

# KIC 005607395

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005607395-01	OBS	No	371.823809	298.440525	1855.6	6.178	13.0	7.3	0.52	3827	2.24	0.08
005607395-02	OBS	No	576.592829	247.340574	1510.8	7.724	14.0	6.3	0.52	3827	2.01	0.04
005607395-03	OBS	No	320.772295	245.866352	1890.5	3.939	10.7	7.3	0.52	3827	2.35	0.10
005607395-04	OBS	No	187.856620	132.517539	919.8	6.715	9.2	5.9	0.52	3827	1.86	0.19
005607395-05	OBS	No	423.799040	136.651567	746.3	3.099	11.0	3.8	0.52	3827	1.52	0.07
005607395-06	OBS	No	479.219145	153.706969	1603.7	9.113	10.3	6.5	0.52	3827	2.48	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005607395-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
005607395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
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005607395-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
005607395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

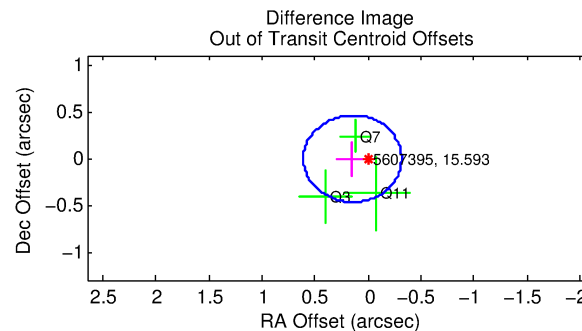
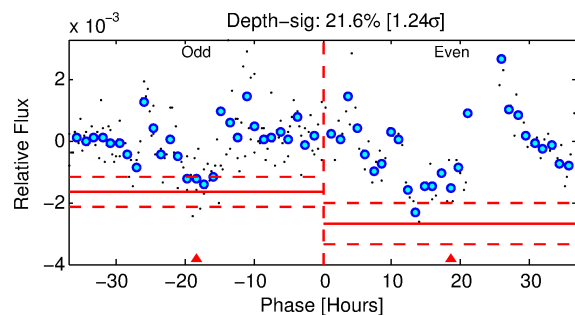
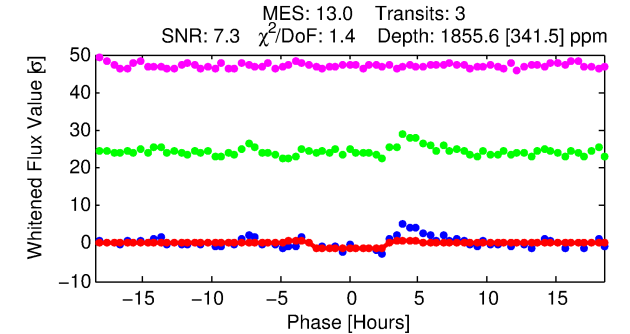
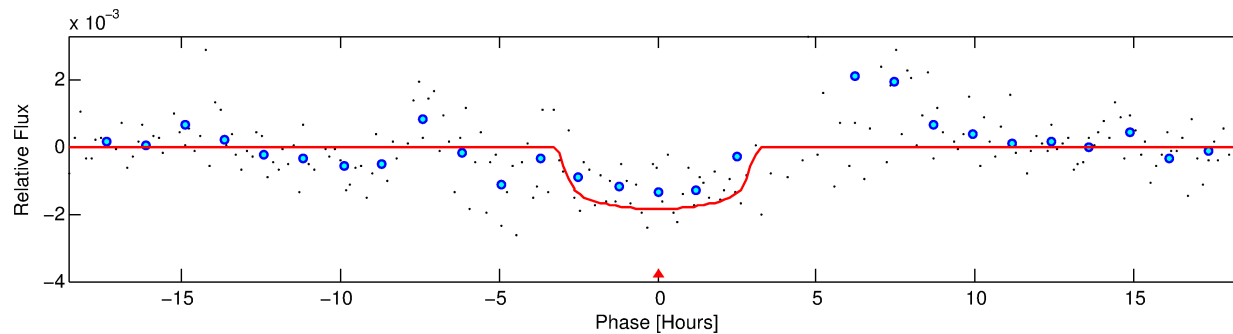
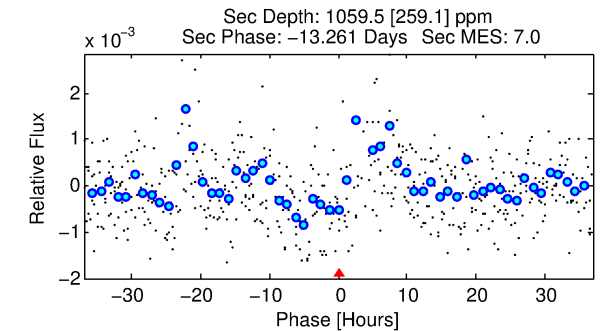
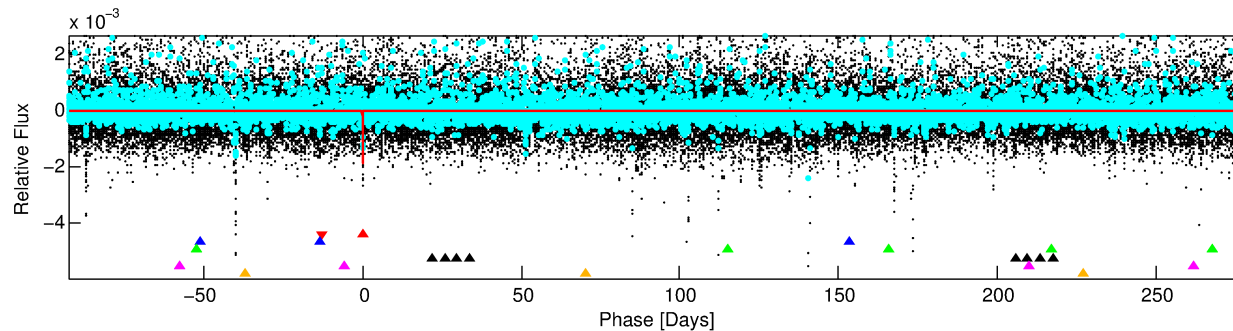
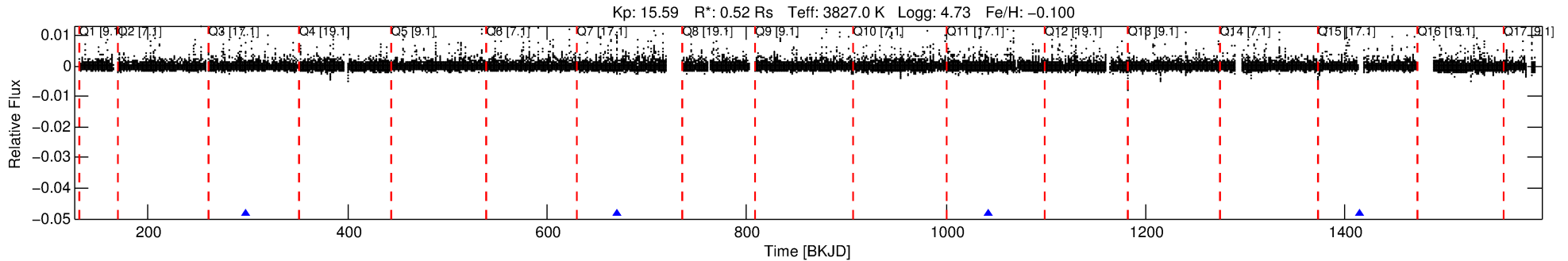
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005607395-01

No Significant Match Found

# DV One-Page Summary

KIC: 5607395 Candidate: 1 of 6 Period: 371.824 d



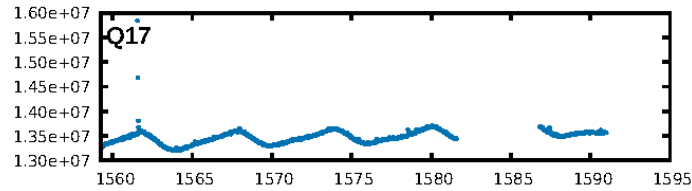
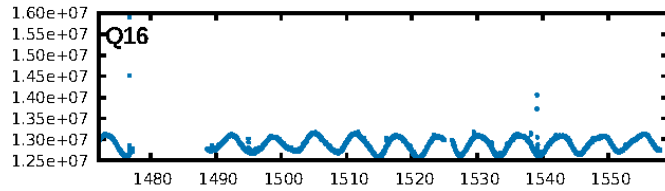
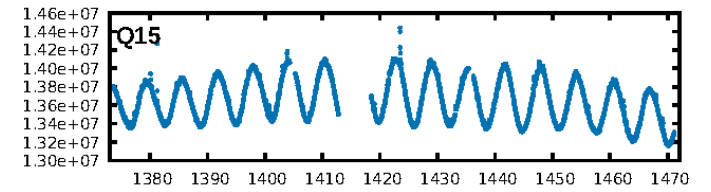
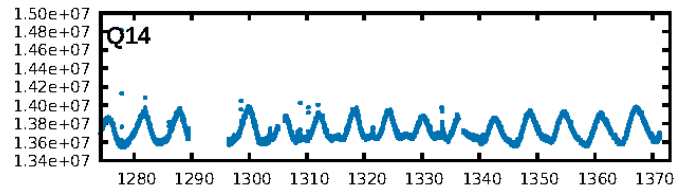
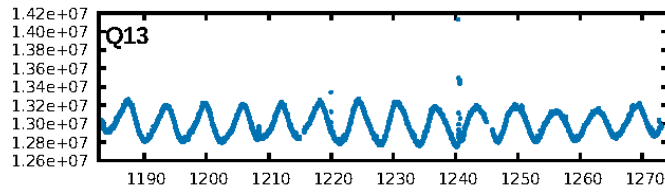
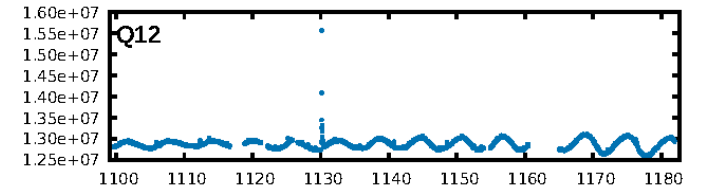
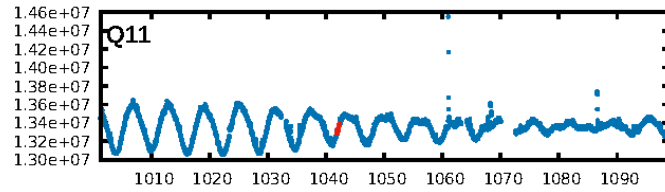
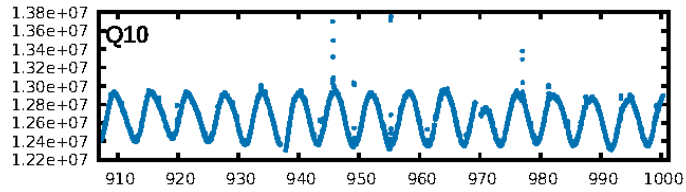
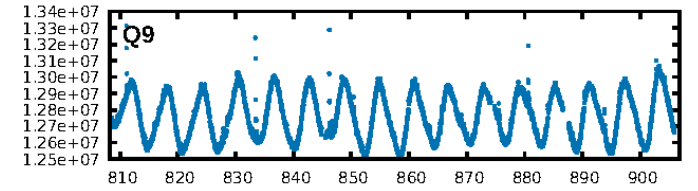
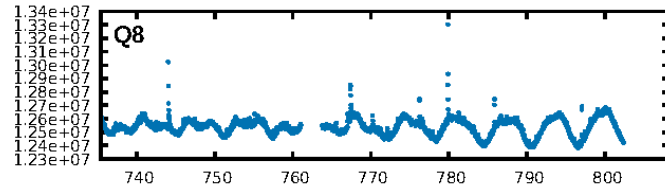
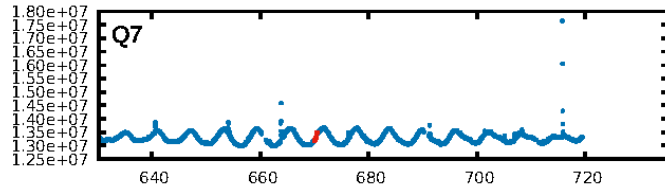
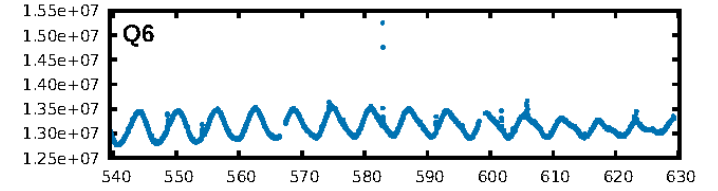
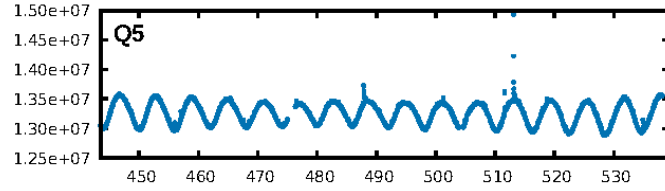
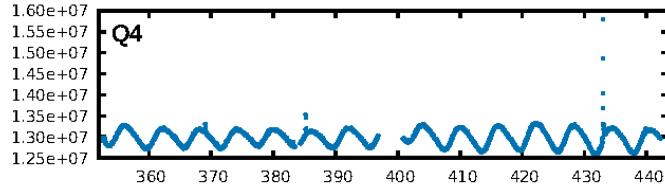
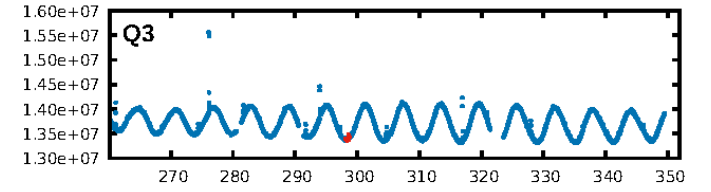
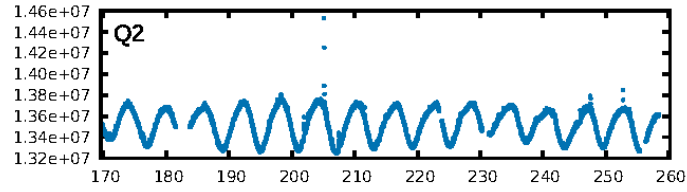
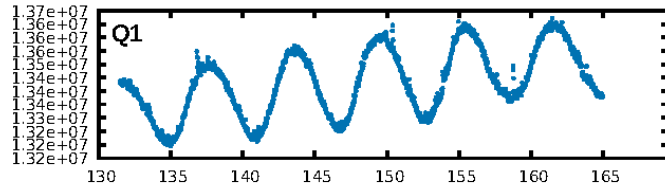
## DV Fit Results:

Period = 371.82381 [0.00918] d  
Epoch = 298.4405 [0.0115] BKJD  
Rp/R\* = 0.0395 [0.0666]  
a/R\* = 456.17 [3325.38]  
b = 0.31 [21.36]  
Seff = 0.08 [0.01]  
Teq = 135 [4] K  
Rp = 2.24 [3.78] Re  
a = 0.8177 [0.0422] AU  
Ag = 77757.48 [263299.16] [0.30σ]  
Teffp = 3476 [2943] K [1.14σ]

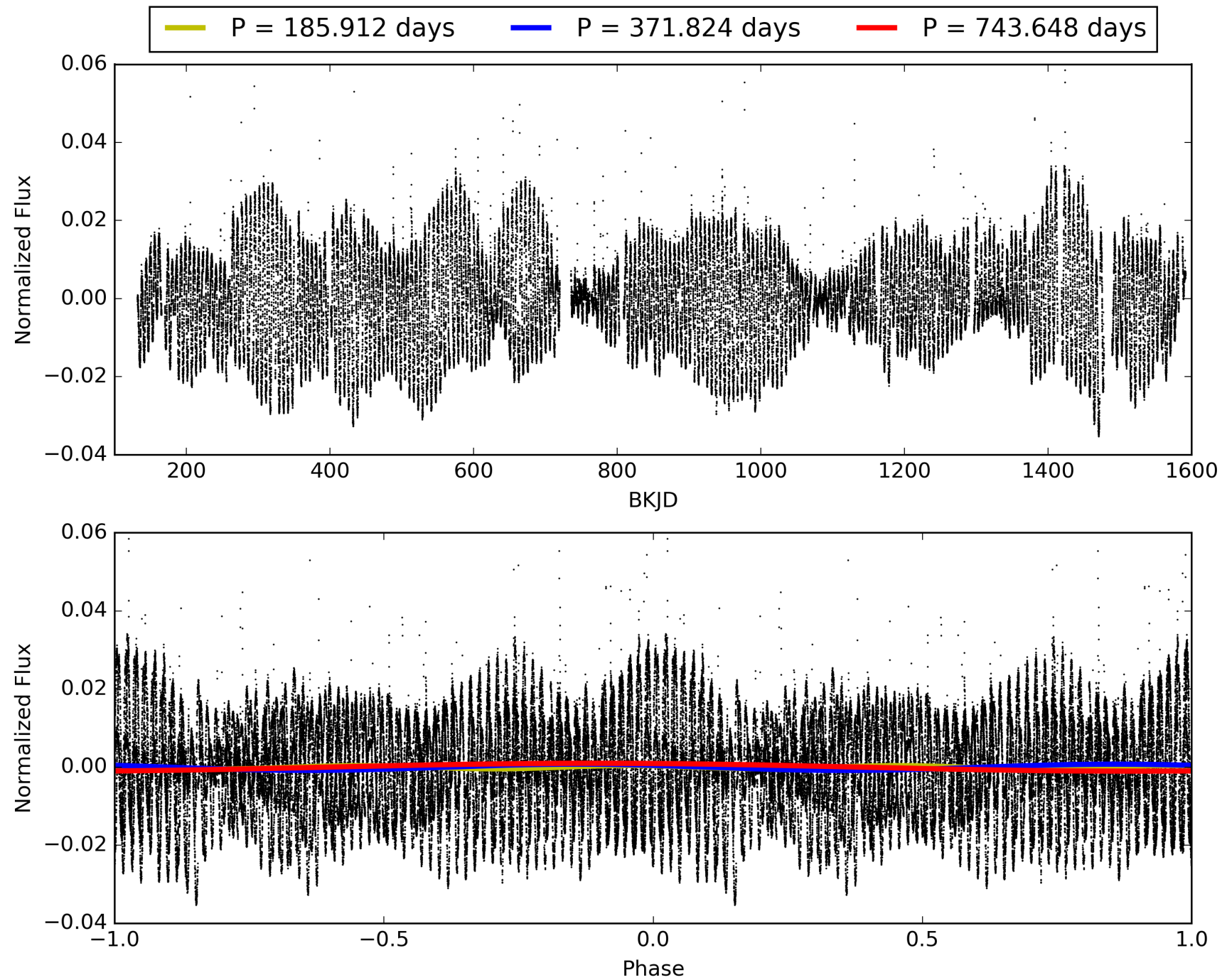
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [167.21σ]  
LongPeriod-sig: 100.0% [180.46σ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 74.1%  
Bootstrap-pfa: 2.57e-13  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.3039**  
Centroid-sig: 5.6%  
Centroid-so: 1.290 arcsec [1.60σ]  
OotOffset-rm: 0.147 arcsec [0.95σ]  
KicOffset-rm: 0.164 arcsec [0.67σ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005607395-01, PDC Light Curves



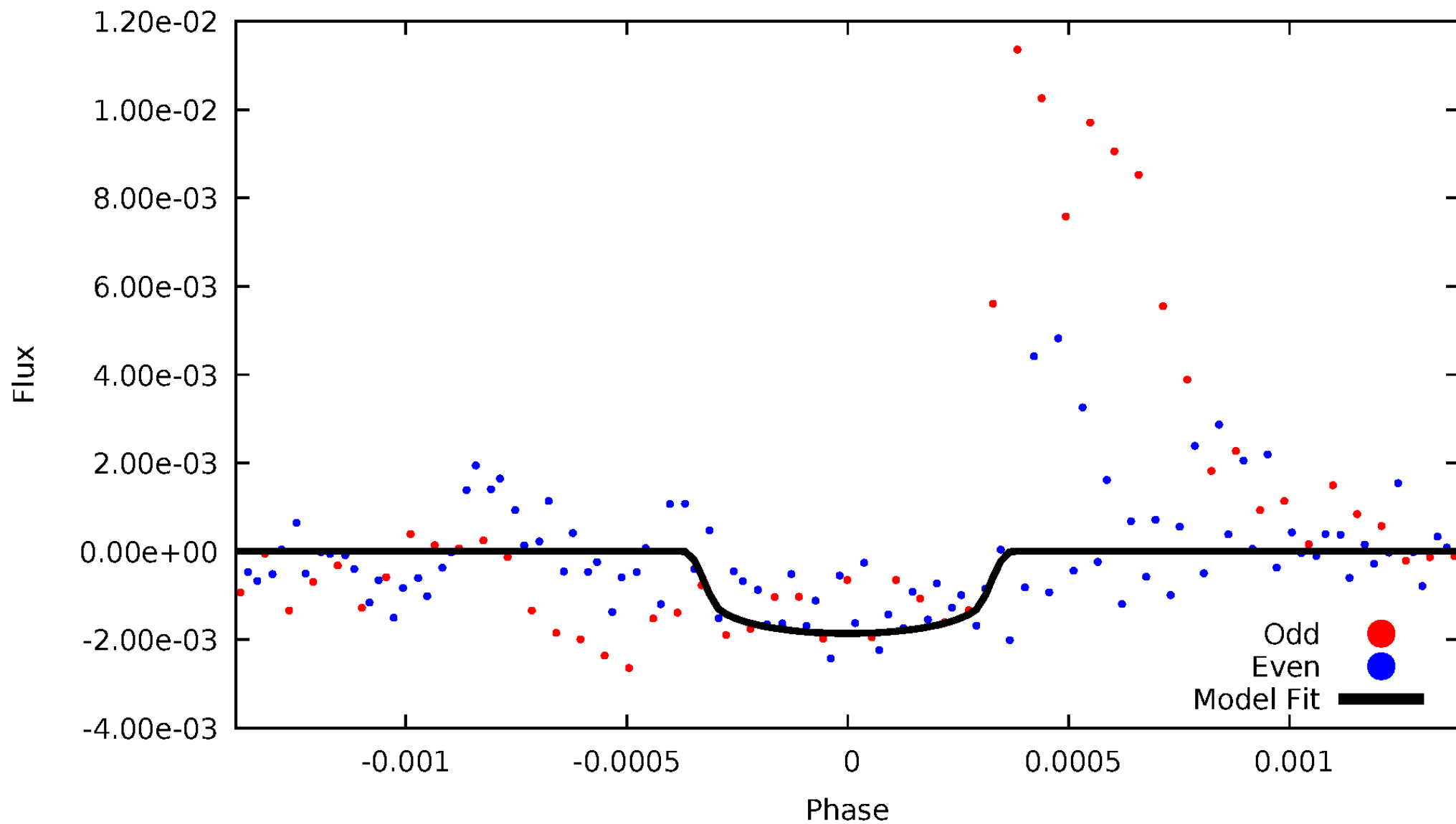
TCE 005607395-01





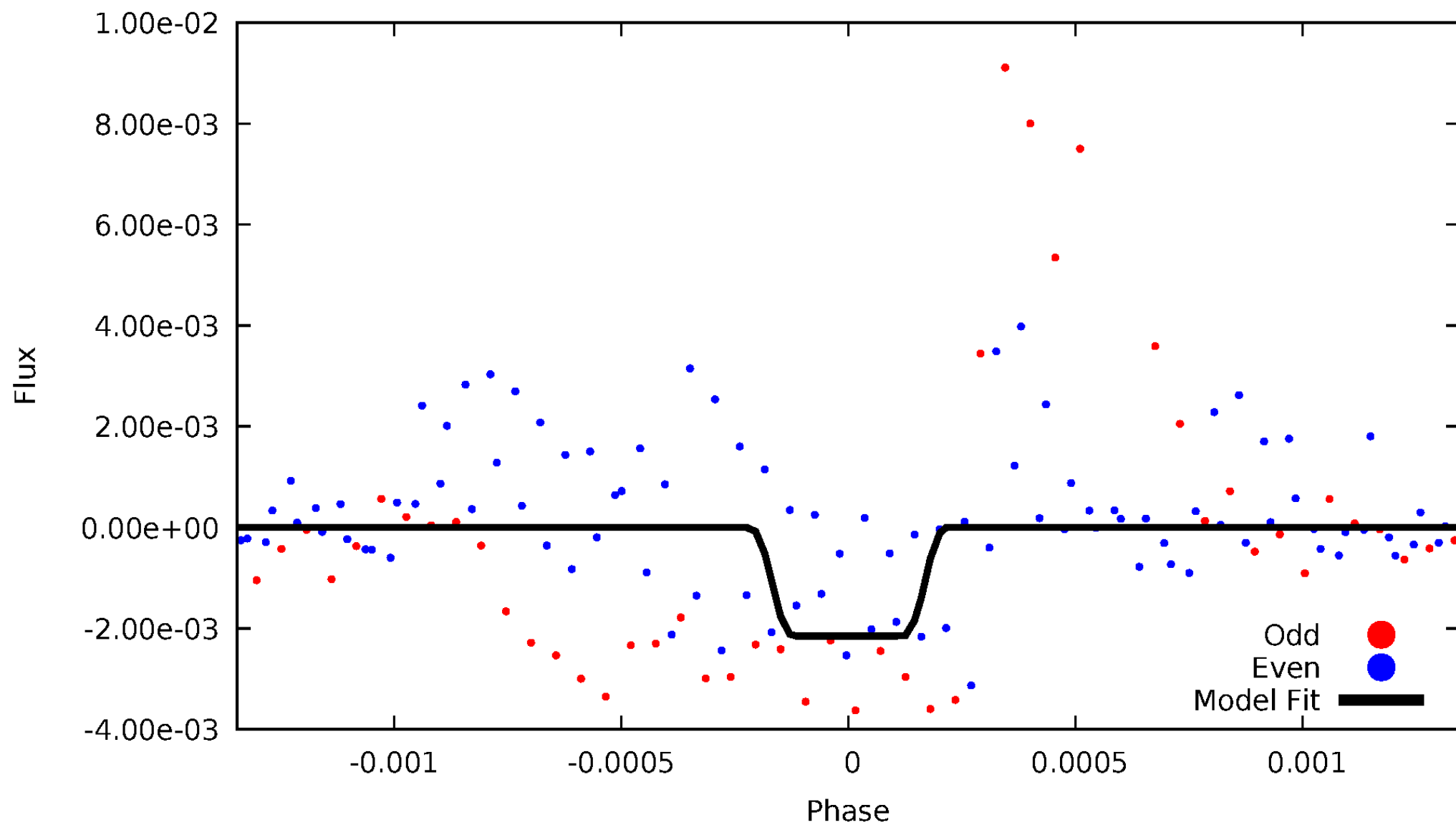
# DV Odd/Even

TCE 005607395-01



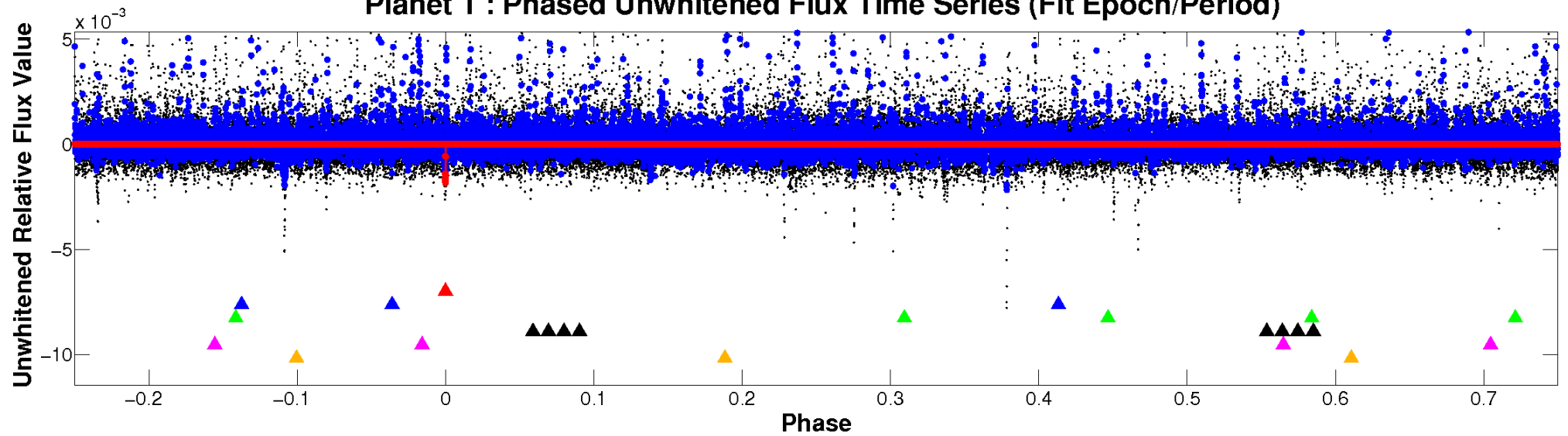
# ALT Odd/Even

TCE 005607395-01

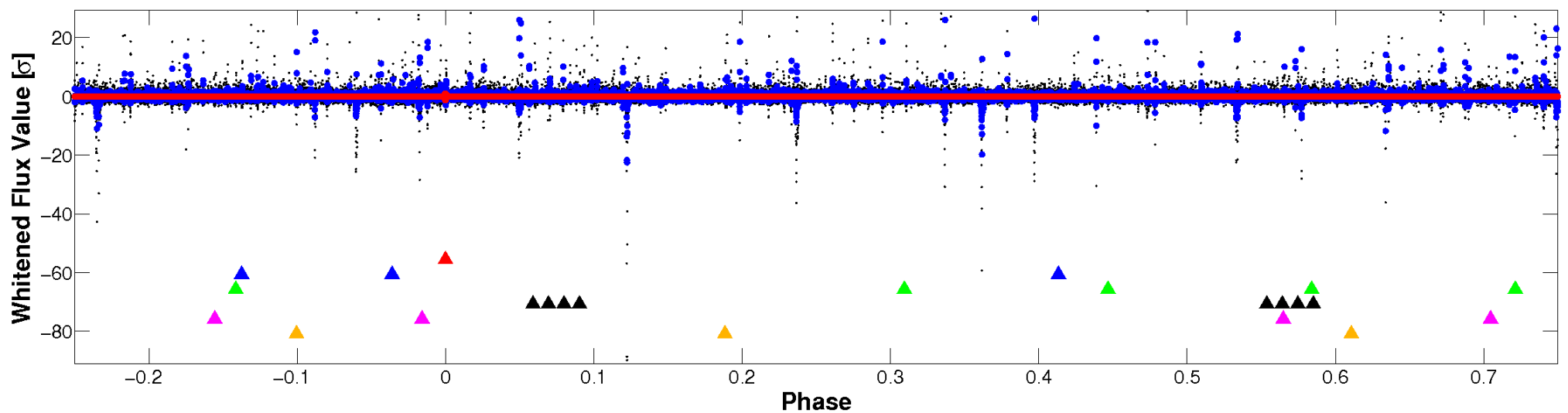


# Non-Whitened Vs. Whitened Light Curve

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

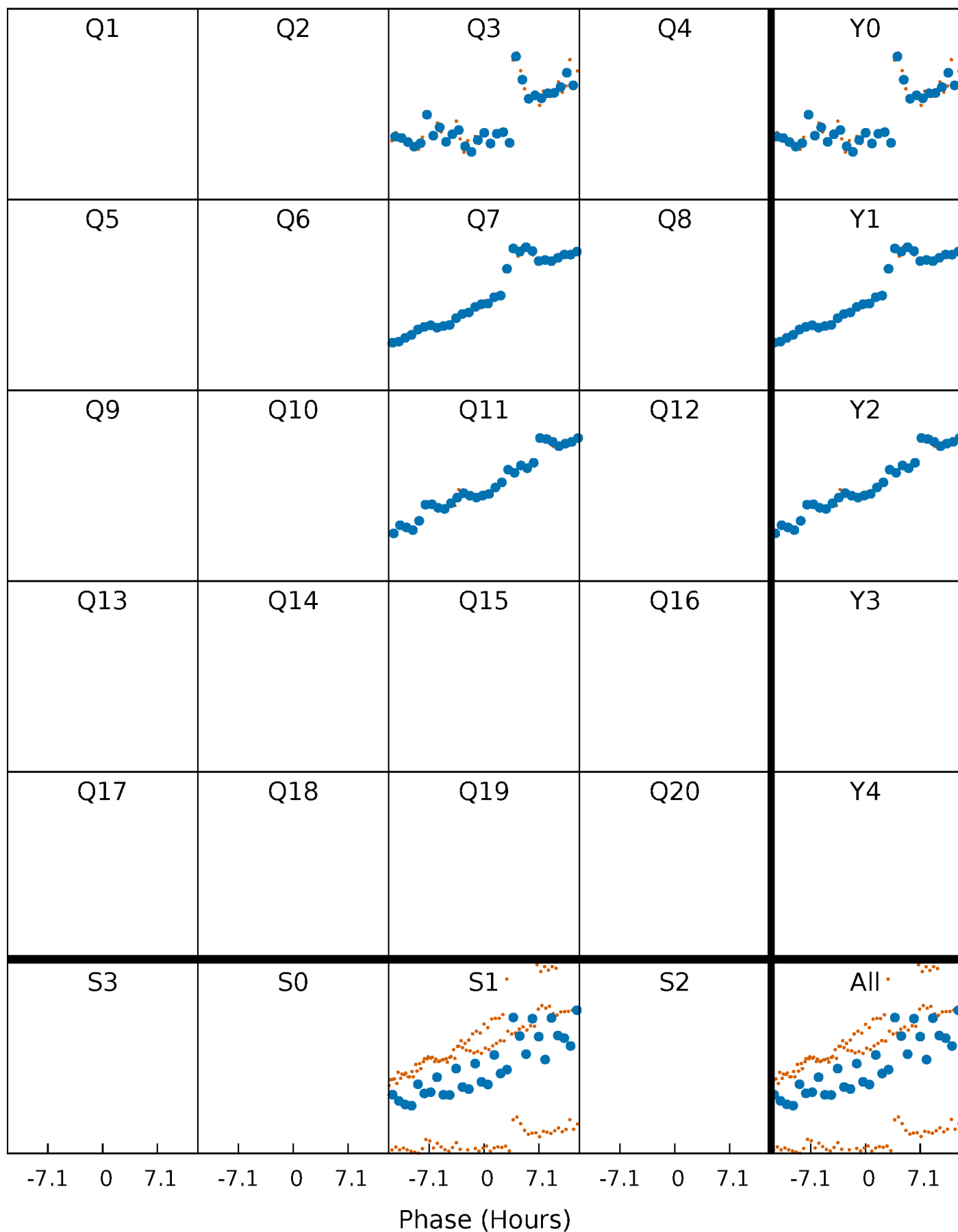


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



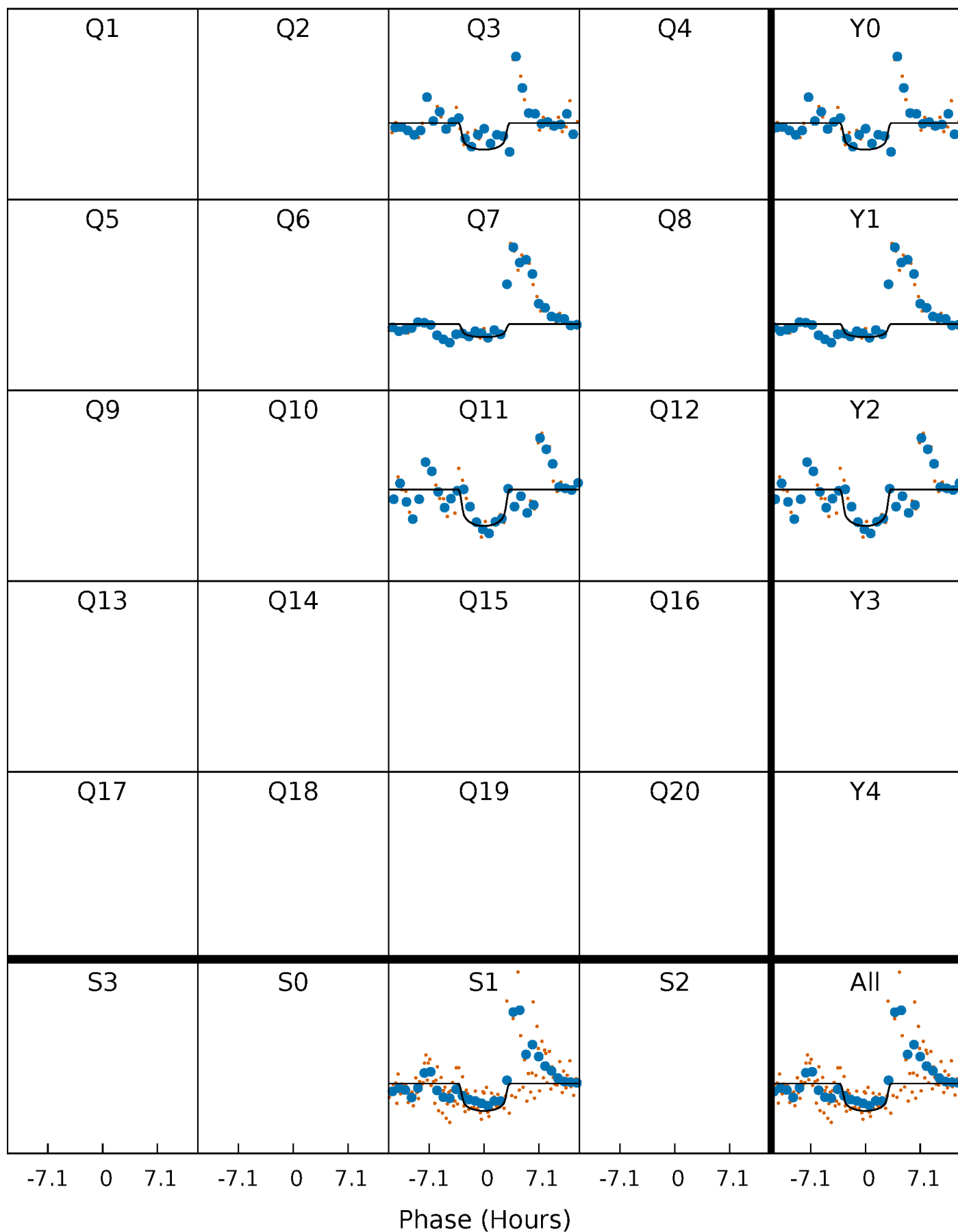
# PDC Quarter-Phased Transit Curves

TCE 005607395-01 P=371.823809 Days  $T_0=298.440525$  (BKJD)



# DV Quarter-Phased Transit Curves

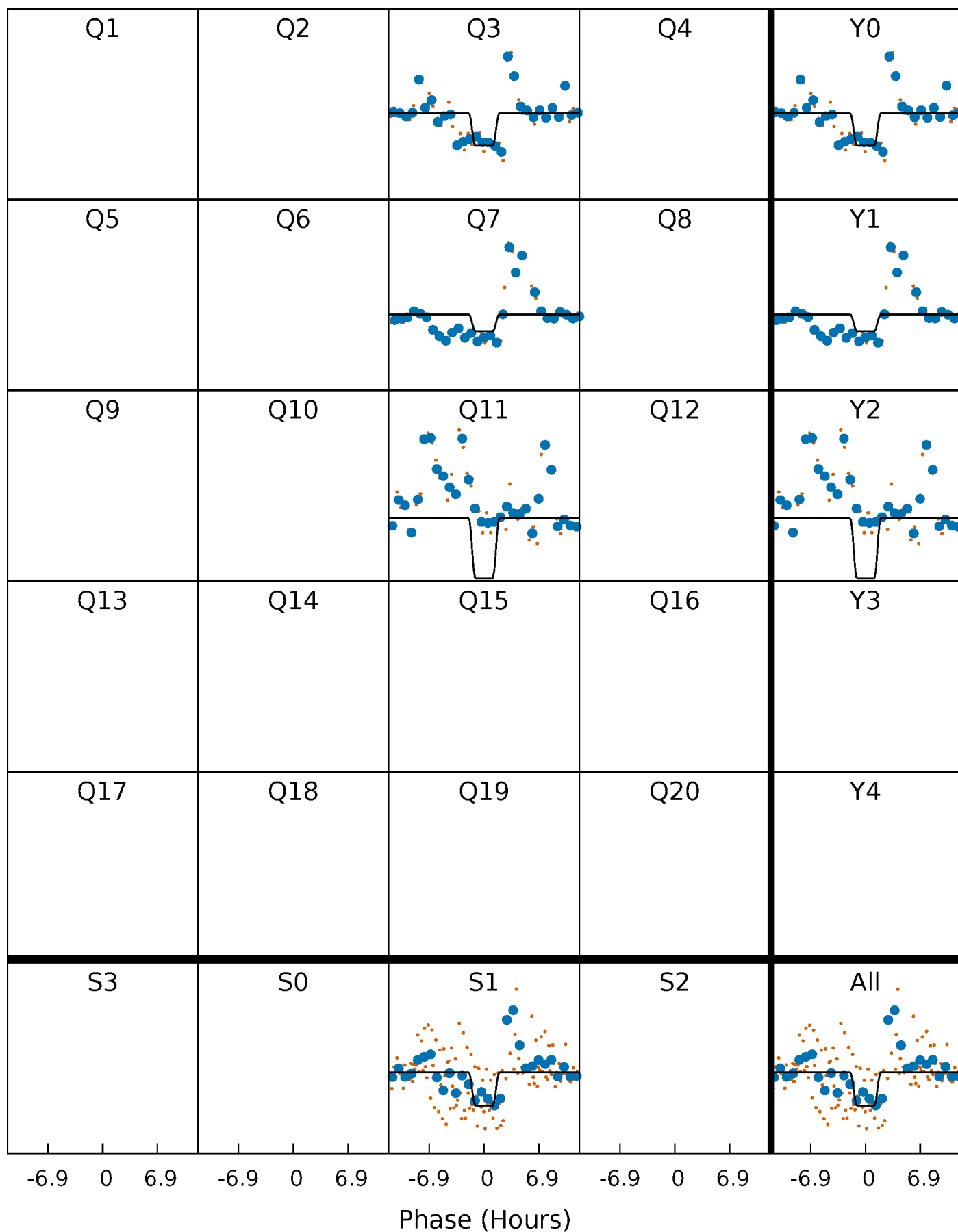
TCE 005607395-01     $P=371.823809$  Days     $T_0=298.440525$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

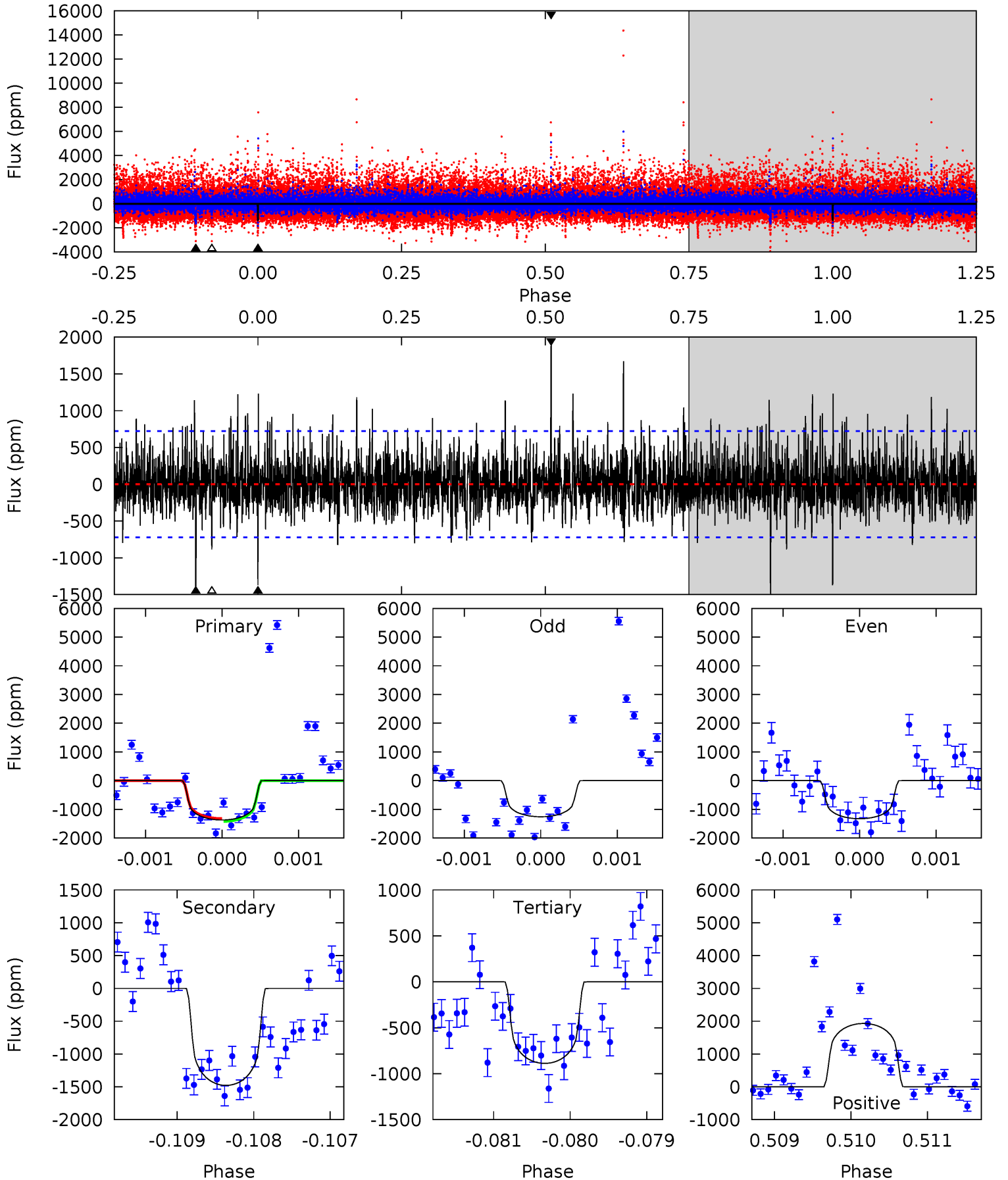
TCE 005607395-01 P=371.802247 Days  $T_0=298.476358$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-01, P = 371.823809 Days, E = 298.440525 Days

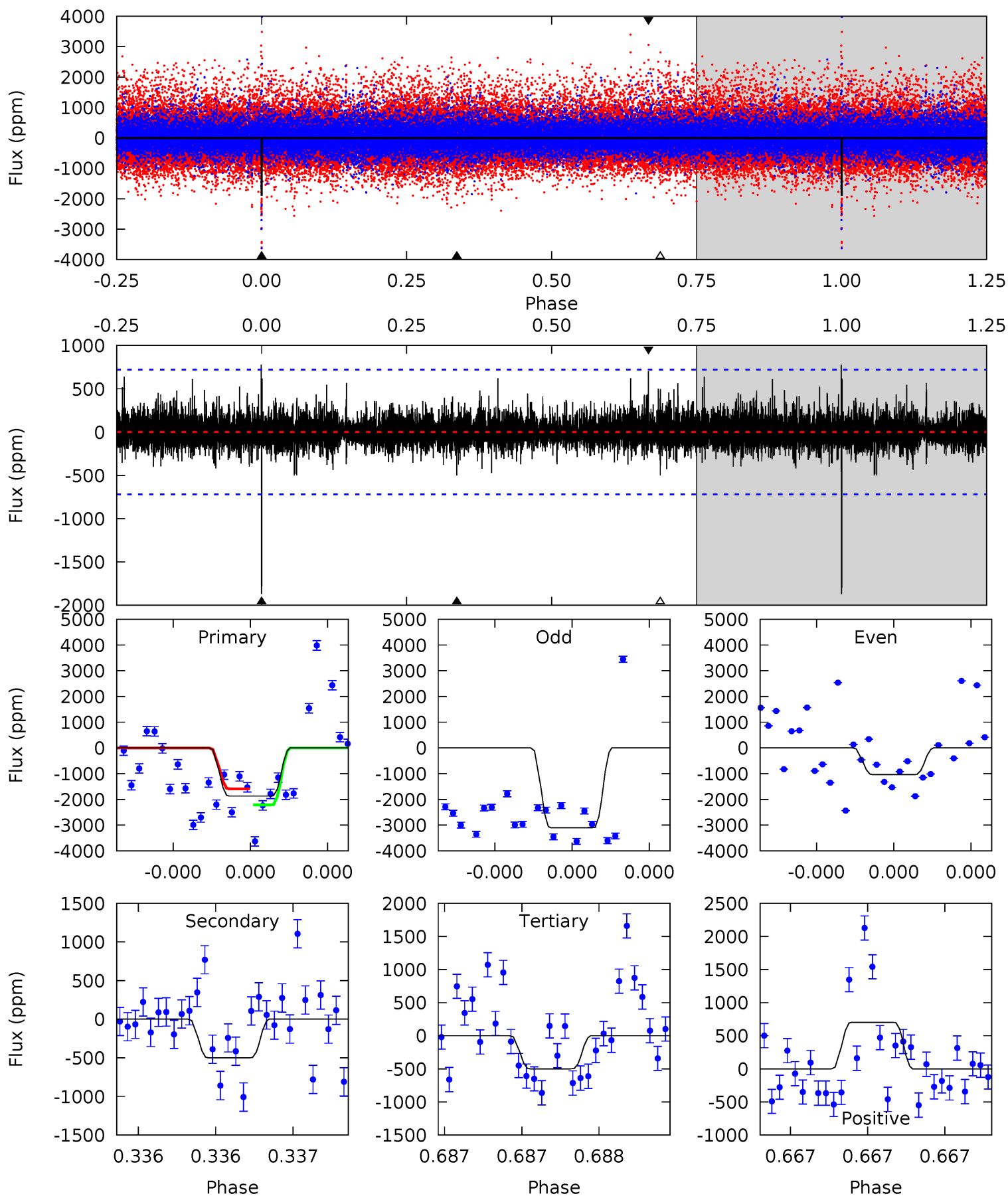
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	11.3	6.78	14.7	5.51	3.38	1.98	3.70	-4.26	4.51	-3.45	0.20	1.04	0.57	0.37



# Alt Model-Shift Uniqueness Test

005607395-01, P = 371.802247 Days, E = 298.476358 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
14.6	3.89	3.89	5.47	5.60	3.53	0.95	10.7	9.09	0.00	-1.58	7.65	0.84	0.29	2.45



### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1479 \pm 131$	$3.70^{+3.29}_{-2.42}$	$187^{+5}_{-5}$	$3215^{+1384}_{-526}$	$39914^{+289561}_{-28947}$
Alt.	$-500 \pm 128$	$3.90^{+2.98}_{-2.71}$	$188^{+4}_{-4}$	$2752^{+1153}_{-406}$	$12369^{+111463}_{-8864}$

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

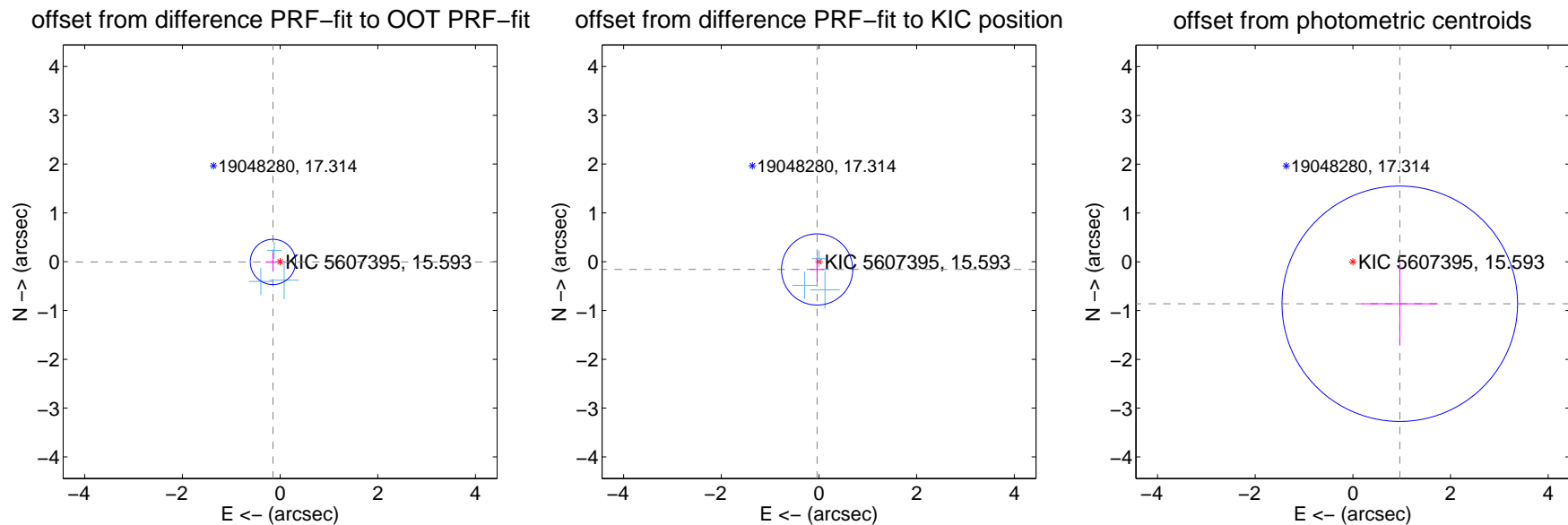
## DV Centroid Data

Supplemental centroid analysis for 005607395-01. Kepler magnitude: 15.59. Transit SNR 7.31

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

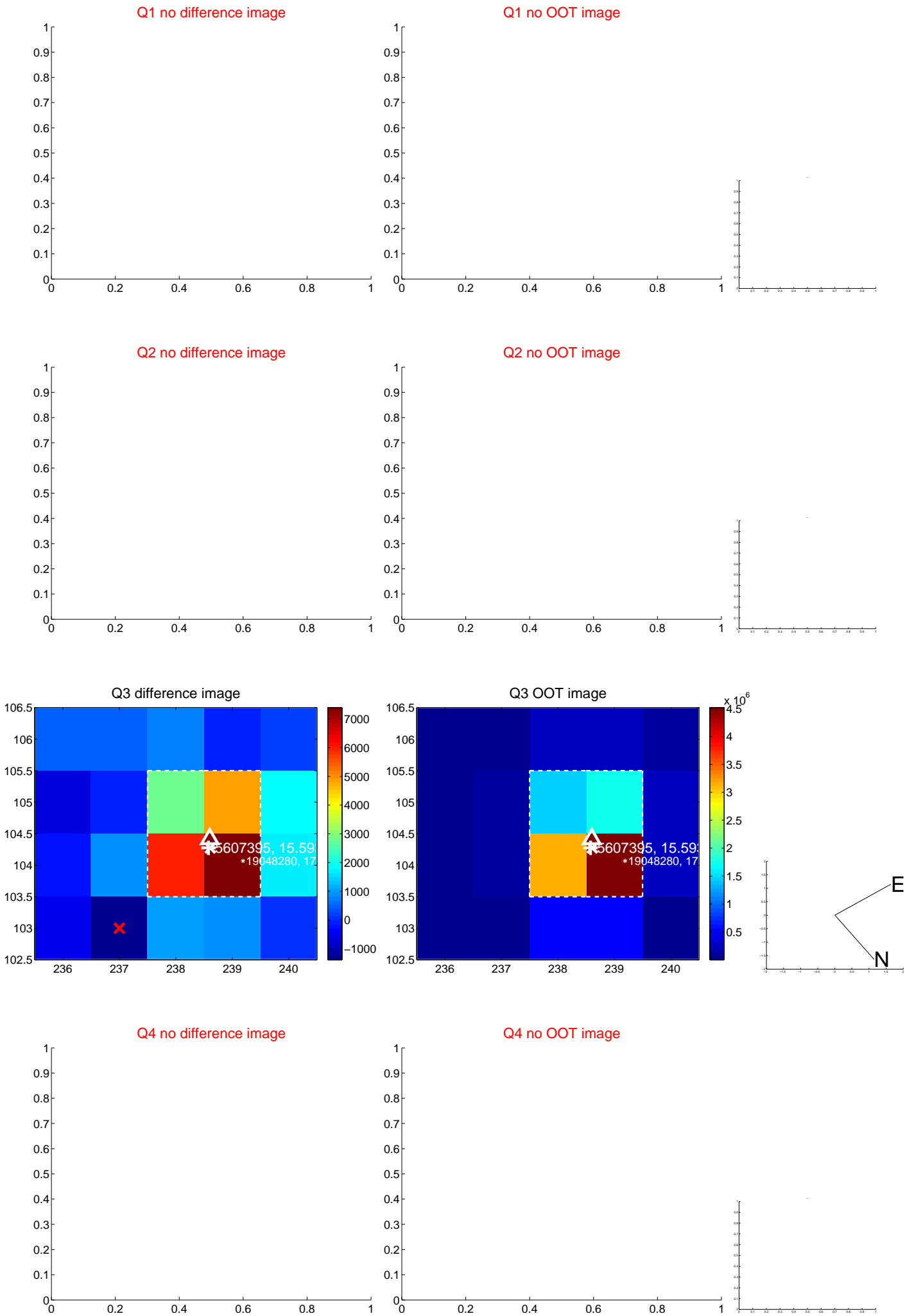
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.147 \pm 0.155$	0.95	$0.147 \pm 0.155$	$-0.005 \pm 0.182$
PRF-fit source offset from KIC position	$0.164 \pm 0.243$	0.67	$0.038 \pm 0.138$	$-0.159 \pm 0.248$
photometric centroid source offset	$1.29 \pm 0.80$	1.60	$-0.96 \pm 0.78$	$-0.86 \pm 0.84$



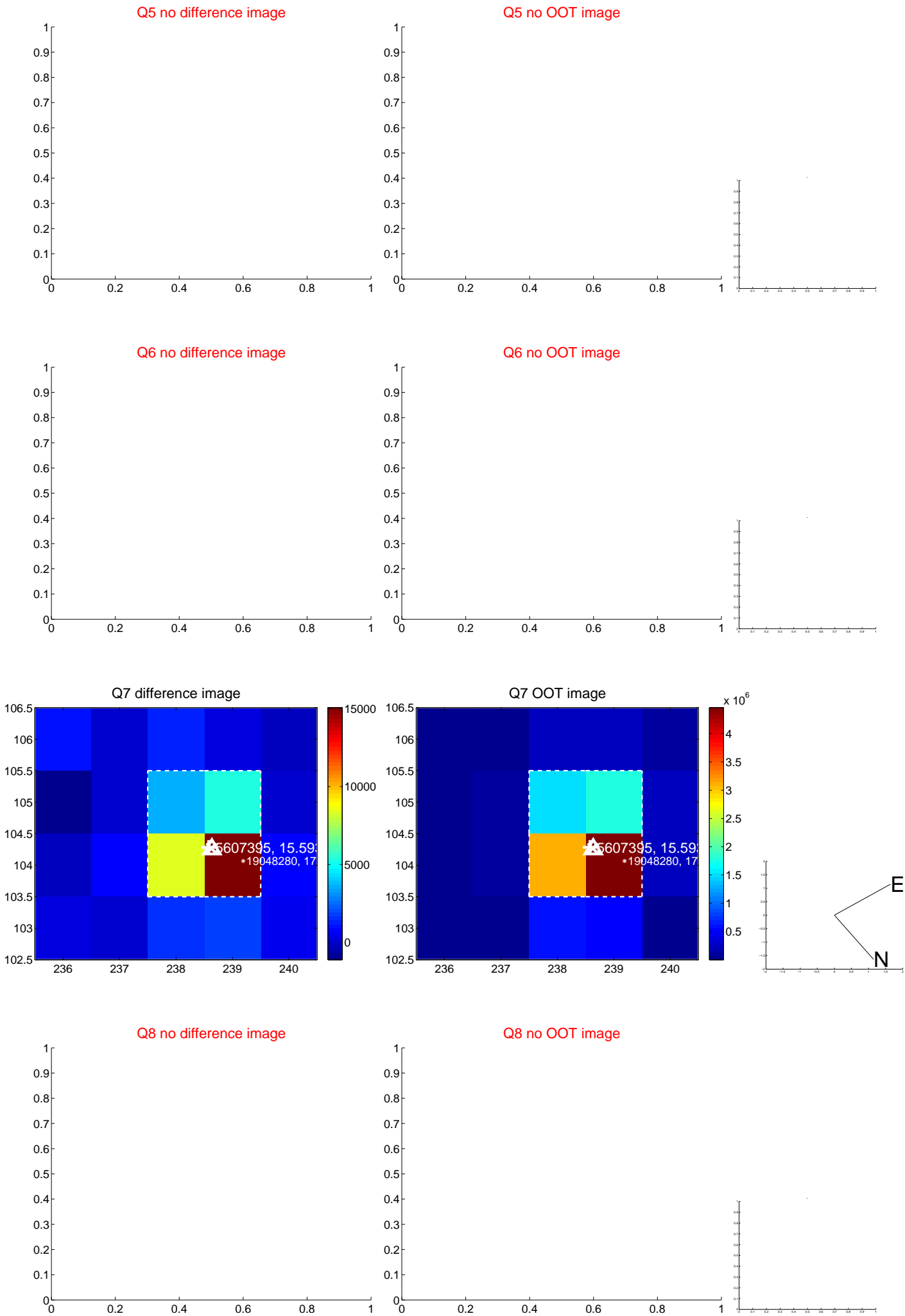
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



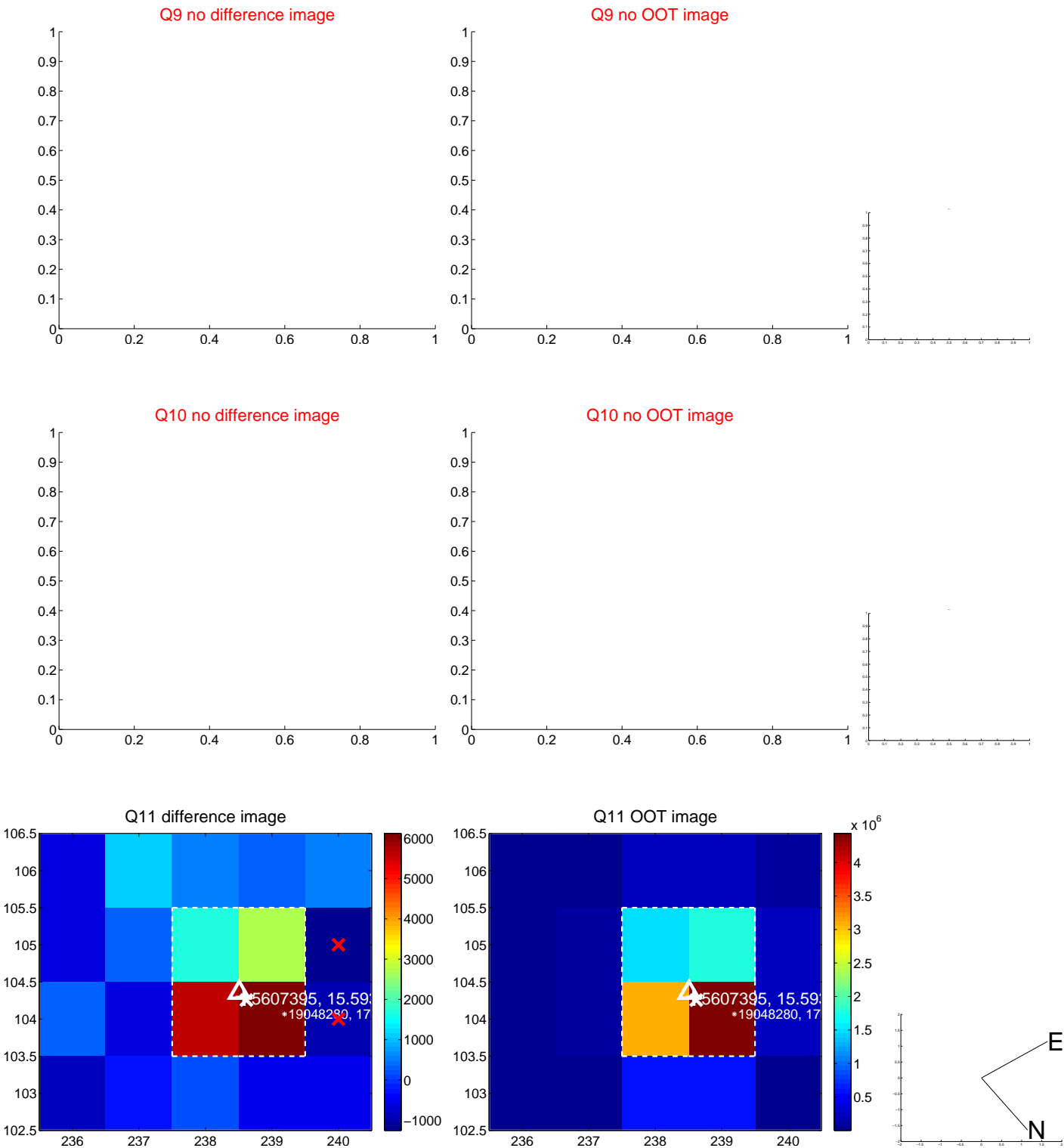
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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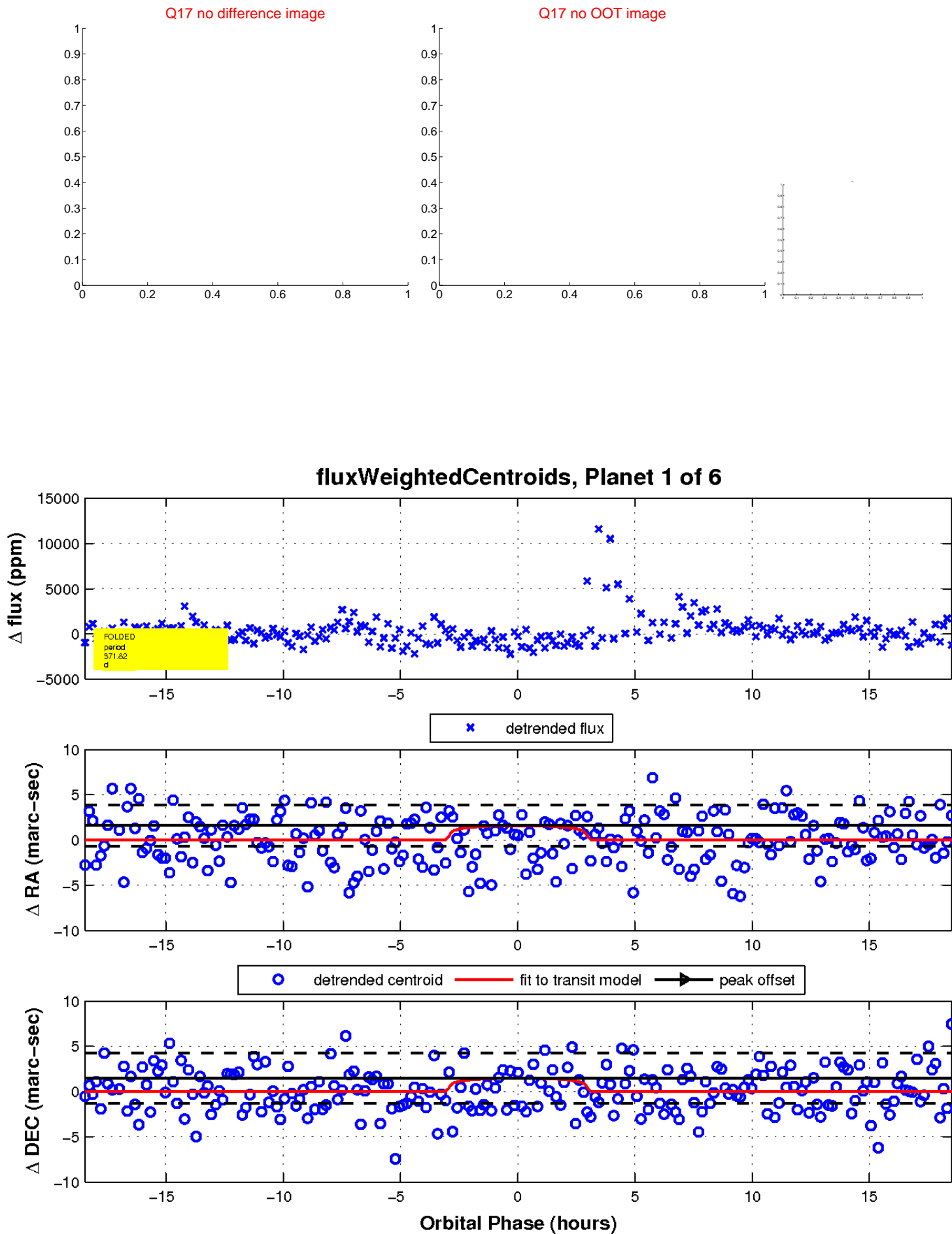
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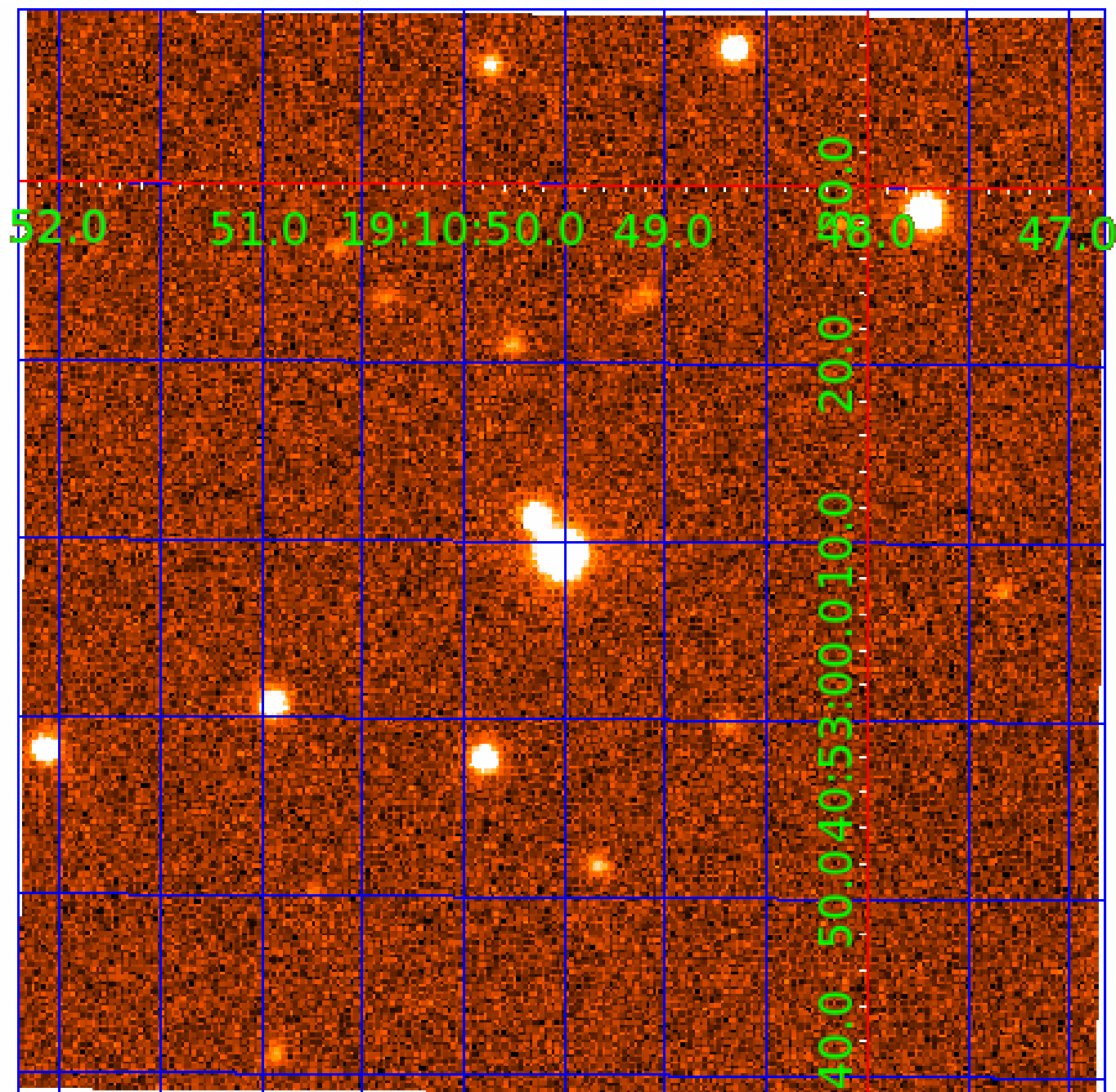
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UKIRT Image

Declination



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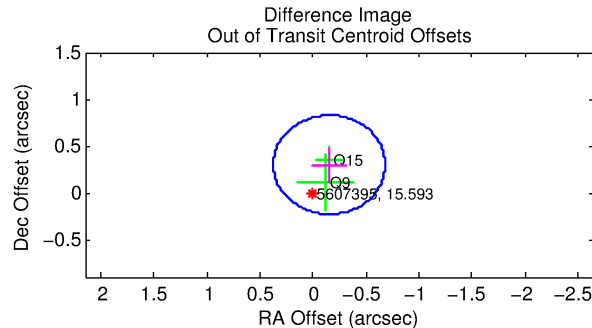
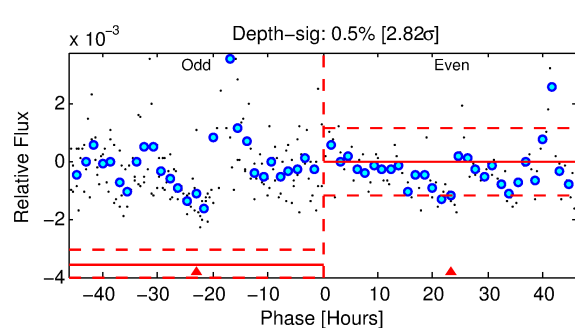
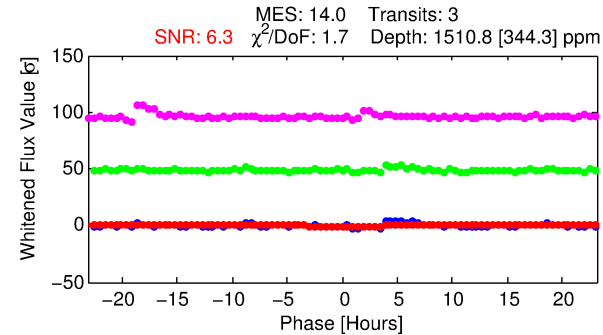
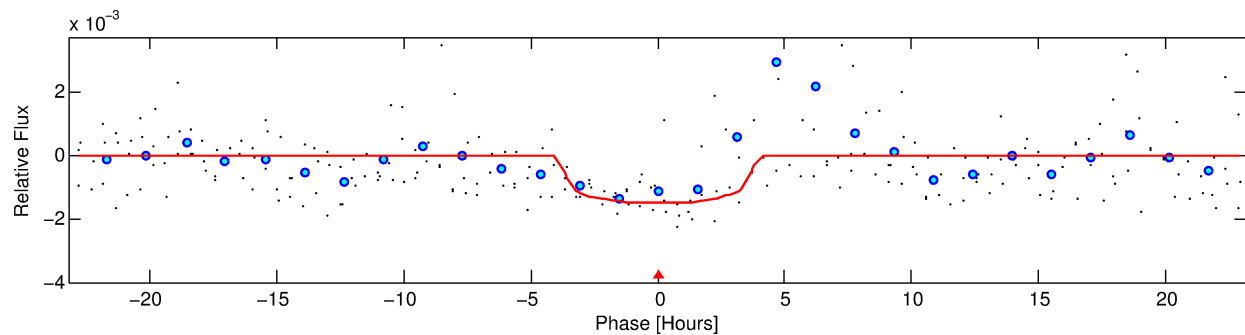
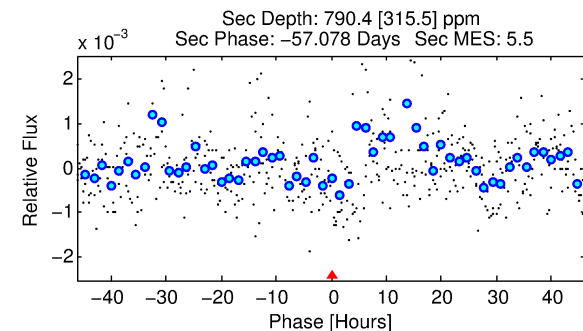
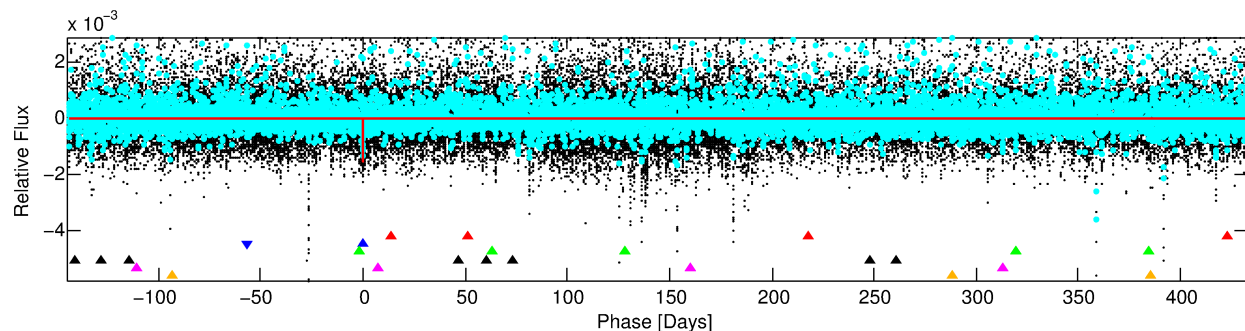
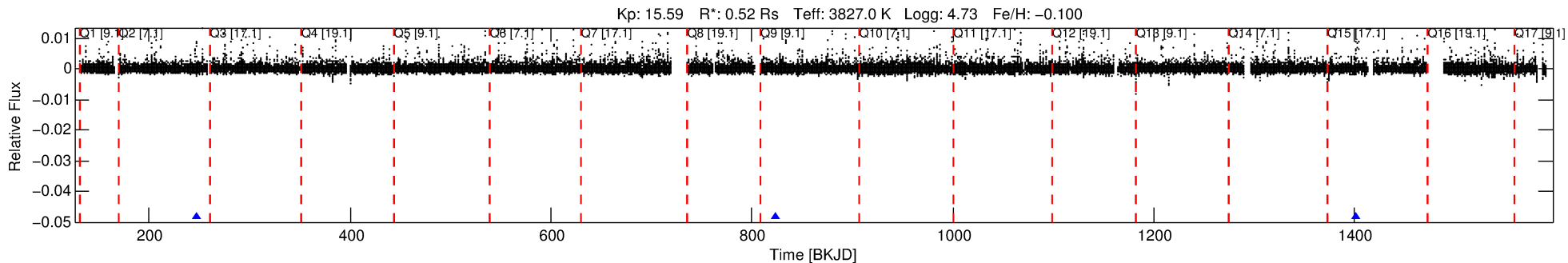
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005607395-02

No Significant Match Found

# DV One-Page Summary

KIC: 5607395 Candidate: 2 of 6 Period: 576.593 d



## DV Fit Results:

Period = 576.59283 [0.01053] d  
Epoch = 247.3406 [0.0130] BKJD  
Rp/R\* = 0.0354 [0.1247]  
a/R\* = 579.51 [8928.62]  
b = 0.20 [74.92]  
Seff = 0.04 [0.00]  
Teq = 116 [3] K  
Rp = 2.01 [7.08] Re  
a = 1.0955 [0.0565] AU  
Ag = 129660.88 [916229.00] [0.14σ]  
Teffp = 3413 [6029] K [0.55σ]

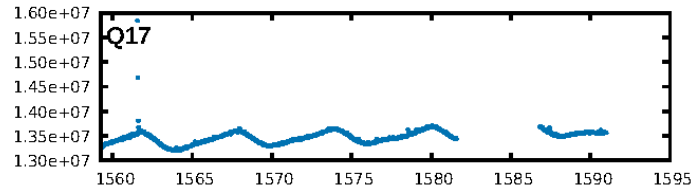
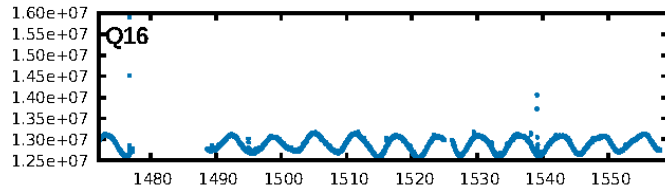
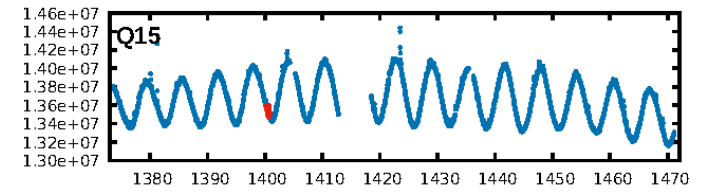
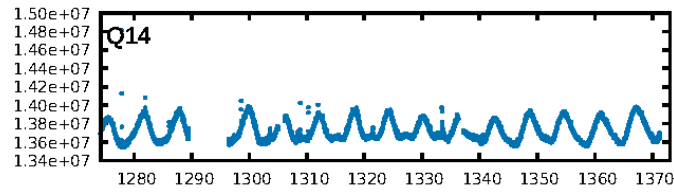
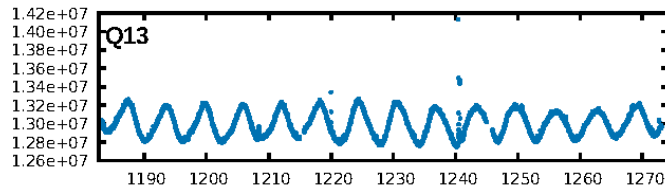
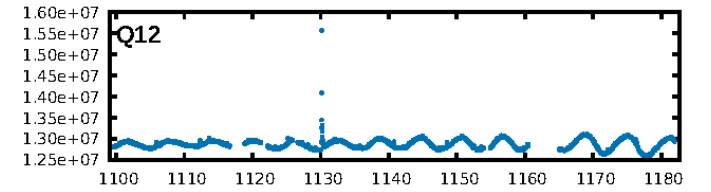
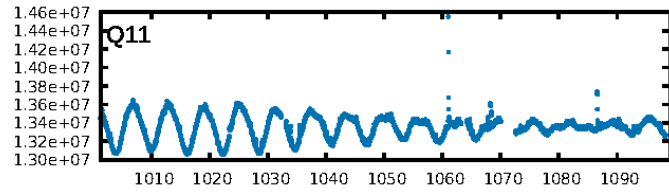
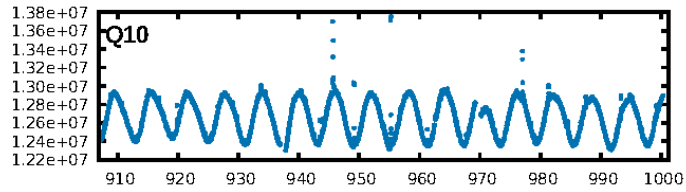
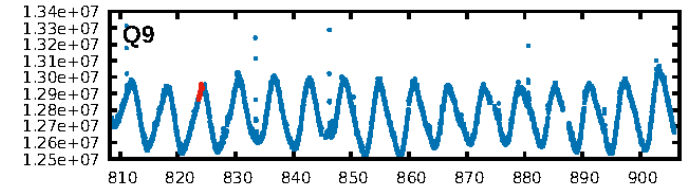
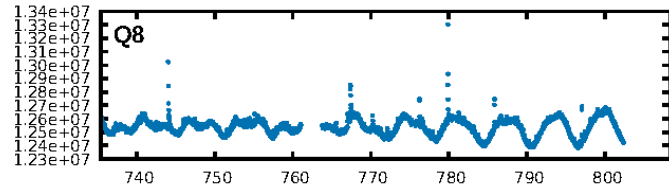
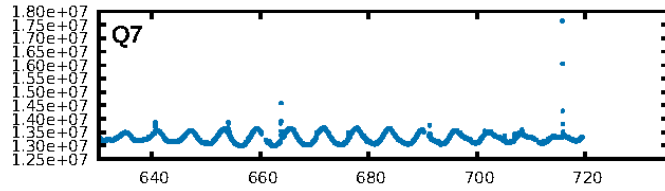
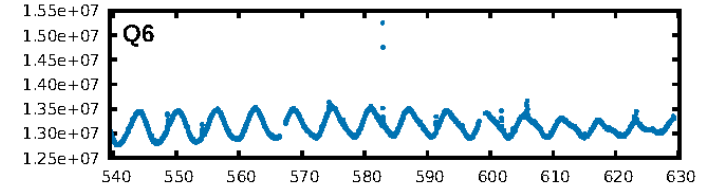
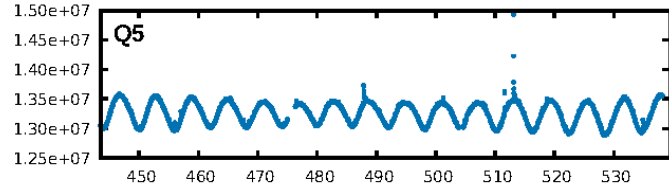
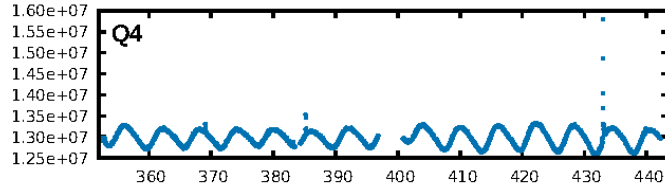
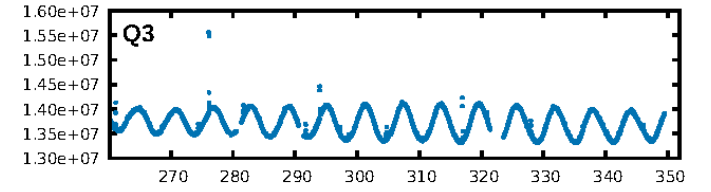
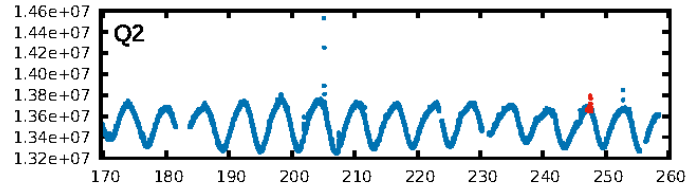
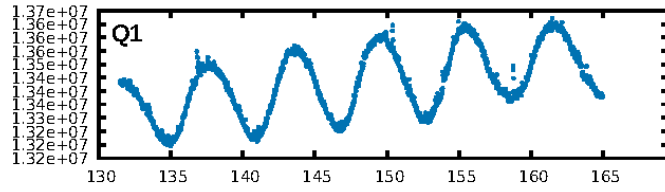
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [195.63σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.3%  
ModelChiSquareGof-sig: 41.9%  
Bootstrap-pfa: 4.76e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.459  
Centroid-sig: 2.1%  
Centroid-so: 1.769 arcsec [2.00σ]  
OotOffset-rm: 0.335 arcsec [1.91σ]  
KicOffset-rm: 0.150 arcsec [0.88σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

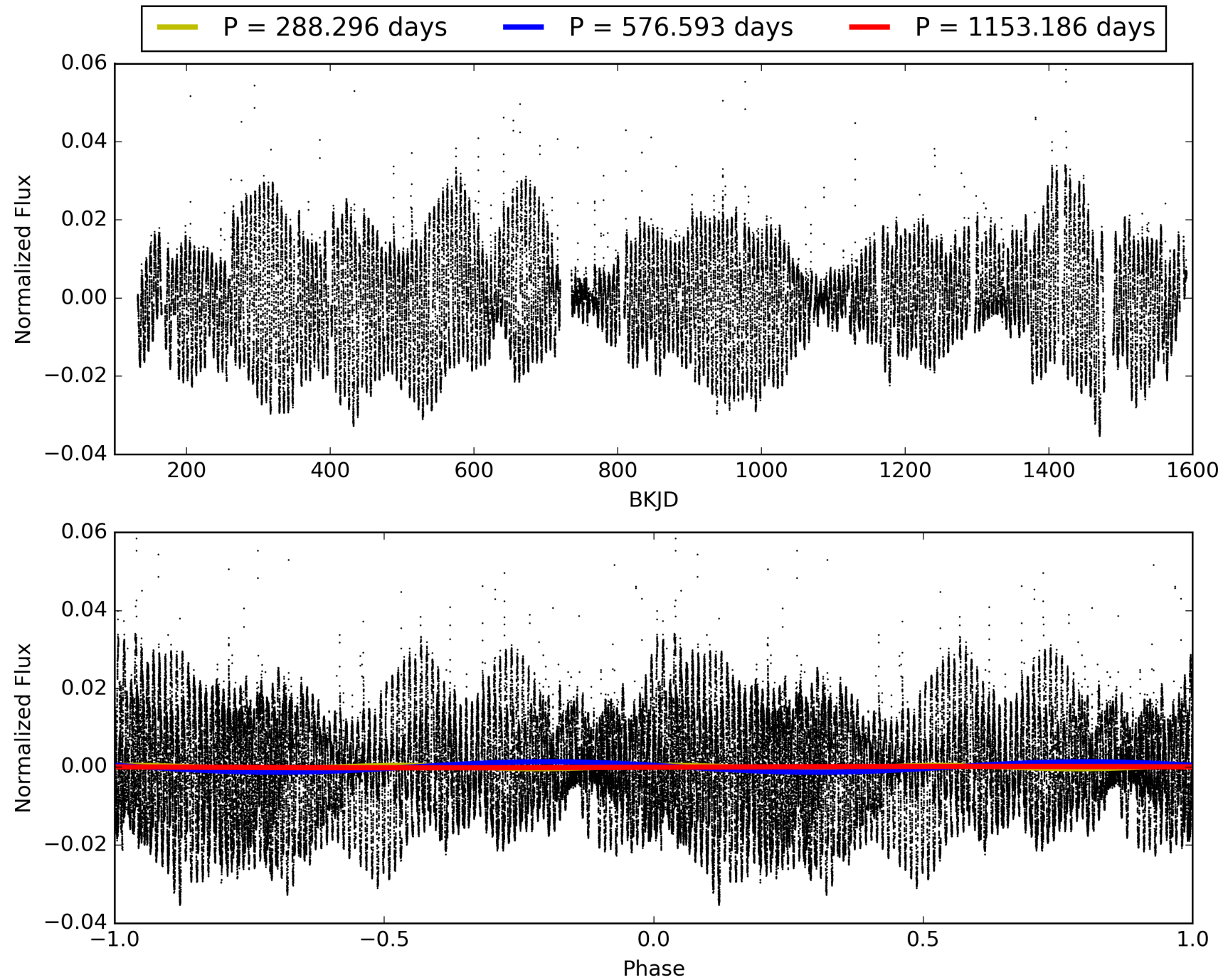
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:15:40 Z

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

# TCE 005607395-02, PDC Light Curves



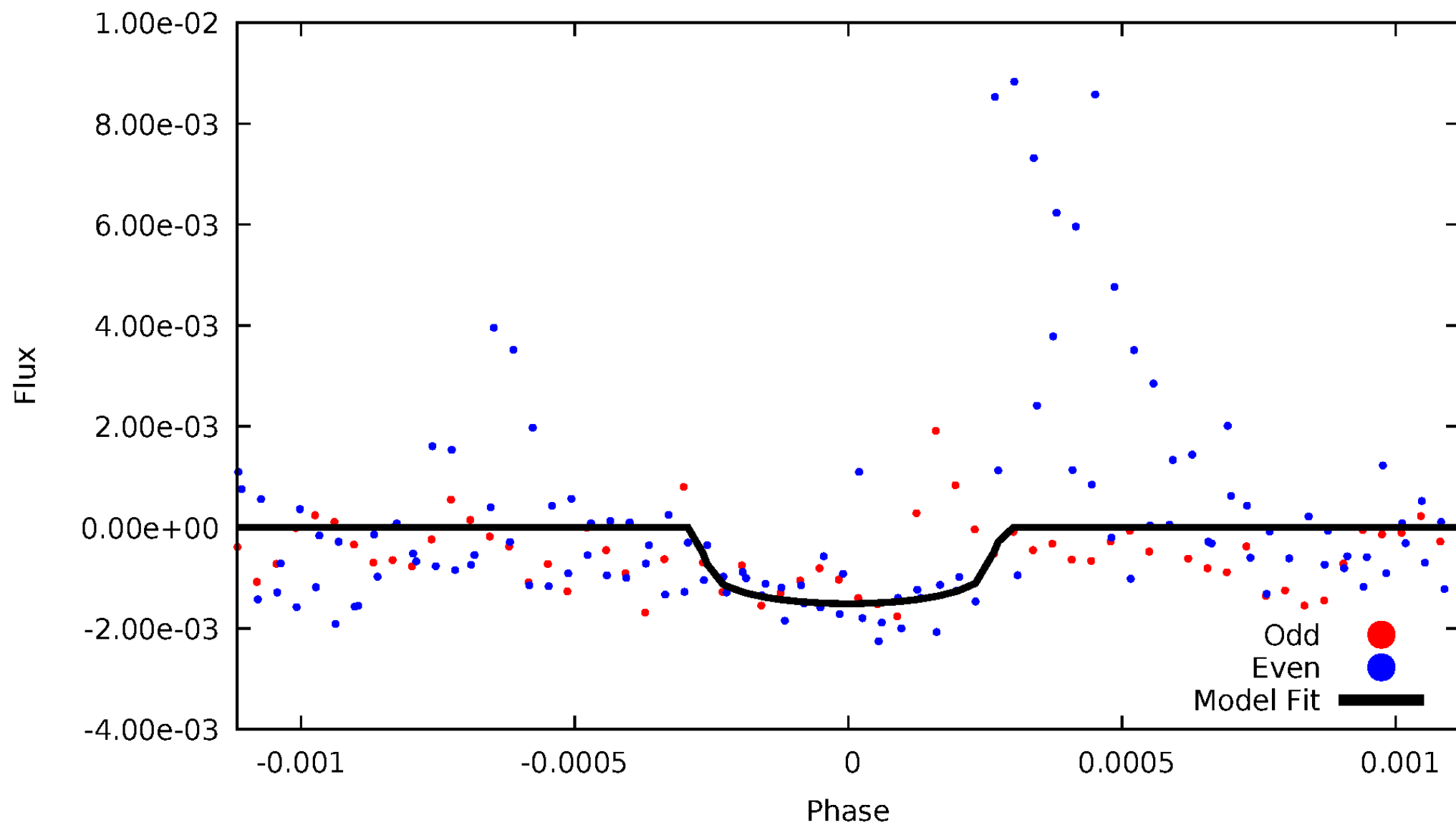
TCE 005607395-02





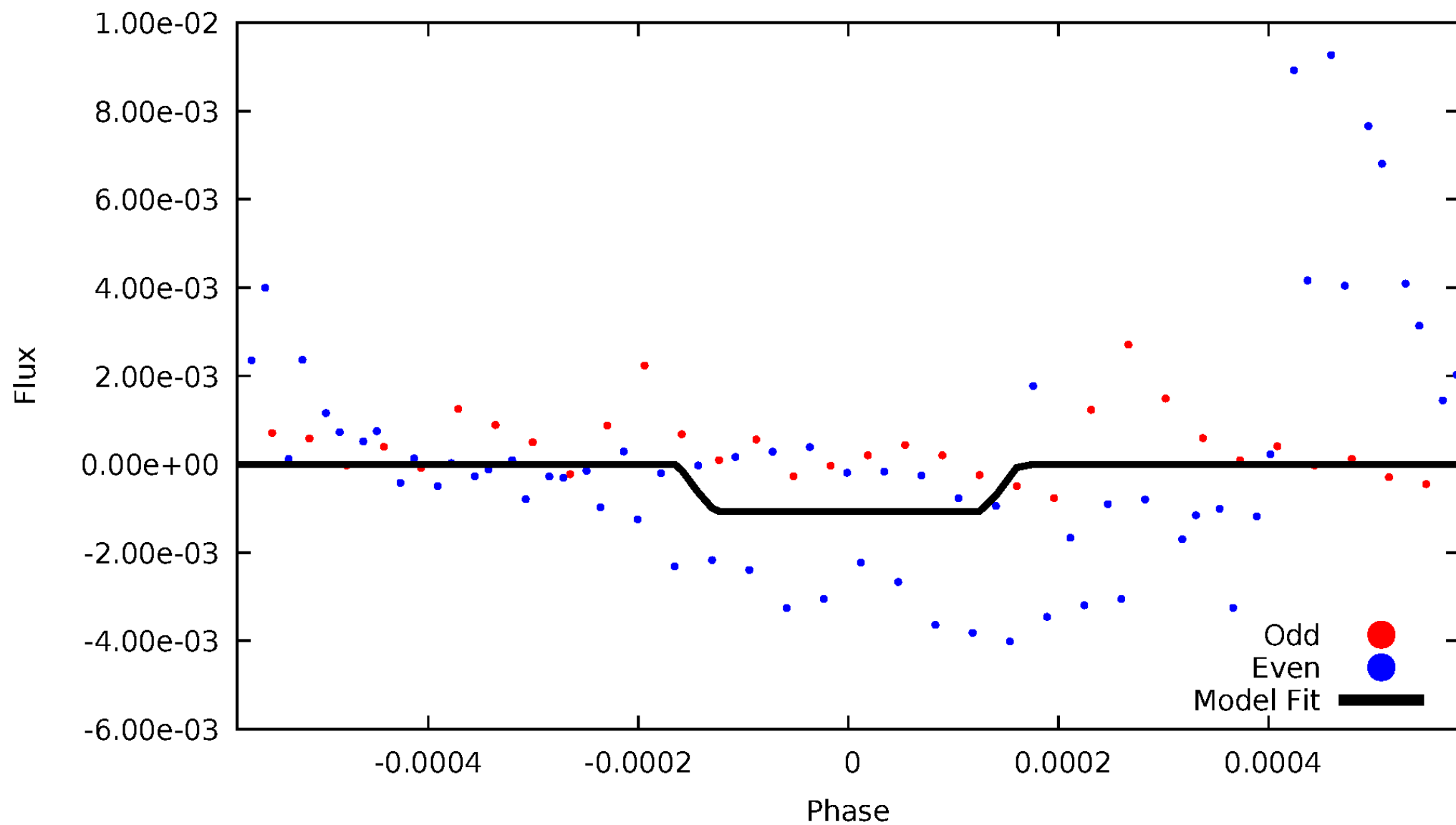
# DV Odd/Even

TCE 005607395-02



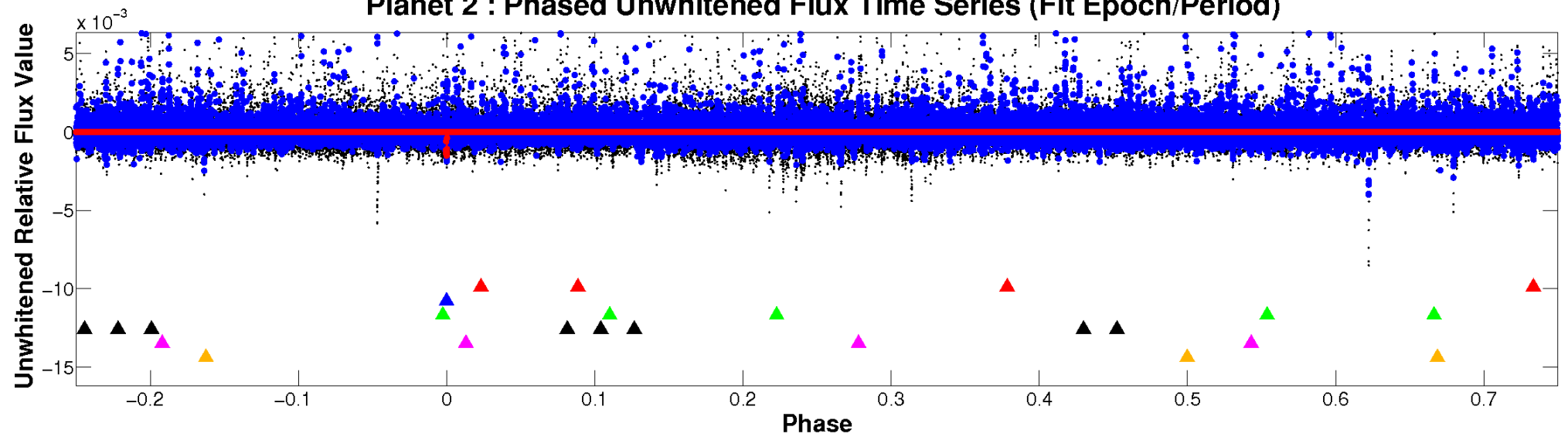
# ALT Odd/Even

TCE 005607395-02

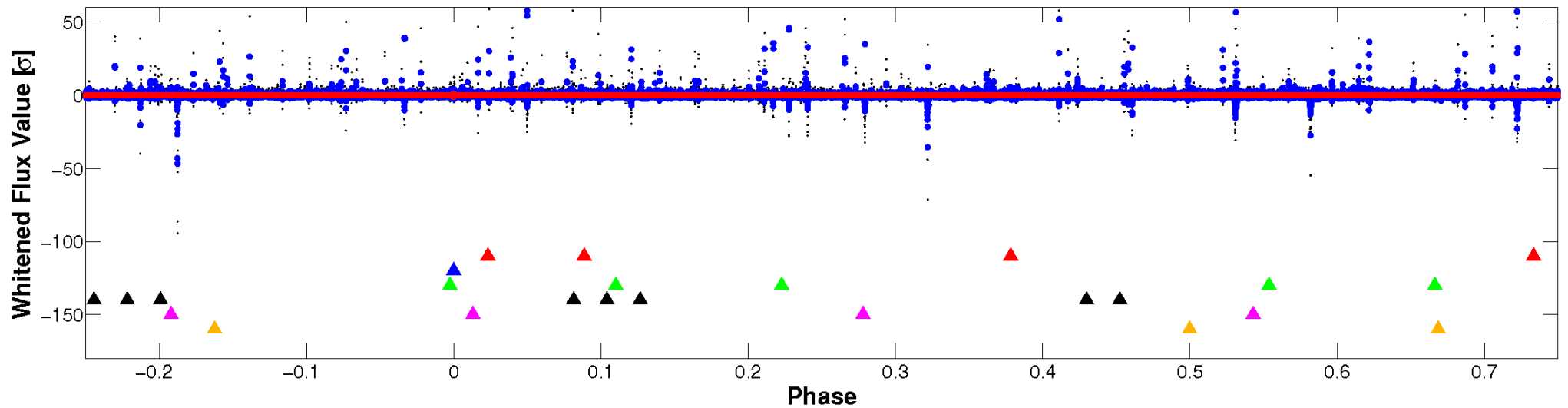


# Non-Whitened Vs. Whitened Light Curve

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



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



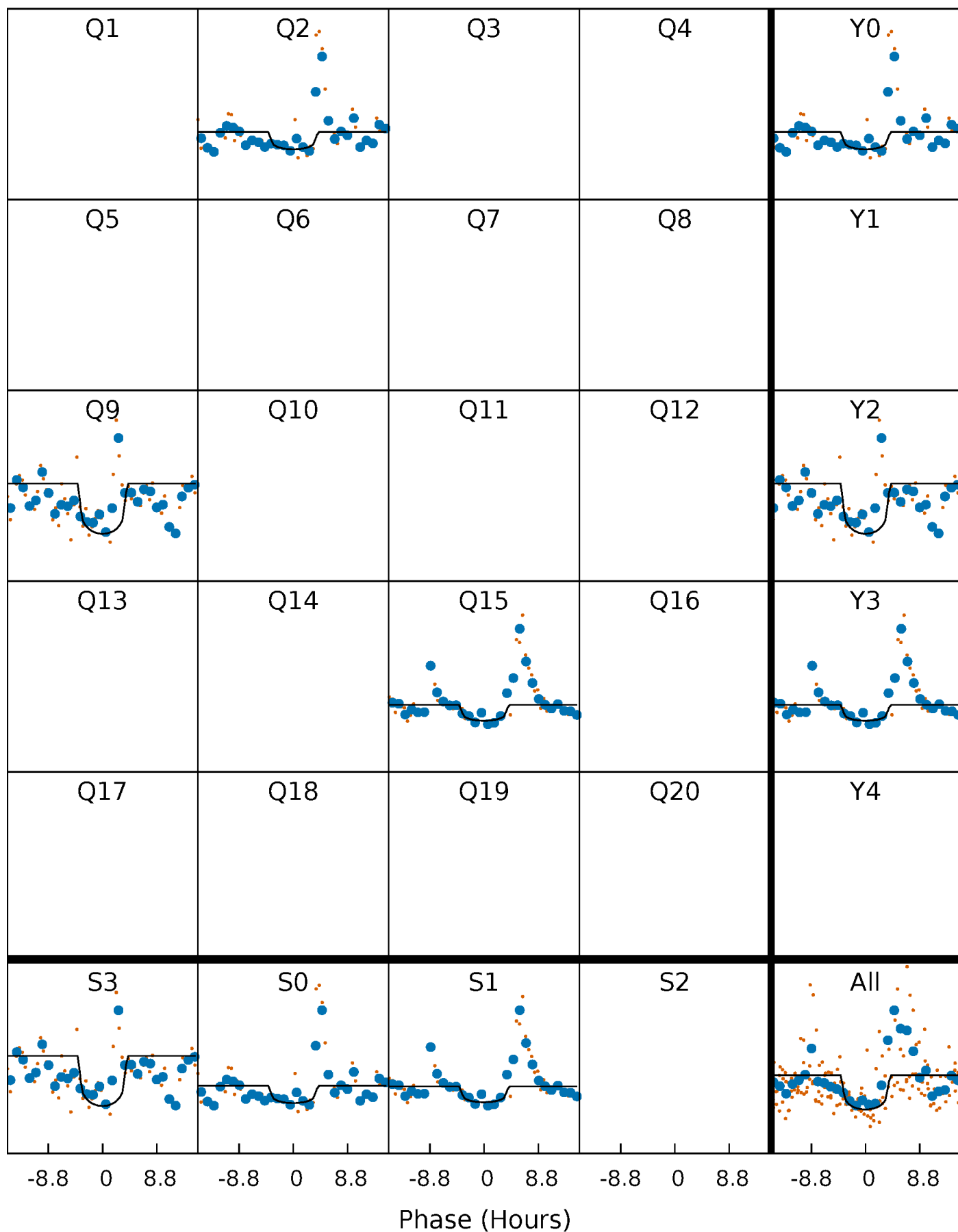
# PDC Quarter-Phased Transit Curves

TCE 005607395-02     $P=576.592829$  Days     $T_0=247.340574$  (BKJD)



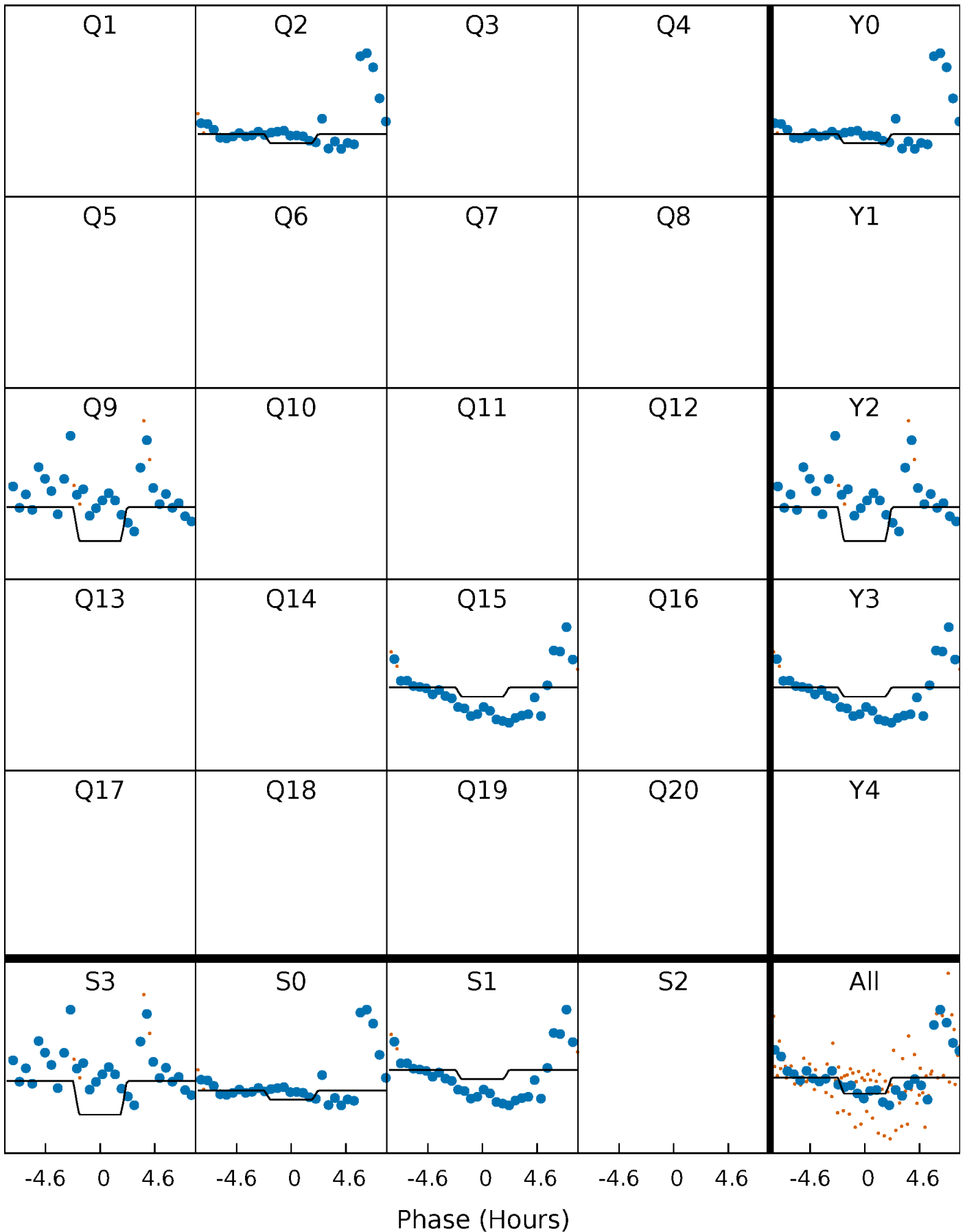
# DV Quarter-Phased Transit Curves

TCE 005607395-02 P=576.592829 Days  $T_0=247.340574$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

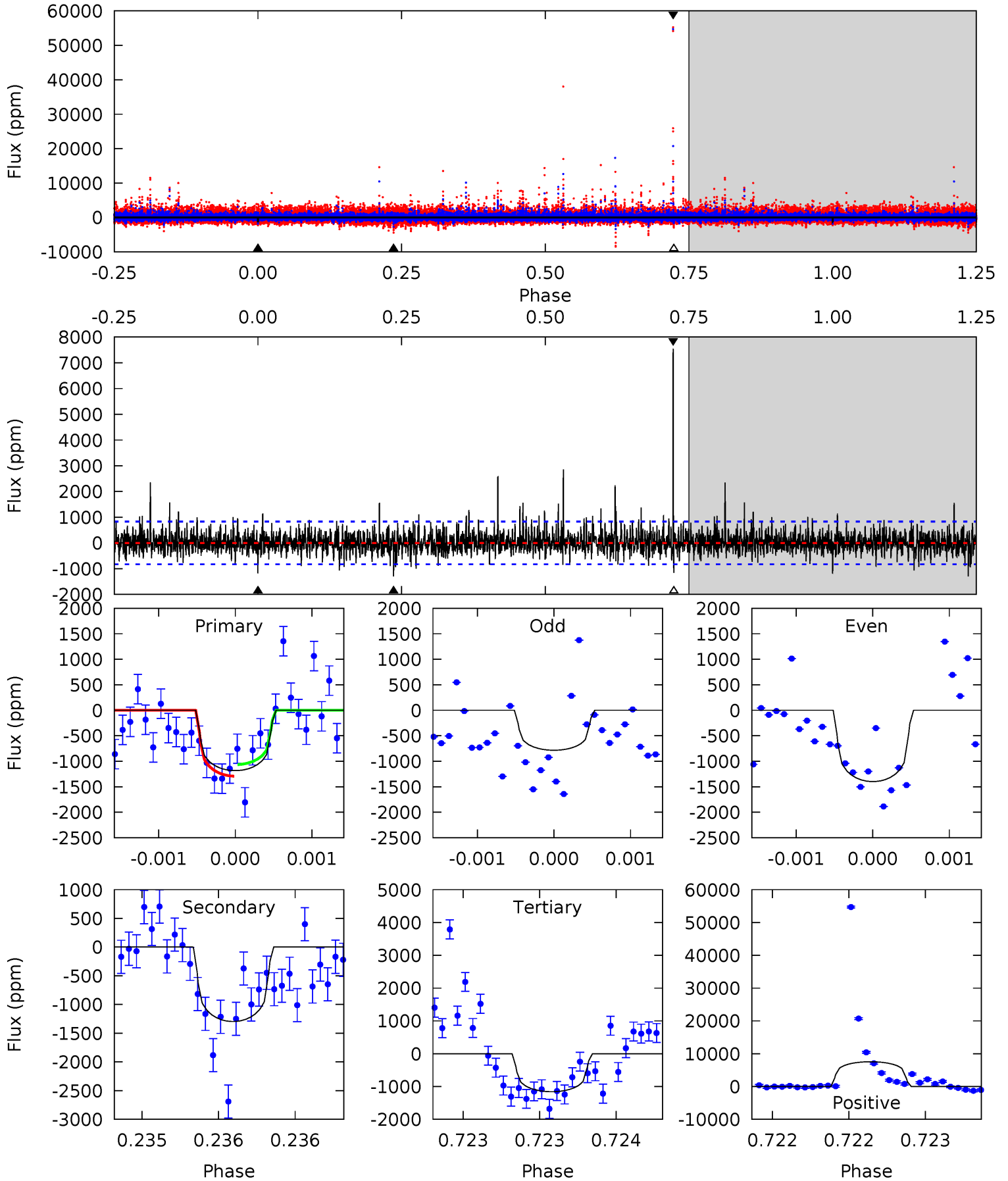
TCE 005607395-02 P=576.621441 Days  $T_0=247.250454$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-02, P = 576.592829 Days, E = 247.340574 Days

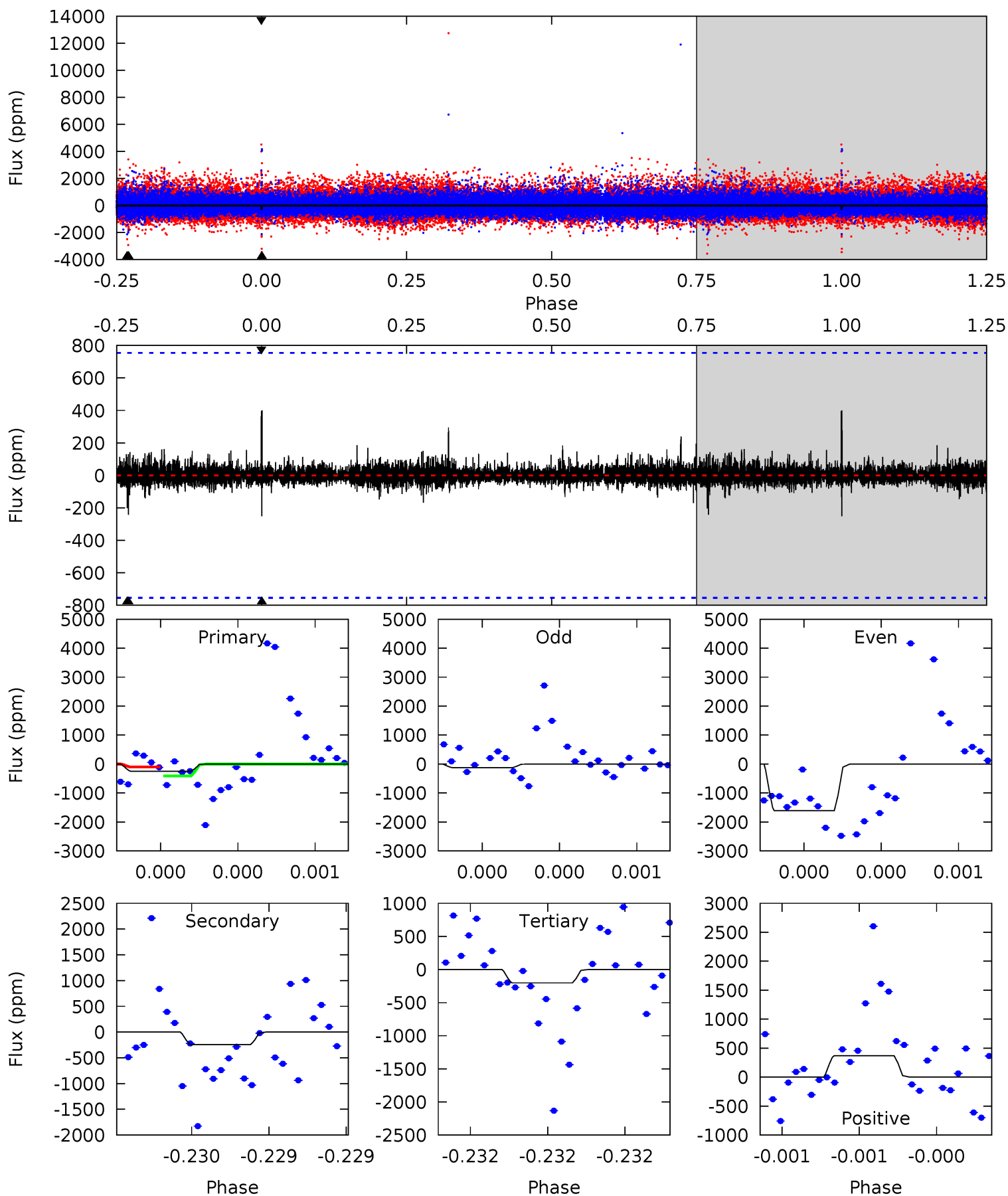
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.91	8.67	7.75	50.5	5.55	3.45	2.48	0.16	-42.6	0.92	-41.9	0.94	0.97	0.85	0.77



# Alt Model-Shift Uniqueness Test

005607395-02, P = 576.621441 Days, E = 247.250454 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
1.87	1.82	1.51	2.75	5.65	3.60	0.26	0.36	-0.88	0.30	-0.94	5.55	6.78	0.62	1.15





### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1296 \pm 149$	$5.66^{+5.65}_{-3.95}$	$162^{+4}_{-4}$	$2826^{+1261}_{-470}$	$27341^{+278307}_{-20784}$
Alt.	$-242 \pm 133$	$5.29^{+5.86}_{-3.77}$	$162^{+4}_{-4}$	$2265^{+929}_{-372}$	$4690^{+59900}_{-3877}$

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

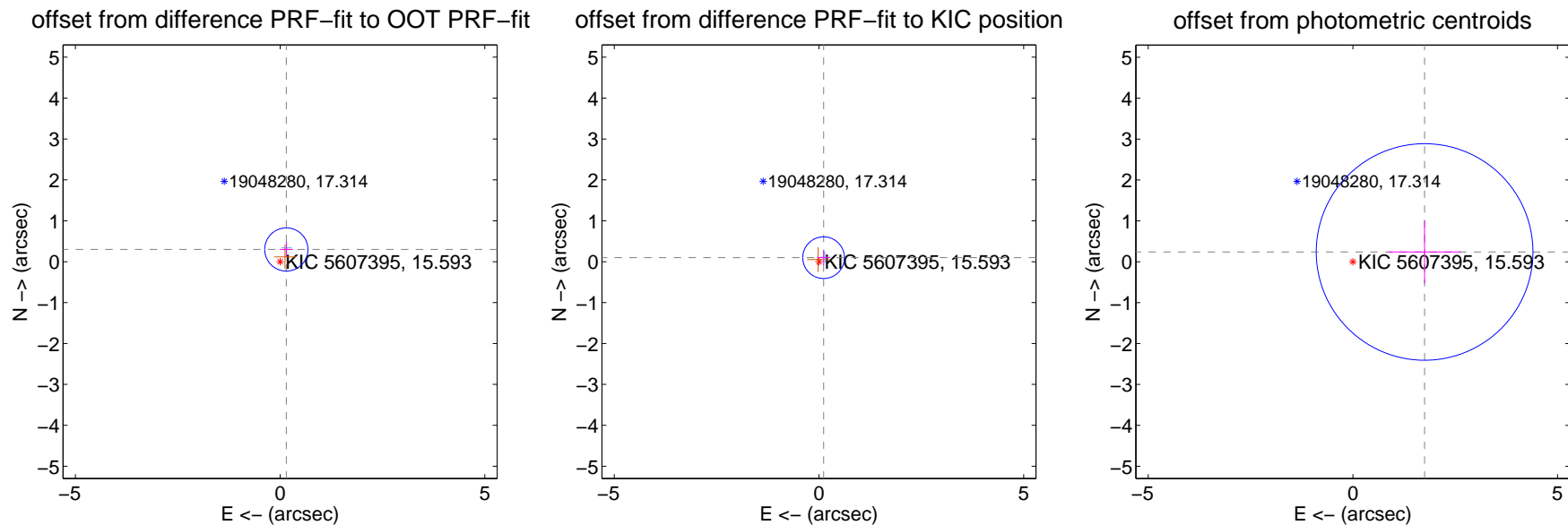
## DV Centroid Data

Supplemental centroid analysis for 005607395-02. Kepler magnitude: 15.59. Transit SNR 6.25

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.335 \pm 0.176$	1.91	$-0.152 \pm 0.162$	$0.299 \pm 0.179$
PRF-fit source offset from KIC position	$0.150 \pm 0.170$	0.88	$-0.113 \pm 0.162$	$0.098 \pm 0.179$
photometric centroid source offset	$1.77 \pm 0.88$	2.00	$-1.75 \pm 0.88$	$0.24 \pm 0.77$



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.

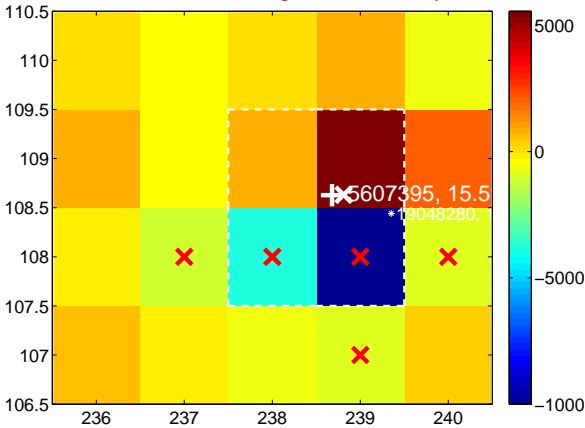
Q1 no difference image



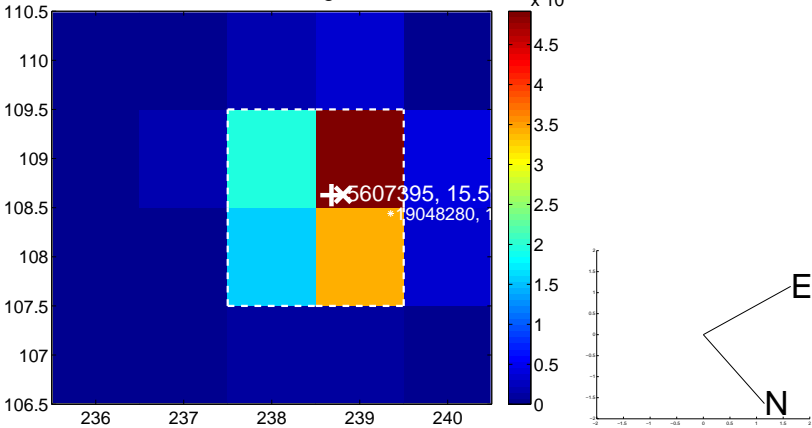
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



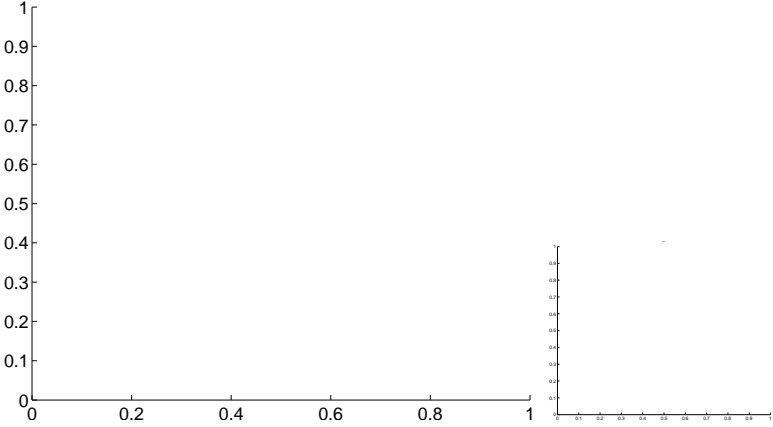
Q3 no OOT image



Q4 no difference image



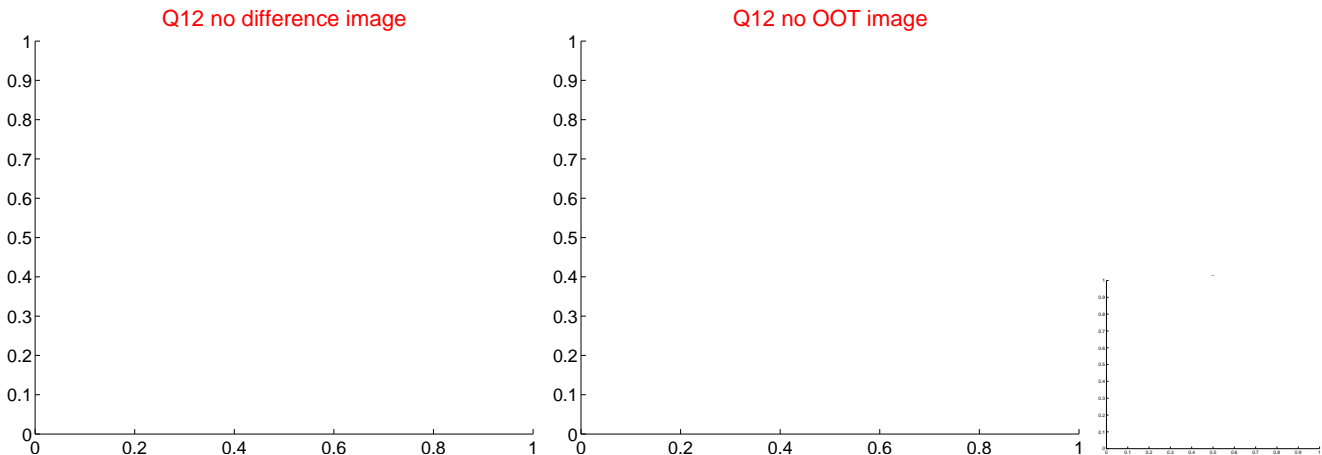
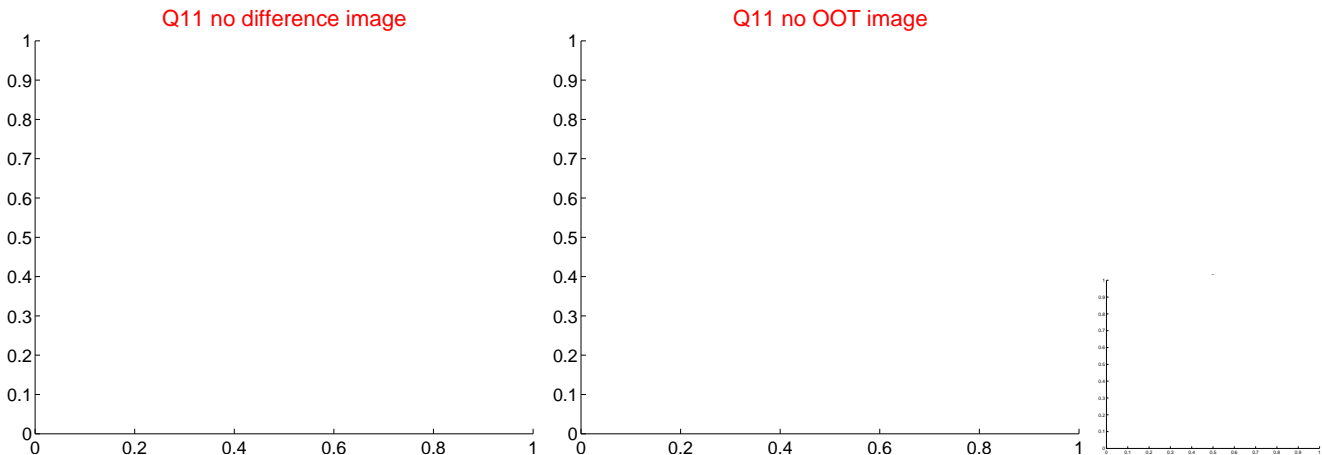
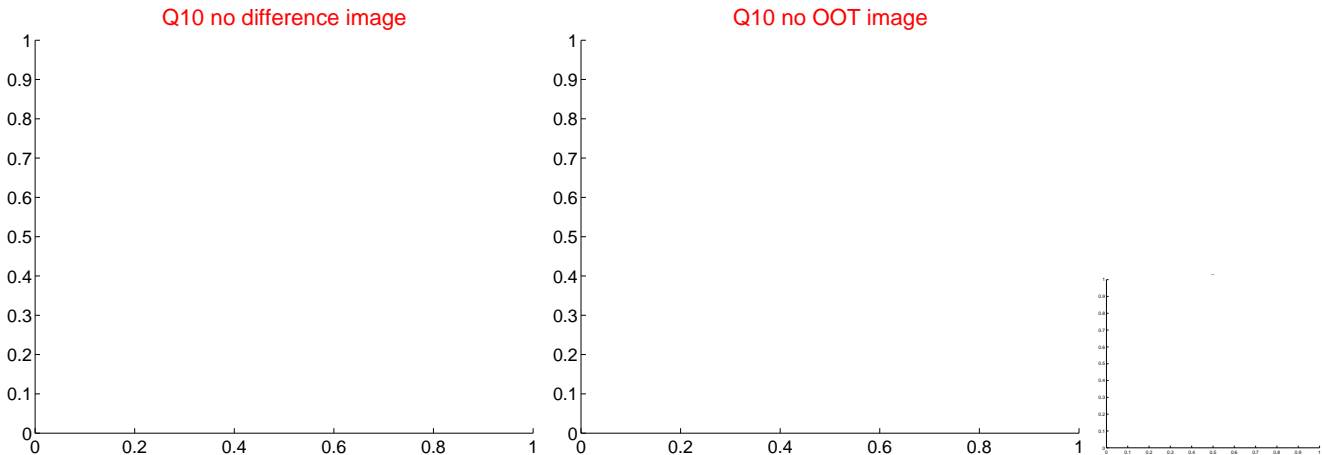
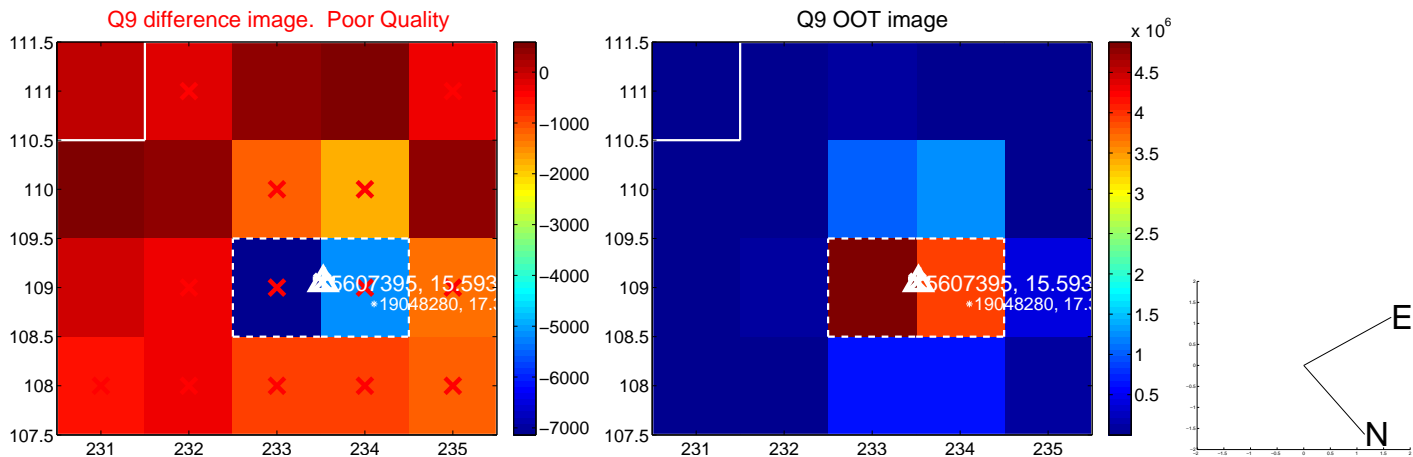
Q4 no OOT image



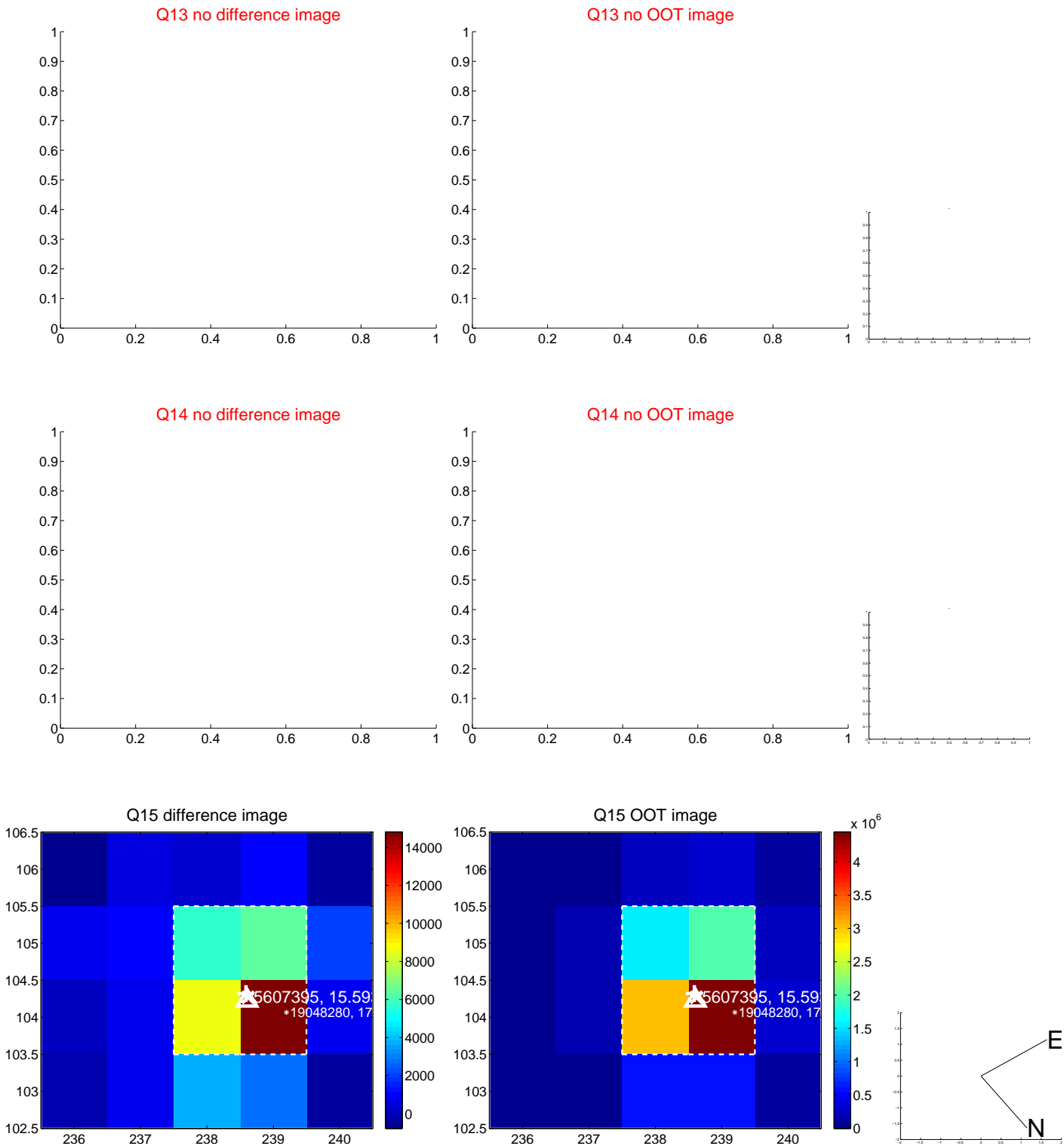
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



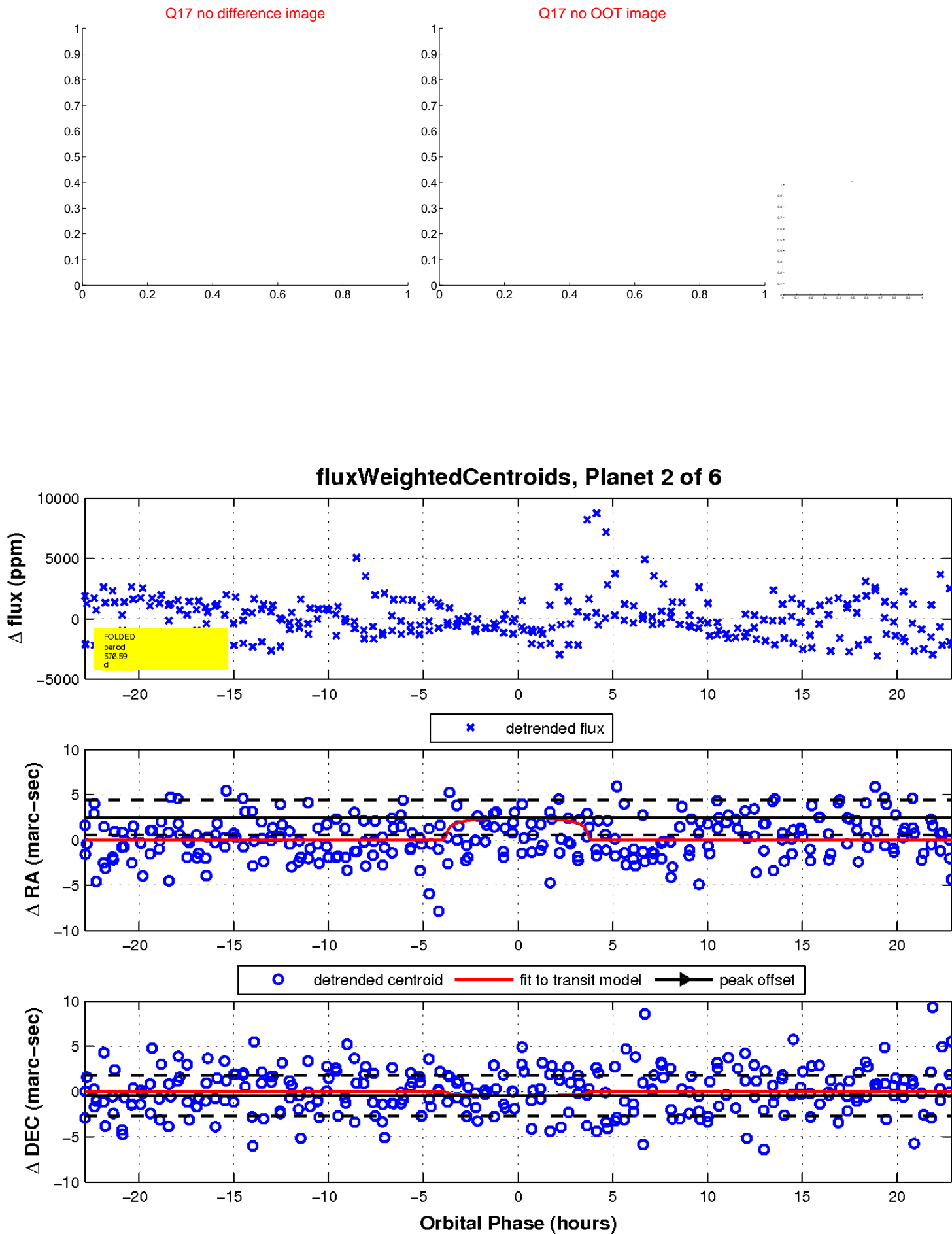
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

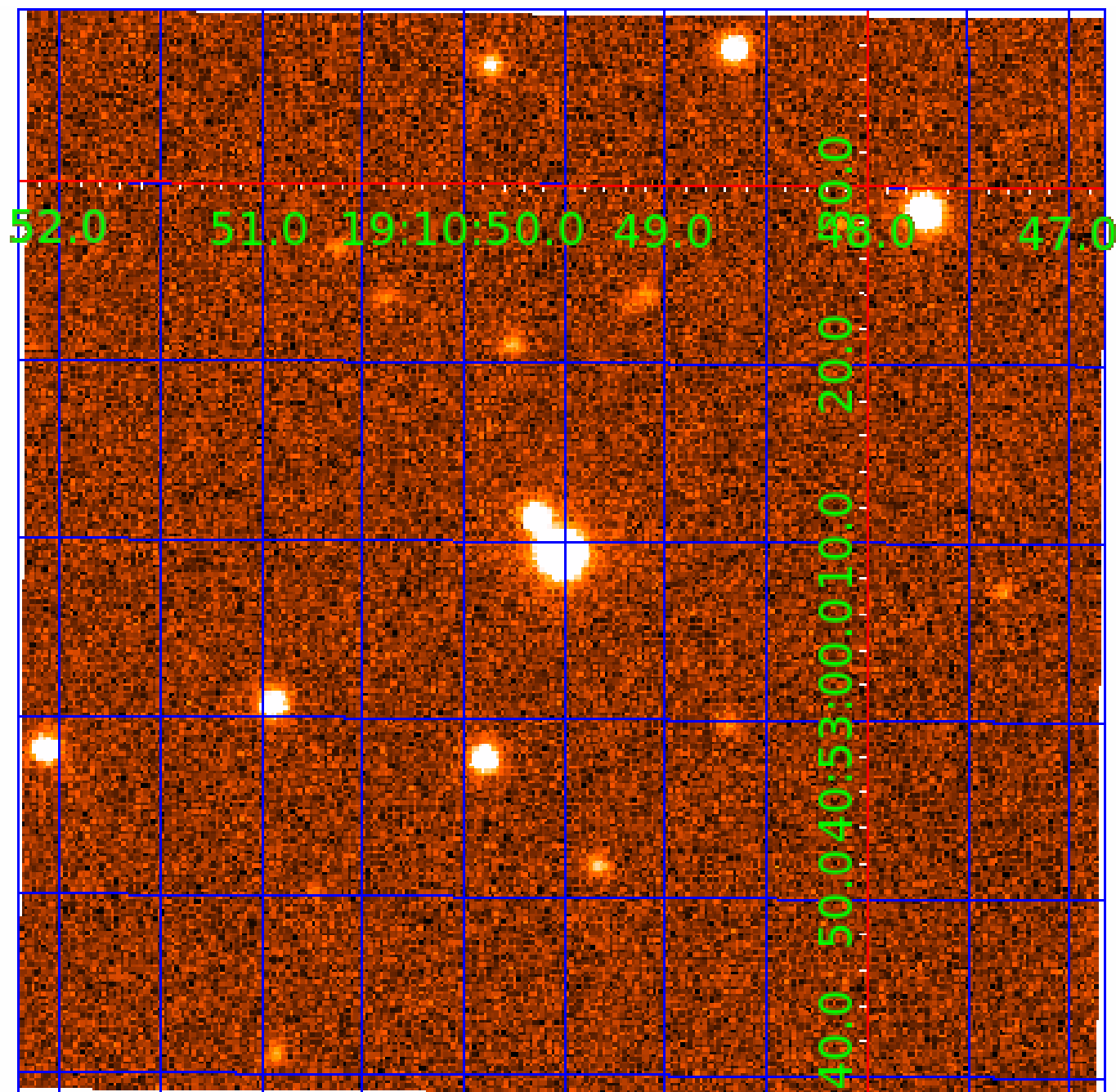


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005607395

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005607395-01	OBS	No	371.823809	298.440525	1855.6	6.178	13.0	7.3	0.52	3827	2.24	0.08
005607395-02	OBS	No	576.592829	247.340574	1510.8	7.724	14.0	6.3	0.52	3827	2.01	0.04
005607395-03	OBS	No	320.772295	245.866352	1890.5	3.939	10.7	7.3	0.52	3827	2.35	0.10
005607395-04	OBS	No	187.856620	132.517539	919.8	6.715	9.2	5.9	0.52	3827	1.86	0.19
005607395-05	OBS	No	423.799040	136.651567	746.3	3.099	11.0	3.8	0.52	3827	1.52	0.07
005607395-06	OBS	No	479.219145	153.706969	1603.7	9.113	10.3	6.5	0.52	3827	2.48	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005607395-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
005607395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
005607395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
005607395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

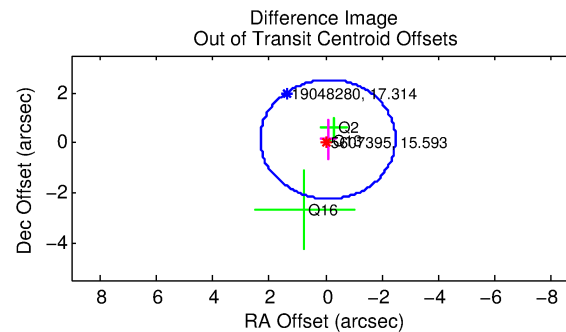
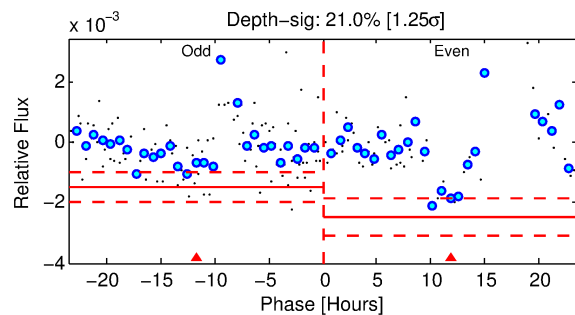
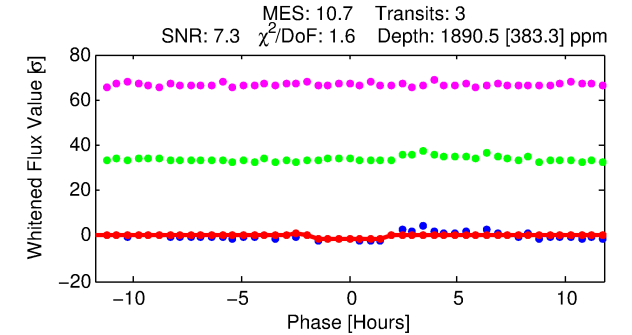
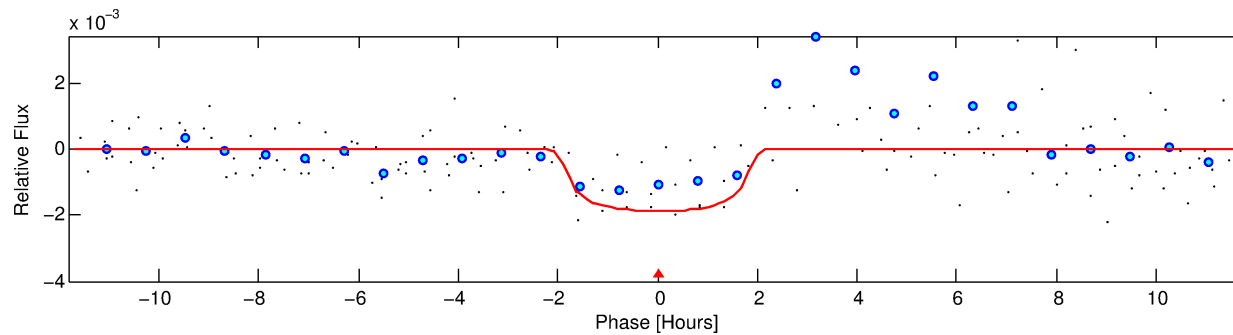
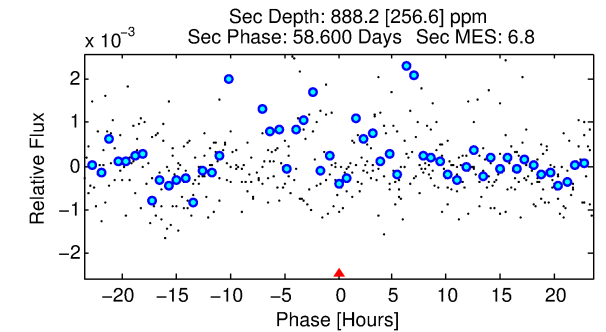
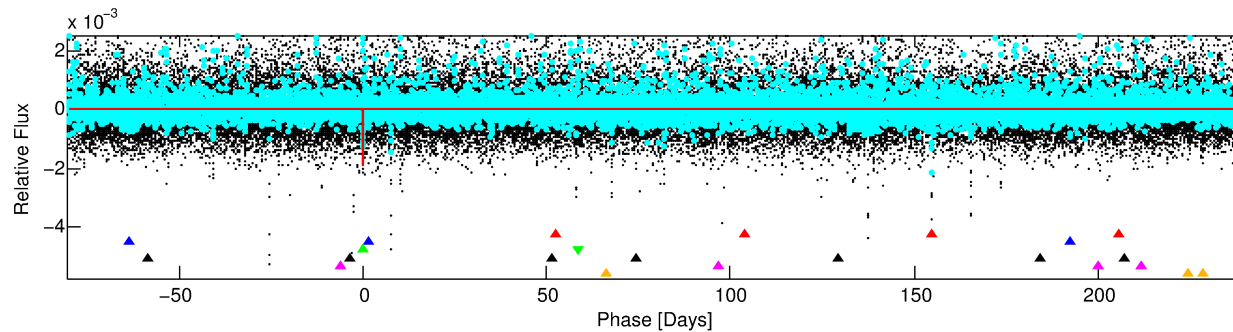
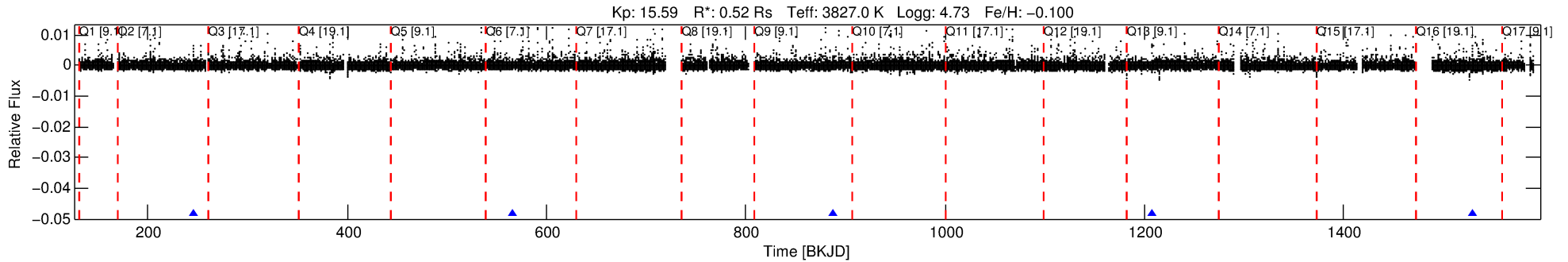
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005607395-03

No Significant Match Found

# DV One-Page Summary

KIC: 5607395 Candidate: 3 of 6 Period: 320.772 d



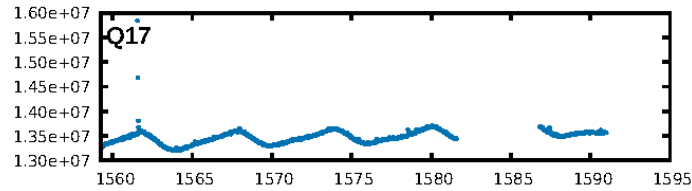
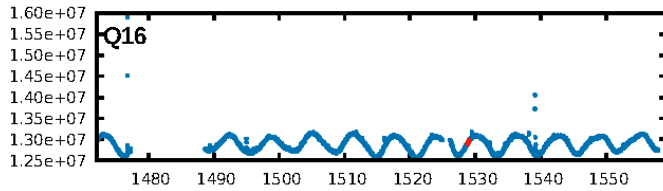
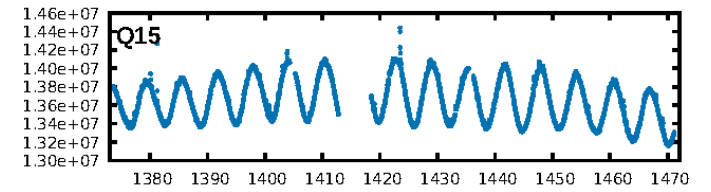
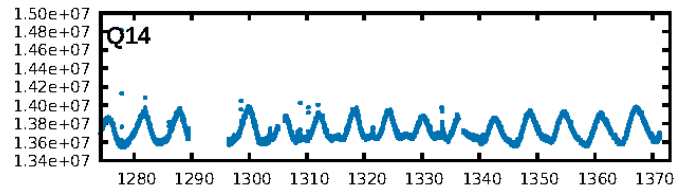
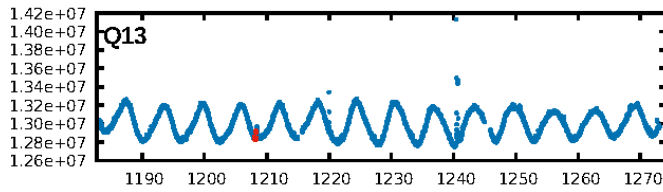
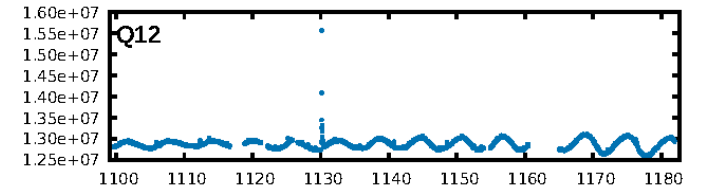
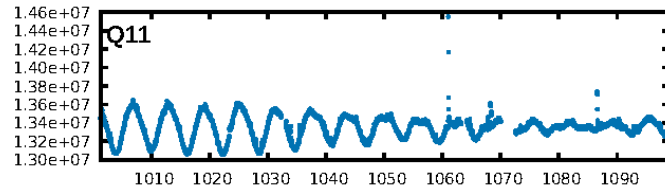
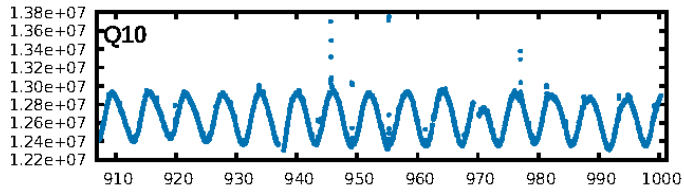
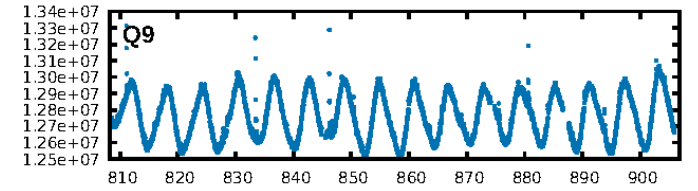
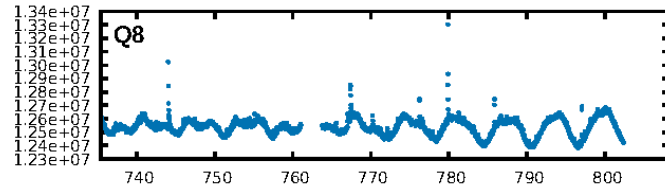
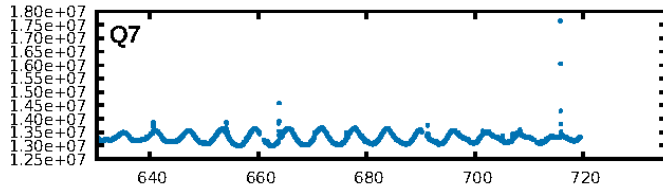
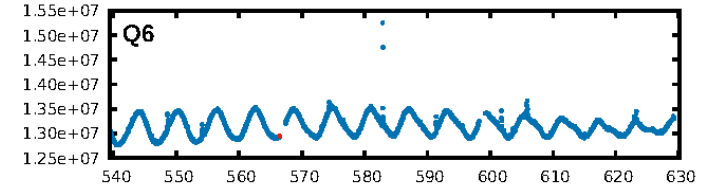
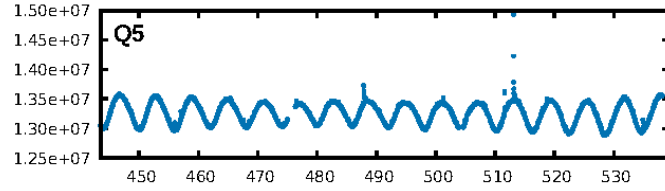
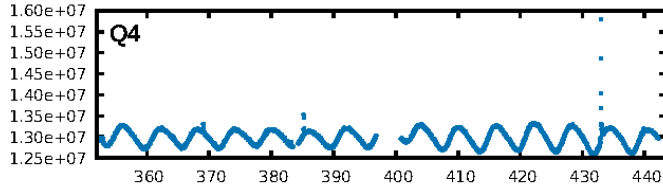
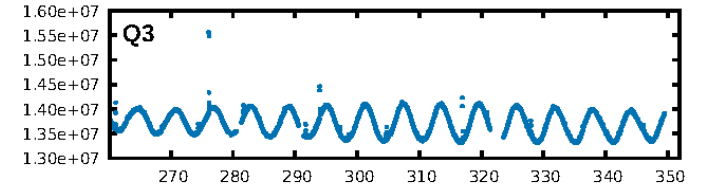
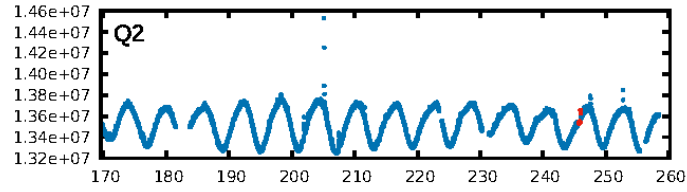
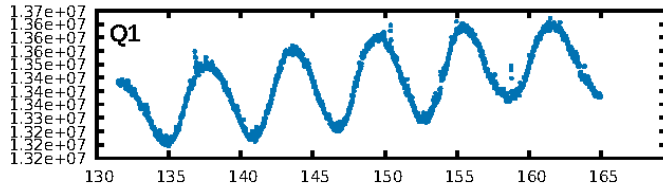
## DV Fit Results:

Period = 320.77230 [0.00521] d  
Epoch = 245.8664 [0.0179] BKJD  
Rp/R\* = 0.0413 [0.0431]  
a/R\* = 533.97 [2405.15]  
b = 0.59 [5.00]  
Seff = 0.09 [0.01]  
Teq = 141 [4] K  
Rp = 2.35 [2.45] Re  
a = 0.7410 [0.0382] AU  
Ag = 48738.13 [102538.74] [0.48σ]  
Teffp = 3249 [1709] K [1.82σ]

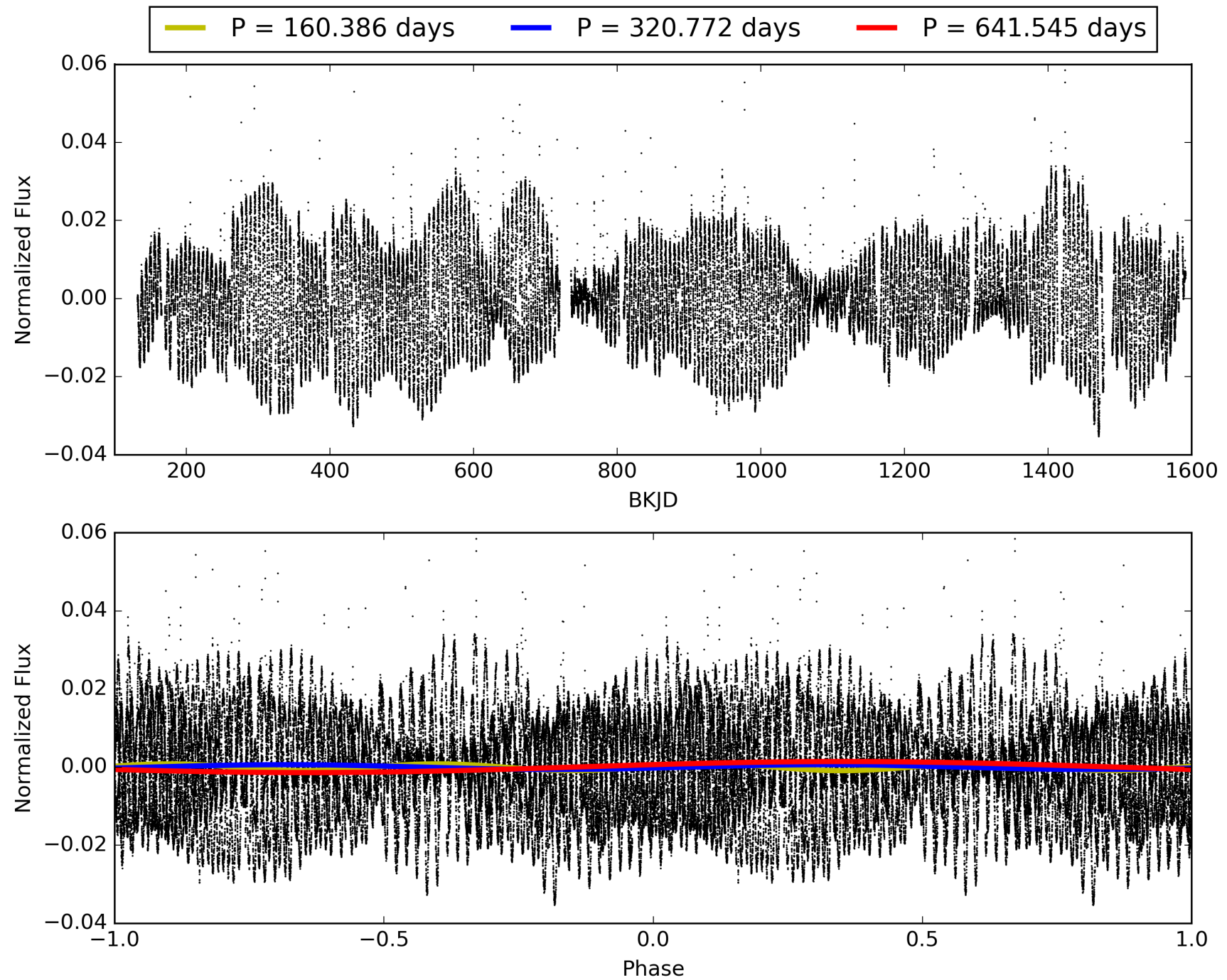
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [409.74σ]  
LongPeriod-sig: 100.0% [167.21σ]  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 70.7%  
Bootstrap-pfa: 9.03e-11  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -25.69  
Centroid-sig: 45.6%  
Centroid-so: 0.940 arcsec [0.96σ]  
OotOffset-rm: 0.158 arcsec [0.20σ]  
KicOffset-rm: 0.082 arcsec [0.15σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005607395-03, PDC Light Curves

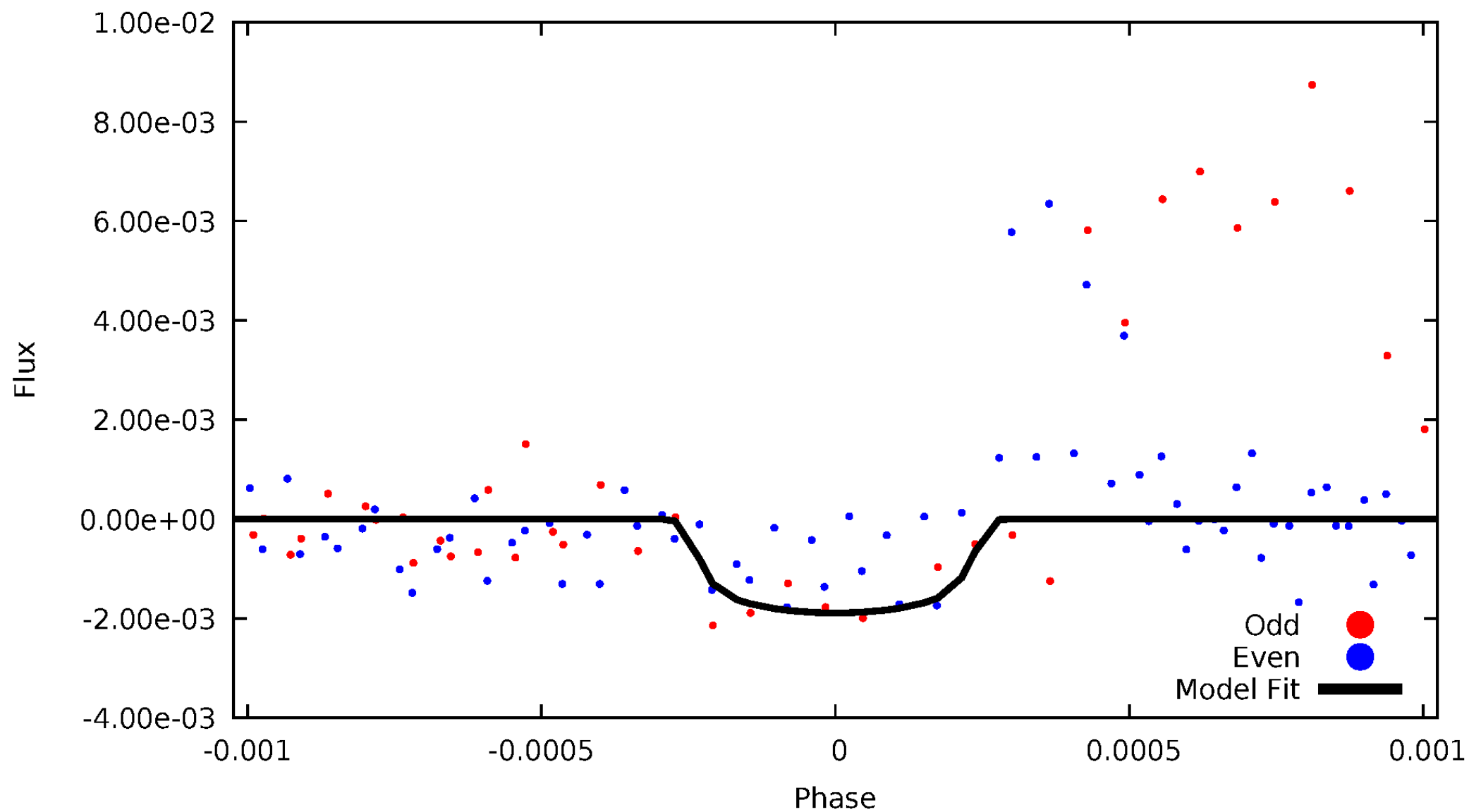


TCE 005607395-03



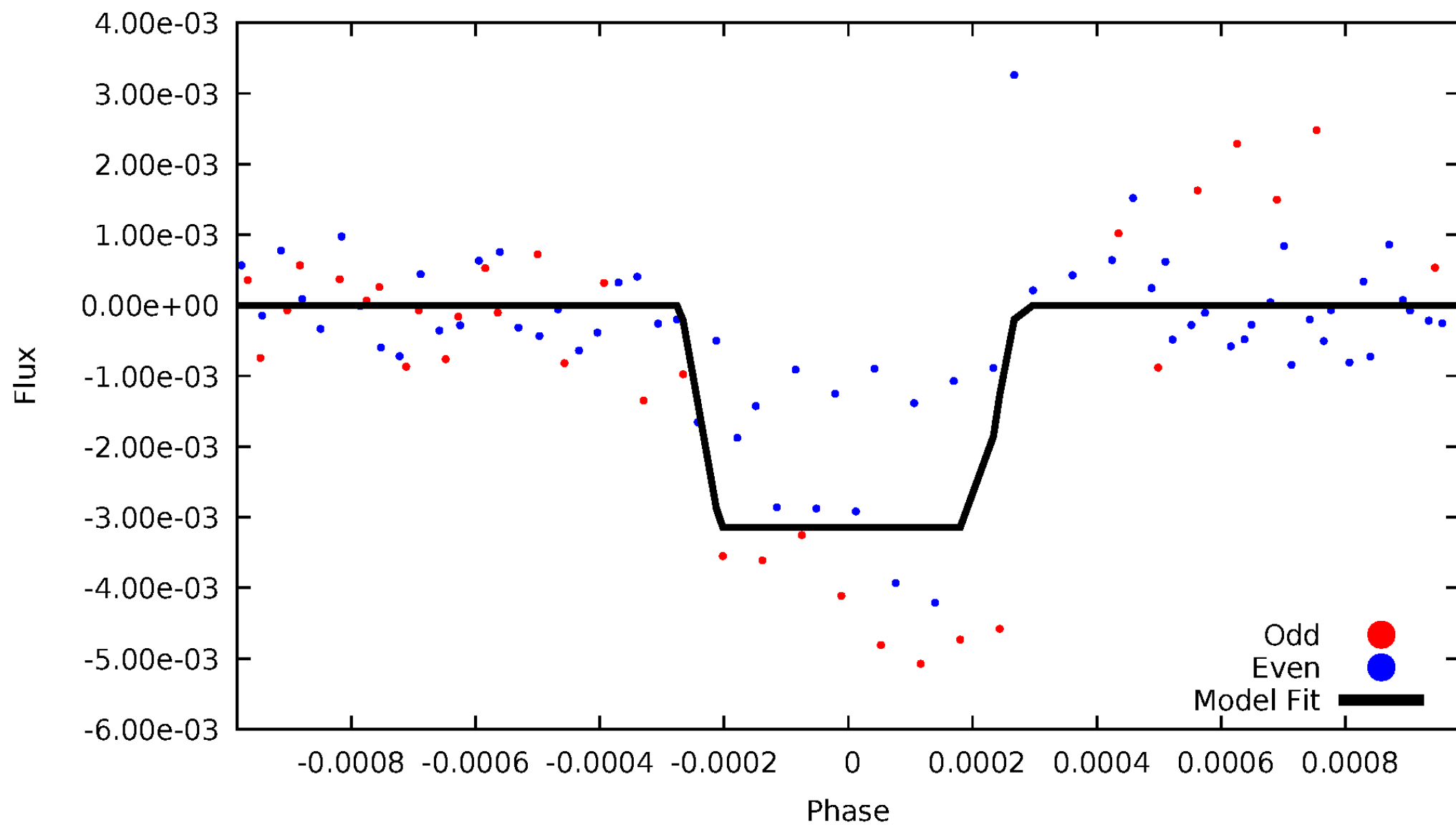
# DV Odd/Even

TCE 005607395-03



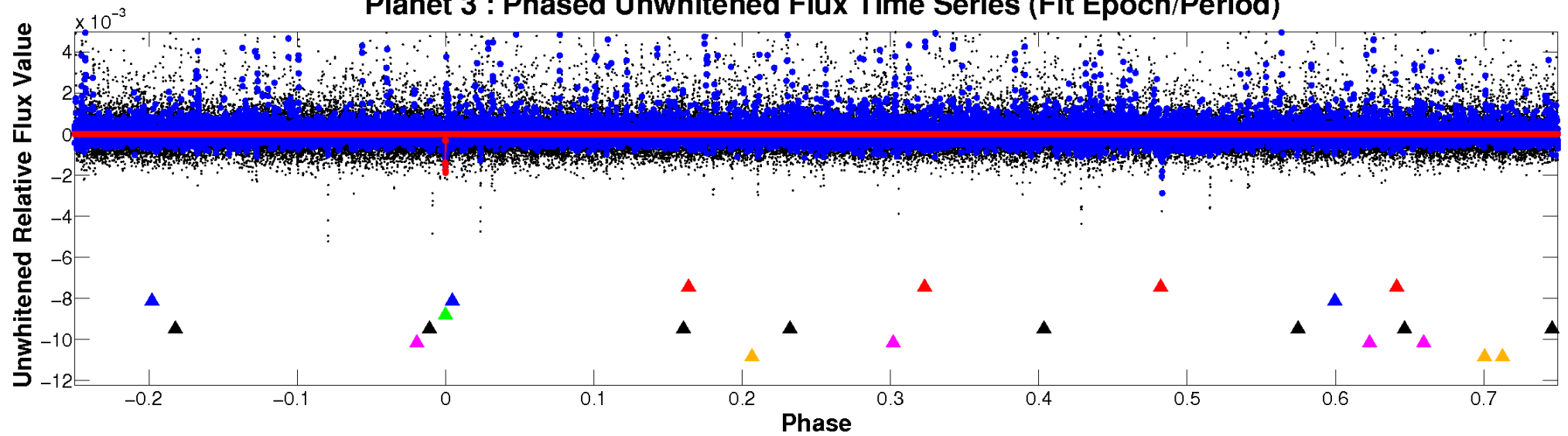
# ALT Odd/Even

TCE 005607395-03

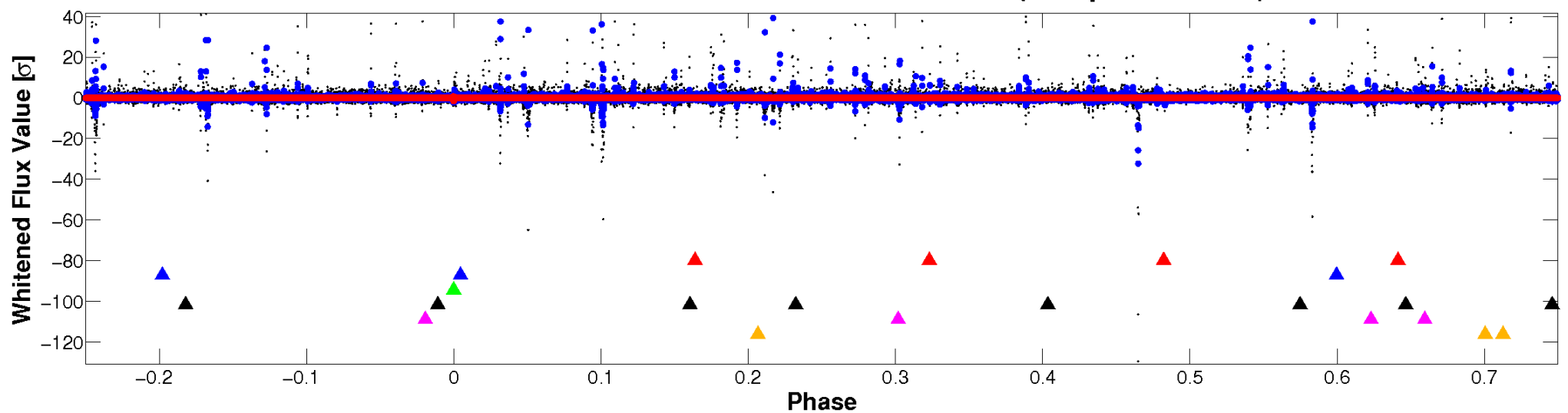


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

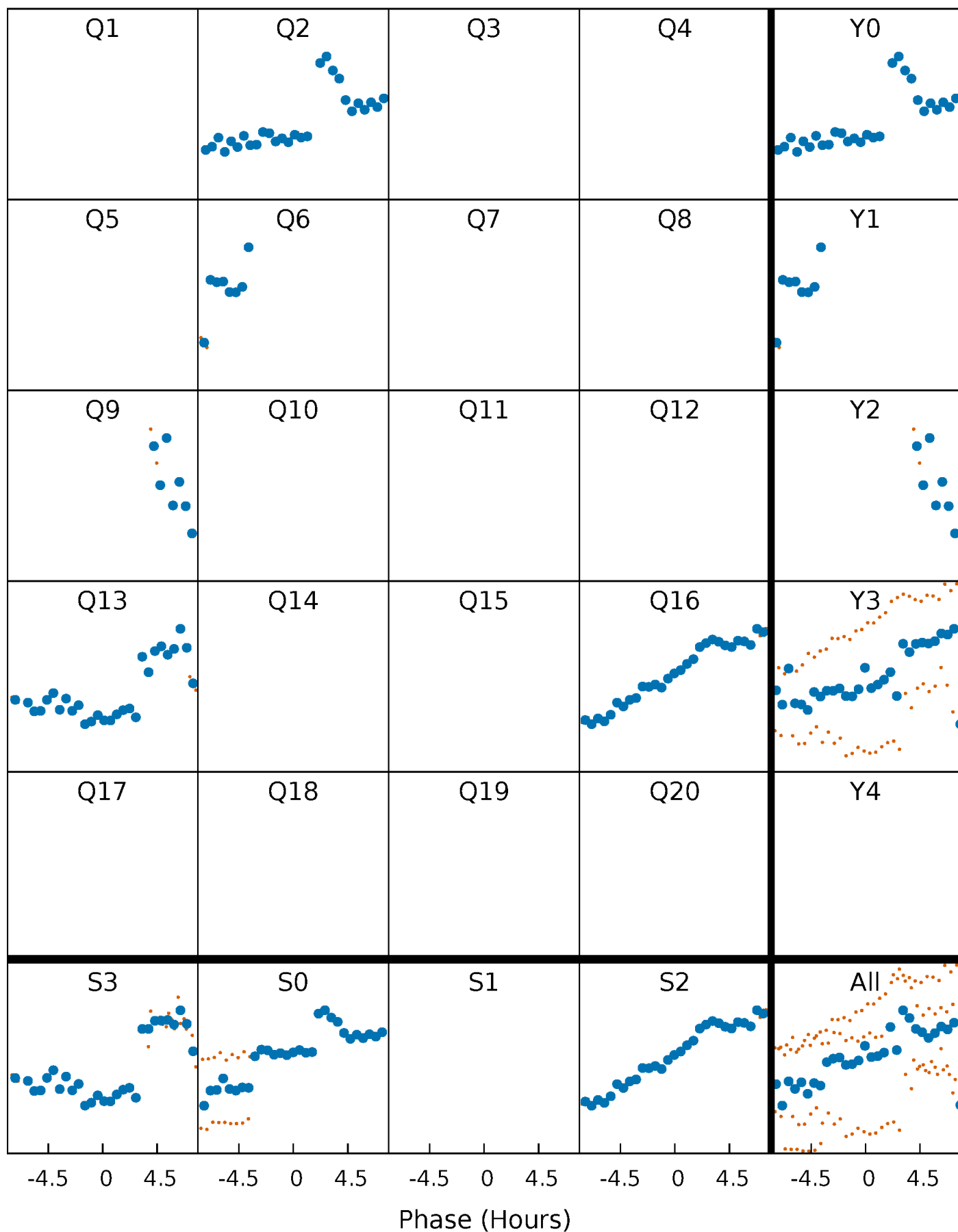


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

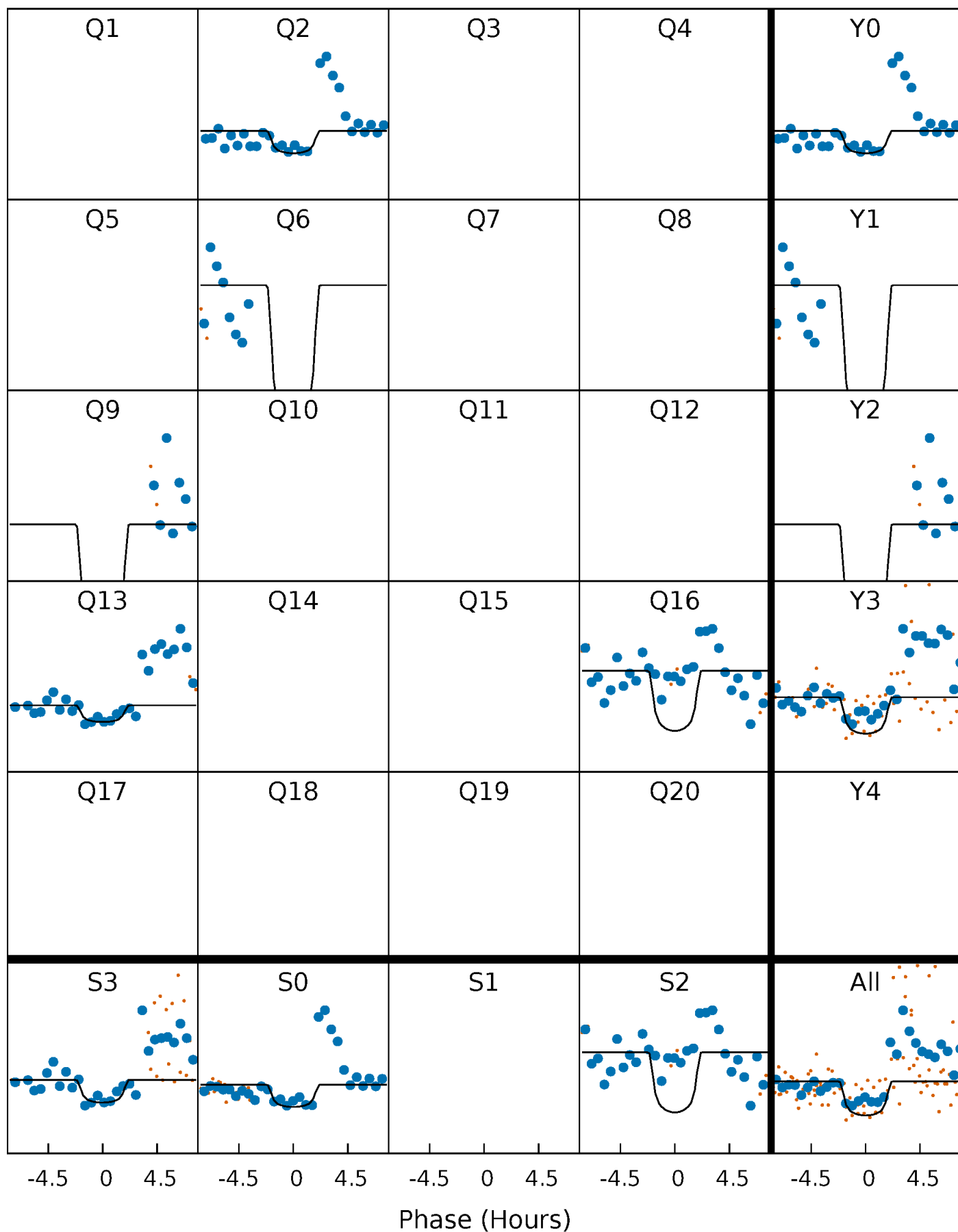
TCE 005607395-03     $P=320.772295$  Days     $T_0=245.866352$  (BKJD)





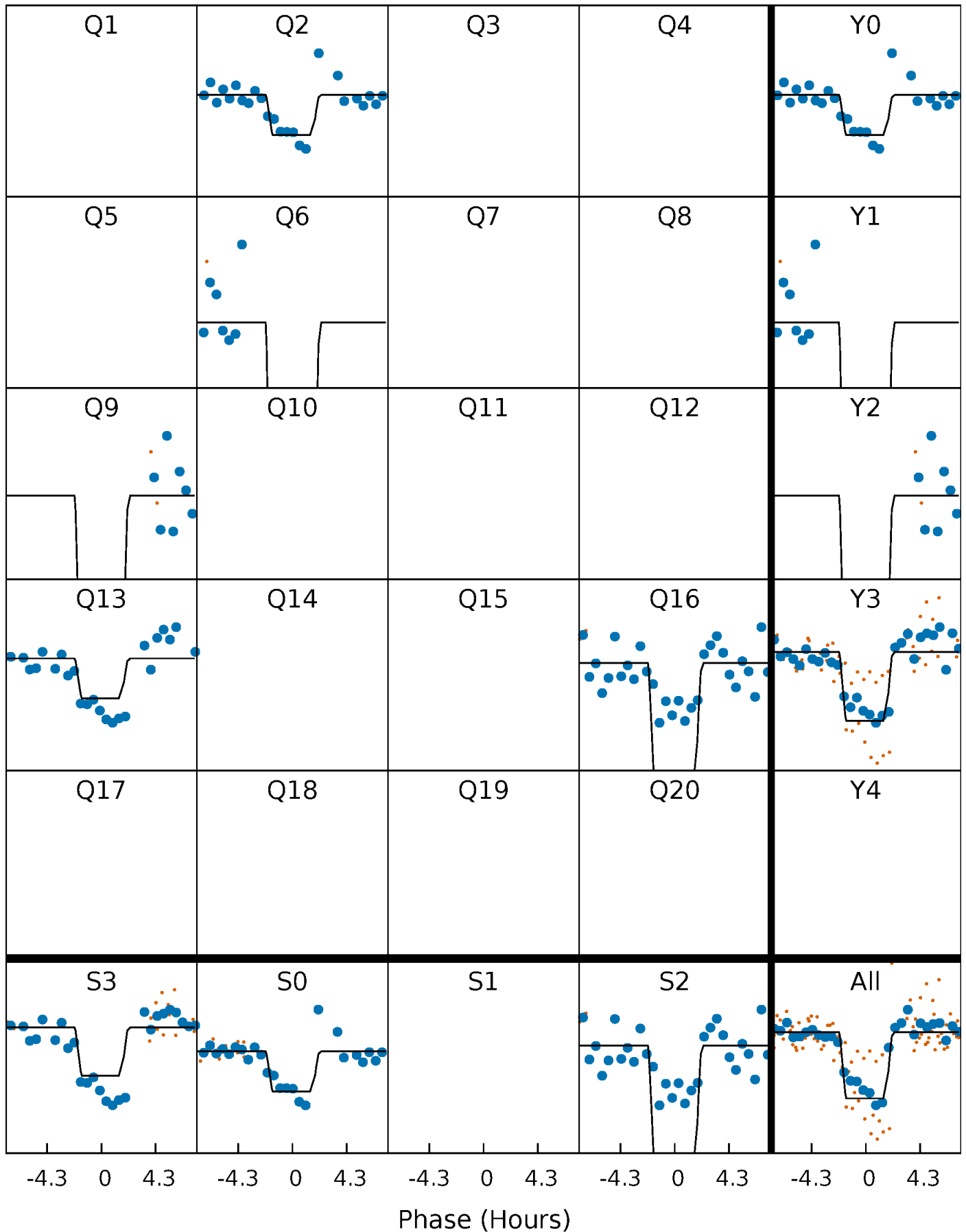
# DV Quarter-Phased Transit Curves

TCE 005607395-03 P=320.772295 Days  $T_0=245.866352$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

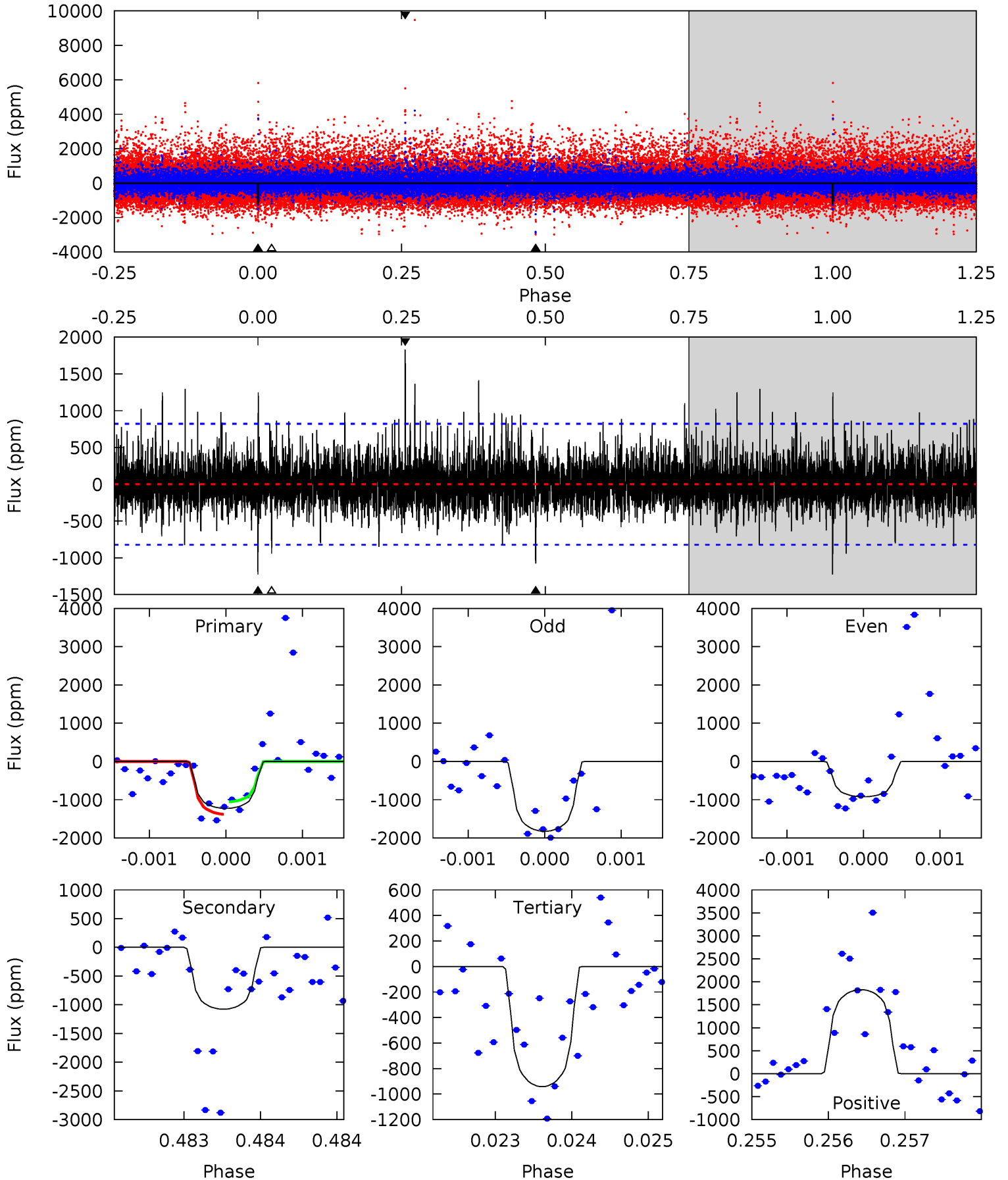
TCE 005607395-03 P=320.768176 Days  $T_0=245.876835$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-03, P = 320.772295 Days, E = 245.866352 Days

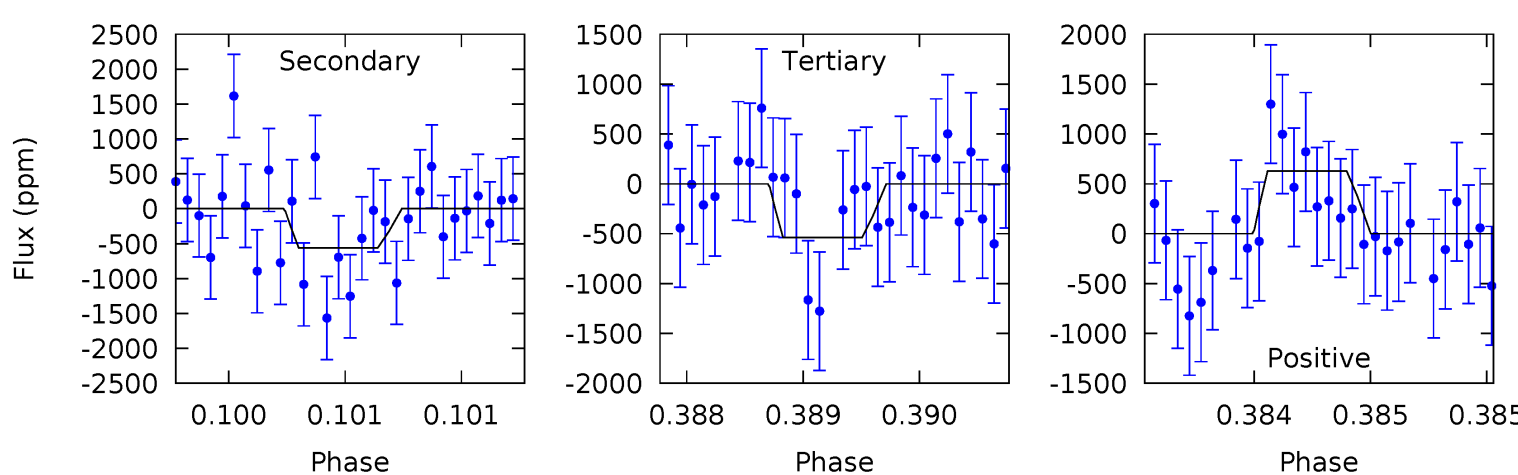
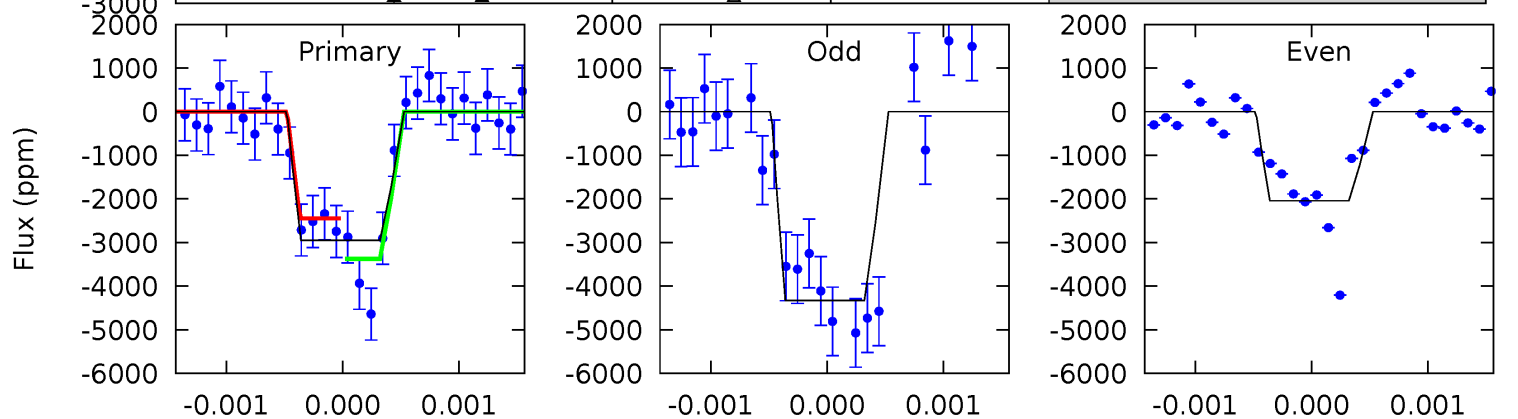
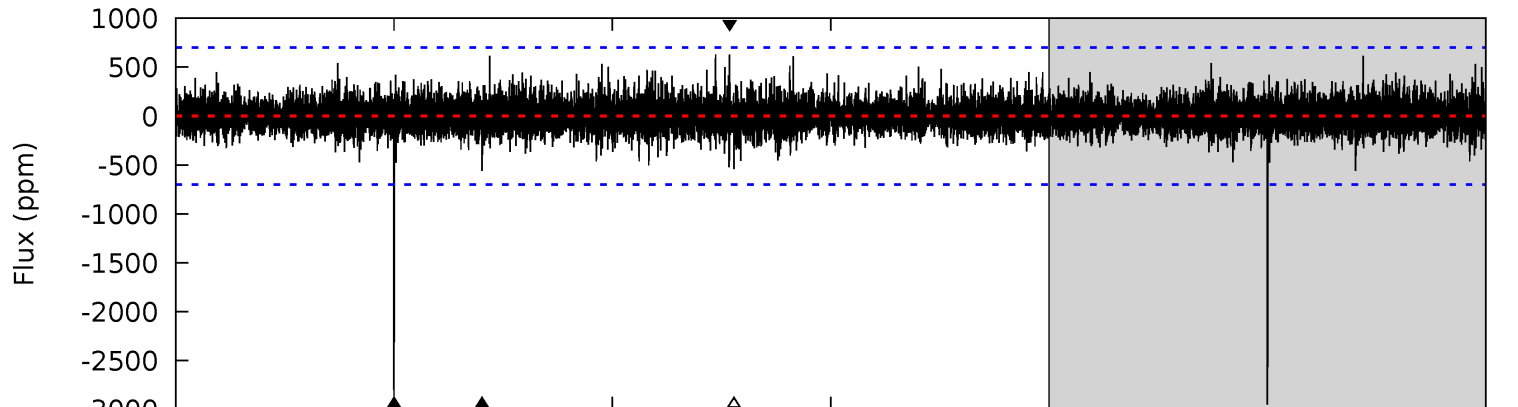
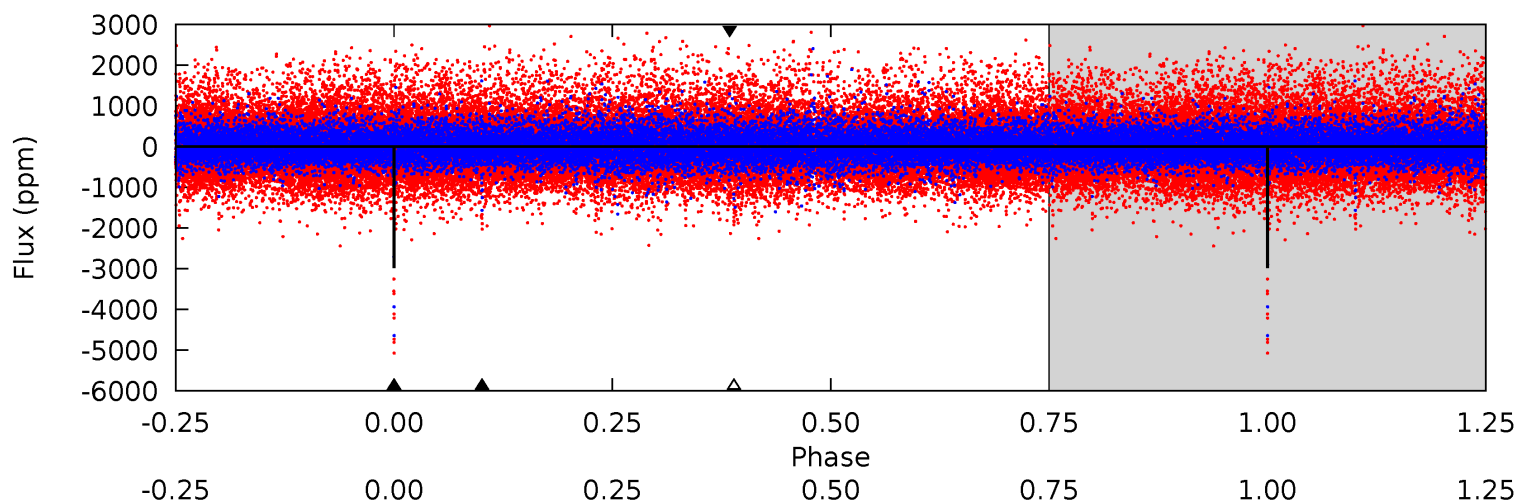
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.27	7.26	6.35	12.3	5.55	3.44	1.62	1.92	-4.07	0.91	-5.08	1.92	0.77	0.60	1.10



# Alt Model-Shift Uniqueness Test

005607395-03, P = 320.768176 Days, E = 245.876835 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
23.4	4.44	4.27	4.99	5.55	3.45	0.96	19.1	18.4	0.17	-0.55	8.83	0.92	0.18	3.73



### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1076 \pm 148$	$2.70^{+2.45}_{-1.65}$	$197^{+5}_{-4}$	$3380^{+1349}_{-578}$	$43371^{+244241}_{-31293}$
Alt.	$-561 \pm 126$	$3.44^{+2.39}_{-2.00}$	$197^{+5}_{-4}$	$2866^{+844}_{-377}$	$14142^{+65674}_{-9414}$

$T_{max}$  = 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

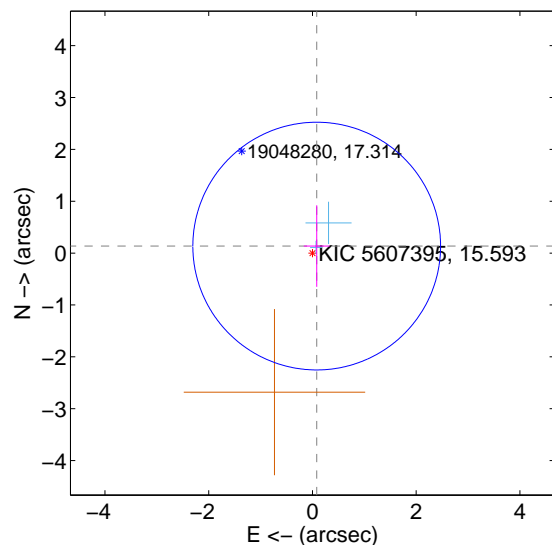
Supplemental centroid analysis for 005607395-03. Kepler magnitude: 15.59. Transit SNR 7.30

There are 2 quarters with good PRF difference image offsets

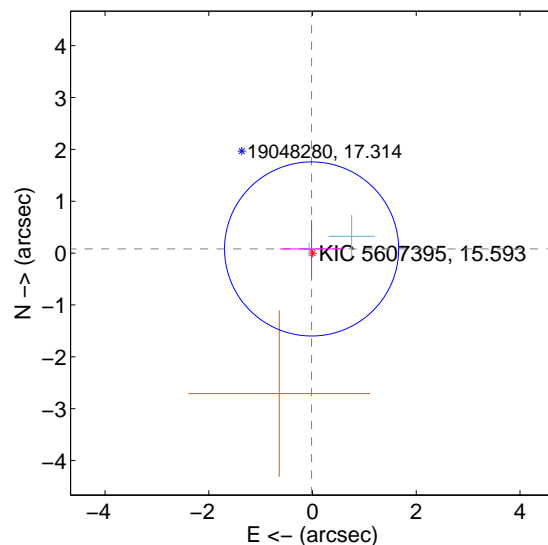
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.158 \pm 0.796$	0.20	$-0.082 \pm 0.249$	$0.135 \pm 0.786$
PRF-fit source offset from KIC position	$0.082 \pm 0.559$	0.15	$0.018 \pm 0.606$	$0.080 \pm 0.557$
photometric centroid source offset	$0.94 \pm 0.98$	0.96	$-0.93 \pm 0.99$	$-0.13 \pm 0.83$

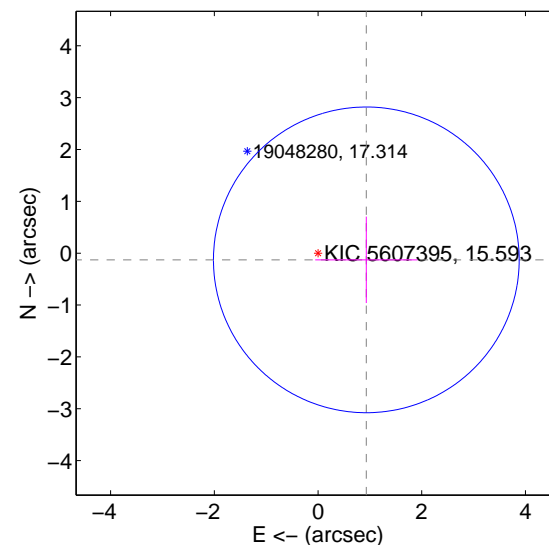
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

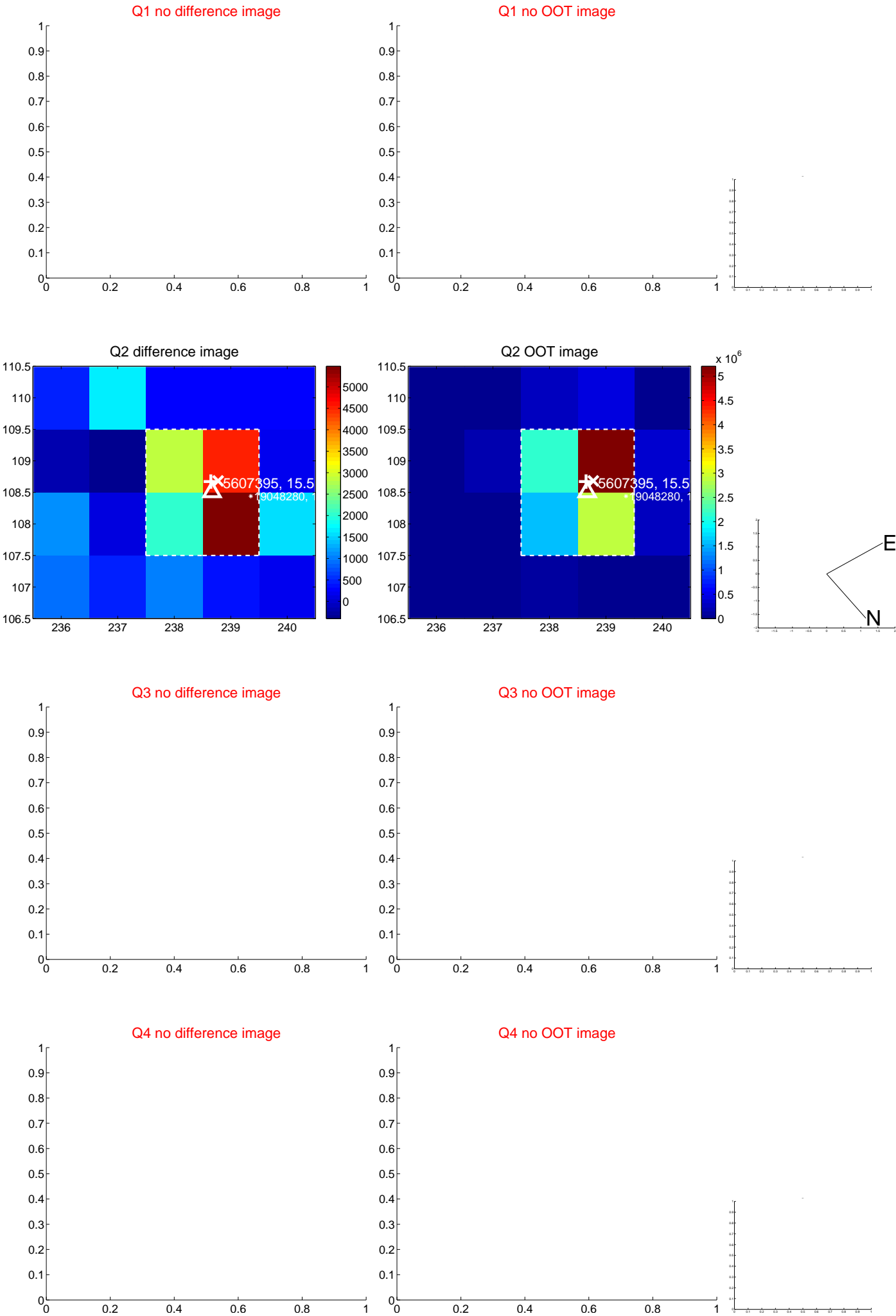


offset from photometric centroids



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.

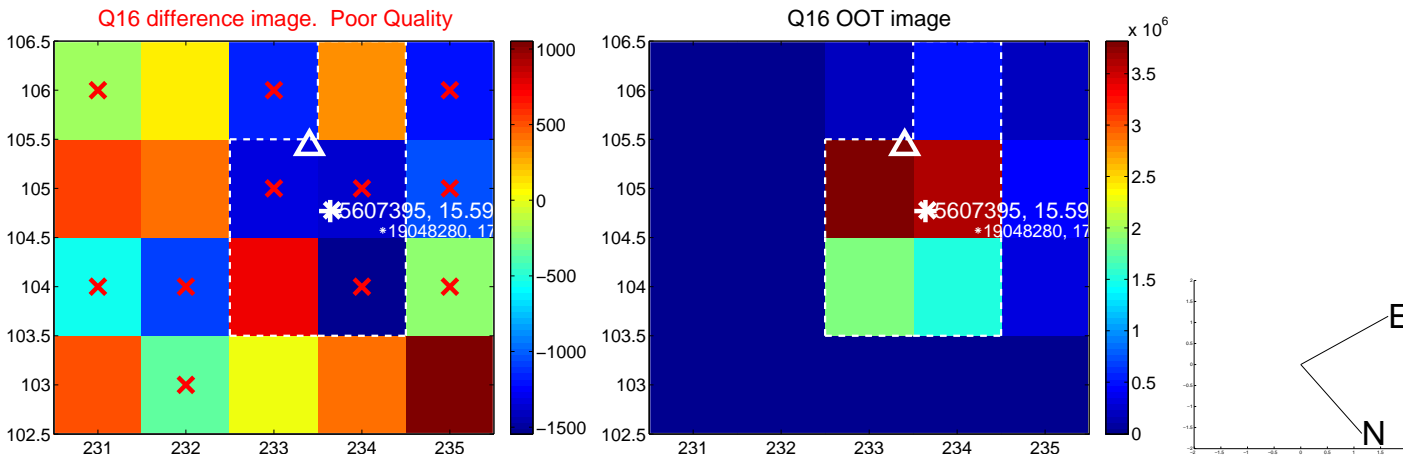
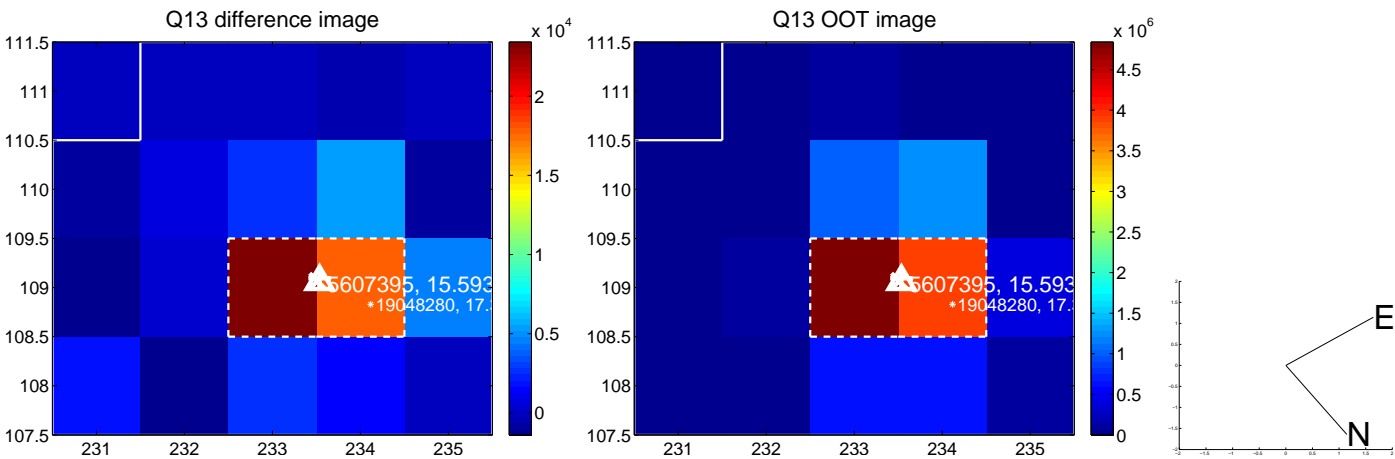




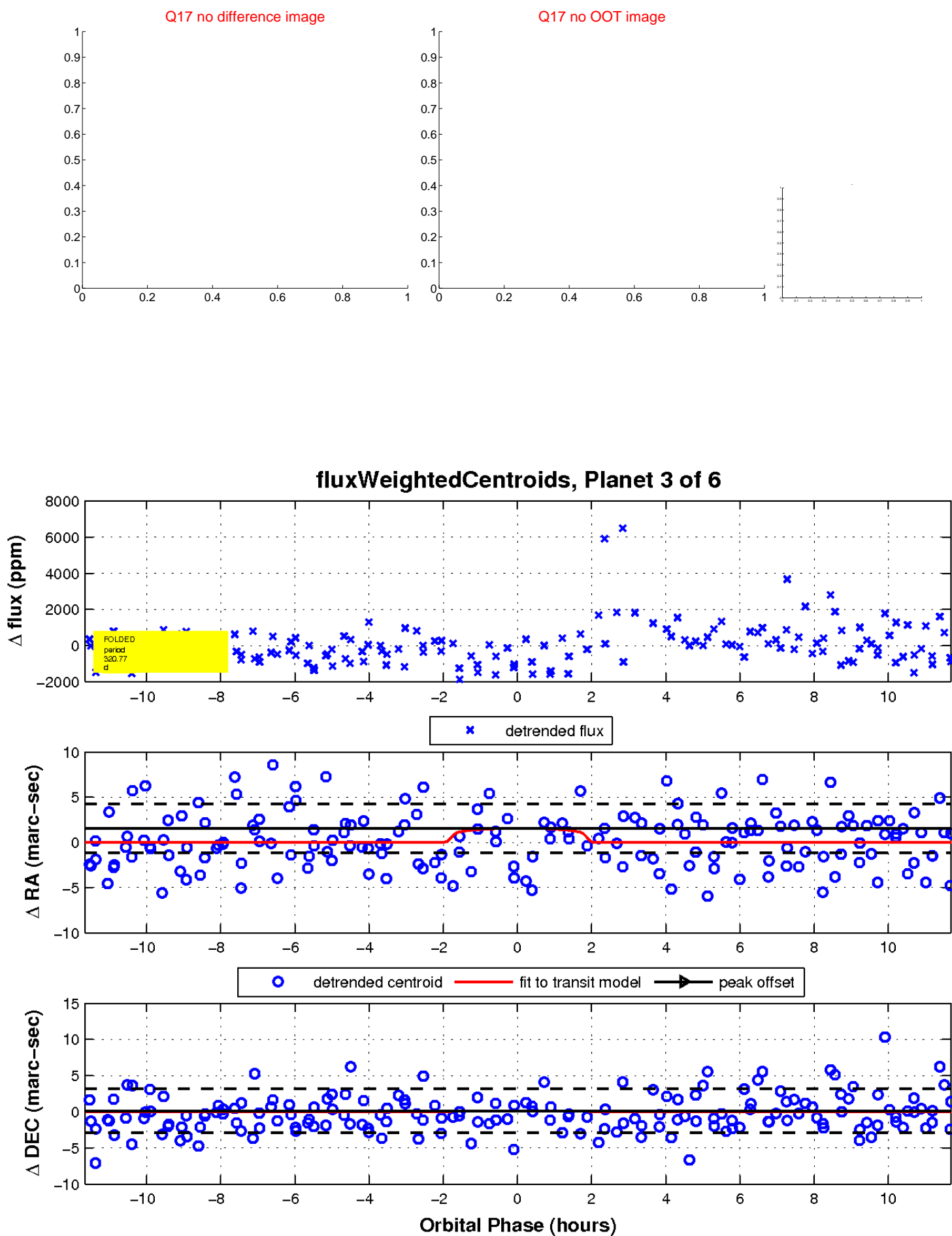
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

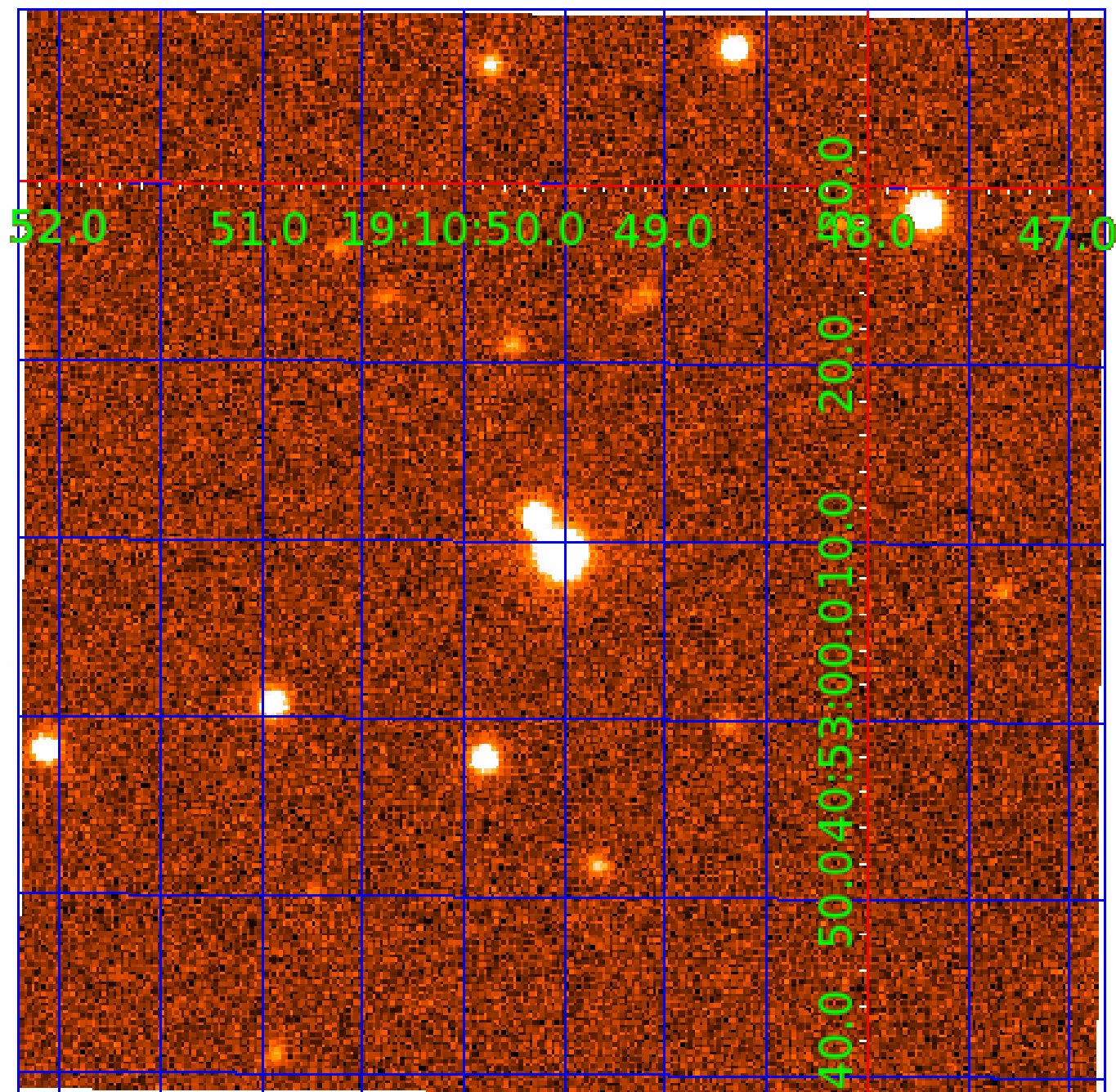


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005607395

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005607395-01	OBS	No	371.823809	298.440525	1855.6	6.178	13.0	7.3	0.52	3827	2.24	0.08
005607395-02	OBS	No	576.592829	247.340574	1510.8	7.724	14.0	6.3	0.52	3827	2.01	0.04
005607395-03	OBS	No	320.772295	245.866352	1890.5	3.939	10.7	7.3	0.52	3827	2.35	0.10
005607395-04	OBS	No	187.856620	132.517539	919.8	6.715	9.2	5.9	0.52	3827	1.86	0.19
005607395-05	OBS	No	423.799040	136.651567	746.3	3.099	11.0	3.8	0.52	3827	1.52	0.07
005607395-06	OBS	No	479.219145	153.706969	1603.7	9.113	10.3	6.5	0.52	3827	2.48	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005607395-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
005607395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
005607395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
005607395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

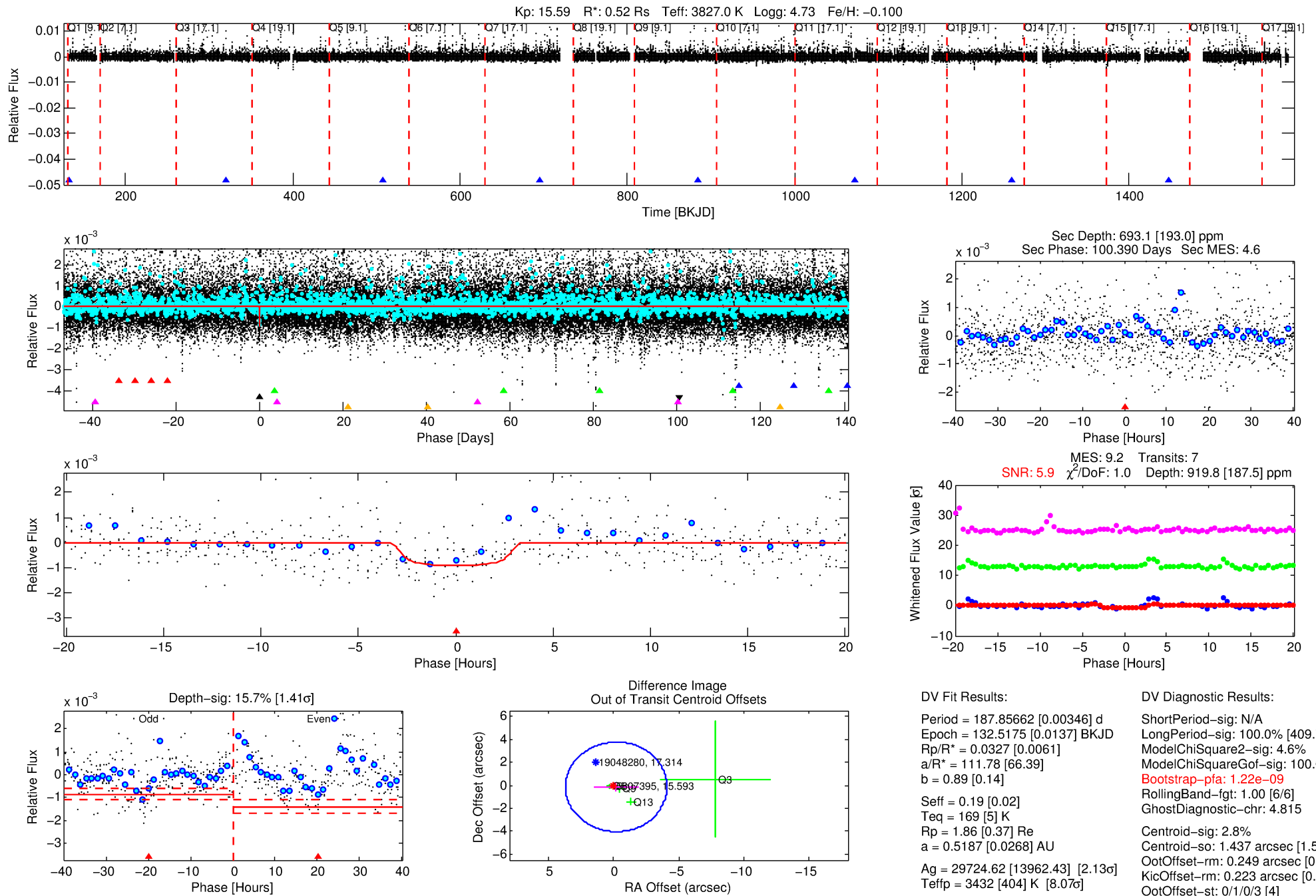
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005607395-04

No Significant Match Found

# DV One-Page Summary

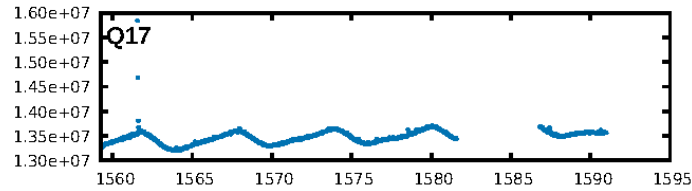
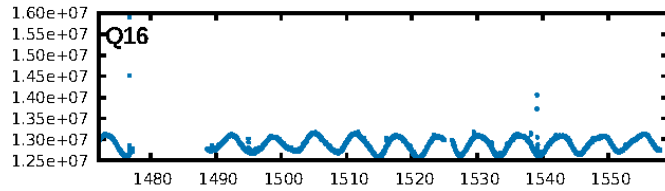
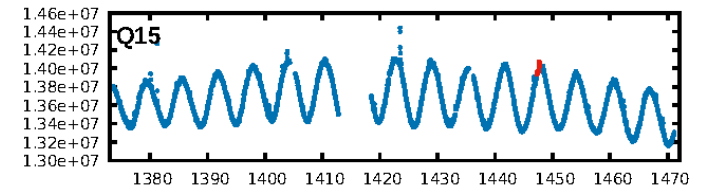
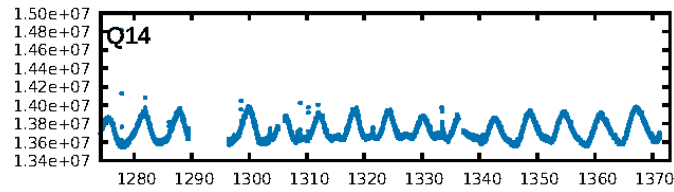
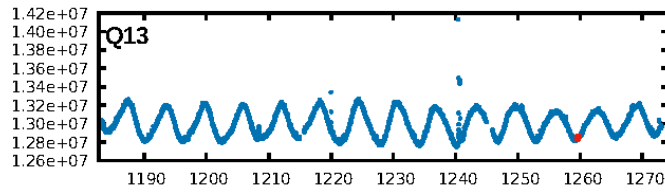
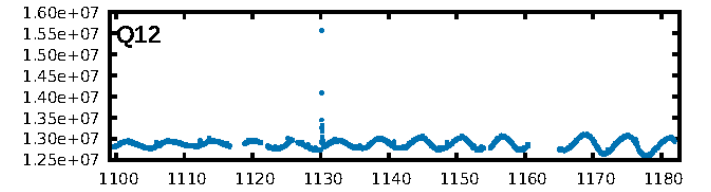
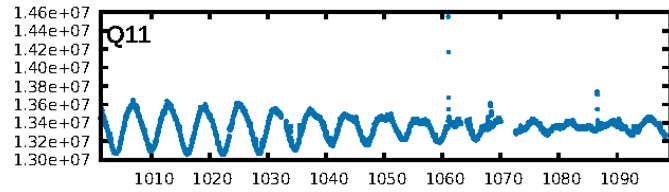
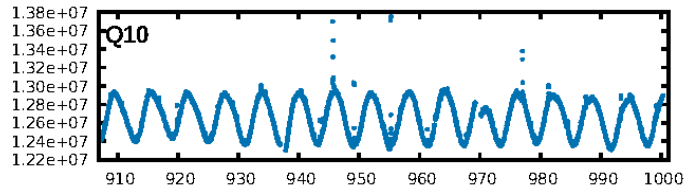
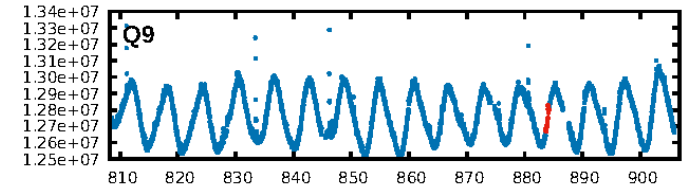
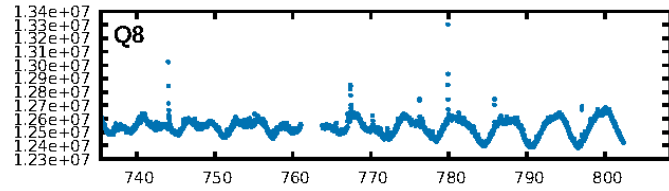
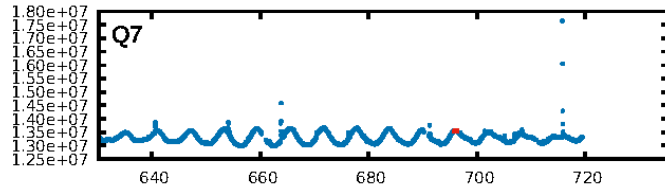
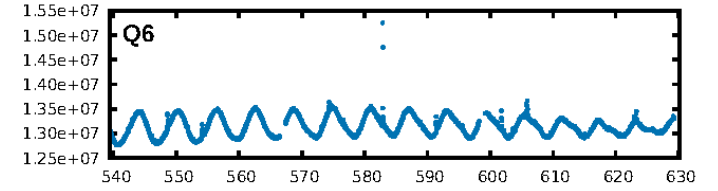
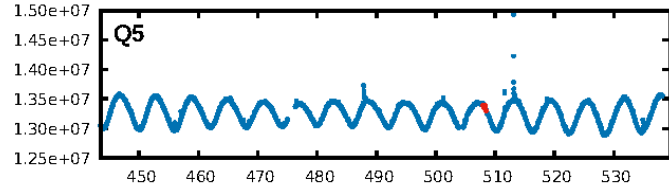
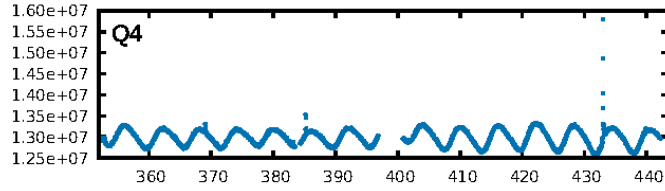
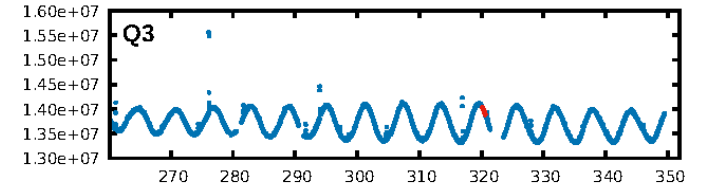
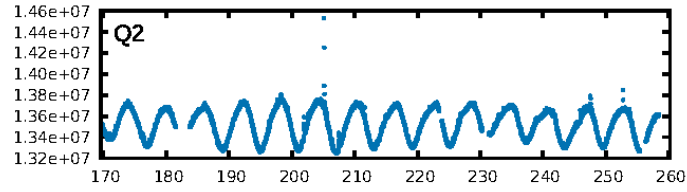
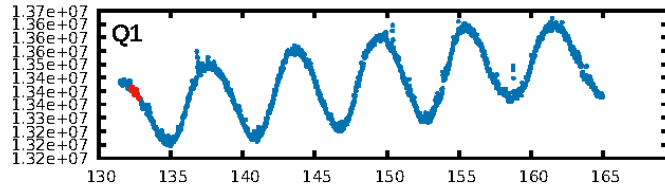
KIC: 5607395 Candidate: 4 of 6 Period: 187.857 d



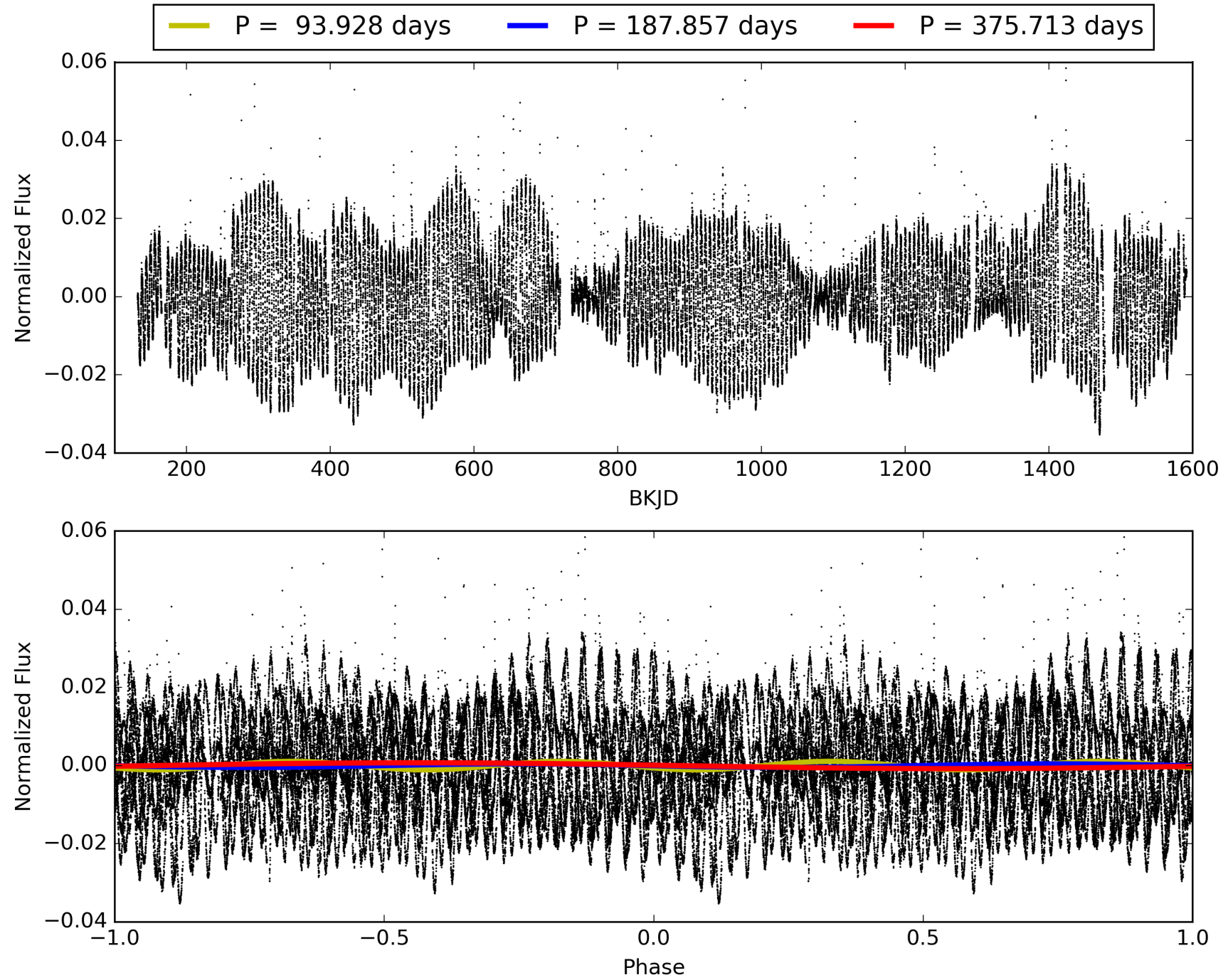
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:16:02 Z

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

# TCE 005607395-04, PDC Light Curves



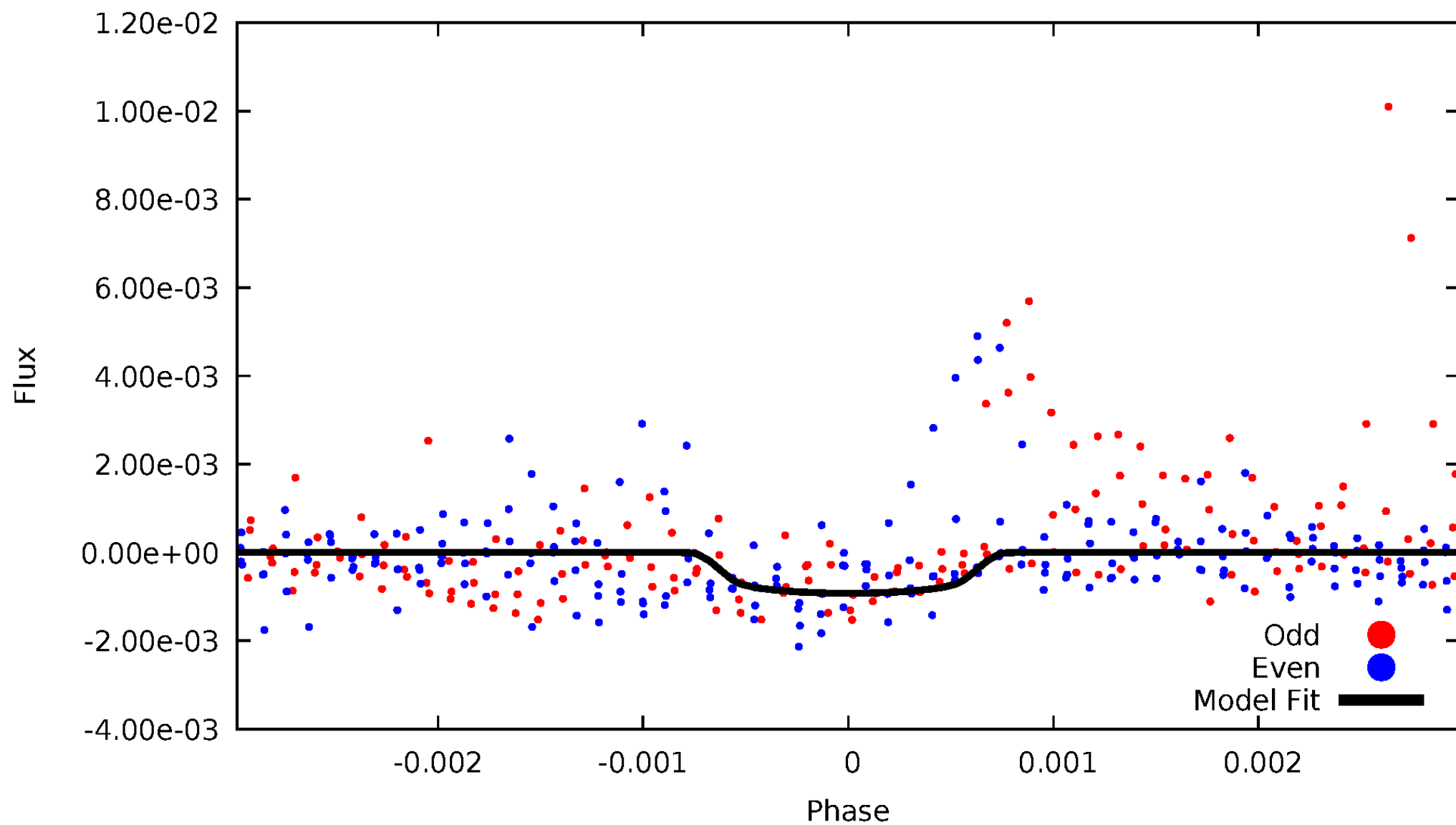
TCE 005607395-04





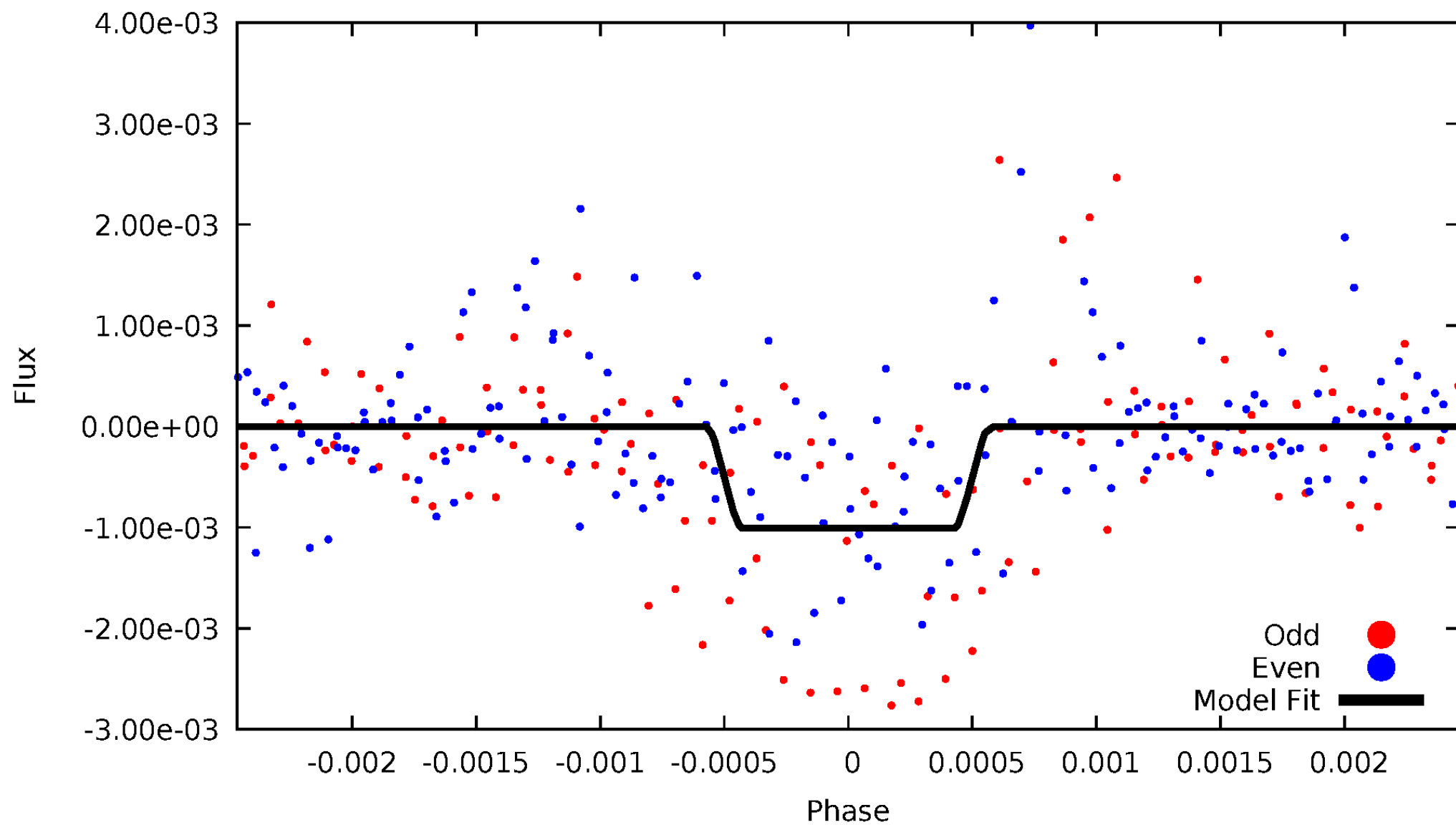
# DV Odd/Even

TCE 005607395-04



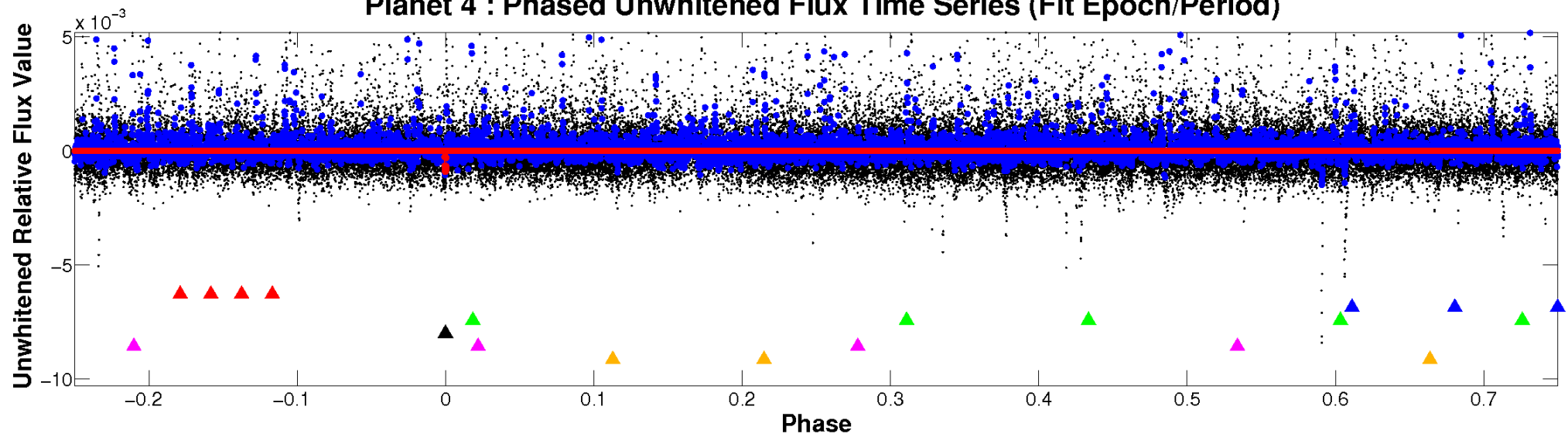
# ALT Odd/Even

TCE 005607395-04

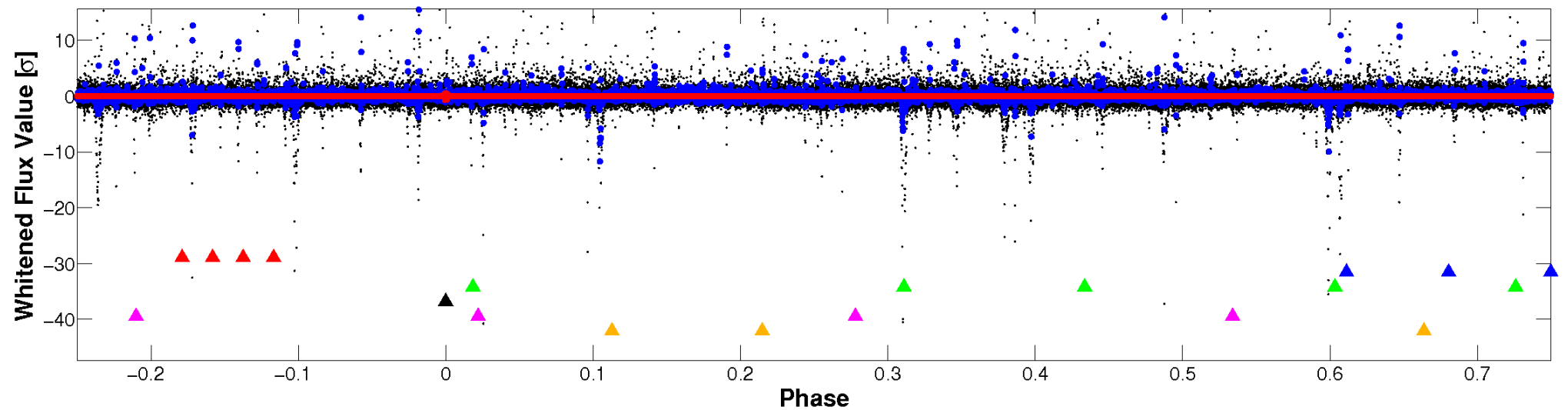


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

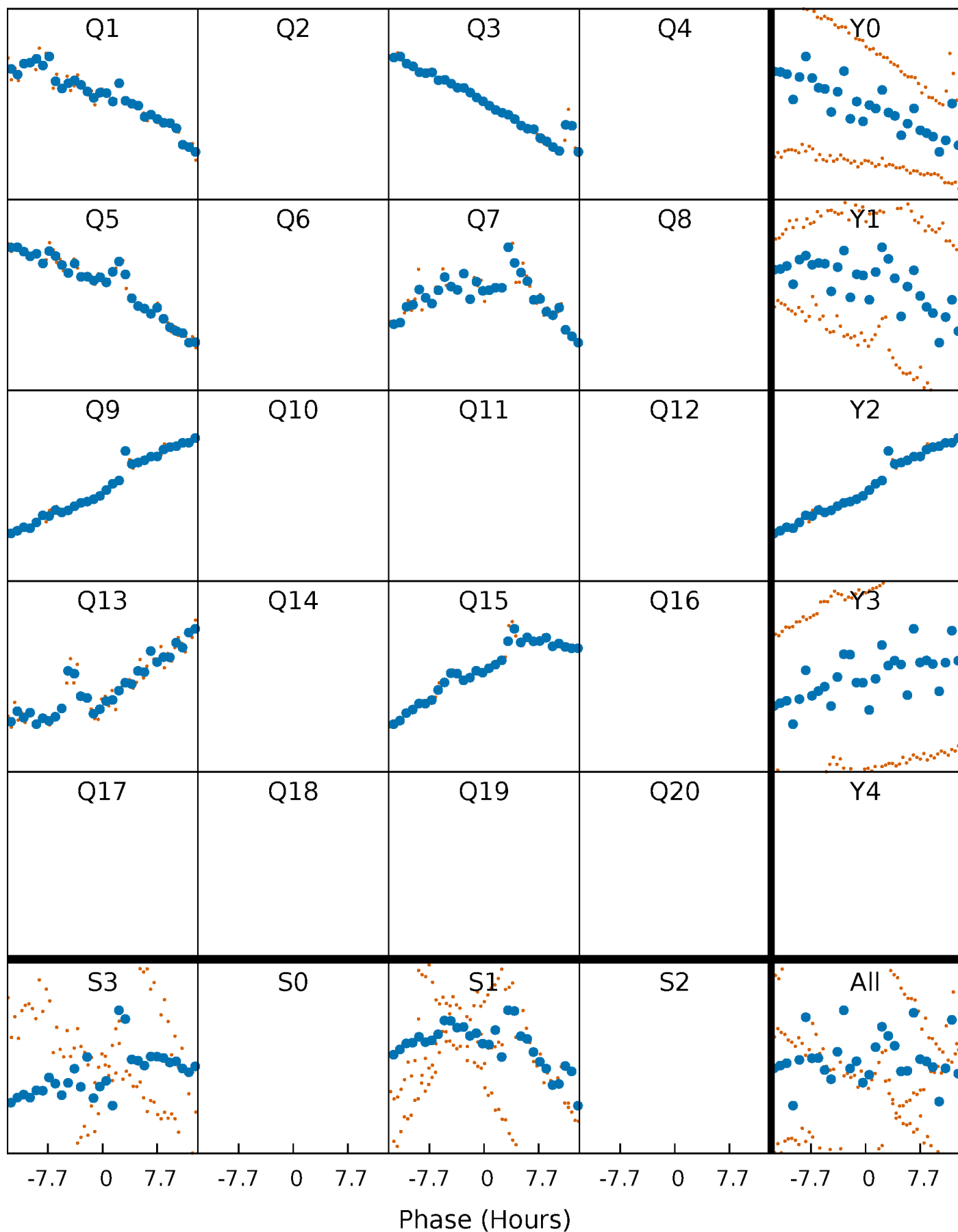


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



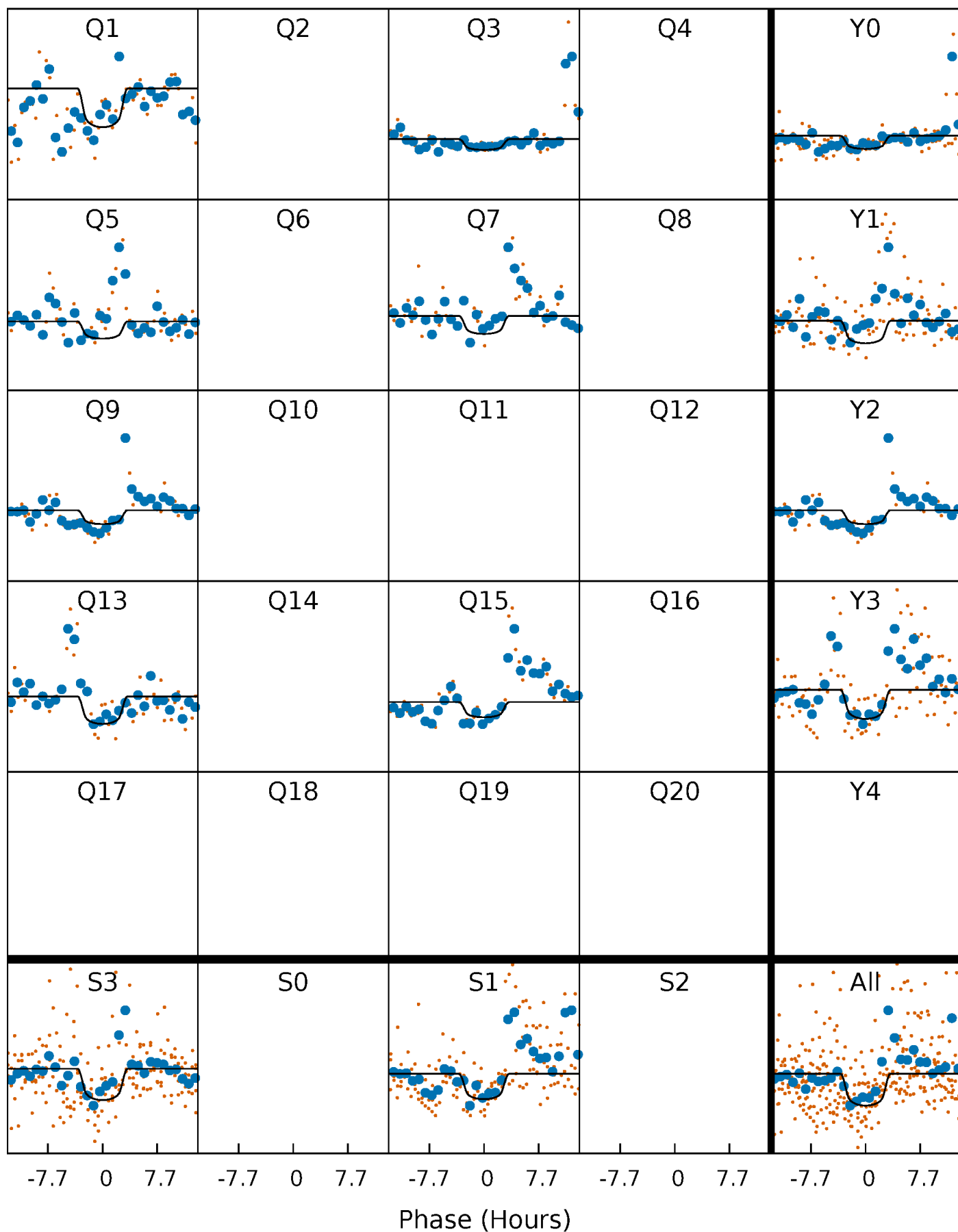
# PDC Quarter-Phased Transit Curves

TCE 005607395-04     $P=187.856620$  Days     $T_0=132.517539$  (BKJD)



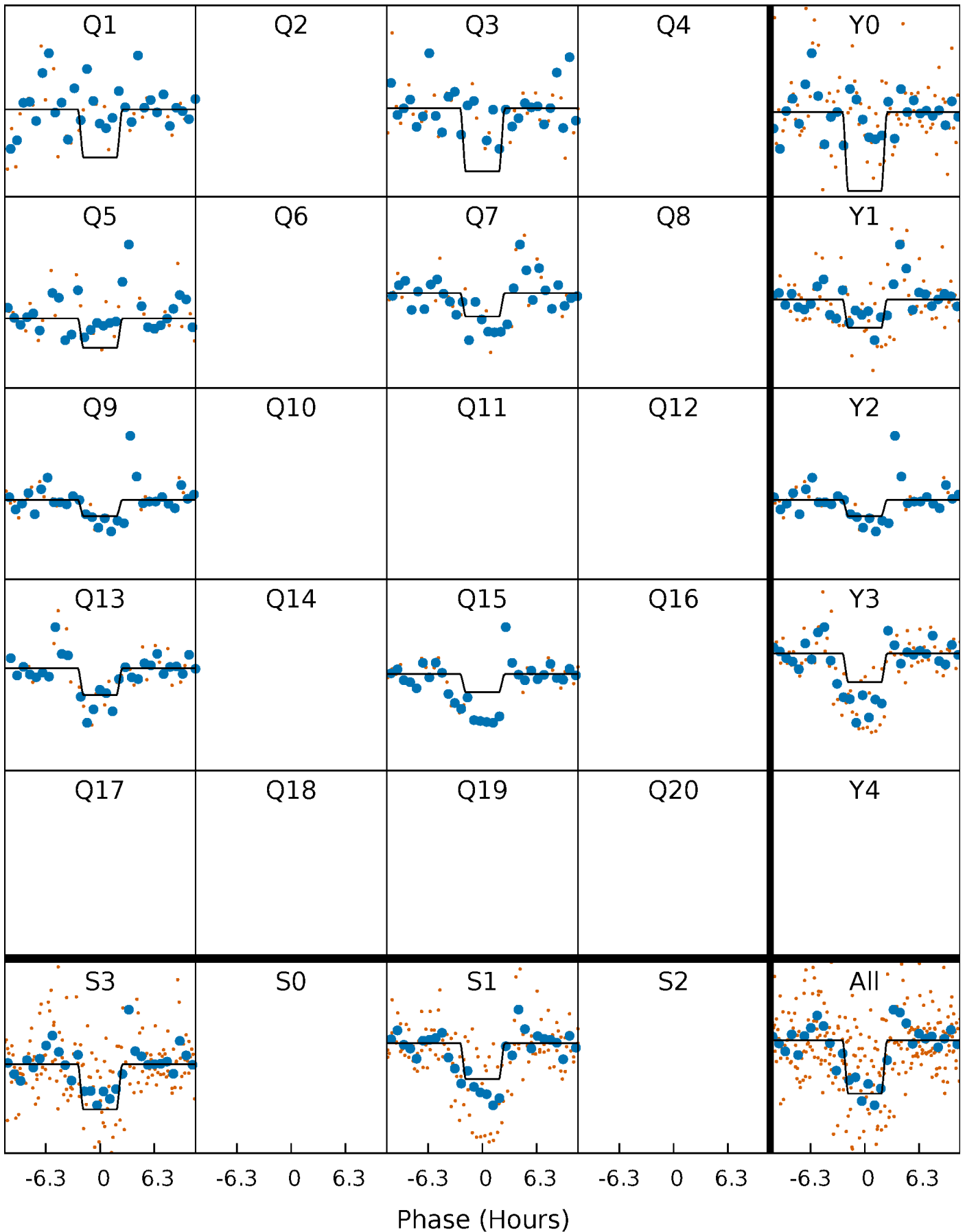
# DV Quarter-Phased Transit Curves

TCE 005607395-04     $P=187.856620$  Days     $T_0=132.517539$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

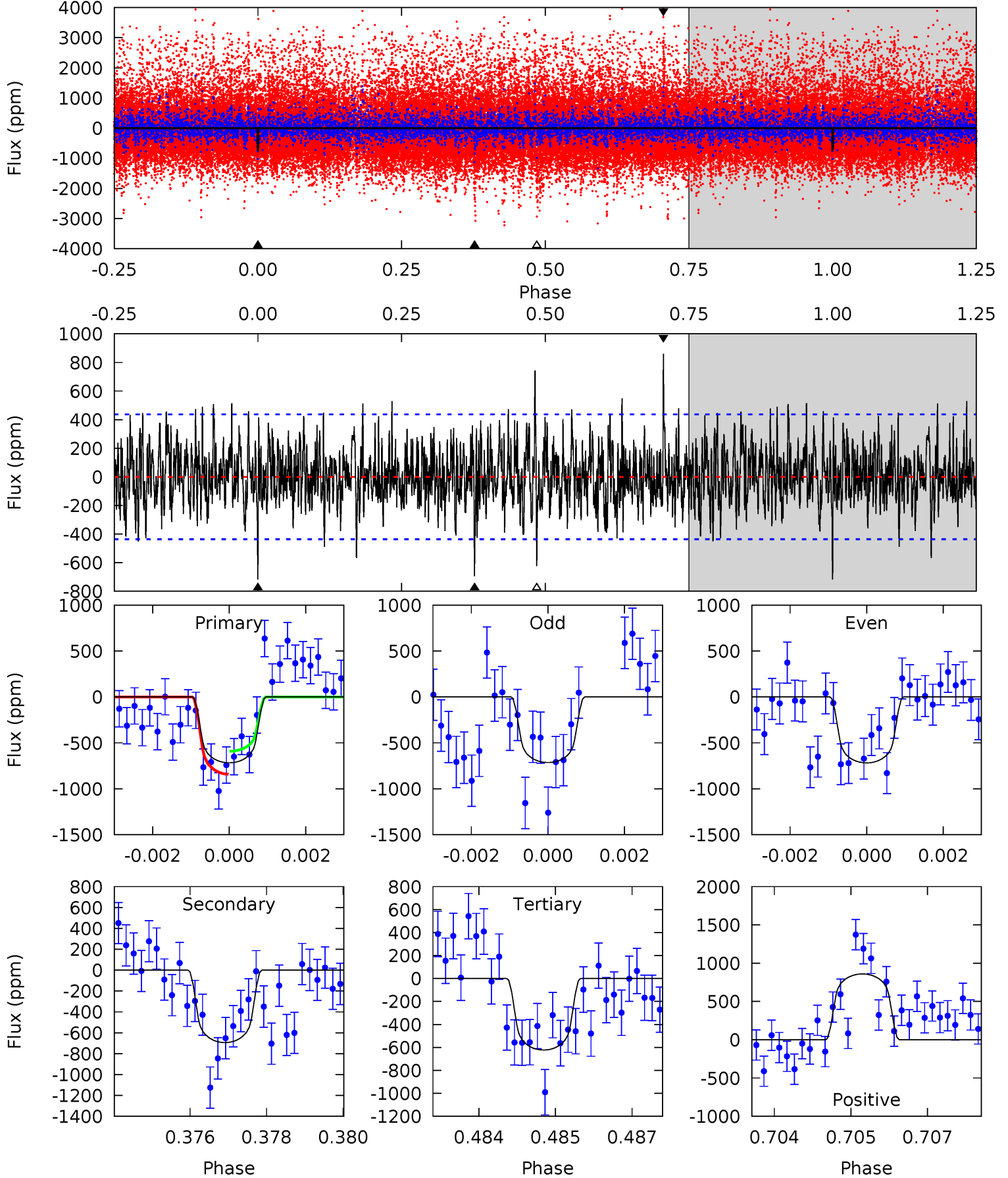
TCE 005607395-04 P=187.873307 Days  $T_0=132.431286$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-04, P = 187.856620 Days, E = 132.517539 Days

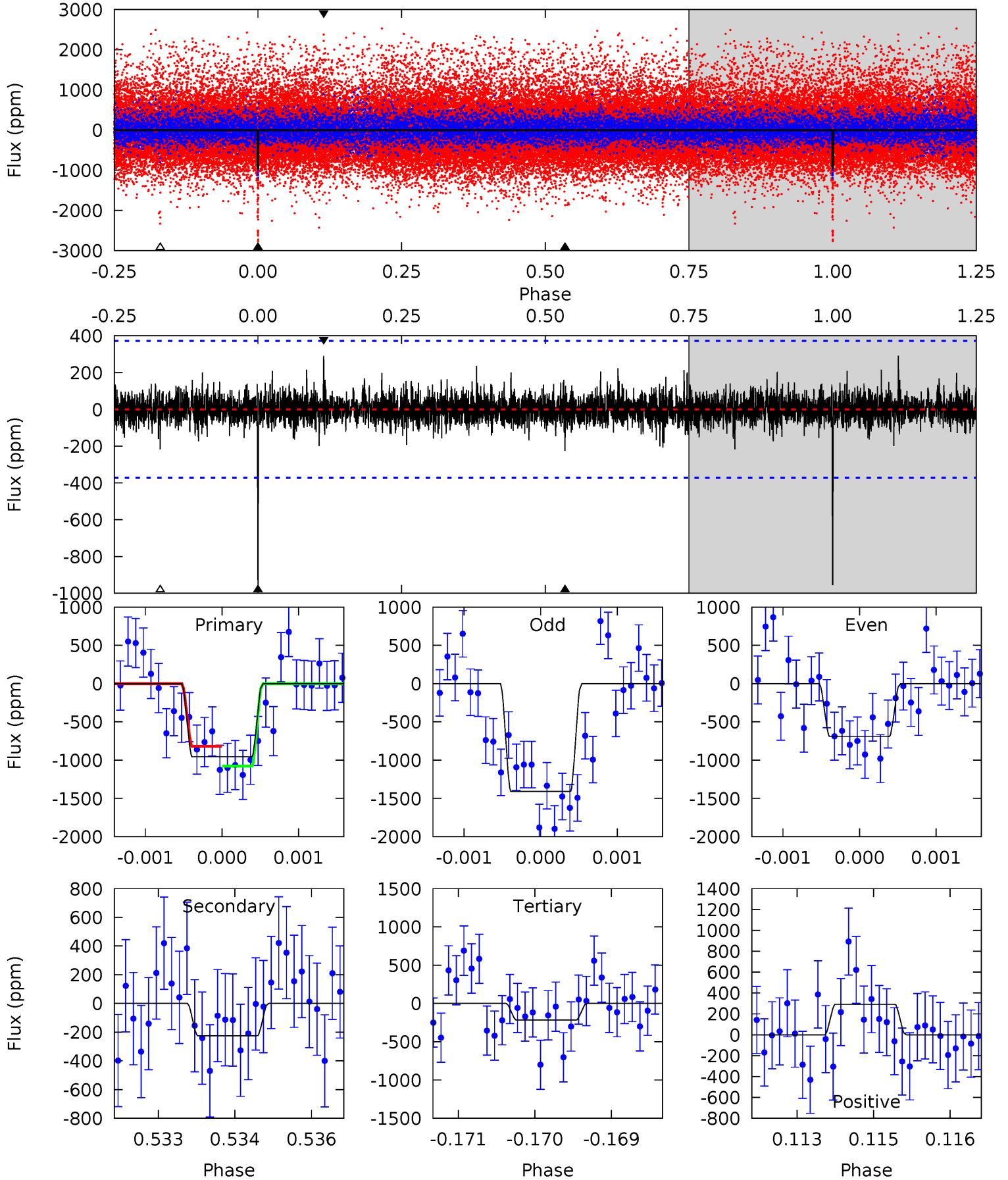
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.81	8.53	7.66	10.6	5.36	3.15	2.09	1.16	-1.75	0.87	-2.03	0.02	0.76	0.55	1.55



# Alt Model-Shift Uniqueness Test

005607395-04, P = 187.873307 Days, E = 132.431286 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
13.9	3.28	3.17	4.26	5.44	3.27	0.77	10.8	9.69	0.11	-0.97	5.16	0.79	0.23	1.89





### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-694 \pm 81$	$1.82^{+0.33}_{-0.35}$	$235^{+5}_{-5}$	$3585^{+267}_{-213}$	$31713^{+15710}_{-9868}$
Alt.	$-225 \pm 68$	$1.80^{+0.36}_{-0.37}$	$235^{+6}_{-6}$	$3021^{+252}_{-208}$	$10158^{+6914}_{-4060}$

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

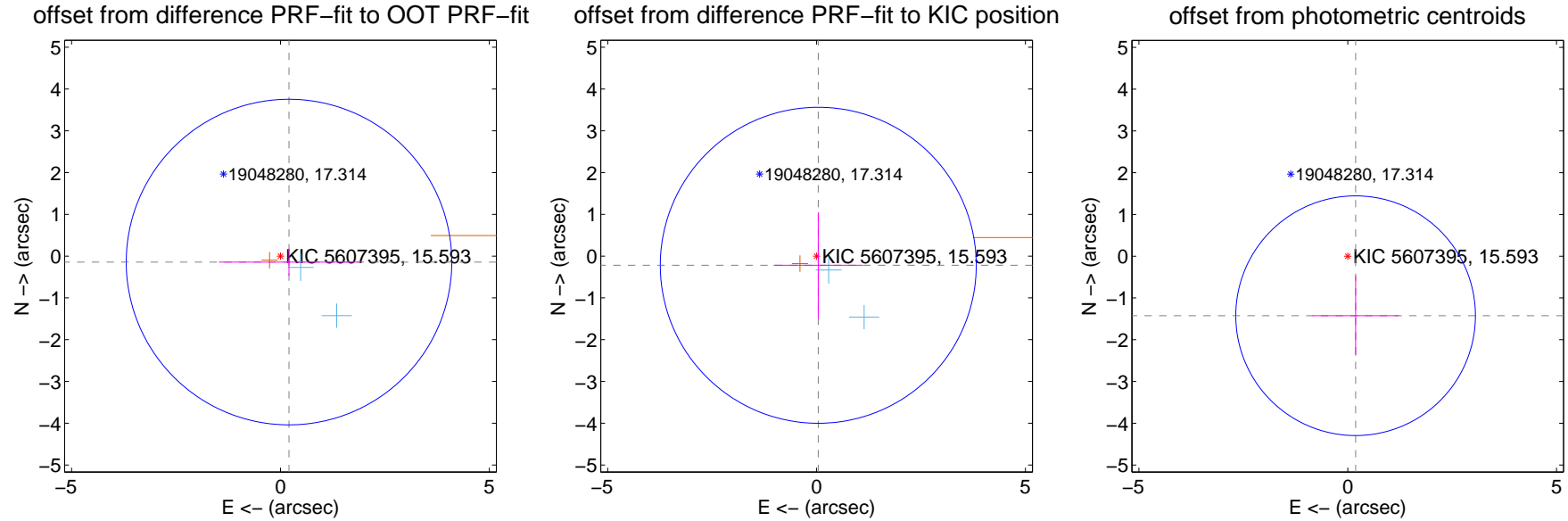
## DV Centroid Data

Supplemental centroid analysis for 005607395-04. Kepler magnitude: 15.59. Transit SNR 5.86

There are 2 quarters with good PRF difference image offsets

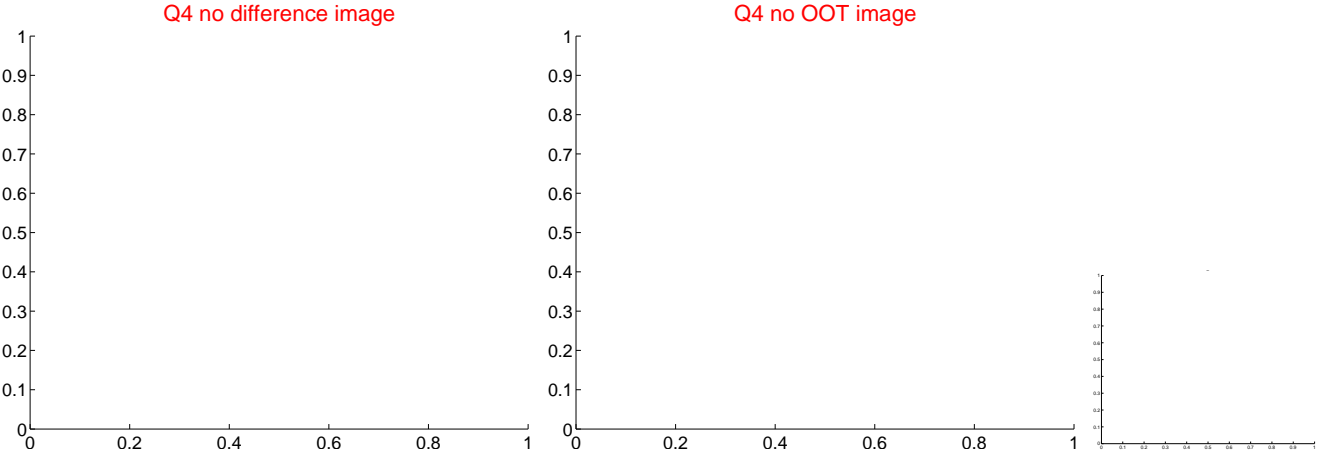
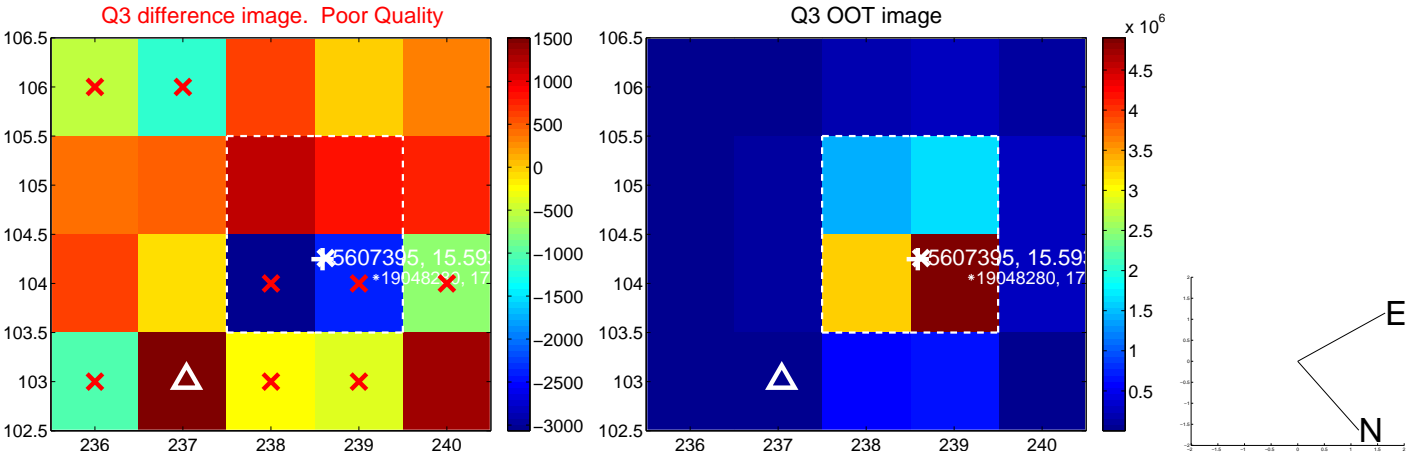
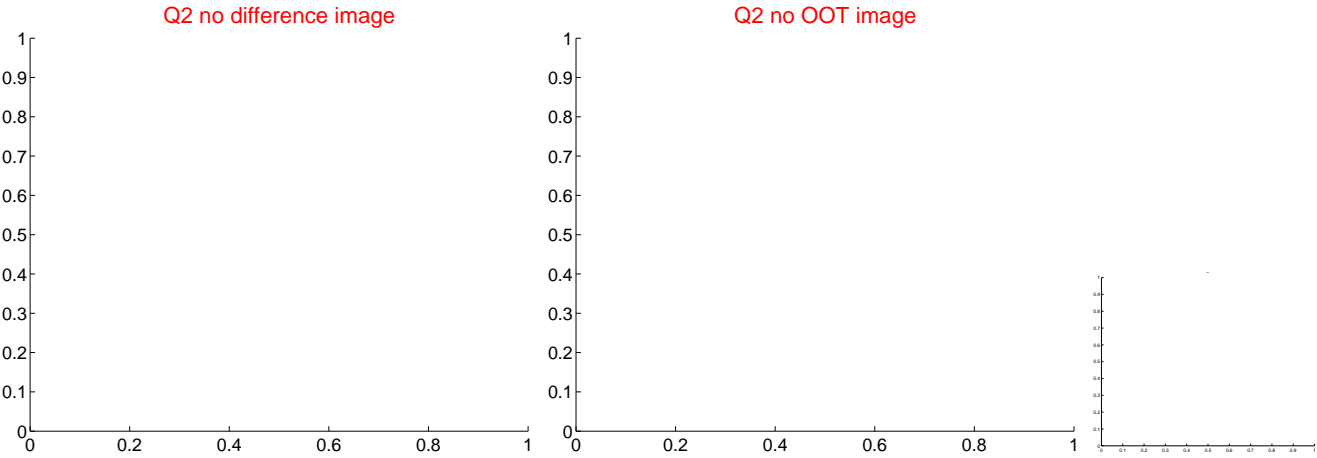
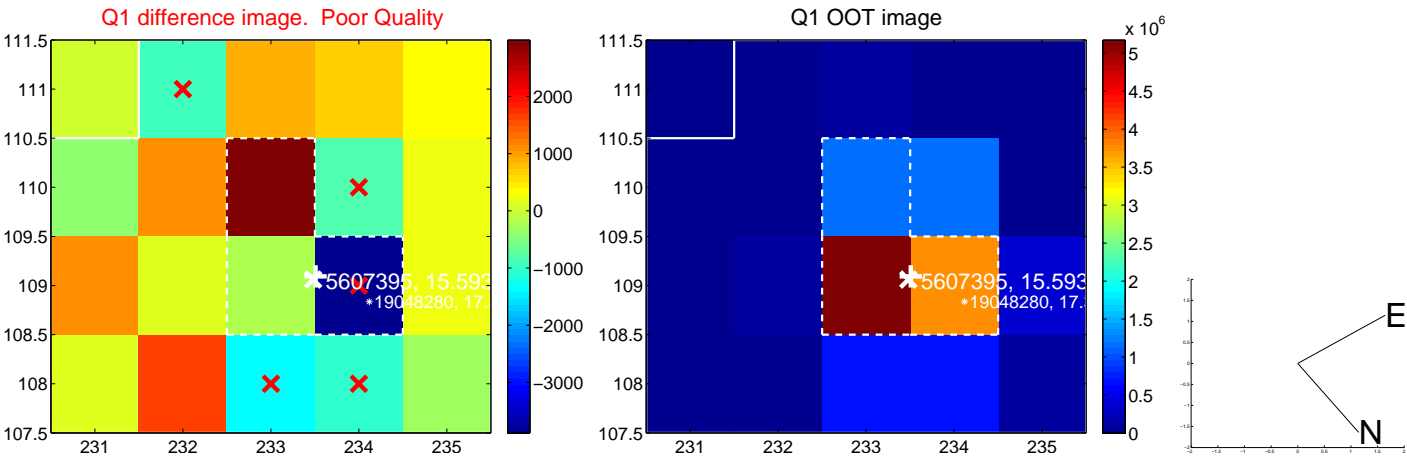
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.249 \pm 1.299$	0.19	$-0.205 \pm 1.677$	$-0.142 \pm 0.322$
PRF-fit source offset from KIC position	$0.223 \pm 1.261$	0.18	$-0.041 \pm 1.069$	$-0.219 \pm 1.267$
photometric centroid source offset	$1.44 \pm 0.96$	1.50	$-0.19 \pm 1.03$	$-1.42 \pm 0.95$

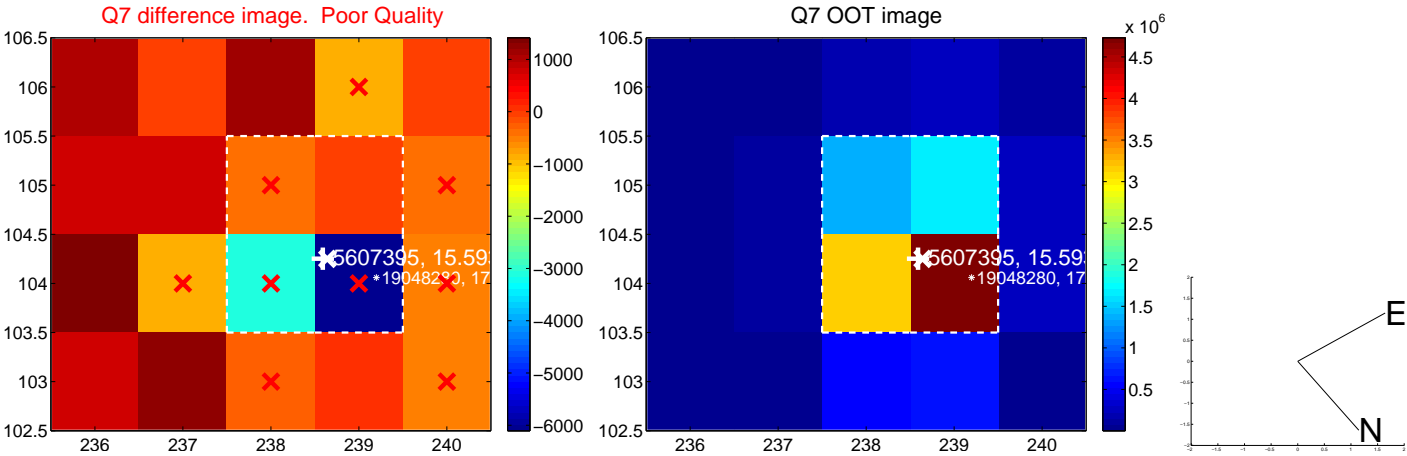
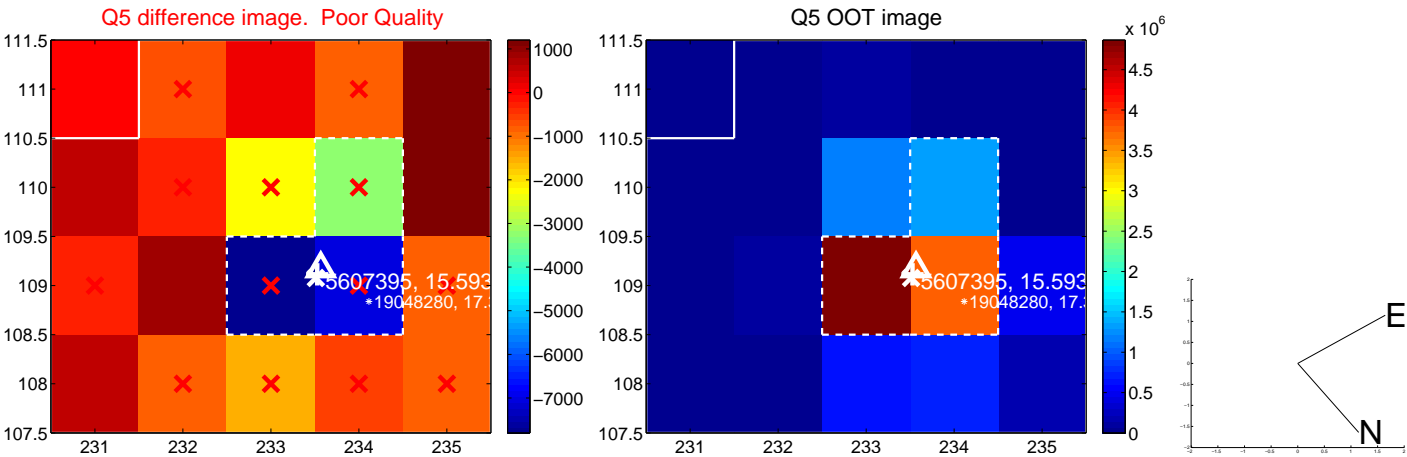


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

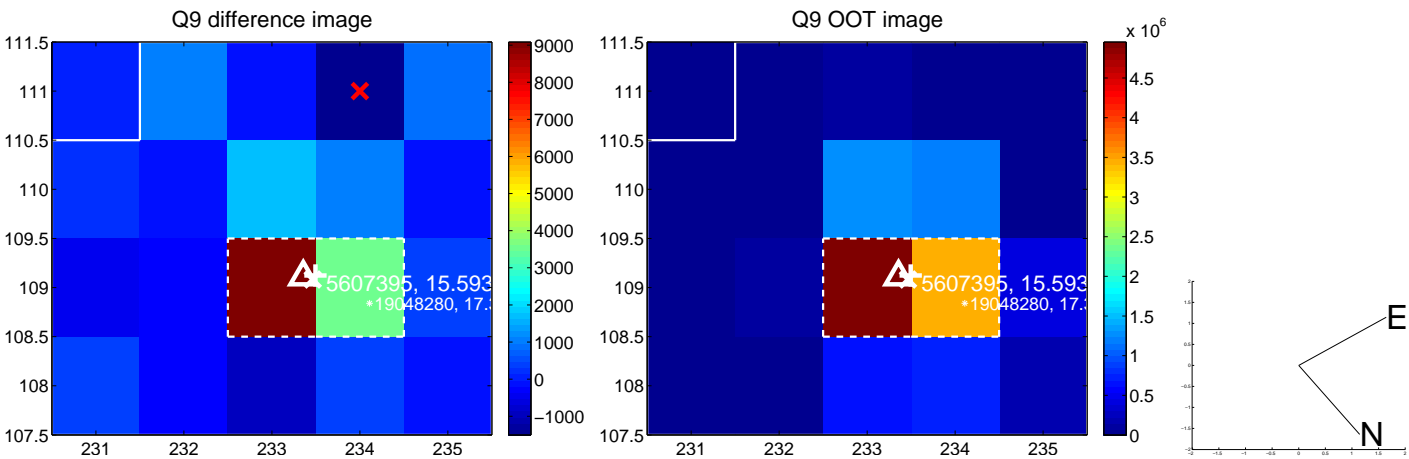
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



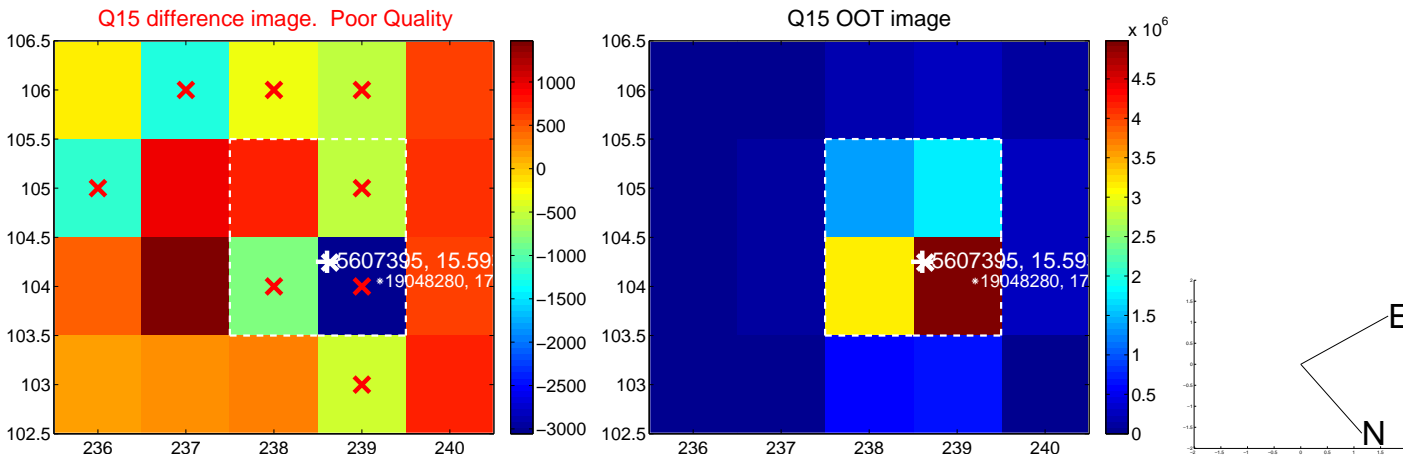
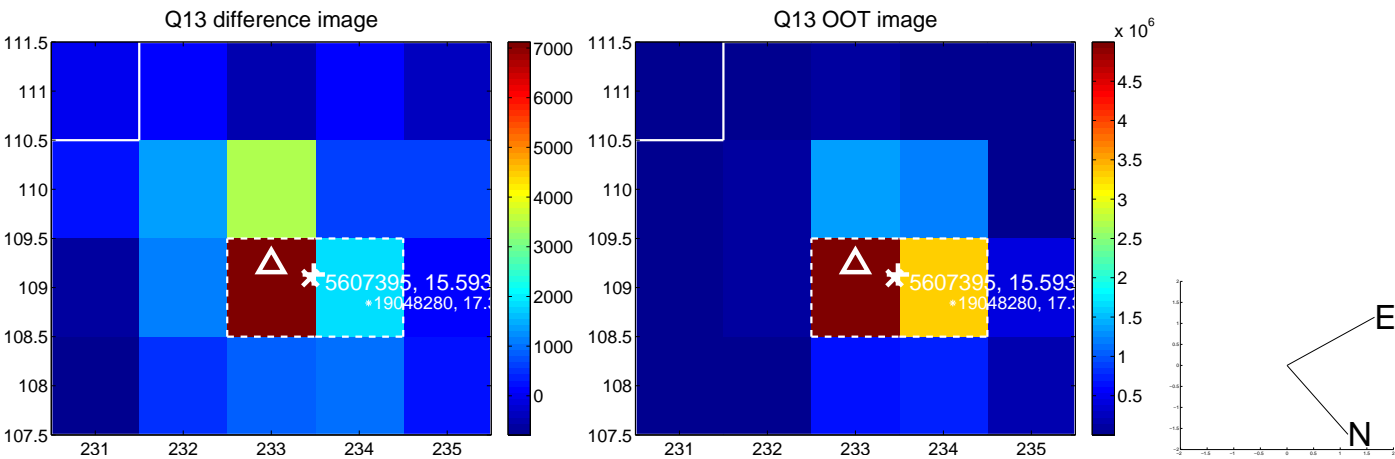
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



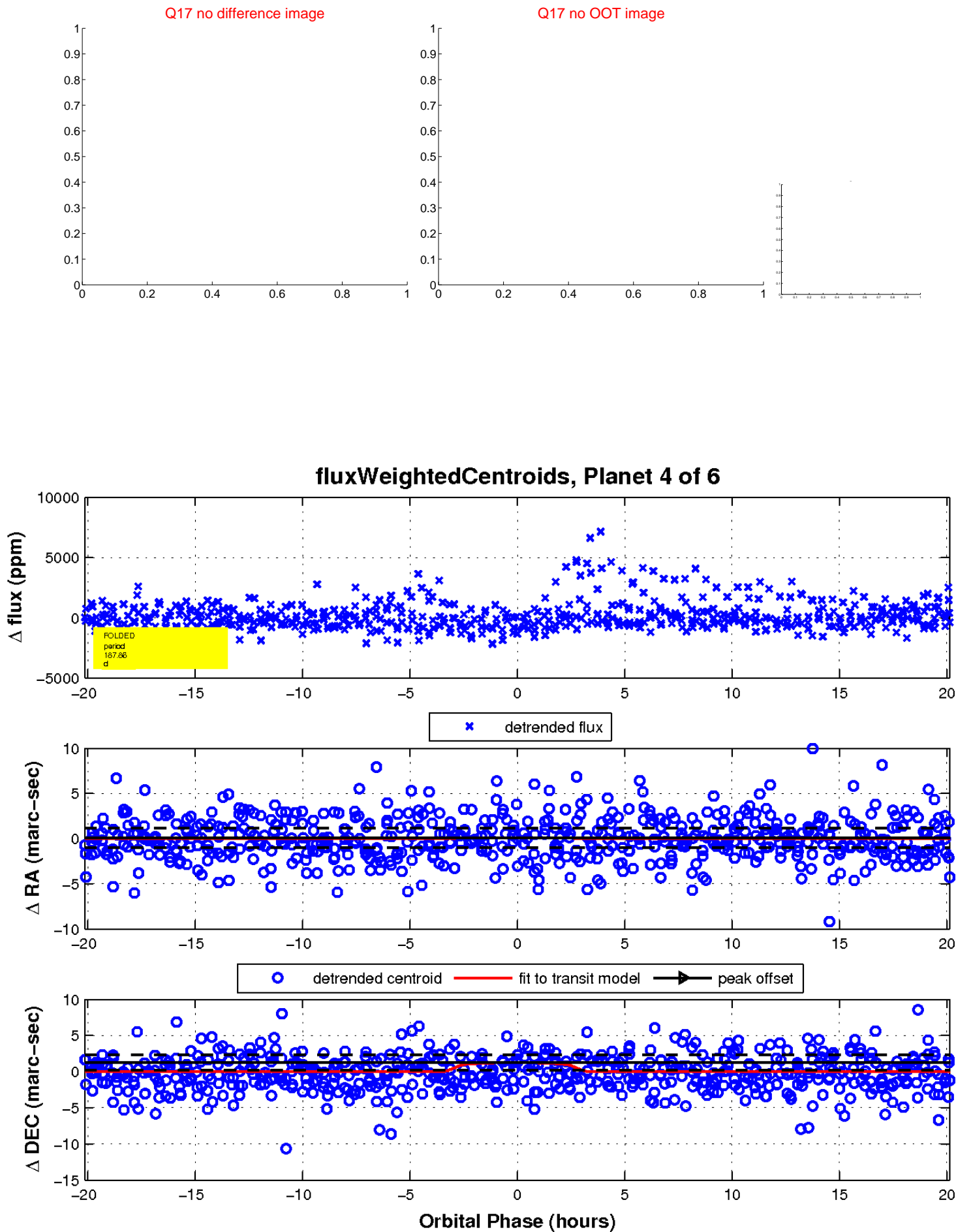
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

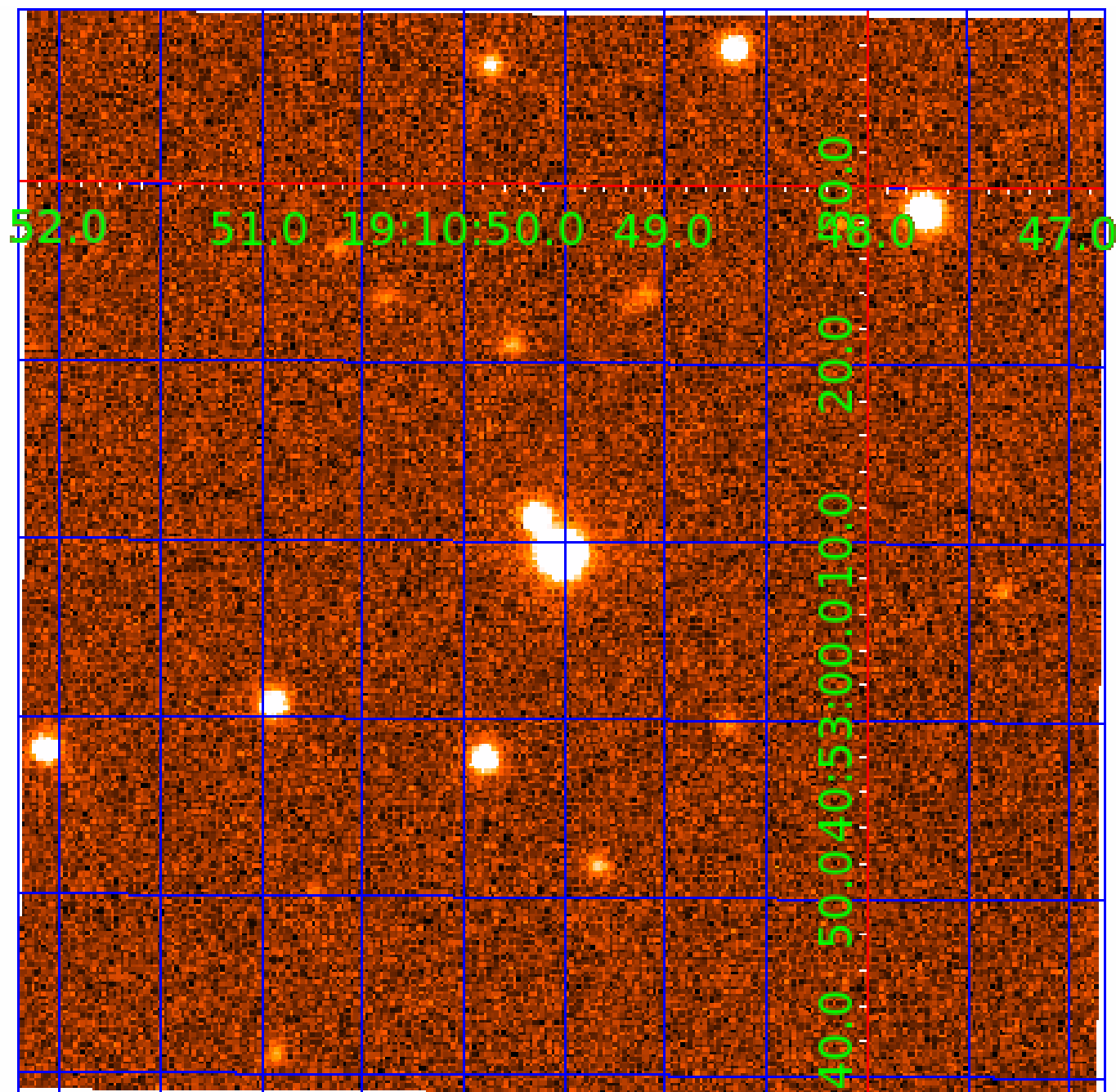


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005607395

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005607395-01	OBS	No	371.823809	298.440525	1855.6	6.178	13.0	7.3	0.52	3827	2.24	0.08
005607395-02	OBS	No	576.592829	247.340574	1510.8	7.724	14.0	6.3	0.52	3827	2.01	0.04
005607395-03	OBS	No	320.772295	245.866352	1890.5	3.939	10.7	7.3	0.52	3827	2.35	0.10
005607395-04	OBS	No	187.856620	132.517539	919.8	6.715	9.2	5.9	0.52	3827	1.86	0.19
005607395-05	OBS	No	423.799040	136.651567	746.3	3.099	11.0	3.8	0.52	3827	1.52	0.07
005607395-06	OBS	No	479.219145	153.706969	1603.7	9.113	10.3	6.5	0.52	3827	2.48	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005607395-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
005607395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
005607395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
005607395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

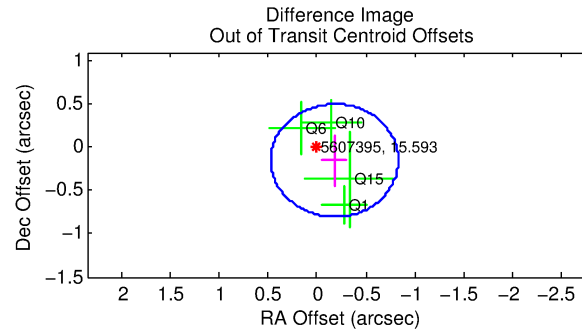
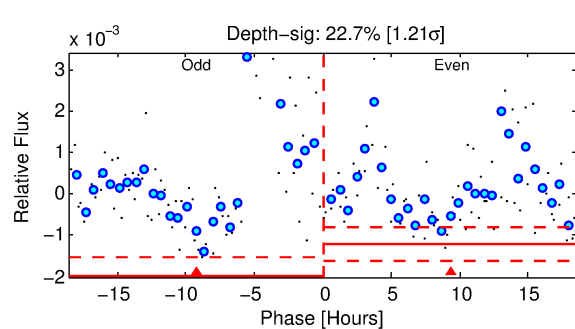
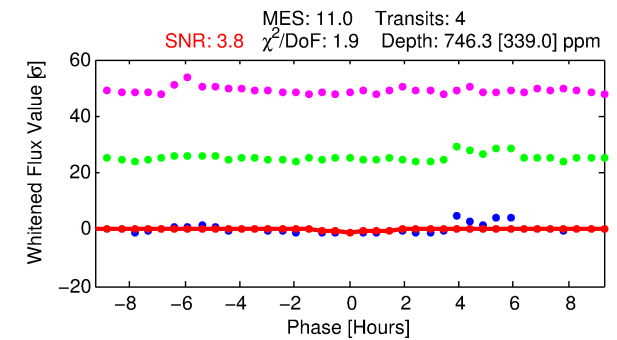
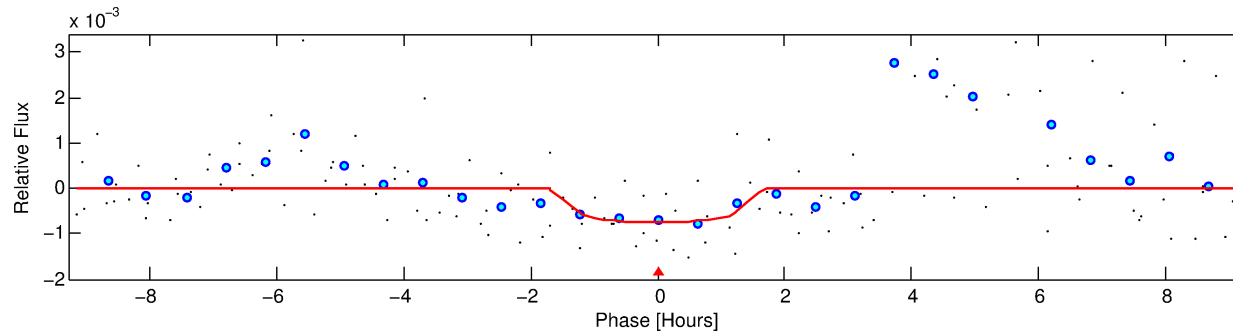
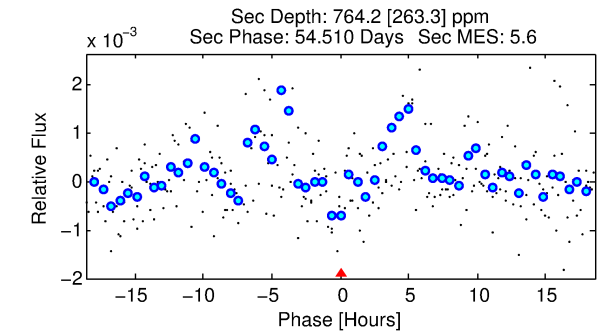
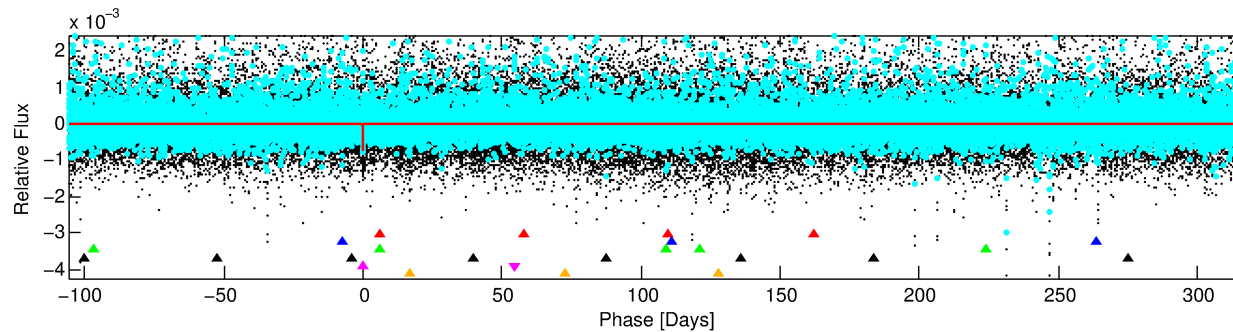
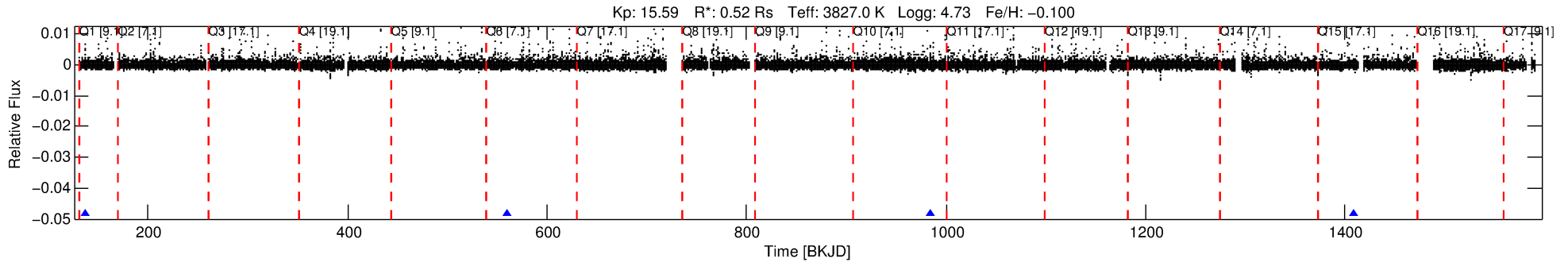
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005607395-05

No Significant Match Found

# DV One-Page Summary

KIC: 5607395 Candidate: 5 of 6 Period: 423.799 d



## DV Fit Results:

Period = 423.79904 [0.01313] d  
Epoch = 136.6516 [0.0248] BKJD  
Rp/R\* = 0.0268 [0.0692]  
a/R\* = 771.82 [8712.40]  
b = 0.71 [7.82]  
Seff = 0.07 [0.01]  
Teq = 129 [3] K  
Rp = 1.52 [3.93] Re  
a = 0.8922 [0.0460] AU  
Ag = 144466.14 [747633.71] [0.19σ]  
Teffp = 3885 [5027] K [0.75σ]

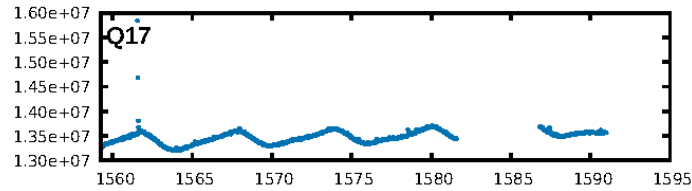
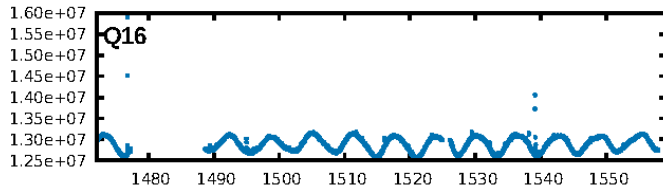
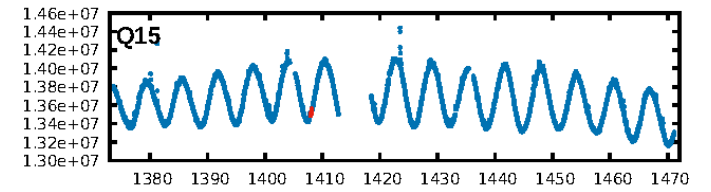
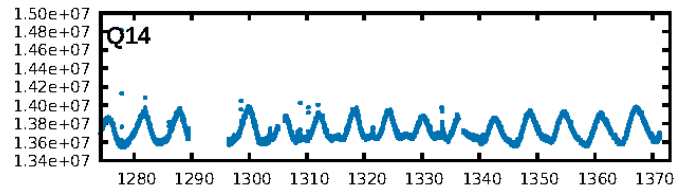
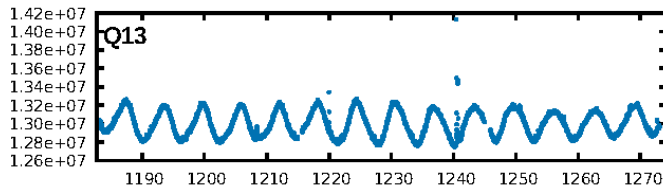
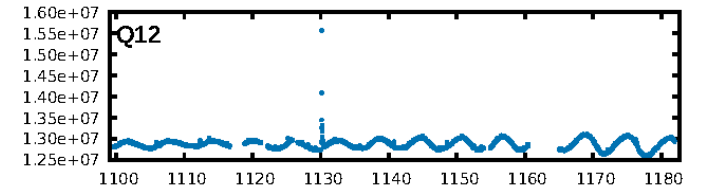
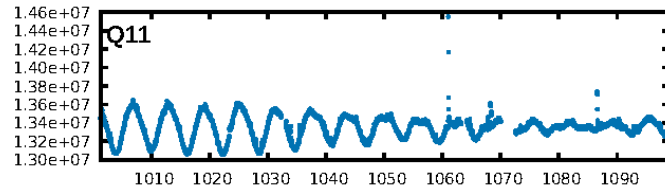
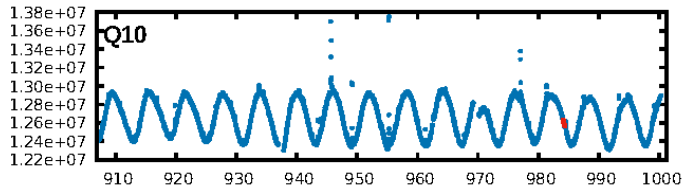
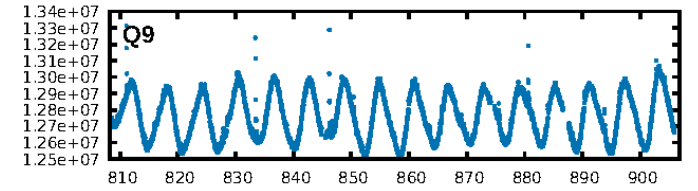
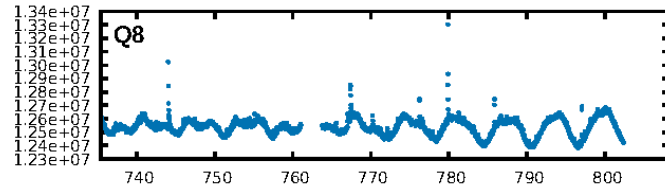
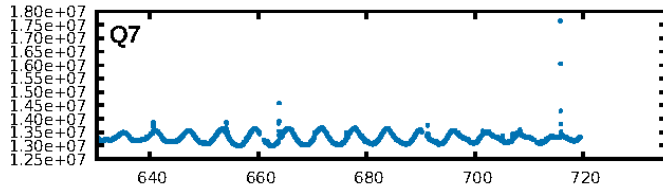
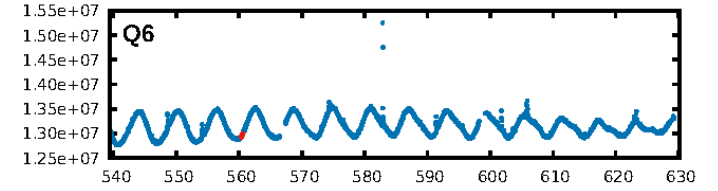
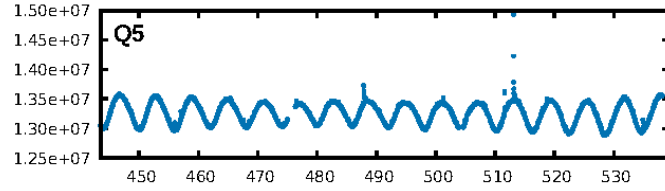
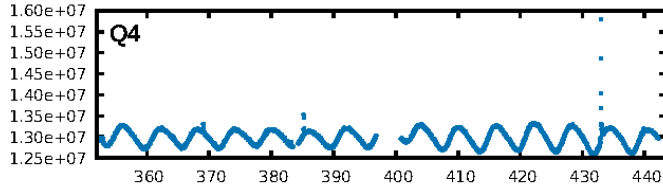
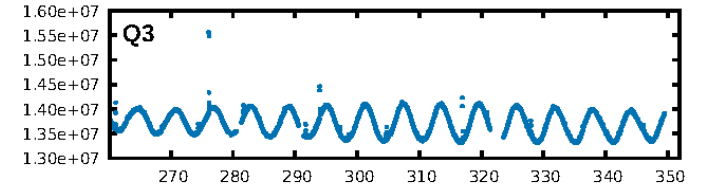
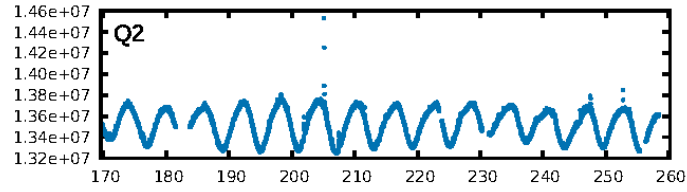
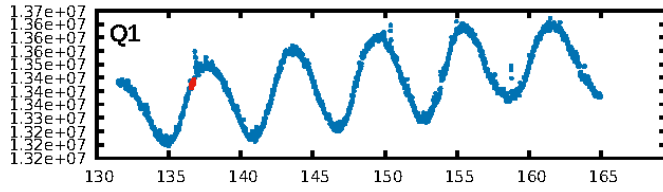
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [180.46σ]  
LongPeriod-sig: 100.0% [138.18σ]  
ModelChiSquare2-sig: 75.3%  
ModelChiSquareGof-sig: 67.0%  
Bootstrap-pfa: 6.13e-11  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.07932  
Centroid-sig: 74.7%  
Centroid-so: 1.060 arcsec [0.47σ]  
OotOffset-rm: 0.234 arcsec [1.08σ]  
KicOffset-rm: 0.360 arcsec [1.57σ]  
OotOffset-st: 2/1/0/1 [4]  
KicOffset-st: 2/1/0/1 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

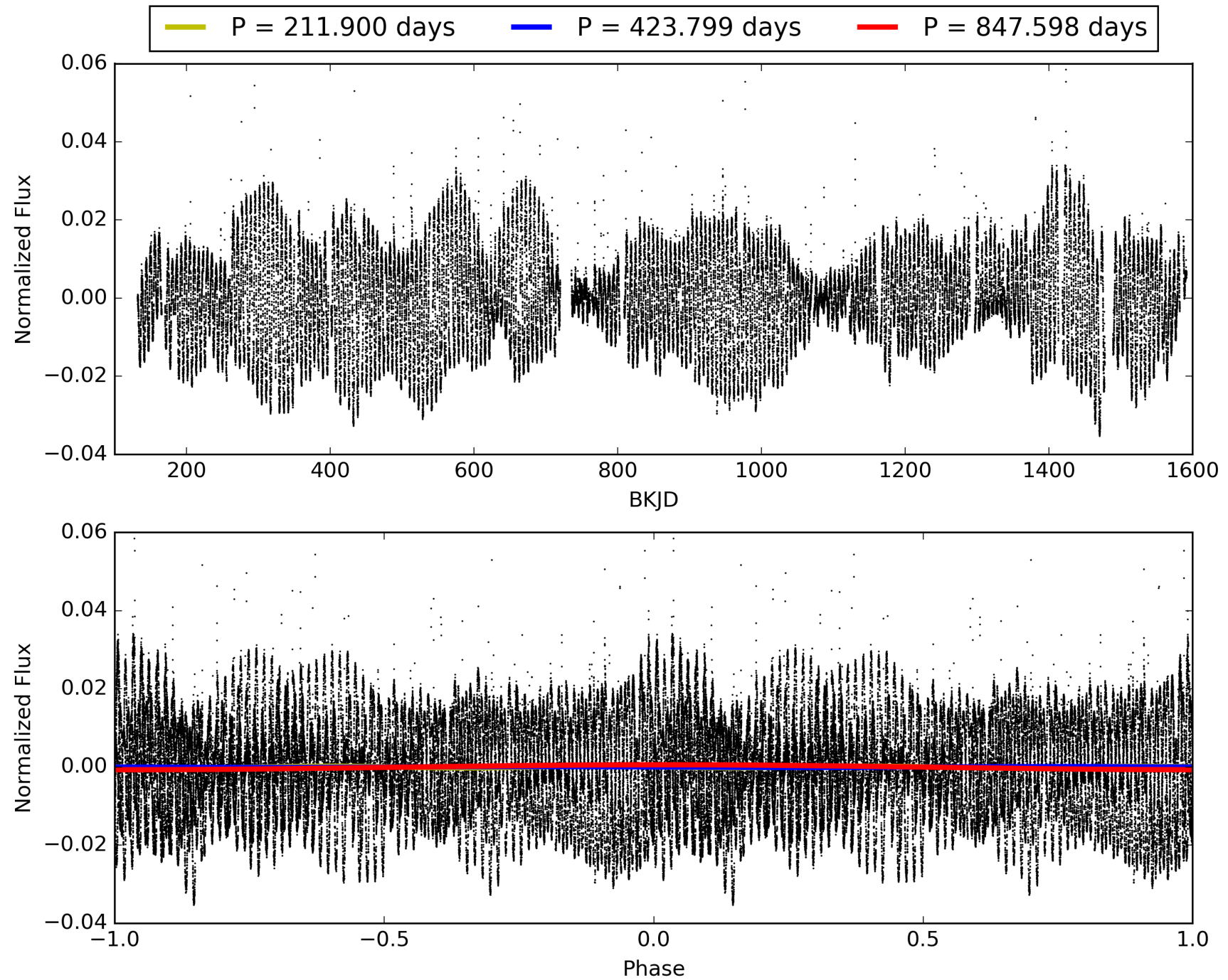
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:16:21 Z

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

# TCE 005607395-05, PDC Light Curves

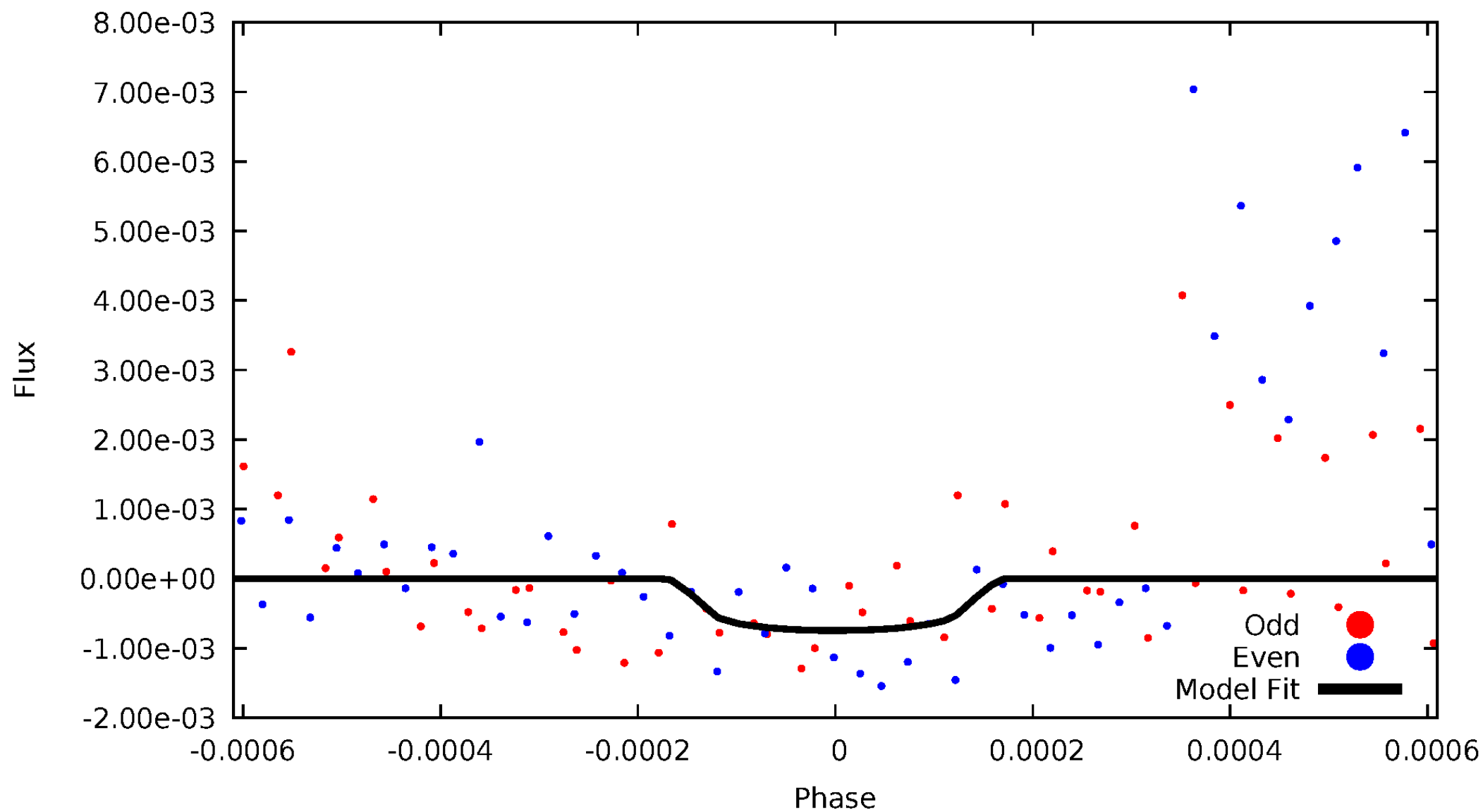


TCE 005607395-05



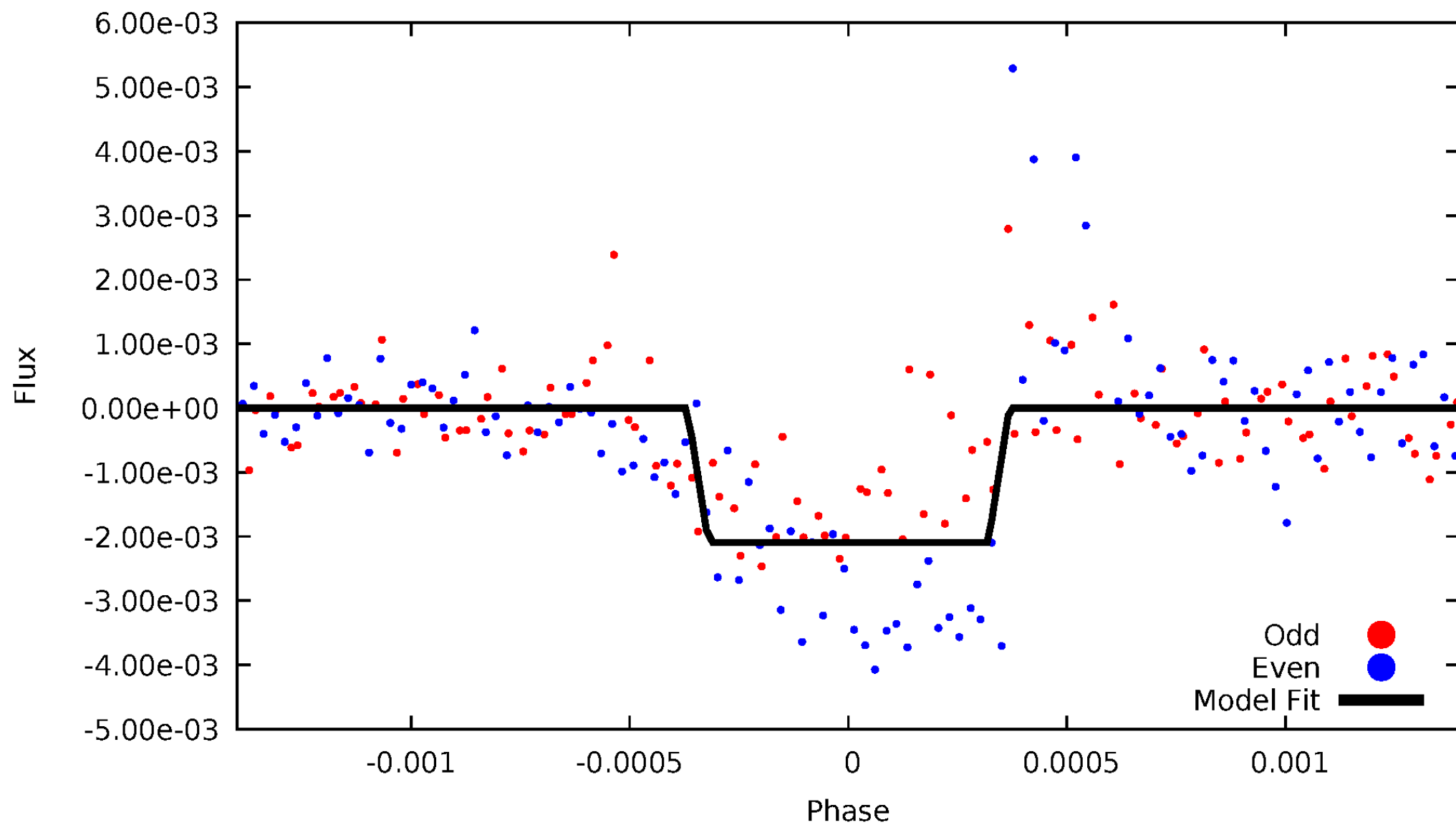
# DV Odd/Even

TCE 005607395-05



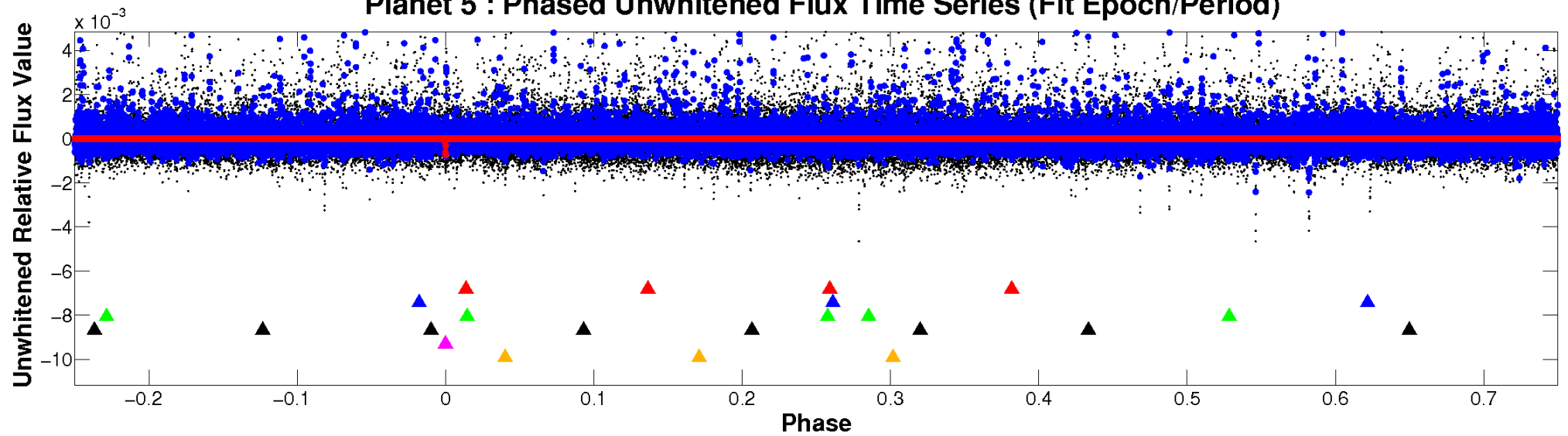
# ALT Odd/Even

TCE 005607395-05

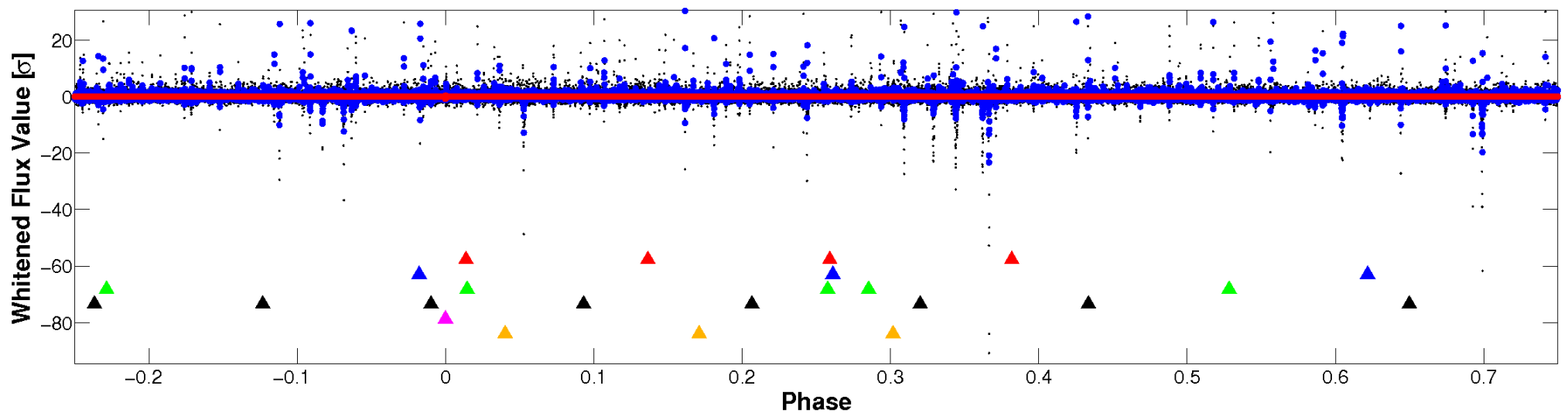


# Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

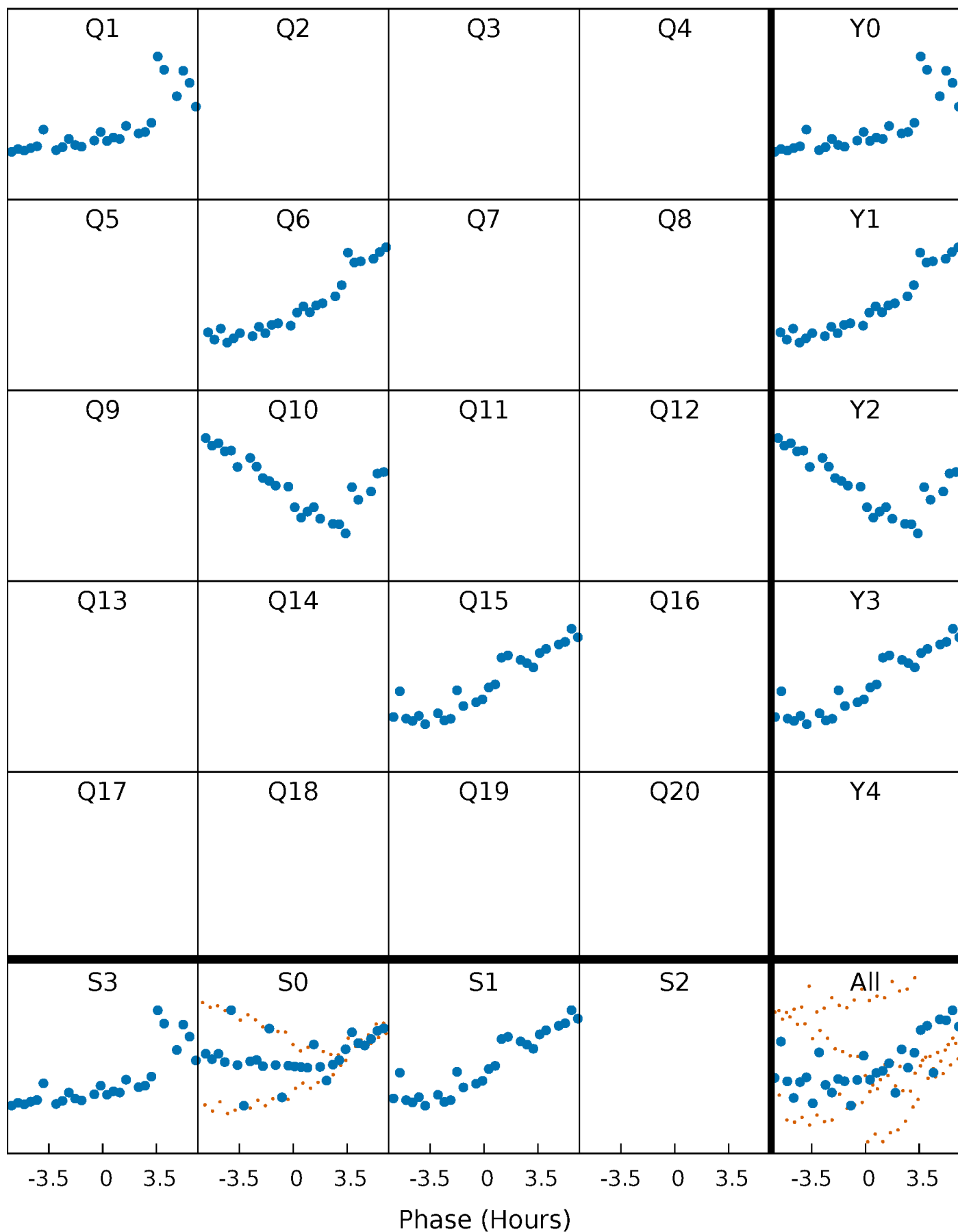


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

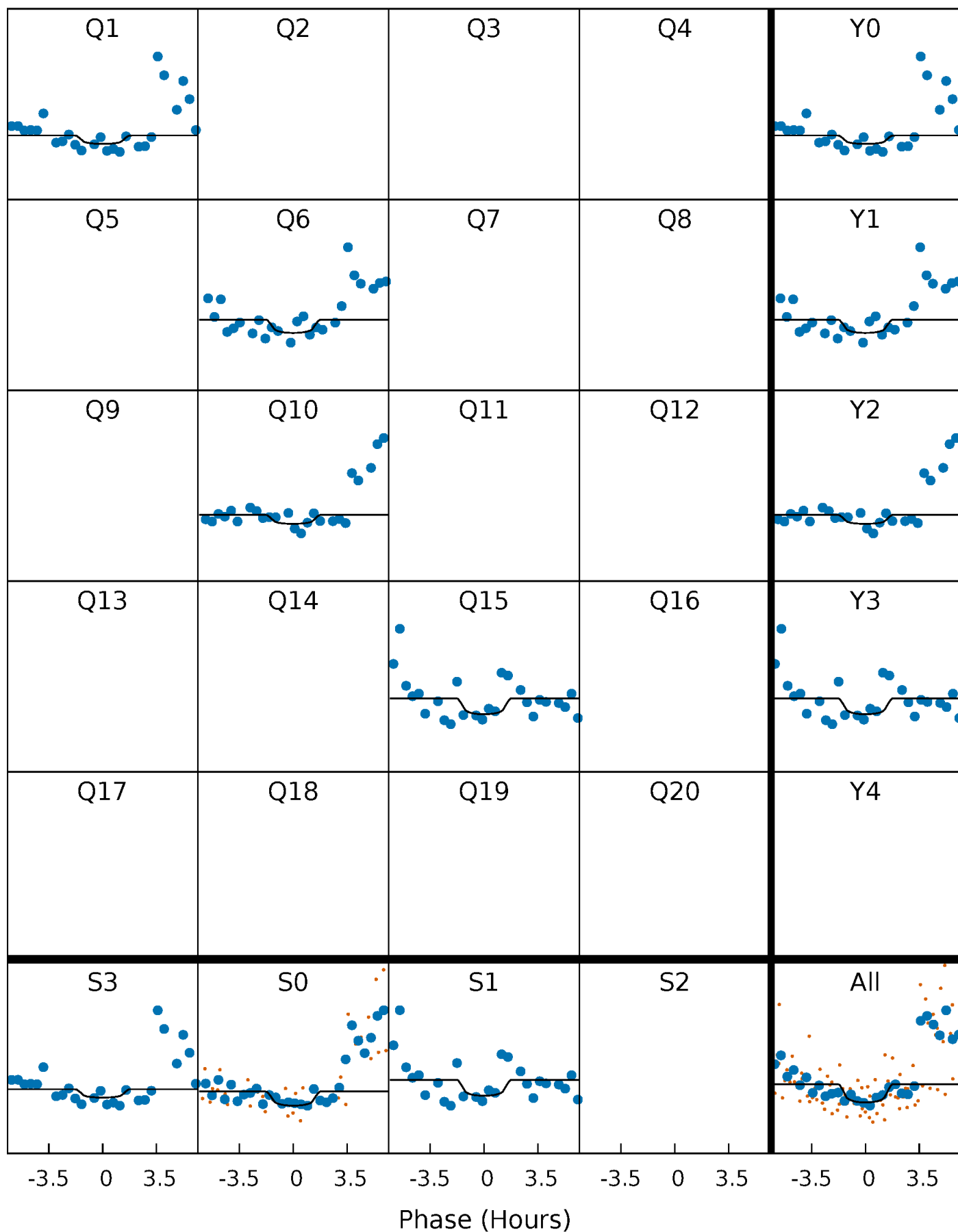
TCE 005607395-05     $P=423.799040$  Days     $T_0=136.651567$  (BKJD)





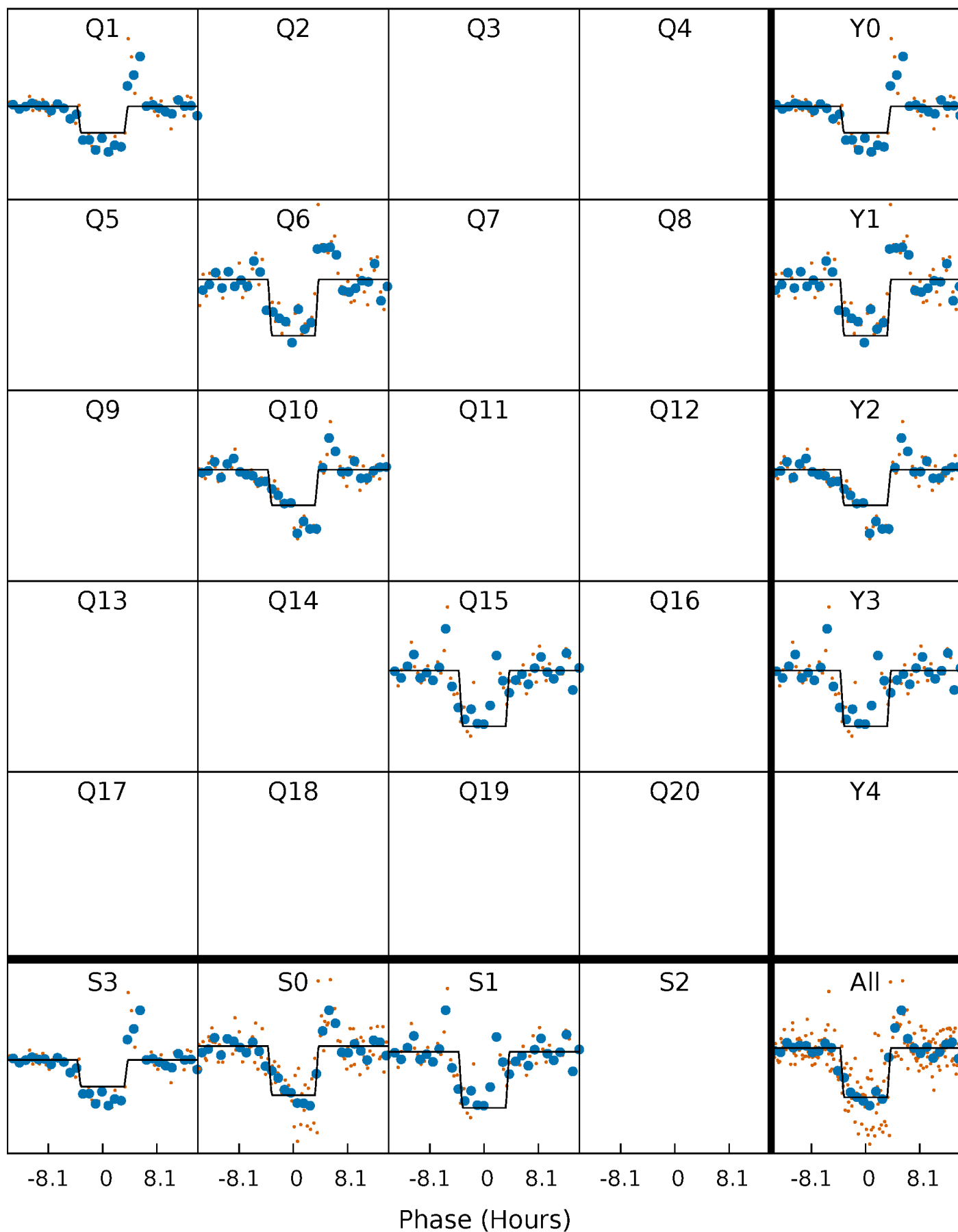
# DV Quarter-Phased Transit Curves

TCE 005607395-05     $P=423.799040$  Days     $T_0=136.651567$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

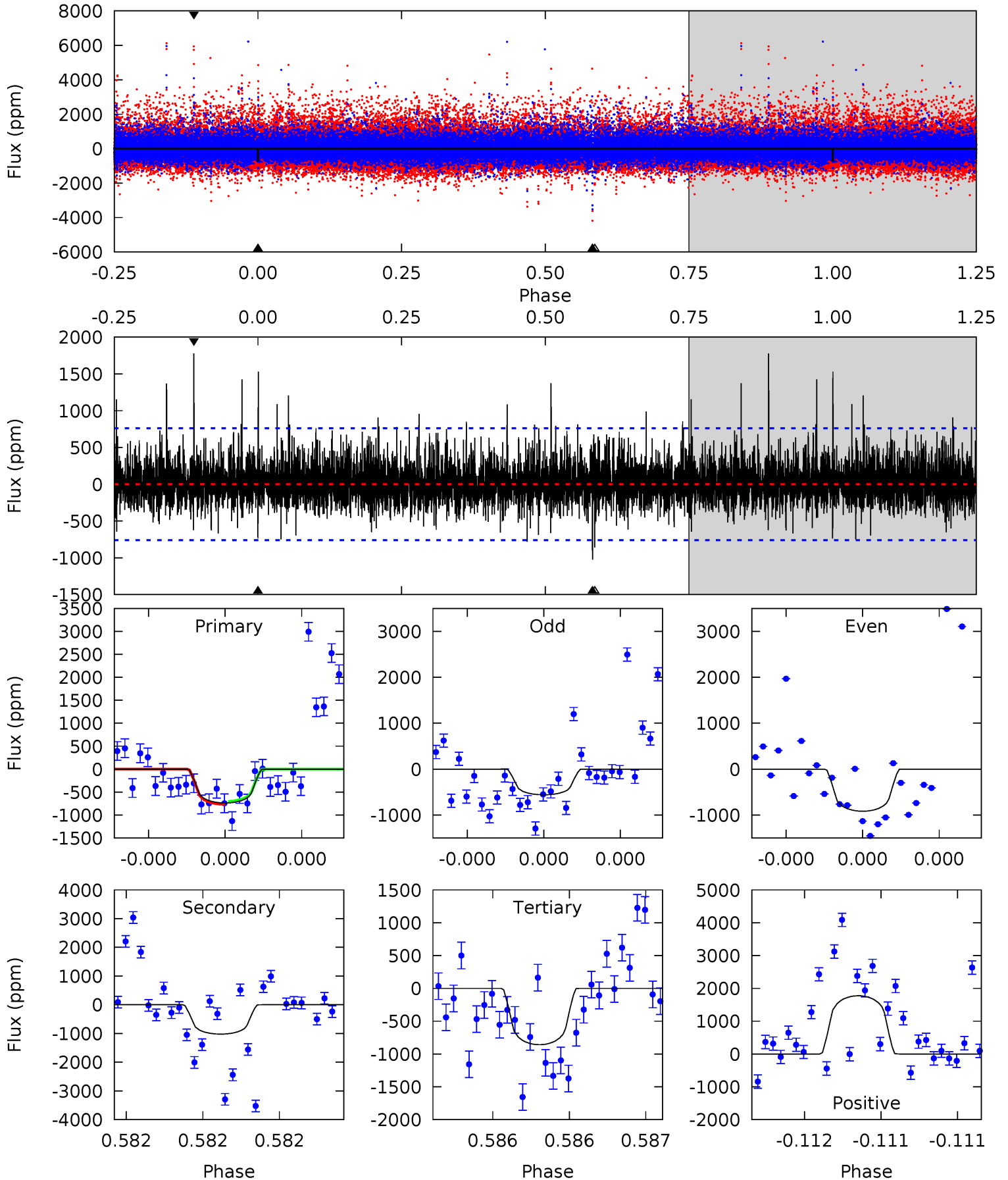
TCE 005607395-05     $P=423.798846$  Days     $T_0=136.645831$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-05, P = 423.799040 Days, E = 136.651567 Days

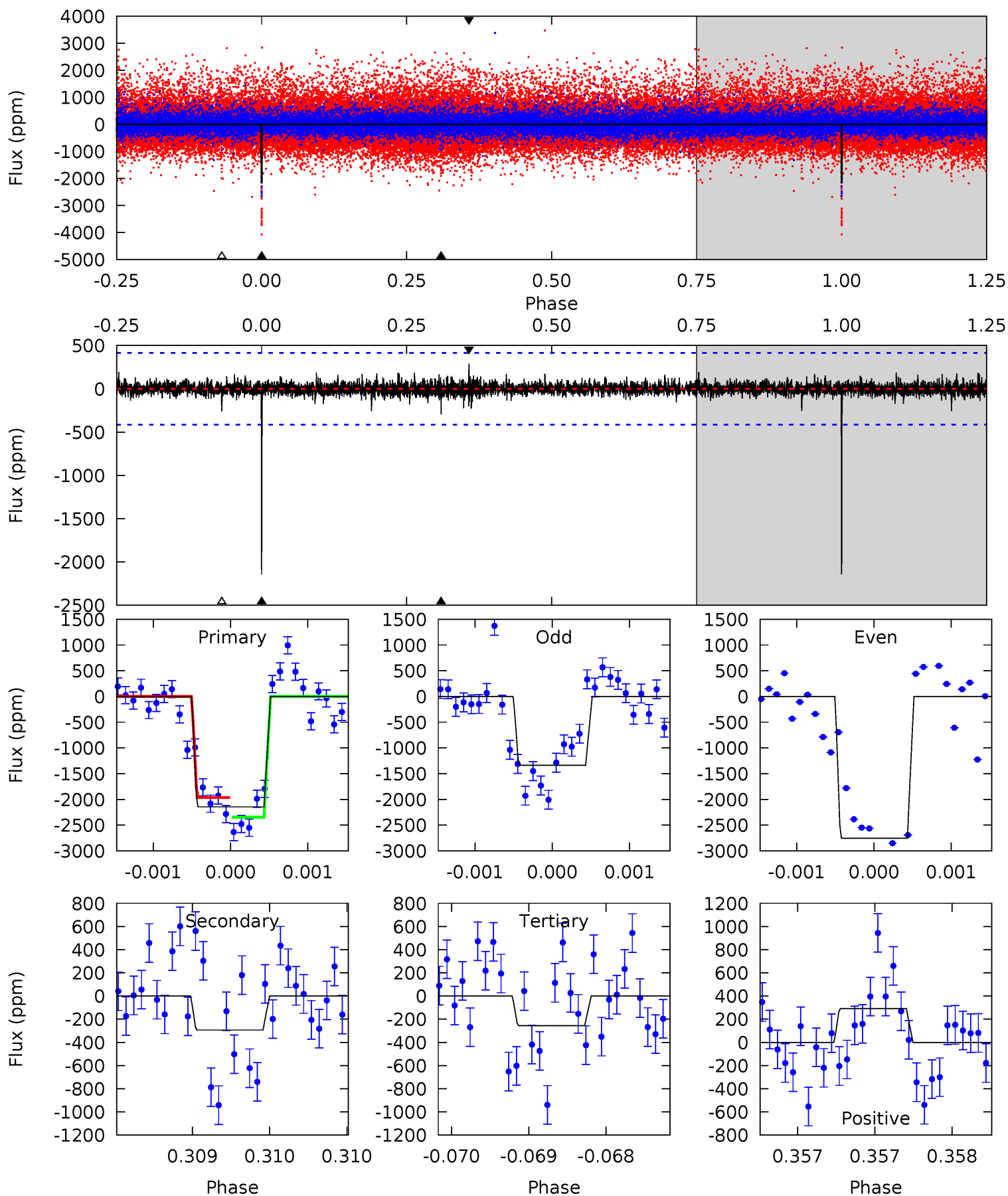
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.47	7.57	6.36	13.2	5.63	3.57	1.66	-0.89	-7.68	1.21	-5.58	0.85	1.15	0.63	0.23



# Alt Model-Shift Uniqueness Test

005607395-05, P = 423.798846 Days, E = 136.645831 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
28.5	3.90	3.40	3.88	5.51	3.38	0.58	25.1	24.6	0.49	0.02	9.49	1.02	0.12	2.54



### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1022 \pm 135$	$3.41^{+3.25}_{-2.37}$	$180^{+4}_{-4}$	$3135^{+1546}_{-533}$	$39700^{+379196}_{-30059}$
Alt.	$-293 \pm 75$	$3.76^{+3.57}_{-2.46}$	$179^{+4}_{-4}$	$2577^{+922}_{-365}$	$9156^{+66920}_{-6723}$

$T_{max}$  = 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

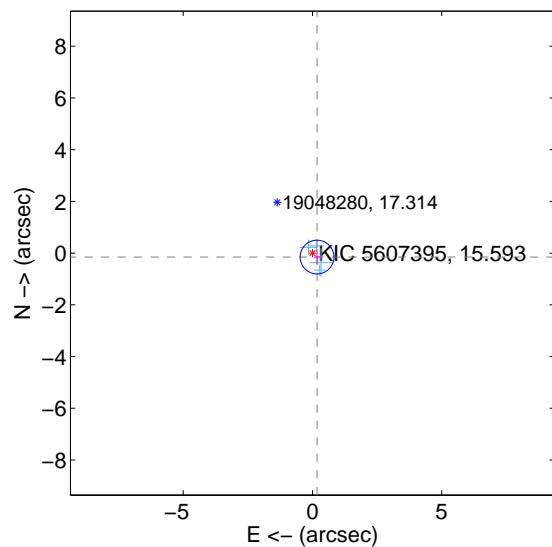
Supplemental centroid analysis for 005607395-05. Kepler magnitude: 15.59. Transit SNR 3.78

There are 4 quarters with good PRF difference image offsets

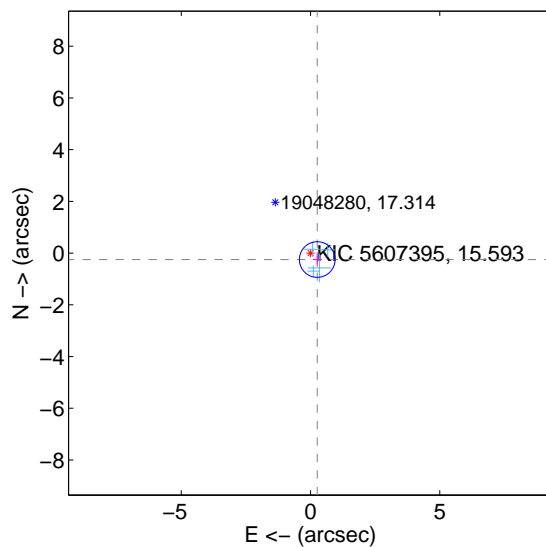
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.234 \pm 0.217$	1.08	$-0.178 \pm 0.129$	$-0.152 \pm 0.298$
PRF-fit source offset from KIC position	$0.360 \pm 0.230$	1.57	$-0.260 \pm 0.175$	$-0.249 \pm 0.277$
photometric centroid source offset	$1.06 \pm 2.25$	0.47	$1.01 \pm 2.23$	$0.33 \pm 2.36$

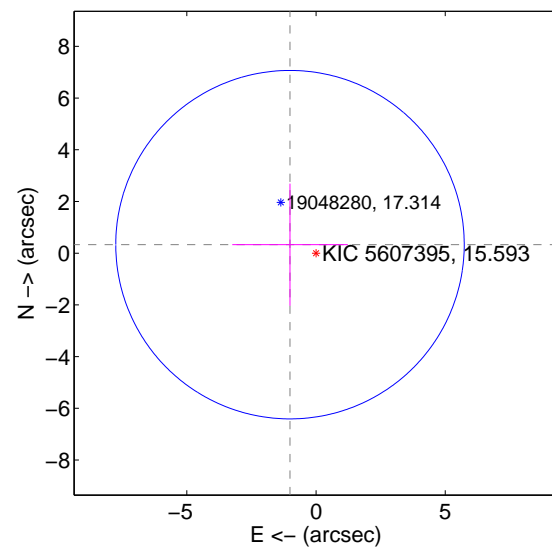
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

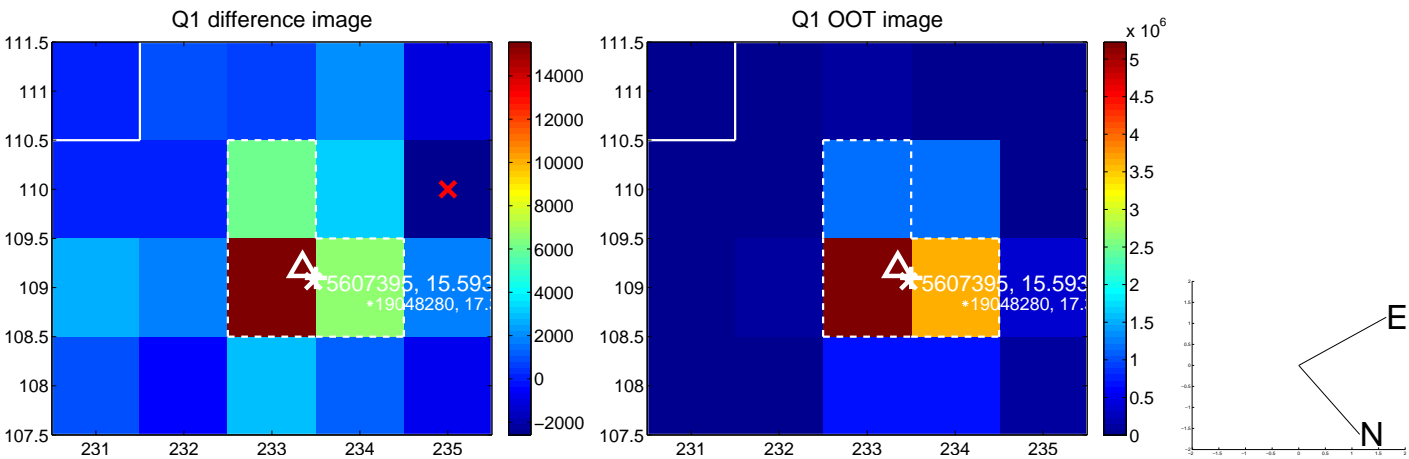


offset from photometric centroids



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 ×: 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.

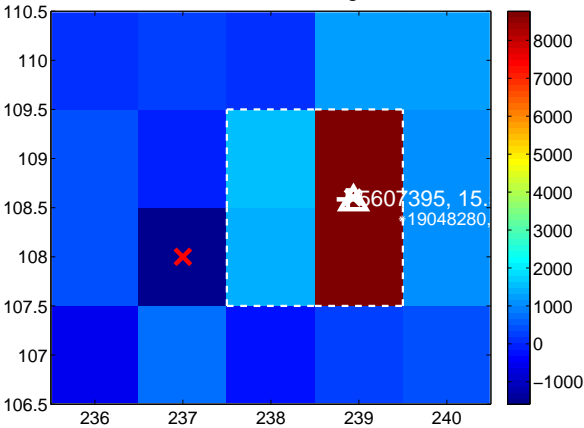
Q5 no difference image



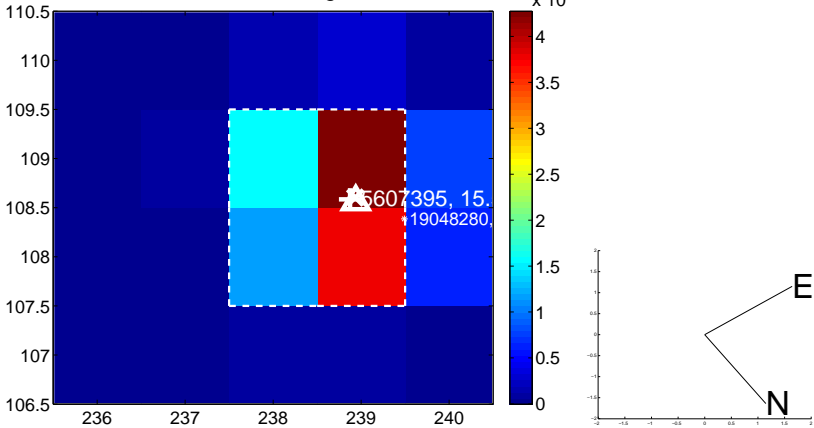
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image

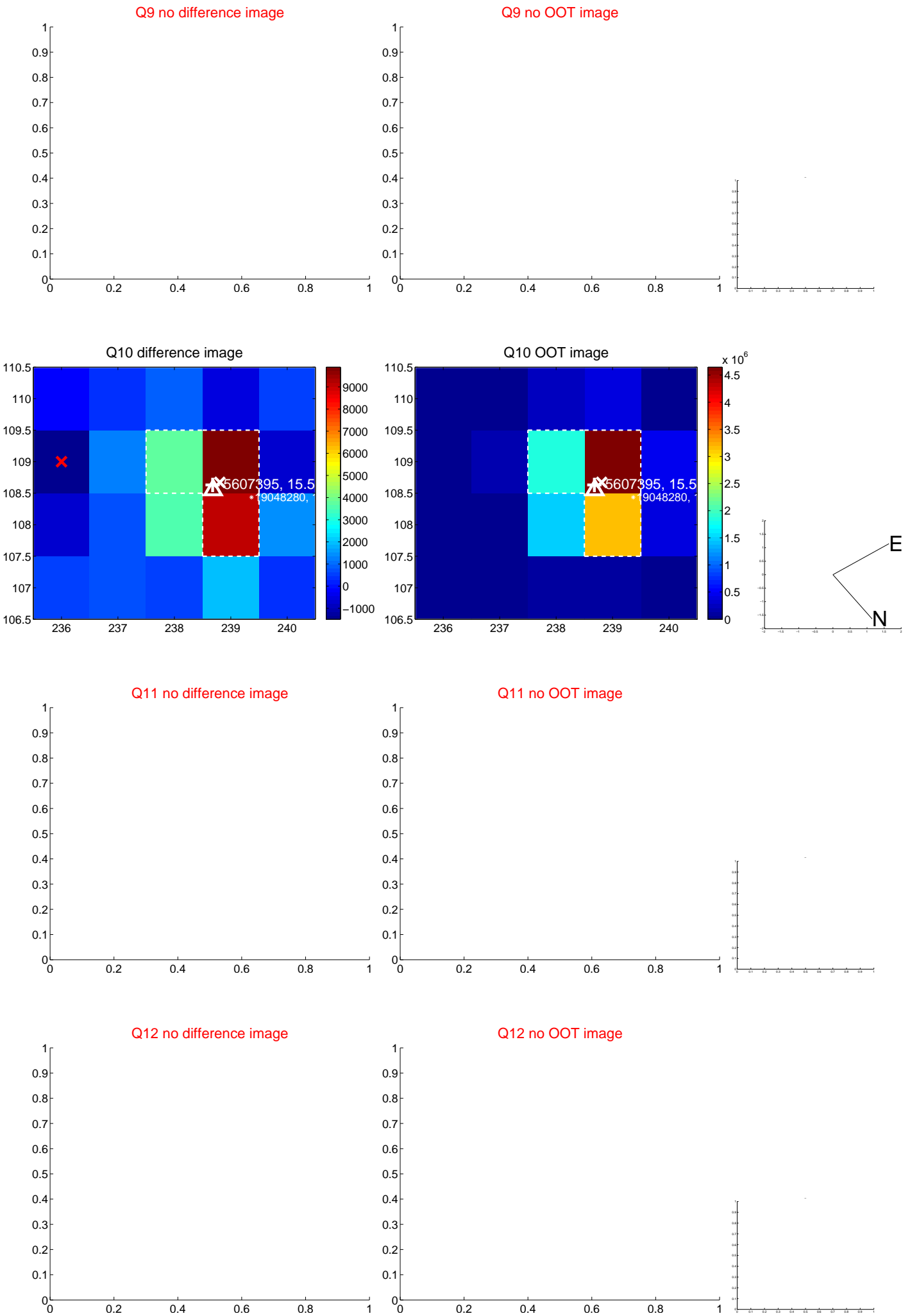


Q8 no OOT image

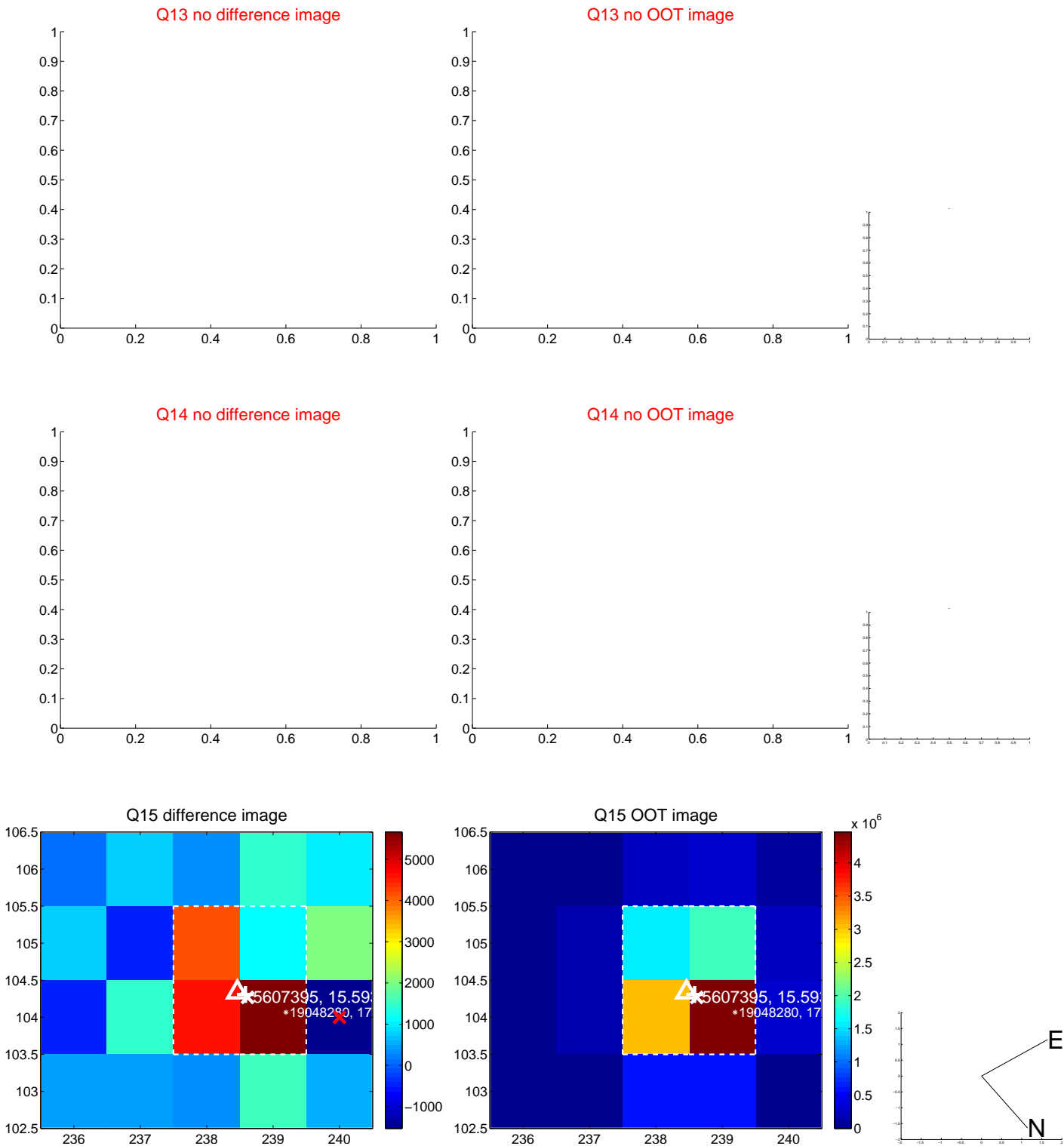




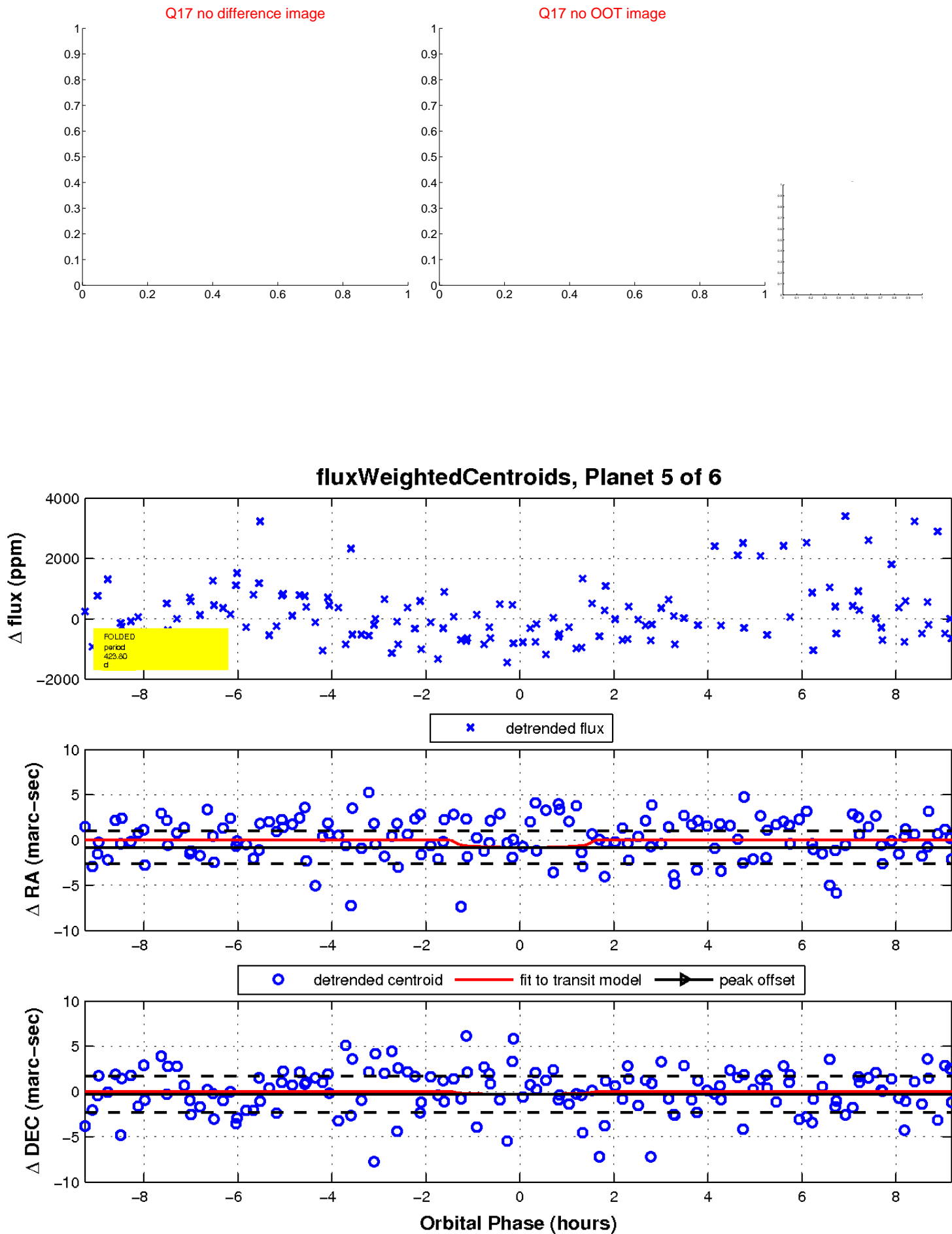
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

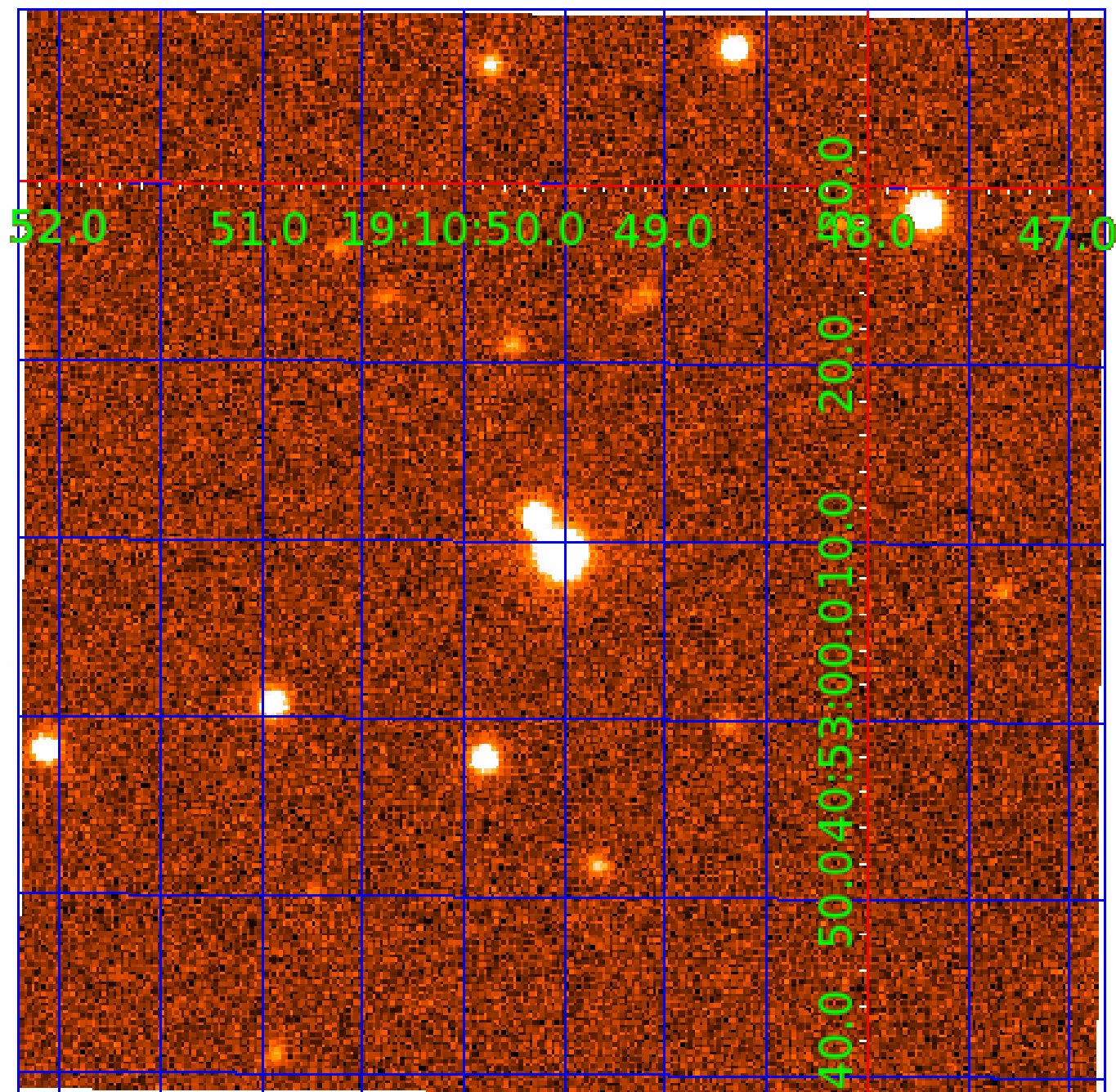


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005607395

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005607395-01	OBS	No	371.823809	298.440525	1855.6	6.178	13.0	7.3	0.52	3827	2.24	0.08
005607395-02	OBS	No	576.592829	247.340574	1510.8	7.724	14.0	6.3	0.52	3827	2.01	0.04
005607395-03	OBS	No	320.772295	245.866352	1890.5	3.939	10.7	7.3	0.52	3827	2.35	0.10
005607395-04	OBS	No	187.856620	132.517539	919.8	6.715	9.2	5.9	0.52	3827	1.86	0.19
005607395-05	OBS	No	423.799040	136.651567	746.3	3.099	11.0	3.8	0.52	3827	1.52	0.07
005607395-06	OBS	No	479.219145	153.706969	1603.7	9.113	10.3	6.5	0.52	3827	2.48	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005607395-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
005607395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
005607395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005607395-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
005607395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

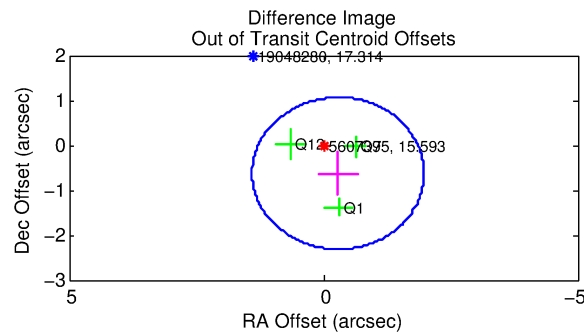
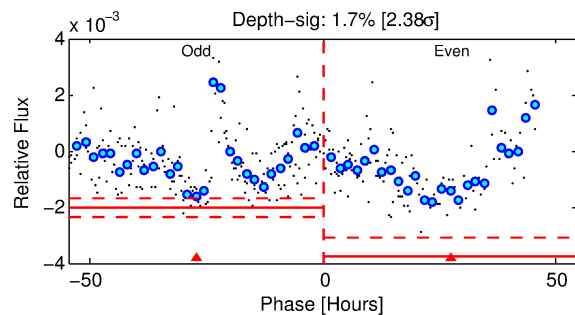
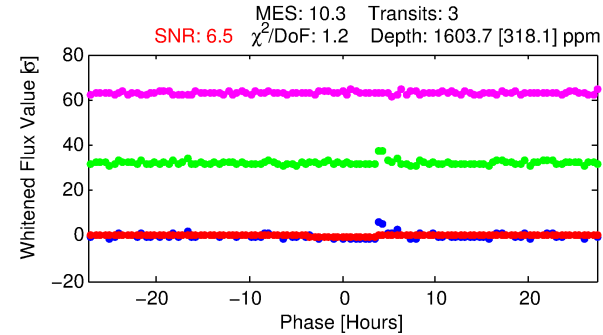
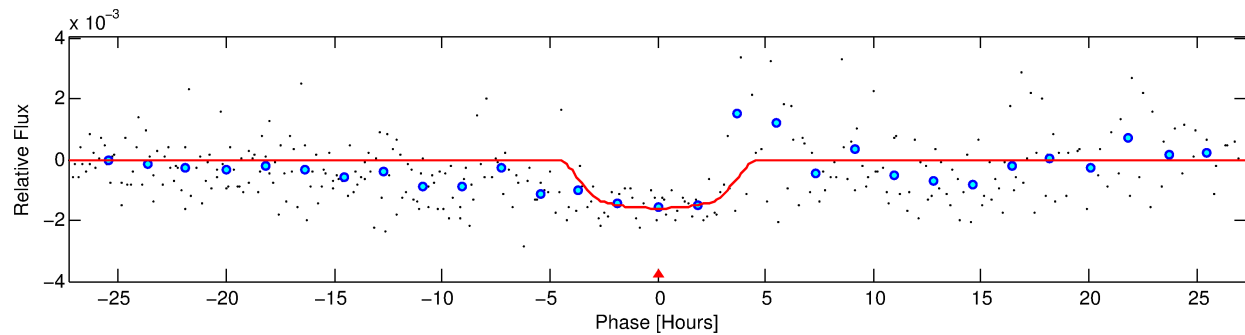
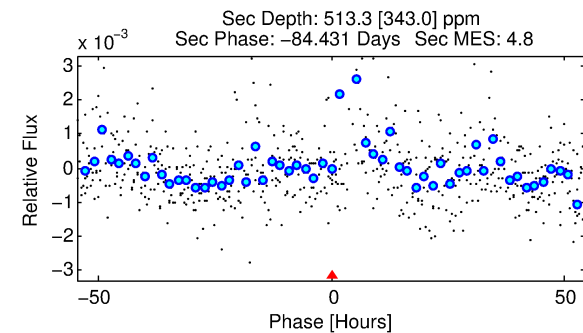
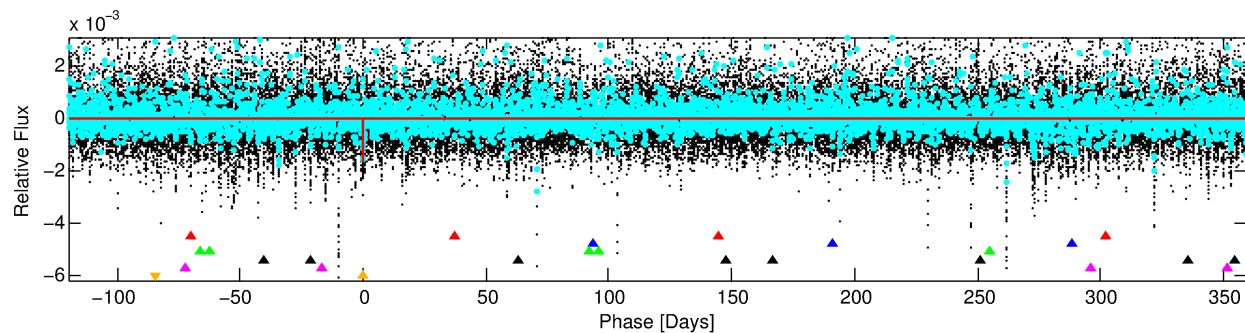
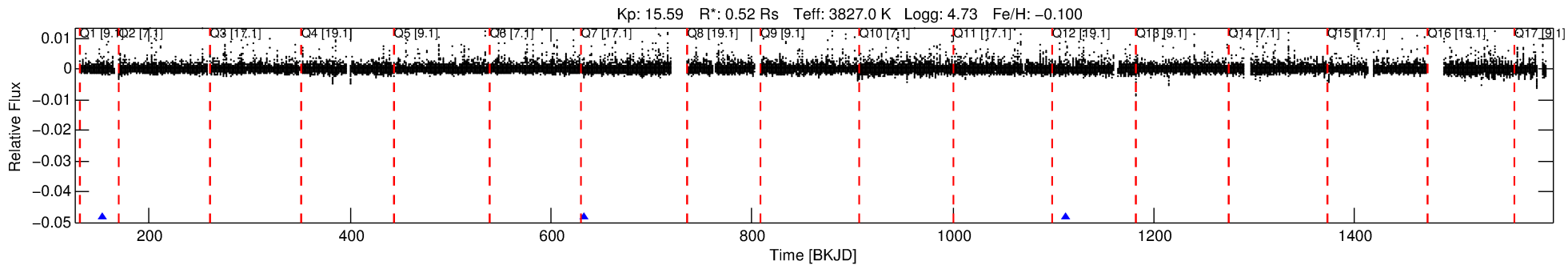
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005607395-06

No Significant Match Found

# DV One-Page Summary

KIC: 5607395 Candidate: 6 of 6 Period: 479.219 d



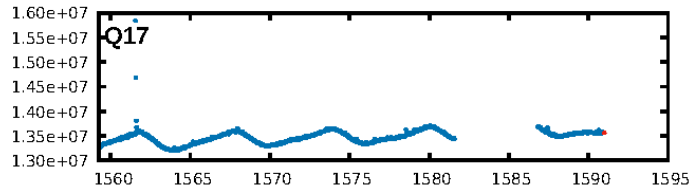
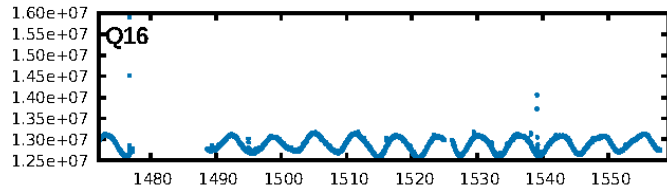
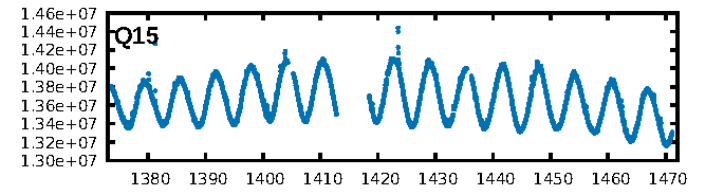
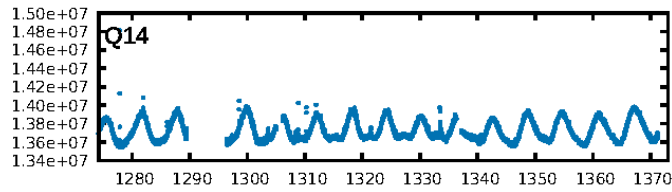
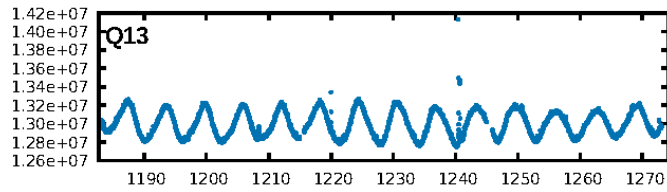
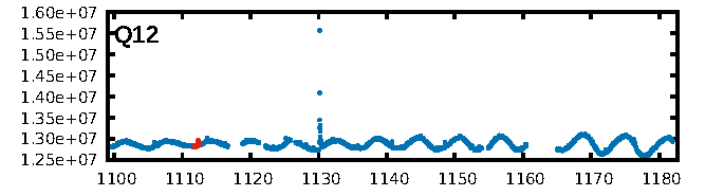
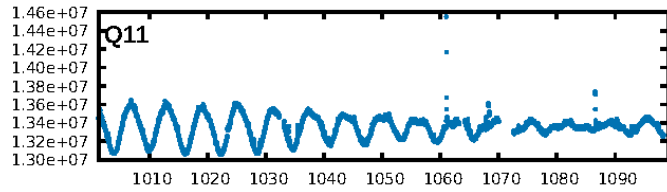
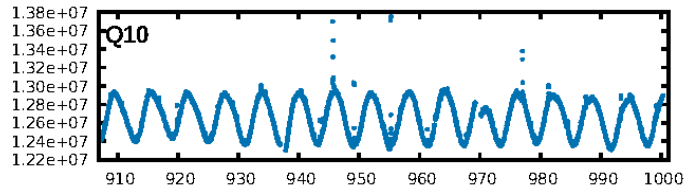
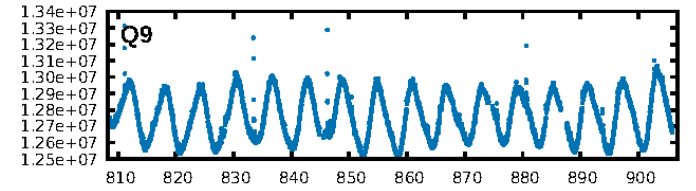
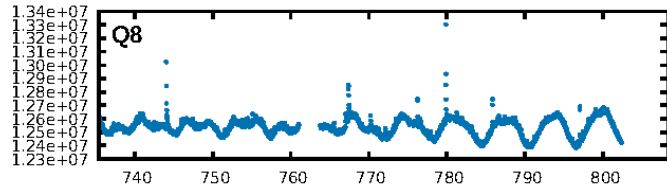
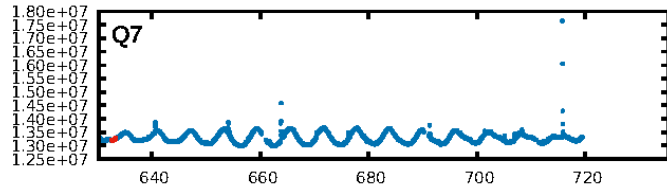
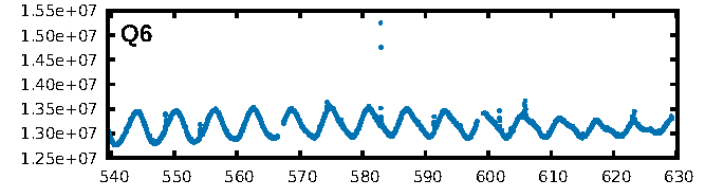
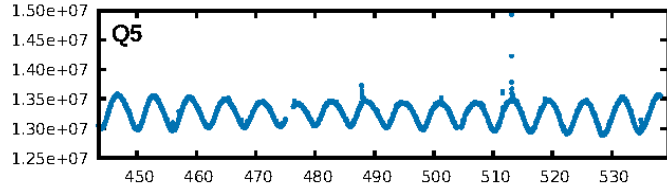
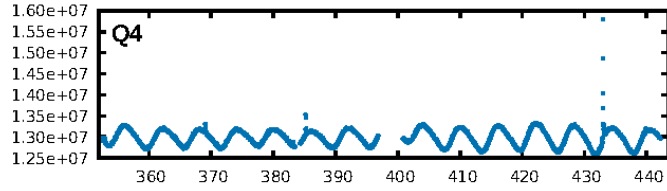
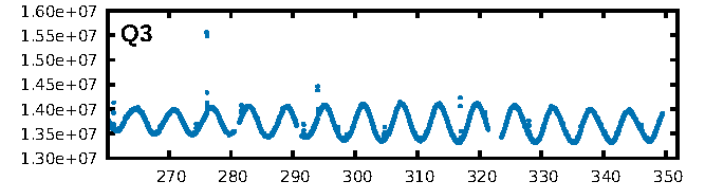
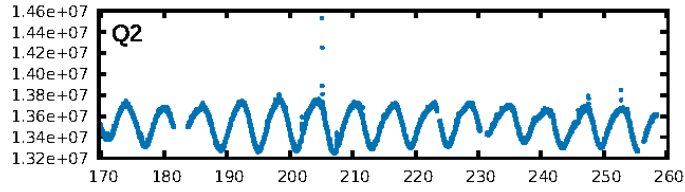
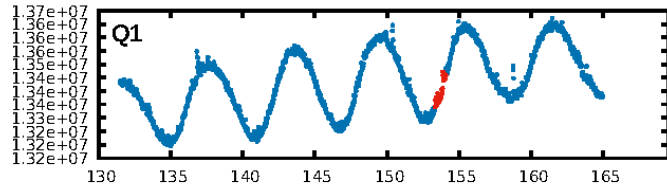
## DV Fit Results:

Period = 479.21914 [0.01464] d  
Epoch = 153.7070 [0.0192] BKJD  
Rp/R\* = 0.0438 [0.0061]  
a/R\* = 211.18 [73.63]  
b = 0.90 [0.07]  
Seff = 0.06 [0.01]  
Teq = 124 [3] K  
Rp = 2.48 [0.38] Re  
a = 0.9684 [0.0500] AU  
Ag = 42953.16 [31271.64] [1.37σ]  
Teffp = 2754 [502] K [5.24σ]

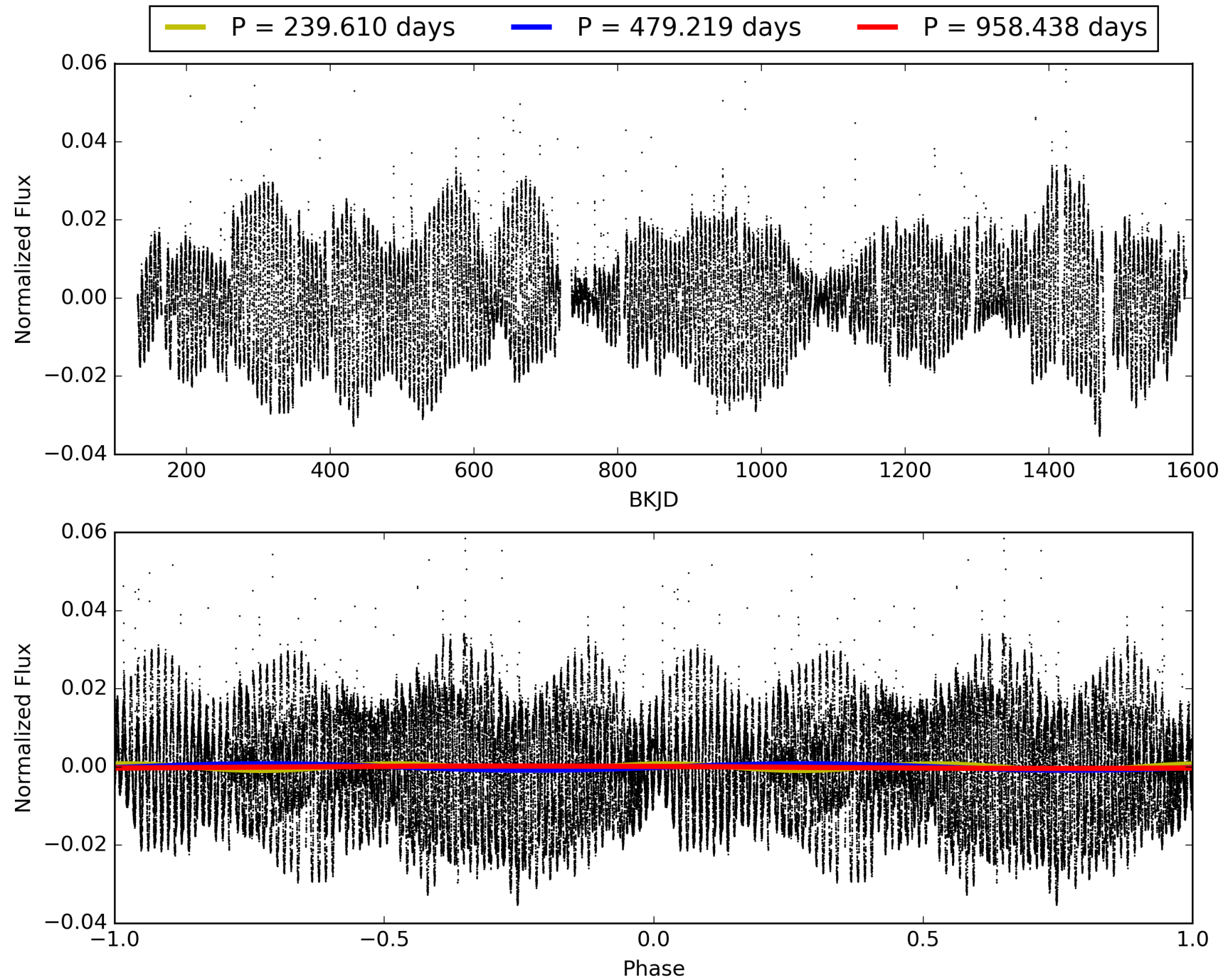
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [138.18σ]  
LongPeriod-sig: 100.0% [195.63σ]  
ModelChiSquare2-sig: 12.8%  
ModelChiSquareGof-sig: 98.1%  
Bootstrap-pfa: 2.59e-09  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.9773  
Centroid-sig: 6.4%  
Centroid-so: 1.101 arcsec [1.23σ]  
OotOffset-rm: 0.689 arcsec [1.22σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.762 arcsec [1.42σ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005607395-06, PDC Light Curves



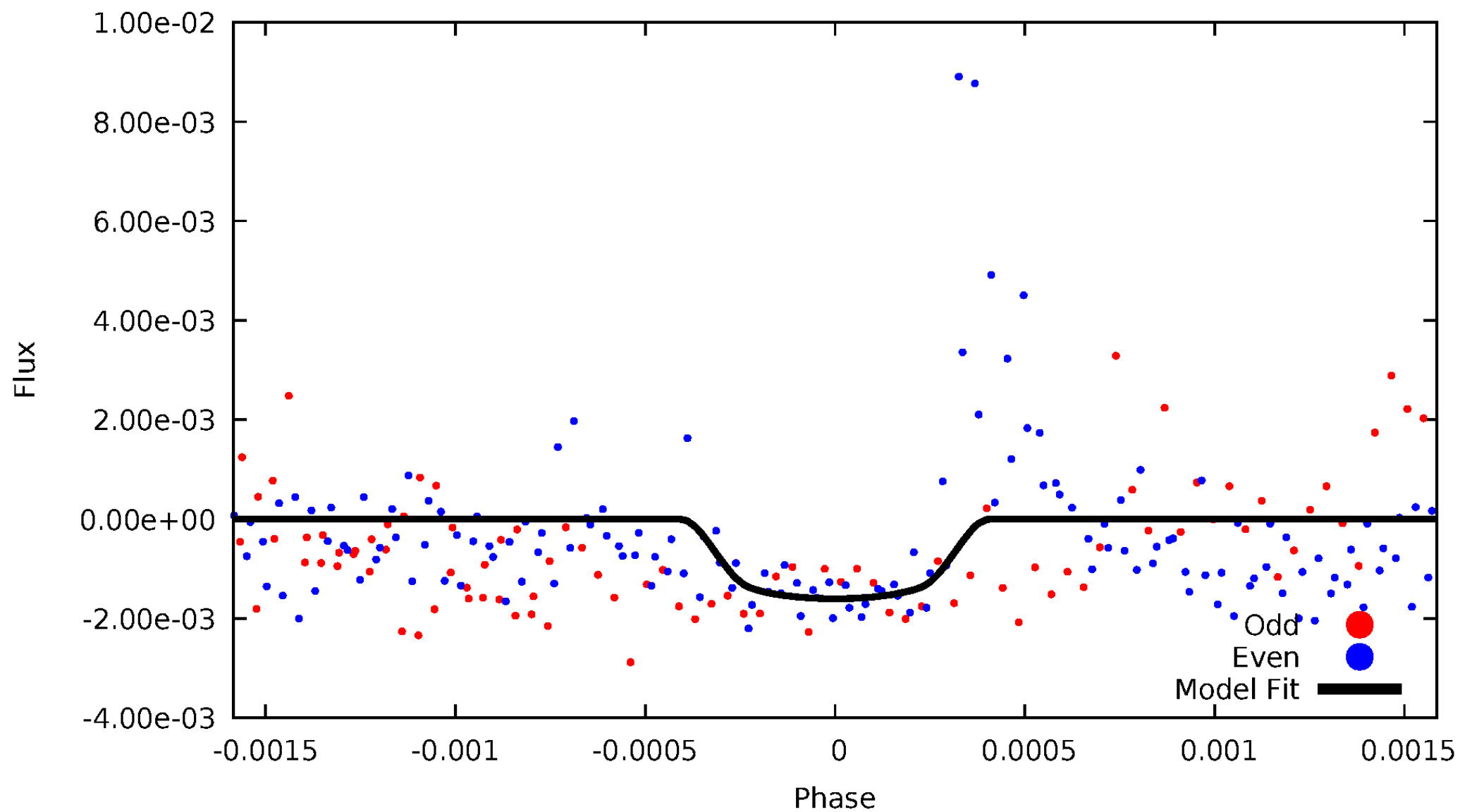
TCE 005607395-06





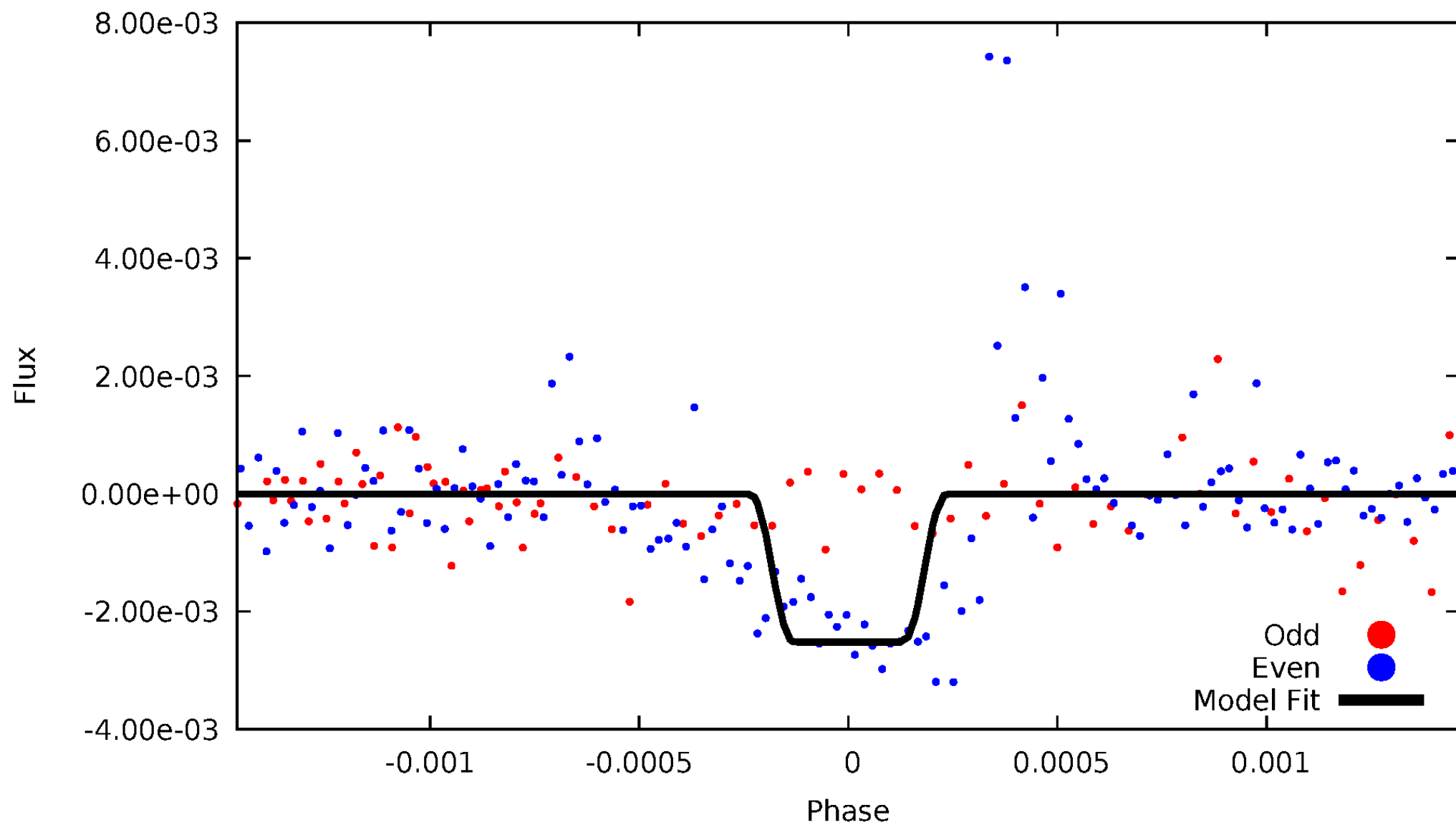
# DV Odd/Even

TCE 005607395-06



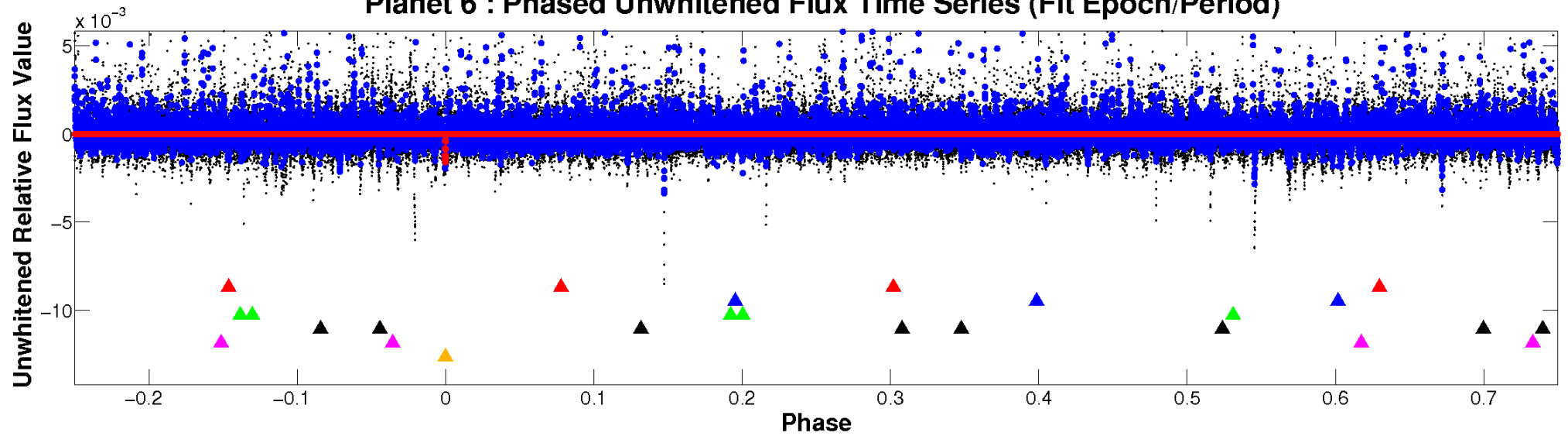
# ALT Odd/Even

TCE 005607395-06

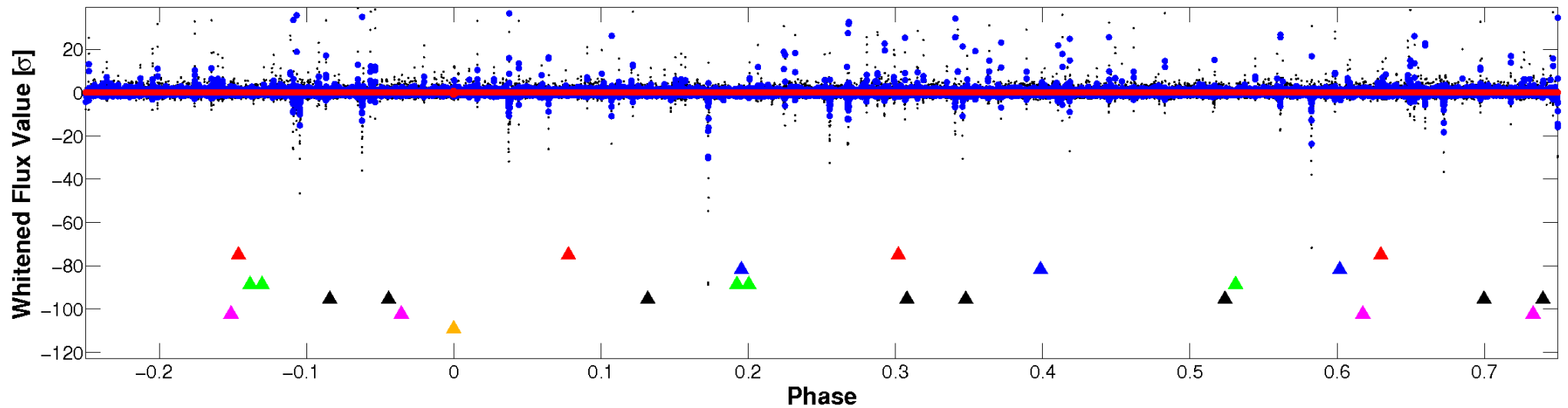


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

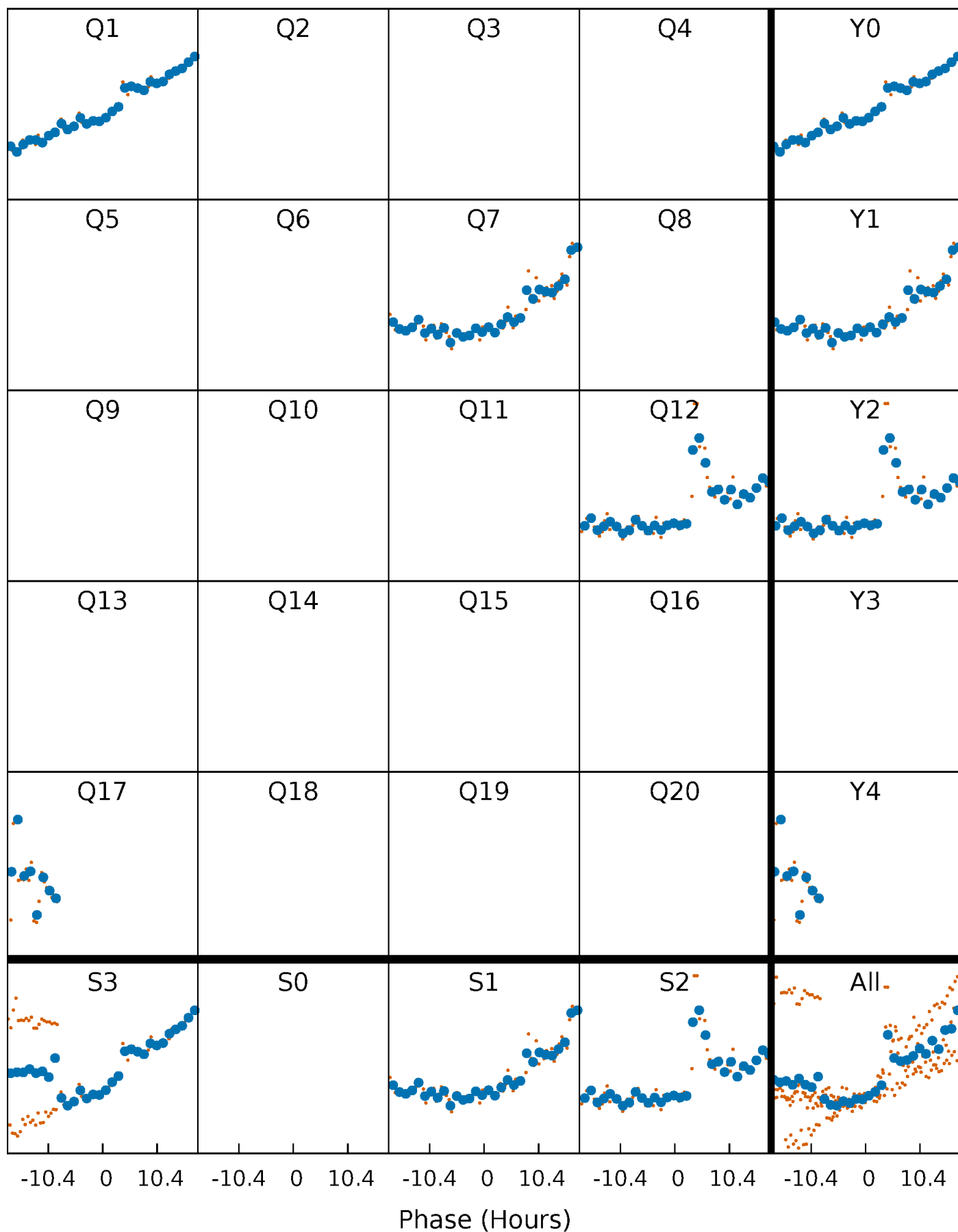


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



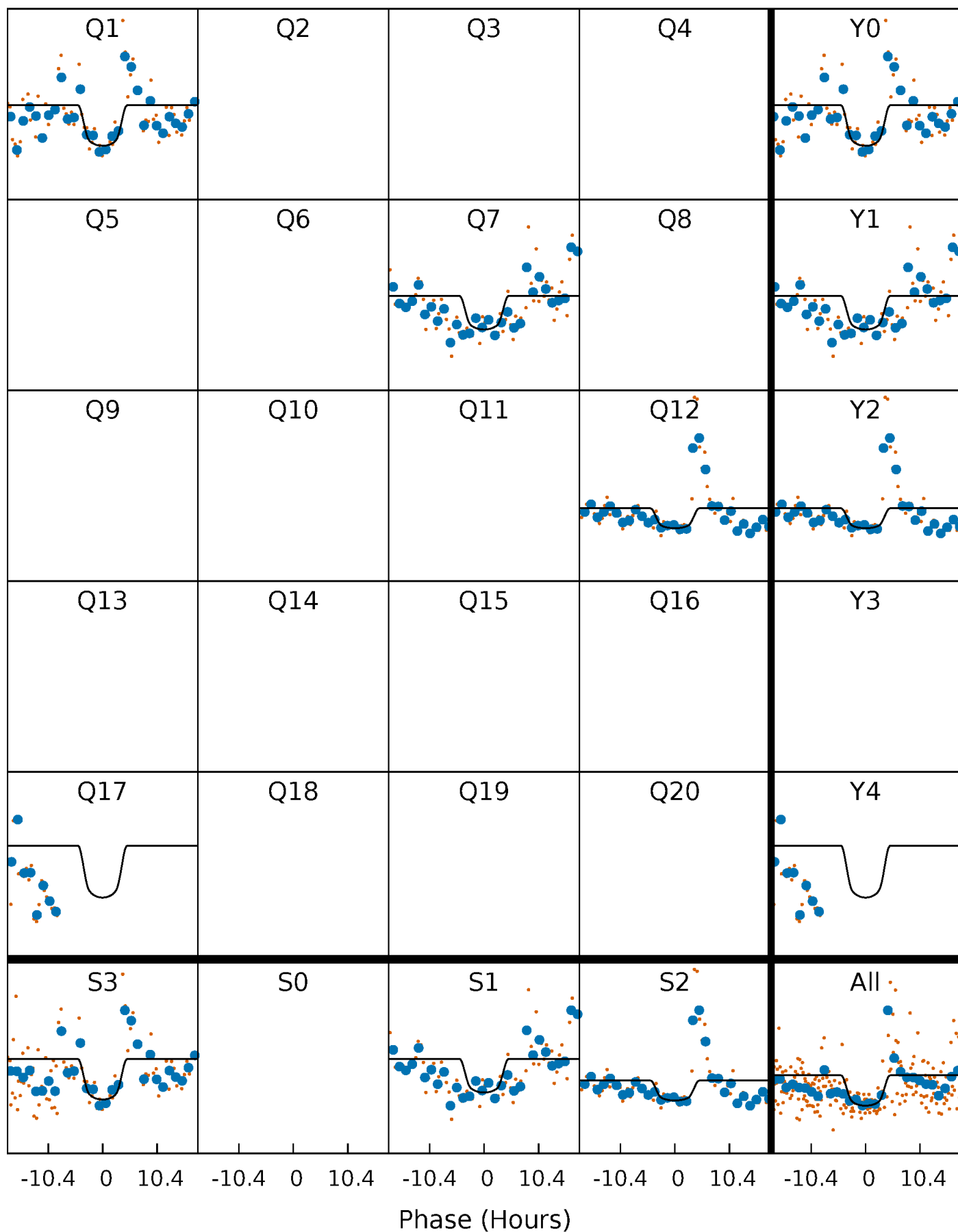
# PDC Quarter-Phased Transit Curves

TCE 005607395-06     $P=479.219145$  Days     $T_0=153.706969$  (BKJD)



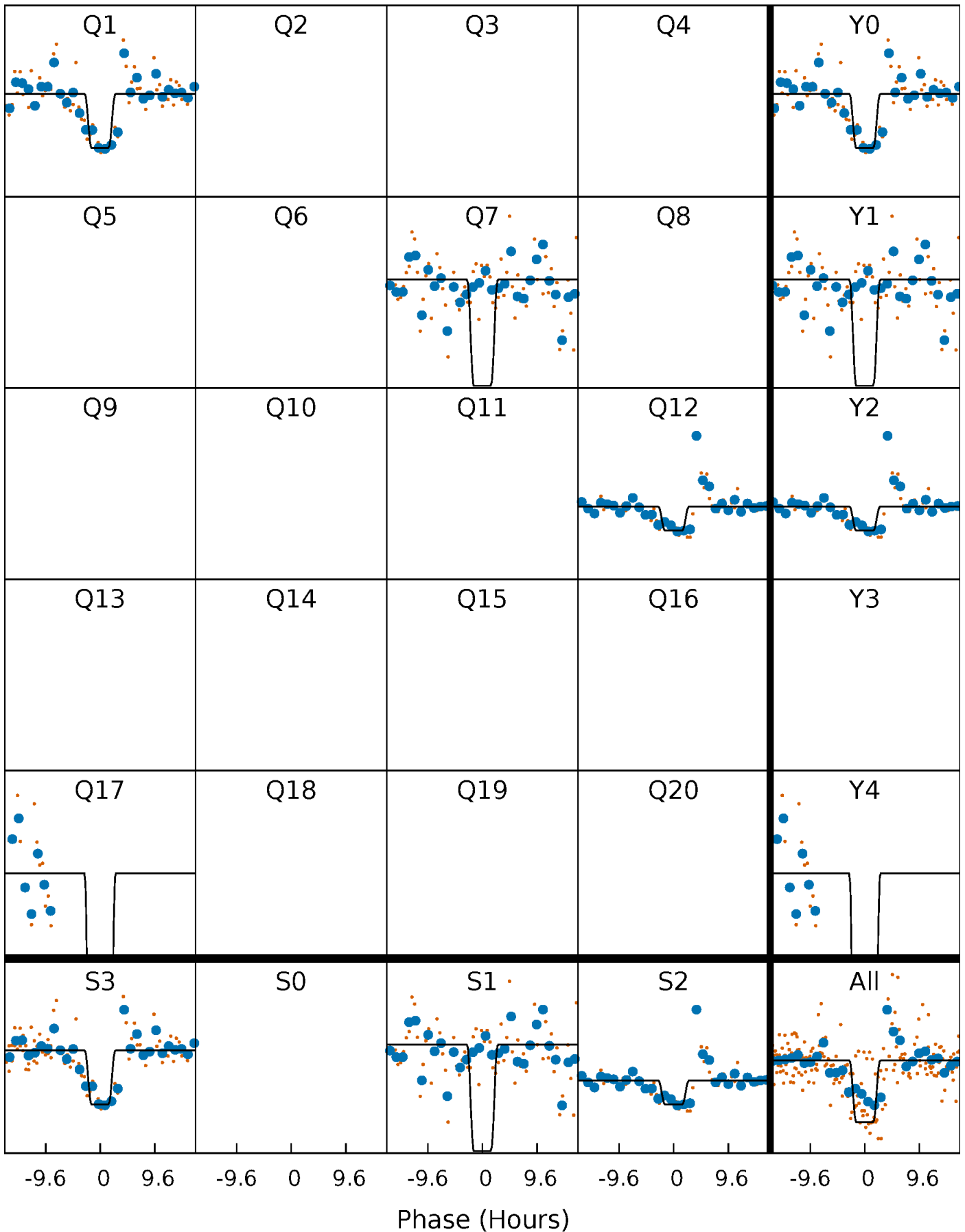
# DV Quarter-Phased Transit Curves

TCE 005607395-06 P=479.219145 Days  $T_0=153.706969$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

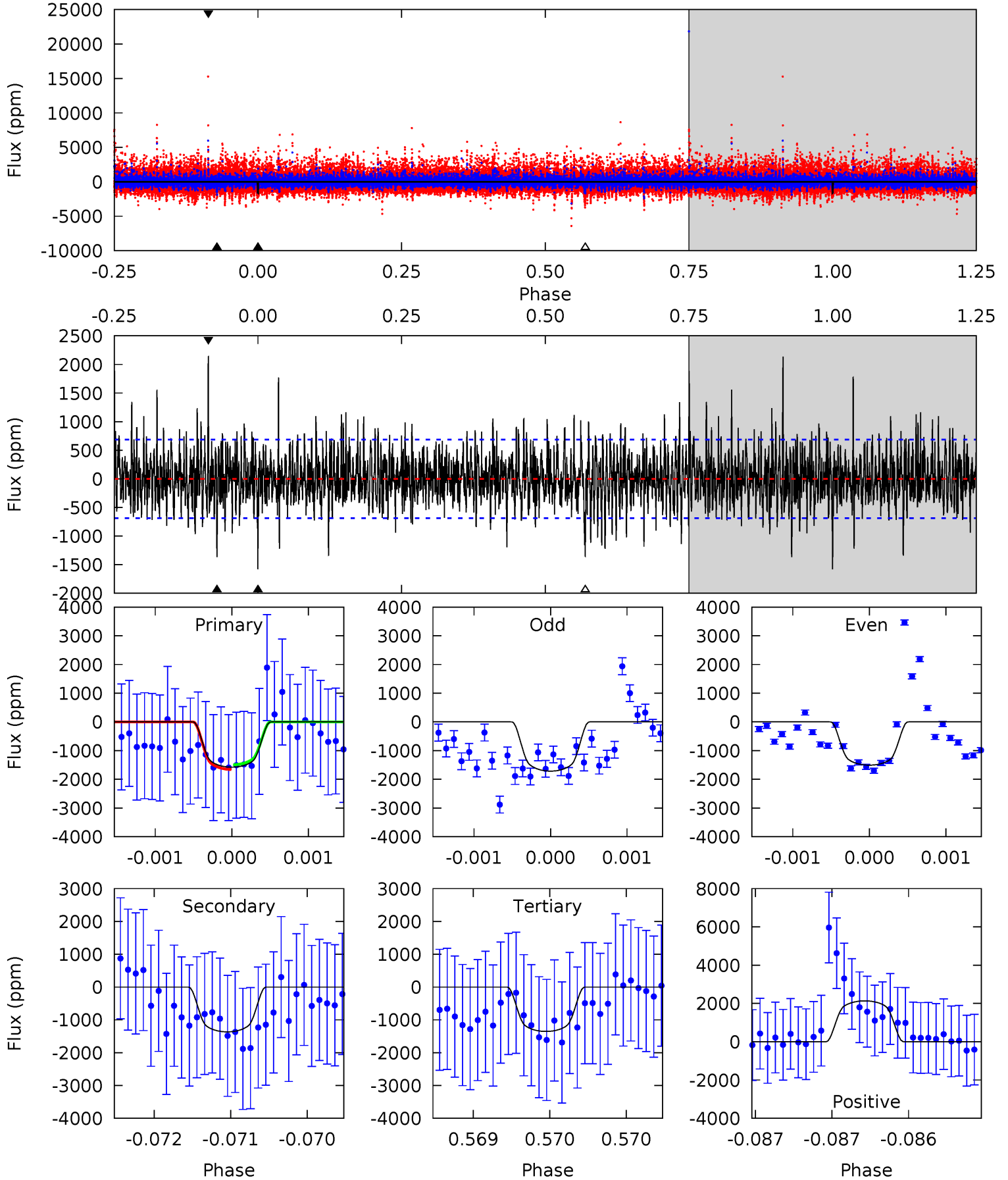
TCE 005607395-06 P=479.221472 Days  $T_0=153.697068$  (BKJD)



# DV Model-Shift Uniqueness Test

005607395-06, P = 479.219145 Days, E = 153.706969 Days

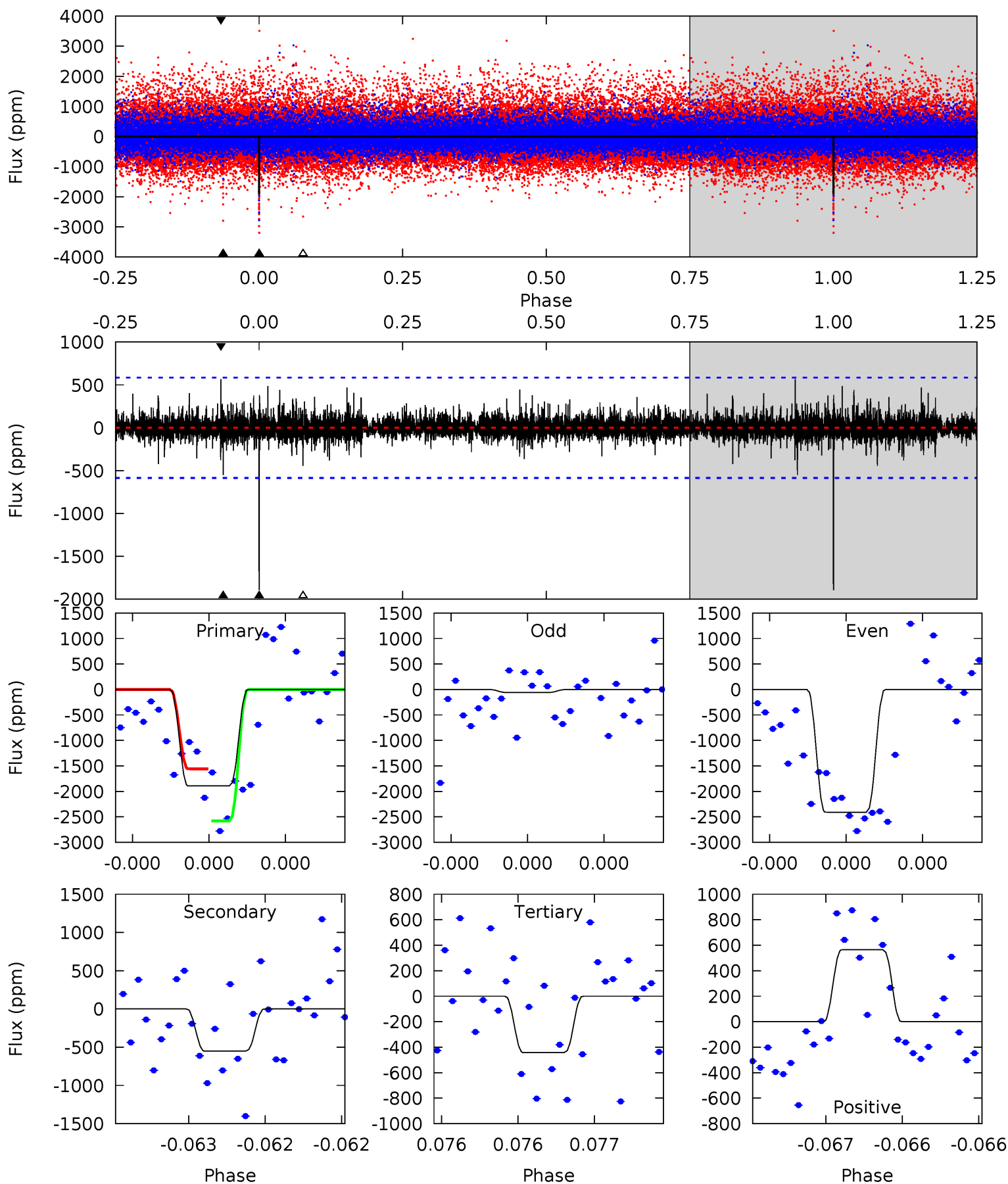
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	10.9	10.8	17.1	5.49	3.35	2.96	1.80	-4.45	0.10	-6.15	0.40	0.99	0.57	0.66



# Alt Model-Shift Uniqueness Test

005607395-06, P = 479.221472 Days, E = 153.697068 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
18.1	5.27	4.23	5.40	5.58	3.50	0.81	13.9	12.7	1.04	-0.13	10.4	0.69	0.23	4.81





### Stellar Parameters For KIC 005607395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3827^{+77}_{-77}$	$4.728^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.520^{+0.025}_{-0.034}$	$0.526^{+0.030}_{-0.030}$	$5.280^{+0.794}_{-0.512}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-7%	+6%/-6%	+15%/-10%
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 005607395-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1365 \pm 125$	$2.47^{+0.39}_{-0.37}$	$172^{+4}_{-4}$	$3620^{+200}_{-180}$	$114641^{+47513}_{-28494}$
Alt.	$-551 \pm 105$	$2.82^{+0.36}_{-0.33}$	$172^{+4}_{-4}$	$3024^{+153}_{-132}$	$35298^{+12990}_{-9042}$

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

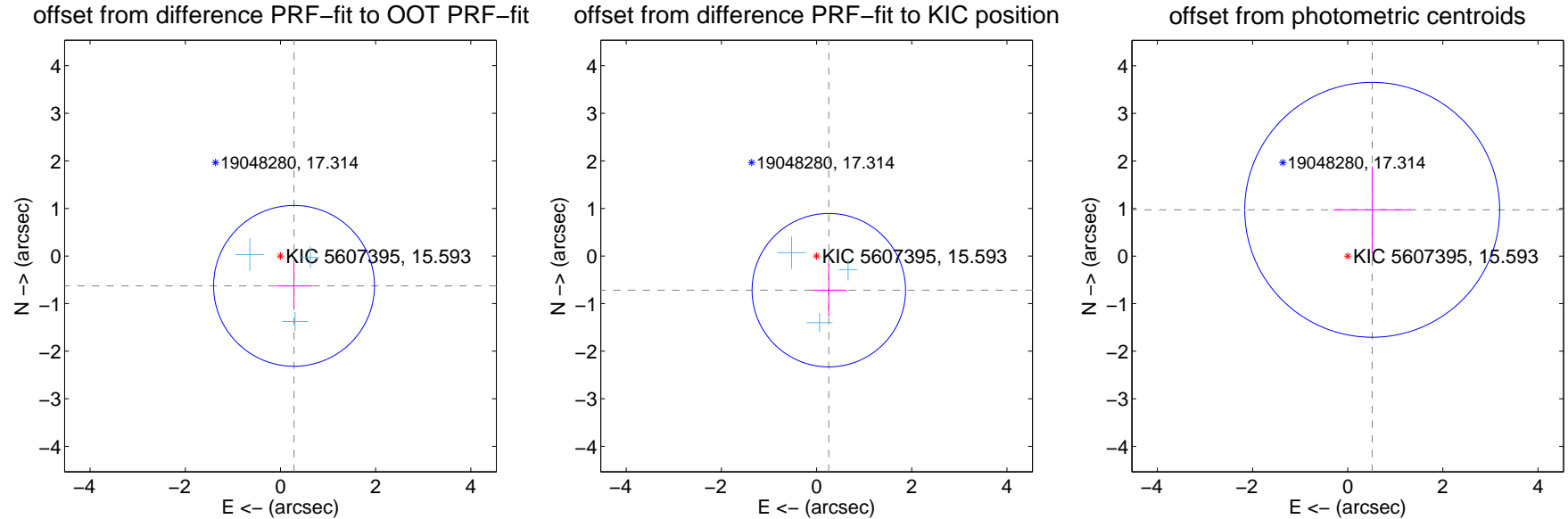
## DV Centroid Data

Supplemental centroid analysis for 005607395-06. Kepler magnitude: 15.59. Transit SNR 6.50

There are 3 quarters with good PRF difference image offsets

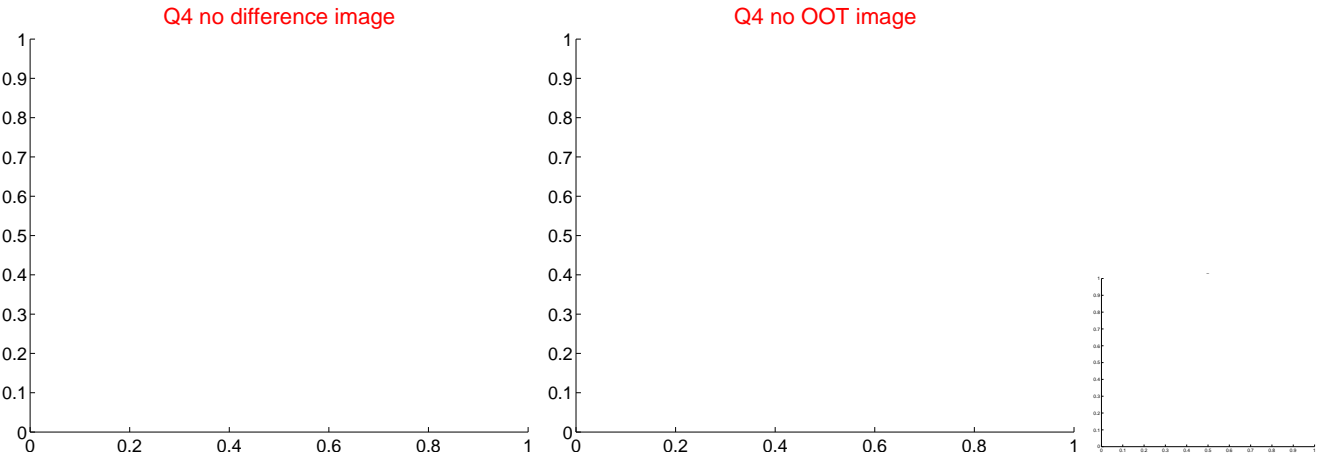
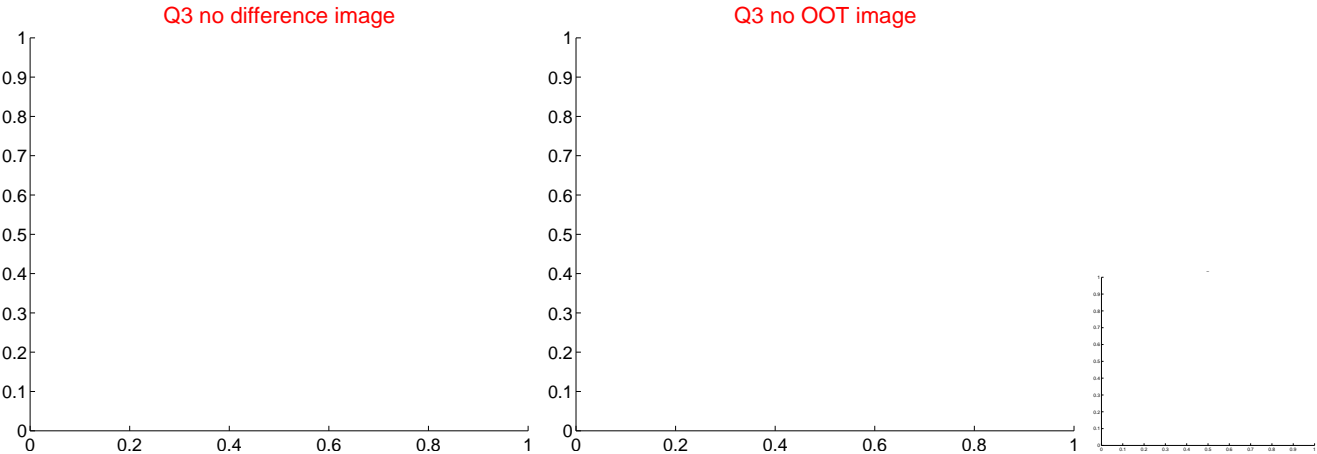
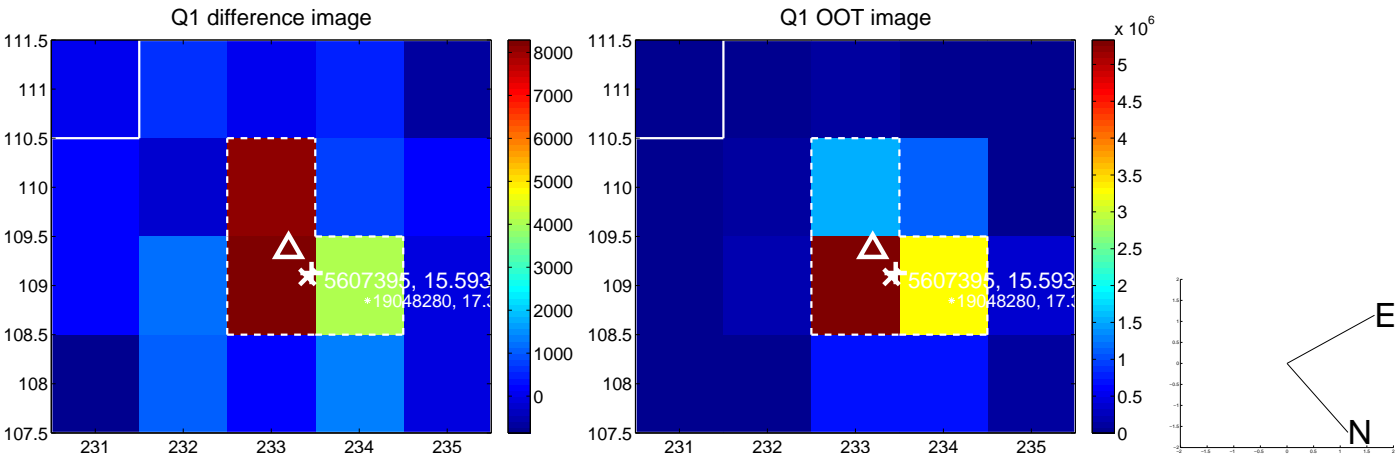
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.689 \pm 0.563$	1.22	$-0.285 \pm 0.379$	$-0.627 \pm 0.473$
PRF-fit source offset from KIC position	$0.762 \pm 0.537$	1.42	$-0.257 \pm 0.373$	$-0.718 \pm 0.555$
photometric centroid source offset	$1.10 \pm 0.89$	1.23	$-0.51 \pm 0.82$	$0.97 \pm 0.91$

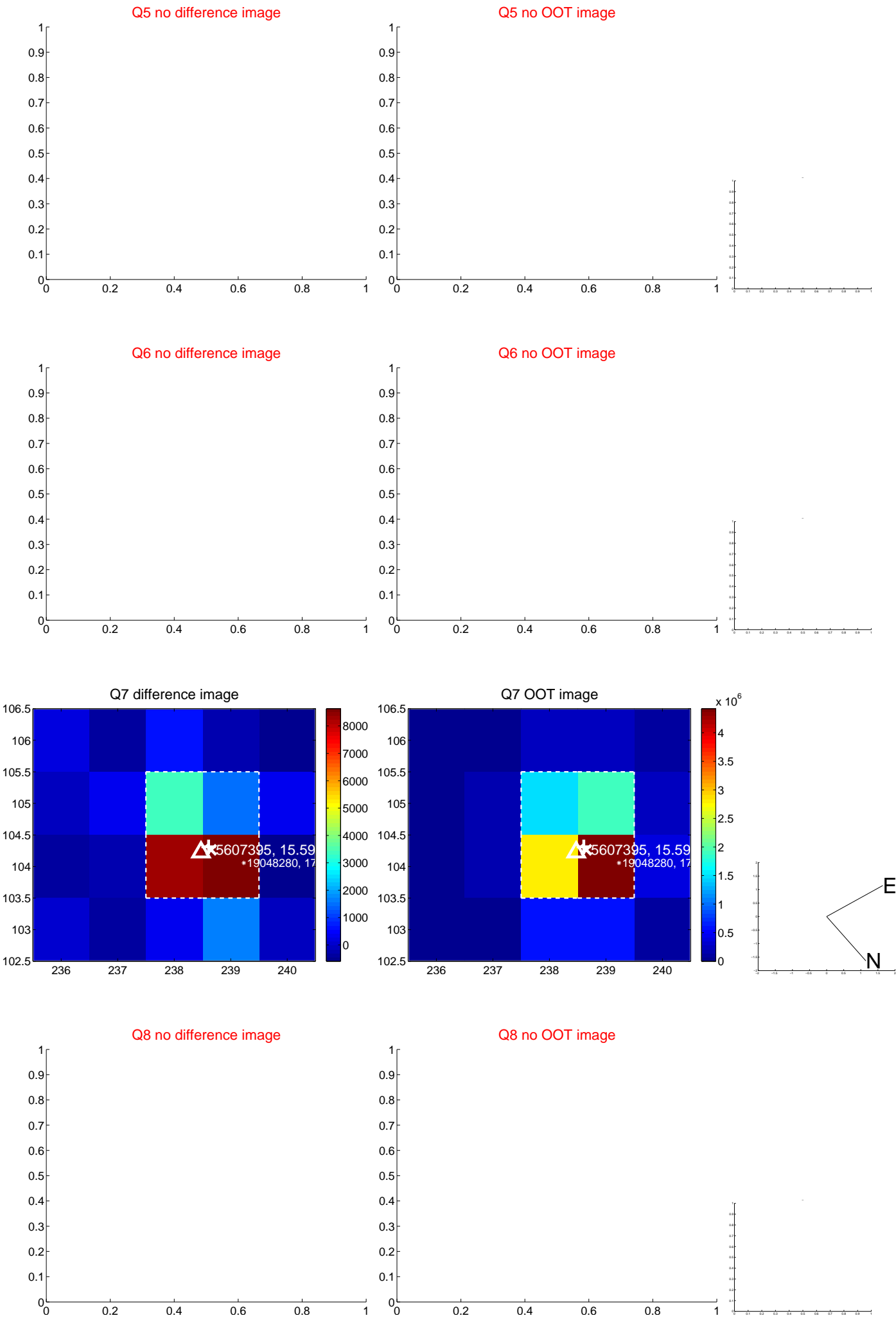


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

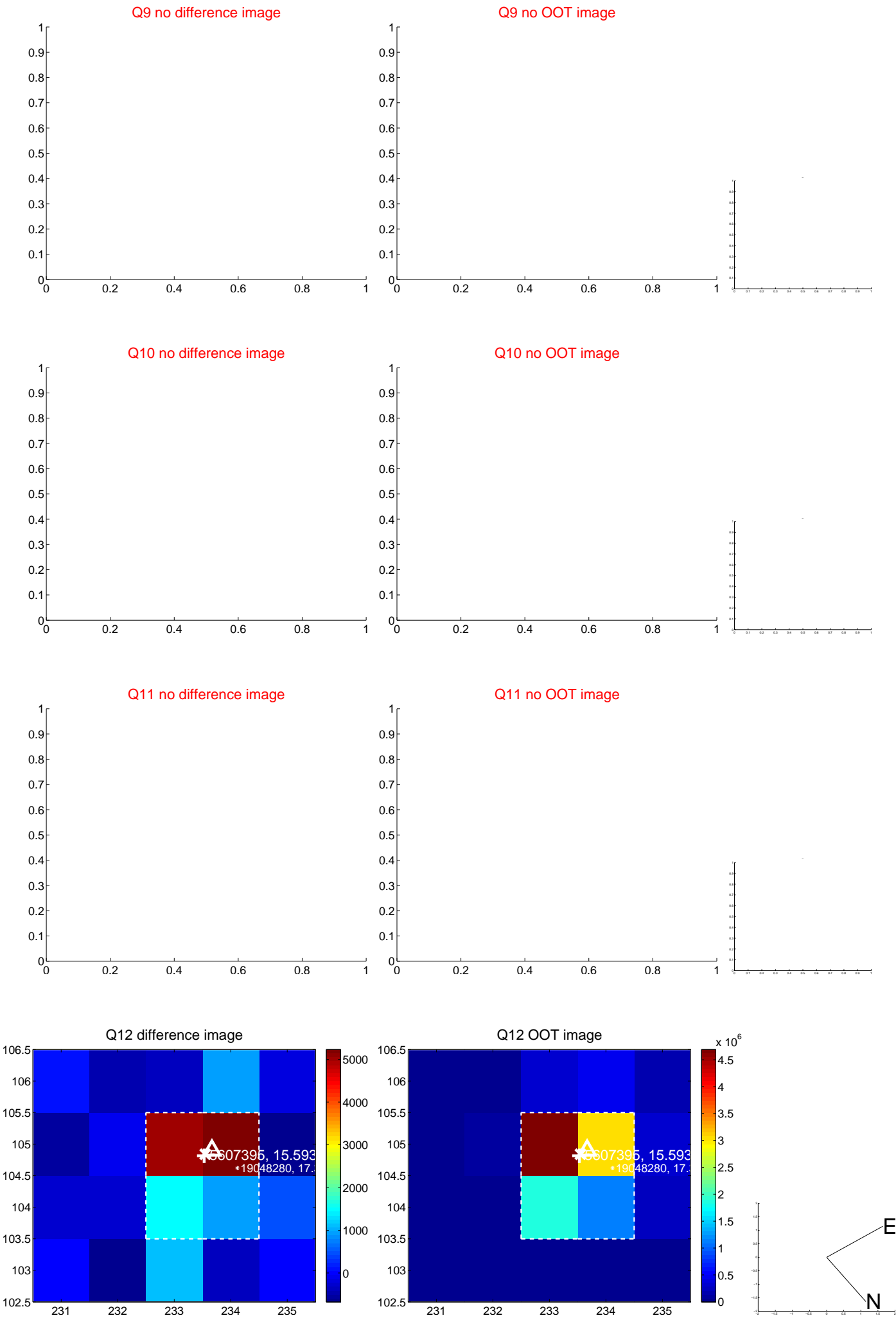
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



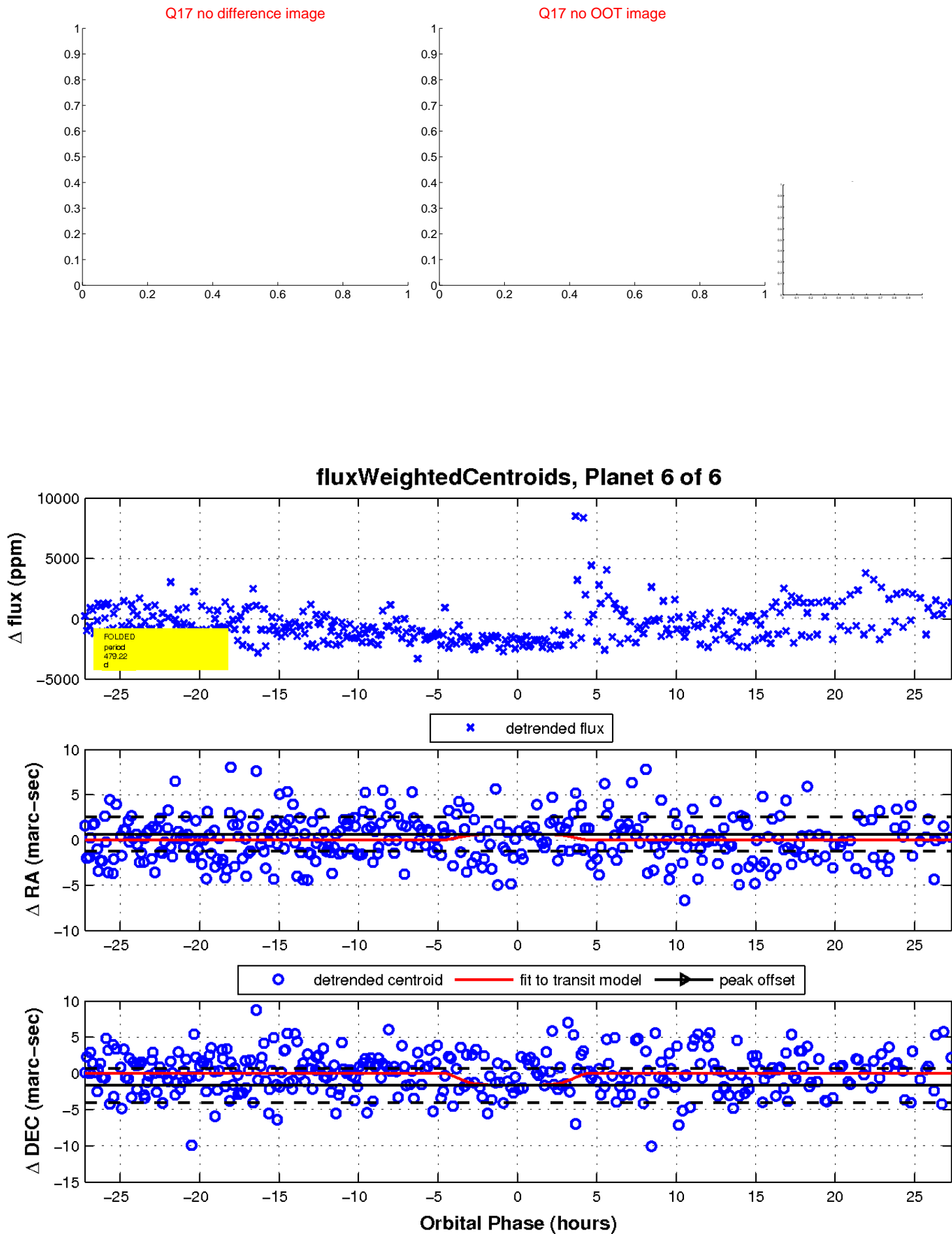
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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.



UKIRT Image

Declination

