

# KIC 005395645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005395645-01	OBS	No	348.269597	423.707496	5746.3	5.000	31.5	-1.0	0.97	6531	7.40	1.58
005395645-02	OBS	No	720.234190	135.197227	38697.7	14.954	20.6	17.2	0.97	6531	32.54	0.60
005395645-03	OBS	No	318.192130	405.250848	24296.7	13.251	18.3	14.6	0.97	6531	26.04	1.78
005395645-04	OBS	No	459.537354	470.569300	20644.7	9.955	17.6	16.9	0.97	6531	24.09	1.09
005395645-05	OBS	No	563.934457	408.638513	23429.0	16.204	15.6	14.2	0.97	6531	25.58	0.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005395645-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005395645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
005395645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005395645-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
005395645-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

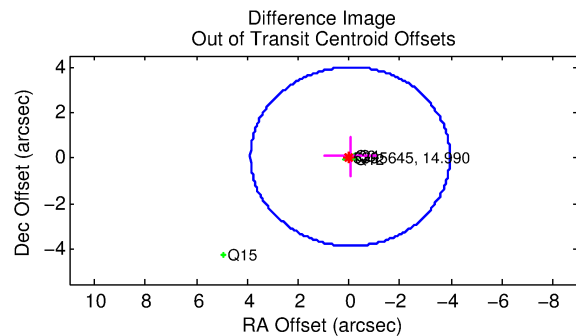
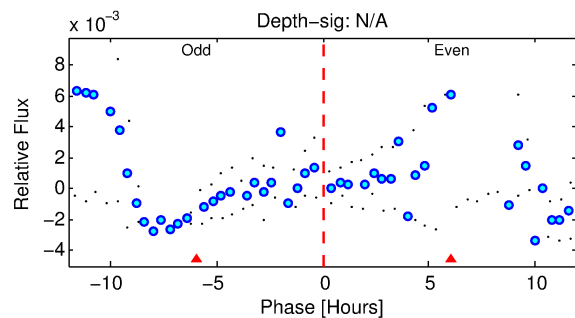
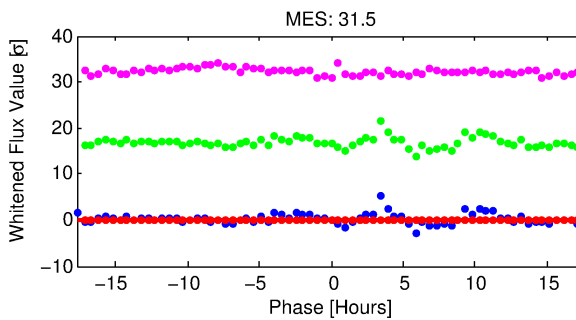
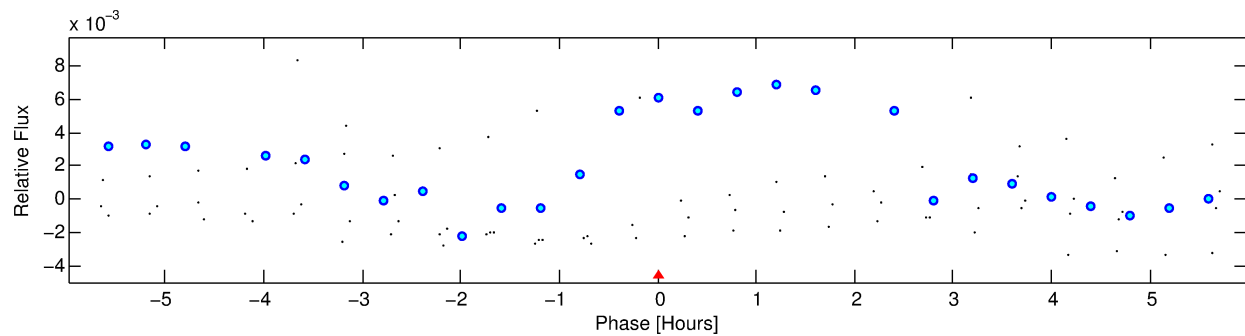
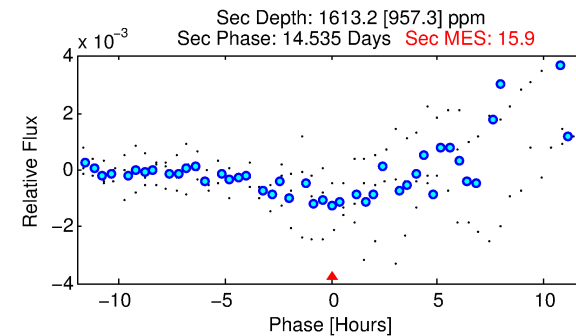
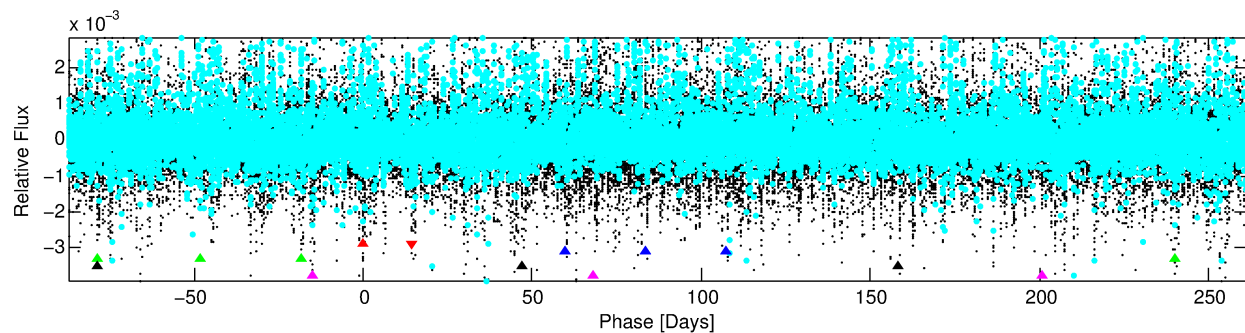
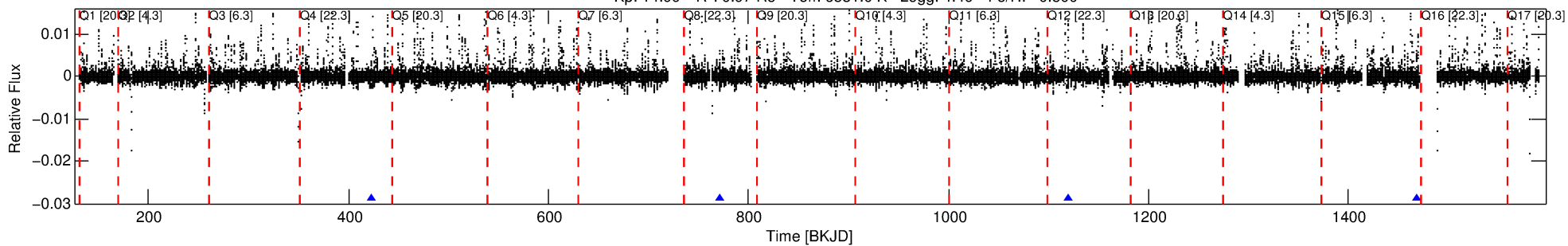
Ephemeris Match Information For 005395645-01

No Significant Match Found

# DV One-Page Summary

KIC: 5395645 Candidate: 1 of 5 Period: 348.270 d

Kp: 14.99 R\*: 0.97 Rs Teff: 6531.0 K Logg: 4.49 Fe/H: -0.500



TPS TCE Results:

Period = 348.26960 d  
Epoch = 423.7075 BKJD

DV fit results are unavailable

DV Diagnostic Results:

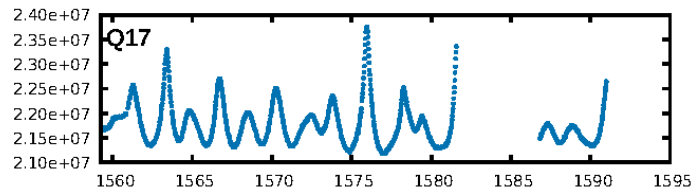
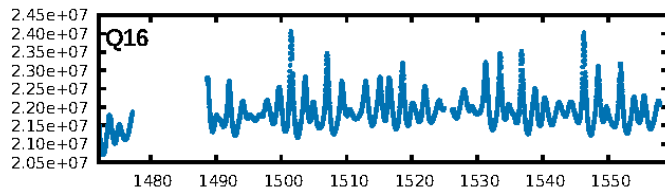
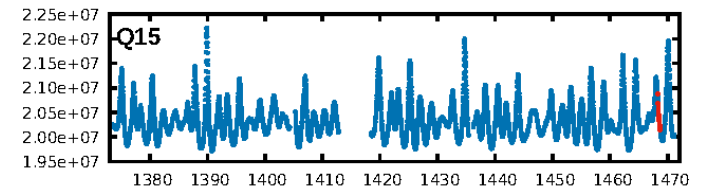
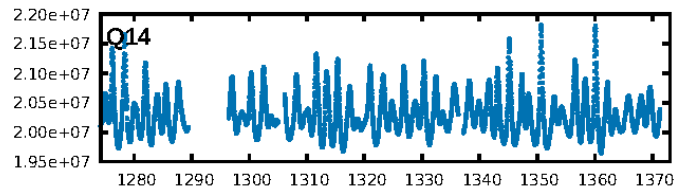
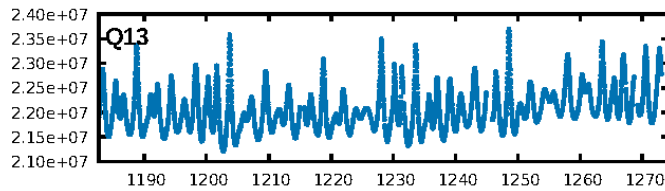
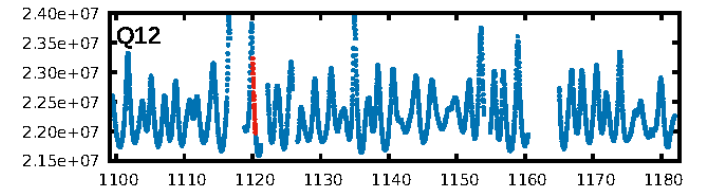
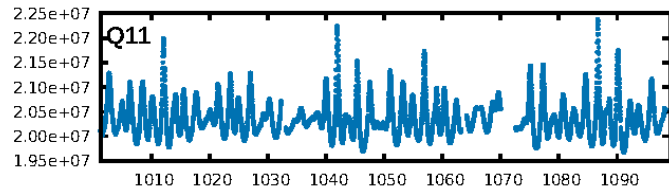
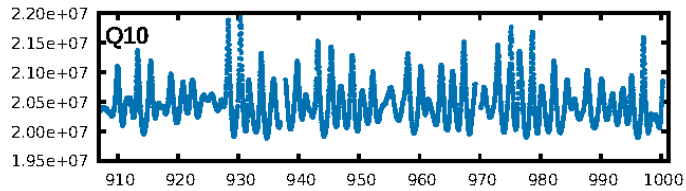
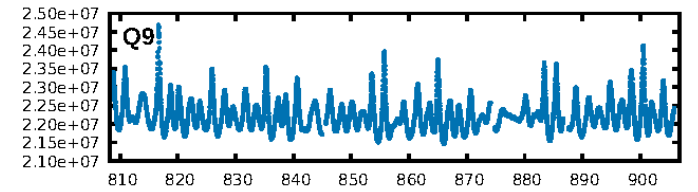
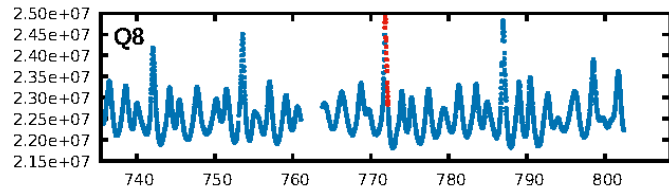
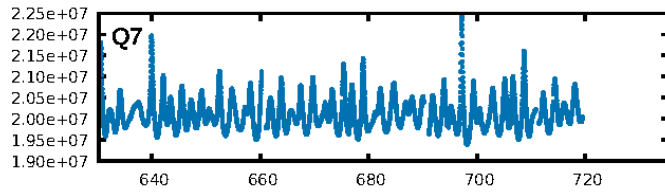
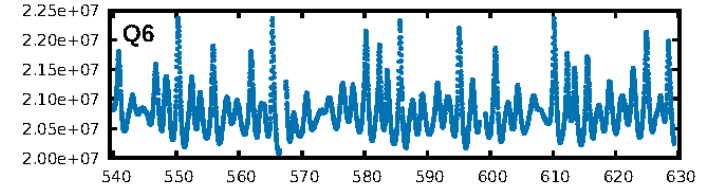
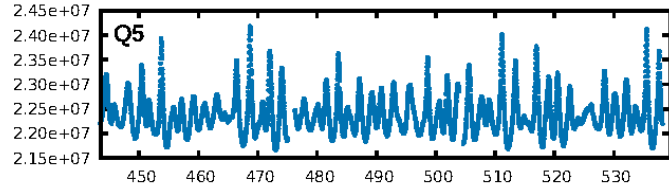
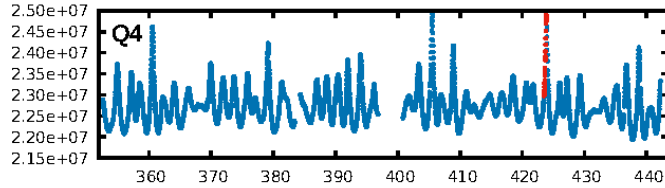
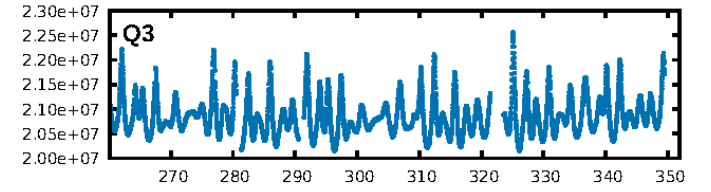
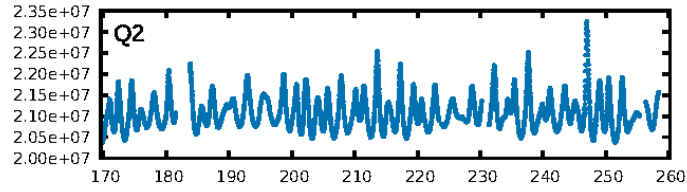
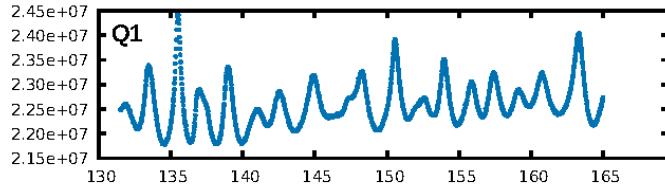
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LongPeriod-sig: 100.0% [239.72σ]  
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ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.04648

Centroid-sig: 7.4%  
Centroid-so: 84.692 arcsec [5.63σ]  
OotOffset-rm: 0.093 arcsec [0.07σ]  
KicOffset-rm: 0.149 arcsec [0.15σ]  
OotOffset-st: 0/1/3/0 [4]  
KicOffset-st: 0/1/3/0 [4]  
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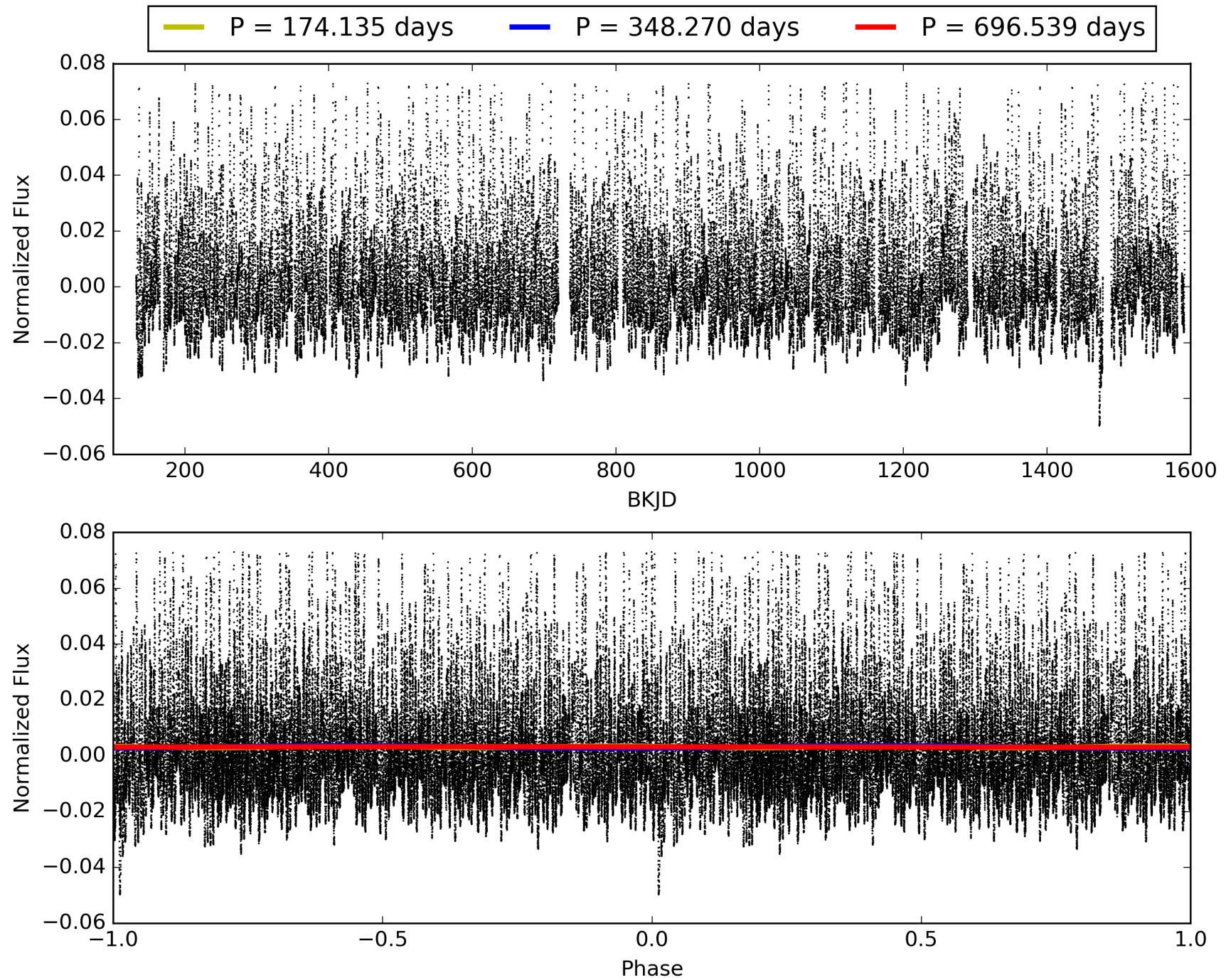
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:17:03 Z

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

# TCE 005395645-01, PDC Light Curves



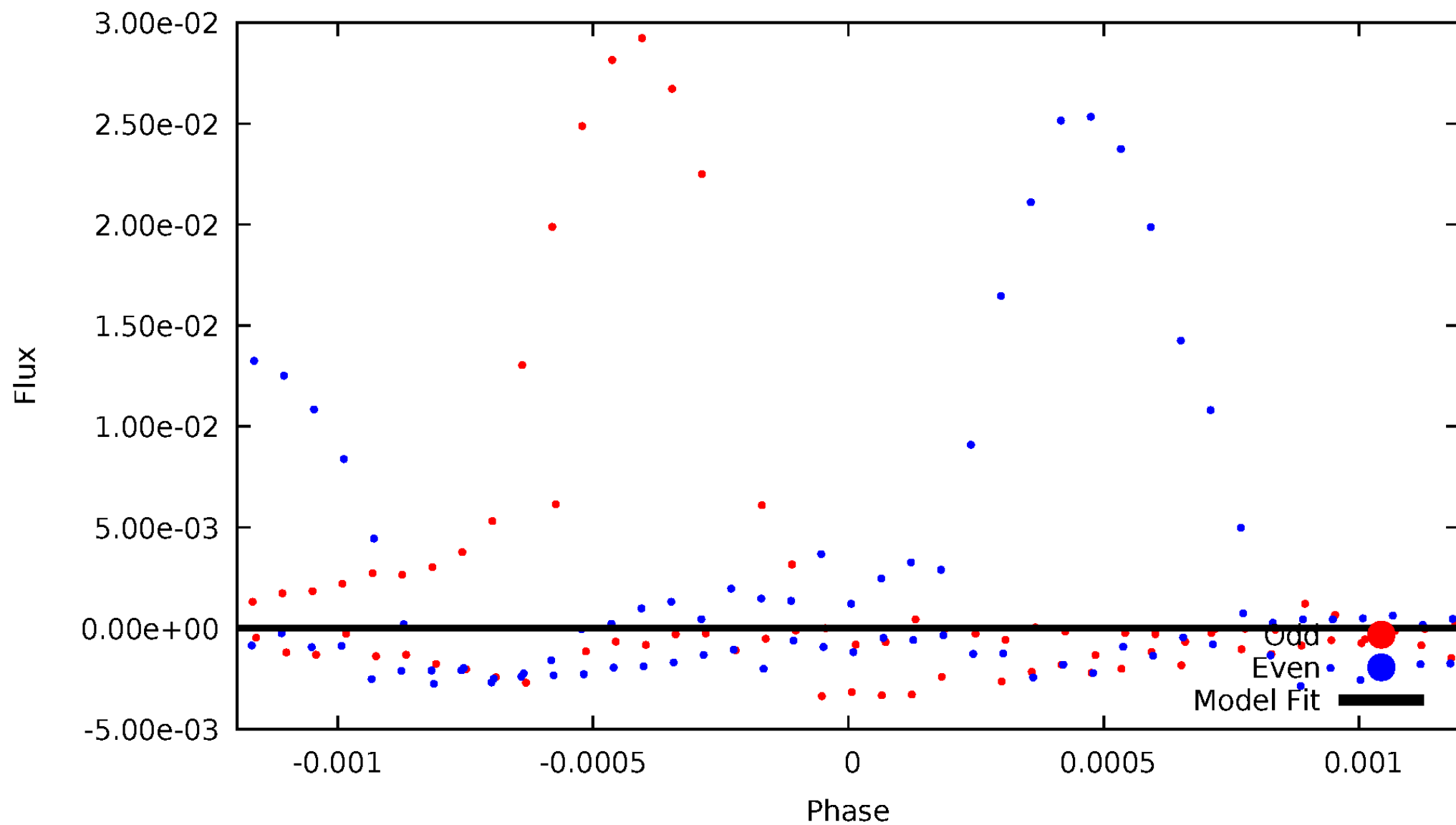
TCE 005395645-01





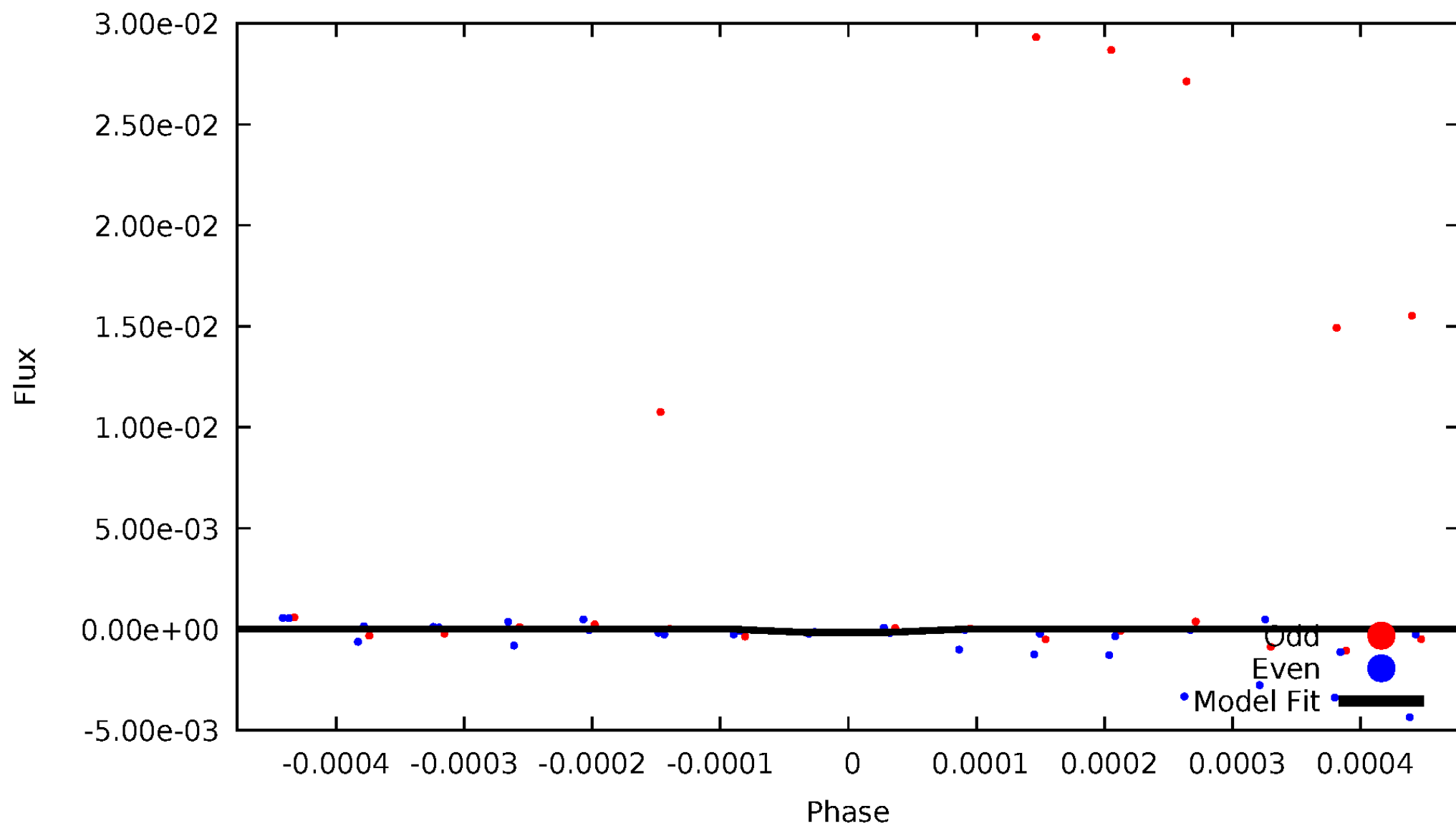
# DV Odd/Even

TCE 005395645-01



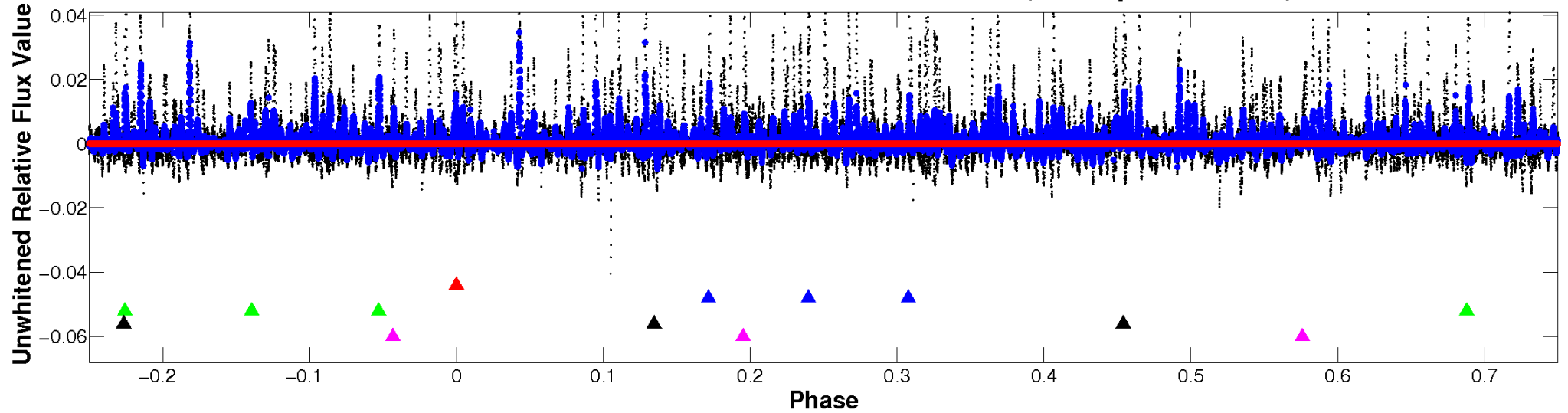
# ALT Odd/Even

TCE 005395645-01

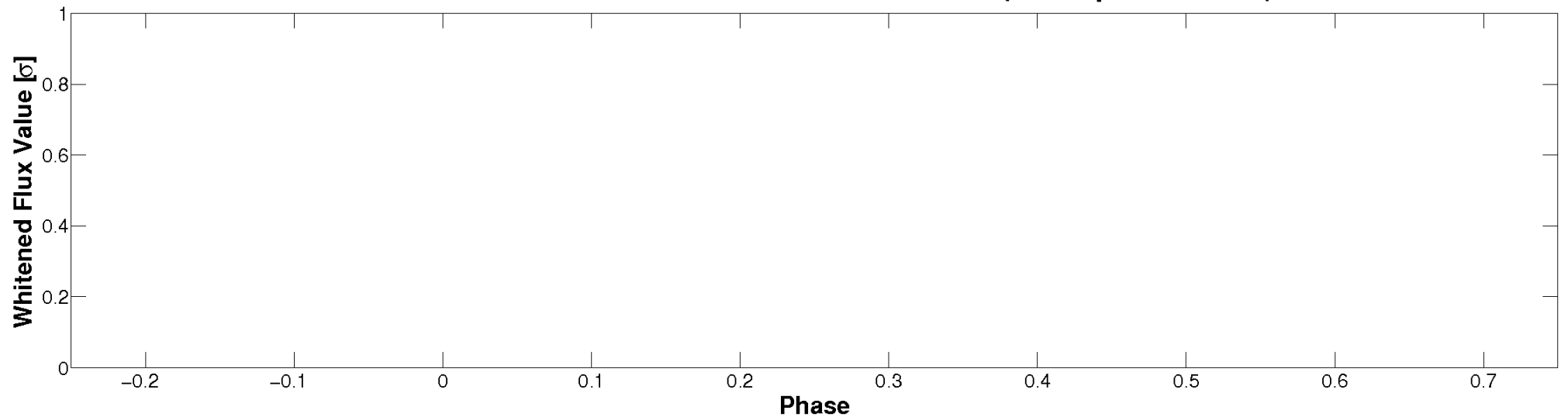


# Non-Whitened Vs. Whitened Light Curve

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

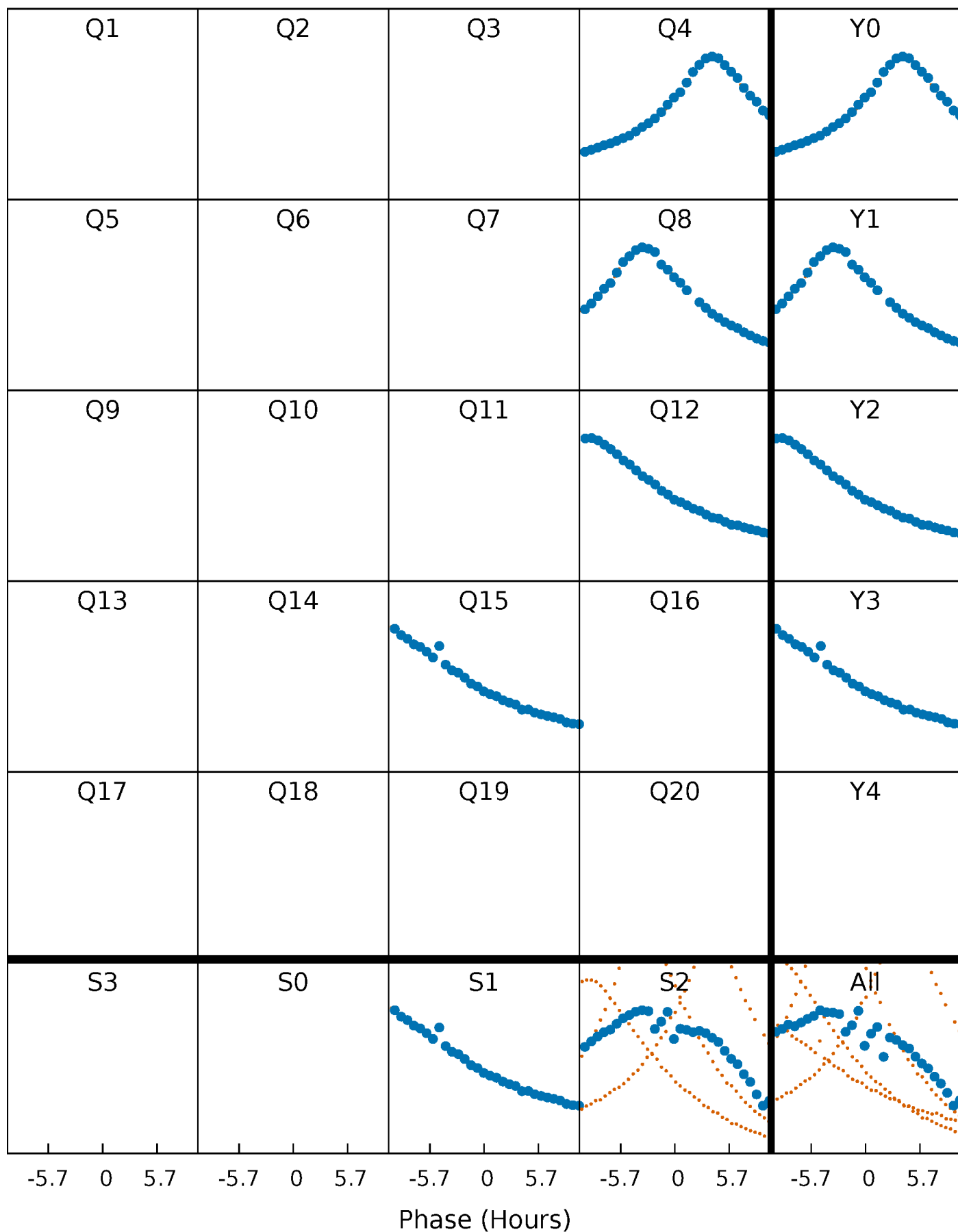


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

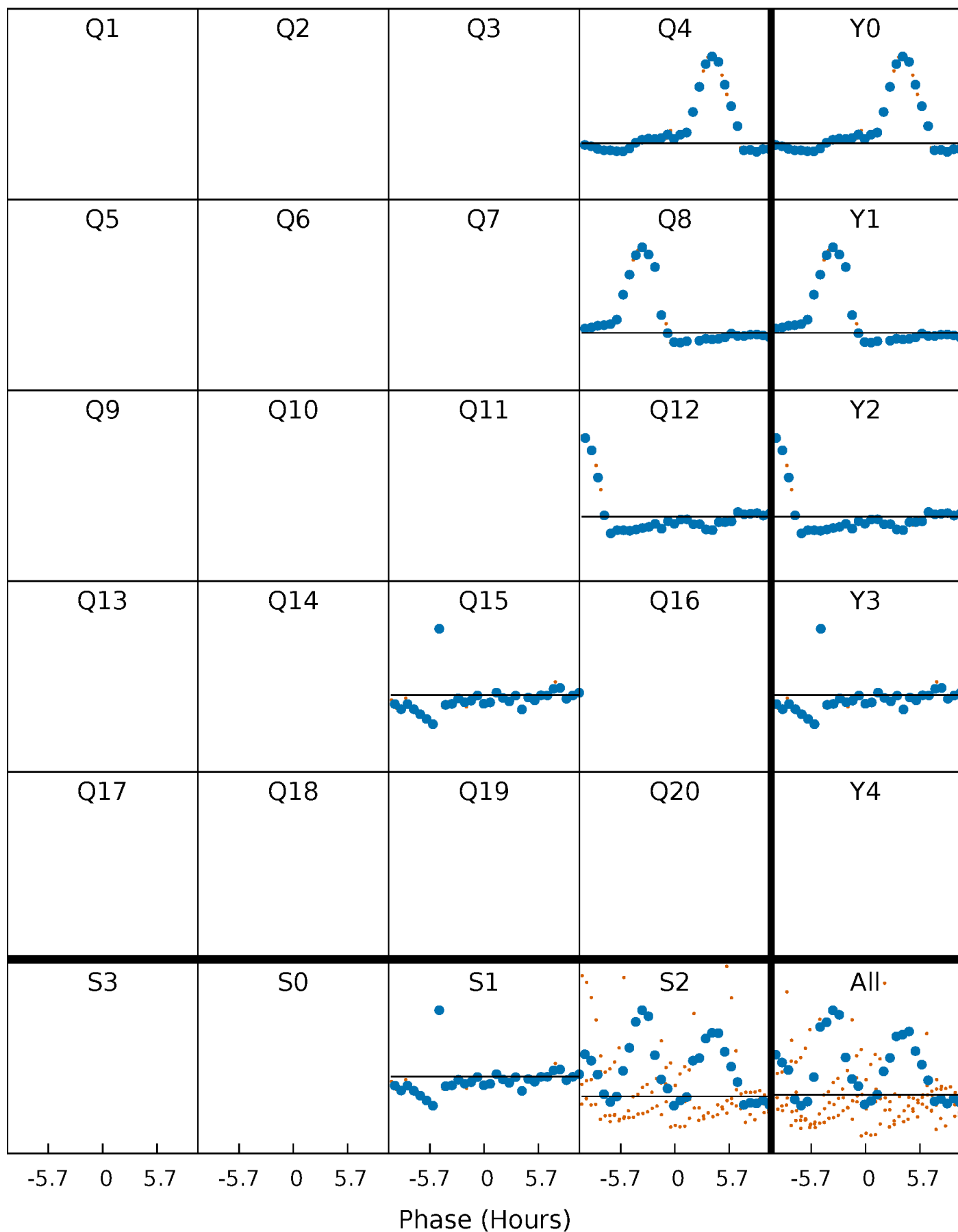
TCE 005395645-01 P=348.269597 Days  $T_0=423.707496$  (BKJD)





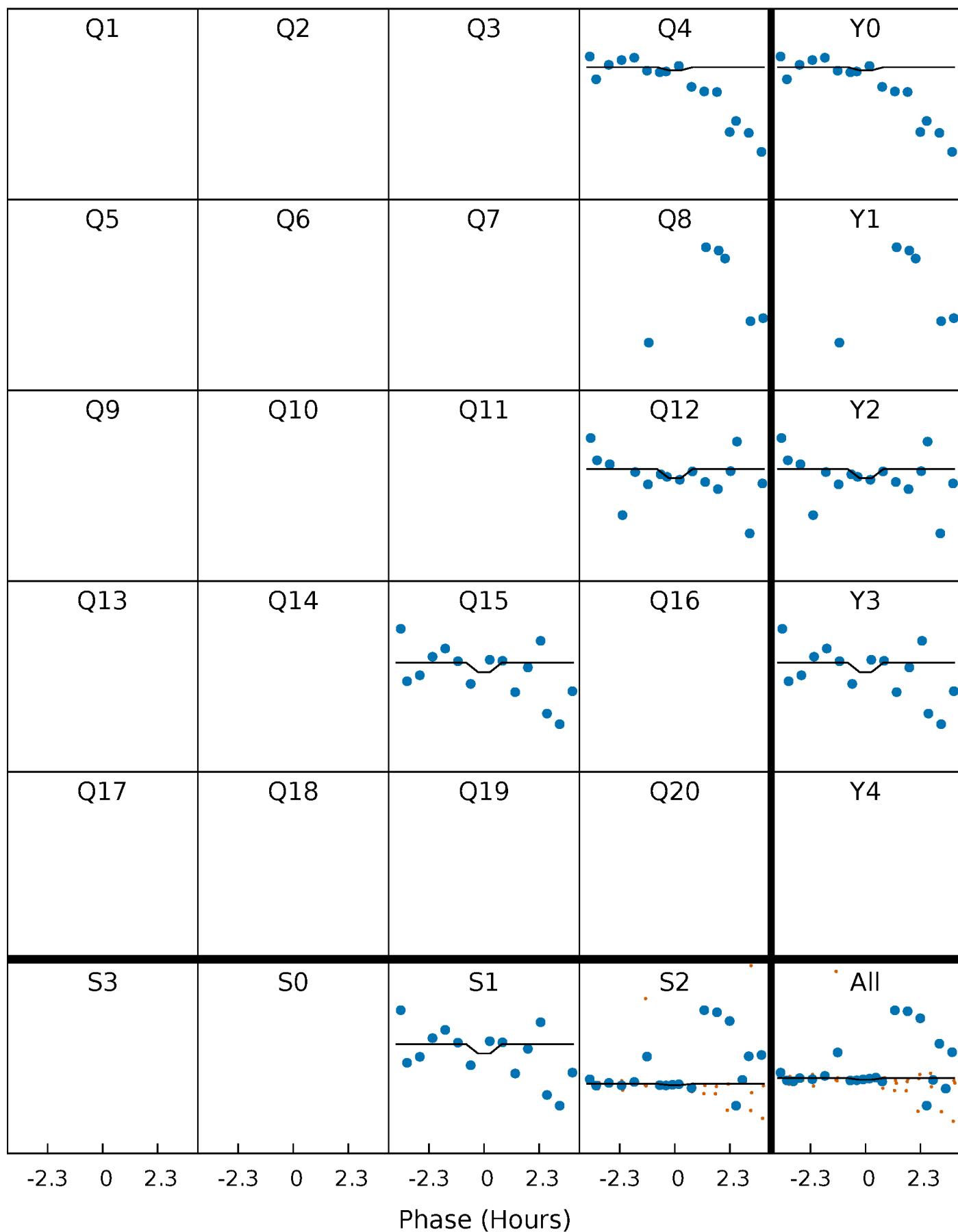
# DV Quarter-Phased Transit Curves

TCE 005395645-01 P=348.269597 Days  $T_0=423.707496$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

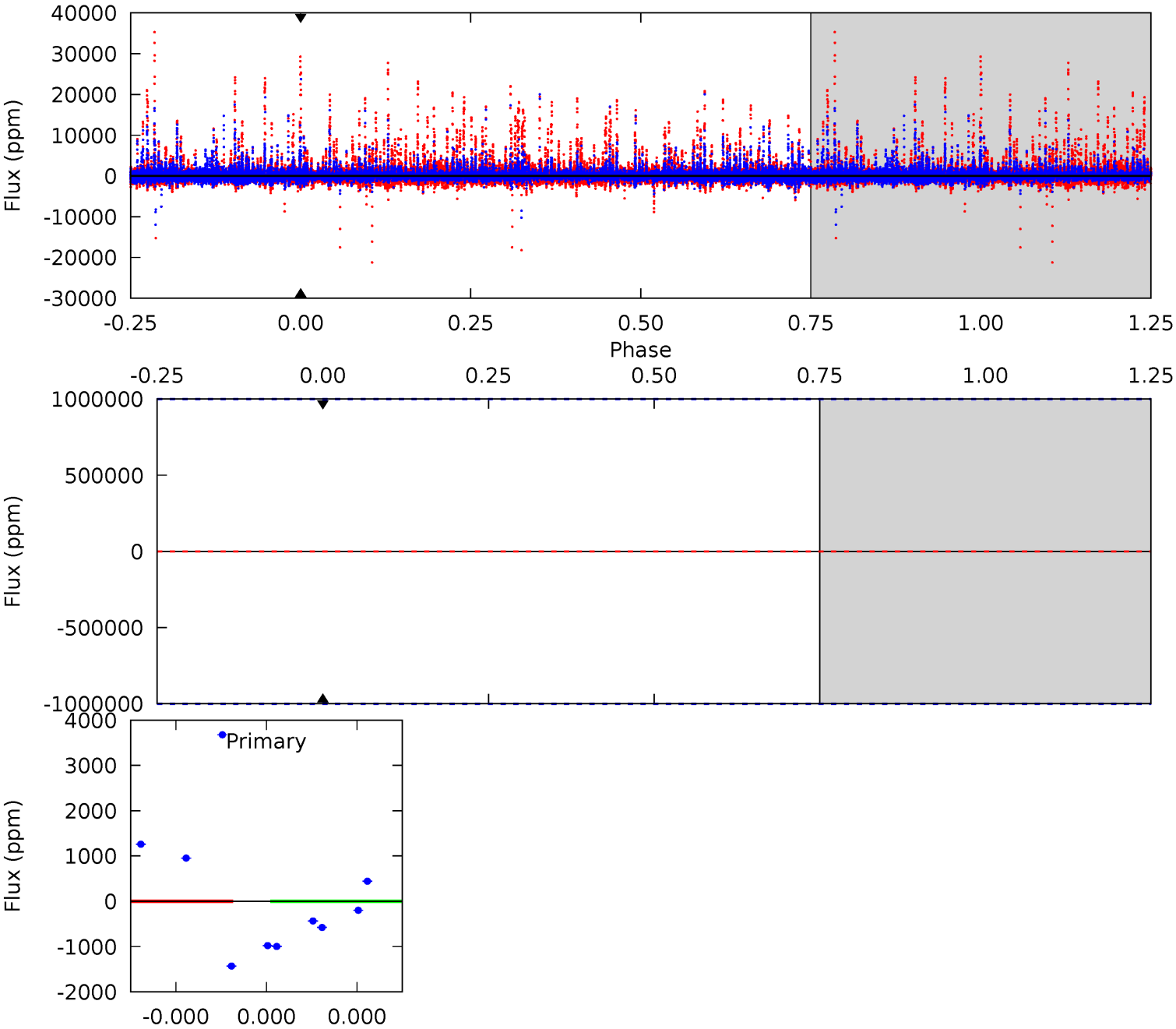
TCE 005395645-01 P=348.269597 Days  $T_0=423.515794$  (BKJD)



# DV Model-Shift Uniqueness Test

005395645-01, P = 348.269597 Days, E = 75.437899 Days

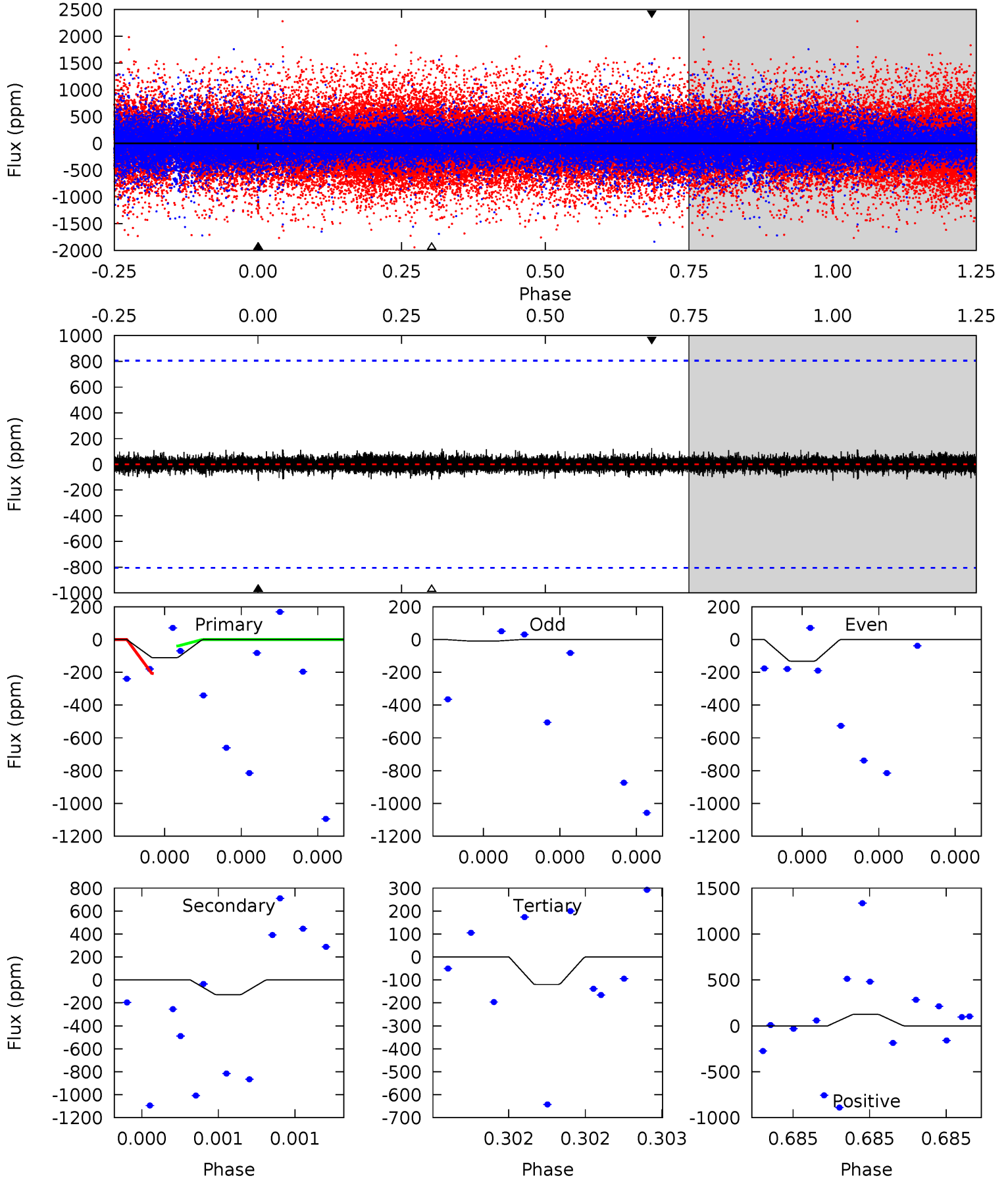
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005395645-01, P = 348.269597 Days, E = 75.246197 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
0.79	0.92	0.85	0.89	5.75	3.74	0.18	-0.06	-0.10	0.06	0.02	0.36	0.96	0.49	0.60





### Stellar Parameters For KIC 005395645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6531^{+176}_{-216}$	$4.486^{+0.048}_{-0.192}$	$-0.500^{+0.300}_{-0.300}$	$0.969^{+0.289}_{-0.090}$	$1.057^{+0.137}_{-0.125}$	$1.635^{+0.315}_{-0.820}$
	+3%/-3%	+1%/-4%	+60%/-60%	+30%/-9%	+13%/-12%	+19%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005395645-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$11.14^{+10.02}_{-7.43}$	$408^{+25}_{-18}$	$-4288^{+24963}_{-12777}$	$-5640.740^{+843174.463}_{-563028.224}$
Alt.	$-128 \pm 140$	$7.78^{+8.11}_{-5.40}$	$407^{+29}_{-21}$	$3015^{+1587}_{-5227}$	$728^{+8408}_{-790}$

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

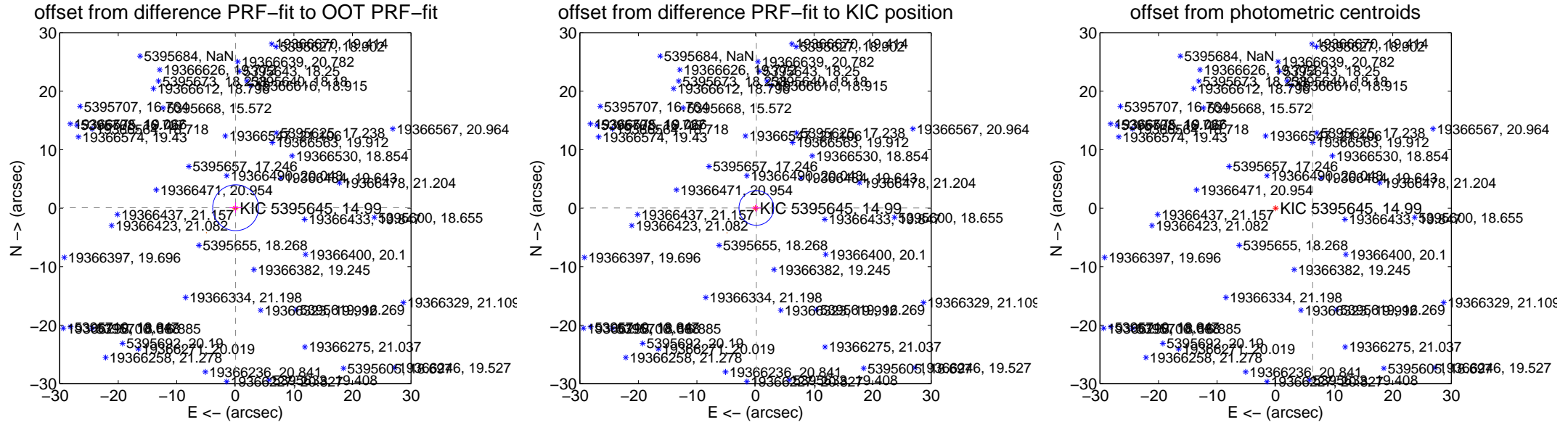
## DV Centroid Data

Supplemental centroid analysis for 005395645-01. Kepler magnitude: 14.99. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

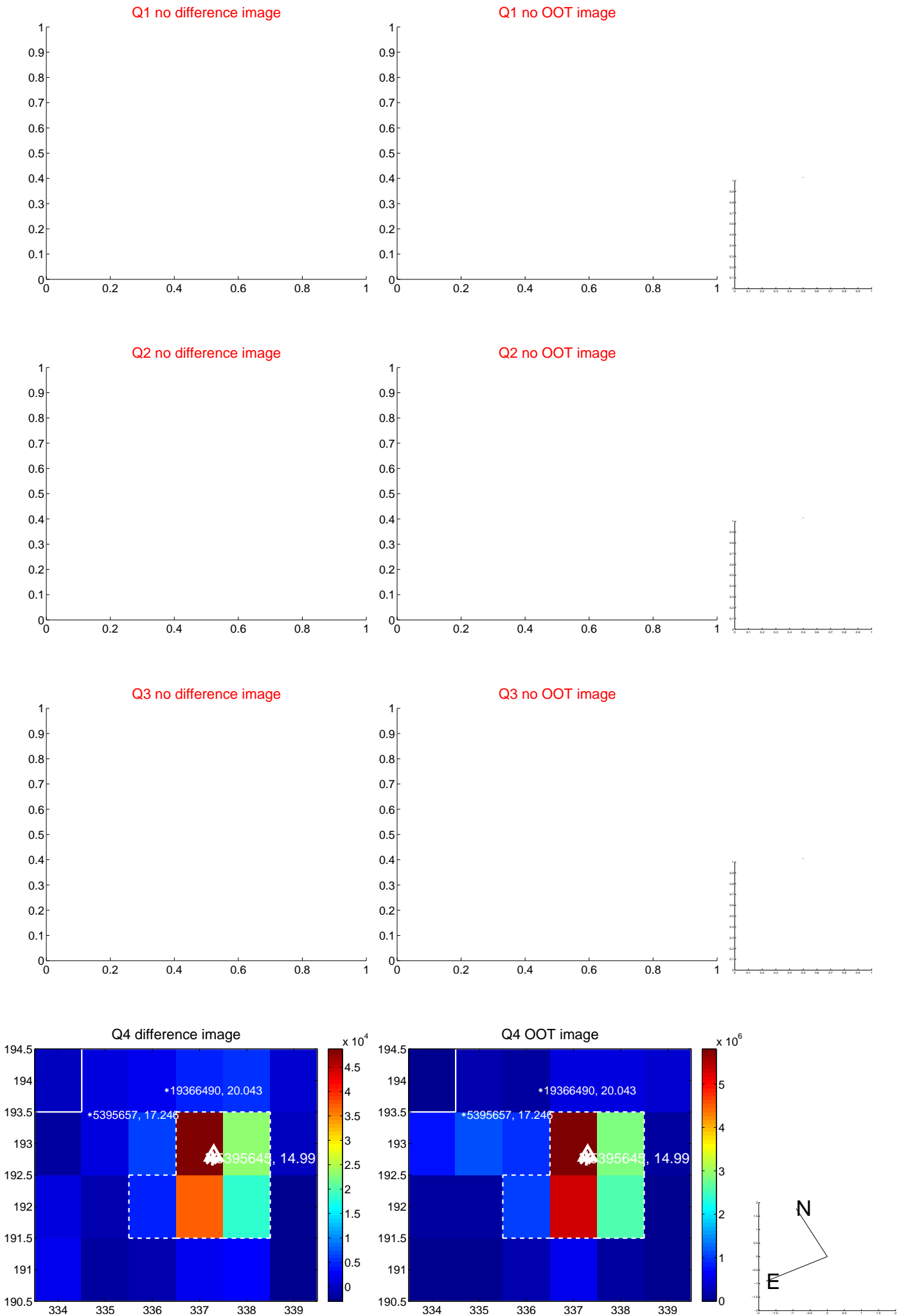
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.093 \pm 1.306$	0.07	$-0.049 \pm 1.047$	$0.079 \pm 0.889$
PRF-fit source offset from KIC position	$0.149 \pm 0.988$	0.15	$-0.143 \pm 0.829$	$0.041 \pm 0.696$
photometric centroid source offset	$84.69 \pm 15.04$	5.63	$-6.33 \pm 17.83$	$84.46 \pm 15.02$

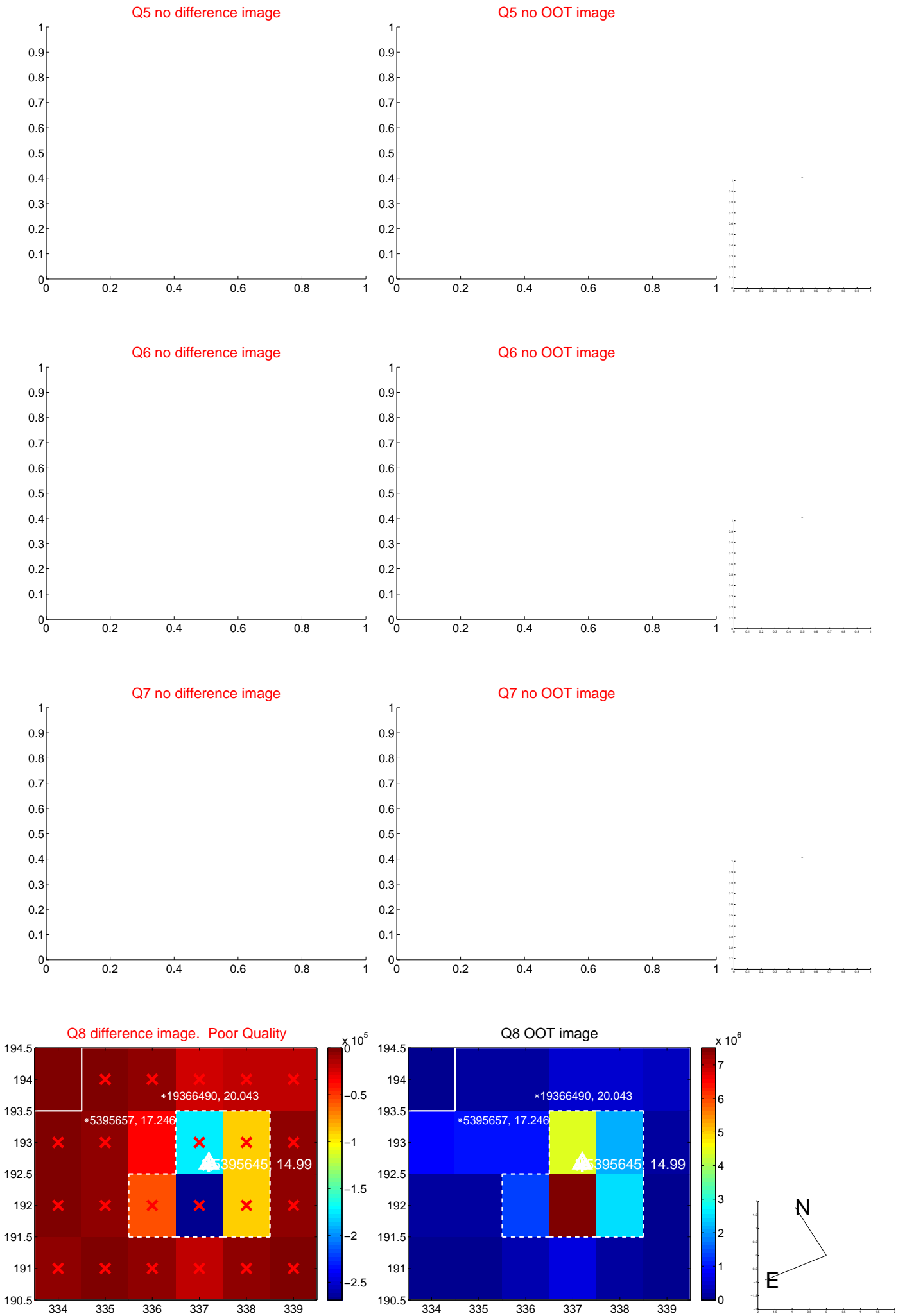


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

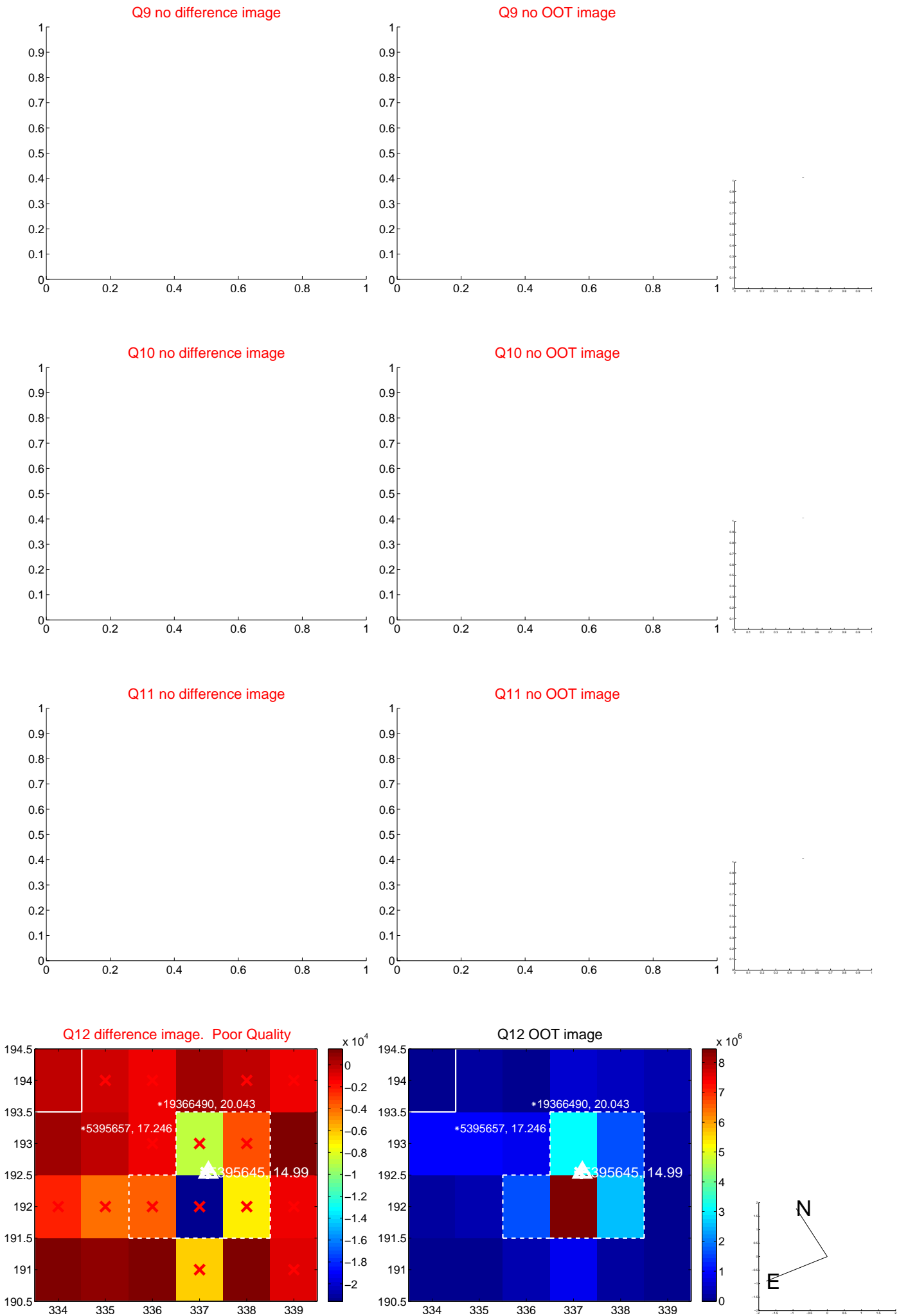


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

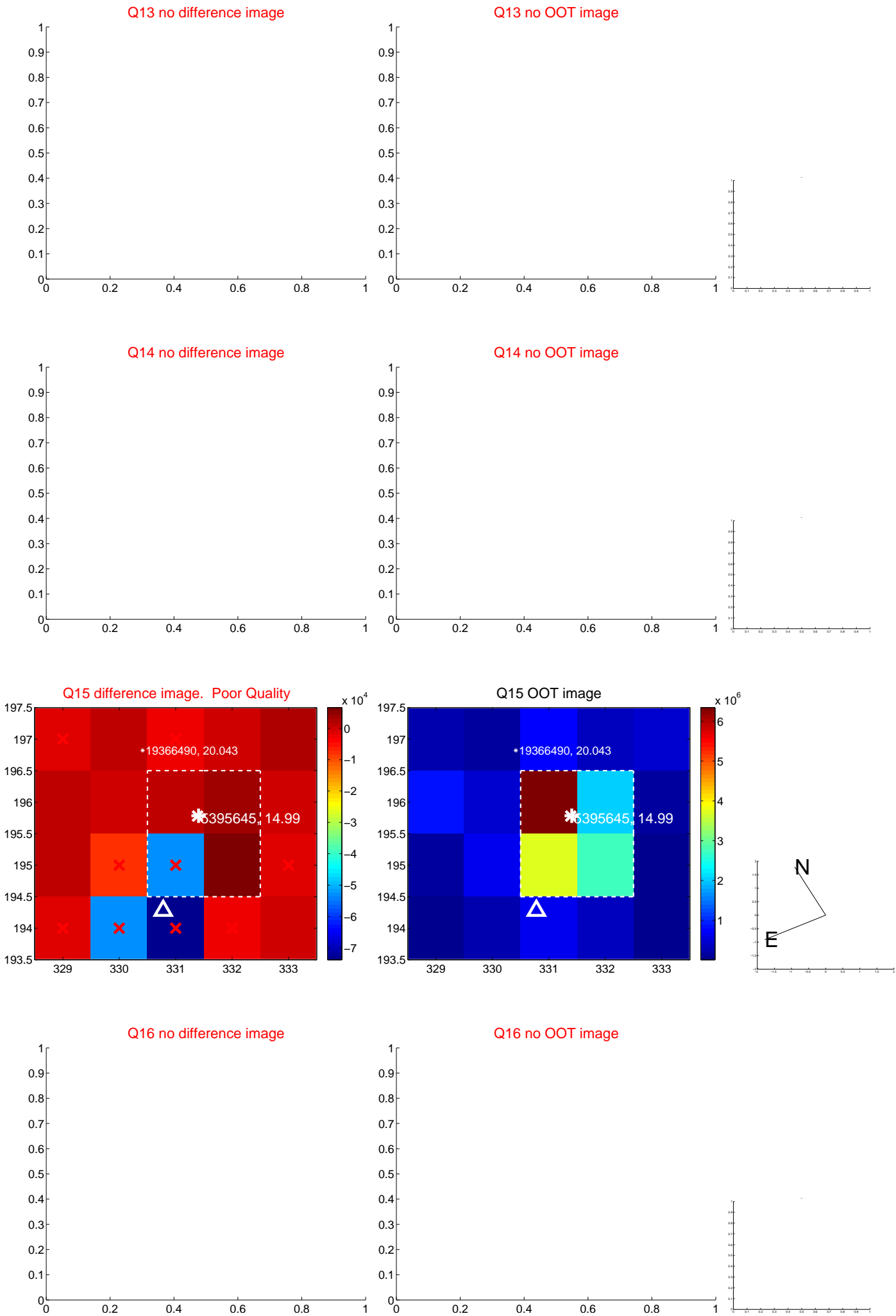




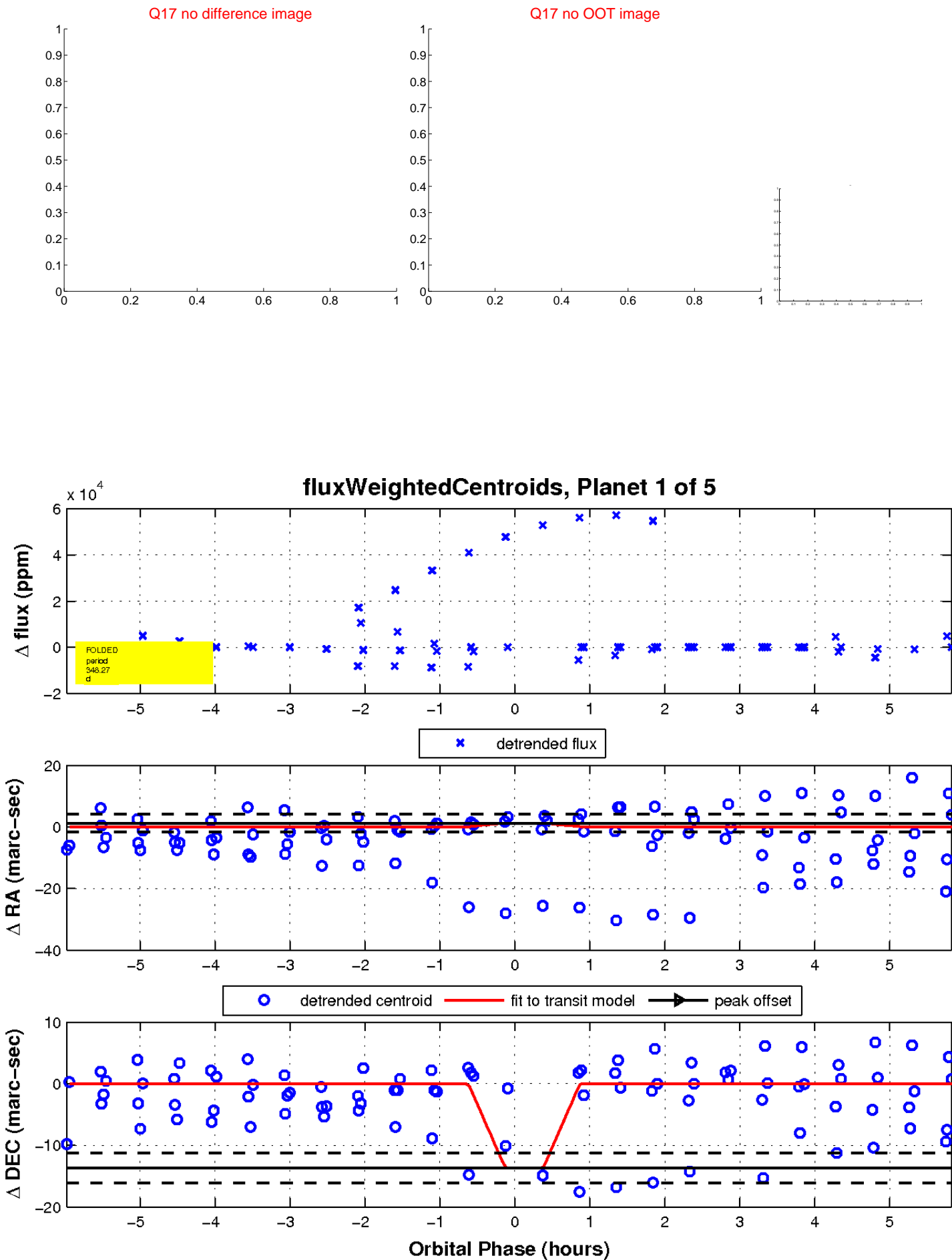
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

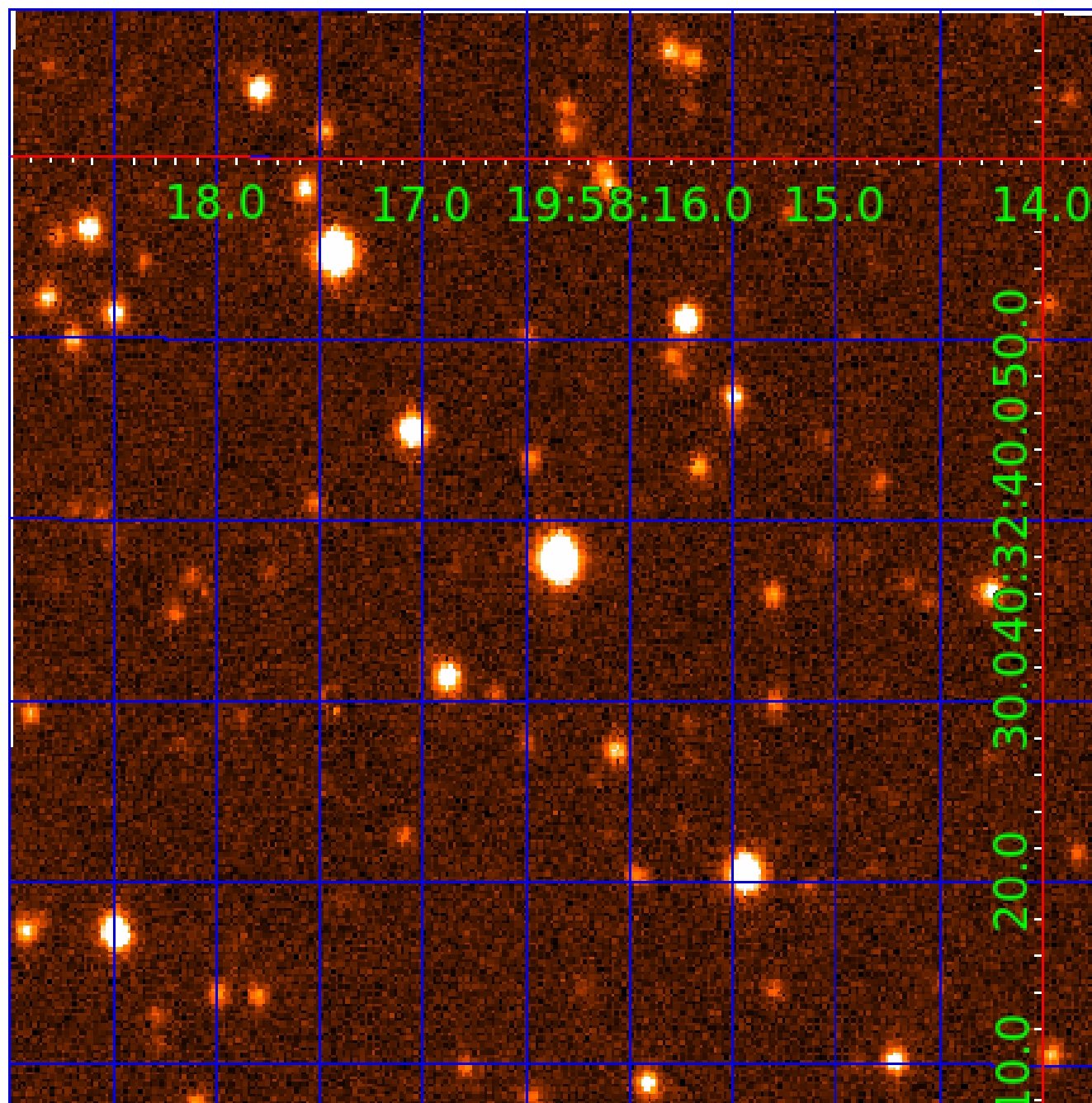


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005395645

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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005395645-04	OBS	No	459.537354	470.569300	20644.7	9.955	17.6	16.9	0.97	6531	24.09	1.09
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005395645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
005395645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005395645-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
005395645-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

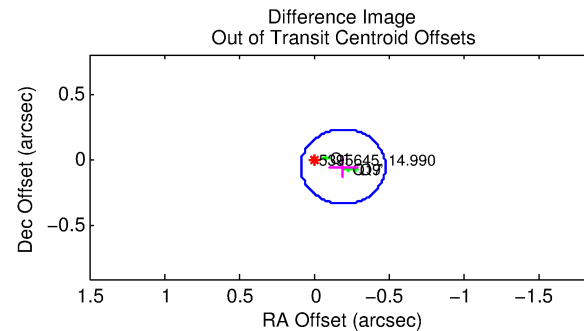
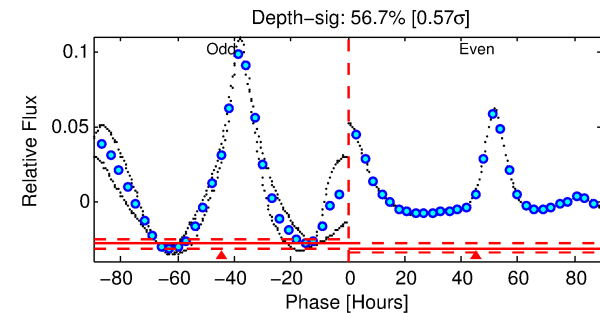
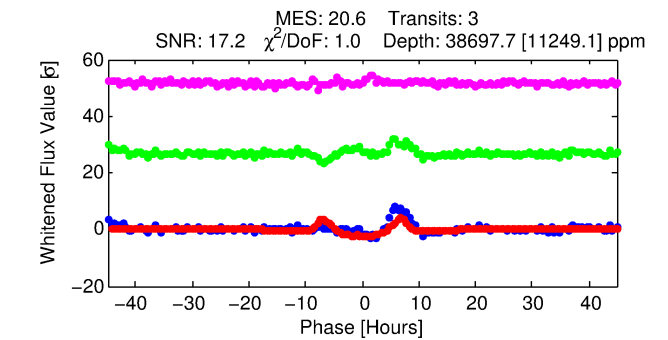
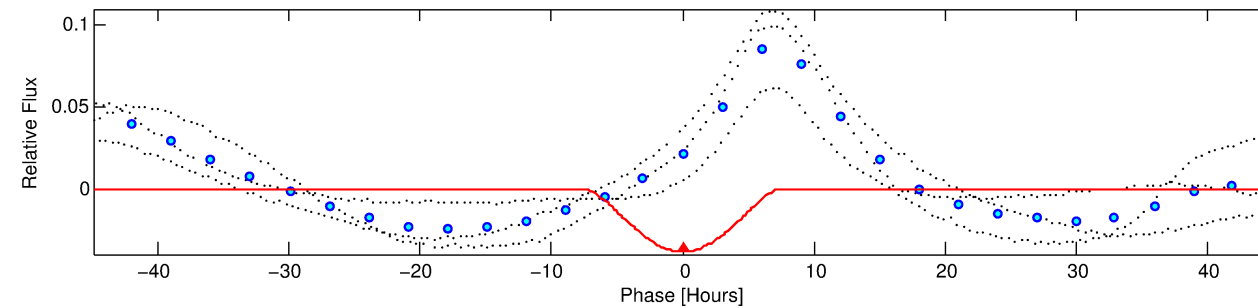
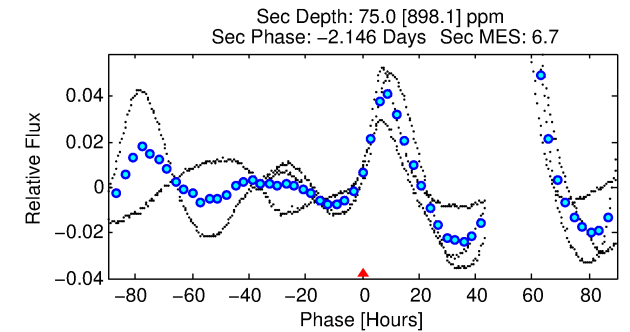
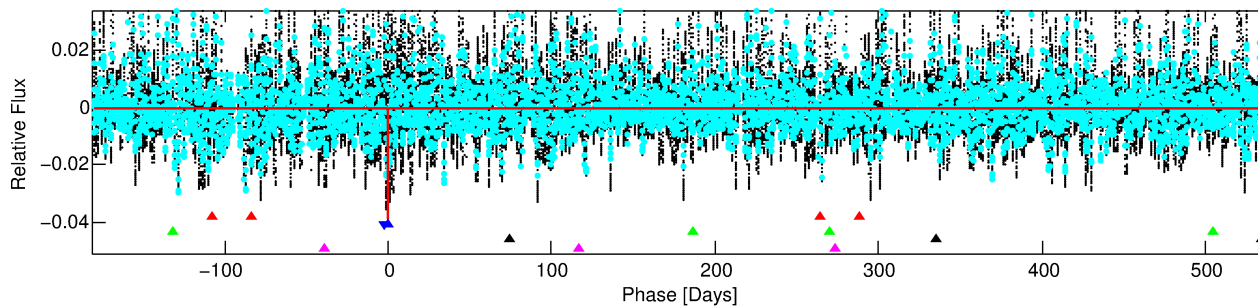
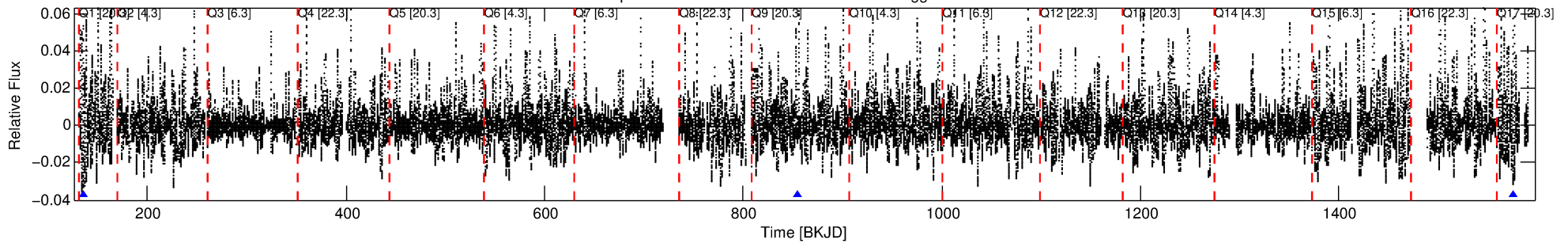
## Ephemeris Match Information For 005395645-02

No Significant Match Found

# DV One-Page Summary

KIC: 5395645 Candidate: 2 of 5 Period: 720.234 d

Kp: 14.99 R\*: 0.97 Rs Teff: 6531.0 K Logg: 4.49 Fe/H: -0.500



## DV Fit Results:

Period = 720.23419 [0.00416] d  
Epoch = 135.1972 [0.0060] BKJD  
Rp/R\* = 0.3077 [0.1478]  
a/R\* = 310.06 [6.40]  
b = 1.00 [0.14]  
Seff = 0.60 [0.23]  
Teq = 224 [21] K  
Rp = 32.54 [18.40] Re  
a = 1.5979 [0.3955] AU  
Ag = 99.54 [1195.95] [0.08σ]  
Teffp = 1096 [3290] K [0.26σ]

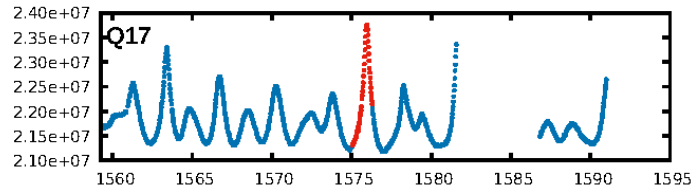
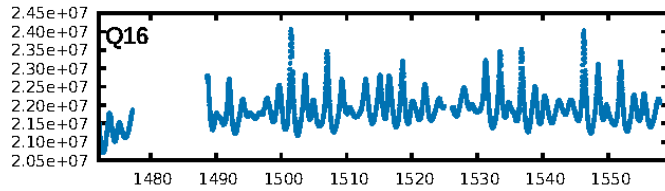
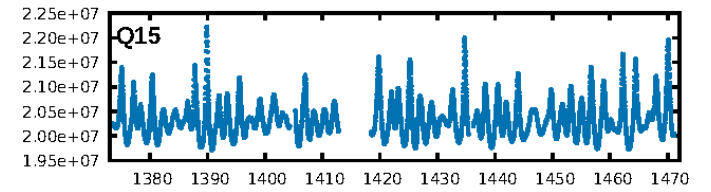
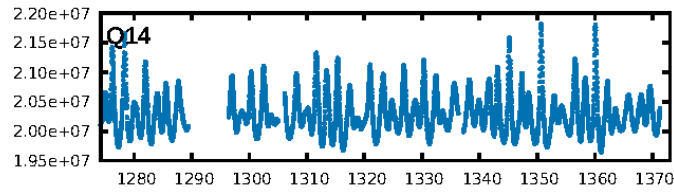
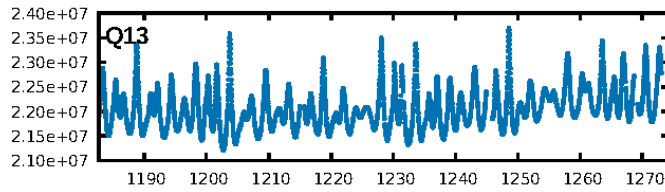
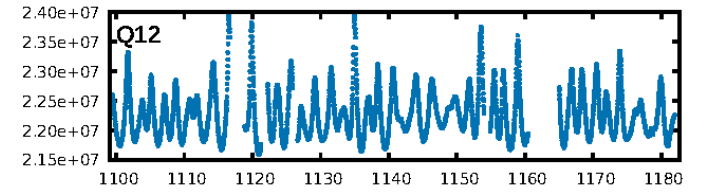
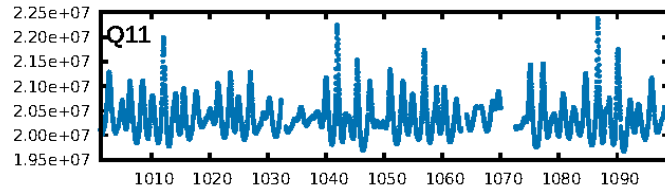
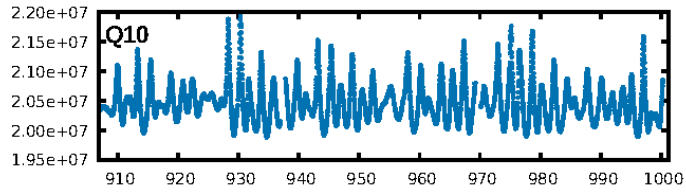
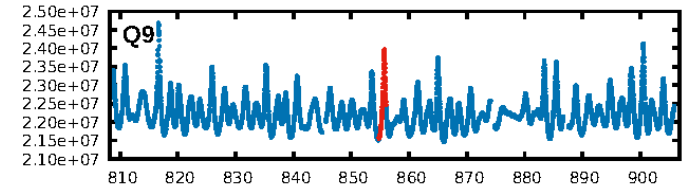
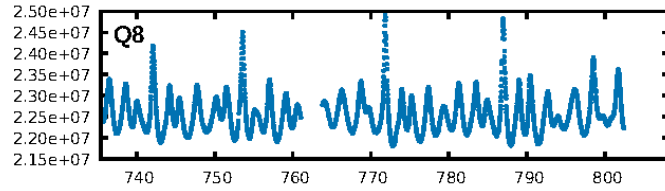
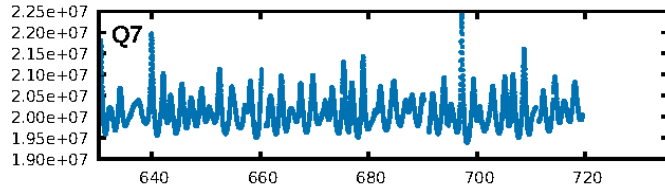
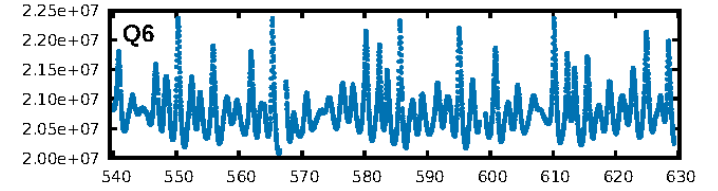
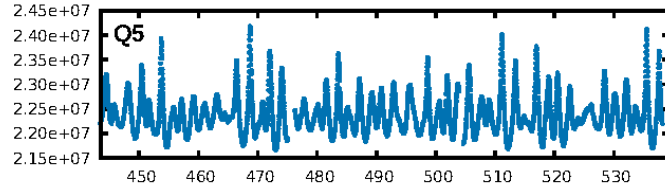
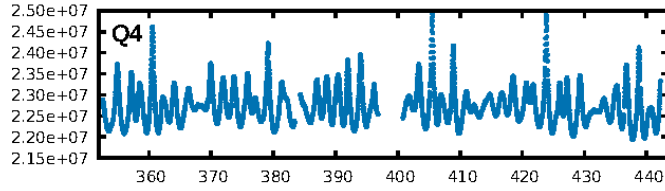
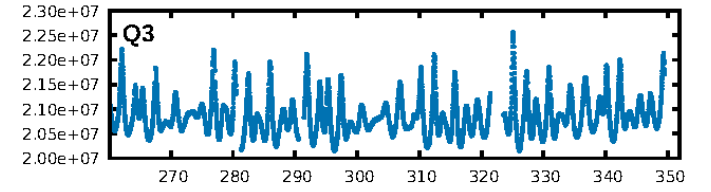
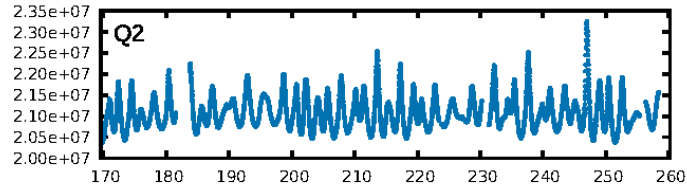
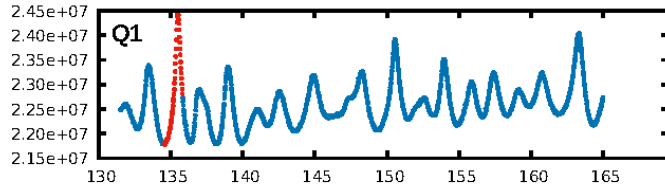
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [170.12σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 70.6%  
ModelChiSquareGof-sig: 97.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1/1]  
GhostDiagnostic-chr: -2.406  
Centroid-sig: 50.4%  
Centroid-so: 1.030 arcsec [13.97σ]  
OotOffset-rm: 0.204 arcsec [2.16σ]  
KicOffset-rm: 0.058 arcsec [0.70σ]  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:17:13 Z

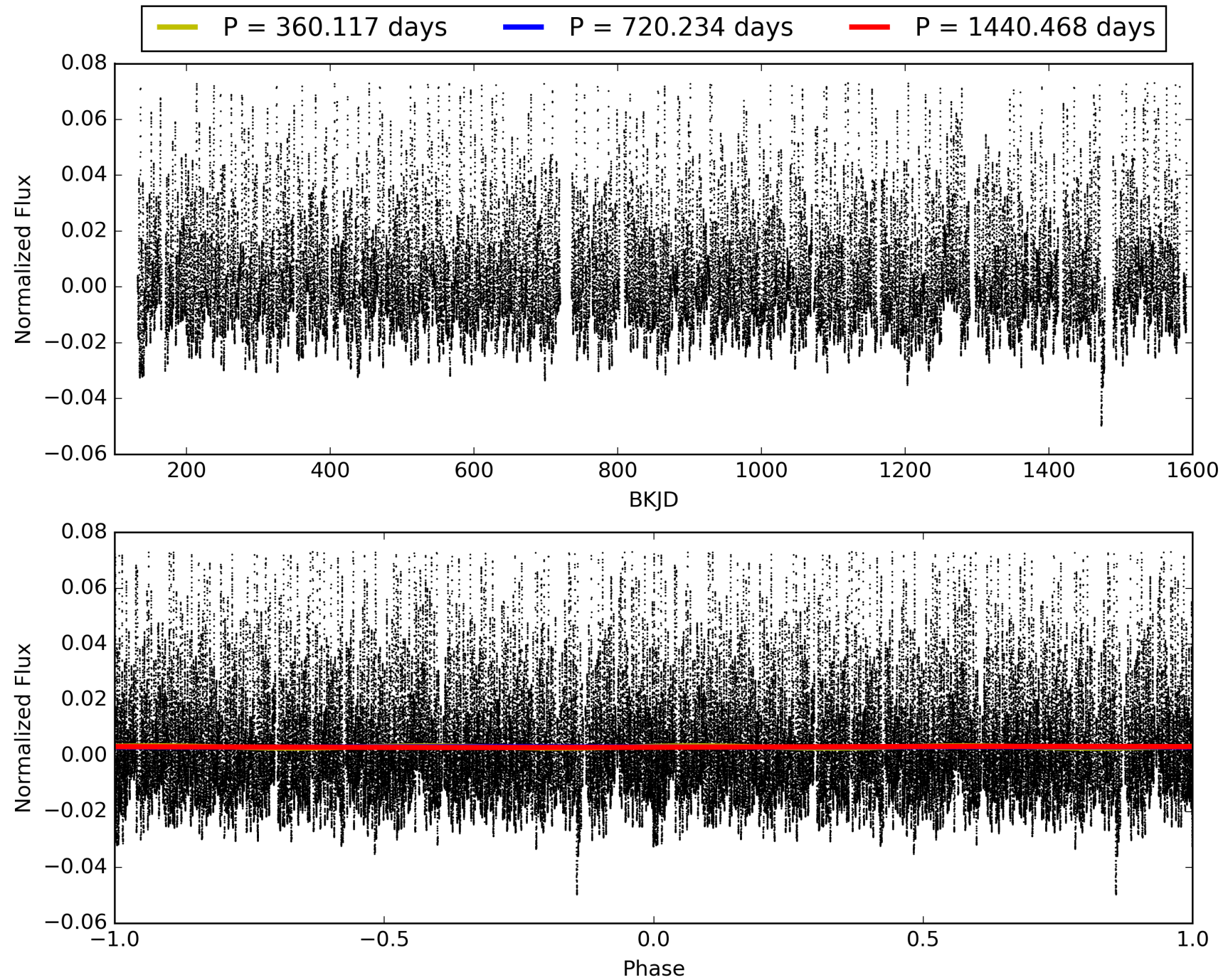
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005395645-02, PDC Light Curves





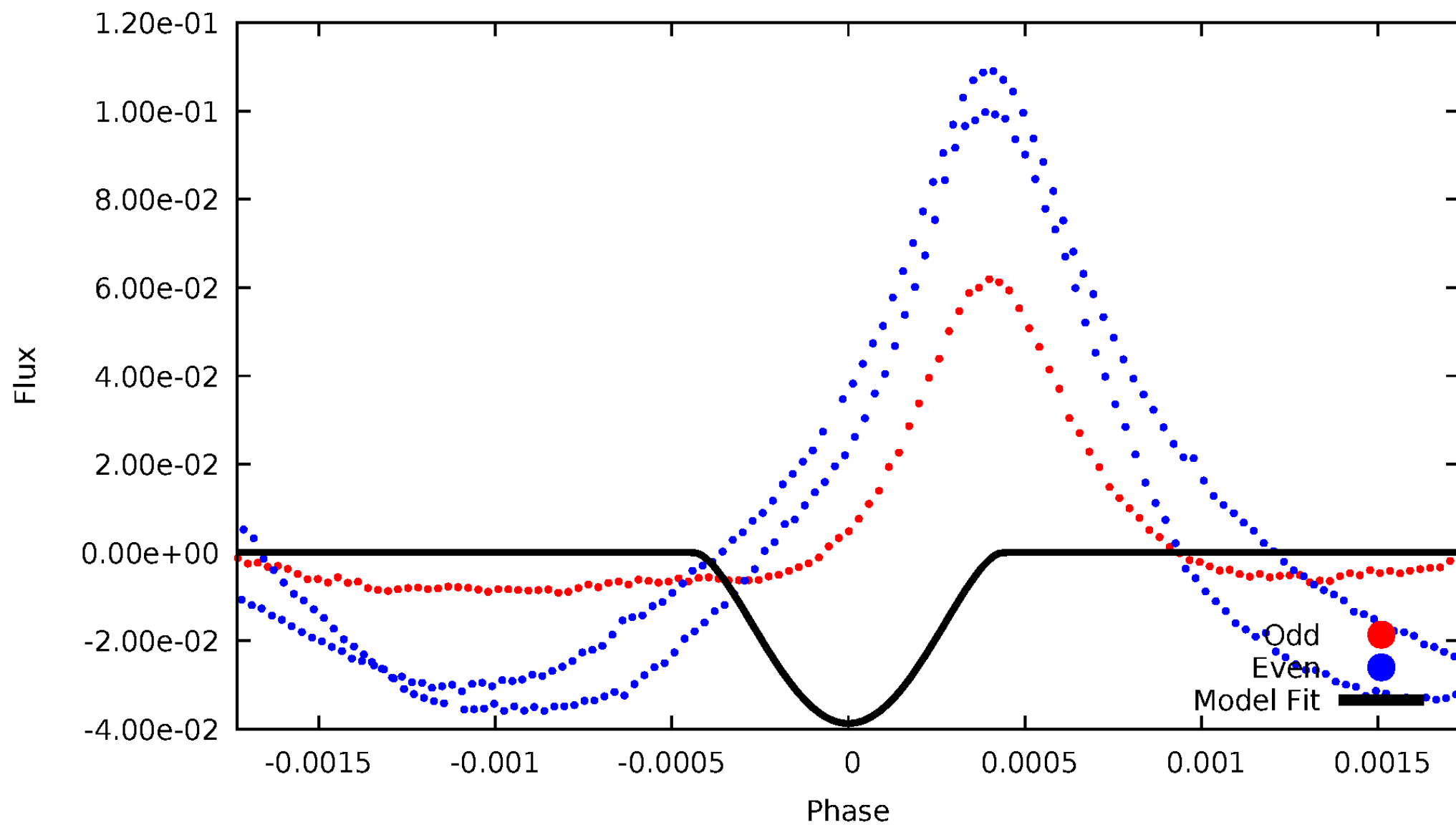
TCE 005395645-02





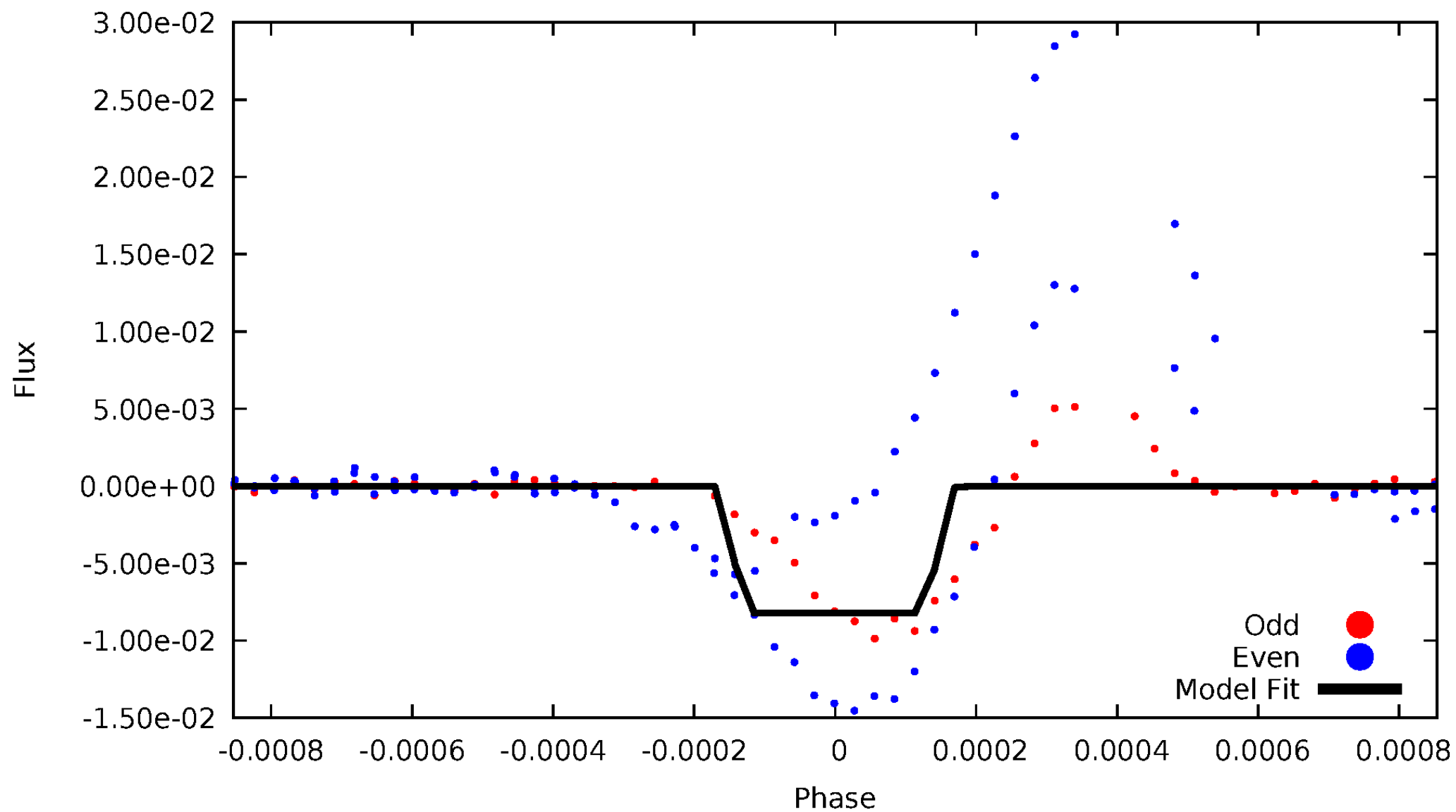
# DV Odd/Even

TCE 005395645-02



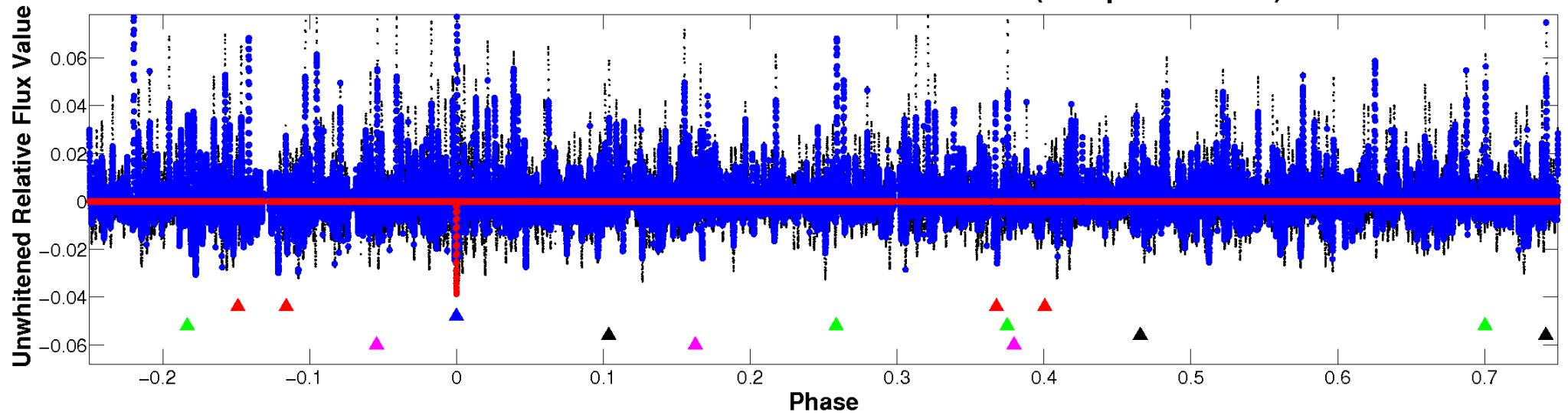
# ALT Odd/Even

TCE 005395645-02

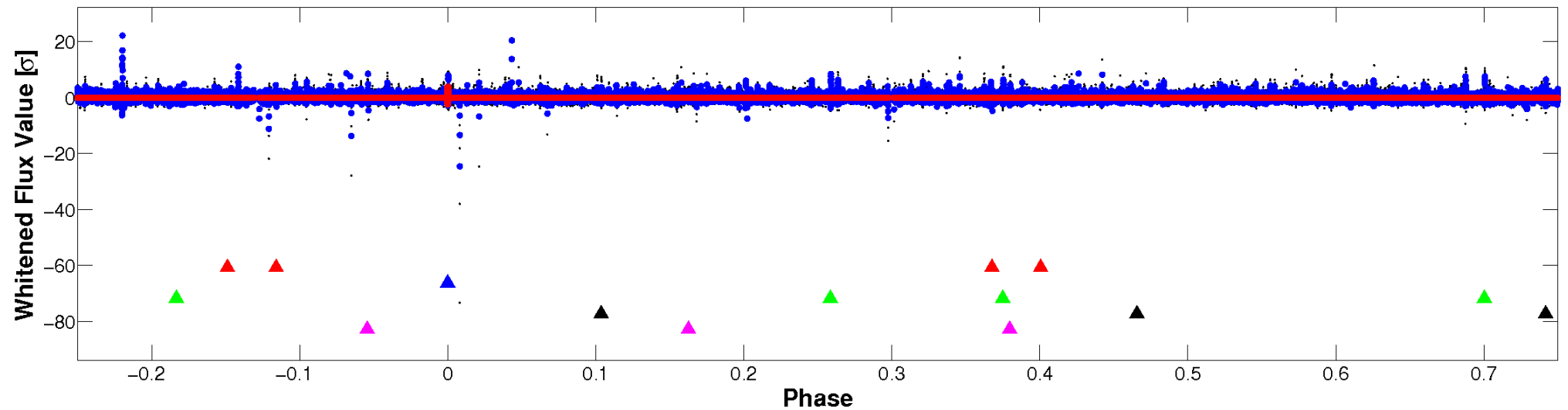


# Non-Whitened Vs. Whitened Light Curve

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

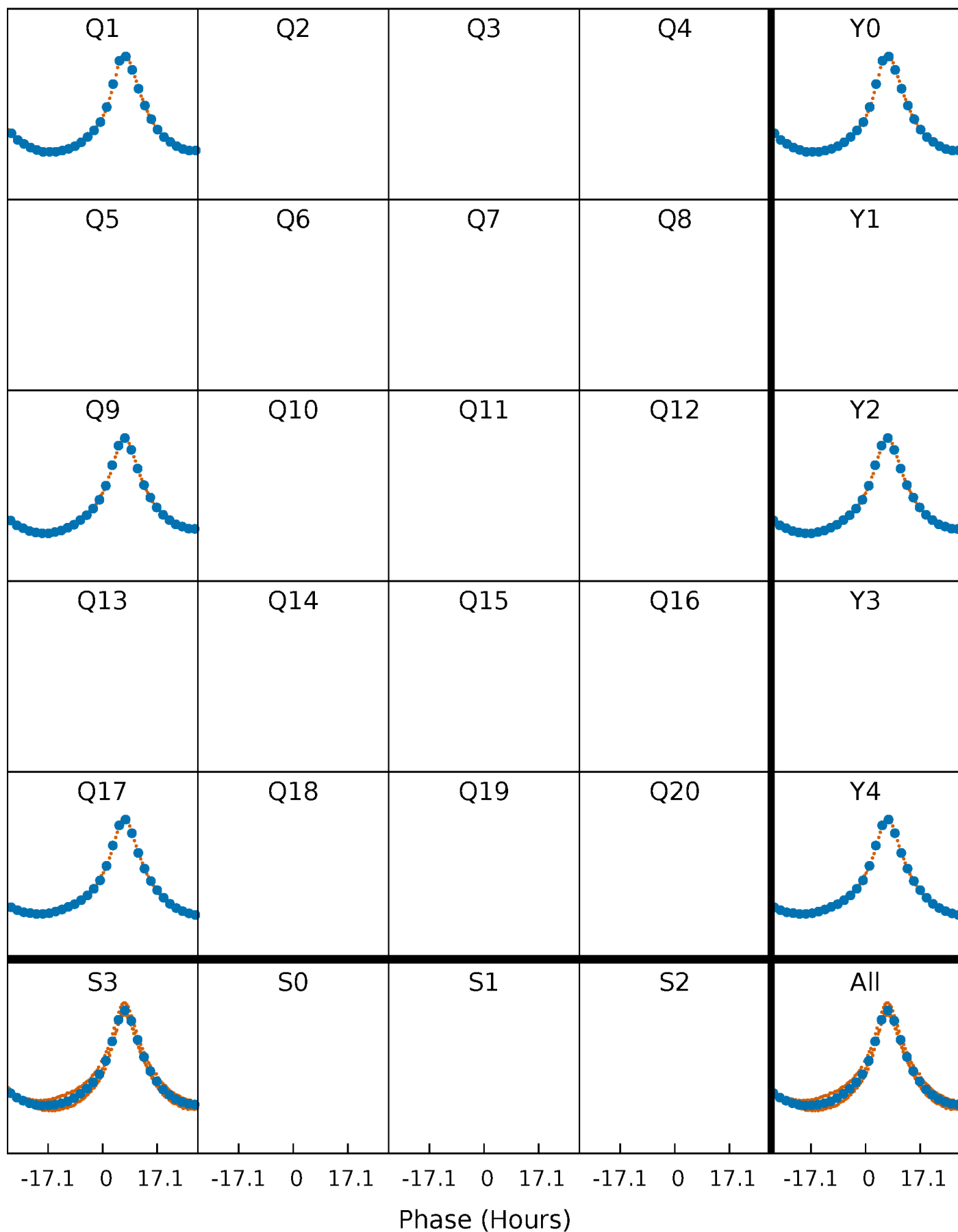


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



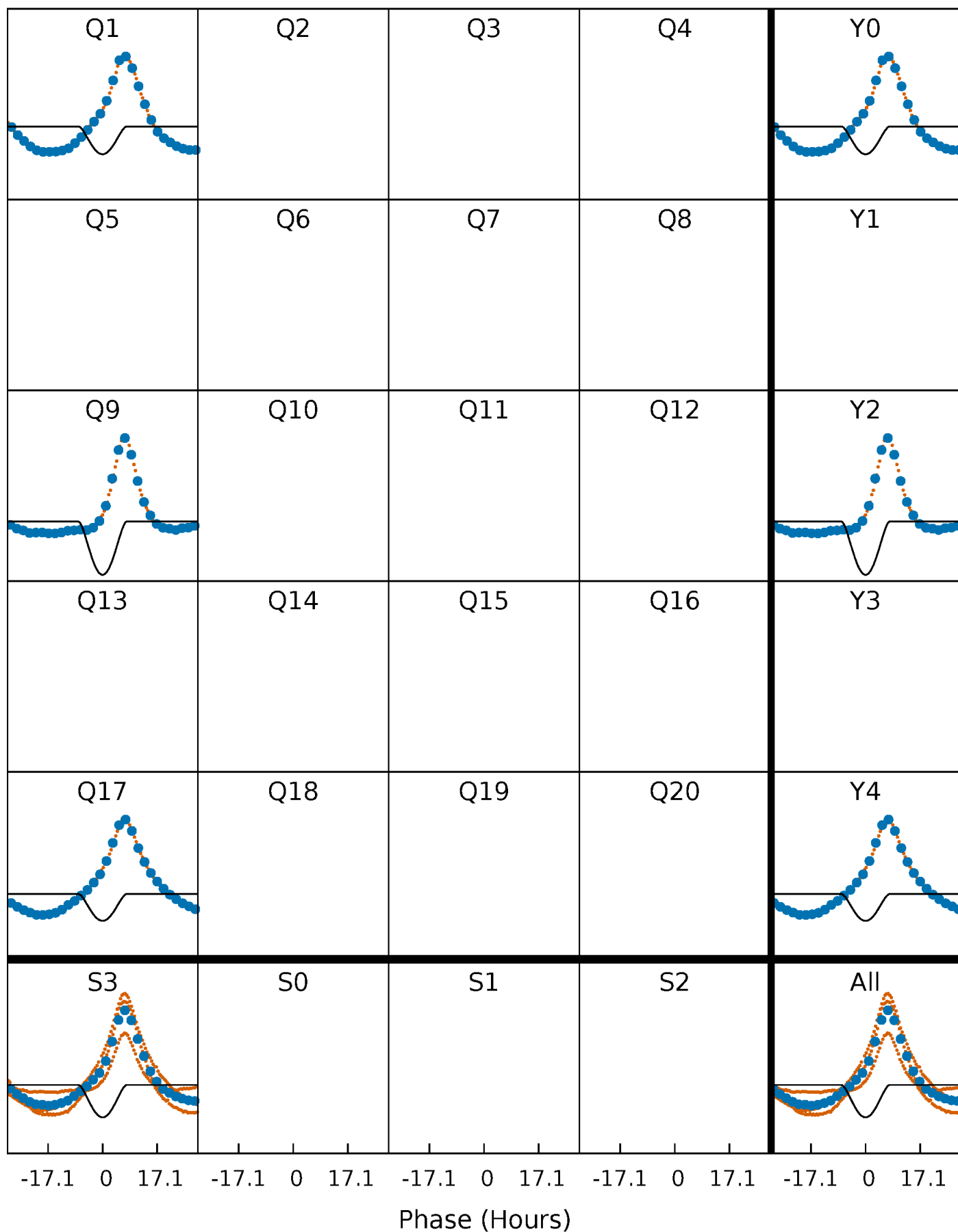
# PDC Quarter-Phased Transit Curves

TCE 005395645-02 P=720.234190 Days  $T_0=135.197226$  (BKJD)



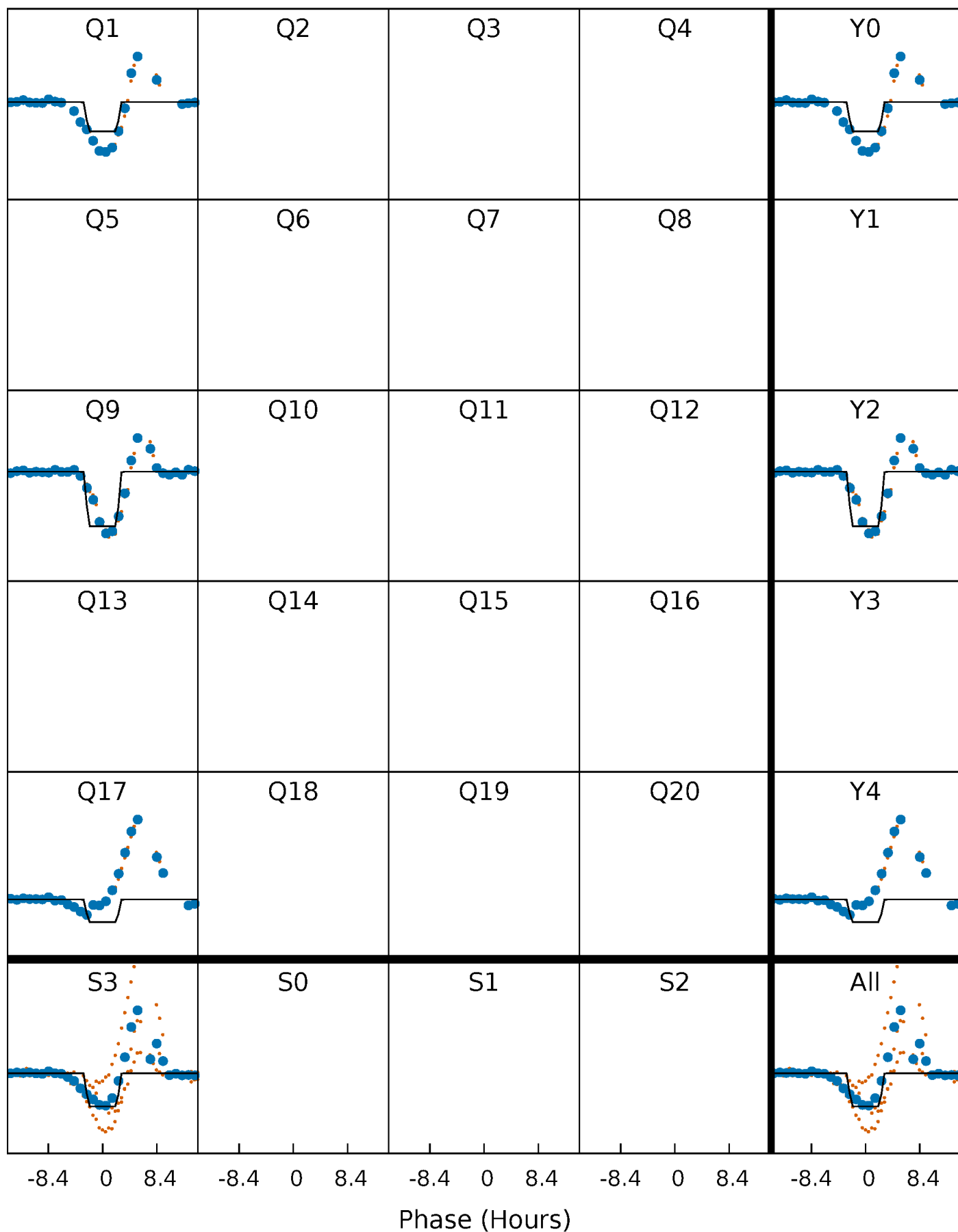
# DV Quarter-Phased Transit Curves

TCE 005395645-02     $P=720.234190$  Days     $T_0=135.197226$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

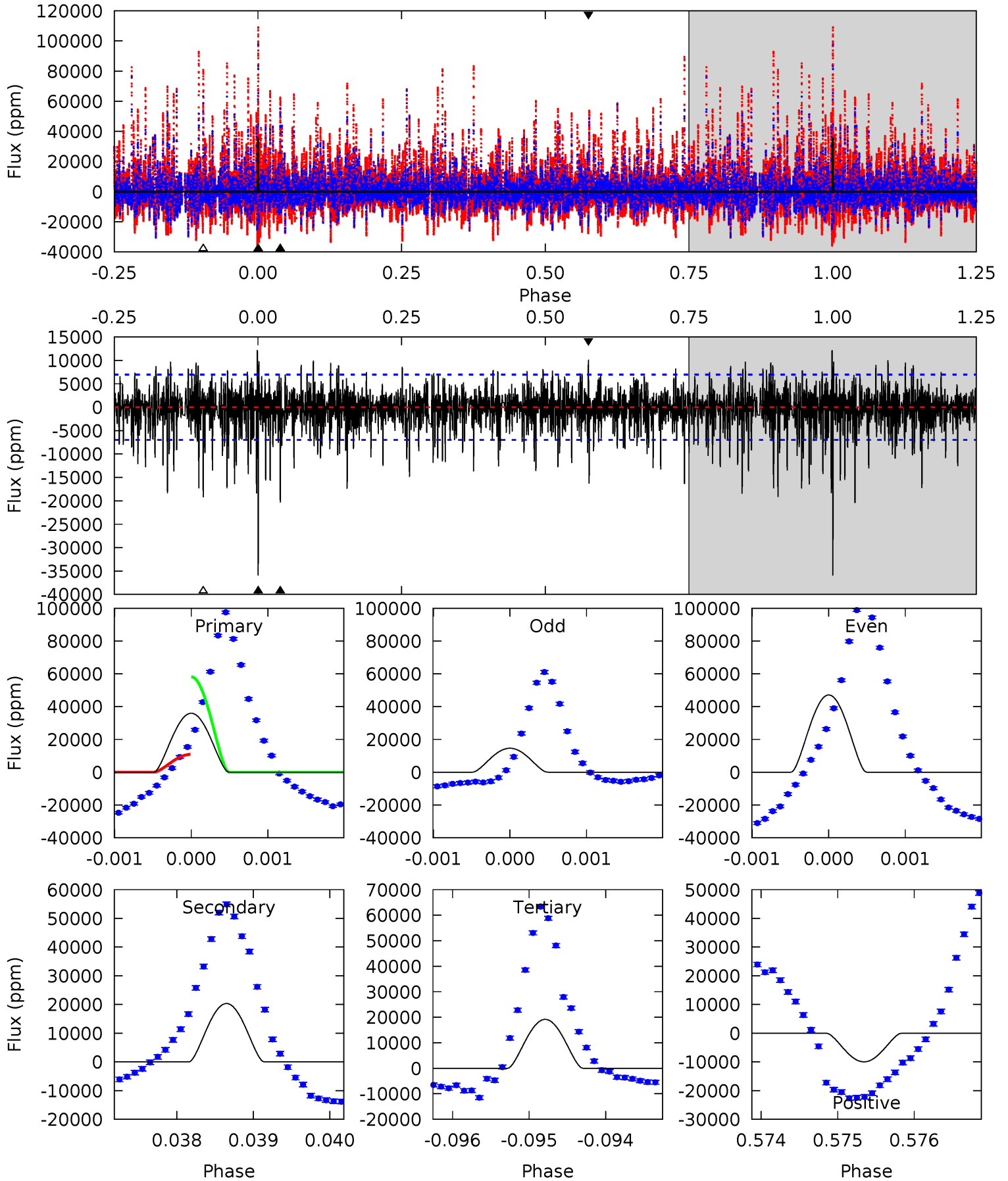
TCE 005395645-02 P=720.242123 Days  $T_0=135.211442$  (BKJD)



# DV Model-Shift Uniqueness Test

005395645-02, P = 720.234190 Days, E = 135.197226 Days

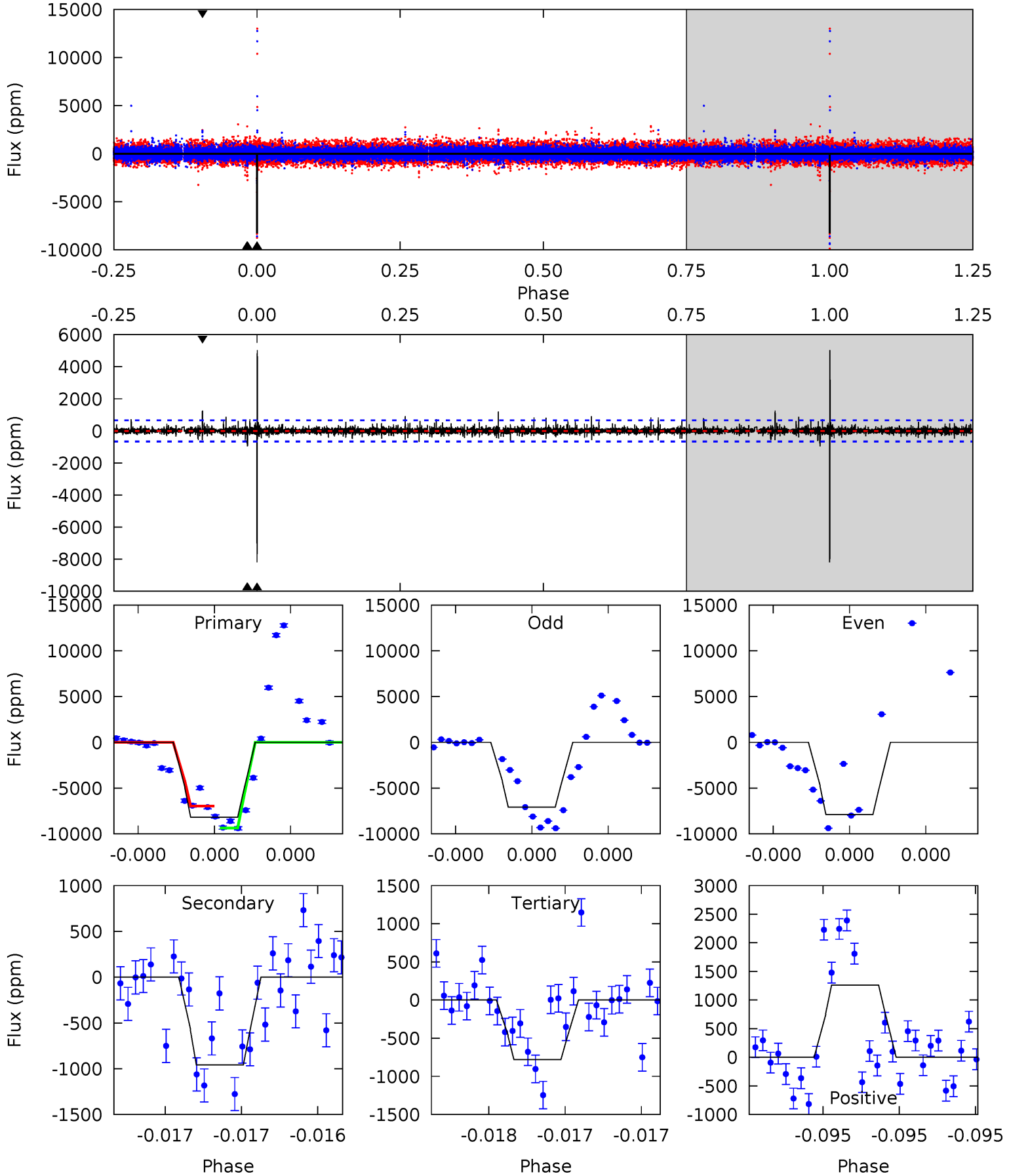
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	16.0	15.0	7.83	5.47	3.32	3.03	13.2	20.4	0.91	8.13	12.4	0.93	0.25	18.5



# Alt Model-Shift Uniqueness Test

005395645-02, P = 720.242123 Days, E = 135.211442 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
69.9	8.19	6.65	10.8	5.63	3.56	0.92	63.3	59.2	1.53	-2.58	4.96	0.95	0.38	0





### Stellar Parameters For KIC 005395645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6531^{+176}_{-216}$	$4.486^{+0.048}_{-0.192}$	$-0.500^{+0.300}_{-0.300}$	$0.969^{+0.289}_{-0.090}$	$1.057^{+0.137}_{-0.125}$	$1.635^{+0.315}_{-0.820}$
	+3%/-3%	+1%/-4%	+60%/-60%	+30%/-9%	+13%/-12%	+19%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005395645-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-20337 \pm 1274$	$34.38^{+16.66}_{-16.45}$	$319^{+21}_{-15}$	$4588^{+1620}_{-592}$	$24489^{+64964}_{-13189}$
Alt.	$-959 \pm 117$	$16.27^{+13.76}_{-11.01}$	$319^{+22}_{-15}$	$3510^{+1824}_{-599}$	$5181^{+44732}_{-3719}$

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

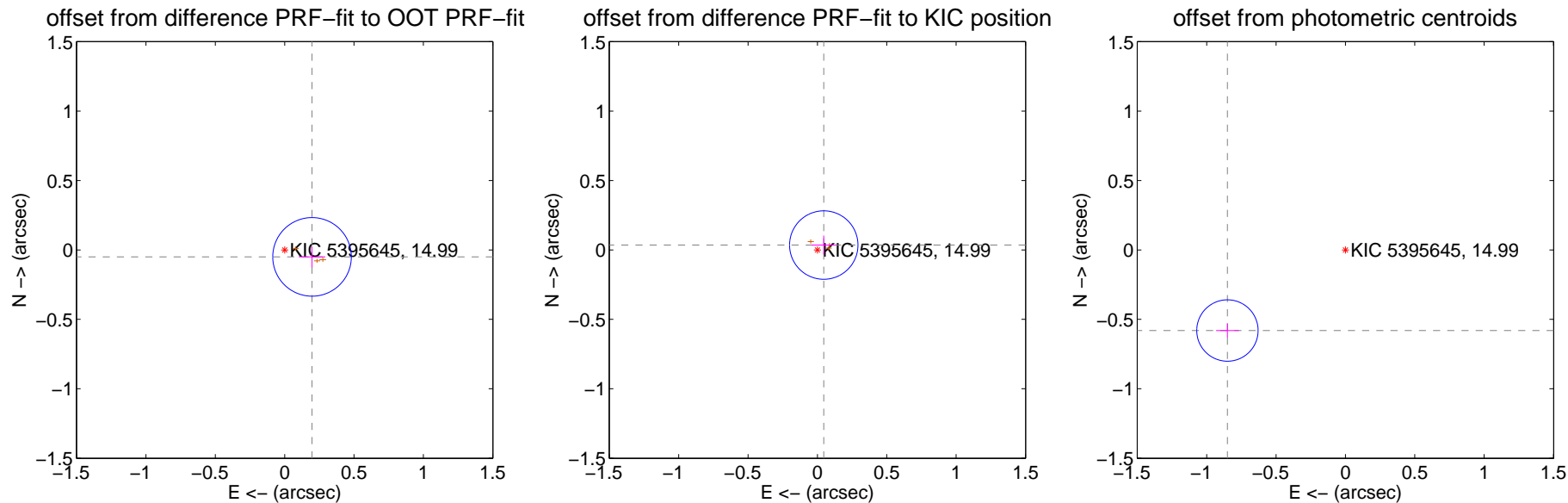
## DV Centroid Data

Supplemental centroid analysis for 005395645-02. Kepler magnitude: 14.99. Transit SNR 17.23

There are 0 quarters with good PRF difference image offsets

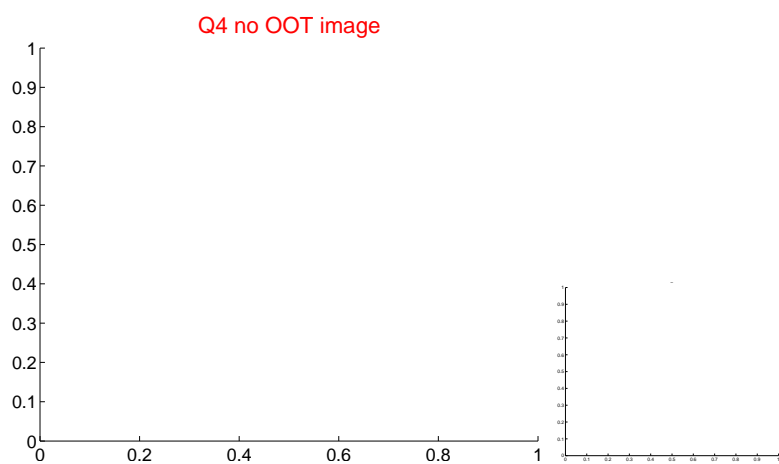
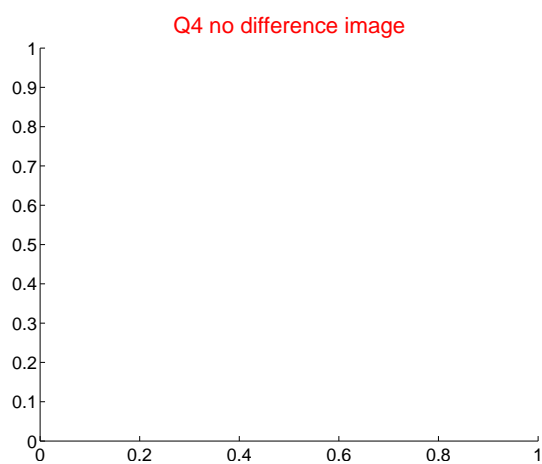
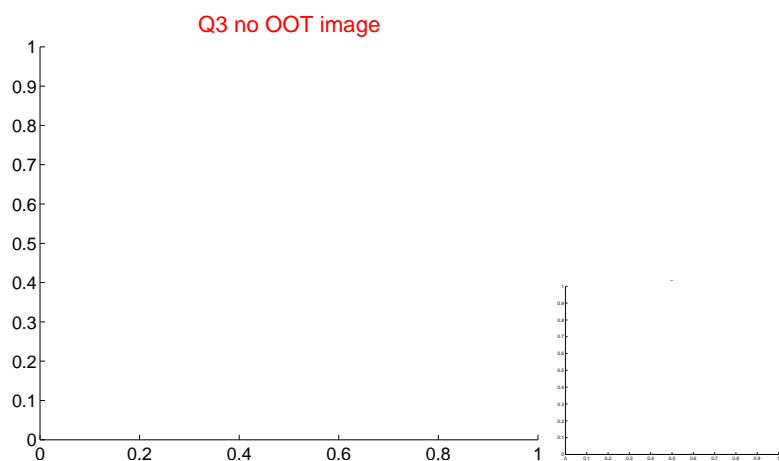
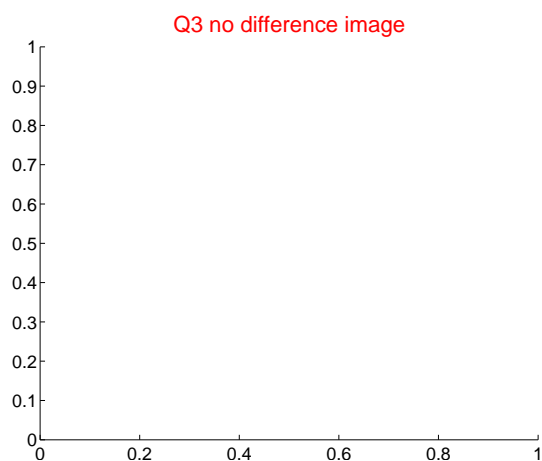
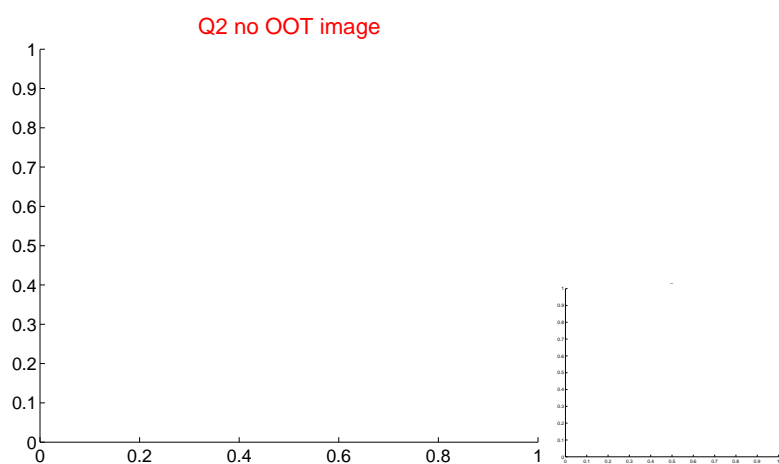
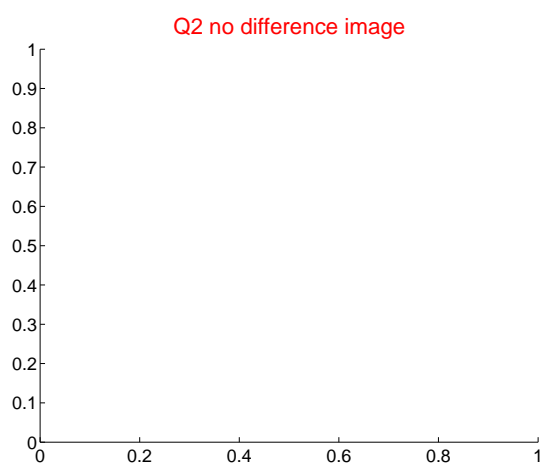
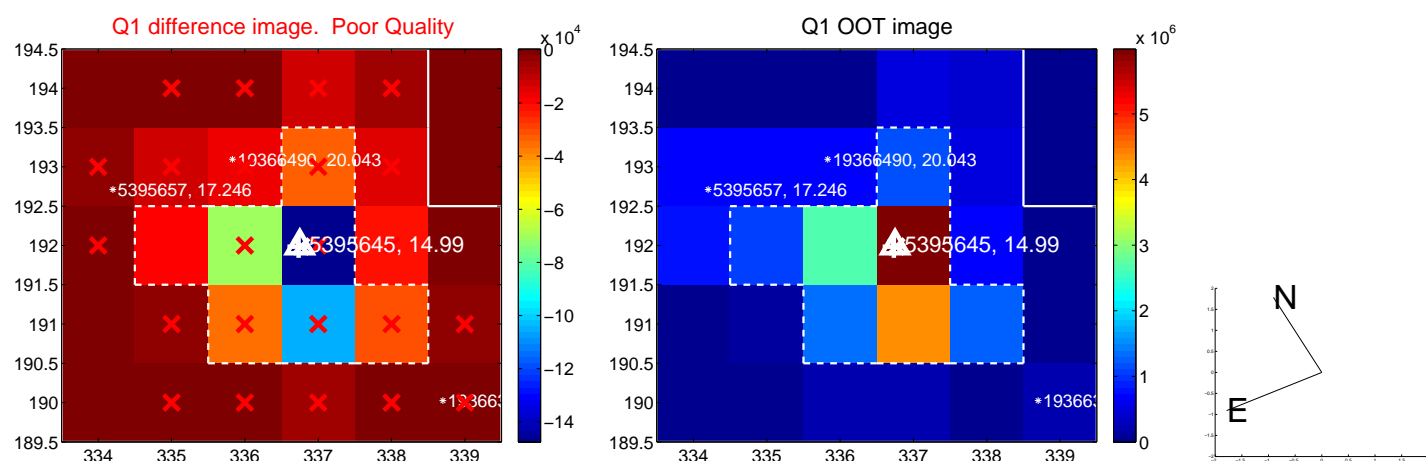
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.204 \pm 0.094$	2.16	$-0.197 \pm 0.095$	$-0.050 \pm 0.075$
PRF-fit source offset from KIC position	$0.058 \pm 0.082$	0.70	$-0.046 \pm 0.089$	$0.035 \pm 0.068$
photometric centroid source offset	$1.03 \pm 0.07$	13.97	$0.85 \pm 0.08$	$-0.58 \pm 0.05$



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.

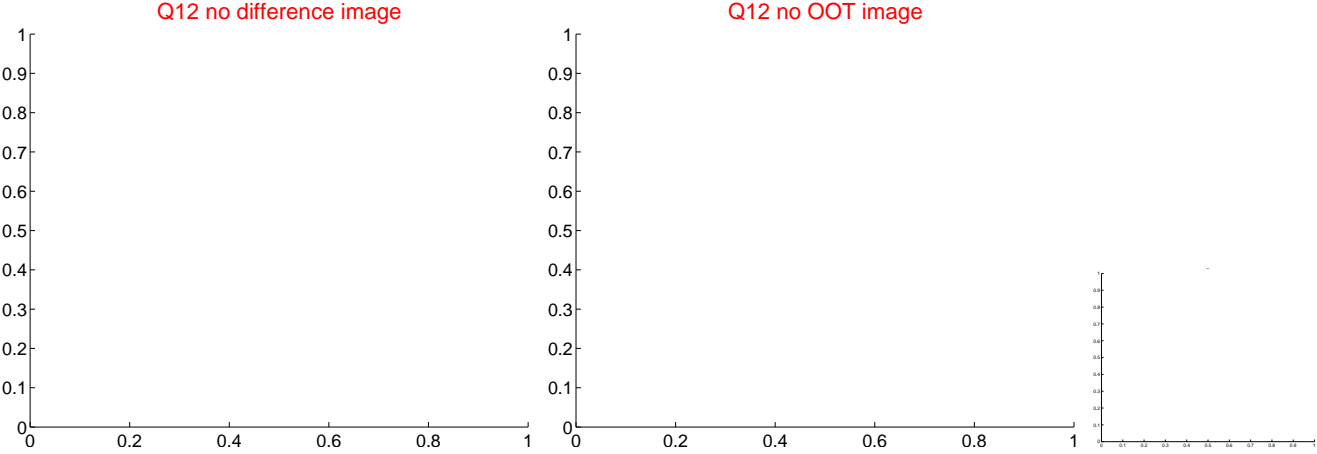
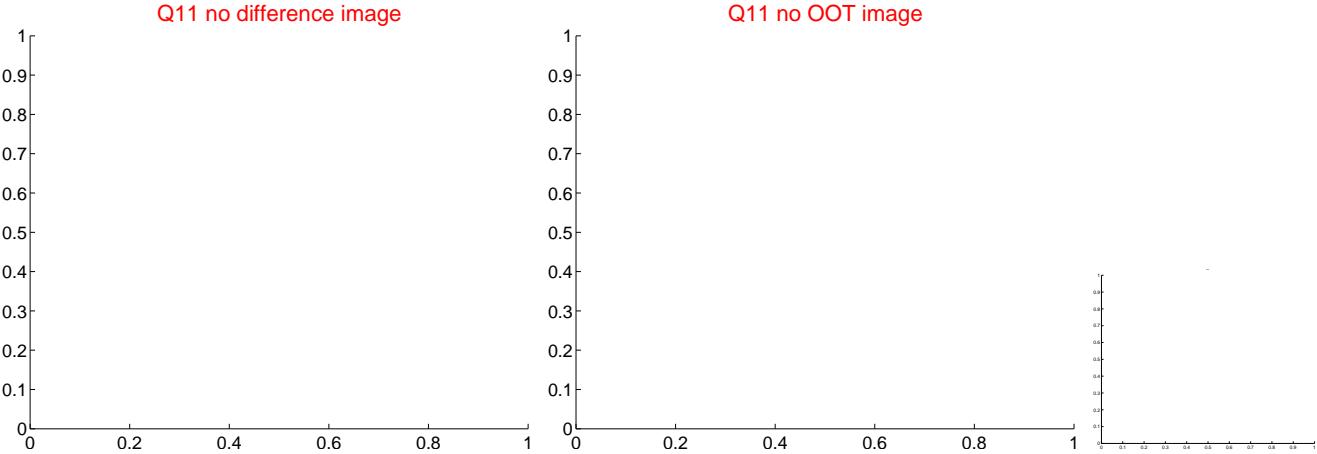
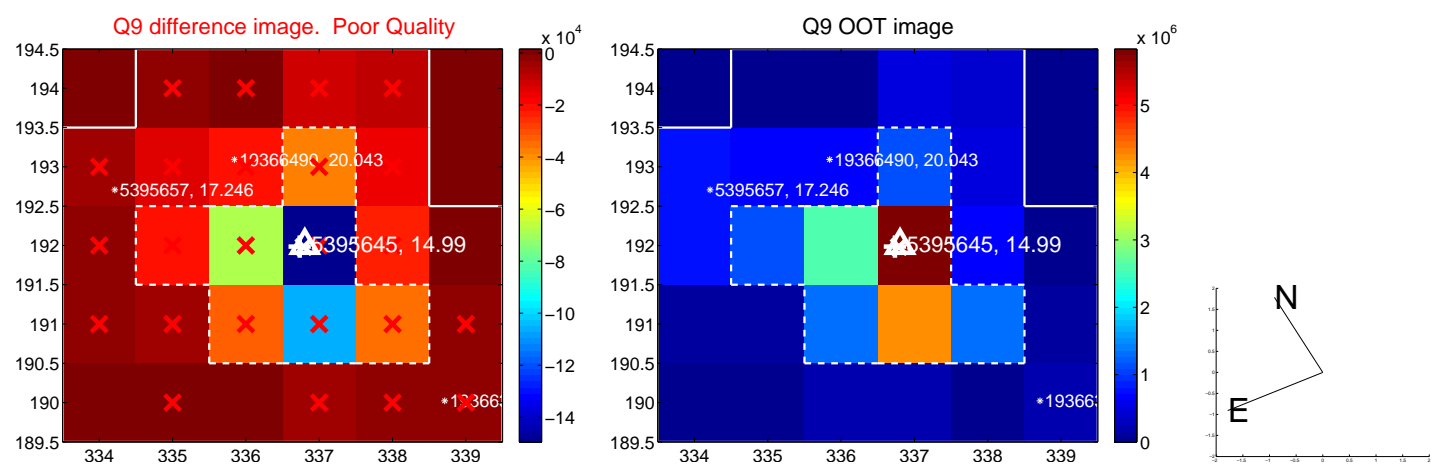
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



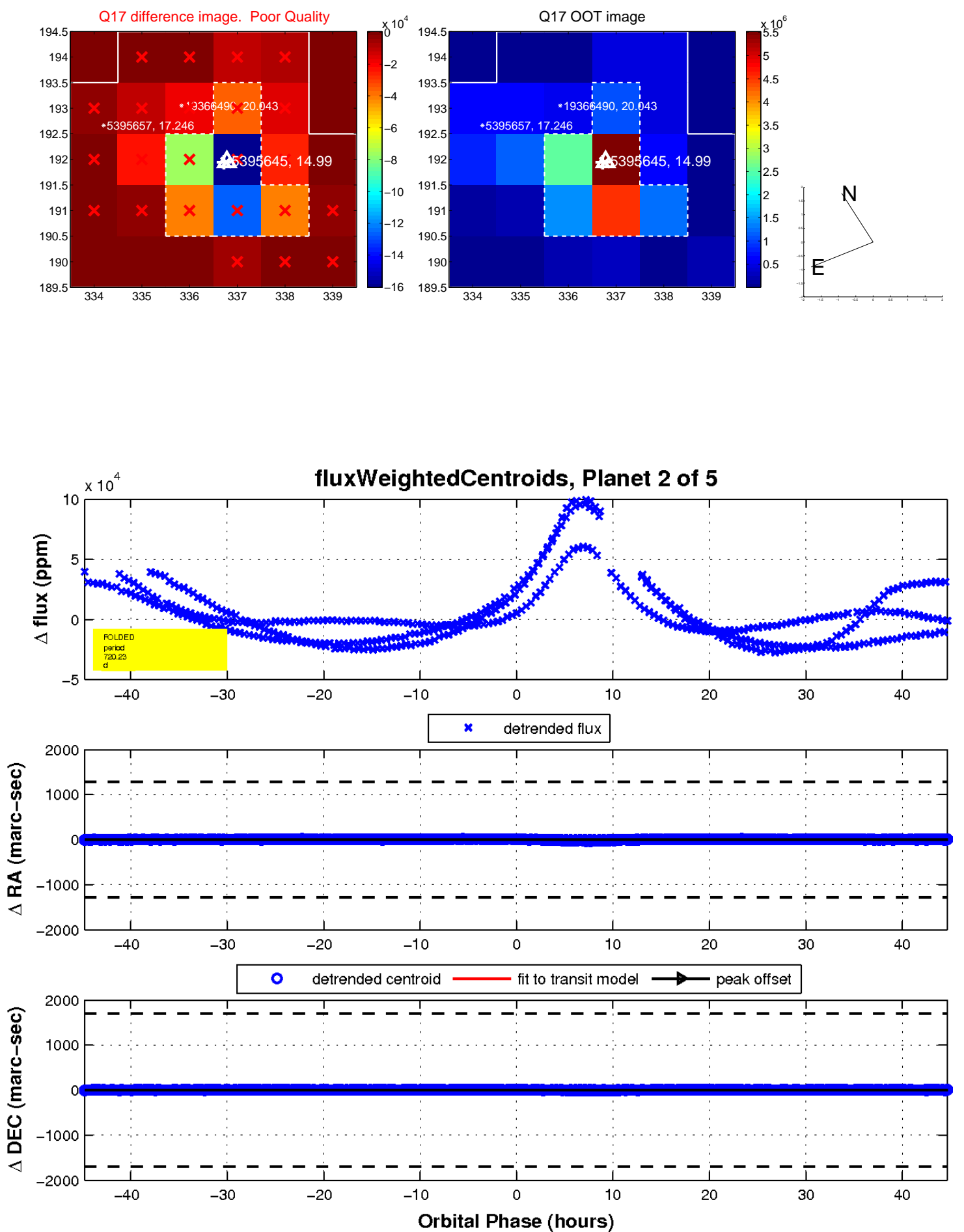
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

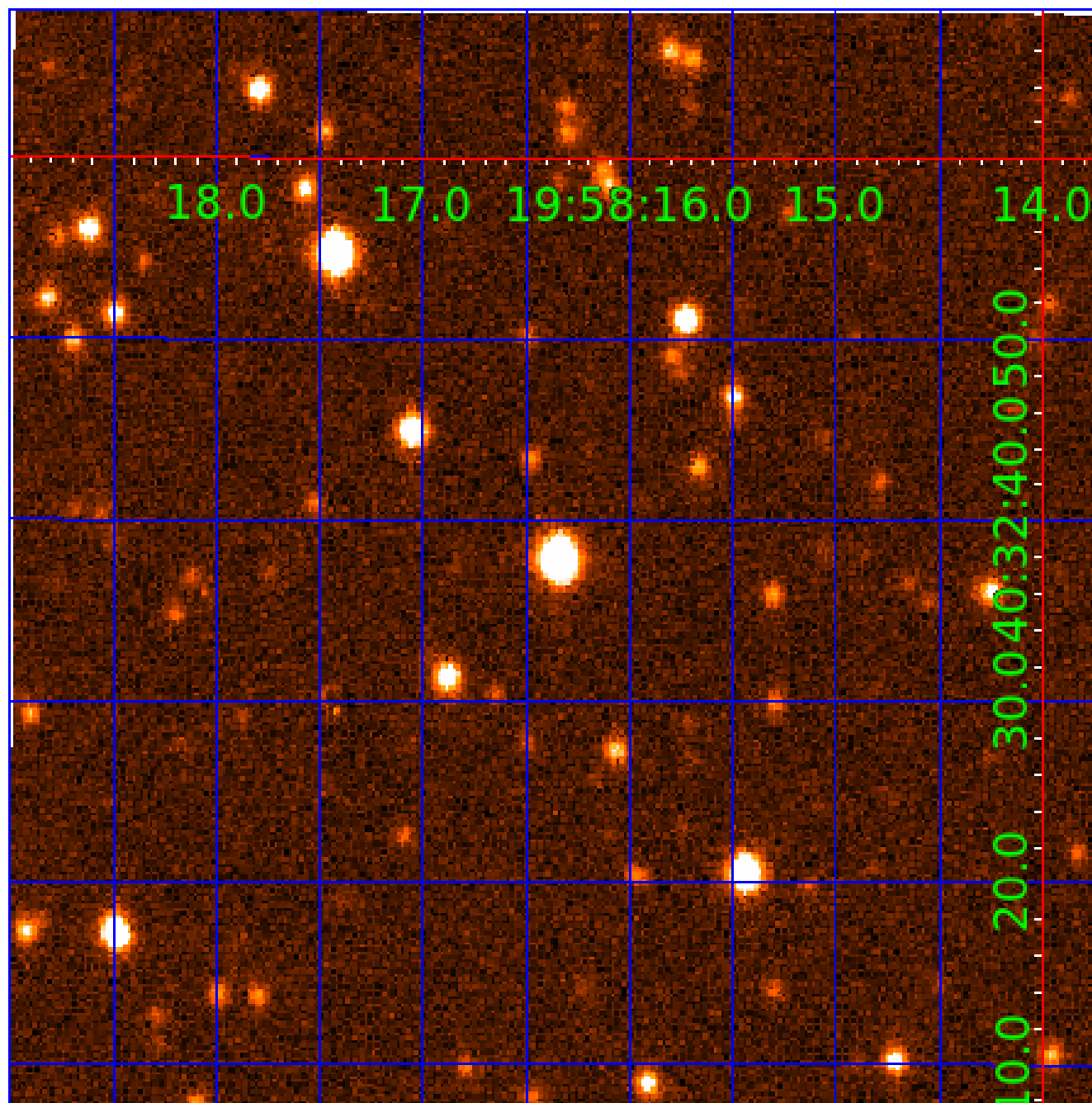


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005395645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005395645-01	OBS	No	348.269597	423.707496	5746.3	5.000	31.5	-1.0	0.97	6531	7.40	1.58
005395645-02	OBS	No	720.234190	135.197227	38697.7	14.954	20.6	17.2	0.97	6531	32.54	0.60
005395645-03	OBS	No	318.192130	405.250848	24296.7	13.251	18.3	14.6	0.97	6531	26.04	1.78
005395645-04	OBS	No	459.537354	470.569300	20644.7	9.955	17.6	16.9	0.97	6531	24.09	1.09
005395645-05	OBS	No	563.934457	408.638513	23429.0	16.204	15.6	14.2	0.97	6531	25.58	0.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005395645-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005395645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
005395645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005395645-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
005395645-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

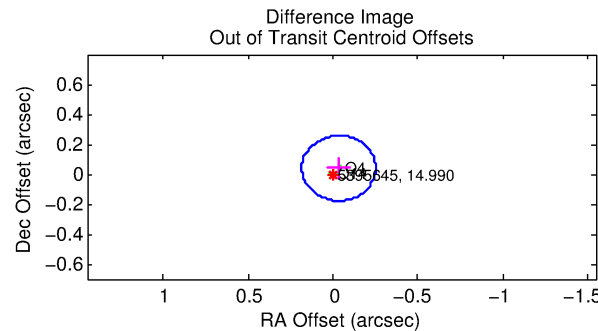
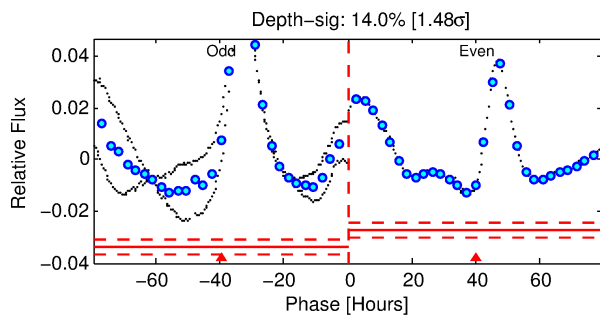
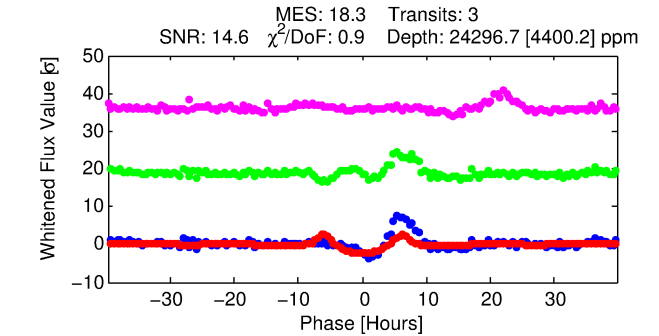
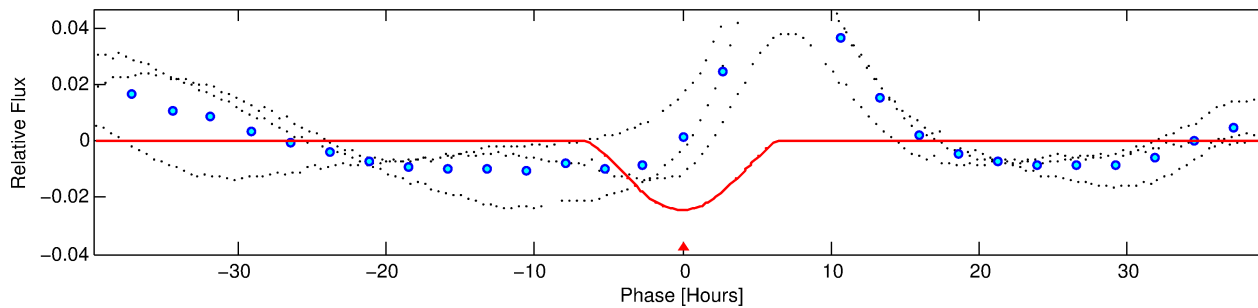
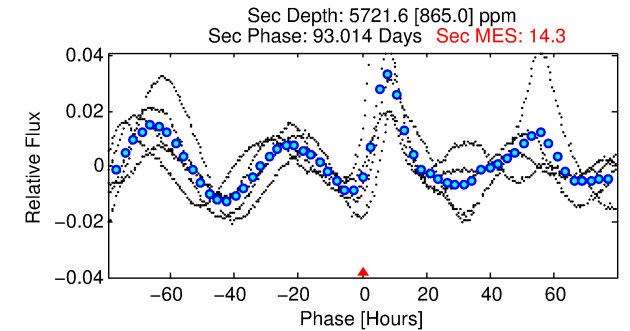
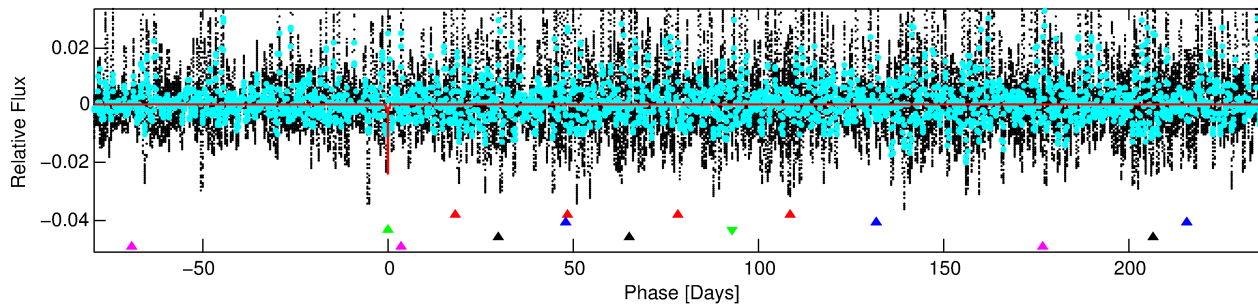
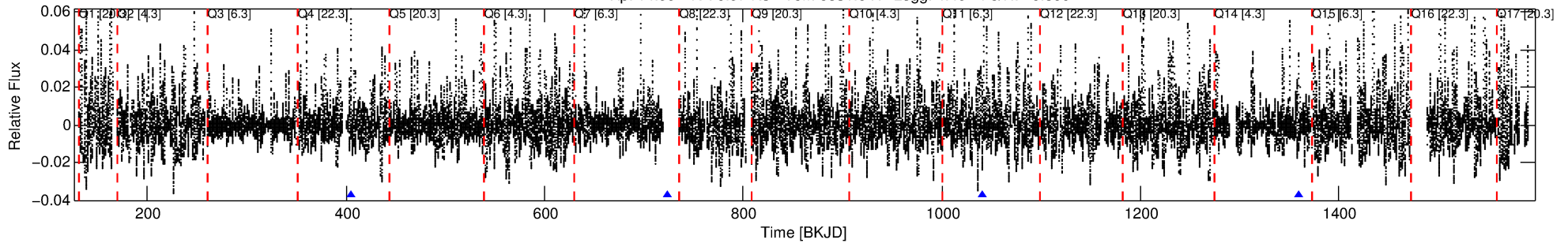
## Ephemeris Match Information For 005395645-03

No Significant Match Found

# DV One-Page Summary

KIC: 5395645 Candidate: 3 of 5 Period: 318.192 d

Kp: 14.99 R\*: 0.97 Rs Teff: 6531.0 K Logg: 4.49 Fe/H: -0.500



## DV Fit Results:

Period = 318.19213 [0.00325] d  
Epoch = 405.2508 [0.0065] BKJD  
Rp/R\* = 0.2462 [0.1464]  
a/R\* = 136.44 [6.73]  
b = 1.00 [0.17]  
Seff = 1.78 [0.68]  
Teq = 295 [28] K  
Rp = 26.04 [17.32] Re  
a = 0.9269 [0.2294] AU  
Ag = 3989.19 [4986.89] [0.80σ]  
Teffp = 3620 [1091] K [3.05σ]

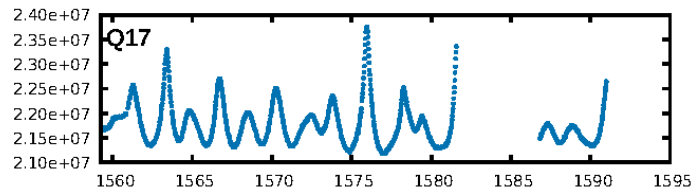
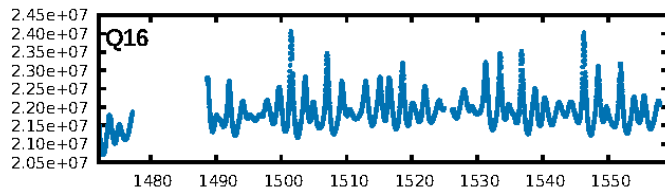
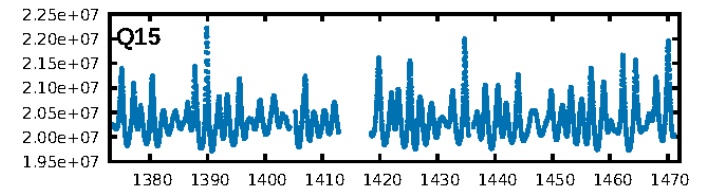
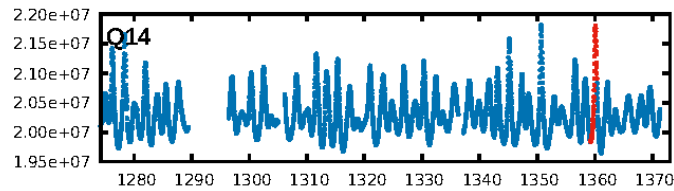
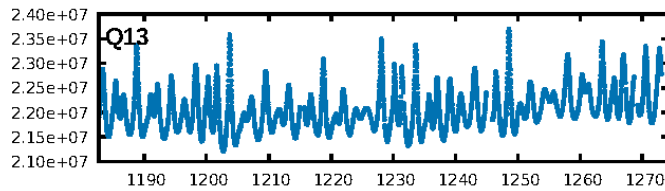
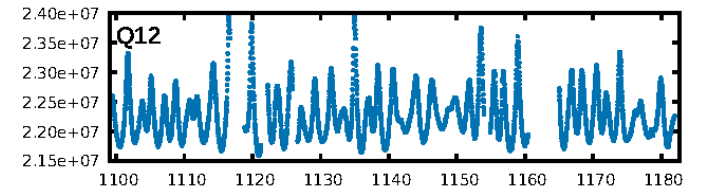
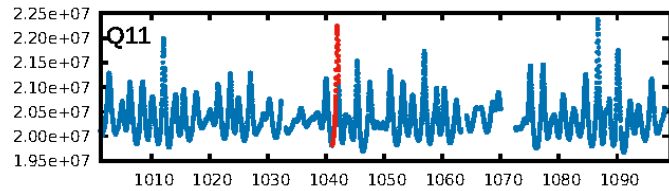
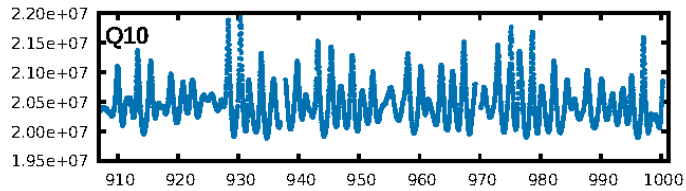
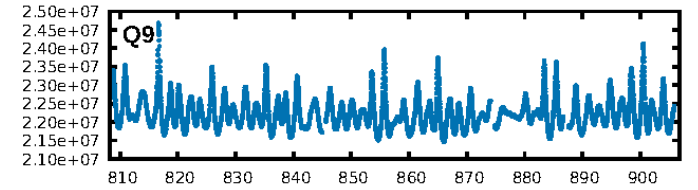
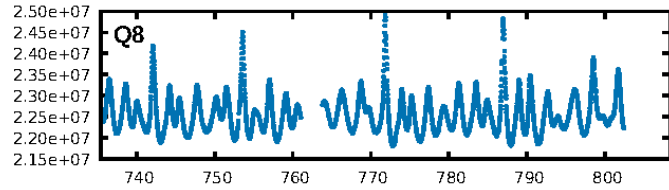
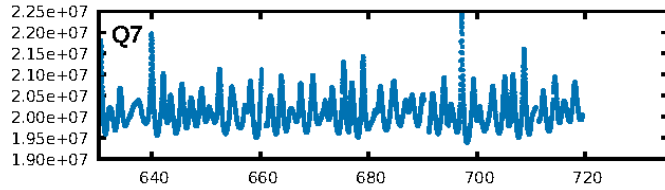
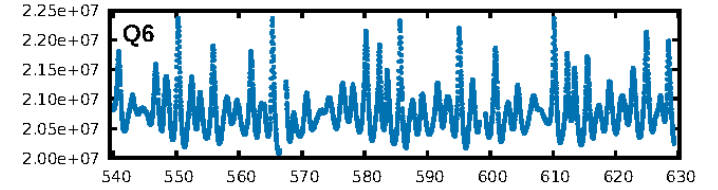
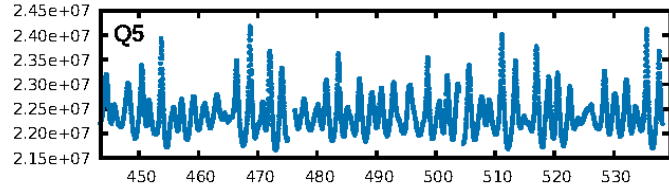
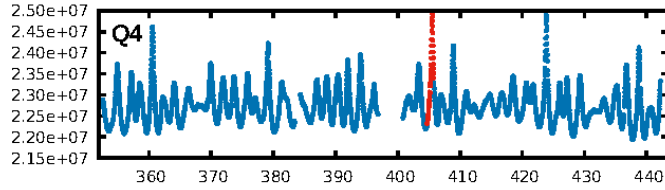
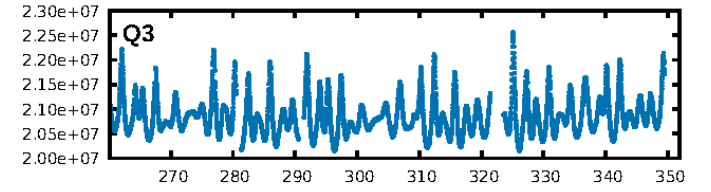
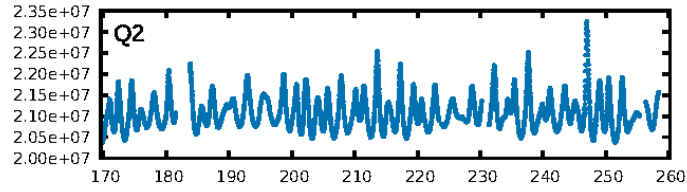
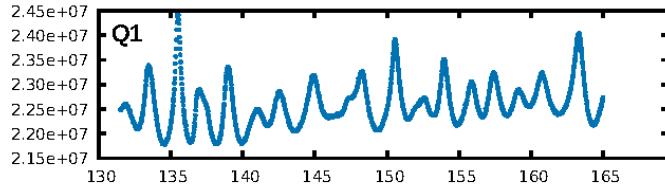
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [50.97σ]  
ModelChiSquare2-sig: 39.2%  
ModelChiSquareGof-sig: 95.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.418  
Centroid-sig: 3.8%  
Centroid-so: 0.825 arcsec [8.08σ]  
OotOffset-rm: 0.051 arcsec [0.71σ]  
KicOffset-rm: 0.133 arcsec [1.35σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

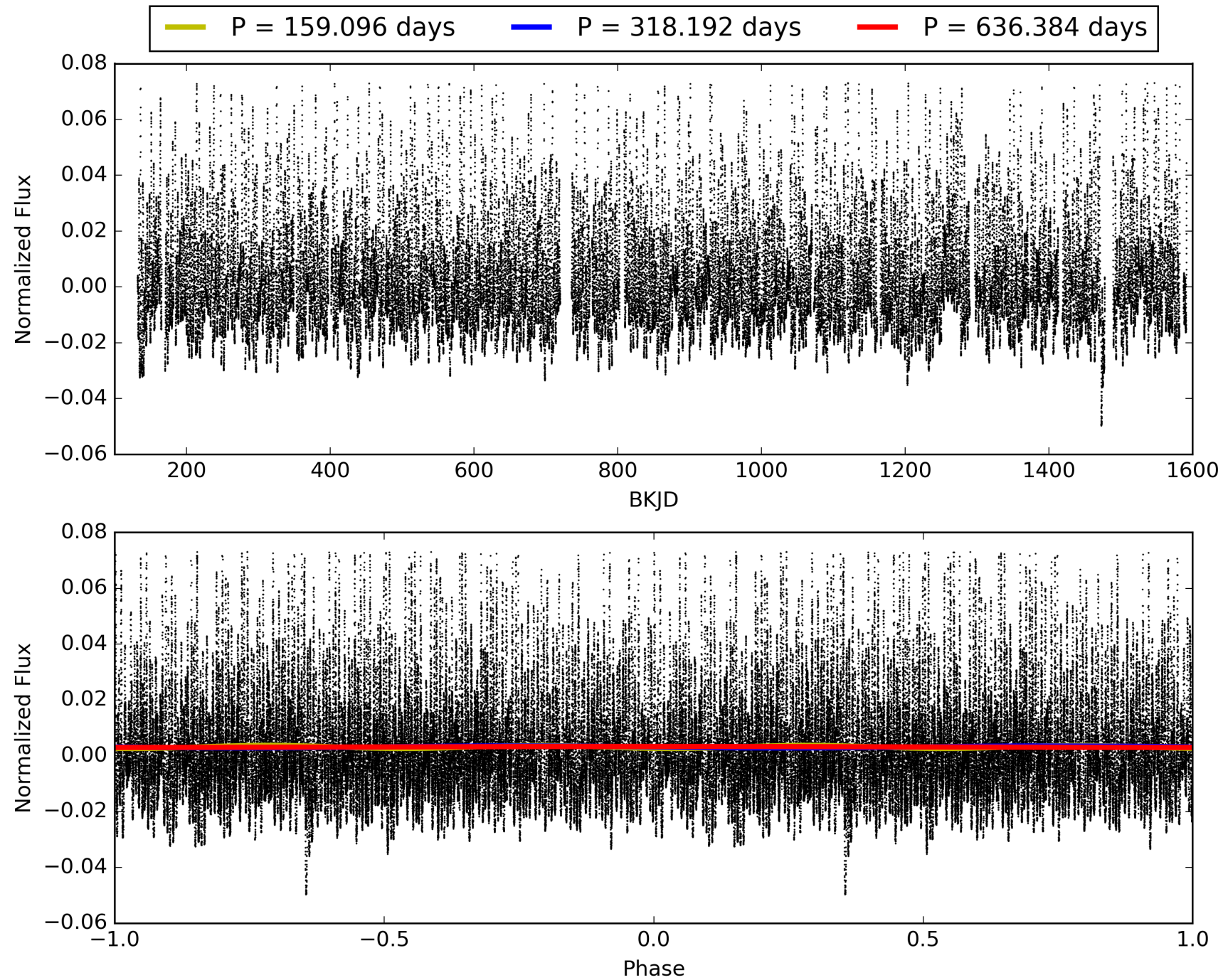
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:17:22 Z

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

# TCE 005395645-03, PDC Light Curves

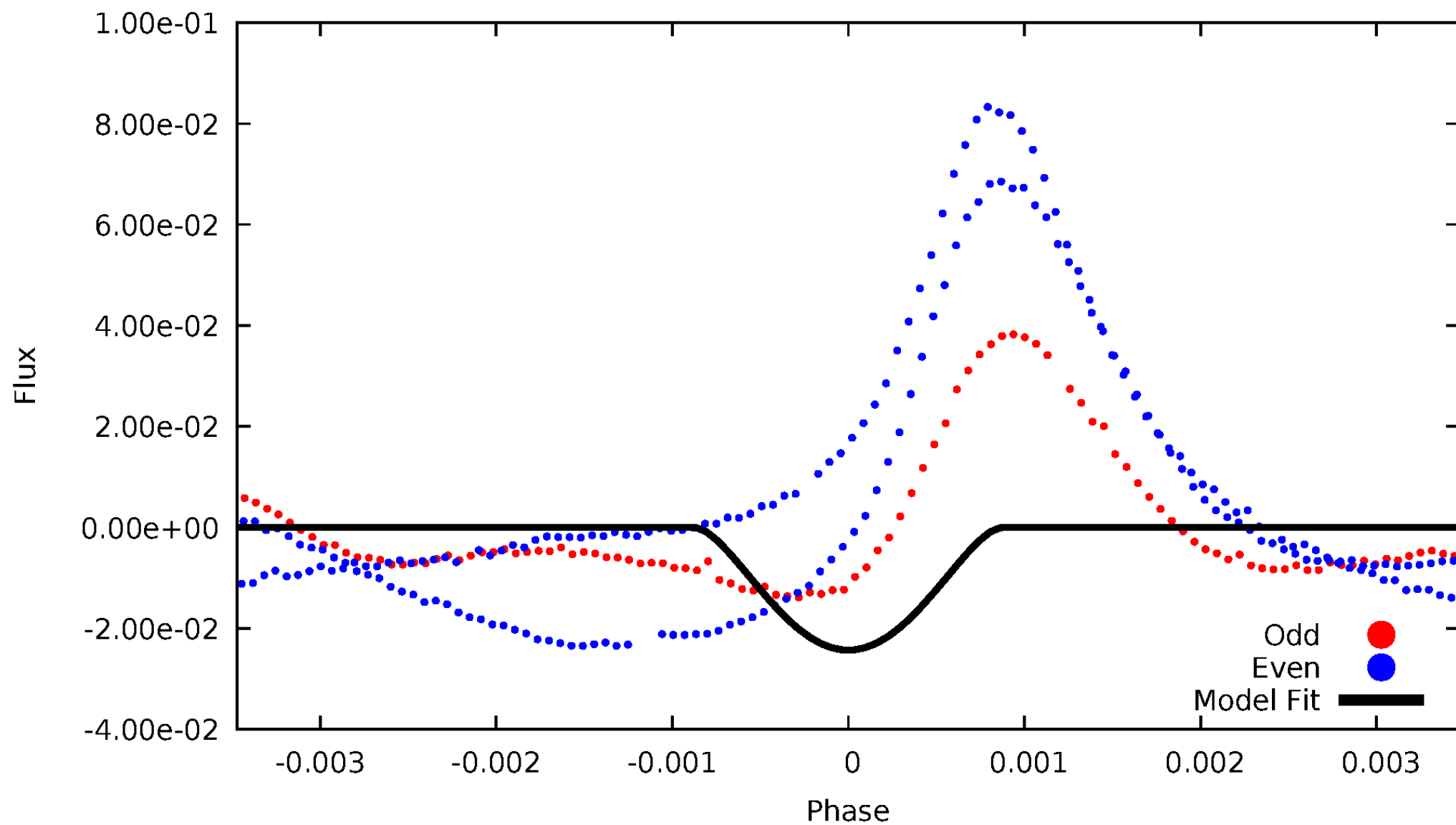


TCE 005395645-03



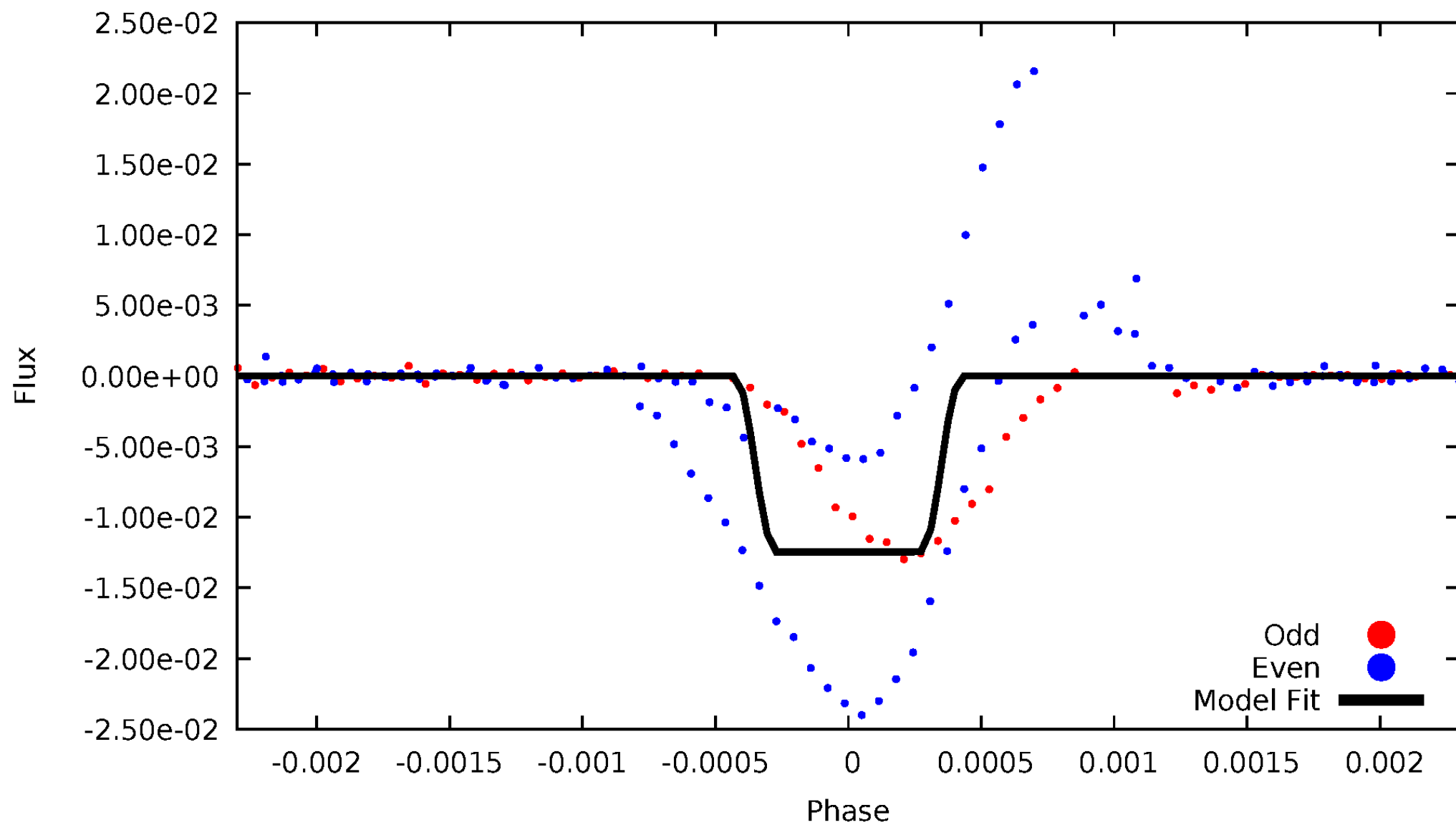
# DV Odd/Even

TCE 005395645-03



# ALT Odd/Even

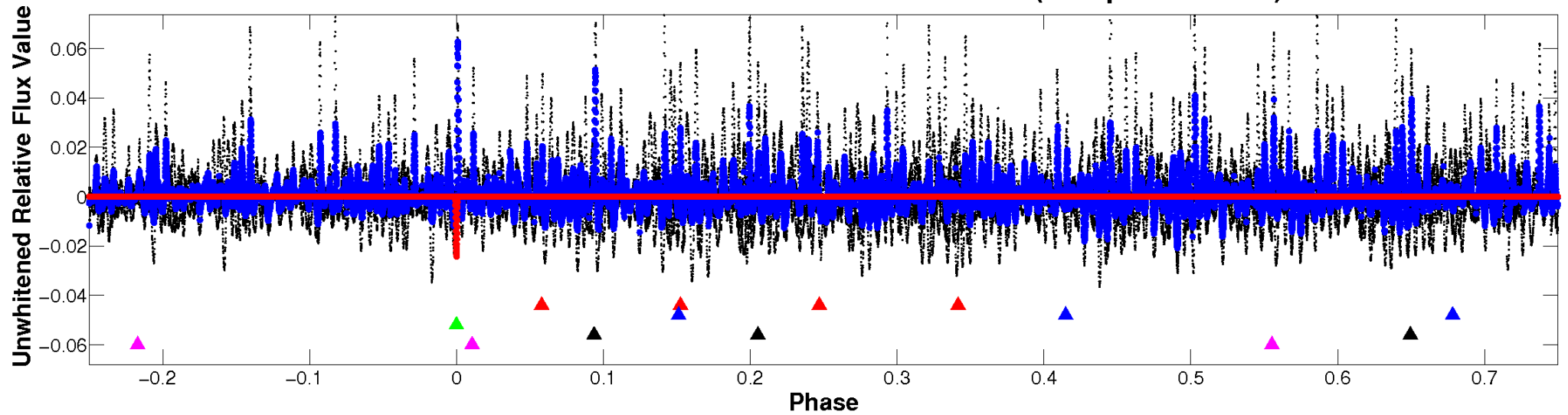
TCE 005395645-03



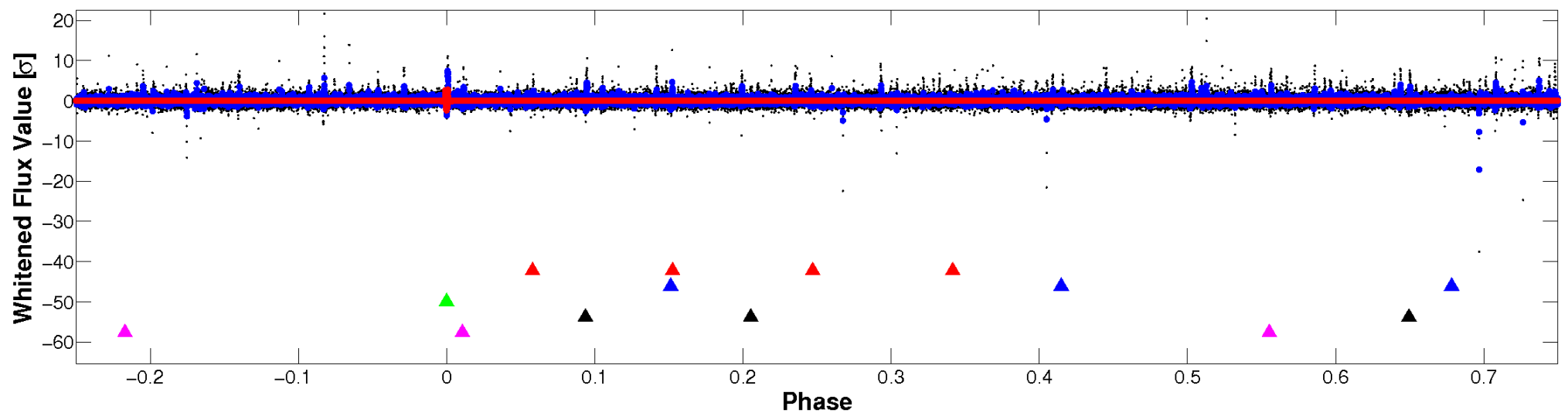


# Non-Whitened Vs. Whitened Light Curve

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

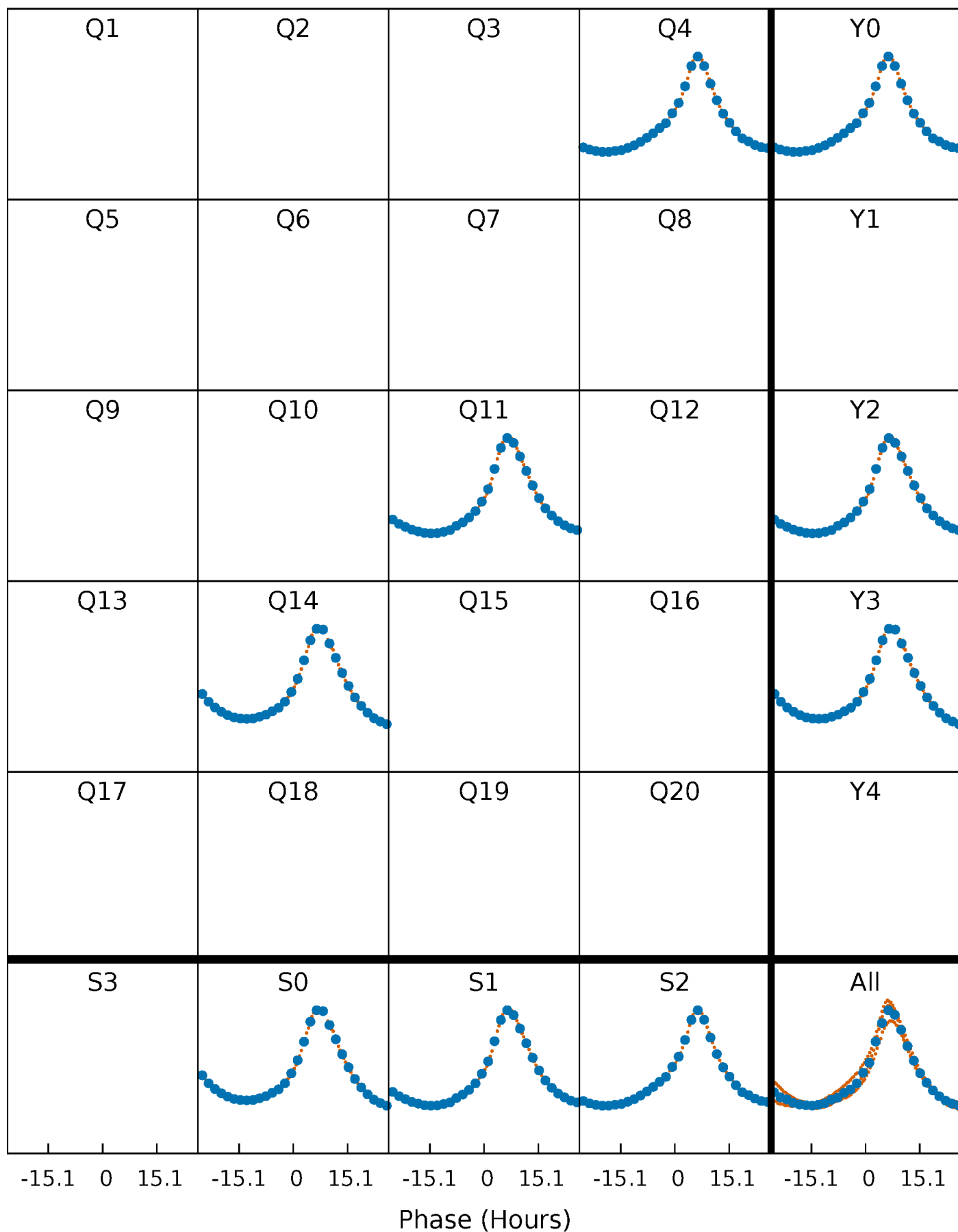


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

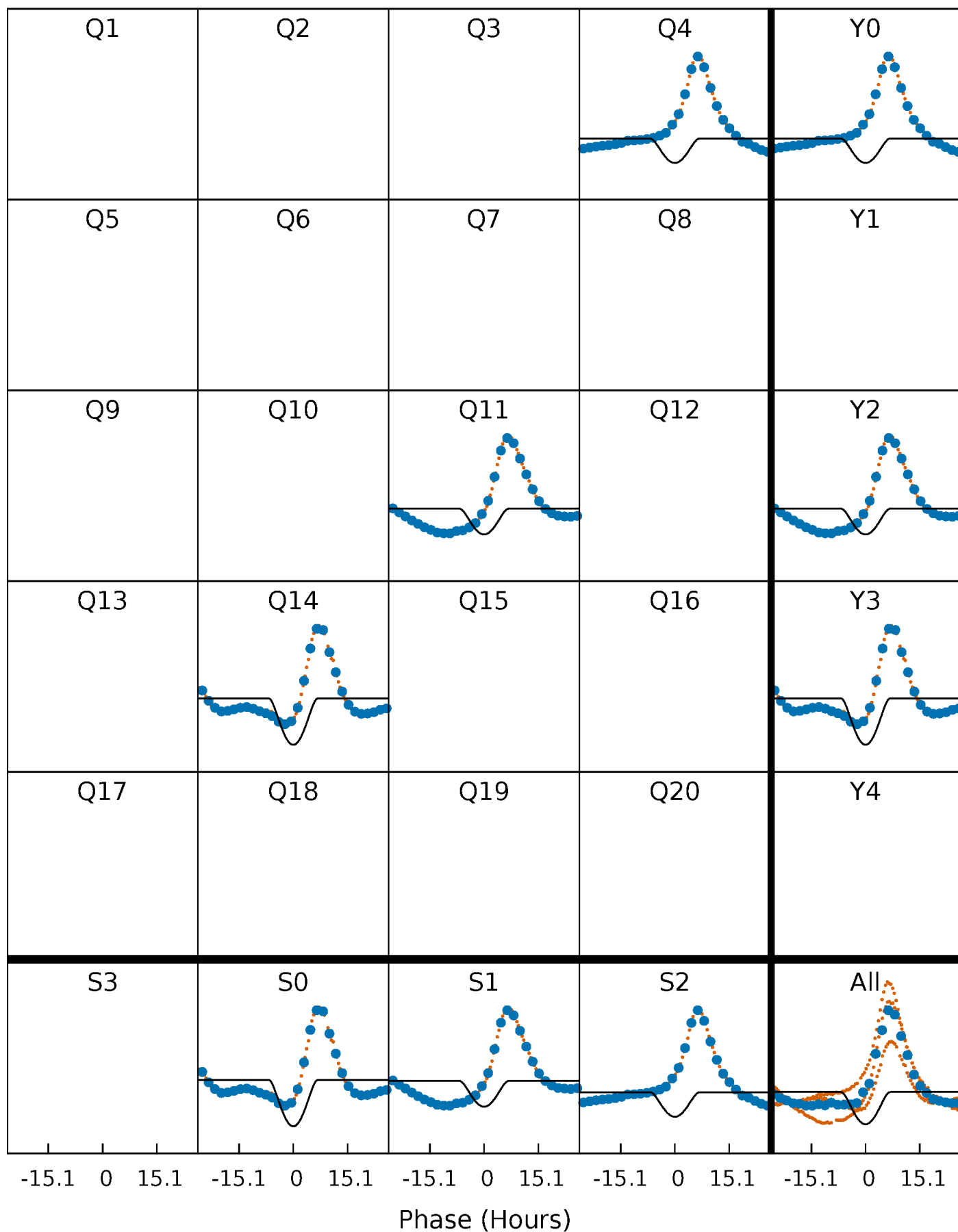
TCE 005395645-03     $P=318.192130$  Days     $T_0=405.250848$  (BKJD)





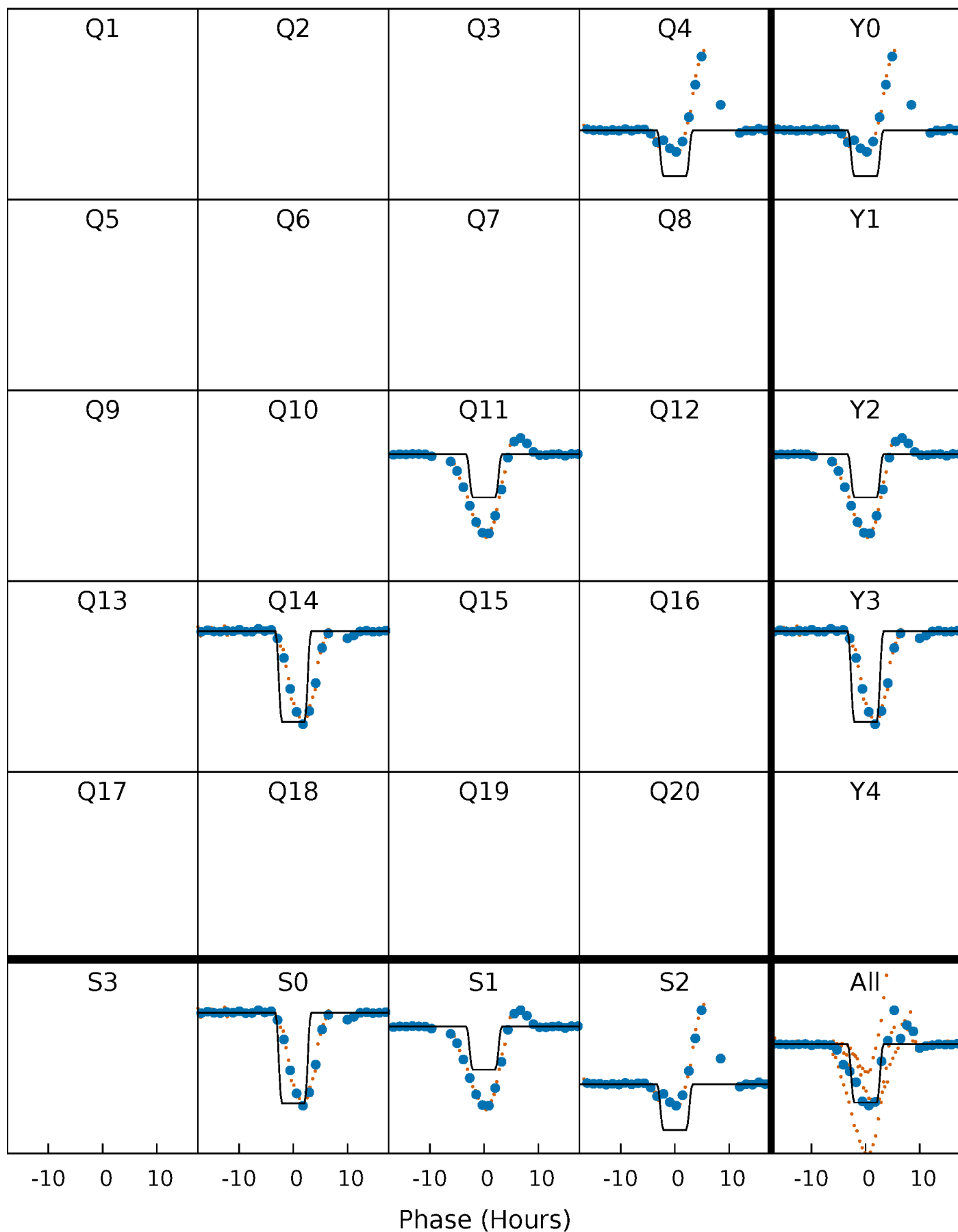
# DV Quarter-Phased Transit Curves

TCE 005395645-03     $P=318.192130$  Days     $T_0=405.250848$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

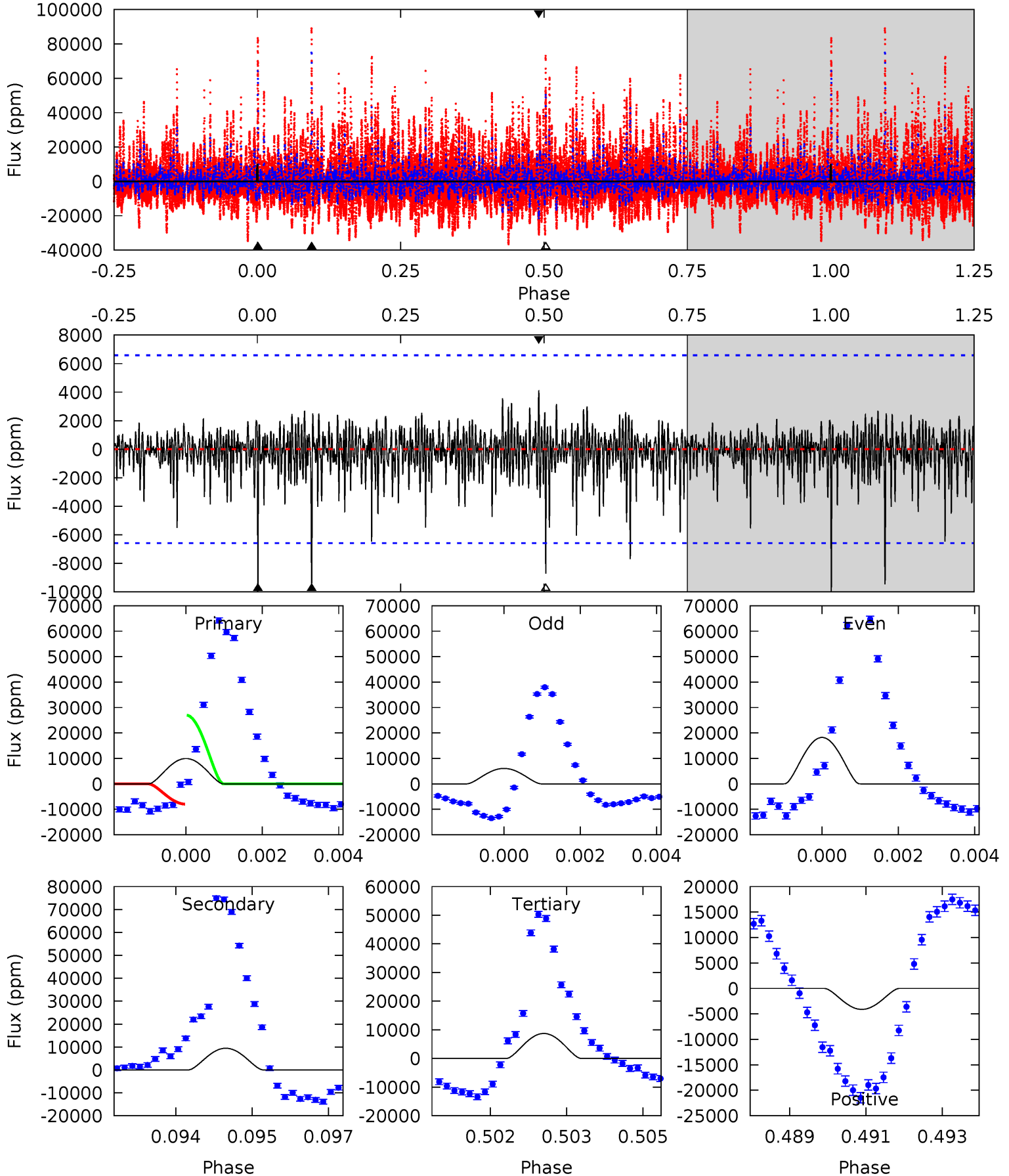
TCE 005395645-03 P=318.184585 Days  $T_0=405.280720$  (BKJD)



# DV Model-Shift Uniqueness Test

005395645-03, P = 318.192130 Days, E = 87.058718 Days

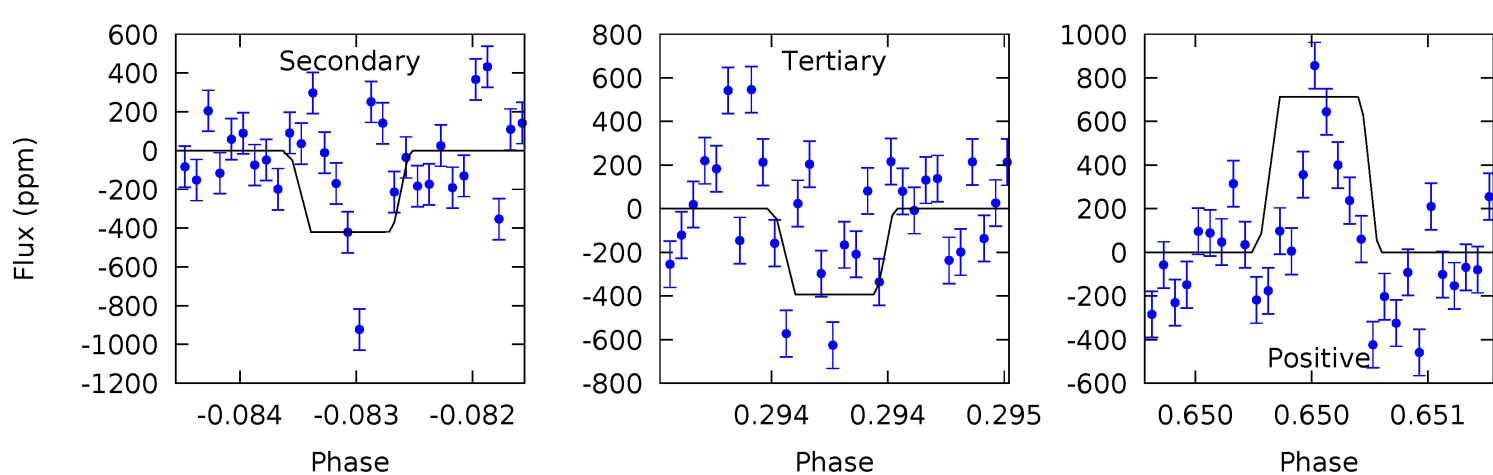
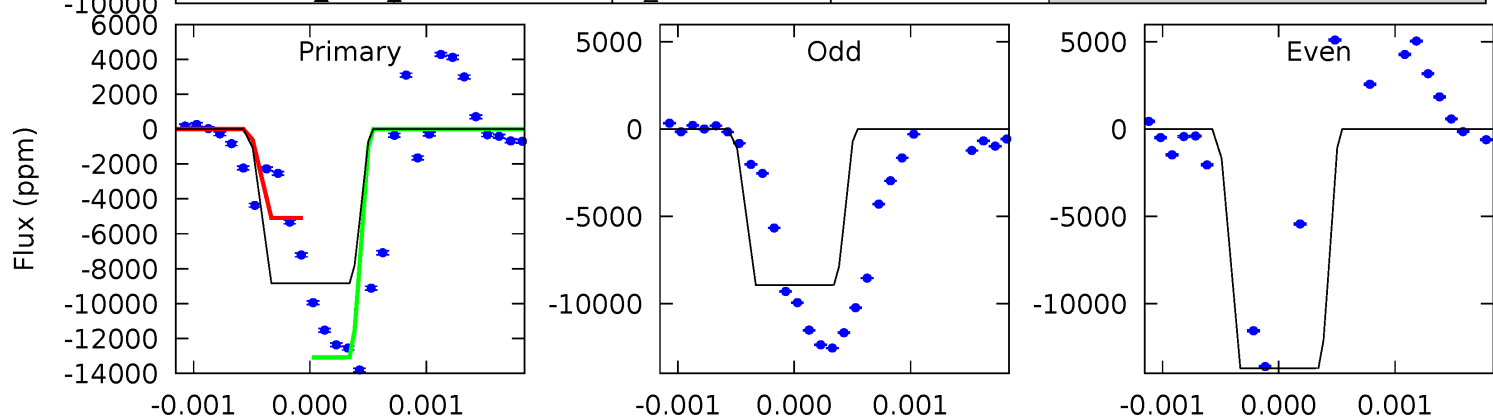
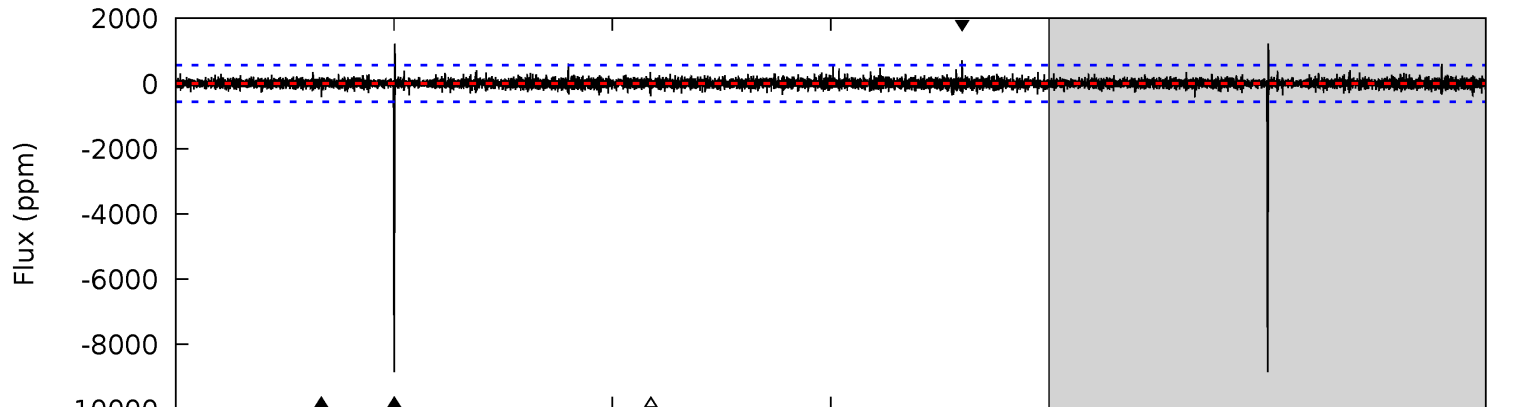
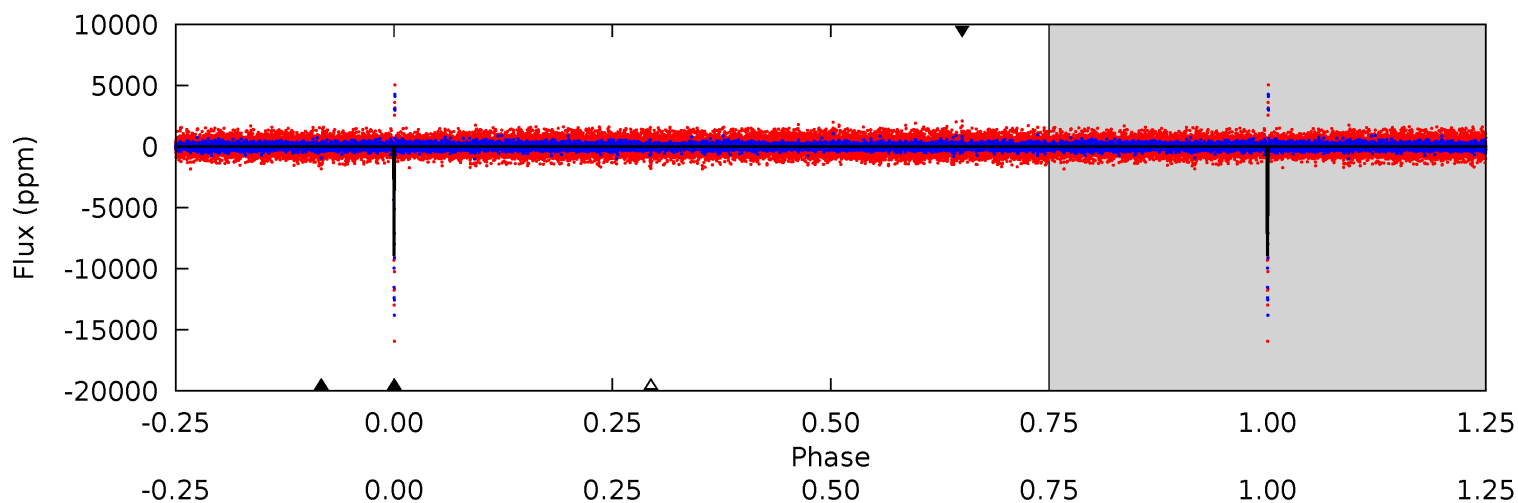
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.09	7.69	7.09	3.35	5.35	3.12	1.09	1.00	4.75	0.60	4.34	4.42	1.75	0.29	7.75



# Alt Model-Shift Uniqueness Test

005395645-03, P = 318.184585 Days, E = 87.096135 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
86.1	4.08	3.82	6.94	5.49	3.35	0.78	82.2	79.1	0.26	-2.85	29.8	1.25	0.12	0



### Stellar Parameters For KIC 005395645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6531^{+176}_{-216}$	$4.486^{+0.048}_{-0.192}$	$-0.500^{+0.300}_{-0.300}$	$0.969^{+0.289}_{-0.090}$	$1.057^{+0.137}_{-0.125}$	$1.635^{+0.315}_{-0.820}$
	+3%/-3%	+1%/-4%	+60%/-60%	+30%/-9%	+13%/-12%	+19%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005395645-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9458 \pm 1230$	$27.16^{+17.82}_{-13.81}$	$420^{+28}_{-19}$	$4328^{+1473}_{-673}$	$6100^{+17435}_{-3874}$
Alt.	$-420 \pm 103$	$16.70^{+15.50}_{-10.52}$	$420^{+29}_{-19}$	$3045^{+1164}_{-464}$	$691^{+4707}_{-503}$

$T_{max}$  = 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

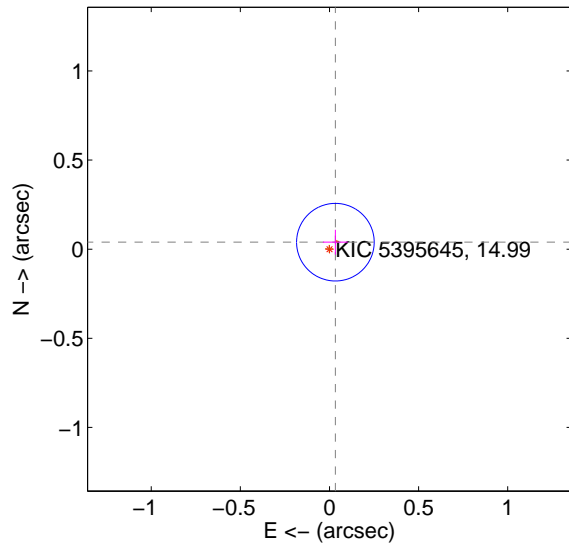
Supplemental centroid analysis for 005395645-03. Kepler magnitude: 14.99. Transit SNR 14.57

There are 0 quarters with good PRF difference image offsets

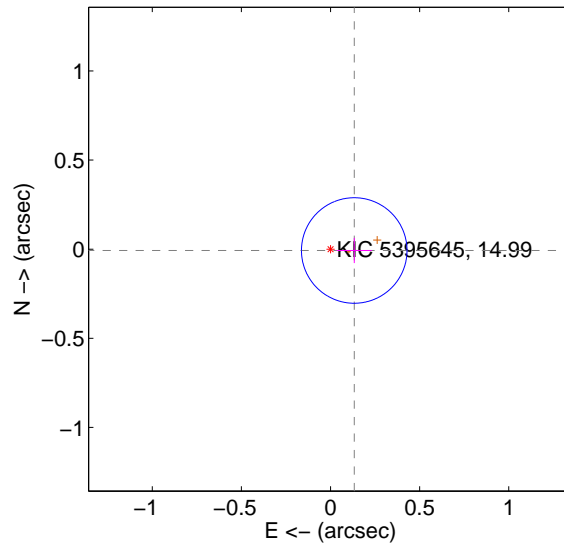
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.051 \pm 0.073$	0.71	$-0.033 \pm 0.070$	$0.039 \pm 0.070$
PRF-fit source offset from KIC position	$0.133 \pm 0.099$	1.35	$-0.133 \pm 0.099$	$-0.007 \pm 0.071$
photometric centroid source offset	$0.83 \pm 0.10$	8.08	$0.65 \pm 0.12$	$-0.51 \pm 0.07$

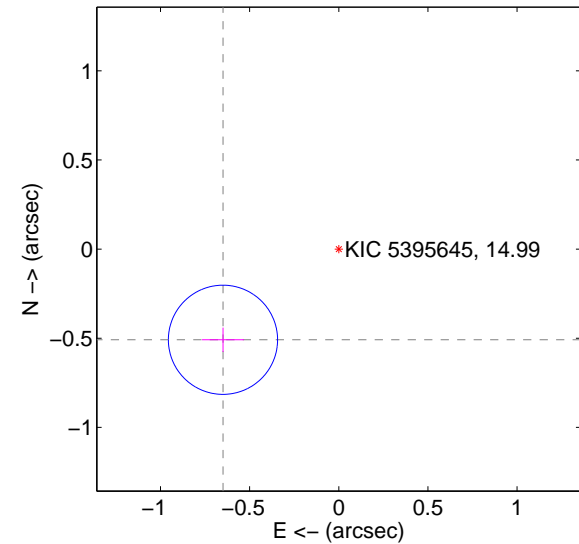
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

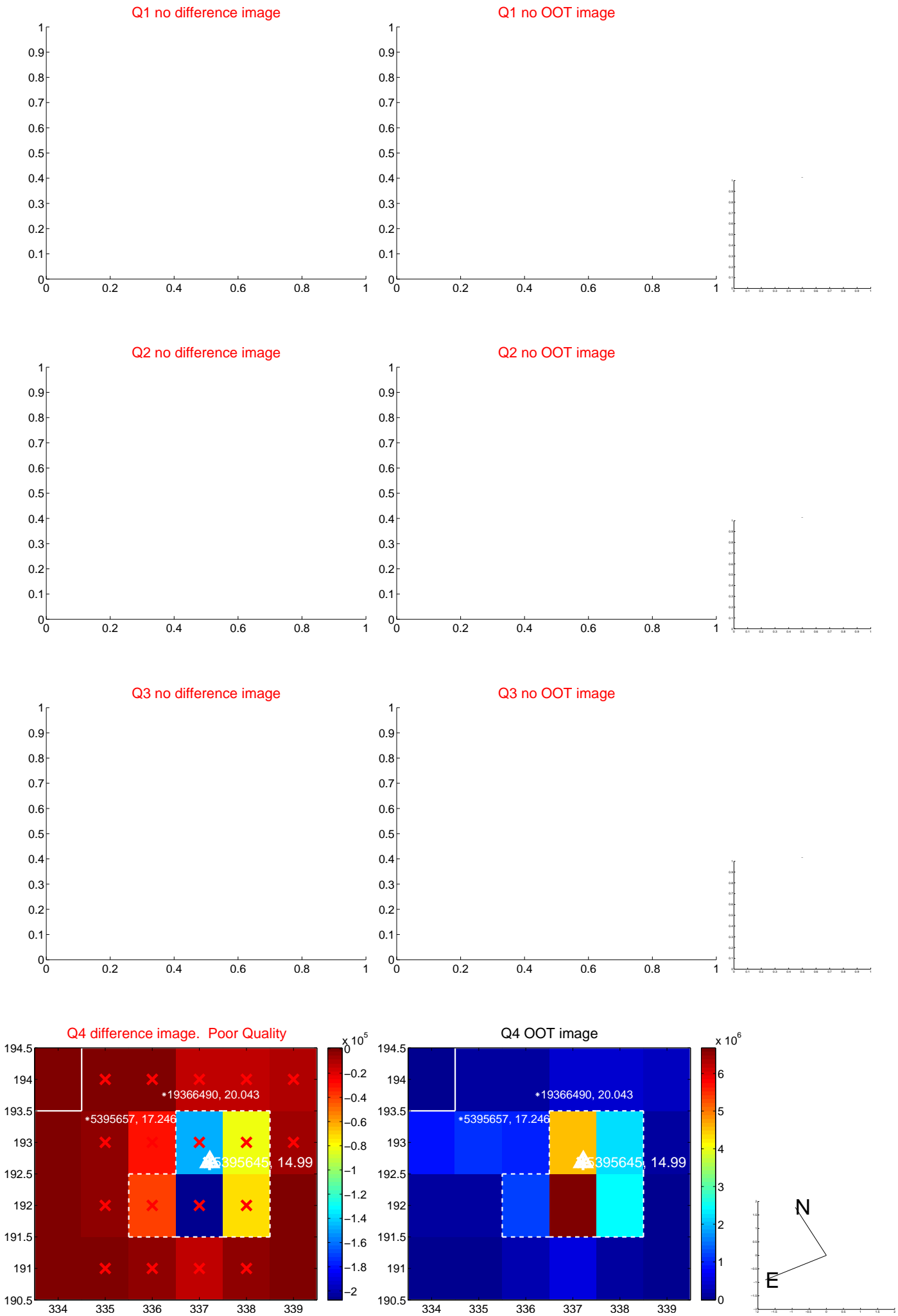


offset from photometric centroids



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.

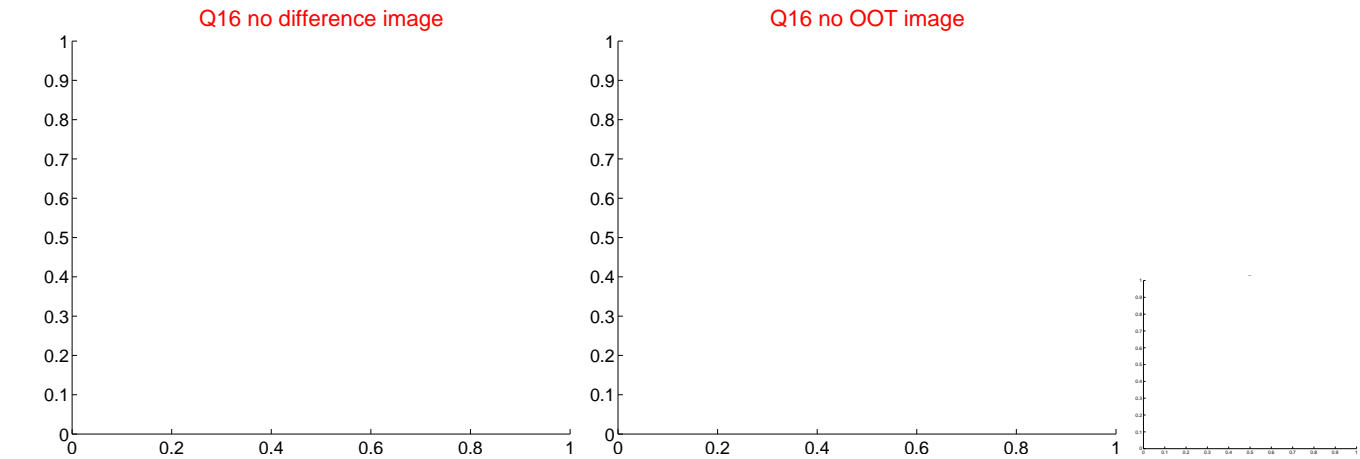
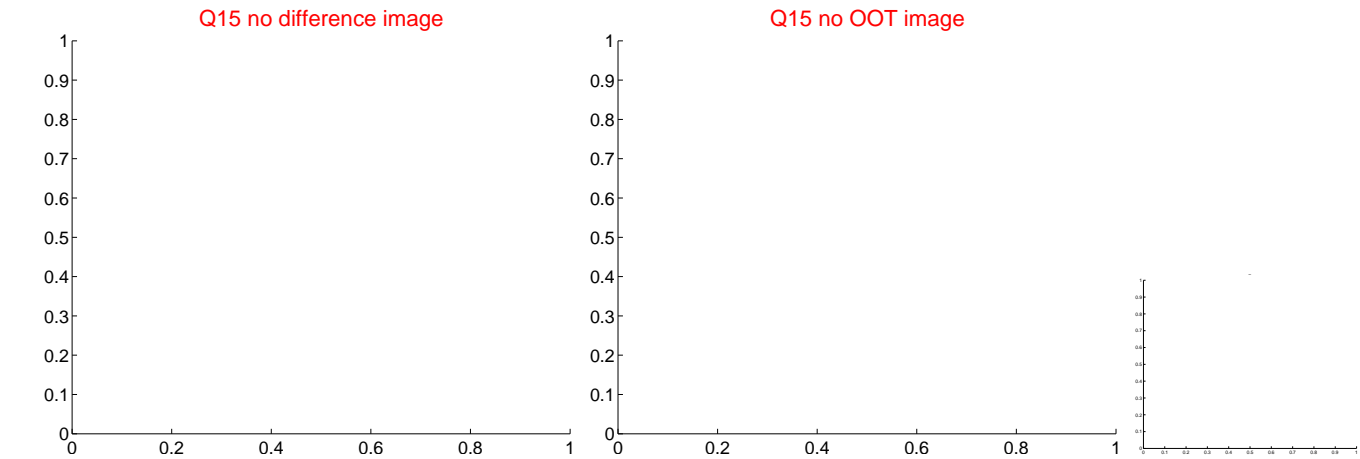
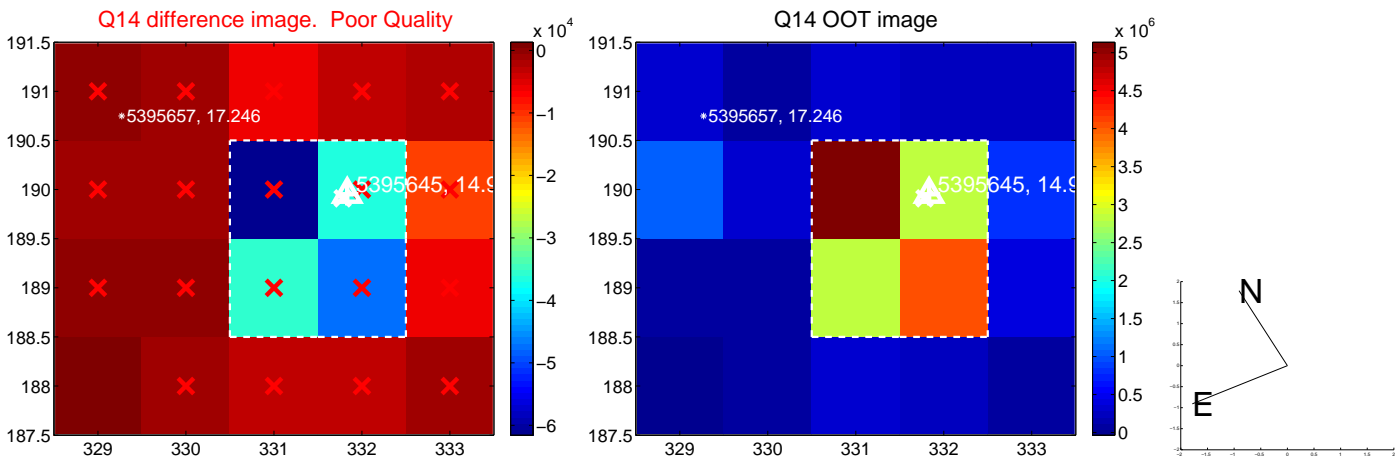
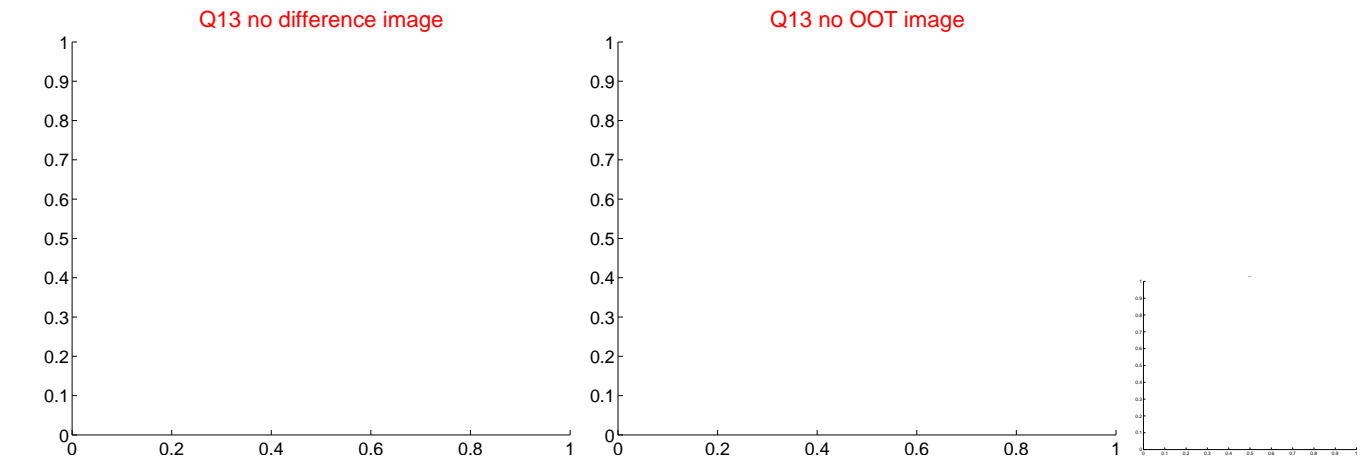




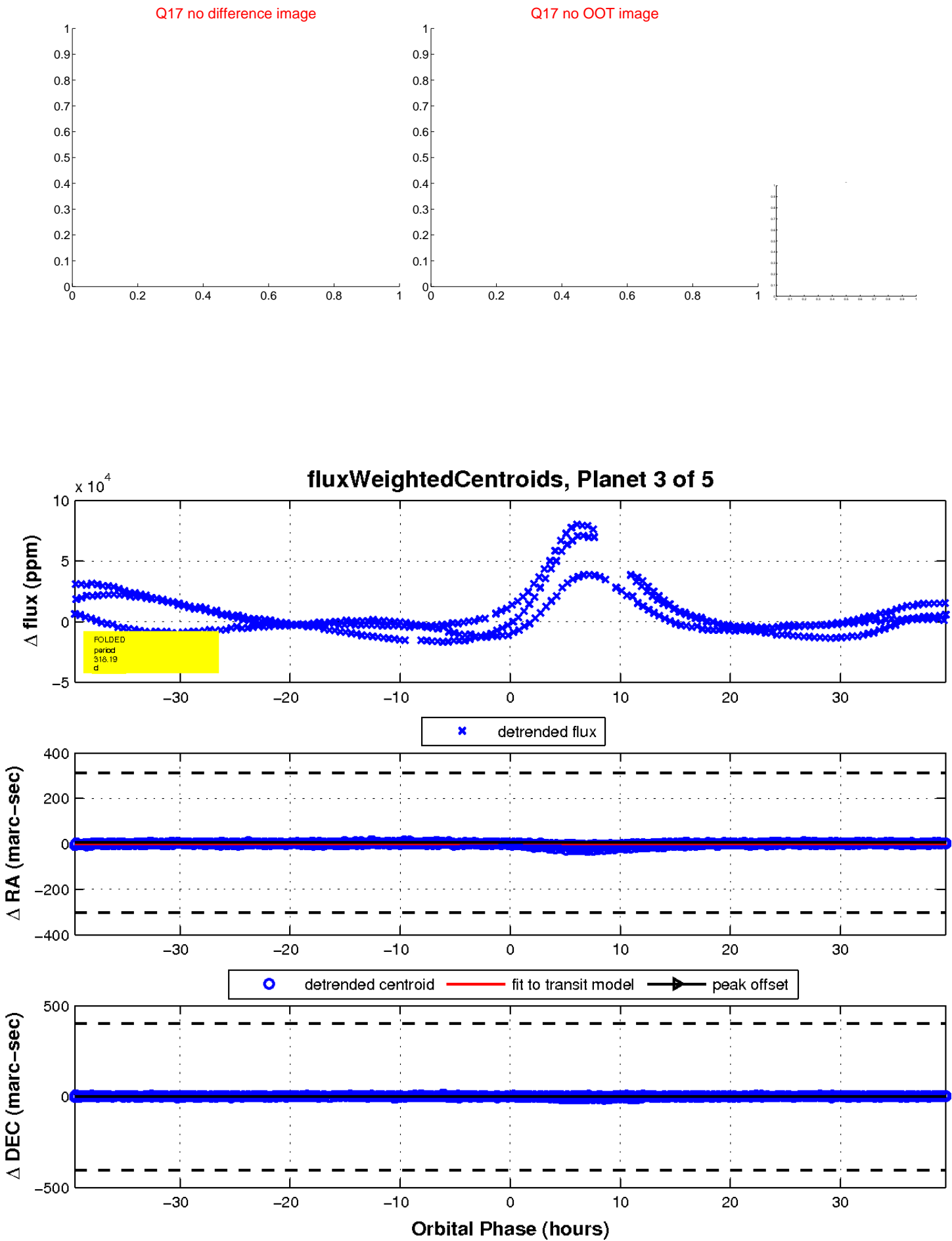
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

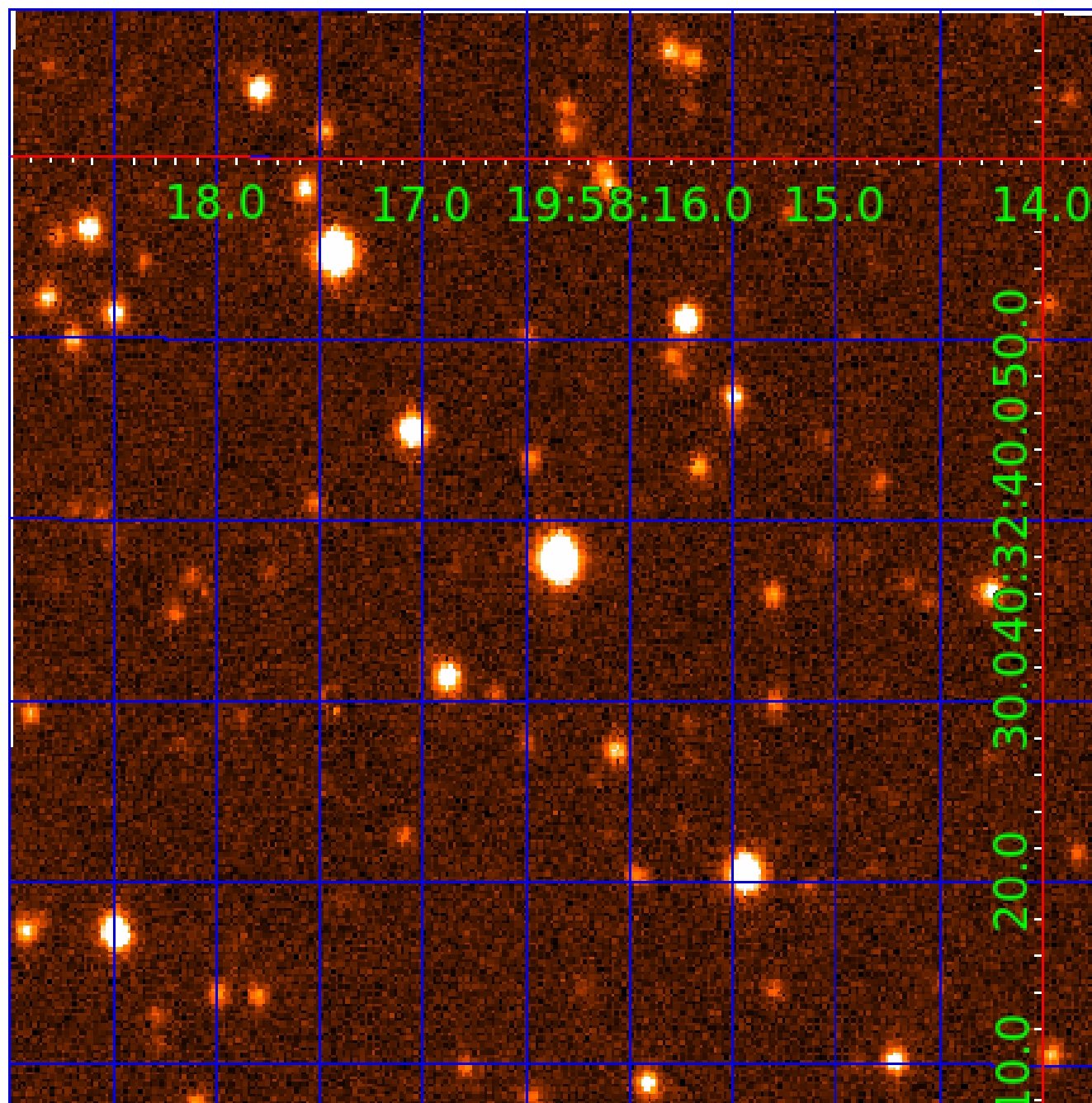


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005395645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005395645-01	OBS	No	348.269597	423.707496	5746.3	5.000	31.5	-1.0	0.97	6531	7.40	1.58
005395645-02	OBS	No	720.234190	135.197227	38697.7	14.954	20.6	17.2	0.97	6531	32.54	0.60
005395645-03	OBS	No	318.192130	405.250848	24296.7	13.251	18.3	14.6	0.97	6531	26.04	1.78
005395645-04	OBS	No	459.537354	470.569300	20644.7	9.955	17.6	16.9	0.97	6531	24.09	1.09
005395645-05	OBS	No	563.934457	408.638513	23429.0	16.204	15.6	14.2	0.97	6531	25.58	0.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005395645-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005395645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
005395645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005395645-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
005395645-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

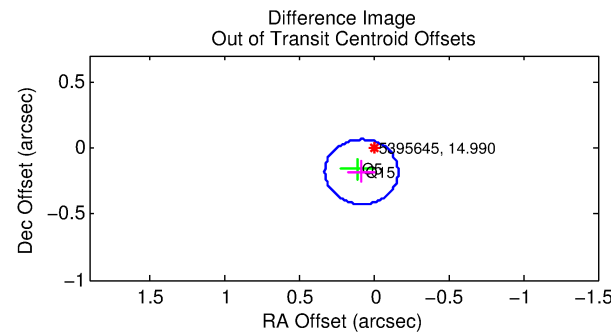
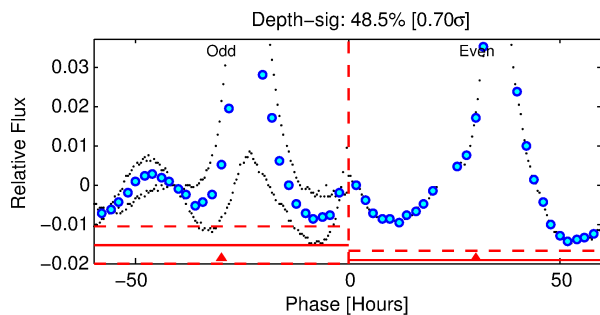
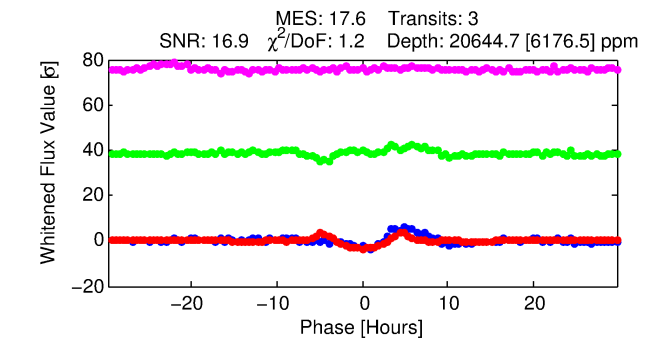
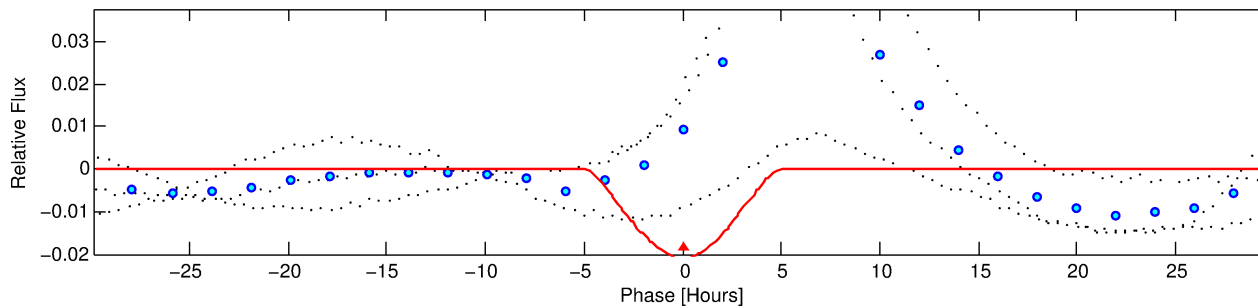
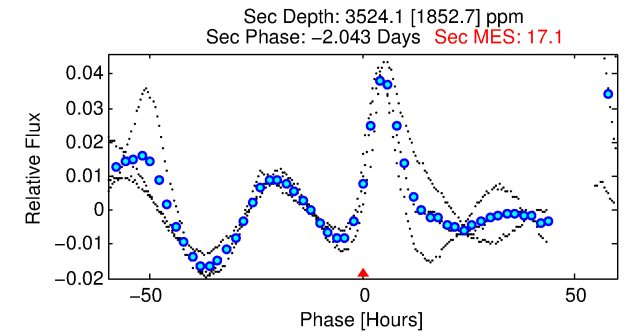
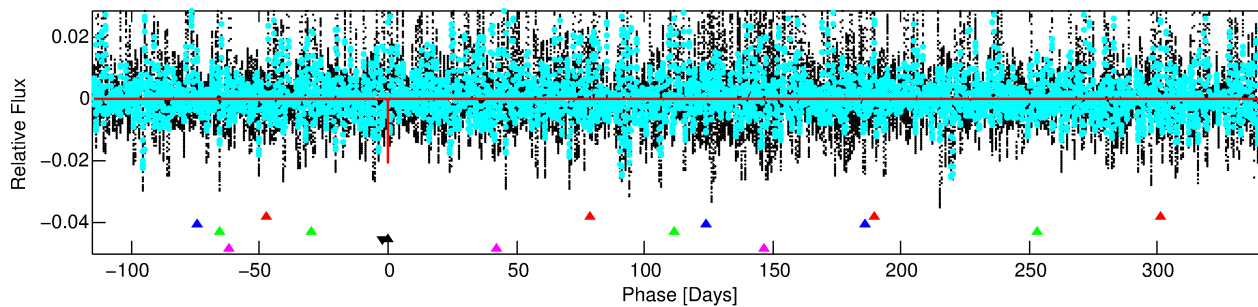
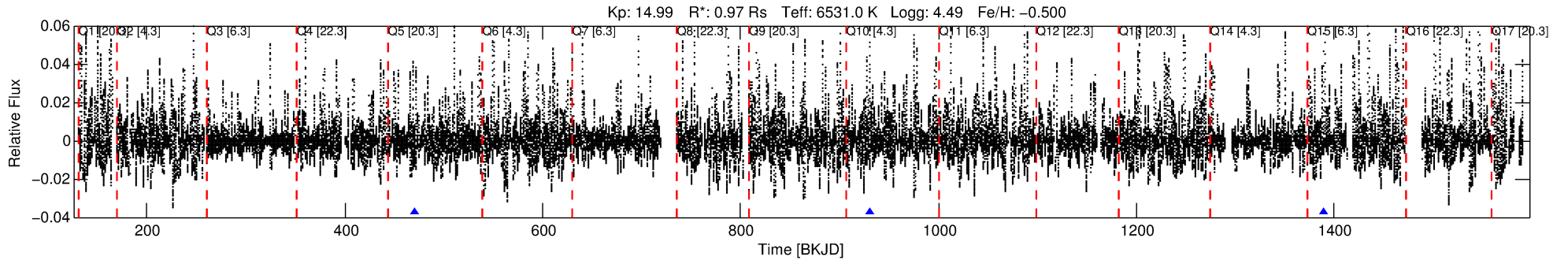
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005395645-04

No Significant Match Found

# DV One-Page Summary

KIC: 5395645 Candidate: 4 of 5 Period: 459.537 d



## DV Fit Results:

Period = 459.53735 [0.00428] d  
Epoch = 470.5693 [0.0059] BKJD  
Rp/R\* = 0.2278 [0.1489]  
a/R\* = 251.25 [16.84]  
b = 1.00 [0.25]  
Seff = 1.09 [0.41]  
Teq = 261 [25] K  
**Rp = 24.09 [17.31] Re**  
a = 1.1843 [0.2931] AU  
Ag = 4685.35 [6807.88] [0.69σ]  
Teffp = 3334 [1179] K [2.61σ]

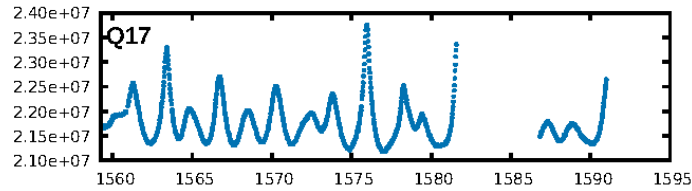
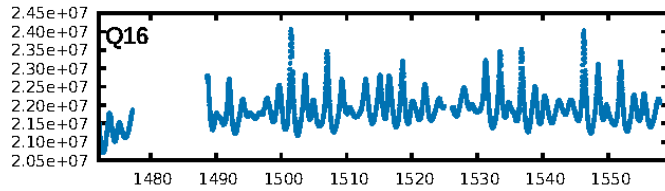
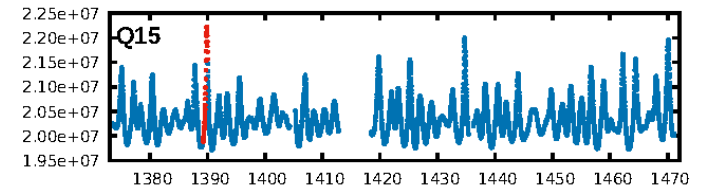
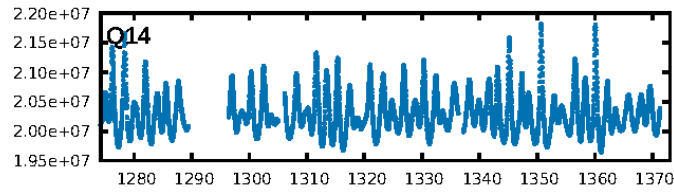
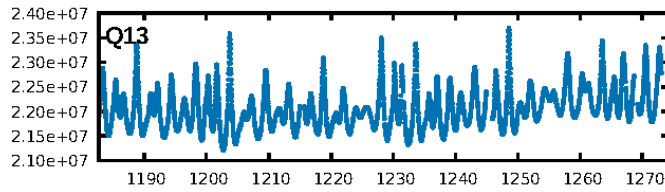
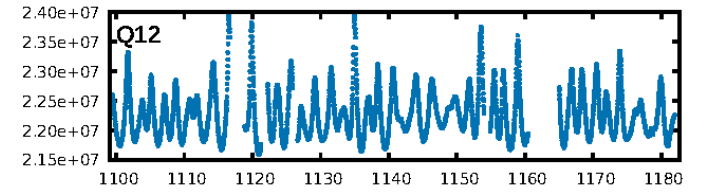
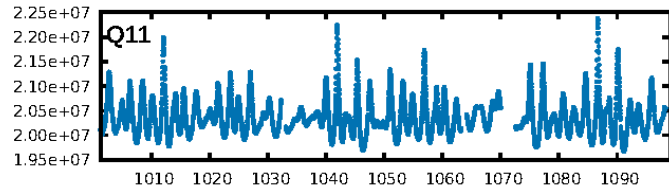
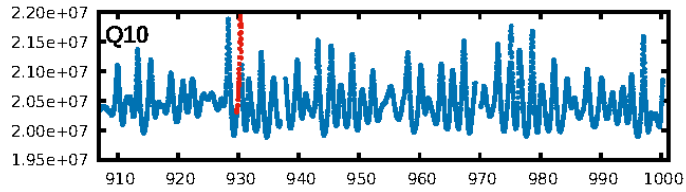
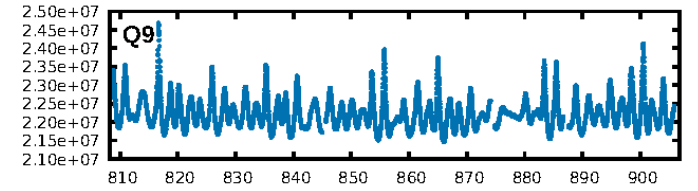
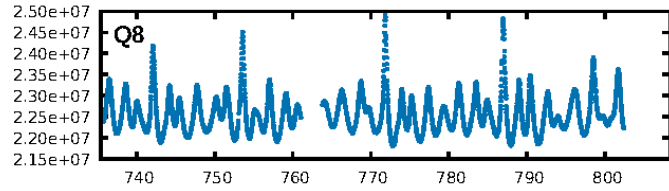
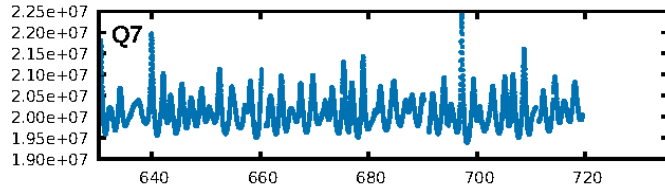
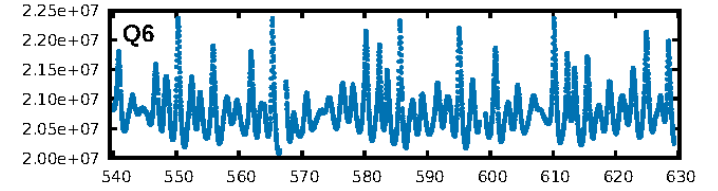
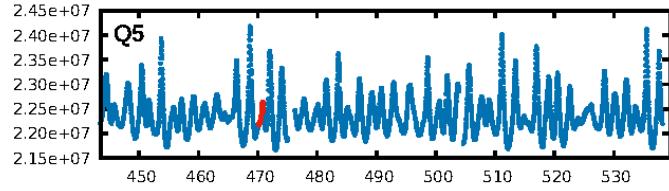
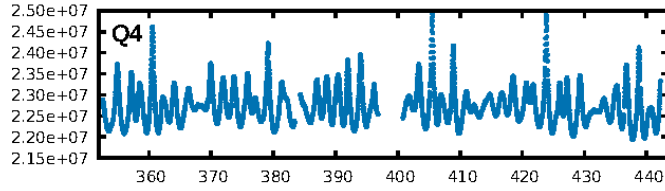
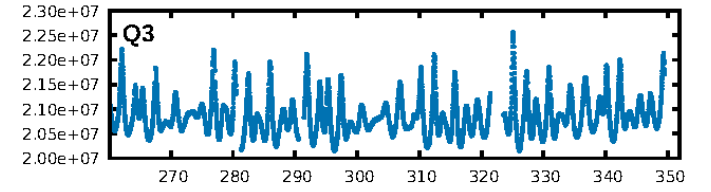
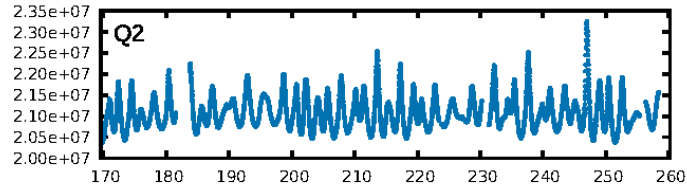
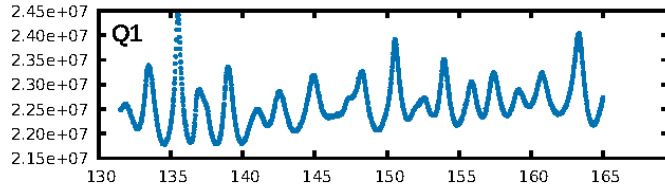
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [239.72σ]  
LongPeriod-sig: 100.0% [131.75σ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 87.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.151  
**Centroid-sig: 0.0%**  
**Centroid-so: 0.909 arcsec [8.72σ]**  
OotOffset-rm: 0.199 arcsec [2.44σ]  
KicOffset-rm: 0.231 arcsec [1.09σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:17:31 Z

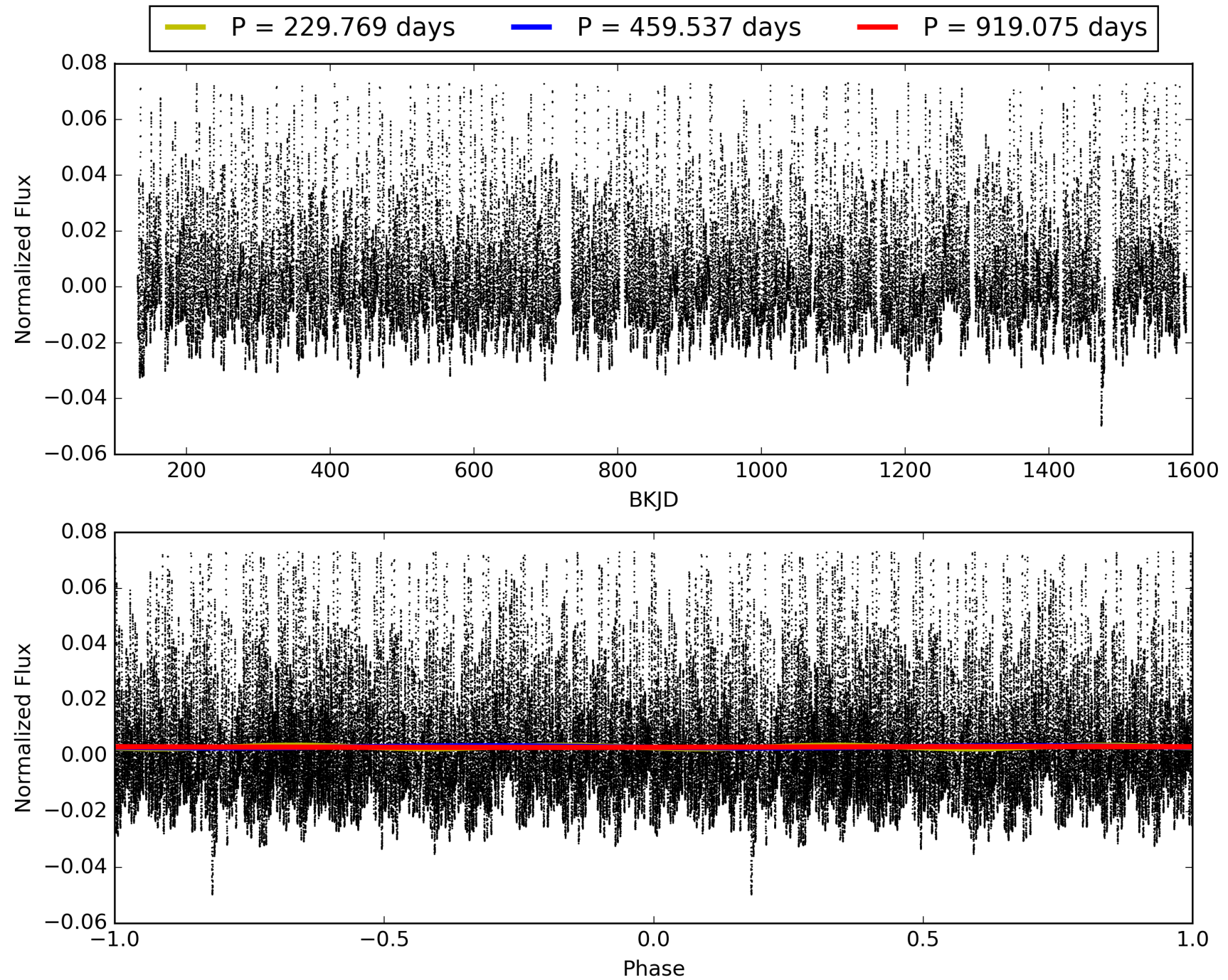
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005395645-04, PDC Light Curves





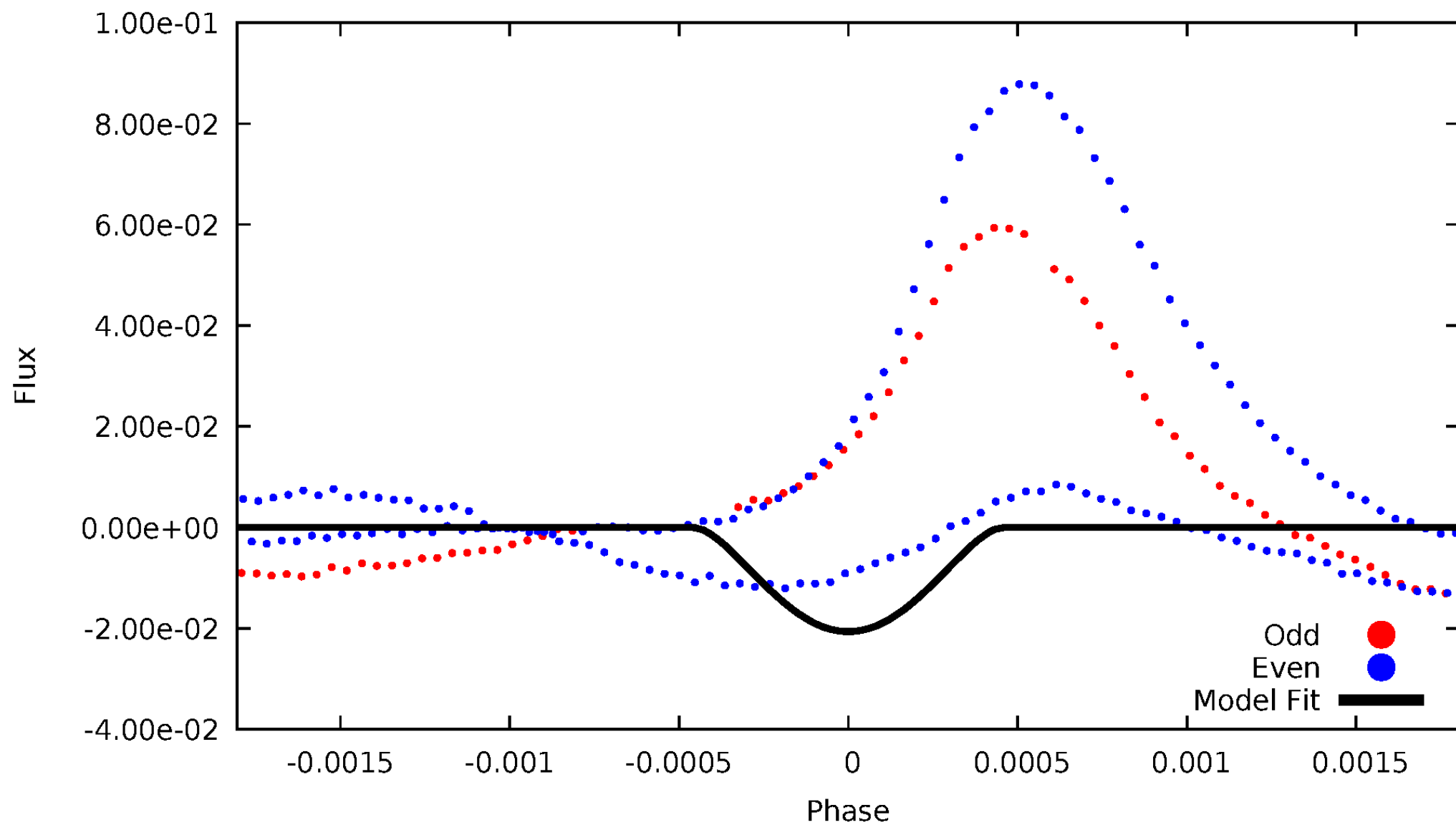
TCE 005395645-04





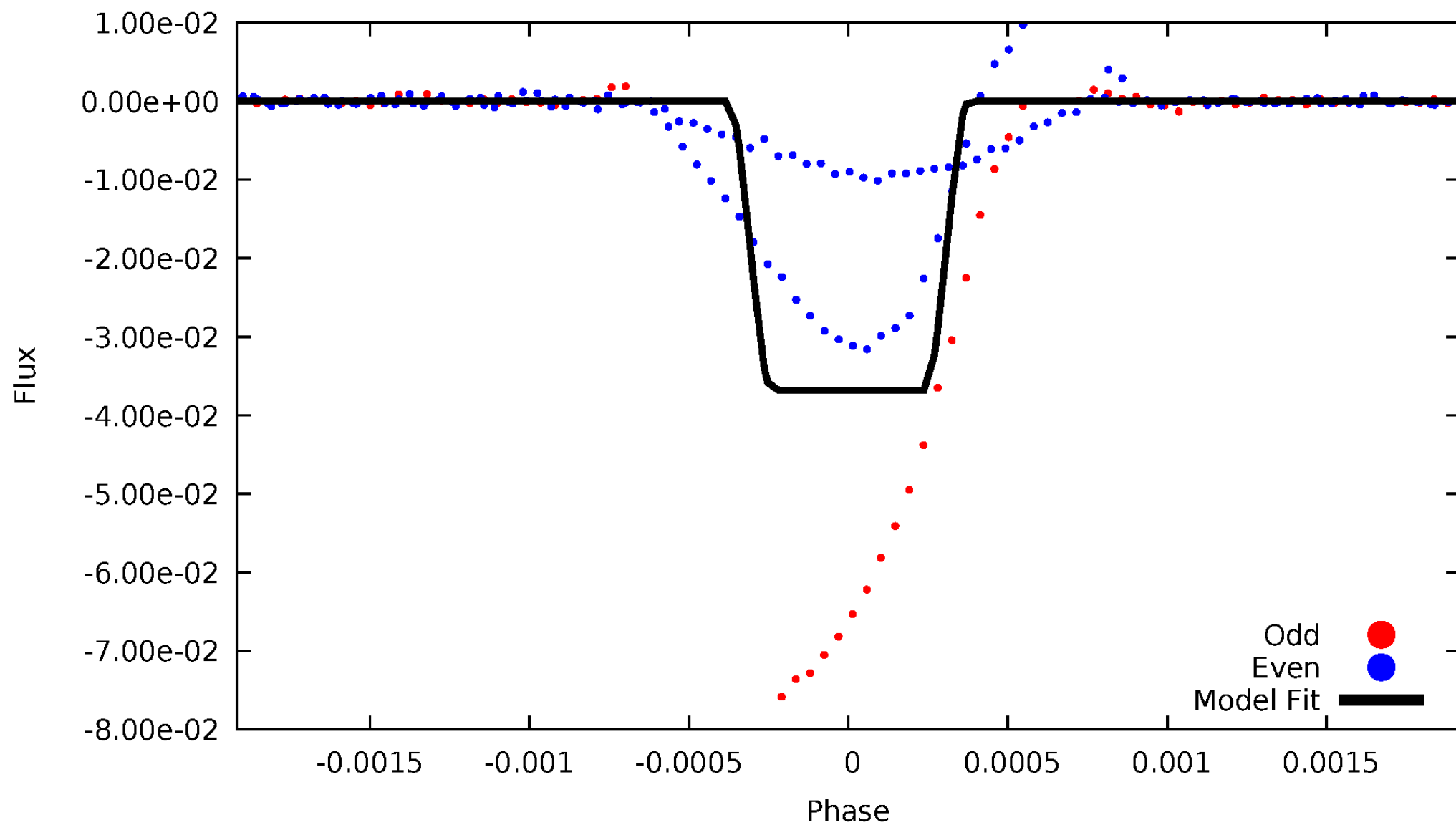
# DV Odd/Even

TCE 005395645-04



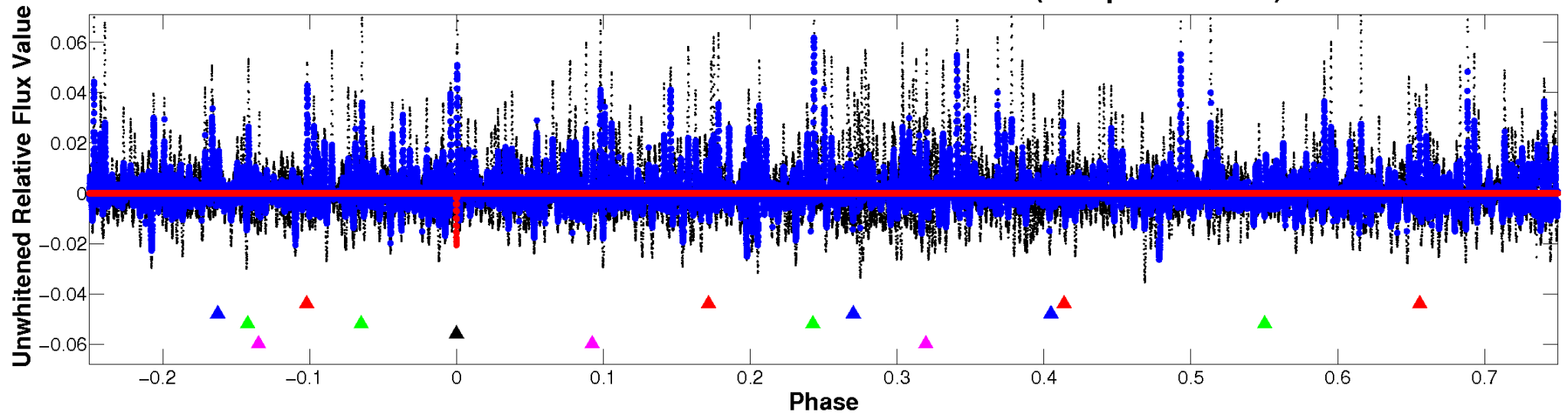
# ALT Odd/Even

TCE 005395645-04

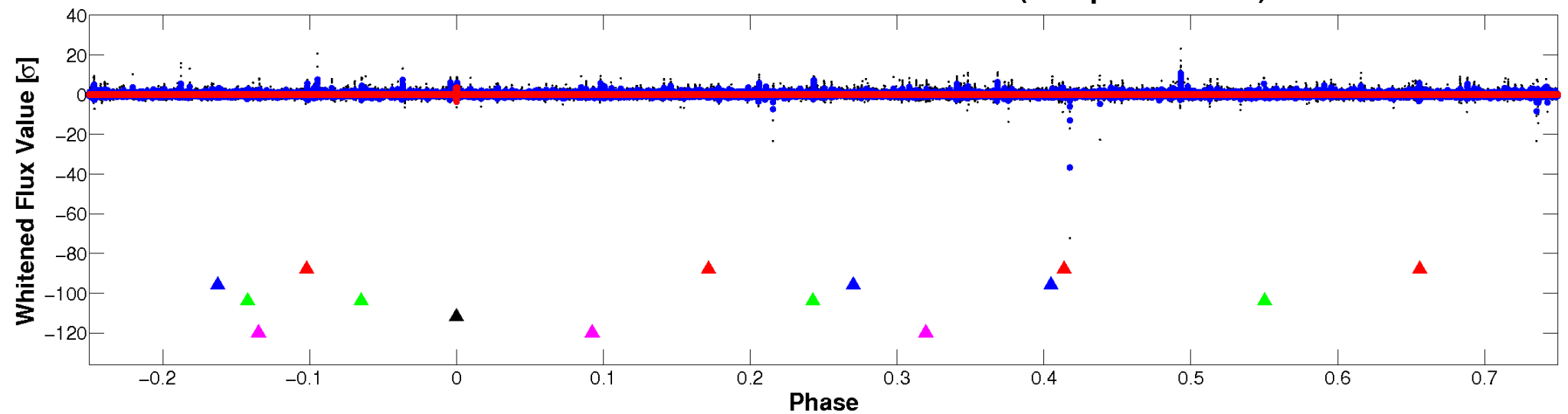


# Non-Whitened Vs. Whitened Light Curve

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

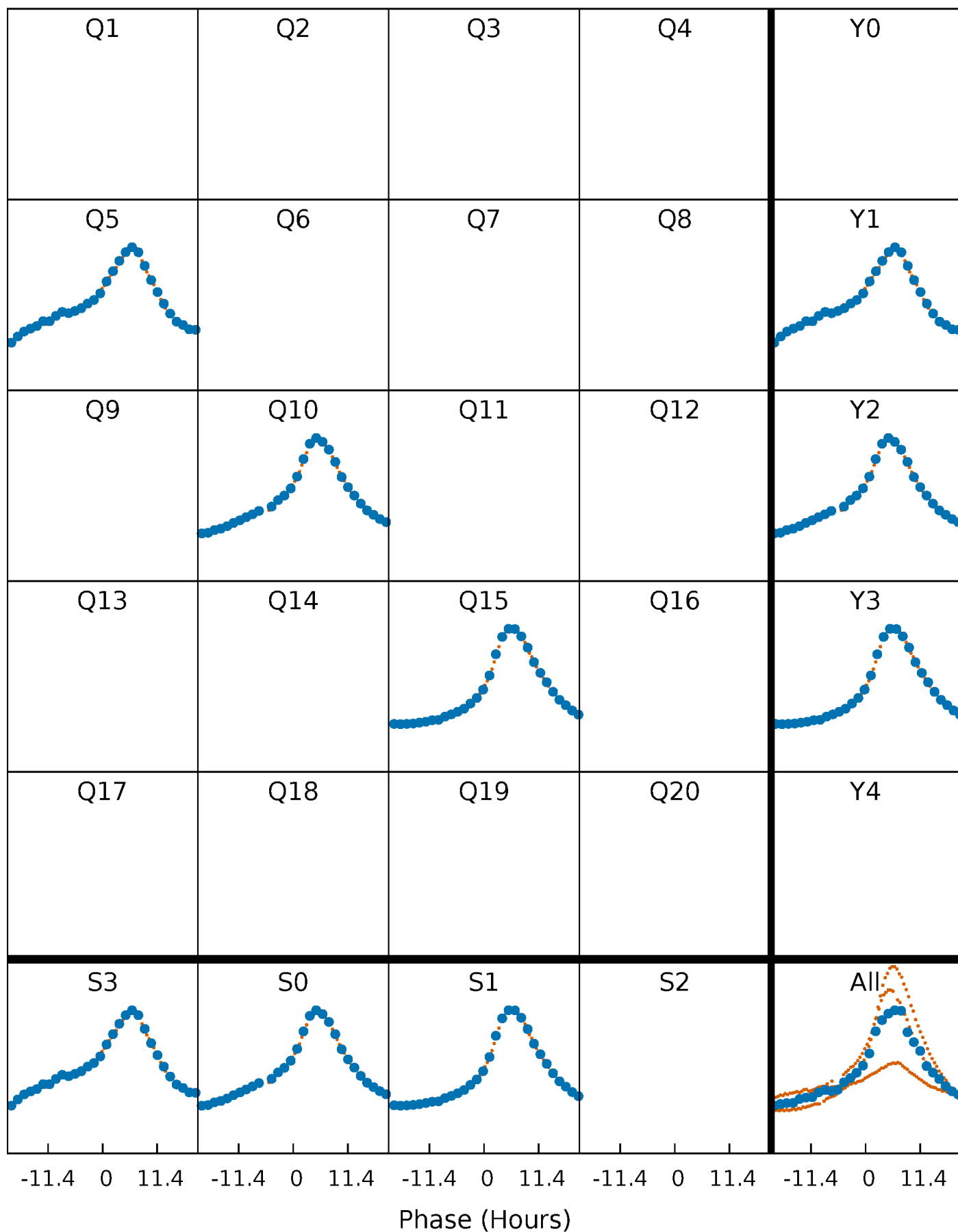


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



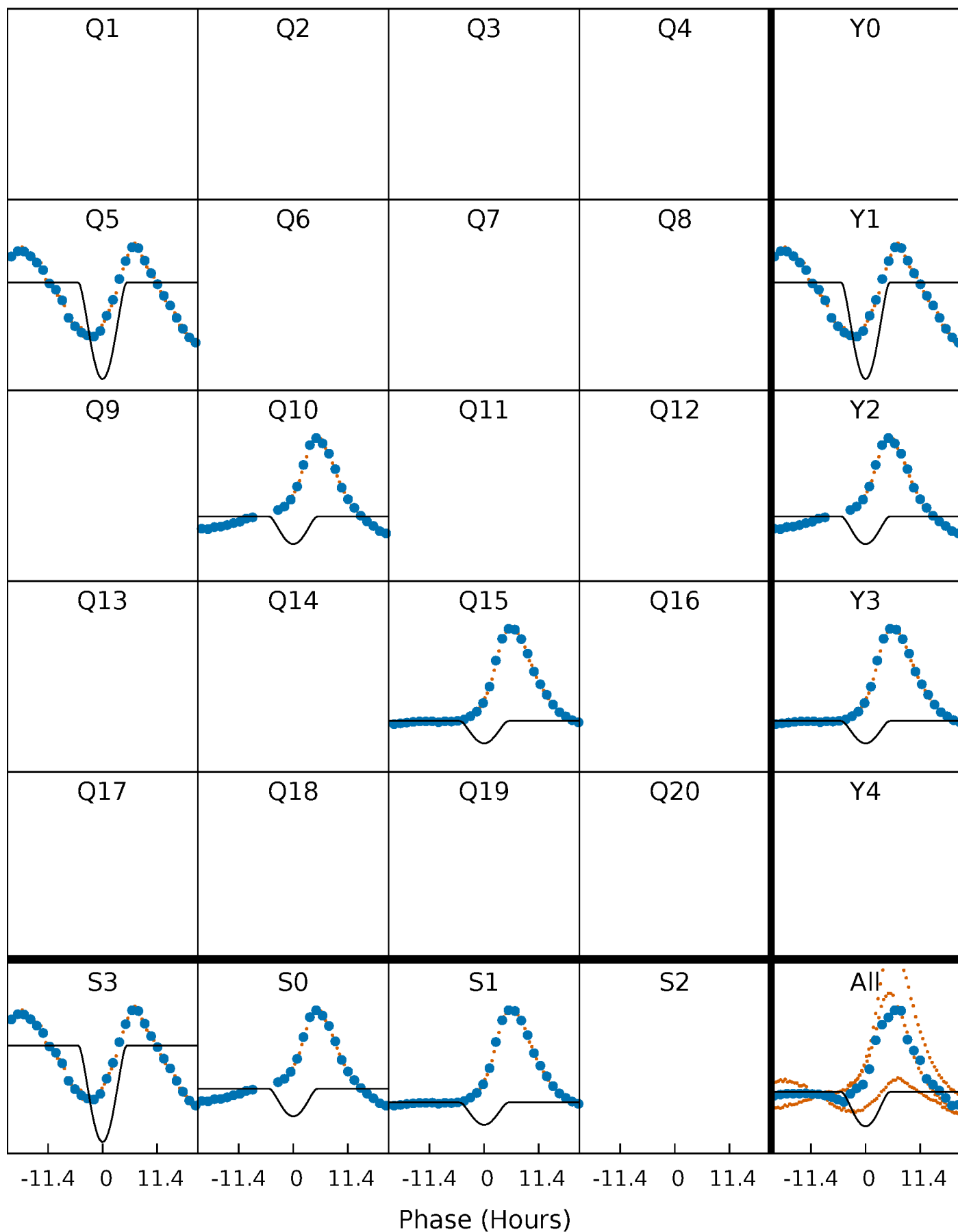
# PDC Quarter-Phased Transit Curves

TCE 005395645-04     $P=459.537354$  Days     $T_0=470.569300$  (BKJD)



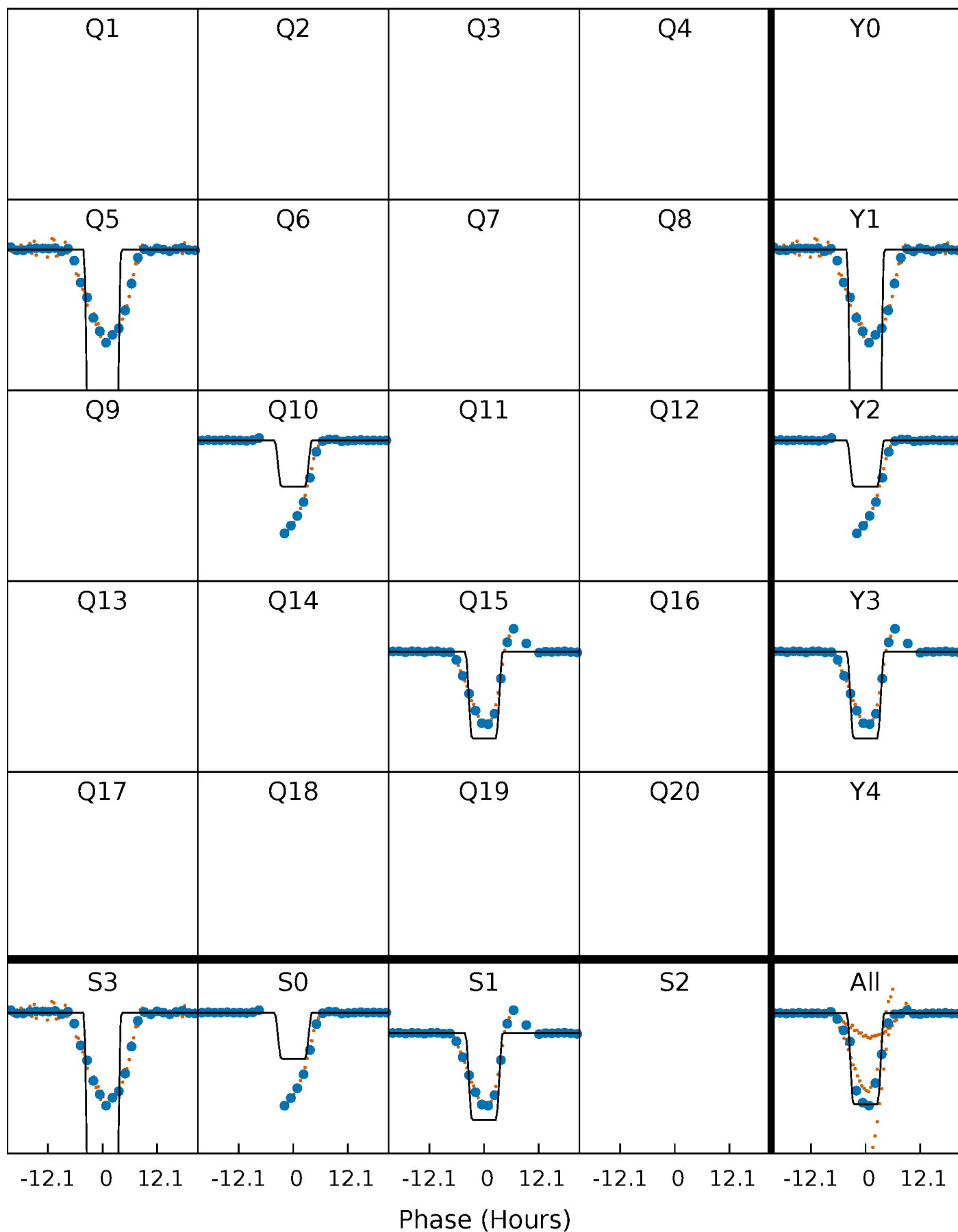
# DV Quarter-Phased Transit Curves

TCE 005395645-04 P=459.537354 Days  $T_0=470.569300$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

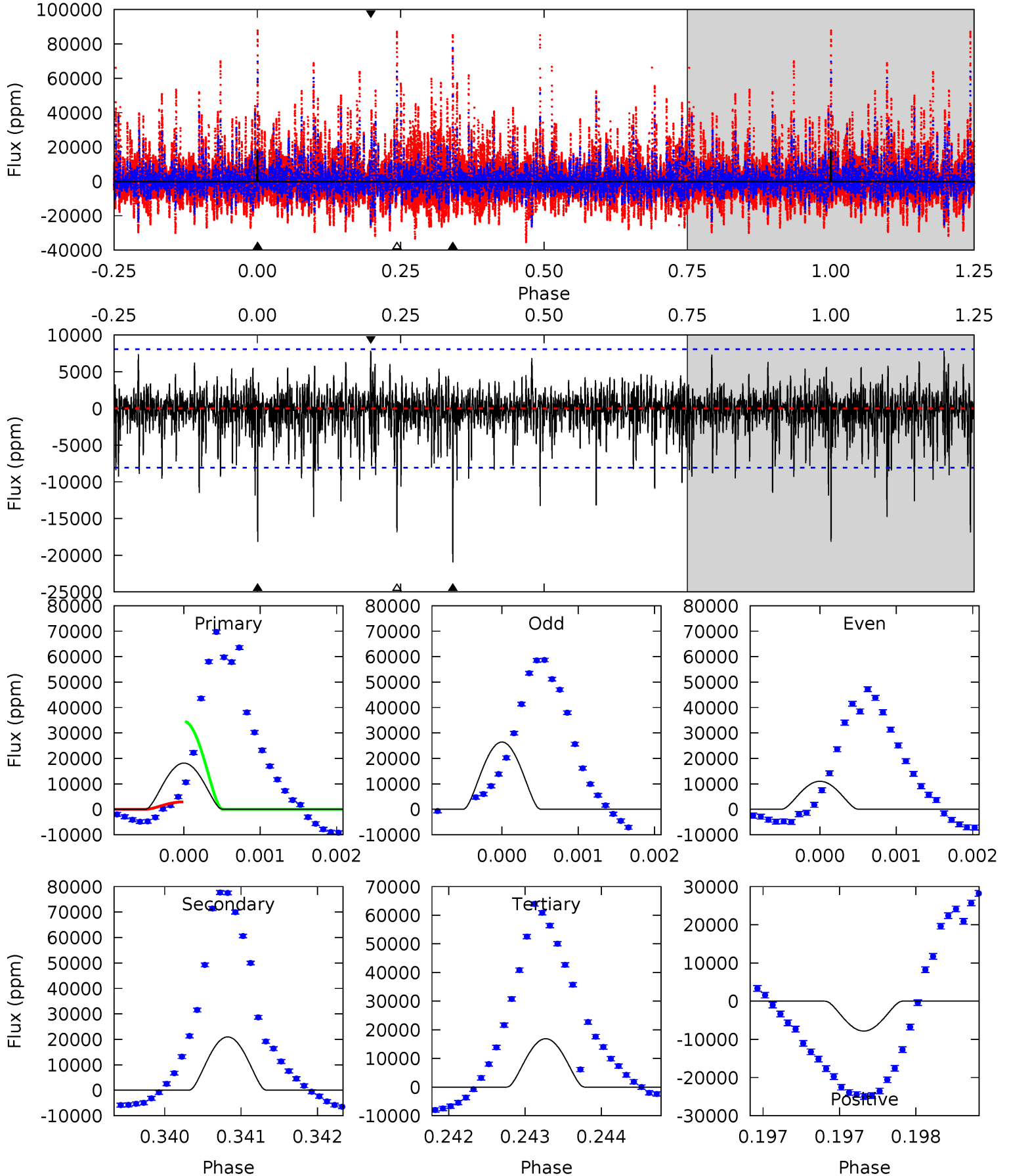
TCE 005395645-04 P=459.550764 Days  $T_0=470.502396$  (BKJD)



# DV Model-Shift Uniqueness Test

005395645-04, P = 459.537354 Days, E = 11.031946 Days

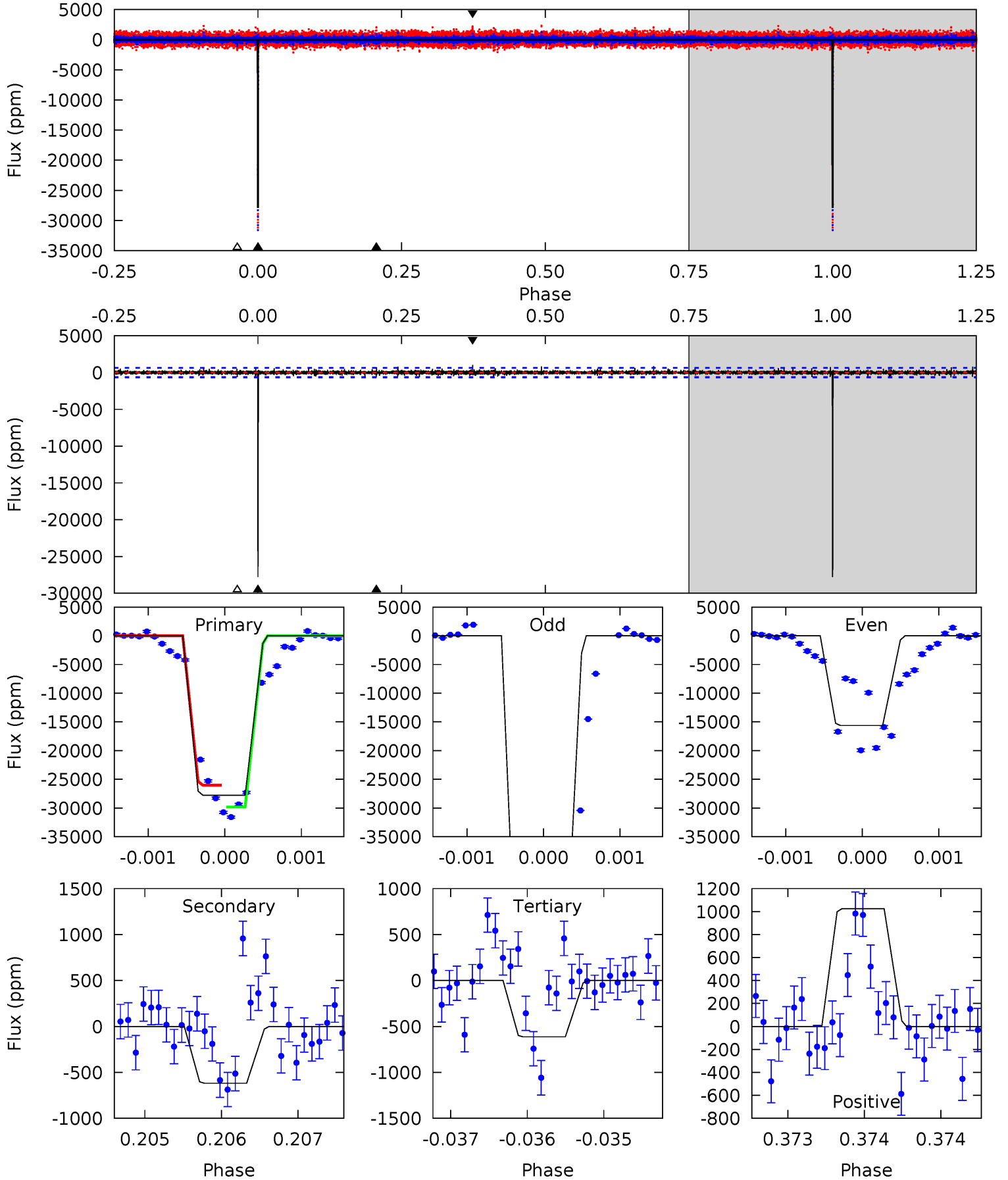
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	14.2	11.4	5.30	5.47	3.32	1.63	0.86	6.99	2.76	8.89	4.70	0.61	0.27	10.8



# Alt Model-Shift Uniqueness Test

005395645-04, P = 459.550764 Days, E = 10.951632 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
241.4	5.38	5.33	8.91	5.51	3.38	0.89	236.0	232.5	0.04	-3.53	330.8	1.20	0.04	16.6





### Stellar Parameters For KIC 005395645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6531^{+176}_{-216}$	$4.486^{+0.048}_{-0.192}$	$-0.500^{+0.300}_{-0.300}$	$0.969^{+0.289}_{-0.090}$	$1.057^{+0.137}_{-0.125}$	$1.635^{+0.315}_{-0.820}$
	+3%/-3%	+1%/-4%	+60%/-60%	+30%/-9%	+13%/-12%	+19%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005395645-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-20967 \pm 1477$	$25.90^{+17.98}_{-13.70}$	$371^{+24}_{-17}$	$5193^{+2569}_{-957}$	$24792^{+84400}_{-16106}$
Alt.	$-618 \pm 115$	$22.65^{+17.08}_{-13.45}$	$372^{+24}_{-18}$	$2932^{+961}_{-367}$	$904^{+4692}_{-607}$

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

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

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

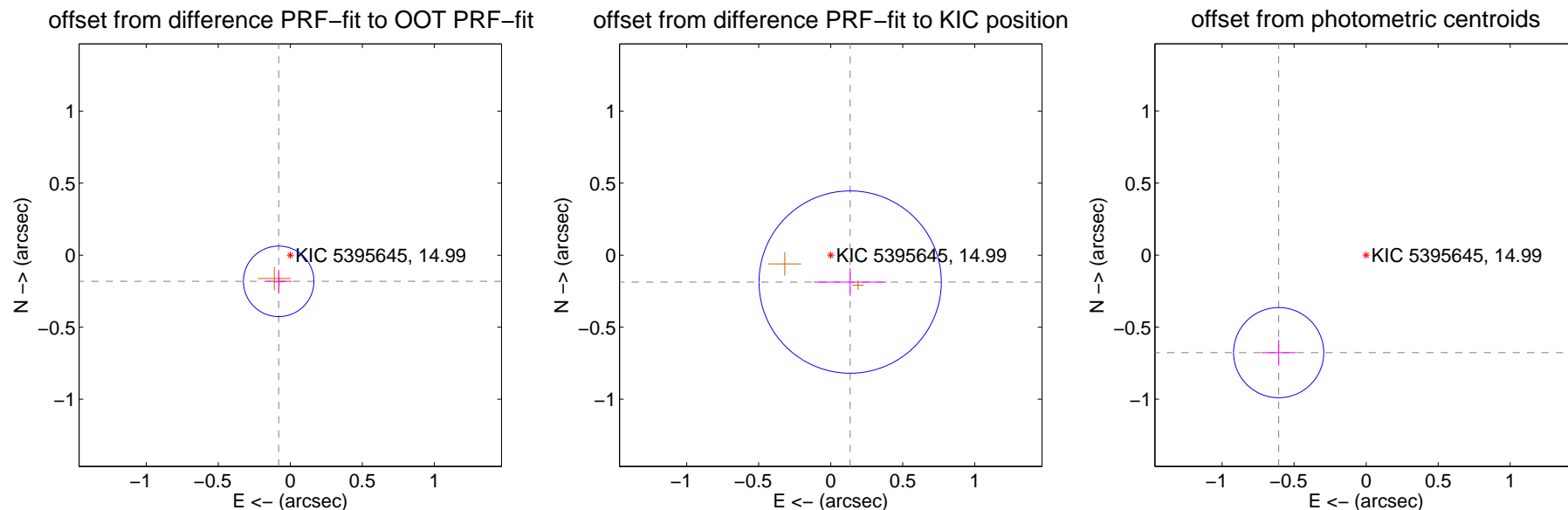
## DV Centroid Data

Supplemental centroid analysis for 005395645-04. Kepler magnitude: 14.99. Transit SNR 16.93

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.199 \pm 0.082$	2.44	$0.080 \pm 0.090$	$-0.182 \pm 0.080$
PRF-fit source offset from KIC position	$0.231 \pm 0.211$	1.09	$-0.135 \pm 0.253$	$-0.187 \pm 0.097$
photometric centroid source offset	$0.91 \pm 0.10$	8.72	$0.61 \pm 0.12$	$-0.68 \pm 0.09$

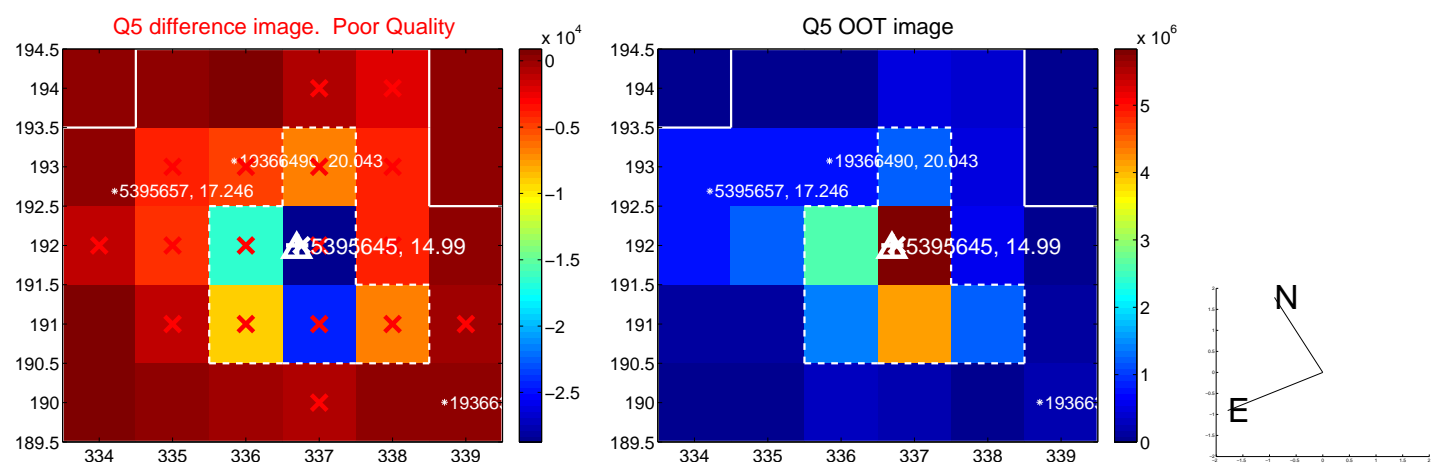


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



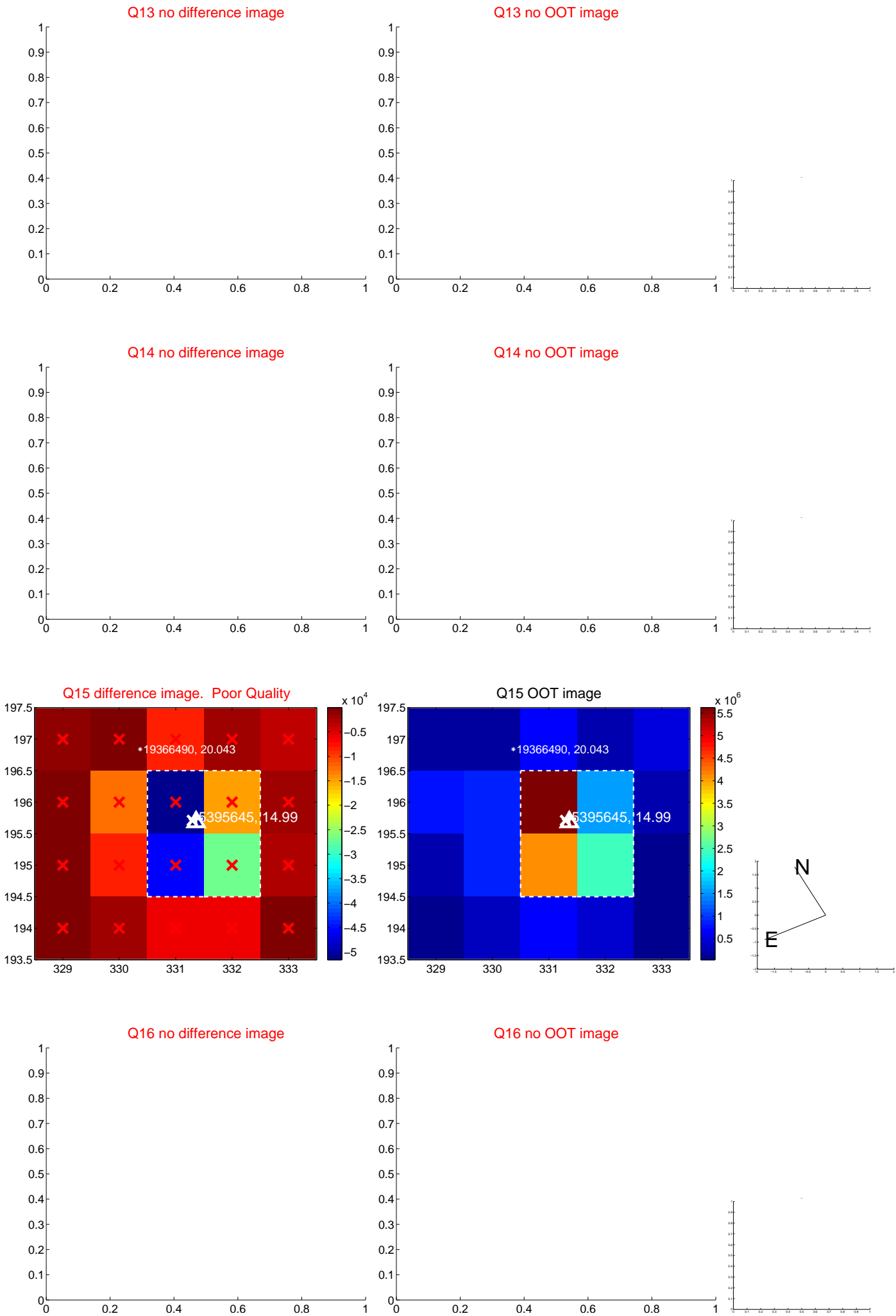
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



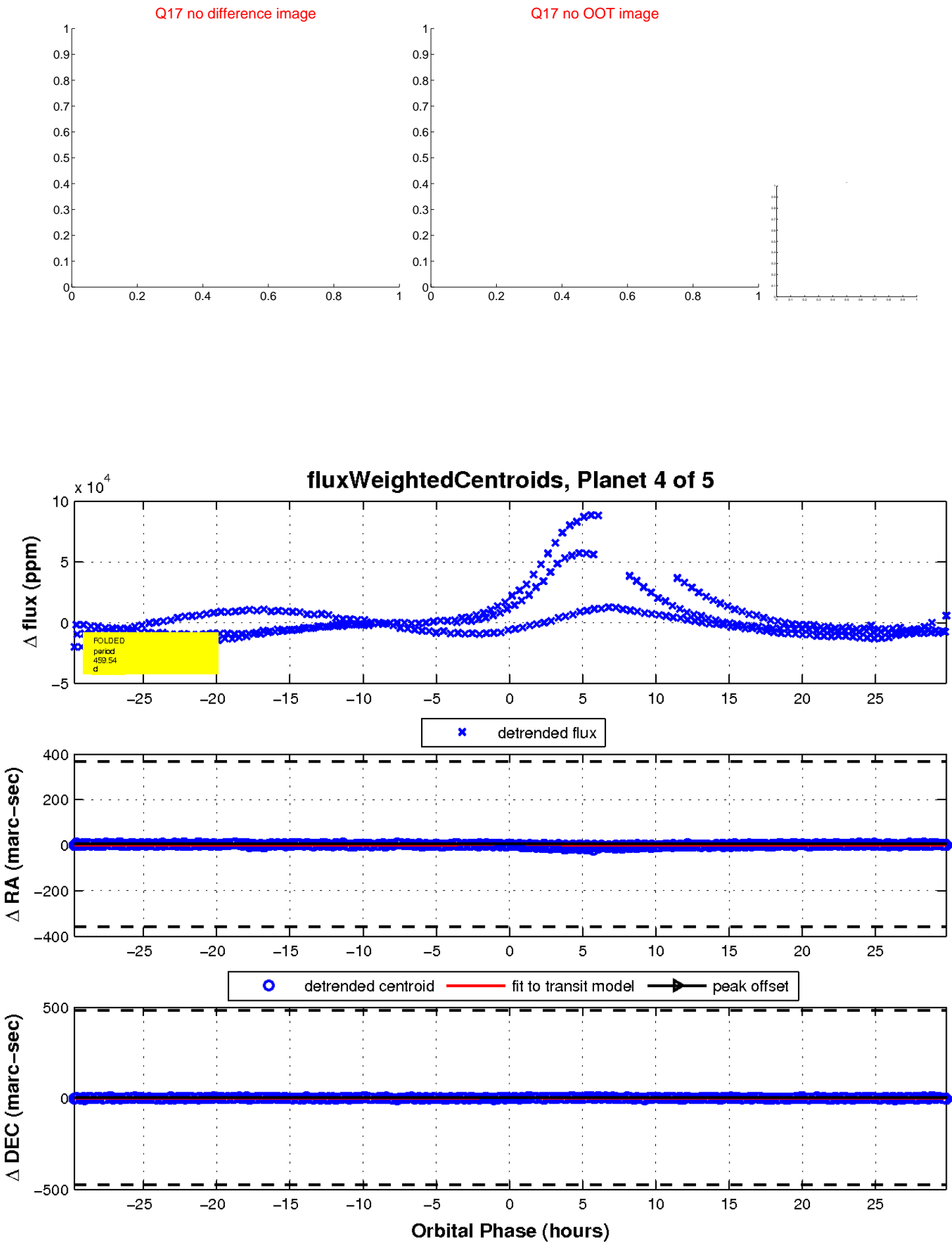
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

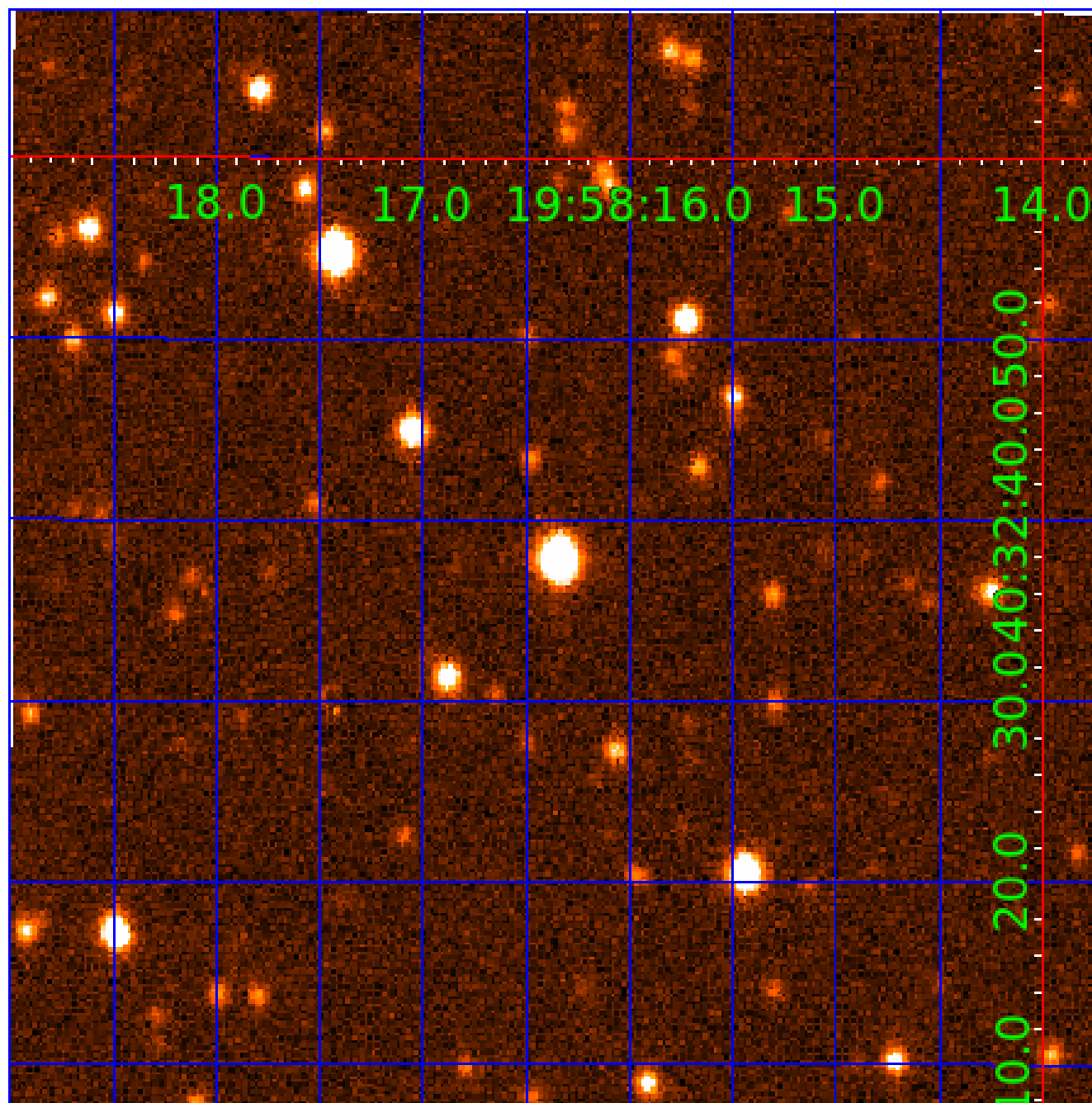


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005395645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005395645-01	OBS	No	348.269597	423.707496	5746.3	5.000	31.5	-1.0	0.97	6531	7.40	1.58
005395645-02	OBS	No	720.234190	135.197227	38697.7	14.954	20.6	17.2	0.97	6531	32.54	0.60
005395645-03	OBS	No	318.192130	405.250848	24296.7	13.251	18.3	14.6	0.97	6531	26.04	1.78
005395645-04	OBS	No	459.537354	470.569300	20644.7	9.955	17.6	16.9	0.97	6531	24.09	1.09
005395645-05	OBS	No	563.934457	408.638513	23429.0	16.204	15.6	14.2	0.97	6531	25.58	0.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005395645-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005395645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
005395645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005395645-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
005395645-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

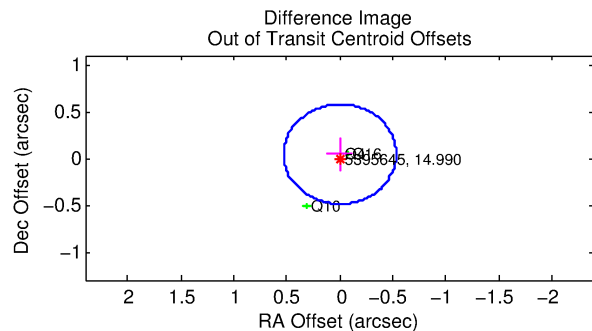
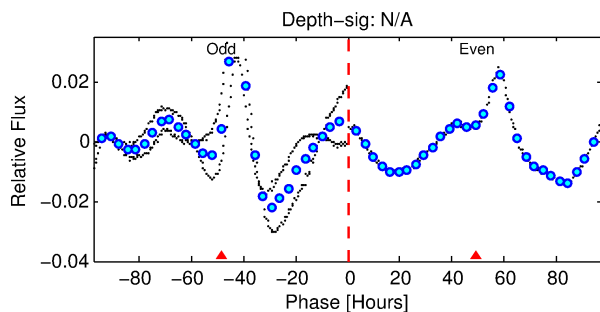
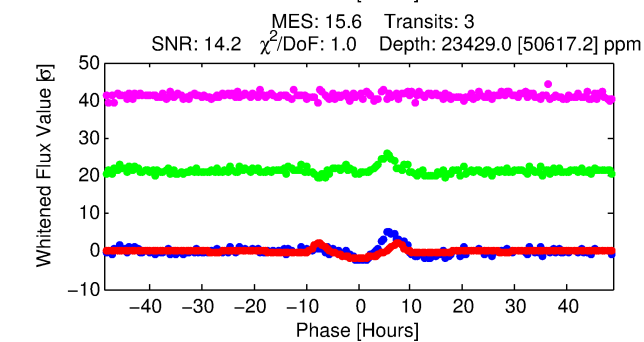
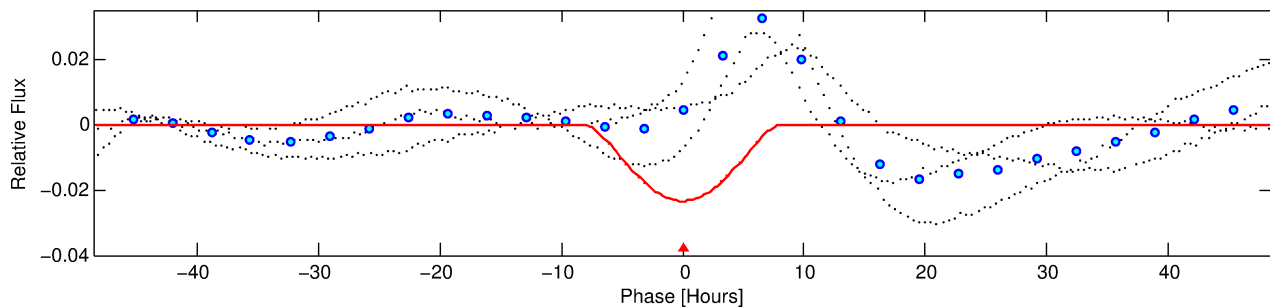
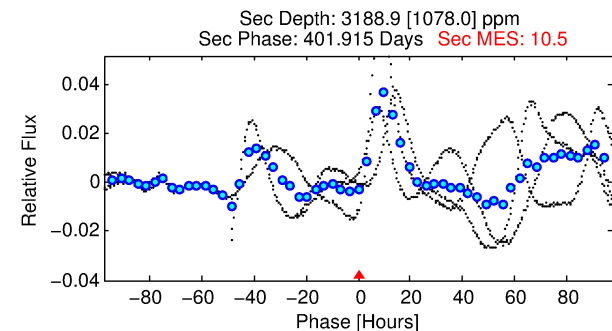
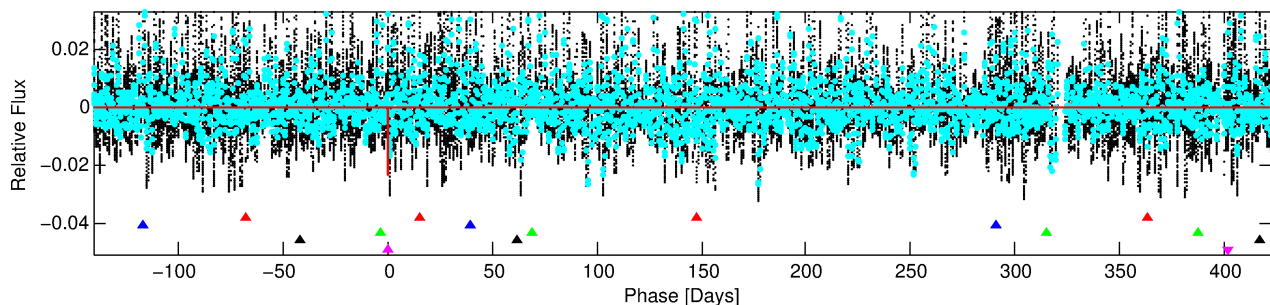
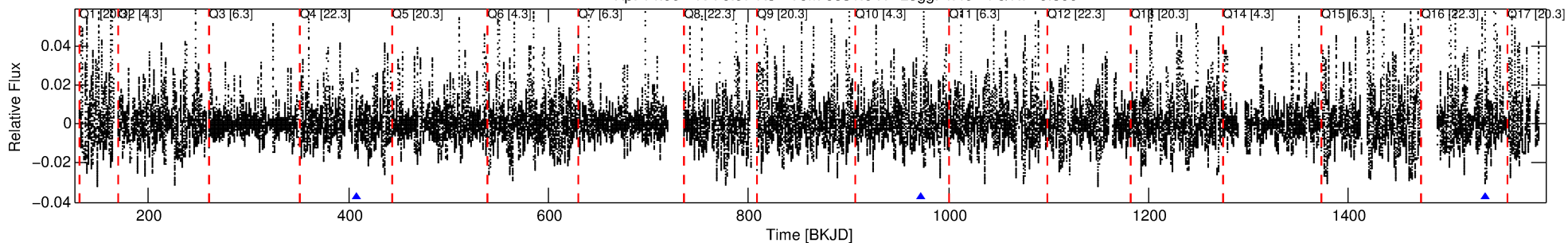
Ephemeris Match Information For 005395645-05

No Significant Match Found

# DV One-Page Summary

KIC: 5395645 Candidate: 5 of 5 Period: 563.934 d

Kp: 14.99 R\*: 0.97 Rs Teff: 6531.0 K Logg: 4.49 Fe/H: -0.500



## DV Fit Results:

Period = 563.93446 [0.00569] d  
Epoch = 408.6385 [0.0071] BKJD  
Rp/R\* = 0.2419 [0.1417]  
a/R\* = 195.79 [9.45]  
b = 1.00 [0.15]  
Seff = 0.83 [0.32]  
Teq = 243 [23] K  
Rp = 25.58 [16.81] Re  
a = 1.3575 [0.3360] AU  
Ag = 4941.48 [6277.01] [0.79σ]  
Teffp = 3156 [968] K [3.01σ]

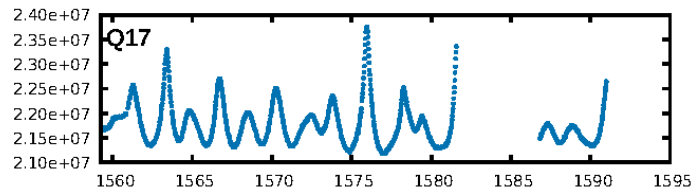
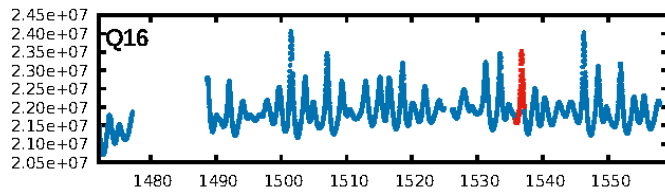
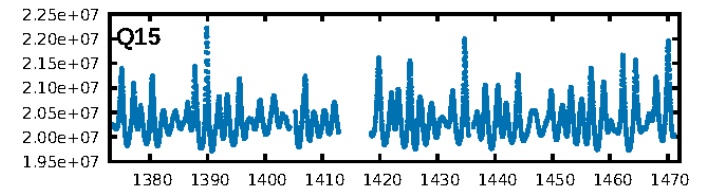
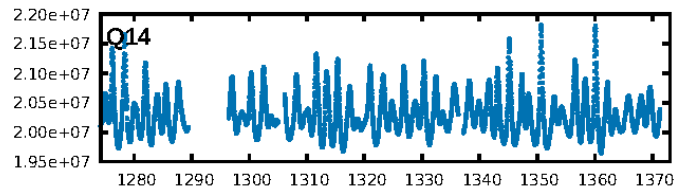
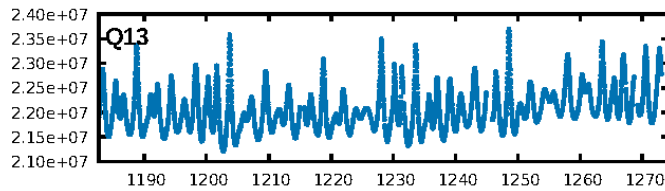
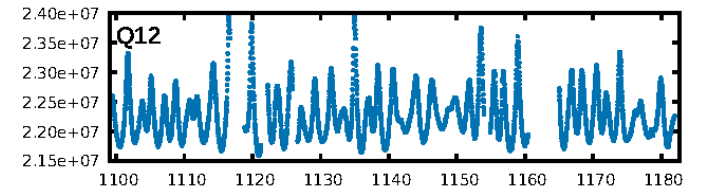
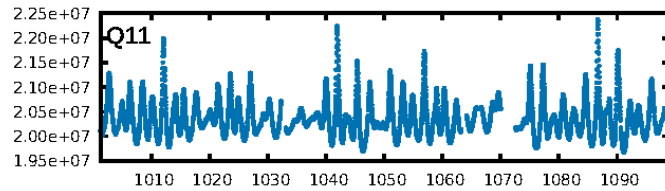
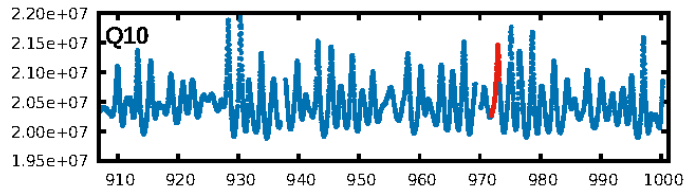
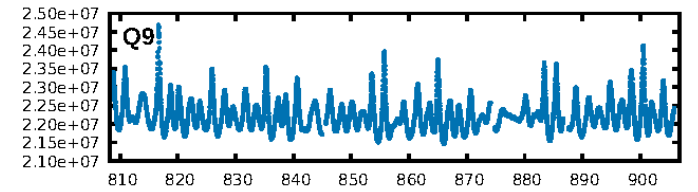
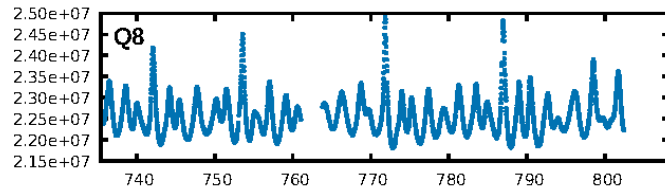
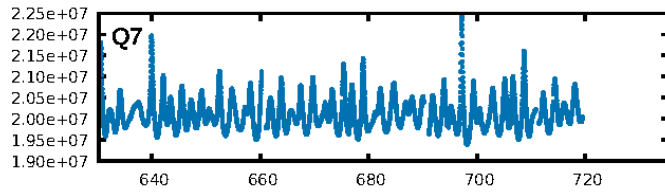
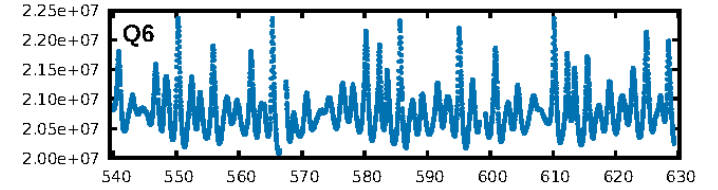
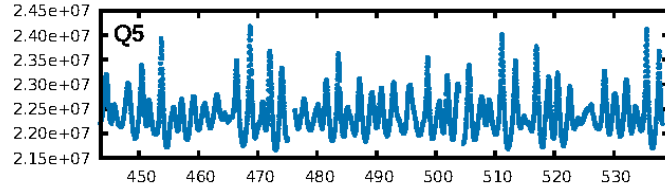
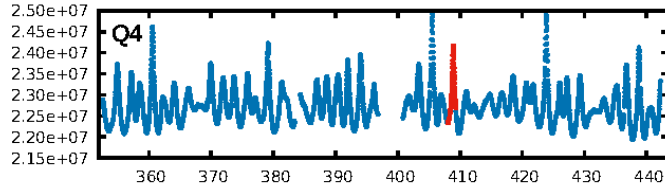
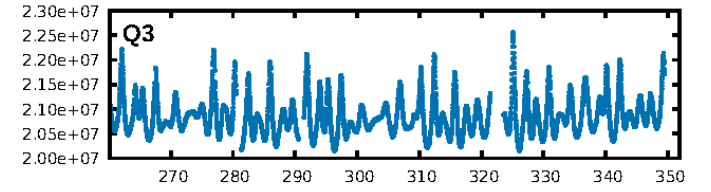
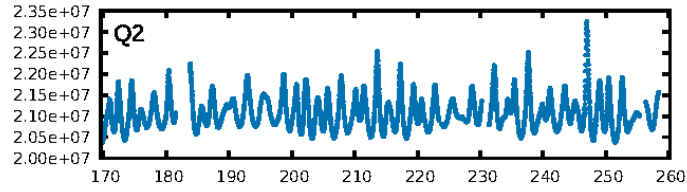
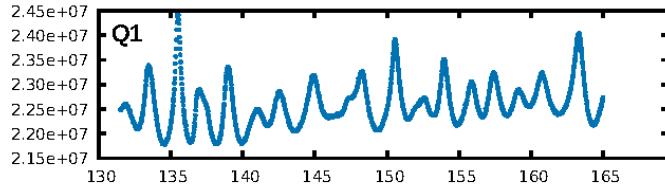
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [131.75σ]  
LongPeriod-sig: 100.0% [170.12σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 93.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.053  
Centroid-sig: 50.2%  
Centroid-so: 0.942 arcsec [8.58σ]  
OotOffset-rm: 0.044 arcsec [0.25σ]  
OotOffset-st: 1/0/2/0 [3]  
KicOffset-rm: 0.100 arcsec [1.05σ]  
KicOffset-st: 1/0/2/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

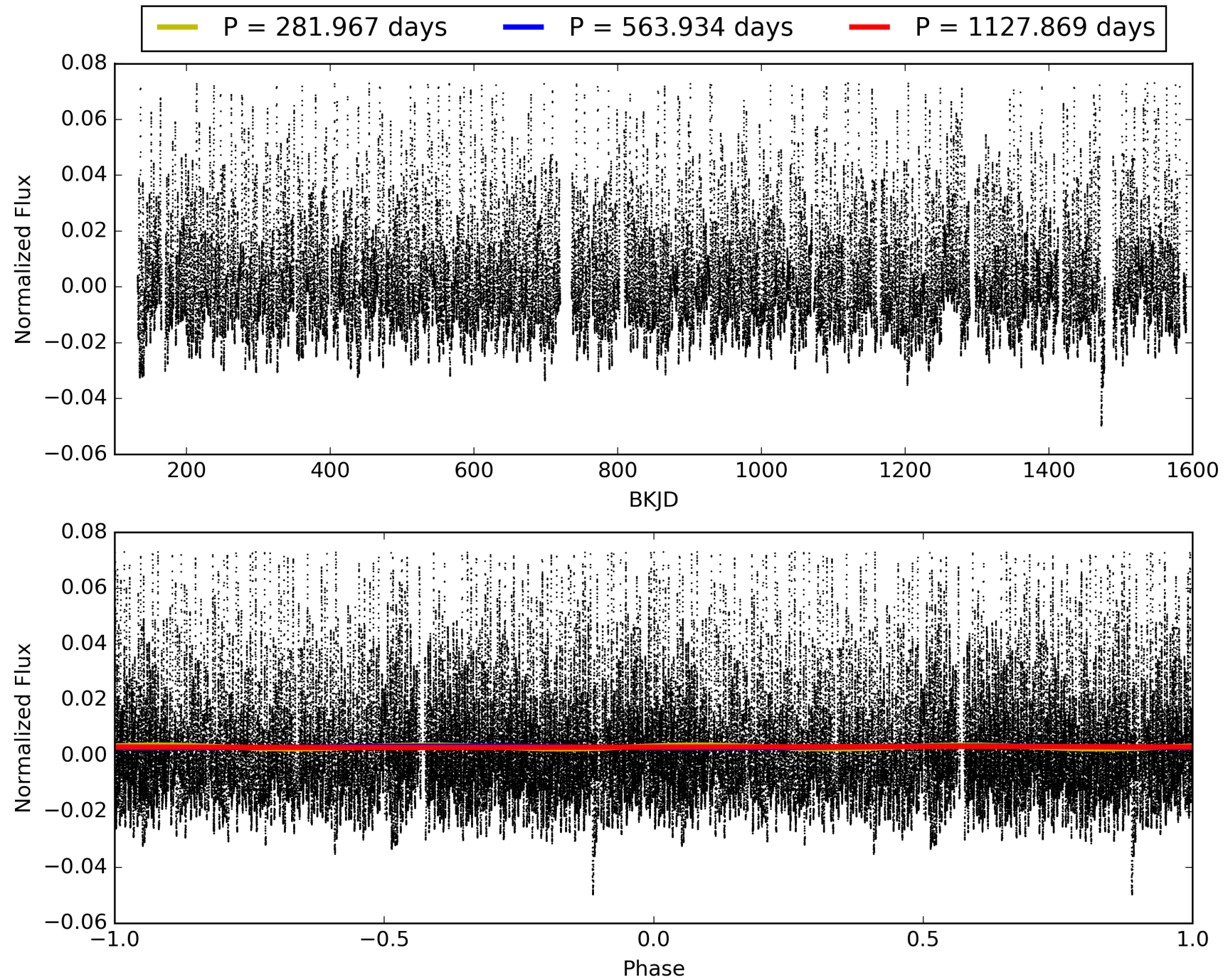
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:17:40 Z

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

# TCE 005395645-05, PDC Light Curves

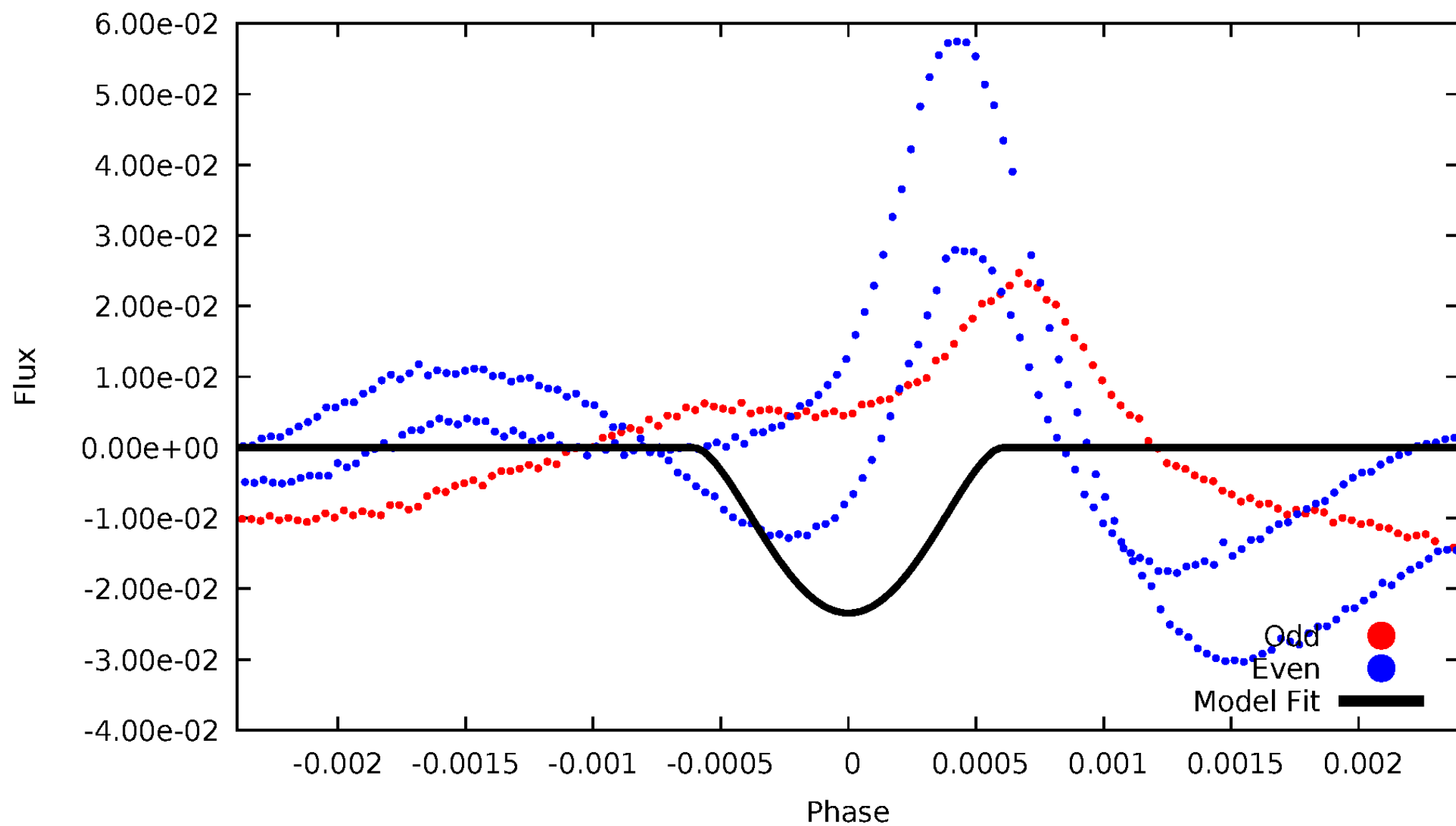


TCE 005395645-05



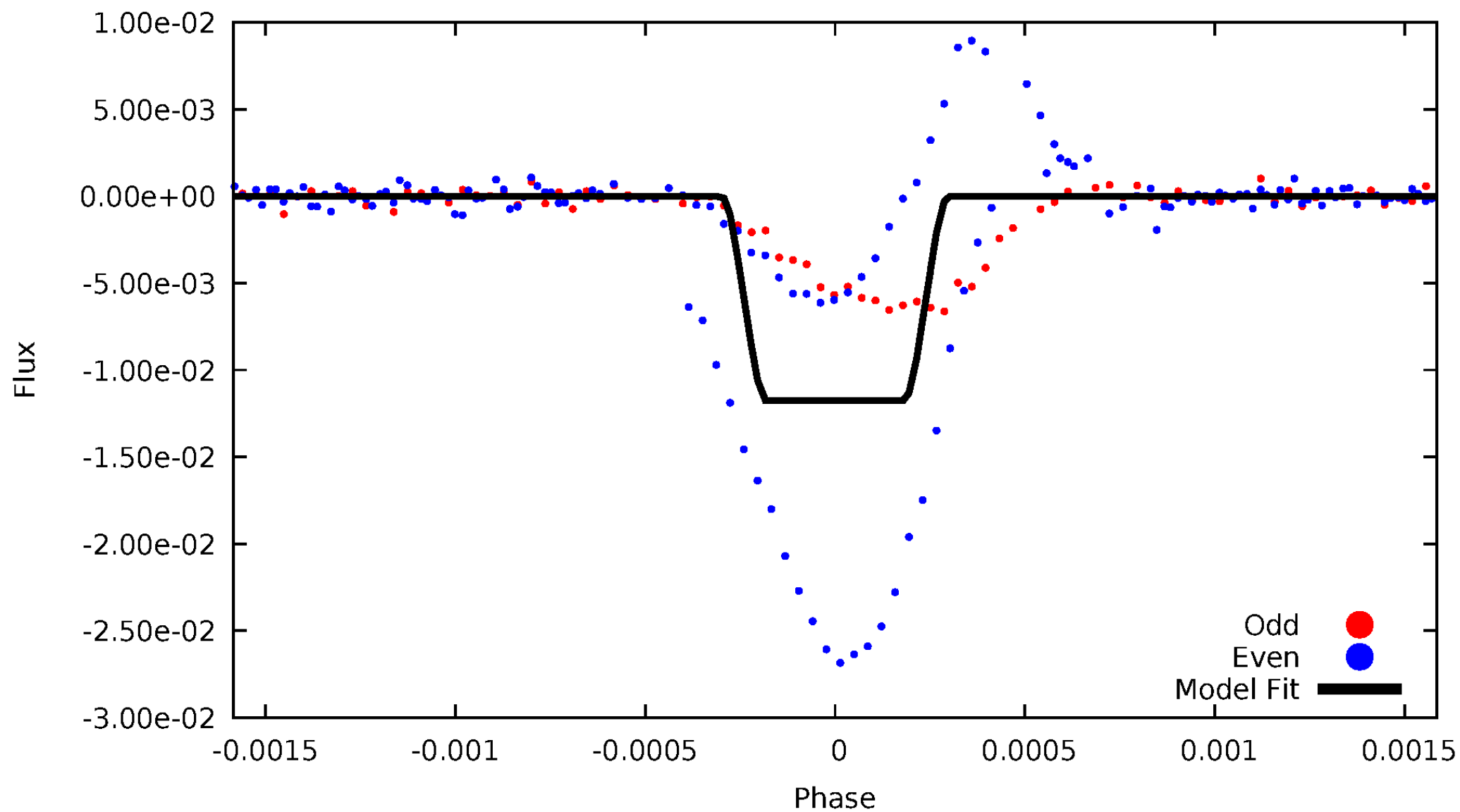
# DV Odd/Even

TCE 005395645-05



# ALT Odd/Even

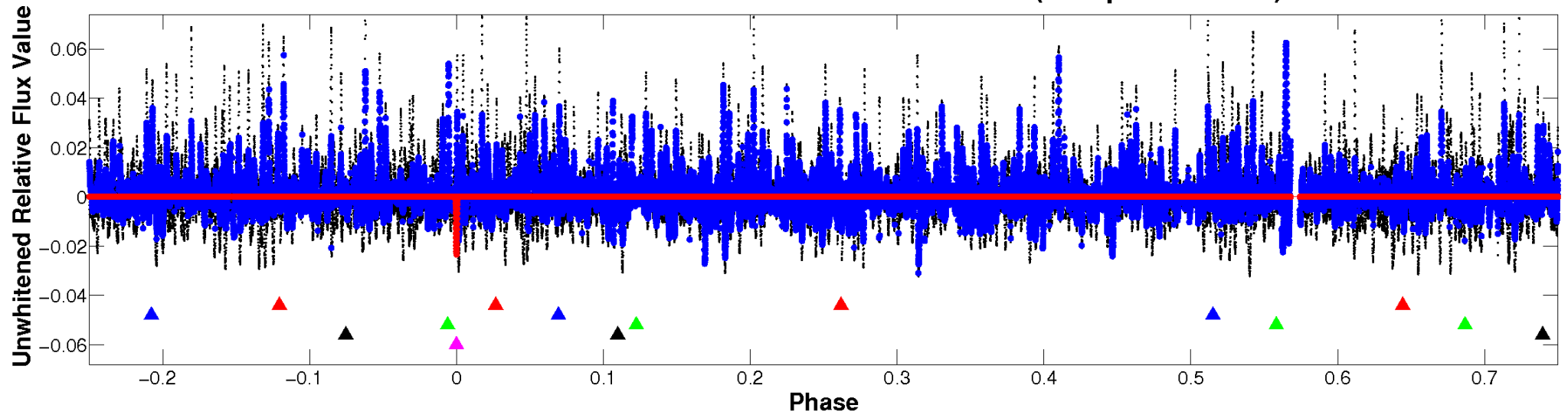
TCE 005395645-05



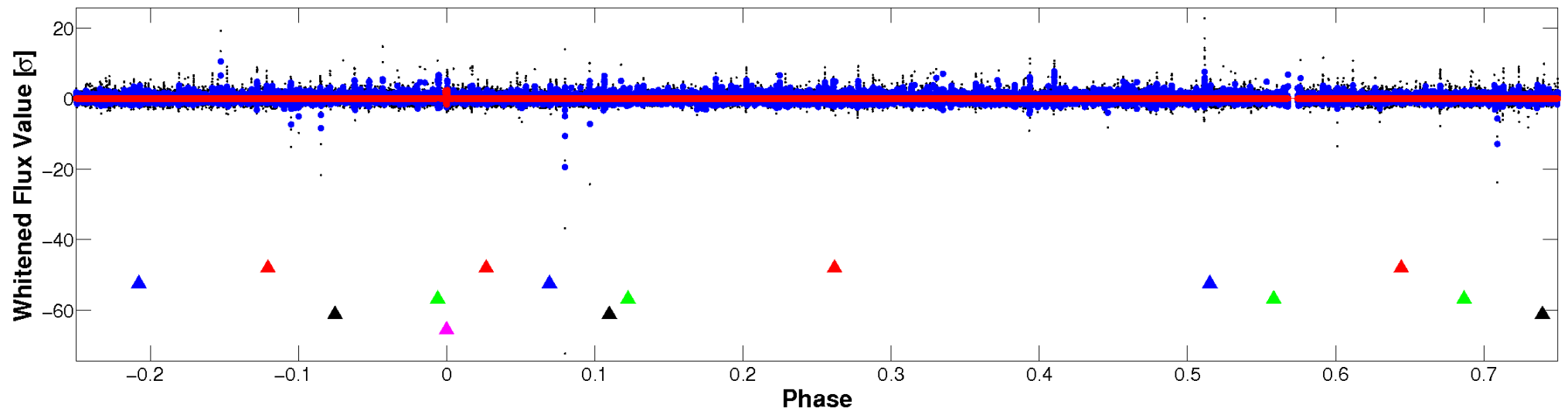


# Non-Whitened Vs. Whitened Light Curve

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

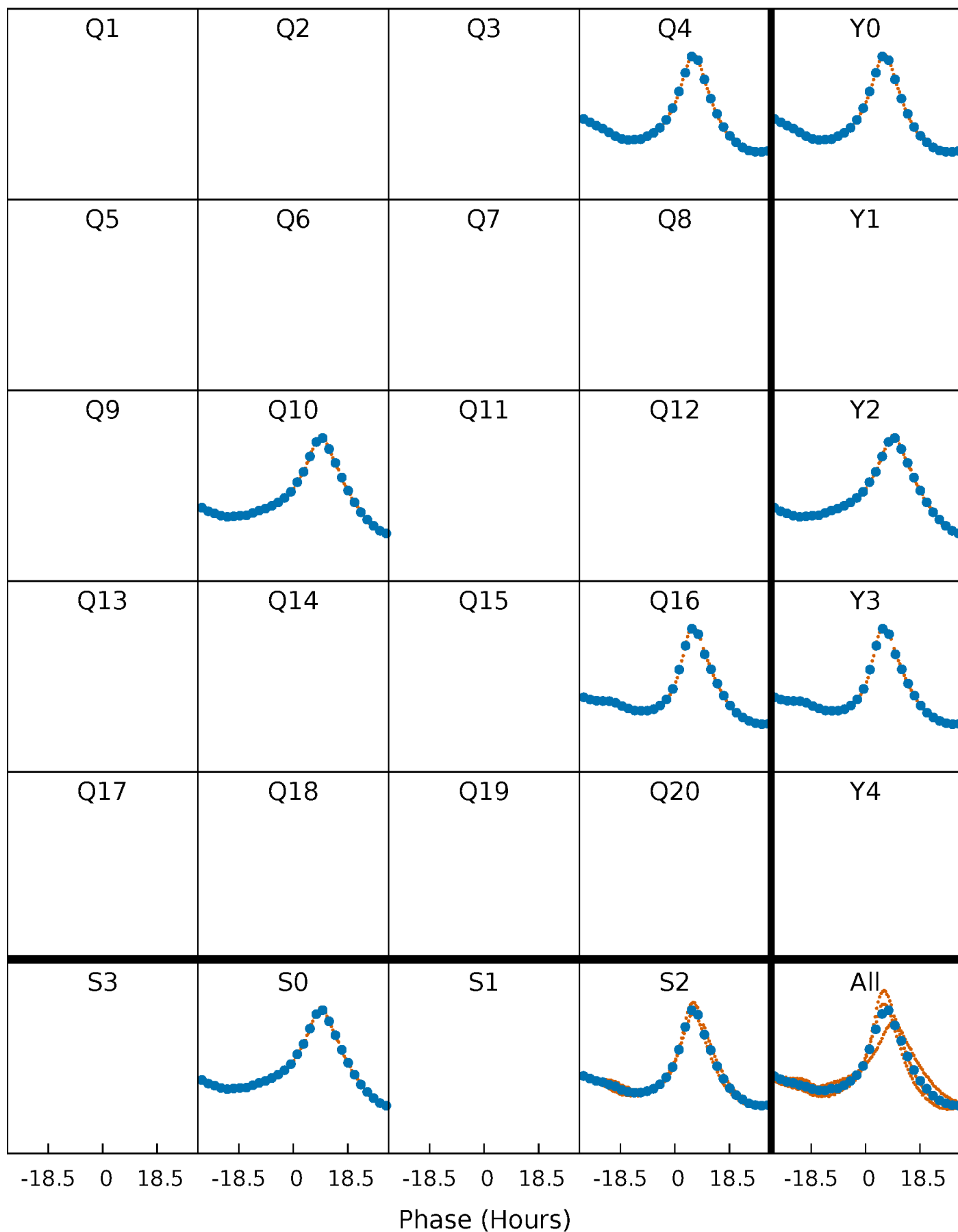


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

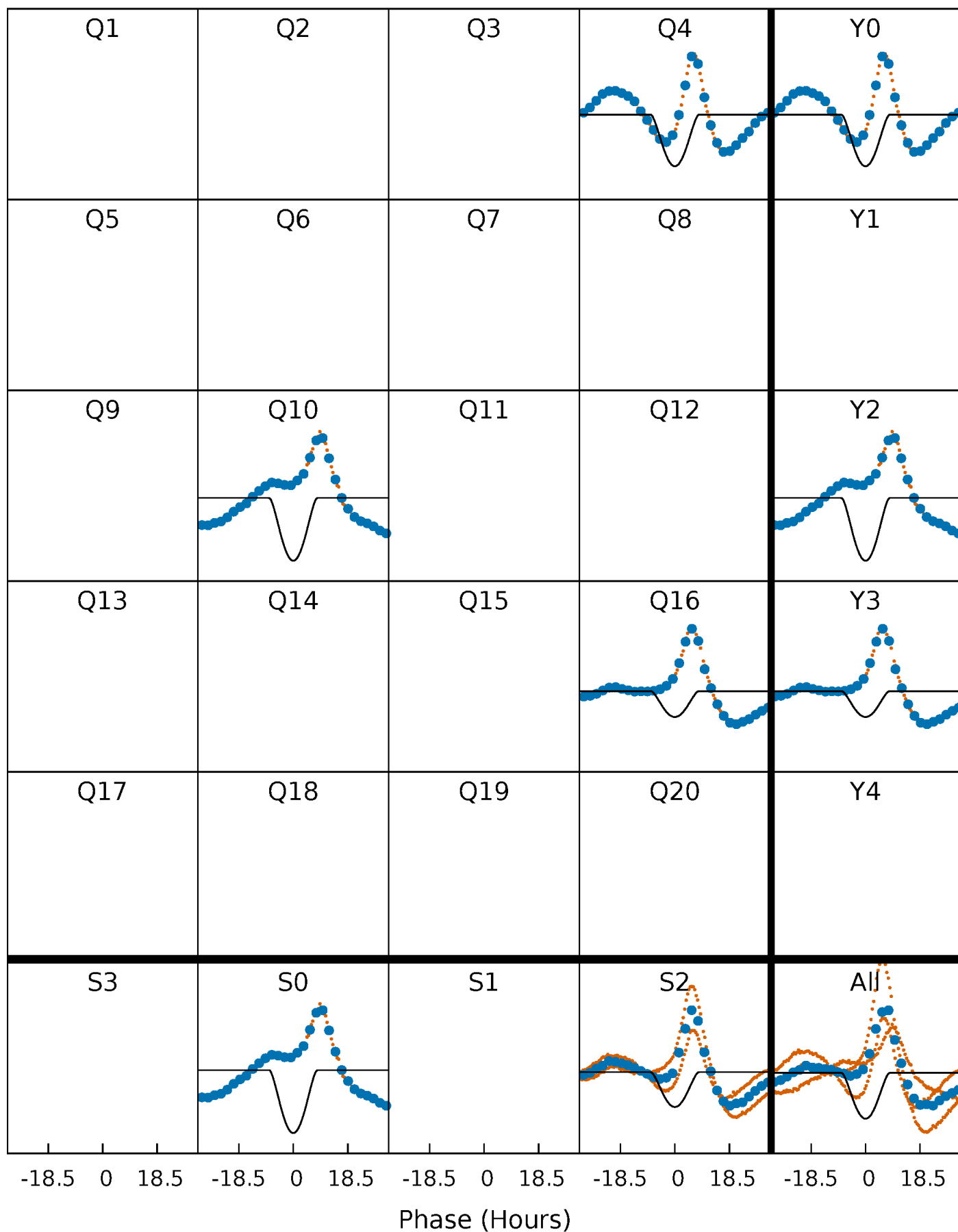
TCE 005395645-05     $P=563.934457$  Days     $T_0=408.638513$  (BKJD)





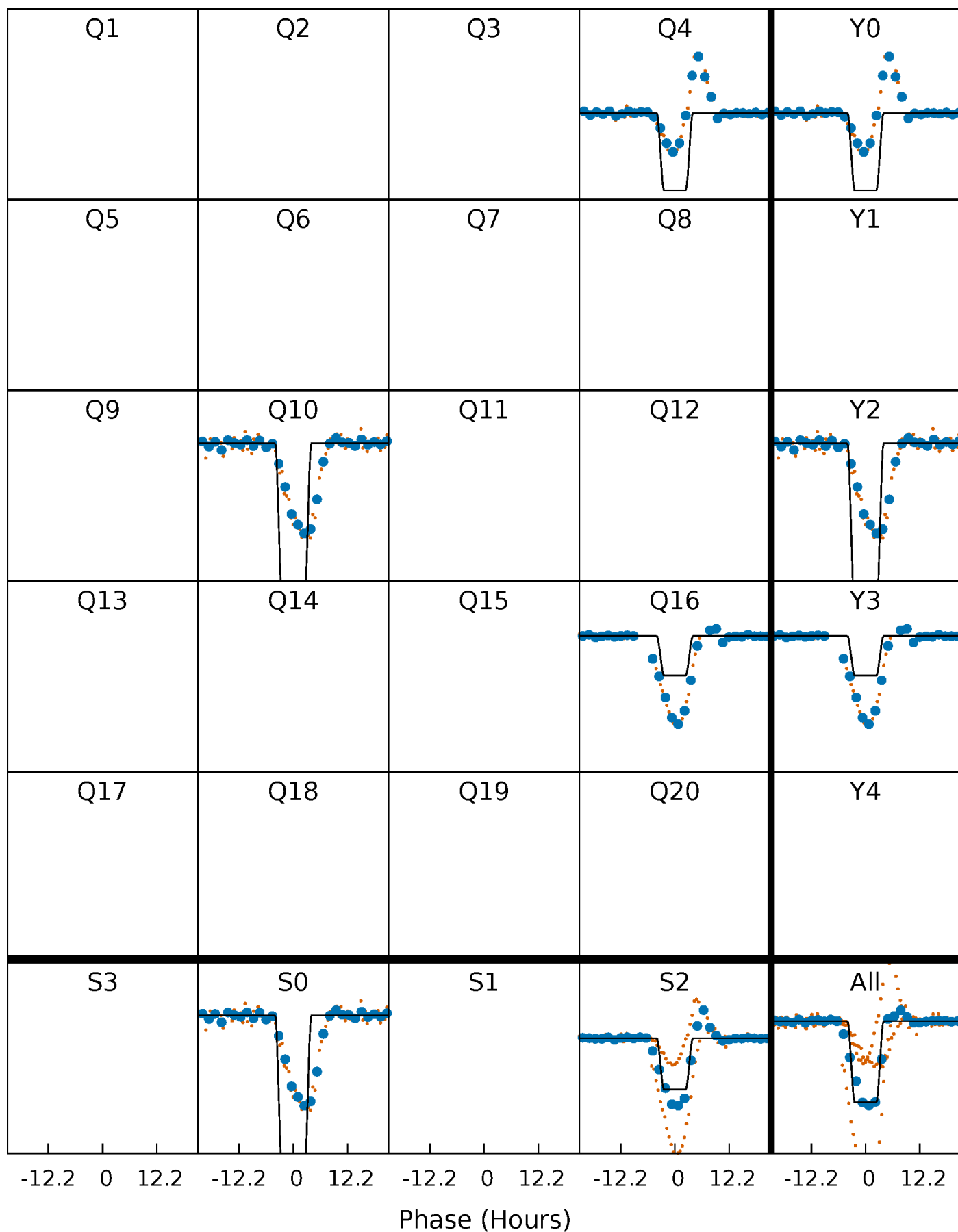
# DV Quarter-Phased Transit Curves

TCE 005395645-05     $P=563.934457$  Days     $T_0=408.638513$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

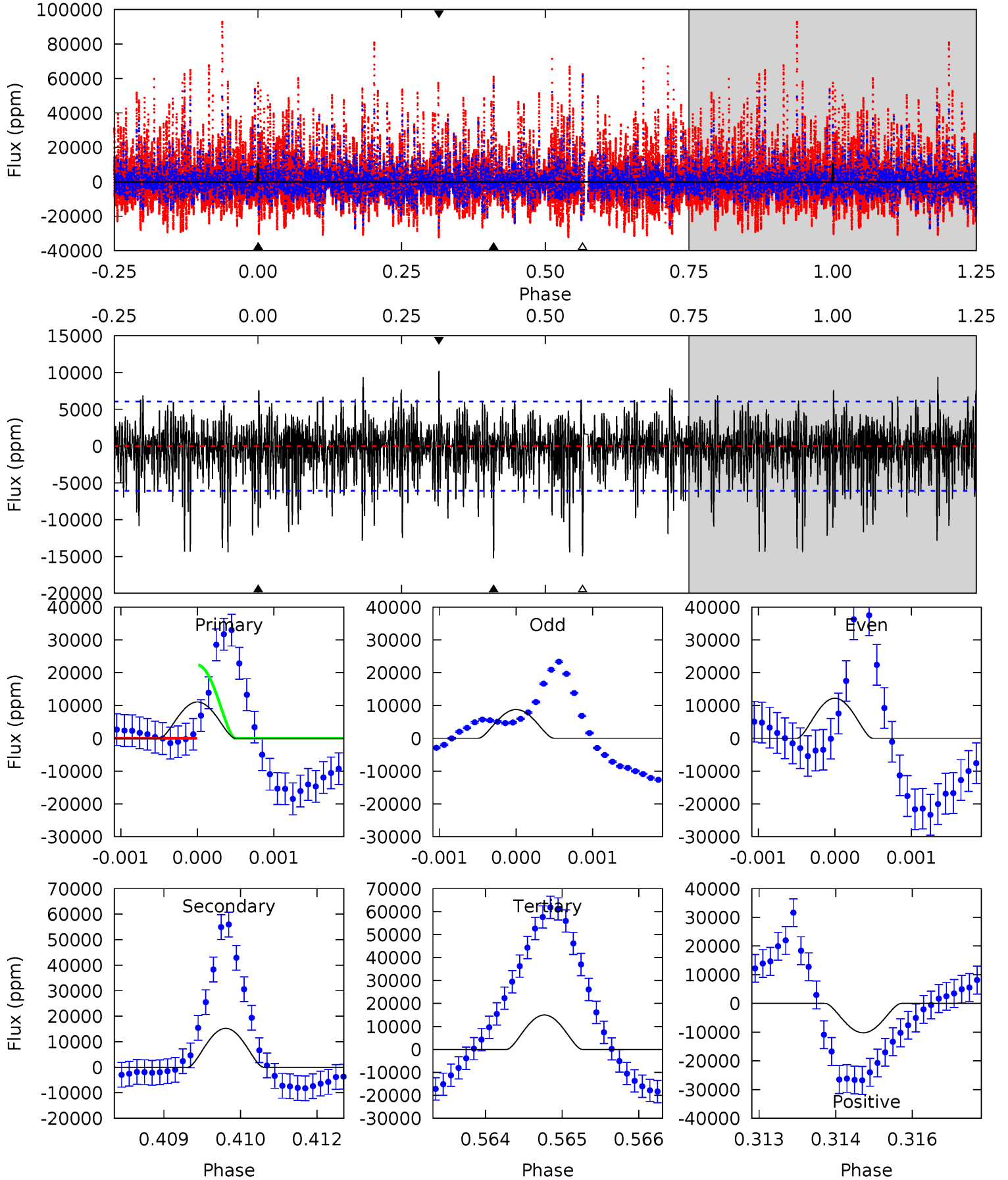
TCE 005395645-05     $P=563.911766$  Days     $T_0=408.671606$  (BKJD)



# DV Model-Shift Uniqueness Test

005395645-05, P = 563.934457 Days, E = 408.638513 Days

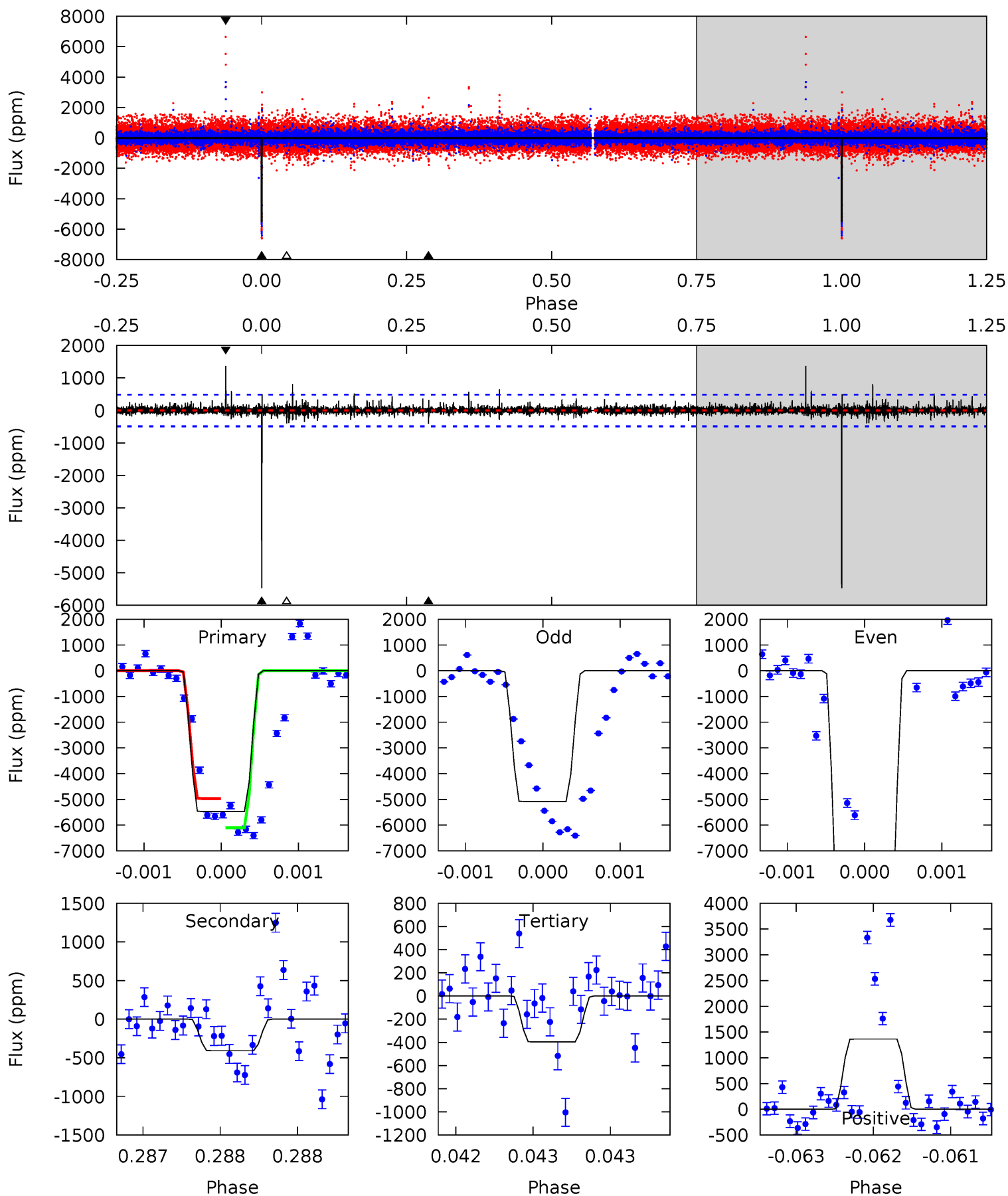
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.86	13.6	13.3	9.11	5.41	3.23	2.76	-3.48	0.75	0.24	4.47	1.38	1.26	0.40	10.0



# Alt Model-Shift Uniqueness Test

005395645-05, P = 563.911766 Days, E = 408.671606 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
62.2	4.65	4.50	15.5	5.54	3.43	0.75	57.7	46.7	0.14	-10.9	50.2	2.14	0.20	6.42



### Stellar Parameters For KIC 005395645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6531^{+176}_{-216}$	$4.486^{+0.048}_{-0.192}$	$-0.500^{+0.300}_{-0.300}$	$0.969^{+0.289}_{-0.090}$	$1.057^{+0.137}_{-0.125}$	$1.635^{+0.315}_{-0.820}$
	+3%/-3%	+1%/-4%	+60%/-60%	+30%/-9%	+13%/-12%	+19%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005395645-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-15237 \pm 1122$	$28.38^{+16.93}_{-15.58}$	$348^{+21}_{-16}$	$4696^{+2031}_{-721}$	$19182^{+76152}_{-11664}$
Alt.	$-408 \pm 88$	$15.37^{+14.59}_{-9.51}$	$345^{+21}_{-16}$	$3064^{+1230}_{-488}$	$1648^{+10103}_{-1216}$

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

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

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

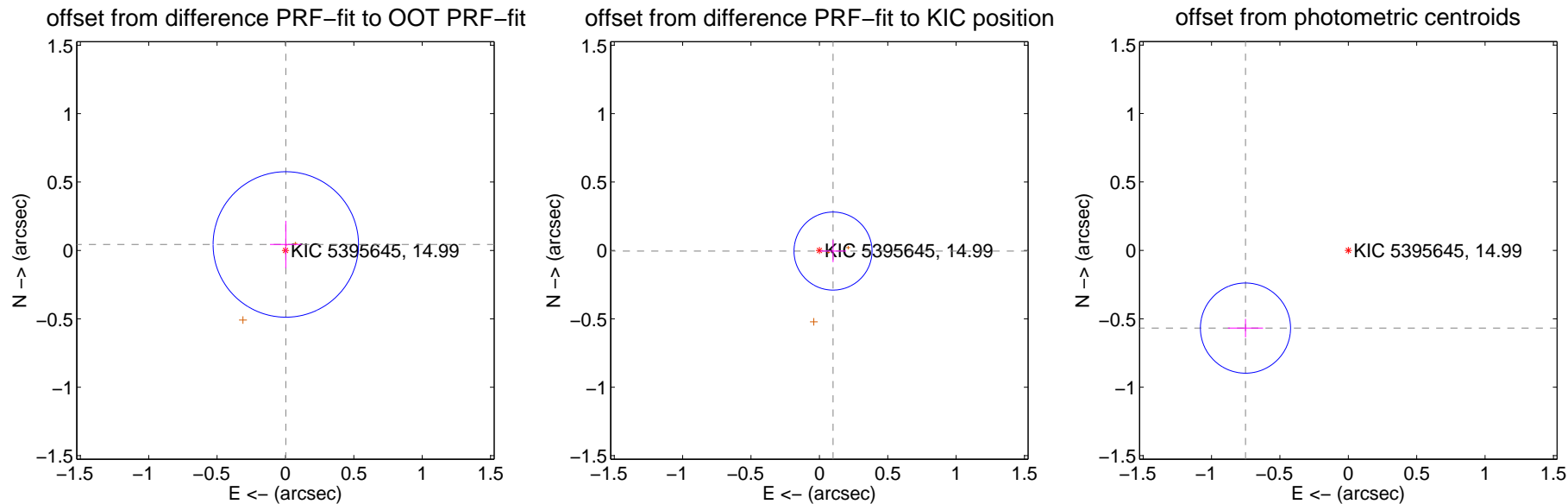
## DV Centroid Data

Supplemental centroid analysis for 005395645-05. Kepler magnitude: 14.99. Transit SNR 14.16

There are 0 quarters with good PRF difference image offsets

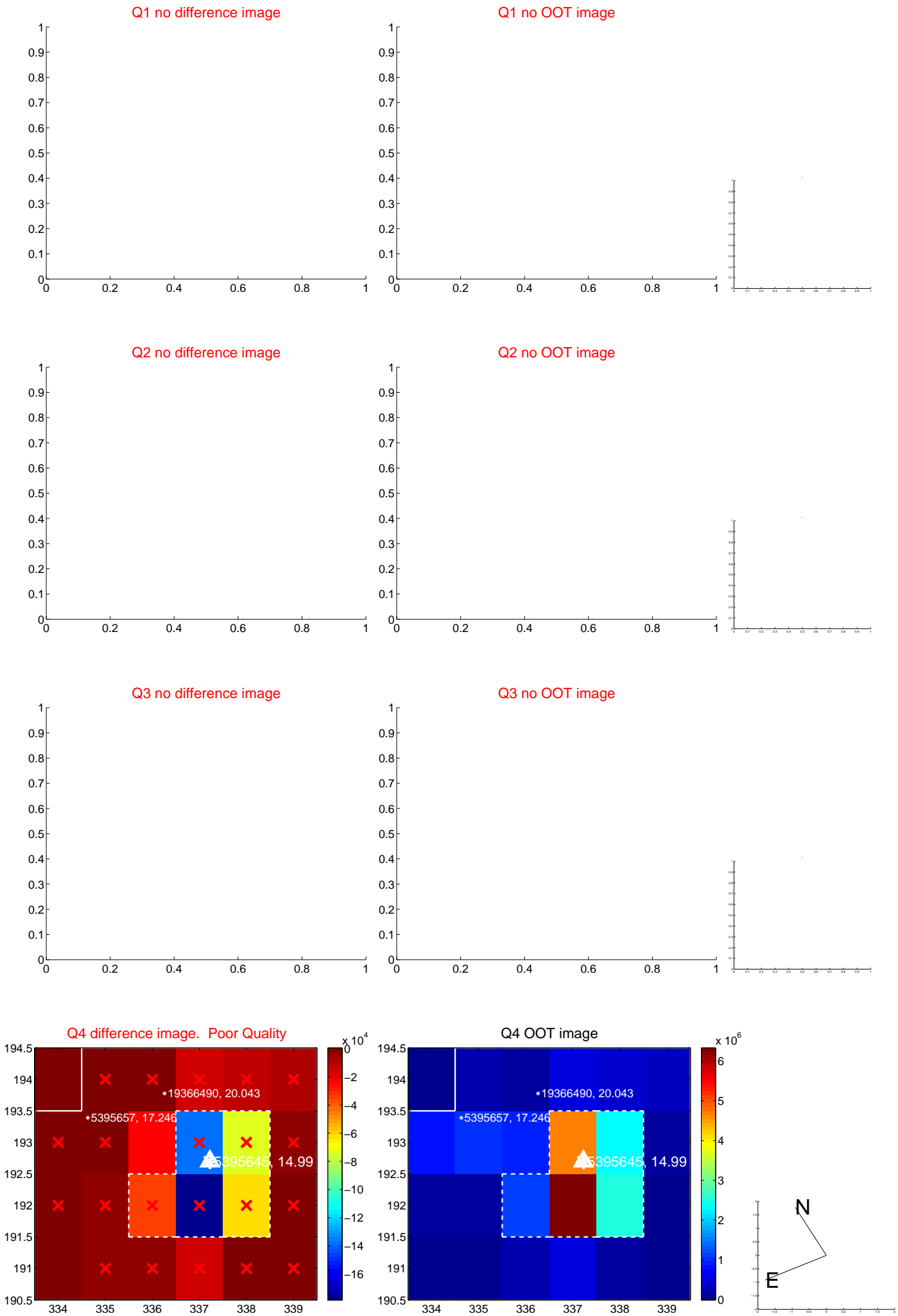
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.044 \pm 0.177$	0.25	$-0.003 \pm 0.115$	$0.044 \pm 0.172$
PRF-fit source offset from KIC position	$0.100 \pm 0.095$	1.05	$-0.100 \pm 0.095$	$-0.005 \pm 0.081$
photometric centroid source offset	$0.94 \pm 0.11$	8.58	$0.75 \pm 0.13$	$-0.57 \pm 0.07$



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.

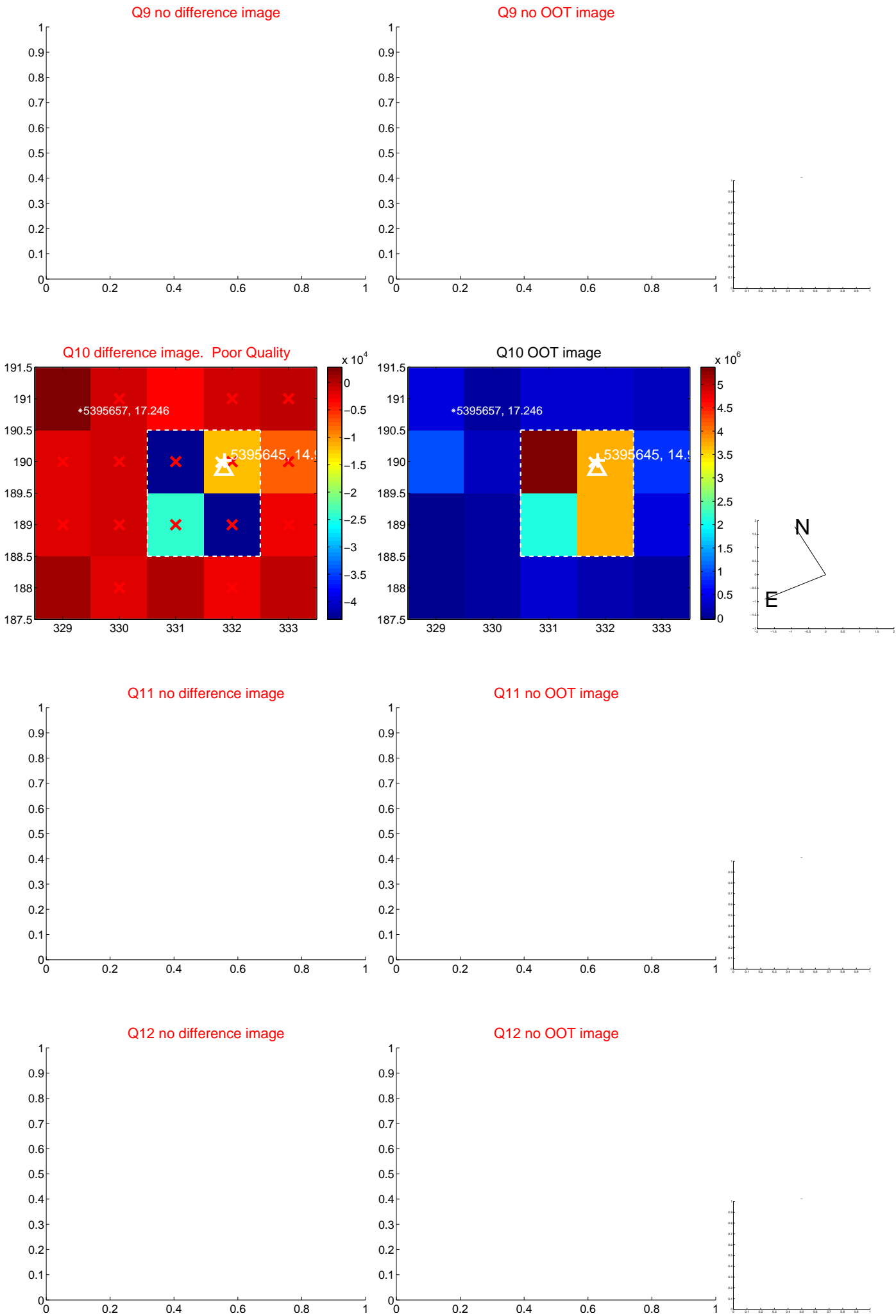


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

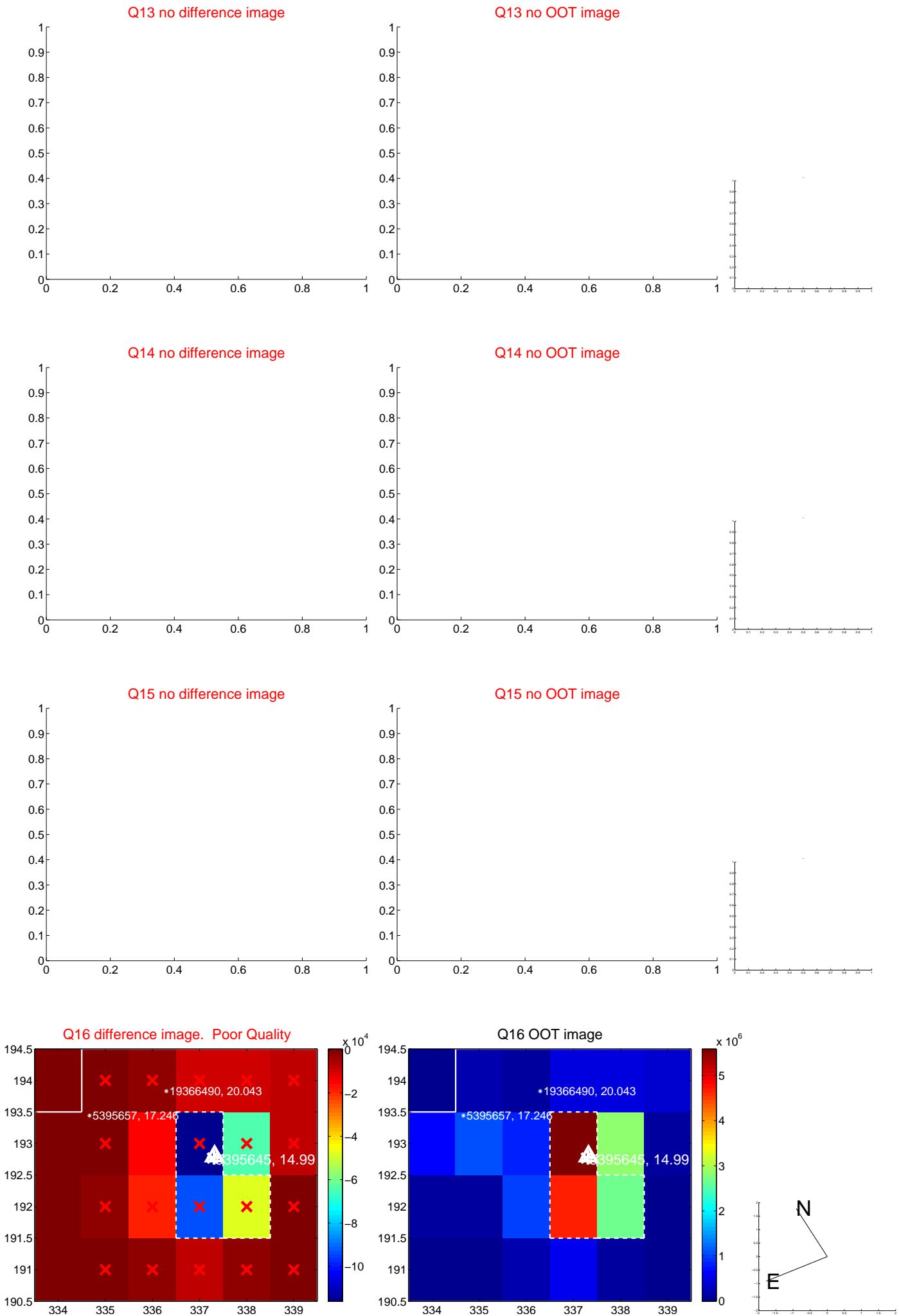




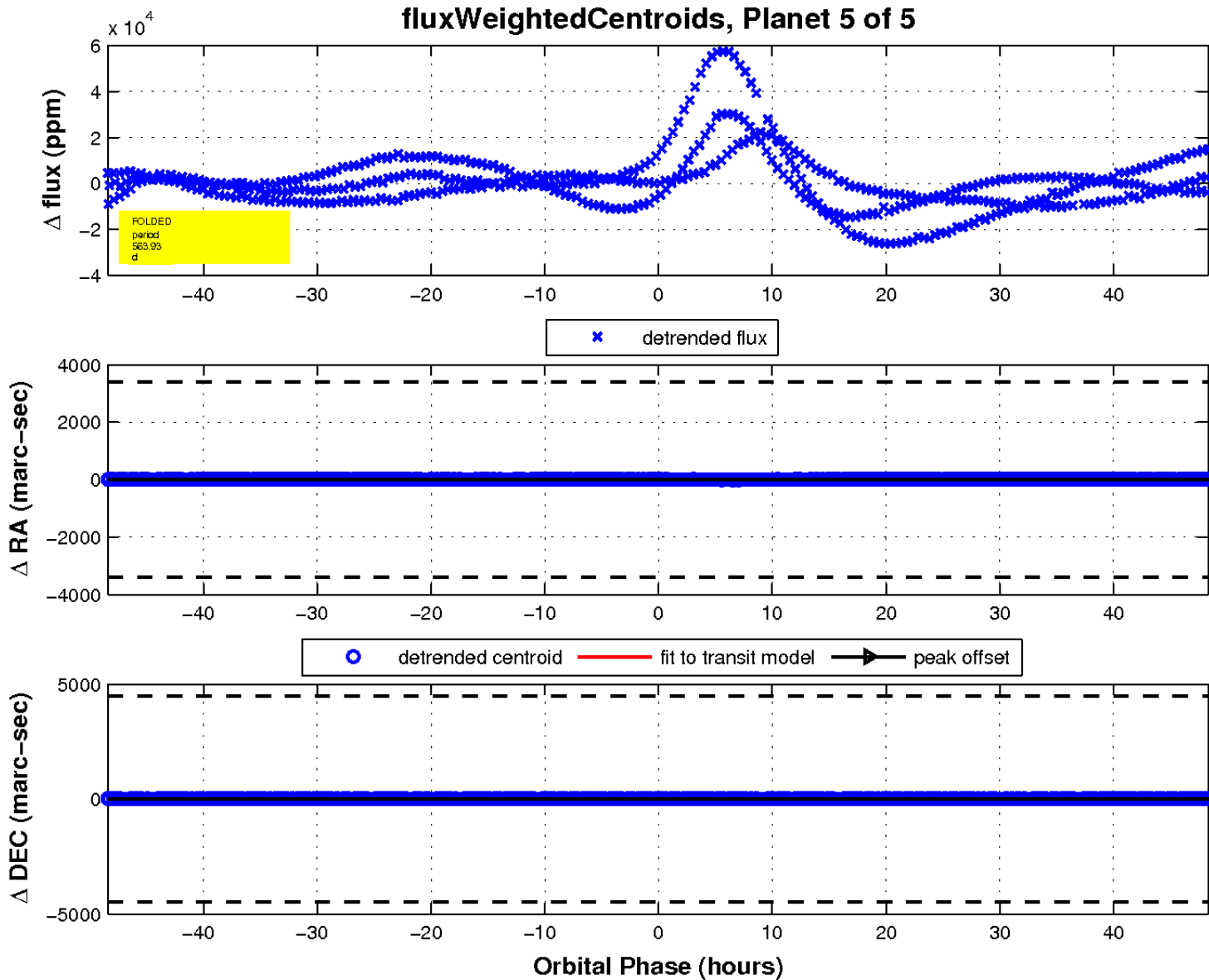
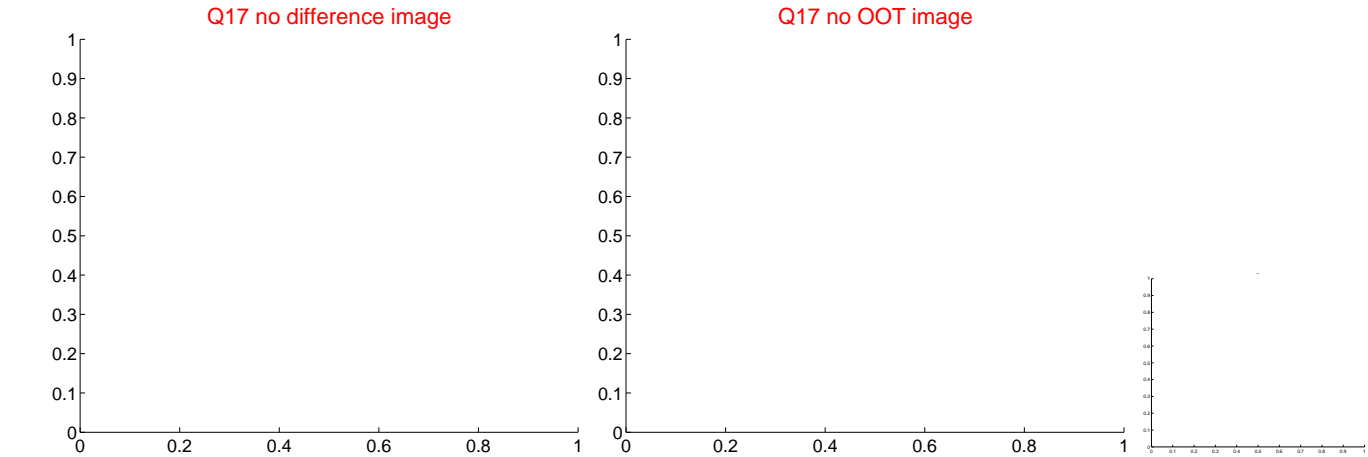
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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.



UKIRT Image

Declination

