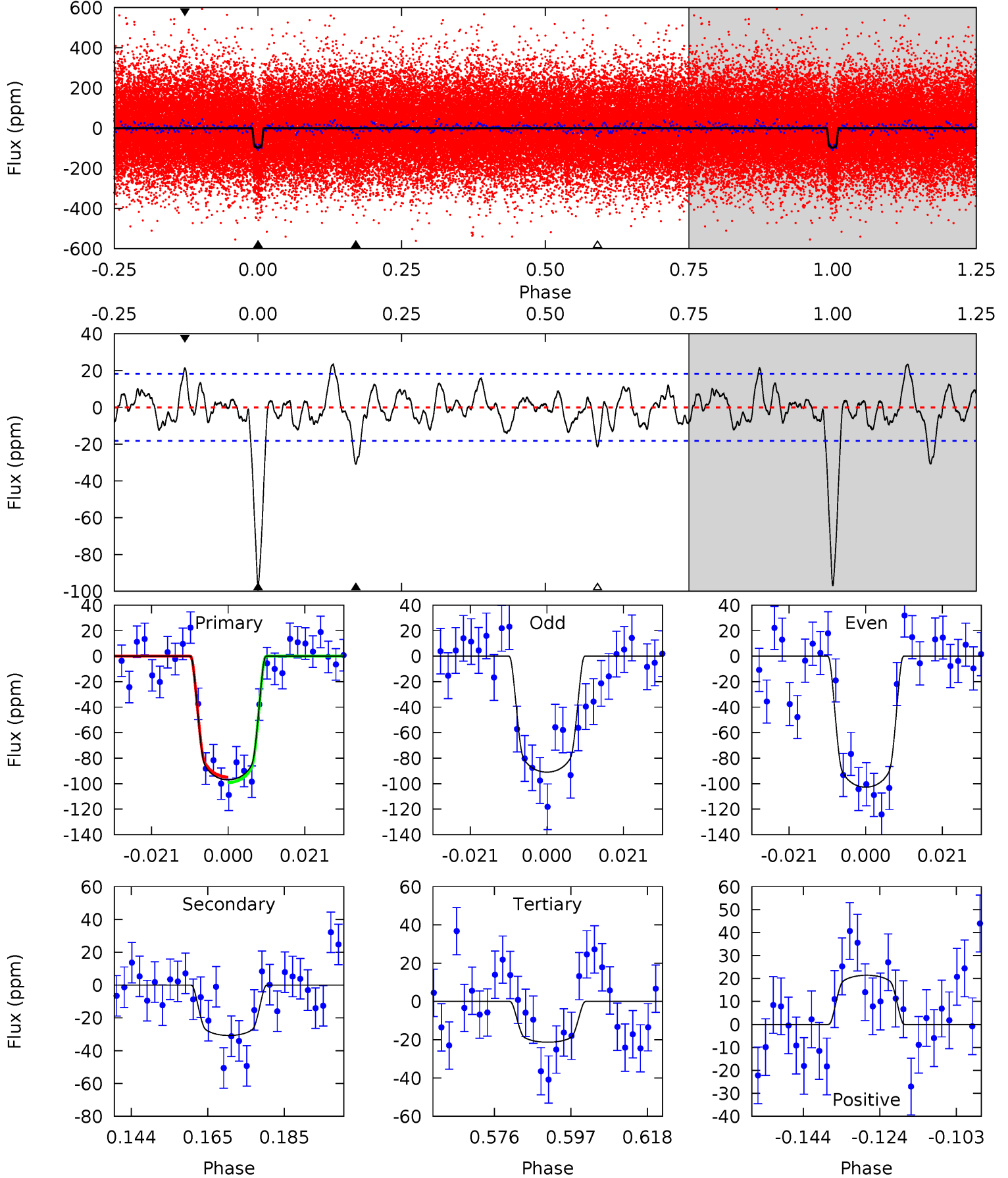
TCE 002305866-01 P= 24.107177 Days $T_0=145.945979$ (BKJD)



DV Model-Shift Uniqueness Test

002305866-01, P = 24.107391 Days, E = 121.820881 Days

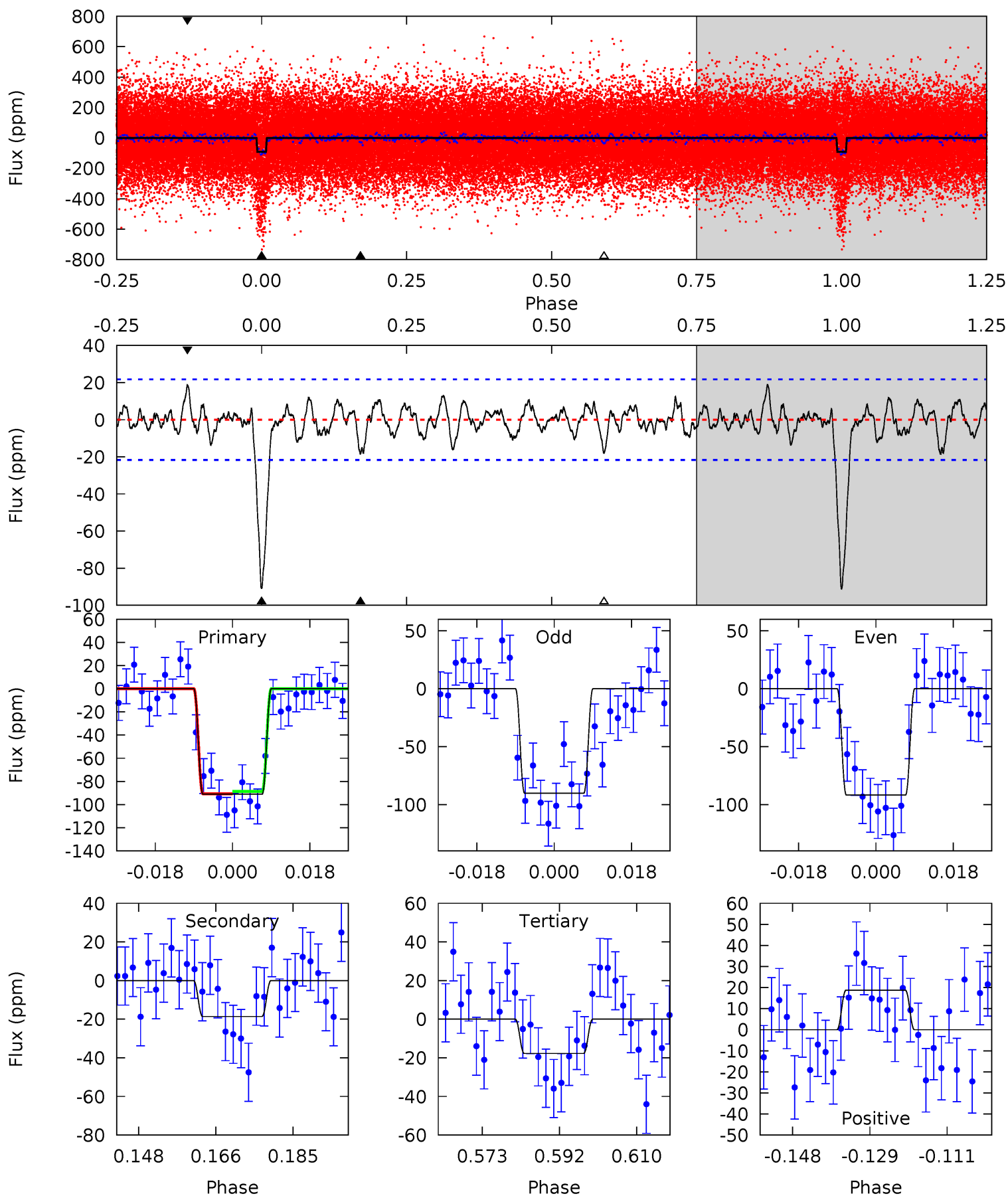
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.0	8.25	5.71	5.74	4.89	2.32	1.94	20.3	20.3	2.53	2.51	1.58	1.16	0.19	0.58



Alt Model-Shift Uniqueness Test

002305866-01, P = 24.107177 Days, E = 121.838802 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	4.20	4.01	4.23	4.91	2.36	1.30	16.5	16.3	0.19	-0.03	0.18	1.43	0.17	0.24



Stellar Parameters For KIC 002305866

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6585^{+182}_{-250}	$3.813^{+0.448}_{-0.112}$	$-0.080^{+0.250}_{-0.300}$	$2.517^{+0.602}_{-1.204}$	$1.502^{+0.211}_{-0.362}$	$0.133^{+0.568}_{-0.045}$
	+3%/-4%	+12%/-3%	+312%/-375%	+24%/-48%	+14%/-24%	+428%/-34%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 002305866-01 / KOI 2610.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-31 ± 4	$3.12^{+0.50}_{-0.77}$	1441^{+116}_{-180}	4611^{+190}_{-189}	62^{+41}_{-17}
Alt.	-19 ± 4	$2.49^{+0.45}_{-0.64}$	1442^{+118}_{-196}	4559^{+263}_{-274}	58^{+51}_{-19}

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

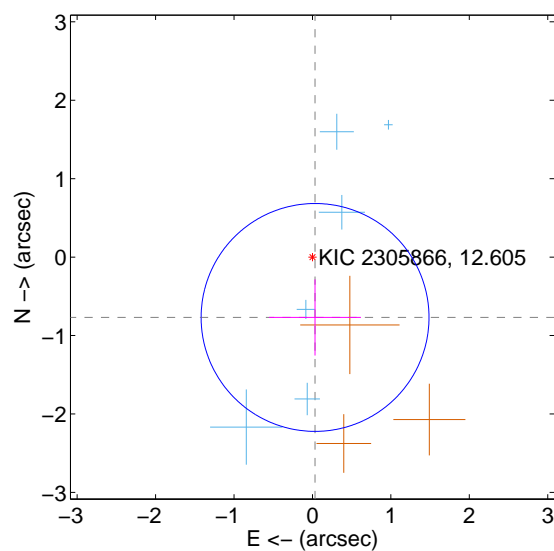
Supplemental centroid analysis for 002305866-01. Kepler magnitude: 12.61. Transit SNR 13.34

There are 6 quarters with good PRF difference image offsets

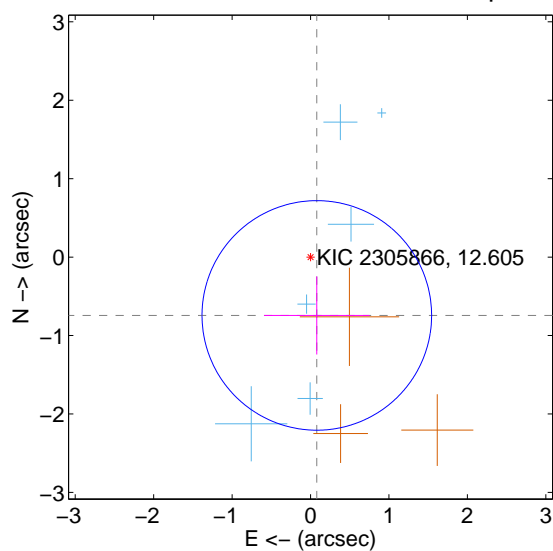
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.770 ± 0.484	1.59	-0.033 ± 0.586	-0.769 ± 0.486
PRF-fit source offset from KIC position	0.748 ± 0.488	1.53	-0.080 ± 0.672	-0.744 ± 0.498
photometric centroid source offset	0.69 ± 0.63	1.09	0.44 ± 0.55	-0.53 ± 0.68

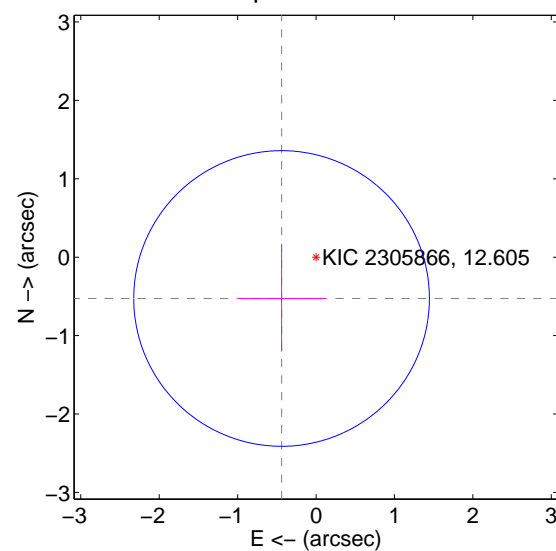
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

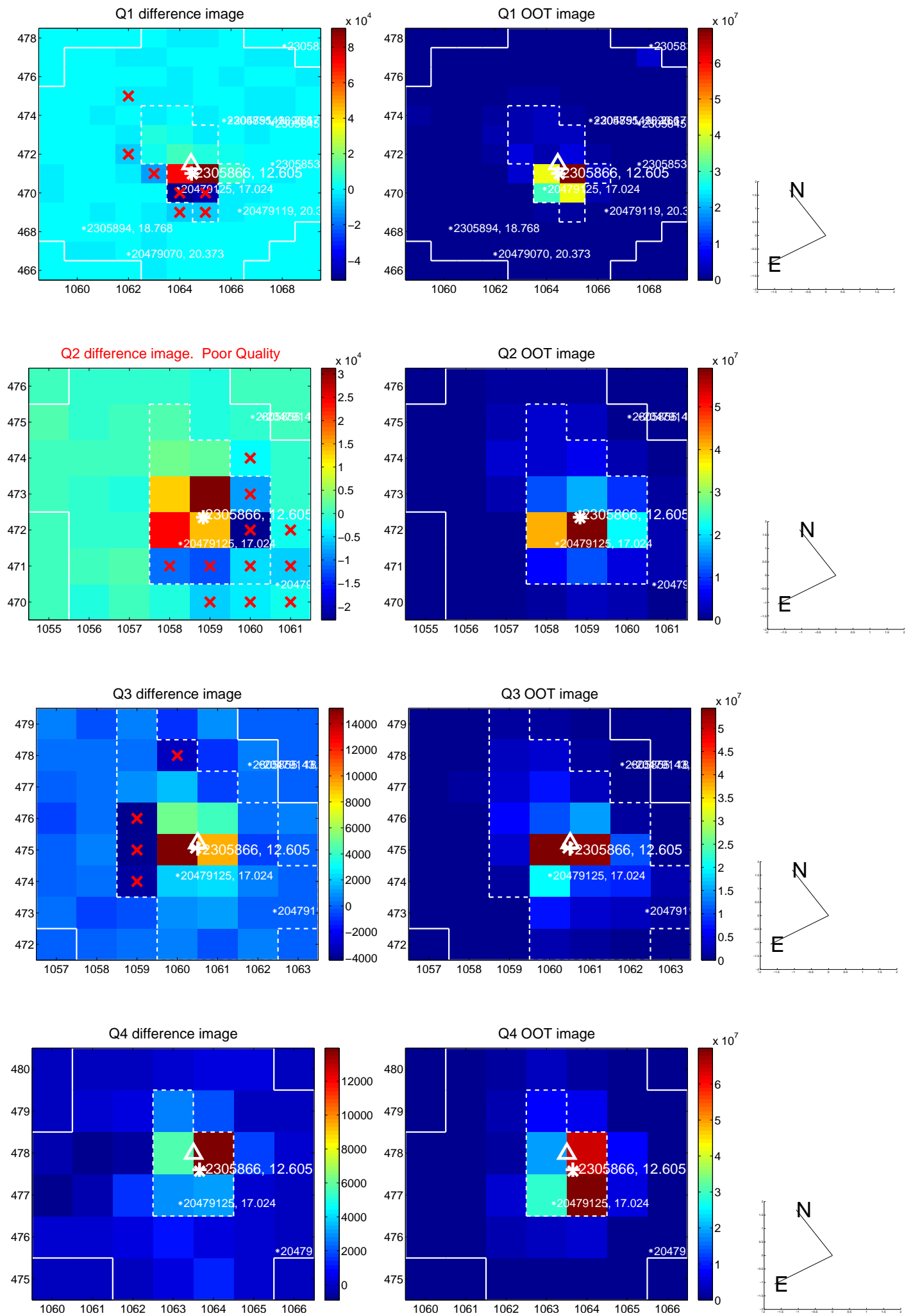


offset from photometric centroids

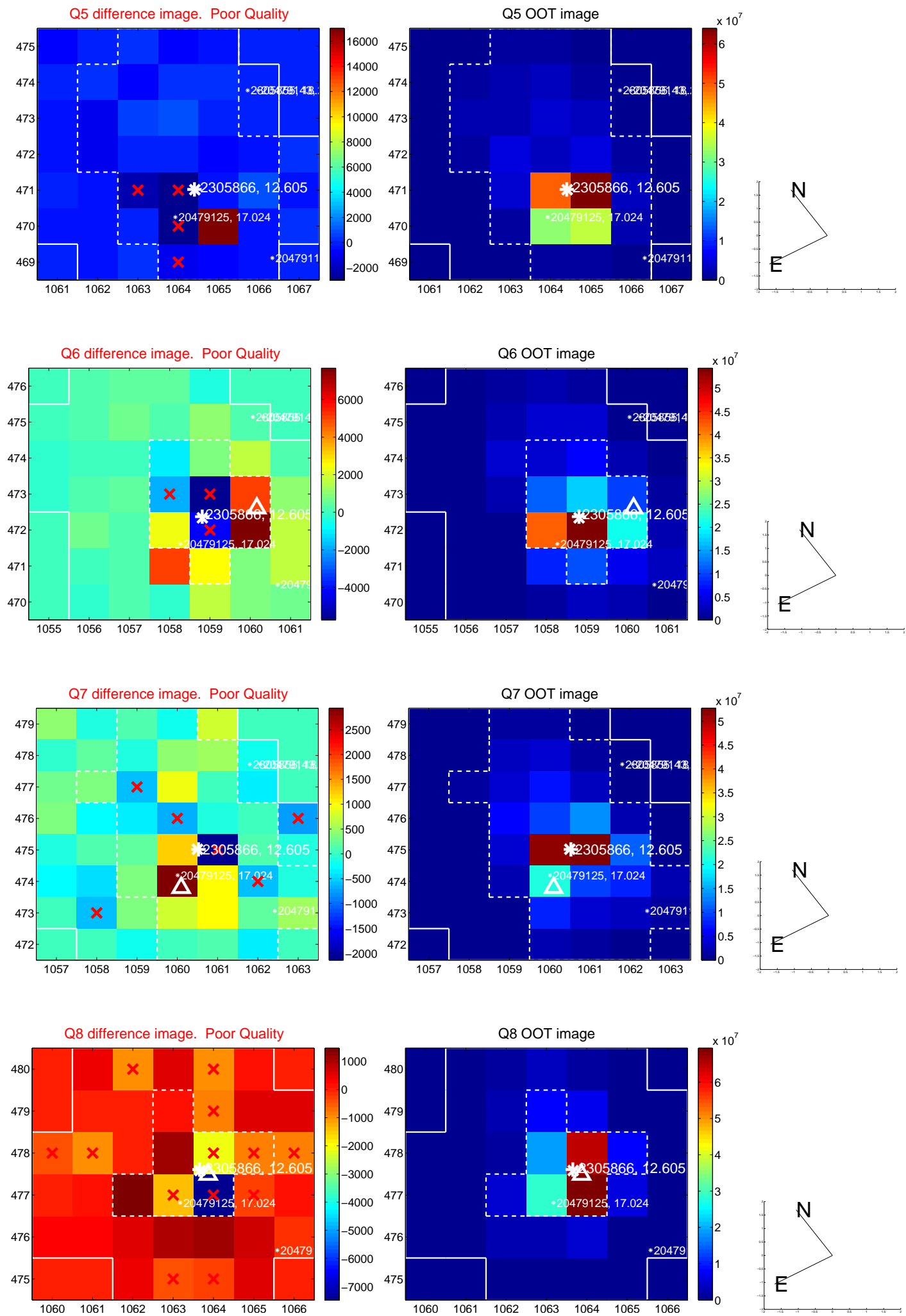


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

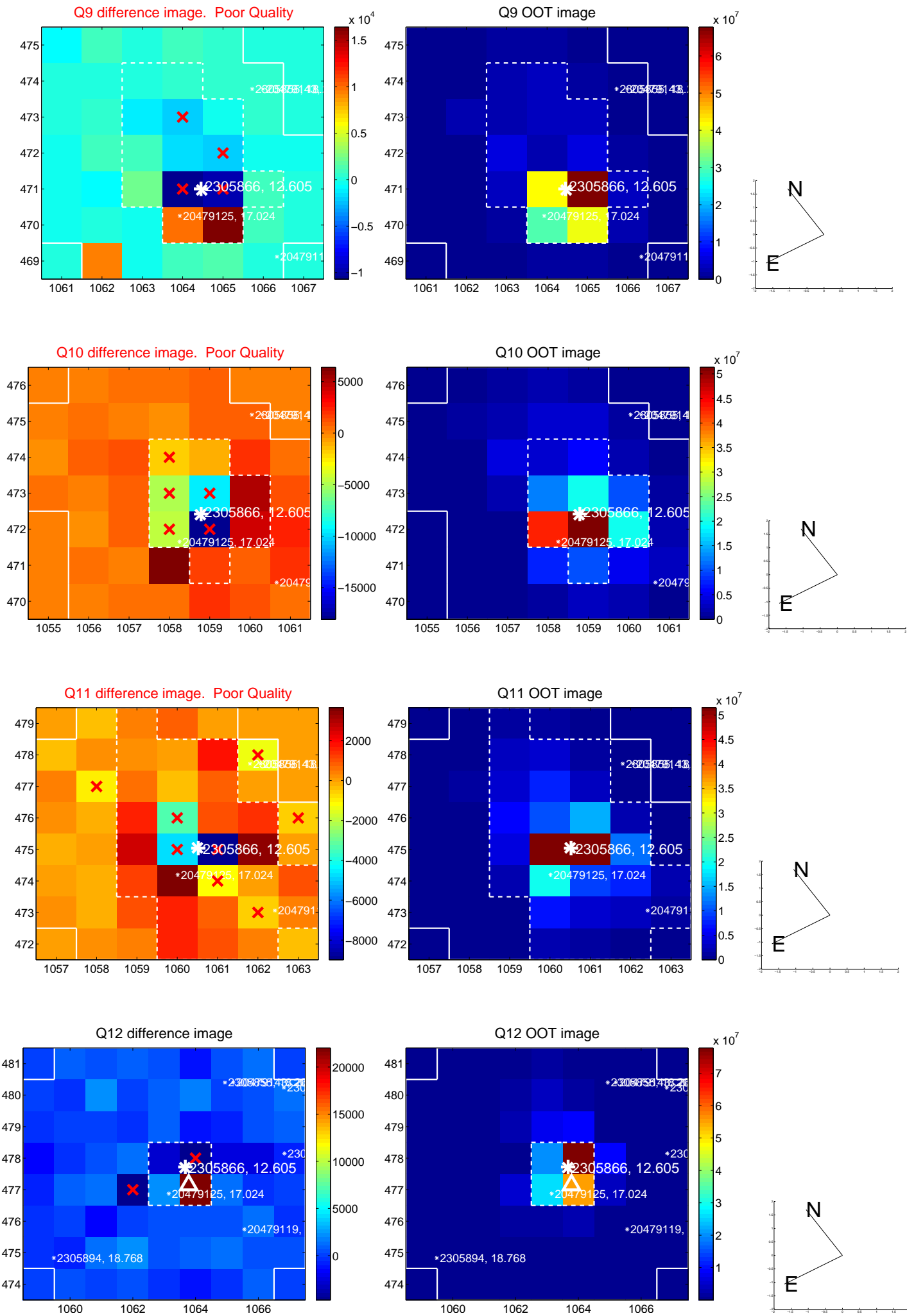
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



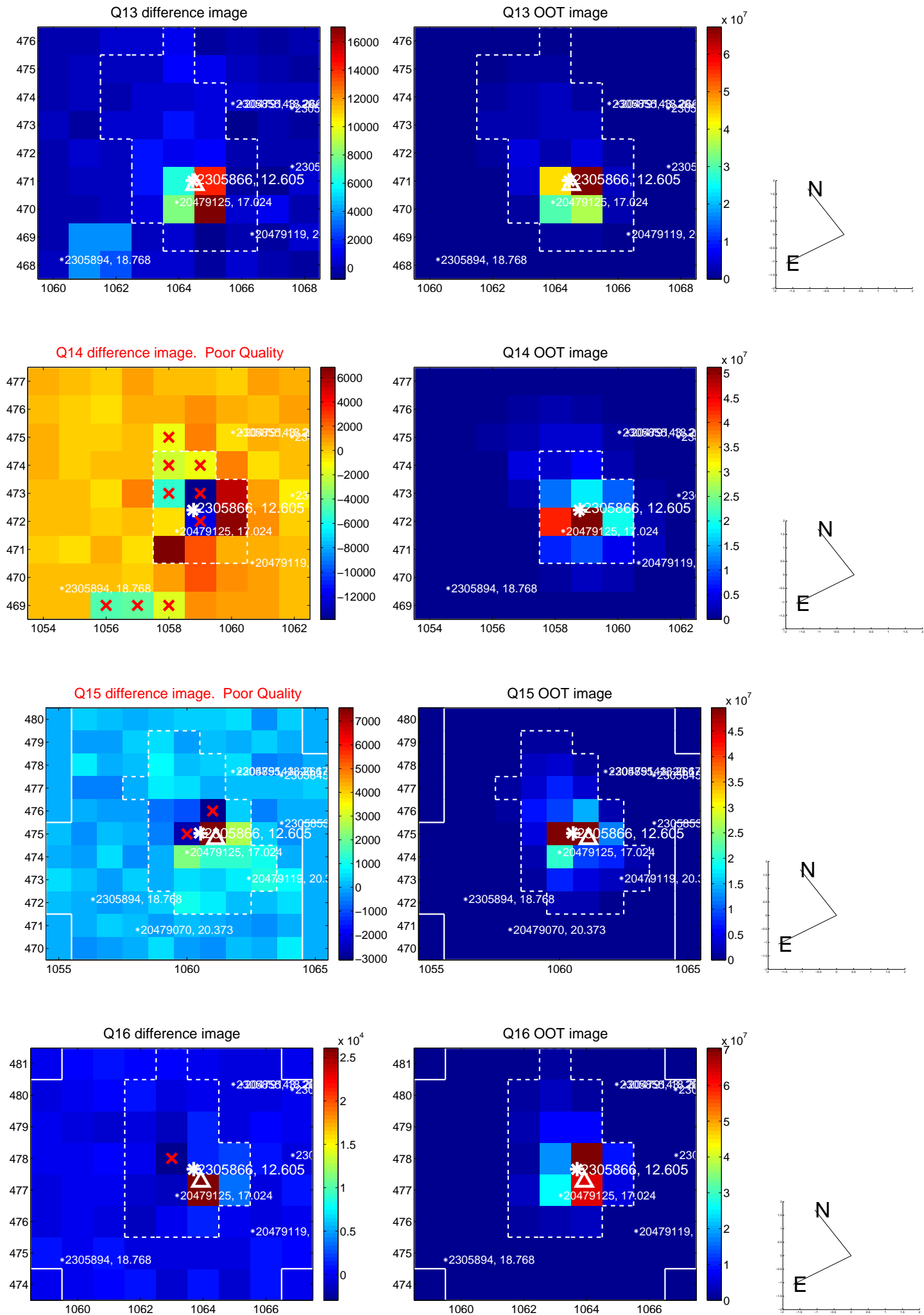
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



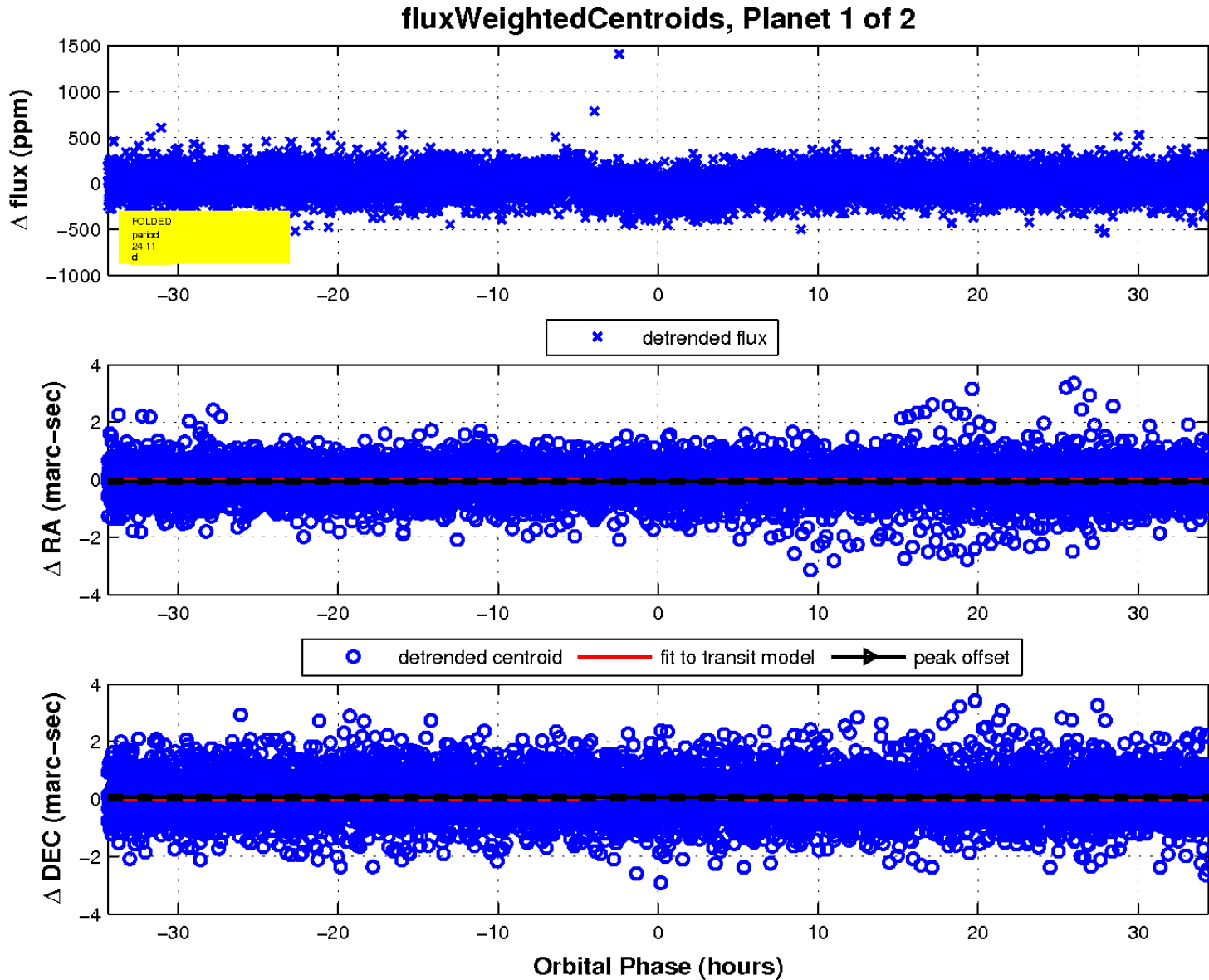
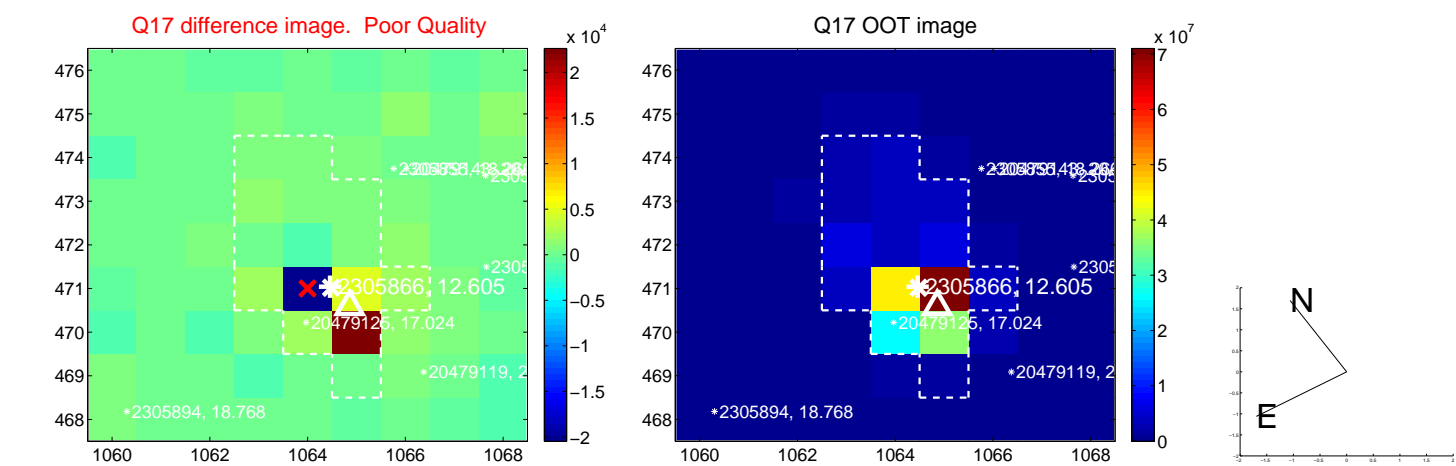
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

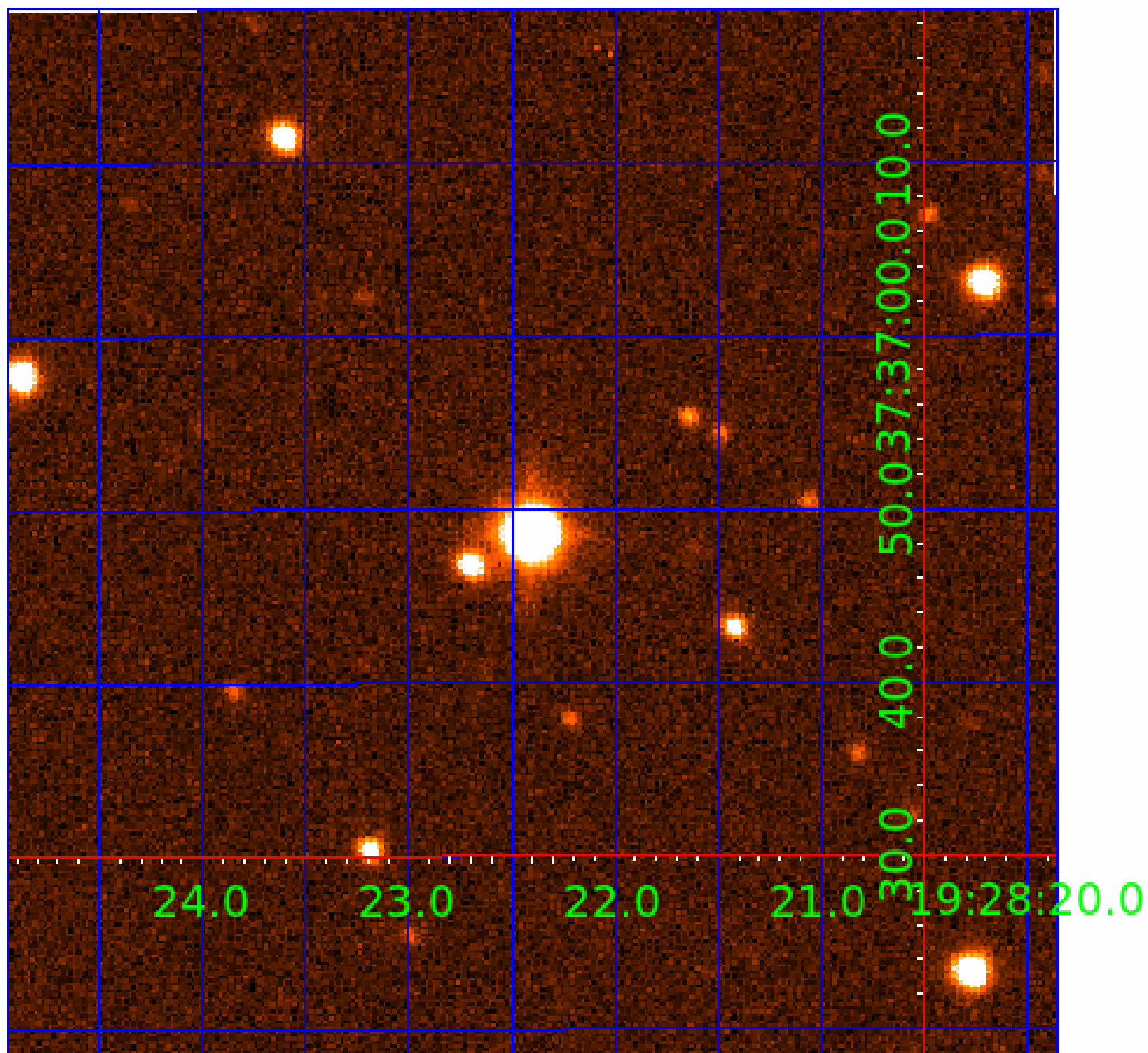


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002305866

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})
002305866-01	OBS	2610.01	24.107391	145.928272	104.2	11.469	12.2	13.3	2.52	6585	3.28	304.91
002305866-02	OBS	2610.02	115.230801	176.645182	154.8	17.279	9.8	11.8	2.52	6585	3.88	37.87

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002305866-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
002305866-02	OBS	PC	0.44	0	0	0	0	CENT_FEW_DIFFS

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

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

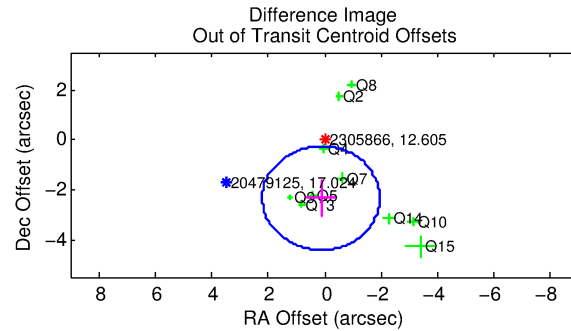
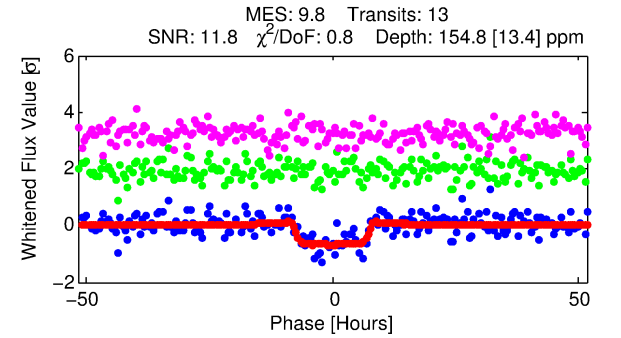
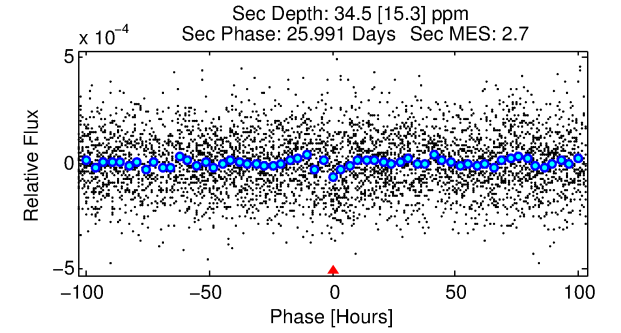
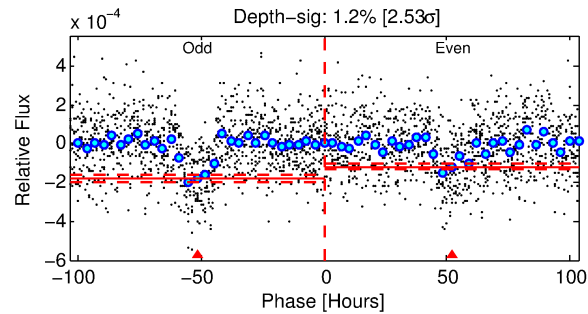
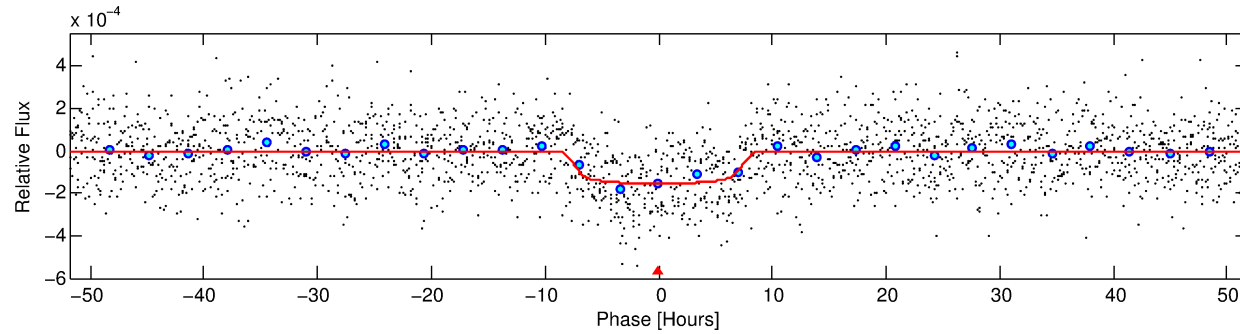
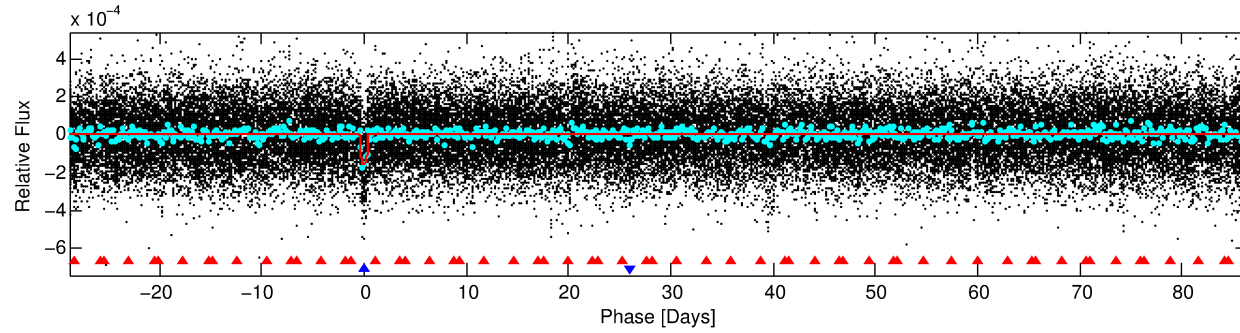
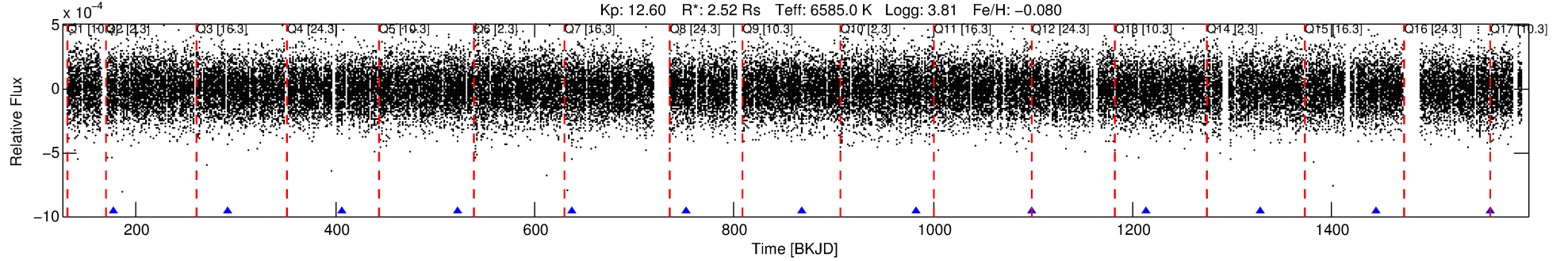
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002305866-02

No Significant Match Found

DV One-Page Summary

KIC: 2305866 Candidate: 2 of 2 Period: 115.231 d
KOI: K02610.02 Corr: 0.955



DV Fit Results:

Period = 115.23080 [0.00321] d
Epoch = 176.6452 [0.0212] BKJD
Rp/R* = 0.0141 [0.0009]
a/R* = 17.65 [4.05]
b = 0.95 [0.02]
Seff = 37.87 [29.28]
Teq = 633 [122] K
Rp = 3.88 [1.87] Re
a = 0.5309 [0.2490] AU
Ag = 355.30 [314.92] [1.13σ]
Teffp = 4246 [513] K [6.85σ]

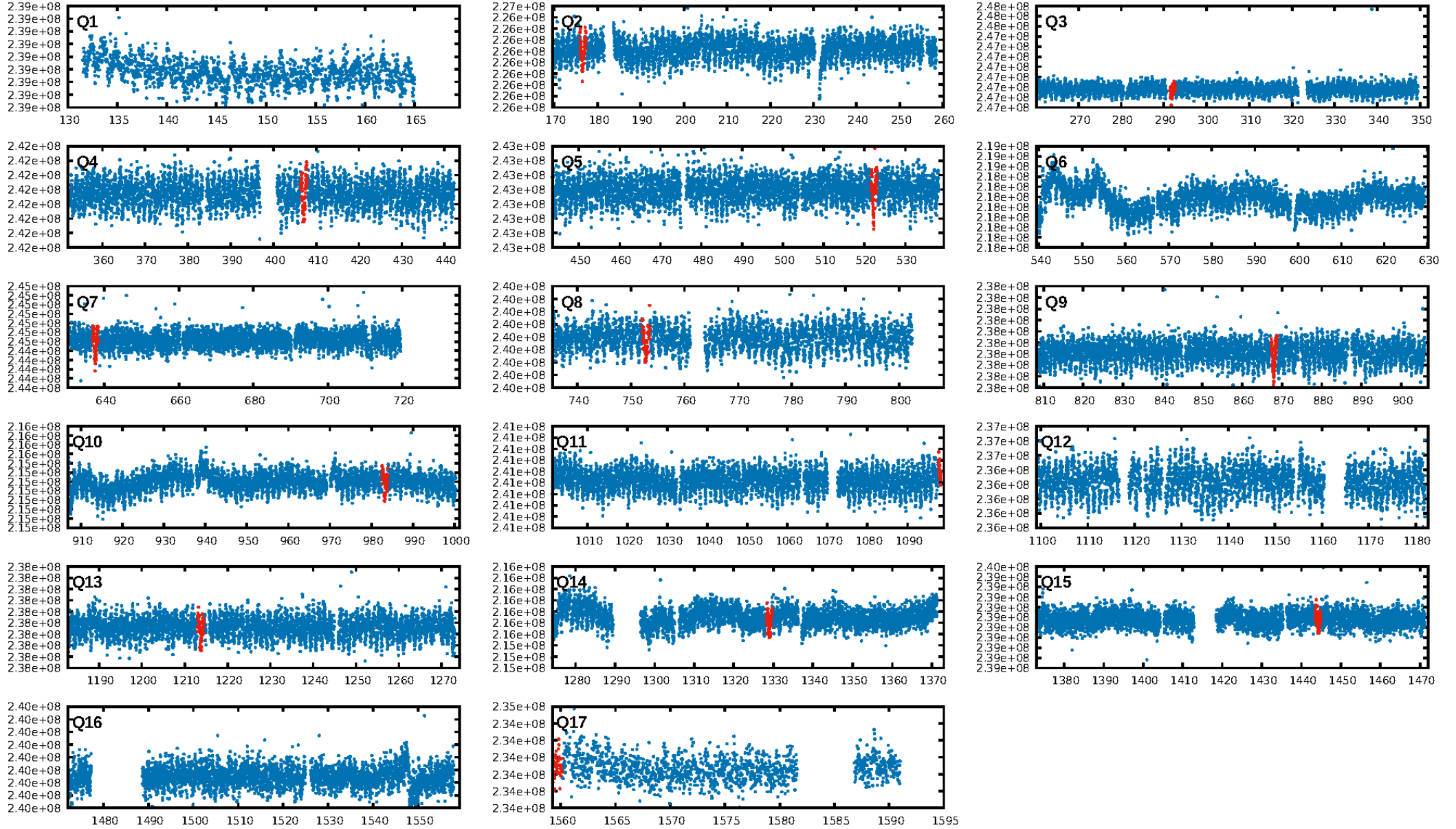
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [105.45σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 42.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.11e-20
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 1.304
Centroid-sig: 80.8%
Centroid-so: 0.340 arcsec [0.51σ]
OotOffset-rm: 2.343 arcsec [3.38σ]
KicOffset-rm: 2.217 arcsec [3.44σ]
OotOffset-st: 3/2/2/3 [10]
KicOffset-st: 3/2/2/3 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 0.90 [9/10]

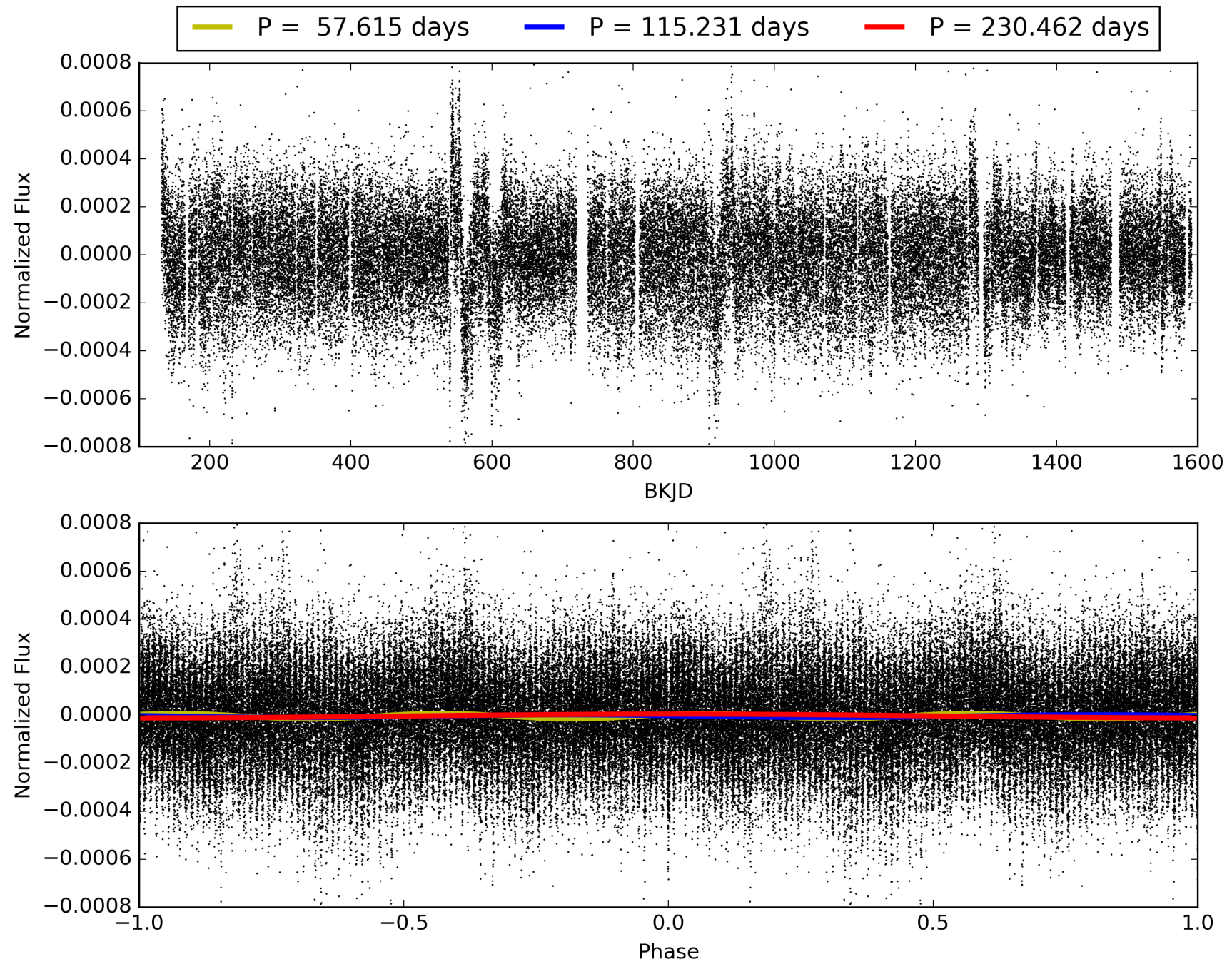
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:50:06 Z

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

TCE 002305866-02, PDC Light Curves

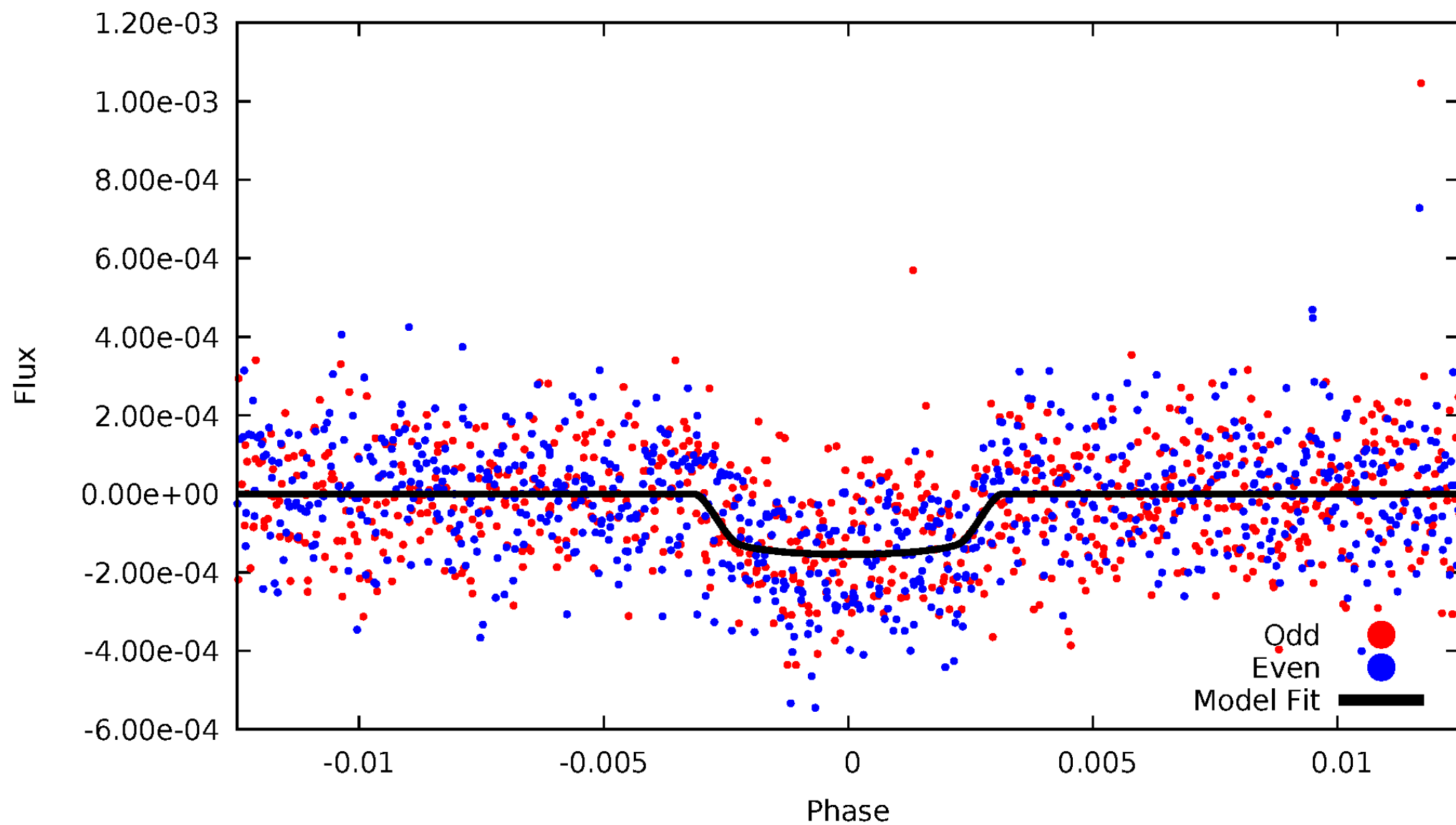


TCE 002305866-02



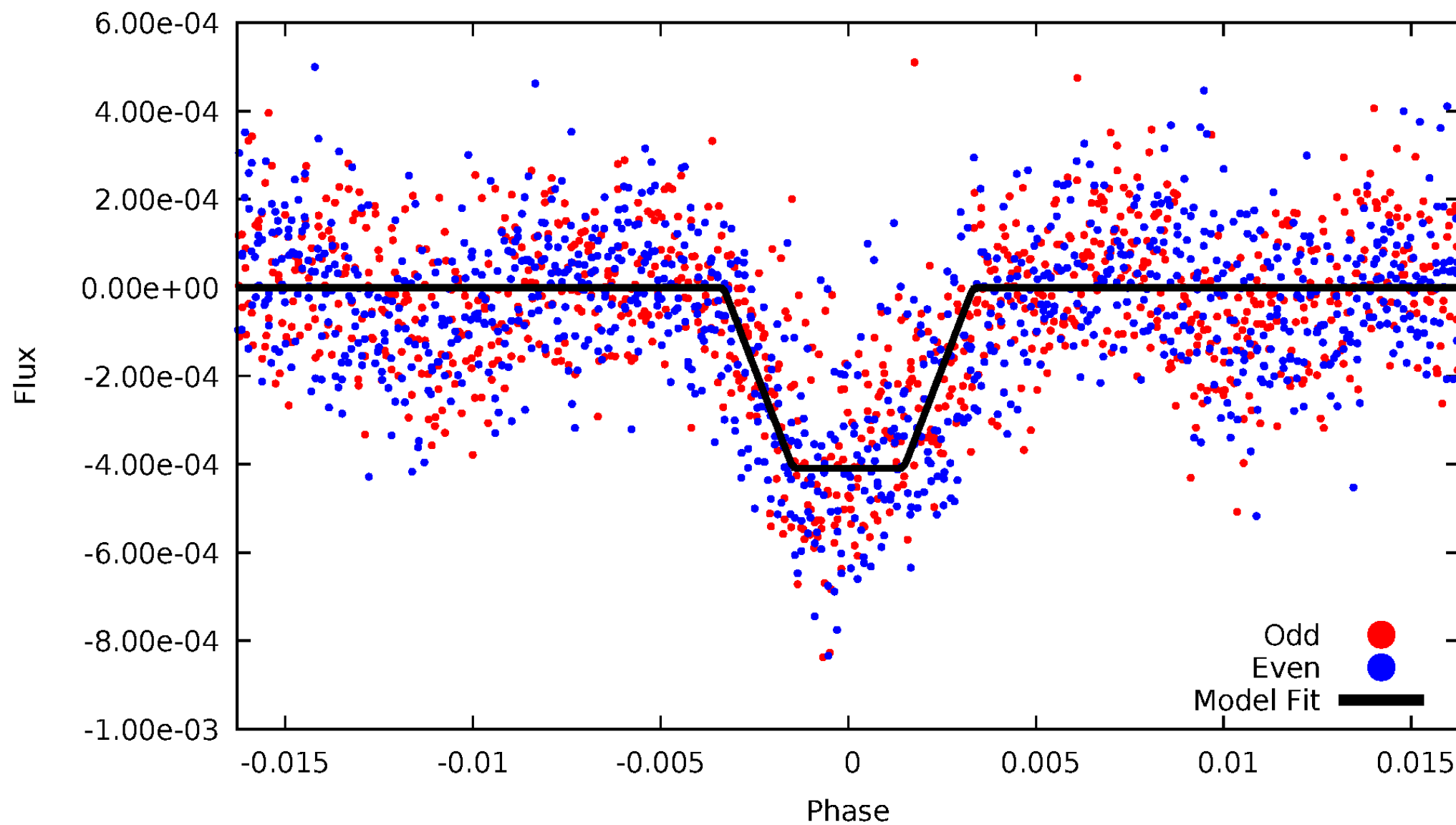
DV Odd/Even

TCE 002305866-02



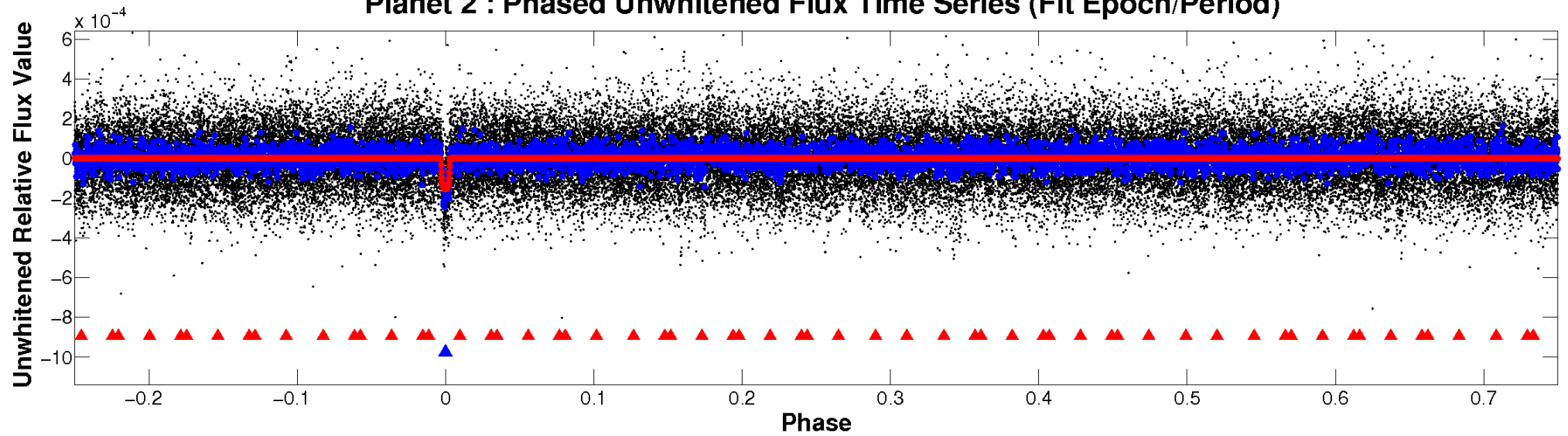
ALT Odd/Even

TCE 002305866-02

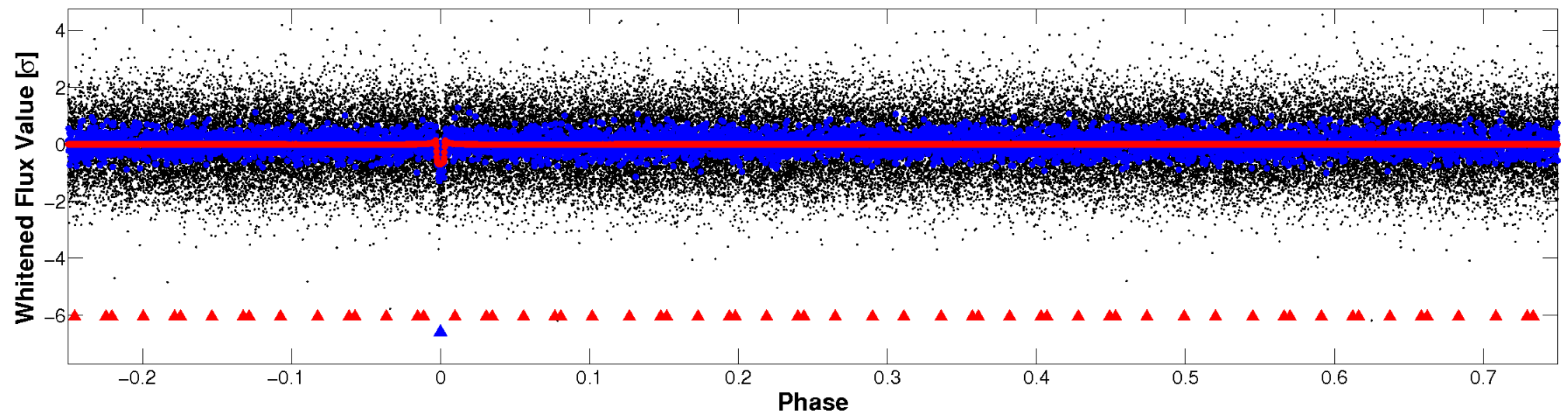


Non-Whitened Vs. Whitened Light Curve

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

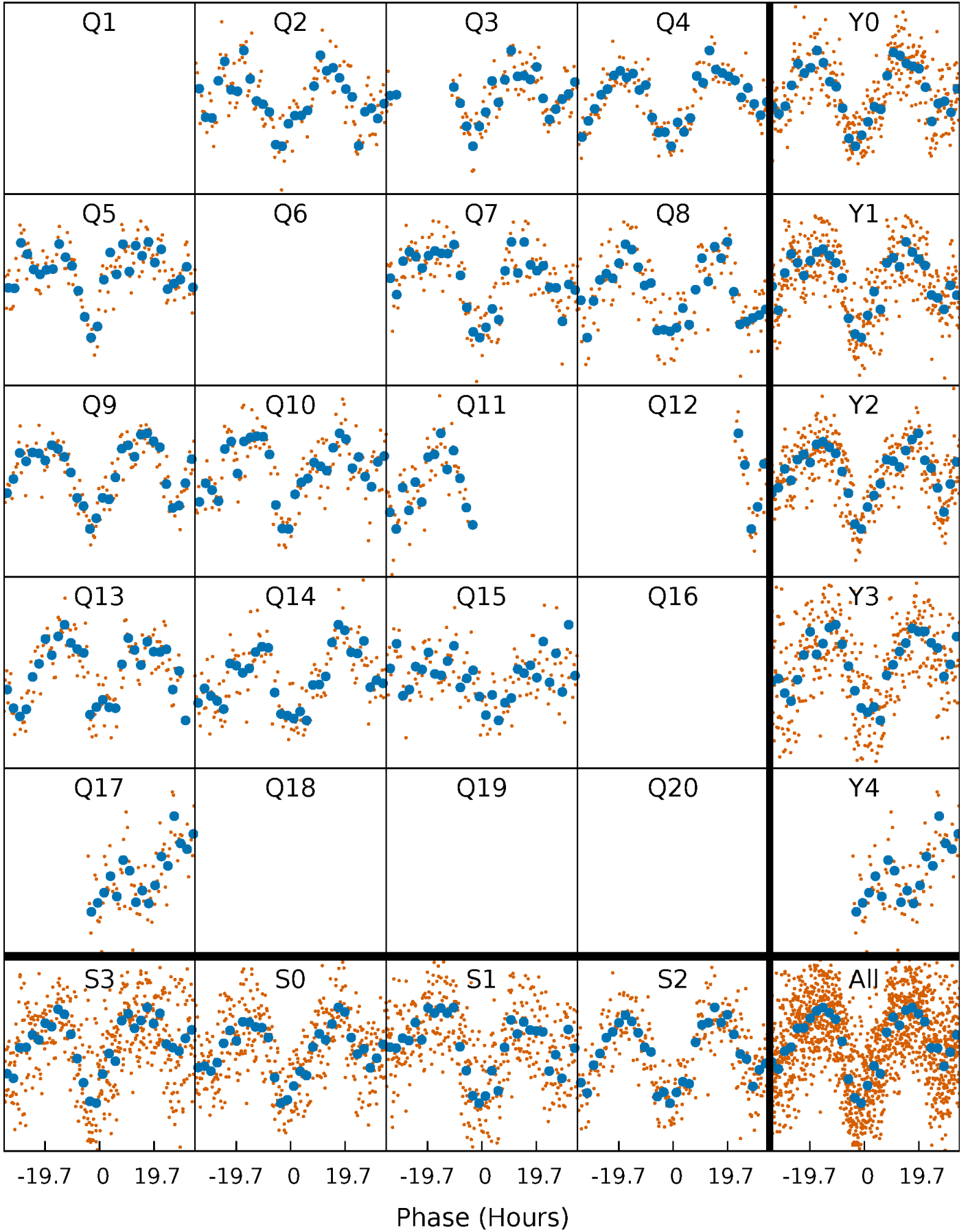


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



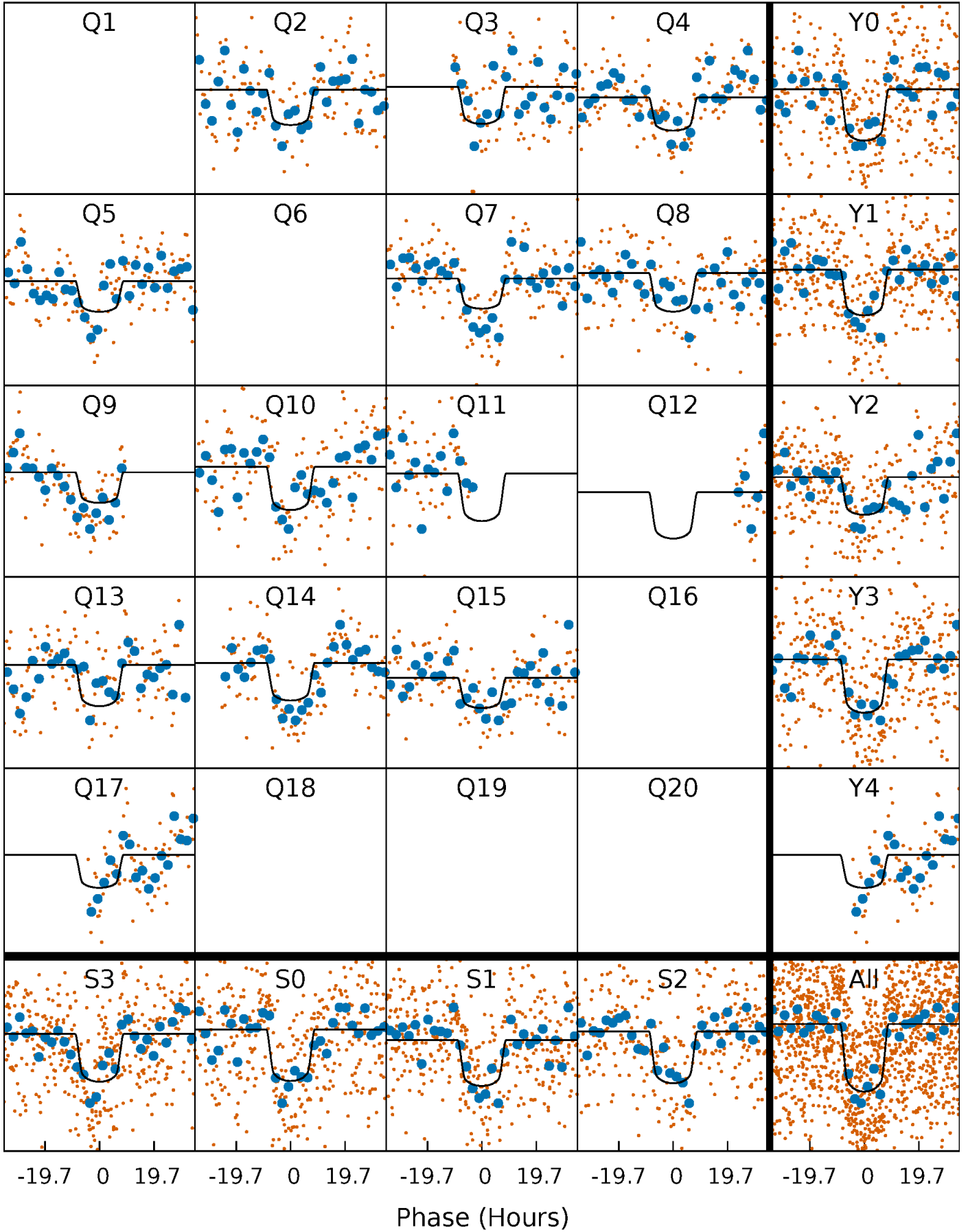
PDC Quarter-Phased Transit Curves

TCE 002305866-02 P=115.230801 Days $T_0=176.645182$ (BKJD)



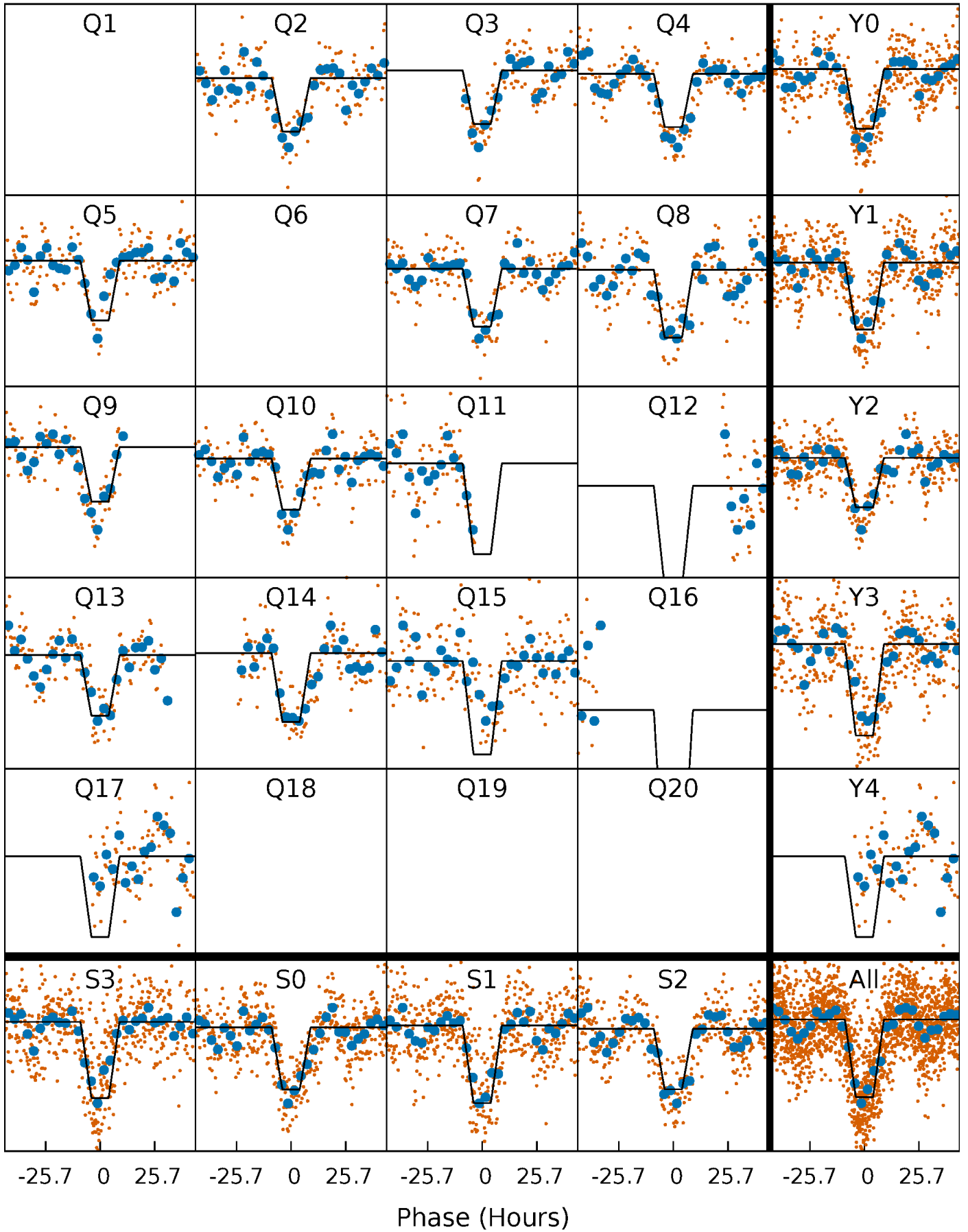
DV Quarter-Phased Transit Curves

TCE 002305866-02 $P=115.230801$ Days $T_0=176.645182$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

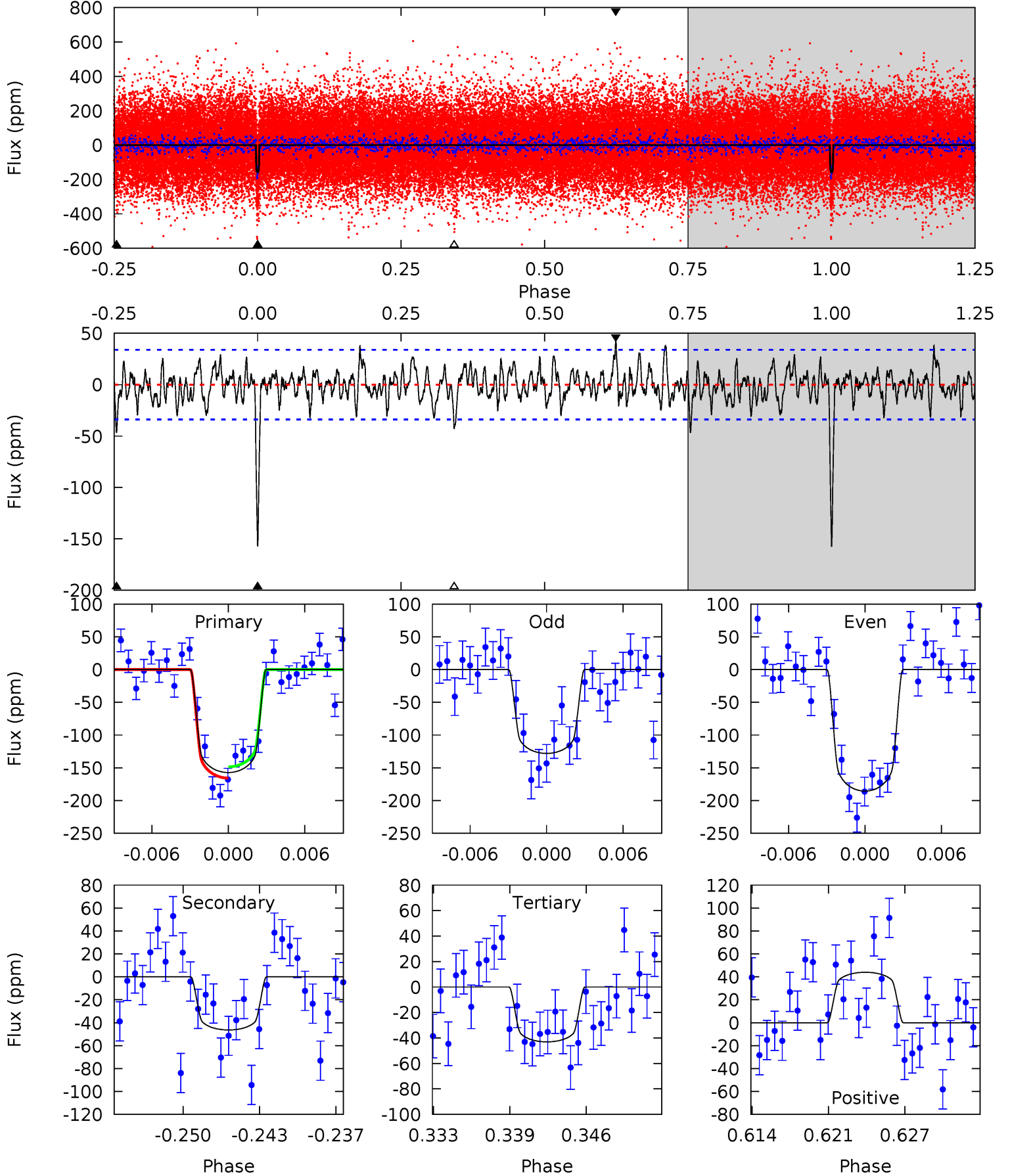
TCE 002305866-02 P=115.238467 Days $T_0=176.571136$ (BKJD)



DV Model-Shift Uniqueness Test

002305866-02, P = 115.230801 Days, E = 61.414381 Days

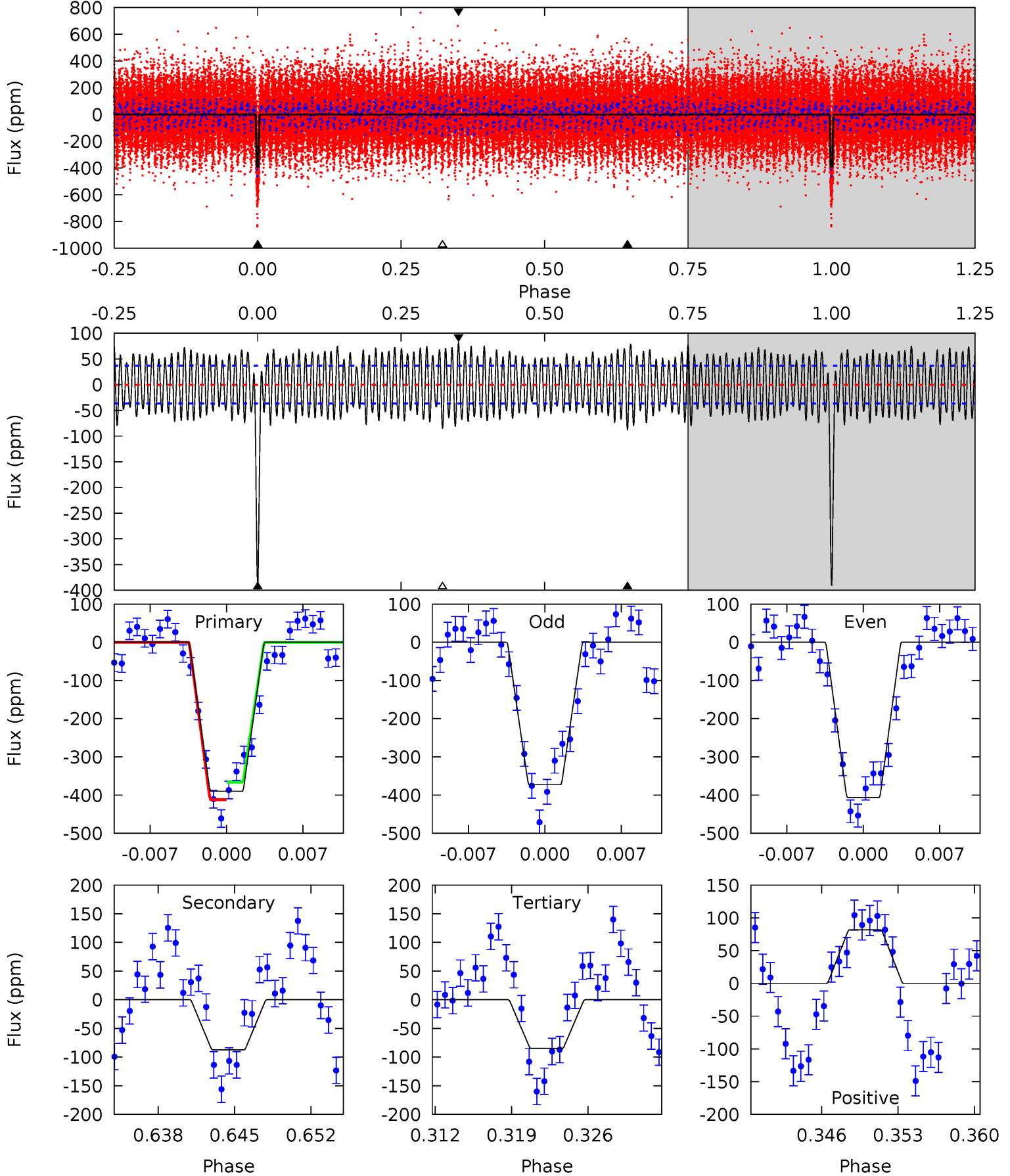
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.7	7.00	6.50	6.64	5.11	2.73	1.88	17.2	17.1	0.50	0.36	4.36	0.96	0.22	1.30



Alt Model-Shift Uniqueness Test

002305866-02, $P = 115.238467$ Days, $E = 61.332669$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.2	12.2	11.8	11.3	5.10	2.71	5.97	42.4	42.9	0.35	0.81	2.35	0.97	0.17	3.17



Stellar Parameters For KIC 002305866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6585^{+182}_{-250}	$3.813^{+0.448}_{-0.112}$	$-0.080^{+0.250}_{-0.300}$	$2.517^{+0.602}_{-1.204}$	$1.502^{+0.211}_{-0.362}$	$0.133^{+0.568}_{-0.045}$
	+3%/-4%	+12%/-3%	+312%/-375%	+24%/-48%	+14%/-24%	+428%/-34%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 002305866-02 / KOI 2610.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-46 ± 7	$3.68^{+0.63}_{-0.90}$	855^{+69}_{-102}	4702^{+195}_{-221}	542^{+351}_{-155}
Alt.	-87 ± 7	$5.32^{+0.76}_{-1.33}$	855^{+68}_{-105}	4620^{+152}_{-159}	486^{+323}_{-120}

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

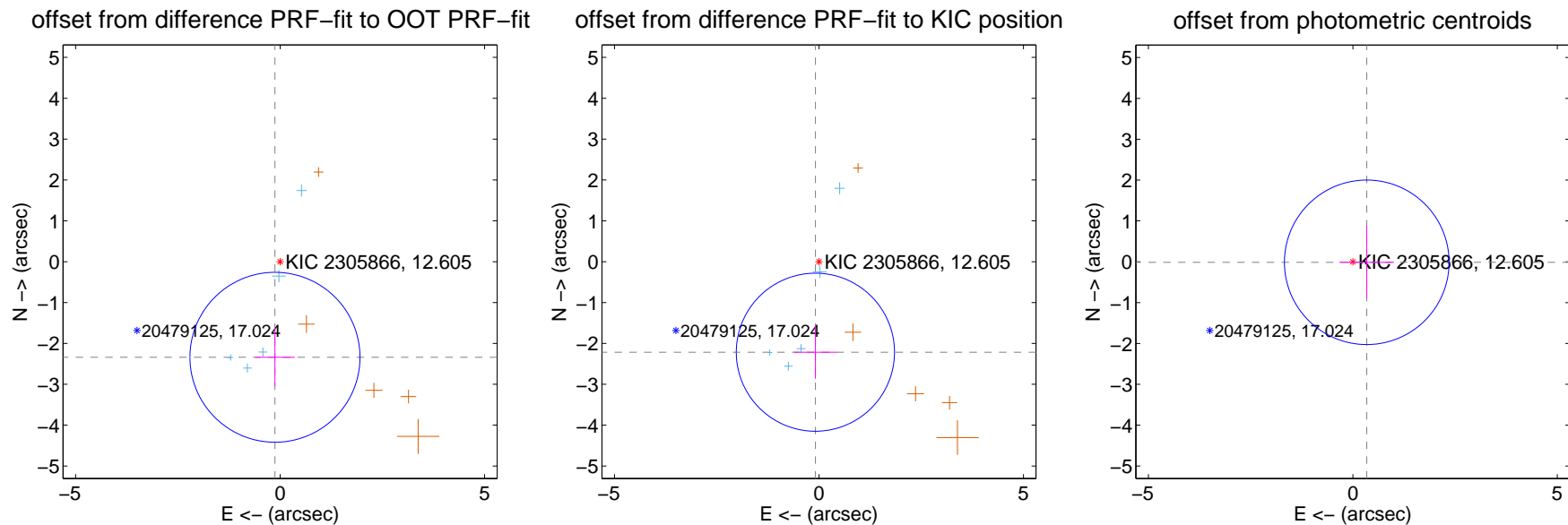
DV Centroid Data

Supplemental centroid analysis for 002305866-02. Kepler magnitude: 12.61. Transit SNR 11.78

There are 5 quarters with good PRF difference image offsets

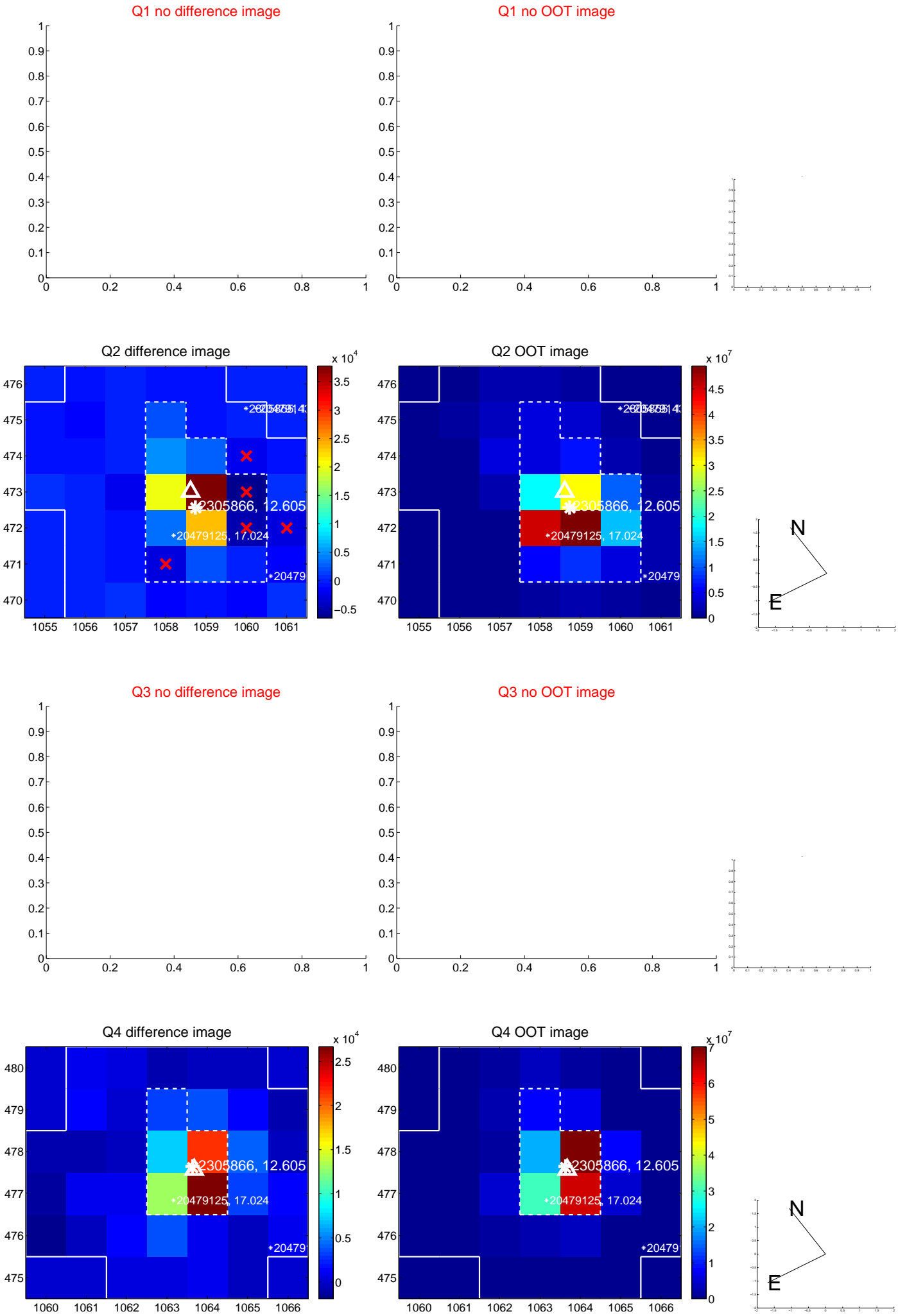
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.343 ± 0.693	3.38	0.126 ± 0.483	-2.339 ± 0.703
PRF-fit source offset from KIC position	2.217 ± 0.645	3.44	0.088 ± 0.519	-2.216 ± 0.652
photometric centroid source offset	0.34 ± 0.67	0.51	-0.34 ± 0.67	-0.01 ± 0.88

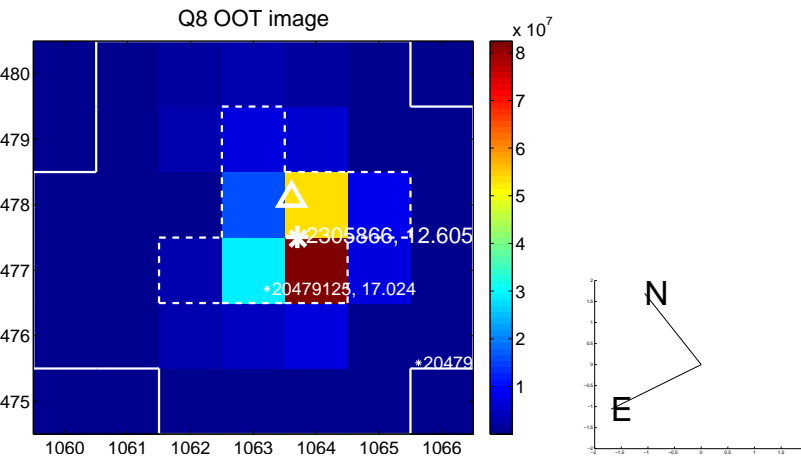
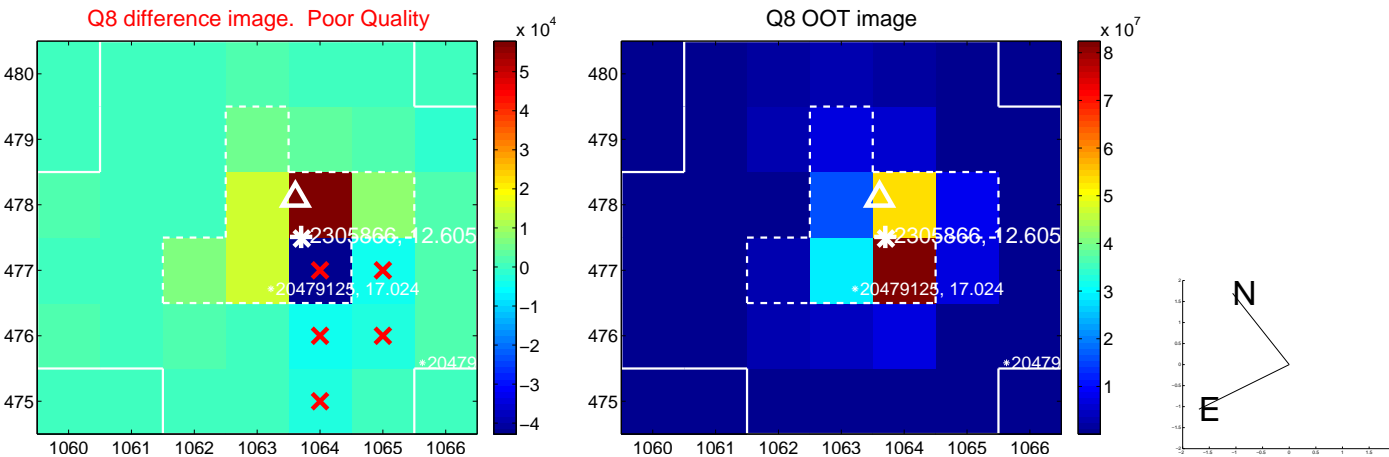
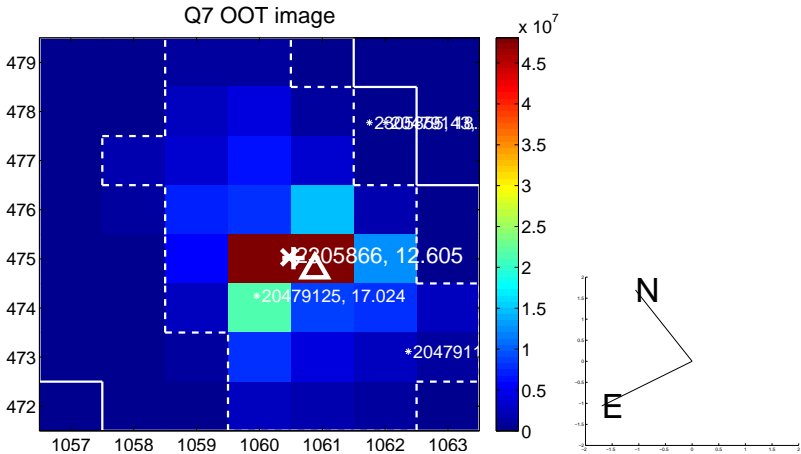
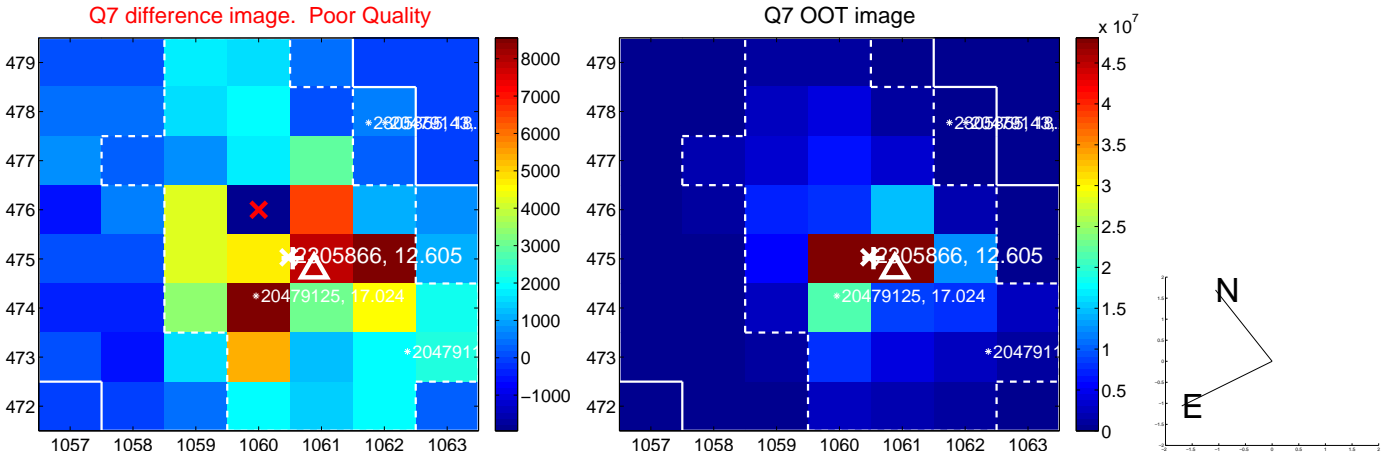
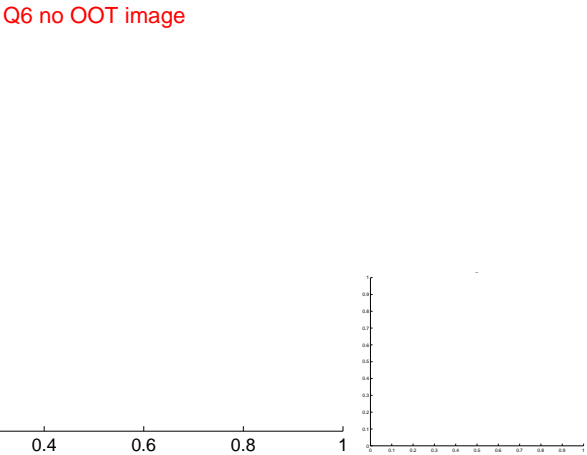
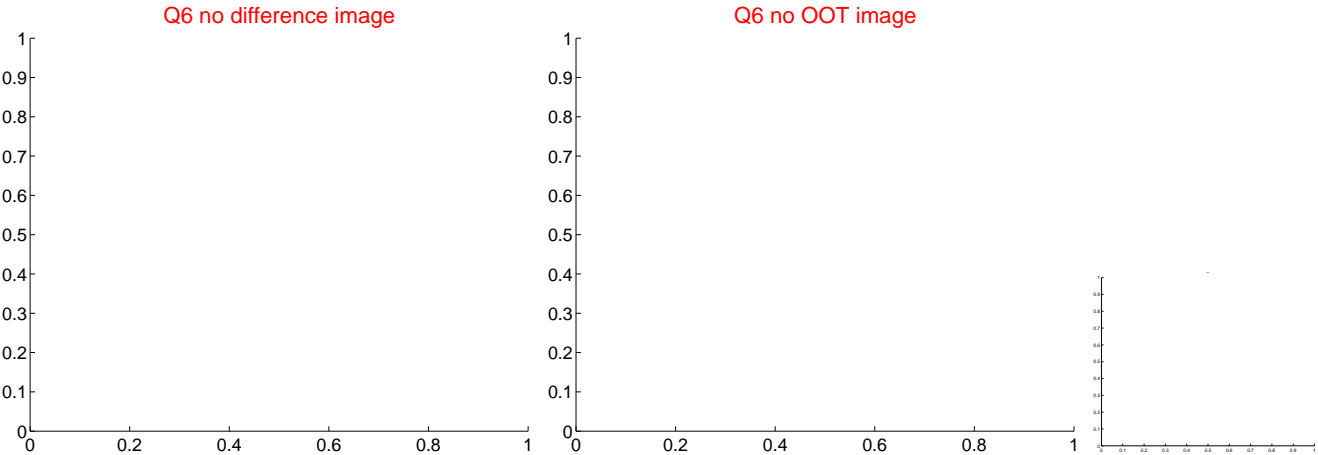
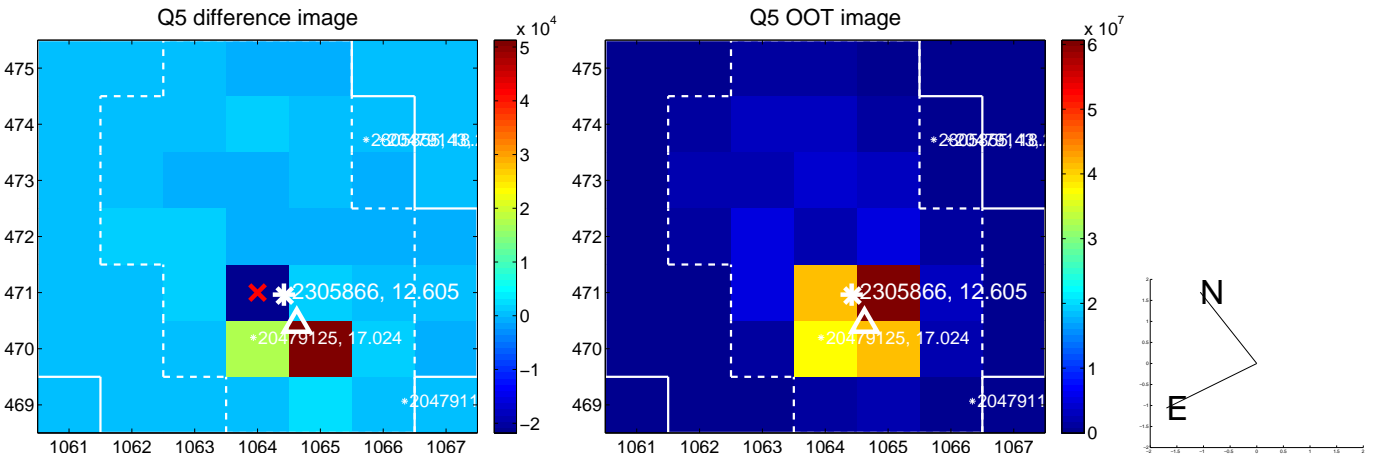


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

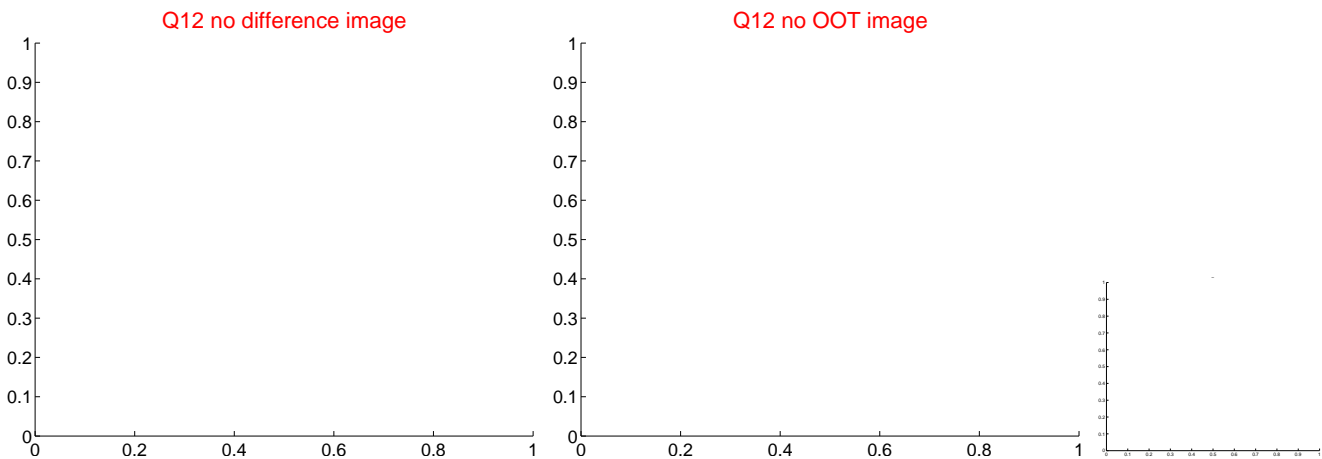
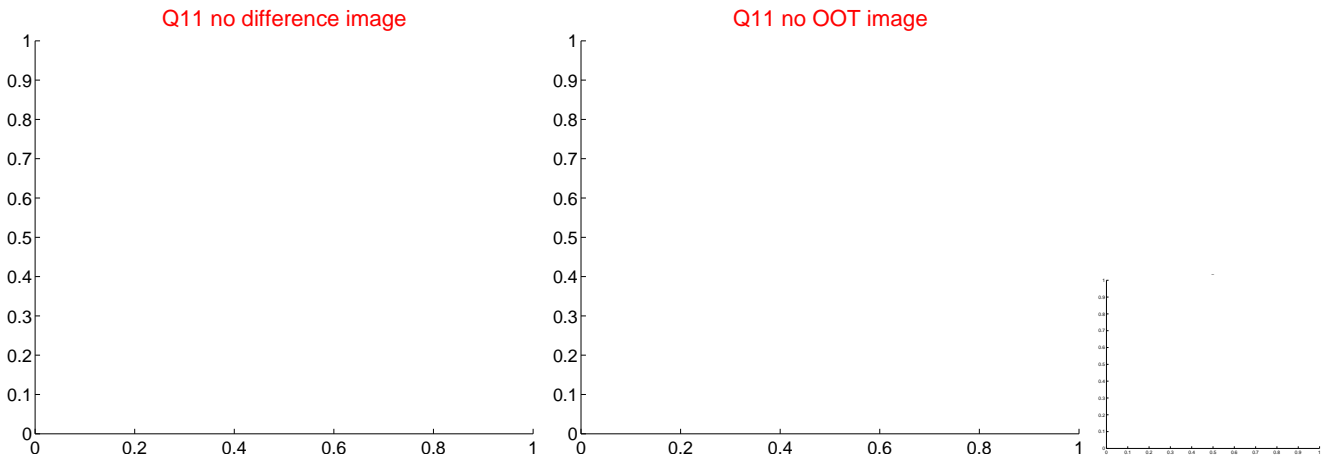
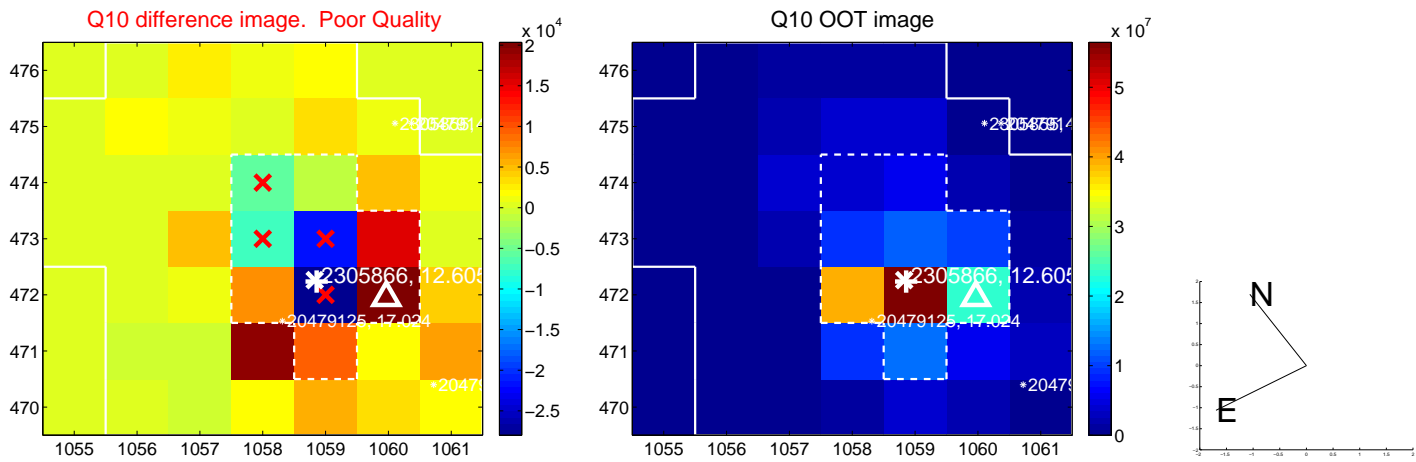
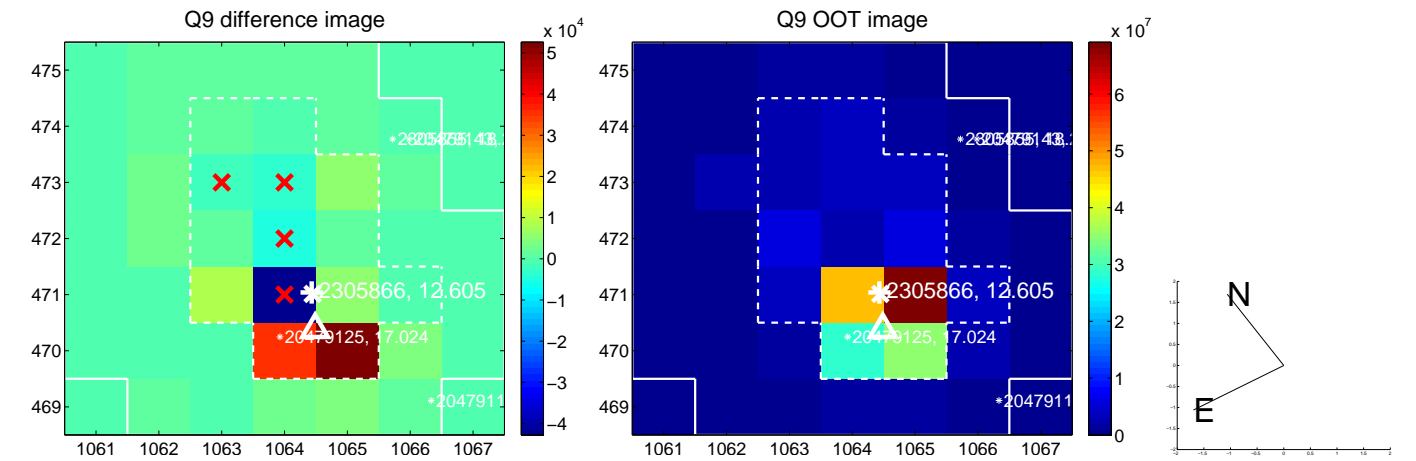
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



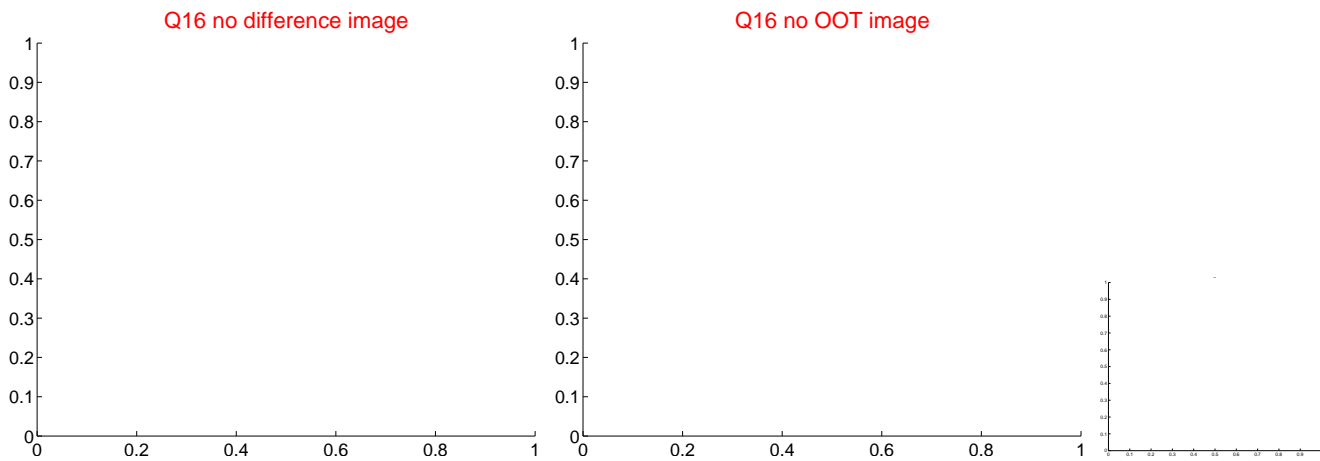
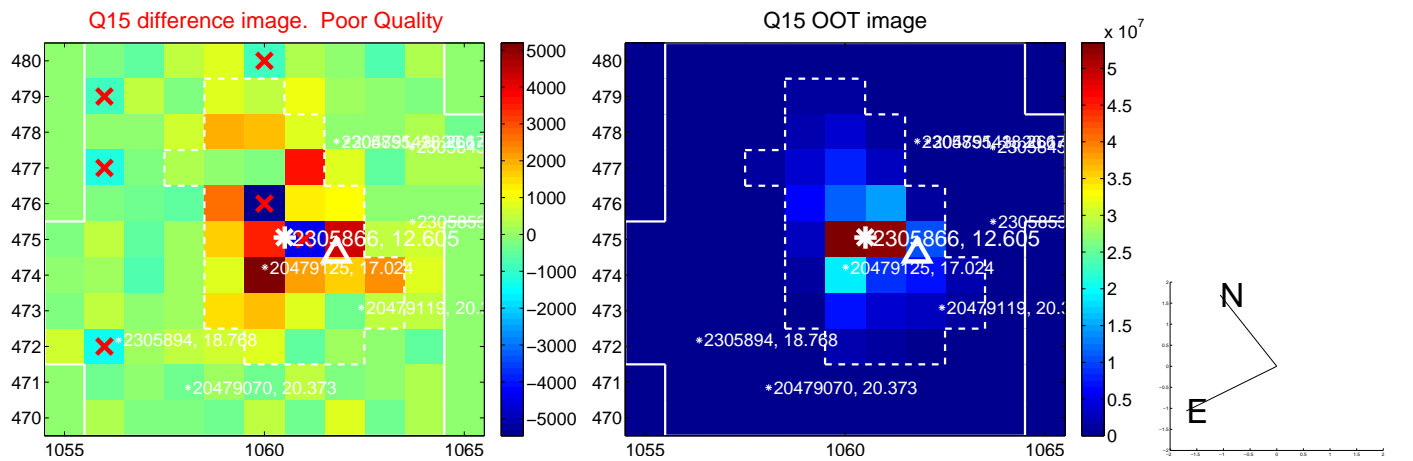
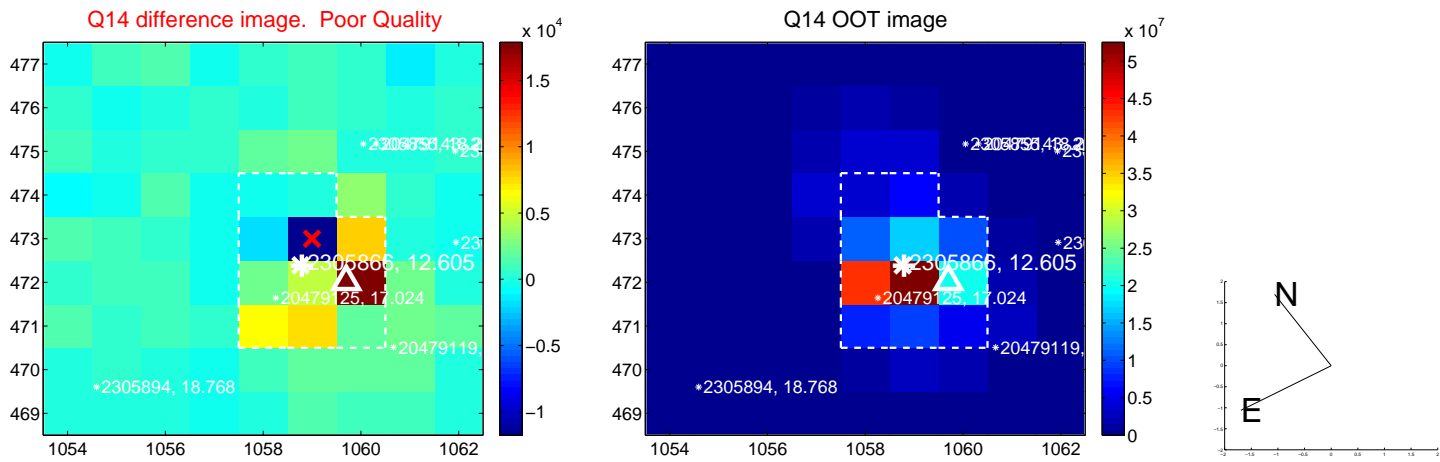
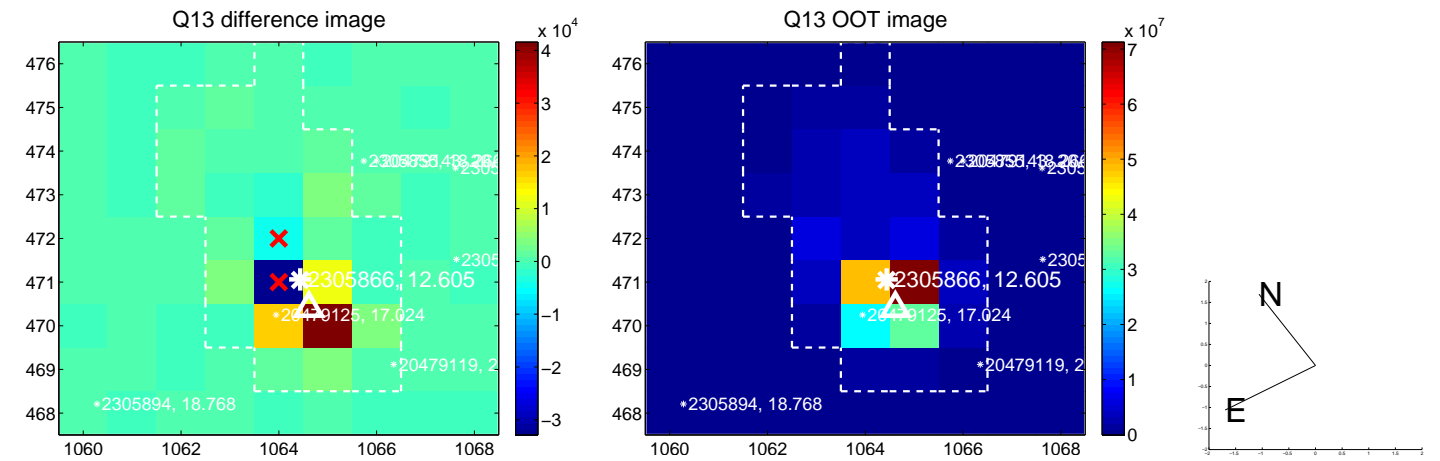
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



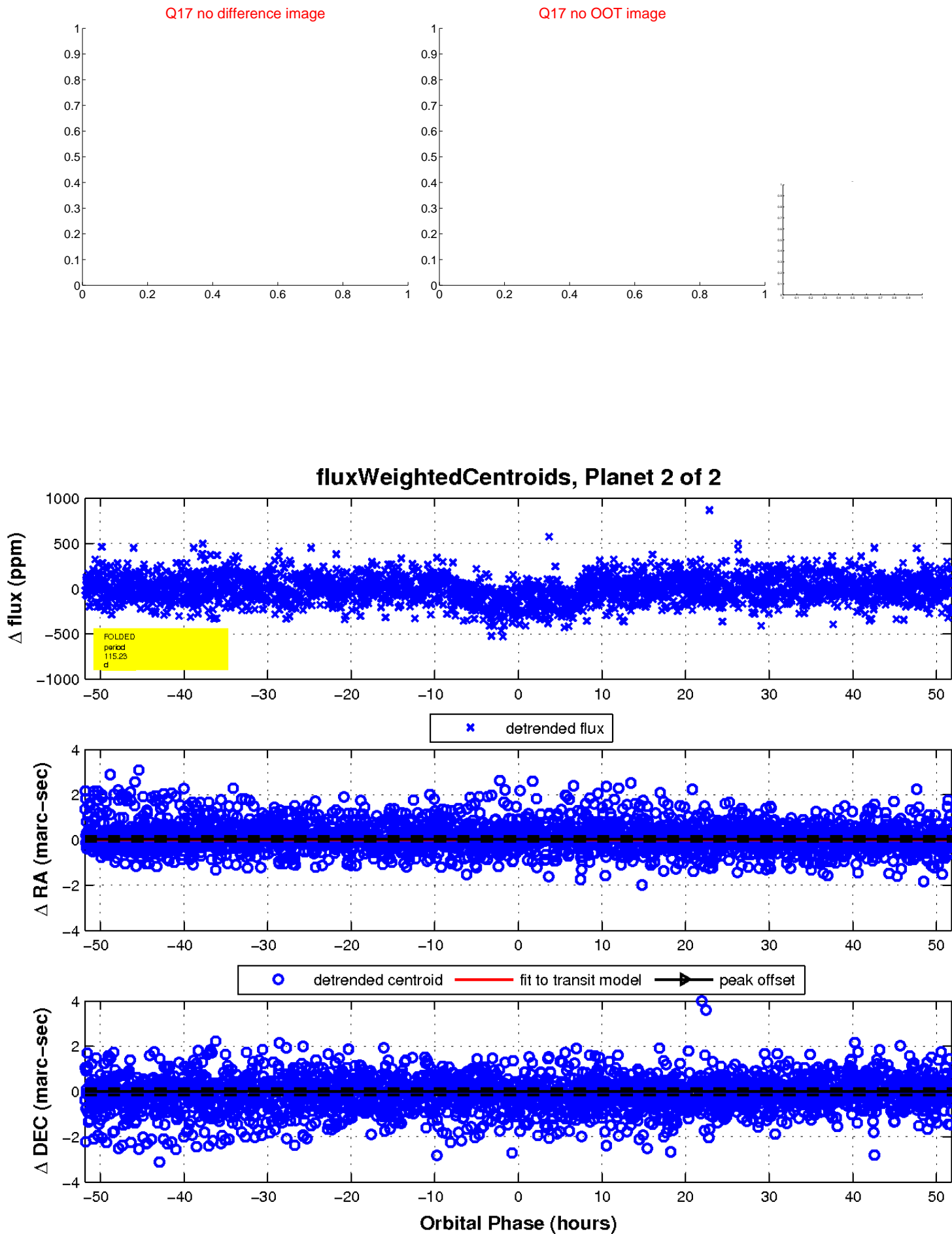
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

