

KIC 006946681

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})
006946681-01	OBS	No	0.586156	131.999606	33.4	1.783	10.3	11.4	2.61	7972	1.76	85400.77
006946681-02	OBS	No	2.249108	132.920606	53.6	23.426	7.9	19.8	2.61	7972	1.93	14216.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006946681-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
006946681-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET

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.

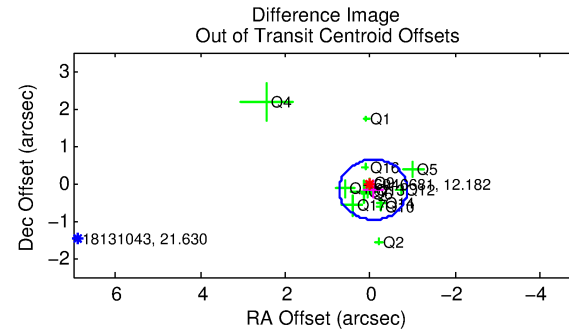
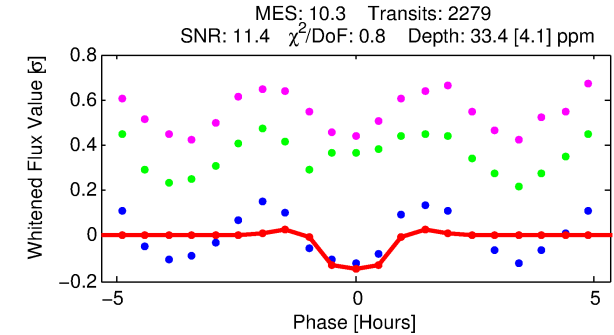
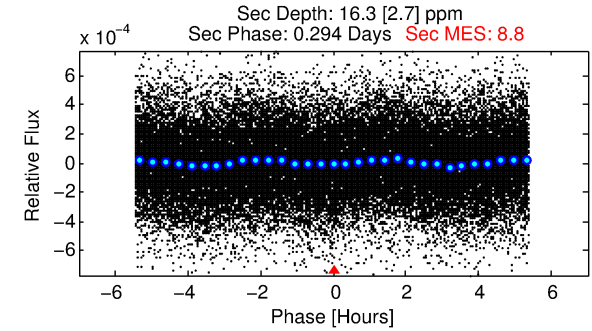
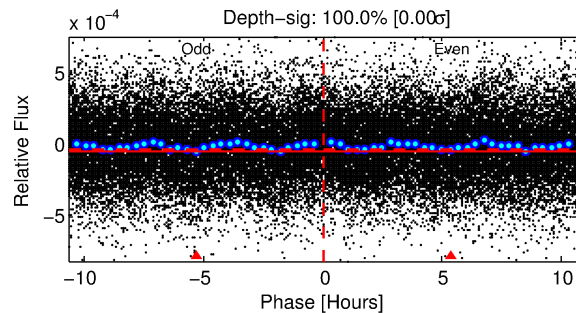
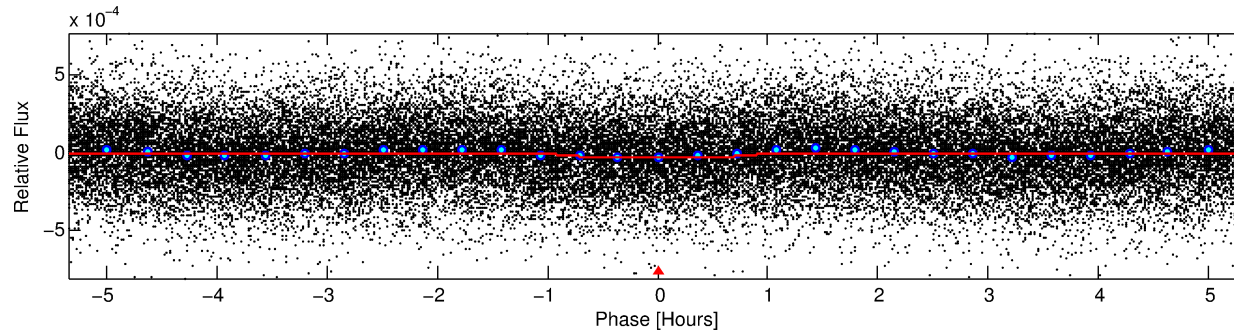
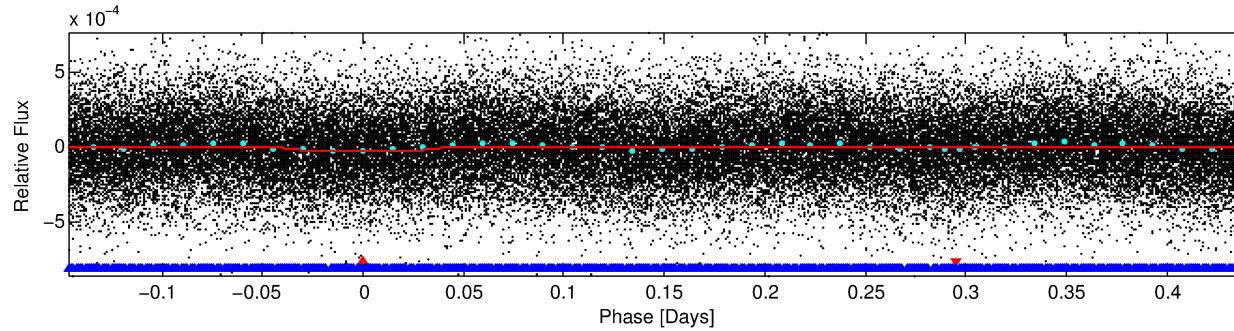
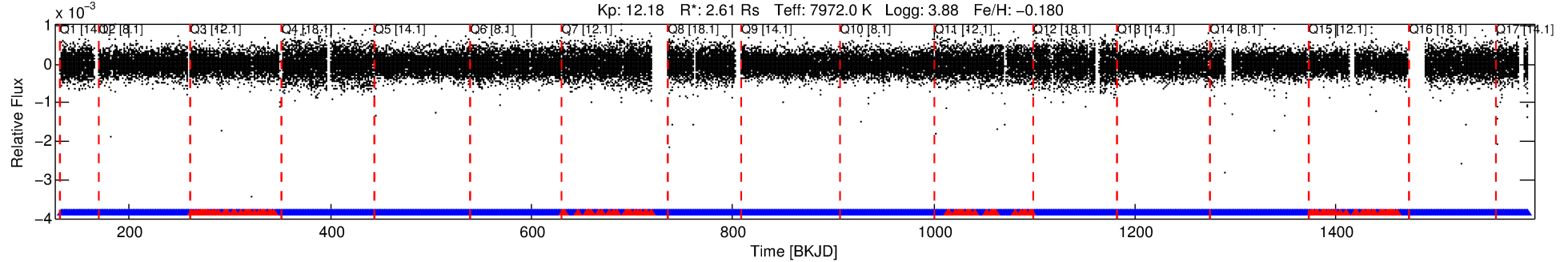
Ephemeris Match Information For 006946681-01

No Significant Match Found

DV One-Page Summary

KIC: 6946681 Candidate: 1 of 2 Period: 0.586 d
KOI: K06150 Corr: No Ephemeris Match

Kp: 12.18 R*: 2.61 Rs Teff: 7972.0 K Logg: 3.88 Fe/H: -0.180



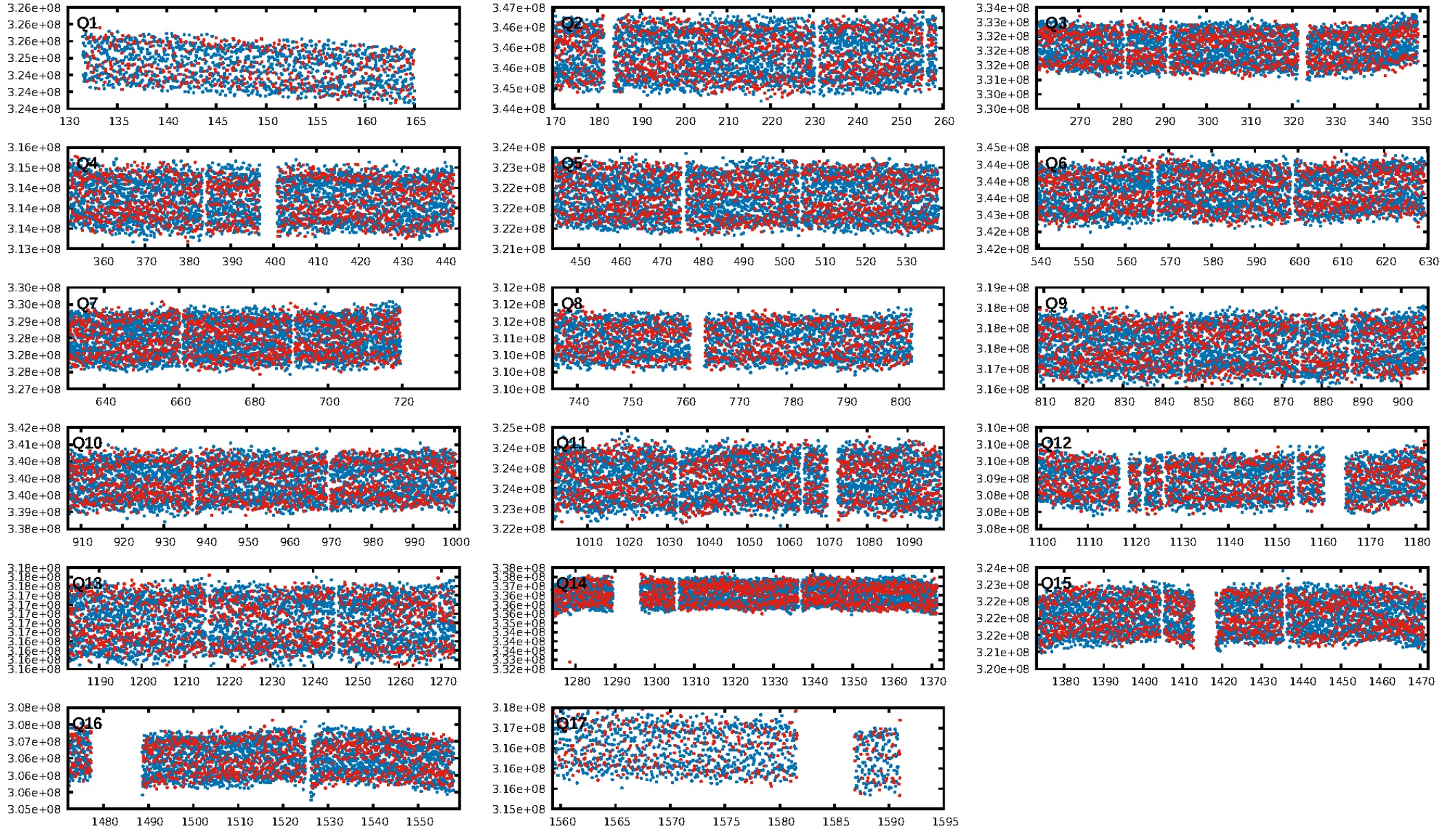
DV Fit Results:

Period = 0.58616 [0.00001] d
Epoch = 131.9996 [0.0019] BKJD
Rp/R* = 0.0062 [0.0021]
a/R* = 1.47 [1.60]
b = 0.90 [0.44]
Seff = 85400.77 [48561.62]
Teq = 4359 [620] K
Rp = 1.76 [0.88] Re
a = 0.0170 [0.0059] AU
Ag = 0.83 [0.74] [-0.23σ]
Teffp = 6435 [1159] K [1.58σ]

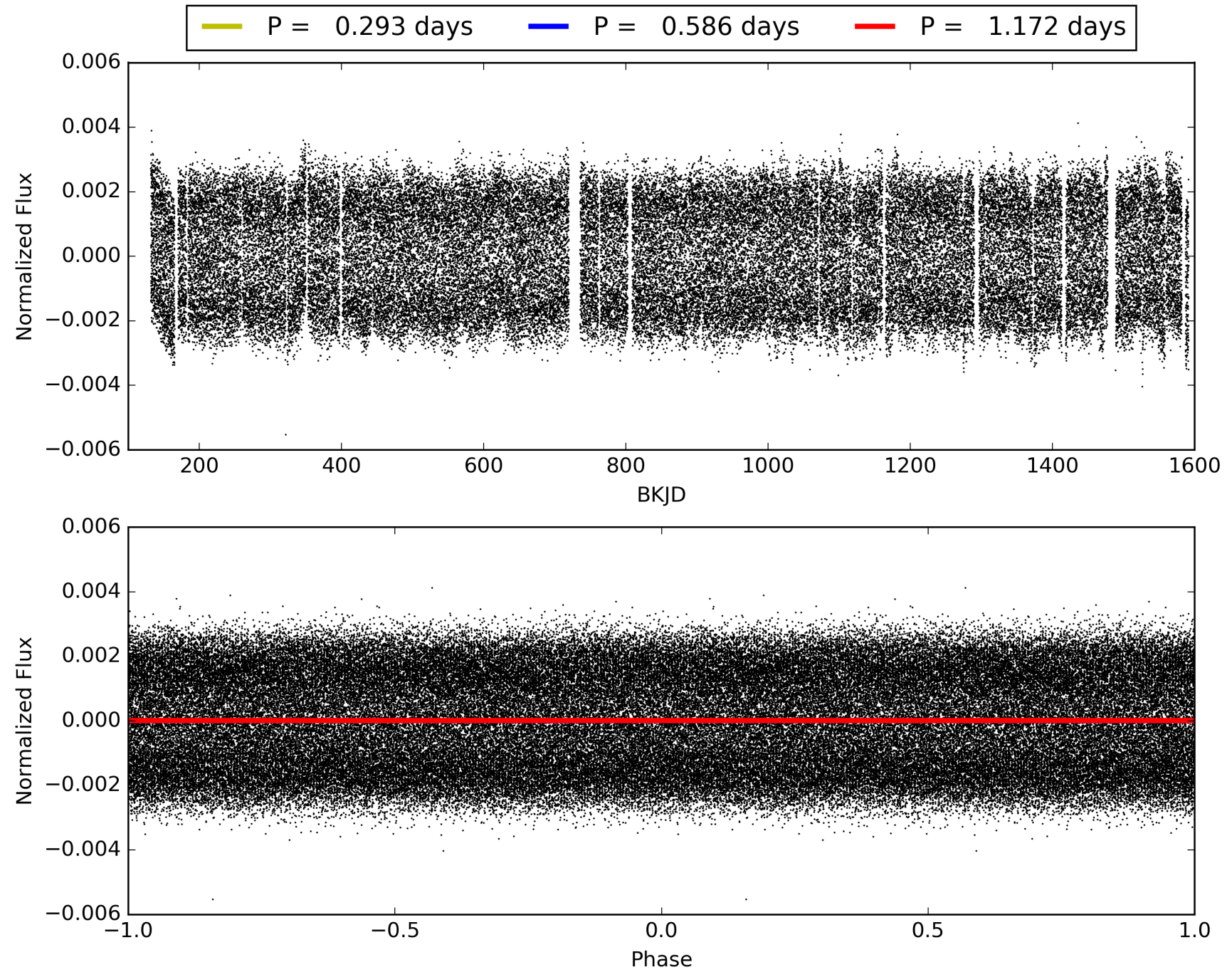
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 91.1% [1.70σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.94 [2054/2175]
GhostDiagnostic-chr: 0.8505
Centroid-sig: 45.1%
Centroid-so: 0.324 arcsec [0.97σ]
OotOffset-rm: 0.184 arcsec [0.68σ]
KicOffset-rm: 0.212 arcsec [0.74σ]
OotOffset-st: 4/2/3/5 [14]
KicOffset-st: 4/2/3/5 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006946681-01, PDC Light Curves

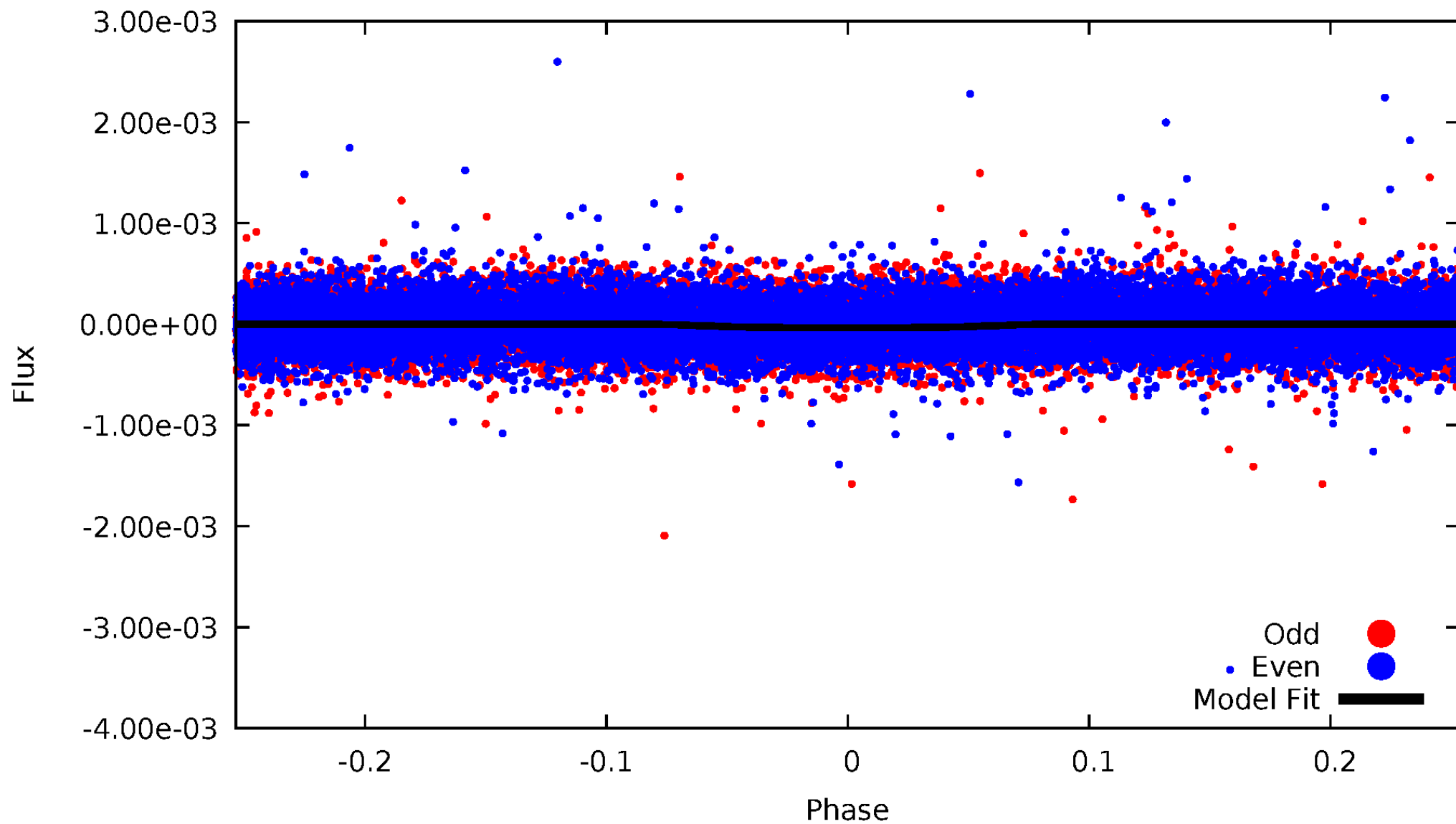


TCE 006946681-01



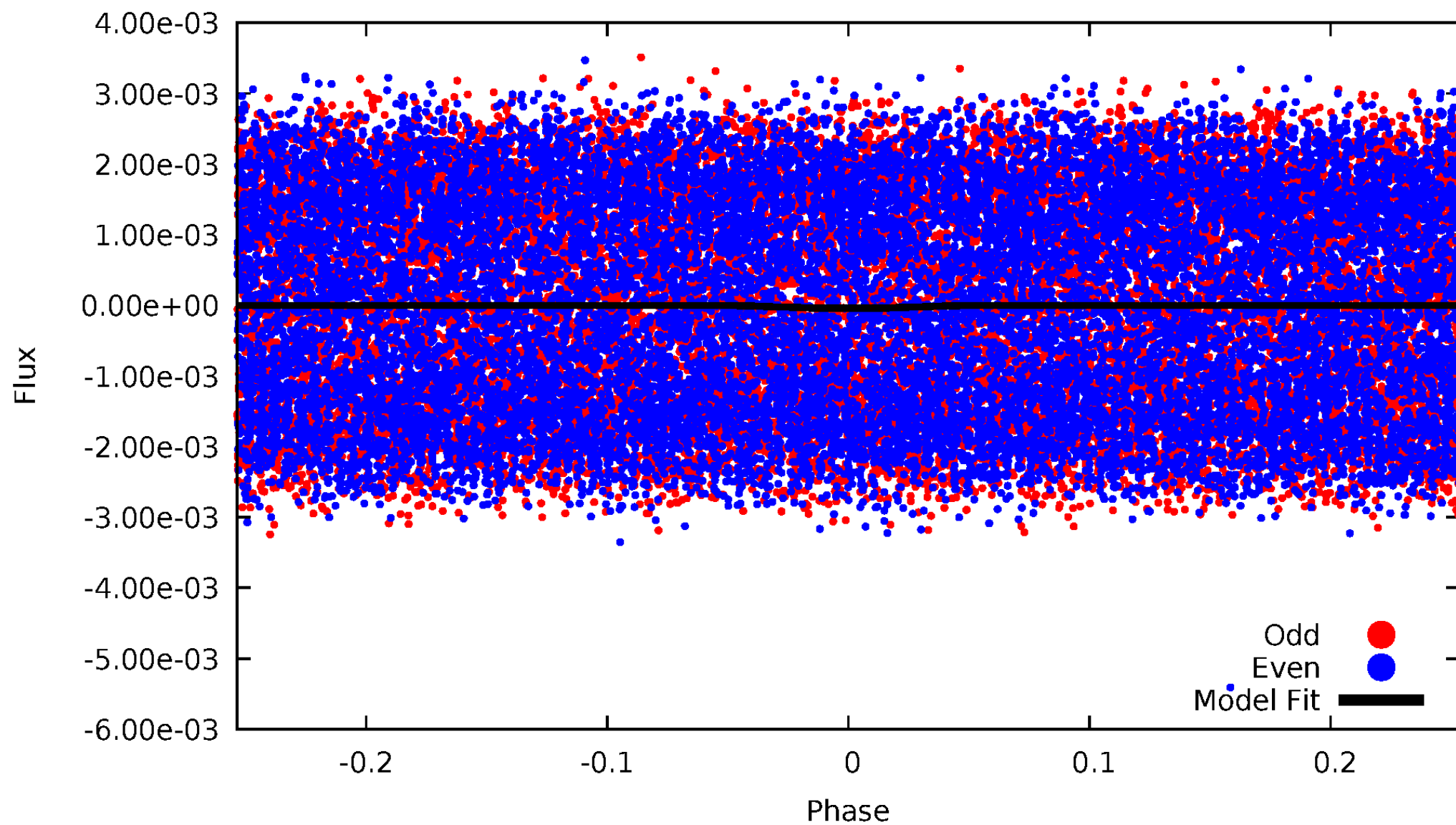
DV Odd/Even

TCE 006946681-01

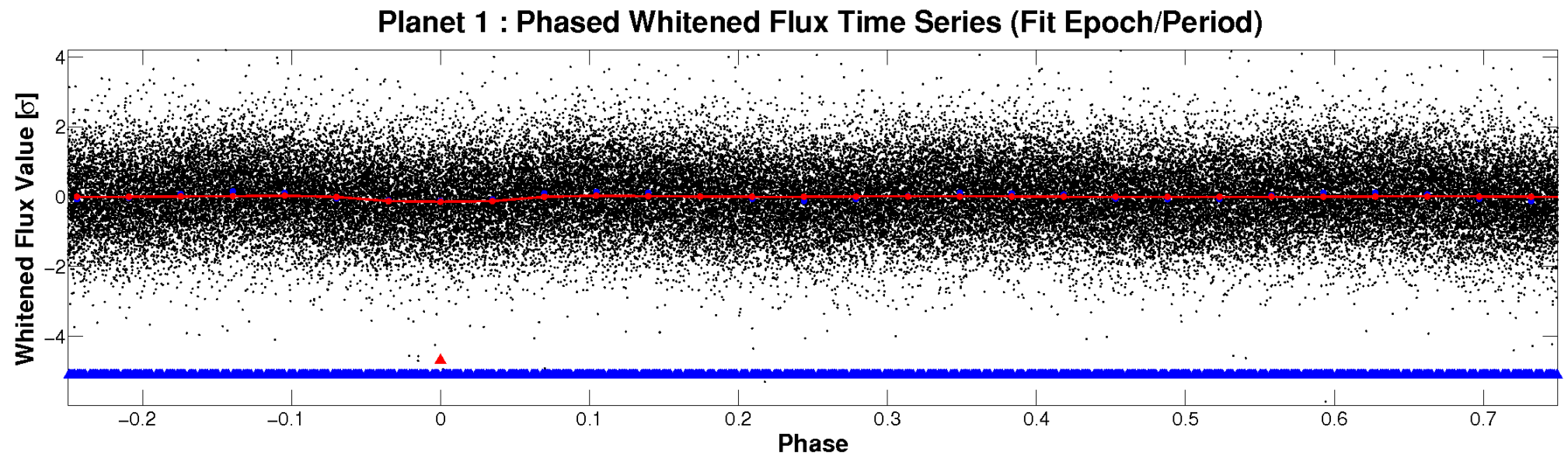
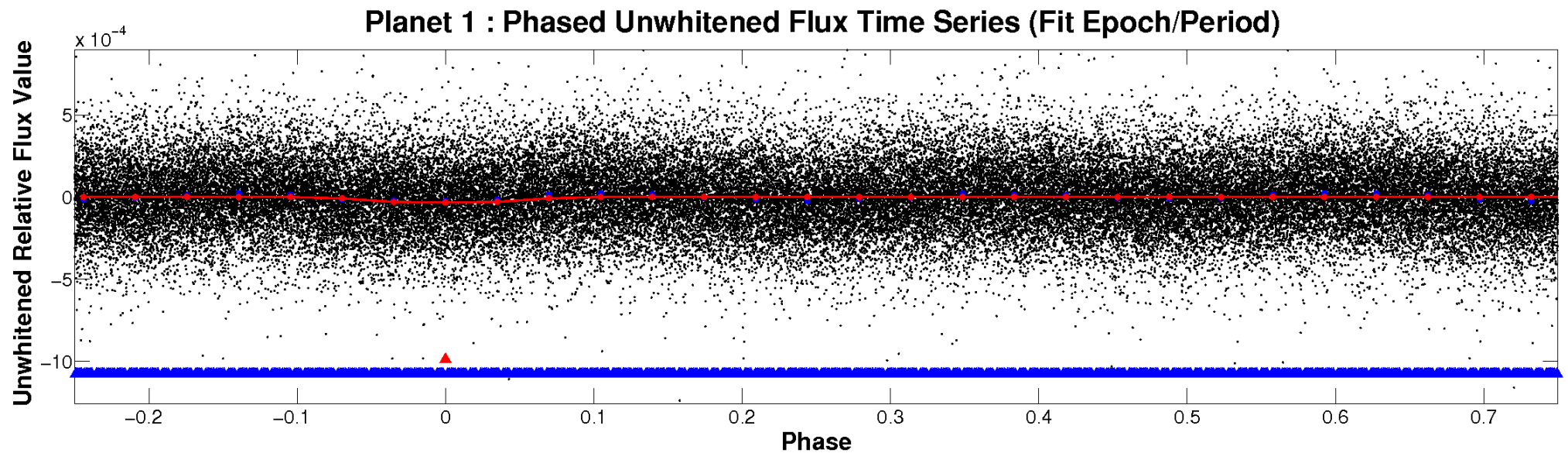


ALT Odd/Even

TCE 006946681-01

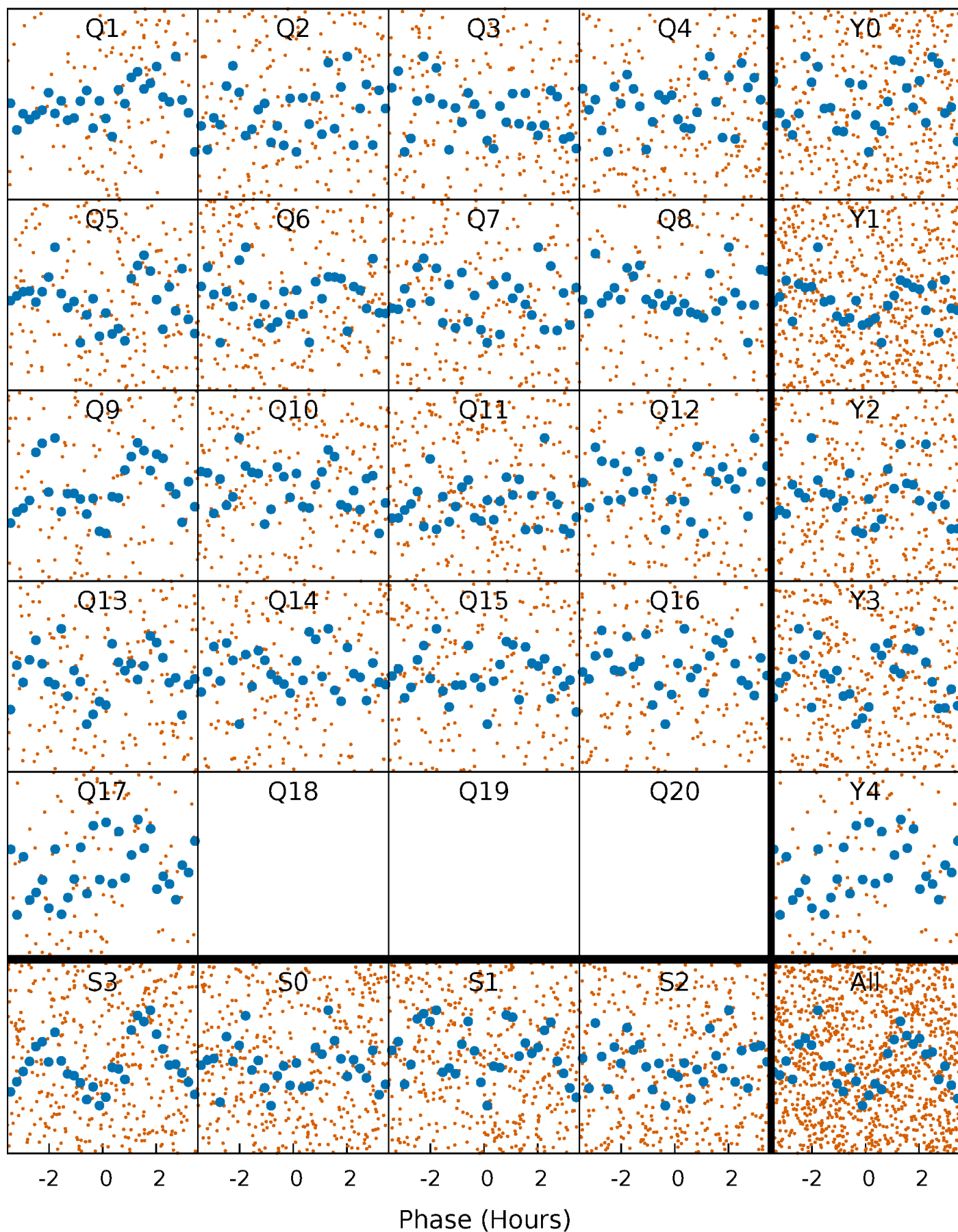


Non-Whitened Vs. Whitened Light Curve



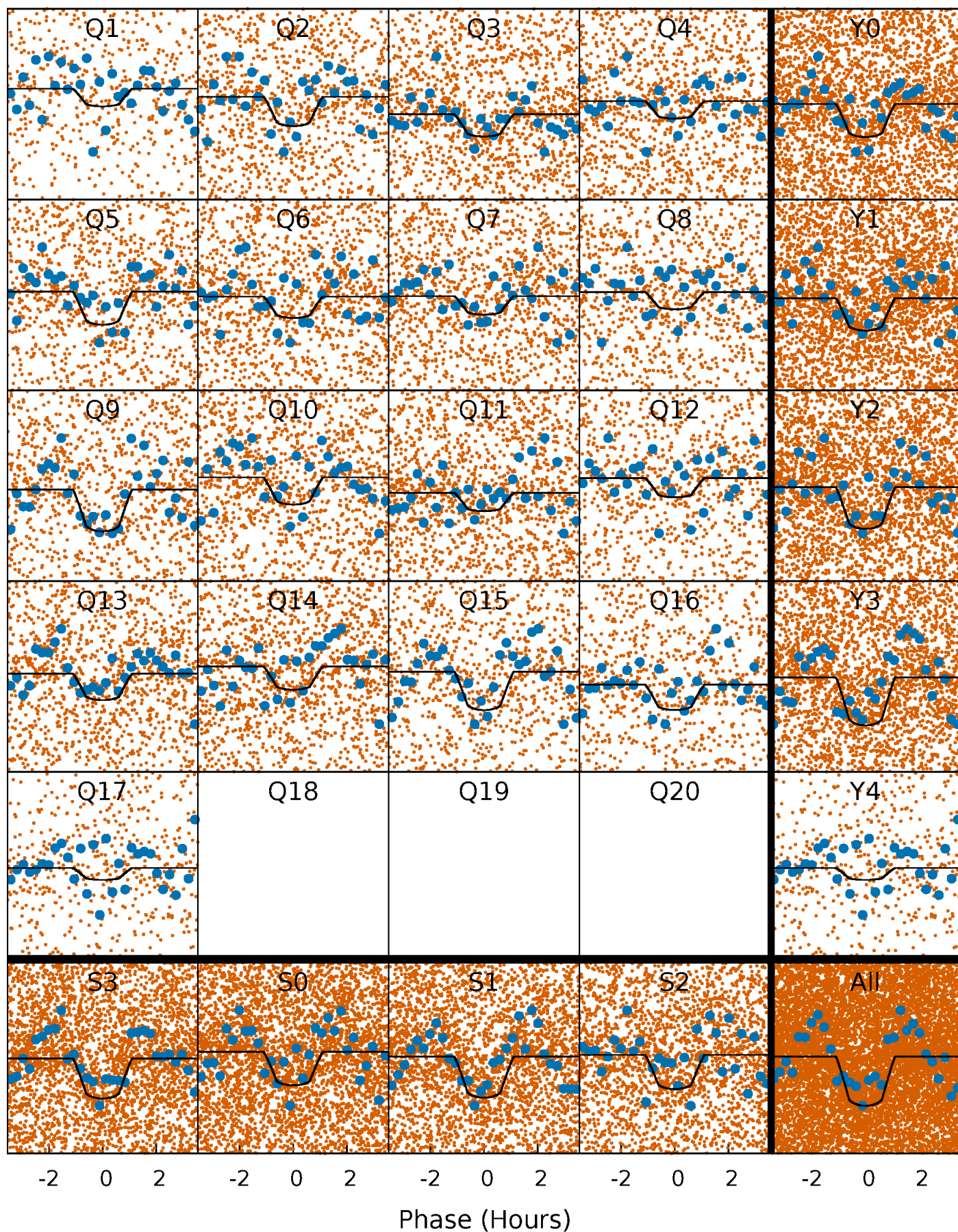
PDC Quarter-Phased Transit Curves

TCE 006946681-01 P= 0.586156 Days $T_0=131.999606$ (BKJD)



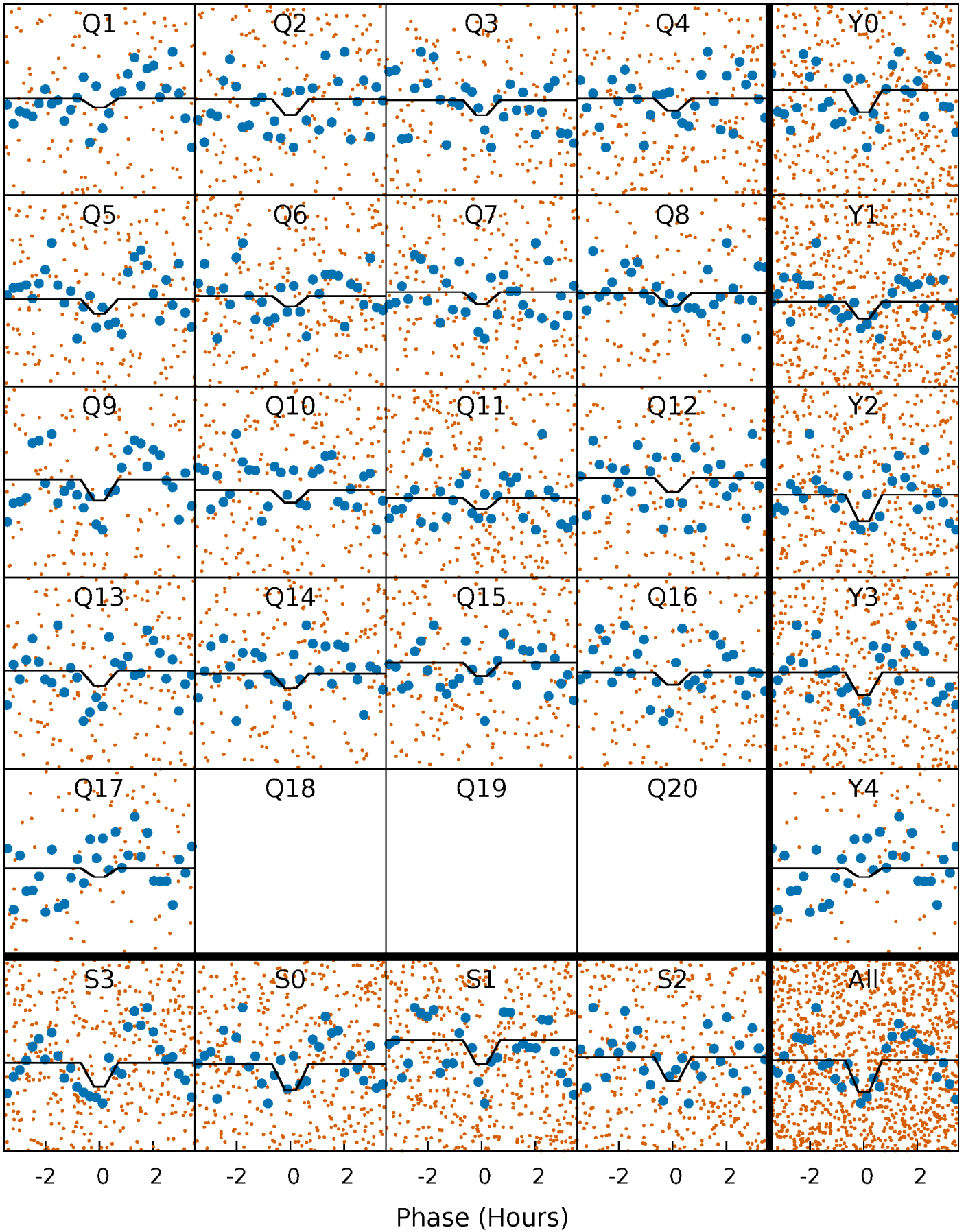
DV Quarter-Phased Transit Curves

TCE 006946681-01 P= 0.586156 Days $T_0=131.999606$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

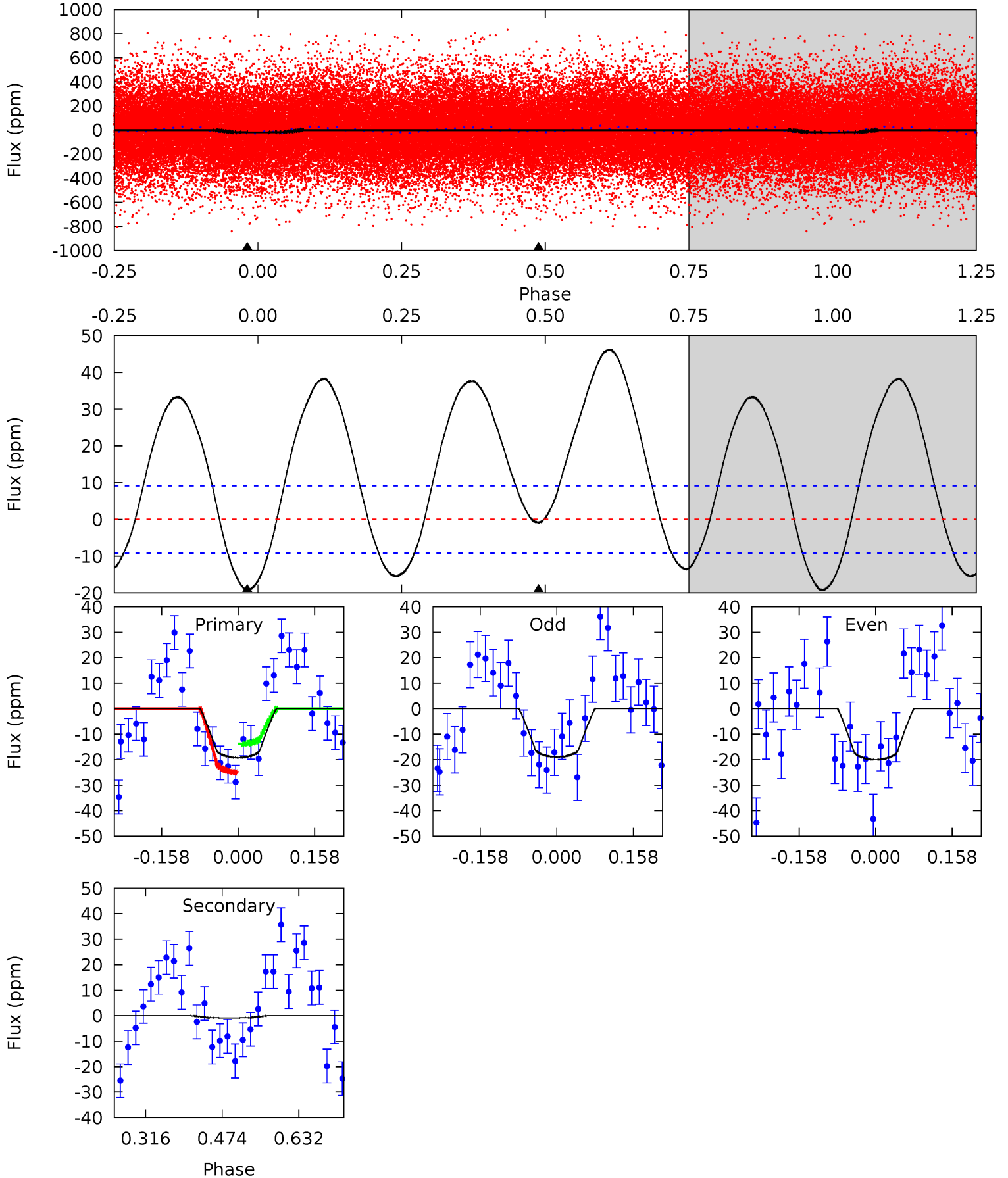
TCE 006946681-01 P= 0.586156 Days $T_0=131.999606$ (BKJD)



DV Model-Shift Uniqueness Test

006946681-01, P = 0.586156 Days, E = 131.413450 Days

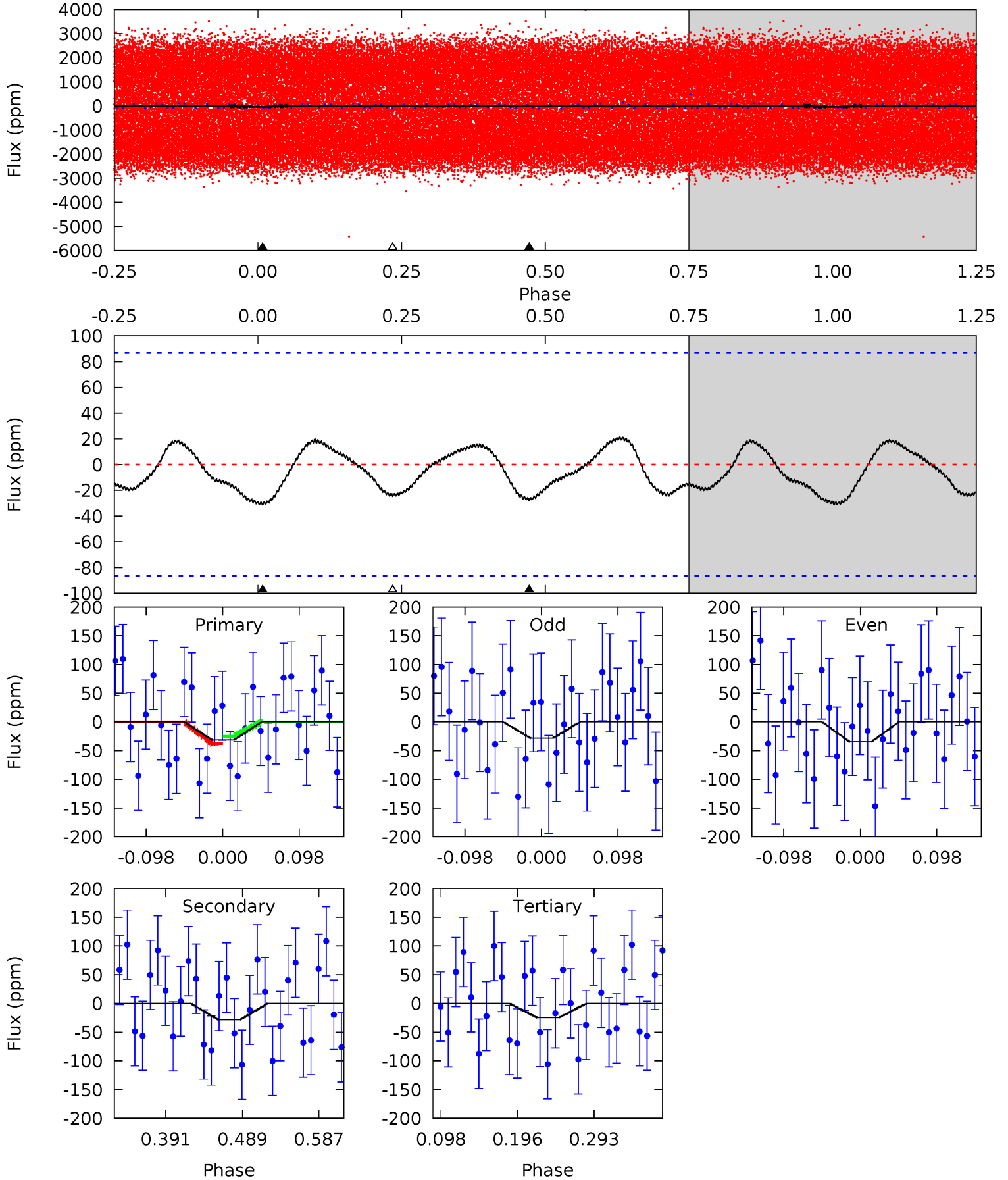
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.35	0.42	0	0	4.47	1.41	7.00	9.35	9.35	0.42	0.42	0.25	0.90	0.71	2.75



Alt Model-Shift Uniqueness Test

006946681-01, P = 0.586156 Days, E = 131.413450 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.66	1.49	1.30	0	4.57	1.66	0.74	0.36	1.66	0.19	1.49	0.16	1.43	0.41	0.34



Stellar Parameters For KIC 006946681

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7972^{+216}_{-340}	$3.884^{+0.315}_{-0.105}$	$-0.180^{+0.200}_{-0.350}$	$2.609^{+0.343}_{-0.962}$	$1.902^{+0.078}_{-0.442}$	$0.151^{+0.379}_{-0.040}$
	+3%/-4%	+8%/-3%	+111%/-194%	+13%/-37%	+4%/-23%	+251%/-27%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006946681-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1 ± 2	$1.68^{+0.68}_{-0.60}$	5981^{+388}_{-571}	-4716^{+823}_{-471}	$0.039^{+0.148}_{-0.121}$
Alt.	-28 ± 19	$1.65^{+0.64}_{-0.59}$	5962^{+390}_{-524}	6600^{+2816}_{-2305}	$1.450^{+2.929}_{-0.991}$

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 $A_{obs} \gg 1.0$

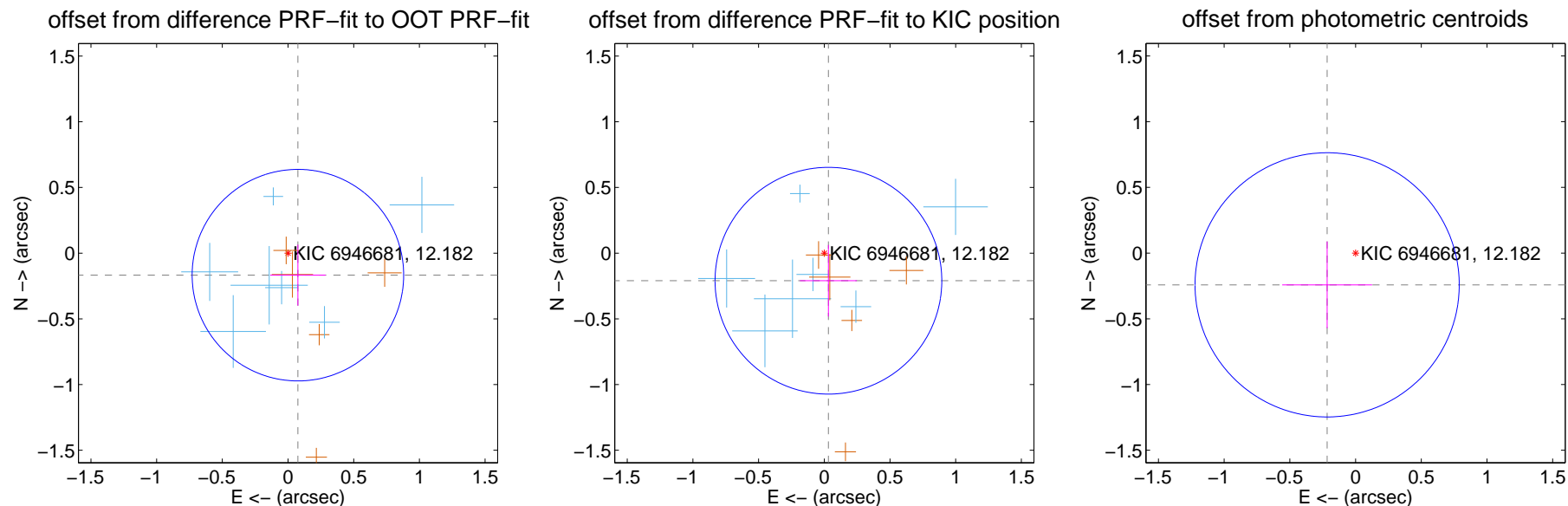
DV Centroid Data

Supplemental centroid analysis for 006946681-01. Kepler magnitude: 12.18. Transit SNR 11.35

There are 8 quarters with good PRF difference image offsets

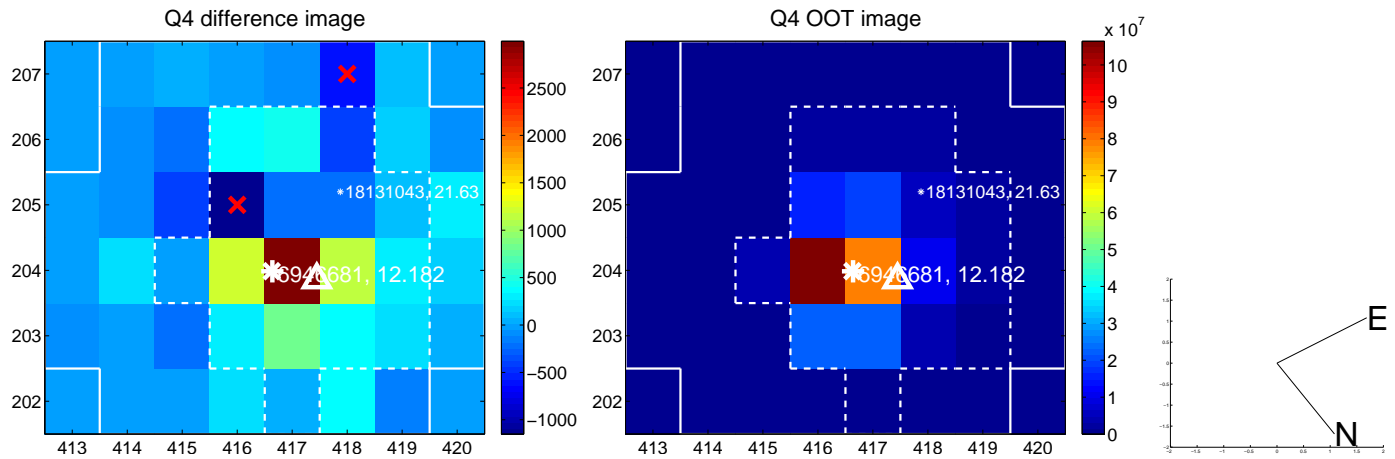
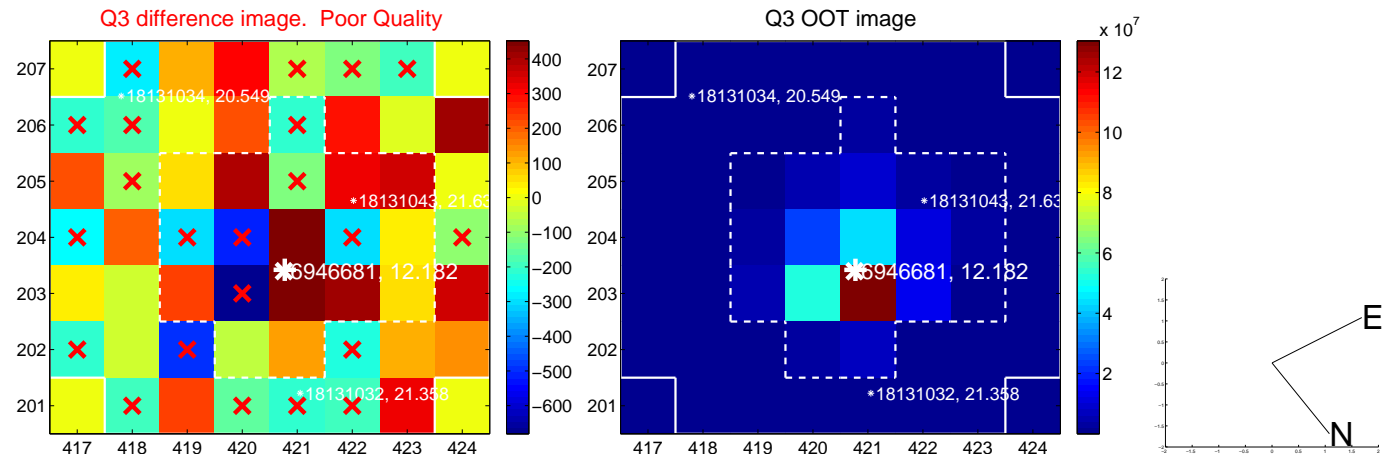
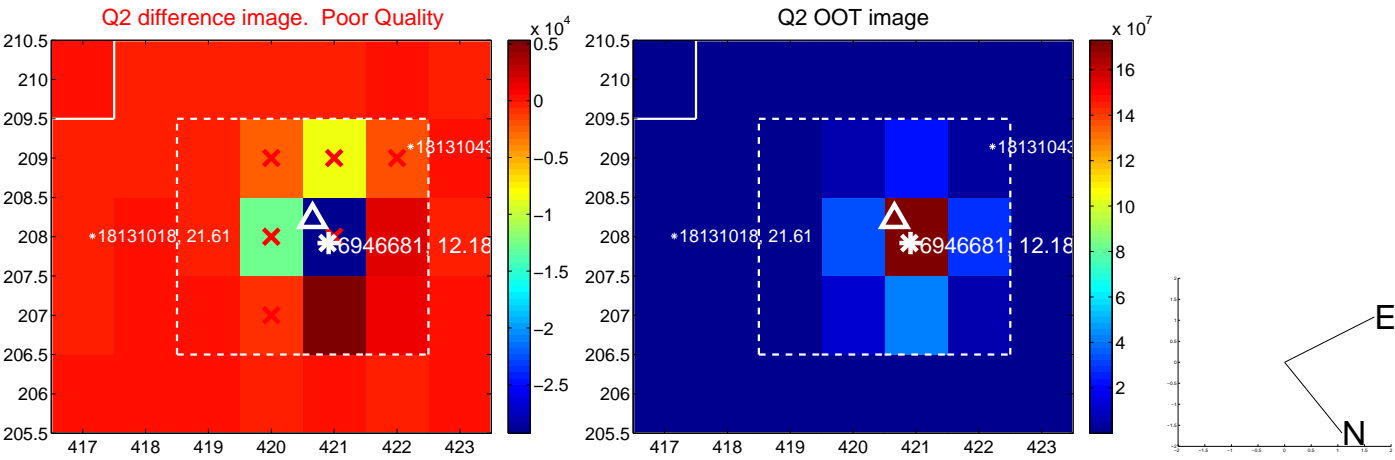
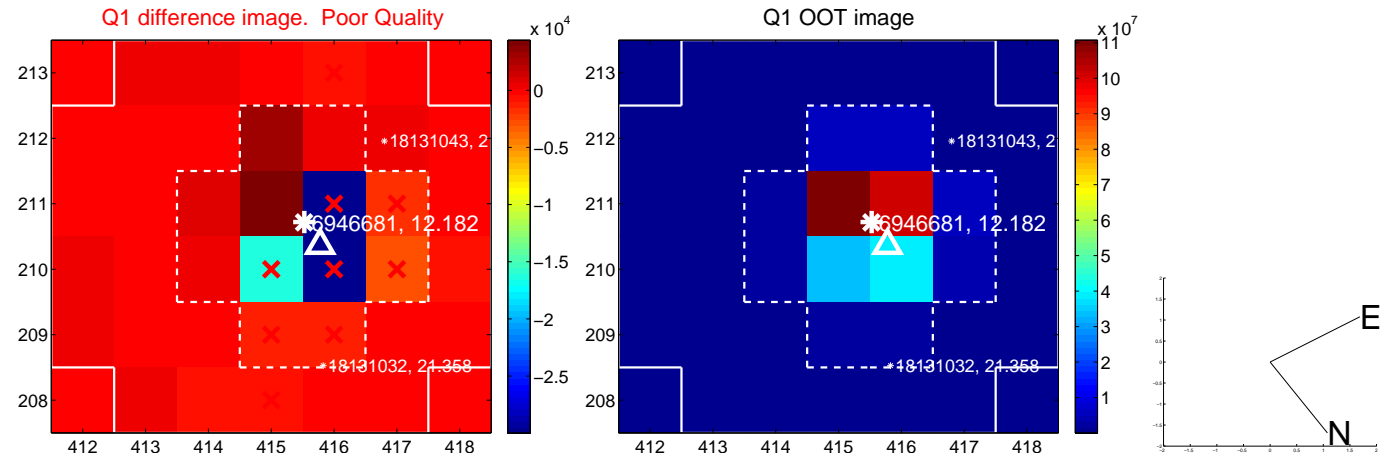
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.184 ± 0.268	0.68	-0.075 ± 0.211	-0.167 ± 0.232
PRF-fit source offset from KIC position	0.212 ± 0.288	0.74	-0.031 ± 0.217	-0.210 ± 0.272
photometric centroid source offset	0.32 ± 0.34	0.97	0.22 ± 0.34	-0.24 ± 0.33

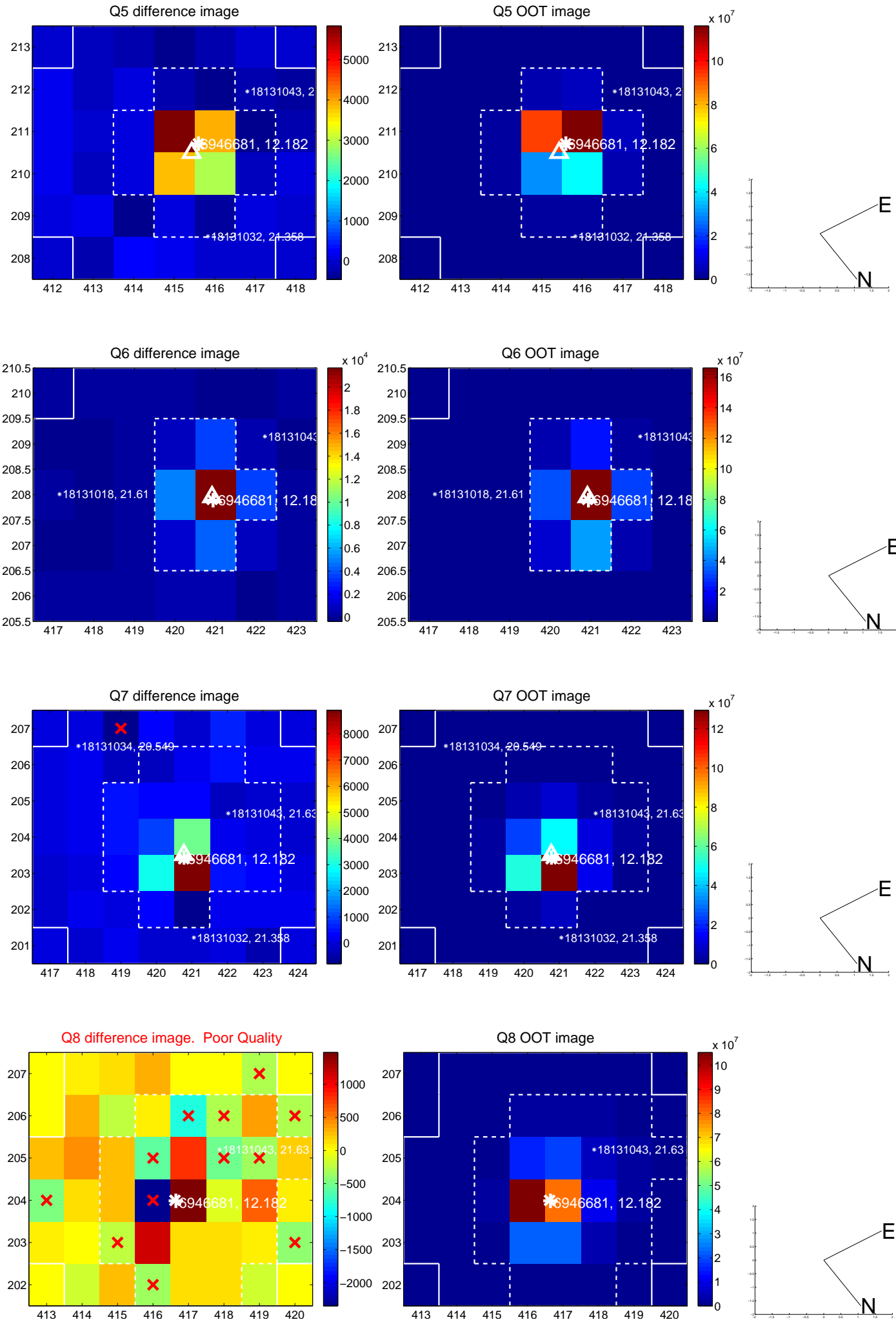


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

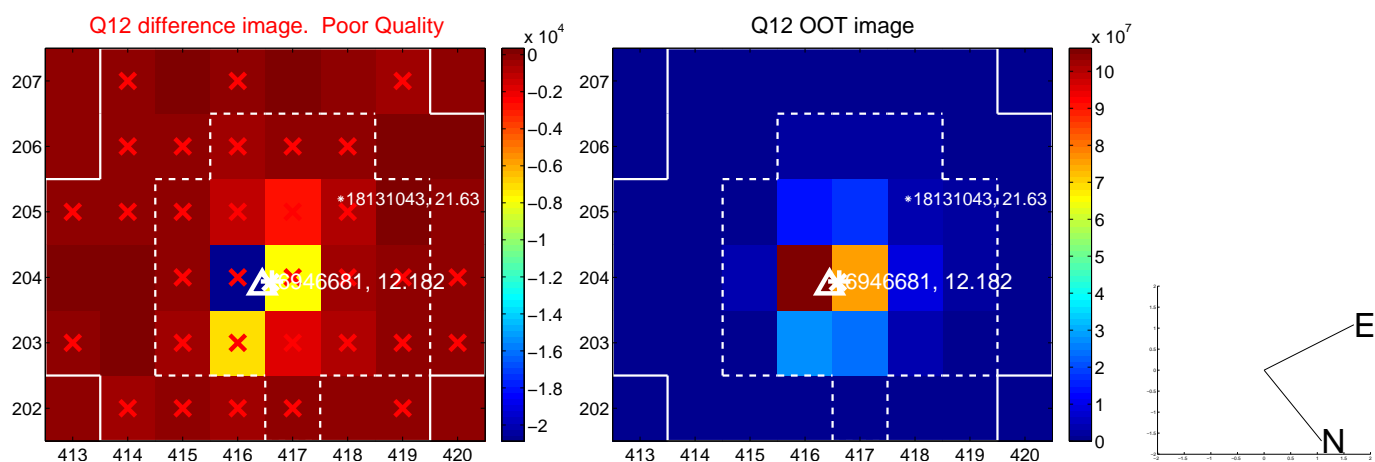
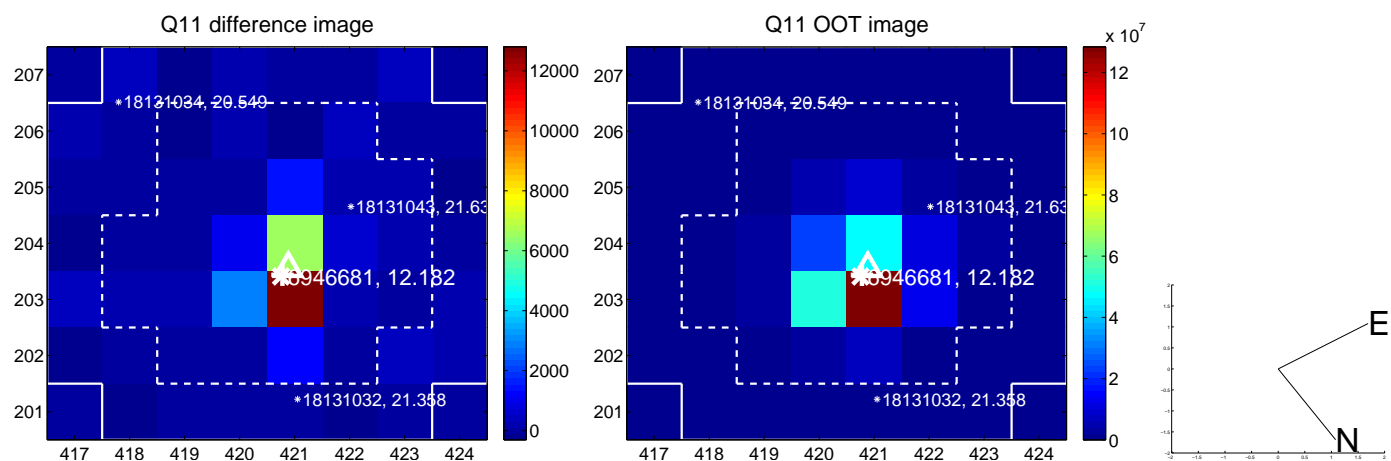
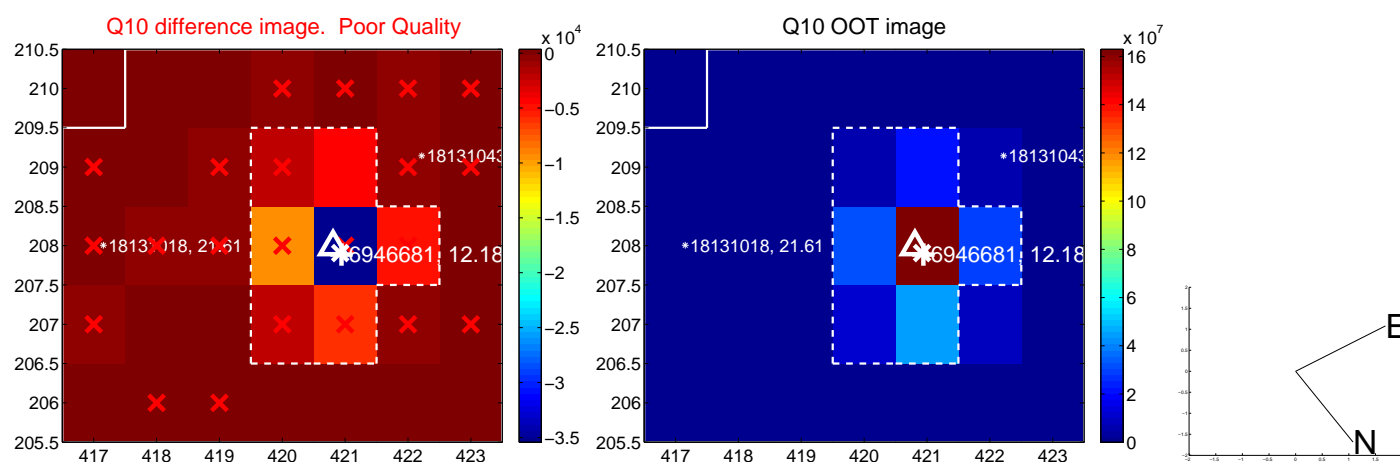
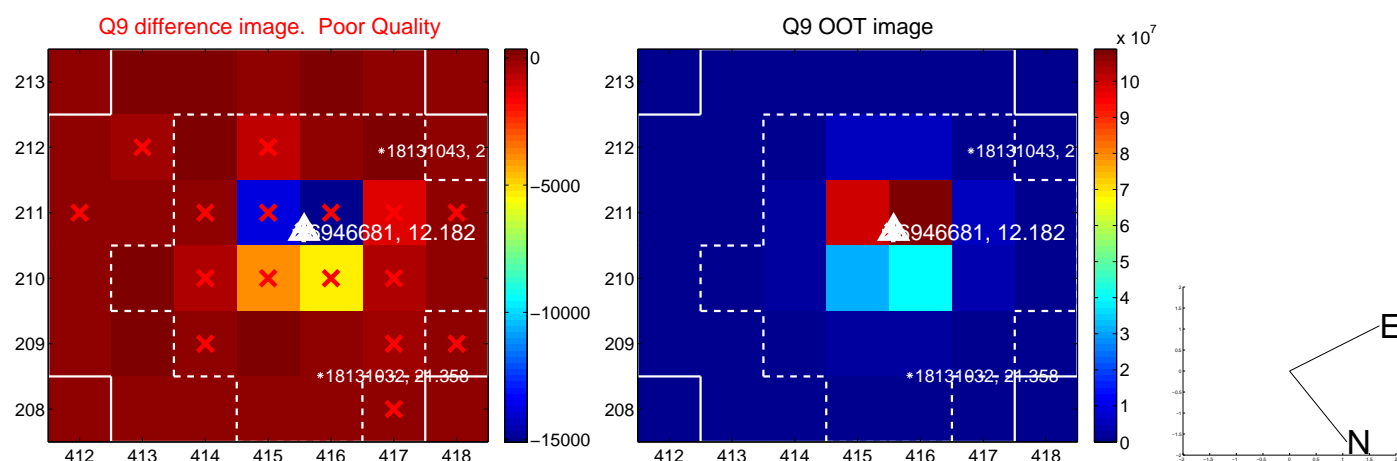
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



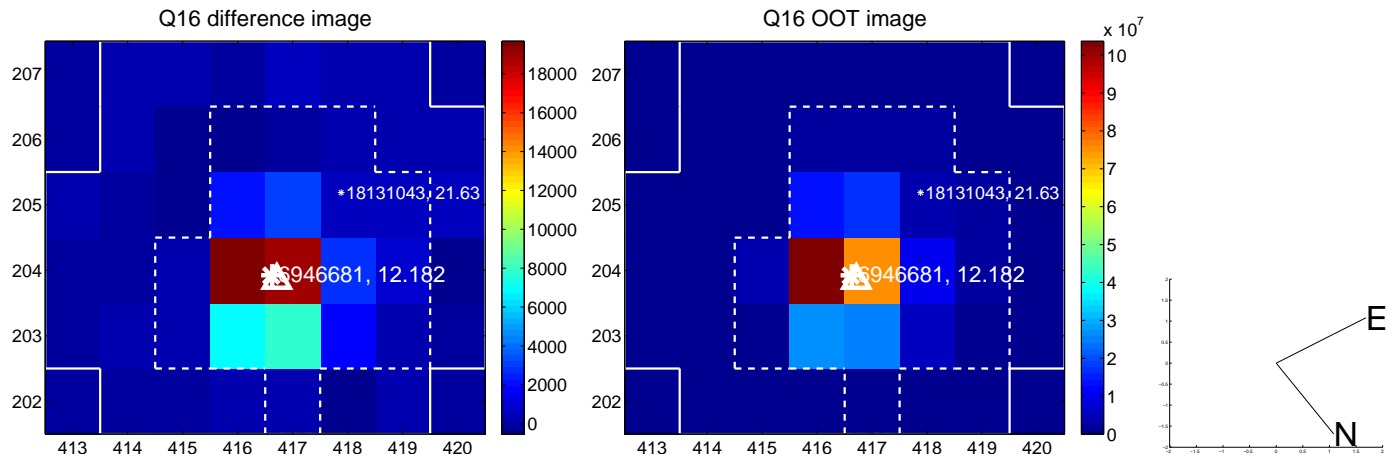
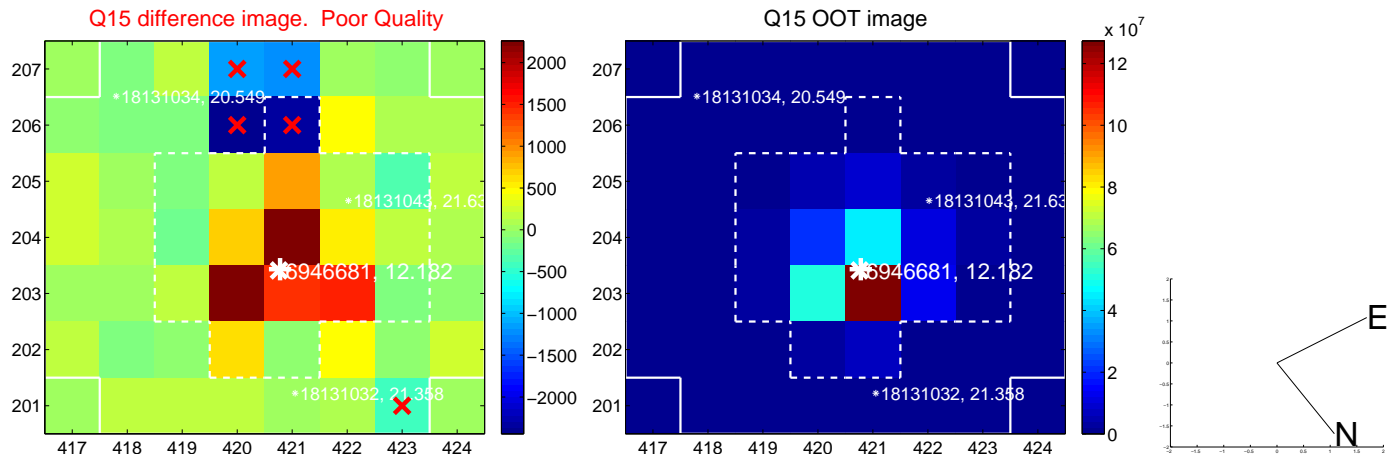
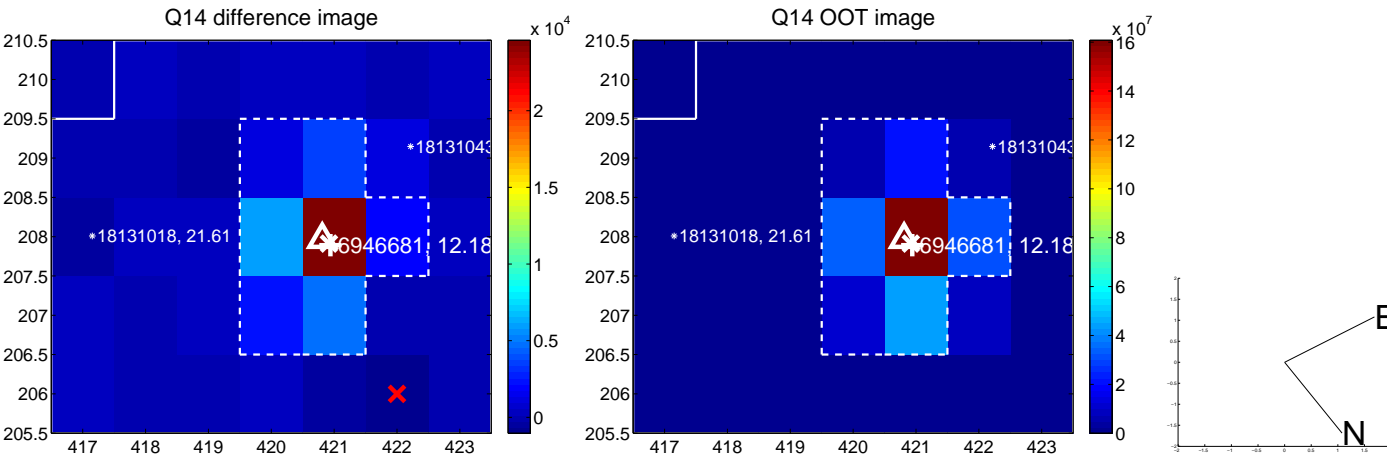
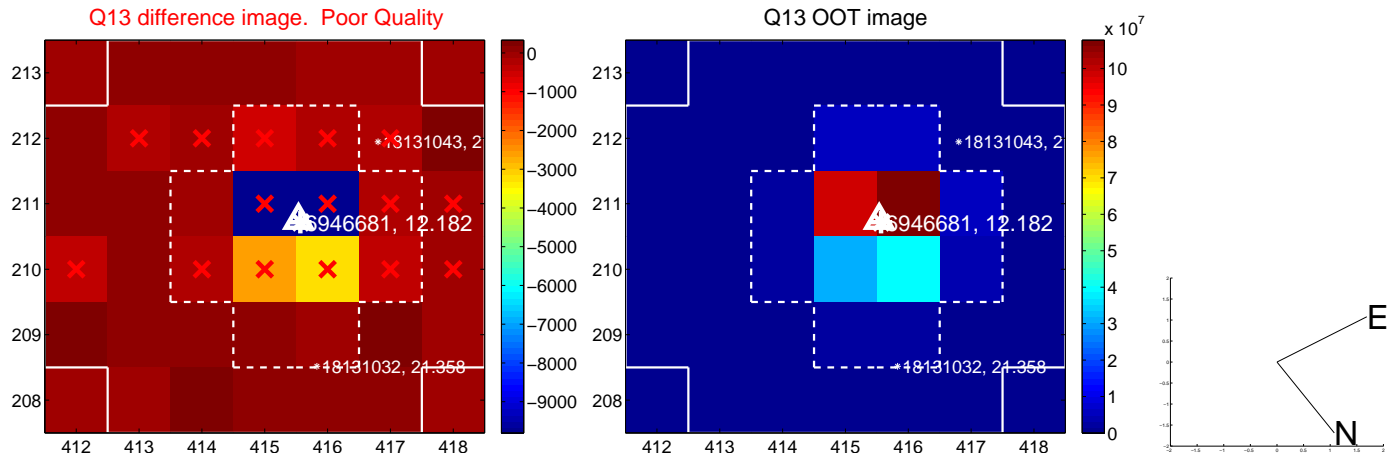
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



	10.0	20.0	30.0	40.0
C ₆₀	50.042	30.000	0.010	



KIC 006946681

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})
006946681-01	OBS	No	0.586156	131.999606	33.4	1.783	10.3	11.4	2.61	7972	1.76	85400.77
006946681-02	OBS	No	2.249108	132.920606	53.6	23.426	7.9	19.8	2.61	7972	1.93	14216.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006946681-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
006946681-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET

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.

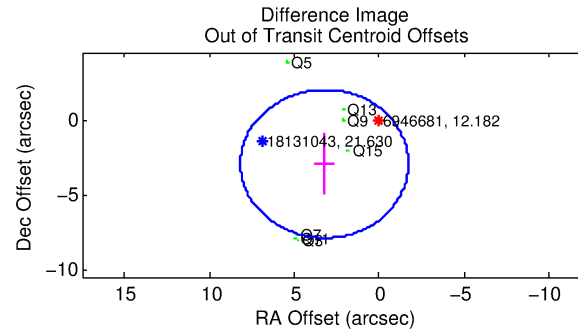
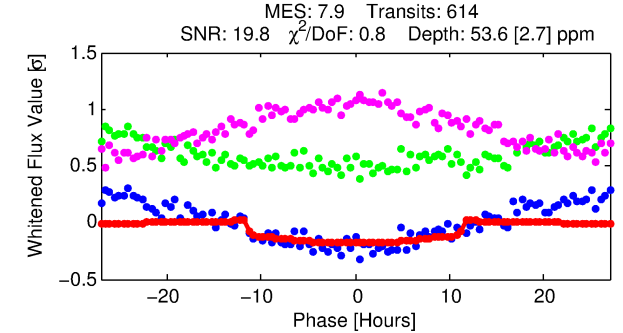
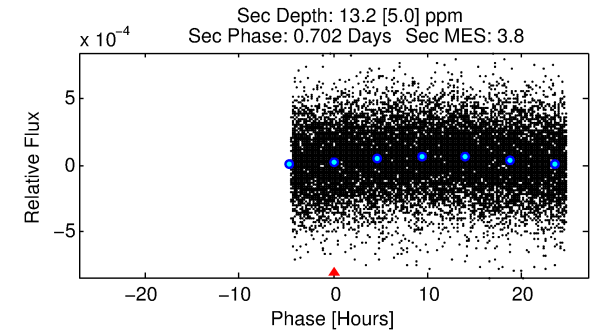
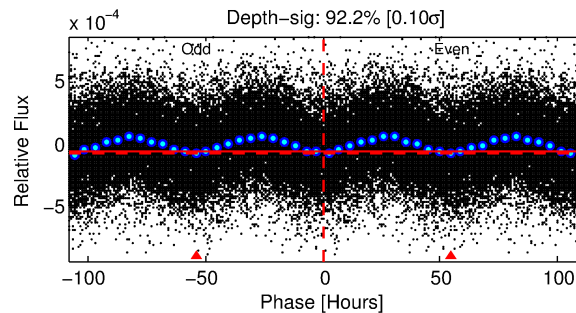
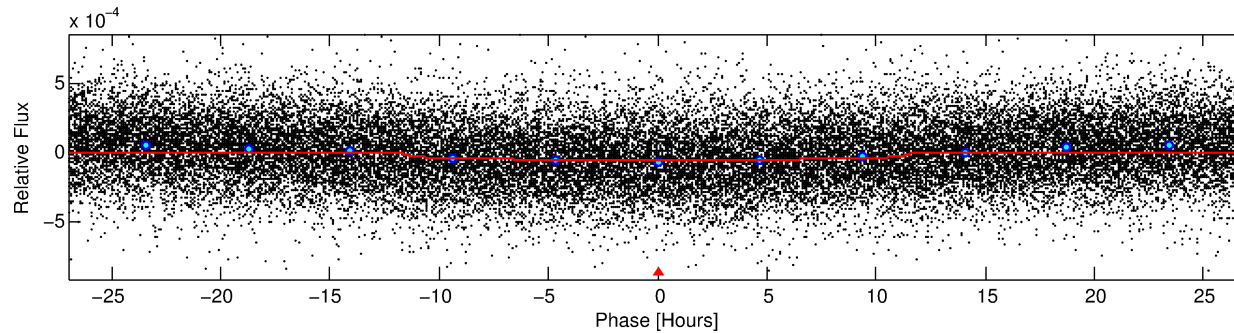
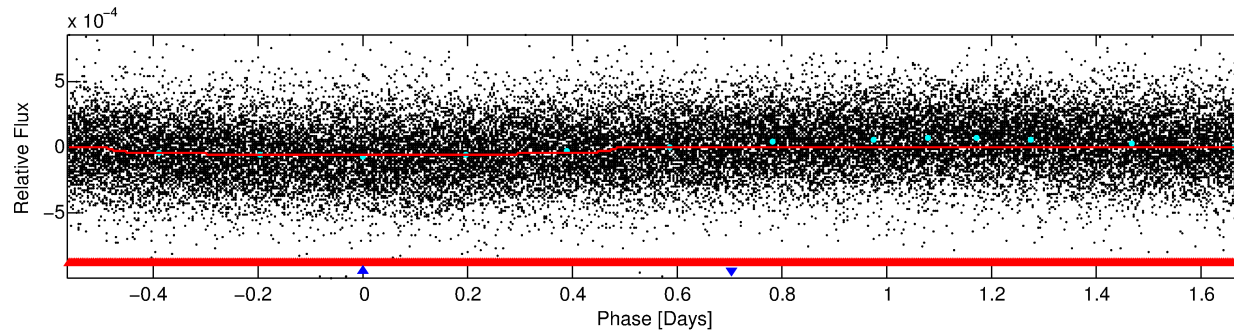
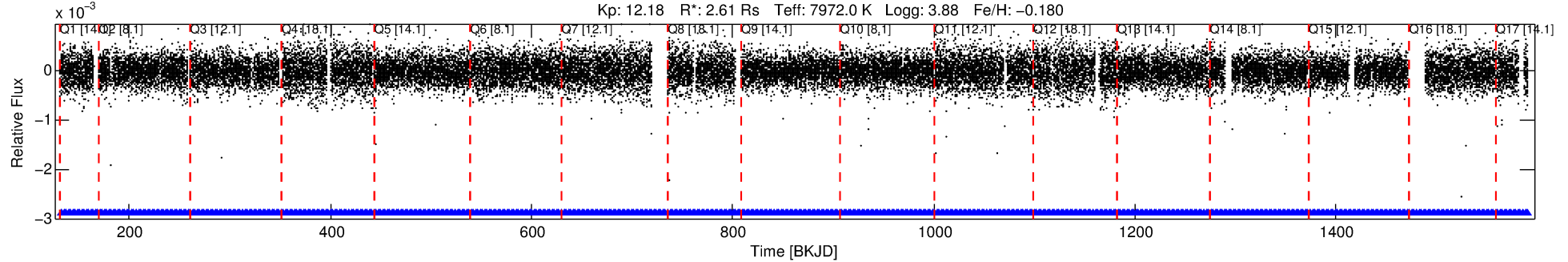
Ephemeris Match Information For 006946681-02

No Significant Match Found

DV One-Page Summary

KIC: 6946681 Candidate: 2 of 2 Period: 2.249 d
KOI: K06150 Corr: No Ephemeris Match

Kp: 12.18 R*: 2.61 Rs Teff: 7972.0 K Logg: 3.88 Fe/H: -0.180



DV Fit Results:

Period = 2.24911 [0.00003] d
Epoch = 132.9206 [0.0074] BKJD
Rp/R* = 0.0068 [0.0017]
a/R* = 1.03 [0.08]
b = 0.03 [43.26]
Seff = 14216.71 [8084.08]
Teq = 2784 [396] K
Rp = 1.92 [0.85] Re
a = 0.0416 [0.0144] AU
Ag = 3.39 [2.80] [0.85σ]
Teffp = 5840 [943] K [2.99σ]

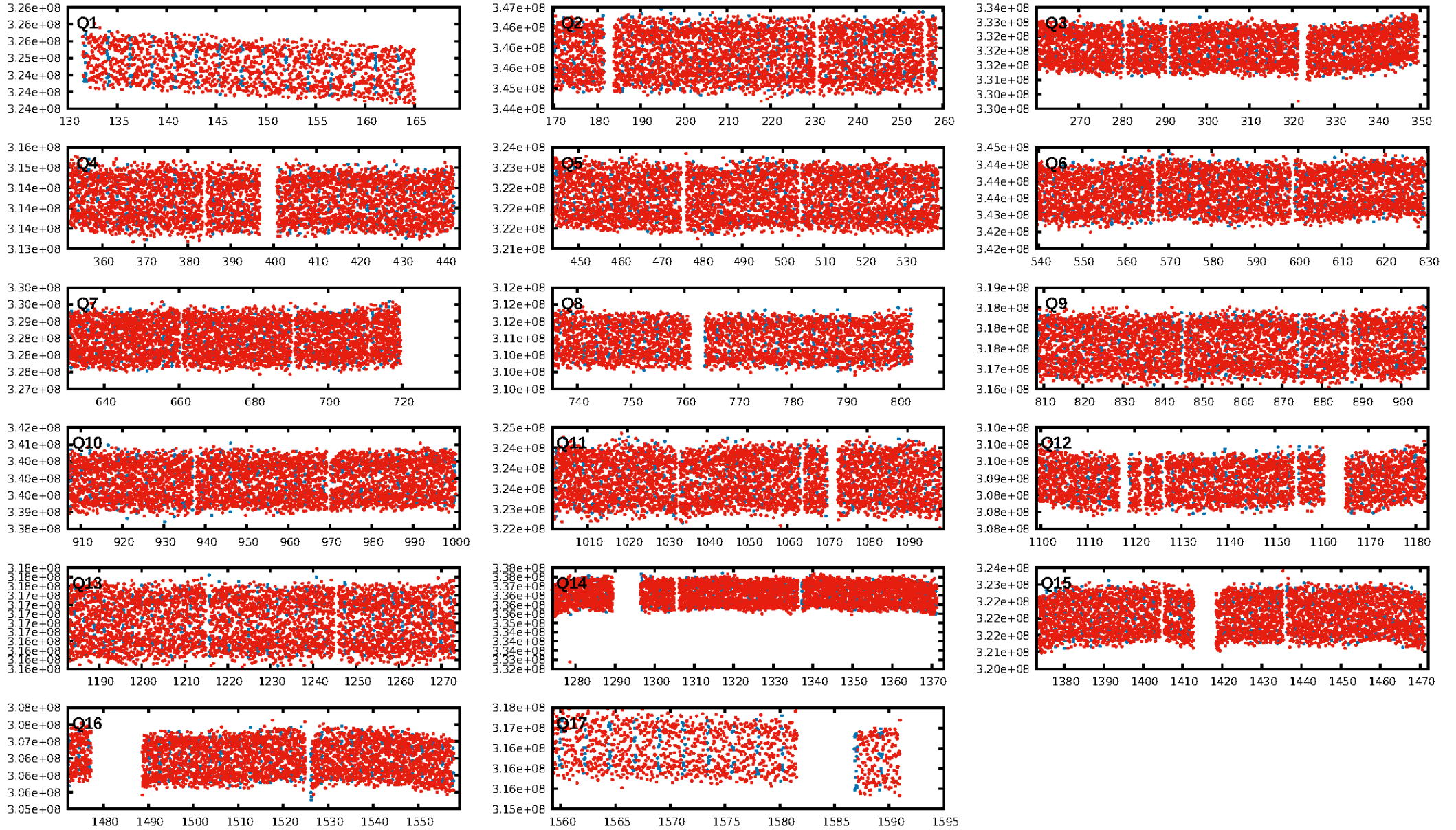
DV Diagnostic Results:

ShortPeriod-sig: 91.1% [1.70σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [587/587]
GhostDiagnostic-chr: 2.095
Centroid-sig: 28.5%
Centroid-so: 0.121 arcsec [0.85σ]
OotOffset-rm: 4.358 arcsec [2.64σ]
OotOffset-st: 0/4/0/3 [7]
KicOffset-rm: 4.442 arcsec [3.20σ]
KicOffset-st: 0/4/0/3 [7]
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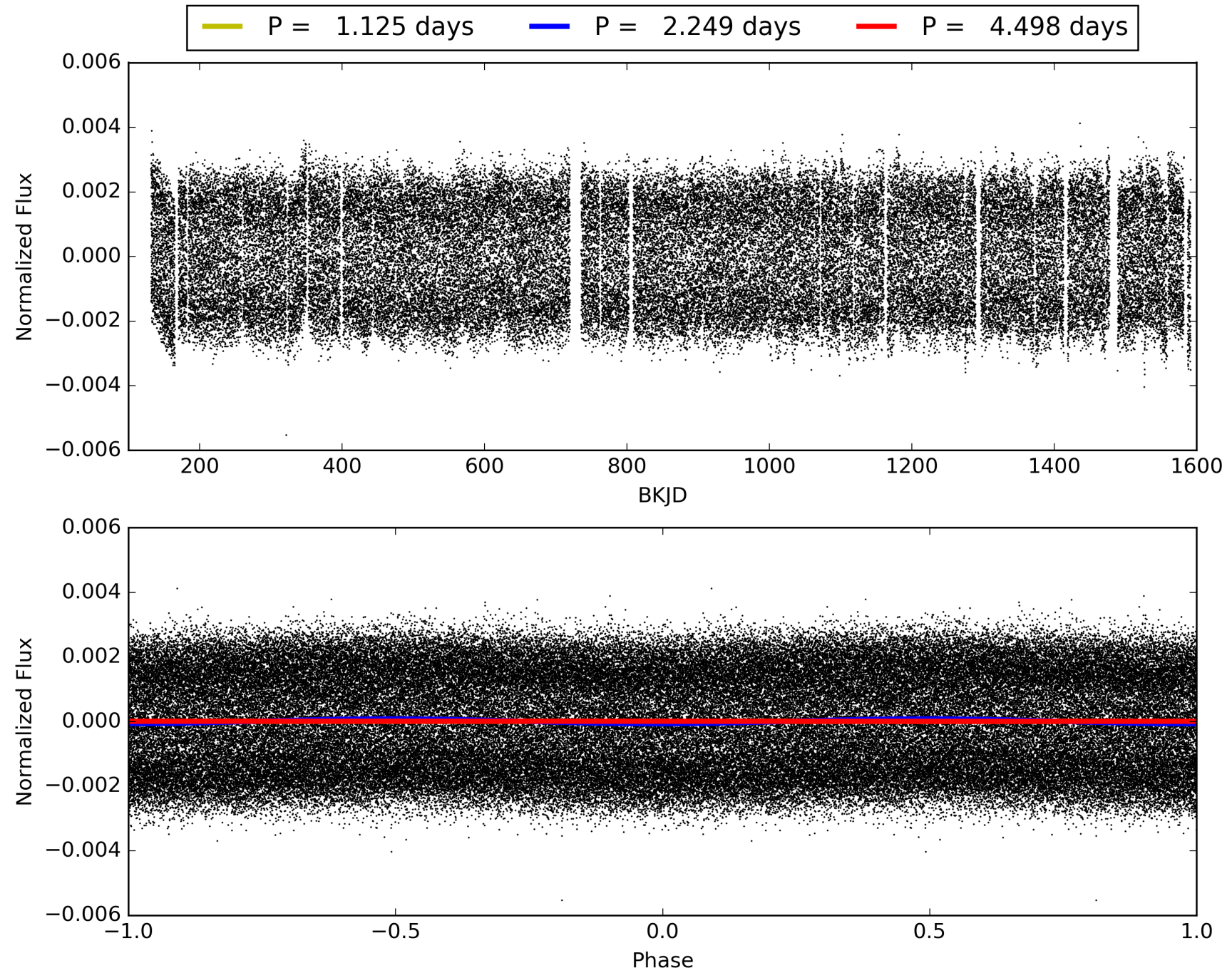
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006946681-02, PDC Light Curves

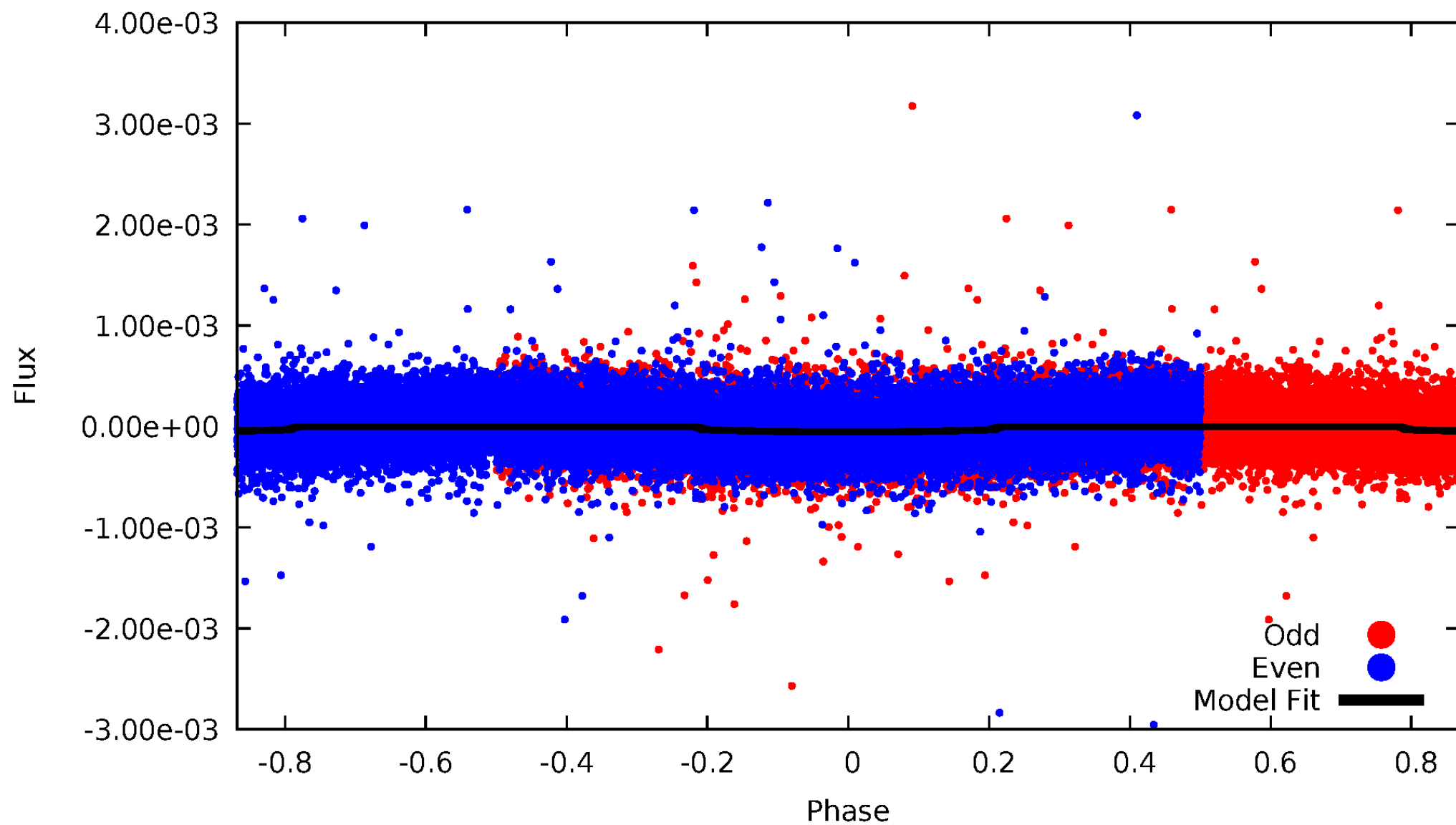


TCE 006946681-02



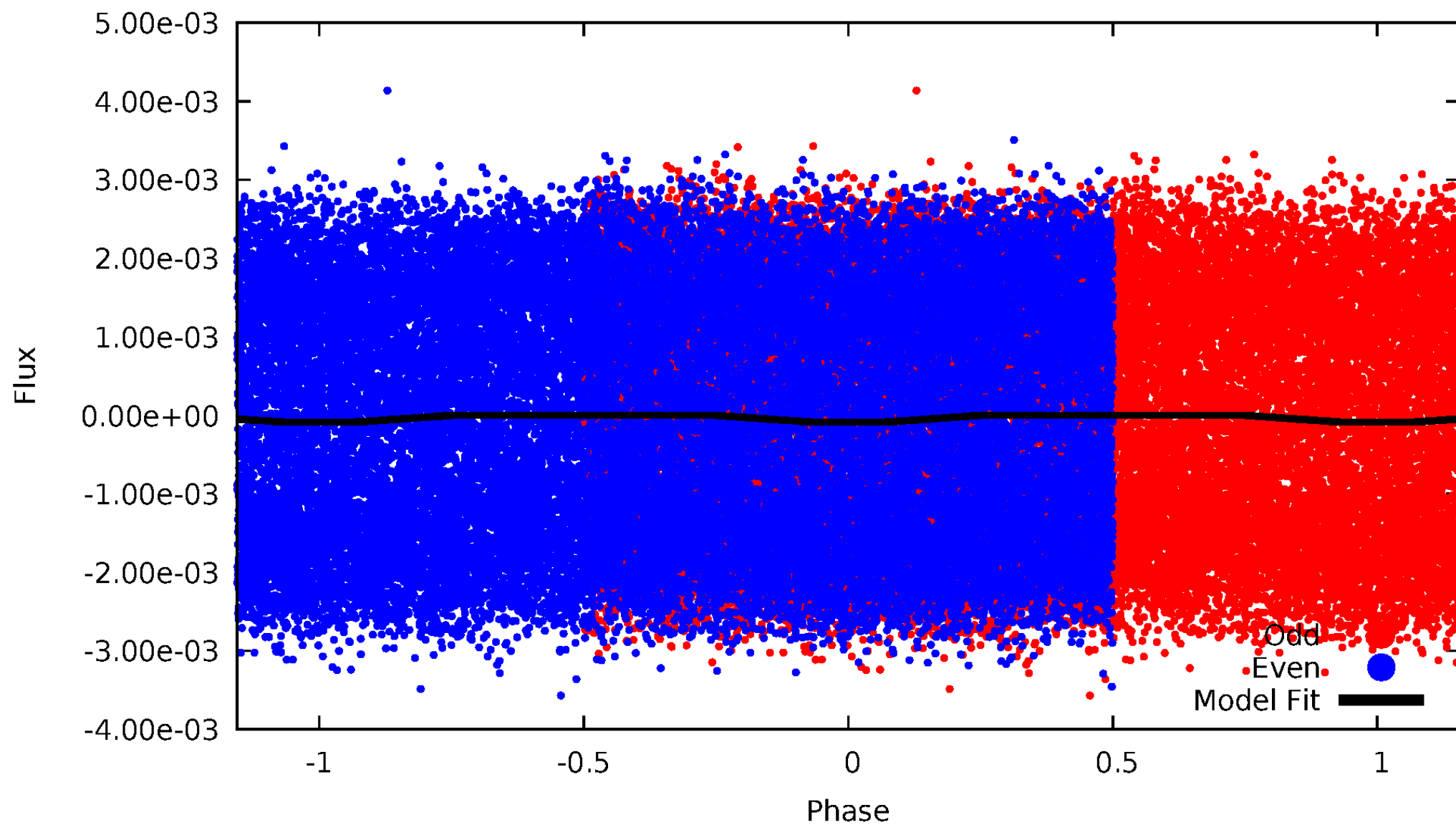
DV Odd/Even

TCE 006946681-02



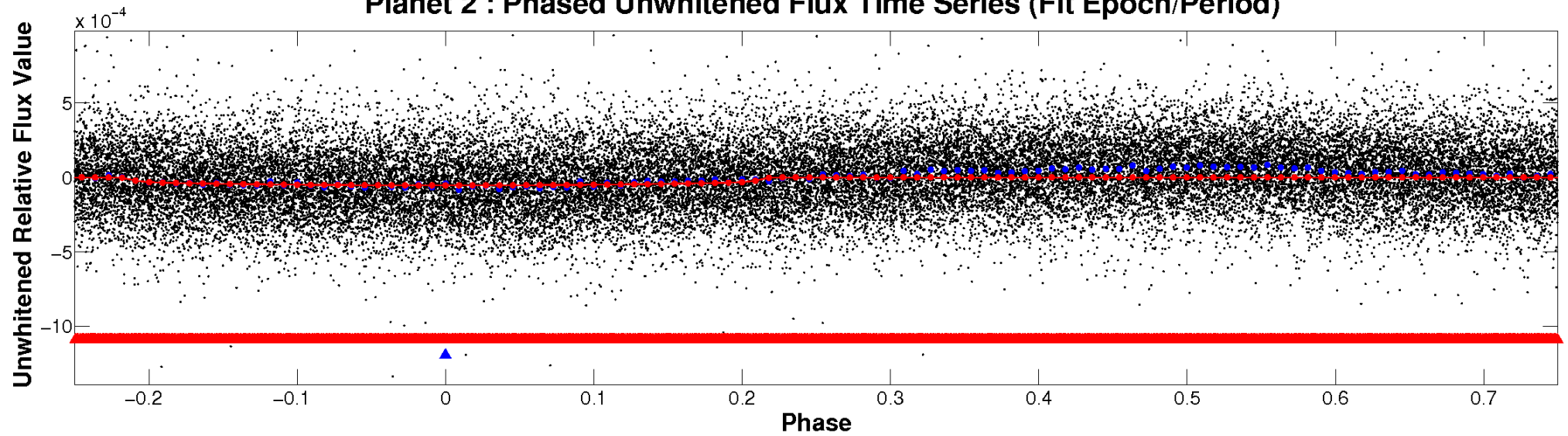
ALT Odd/Even

TCE 006946681-02

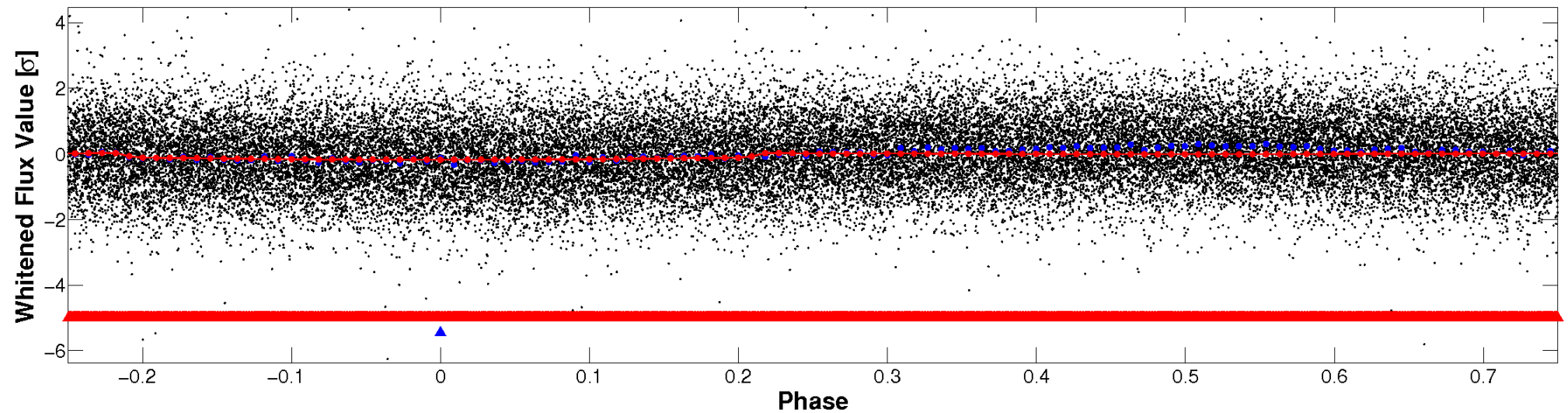


Non-Whitened Vs. Whitened Light Curve

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

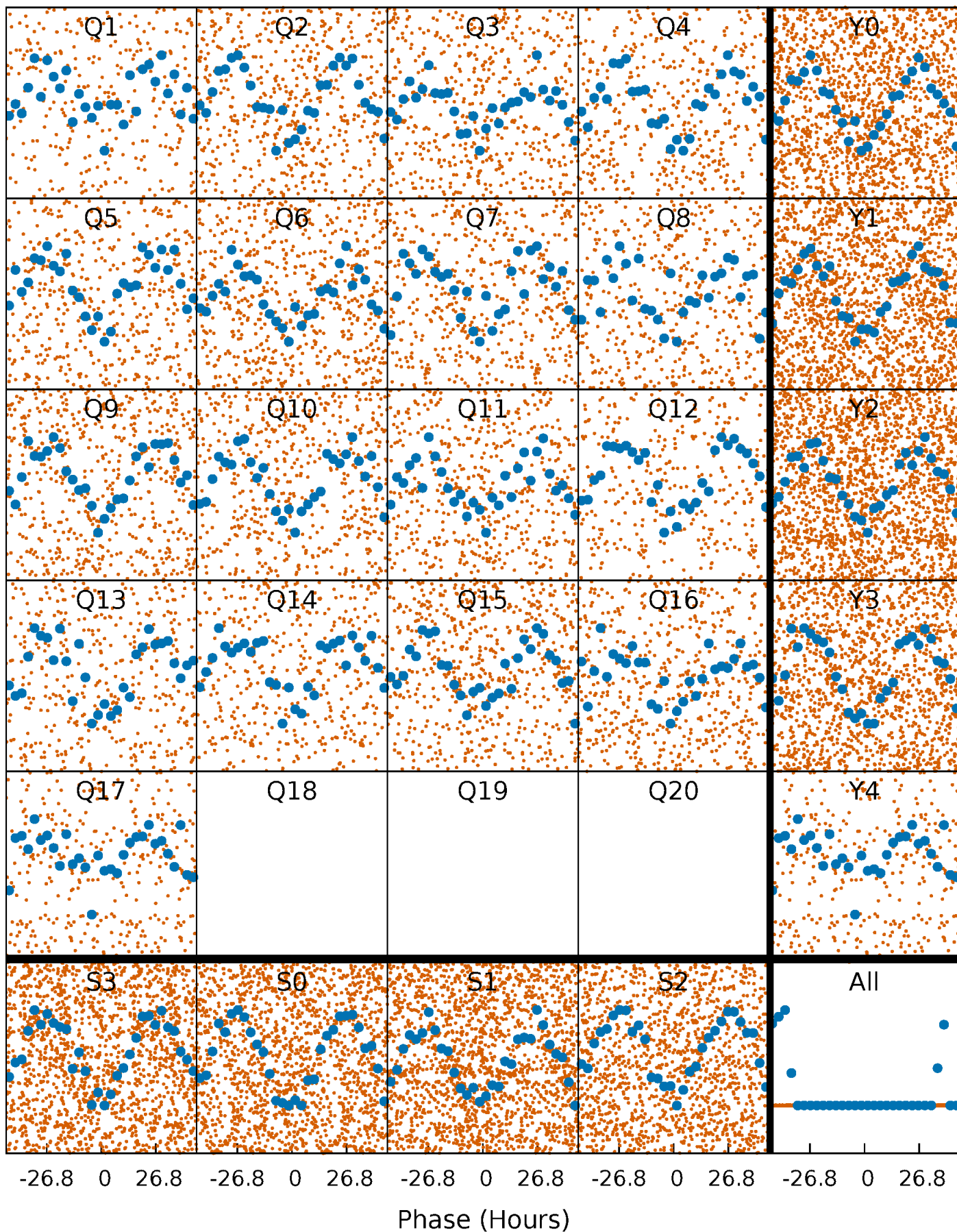


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



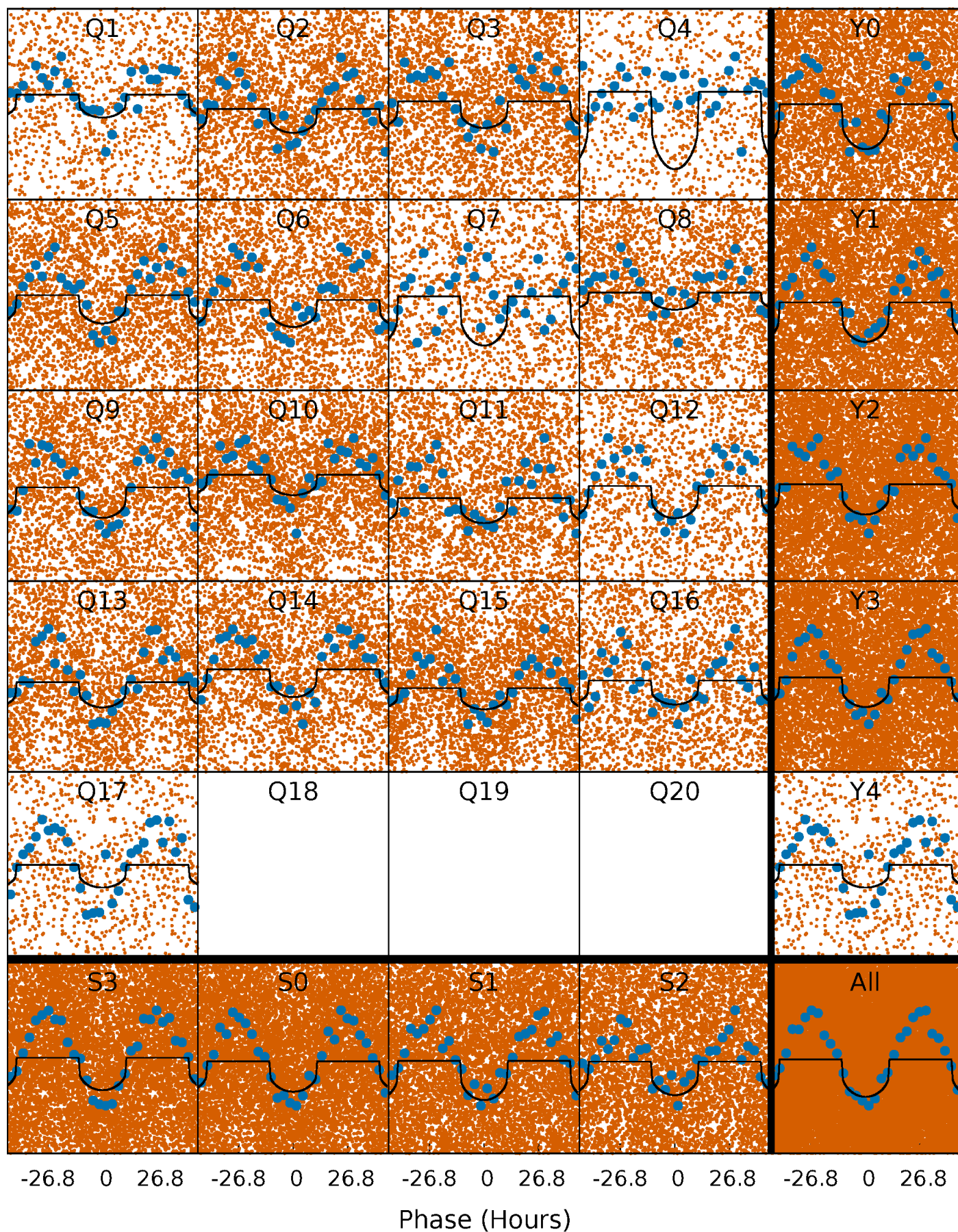
PDC Quarter-Phased Transit Curves

TCE 006946681-02 P= 2.249108 Days $T_0=132.920606$ (BKJD)



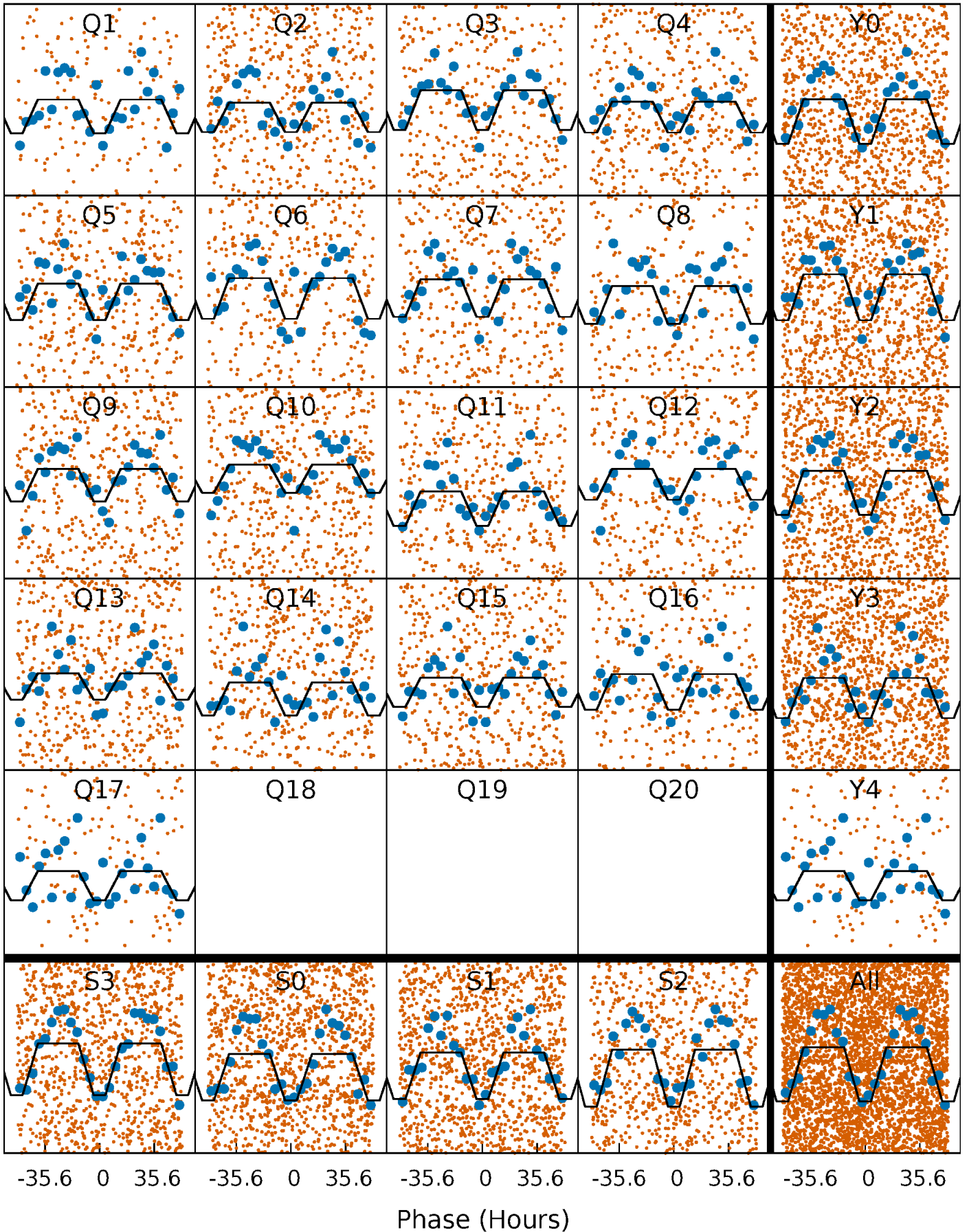
DV Quarter-Phased Transit Curves

TCE 006946681-02 P= 2.249108 Days $T_0=132.920606$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

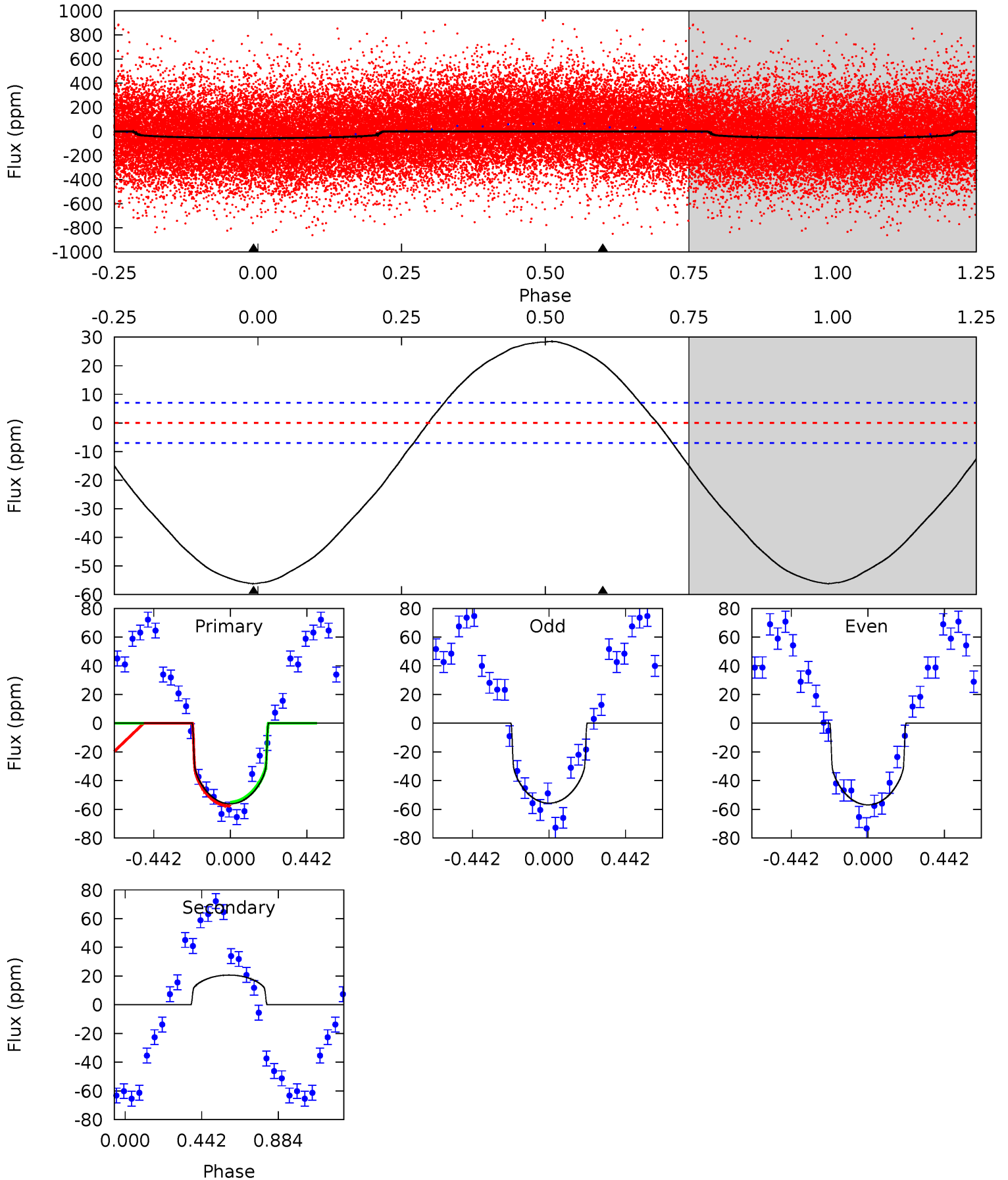
TCE 006946681-02 P= 2.248918 Days $T_0=132.945144$ (BKJD)



DV Model-Shift Uniqueness Test

006946681-02, P = 2.249108 Days, E = 130.671498 Days

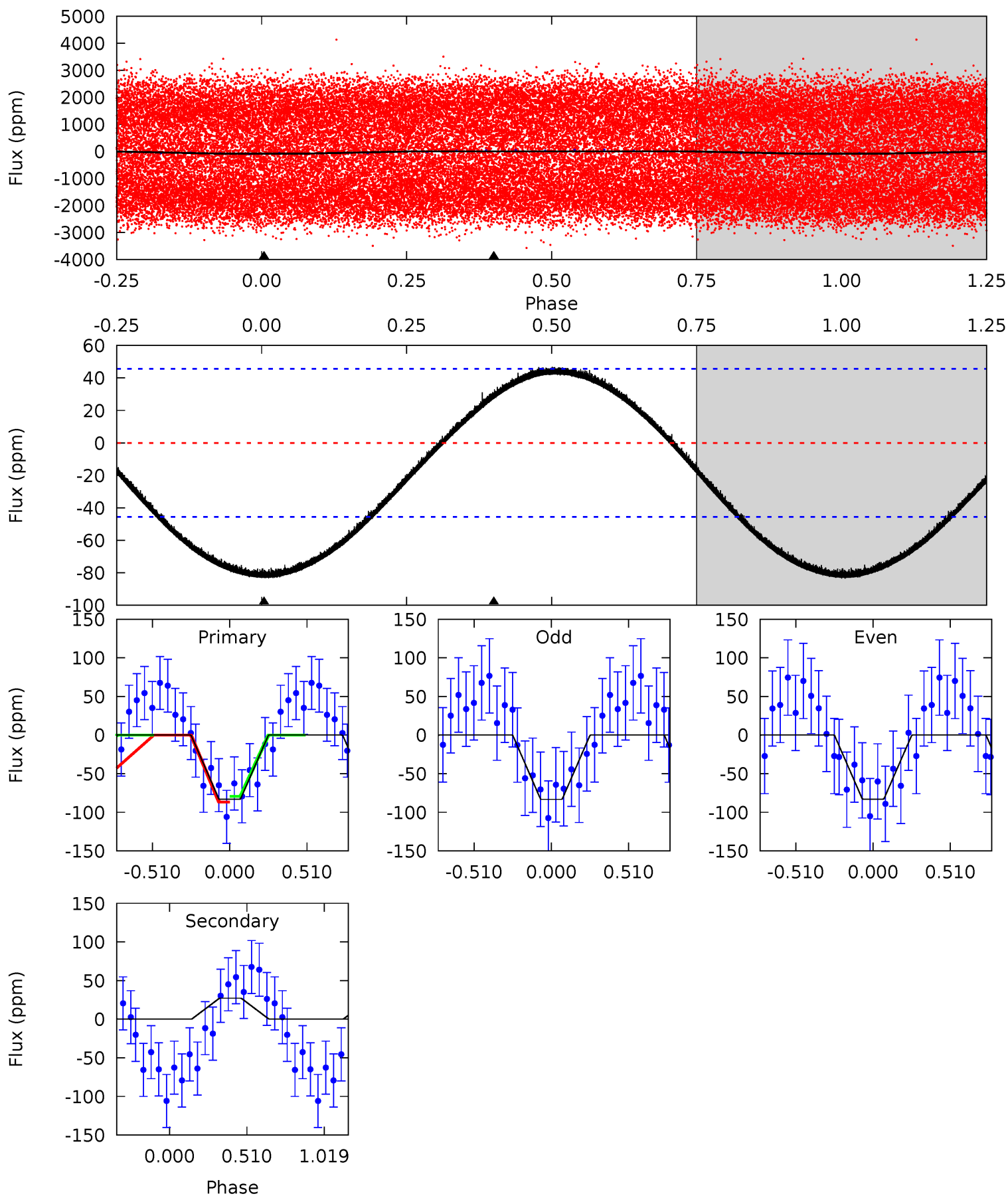
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.9	-12.5	0	0	4.24	0.77	4.69	33.9	33.9	-12.5	-12.5	0.35	0.93	0.34	0.81



Alt Model-Shift Uniqueness Test

006946681-02, P = 2.248918 Days, E = 130.696226 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.67	-2.52	0	0	4.21	0.66	1.06	7.67	7.67	-2.52	-2.52	0.02	1.91	0.36	0.35



Stellar Parameters For KIC 006946681

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7972^{+216}_{-340}	$3.884^{+0.315}_{-0.105}$	$-0.180^{+0.200}_{-0.350}$	$2.609^{+0.343}_{-0.962}$	$1.902^{+0.078}_{-0.442}$	$0.151^{+0.379}_{-0.040}$
	+3%/-4%	+8%/-3%	+111%/-194%	+13%/-37%	+4%/-23%	+251%/-27%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006946681-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	21 ± 2	$1.81^{+0.53}_{-0.54}$	3841^{+233}_{-340}	-6437^{+600}_{-1127}	$-5.848^{+2.314}_{-5.738}$
Alt.	27 ± 11	$2.52^{+0.56}_{-0.63}$	3832^{+252}_{-359}	-5903^{+668}_{-780}	$-3.916^{+1.743}_{-3.560}$

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

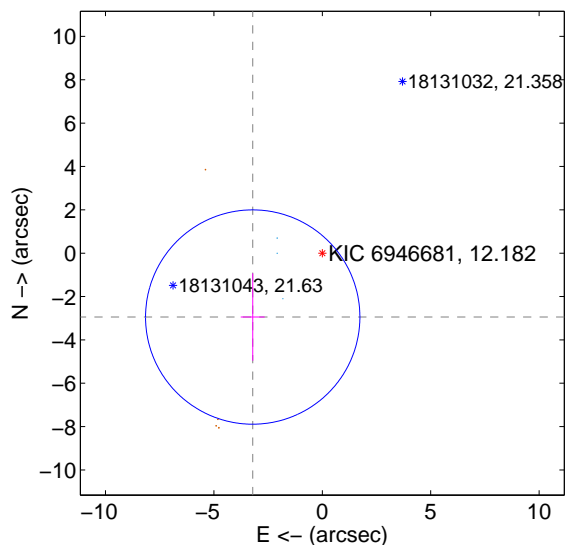
Supplemental centroid analysis for 006946681-02. Kepler magnitude: 12.18. Transit SNR 19.81

There are 3 quarters with good PRF difference image offsets

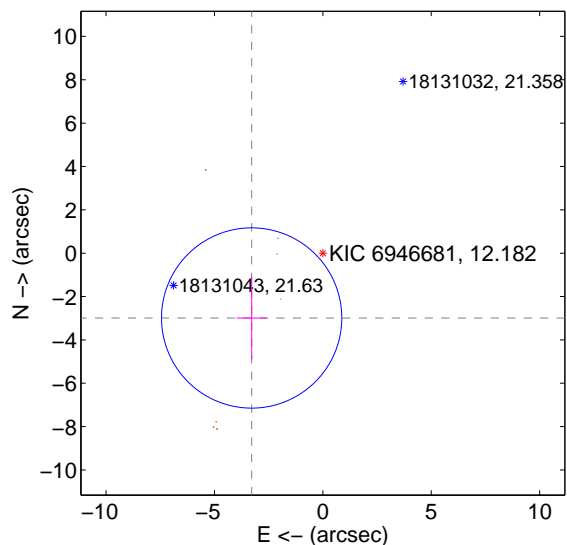
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.358 ± 1.648	2.64	3.210 ± 0.552	-2.947 ± 2.014
PRF-fit source offset from KIC position	4.442 ± 1.386	3.20	3.285 ± 0.696	-2.990 ± 1.912
photometric centroid source offset	0.12 ± 0.14	0.85	0.09 ± 0.14	0.08 ± 0.14

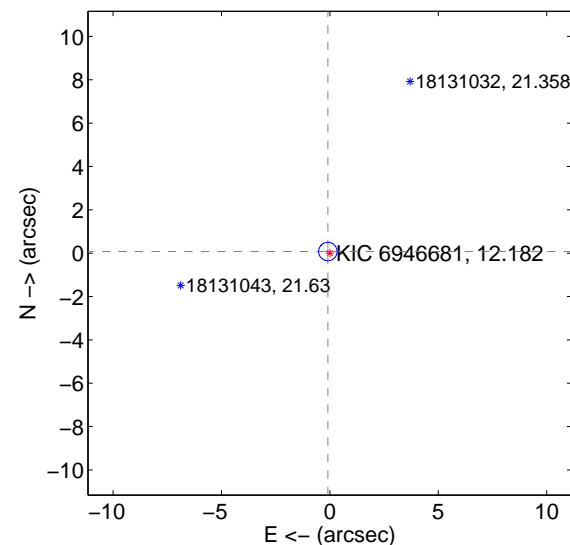
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

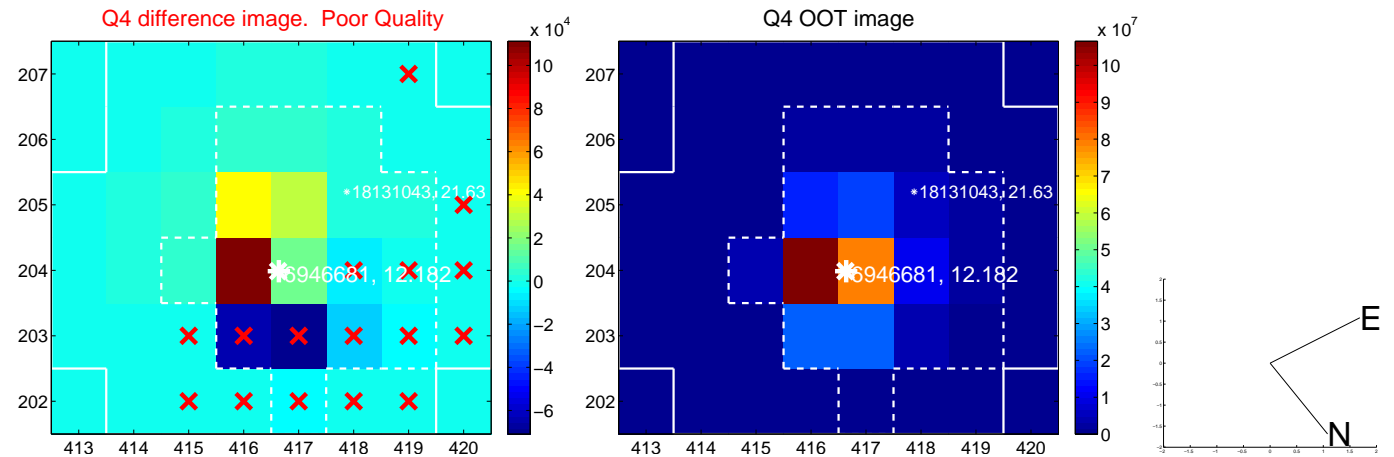
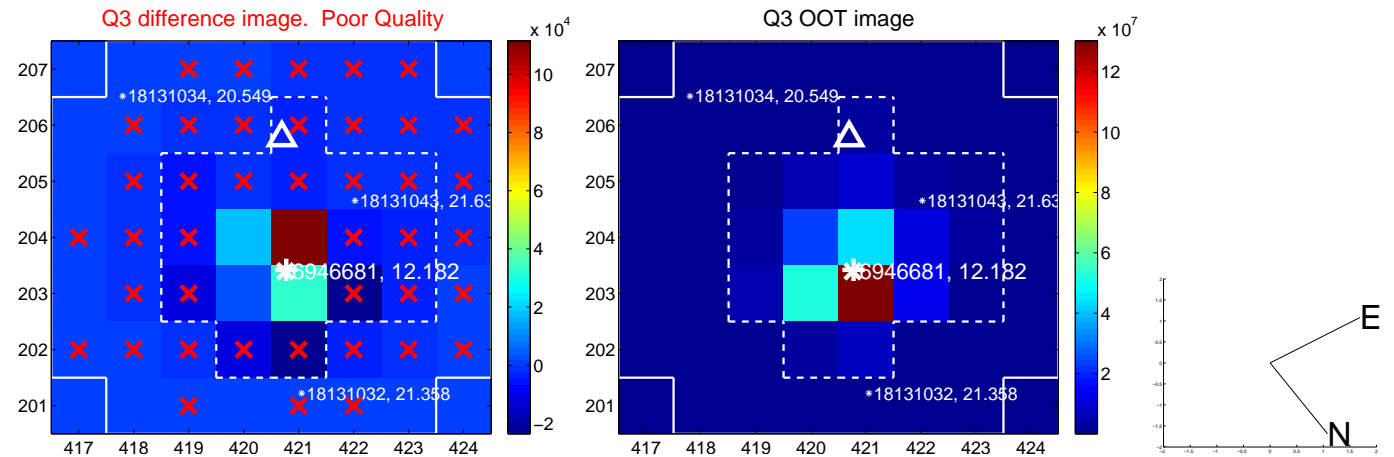
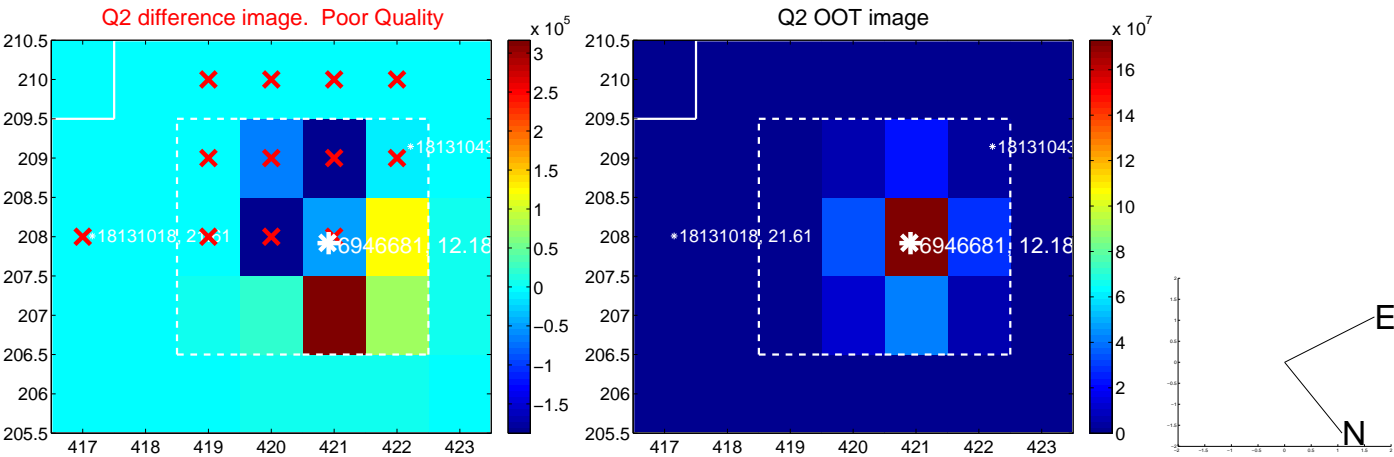
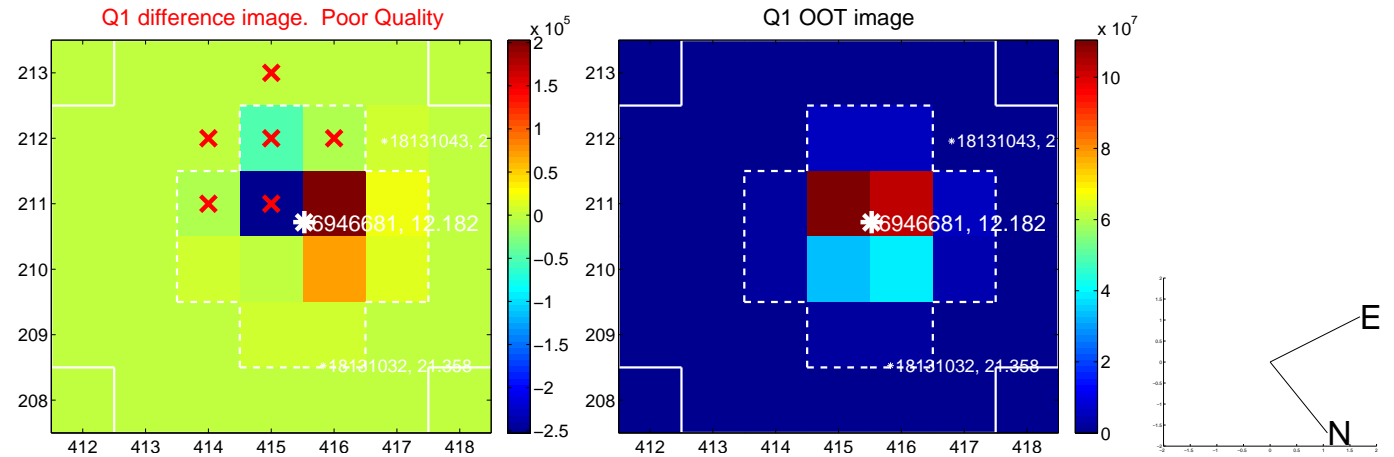


offset from photometric centroids

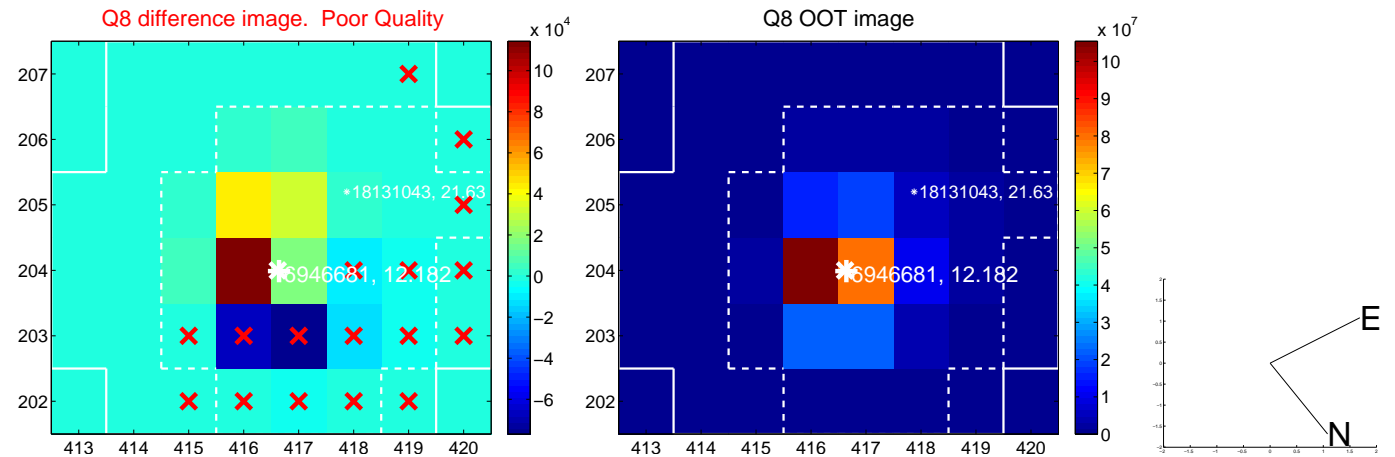
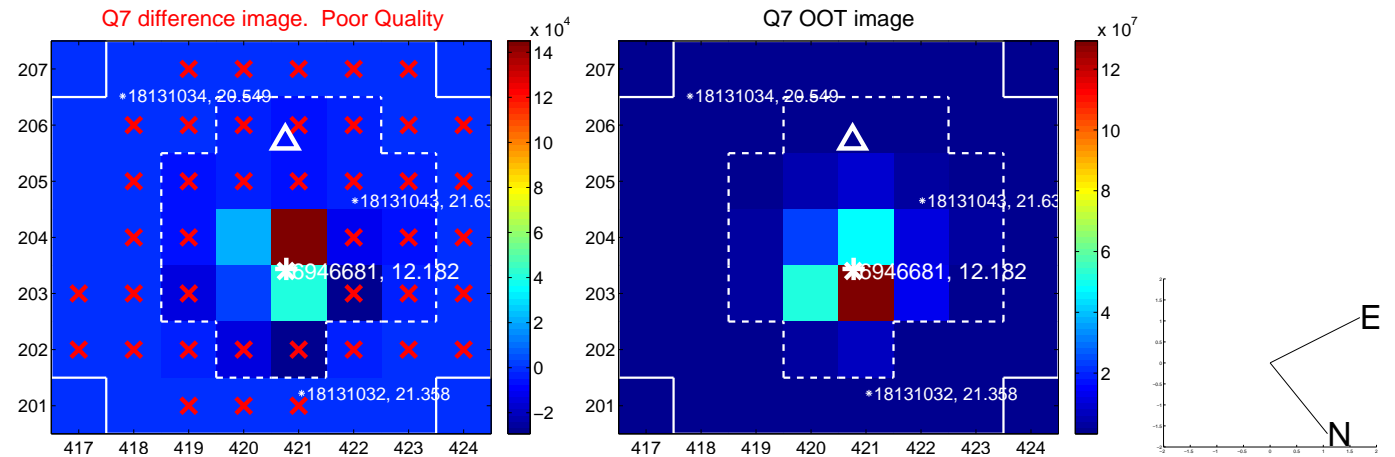
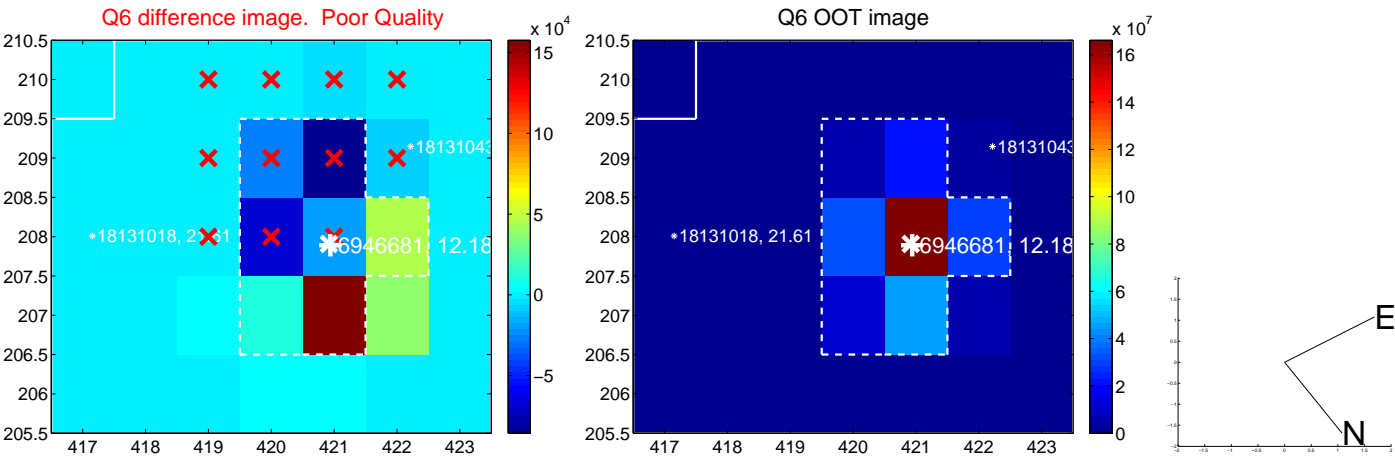
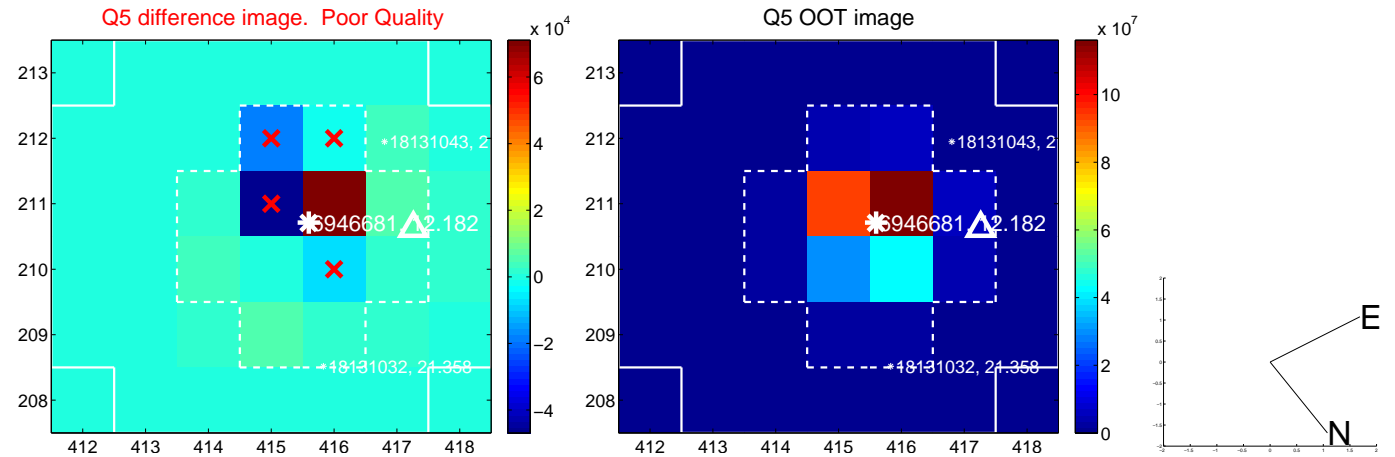


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

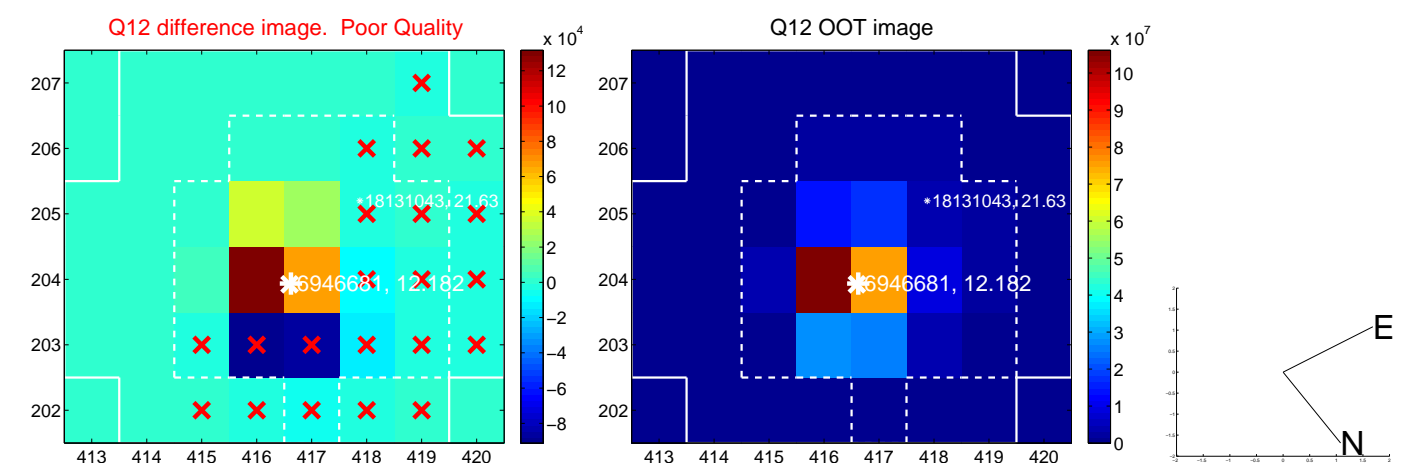
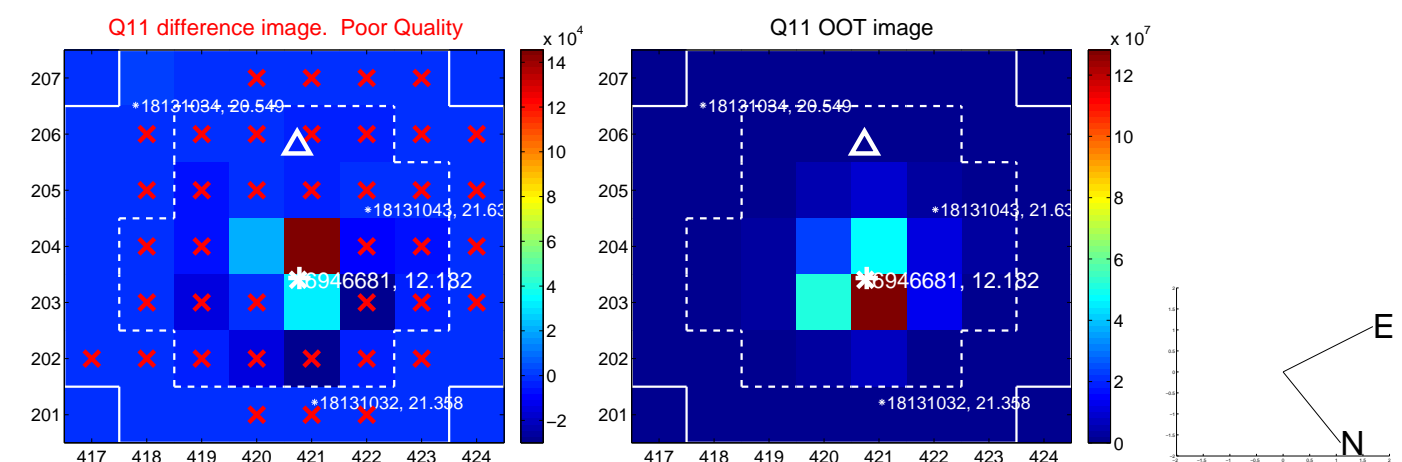
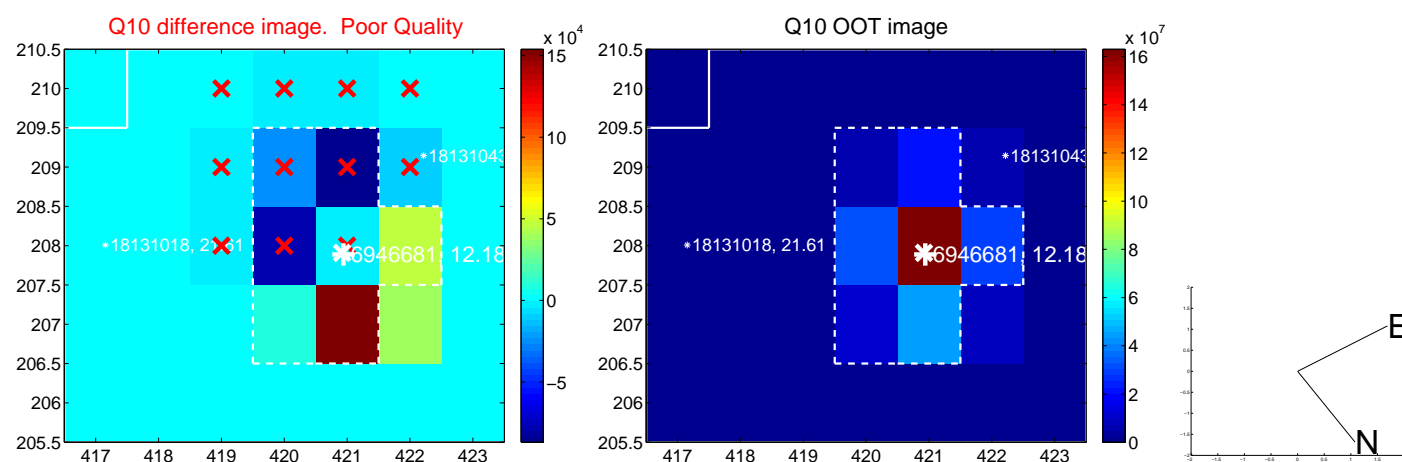
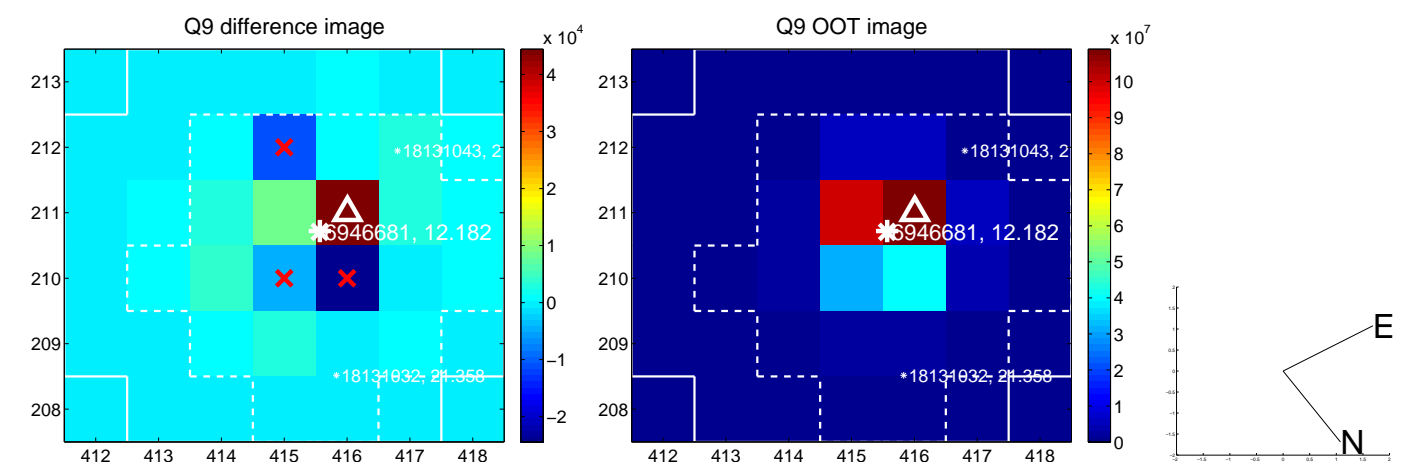
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



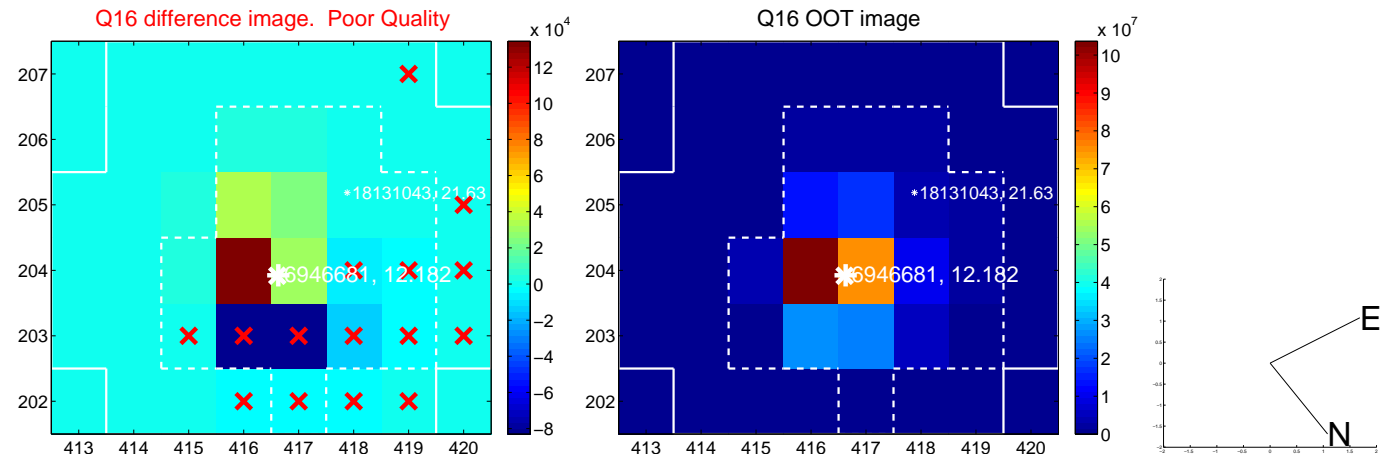
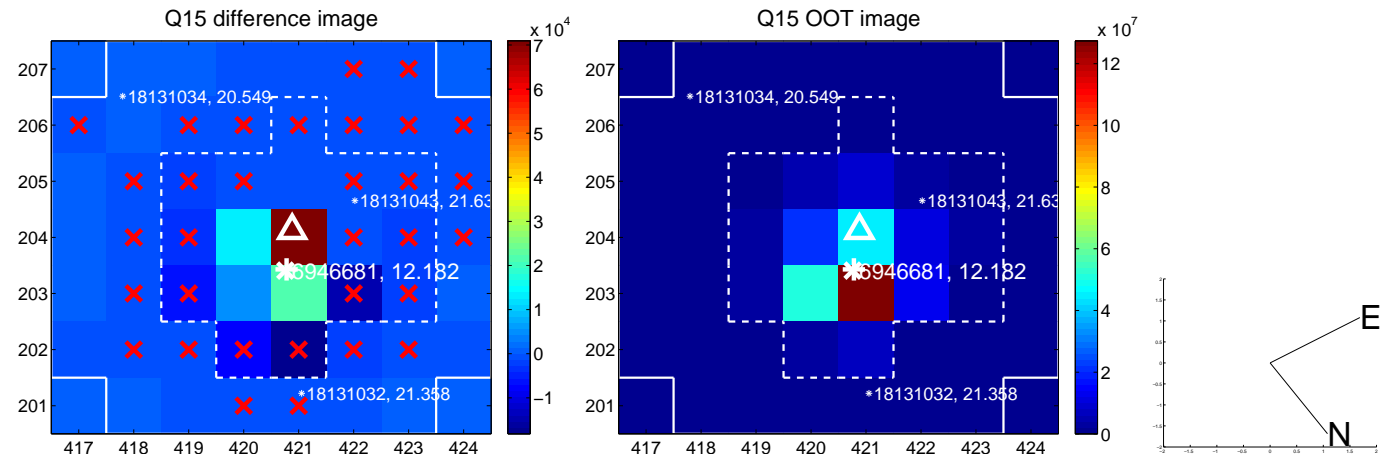
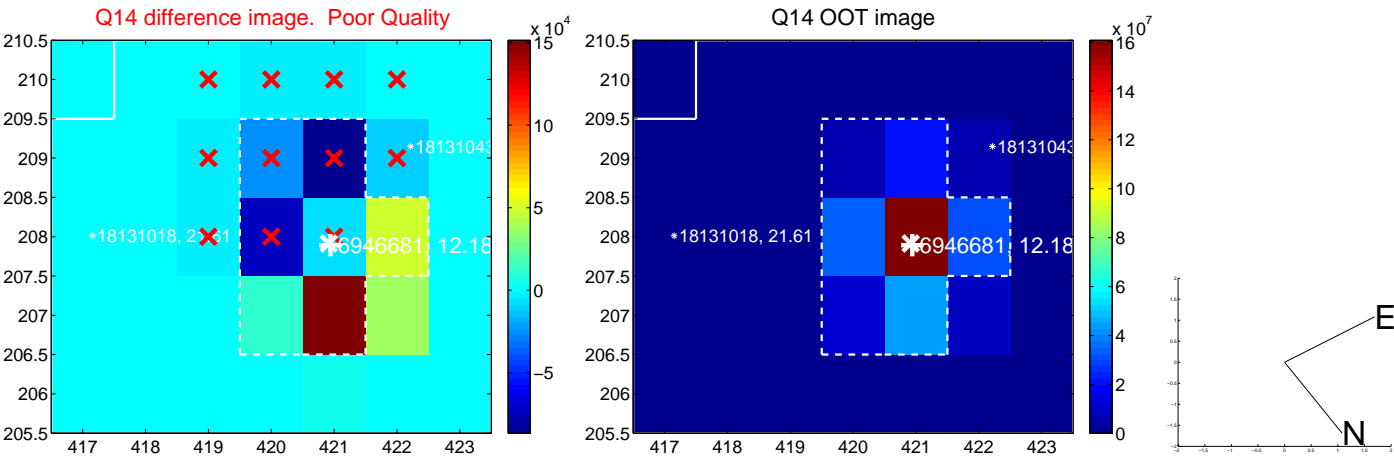
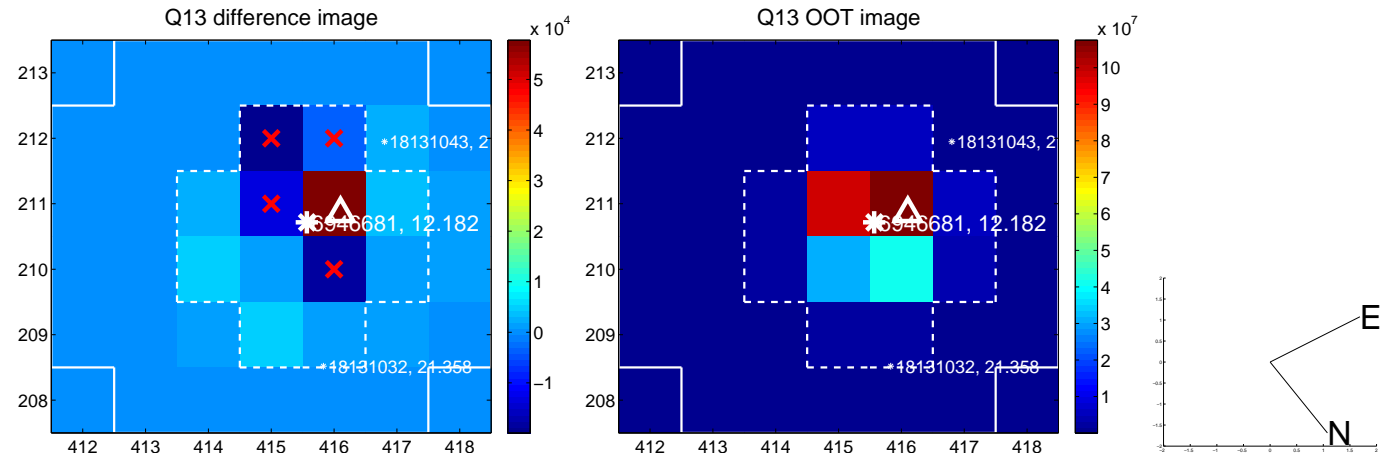
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



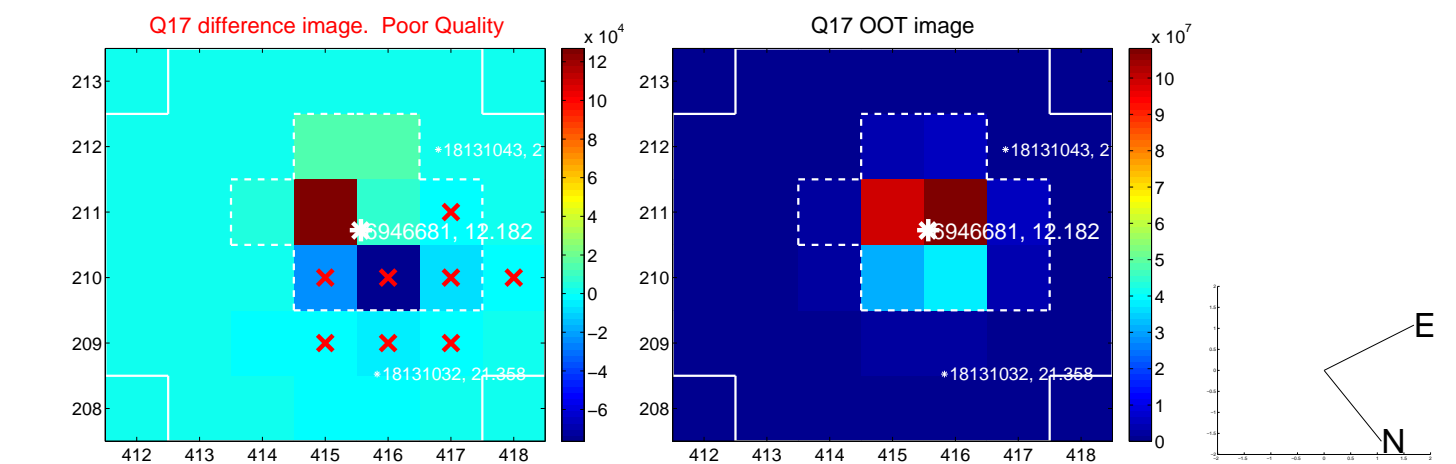
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



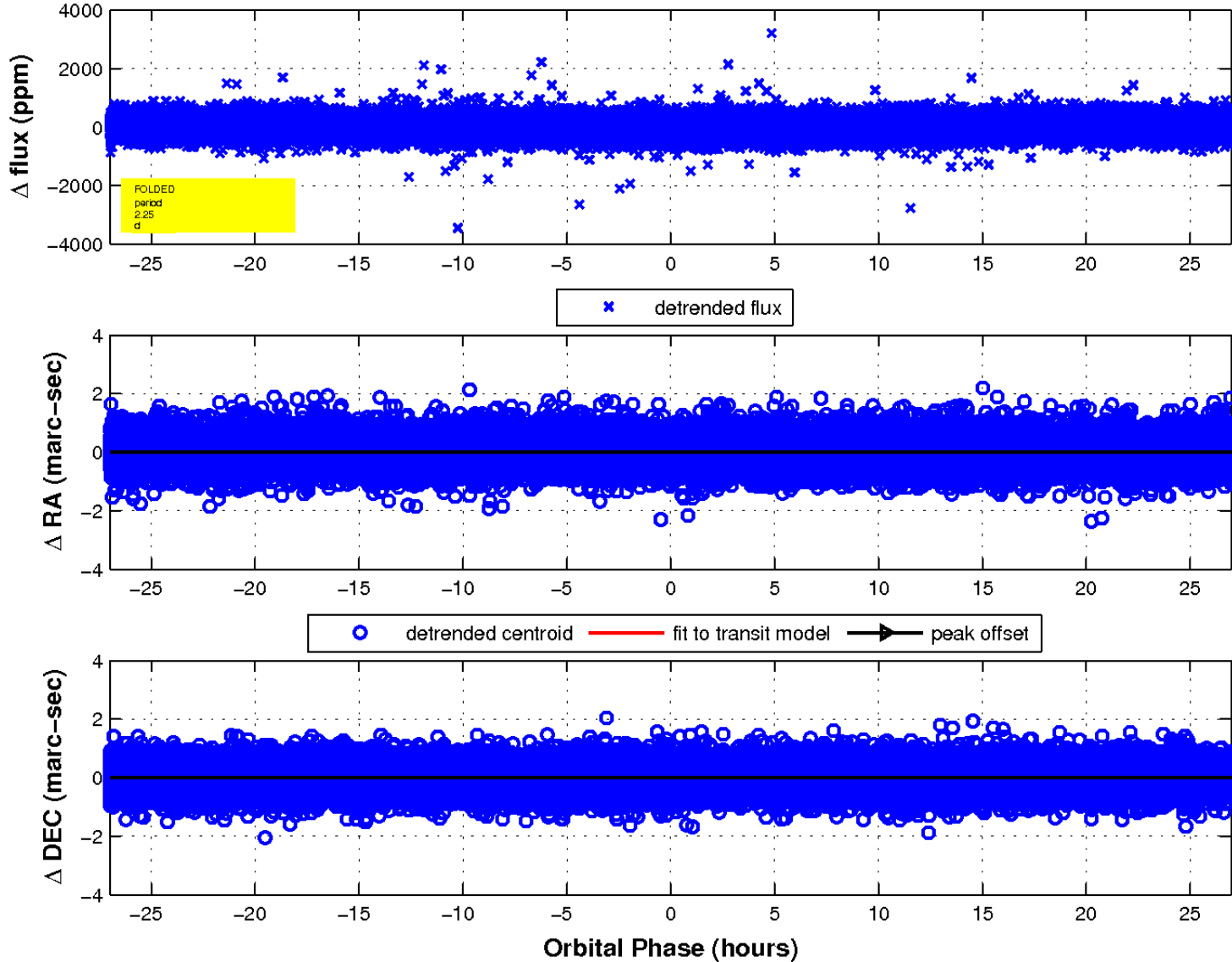
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

