

KIC 010018866

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})
010018866-01	OBS	No	2.936578	133.318333	29.6	9.068	7.4	7.1	0.53	3900	0.37	54.33
010018866-02	OBS	No	190.568266	166.949837	420.6	17.802	21.7	7.3	0.53	3900	1.33	0.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010018866-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_MEAS
010018866-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—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.

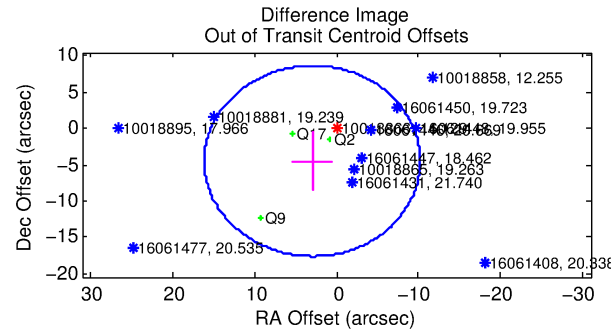
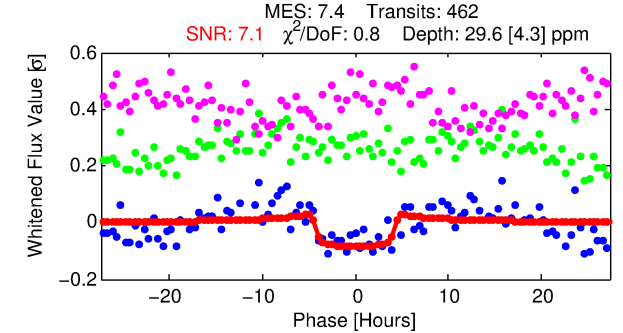
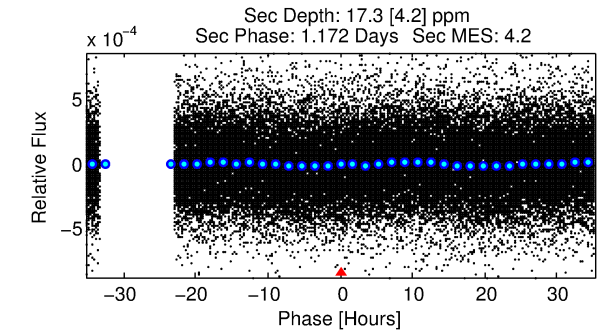
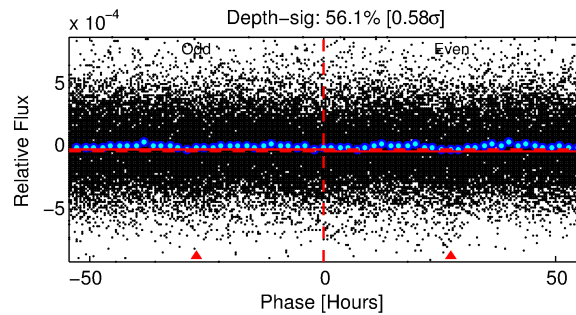
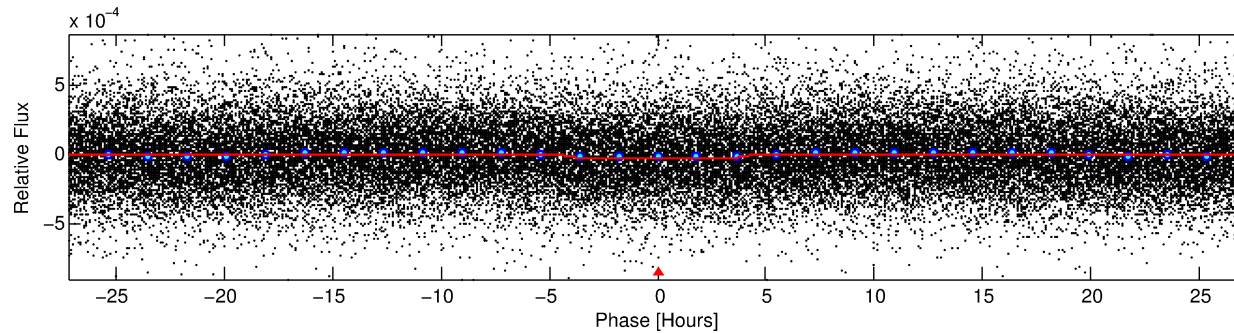
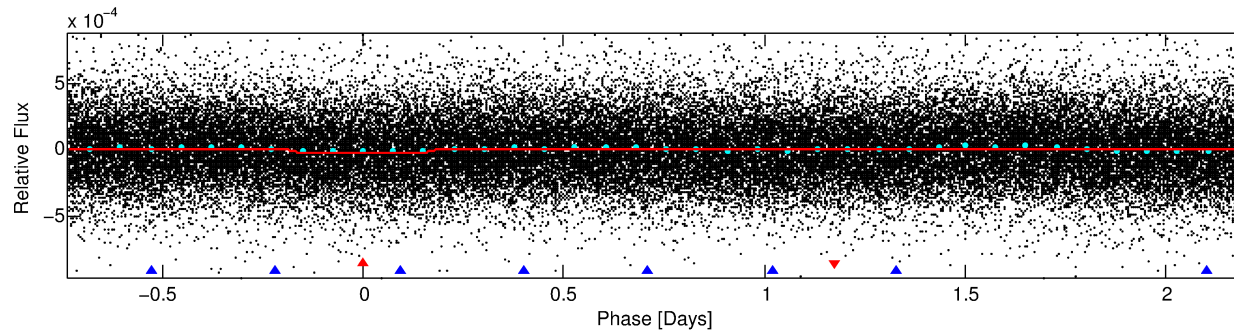
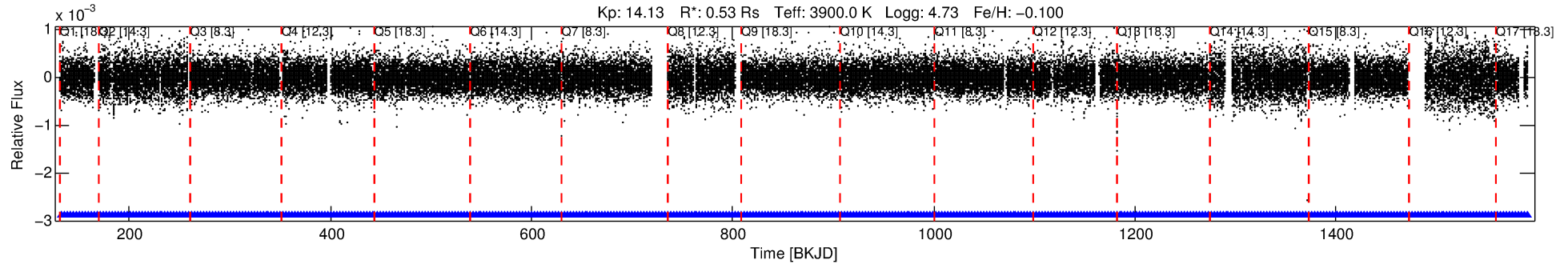
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010018866-01

No Significant Match Found

DV One-Page Summary

KIC: 10018866 Candidate: 1 of 2 Period: 2.937 d



DV Fit Results:

Period = 2.93658 [0.00005] d
Epoch = 133.3183 [0.0114] BKJD
Rp/R* = 0.0063 [0.0015]
a/R* = 1.29 [0.58]
b = 0.94 [0.13]
Seff = 54.33 [3.71]
Teq = 692 [12] K
Rp = 0.37 [0.09] Re
a = 0.0330 [0.0011] AU
Ag = 76.98 [42.35] [1.79 σ]
Teffp = 3171 [436] K [5.68 σ]

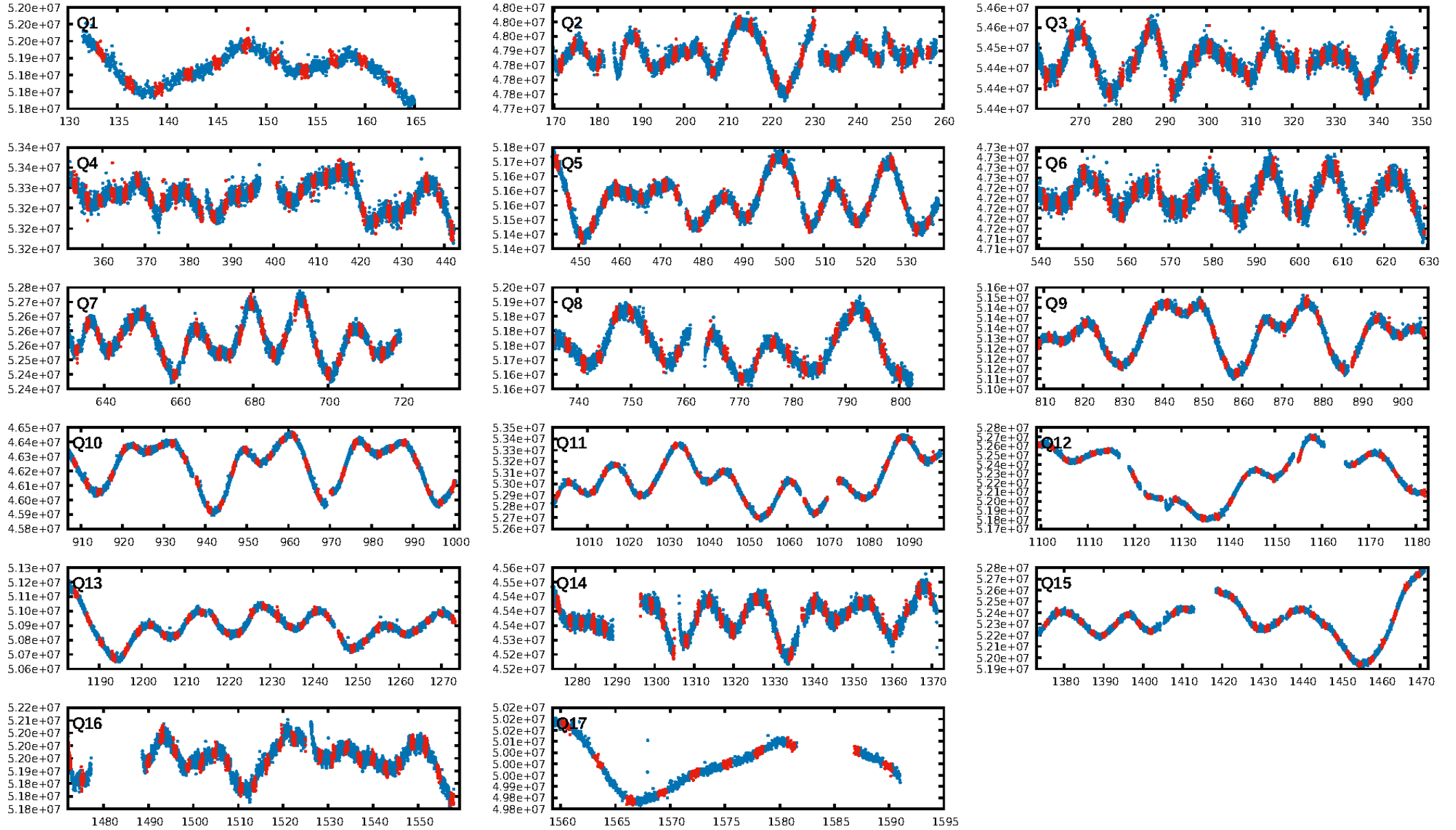
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [225.40 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.80e-11
RollingBand-fgt: 1.00 [441/441]
GhostDiagnostic-chr: 0.6679
Centroid-sig: 0.0%
Centroid-so: 9.485 arcsec [2.18 σ]
OotOffset-rm: 5.388 arcsec [1.23 σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-rm: 8.848 arcsec [3.12 σ]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [17/17]

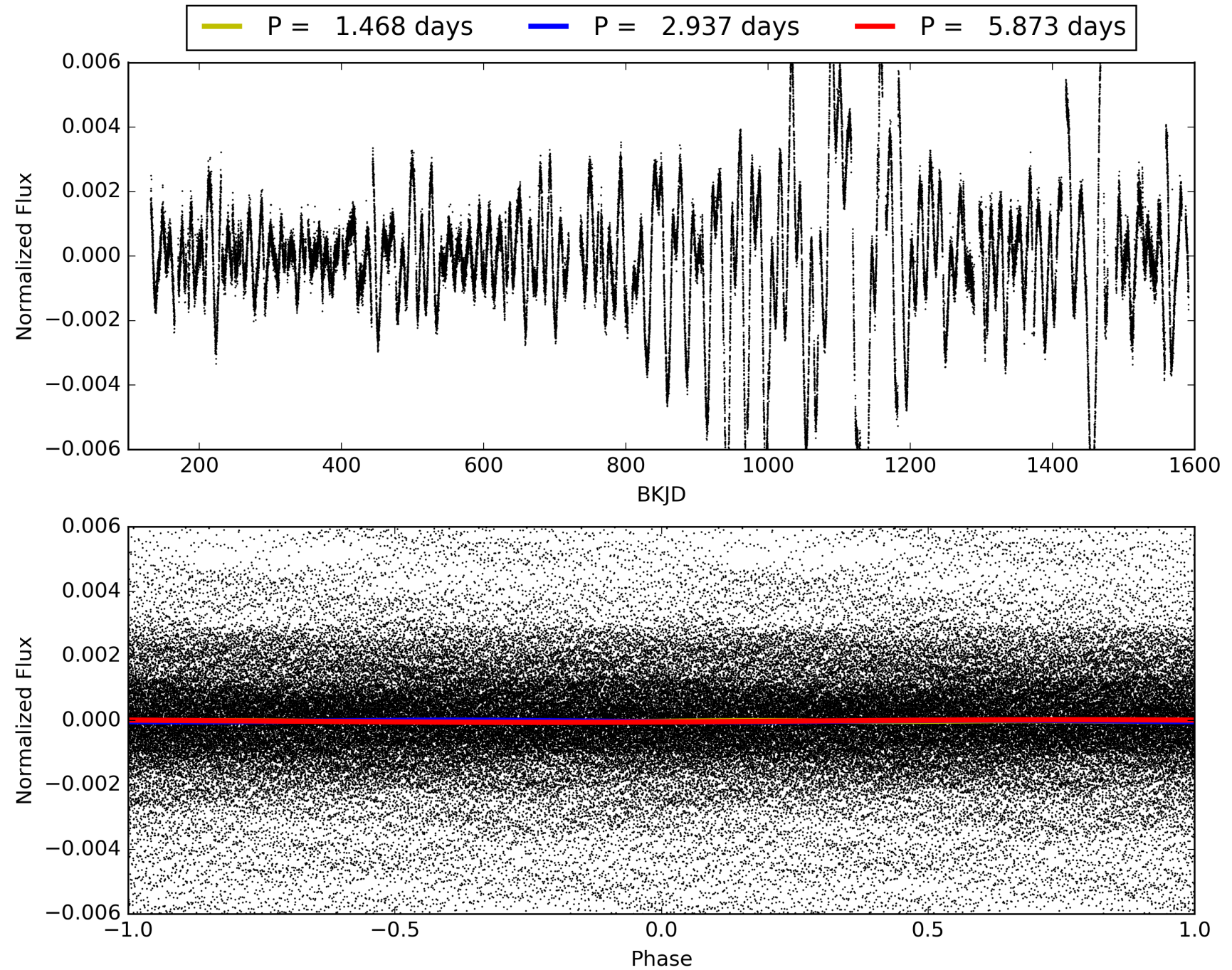
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010018866-01, PDC Light Curves

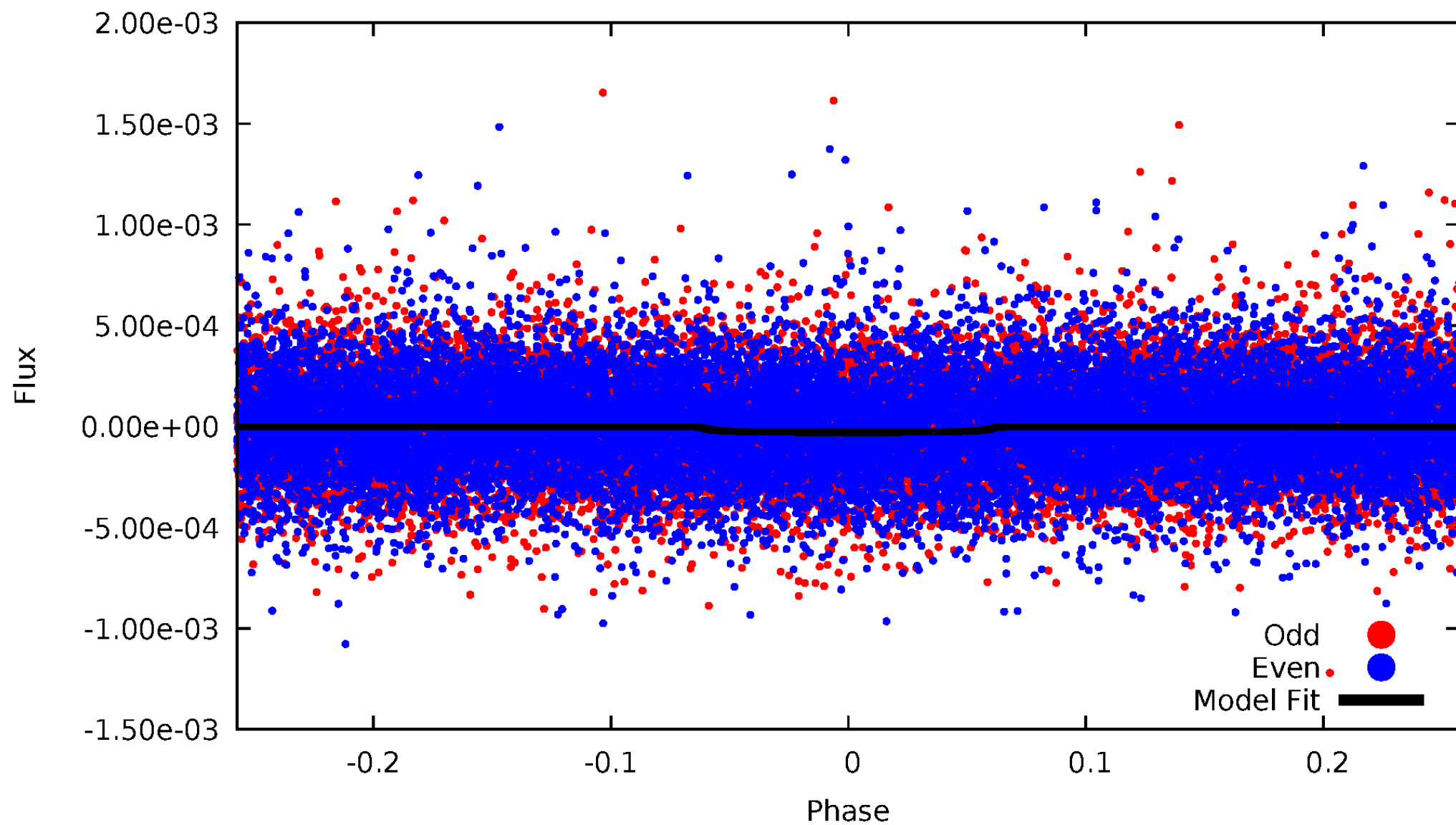


TCE 010018866-01



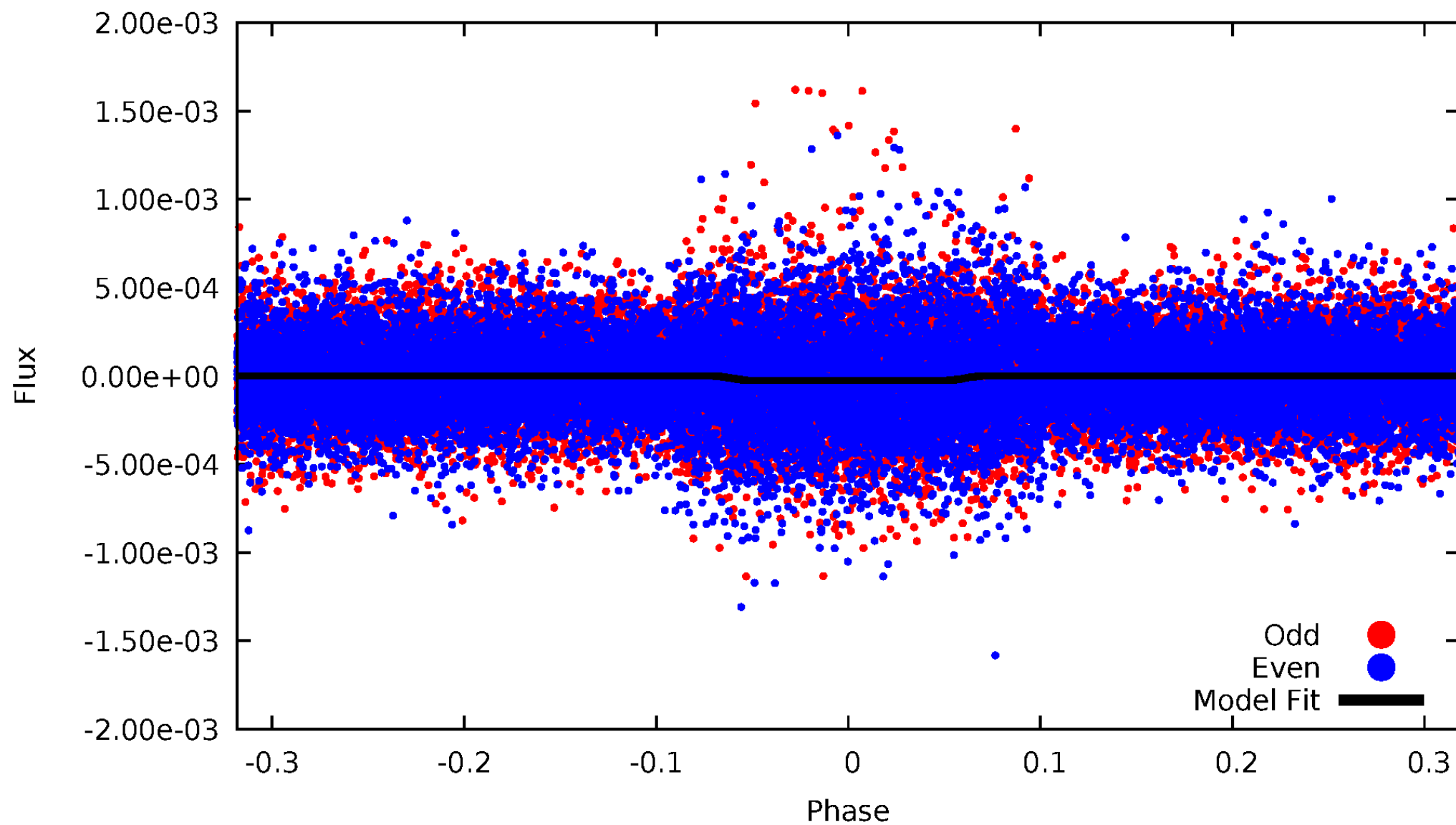
DV Odd/Even

TCE 010018866-01

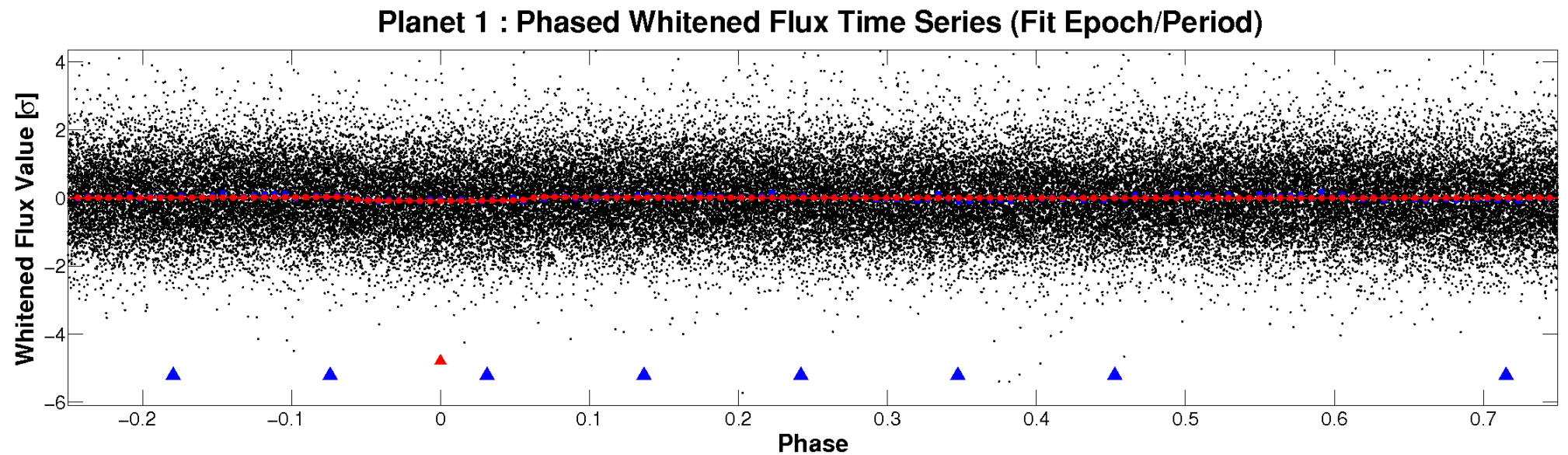
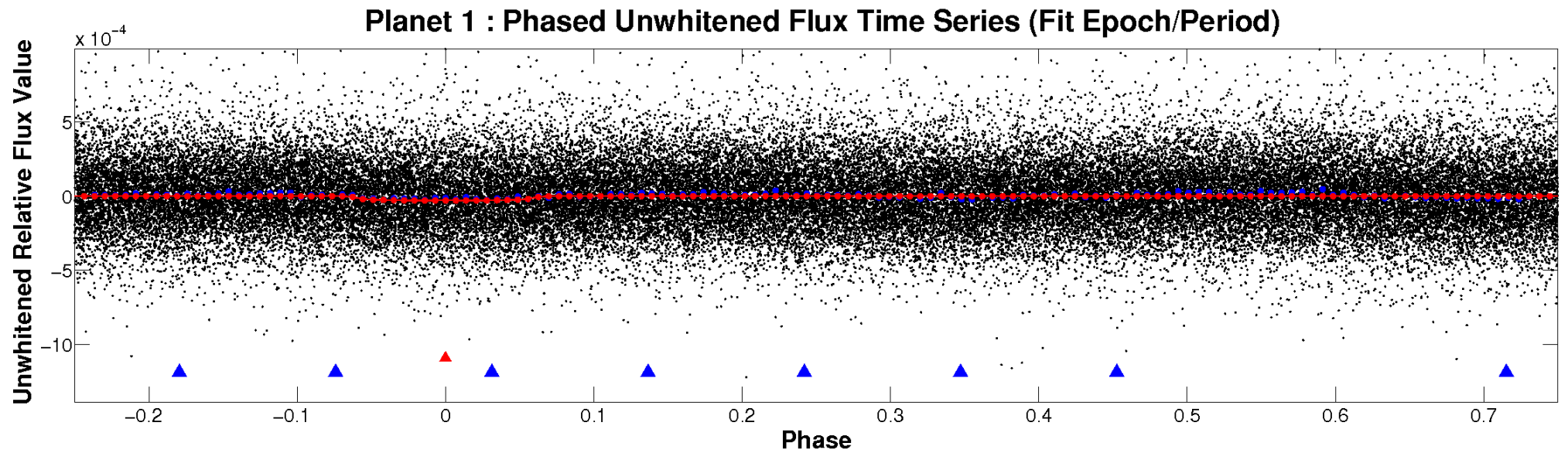


ALT Odd/Even

TCE 010018866-01

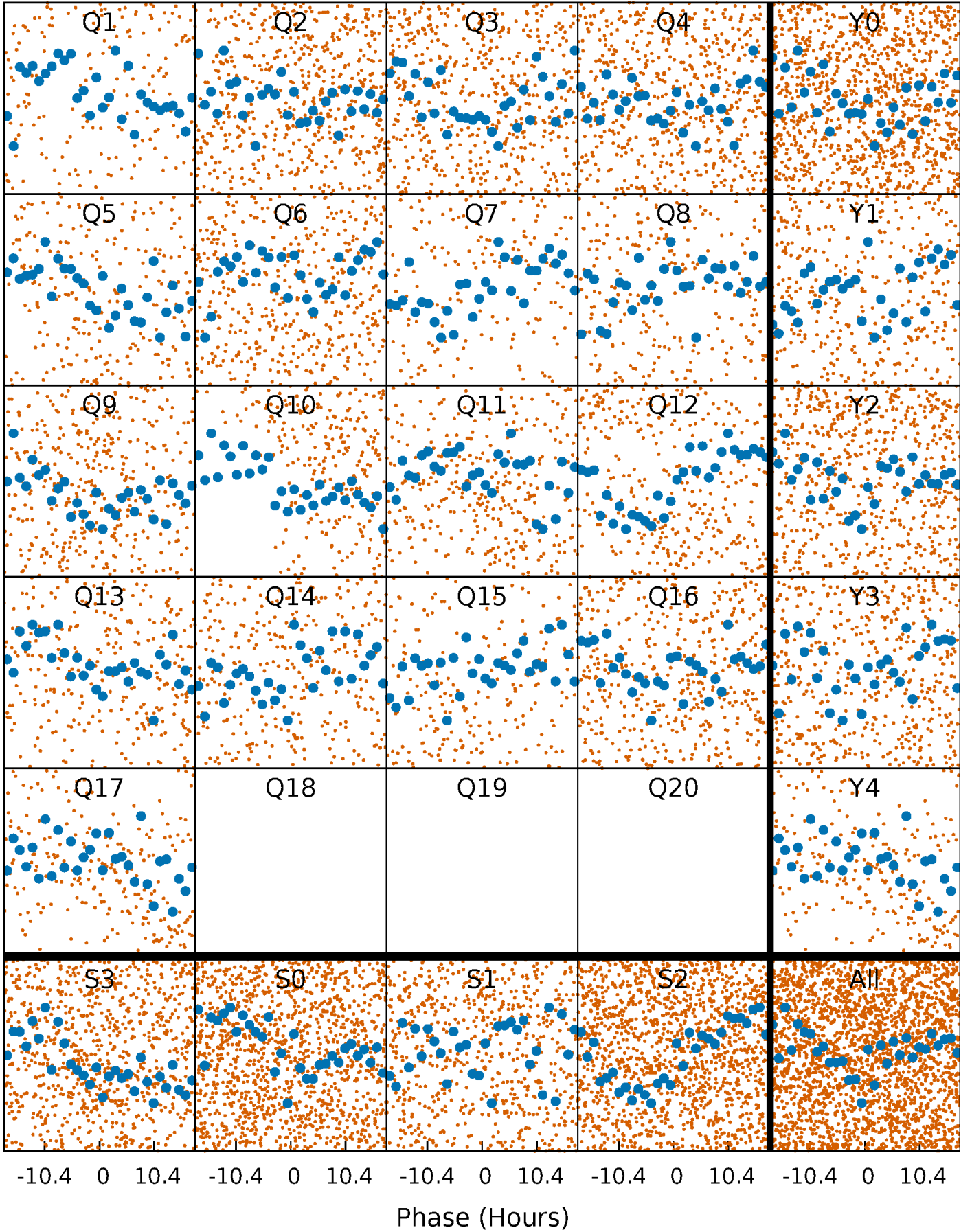


Non-Whitened Vs. Whitened Light Curve



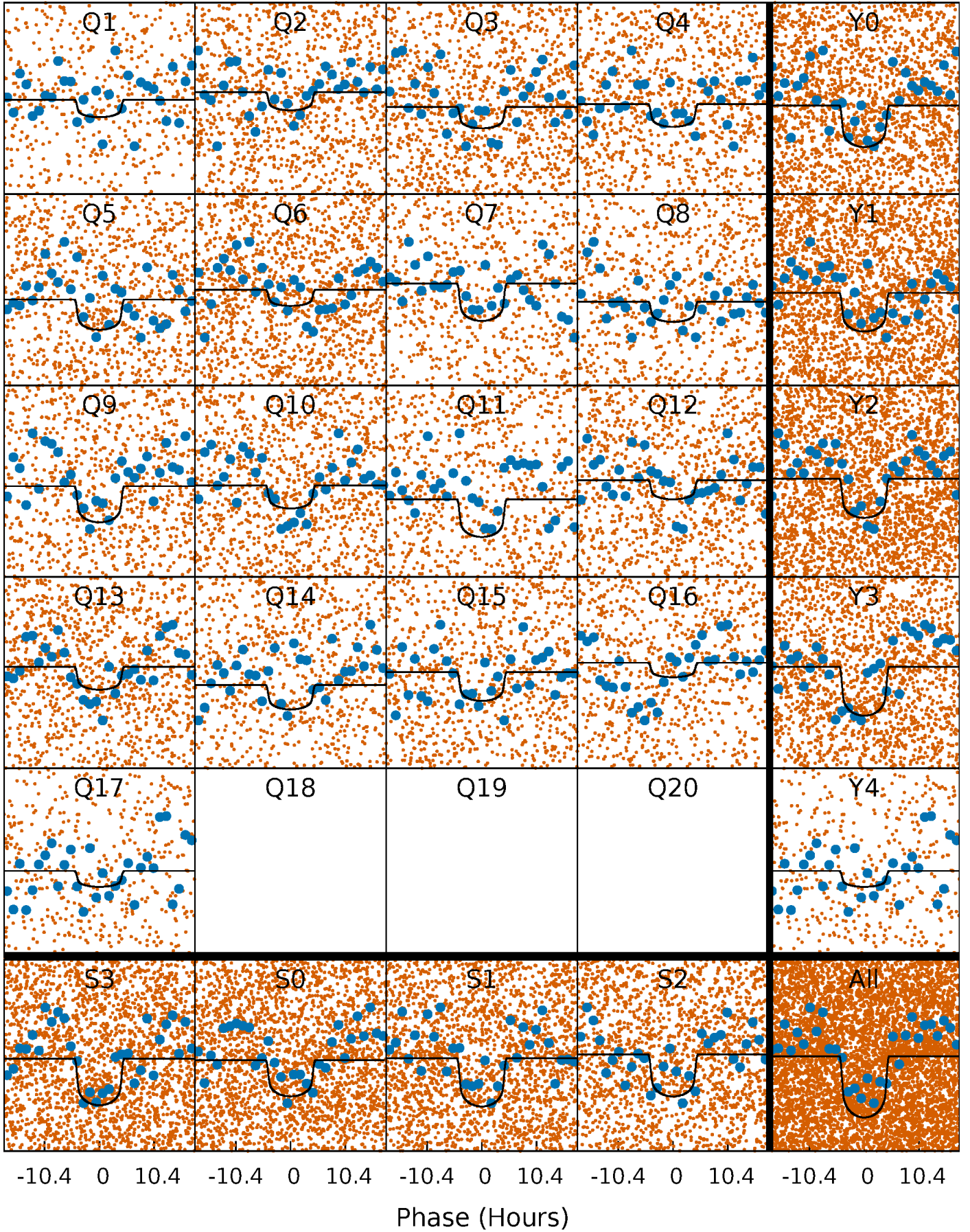
PDC Quarter-Phased Transit Curves

TCE 010018866-01 P= 2.936578 Days $T_0=133.318333$ (BKJD)



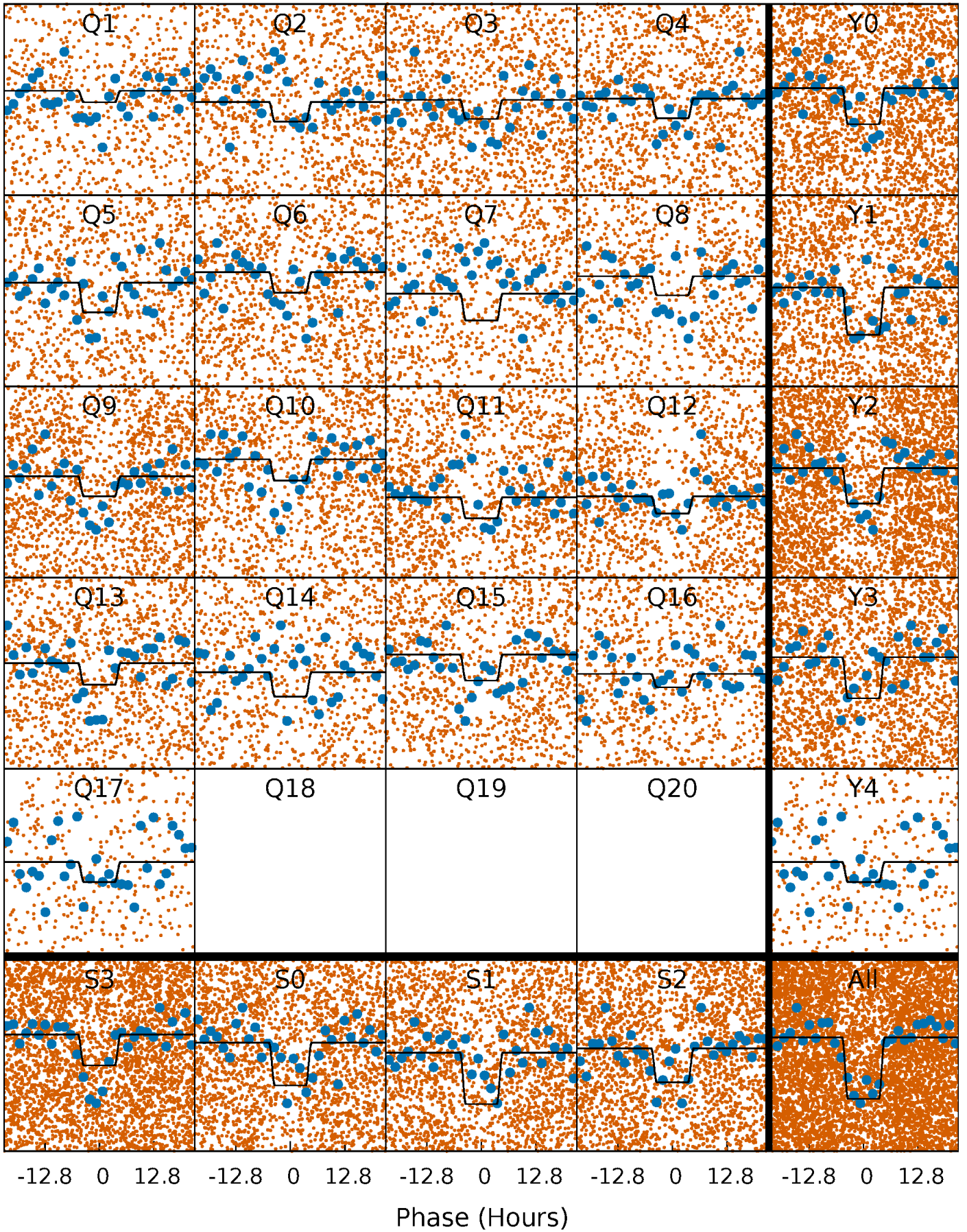
DV Quarter-Phased Transit Curves

TCE 010018866-01 P= 2.936578 Days $T_0=133.318333$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

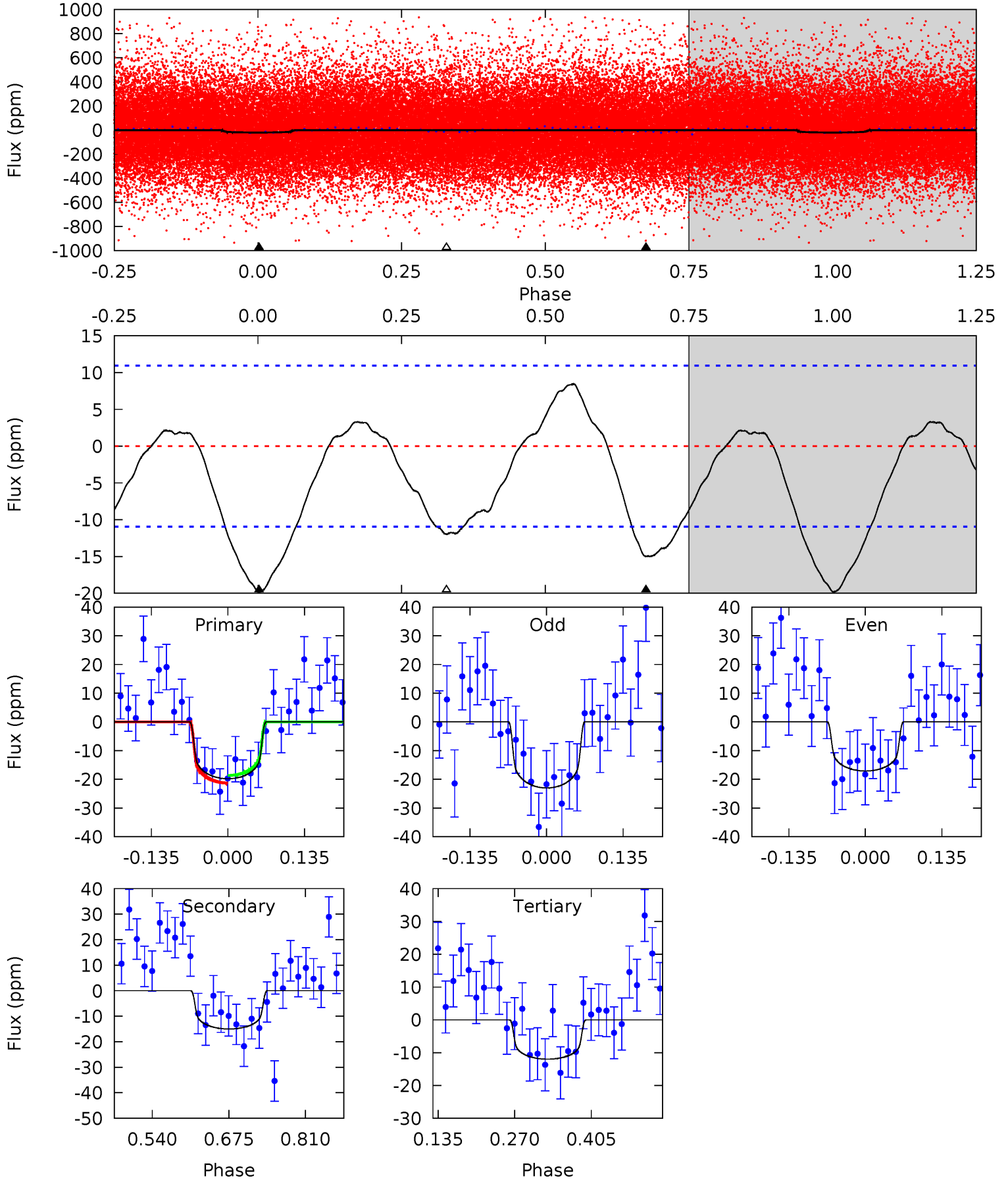
TCE 010018866-01 P= 2.936550 Days $T_0=133.314127$ (BKJD)



DV Model-Shift Uniqueness Test

010018866-01, P = 2.936578 Days, E = 130.381755 Days

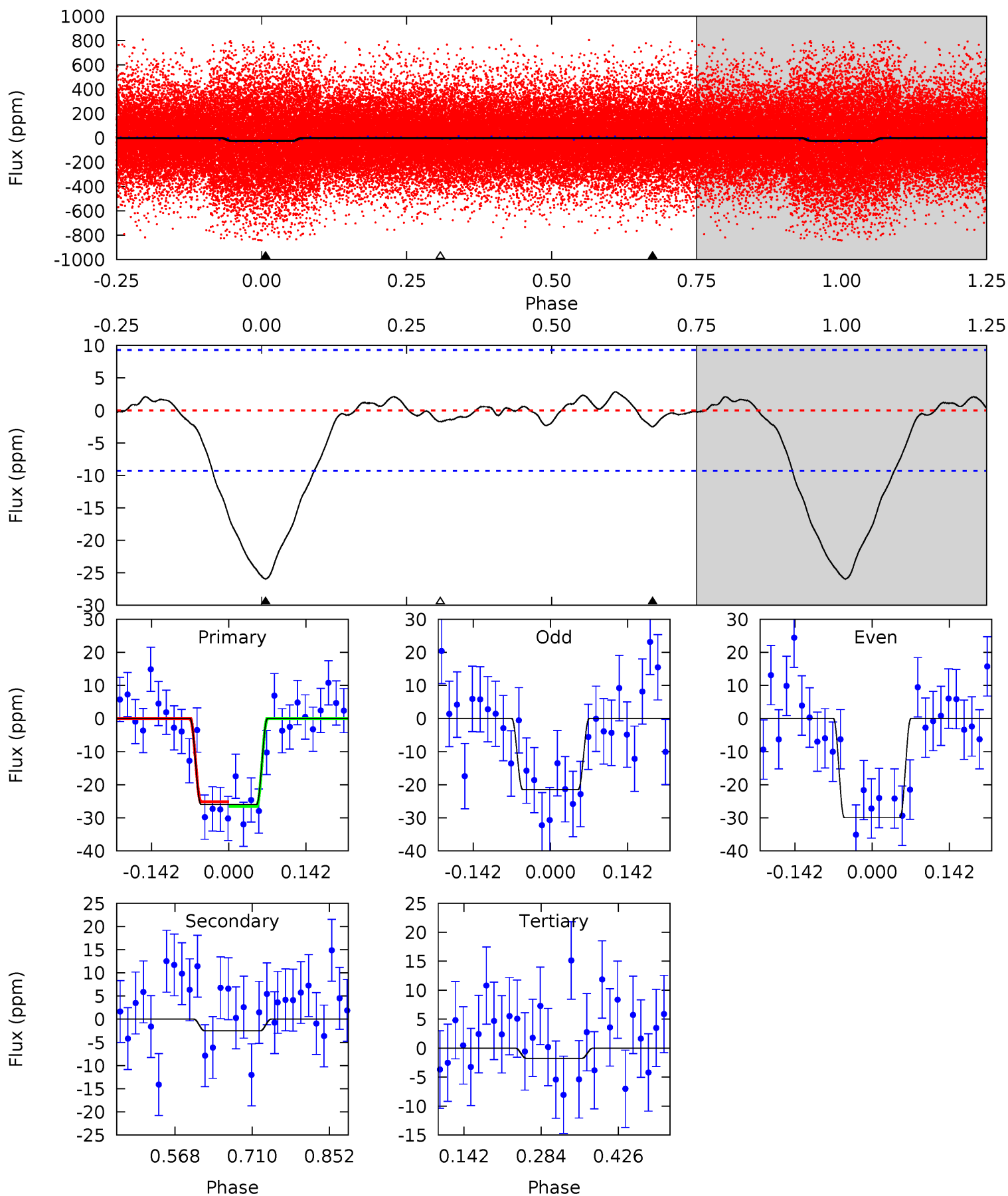
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.14	6.16	4.92	0	4.50	1.49	2.38	3.21	8.14	1.24	6.16	1.21	1.09	0.30	0.53



Alt Model-Shift Uniqueness Test

010018866-01, P = 2.936550 Days, E = 130.377577 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	1.21	0.85	0	4.49	1.47	0.51	11.7	12.5	0.36	1.21	2.04	0.85	0.10	0.33



Stellar Parameters For KIC 010018866

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3900^{+46}_{-50}	$4.727^{+0.017}_{-0.022}$	$-0.100^{+0.100}_{-0.100}$	$0.534^{+0.024}_{-0.021}$	$0.555^{+0.020}_{-0.025}$	$5.136^{+0.442}_{-0.450}$
	+1%/-1%	+0%/-0%	+100%/-100%	+4%/-4%	+4%/-5%	+9%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010018866-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-15 ± 2	$0.37^{+0.09}_{-0.09}$	968^{+14}_{-15}	3337^{+309}_{-239}	68^{+50}_{-26}
Alt.	-3 ± 2	$0.28^{+0.09}_{-0.09}$	968^{+15}_{-15}	2745^{+394}_{-617}	17^{+27}_{-15}

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 $A_{obs} \gg 1.0$

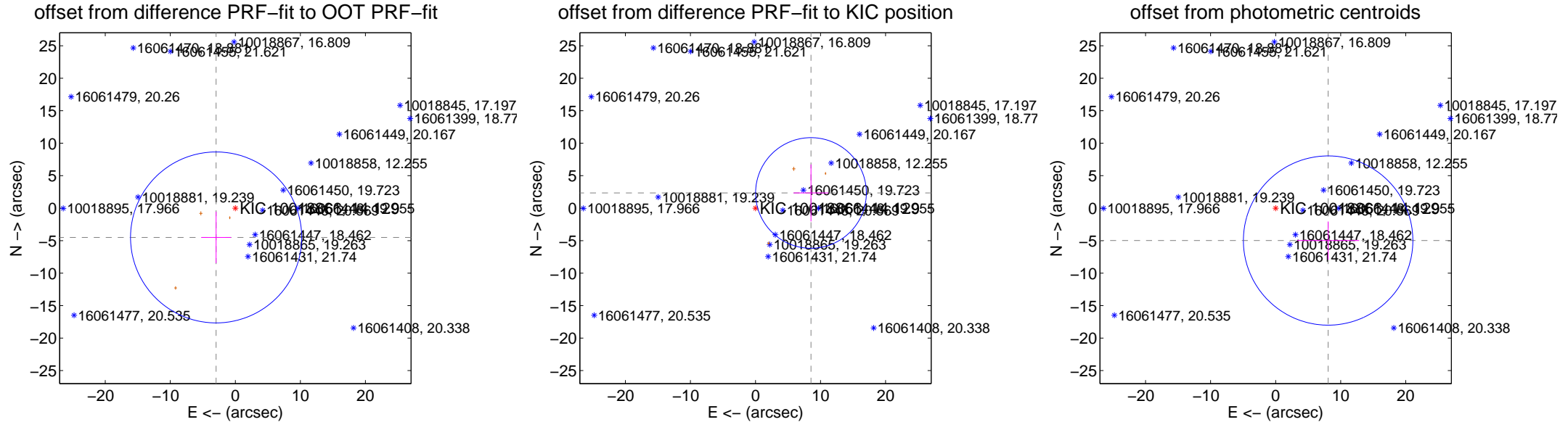
DV Centroid Data

Supplemental centroid analysis for 010018866-01. Kepler magnitude: 14.13. Transit SNR 7.07

There are 0 quarters with good PRF difference image offsets

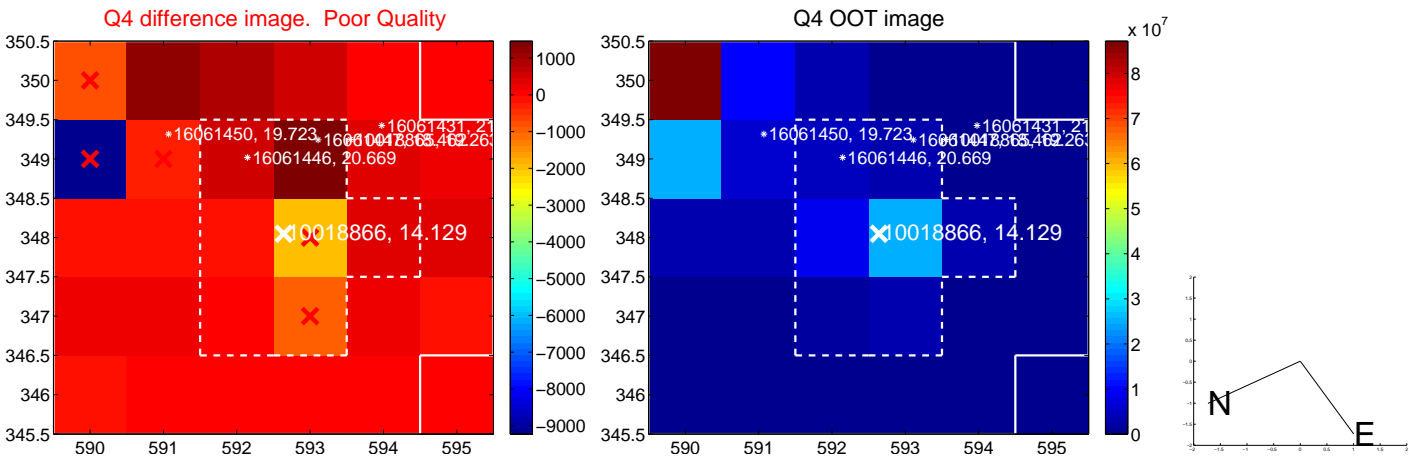
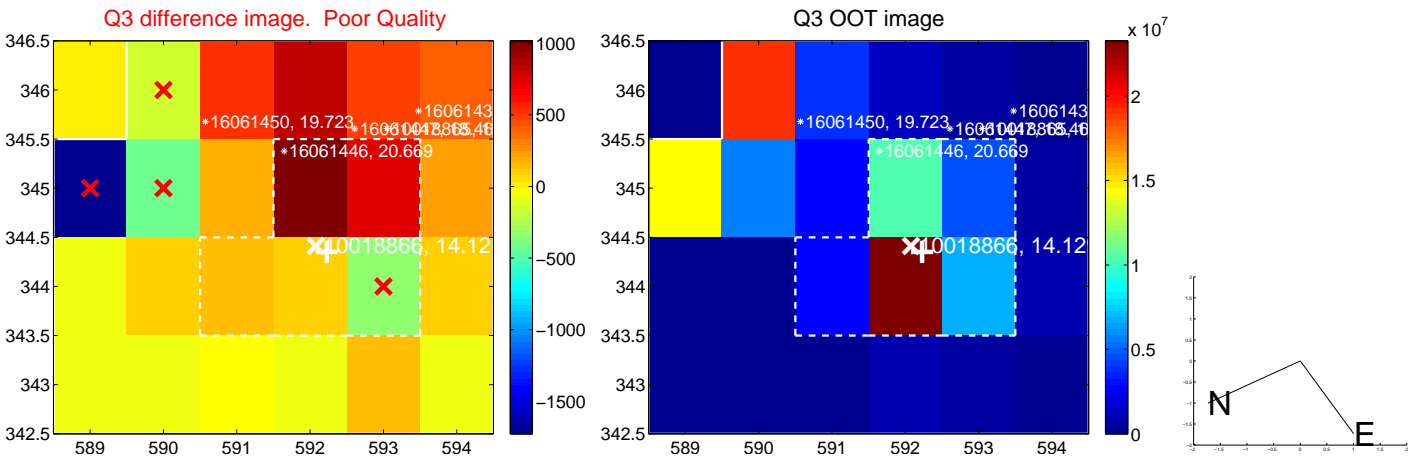
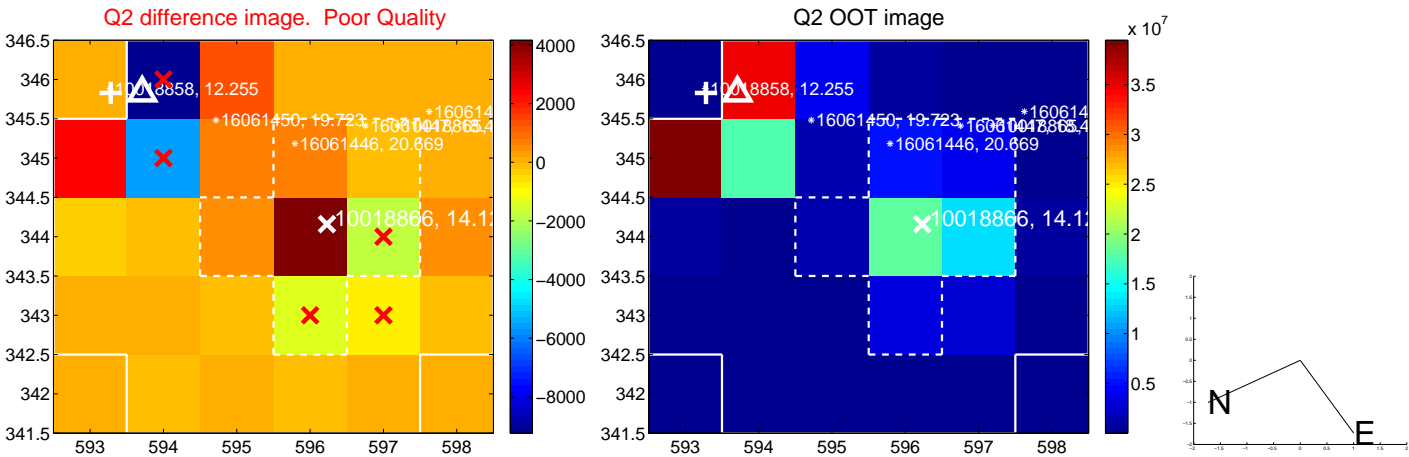
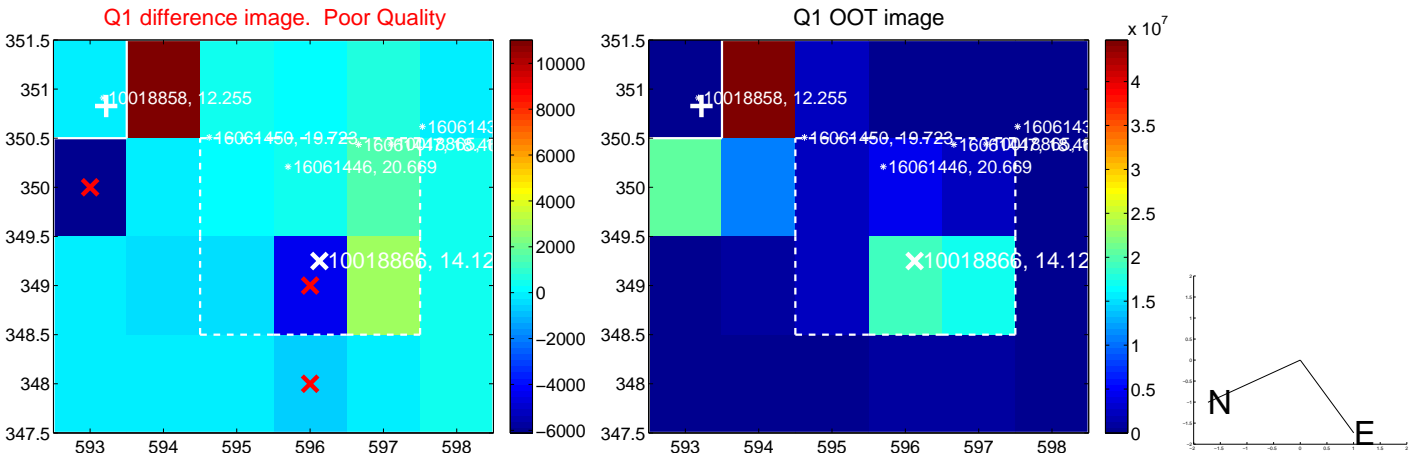
The OOT PRF centroid is offset from the target star catalog position by about 13.12 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.388 ± 4.387	1.23	2.955 ± 2.293	-4.505 ± 3.957
PRF-fit source offset from KIC position	8.848 ± 2.838	3.12	-8.532 ± 2.687	2.342 ± 4.377
photometric centroid source offset	9.48 ± 4.34	2.18	-8.07 ± 4.77	-4.98 ± 2.93

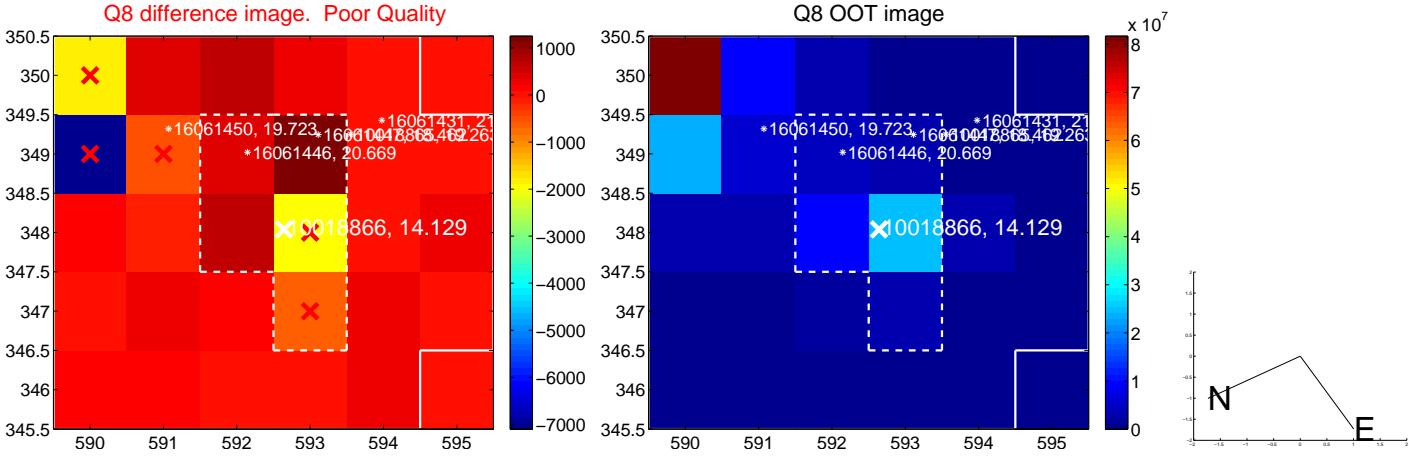
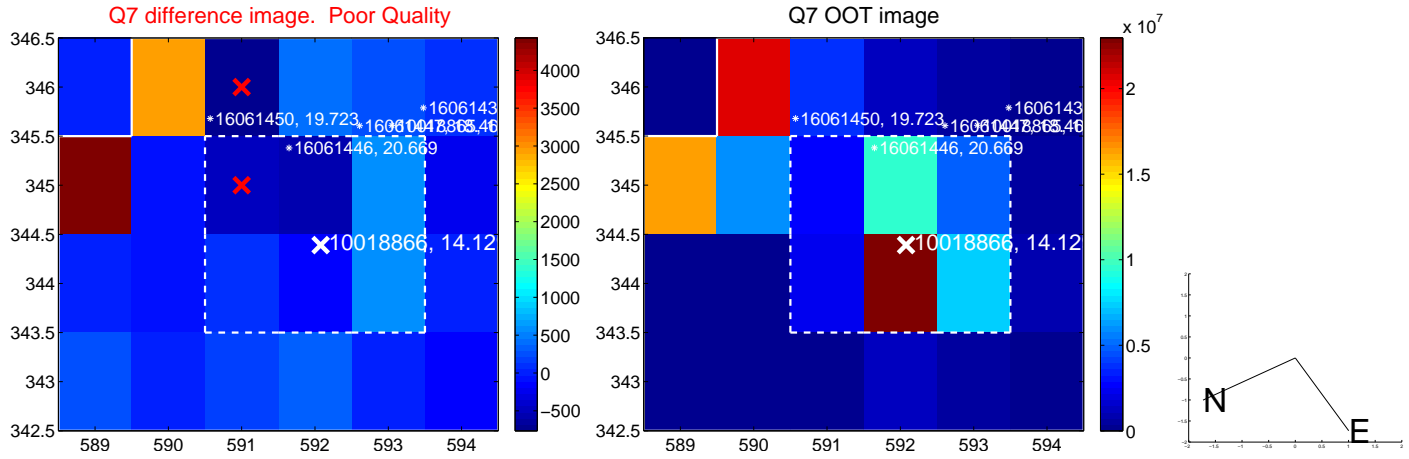
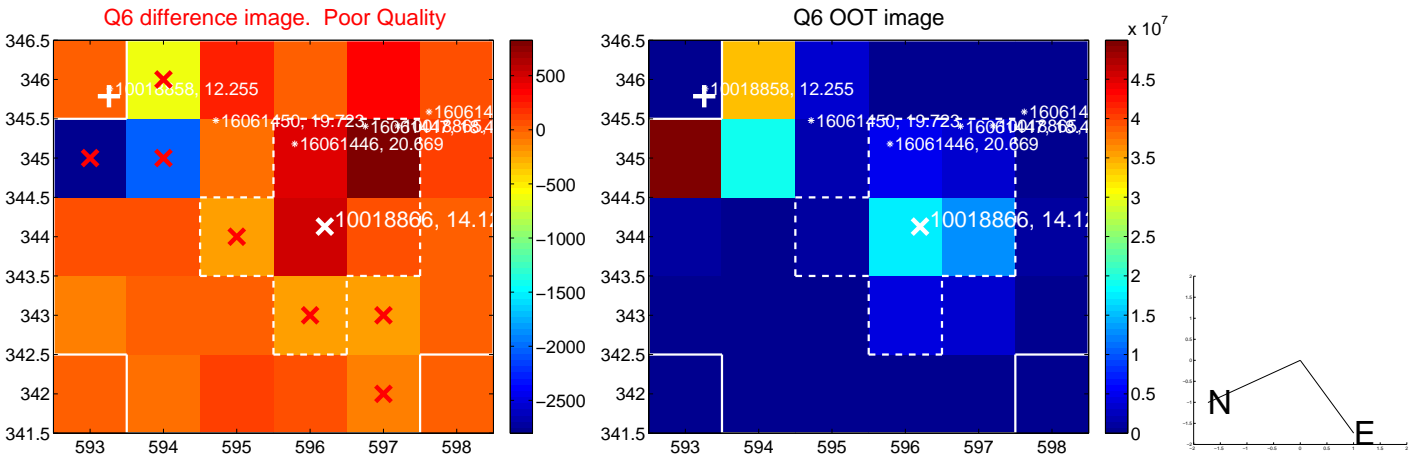
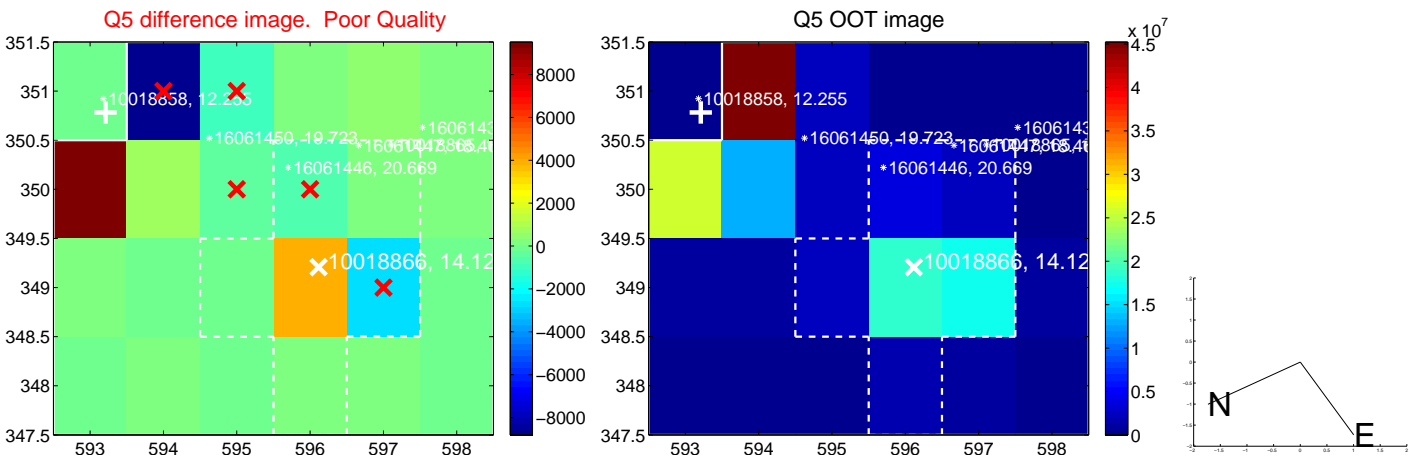


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

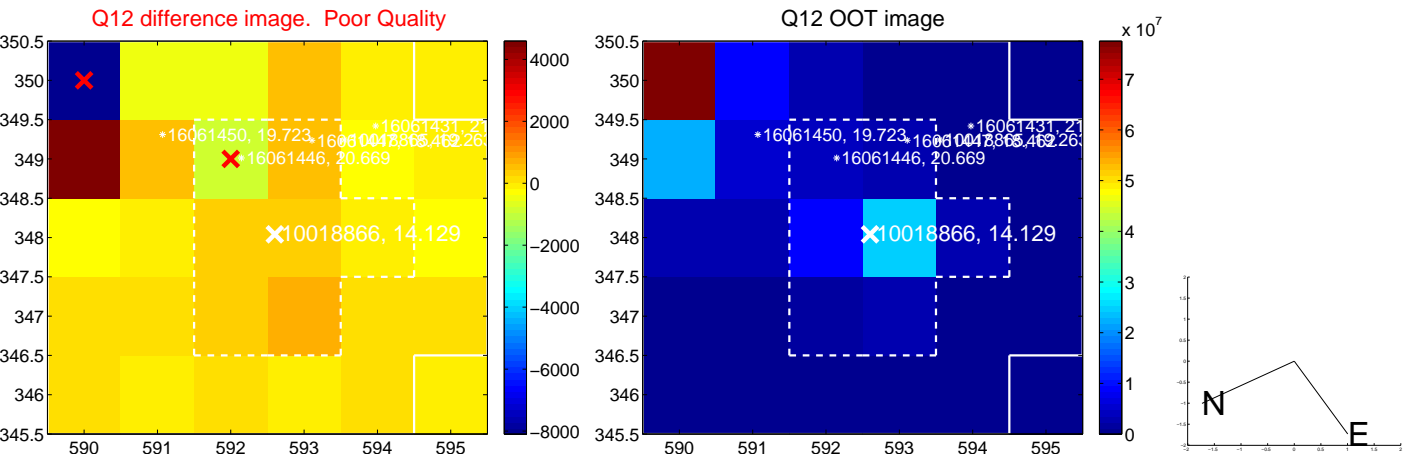
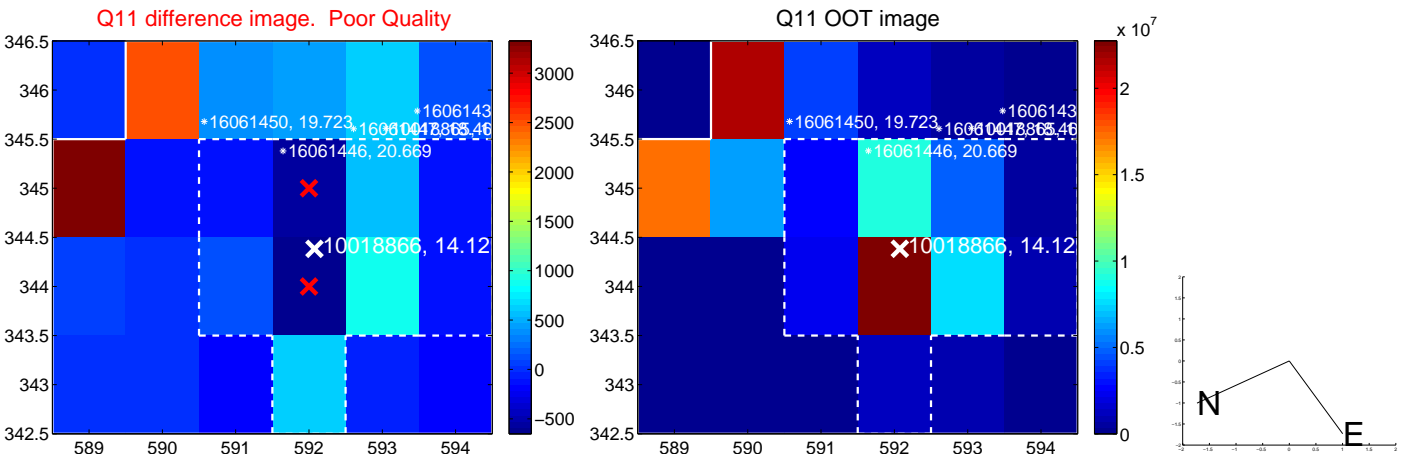
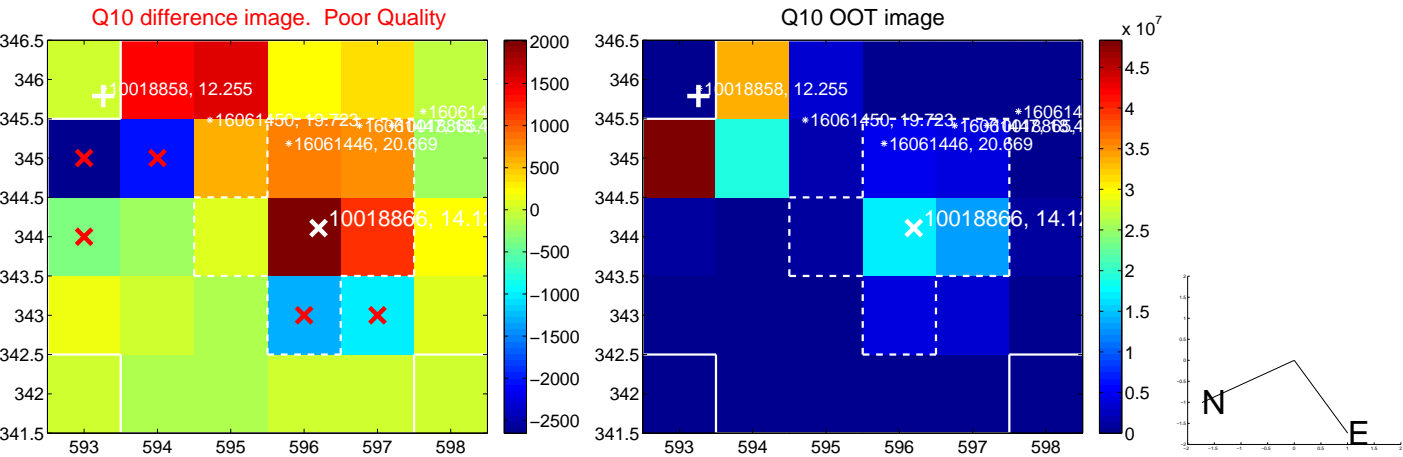
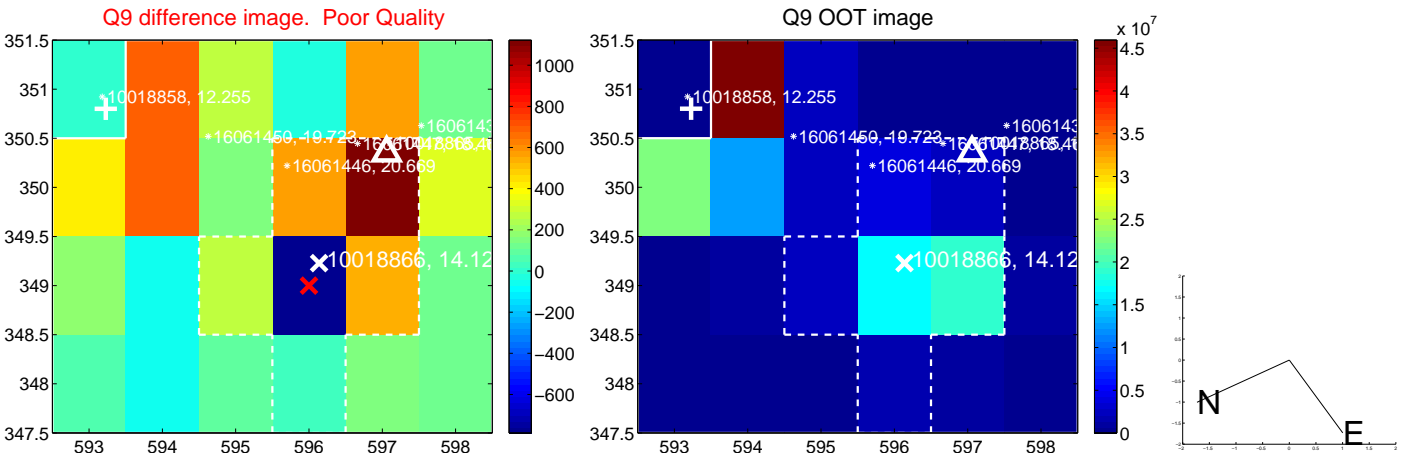
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



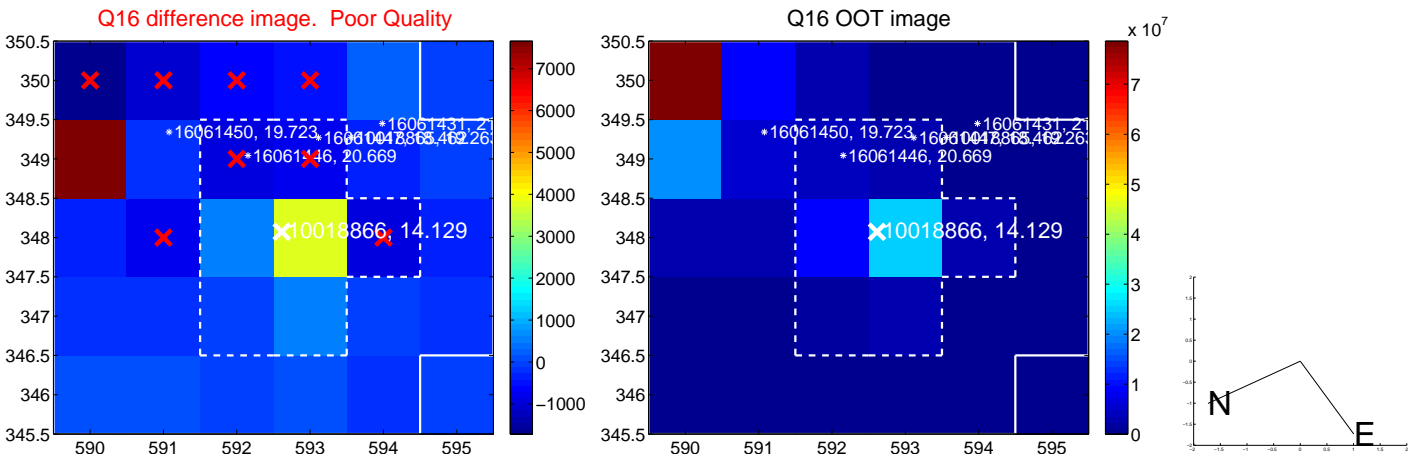
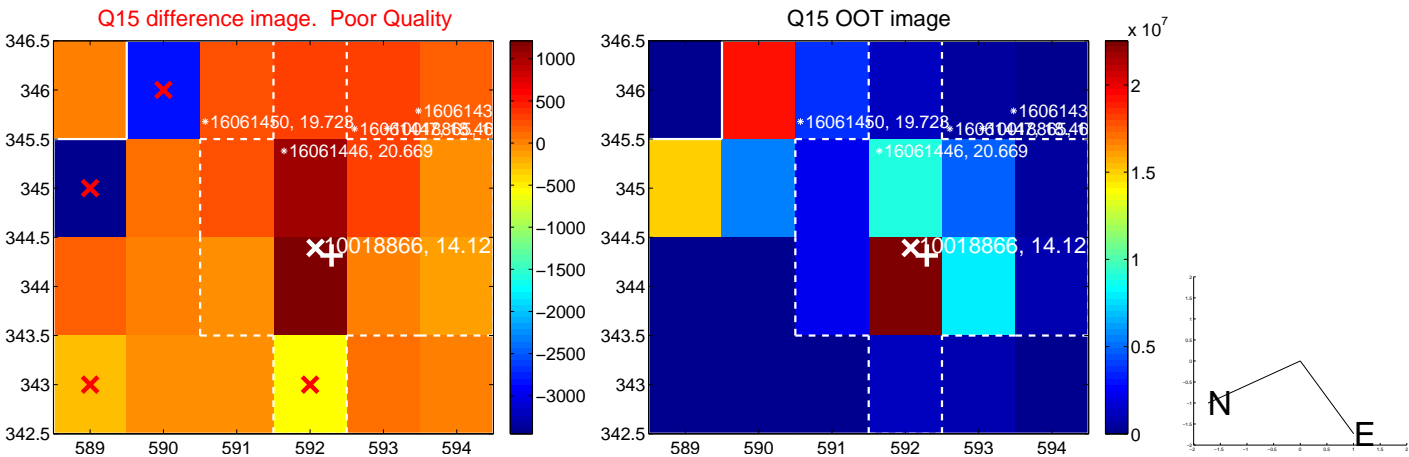
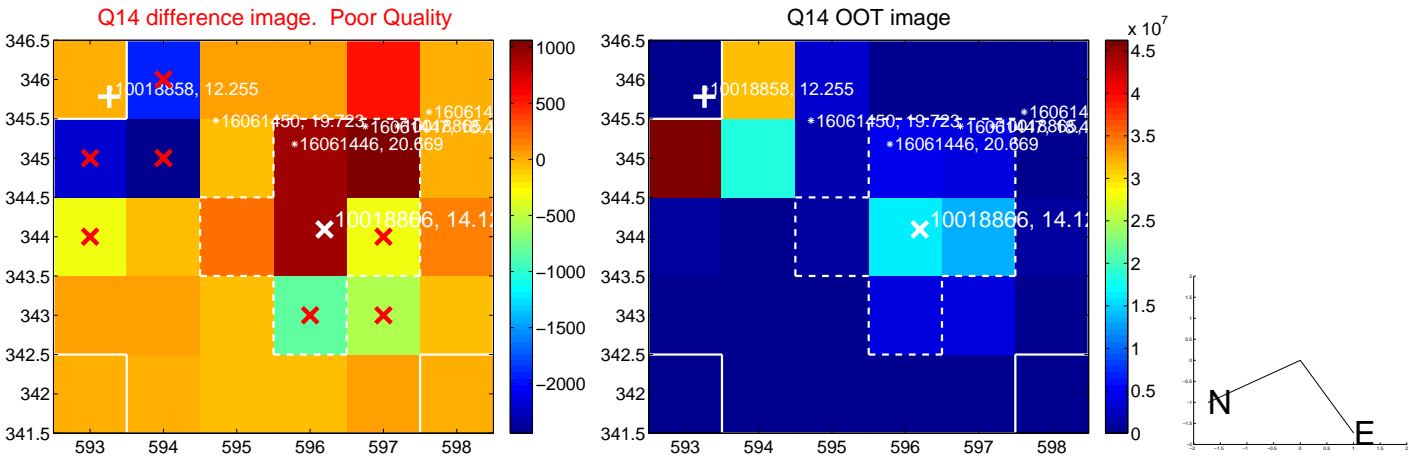
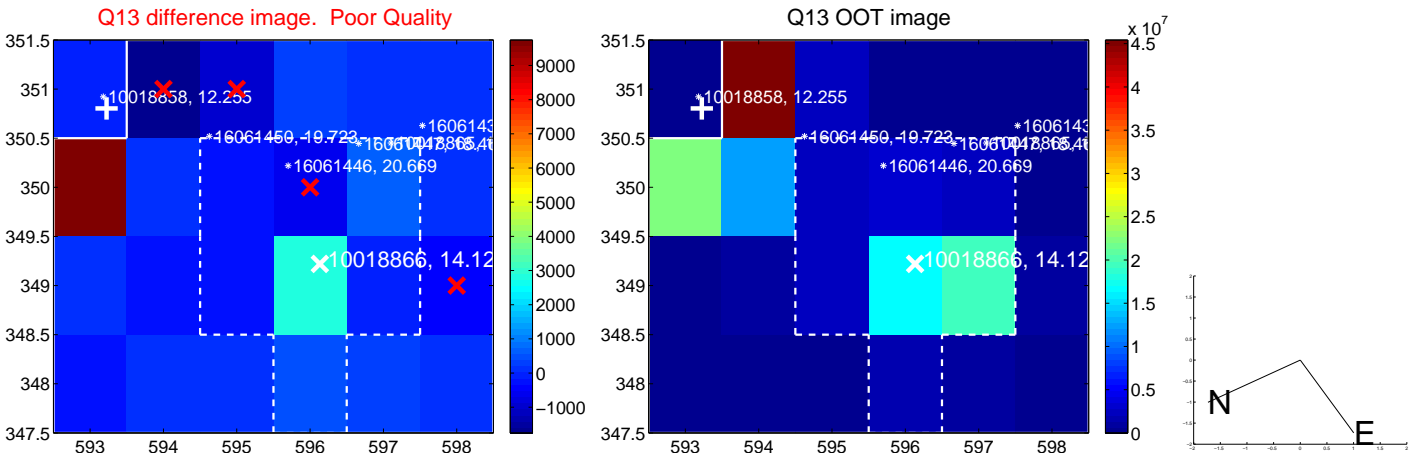
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



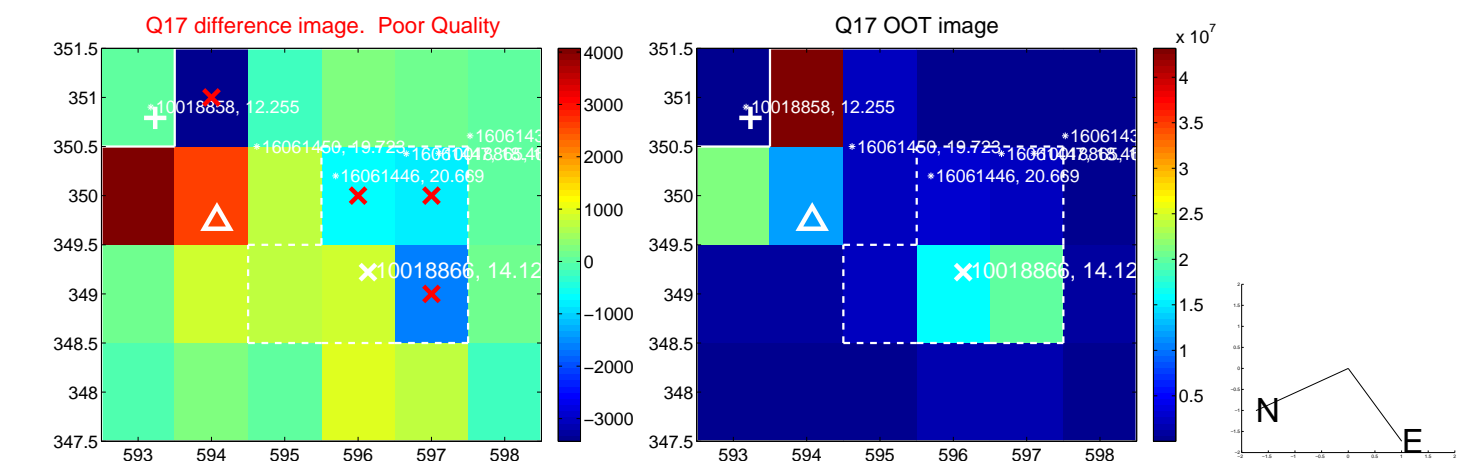
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



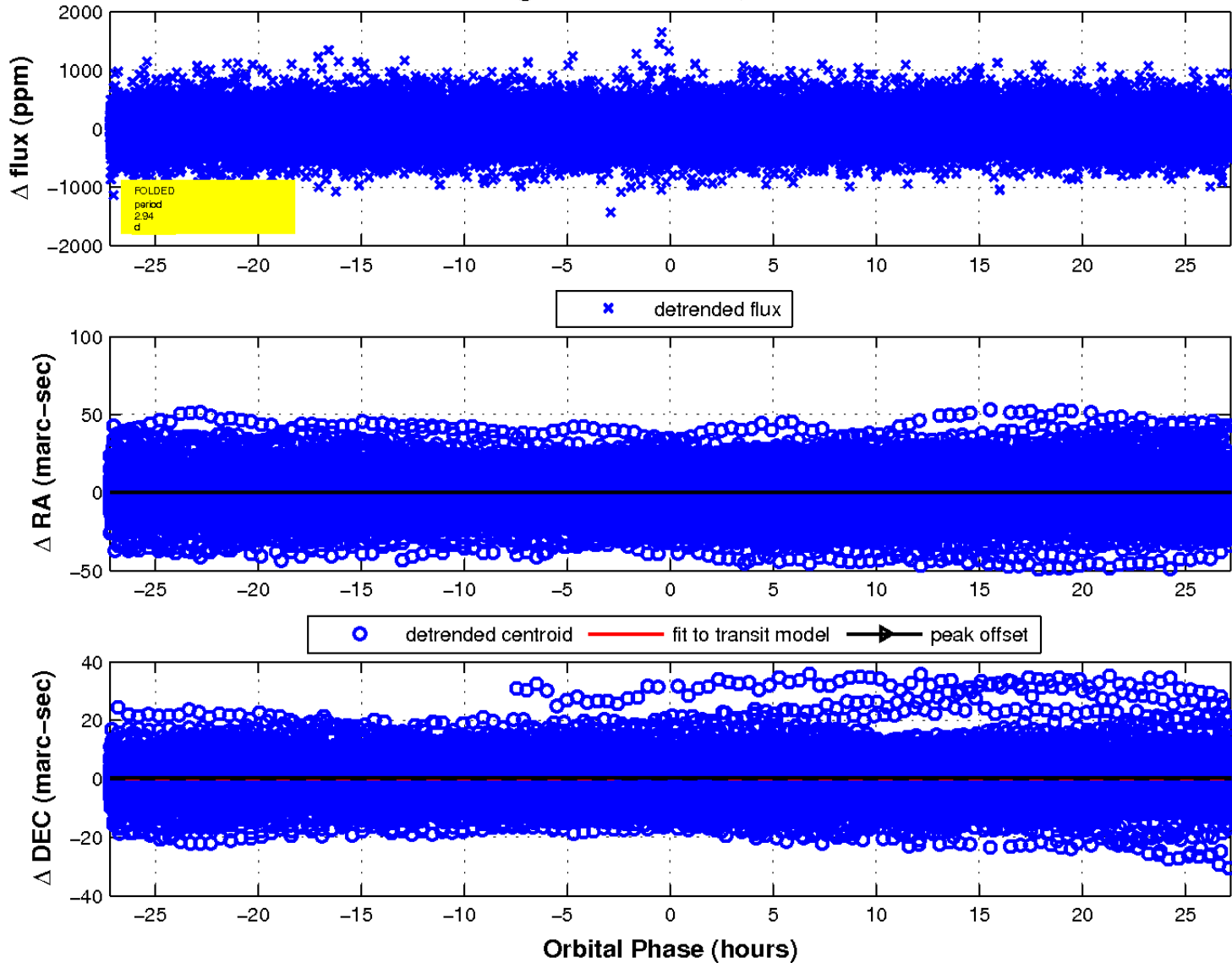
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



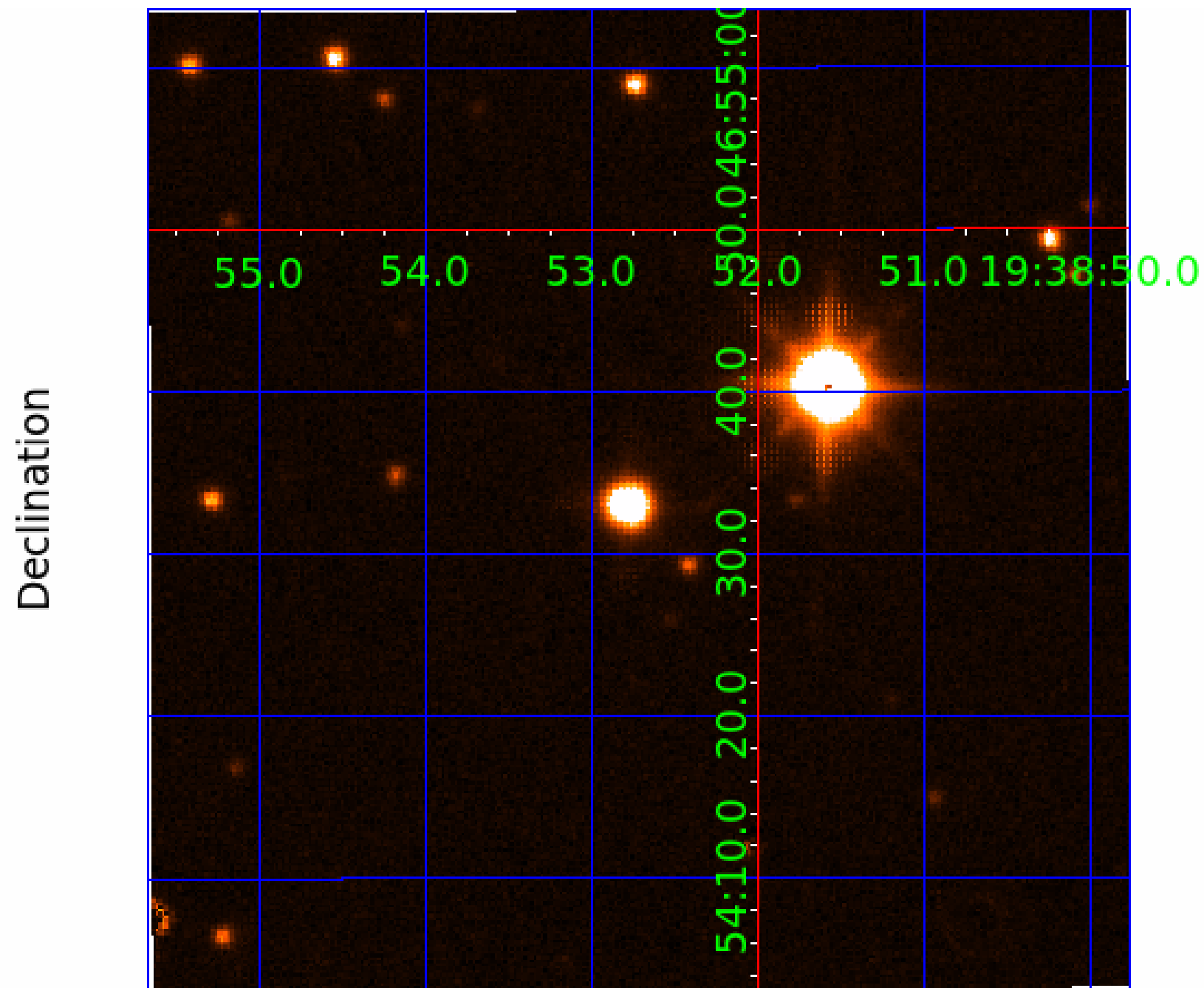
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 010018866

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})
010018866-01	OBS	No	2.936578	133.318333	29.6	9.068	7.4	7.1	0.53	3900	0.37	54.33
010018866-02	OBS	No	190.568266	166.949837	420.6	17.802	21.7	7.3	0.53	3900	1.33	0.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010018866-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_MEAS
010018866-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

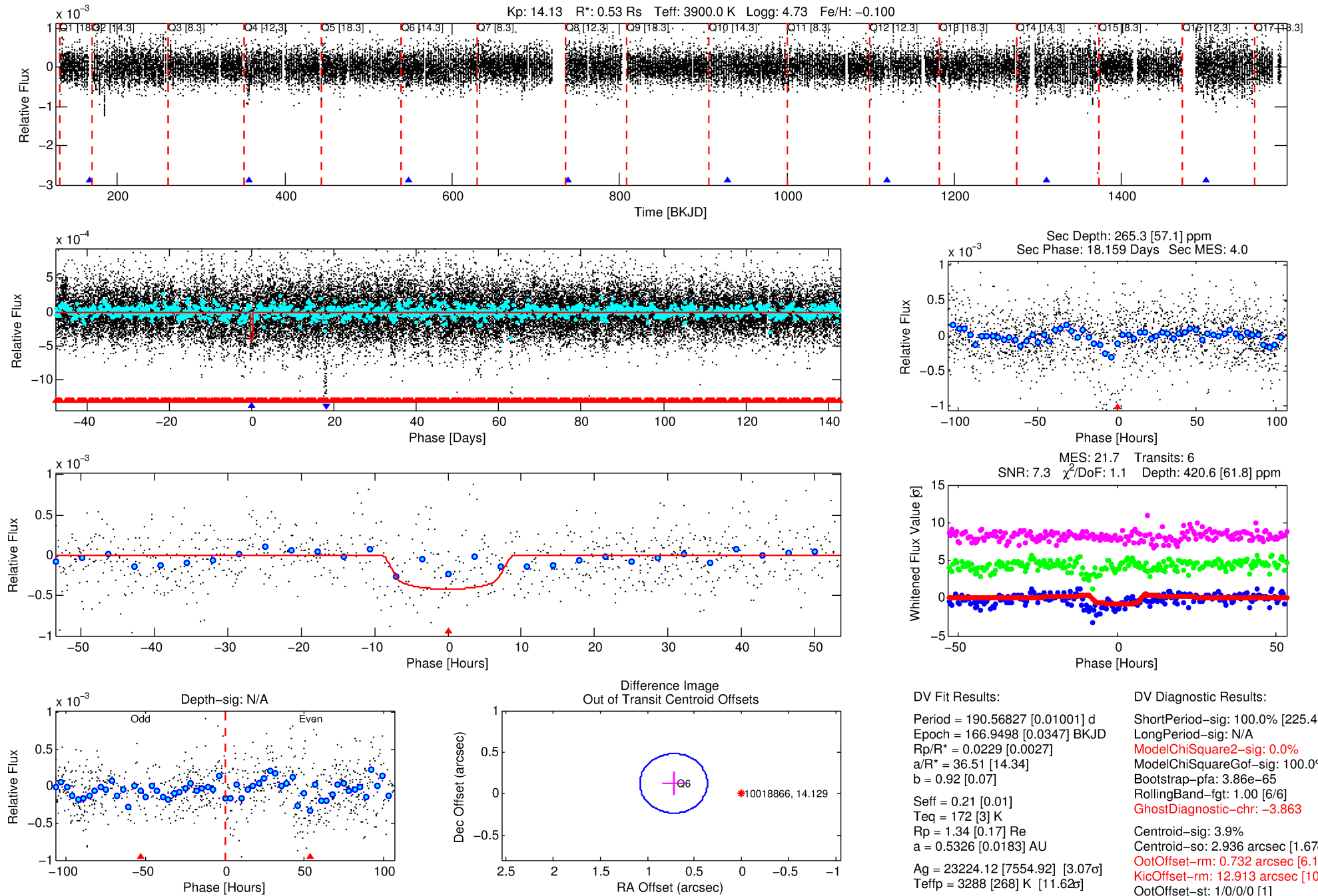
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010018866-02

No Significant Match Found

DV One-Page Summary

KIC: 10018866 Candidate: 2 of 2 Period: 190.568 d



DV Fit Results:

Period = 190.56827 [0.01001] d
Epoch = 166.9498 [0.0347] BKJD
Rp/R* = 0.0229 [0.0027]
a/R* = 36.51 [14.34]
b = 0.92 [0.07]
Seff = 0.21 [0.01]
Teq = 172 [3] K
Rp = 1.34 [0.17] Re
a = 0.5326 [0.0183] AU
Ag = 23224.12 [7554.92] [3.07σ]
Teff = 3288 [268] K [11.62σ]

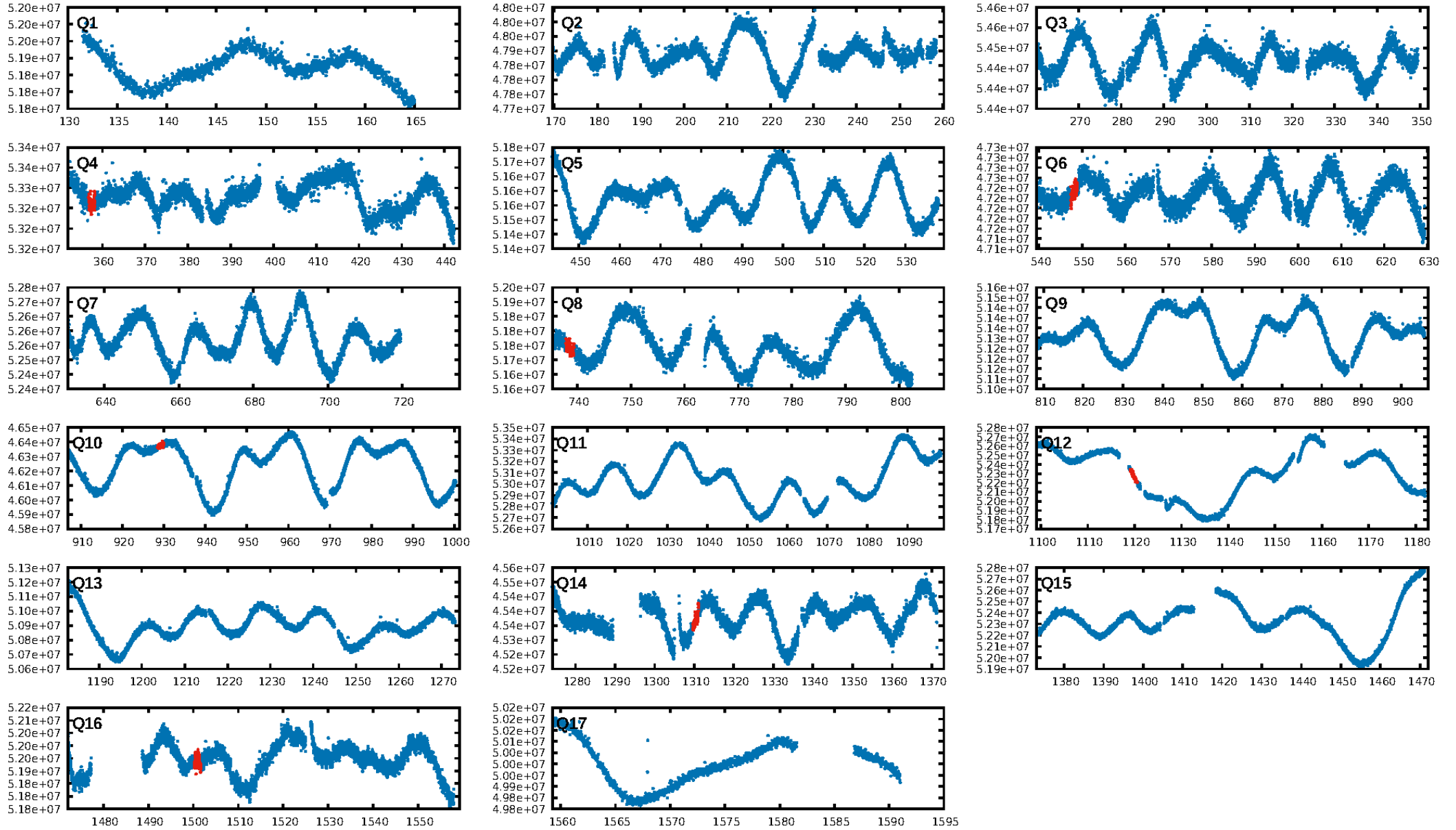
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [225.40σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.86e-65
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -3.863
Centroid-sig: 3.9%
Centroid-so: 2.936 arcsec [1.67σ]
OotOffset-rm: 0.732 arcsec [6.13σ]
KicOffset-rm: 12.913 arcsec [103.84σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/5]

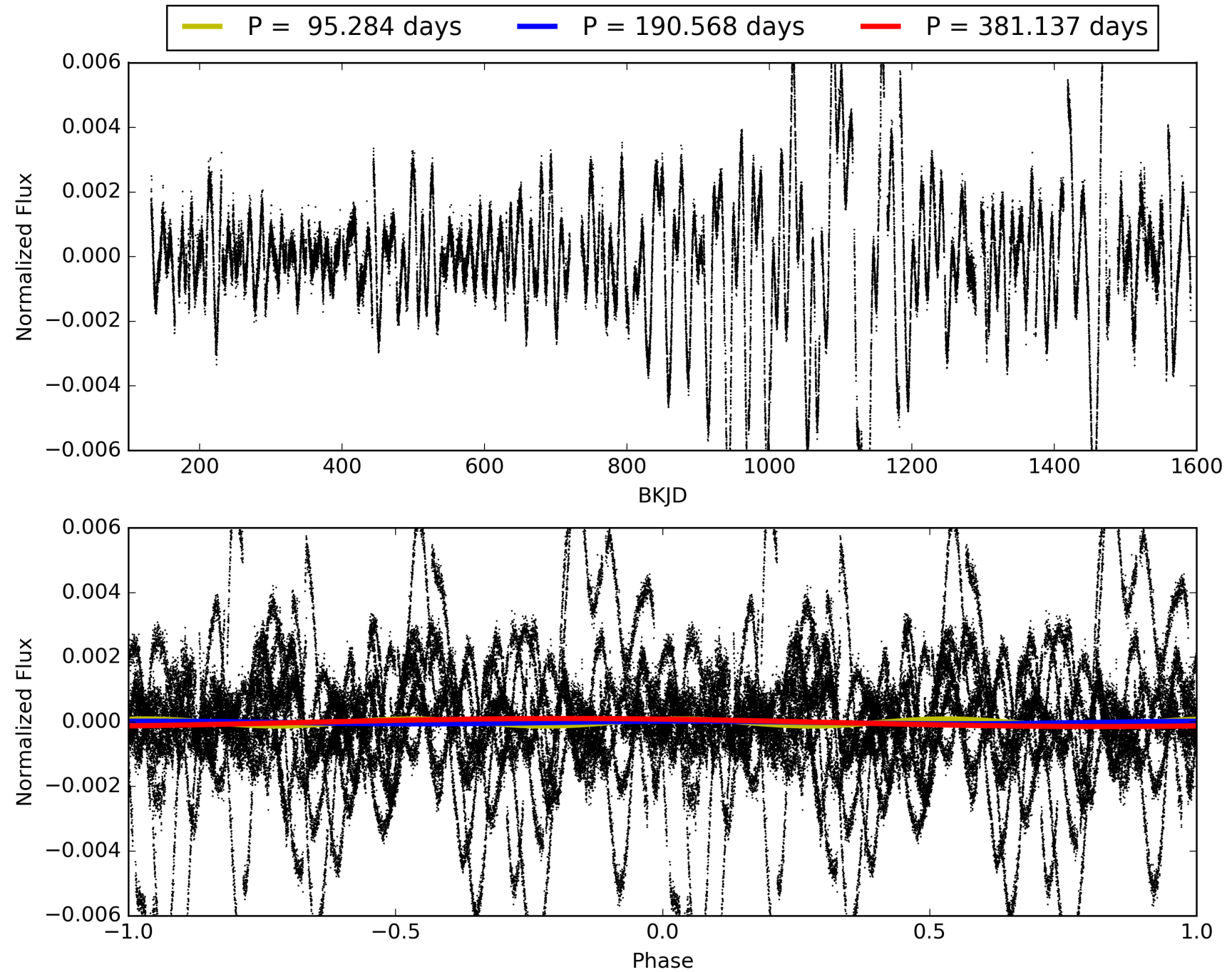
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010018866-02, PDC Light Curves

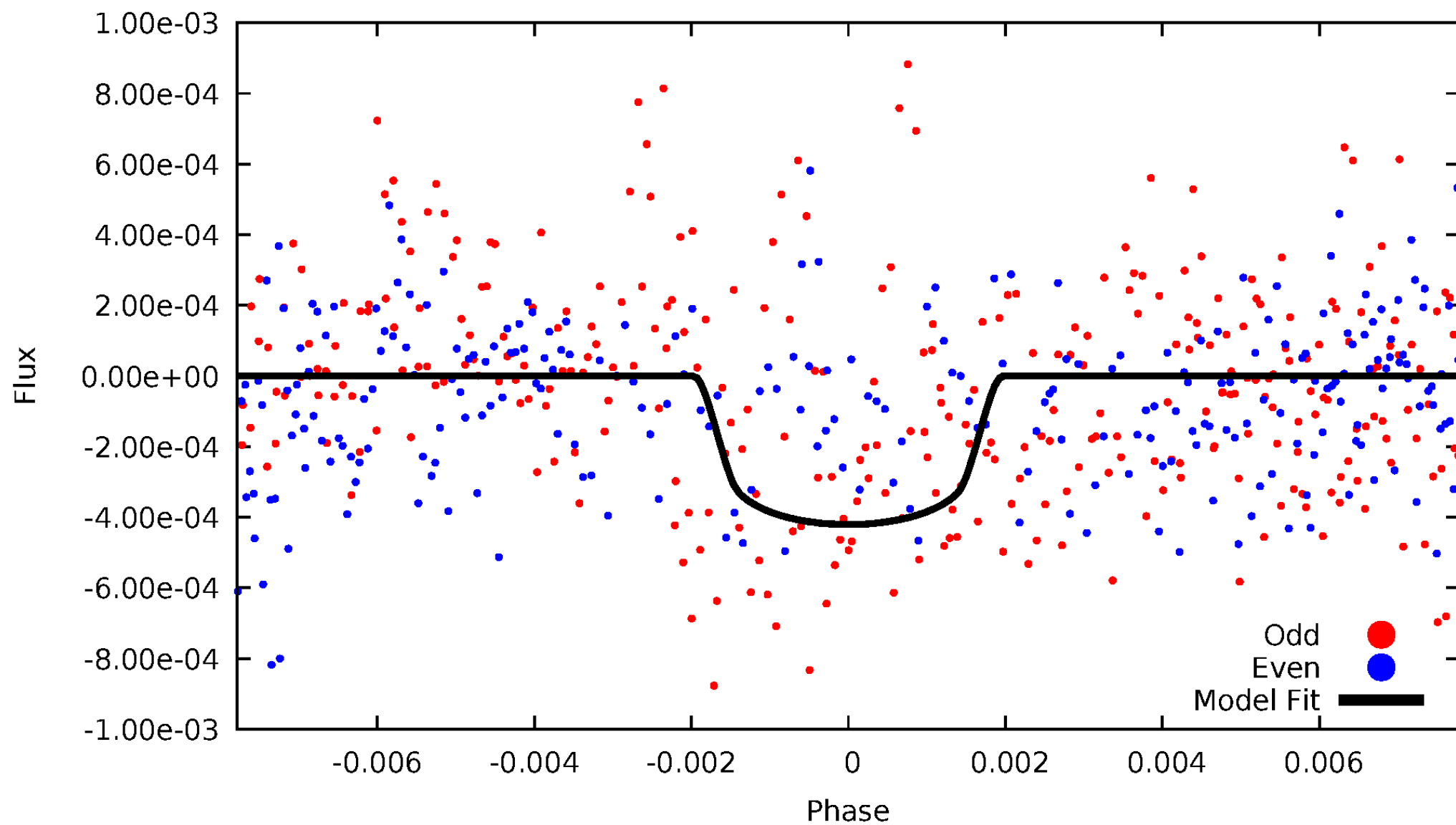


TCE 010018866-02



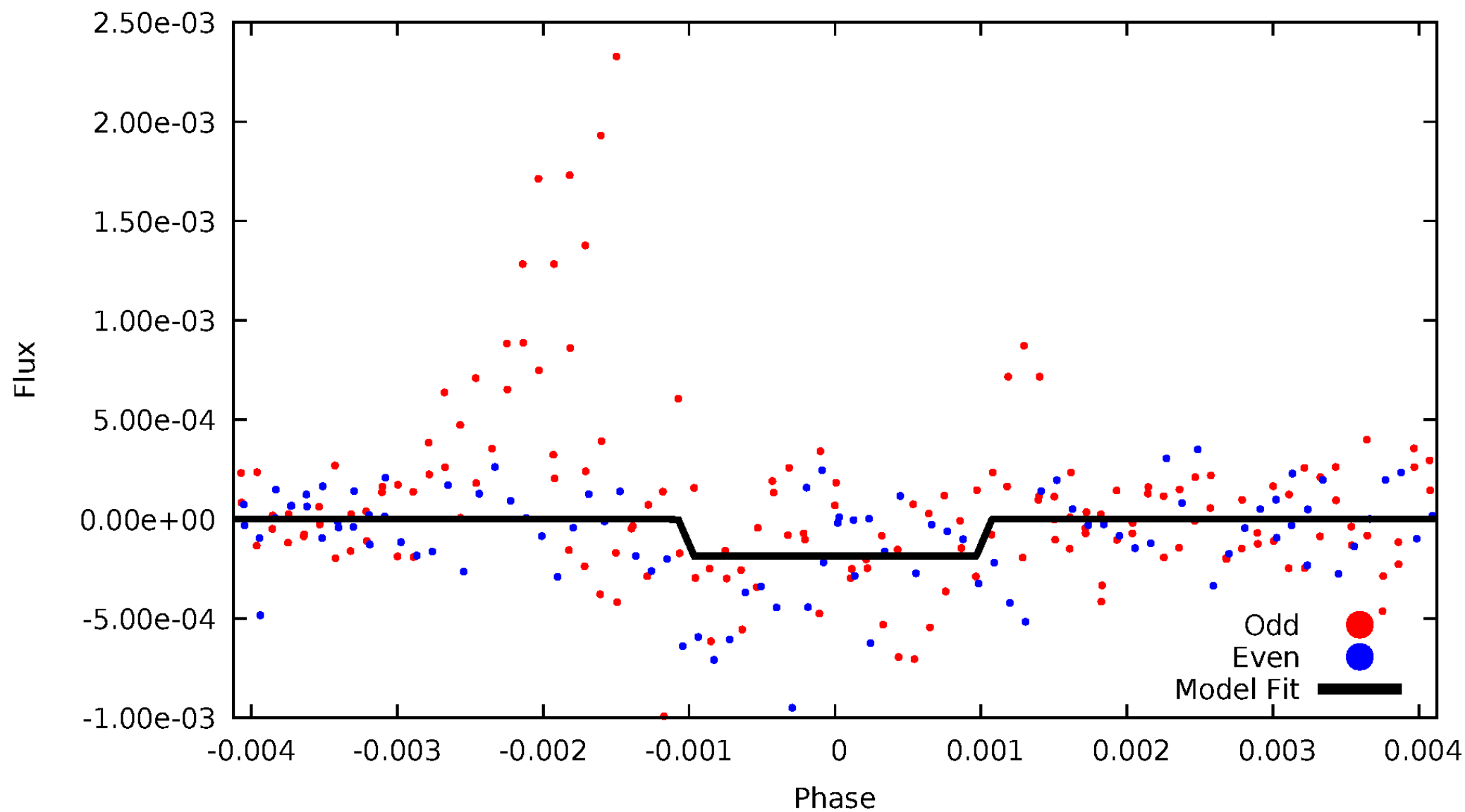
DV Odd/Even

TCE 010018866-02



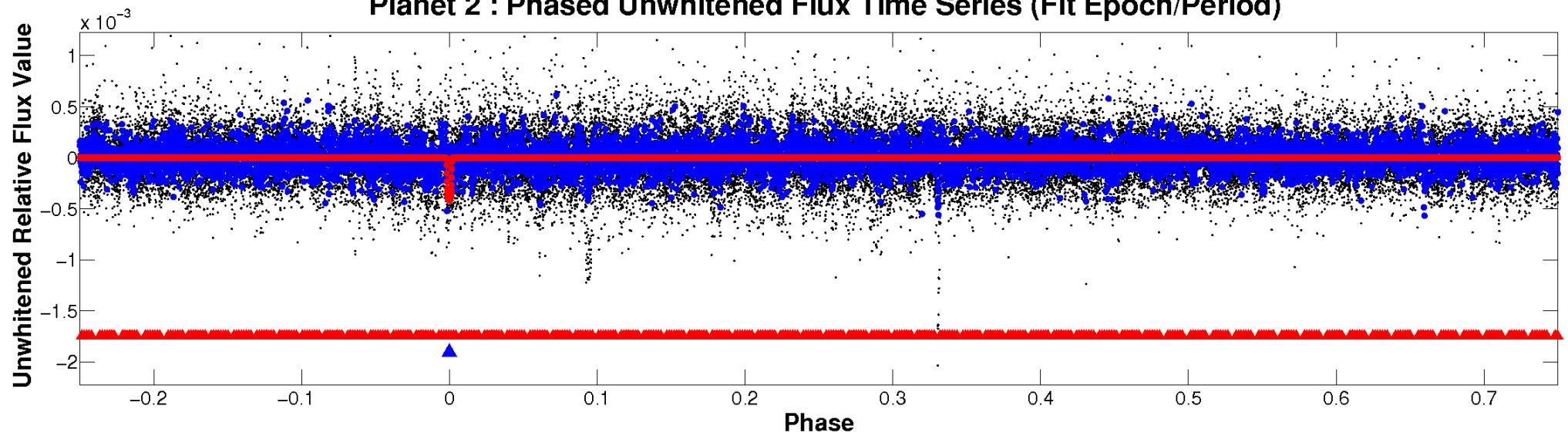
ALT Odd/Even

TCE 010018866-02

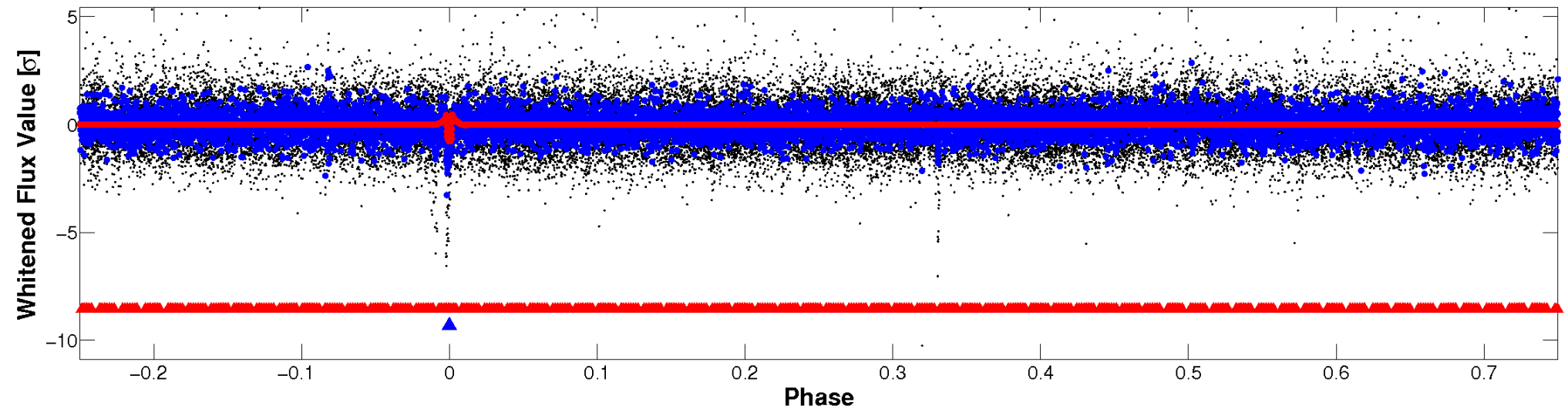


Non-Whitened Vs. Whitened Light Curve

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

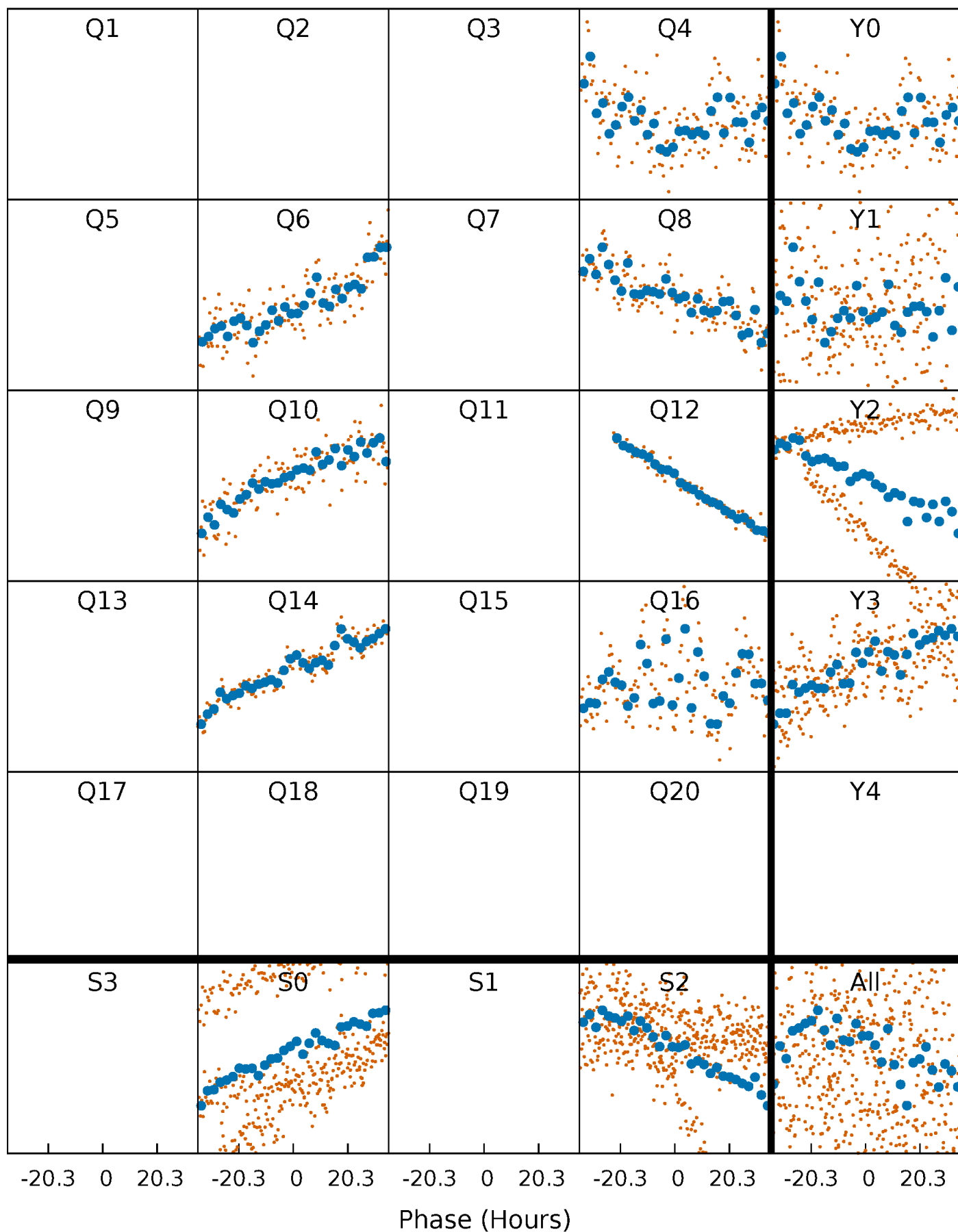


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



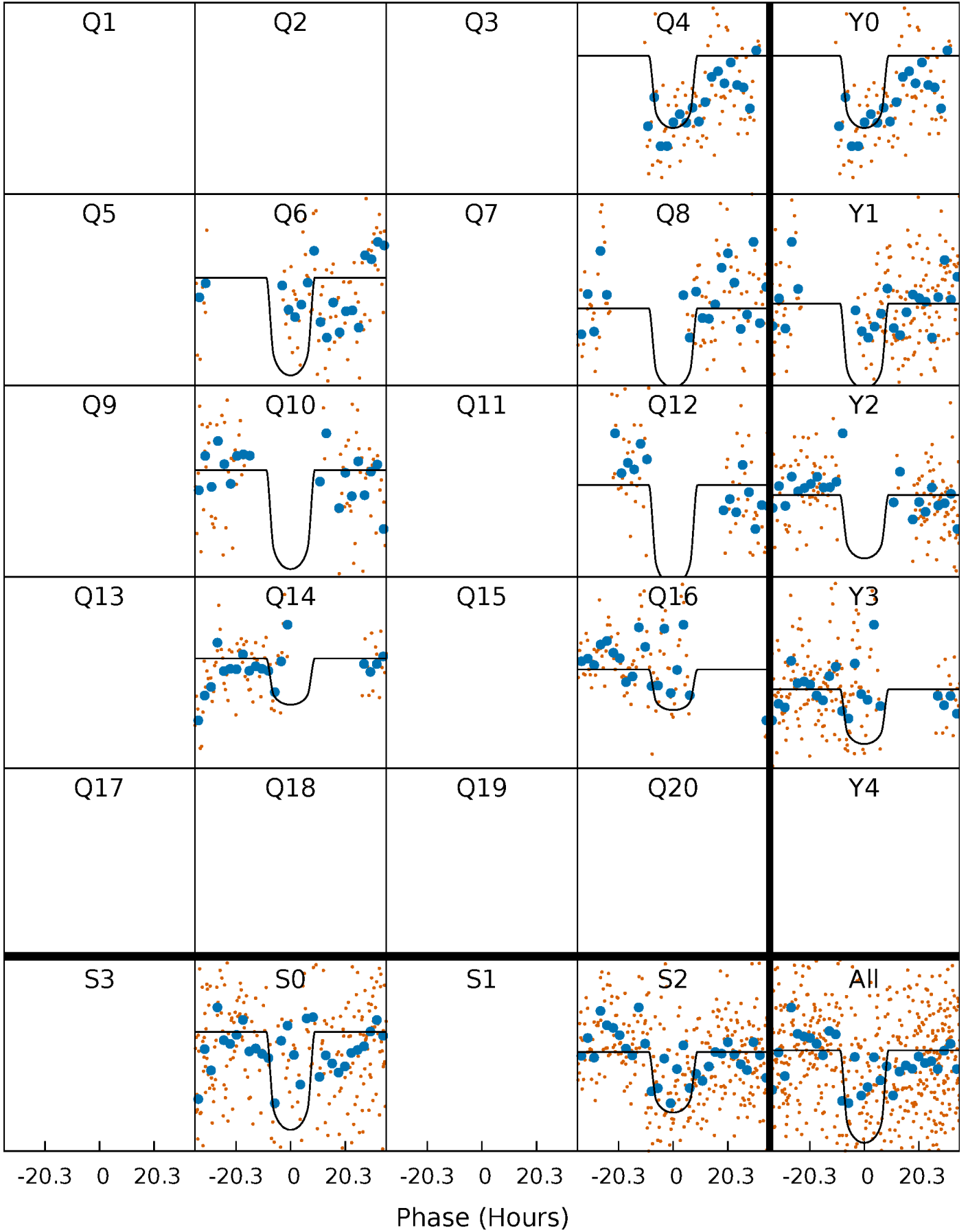
PDC Quarter-Phased Transit Curves

TCE 010018866-02 $P=190.568266$ Days $T_0=166.949837$ (BKJD)



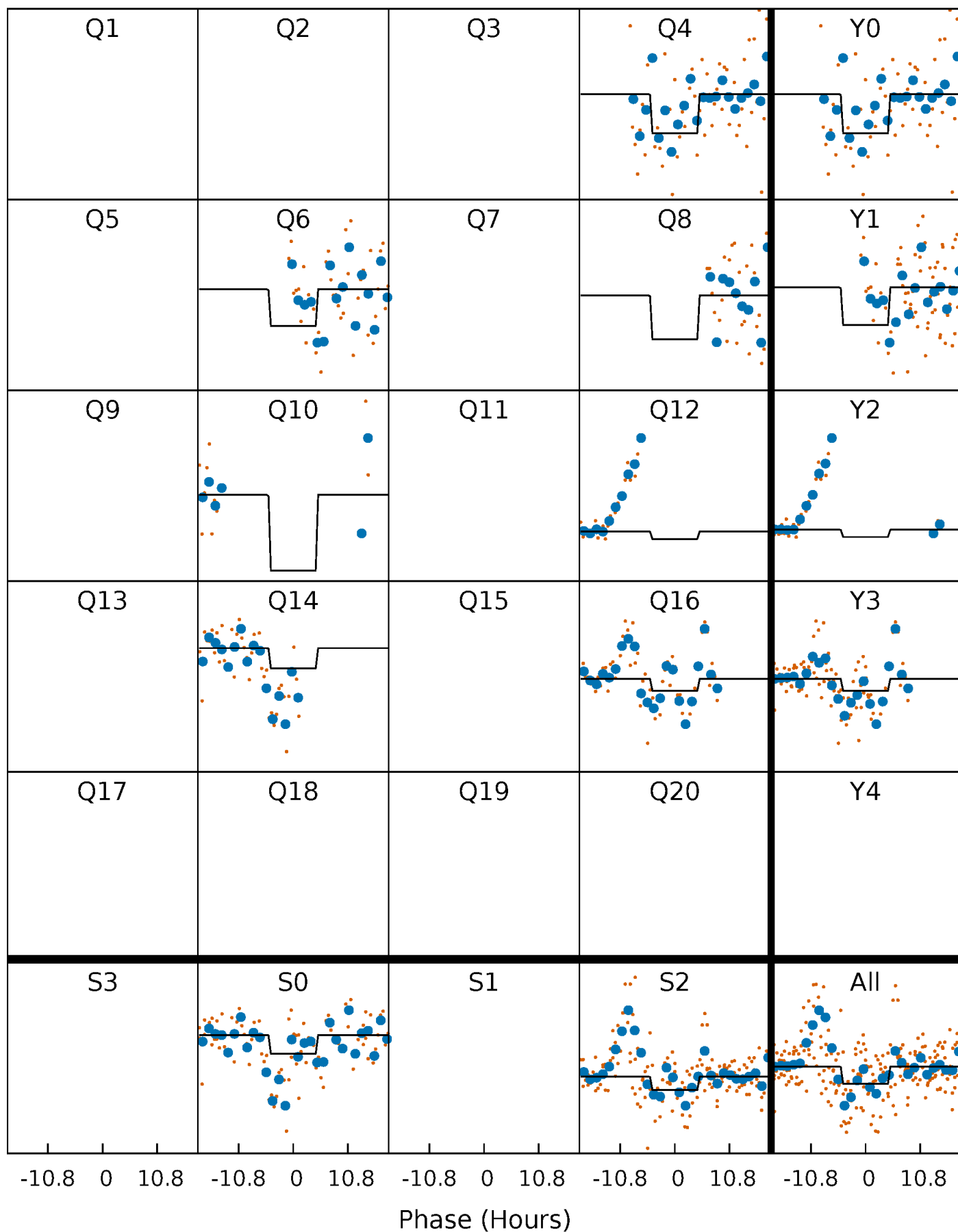
DV Quarter-Phased Transit Curves

TCE 010018866-02 $P=190.568266$ Days $T_0=166.949837$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

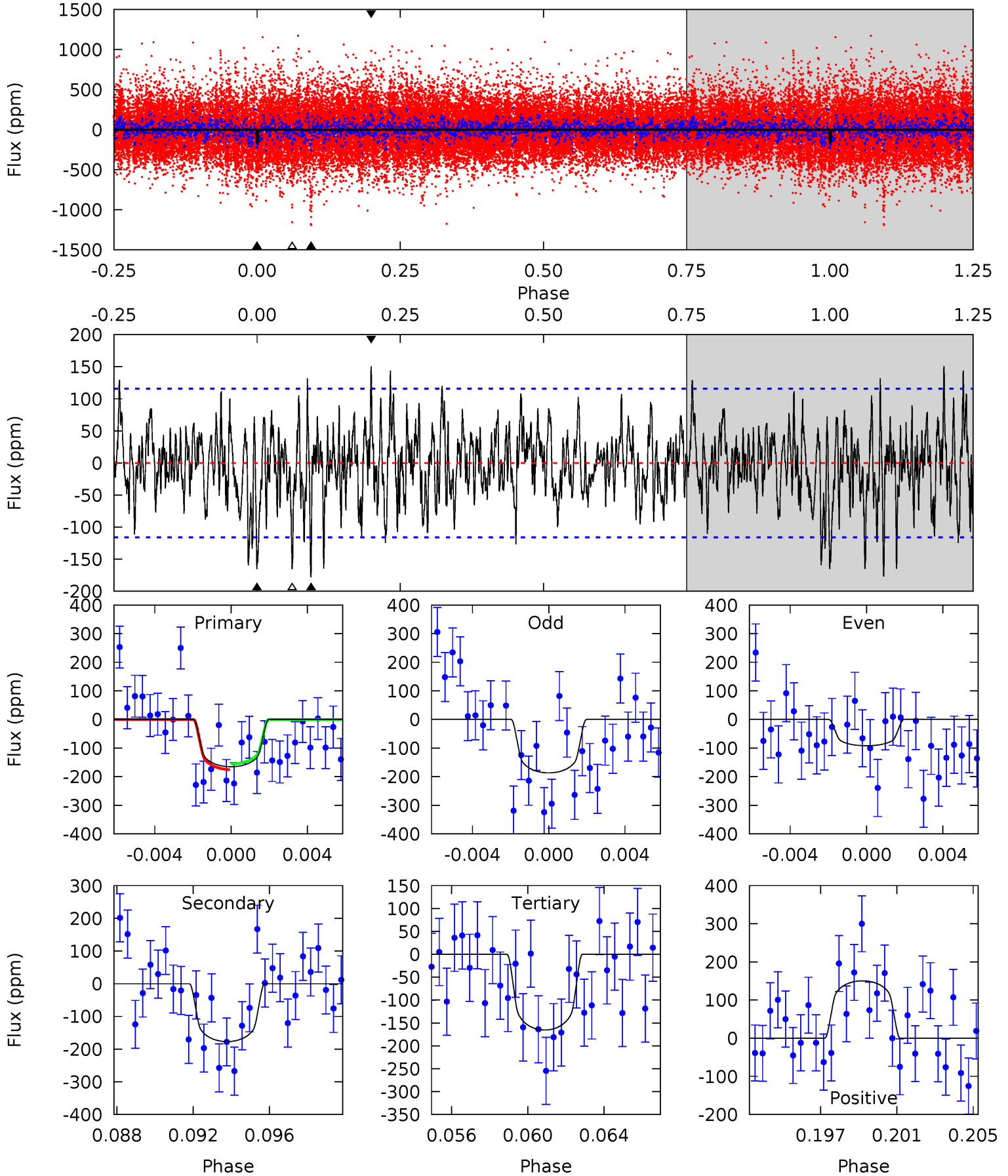
TCE 010018866-02 P=190.563381 Days $T_0=166.881285$ (BKJD)



DV Model-Shift Uniqueness Test

010018866-02, P = 190.568266 Days, E = 166.949837 Days

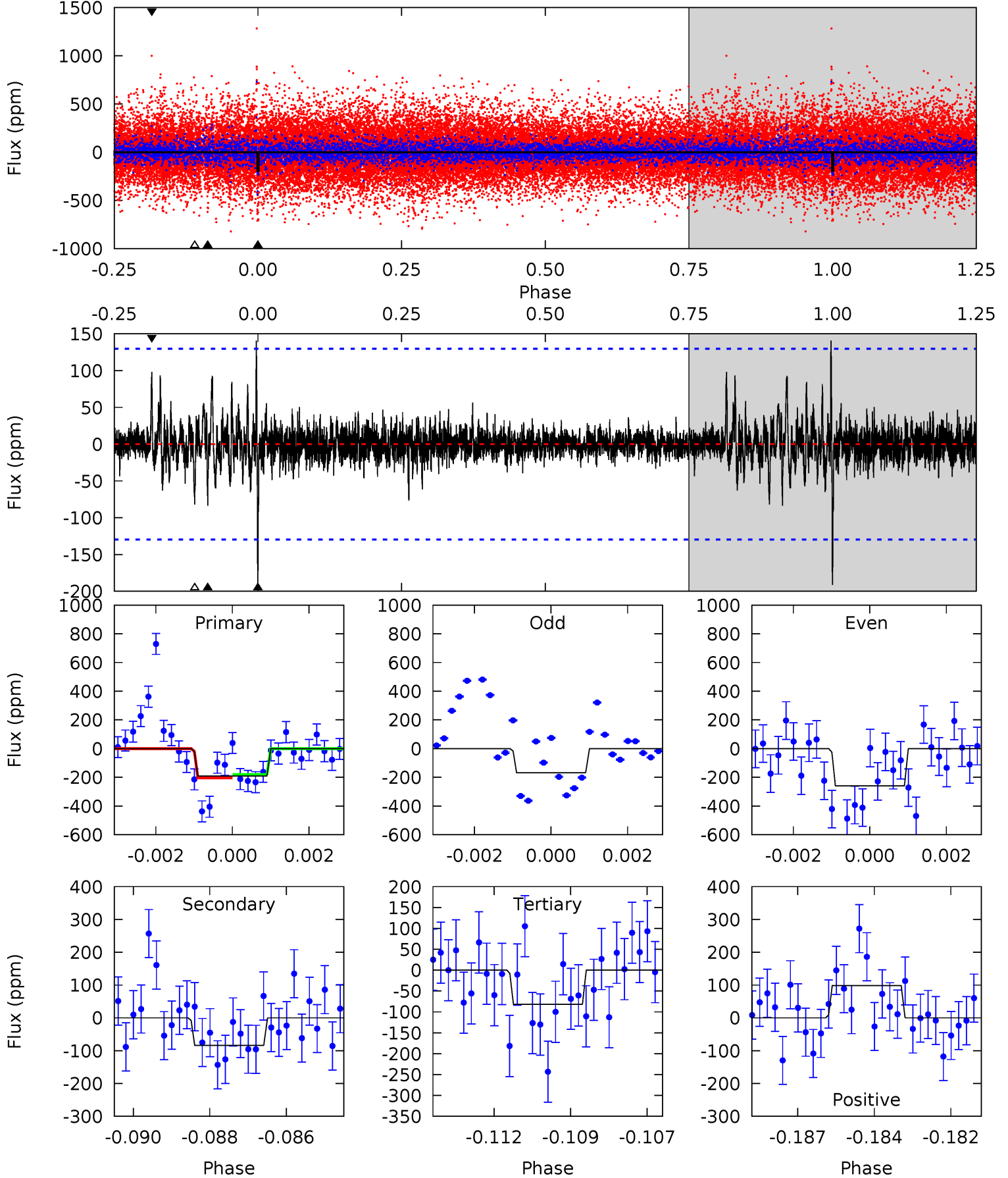
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.42	7.94	7.42	6.75	5.20	2.88	2.09	-0.00	0.67	0.52	1.19	2.04	1.31	0.46	0.45



Alt Model-Shift Uniqueness Test

010018866-02, P = 190.563381 Days, E = 166.881285 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.84	3.43	3.35	4.03	5.31	3.07	0.68	4.49	3.81	0.08	-0.60	1.83	1.26	0.42	0.50



Stellar Parameters For KIC 010018866

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3900^{+46}_{-50}	$4.727^{+0.017}_{-0.022}$	$-0.100^{+0.100}_{-0.100}$	$0.534^{+0.024}_{-0.021}$	$0.555^{+0.020}_{-0.025}$	$5.136^{+0.442}_{-0.450}$
	+1%/-1%	+0%/-0%	+100%/-100%	+4%/-4%	+4%/-5%	+9%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010018866-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-177 ± 22	$1.33^{+0.16}_{-0.16}$	241^{+3}_{-4}	3277^{+150}_{-130}	15581^{+4871}_{-3500}
Alt.	-84 ± 24	$0.80^{+0.16}_{-0.16}$	241^{+3}_{-3}	3395^{+304}_{-237}	19986^{+14152}_{-7872}

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

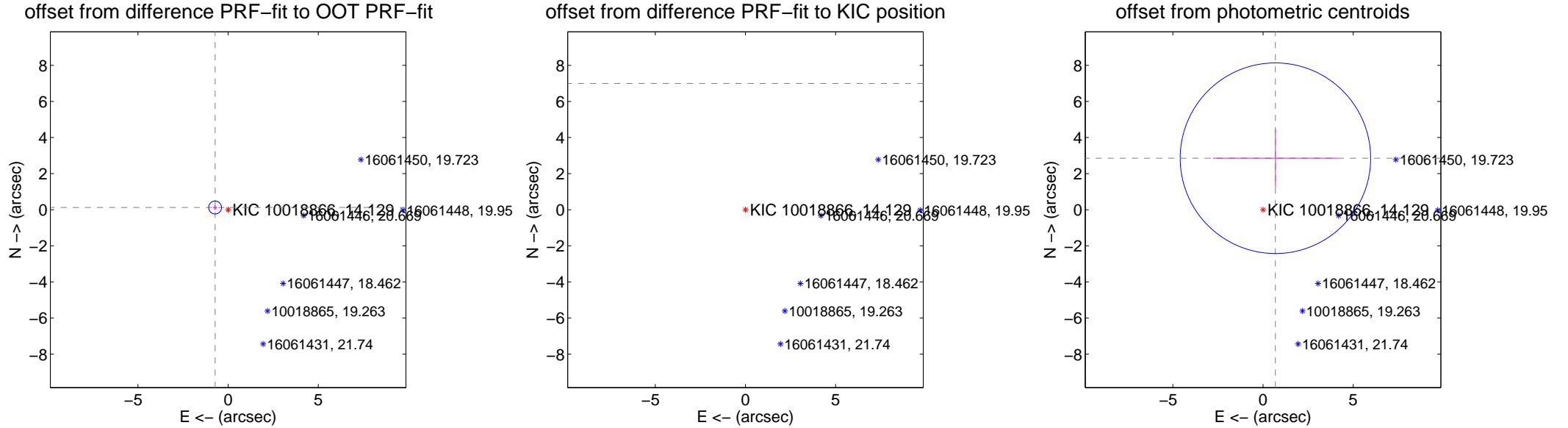
DV Centroid Data

Supplemental centroid analysis for 010018866-02. Kepler magnitude: 14.13. Transit SNR 7.32

There are 1 quarters with good PRF difference image offsets

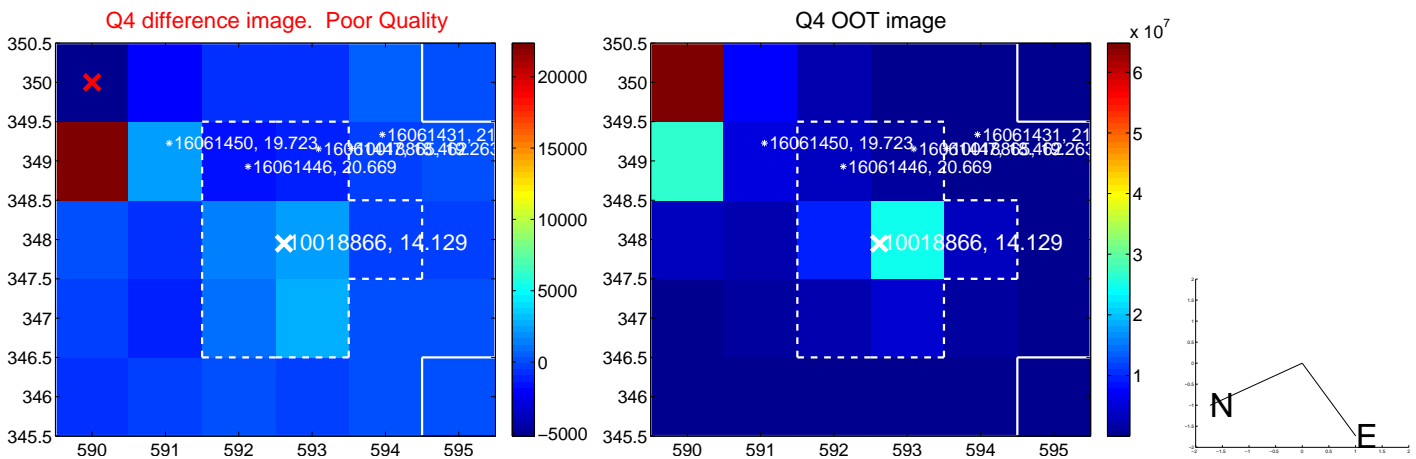
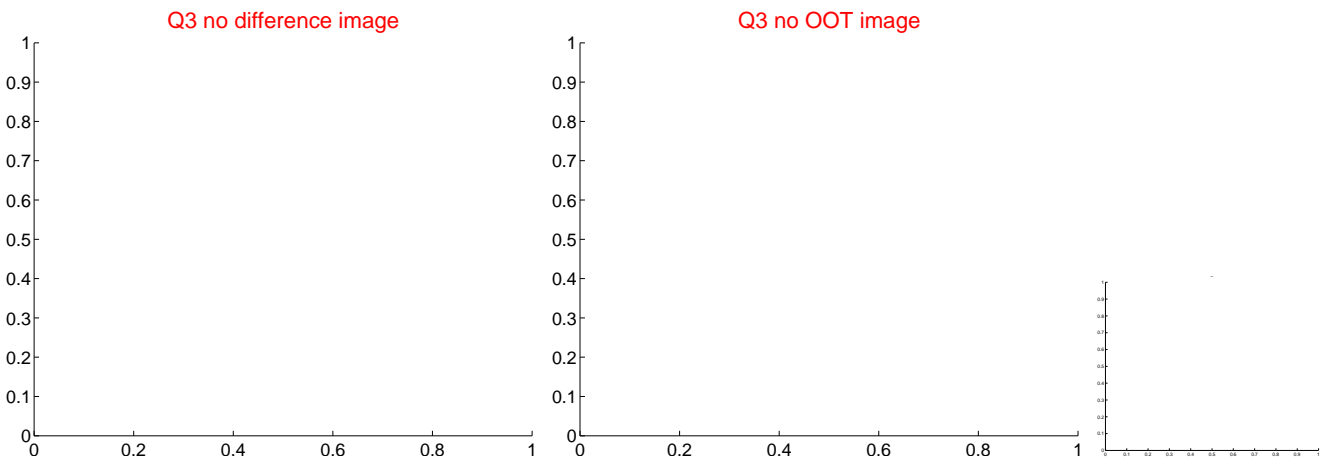
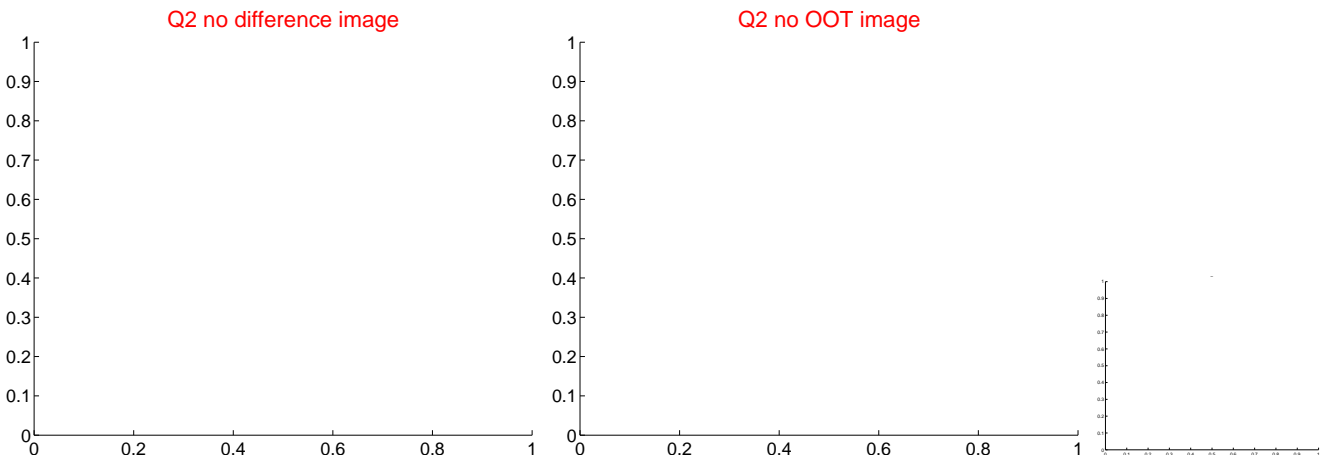
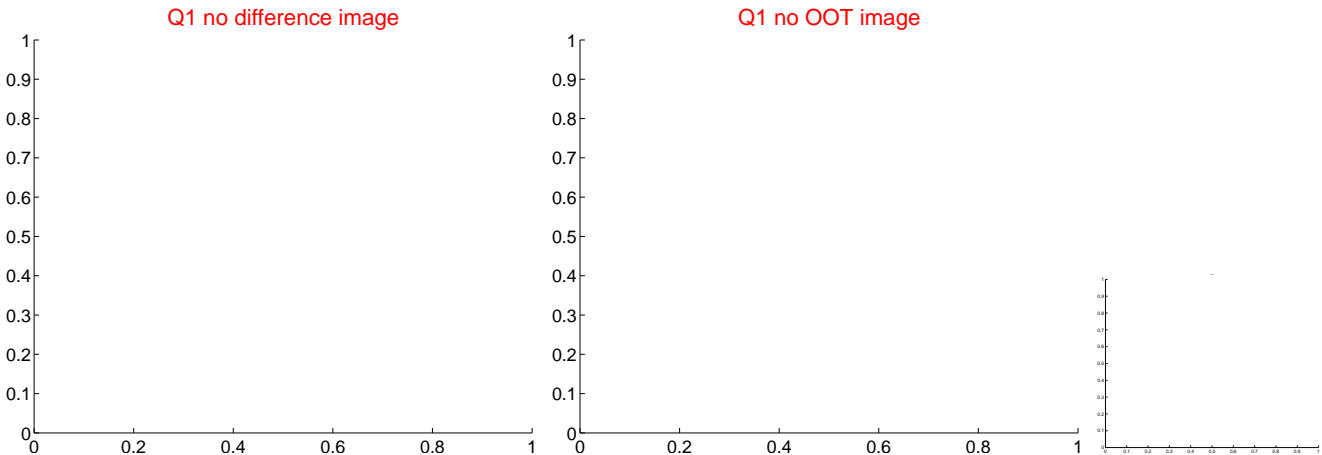
The OOT PRF centroid is offset from the target star catalog position by about 13.46 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.732 \pm 0.119	6.13	0.722 \pm 0.119	0.122 \pm 0.137
PRF-fit source offset from KIC position	12.913 \pm 0.124	103.84	-10.852 \pm 0.119	6.997 \pm 0.137
photometric centroid source offset	2.94 \pm 1.76	1.67	-0.69 \pm 3.46	2.85 \pm 1.61

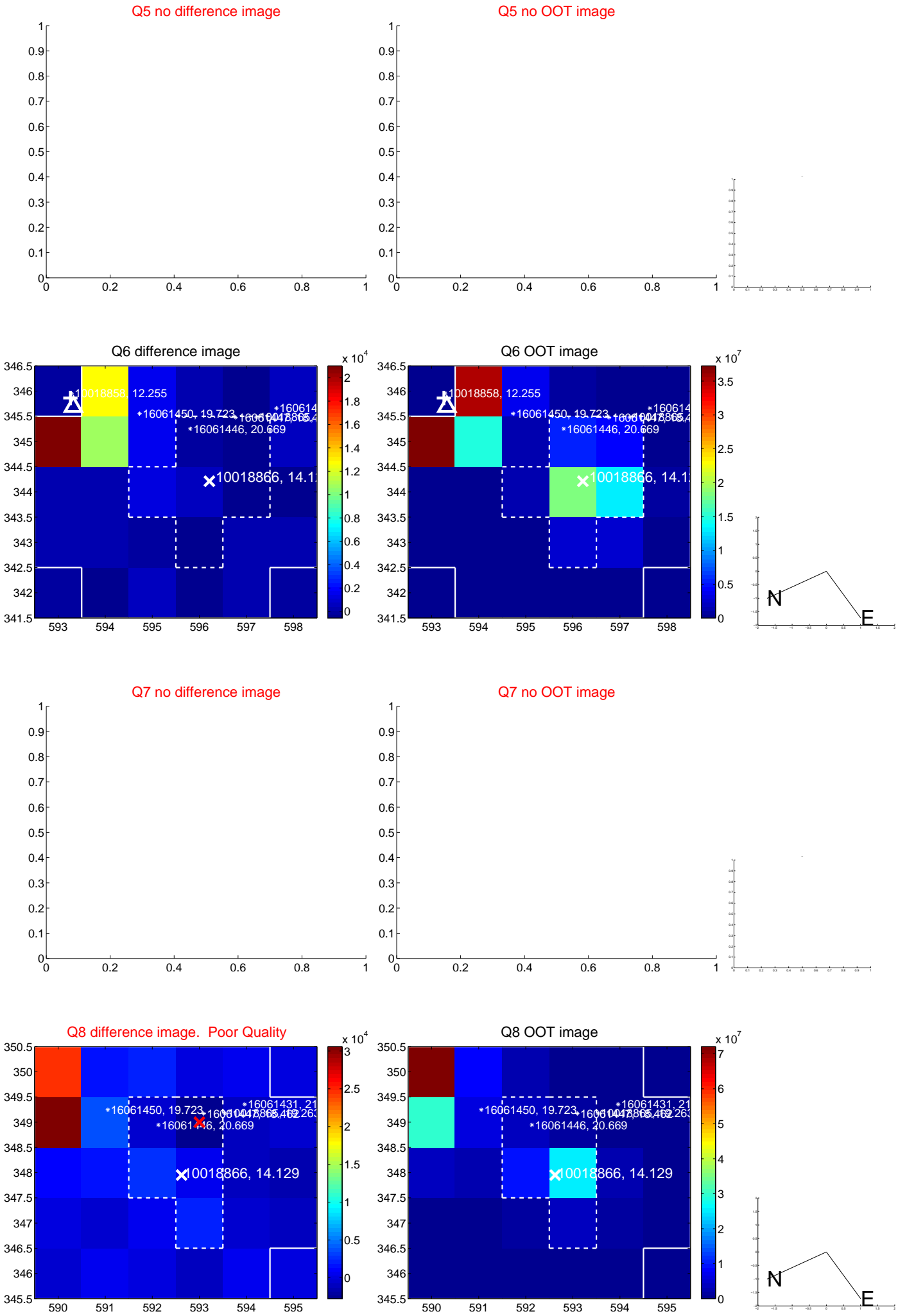


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



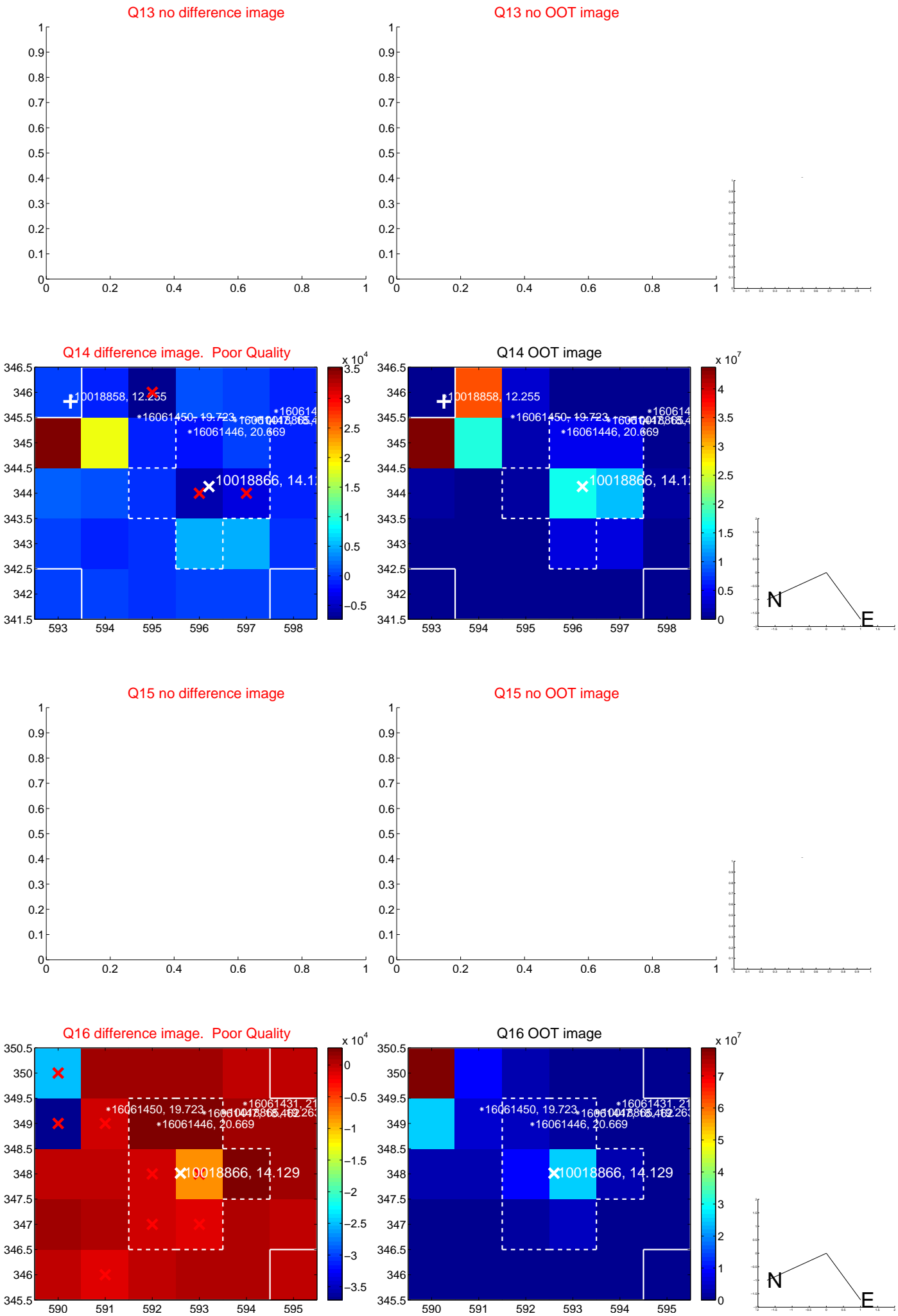
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



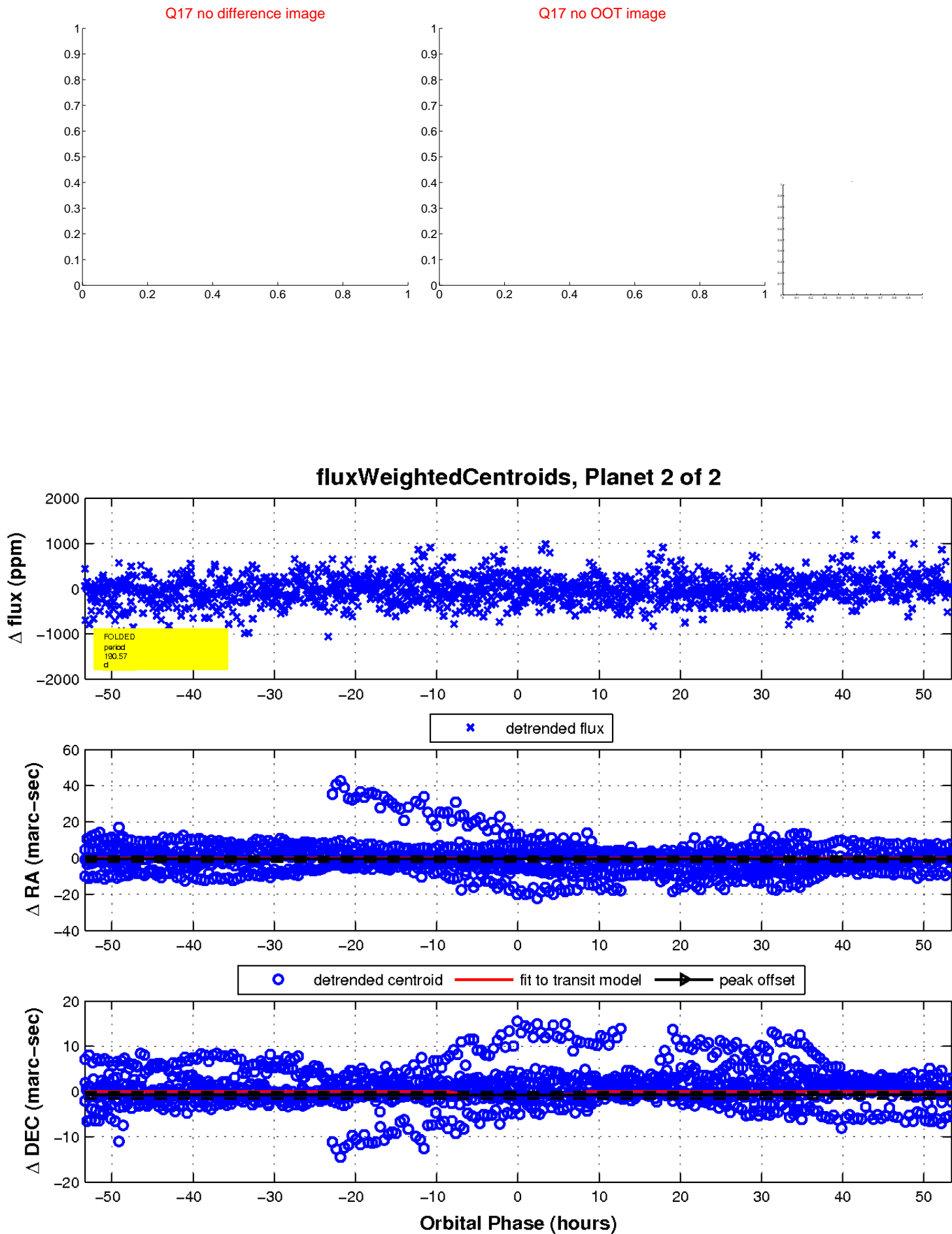
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

