

KIC 009774286

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})
009774286-01	OBS	No	0.609440	131.620253	2.2	1.159	9.1	0.5	1.04	6053	0.16	7296.41
009774286-02	OBS	No	1.218958	131.905715	34.3	3.769	8.6	10.0	1.04	6053	0.68	2895.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009774286-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009774286-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

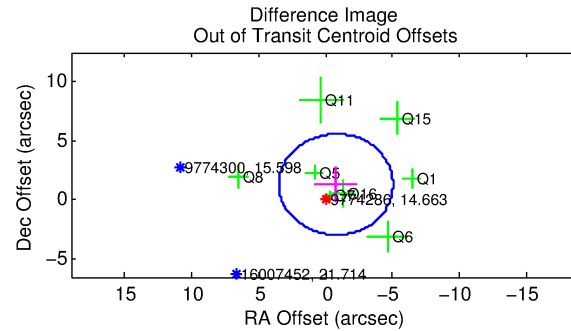
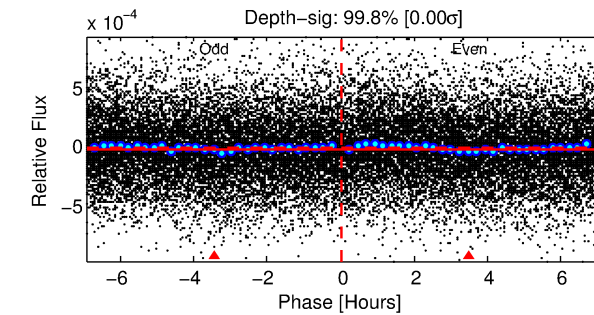
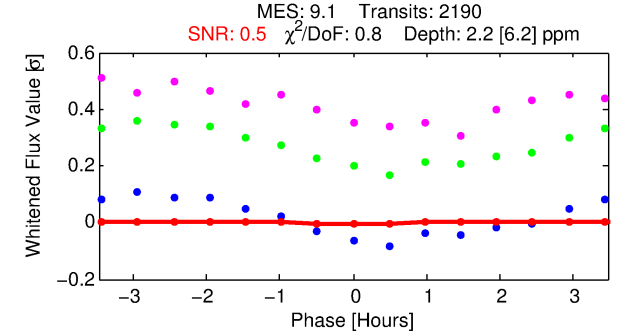
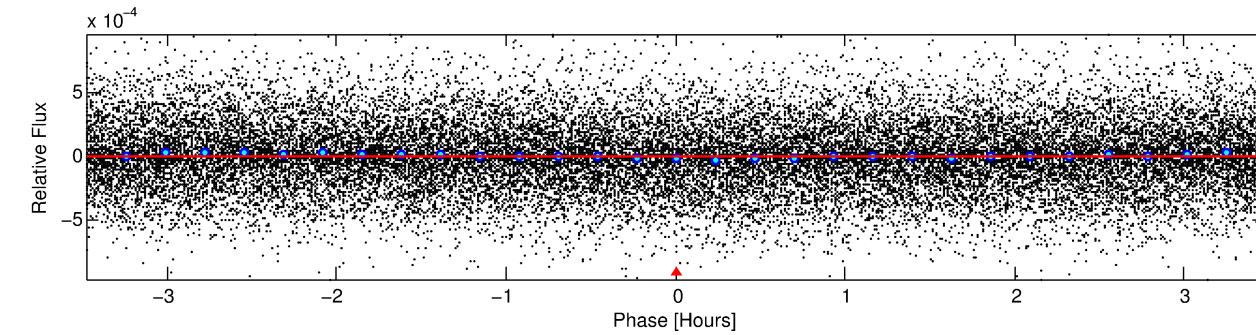
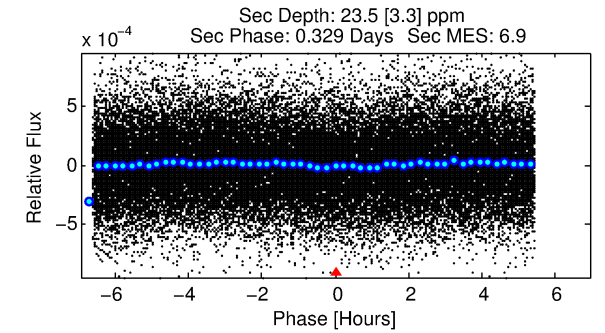
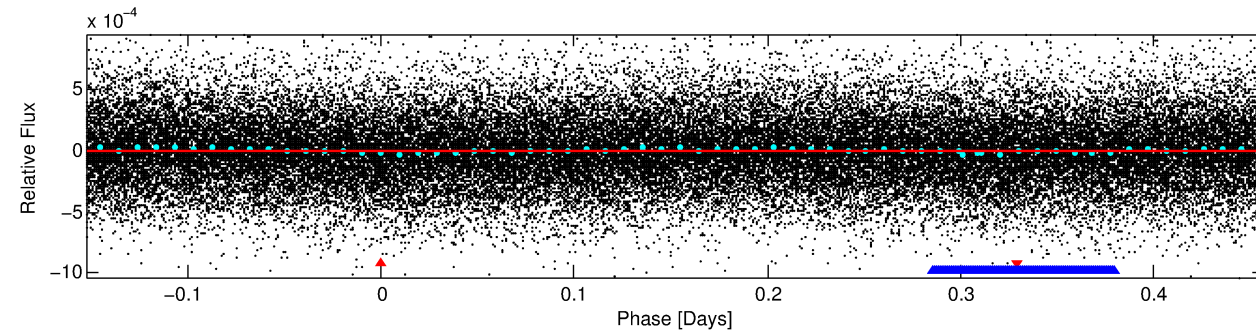
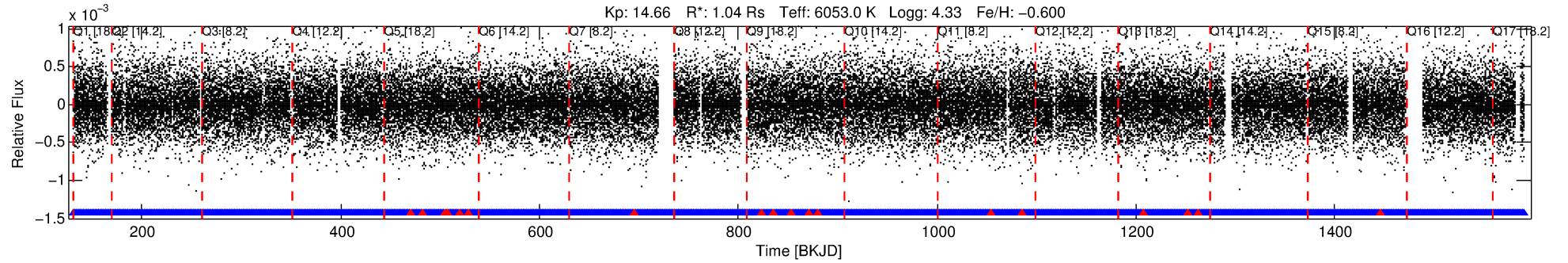
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009774286-01

No Significant Match Found

DV One-Page Summary

KIC: 9774286 Candidate: 1 of 2 Period: 0.609 d



DV Fit Results:

Period = 0.60944 [0.00022] d
Epoch = 131.6203 [0.0409] BKJD
Rp/R* = 0.0014 [0.0029]
a/R* = 3.69 [26.83]
b = 0.43 [14.71]
Seff = 7296.41 [2592.75]
Teff = 2357 [209] K
Rp = 0.16 [0.33] Re
a = 0.0133 [0.0030] AU
Ag = 91.16 [381.32] [0.24σ]
Teffp = 11259 [11741] K [0.76σ]

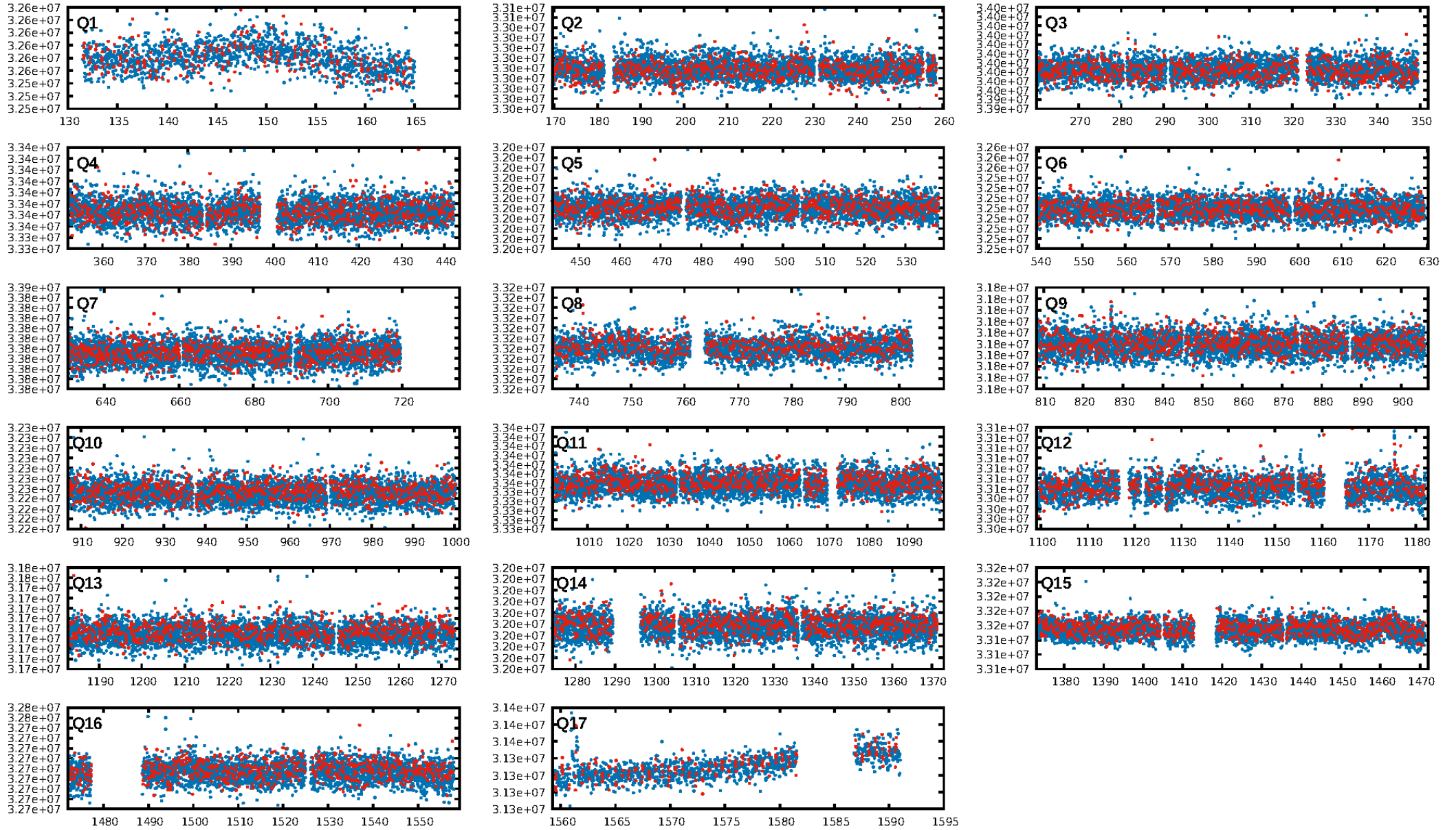
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [3.71σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.46e-19
RollingBand-fgt: 0.99 [2073/2091]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 1.541 arcsec [1.08σ]
KicOffset-rm: 1.107 arcsec [0.92σ]
OotOffset-st: 1/3/2/2 [8]
KicOffset-st: 1/3/2/2 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 1.00 [17/17]

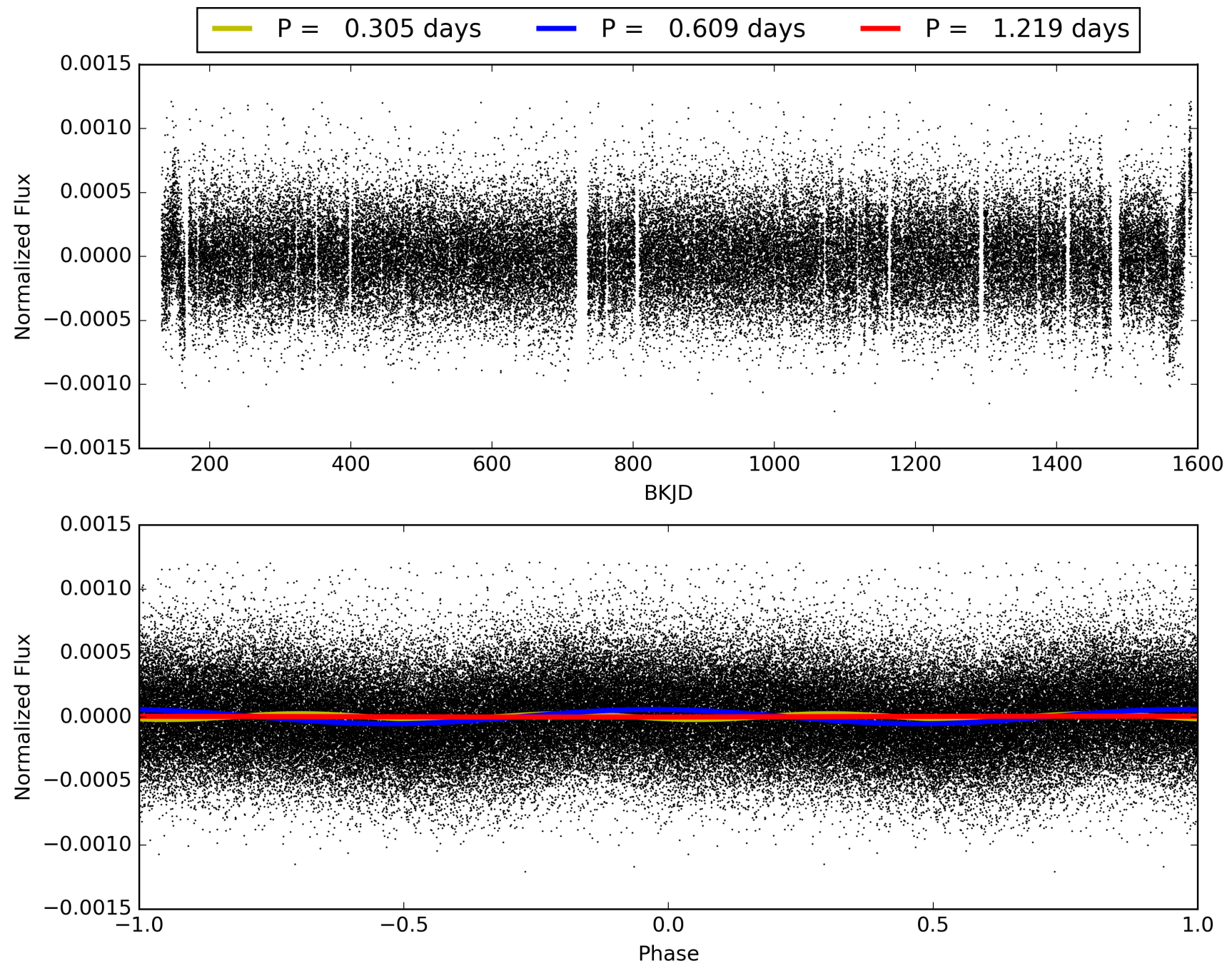
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:02:33 Z

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

TCE 009774286-01, PDC Light Curves

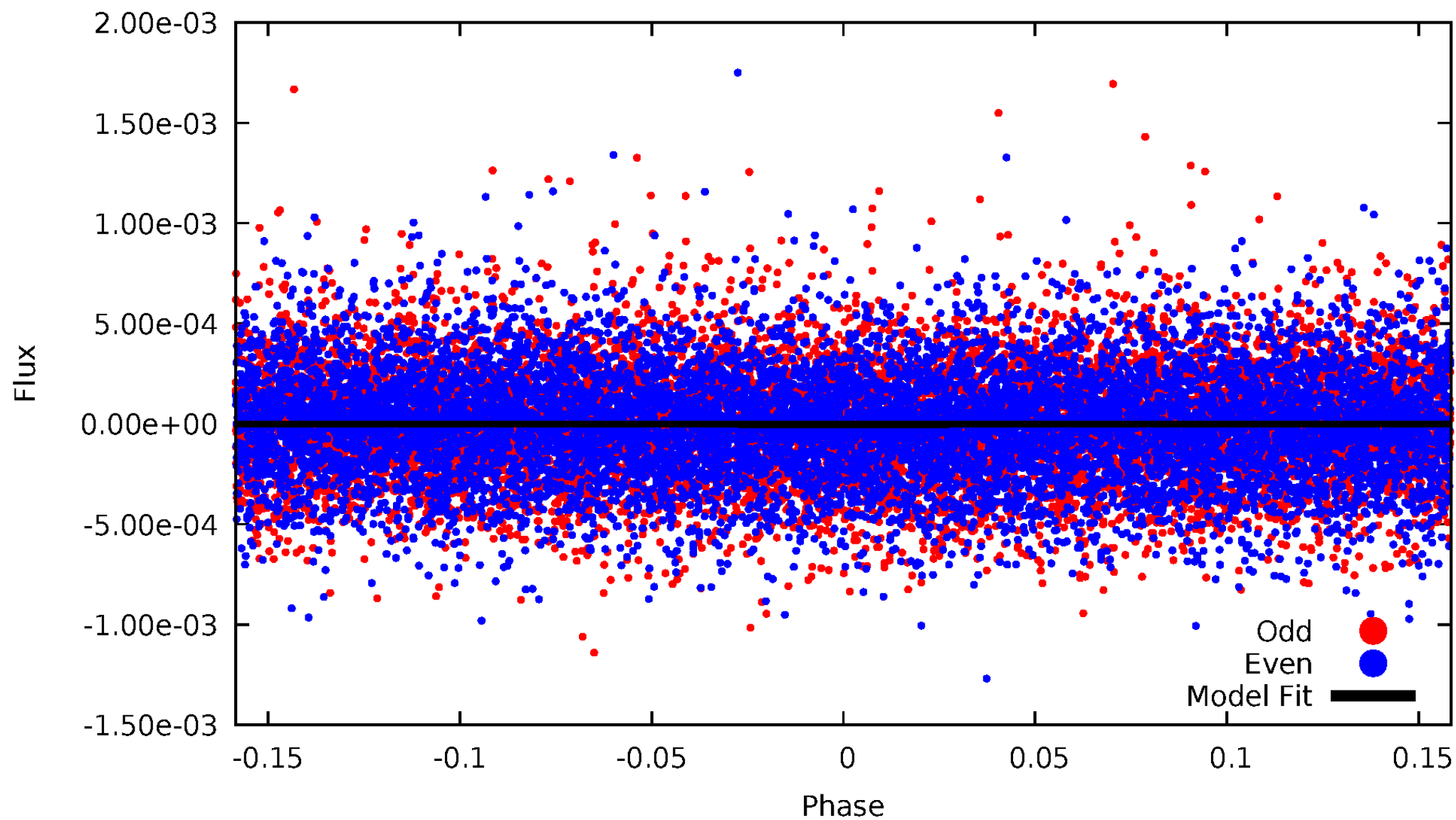


TCE 009774286-01



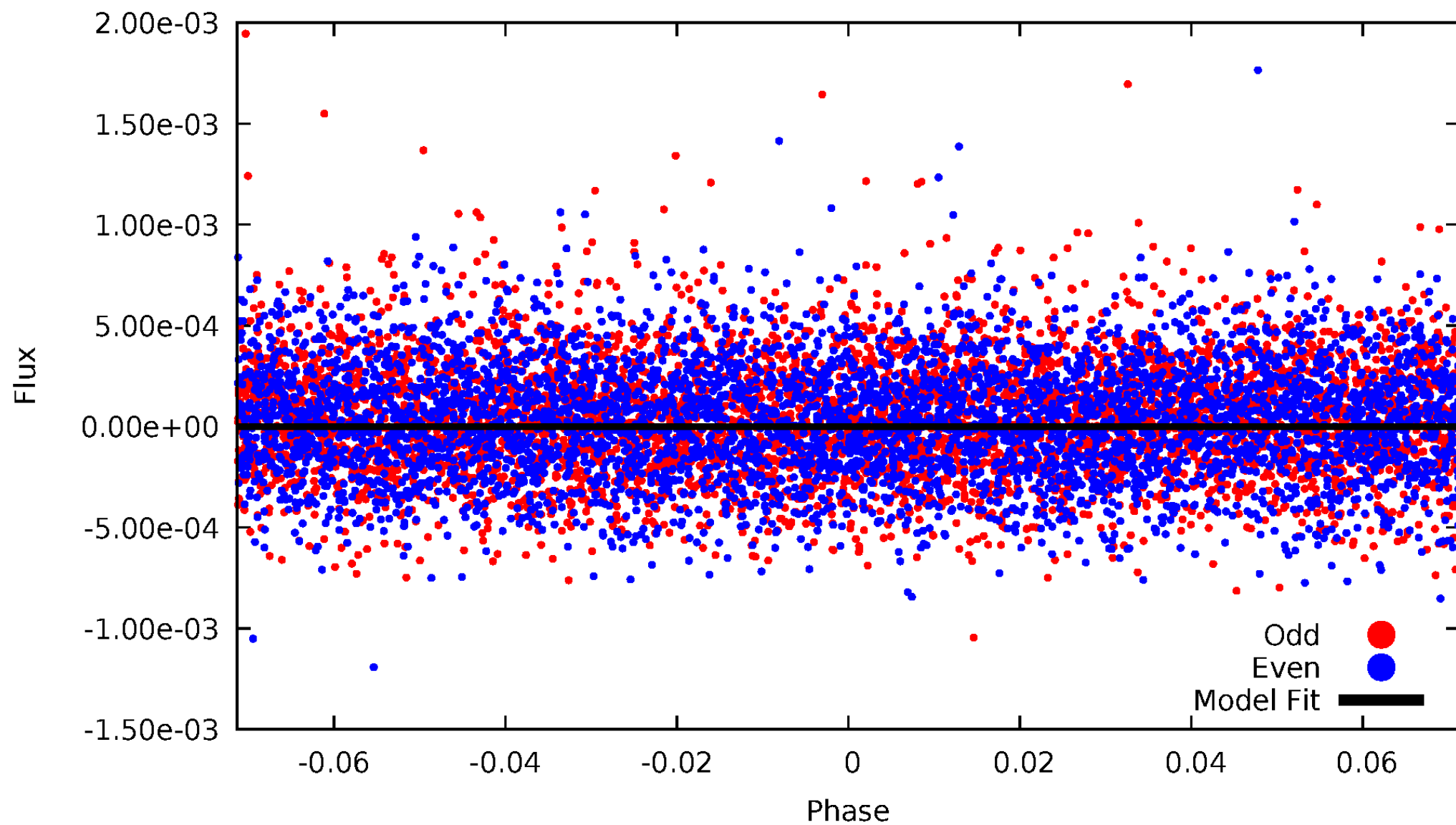
DV Odd/Even

TCE 009774286-01



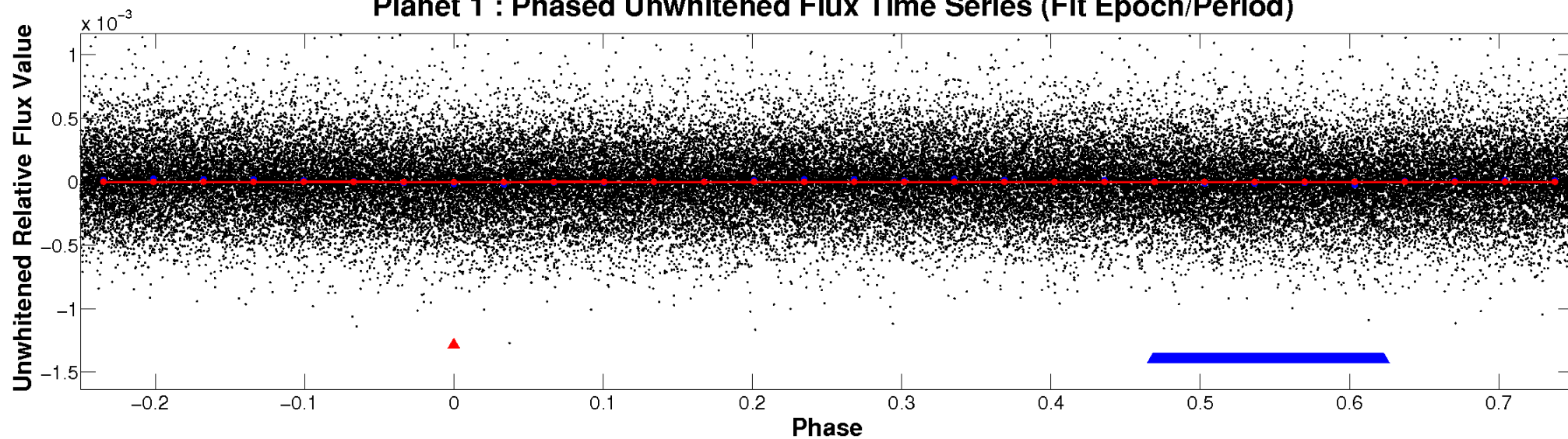
ALT Odd/Even

TCE 009774286-01

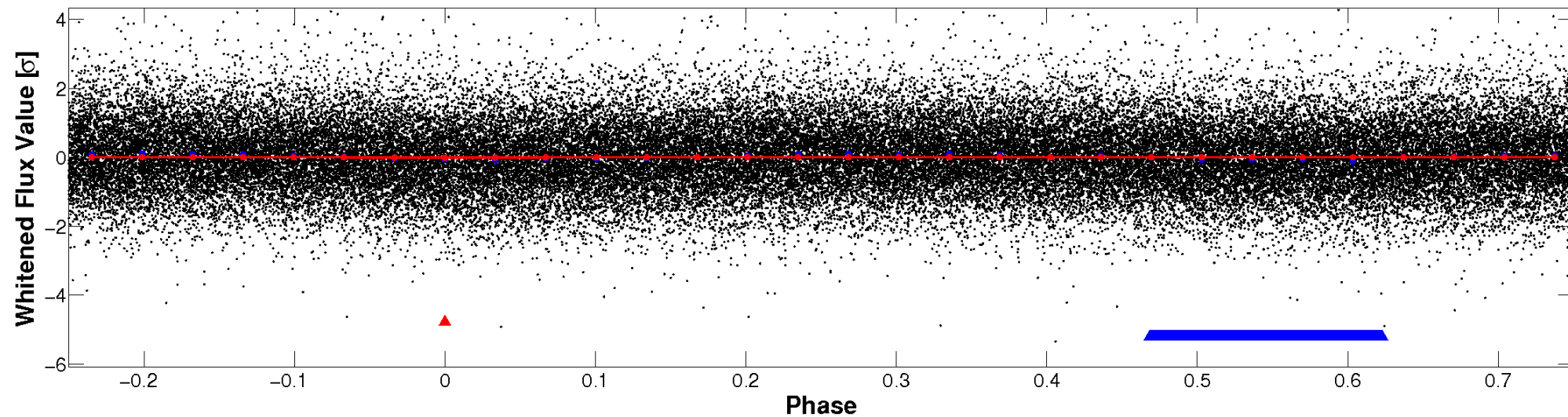


Non-Whitened Vs. Whitened Light Curve

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

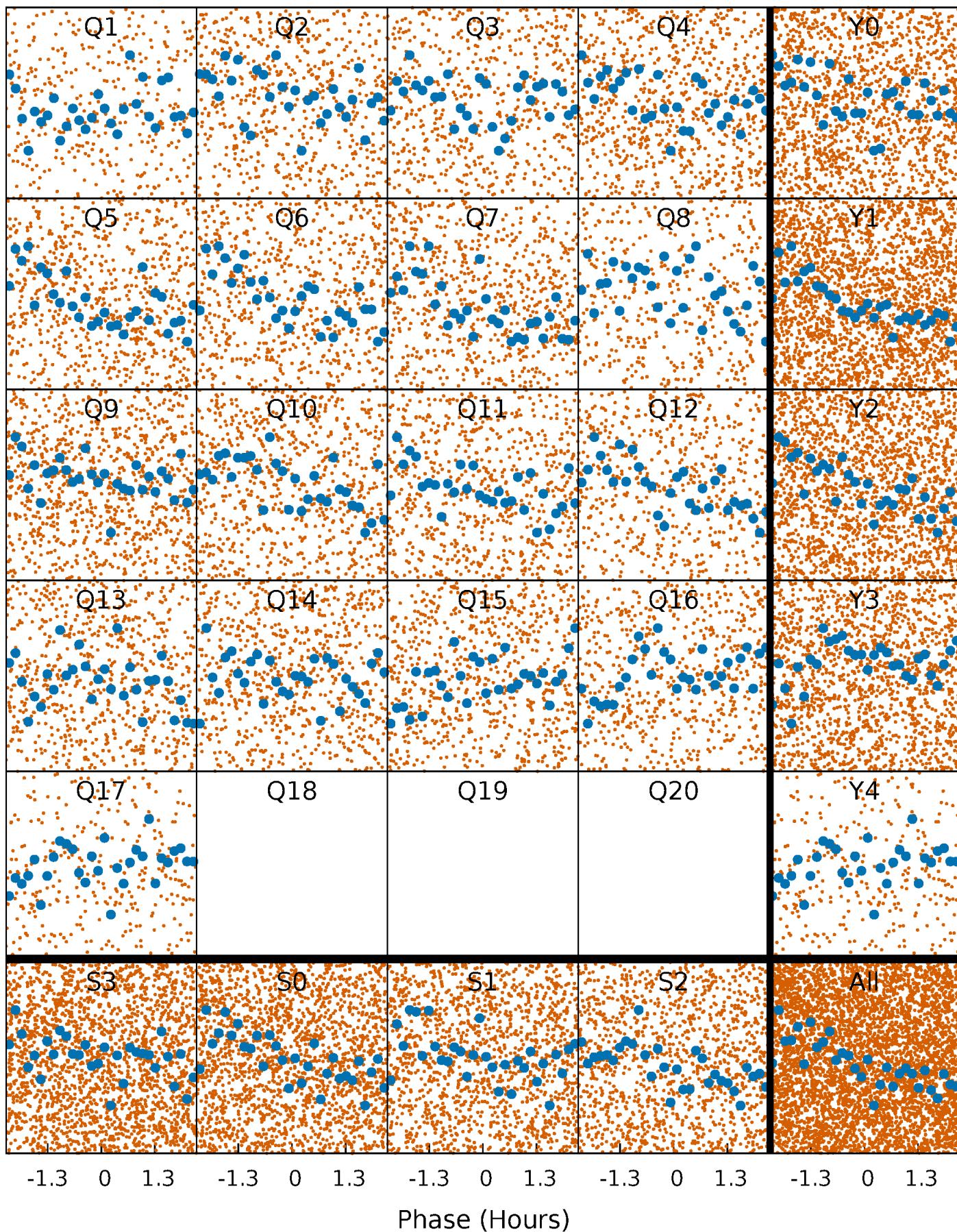


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



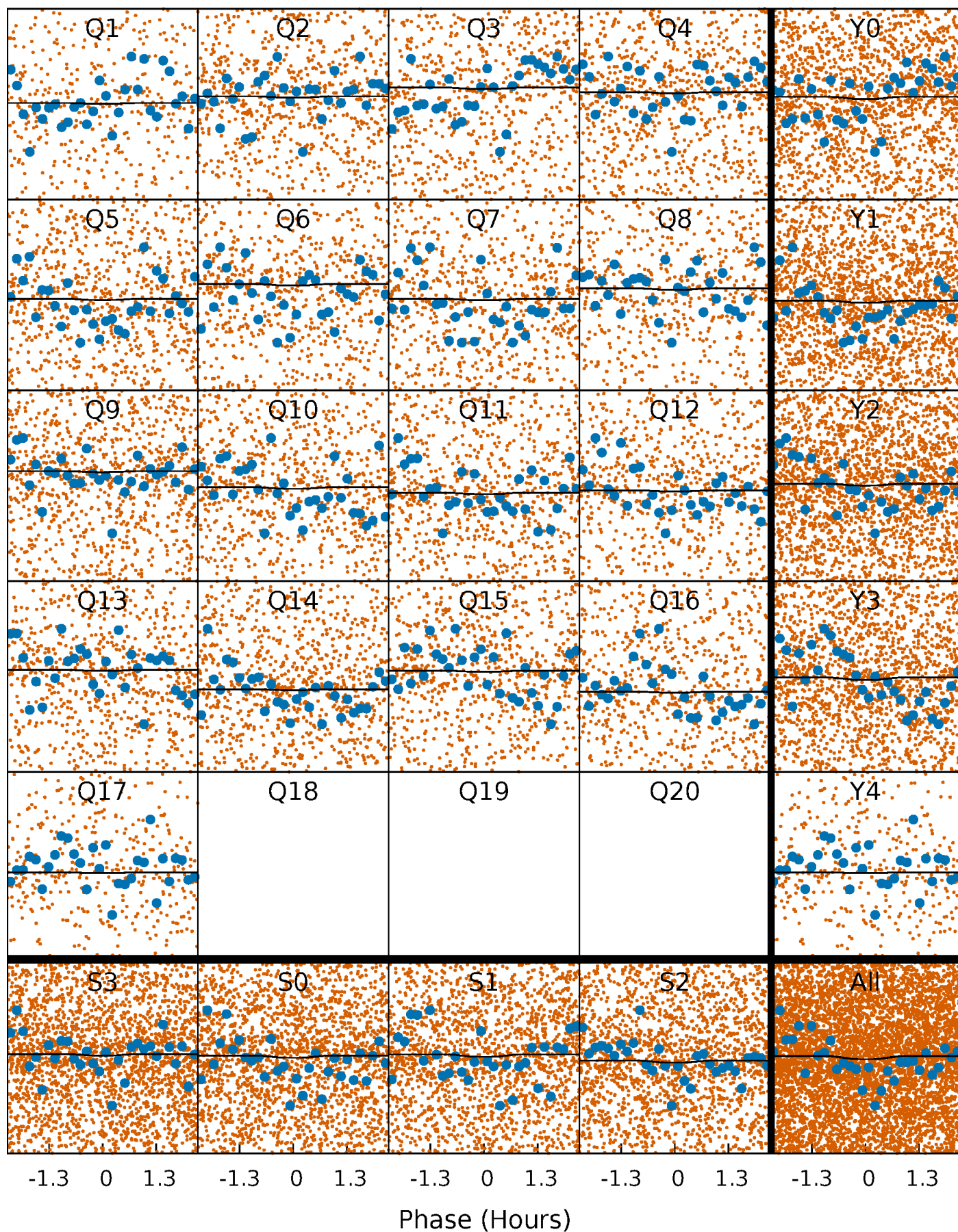
PDC Quarter-Phased Transit Curves

TCE 009774286-01 P= 0.609440 Days $T_0=131.620253$ (BKJD)



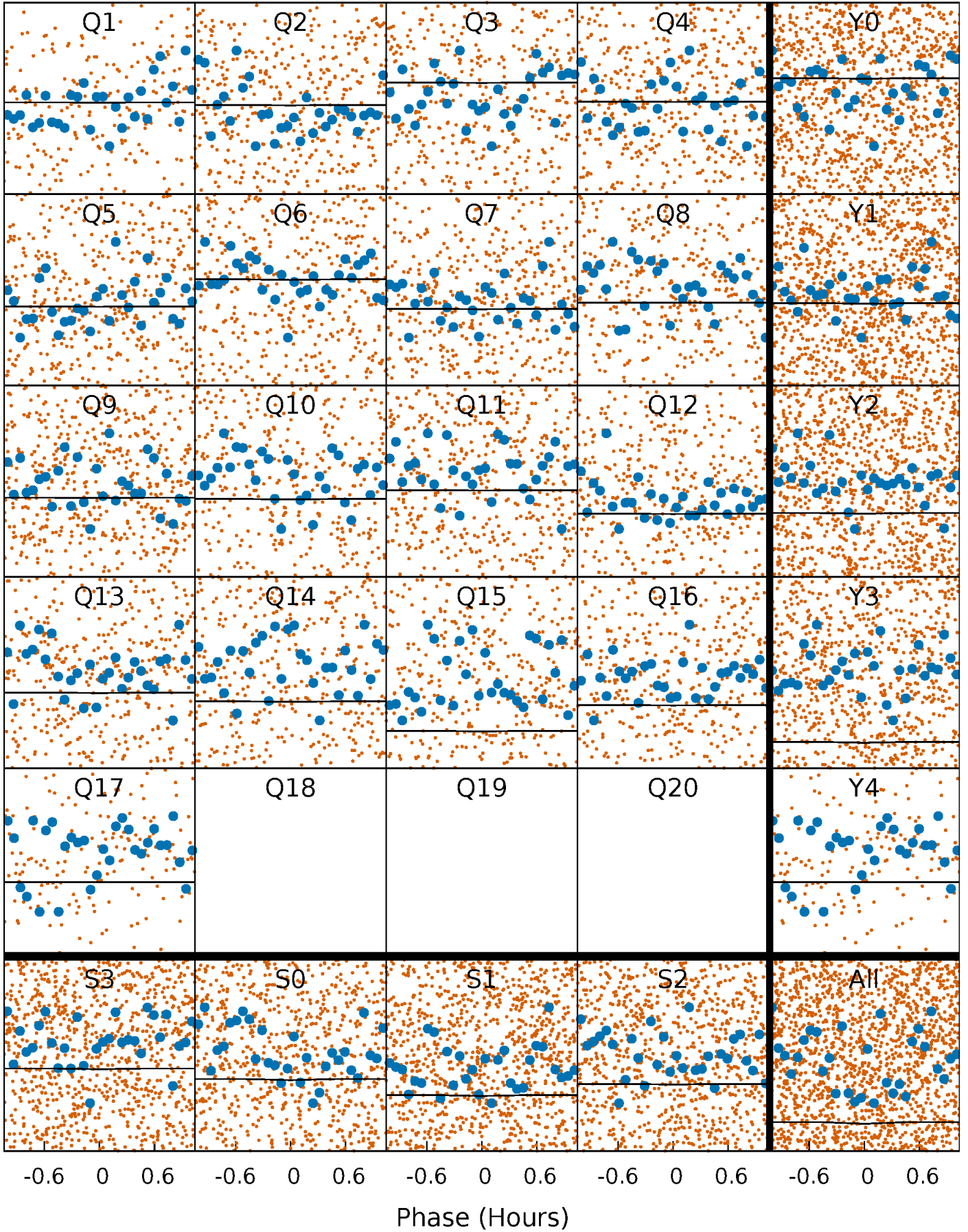
DV Quarter-Phased Transit Curves

TCE 009774286-01 P= 0.609440 Days $T_0=131.620253$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

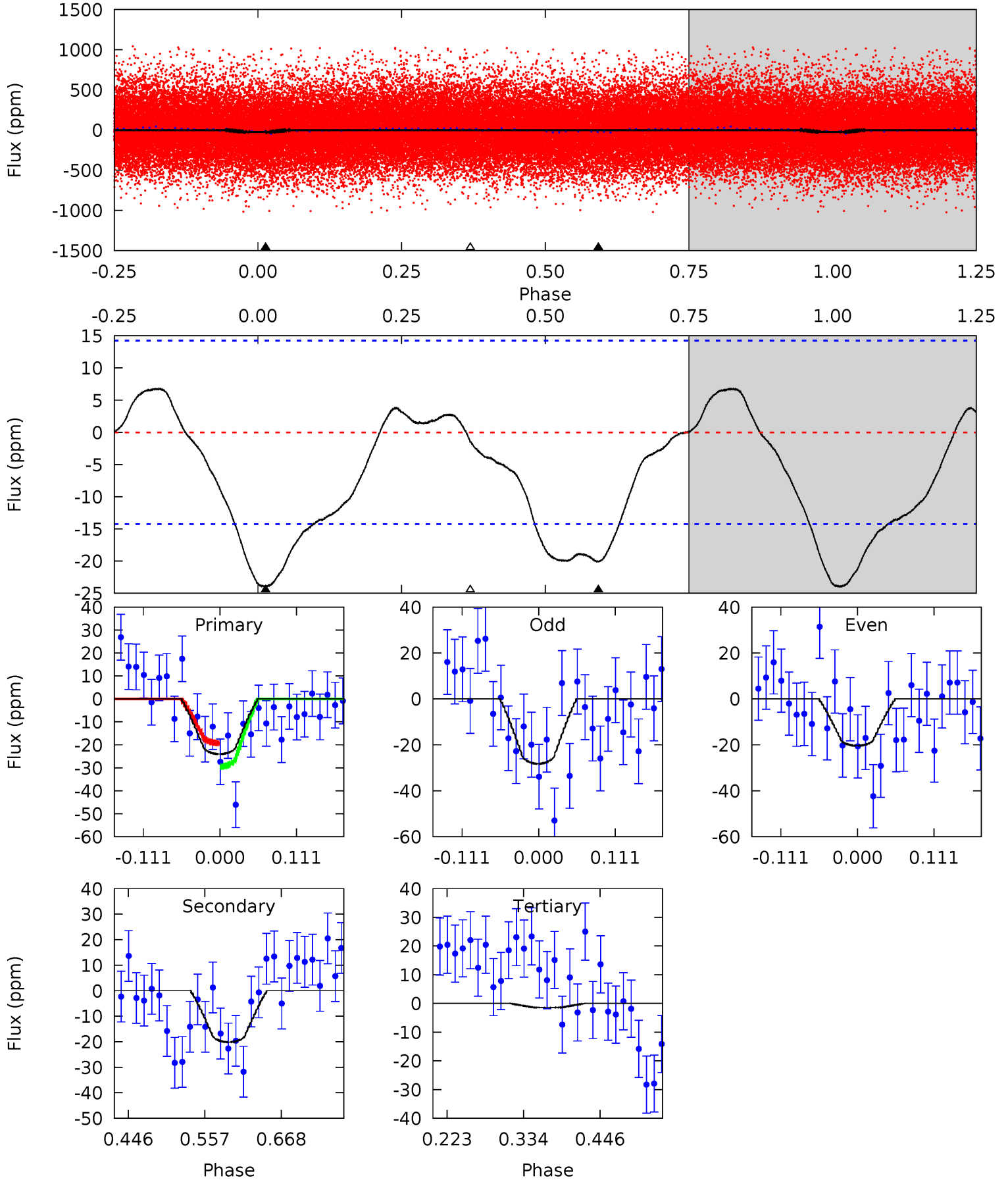
TCE 009774286-01 P= 0.609489 Days $T_0=131.622366$ (BKJD)



DV Model-Shift Uniqueness Test

009774286-01, P = 0.609440 Days, E = 131.010813 Days

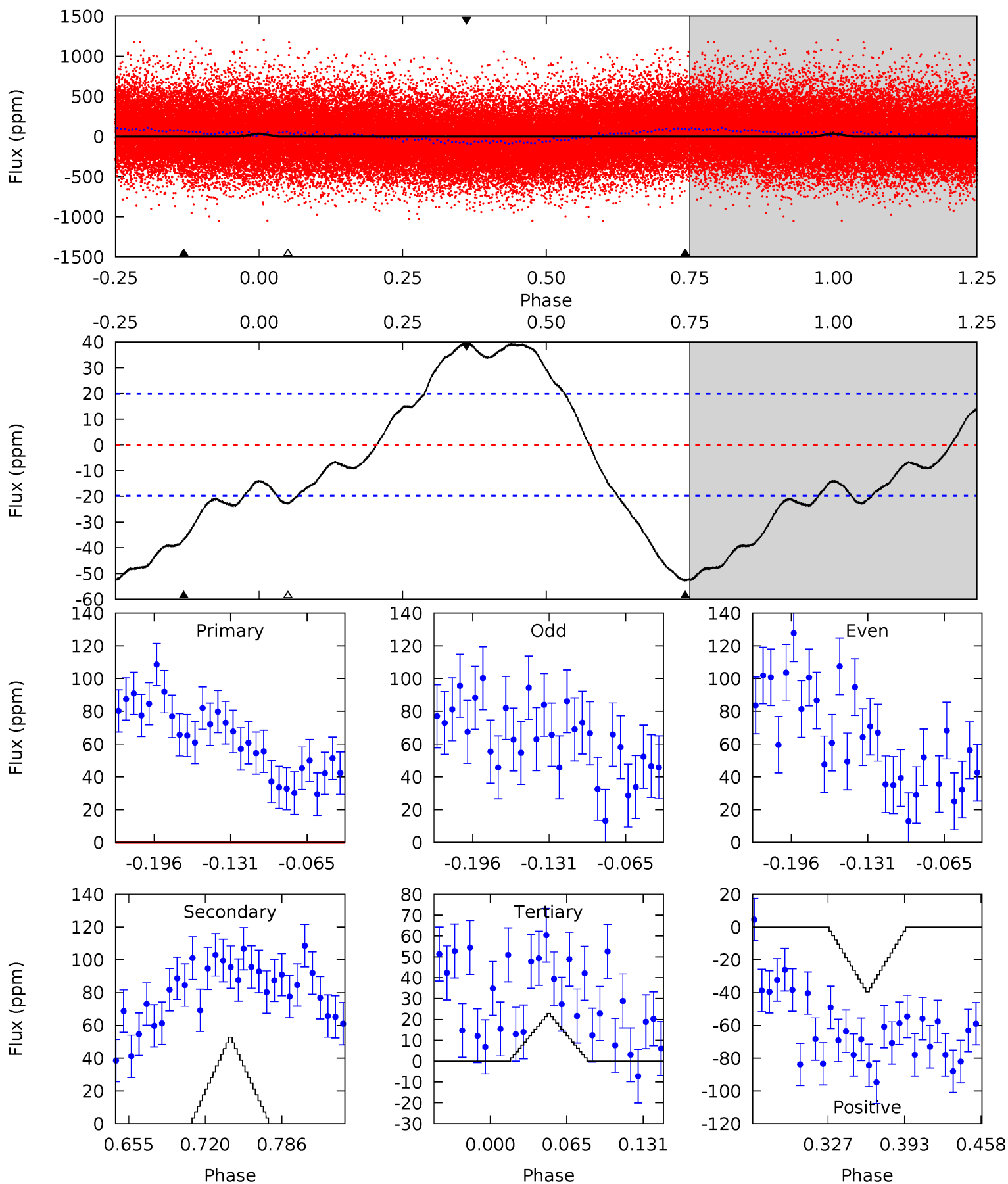
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.66	6.42	0.46	0	4.54	1.59	1.65	7.20	7.66	5.96	6.42	1.25	1.00	0.22	1.63



Alt Model-Shift Uniqueness Test

009774286-01, P = 0.609489 Days, E = 131.012877 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	12.4	5.36	9.31	4.65	1.84	5.48	3.29	-0.66	7.05	3.10	0.71	1.34	0.43	1.46



Stellar Parameters For KIC 009774286

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6053^{+181}_{-181}	$4.334^{+0.185}_{-0.185}$	$-0.600^{+0.300}_{-0.300}$	$1.036^{+0.275}_{-0.200}$	$0.844^{+0.108}_{-0.063}$	$1.070^{+0.961}_{-0.499}$
	+3%/-3%	+4%/-4%	+50%/-50%	+27%/-19%	+13%/-7%	+90%/-47%
Source	PHO1	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 009774286-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 3	$0.30^{+0.29}_{-0.20}$	3304^{+236}_{-224}	8320^{+14120}_{-2791}	22^{+217}_{-16}
Alt.	-53 ± 4	$0.27^{+0.29}_{-0.17}$	3288^{+241}_{-211}	12408^{+27149}_{-4935}	73^{+482}_{-56}

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 $A_{obs} \gg 1.0$

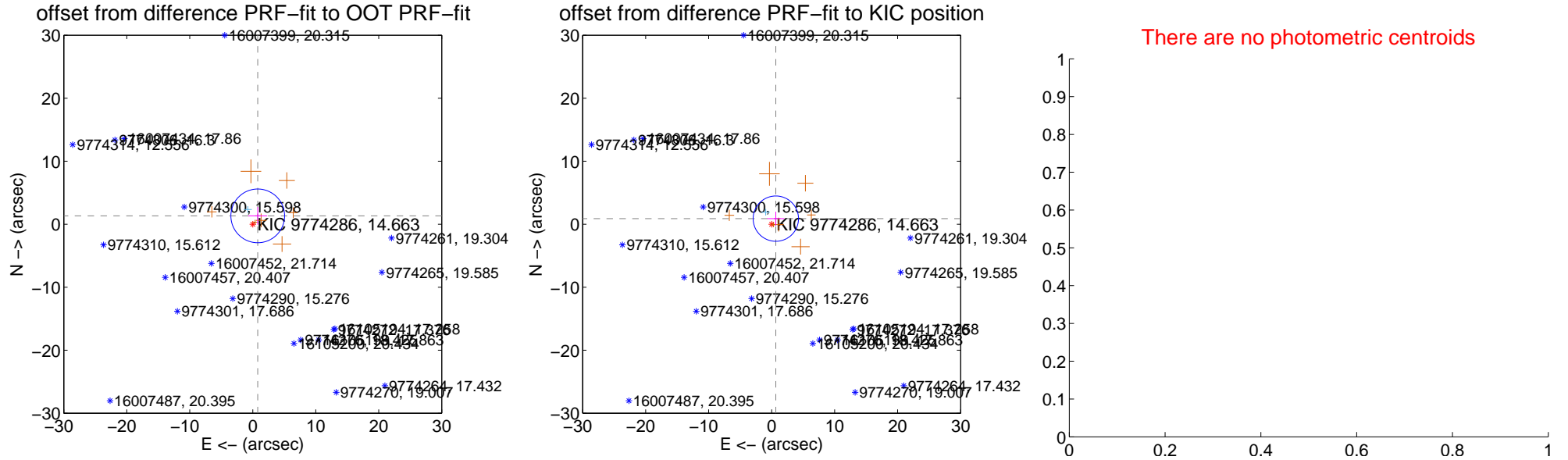
DV Centroid Data

Supplemental centroid analysis for 009774286-01. Kepler magnitude: 14.66. Transit SNR 0.49

There are 1 quarters with good PRF difference image offsets

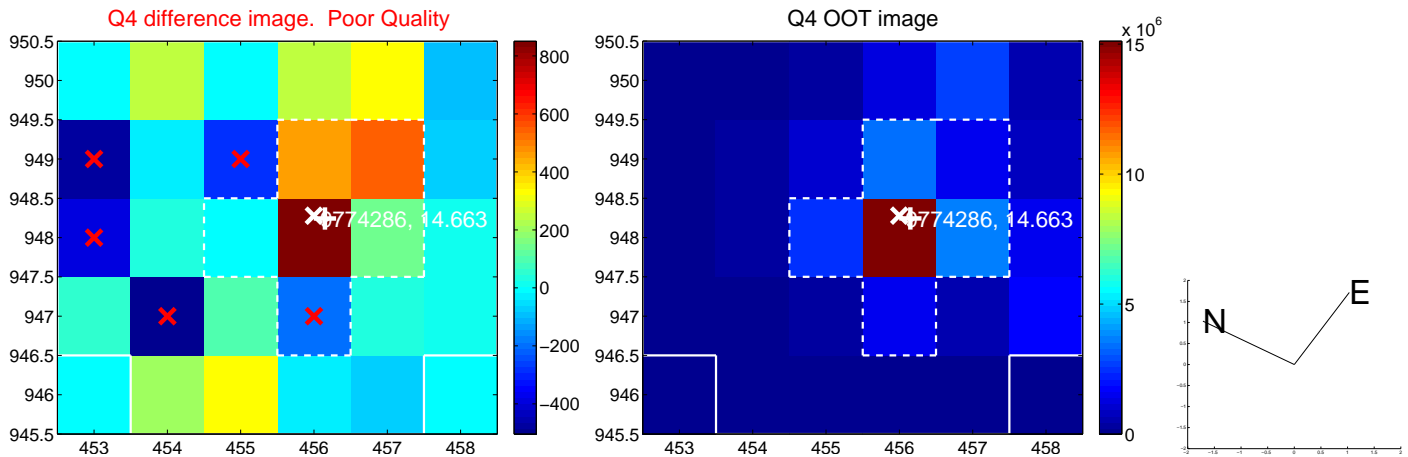
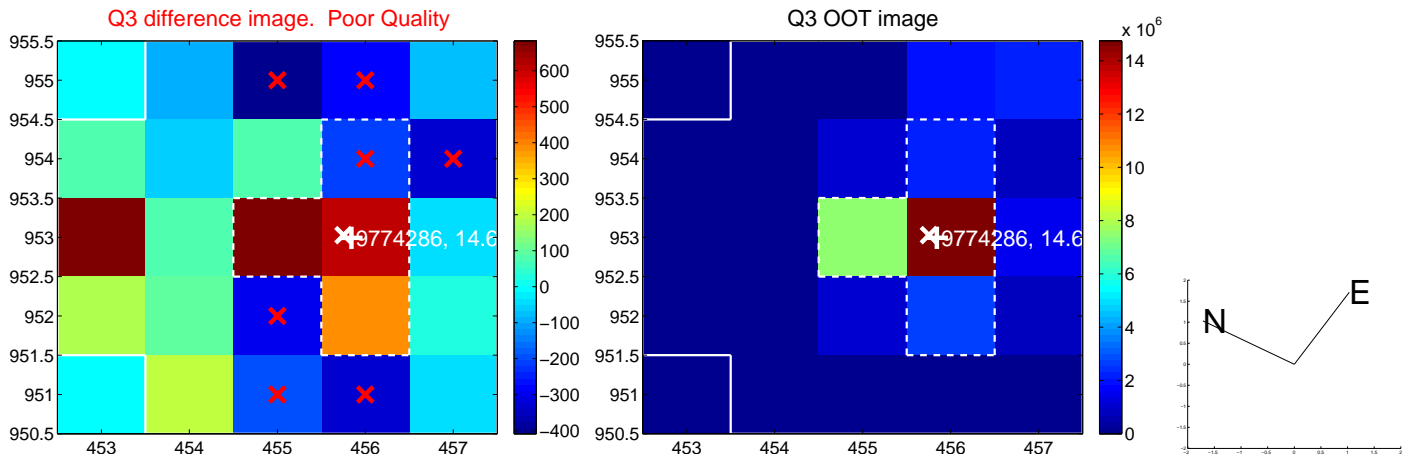
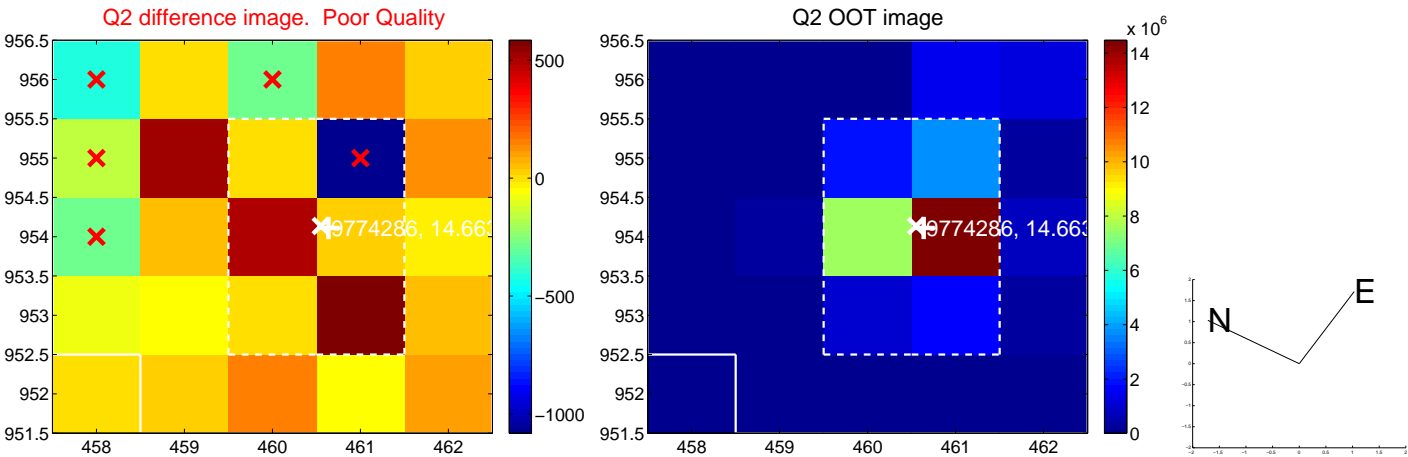
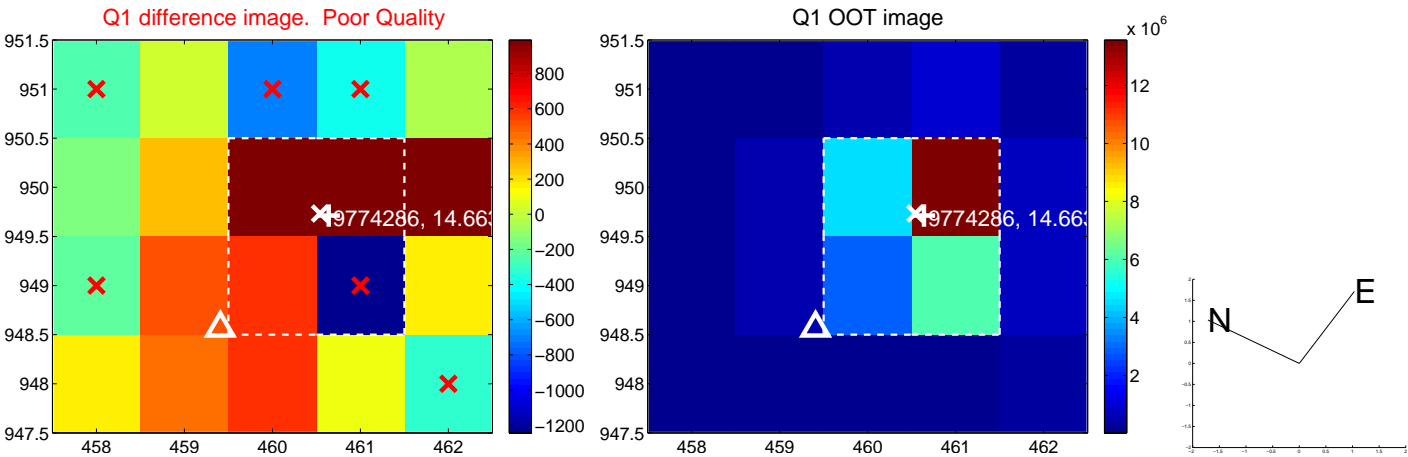
The direct PRF centroid is offset from the target star catalog position by about 0.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.541 ± 1.421	1.08	-0.788 ± 1.504	1.324 ± 1.405
PRF-fit source offset from KIC position	1.107 ± 1.199	0.92	-0.663 ± 1.350	0.886 ± 1.116
photometric centroid source offset	—	—	—	—

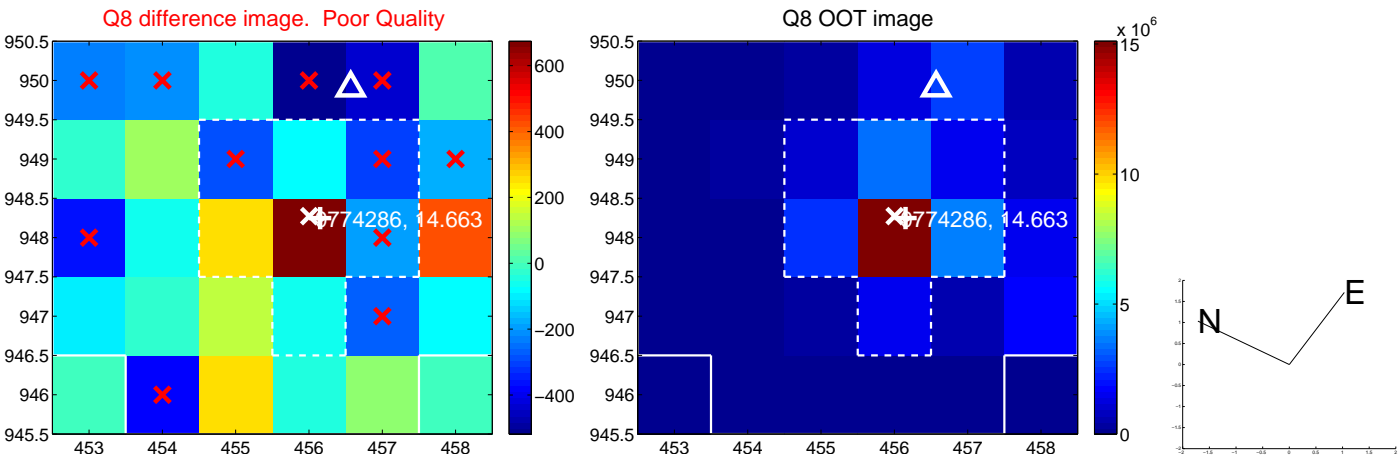
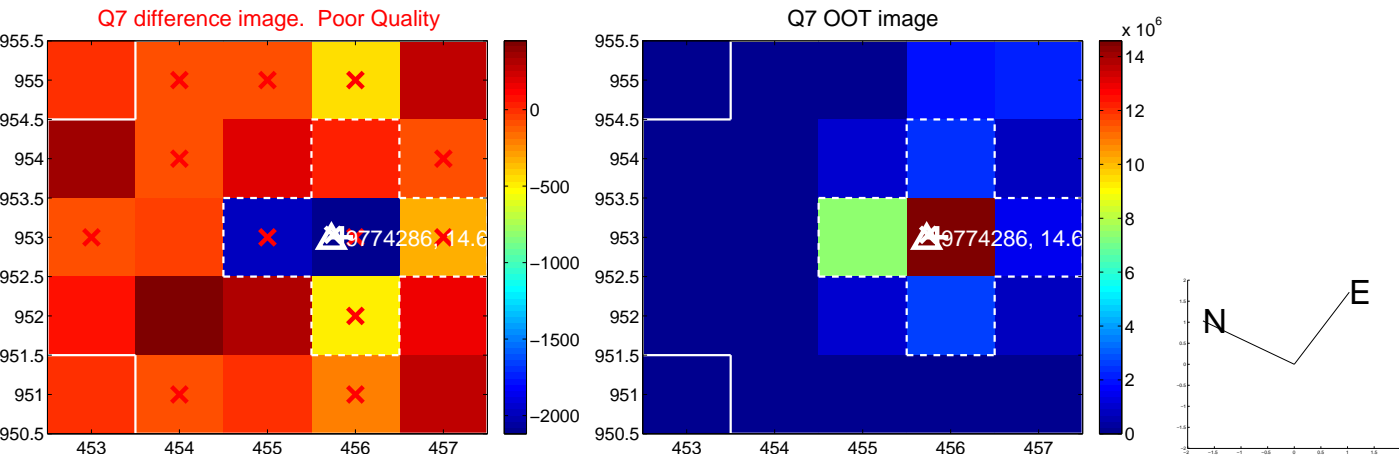
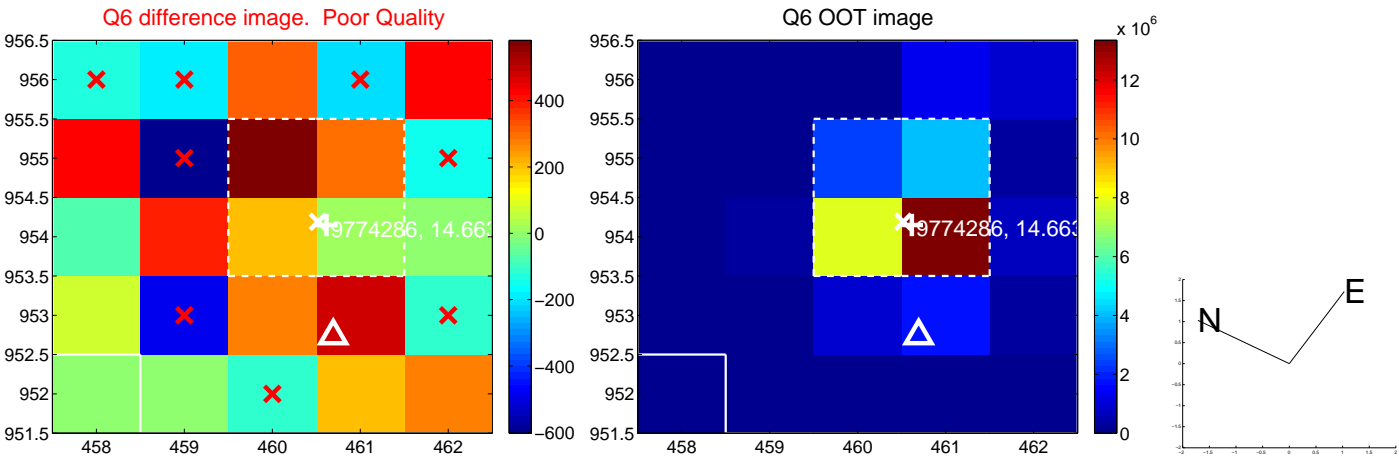
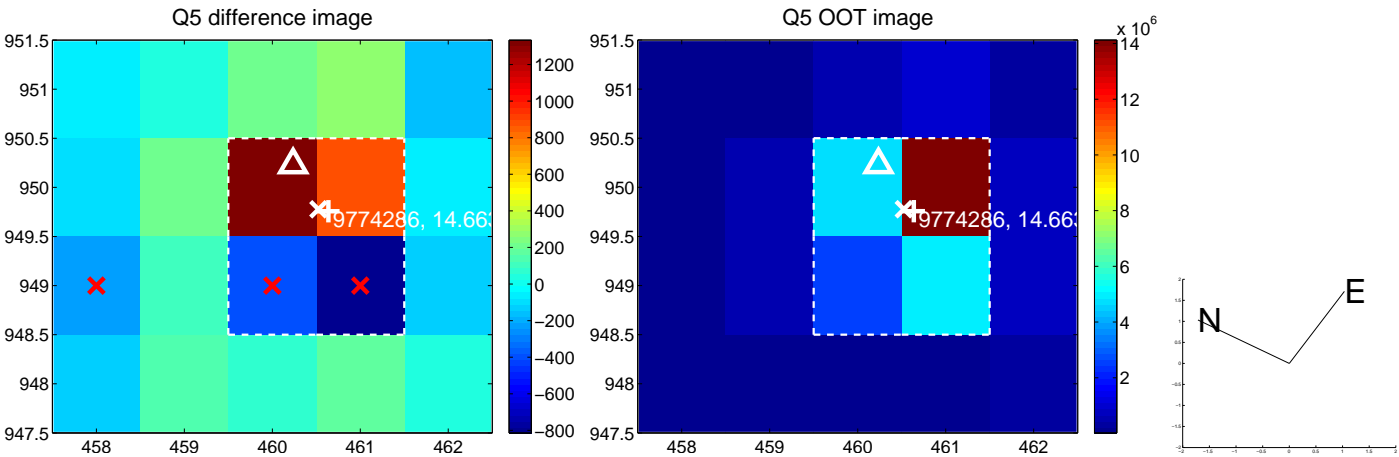


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

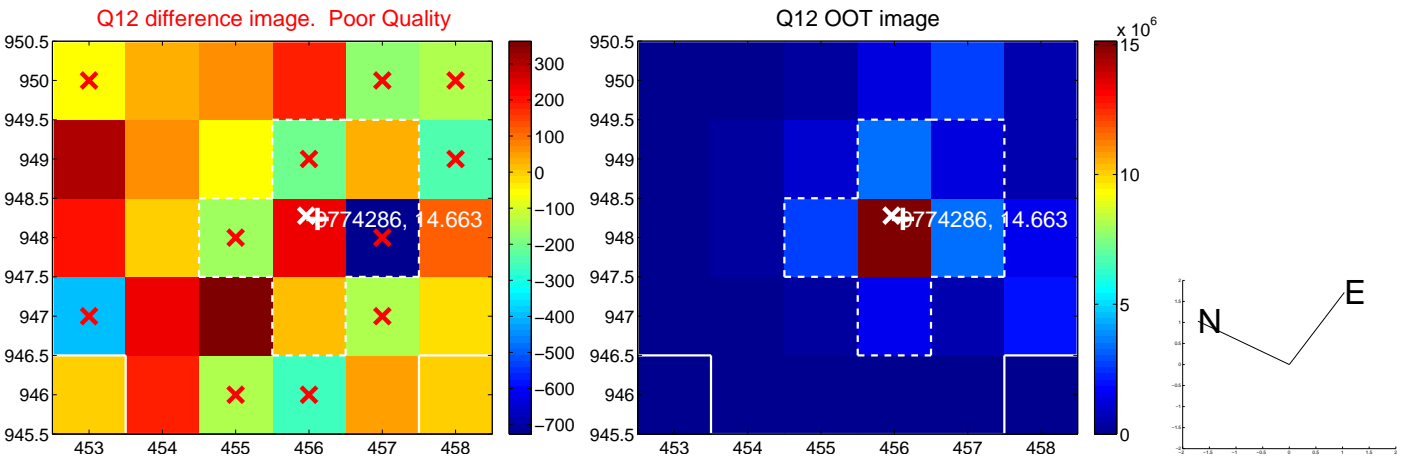
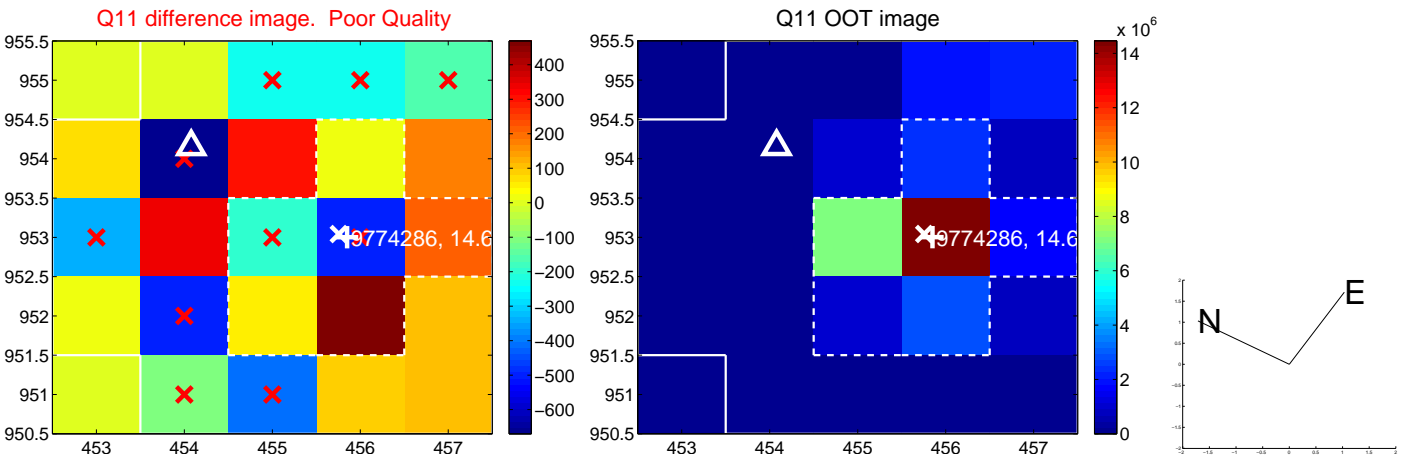
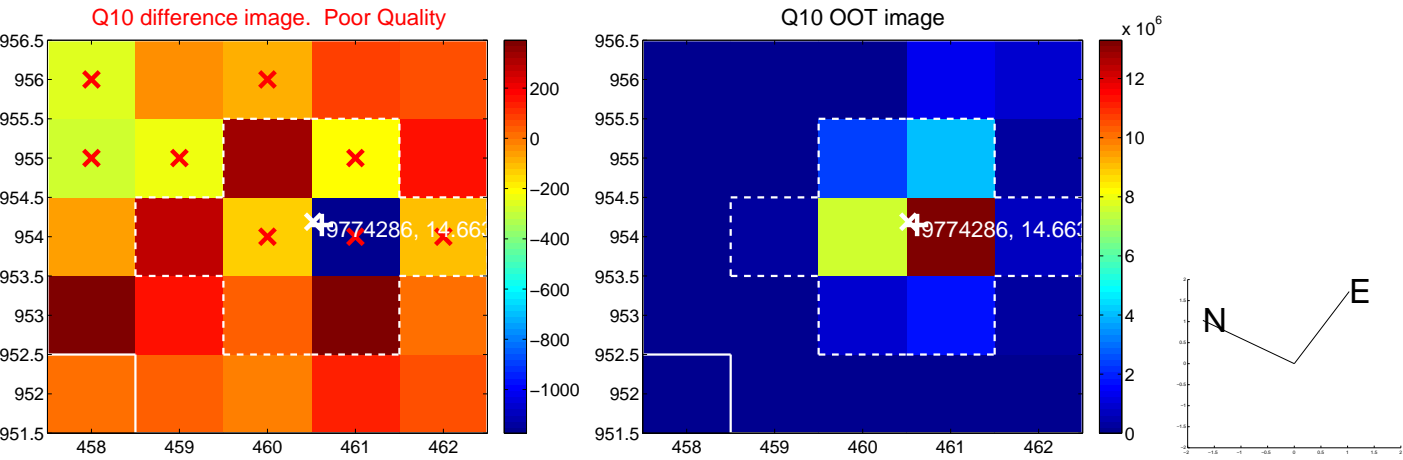
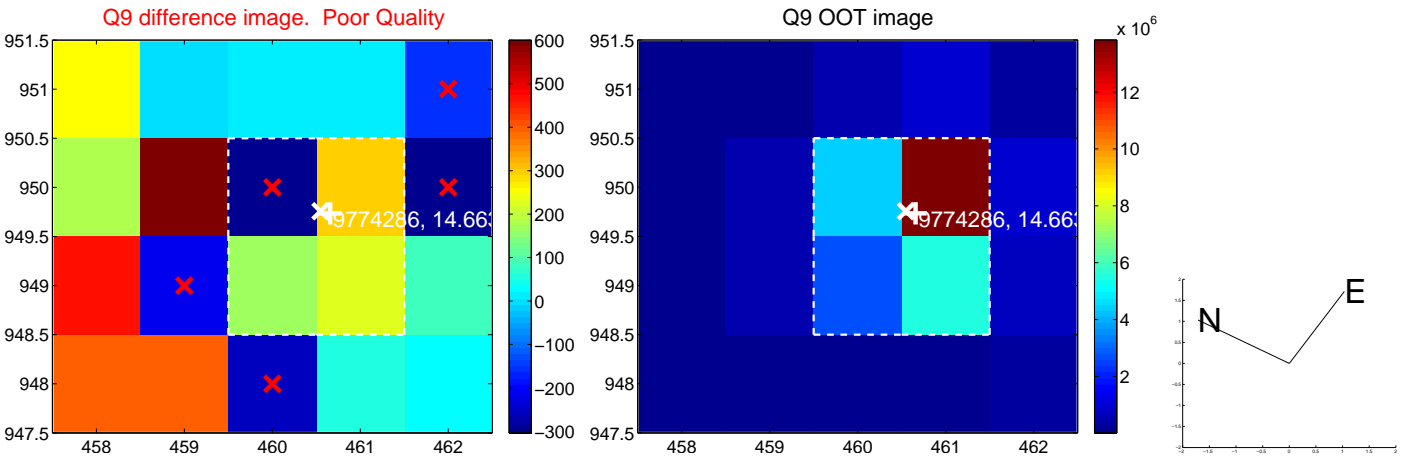
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



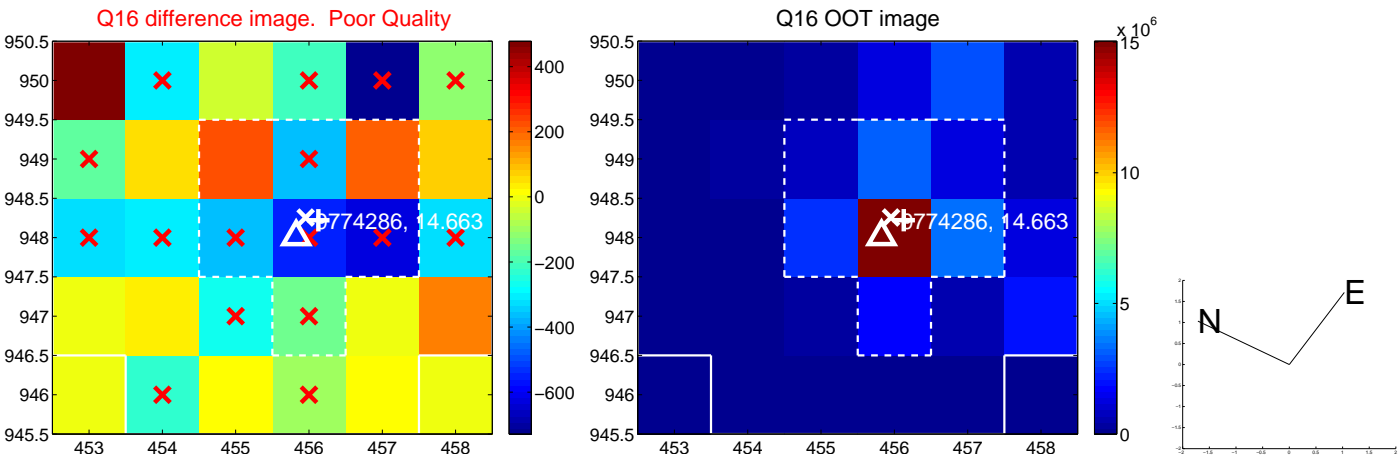
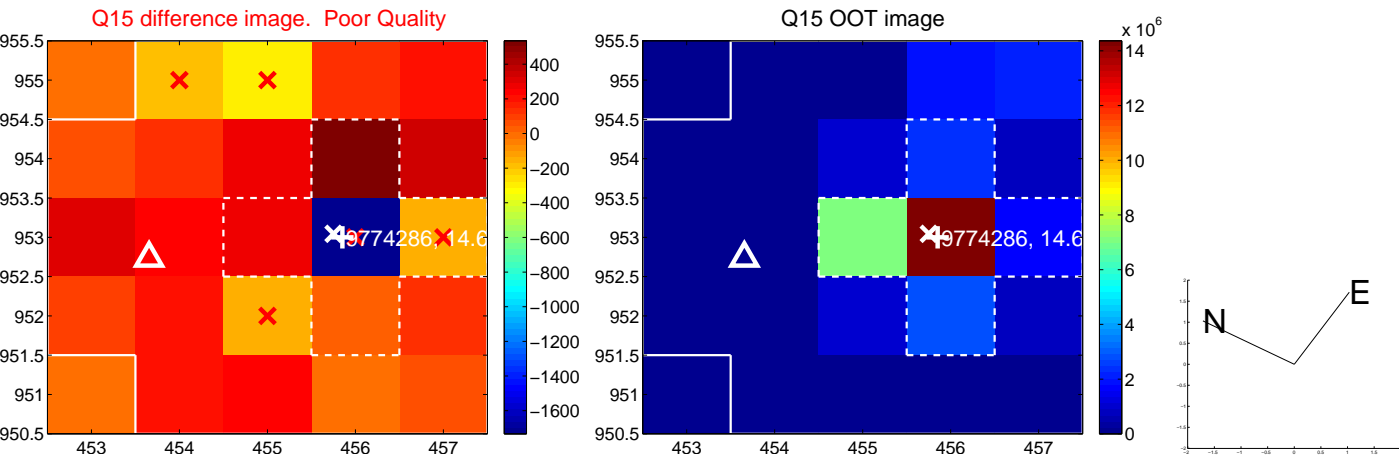
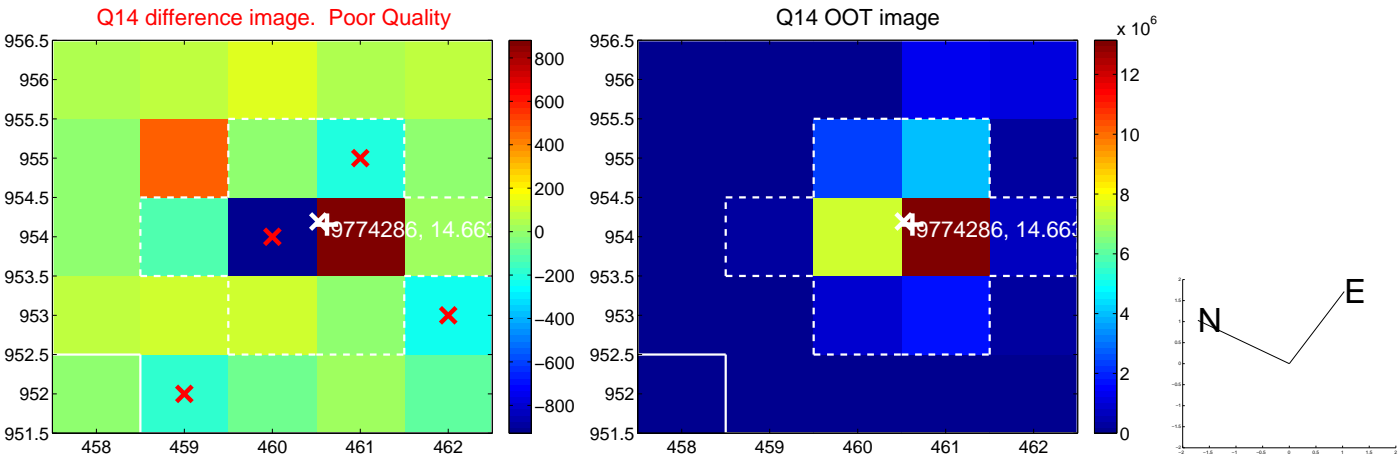
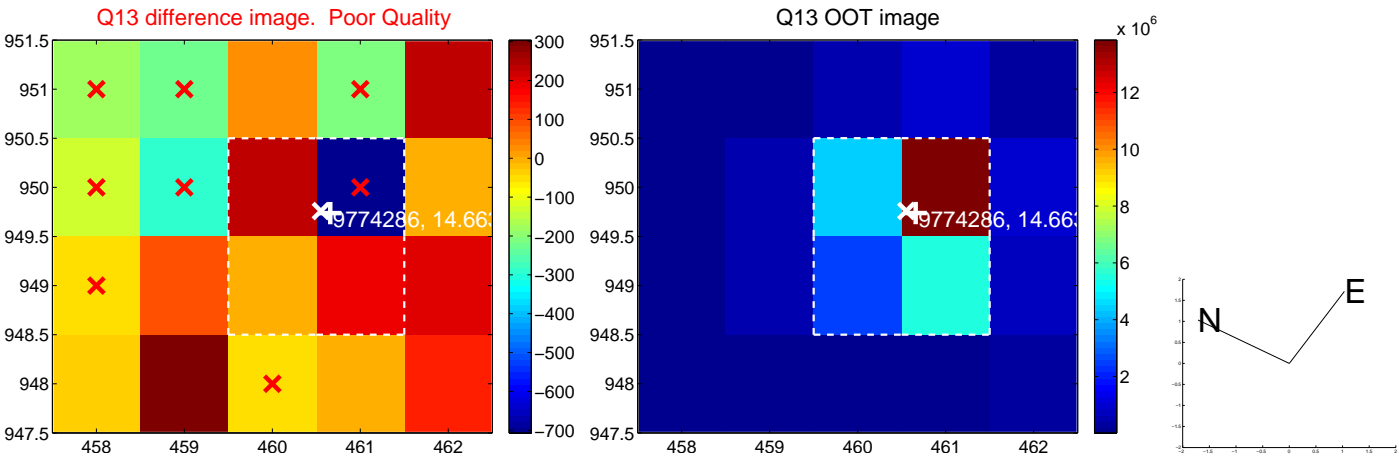
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



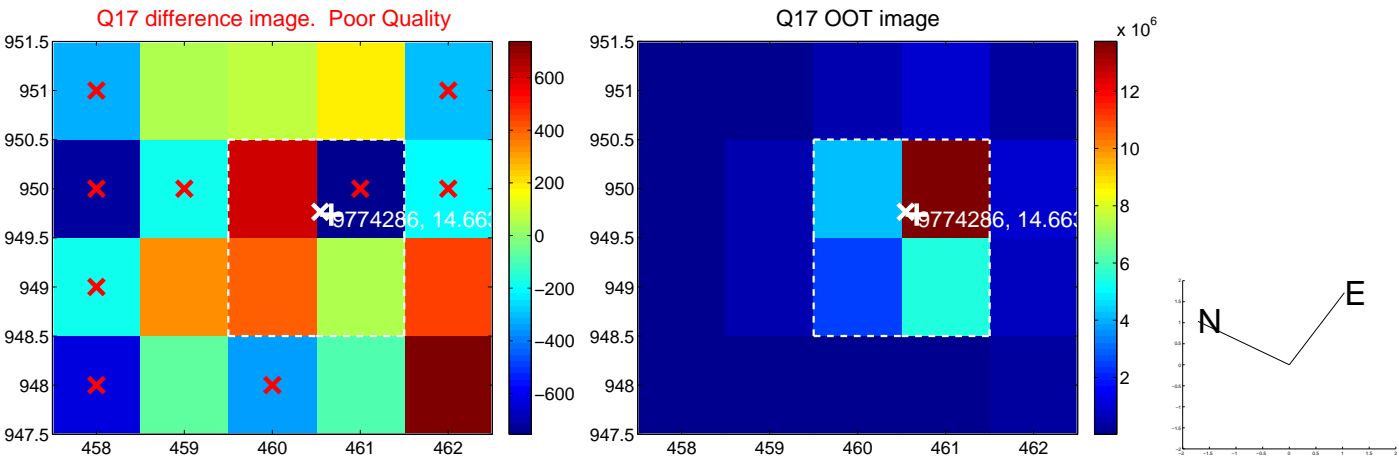
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

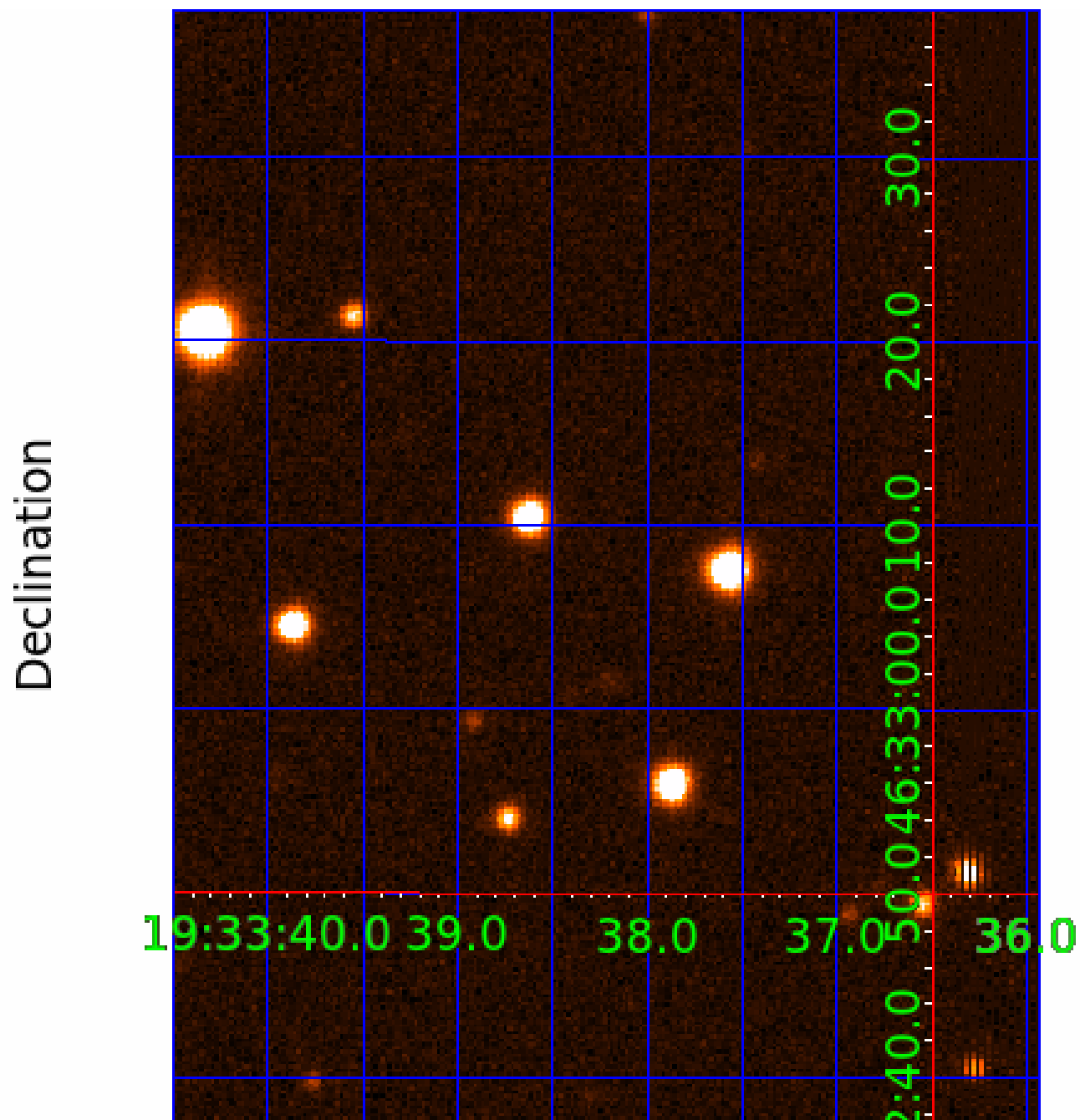


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



KIC 009774286

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})
009774286-01	OBS	No	0.609440	131.620253	2.2	1.159	9.1	0.5	1.04	6053	0.16	7296.41
009774286-02	OBS	No	1.218958	131.905715	34.3	3.769	8.6	10.0	1.04	6053	0.68	2895.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009774286-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009774286-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

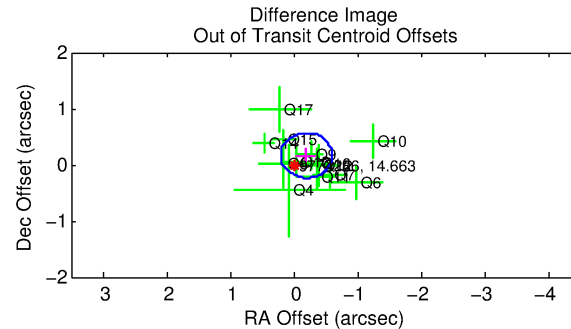
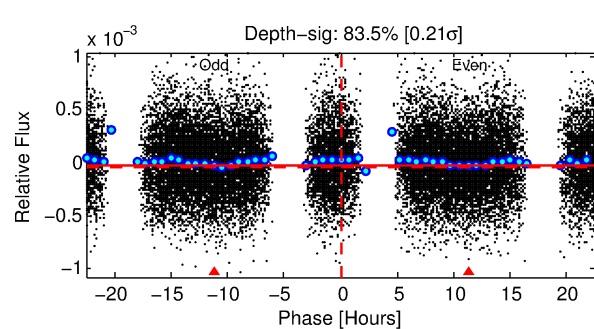
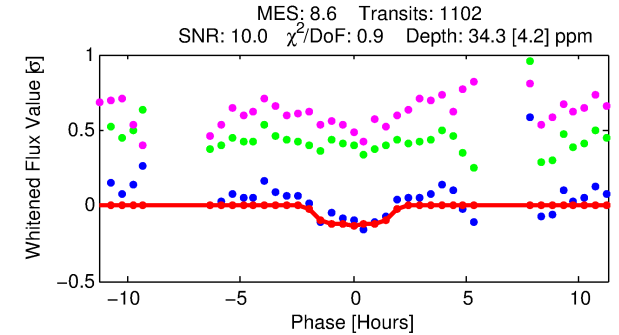
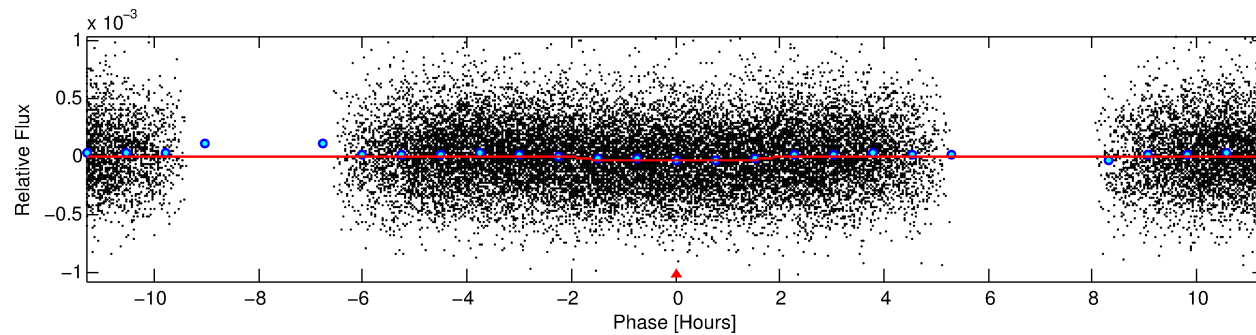
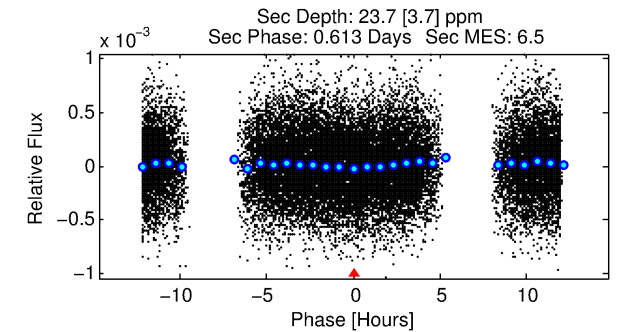
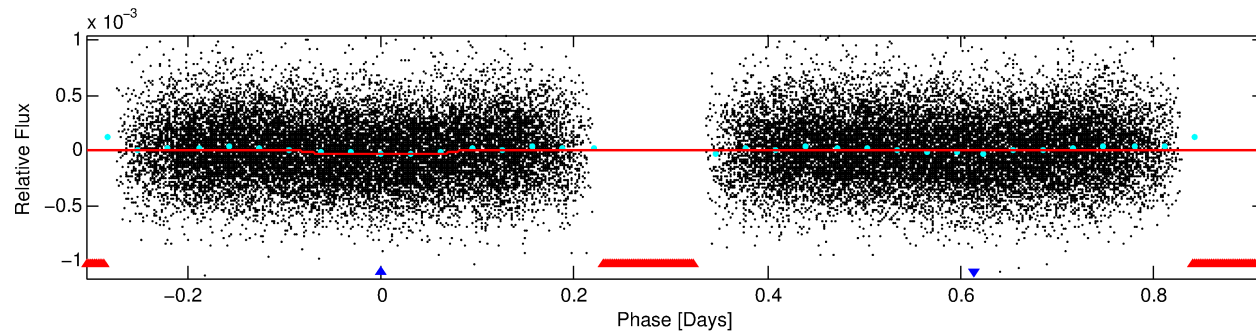
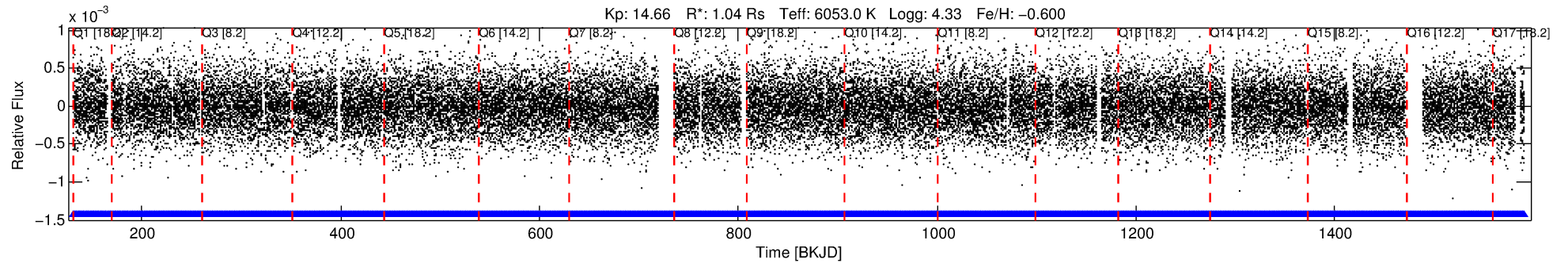
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009774286-02

No Significant Match Found

DV One-Page Summary

KIC: 9774286 Candidate: 2 of 2 Period: 1.219 d



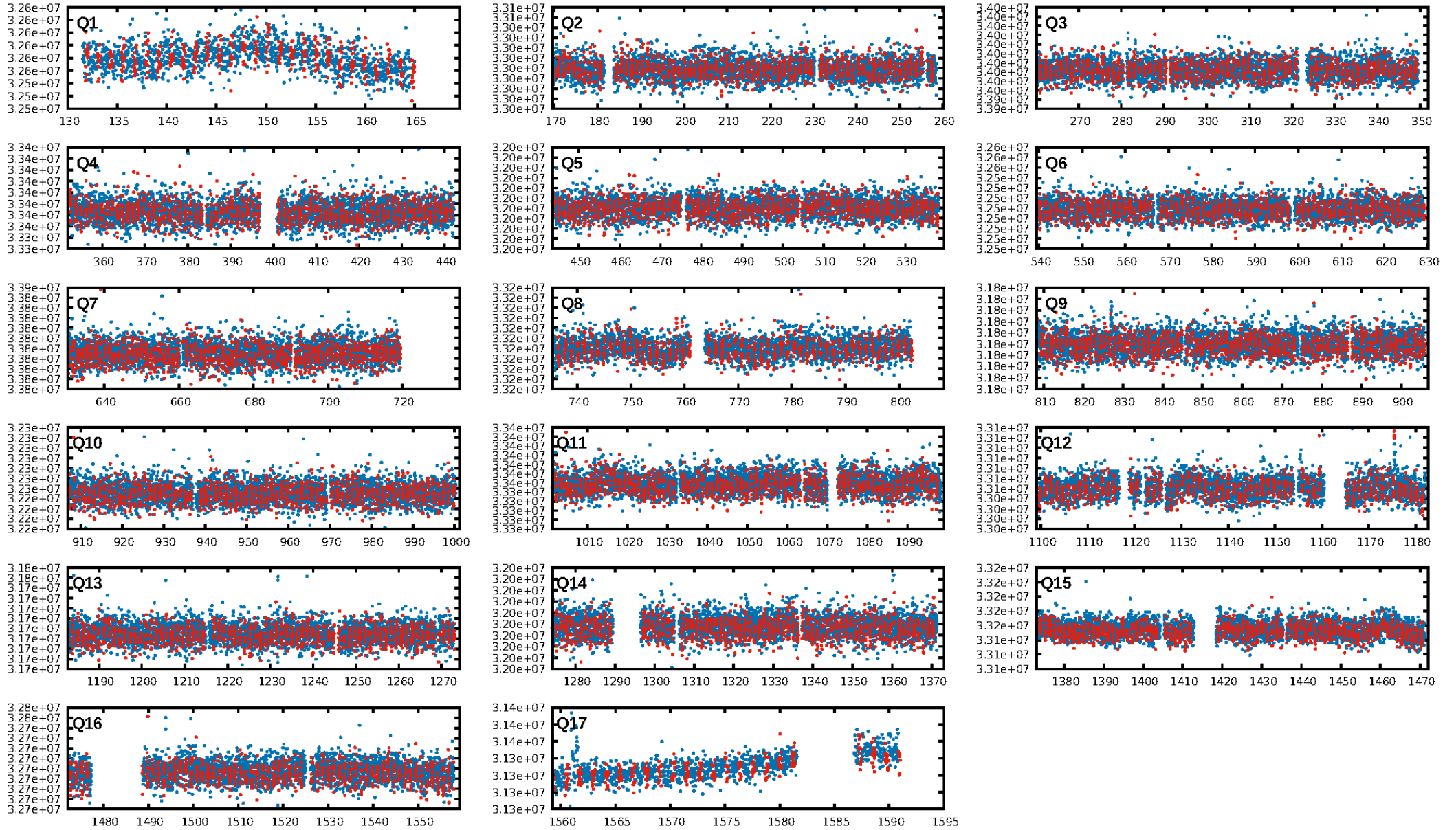
DV Fit Results:

Period = 1.21896 [0.00002] d
Epoch = 131.9057 [0.0050] BKJD
Rp/R* = 0.0060 [0.0026]
a/R* = 1.65 [2.45]
b = 0.83 [0.86]
Seff = 2895.33 [1028.84]
Teff = 1870 [166] K
Rp = 0.68 [0.35] Re
a = 0.0211 [0.0048] AU
Ag = 12.50 [11.84] [0.97σ]
Teffp = 5438 [1216] K [2.91σ]

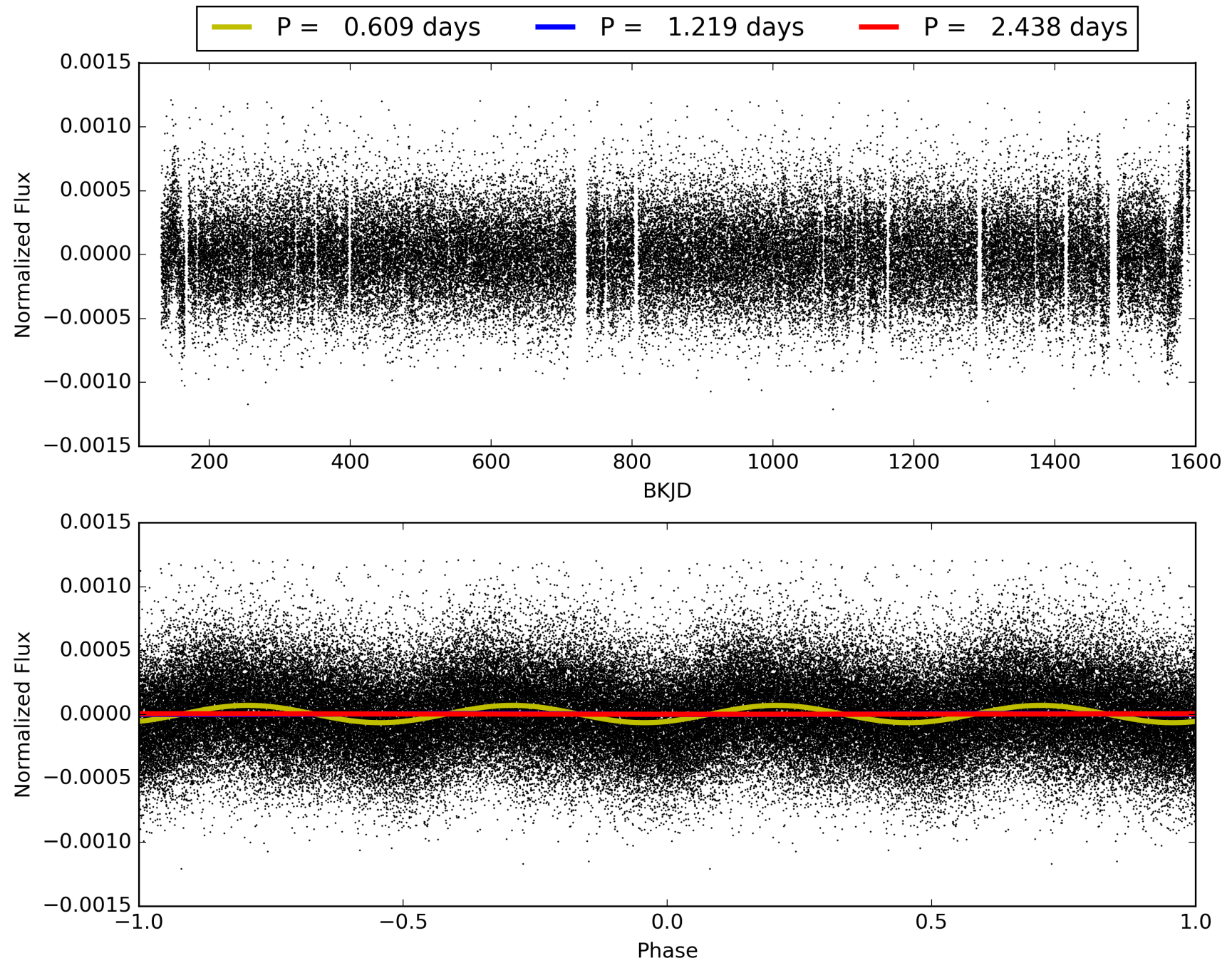
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.71σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.46e-17
RollingBand-fgt: 1.00 [1051/1051]
GhostDiagnostic-chr: 1.287
Centroid-sig: 0.8%
Centroid-so: 3.184 arcsec [2.00σ]
OotOffset-rm: 0.259 arcsec [1.94σ]
KicOffset-rm: 0.280 arcsec [2.07σ]
OotOffset-st: 3/3/4/3 [13]
KicOffset-st: 3/3/4/3 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009774286-02, PDC Light Curves

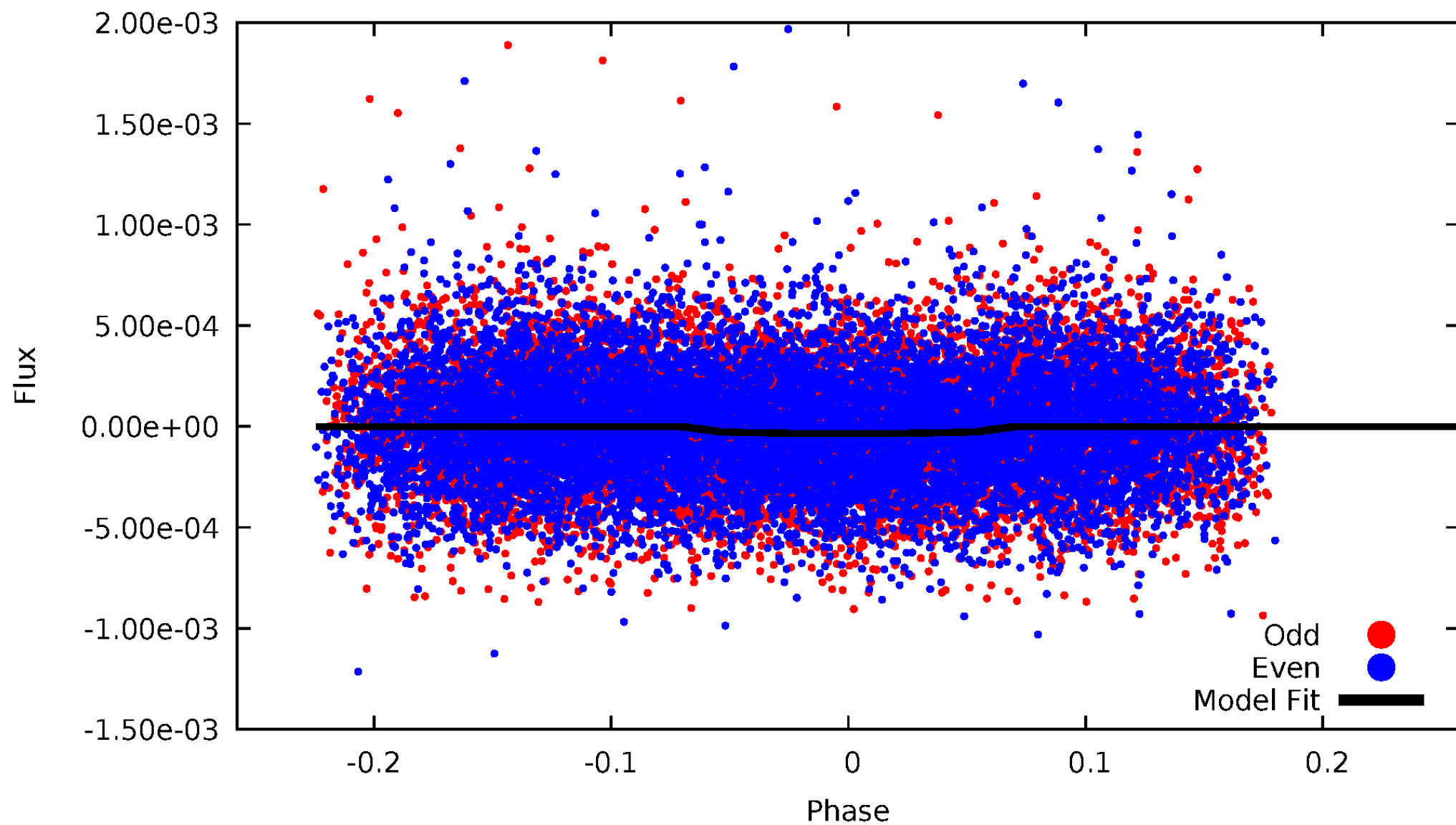


TCE 009774286-02



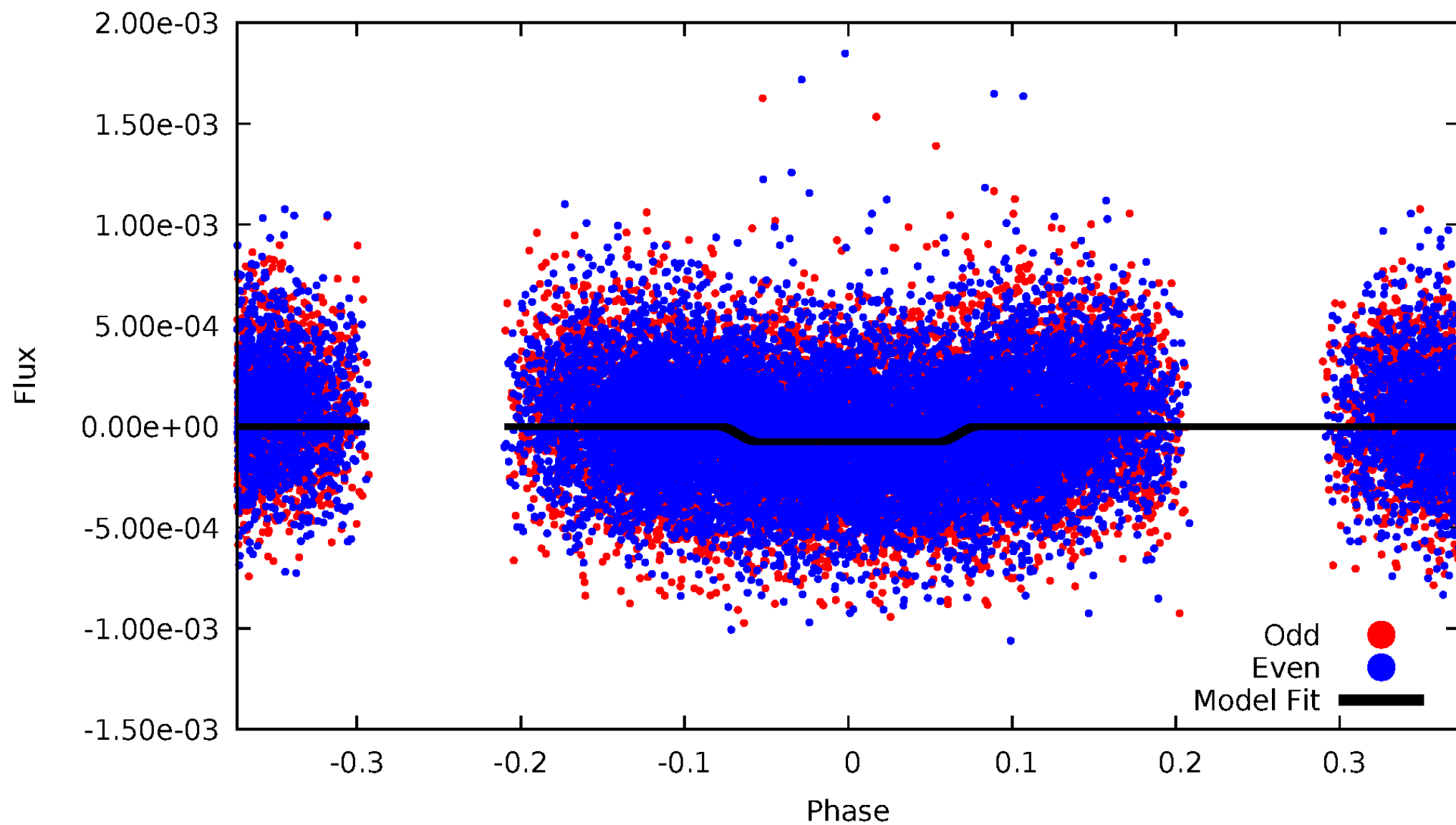
DV Odd/Even

TCE 009774286-02



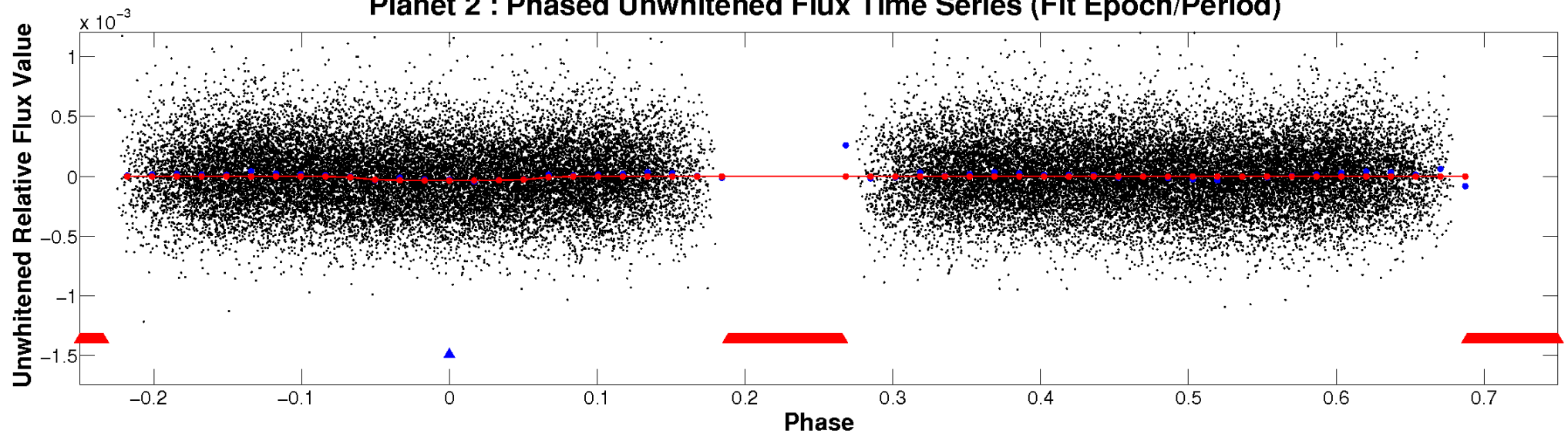
ALT Odd/Even

TCE 009774286-02

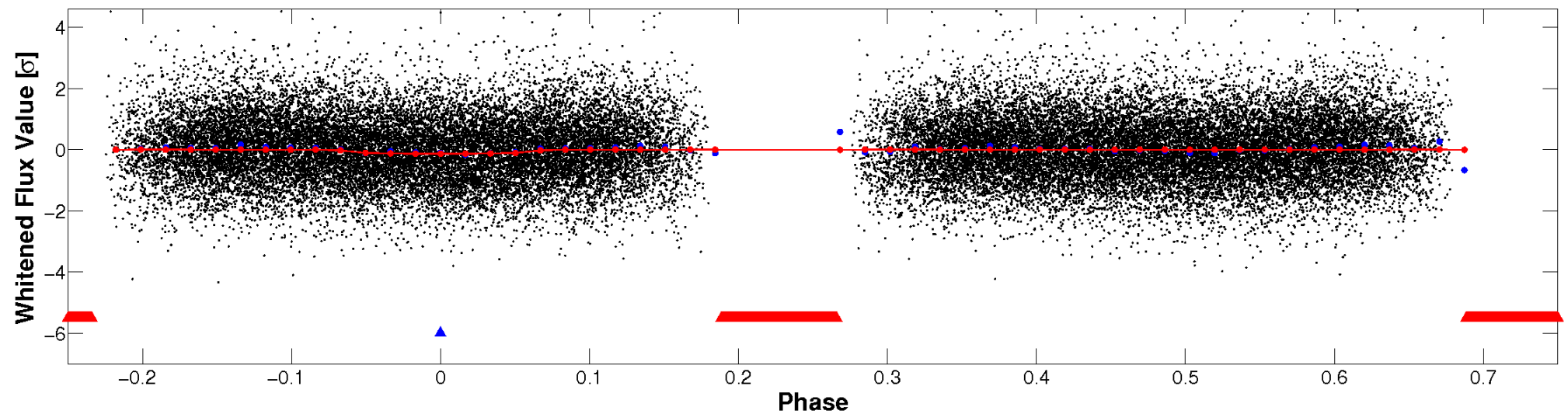


Non-Whitened Vs. Whitened Light Curve

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

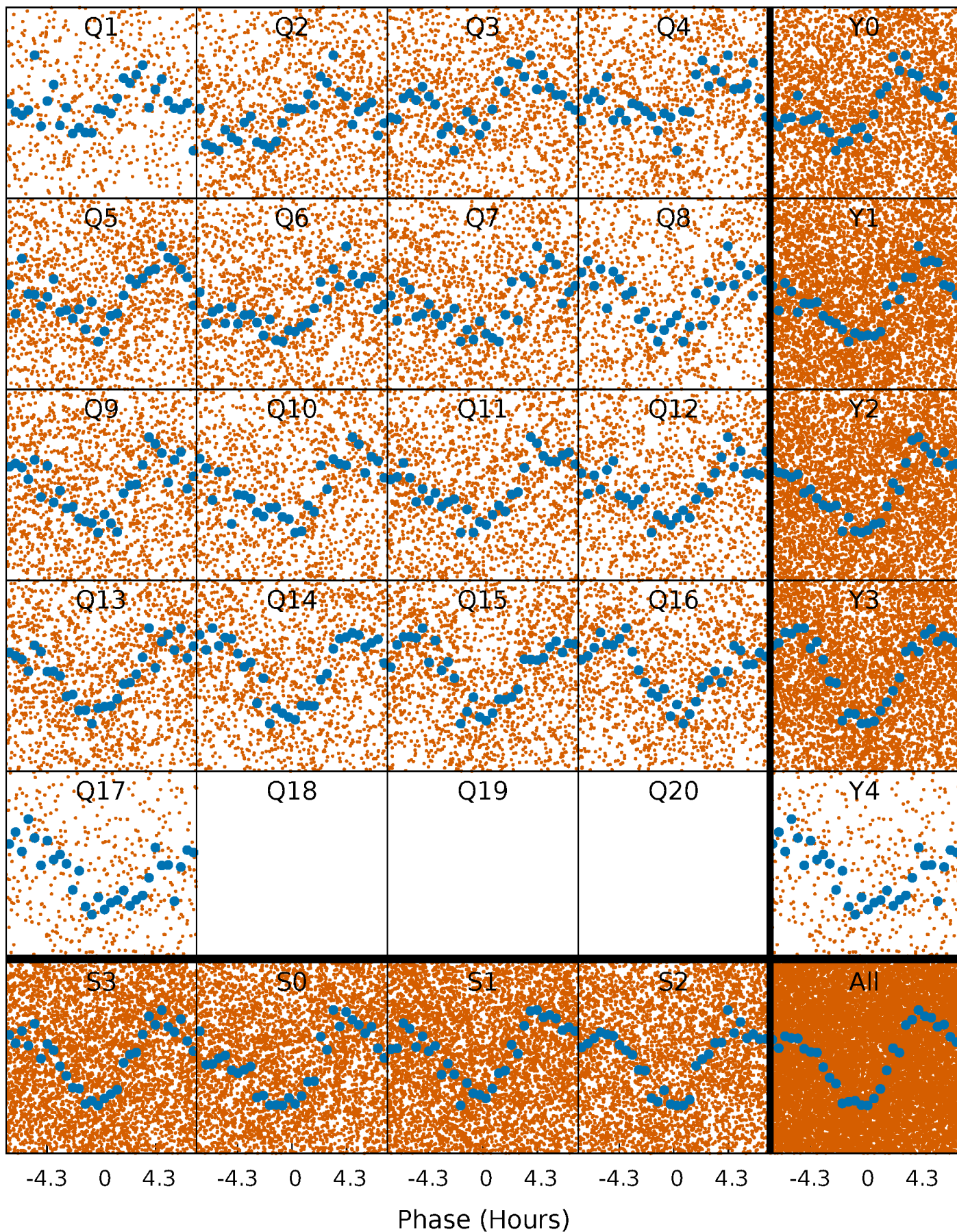


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



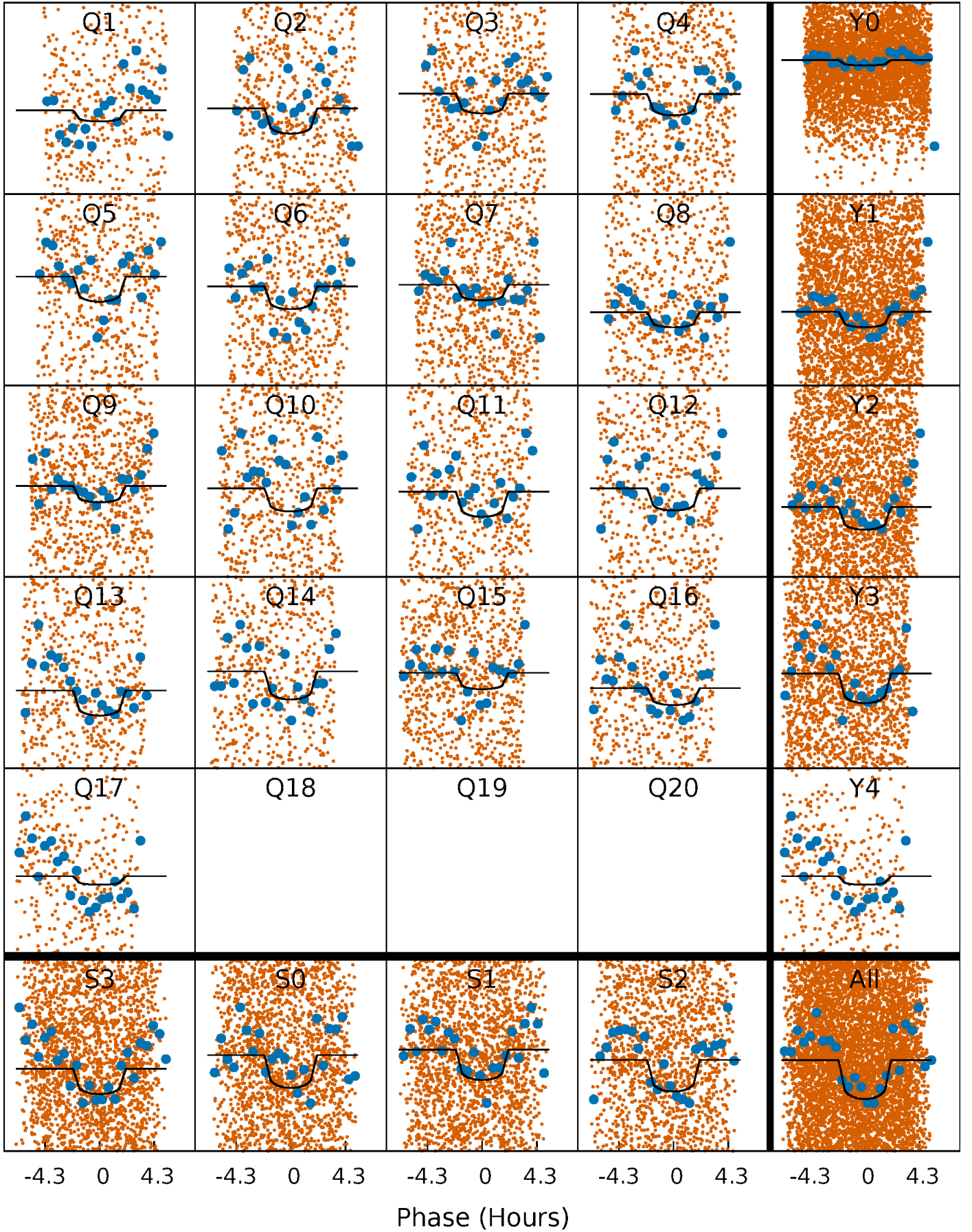
PDC Quarter-Phased Transit Curves

TCE 009774286-02 P= 1.218958 Days $T_0=131.905715$ (BKJD)



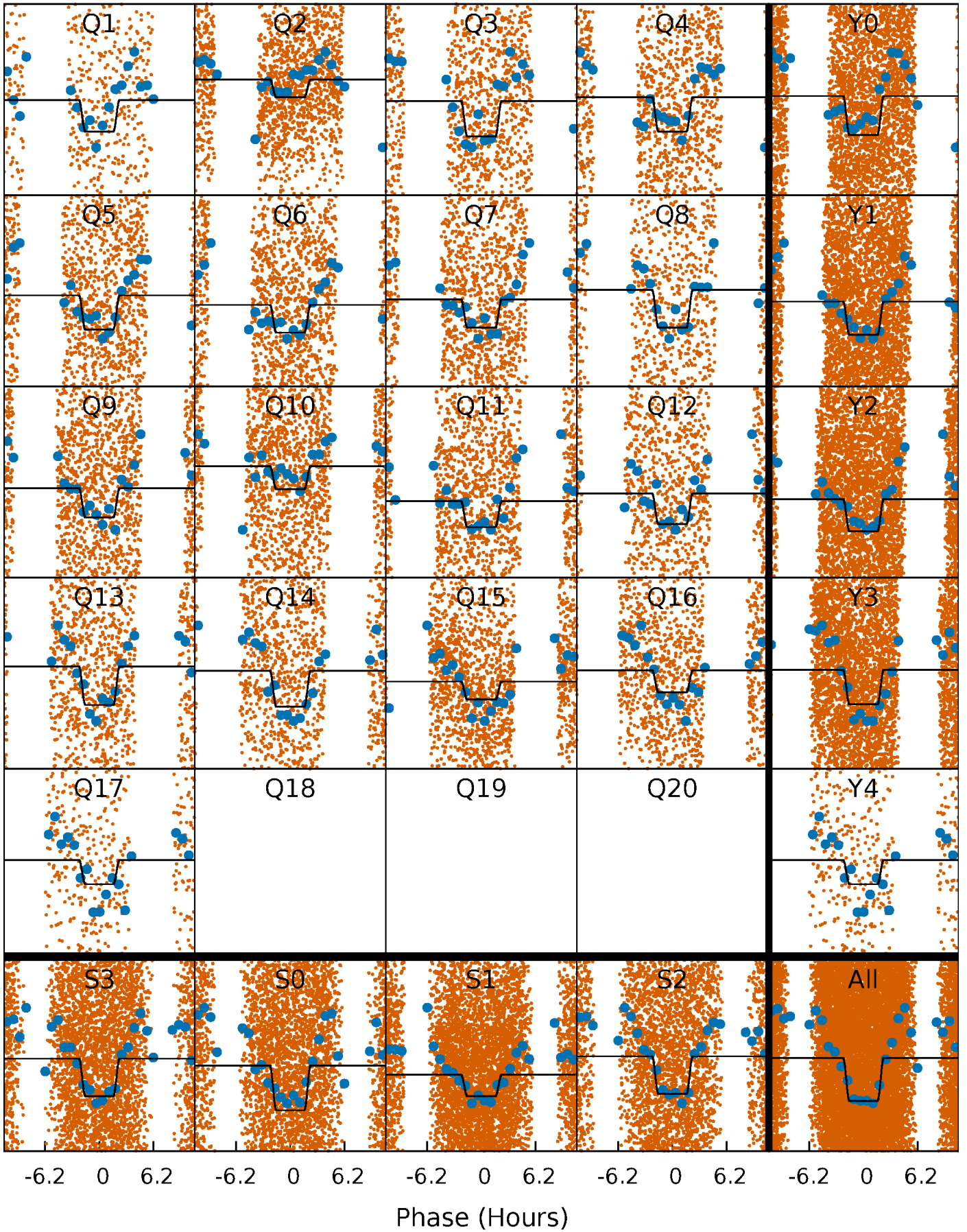
DV Quarter-Phased Transit Curves

TCE 009774286-02 P= 1.218958 Days $T_0=131.905715$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

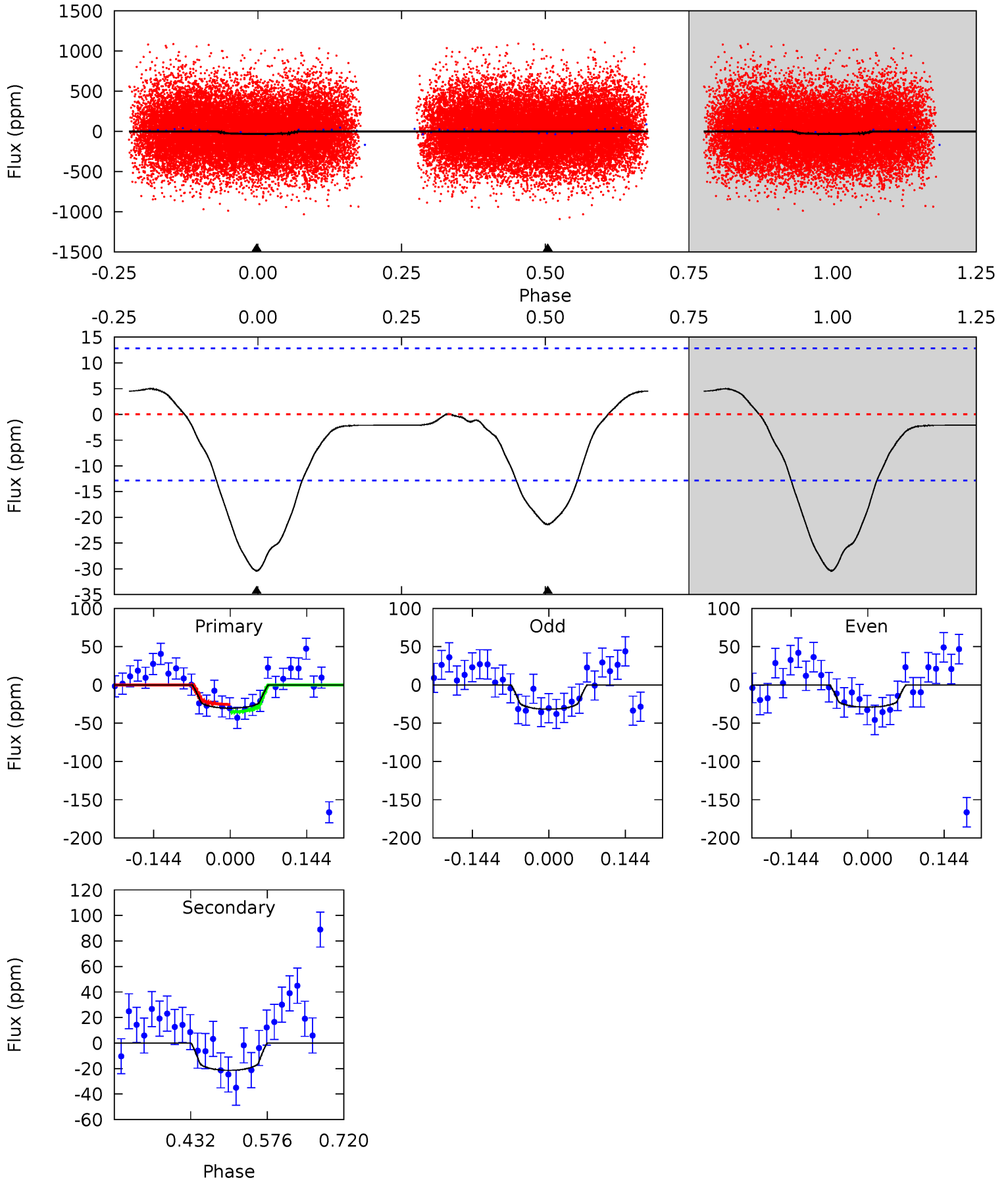
TCE 009774286-02 P= 1.218972 Days $T_0=131.871228$ (BKJD)



DV Model-Shift Uniqueness Test

009774286-02, P = 1.218958 Days, E = 130.686757 Days

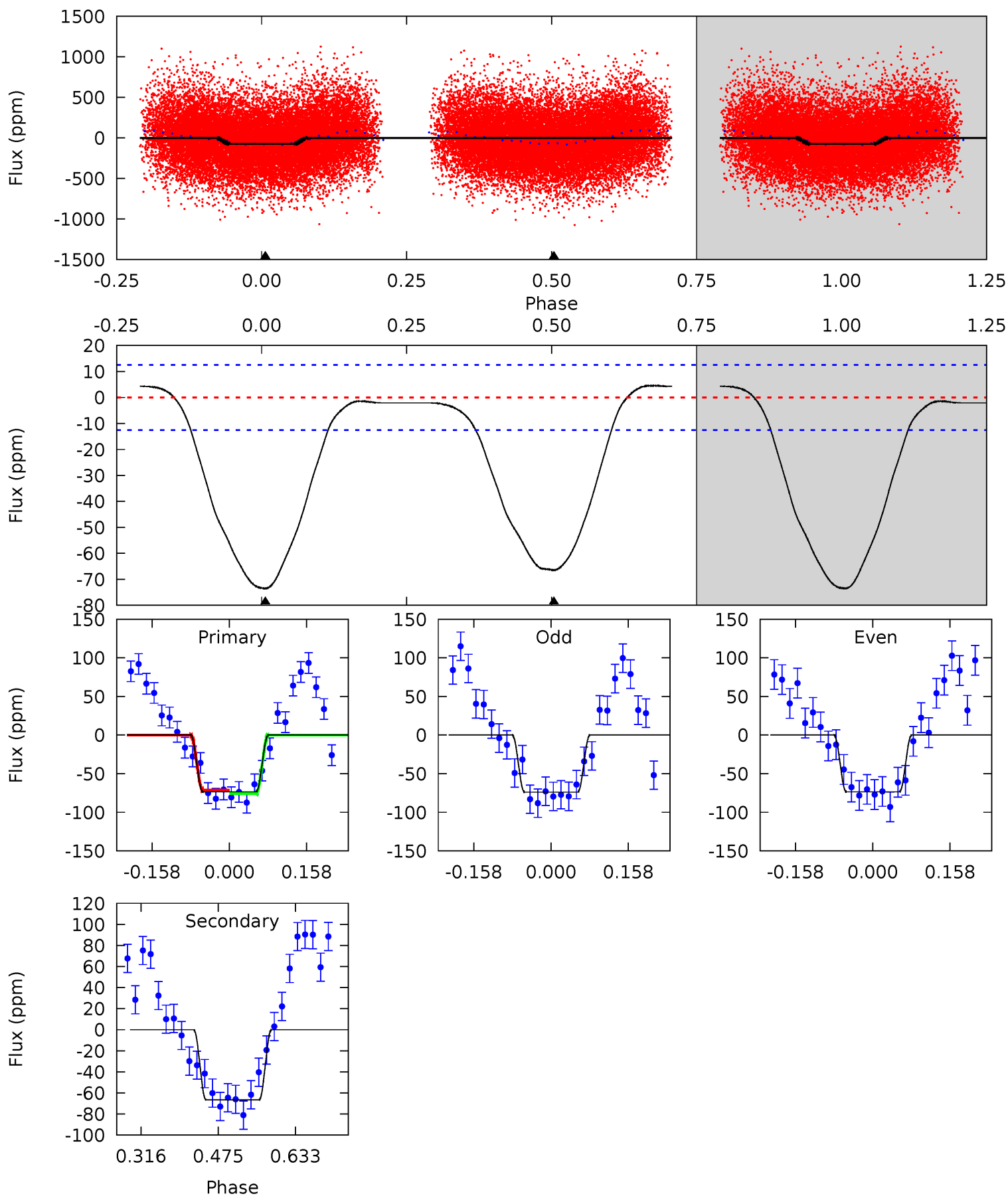
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	7.46	0	0	4.49	1.46	0.93	10.6	10.6	7.46	7.46	0.48	0.94	0.14	1.73



Alt Model-Shift Uniqueness Test

009774286-02, P = 1.218972 Days, E = 130.652256 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.1	23.6	0	0	4.47	1.41	1.25	26.1	26.1	23.6	23.6	0.06	0.96	0.06	0.83



Stellar Parameters For KIC 009774286

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6053^{+181}_{-181}	$4.334^{+0.185}_{-0.185}$	$-0.600^{+0.300}_{-0.300}$	$1.036^{+0.275}_{-0.200}$	$0.844^{+0.108}_{-0.063}$	$1.070^{+0.961}_{-0.499}$
	+3%/-3%	+4%/-4%	+50%/-50%	+27%/-19%	+13%/-7%	+90%/-47%
Source	PHO1	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 009774286-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-21 ± 3	$0.68^{+0.36}_{-0.29}$	2612^{+210}_{-167}	5317^{+1738}_{-836}	11^{+24}_{-7}
Alt.	-66 ± 3	$0.98^{+0.34}_{-0.32}$	2616^{+189}_{-177}	5860^{+1147}_{-696}	17^{+20}_{-8}

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

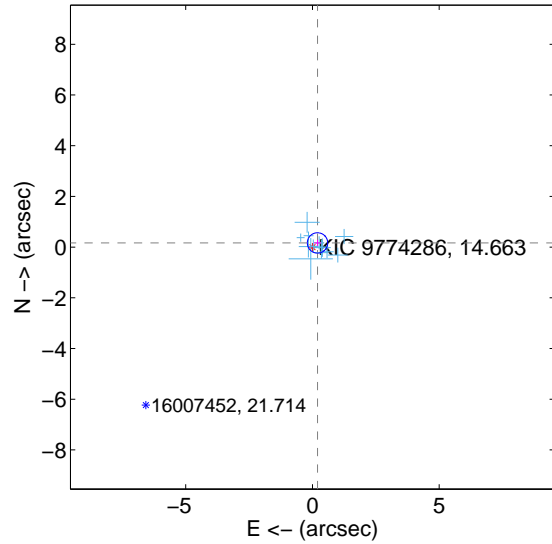
Supplemental centroid analysis for 009774286-02. Kepler magnitude: 14.66. Transit SNR 10.05

There are 13 quarters with good PRF difference image offsets

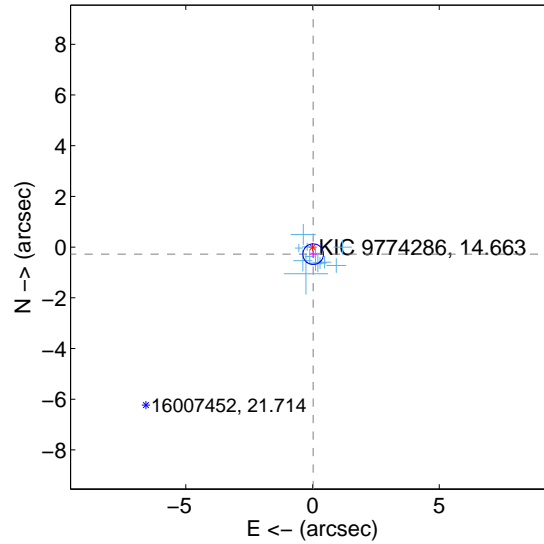
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.259 ± 0.134	1.94	-0.201 ± 0.142	0.164 ± 0.121
PRF-fit source offset from KIC position	0.280 ± 0.135	2.07	-0.026 ± 0.144	-0.279 ± 0.133
photometric centroid source offset	3.18 ± 1.59	2.00	-3.04 ± 1.59	-0.95 ± 1.55

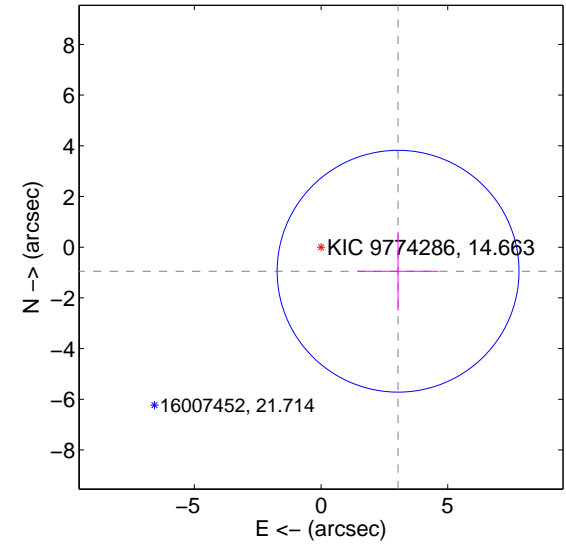
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

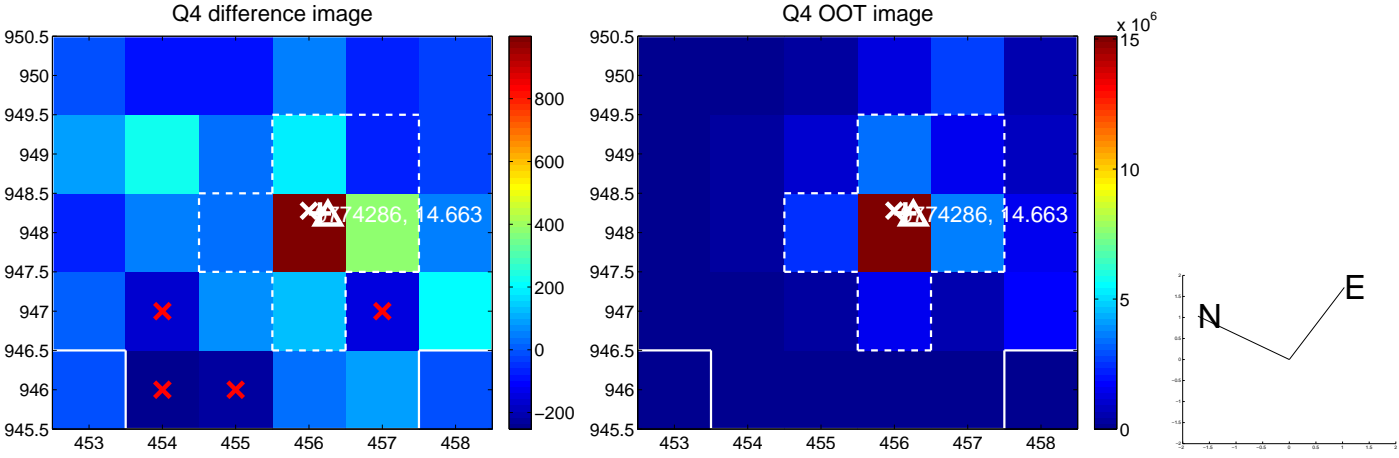
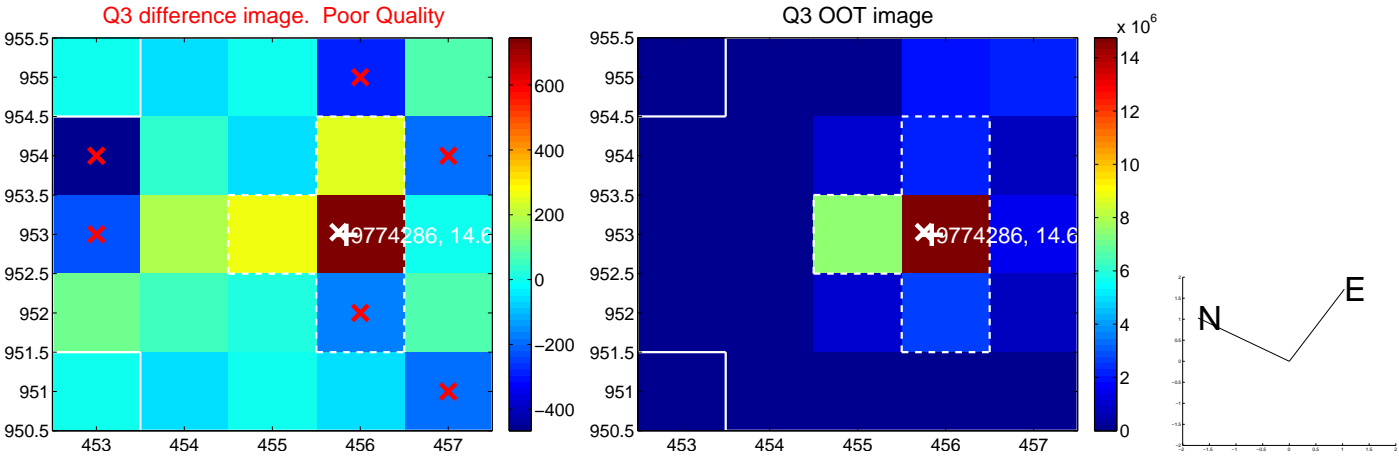
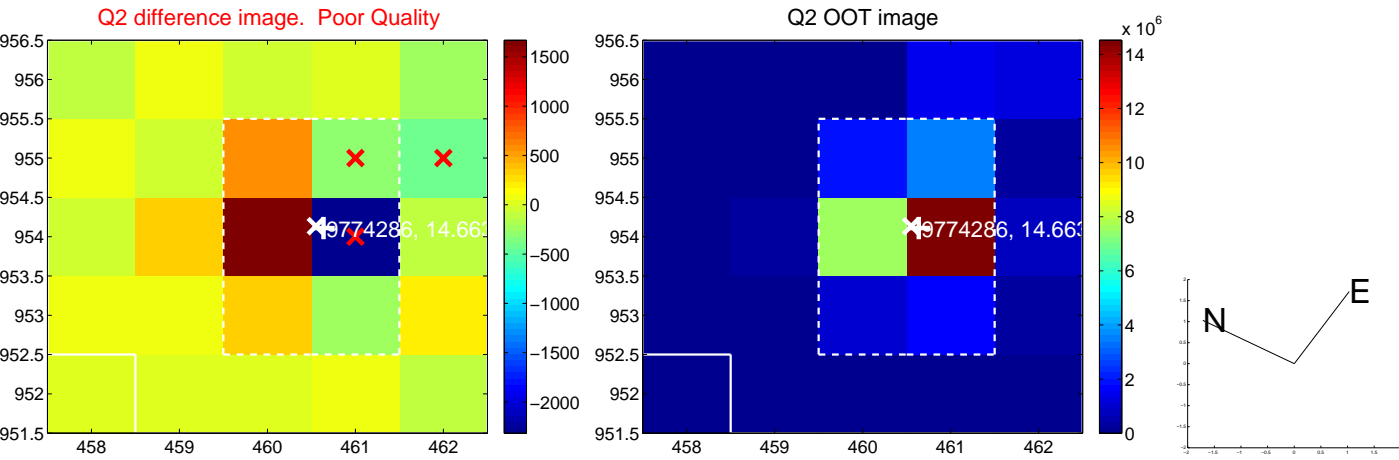
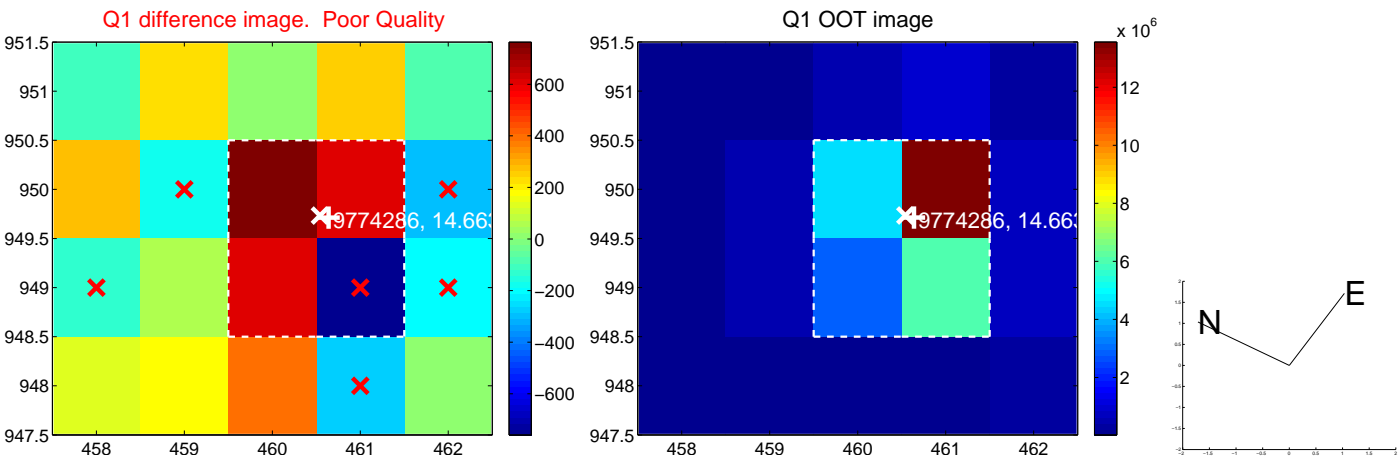


offset from photometric centroids

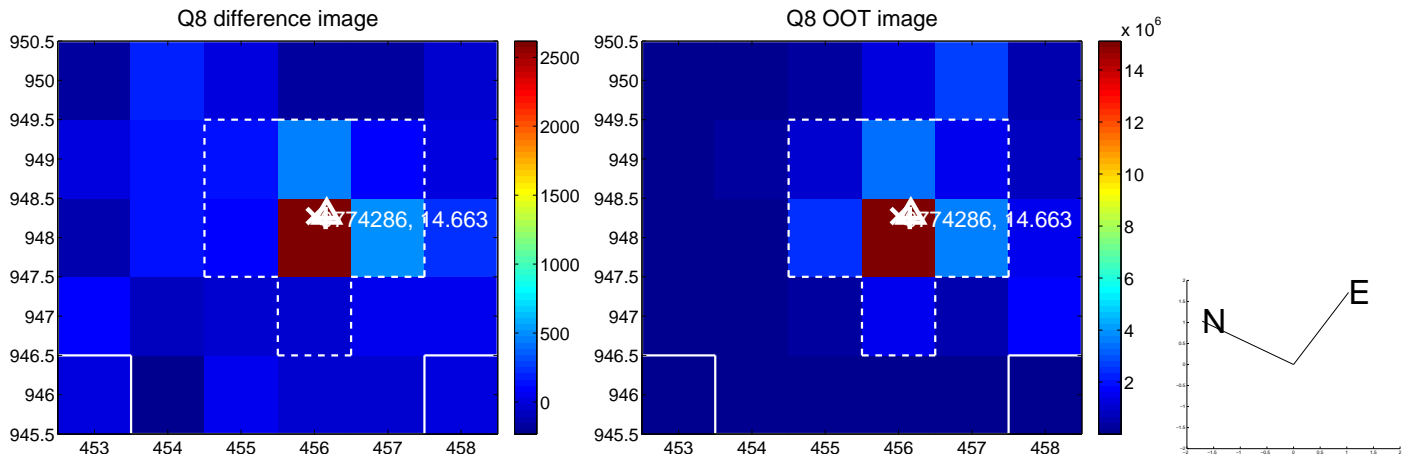
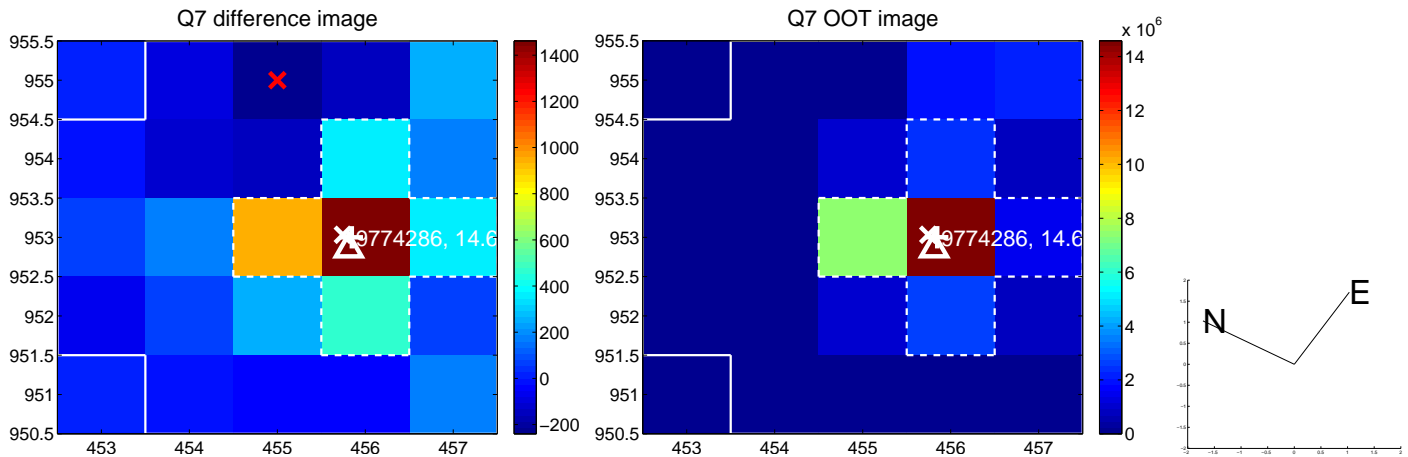
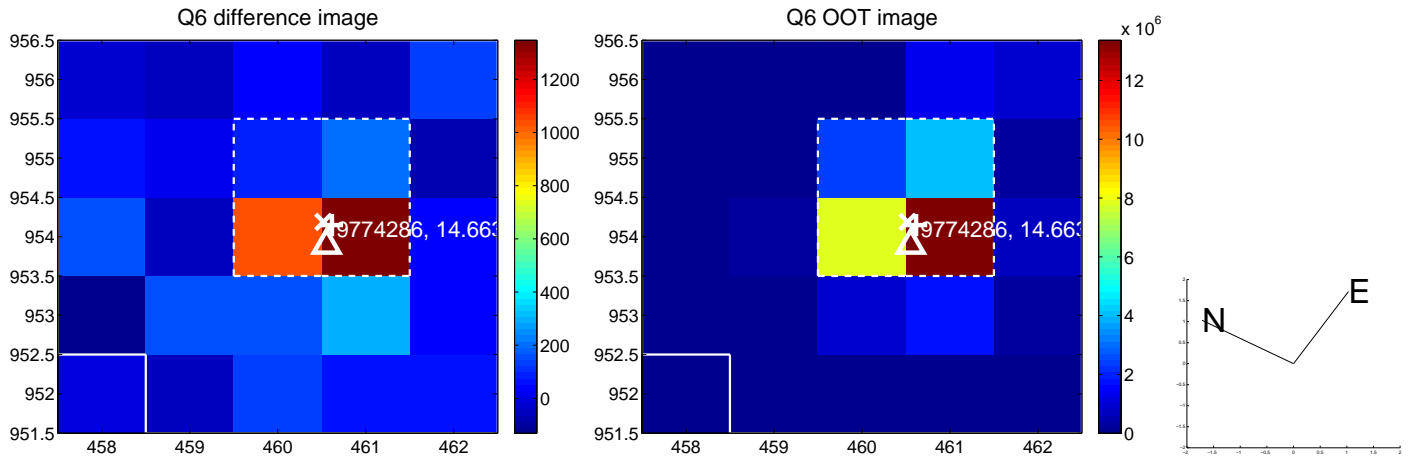
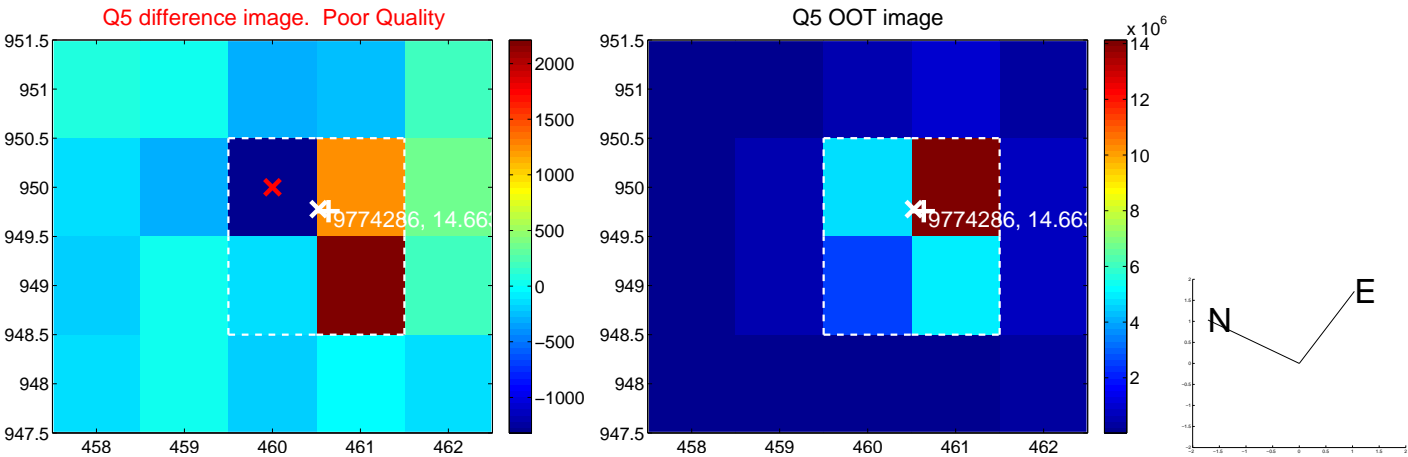


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

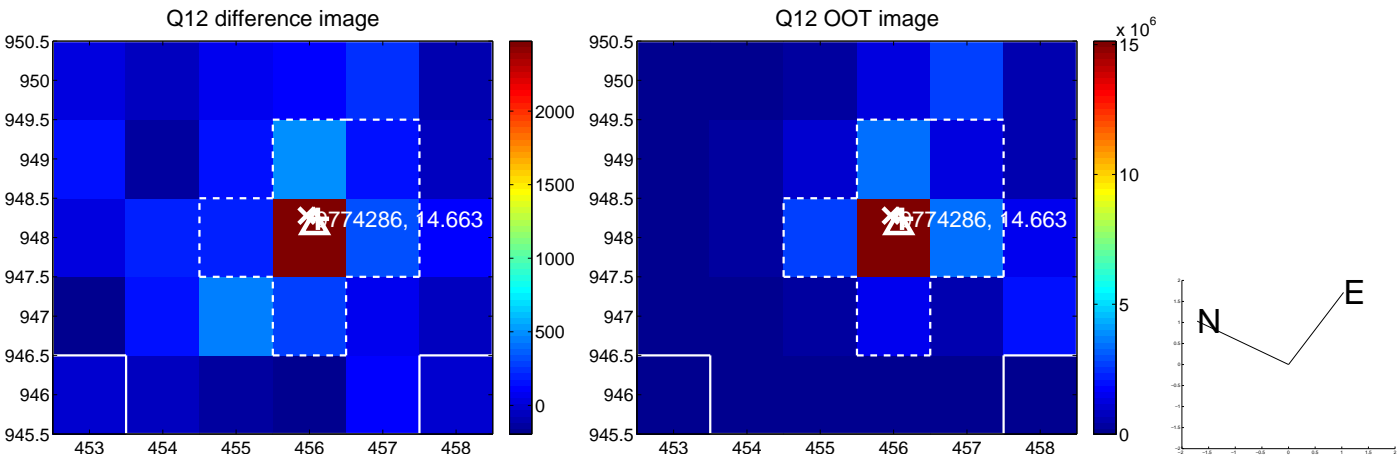
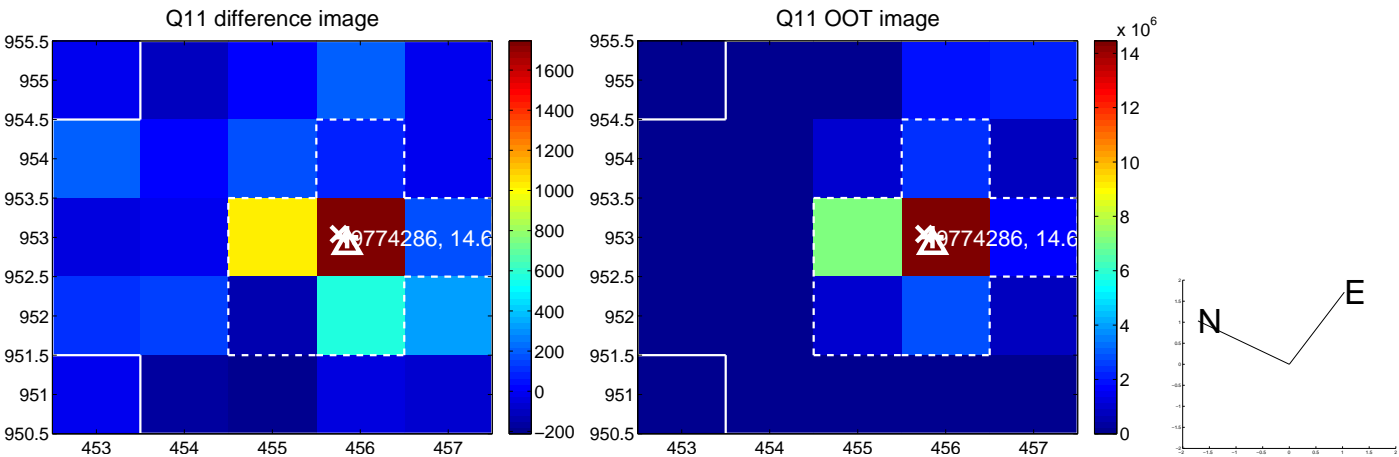
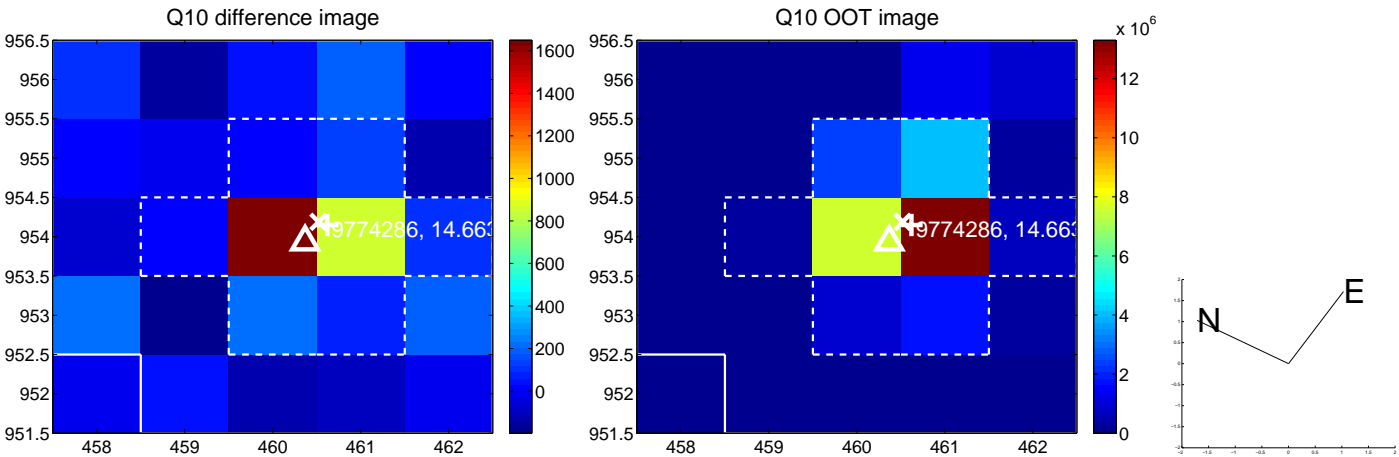
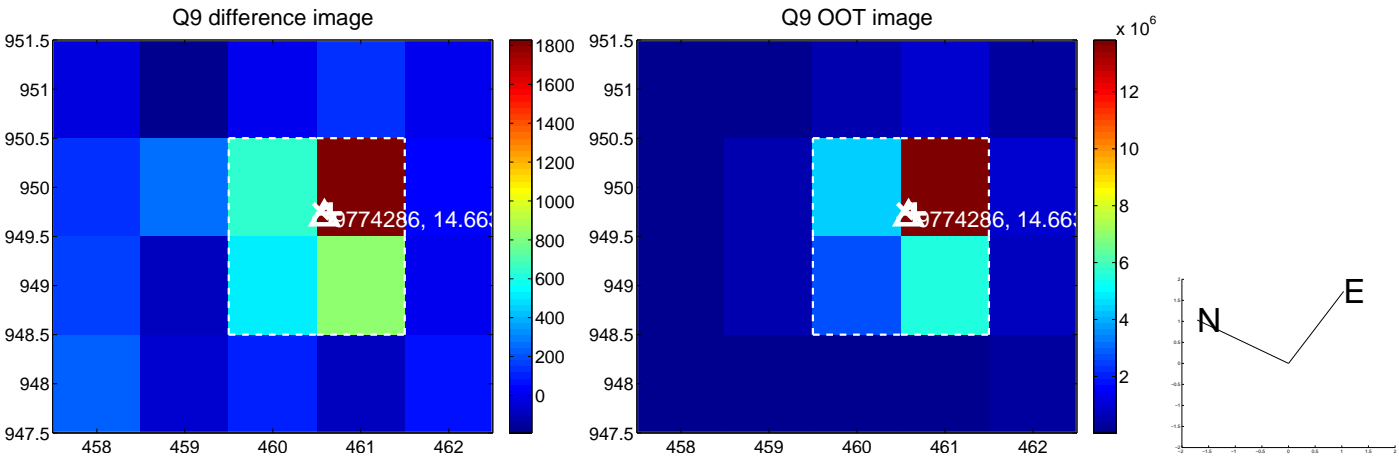
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



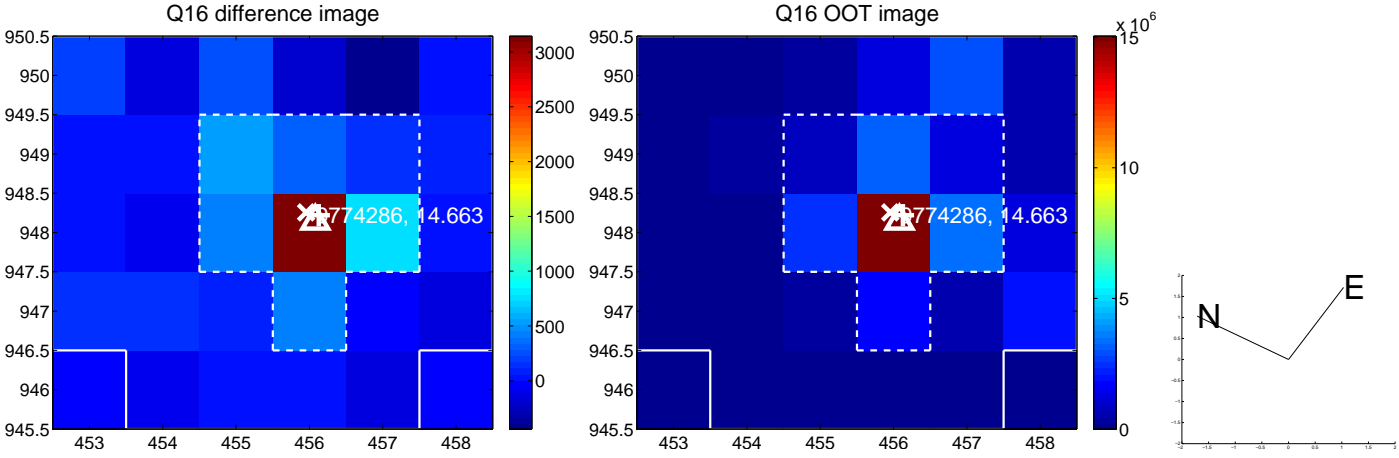
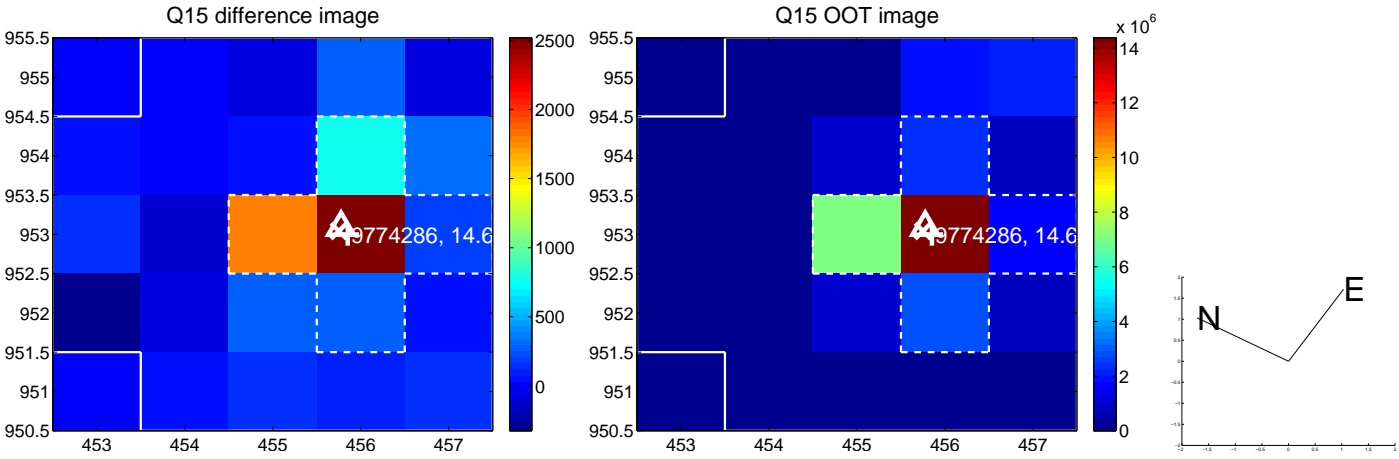
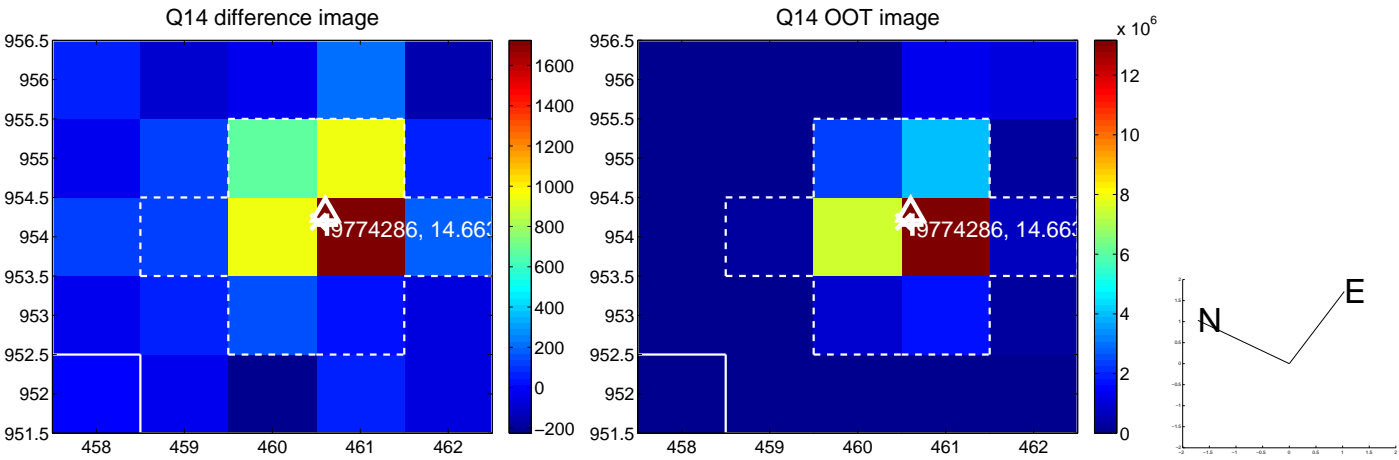
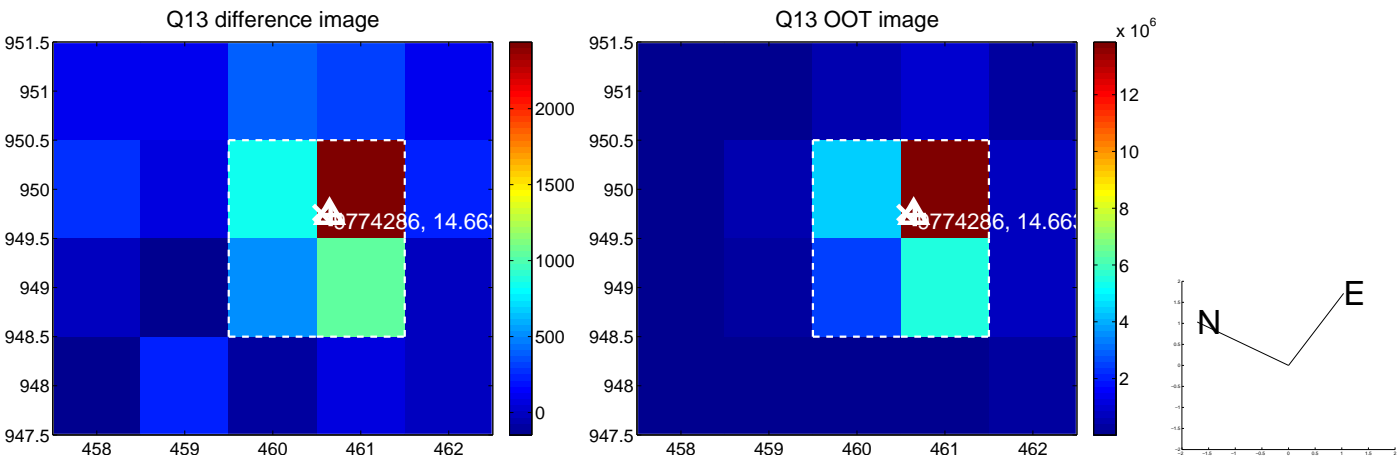
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



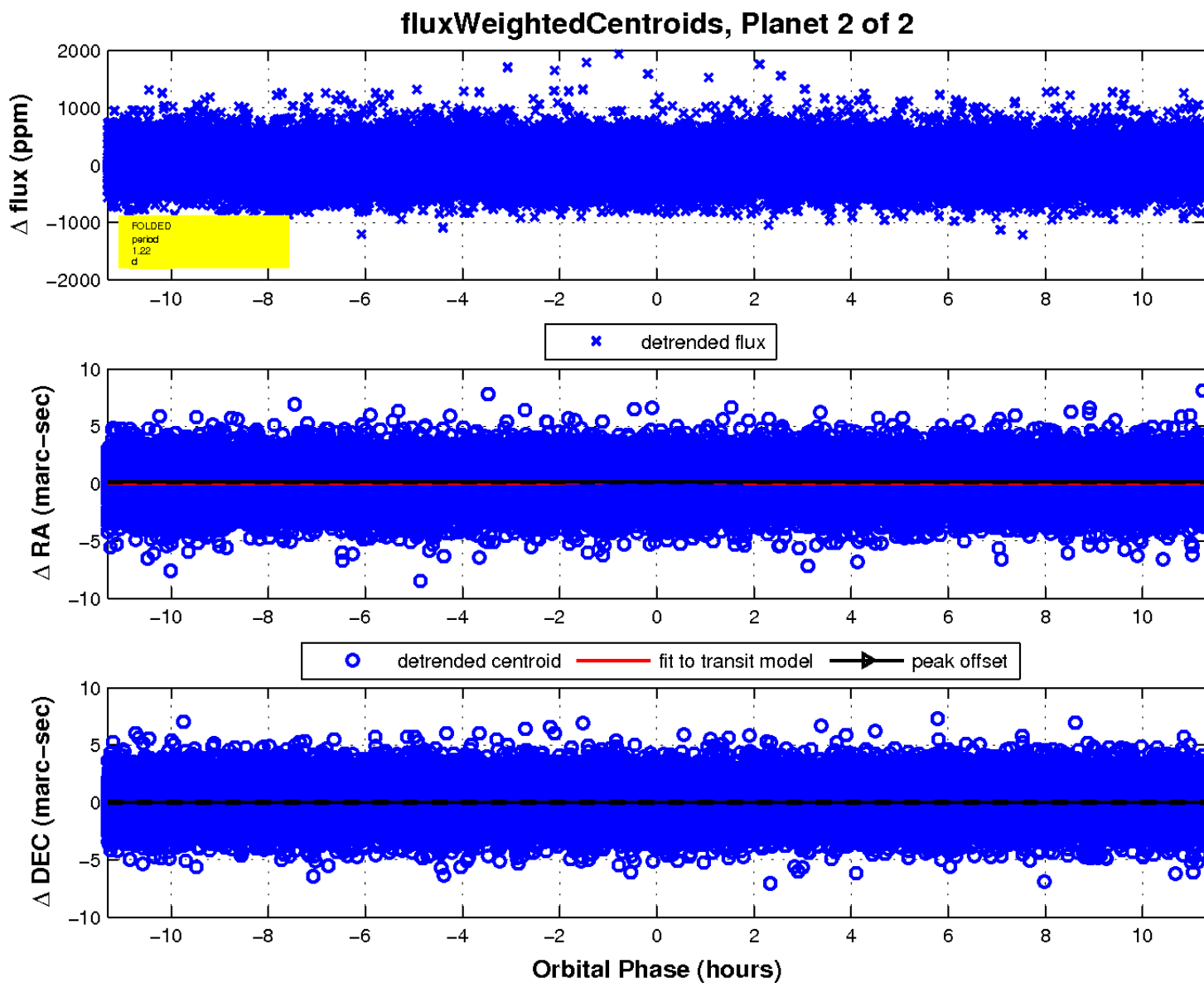
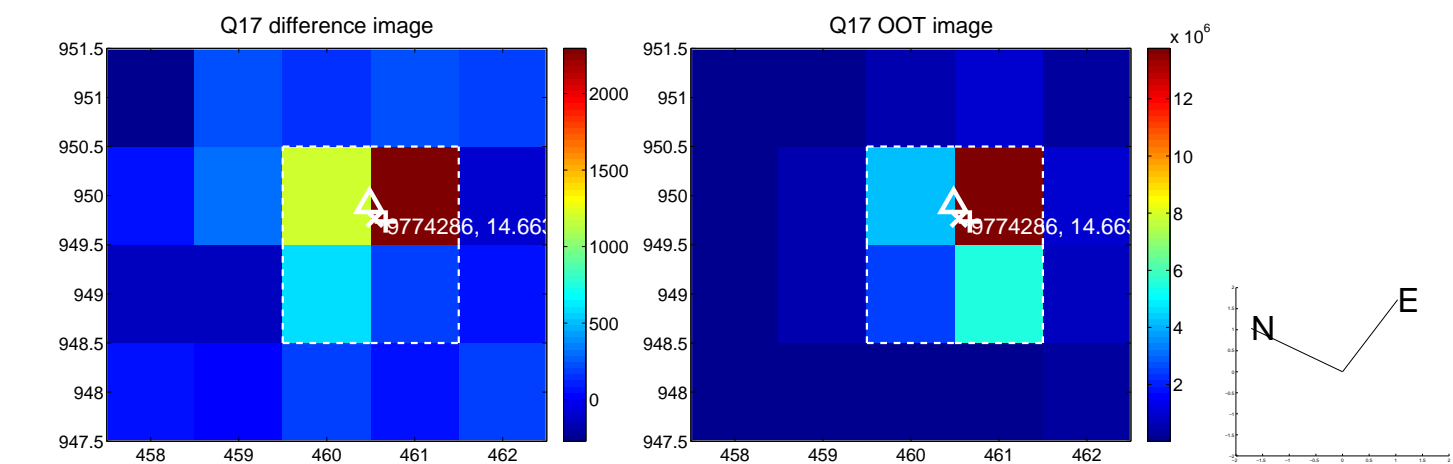
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

