

# KIC 007285757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007285757-01	OBS	3271.01	19.549268	149.783321	480.3	3.186	11.1	12.4	0.73	5549	2.95	26.66
007285757-02	OBS	3271.02	7.418297	133.523197	217.0	2.716	9.0	10.6	0.73	5549	1.26	97.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007285757-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
007285757-02	OBS	PC	1.00	0	0	0	0	CENT_FEW_MEAS

**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.

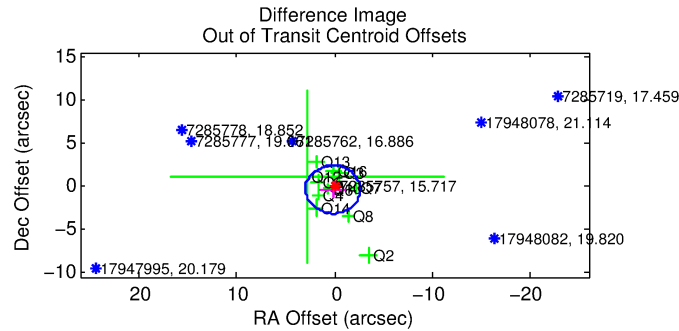
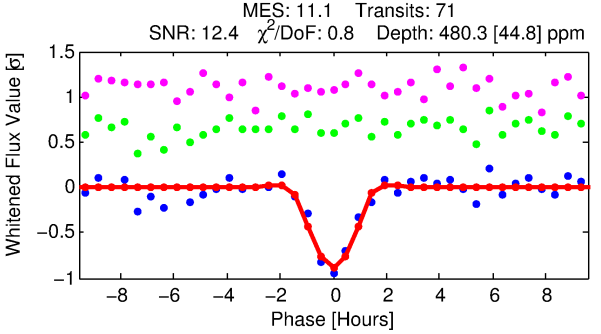
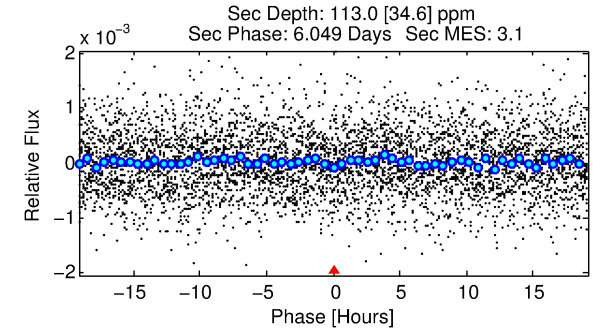
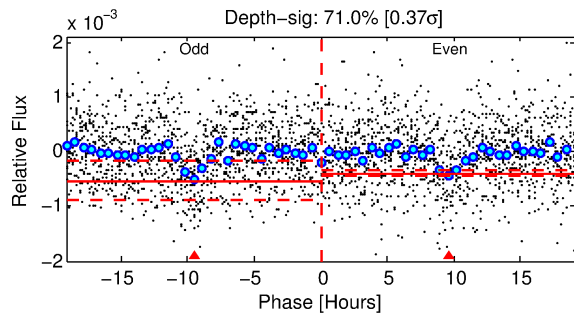
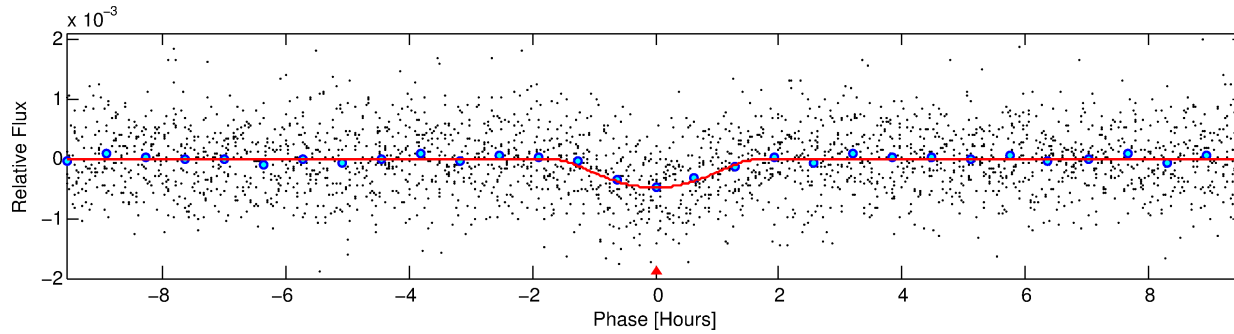
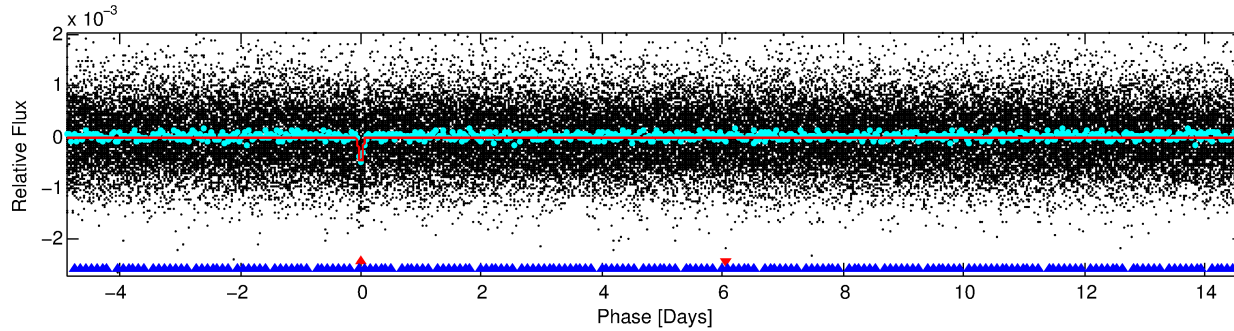
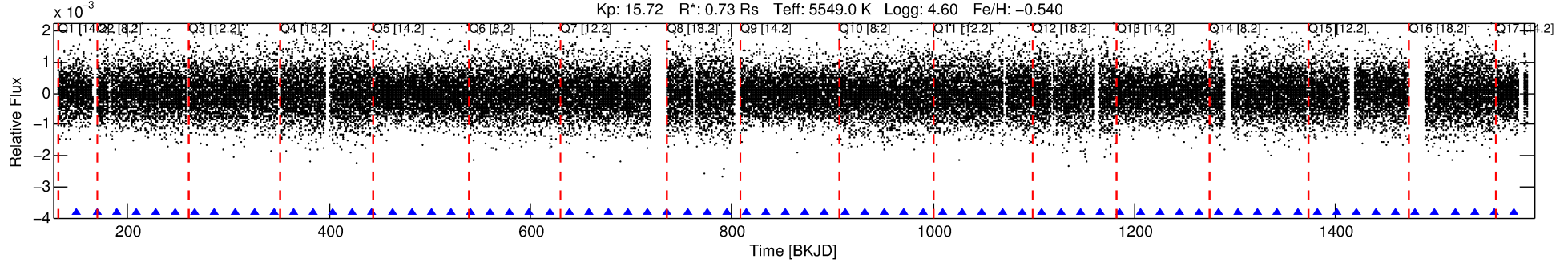
## Ephemeris Match Information For 007285757-01

No Significant Match Found

# DV One-Page Summary

KIC: 7285757 Candidate: 1 of 2 Period: 19.549 d  
KOI: K03271 Corr: No Ephemeris Match

Kp: 15.72 R\*: 0.73 Rs Teff: 5549.0 K Logg: 4.60 Fe/H: -0.540



## DV Fit Results:

Period = 19.54927 [0.00016] d  
Epoch = 149.7833 [0.0065] BKJD  
Rp/R\* = 0.0369 [0.0988]  
a/R\* = 13.74 [10.49]  
b = 0.99 [0.16]  
Seff = 26.66 [6.50]  
Teq = 579 [35] K  
Rp = 2.95 [7.91] Re  
a = 0.1307 [0.0199] AU  
Ag = 121.86 [653.50] [0.18σ]  
Teffp = 2977 [3988] K [0.60σ]

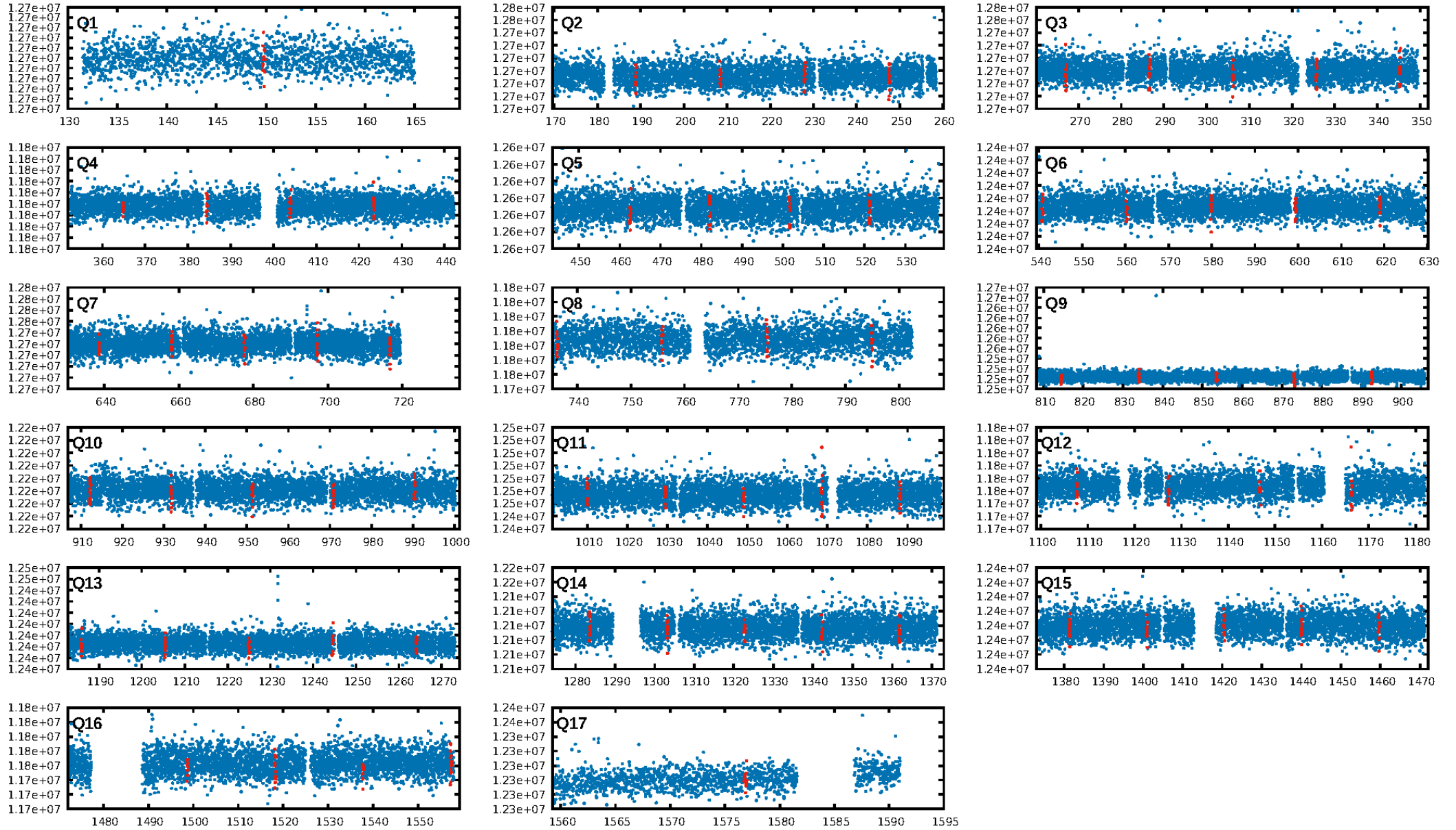
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.55σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.96e-29  
RollingBand-fgt: 1.00 [69/69]  
GhostDiagnostic-chr: 2.322  
Centroid-sig: 16.5%  
Centroid-so: 0.383 arcsec [0.38σ]  
OotOffset-rm: 0.418 arcsec [0.45σ]  
OotOffset-st: 4/2/4/2 [12]  
KicOffset-rm: 0.998 arcsec [0.85σ]  
KicOffset-st: 4/2/4/2 [12]  
DiffImageQuality-fgm: 0.50 [6/12]  
DiffImageOverlap-fno: 1.00 [17/17]

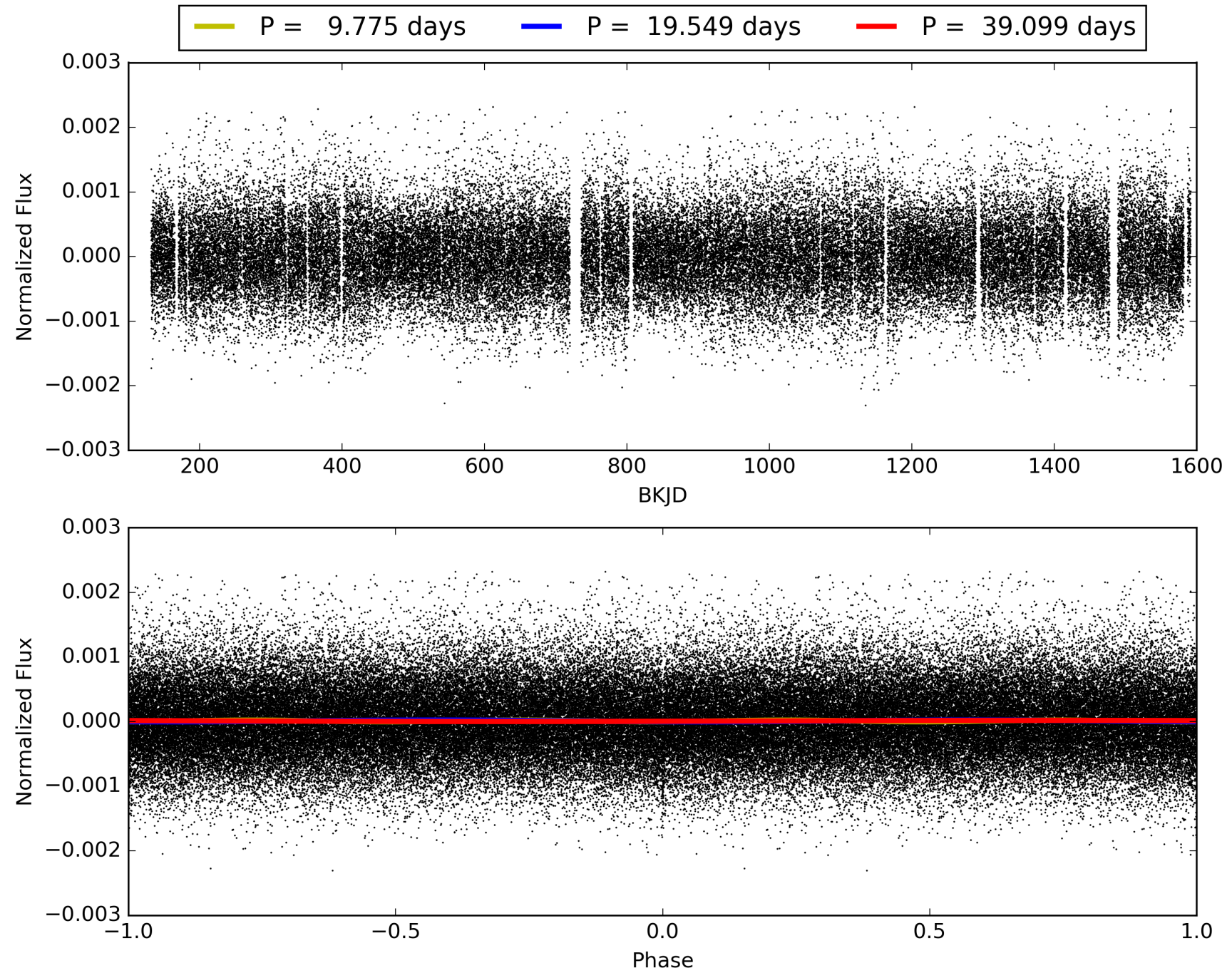
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:24:47 Z

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

# TCE 007285757-01, PDC Light Curves

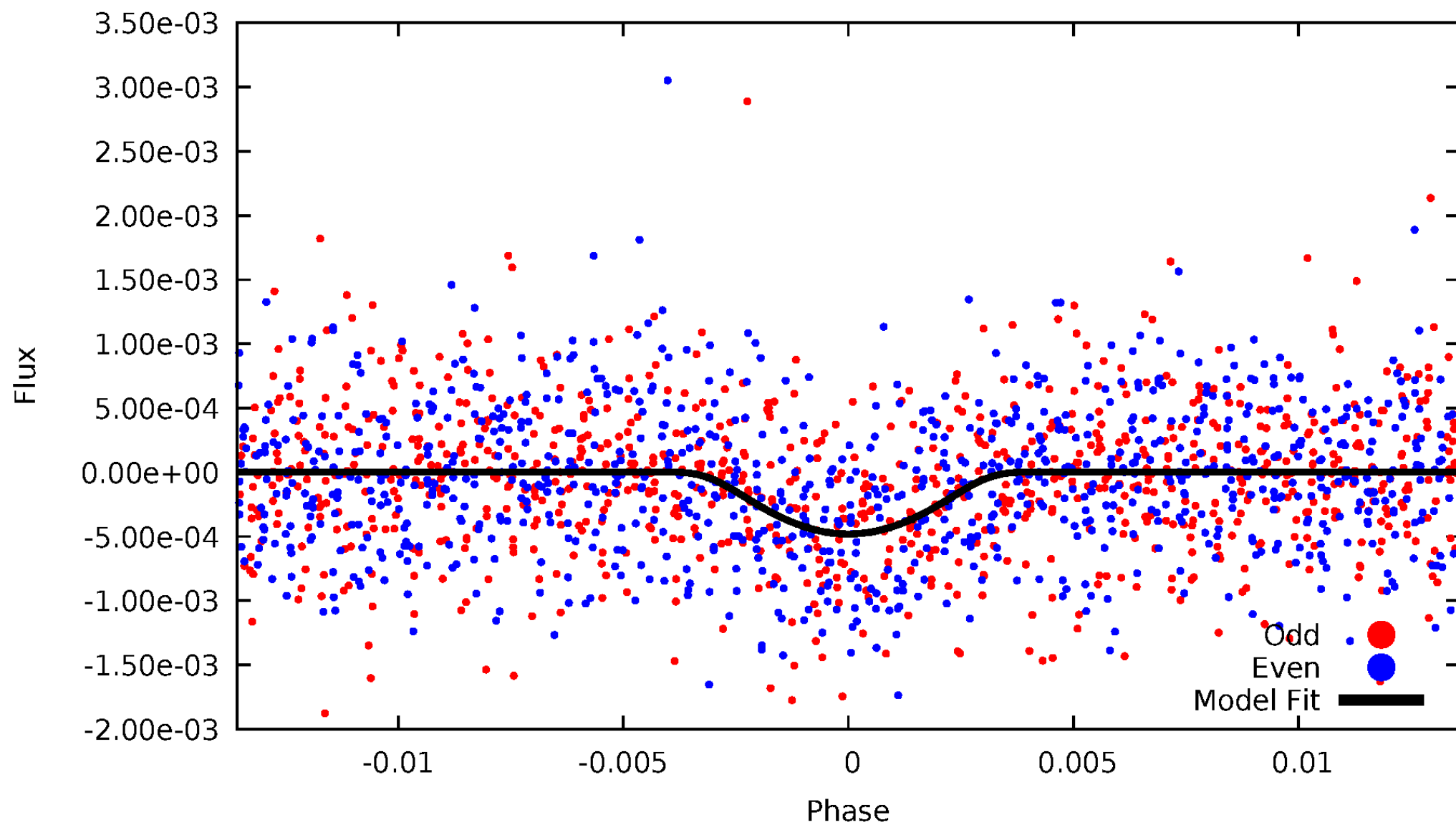


TCE 007285757-01



# DV Odd/Even

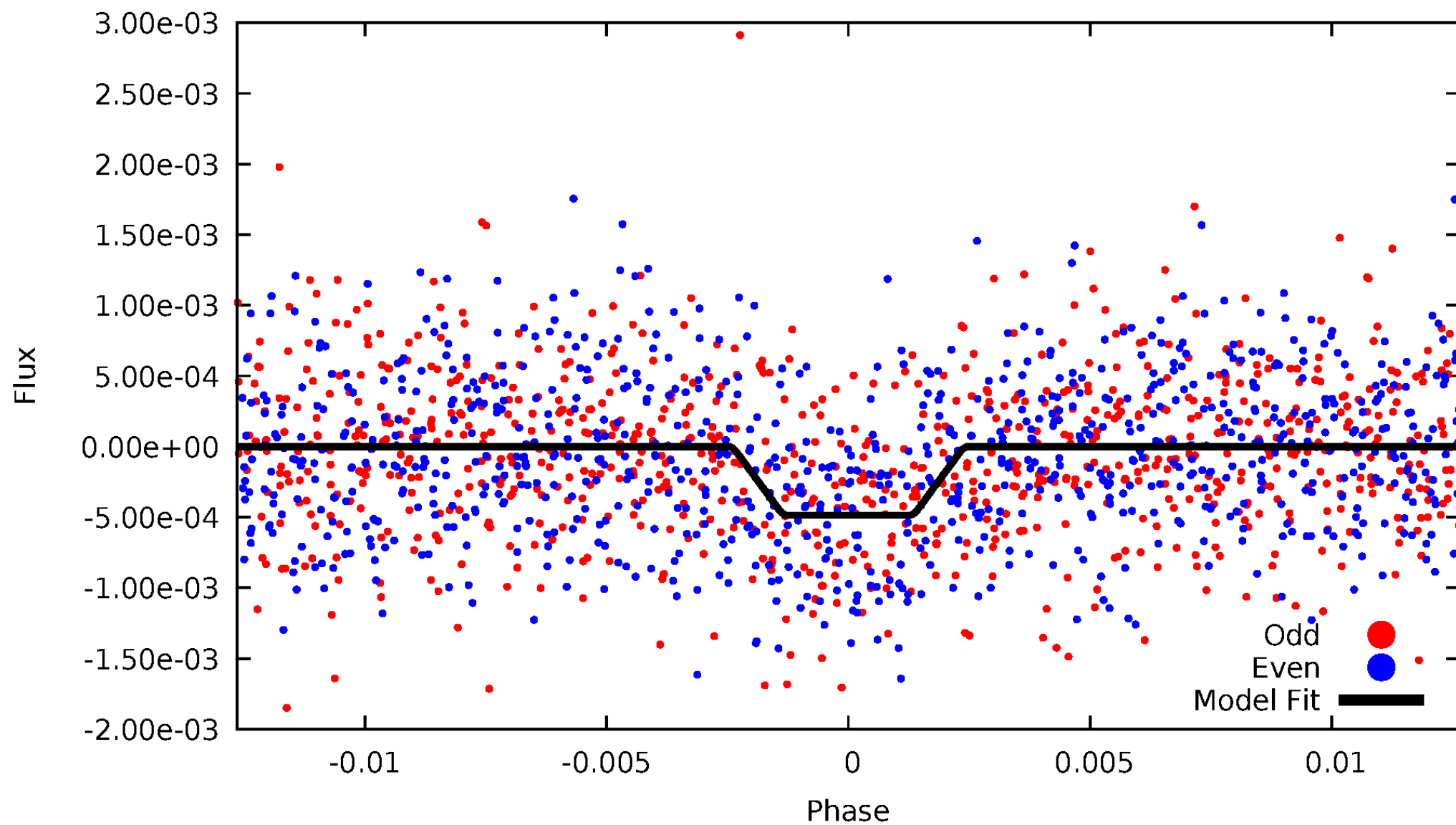
TCE 007285757-01



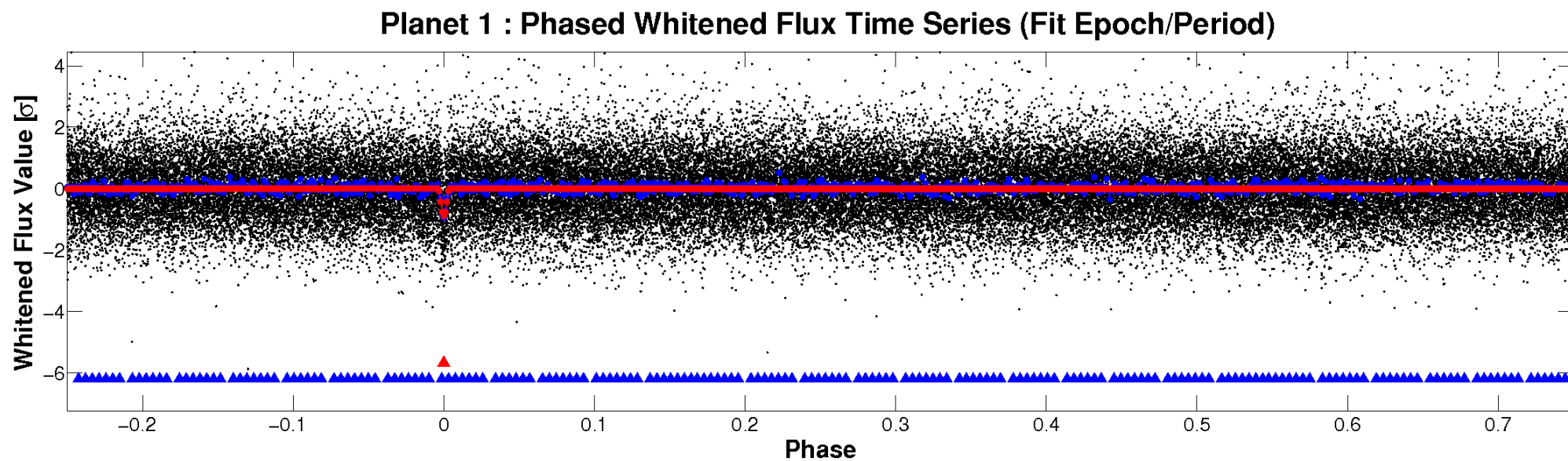
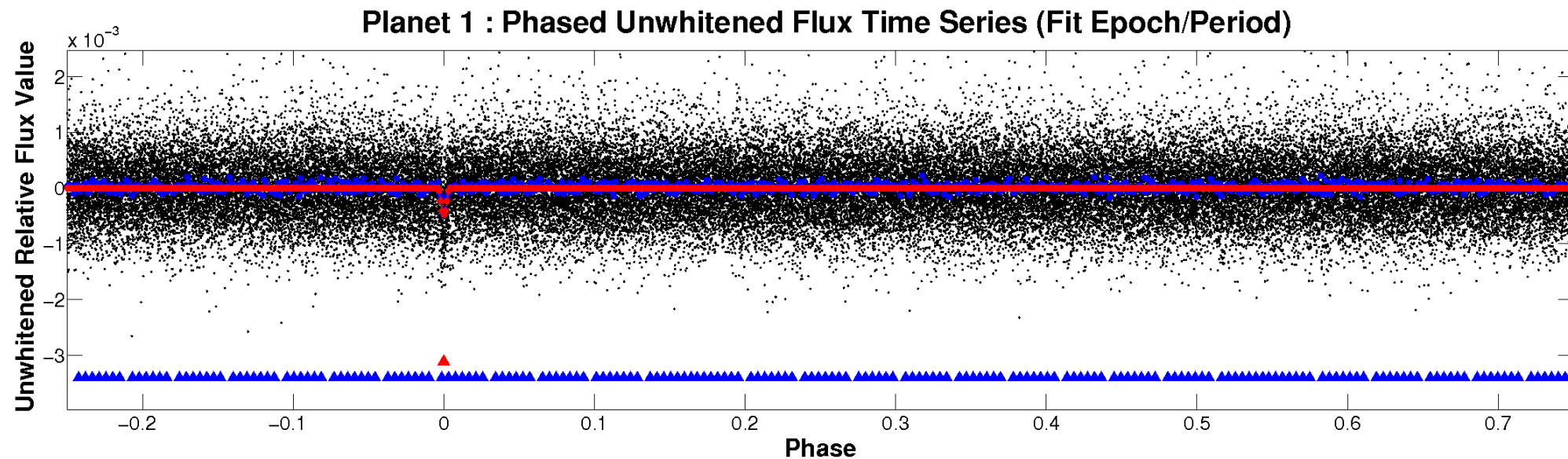


# ALT Odd/Even

TCE 007285757-01

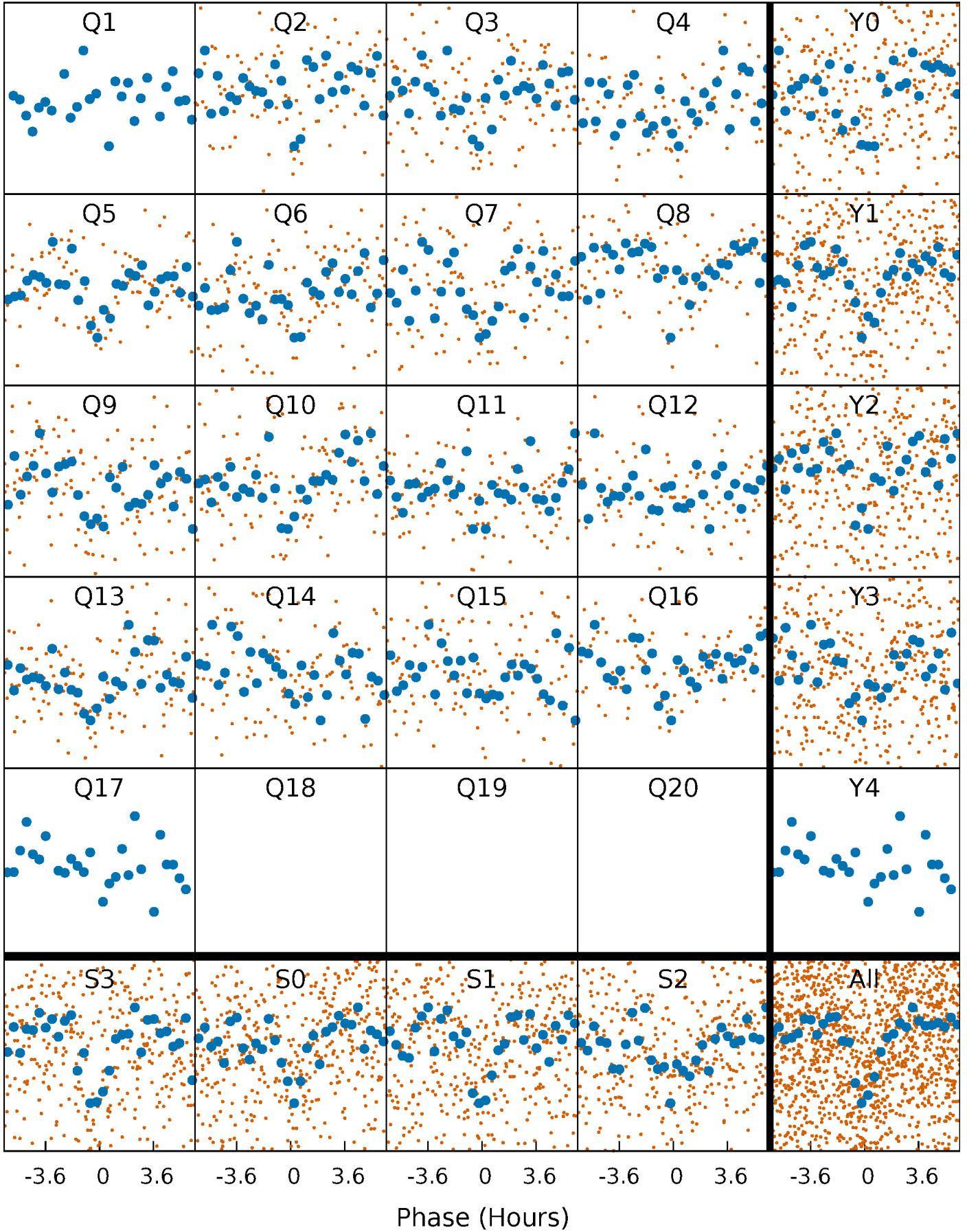


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

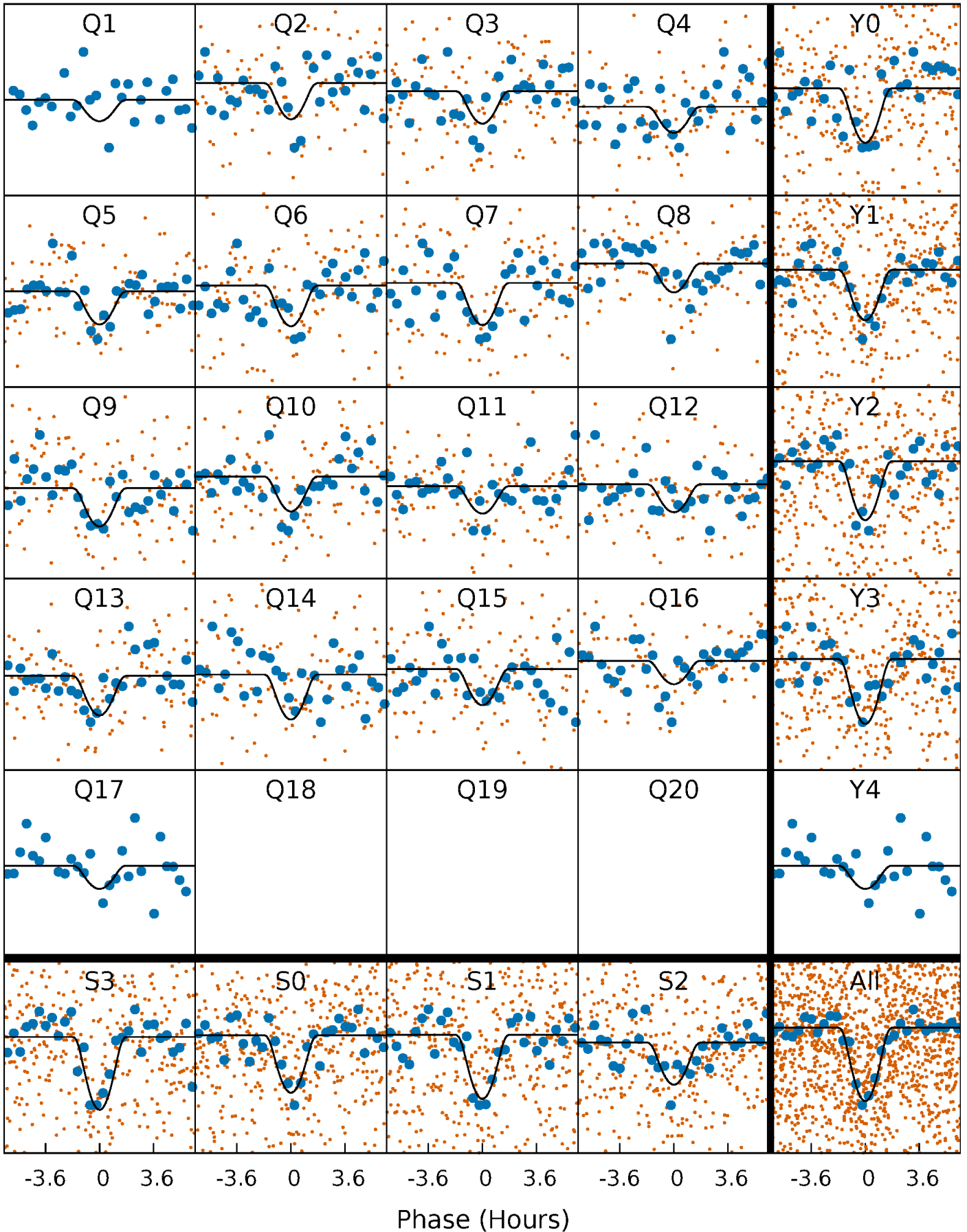
TCE 007285757-01 P= 19.549268 Days  $T_0=149.783321$  (BKJD)





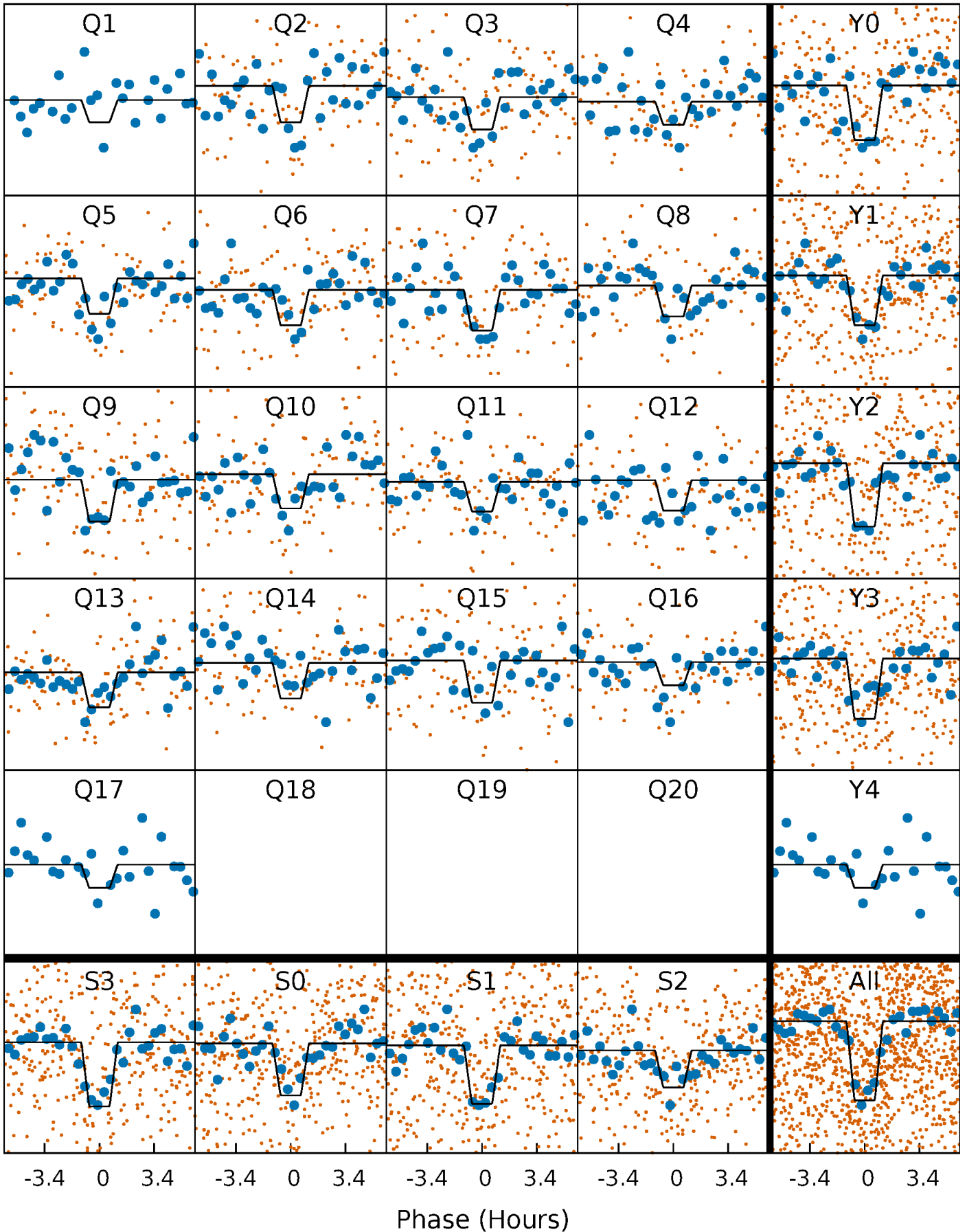
# DV Quarter-Phased Transit Curves

TCE 007285757-01 P= 19.549268 Days  $T_0=149.783321$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

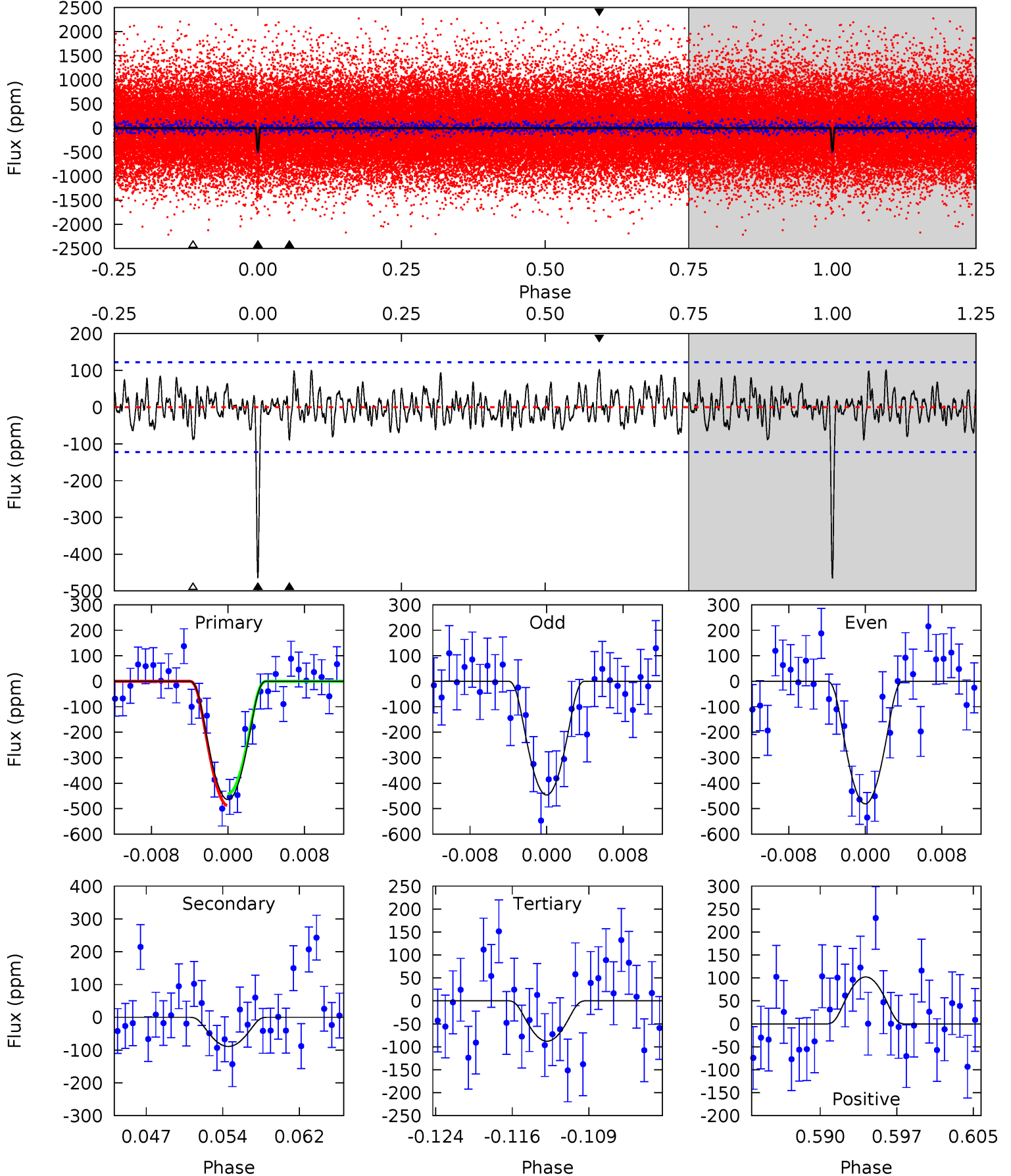
TCE 007285757-01 P= 19.549249 Days  $T_0=149.784153$  (BKJD)



# DV Model-Shift Uniqueness Test

007285757-01,  $P = 19.549268$  Days,  $E = 130.234053$  Days

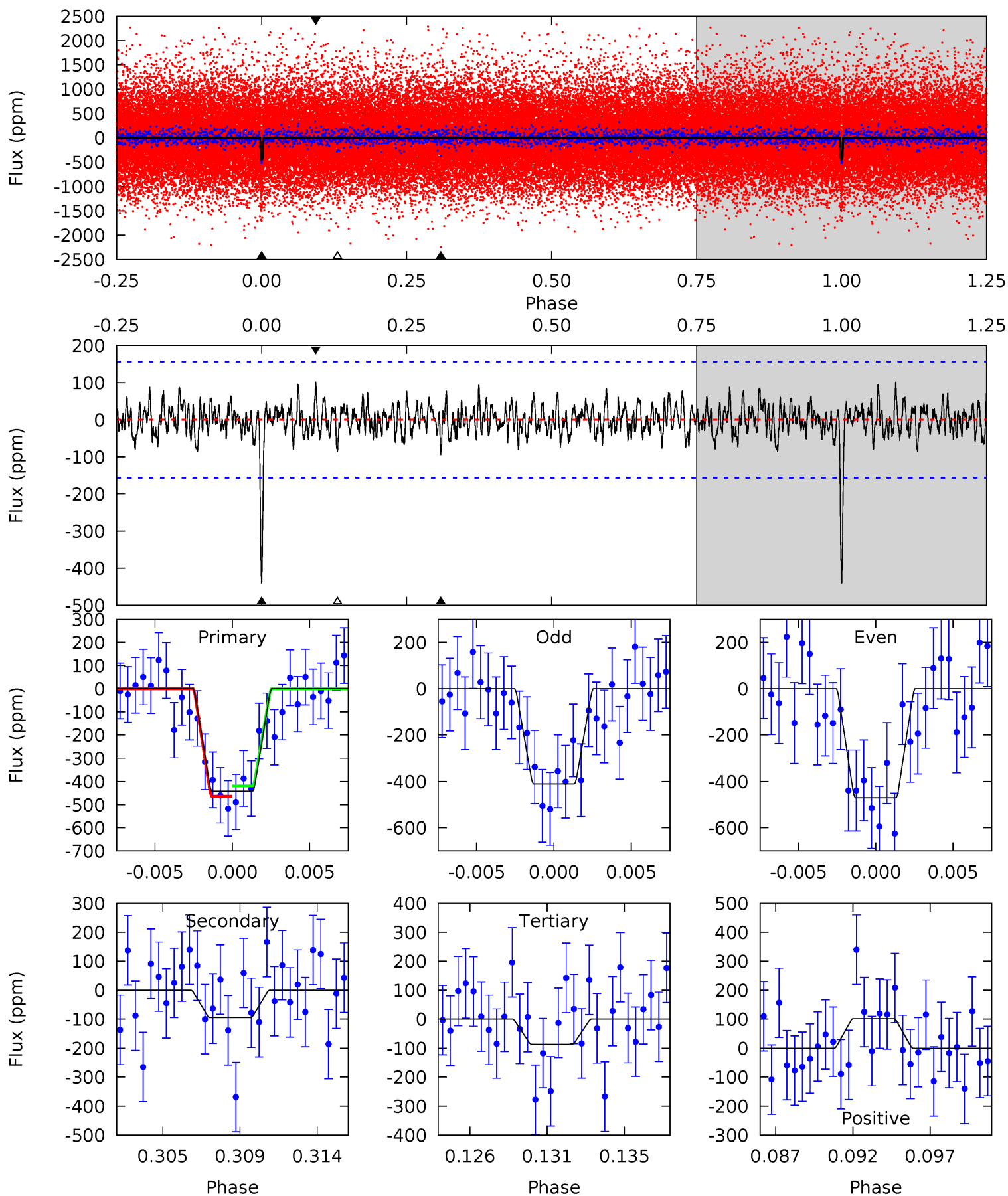
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	3.70	3.65	4.24	5.07	2.66	1.38	15.6	15.0	0.05	-0.55	0.72	1.07	0.18	0.95



# Alt Model-Shift Uniqueness Test

007285757-01,  $P = 19.549249$  Days,  $E = 130.234904$  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
14.5	3.13	2.85	3.37	5.16	2.82	1.06	11.7	11.2	0.28	-0.24	0.99	1.11	0.19	0.73



### Stellar Parameters For KIC 007285757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5549^{+163}_{-163}$	$4.600^{+0.045}_{-0.113}$	$-0.540^{+0.300}_{-0.300}$	$0.732^{+0.137}_{-0.059}$	$0.776^{+0.089}_{-0.065}$	$2.791^{+0.547}_{-0.952}$
	+3%/-3%	+1%/-2%	+56%/-56%	+19%/-8%	+11%/-8%	+20%/-34%
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 007285757-01 / KOI 3271.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-89 \pm 24$	$6.66^{+6.39}_{-4.70}$	$820^{+36}_{-35}$	$2669^{+1148}_{-412}$	$19^{+210}_{-14}$
Alt.	$-95 \pm 30$	$6.05^{+6.56}_{-4.20}$	$819^{+38}_{-33}$	$2758^{+1208}_{-486}$	$25^{+250}_{-20}$

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



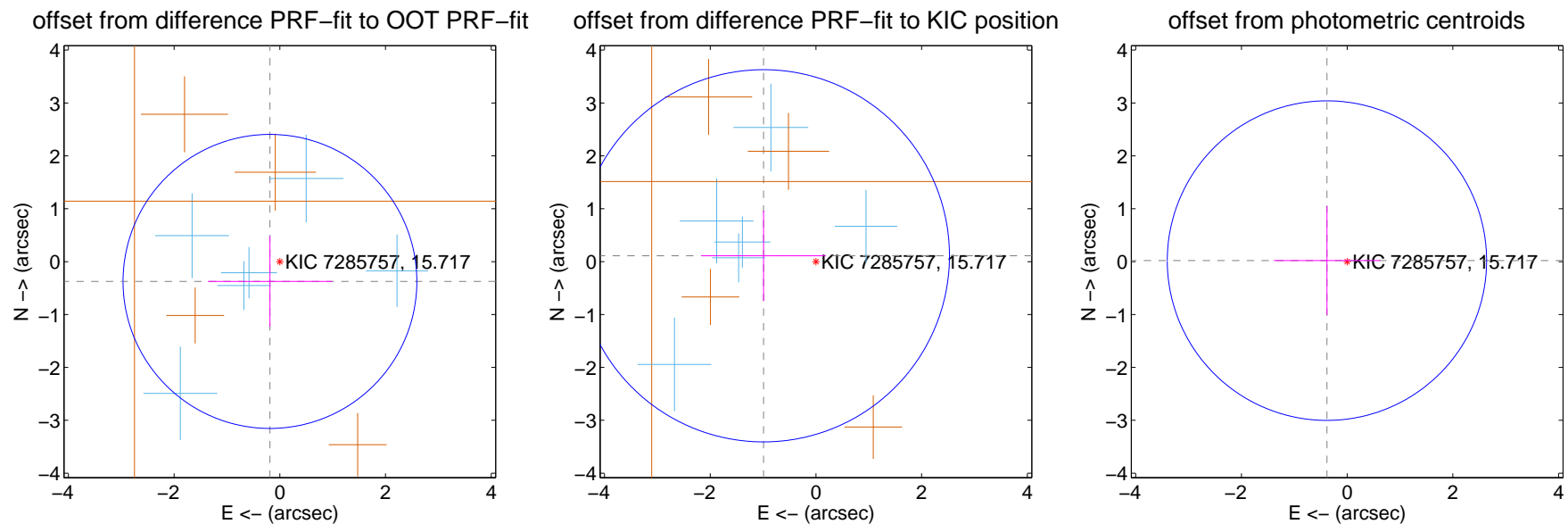
## DV Centroid Data

Supplemental centroid analysis for 007285757-01. Kepler magnitude: 15.72. Transit SNR 12.39

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.59 arcsec

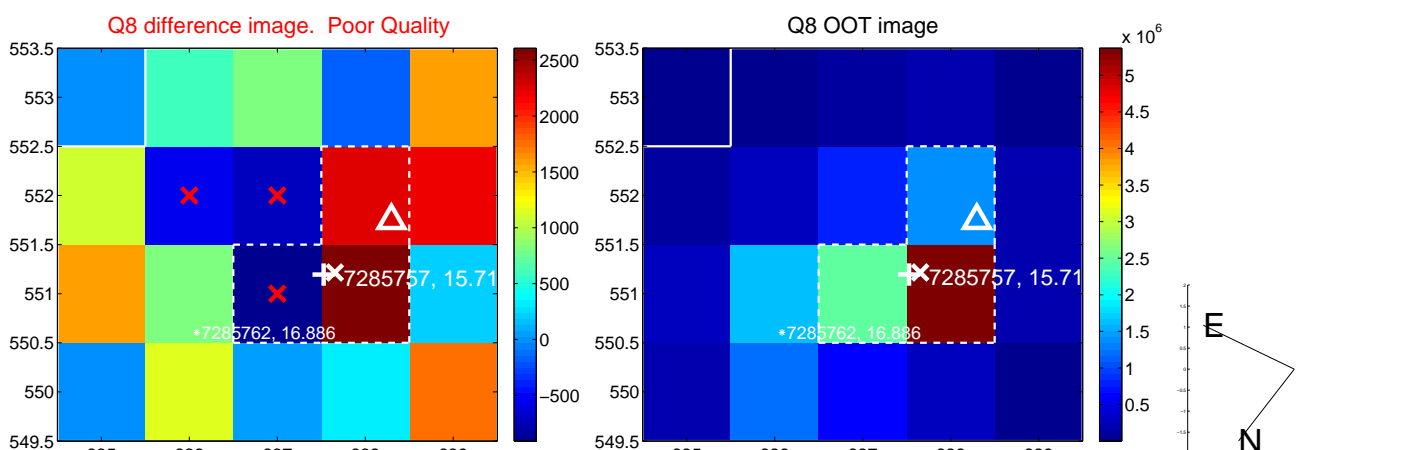
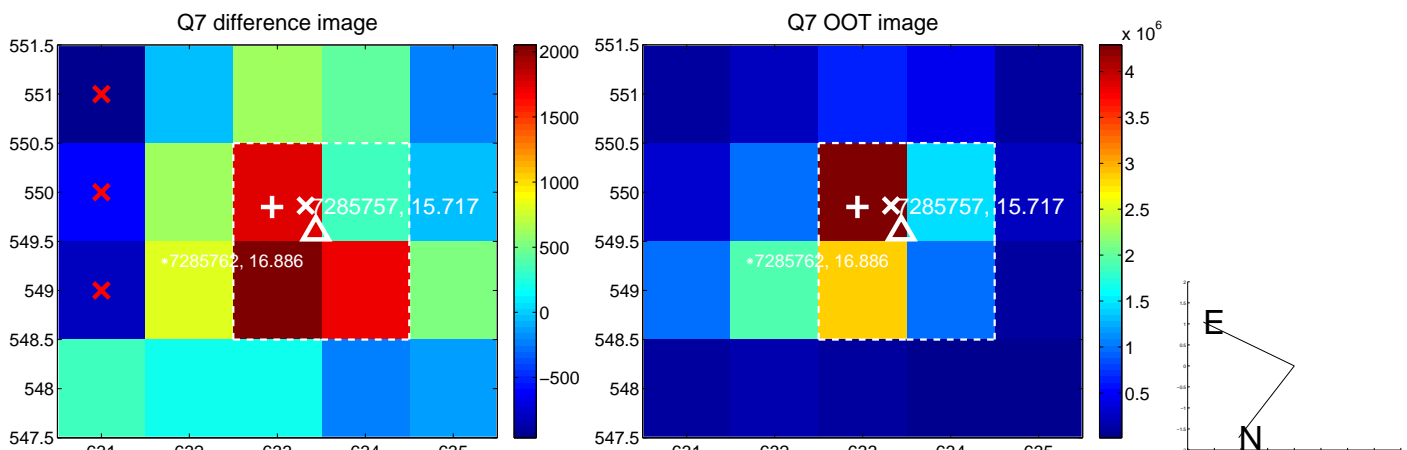
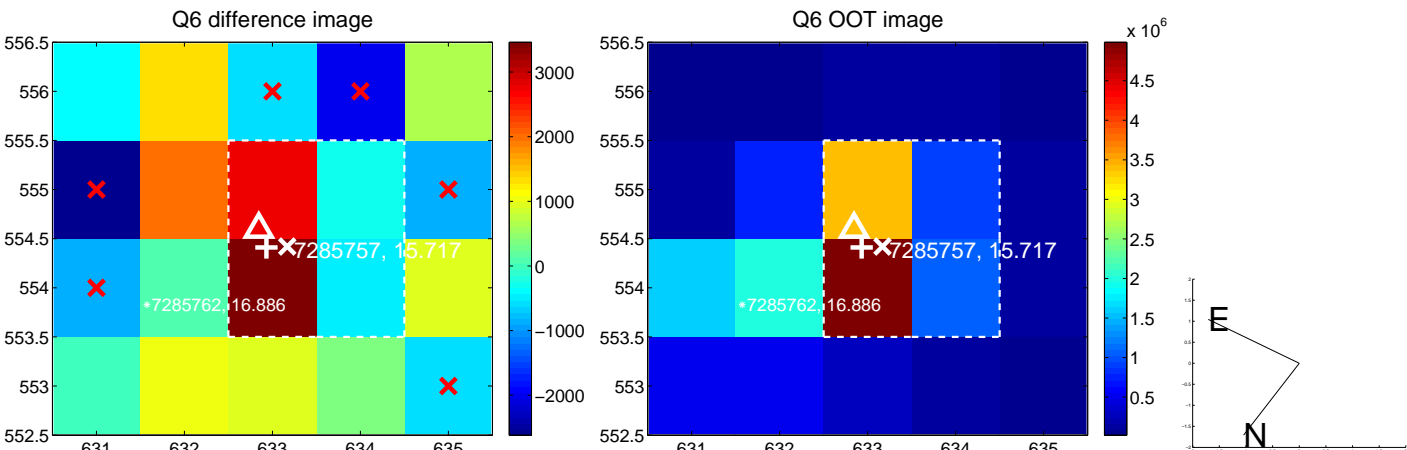
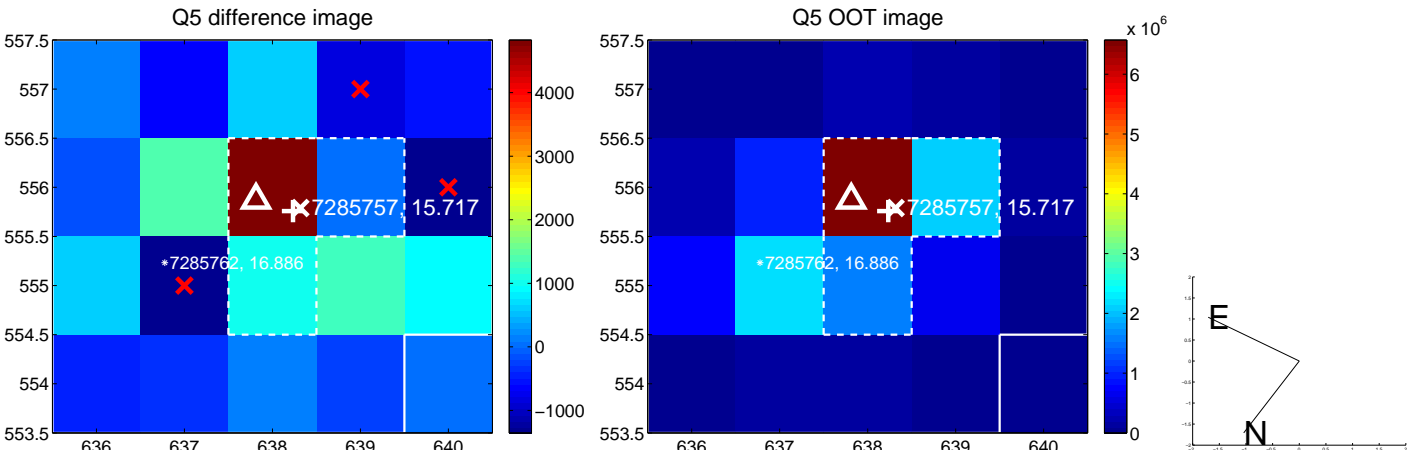
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.418 \pm 0.927$	0.45	$0.186 \pm 1.176$	$-0.374 \pm 0.853$
PRF-fit source offset from KIC position	$0.998 \pm 1.173$	0.85	$0.992 \pm 1.176$	$0.111 \pm 0.853$
photometric centroid source offset	$0.38 \pm 1.01$	0.38	$0.38 \pm 1.01$	$0.02 \pm 1.03$



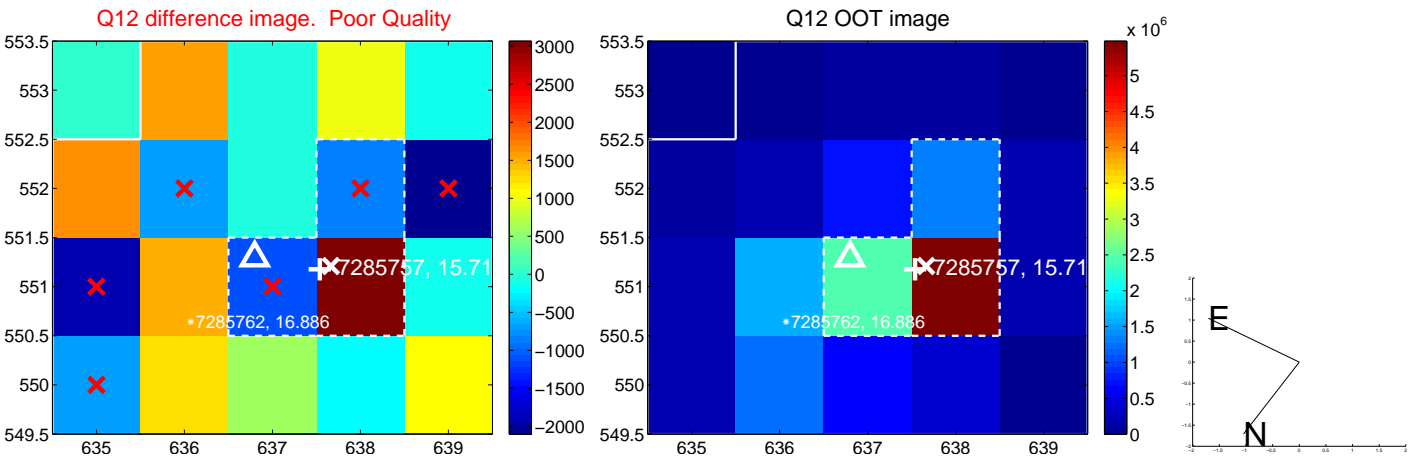
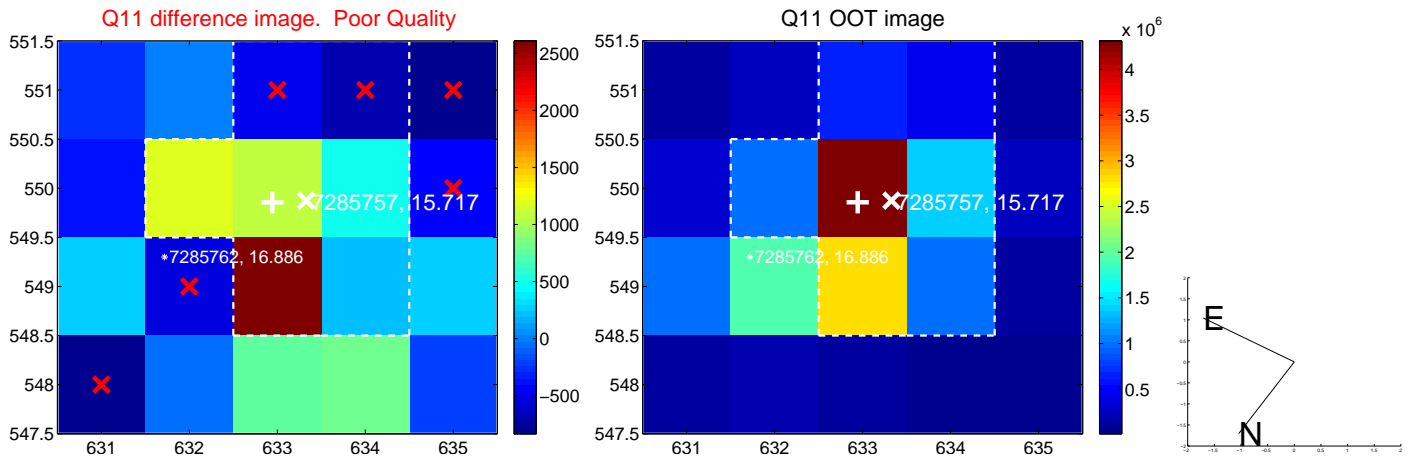
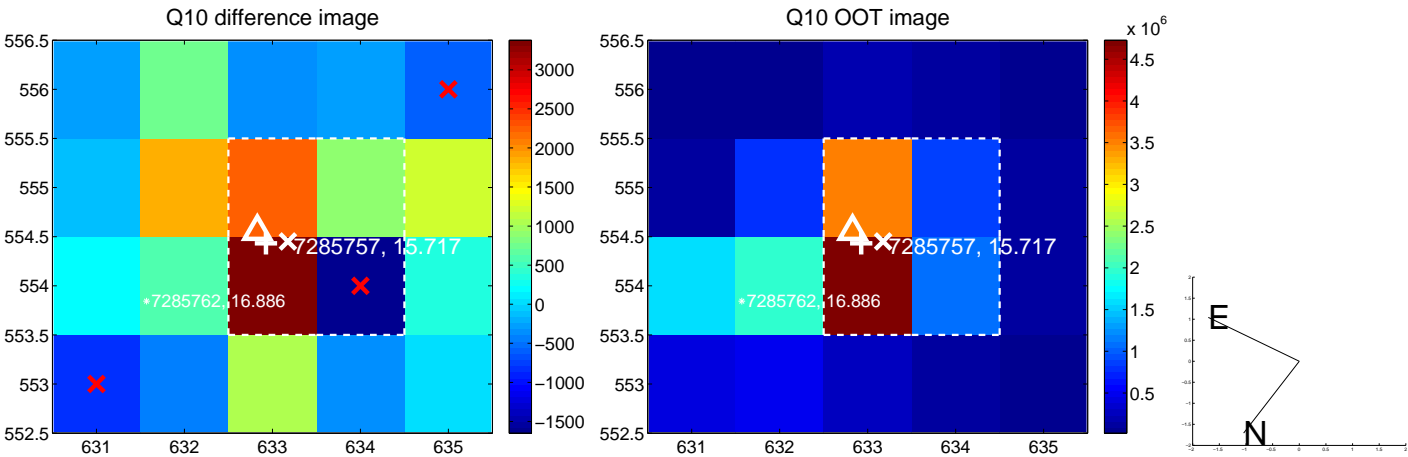
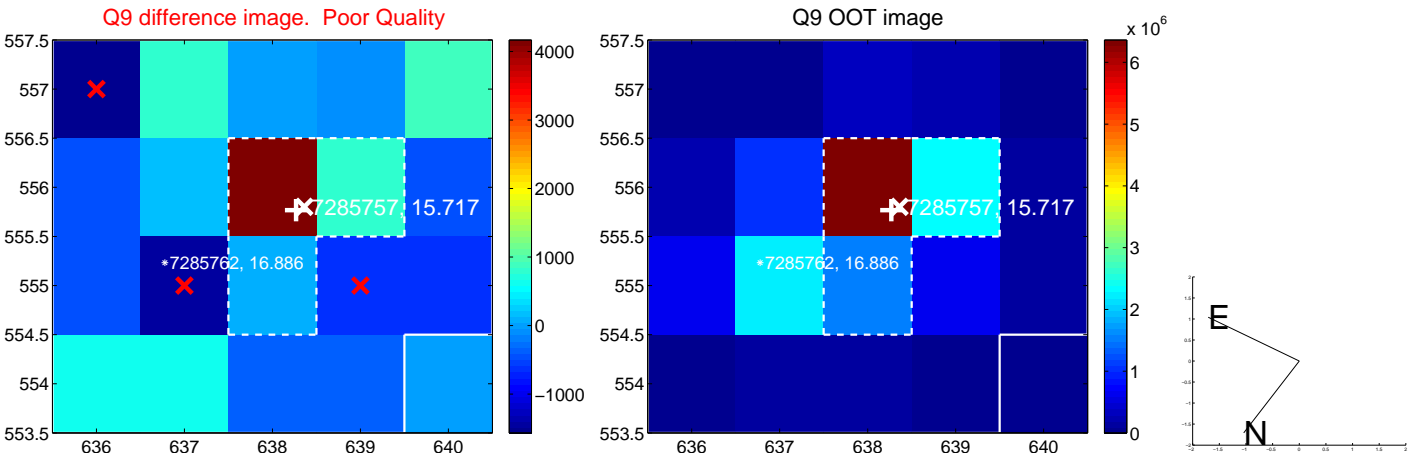
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



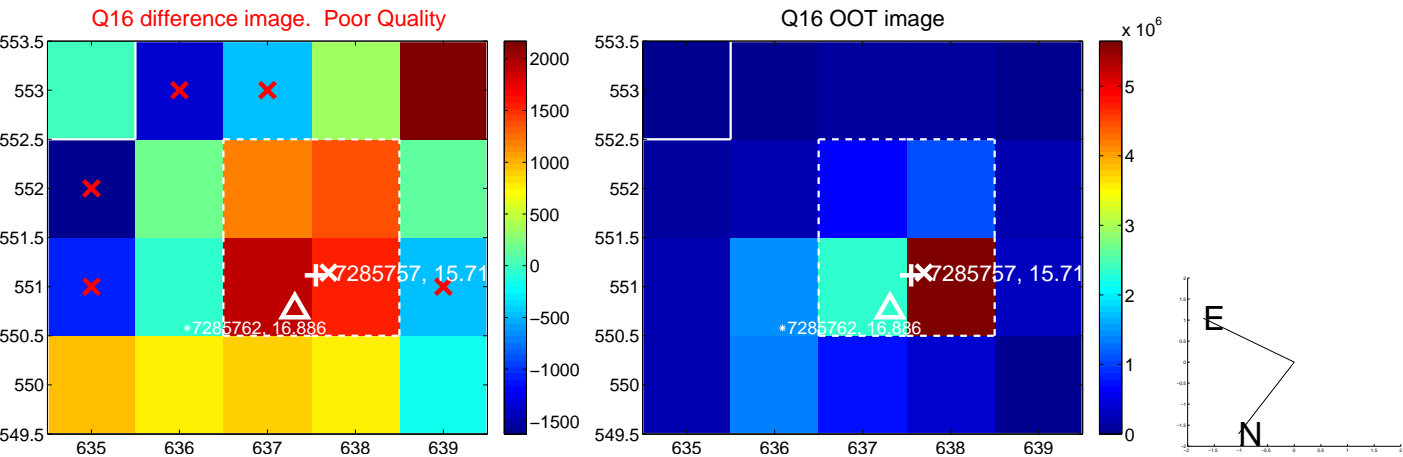
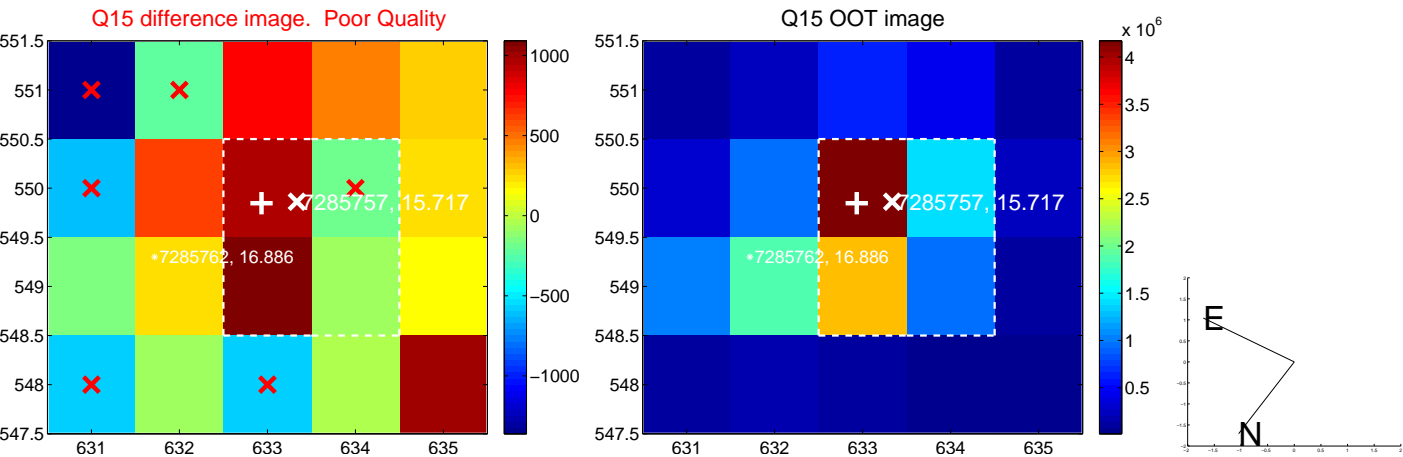
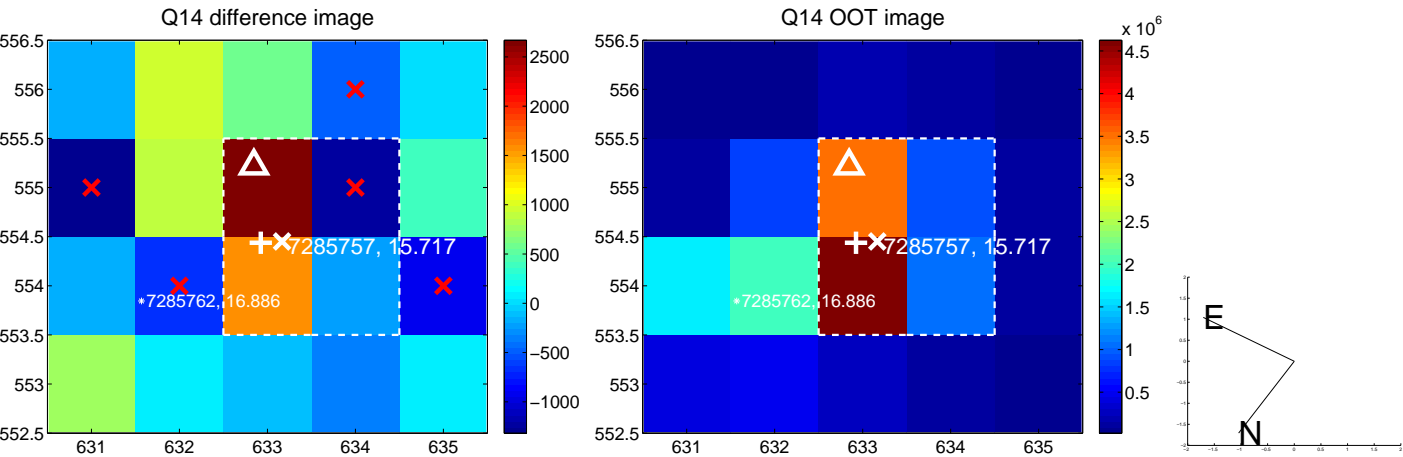
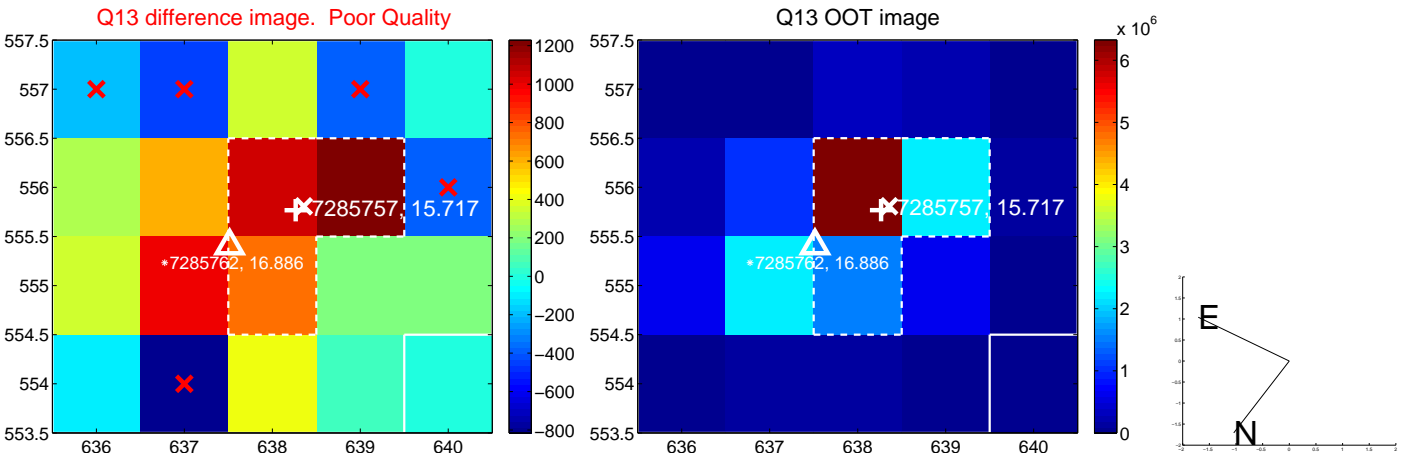
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

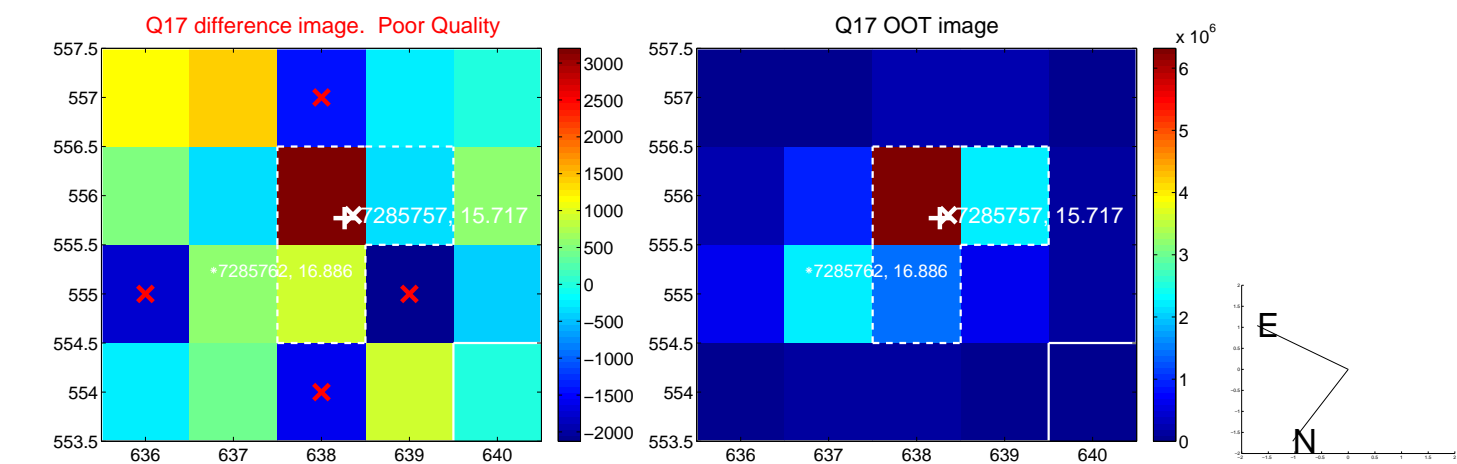


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

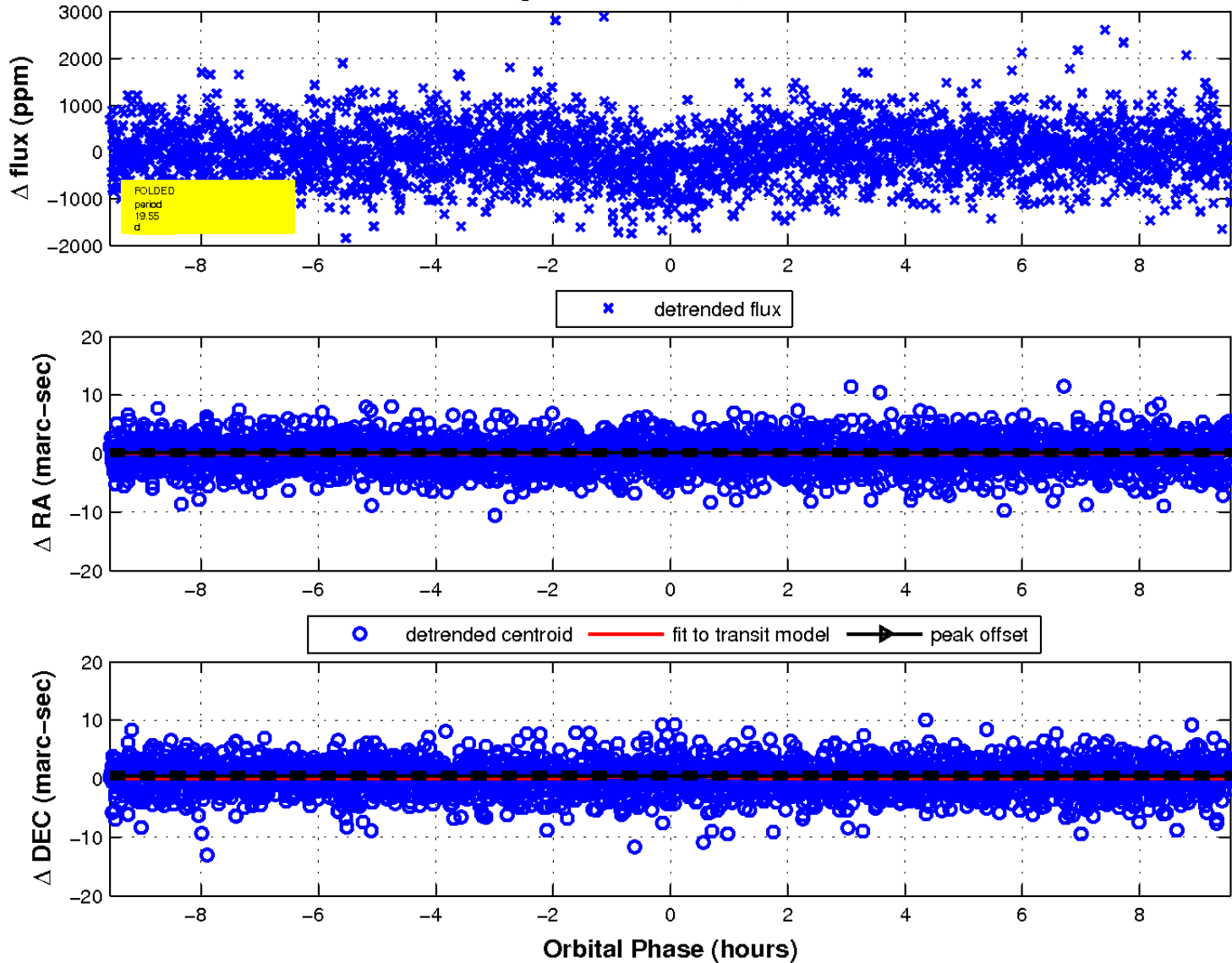




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

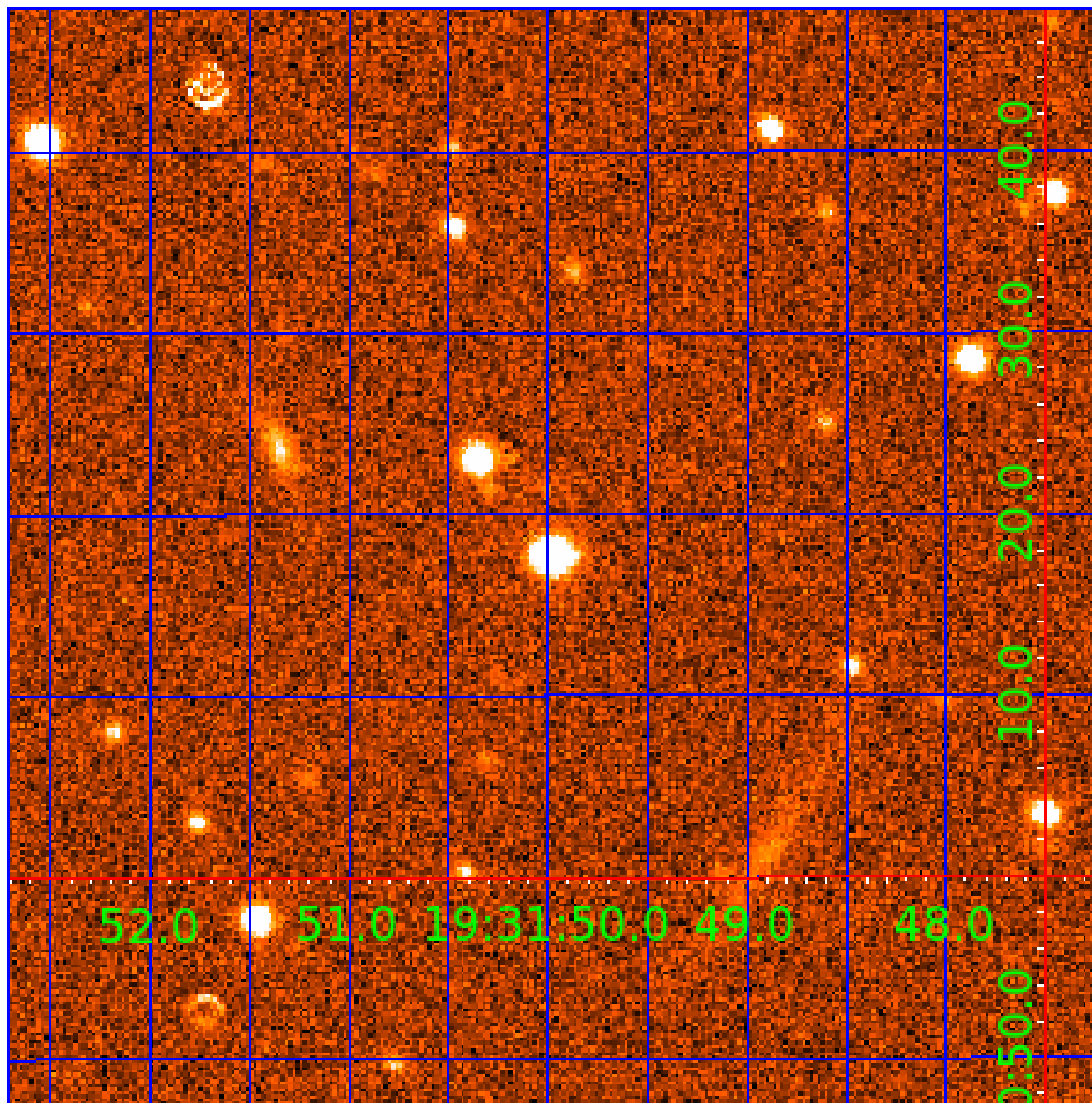


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 007285757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007285757-01	OBS	3271.01	19.549268	149.783321	480.3	3.186	11.1	12.4	0.73	5549	2.95	26.66
007285757-02	OBS	3271.02	7.418297	133.523197	217.0	2.716	9.0	10.6	0.73	5549	1.26	97.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007285757-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
007285757-02	OBS	PC	1.00	0	0	0	0	CENT_FEW_MEAS

**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.

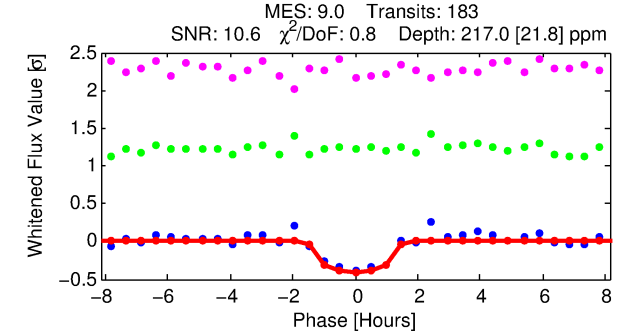
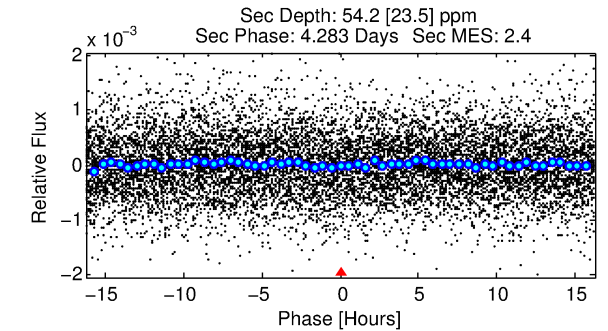
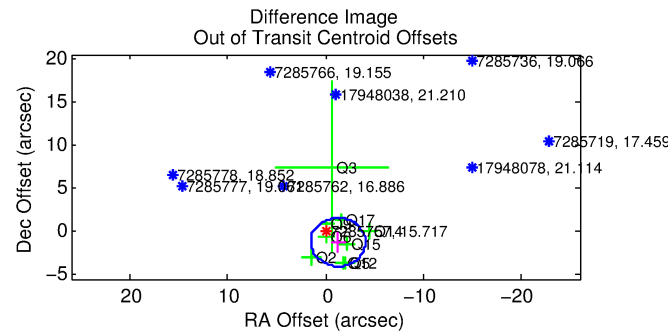
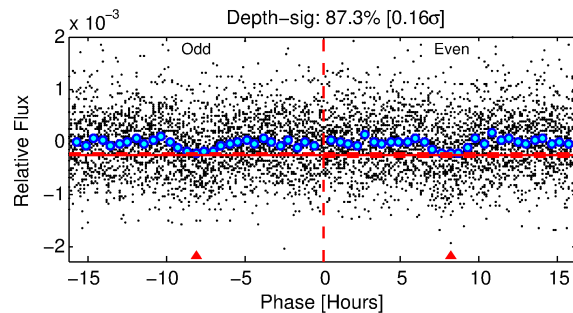
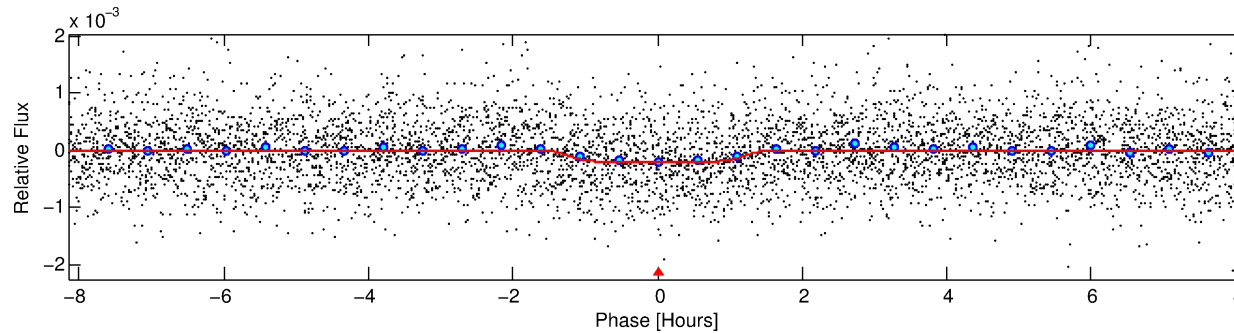
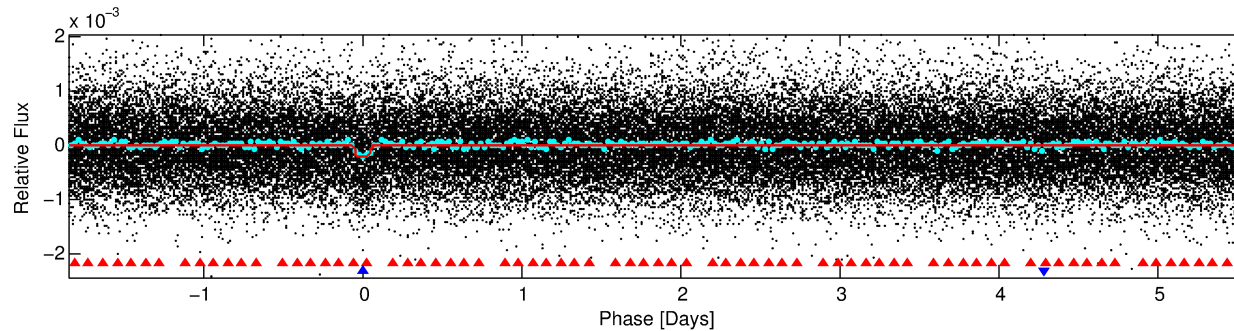
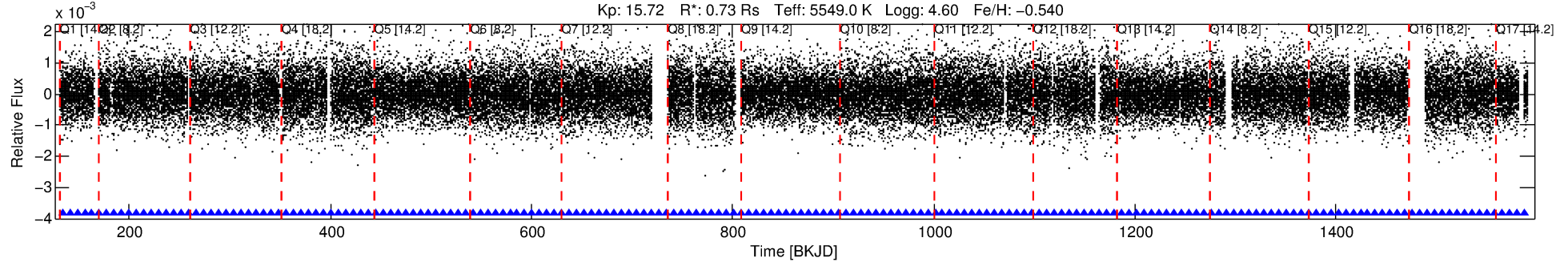
## Ephemeris Match Information For 007285757-02

No Significant Match Found

# DV One-Page Summary

KIC: 7285757 Candidate: 2 of 2 Period: 7.418 d  
KOI: K03271.02 Corr: 0.942

Kp: 15.72 R\*: 0.73 Rs Teff: 5549.0 K Logg: 4.60 Fe/H: -0.540



## DV Fit Results:

Period = 7.41830 [0.00005] d  
Epoch = 133.5232 [0.0054] BKJD  
Rp/R\* = 0.0158 [0.0101]  
a/R\* = 10.39 [31.40]  
b = 0.89 [0.75]  
Seff = 97.06 [23.67]  
Teq = 800 [49] K  
Rp = 1.26 [0.84] Re  
a = 0.0685 [0.0104] AU  
Ag = 87.47 [119.68] [0.72σ]  
Teffp = 3784 [1283] K [2.32σ]

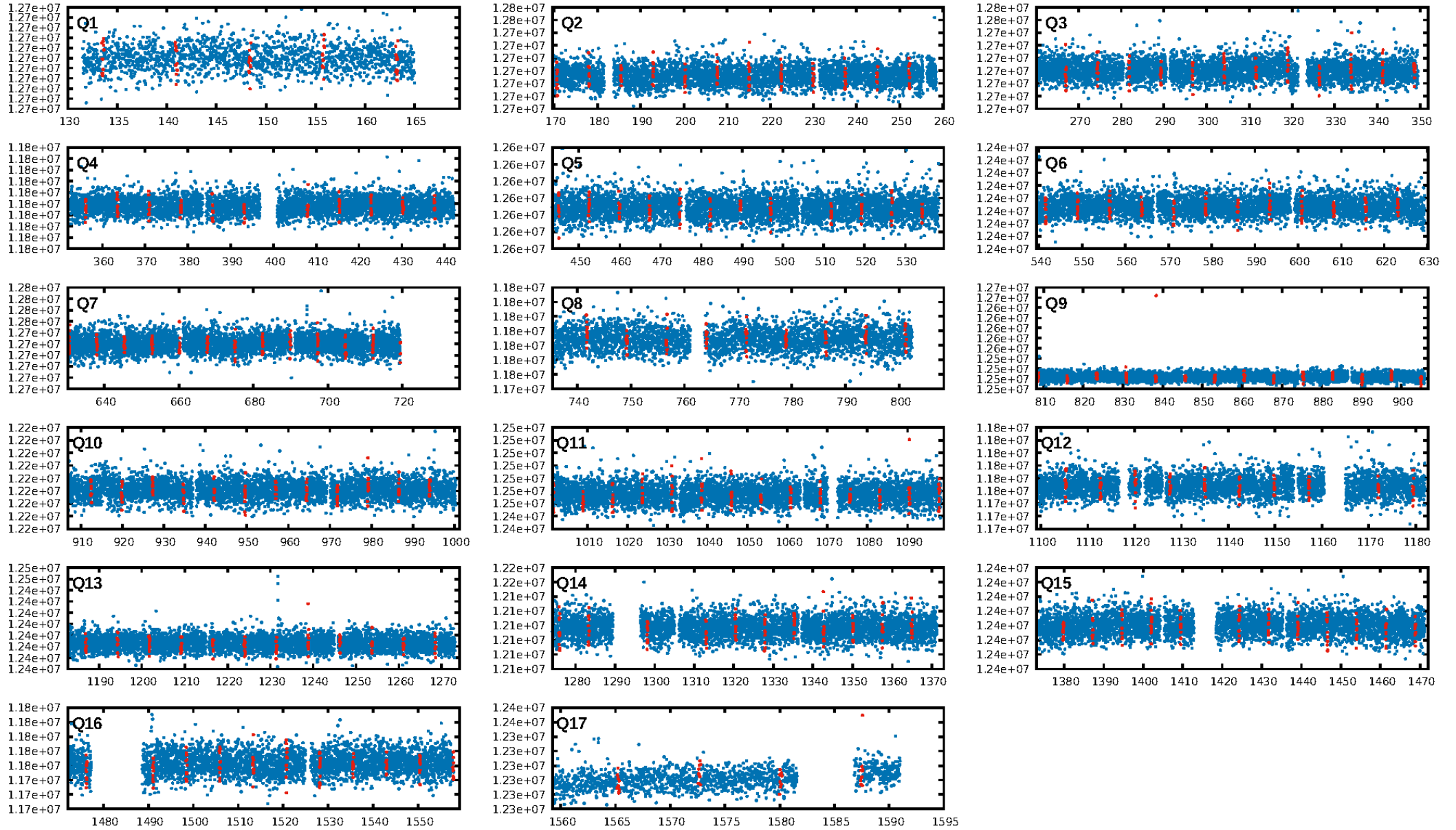
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [69.55σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.61e-20  
RollingBand-fgt: 1.00 [174/174]  
GhostDiagnostic-chr: -9.197  
Centroid-sig: 34.2%  
Centroid-so: 1.146 arcsec [0.96σ]  
OotOffset-rm: 1.783 arcsec [1.92σ]  
KicOffset-rm: 1.061 arcsec [1.01σ]  
OotOffset-st: 3/2/1/3 [9]  
KicOffset-st: 3/2/1/3 [9]  
DiffImageQuality-fgm: 0.22 [2/9]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:24:54 Z

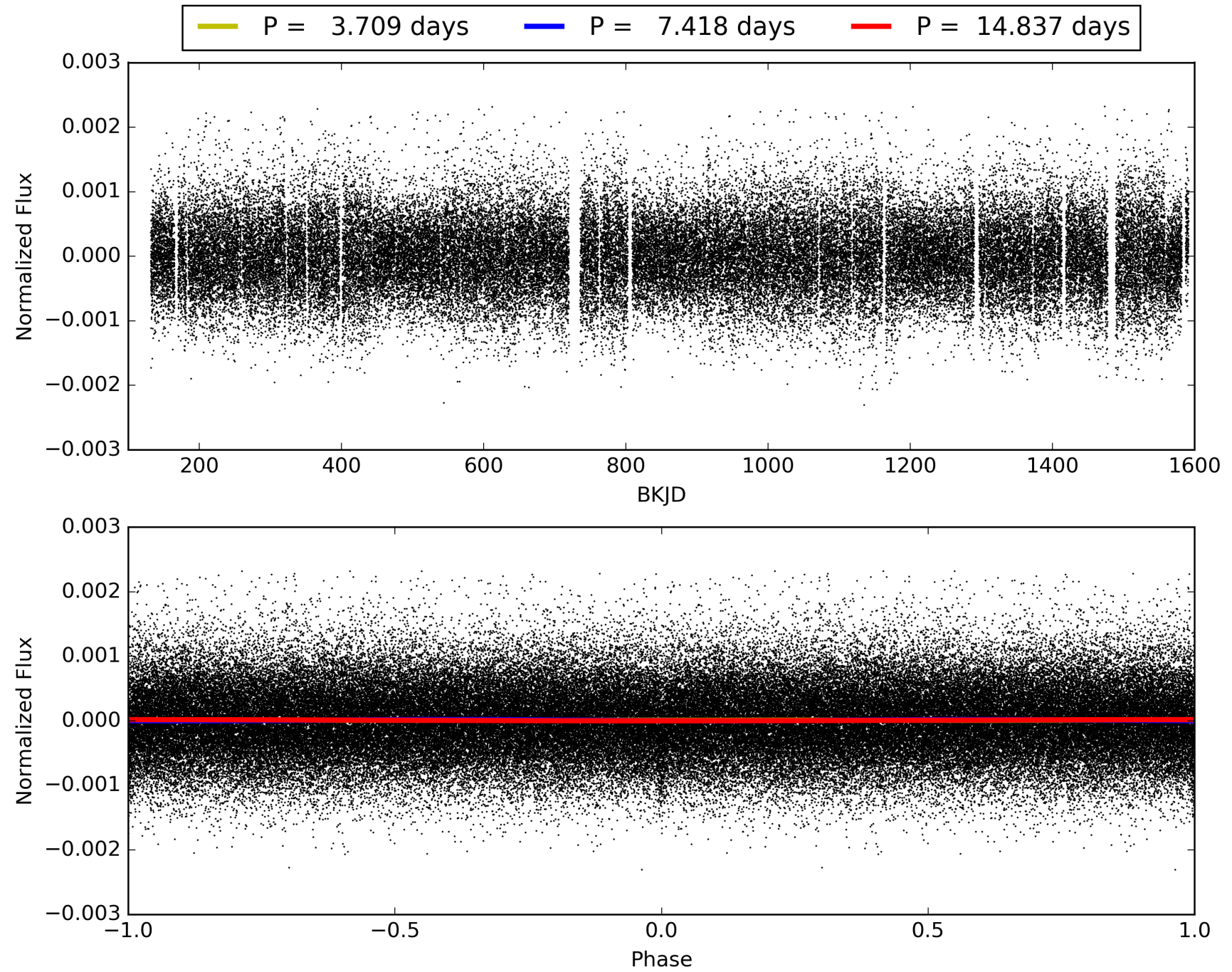
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007285757-02, PDC Light Curves



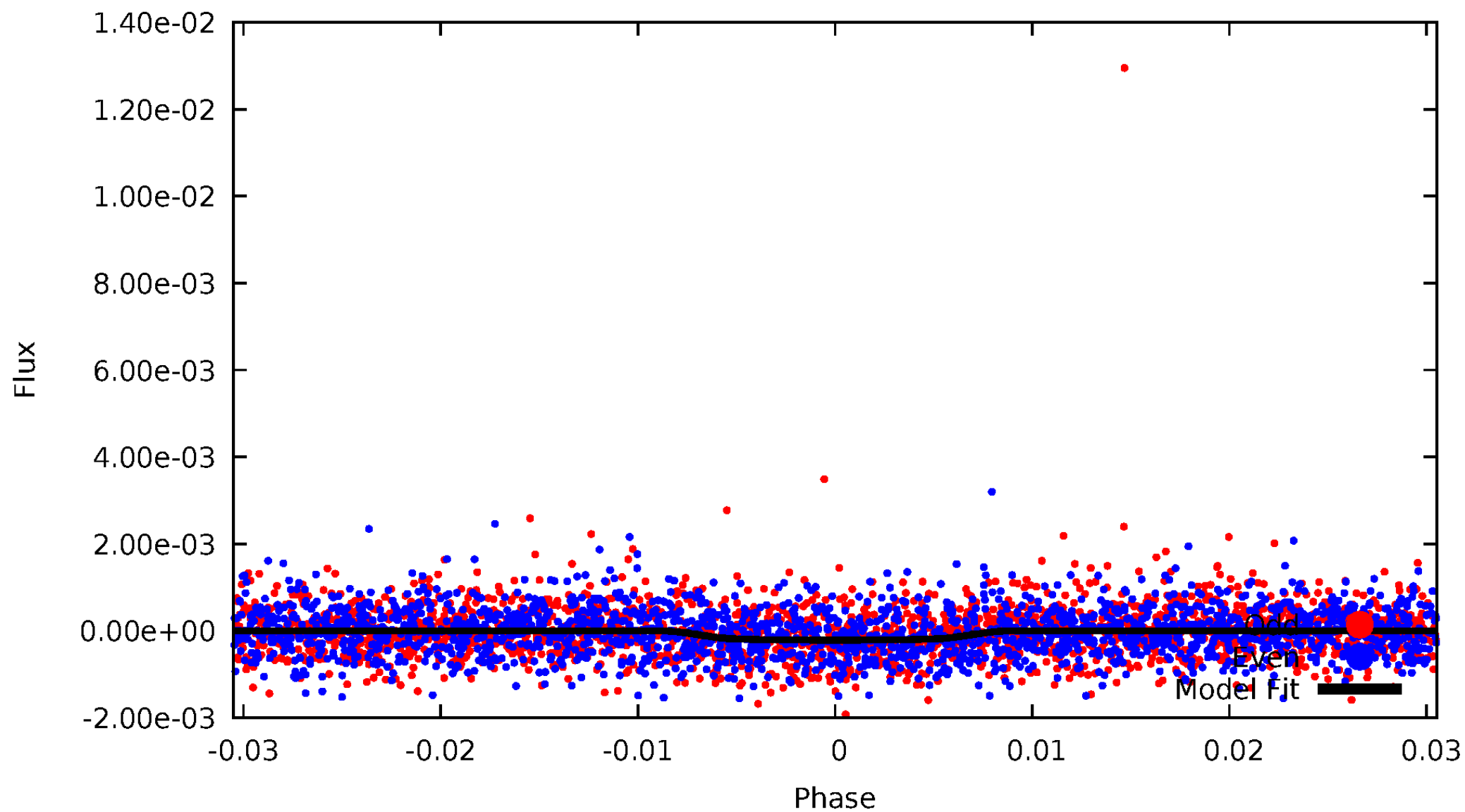


# TCE 007285757-02



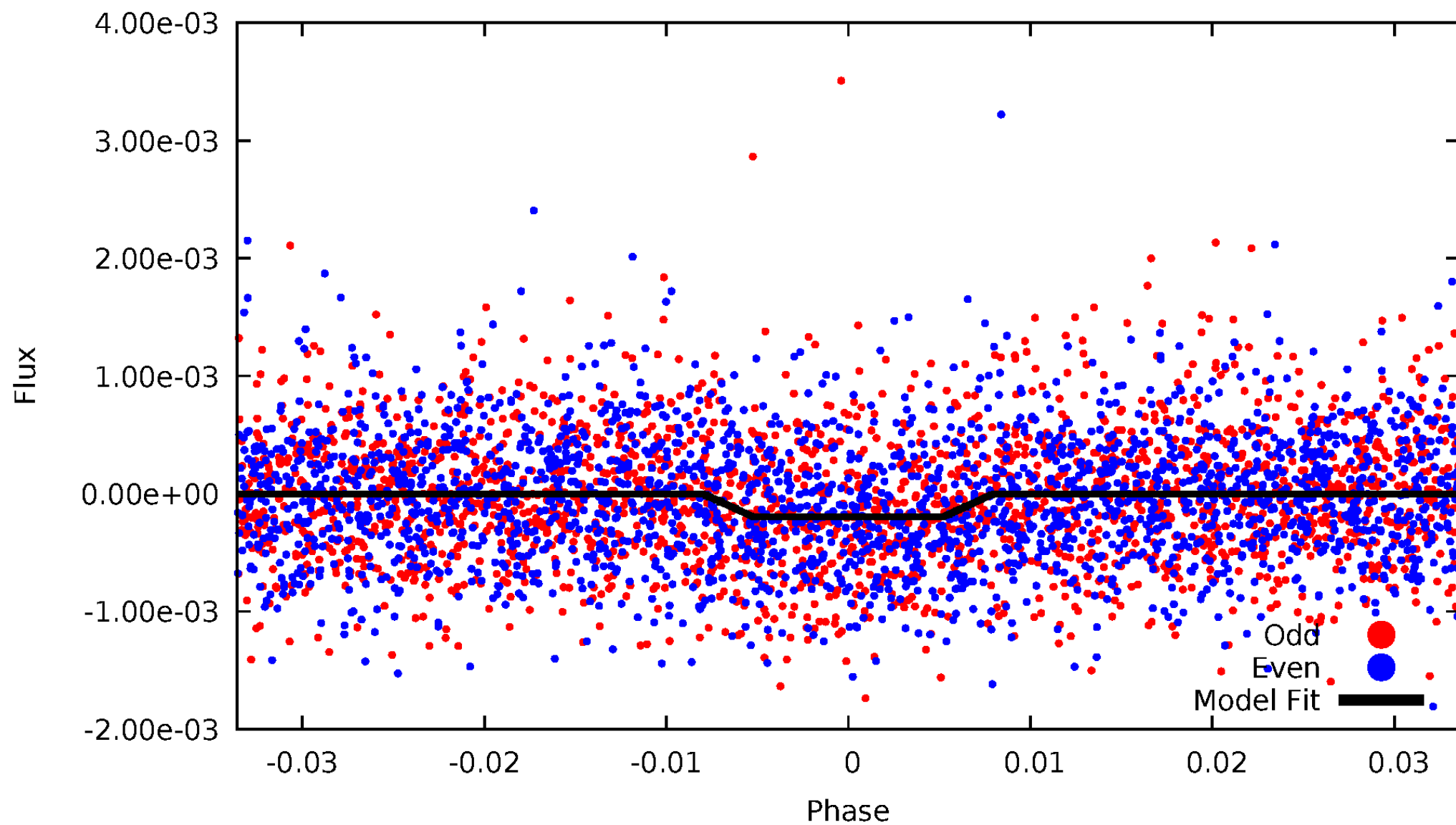
# DV Odd/Even

TCE 007285757-02



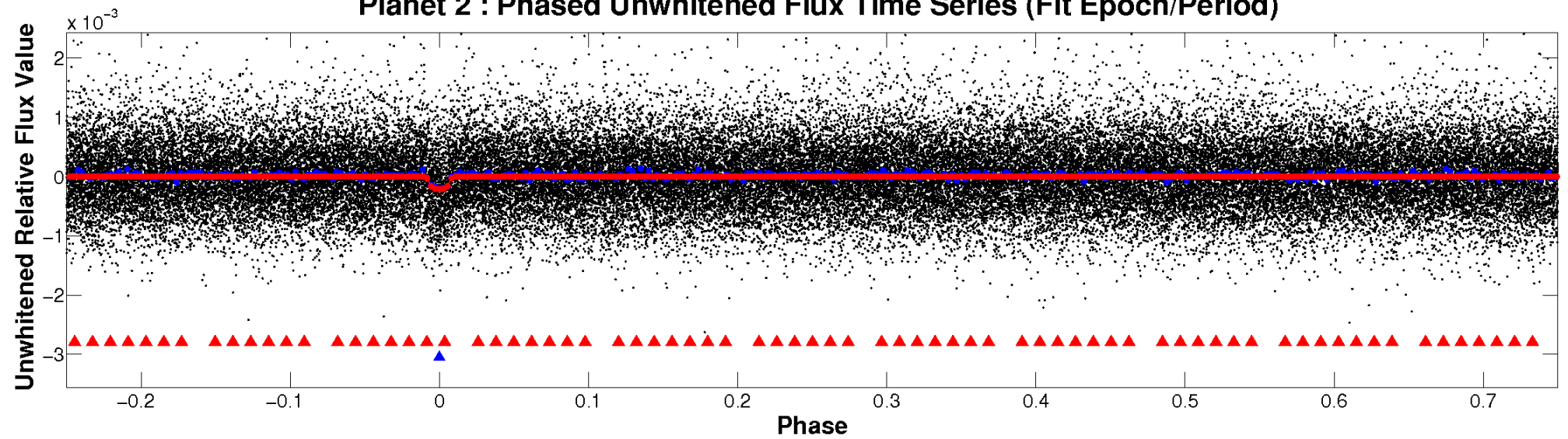
# ALT Odd/Even

TCE 007285757-02

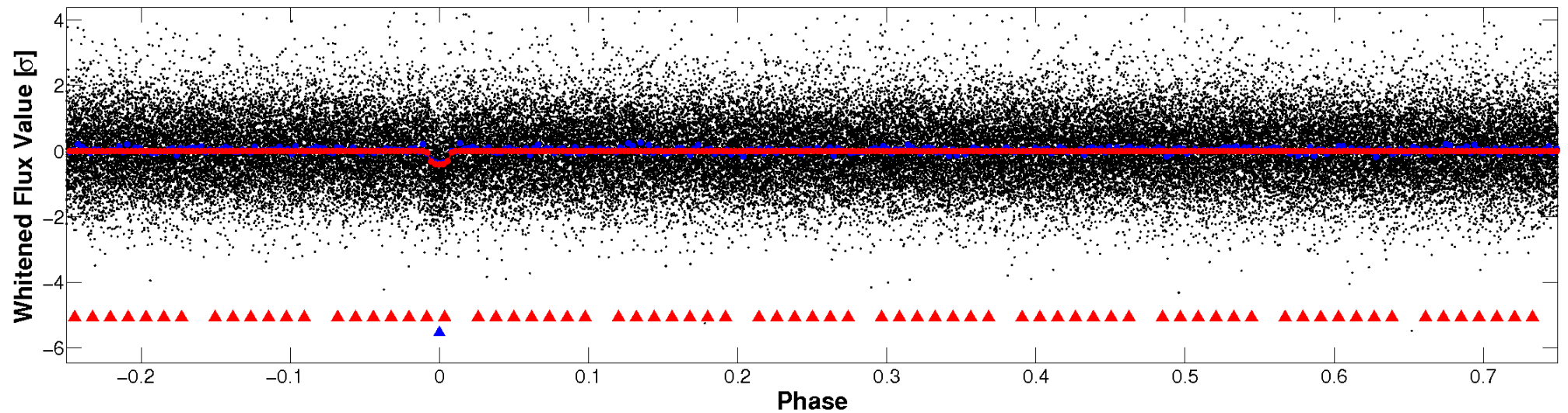


# Non-Whitened Vs. Whitened Light Curve

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

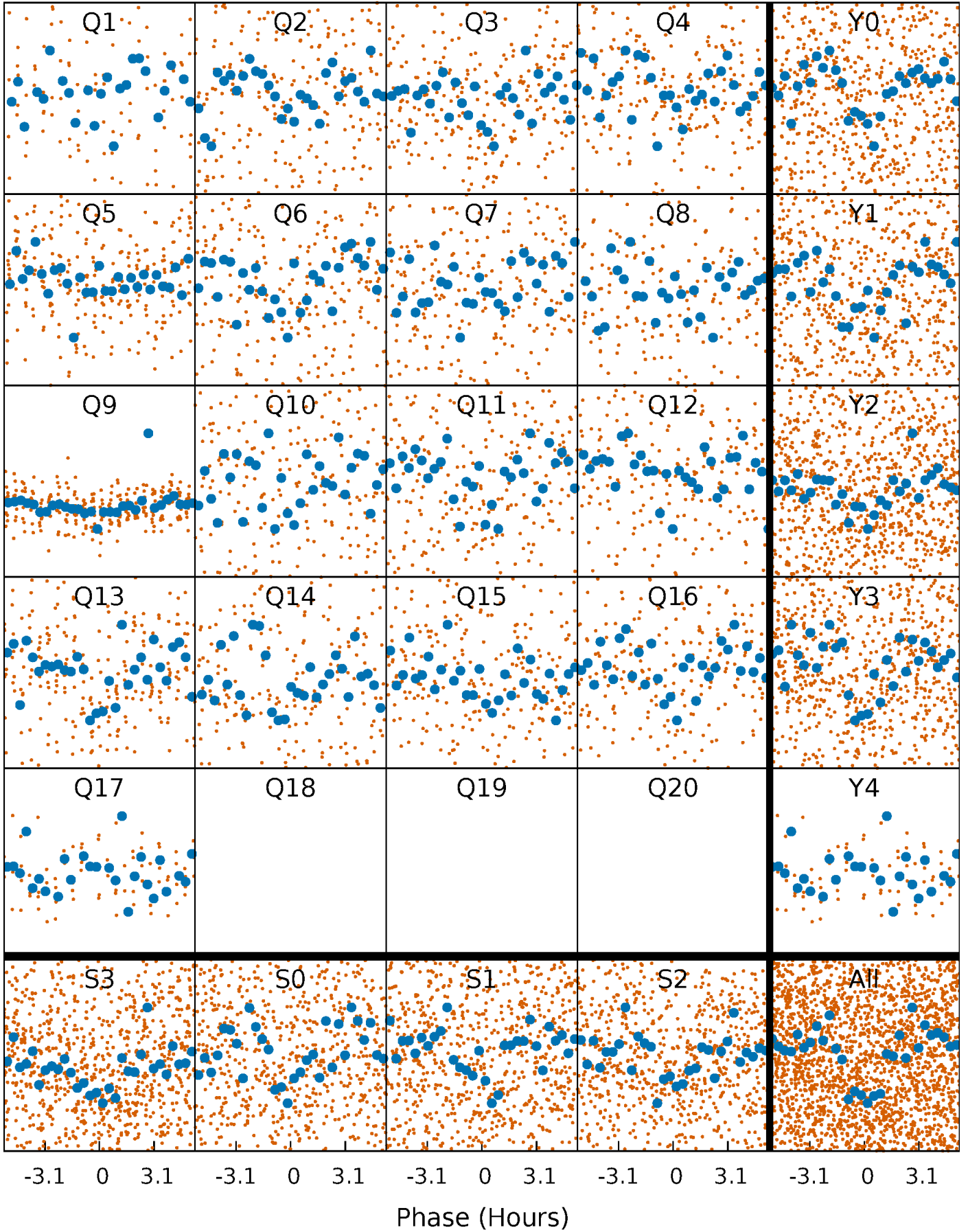


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

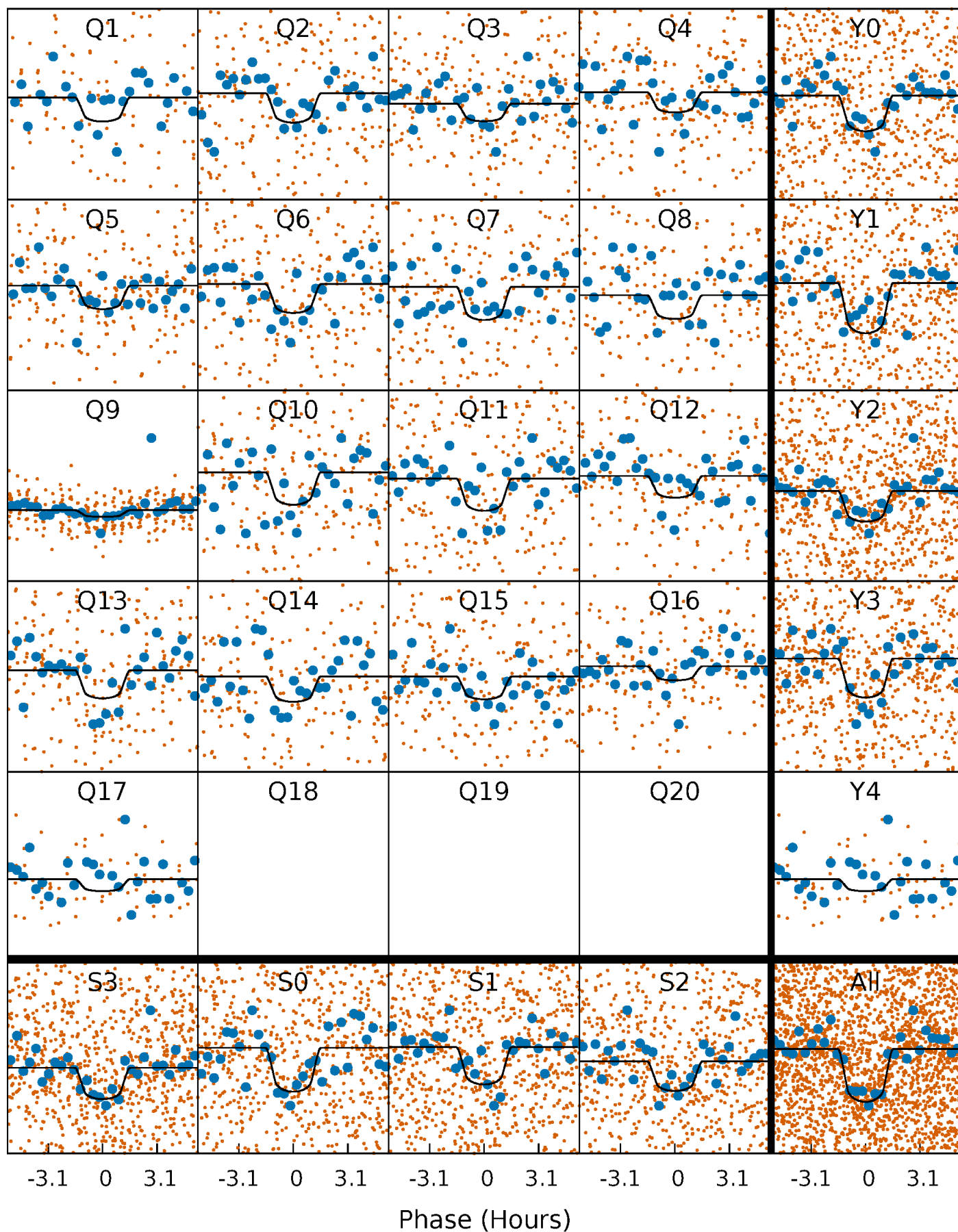
TCE 007285757-02   P= 7.418297 Days    $T_0=133.523197$  (BKJD)





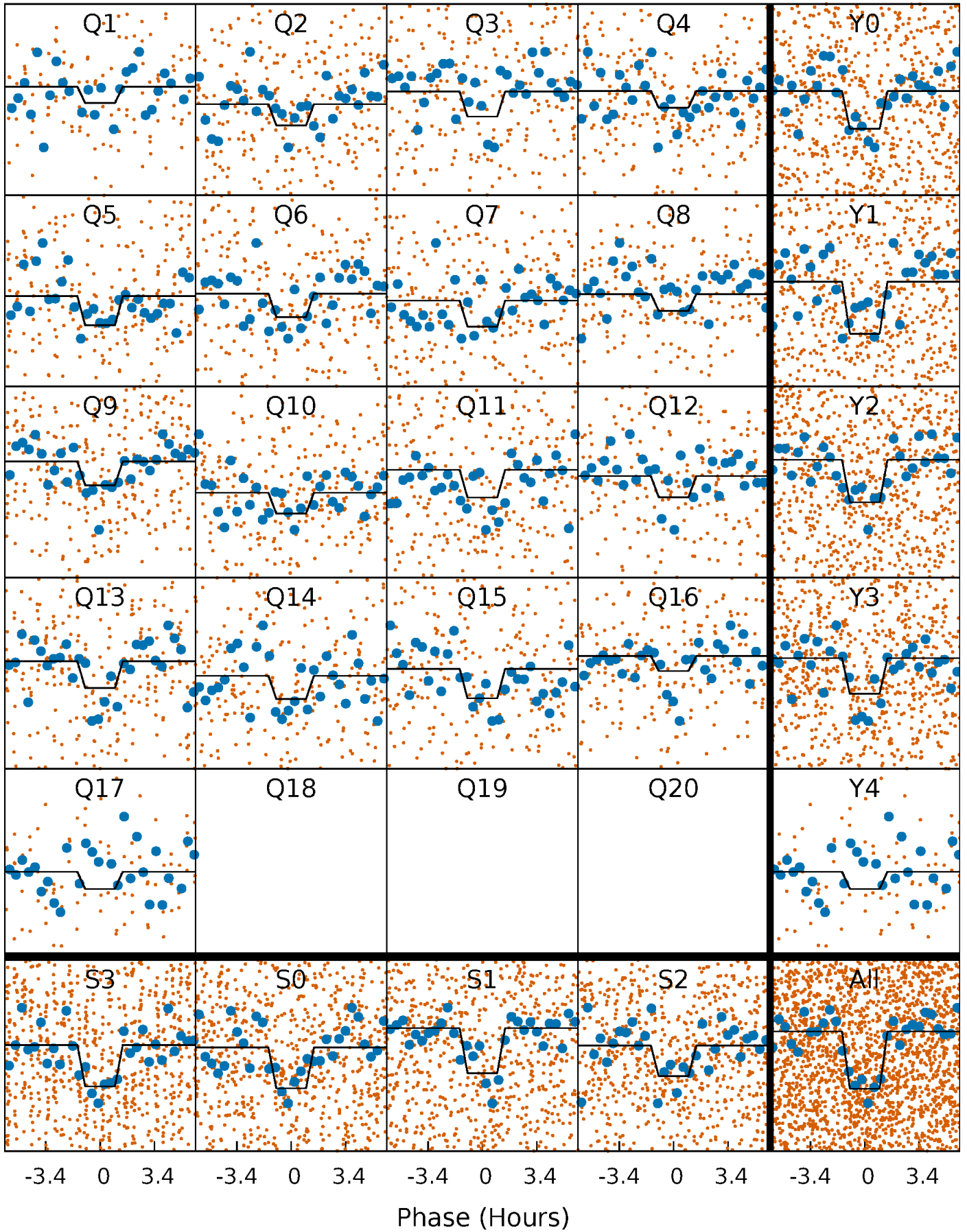
# DV Quarter-Phased Transit Curves

TCE 007285757-02   P= 7.418297 Days    $T_0=133.523197$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

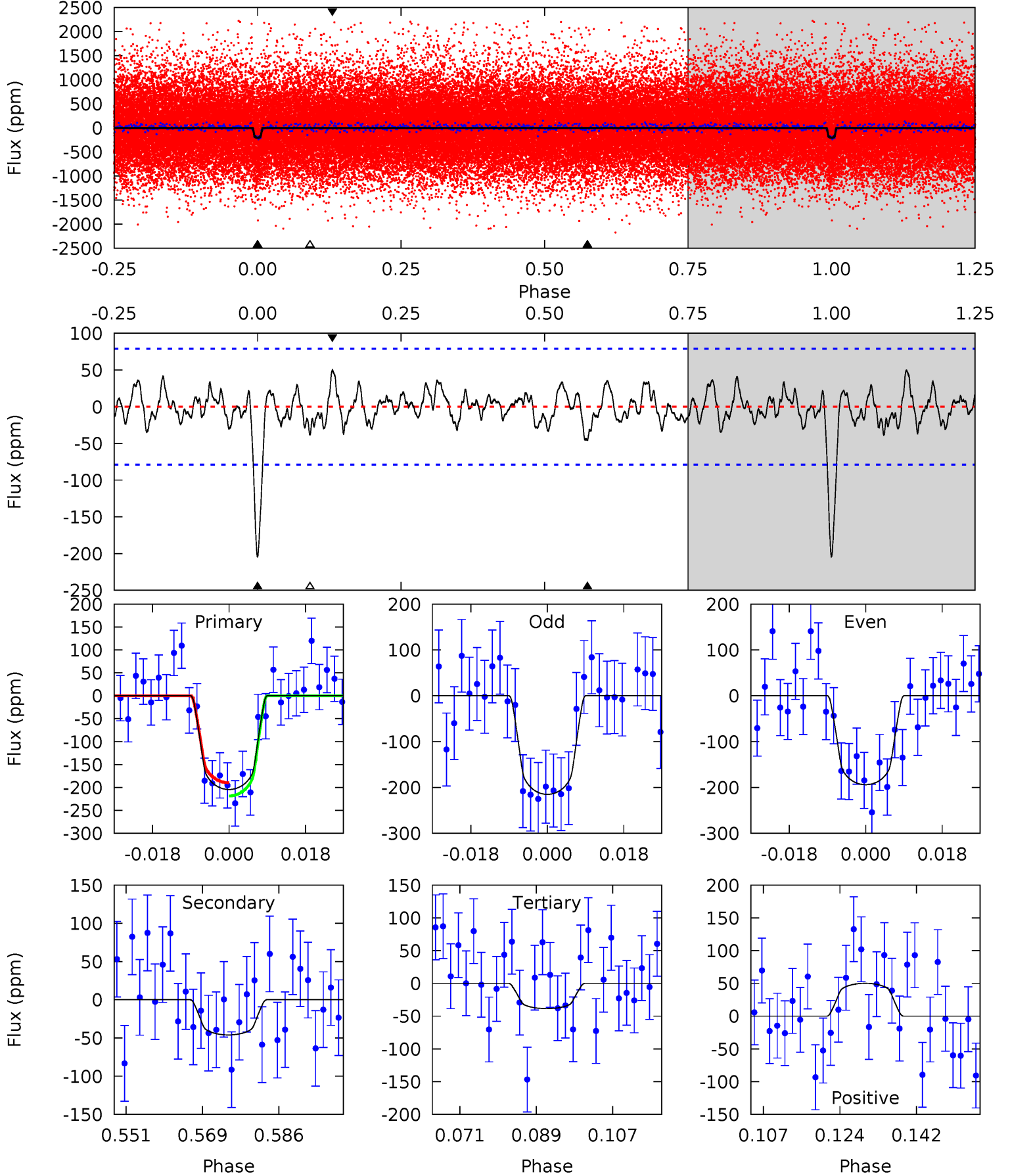
TCE 007285757-02   P= 7.418265 Days    $T_0=133.526031$  (BKJD)



# DV Model-Shift Uniqueness Test

007285757-02, P = 7.418297 Days, E = 126.104900 Days

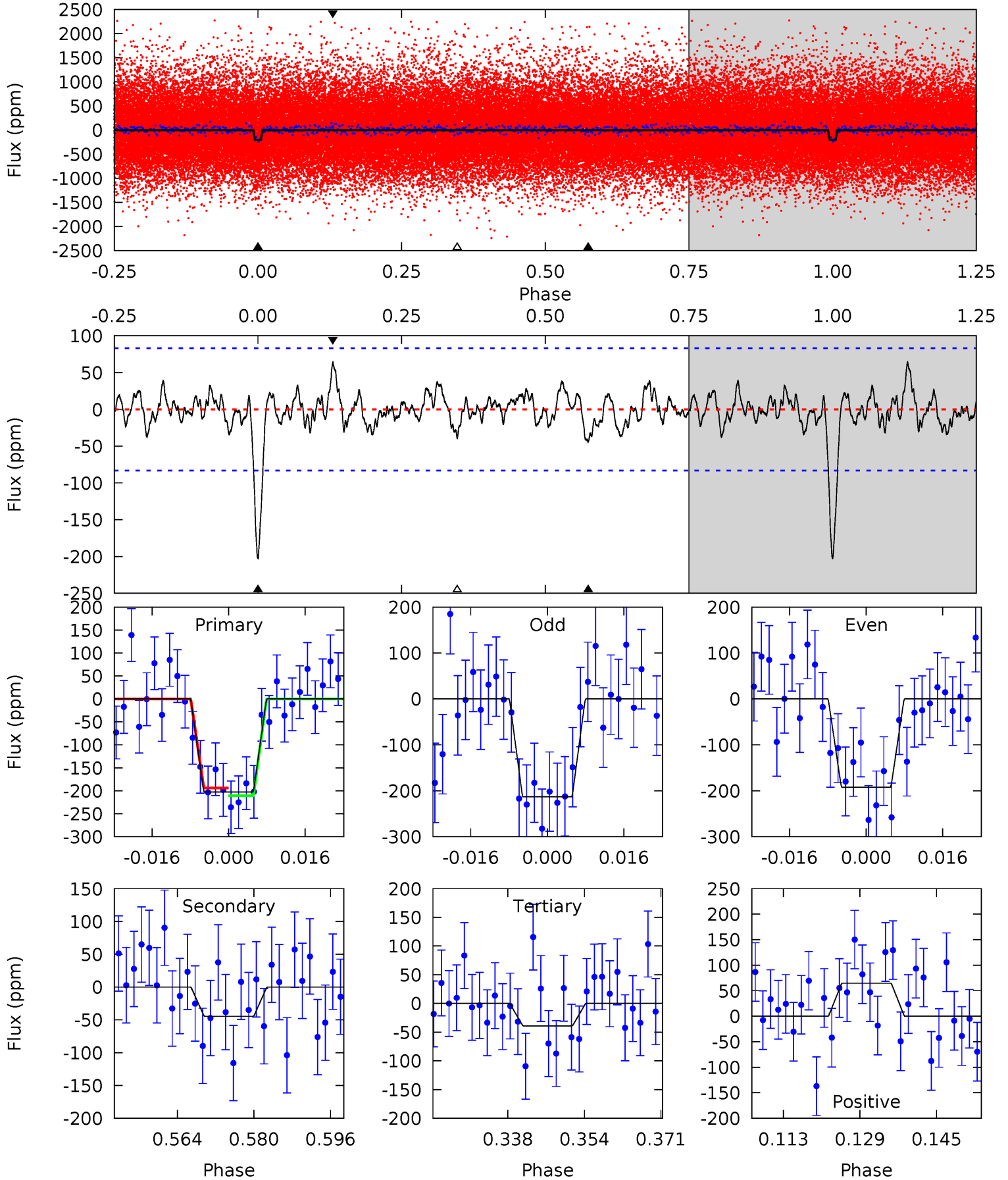
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	2.86	2.40	3.12	4.91	2.37	1.06	10.3	9.62	0.46	-0.25	0.66	0.95	0.20	0.90



# Alt Model-Shift Uniqueness Test

007285757-02, P = 7.418265 Days, E = 126.107766 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
12.0	2.64	2.32	3.83	4.93	2.41	1.00	9.71	8.20	0.32	-1.19	0.63	0.81	0.24	0.51



### Stellar Parameters For KIC 007285757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5549^{+163}_{-163}$	$4.600^{+0.045}_{-0.113}$	$-0.540^{+0.300}_{-0.300}$	$0.732^{+0.137}_{-0.059}$	$0.776^{+0.089}_{-0.065}$	$2.791^{+0.547}_{-0.952}$
	+3%/-3%	+1%/-2%	+56%/-56%	+19%/-8%	+11%/-8%	+20%/-34%
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 007285757-02 / KOI 3271.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-46 \pm 16$	$1.36^{+0.84}_{-0.75}$	$1133^{+55}_{-45}$	$3848^{+1378}_{-581}$	$61^{+219}_{-39}$
Alt.	$-45 \pm 17$	$1.23^{+0.79}_{-0.69}$	$1129^{+58}_{-44}$	$3976^{+1549}_{-667}$	$72^{+298}_{-48}$

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

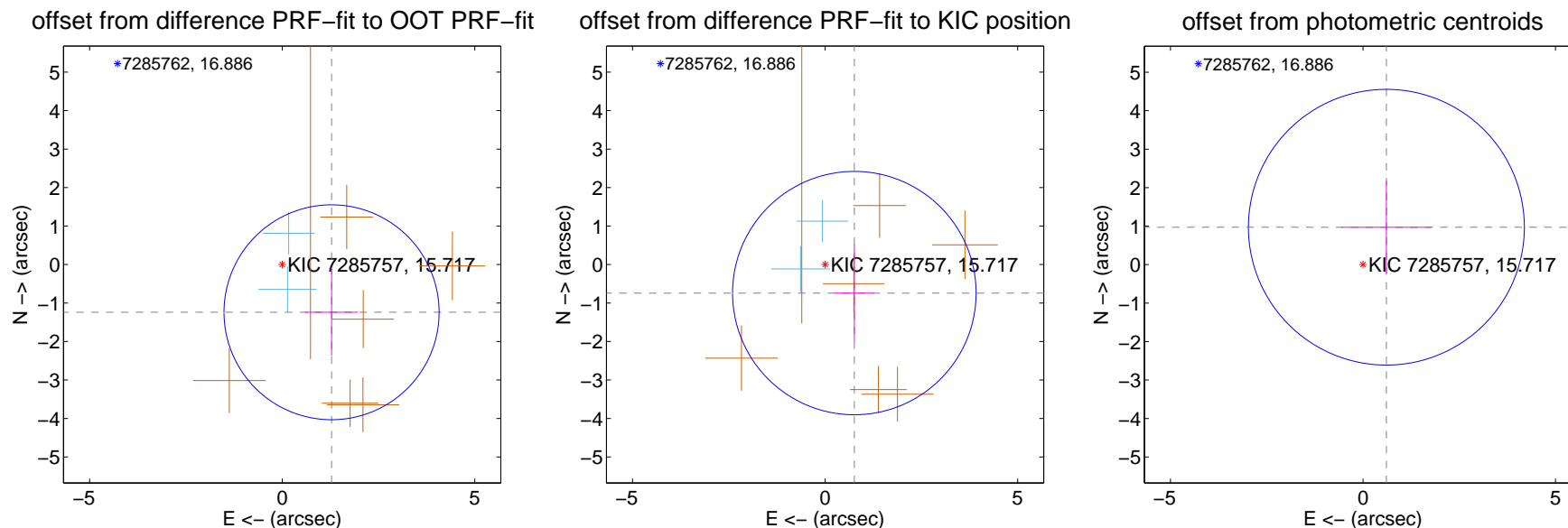
## DV Centroid Data

Supplemental centroid analysis for 007285757-02. Kepler magnitude: 15.72. Transit SNR 10.64

There are 2 quarters with good PRF difference image offsets

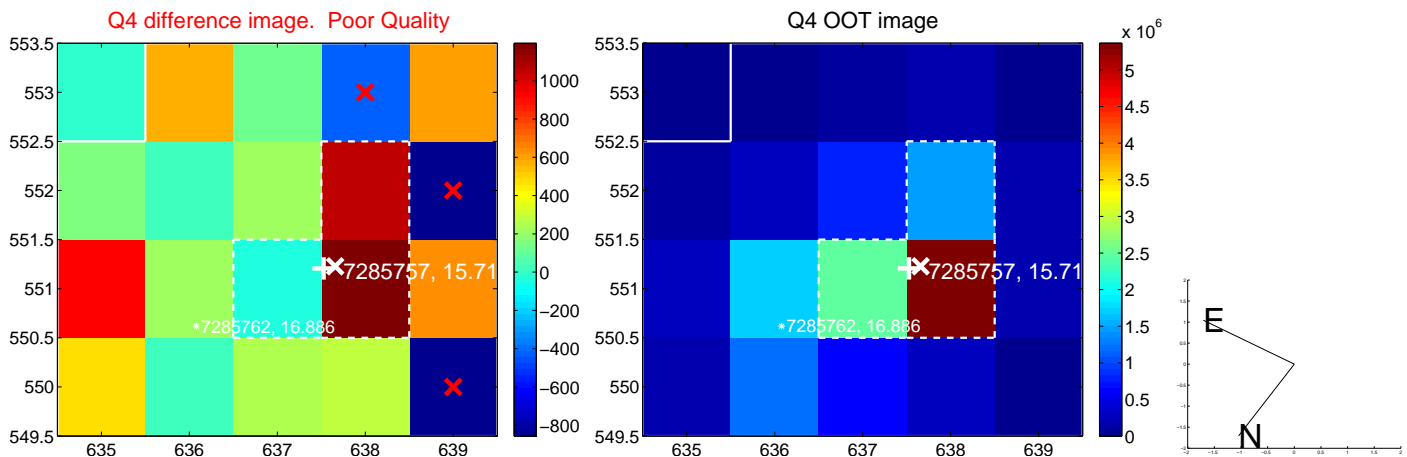
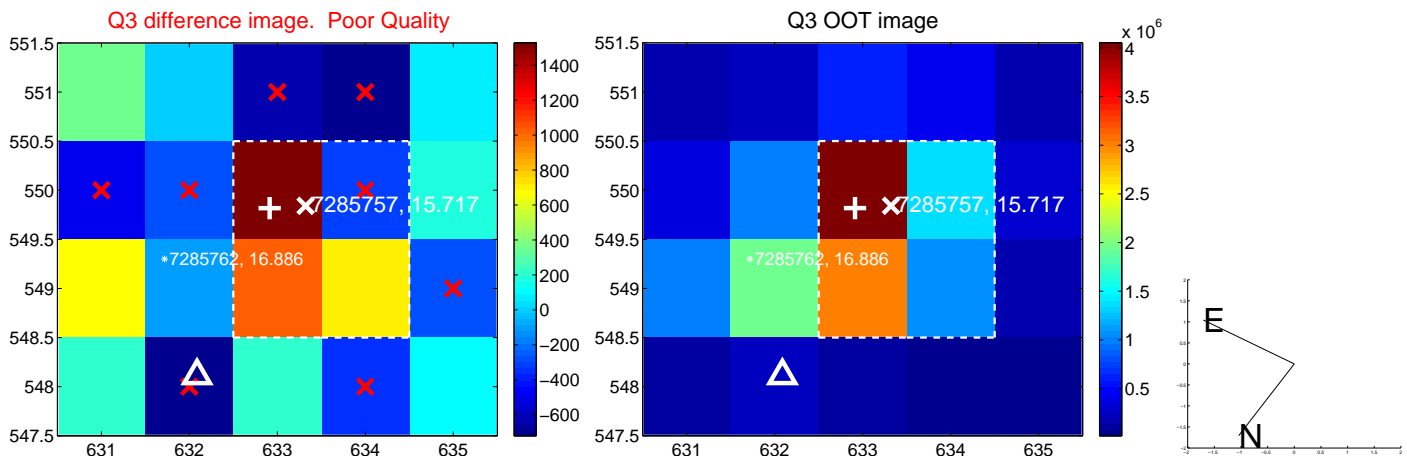
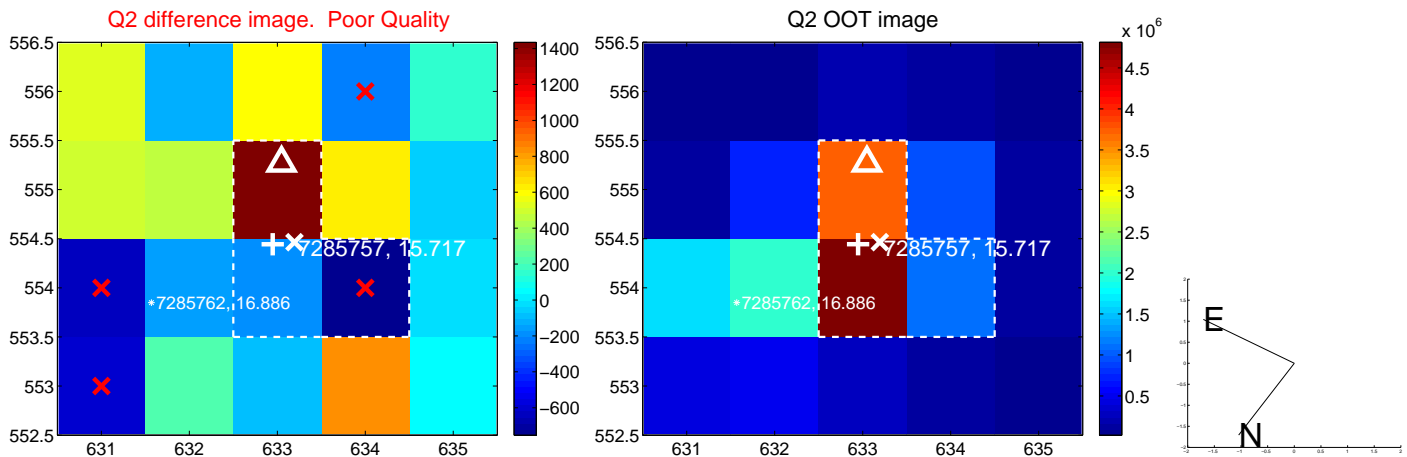
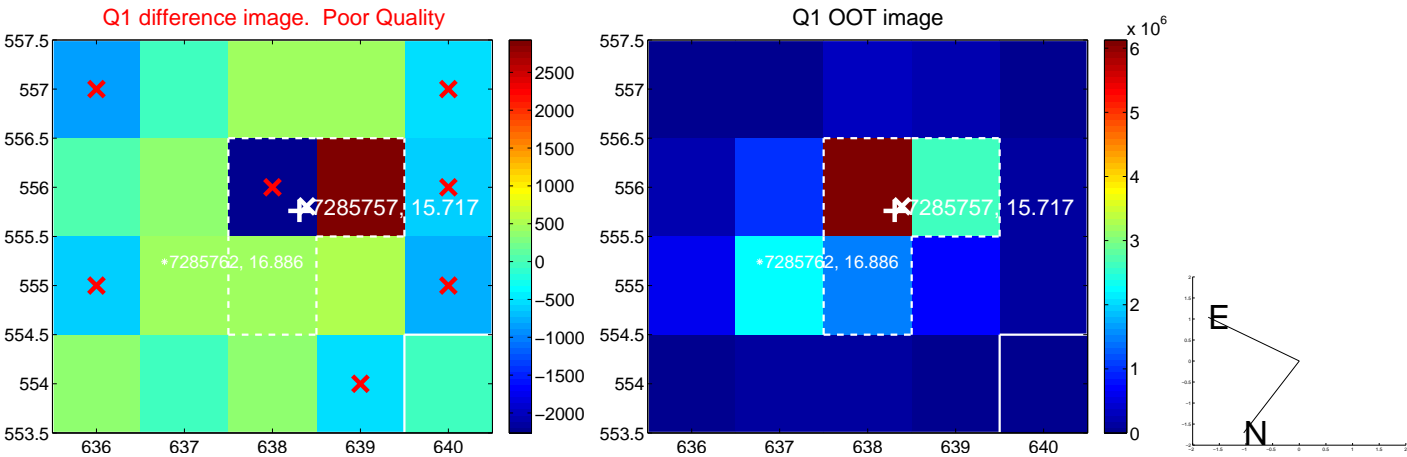
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.783 \pm 0.931$	1.92	$-1.281 \pm 0.691$	$-1.240 \pm 1.132$
PRF-fit source offset from KIC position	$1.061 \pm 1.054$	1.01	$-0.759 \pm 0.523$	$-0.741 \pm 1.270$
photometric centroid source offset	$1.15 \pm 1.19$	0.96	$-0.61 \pm 1.17$	$0.97 \pm 1.20$



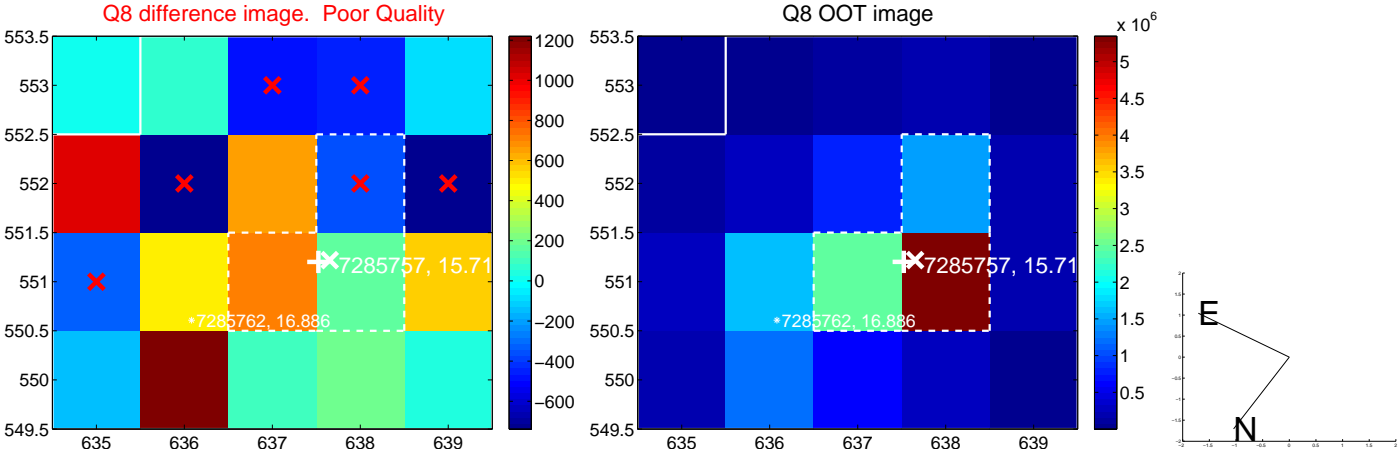
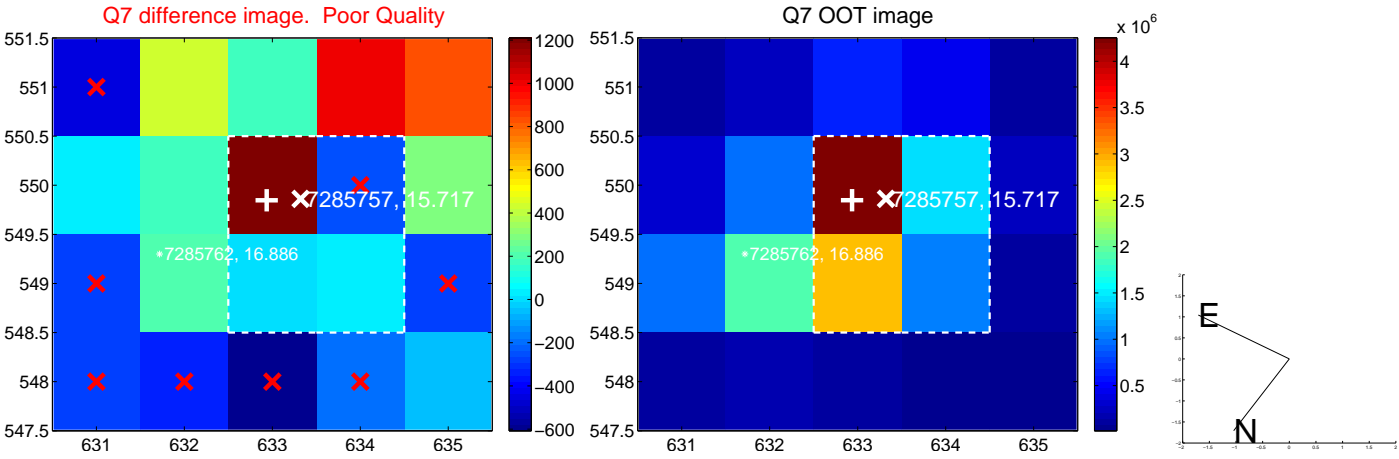
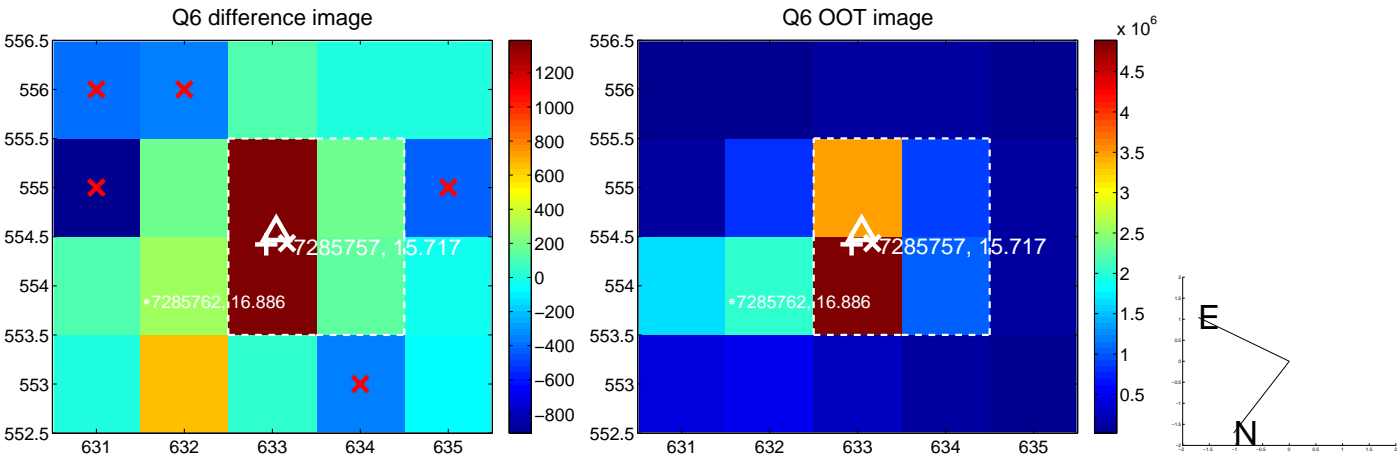
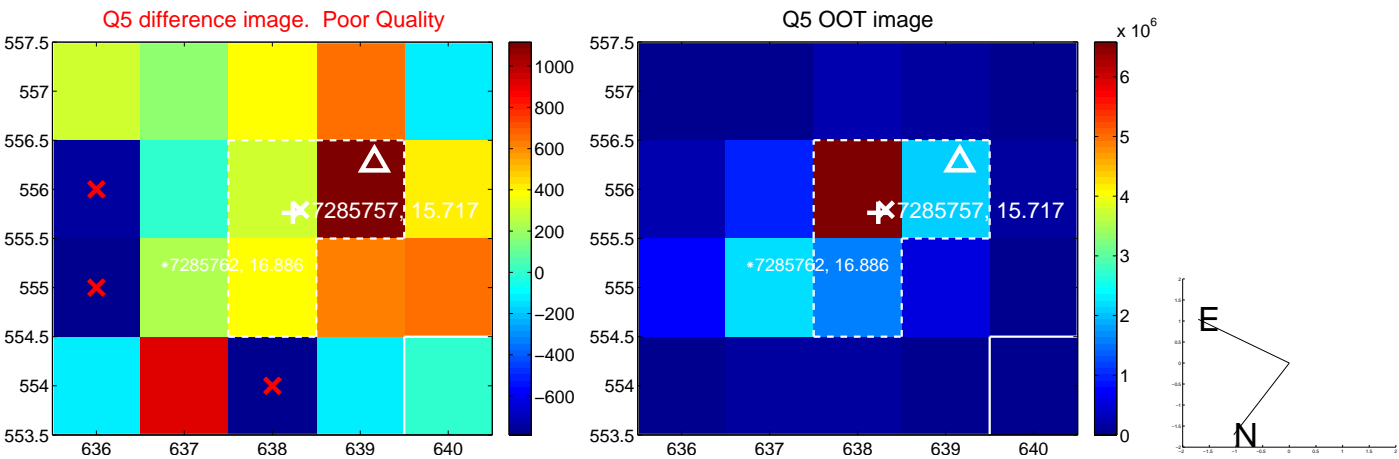
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

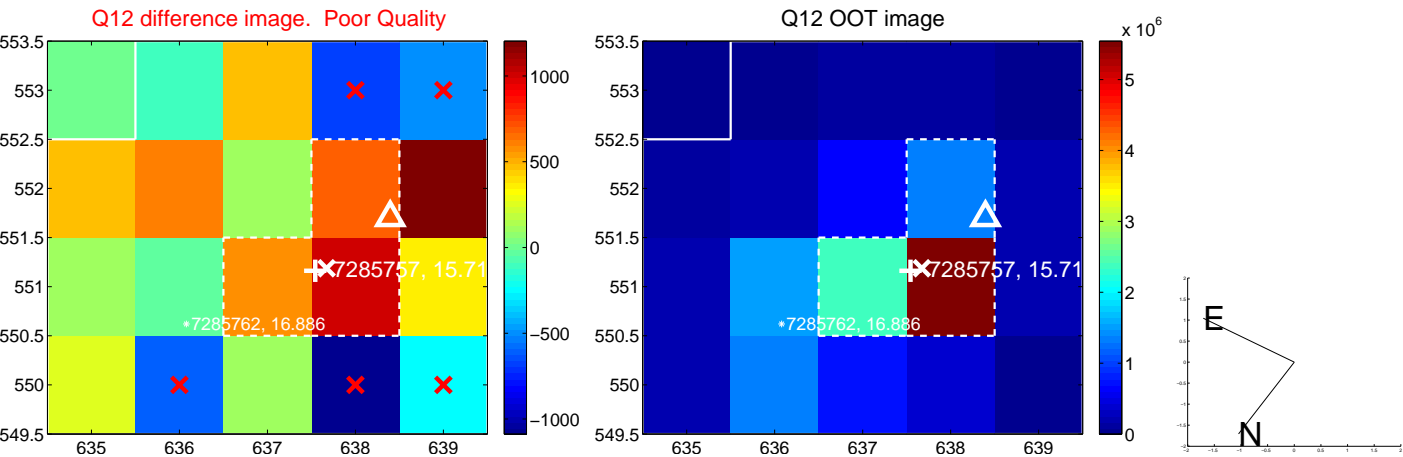
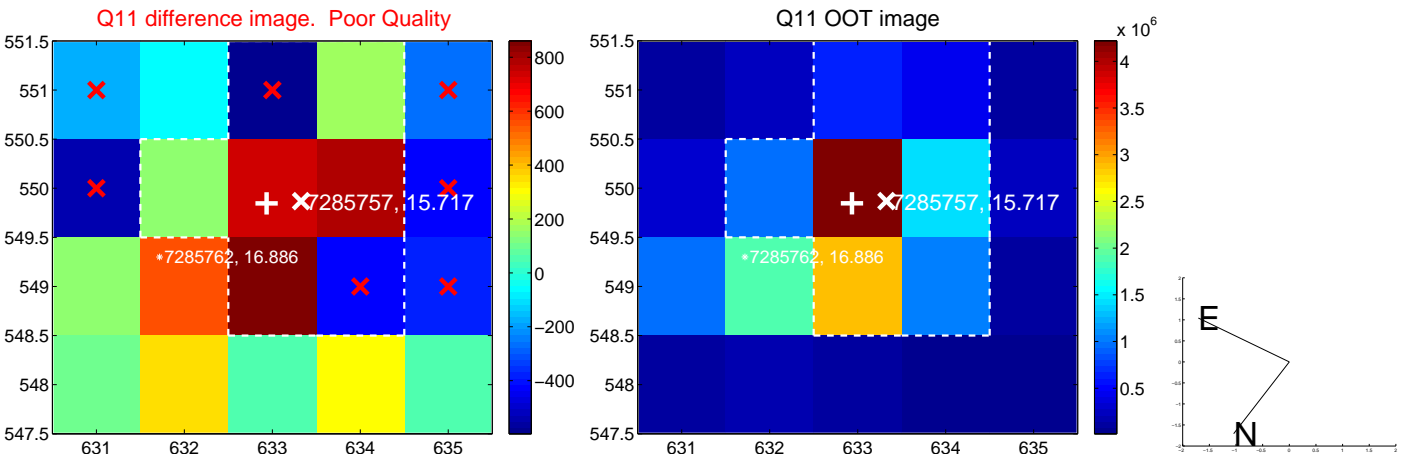
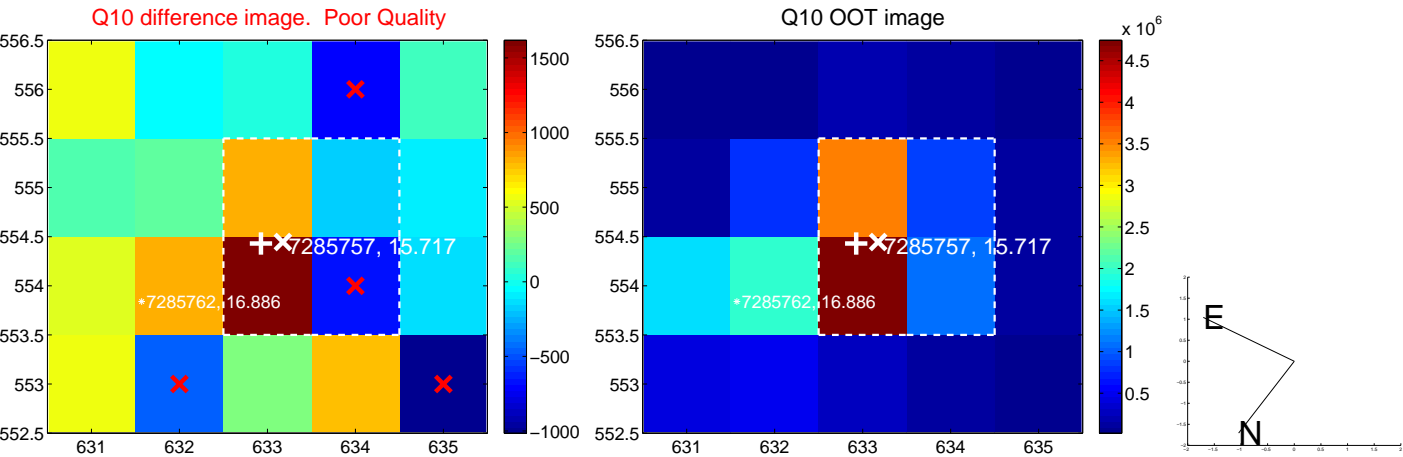
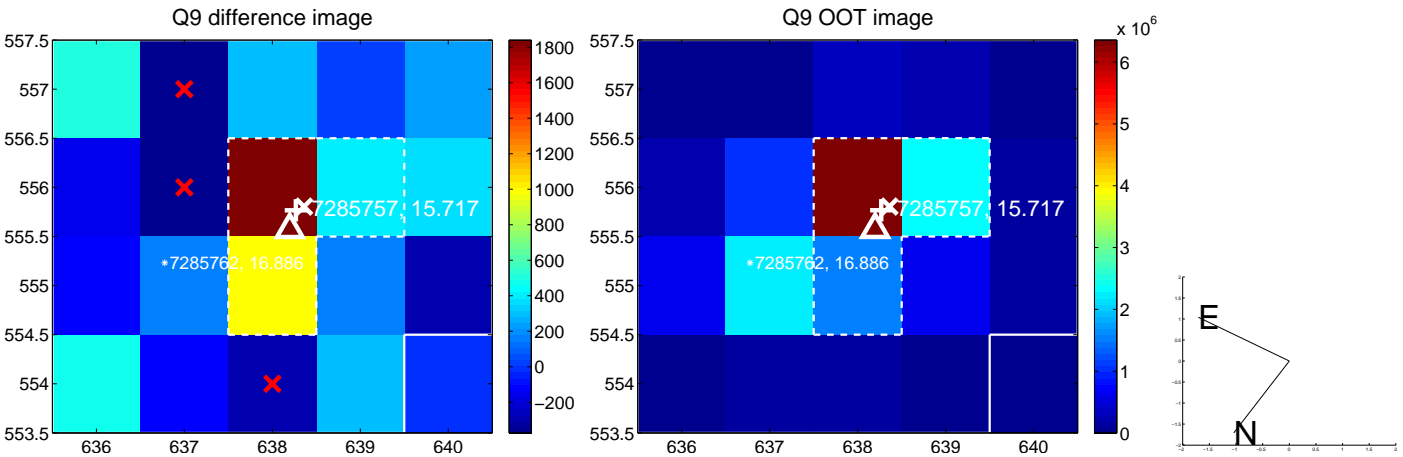




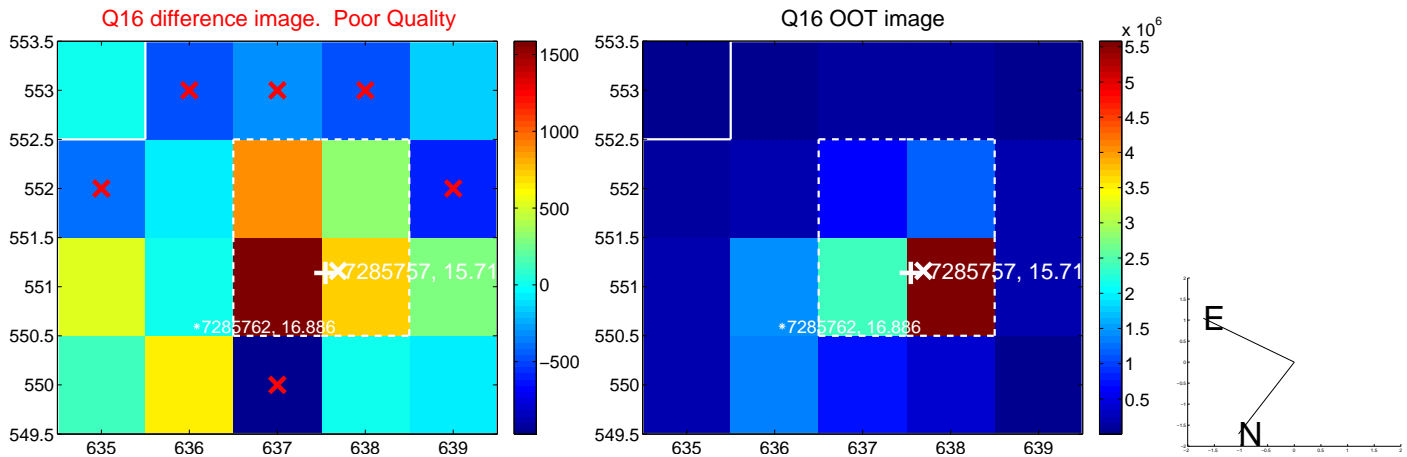
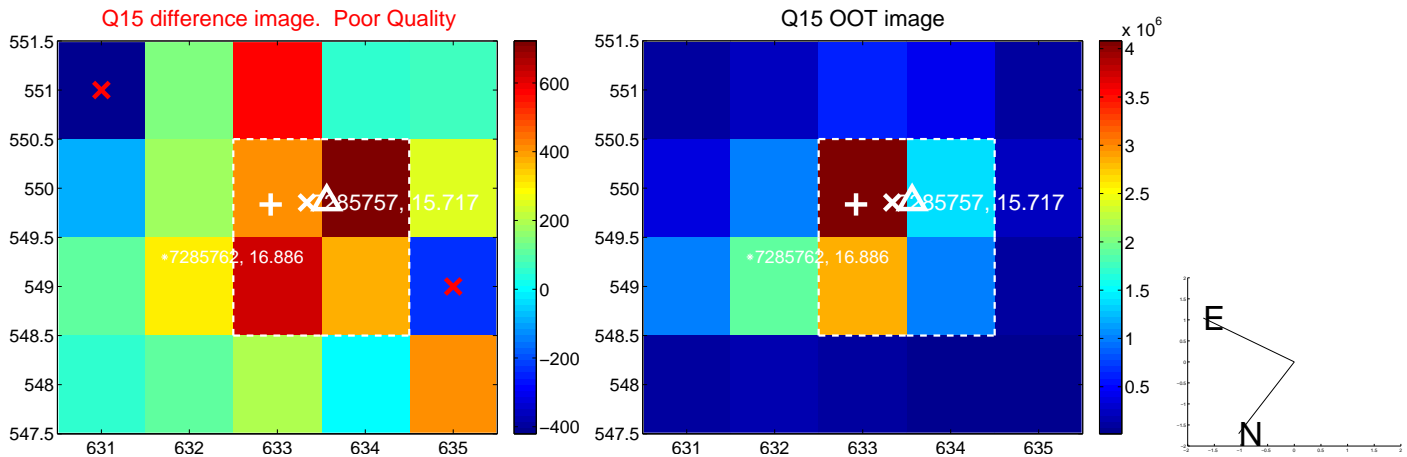
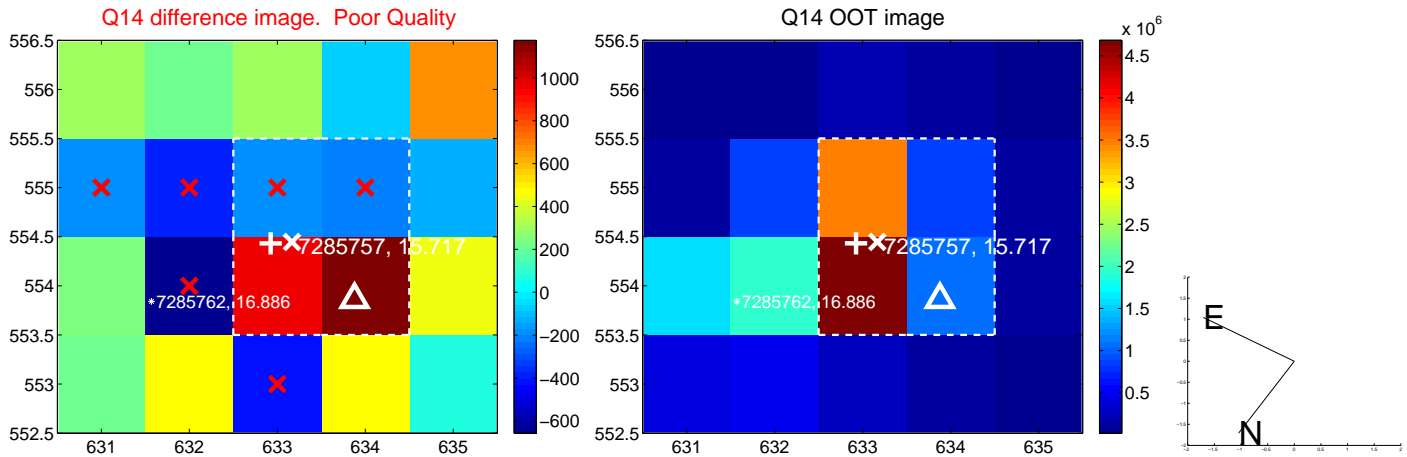
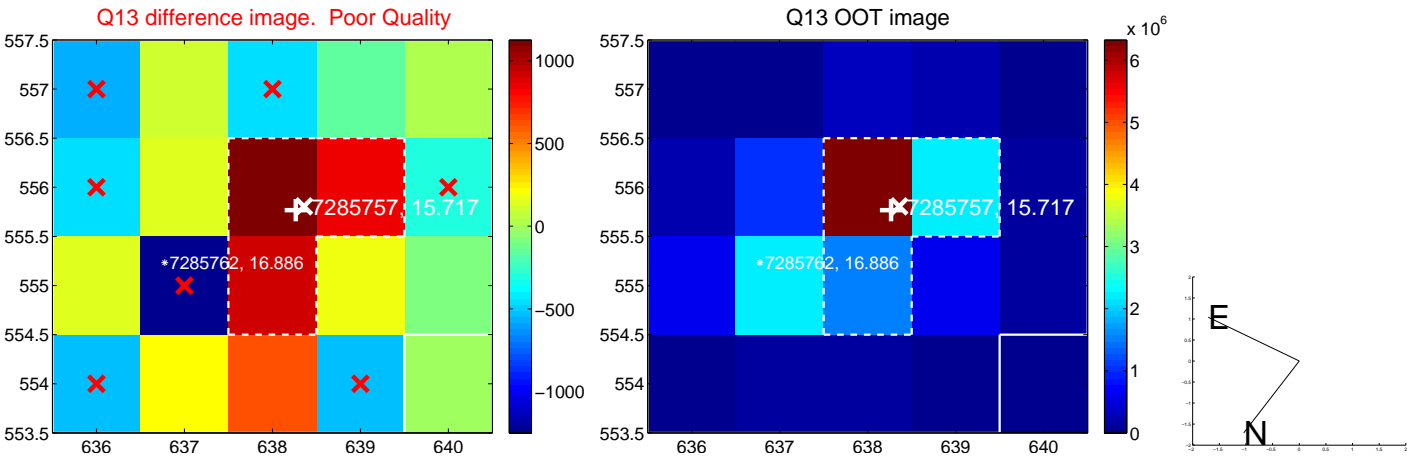
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



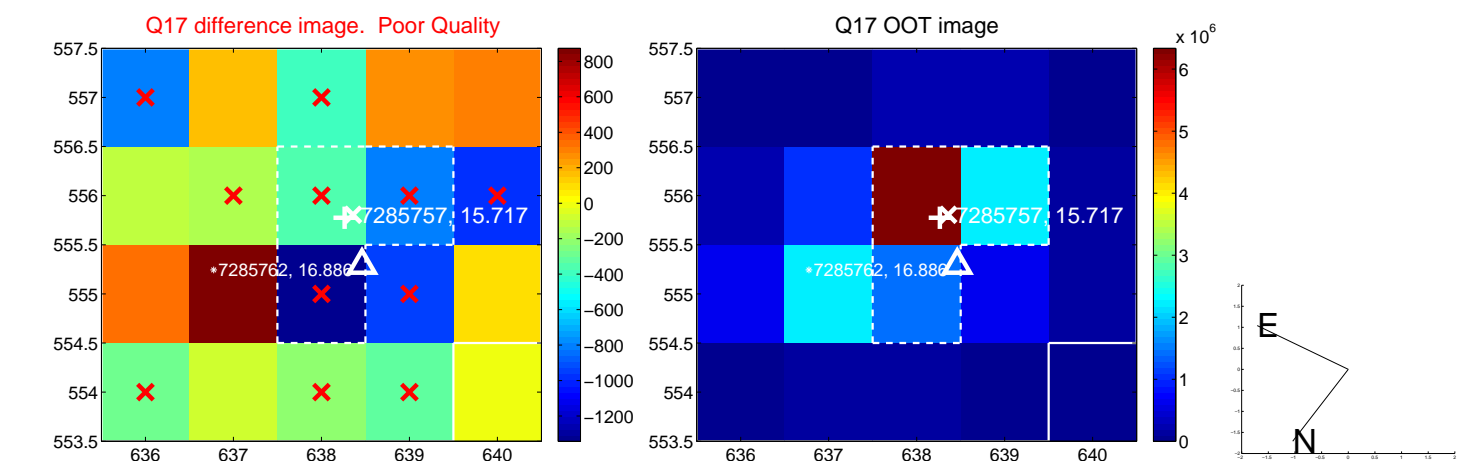
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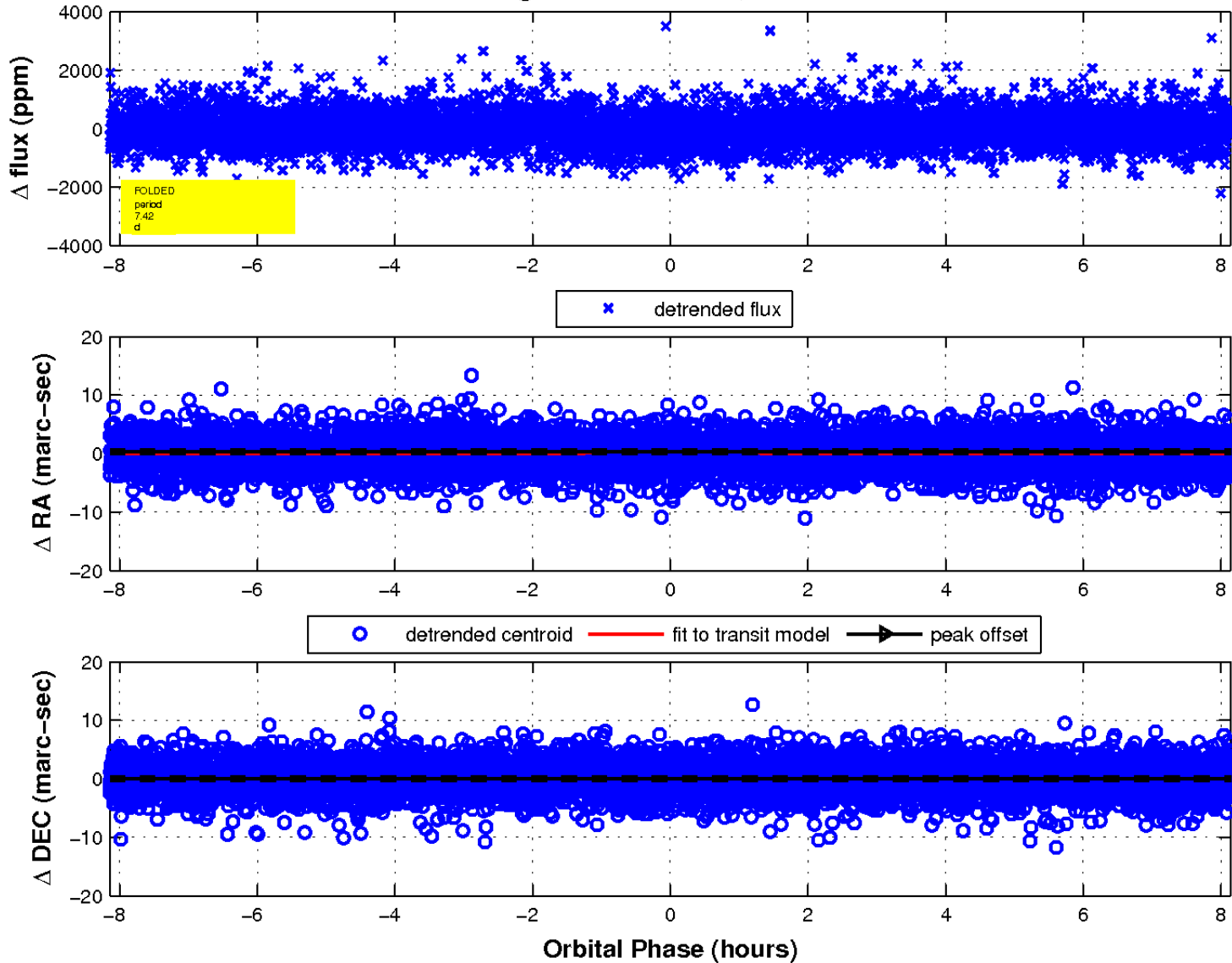
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

