

# KIC 002719873

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002719873-01	OBS	6096.01	17.279291	135.274113	165122.9	5.091	4466.5	3190.0	0.66	5251	27.76	22.66
002719873-02	OBS	No	17.279282	143.895383	10565.2	4.233	304.7	291.0	0.66	5251	7.71	22.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002719873-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE
002719873-02	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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

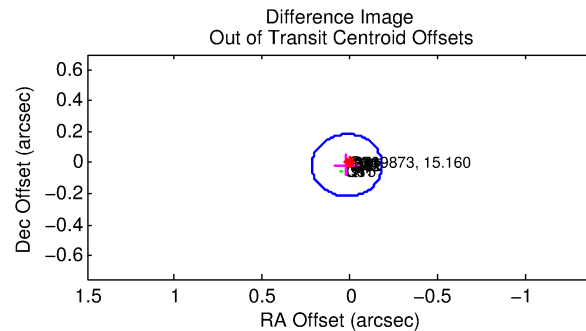
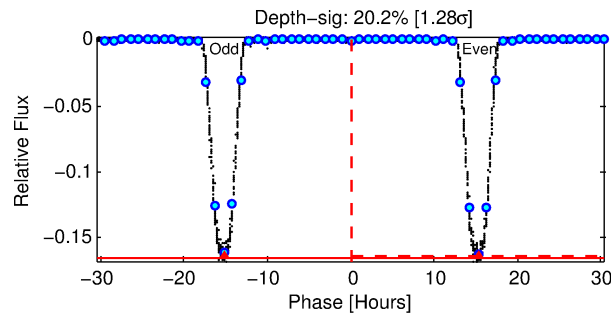
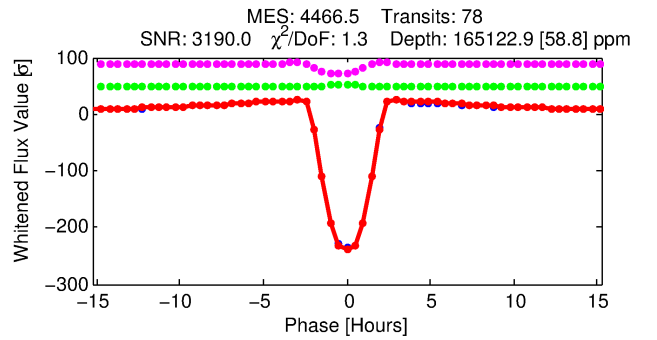
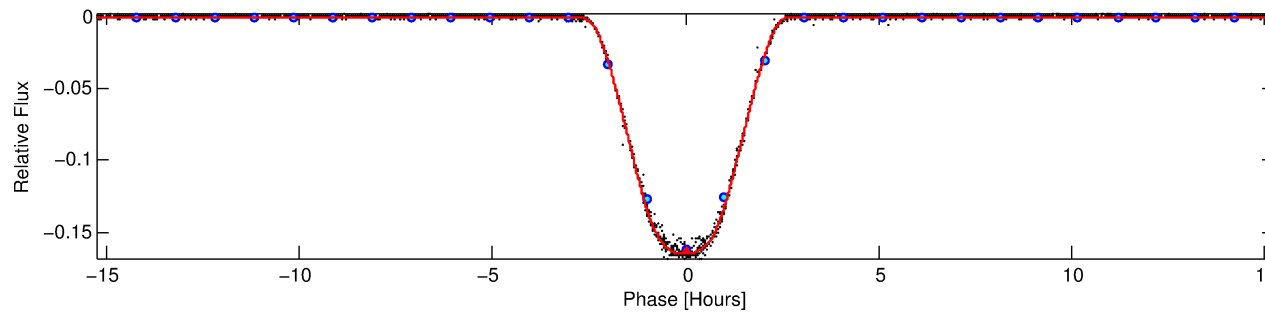
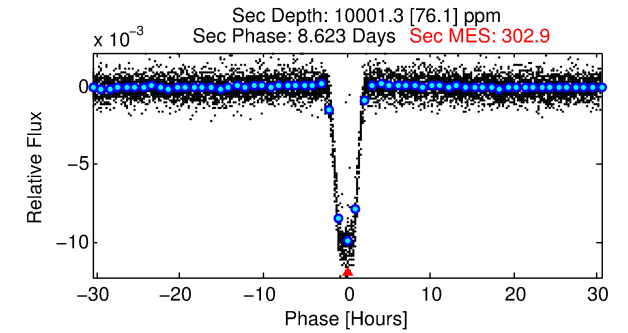
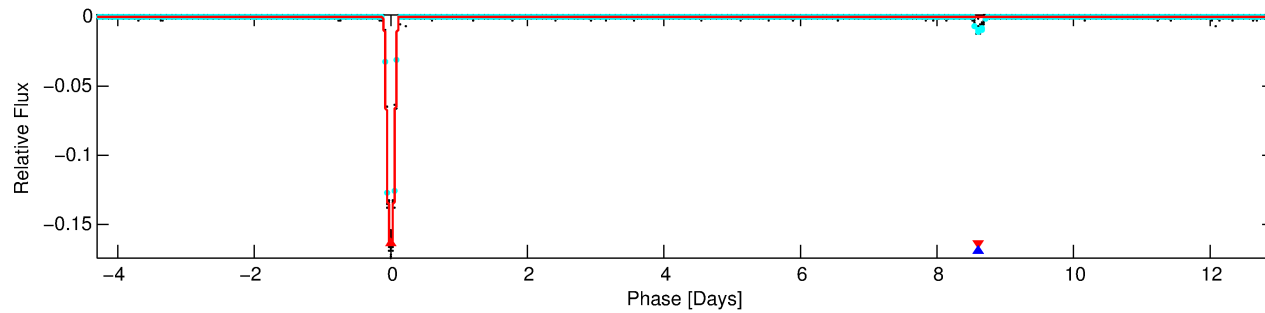
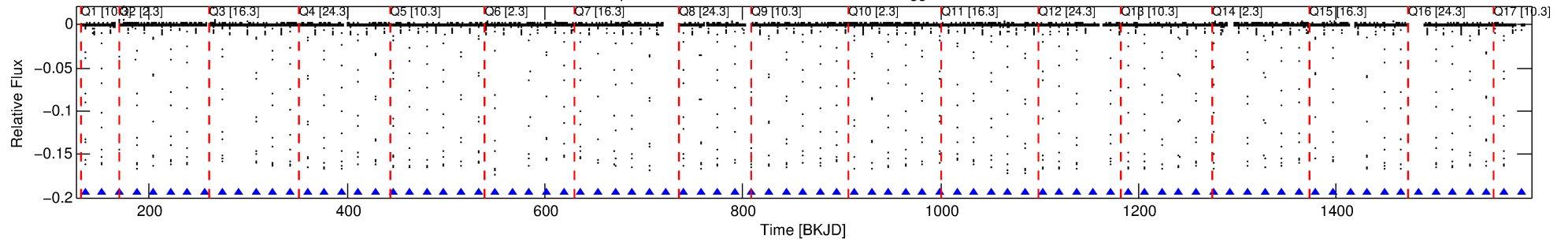
## Ephemeris Match Information For 002719873-01

No Significant Match Found

# DV One-Page Summary

KIC: 2719873 Candidate: 1 of 2 Period: 17.279 d  
KOI: K06096.01 Corr: 0.998

Kp: 15.16 R\*: 0.66 Rs Teff: 5251.0 K Logg: 4.62 Fe/H: -0.780



## DV Fit Results:

Period = 17.27929 [0.00000] d  
Epoch = 135.2741 [0.0000] BKJD  
Rp/R\* = 0.3866 [0.0001]  
a/R\* = 33.52 [0.02]  
b = 0.50 [0.00]  
Seff = 22.66 [3.66]  
Teff = 556 [22] K  
Rp = 27.76 [2.91] Re  
a = 0.1141 [0.0093] AU  
Ag = 92.92 [10.21] [9.00σ]  
Teffp = 2671 [80] K [25.59σ]

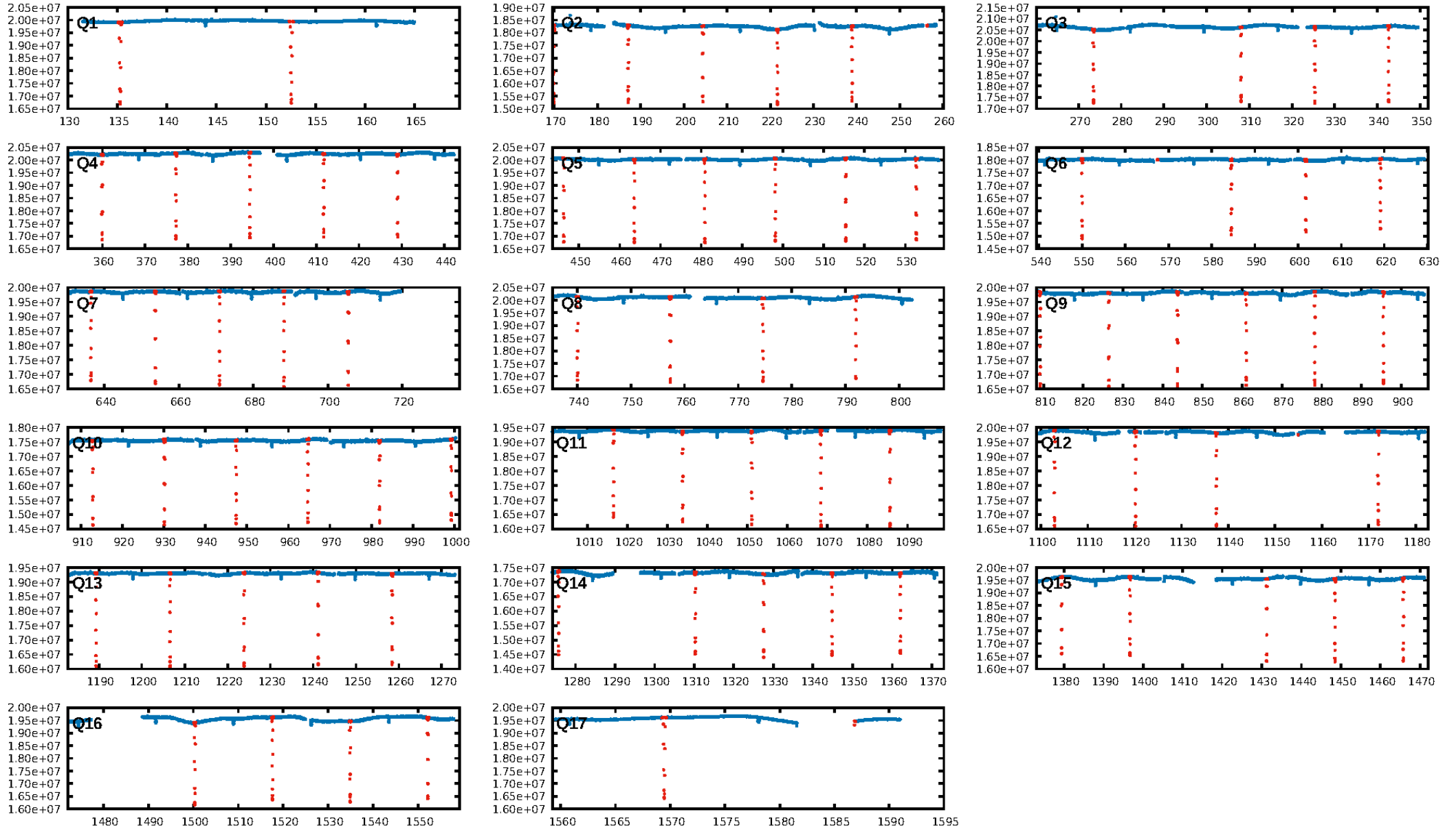
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 87.7%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [74/74]  
GhostDiagnostic-chr: 4.04  
Centroid-sig: 0.0%  
Centroid-so: 0.925 arcsec [383.83σ]  
OotOffset-rm: 0.025 arcsec [0.37σ]  
KicOffset-rm: 0.312 arcsec [4.54σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

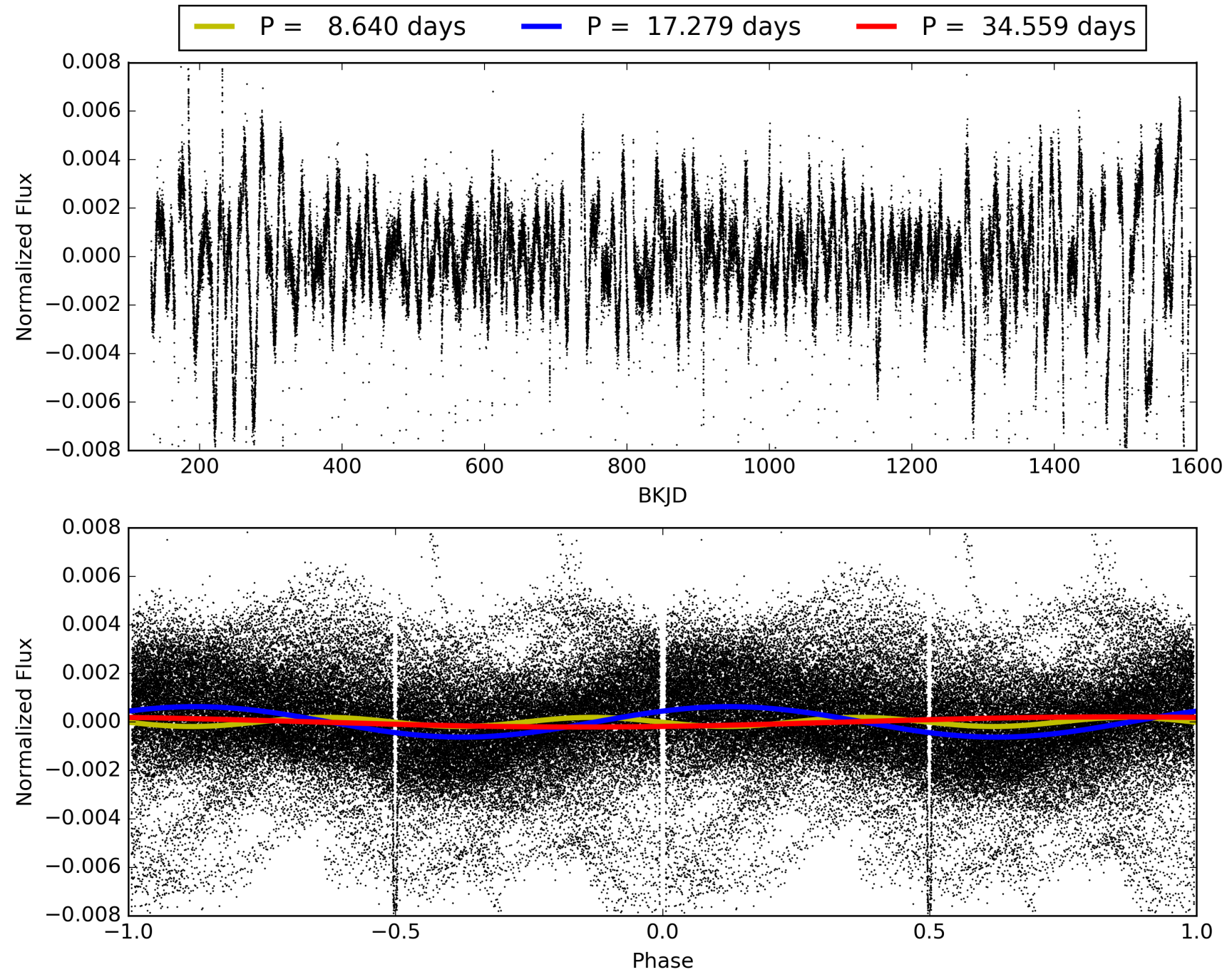
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:38:12 Z

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

# TCE 002719873-01, PDC Light Curves

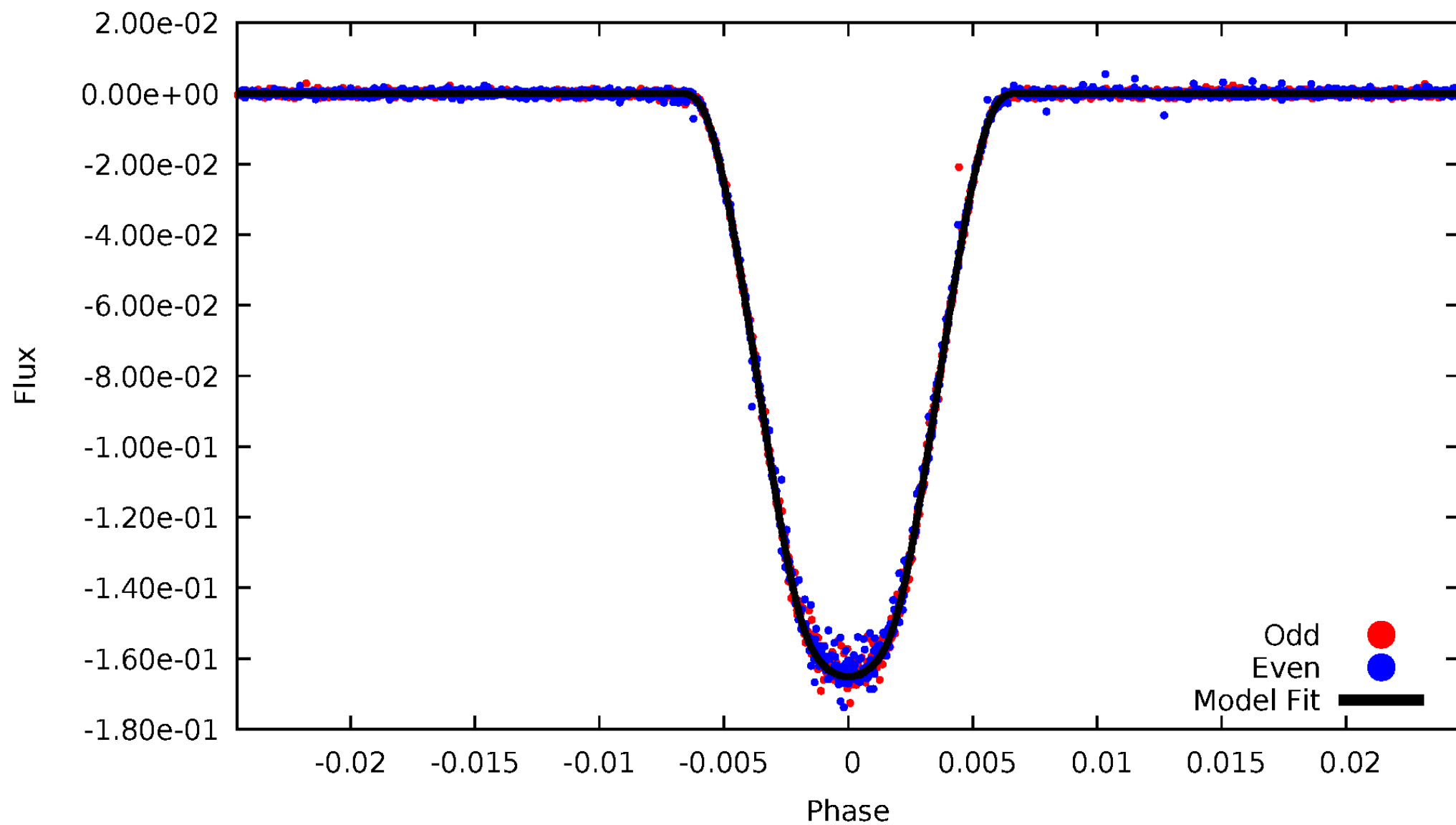


TCE 002719873-01



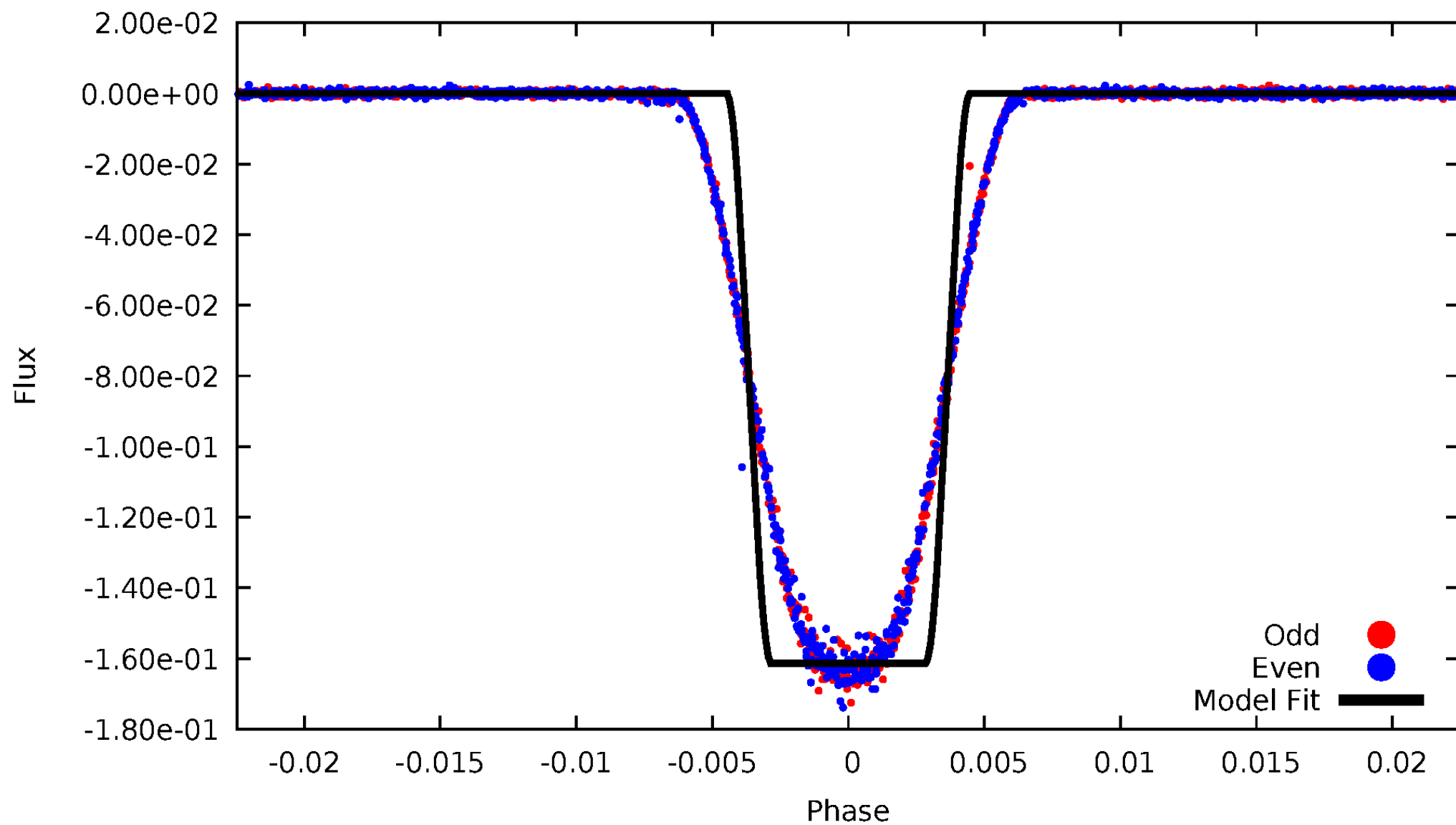
# DV Odd/Even

TCE 002719873-01



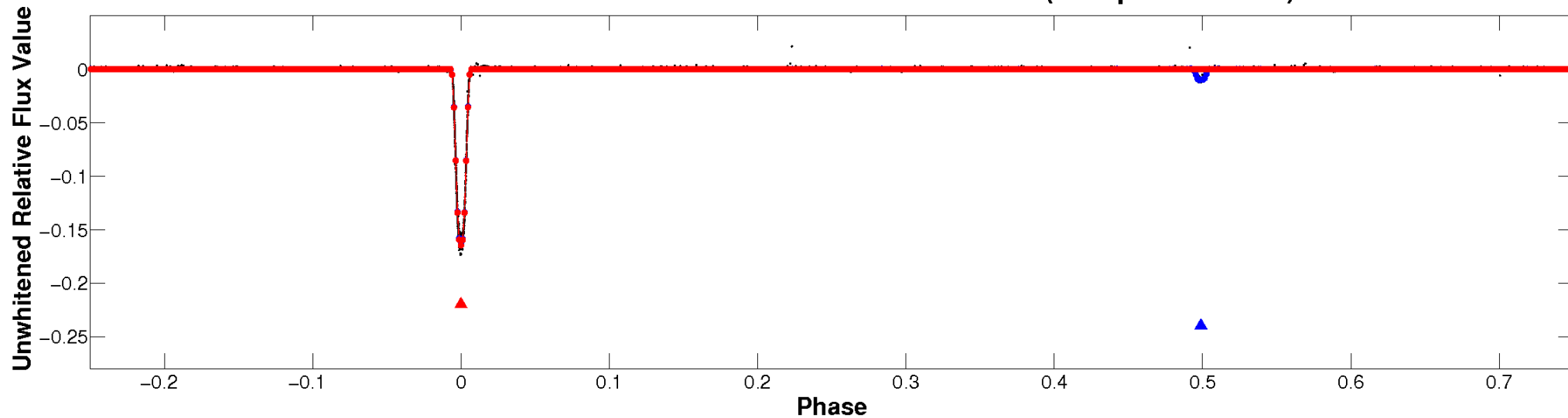
# ALT Odd/Even

TCE 002719873-01

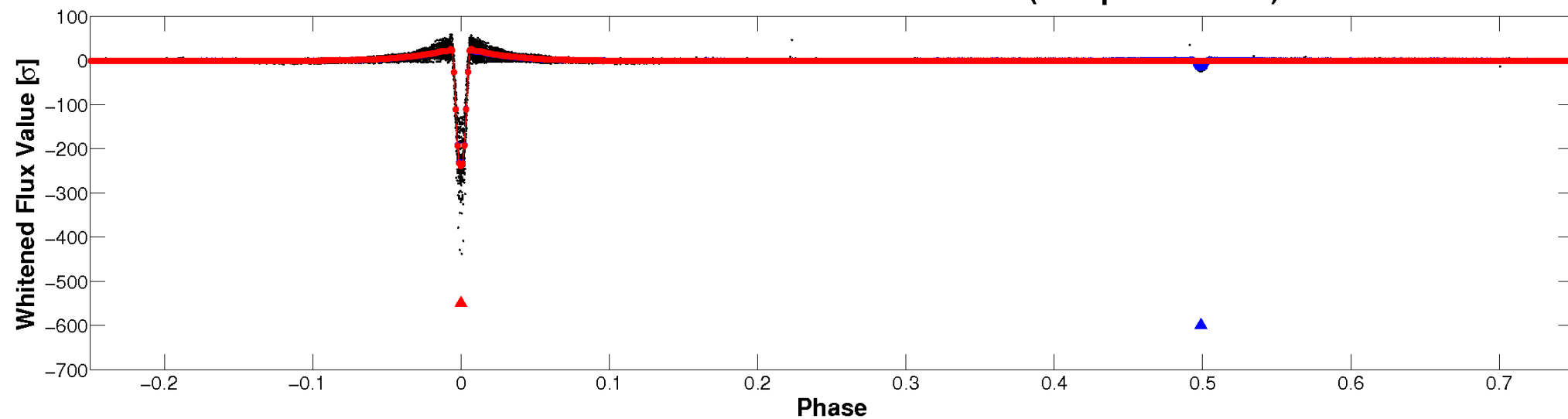


# Non-Whitened Vs. Whitened Light Curve

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

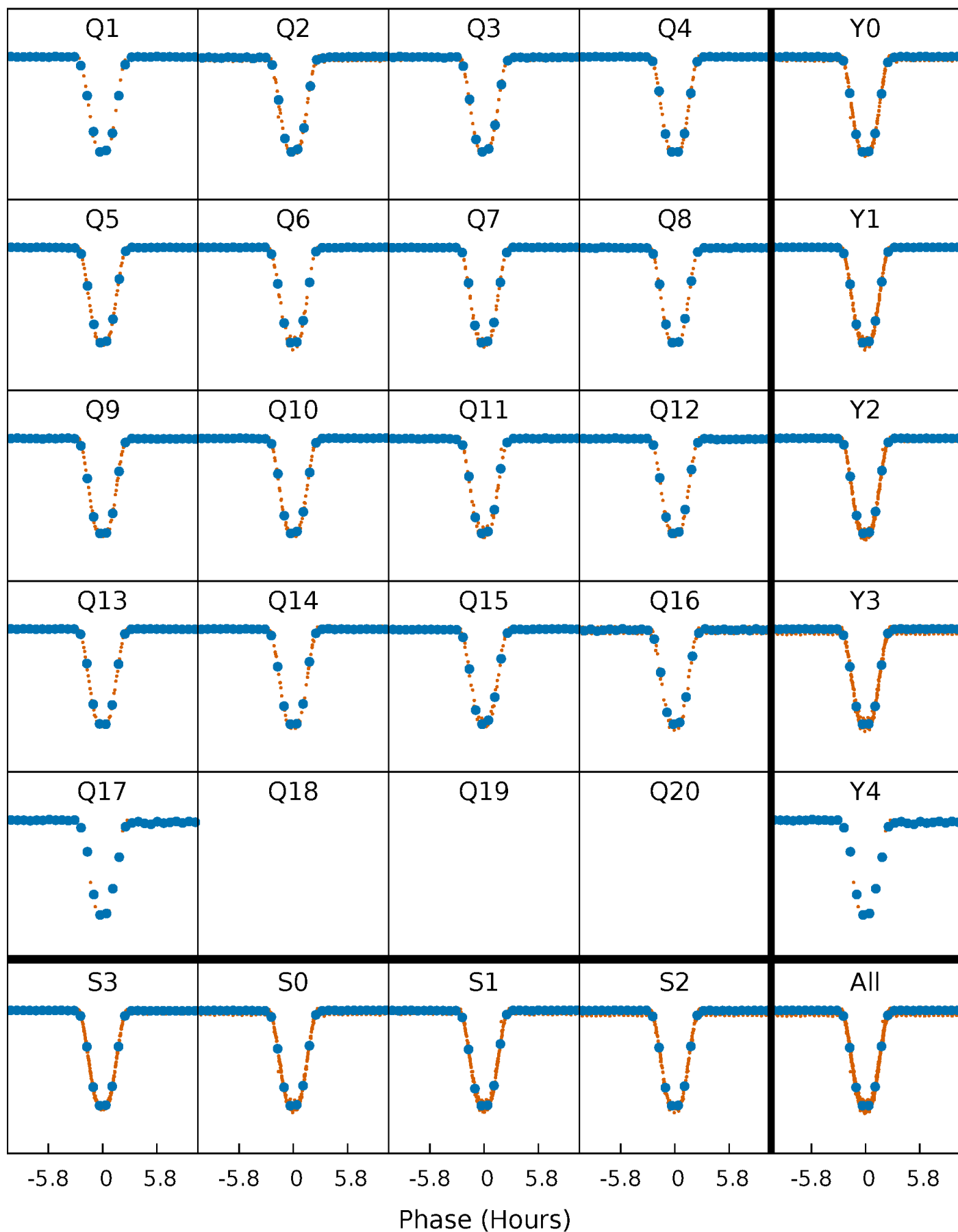


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

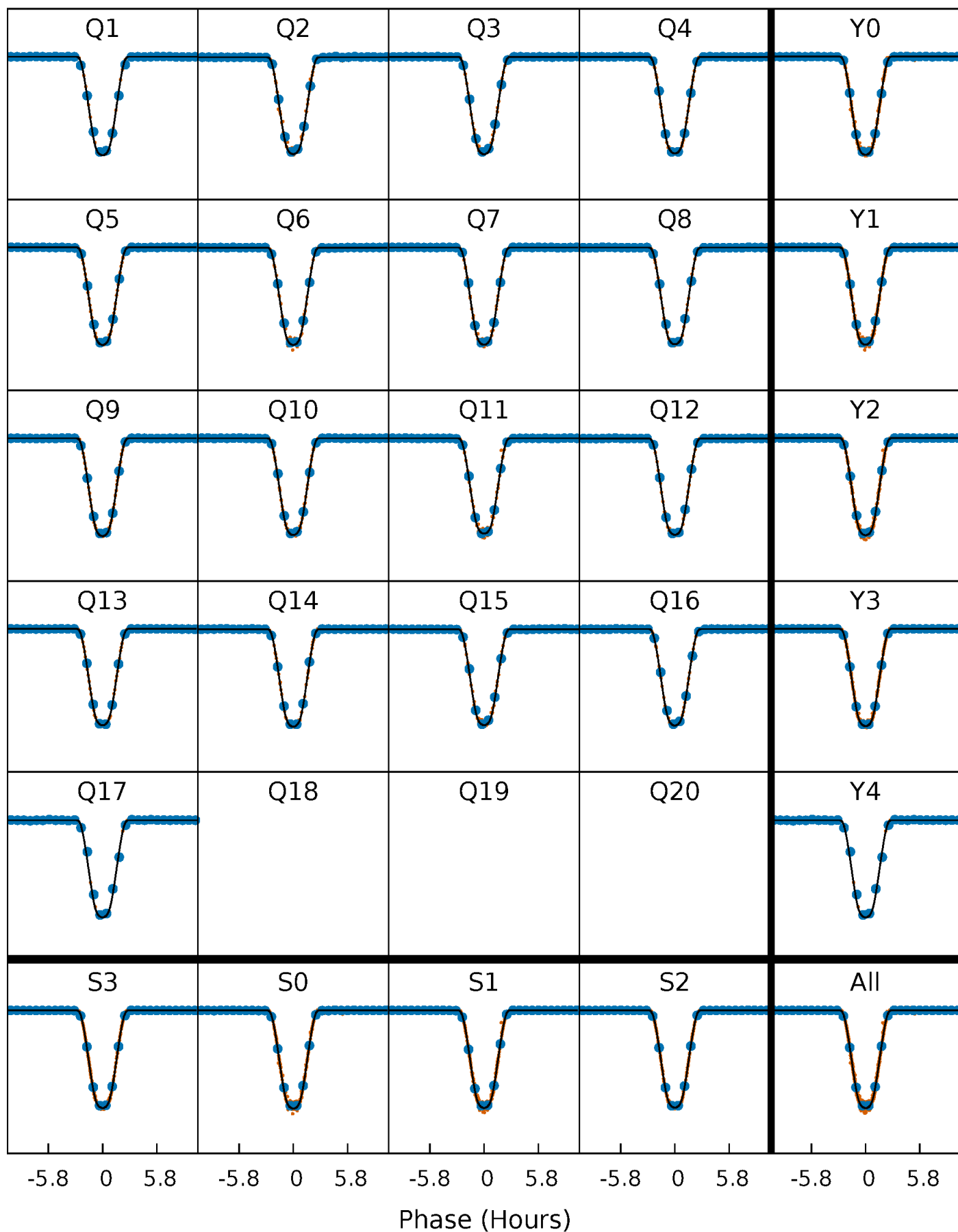
TCE 002719873-01 P= 17.279291 Days  $T_0=135.274113$  (BKJD)





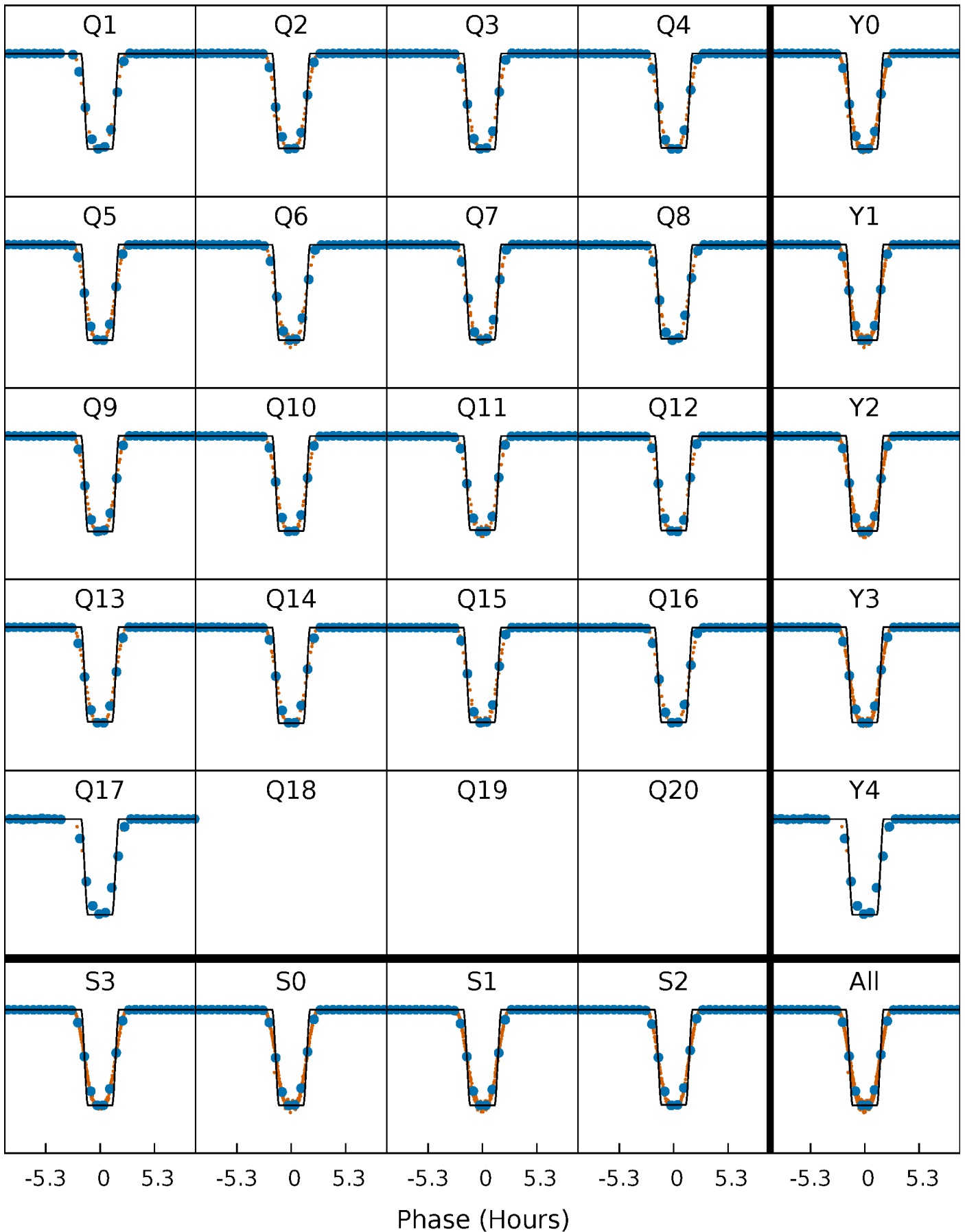
# DV Quarter-Phased Transit Curves

TCE 002719873-01 P= 17.279291 Days  $T_0=135.274113$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

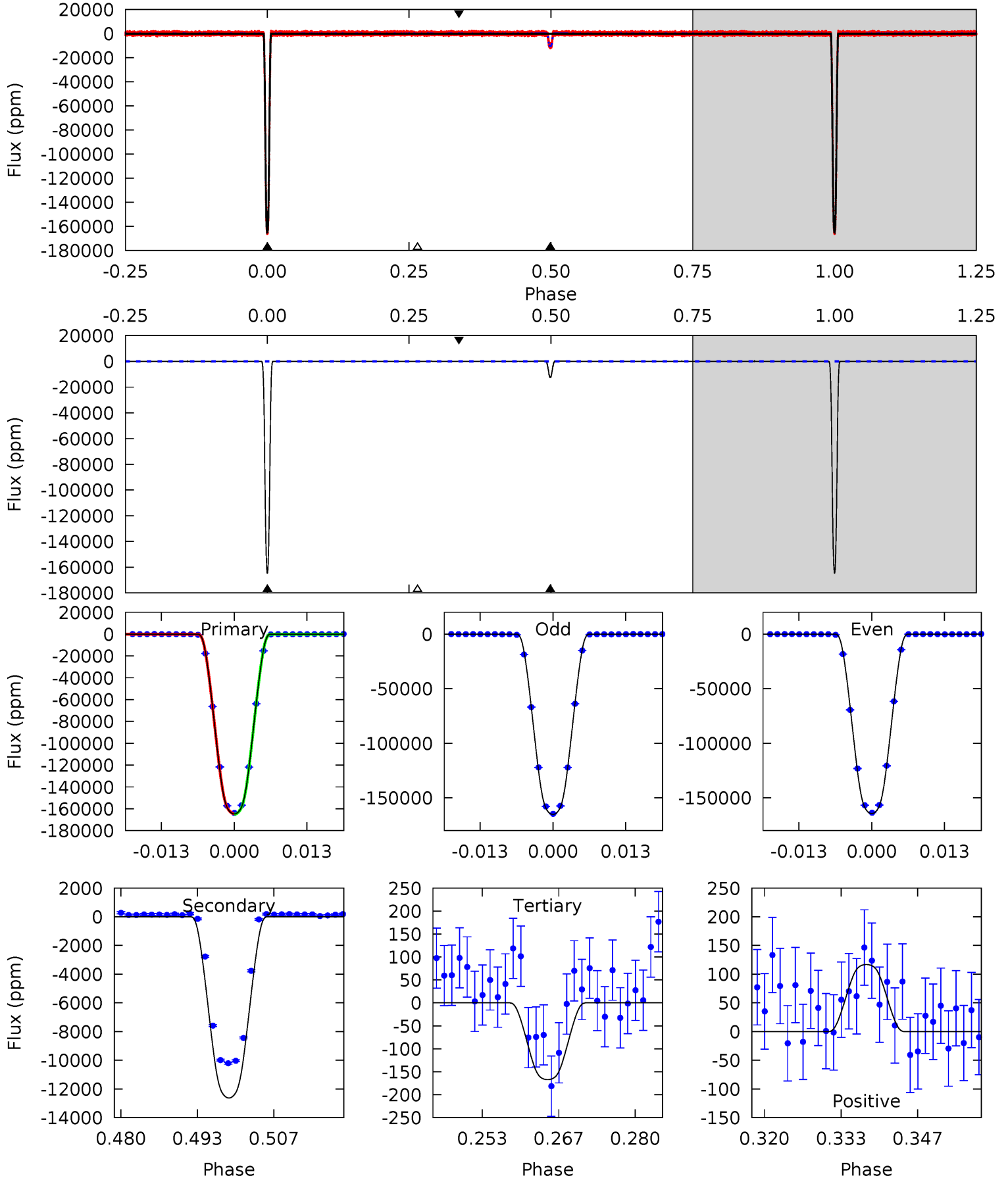
TCE 002719873-01 P= 17.279273 Days  $T_0=135.274819$  (BKJD)



# DV Model-Shift Uniqueness Test

002719873-01, P = 17.279291 Days, E = 117.994822 Days

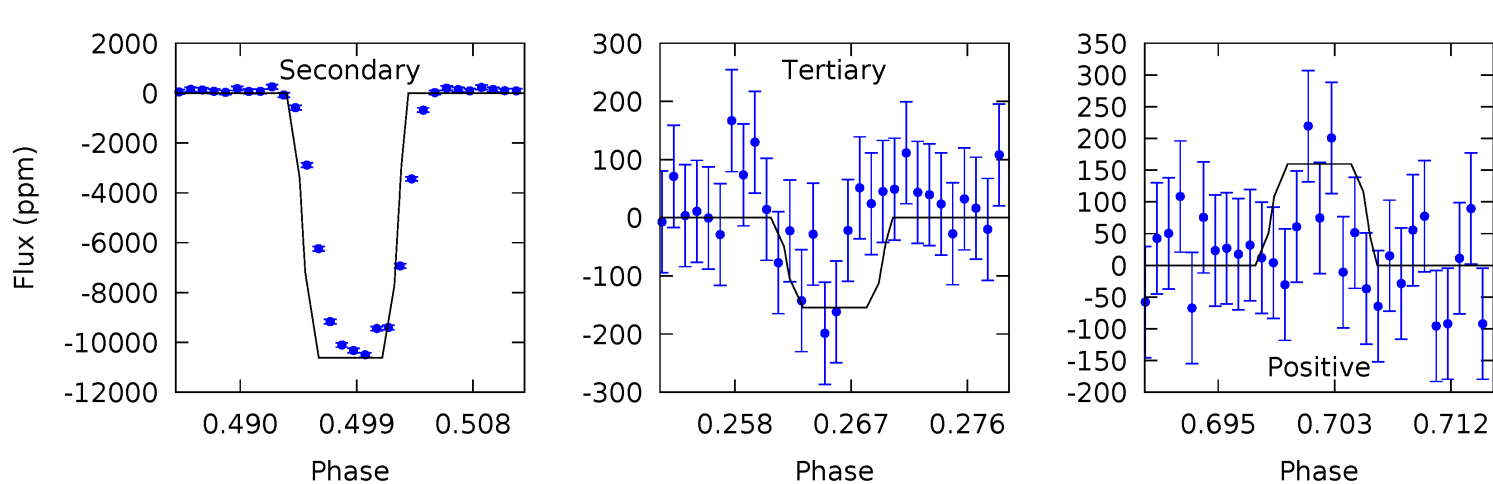
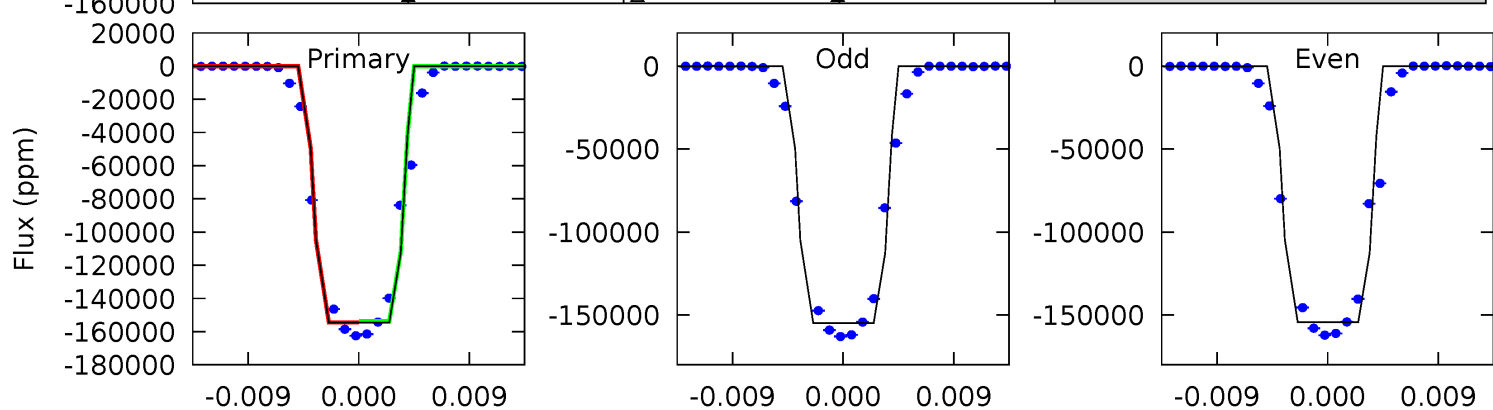
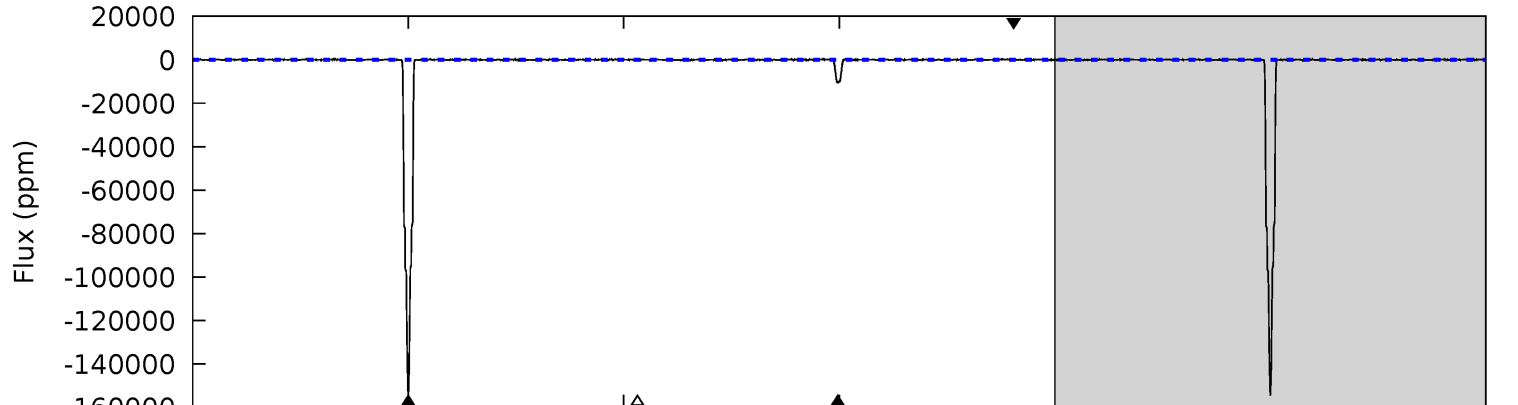
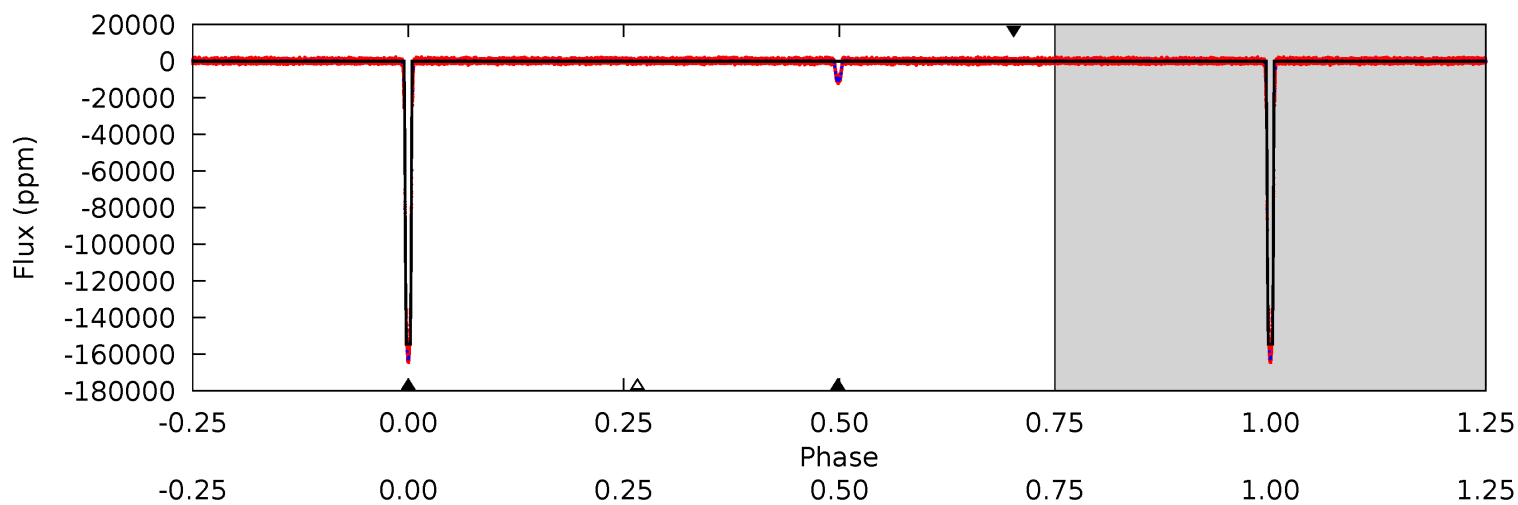
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7635	585.3	7.75	5.41	4.97	2.47	2.24	7628	7630	577.6	579.9	18.9	1.00	0.00	0



# Alt Model-Shift Uniqueness Test

002719873-01, P = 17.279273 Days, E = 117.995546 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3951	271.5	3.95	4.09	5.05	2.62	1.12	3947	3947	267.6	267.5	5.24	1.00	0.00	8.87



### Stellar Parameters For KIC 002719873

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5251^{+156}_{-156}$	$4.623^{+0.055}_{-0.055}$	$-0.780^{+0.300}_{-0.300}$	$0.658^{+0.069}_{-0.052}$	$0.663^{+0.066}_{-0.033}$	$3.276^{+0.754}_{-0.613}$
	+3%/-3%	+1%/-1%	+38%/-38%	+10%/-8%	+10%/-5%	+23%/-19%
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 002719873-01 / KOI 6096.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-12629 \pm 22$	$27.81^{+1.59}_{-1.19}$	$778^{+28}_{-27}$	$3351^{+71}_{-73}$	$119^{+10}_{-10}$
Alt.	$-10617 \pm 39$	$28.81^{+1.70}_{-1.17}$	$777^{+28}_{-27}$	$3224^{+65}_{-61}$	$93^{+8}_{-8}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

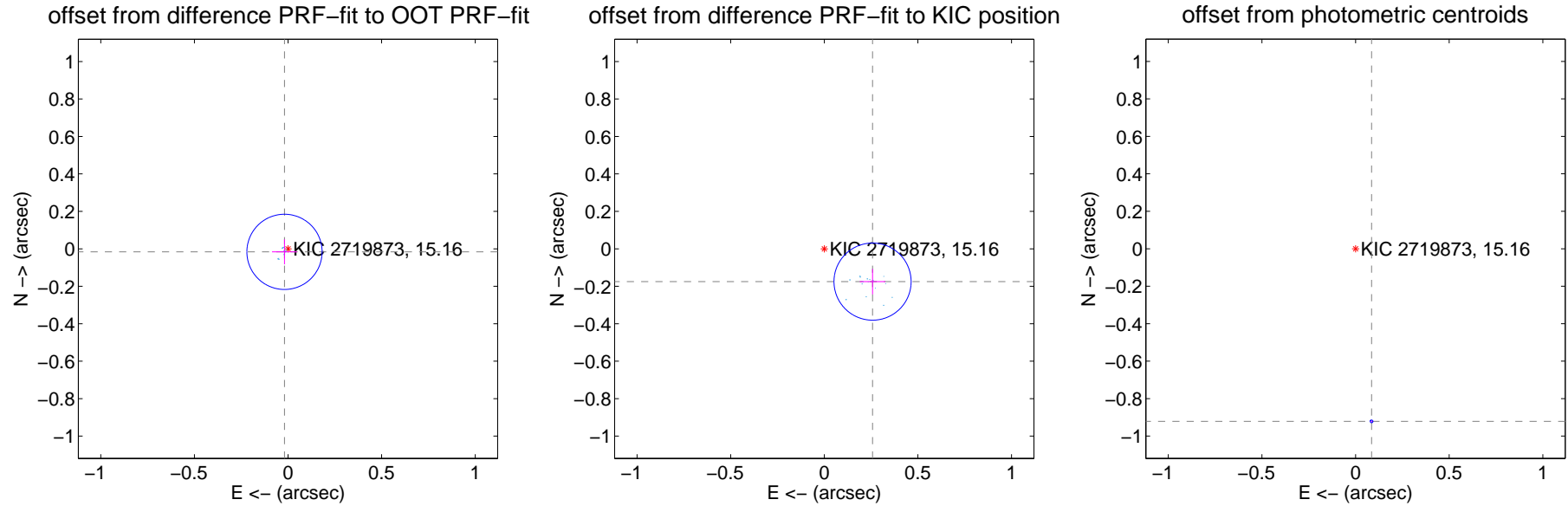
## DV Centroid Data

Supplemental centroid analysis for 002719873-01. Kepler magnitude: 15.16. Transit SNR 3189.98

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

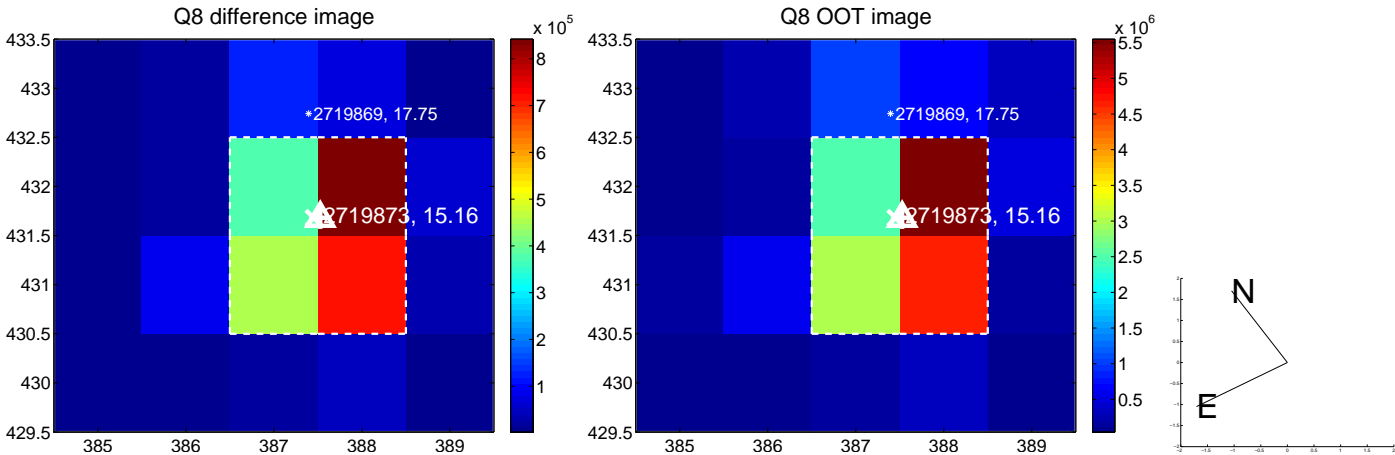
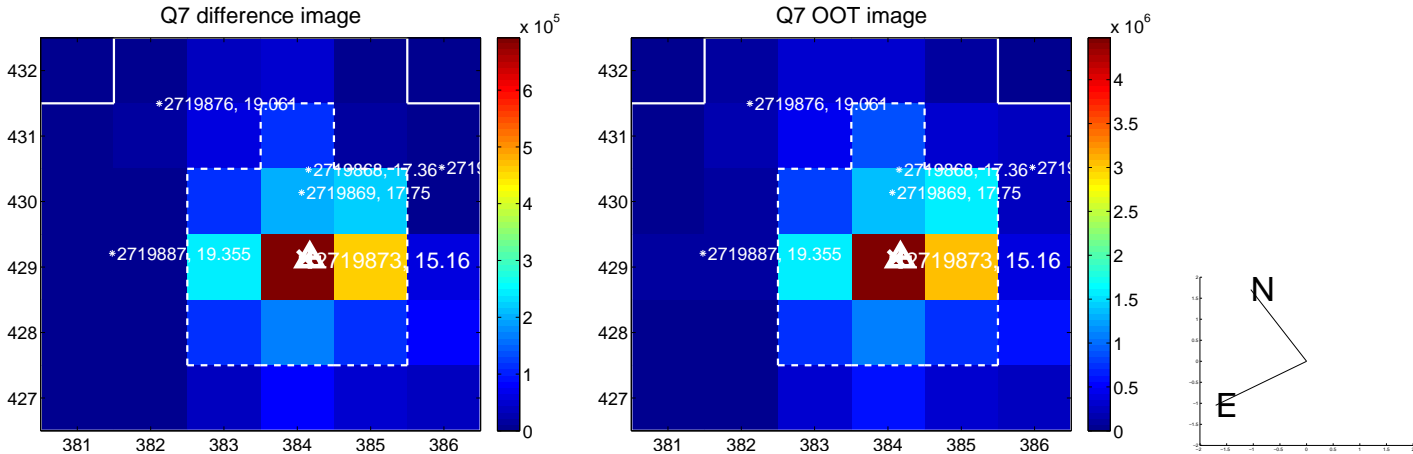
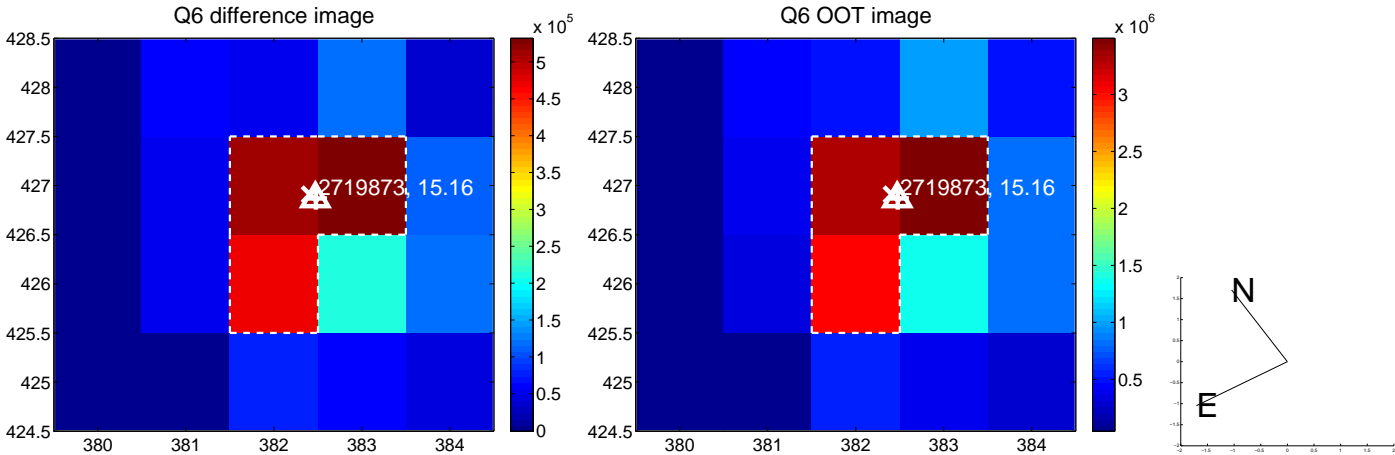
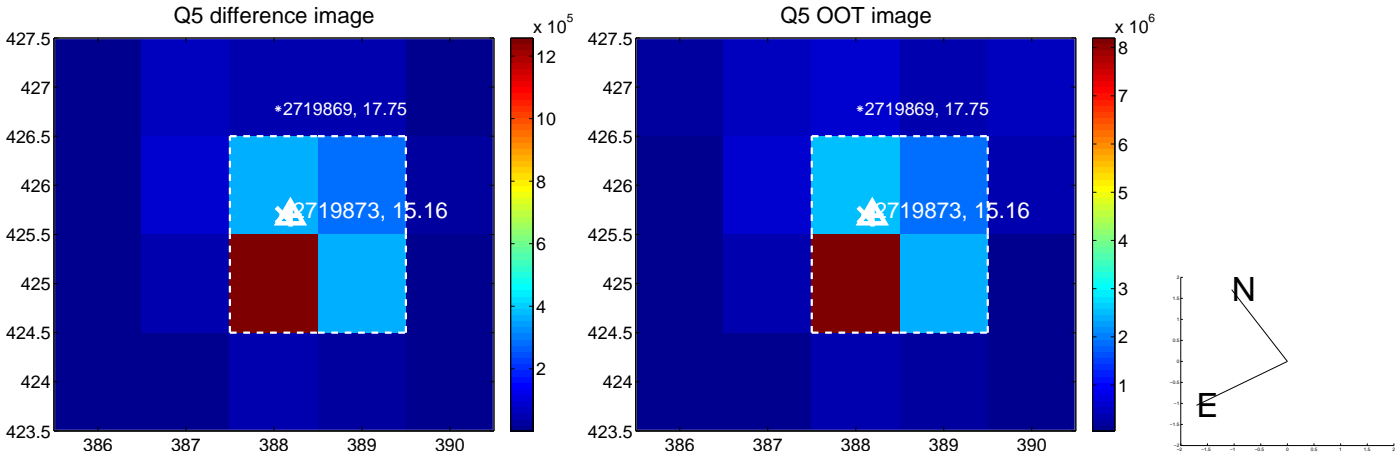
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.025 \pm 0.067$	0.37	$0.019 \pm 0.067$	$-0.016 \pm 0.067$
PRF-fit source offset from KIC position	$0.312 \pm 0.069$	4.54	$-0.258 \pm 0.069$	$-0.175 \pm 0.068$
photometric centroid source offset	$0.93 \pm 0.00$	383.83	$-0.09 \pm 0.00$	$-0.92 \pm 0.00$



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- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

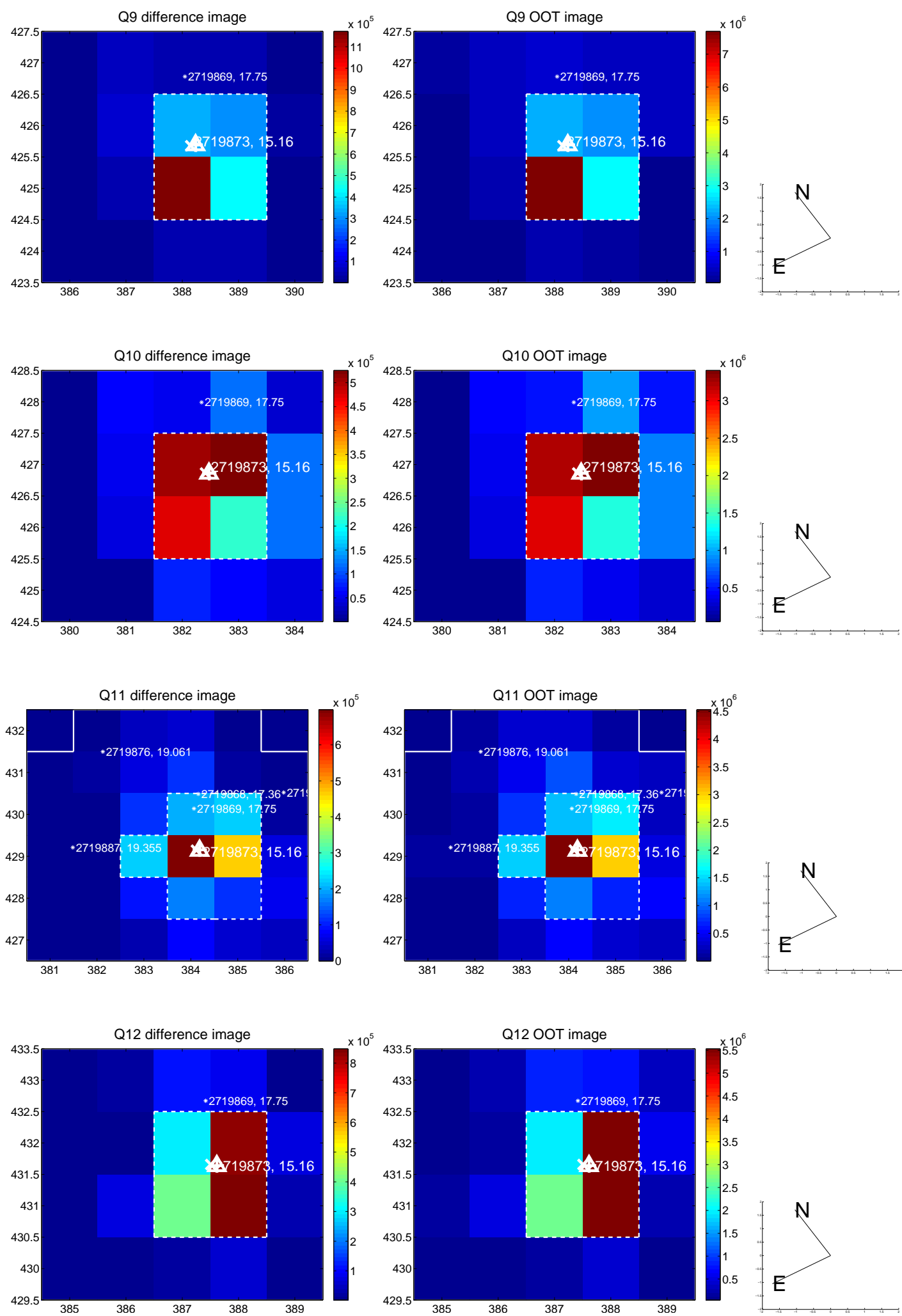


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

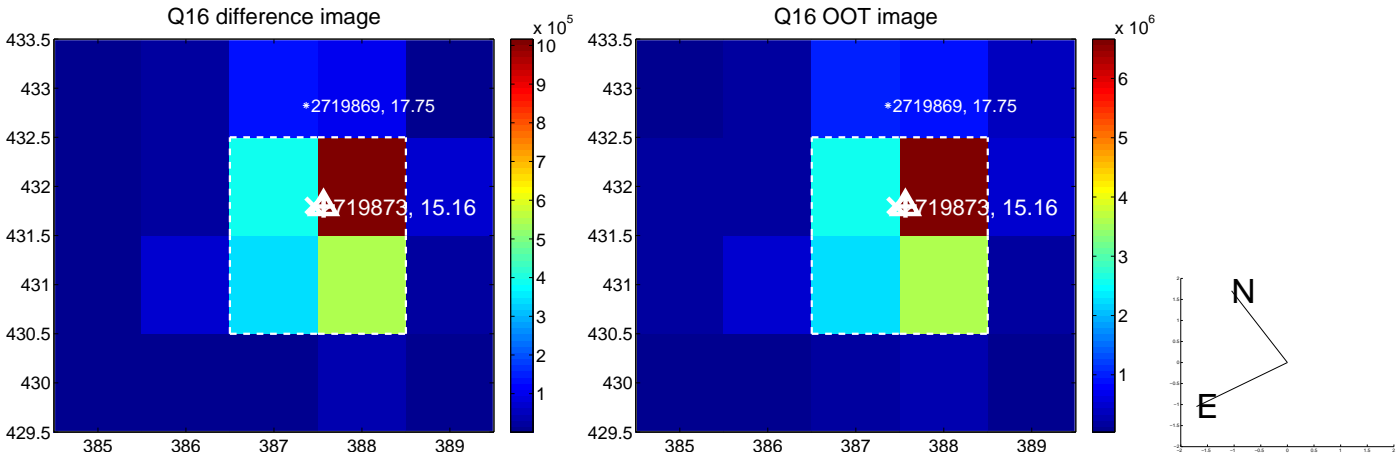
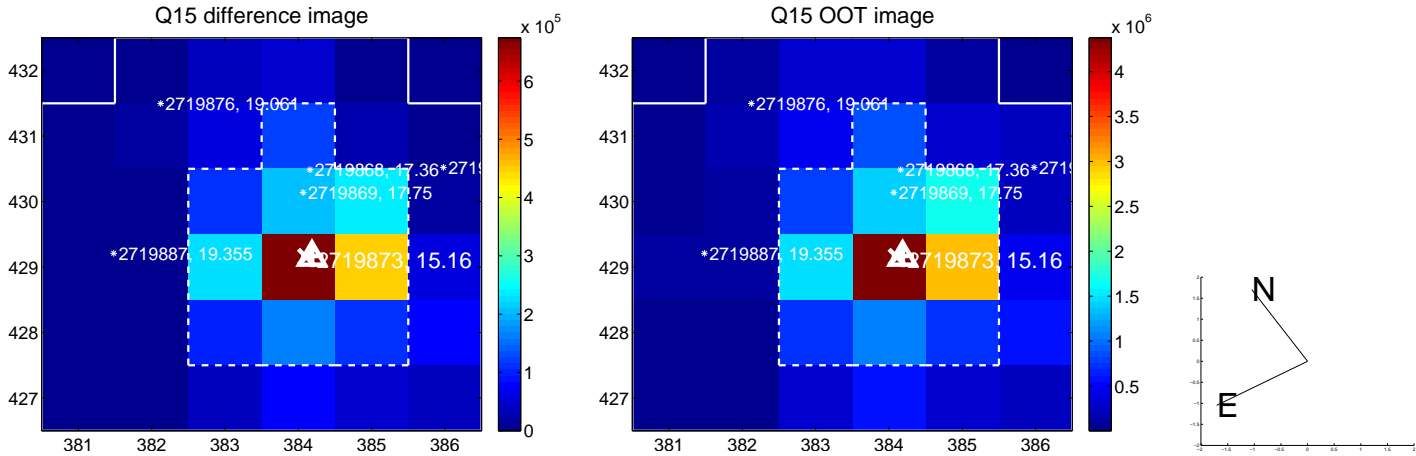
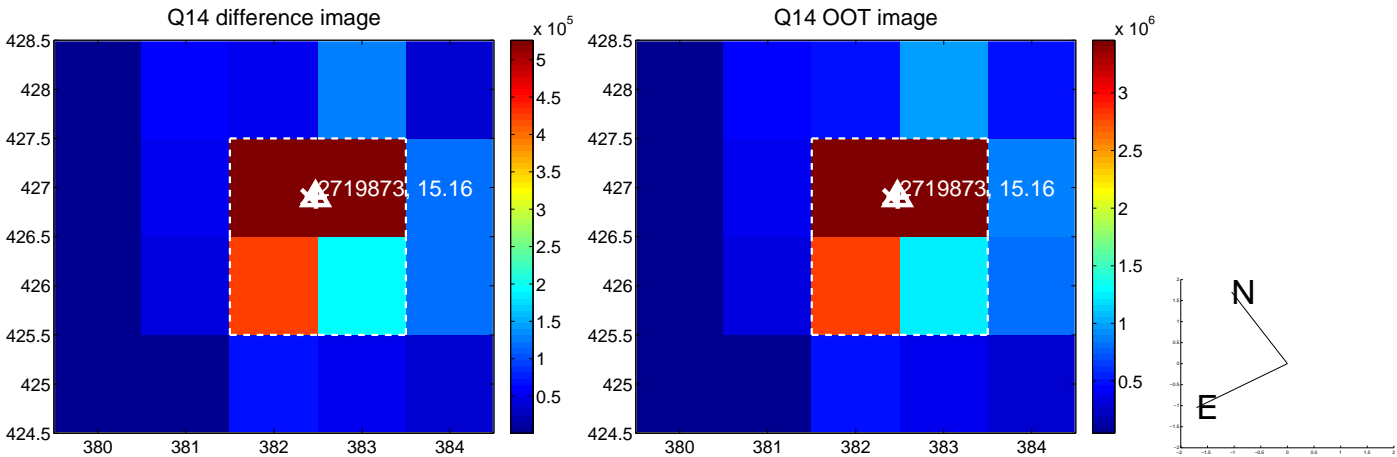
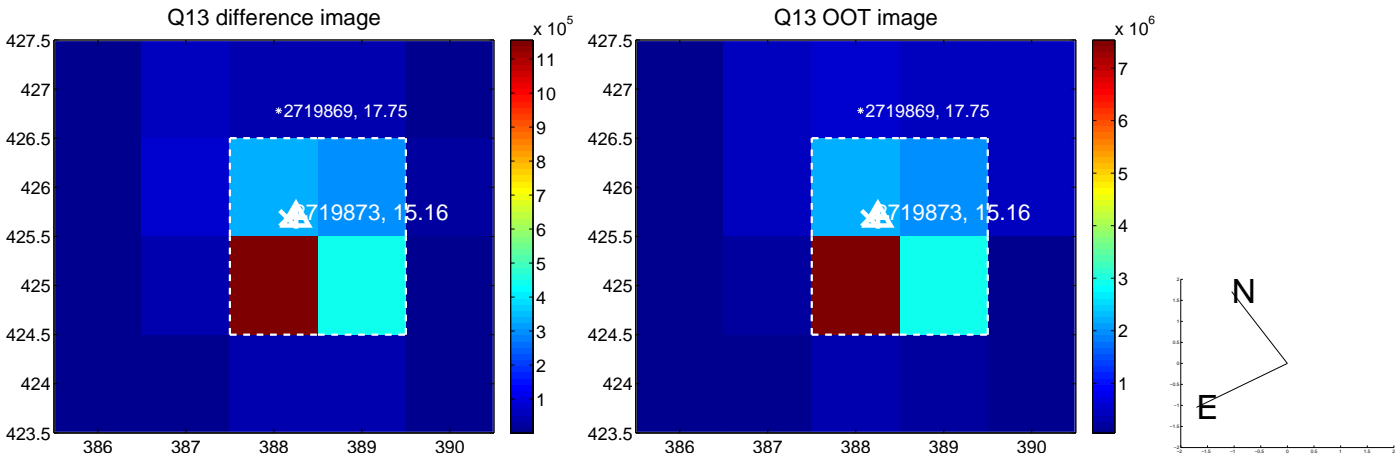




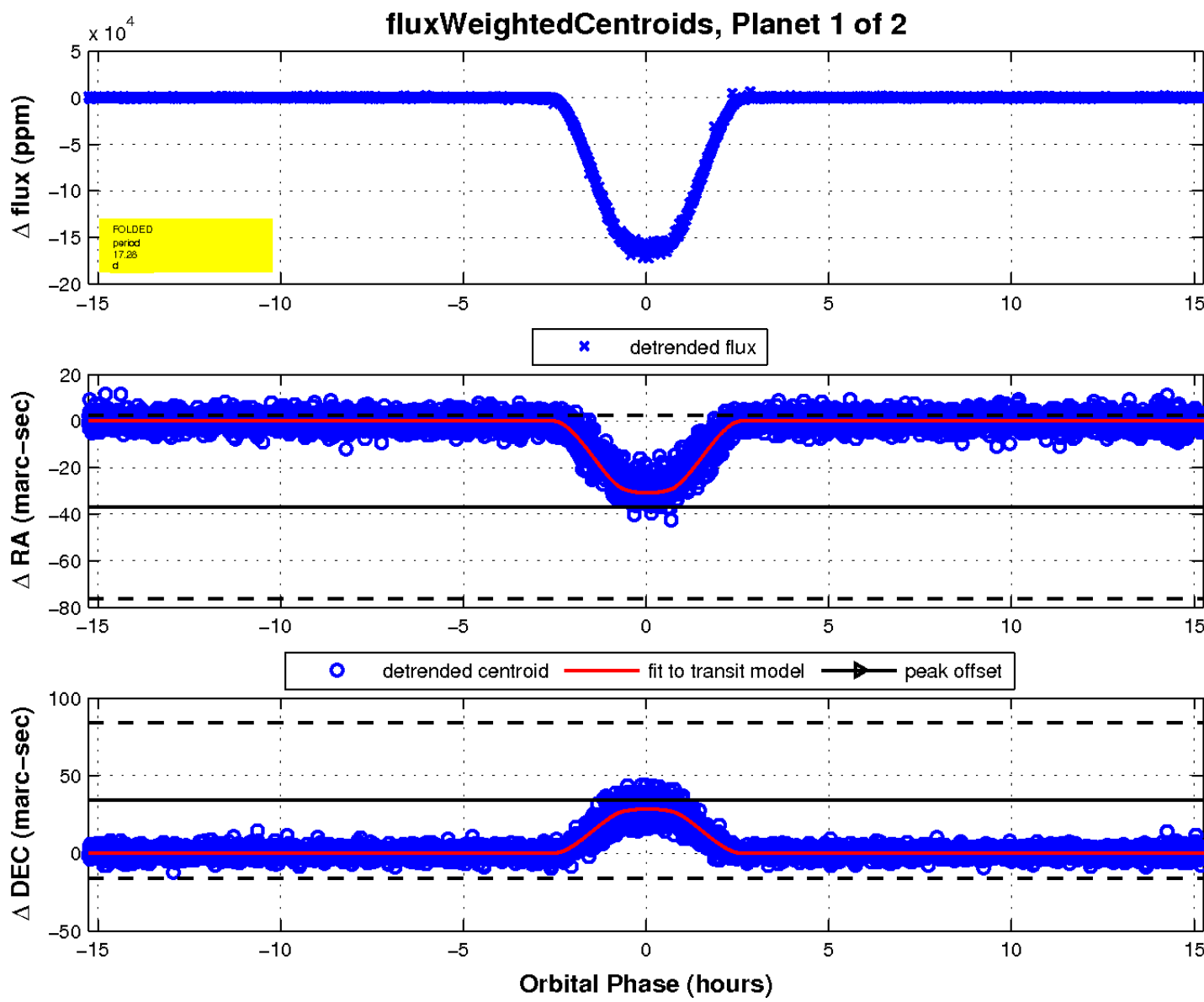
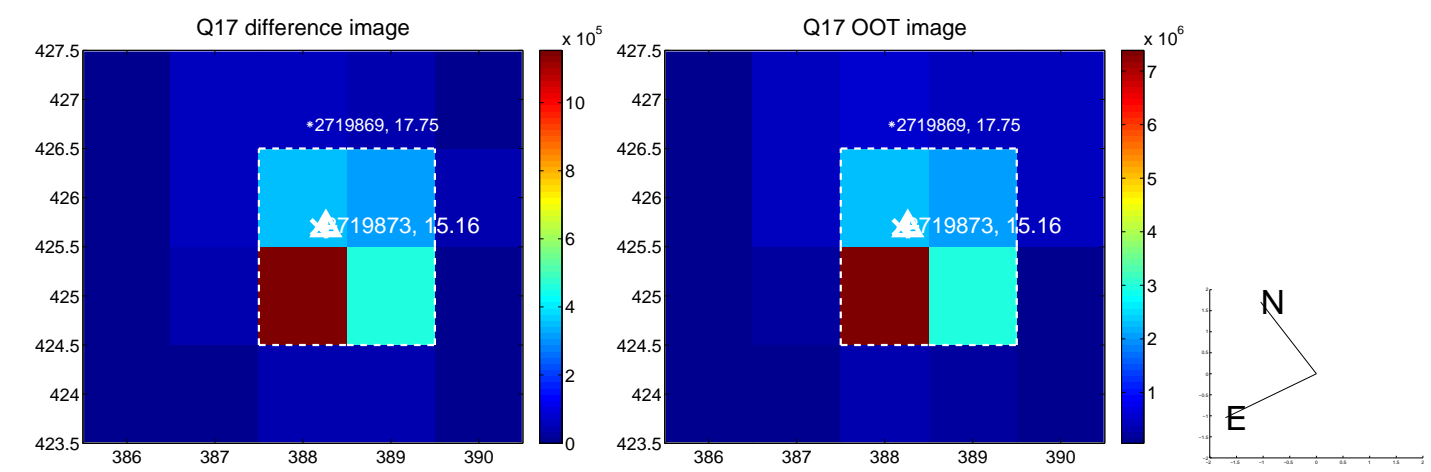
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

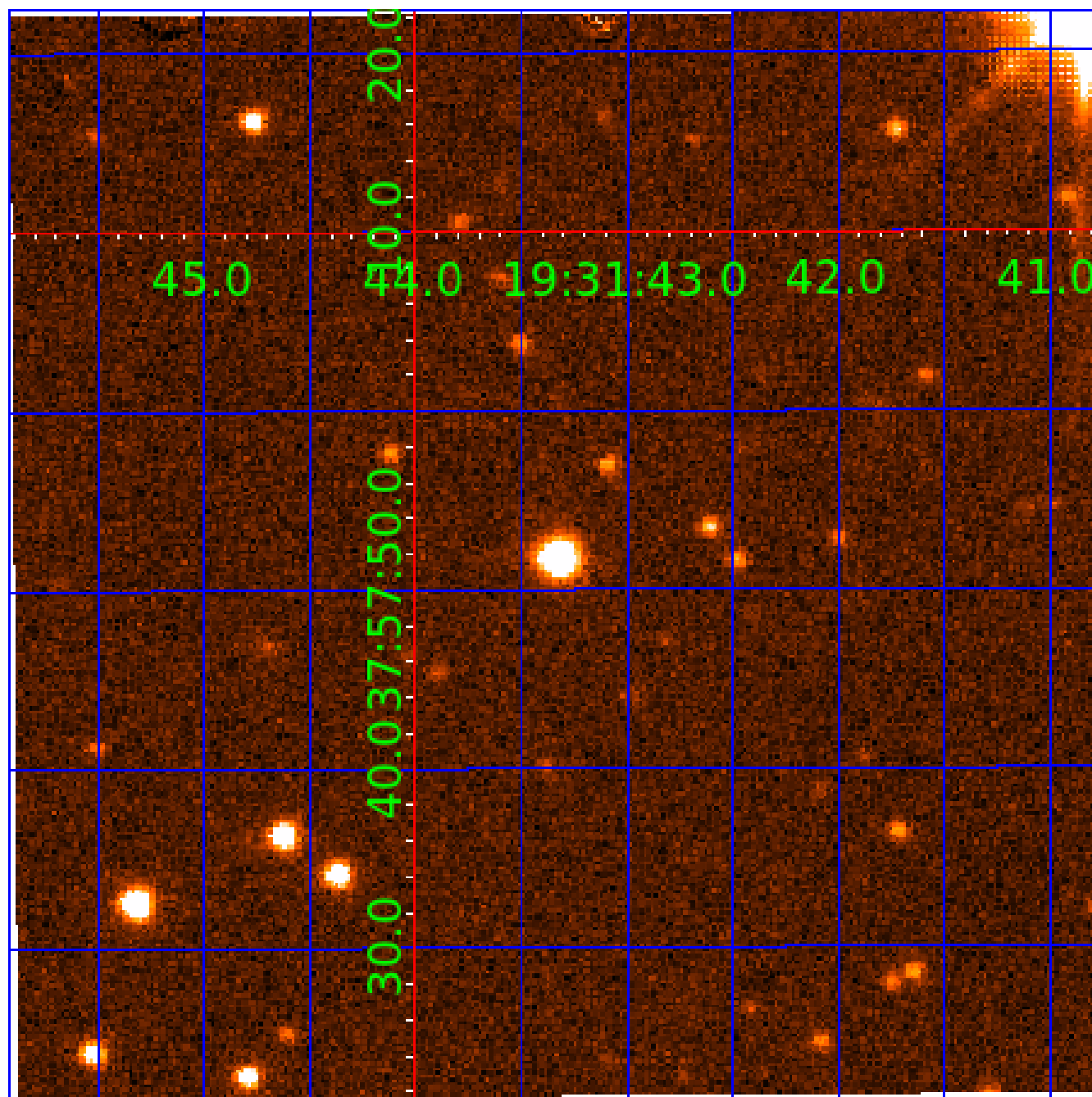


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 002719873

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002719873-01	OBS	6096.01	17.279291	135.274113	165122.9	5.091	4466.5	3190.0	0.66	5251	27.76	22.66
002719873-02	OBS	No	17.279282	143.895383	10565.2	4.233	304.7	291.0	0.66	5251	7.71	22.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002719873-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE
002719873-02	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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

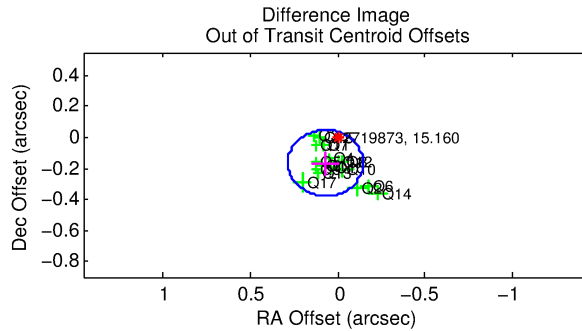
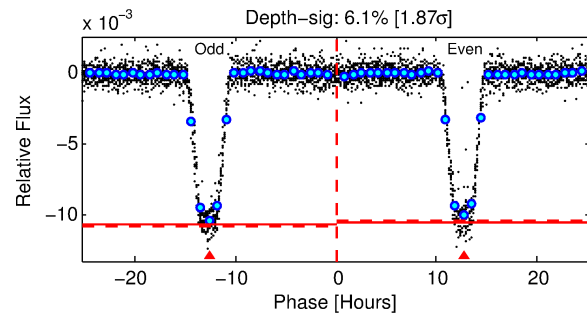
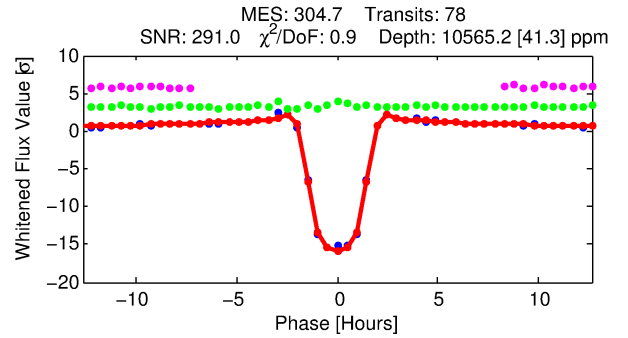
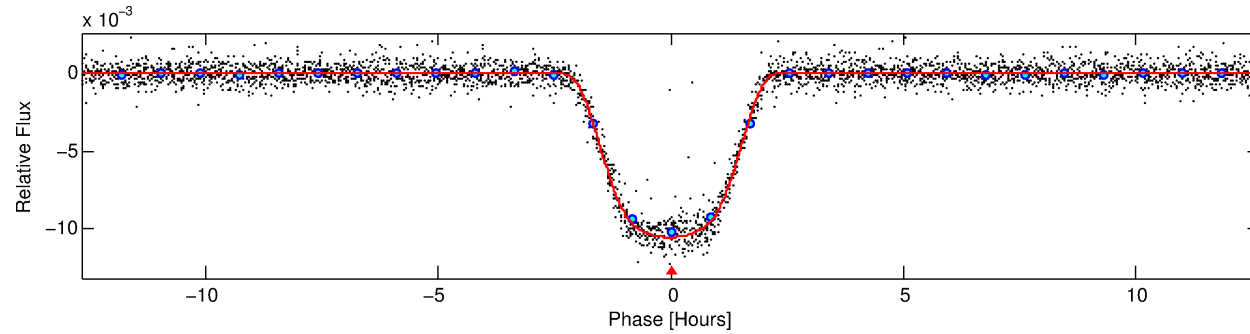
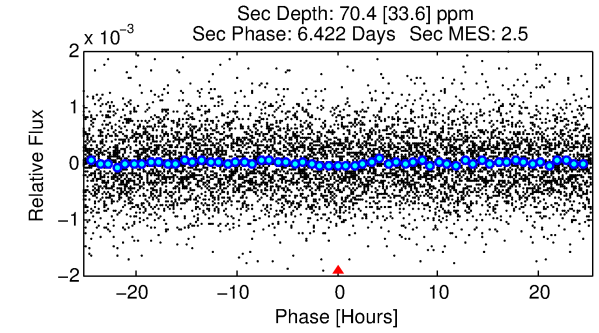
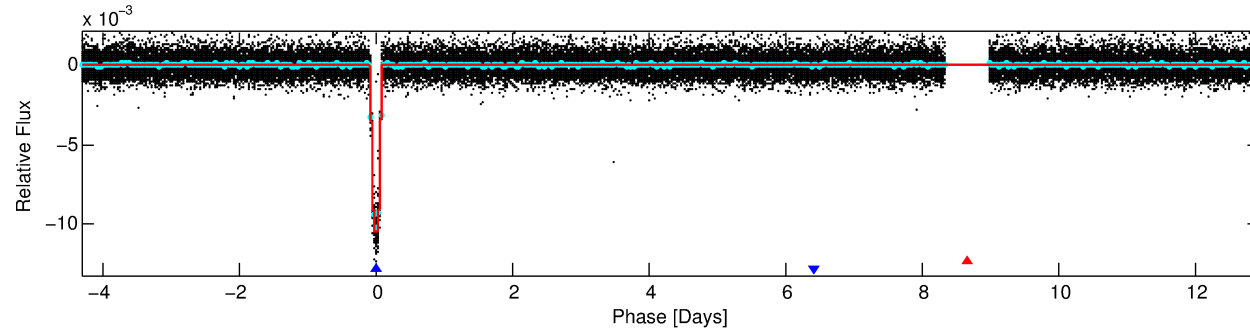
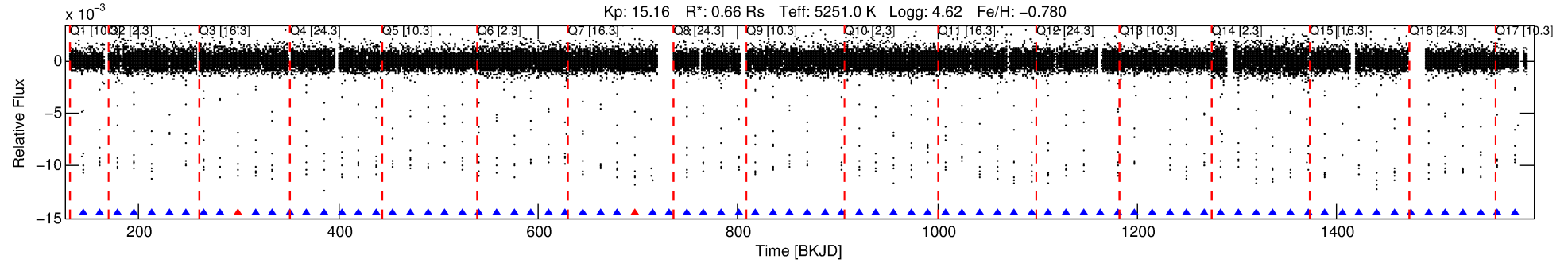
## Ephemeris Match Information For 002719873-02

No Significant Match Found

# DV One-Page Summary

KIC: 2719873 Candidate: 2 of 2 Period: 17.279 d

KOI: K06096 Corr: No Ephemeris Match



## DV Fit Results:

Period = 17.27928 [0.00001] d  
Epoch = 143.8954 [0.0003] BKJD  
Rp/R\* = 0.1074 [0.0004]  
a/R\* = 22.69 [0.20]  
b = 0.84 [0.00]  
Seff = 22.66 [3.66]  
Teq = 556 [22] K  
Rp = 7.71 [0.81] Re  
a = 0.1141 [0.0093] AU  
Ag = 8.47 [4.15] [1.80 $\sigma$ ]  
Teffp = 1467 [180] K [5.01 $\sigma$ ]

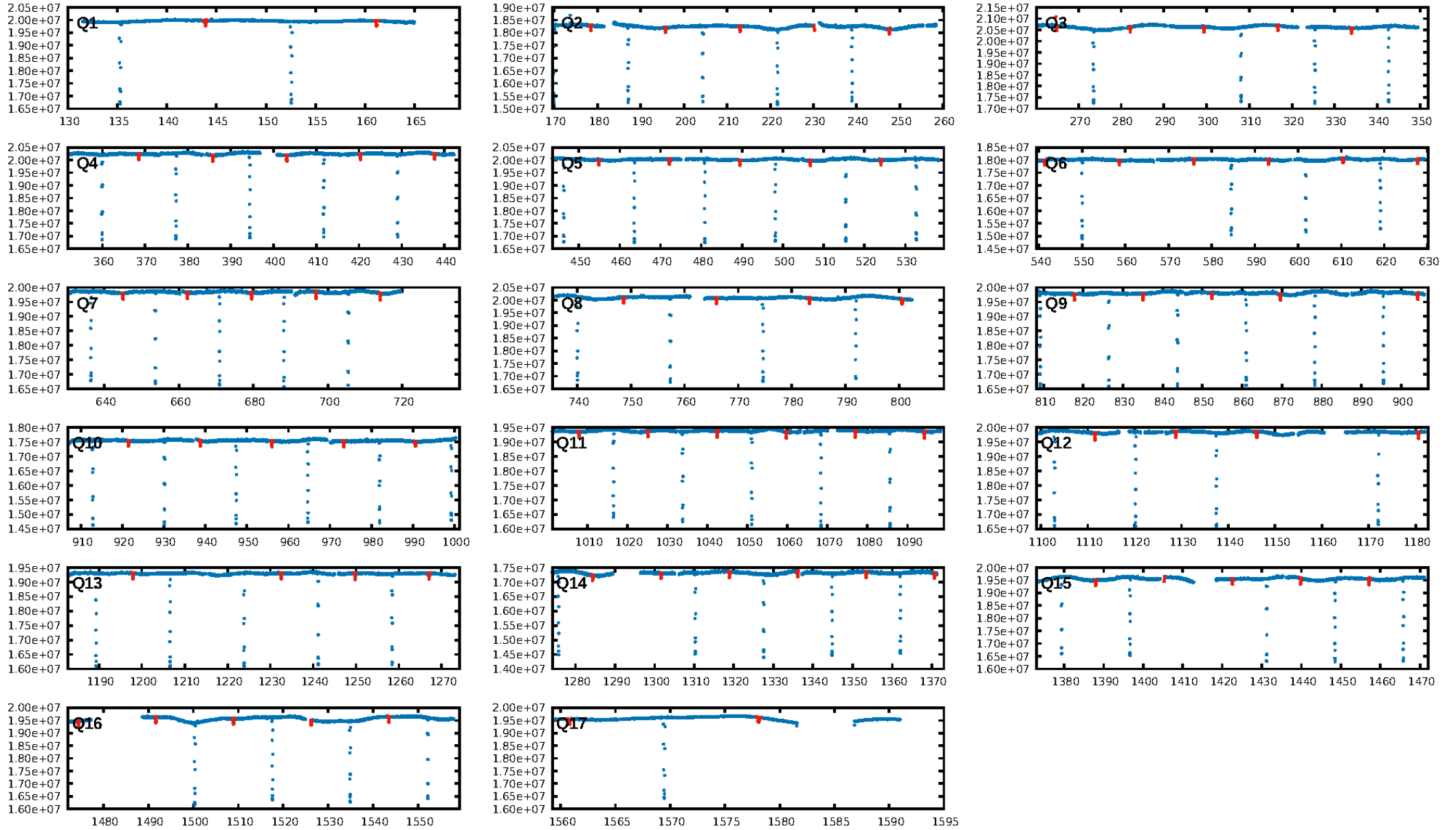
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.97 [72/74]  
GhostDiagnostic-chr: 2.859  
Centroid-sig: 0.0%  
Centroid-so: 0.949 arcsec [25.59 $\sigma$ ]  
OotOffset-rm: 0.178 arcsec [2.50 $\sigma$ ]  
KicOffset-rm: 0.406 arcsec [5.22 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

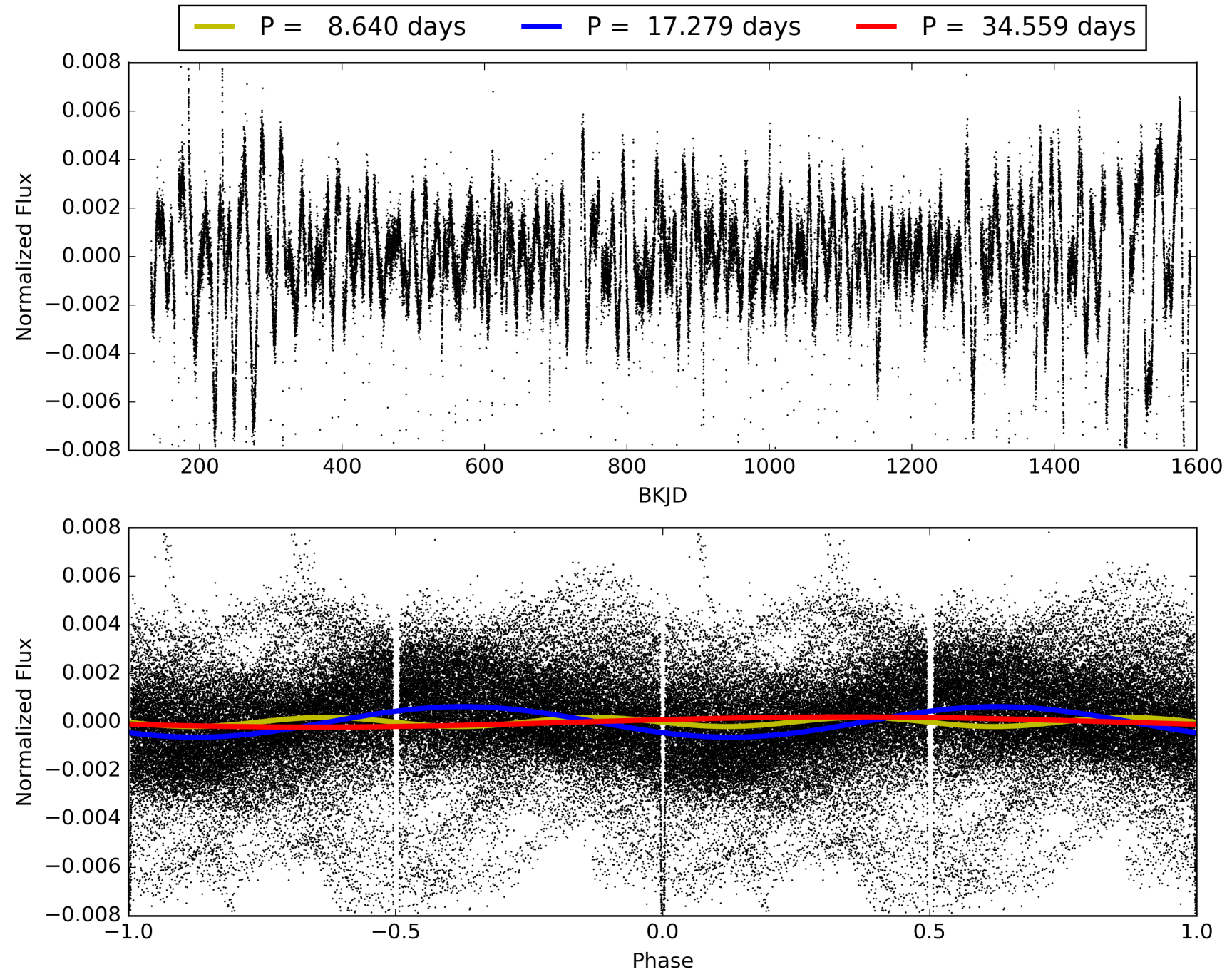
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:38:16 Z

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

# TCE 002719873-02, PDC Light Curves



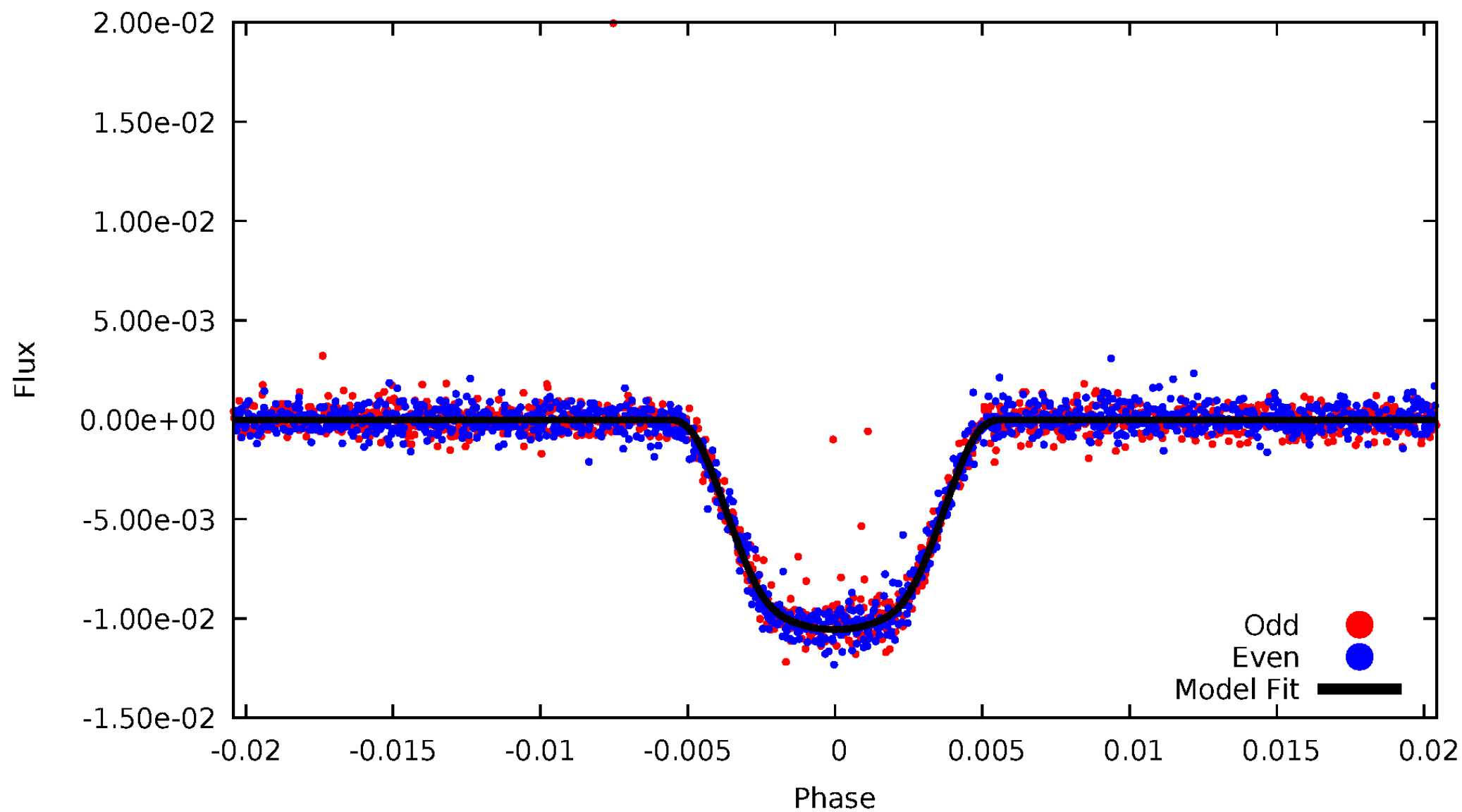
TCE 002719873-02





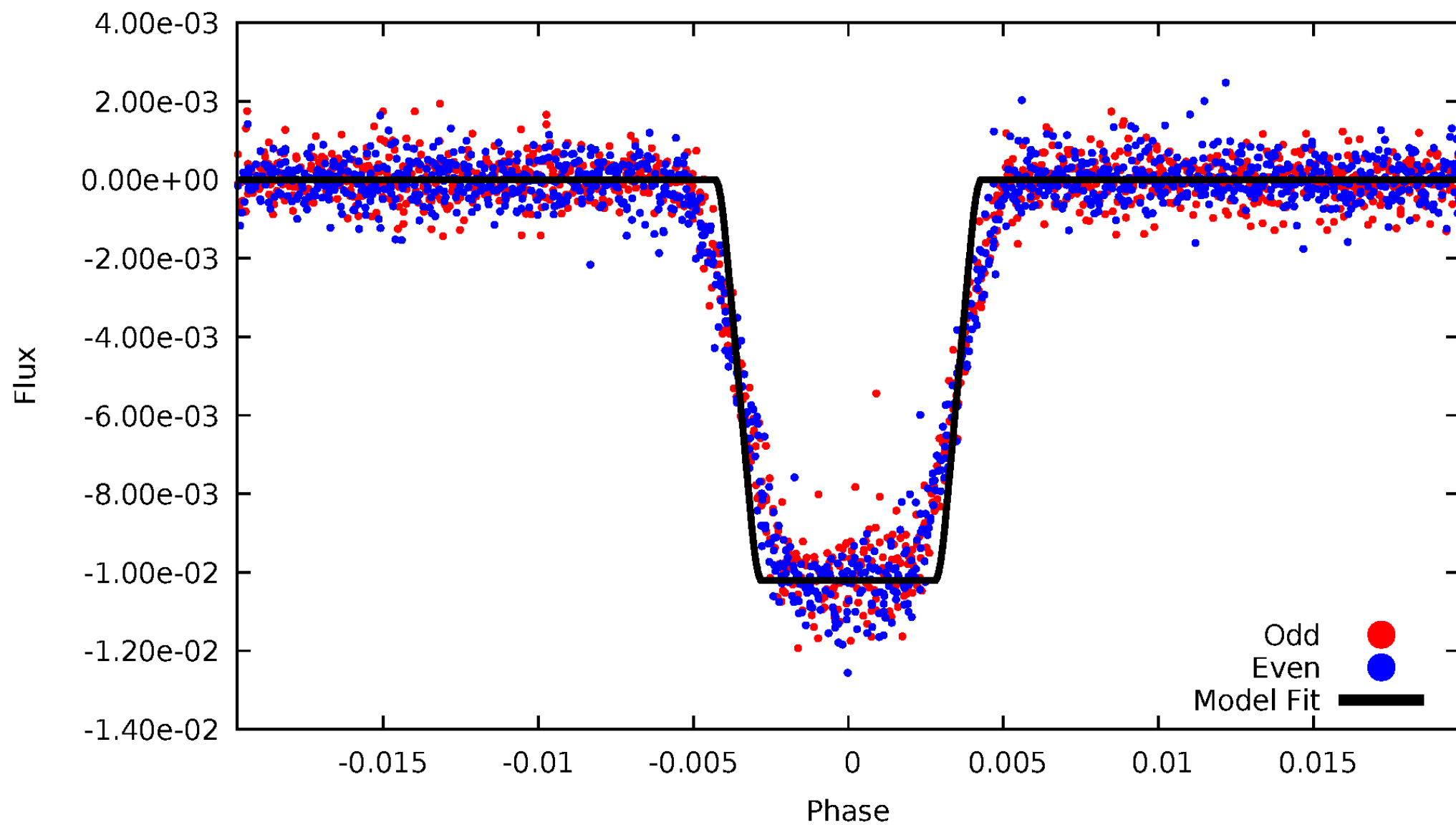
# DV Odd/Even

TCE 002719873-02



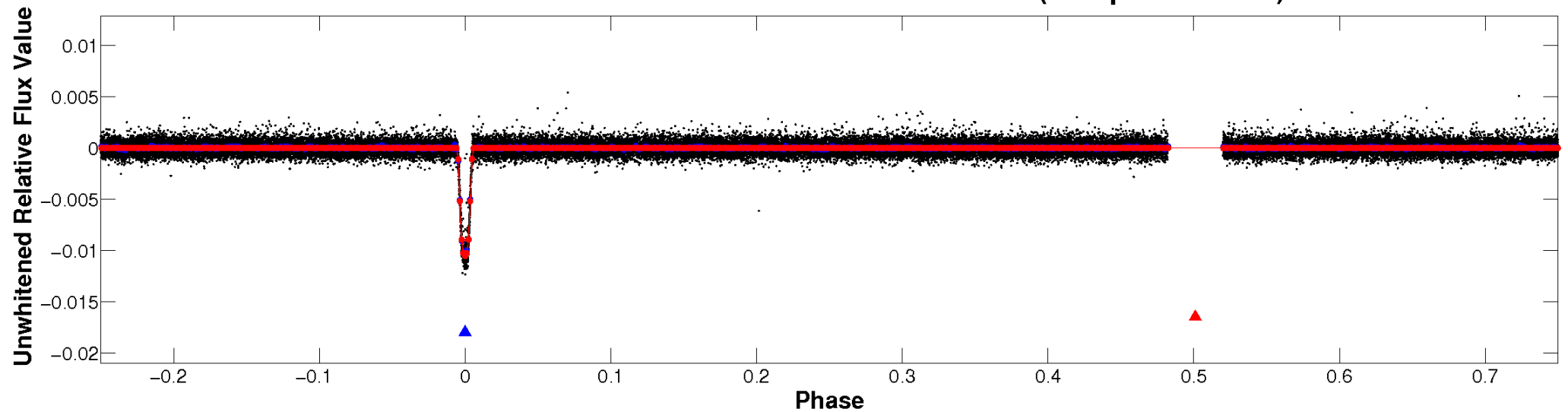
# ALT Odd/Even

TCE 002719873-02

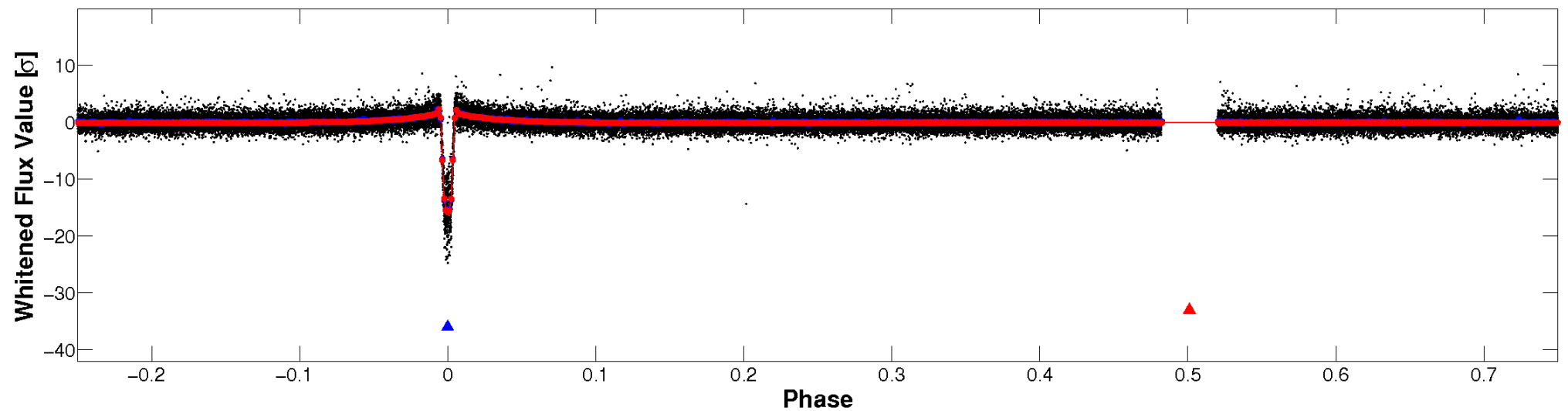


# Non-Whitened Vs. Whitened Light Curve

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

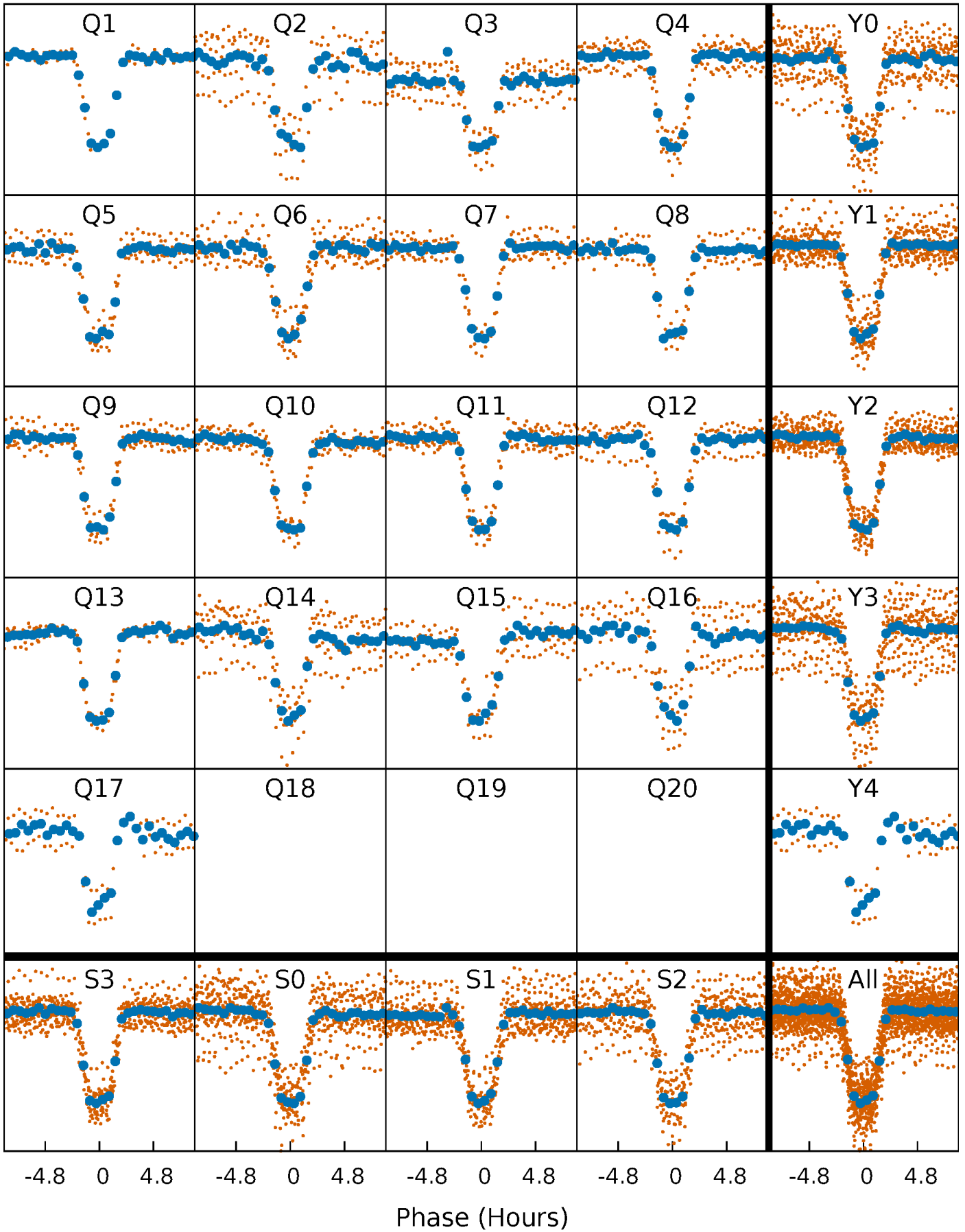


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



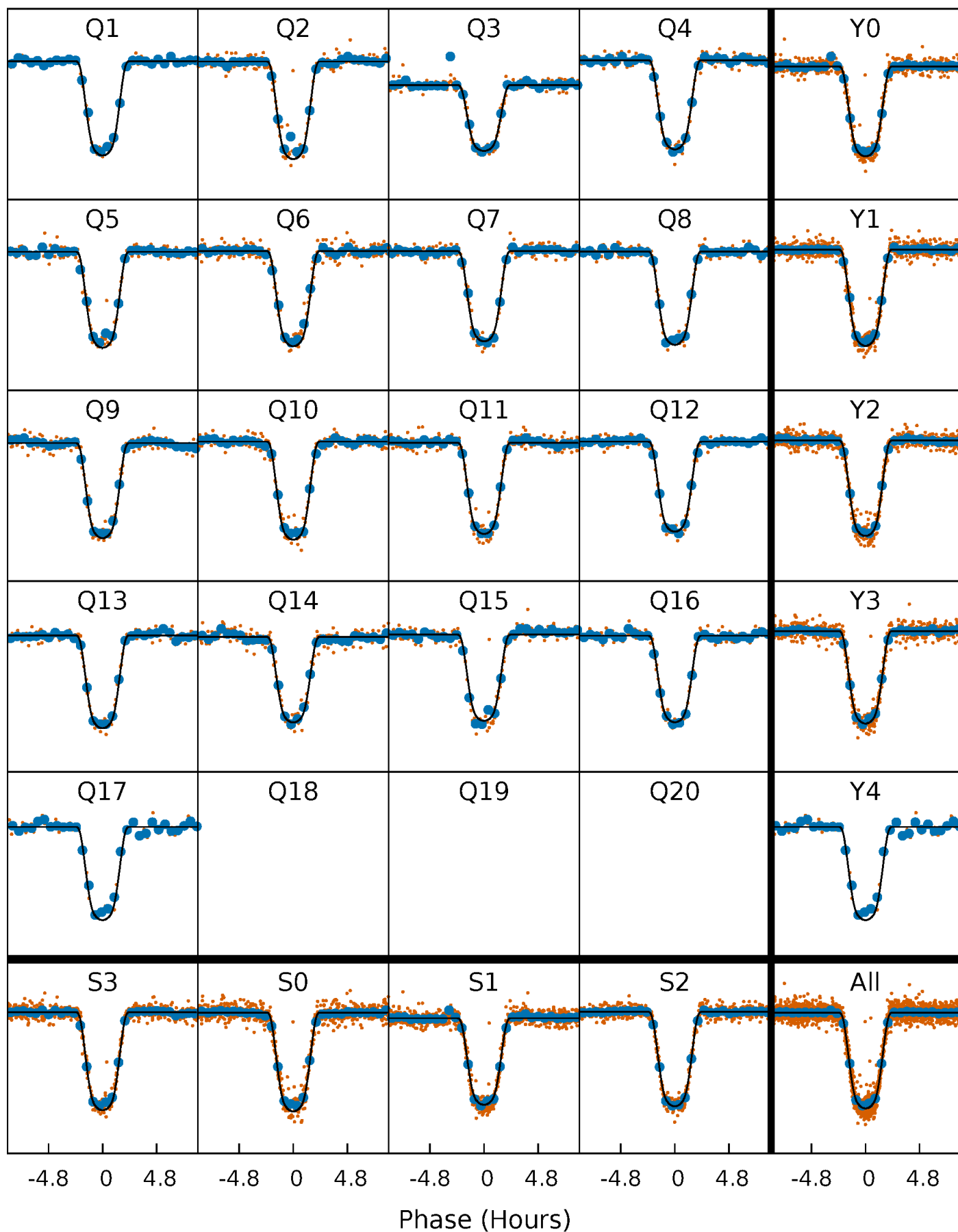
# PDC Quarter-Phased Transit Curves

TCE 002719873-02 P= 17.279282 Days  $T_0=143.895383$  (BKJD)



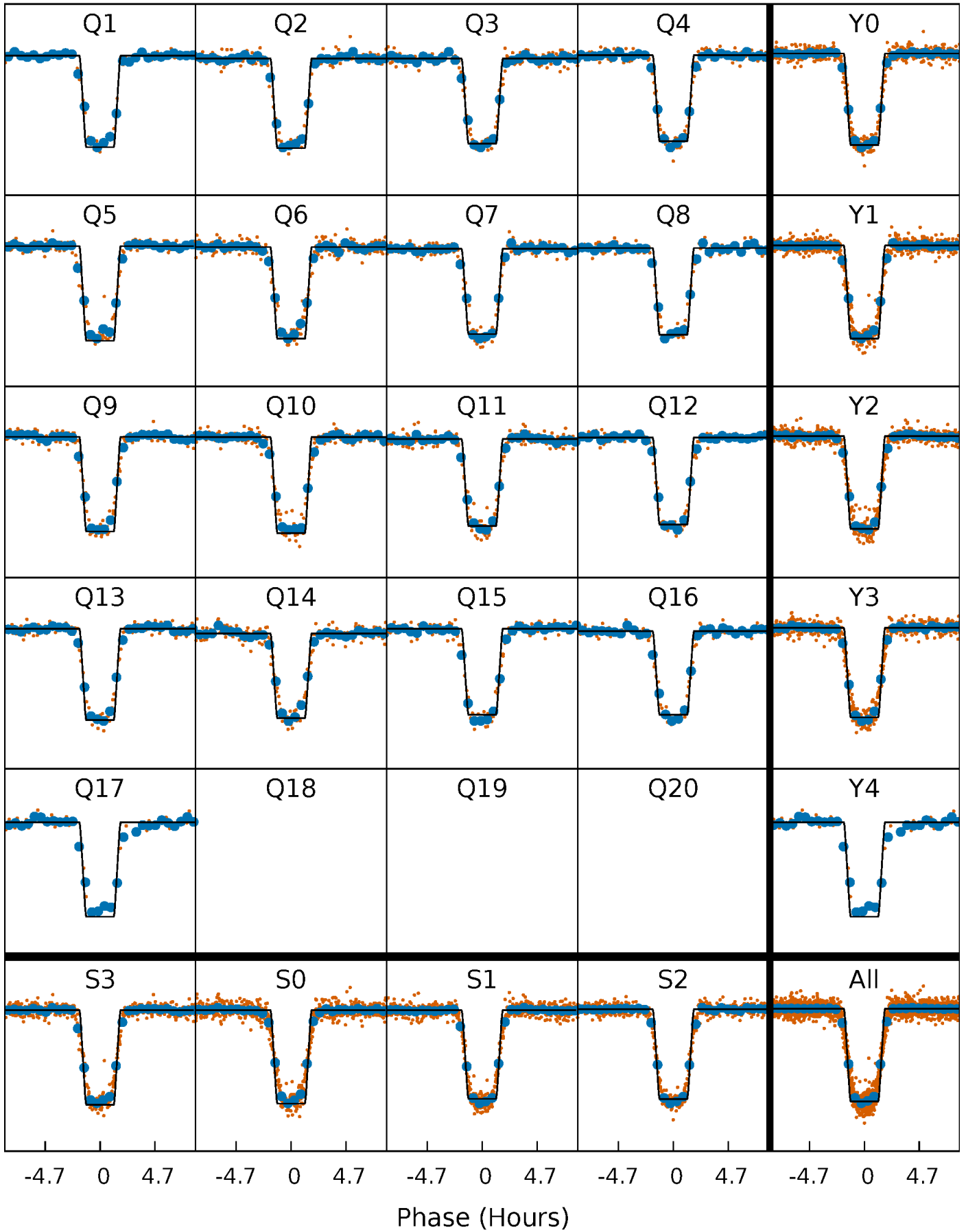
# DV Quarter-Phased Transit Curves

TCE 002719873-02 P= 17.279282 Days  $T_0=143.895383$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

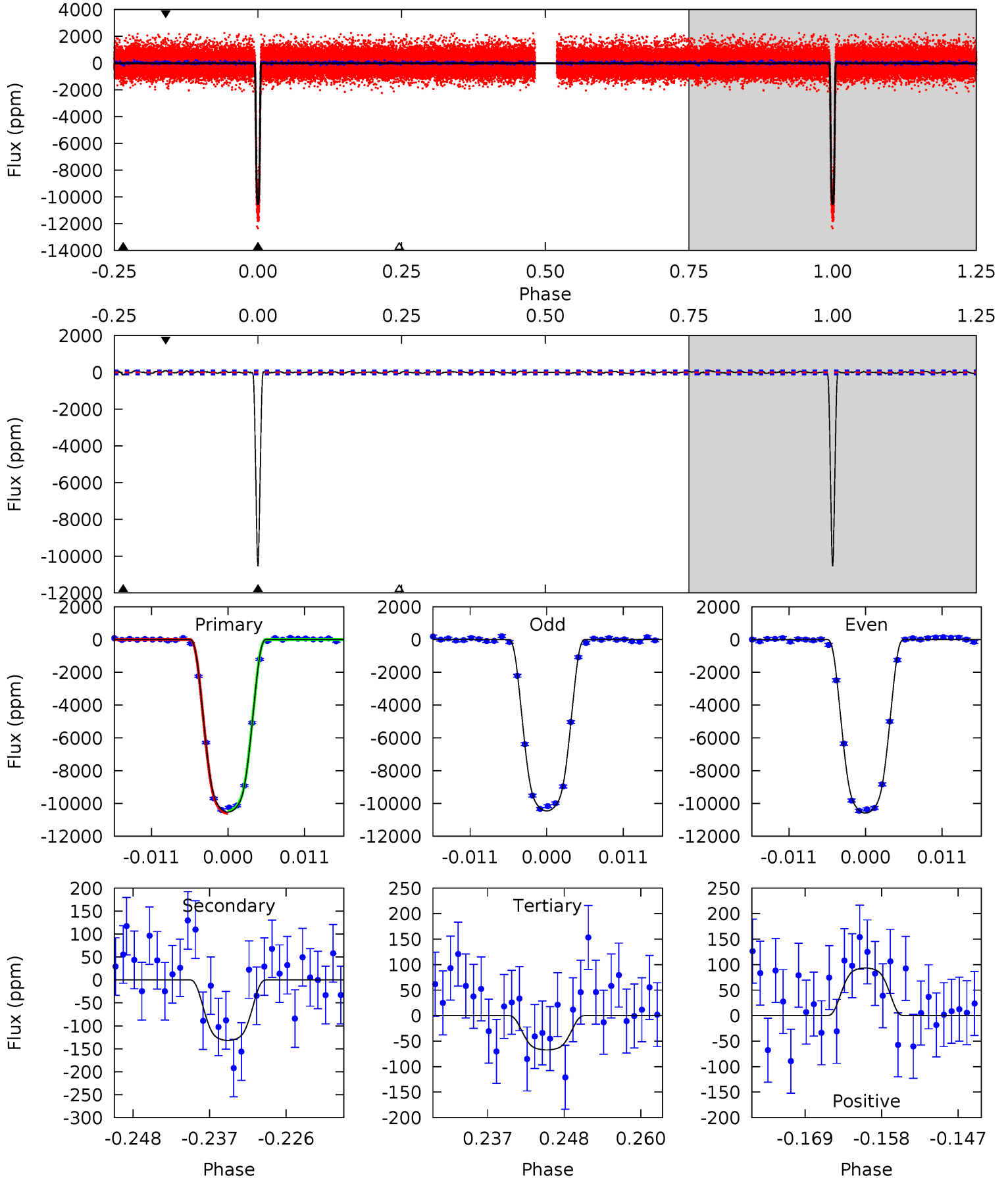
TCE 002719873-02   P= 17.279273 Days    $T_0=143.895477$  (BKJD)



# DV Model-Shift Uniqueness Test

002719873-02, P = 17.279282 Days, E = 126.616101 Days

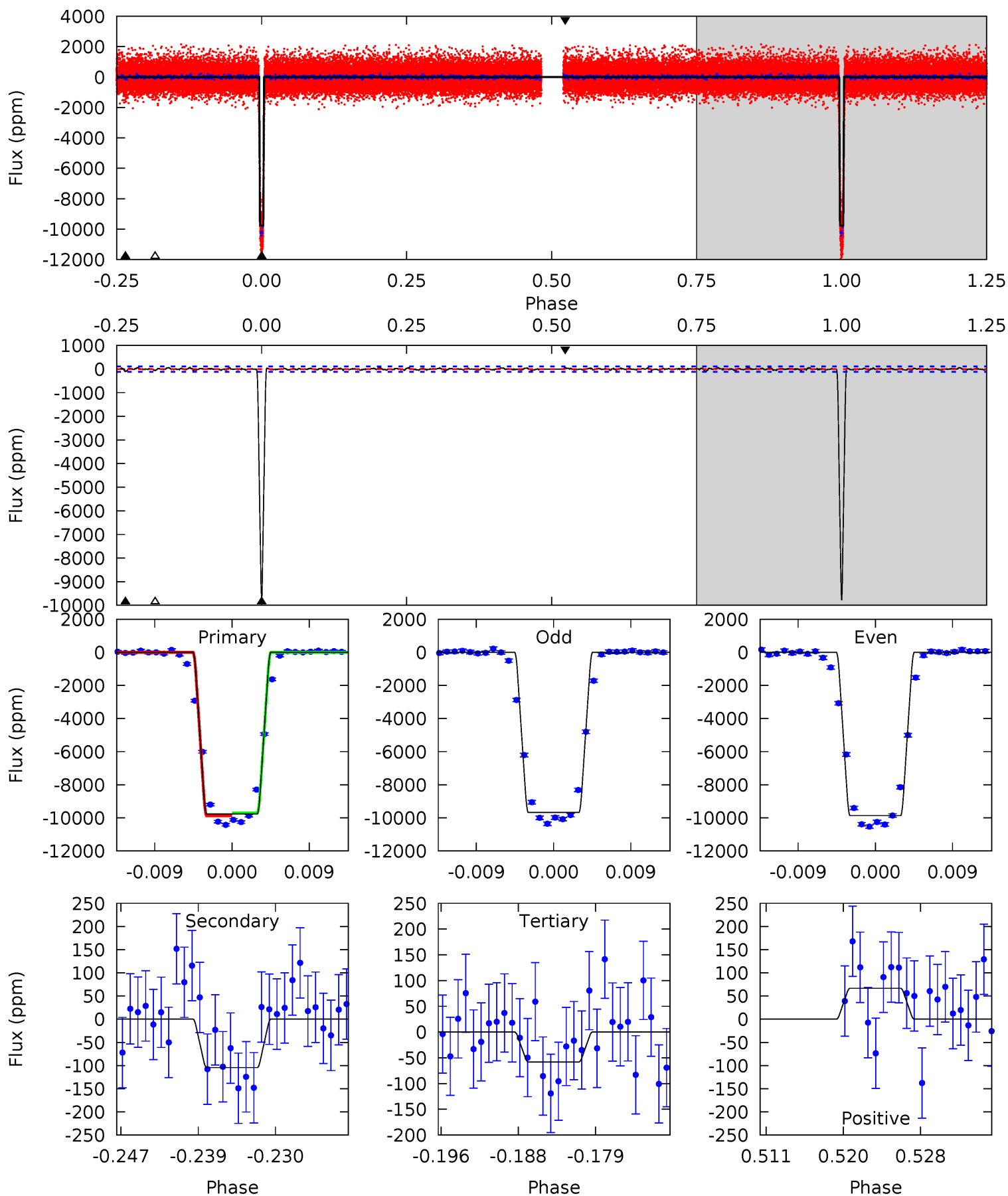
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
516.0	6.47	3.30	4.58	5.00	2.53	1.46	512.7	511.5	3.17	1.89	3.19	0.99	0.01	3.24



# Alt Model-Shift Uniqueness Test

002719873-02, P = 17.279273 Days, E = 126.616204 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
432.2	4.62	2.57	2.94	5.06	2.63	0.97	429.6	429.2	2.05	1.68	4.29	1.00	0.01	3.89





### Stellar Parameters For KIC 002719873

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5251^{+156}_{-156}$	$4.623^{+0.055}_{-0.055}$	$-0.780^{+0.300}_{-0.300}$	$0.658^{+0.069}_{-0.052}$	$0.663^{+0.066}_{-0.033}$	$3.276^{+0.754}_{-0.613}$
	+3%/-3%	+1%/-1%	+38%/-38%	+10%/-8%	+10%/-5%	+23%/-19%
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 002719873-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-132 \pm 20$	$7.74^{+0.43}_{-0.35}$	$778^{+29}_{-29}$	$2534^{+59}_{-68}$	$16^{+3}_{-3}$
Alt.	$-104 \pm 23$	$7.25^{+0.43}_{-0.31}$	$777^{+29}_{-28}$	$2494^{+77}_{-80}$	$14^{+3}_{-3}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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

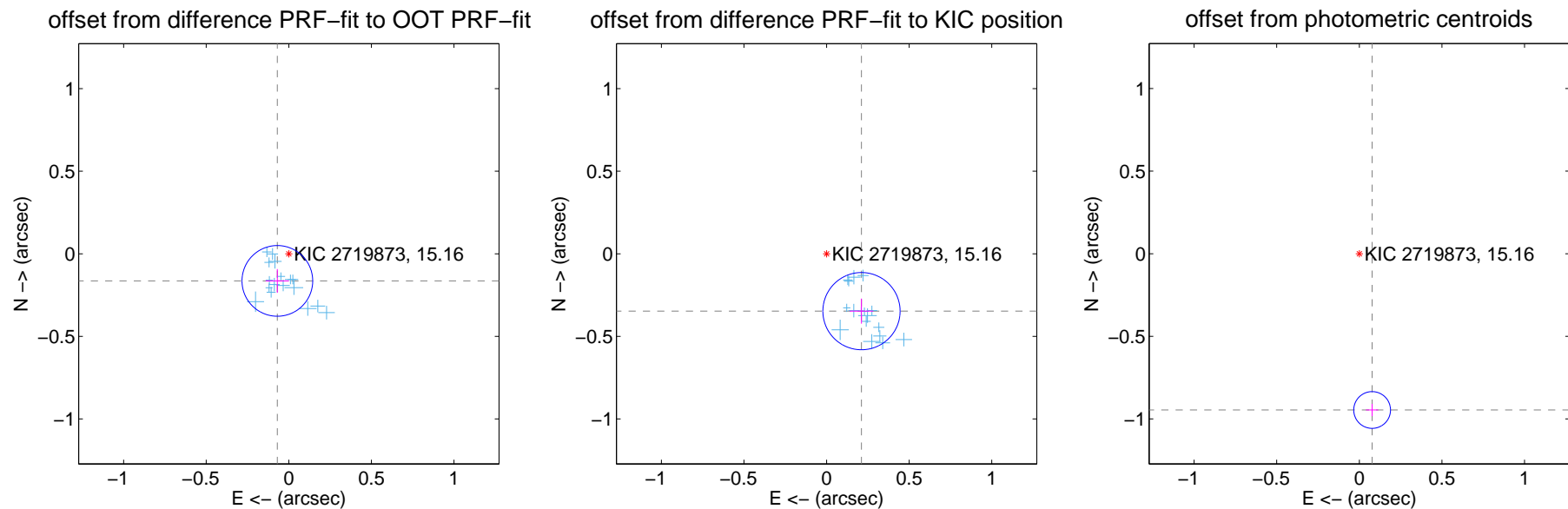
## DV Centroid Data

Supplemental centroid analysis for 002719873-02. Kepler magnitude: 15.16. Transit SNR 291.01

There are 17 quarters with good PRF difference image offsets

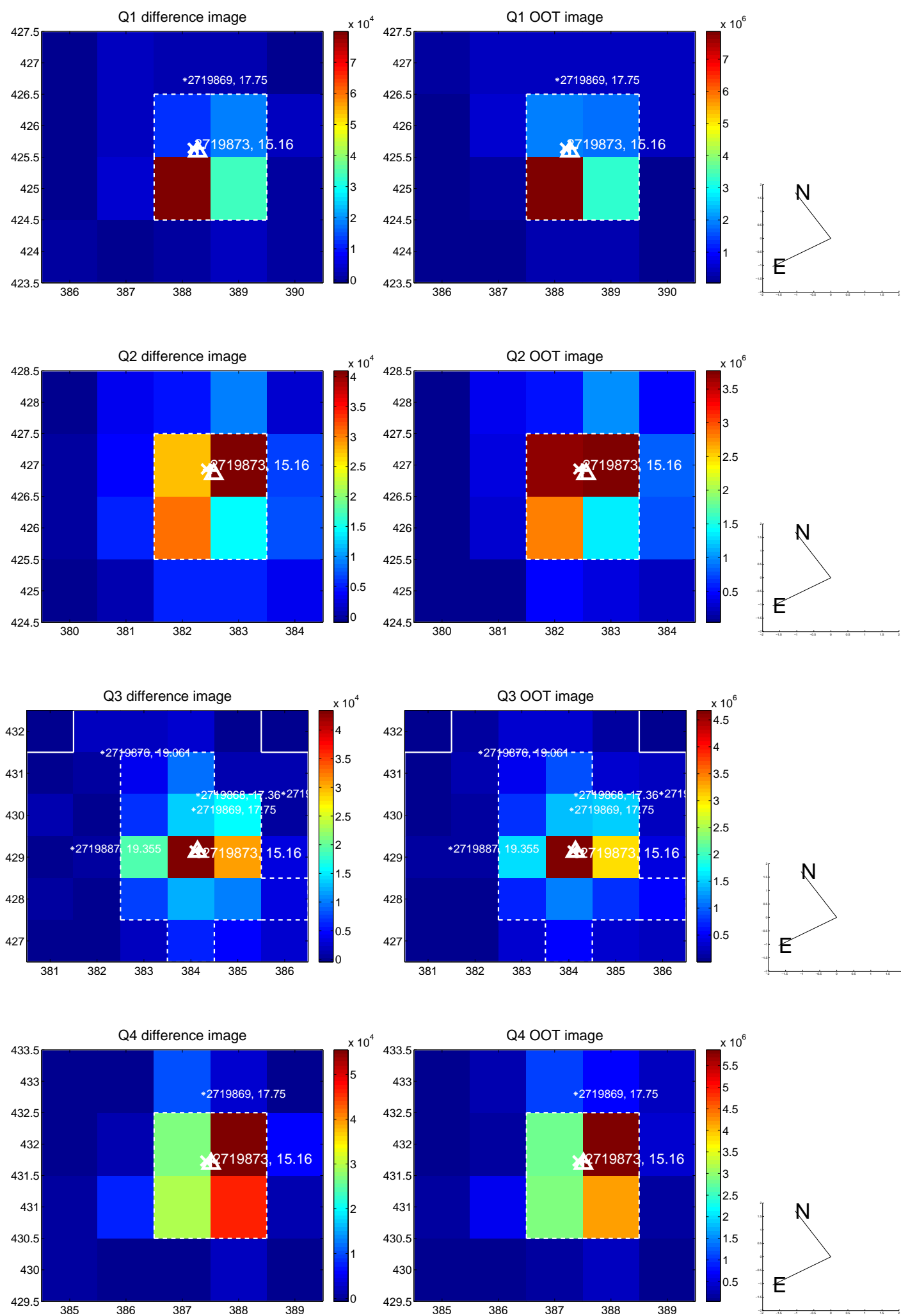
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.178 \pm 0.071$	2.50	$0.069 \pm 0.070$	$-0.164 \pm 0.072$
PRF-fit source offset from KIC position	$0.406 \pm 0.078$	5.22	$-0.211 \pm 0.071$	$-0.347 \pm 0.076$
photometric centroid source offset	$0.95 \pm 0.04$	25.59	$-0.08 \pm 0.04$	$-0.95 \pm 0.04$

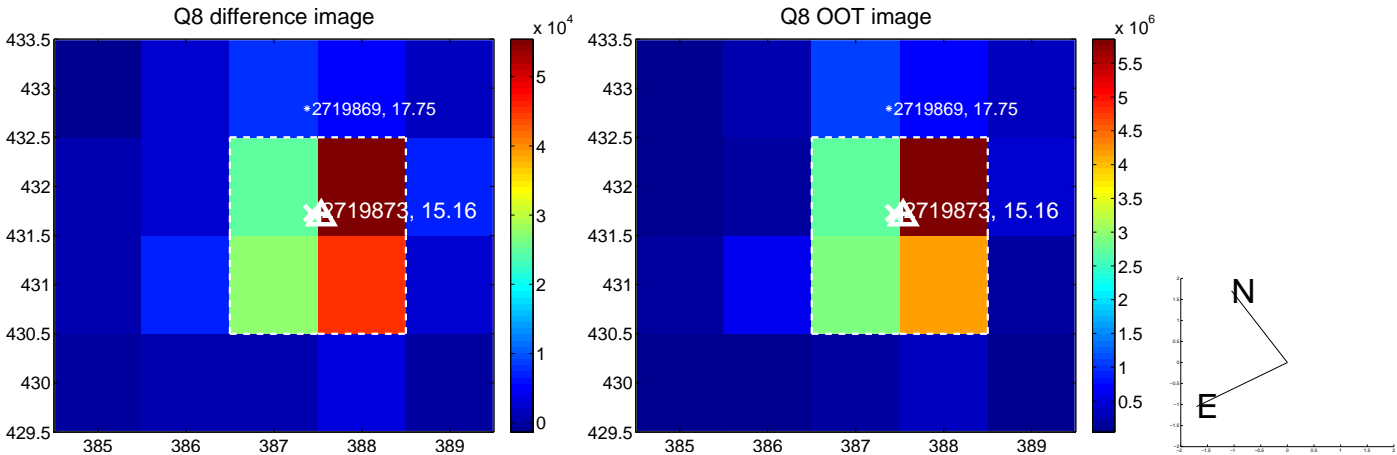
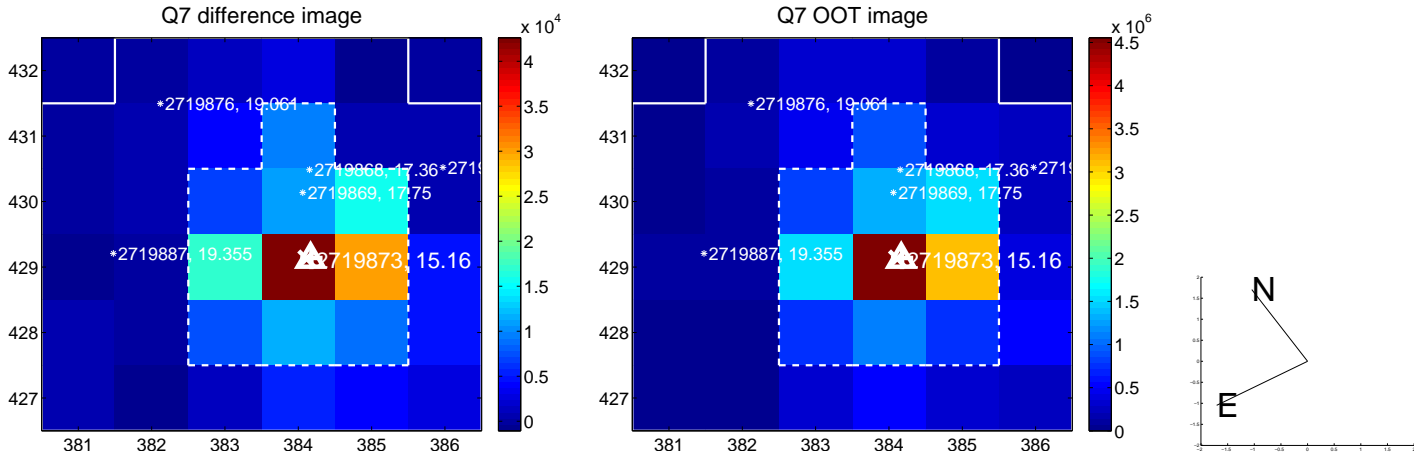
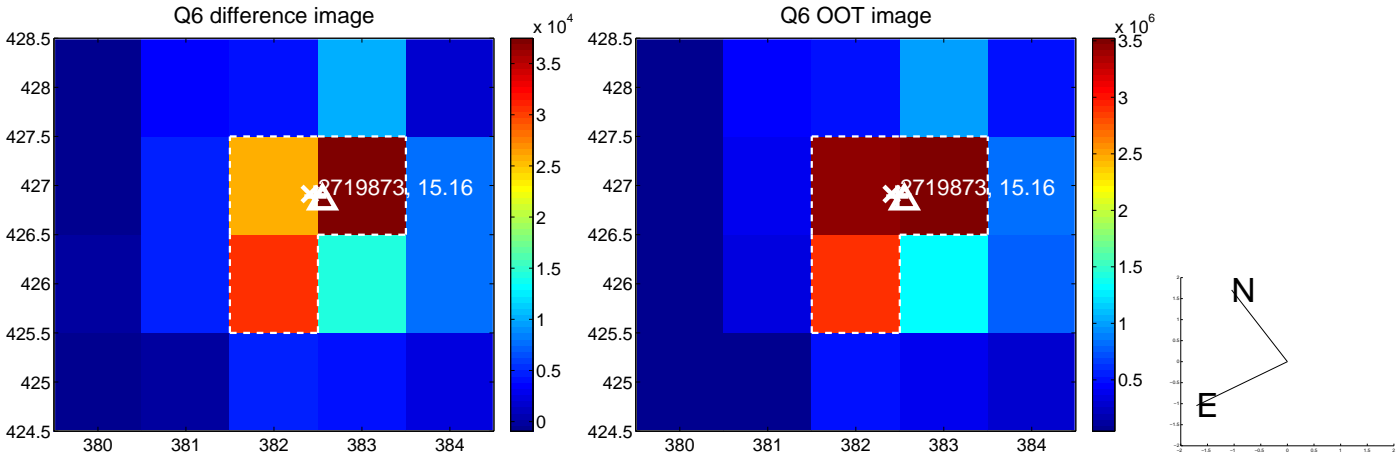
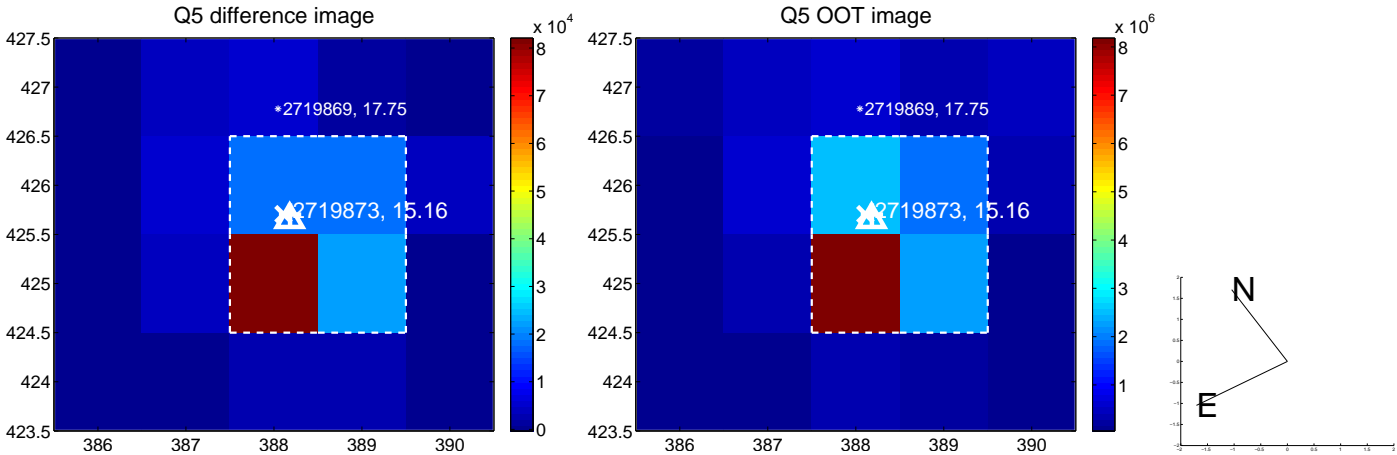


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

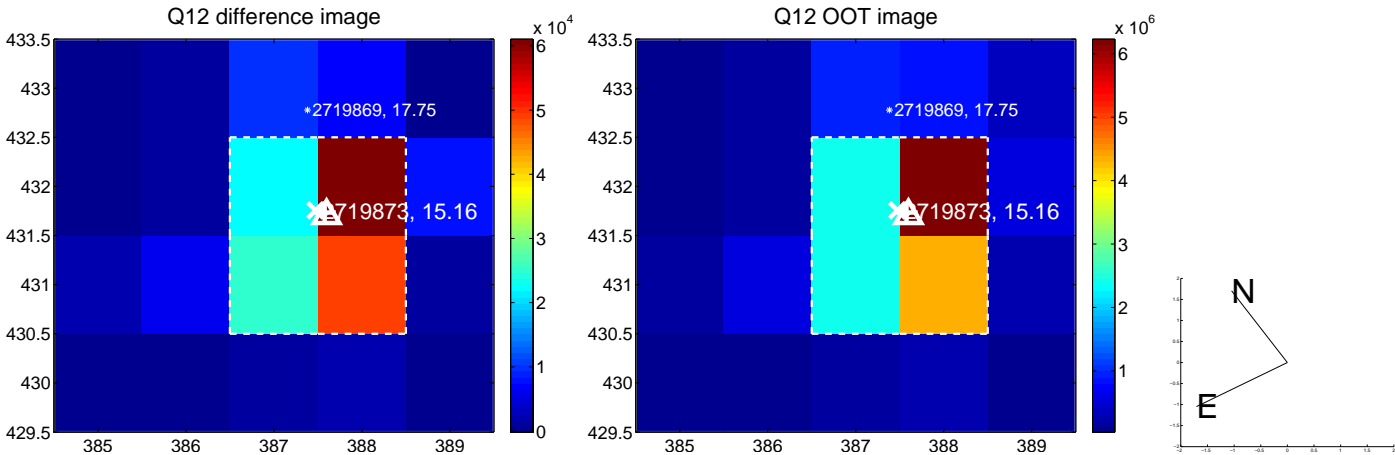
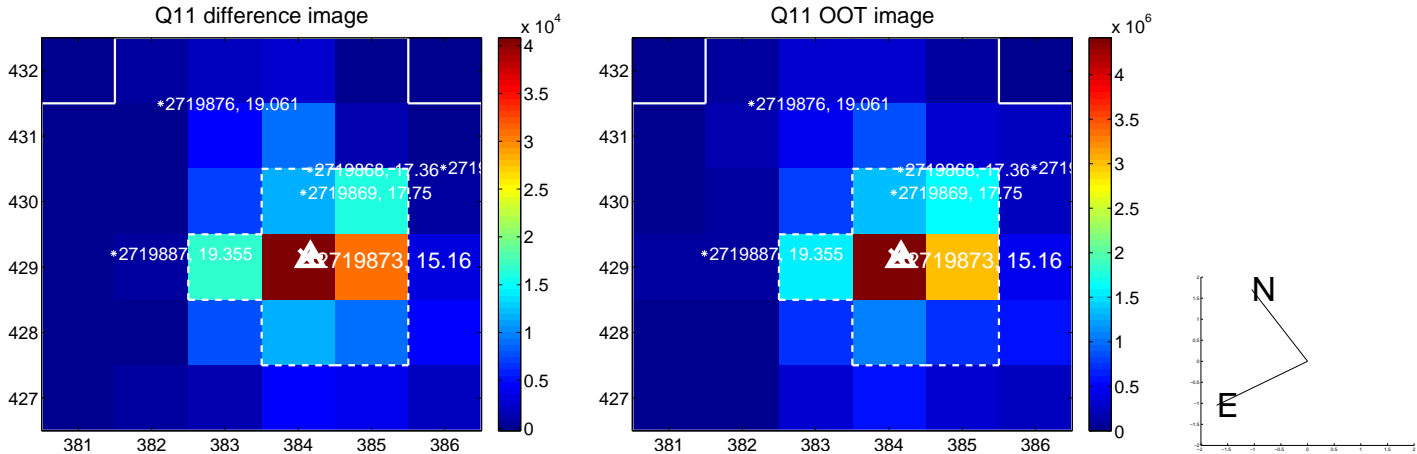
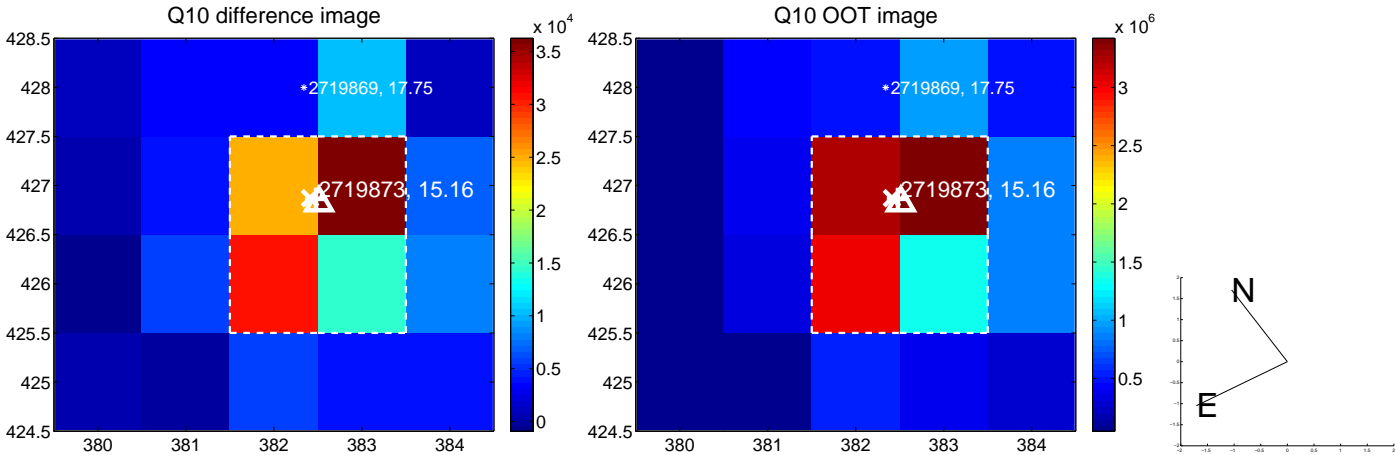
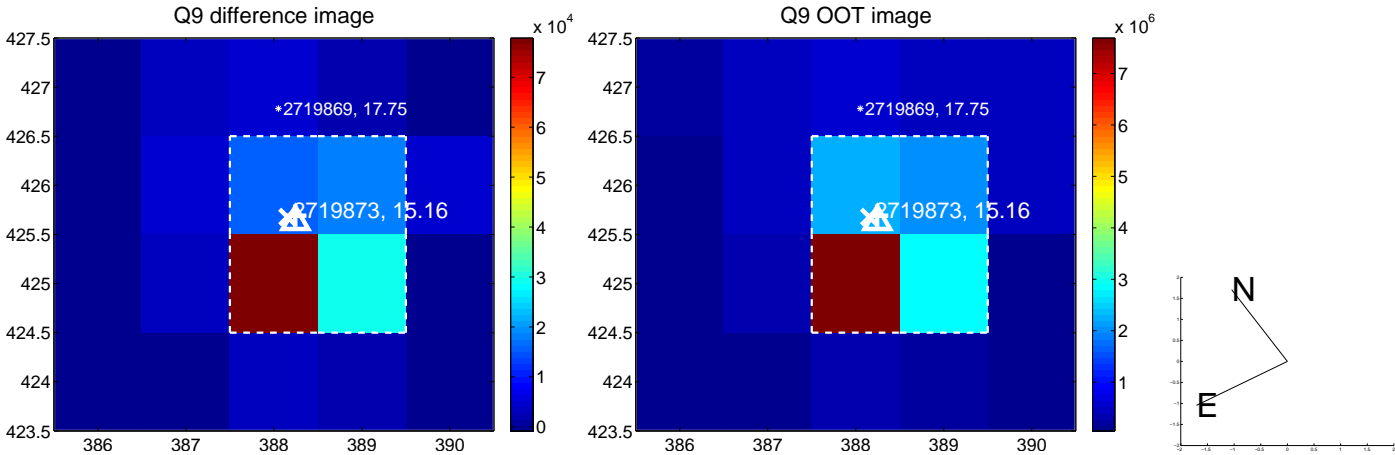
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



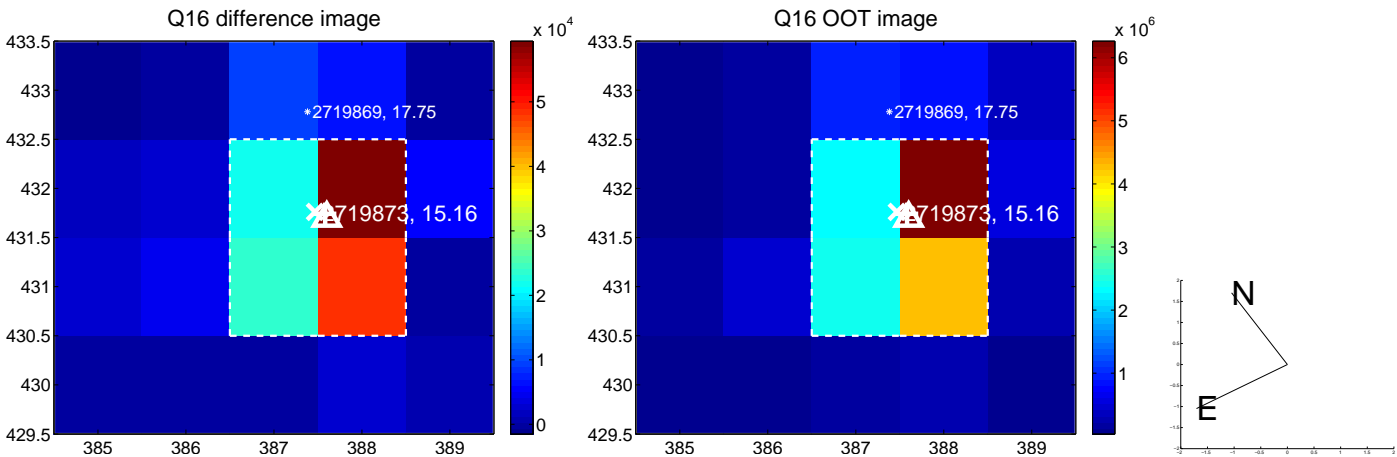
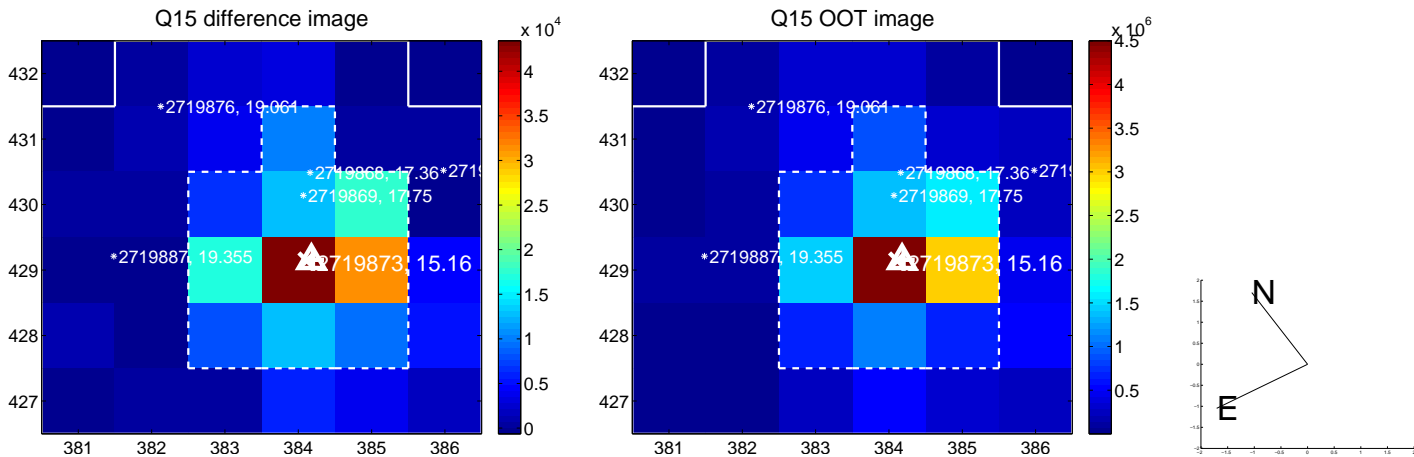
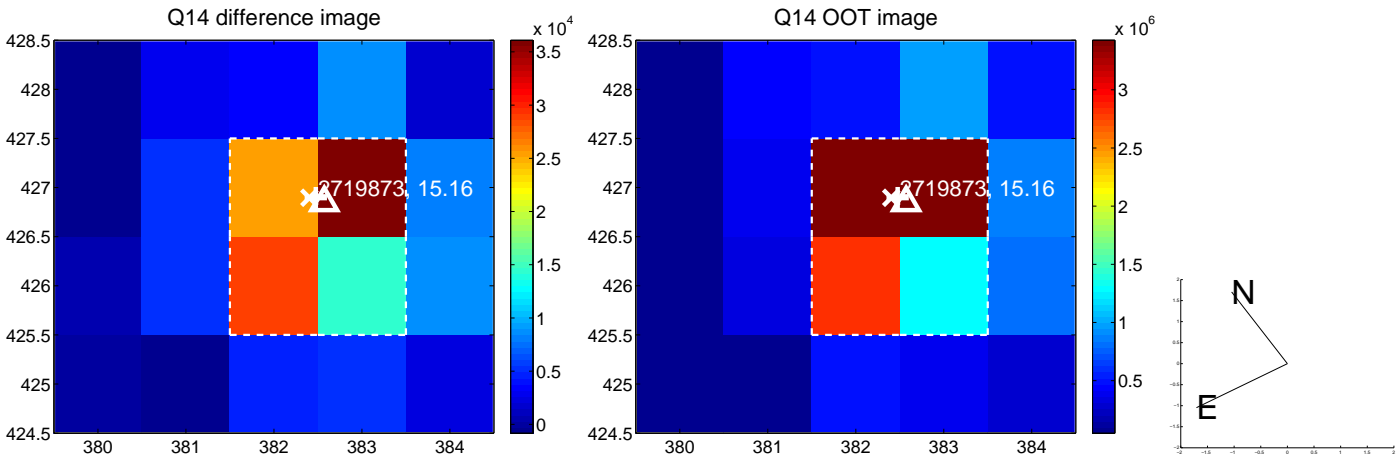
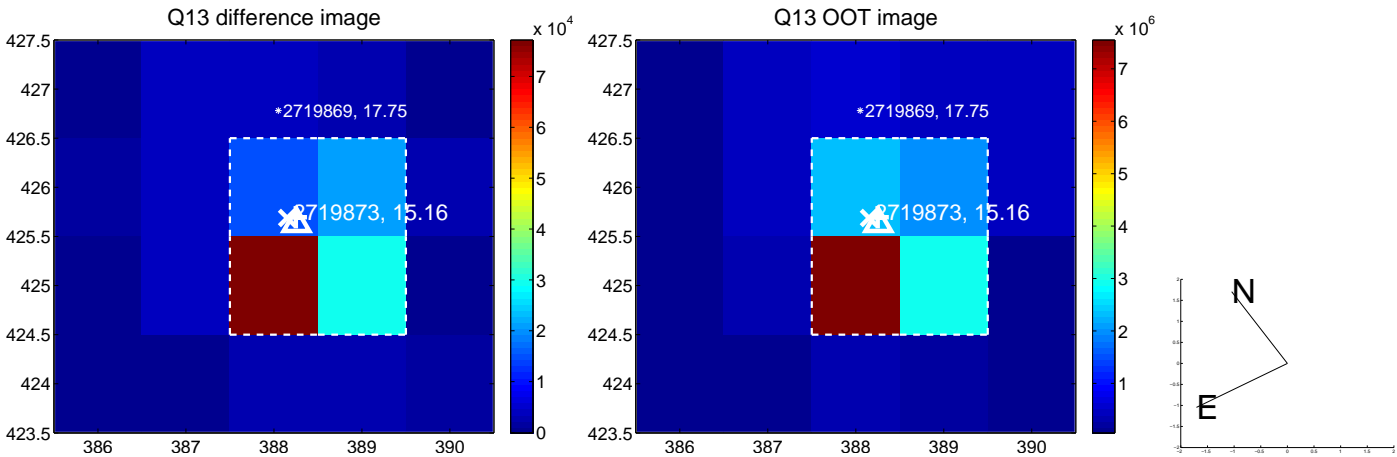
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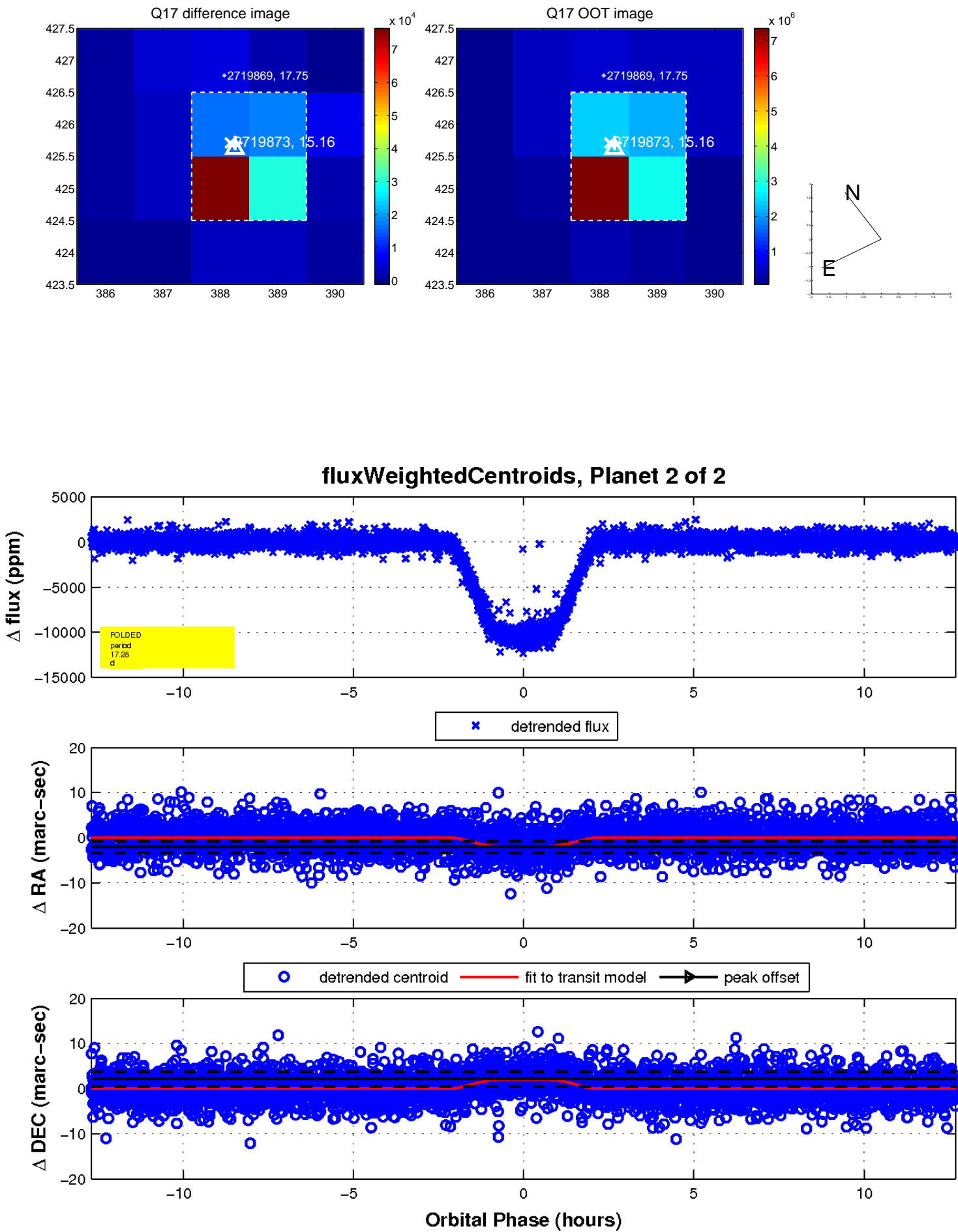
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

