

KIC 005356593

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})
005356593-01	OBS	0644.01	45.977867	148.641801	23887.0	7.462	1945.3	1655.0	1.10	5761	17.12	20.36
005356593-02	OBS	No	45.977760	168.942536	519.9	9.648	38.0	40.3	1.10	5761	2.96	20.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005356593-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005356593-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

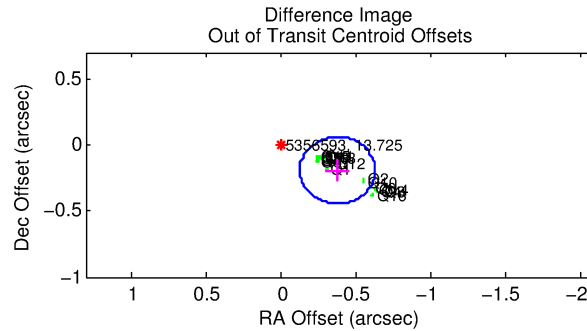
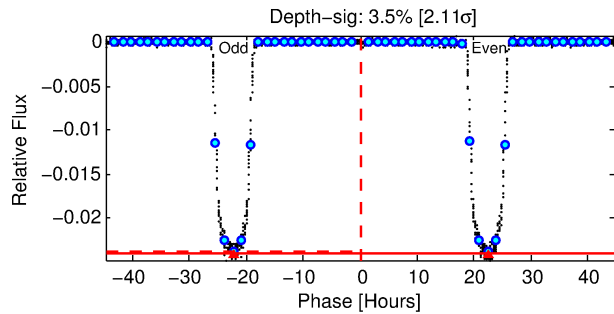
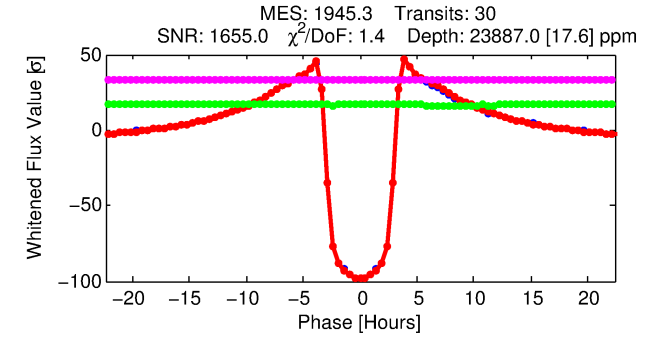
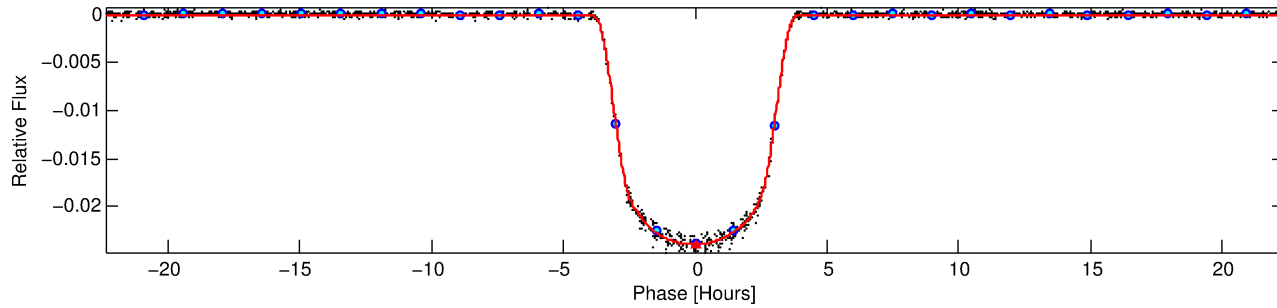
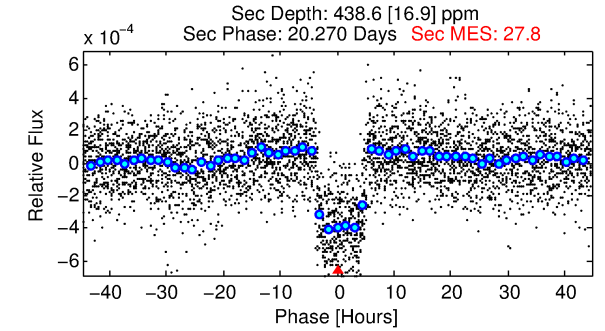
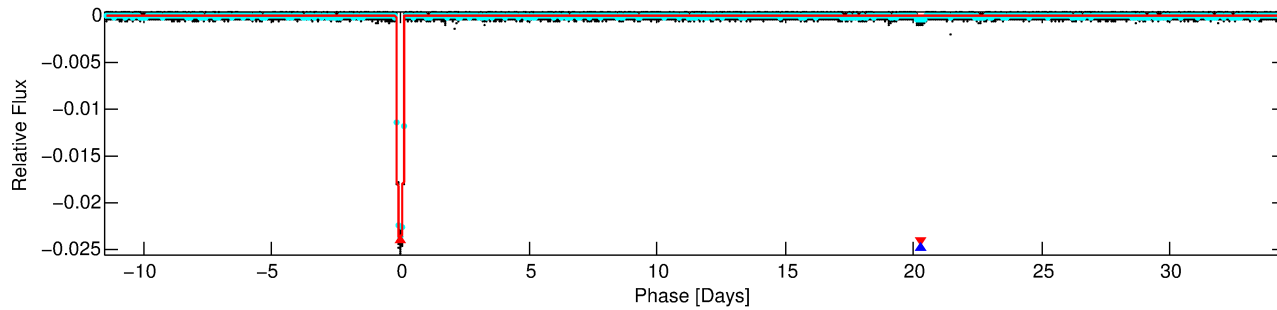
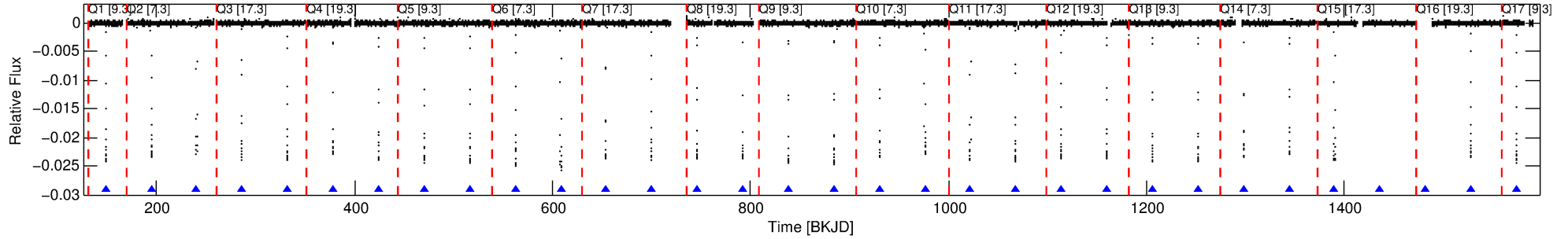
Ephemeris Match Information For 005356593-01

No Significant Match Found

DV One-Page Summary

KIC: 5356593 Candidate: 1 of 2 Period: 45.978 d
KOI: K00644.01 Corr: 0.999

Kp: 13.73 R*: 1.10 Rs Teff: 5761.0 K Logg: 4.31 Fe/H: -0.200



DV Fit Results:

Period = 45.97787 [0.00000] d
Epoch = 148.6418 [0.0001] BKJD
Rp/R* = 0.1432 [0.0001]
a/R* = 50.61 [0.13]
b = 0.39 [0.01]
Seff = 20.36 [5.42]
Teq = 542 [36] K
Rp = 17.12 [2.66] Re
a = 0.2413 [0.0382] AU
Ag = 47.93 [12.64] [3.71σ]
Teffp = 2203 [36] K [32.48σ]

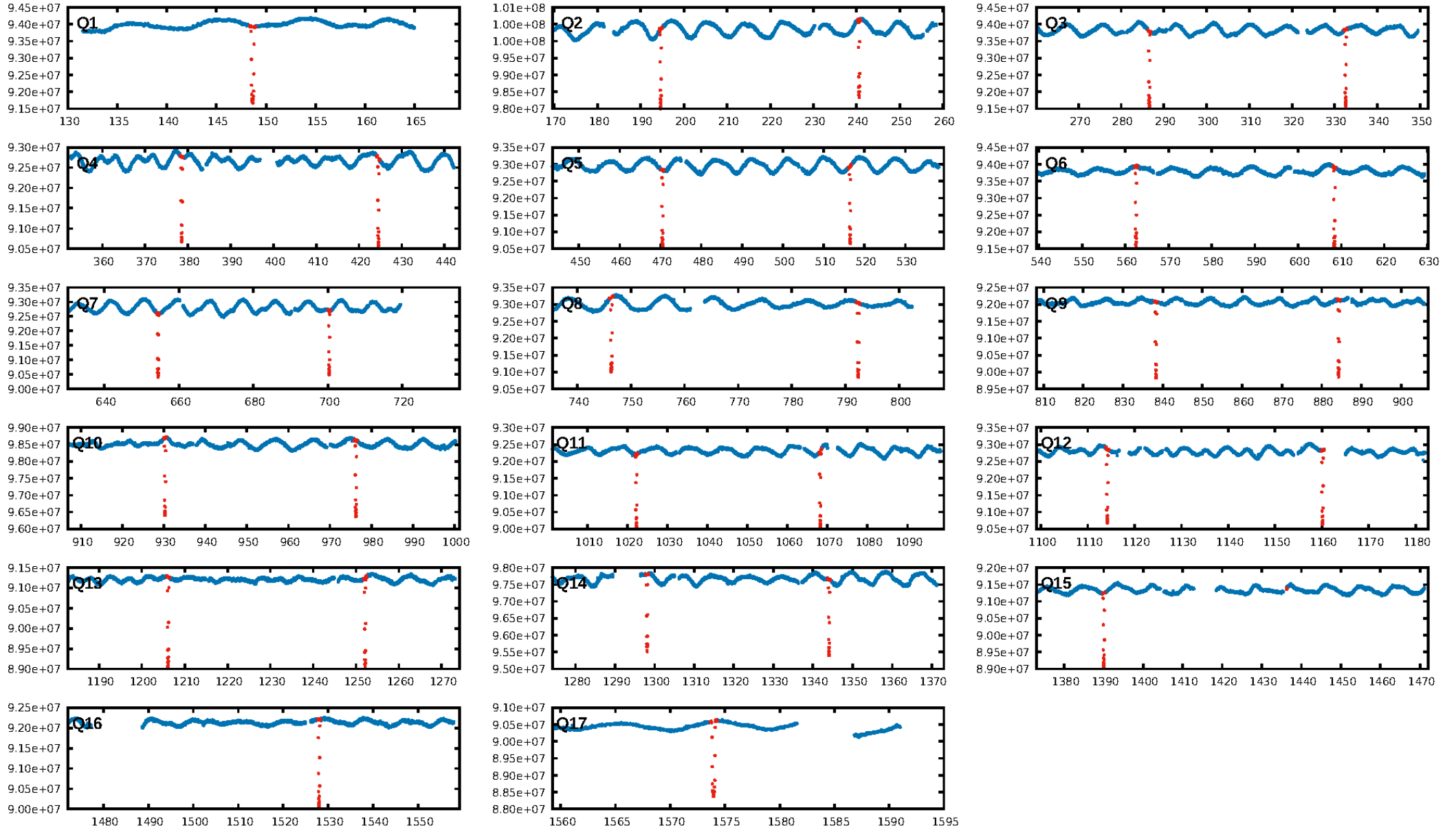
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 5.636
Centroid-sig: 0.0%
Centroid-so: 0.223 arcsec [38.61σ]
OotOffset-rm: 0.428 arcsec [5.10σ]
KicOffset-rm: 0.326 arcsec [4.81σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
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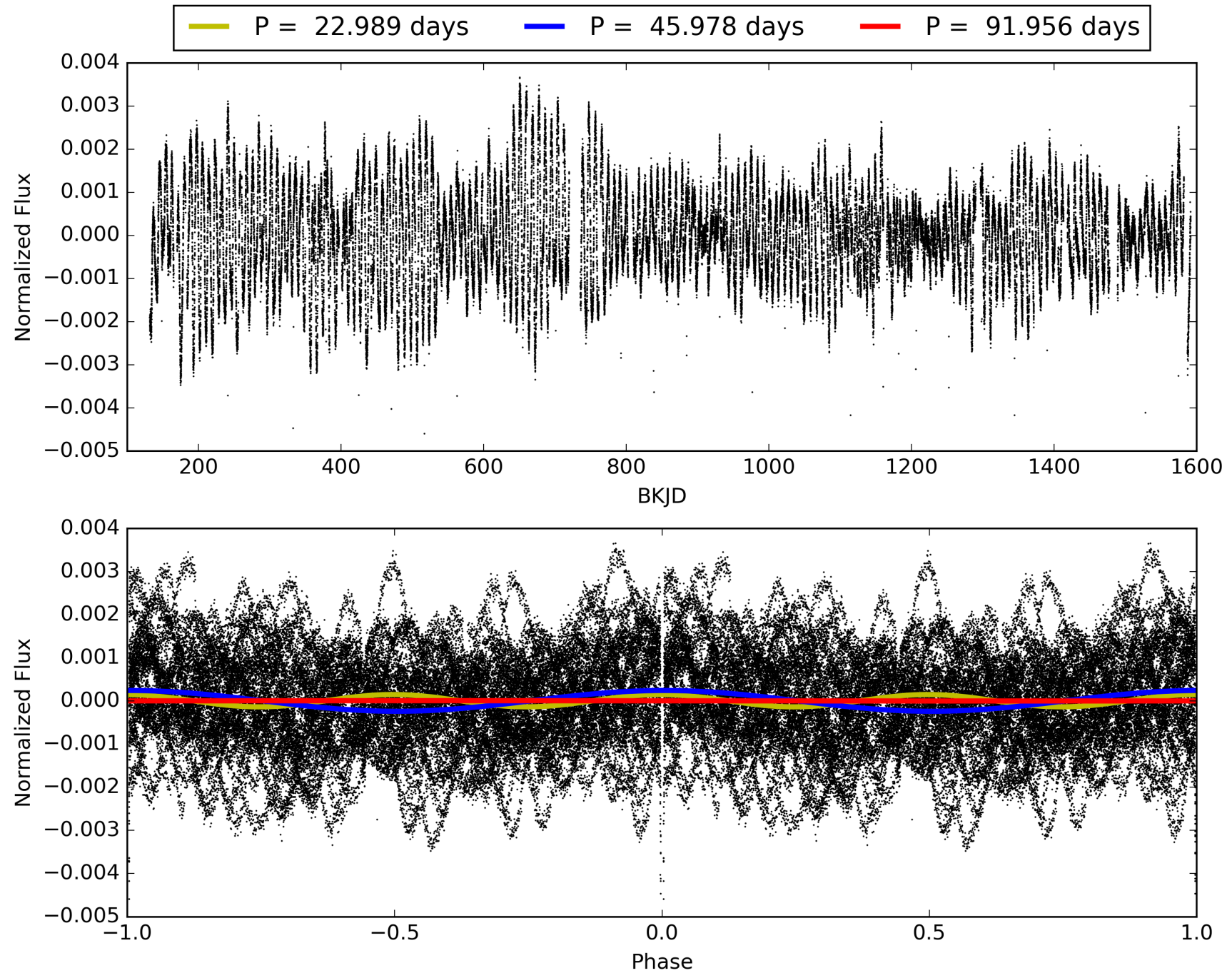
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005356593-01, PDC Light Curves

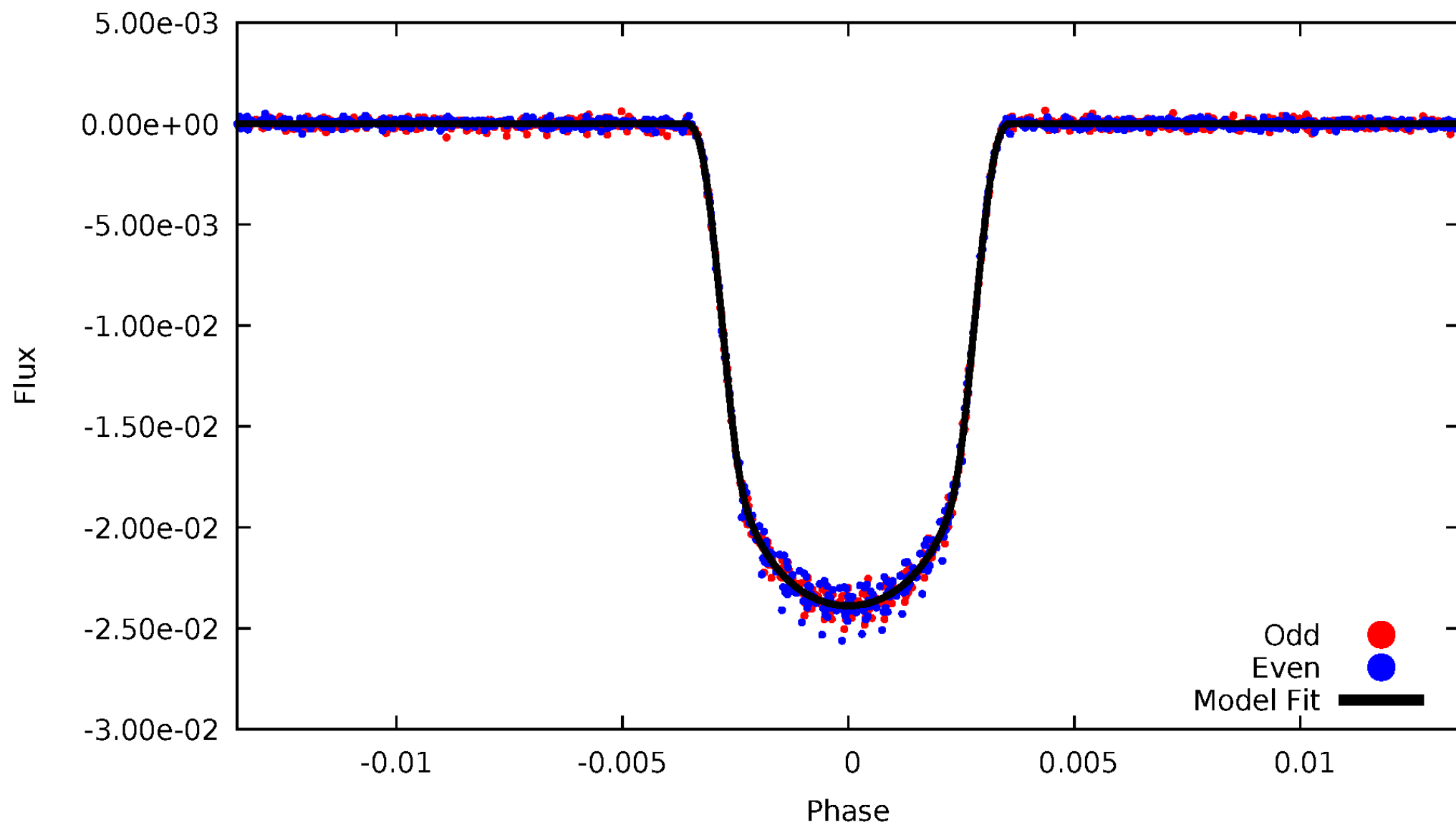


TCE 005356593-01



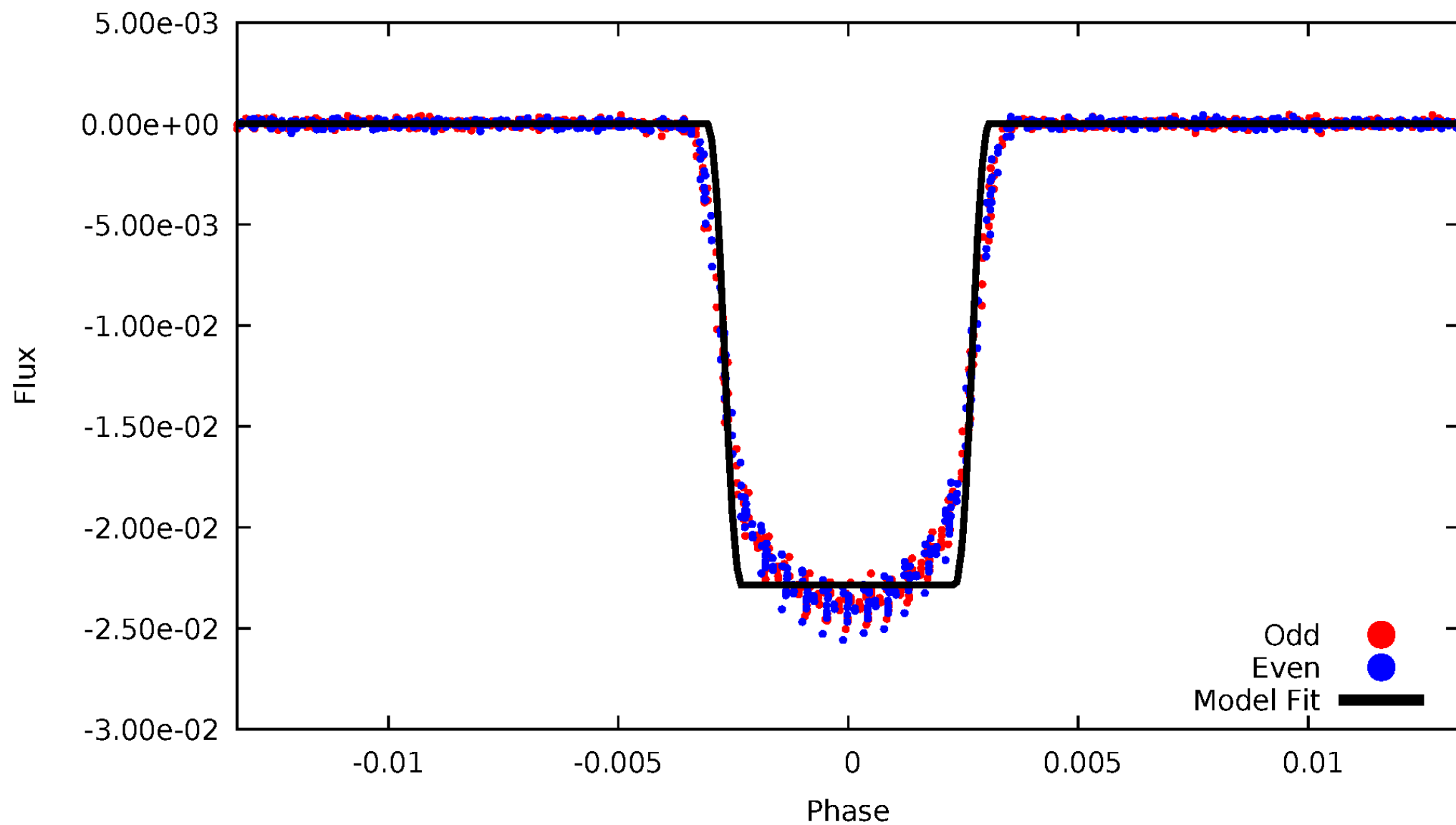
DV Odd/Even

TCE 005356593-01



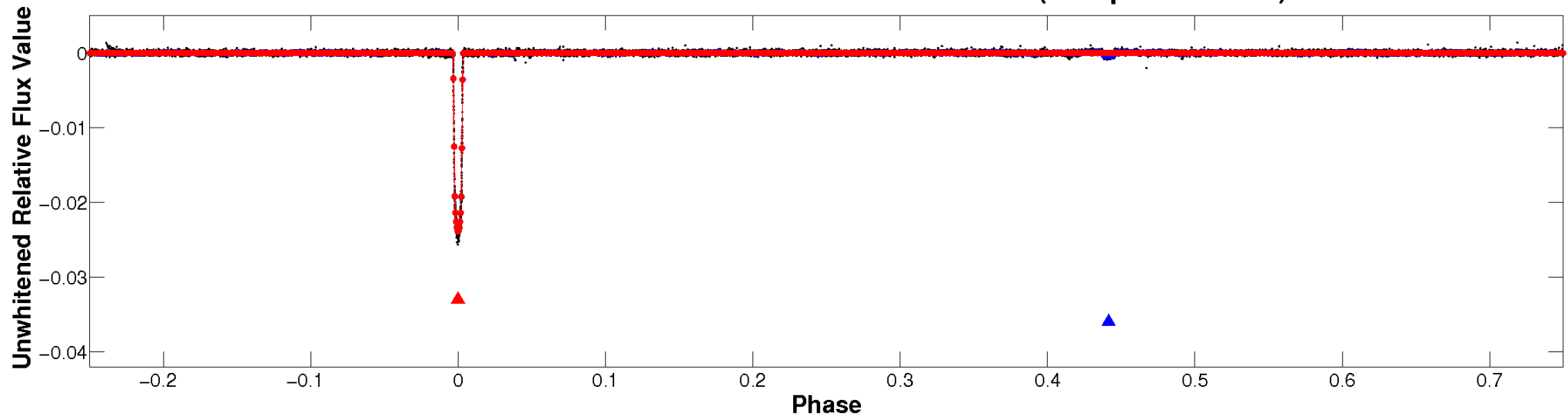
ALT Odd/Even

TCE 005356593-01

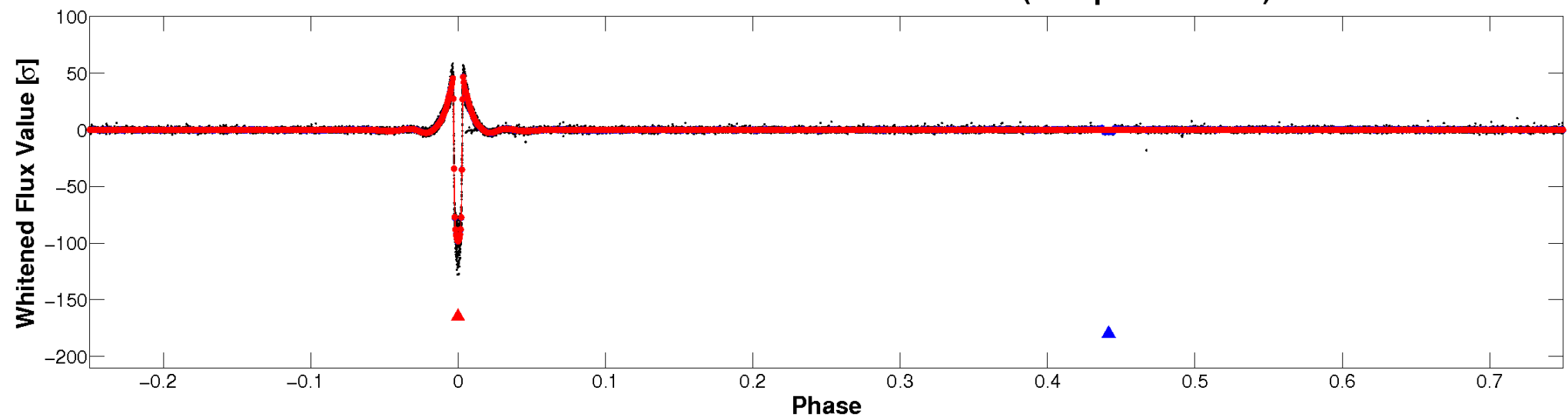


Non-Whitened Vs. Whitened Light Curve

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

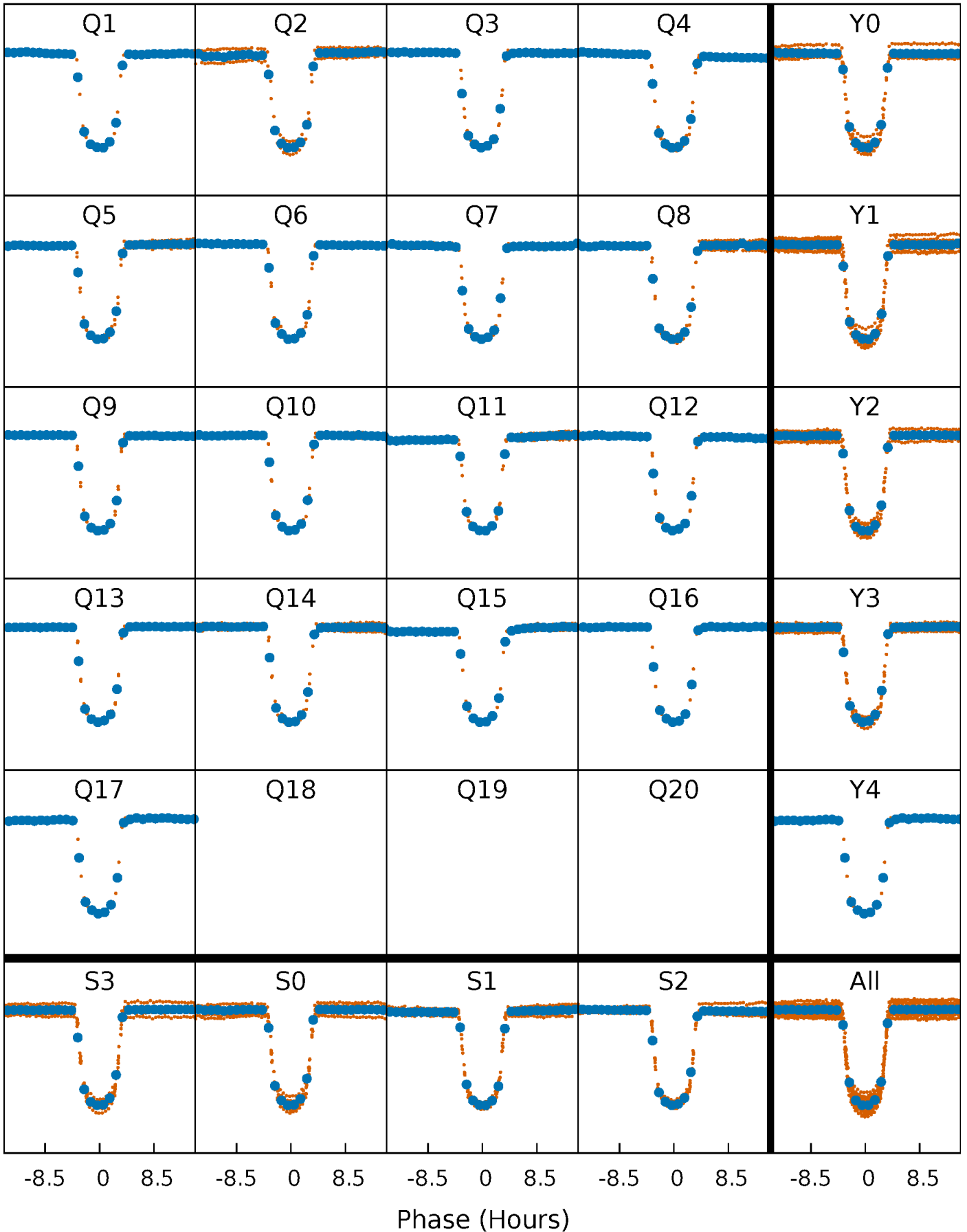


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



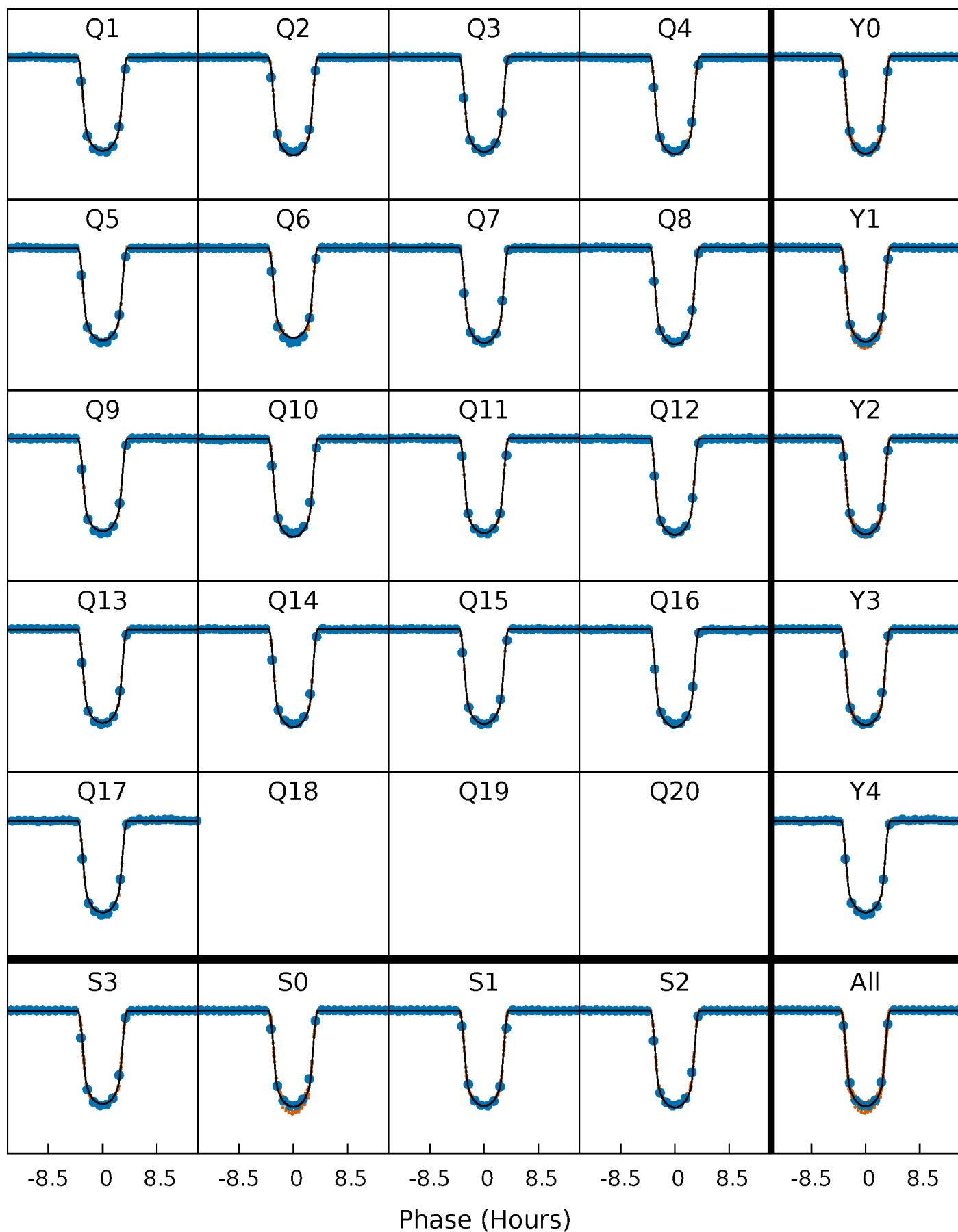
PDC Quarter-Phased Transit Curves

TCE 005356593-01 P= 45.977867 Days $T_0=148.641801$ (BKJD)



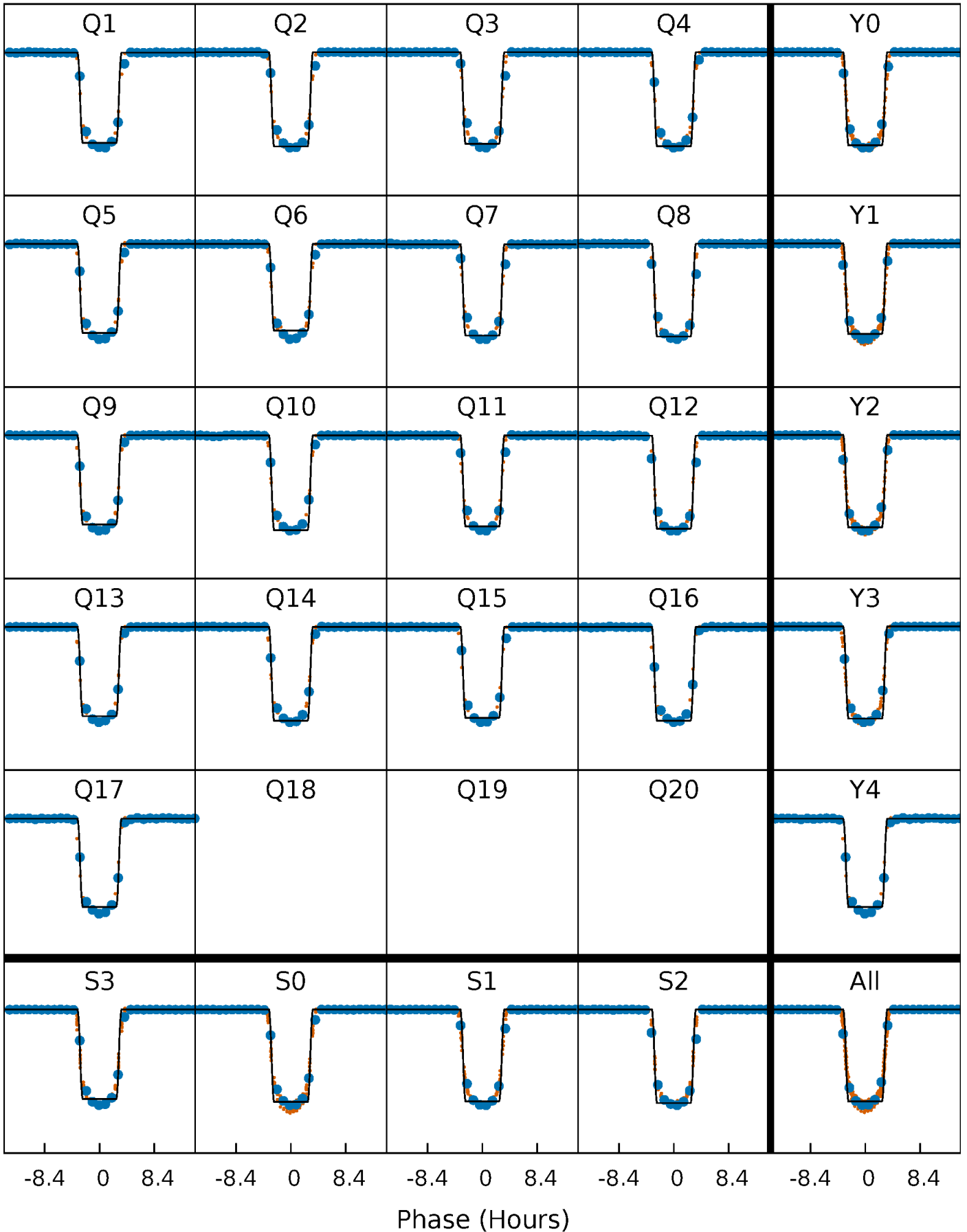
DV Quarter-Phased Transit Curves

TCE 005356593-01 P= 45.977867 Days $T_0=148.641801$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

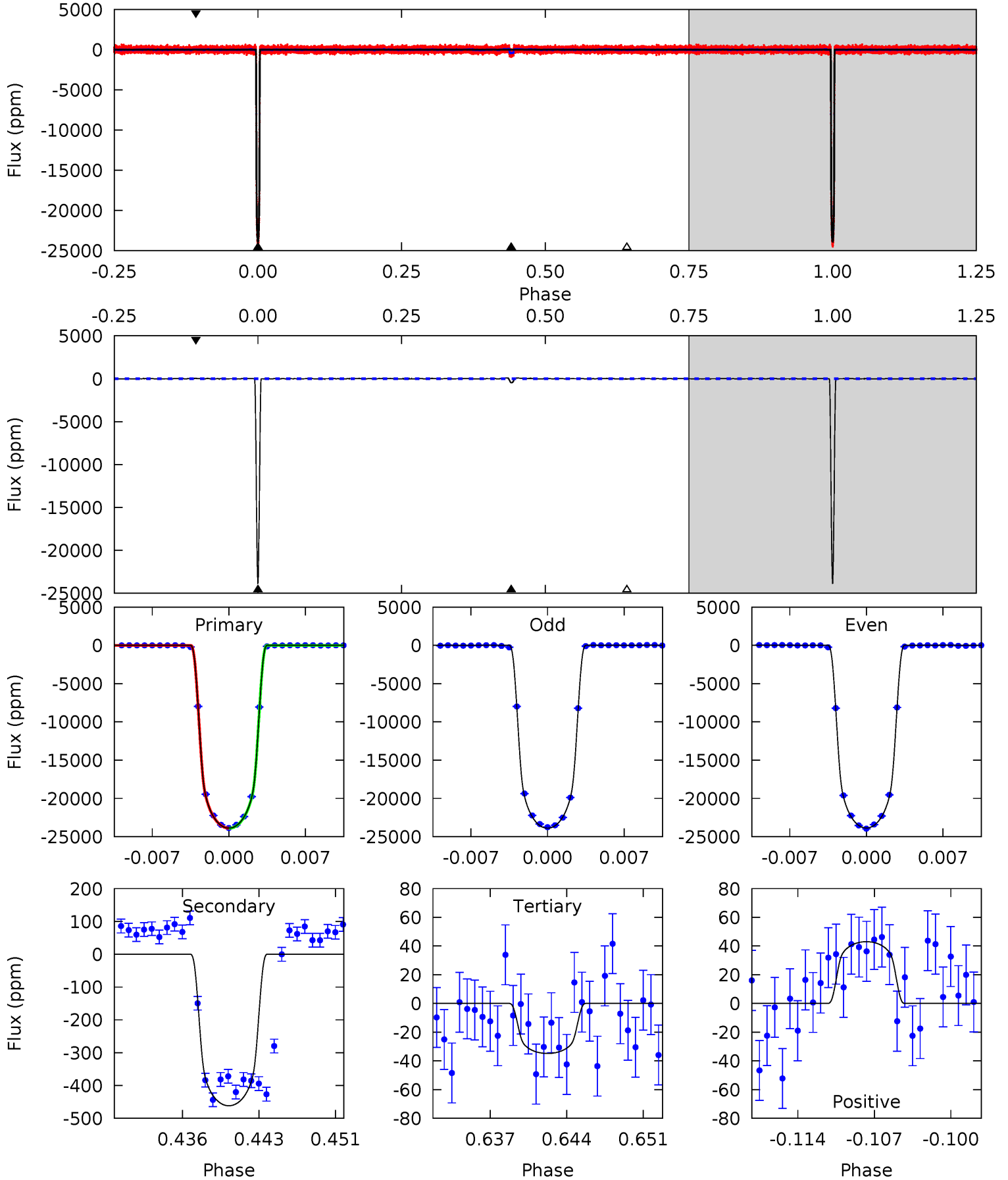
TCE 005356593-01 P= 45.978132 Days $T_0=148.637888$ (BKJD)



DV Model-Shift Uniqueness Test

005356593-01, P = 45.977867 Days, E = 102.663934 Days

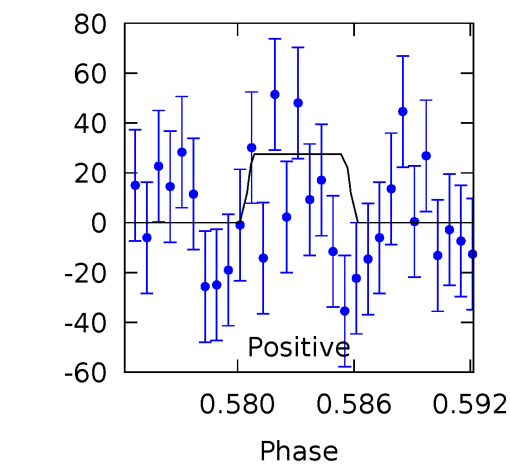
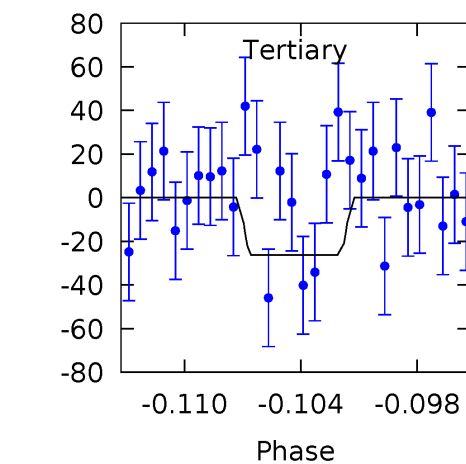
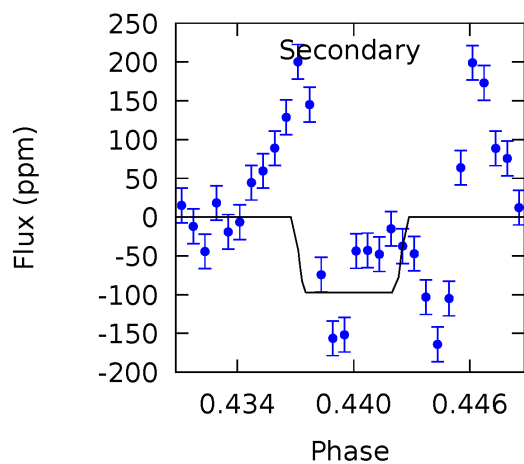
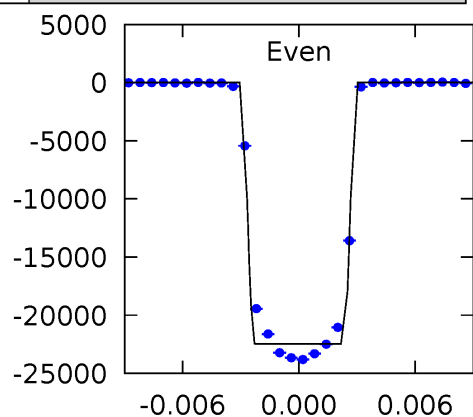
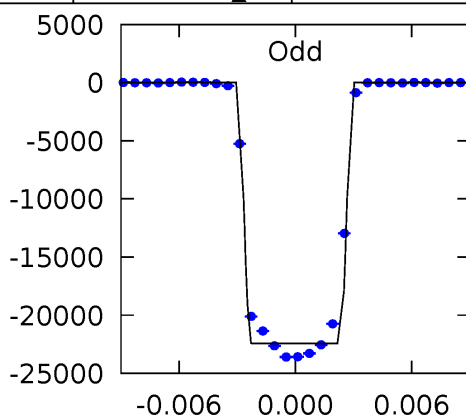
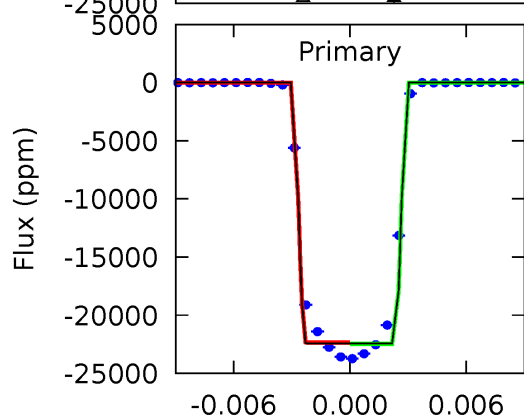
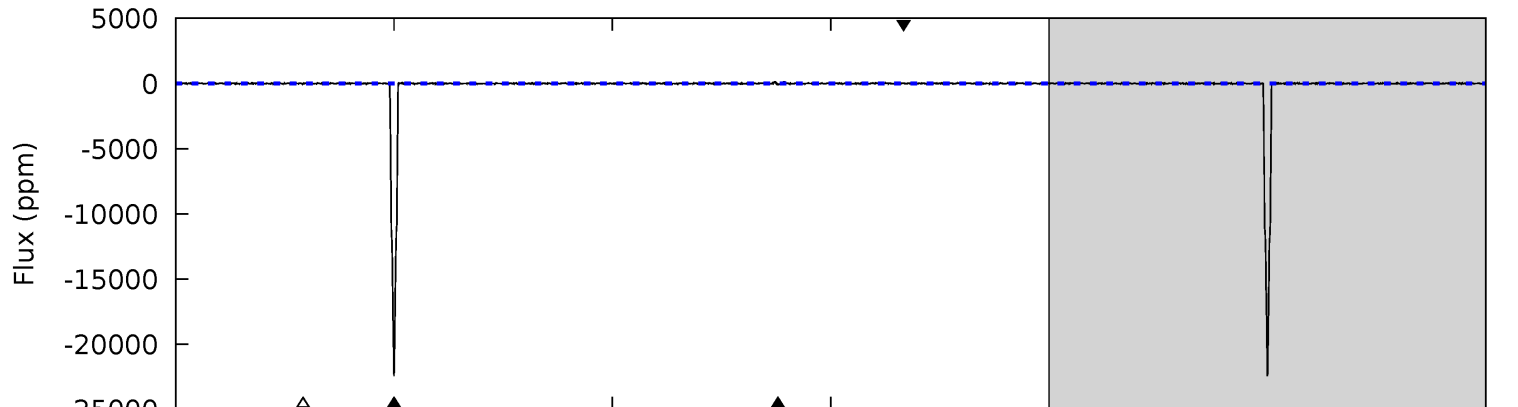
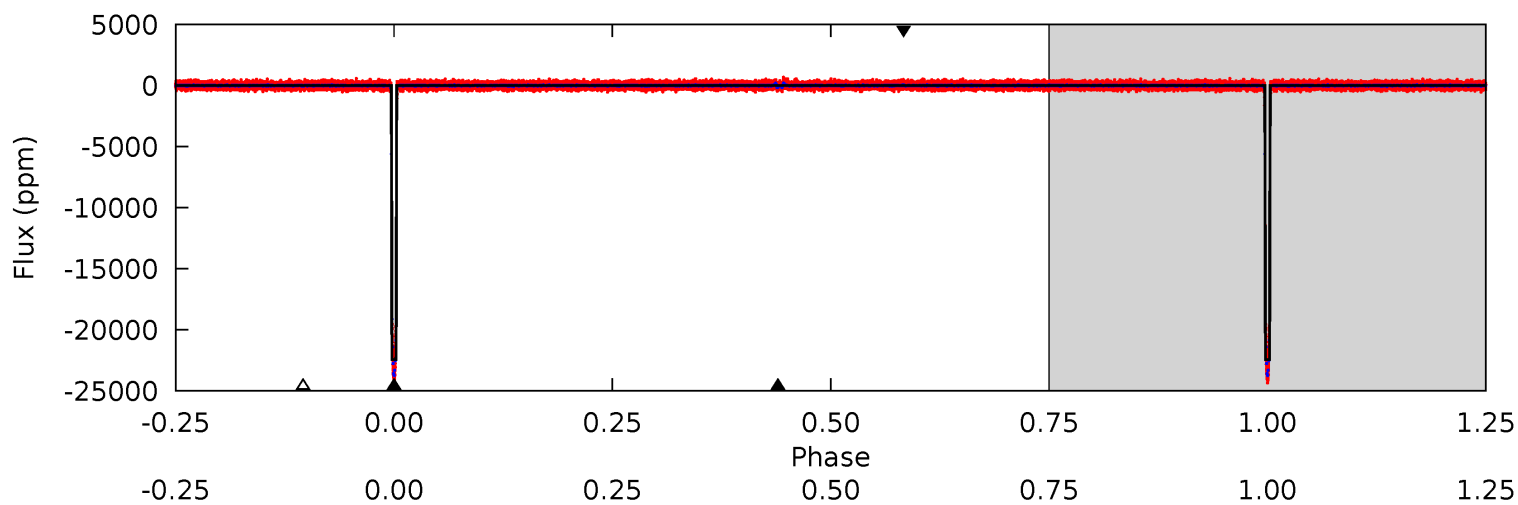
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3115	60.2	4.54	5.61	5.09	2.69	2.15	3110	3109	55.7	54.6	1.89	1.00	0.00	1.40



Alt Model-Shift Uniqueness Test

005356593-01, P = 45.978132 Days, E = 102.659756 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2415	10.5	2.82	2.96	5.12	2.74	0.92	2412	2412	7.63	7.49	2.31	1.01	0.01	0



Stellar Parameters For KIC 005356593

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5761^{+77}_{-77}	$4.306^{+0.156}_{-0.117}$	$-0.200^{+0.150}_{-0.150}$	$1.096^{+0.170}_{-0.170}$	$0.885^{+0.068}_{-0.049}$	$0.948^{+0.624}_{-0.321}$
	+1%/-1%	+4%/-3%	+75%/-75%	+16%/-16%	+8%/-6%	+66%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005356593-01 / KOI 0644.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-462 ± 8	$17.11^{+1.58}_{-1.63}$	755^{+33}_{-35}	2926^{+24}_{-25}	51^{+11}_{-8}
Alt.	-97 ± 9	$18.04^{+1.59}_{-1.64}$	755^{+33}_{-35}	2361^{+32}_{-32}	$9.633^{+2.100}_{-1.755}$

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 $A_{obs} \gg 1.0$

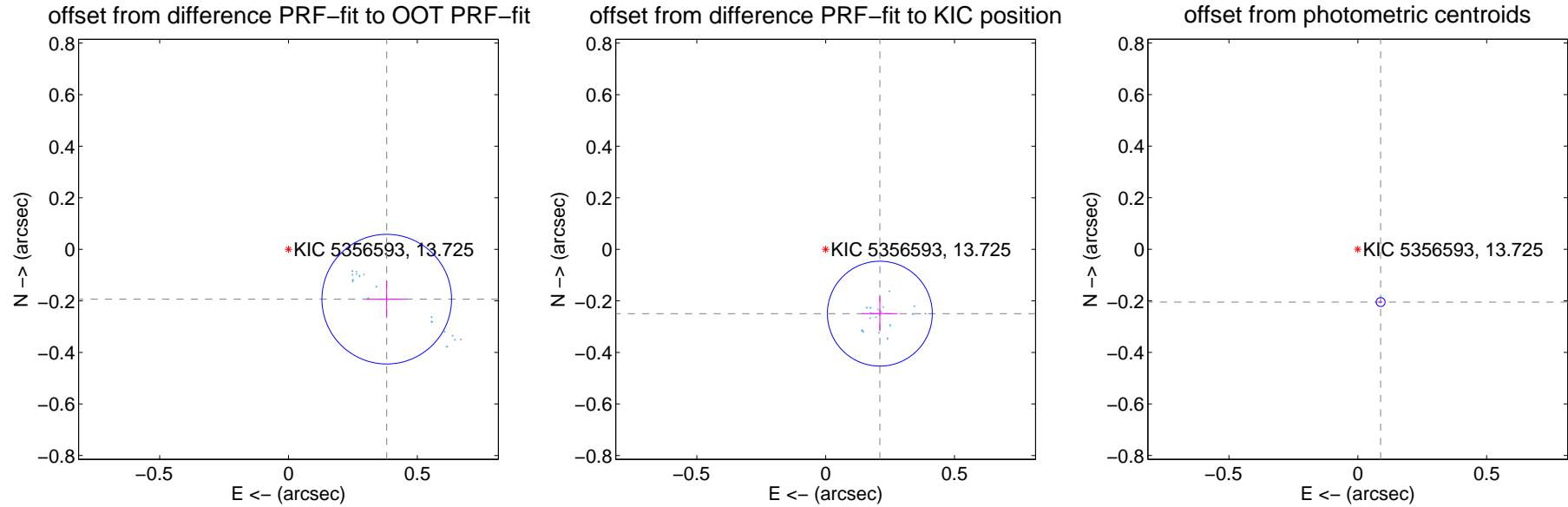
DV Centroid Data

Supplemental centroid analysis for 005356593-01. Kepler magnitude: 13.72. Transit SNR 1654.96

There are 17 quarters with good PRF difference image offsets

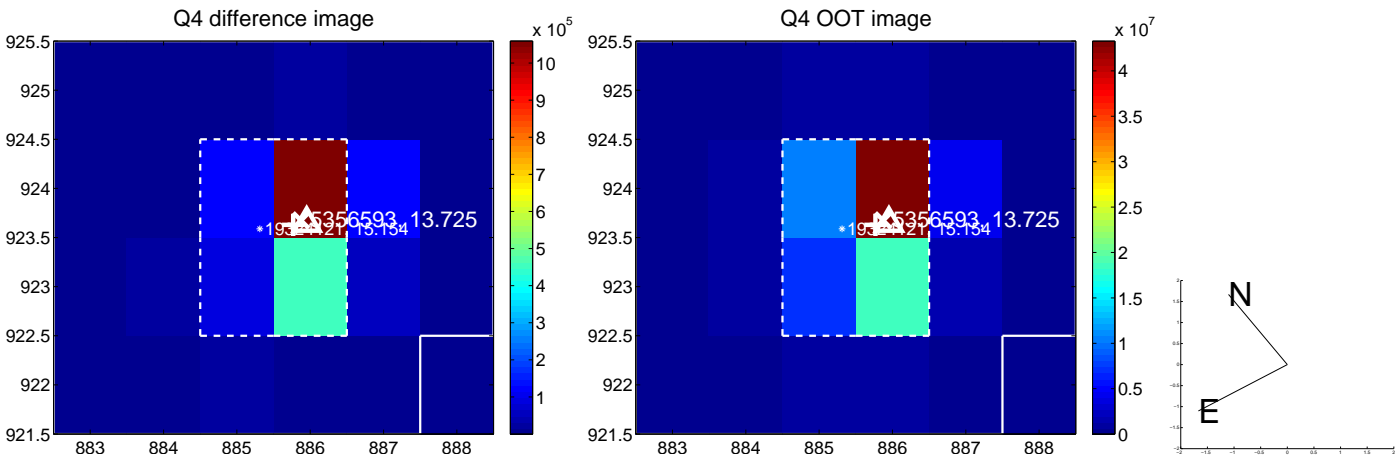
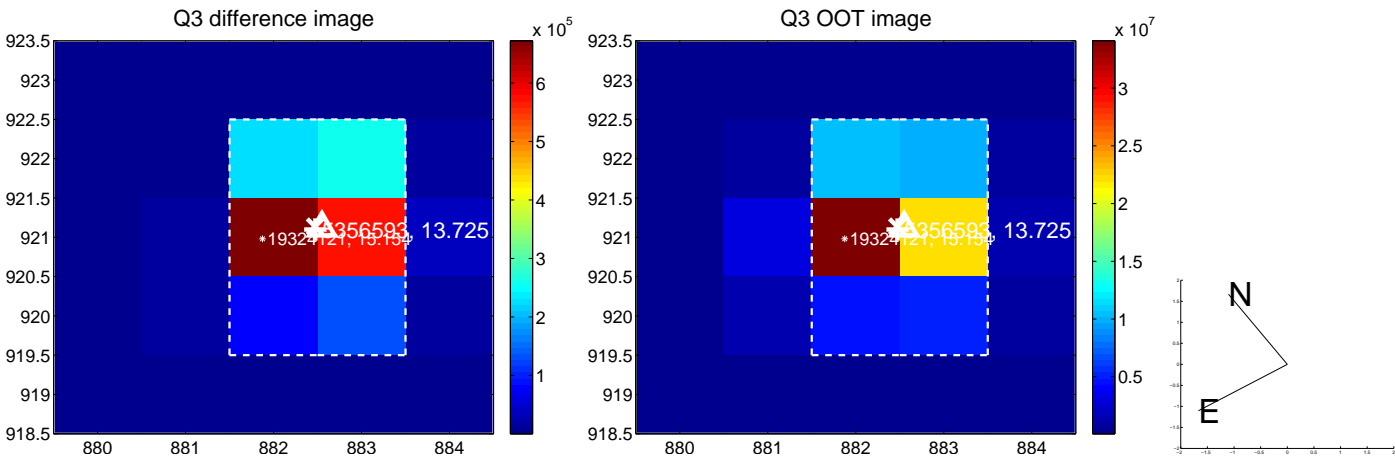
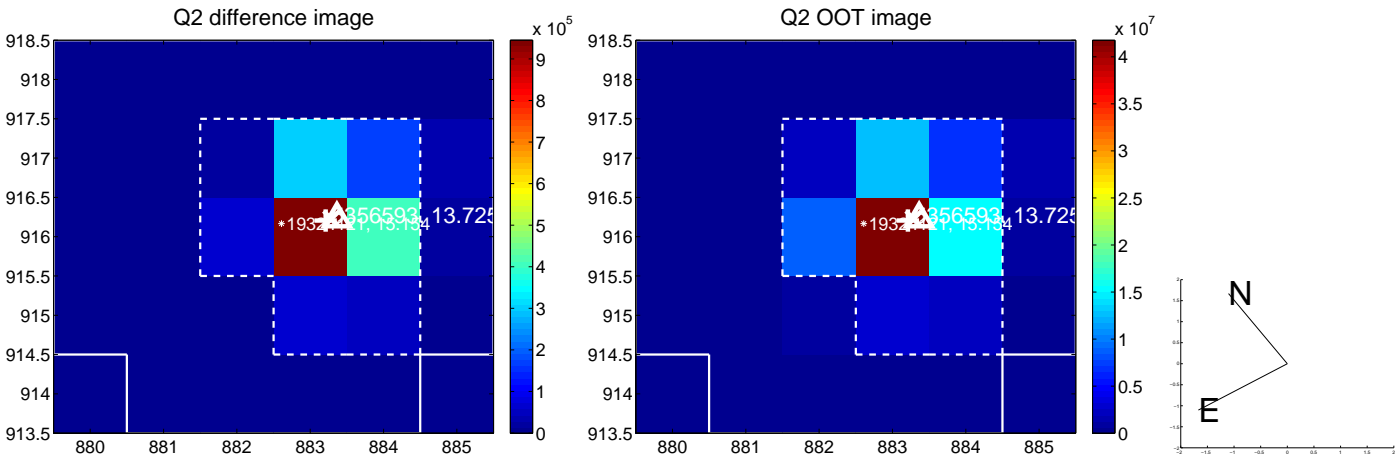
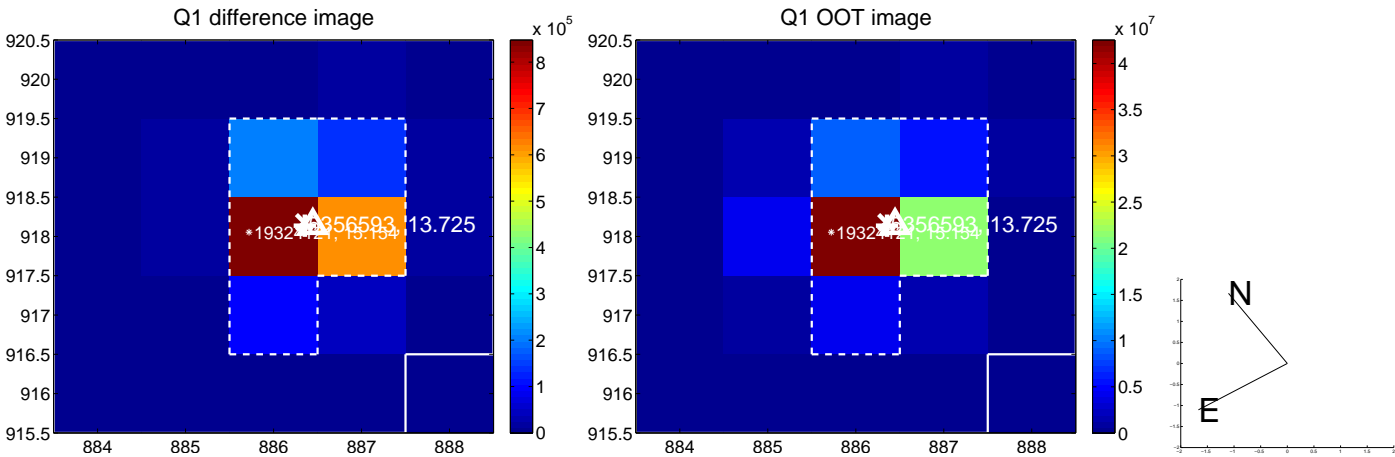
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.428 ± 0.084	5.10	-0.381 ± 0.079	-0.193 ± 0.072
PRF-fit source offset from KIC position	0.326 ± 0.068	4.81	-0.210 ± 0.068	-0.250 ± 0.068
photometric centroid source offset	0.22 ± 0.01	38.61	-0.09 ± 0.01	-0.20 ± 0.01

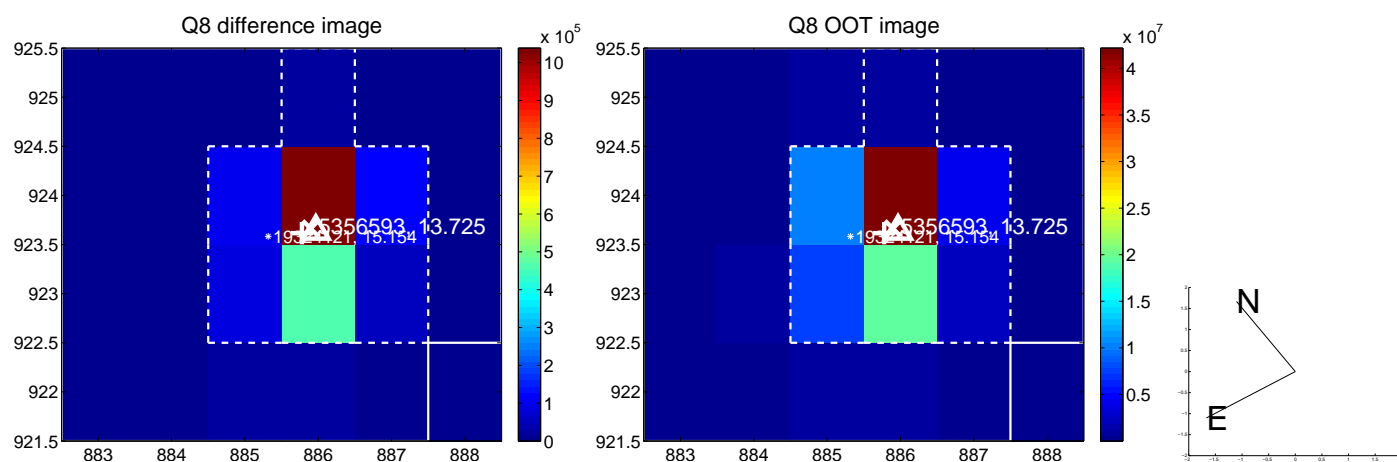
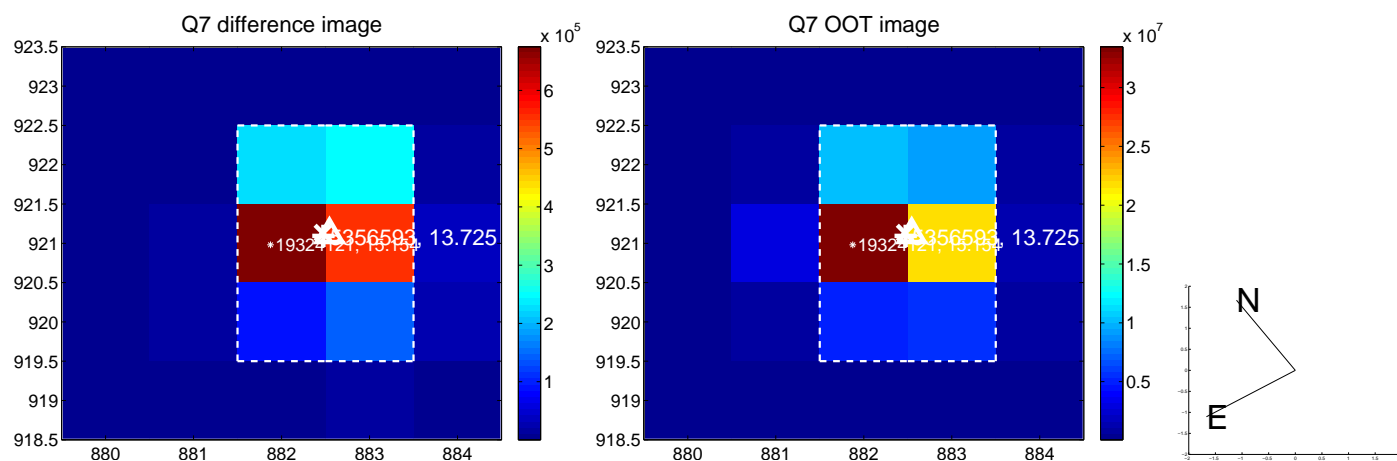
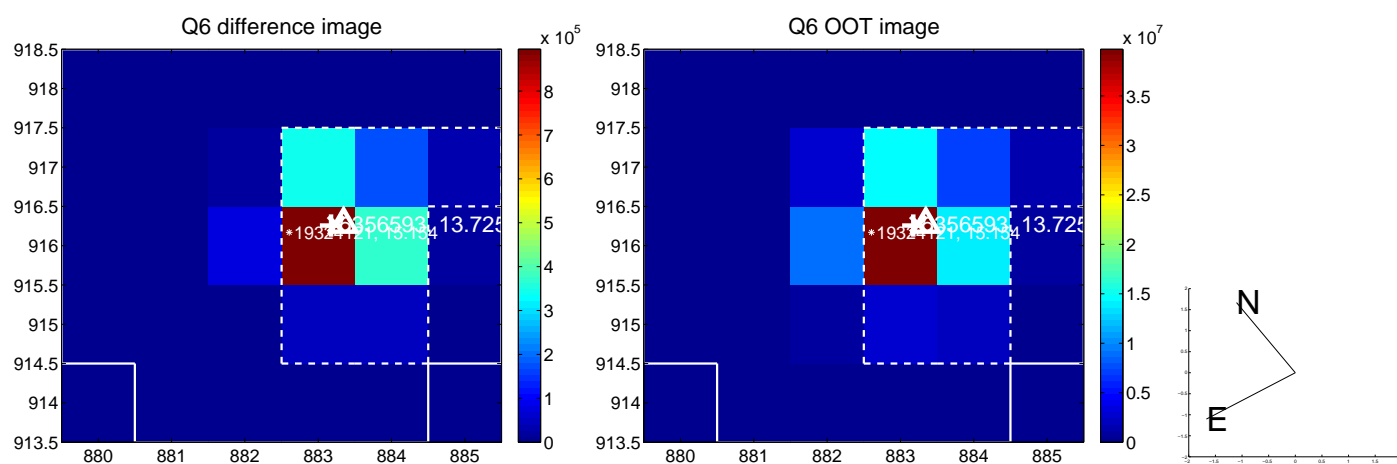
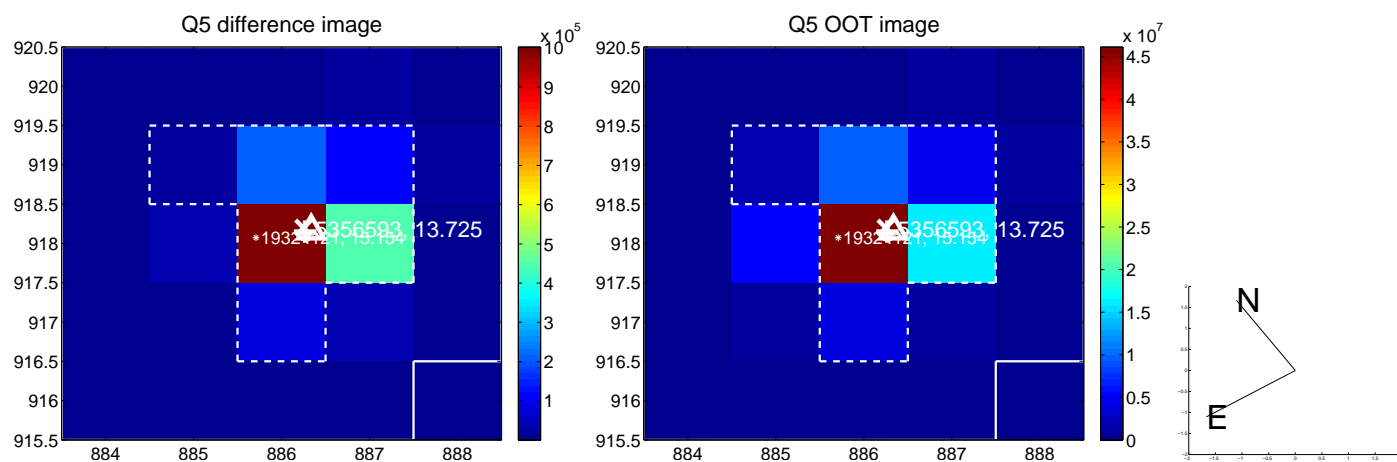


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

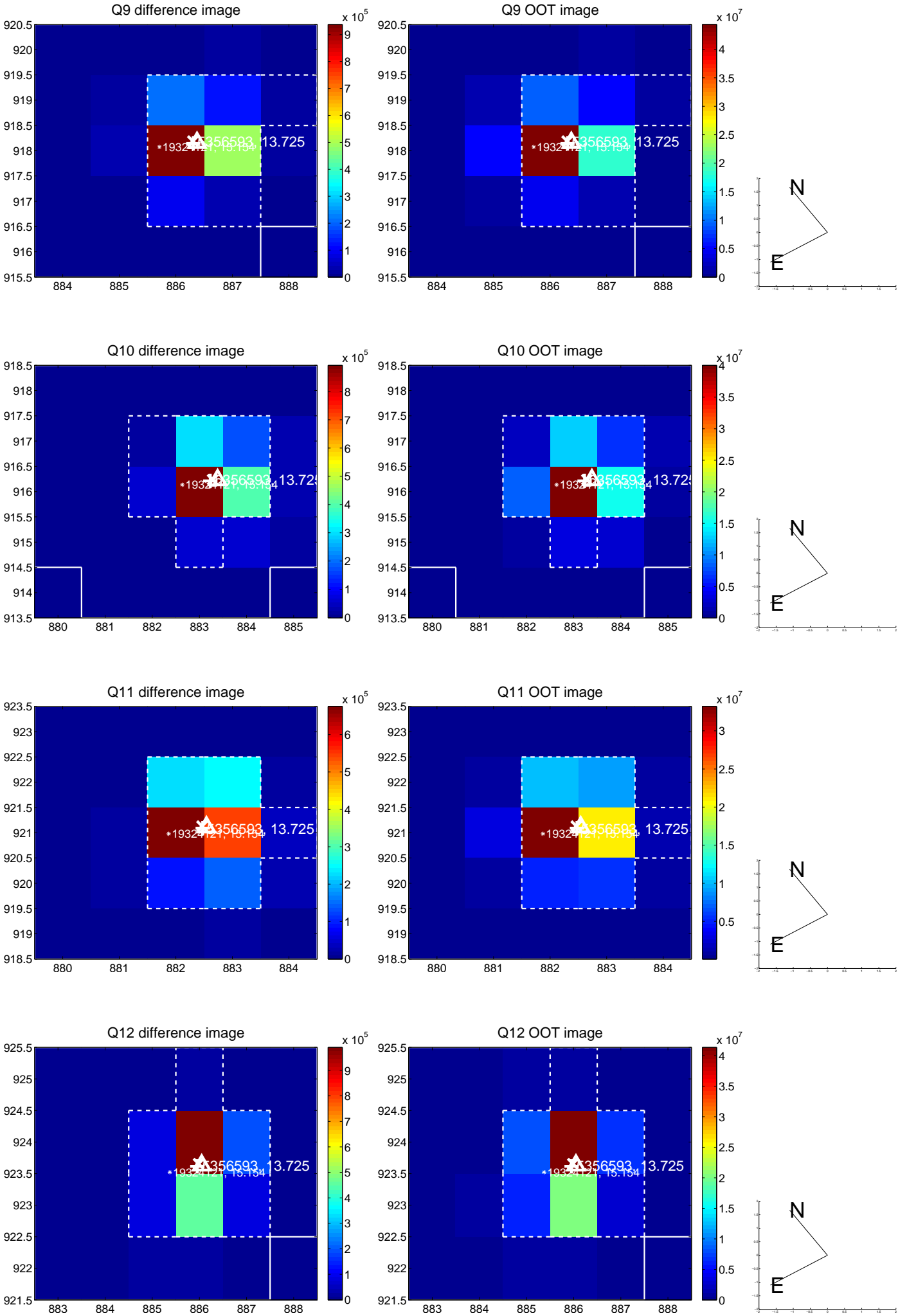
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



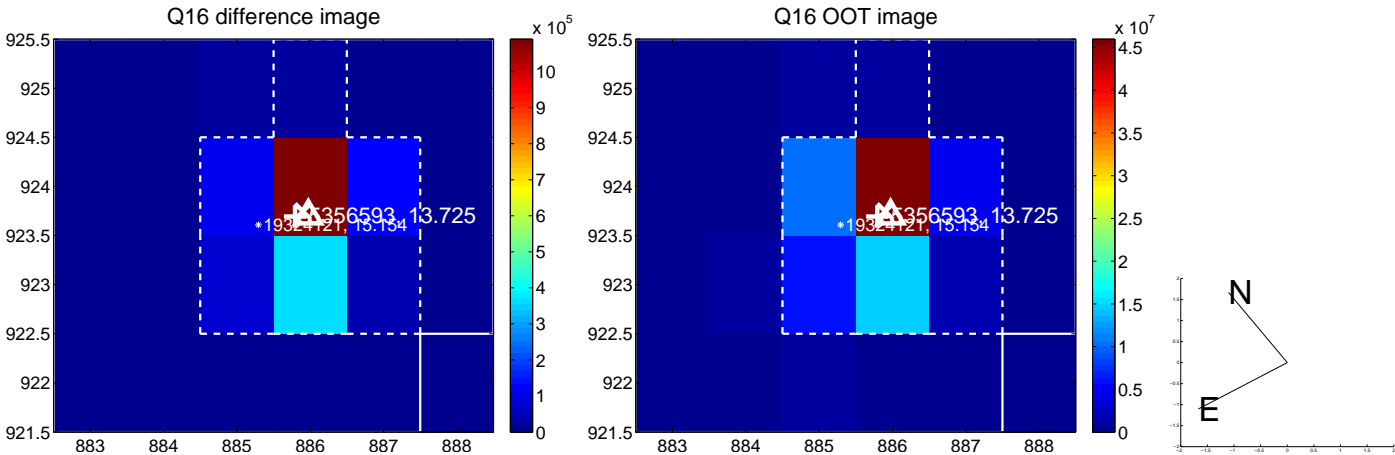
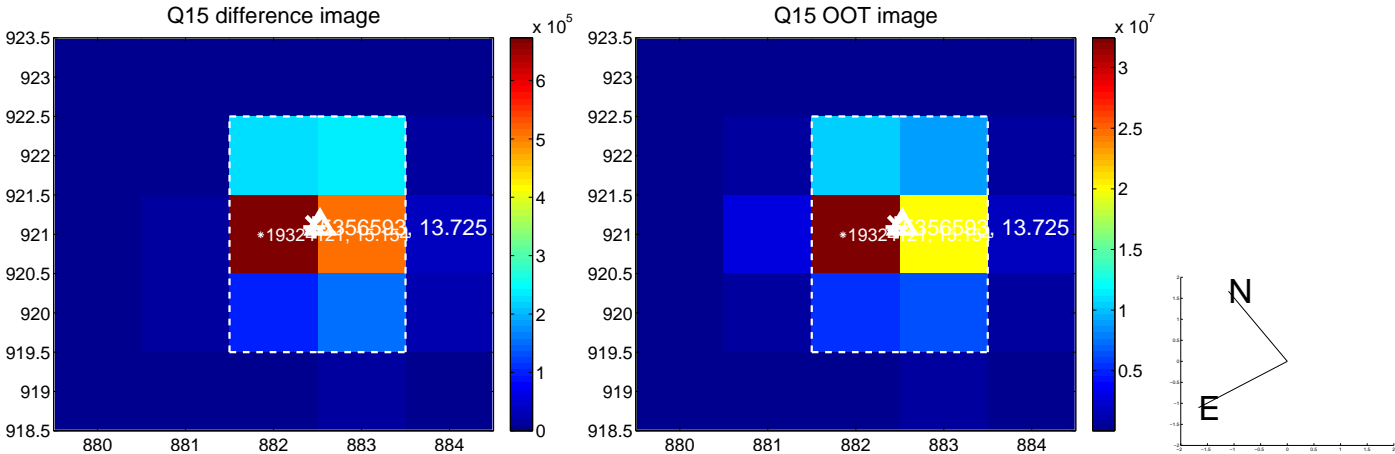
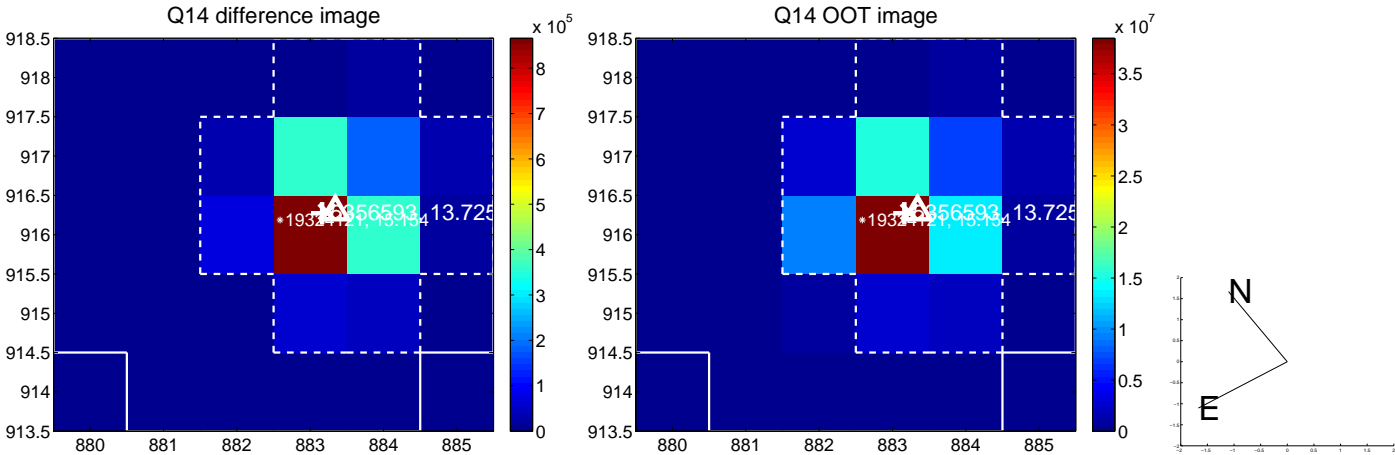
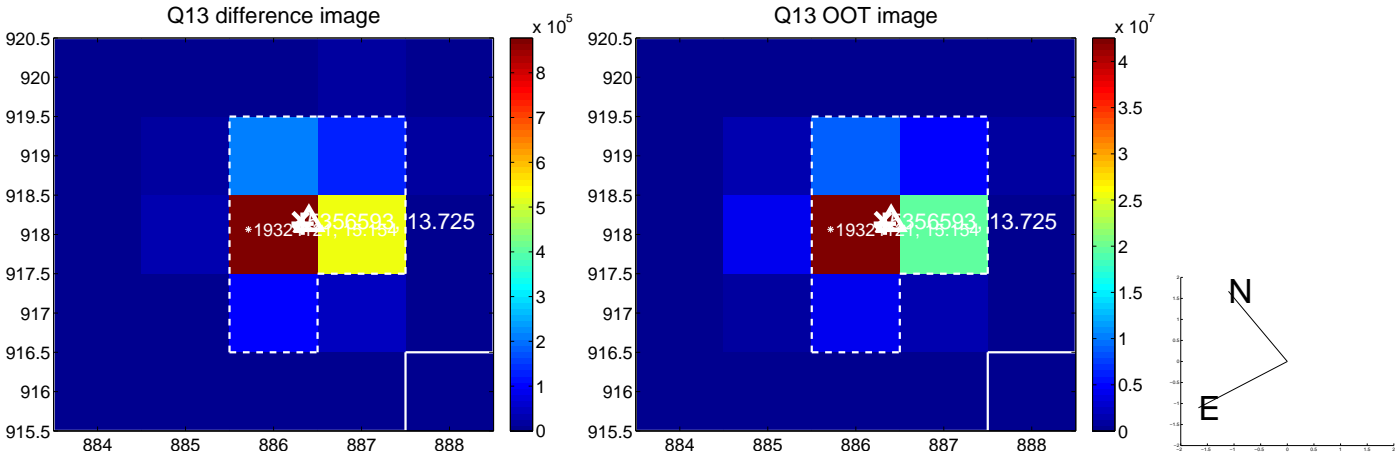
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



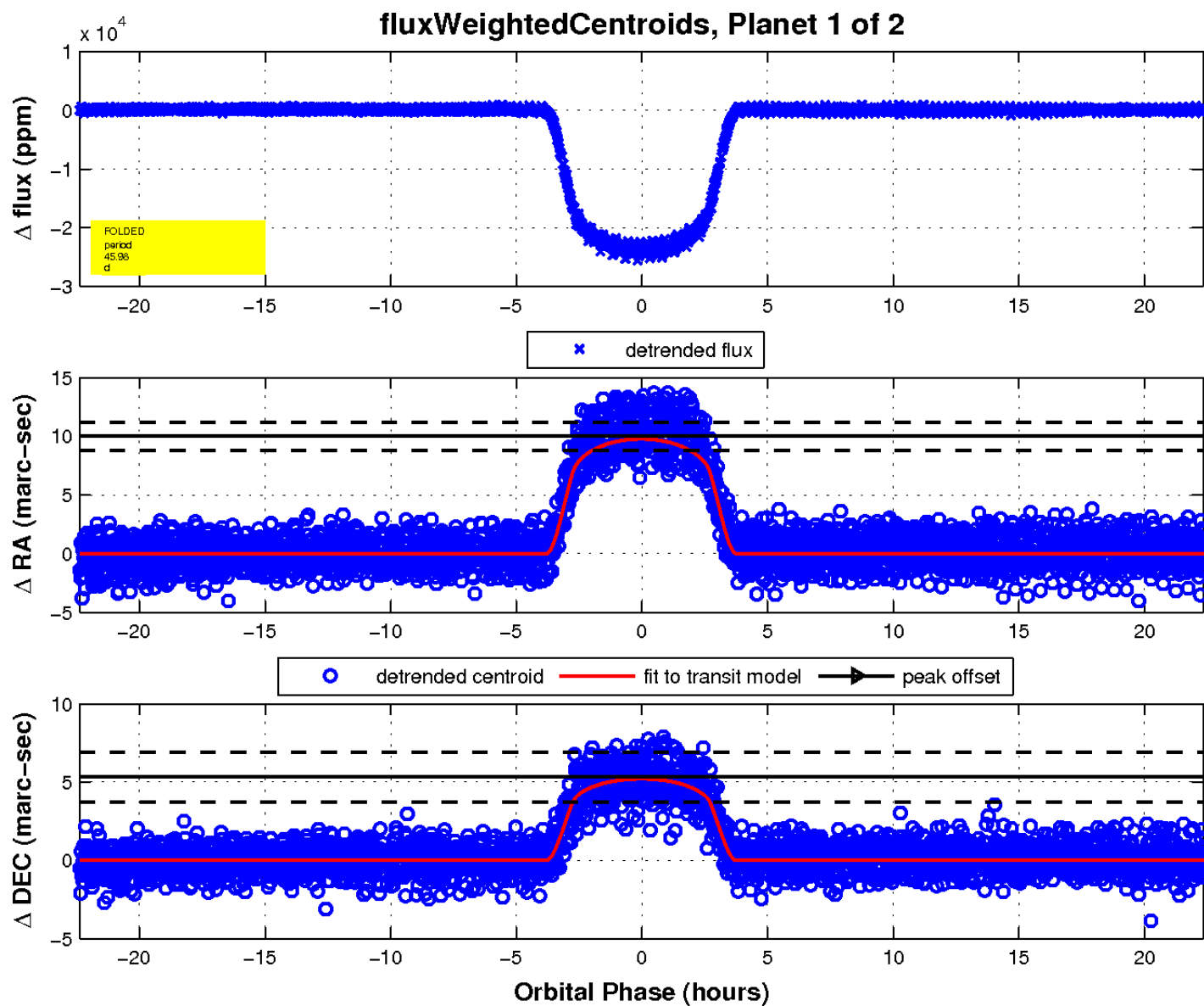
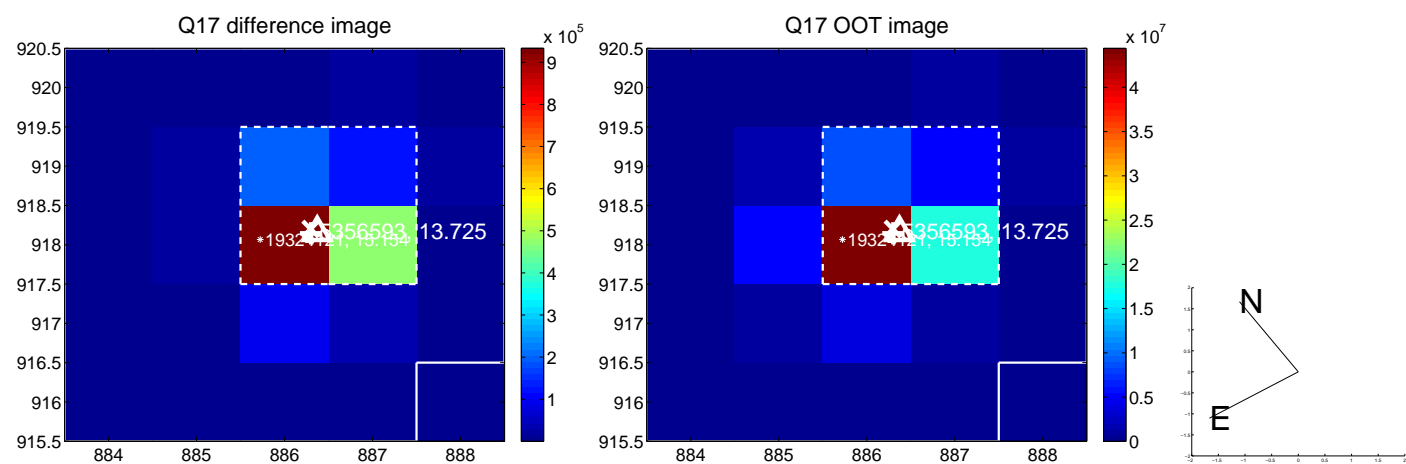
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

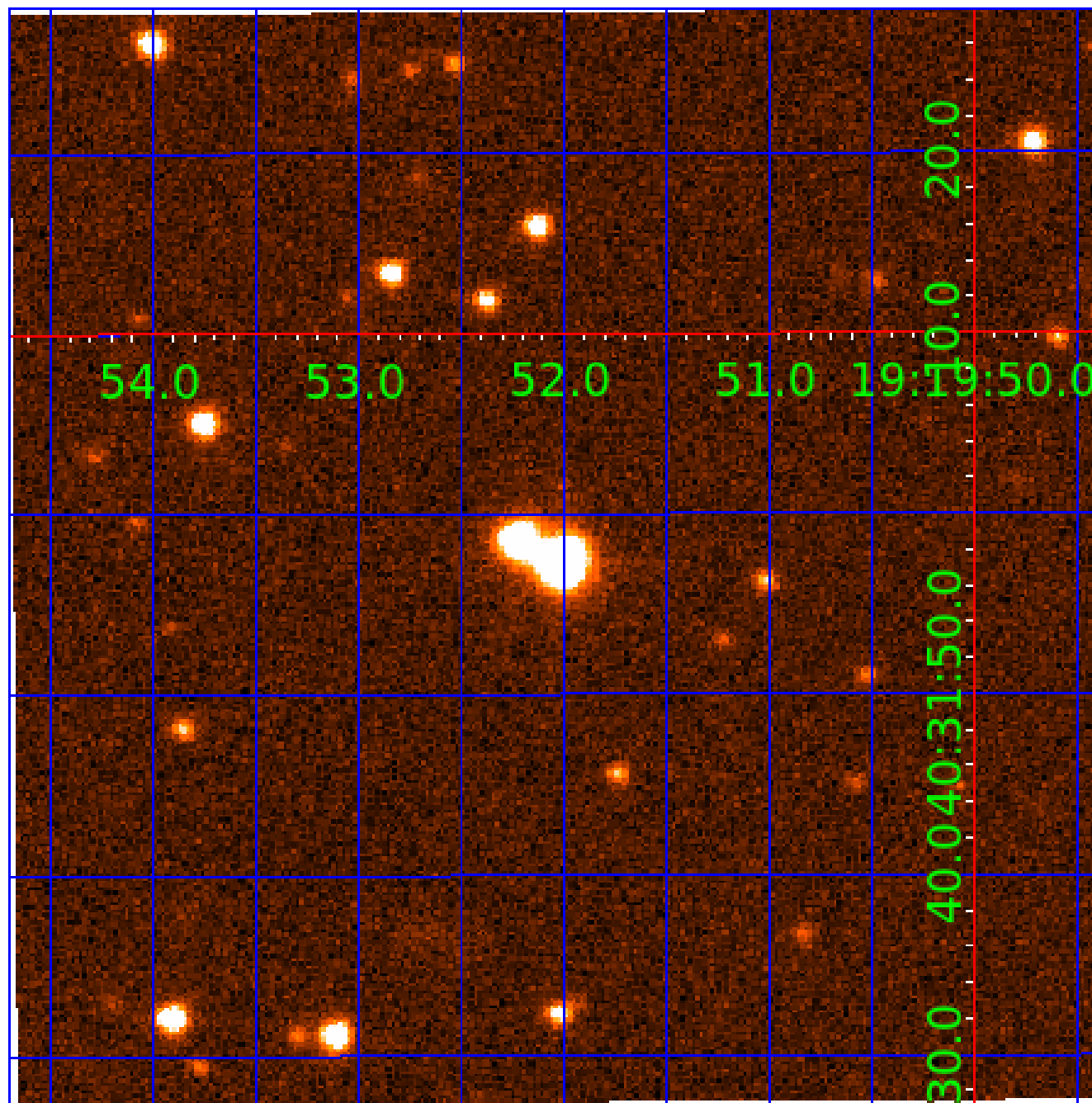


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005356593

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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005356593-02	OBS	No	45.977760	168.942536	519.9	9.648	38.0	40.3	1.10	5761	2.96	20.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005356593-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005356593-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

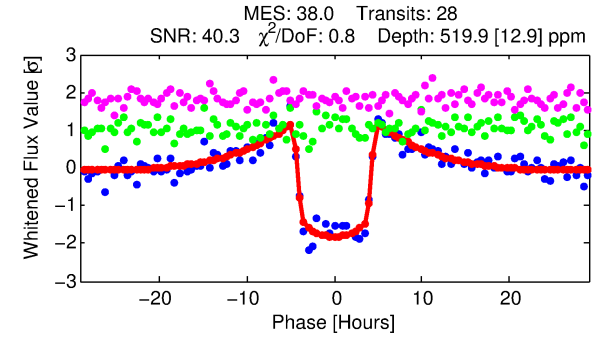
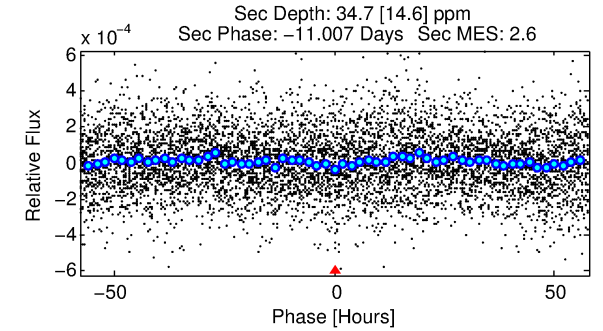
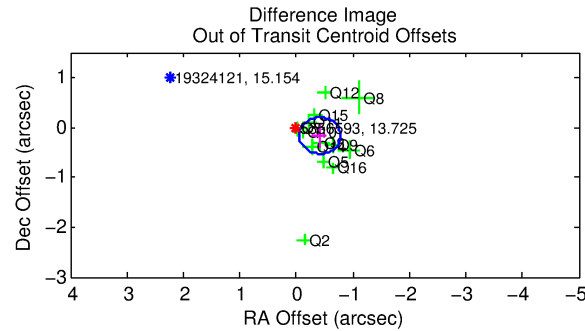
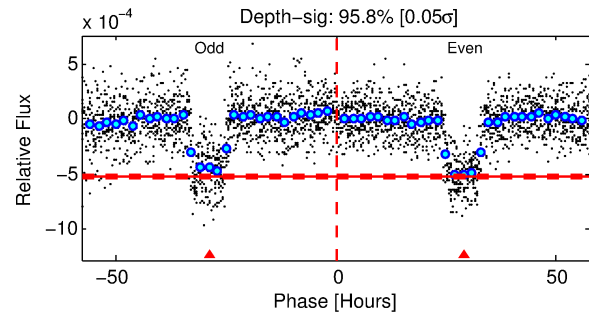
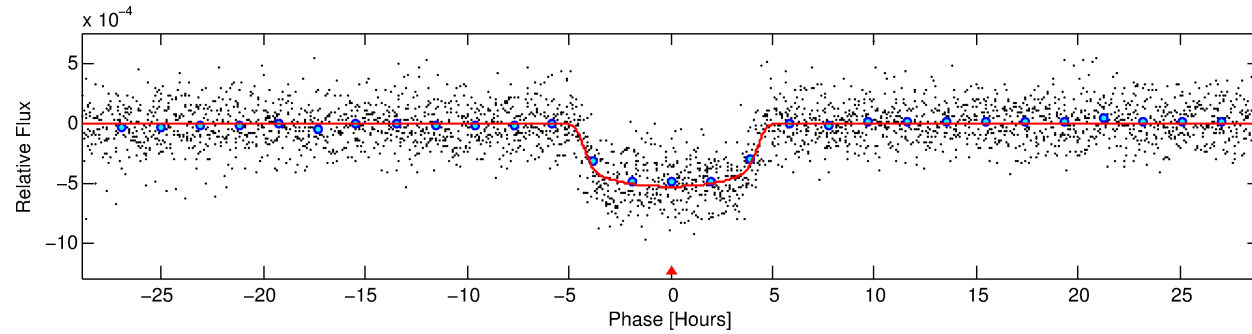
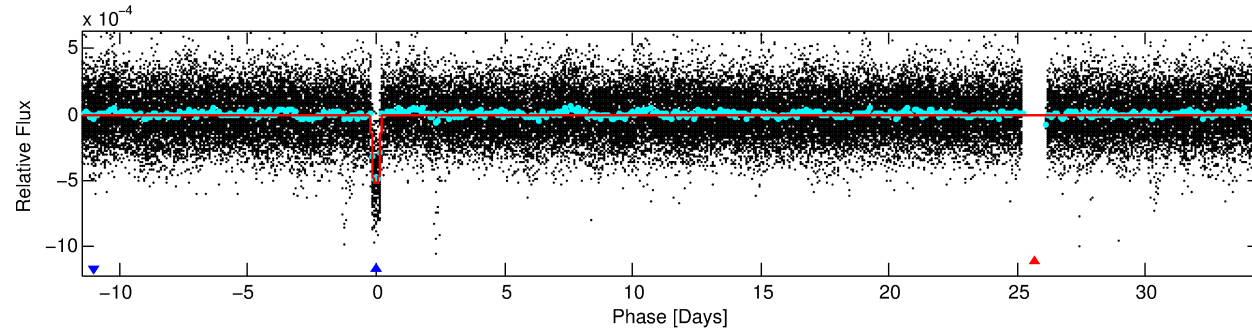
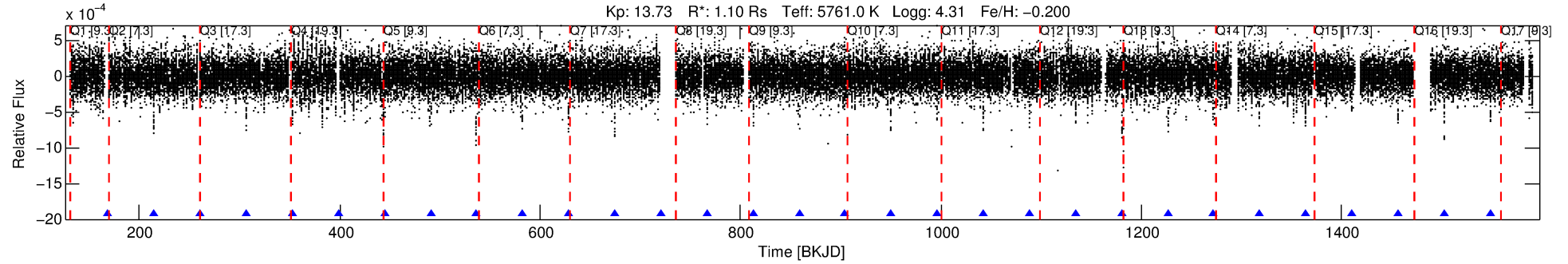
Ephemeris Match Information For 005356593-02

No Significant Match Found

DV One-Page Summary

KIC: 5356593 Candidate: 2 of 2 Period: 45.978 d

KOI: K00644 Corr: No Ephemeris Match



DV Fit Results:

Period = 45.97776 [0.00018] d
Epoch = 168.9425 [0.0034] BKJD
Rp/R* = 0.0248 [0.0006]
a/R* = 17.95 [1.58]
b = 0.90 [0.02]
Seff = 20.36 [5.42]
Teq = 542 [36] K
Rp = 2.96 [0.46] Re
a = 0.2413 [0.0382] AU
Ag = 126.90 [63.24] [1.99 σ]
Teffp = 2811 [301] K [7.49 σ]

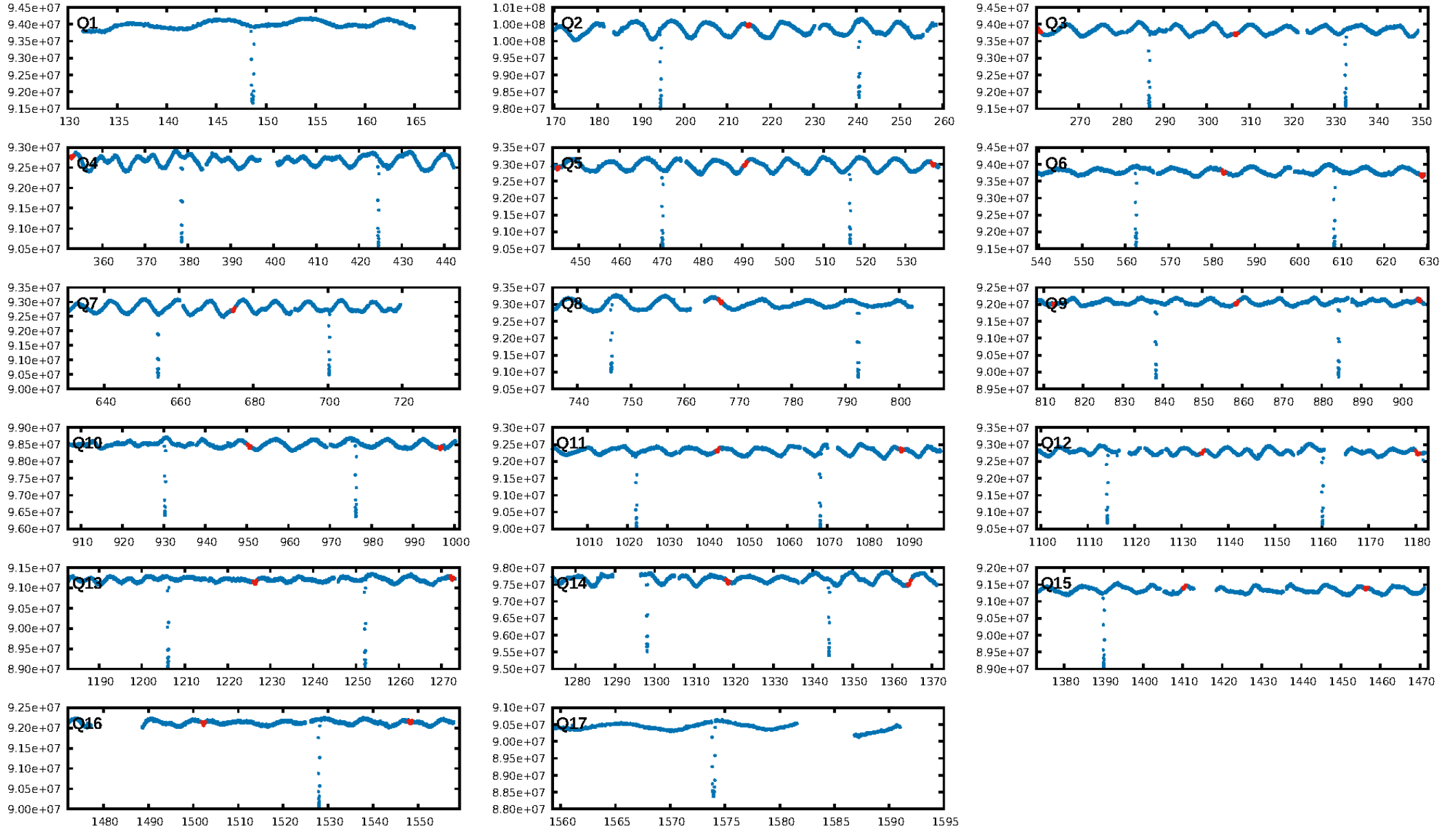
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: 88.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.89e-292
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 4.52
Centroid-sig: 0.0%
Centroid-so: 0.751 arcsec [2.47 σ]
OotOffset-rm: 0.442 arcsec [3.62 σ]
KicOffset-rm: 0.349 arcsec [1.89 σ]
OotOffset-st: 4/4/3/2 [13]
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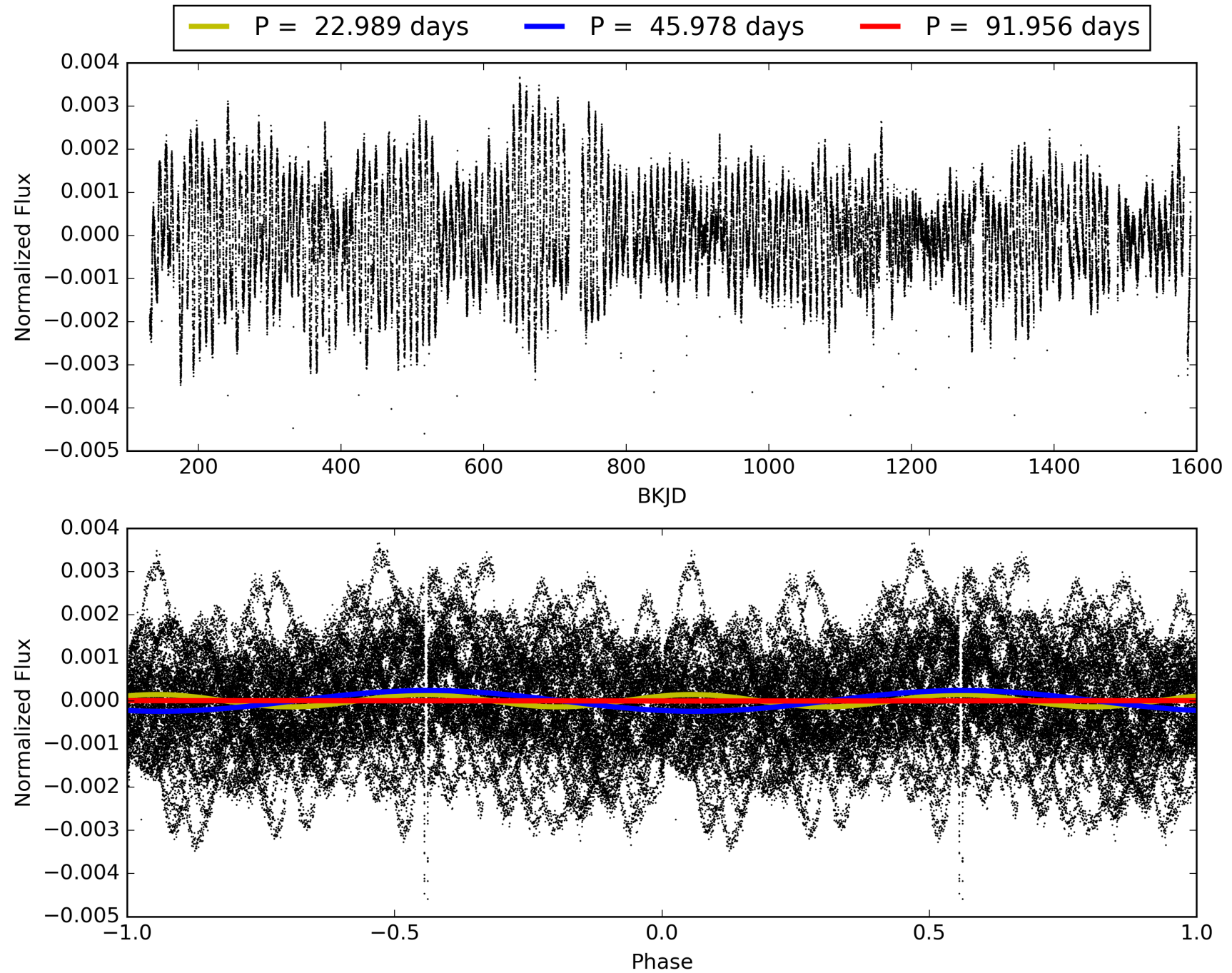
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005356593-02, PDC Light Curves

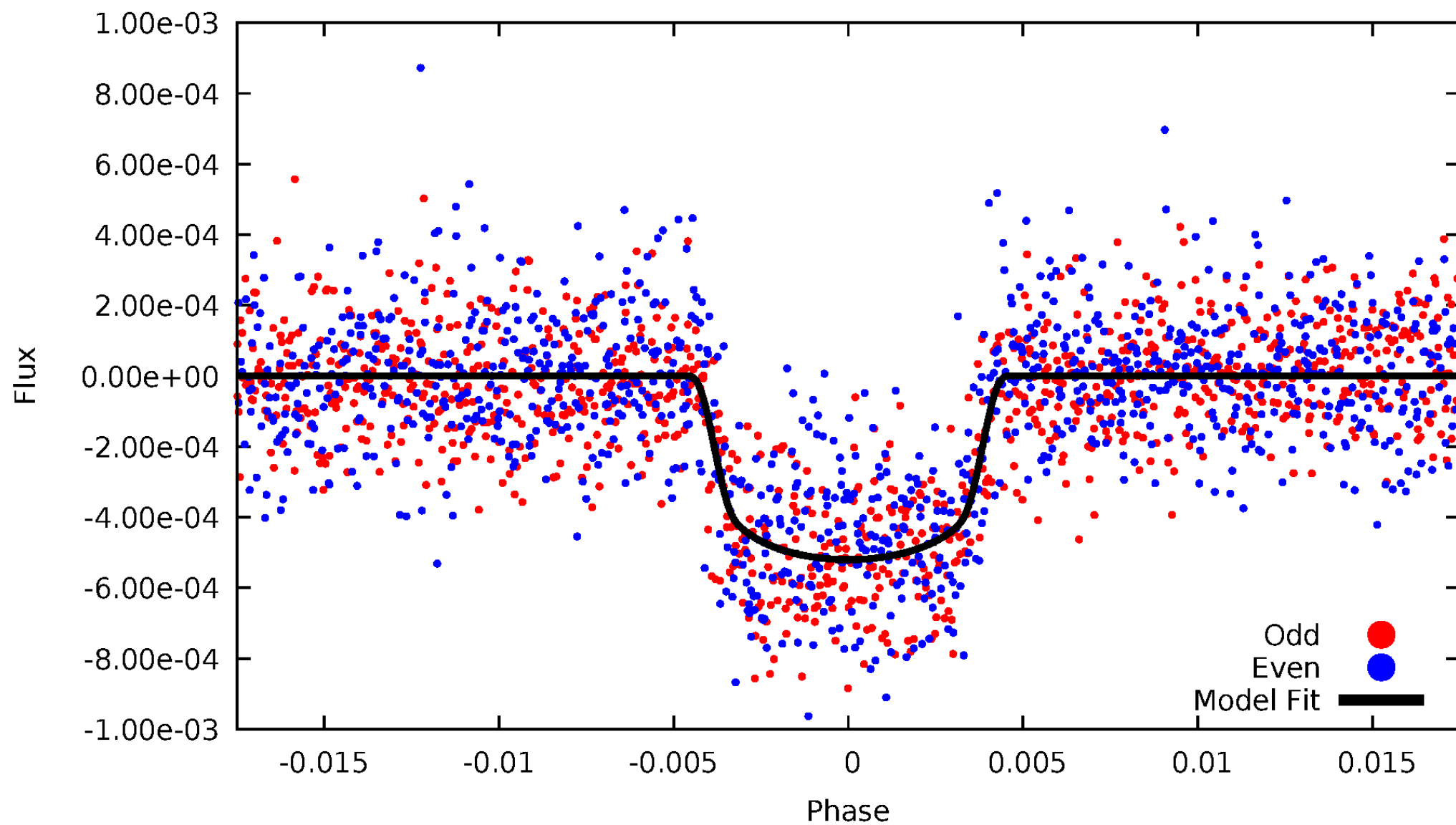


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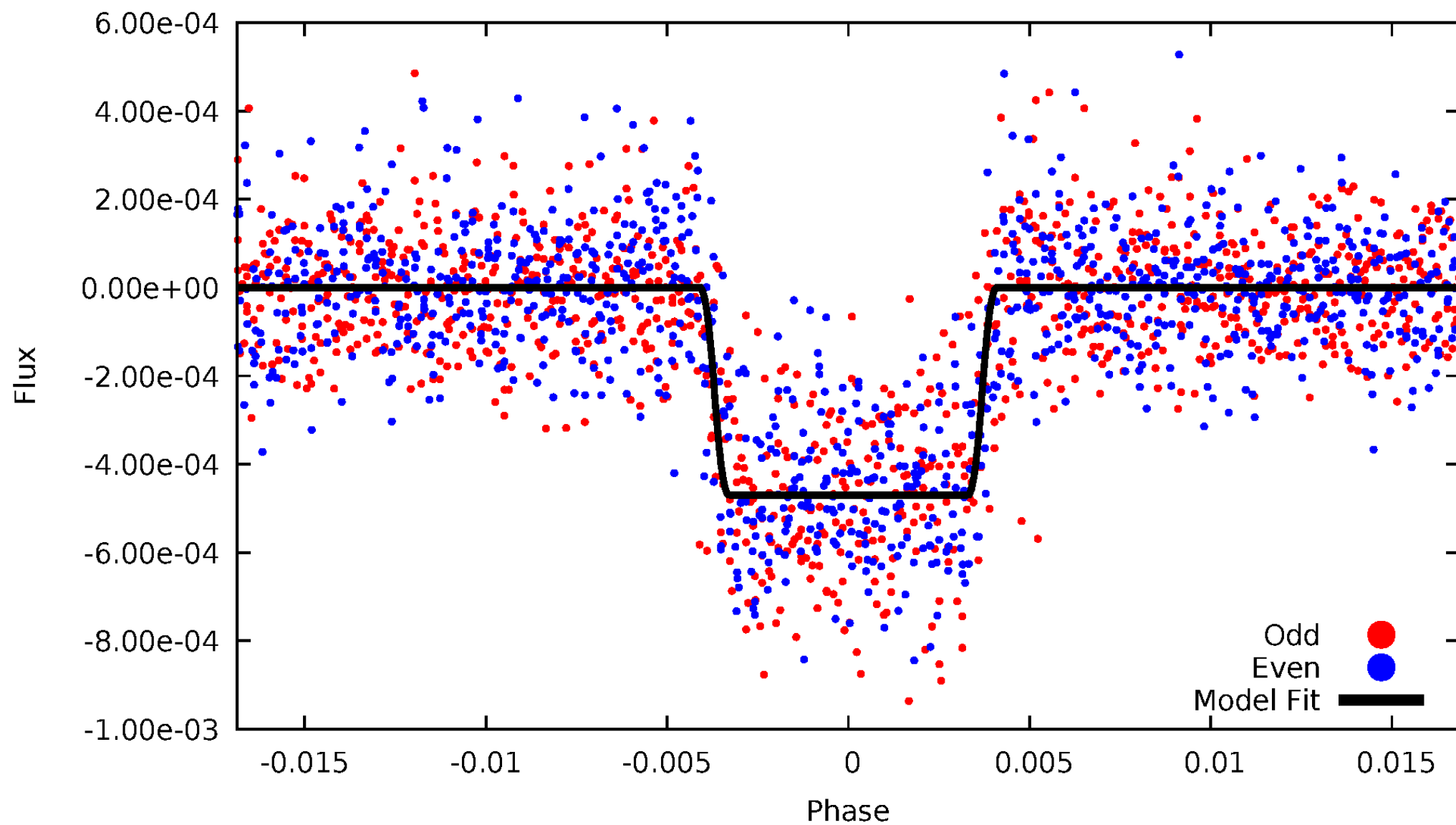
DV Odd/Even

TCE 005356593-02



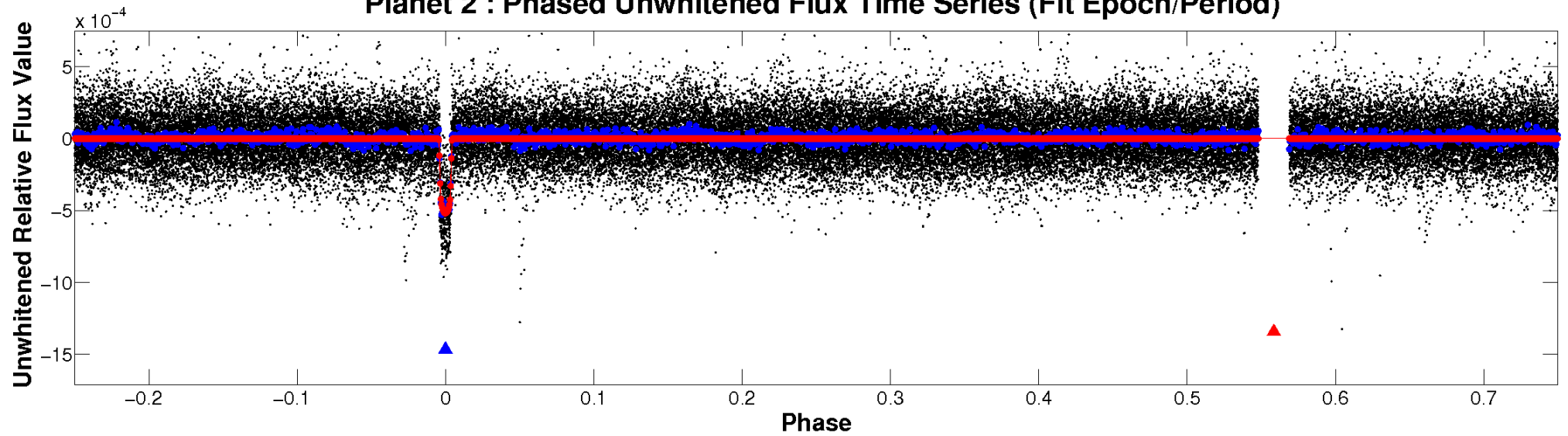
ALT Odd/Even

TCE 005356593-02

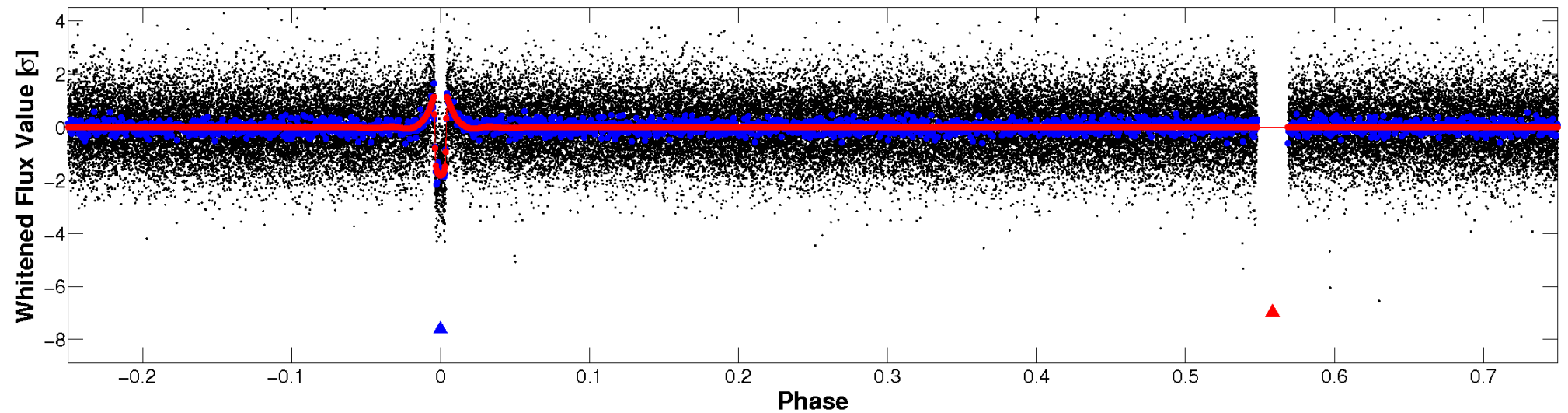


Non-Whitened Vs. Whitened Light Curve

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

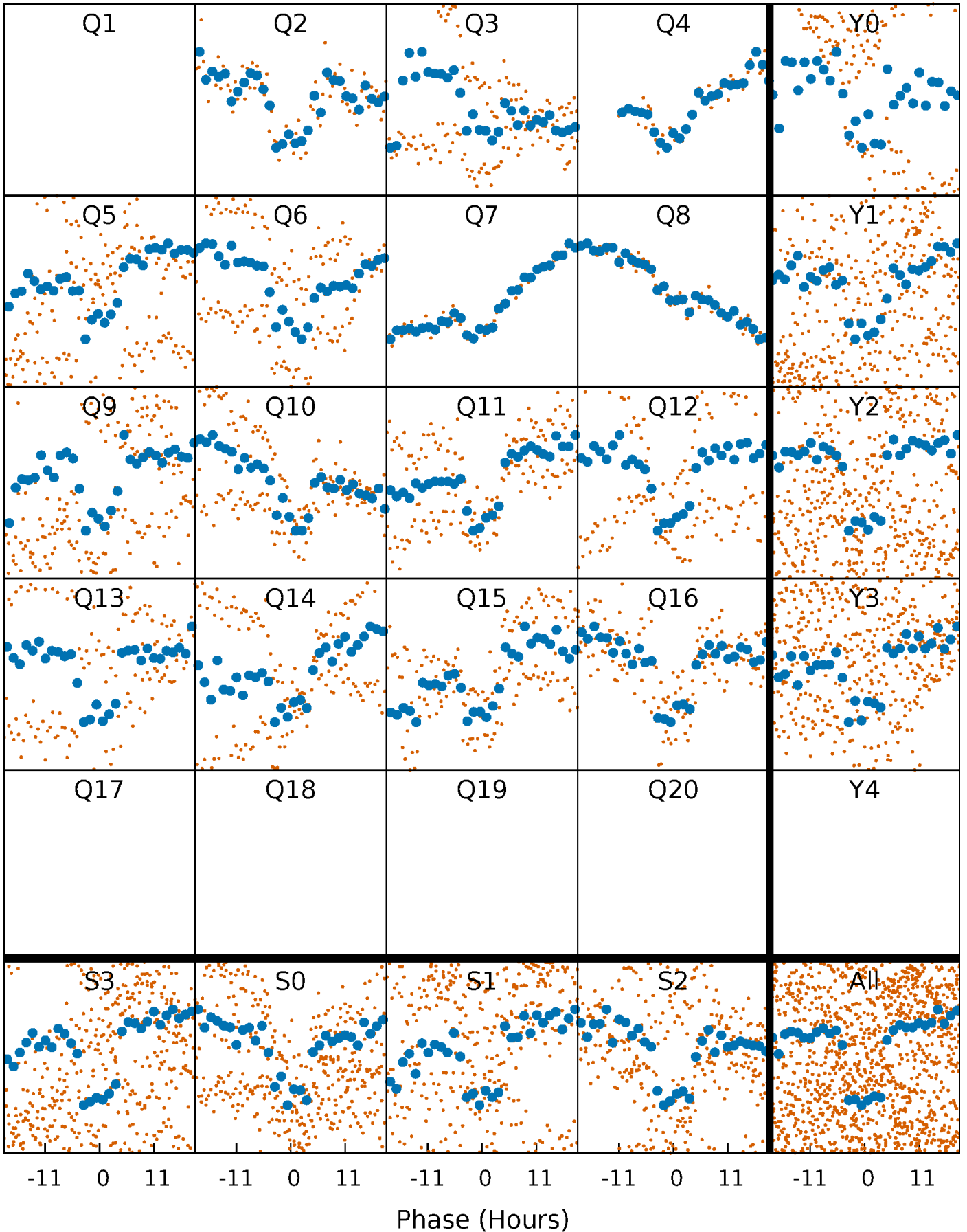


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



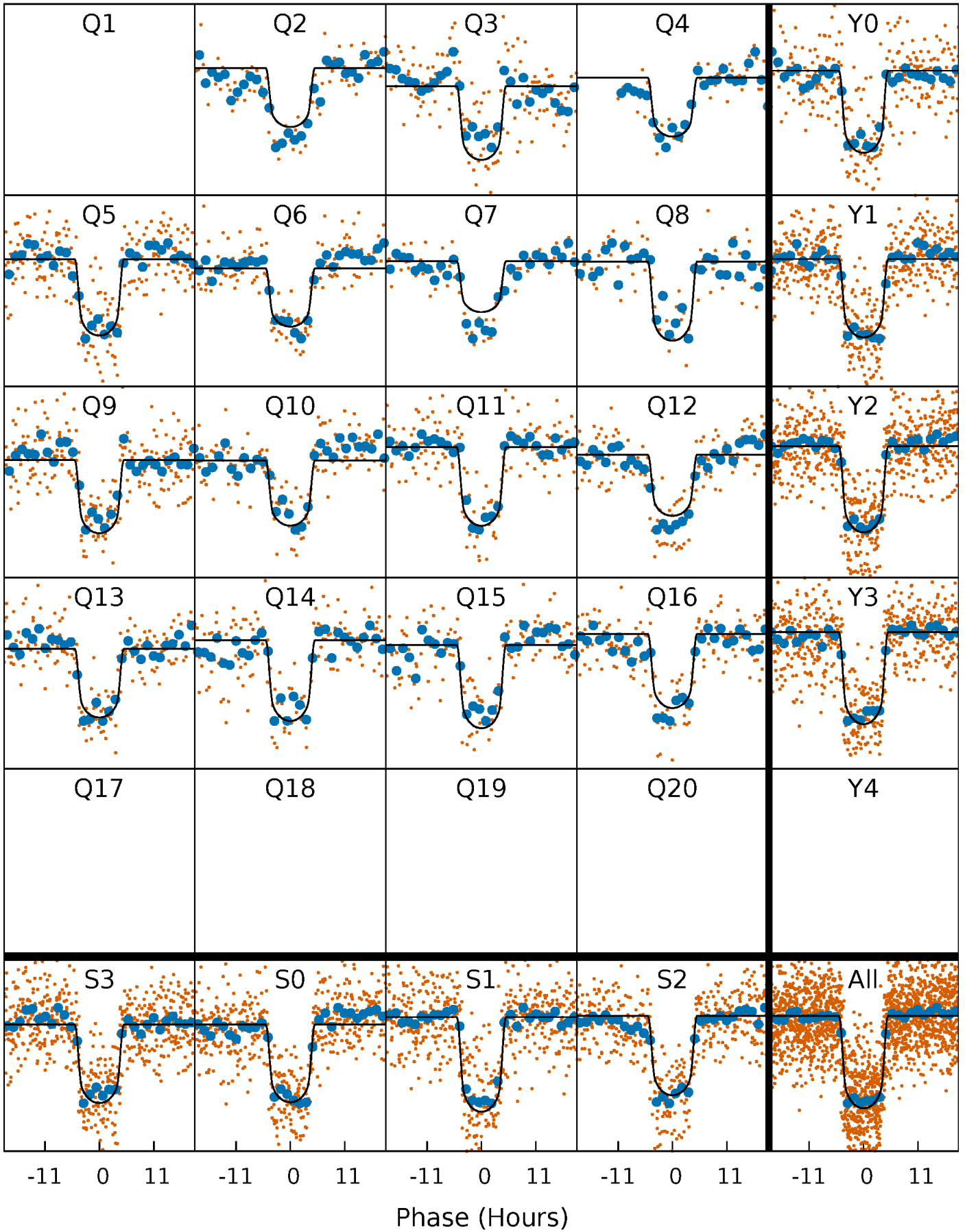
PDC Quarter-Phased Transit Curves

TCE 005356593-02 P= 45.977760 Days $T_0=168.942536$ (BKJD)



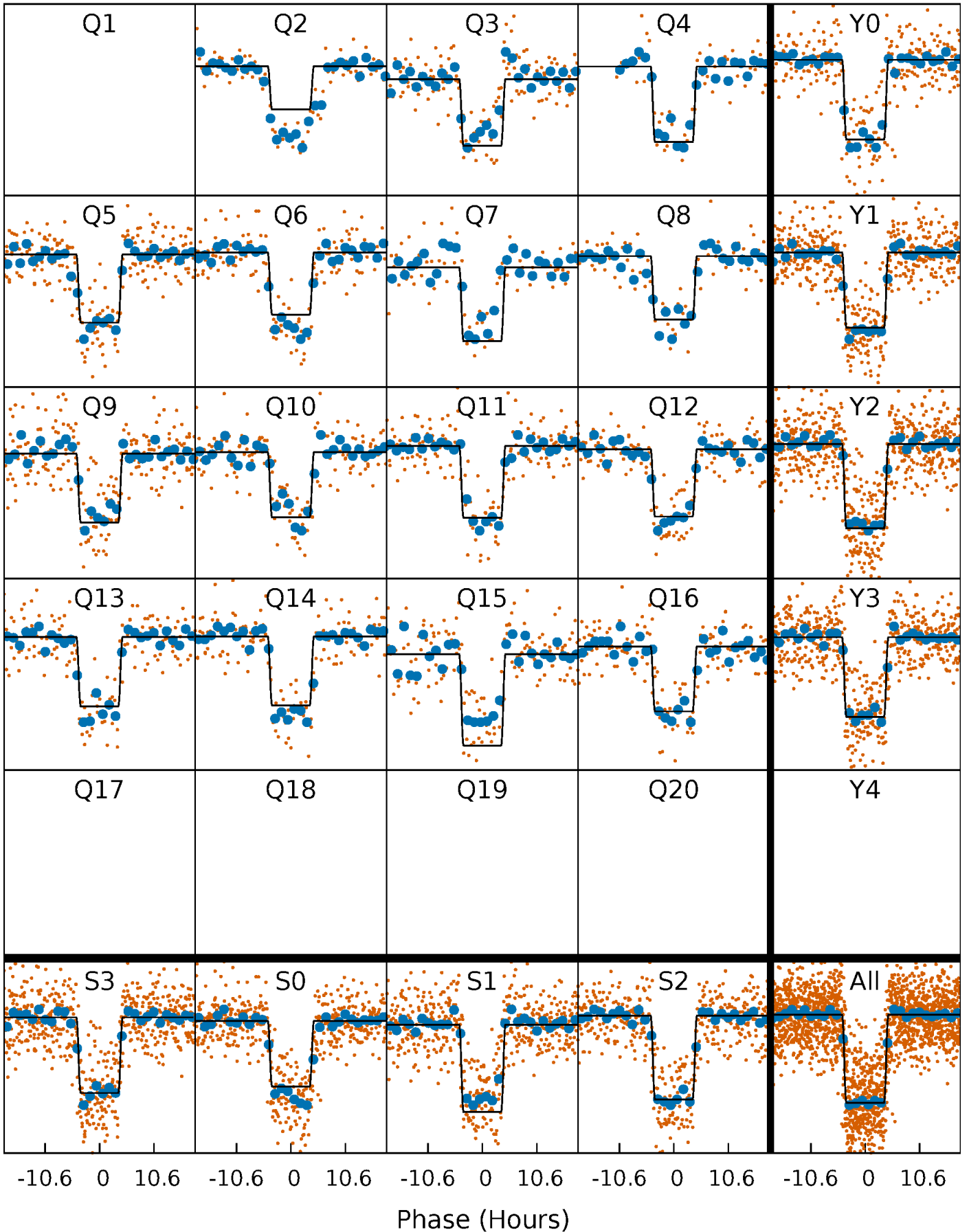
DV Quarter-Phased Transit Curves

TCE 005356593-02 P= 45.977760 Days $T_0=168.942536$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

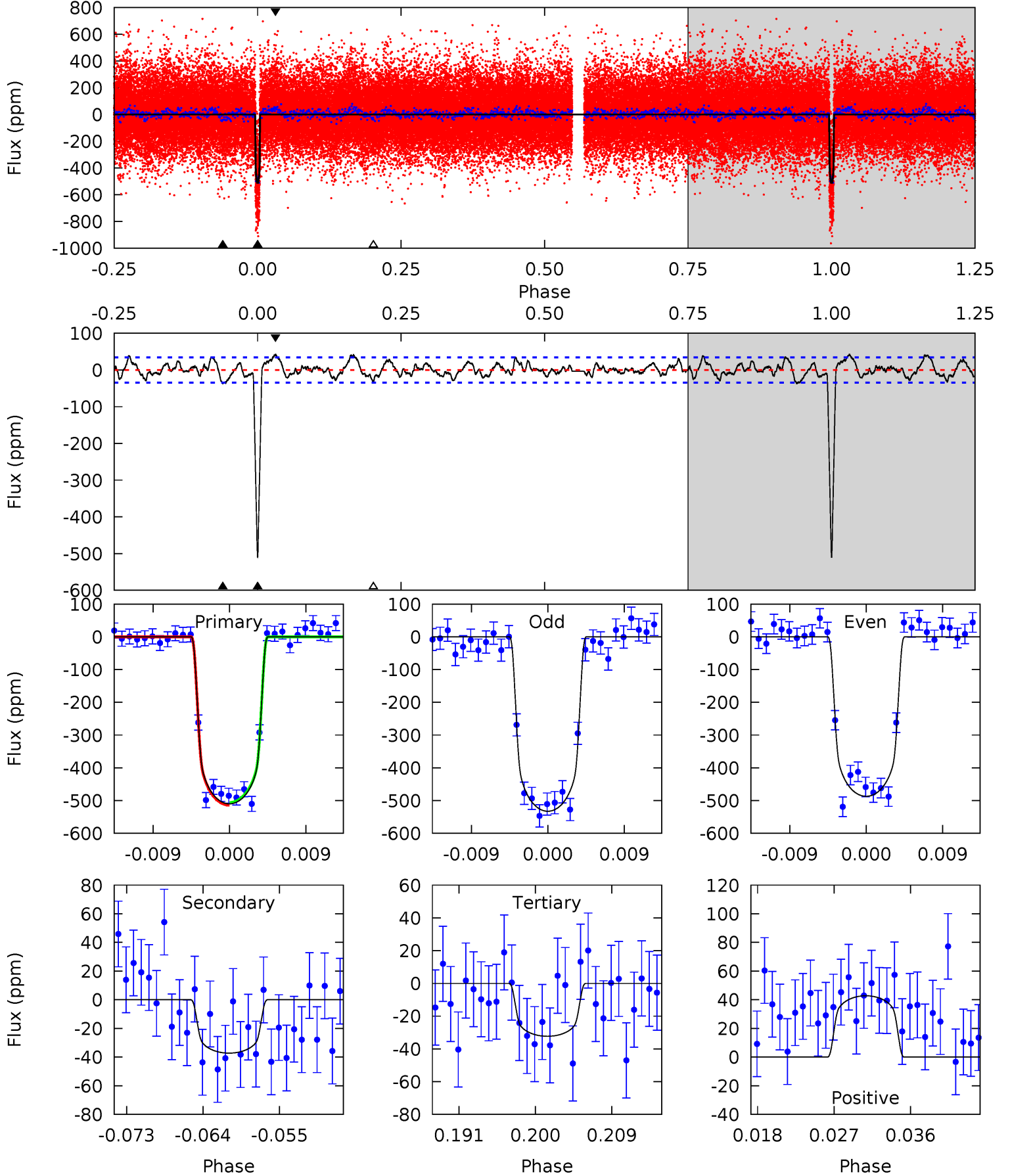
TCE 005356593-02 P= 45.977034 Days $T_0=168.952293$ (BKJD)



DV Model-Shift Uniqueness Test

005356593-02, P = 45.977760 Days, E = 122.964776 Days

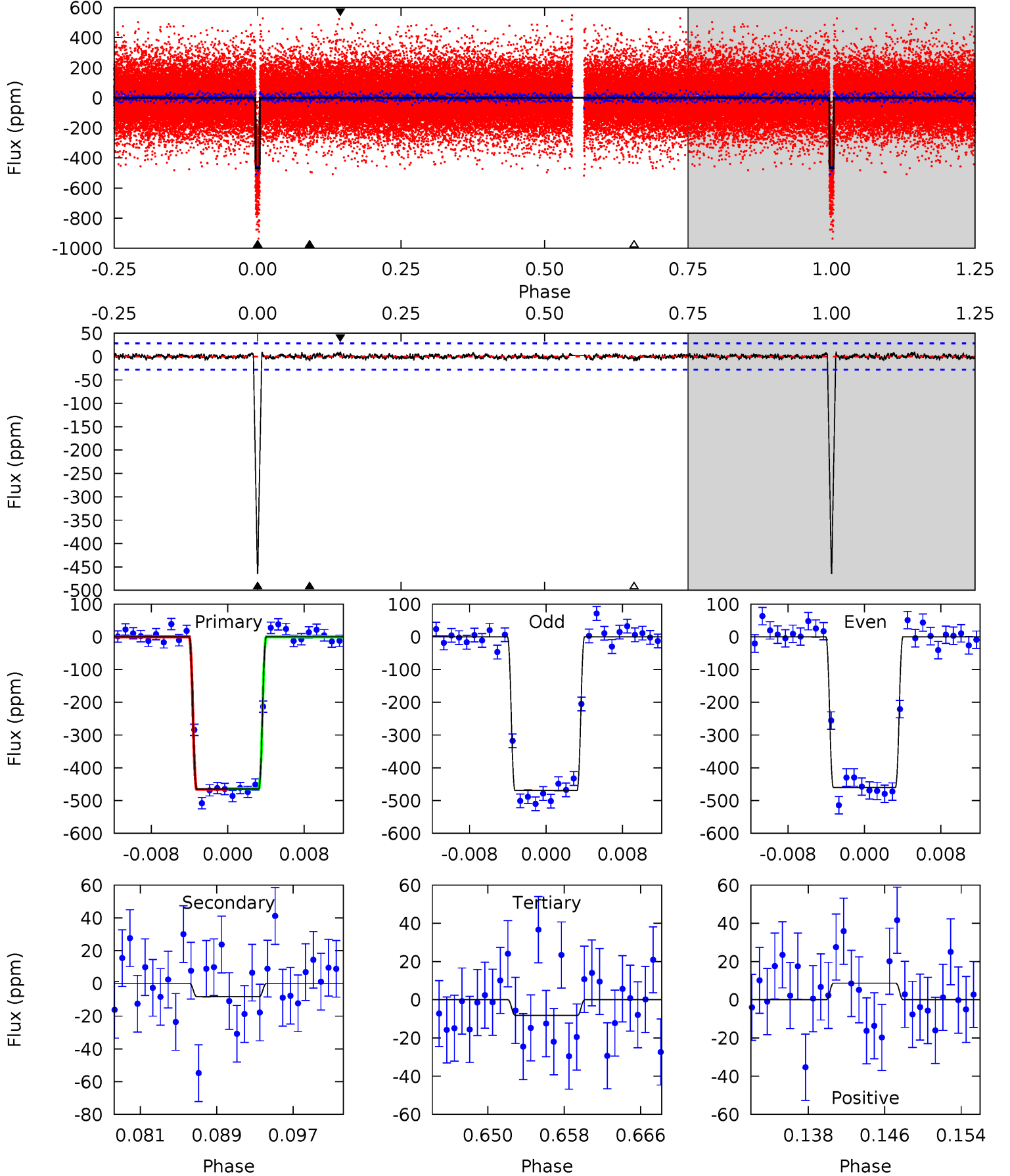
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.7	5.45	4.73	6.27	5.04	2.61	2.06	70.0	68.4	0.72	-0.81	3.35	0.99	0.08	0.59



Alt Model-Shift Uniqueness Test

005356593-02, P = 45.977034 Days, E = 122.975259 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
83.7	1.48	1.47	1.57	5.07	2.65	0.47	82.2	82.2	0.01	-0.09	0.86	1.02	0.02	0.21



Stellar Parameters For KIC 005356593

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5761^{+77}_{-77}	$4.306^{+0.156}_{-0.117}$	$-0.200^{+0.150}_{-0.150}$	$1.096^{+0.170}_{-0.170}$	$0.885^{+0.068}_{-0.049}$	$0.948^{+0.624}_{-0.321}$
	+1%/-1%	+4%/-3%	+75%/-75%	+16%/-16%	+8%/-6%	+66%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005356593-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-37 ± 7	$2.94^{+0.30}_{-0.29}$	754^{+37}_{-38}	3381^{+99}_{-105}	138^{+44}_{-33}
Alt.	-8 ± 6	$2.59^{+0.25}_{-0.25}$	755^{+36}_{-38}	2830^{+215}_{-399}	40^{+31}_{-27}

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 $A_{obs} \gg 1.0$

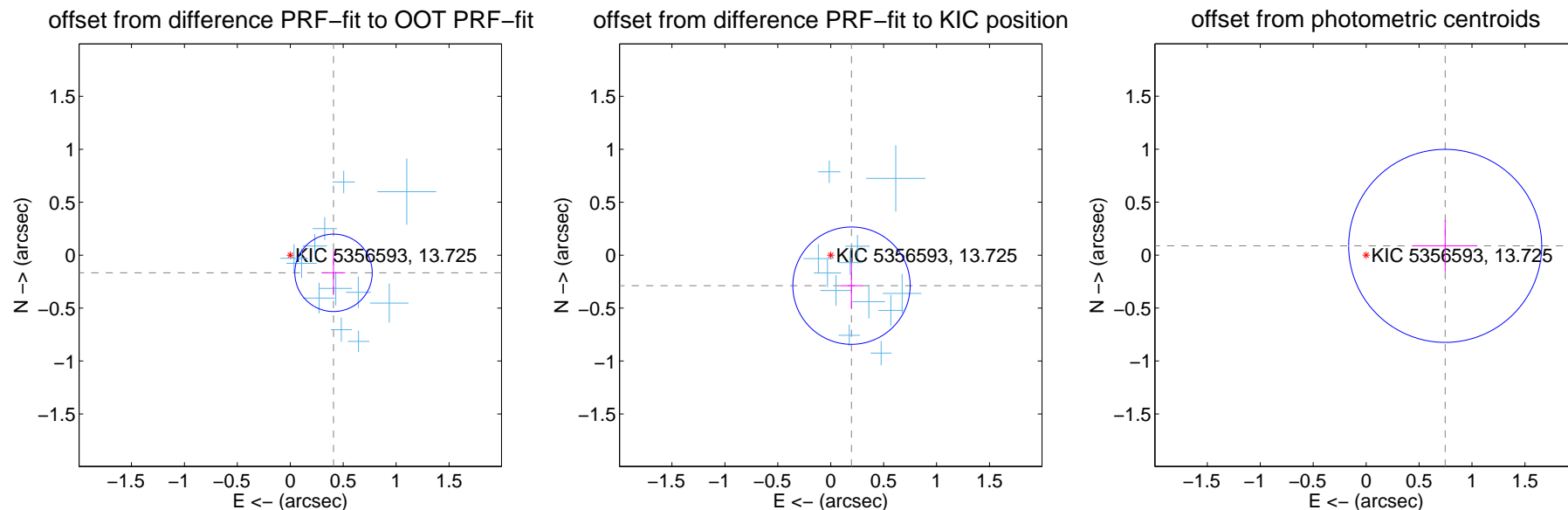
DV Centroid Data

Supplemental centroid analysis for 005356593-02. Kepler magnitude: 13.72. Transit SNR 40.33

There are 13 quarters with good PRF difference image offsets

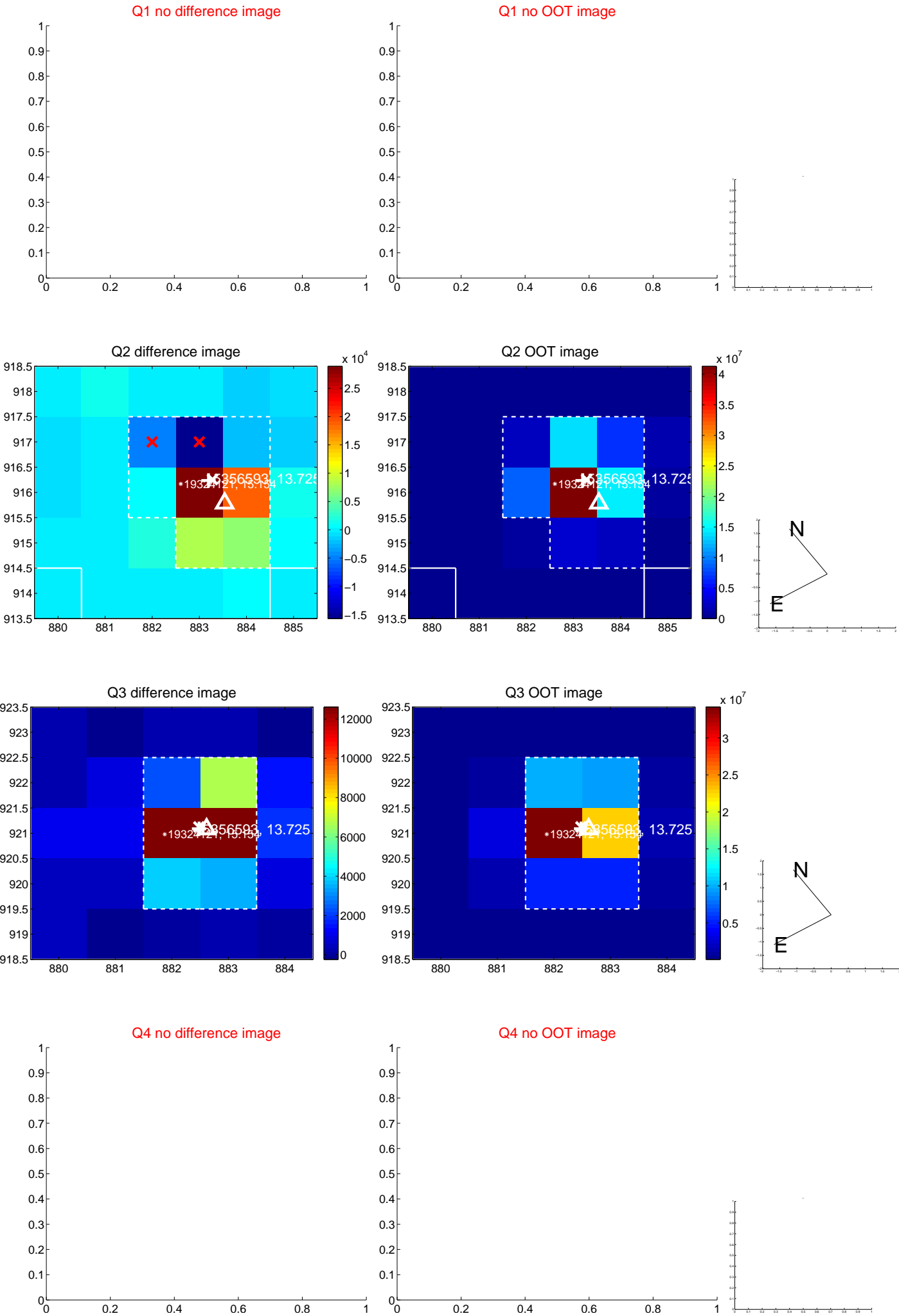
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.442 \pm 0.122	3.62	-0.409 \pm 0.111	-0.167 \pm 0.211
PRF-fit source offset from KIC position	0.349 \pm 0.185	1.89	-0.196 \pm 0.105	-0.288 \pm 0.220
photometric centroid source offset	0.75 \pm 0.30	2.47	-0.75 \pm 0.30	0.09 \pm 0.24

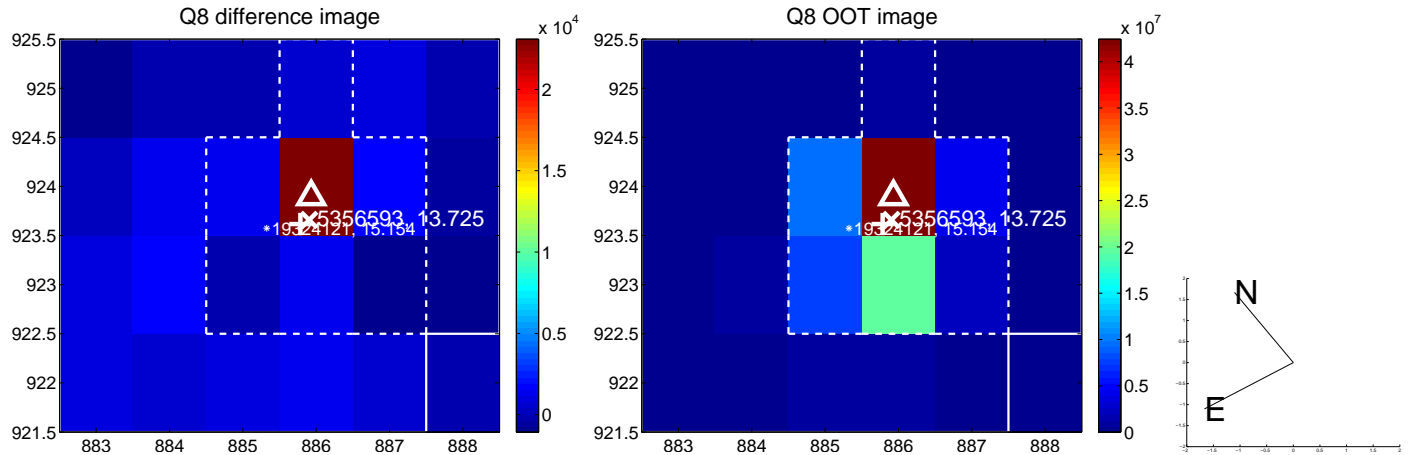
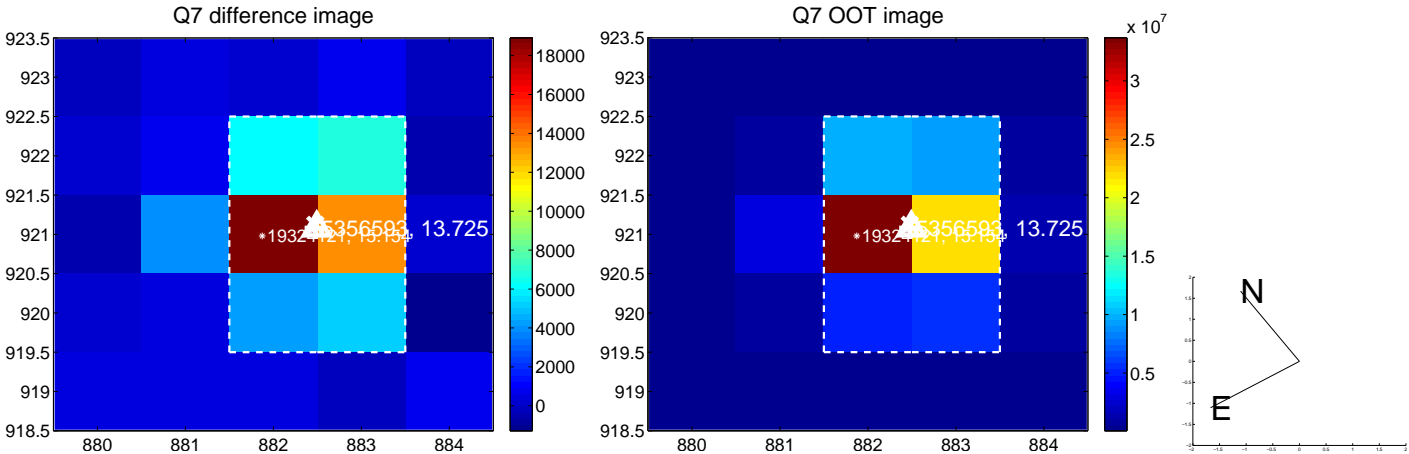
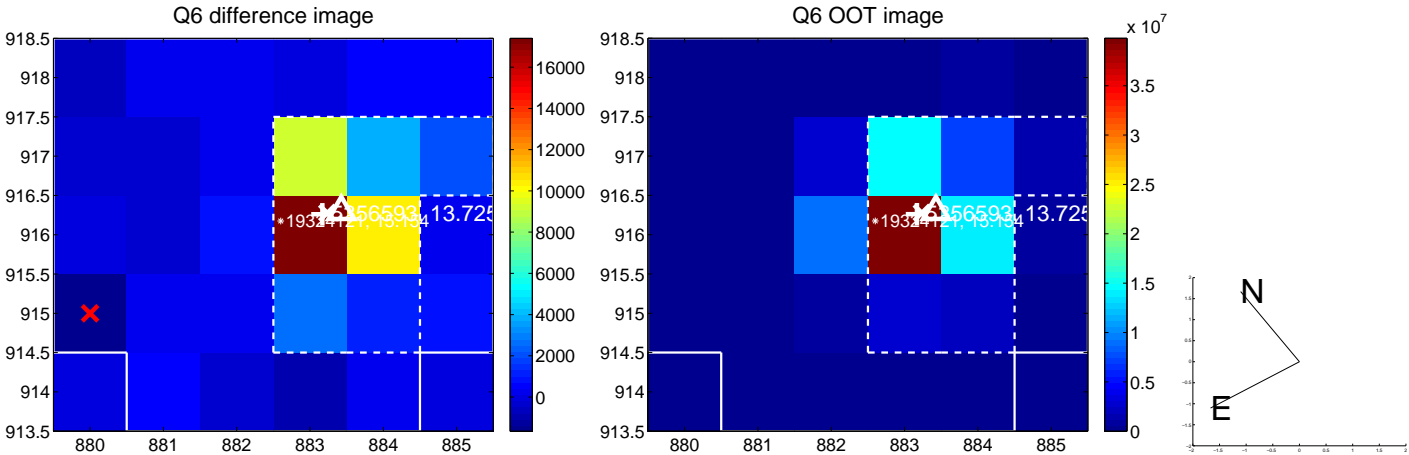
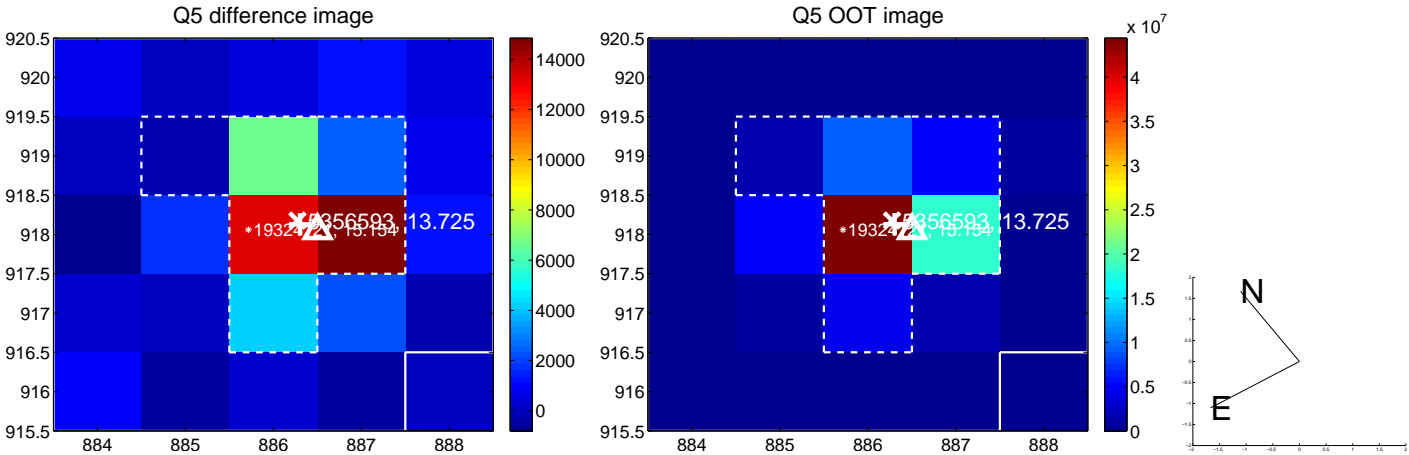


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

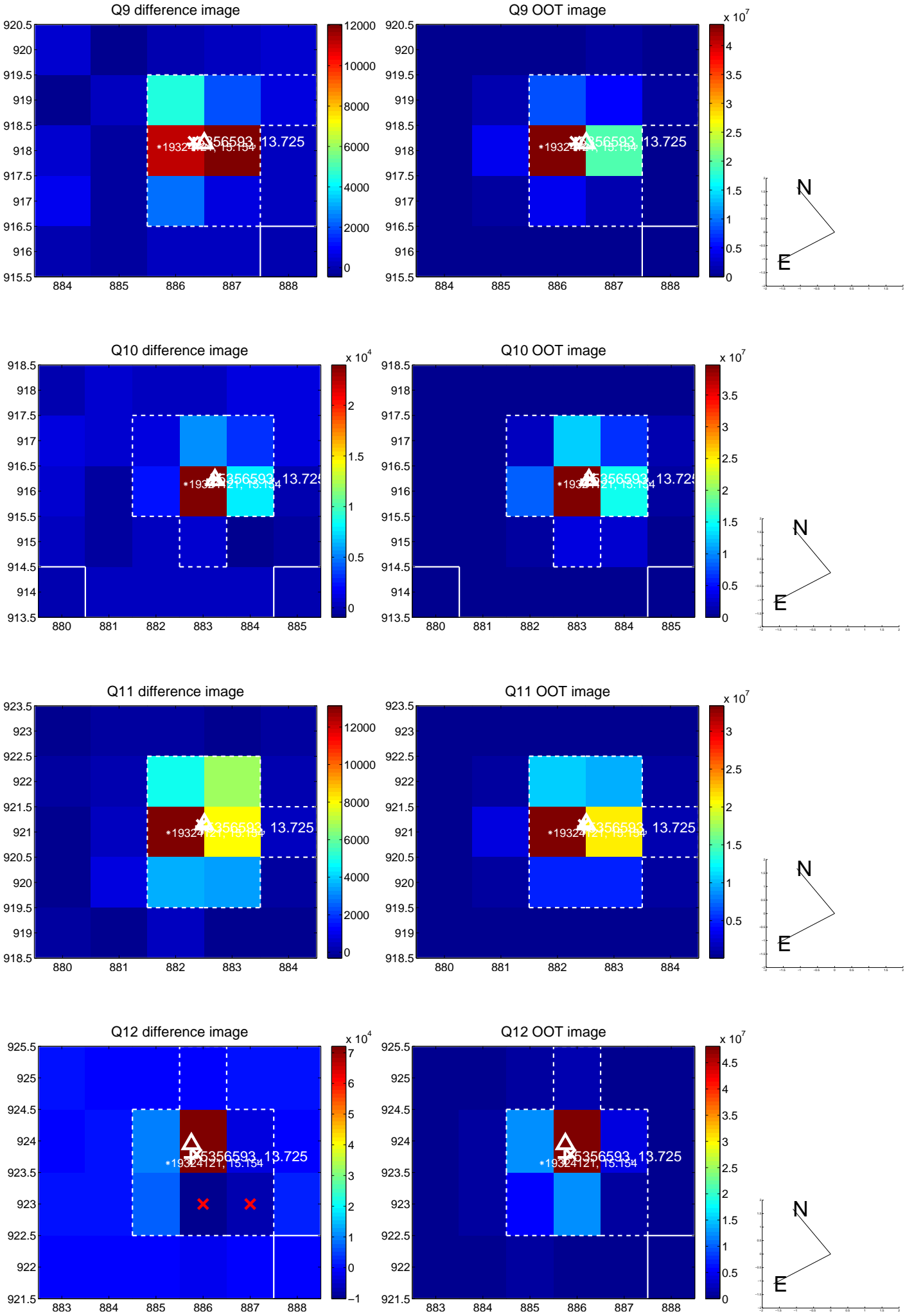
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



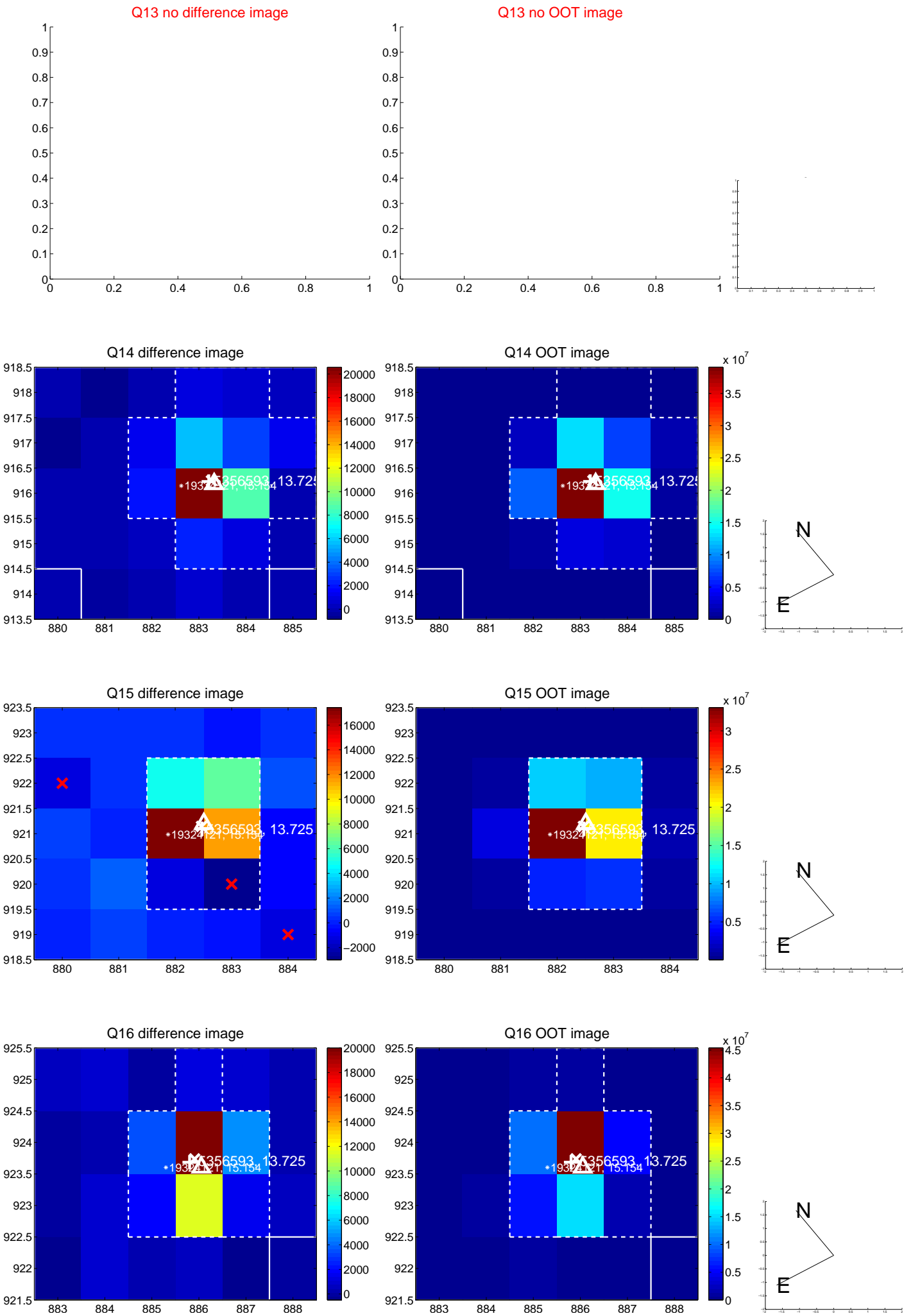
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



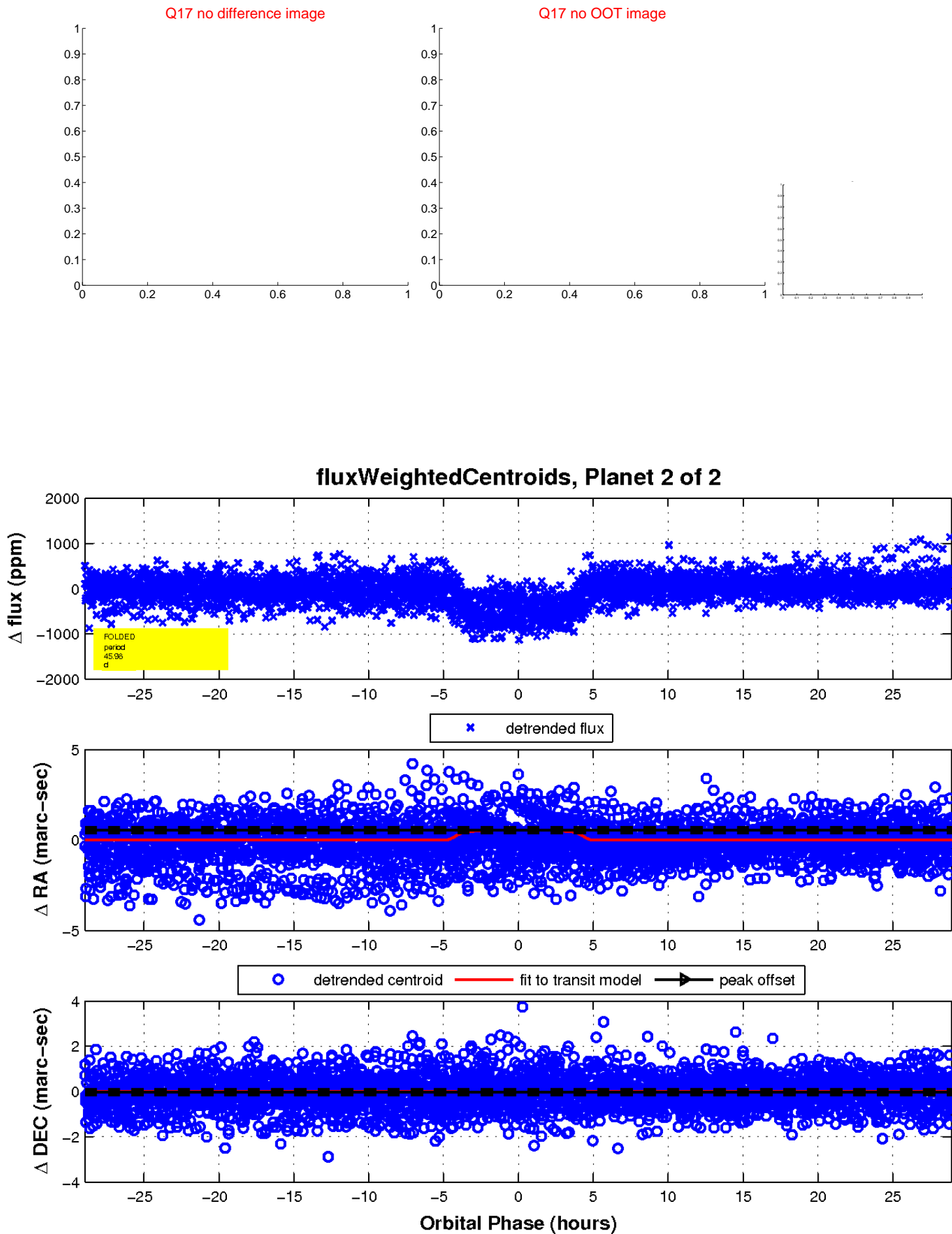
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

