

KIC 004371172

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})
004371172-01	OBS	8093.01	73.994613	143.360560	282.5	6.328	8.6	6.0	1.90	5271	4.29	21.02
004371172-02	OBS	No	1.277231	131.624422	42.4	1.042	7.5	5.9	1.90	5271	1.26	4711.73

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004371172-01	OBS	FP	0.00	0	1	1	0	DEPTH_ODDEVEN_DV—HALO_GHOST
004371172-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

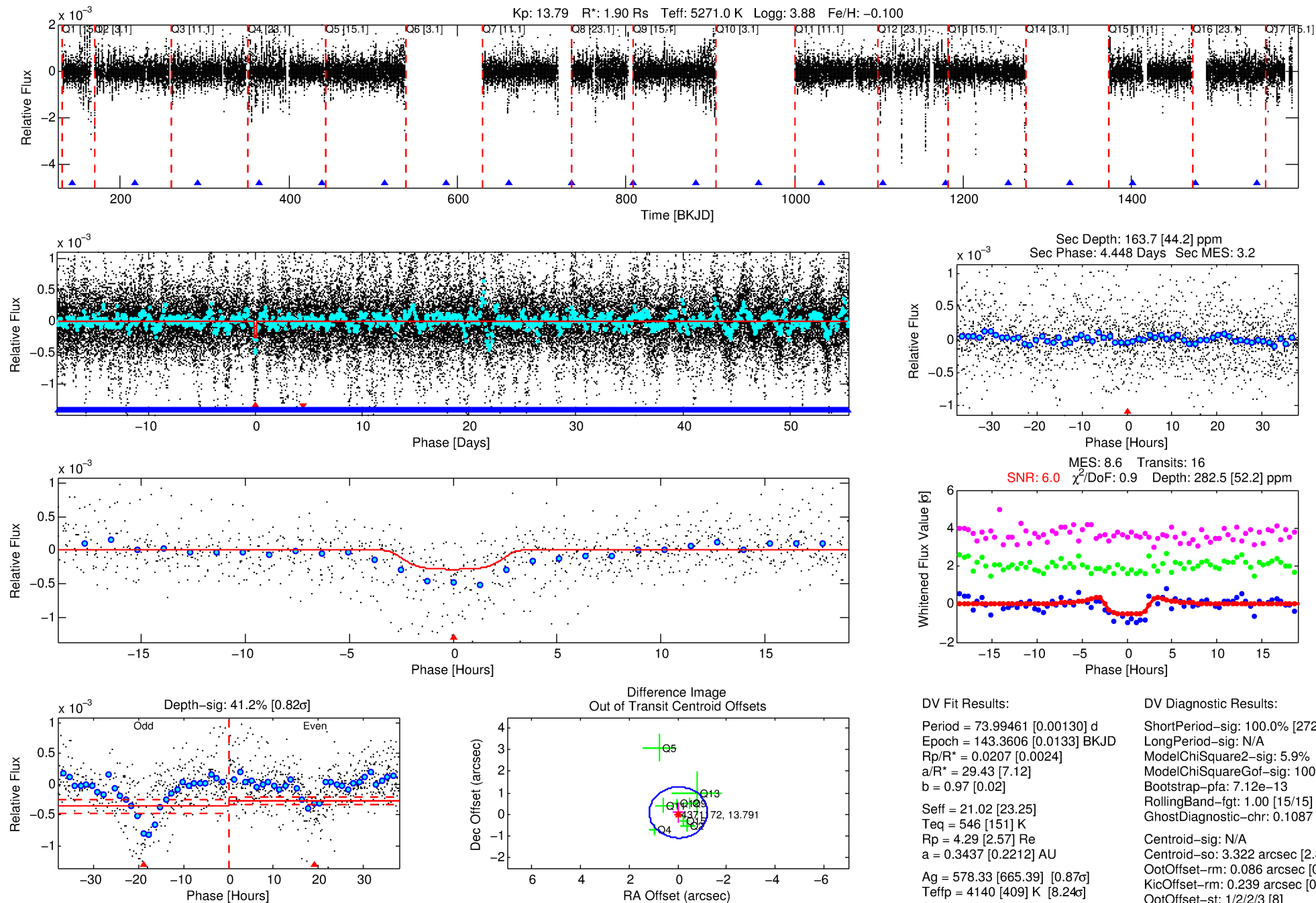
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004371172-01

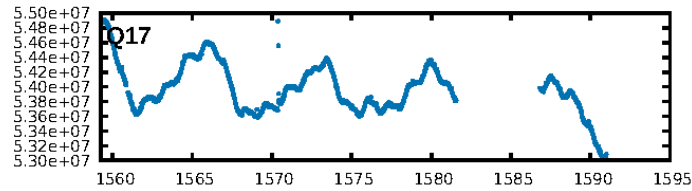
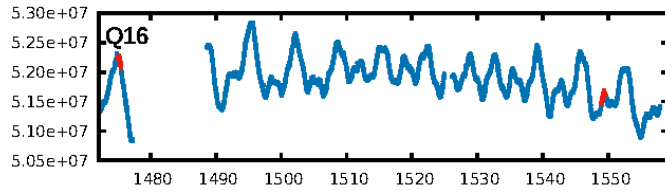
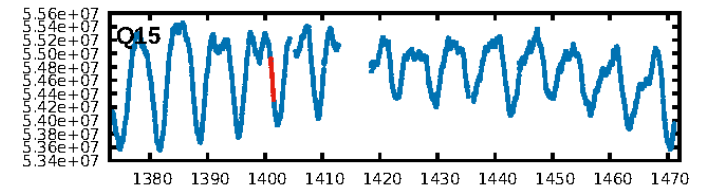
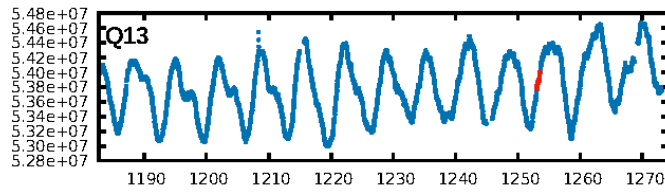
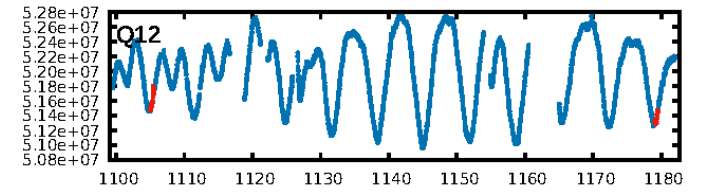
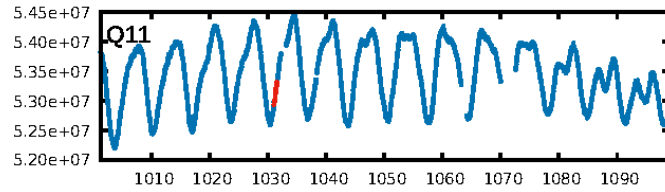
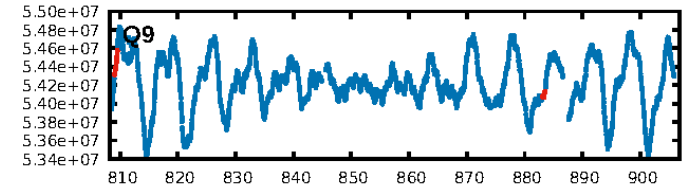
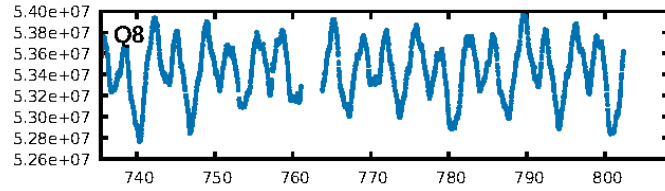
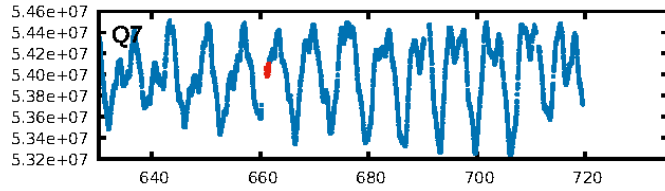
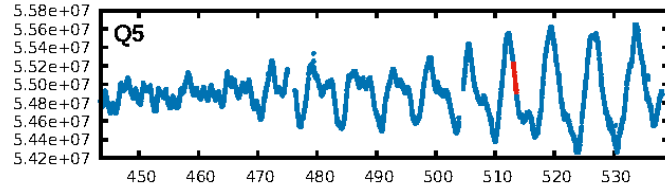
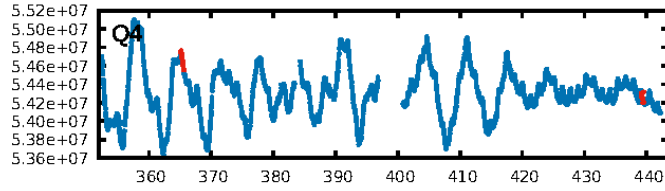
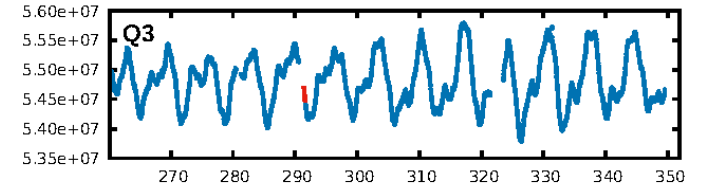
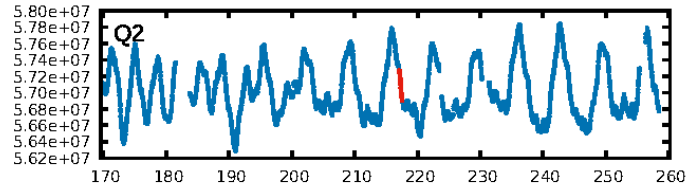
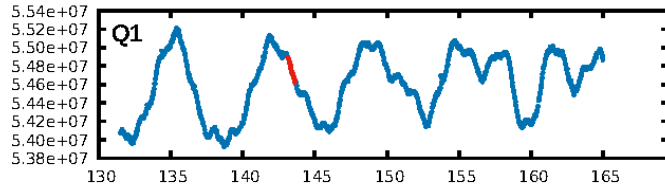
No Significant Match Found

DV One-Page Summary

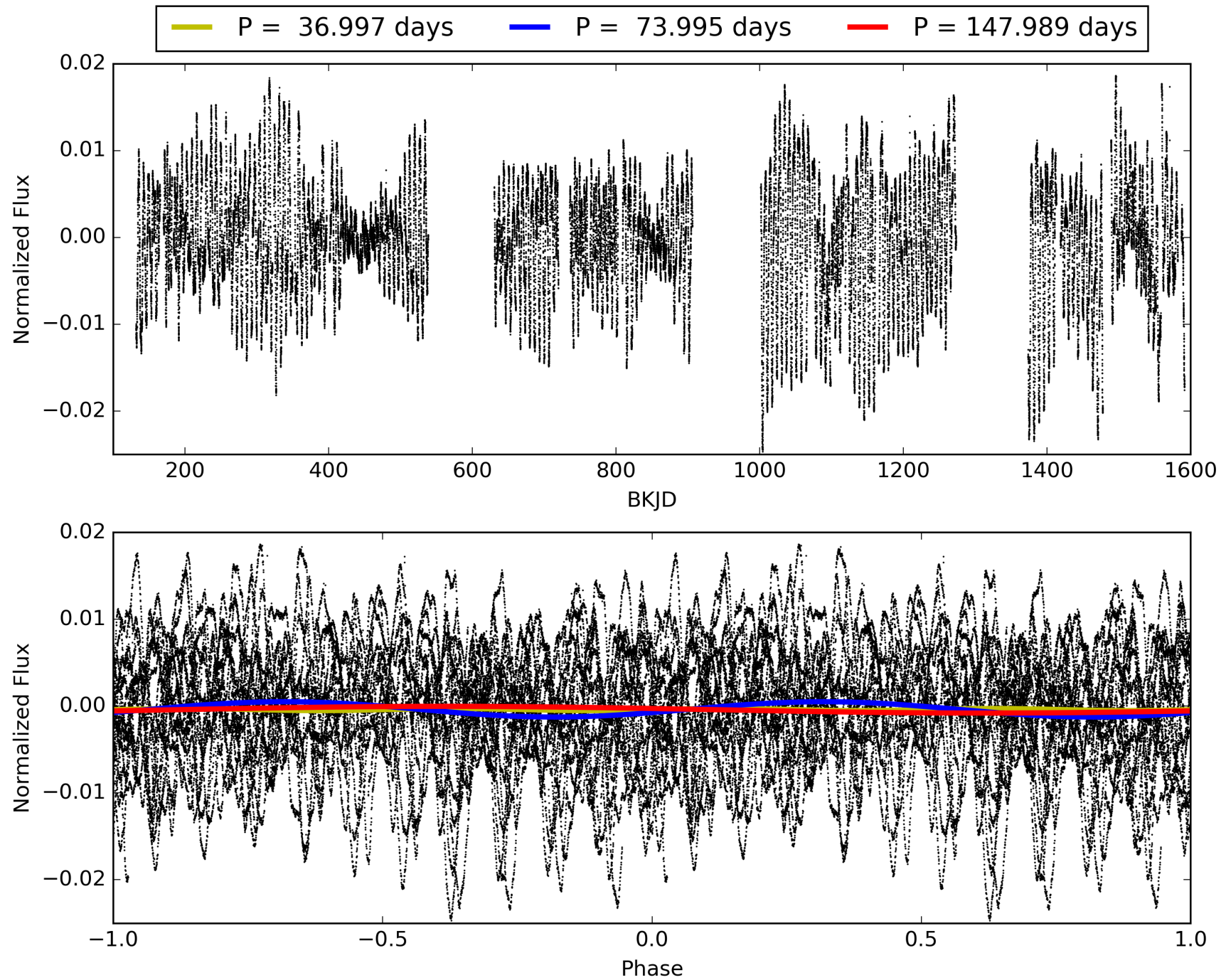
KIC: 4371172 Candidate: 1 of 2 Period: 73.995 d



TCE 004371172-01, PDC Light Curves

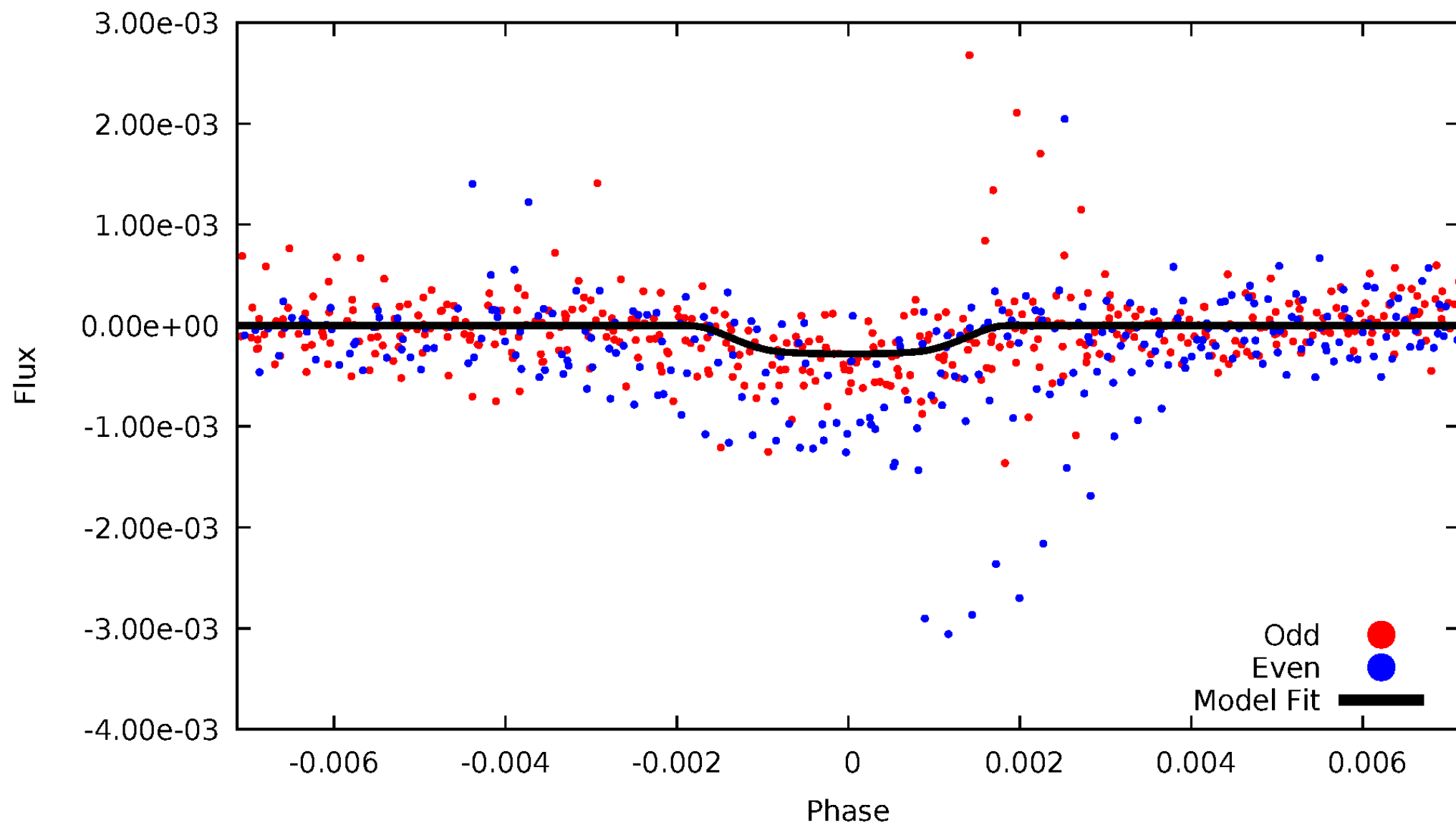


TCE 004371172-01



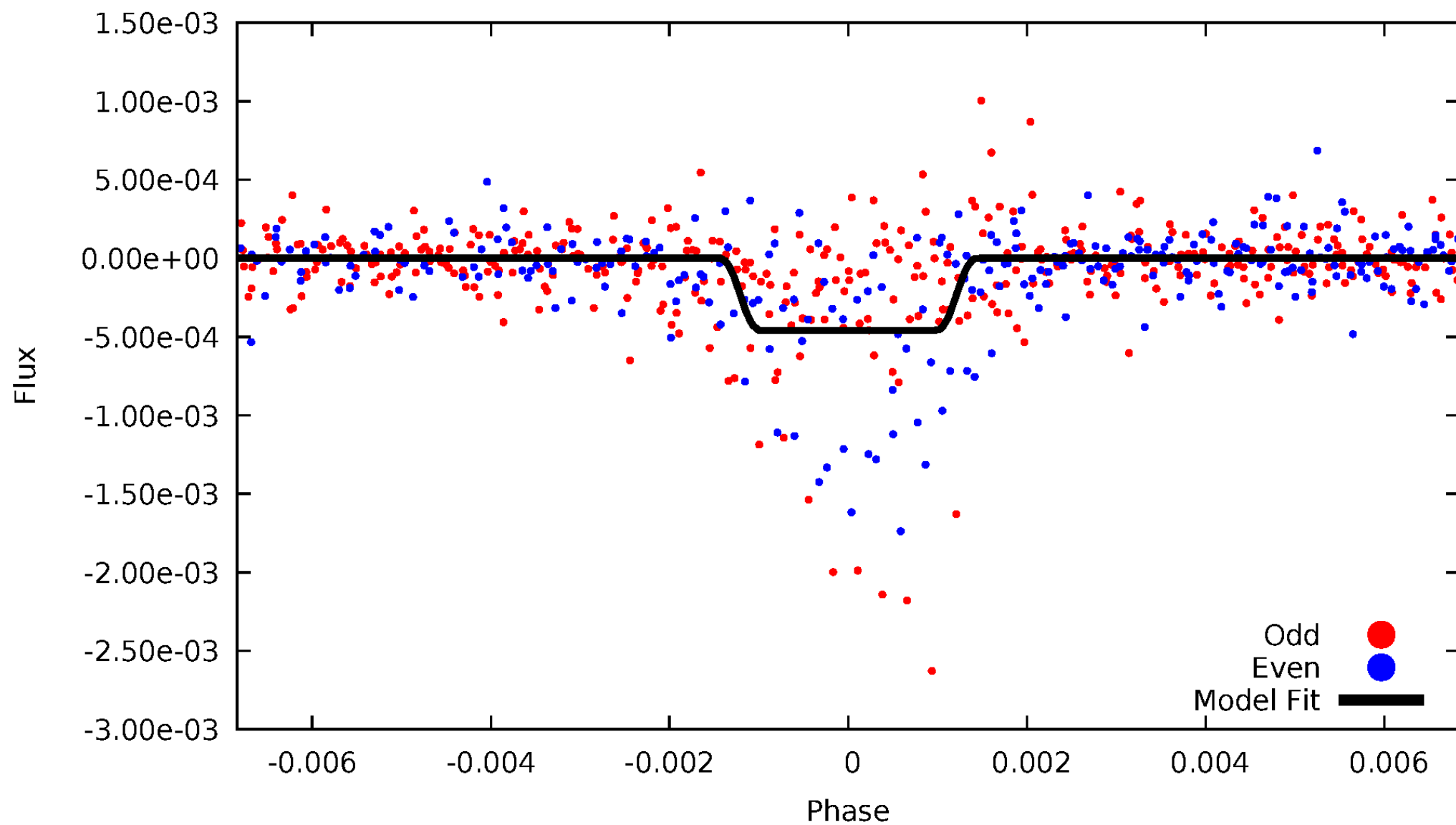
DV Odd/Even

TCE 004371172-01



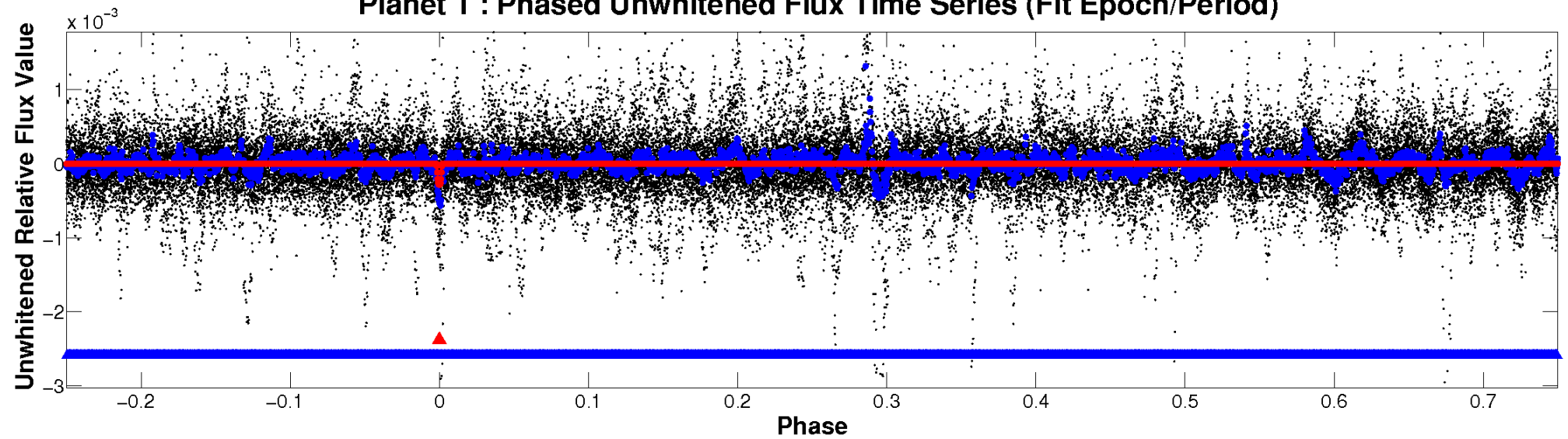
ALT Odd/Even

TCE 004371172-01

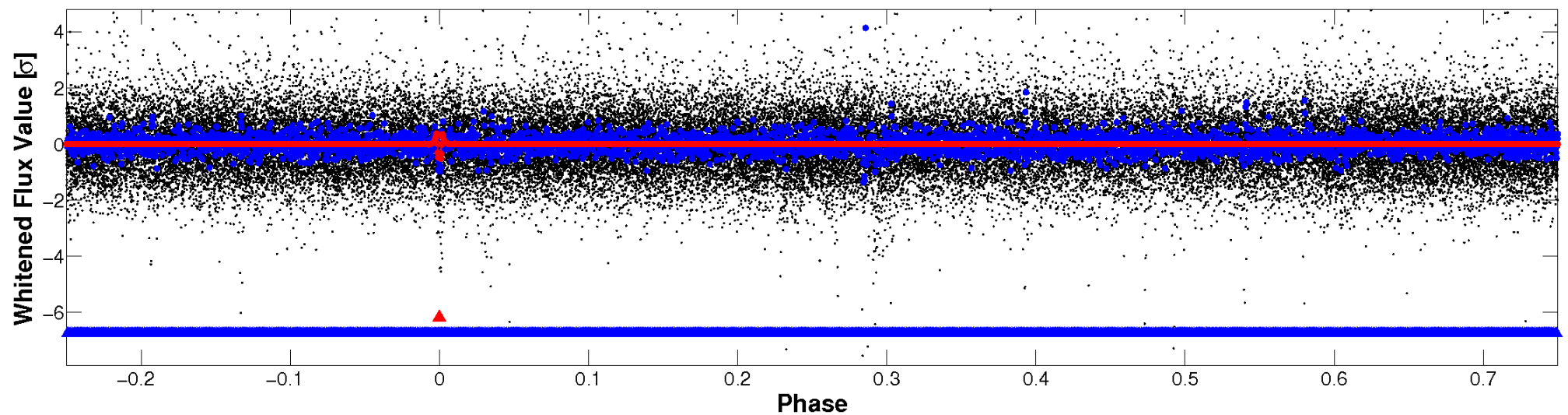


Non-Whitened Vs. Whitened Light Curve

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

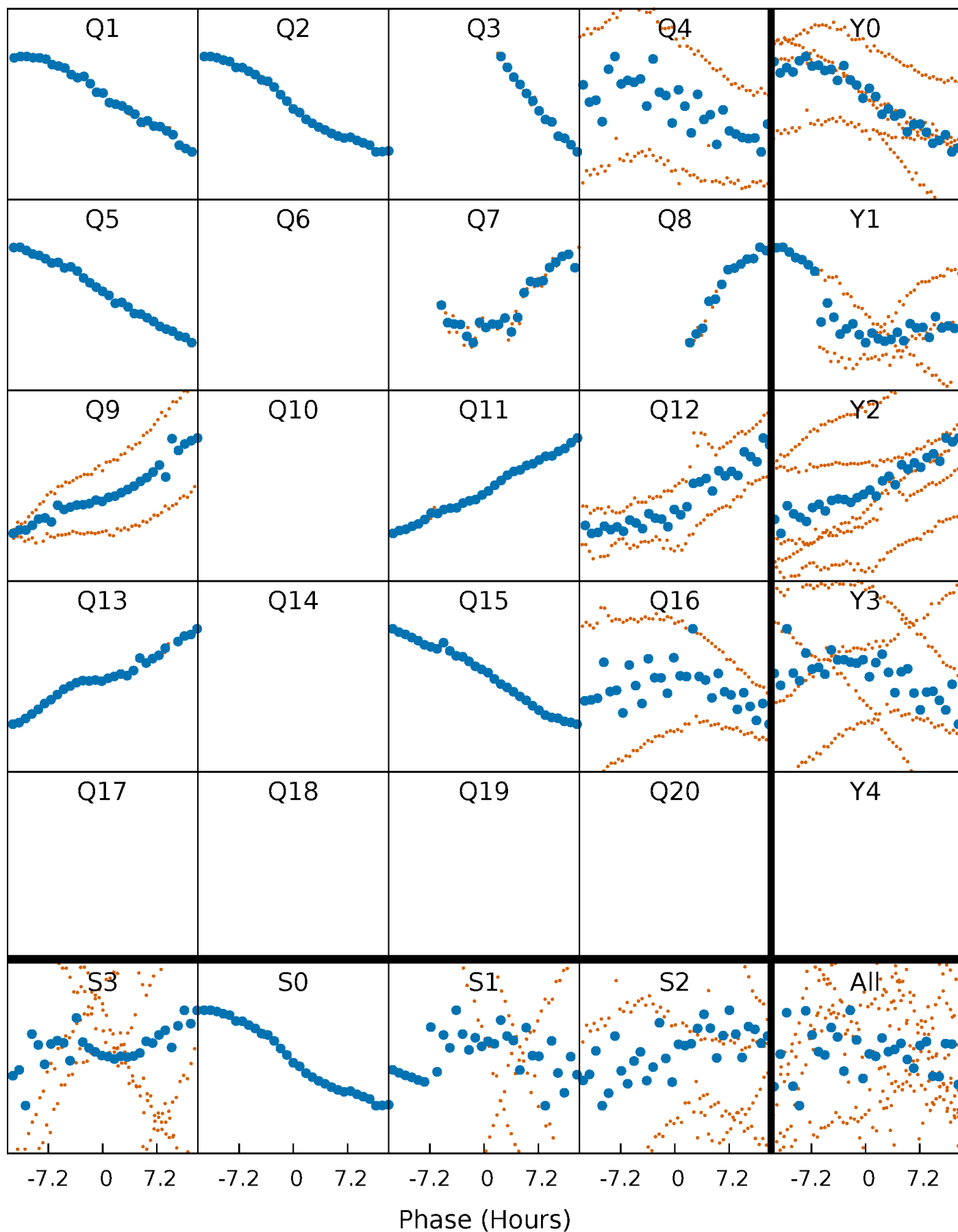


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



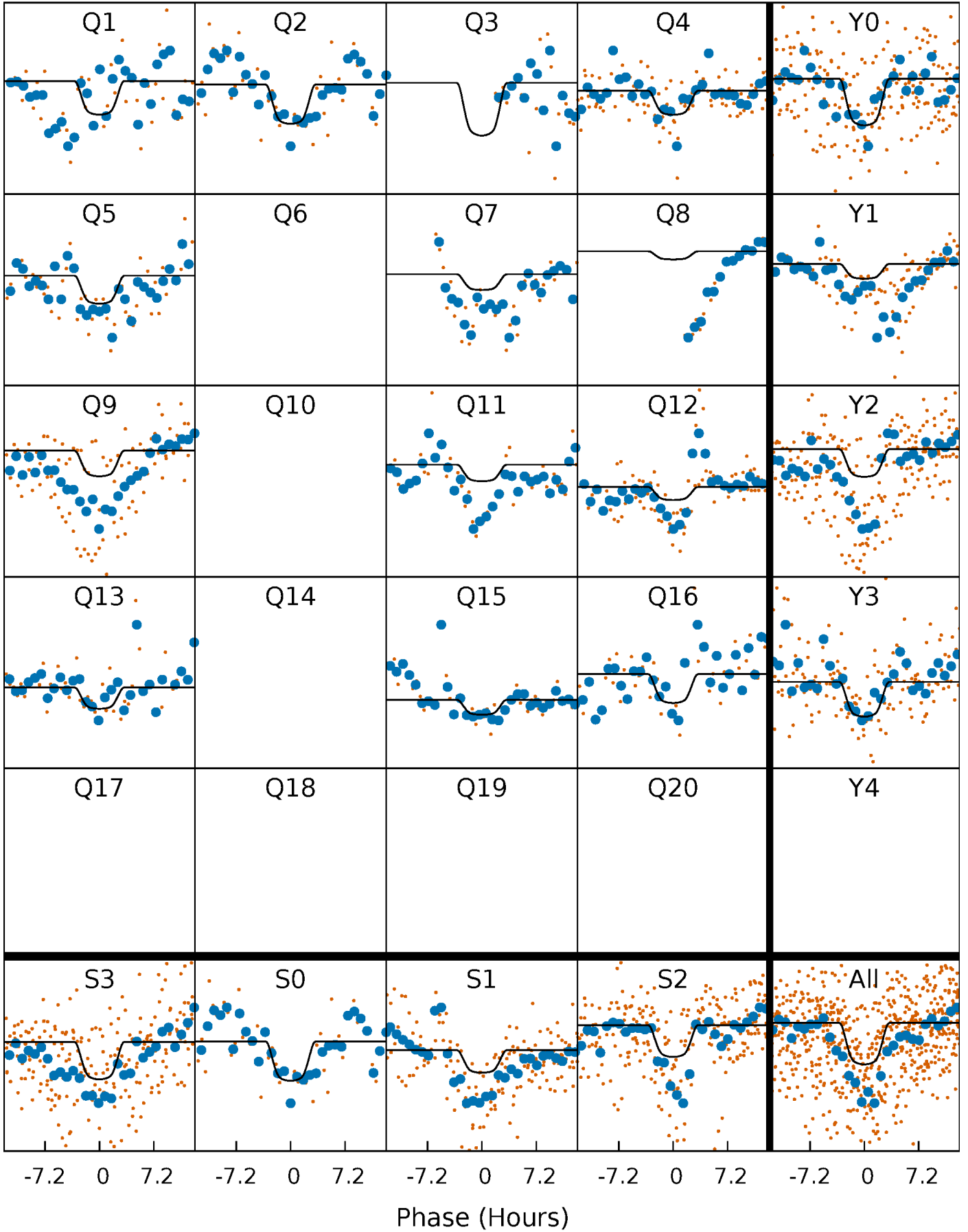
PDC Quarter-Phased Transit Curves

TCE 004371172-01 P= 73.994613 Days $T_0=143.360560$ (BKJD)



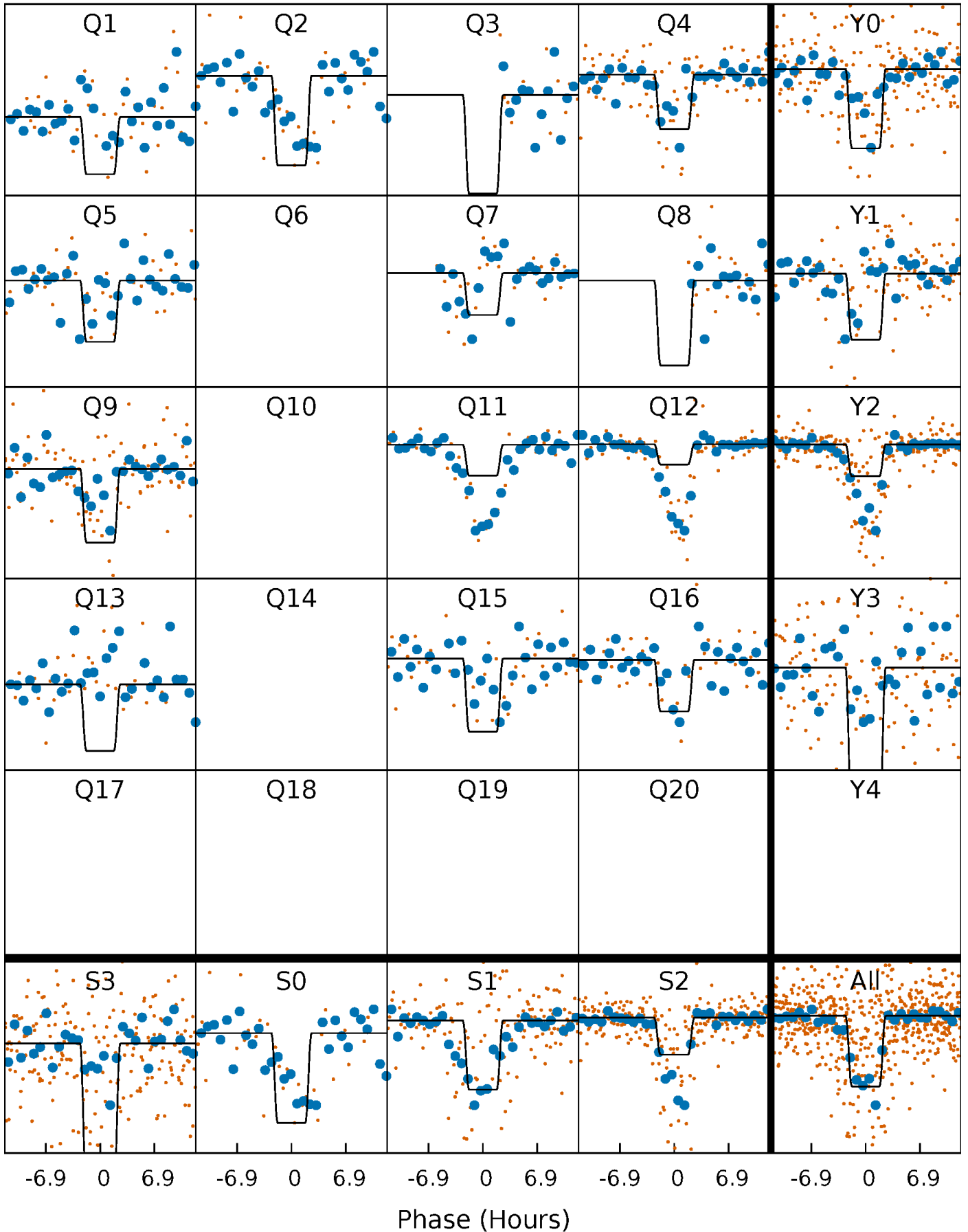
DV Quarter-Phased Transit Curves

TCE 004371172-01 P= 73.994613 Days $T_0=143.360560$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

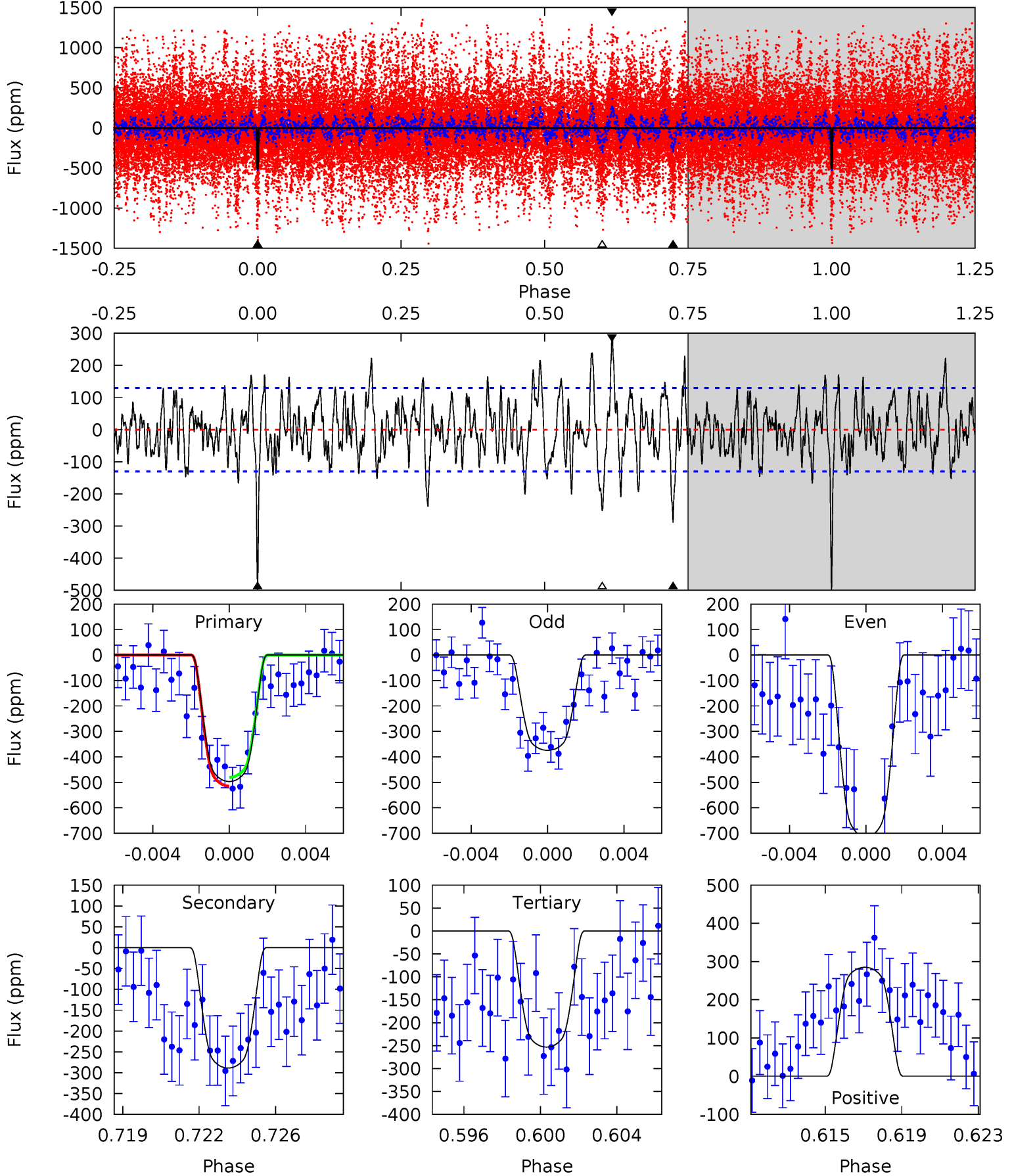
TCE 004371172-01 P= 73.995491 Days $T_0=143.343702$ (BKJD)



DV Model-Shift Uniqueness Test

004371172-01, P = 73.994613 Days, E = 69.365947 Days

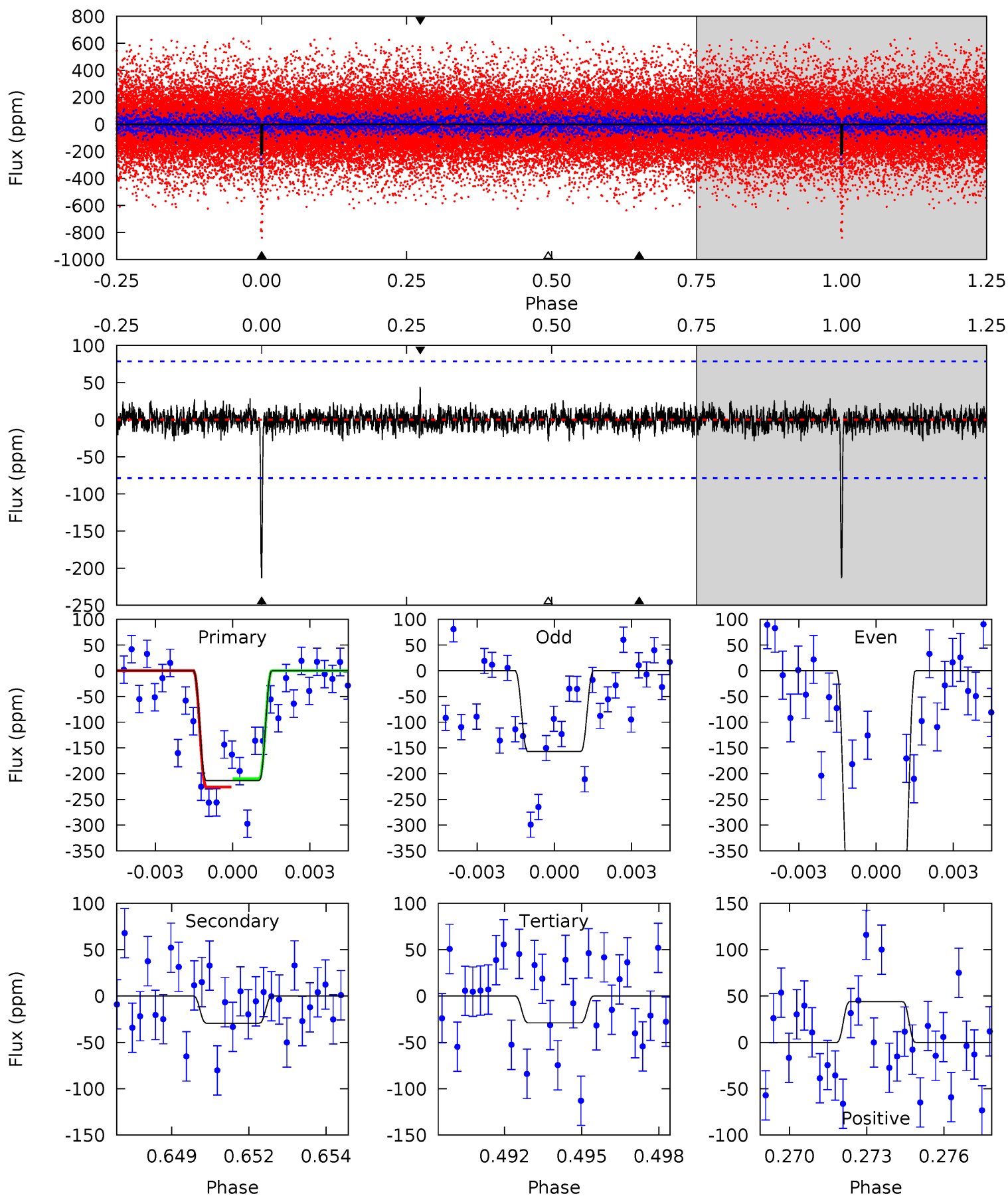
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	11.6	10.1	11.4	5.21	2.89	3.23	9.75	8.48	1.42	0.15	6.64	2.00	0.36	0.70



Alt Model-Shift Uniqueness Test

004371172-01, P = 73.995491 Days, E = 69.348211 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	1.96	1.94	2.93	5.26	2.98	0.57	12.3	11.3	0.02	-0.97	10.2	2.24	0.17	0.54



Stellar Parameters For KIC 004371172

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5271^{+222}_{-167}	$3.878^{+0.665}_{-0.285}$	$-0.100^{+0.300}_{-0.250}$	$1.895^{+0.912}_{-1.114}$	$0.989^{+0.183}_{-0.183}$	$0.205^{+2.003}_{-0.128}$
	+4%/-3%	+17%/-7%	+300%/-250%	+48%/-59%	+19%/-19%	+978%/-63%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004371172-01 / KOI 8093.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-289 ± 25	$4.15^{+1.33}_{-1.30}$	751^{+110}_{-119}	4856^{+322}_{-286}	1084^{+1167}_{-458}
Alt.	-29 ± 15	$4.31^{+1.33}_{-1.41}$	754^{+104}_{-121}	3194^{+275}_{-305}	101^{+142}_{-61}

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 $A_{obs} \gg 1.0$

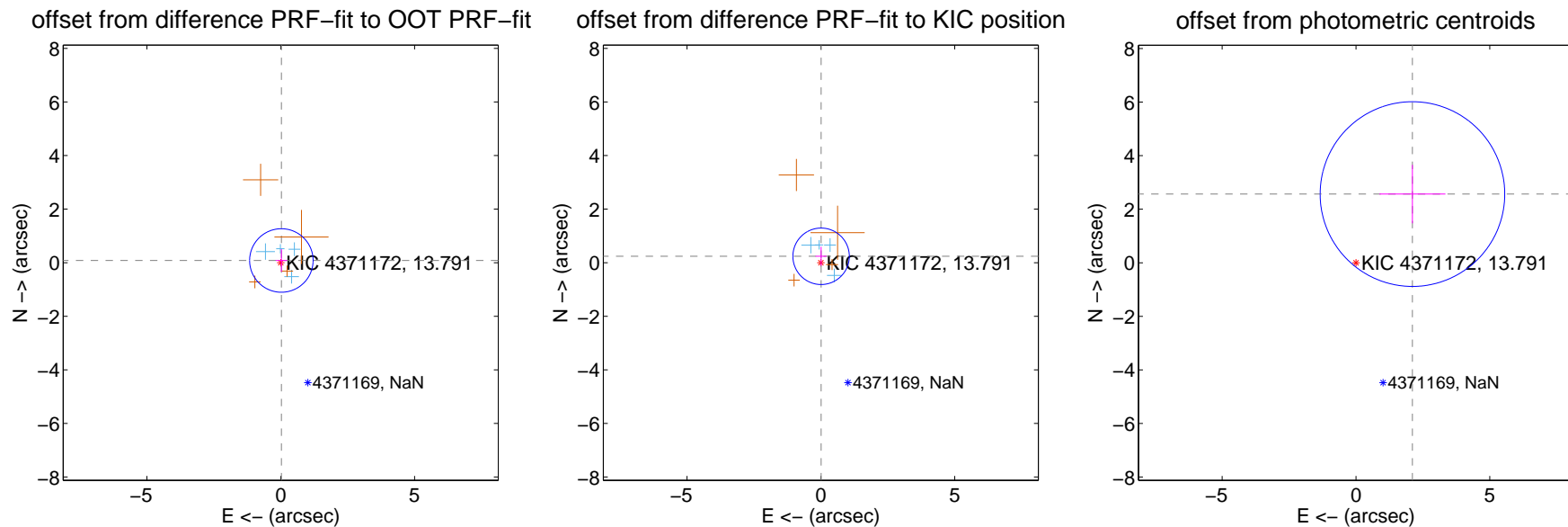
DV Centroid Data

Supplemental centroid analysis for 004371172-01. Kepler magnitude: 13.79. Transit SNR 6.02

There are 4 quarters with good PRF difference image offsets

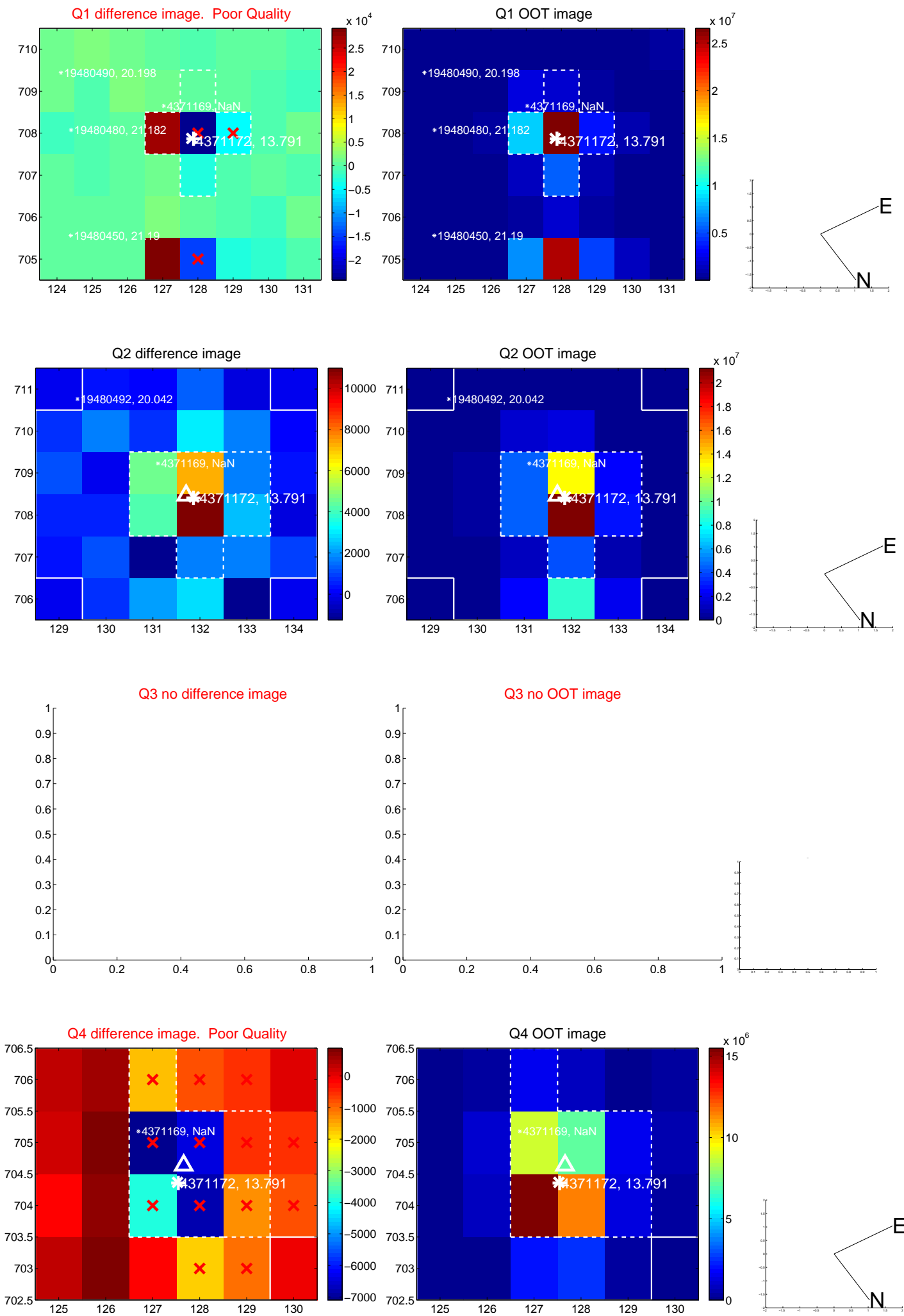
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.086 ± 0.395	0.22	-0.023 ± 0.210	0.082 ± 0.424
PRF-fit source offset from KIC position	0.239 ± 0.351	0.68	-0.009 ± 0.206	0.239 ± 0.354
photometric centroid source offset	3.32 ± 1.15	2.89	-2.11 ± 1.23	2.57 ± 1.09

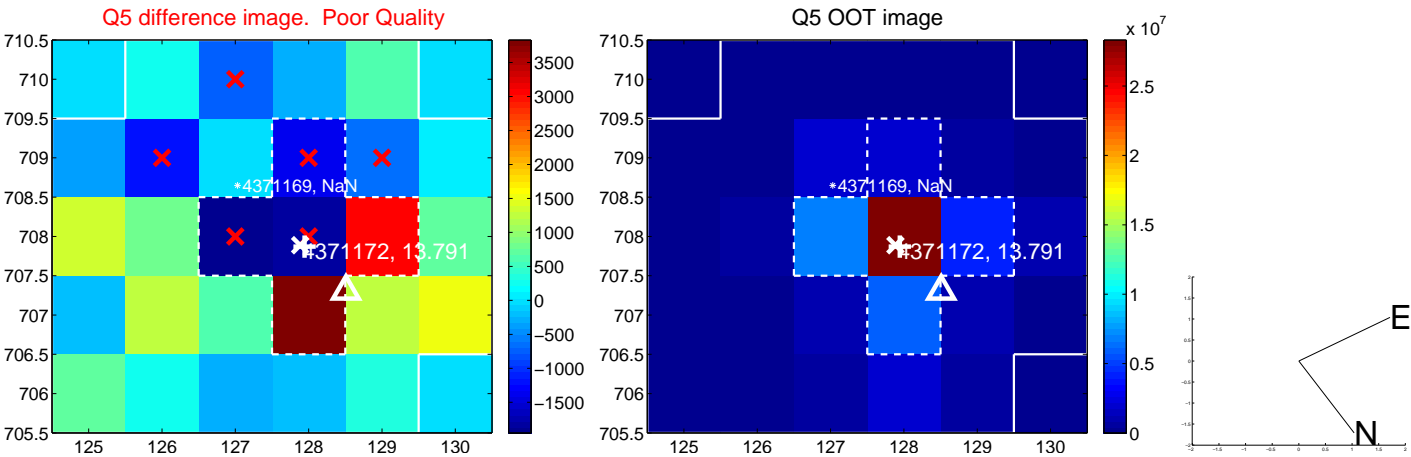


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

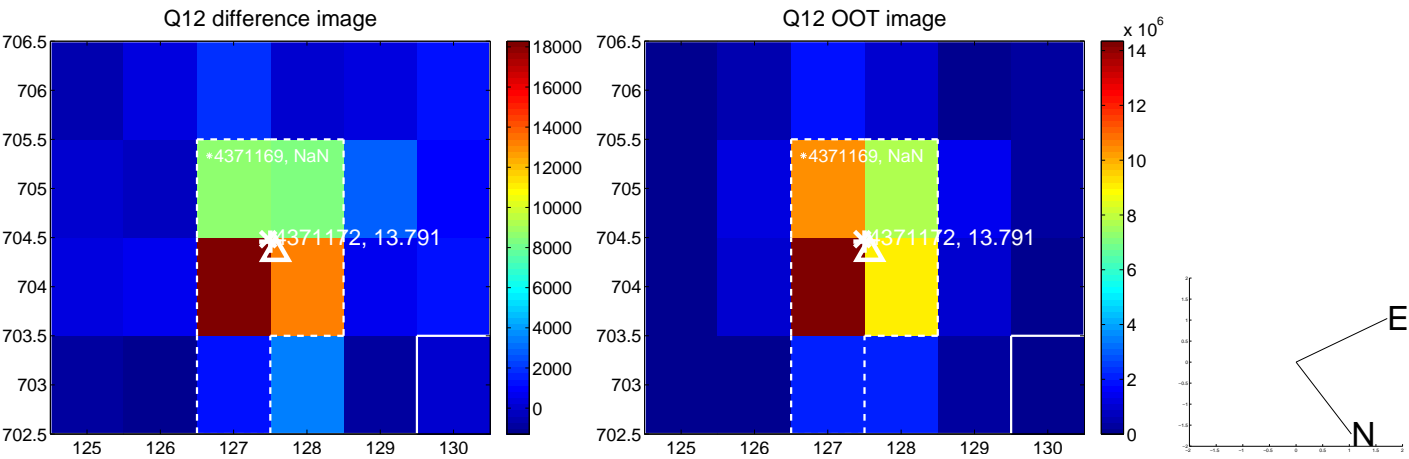
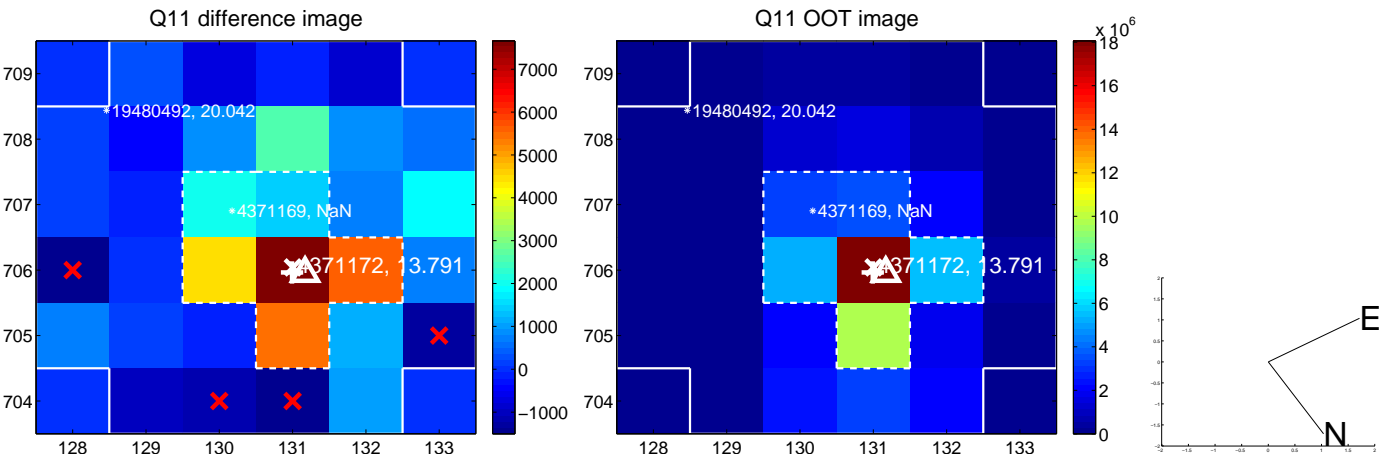
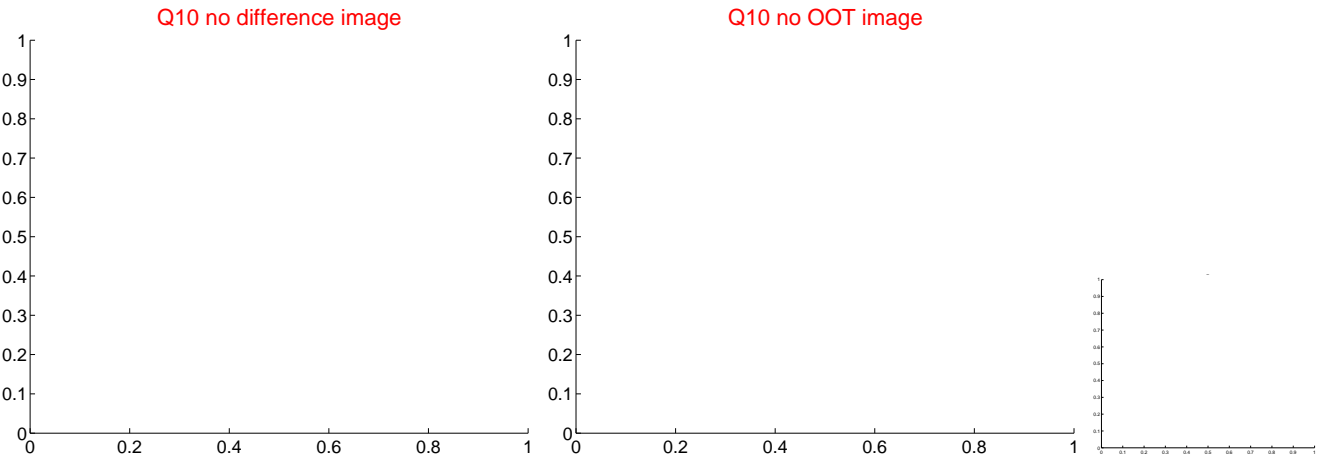
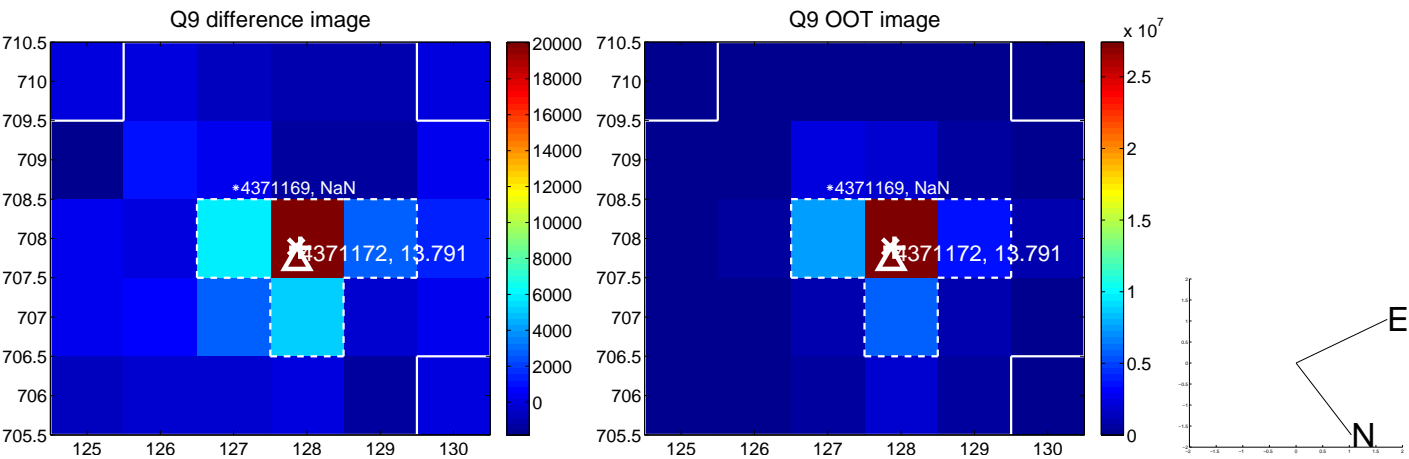
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



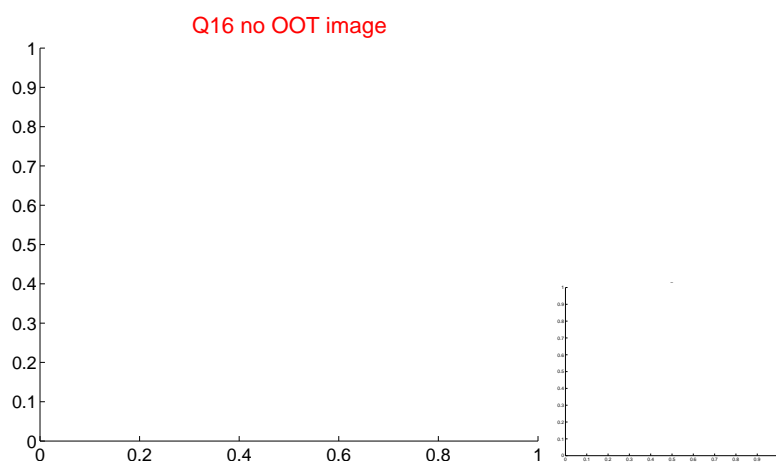
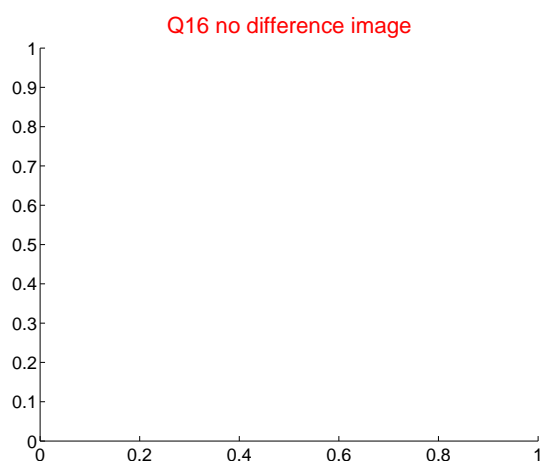
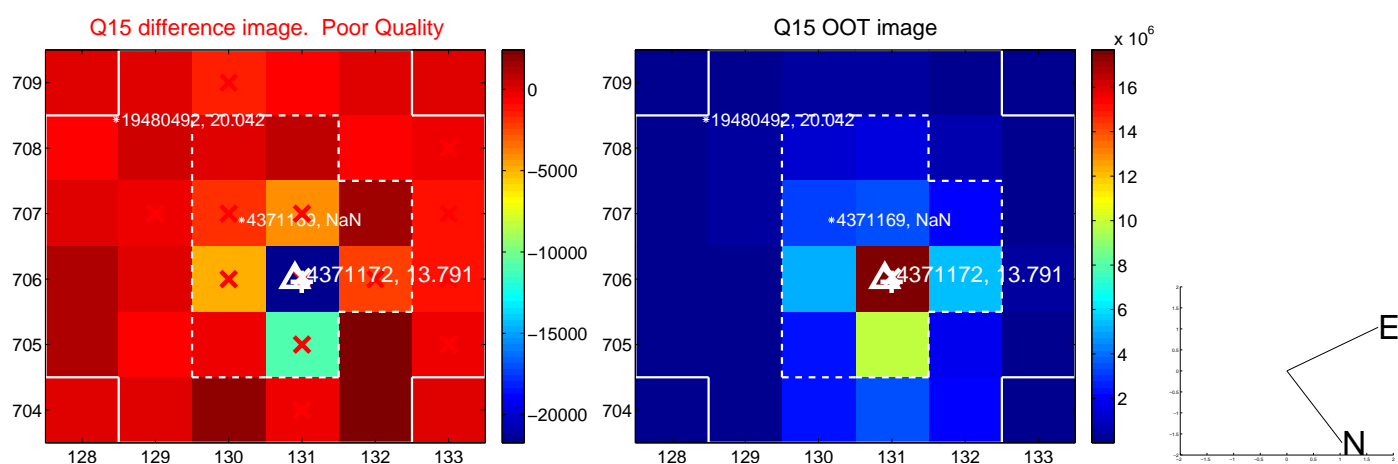
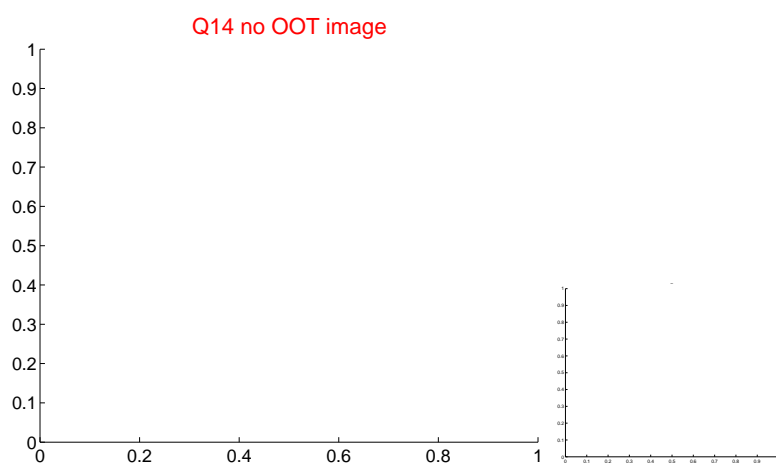
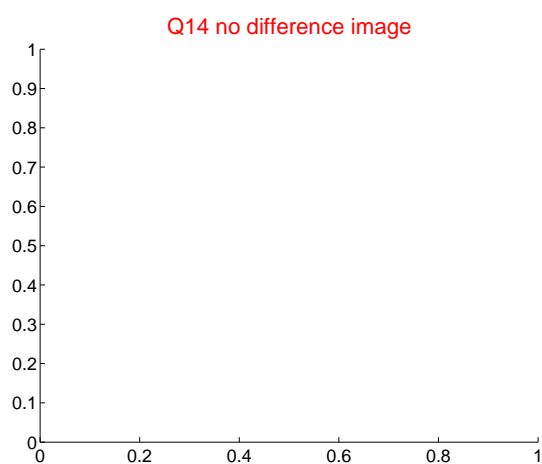
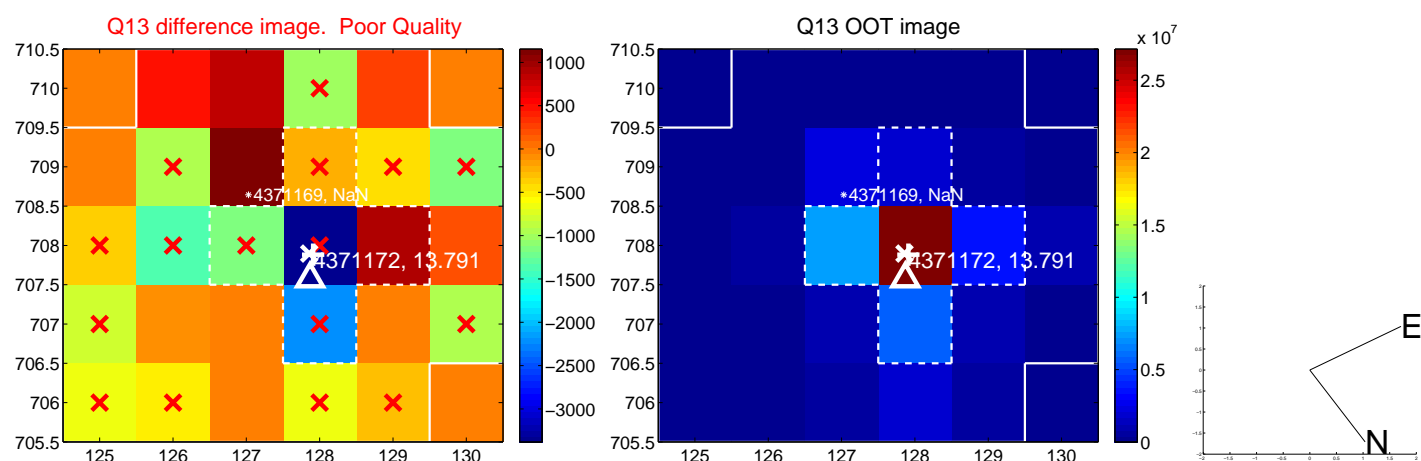
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



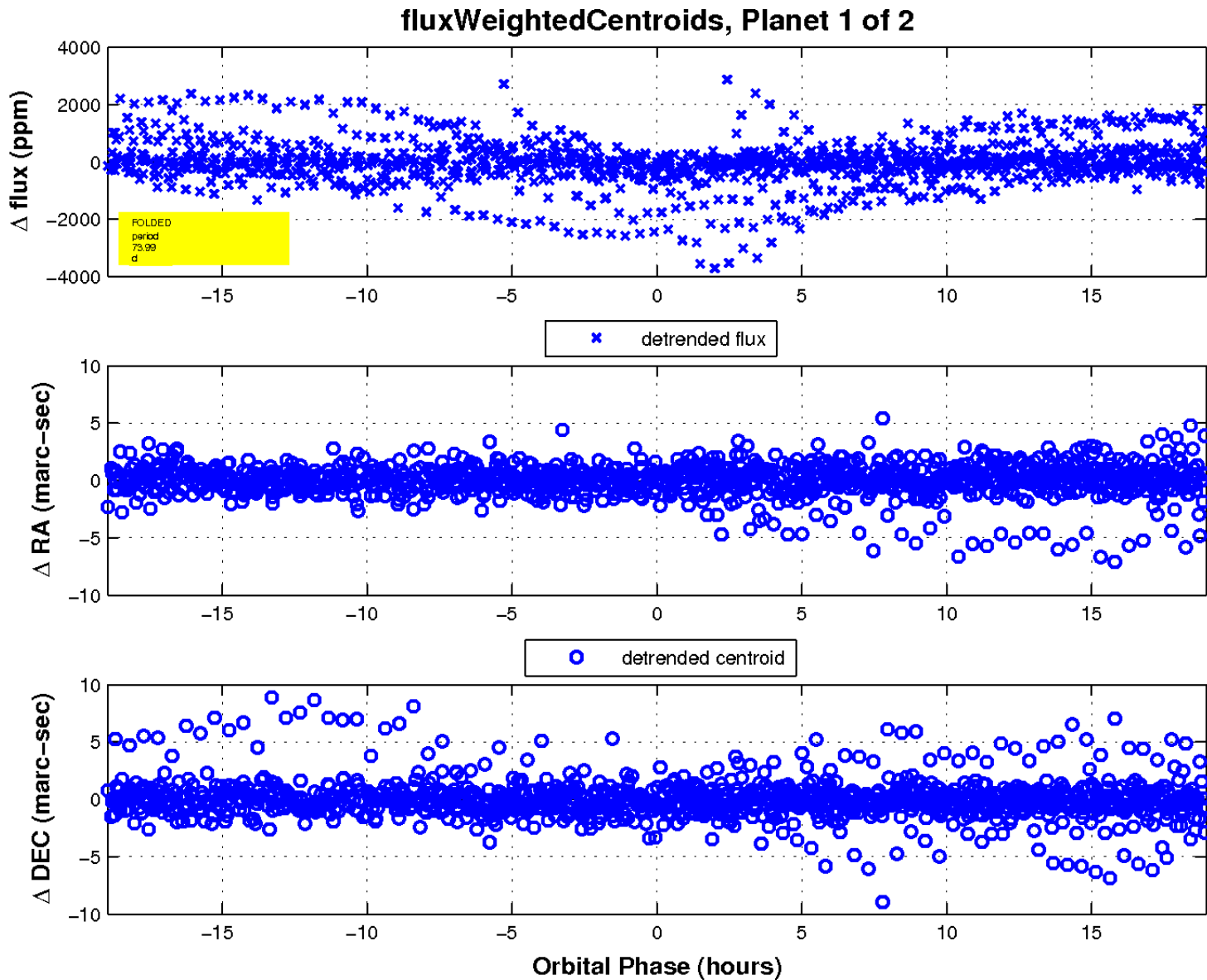
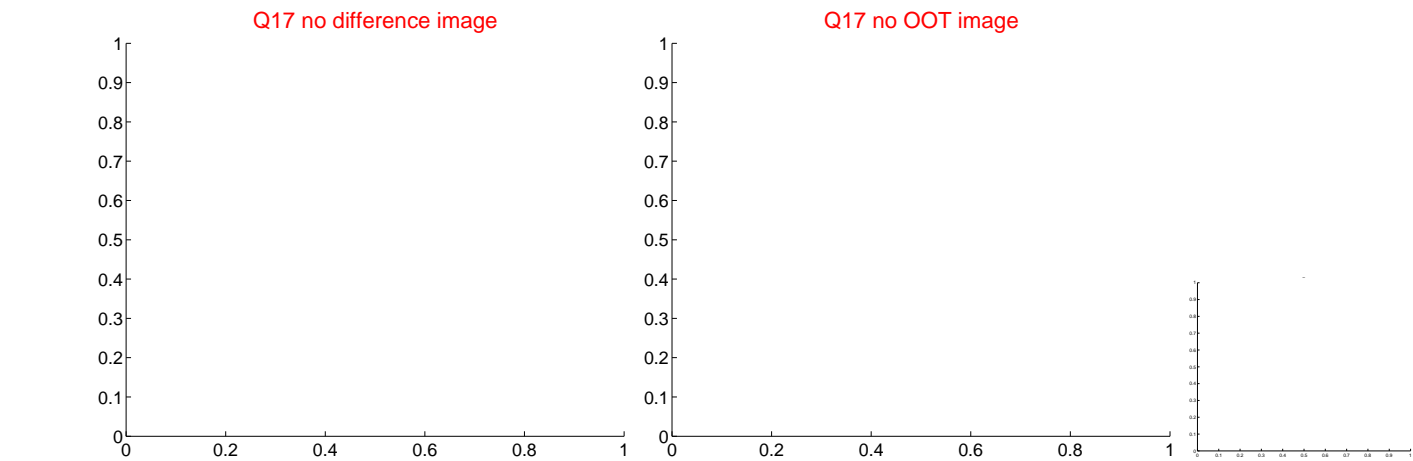
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

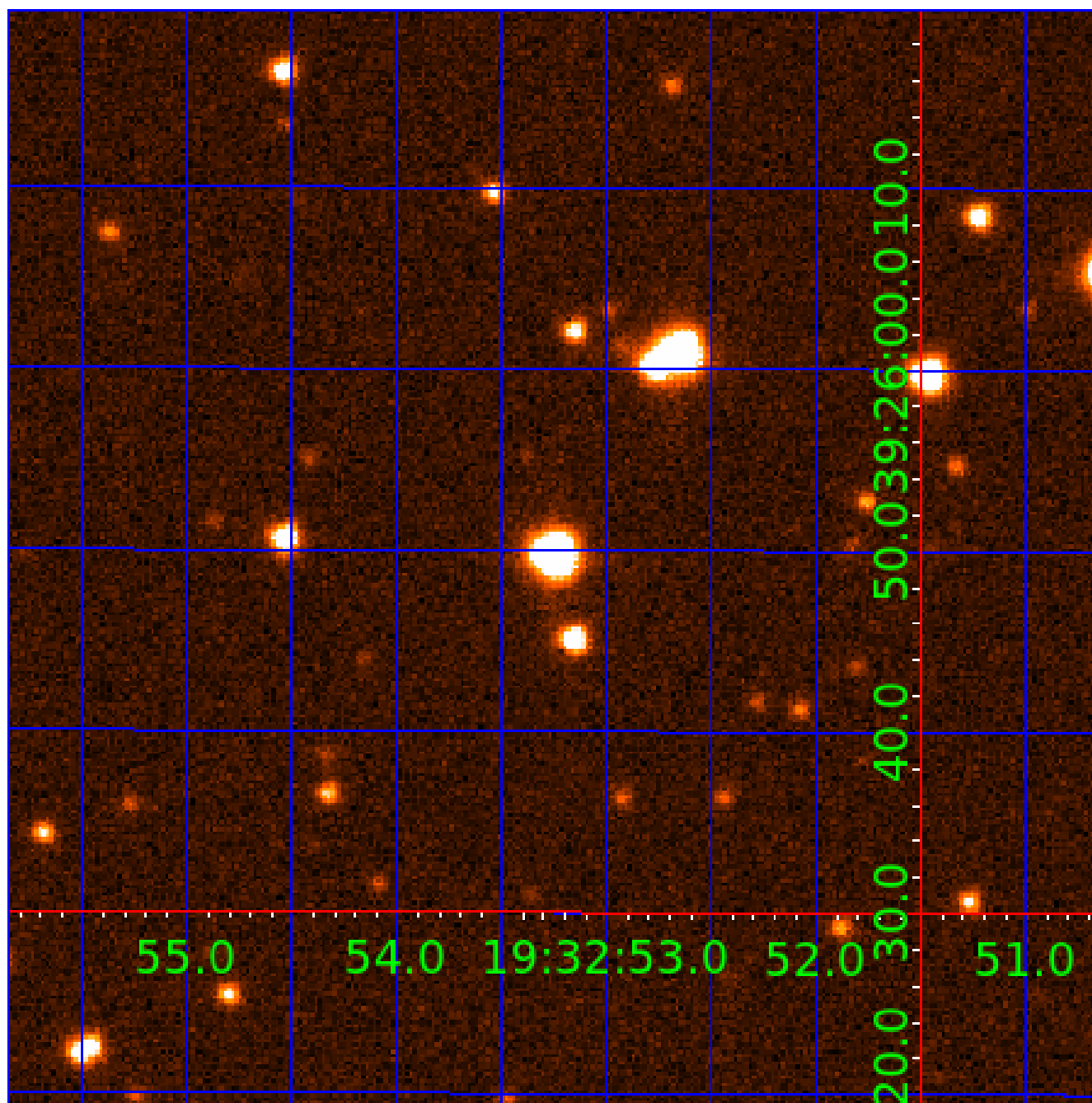


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004371172

Q1-17 DR25 TCE Parameters

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004371172-02	OBS	No	1.277231	131.624422	42.4	1.042	7.5	5.9	1.90	5271	1.26	4711.73

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004371172-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

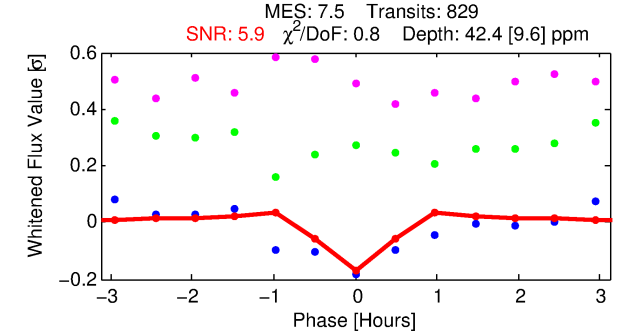
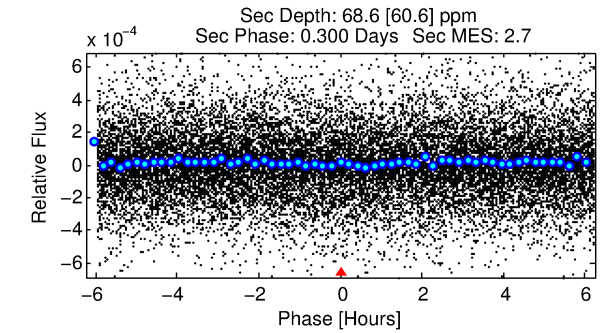
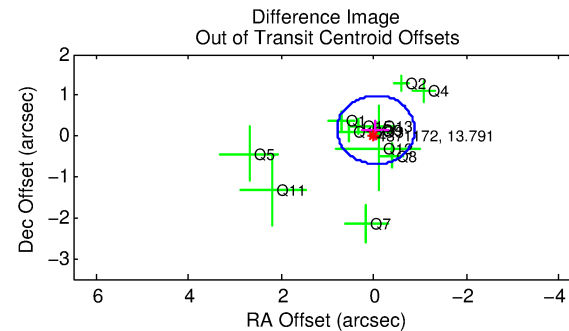
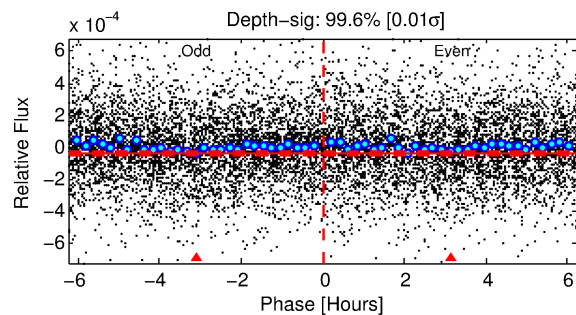
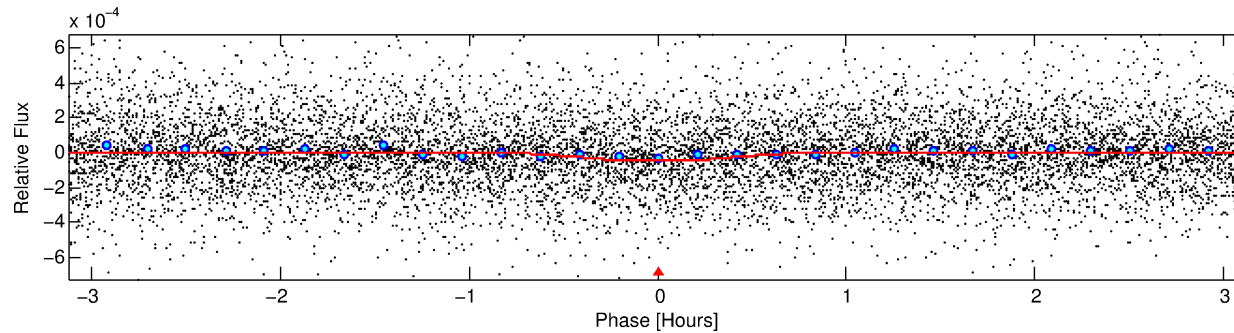
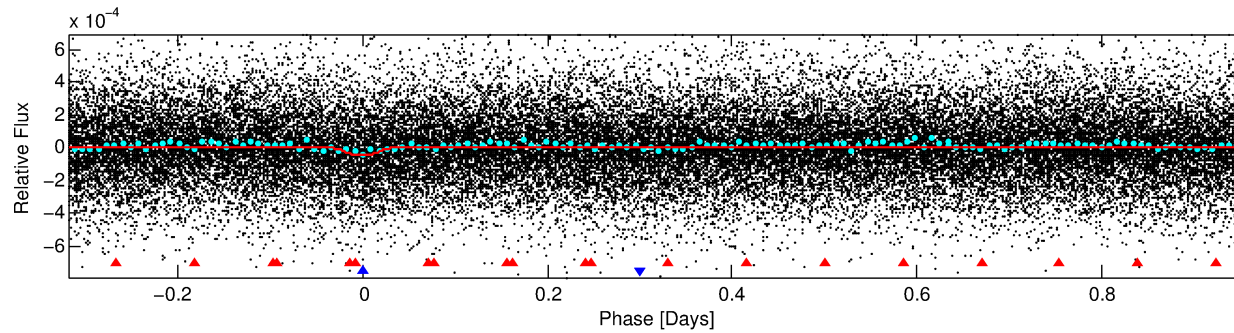
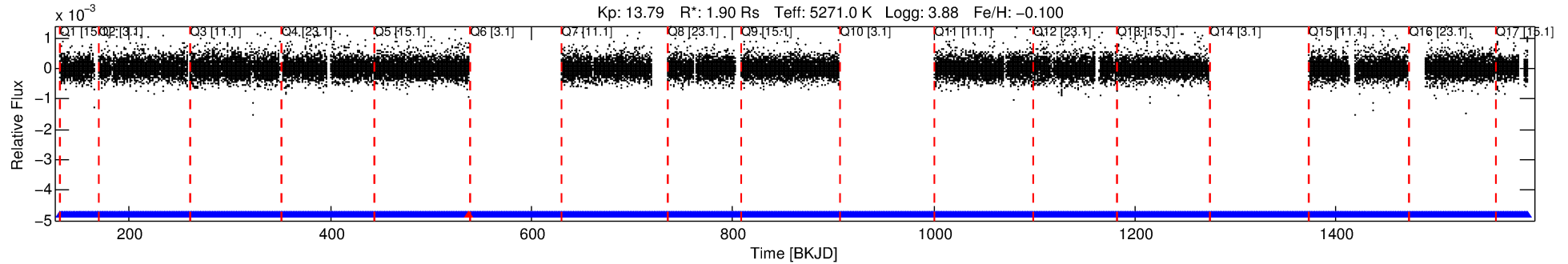
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004371172-02

No Significant Match Found

DV One-Page Summary

KIC: 4371172 Candidate: 2 of 2 Period: 1.277 d



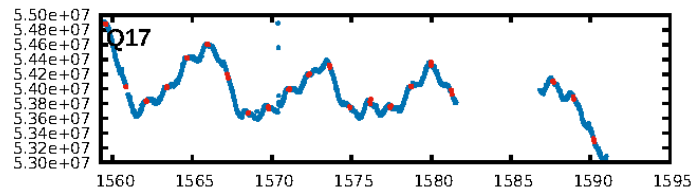
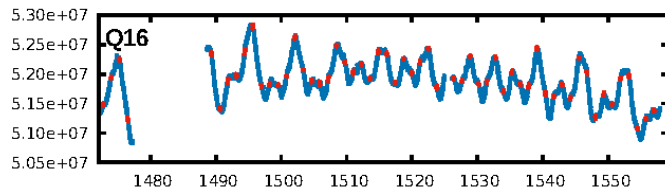
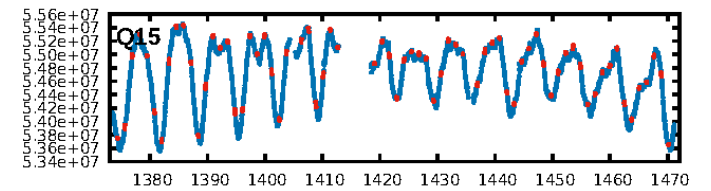
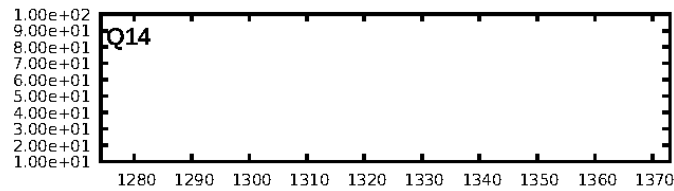
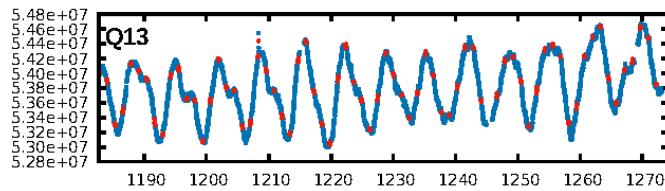
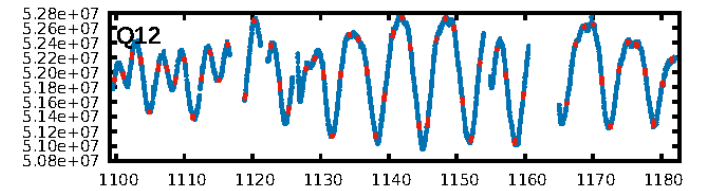
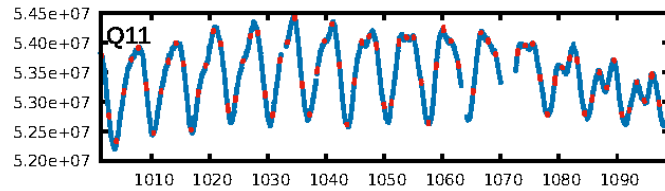
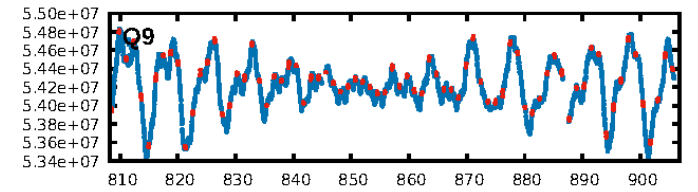
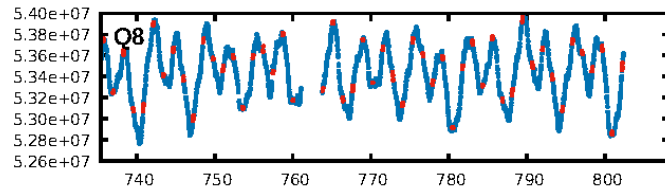
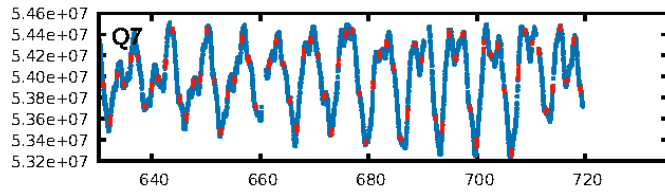
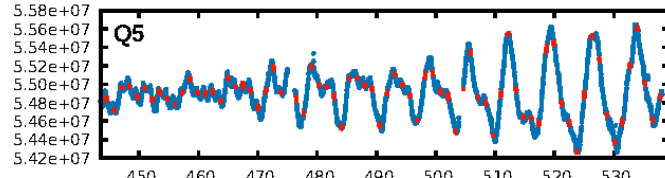
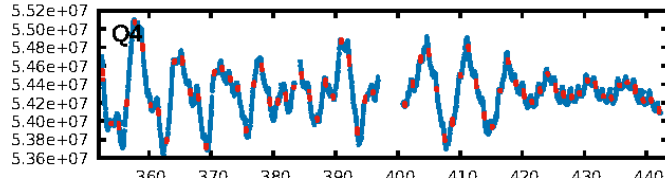
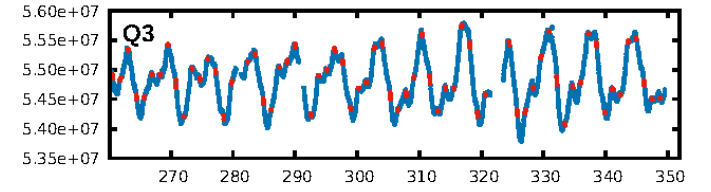
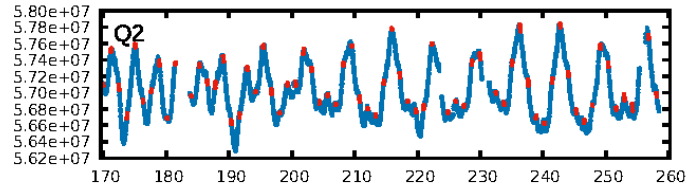
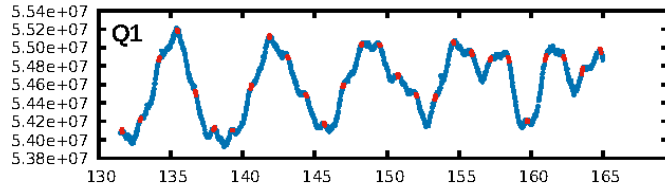
DV Fit Results:

Period = 1.27723 [0.00002] d
Epoch = 131.6244 [0.0026] BKJD
Rp/R* = 0.0061 [0.0059]
a/R* = 8.20 [29.60]
b = 0.50 [5.51]
Seff = 4711.72 [5212.86]
Teq = 2113 [584] K
Rp = 1.26 [1.42] Re
a = 0.0230 [0.0148] AU
Ag = 12.45 [29.64] [0.39 σ]
Teffp = 6136 [3255] K [1.22 σ]

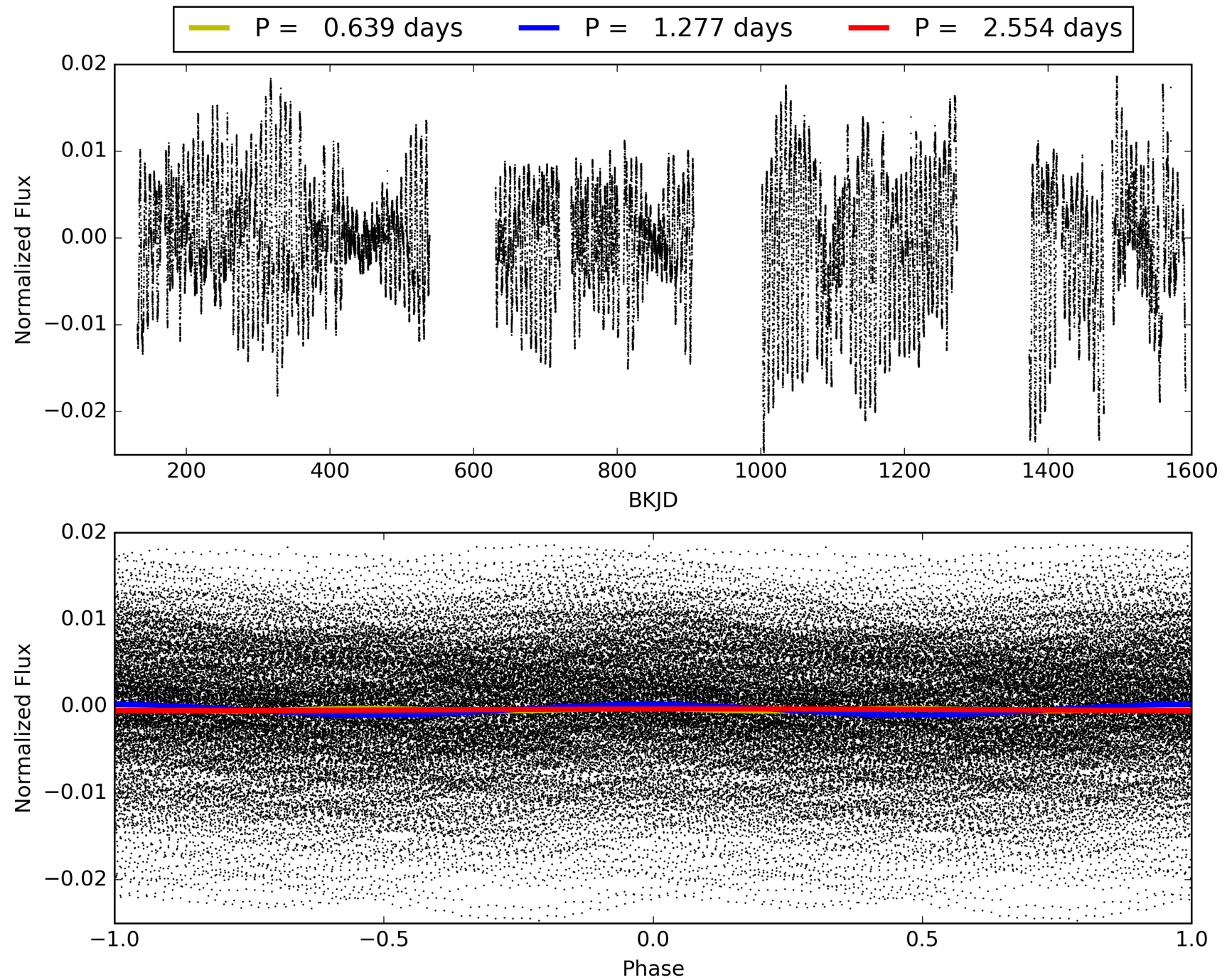
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [272.15 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.96e-13
RollingBand-fgt: 1.00 [781/782]
GhostDiagnostic-chr: -0.1113
Centroid-sig: N/A
Centroid-so: 1.496 arcsec [0.73 σ]
OotOffset-rm: 0.156 arcsec [0.56 σ]
KicOffset-rm: 0.318 arcsec [1.29 σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004371172-02, PDC Light Curves

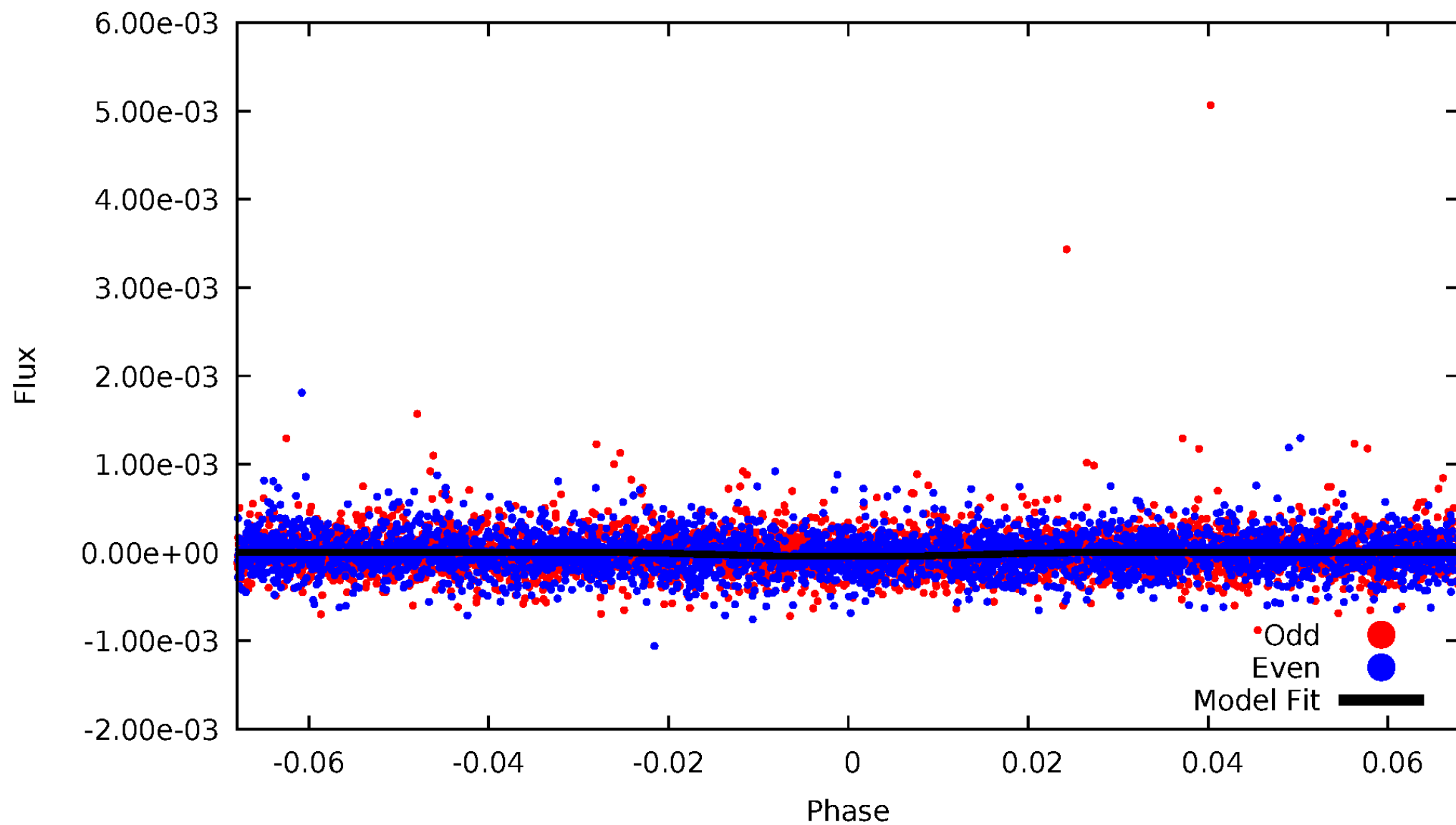


TCE 004371172-02



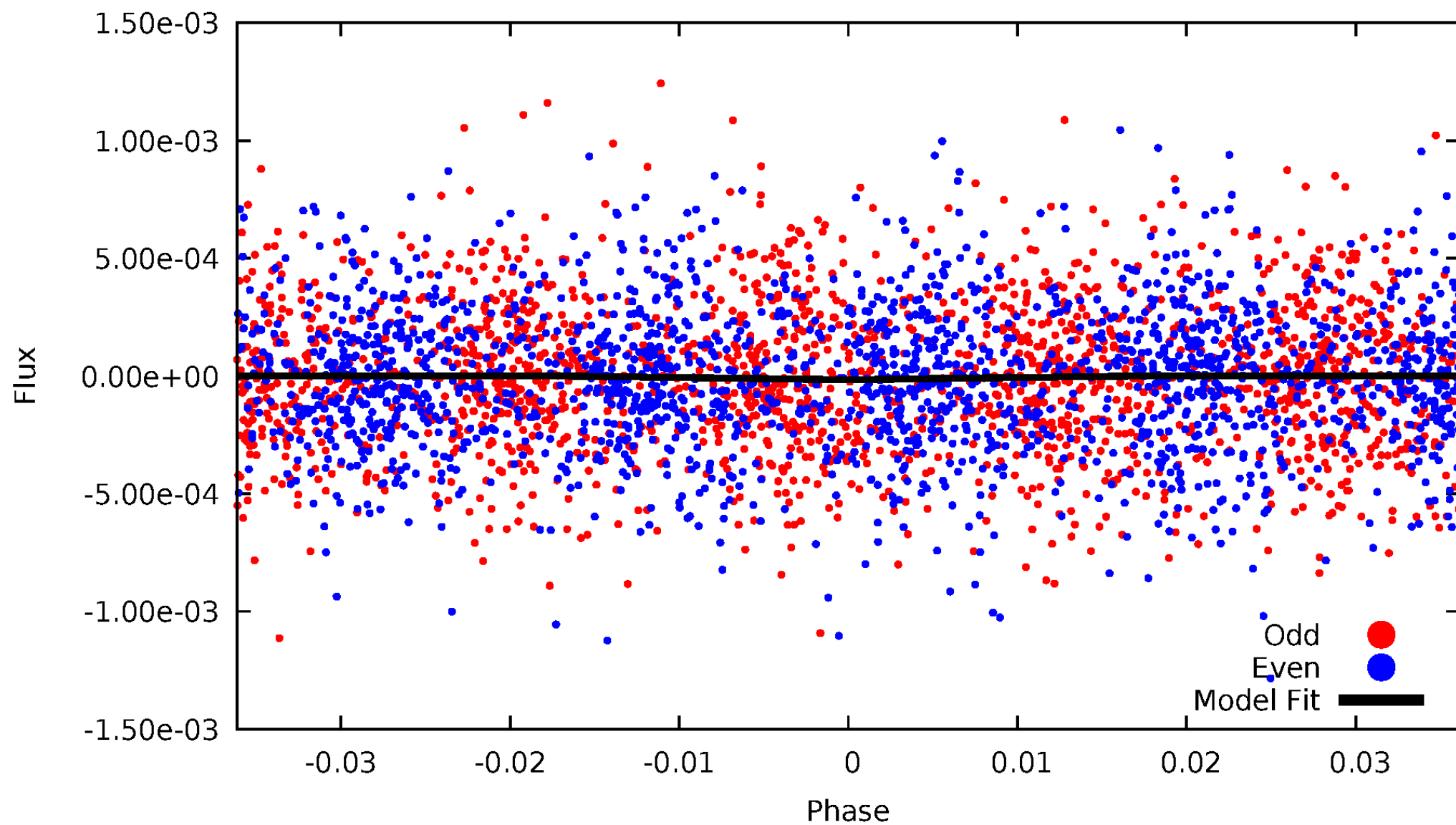
DV Odd/Even

TCE 004371172-02



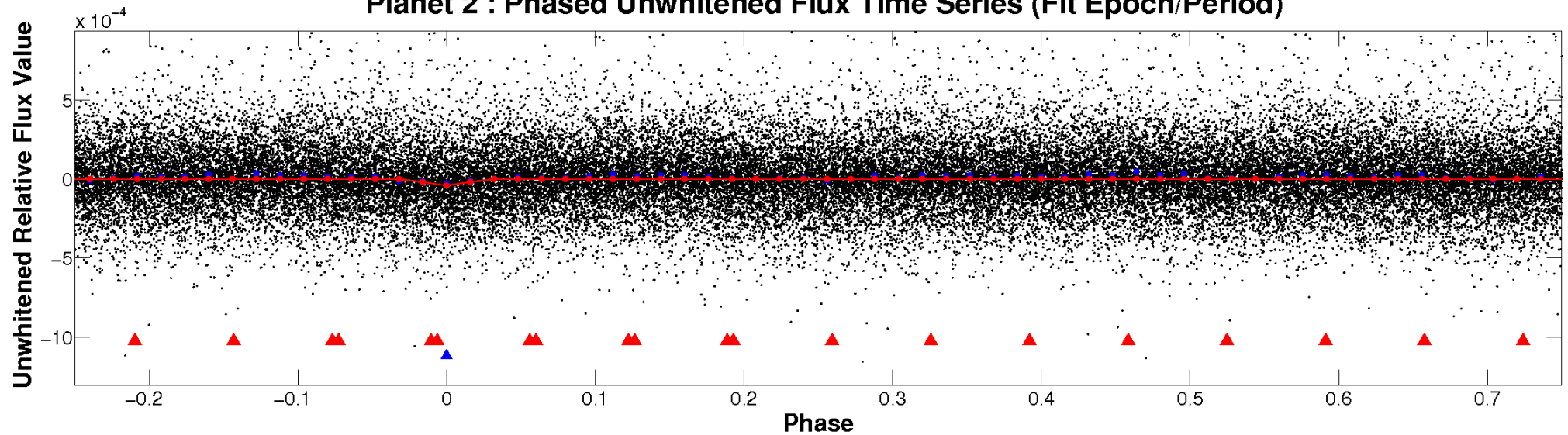
ALT Odd/Even

TCE 004371172-02

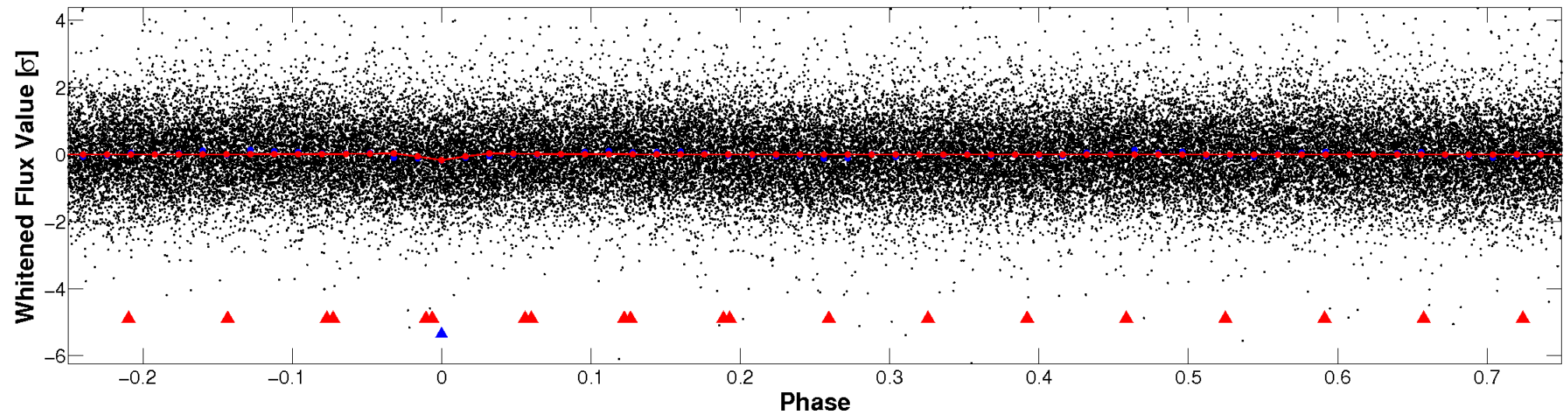


Non-Whitened Vs. Whitened Light Curve

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

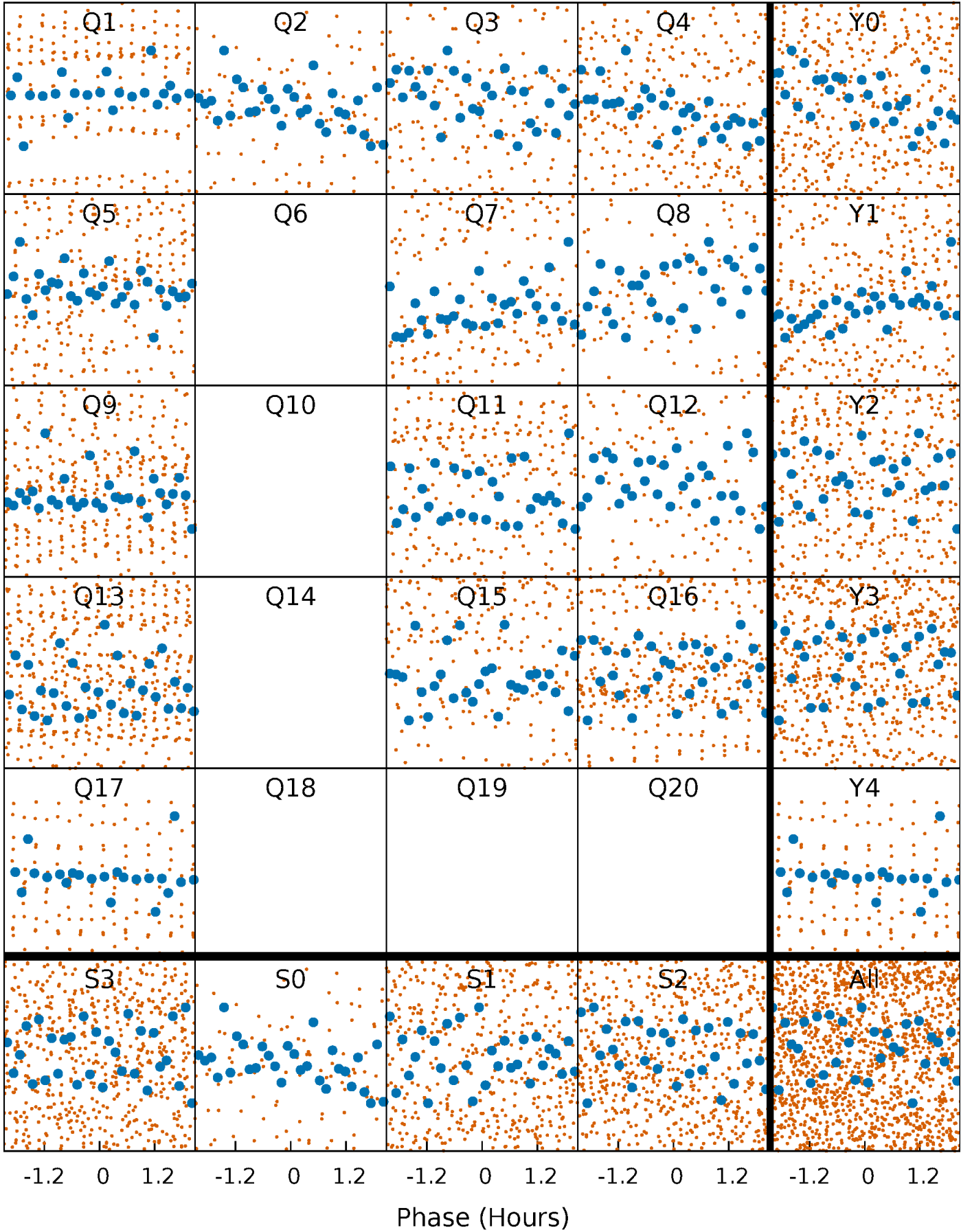


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



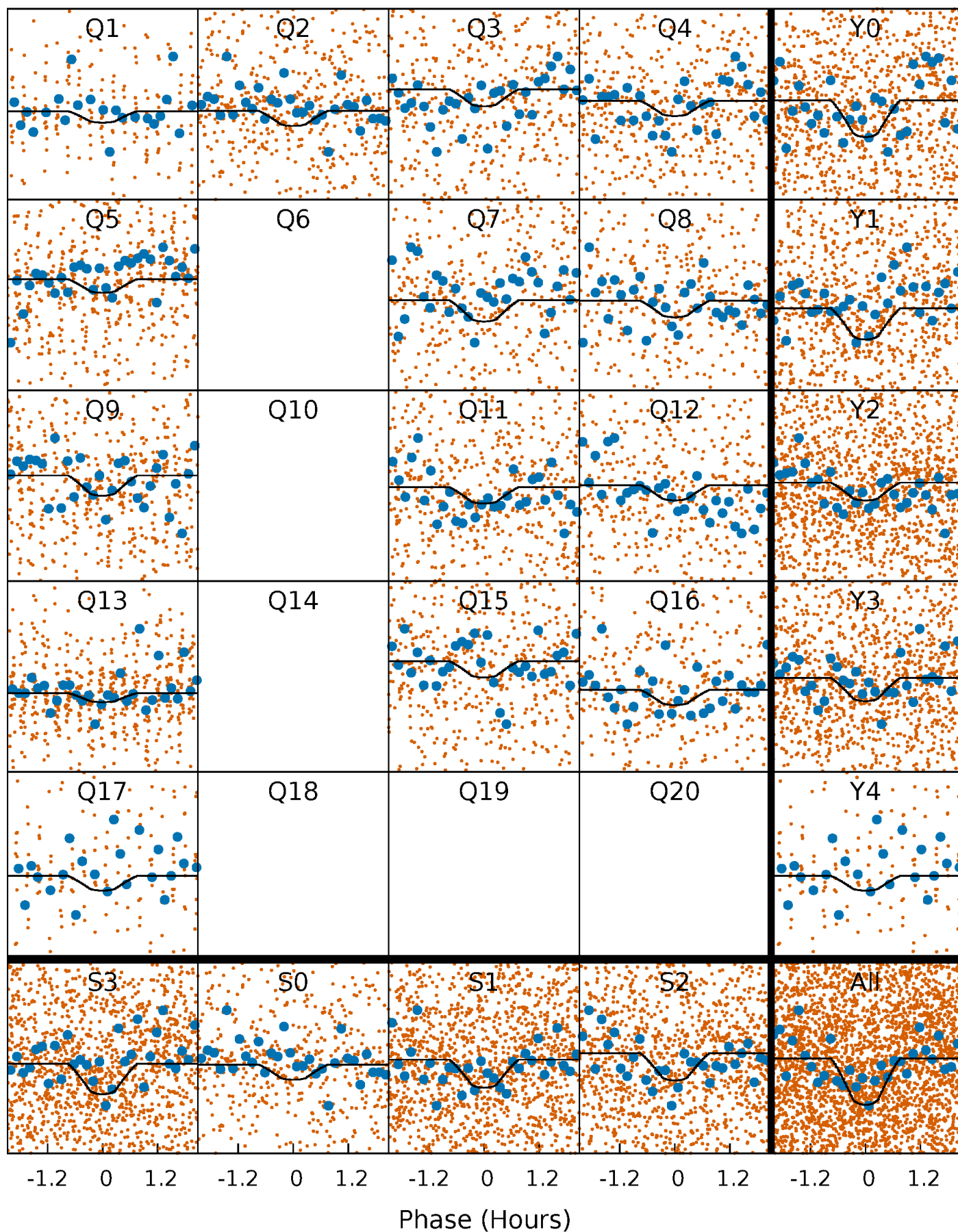
PDC Quarter-Phased Transit Curves

TCE 004371172-02 P= 1.277231 Days $T_0=131.624422$ (BKJD)



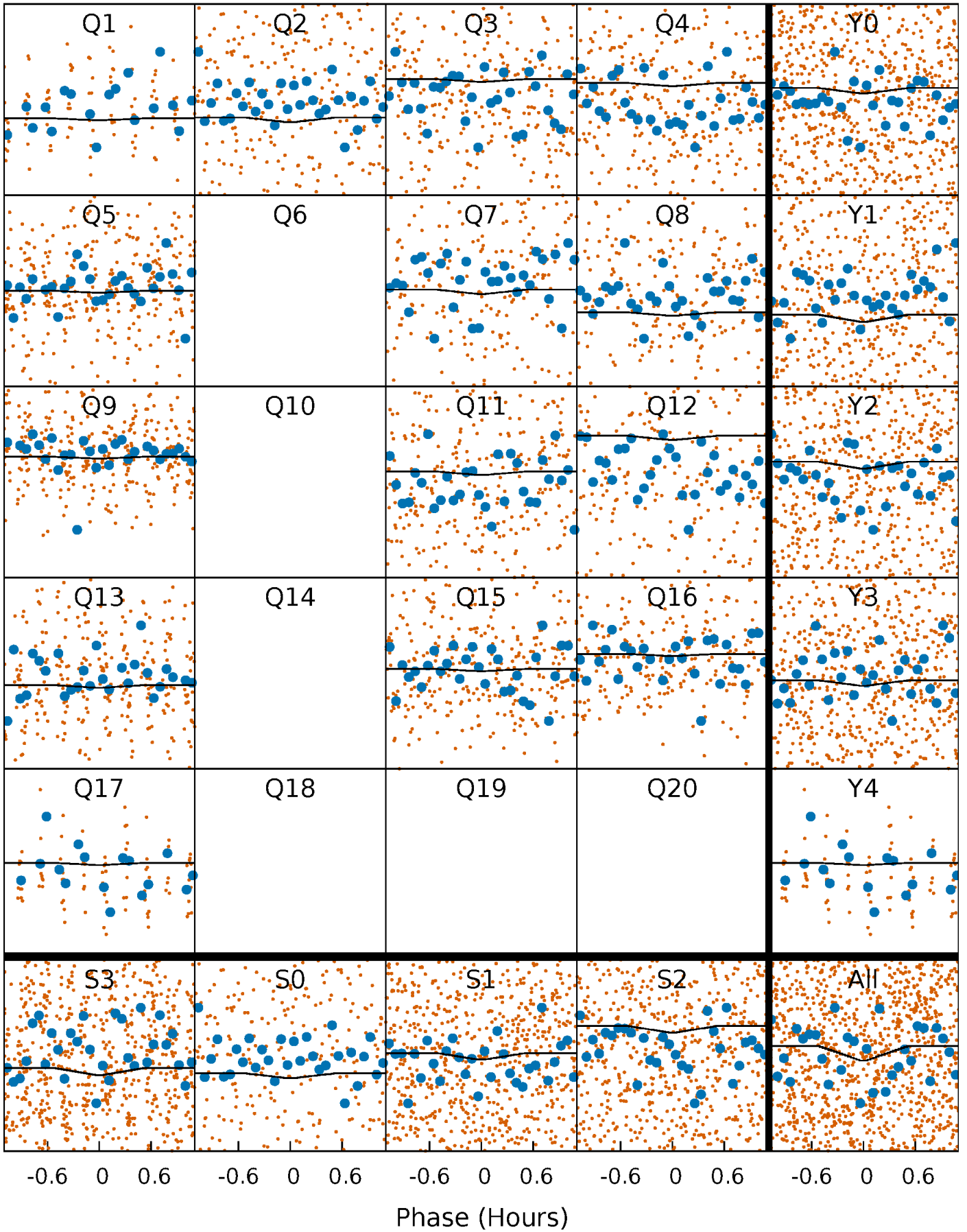
DV Quarter-Phased Transit Curves

TCE 004371172-02 P= 1.277231 Days $T_0=131.624422$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

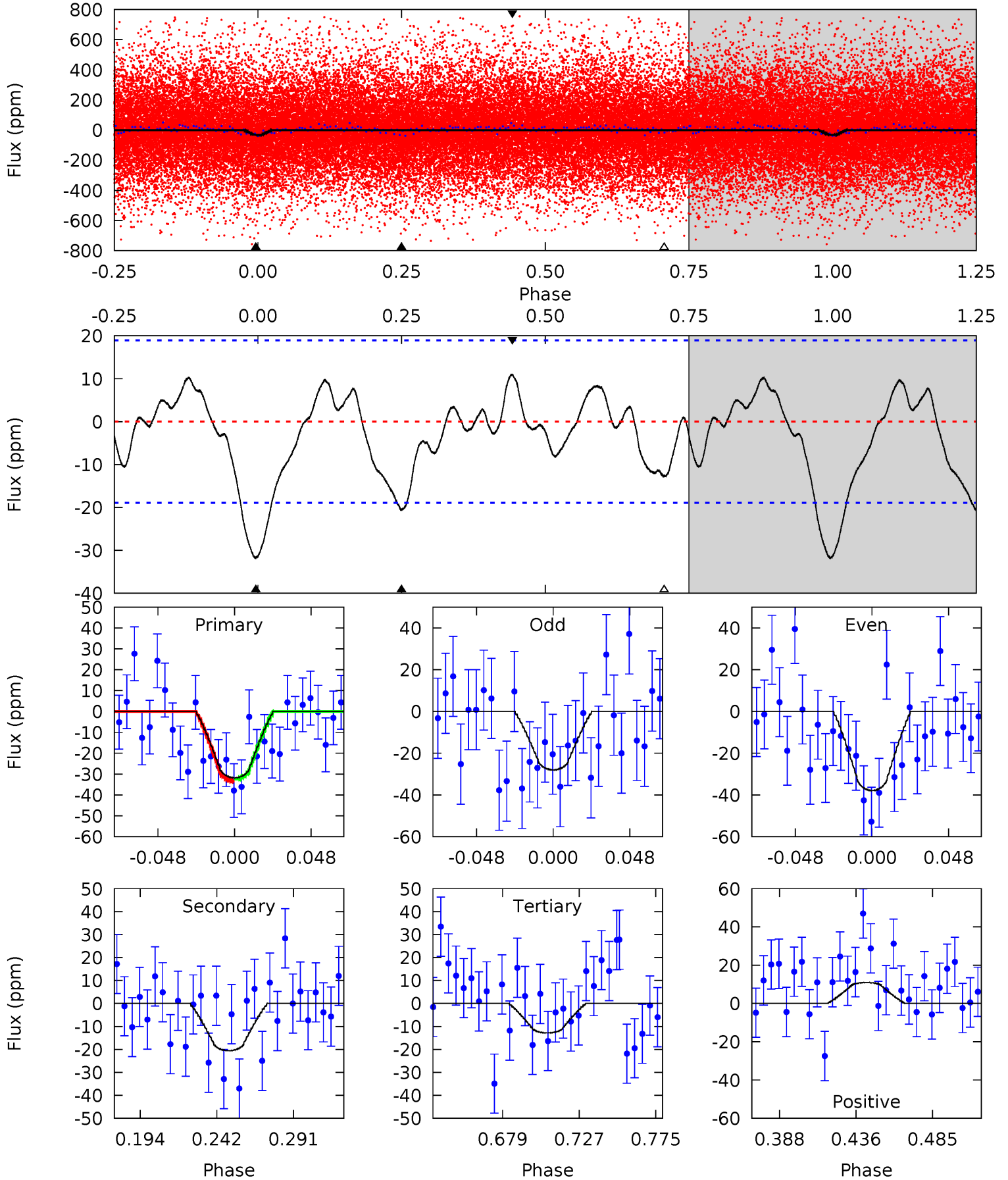
TCE 004371172-02 P= 1.277247 Days $T_0=131.607186$ (BKJD)



DV Model-Shift Uniqueness Test

004371172-02, P = 1.277231 Days, E = 130.347191 Days

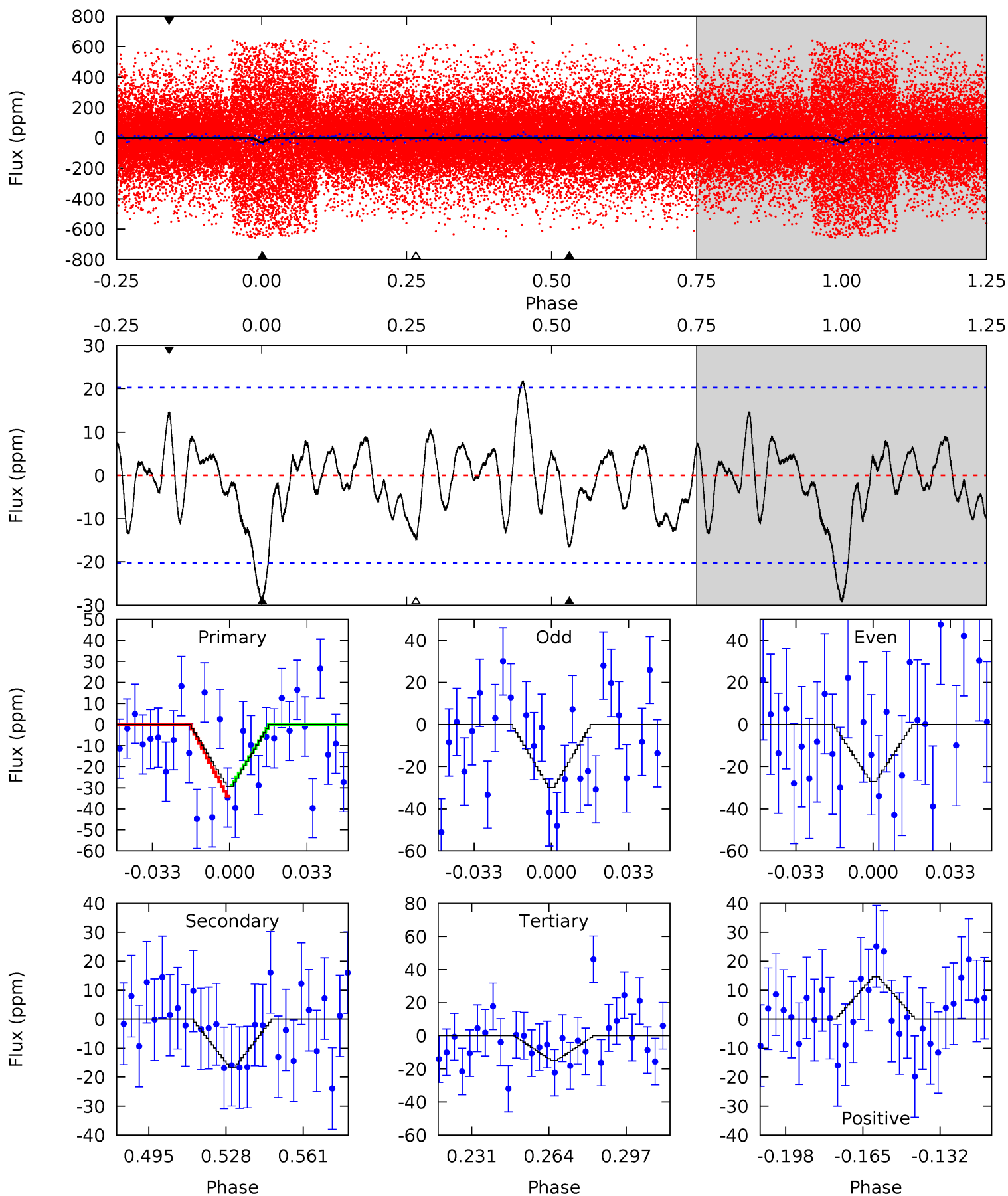
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.92	5.12	3.19	2.73	4.71	1.97	1.43	4.72	5.19	1.93	2.39	1.24	0.84	0.26	0.12



Alt Model-Shift Uniqueness Test

004371172-02, P = 1.277247 Days, E = 130.329939 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.94	3.92	3.53	3.48	4.79	2.13	1.61	3.41	3.46	0.39	0.44	0.33	0.65	0.43	0.61



Stellar Parameters For KIC 004371172

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5271^{+222}_{-167}	$3.878^{+0.665}_{-0.285}$	$-0.100^{+0.300}_{-0.250}$	$1.895^{+0.912}_{-1.114}$	$0.989^{+0.183}_{-0.183}$	$0.205^{+2.003}_{-0.128}$
	+4%/-3%	+17%/-7%	+300%/-250%	+48%/-59%	+19%/-19%	+978%/-63%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004371172-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 4	$1.38^{+1.38}_{-0.90}$	2943^{+401}_{-462}	4305^{+2429}_{-984}	$3.197^{+21.333}_{-2.357}$
Alt.	-17 ± 4	$1.06^{+1.17}_{-0.72}$	2933^{+386}_{-507}	4501^{+3352}_{-1103}	$4.083^{+36.259}_{-3.166}$

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

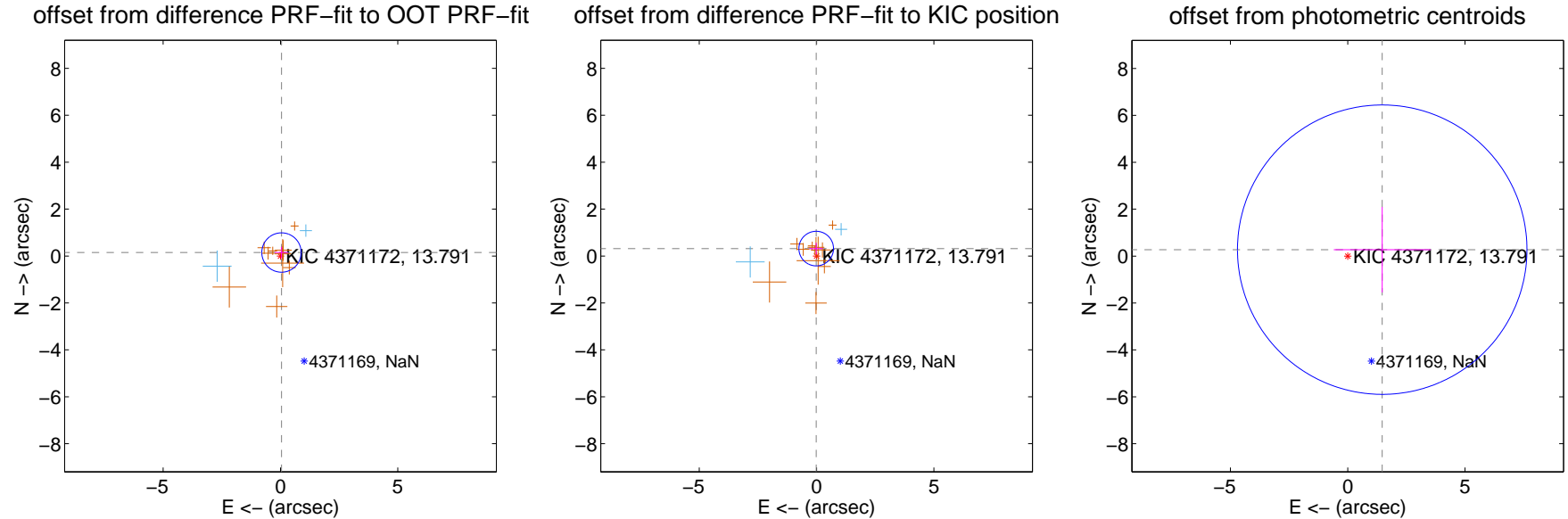
DV Centroid Data

Supplemental centroid analysis for 004371172-02. Kepler magnitude: 13.79. Transit SNR 5.89

There are 2 quarters with good PRF difference image offsets

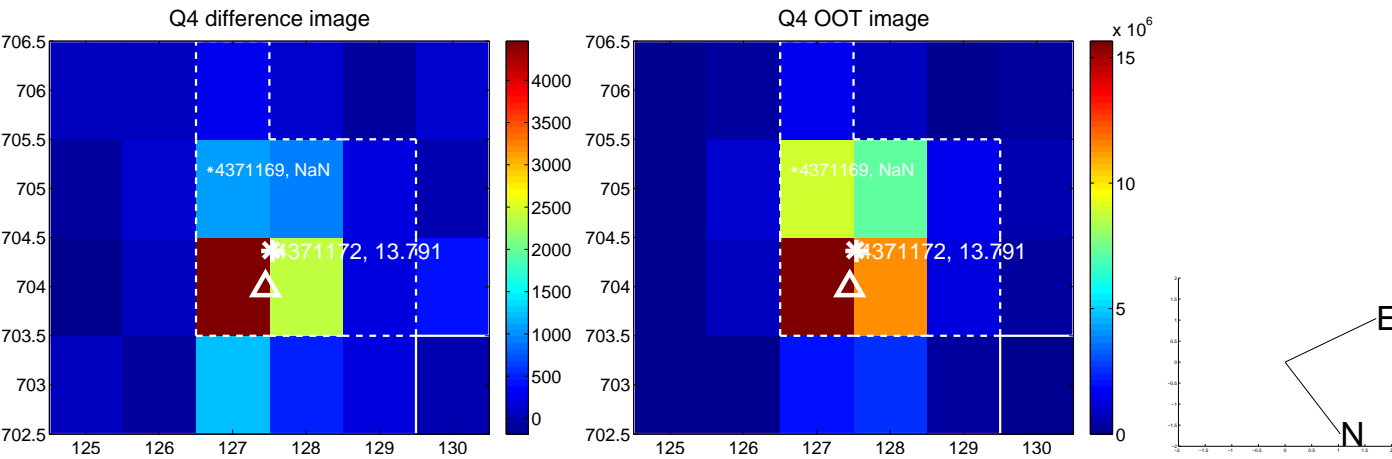
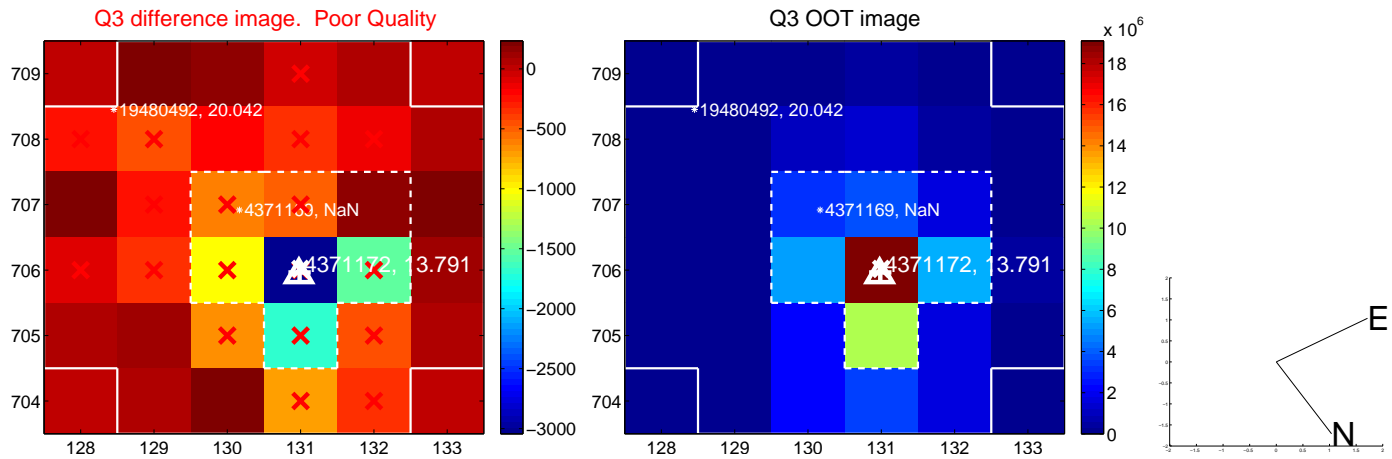
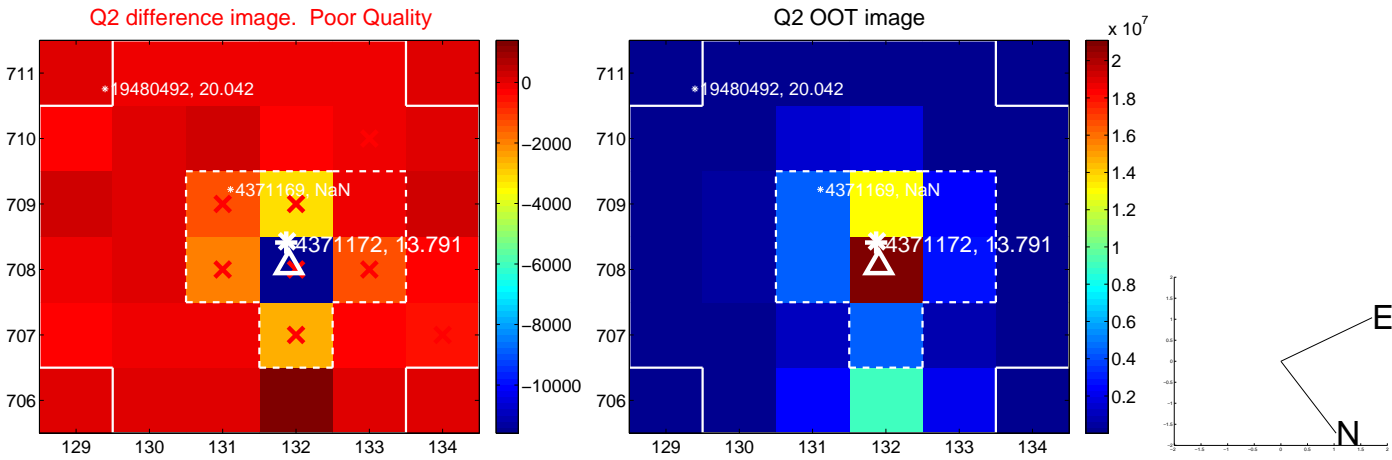
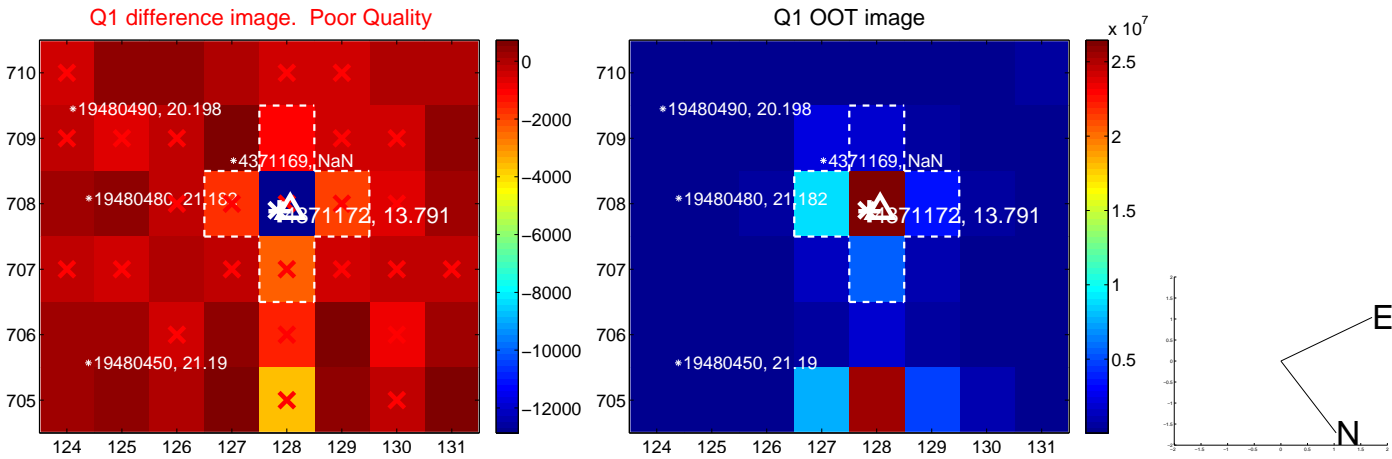
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.156 ± 0.280	0.56	-0.044 ± 0.286	0.150 ± 0.244
PRF-fit source offset from KIC position	0.318 ± 0.246	1.29	0.016 ± 0.285	0.317 ± 0.250
photometric centroid source offset	1.50 ± 2.06	0.73	-1.47 ± 2.06	0.27 ± 1.82

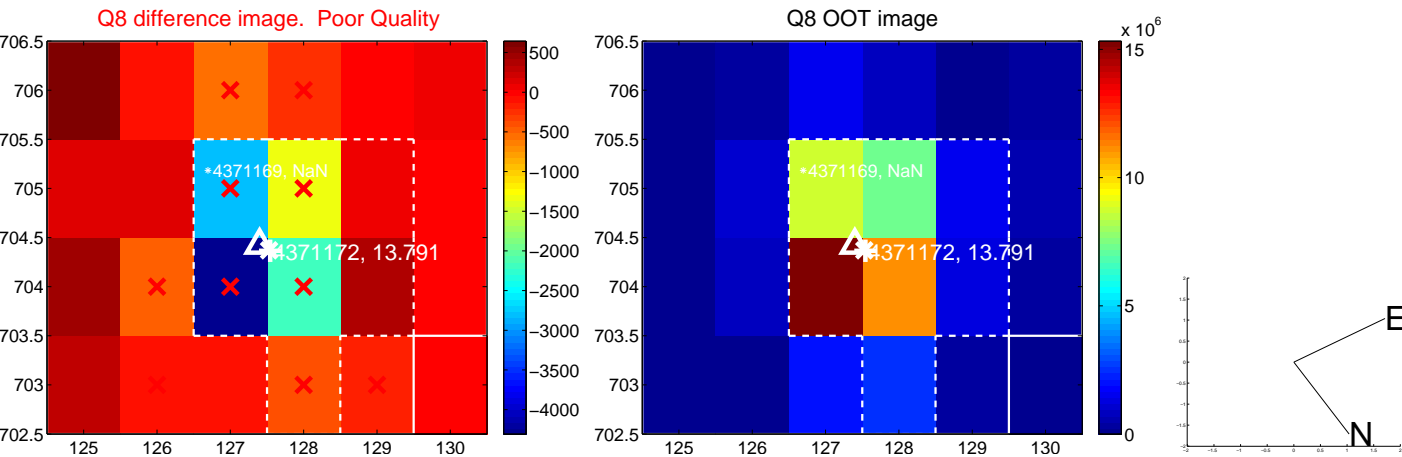
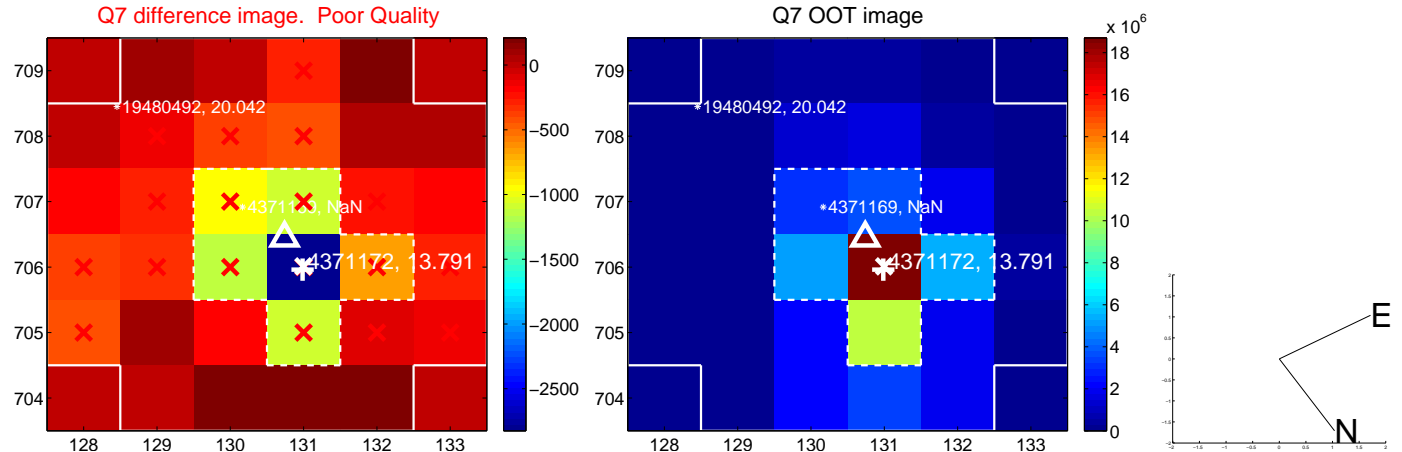
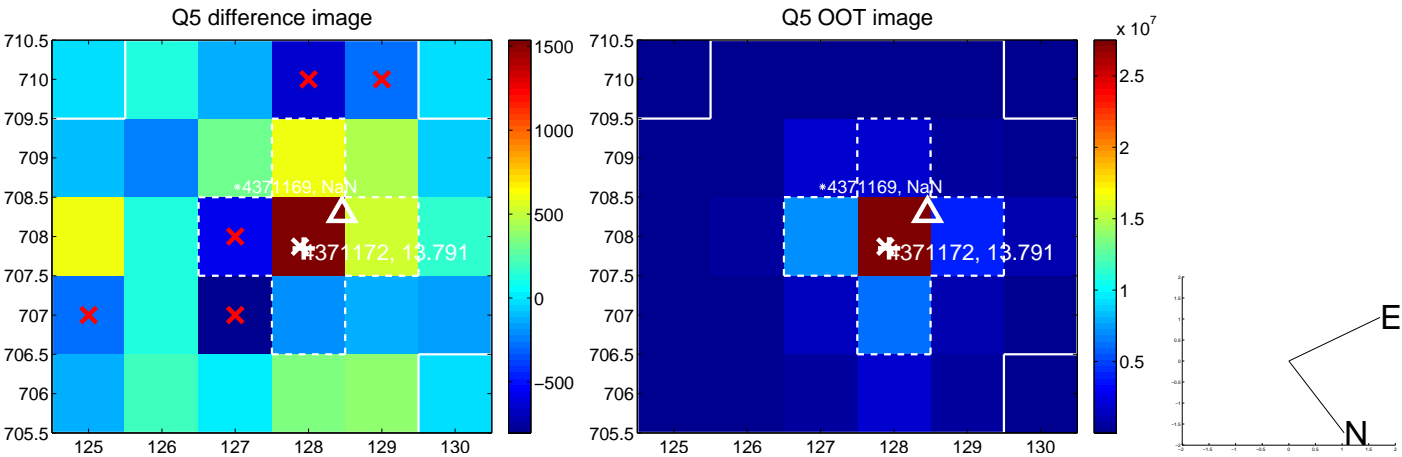


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

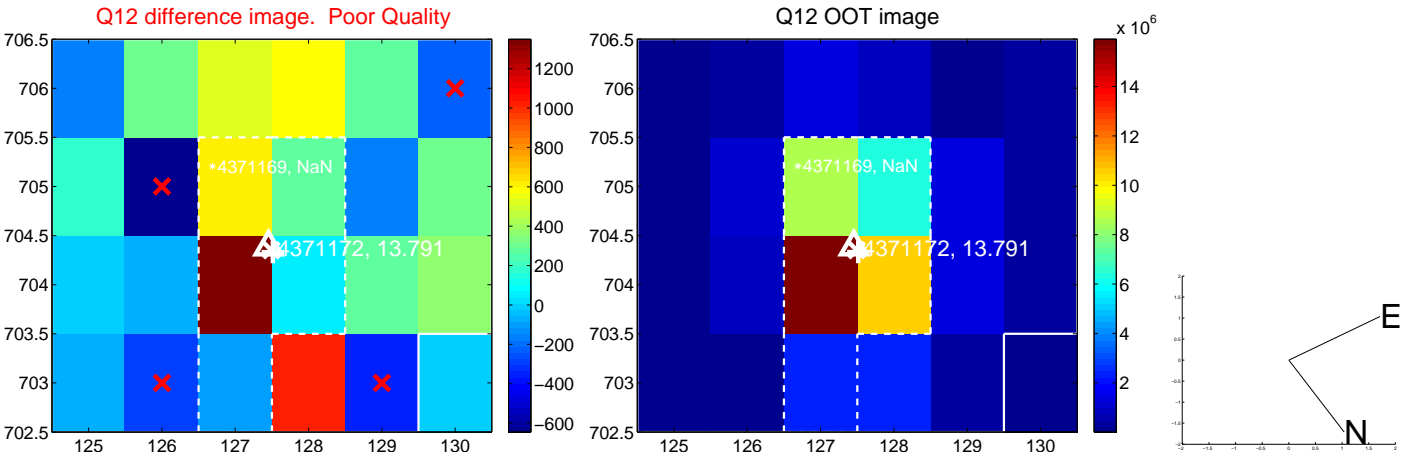
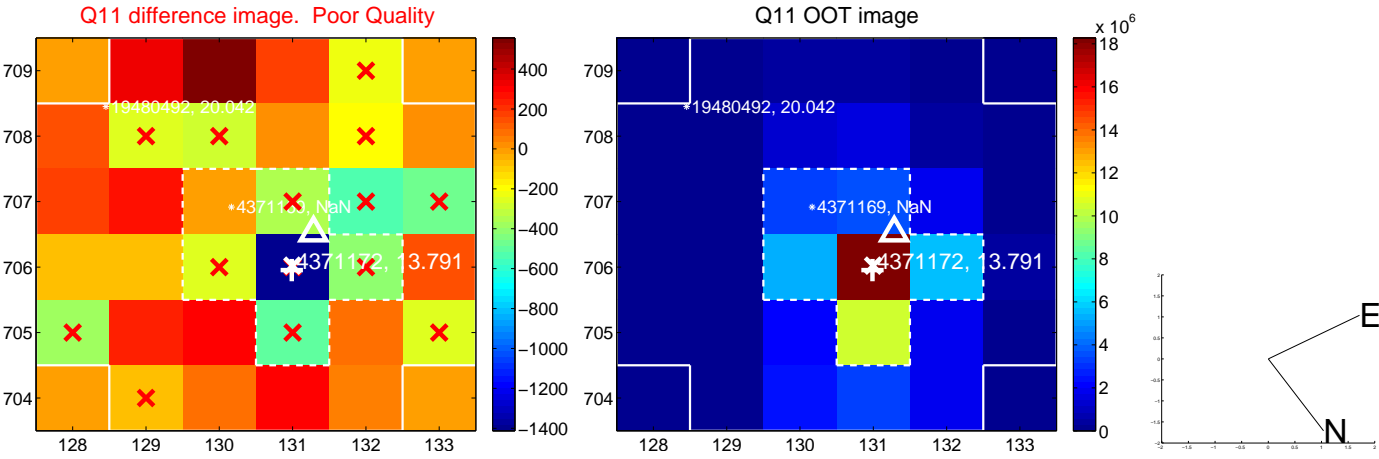
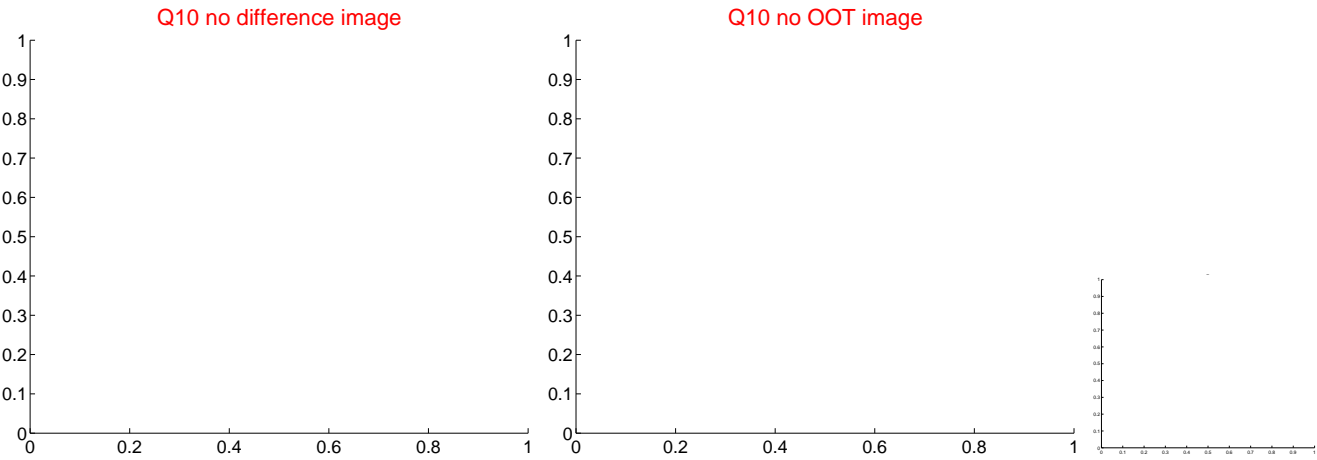
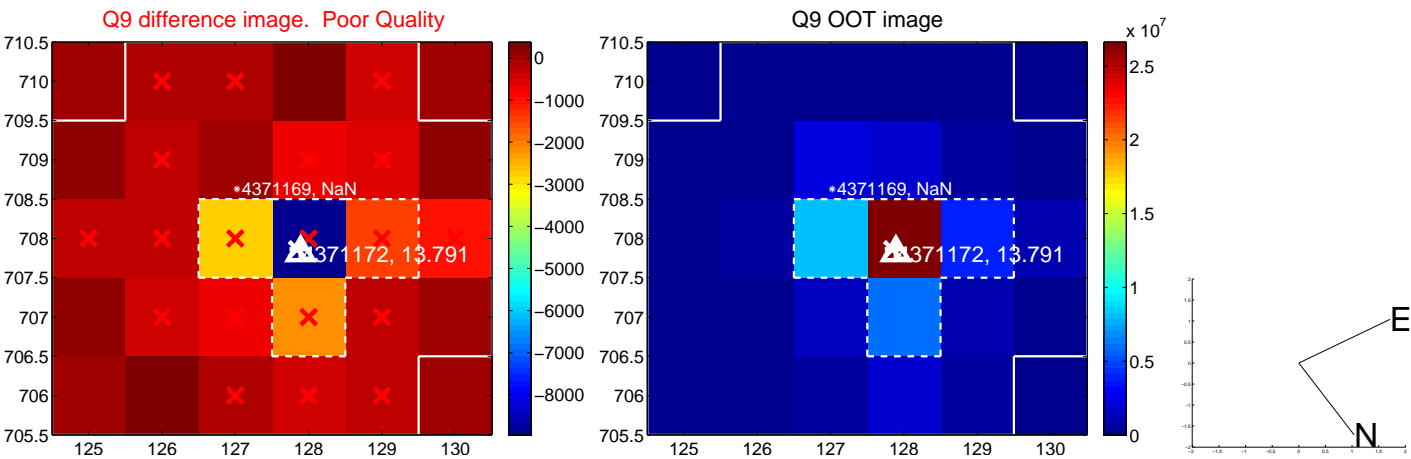
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



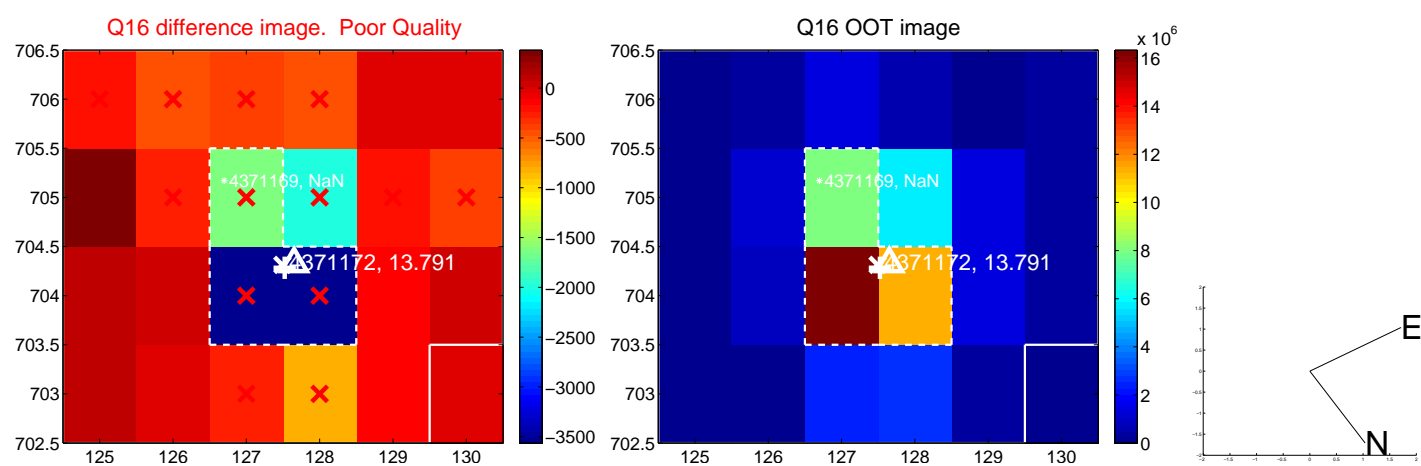
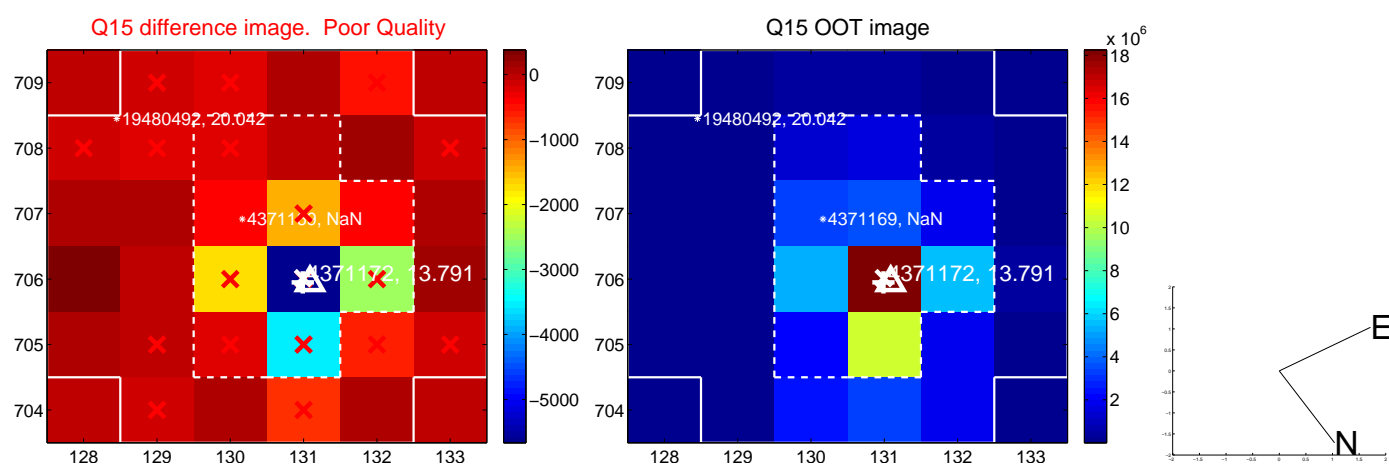
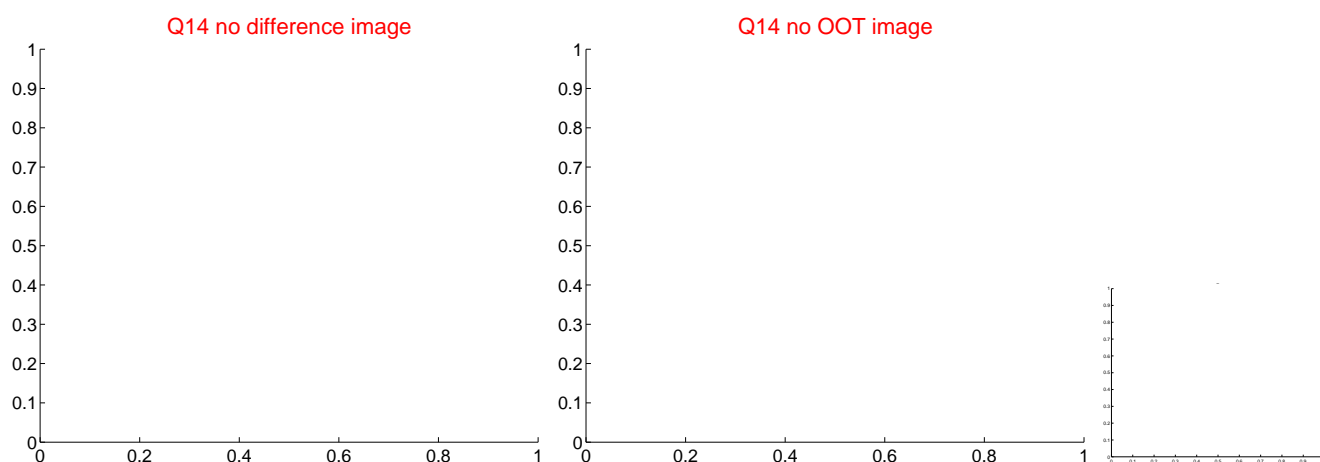
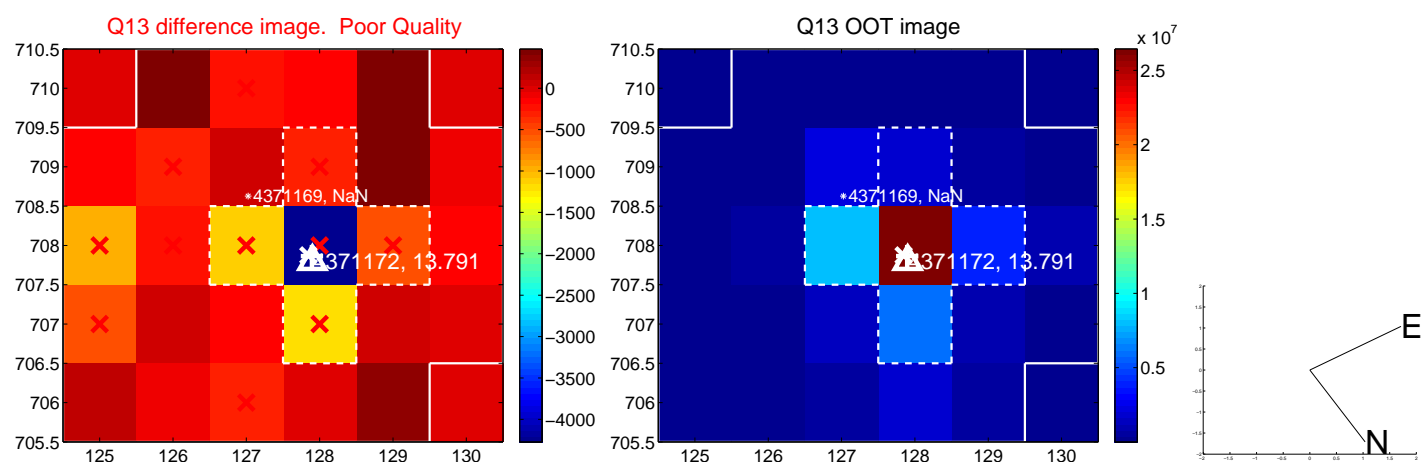
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



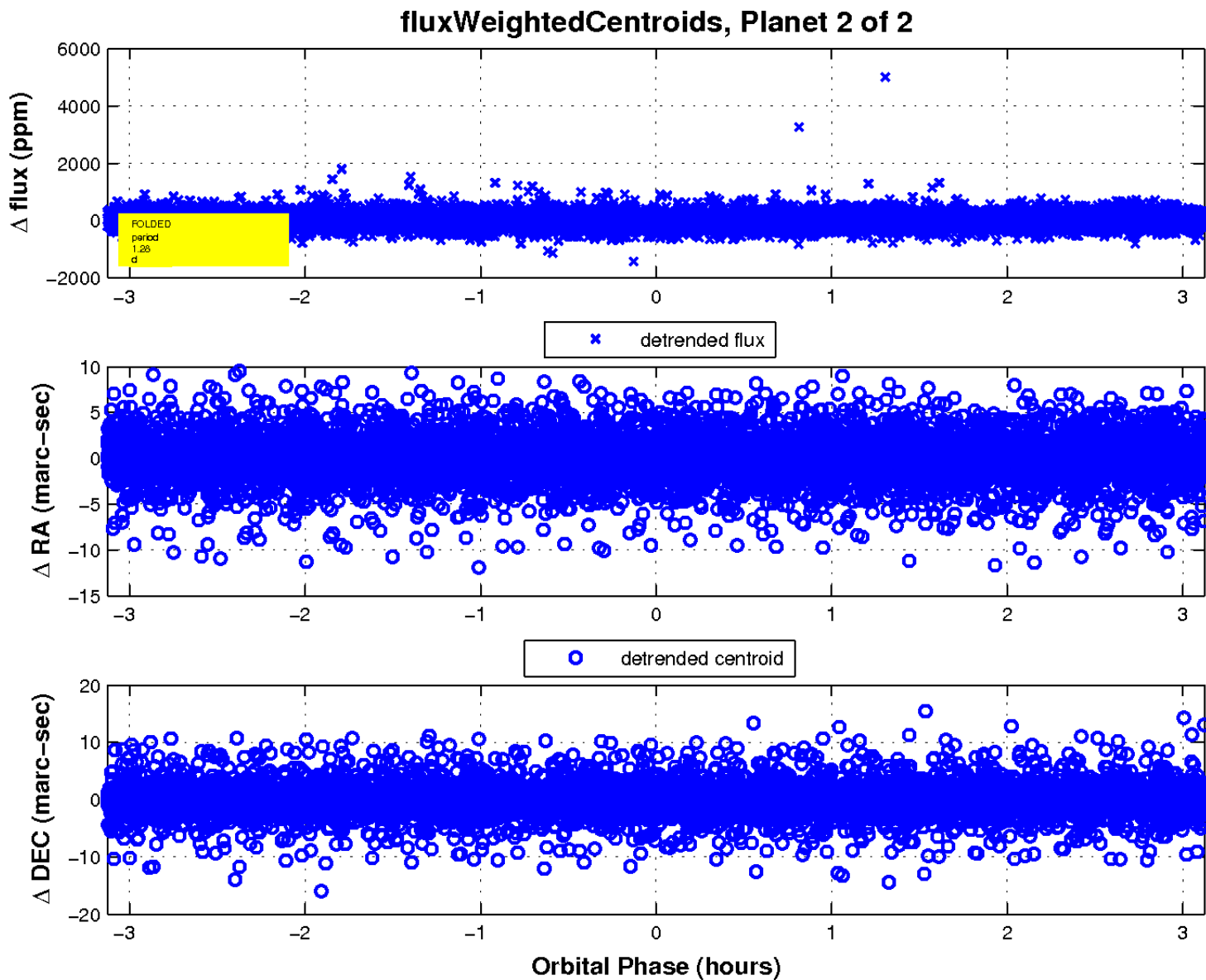
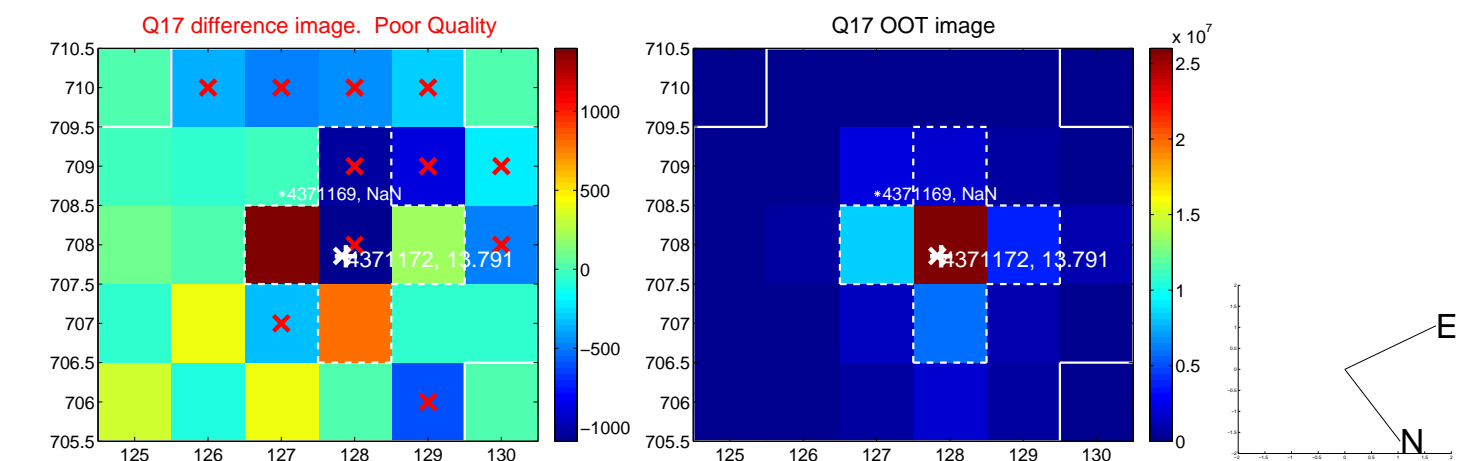
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

