

KIC 010937628

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})
010937628-01	OBS	No	5.364615	136.305025	72.2	16.709	13.4	12.2	2.66	6751	3.75	2946.81
010937628-02	OBS	No	5.365009	133.800792	25.8	22.546	9.7	6.4	2.66	6751	1.40	2946.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010937628-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010937628-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

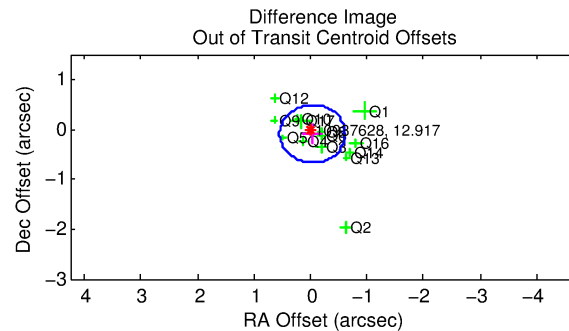
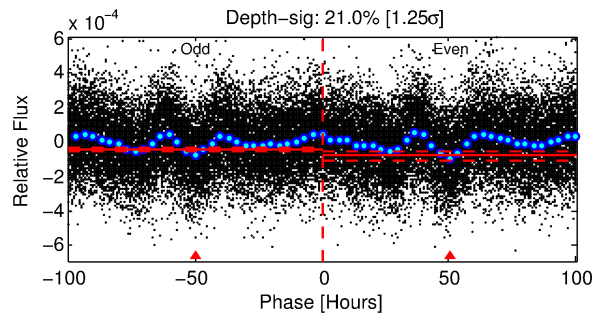
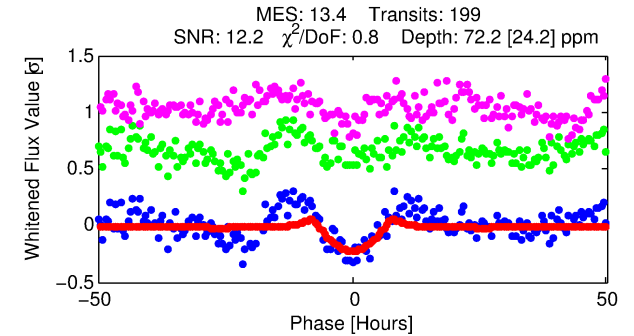
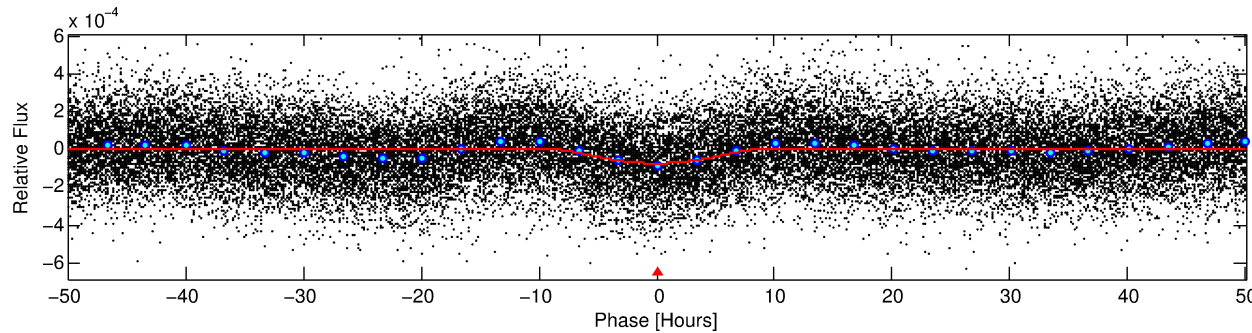
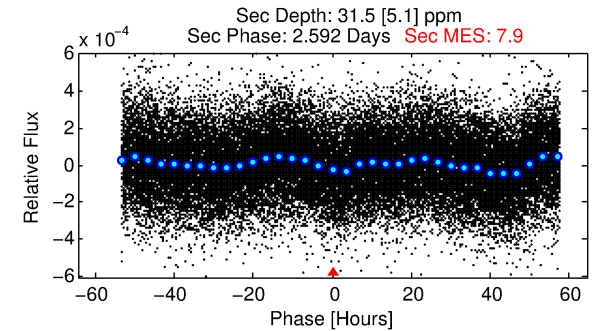
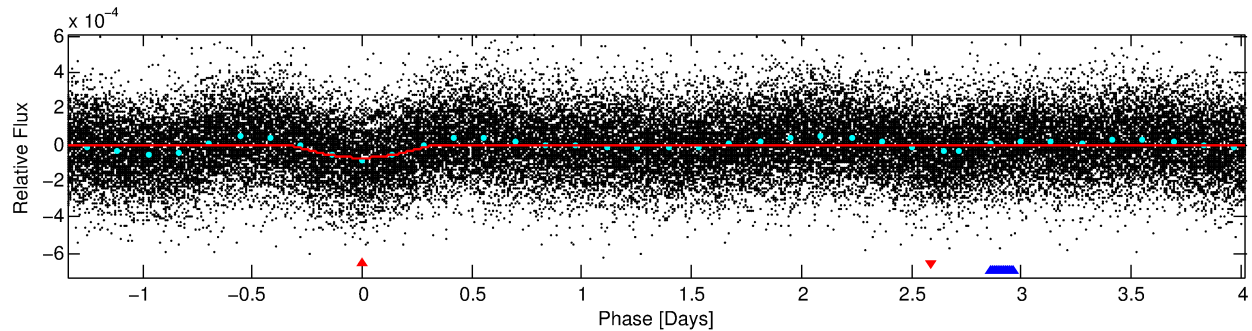
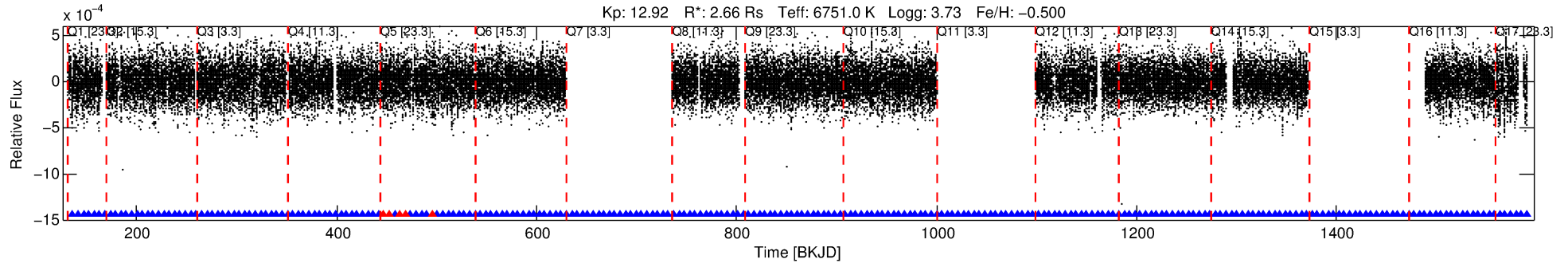
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010937628-01

No Significant Match Found

DV One-Page Summary

KIC: 10937628 Candidate: 1 of 2 Period: 5.365 d



DV Fit Results:

Period = 5.36461 [0.00017] d
Epoch = 136.3050 [0.0246] BKJD
Rp/R* = 0.0129 [0.0081]
a/R* = 1.10 [0.04]
b = 1.00 [0.01]
Seff = 2946.81 [1611.78]
Teq = 1879 [257] K
Rp = 3.75 [2.73] Re
a = 0.0668 [0.0229] AU
Ag = 5.51 [7.56] [0.60σ]
Teffp = 4451 [1412] K [1.79σ]

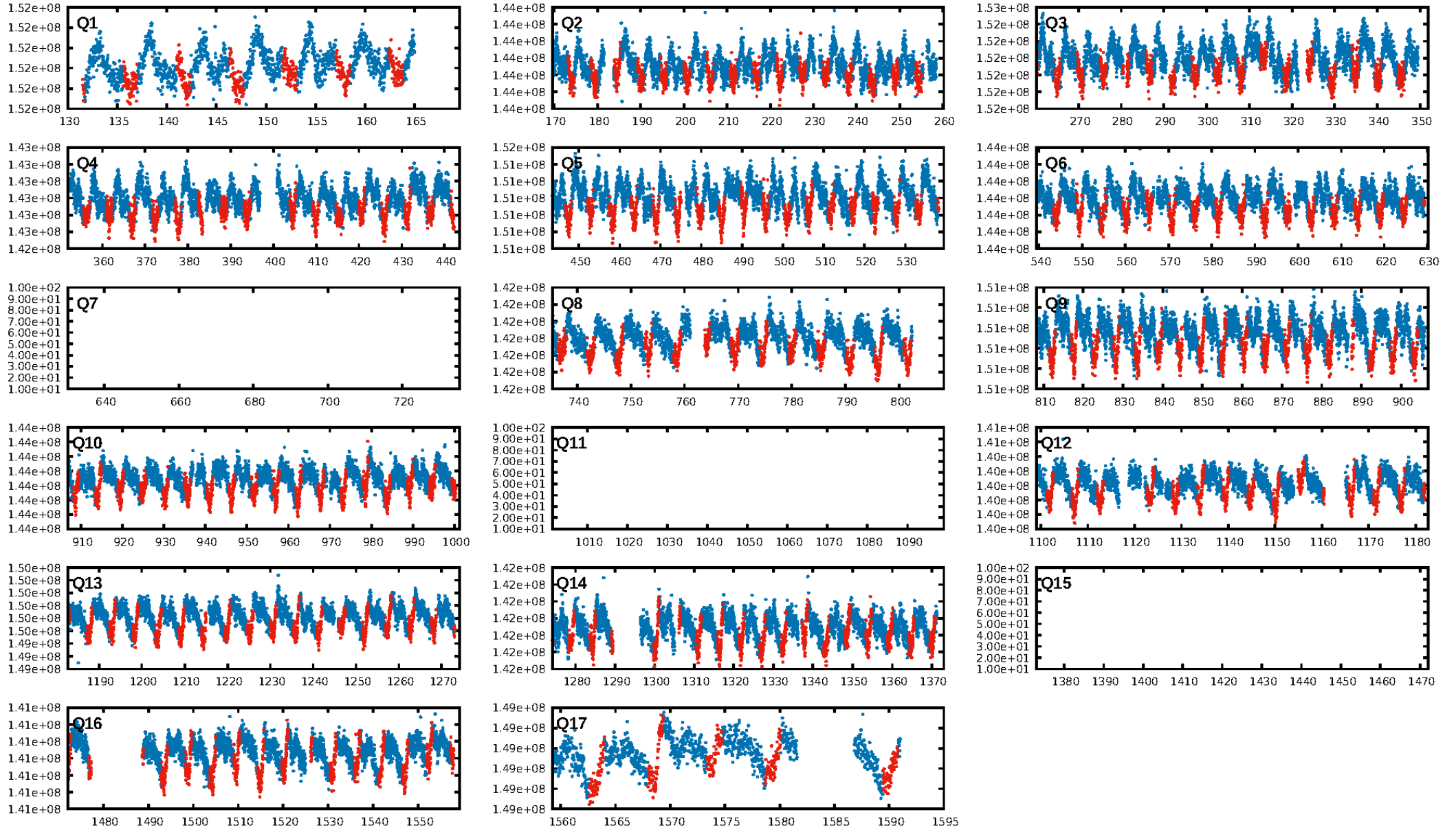
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [183/188]
GhostDiagnostic-chr: 1.213
Centroid-sig: 1.8%
Centroid-so: 0.604 arcsec [1.01σ]
OotOffset-rm: 0.099 arcsec [0.51σ]
KicOffset-rm: 0.283 arcsec [1.44σ]
KicOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

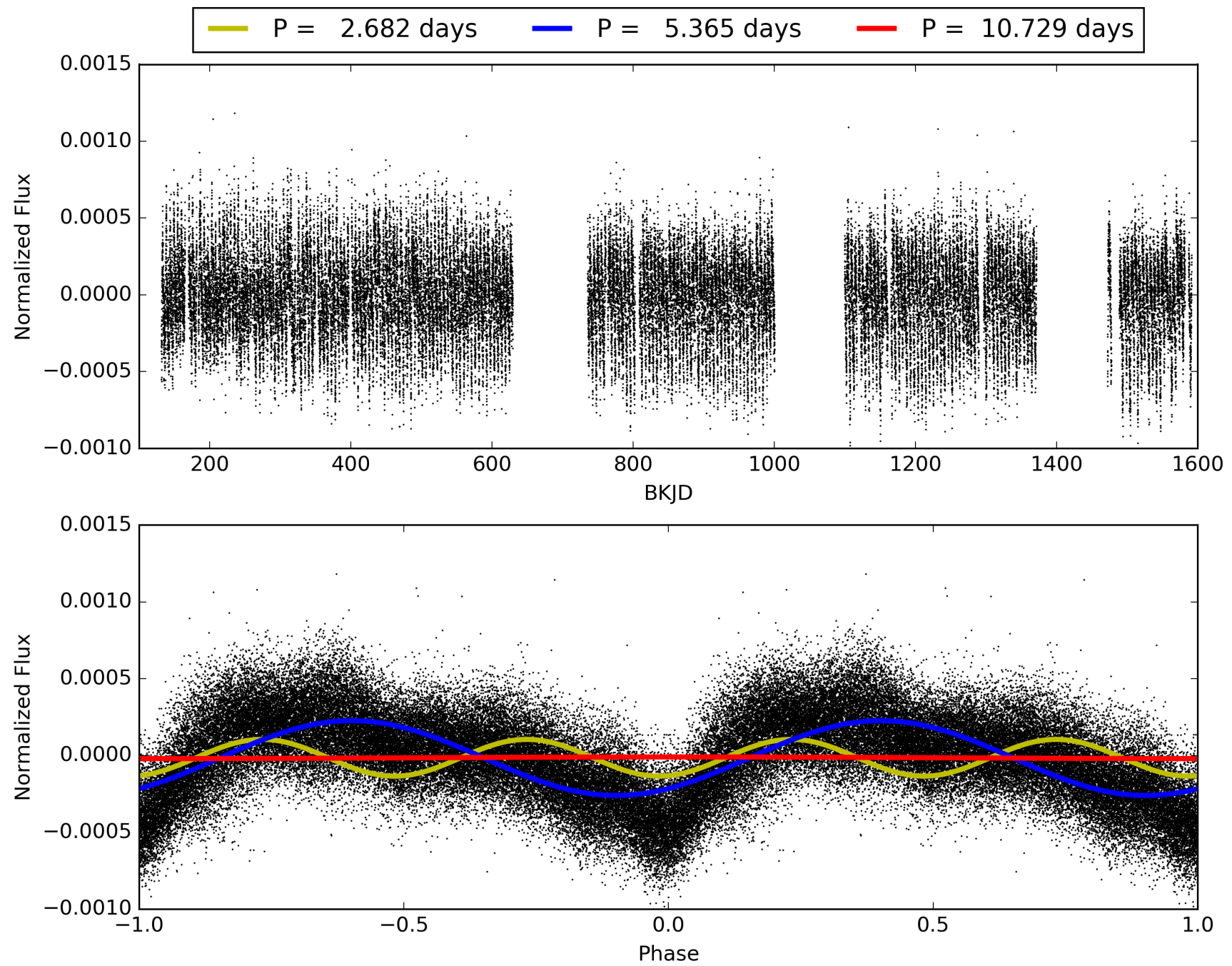
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:25:48 Z

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

TCE 010937628-01, PDC Light Curves

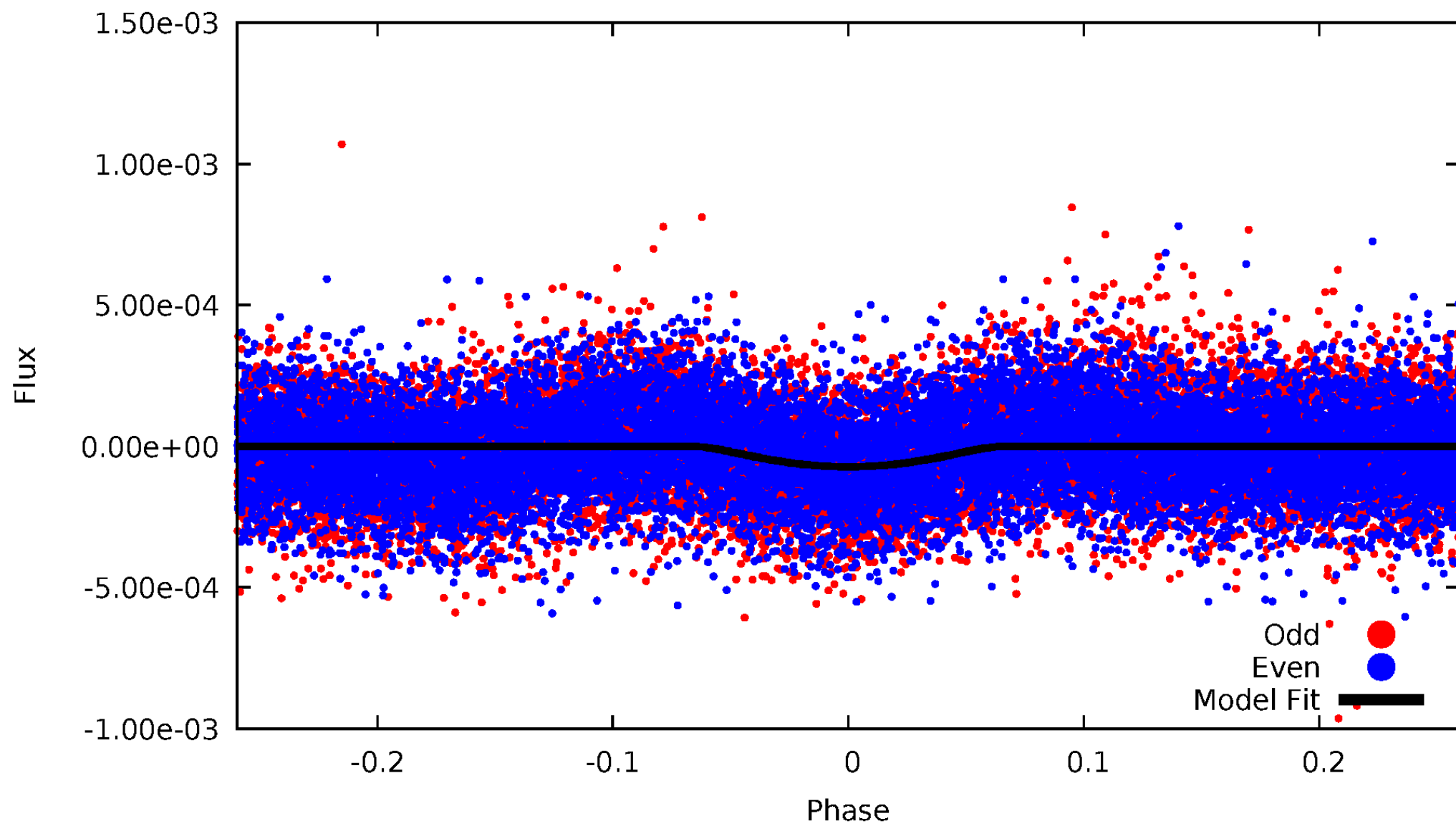


TCE 010937628-01



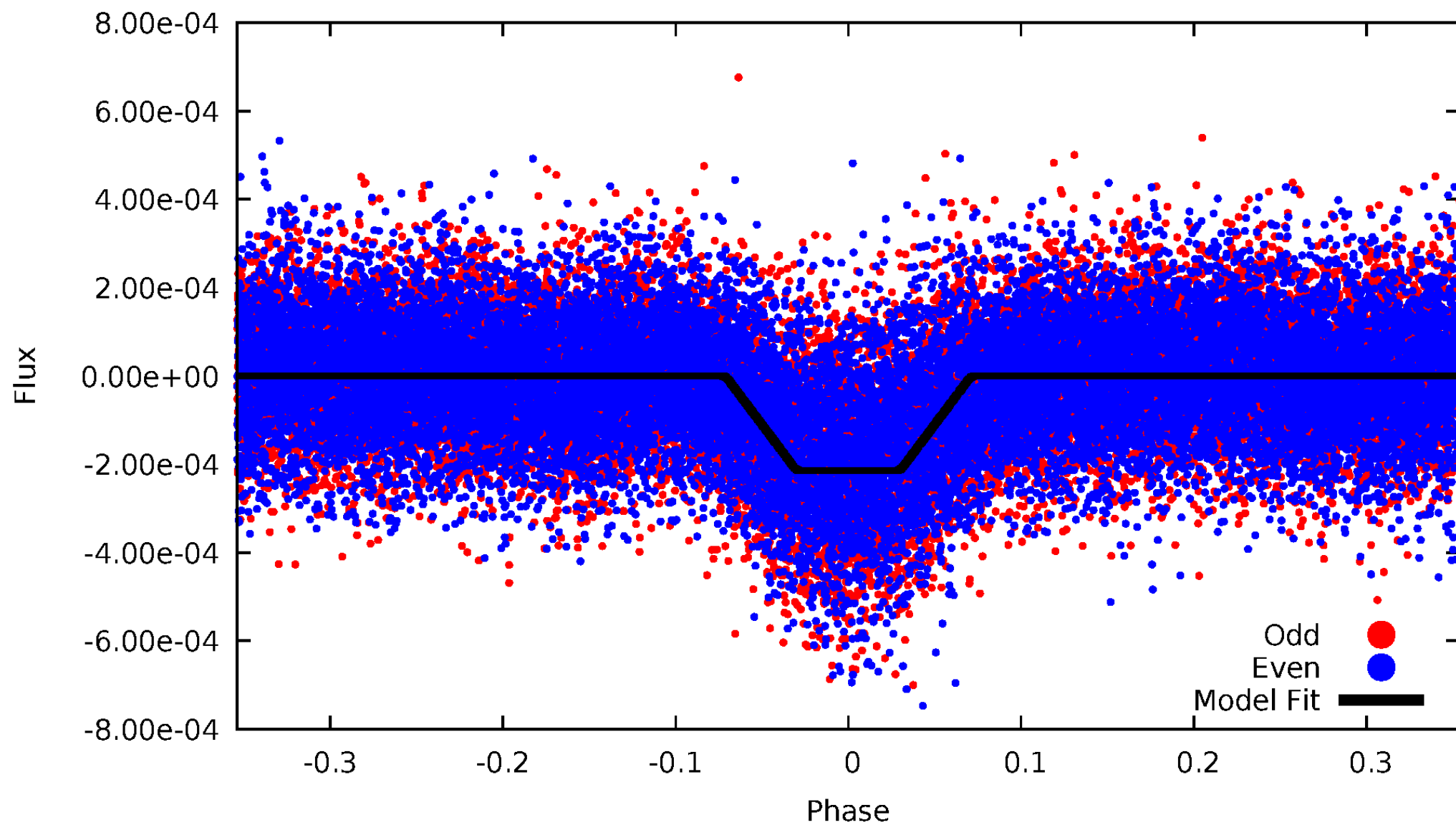
DV Odd/Even

TCE 010937628-01

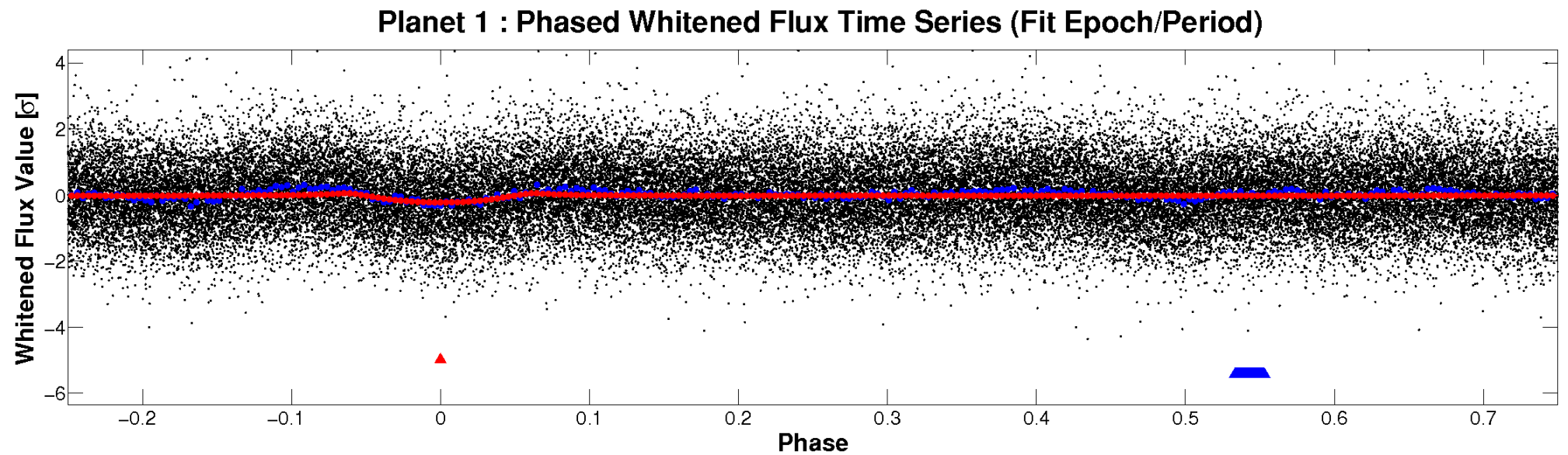
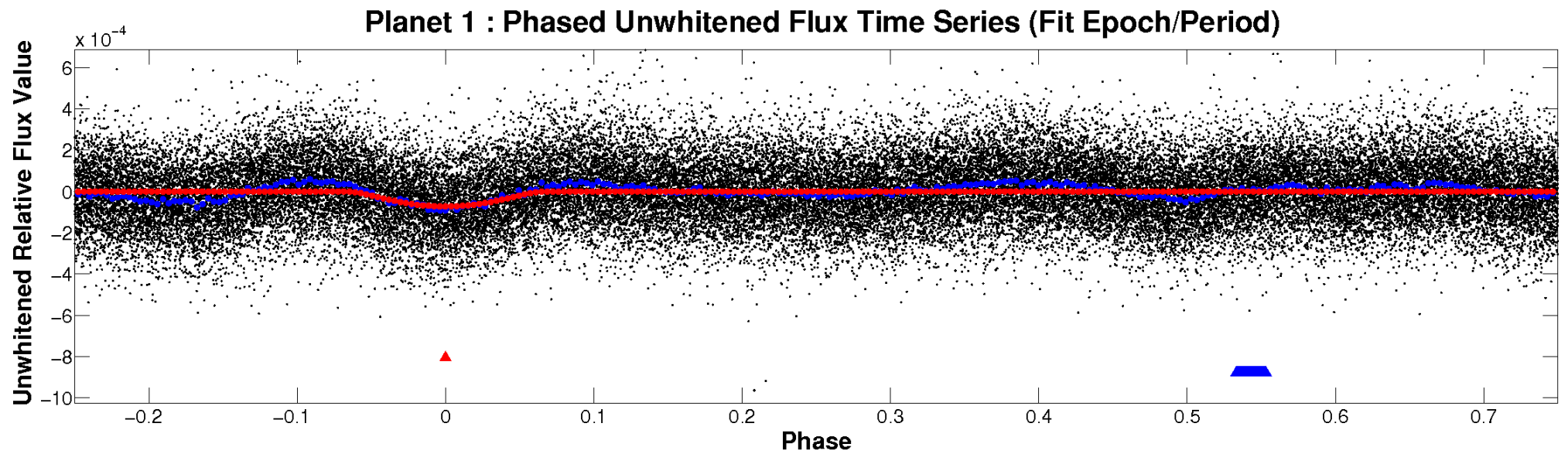


ALT Odd/Even

TCE 010937628-01

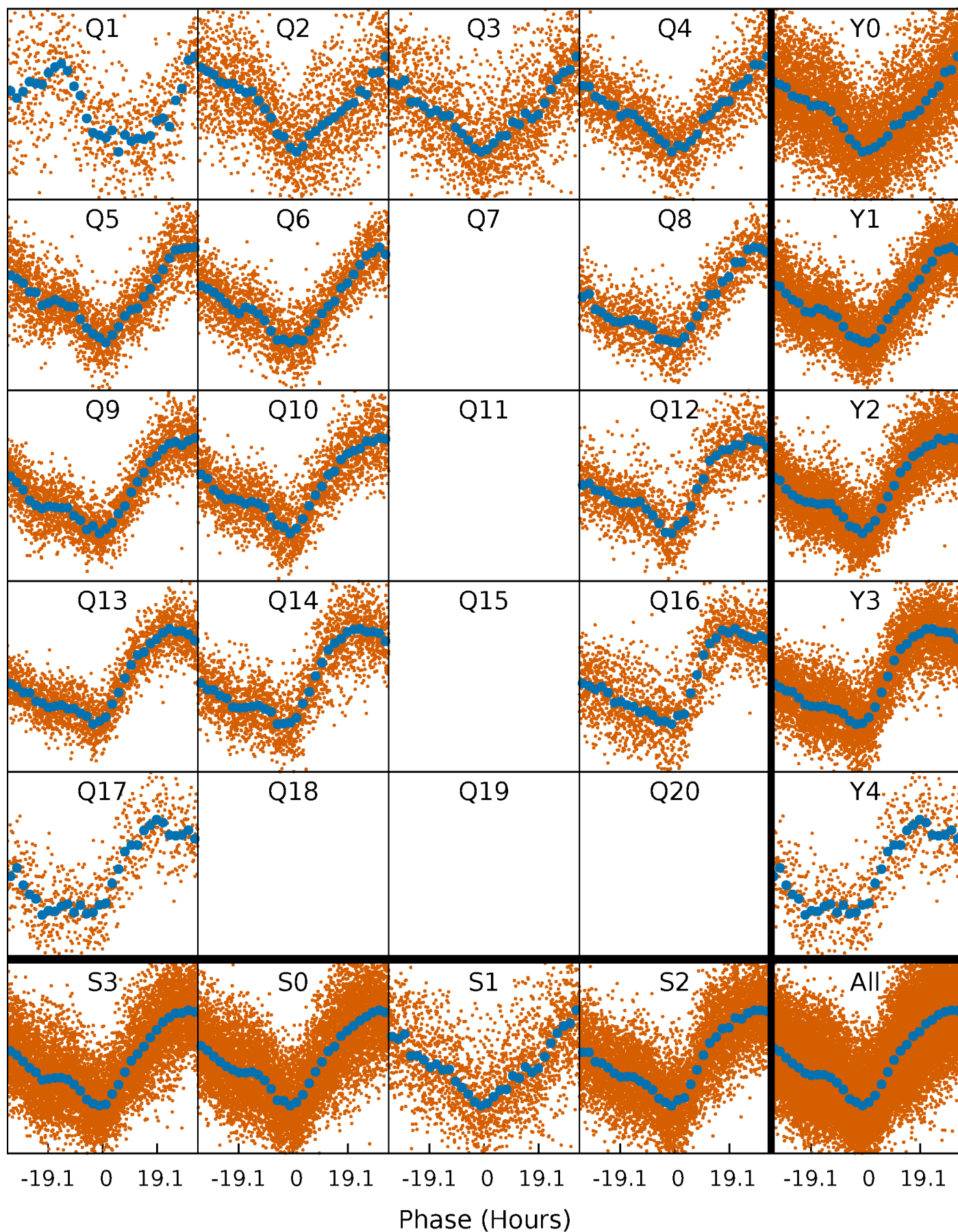


Non-Whitened Vs. Whitened Light Curve



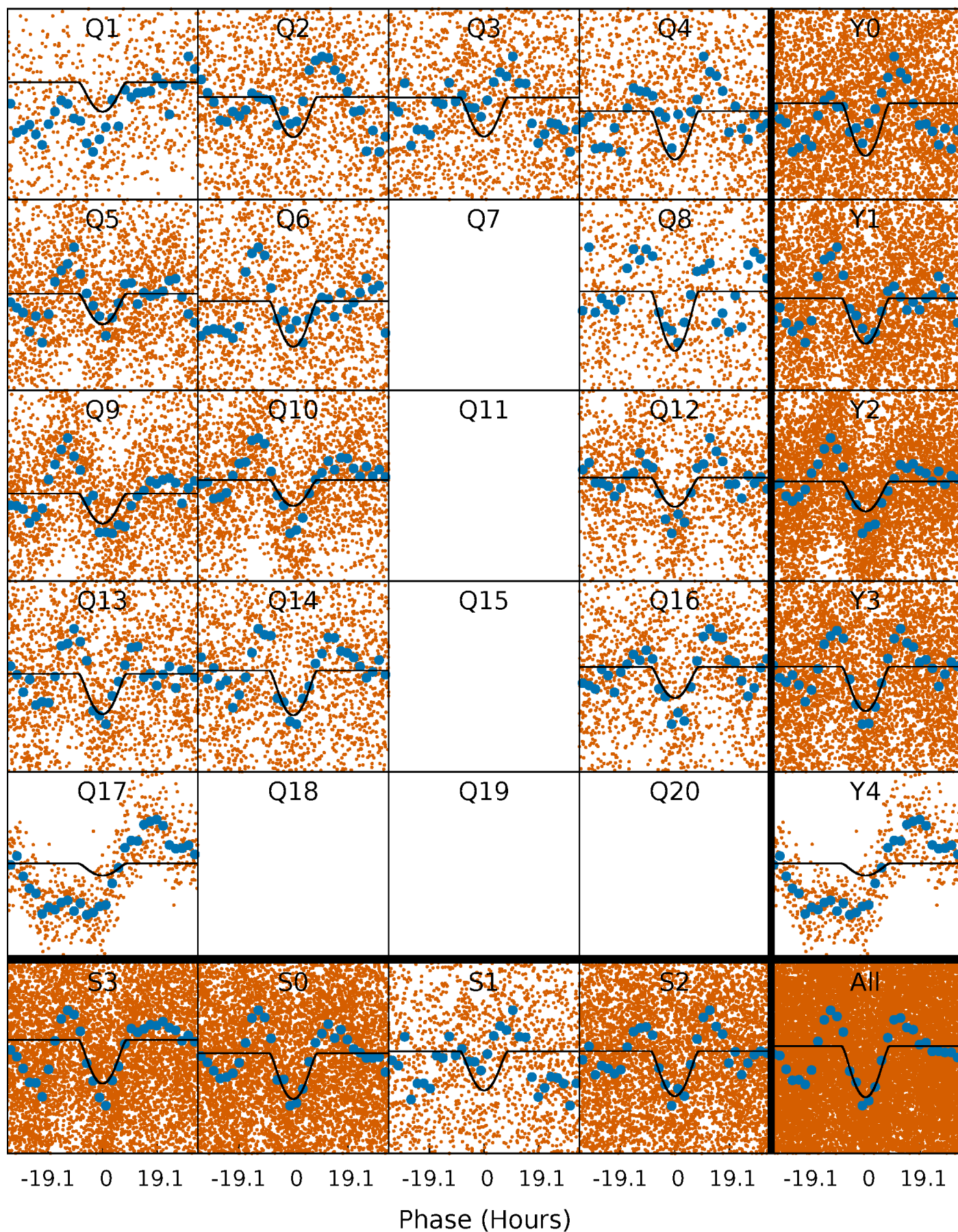
PDC Quarter-Phased Transit Curves

TCE 010937628-01 P= 5.364615 Days $T_0=136.305025$ (BKJD)



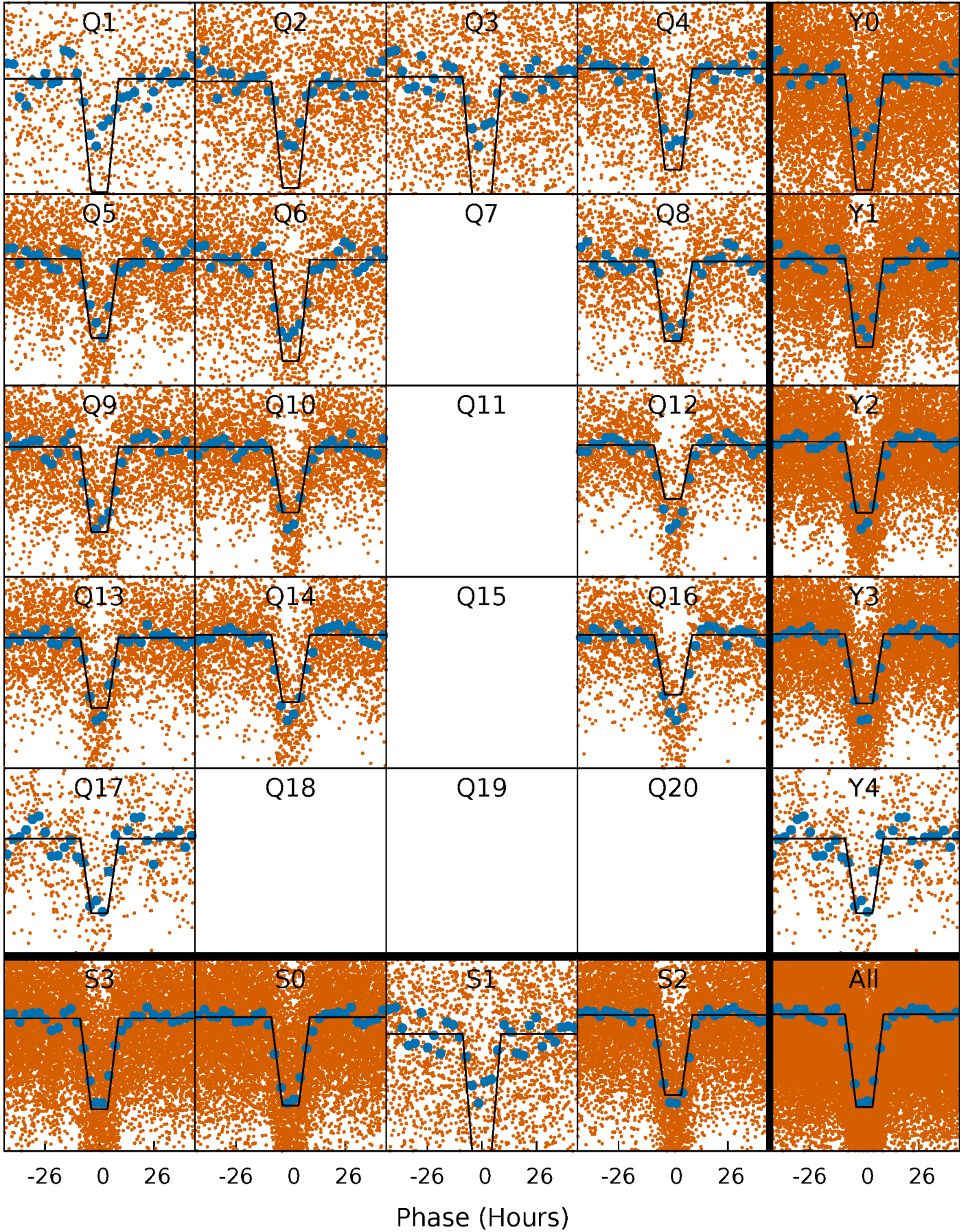
DV Quarter-Phased Transit Curves

TCE 010937628-01 P= 5.364615 Days $T_0=136.305025$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

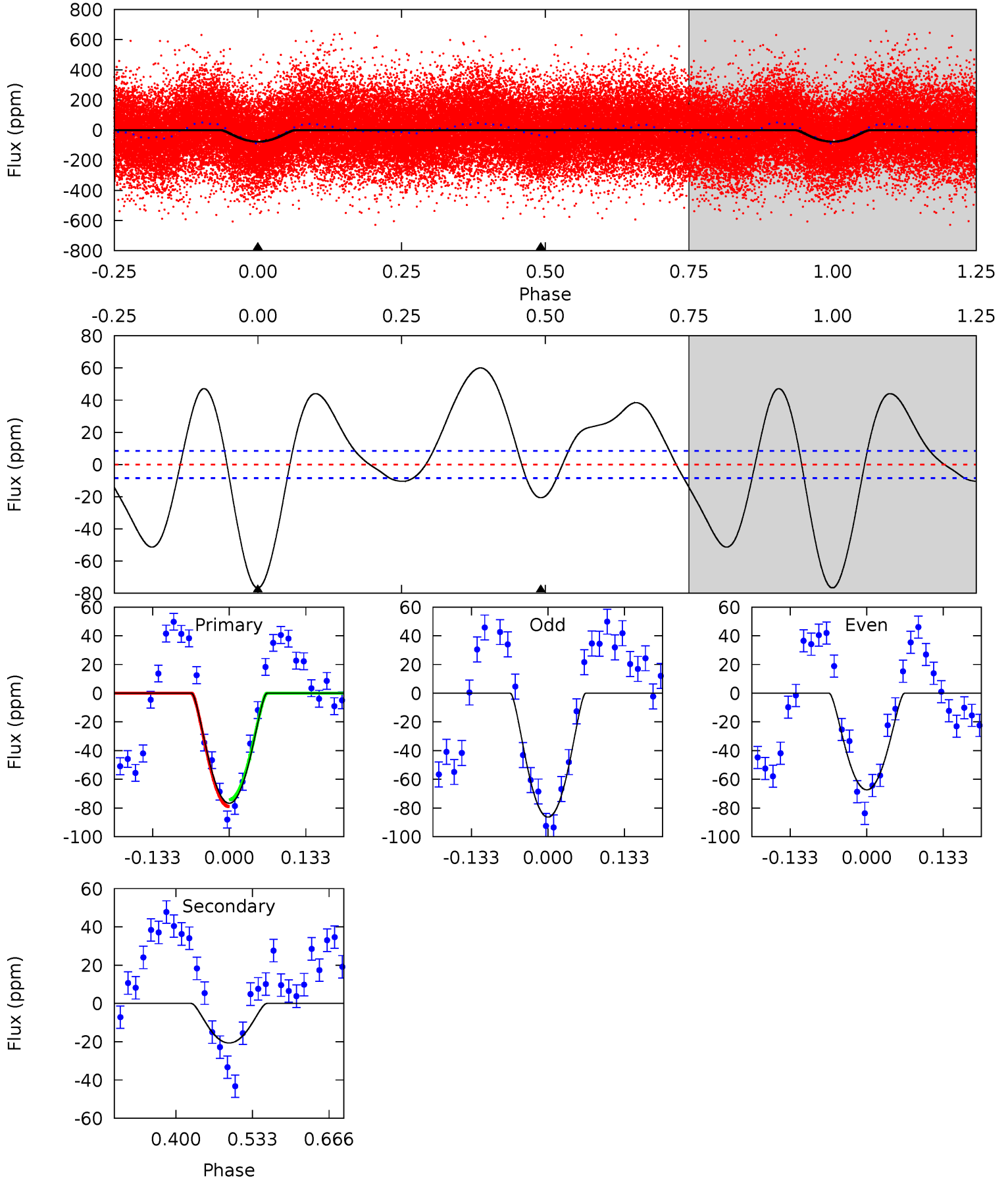
TCE 010937628-01 P= 5.364625 Days $T_0=136.309163$ (BKJD)



DV Model-Shift Uniqueness Test

010937628-01, P = 5.364615 Days, E = 130.940410 Days

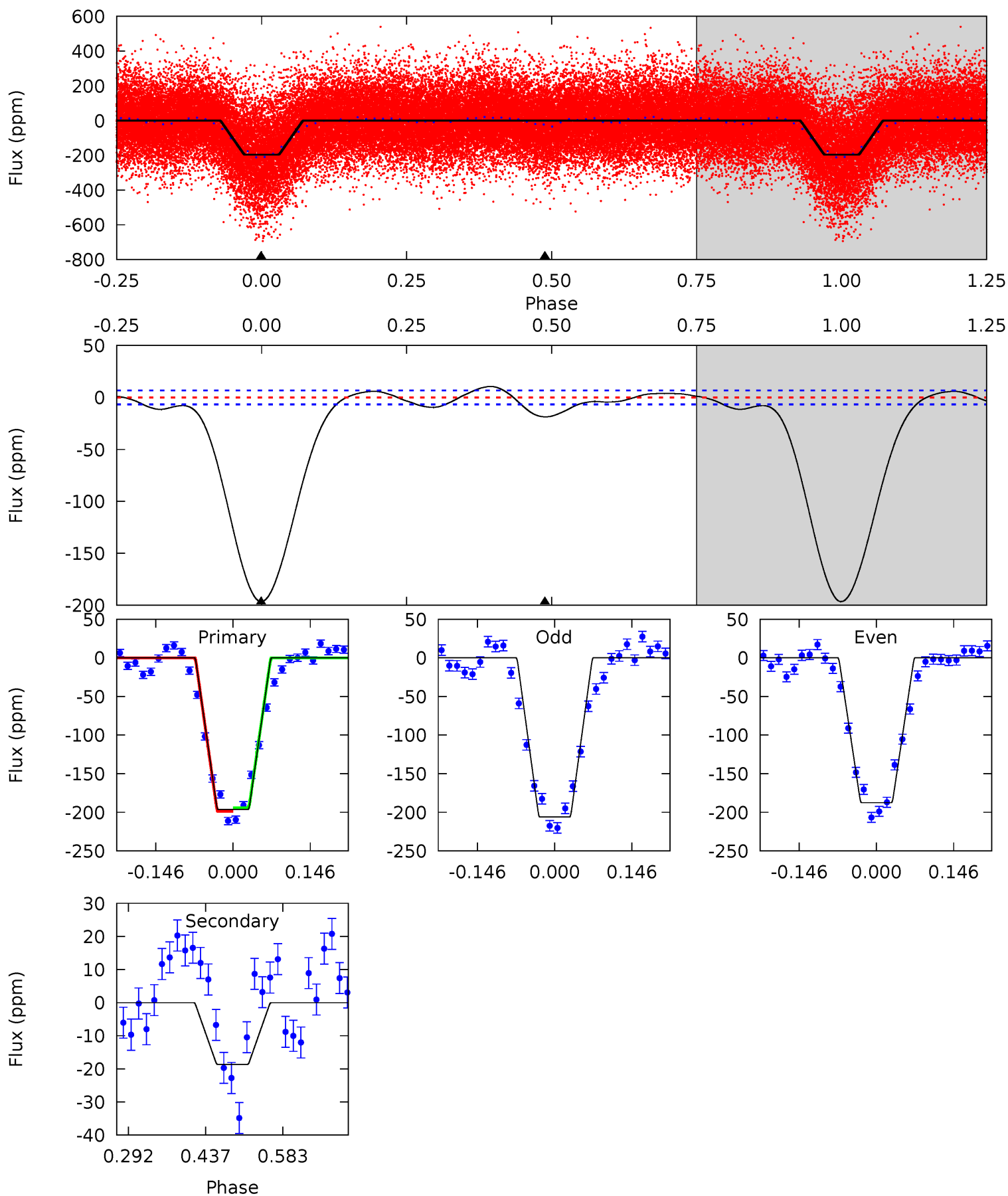
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.8	11.0	0	0	4.50	1.50	14.0	40.8	40.8	11.0	11.0	5.07	1.14	0.44	1.25



Alt Model-Shift Uniqueness Test

010937628-01, P = 5.364625 Days, E = 130.944538 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
131.1	12.5	0	0	4.49	1.45	3.64	131.1	131.1	12.5	12.5	6.18	0.96	0.05	1.51



Stellar Parameters For KIC 010937628

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6751^{+169}_{-203}	$3.729^{+0.308}_{-0.082}$	$-0.500^{+0.350}_{-0.250}$	$2.658^{+0.423}_{-0.986}$	$1.382^{+0.220}_{-0.294}$	$0.104^{+0.224}_{-0.033}$
	+3%/-3%	+8%/-2%	+70%/-50%	+16%/-37%	+16%/-21%	+216%/-32%
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 010937628-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 2	$3.70^{+2.24}_{-2.05}$	2559^{+158}_{-229}	4088^{+1657}_{-662}	$3.739^{+14.667}_{-2.289}$
Alt.	-19 ± 1	$4.13^{+2.21}_{-2.14}$	2574^{+138}_{-240}	3816^{+1261}_{-537}	$2.683^{+8.659}_{-1.522}$

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

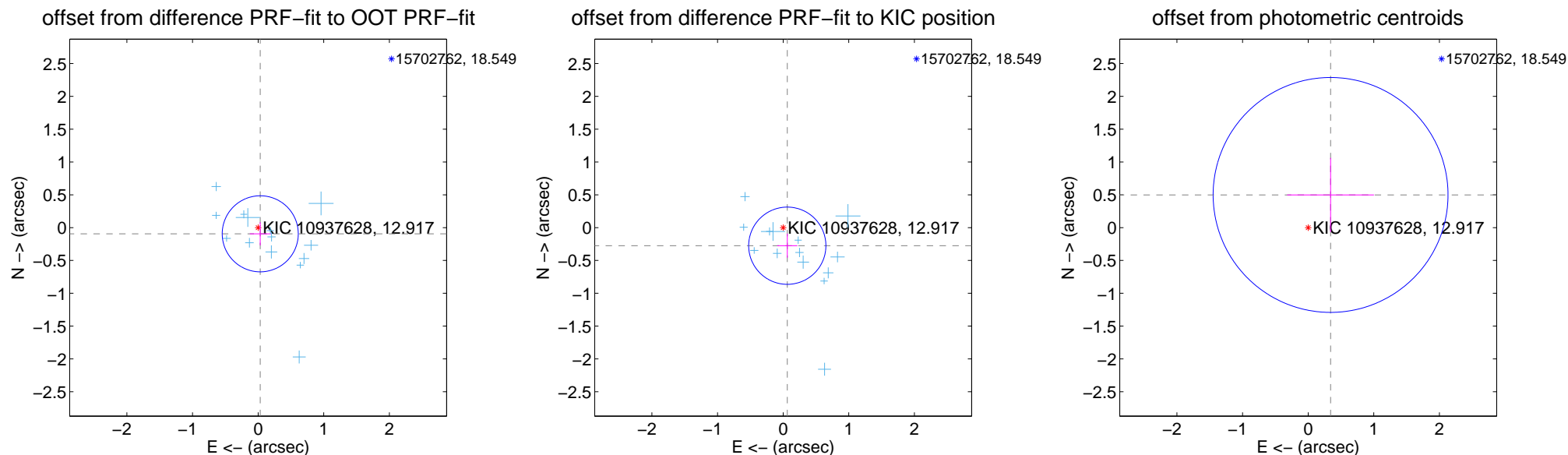
DV Centroid Data

Supplemental centroid analysis for 010937628-01. Kepler magnitude: 12.92. Transit SNR 12.19

There are 14 quarters with good PRF difference image offsets

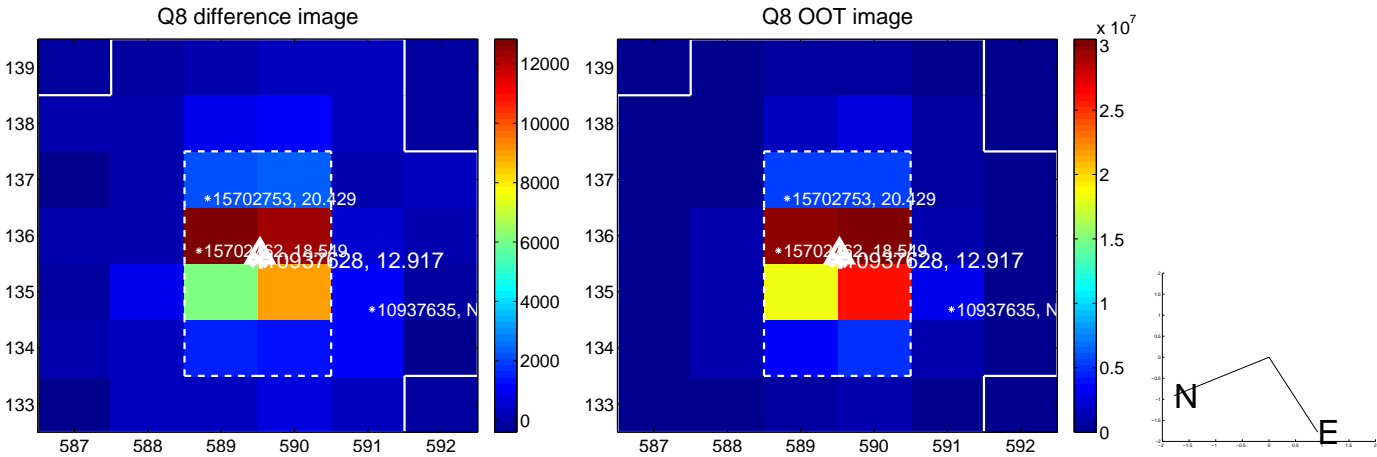
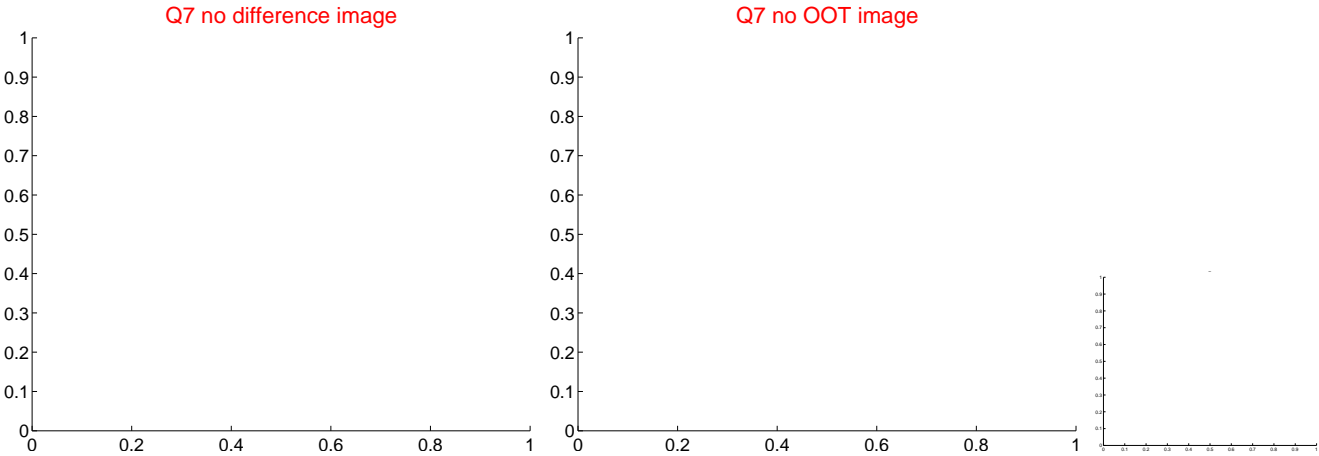
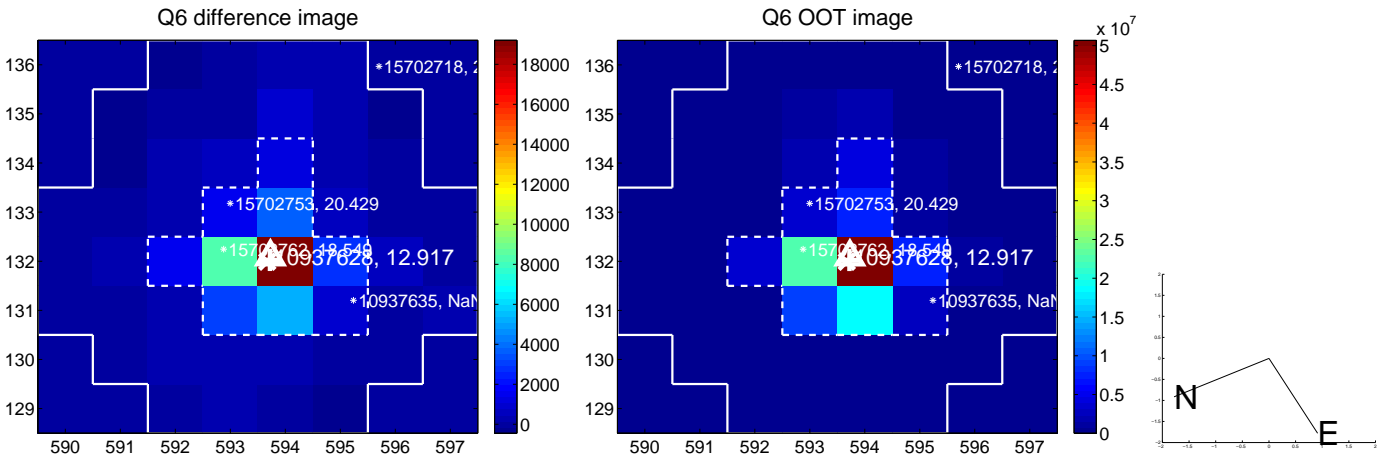
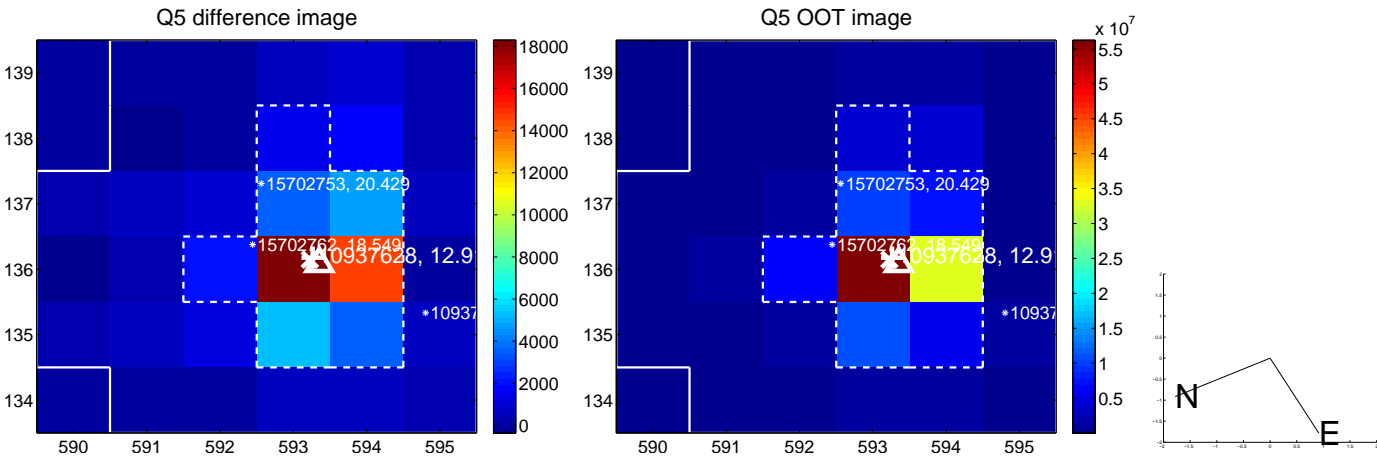
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.099 ± 0.193	0.51	-0.032 ± 0.159	-0.094 ± 0.176
PRF-fit source offset from KIC position	0.283 ± 0.196	1.44	-0.063 ± 0.153	-0.275 ± 0.184
photometric centroid source offset	0.60 ± 0.60	1.01	-0.34 ± 0.66	0.50 ± 0.56

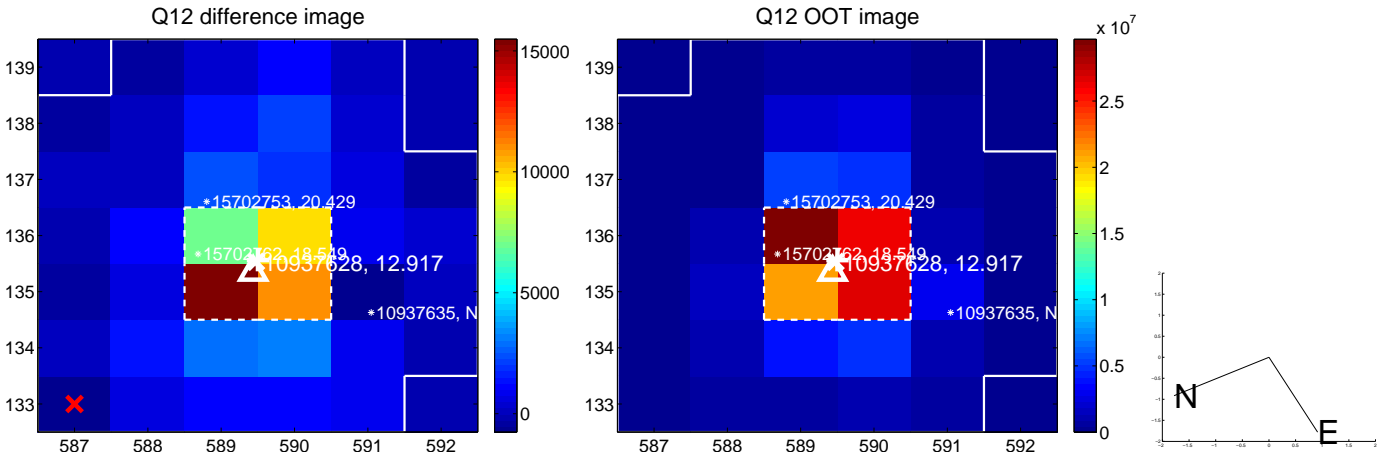
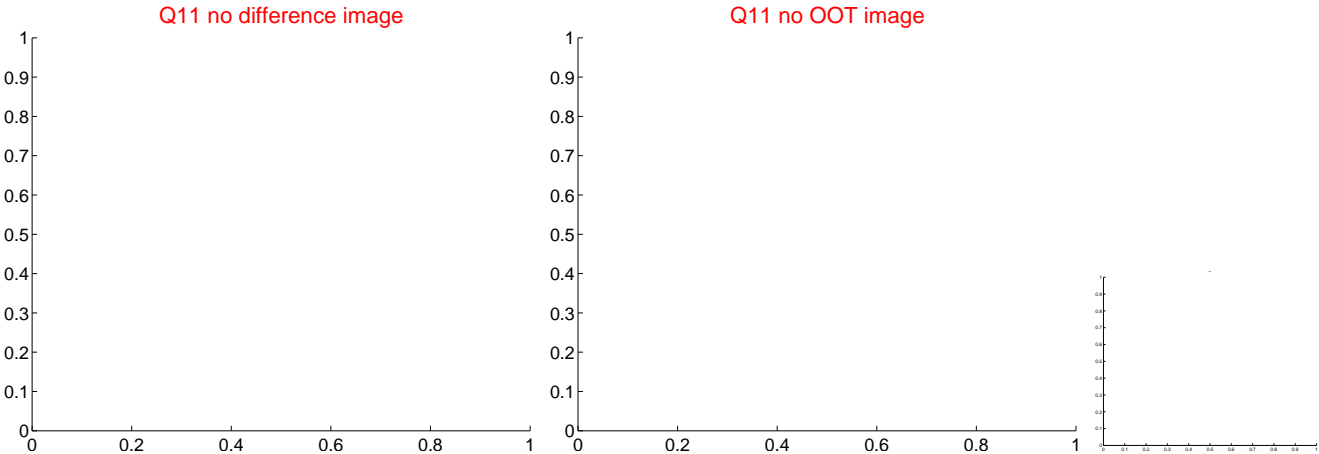
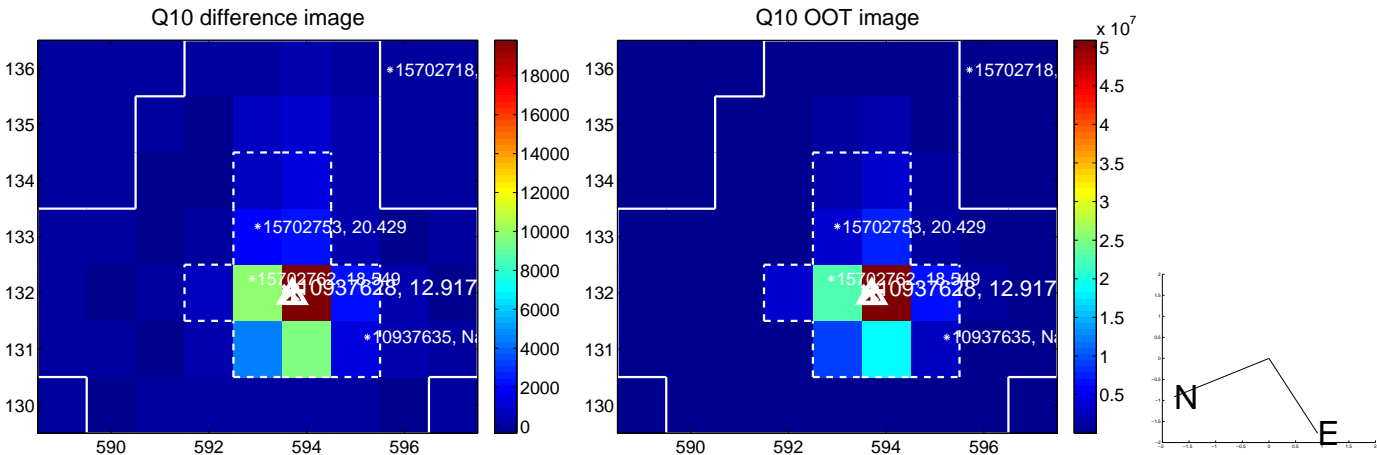
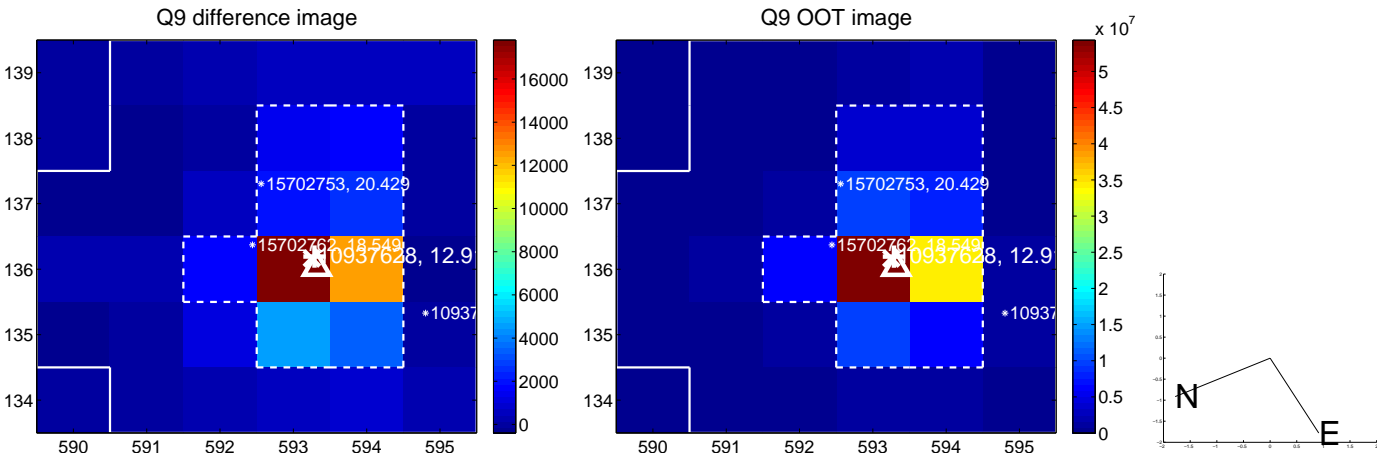


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

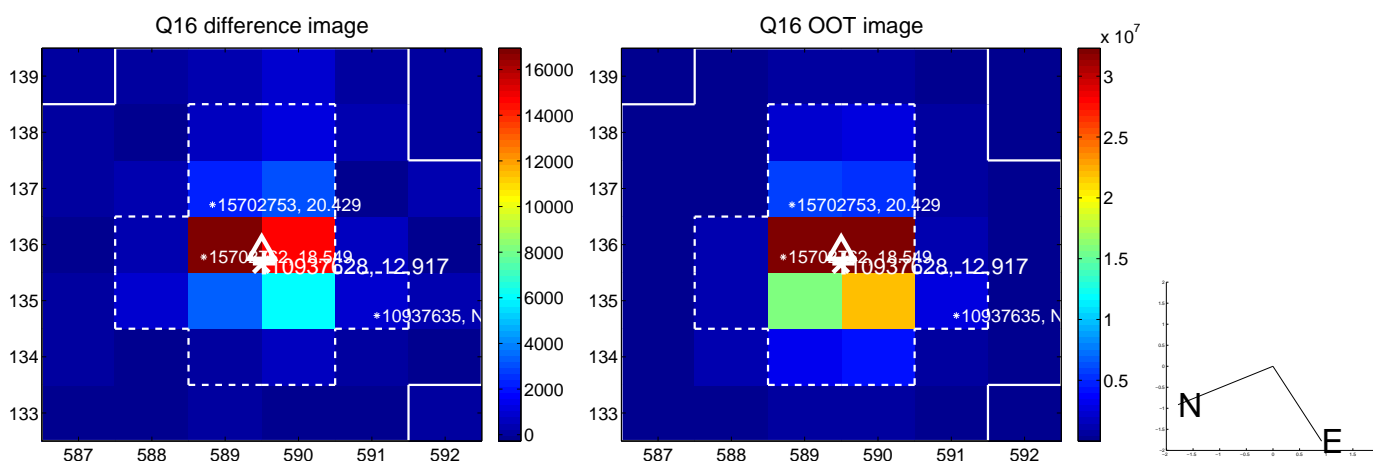
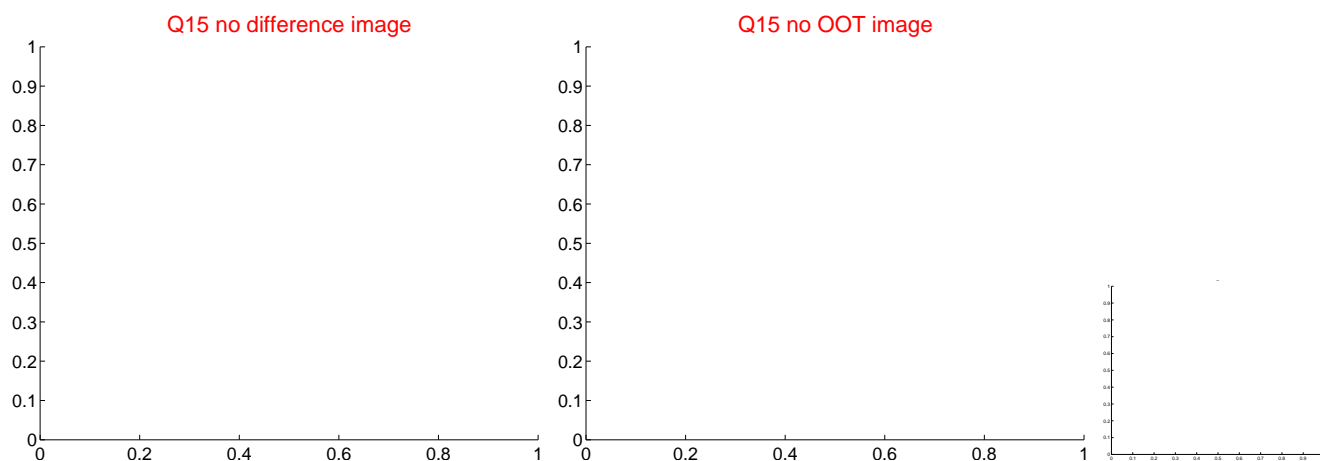
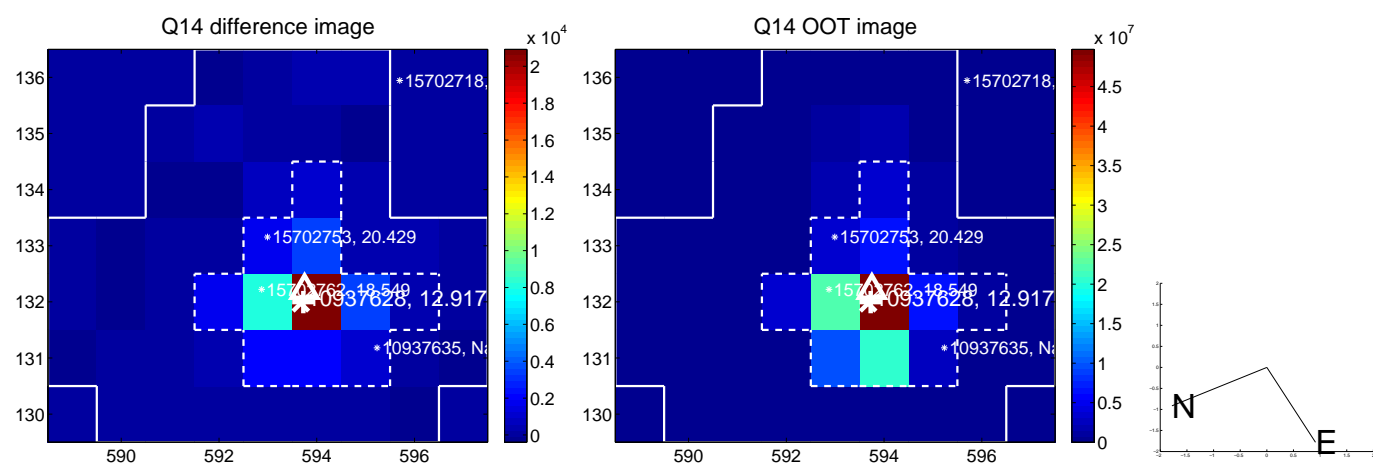
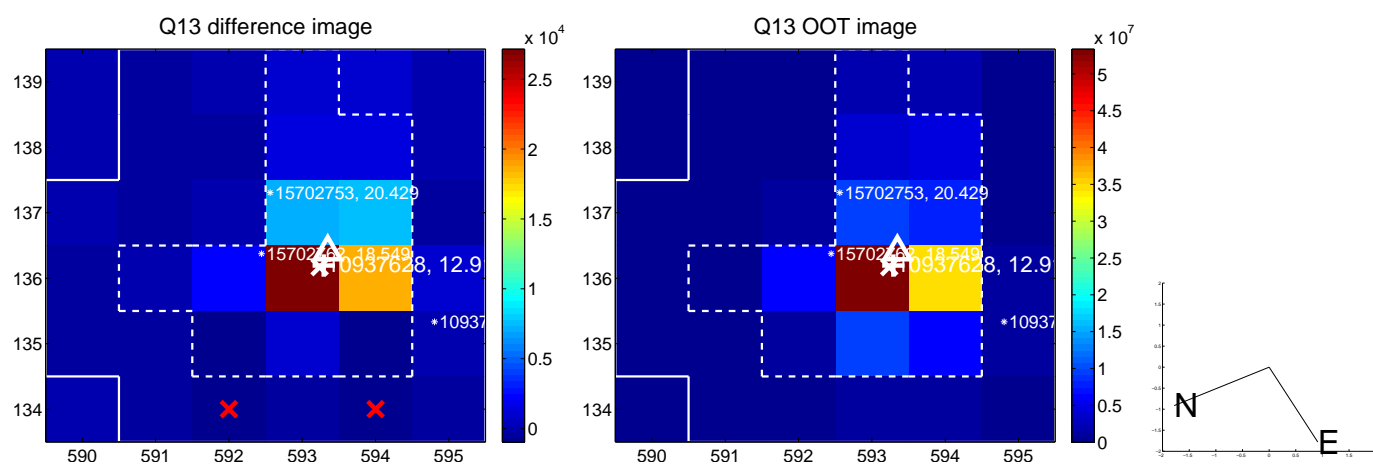
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



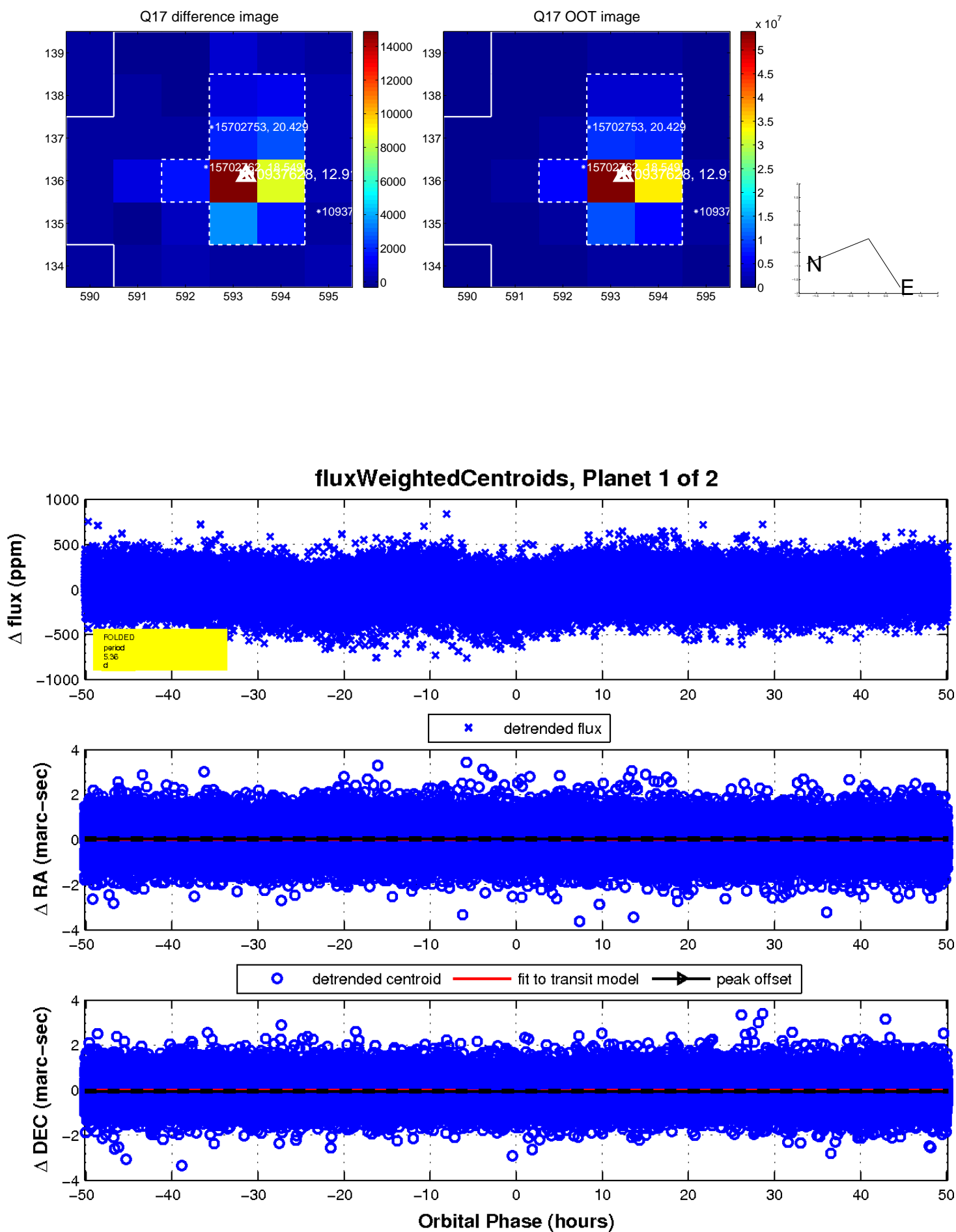
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

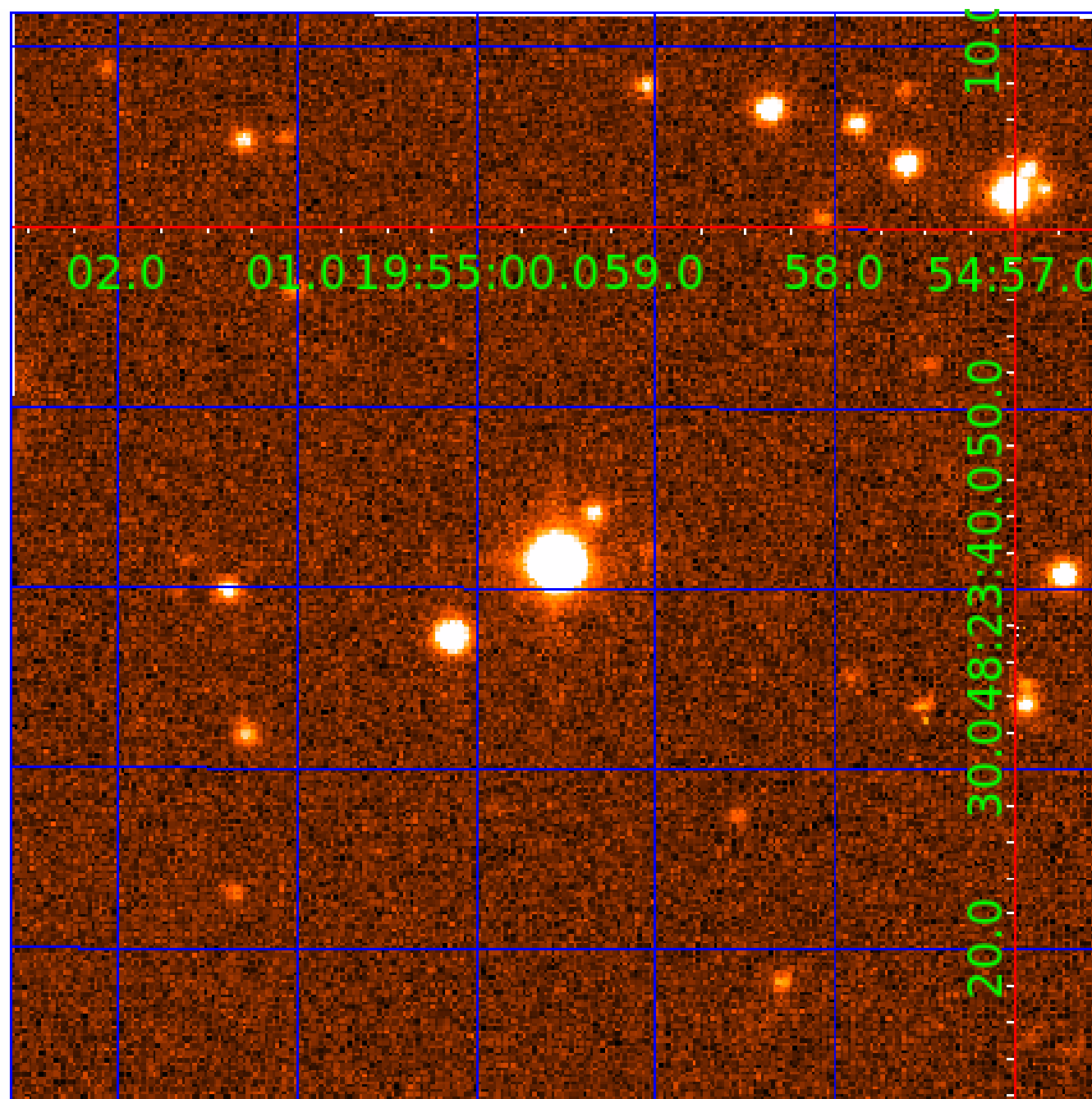


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010937628

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})
010937628-01	OBS	No	5.364615	136.305025	72.2	16.709	13.4	12.2	2.66	6751	3.75	2946.81
010937628-02	OBS	No	5.365009	133.800792	25.8	22.546	9.7	6.4	2.66	6751	1.40	2946.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010937628-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
010937628-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

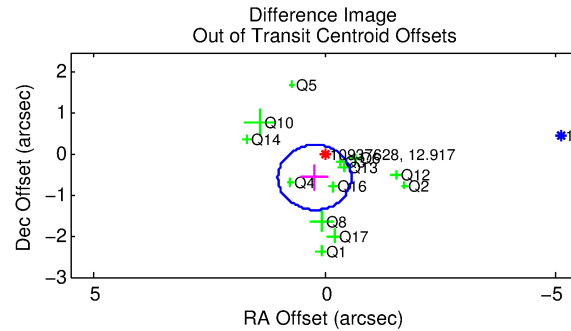
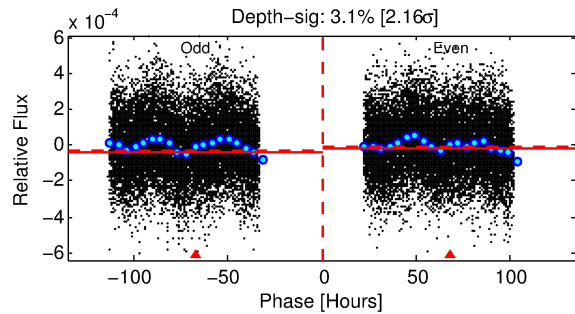
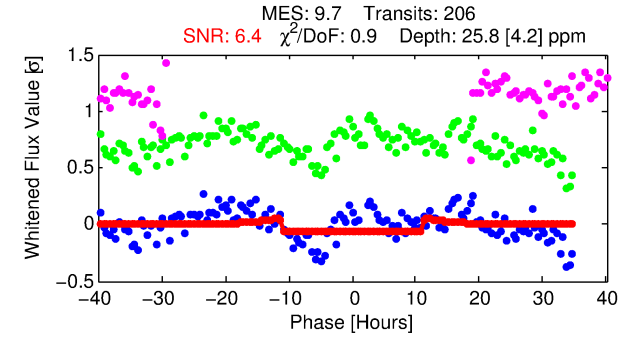
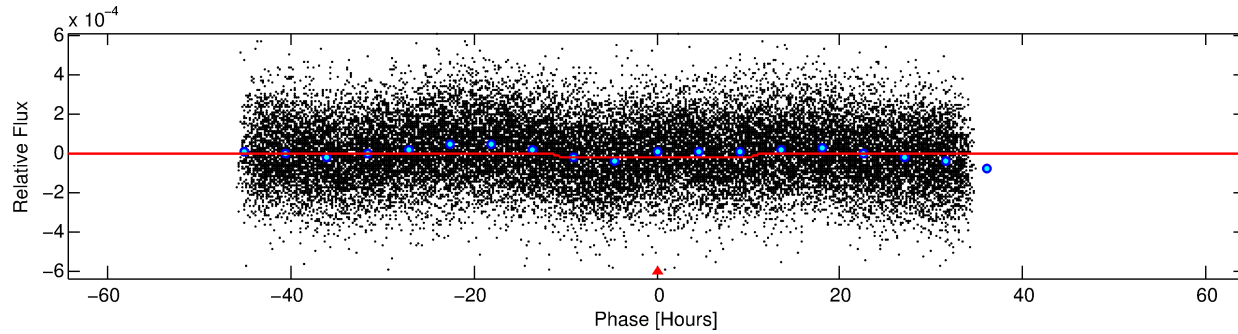
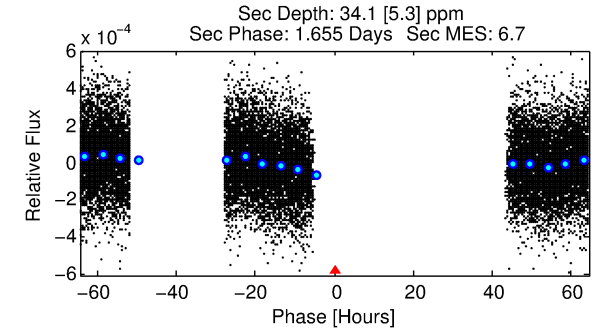
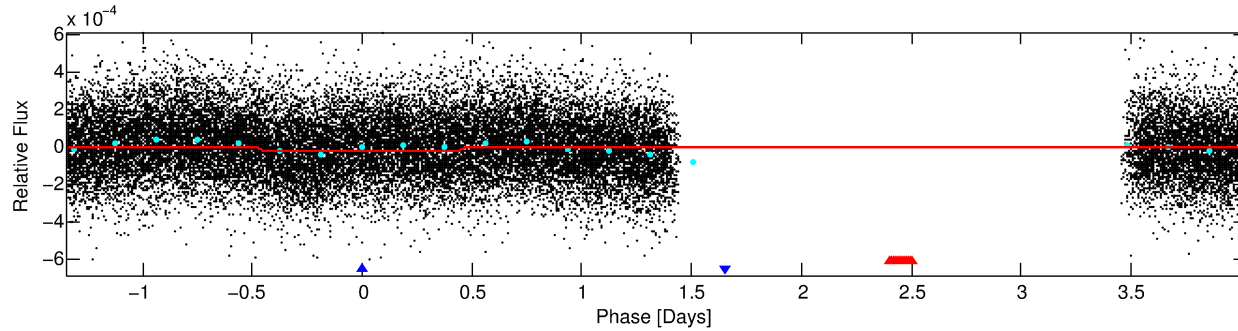
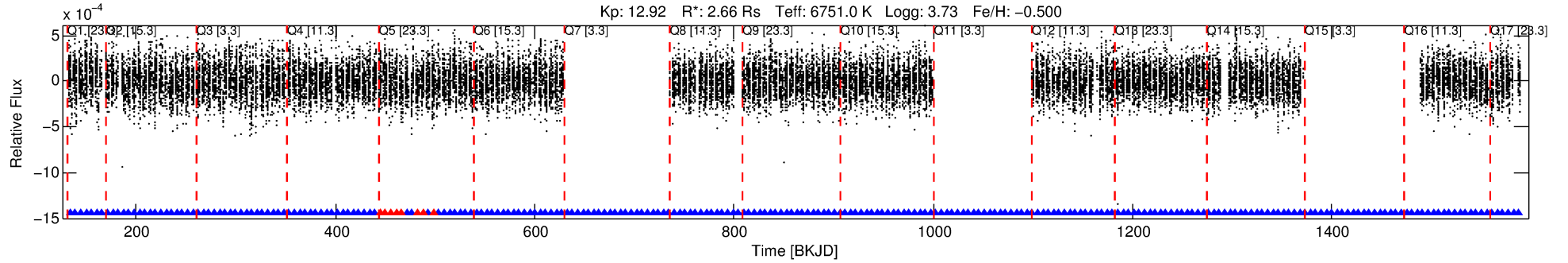
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010937628-02

No Significant Match Found

DV One-Page Summary

KIC: 10937628 Candidate: 2 of 2 Period: 5.365 d



DV Fit Results:

Period = 5.36501 [0.00010] d
Epoch = 133.8008 [0.0136] BKJD
Rp/R* = 0.0048 [0.0017]
b = 0.52 [2.21]
Seff = 2946.52 [1611.62]
Teq = 1879 [257] K
Rp = 1.40 [0.71] Re
a = 0.0668 [0.0229] AU
Ag = 42.65 [37.78] [1.10σ]
Teffp = 7423 [1331] K [4.09σ]

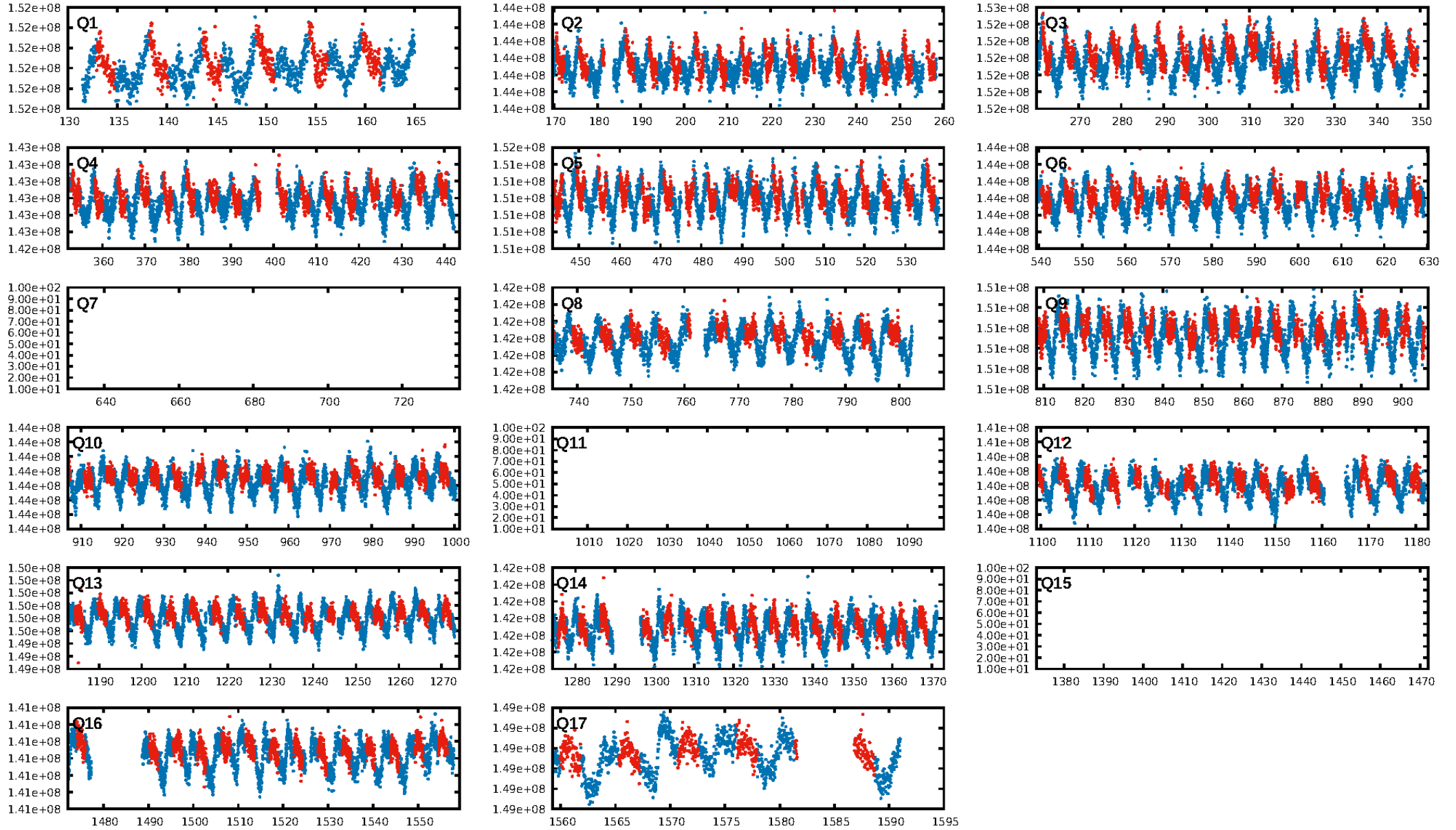
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.96 [187/195]
GhostDiagnostic-chr: 1.217
Centroid-sig: 0.2%
Centroid-so: 2.774 arcsec [2.16σ]
OotOffset-rm: 0.604 arcsec [2.28σ]
KicOffset-rm: 0.771 arcsec [2.84σ]
OotOffset-st: 4/1/4/4 [13]
KicOffset-st: 4/1/4/4 [13]
DiffImageQuality-fgm: 0.54 [7/13]
DiffImageOverlap-fno: 1.00 [14/14]

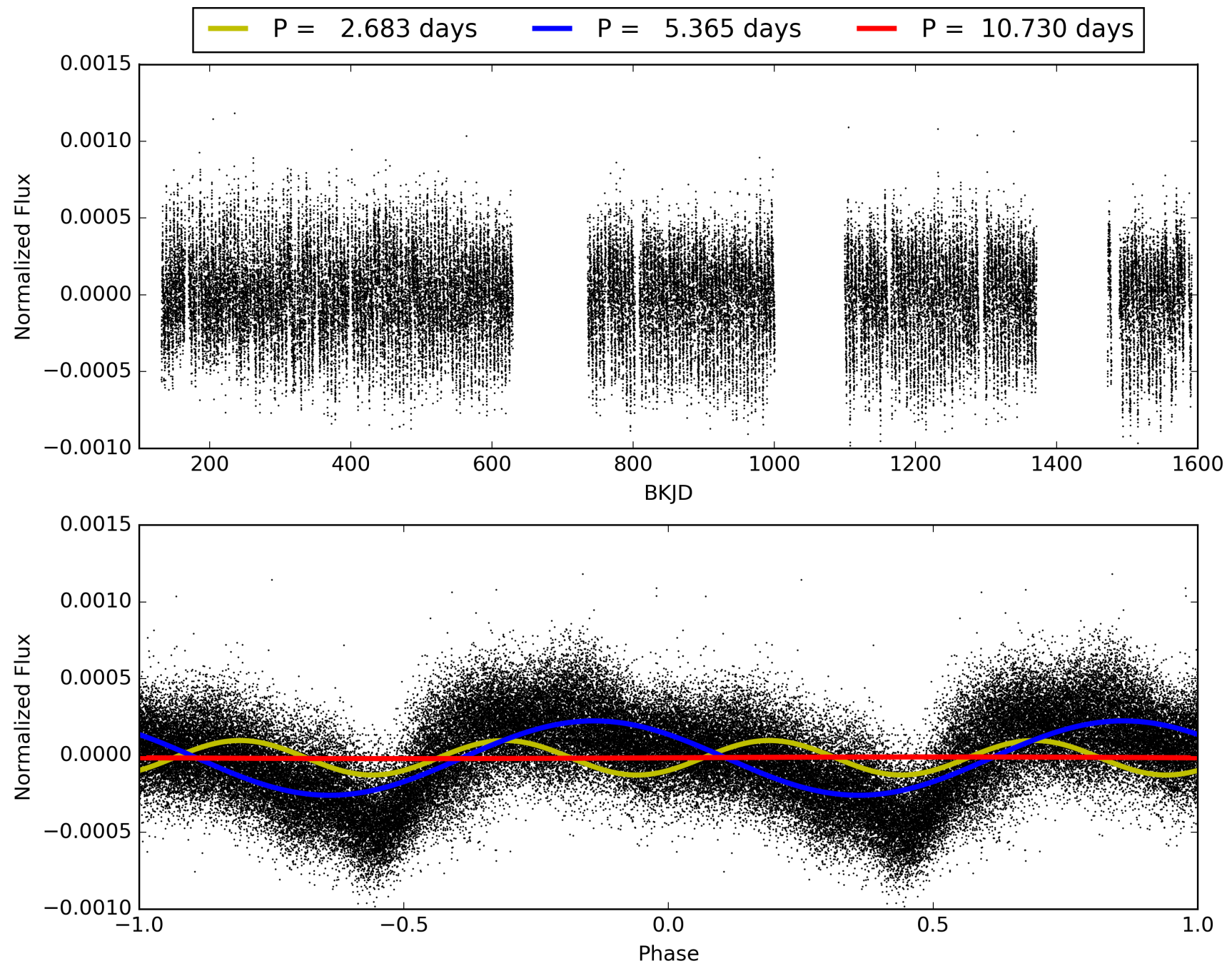
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010937628-02, PDC Light Curves

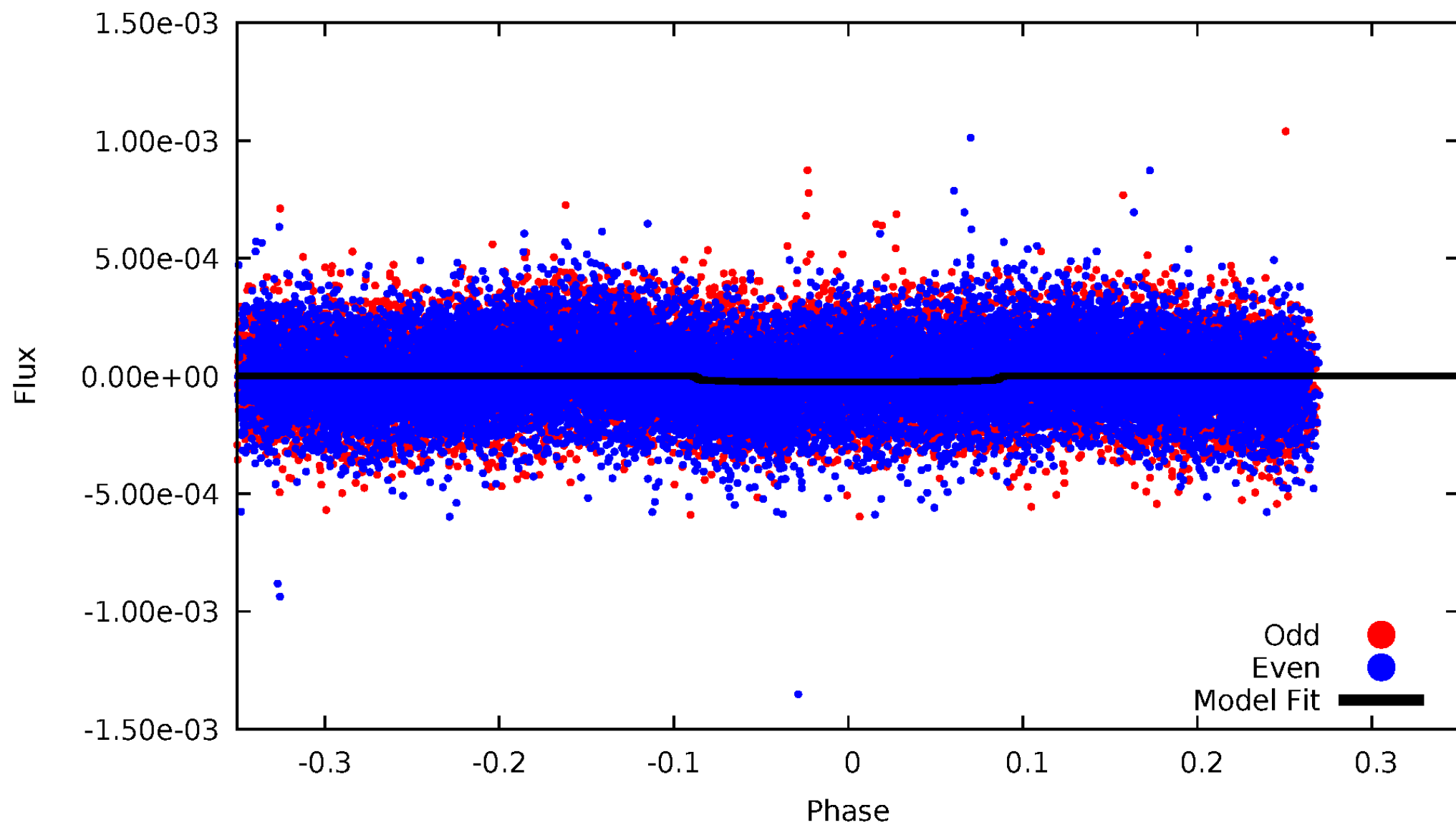


TCE 010937628-02



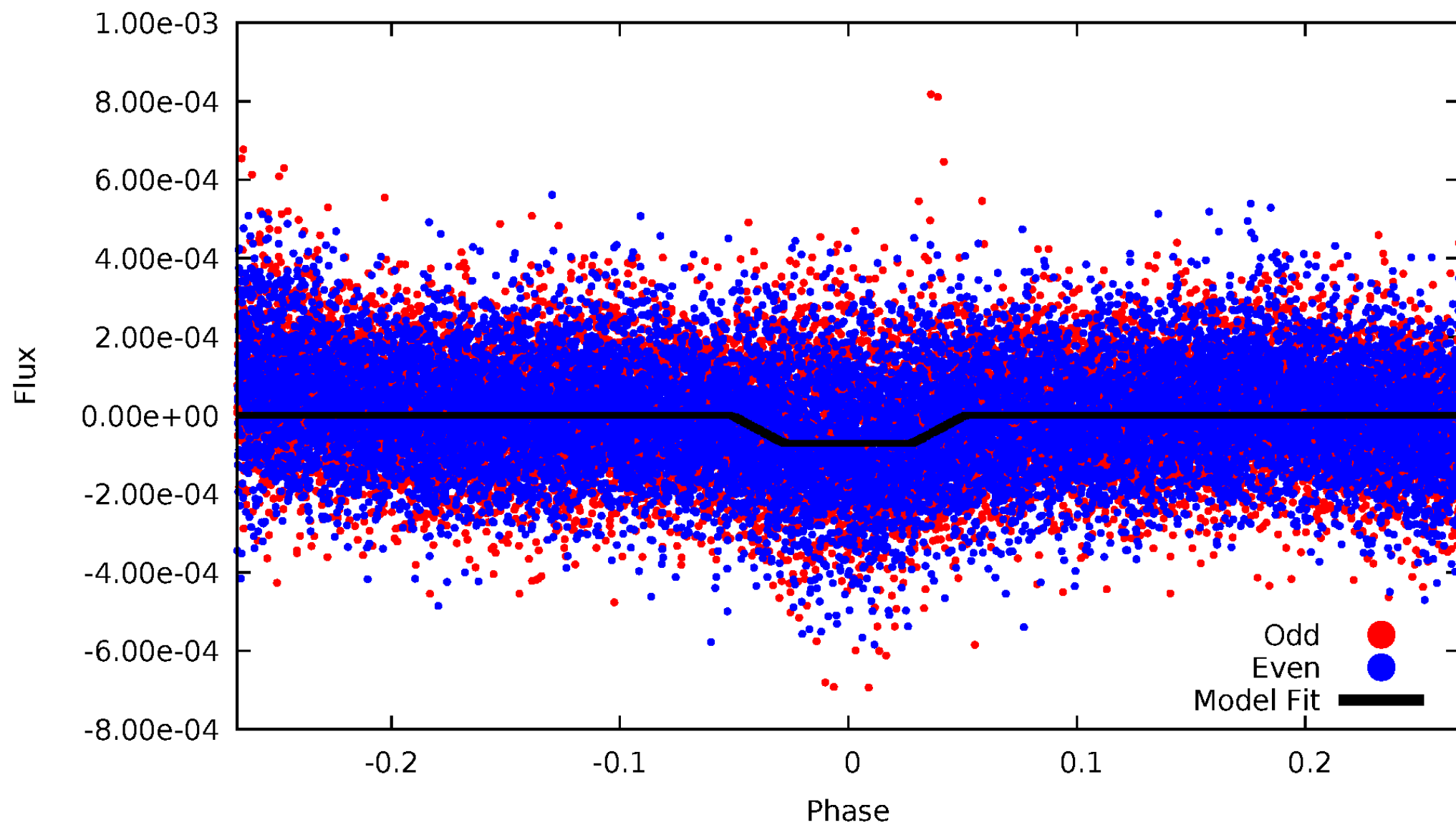
DV Odd/Even

TCE 010937628-02



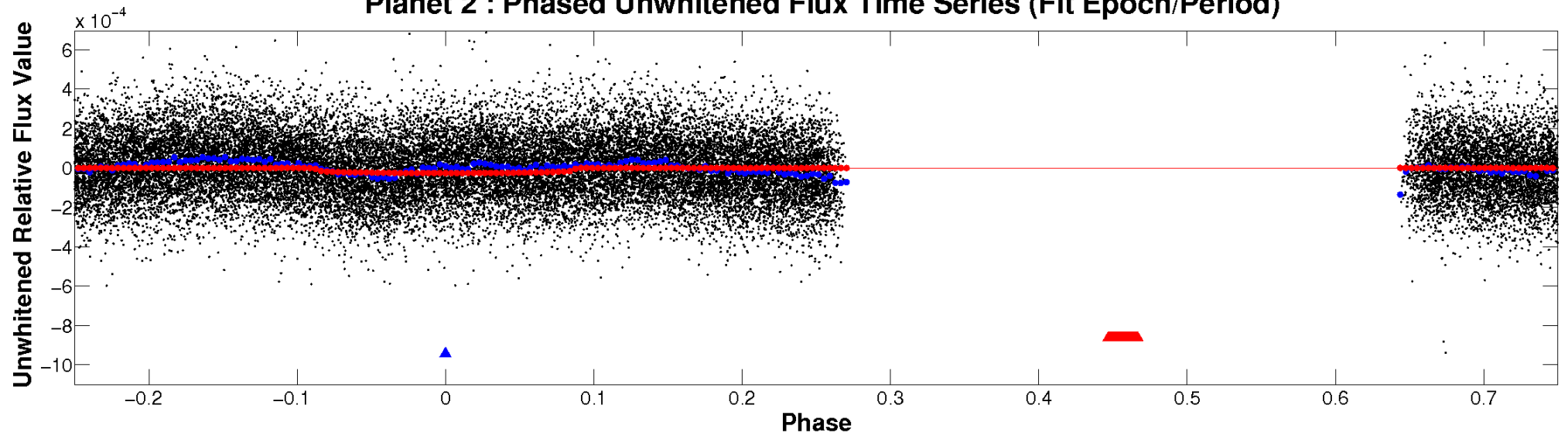
ALT Odd/Even

TCE 010937628-02

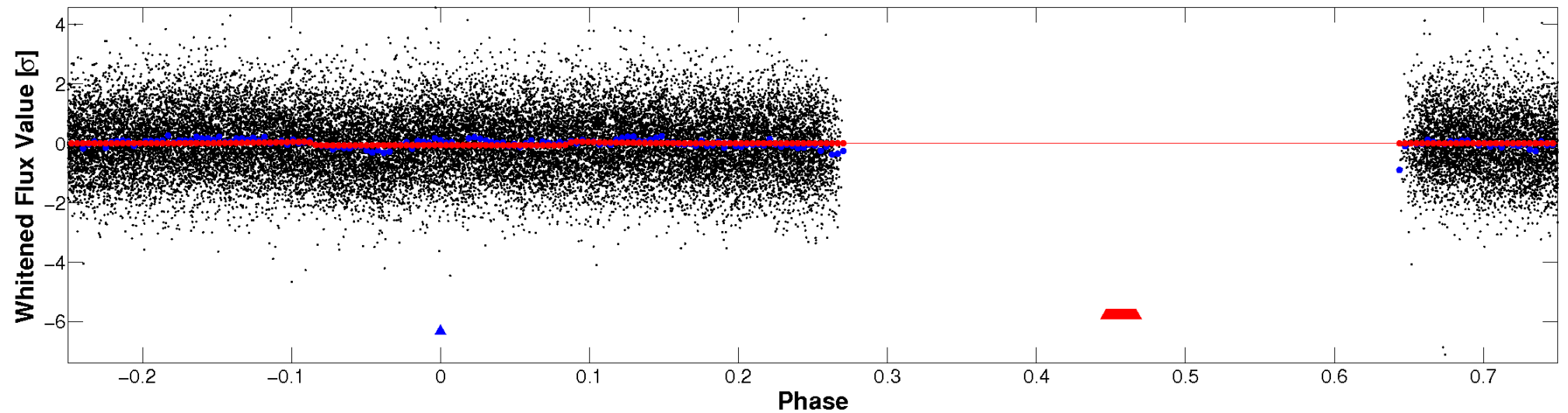


Non-Whitened Vs. Whitened Light Curve

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

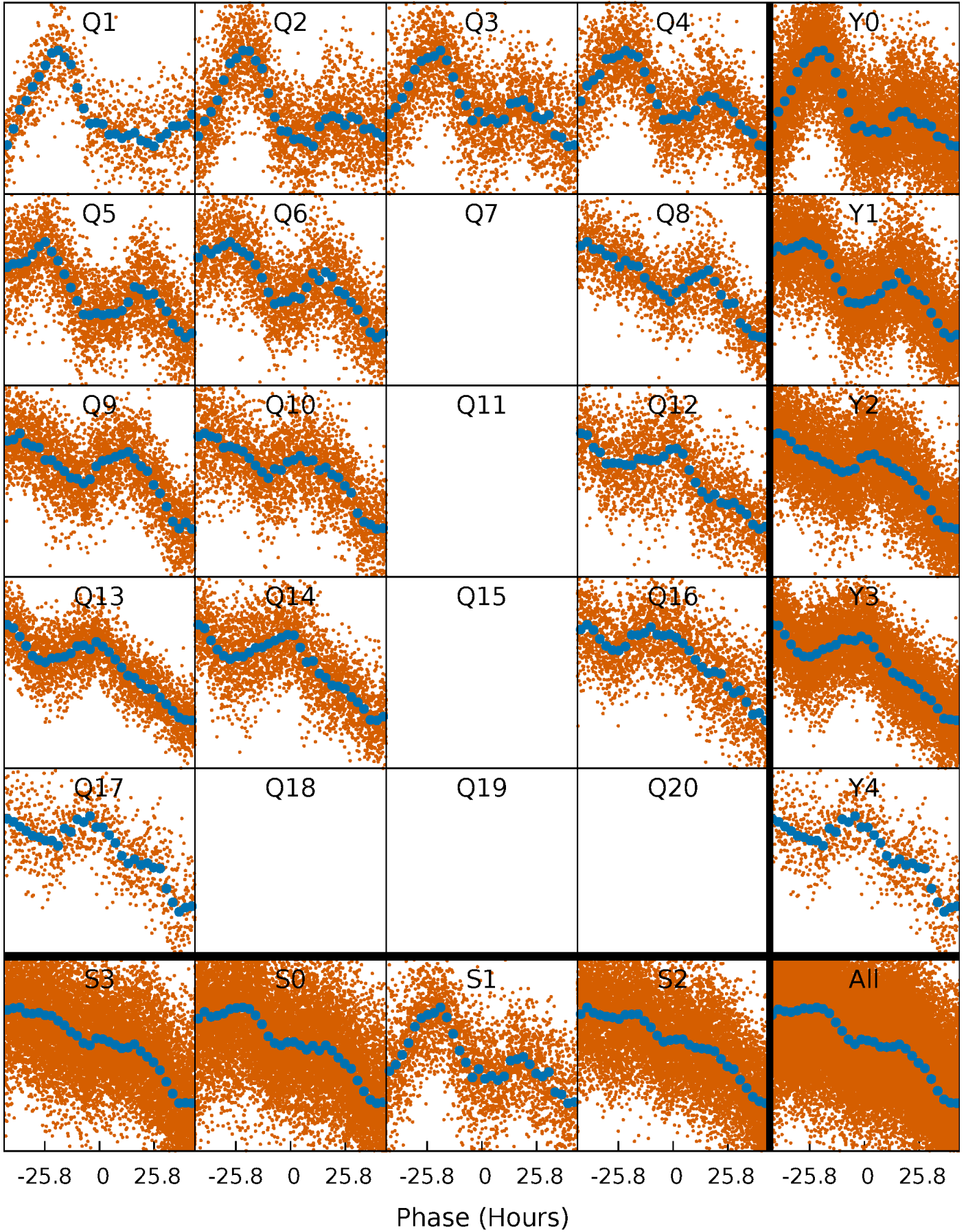


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



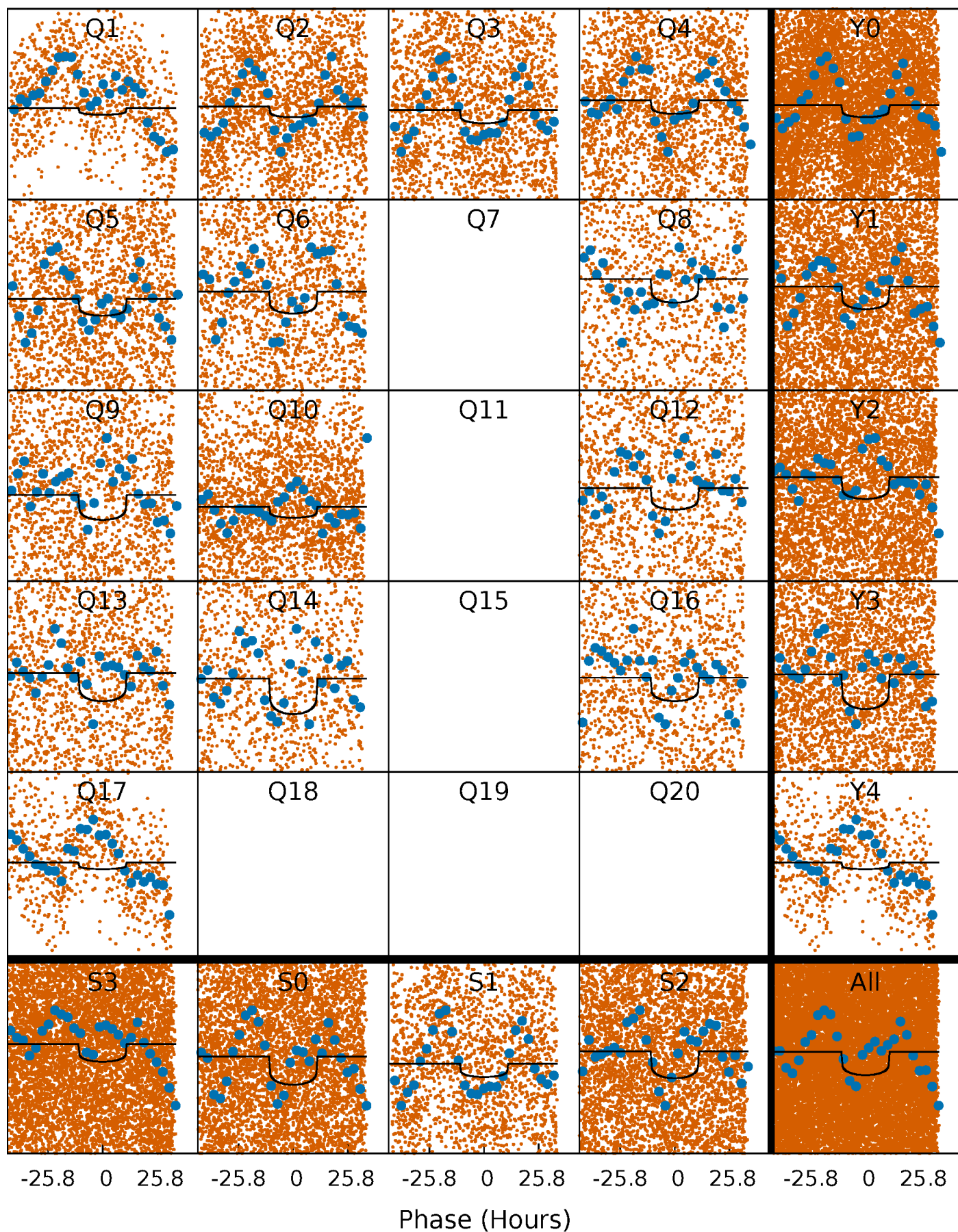
PDC Quarter-Phased Transit Curves

TCE 010937628-02 P= 5.365009 Days $T_0=133.800792$ (BKJD)



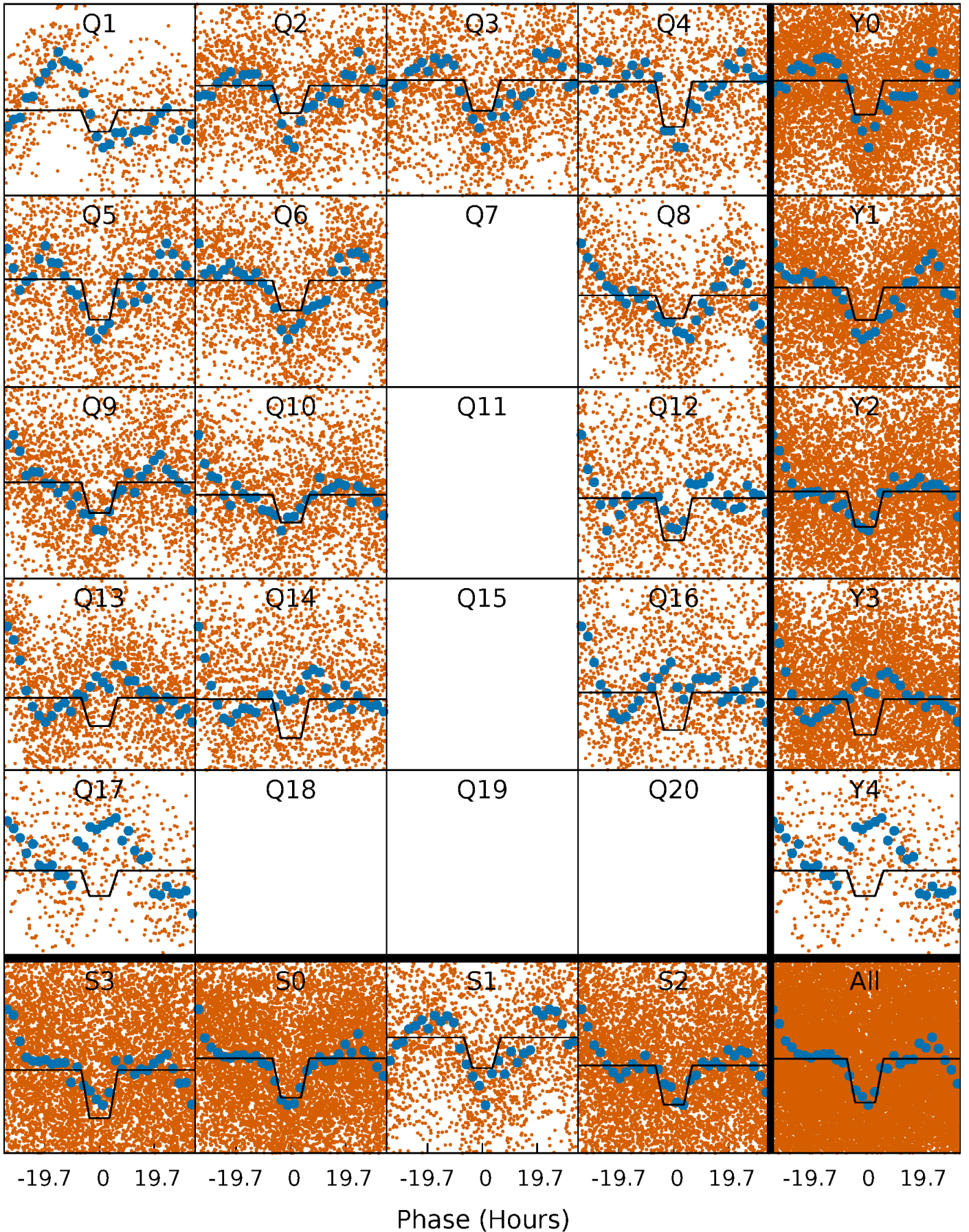
DV Quarter-Phased Transit Curves

TCE 010937628-02 $P = 5.365009$ Days $T_0 = 133.800792$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

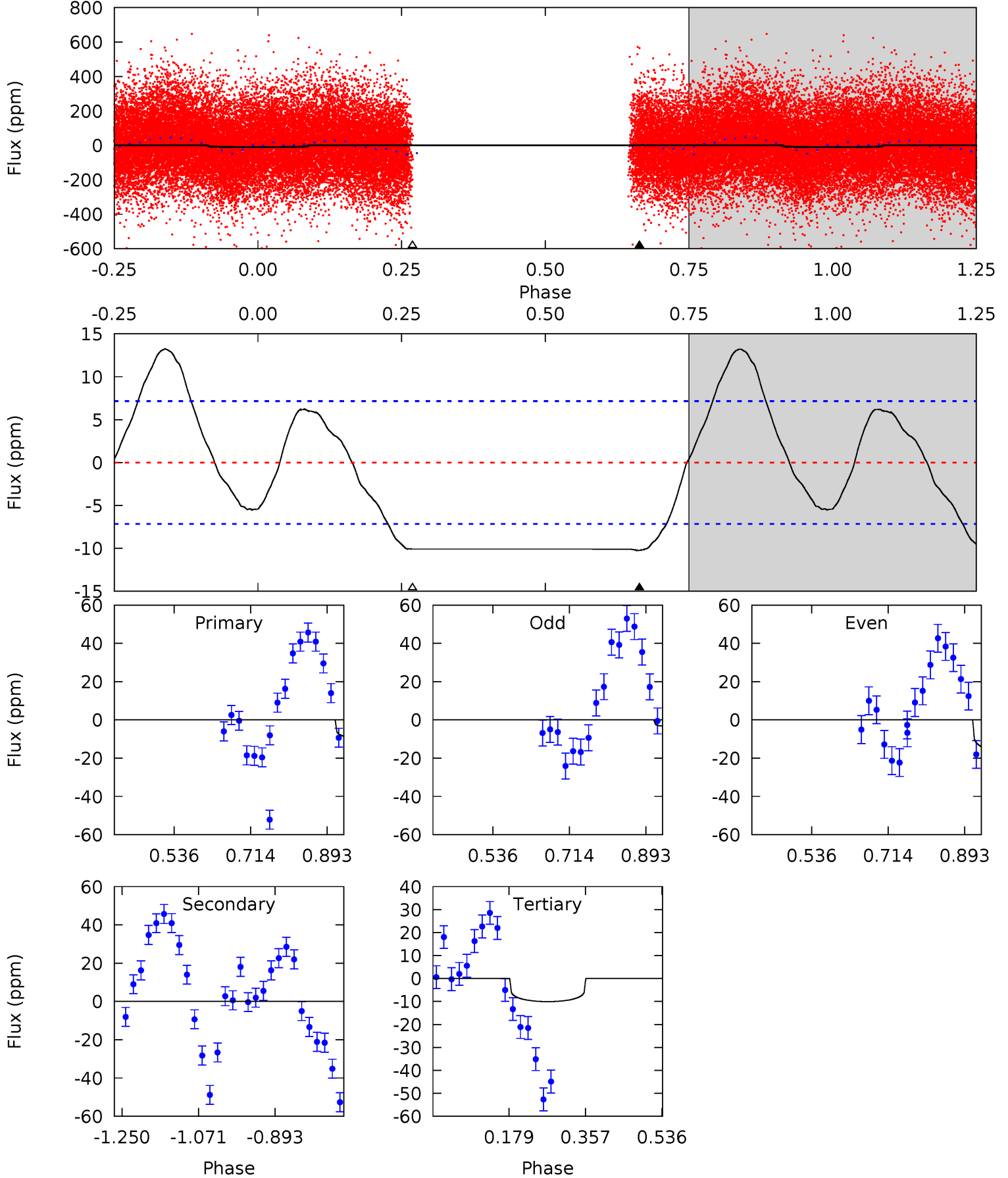
TCE 010937628-02 P= 5.364627 Days $T_0=133.550561$ (BKJD)



DV Model-Shift Uniqueness Test

010937628-02, P = 5.365009 Days, E = 128.435783 Days

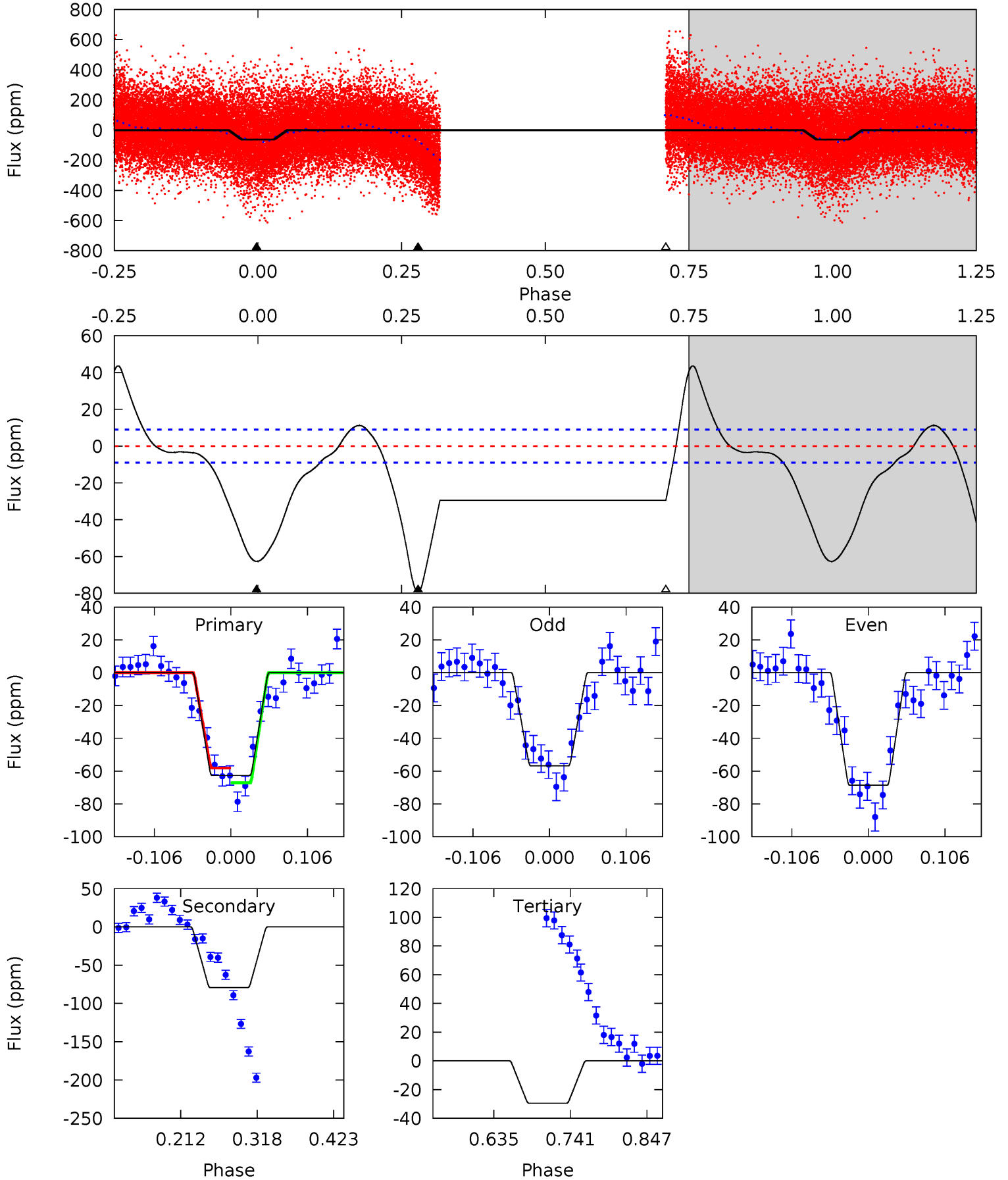
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.36	0	6.25	0	4.44	1.35	3.56	0.10	6.36	-6.25	0	4.03	0.48	0.56	6.35



Alt Model-Shift Uniqueness Test

010937628-02, P = 5.364627 Days, E = 128.185934 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.8	40.1	14.9	0	4.55	1.62	7.99	16.8	31.8	25.2	40.1	2.98	0.86	0.36	2.46



Stellar Parameters For KIC 010937628

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6751^{+169}_{-203}	$3.729^{+0.308}_{-0.082}$	$-0.500^{+0.350}_{-0.250}$	$2.658^{+0.423}_{-0.986}$	$1.382^{+0.220}_{-0.294}$	$0.104^{+0.224}_{-0.033}$
	+3%/-3%	+8%/-2%	+70%/-50%	+16%/-37%	+16%/-21%	+216%/-32%
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 010937628-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 2	$1.31^{+0.52}_{-0.50}$	2567^{+146}_{-216}	-2866^{+6685}_{-1086}	$-0.097^{+2.736}_{-2.525}$
Alt.	-79 ± 2	$2.35^{+0.65}_{-0.60}$	2571^{+161}_{-219}	6880^{+932}_{-648}	36^{+27}_{-14}

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 $A_{obs} \gg 1.0$

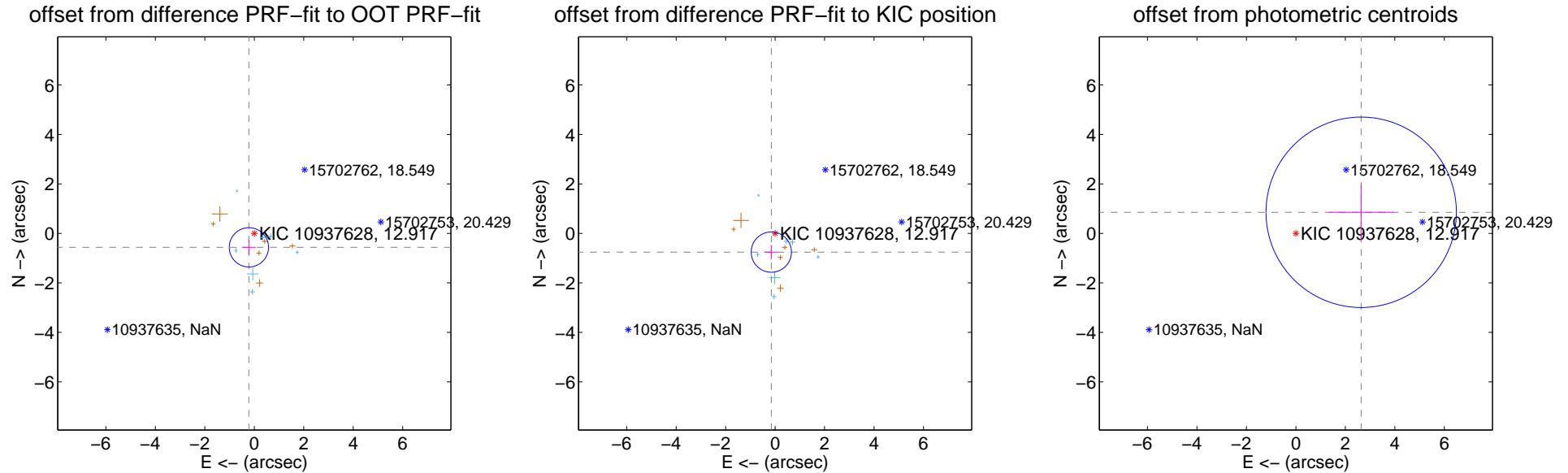
DV Centroid Data

Supplemental centroid analysis for 010937628-02. Kepler magnitude: 12.92. Transit SNR 6.37

There are 7 quarters with good PRF difference image offsets

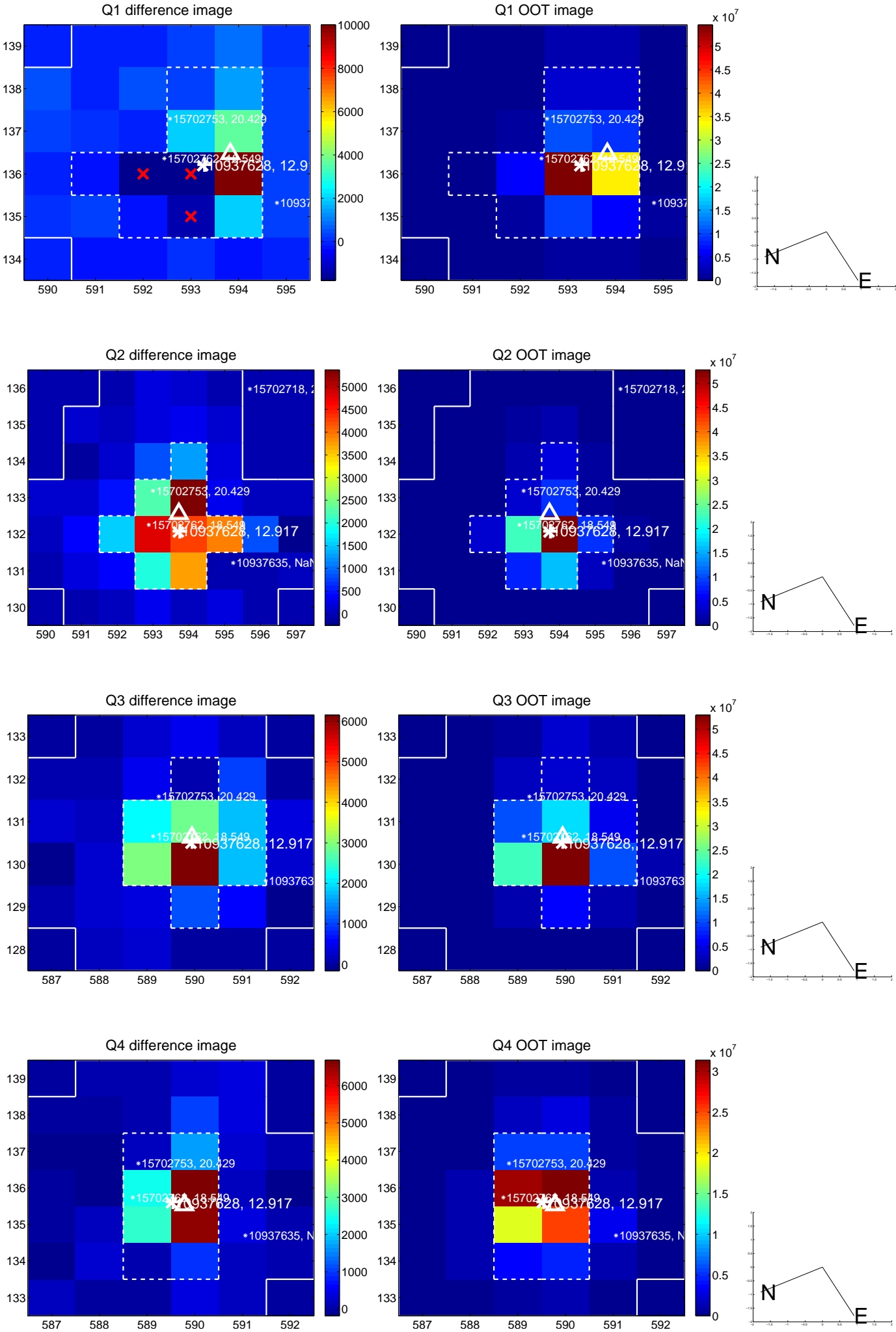
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.604 ± 0.265	2.28	0.218 ± 0.280	-0.563 ± 0.302
PRF-fit source offset from KIC position	0.771 ± 0.271	2.84	0.152 ± 0.268	-0.756 ± 0.292
photometric centroid source offset	2.77 ± 1.28	2.16	-2.64 ± 1.30	0.85 ± 1.11

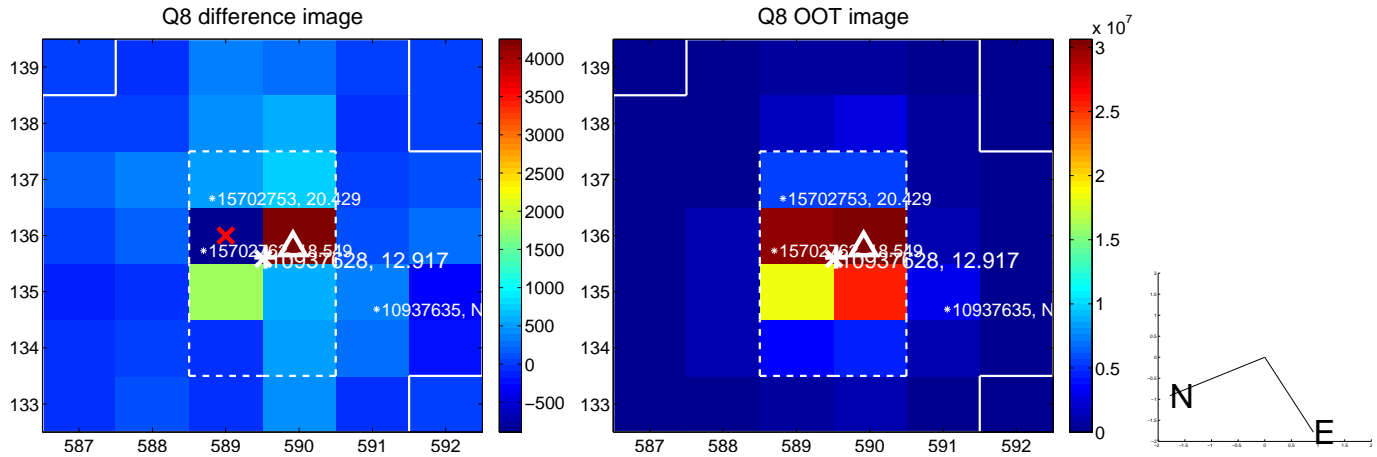
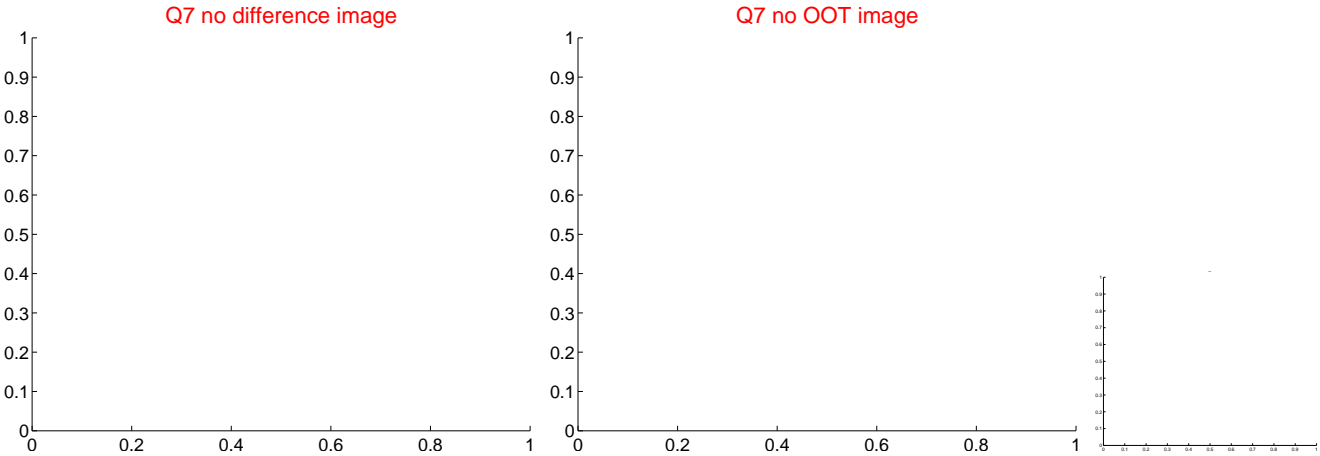
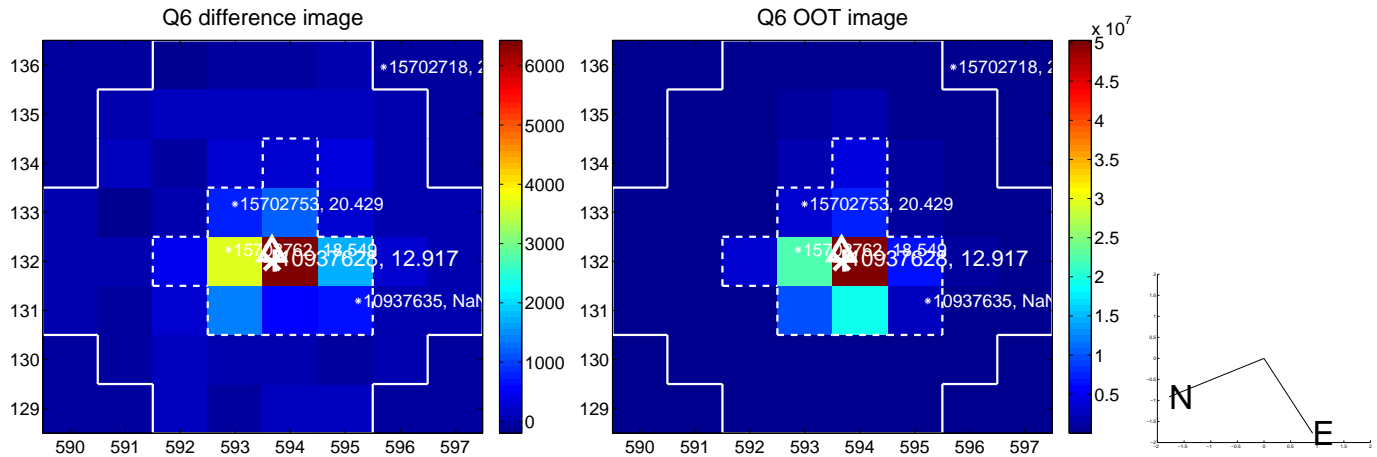
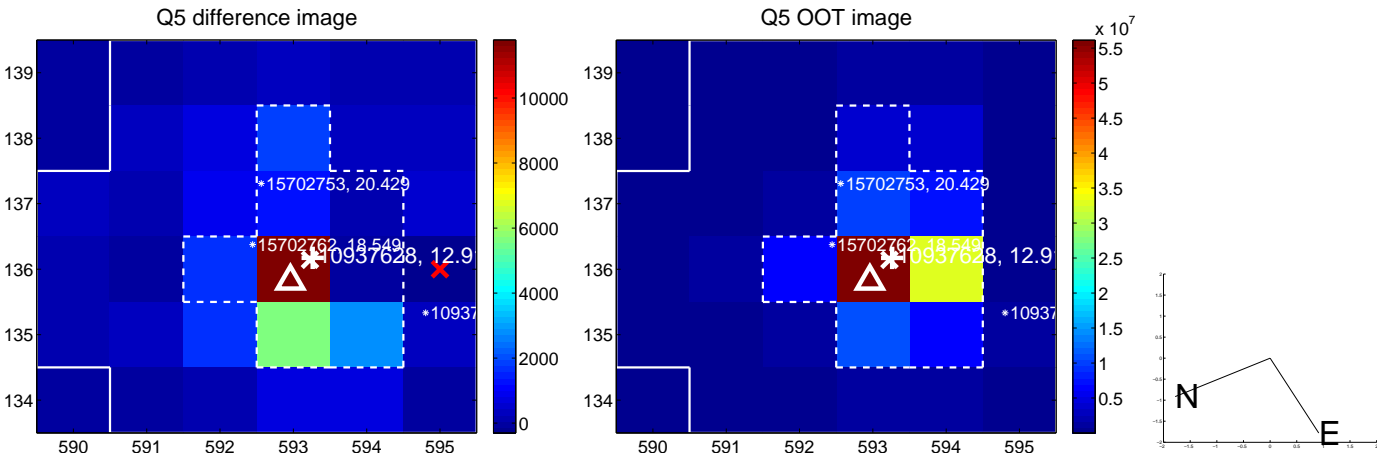


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

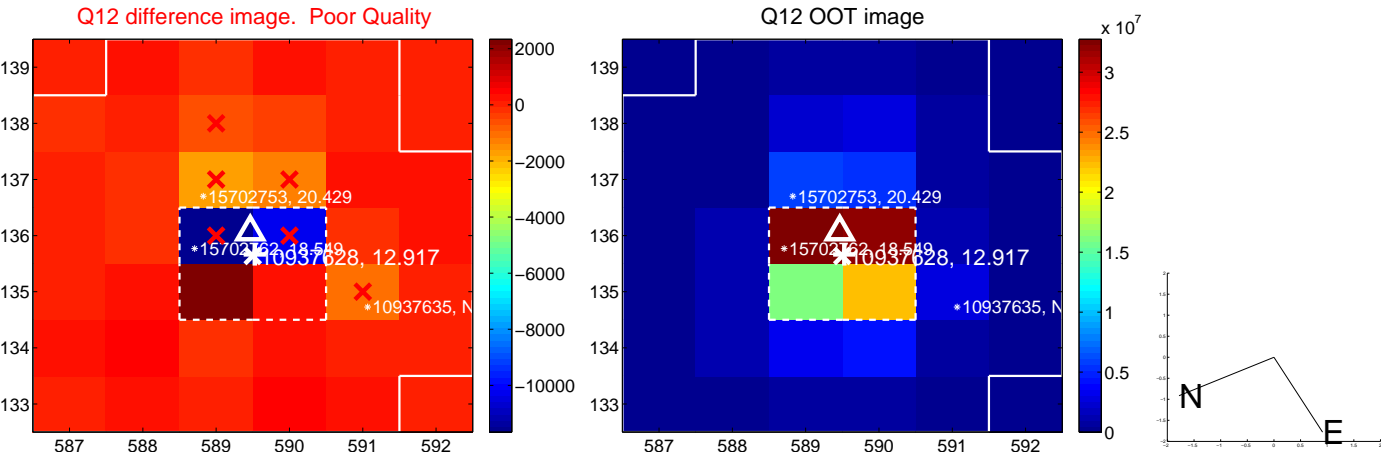
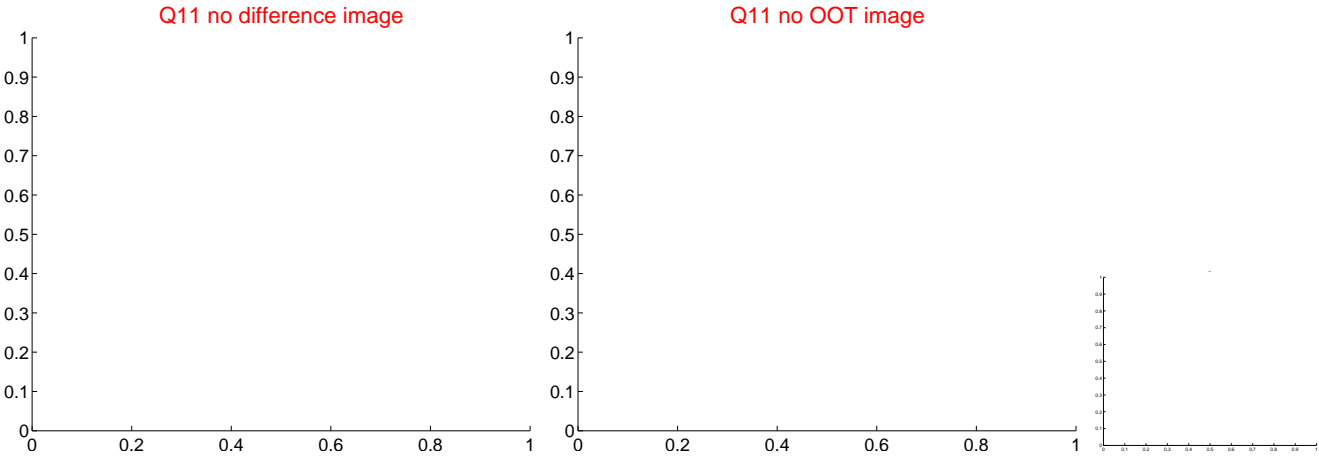
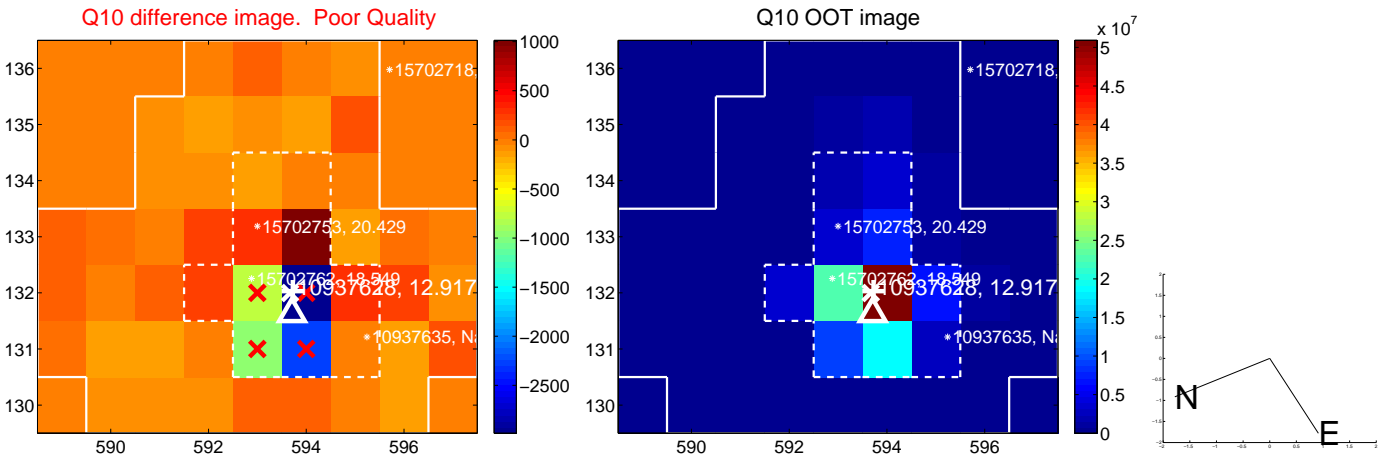
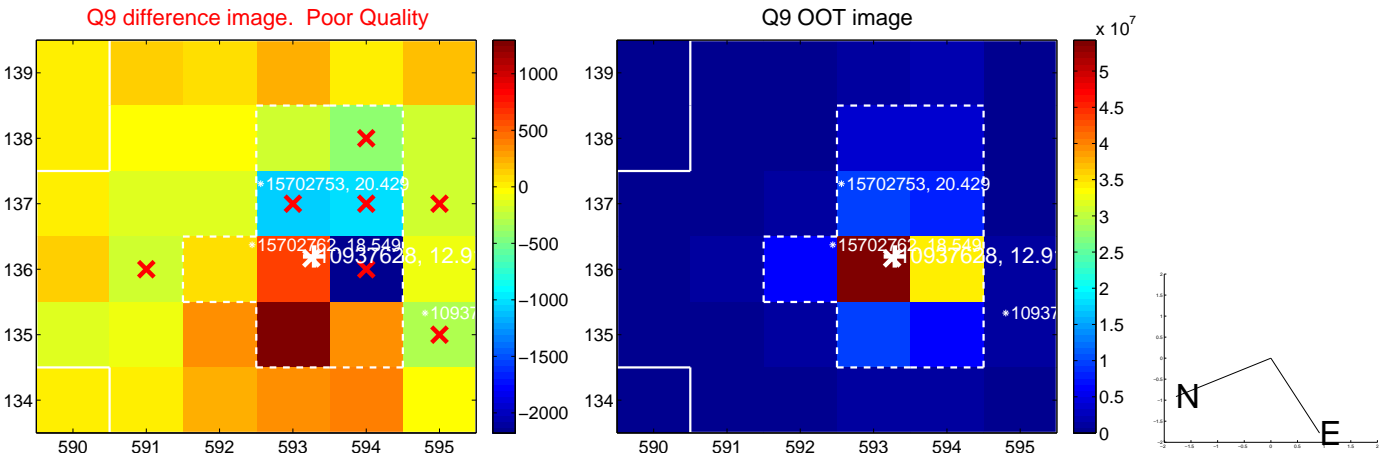
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



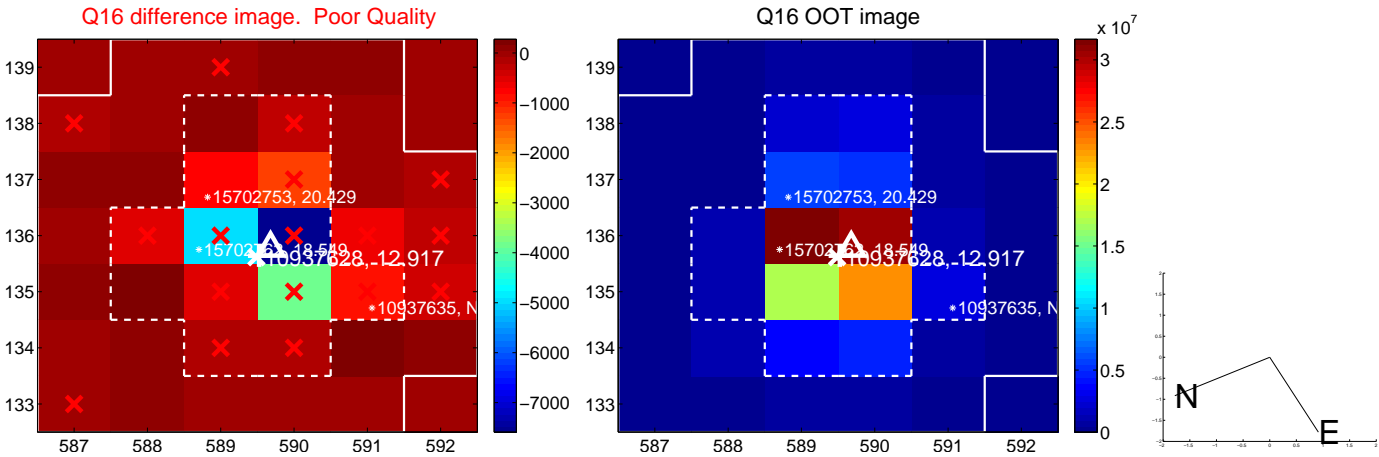
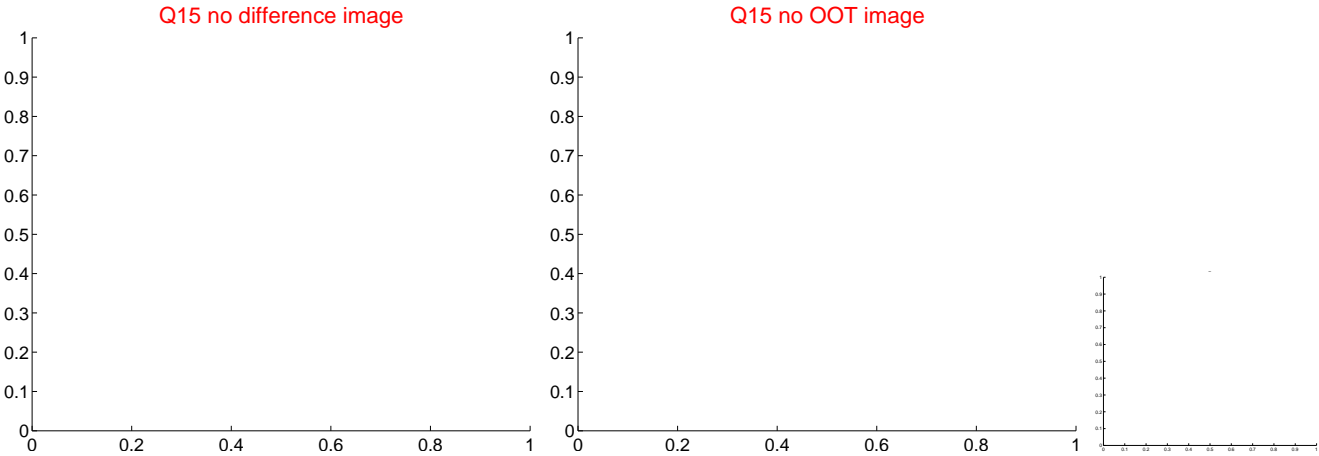
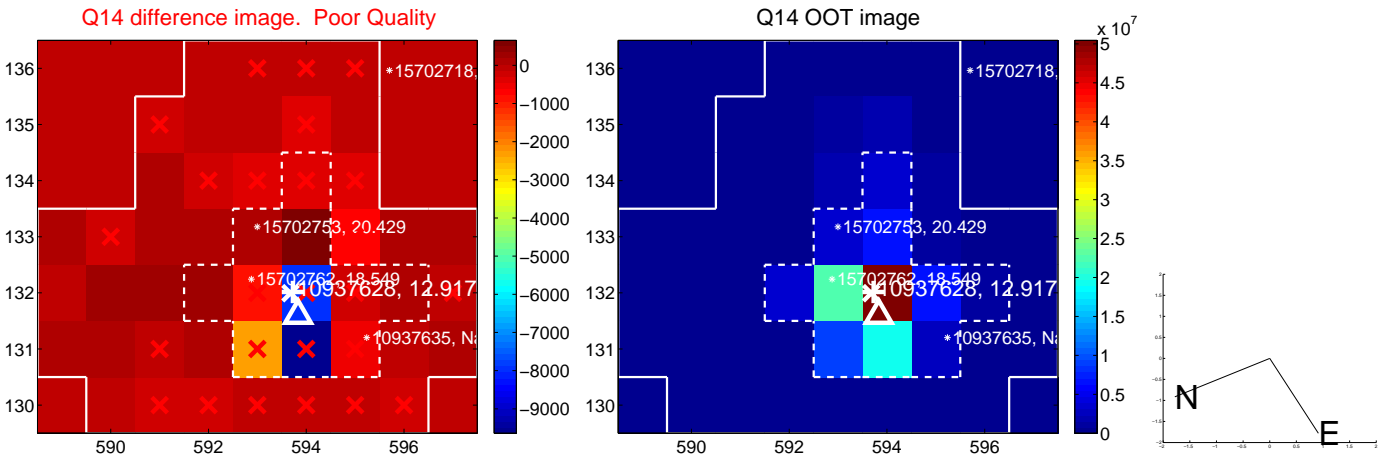
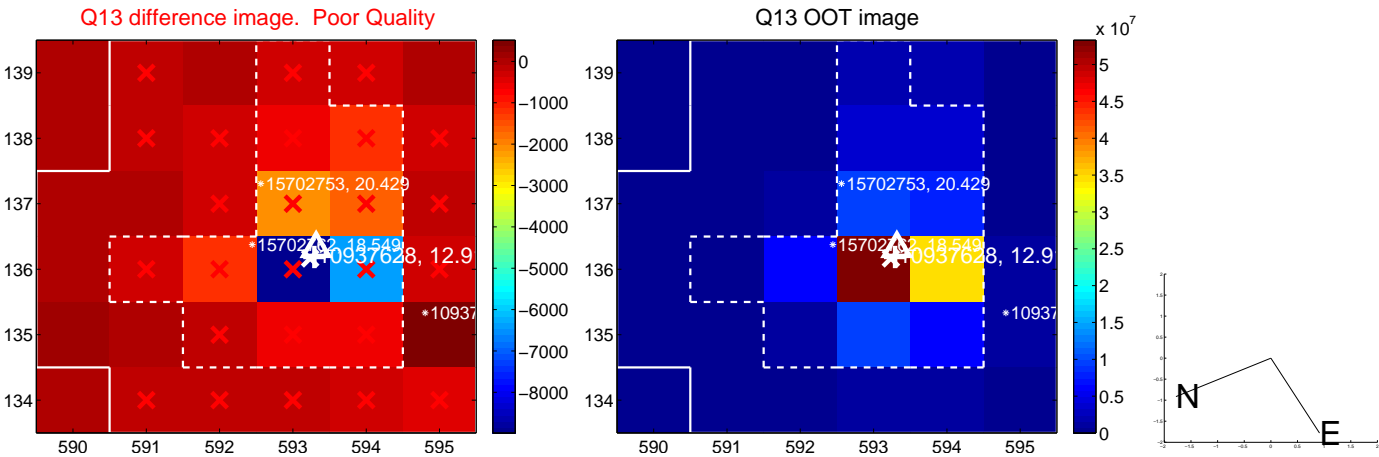
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



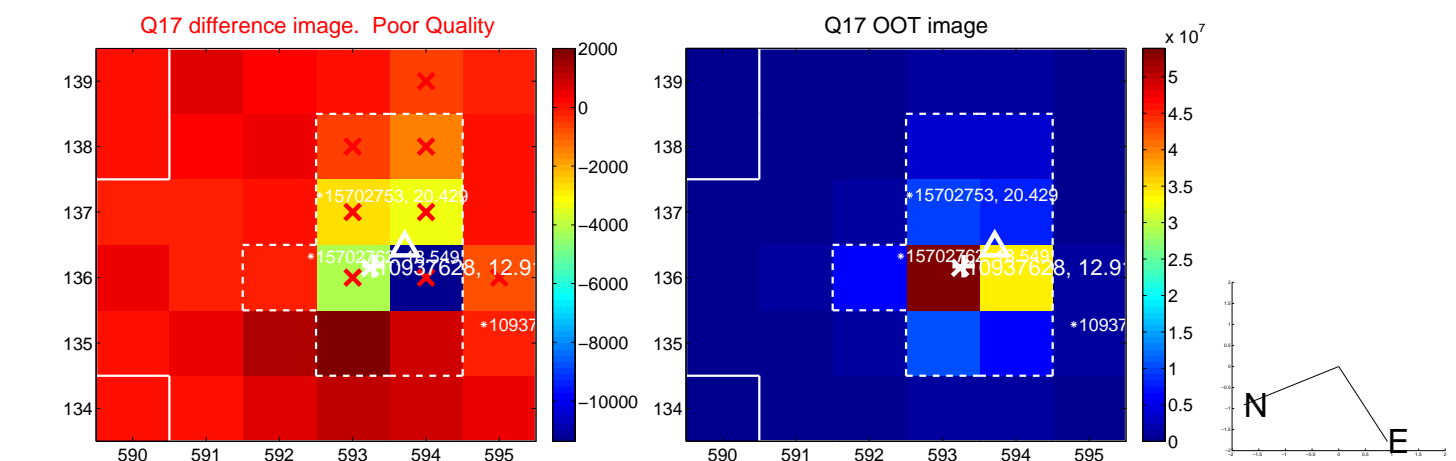
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



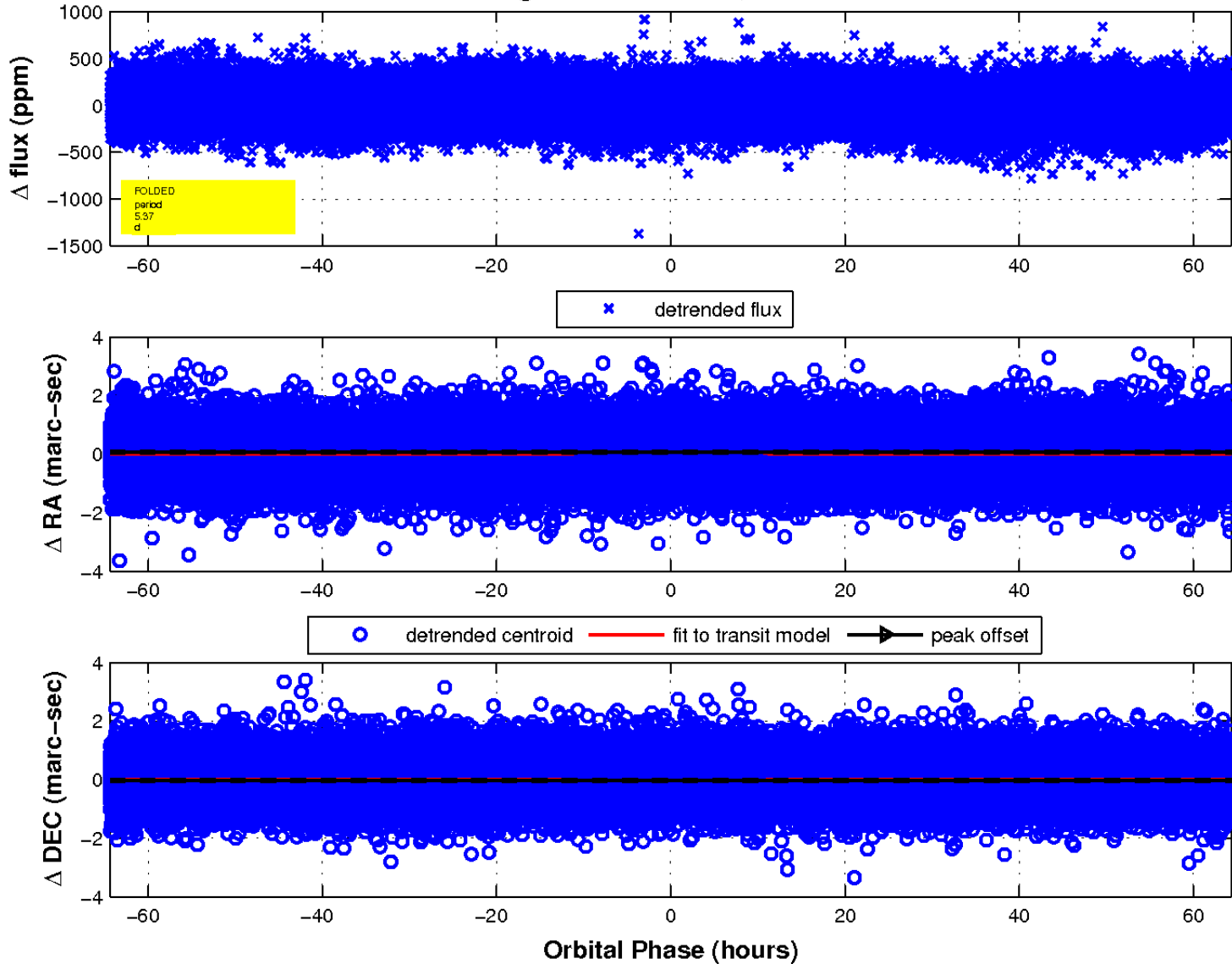
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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

