

KIC 007877209

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})
007877209-01	OBS	No	349.404898	285.748322	1847.8	6.854	11.5	8.1	0.35	3520	1.49	0.04
007877209-02	OBS	No	520.363034	189.717005	1638.7	13.119	10.4	6.7	0.35	3520	1.41	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007877209-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
007877209-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

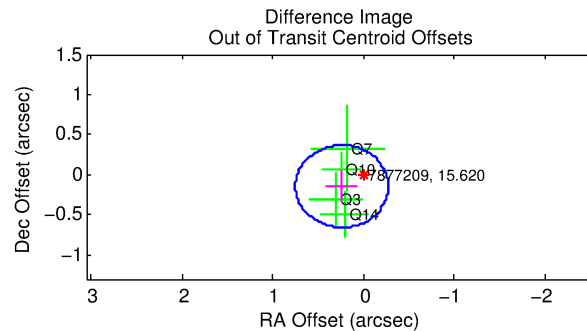
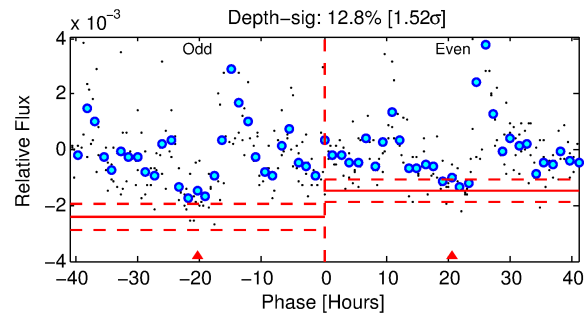
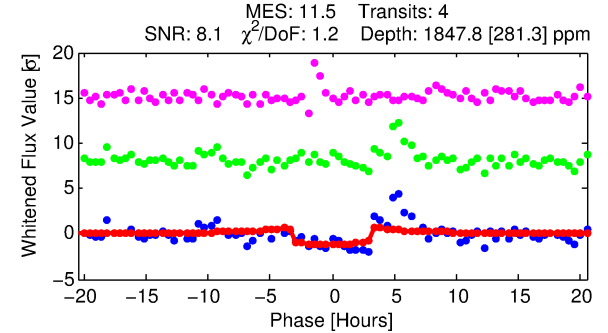
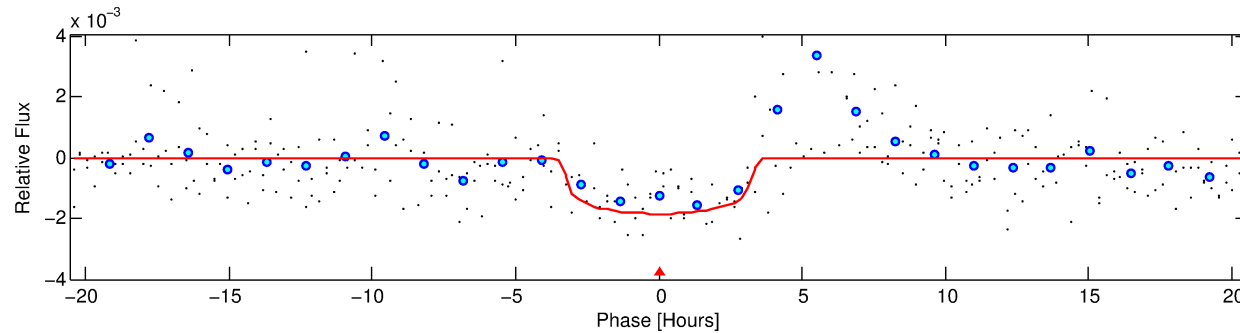
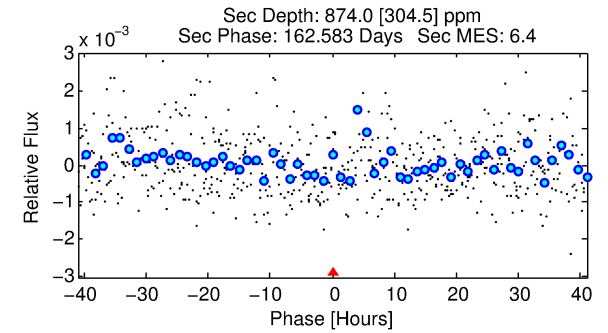
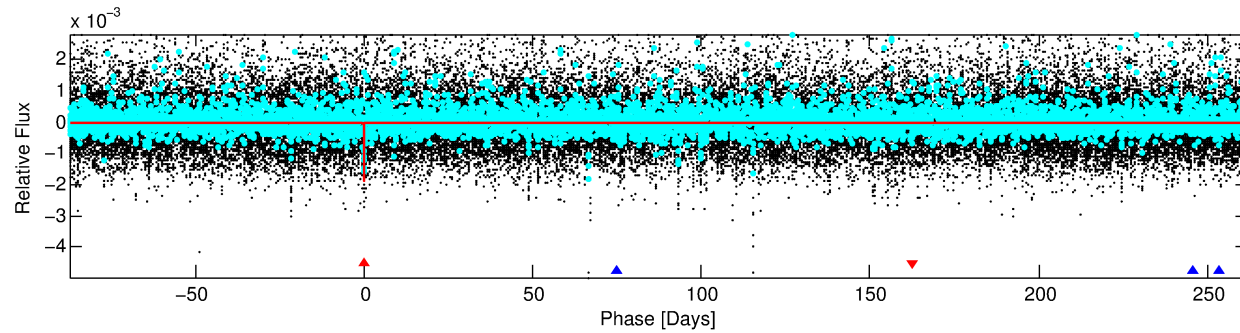
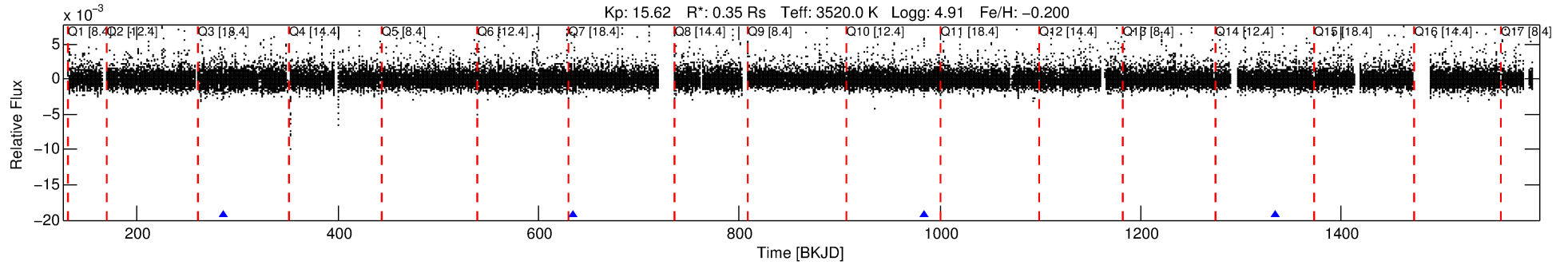
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007877209-01

No Significant Match Found

DV One-Page Summary

KIC: 7877209 Candidate: 1 of 2 Period: 349.405 d



DV Fit Results:

Period = 349.40490 [0.00526] d
Epoch = 285.7483 [0.0100] BKJD
Rp/R* = 0.0390 [0.0291]
a/R* = 404.63 [1359.63]
b = 0.01 [411.69]
Seff = 0.04 [0.01]
Teq = 110 [4] K
Rp = 1.49 [1.13] Re
a = 0.6899 [0.0696] AU
Ag = 103618.47 [159369.48] [0.65σ]
Teffp = 3064 [1175] K [2.51σ]

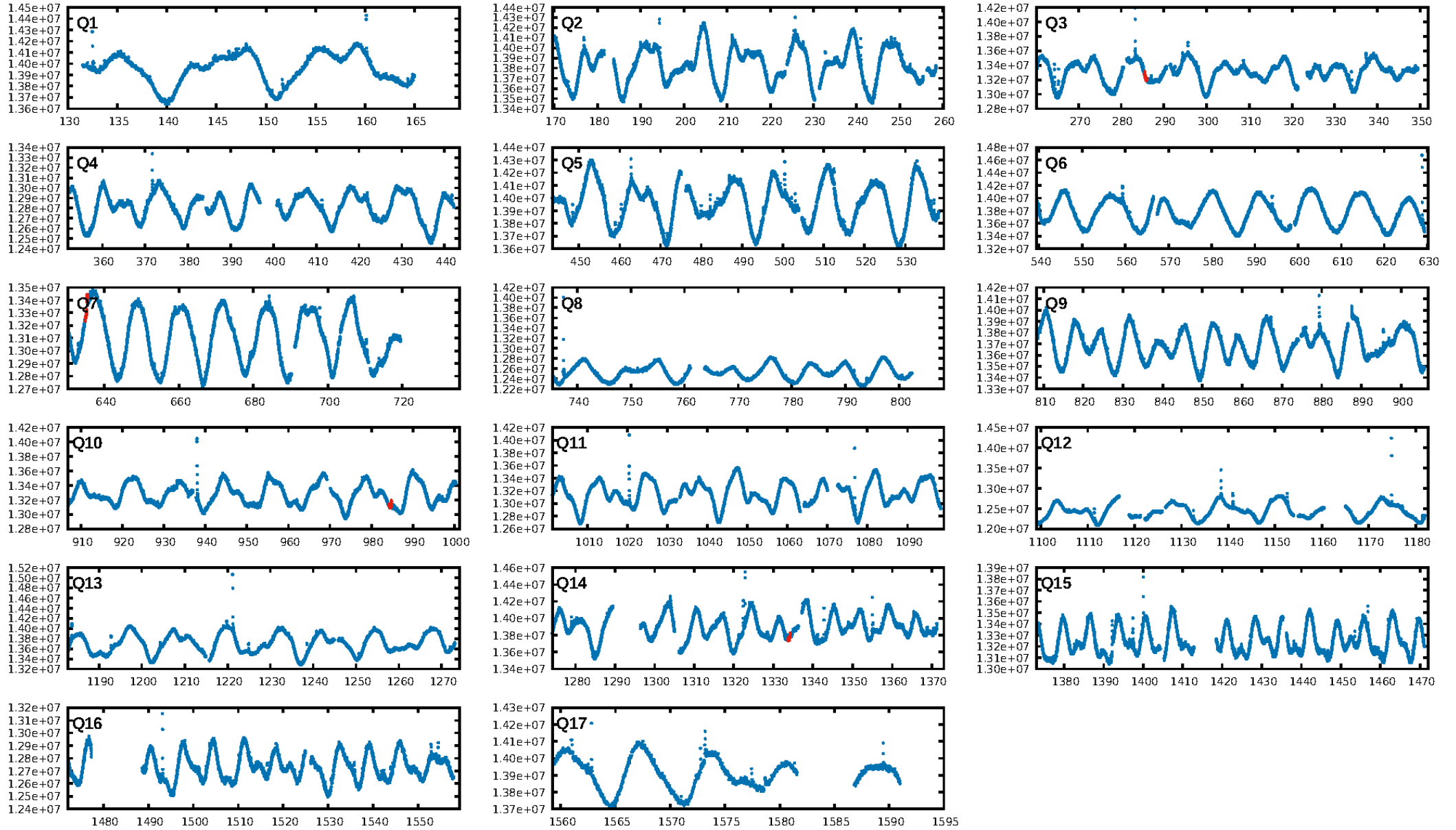
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [277.19σ]
ModelChiSquare2-sig: 20.7%
ModelChiSquareGof-sig: 94.2%
Bootstrap-pfa: 5.83e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 25.06
Centroid-sig: 63.4%
Centroid-so: 0.835 arcsec [0.84σ]
OotOffset-rm: 0.279 arcsec [1.63σ]
OotOffset-st: 2/2/0/0 [4]
KicOffset-rm: 0.243 arcsec [1.30σ]
KicOffset-st: 2/2/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

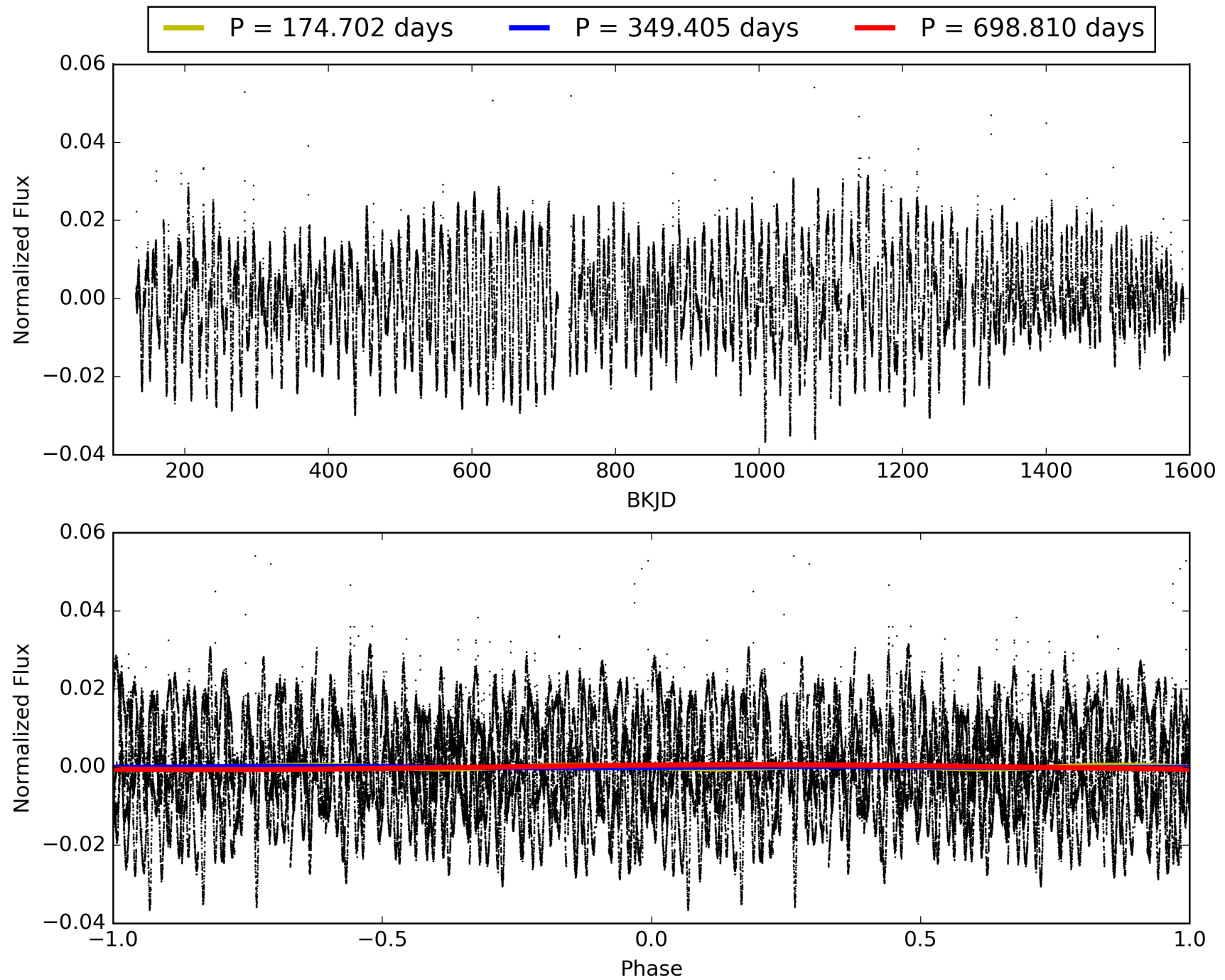
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:44:02 Z

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

TCE 007877209-01, PDC Light Curves

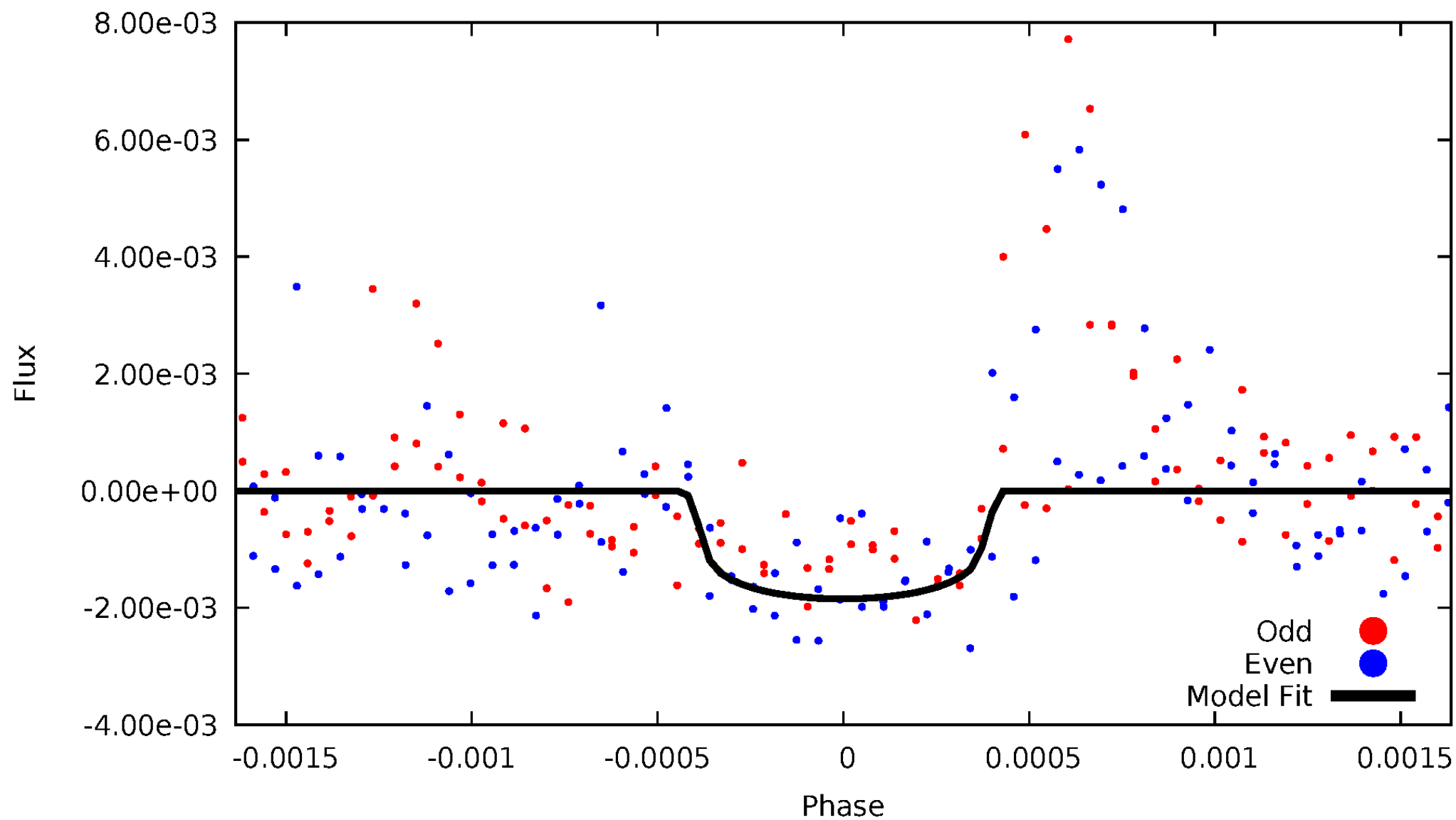


TCE 007877209-01



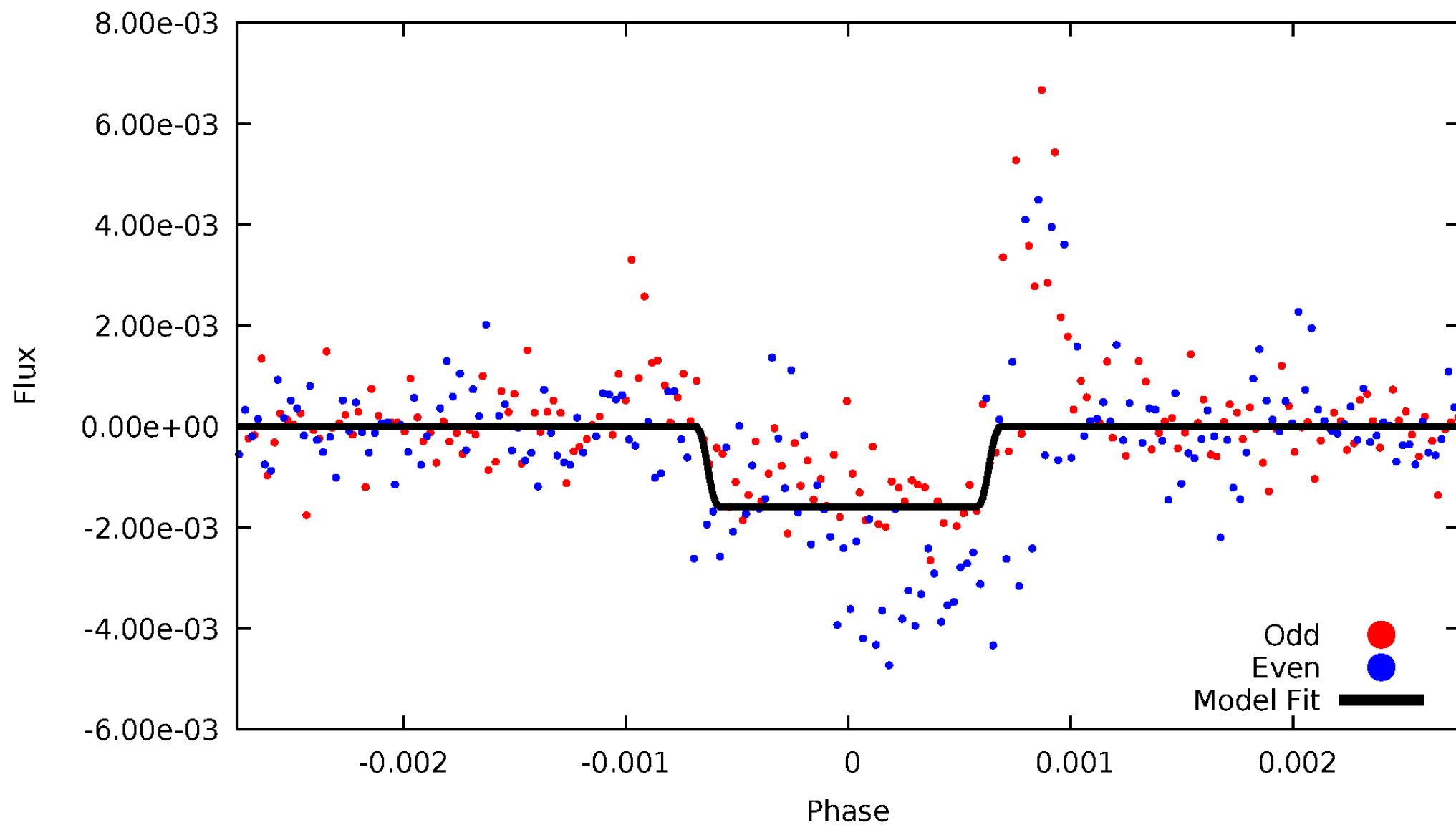
DV Odd/Even

TCE 007877209-01



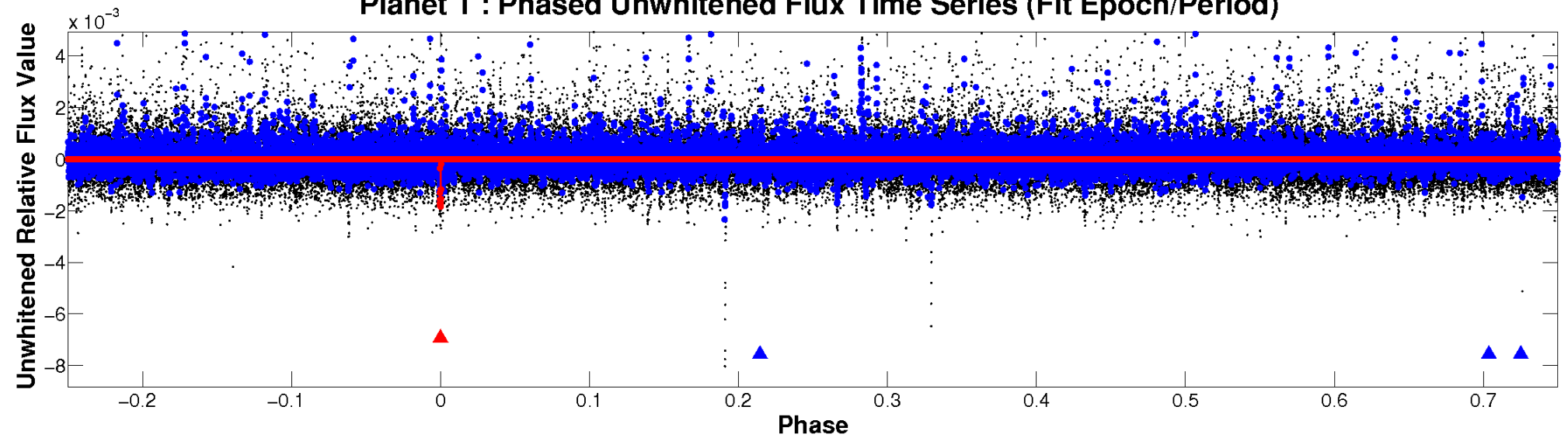
ALT Odd/Even

TCE 007877209-01

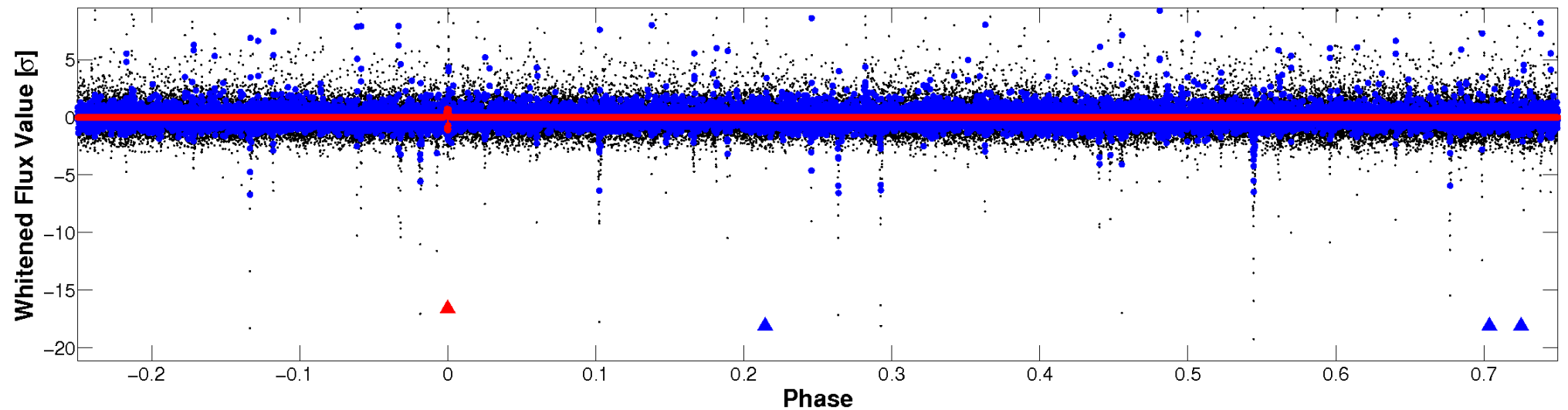


Non-Whitened Vs. Whitened Light Curve

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

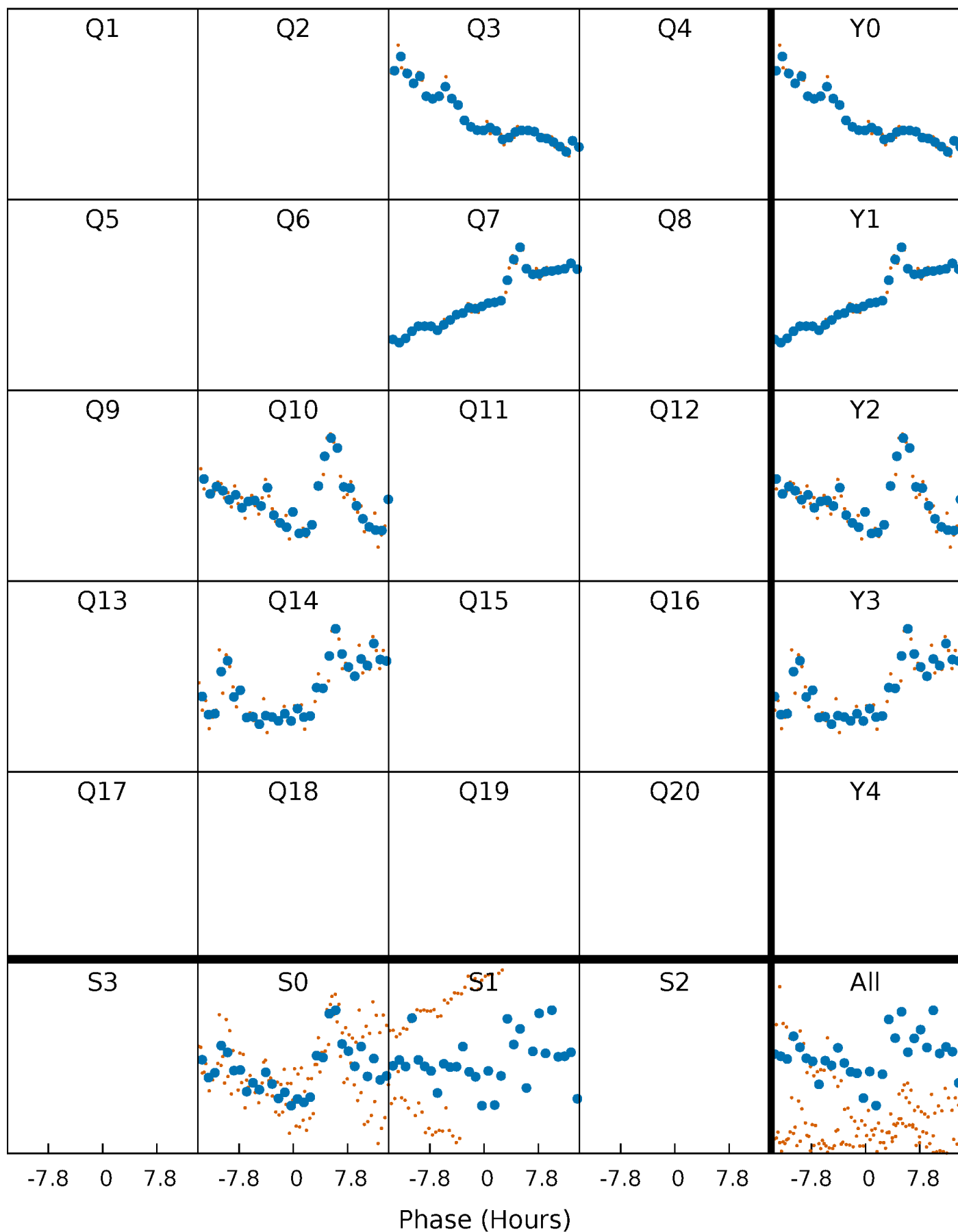


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



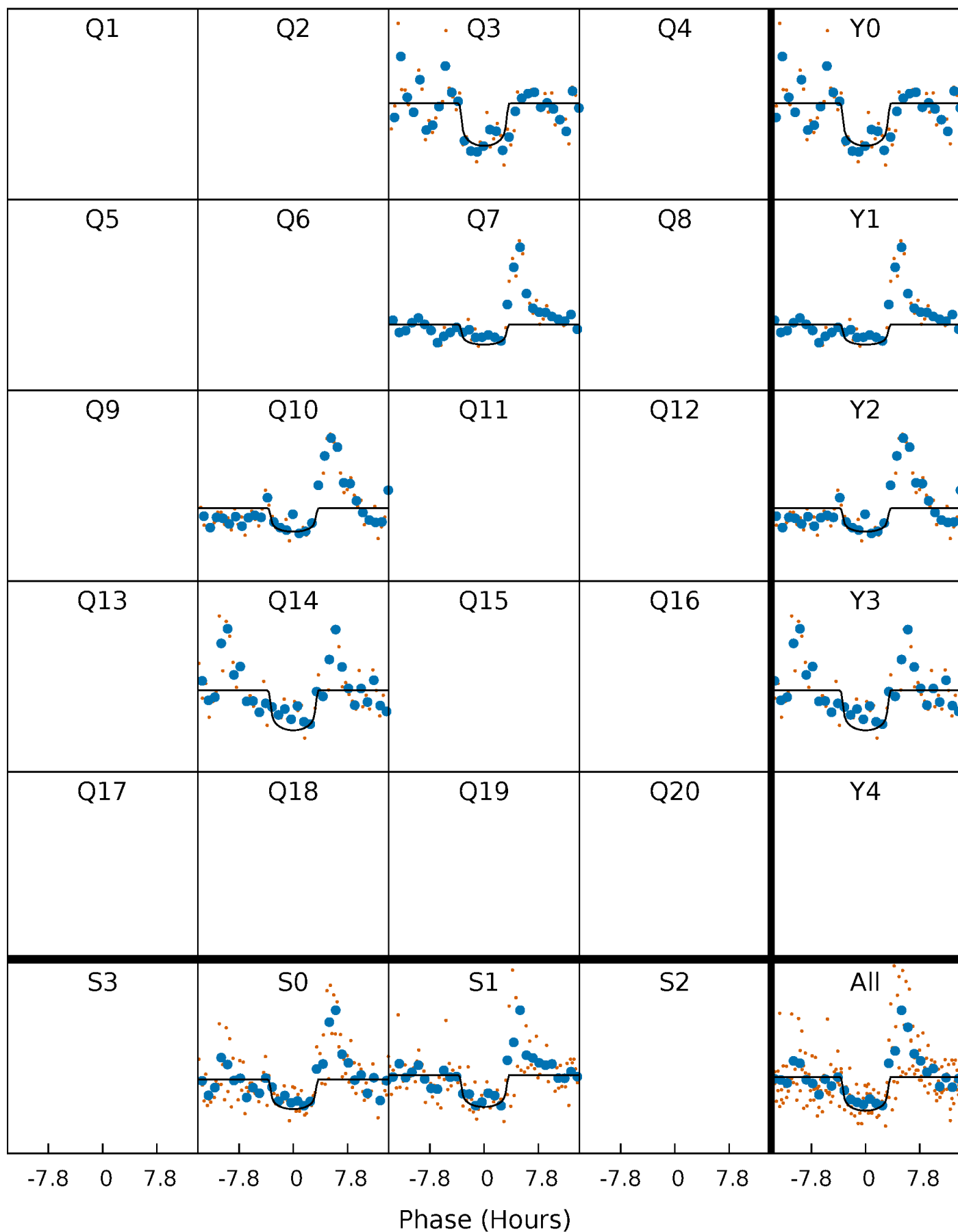
PDC Quarter-Phased Transit Curves

TCE 007877209-01 P=349.404898 Days $T_0=285.748322$ (BKJD)



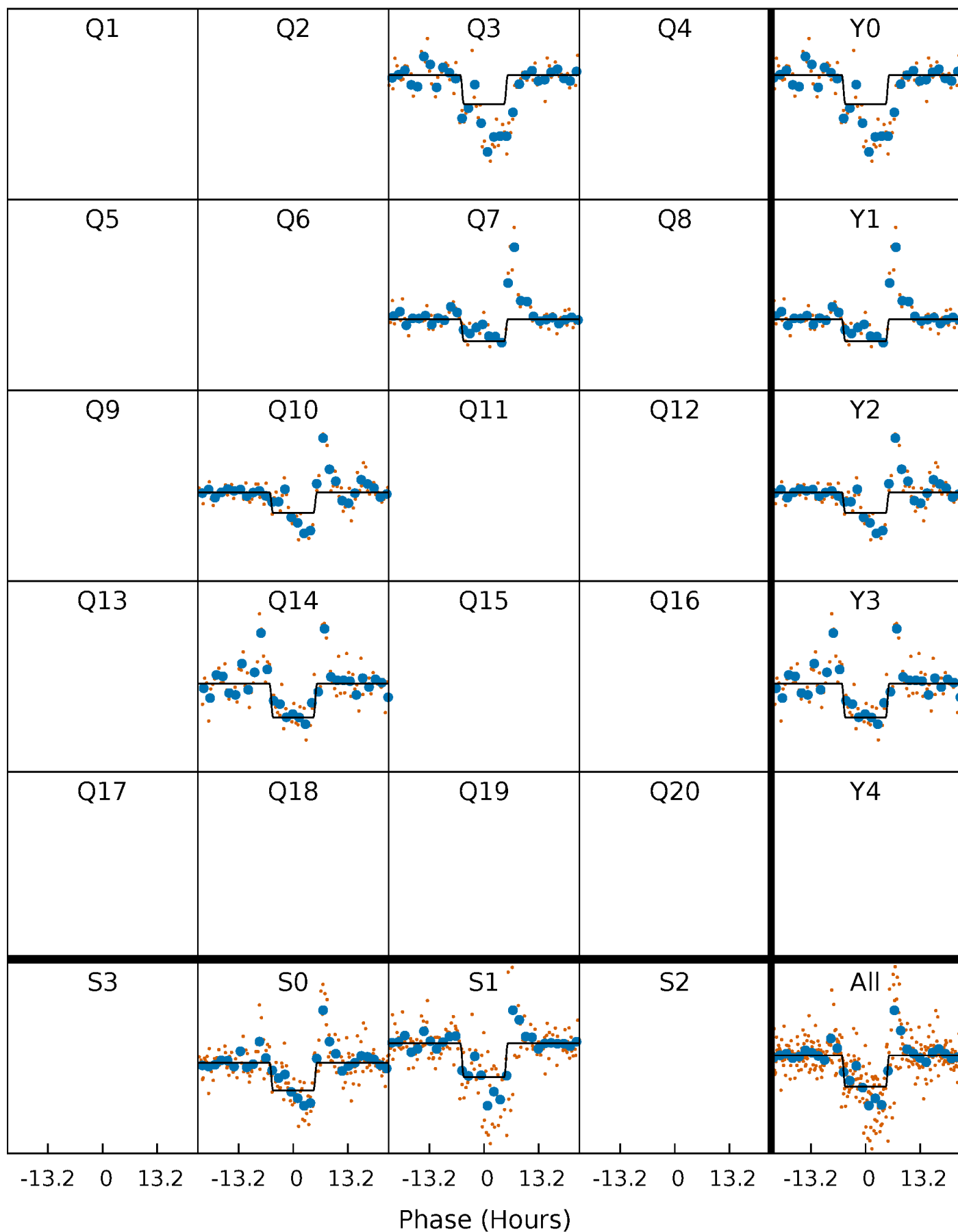
DV Quarter-Phased Transit Curves

TCE 007877209-01 P=349.404898 Days $T_0=285.748322$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

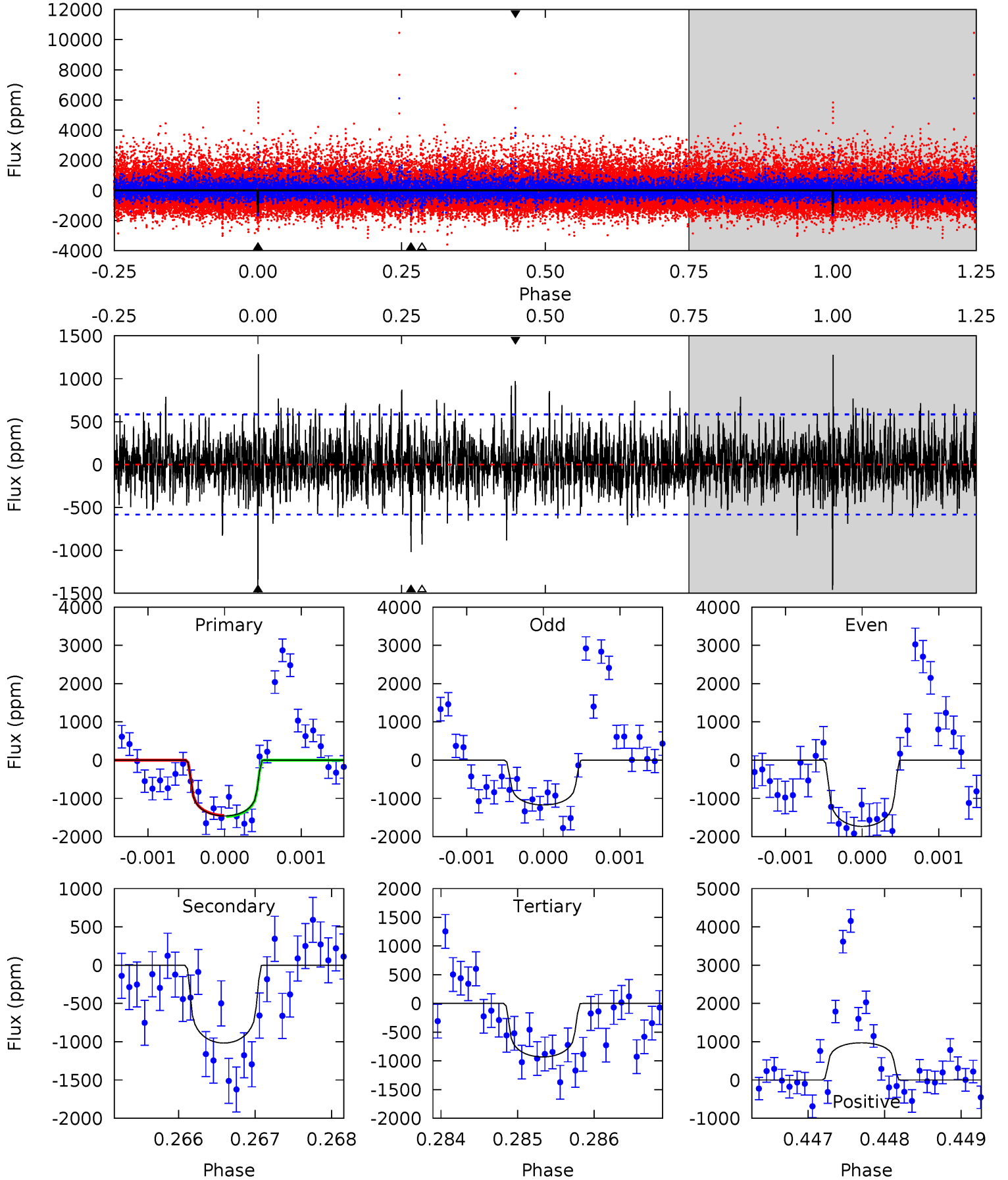
TCE 007877209-01 P=349.420687 Days $T_0=285.640079$ (BKJD)



DV Model-Shift Uniqueness Test

007877209-01, P = 349.404898 Days, E = 285.748322 Days

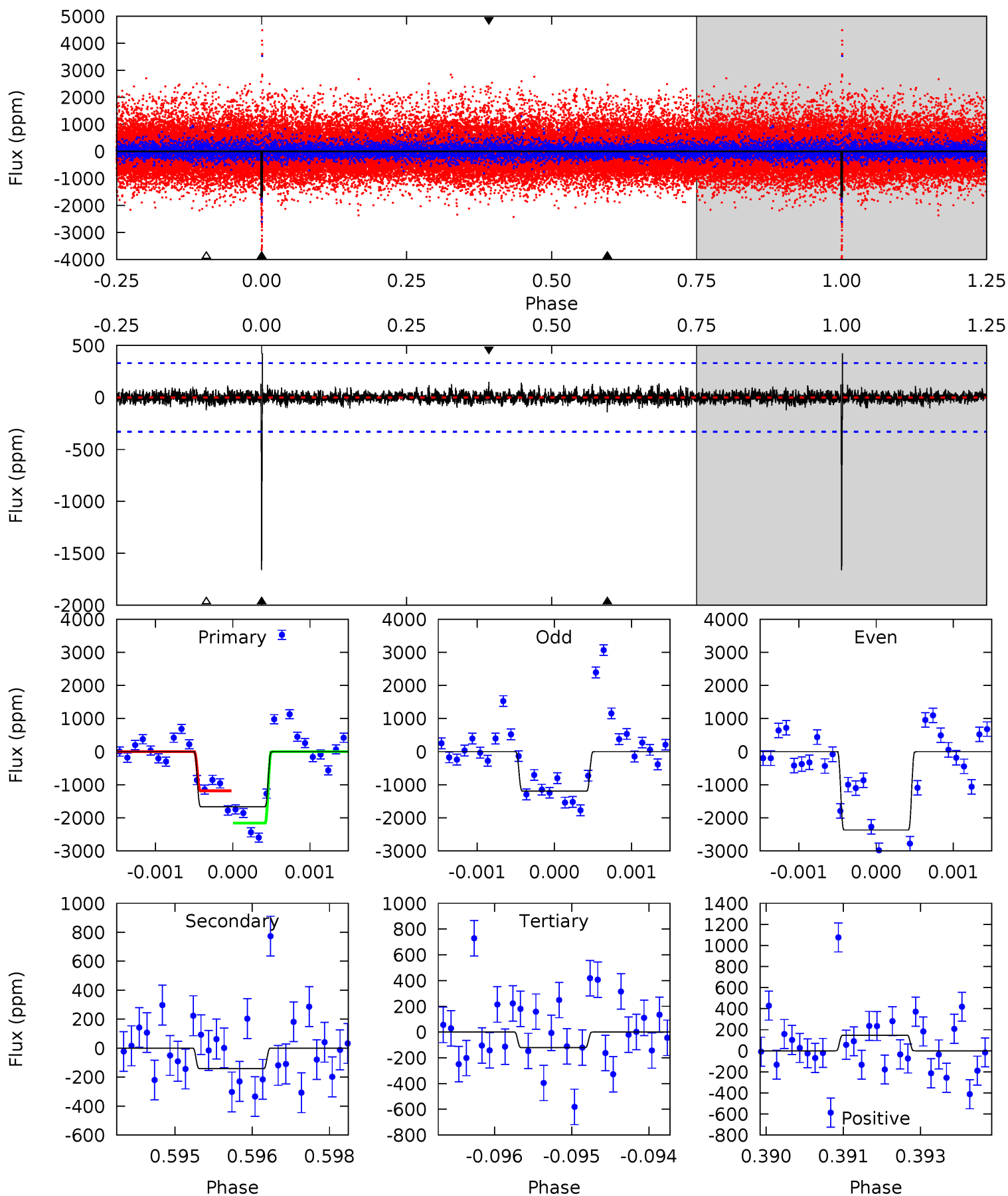
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	9.54	8.74	9.12	5.47	3.33	2.13	4.94	4.55	0.80	0.42	2.12	1.03	0.47	0.13



Alt Model-Shift Uniqueness Test

007877209-01, P = 349.420687 Days, E = 285.640079 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.1	2.31	1.97	2.42	5.39	3.20	0.53	25.2	24.7	0.35	-0.11	9.63	1.12	0.20	0



Stellar Parameters For KIC 007877209

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3520^{+62}_{-62}	$4.907^{+0.055}_{-0.045}$	$-0.200^{+0.100}_{-0.100}$	$0.349^{+0.039}_{-0.048}$	$0.359^{+0.049}_{-0.060}$	$11.930^{+4.003}_{-2.091}$
	+2%/-2%	+1%/-1%	+50%/-50%	+11%/-14%	+14%/-17%	+34%/-18%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007877209-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1017 ± 107	$1.60^{+1.04}_{-0.87}$	154^{+4}_{-5}	3236^{+933}_{-439}	$104851^{+381199}_{-67321}$
Alt.	-142 ± 61	$1.67^{+1.04}_{-1.01}$	154^{+4}_{-5}	2435^{+677}_{-294}	12548^{+68180}_{-8548}

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

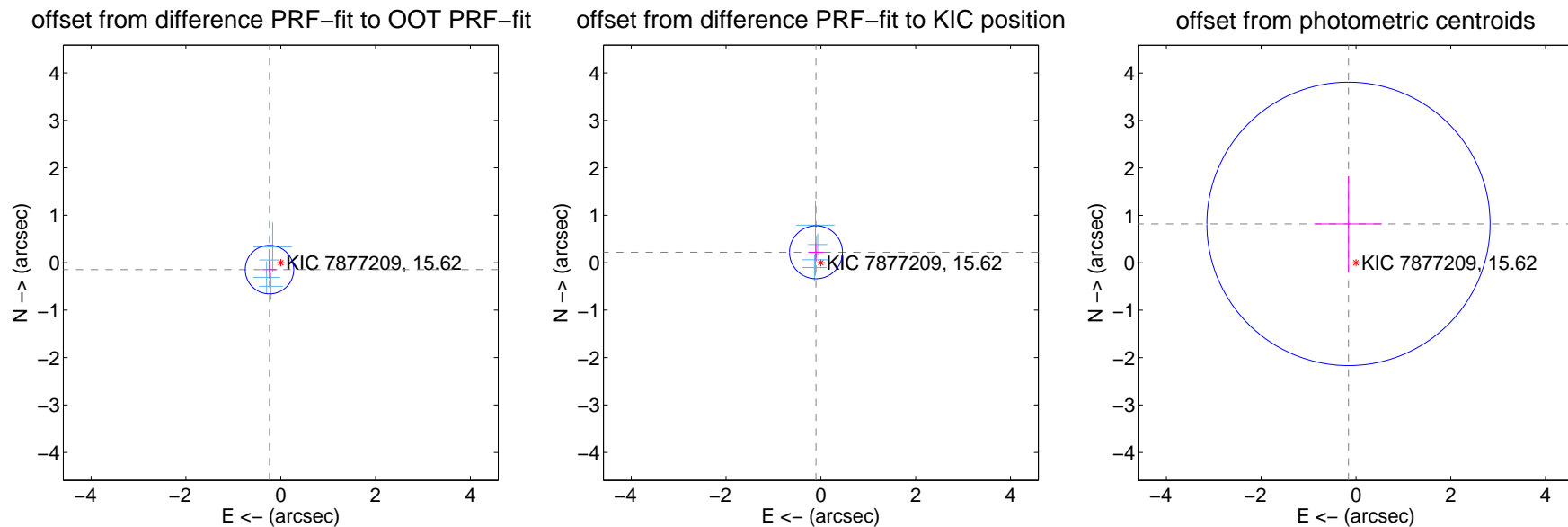
DV Centroid Data

Supplemental centroid analysis for 007877209-01. Kepler magnitude: 15.62. Transit SNR 8.10

There are 4 quarters with good PRF difference image offsets

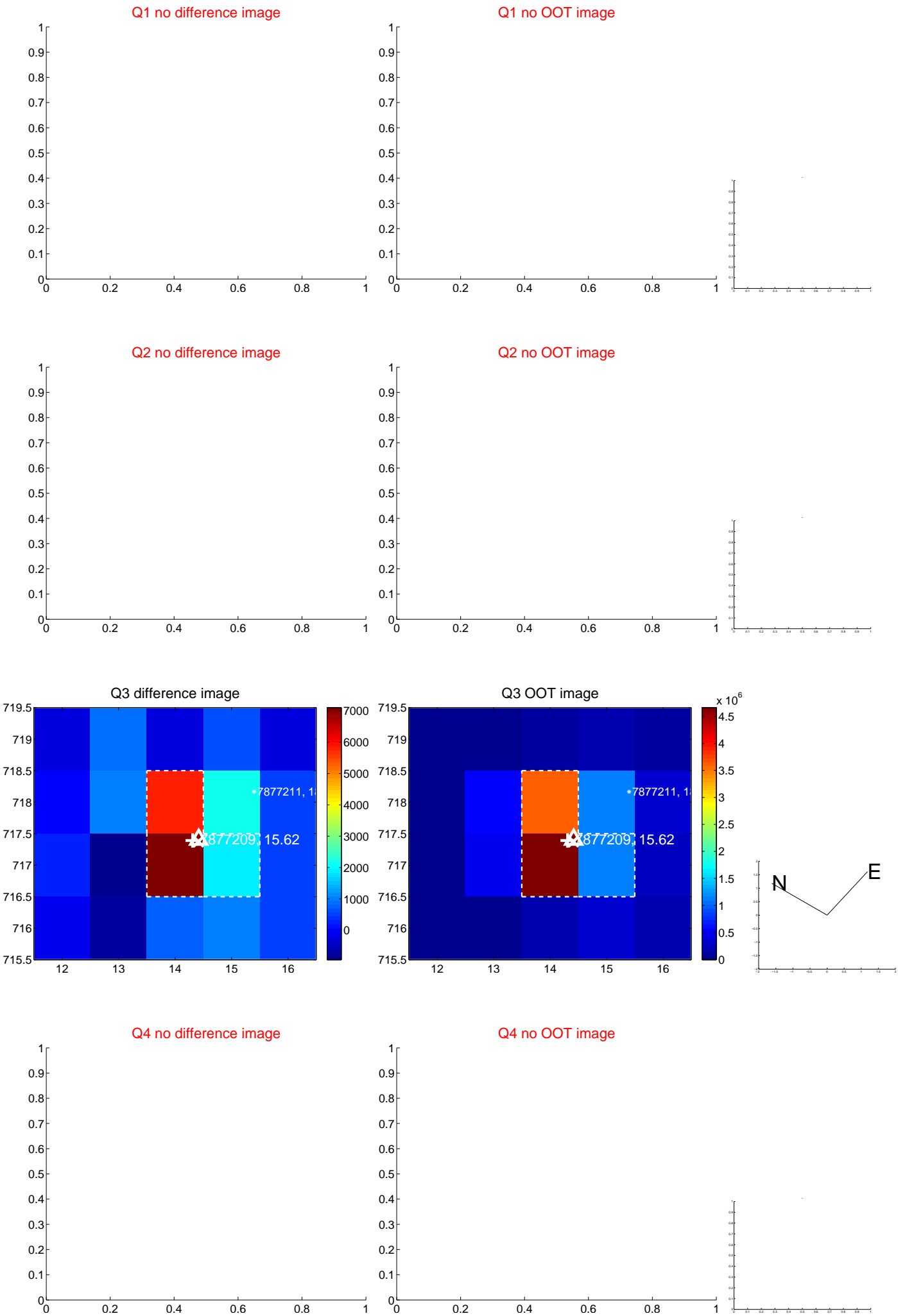
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.279 ± 0.171	1.63	0.237 ± 0.162	-0.146 ± 0.191
PRF-fit source offset from KIC position	0.243 ± 0.186	1.30	0.103 ± 0.162	0.220 ± 0.191
photometric centroid source offset	0.84 ± 1.00	0.84	0.16 ± 0.71	0.82 ± 1.01

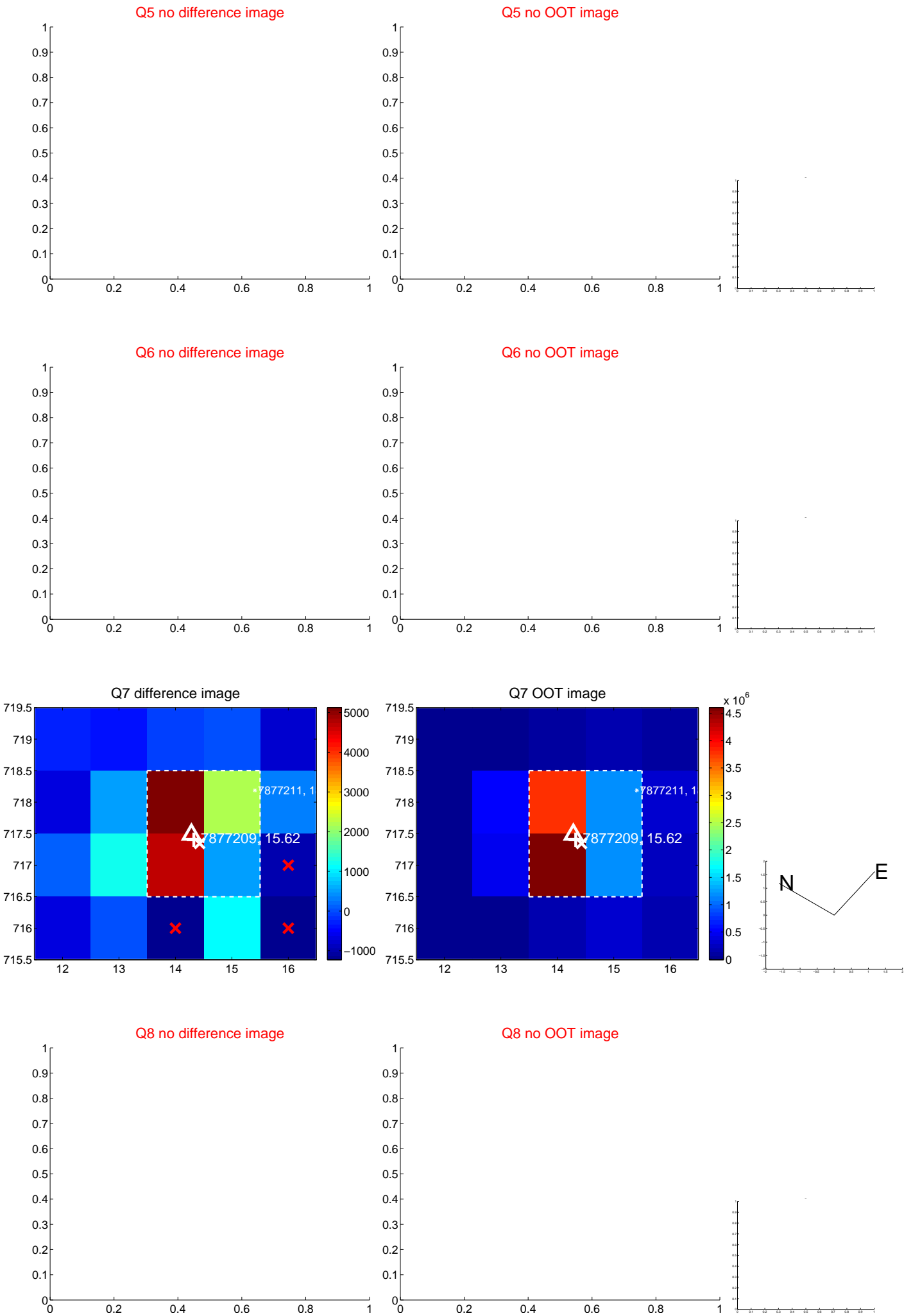


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

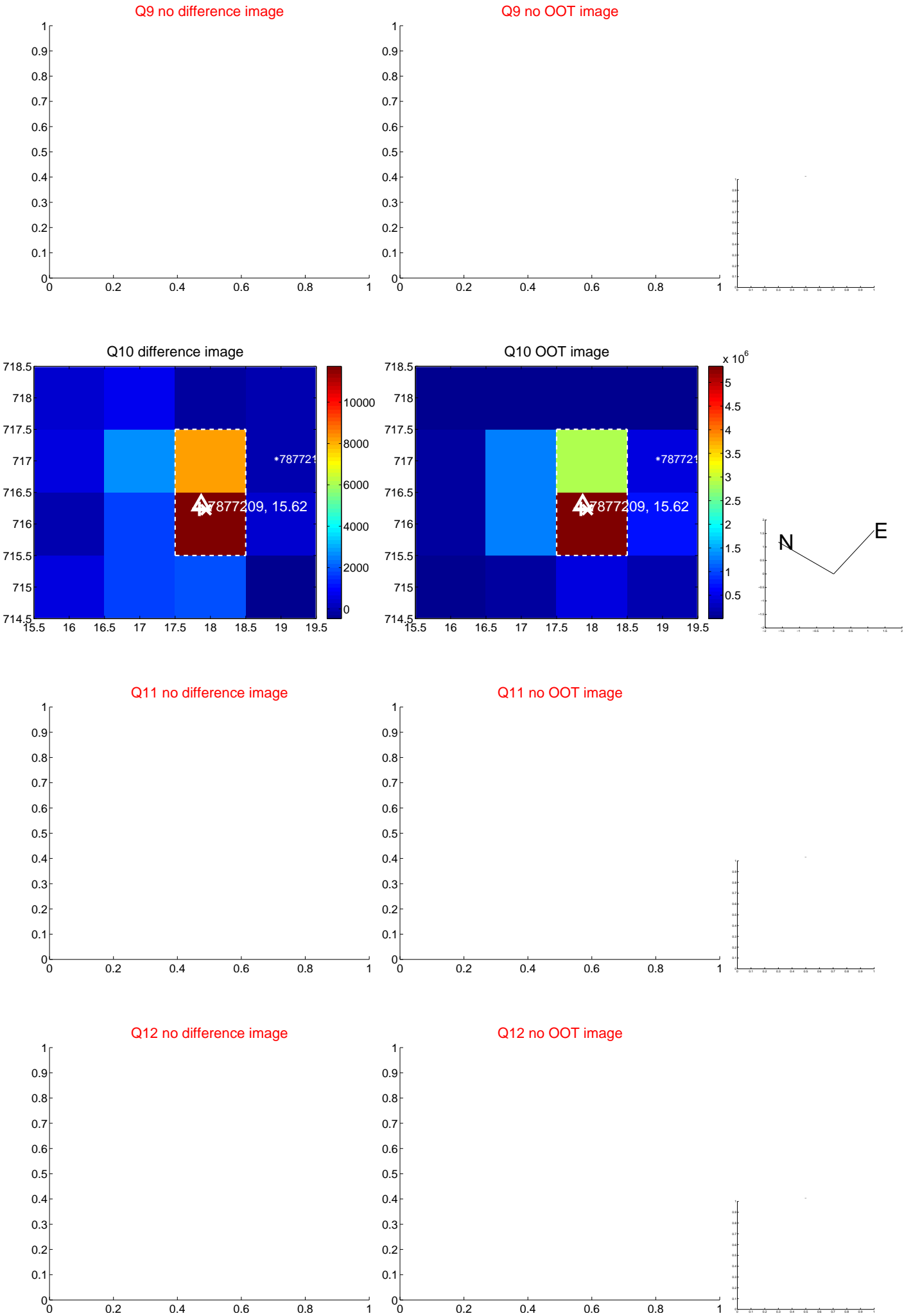
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



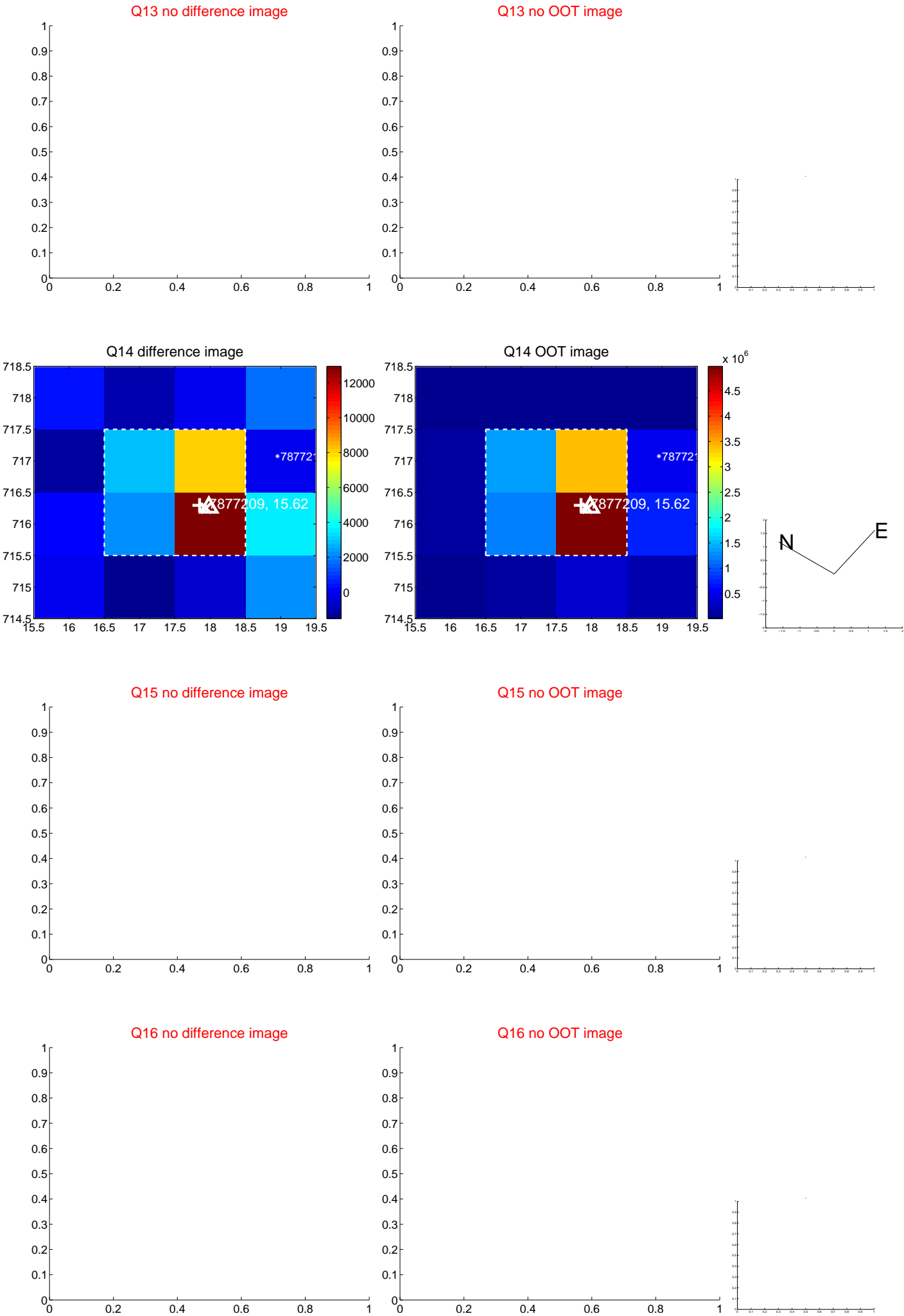
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



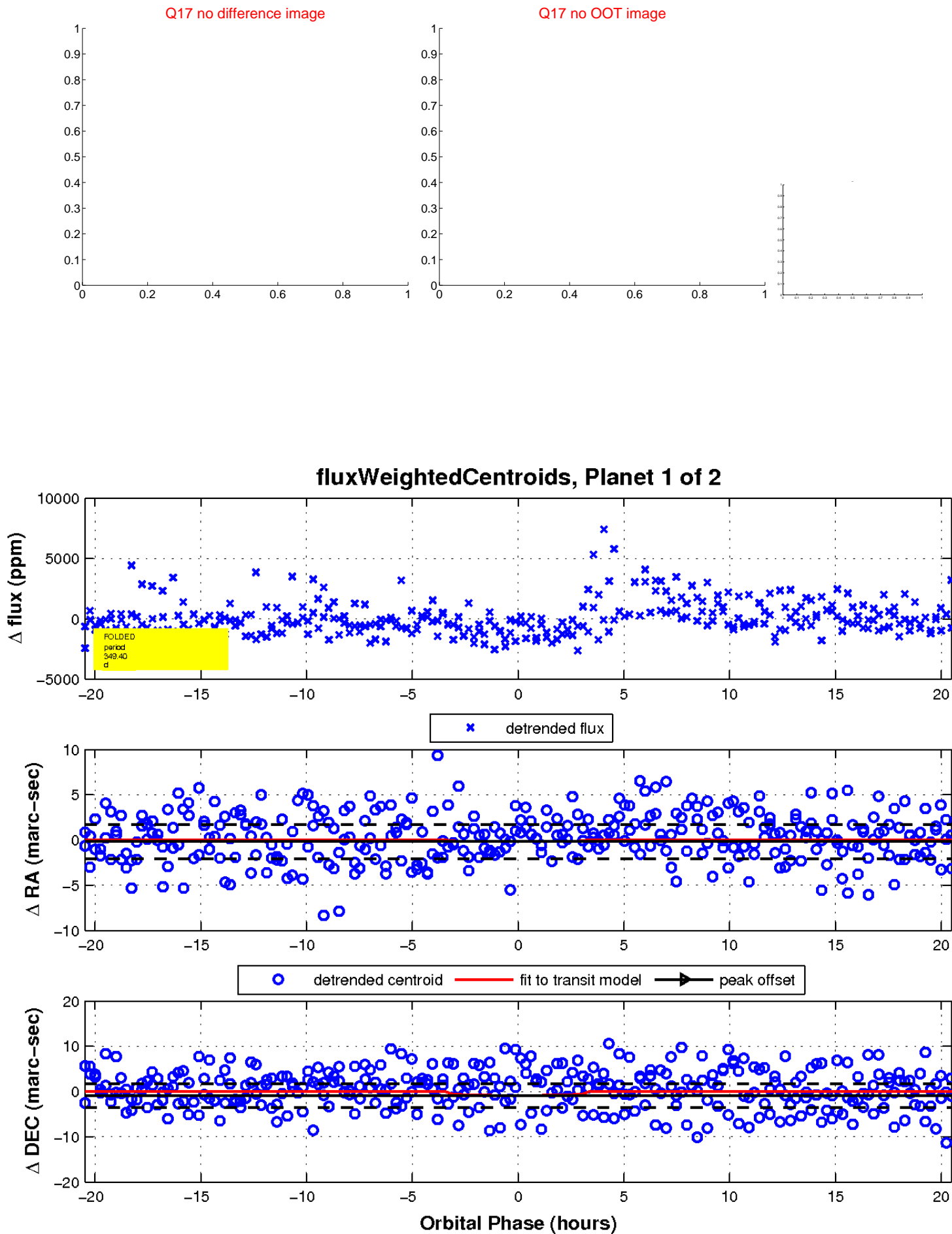
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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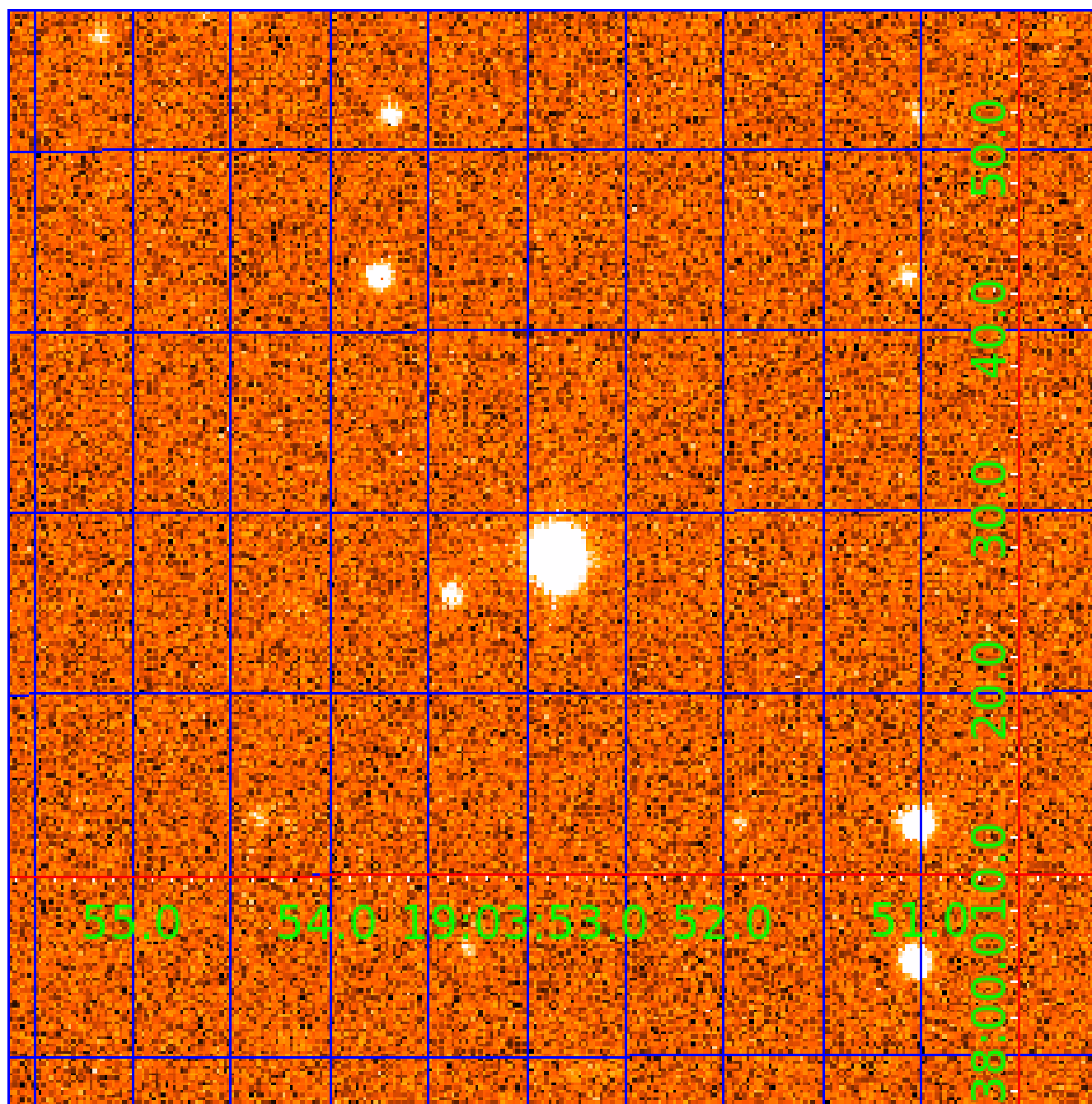


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007877209

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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007877209-02	OBS	No	520.363034	189.717005	1638.7	13.119	10.4	6.7	0.35	3520	1.41	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007877209-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
007877209-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

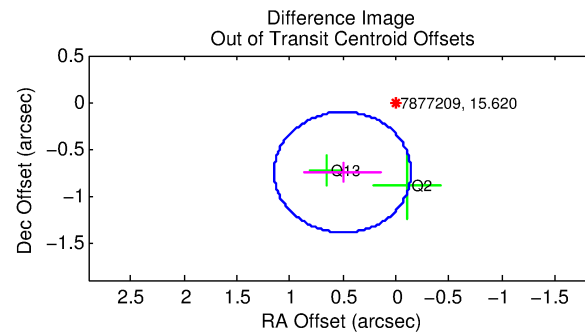
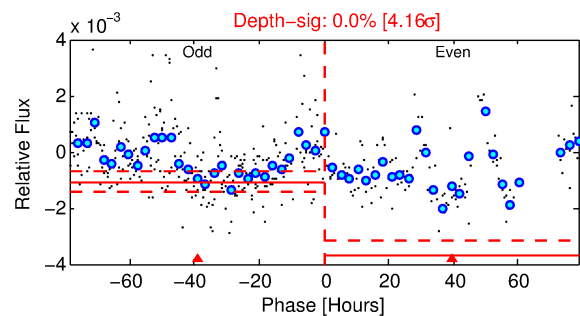
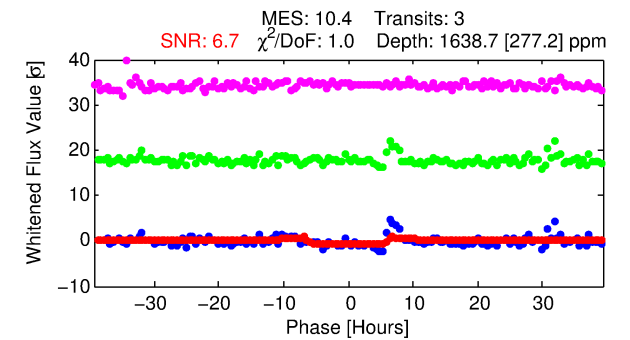
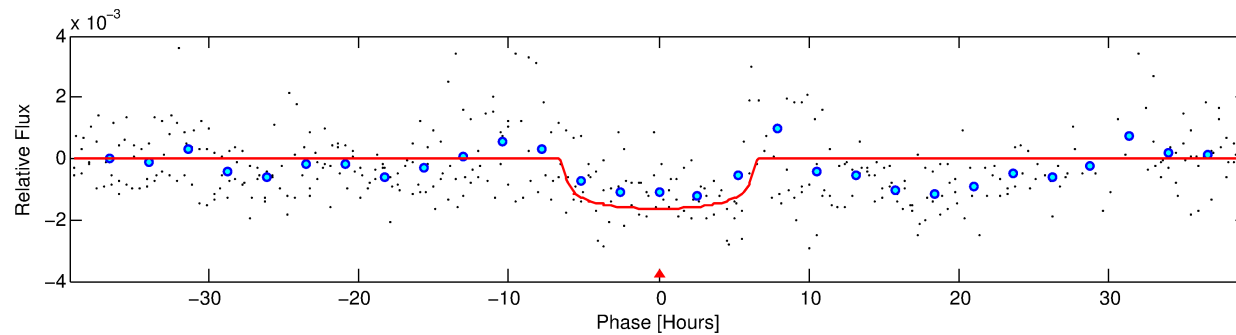
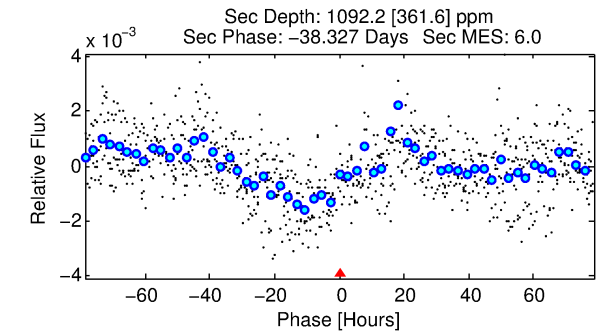
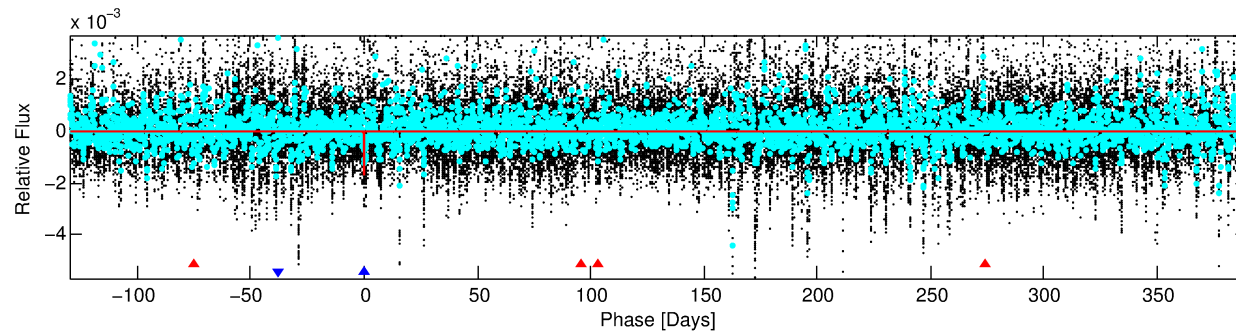
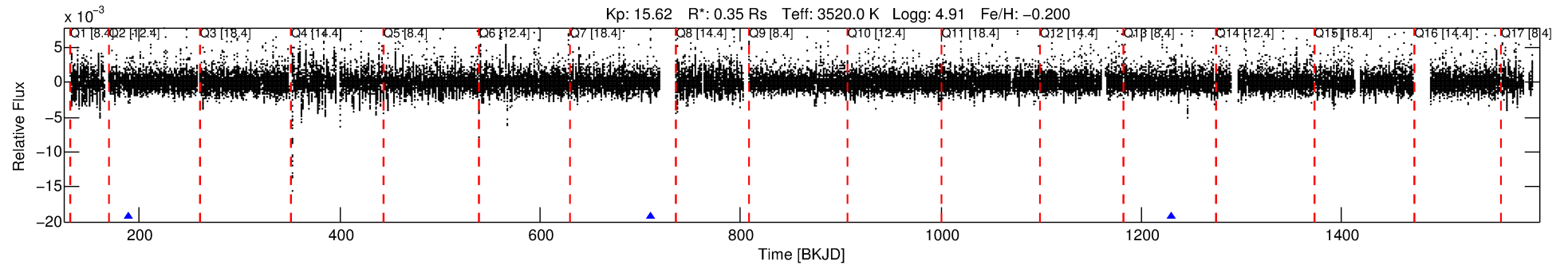
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007877209-02

No Significant Match Found

DV One-Page Summary

KIC: 7877209 Candidate: 2 of 2 Period: 520.363 d



DV Fit Results:

Period = 520.36303 [0.01073] d
Epoch = 189.7170 [0.0138] BKJD
Rp/R* = 0.0371 [0.0140]
a/R* = 301.05 [490.39]
b = 0.30 [4.96]
Seff = 0.02 [0.00]
Teq = 97 [3] K
Rp = 1.41 [0.57] Re
a = 0.8997 [0.0908] AU
Ag = 243487.35 [203378.14] [1.20 σ]
Teffp = 3322 [688] K [4.68 σ]

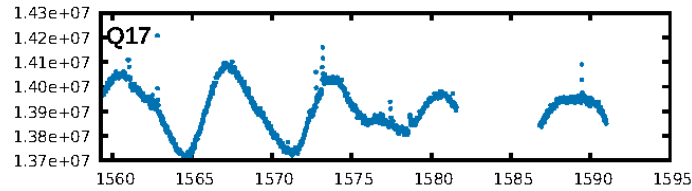
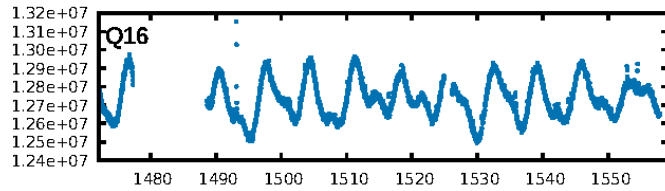
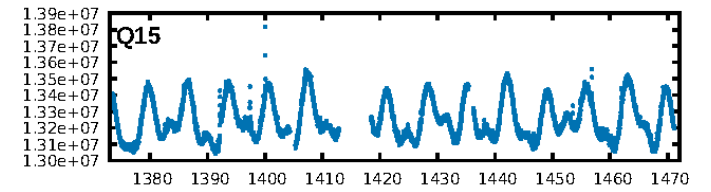
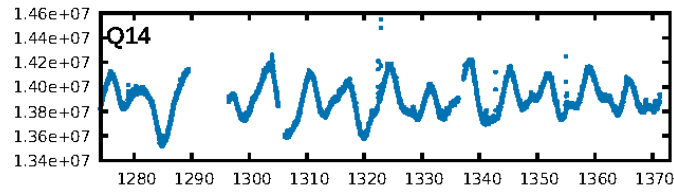
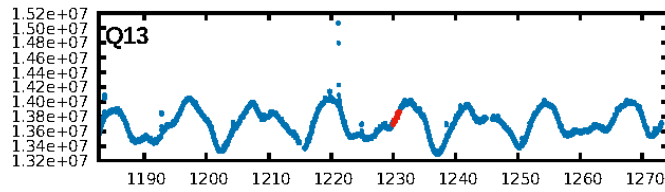
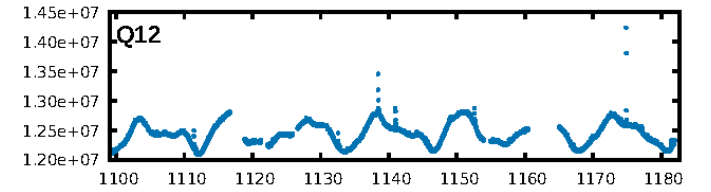
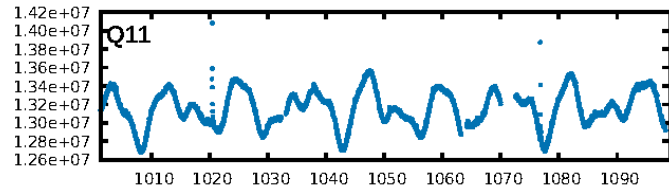
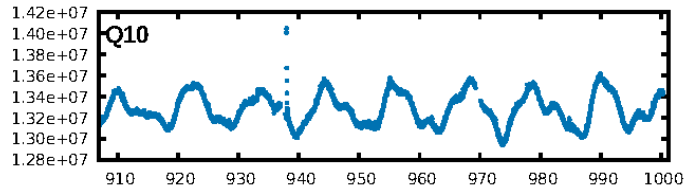
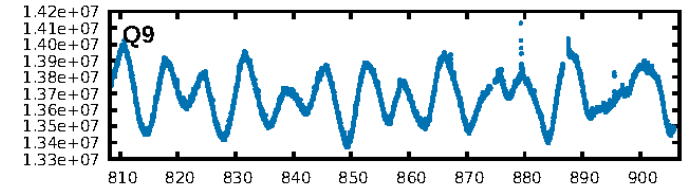
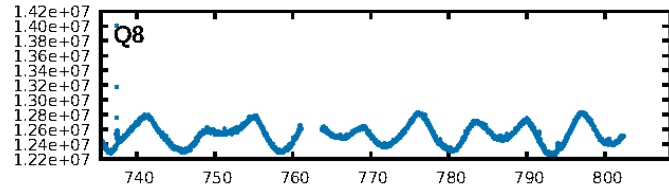
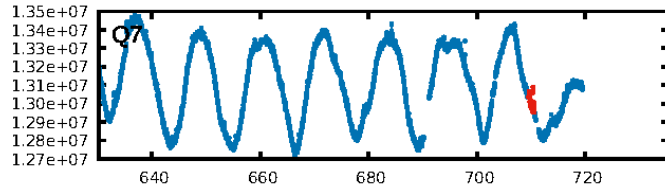
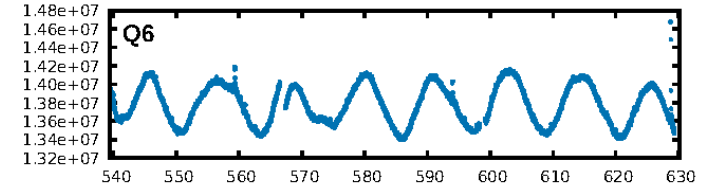
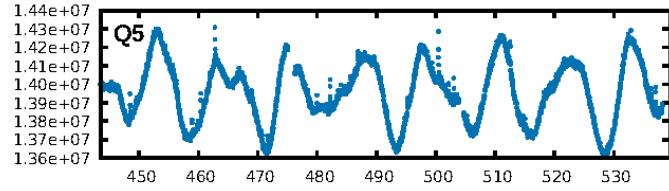
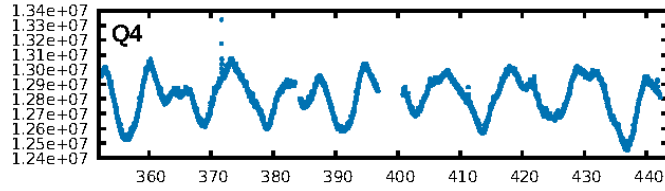
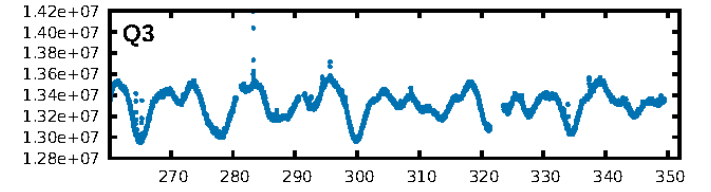
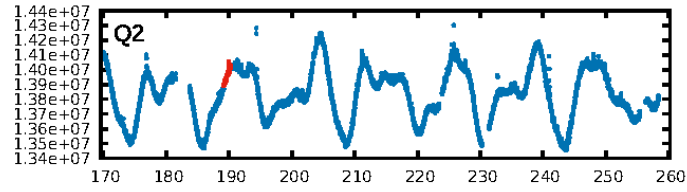
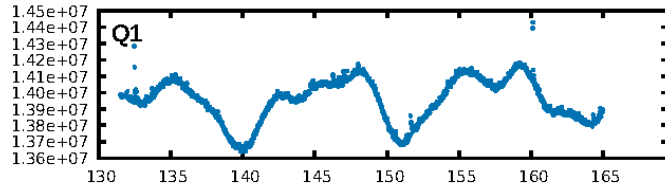
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [277.19 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.3%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 3.19e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.351
Centroid-sig: 26.7%
Centroid-so: 0.862 arcsec [1.05 σ]
OotOffset-rm: 0.901 arcsec [4.19 σ]
KicOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

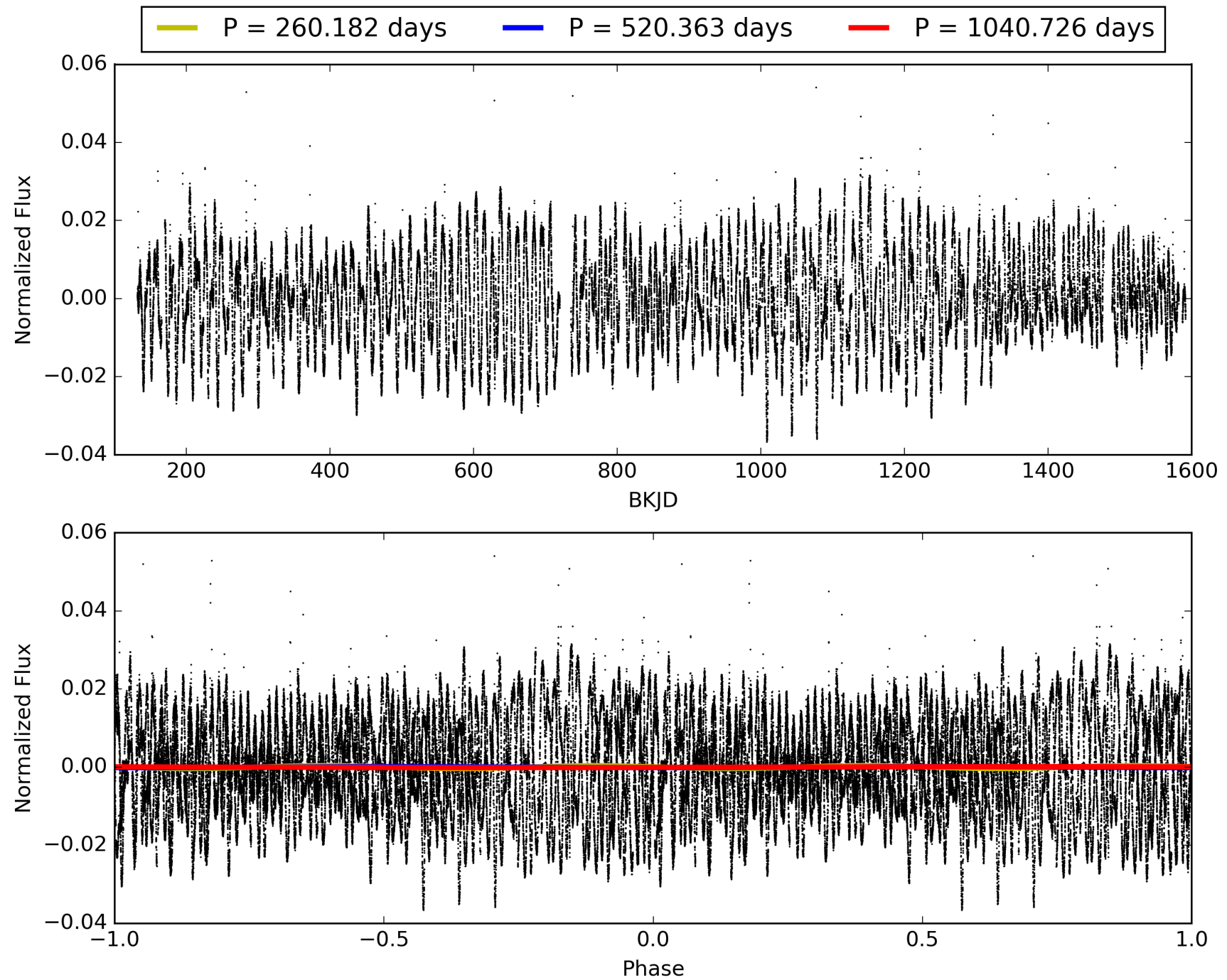
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:44:11 Z

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

TCE 007877209-02, PDC Light Curves

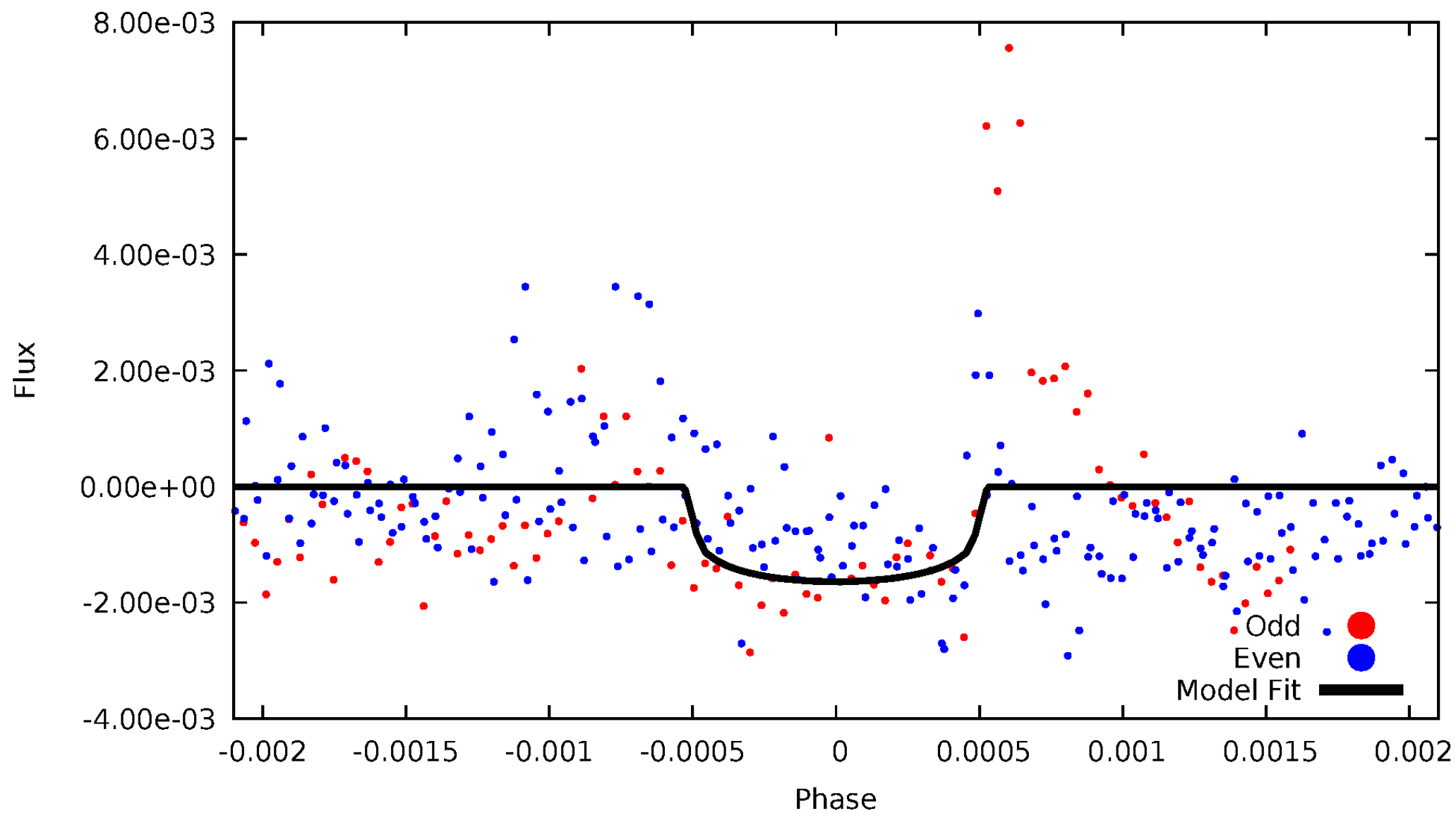


TCE 007877209-02



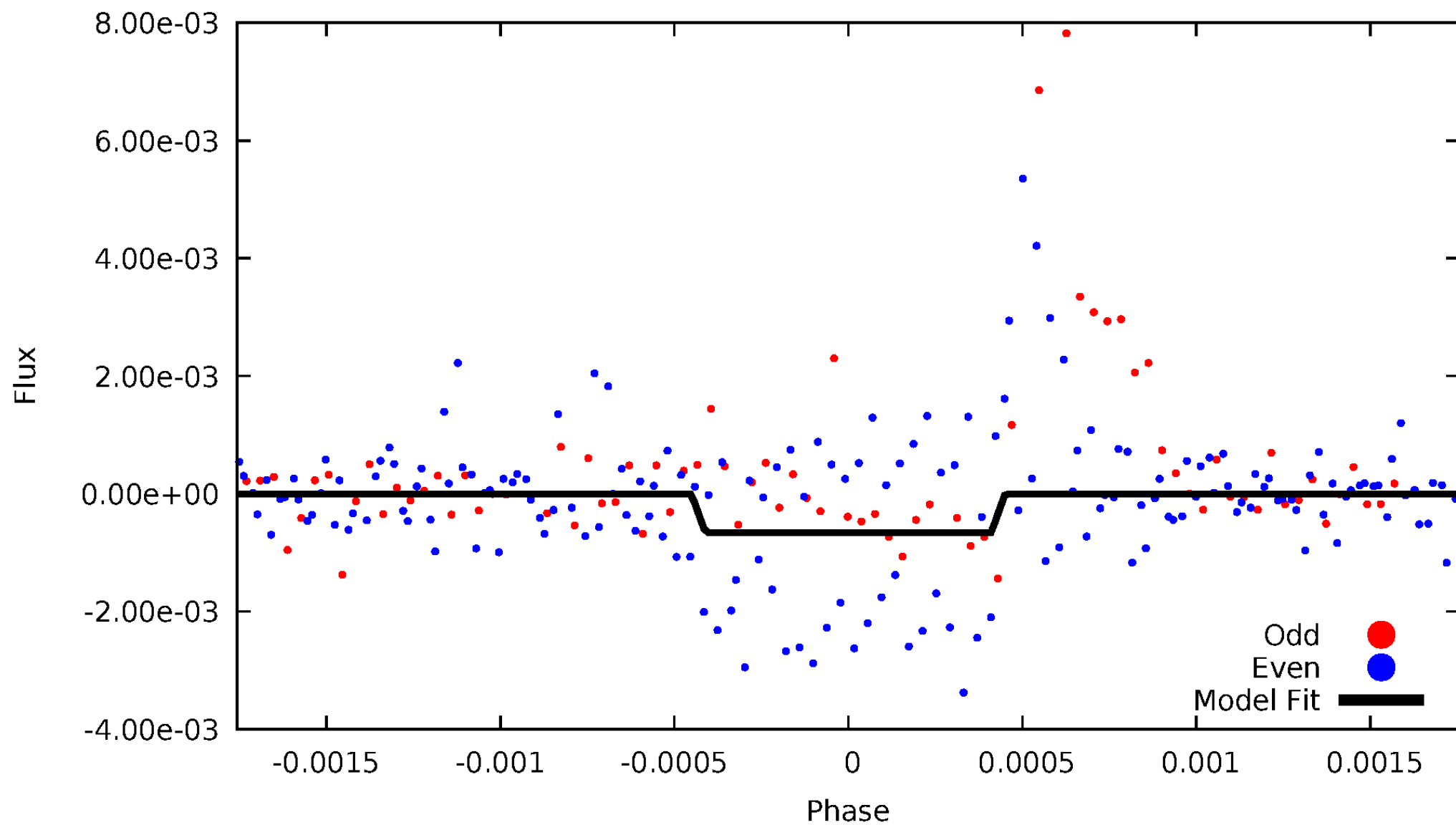
DV Odd/Even

TCE 007877209-02



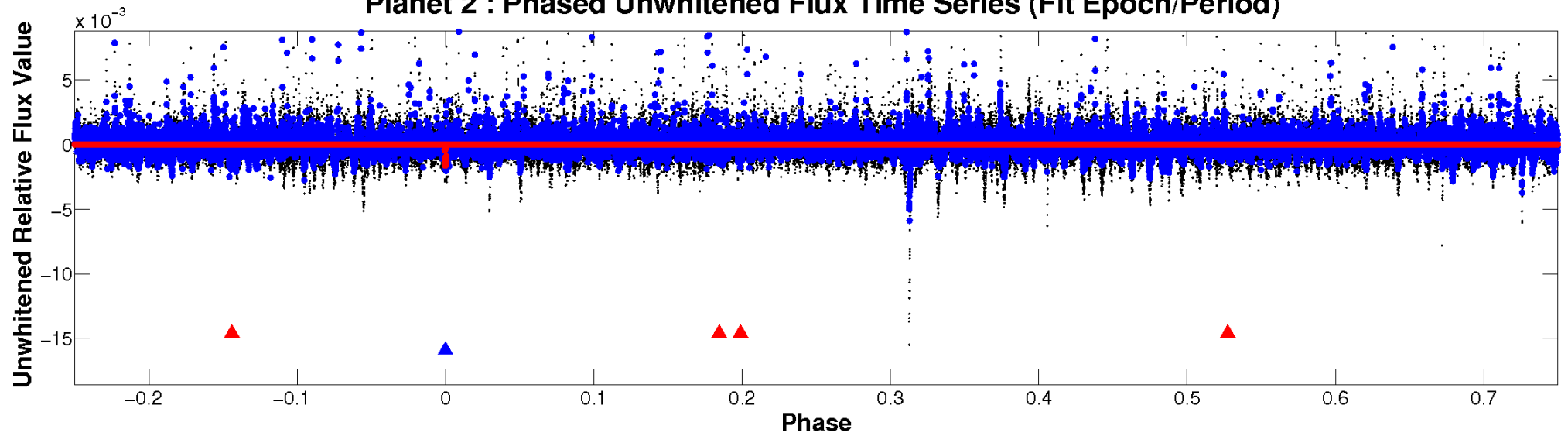
ALT Odd/Even

TCE 007877209-02

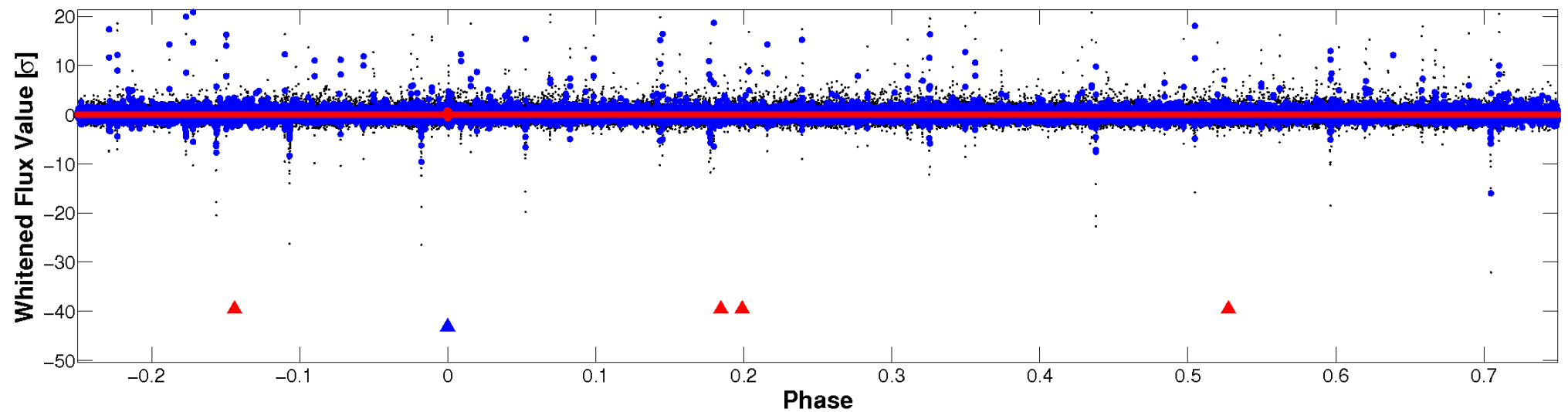


Non-Whitened Vs. Whitened Light Curve

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

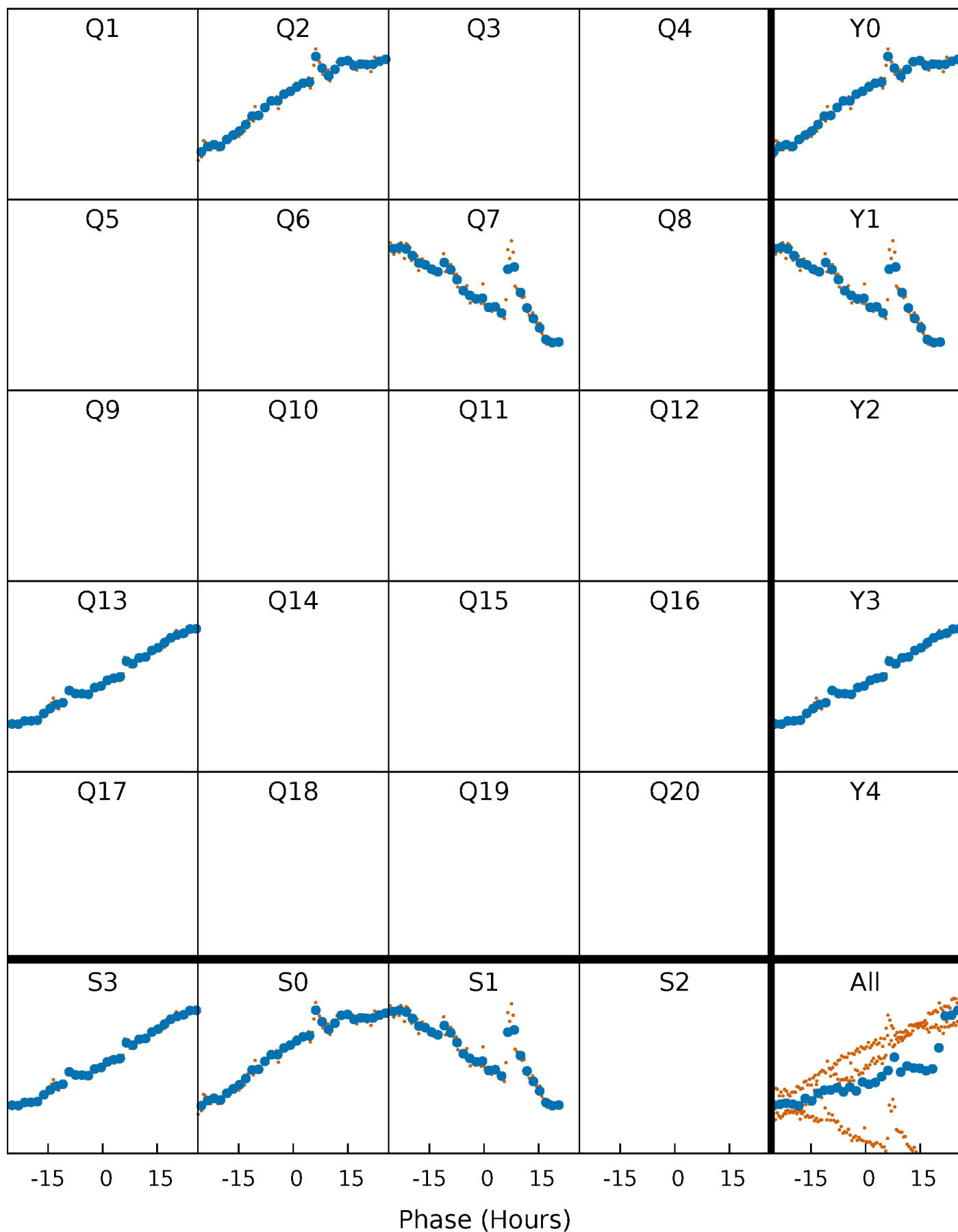


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



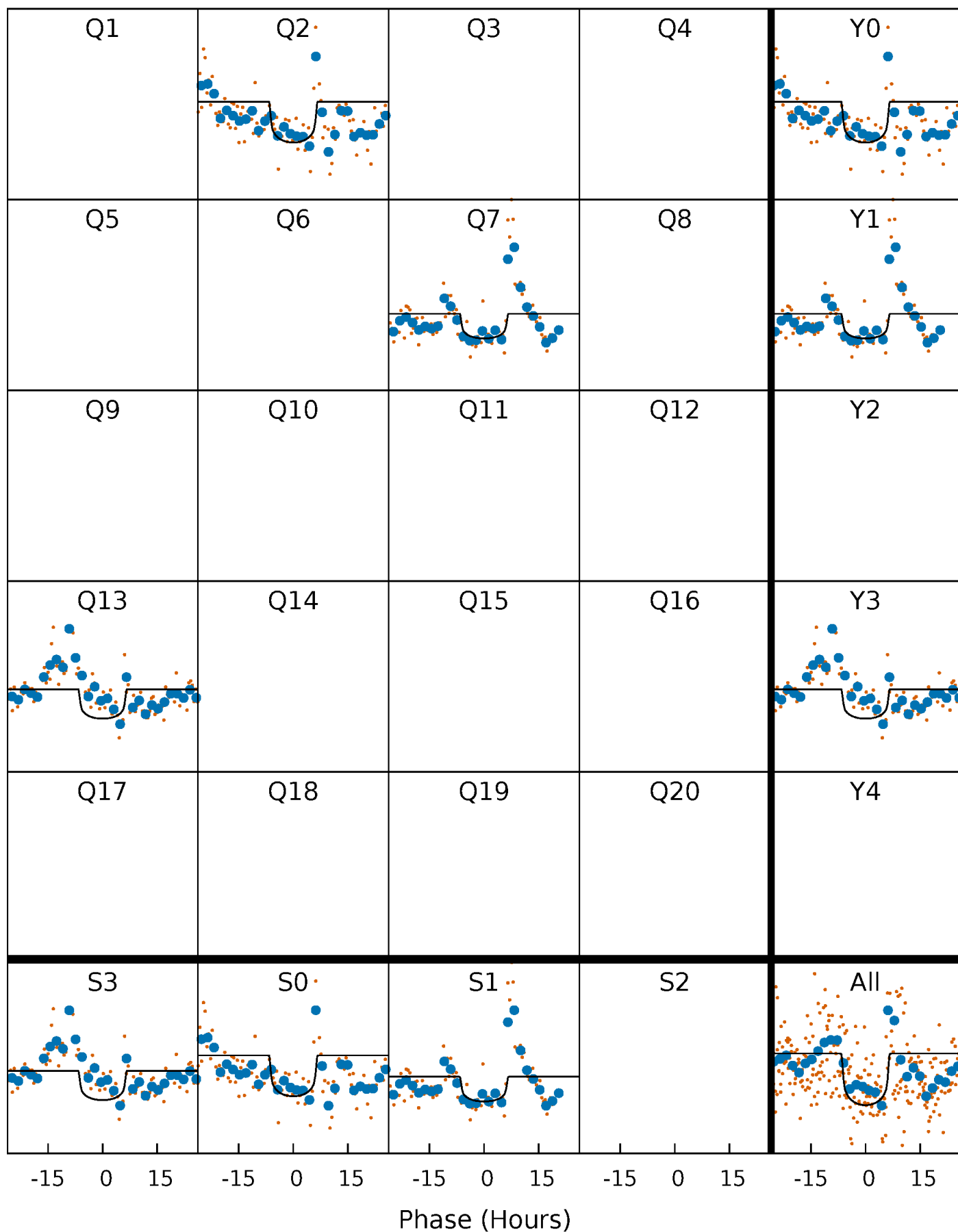
PDC Quarter-Phased Transit Curves

TCE 007877209-02 $P=520.363034$ Days $T_0=189.717005$ (BKJD)



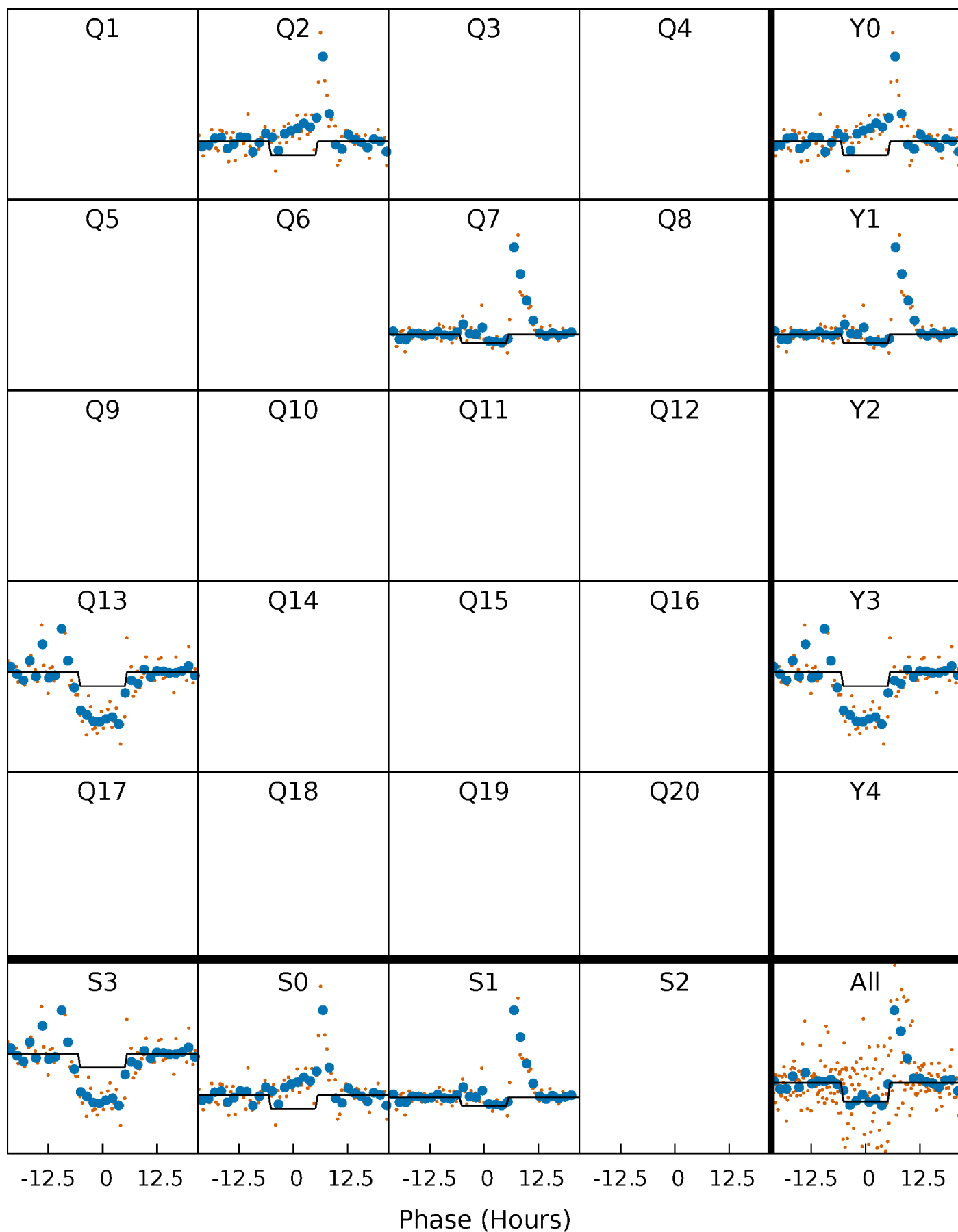
DV Quarter-Phased Transit Curves

TCE 007877209-02 P=520.363034 Days $T_0=189.717005$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

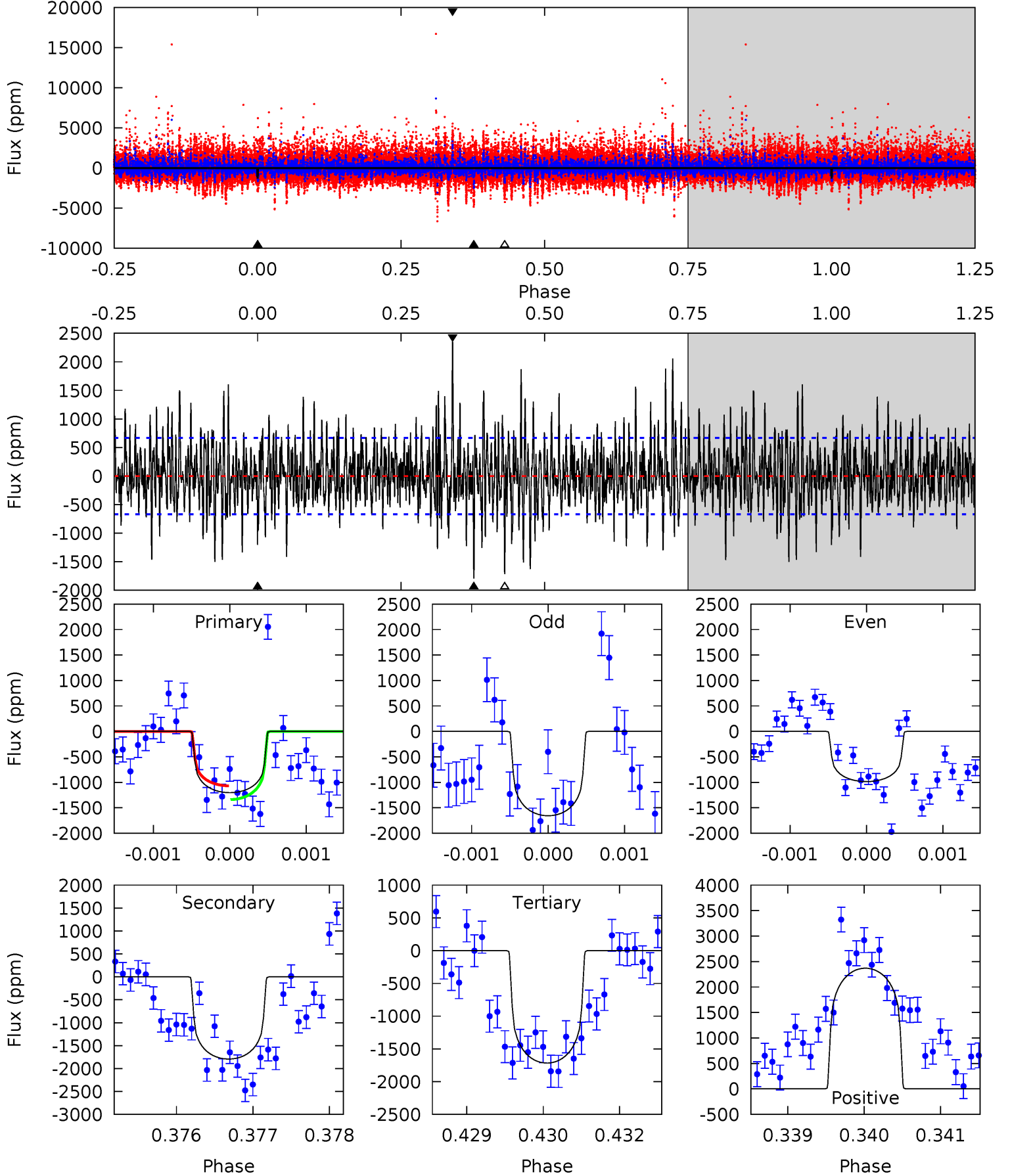
TCE 007877209-02 $P=520.374661$ Days $T_0=189.713742$ (BKJD)



DV Model-Shift Uniqueness Test

007877209-02, P = 520.363034 Days, E = 189.717005 Days

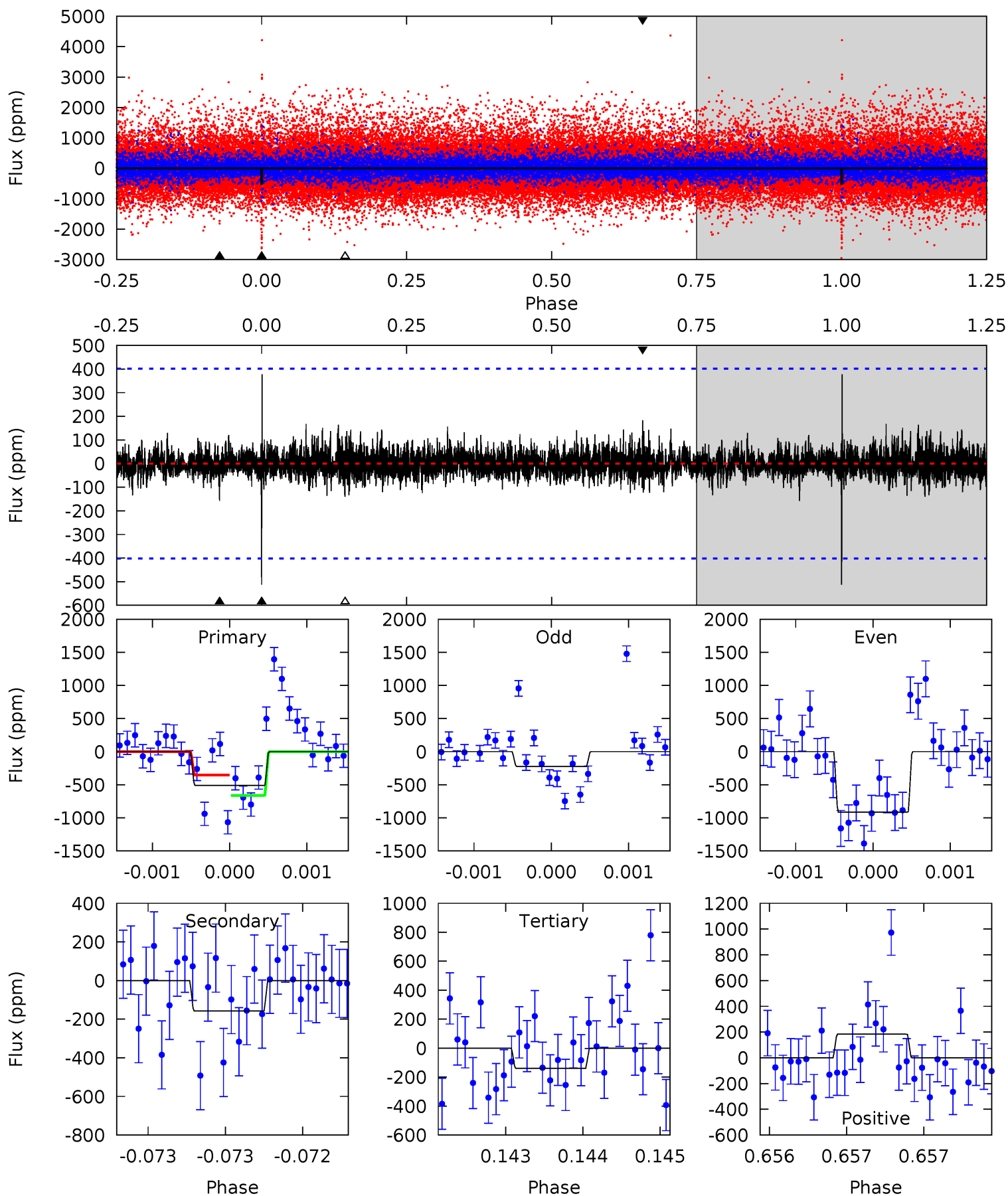
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.77	14.6	13.9	19.2	5.44	3.27	3.93	-4.17	-9.48	0.63	-4.68	2.02	0.90	0.57	1.10



Alt Model-Shift Uniqueness Test

007877209-02, P = 520.374661 Days, E = 189.713742 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.97	2.15	1.90	2.50	5.47	3.32	0.49	5.07	4.47	0.25	-0.35	4.55	6.32	0.42	2.10



Stellar Parameters For KIC 007877209

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3520^{+62}_{-62}	$4.907^{+0.055}_{-0.045}$	$-0.200^{+0.100}_{-0.100}$	$0.349^{+0.039}_{-0.048}$	$0.359^{+0.049}_{-0.060}$	$11.930^{+4.003}_{-2.091}$
	+2%/-2%	+1%/-1%	+50%/-50%	+11%/-14%	+14%/-17%	+34%/-18%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 007877209-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1793 ± 123	$1.42^{+0.53}_{-0.55}$	135^{+4}_{-4}	3666^{+734}_{-349}	$398862^{+683267}_{-185285}$
Alt.	-158 ± 73	$0.99^{+0.54}_{-0.52}$	135^{+4}_{-4}	2820^{+691}_{-359}	$66181^{+232468}_{-42613}$

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

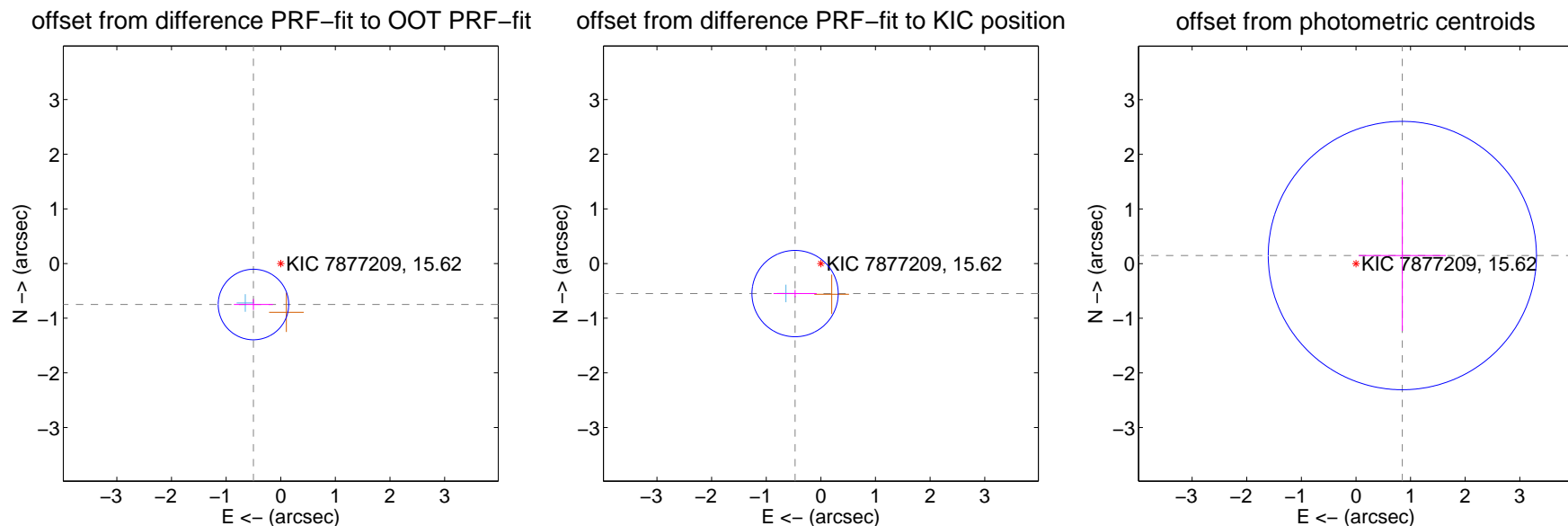
DV Centroid Data

Supplemental centroid analysis for 007877209-02. Kepler magnitude: 15.62. Transit SNR 6.73

There are 1 quarters with good PRF difference image offsets

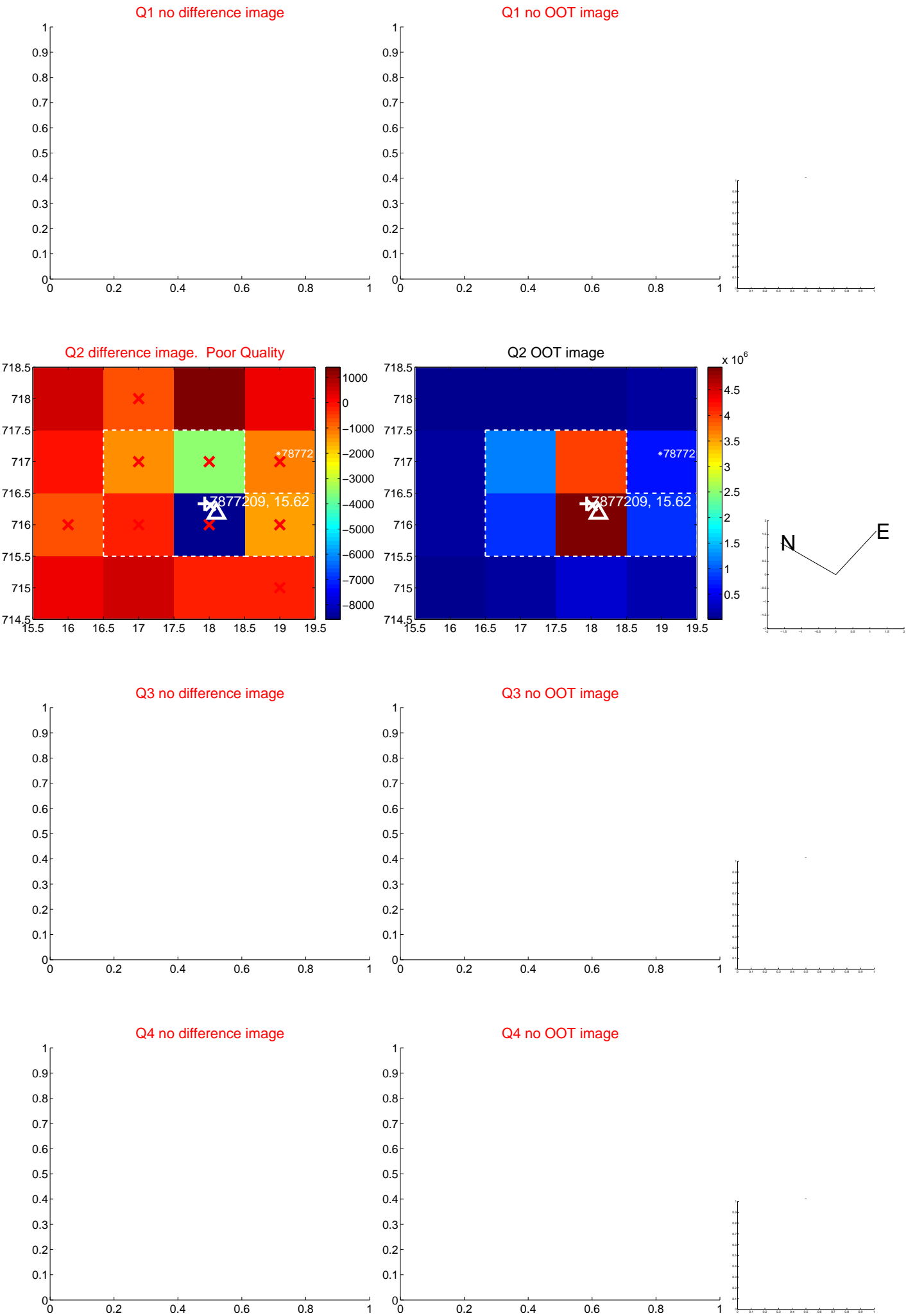
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.901 ± 0.215	4.19	0.500 ± 0.358	-0.750 ± 0.100
PRF-fit source offset from KIC position	0.724 ± 0.263	2.75	0.472 ± 0.396	-0.550 ± 0.067
photometric centroid source offset	0.86 ± 0.82	1.05	-0.85 ± 0.80	0.15 ± 1.38



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



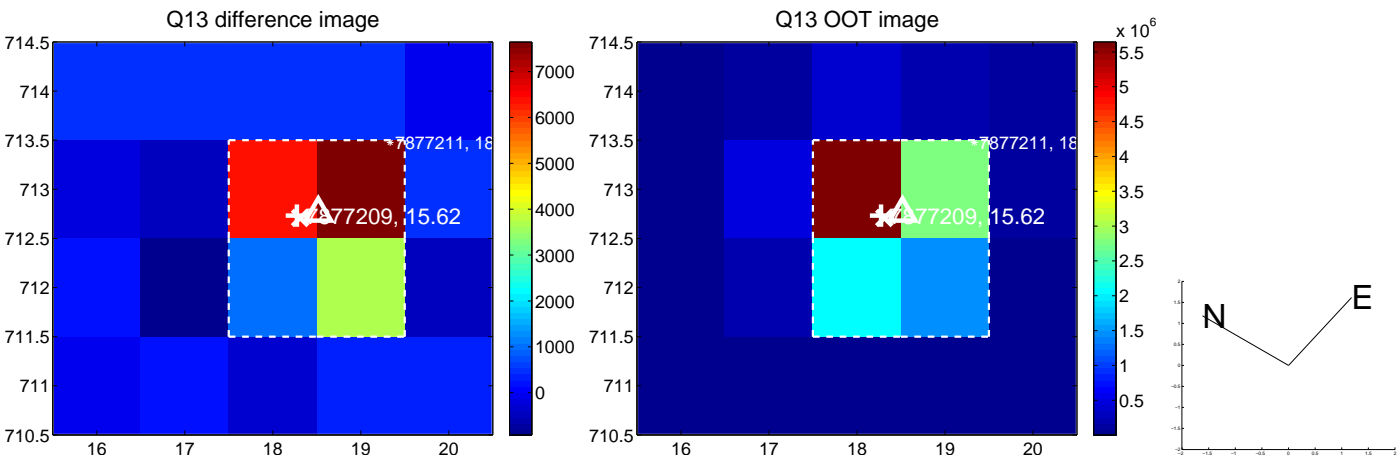
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



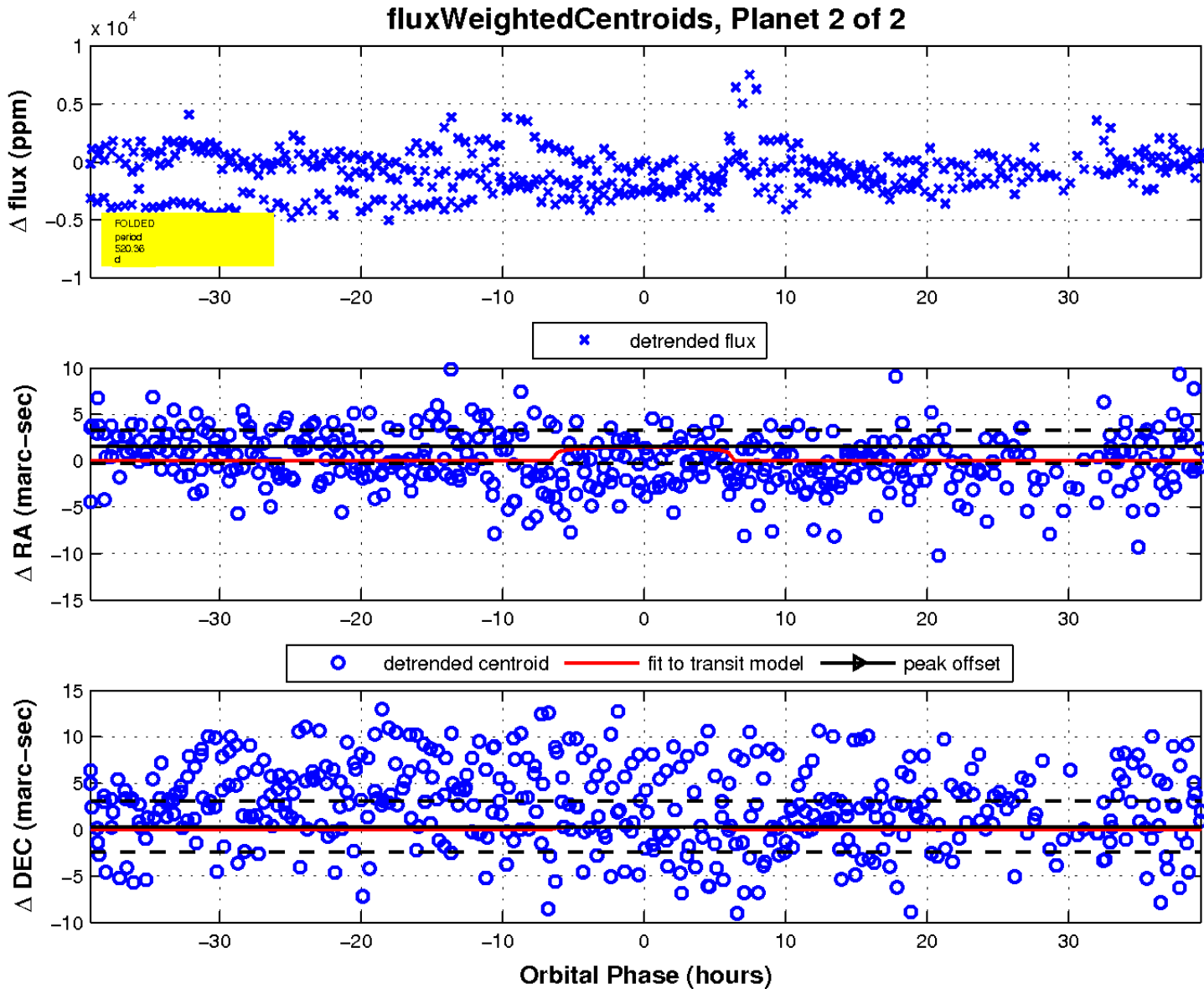
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q17 no difference image

Q17 no OOT image



UKIRT Image

Declination

