

KIC 004275721

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})
004275721-01	OBS	1342.01	3.773588	134.071379	177.8	2.853	21.2	24.1	0.97	6224	1.50	616.19
004275721-02	OBS	1342.02	8.181837	134.812467	286.2	2.553	21.6	24.0	0.97	6224	1.92	219.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004275721-01	OBS	PC	0.81	0	0	0	0	NO_COMMENT
004275721-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

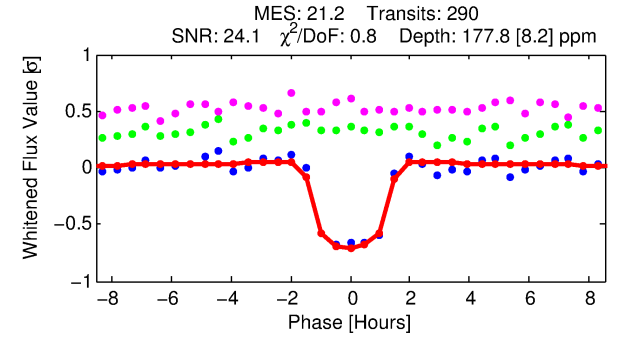
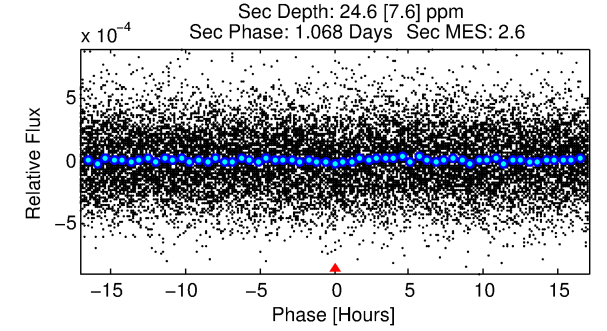
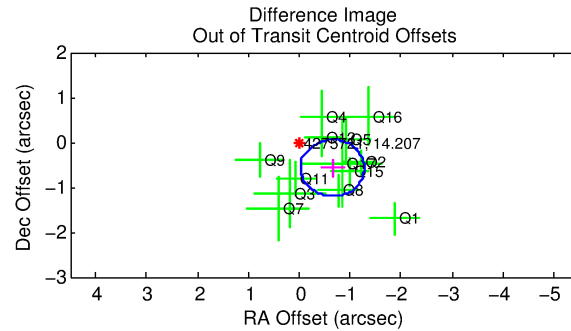
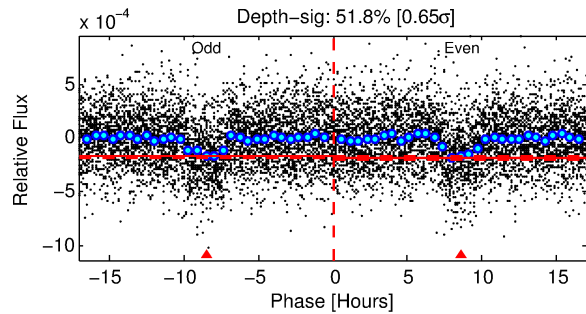
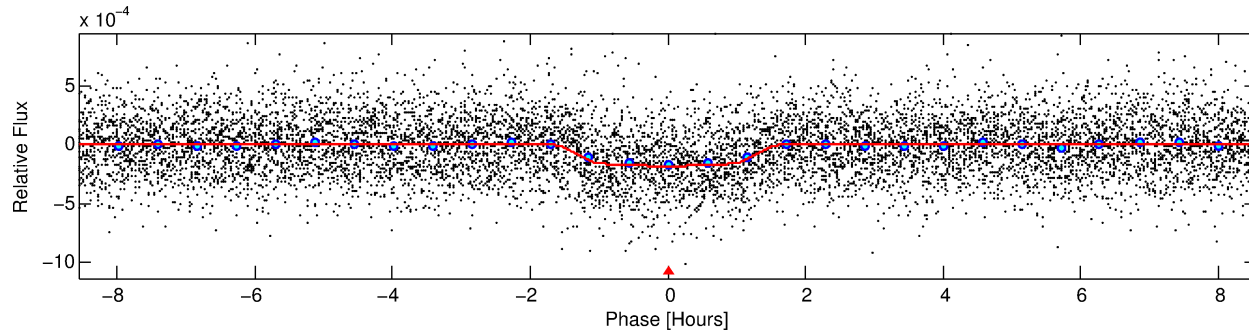
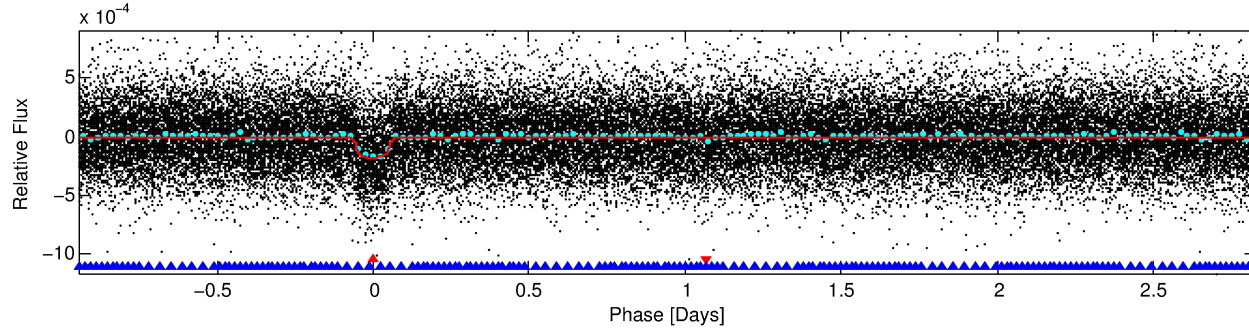
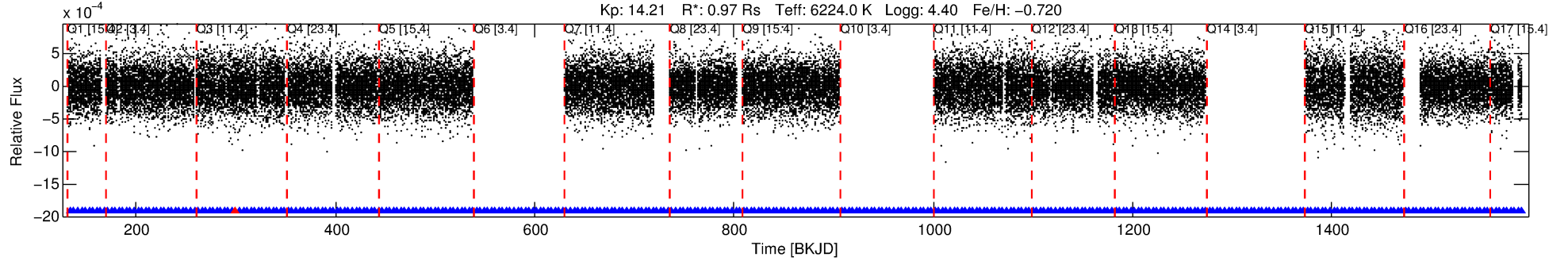
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004275721-01

No Significant Match Found

DV One-Page Summary

KIC: 4275721 Candidate: 1 of 2 Period: 3.774 d
KOI: K01342.01 Corr: 0.970



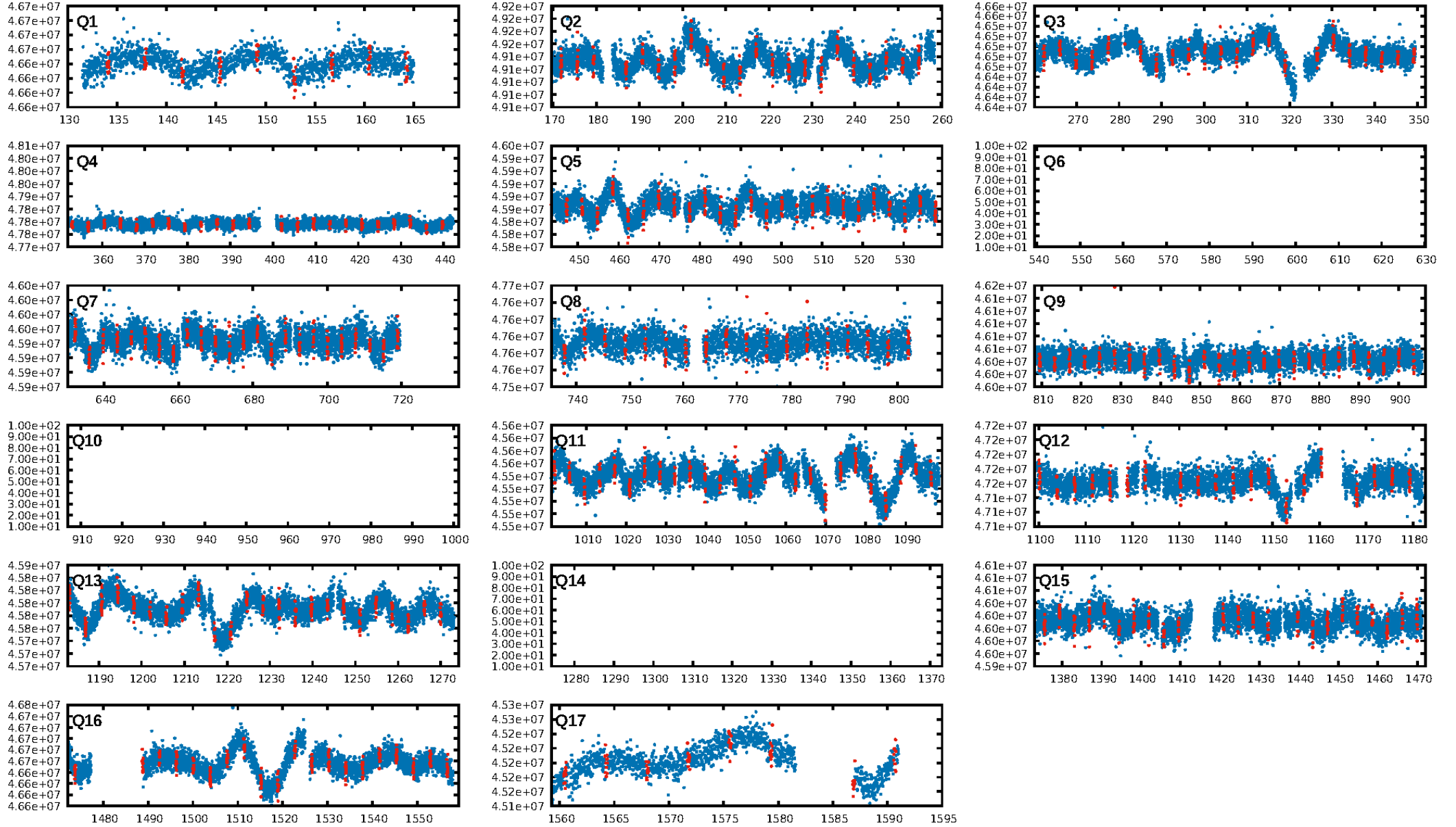
DV Fit Results:

Period = 3.77359 [0.00001] d
Epoch = 134.0714 [0.0019] BKJD
Rp/R* = 0.0142 [0.0032]
a/R* = 4.96 [6.01]
b = 0.89 [0.29]
Seff = 616.19 [215.22]
Teff = 1270 [111] K
Rp = 1.50 [0.50] Re
a = 0.0453 [0.0098] AU
Ag = 12.30 [7.77] [1.45 σ]
Teffp = 3679 [514] K [4.58 σ]

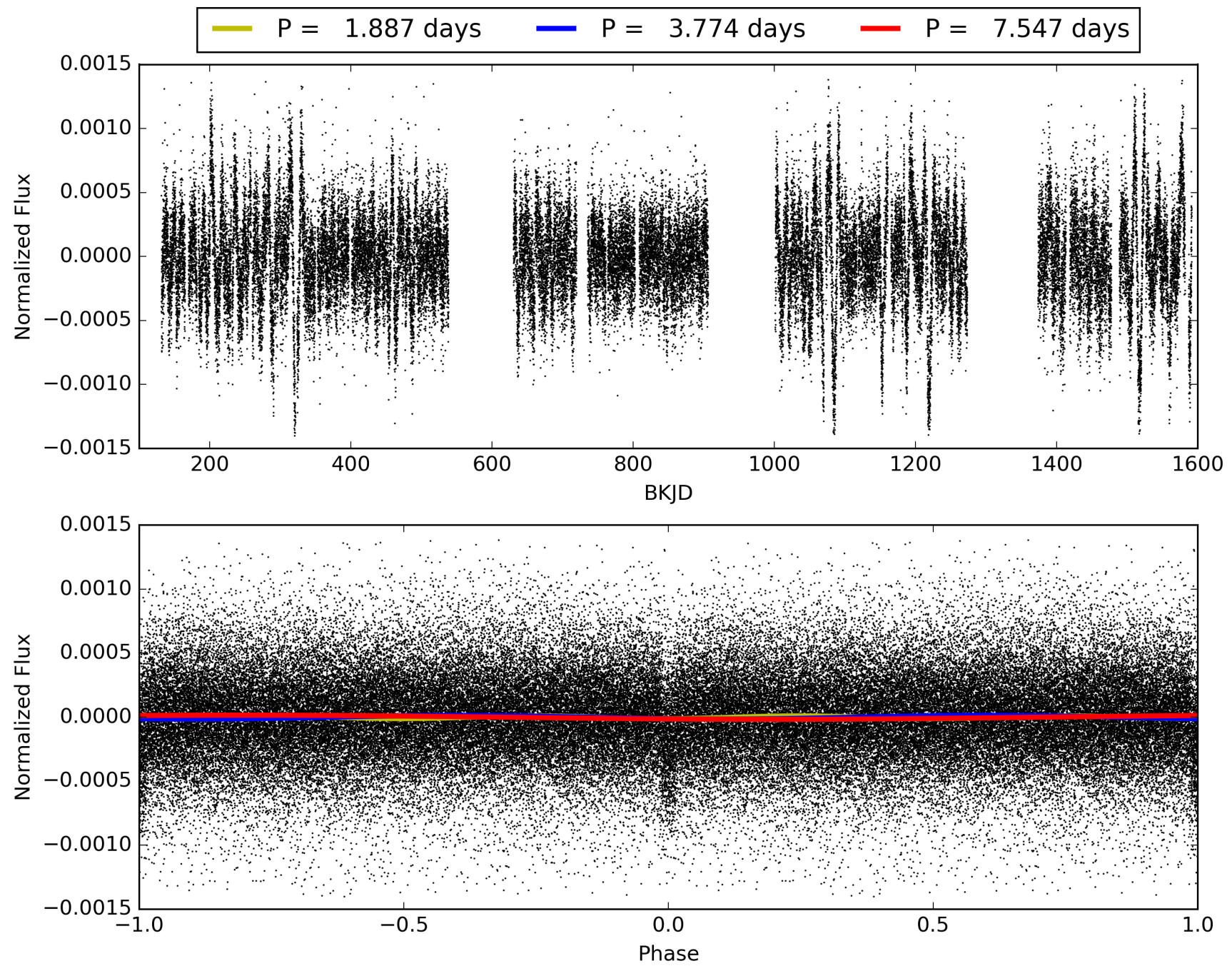
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [27.63 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.60e-98
RollingBand-fgt: 1.00 [272/273]
GhostDiagnostic-chr: 8.935
Centroid-sig: 0.0%
Centroid-so: 0.284 arcsec [0.55 σ]
OotOffset-rm: 0.868 arcsec [4.16 σ]
KicOffset-rm: 0.974 arcsec [4.86 σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004275721-01, PDC Light Curves

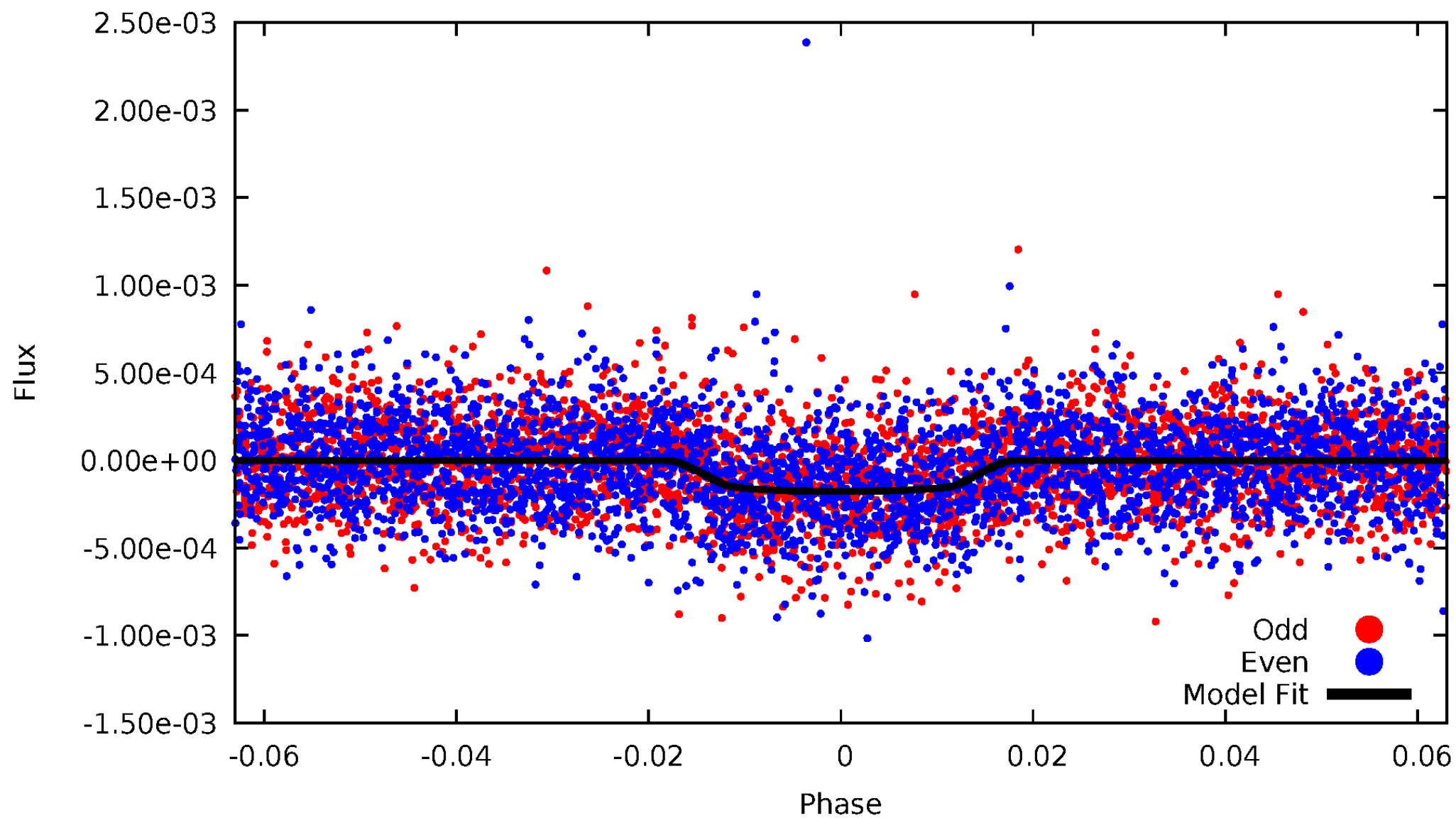


TCE 004275721-01



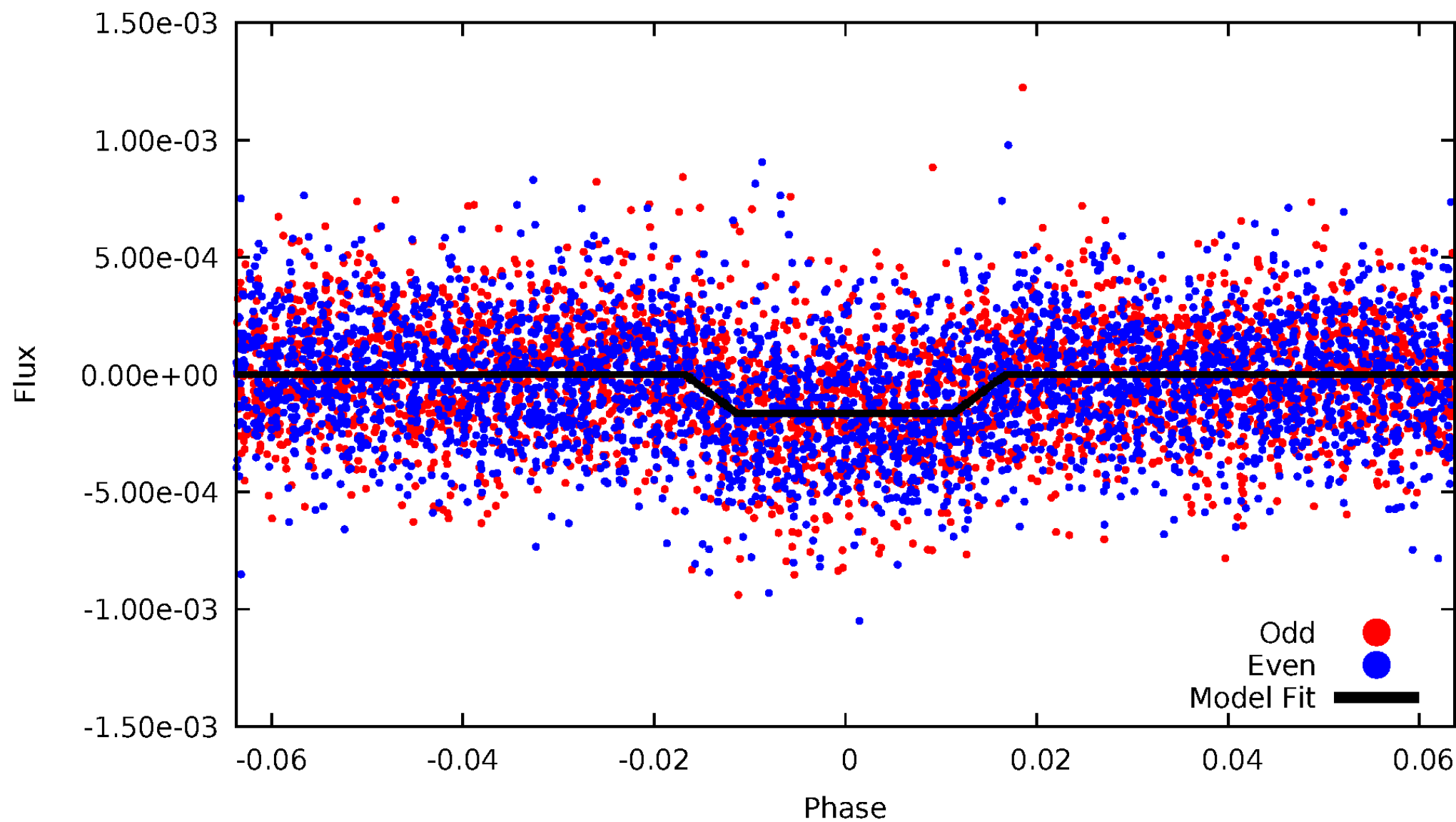
DV Odd/Even

TCE 004275721-01



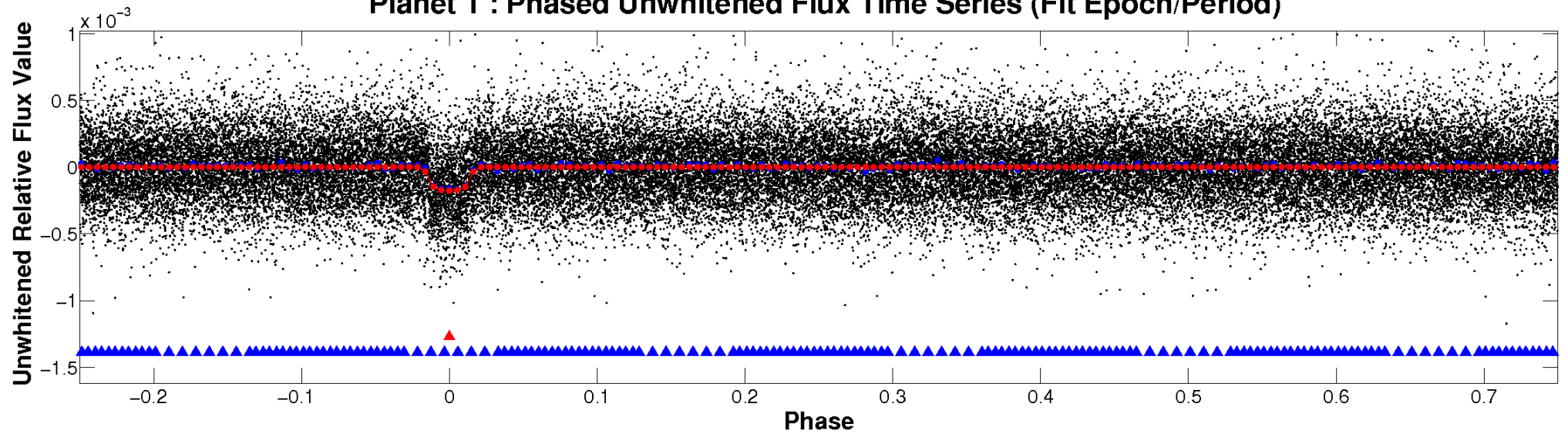
ALT Odd/Even

TCE 004275721-01

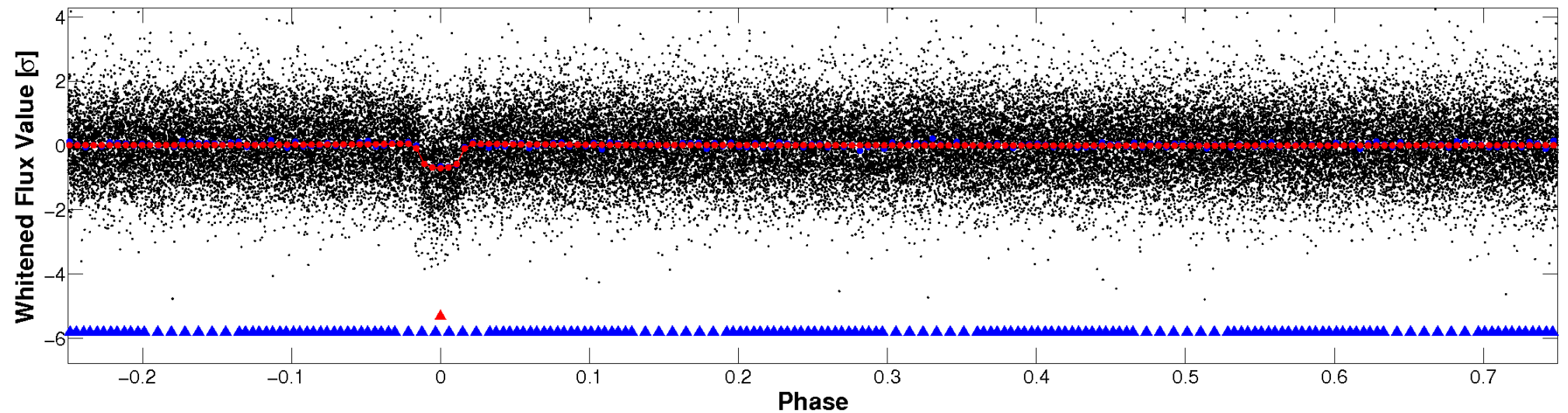


Non-Whitened Vs. Whitened Light Curve

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

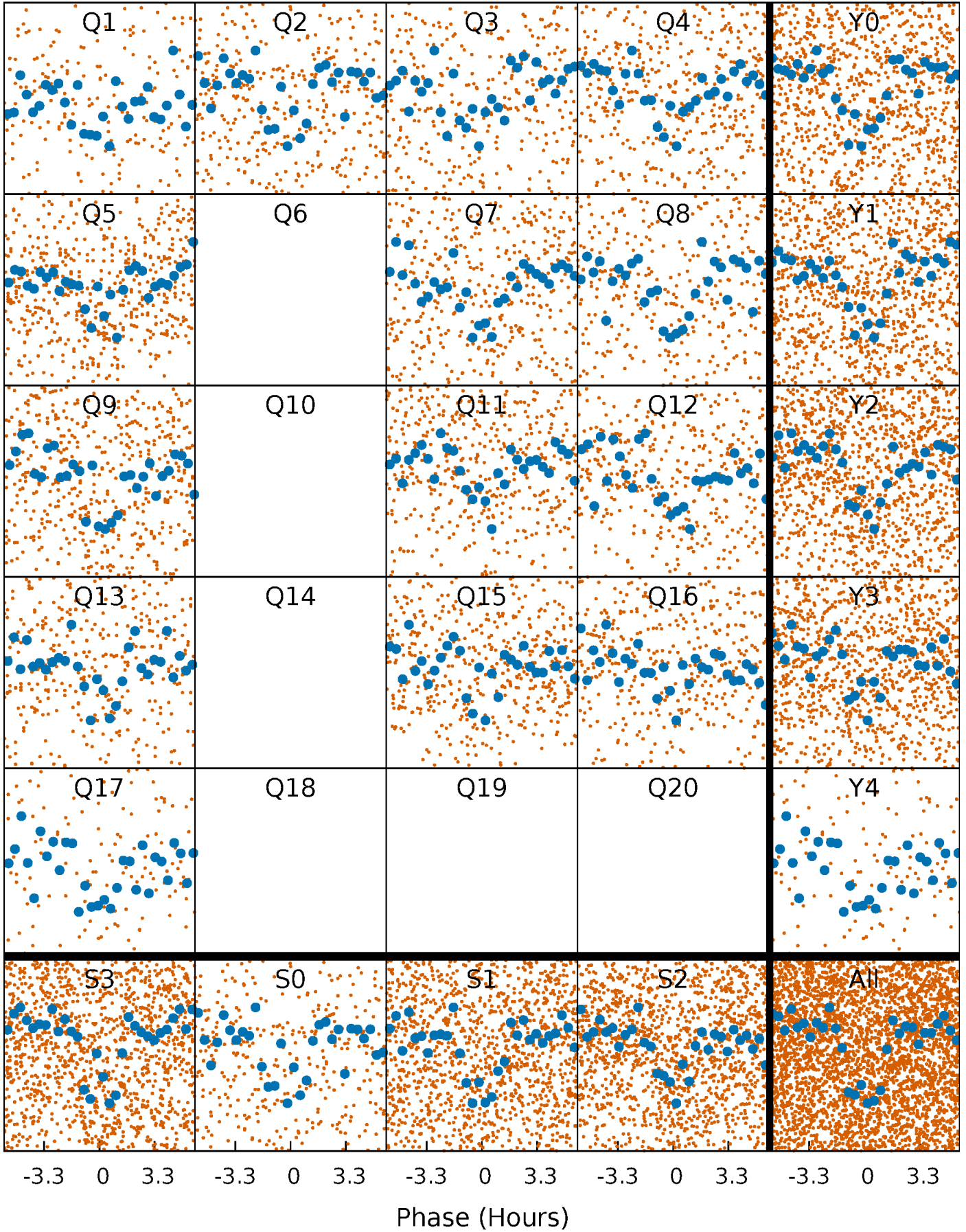


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



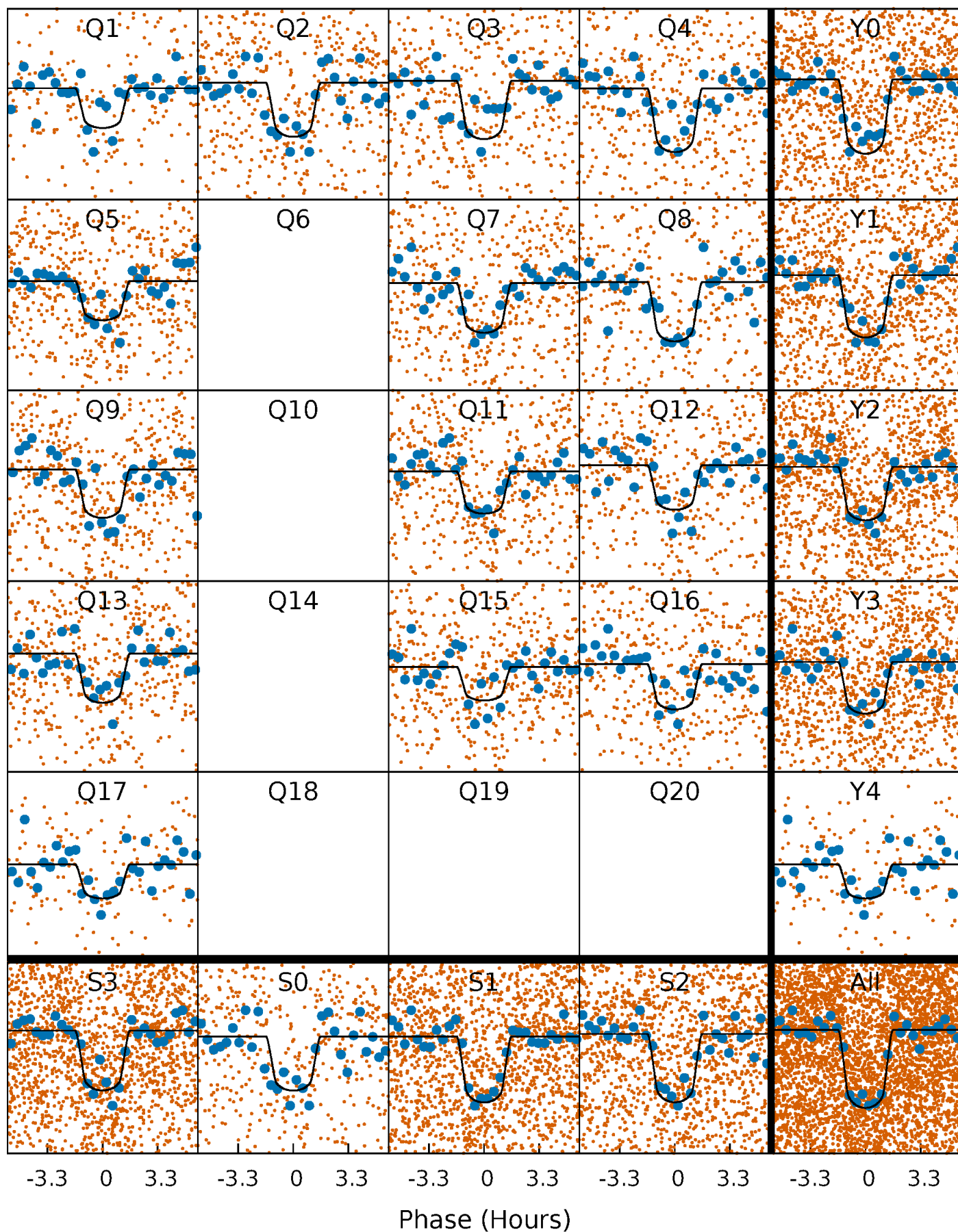
PDC Quarter-Phased Transit Curves

TCE 004275721-01 P= 3.773588 Days $T_0=134.071379$ (BKJD)



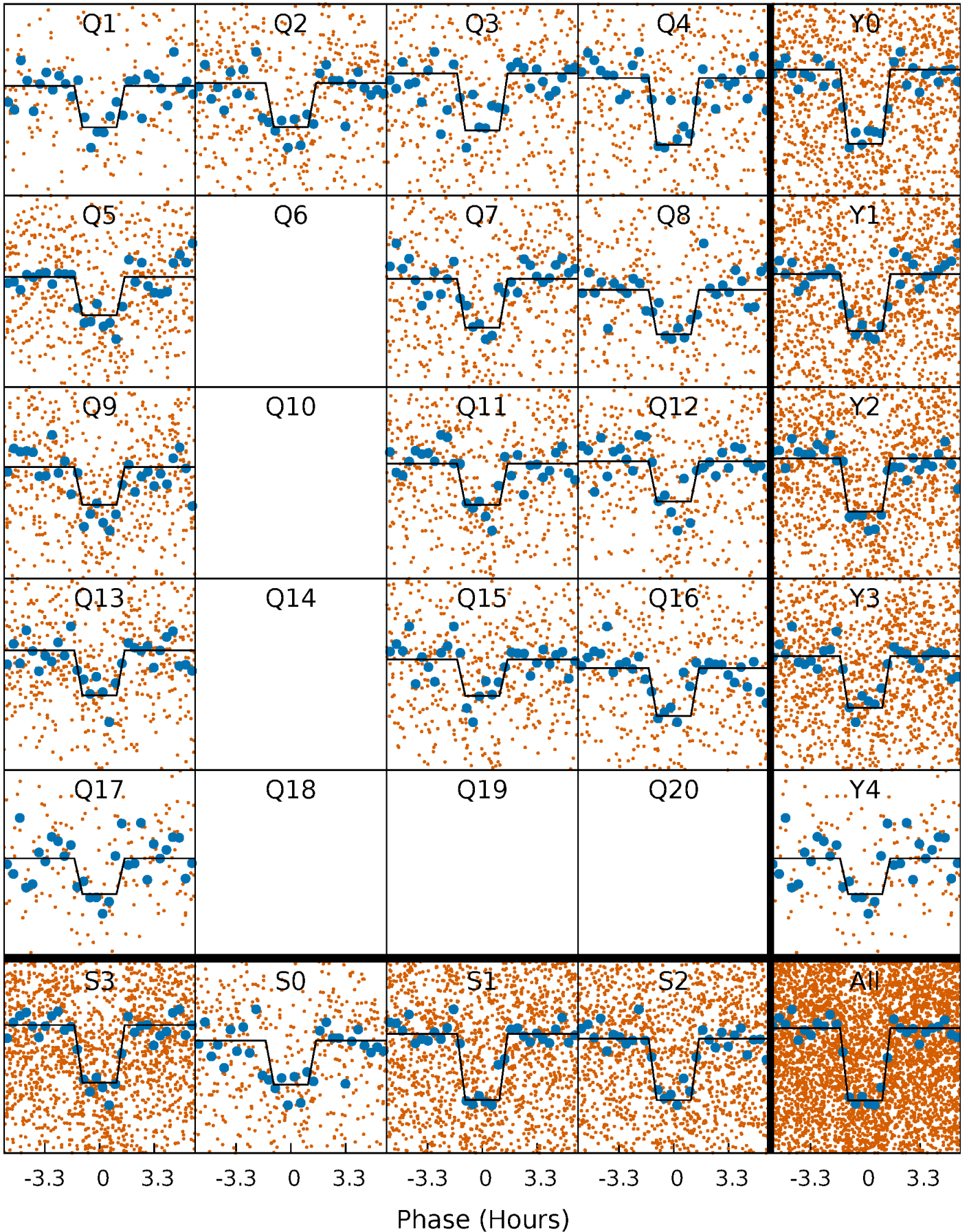
DV Quarter-Phased Transit Curves

TCE 004275721-01 P= 3.773588 Days $T_0=134.071379$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

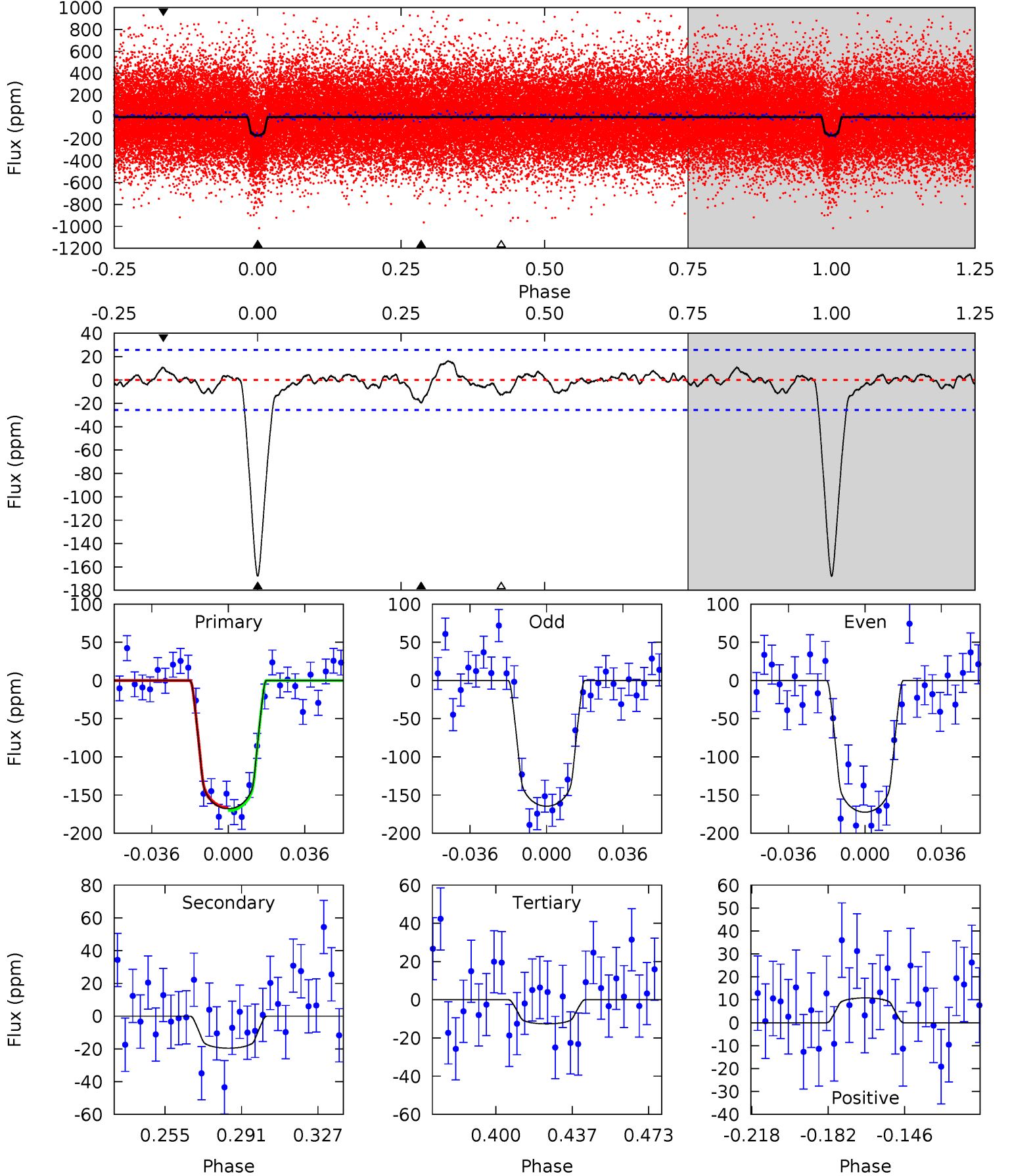
TCE 004275721-01 P= 3.773621 Days $T_0=134.065547$ (BKJD)



DV Model-Shift Uniqueness Test

004275721-01, P = 3.773588 Days, E = 130.297791 Days

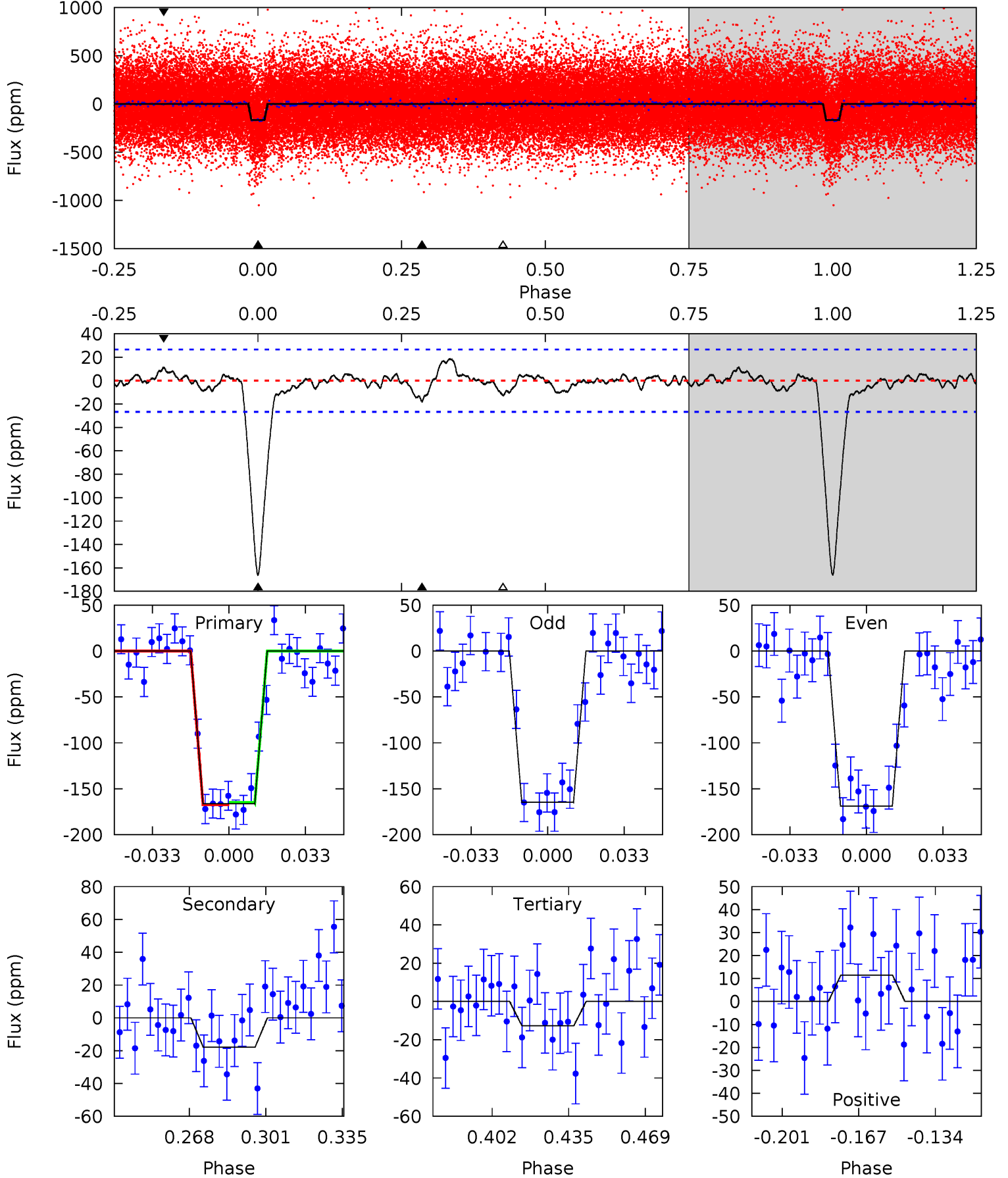
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.2	3.64	2.35	2.01	4.77	2.09	0.98	28.8	29.2	1.29	1.63	0.72	0.95	0.09	0.32



Alt Model-Shift Uniqueness Test

004275721-01, P = 3.773621 Days, E = 130.291926 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.9	3.22	2.29	2.05	4.79	2.13	0.95	27.6	27.8	0.93	1.17	0.38	1.00	0.10	0.24



Stellar Parameters For KIC 004275721

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6224^{+169}_{-207}	$4.404^{+0.135}_{-0.180}$	$-0.720^{+0.300}_{-0.300}$	$0.969^{+0.243}_{-0.142}$	$0.868^{+0.102}_{-0.077}$	$1.342^{+0.742}_{-0.654}$
	+3%/-3%	+3%/-4%	+42%/-42%	+25%/-15%	+12%/-9%	+55%/-49%
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 004275721-01 / KOI 1342.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 5	$1.54^{+0.39}_{-0.38}$	1783^{+116}_{-100}	3802^{+456}_{-336}	$9.498^{+8.182}_{-4.120}$
Alt.	-18 ± 6	$1.35^{+0.41}_{-0.34}$	1786^{+118}_{-103}	3891^{+475}_{-359}	11^{+10}_{-5}

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

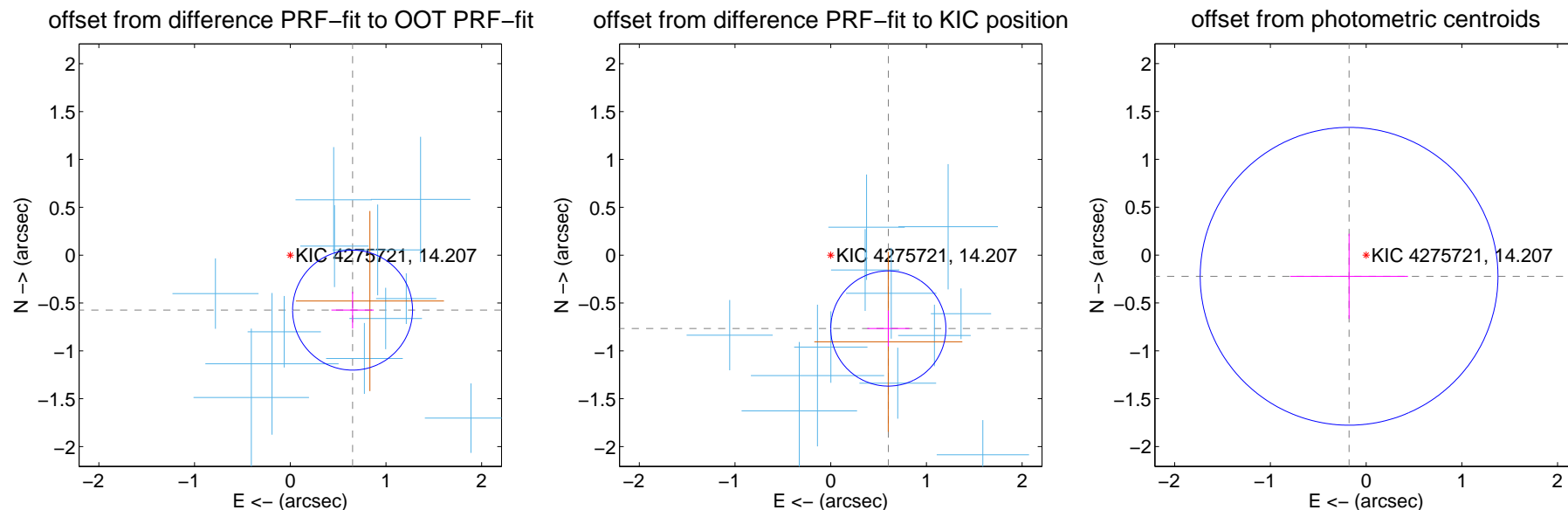
DV Centroid Data

Supplemental centroid analysis for 004275721-01. Kepler magnitude: 14.21. Transit SNR 24.12

There are 12 quarters with good PRF difference image offsets

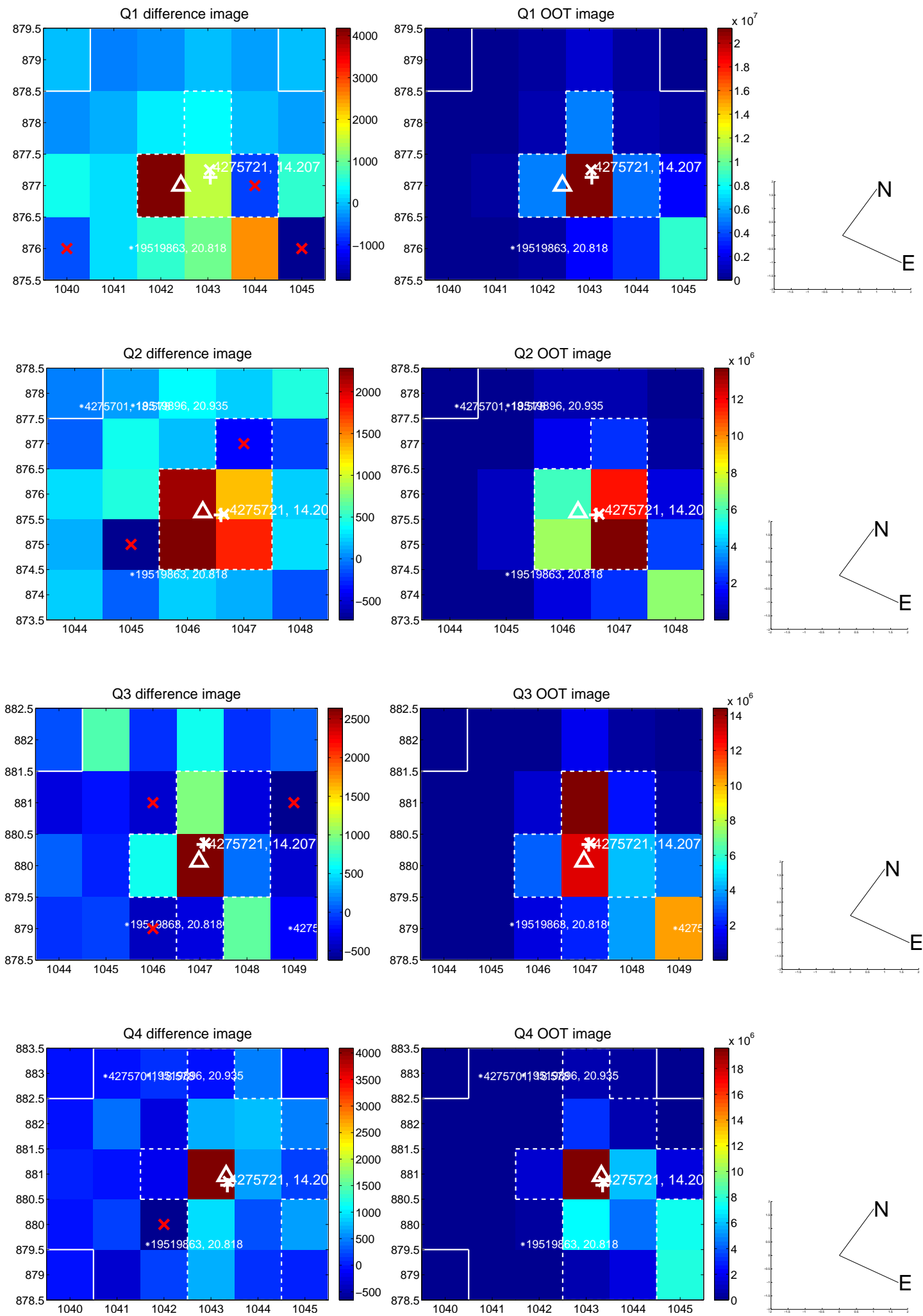
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.868 ± 0.209	4.16	-0.651 ± 0.222	-0.574 ± 0.191
PRF-fit source offset from KIC position	0.974 ± 0.201	4.86	-0.602 ± 0.220	-0.766 ± 0.188
photometric centroid source offset	0.28 ± 0.52	0.55	0.18 ± 0.61	-0.22 ± 0.44

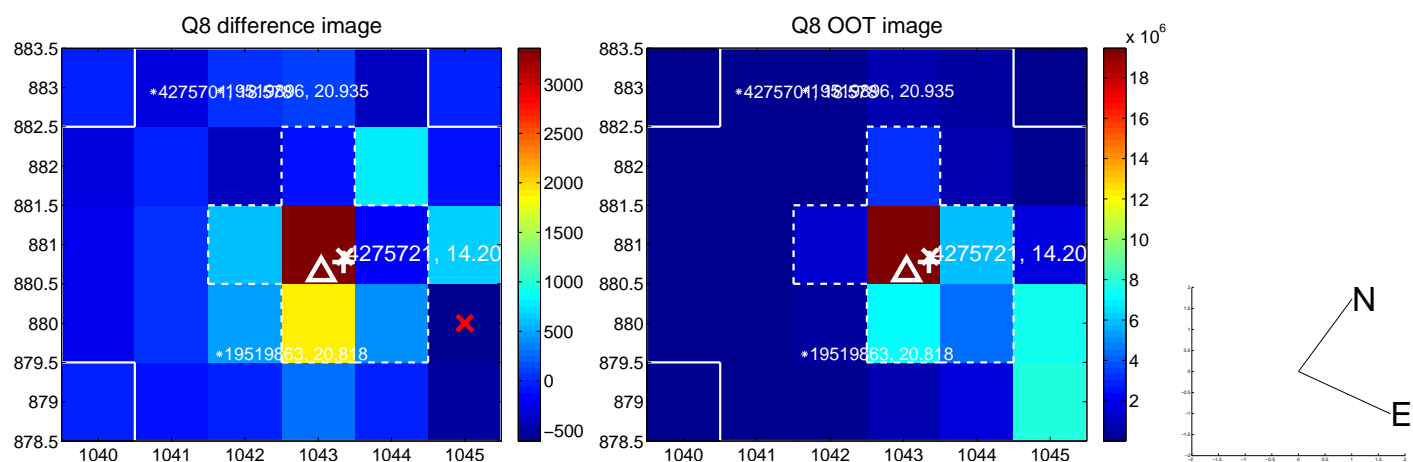
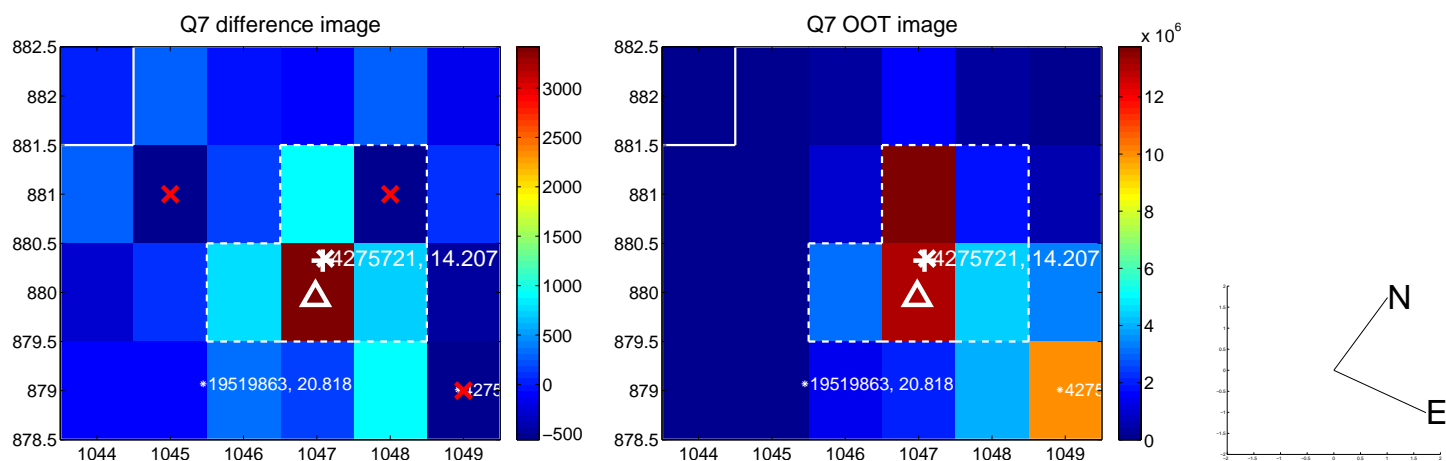
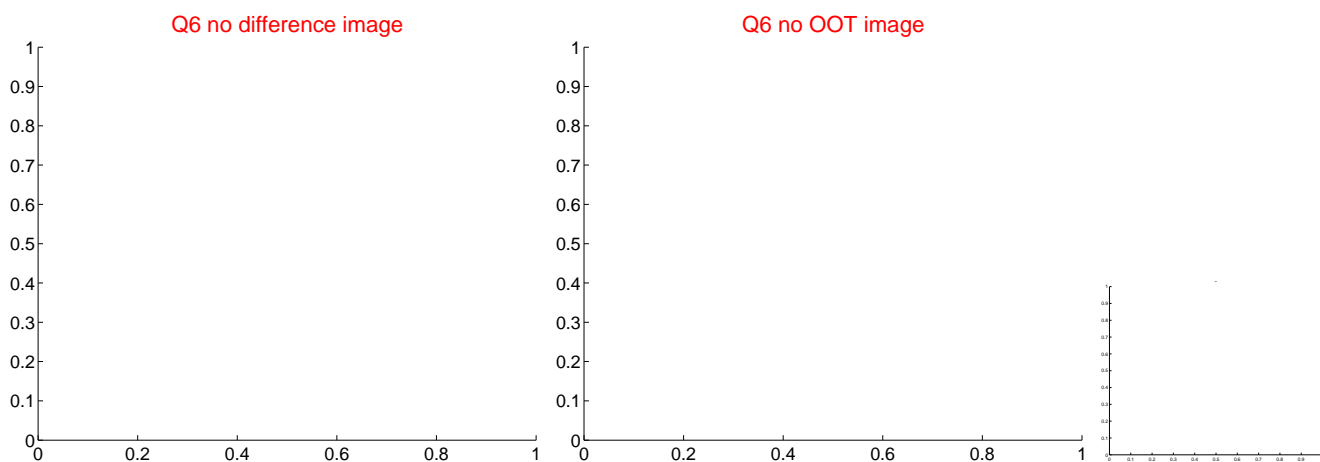
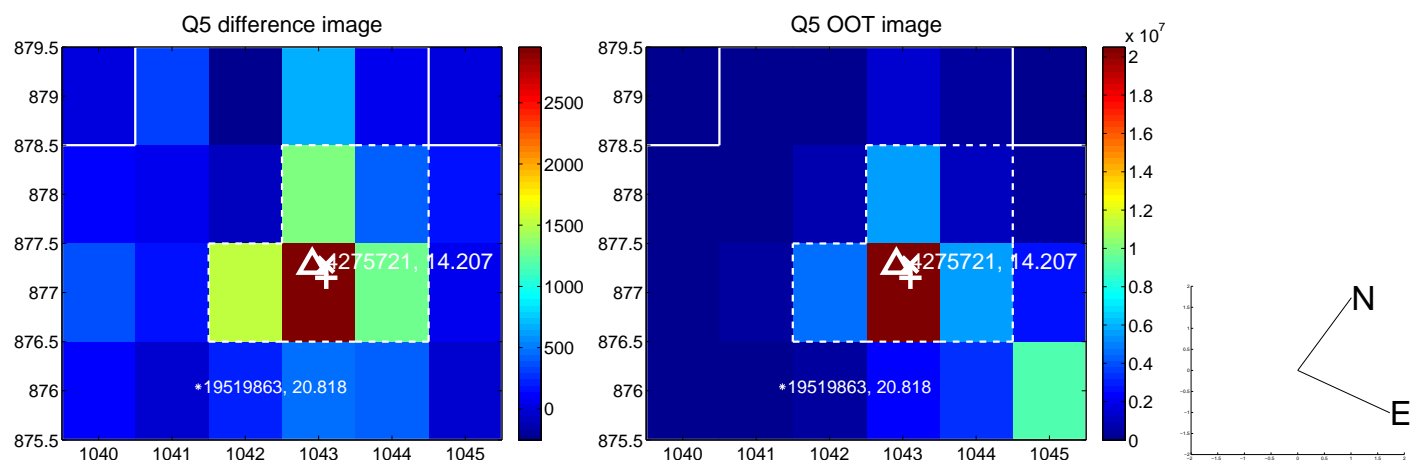


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

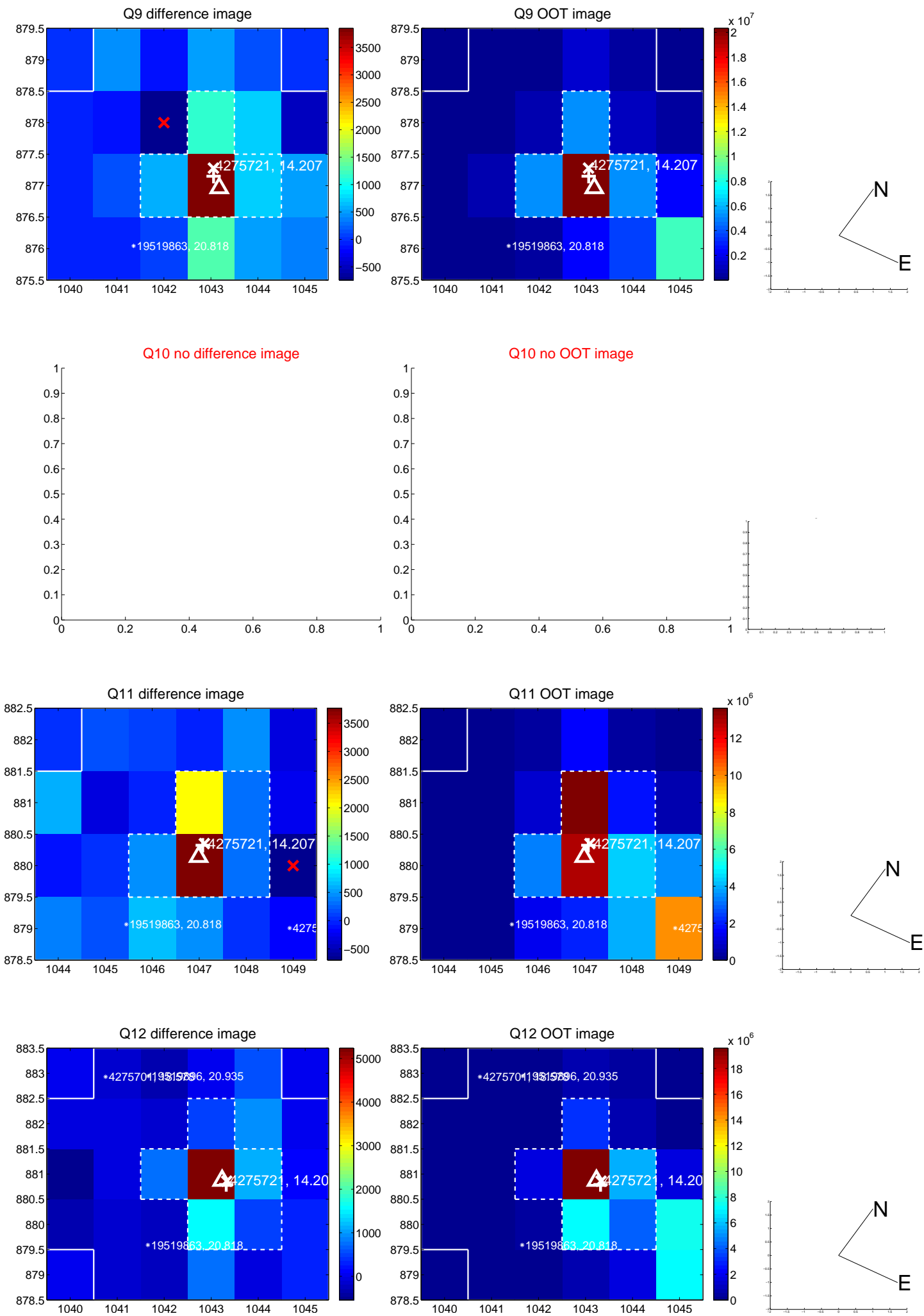
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



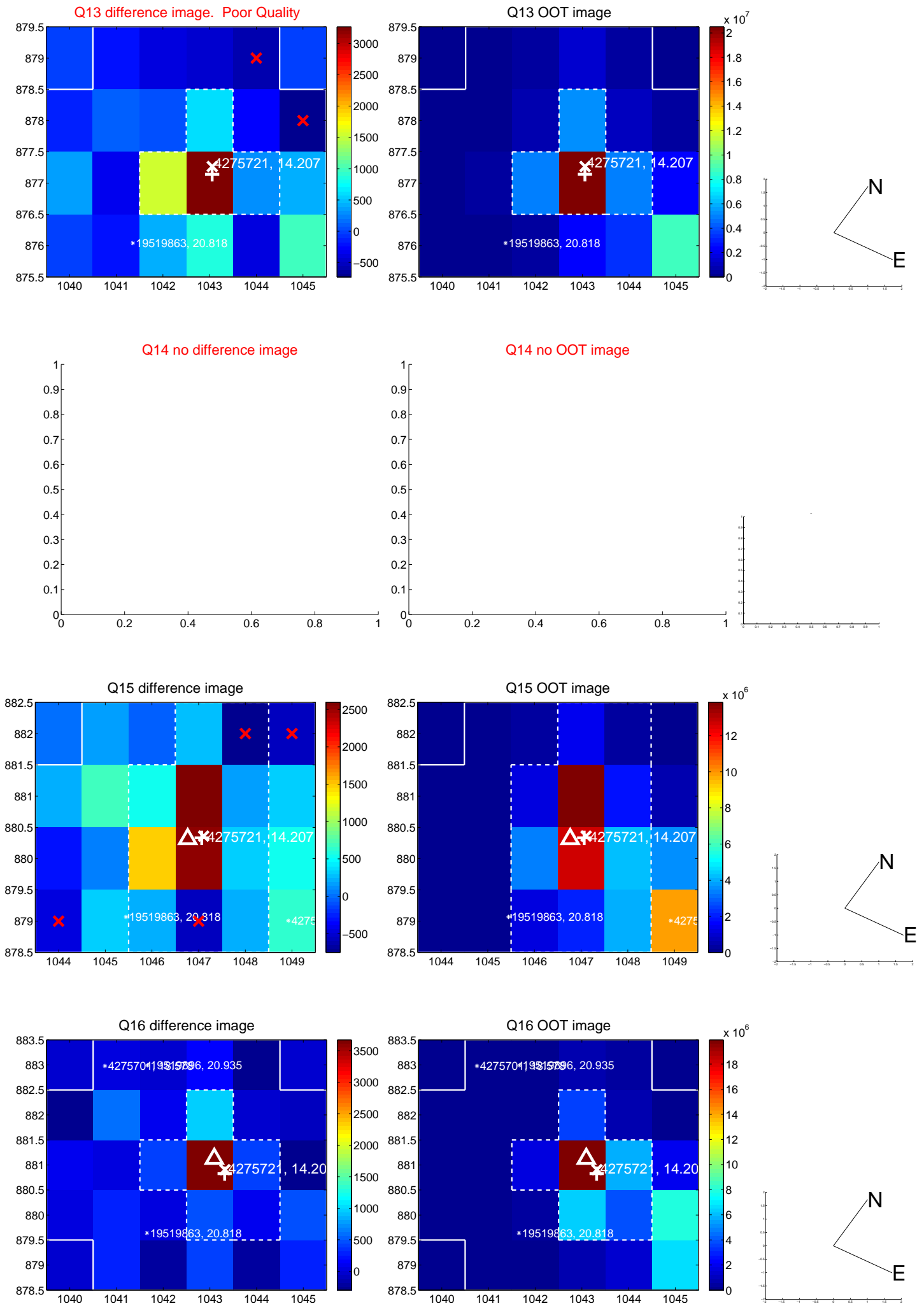
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



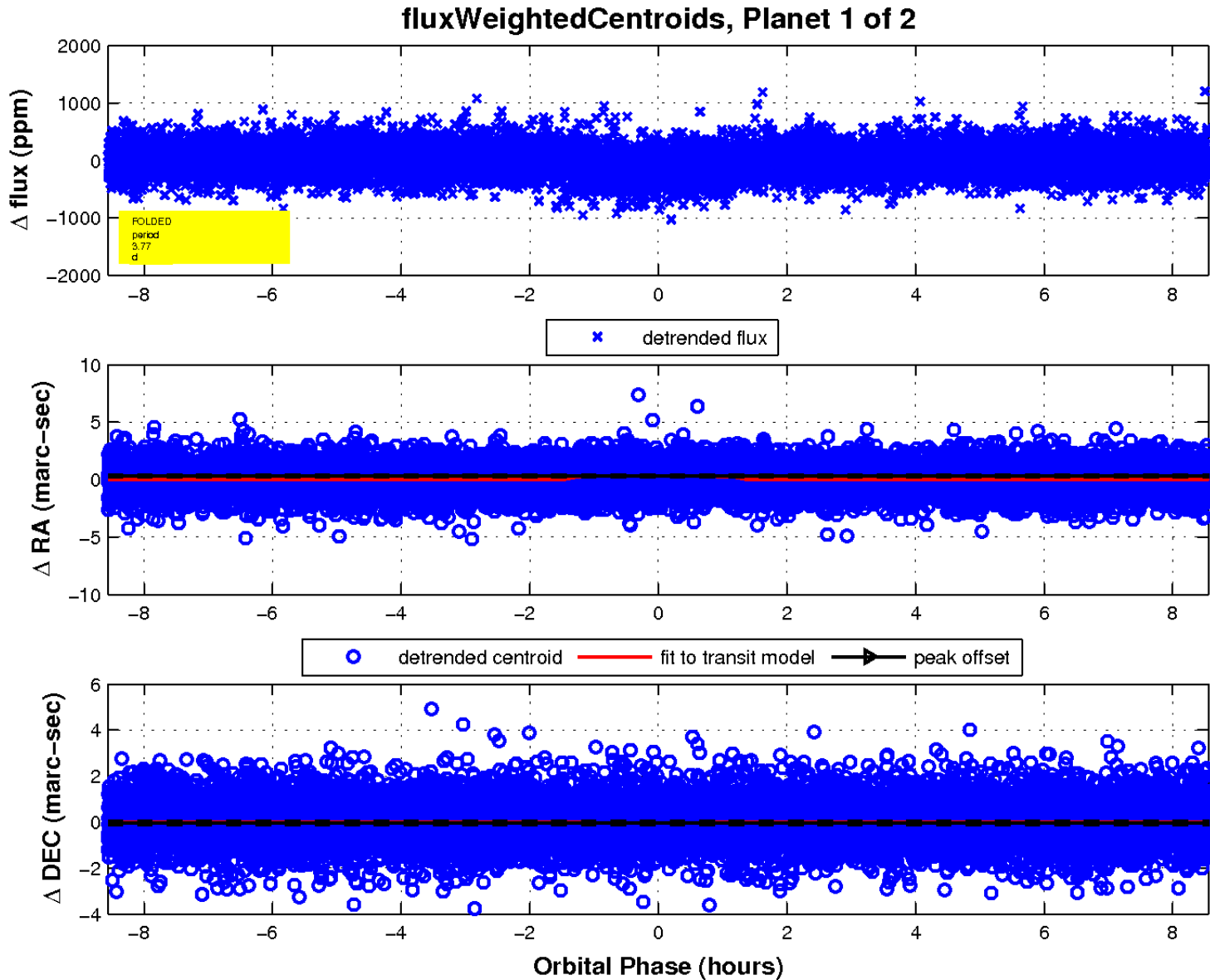
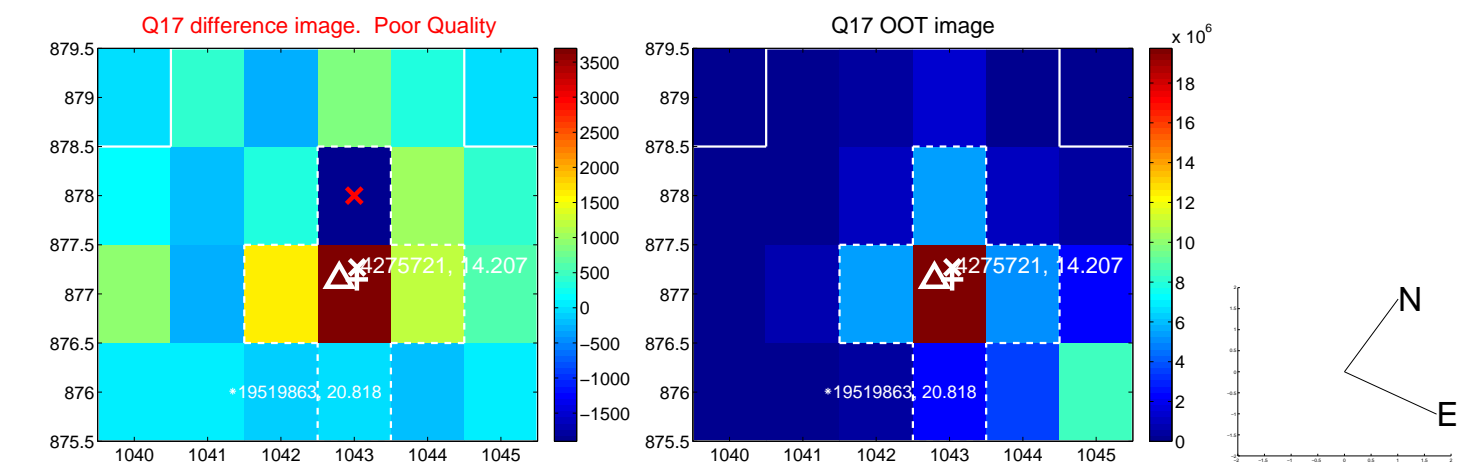
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

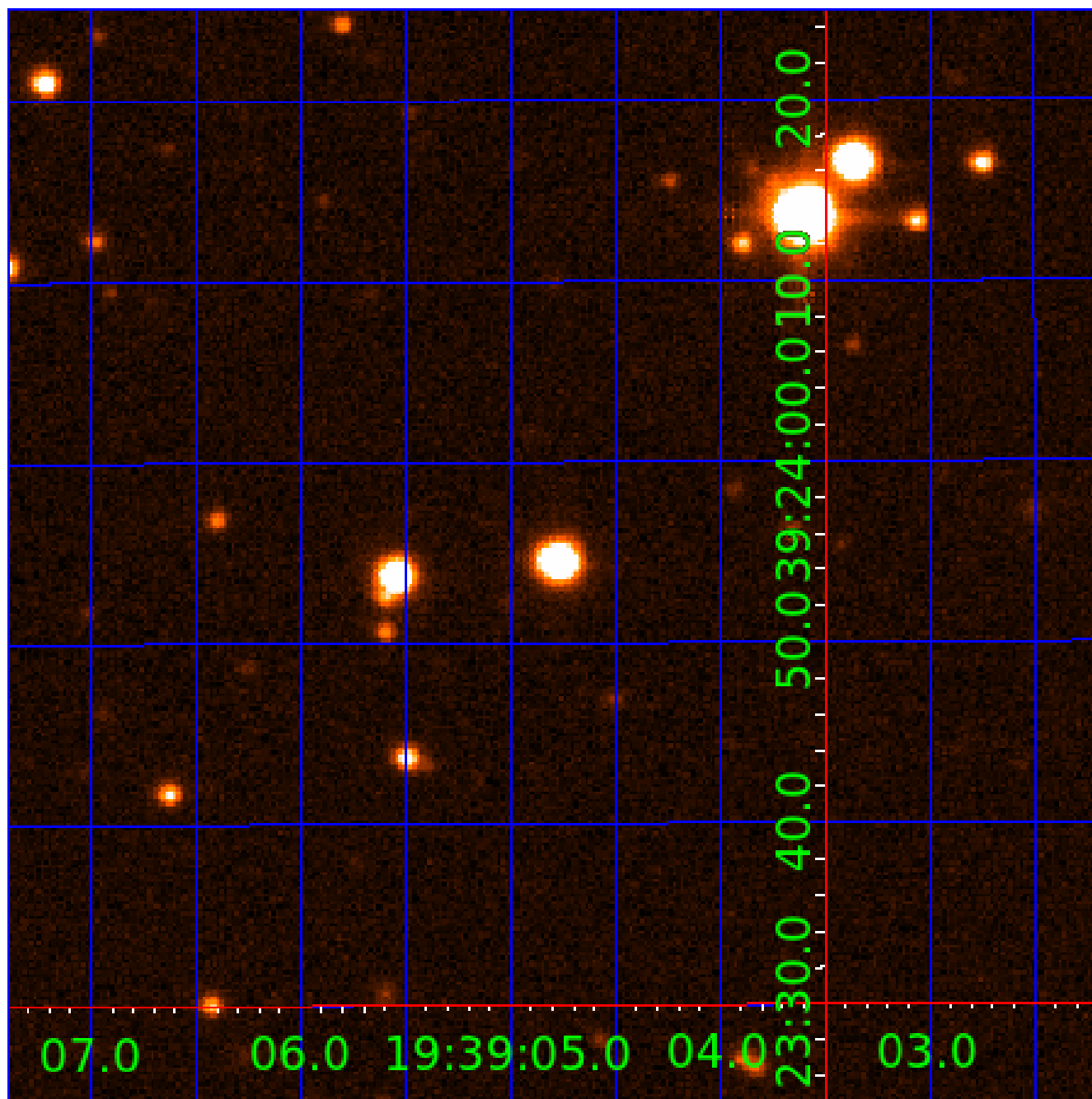


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004275721

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})
004275721-01	OBS	1342.01	3.773588	134.071379	177.8	2.853	21.2	24.1	0.97	6224	1.50	616.19
004275721-02	OBS	1342.02	8.181837	134.812467	286.2	2.553	21.6	24.0	0.97	6224	1.92	219.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004275721-01	OBS	PC	0.81	0	0	0	0	NO_COMMENT
004275721-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

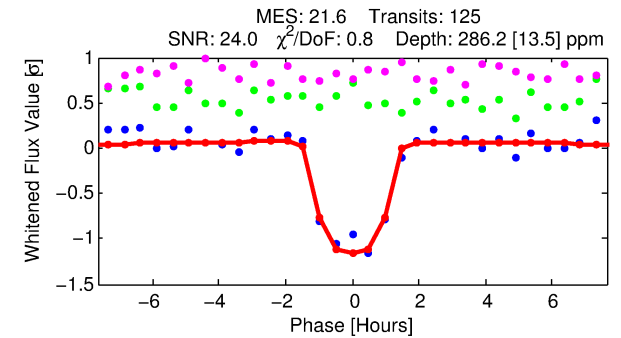
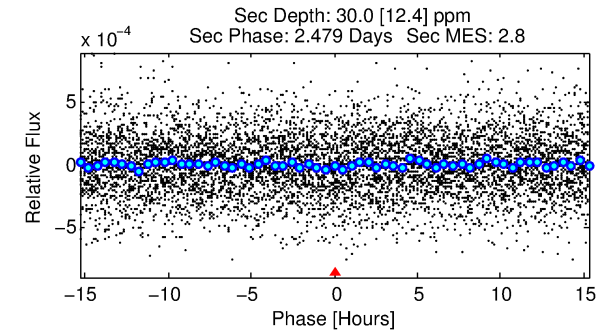
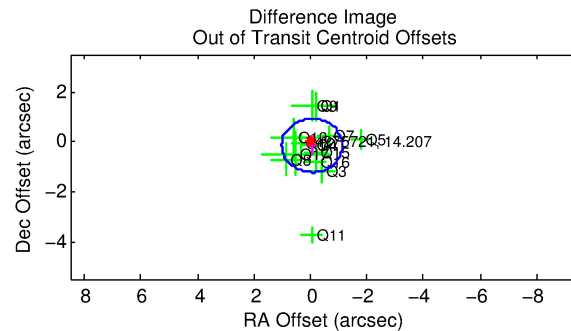
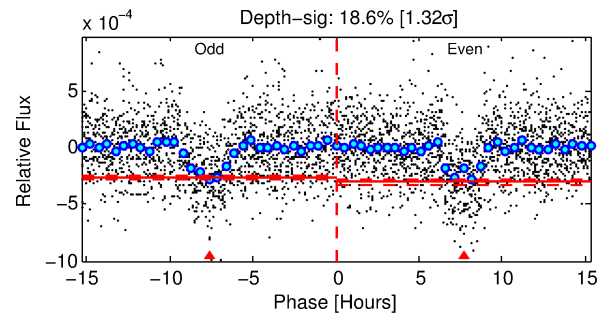
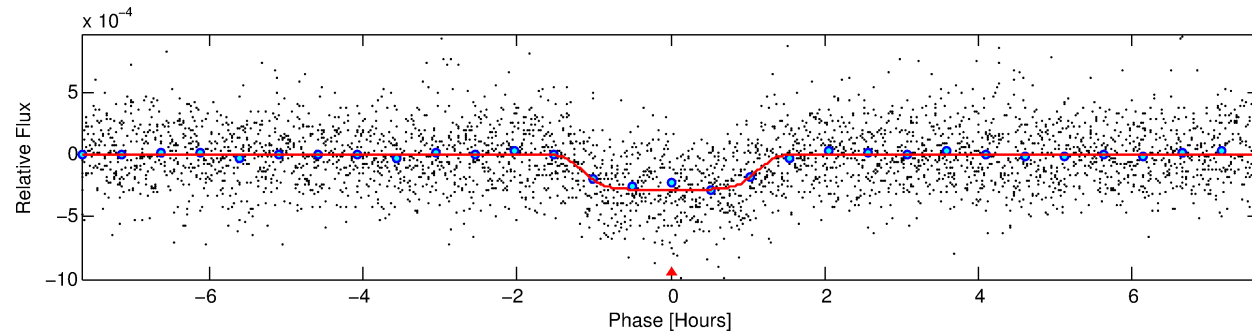
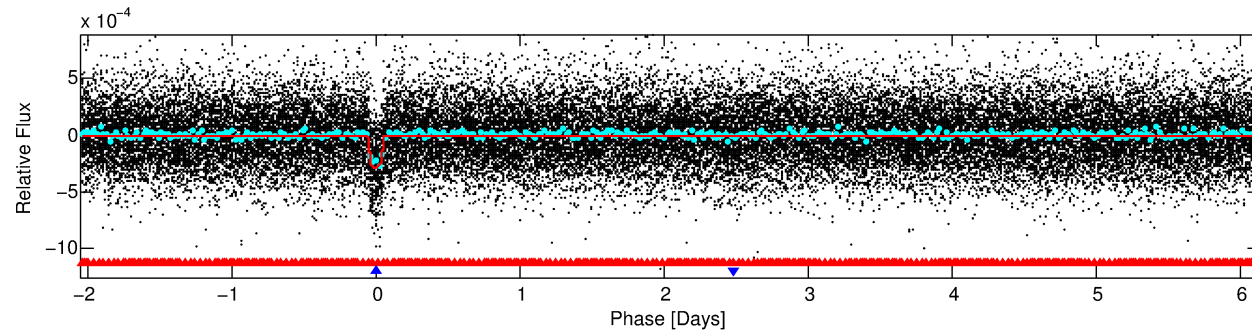
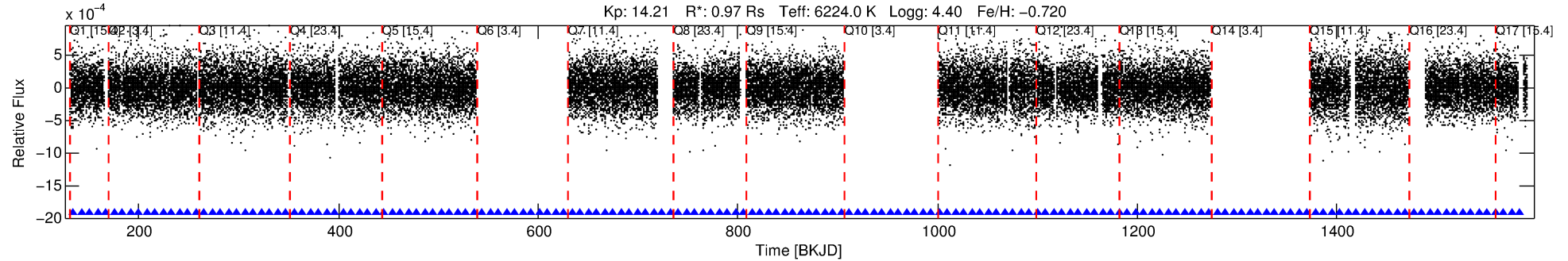
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004275721-02

No Significant Match Found

DV One-Page Summary

KIC: 4275721 Candidate: 2 of 2 Period: 8.182 d
KOI: K01342.02 Corr: 0.981



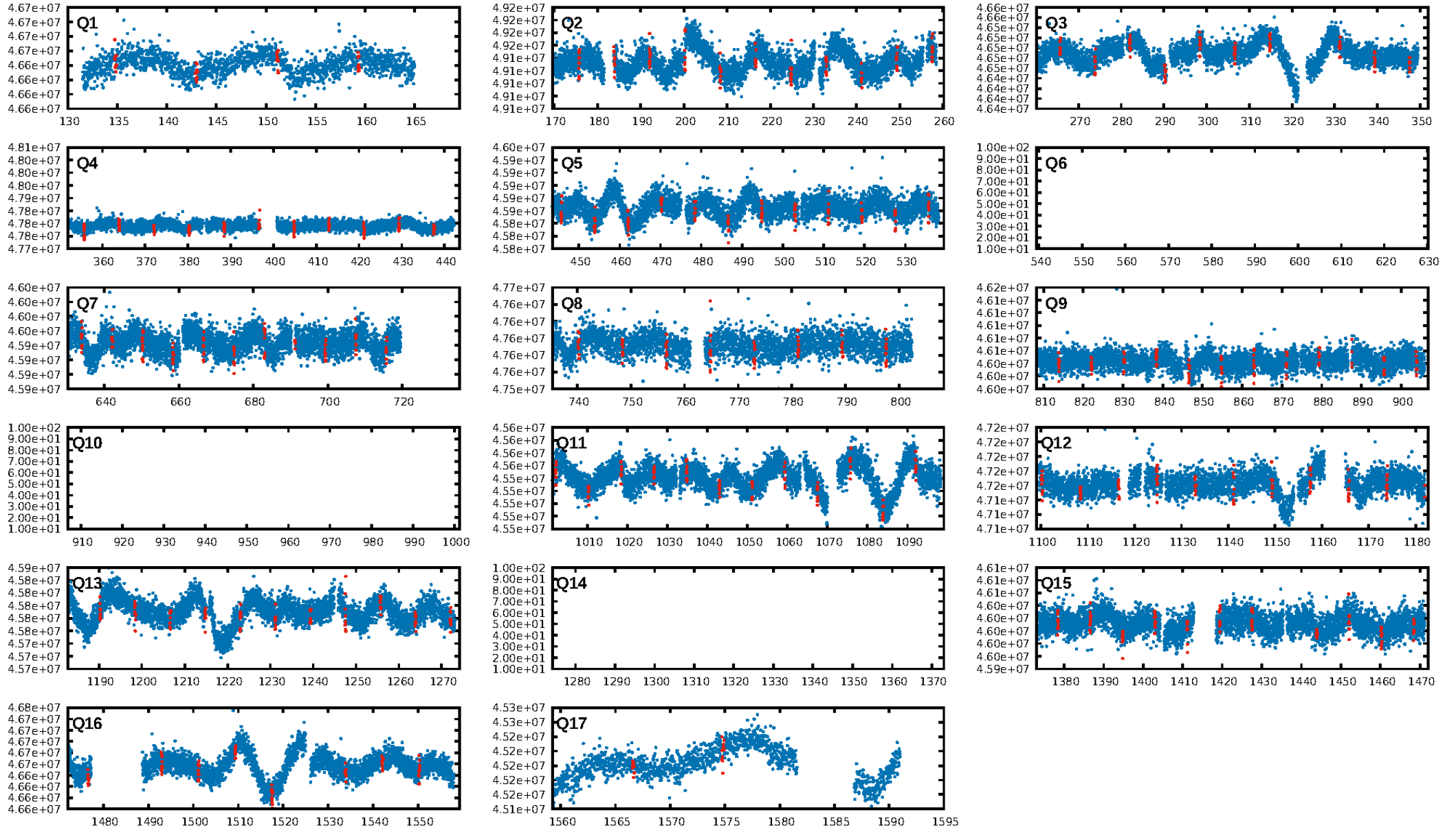
DV Fit Results:

Period = 8.18184 [0.00002] d
Epoch = 134.8125 [0.0022] BKJD
Rp/R* = 0.0181 [0.0032]
a/R* = 11.69 [11.41]
b = 0.90 [0.21]
Seff = 219.58 [76.69]
Teff = 982 [86] K
Rp = 1.92 [0.59] Re
a = 0.0758 [0.0164] AU
Ag = 25.75 [16.31] [1.52 σ]
Teffp = 3419 [479] K [5.01 σ]

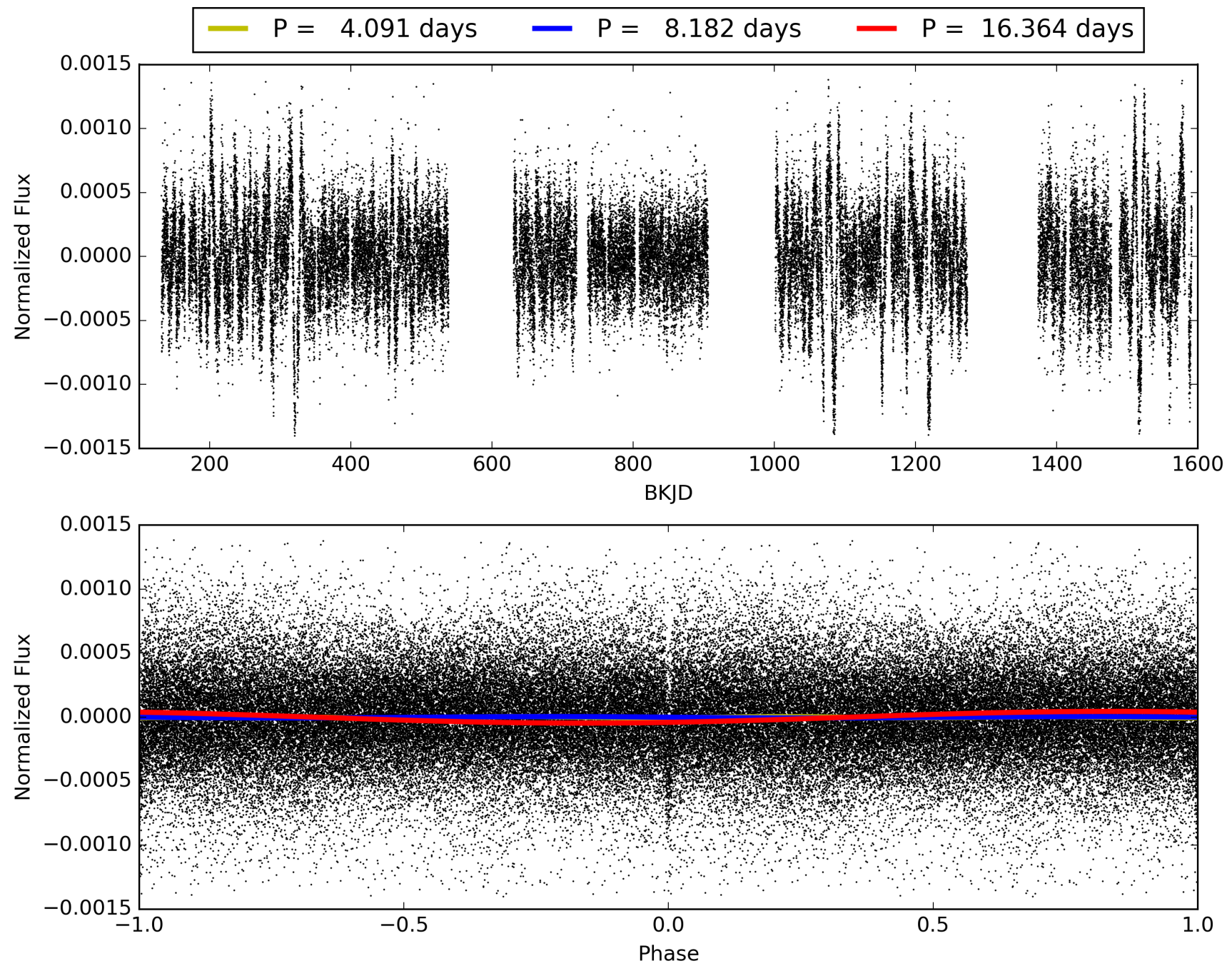
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.63 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.41e-102
RollingBand-fgt: 1.00 [119/119]
GhostDiagnostic-chr: 5.558
Centroid-sig: 0.0%
Centroid-so: 0.955 arcsec [2.15 σ]
OotOffset-rm: 0.161 arcsec [0.45 σ]
KicOffset-rm: 0.419 arcsec [1.33 σ]
OotOffset-st: 0/4/4/5 [13]
KicOffset-st: 0/4/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004275721-02, PDC Light Curves

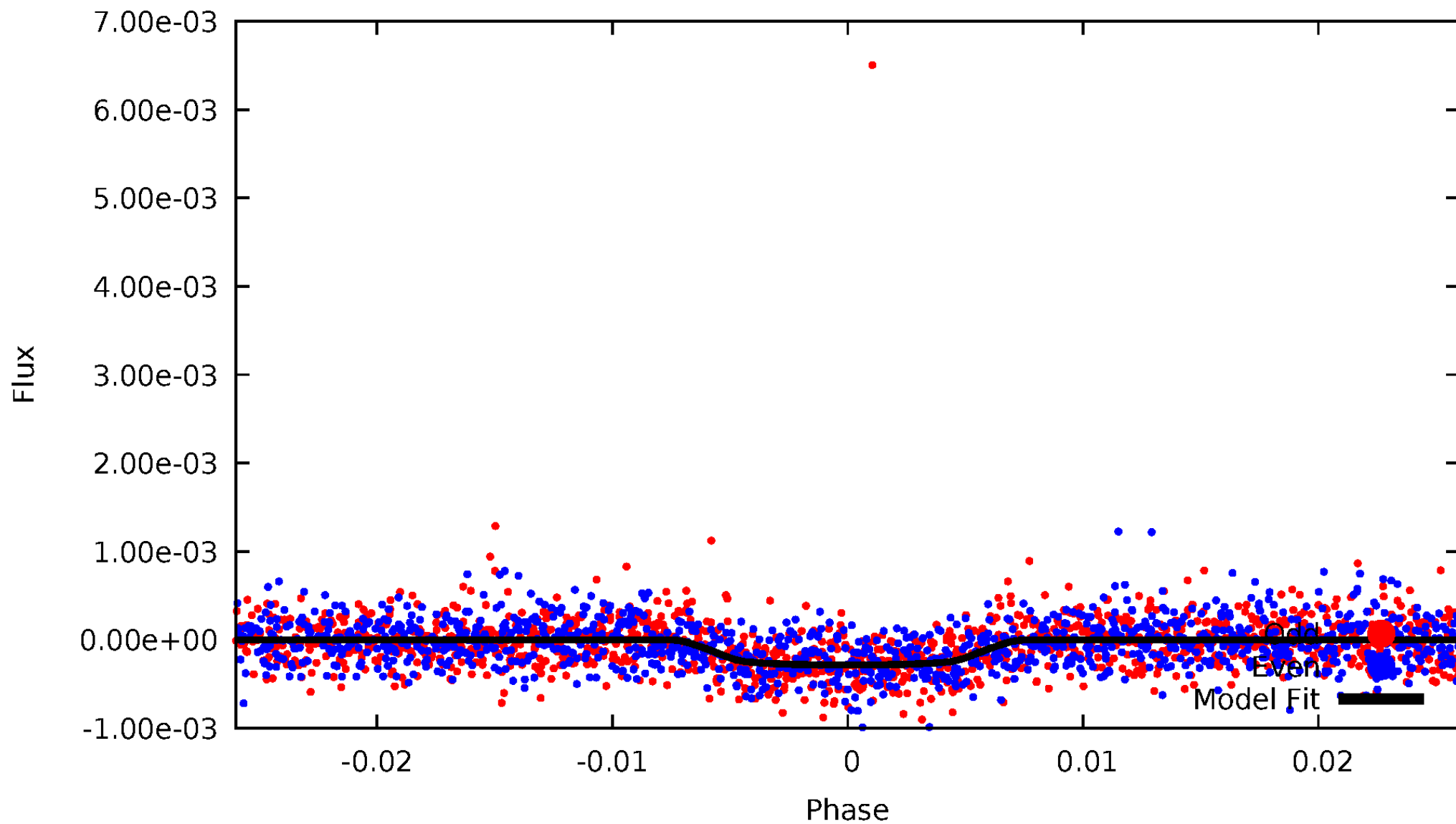


TCE 004275721-02



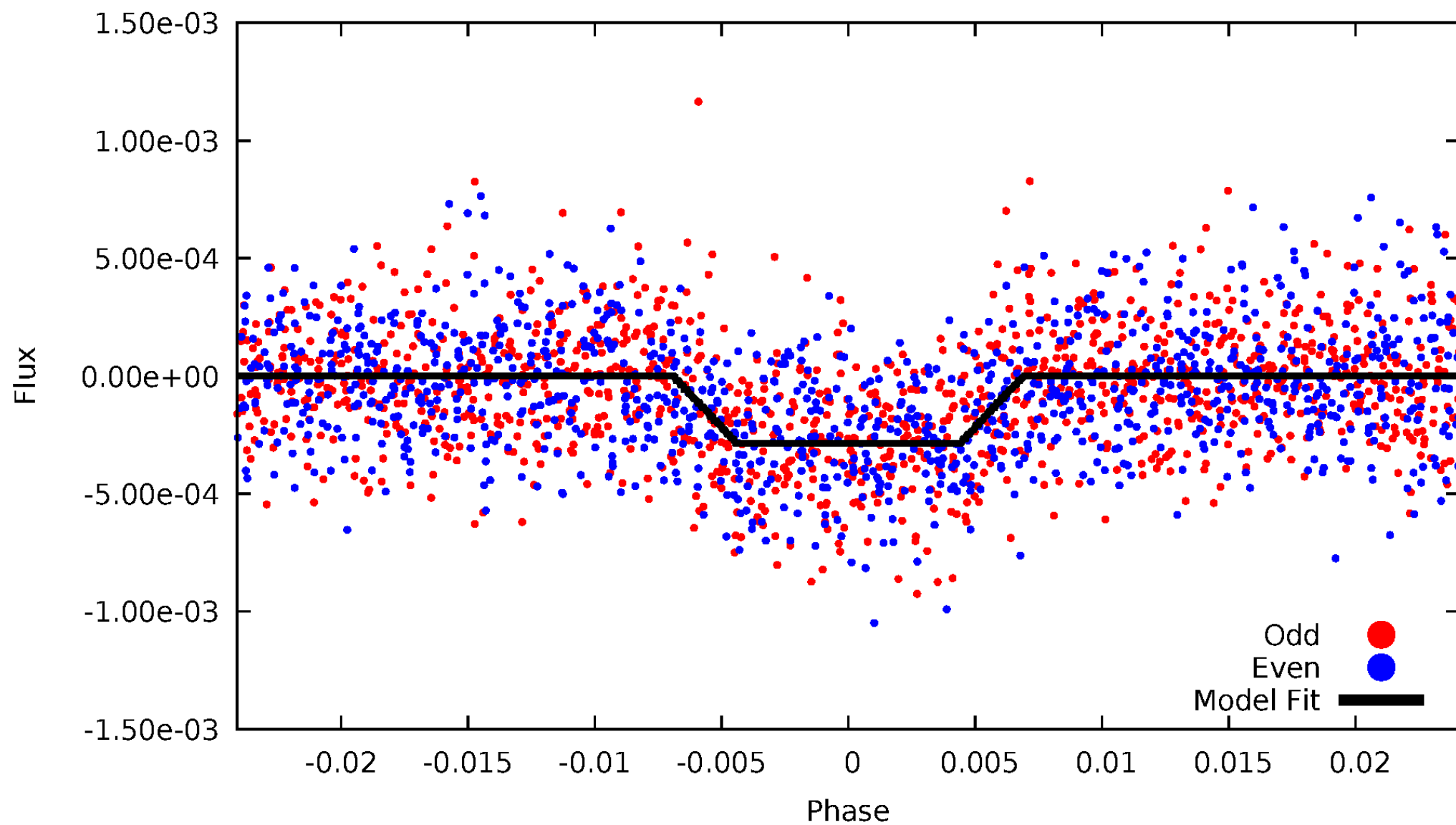
DV Odd/Even

TCE 004275721-02



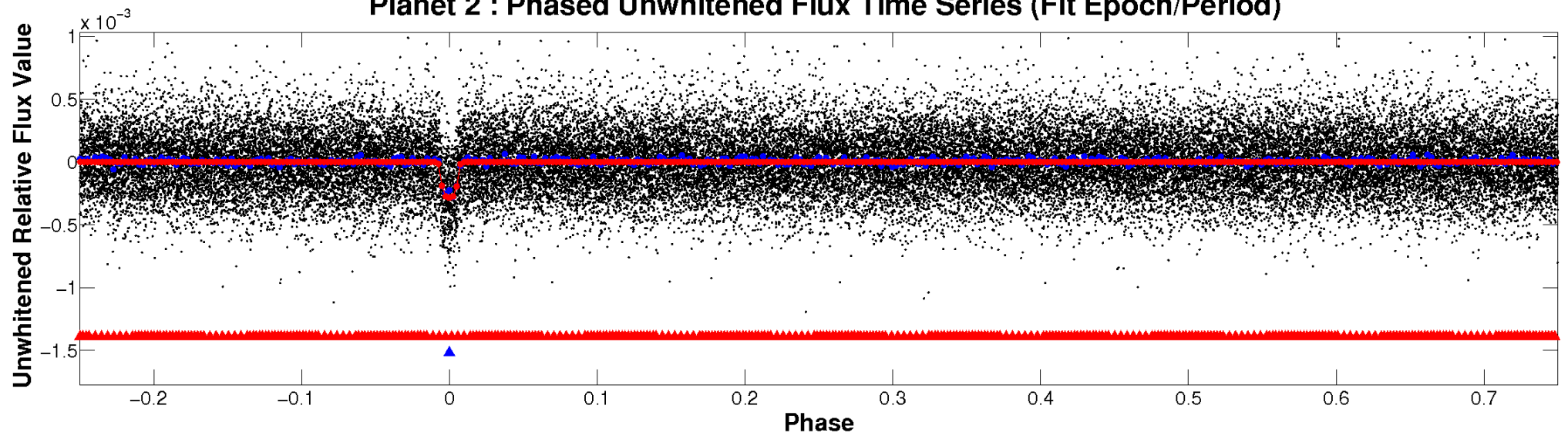
ALT Odd/Even

TCE 004275721-02

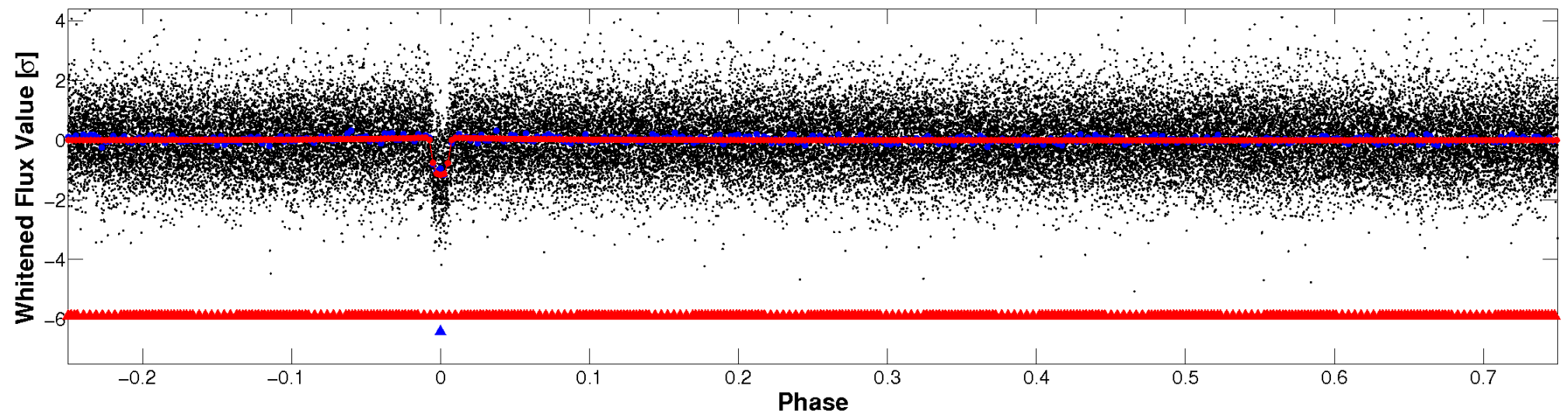


Non-Whitened Vs. Whitened Light Curve

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

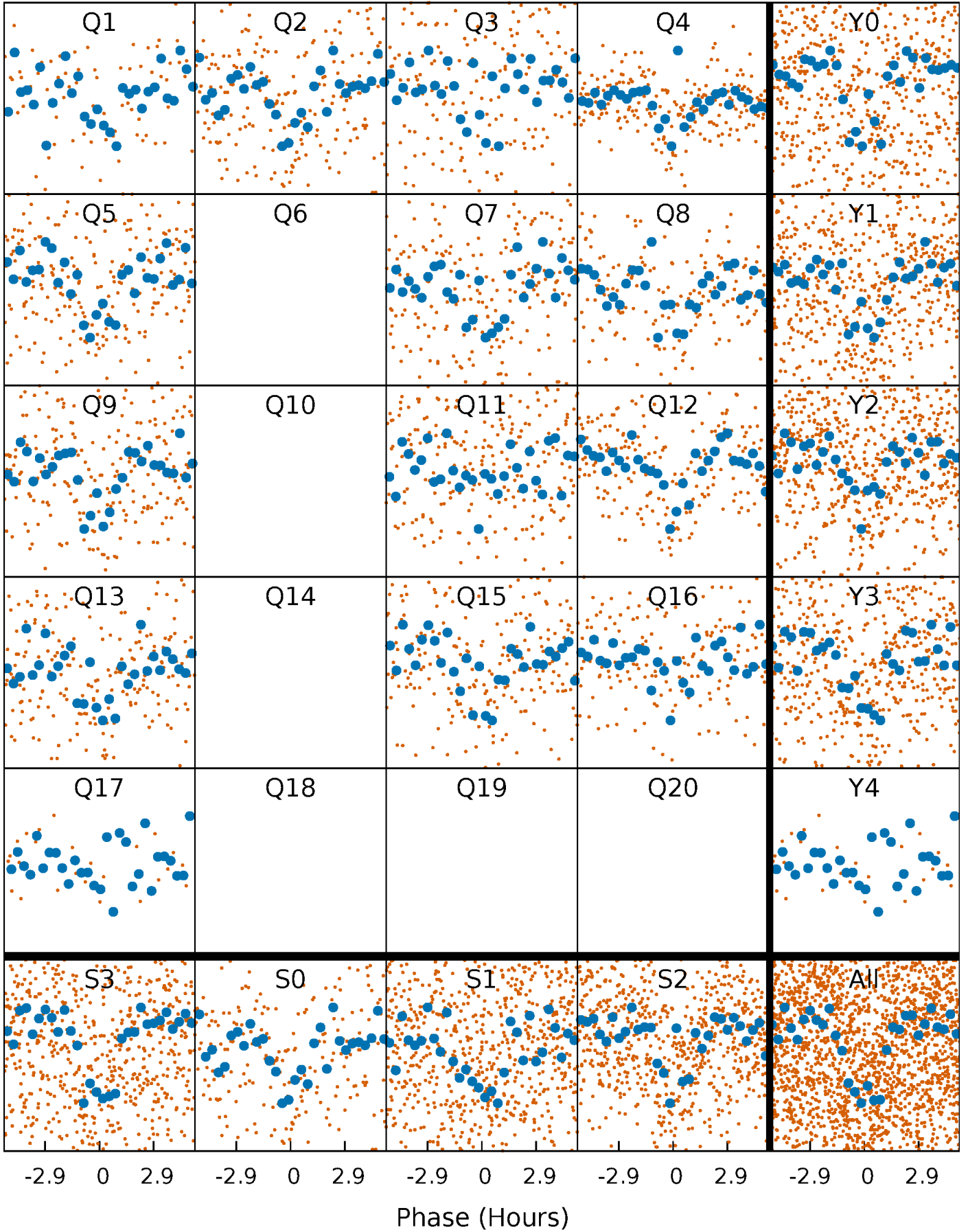


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



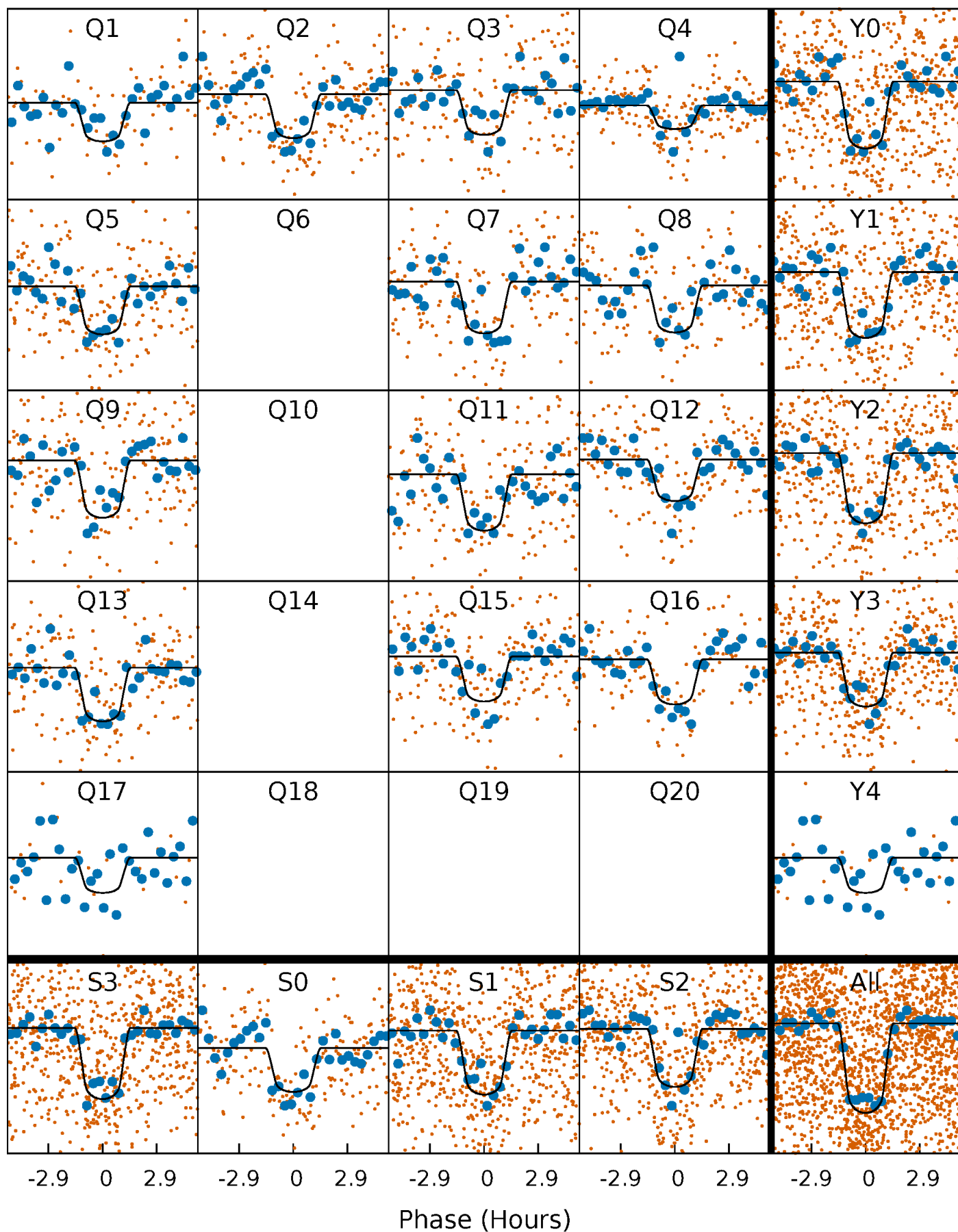
PDC Quarter-Phased Transit Curves

TCE 004275721-02 P= 8.181837 Days $T_0=134.812466$ (BKJD)



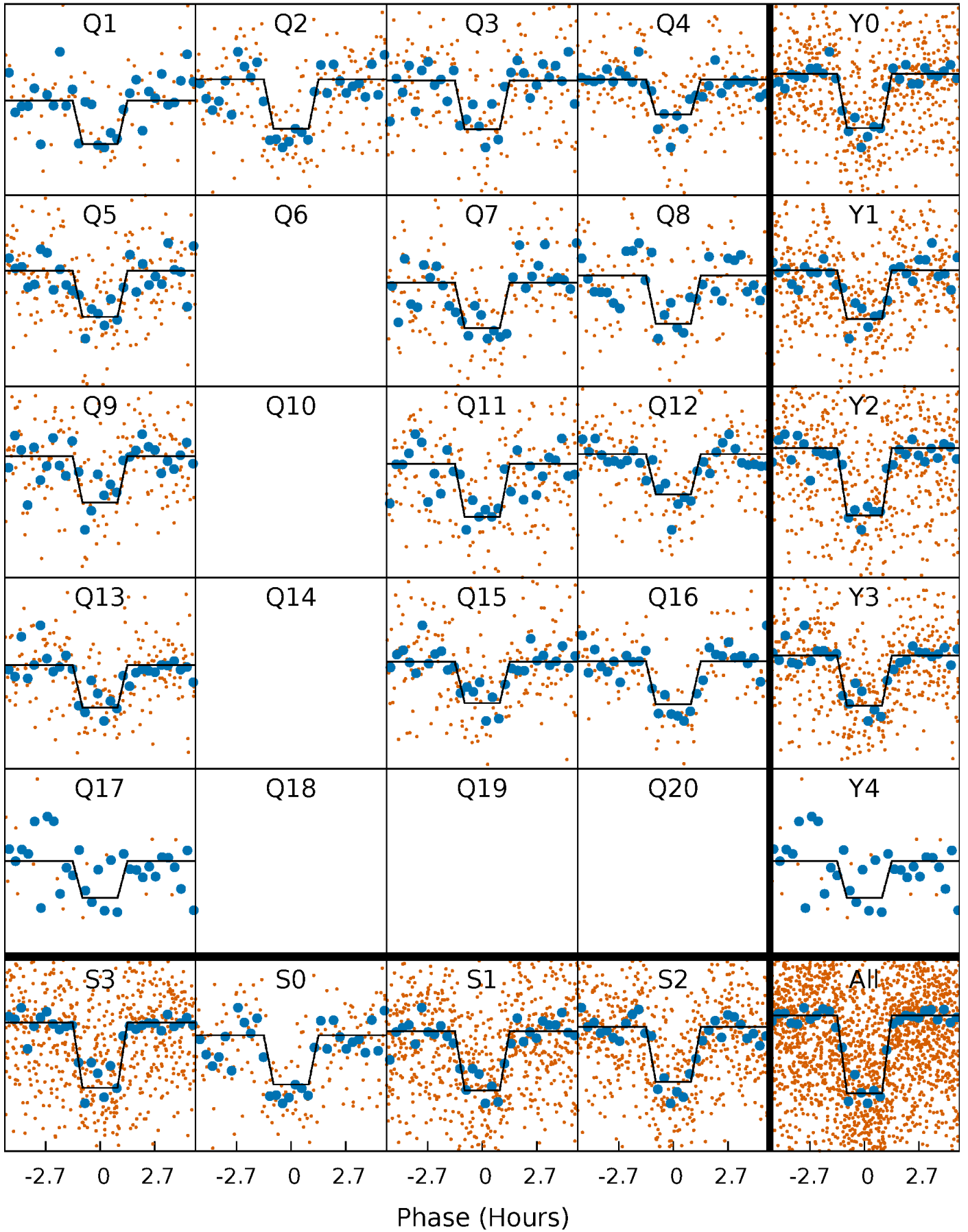
DV Quarter-Phased Transit Curves

TCE 004275721-02 P= 8.181837 Days $T_0=134.812466$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

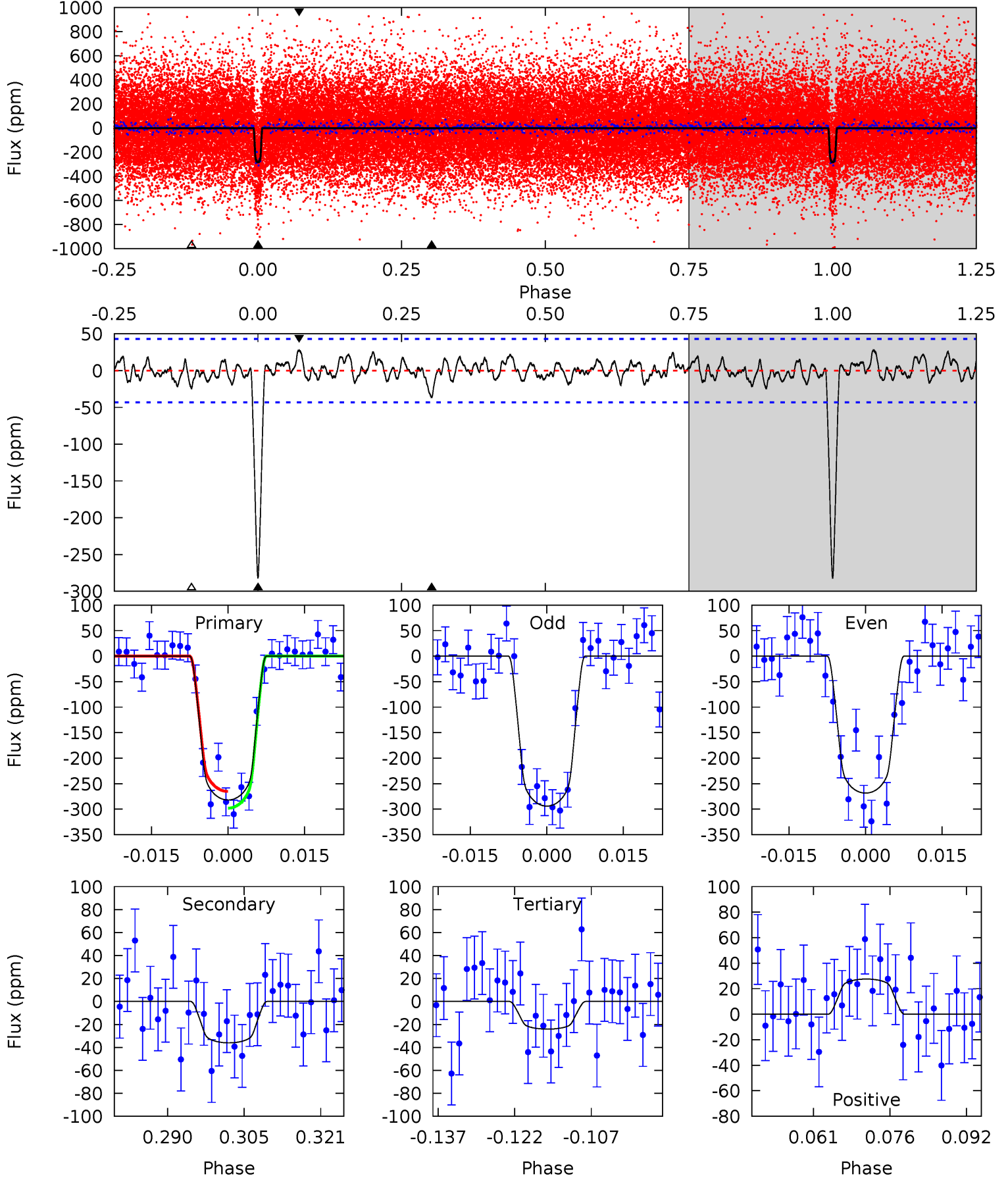
TCE 004275721-02 P= 8.181783 Days $T_0=134.817638$ (BKJD)



DV Model-Shift Uniqueness Test

004275721-02, P = 8.181837 Days, E = 126.630629 Days

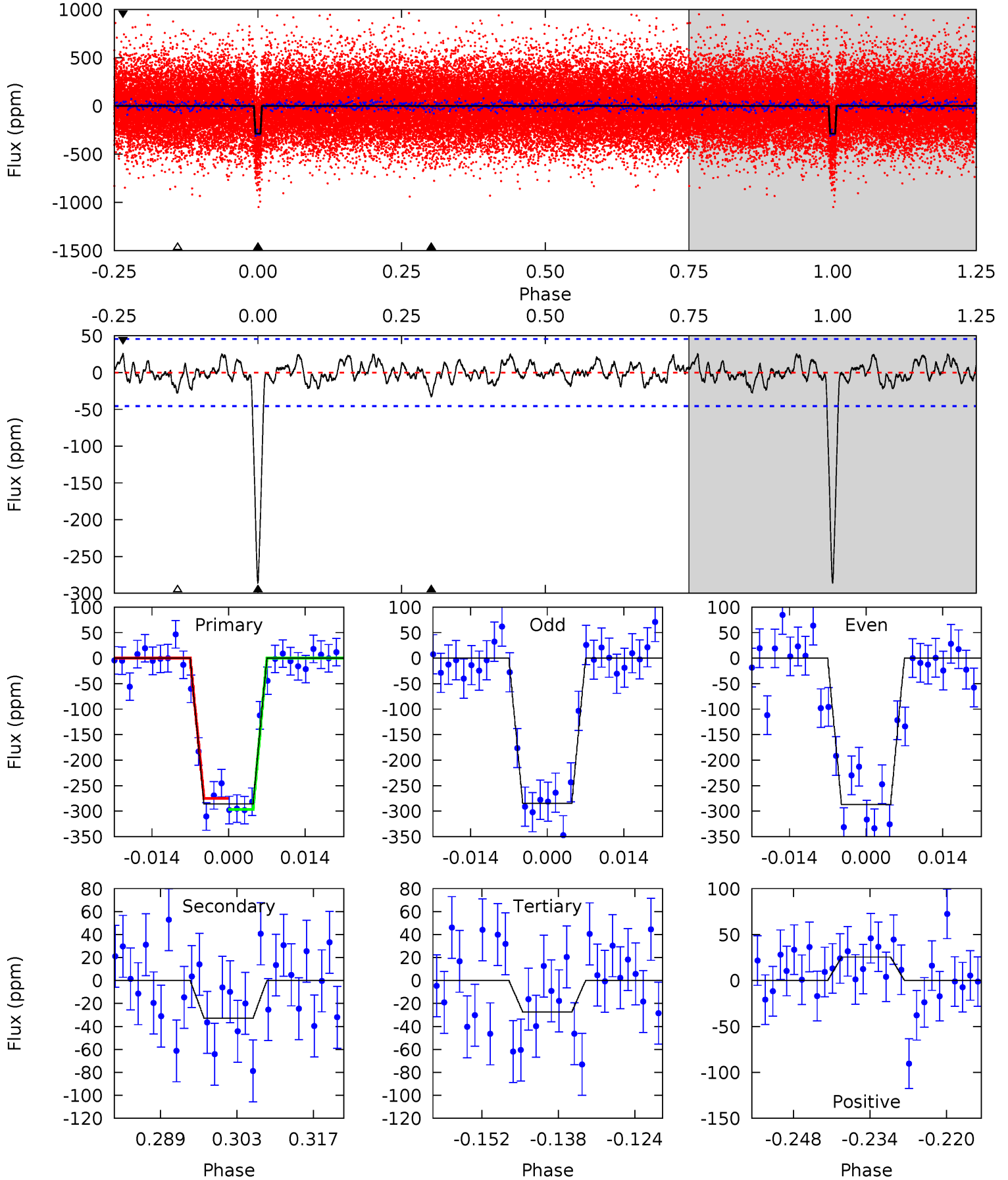
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.3	4.13	2.76	3.16	4.94	2.43	1.12	29.5	29.1	1.37	0.97	1.46	0.98	0.09	1.88



Alt Model-Shift Uniqueness Test

004275721-02, P = 8.181783 Days, E = 126.635855 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.1	3.57	2.99	2.78	4.96	2.46	1.12	28.1	28.3	0.58	0.80	0.13	1.01	0.08	1.17



Stellar Parameters For KIC 004275721

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6224^{+169}_{-207}	$4.404^{+0.135}_{-0.180}$	$-0.720^{+0.300}_{-0.300}$	$0.969^{+0.243}_{-0.142}$	$0.868^{+0.102}_{-0.077}$	$1.342^{+0.742}_{-0.654}$
	+3%/-3%	+3%/-4%	+42%/-42%	+25%/-15%	+12%/-9%	+55%/-49%
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 004275721-02 / KOI 1342.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-36 ± 9	$1.95^{+0.43}_{-0.40}$	1379^{+91}_{-81}	3892^{+340}_{-254}	29^{+19}_{-11}
Alt.	-33 ± 9	$1.79^{+0.42}_{-0.38}$	1373^{+92}_{-86}	3937^{+416}_{-313}	32^{+24}_{-13}

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 $A_{obs} \gg 1.0$

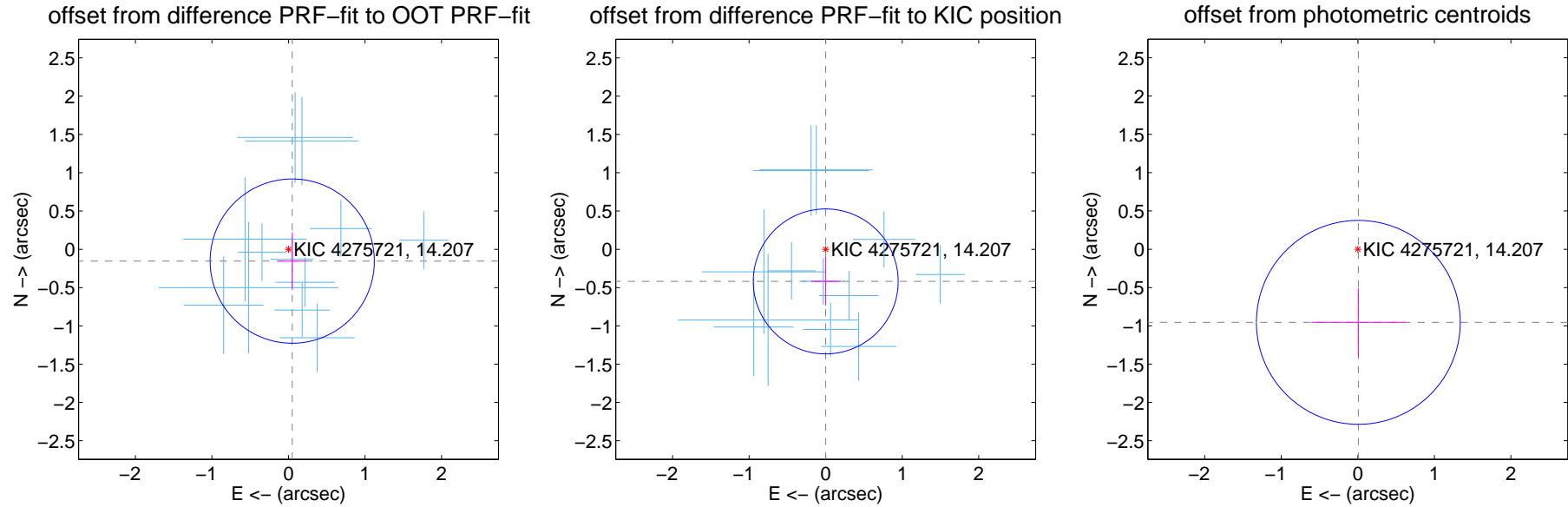
DV Centroid Data

Supplemental centroid analysis for 004275721-02. Kepler magnitude: 14.21. Transit SNR 24.03

There are 13 quarters with good PRF difference image offsets

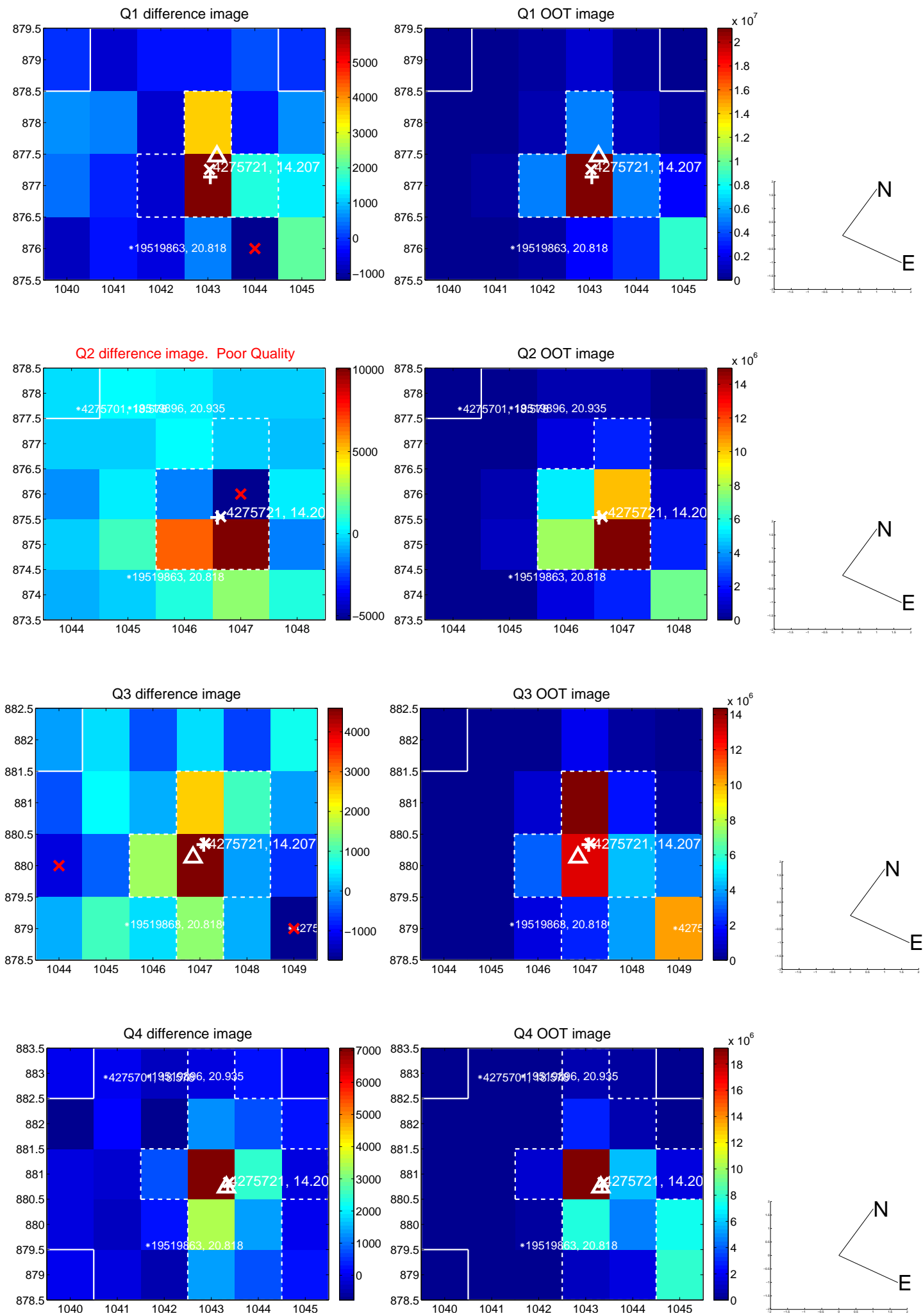
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 0.358	0.45	-0.049 ± 0.185	-0.154 ± 0.375
PRF-fit source offset from KIC position	0.419 ± 0.316	1.33	-0.001 ± 0.195	-0.419 ± 0.316
photometric centroid source offset	0.95 ± 0.44	2.15	-0.01 ± 0.62	-0.95 ± 0.44

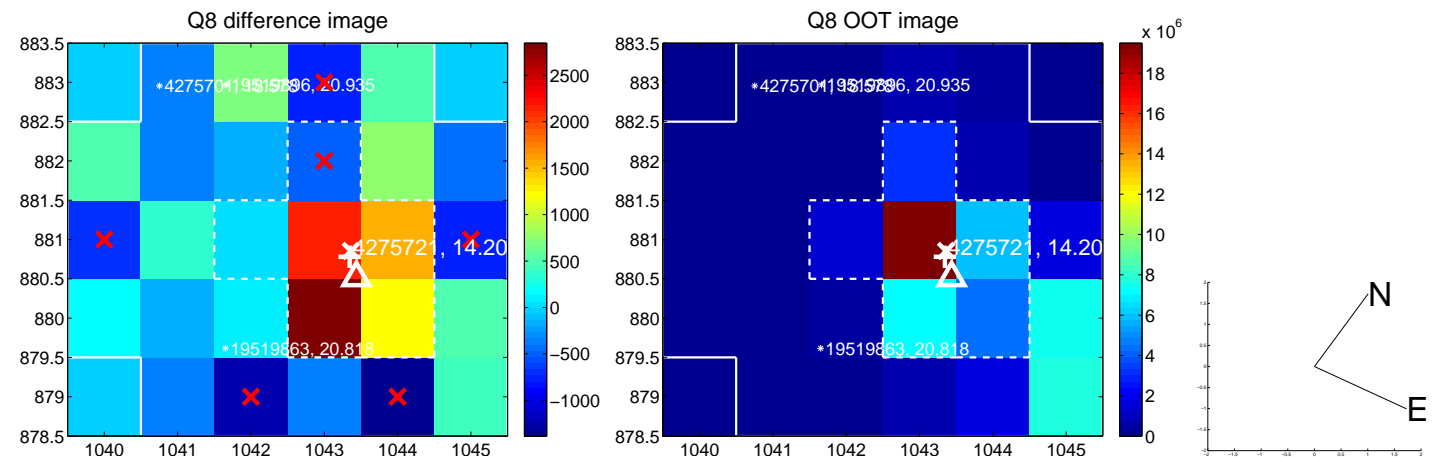
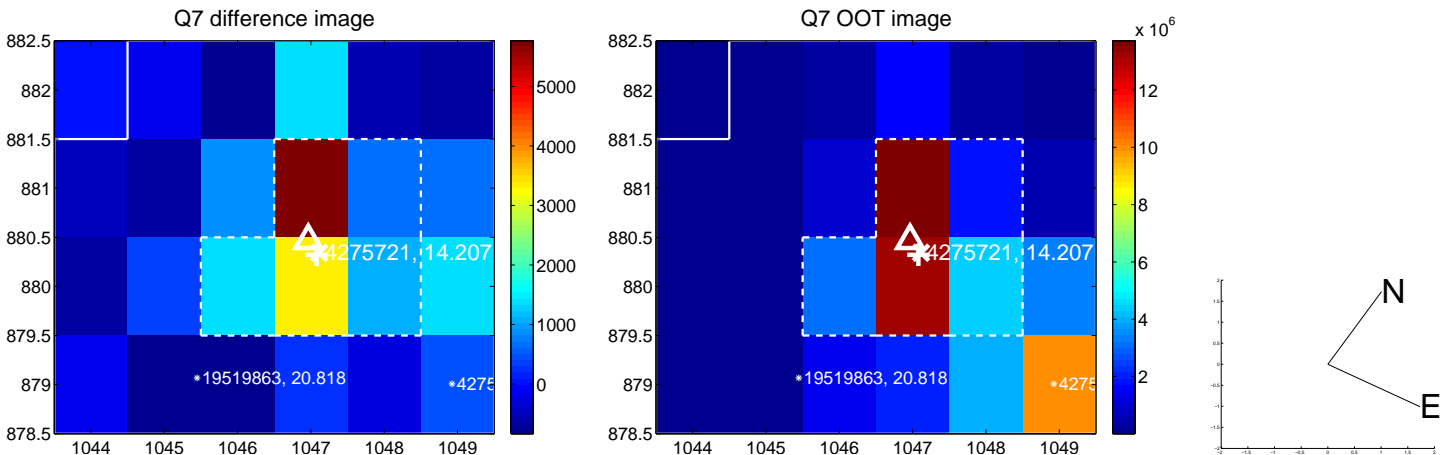
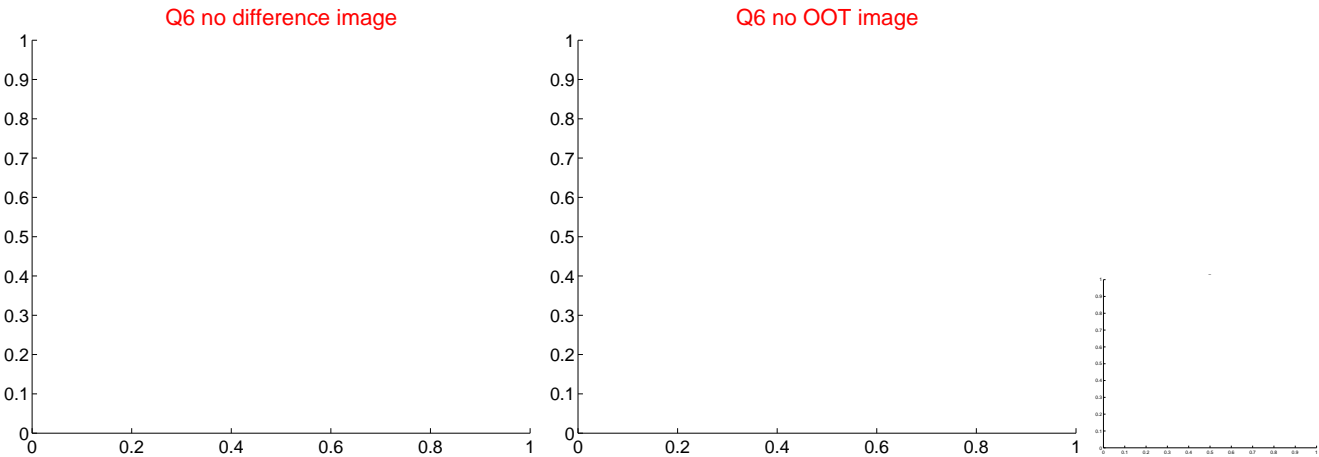
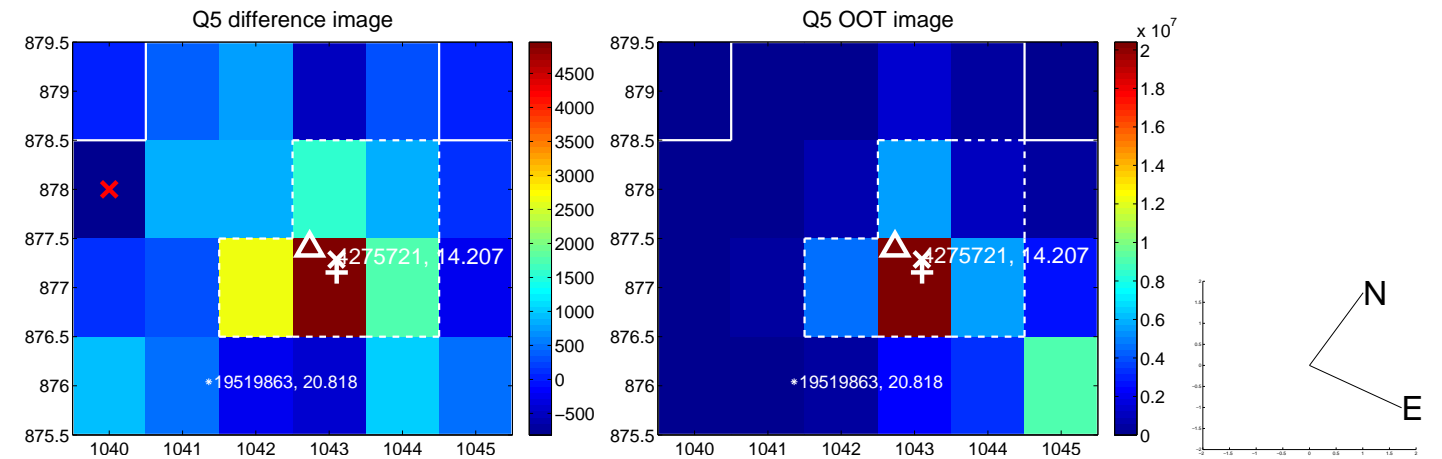


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

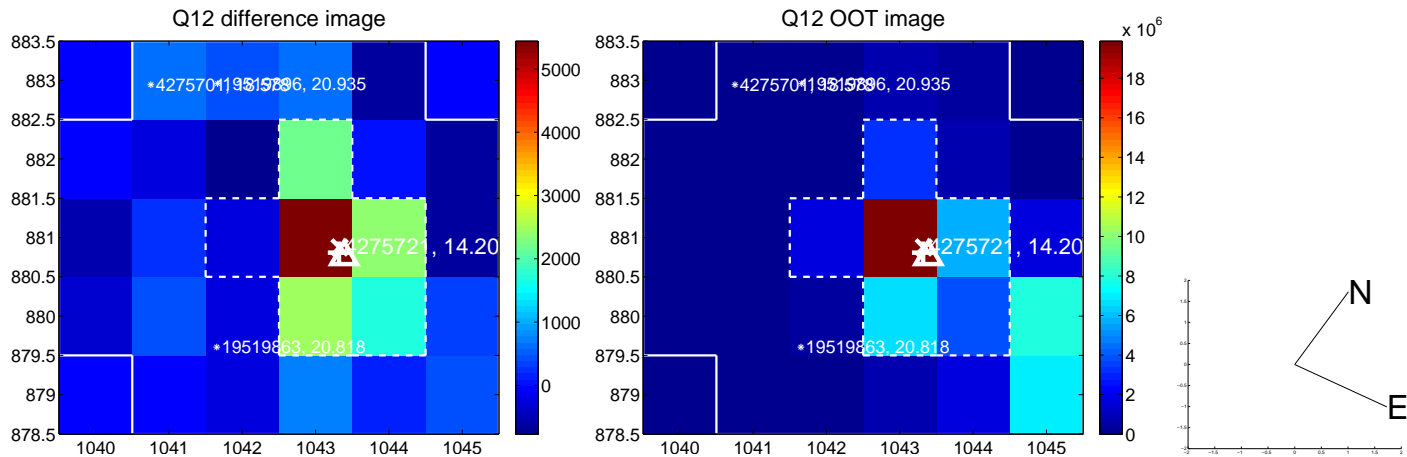
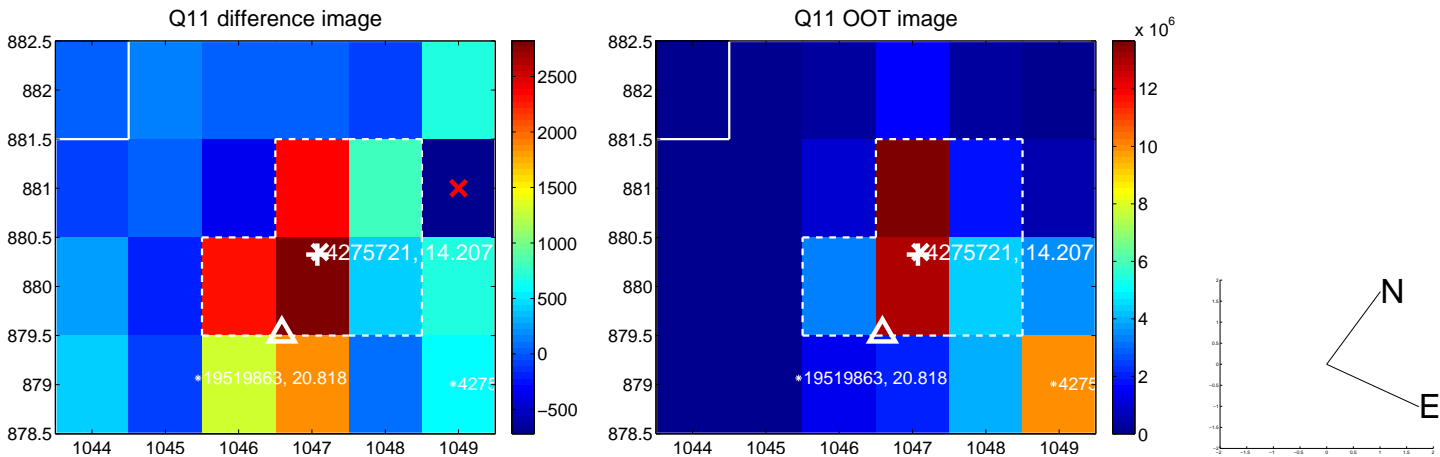
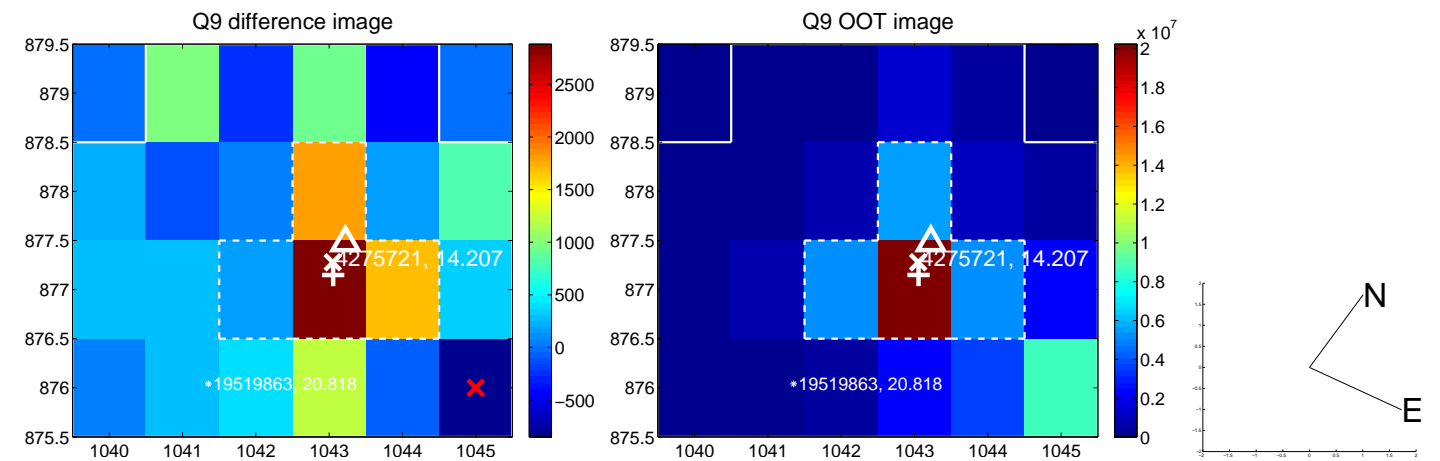
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



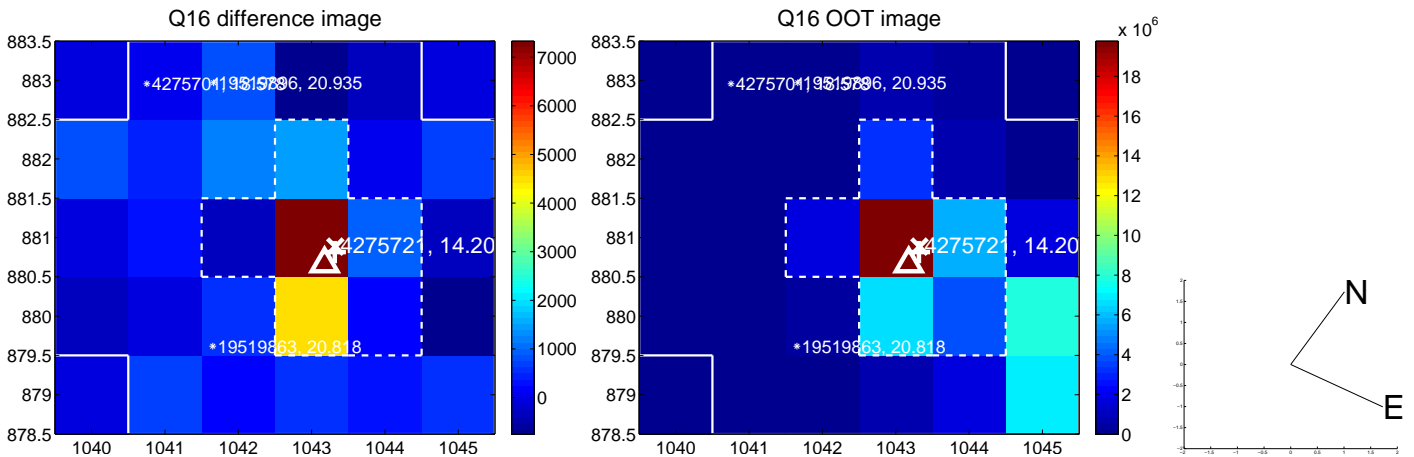
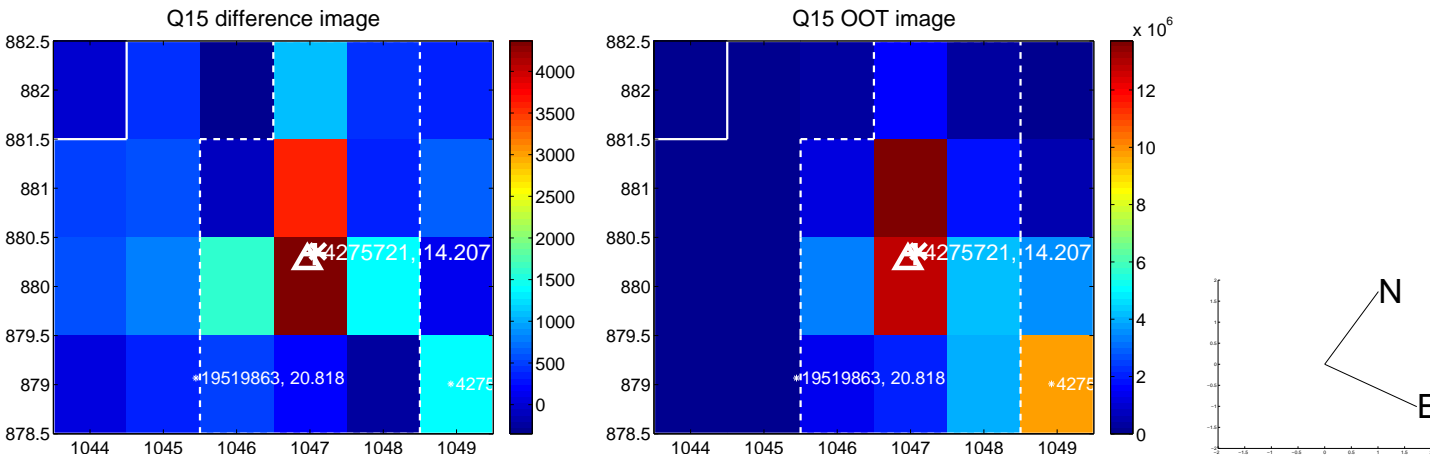
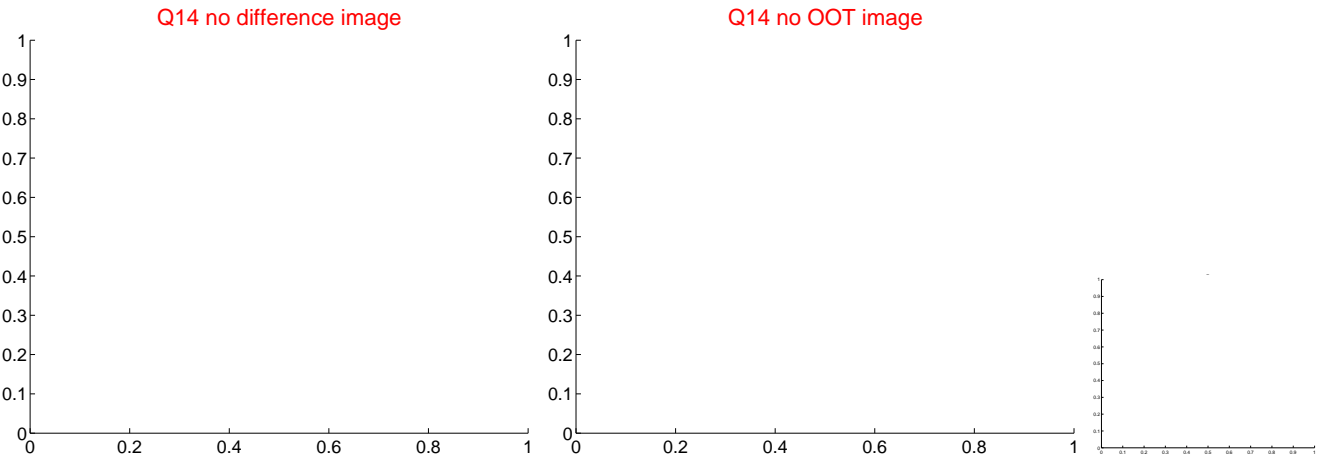
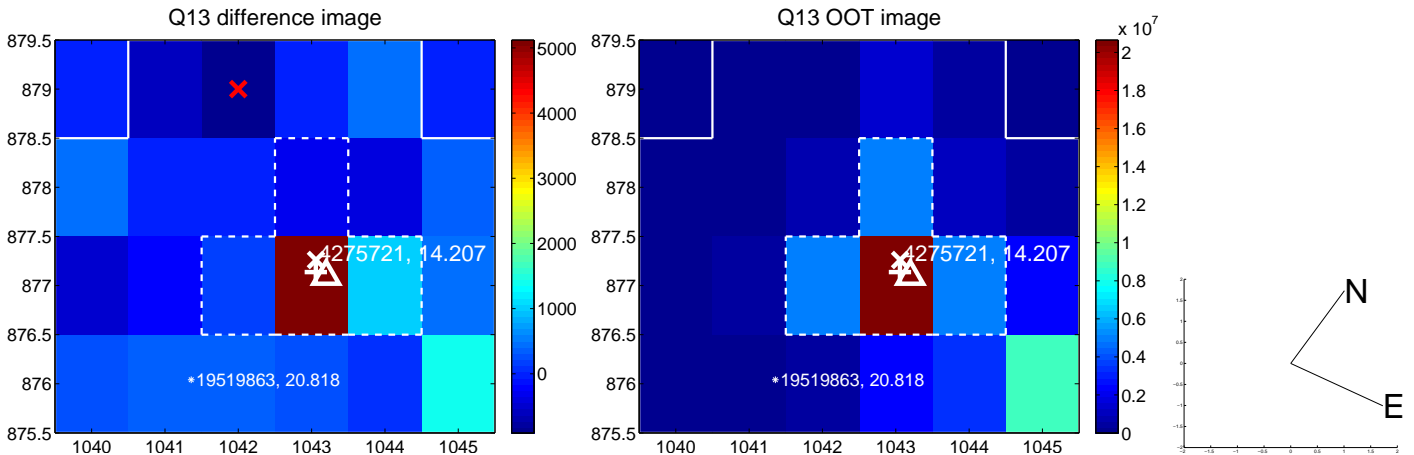
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



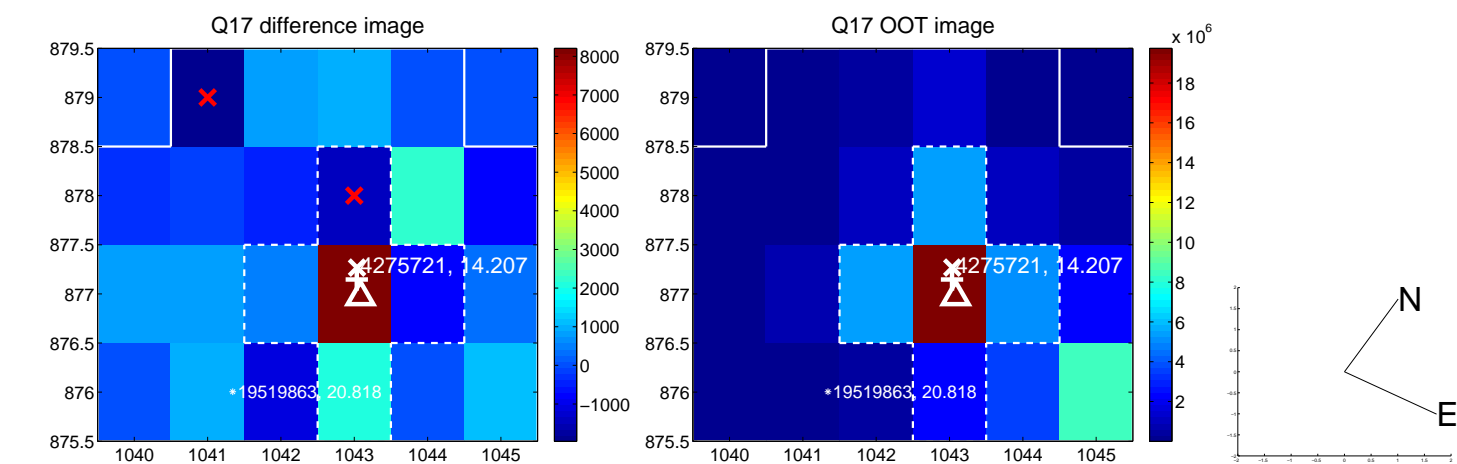
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



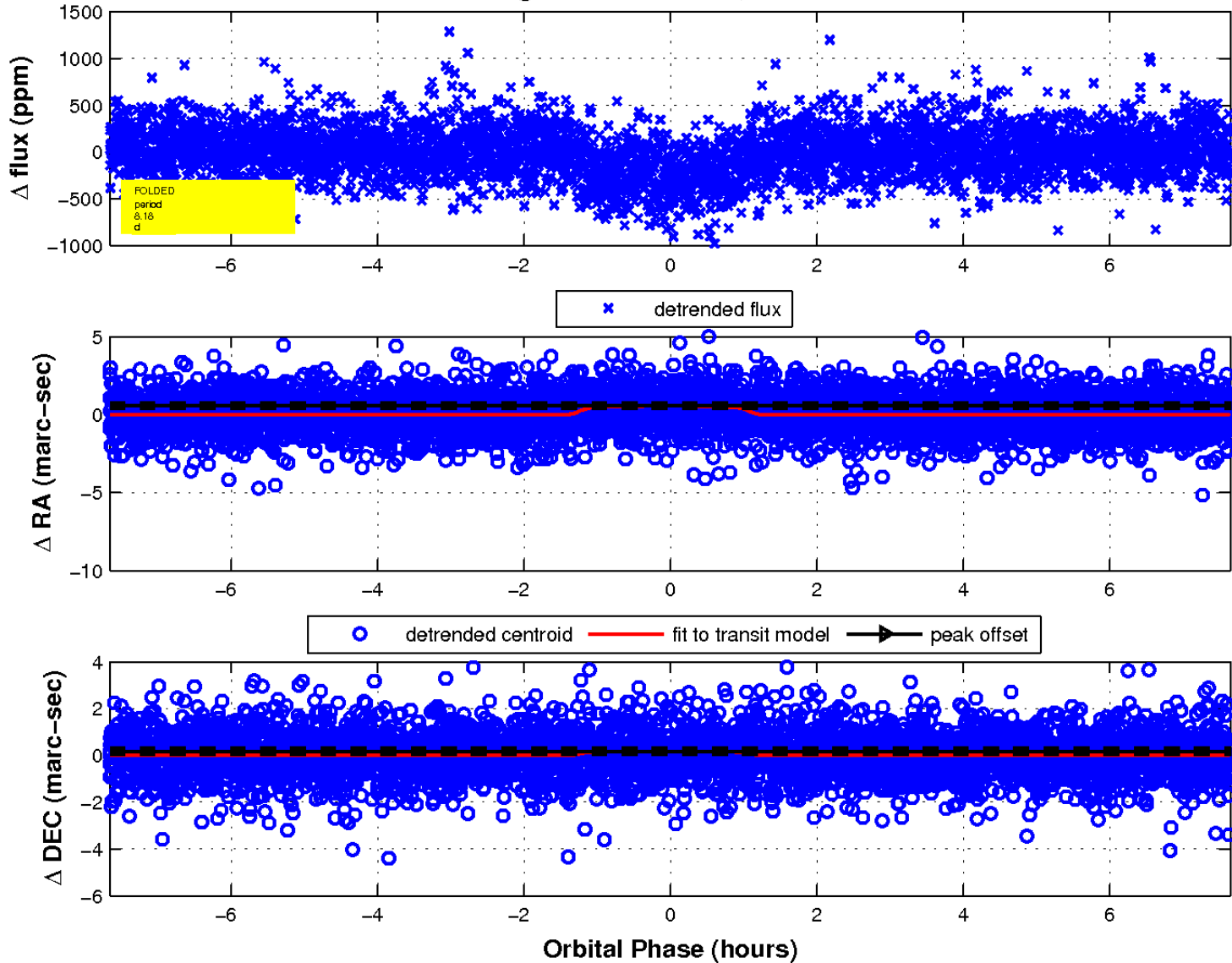
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

