

KIC 012157983

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})
012157983-01	OBS	7514.01	0.577868	131.859409	56.8	1.965	23.6	18.8	0.82	5693	0.65	3638.72
012157983-02	OBS	No	295.900375	143.162371	521.8	3.672	8.2	7.1	0.82	5693	2.21	0.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012157983-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
012157983-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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 012157983-01

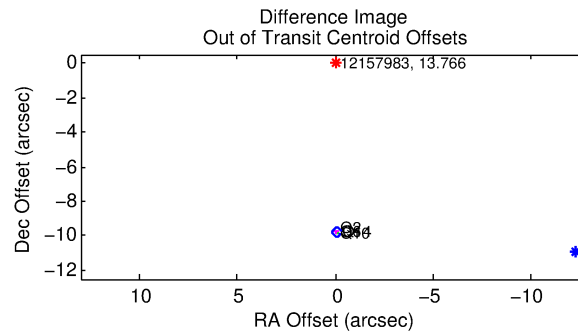
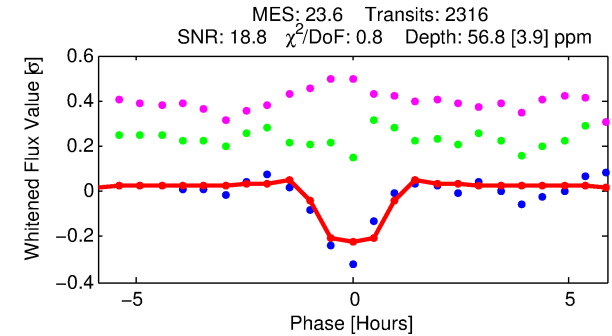
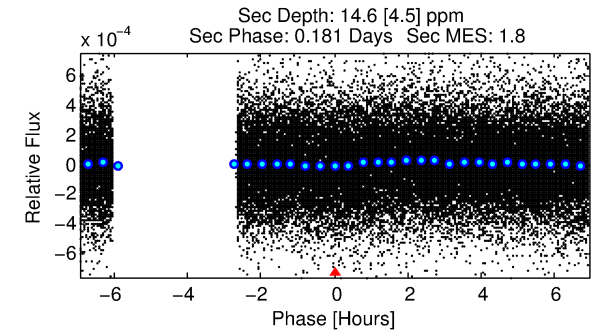
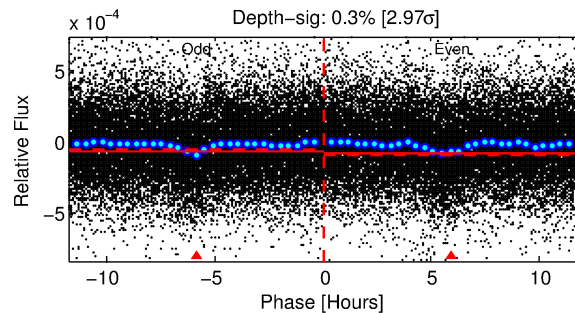
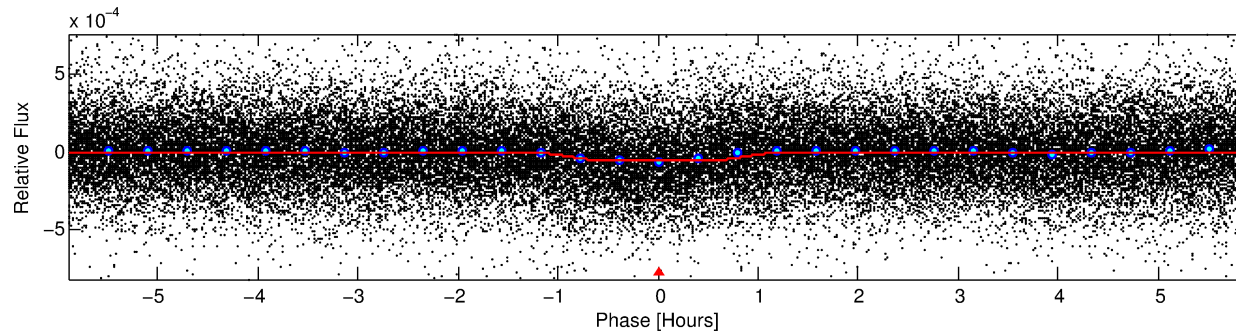
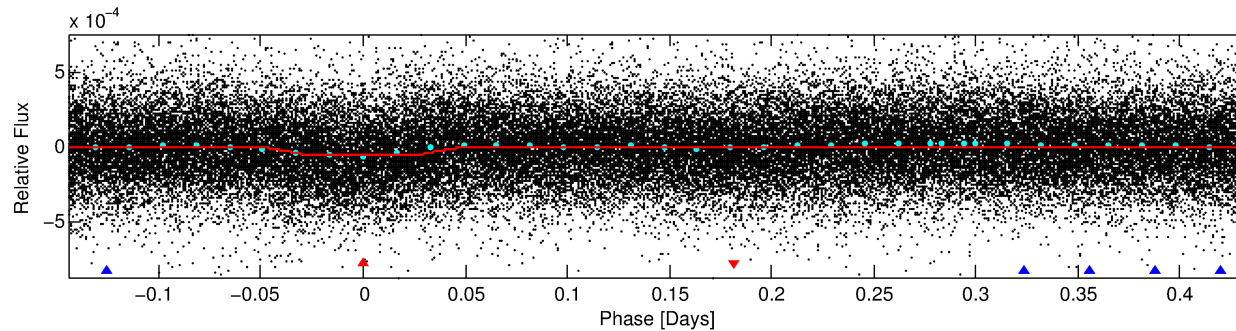
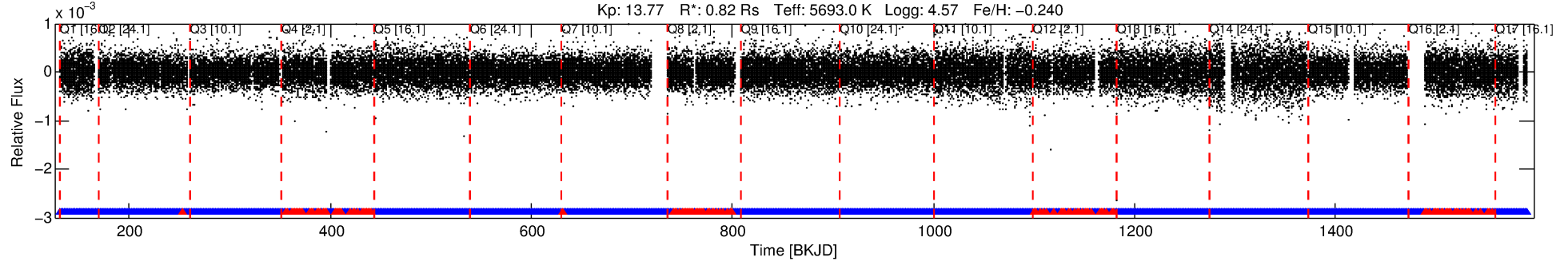
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
012157983-01	12157983	012157987-pri	12157987	1:1	25.1	6	-1	12.21	13.77	3608.80	Direct-PRF	0	4.58	1.75

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 12157983 Candidate: 1 of 2 Period: 0.578 d
KOI: K07514 Corr: No Ephemeris Match

Kp: 13.77 R*: 0.82 Rs Teff: 5693.0 K Logg: 4.57 Fe/H: -0.240



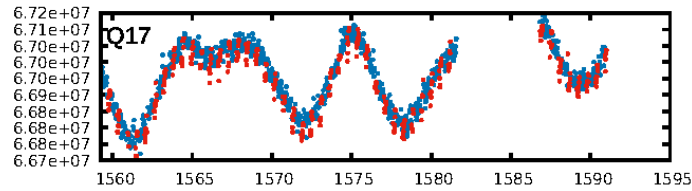
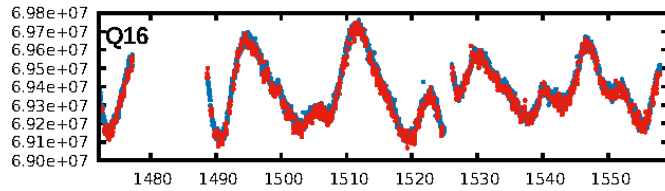
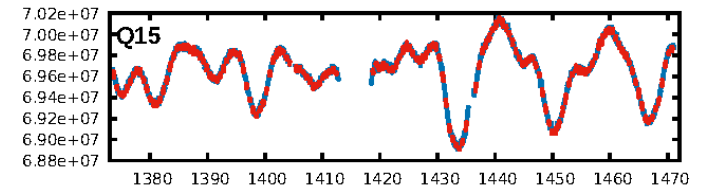
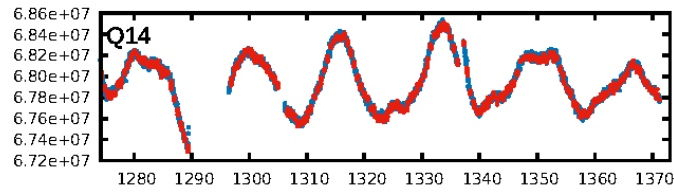
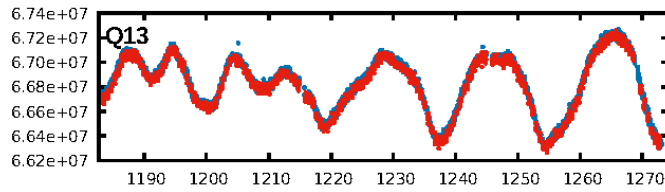
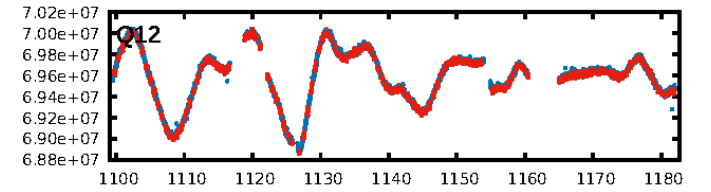
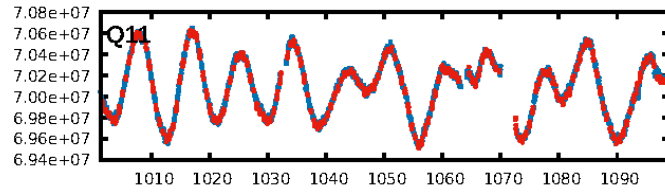
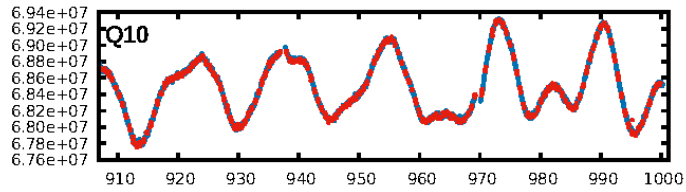
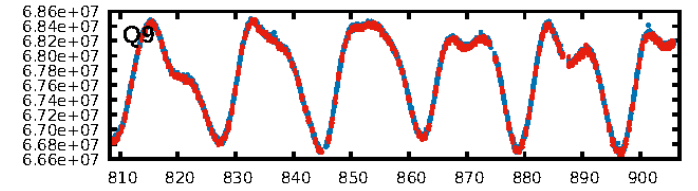
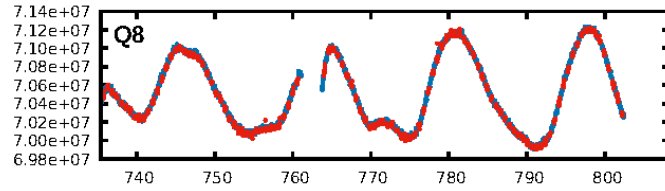
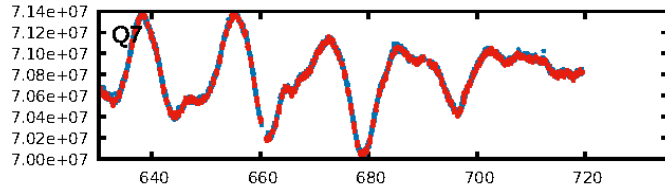
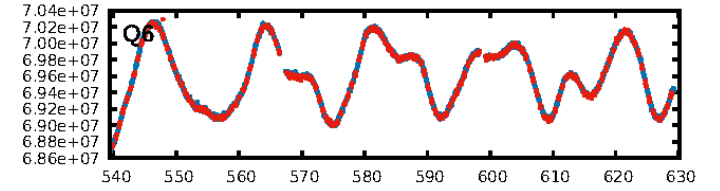
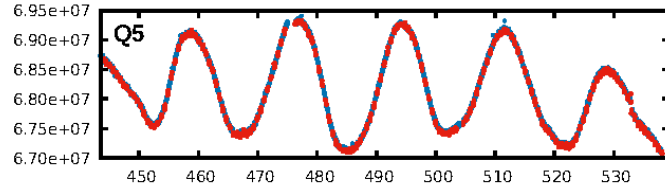
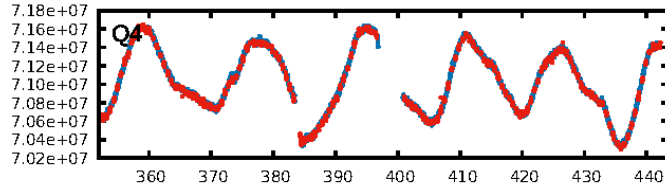
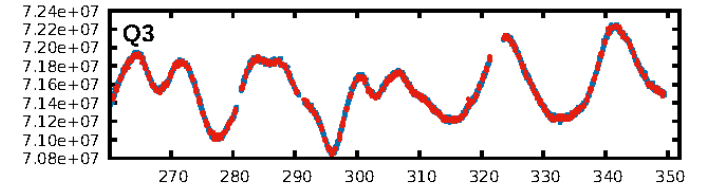
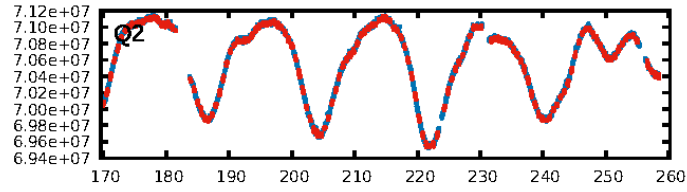
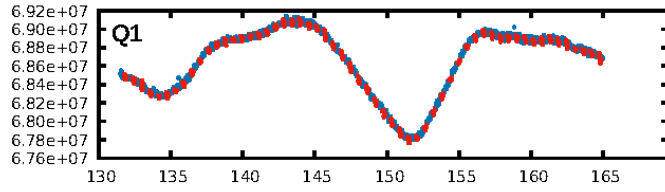
DV Fit Results:

Period = 0.57787 [0.00001] d
Epoch = 131.8594 [0.0012] BKJD
Rp/R* = 0.0073 [0.0016]
a/R* = 1.86 [1.31]
b = 0.67 [0.81]
Seff = 3638.71 [1190.77]
Teq = 1980 [162] K
Rp = 0.65 [0.22] Re
a = 0.0131 [0.0028] AU
Ag = 3.24 [2.03] [1.10σ]
Teff = 4107 [571] K [3.58σ]

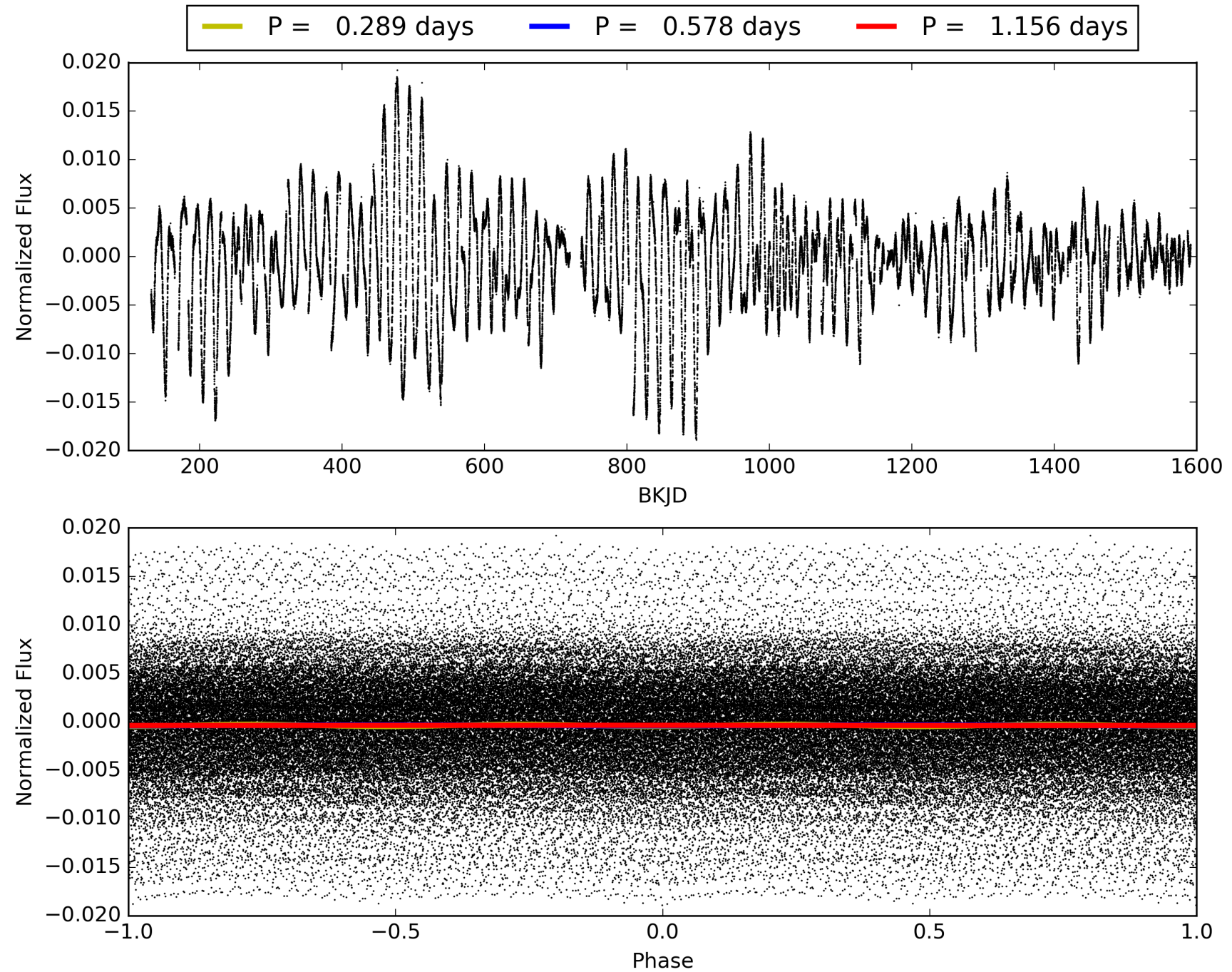
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1701.97σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 3.31e-105
RollingBand-fgt: 0.94 [2074/2212]
GhostDiagnostic-chr: -0.3944
Centroid-sig: 0.0%
Centroid-so: 9.888 arcsec [13.27σ]
OotOffset-rm: 9.778 arcsec [122.42σ]
KicOffset-rm: 9.682 arcsec [127.09σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012157983-01, PDC Light Curves

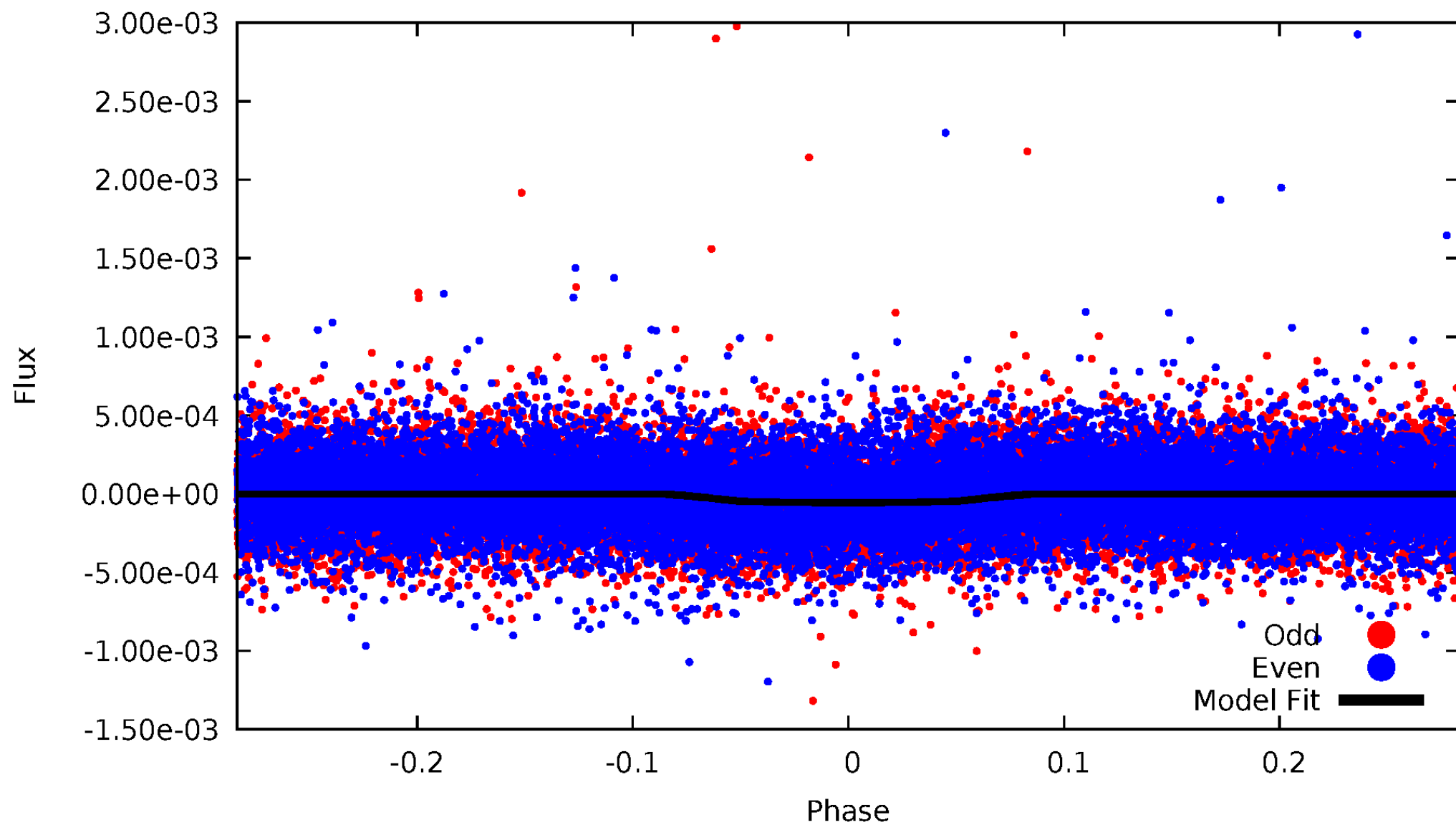


TCE 012157983-01



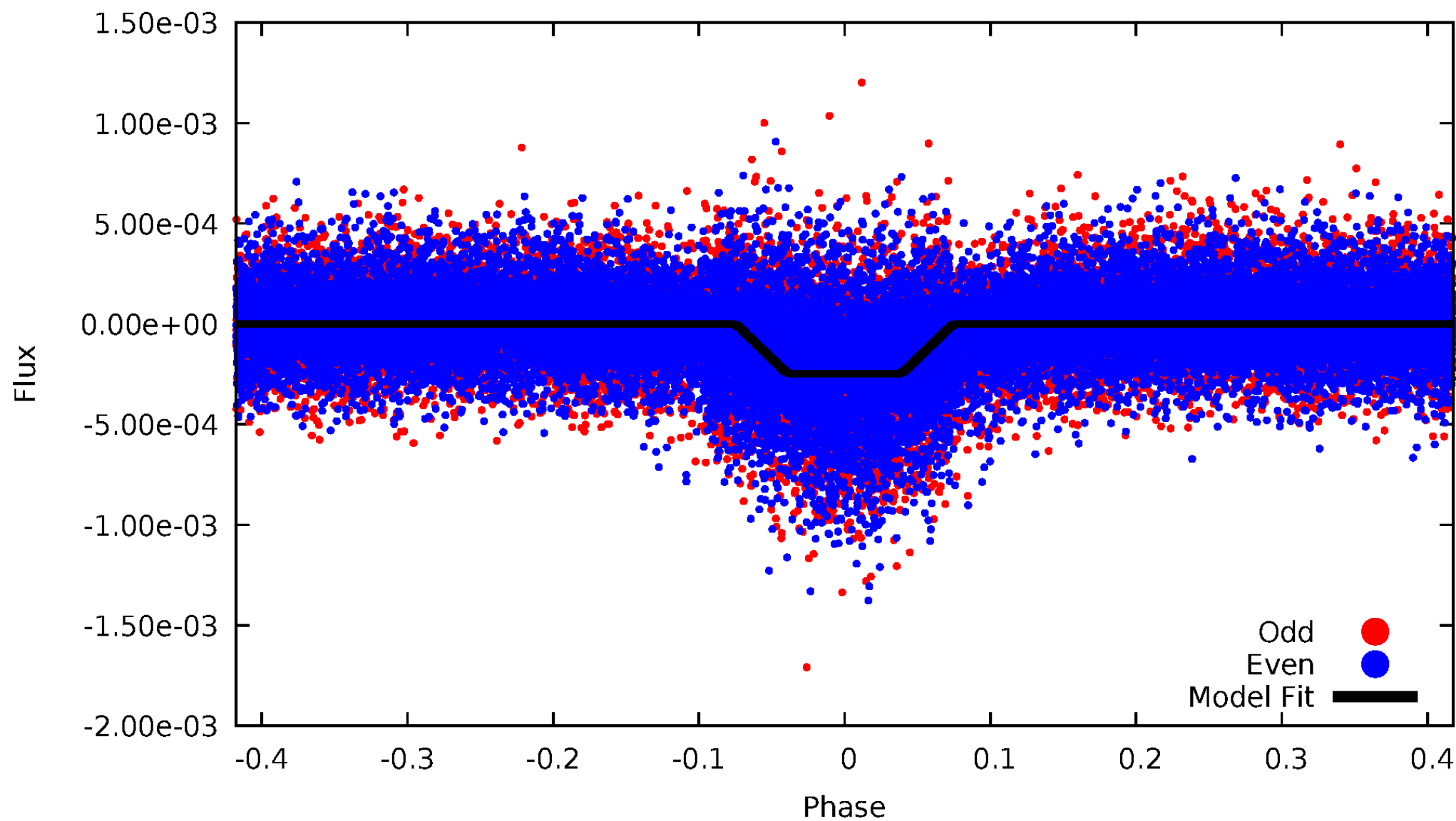
DV Odd/Even

TCE 012157983-01



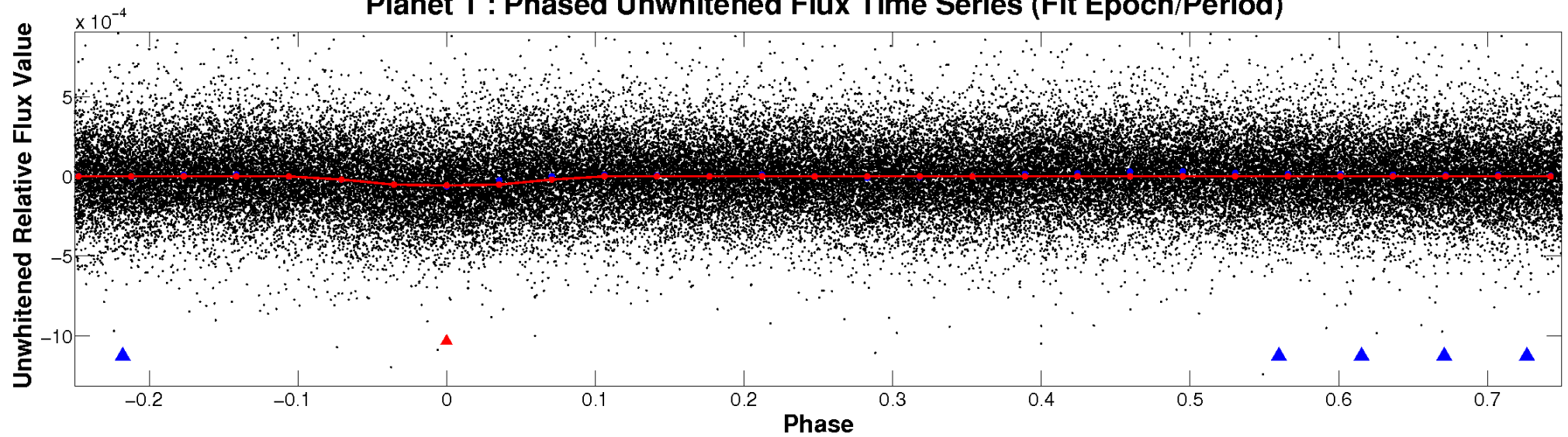
ALT Odd/Even

TCE 012157983-01

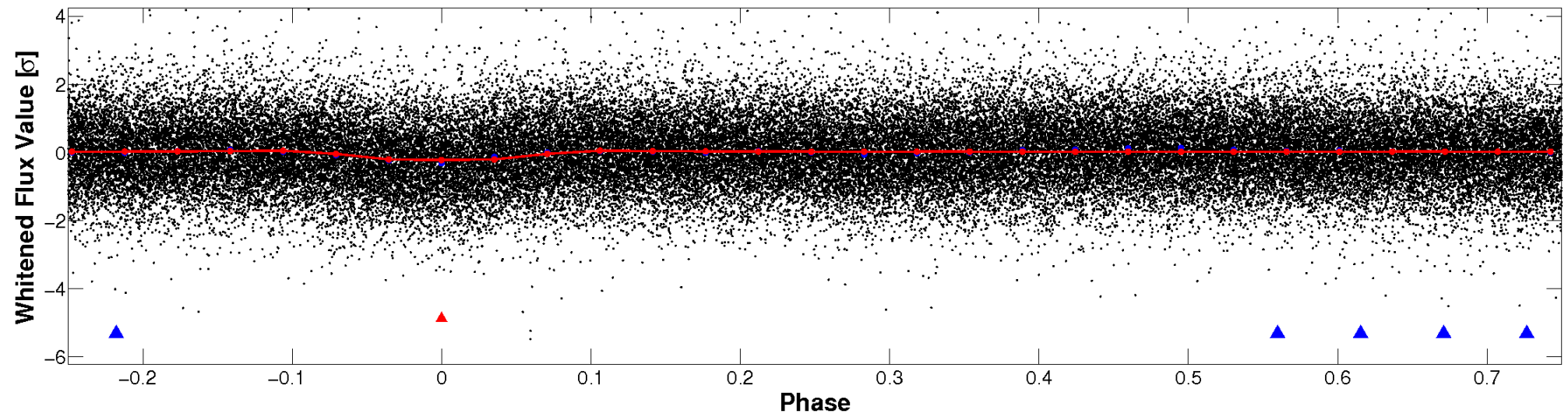


Non-Whitened Vs. Whitened Light Curve

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

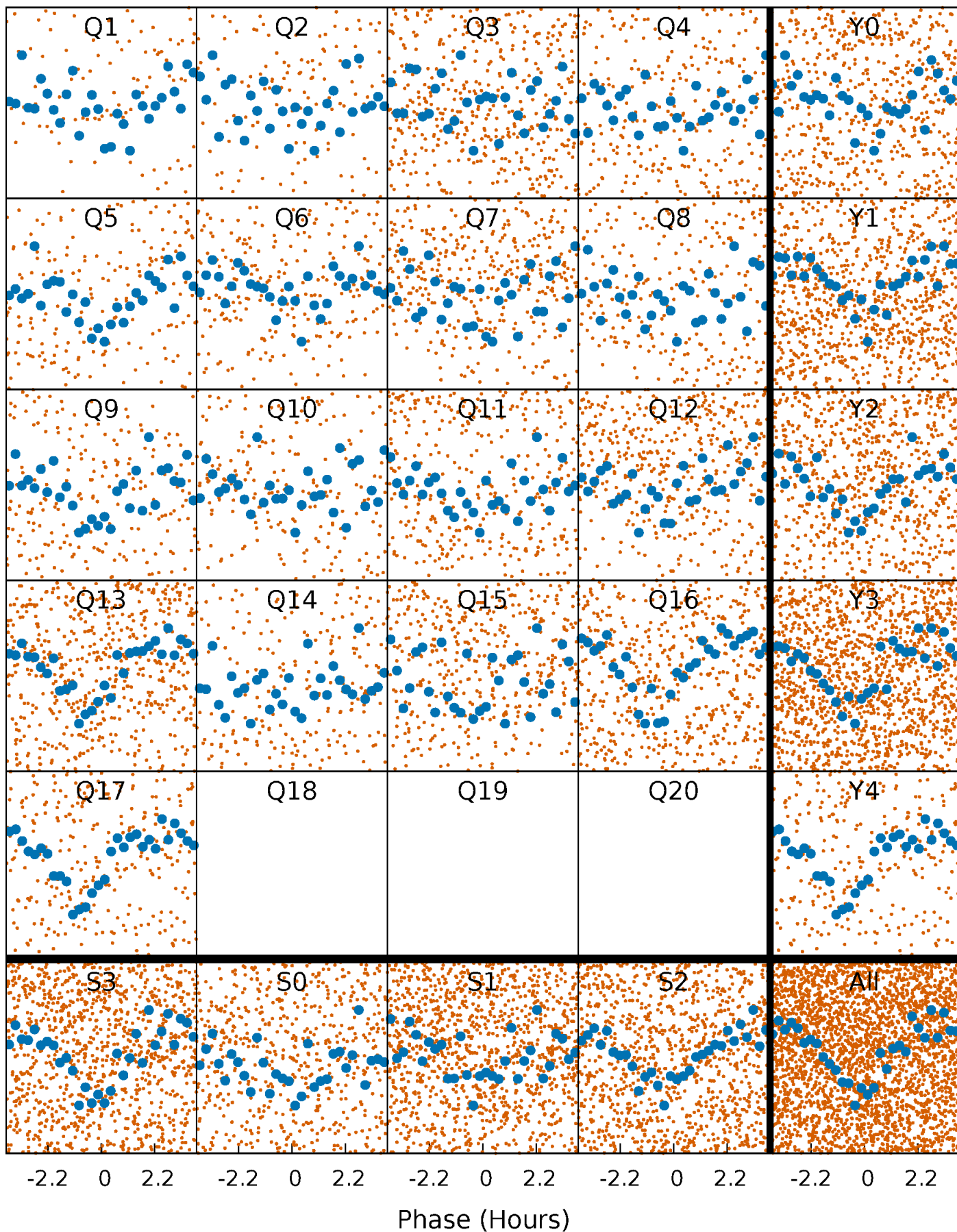


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



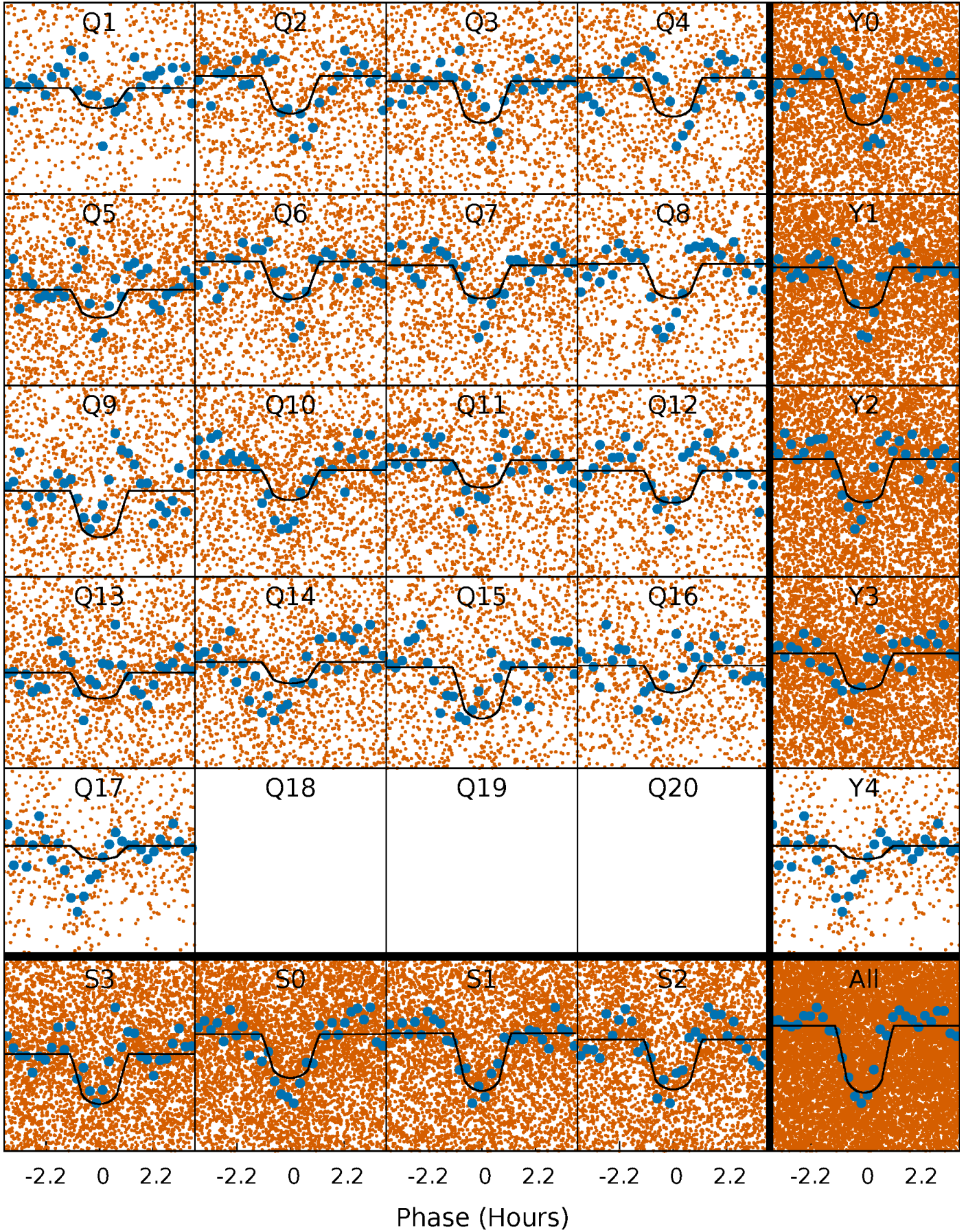
PDC Quarter-Phased Transit Curves

TCE 012157983-01 P= 0.577868 Days $T_0=131.859409$ (BKJD)



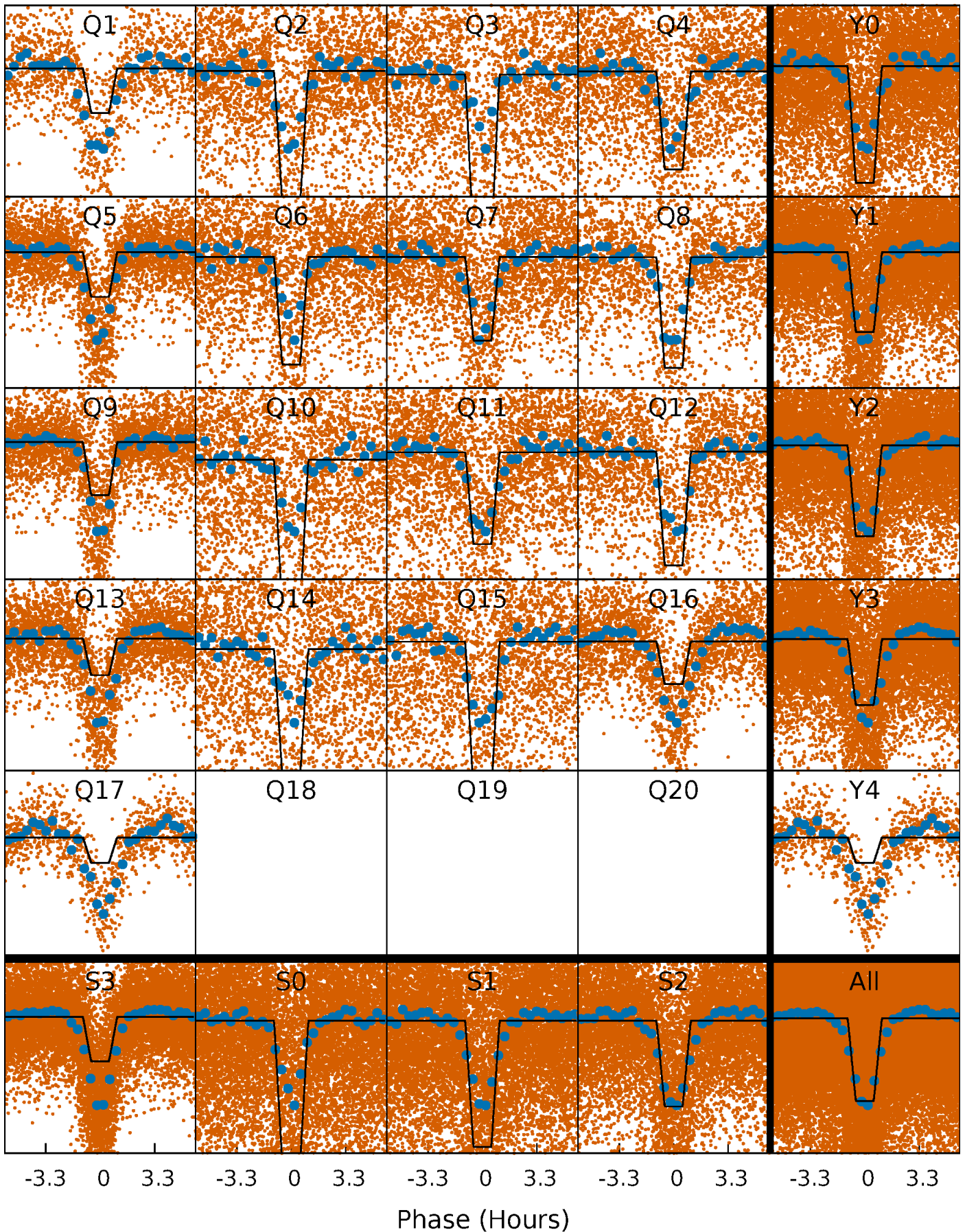
DV Quarter-Phased Transit Curves

TCE 012157983-01 P= 0.577868 Days $T_0=131.859409$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

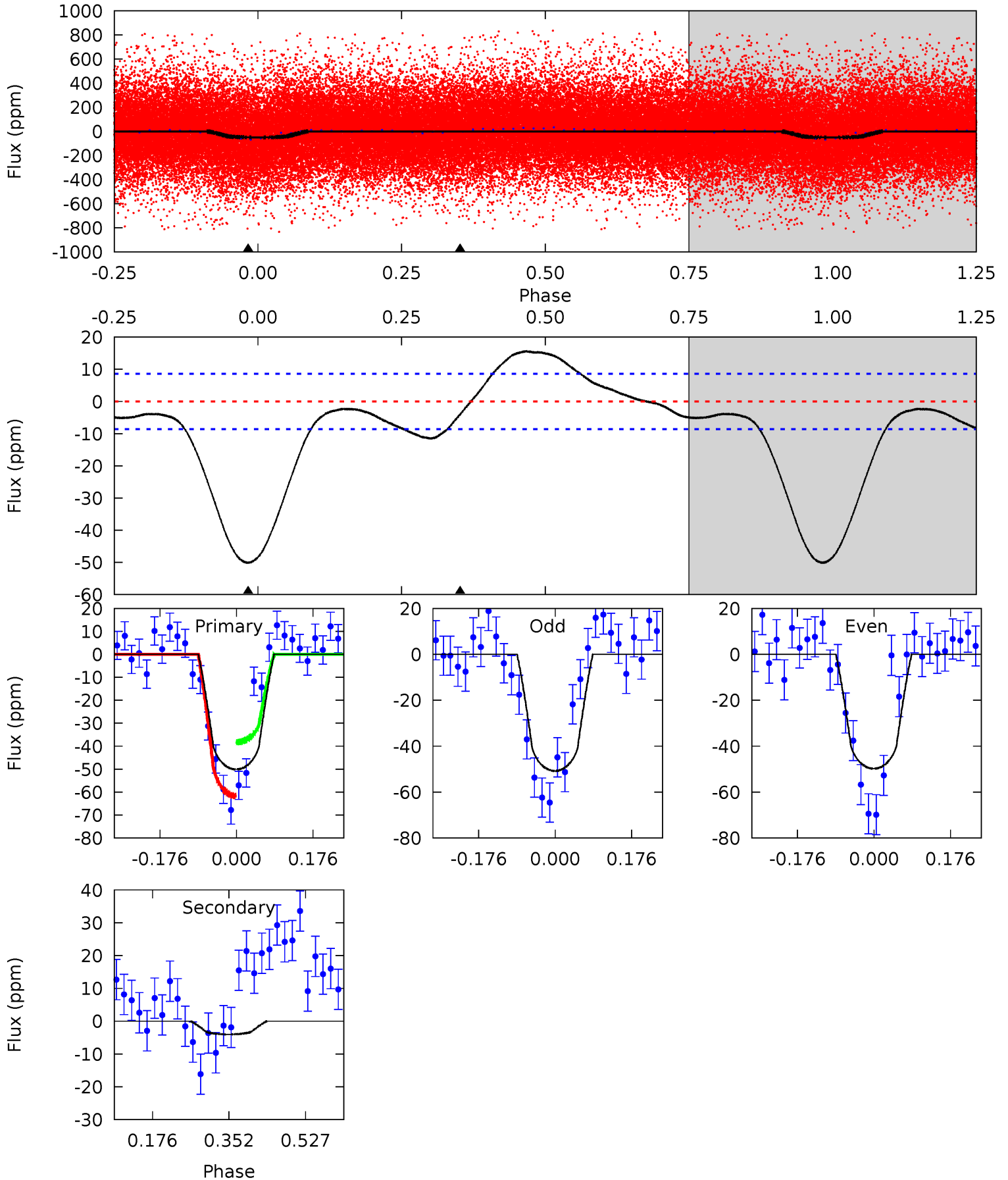
TCE 012157983-01 P= 0.577839 Days $T_0=131.884623$ (BKJD)



DV Model-Shift Uniqueness Test

012157983-01, P = 0.577868 Days, E = 131.281541 Days

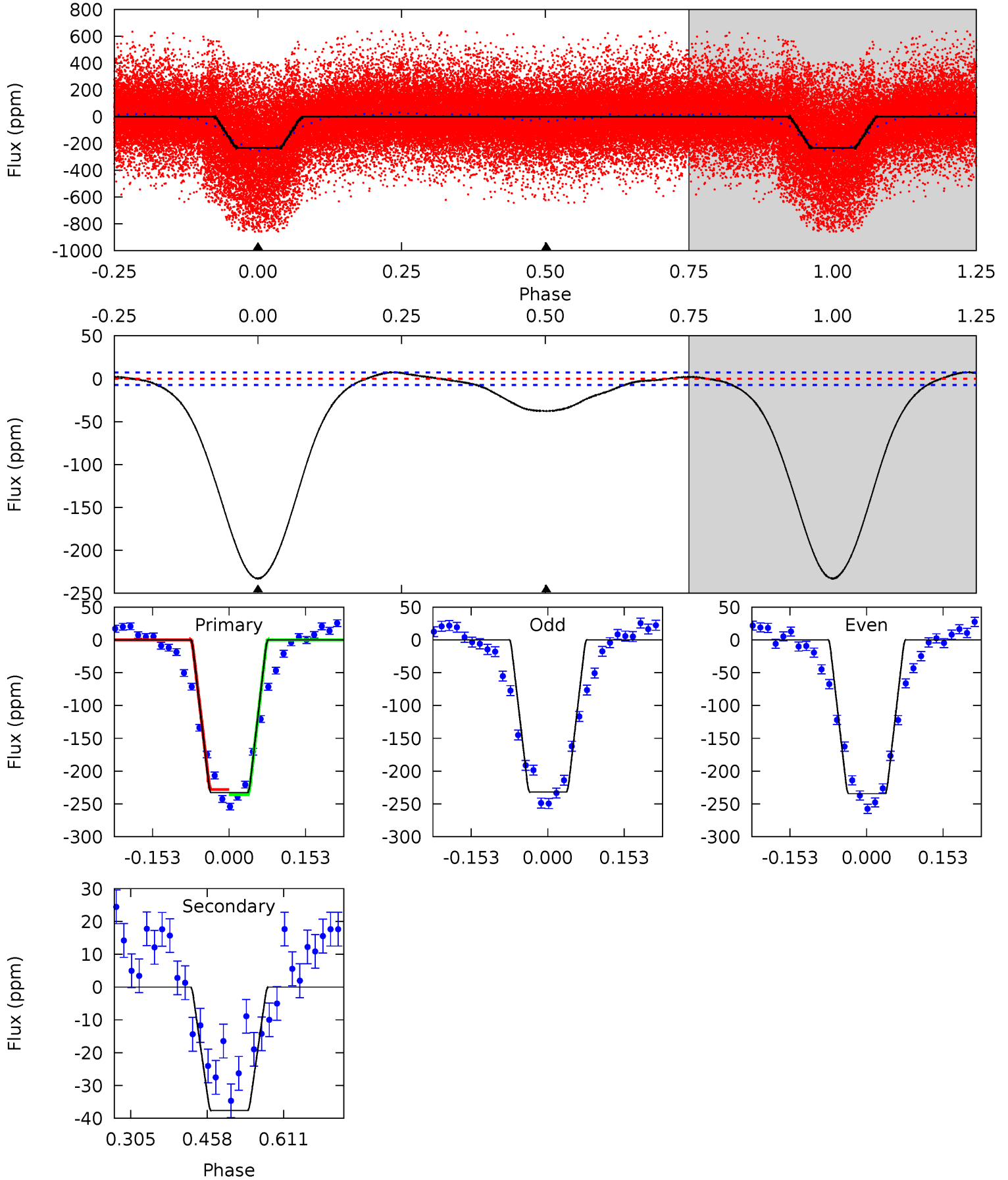
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.0	2.08	0	0	4.44	1.35	2.66	26.0	26.0	2.08	2.08	0.26	1.00	0.24	6.09



Alt Model-Shift Uniqueness Test

012157983-01, P = 0.577839 Days, E = 131.306784 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
144.2	23.3	0	0	4.48	1.43	2.92	144.2	144.2	23.3	23.3	0.75	1.07	0.03	2.44



Stellar Parameters For KIC 012157983

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5693^{+154}_{-154}	$4.570^{+0.042}_{-0.168}$	$-0.240^{+0.300}_{-0.300}$	$0.816^{+0.208}_{-0.069}$	$0.911^{+0.089}_{-0.109}$	$2.357^{+0.394}_{-1.092}$
	+3%/-3%	+1%/-4%	+125%/-125%	+25%/-8%	+10%/-12%	+17%/-46%
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 012157983-01 / KOI 7514.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-4 ± 2	$0.67^{+0.17}_{-0.15}$	2820^{+158}_{-118}	3211^{+498}_{-837}	$0.801^{+0.740}_{-0.453}$
Alt.	-38 ± 2	$1.45^{+0.25}_{-0.18}$	2821^{+170}_{-118}	3762^{+189}_{-169}	$1.662^{+0.517}_{-0.418}$

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 $A_{obs} \gg 1.0$

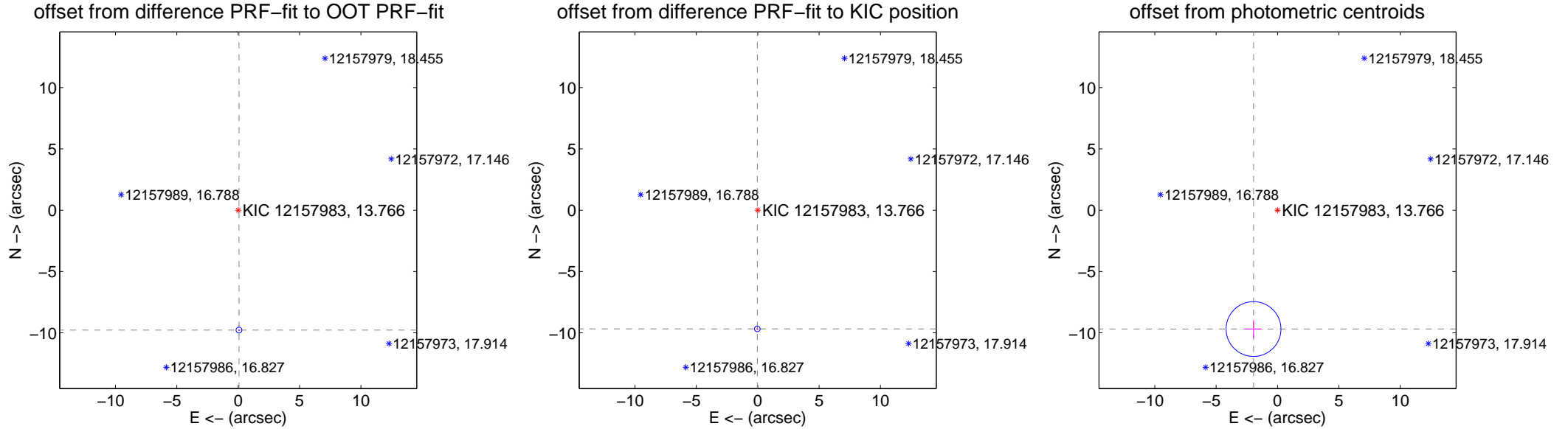
DV Centroid Data

Supplemental centroid analysis for 012157983-01. Kepler magnitude: 13.77. Transit SNR 18.81

There are 4 quarters with good PRF difference image offsets

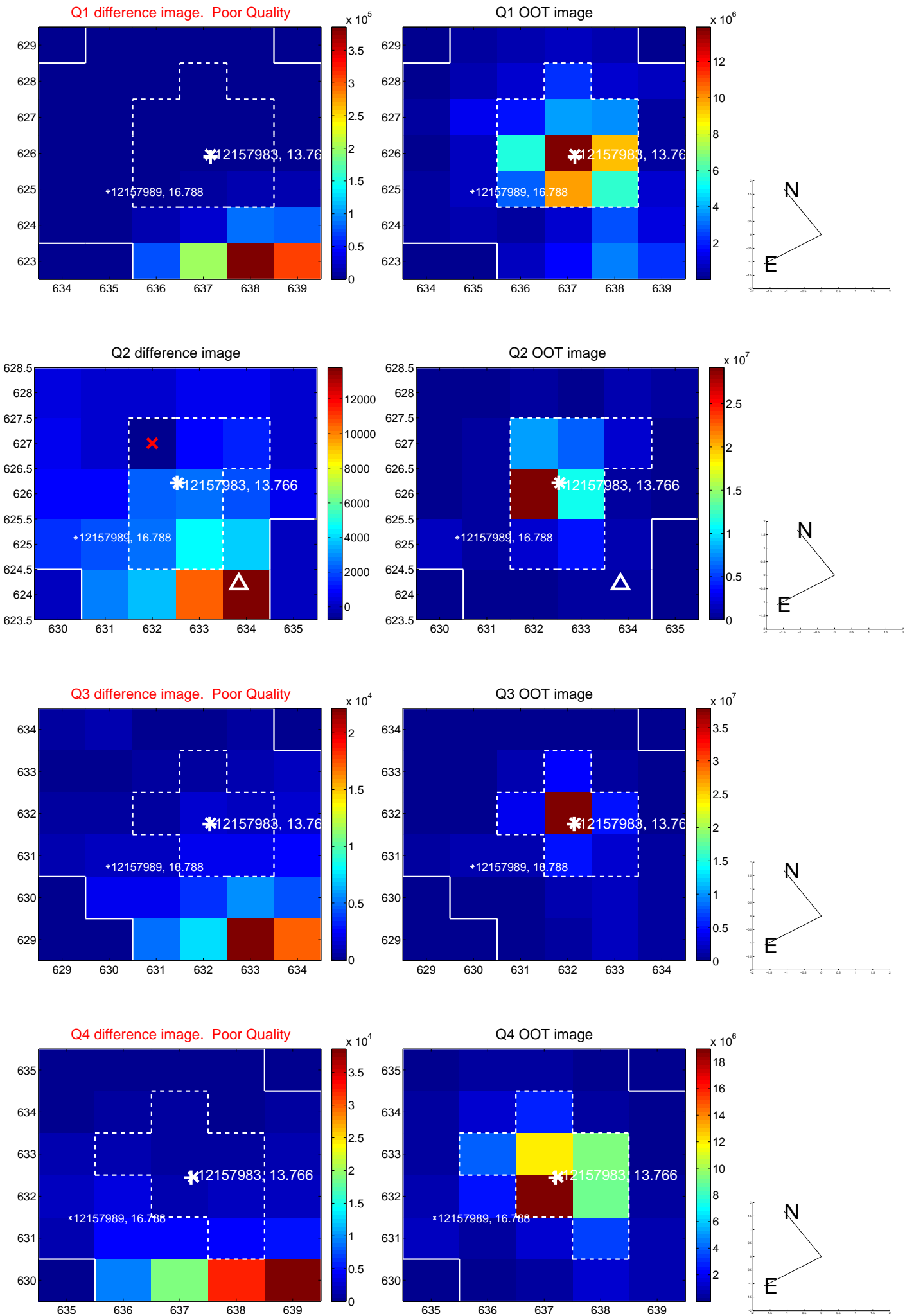
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.778 \pm 0.080	122.42	-0.064 \pm 0.068	-9.778 \pm 0.080
PRF-fit source offset from KIC position	9.682 \pm 0.076	127.09	0.031 \pm 0.067	-9.682 \pm 0.076
photometric centroid source offset	9.89 \pm 0.74	13.27	1.95 \pm 0.66	-9.69 \pm 0.75

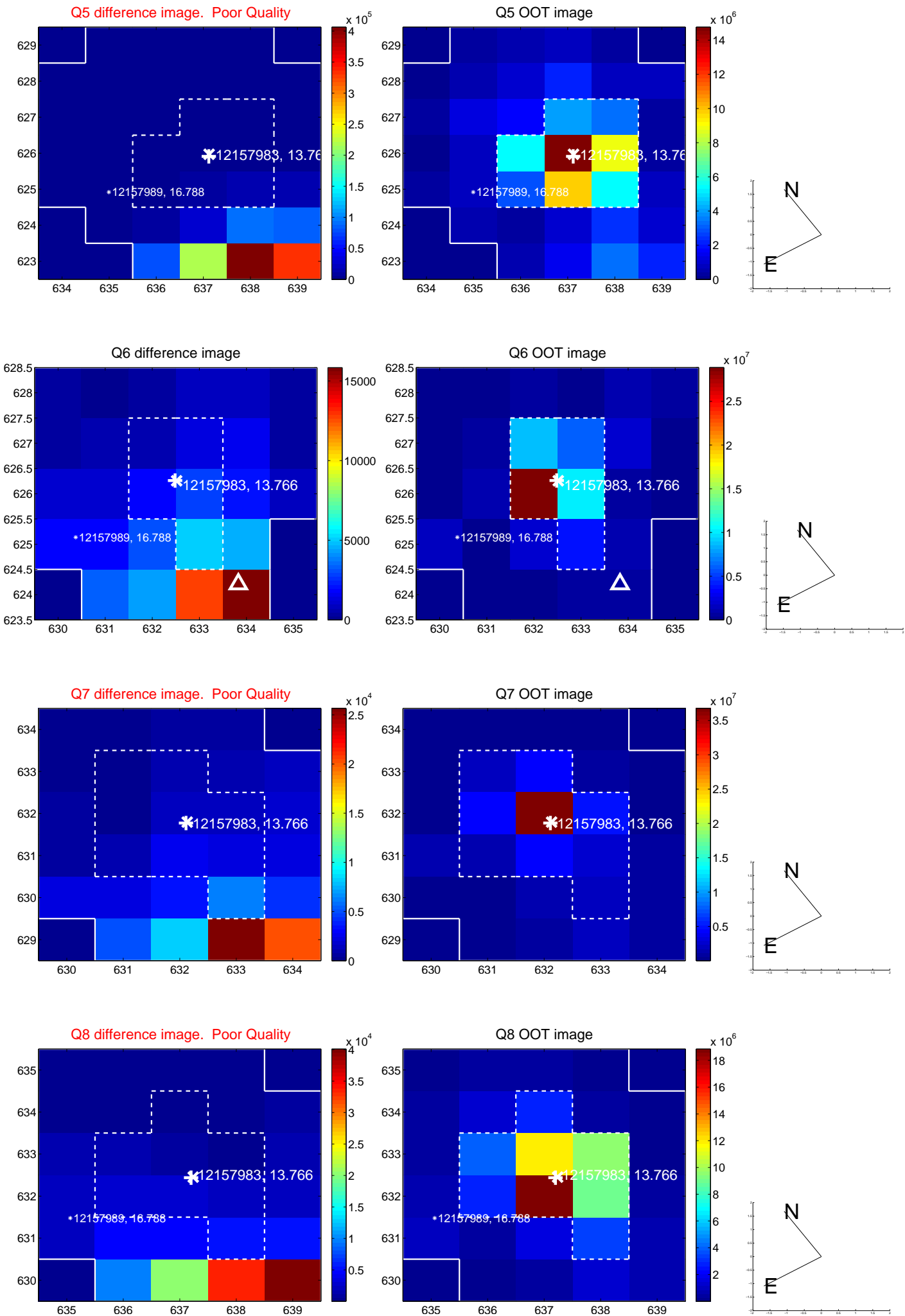


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

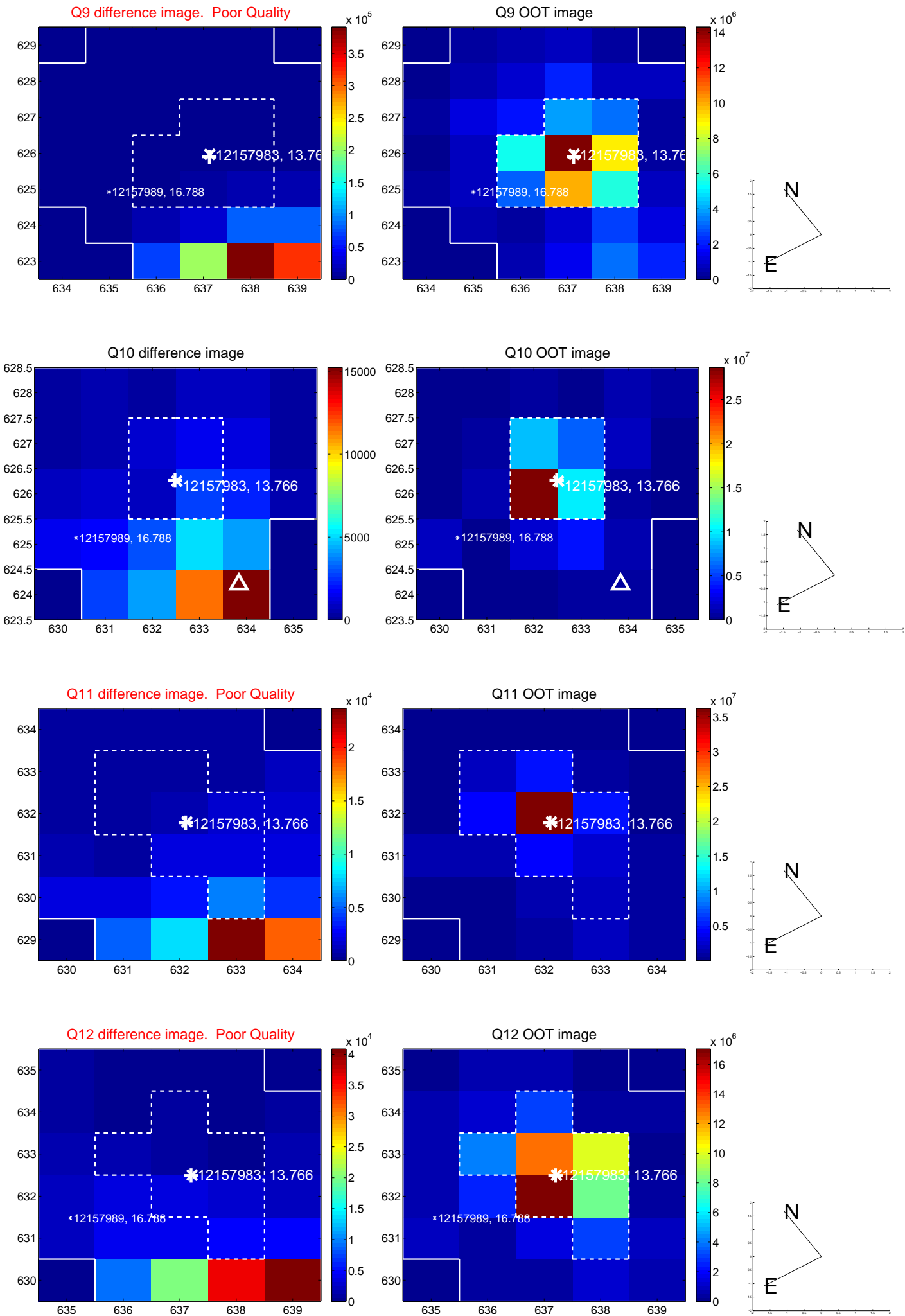
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



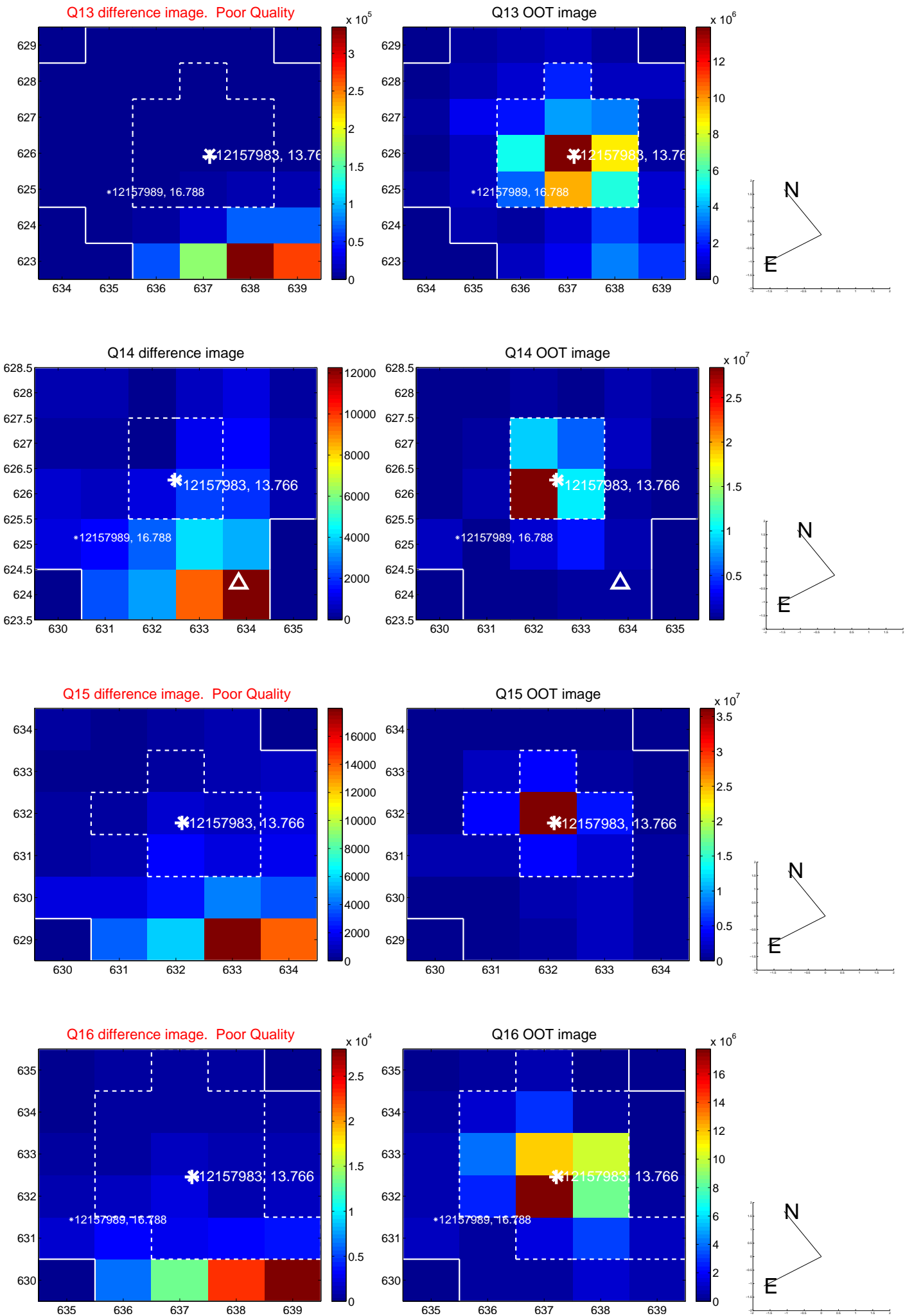
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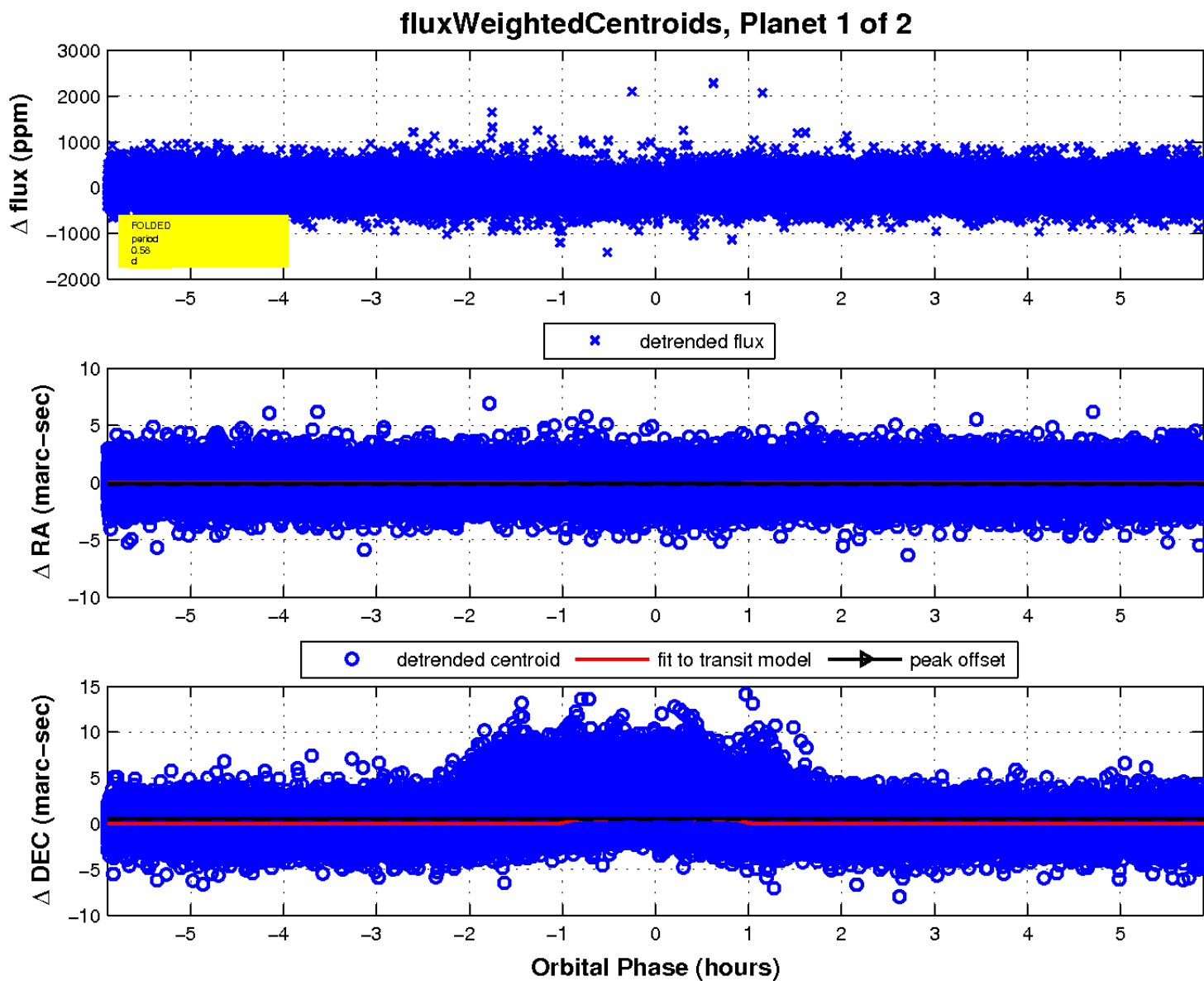
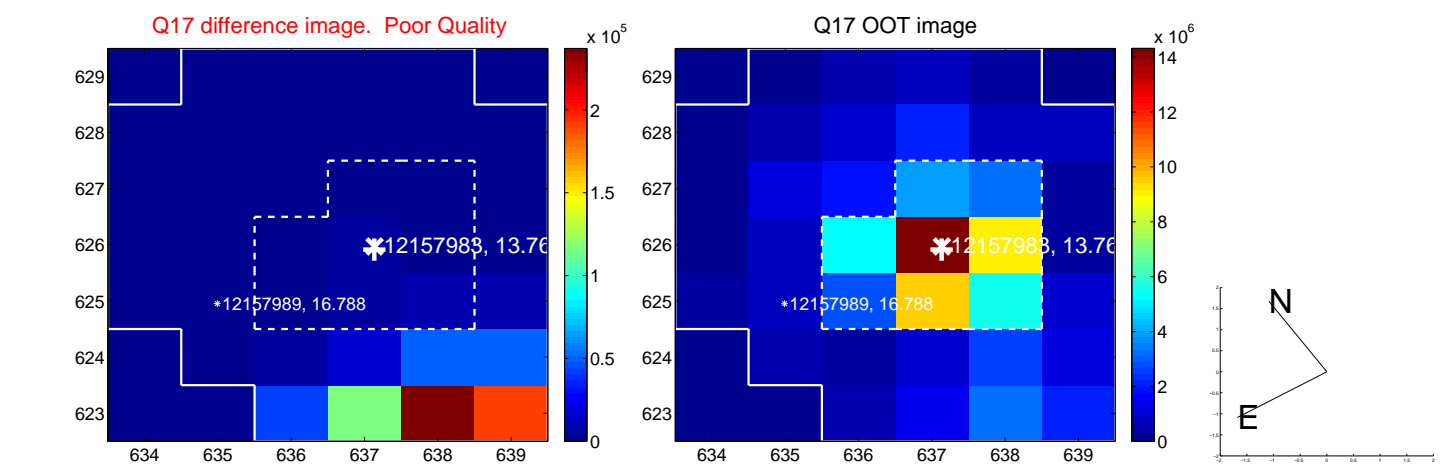
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

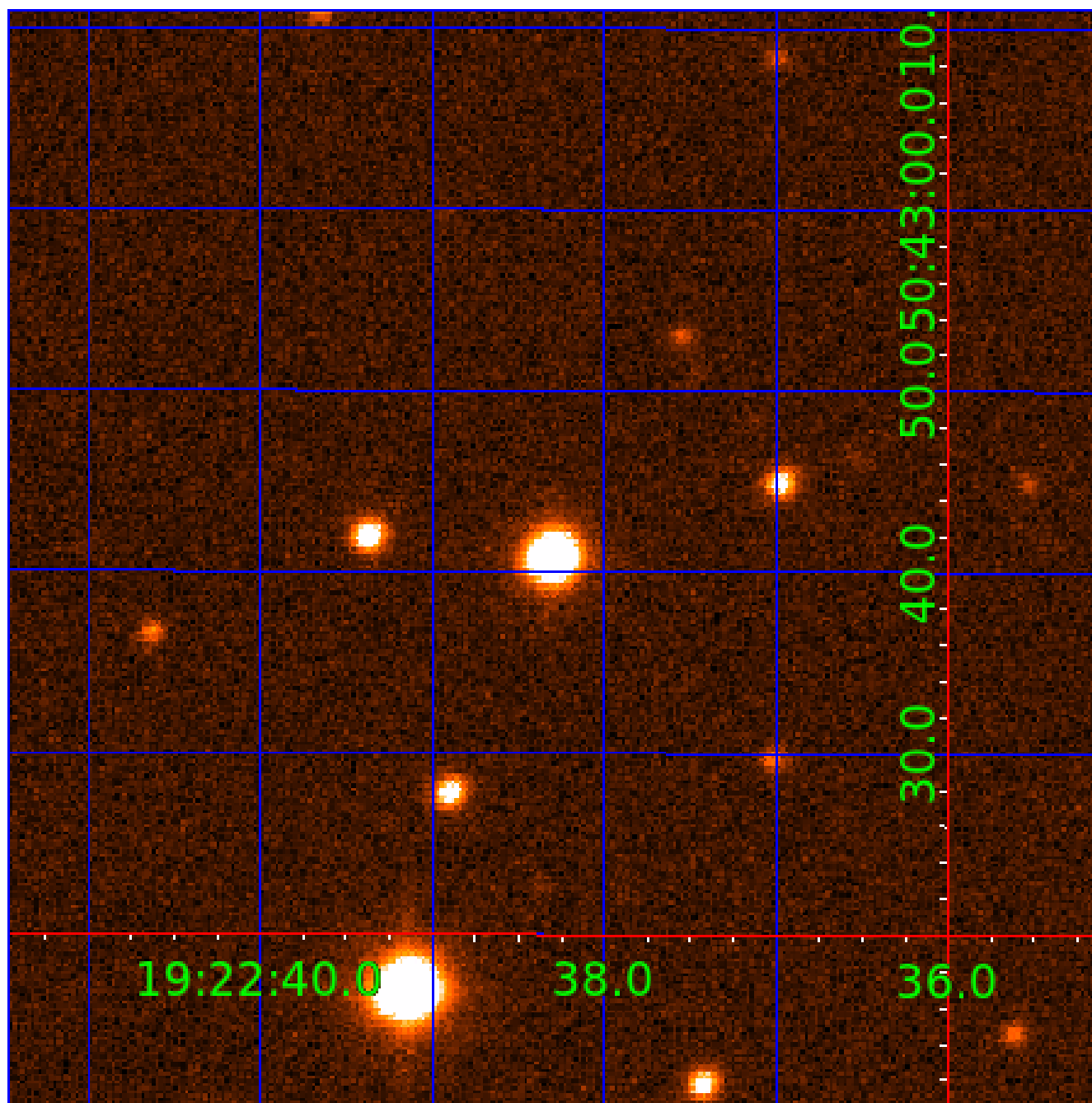


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012157983

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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012157983-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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.

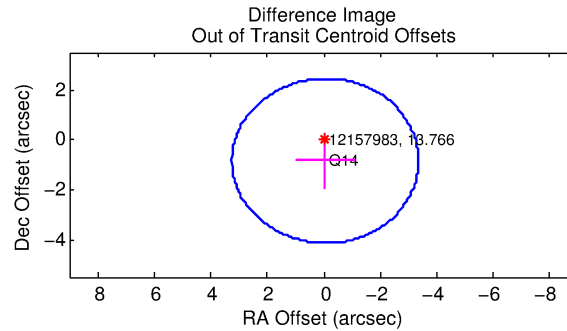
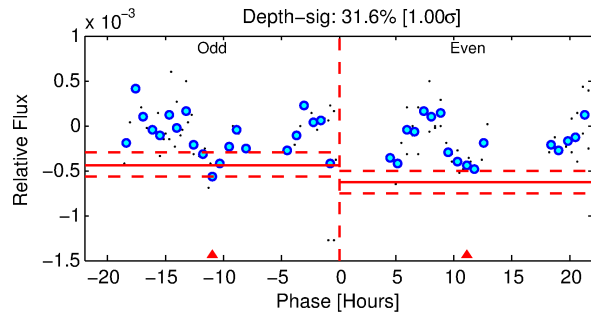
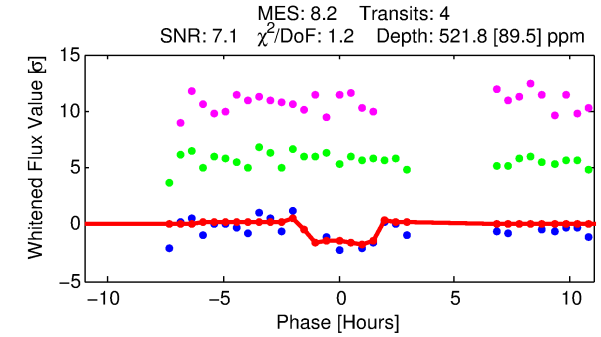
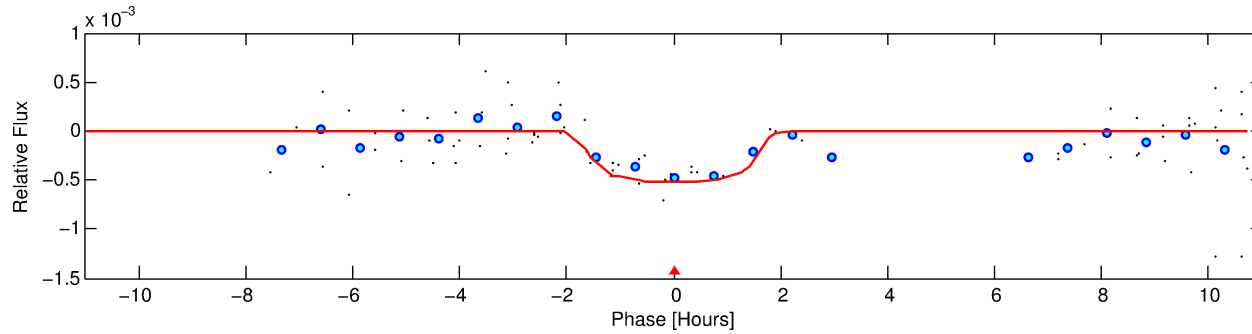
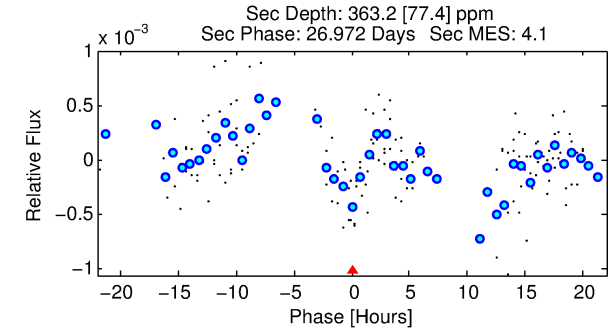
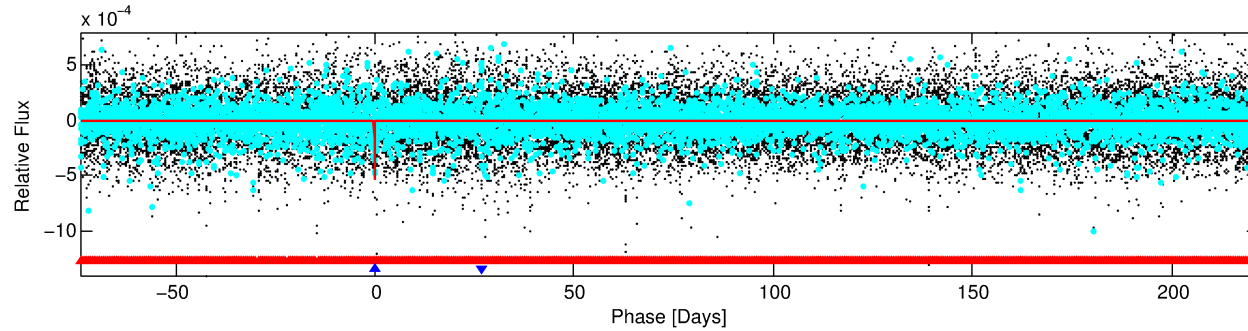
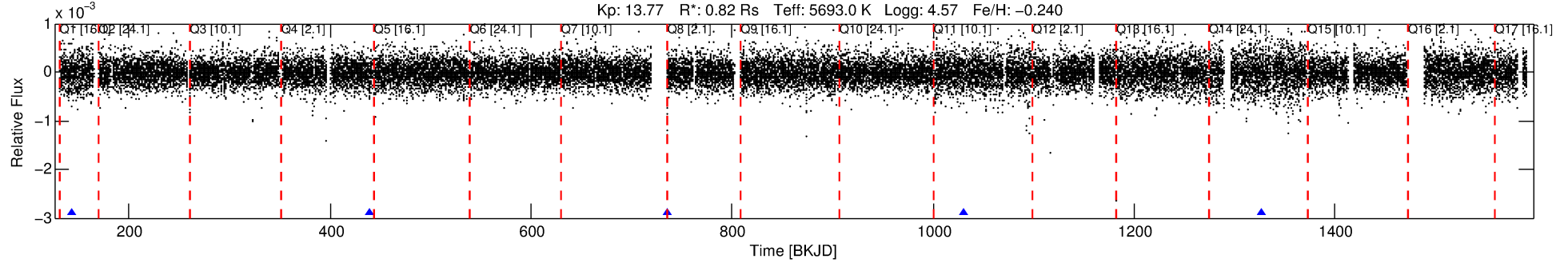
Ephemeris Match Information For 012157983-02

No Significant Match Found

DV One-Page Summary

KIC: 12157983 Candidate: 2 of 2 Period: 295.900 d
KOI: K07514 Corr: No Ephemeris Match

Kp: 13.77 R*: 0.82 Rs Teff: 5693.0 K Logg: 4.57 Fe/H: -0.240



DV Fit Results:

Period = 295.90037 [0.00402] d
Epoch = 143.1624 [0.0084] BKJD
Rp/R* = 0.0248 [0.0086]
a/R* = 305.55 [466.13]
b = 0.90 [0.34]
Seff = 0.89 [0.29]
Teq = 248 [20] K
Rp = 2.21 [0.95] Re
a = 0.8400 [0.1792] AU
Ag = 28902.38 [22769.34] [1.27σ]
Teffp = 4990 [914] K [5.19σ]

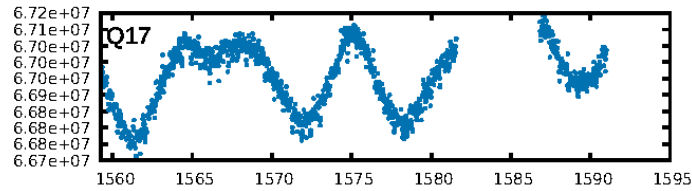
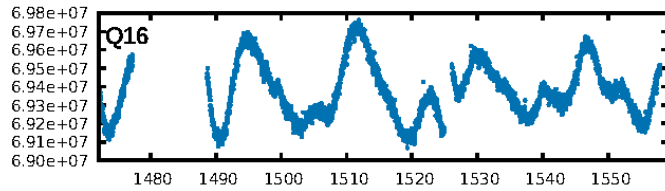
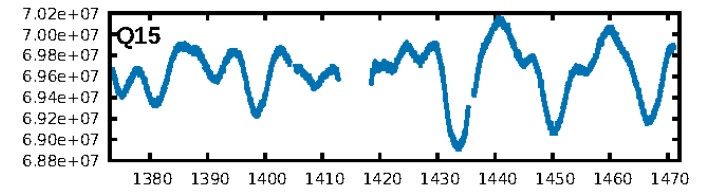
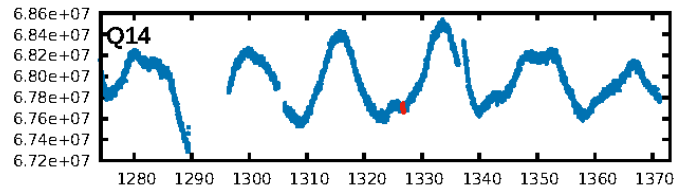
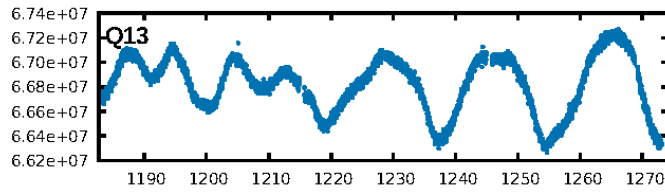
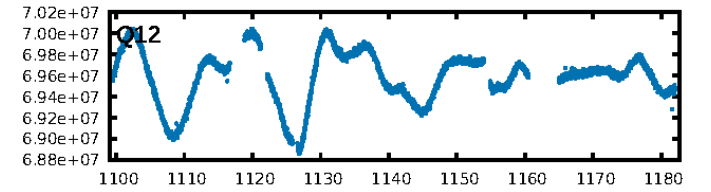
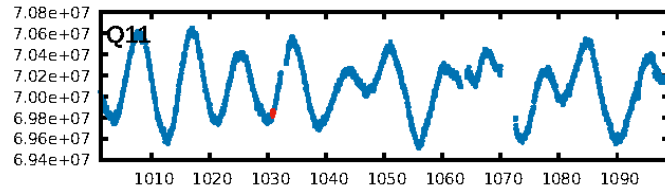
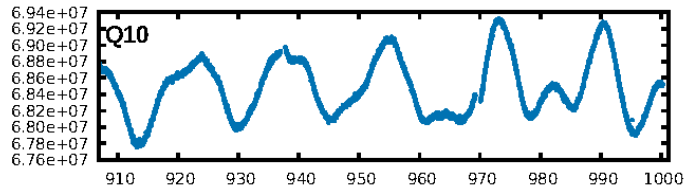
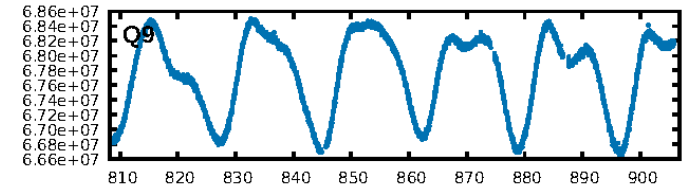
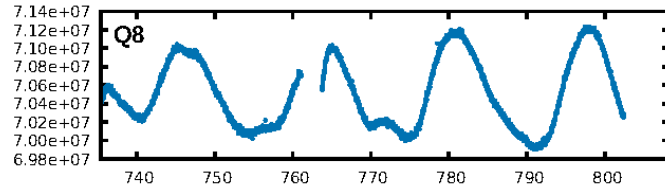
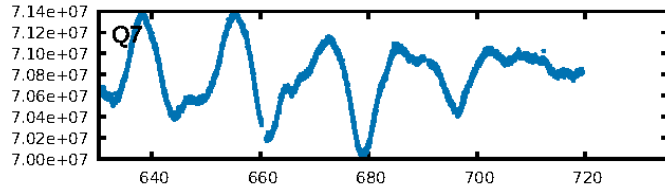
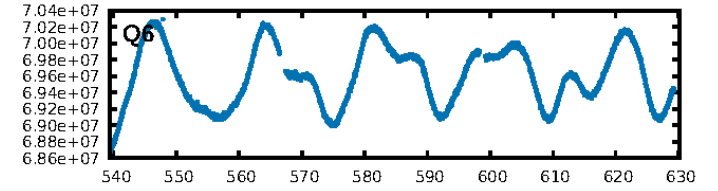
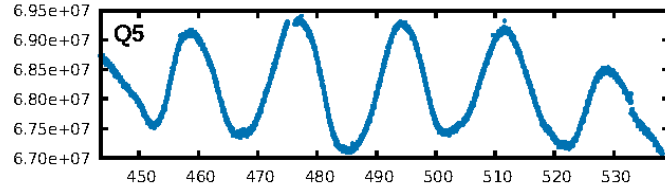
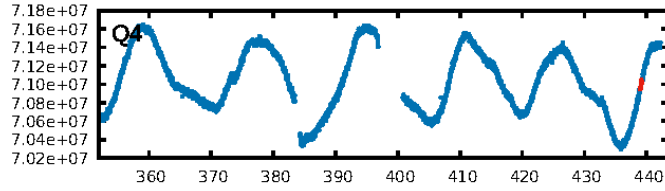
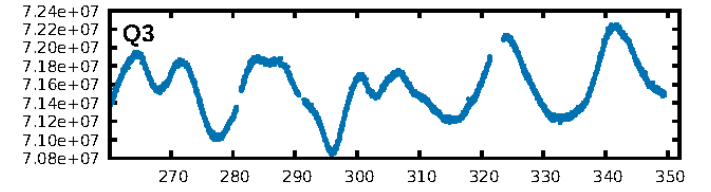
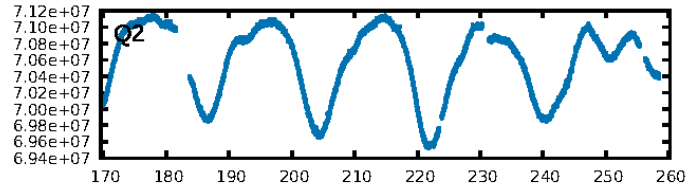
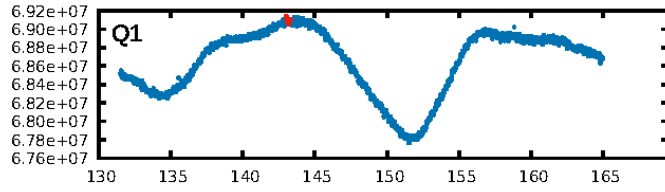
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1701.97σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 23.7%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.85e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2609
Centroid-sig: 32.3%
Centroid-so: 1.522 arcsec [1.21σ]
OotOffset-rm: 0.851 arcsec [0.77σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-rm: 0.789 arcsec [0.72σ]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/4]

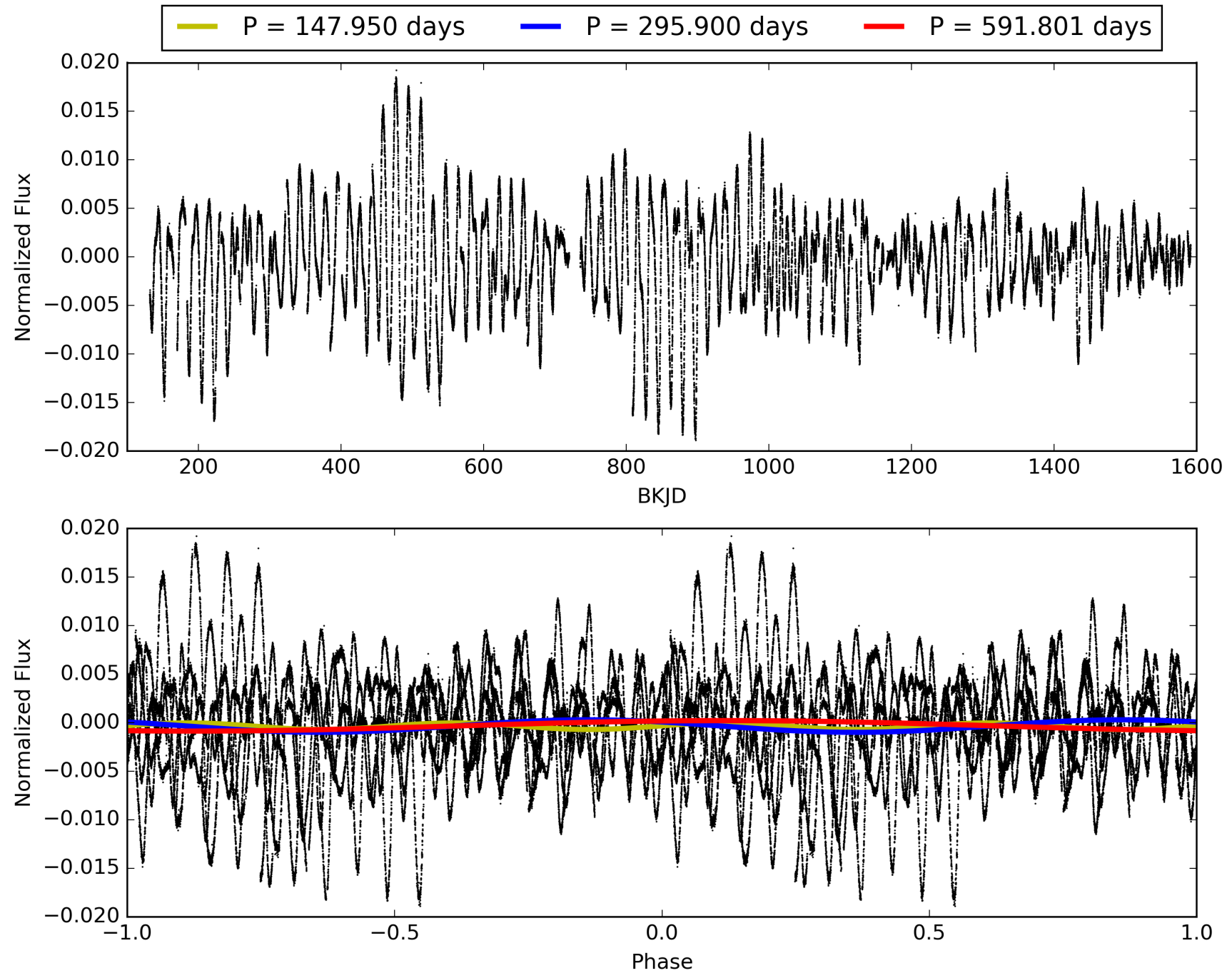
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:23:41 Z

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

TCE 012157983-02, PDC Light Curves

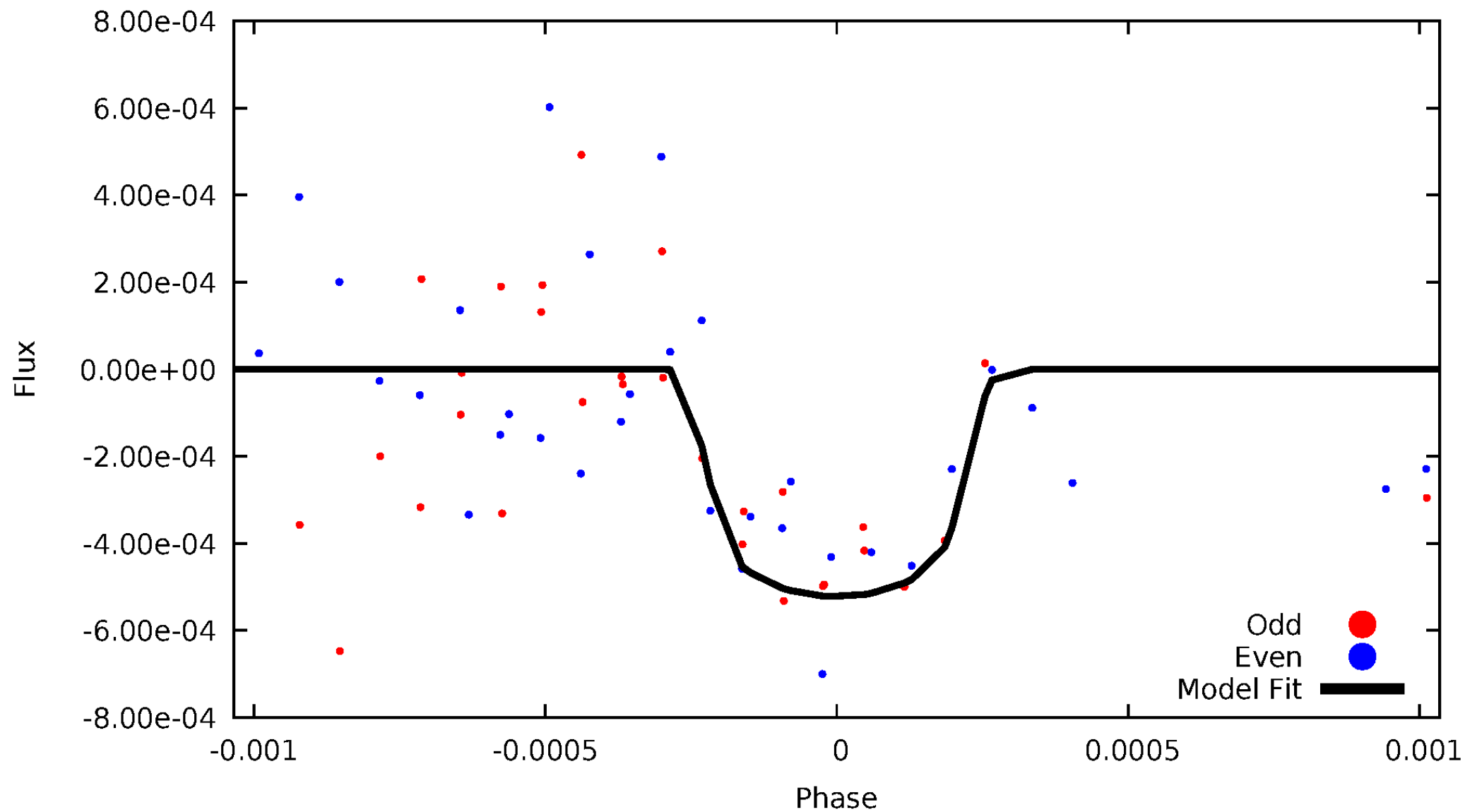


TCE 012157983-02



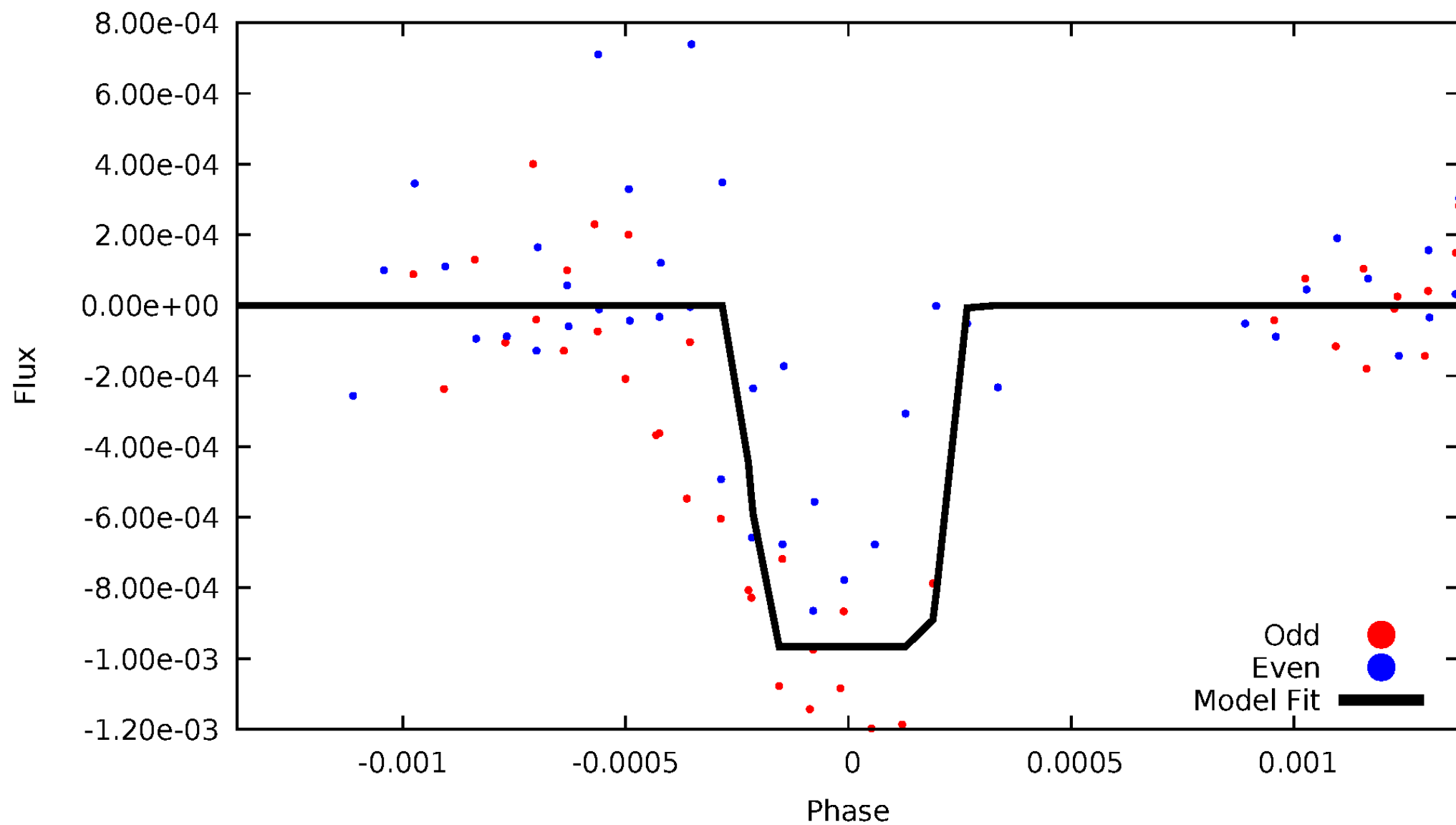
DV Odd/Even

TCE 012157983-02



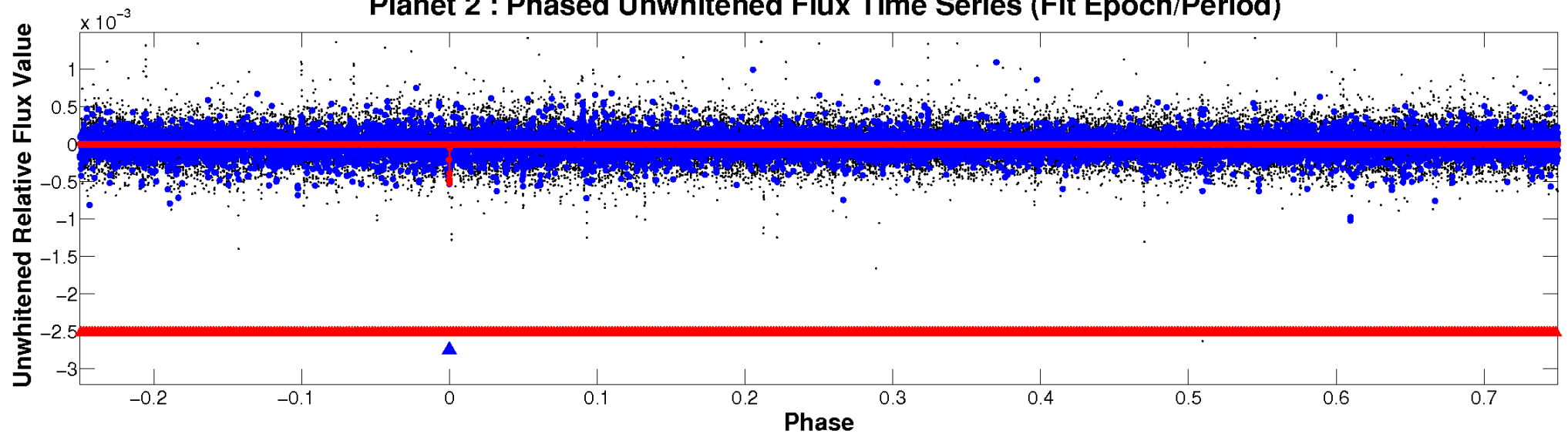
ALT Odd/Even

TCE 012157983-02

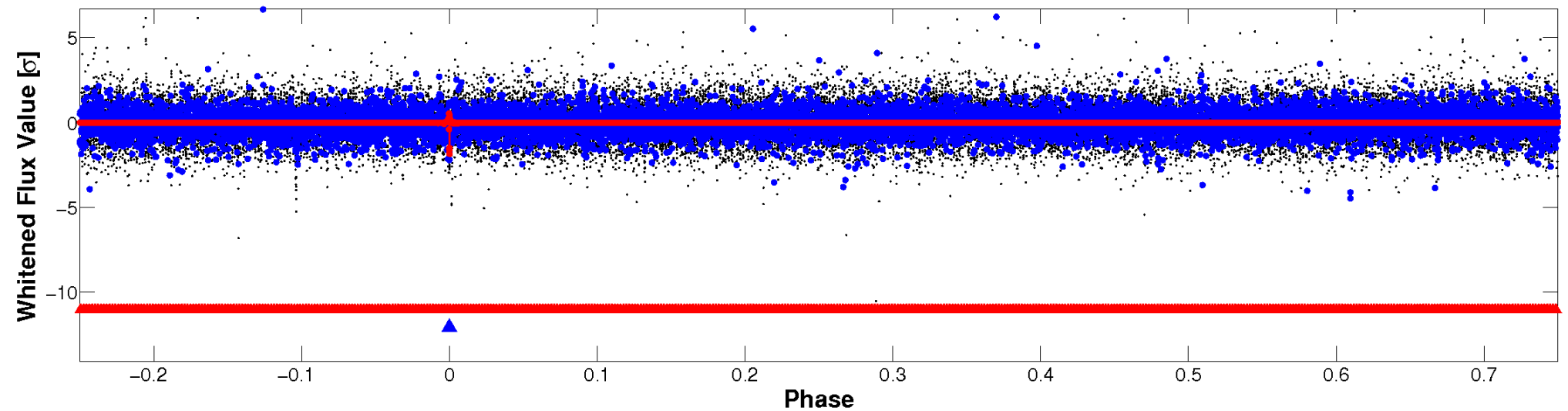


Non-Whitened Vs. Whitened Light Curve

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

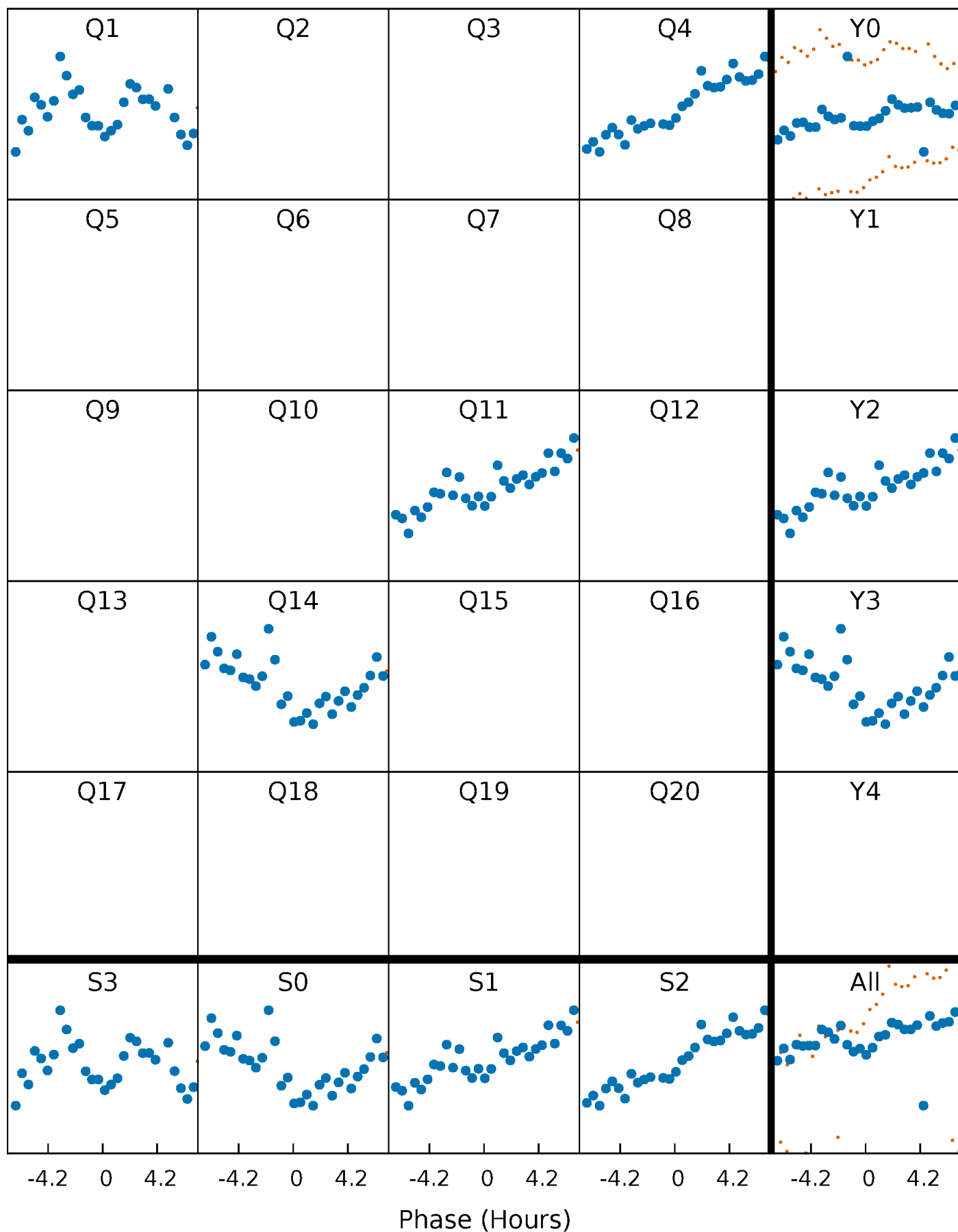


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



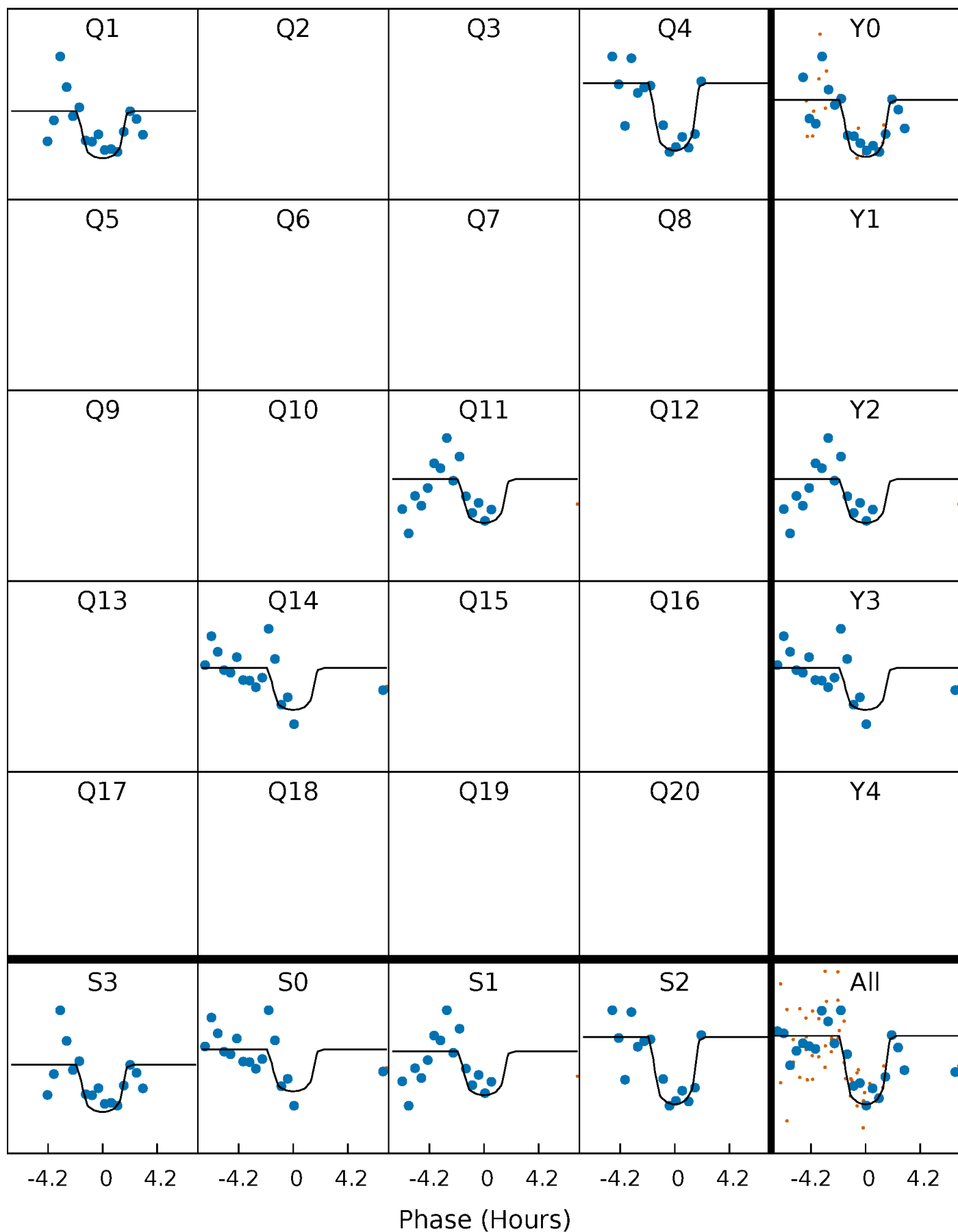
PDC Quarter-Phased Transit Curves

TCE 012157983-02 $P=295.900375$ Days $T_0=143.162371$ (BKJD)



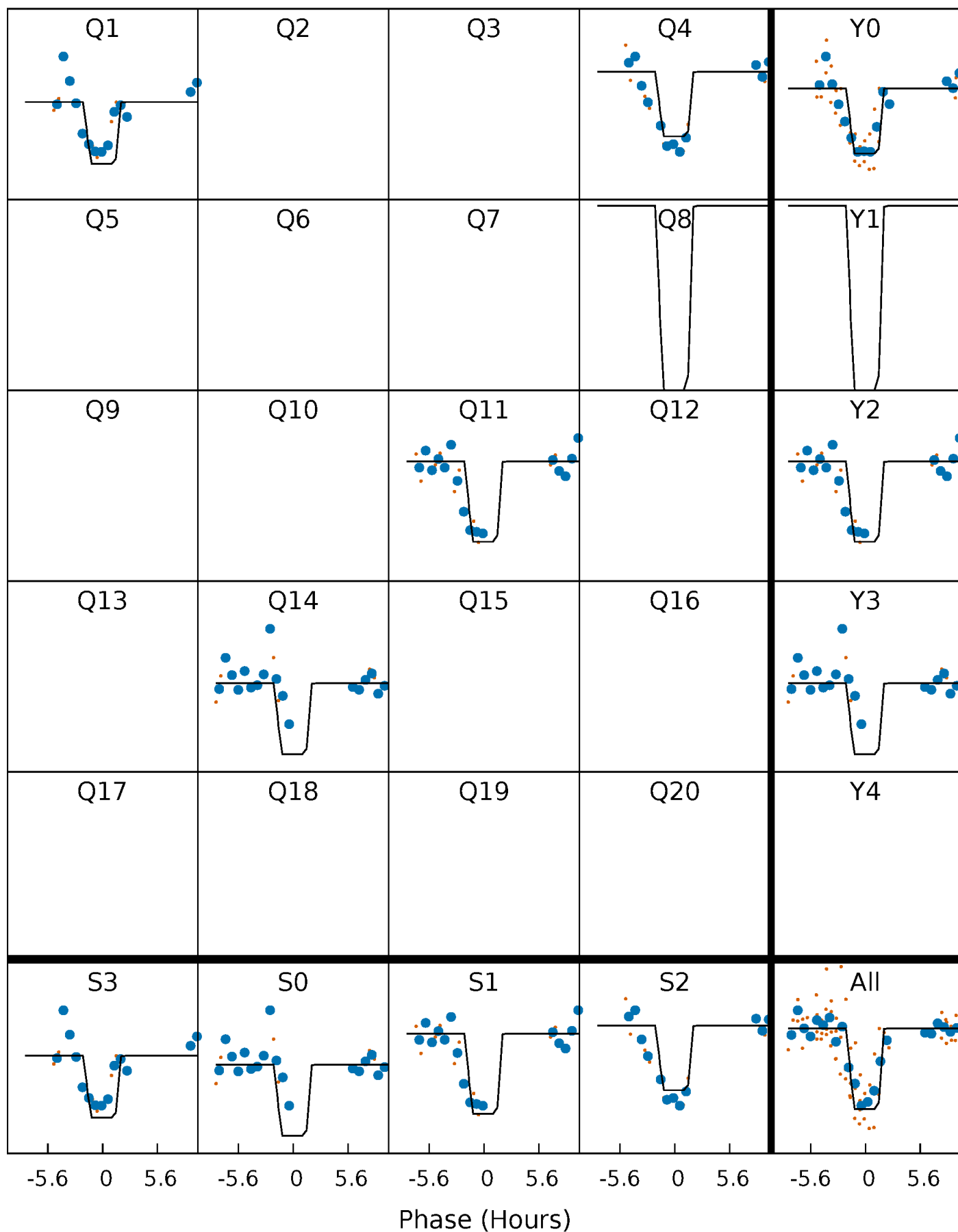
DV Quarter-Phased Transit Curves

TCE 012157983-02 $P=295.900375$ Days $T_0=143.162371$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

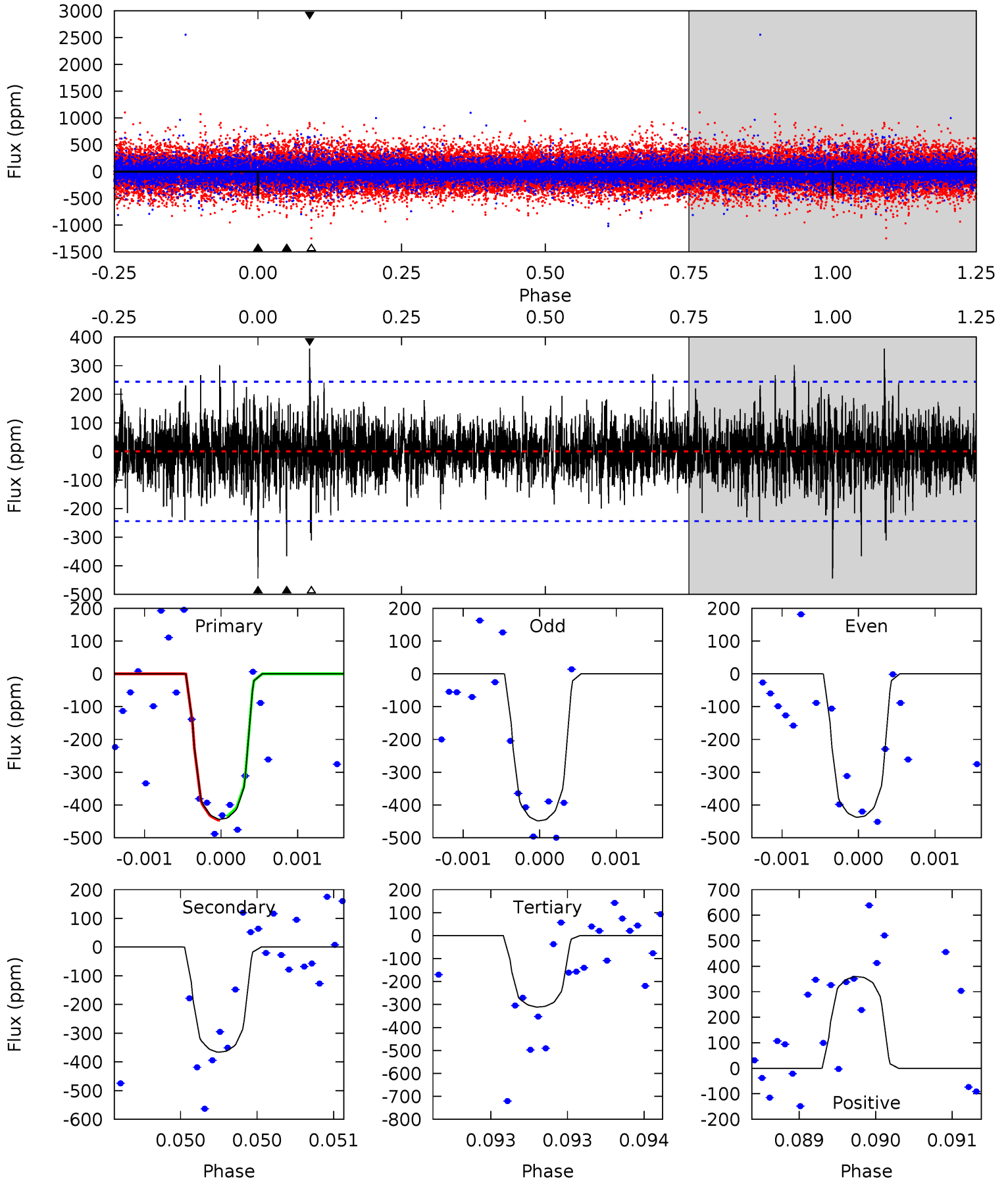
TCE 012157983-02 P=295.899064 Days $T_0=143.182811$ (BKJD)



DV Model-Shift Uniqueness Test

012157983-02, P = 295.900375 Days, E = 143.162371 Days

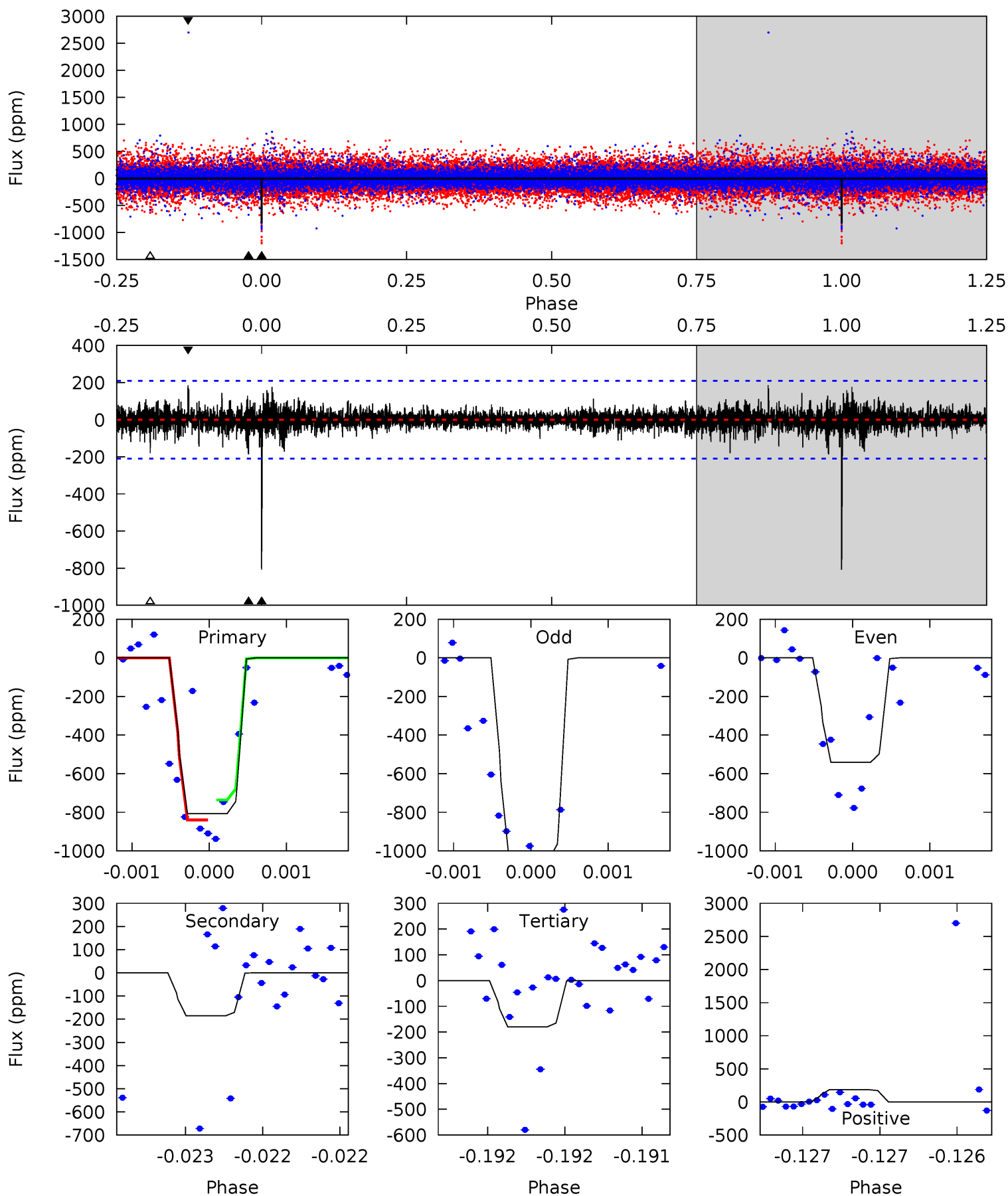
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	8.32	7.07	8.17	5.54	3.42	1.49	3.01	1.91	1.25	0.15	0.12	1.01	0.45	0.13



Alt Model-Shift Uniqueness Test

012157983-02, P = 295.899064 Days, E = 143.182811 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	4.91	4.76	4.92	5.56	3.45	0.85	16.7	16.5	0.16	-0.01	6.63	0.99	0.19	1.33



Stellar Parameters For KIC 012157983

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5693^{+154}_{-154}	$4.570^{+0.042}_{-0.168}$	$-0.240^{+0.300}_{-0.300}$	$0.816^{+0.208}_{-0.069}$	$0.911^{+0.089}_{-0.109}$	$2.357^{+0.394}_{-1.092}$
	+3%/-3%	+1%/-4%	+125%/-125%	+25%/-8%	+10%/-12%	+17%/-46%
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 012157983-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-366 ± 44	$2.31^{+0.83}_{-0.82}$	353^{+21}_{-14}	5083^{+1168}_{-611}	26497^{+38595}_{-12343}
Alt.	-185 ± 38	$2.85^{+0.89}_{-0.78}$	352^{+20}_{-14}	4072^{+530}_{-391}	8651^{+8209}_{-3998}

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

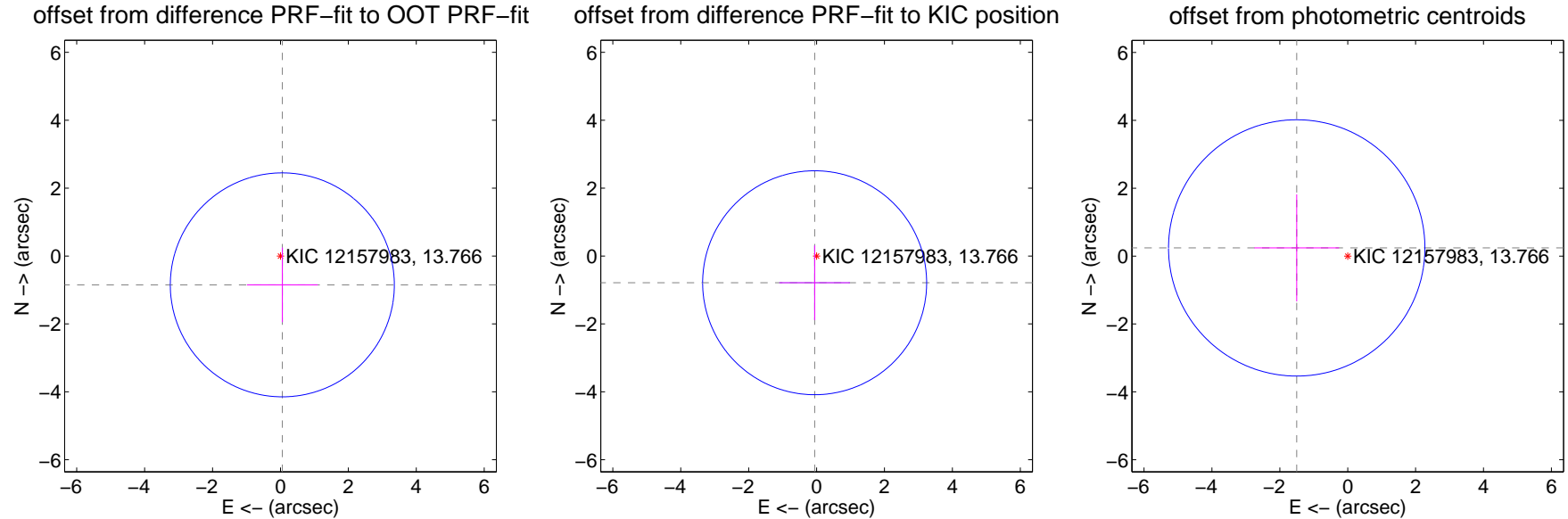
DV Centroid Data

Supplemental centroid analysis for 012157983-02. Kepler magnitude: 13.77. Transit SNR 7.11

There are 1 quarters with good PRF difference image offsets

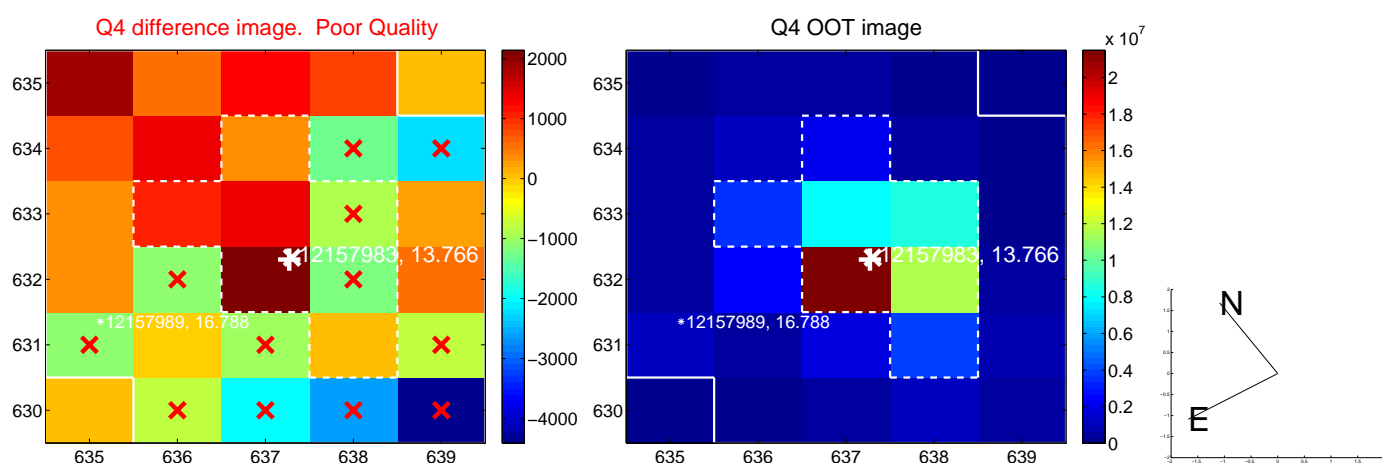
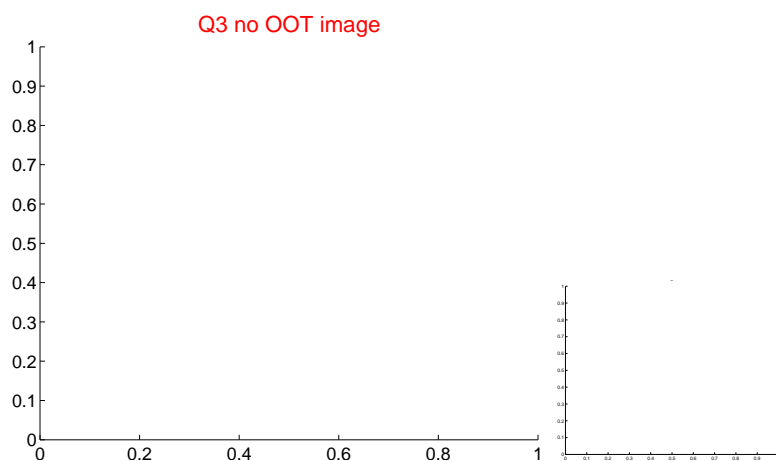
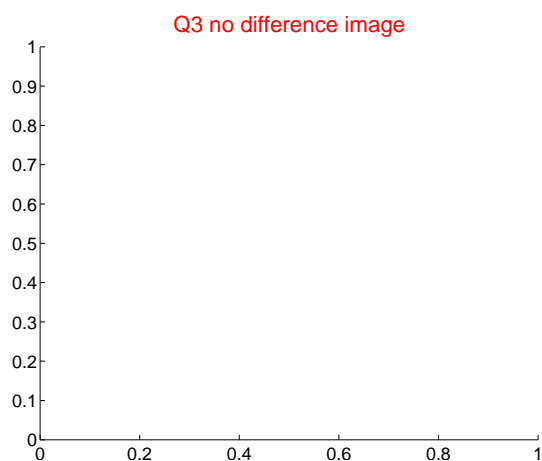
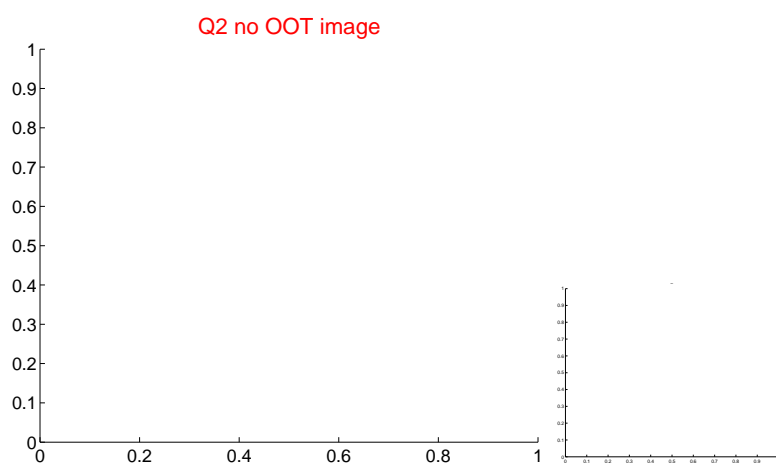
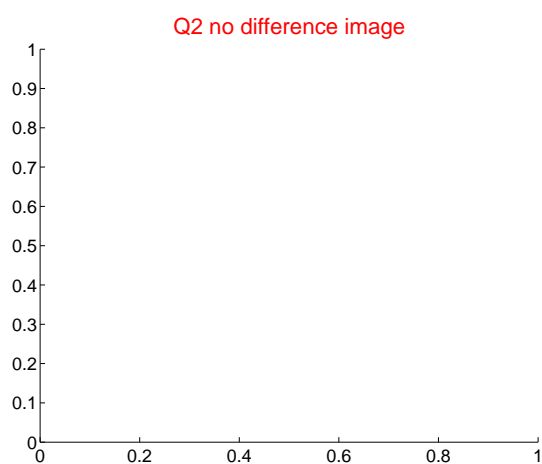
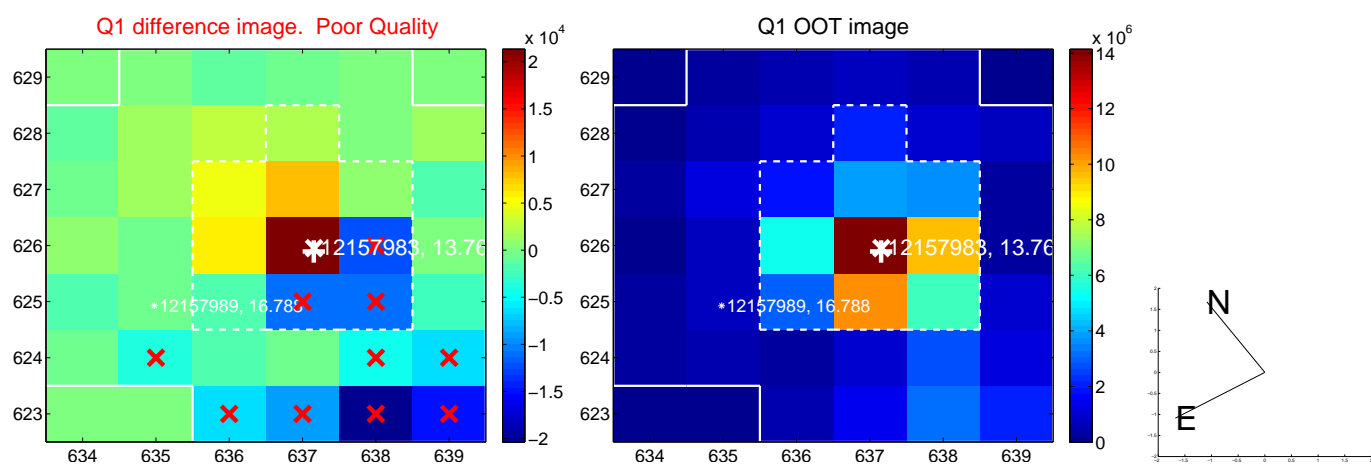
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.851 ± 1.099	0.77	-0.055 ± 1.041	-0.849 ± 1.100
PRF-fit source offset from KIC position	0.789 ± 1.099	0.72	0.057 ± 1.041	-0.787 ± 1.100
photometric centroid source offset	1.52 ± 1.26	1.21	1.50 ± 1.25	0.24 ± 1.58



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.

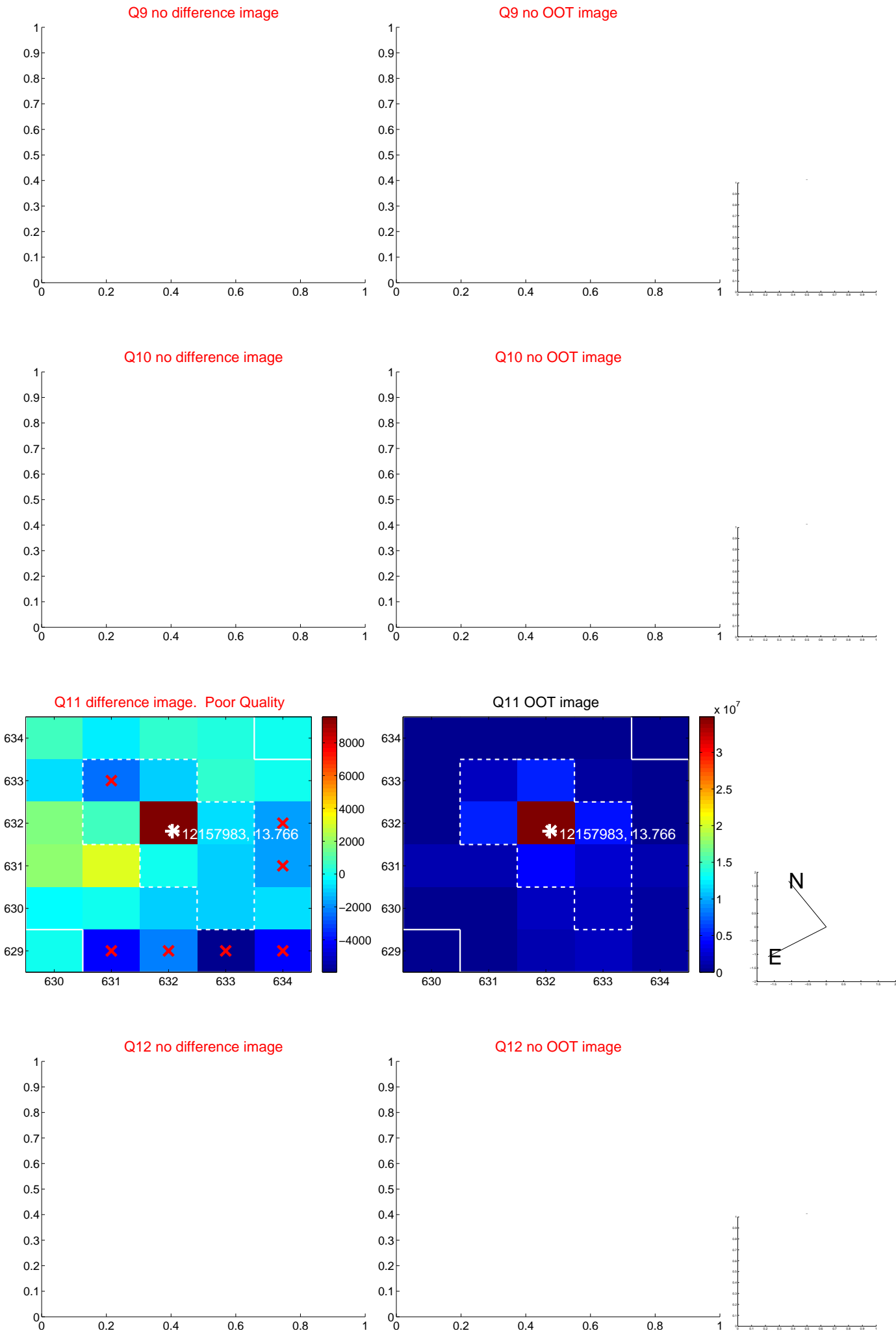
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



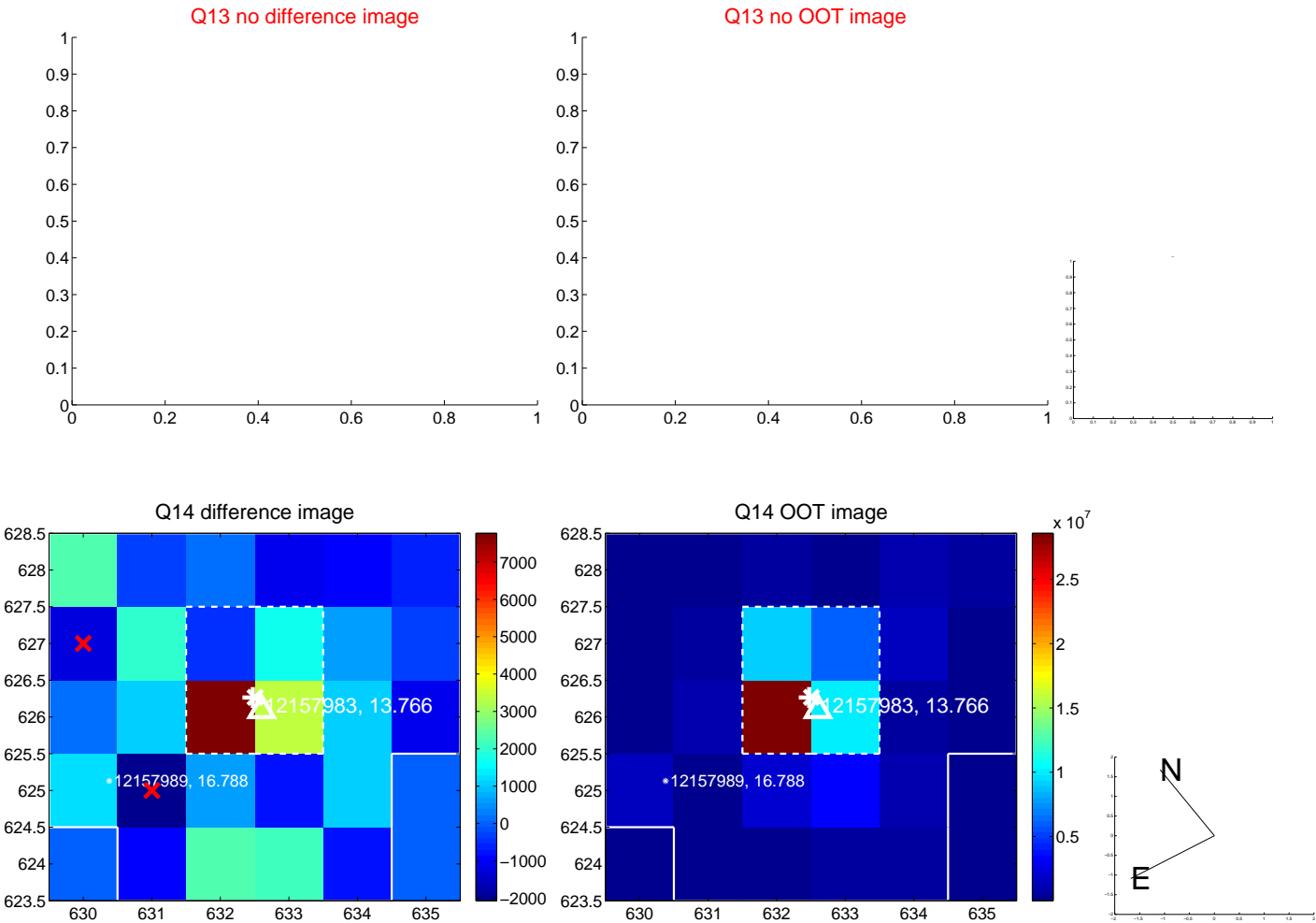
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



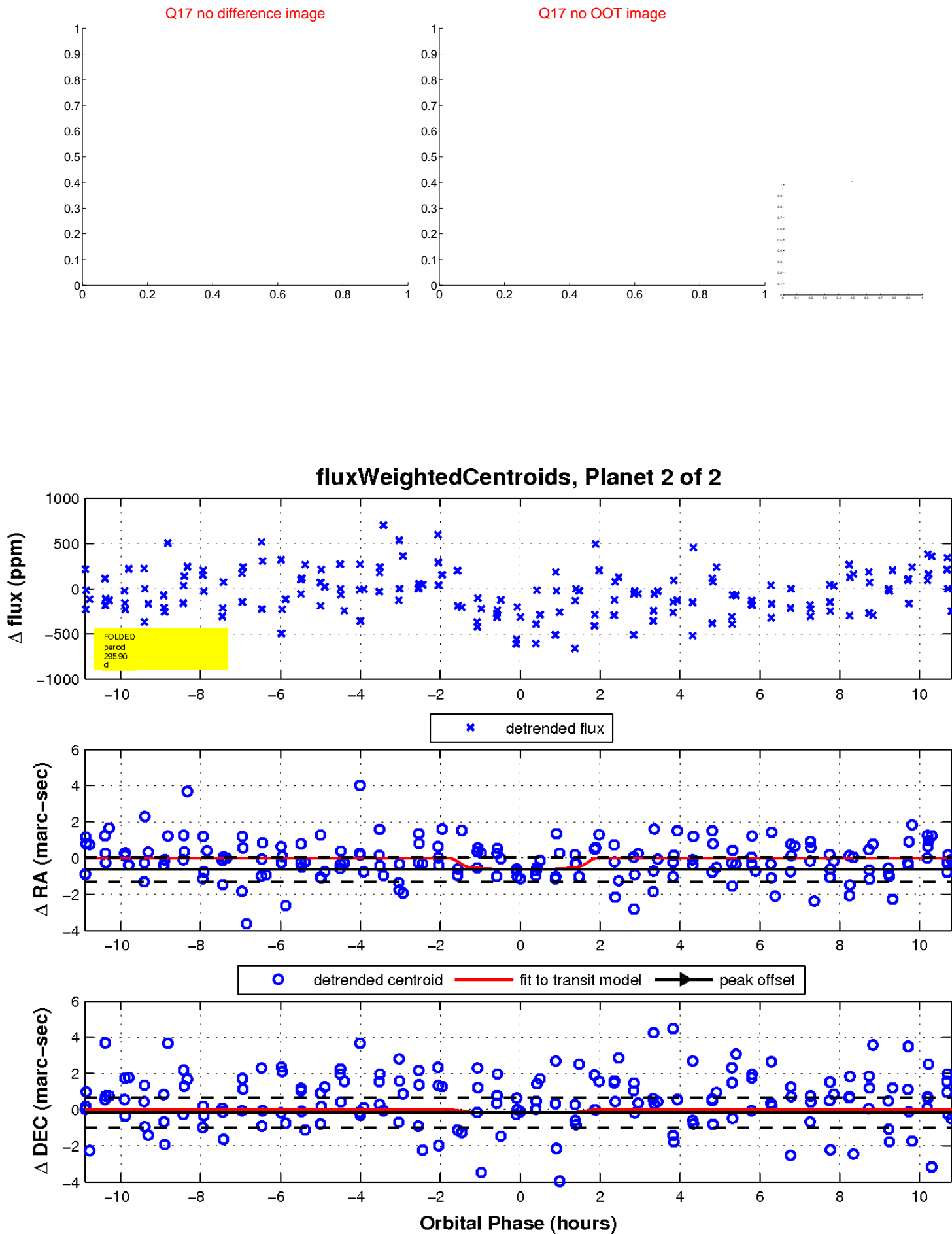
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

