

KIC 006020753

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})
006020753-01	OBS	0657.01	4.069422	134.393677	537.1	2.248	53.6	61.5	0.68	4671	1.96	97.76
006020753-02	OBS	0657.02	16.282462	131.951409	783.9	3.182	48.7	52.4	0.68	4671	2.32	15.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006020753-01	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
006020753-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

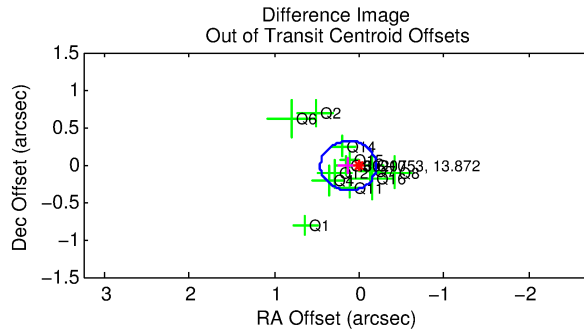
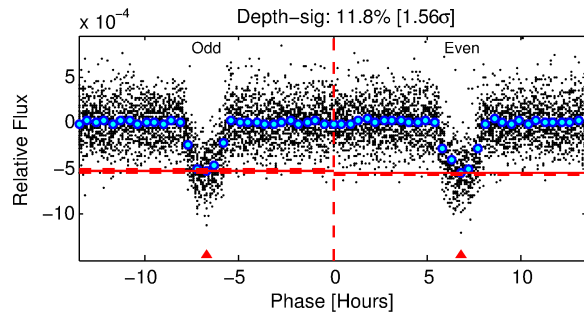
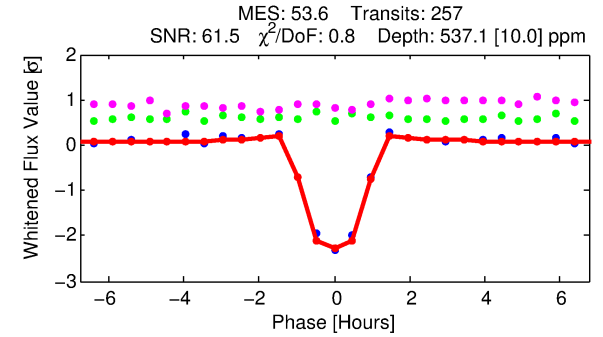
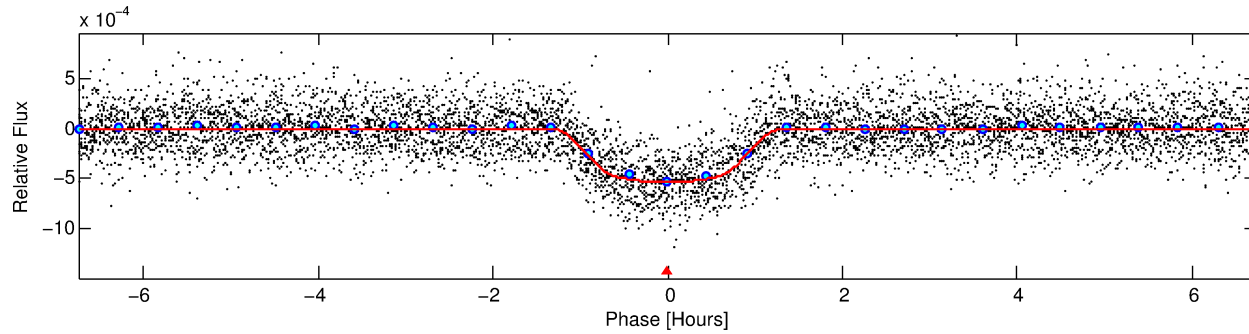
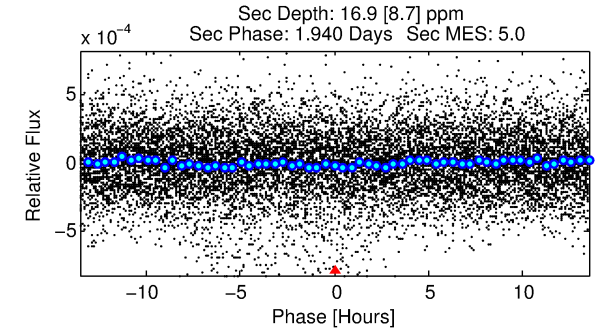
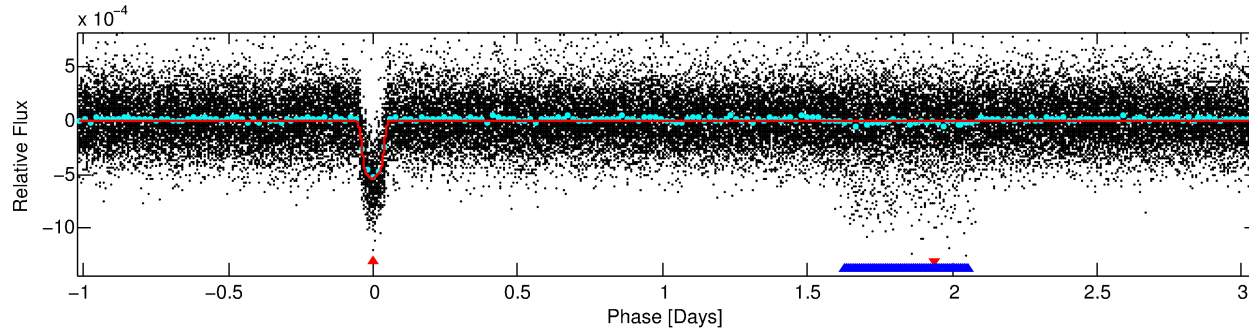
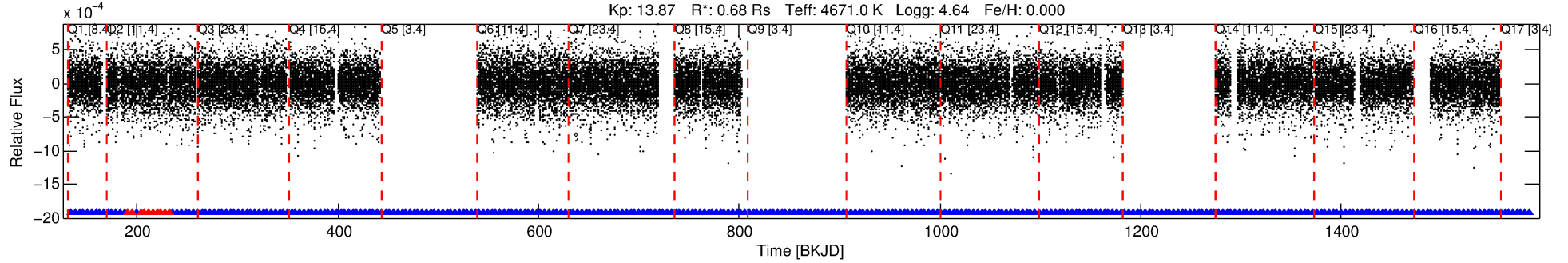
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006020753-01

No Significant Match Found

DV One-Page Summary

KIC: 6020753 Candidate: 1 of 2 Period: 4.069 d
KOI: K00657.01 Name: Kepler-202b Corr: 0.965



DV Fit Results:

Period = 4.06942 [0.00000] d
Epoch = 134.3937 [0.0006] BKJD
Rp/R* = 0.0265 [0.0019]
a/R* = 6.66 [1.74]
b = 0.91 [0.05]
Seff = 97.76 [10.94]
Teff = 802 [22] K
Rp = 1.96 [0.19] Re
a = 0.0449 [0.0025] AU
Ag = 4.86 [2.64] [1.46σ]
Teffp = 1840 [250] K [4.14σ]

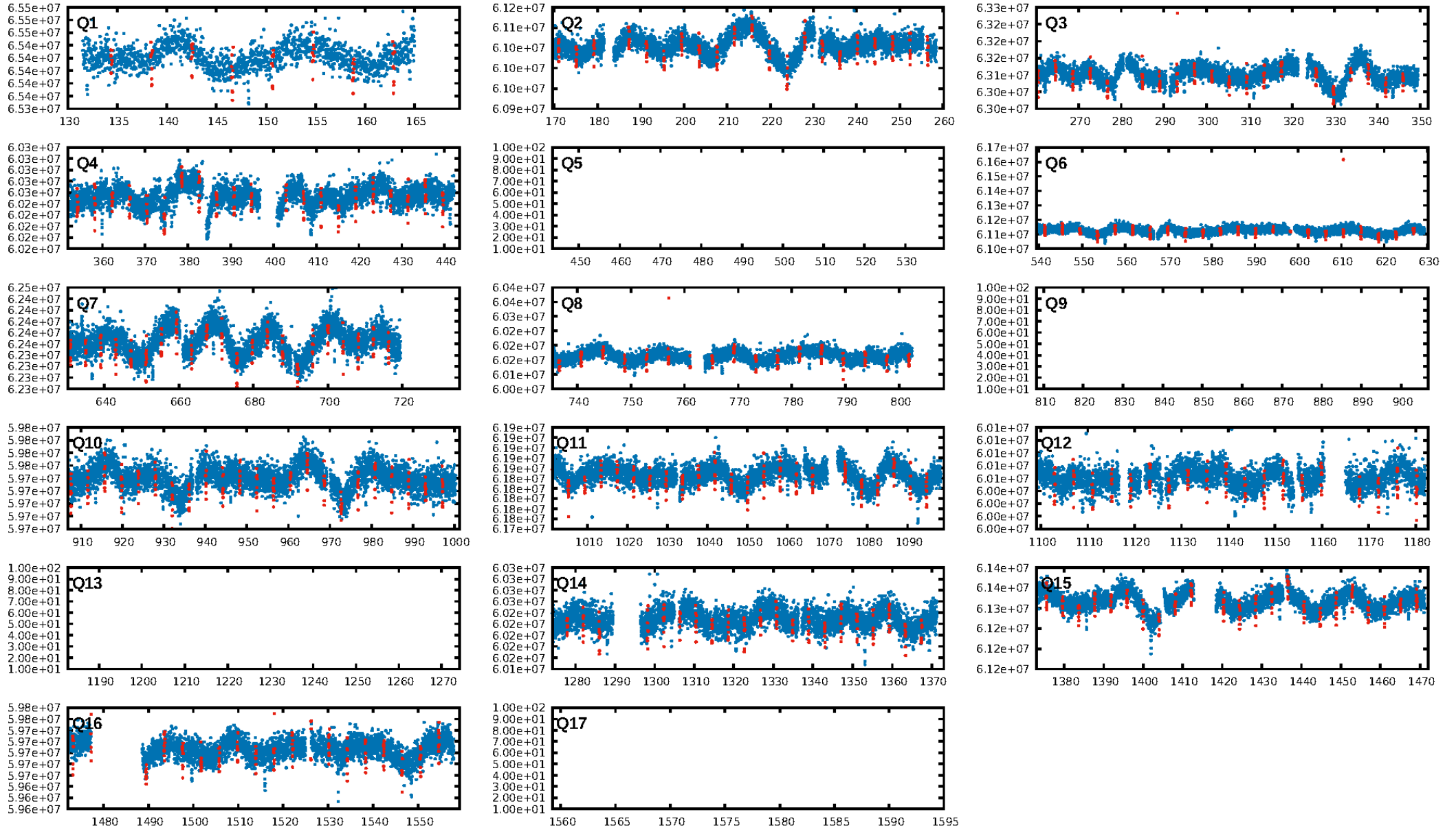
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [75.24σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [239/249]
GhostDiagnostic-chr: 7.765
Centroid-sig: 75.4%
Centroid-so: 0.656 arcsec [2.77σ]
OotOffset-rm: 0.125 arcsec [1.13σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-rm: 0.737 arcsec [7.31σ]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

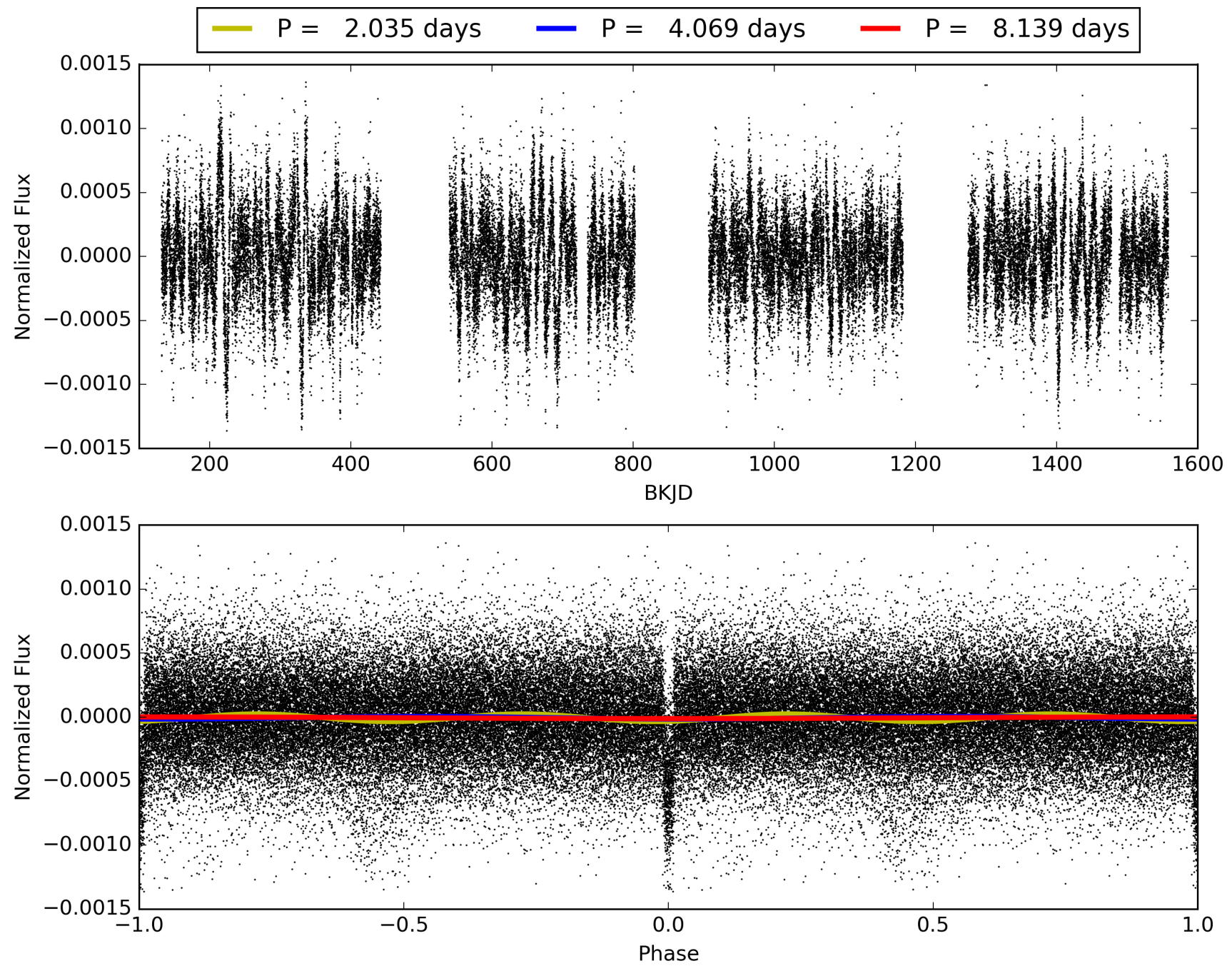
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:06:14 Z

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

TCE 006020753-01, PDC Light Curves

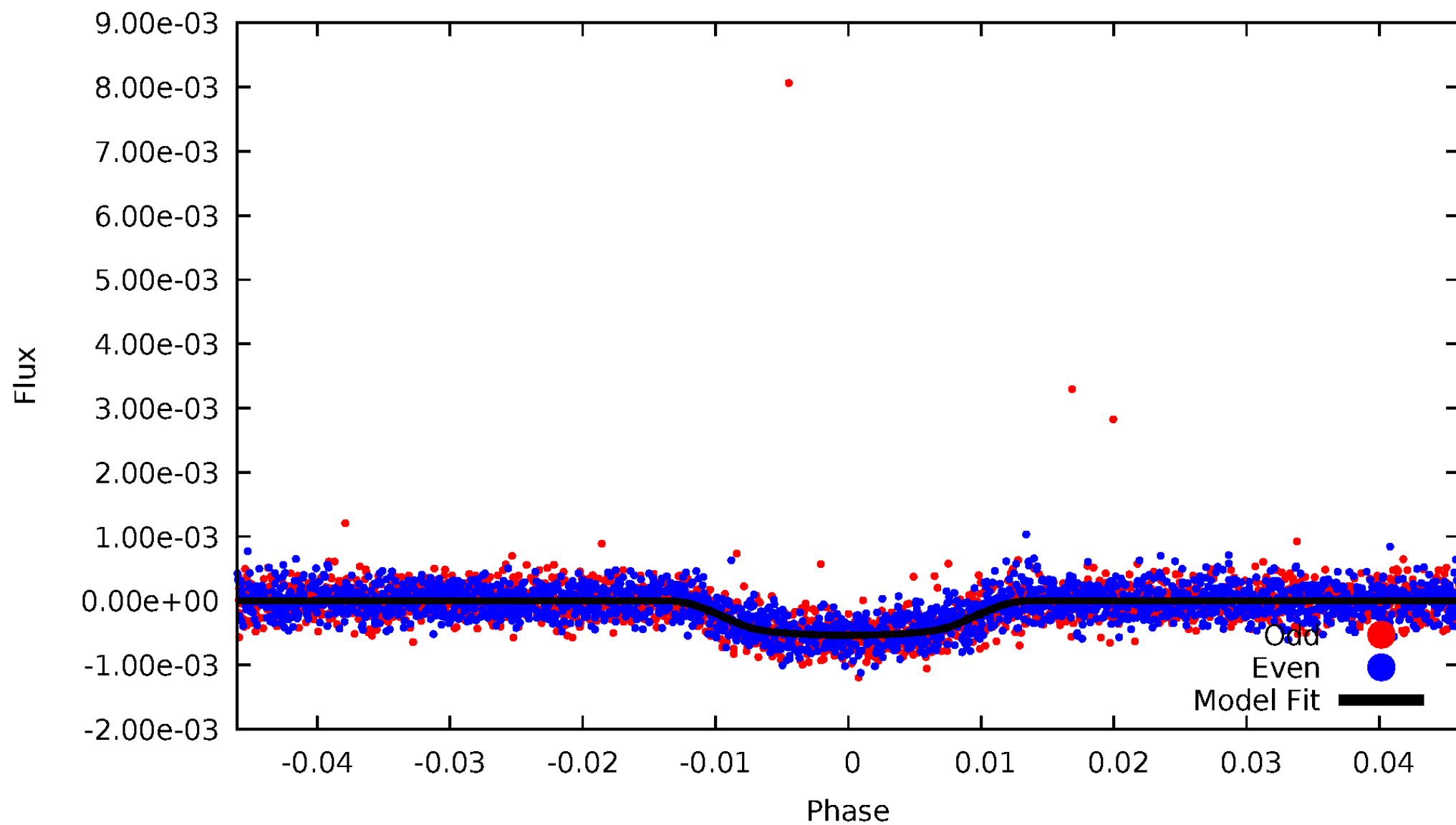


TCE 006020753-01



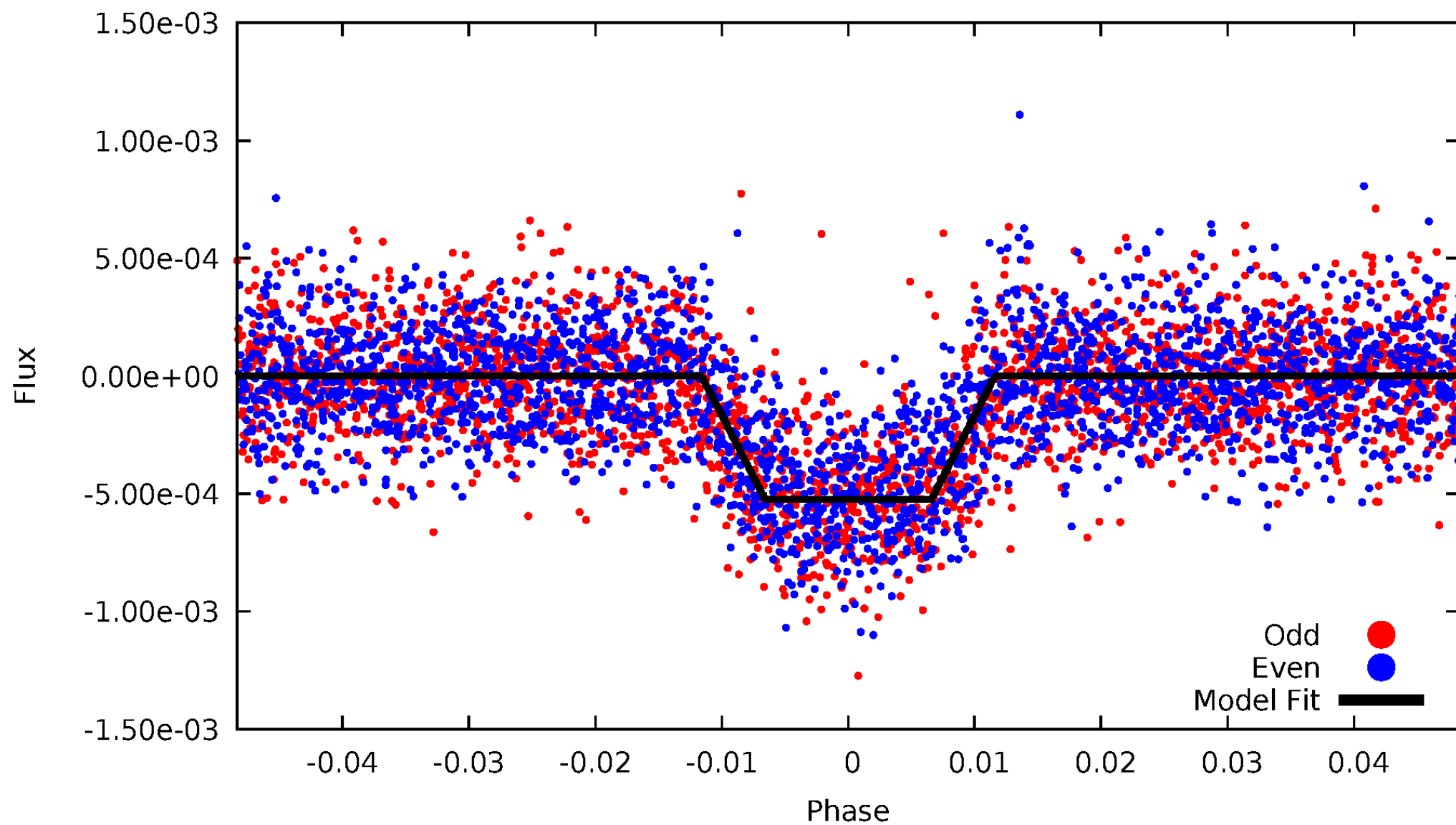
DV Odd/Even

TCE 006020753-01



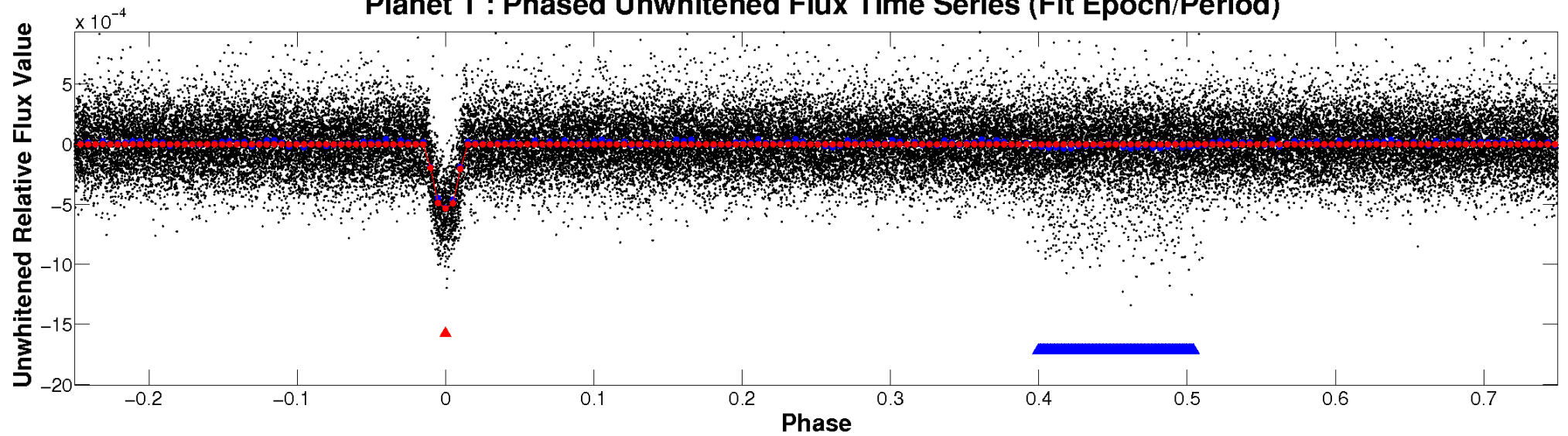
ALT Odd/Even

TCE 006020753-01

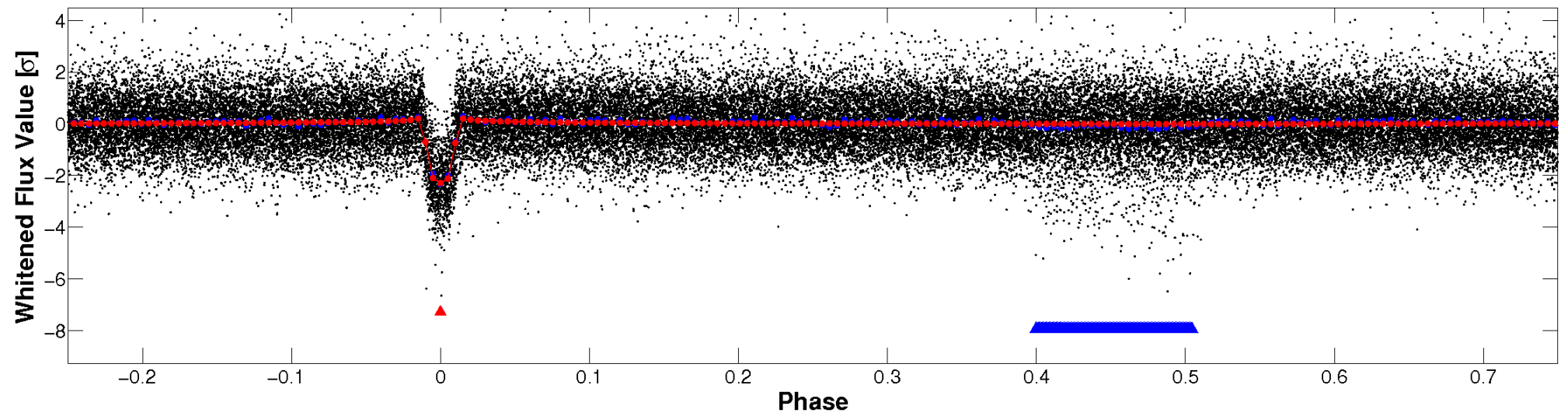


Non-Whitened Vs. Whitened Light Curve

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

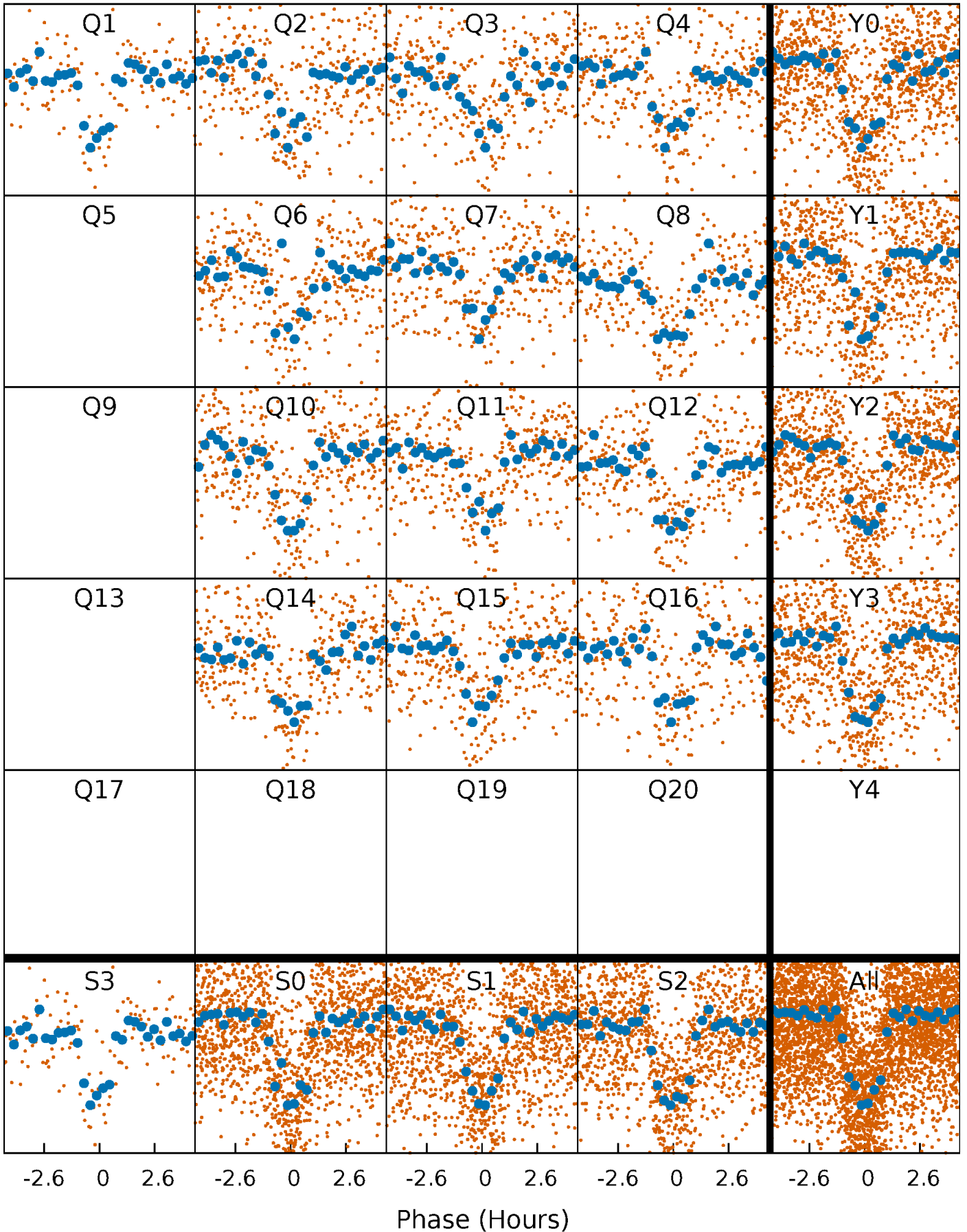


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



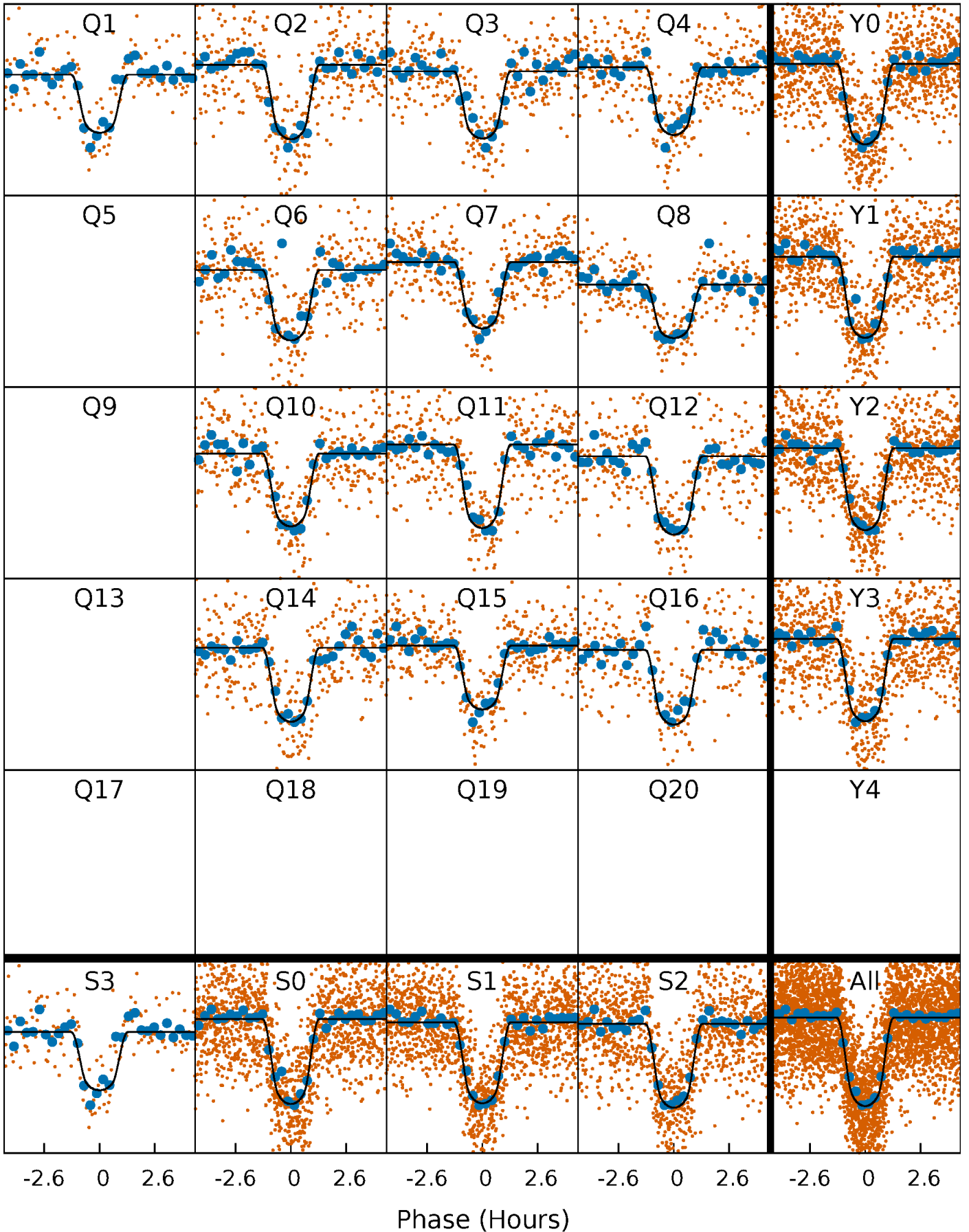
PDC Quarter-Phased Transit Curves

TCE 006020753-01 P= 4.069422 Days $T_0=134.393677$ (BKJD)



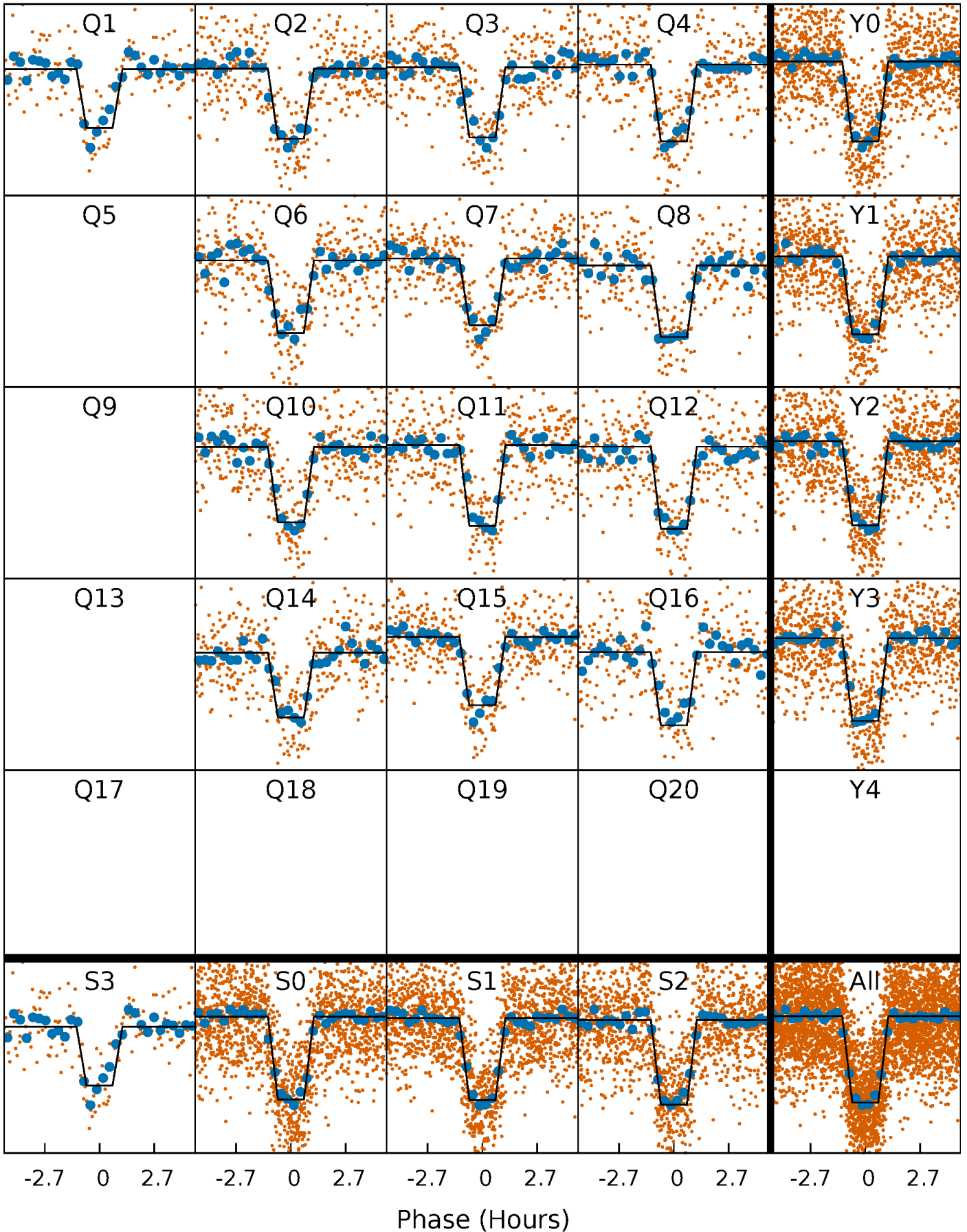
DV Quarter-Phased Transit Curves

TCE 006020753-01 P= 4.069422 Days $T_0=134.393677$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

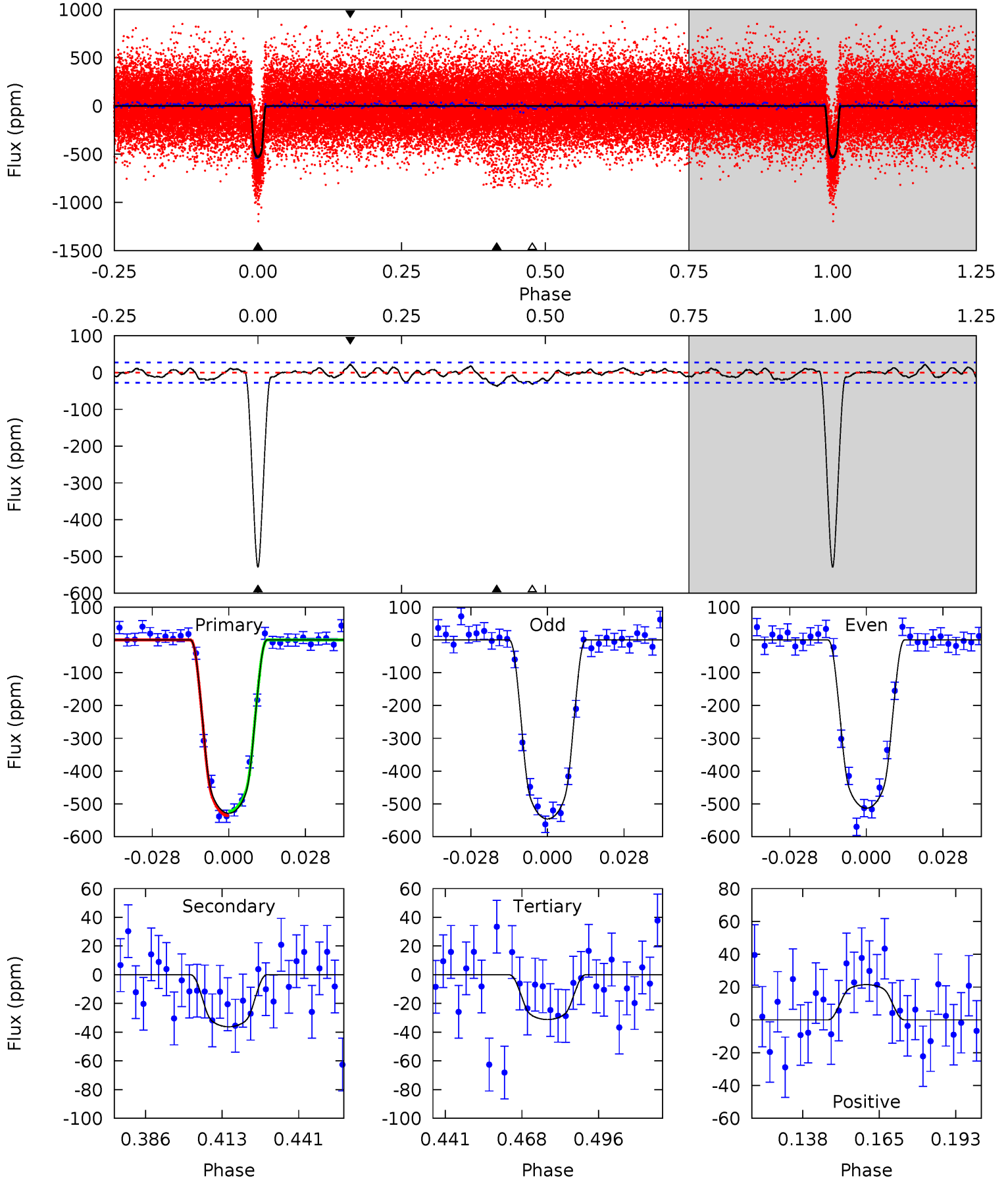
TCE 006020753-01 P= 4.069419 Days $T_0=134.394167$ (BKJD)



DV Model-Shift Uniqueness Test

006020753-01, P = 4.069422 Days, E = 130.324255 Days

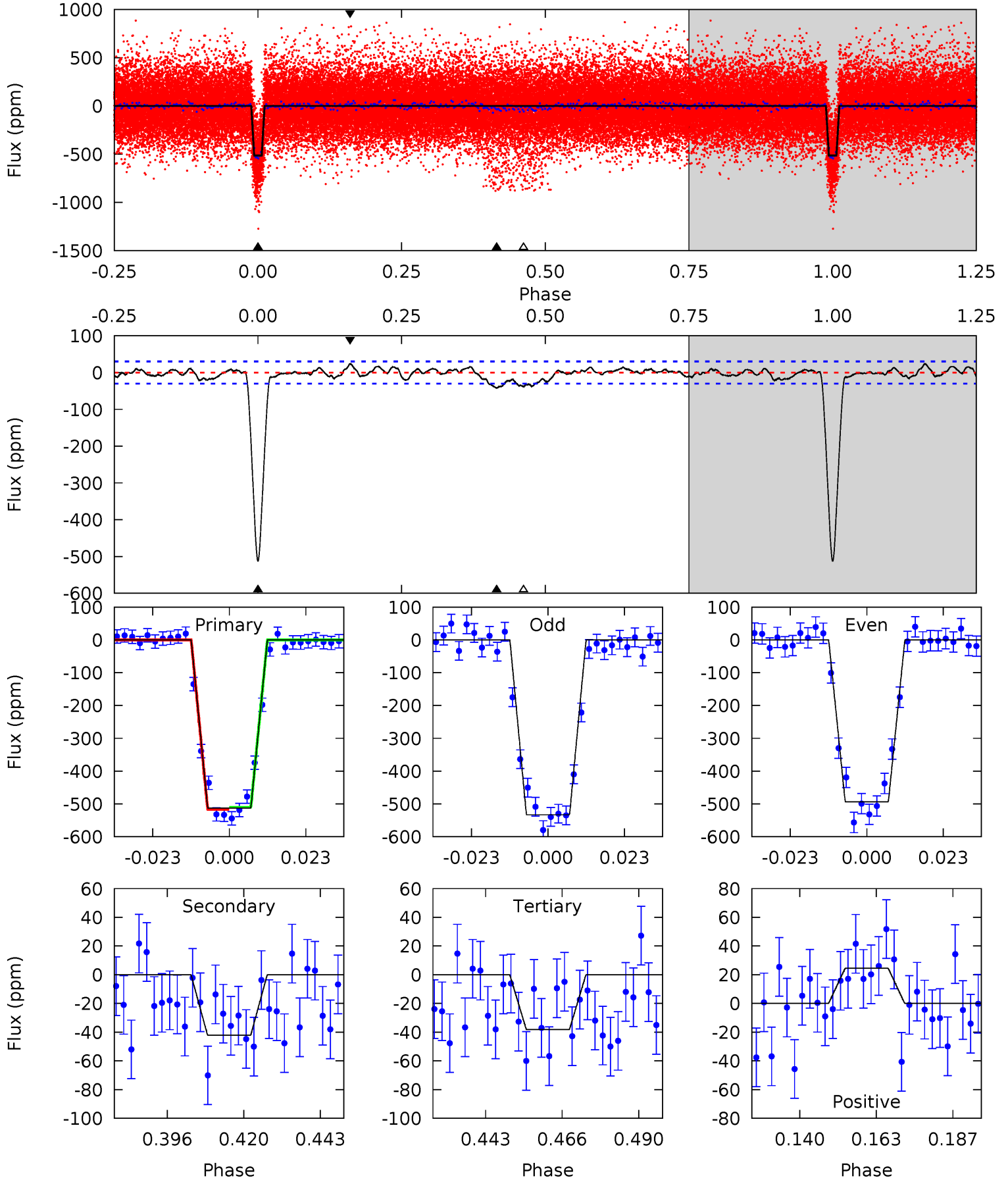
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
92.3	6.33	5.45	3.75	4.83	2.20	1.75	86.9	88.6	0.88	2.58	2.88	0.97	0.04	1.15



Alt Model-Shift Uniqueness Test

006020753-01, P = 4.069419 Days, E = 130.324748 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.4	6.77	6.13	3.93	4.86	2.27	1.80	76.3	78.5	0.64	2.84	3.19	0.97	0.05	0.49



Stellar Parameters For KIC 006020753

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4671^{+93}_{-93}	$4.636^{+0.012}_{-0.042}$	$0.000^{+0.150}_{-0.150}$	$0.680^{+0.046}_{-0.021}$	$0.750^{+0.030}_{-0.048}$	$3.359^{+0.219}_{-0.544}$
	+2%/-2%	+0%/-1%	+inf%/-inf%	+7%/-3%	+4%/-6%	+7%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 006020753-01 / KOI 0657.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-36 ± 6	$2.00^{+0.16}_{-0.16}$	1129^{+25}_{-28}	2859^{+100}_{-86}	10^{+2}_{-2}
Alt.	-42 ± 6	$1.73^{+0.16}_{-0.15}$	1130^{+29}_{-27}	3049^{+117}_{-104}	16^{+4}_{-3}

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

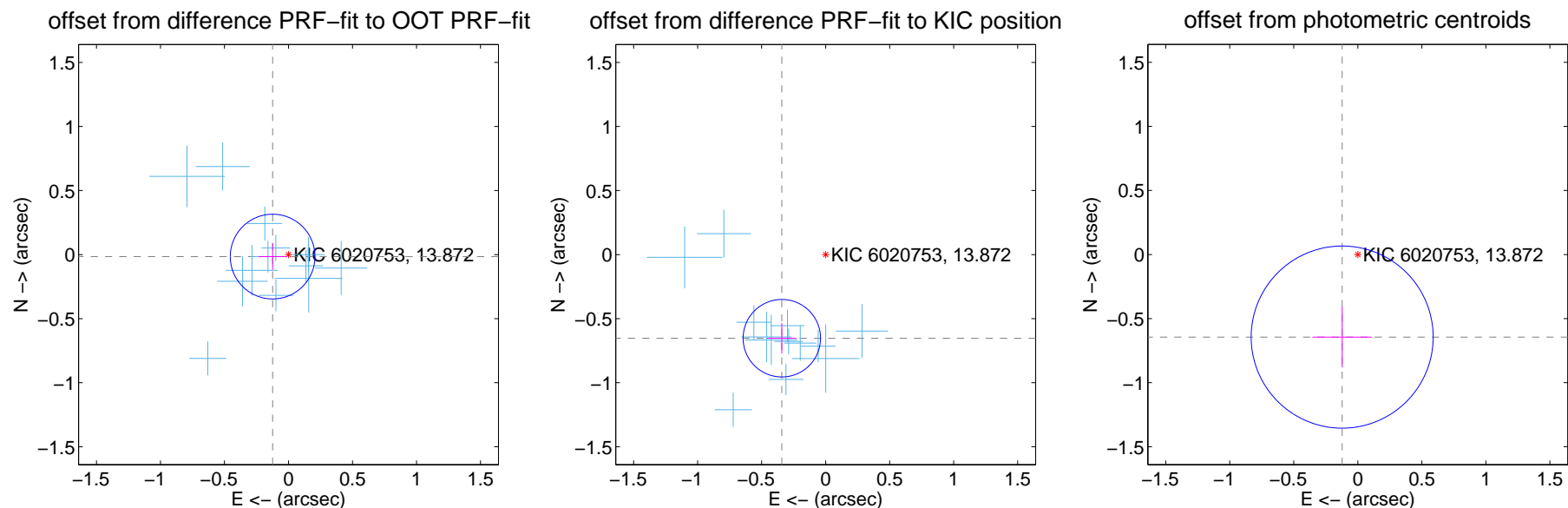
DV Centroid Data

Supplemental centroid analysis for 006020753-01. Kepler magnitude: 13.87. Transit SNR 61.49

There are 13 quarters with good PRF difference image offsets

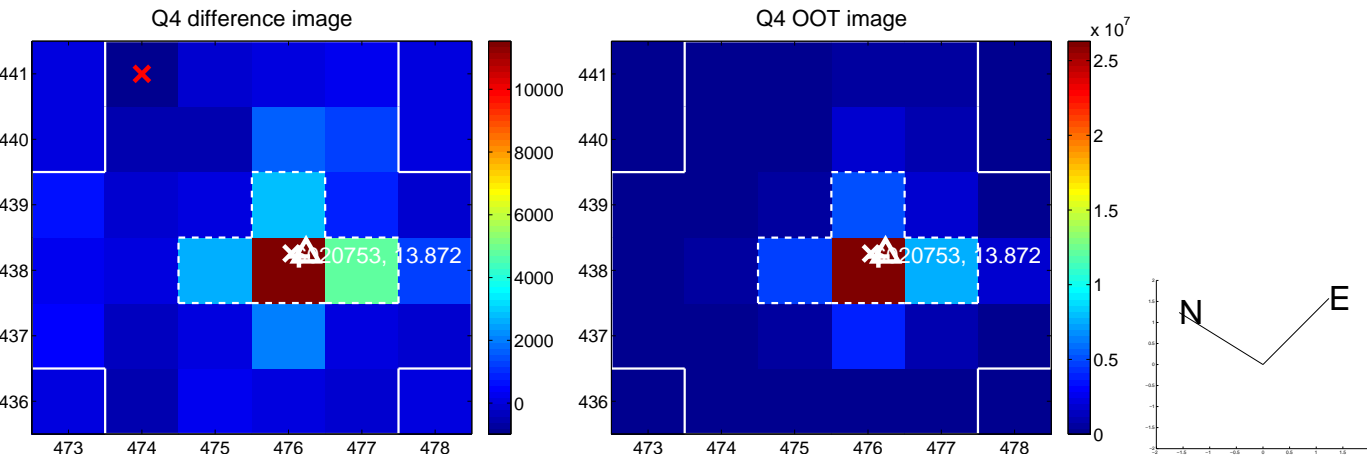
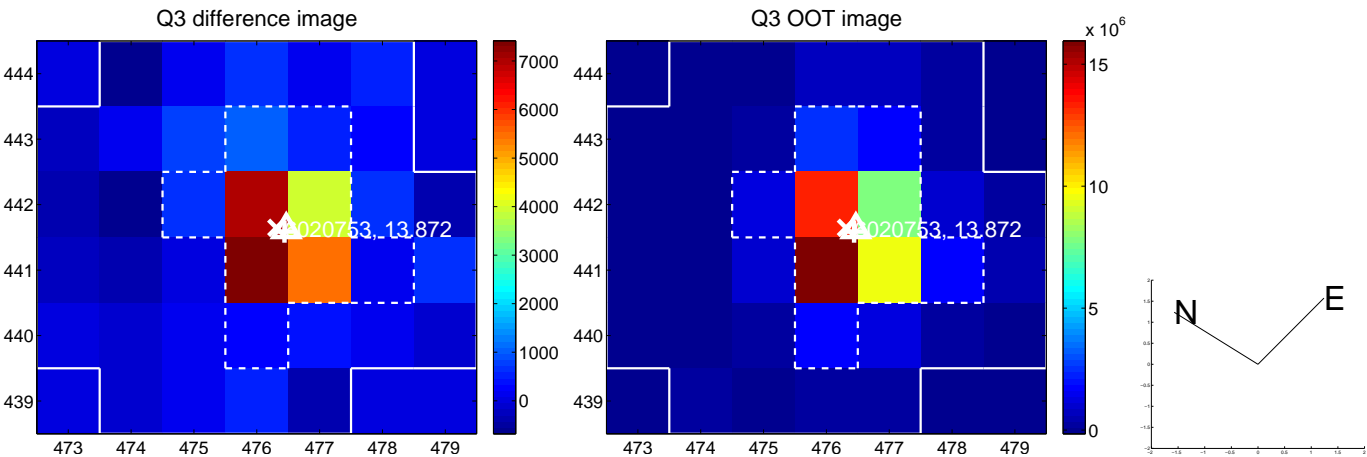
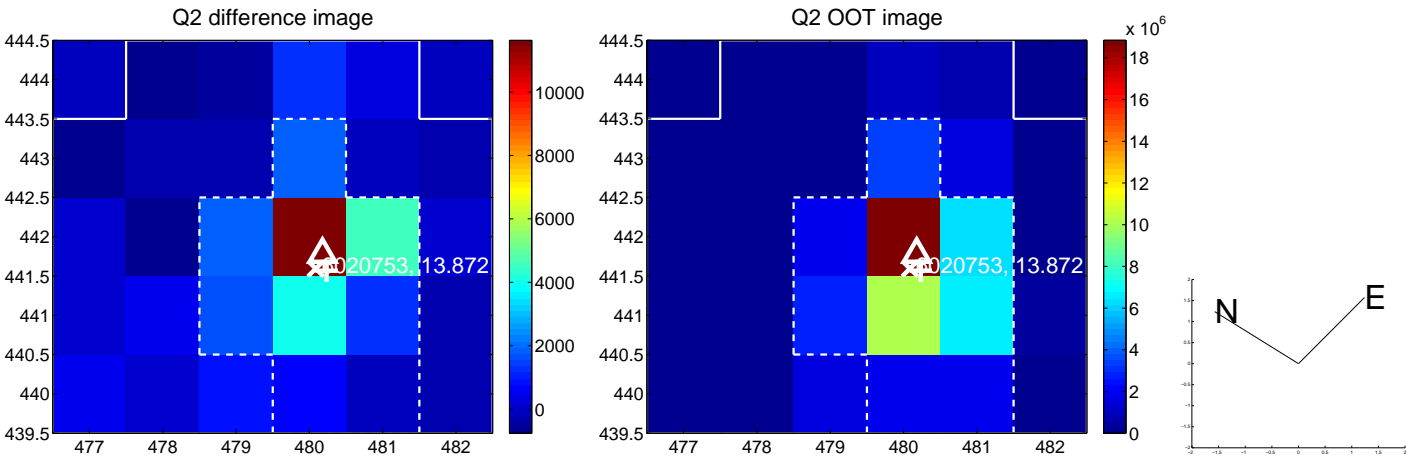
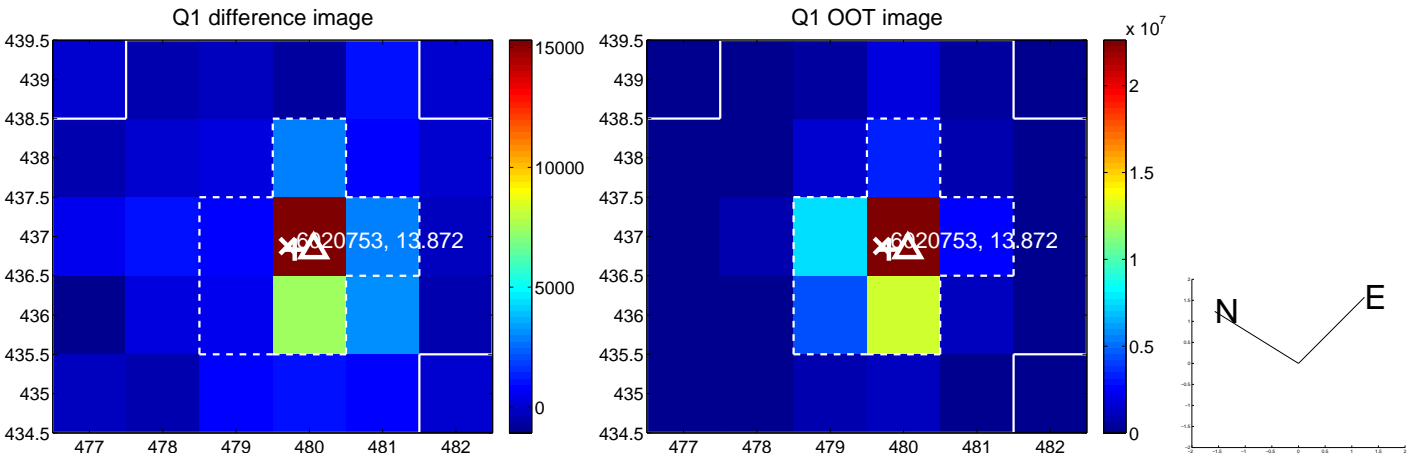
The direct PRF centroid is offset from the target star catalog position by about 0.65 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.125 ± 0.110	1.13	0.124 ± 0.110	-0.016 ± 0.104
PRF-fit source offset from KIC position	0.737 ± 0.101	7.31	0.342 ± 0.115	-0.653 ± 0.118
photometric centroid source offset	0.66 ± 0.24	2.77	0.12 ± 0.23	-0.64 ± 0.24

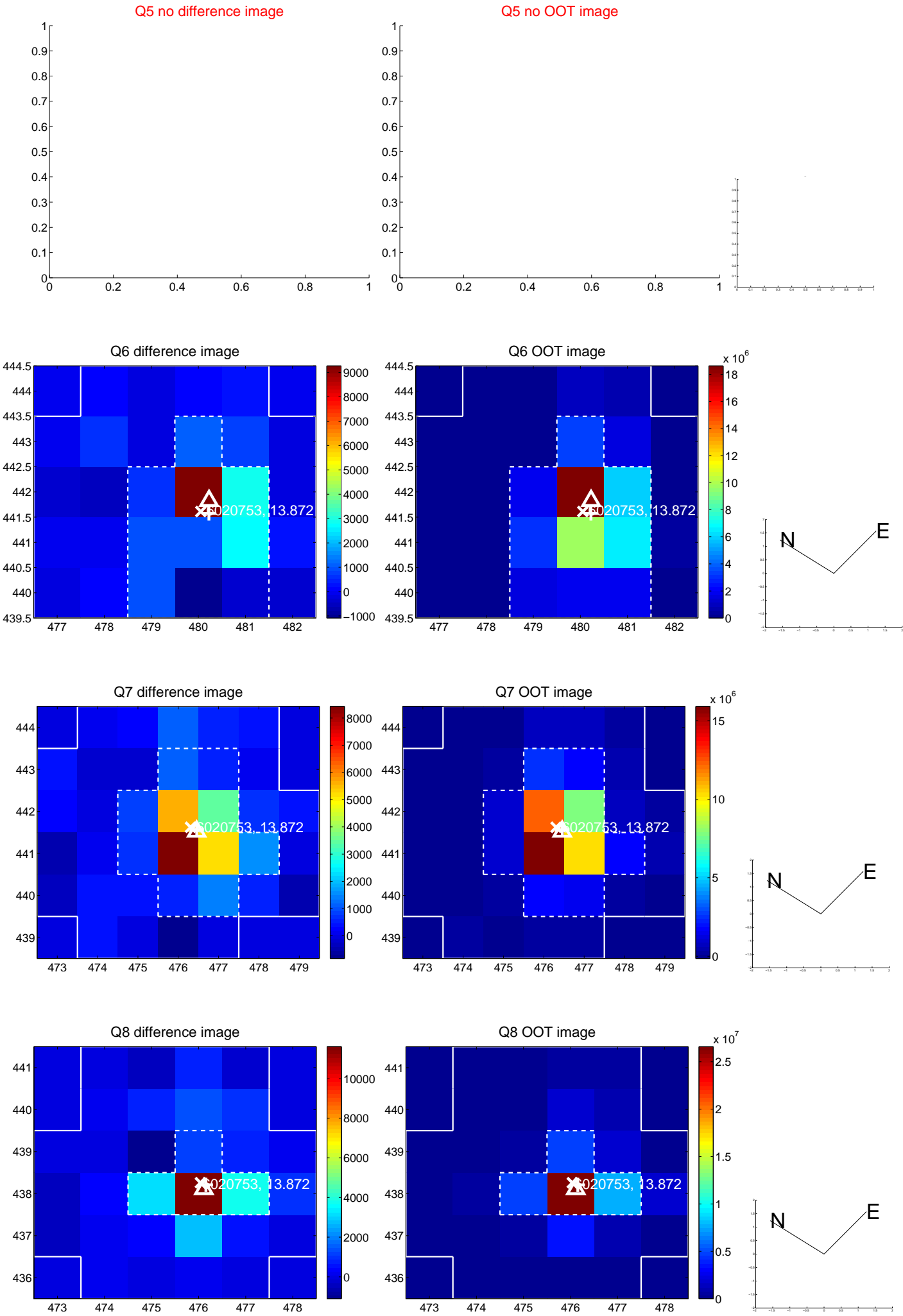


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

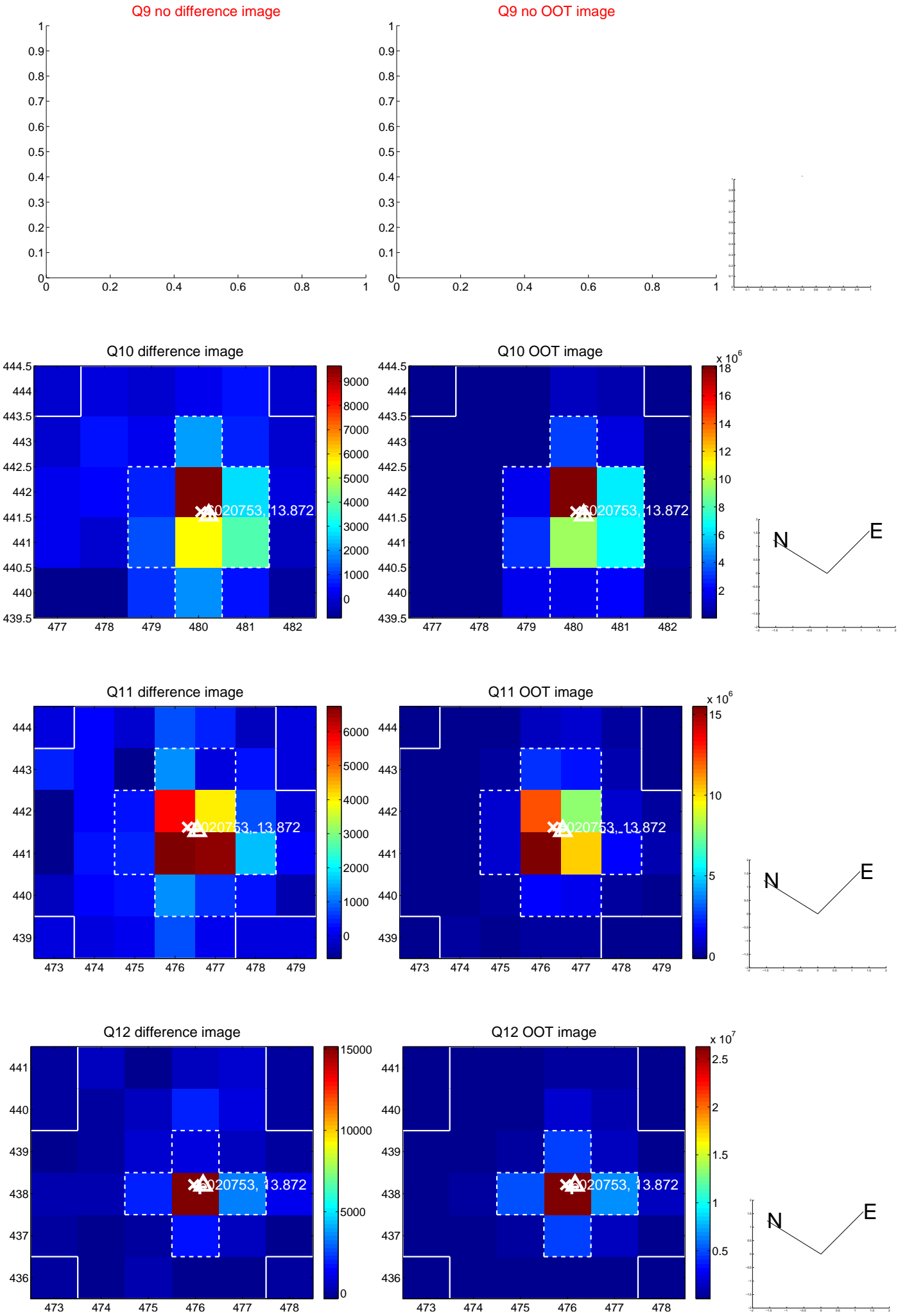
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



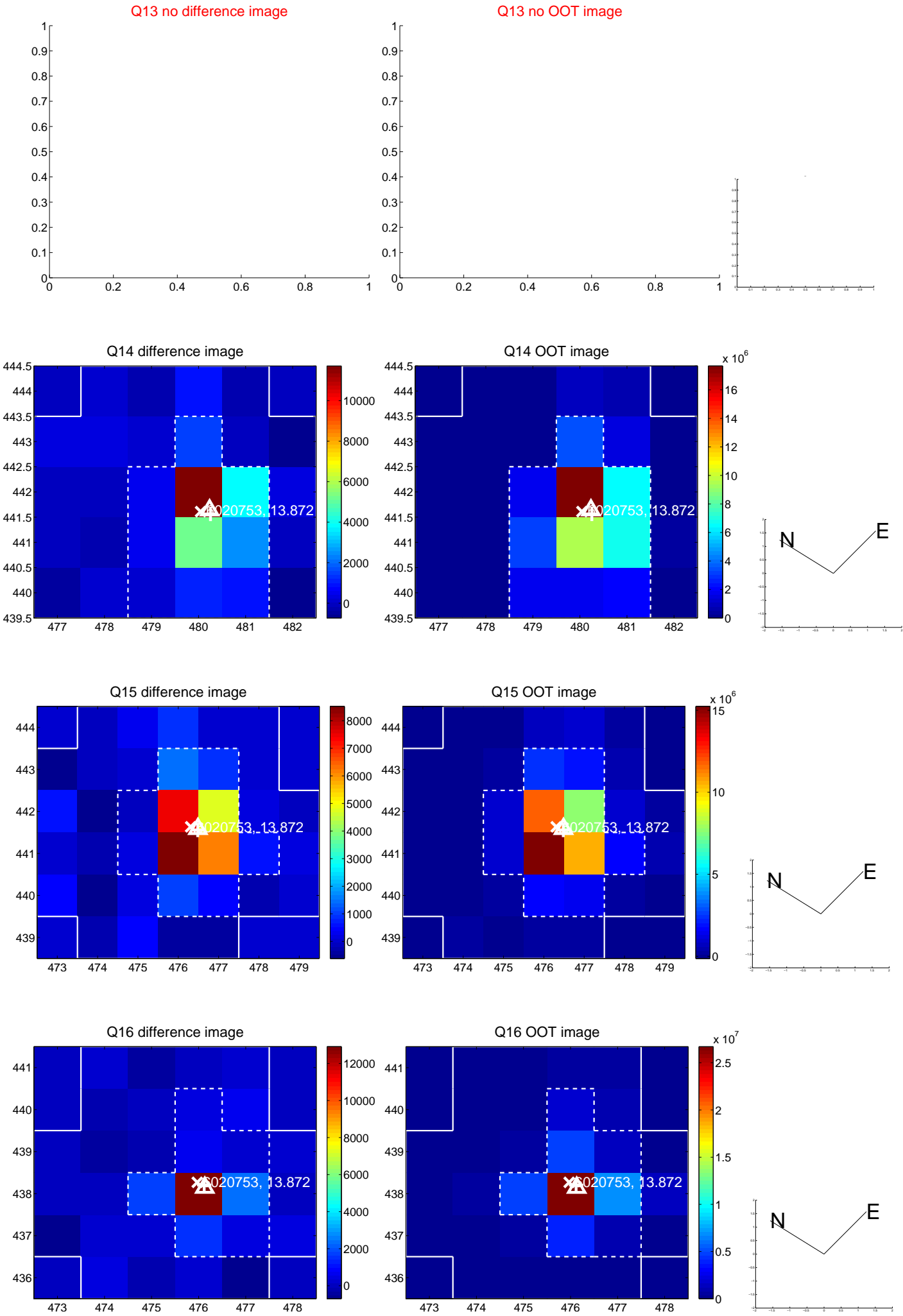
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



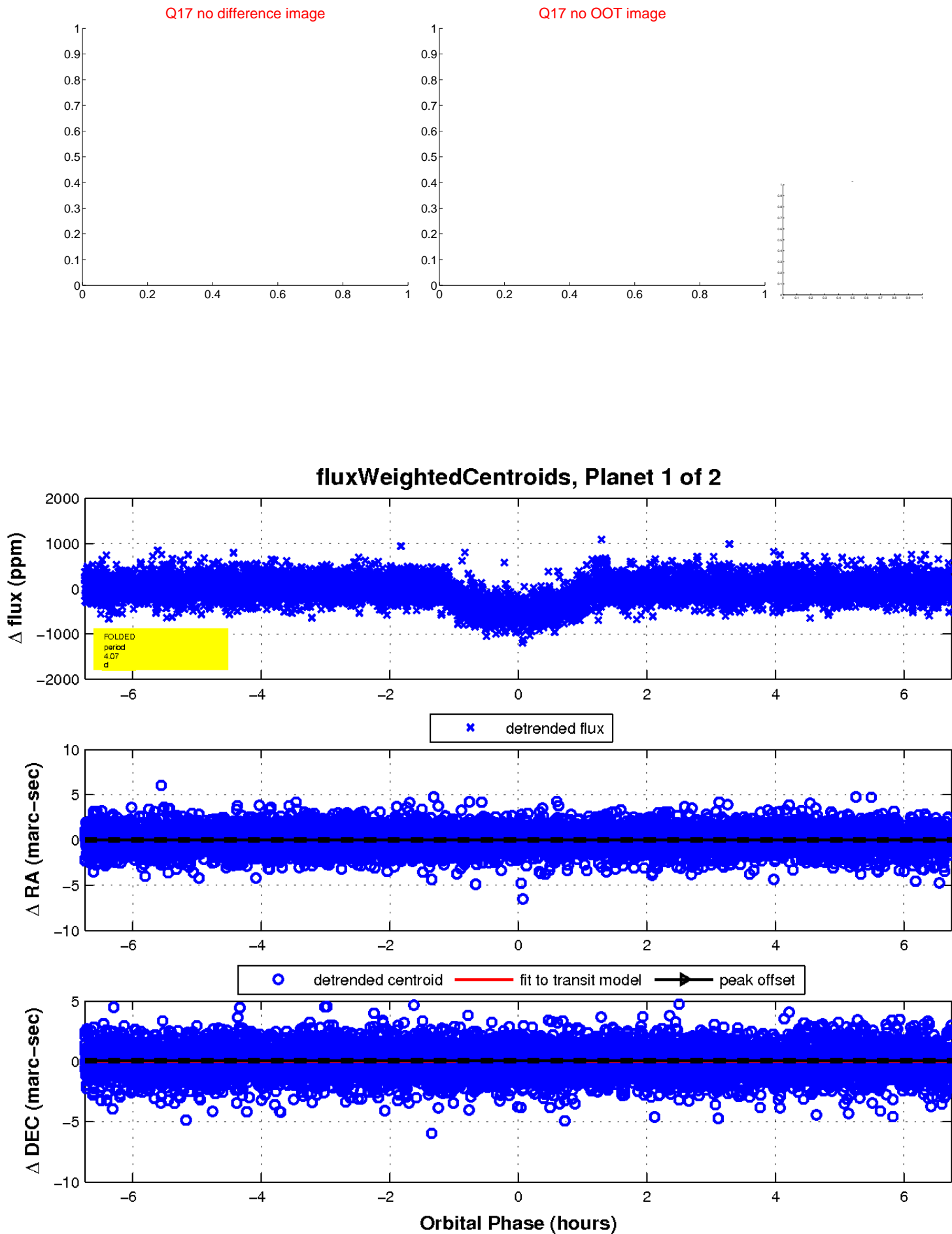
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

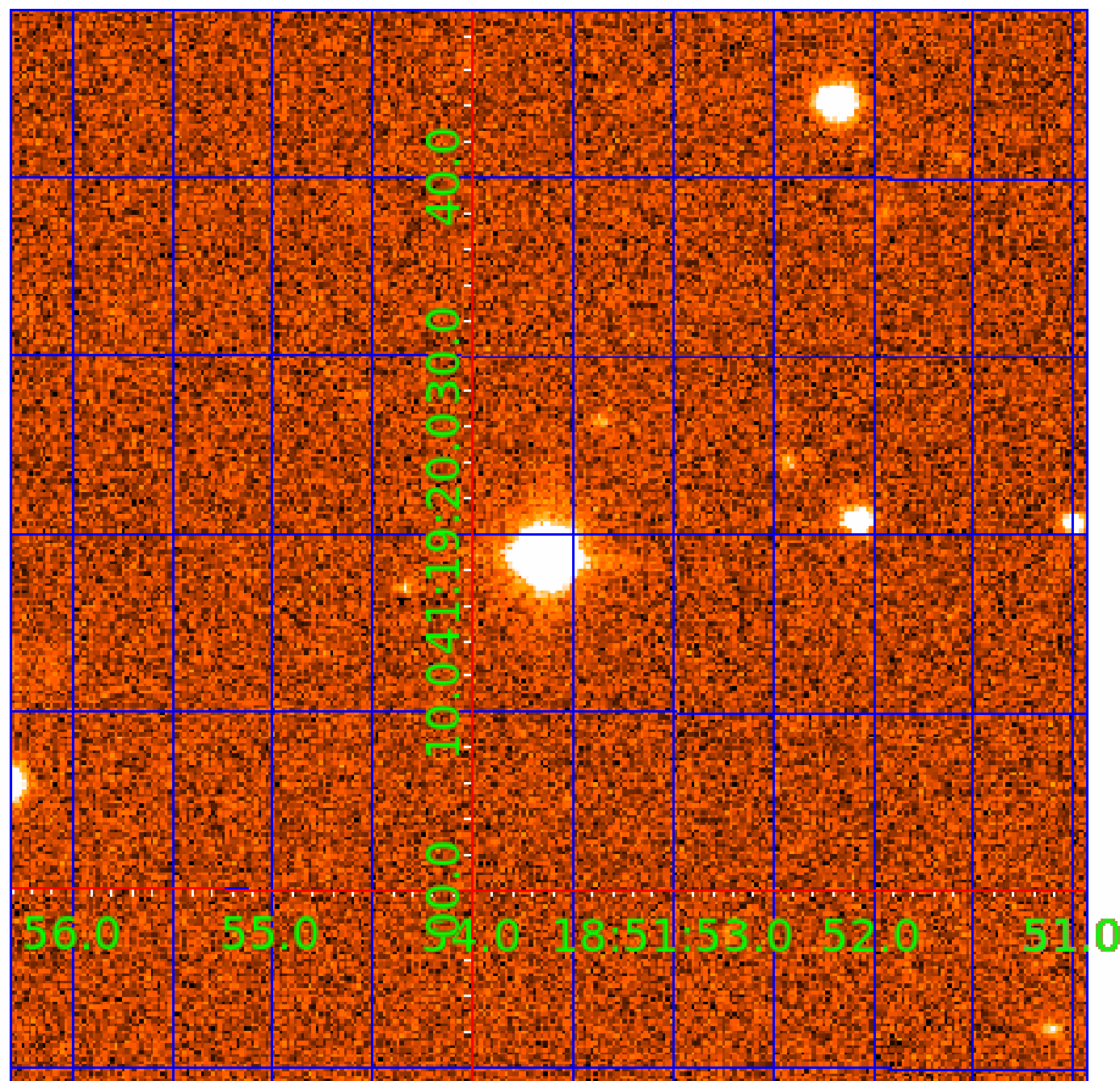


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006020753

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})
006020753-01	OBS	0657.01	4.069422	134.393677	537.1	2.248	53.6	61.5	0.68	4671	1.96	97.76
006020753-02	OBS	0657.02	16.282462	131.951409	783.9	3.182	48.7	52.4	0.68	4671	2.32	15.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006020753-01	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
006020753-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

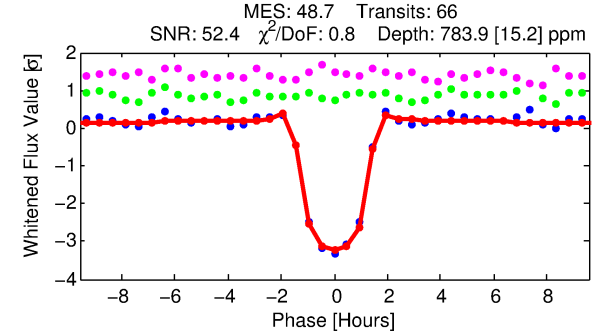
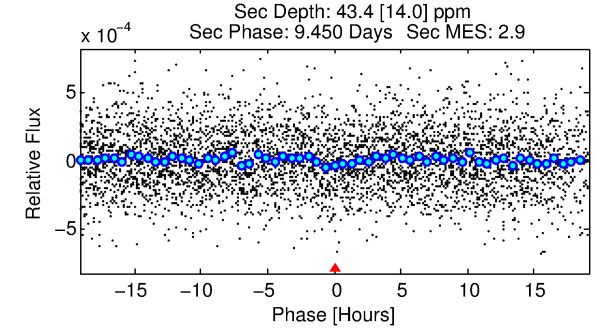
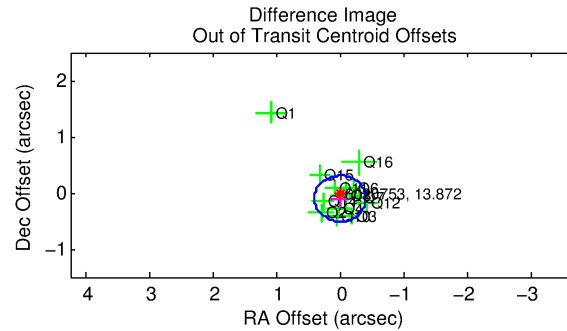
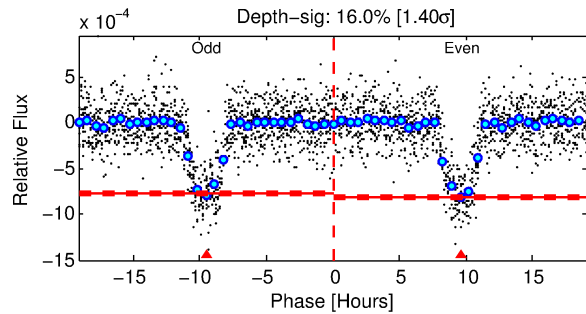
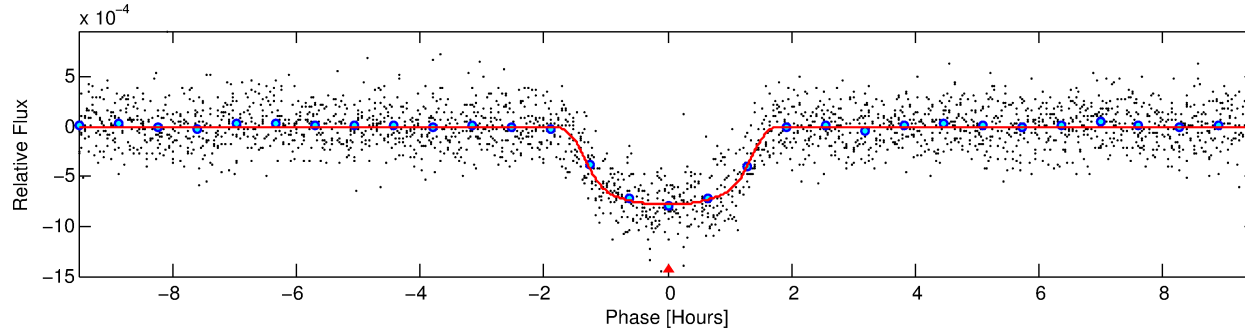
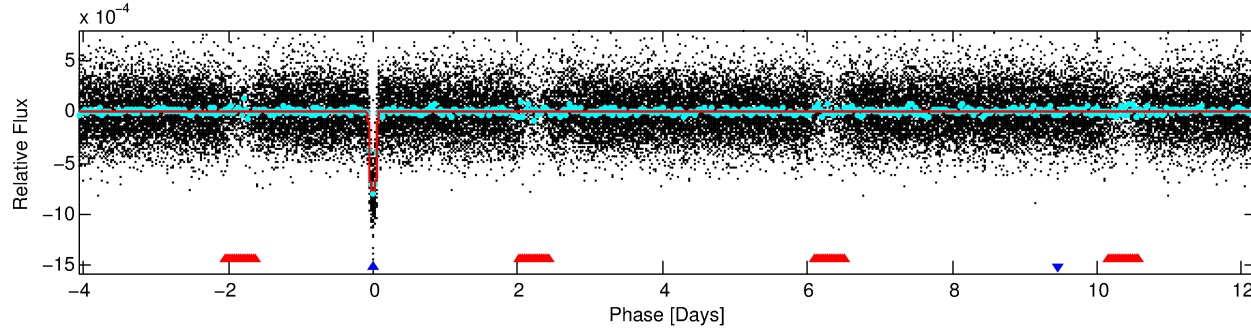
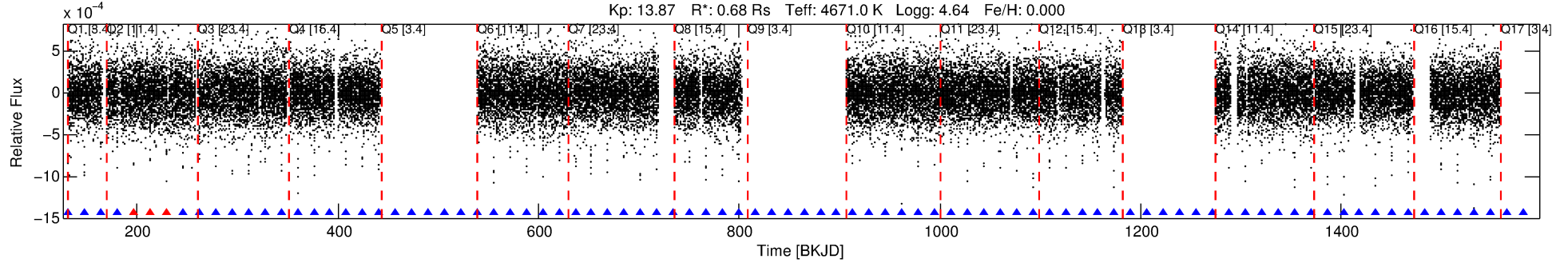
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006020753-02

No Significant Match Found

DV One-Page Summary

KIC: 6020753 Candidate: 2 of 2 Period: 16.282 d
KOI: K00657.02 Name: Kepler-202c Corr: 0.952



DV Fit Results:

Period = 16.28246 [0.00002] d
Epoch = 131.9514 [0.0012] BKJD
Rp/R* = 0.0313 [0.0018]
a/R* = 20.26 [4.12]
b = 0.89 [0.05]
Seff = 15.39 [1.72]
Teq = 505 [14] K
Rp = 2.32 [0.21] Re
a = 0.1132 [0.0063] AU
Ag = 56.88 [19.98] [2.80 σ]
Teffp = 2144 [188] K [8.67 σ]

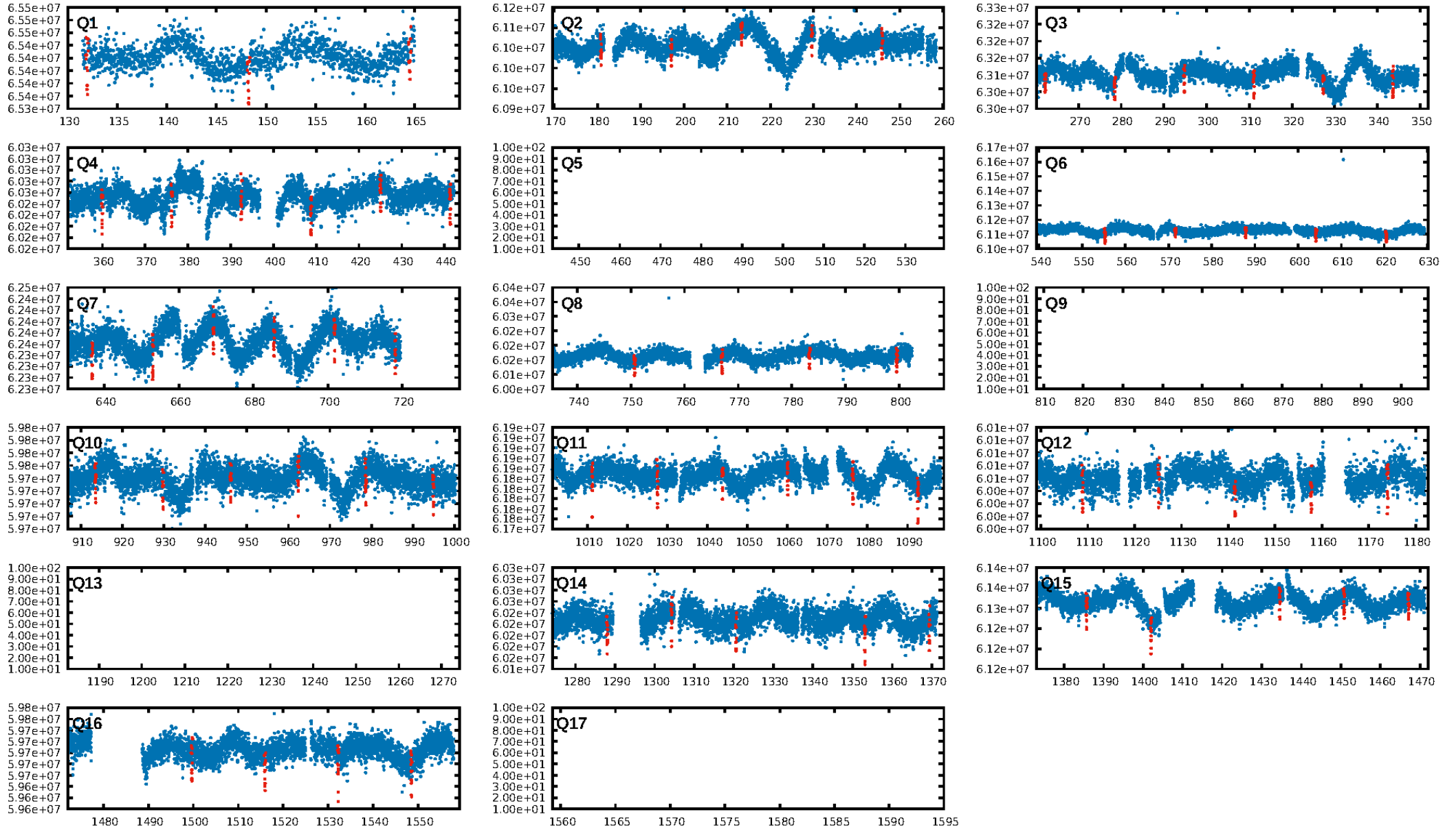
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [75.24 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.95 [60/63]
GhostDiagnostic-chr: 3.982
Centroid-sig: 0.0%
Centroid-so: 1.188 arcsec [4.33 σ]
OotOffset-rm: 0.104 arcsec [0.77 σ]
KicOffset-rm: 0.762 arcsec [5.63 σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
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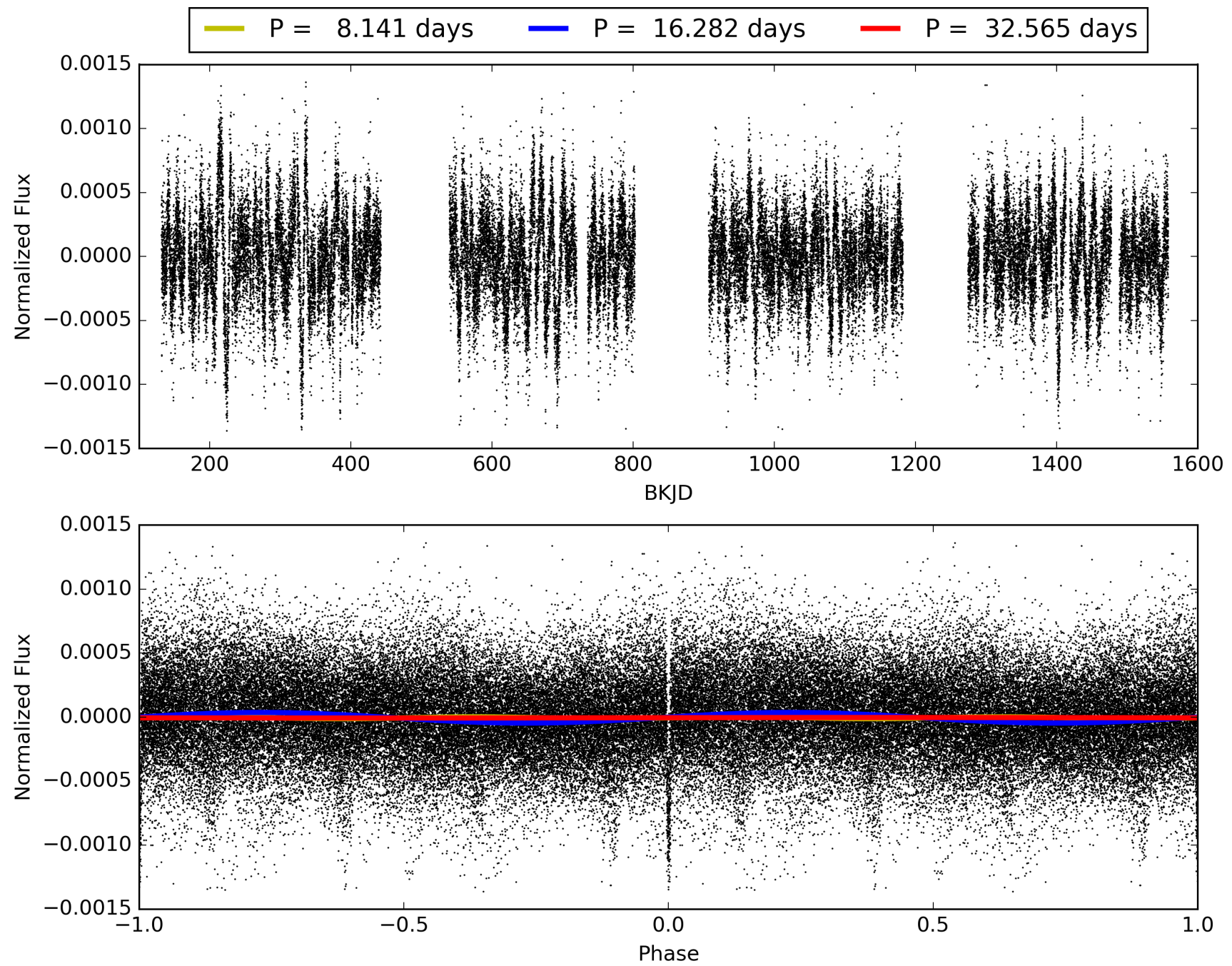
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:06:21 Z

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

TCE 006020753-02, PDC Light Curves

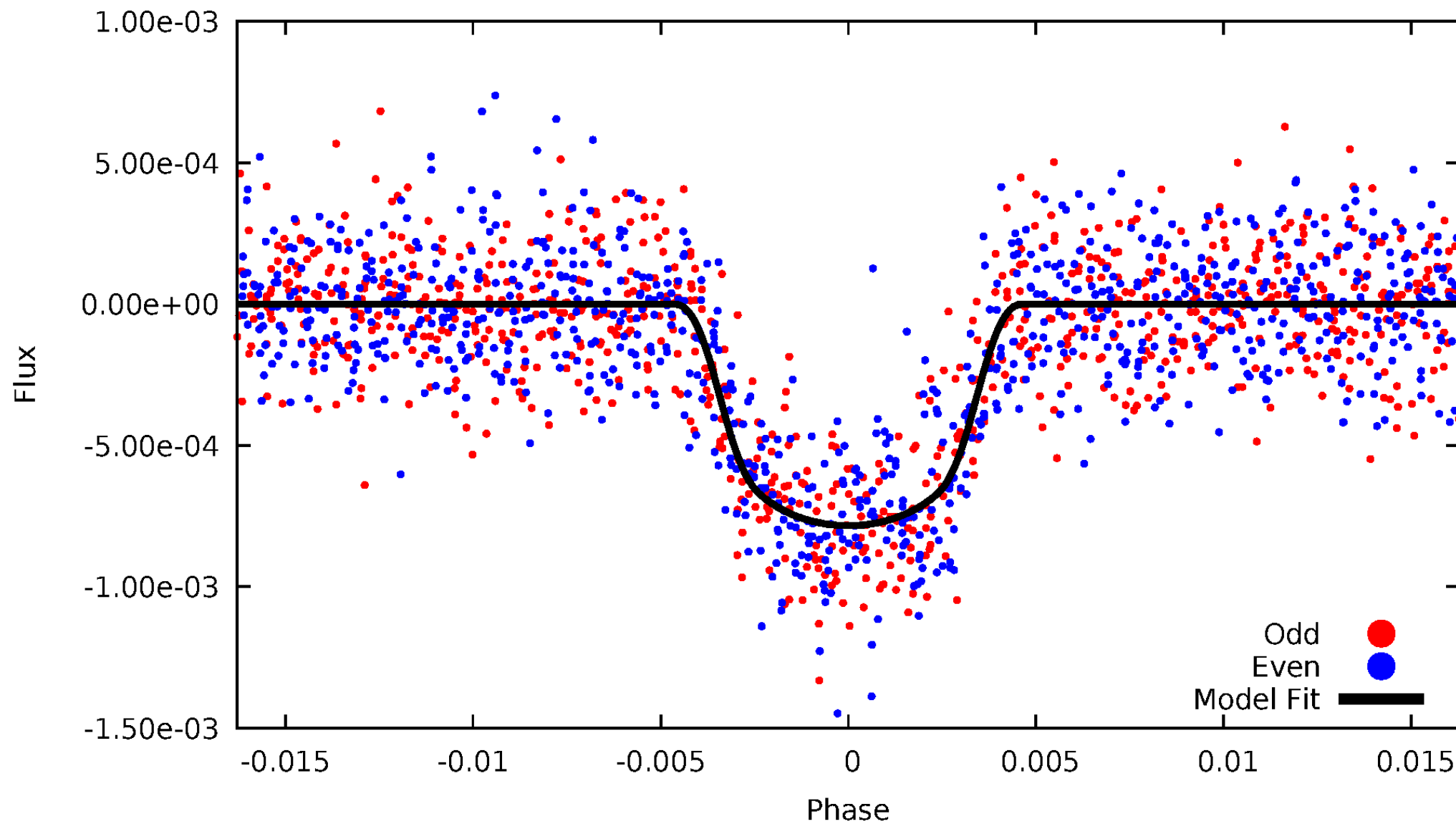


TCE 006020753-02



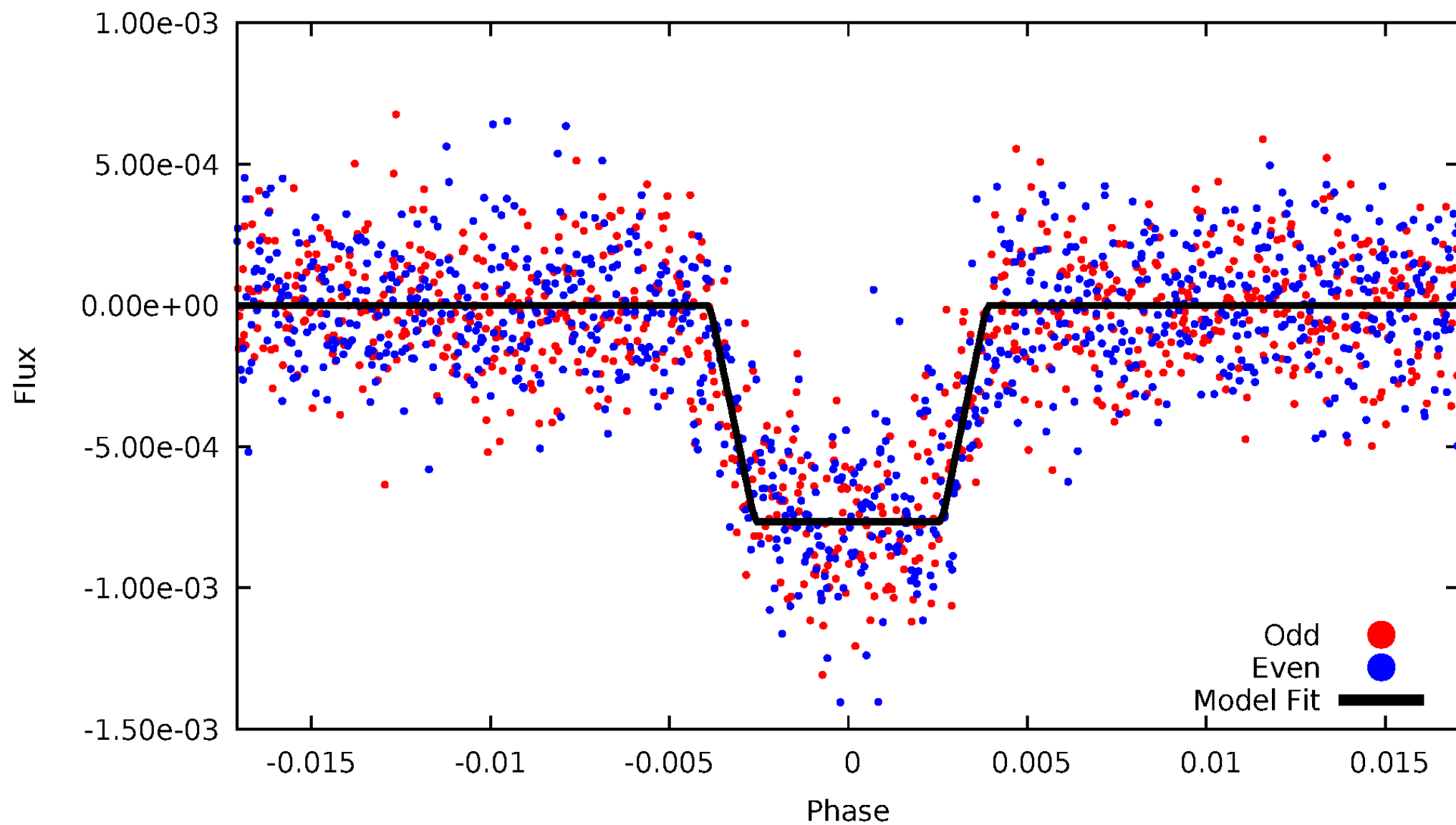
DV Odd/Even

TCE 006020753-02



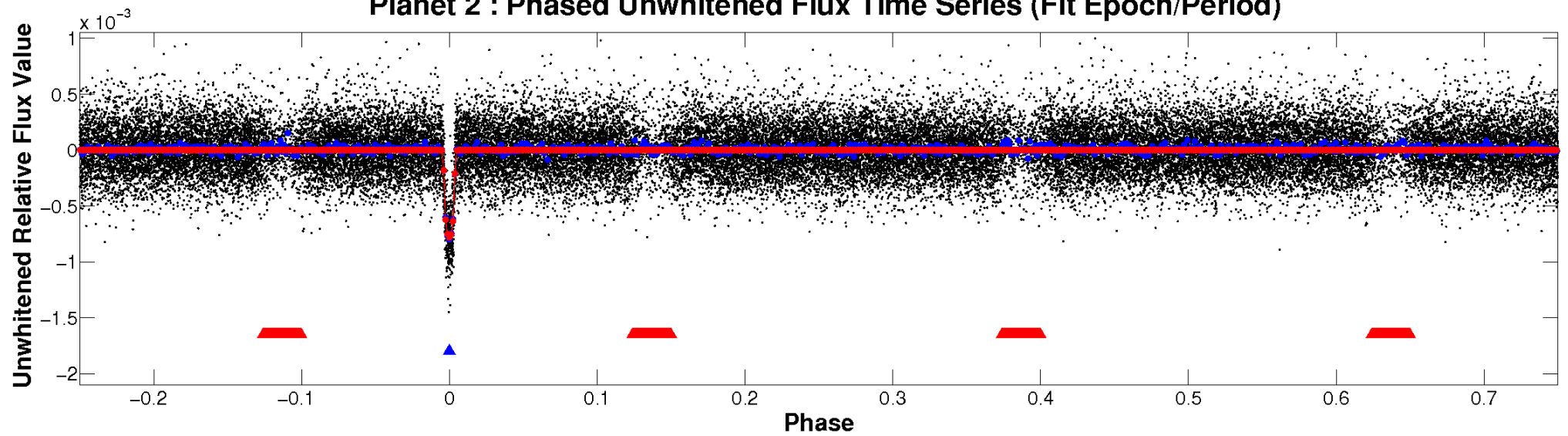
ALT Odd/Even

TCE 006020753-02

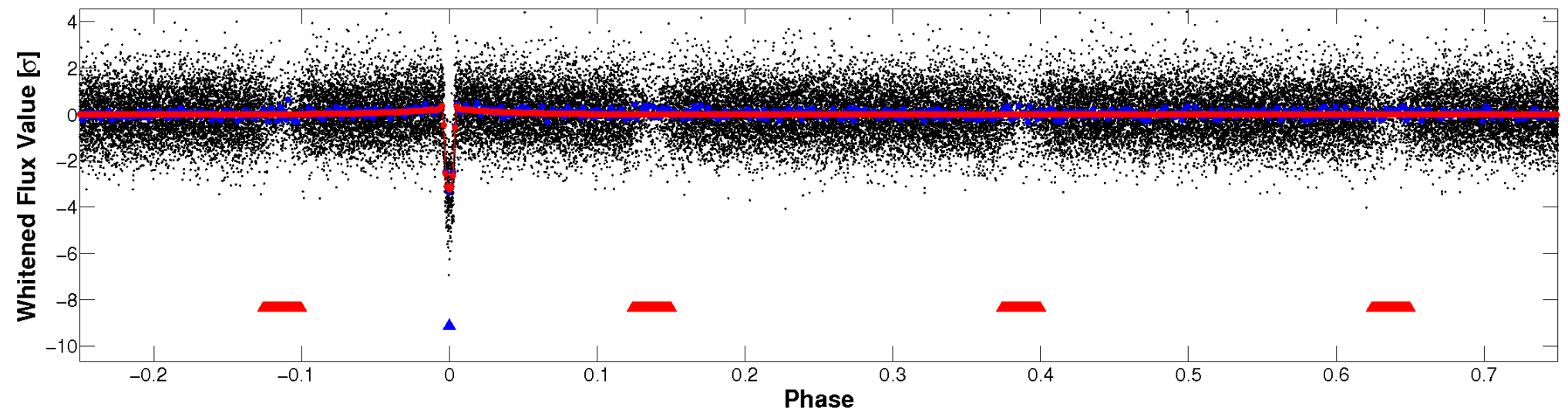


Non-Whitened Vs. Whitened Light Curve

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

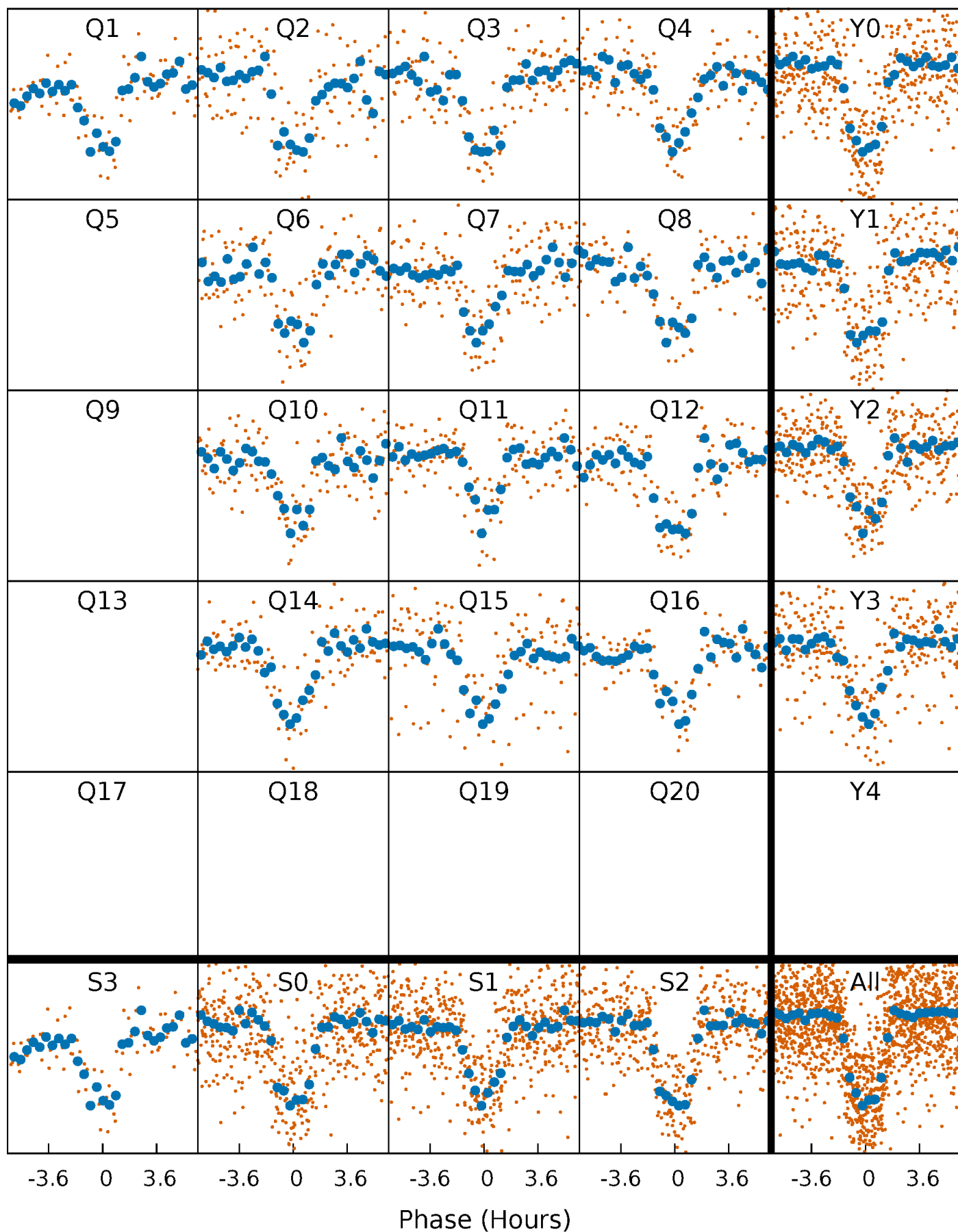


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



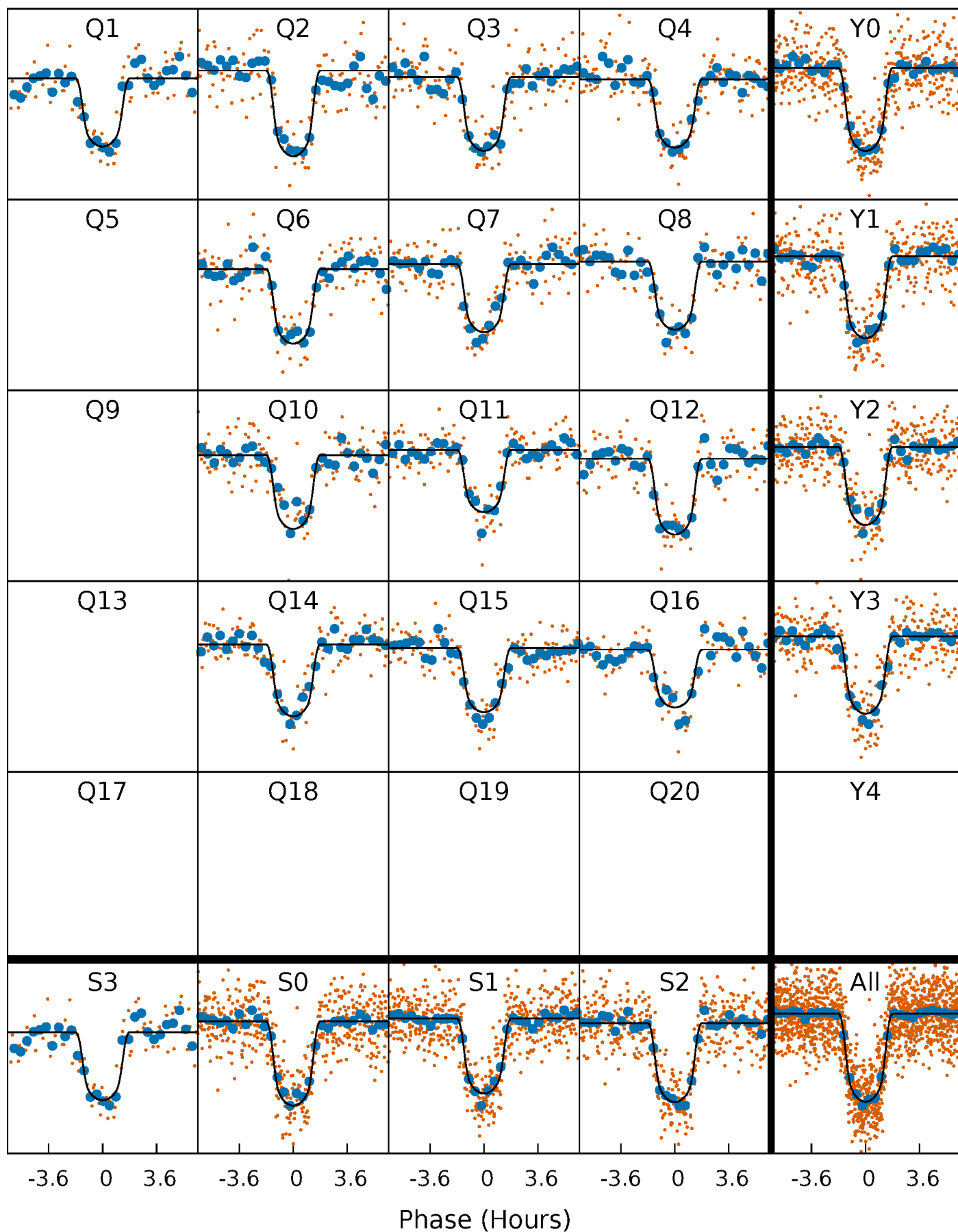
PDC Quarter-Phased Transit Curves

TCE 006020753-02 P= 16.282462 Days $T_0=131.951409$ (BKJD)



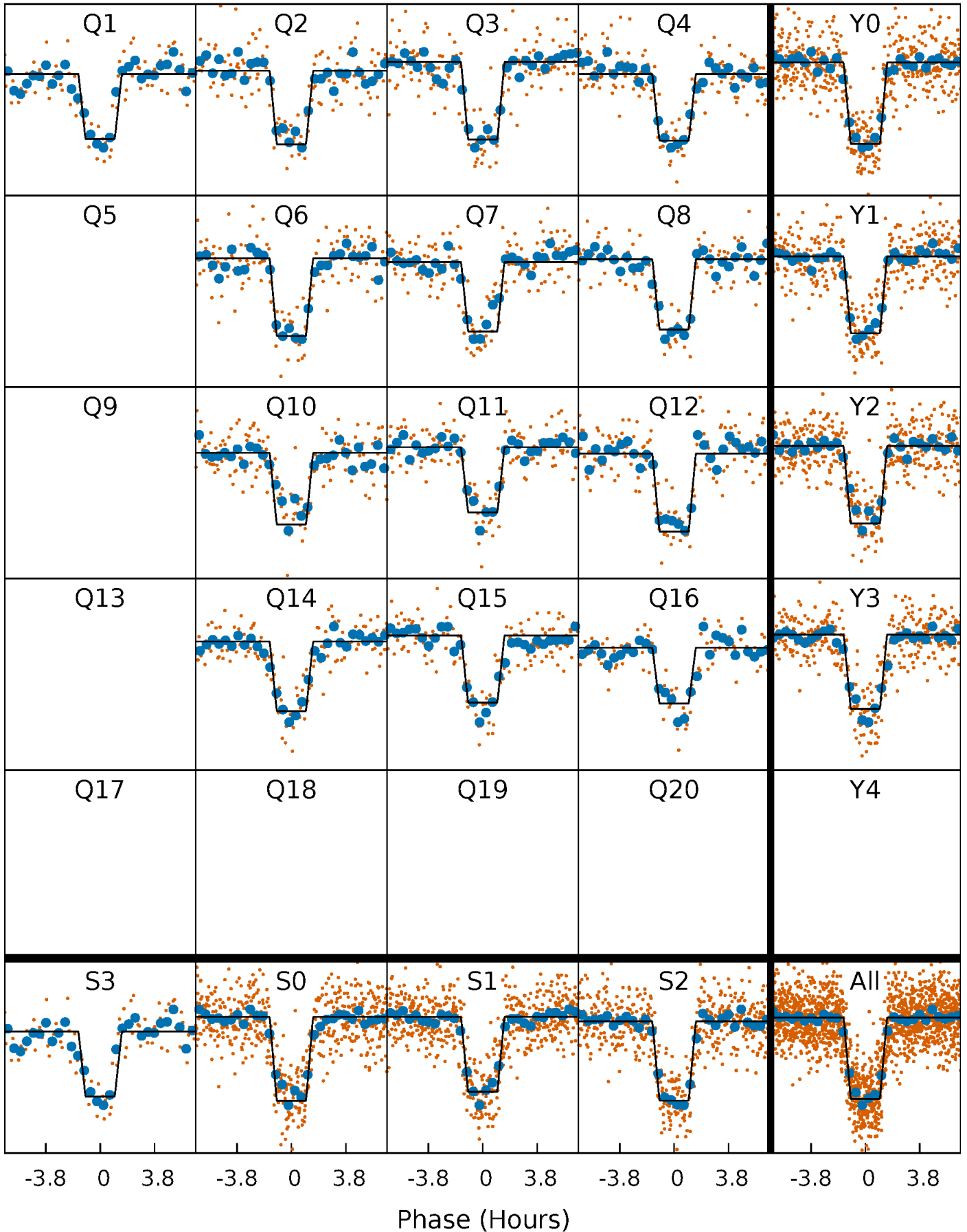
DV Quarter-Phased Transit Curves

TCE 006020753-02 P= 16.282462 Days $T_0=131.951409$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

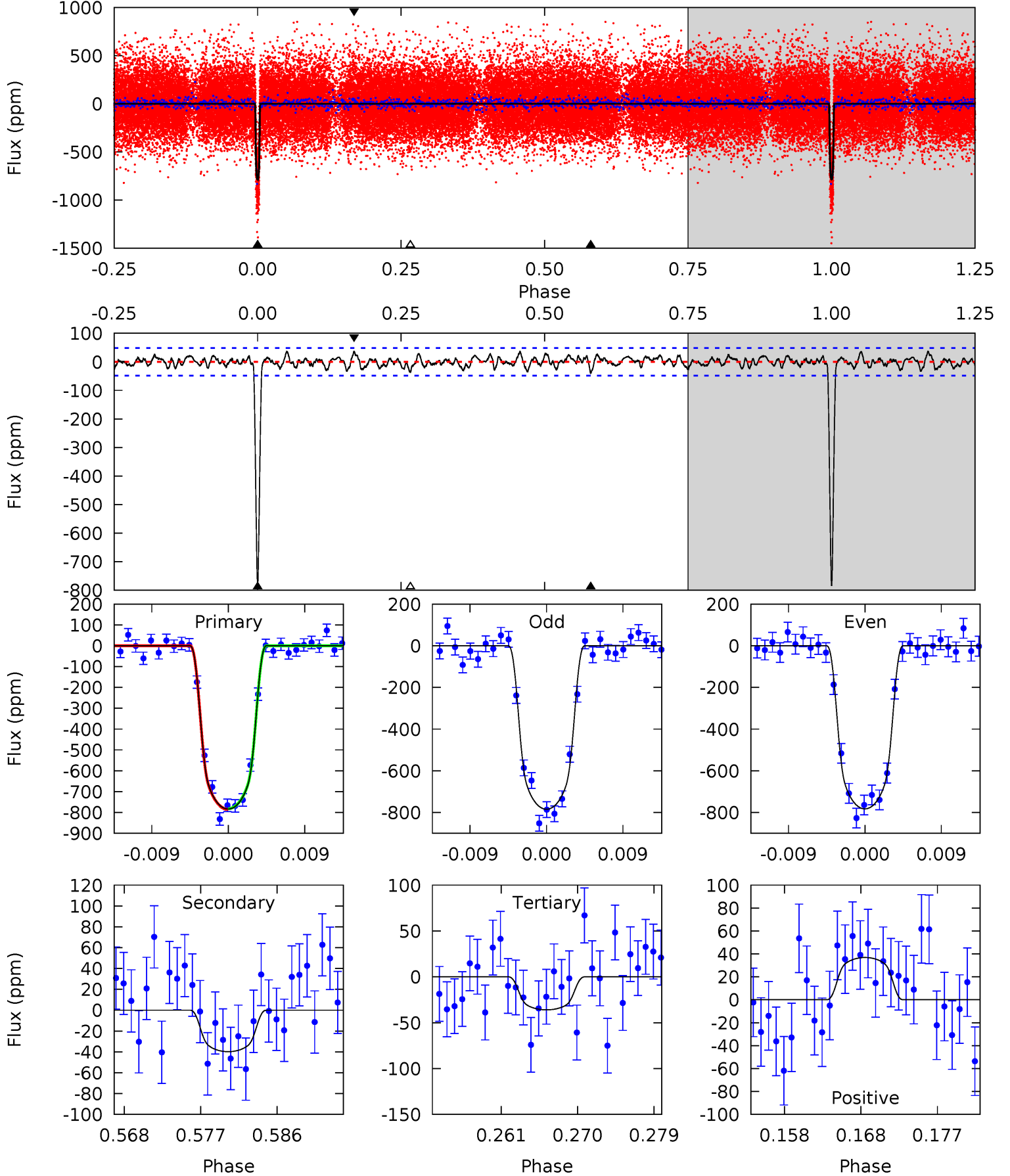
TCE 006020753-02 P= 16.282387 Days $T_0=131.954438$ (BKJD)



DV Model-Shift Uniqueness Test

006020753-02, P = 16.282462 Days, E = 115.668947 Days

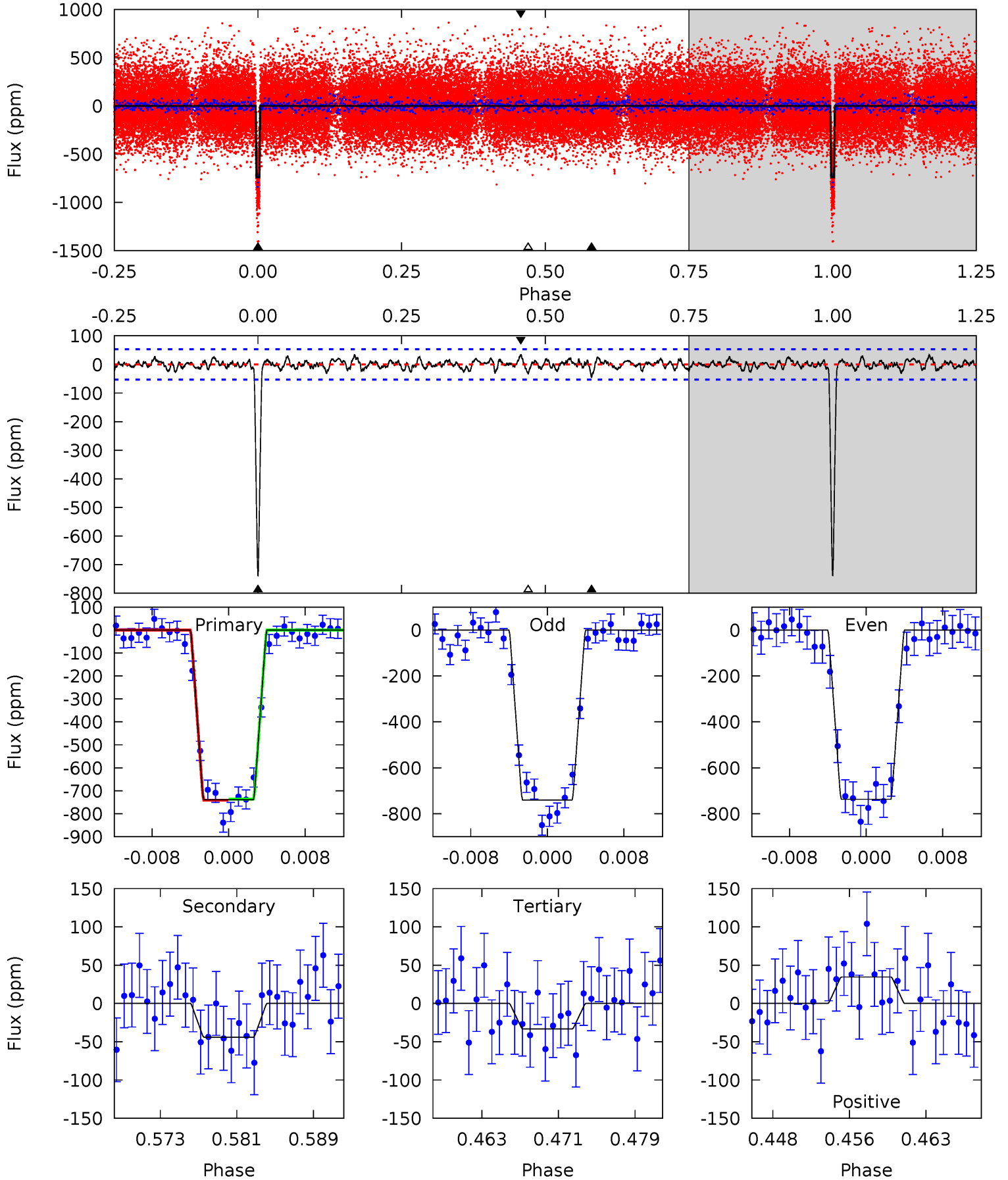
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.5	4.14	3.74	3.83	5.04	2.60	1.36	77.7	77.6	0.40	0.31	0.09	0.98	0.04	0.19



Alt Model-Shift Uniqueness Test

006020753-02, P = 16.282387 Days, E = 115.672051 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.8	4.23	3.19	3.32	5.07	2.66	1.09	67.6	67.5	1.04	0.91	0.15	0.99	0.04	0.21



Stellar Parameters For KIC 006020753

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4671^{+93}_{-93}	$4.636^{+0.012}_{-0.042}$	$0.000^{+0.150}_{-0.150}$	$0.680^{+0.046}_{-0.021}$	$0.750^{+0.030}_{-0.048}$	$3.359^{+0.219}_{-0.544}$
	+2%/-2%	+0%/-1%	+inf%/-inf%	+7%/-3%	+4%/-6%	+7%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 006020753-02 / KOI 0657.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-40 ± 10	$2.37^{+0.17}_{-0.15}$	712^{+16}_{-17}	2775^{+107}_{-114}	49^{+15}_{-13}
Alt.	-44 ± 10	$2.09^{+0.16}_{-0.14}$	711^{+17}_{-16}	2910^{+120}_{-111}	70^{+22}_{-17}

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

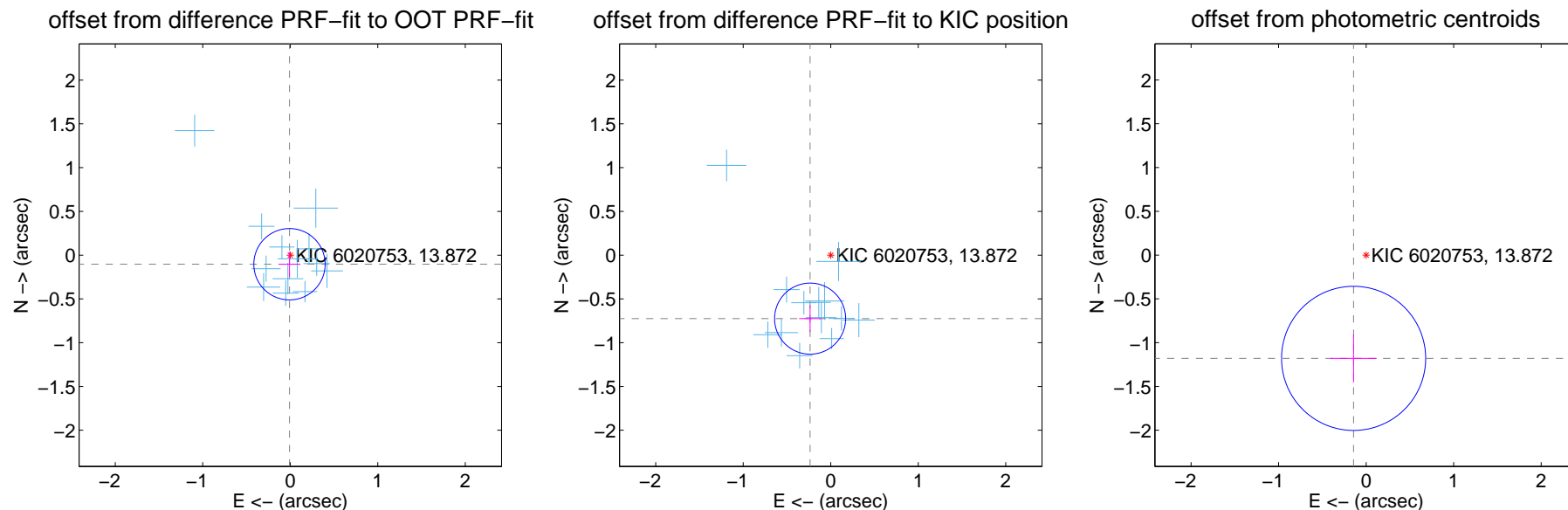
DV Centroid Data

Supplemental centroid analysis for 006020753-02. Kepler magnitude: 13.87. Transit SNR 52.40

There are 13 quarters with good PRF difference image offsets

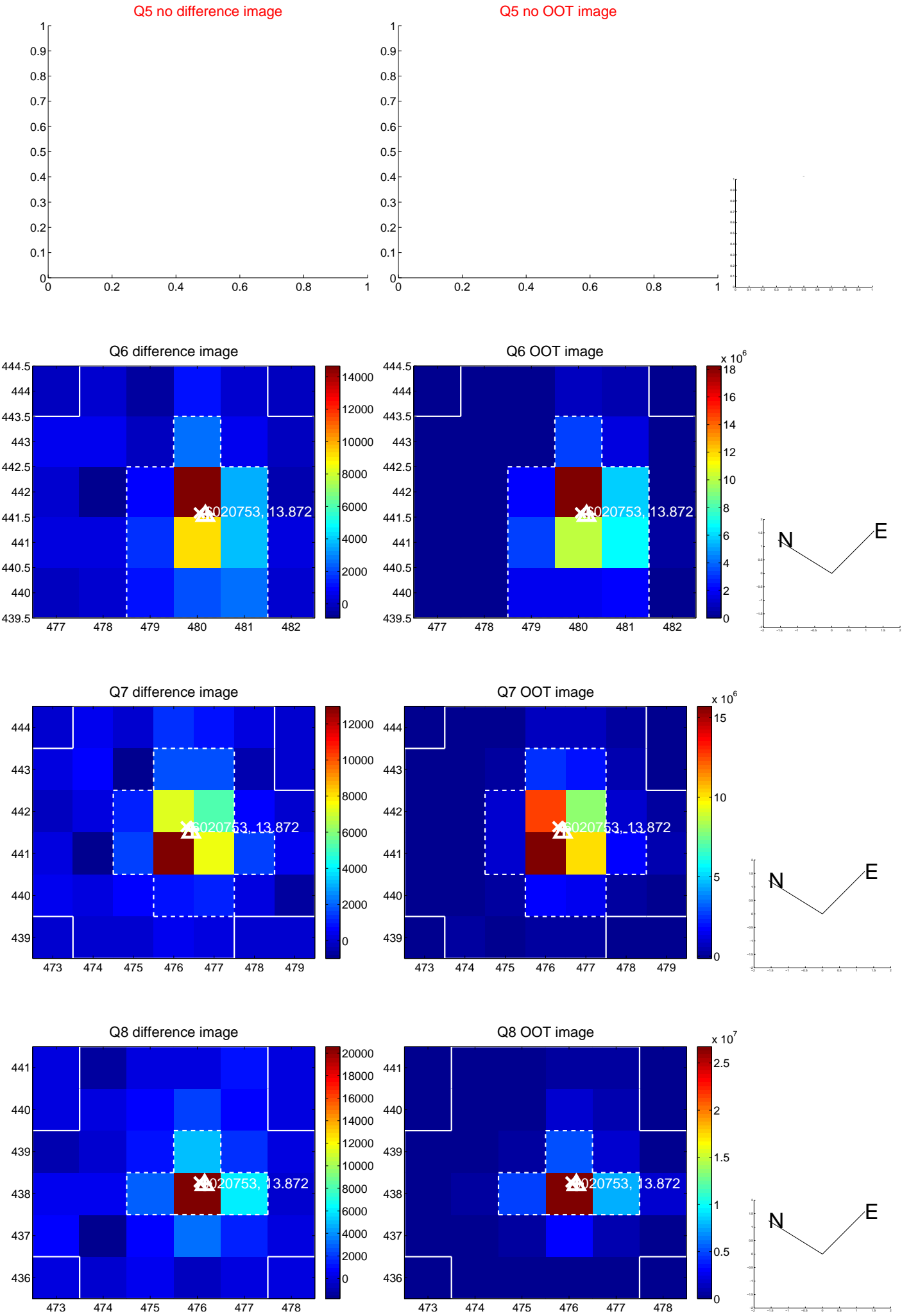
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.104 ± 0.136	0.77	0.009 ± 0.125	-0.104 ± 0.141
PRF-fit source offset from KIC position	0.762 ± 0.135	5.63	0.236 ± 0.126	-0.725 ± 0.150
photometric centroid source offset	1.19 ± 0.27	4.33	0.14 ± 0.26	-1.18 ± 0.27

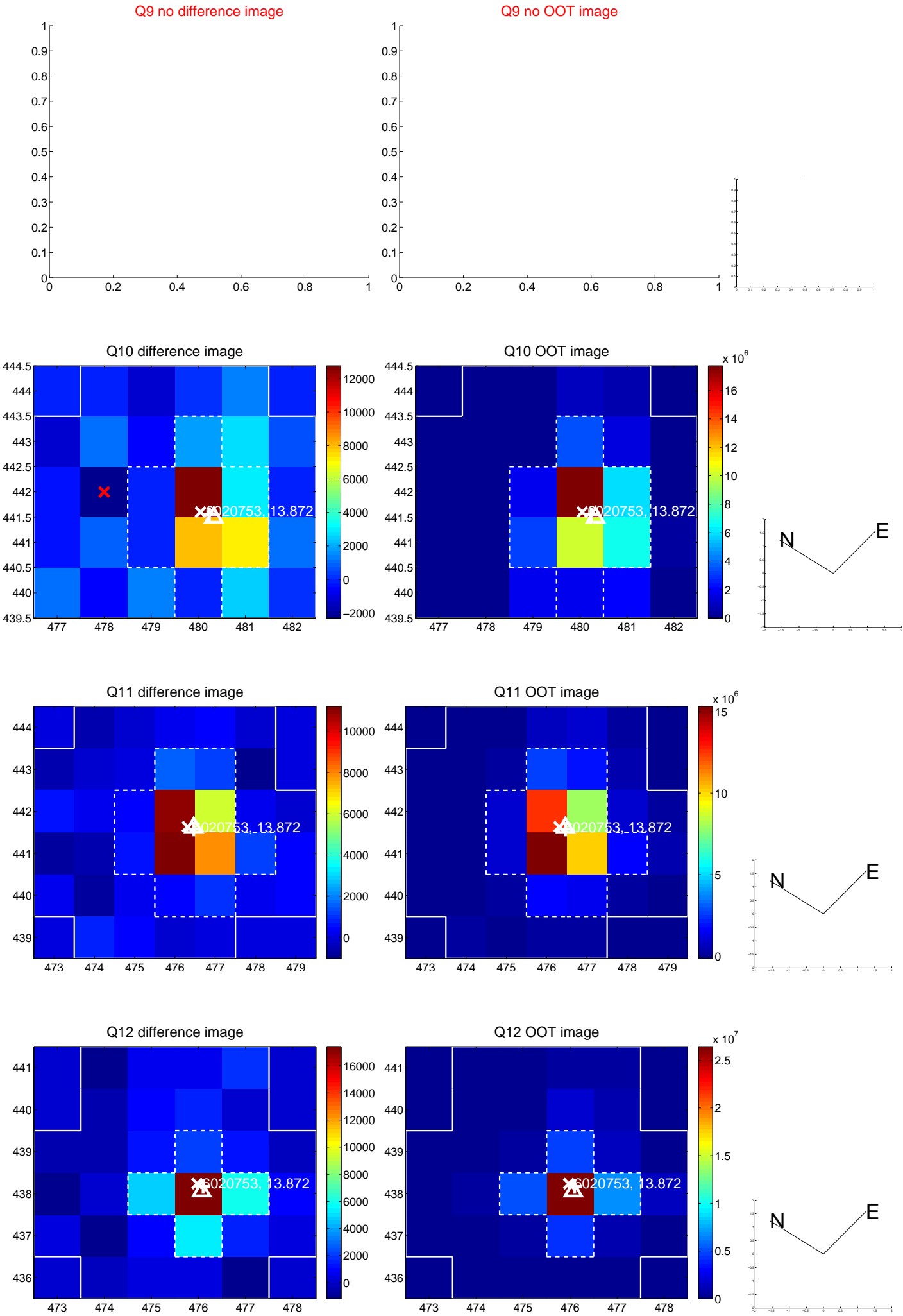


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

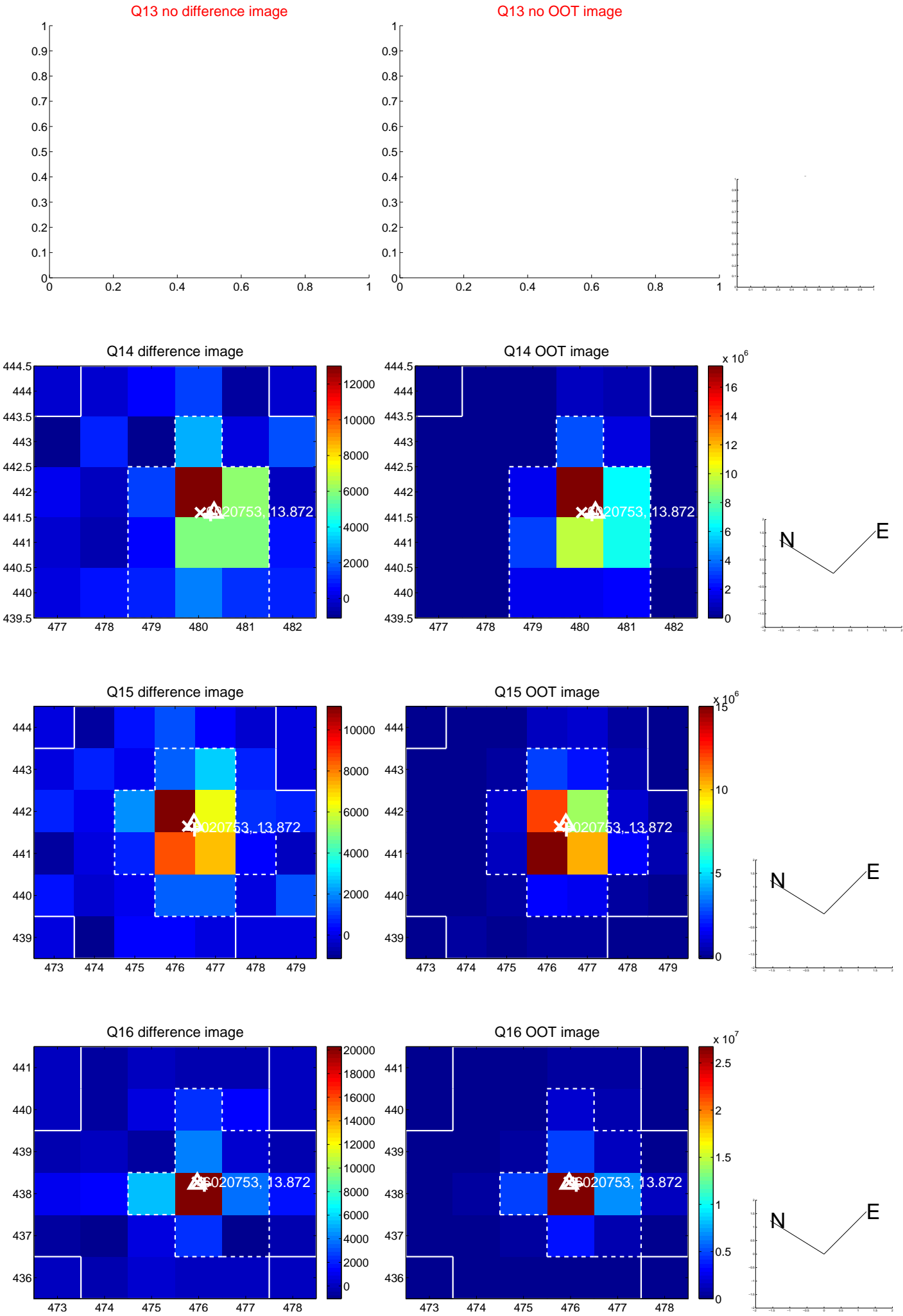
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



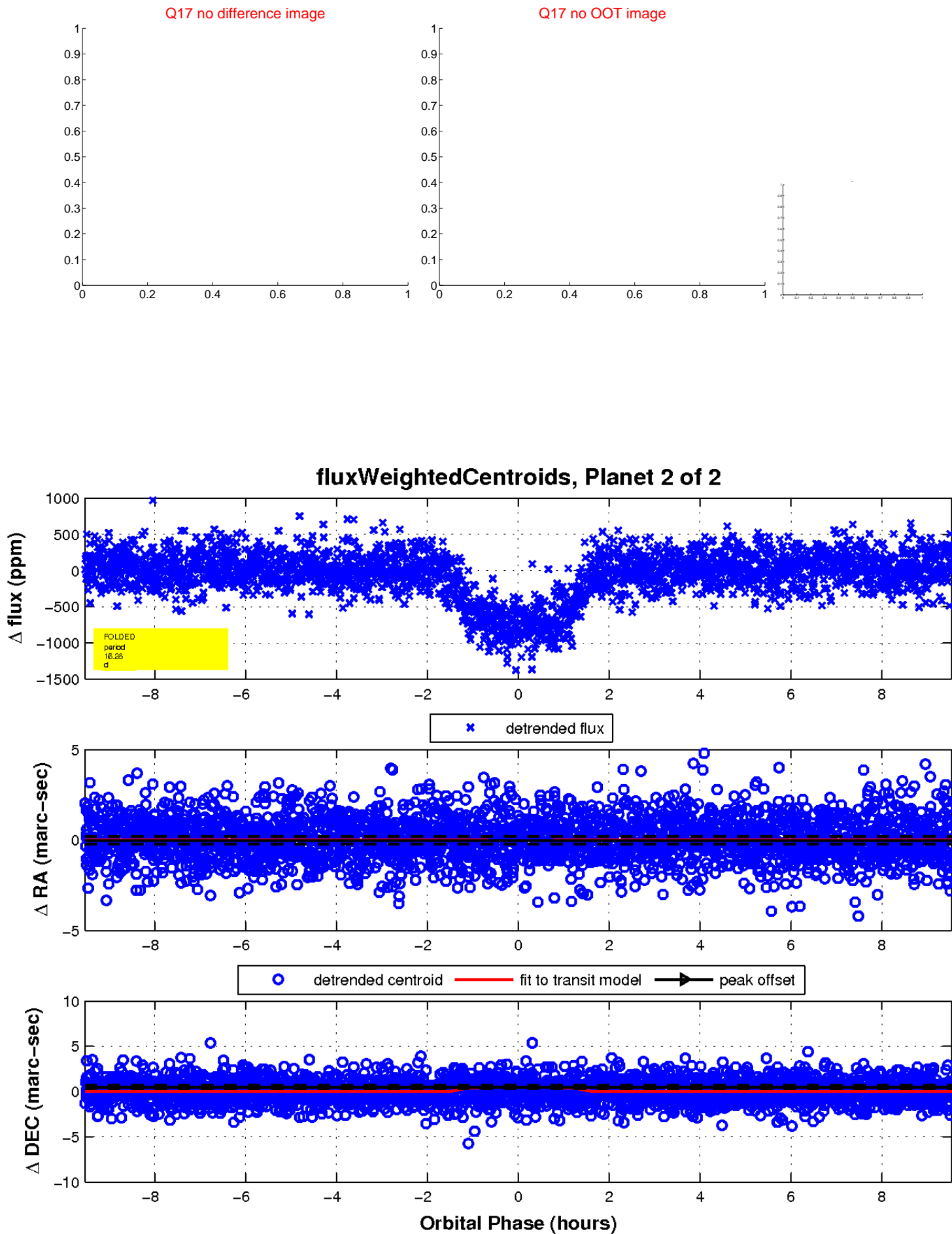
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

