

KIC 010729472

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})
010729472-01	OBS	No	320.140194	259.286223	413.3	15.771	9.4	7.2	0.90	5838	1.95	1.00
010729472-02	OBS	4453.02	0.834419	131.787398	43.7	1.898	7.4	7.3	0.90	5838	0.61	2796.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010729472-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010729472-02	OBS	FP	0.14	0	1	0	0	MOD_SEC_DV—CENT_FEW_DIFFS

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.

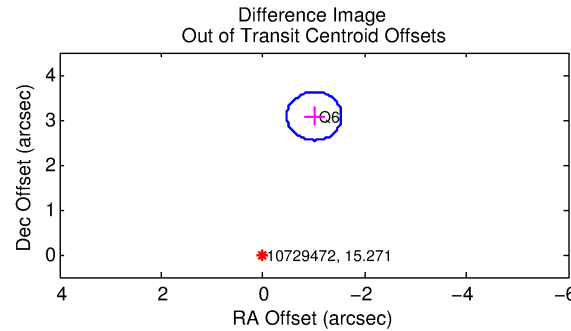
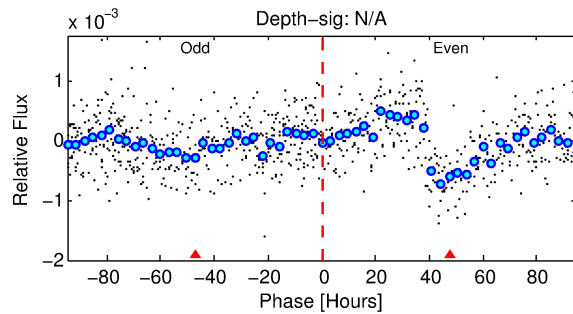
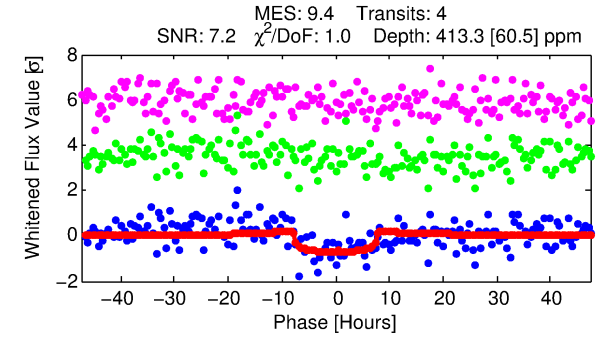
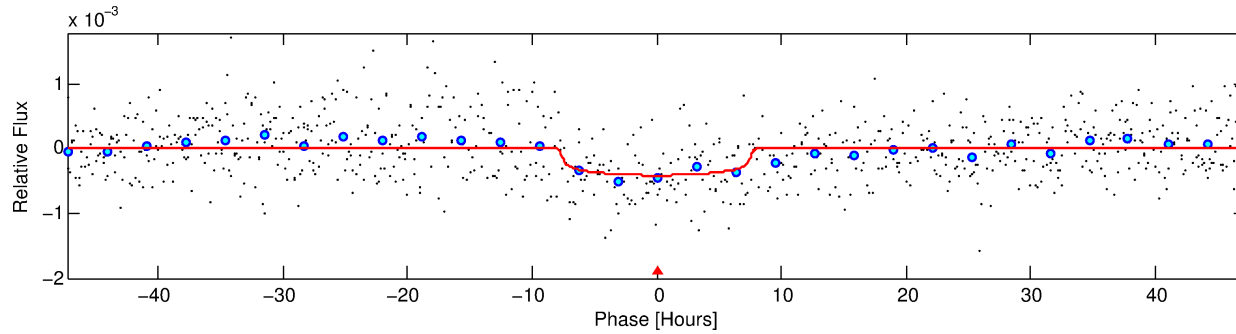
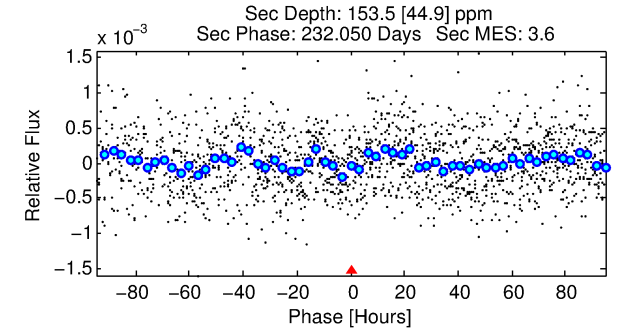
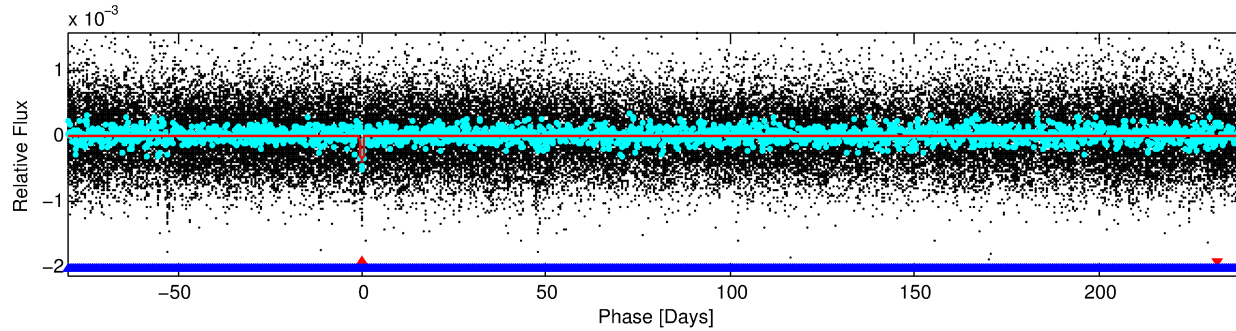
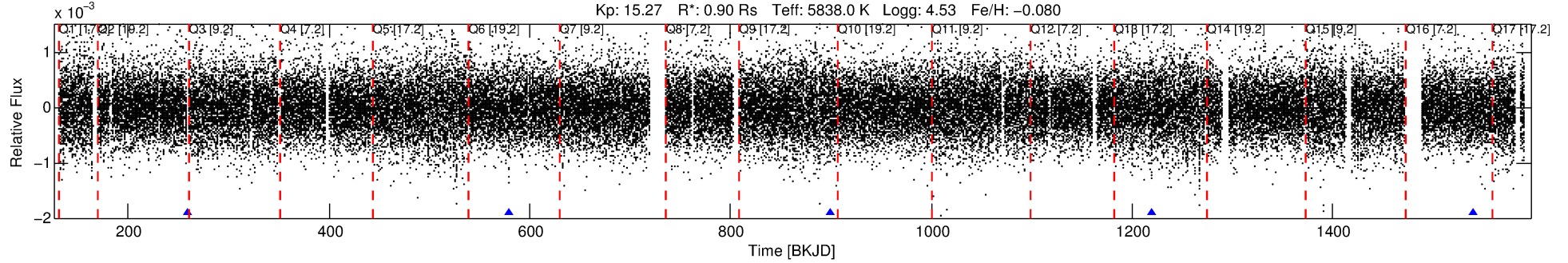
Ephemeris Match Information For 010729472-01

No Significant Match Found

DV One-Page Summary

KIC: 10729472 Candidate: 1 of 2 Period: 320.140 d
KOI: K04453 Corr: No Ephemeris Match

Kp: 15.27 R*: 0.90 Rs Teff: 5838.0 K Logg: 4.53 Fe/H: -0.080



DV Fit Results:

Period = 320.14019 [0.01221] d
Epoch = 259.2862 [0.0348] BKJD
Rp/R* = 0.0199 [0.0091]
a/R* = 113.81 [232.68]
b = 0.71 [1.45]
Seff = 1.00 [0.34]
Teq = 255 [22] K
Rp = 1.95 [1.02] Re
a = 0.9137 [0.1996] AU
Ag = 18506.42 [18692.70] [0.99σ]
Teff = 4602 [1111] K [3.91σ]

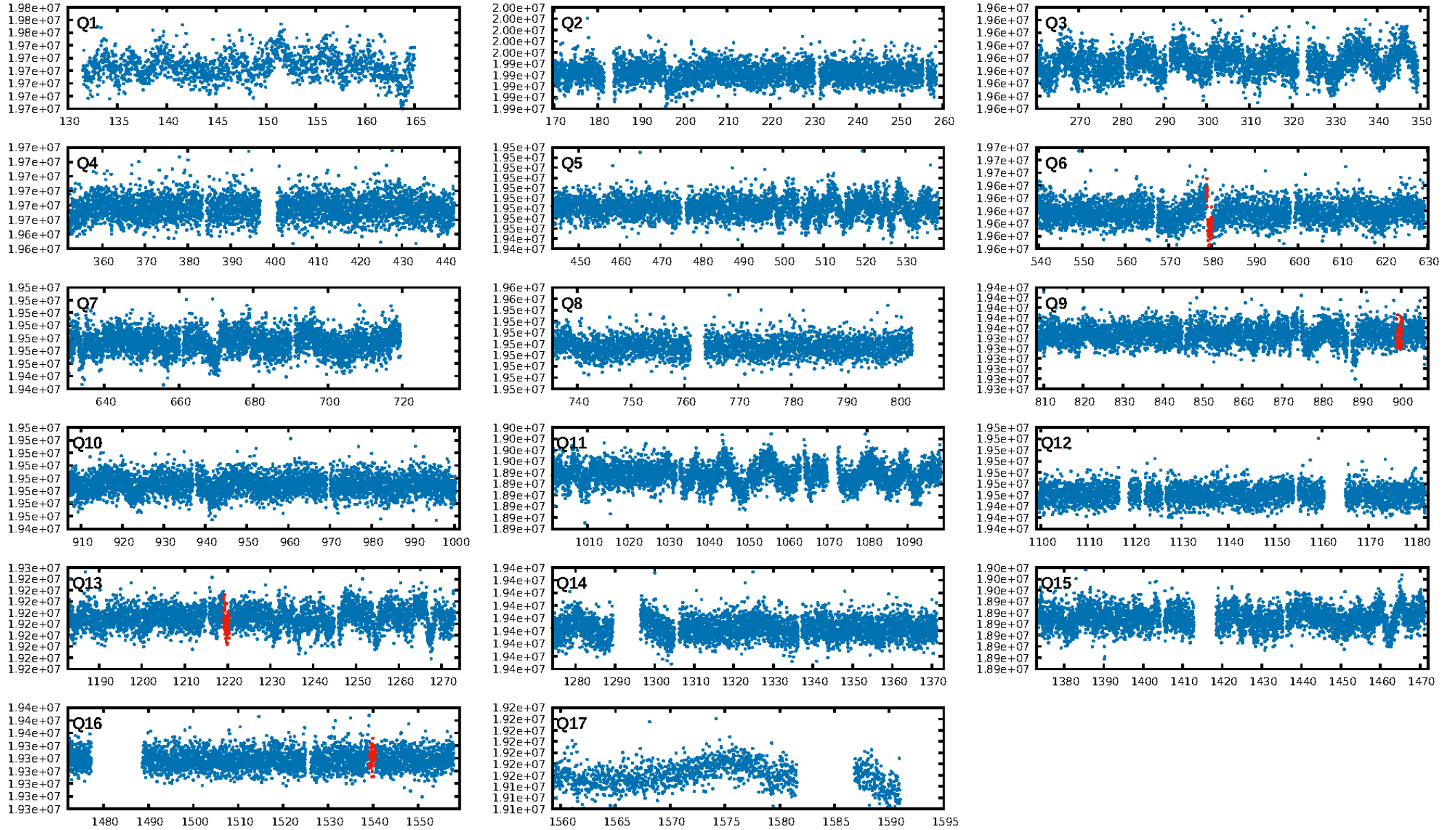
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [482.43σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 99.7%
Bootstrap-pfa: 2.45e-16
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.2
Centroid-sig: 0.2%
Centroid-so: 4.501 arcsec [2.15σ]
OotOffset-rm: 3.241 arcsec [18.04σ]
KicOffset-rm: 3.203 arcsec [17.85σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/3]

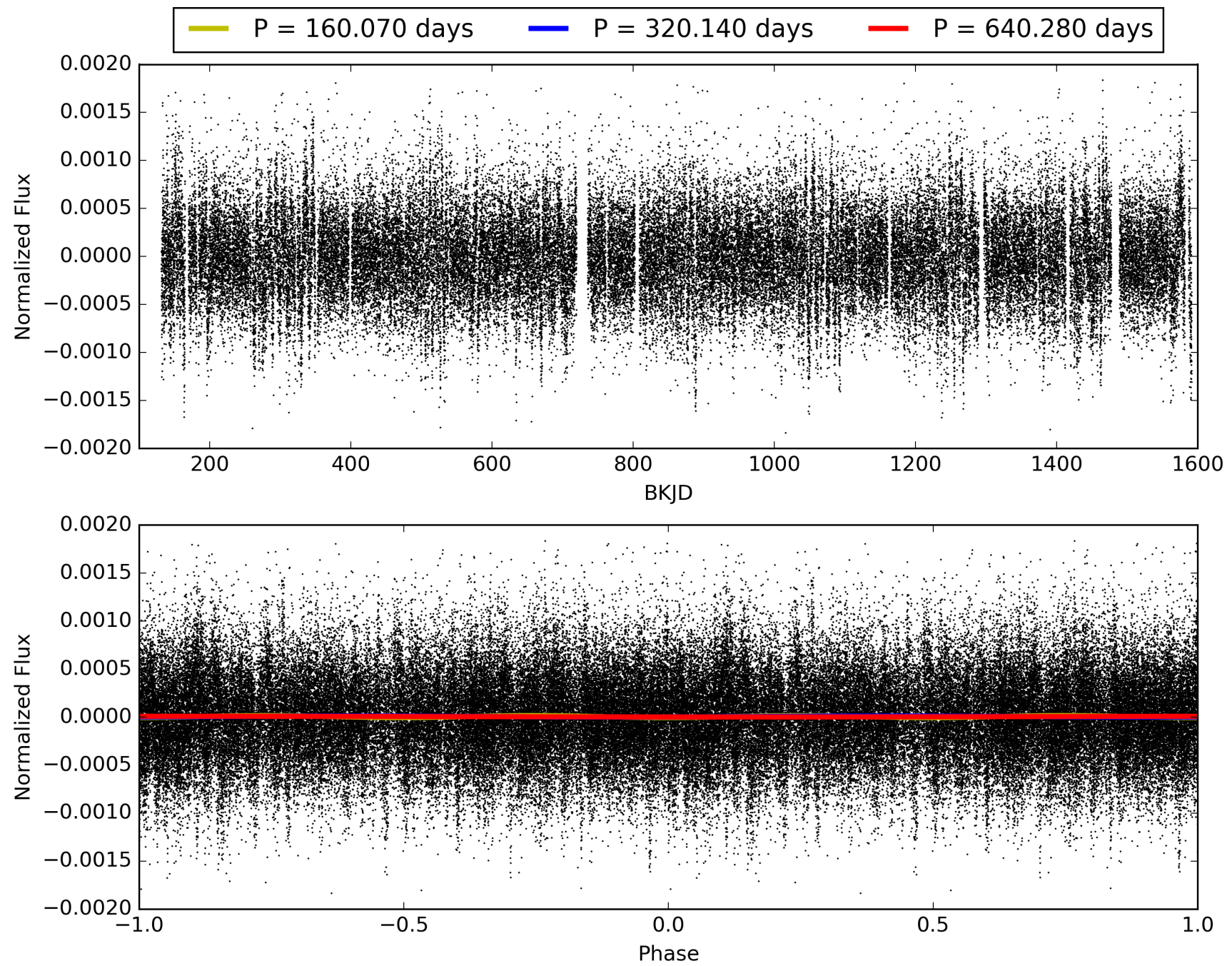
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:23:13 Z

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

TCE 010729472-01, PDC Light Curves

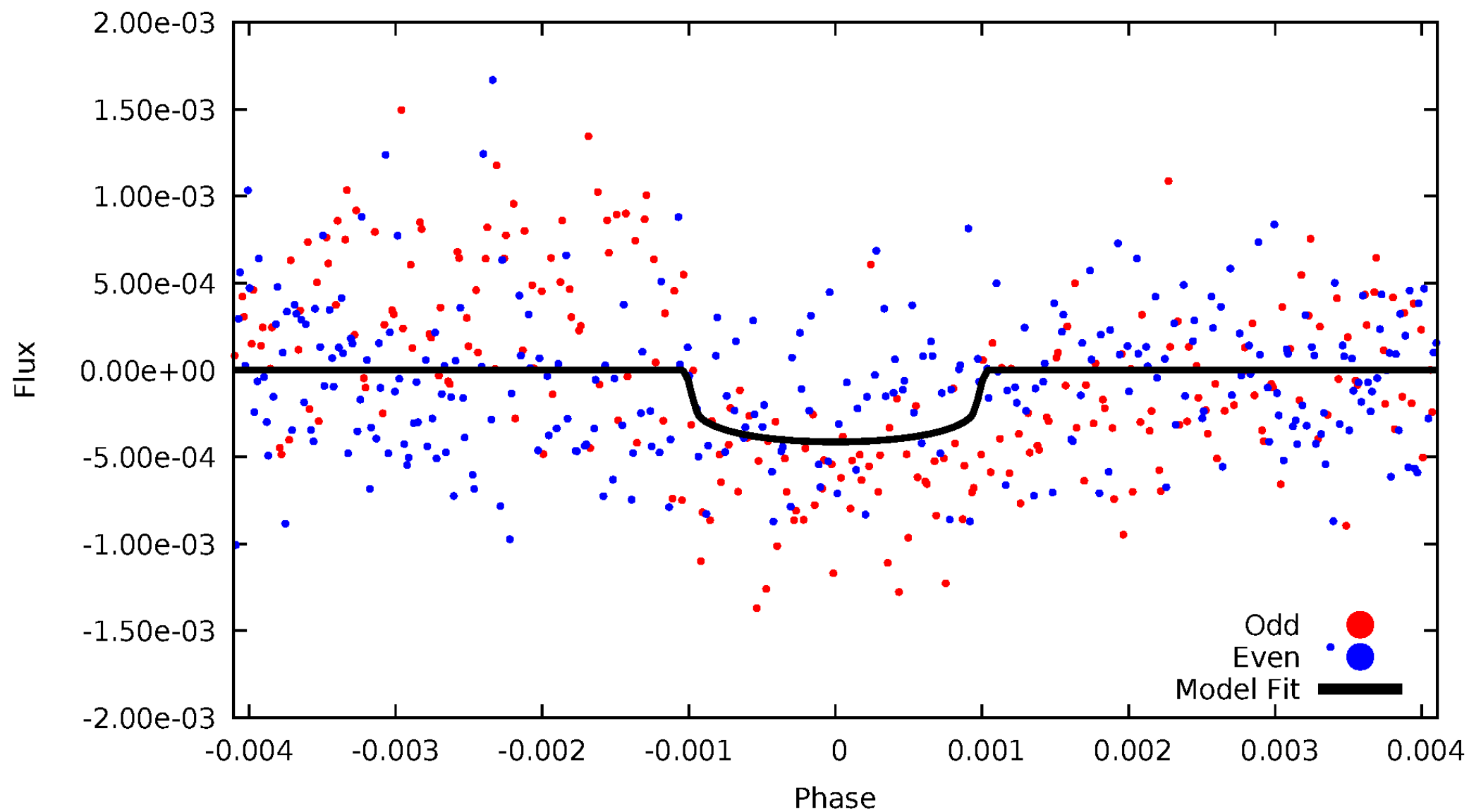


TCE 010729472-01



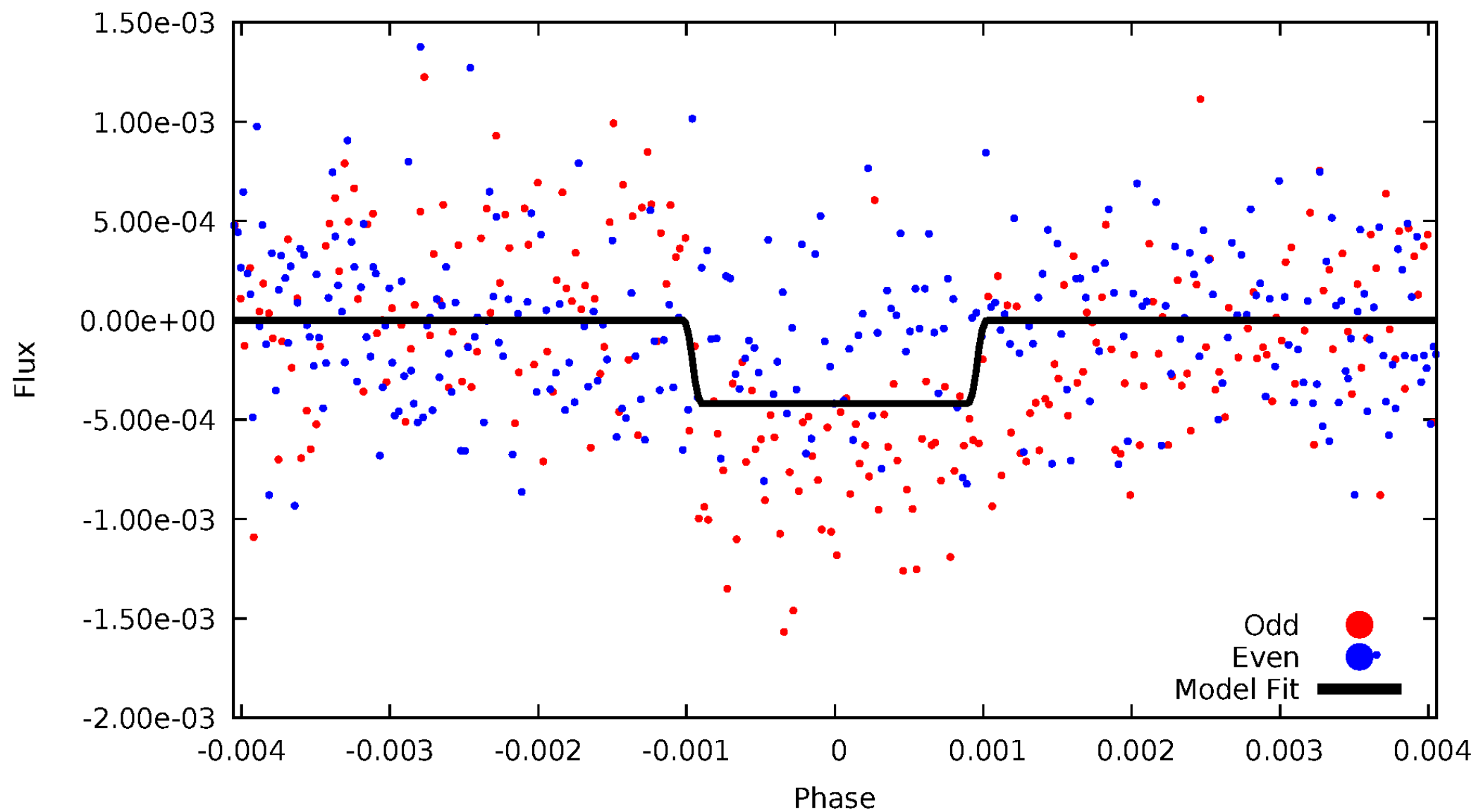
DV Odd/Even

TCE 010729472-01



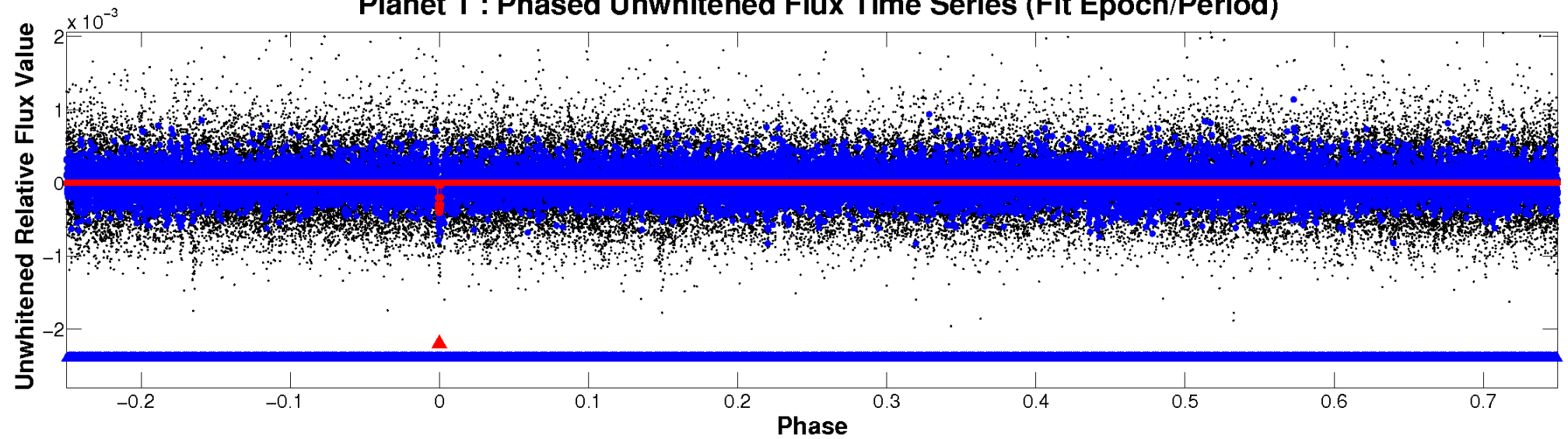
ALT Odd/Even

TCE 010729472-01

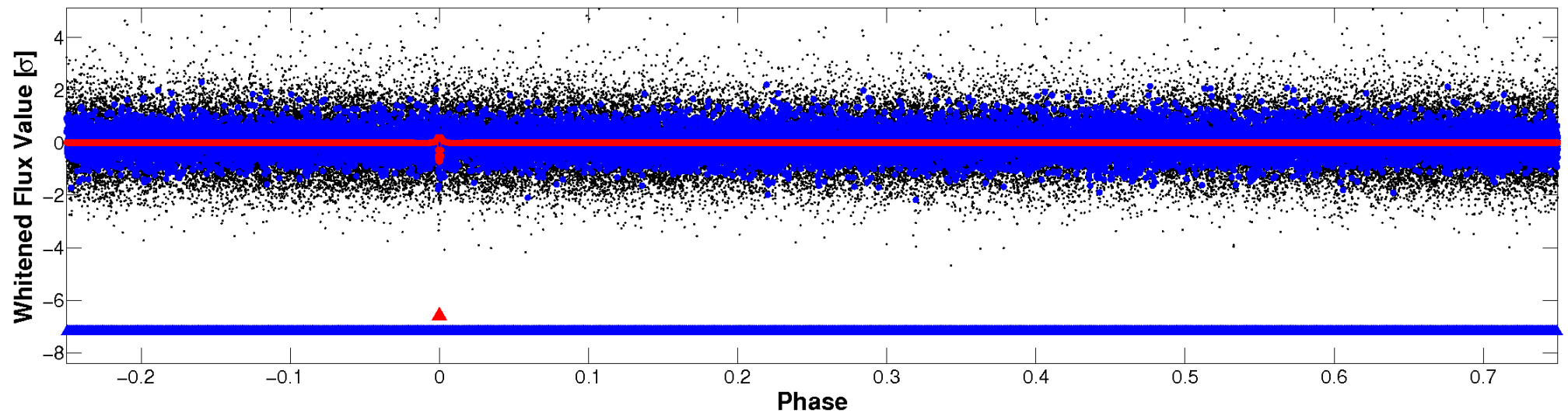


Non-Whitened Vs. Whitened Light Curve

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

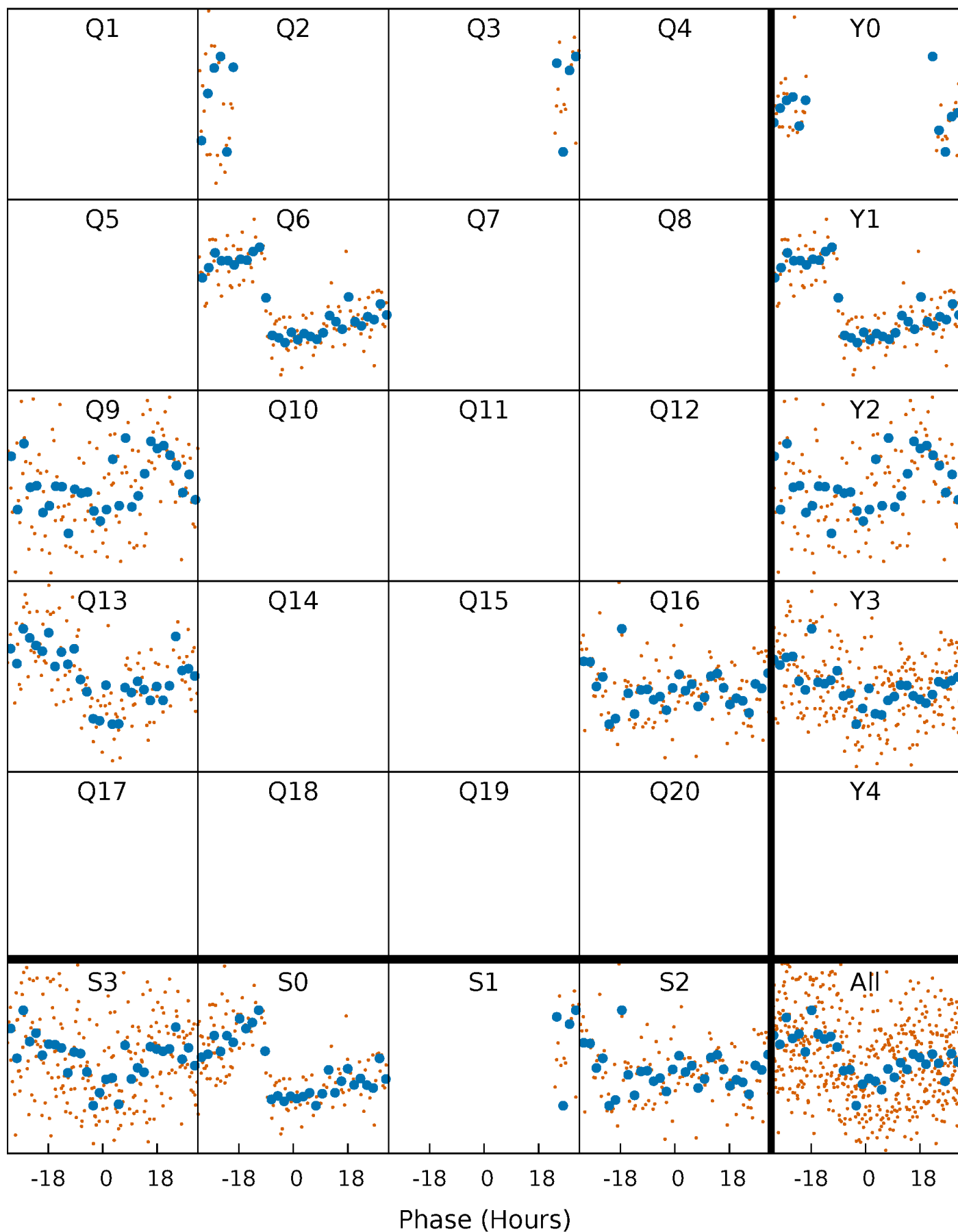


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



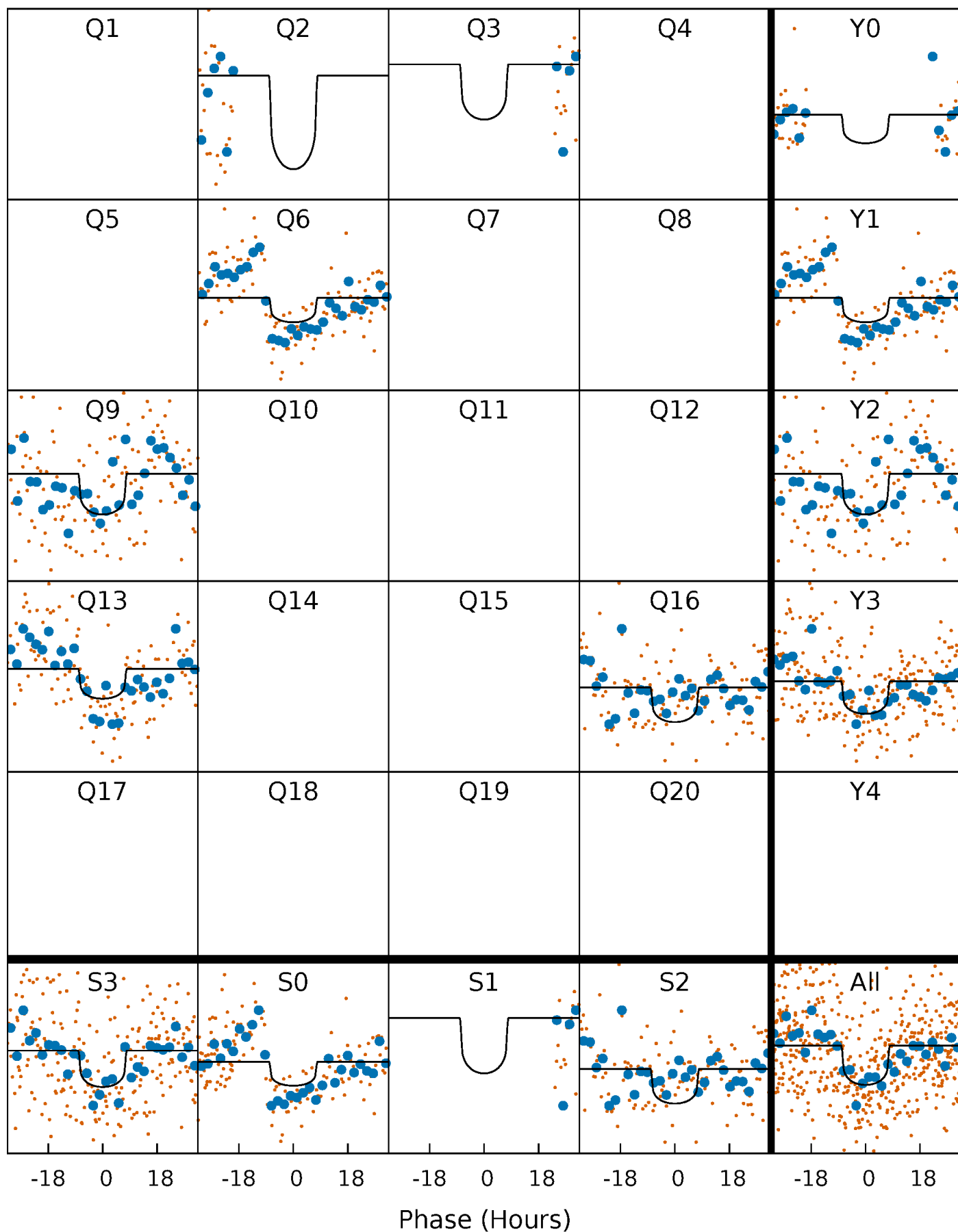
PDC Quarter-Phased Transit Curves

TCE 010729472-01 P=320.140194 Days $T_0=259.286223$ (BKJD)



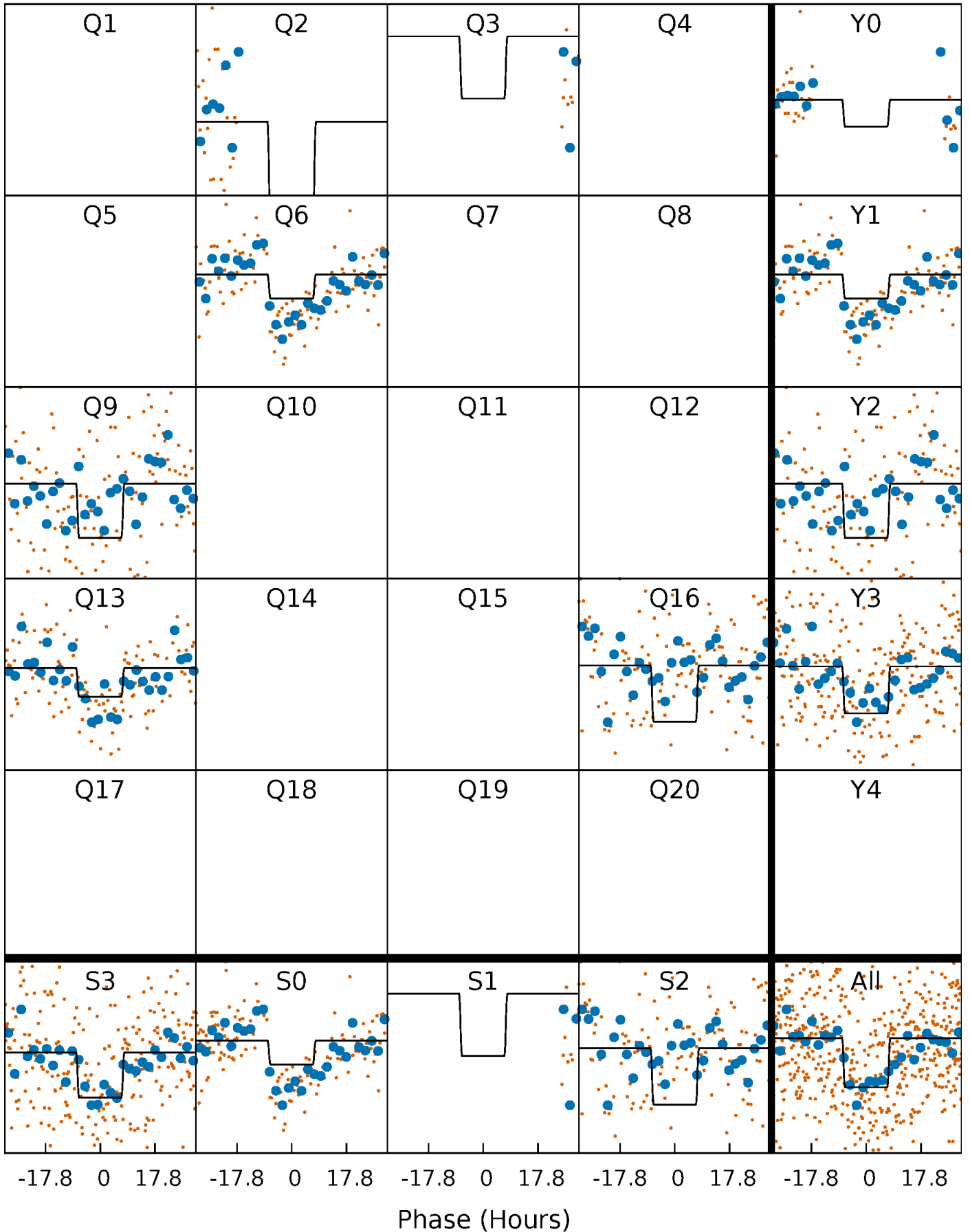
DV Quarter-Phased Transit Curves

TCE 010729472-01 P=320.140194 Days $T_0=259.286223$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

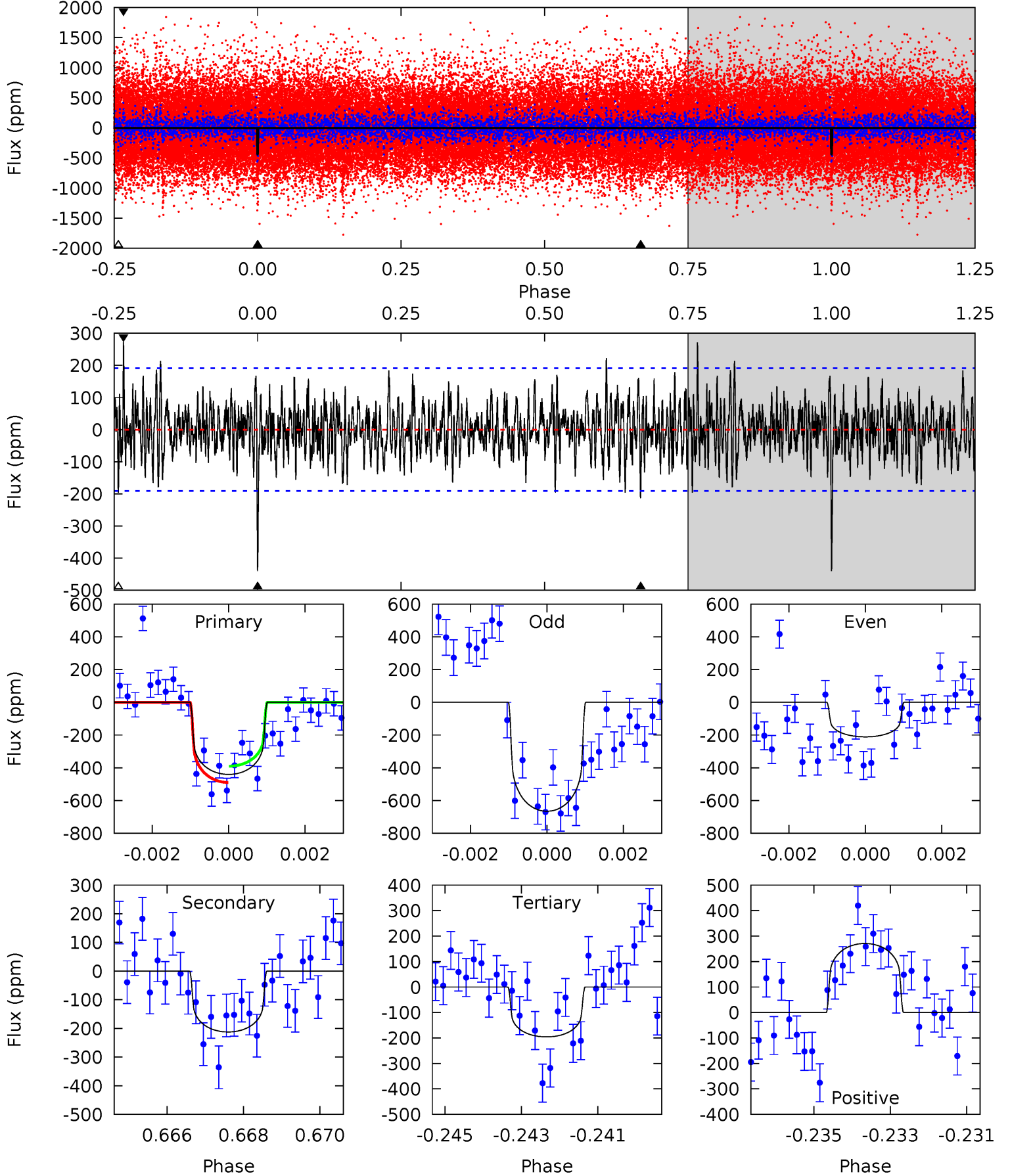
TCE 010729472-01 P=320.166640 Days $T_0=259.198377$ (BKJD)



DV Model-Shift Uniqueness Test

010729472-01, P = 320.140194 Days, E = 259.286223 Days

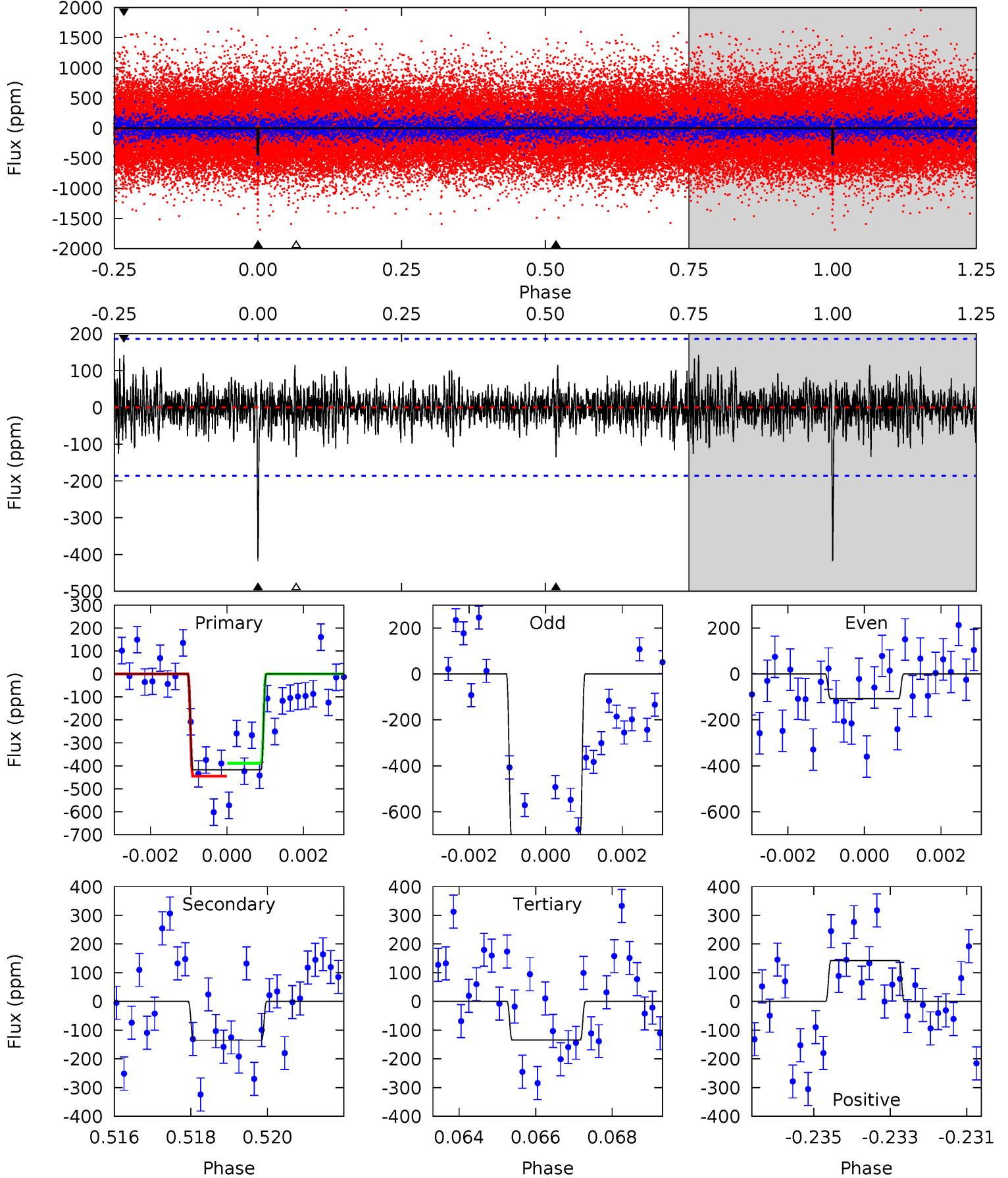
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	5.92	5.45	7.54	5.32	3.08	1.80	6.82	4.73	0.46	-1.63	6.34	0.95	0.38	1.39



Alt Model-Shift Uniqueness Test

010729472-01, P = 320.166640 Days, E = 259.198377 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	3.86	3.85	4.08	5.33	3.09	0.99	8.10	7.88	0.01	-0.22	8.82	1.07	0.25	0.81



Stellar Parameters For KIC 010729472

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5838^{+140}_{-175}	$4.529^{+0.044}_{-0.176}$	$-0.080^{+0.250}_{-0.300}$	$0.897^{+0.231}_{-0.093}$	$0.992^{+0.104}_{-0.127}$	$1.938^{+0.445}_{-0.936}$
	+2%/-3%	+1%/-4%	+312%/-375%	+26%/-10%	+10%/-13%	+23%/-48%
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 010729472-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-212 ± 36	$2.11^{+0.98}_{-0.88}$	364^{+23}_{-17}	4957^{+1559}_{-694}	20713^{+42236}_{-10892}
Alt.	-135 ± 35	$2.07^{+0.97}_{-0.86}$	364^{+21}_{-15}	4589^{+1240}_{-665}	13974^{+30065}_{-7881}

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

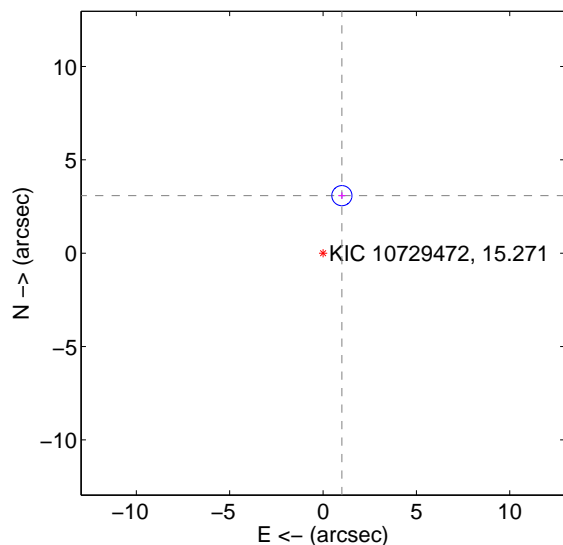
Supplemental centroid analysis for 010729472-01. Kepler magnitude: 15.27. Transit SNR 7.24

There are 1 quarters with good PRF difference image offsets

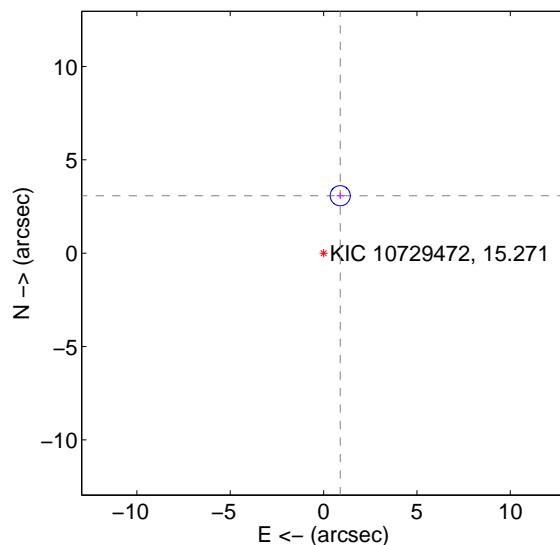
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.241 ± 0.180	18.04	-1.009 ± 0.192	3.080 ± 0.178
PRF-fit source offset from KIC position	3.203 ± 0.179	17.85	-0.891 ± 0.192	3.076 ± 0.178
photometric centroid source offset	4.50 ± 2.10	2.15	1.96 ± 2.16	4.05 ± 2.08

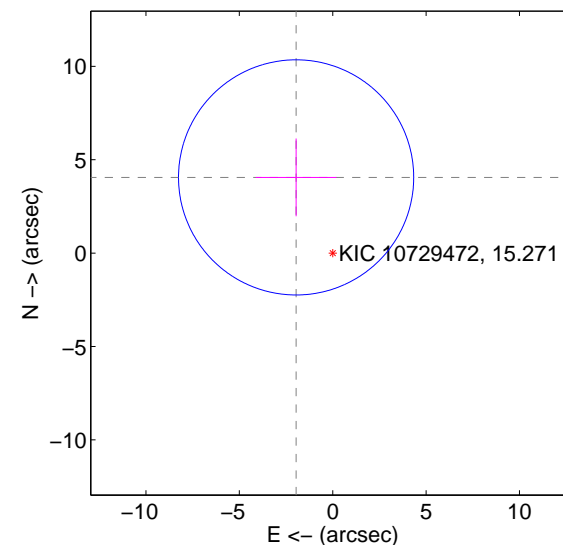
offset from difference PRF-fit to OOT PRF-fit



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.

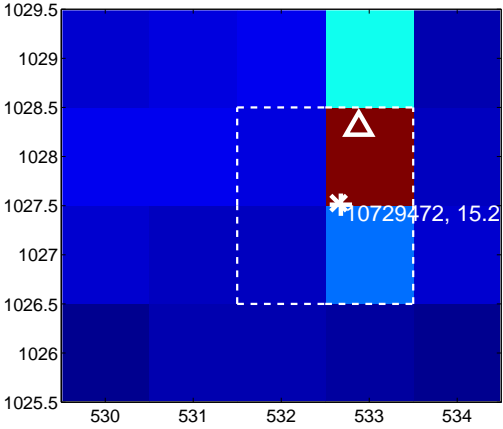
Q5 no difference image



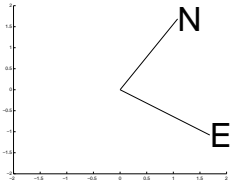
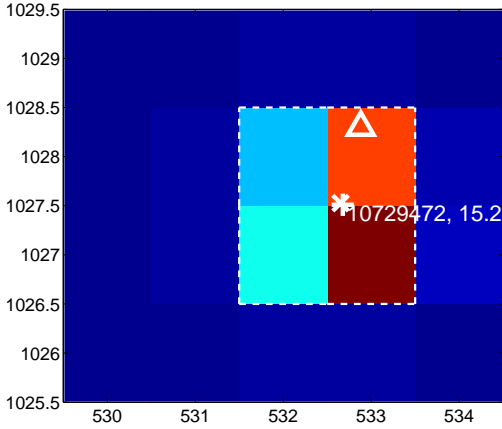
Q5 no OOT image



Q6 difference image



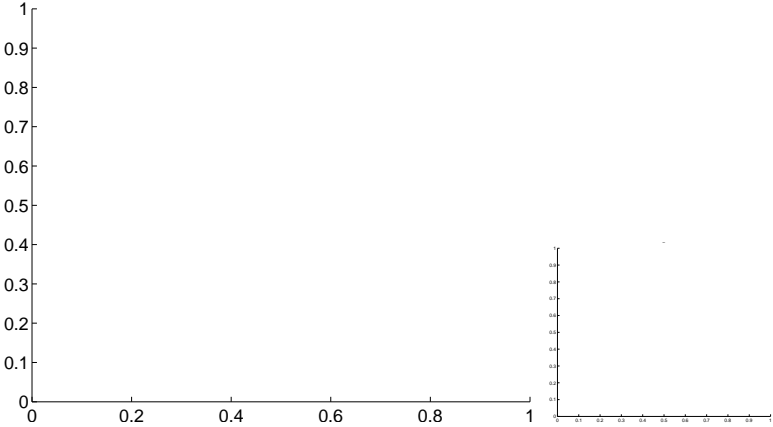
Q6 OOT image



Q7 no difference image



Q7 no OOT image



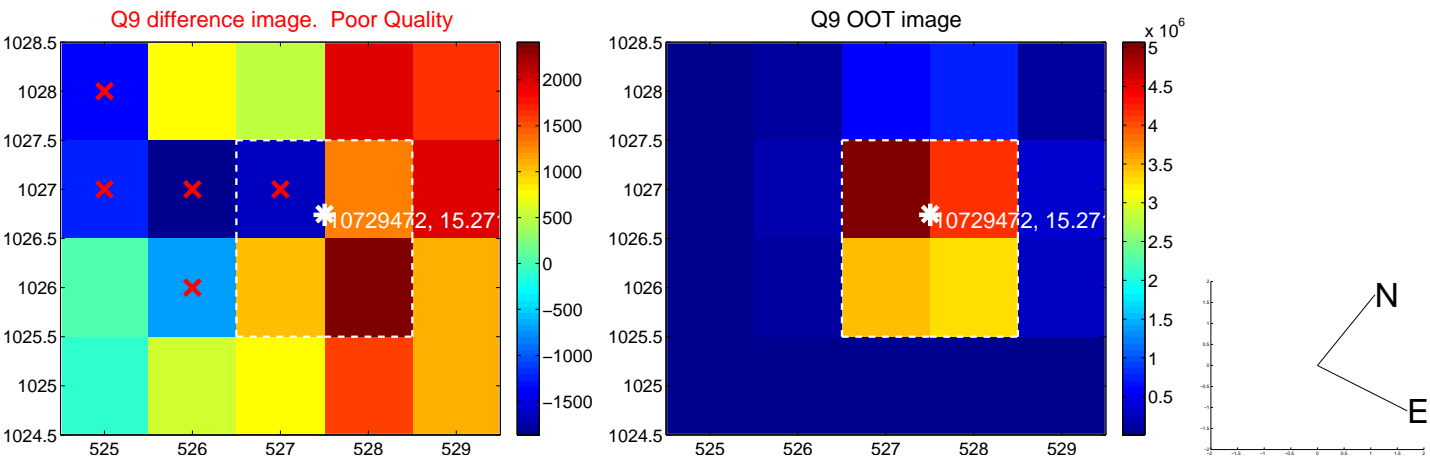
Q8 no difference image



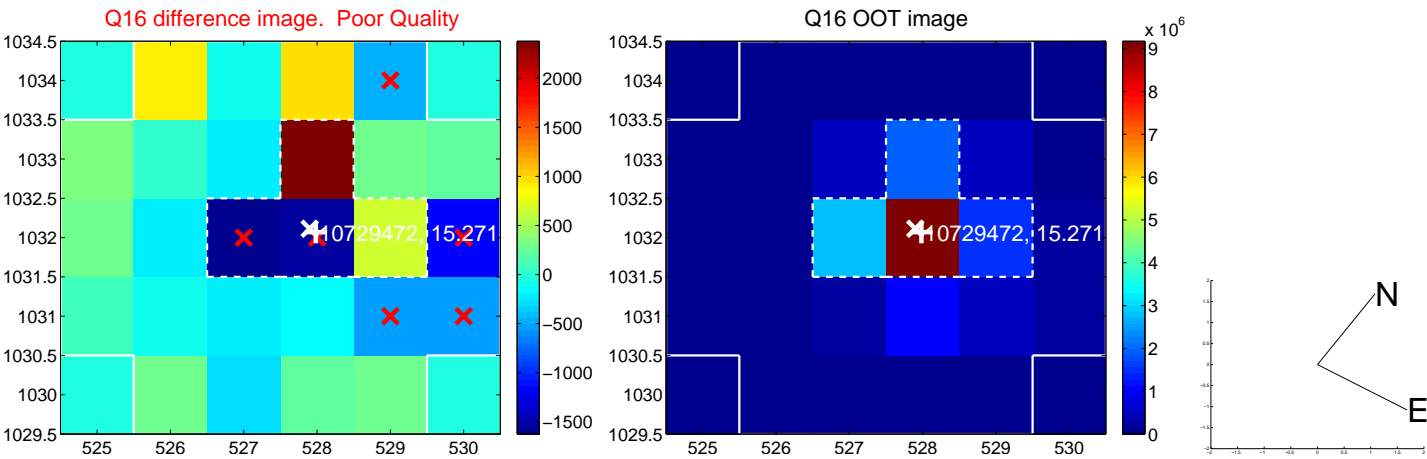
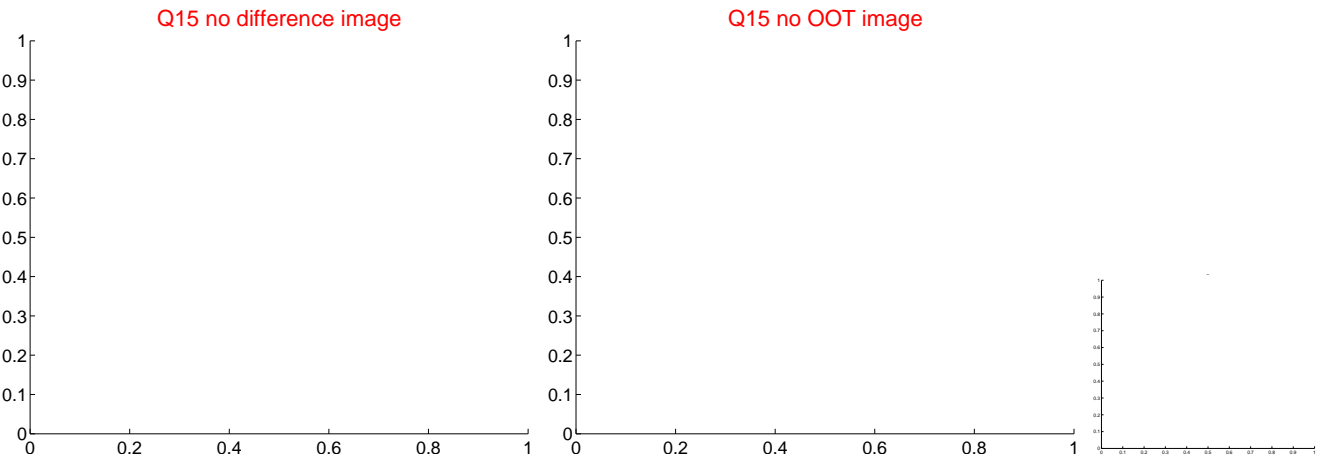
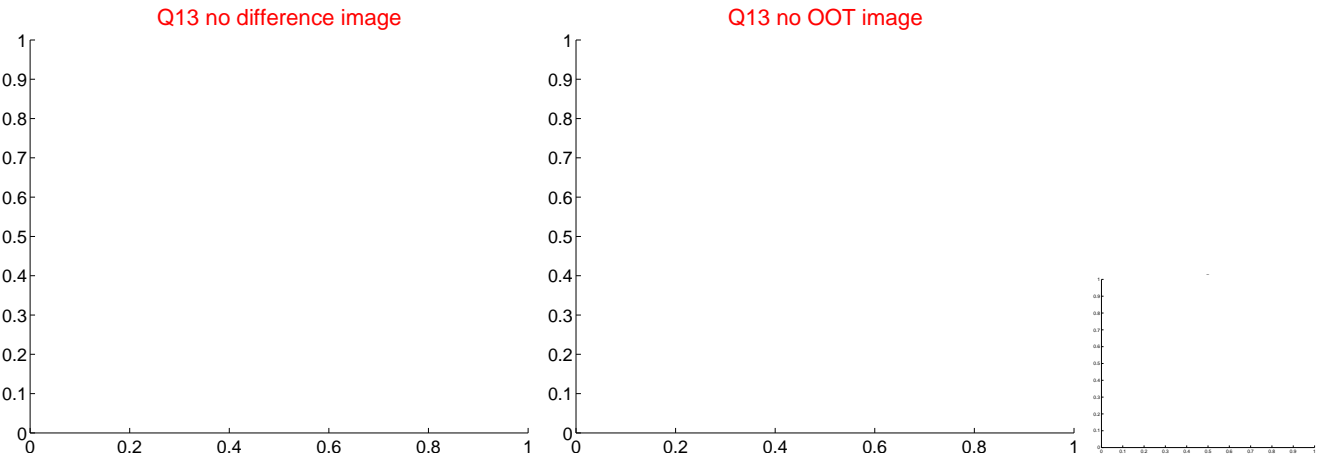
Q8 no OOT image



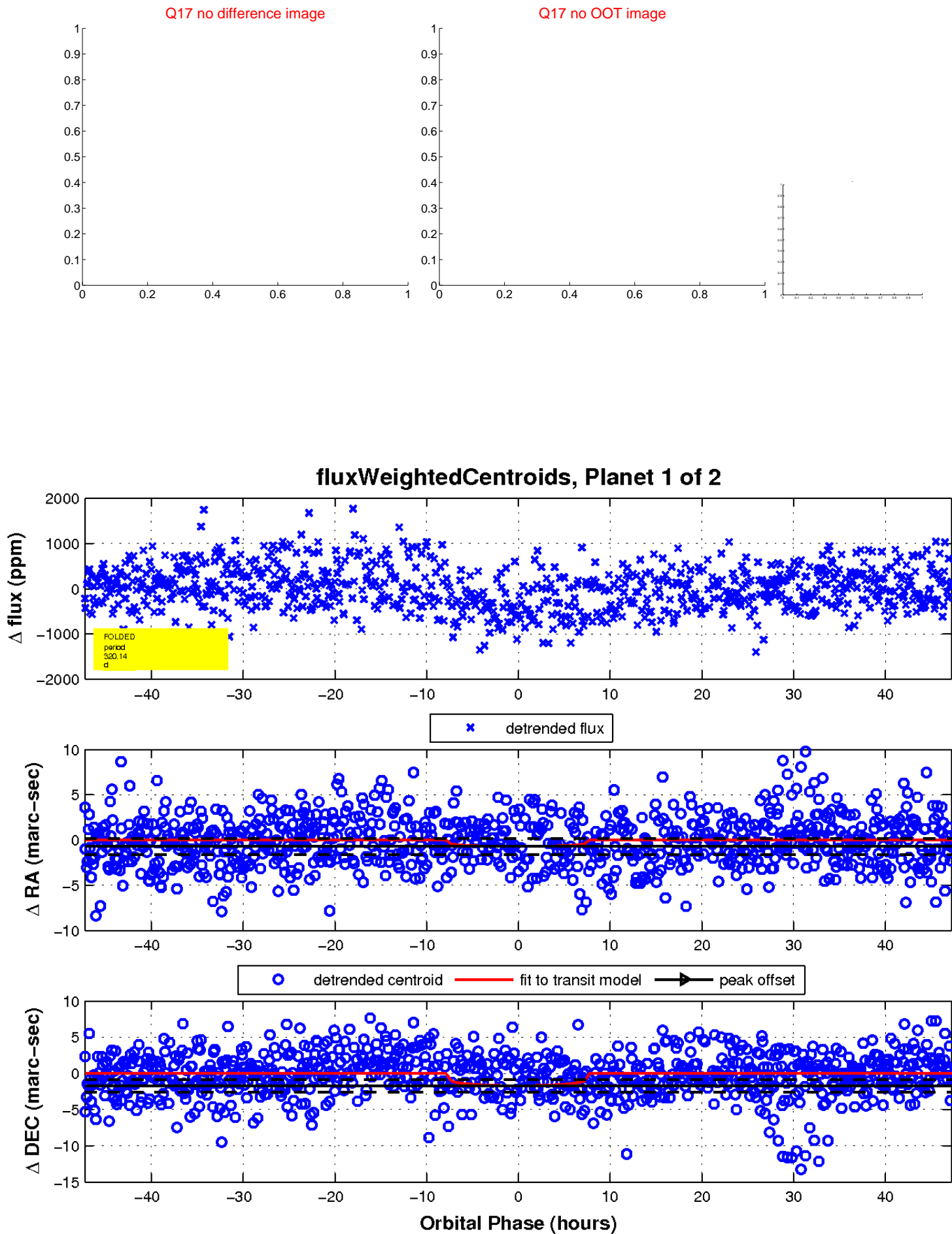
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

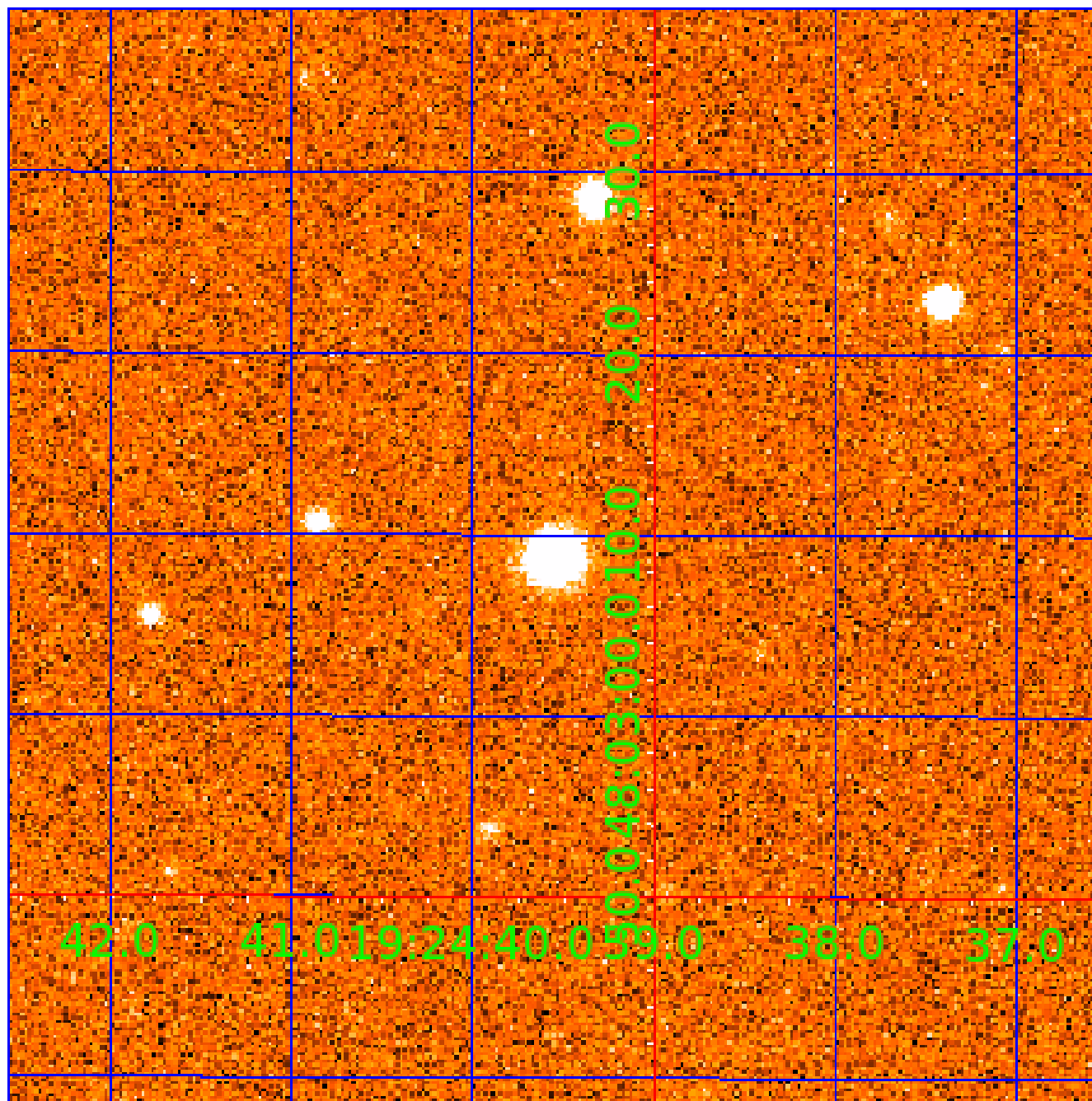


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010729472

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})
010729472-01	OBS	No	320.140194	259.286223	413.3	15.771	9.4	7.2	0.90	5838	1.95	1.00
010729472-02	OBS	4453.02	0.834419	131.787398	43.7	1.898	7.4	7.3	0.90	5838	0.61	2796.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010729472-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010729472-02	OBS	FP	0.14	0	1	0	0	MOD_SEC_DV—CENT_FEW_DIFFS

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 010729472-02

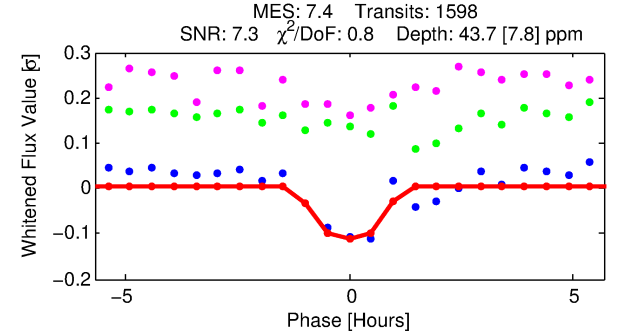
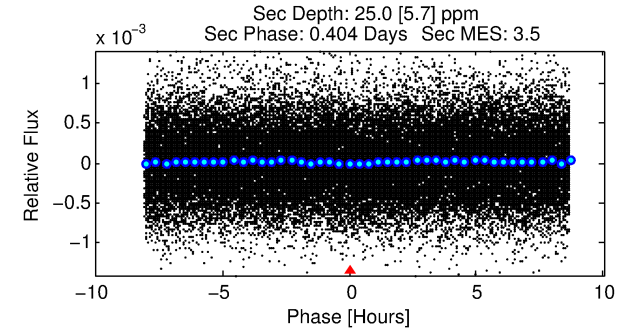
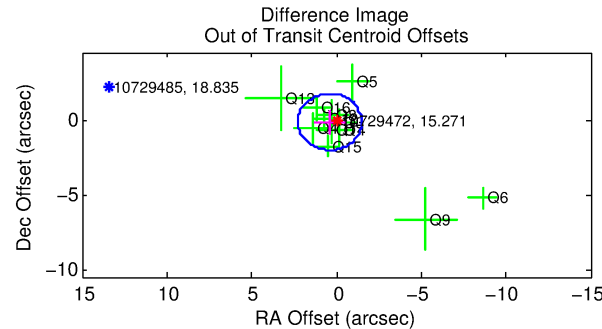
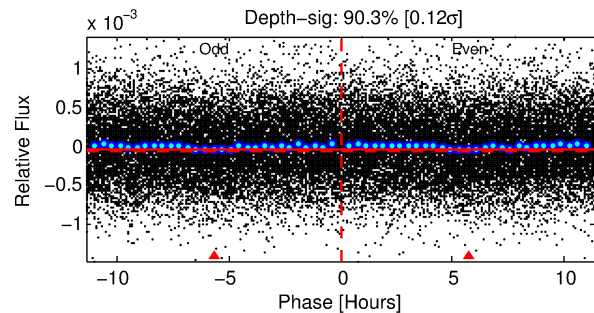
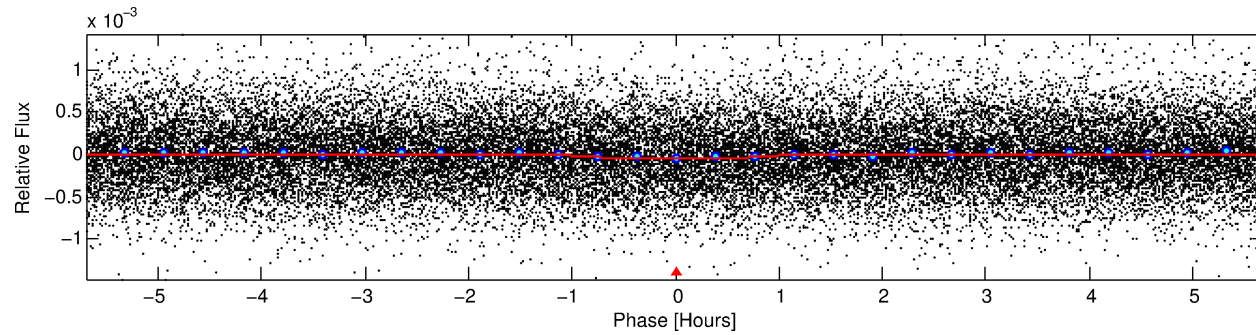
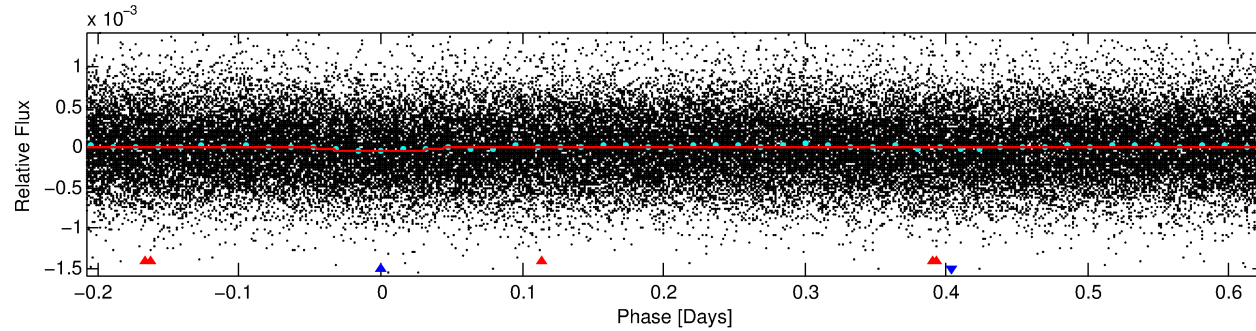
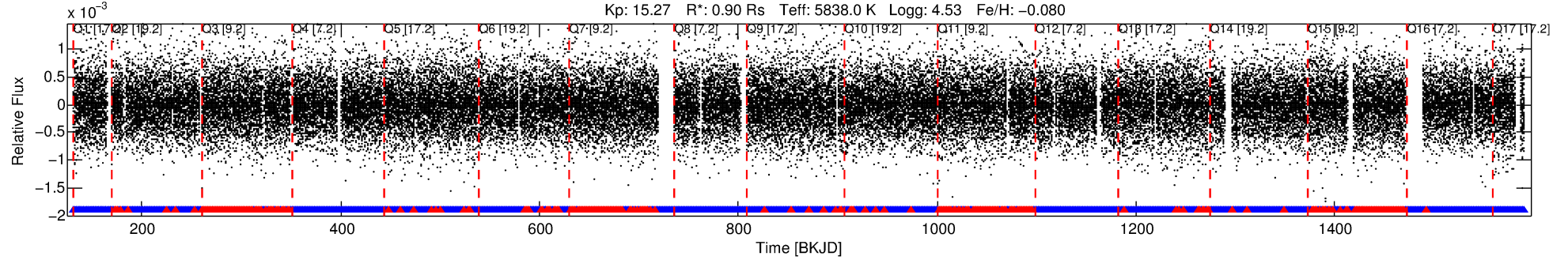
No Significant Match Found

DV One-Page Summary

KIC: 10729472 Candidate: 2 of 2 Period: 0.834 d

KOI: K04453 Corr: No Ephemeris Match

Kp: 15.27 R*: 0.90 Rs Teff: 5838.0 K Logg: 4.53 Fe/H: -0.080



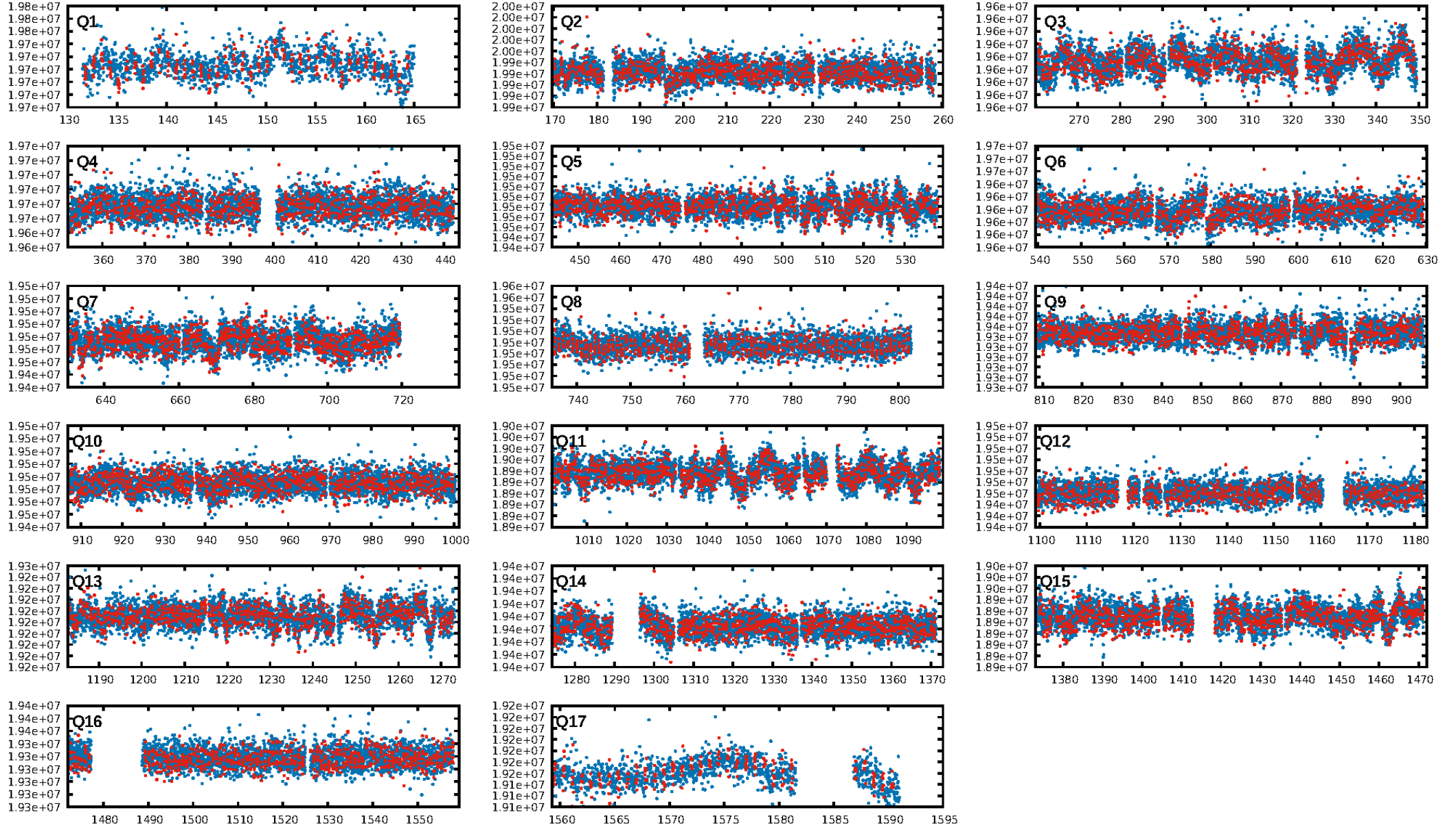
DV Fit Results:

Period = 0.83442 [0.00001] d
Epoch = 131.7874 [0.0038] BKJD
Rp/R* = 0.0062 [0.0044]
a/R* = 3.03 [8.67]
b = 0.50 [4.94]
Seff = 2796.62 [955.95]
Teff = 1854 [158] K
Rp = 0.61 [0.46] Re
a = 0.0173 [0.0038] AU
Ag = 11.16 [16.56] [0.61σ]
Teffp = 5241 [1905] K [1.77σ]

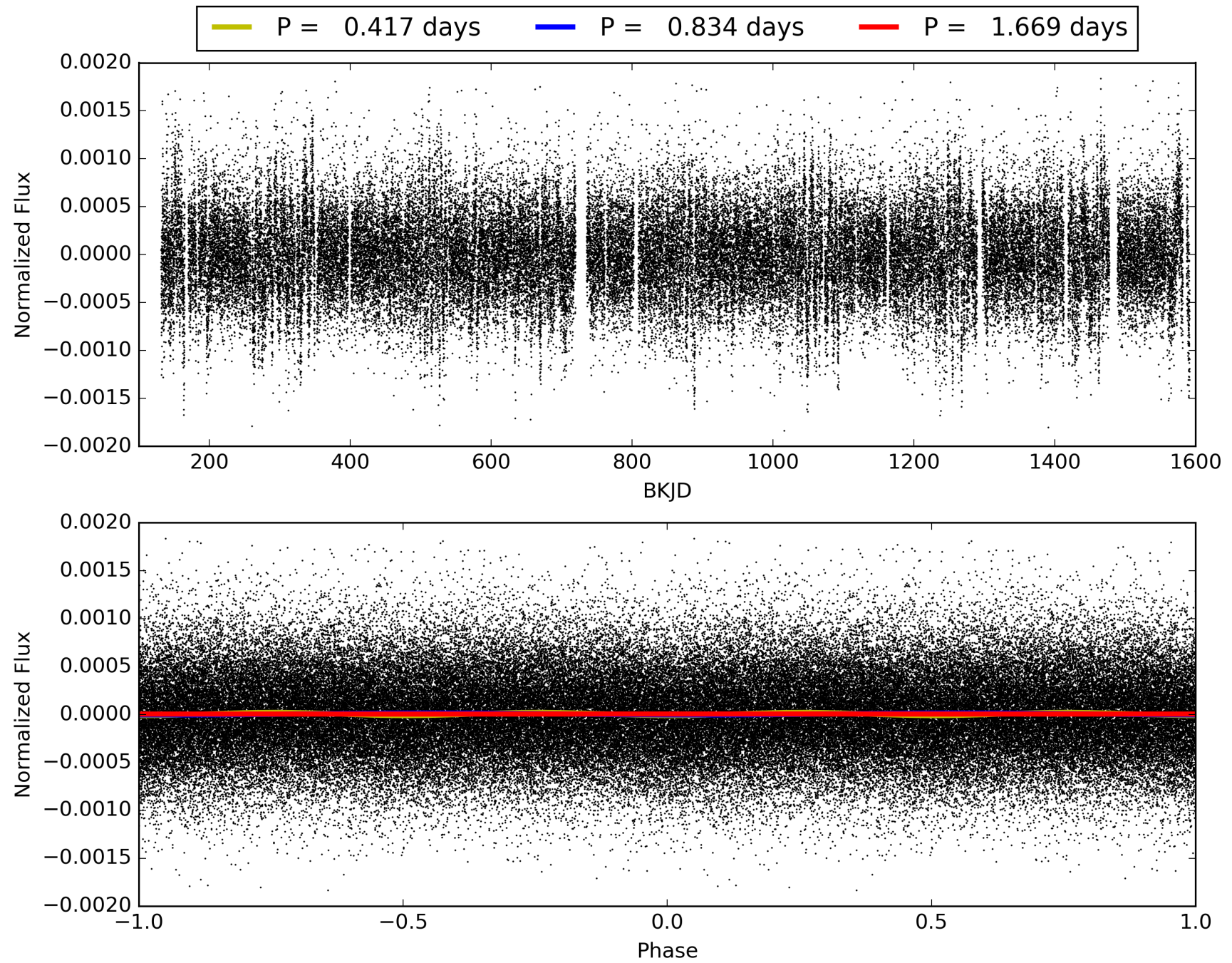
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [482.43σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.79e-15
RollingBand-fgt: 0.75 [1149/1526]
GhostDiagnostic-chr: 1.82
Centroid-sig: 97.2%
Centroid-so: 0.449 arcsec [0.20σ]
OotOffset-rm: 0.422 arcsec [0.67σ]
KicOffset-rm: 0.610 arcsec [0.90σ]
OotOffset-st: 2/3/4/3 [12]
KicOffset-st: 2/3/4/3 [12]
DiffImageQuality-fgm: 0.67 [8/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010729472-02, PDC Light Curves

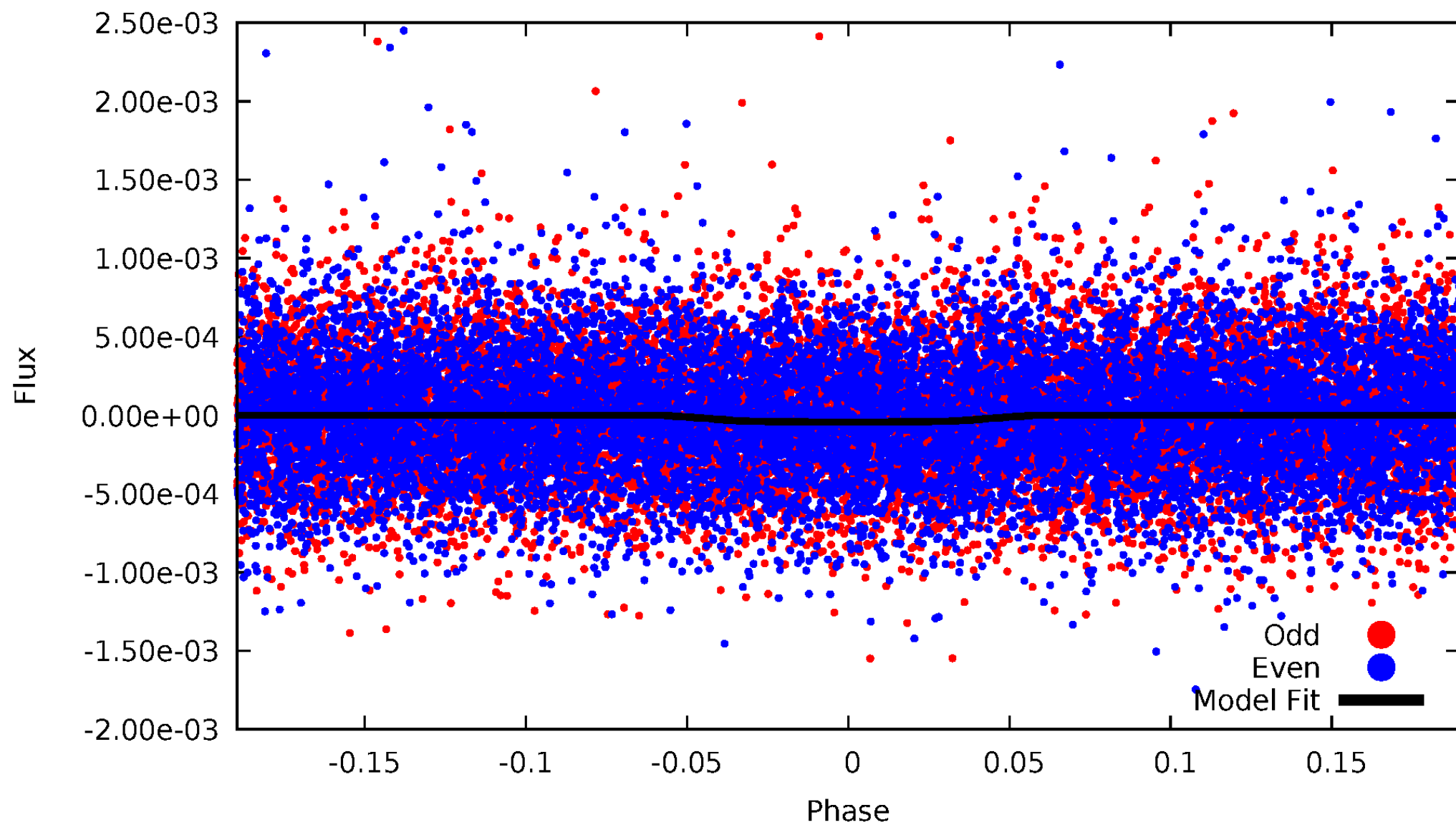


TCE 010729472-02



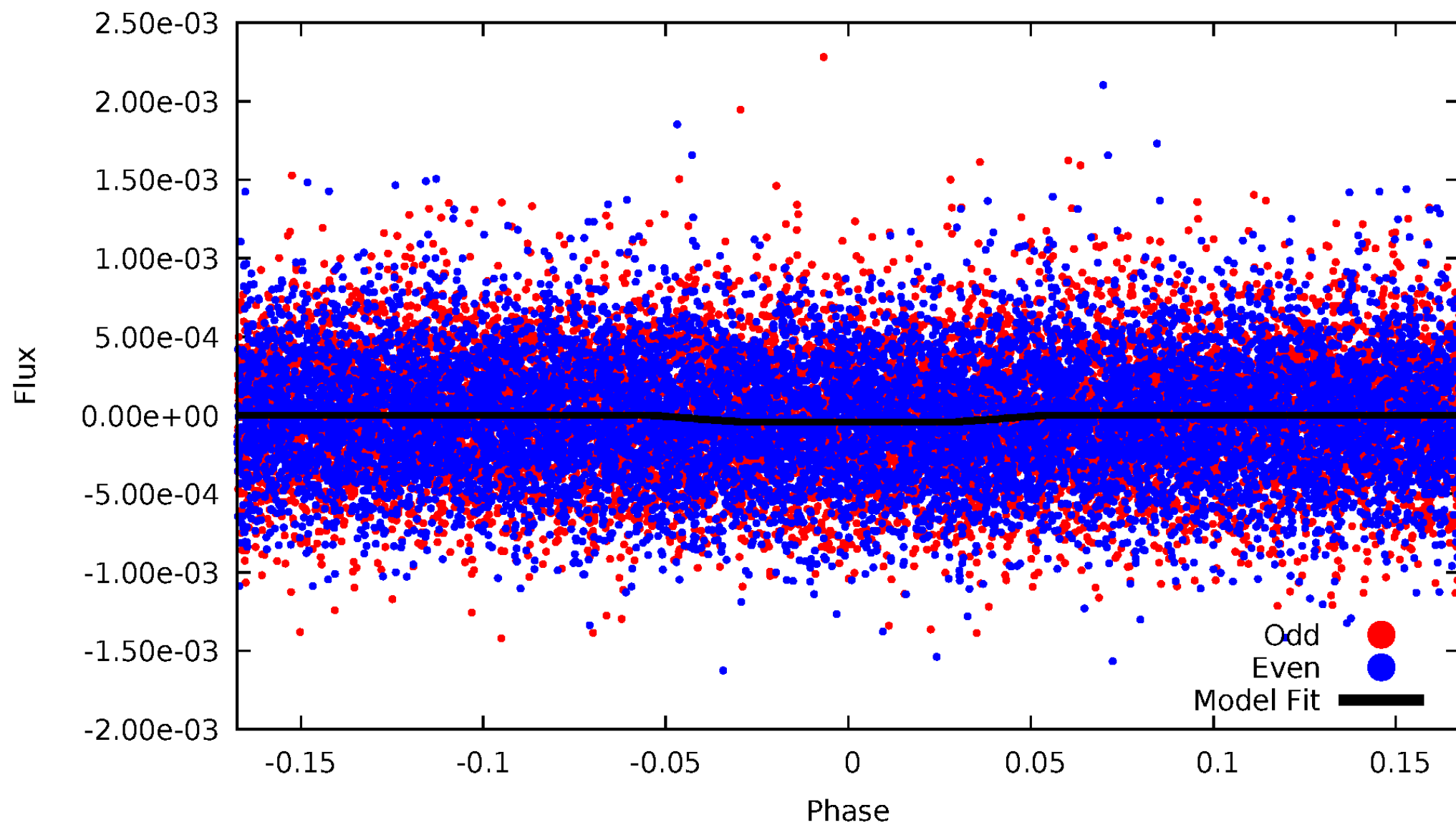
DV Odd/Even

TCE 010729472-02



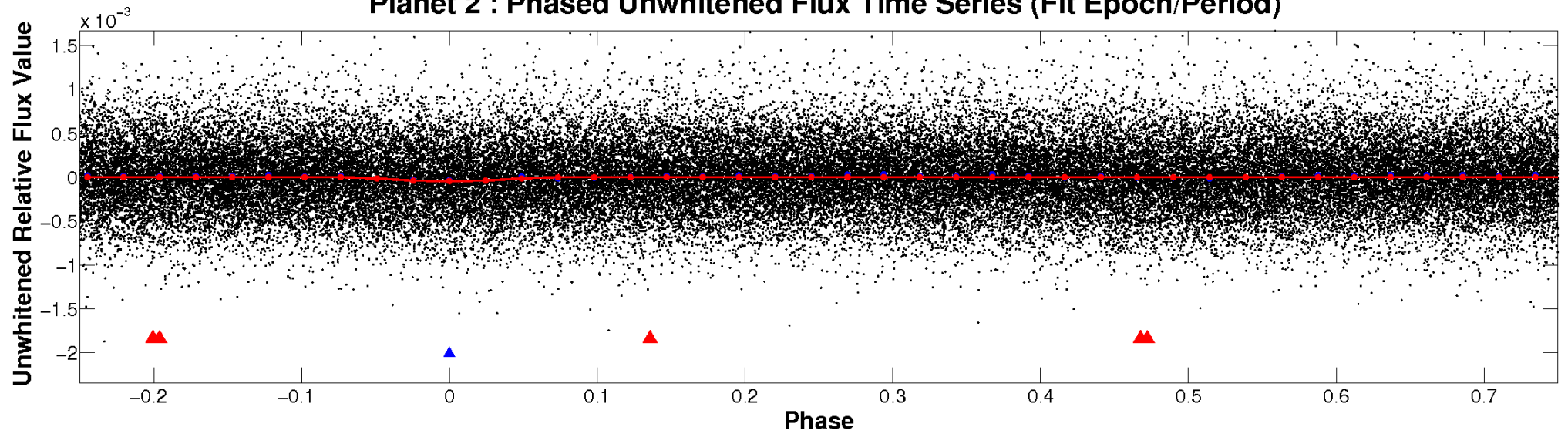
ALT Odd/Even

TCE 010729472-02

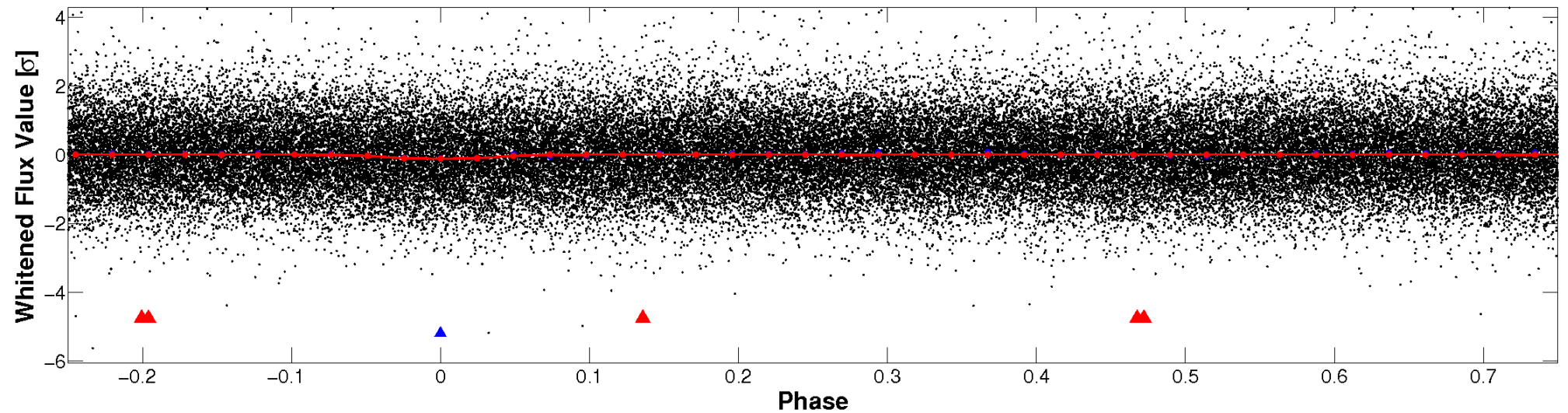


Non-Whitened Vs. Whitened Light Curve

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

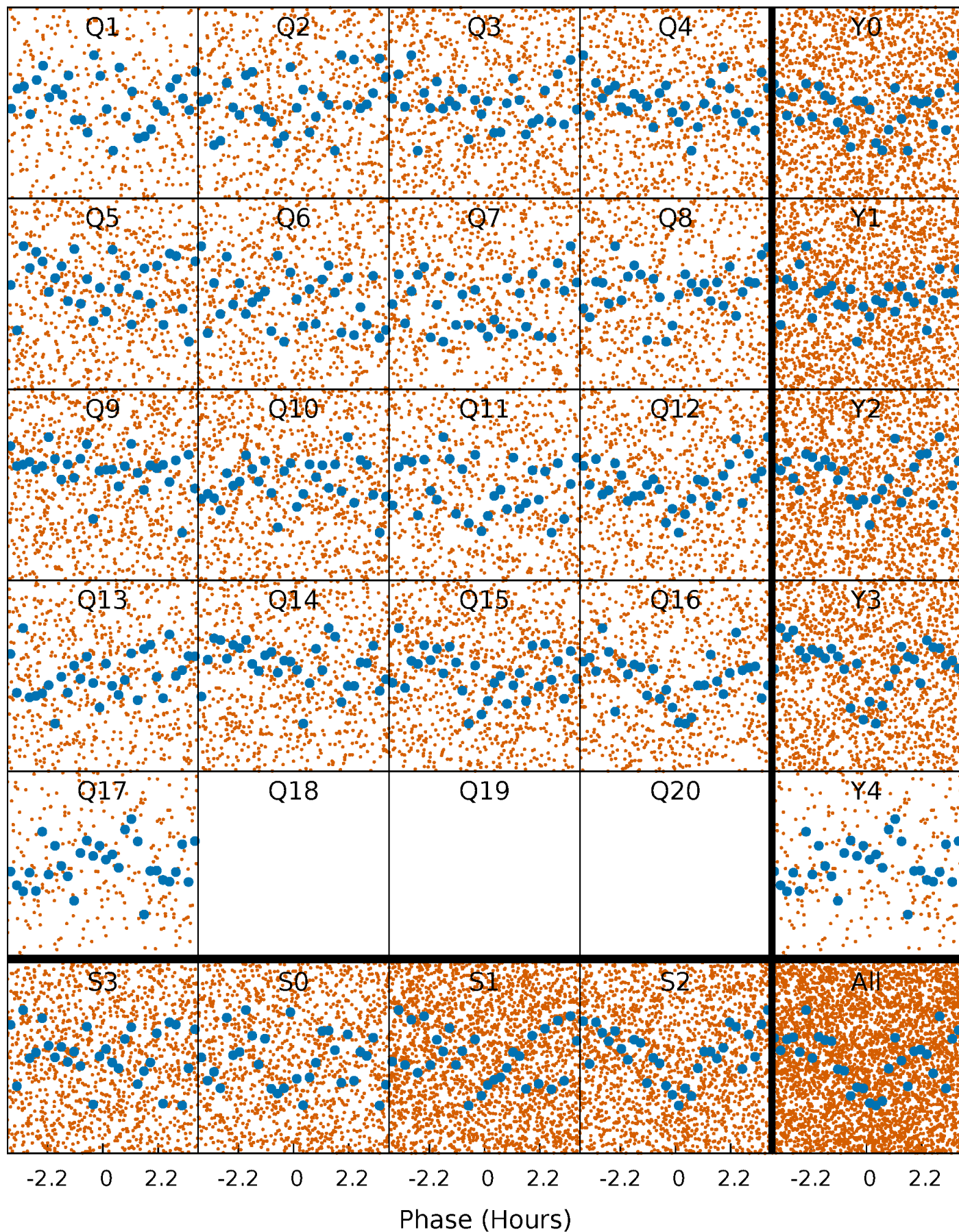


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



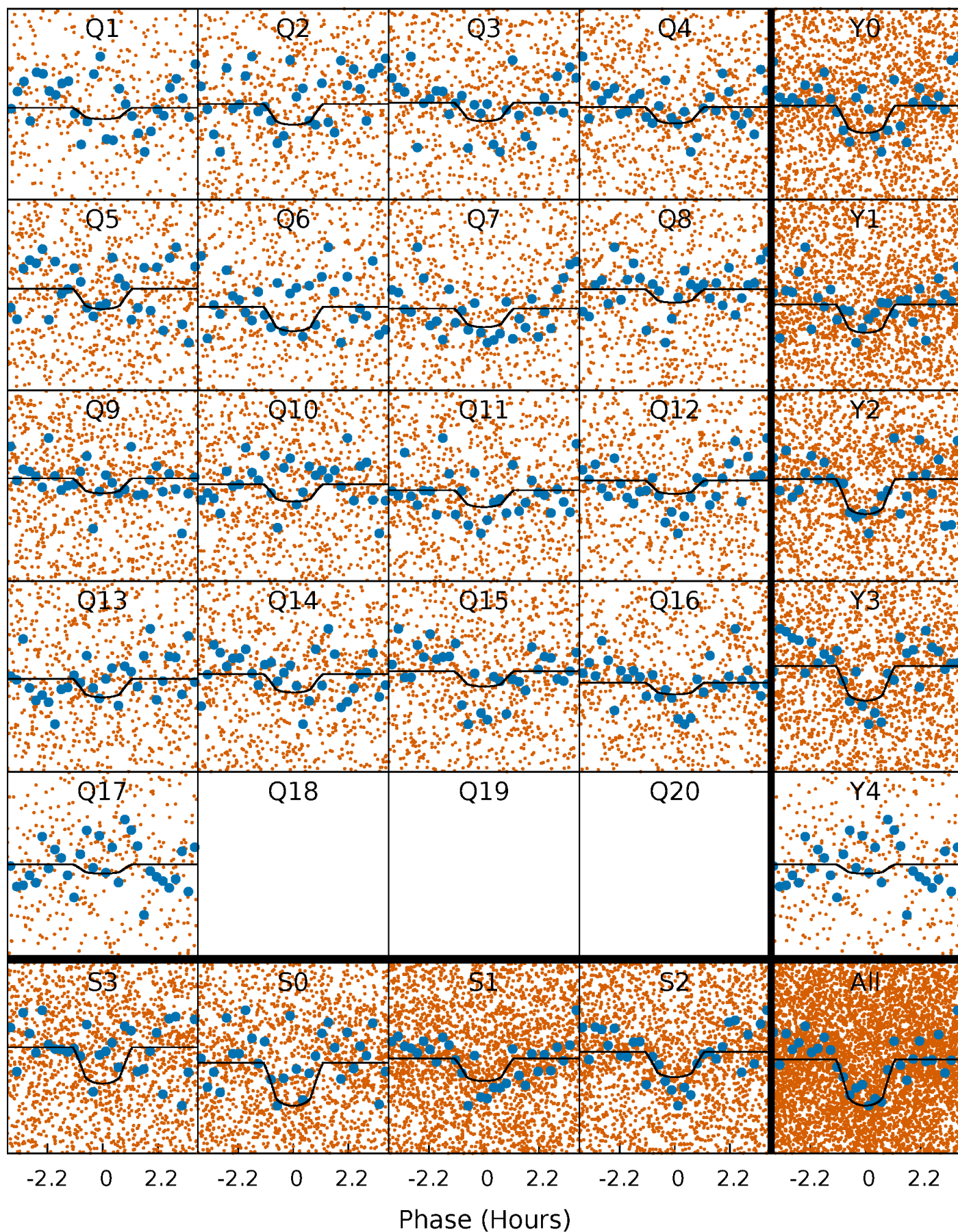
PDC Quarter-Phased Transit Curves

TCE 010729472-02 P= 0.834419 Days $T_0=131.787398$ (BKJD)



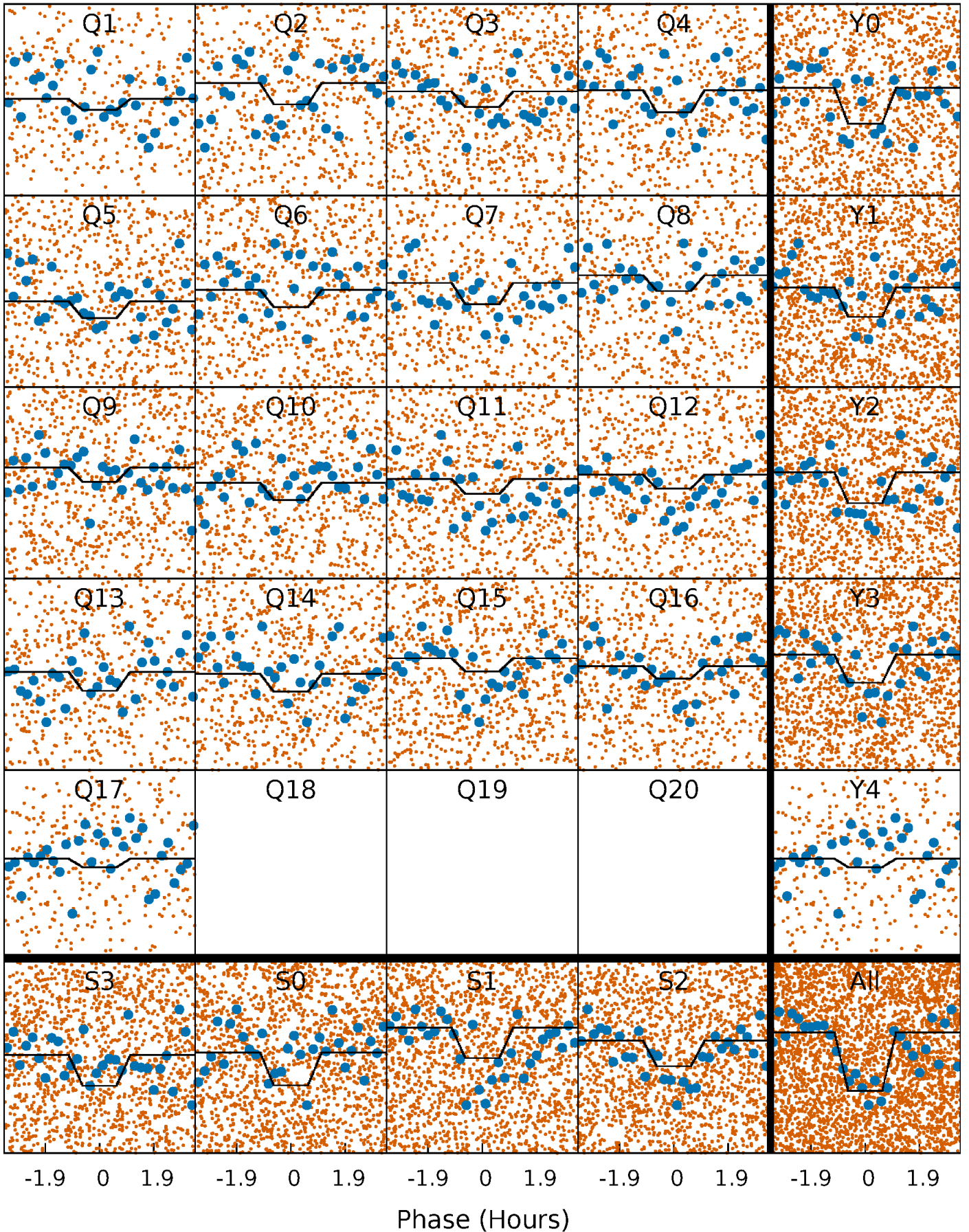
DV Quarter-Phased Transit Curves

TCE 010729472-02 P= 0.834419 Days $T_0=131.787398$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

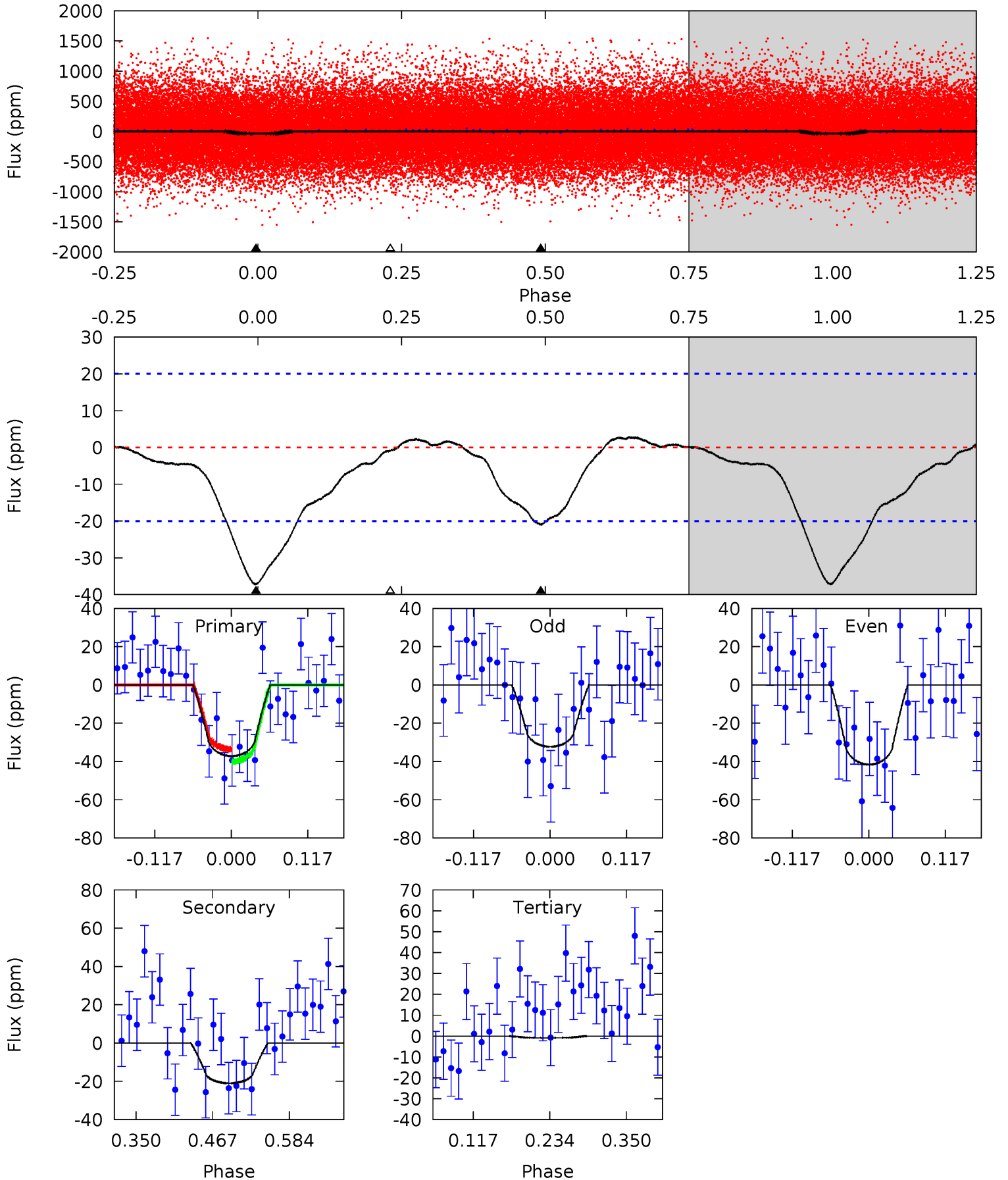
TCE 010729472-02 $P = 0.834418$ Days $T_0 = 131.785585$ (BKJD)



DV Model-Shift Uniqueness Test

010729472-02, P = 0.834419 Days, E = 130.952979 Days

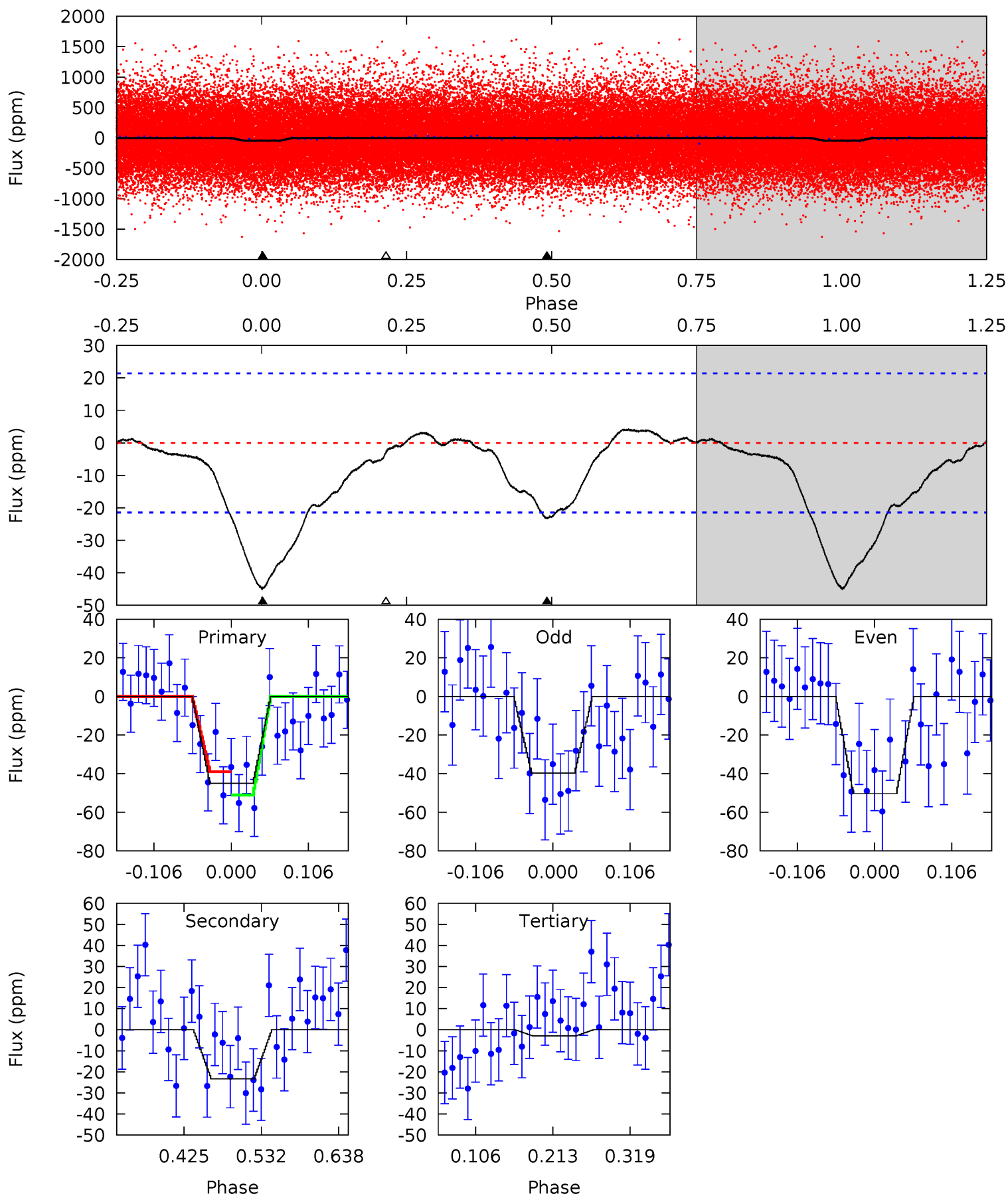
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.41	4.75	0.20	0	4.53	1.57	0.82	8.22	8.41	4.55	4.75	1.05	0.97	0.07	0.73



Alt Model-Shift Uniqueness Test

010729472-02, P = 0.834418 Days, E = 130.951167 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.56	4.94	0.63	0	4.55	1.61	1.01	8.93	9.56	4.32	4.94	1.13	0.87	0.09	1.28



Stellar Parameters For KIC 010729472

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5838^{+140}_{-175}	$4.529^{+0.044}_{-0.176}$	$-0.080^{+0.250}_{-0.300}$	$0.897^{+0.231}_{-0.093}$	$0.992^{+0.104}_{-0.127}$	$1.938^{+0.445}_{-0.936}$
	+2%/-3%	+1%/-4%	+312%/-375%	+26%/-10%	+10%/-13%	+23%/-48%
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 010729472-02 / KOI 4453.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-21 ± 4	$0.67^{+0.46}_{-0.38}$	2645^{+146}_{-114}	4916^{+2446}_{-971}	$7.590^{+29.540}_{-5.044}$
Alt.	-23 ± 5	$0.70^{+0.47}_{-0.40}$	2643^{+157}_{-119}	4907^{+2573}_{-901}	$7.572^{+30.658}_{-4.850}$

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

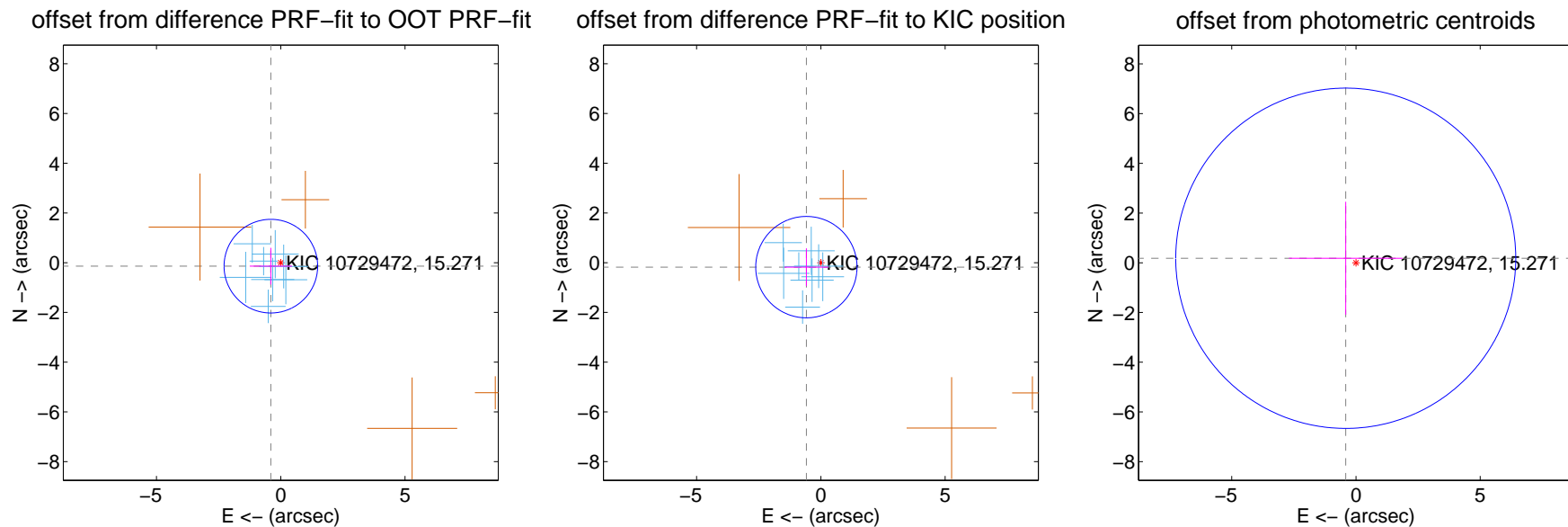
DV Centroid Data

Supplemental centroid analysis for 010729472-02. Kepler magnitude: 15.27. Transit SNR 7.28

There are 8 quarters with good PRF difference image offsets

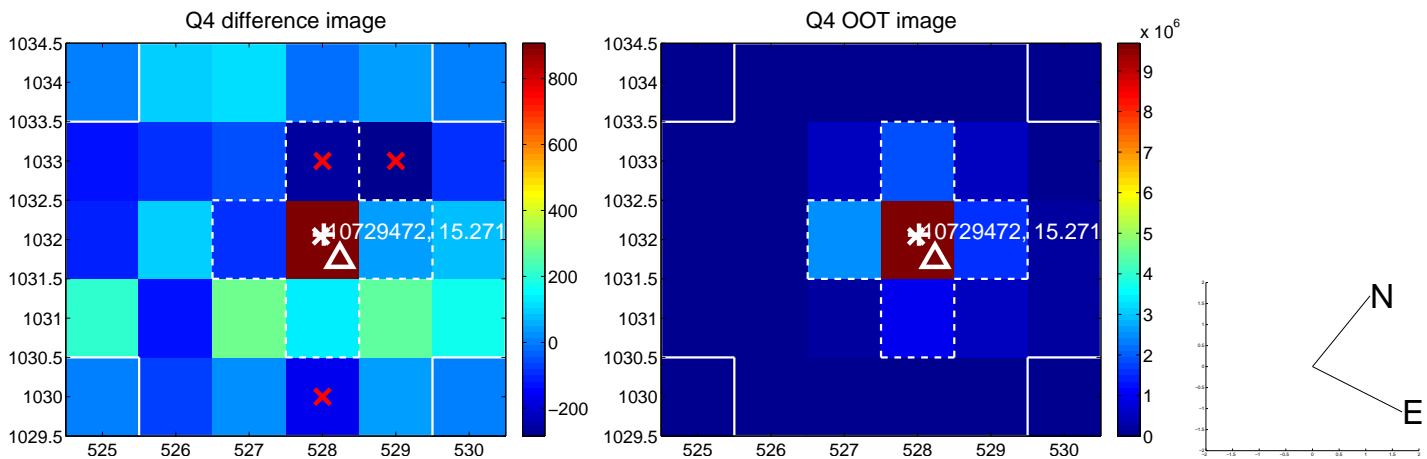
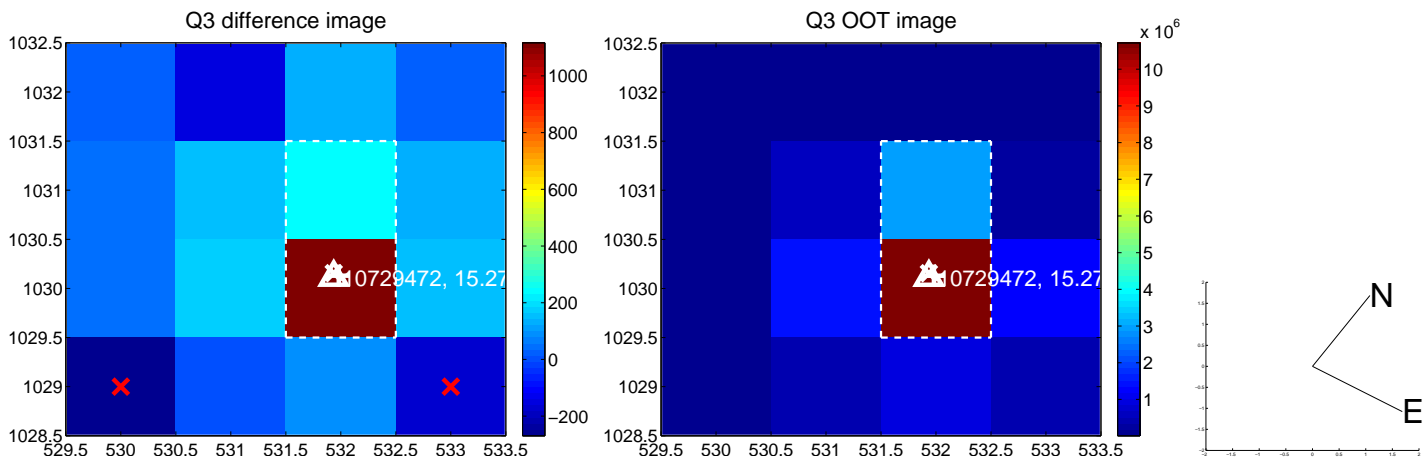
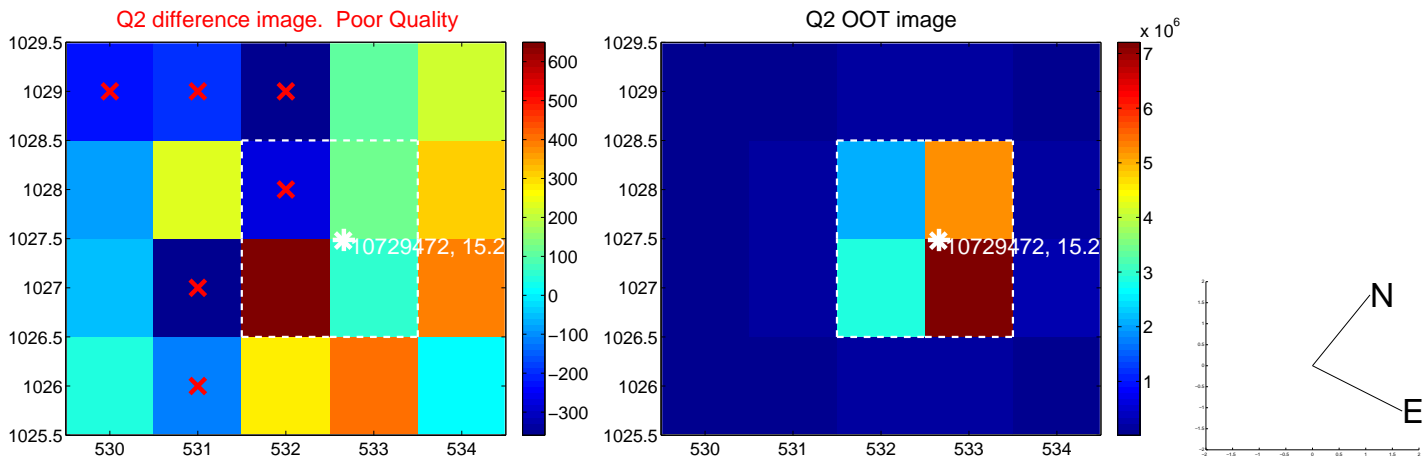
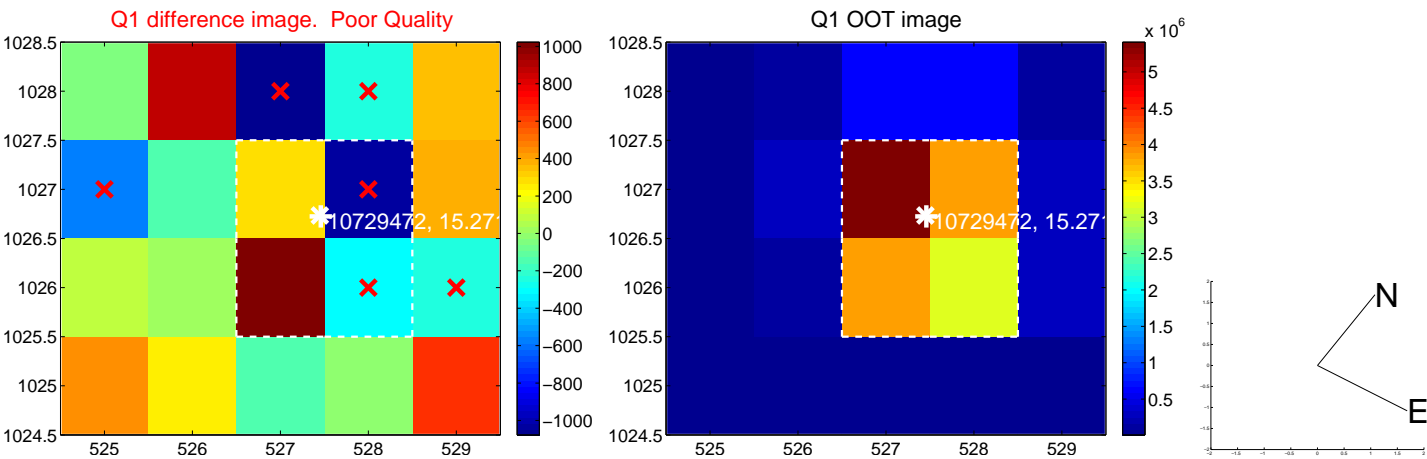
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.422 ± 0.628	0.67	0.398 ± 0.850	-0.140 ± 0.739
PRF-fit source offset from KIC position	0.610 ± 0.680	0.90	0.583 ± 0.883	-0.178 ± 0.755
photometric centroid source offset	0.45 ± 2.28	0.20	0.41 ± 2.28	0.18 ± 2.27

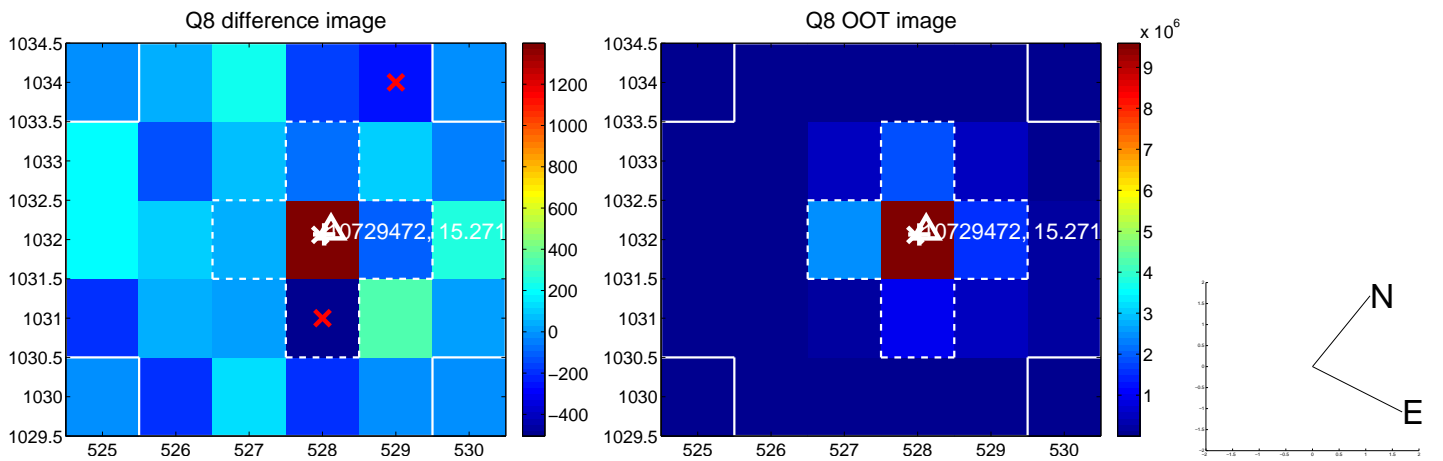
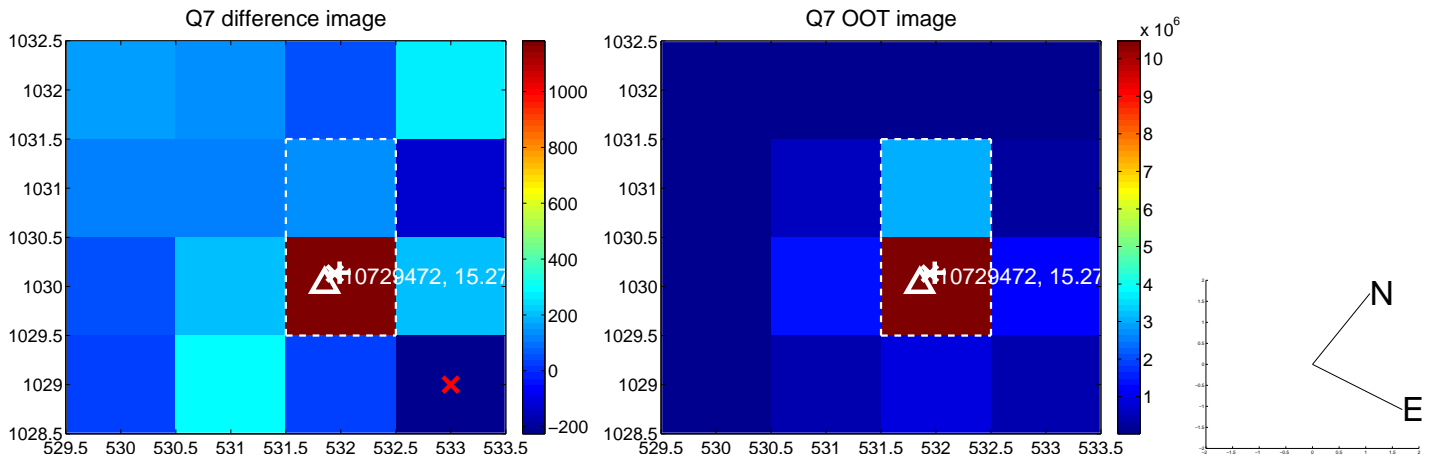
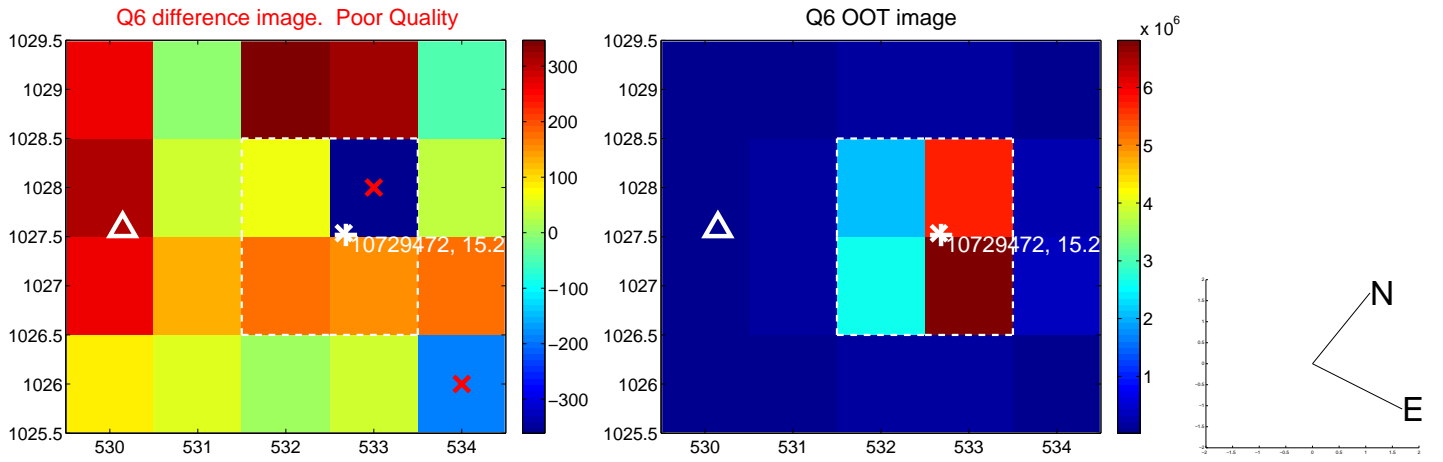
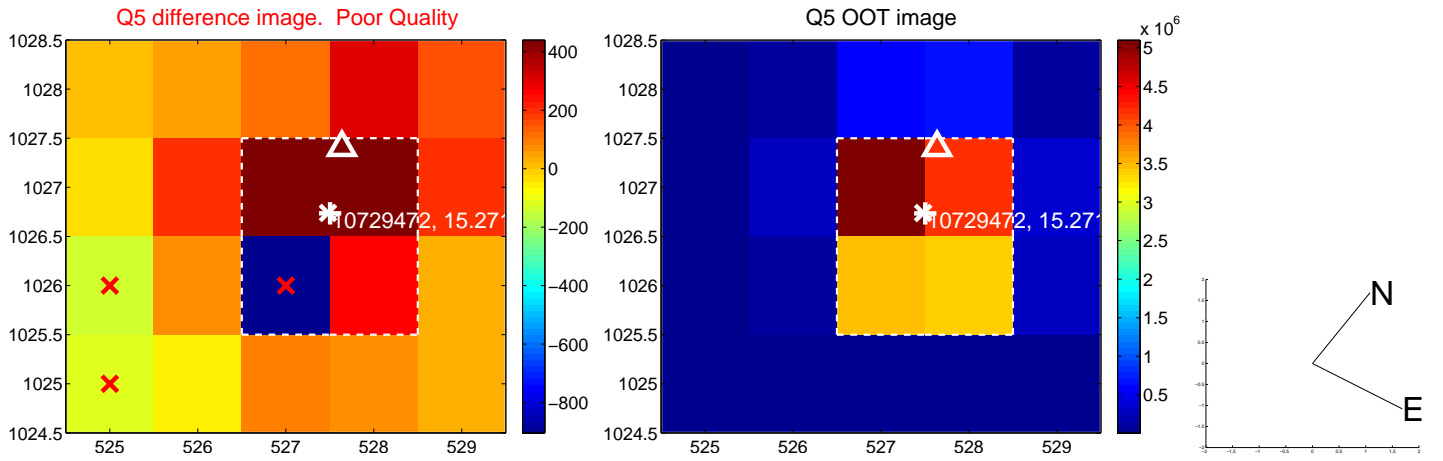


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

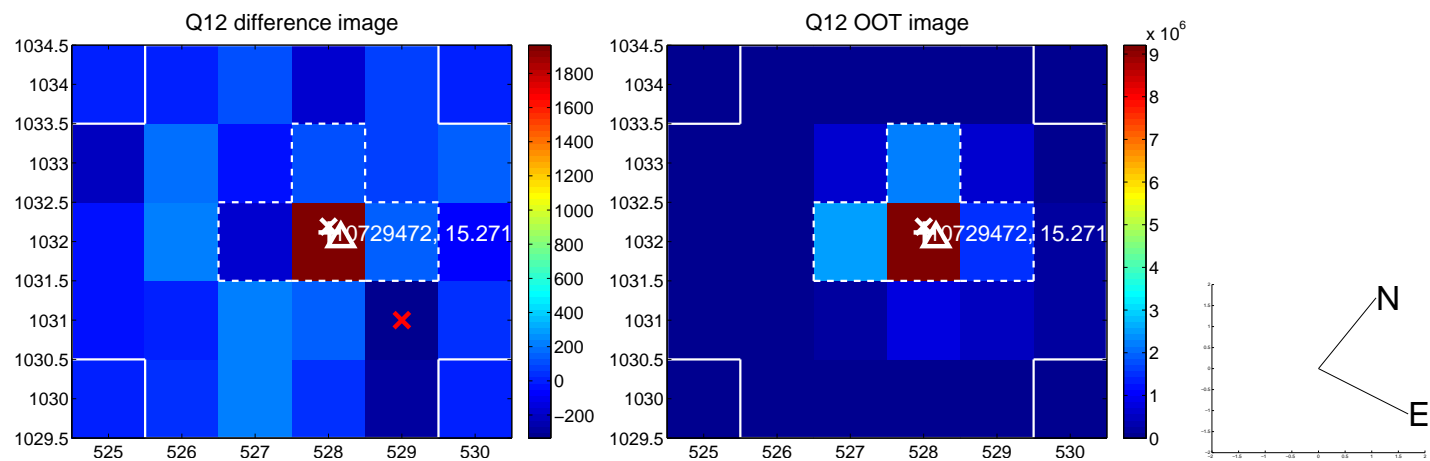
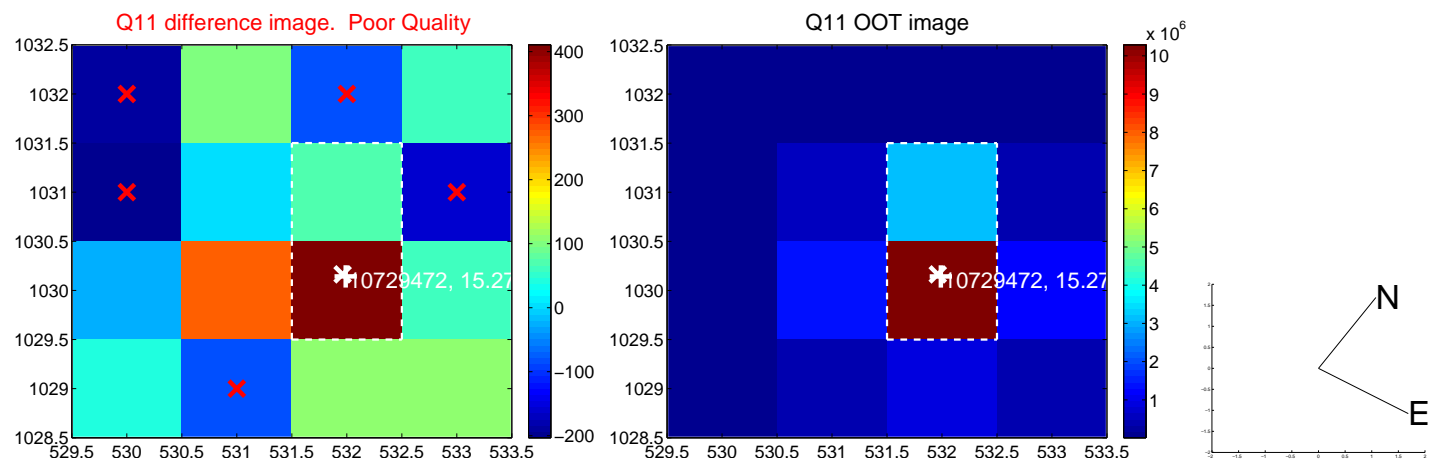
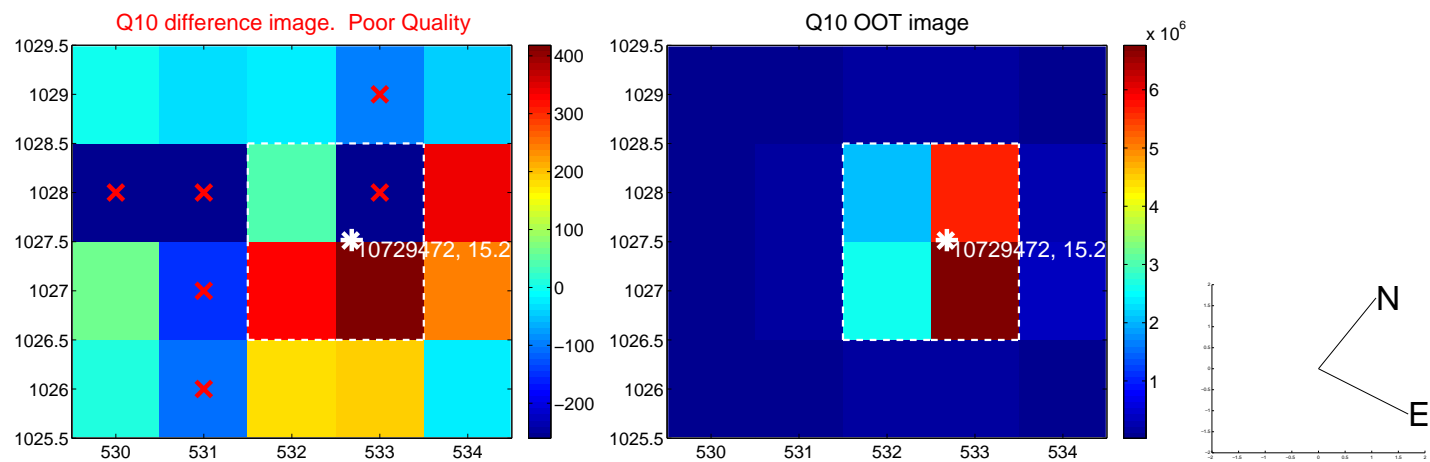
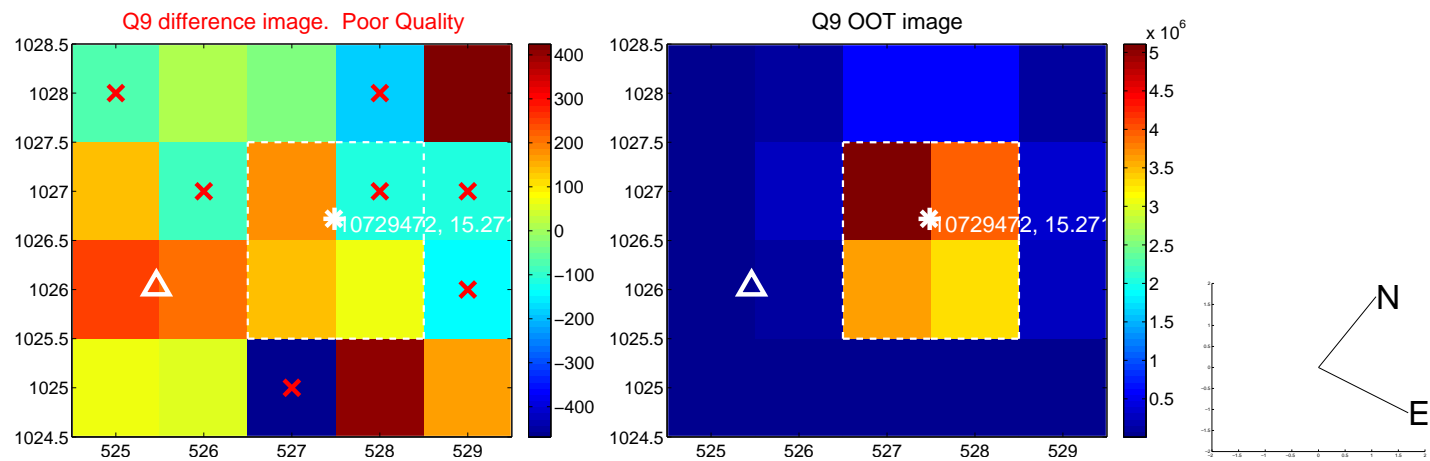
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



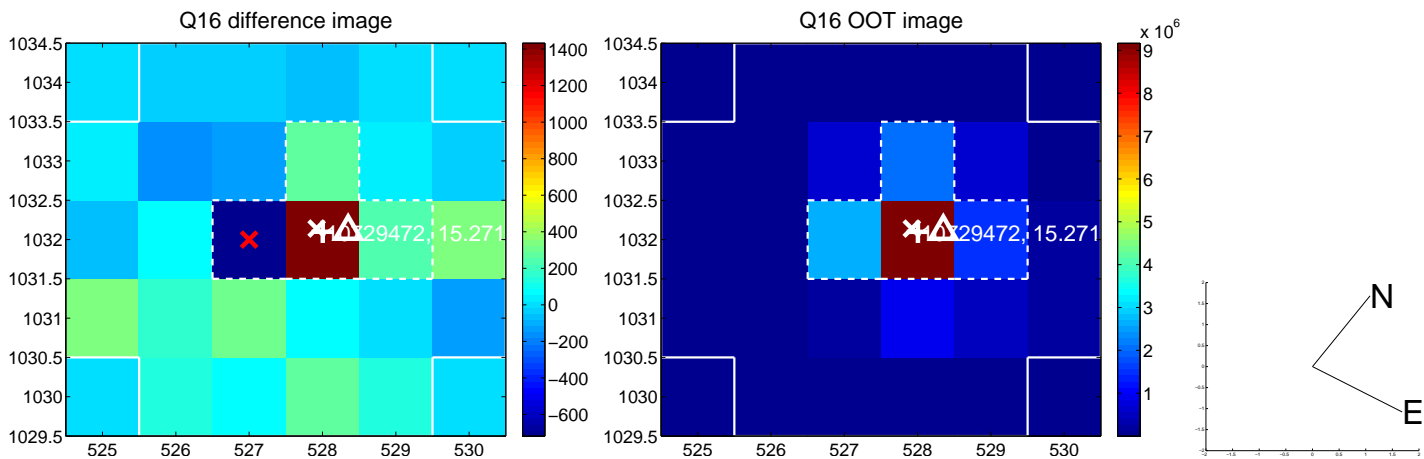
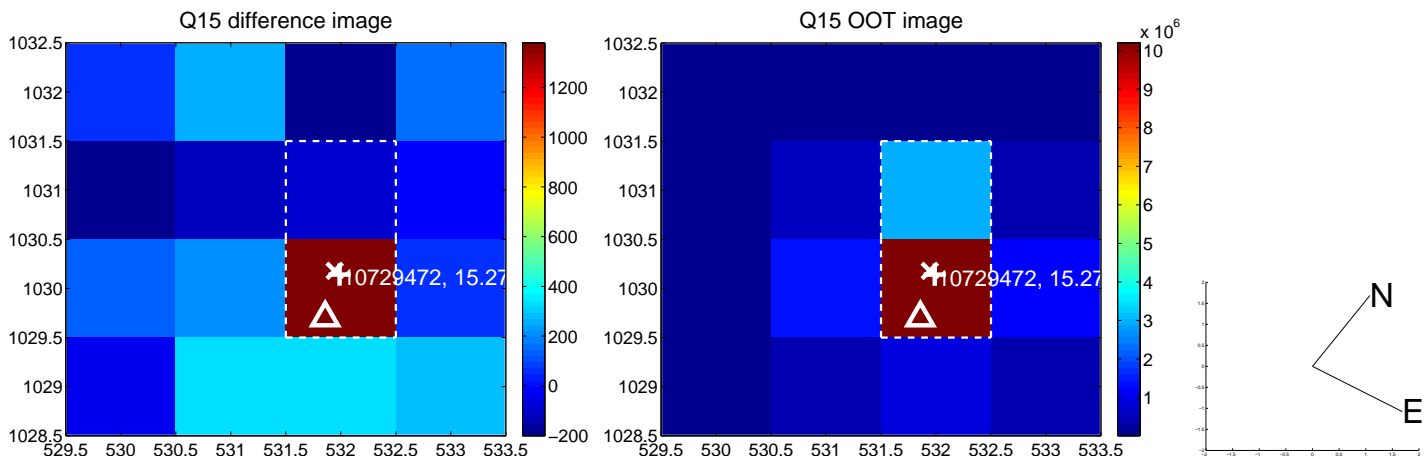
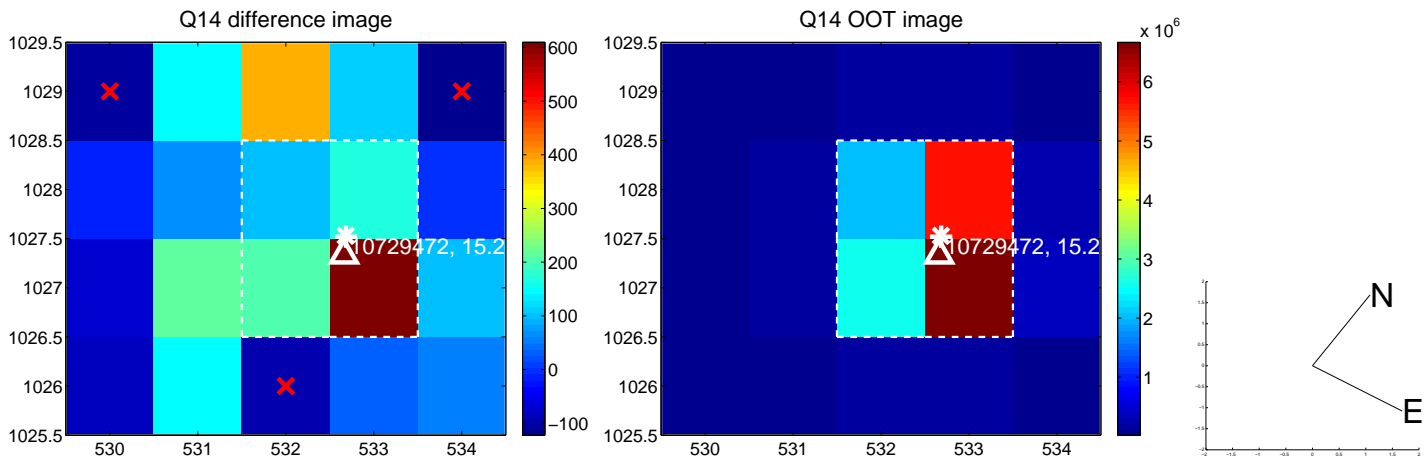
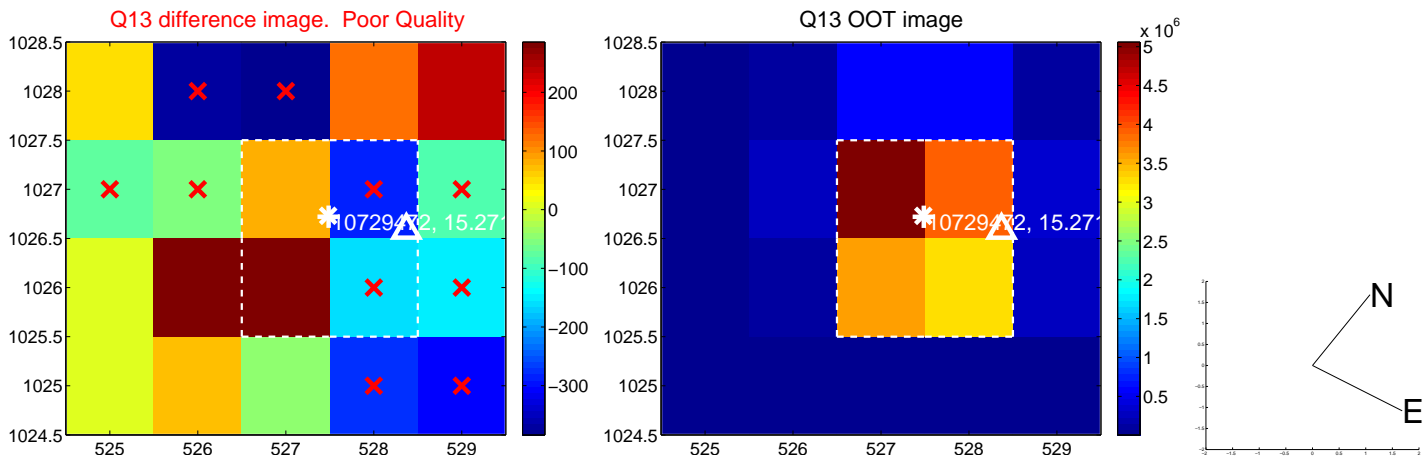
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



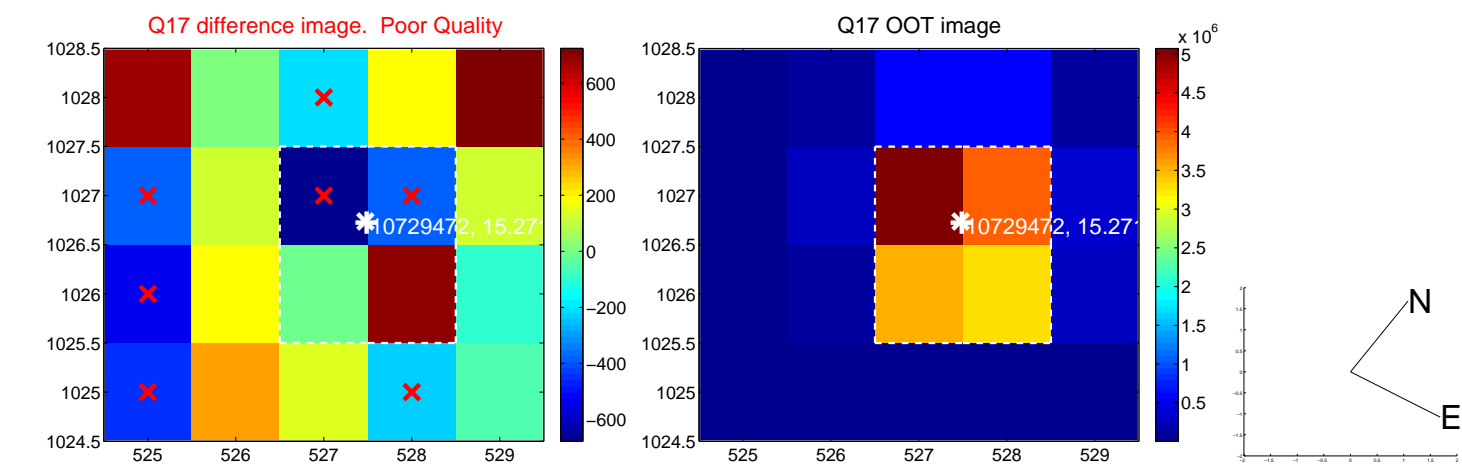
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



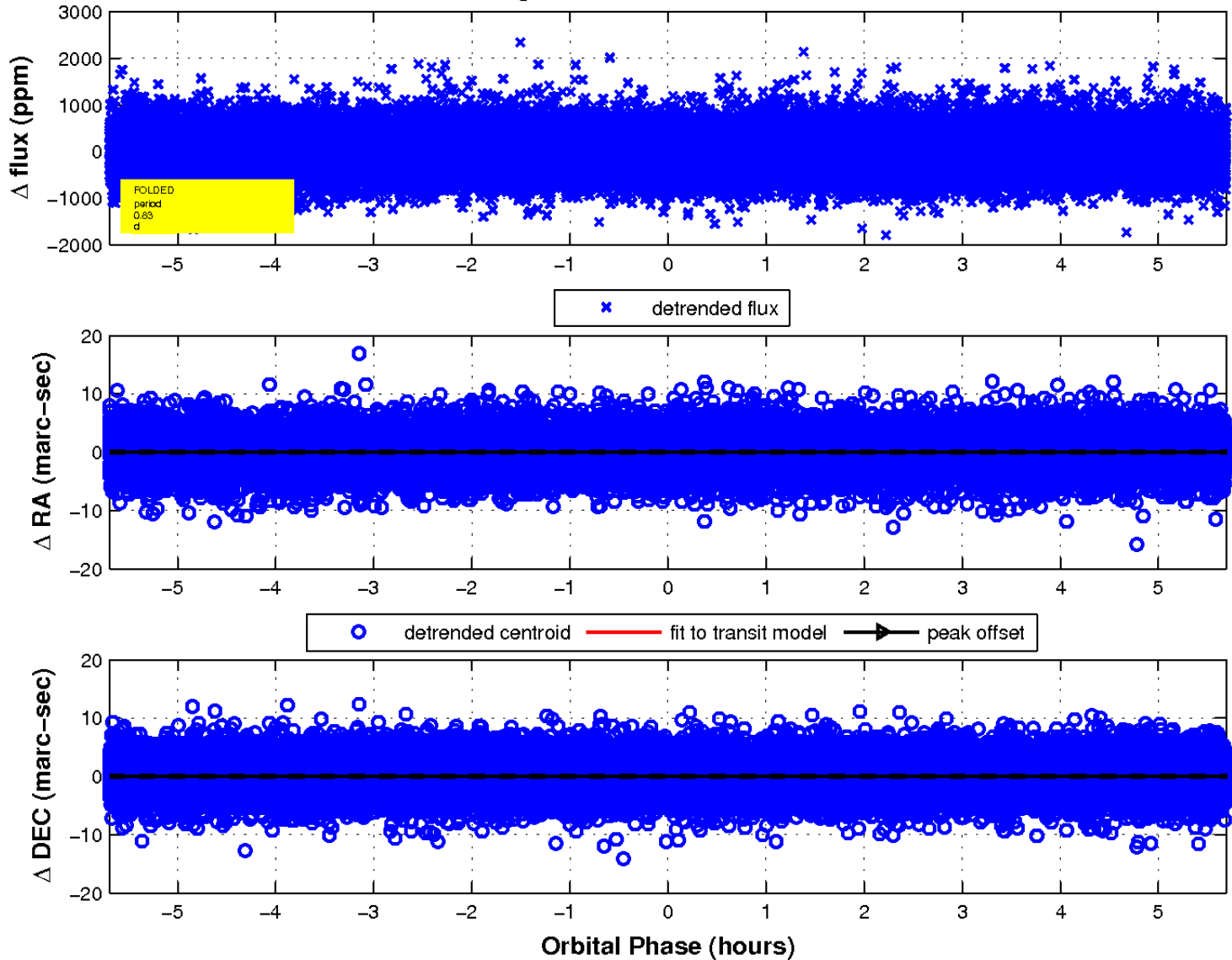
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

