

KIC 009350686

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})
009350686-01	OBS	No	1.081785	132.237875	33.6	4.695	11.6	5.1	1.66	7327	1.12	12754.78
009350686-02	OBS	No	1.081747	131.702673	197.1	5.847	17.6	19.9	1.66	7327	3.86	12755.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009350686-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009350686-02	OBS	FP	0.00	1	0	0	0	LPP_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.

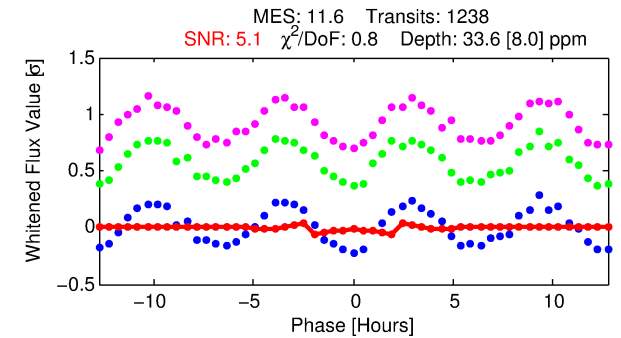
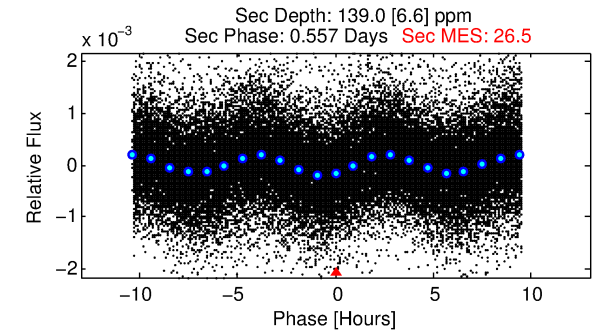
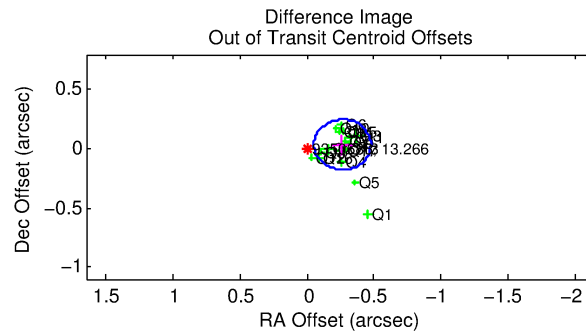
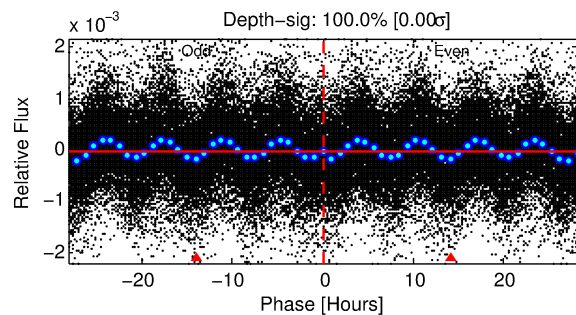
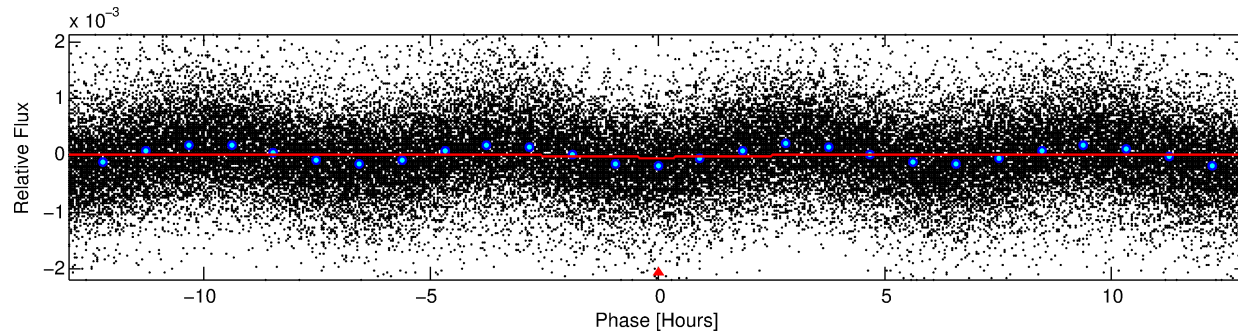
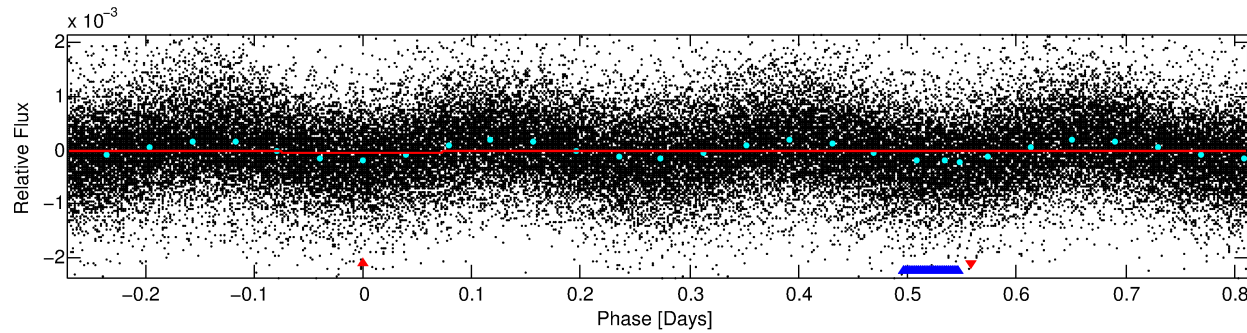
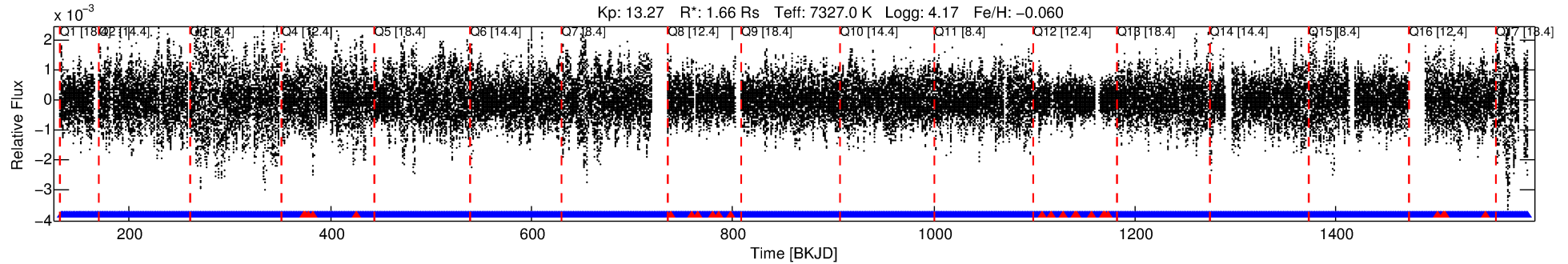
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009350686-01

No Significant Match Found

DV One-Page Summary

KIC: 9350686 Candidate: 1 of 2 Period: 1.082 d



DV Fit Results:

Period = 1.08178 [0.00002] d
Epoch = 132.2379 [0.0030] BKJD
Rp/R* = 0.0062 [0.0017]
a/R* = 1.23 [0.63]
b = 0.90 [0.32]
Seff = 12754.78 [5368.51]
Teq = 2710 [285] K
Rp = 1.12 [0.48] Re
a = 0.0237 [0.0064] AU
Ag = 34.33 [22.93] [1.45σ]
Teffp = 10141 [1465] K [4.98σ]

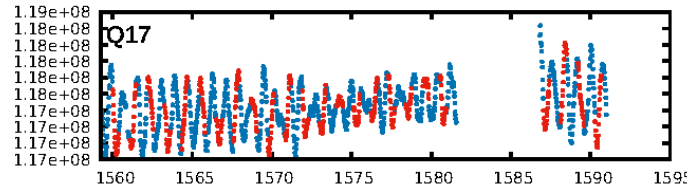
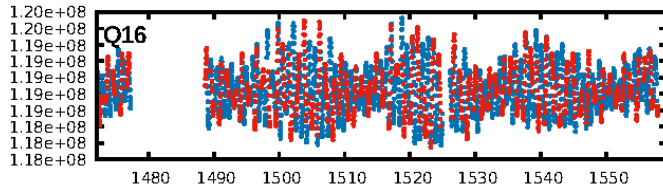
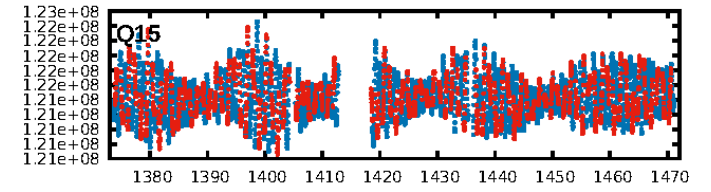
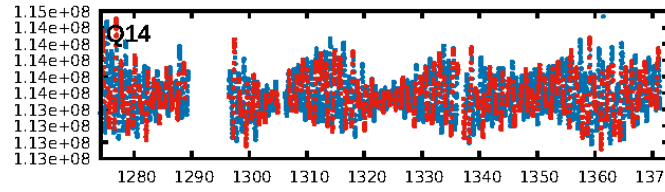
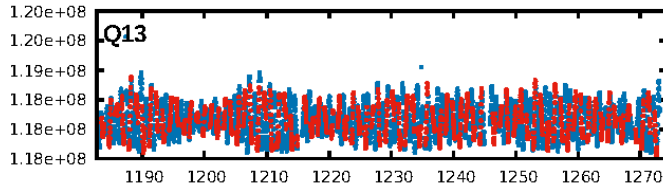
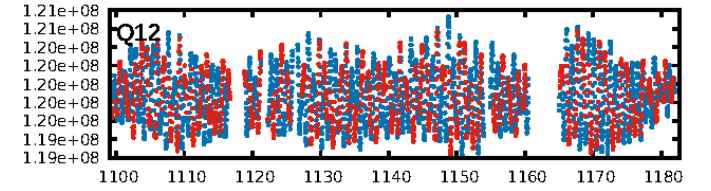
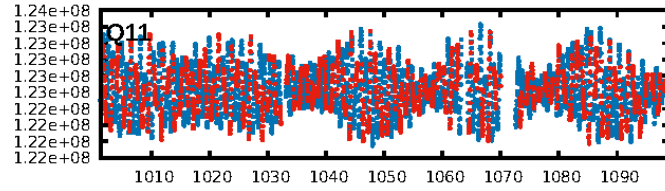
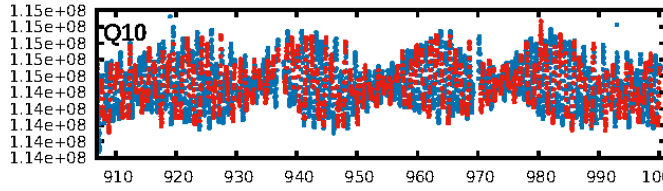
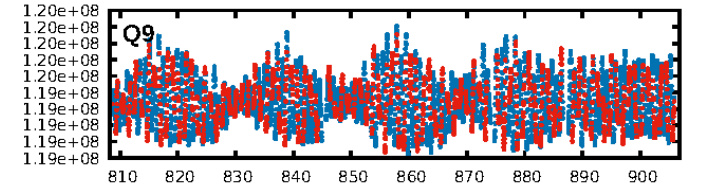
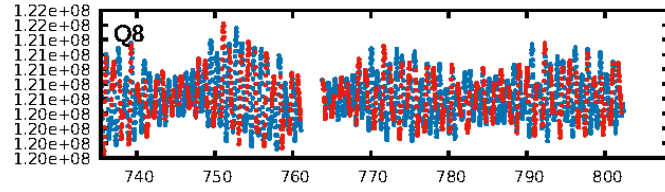
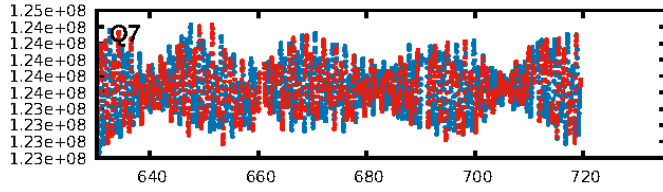
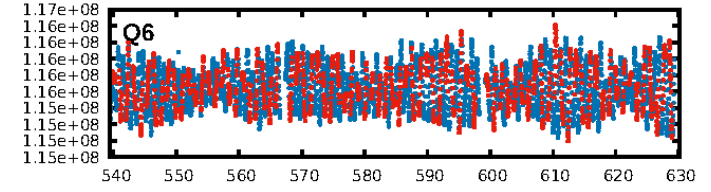
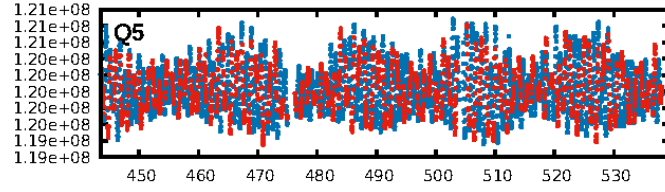
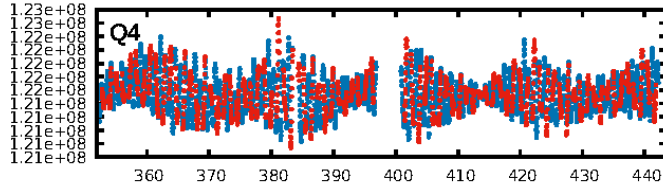
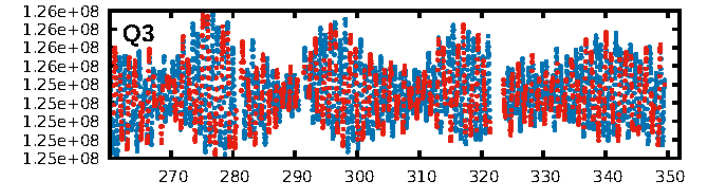
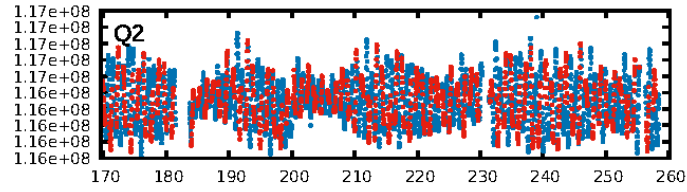
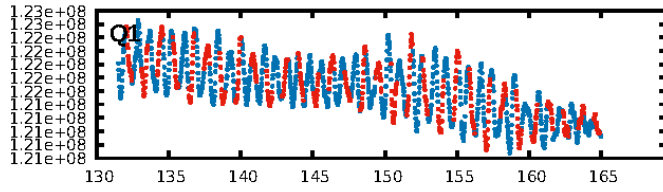
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [1158/1183]
GhostDiagnostic-chr: 0.4667
Centroid-sig: 0.0%
Centroid-so: 3.733 arcsec [3.88σ]
OotOffset-rm: 0.265 arcsec [3.75σ]
KicOffset-rm: 0.069 arcsec [0.91σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.12 [2/17]

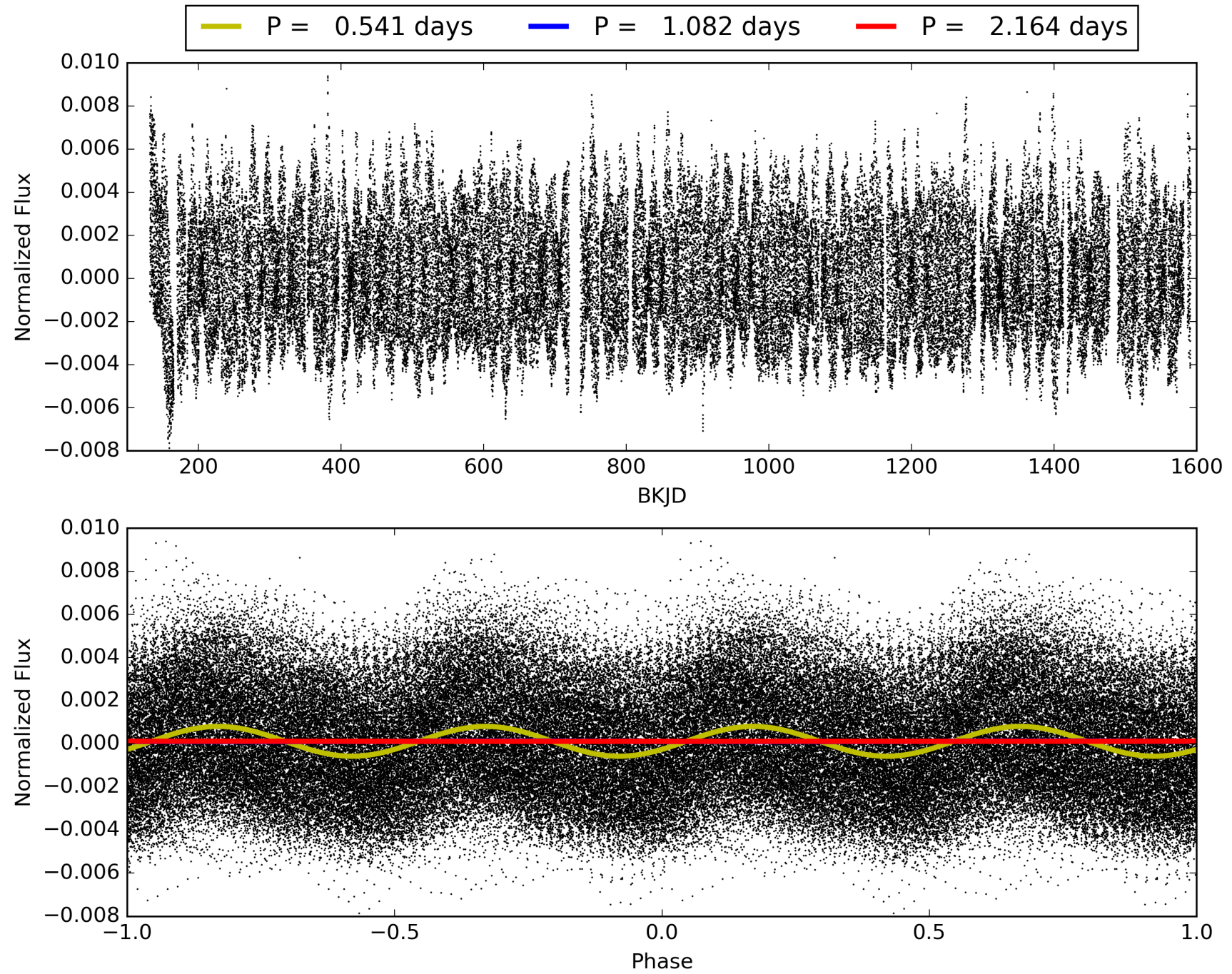
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009350686-01, PDC Light Curves

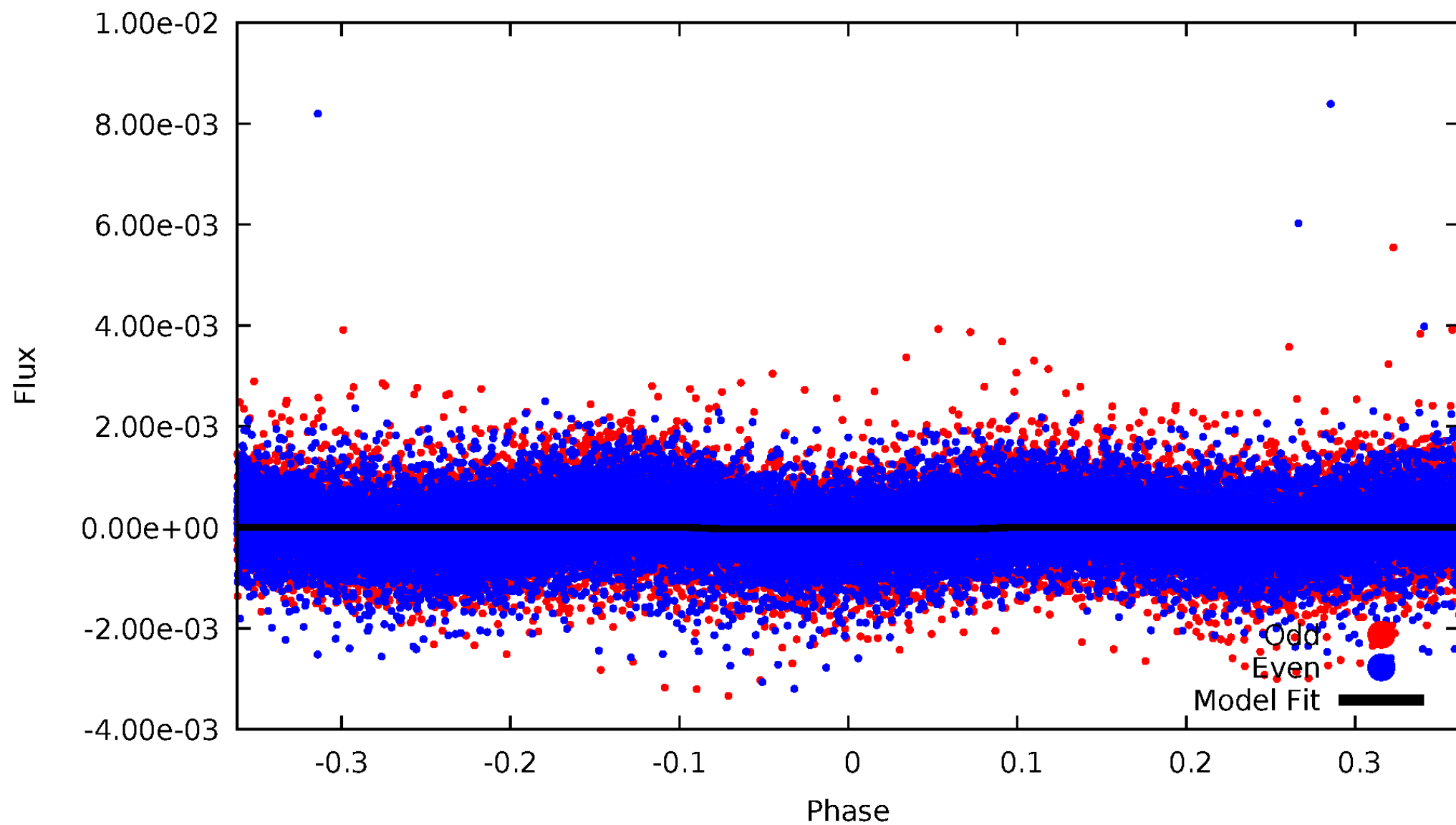


TCE 009350686-01



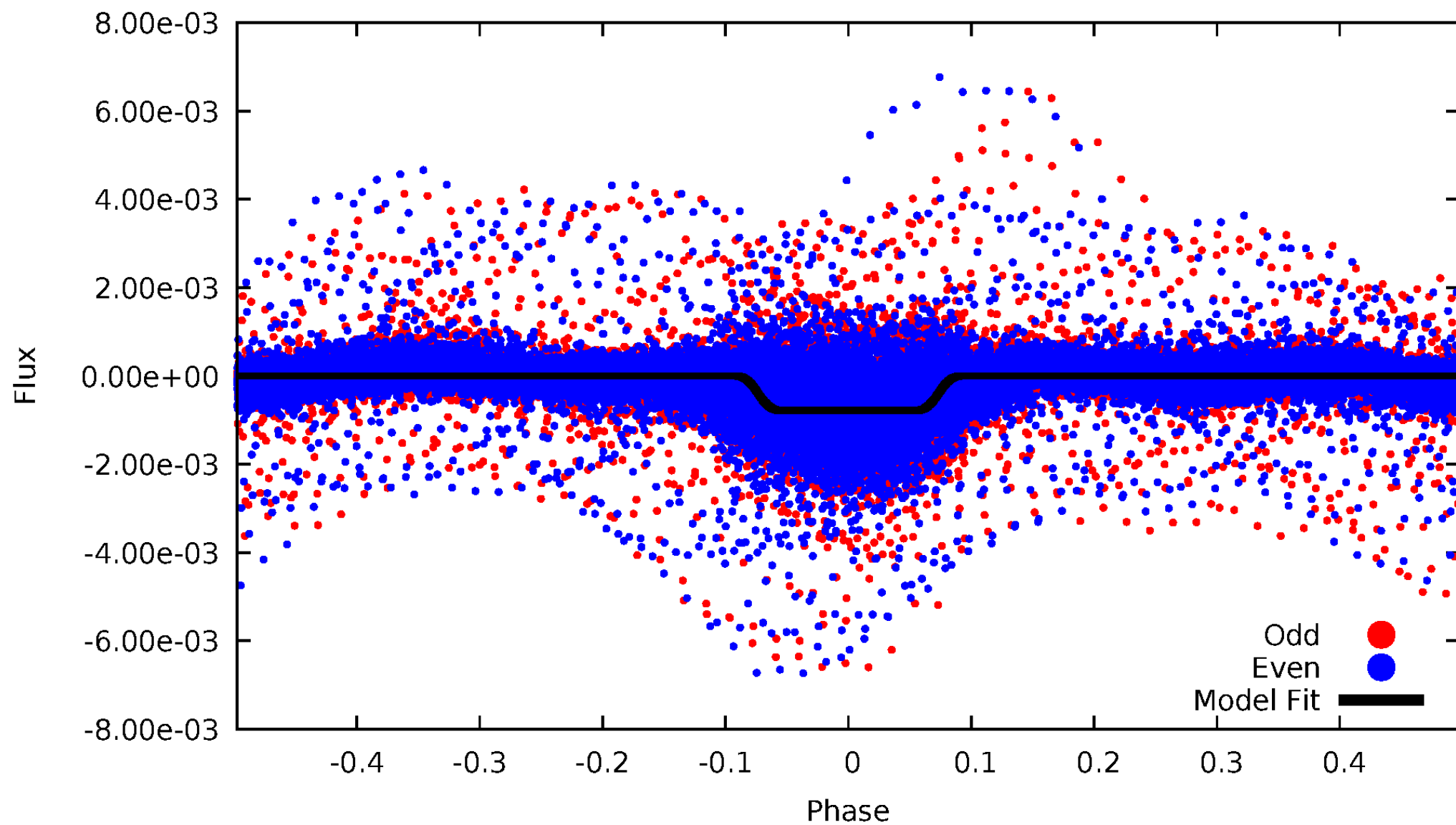
DV Odd/Even

TCE 009350686-01



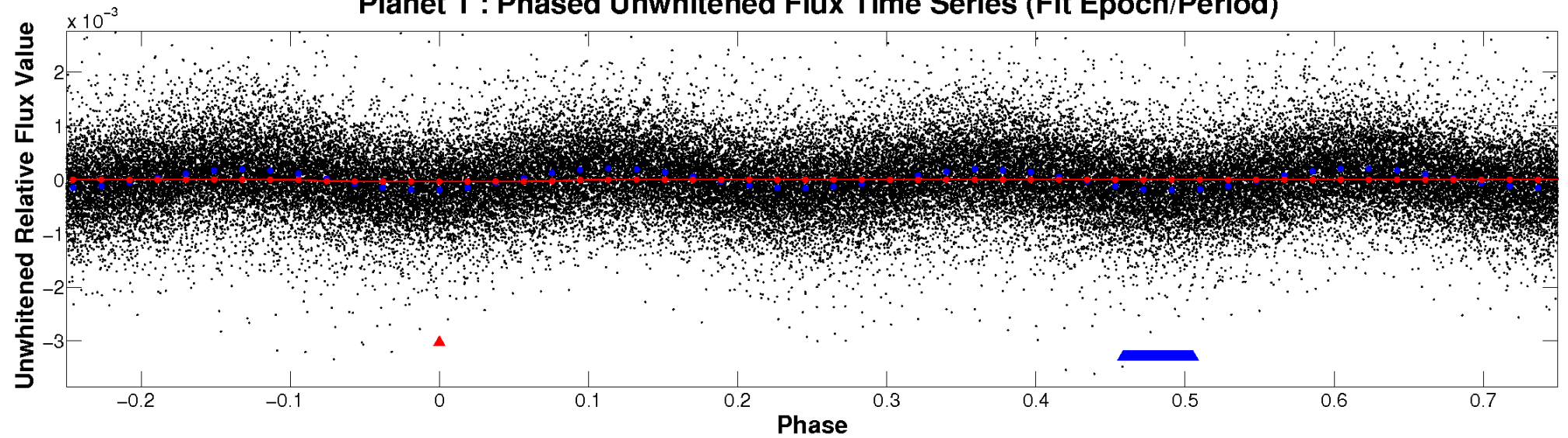
ALT Odd/Even

TCE 009350686-01

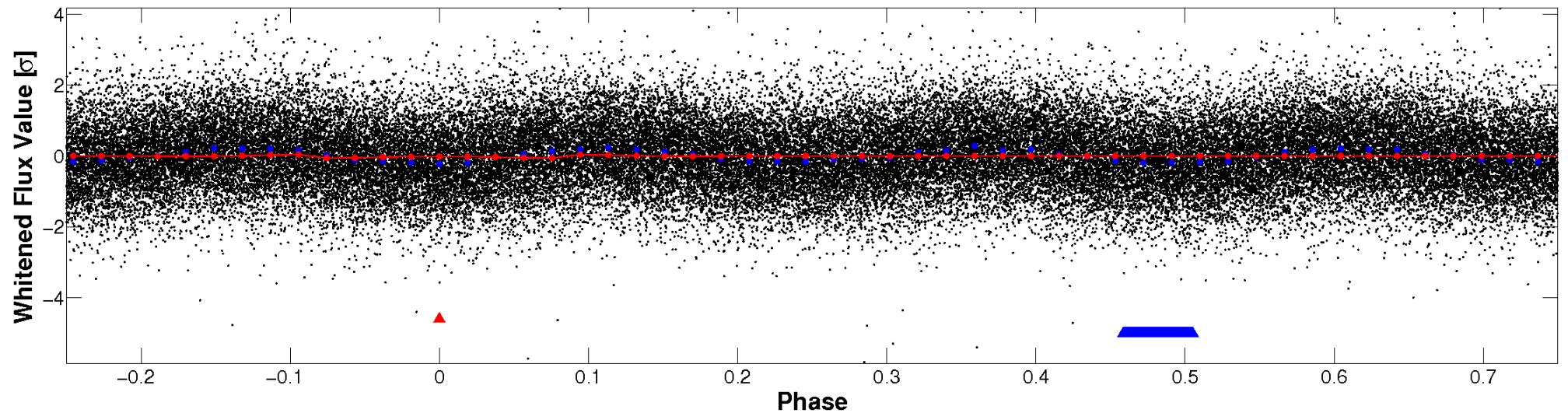


Non-Whitened Vs. Whitened Light Curve

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

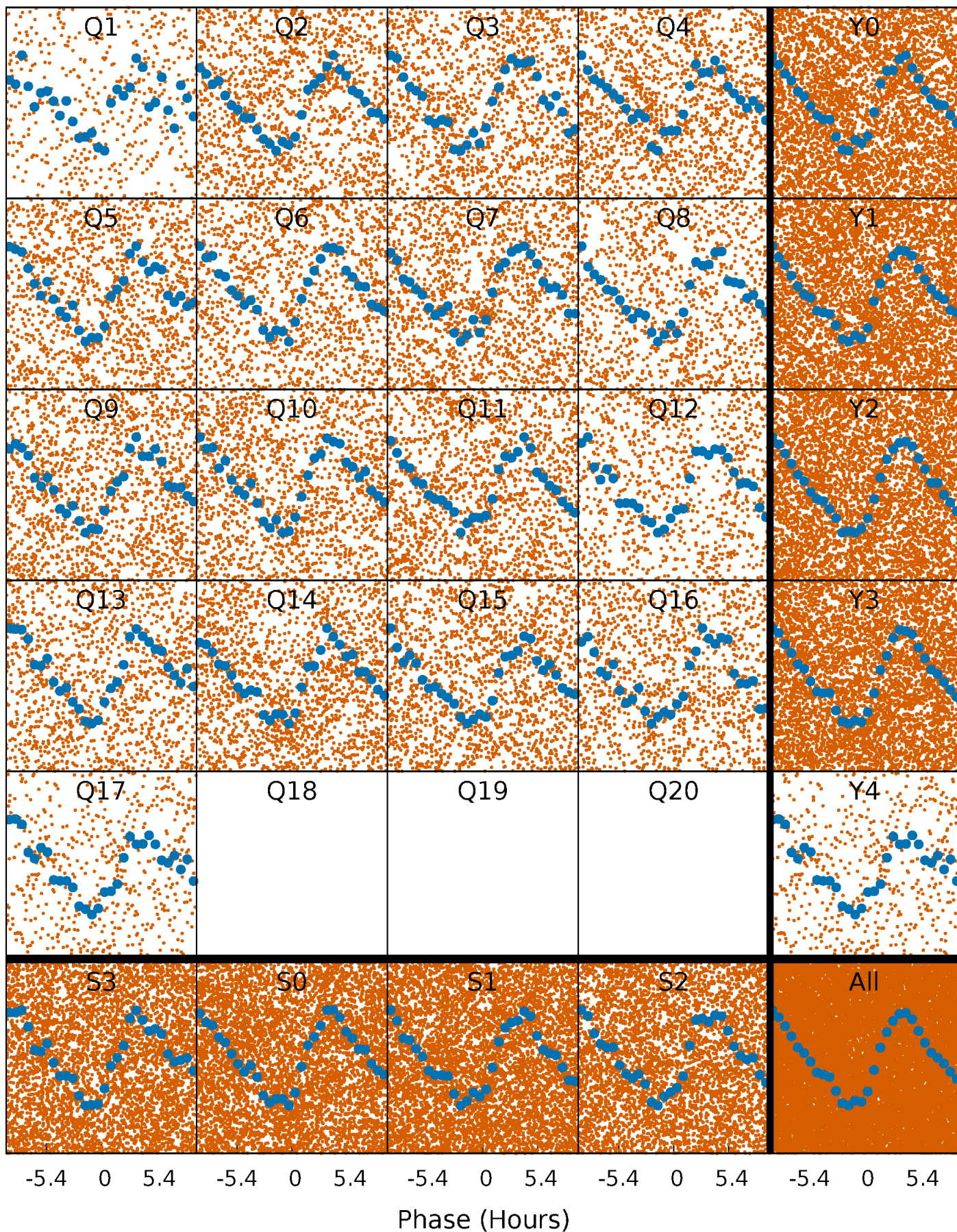


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



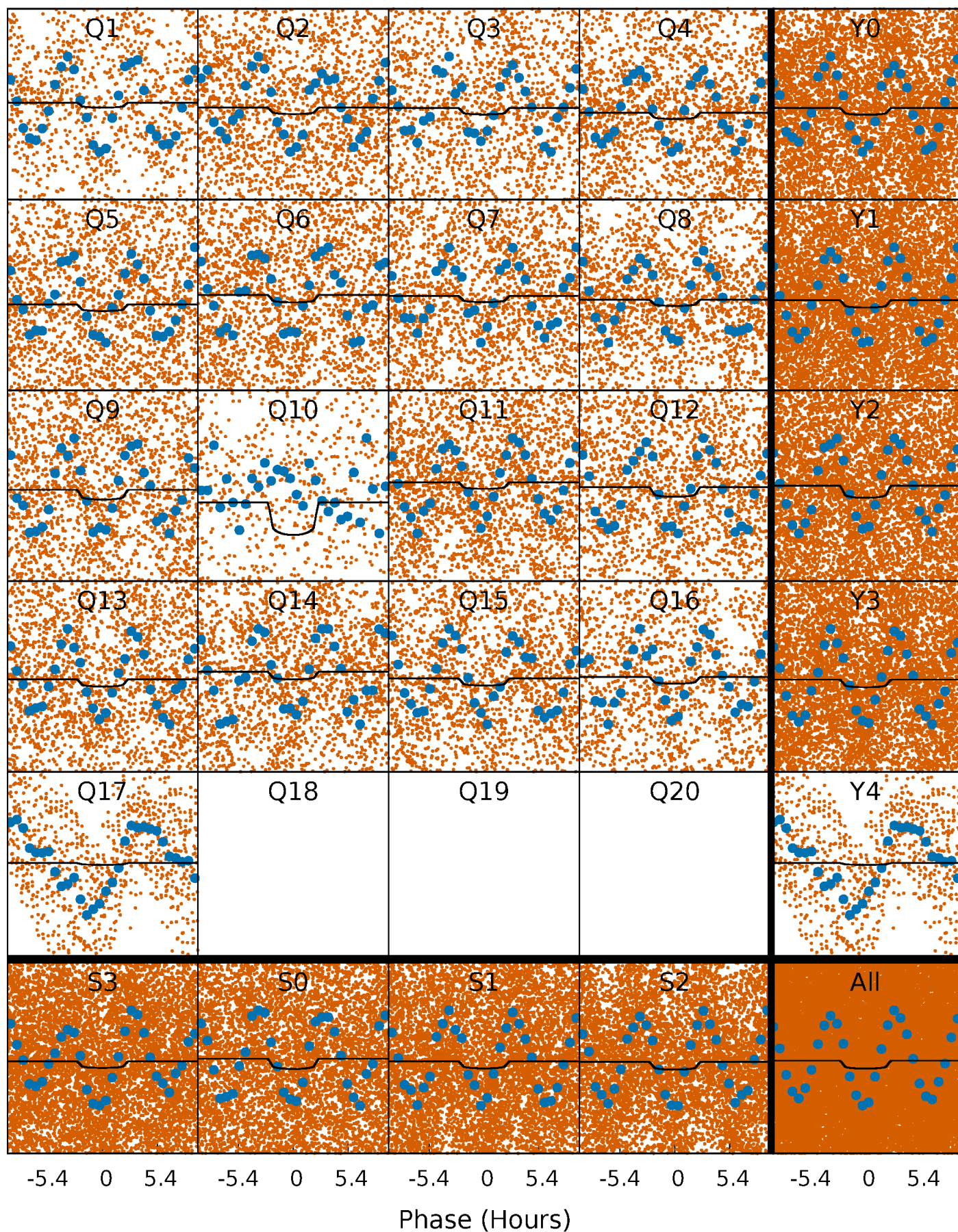
PDC Quarter-Phased Transit Curves

TCE 009350686-01 P= 1.081785 Days $T_0=132.237875$ (BKJD)



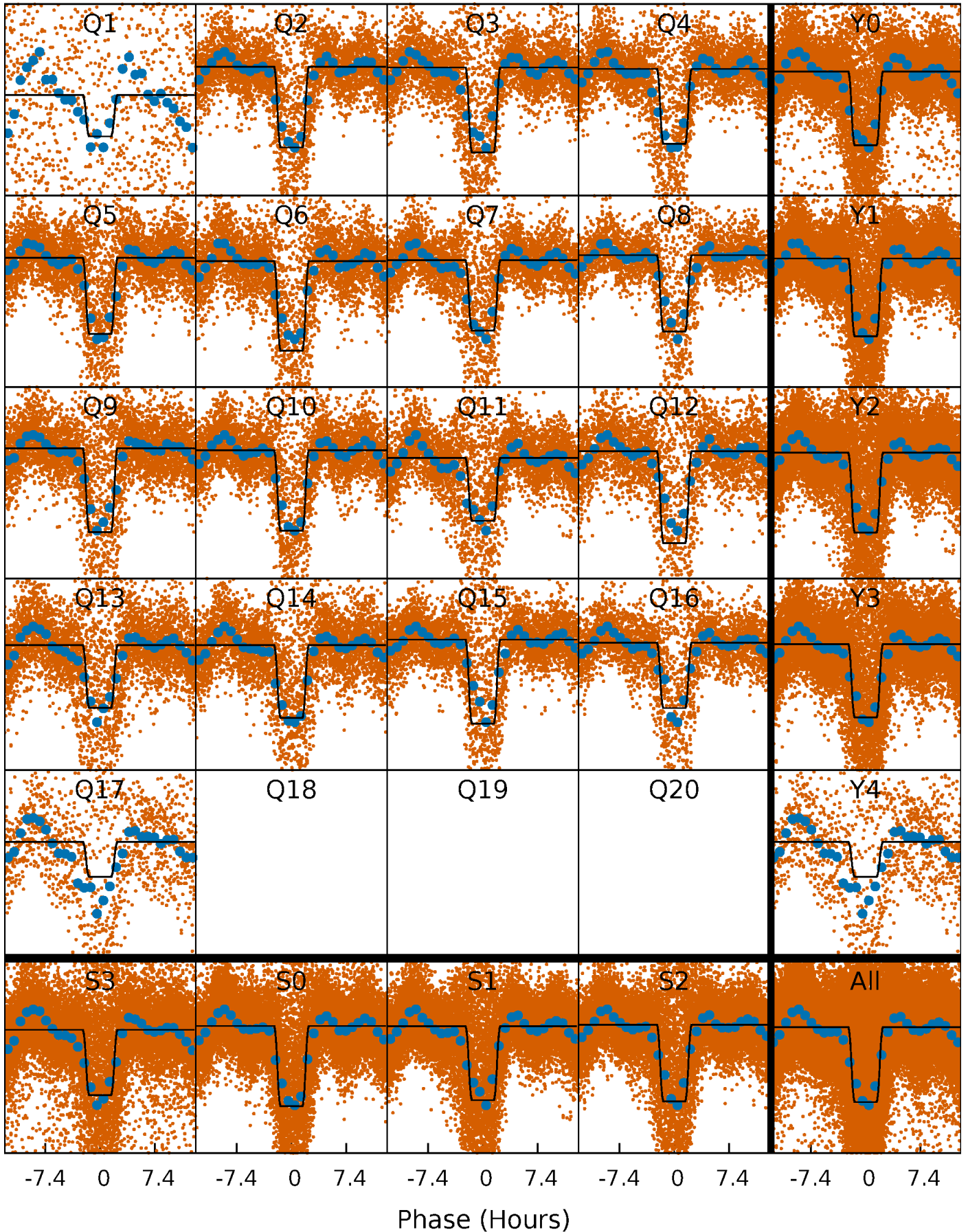
DV Quarter-Phased Transit Curves

TCE 009350686-01 P= 1.081785 Days $T_0=132.237875$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

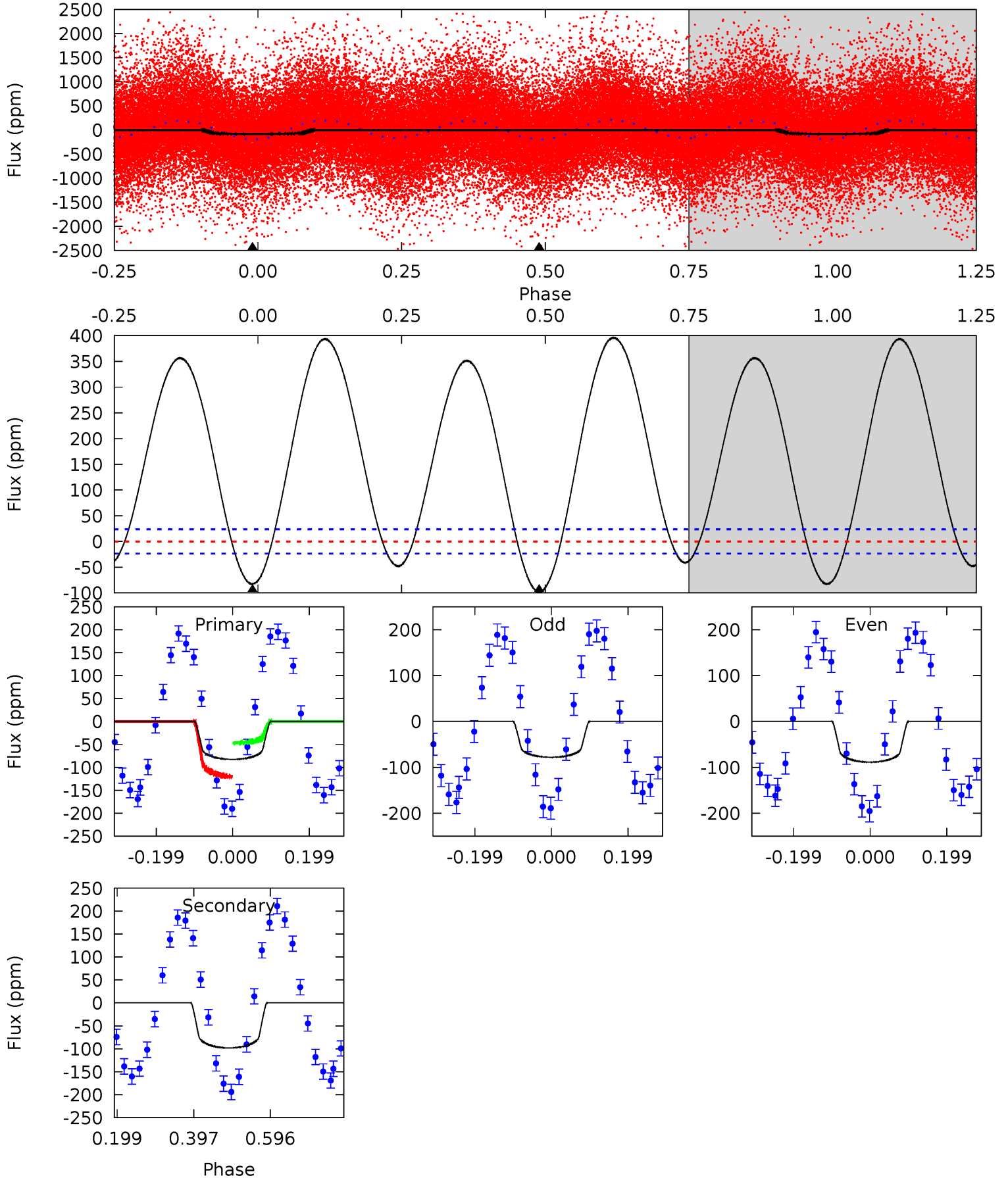
TCE 009350686-01 P= 1.081785 Days $T_0=132.213716$ (BKJD)



DV Model-Shift Uniqueness Test

009350686-01, P = 1.081785 Days, E = 131.156090 Days

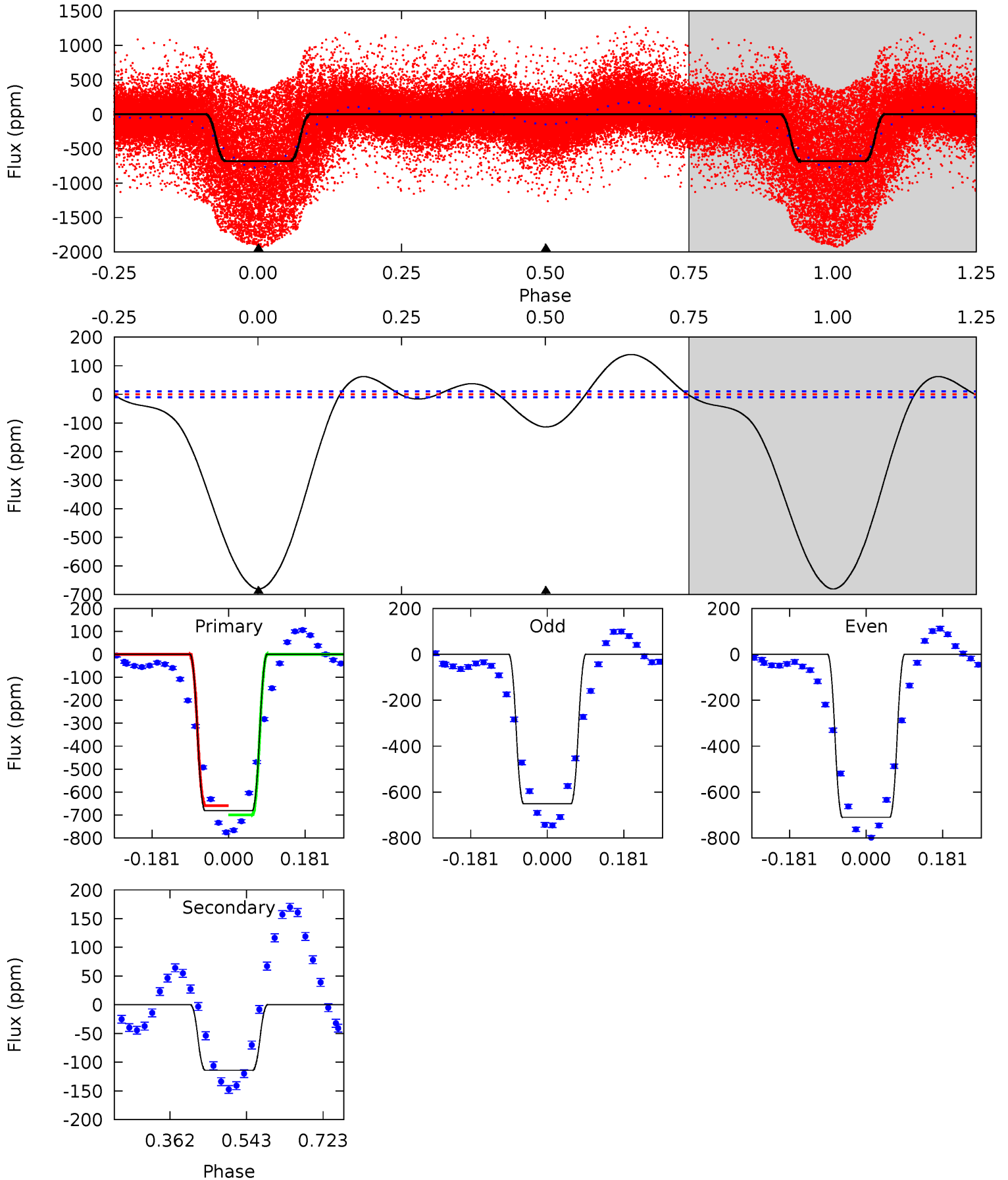
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	18.4	0	0	4.42	1.29	9.27	15.5	15.5	18.4	18.4	1.00	1.20	0.80	7.13



Alt Model-Shift Uniqueness Test

009350686-01, P = 1.081785 Days, E = 131.131931 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
288.9	48.4	0	0	4.44	1.34	17.1	288.9	288.9	48.4	48.4	12.5	1.02	0.17	8.51



Stellar Parameters For KIC 009350686

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7327^{+228}_{-330}	$4.175^{+0.108}_{-0.201}$	$-0.060^{+0.200}_{-0.350}$	$1.663^{+0.555}_{-0.299}$	$1.508^{+0.219}_{-0.219}$	$0.462^{+0.278}_{-0.234}$
	+3%/-5%	+3%/-5%	+333%/-583%	+33%/-18%	+15%/-15%	+60%/-51%
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 009350686-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-98 ± 5	$1.15^{+0.34}_{-0.32}$	3811^{+295}_{-227}	9798^{+2872}_{-1488}	23^{+20}_{-9}
Alt.	-114 ± 2	$5.11^{+0.82}_{-0.57}$	3808^{+293}_{-252}	4385^{+185}_{-188}	$1.321^{+0.339}_{-0.316}$

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 $A_{obs} \gg 1.0$

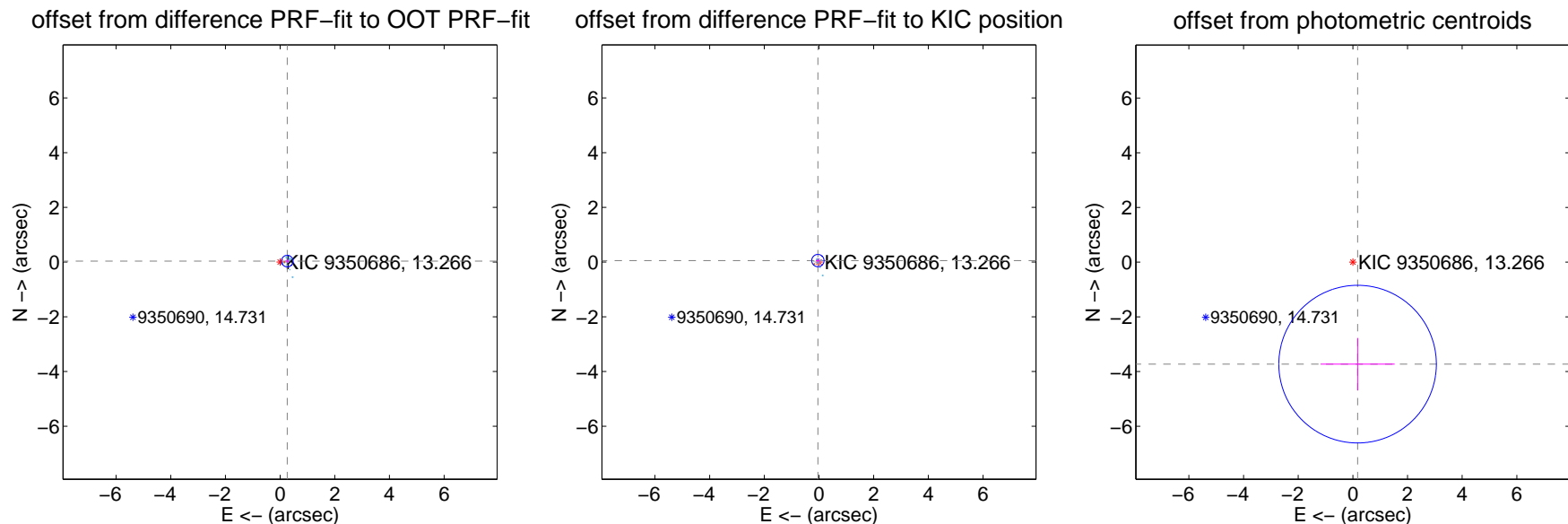
DV Centroid Data

Supplemental centroid analysis for 009350686-01. Kepler magnitude: 13.27. Transit SNR 5.08

There are 16 quarters with good PRF difference image offsets

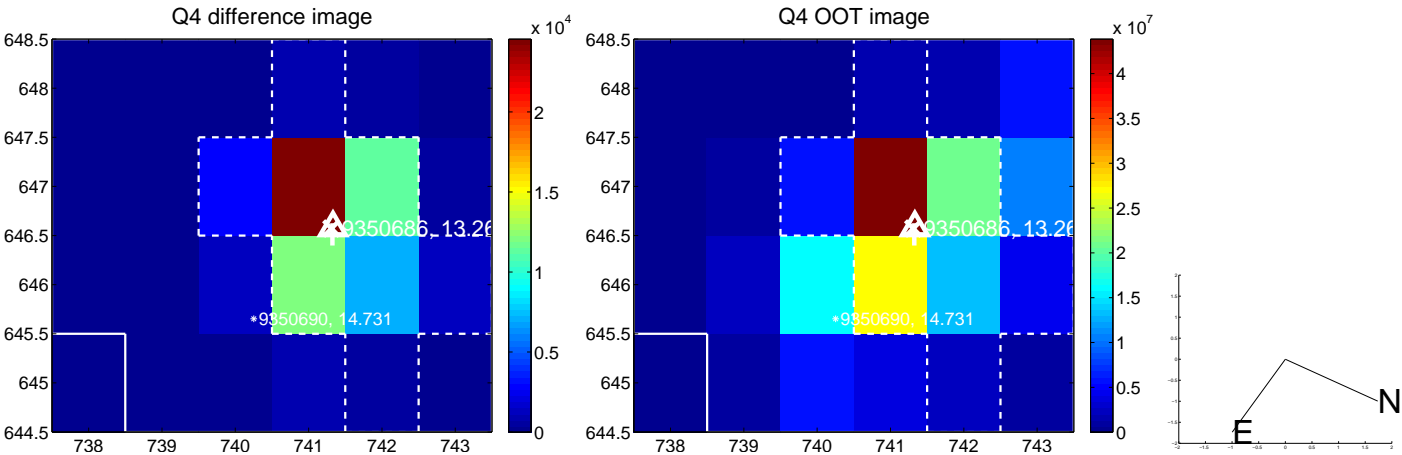
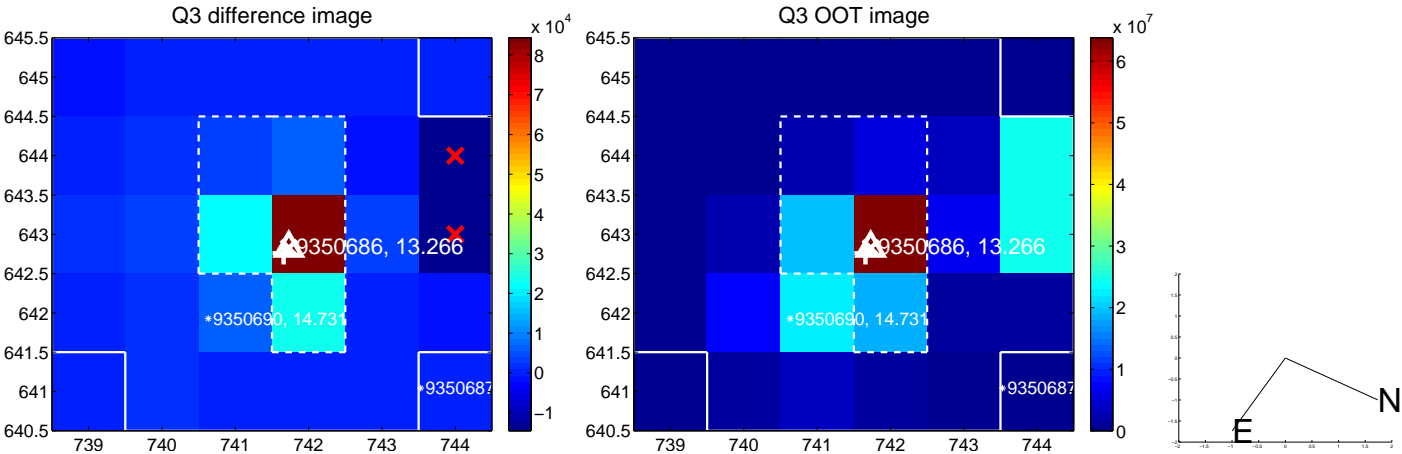
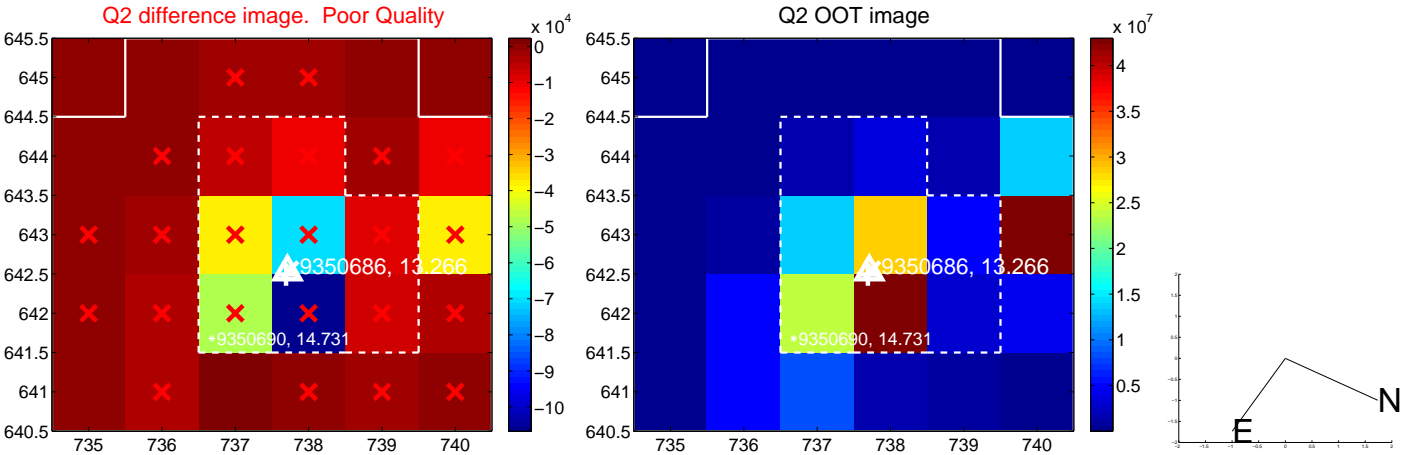
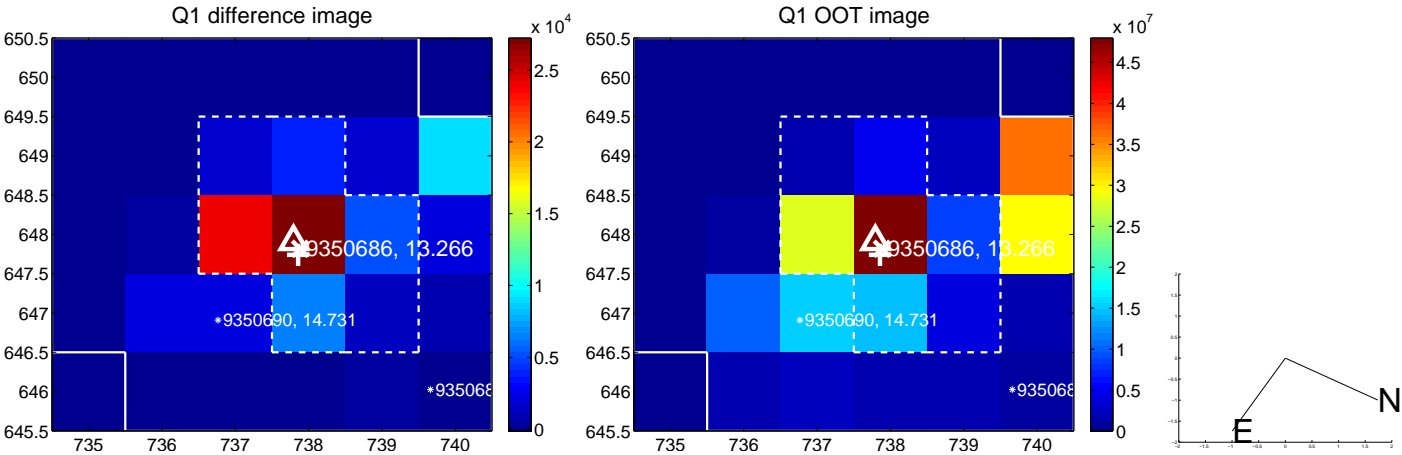
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.265 ± 0.071	3.75	-0.263 ± 0.071	0.036 ± 0.078
PRF-fit source offset from KIC position	0.069 ± 0.075	0.91	0.040 ± 0.069	0.055 ± 0.075
photometric centroid source offset	3.73 ± 0.96	3.88	-0.17 ± 1.36	-3.73 ± 0.96

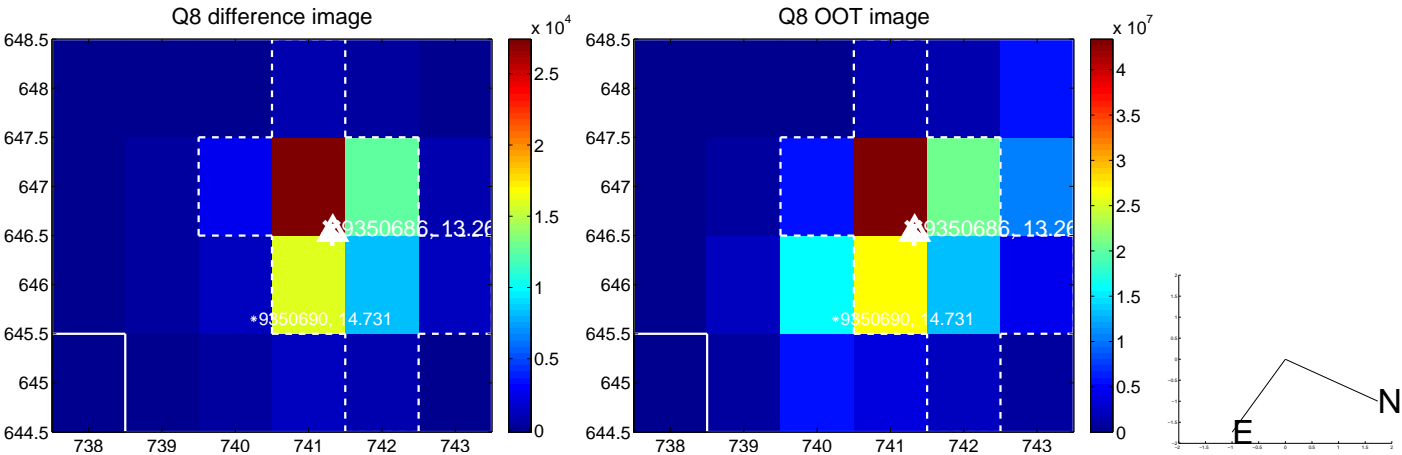
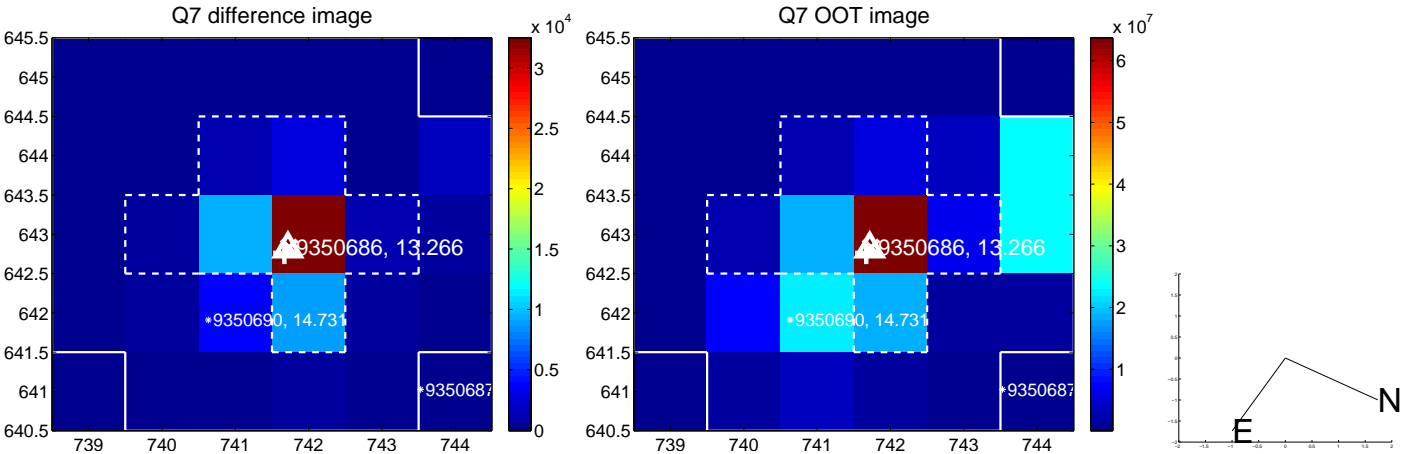
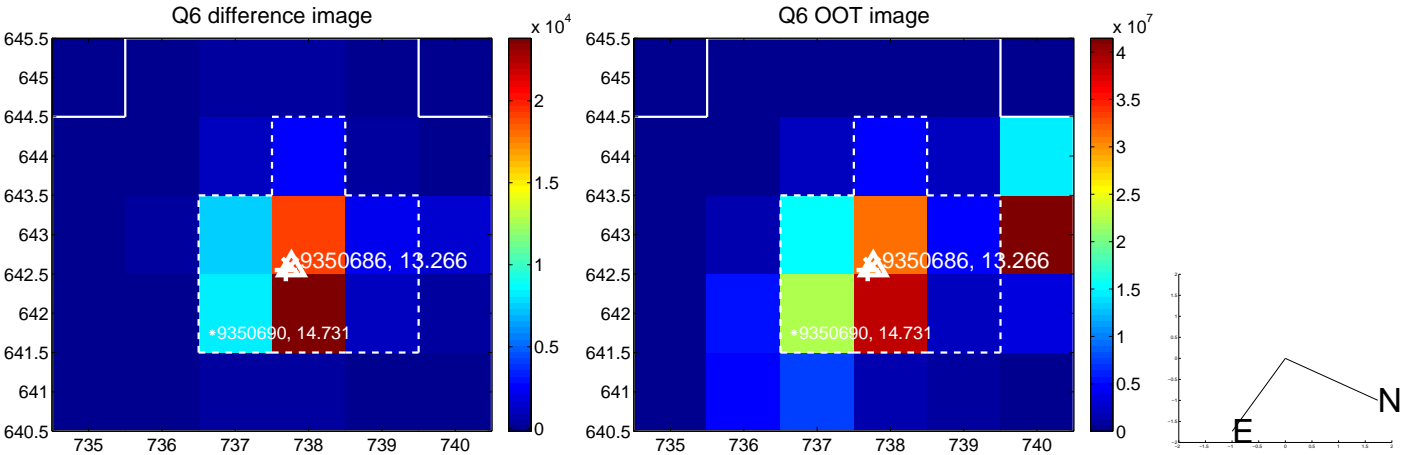
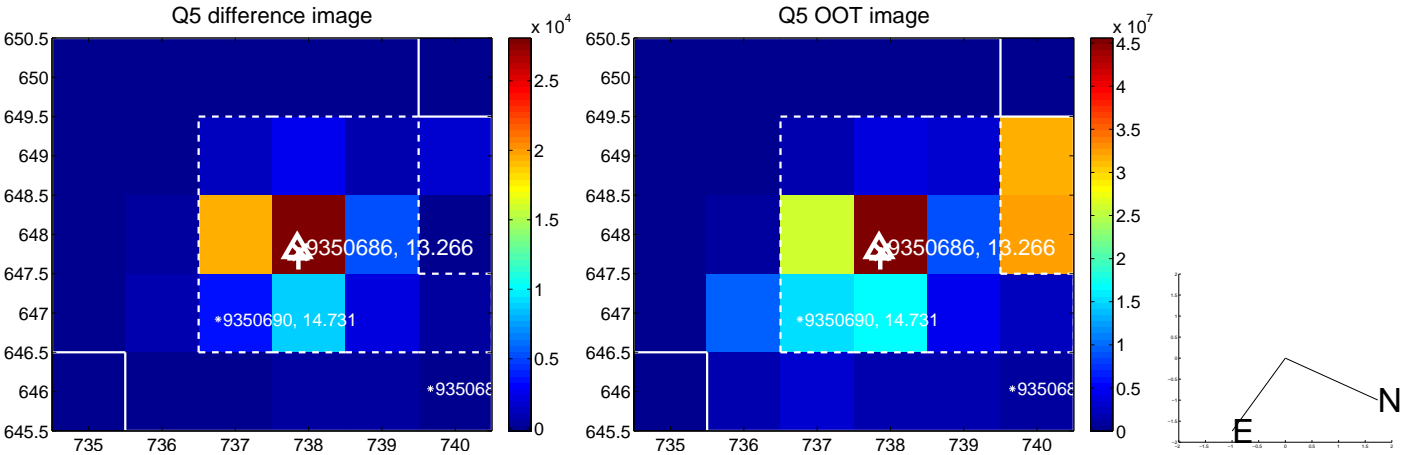


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

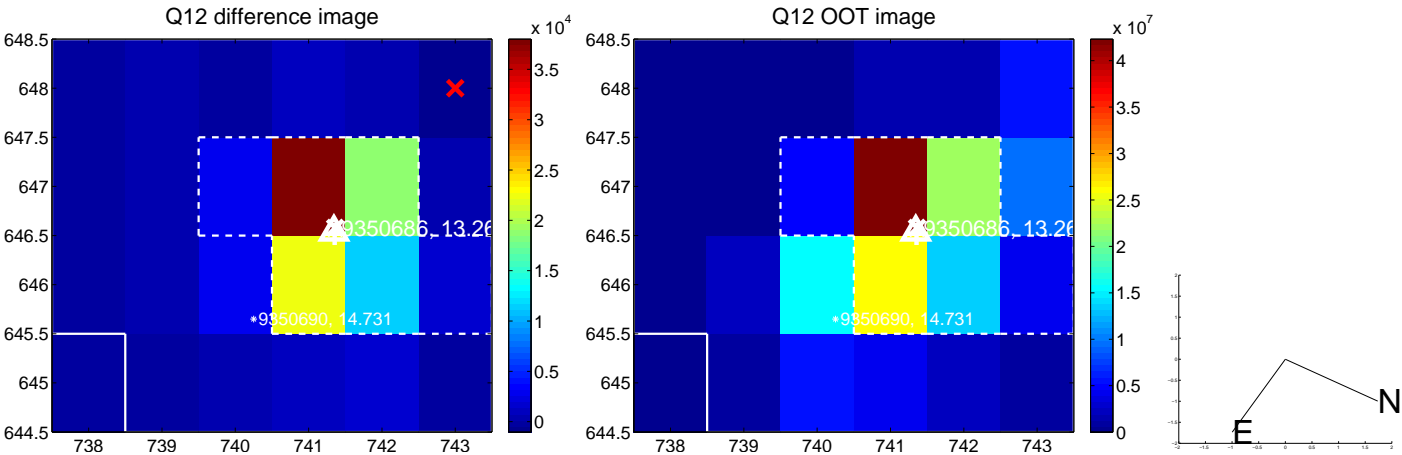
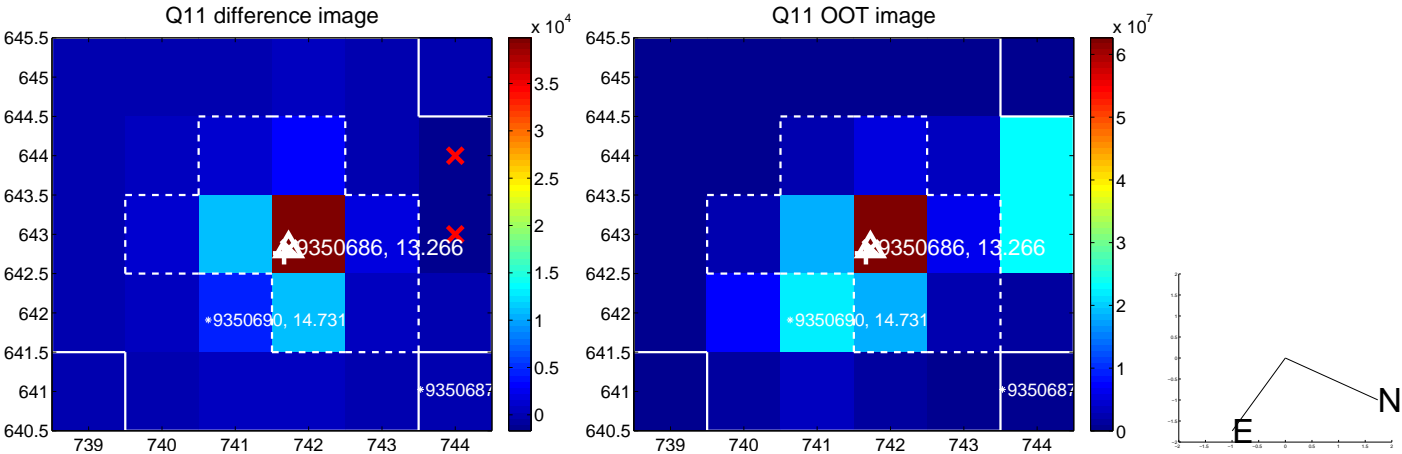
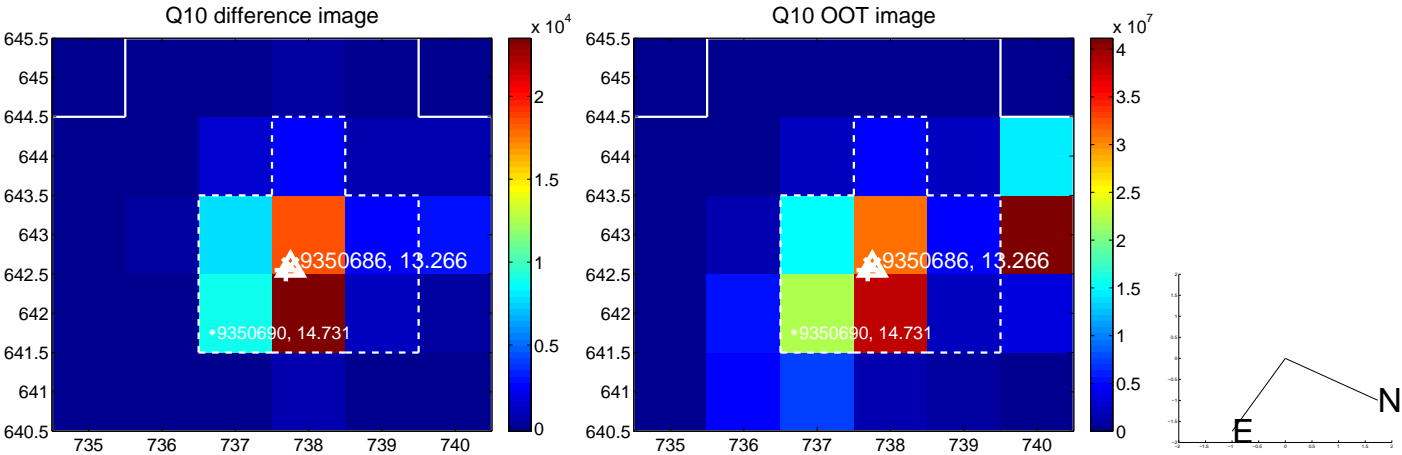
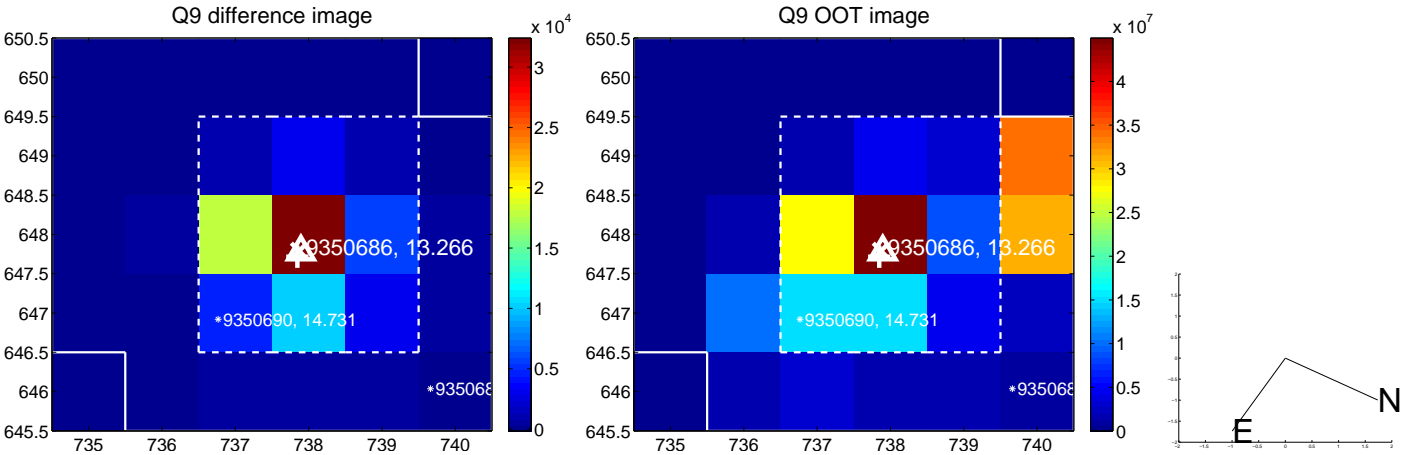
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



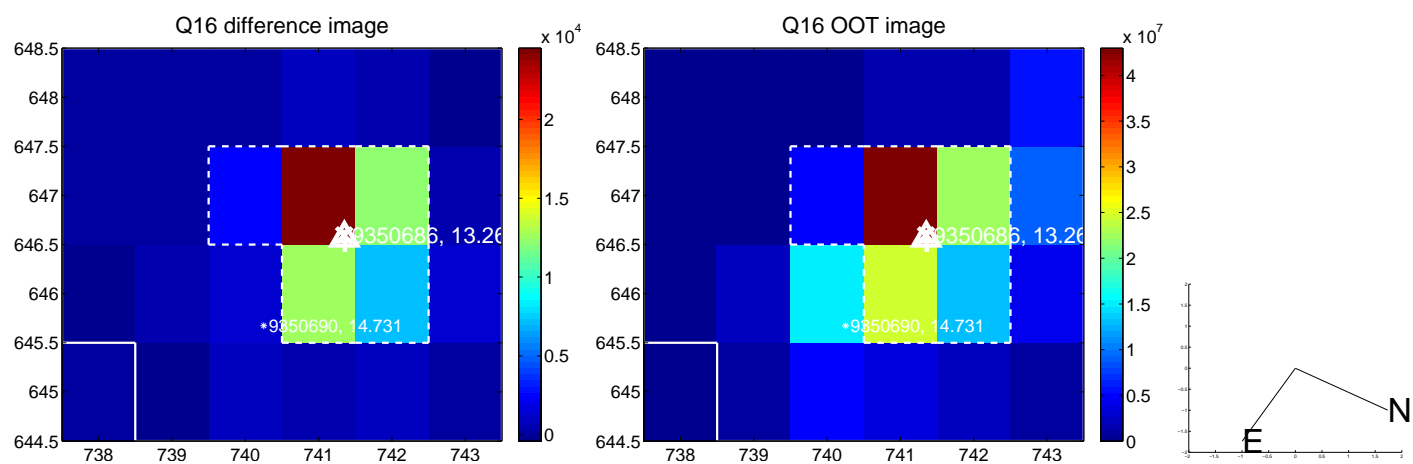
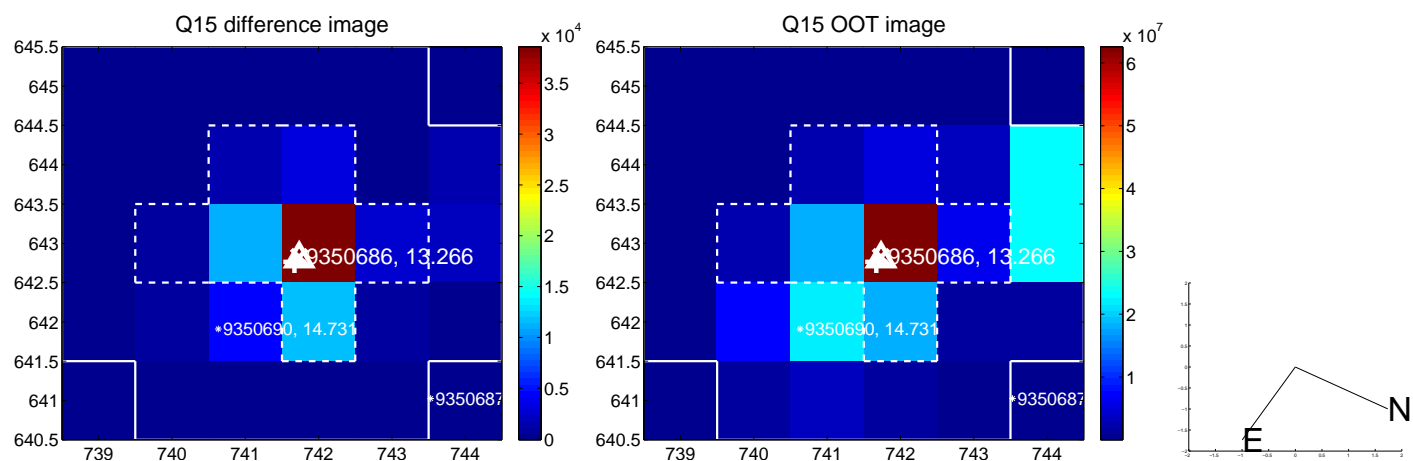
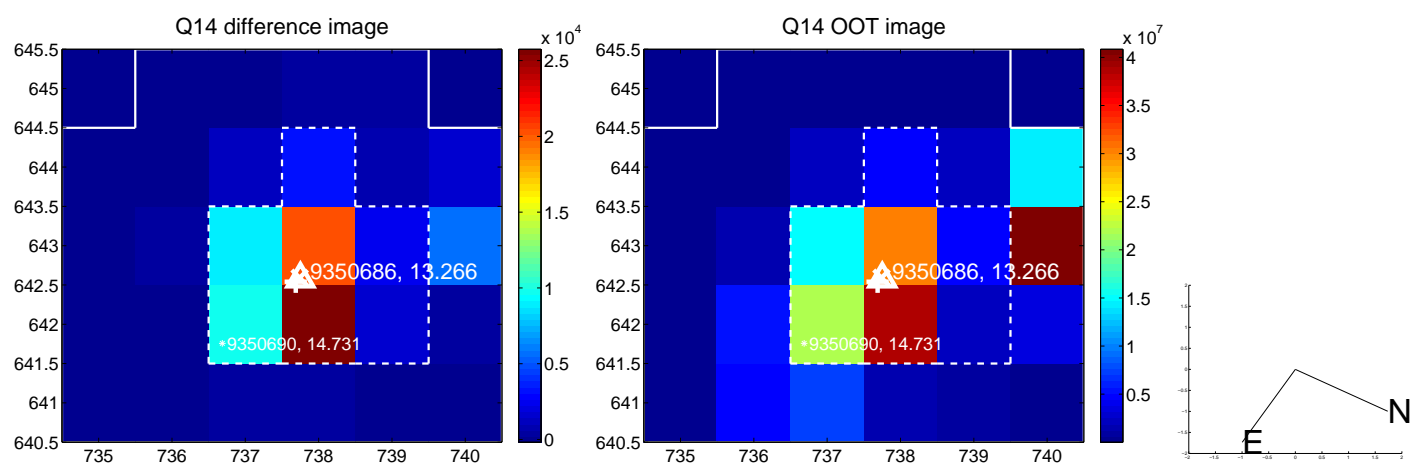
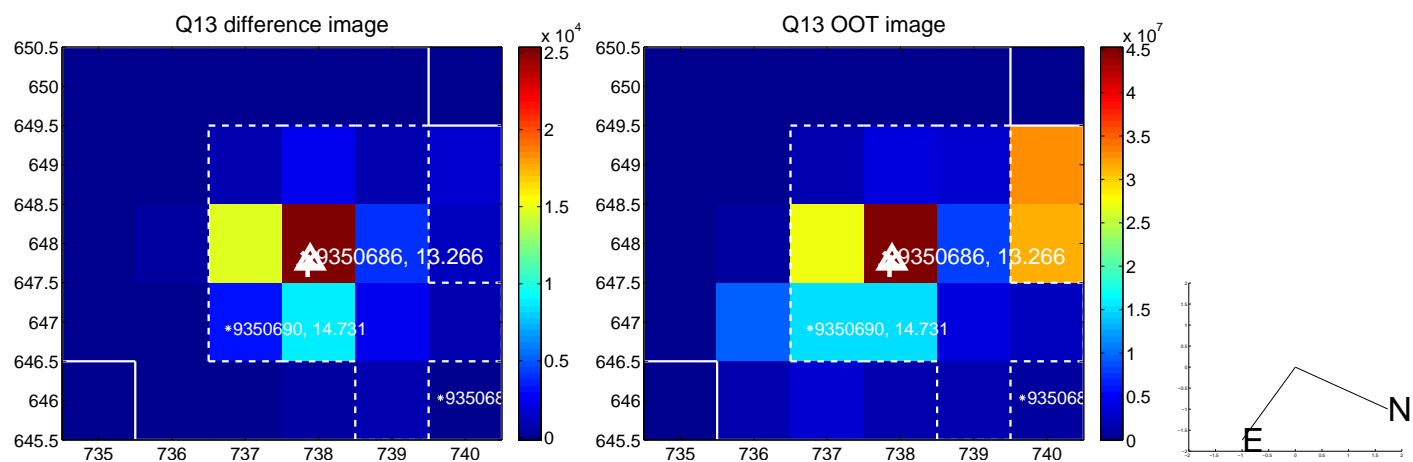
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



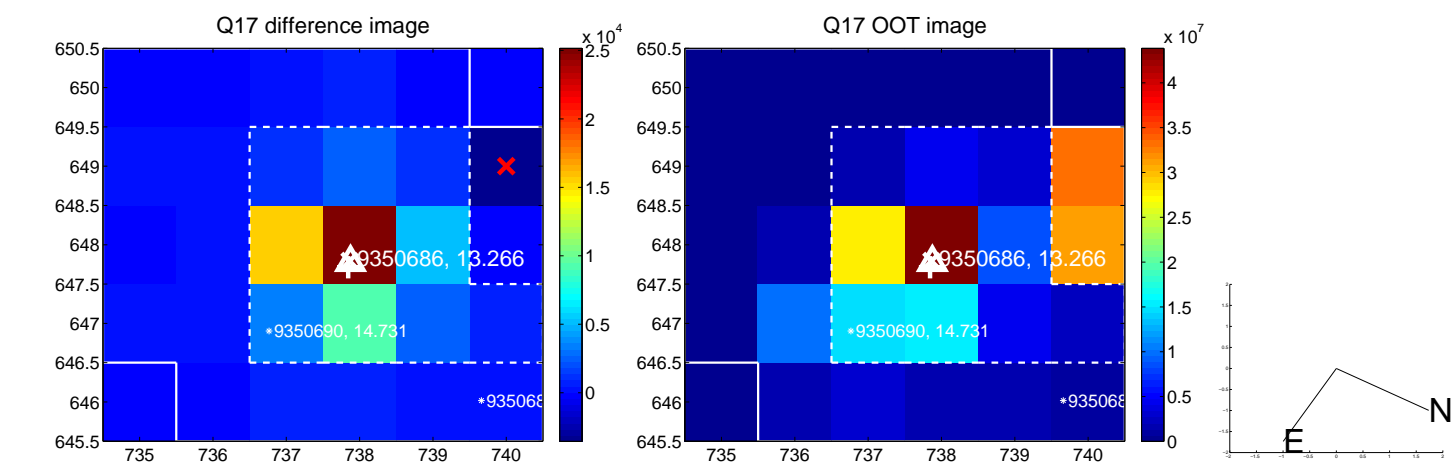
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



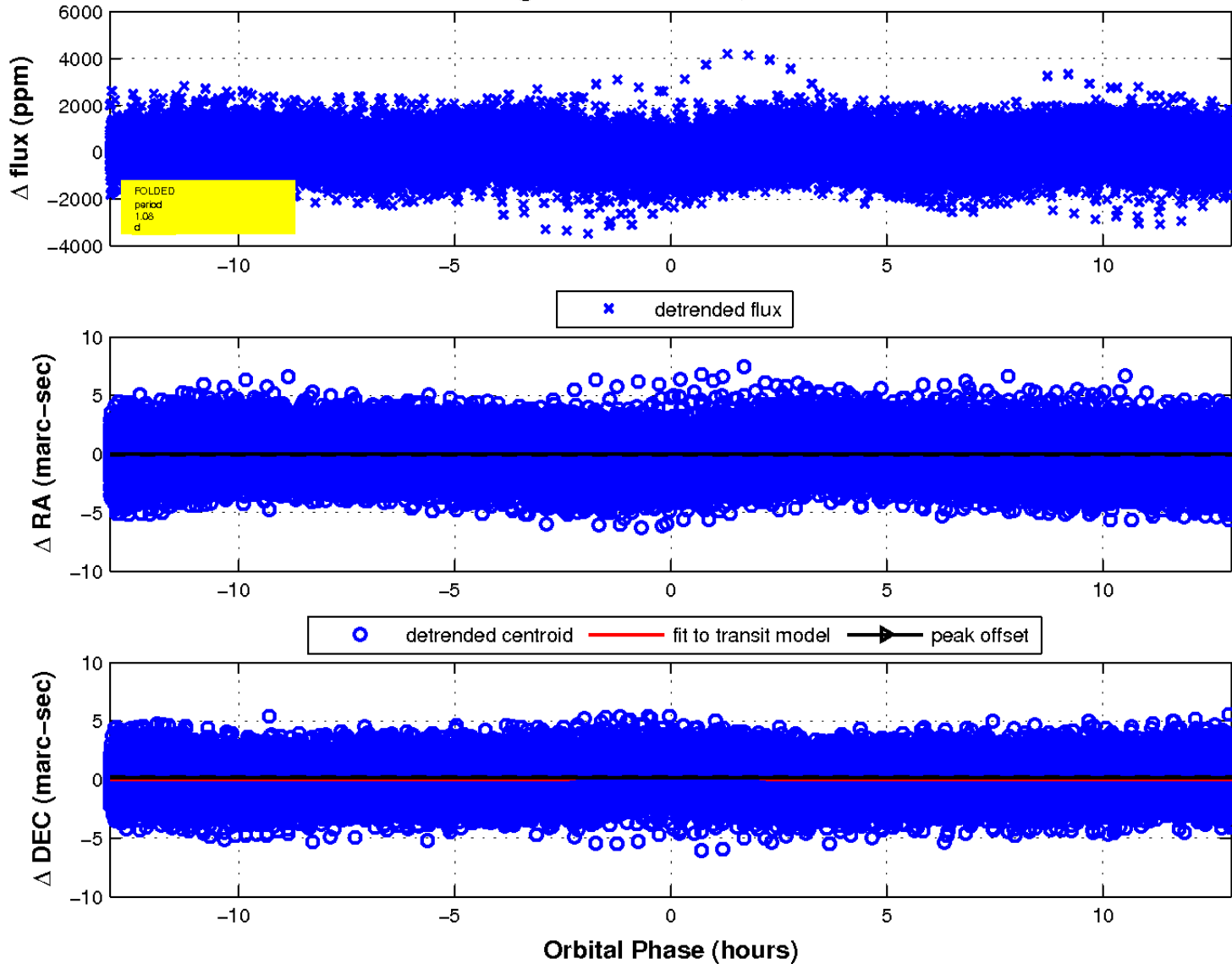
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

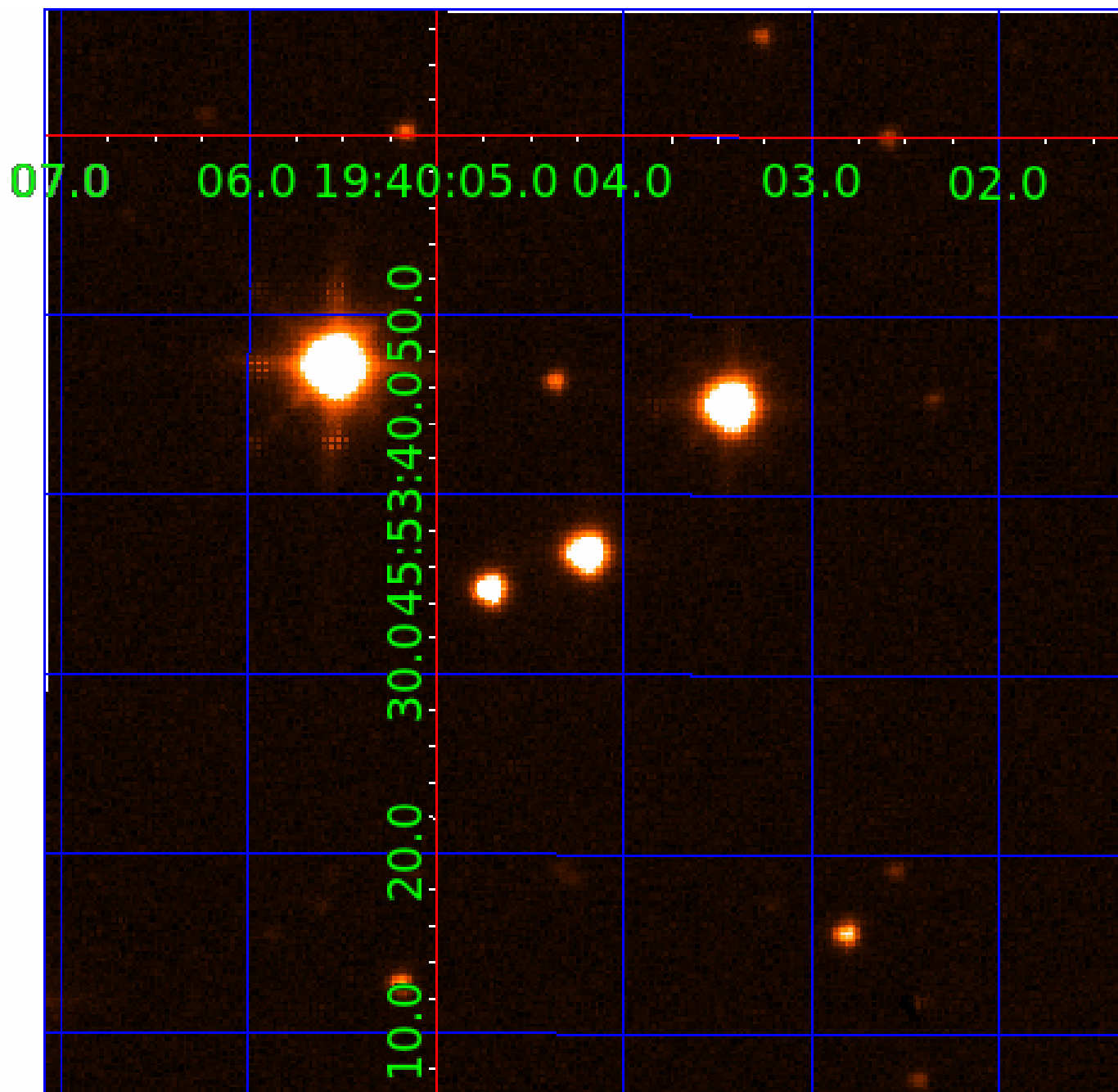


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009350686

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009350686-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009350686-02	OBS	FP	0.00	1	0	0	0	LPP_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.

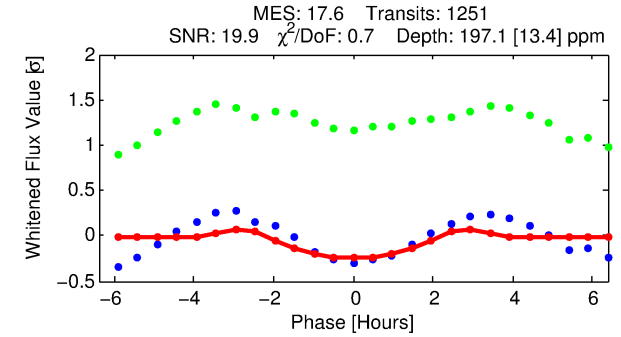
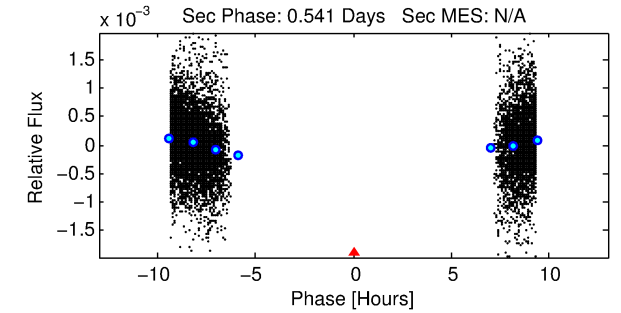
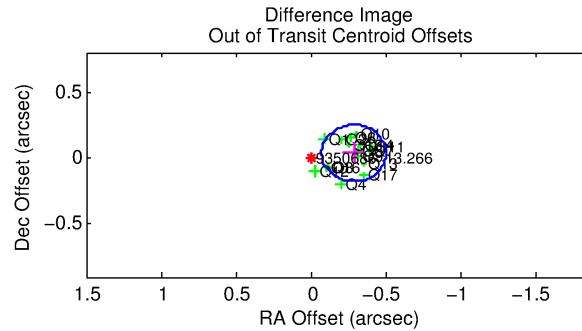
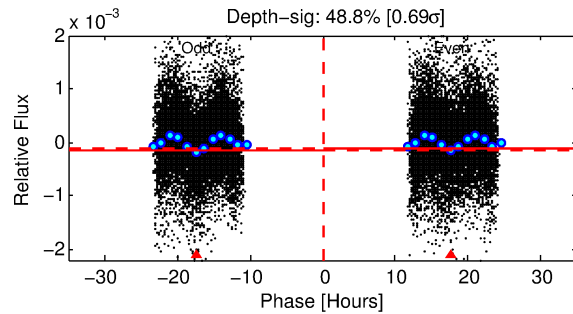
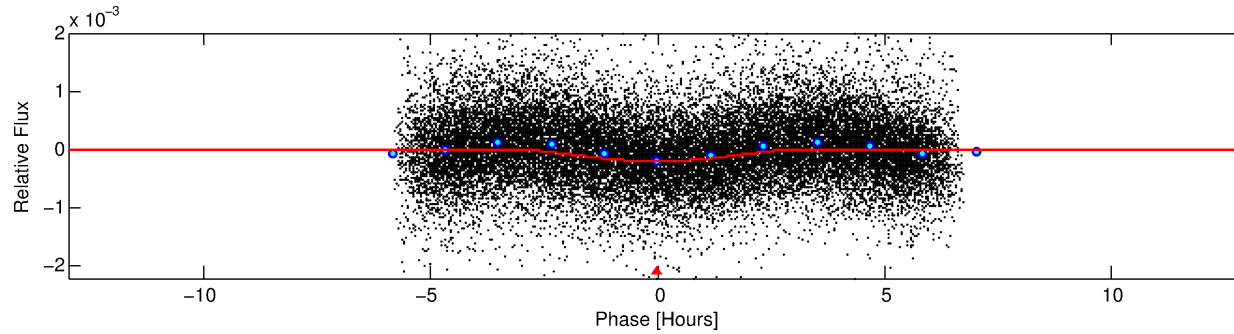
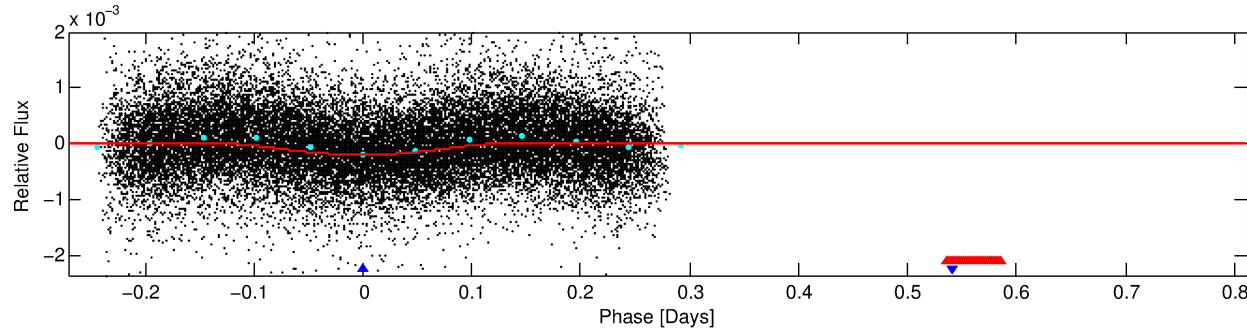
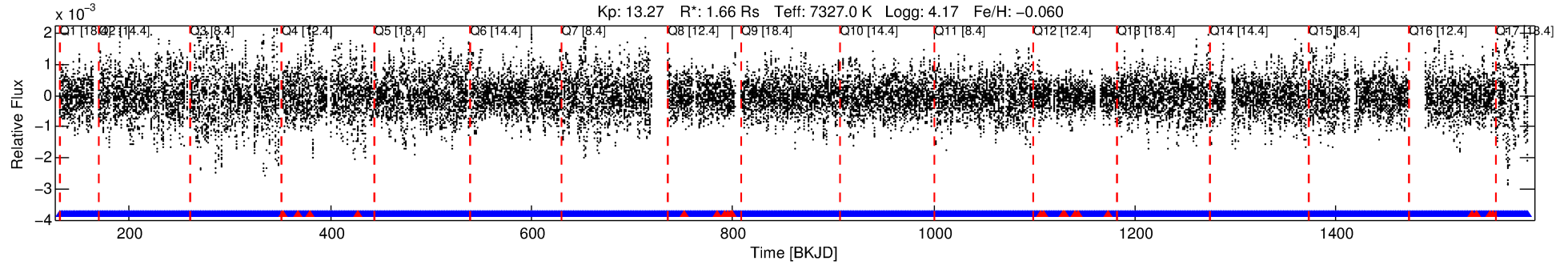
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009350686-02

No Significant Match Found

DV One-Page Summary

KIC: 9350686 Candidate: 2 of 2 Period: 1.082 d



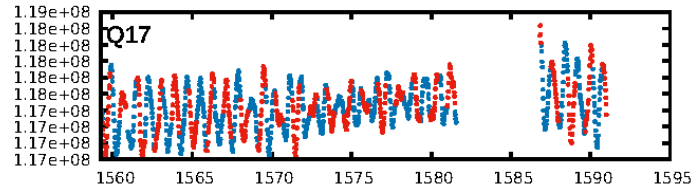
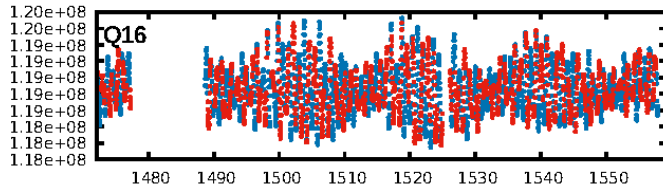
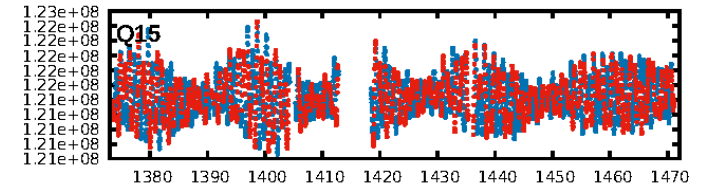
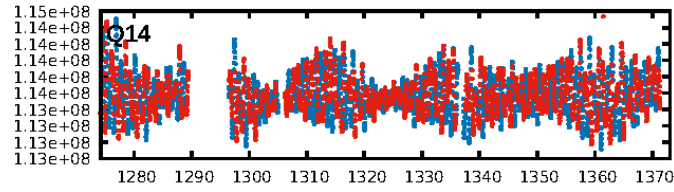
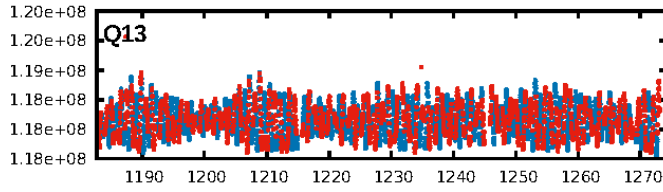
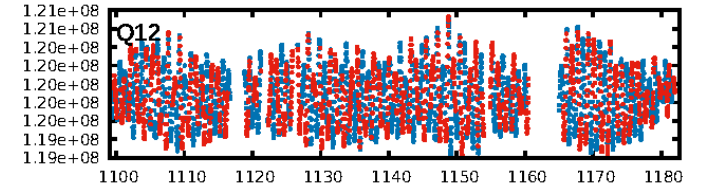
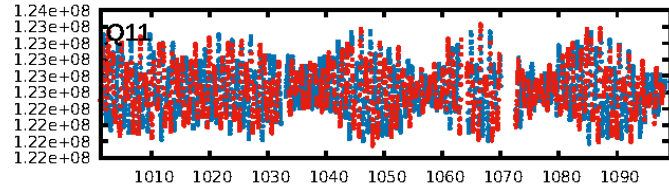
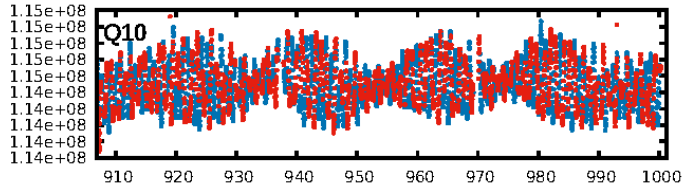
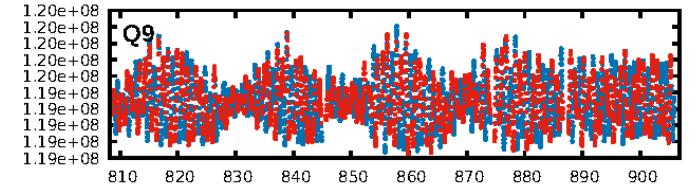
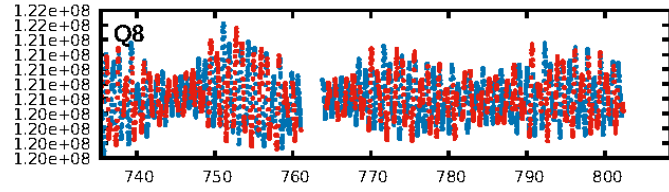
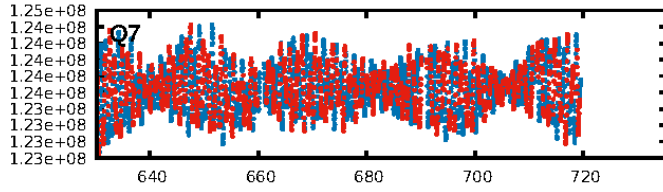
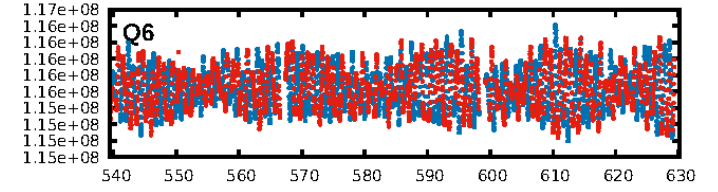
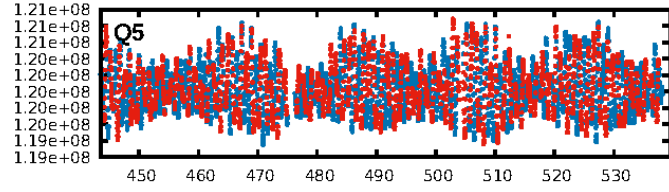
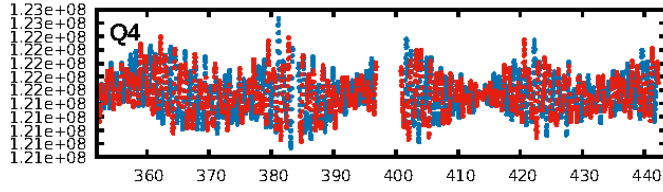
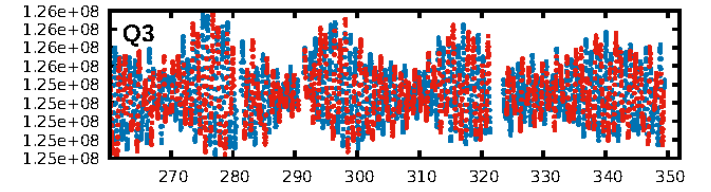
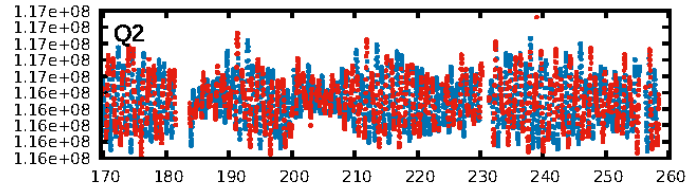
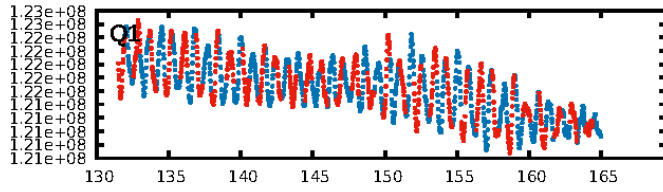
DV Fit Results:

Period = 1.08175 [0.00001] d
Epoch = 131.7027 [0.0024] BKJD
Rp/R* = 0.0213 [0.0054]
a/R* = 1.06 [0.00]
b = 0.99 [0.01]
Seff = 12755.37 [5368.76]
Teq = 2710 [285] K
Rp = 3.86 [1.62] Re
a = 0.0237 [0.0064] AU

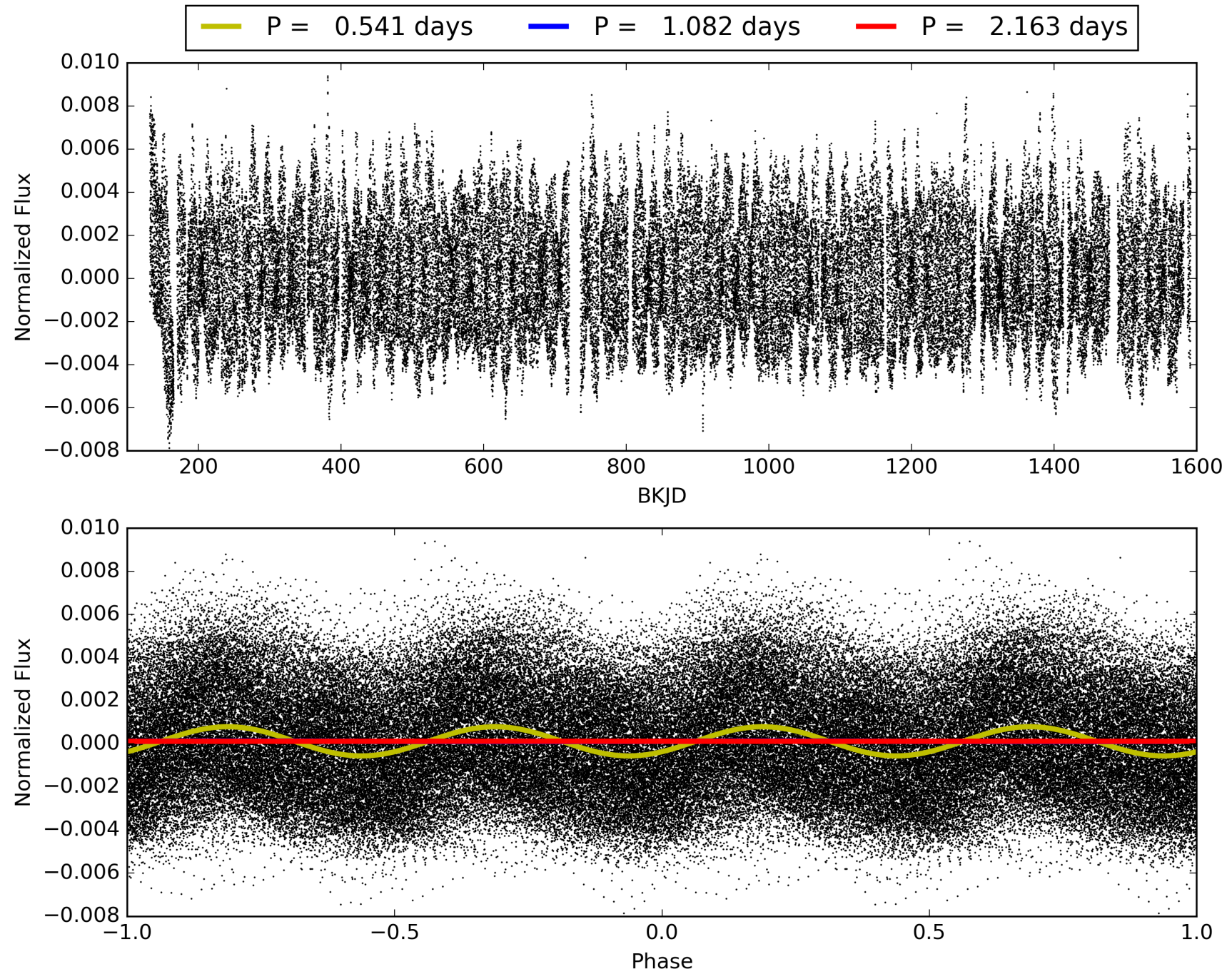
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [1174/1195]
GhostDiagnostic-chr: 0.4019
Centroid-sig: 0.0%
Centroid-so: 0.169 arcsec [0.78 σ]
OotOffset-rm: 0.290 arcsec [4.06 σ]
KicOffset-rm: 0.040 arcsec [0.57 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]

TCE 009350686-02, PDC Light Curves

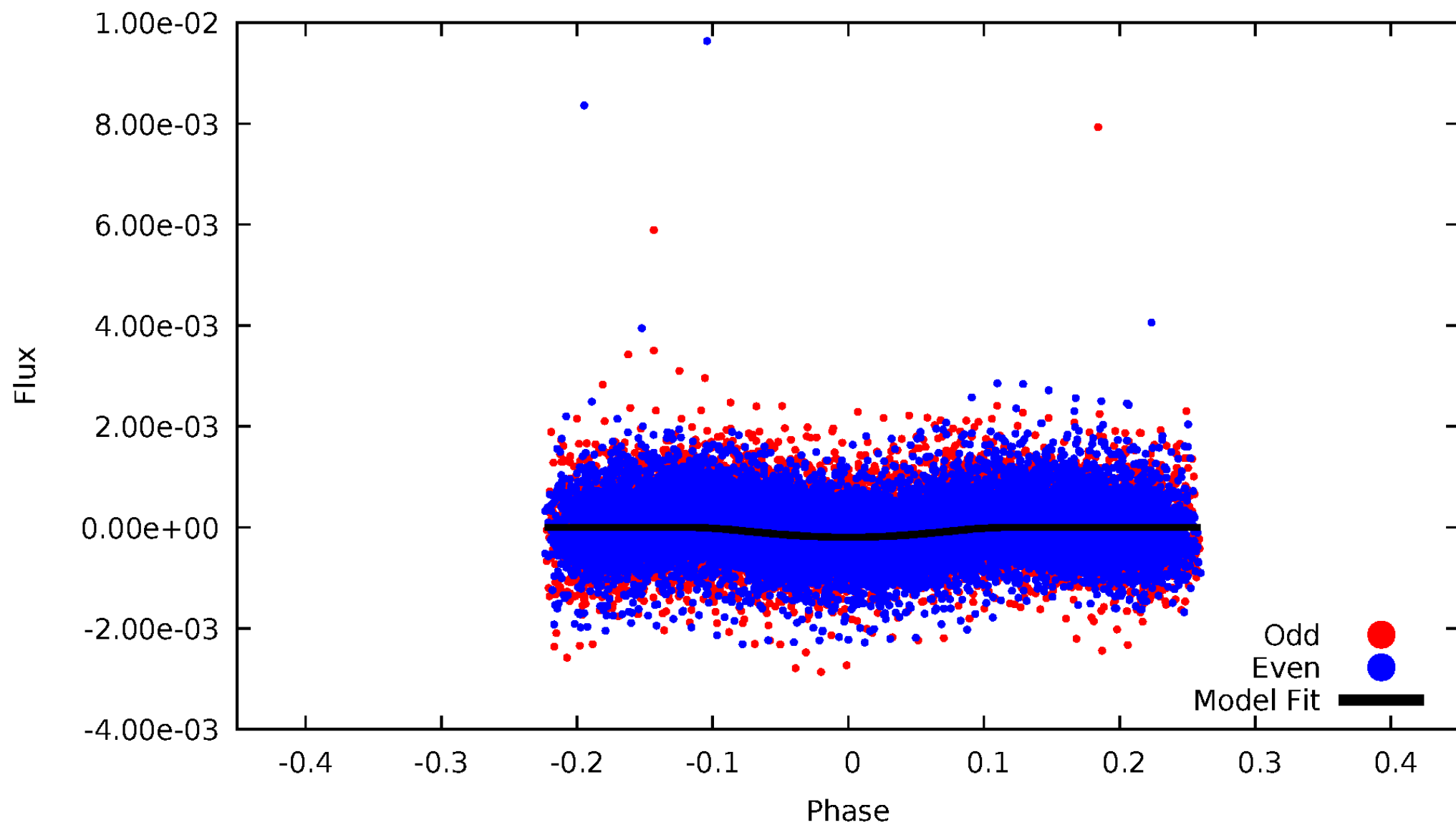


TCE 009350686-02



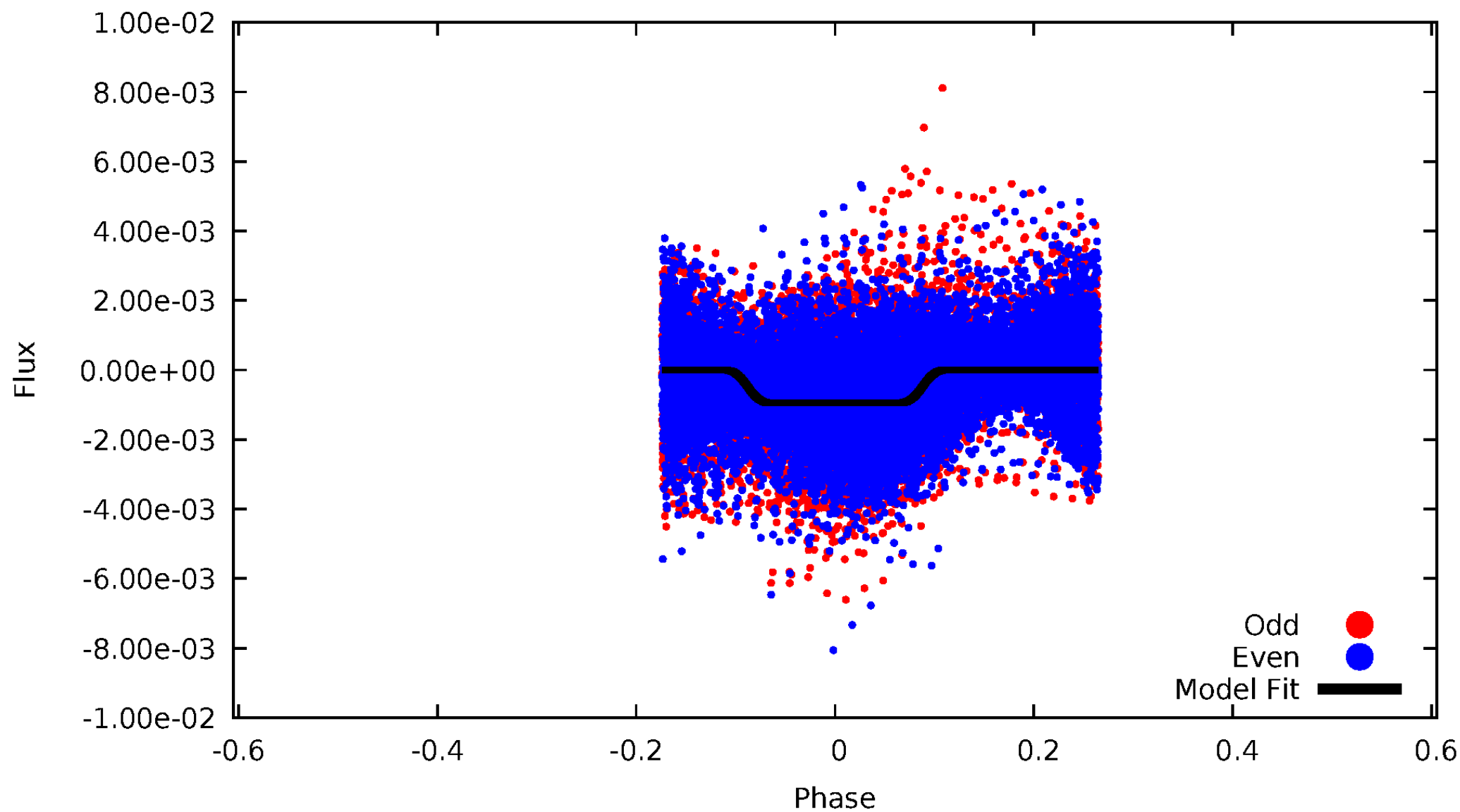
DV Odd/Even

TCE 009350686-02



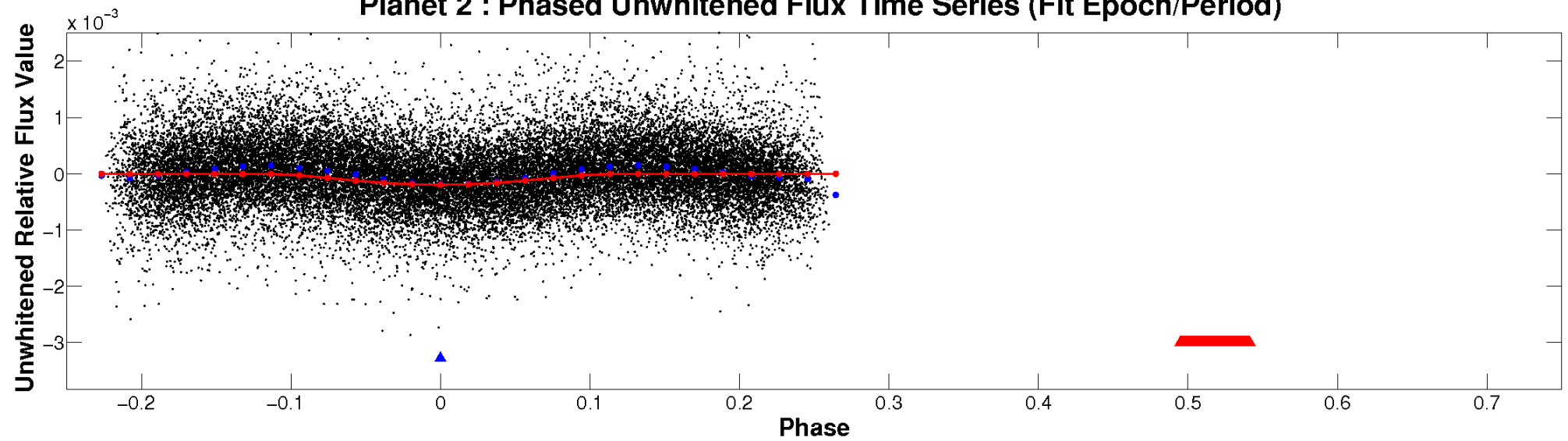
ALT Odd/Even

TCE 009350686-02

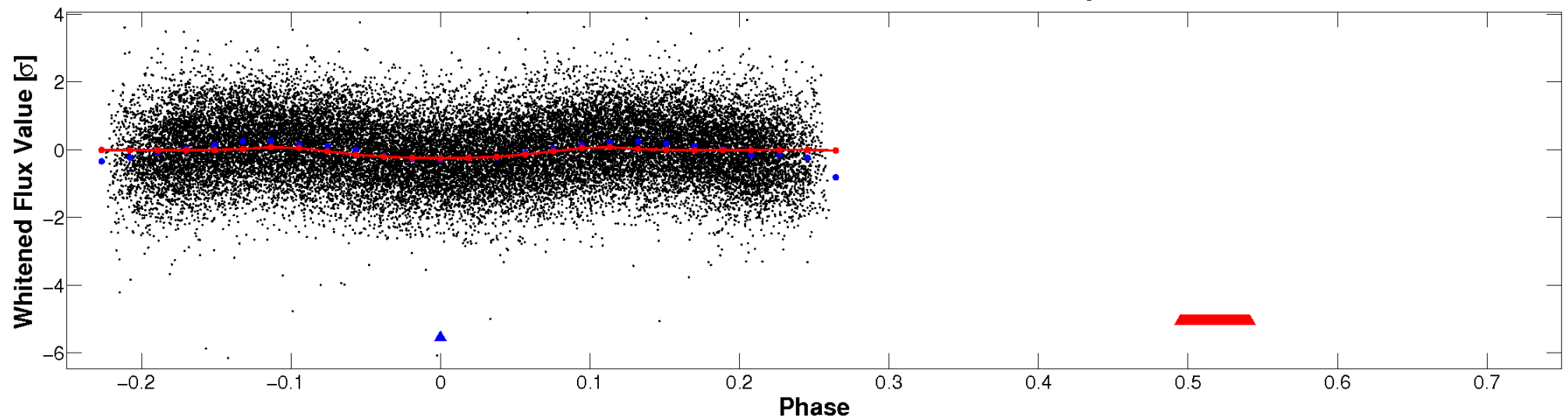


Non-Whitened Vs. Whitened Light Curve

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

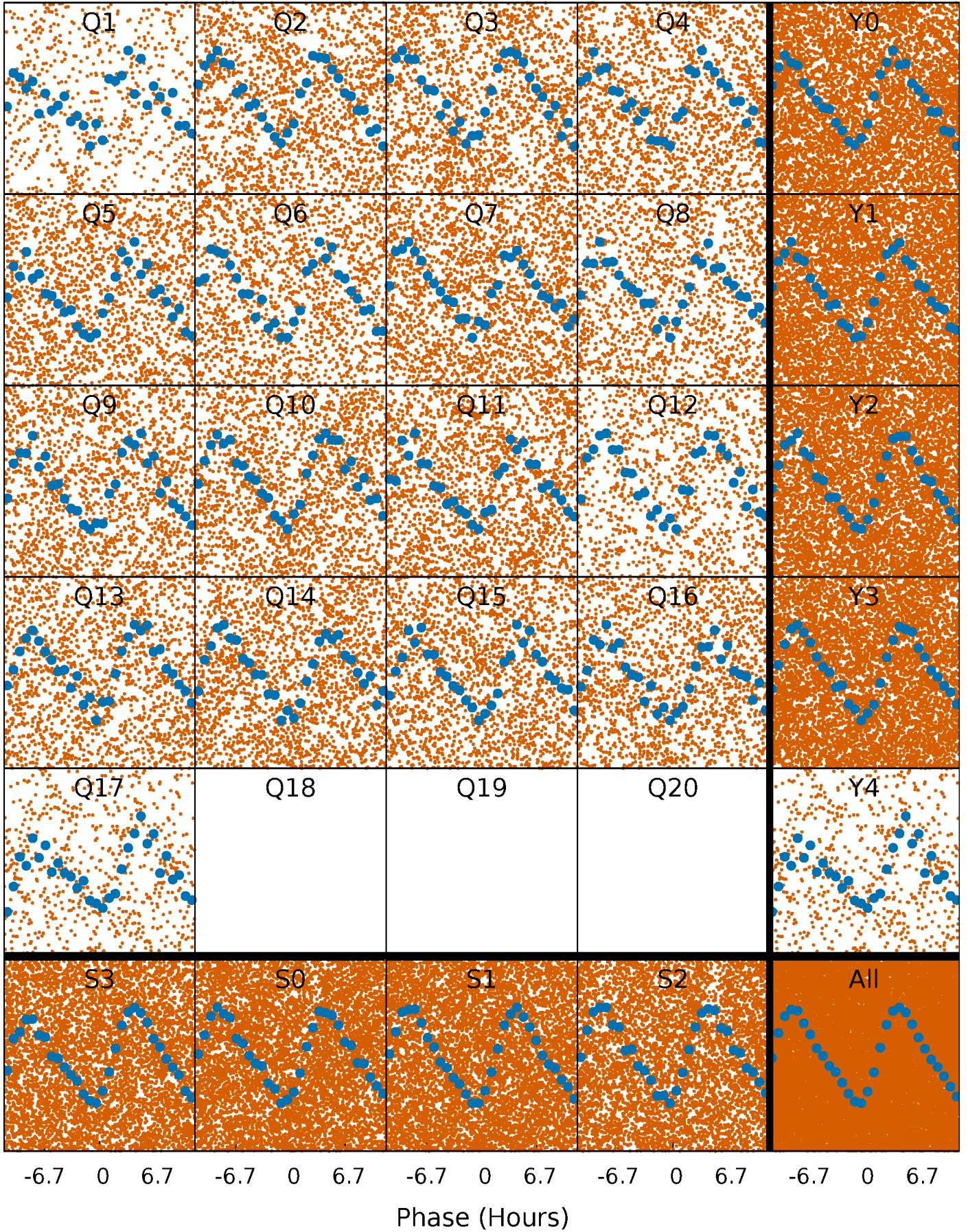


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



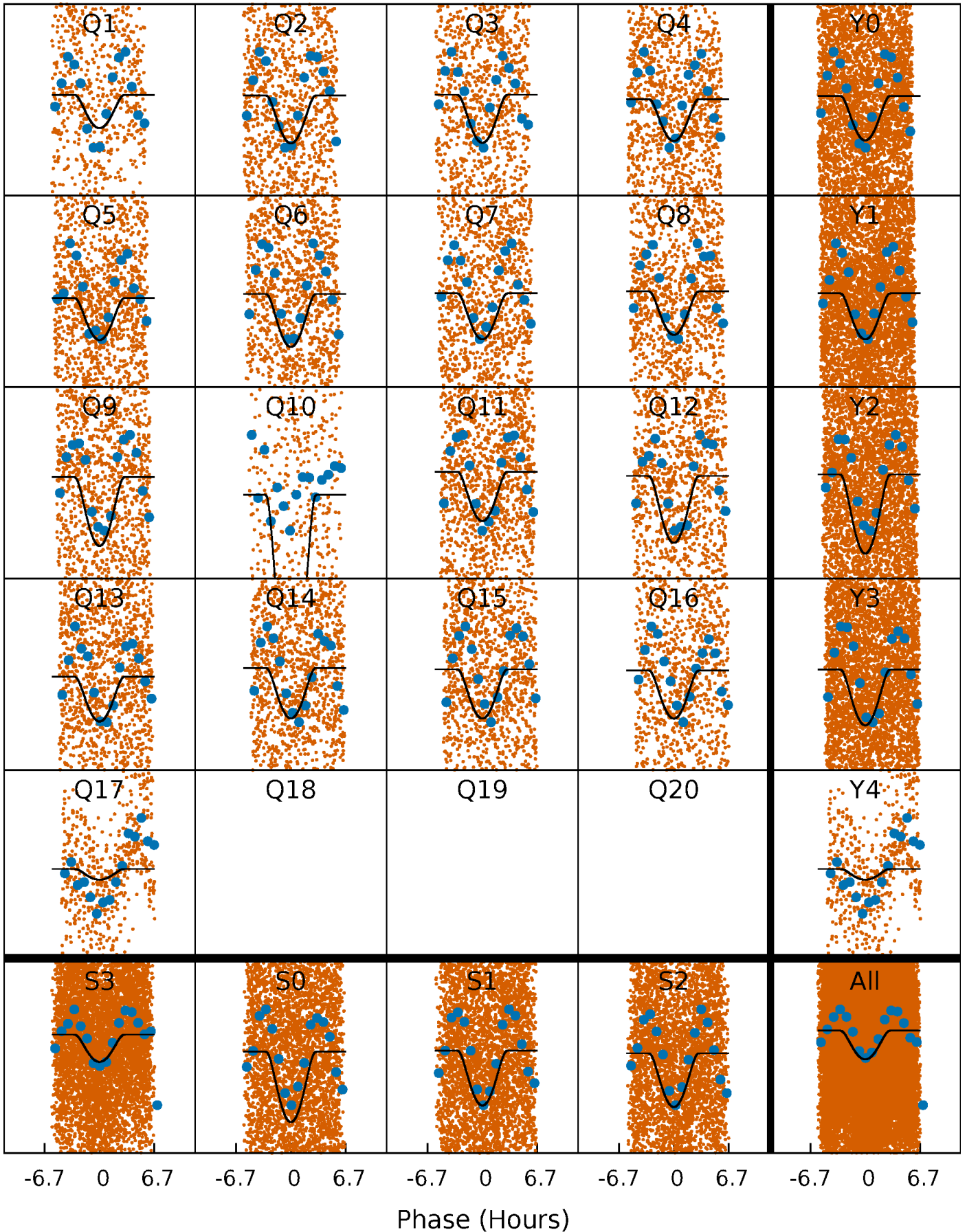
PDC Quarter-Phased Transit Curves

TCE 009350686-02 P= 1.081747 Days $T_0=131.702673$ (BKJD)



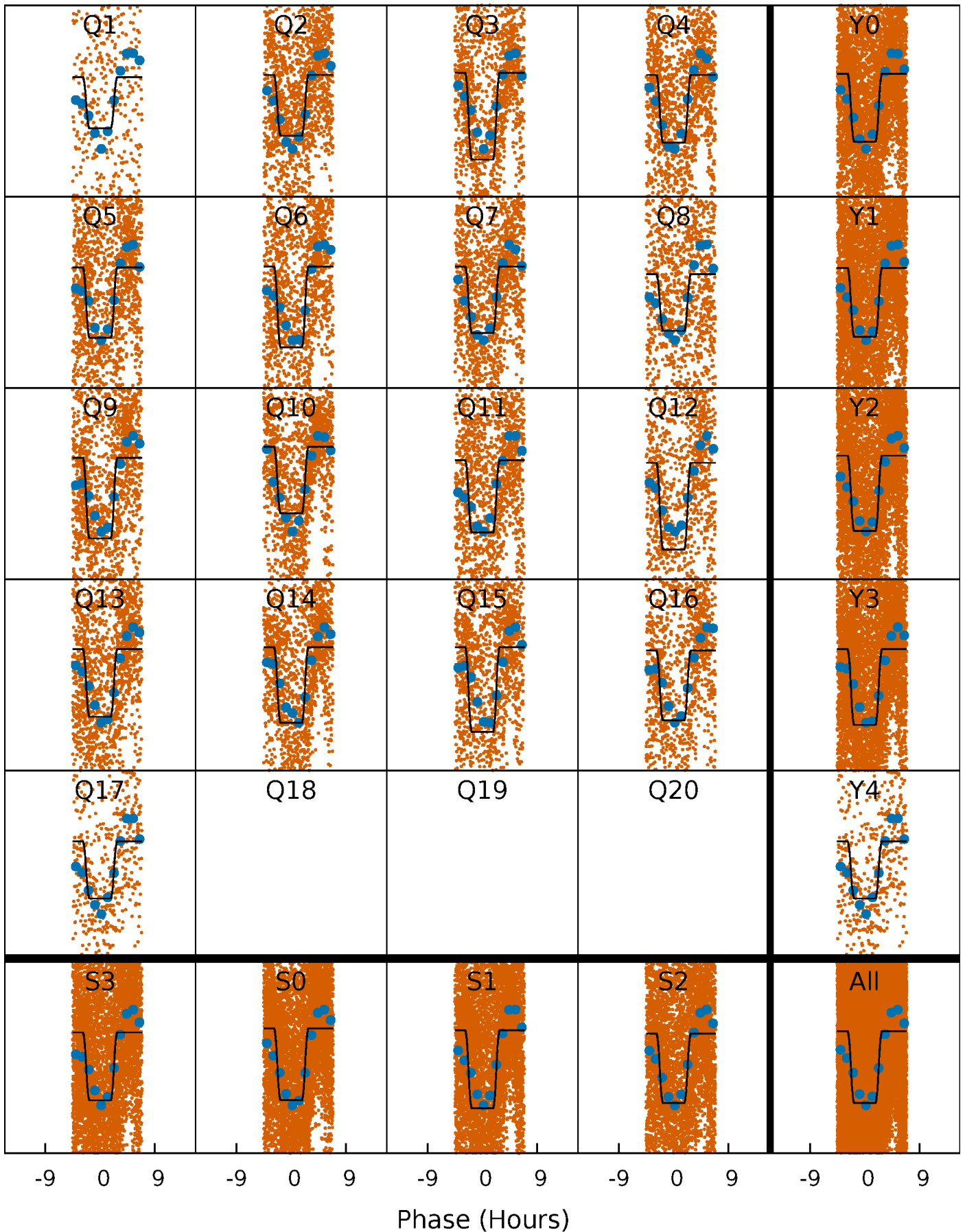
DV Quarter-Phased Transit Curves

TCE 009350686-02 P= 1.081747 Days $T_0=131.702673$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

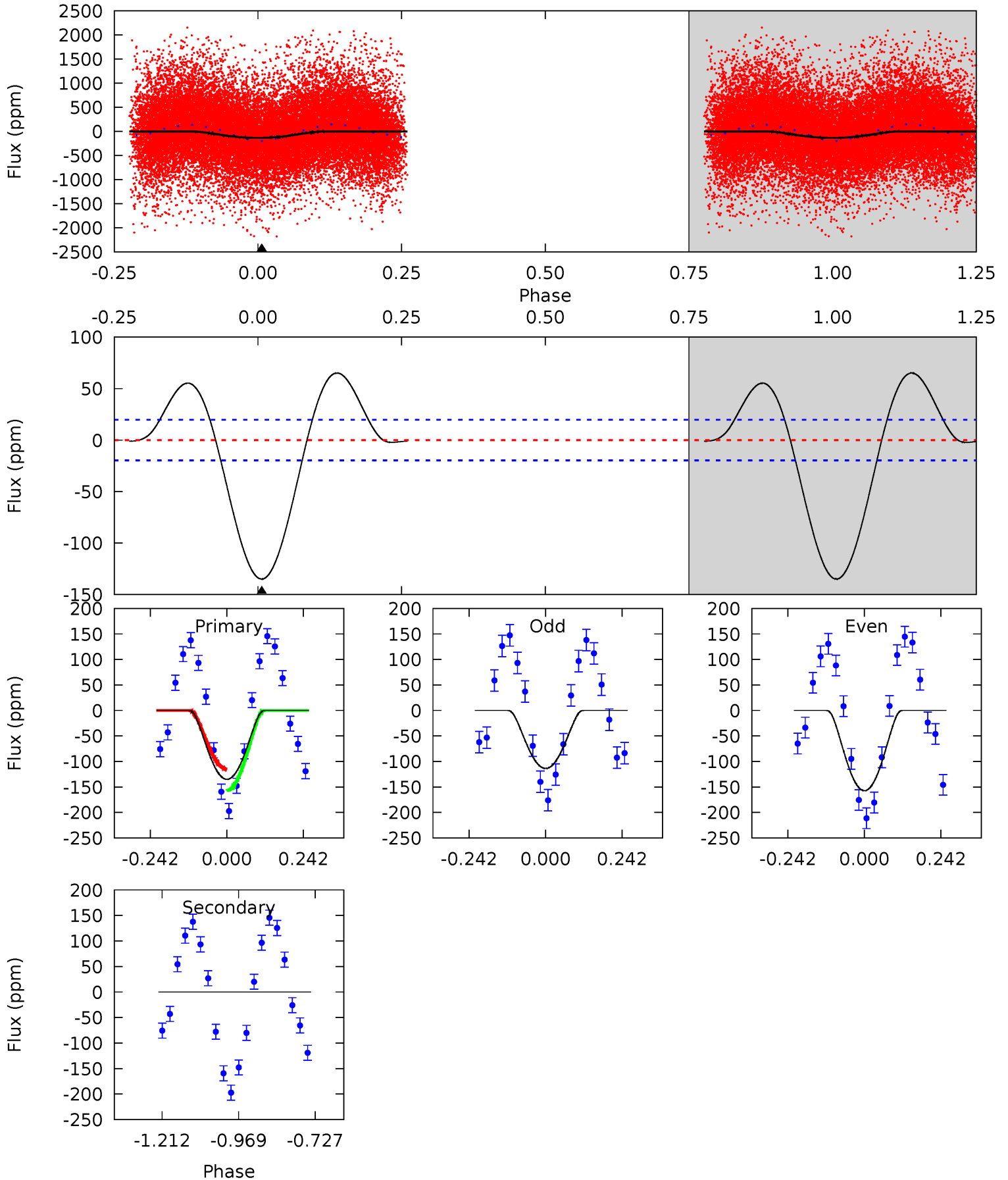
TCE 009350686-02 P= 1.081785 Days $T_0=131.647513$ (BKJD)



DV Model-Shift Uniqueness Test

009350686-02, P = 1.081747 Days, E = 130.620926 Days

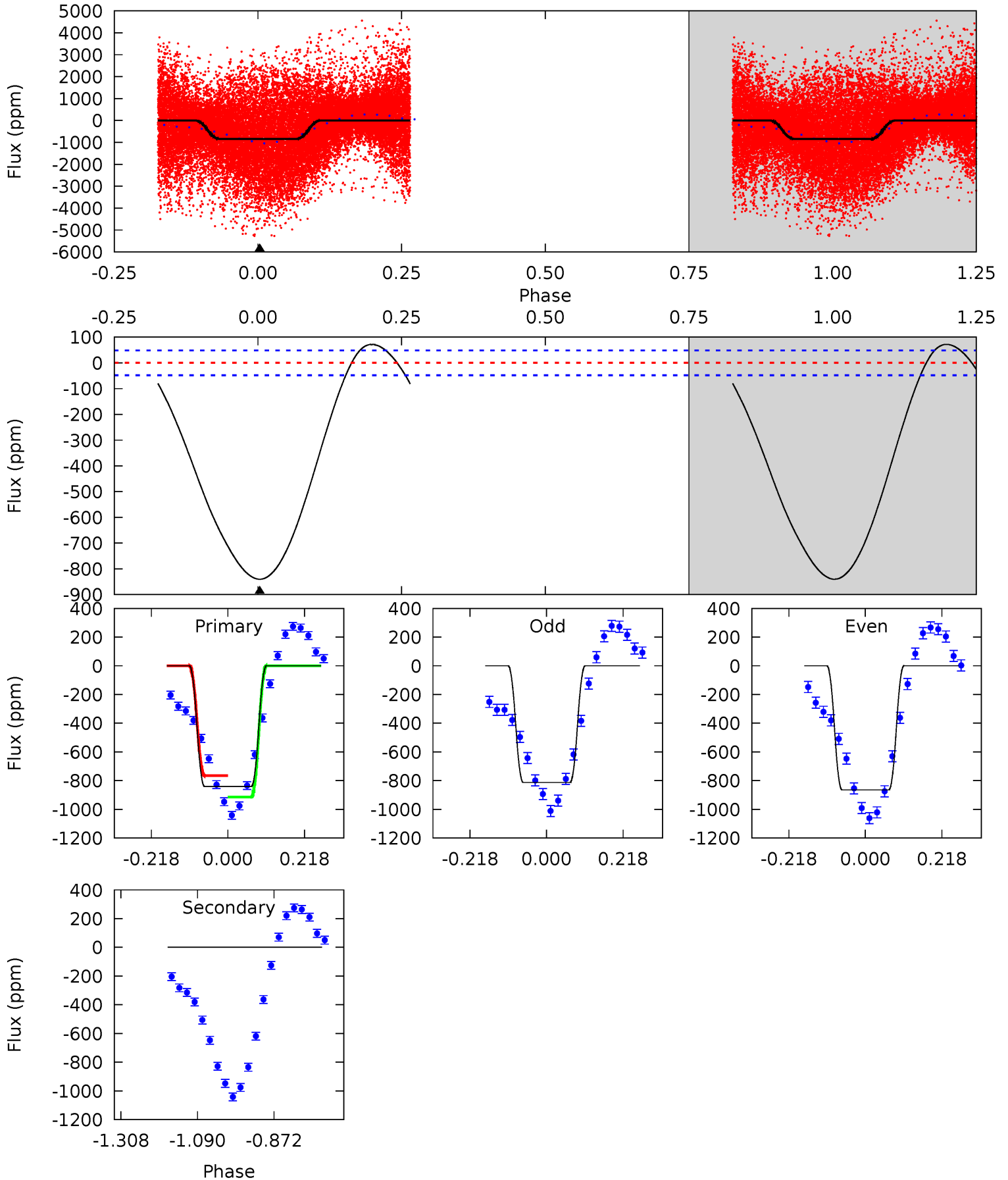
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.9	0	0	0	4.38	1.17	0.62	29.9	29.9	0	0	4.86	1.14	0.33	4.71



Alt Model-Shift Uniqueness Test

009350686-02, P = 1.081785 Days, E = 130.565728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
76.5	0	0	0	4.40	1.23	3.54	76.5	76.5	0	0	2.37	0.97	0.08	6.40



Stellar Parameters For KIC 009350686

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7327^{+228}_{-330}	$4.175^{+0.108}_{-0.201}$	$-0.060^{+0.200}_{-0.350}$	$1.663^{+0.555}_{-0.299}$	$1.508^{+0.219}_{-0.219}$	$0.462^{+0.278}_{-0.234}$
	+3%/-5%	+3%/-5%	+333%/-583%	+33%/-18%	+15%/-15%	+60%/-51%
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 009350686-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 5	$3.97^{+1.23}_{-1.05}$	3828^{+301}_{-259}	-3584^{+259}_{-250}	$-0.004^{+0.086}_{-0.095}$
Alt.	0 ± 11	$5.74^{+1.37}_{-1.18}$	3800^{+358}_{-226}	-3548^{+298}_{-277}	$0.005^{+0.109}_{-0.102}$

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

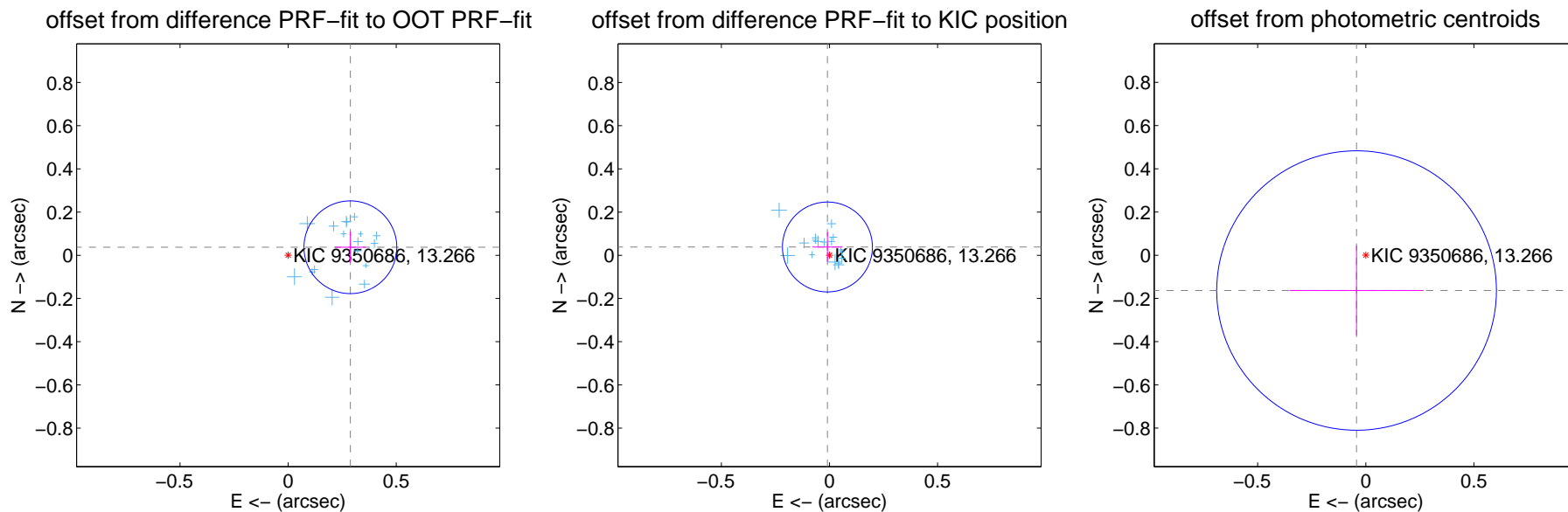
DV Centroid Data

Supplemental centroid analysis for 009350686-02. Kepler magnitude: 13.27. Transit SNR 19.90

There are 17 quarters with good PRF difference image offsets

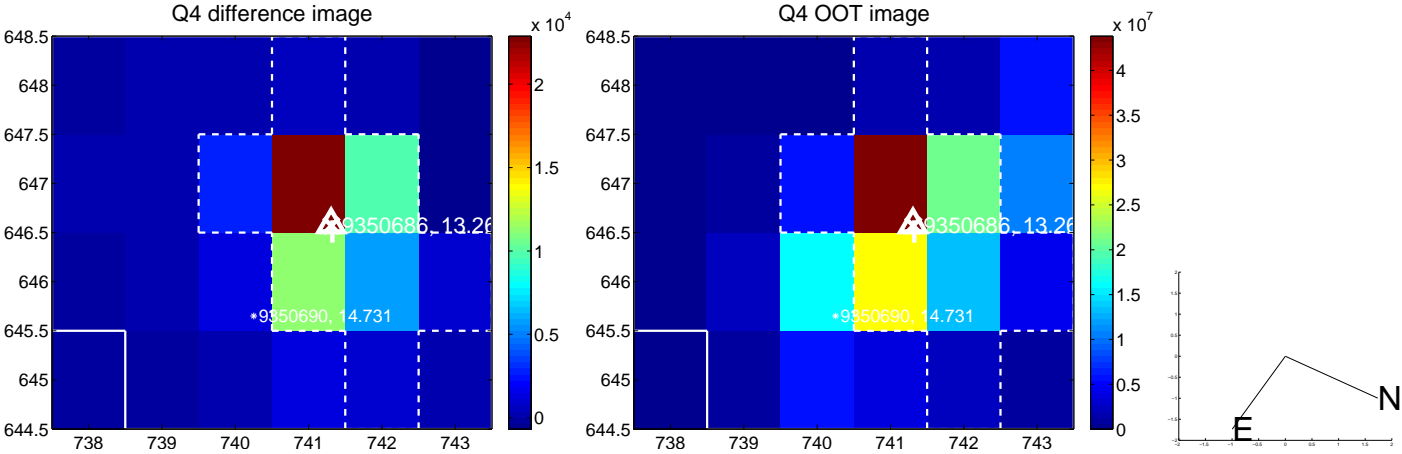
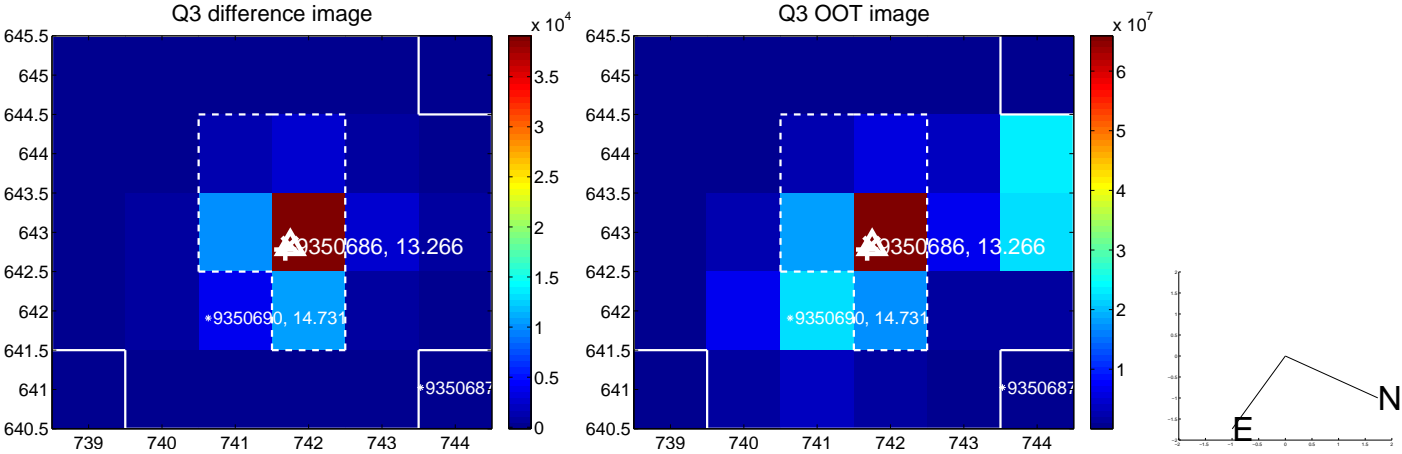
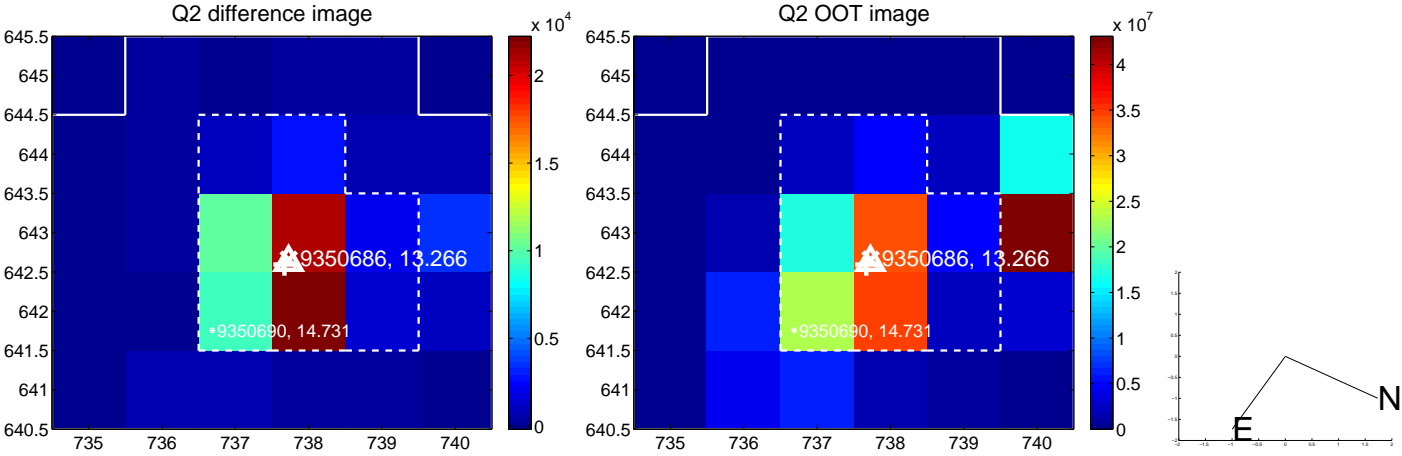
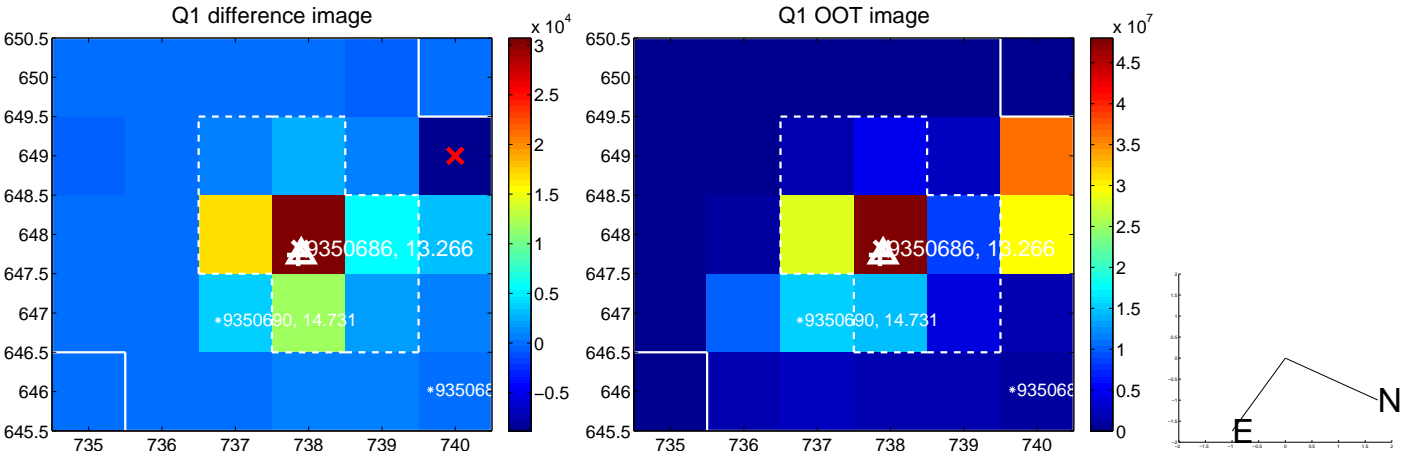
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.290 \pm 0.072	4.06	-0.288 \pm 0.072	0.037 \pm 0.072
PRF-fit source offset from KIC position	0.040 \pm 0.069	0.57	0.010 \pm 0.070	0.038 \pm 0.069
photometric centroid source offset	0.17 \pm 0.22	0.78	0.04 \pm 0.31	-0.16 \pm 0.21

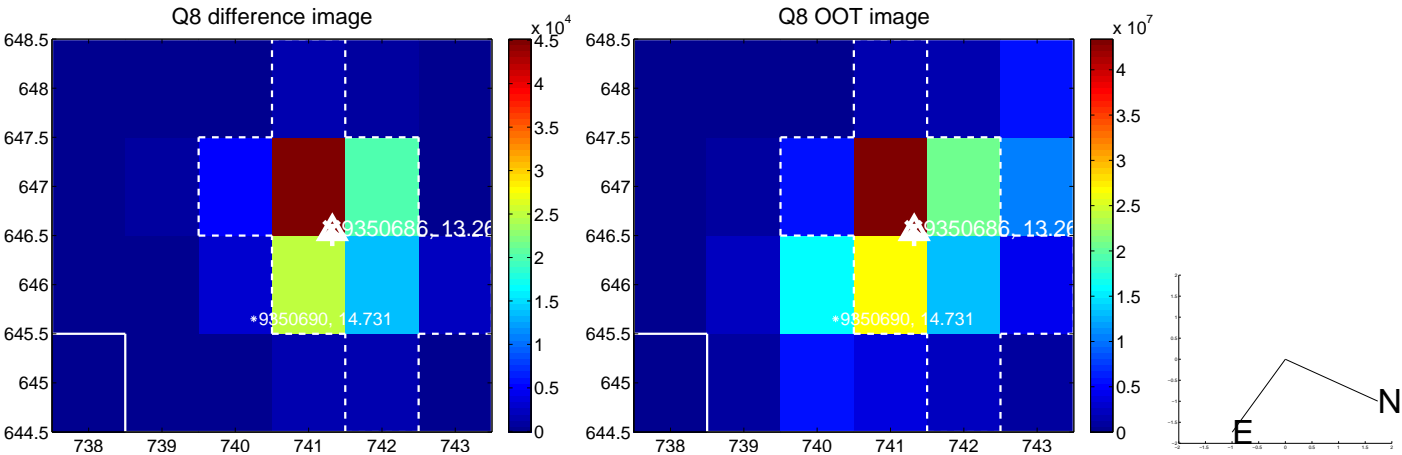
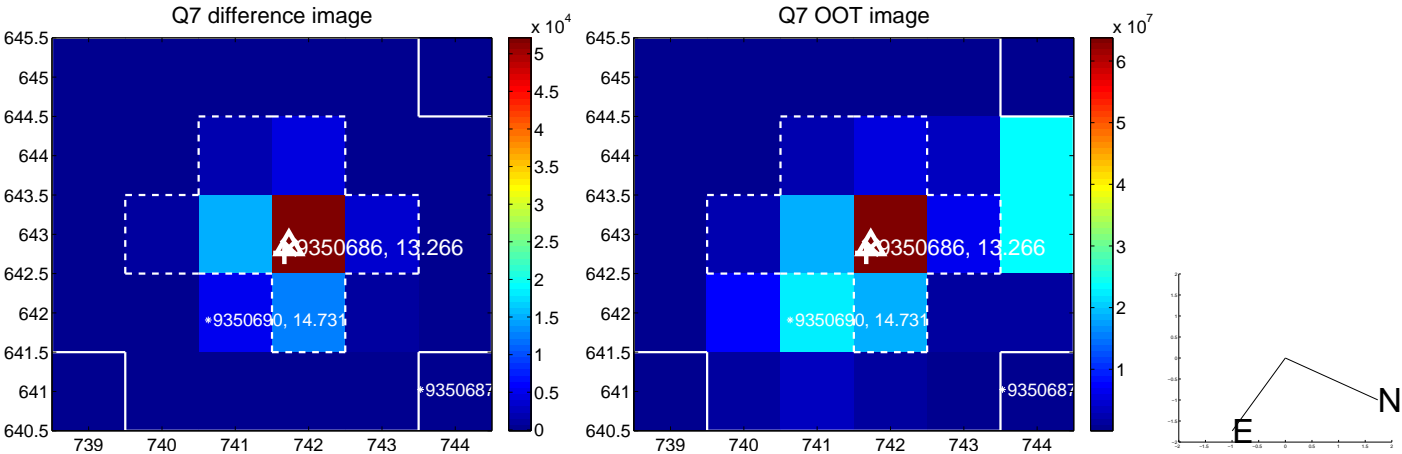
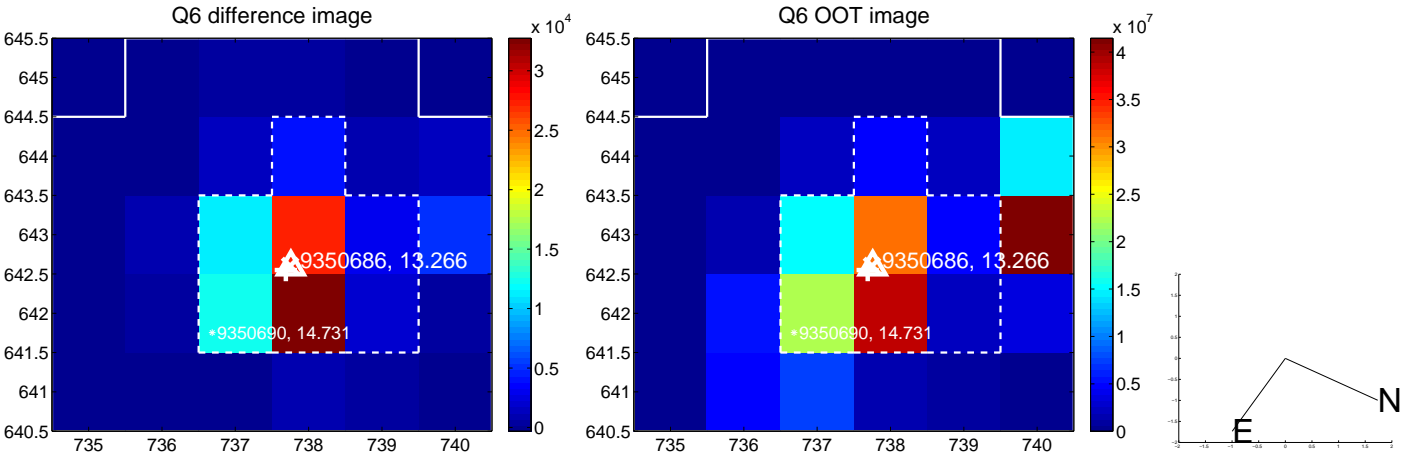
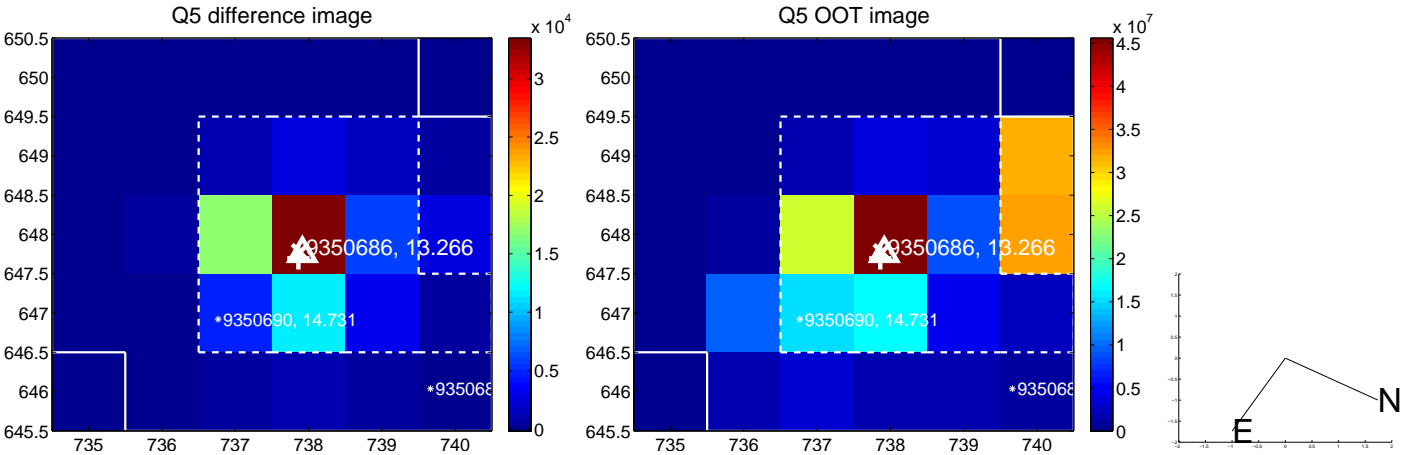


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

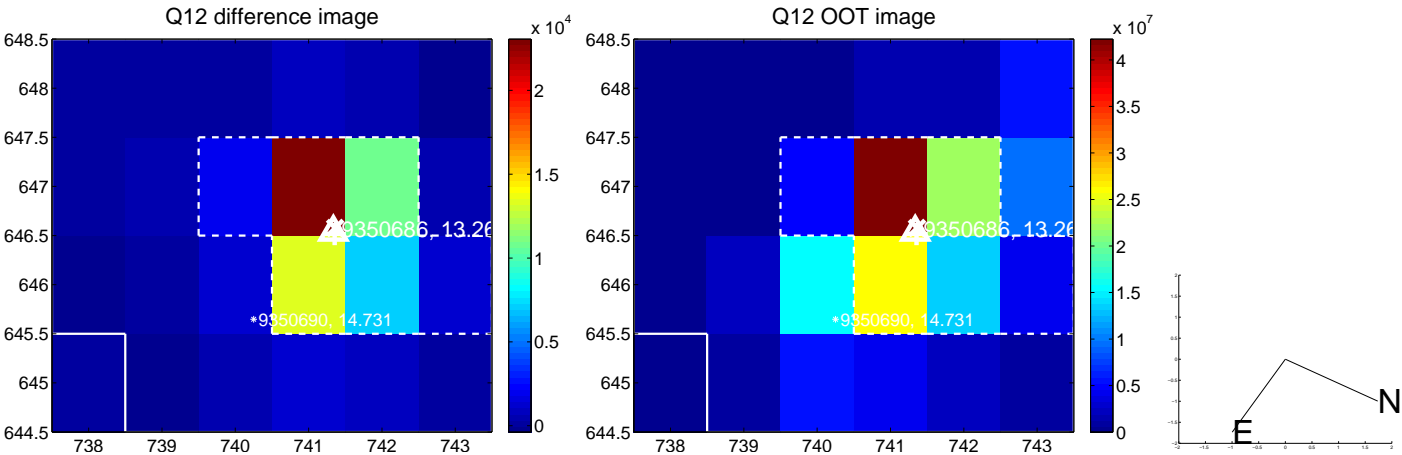
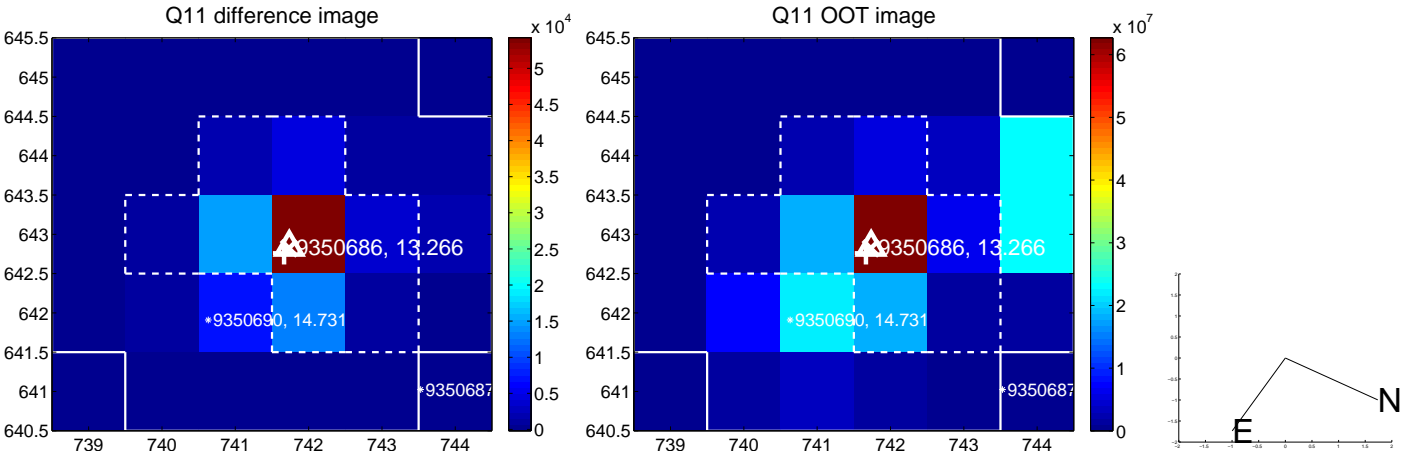
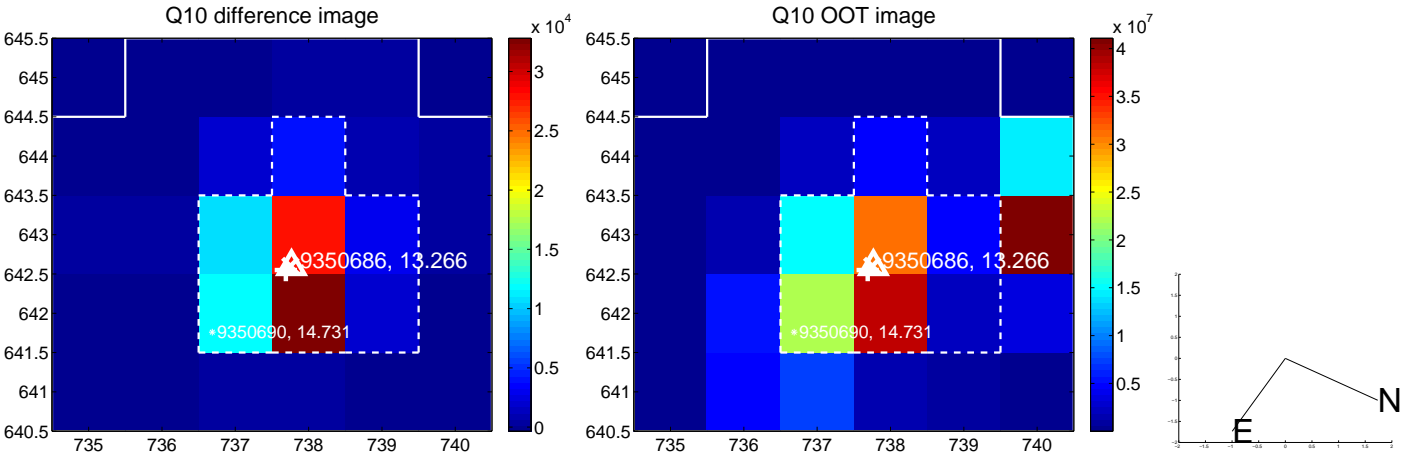
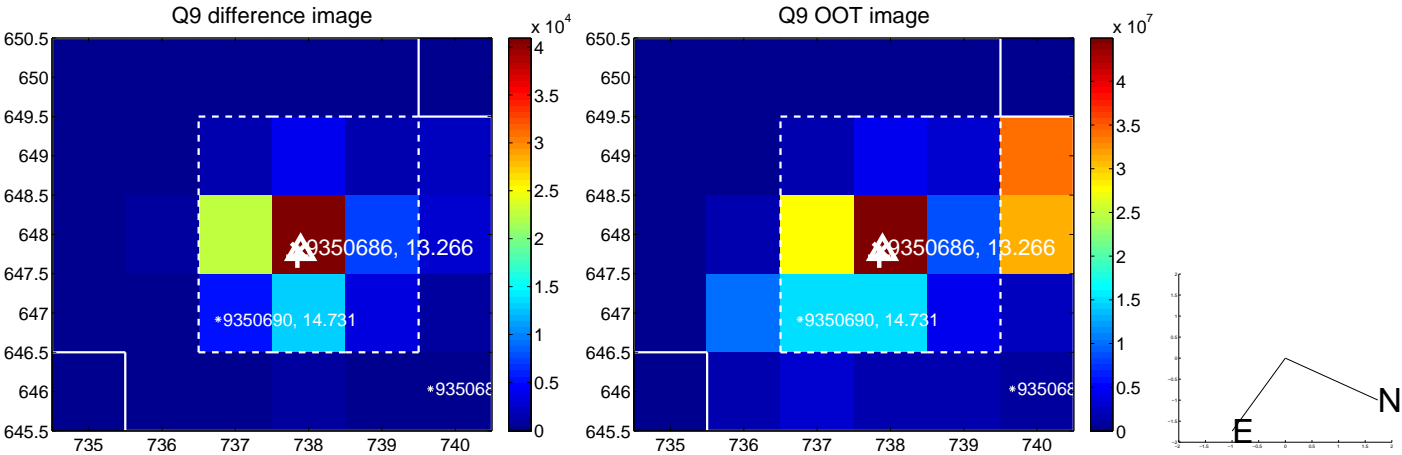
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



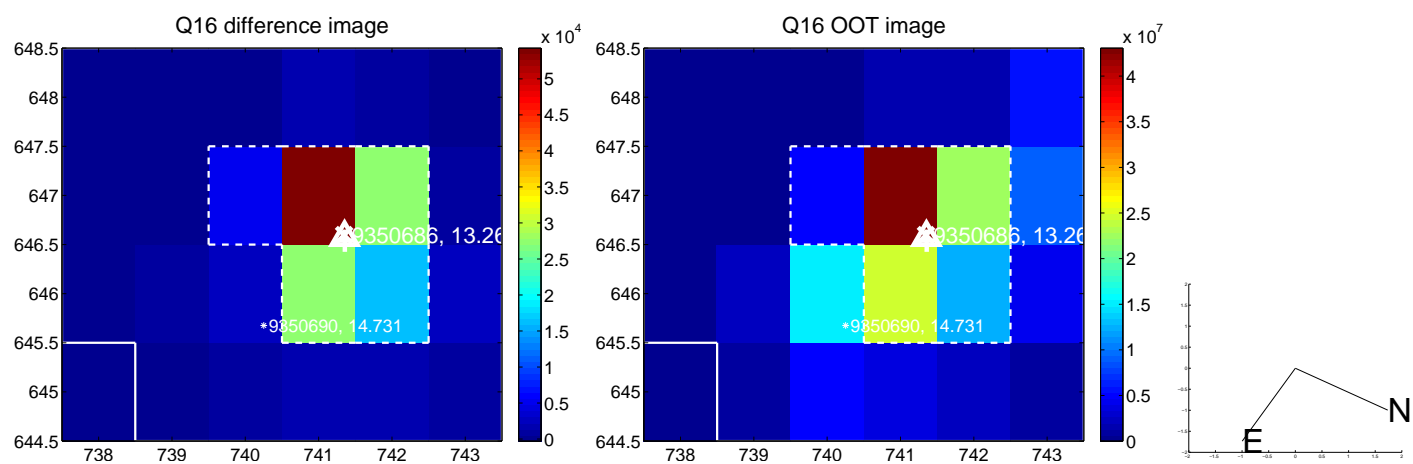
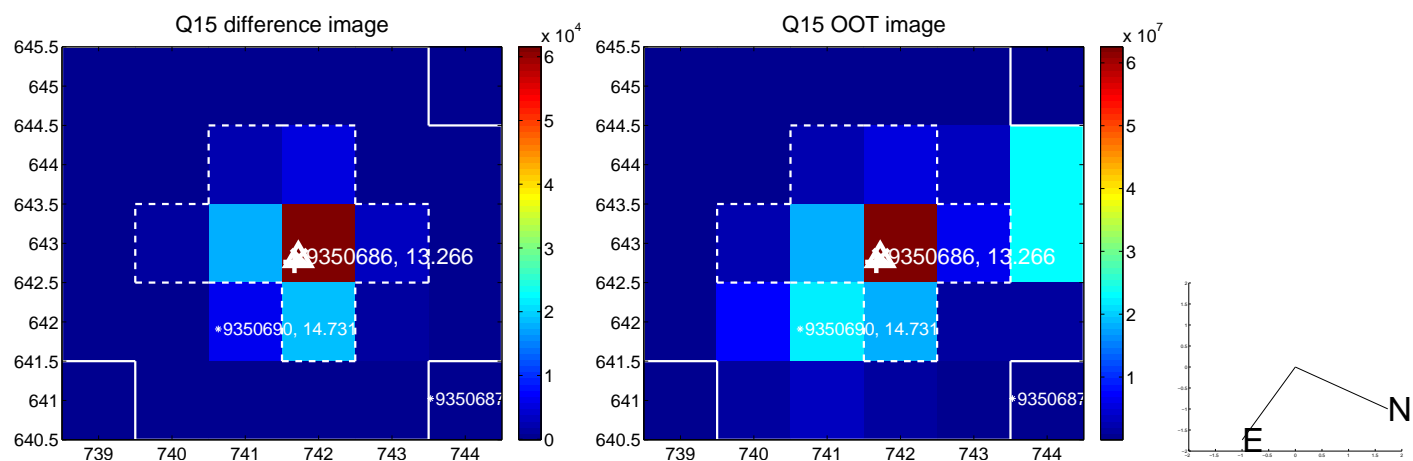
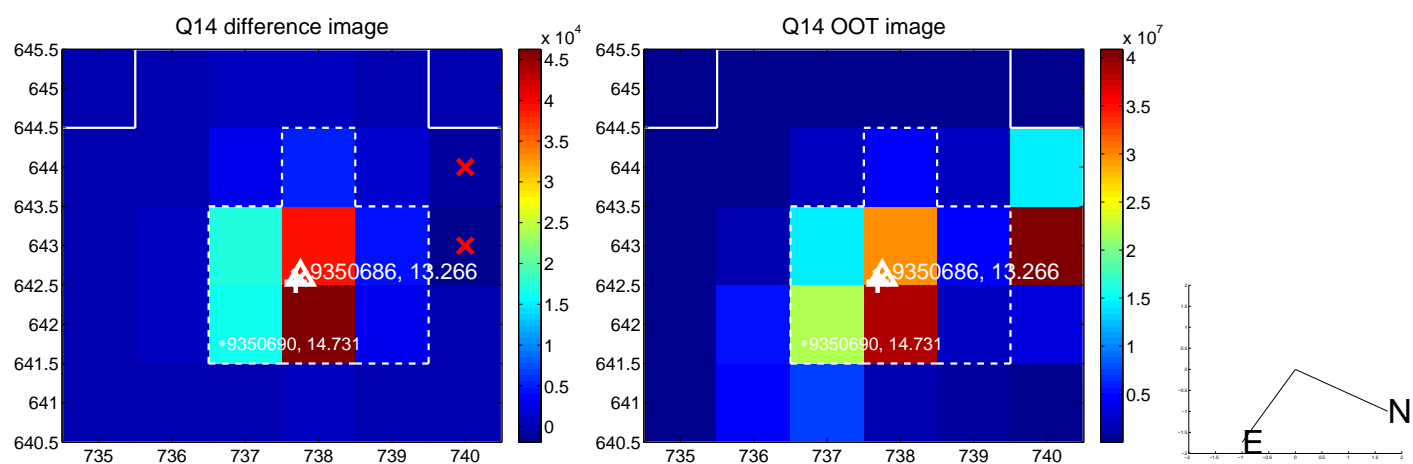
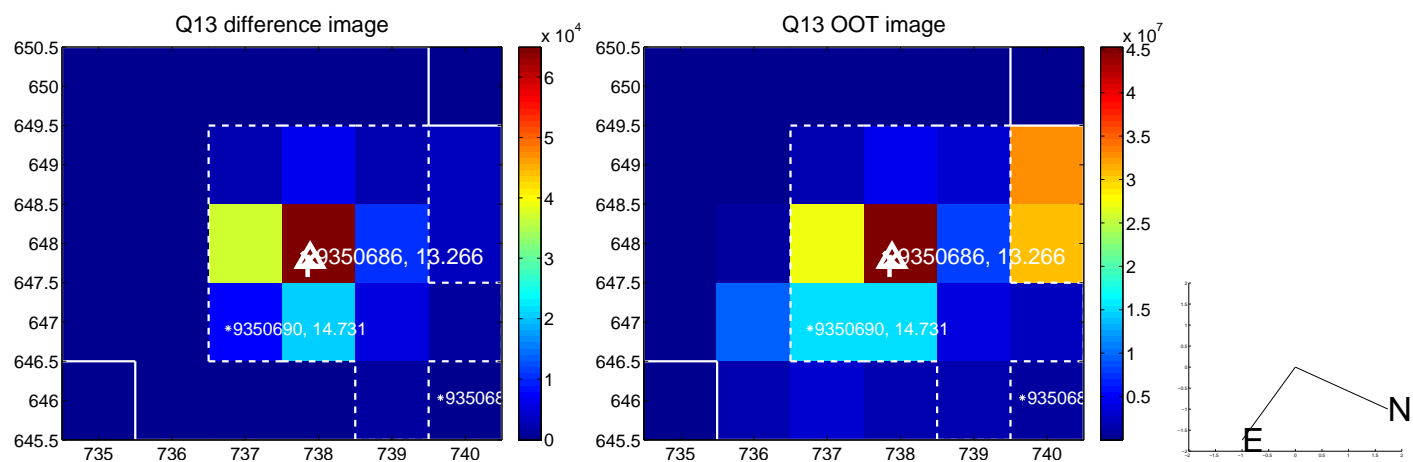
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



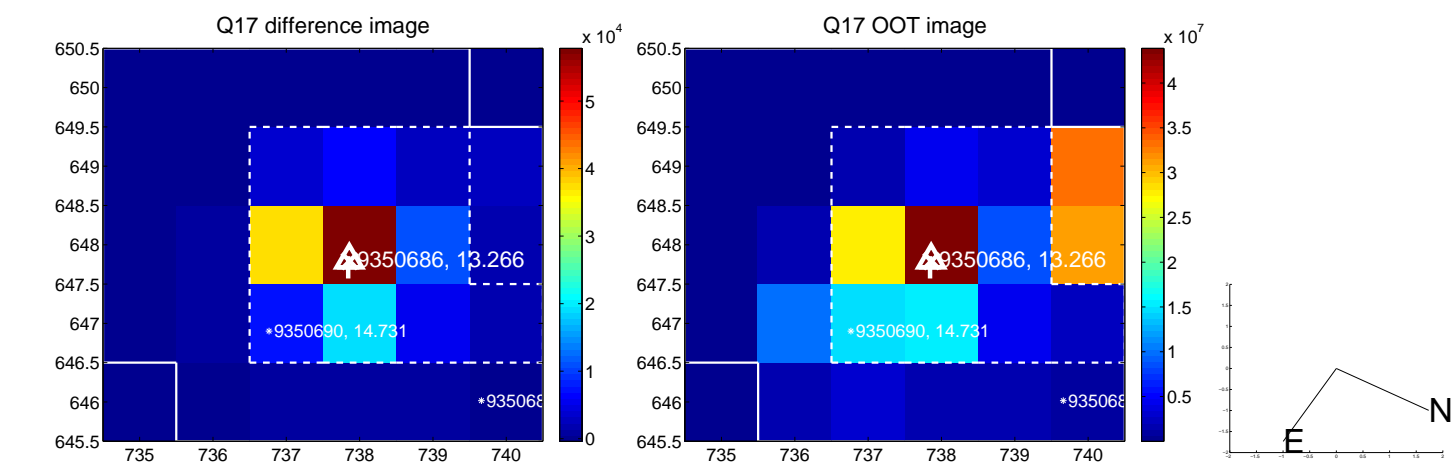
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



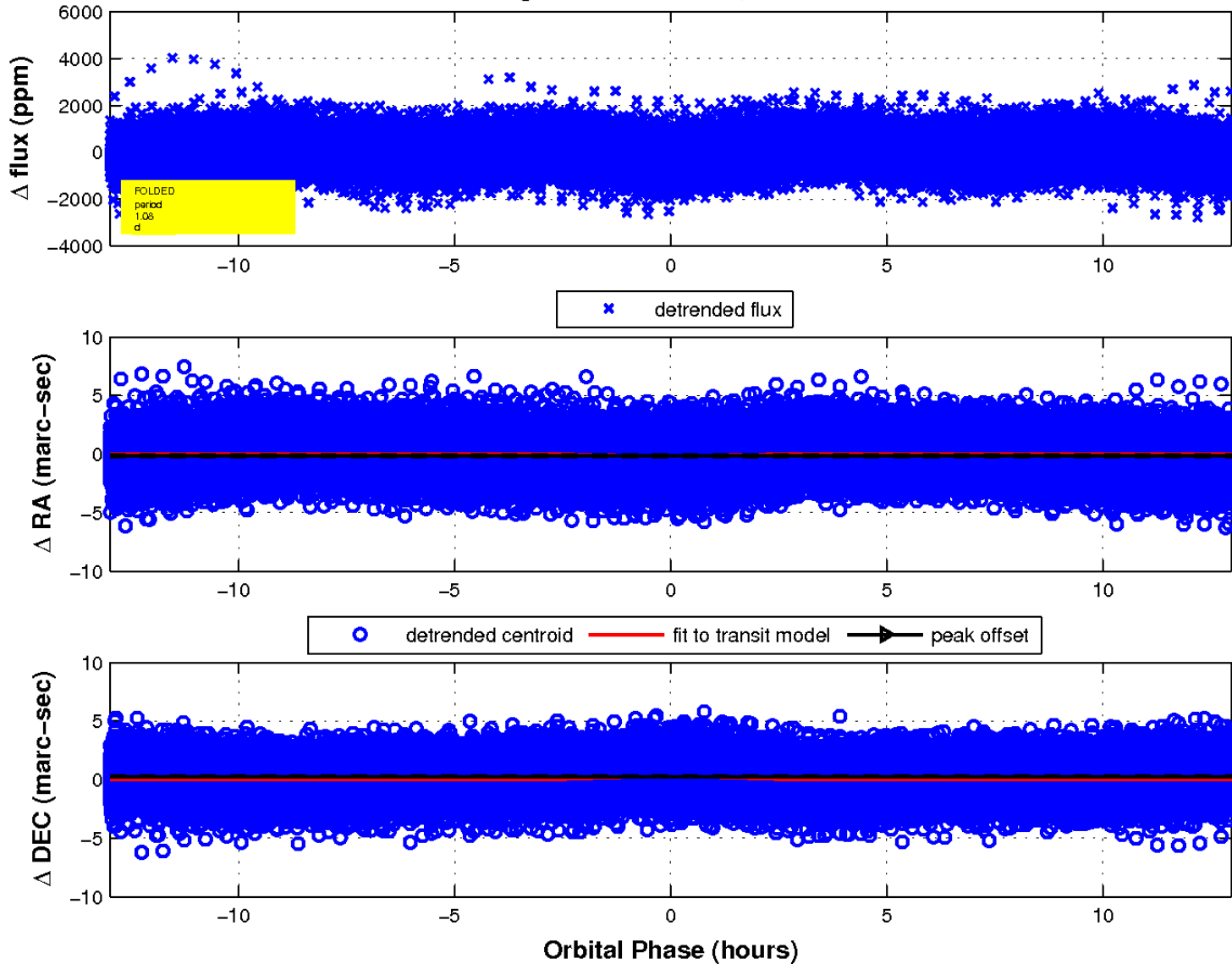
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

