

# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
007966841-03	OBS	No	315.248349	330.237593	1797.5	13.566	12.8	8.0	0.82	5819	4.19	0.90
007966841-04	OBS	No	432.373917	366.819488	1443.3	7.365	13.4	5.1	0.82	5819	3.29	0.59
007966841-05	OBS	No	176.341019	181.932535	1719.2	3.559	11.2	7.6	0.82	5819	3.51	1.95
007966841-06	OBS	No	495.076667	371.337077	1667.5	4.863	12.3	7.2	0.82	5819	3.42	0.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007966841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

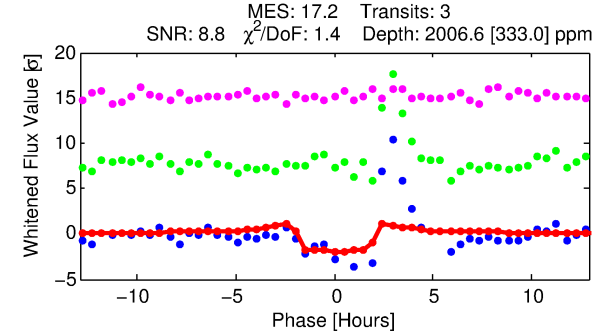
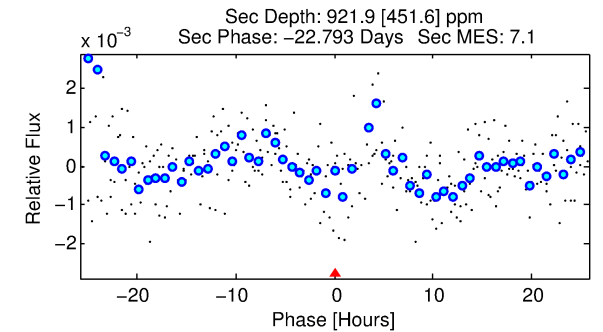
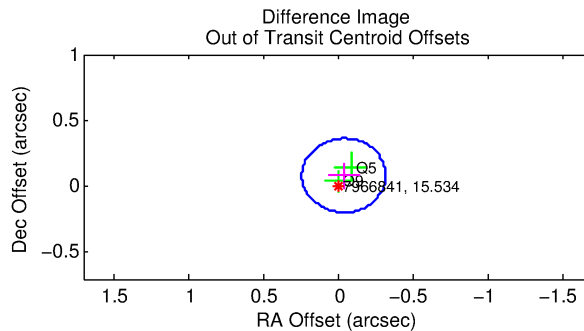
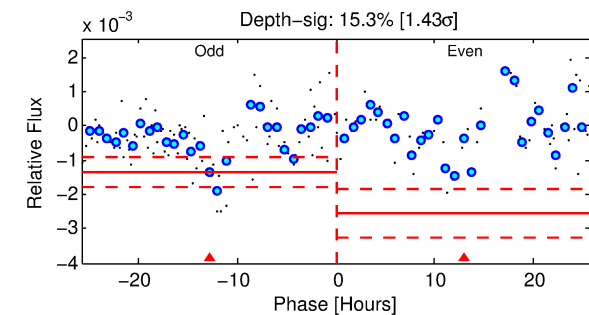
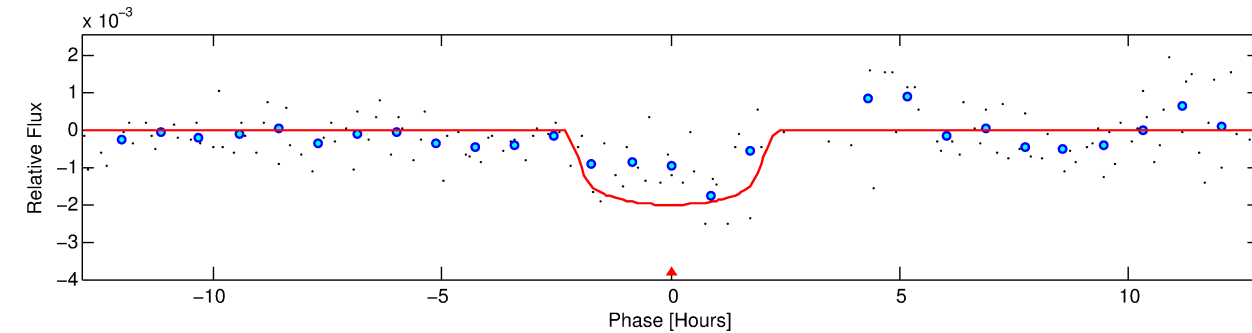
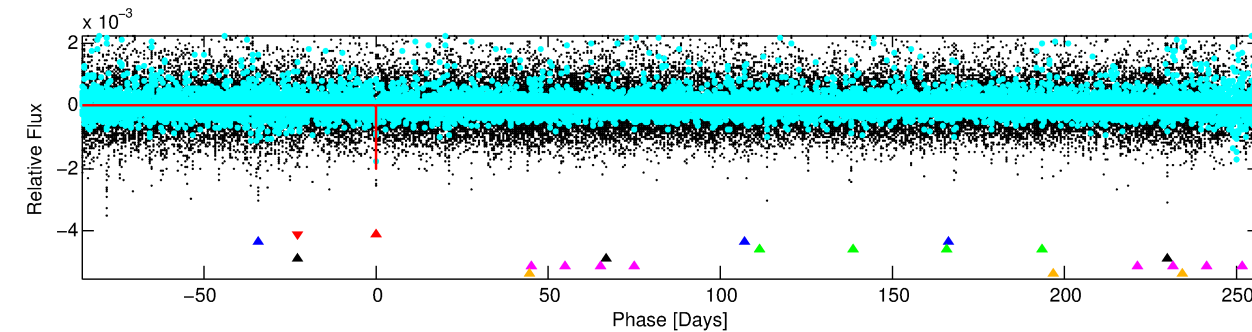
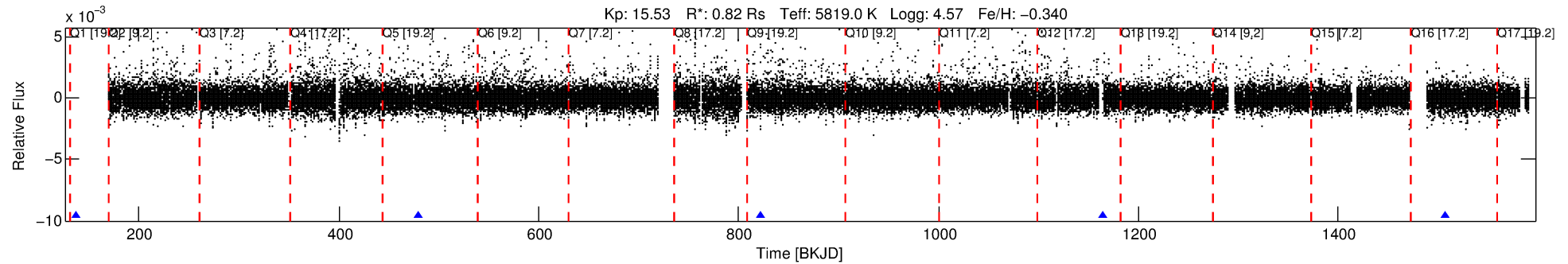
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007966841-01

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 1 of 6 Period: 342.636 d



## DV Fit Results:

Period = 342.63552 [0.00369] d  
Epoch = 136.7811 [0.0113] BKJD  
Rp/R\* = 0.0408 [0.3743]  
a/R\* = 634.02 [27102.45]  
b = 0.00 [22355.63]  
Seff = 0.81 [0.29]  
Teq = 242 [22] K  
Rp = 3.65 [33.51] Re  
a = 0.9257 [0.2139] AU  
Ag = 32539.79 [596738.53] [0.05 $\sigma$ ]  
Teffp = 5017 [22999] K [0.2 $\sigma$ ]

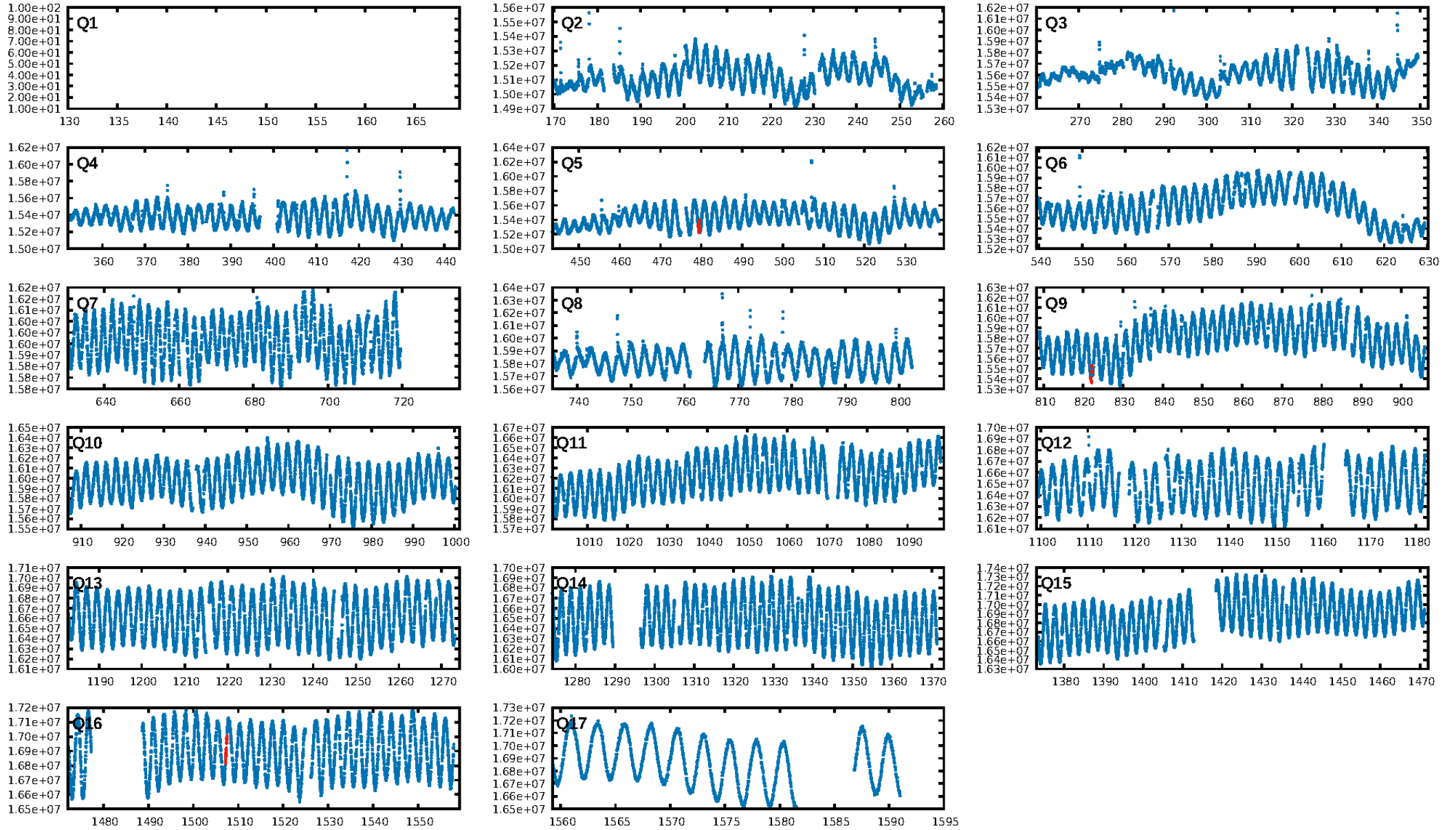
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.19 $\sigma$ ]  
LongPeriod-sig: 100.0% [252.58 $\sigma$ ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 51.1%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 133.7  
Centroid-sig: 0.9%  
Centroid-so: 1.240 arcsec [1.15 $\sigma$ ]  
OotOffset-rm: 0.093 arcsec [0.99 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-rm: 0.100 arcsec [1.03 $\sigma$ ]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

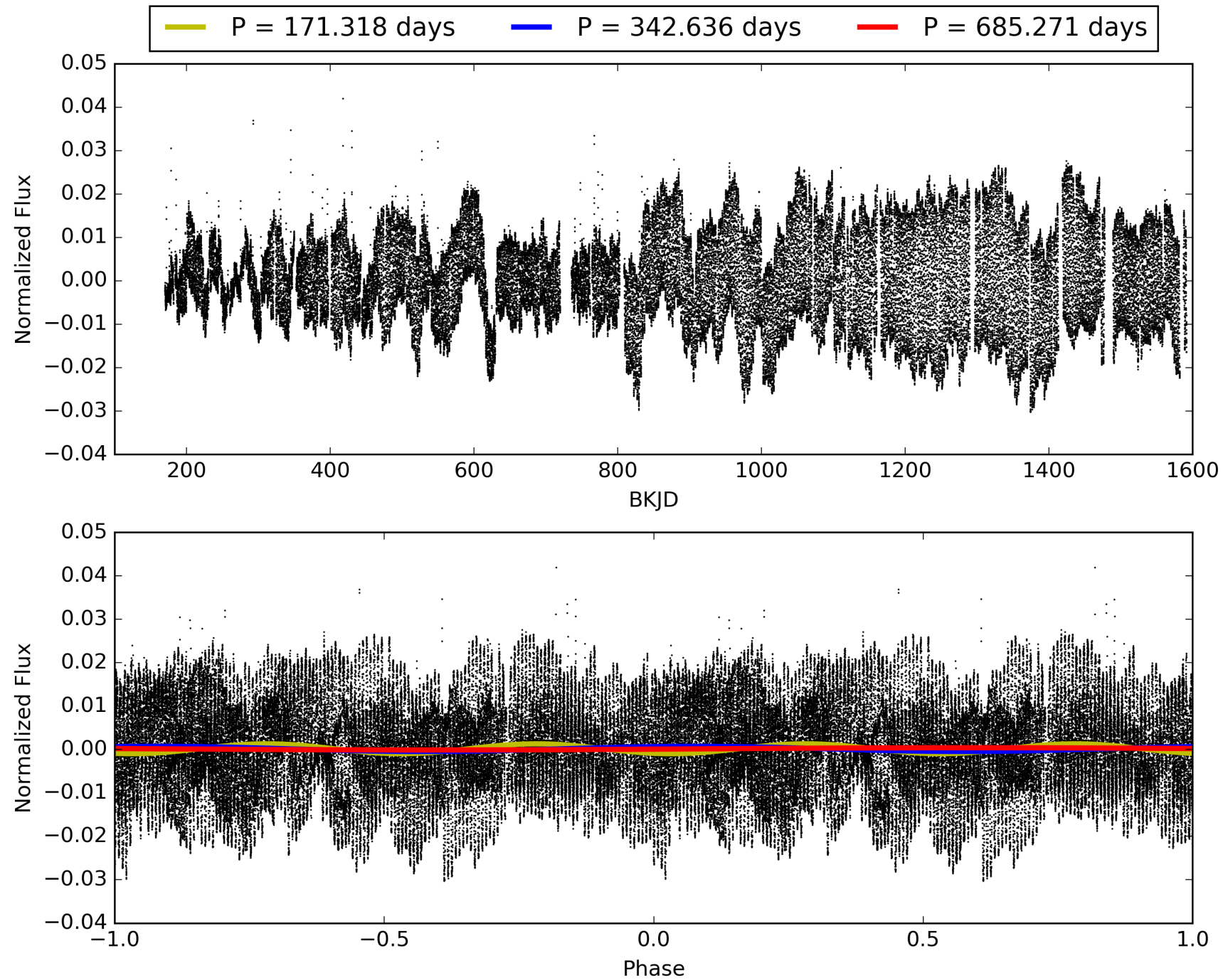
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007966841-01, PDC Light Curves



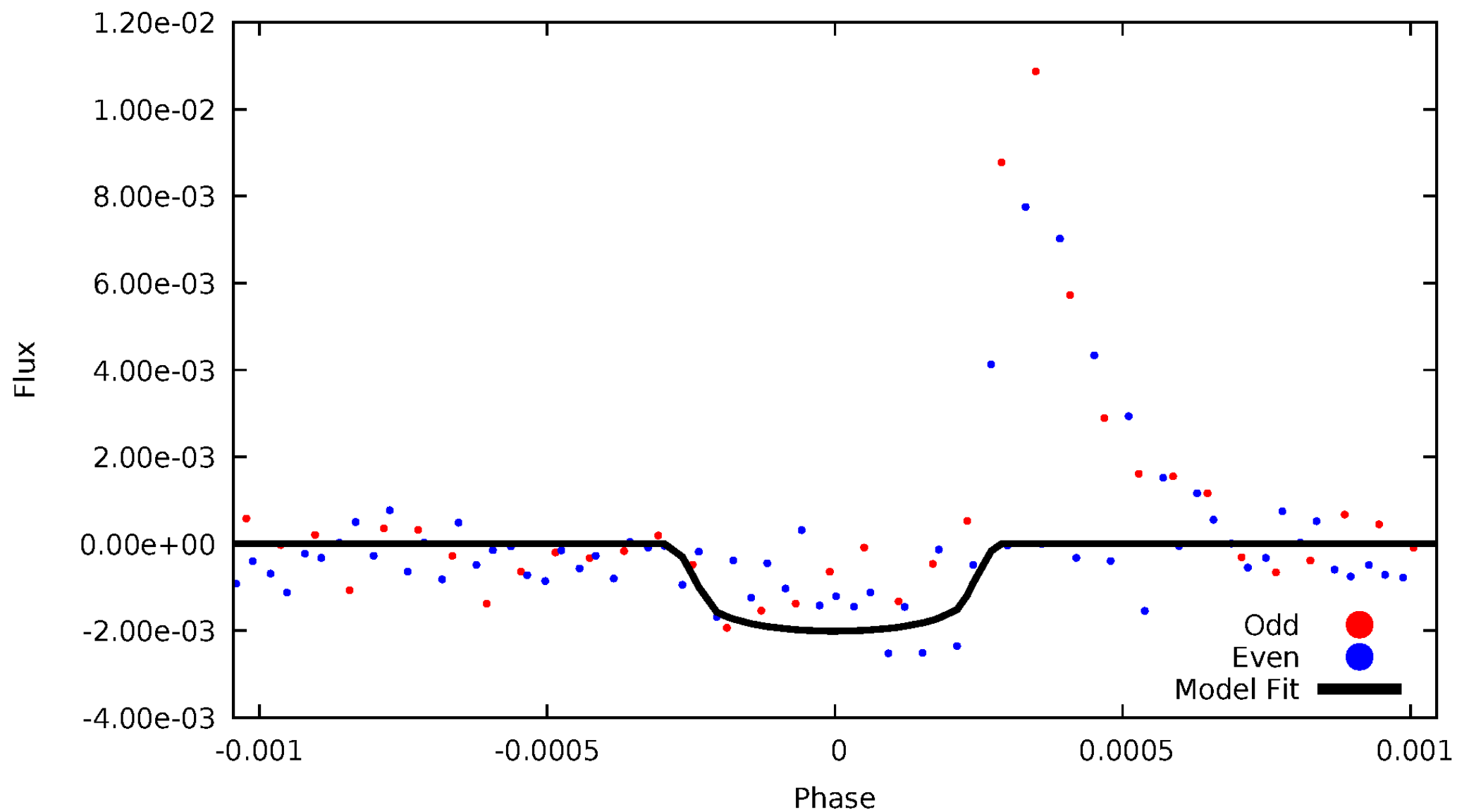
TCE 007966841-01





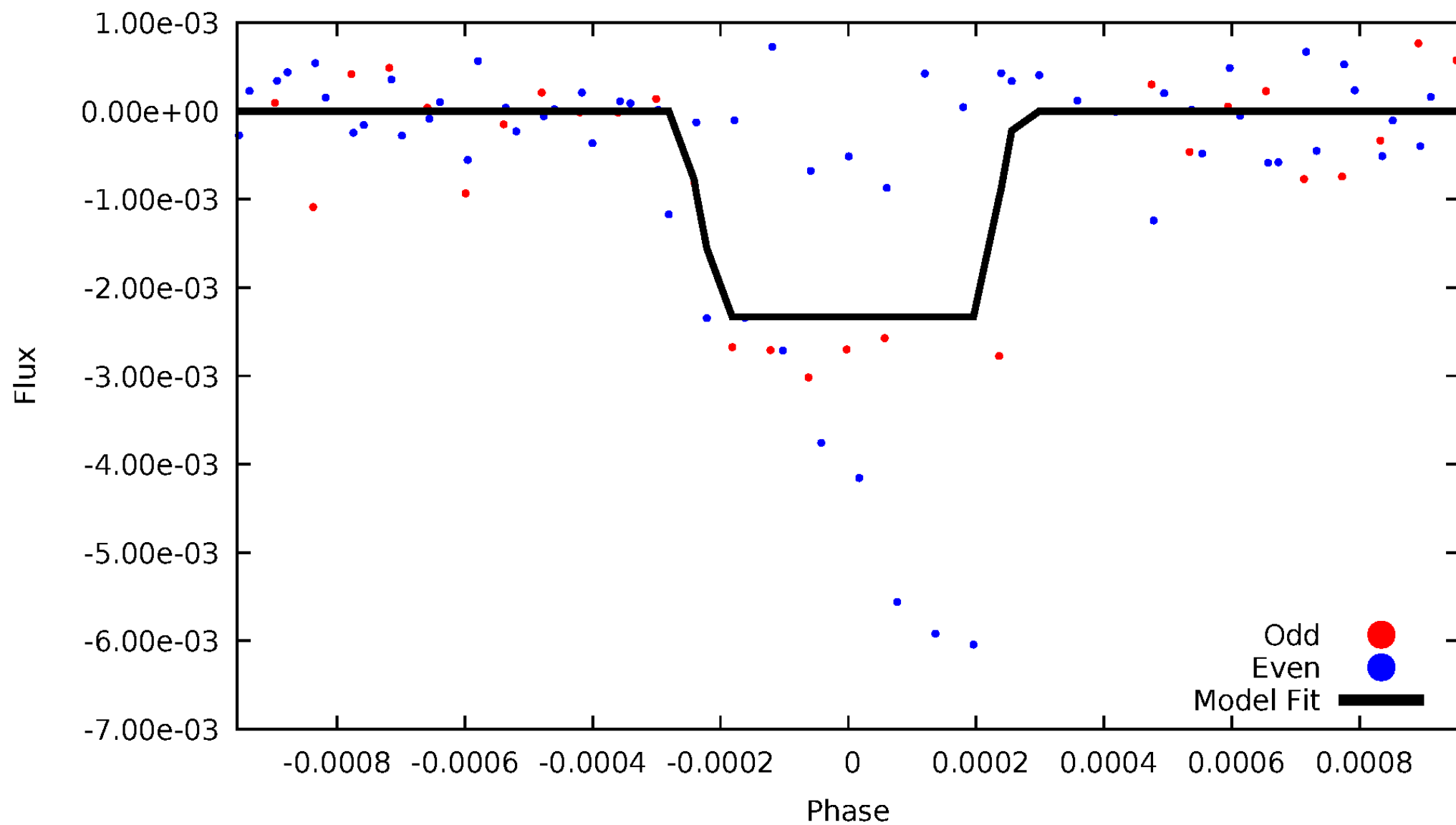
# DV Odd/Even

TCE 007966841-01



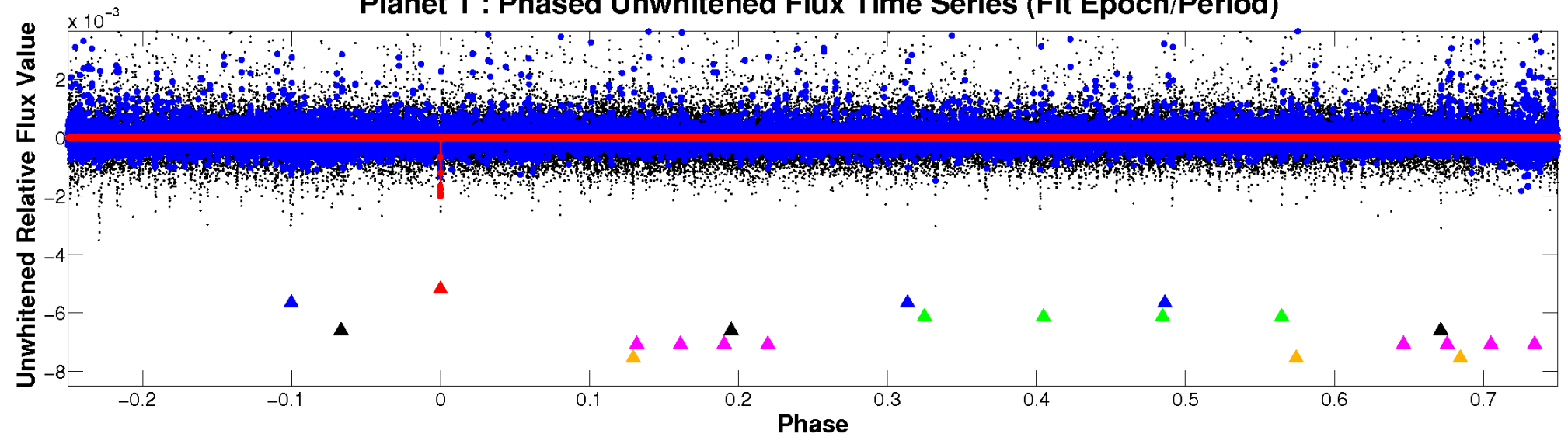
# ALT Odd/Even

TCE 007966841-01

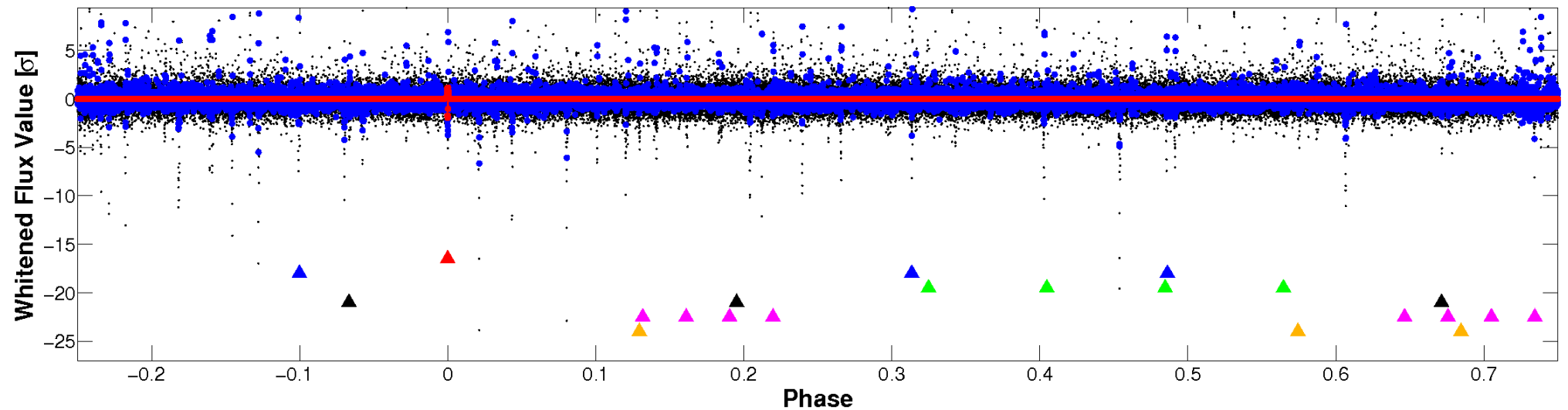


# Non-Whitened Vs. Whitened Light Curve

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

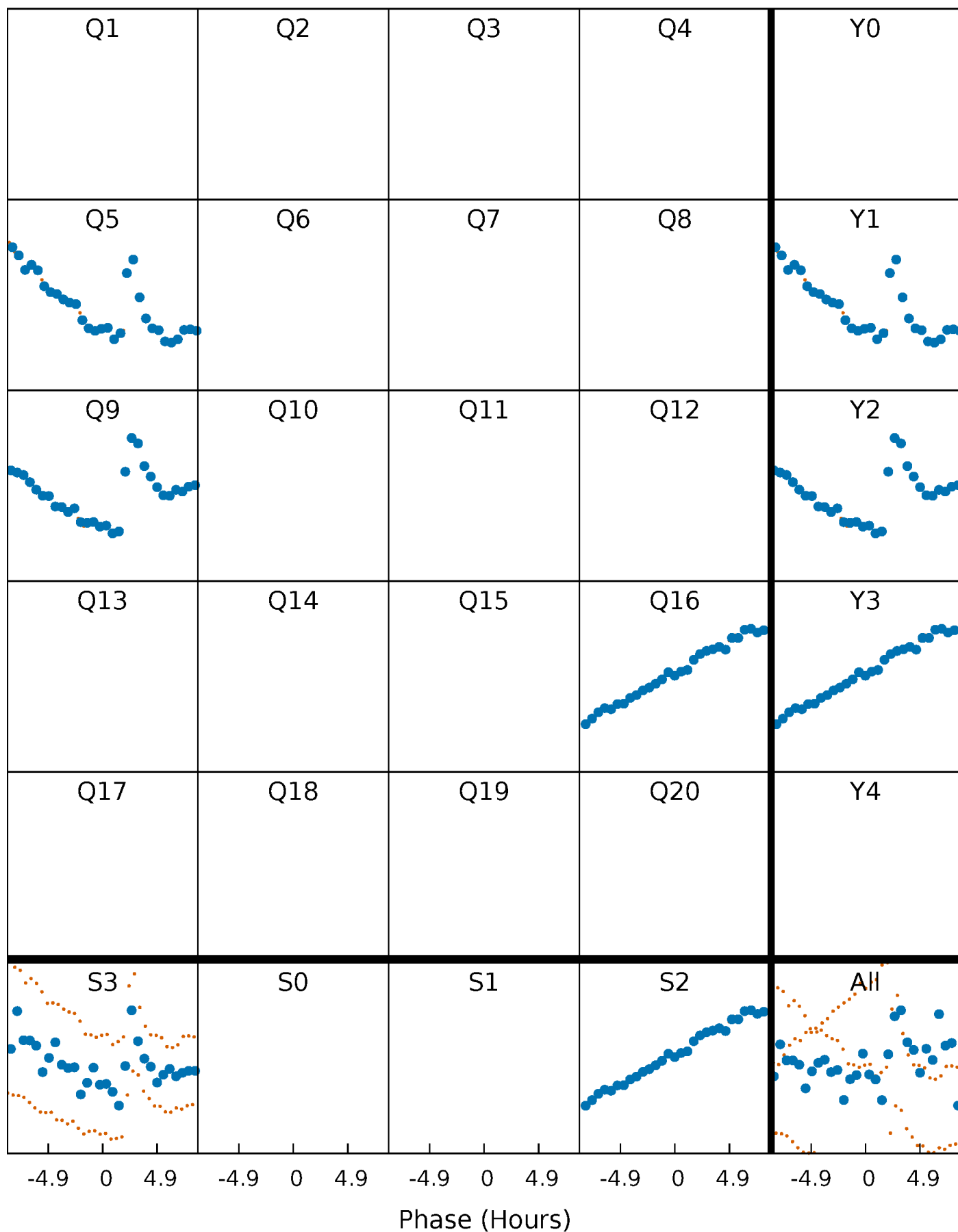


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



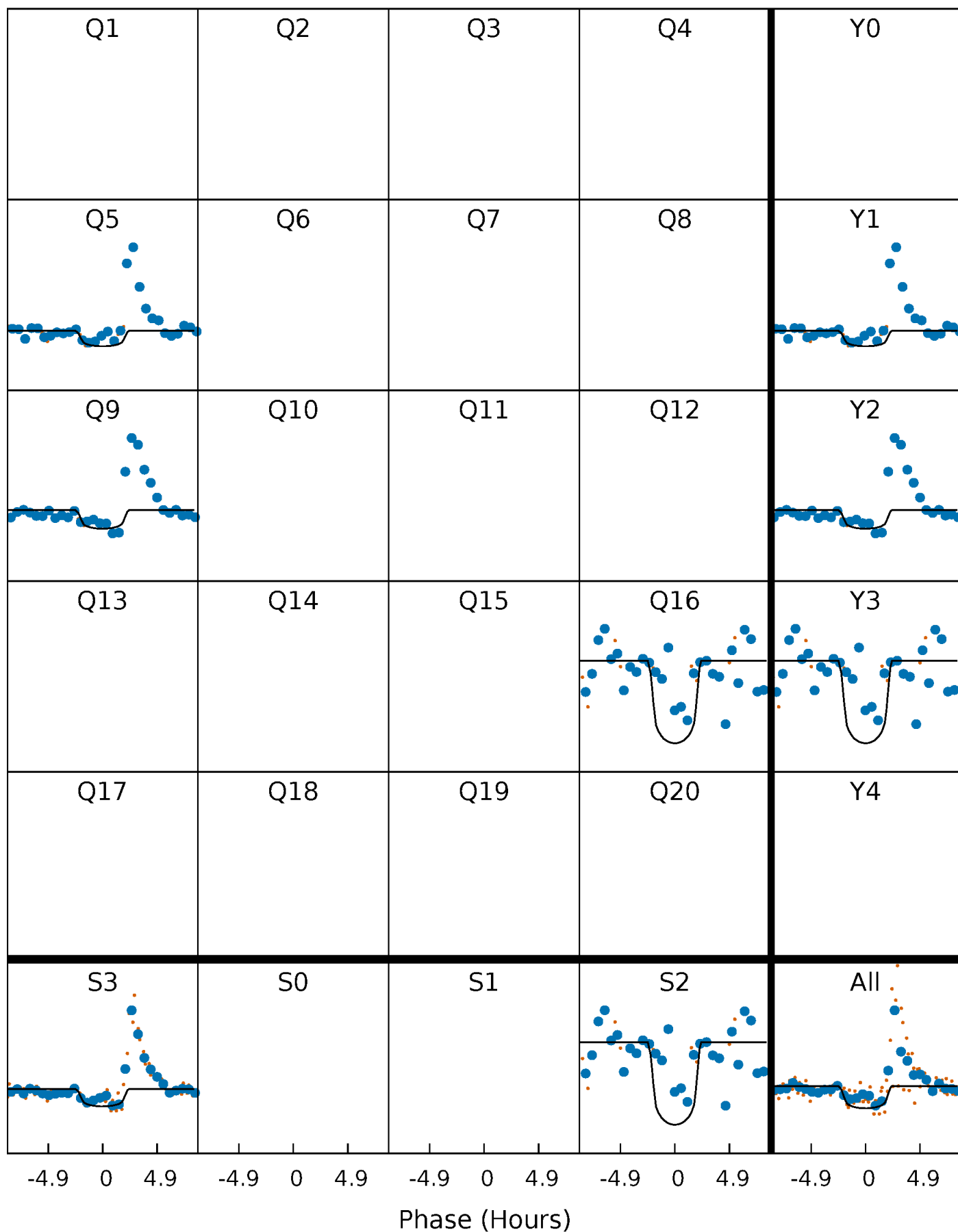
# PDC Quarter-Phased Transit Curves

TCE 007966841-01 P=342.635524 Days  $T_0=136.781112$  (BKJD)



# DV Quarter-Phased Transit Curves

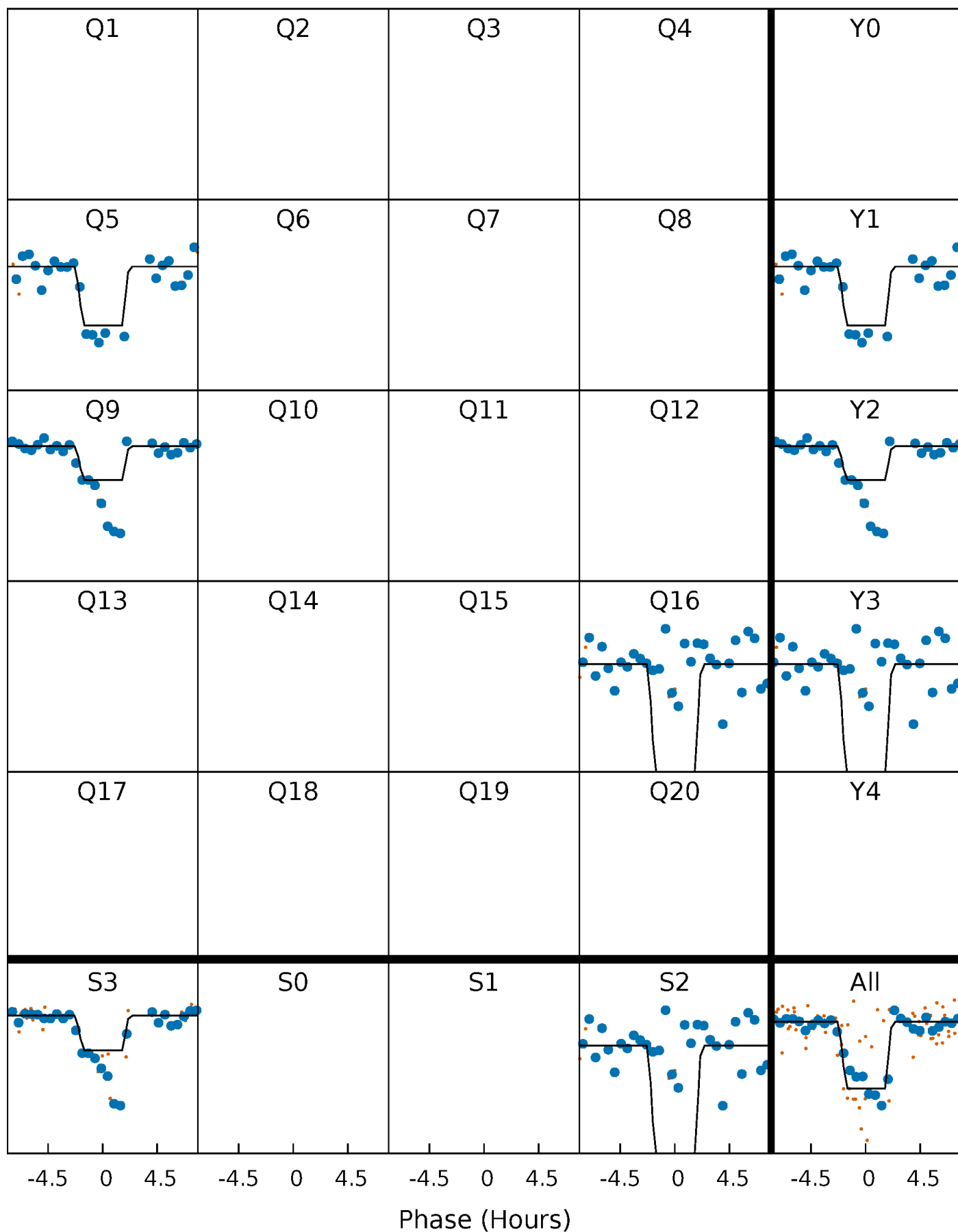
TCE 007966841-01 P=342.635524 Days  $T_0=136.781112$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

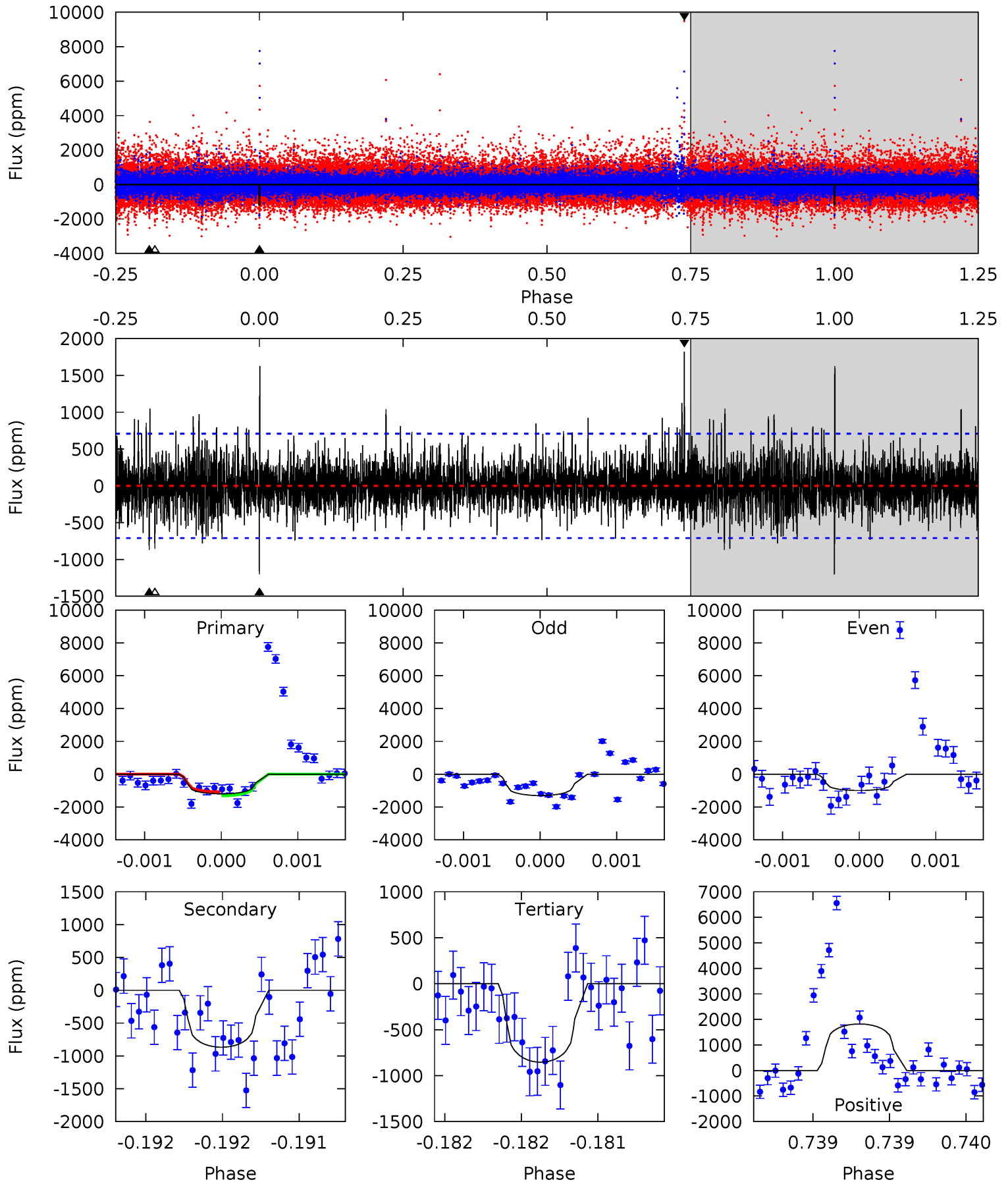
TCE 007966841-01 P=342.643182 Days  $T_0=136.771319$  (BKJD)



## DV Model-Shift Uniqueness Test

007966841-01, P = 342.635524 Days, E = 136.781112 Days

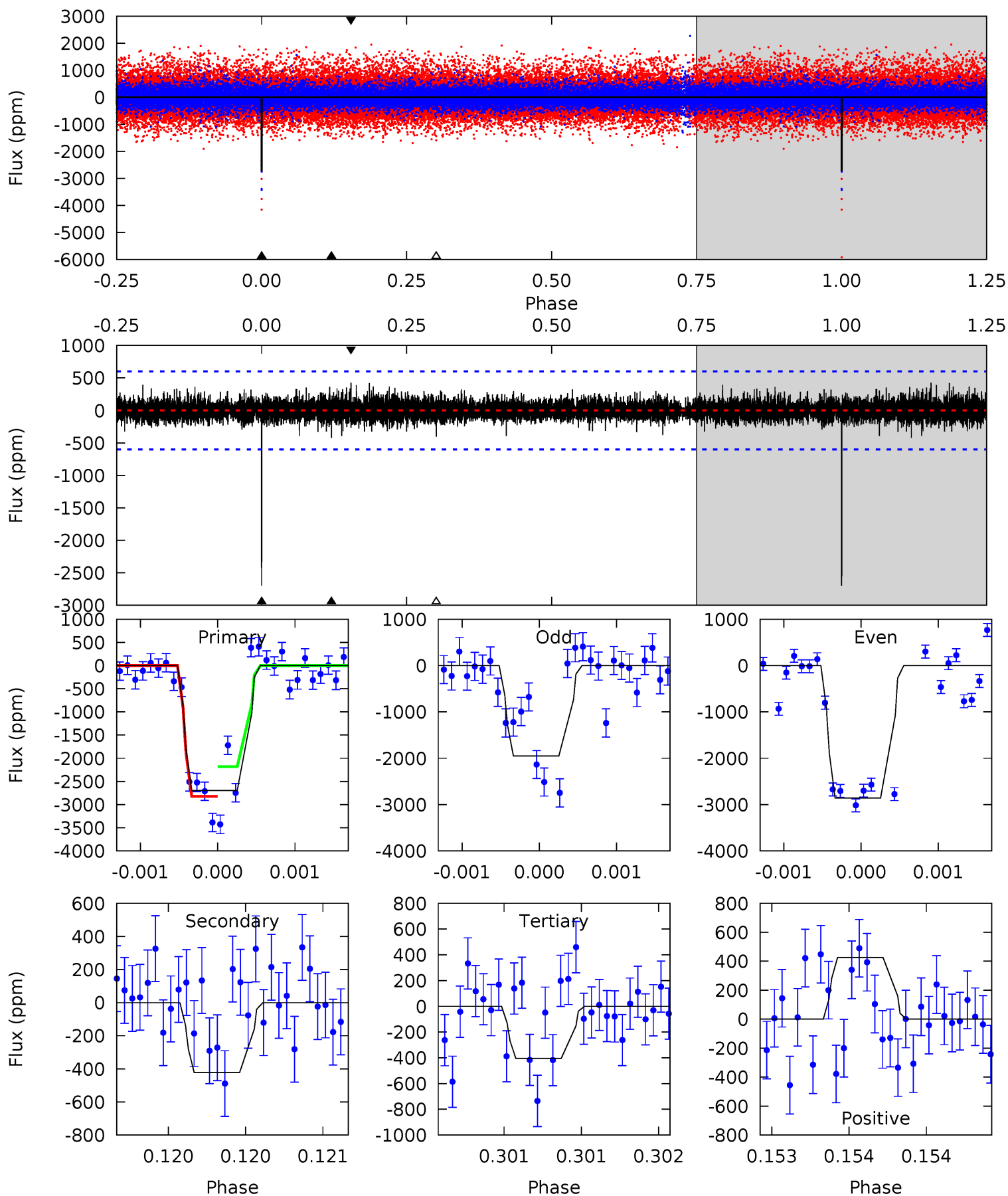
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.41	6.80	6.69	14.3	5.56	3.46	1.75	2.72	-4.86	0.11	-7.48	1.07	1.18	0.60	0.95



# Alt Model-Shift Uniqueness Test

007966841-01, P = 342.643182 Days, E = 136.771319 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
25.0	3.91	3.74	3.94	5.56	3.46	0.82	21.2	21.0	0.17	-0.04	4.38	0.85	0.14	3.08



### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-868 \pm 128$	$26.89^{+27.49}_{-19.28}$	$345^{+23}_{-15}$	$2678^{+1167}_{-434}$	$552^{+6058}_{-416}$
Alt.	$-422 \pm 108$	$25.87^{+25.77}_{-17.79}$	$346^{+22}_{-14}$	$2471^{+906}_{-388}$	$285^{+2695}_{-216}$

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

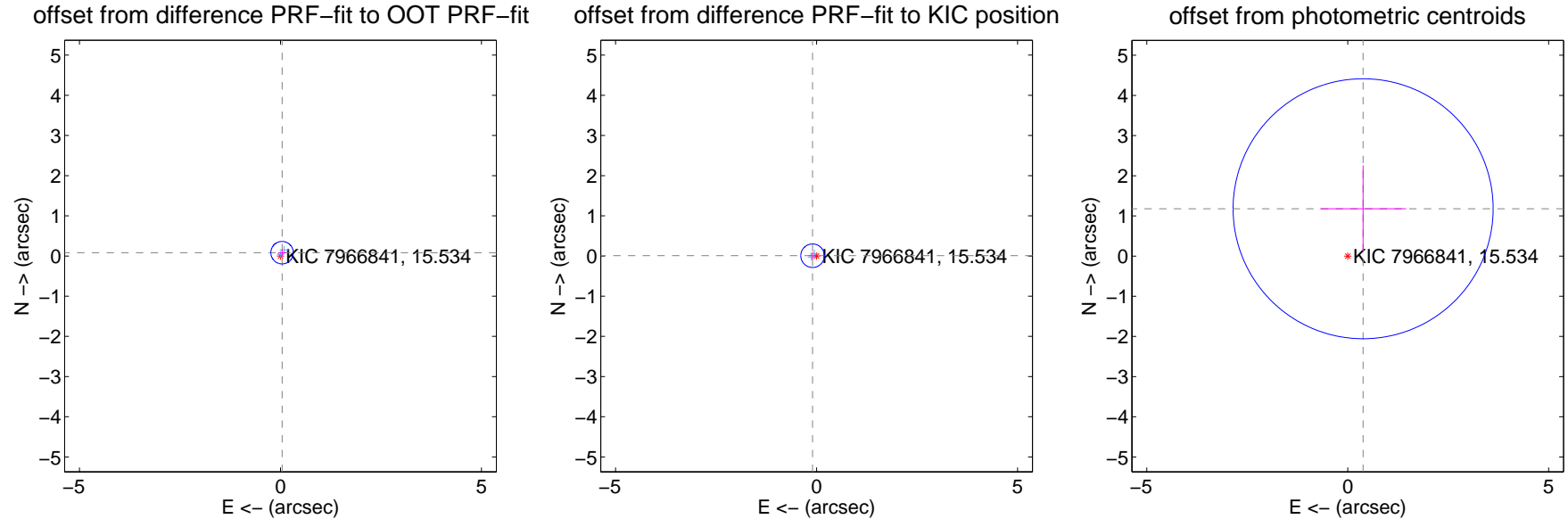
## DV Centroid Data

Supplemental centroid analysis for 007966841-01. Kepler magnitude: 15.53. Transit SNR 8.75

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.093 \pm 0.093$	0.99	$-0.041 \pm 0.098$	$0.083 \pm 0.092$
PRF-fit source offset from KIC position	$0.100 \pm 0.098$	1.03	$0.100 \pm 0.098$	$0.008 \pm 0.092$
photometric centroid source offset	$1.24 \pm 1.08$	1.15	$-0.38 \pm 1.07$	$1.18 \pm 1.08$



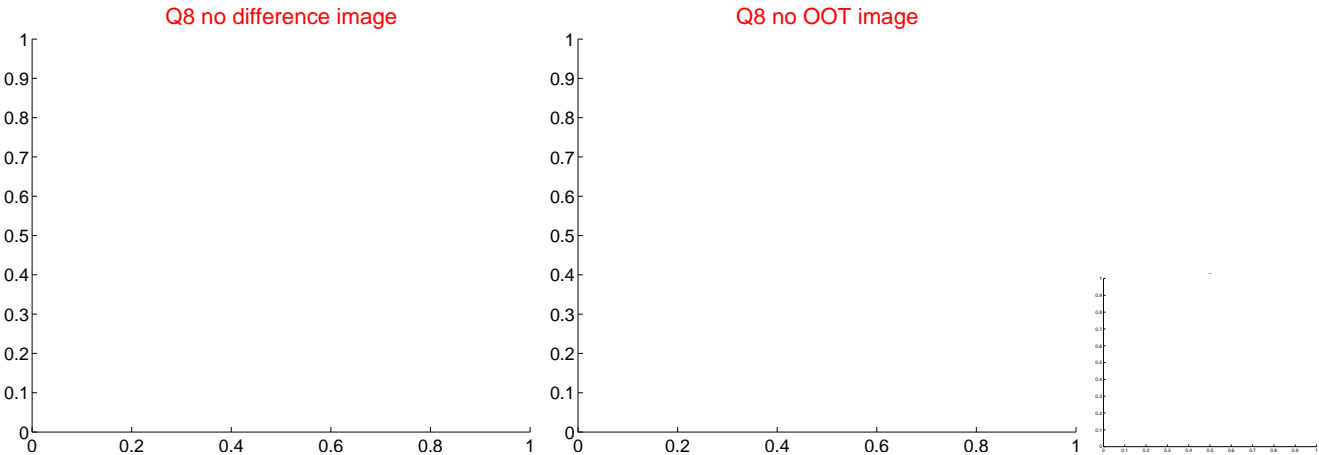
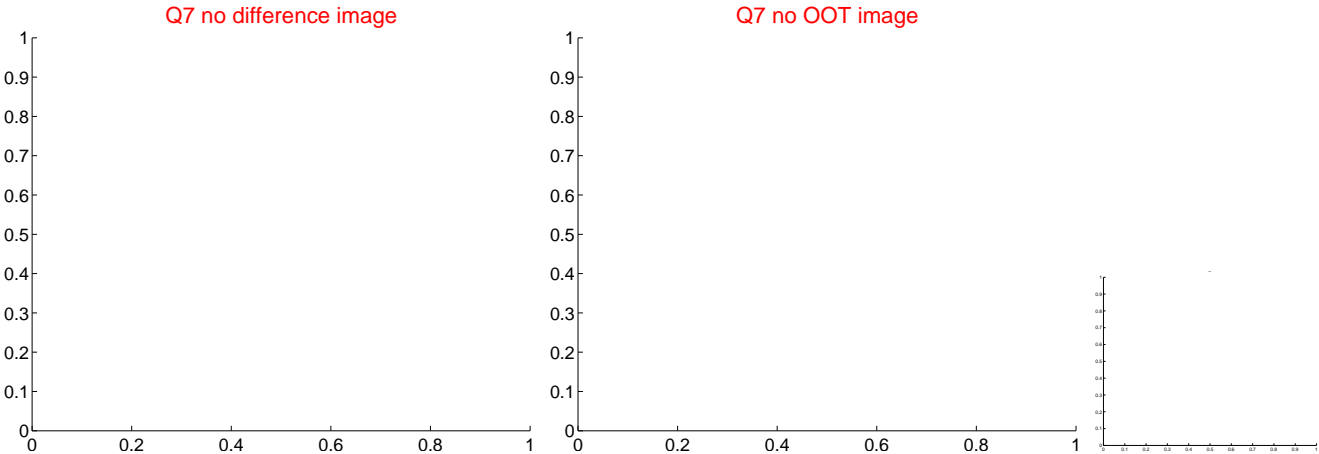
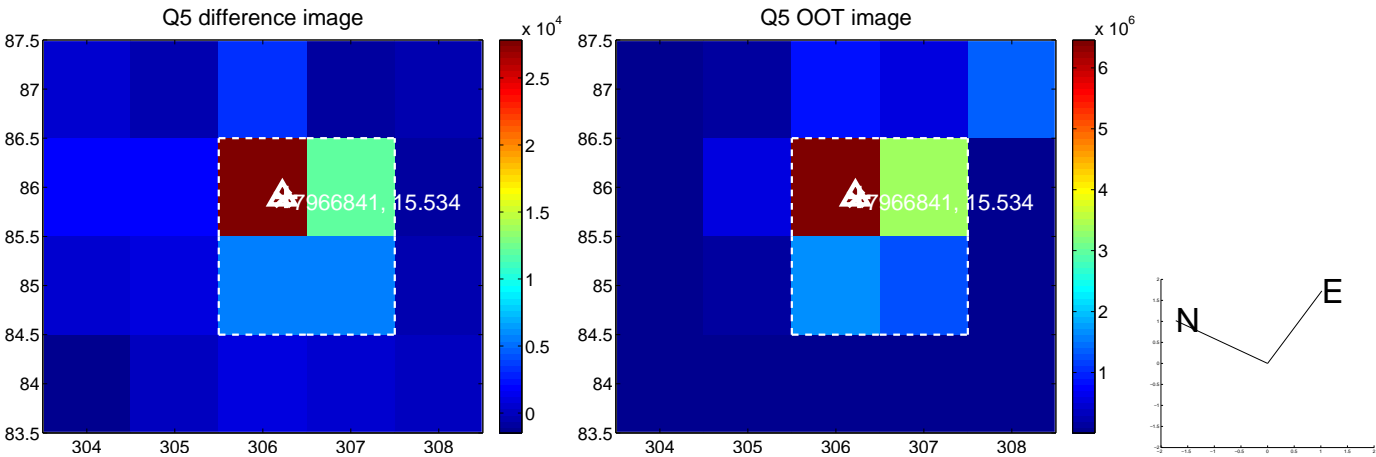
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



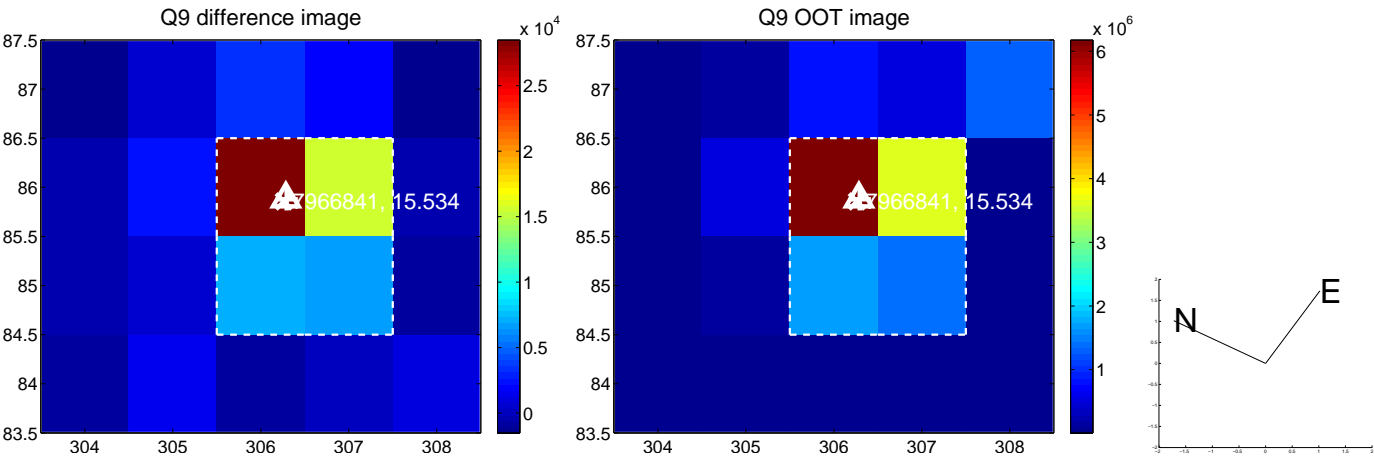
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



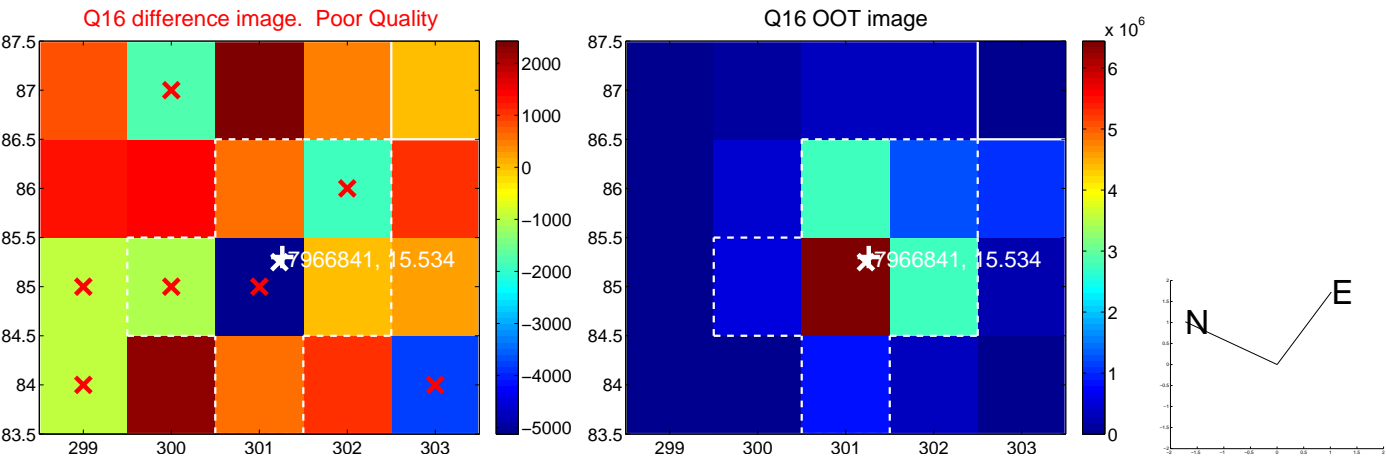
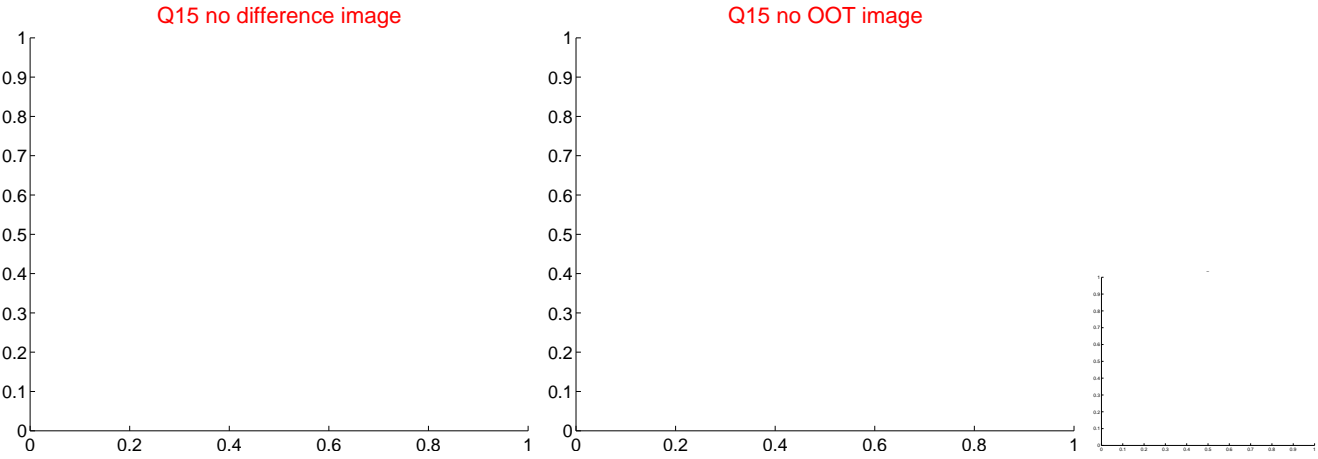
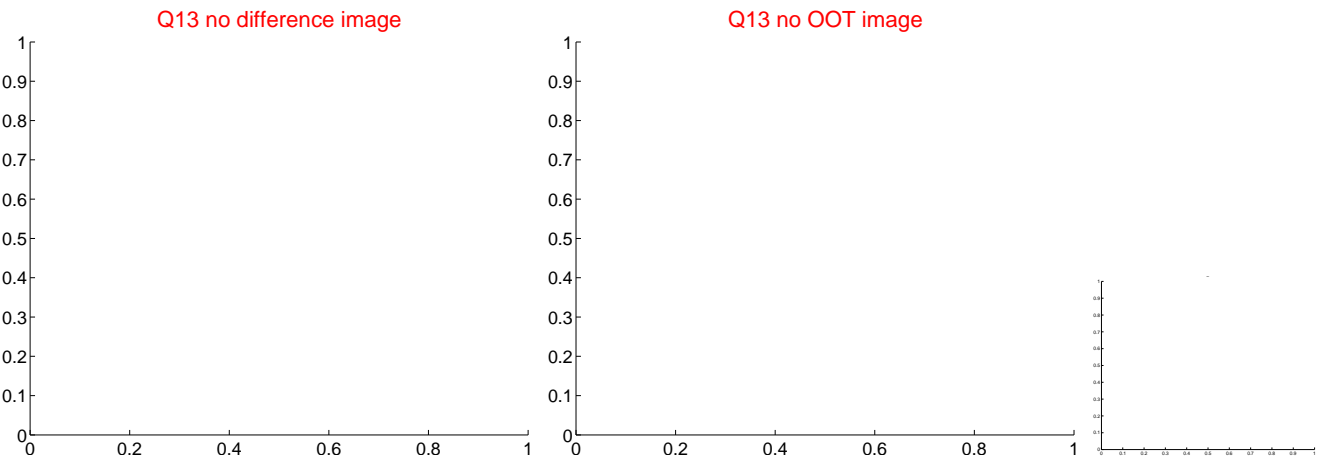
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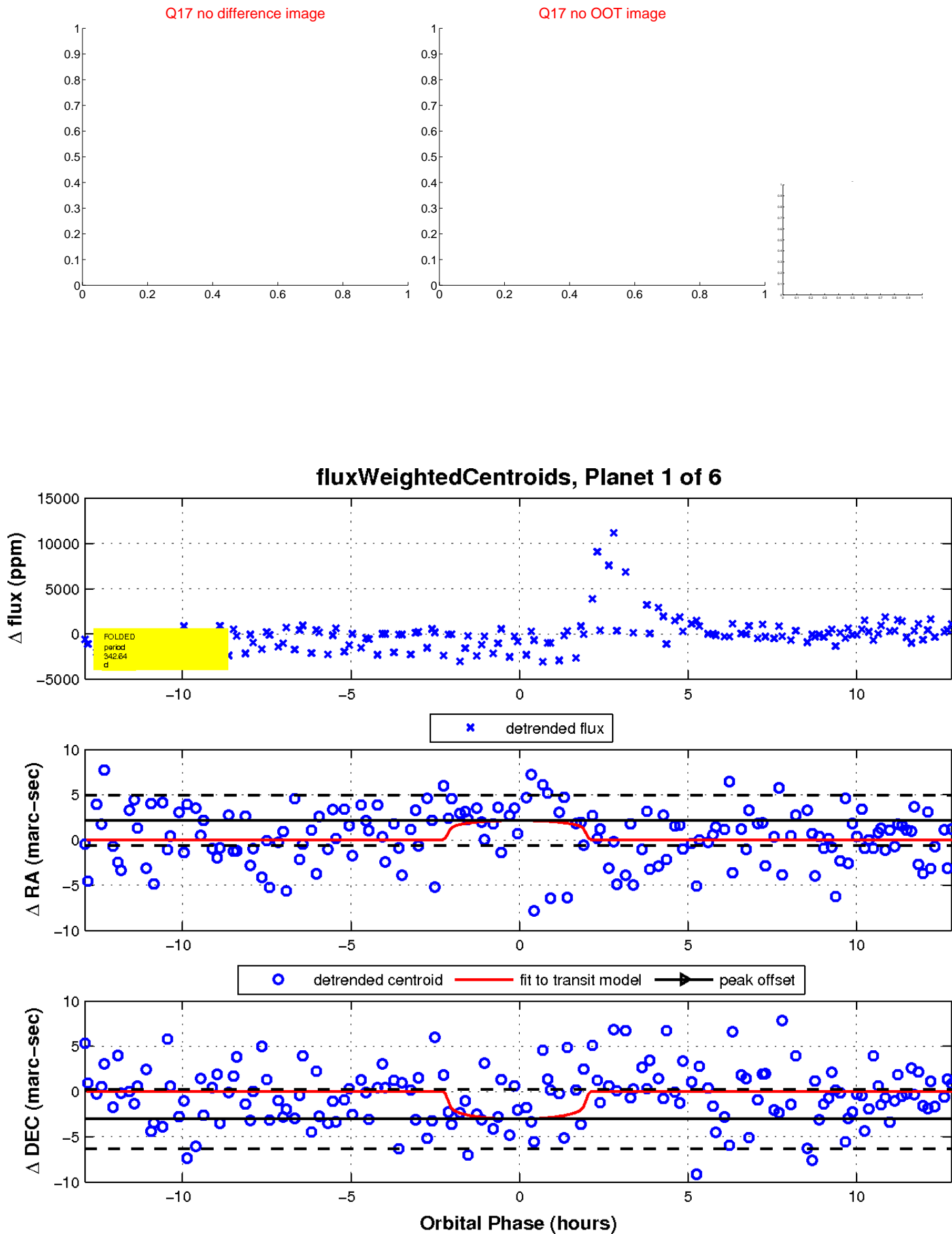
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



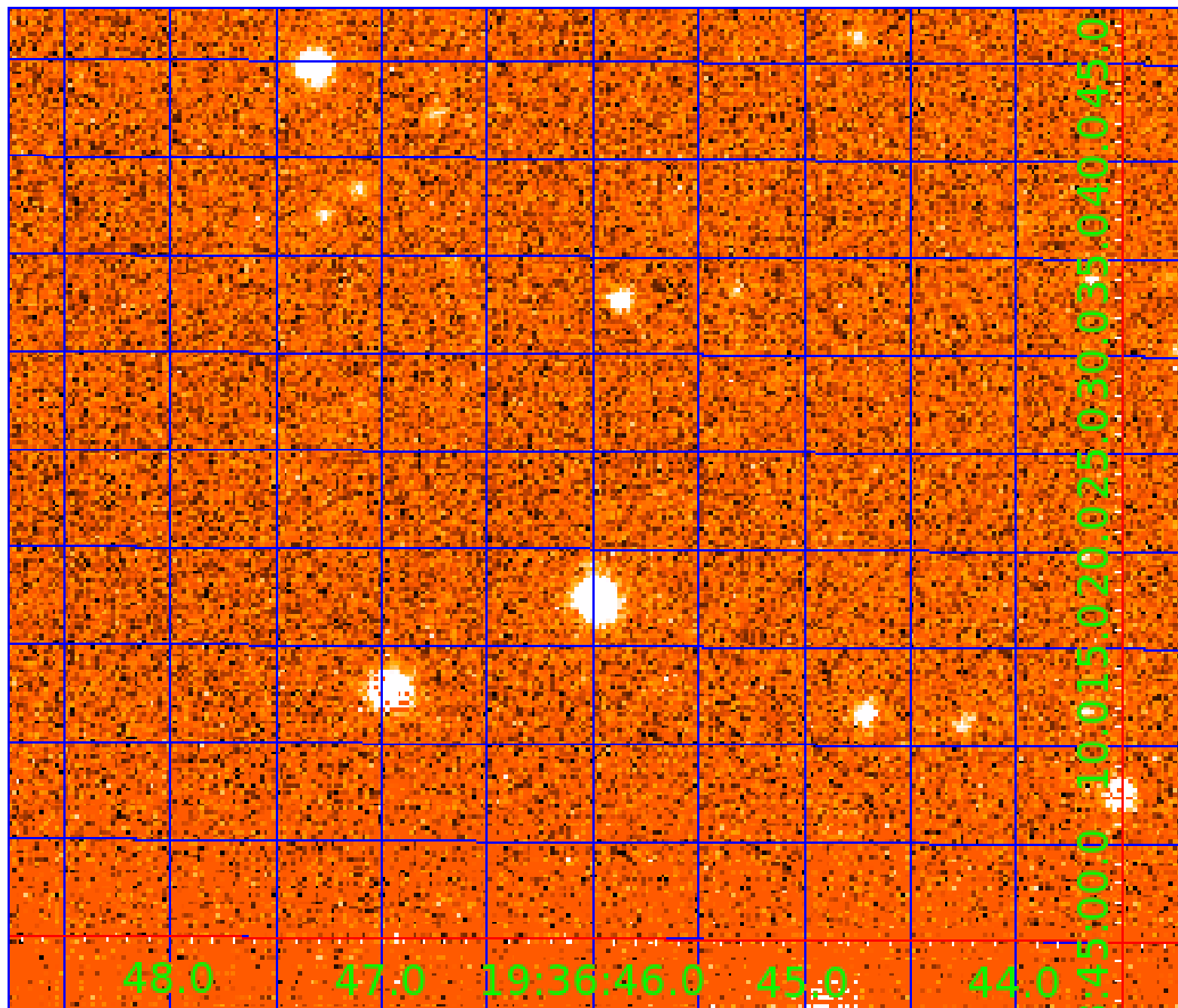
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

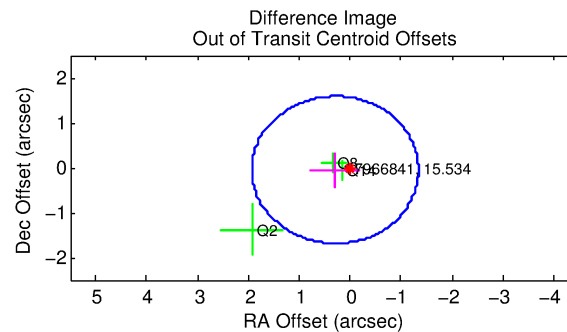
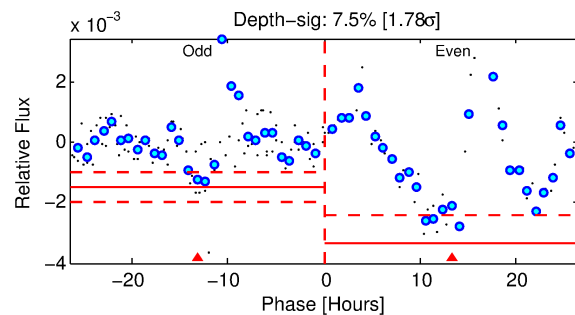
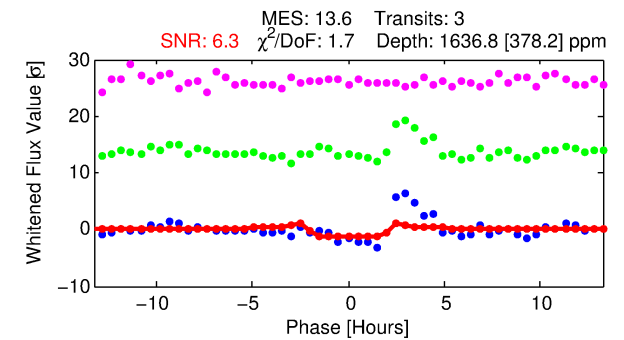
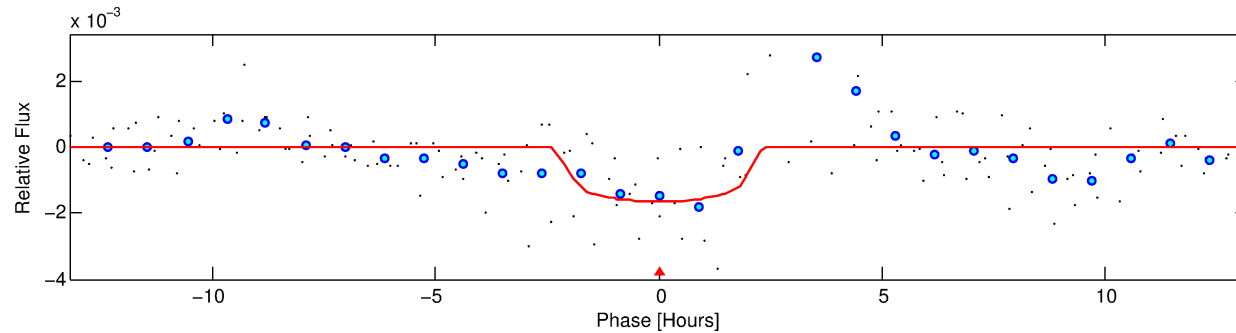
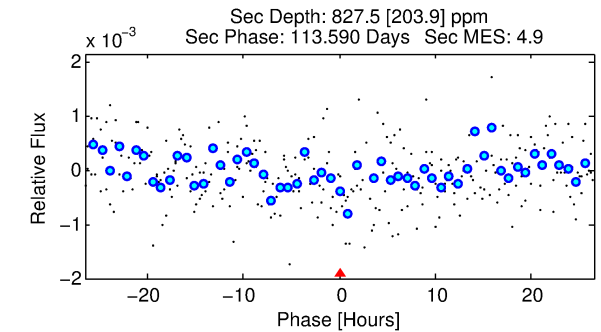
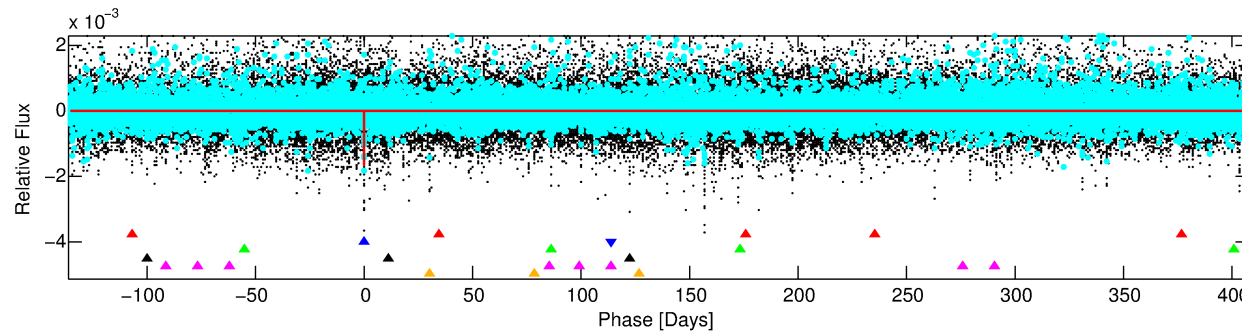
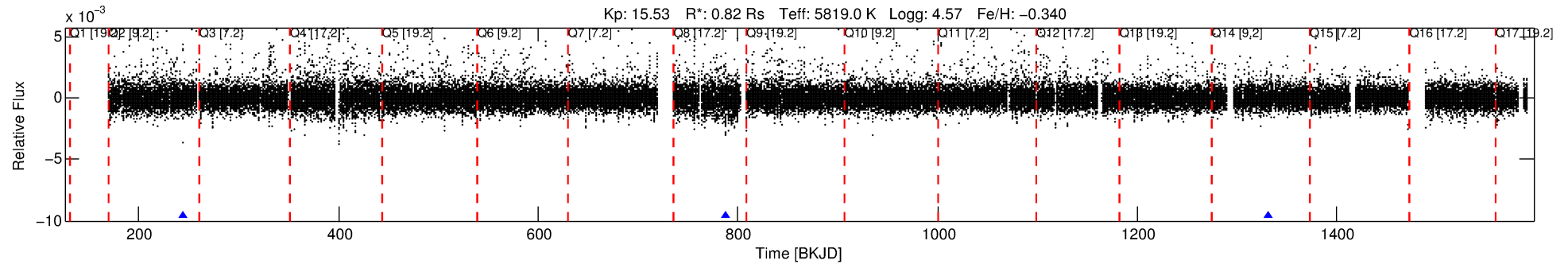
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## Ephemeris Match Information For 007966841-02

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 2 of 6 Period: 543.541 d



## DV Fit Results:

Period = 543.54141 [0.00641] d  
Epoch = 244.1913 [0.0108] BKJD  
Rp/R\* = 0.0382 [0.0540]  
a/R\* = 841.29 [5446.99]  
b = 0.53 [8.87]  
Seff = 0.44 [0.16]  
Teq = 207 [18] K  
Rp = 3.42 [4.92] Re  
a = 1.2591 [0.2910] AU  
Ag = 61774.92 [176477.89] [0.35 $\sigma$ ]  
Teffp = 5050 [3585] K [1.35 $\sigma$ ]

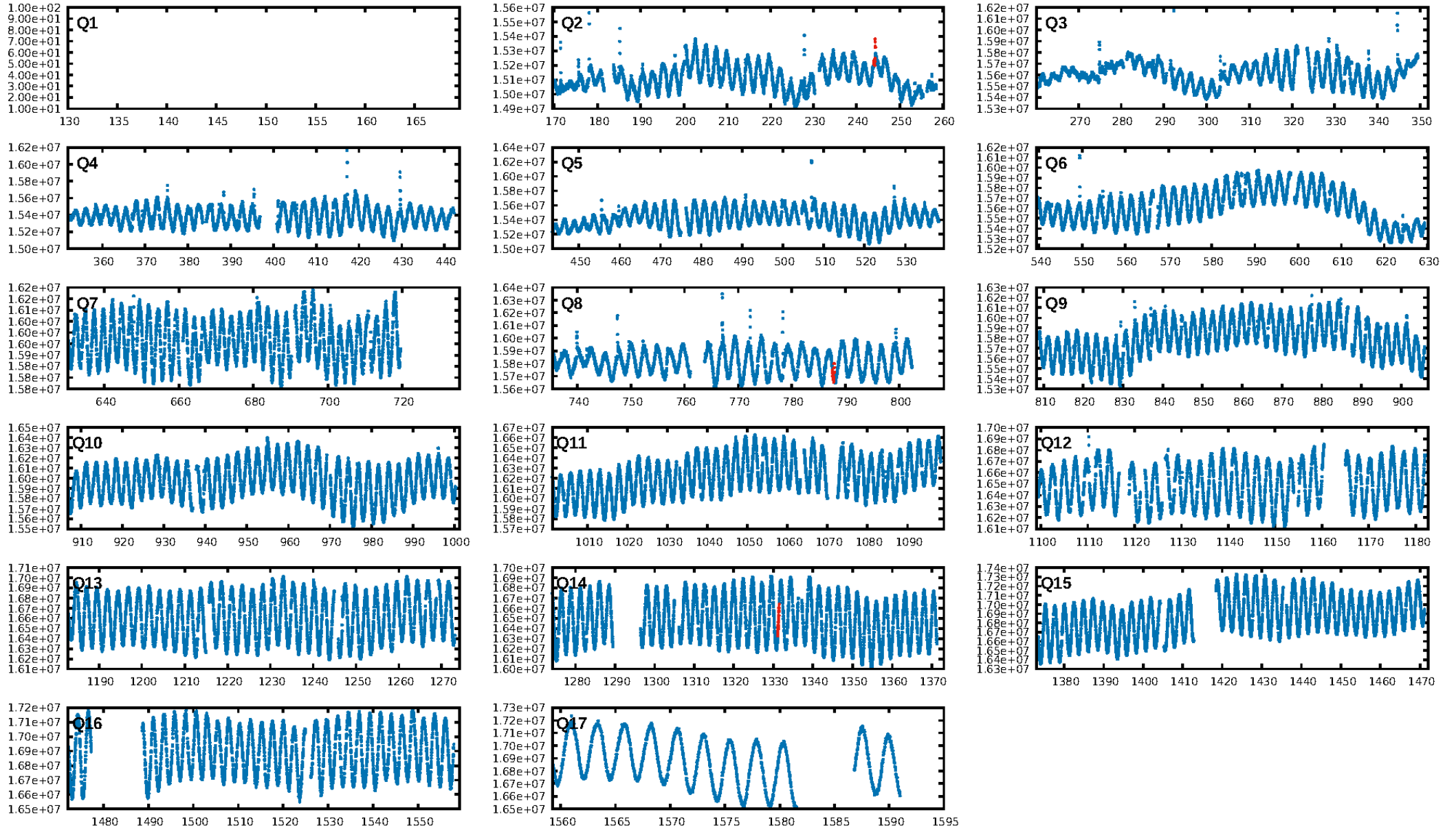
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [177.22 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 7.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.4236  
Centroid-sig: 73.3%  
Centroid-so: 0.101 arcsec [0.06 $\sigma$ ]  
OotOffset-rm: 0.298 arcsec [0.55 $\sigma$ ]  
OotOffset-st: 2/0/1/0 [3]  
KicOffset-rm: 0.432 arcsec [1.31 $\sigma$ ]  
KicOffset-st: 2/0/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

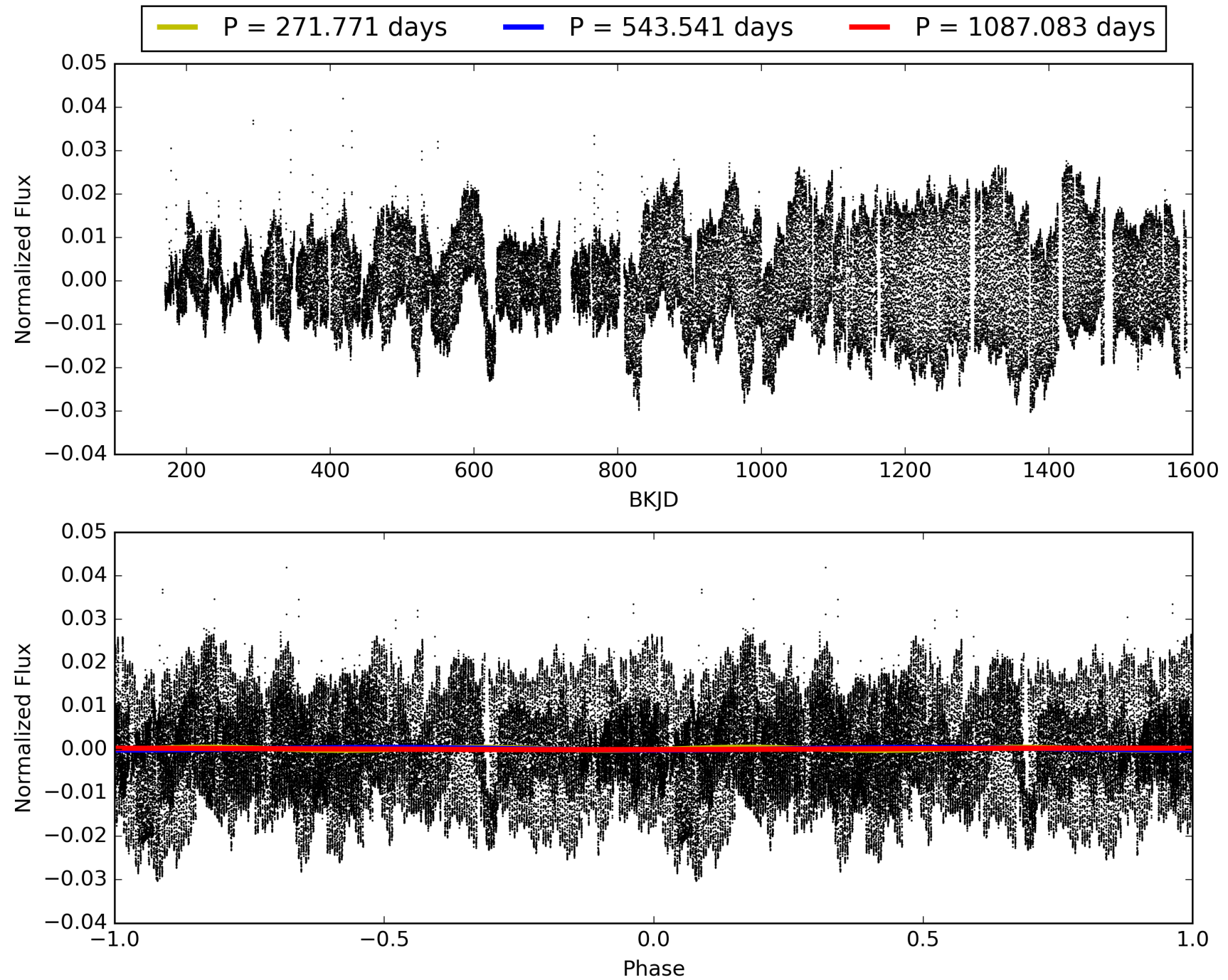
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007966841-02, PDC Light Curves



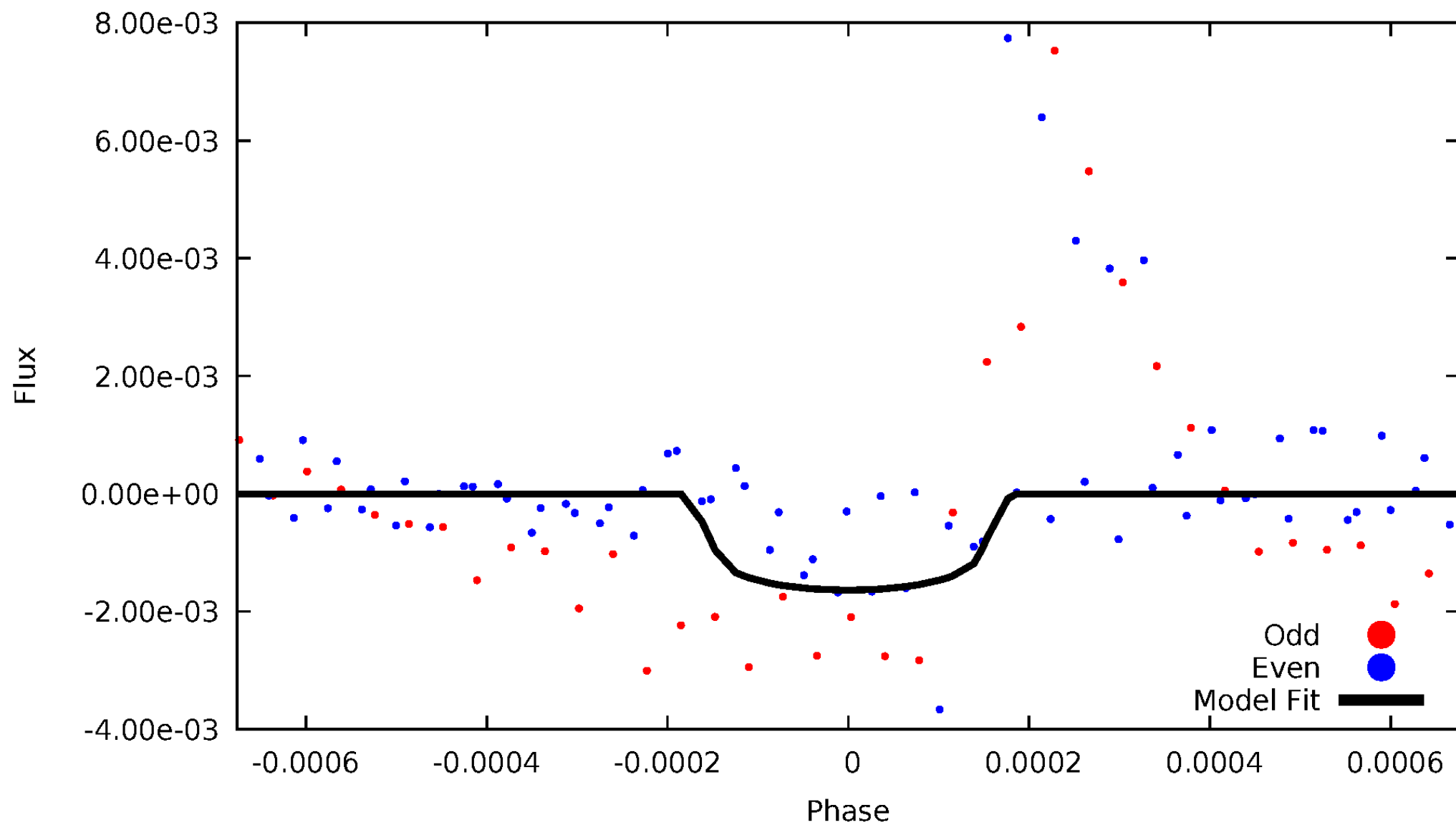
TCE 007966841-02





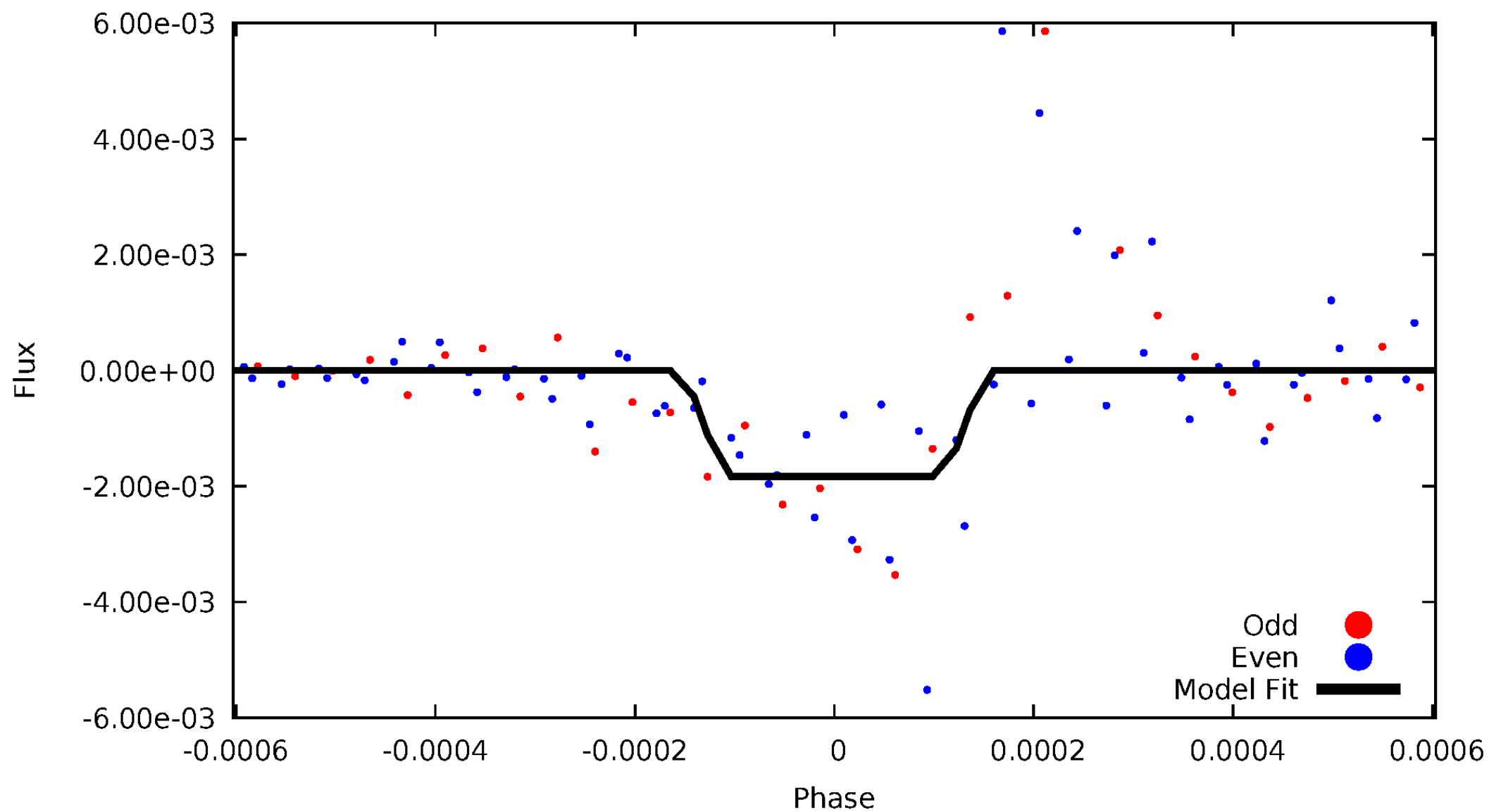
# DV Odd/Even

TCE 007966841-02



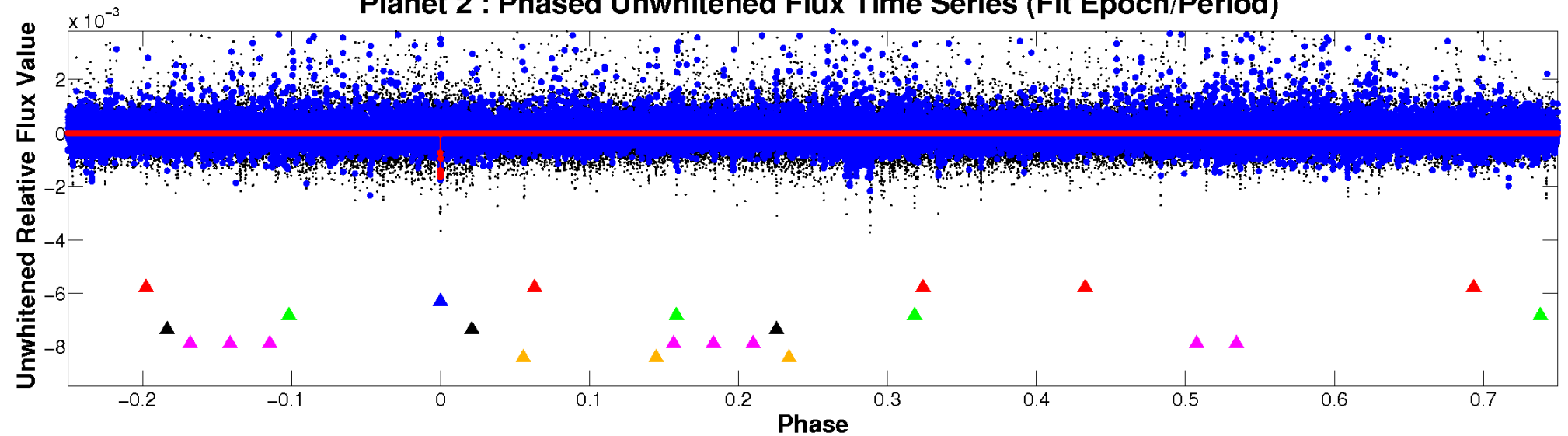
# ALT Odd/Even

TCE 007966841-02

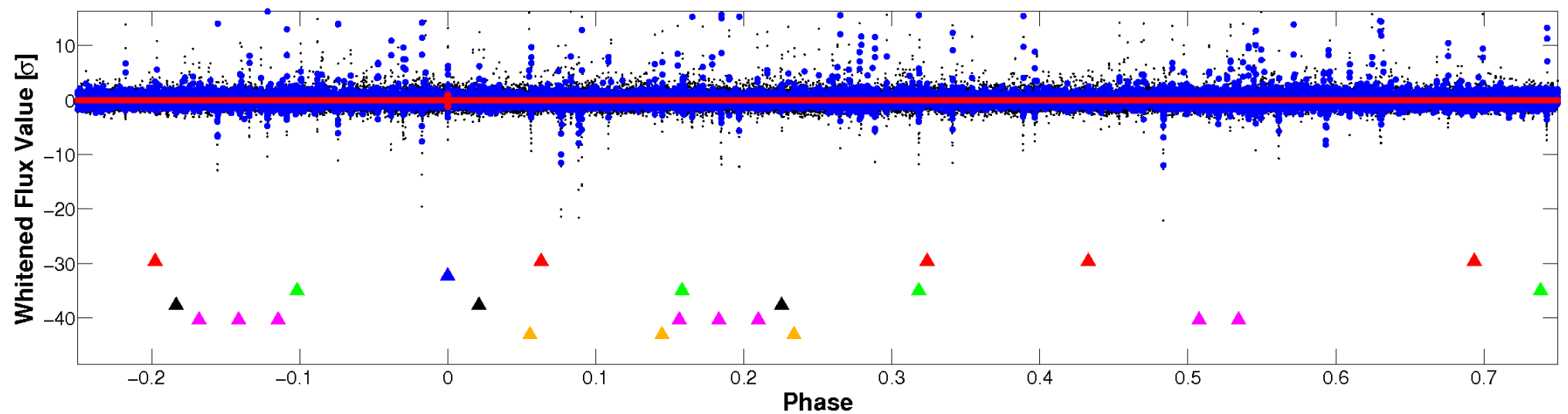


# Non-Whitened Vs. Whitened Light Curve

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

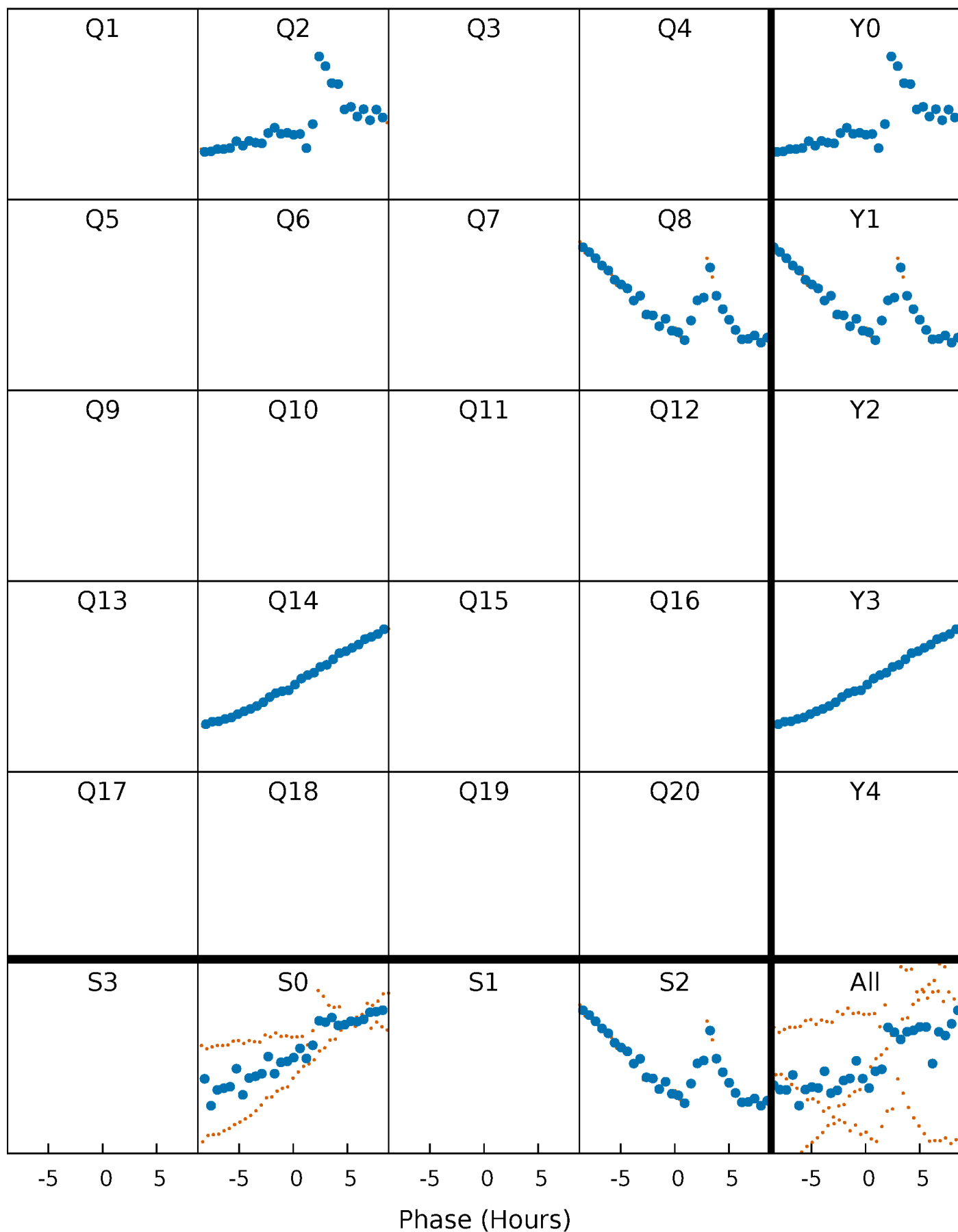


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



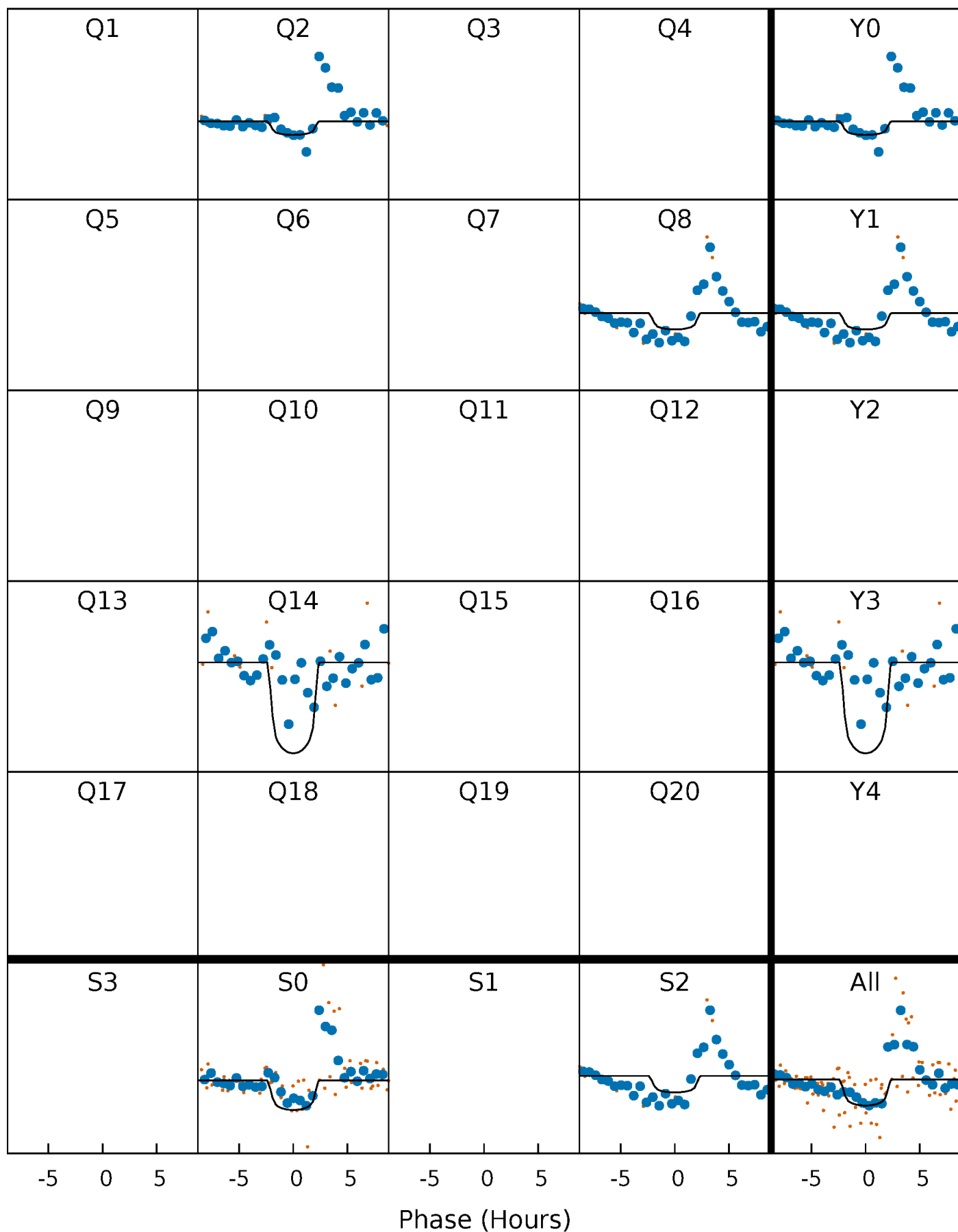
# PDC Quarter-Phased Transit Curves

TCE 007966841-02 P=543.541414 Days  $T_0=244.191299$  (BKJD)



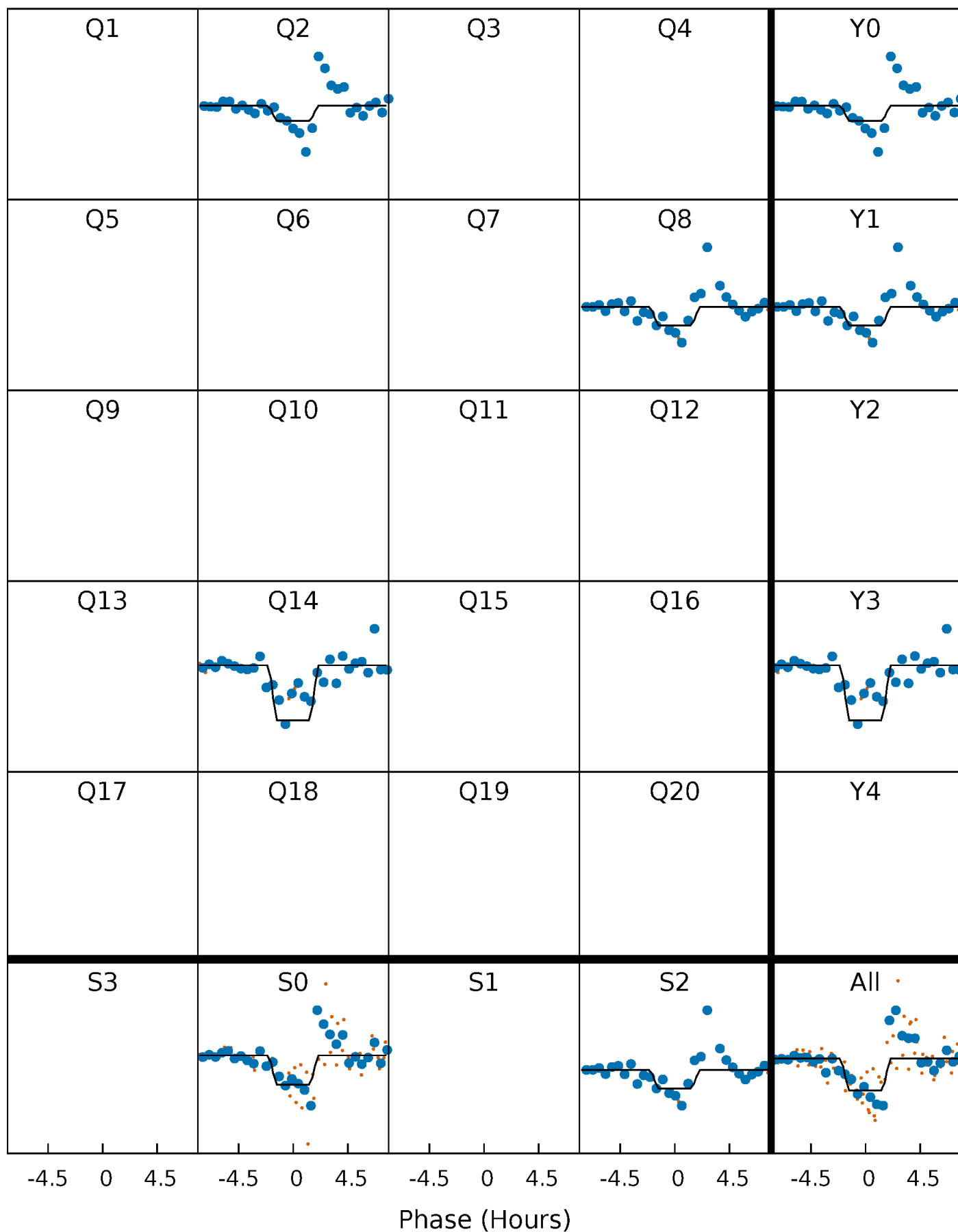
# DV Quarter-Phased Transit Curves

TCE 007966841-02     $P=543.541414$  Days     $T_0=244.191299$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

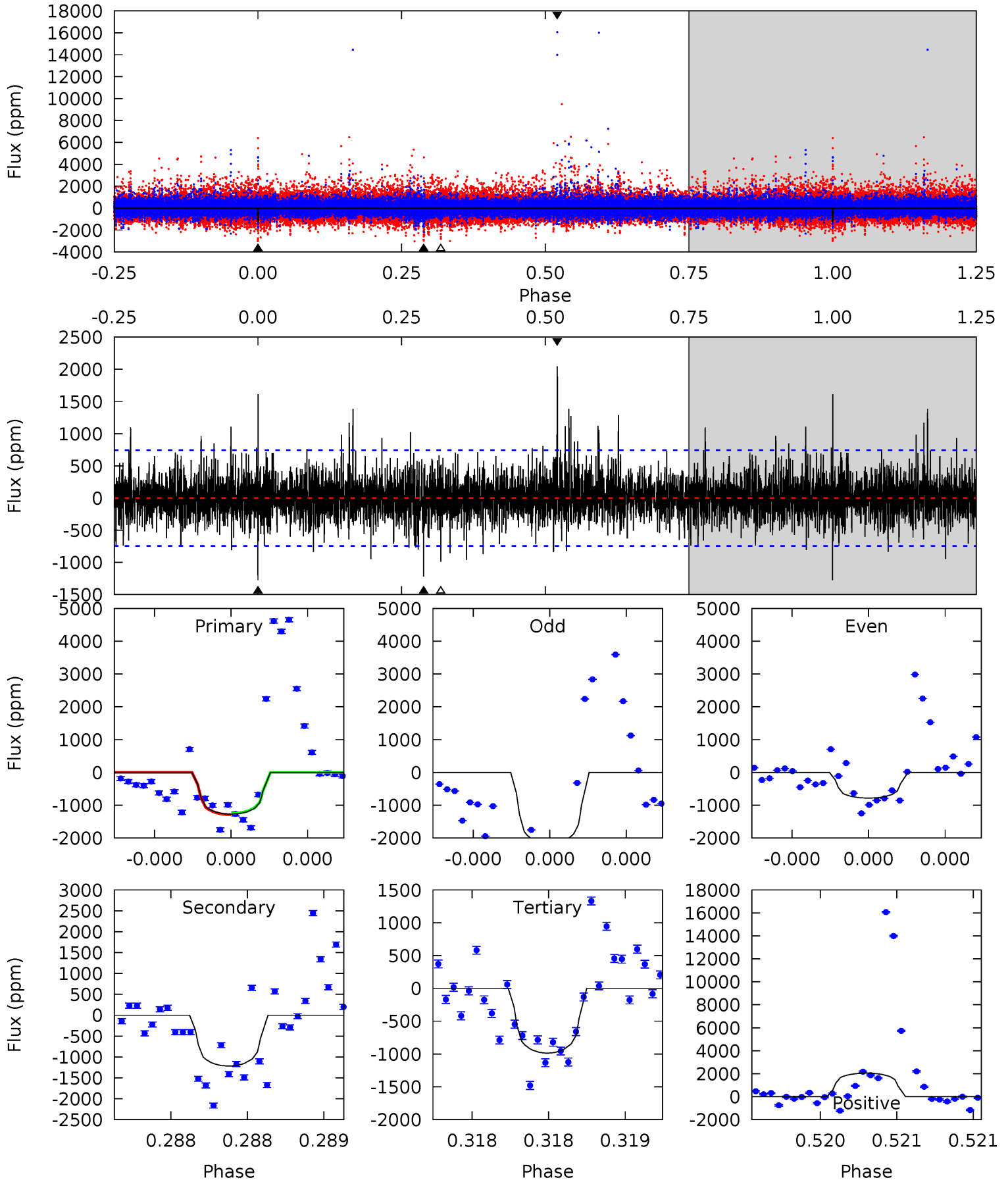
TCE 007966841-02 P=543.546318 Days  $T_0=244.195751$  (BKJD)



# DV Model-Shift Uniqueness Test

007966841-02, P = 543.541414 Days, E = 244.191299 Days

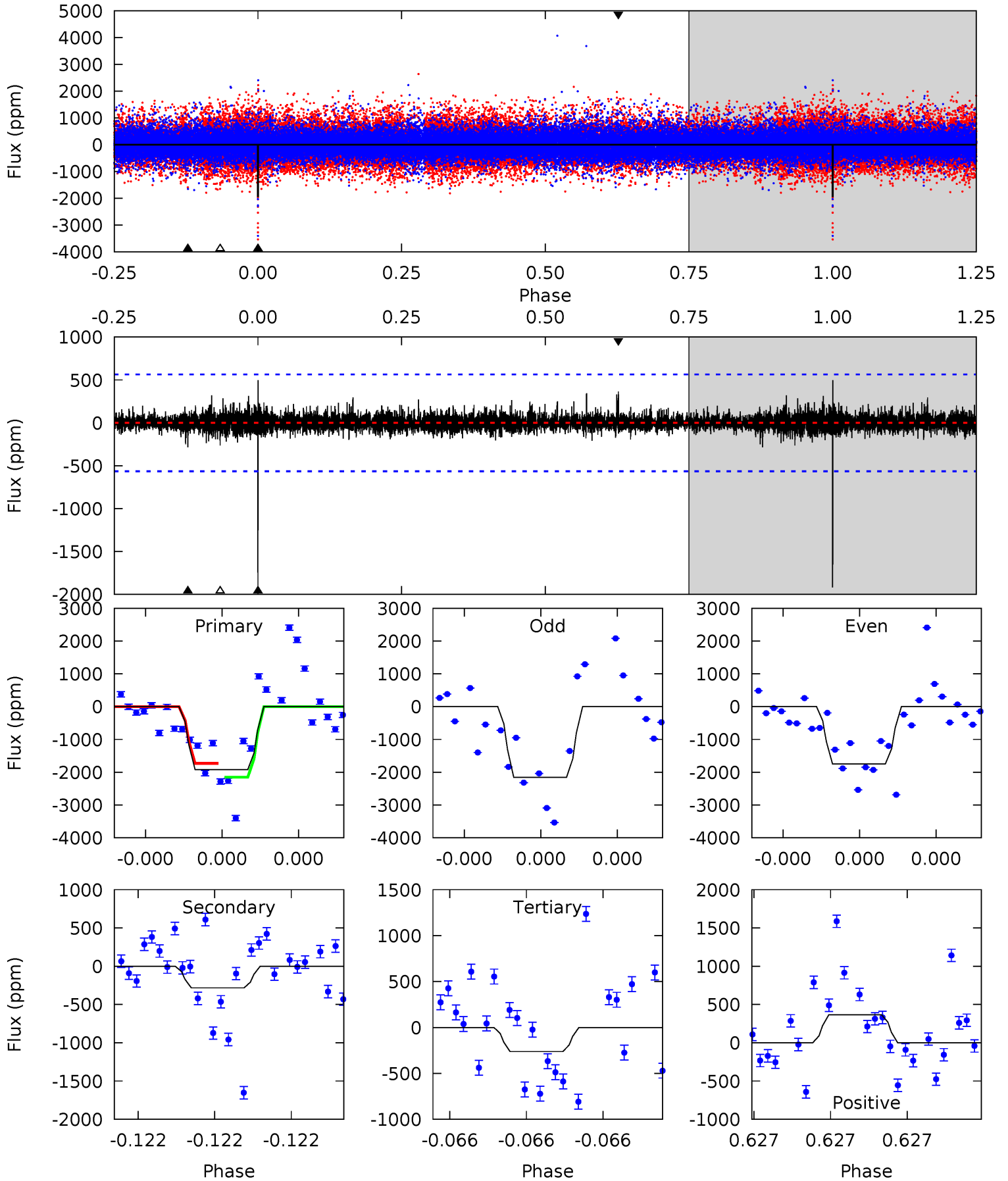
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.60	9.19	7.45	15.4	5.62	3.56	1.85	2.15	-5.83	1.74	-6.24	3.61	0.90	0.62	0.14



# Alt Model-Shift Uniqueness Test

007966841-02, P = 543.546318 Days, E = 244.195751 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	2.84	2.63	3.68	5.67	3.62	0.57	16.6	15.6	0.21	-0.84	2.09	0.97	0.21	2.12





### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1217 \pm 132$	$5.00^{+4.57}_{-3.30}$	$296^{+18}_{-13}$	$4833^{+3387}_{-1014}$	$41567^{+312831}_{-30410}$
Alt.	$-283 \pm 100$	$5.85^{+4.91}_{-3.76}$	$296^{+20}_{-13}$	$3468^{+1627}_{-589}$	$6898^{+48628}_{-5054}$

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

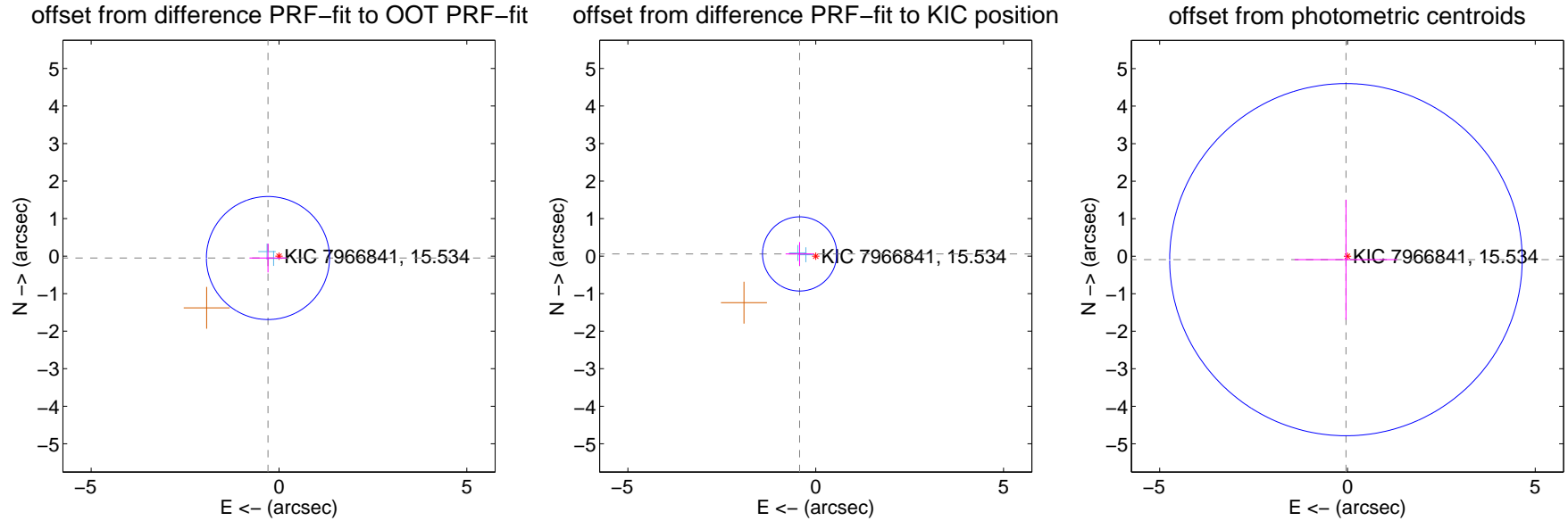
## DV Centroid Data

Supplemental centroid analysis for 007966841-02. Kepler magnitude: 15.53. Transit SNR 6.33

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.298 \pm 0.546$	0.55	$0.294 \pm 0.490$	$-0.050 \pm 0.383$
PRF-fit source offset from KIC position	$0.432 \pm 0.329$	1.31	$0.428 \pm 0.373$	$0.059 \pm 0.314$
photometric centroid source offset	$0.10 \pm 1.56$	0.06	$0.04 \pm 1.37$	$-0.09 \pm 1.60$



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.

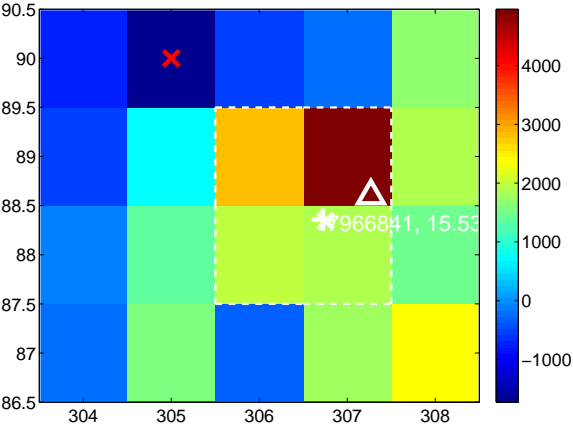
Q1 no difference image



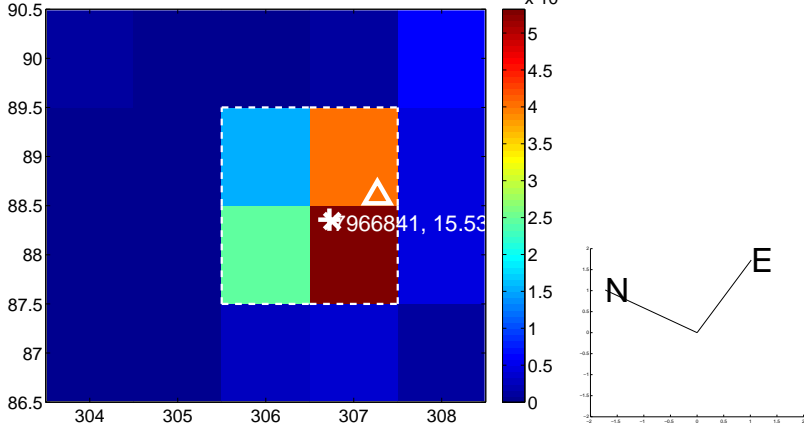
Q1 no OOT image



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.

Q5 no difference image



Q5 no OOT image



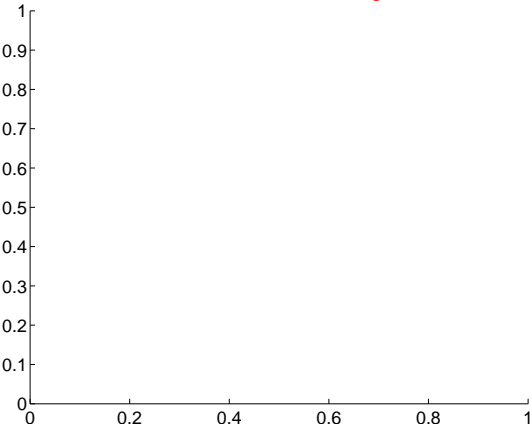
Q6 no difference image



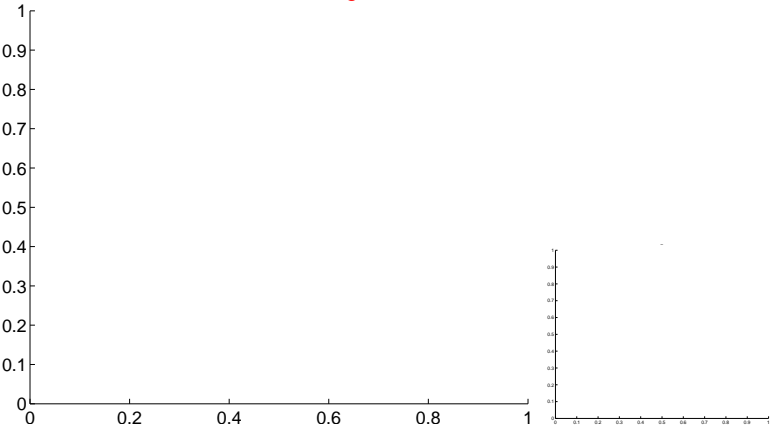
Q6 no OOT image



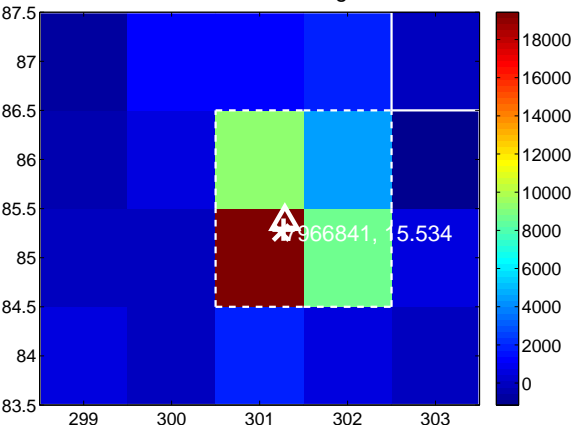
Q7 no difference image



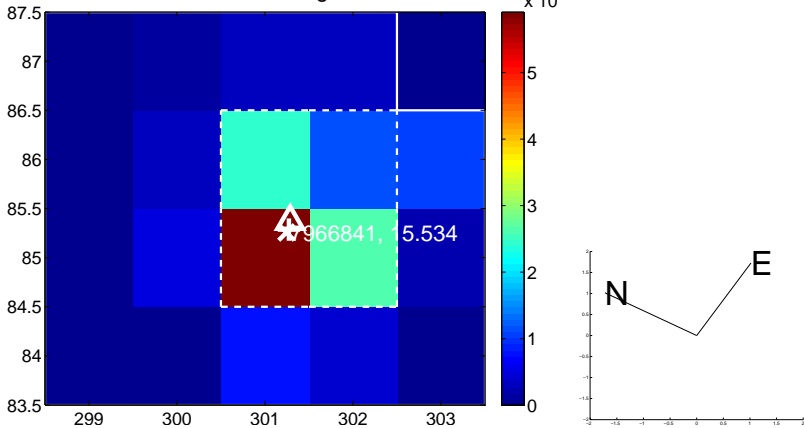
Q7 no OOT image



Q8 difference image



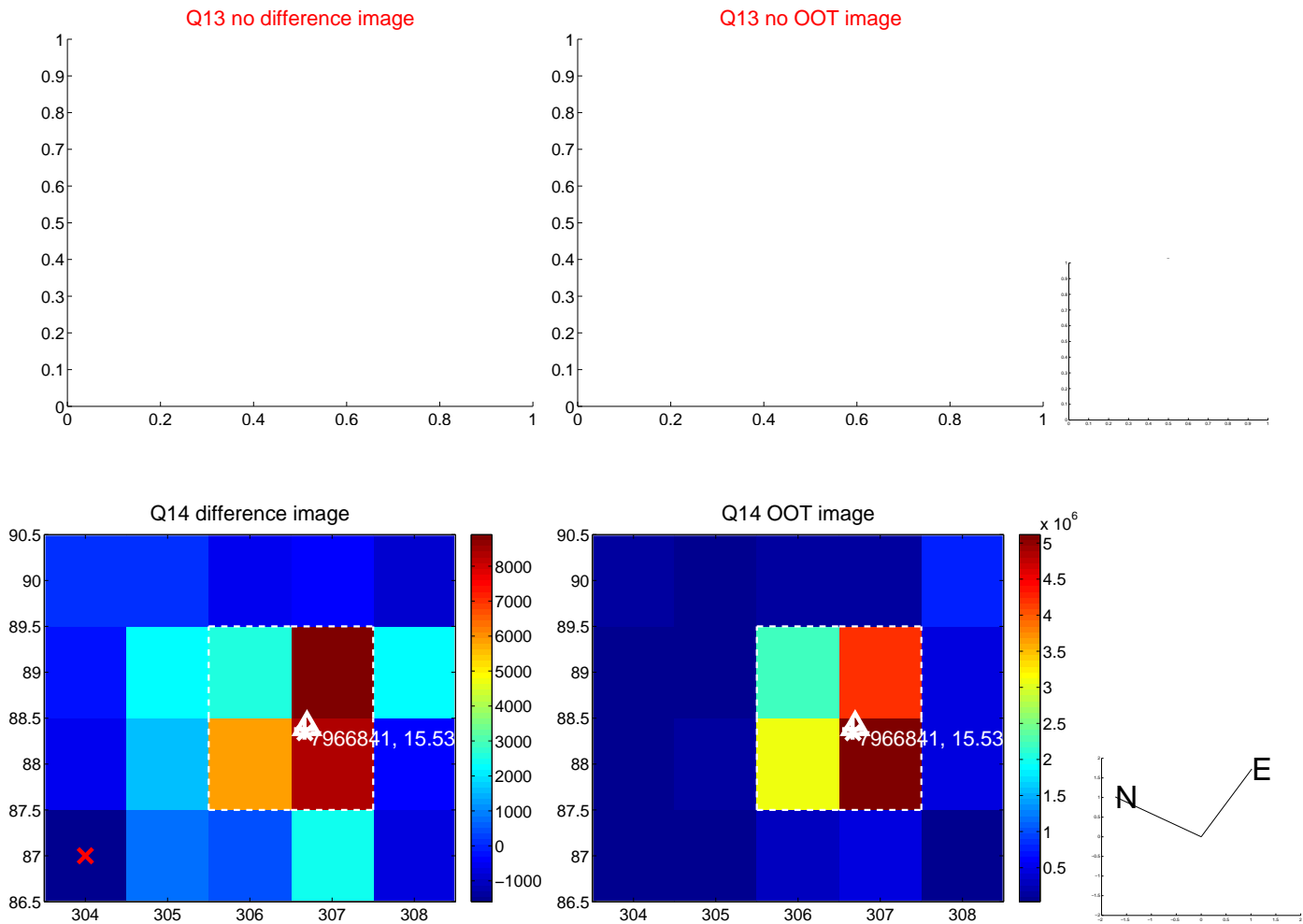
Q8 OOT image



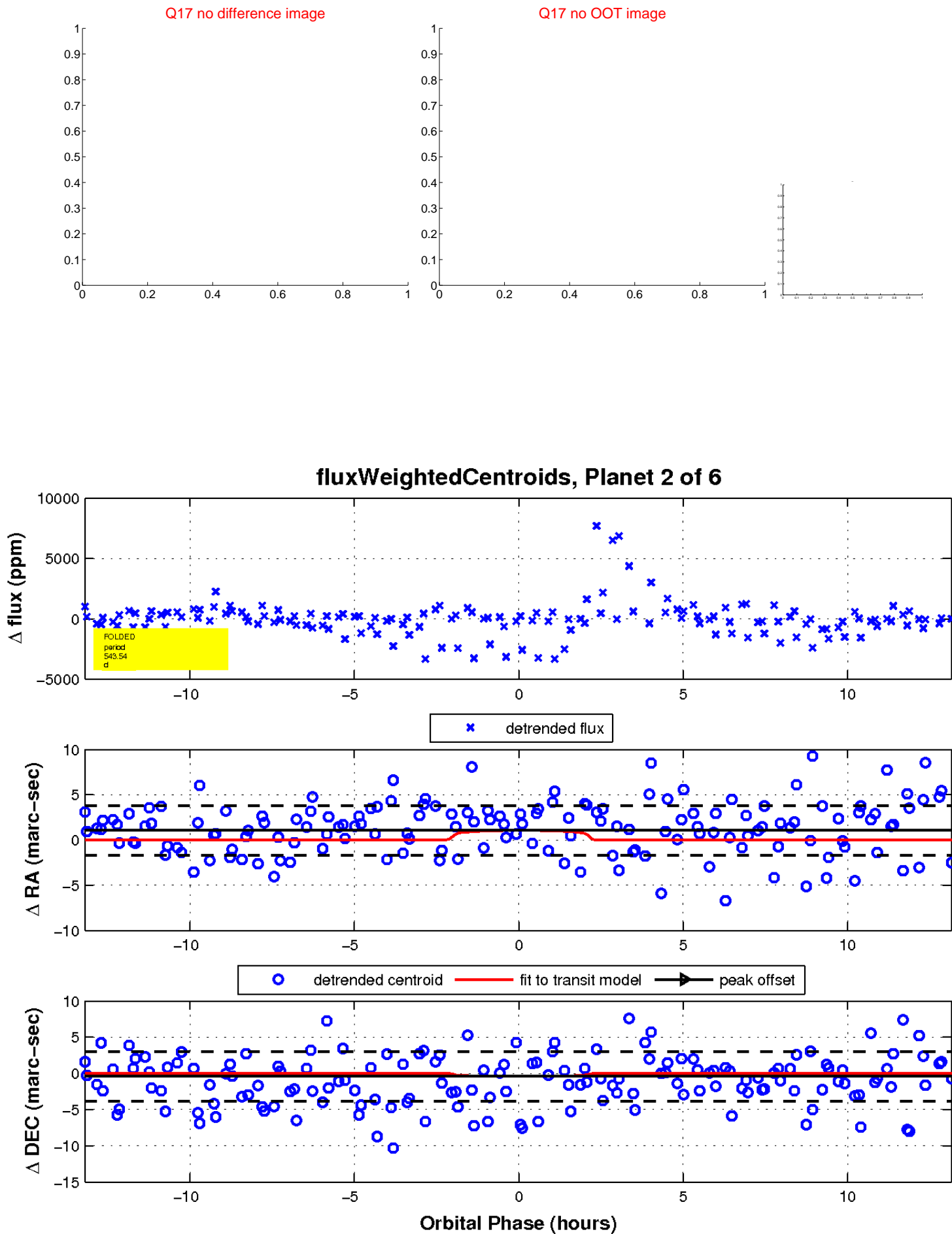
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

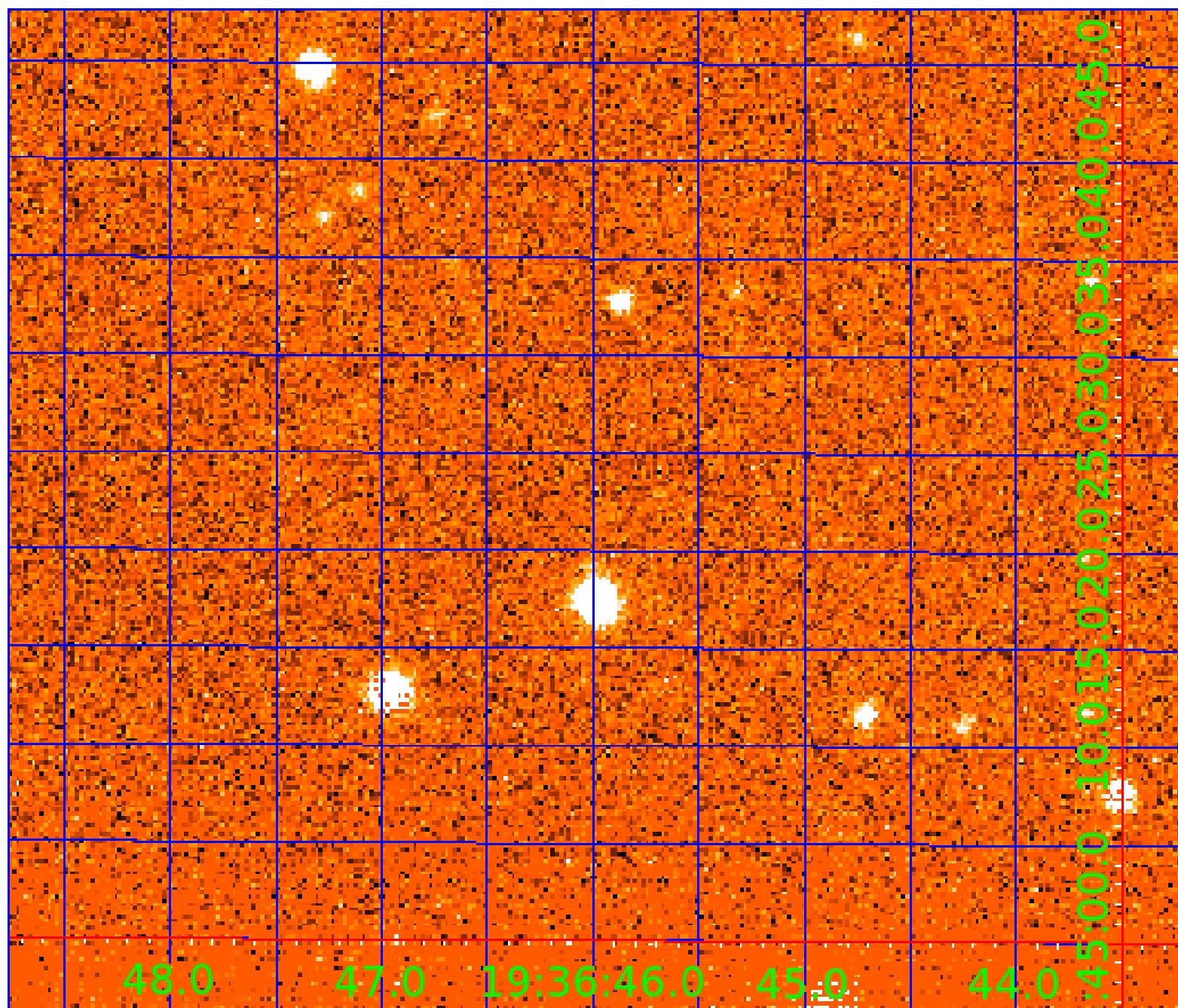


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
007966841-03	OBS	No	315.248349	330.237593	1797.5	13.566	12.8	8.0	0.82	5819	4.19	0.90
007966841-04	OBS	No	432.373917	366.819488	1443.3	7.365	13.4	5.1	0.82	5819	3.29	0.59
007966841-05	OBS	No	176.341019	181.932535	1719.2	3.559	11.2	7.6	0.82	5819	3.51	1.95
007966841-06	OBS	No	495.076667	371.337077	1667.5	4.863	12.3	7.2	0.82	5819	3.42	0.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007966841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

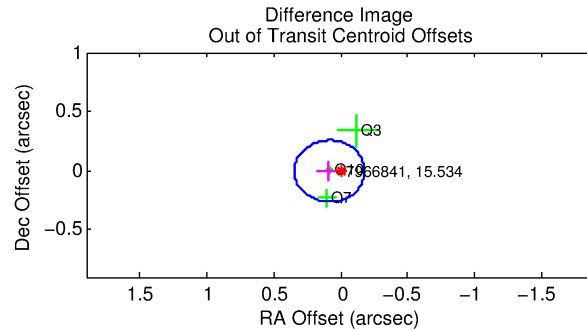
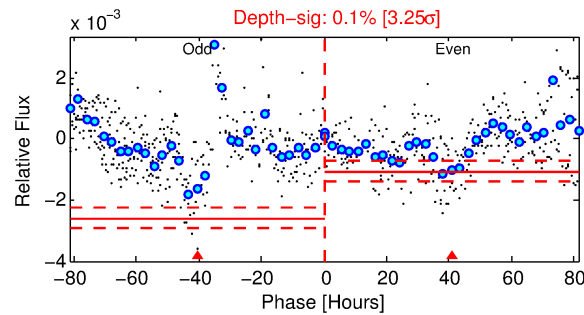
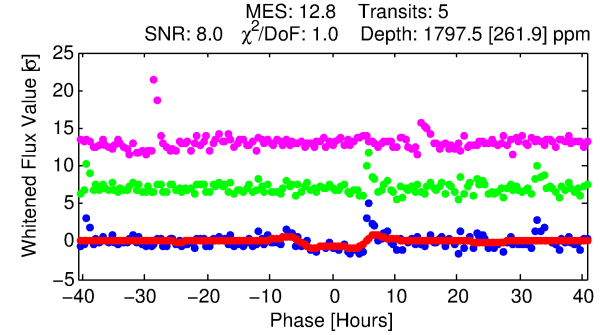
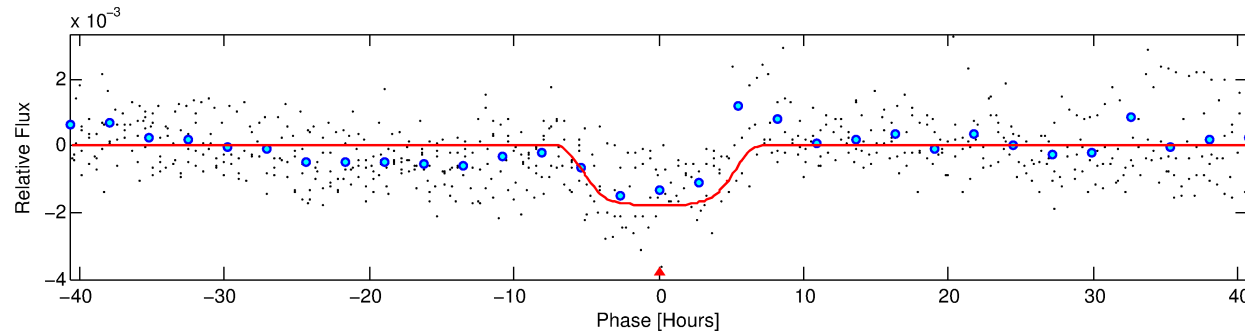
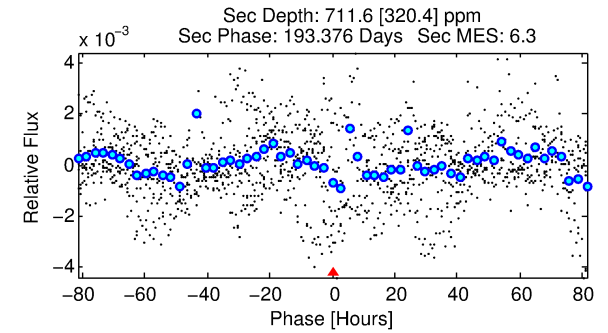
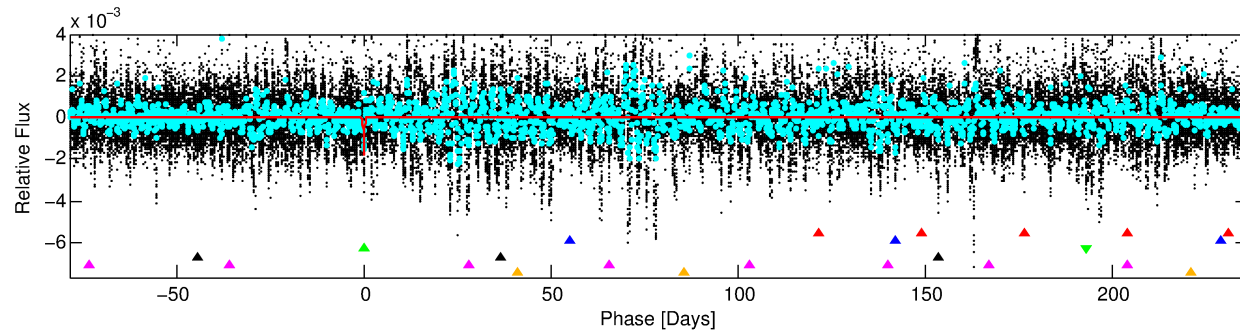
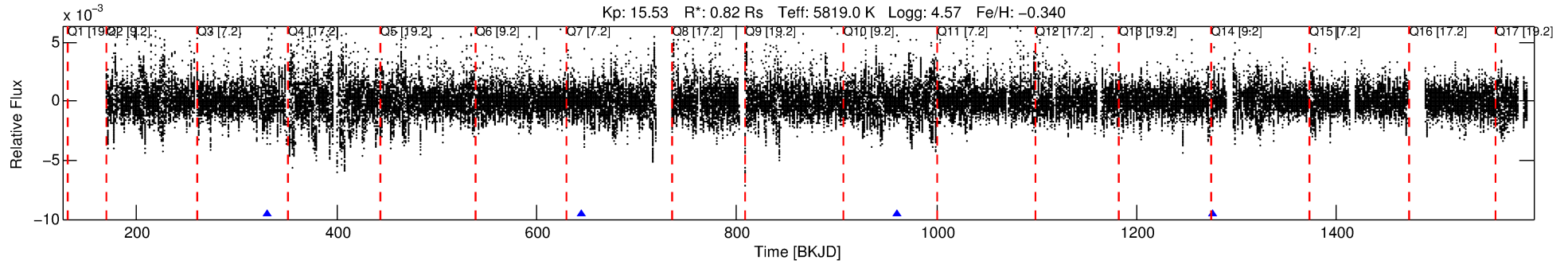
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007966841-03

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 3 of 6 Period: 315.248 d



## DV Fit Results:

Period = 315.24835 [0.00804] d  
Epoch = 330.2376 [0.0176] BKJD  
Rp/R\* = 0.0468 [0.0039]  
a/R\* = 89.87 [11.93]  
b = 0.92 [0.02]  
Seff = 0.90 [0.32]  
Teq = 248 [22] K  
Rp = 4.19 [1.20] Re  
a = 0.8757 [0.2024] AU  
Ag = 17131.10 [10049.16] [1.70 $\sigma$ ]  
Teffp = 4394 [544] K [7.62 $\sigma$ ]

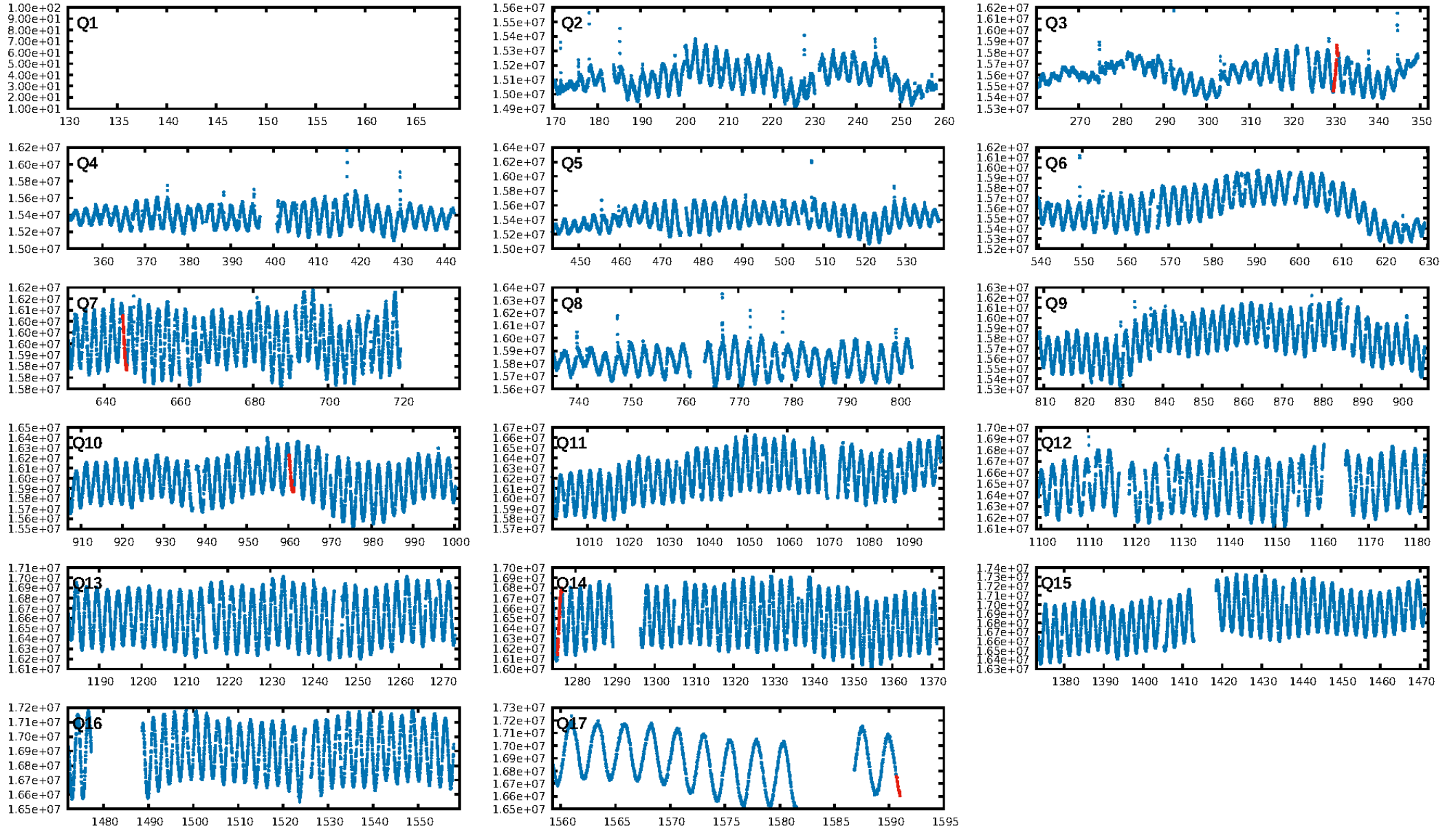
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [237.70 $\sigma$ ]  
LongPeriod-sig: 100.0% [46.19 $\sigma$ ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.122  
Centroid-sig: 28.9%  
Centroid-so: 0.252 arcsec [0.26 $\sigma$ ]  
OotOffset-rm: 0.084 arcsec [0.96 $\sigma$ ]  
OotOffset-st: 1/2/0/0 [3]  
KicOffset-rm: 0.207 arcsec [2.38 $\sigma$ ]  
KicOffset-st: 1/2/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

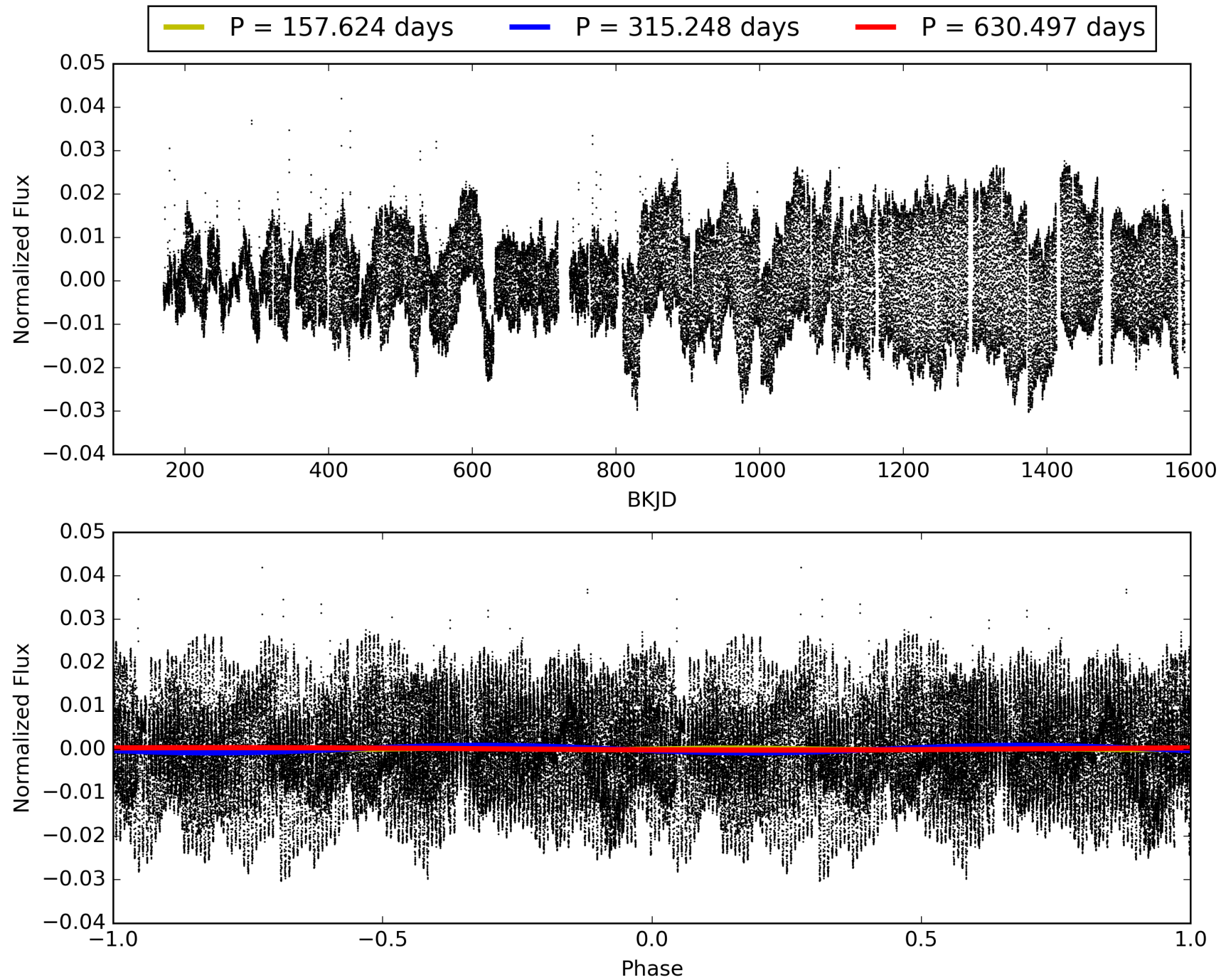
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:14 Z

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

# TCE 007966841-03, PDC Light Curves

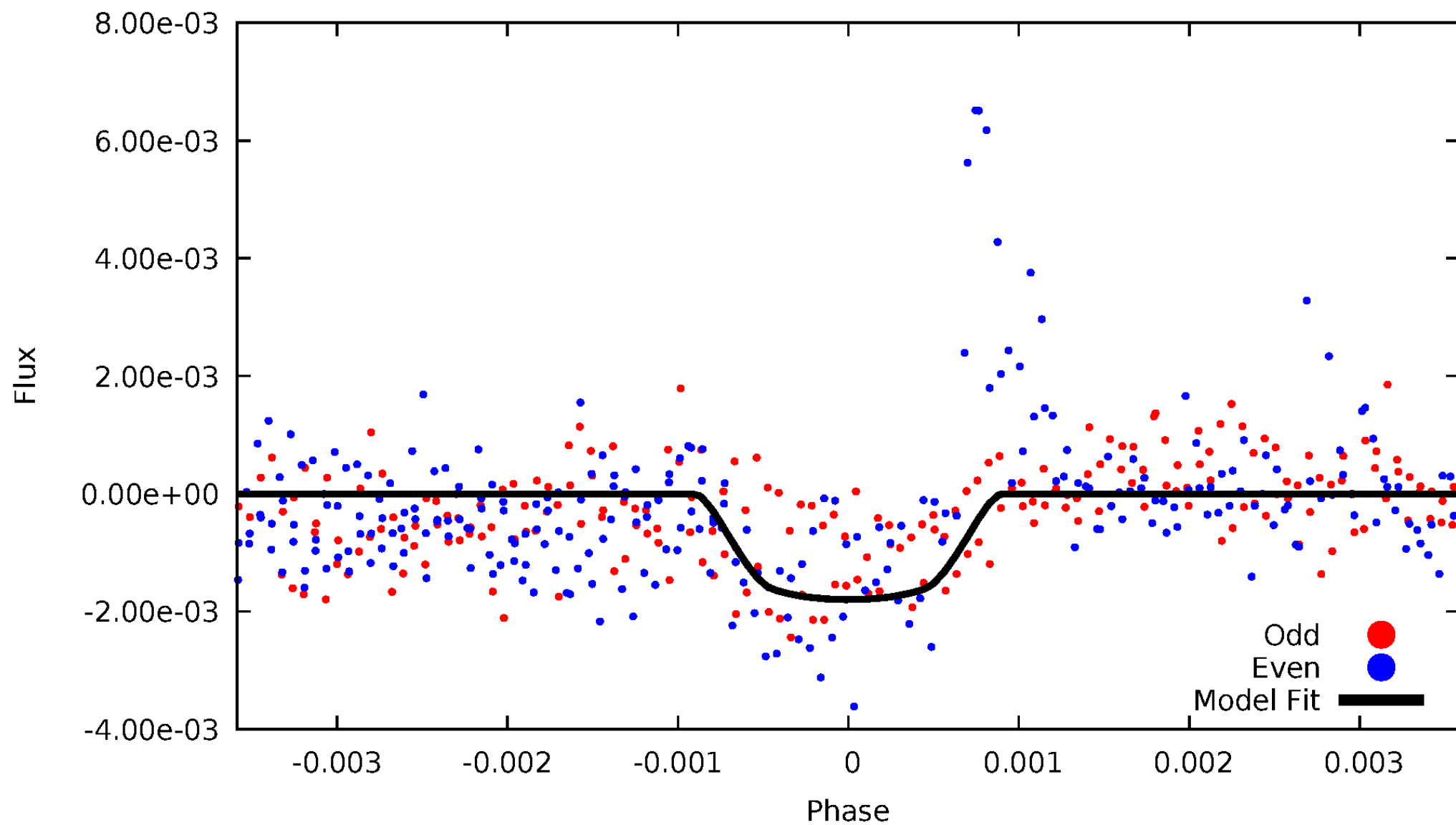


# TCE 007966841-03



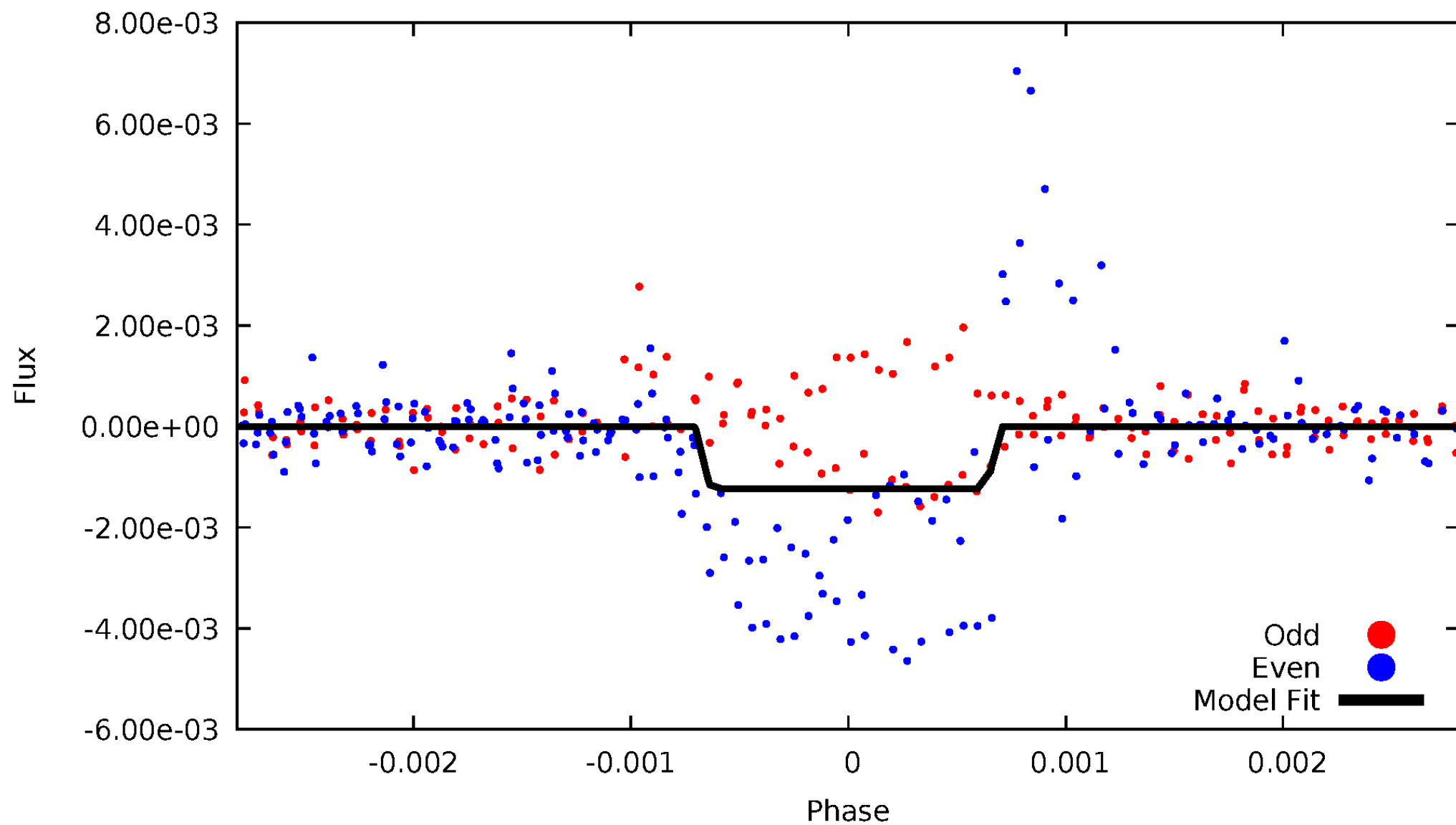
# DV Odd/Even

TCE 007966841-03



# ALT Odd/Even

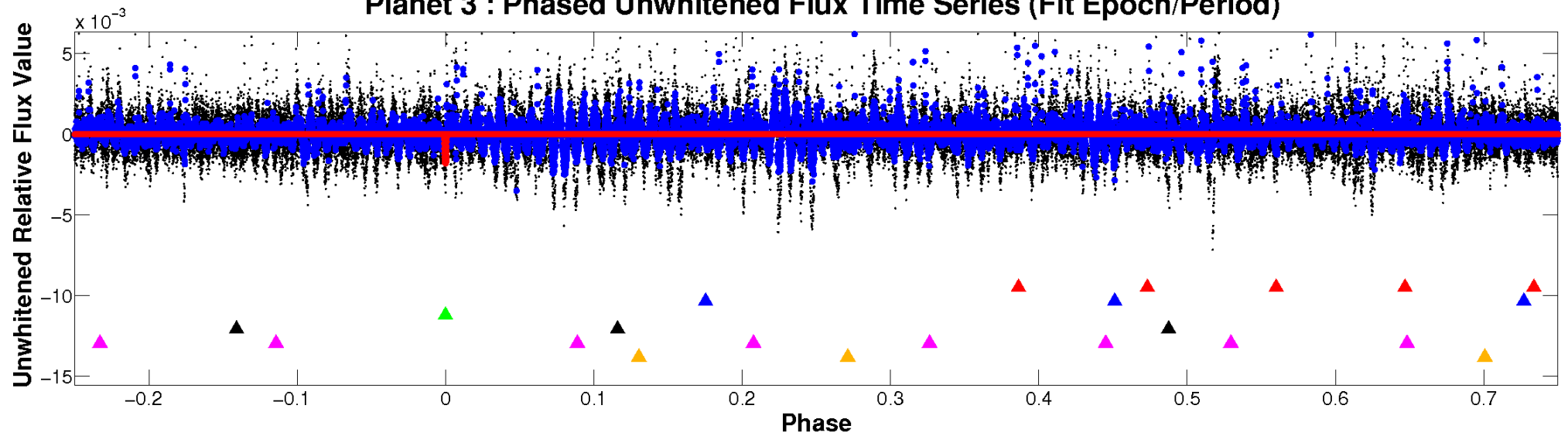
TCE 007966841-03



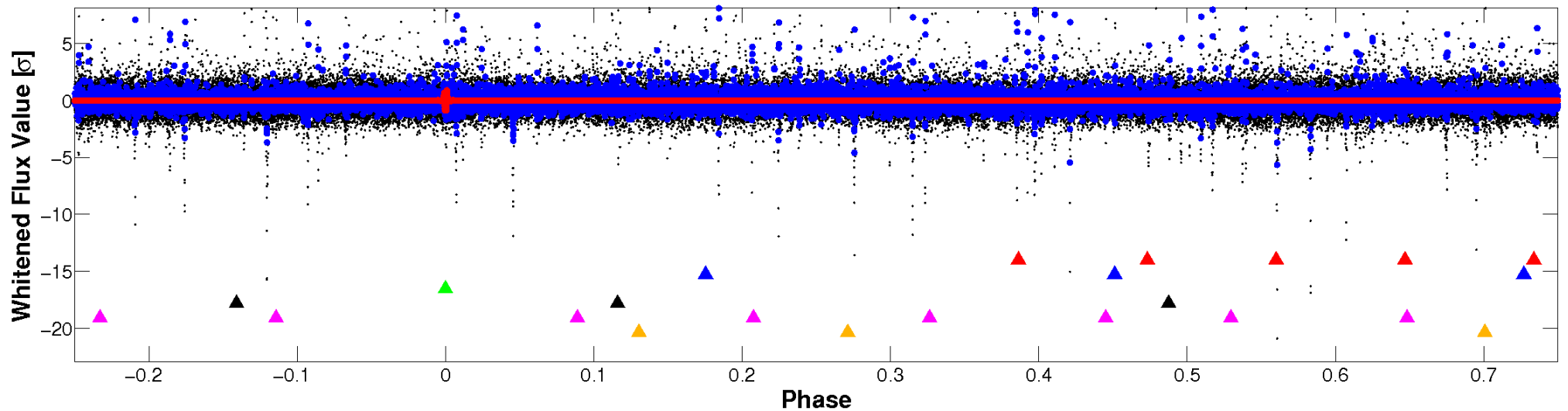


# Non-Whitened Vs. Whitened Light Curve

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

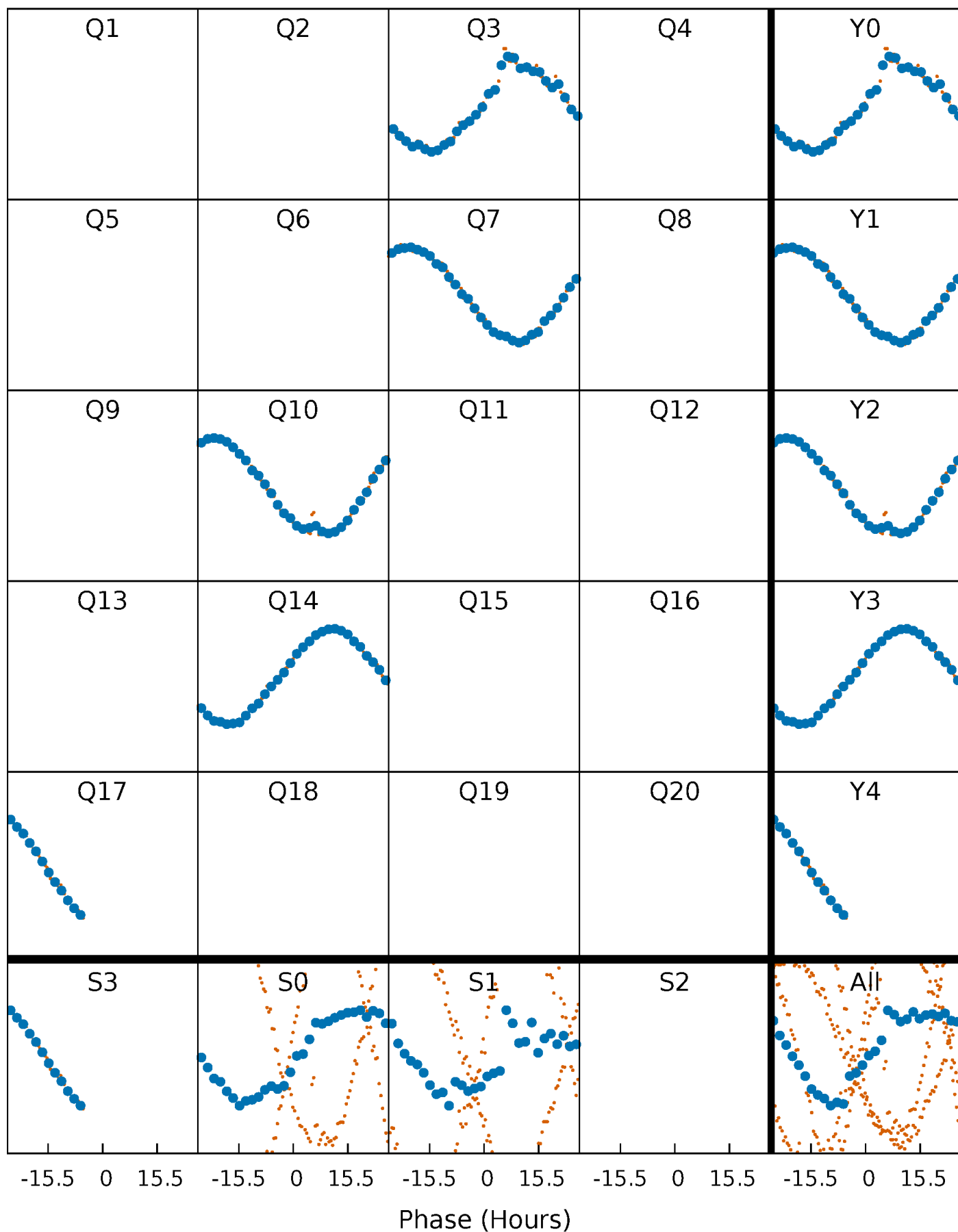


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

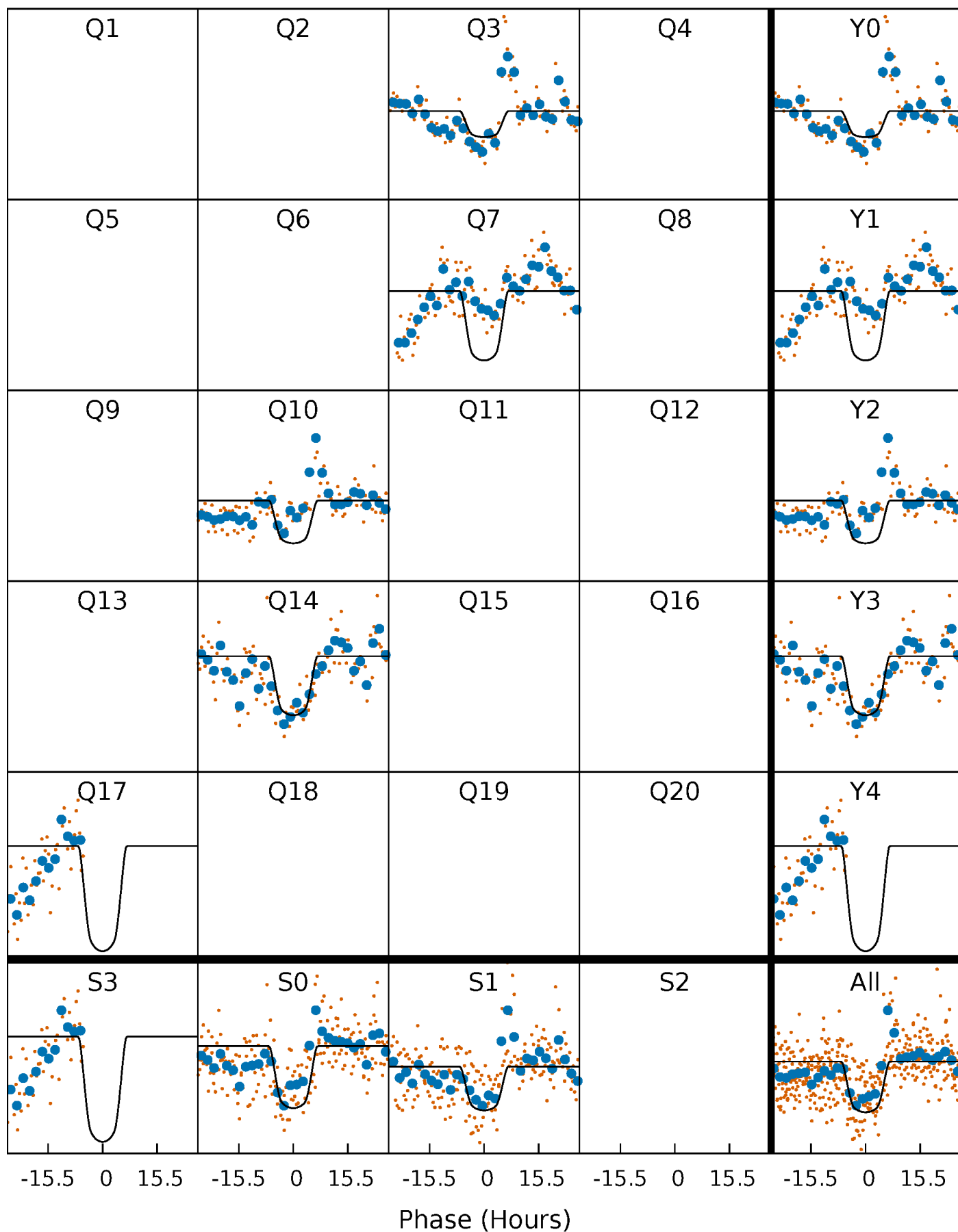
TCE 007966841-03     $P=315.248349$  Days     $T_0=330.237593$  (BKJD)





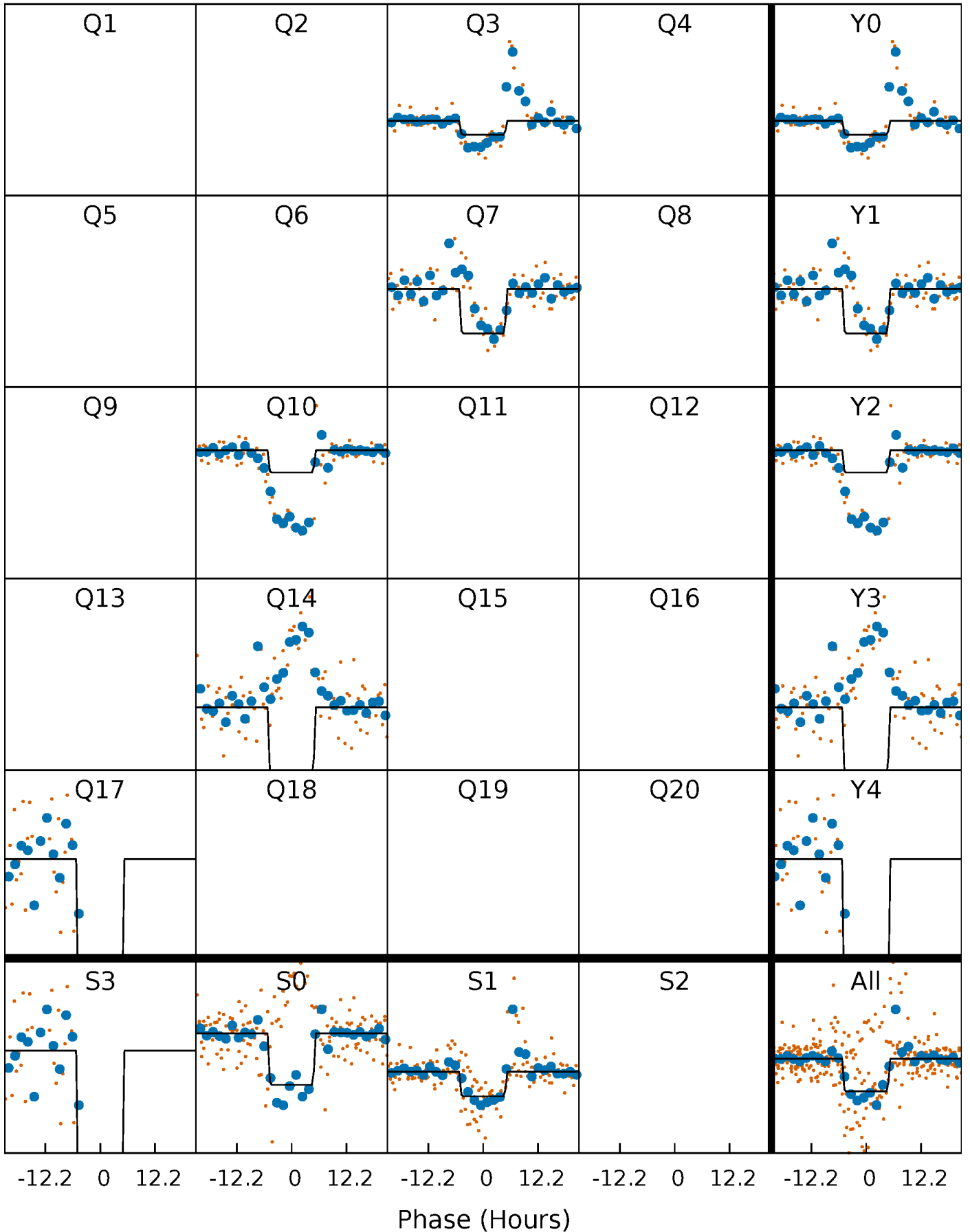
# DV Quarter-Phased Transit Curves

TCE 007966841-03     $P=315.248349$  Days     $T_0=330.237593$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

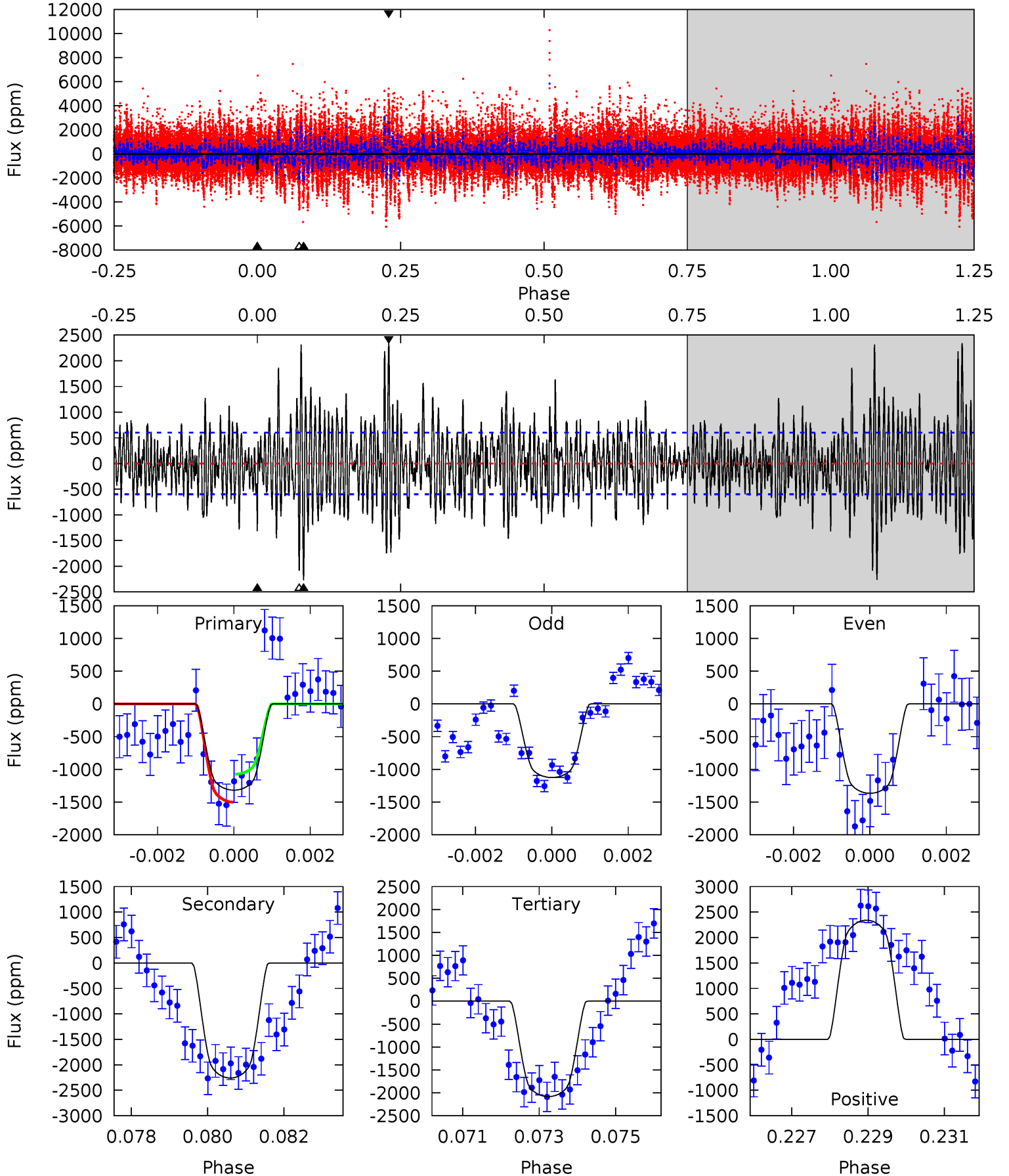
TCE 007966841-03     $P=315.248964$  Days     $T_0=330.228605$  (BKJD)



# DV Model-Shift Uniqueness Test

007966841-03,  $P = 315.248349$  Days,  $E = 14.989244$  Days

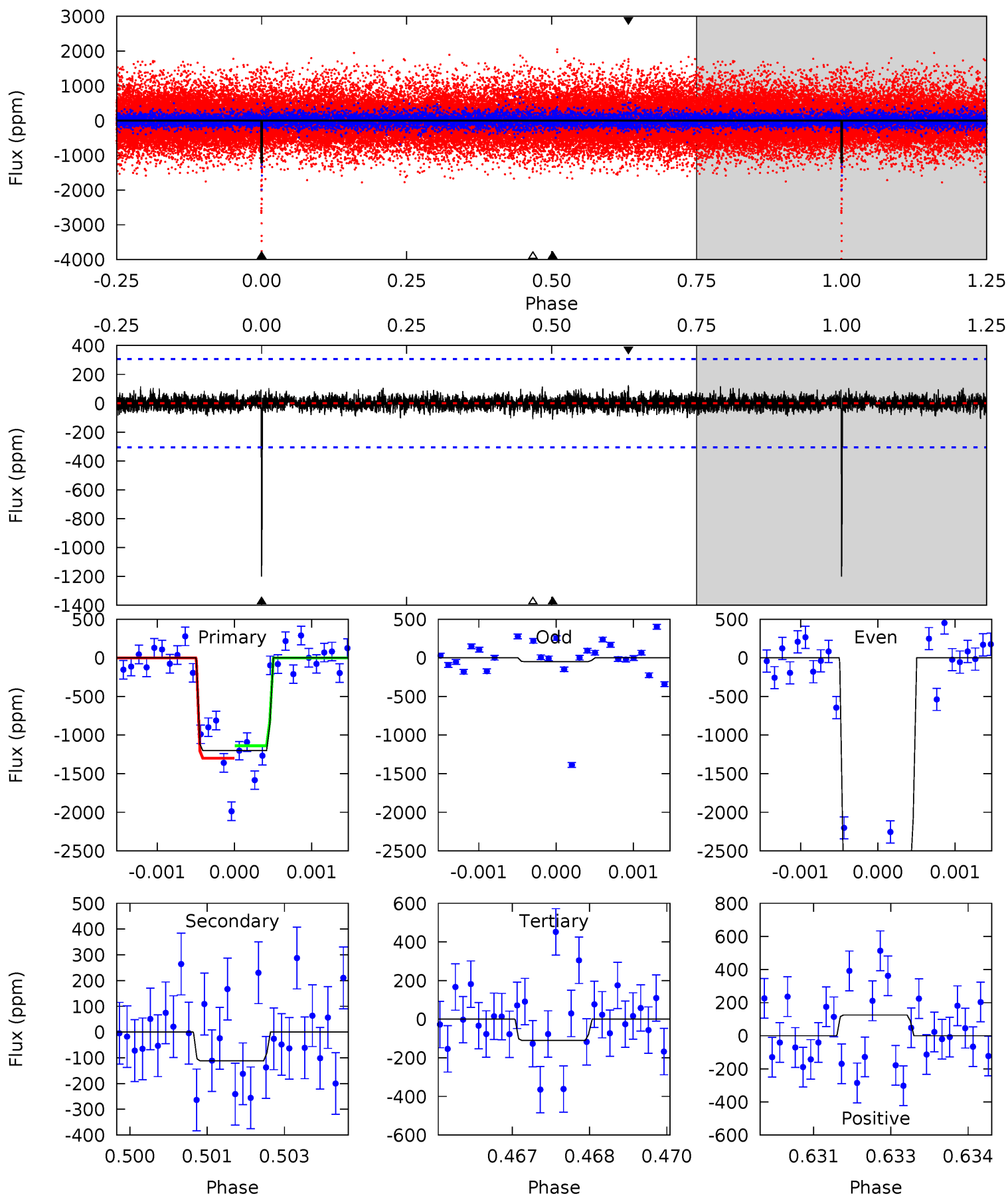
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	20.1	18.5	20.8	5.34	3.12	4.85	-6.80	-9.09	1.57	-0.72	1.08	1.02	0.51	1.86



# Alt Model-Shift Uniqueness Test

007966841-03, P = 315.248964 Days, E = 14.979641 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
21.1	1.97	1.92	2.20	5.39	3.19	0.48	19.2	18.9	0.05	-0.24	29.7	1.07	0.09	1.36



### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2259 \pm 112$	$4.31^{+0.72}_{-0.48}$	$355^{+22}_{-15}$	$5869^{+350}_{-277}$	$50041^{+13583}_{-12208}$
Alt.	$-112 \pm 57$	$3.29^{+0.52}_{-0.44}$	$355^{+24}_{-15}$	$3628^{+292}_{-350}$	$4167^{+2766}_{-2069}$

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

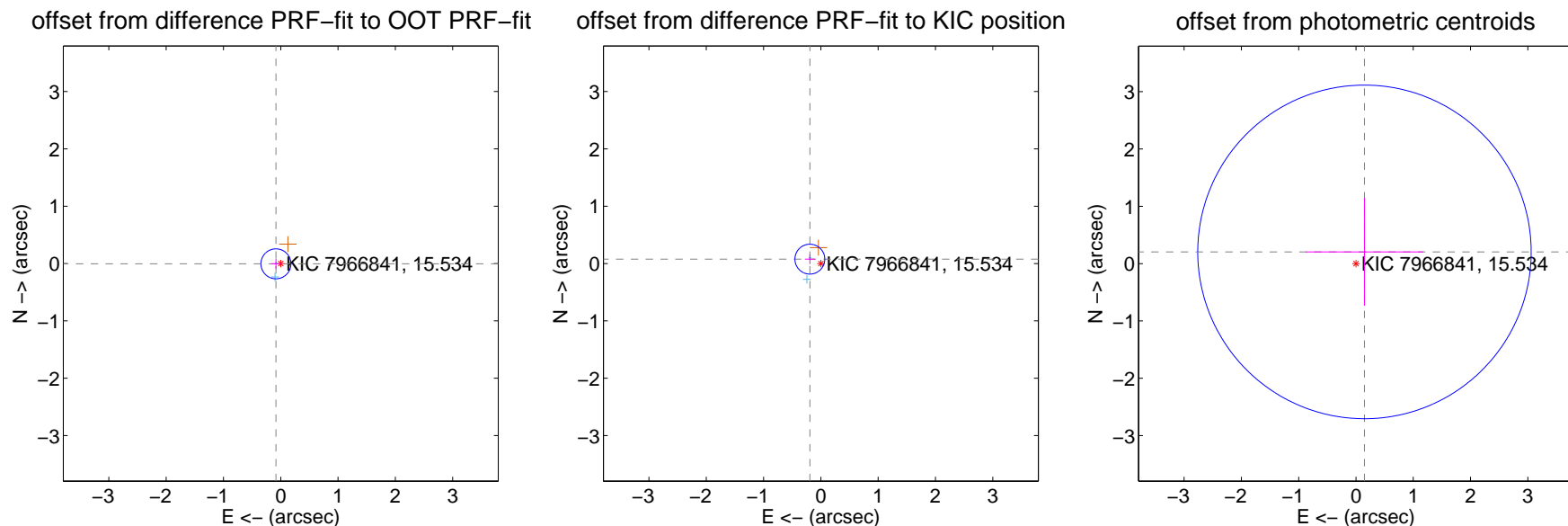
## DV Centroid Data

Supplemental centroid analysis for 007966841-03. Kepler magnitude: 15.53. Transit SNR 7.96

There are 2 quarters with good PRF difference image offsets

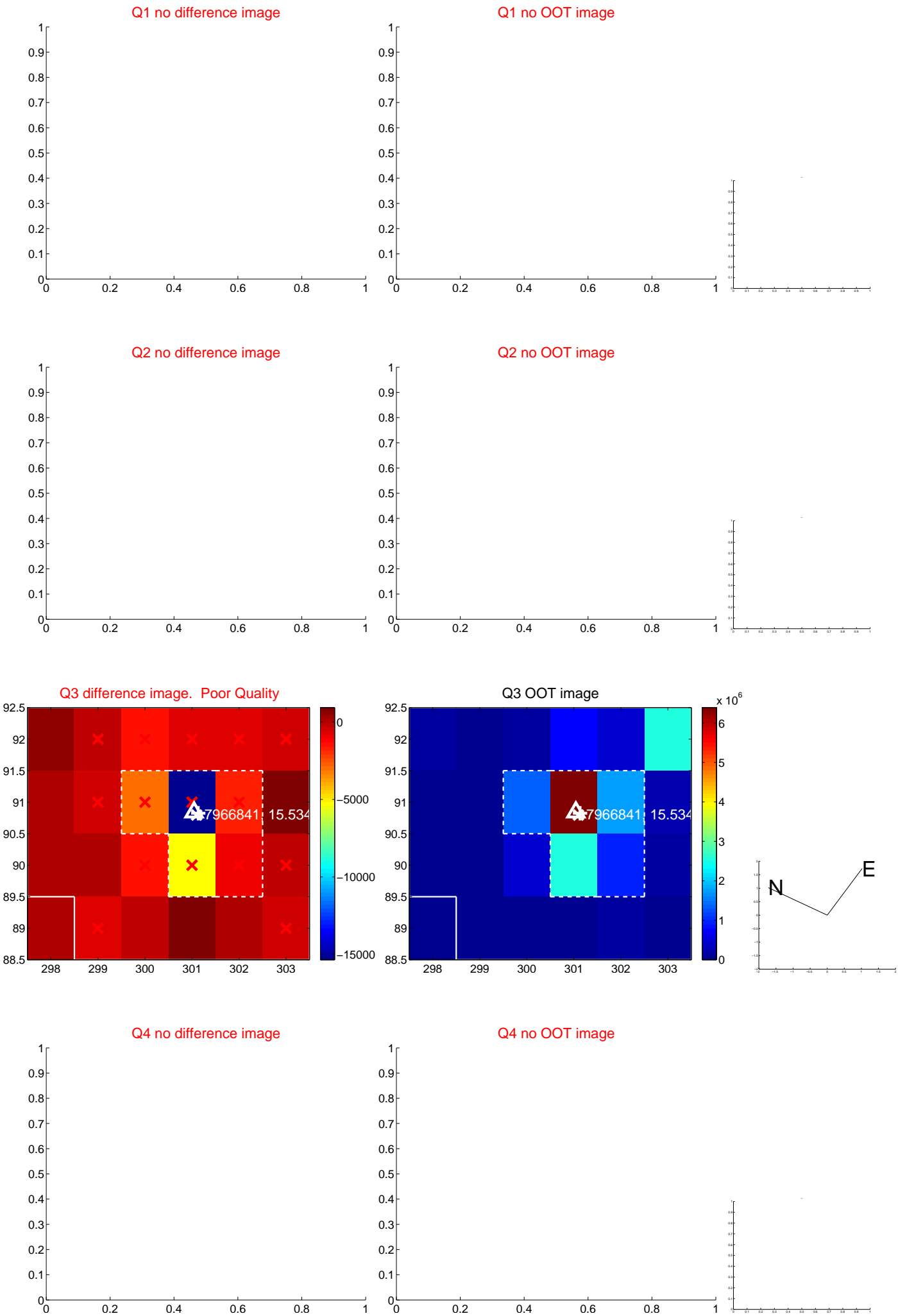
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.084 \pm 0.087$	0.96	$0.084 \pm 0.087$	$-0.005 \pm 0.085$
PRF-fit source offset from KIC position	$0.207 \pm 0.087$	2.38	$0.192 \pm 0.087$	$0.077 \pm 0.085$
photometric centroid source offset	$0.25 \pm 0.97$	0.26	$-0.15 \pm 1.02$	$0.20 \pm 0.94$

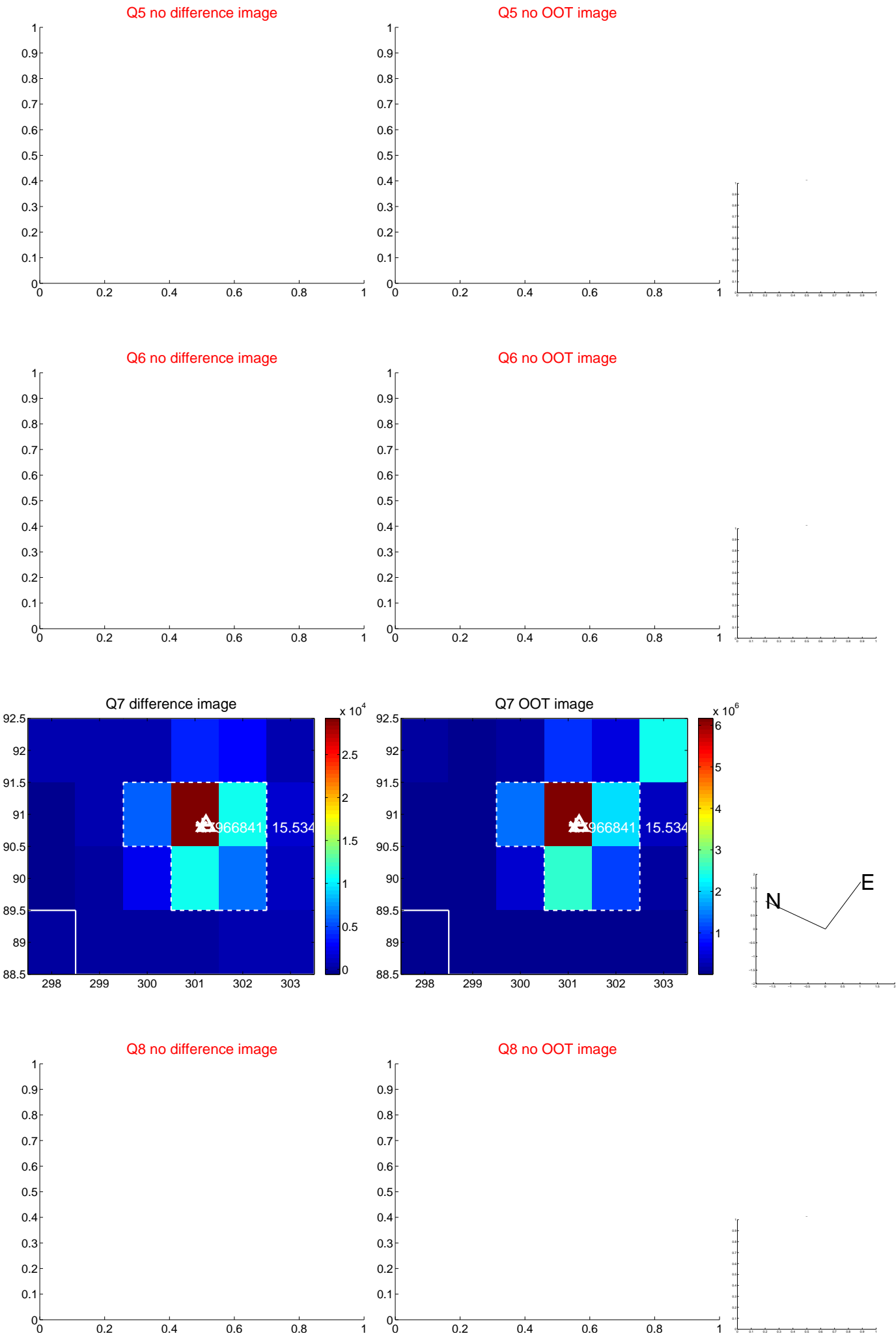


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

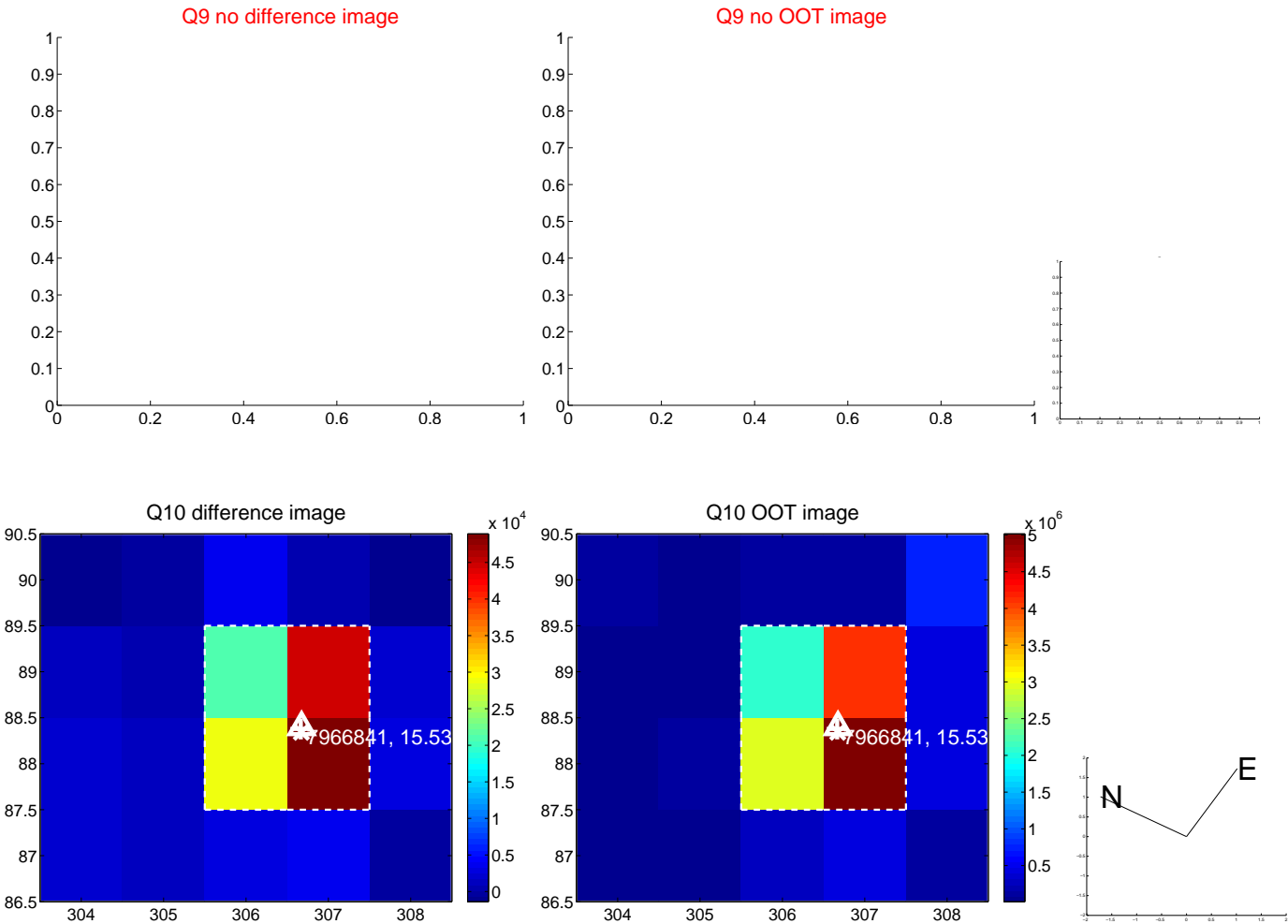


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





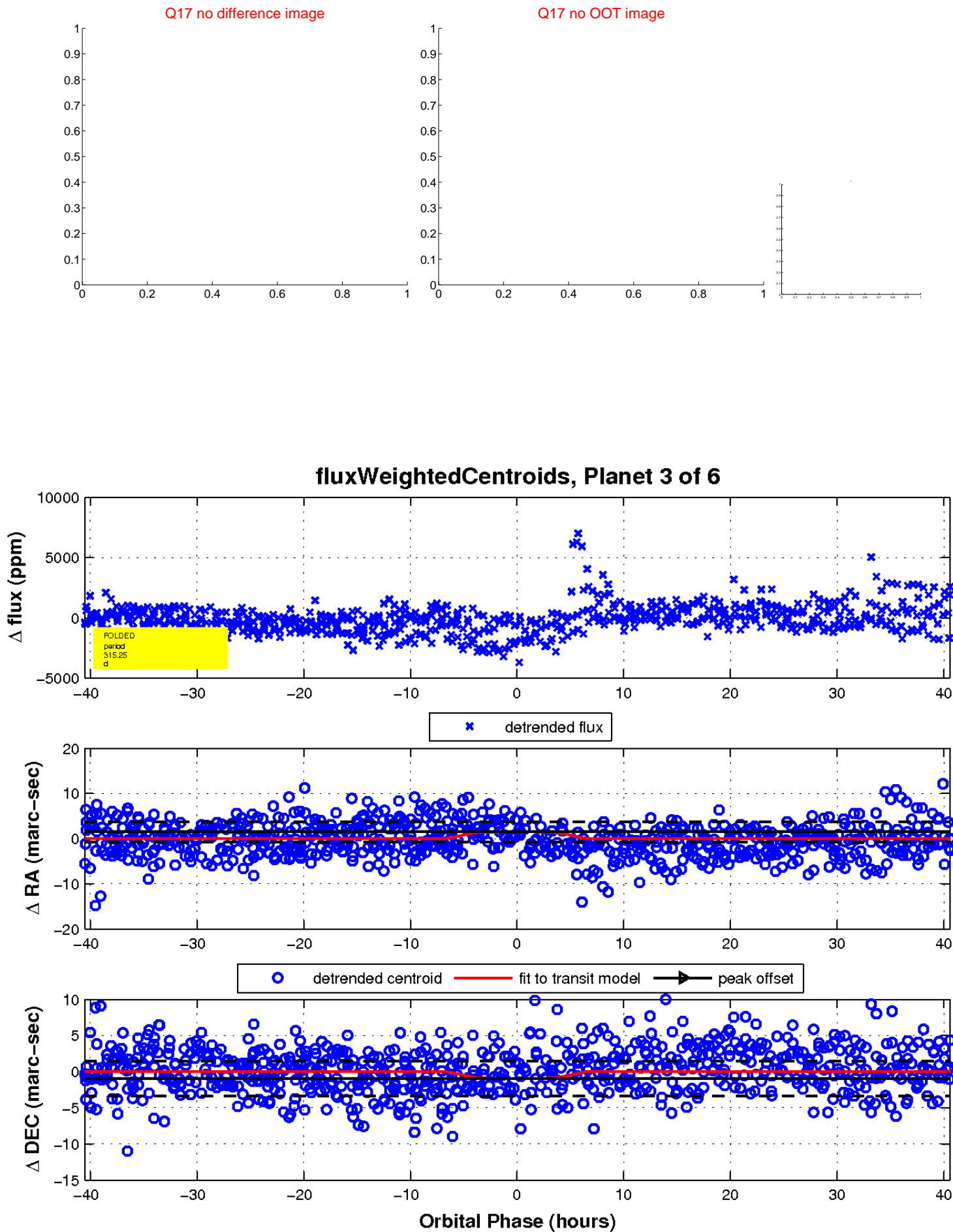
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

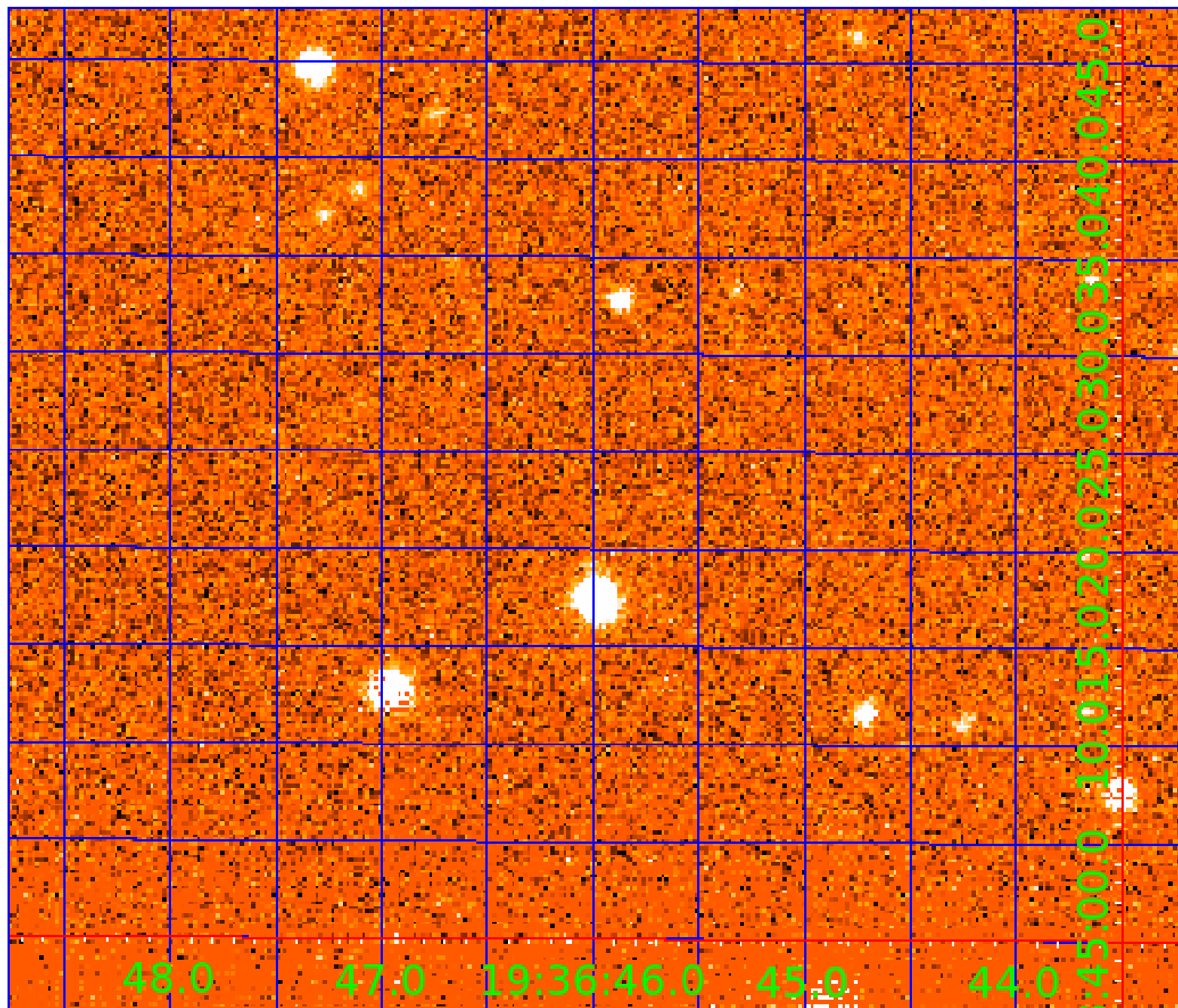


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
007966841-03	OBS	No	315.248349	330.237593	1797.5	13.566	12.8	8.0	0.82	5819	4.19	0.90
007966841-04	OBS	No	432.373917	366.819488	1443.3	7.365	13.4	5.1	0.82	5819	3.29	0.59
007966841-05	OBS	No	176.341019	181.932535	1719.2	3.559	11.2	7.6	0.82	5819	3.51	1.95
007966841-06	OBS	No	495.076667	371.337077	1667.5	4.863	12.3	7.2	0.82	5819	3.42	0.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007966841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

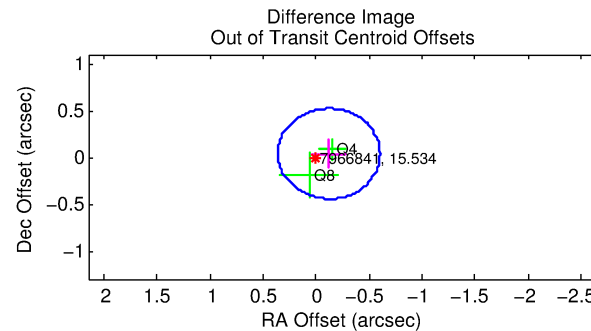
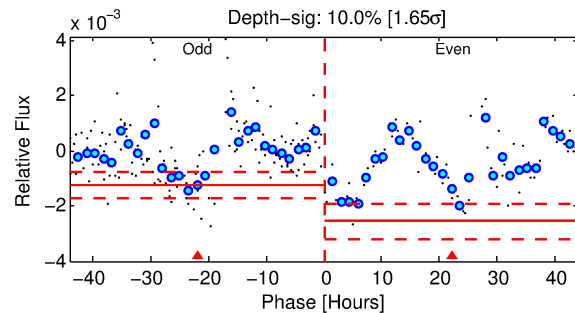
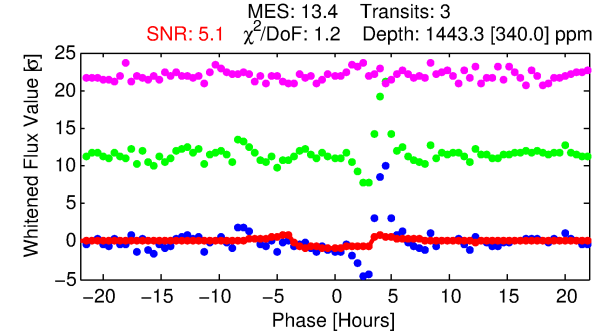
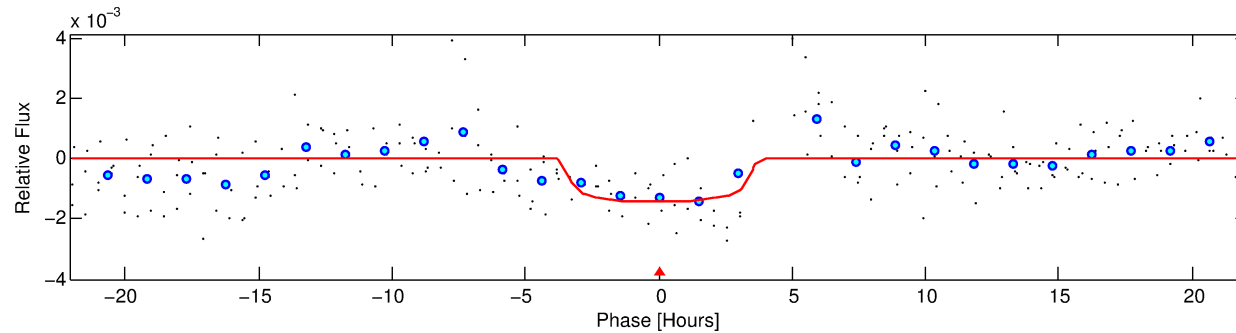
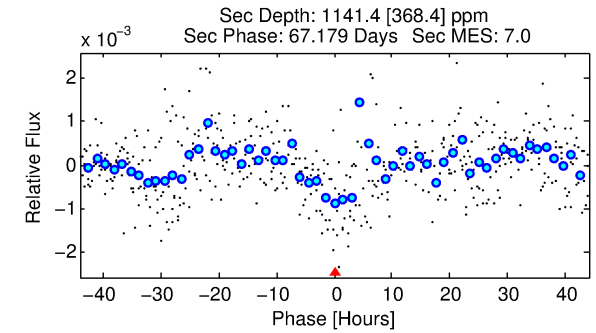
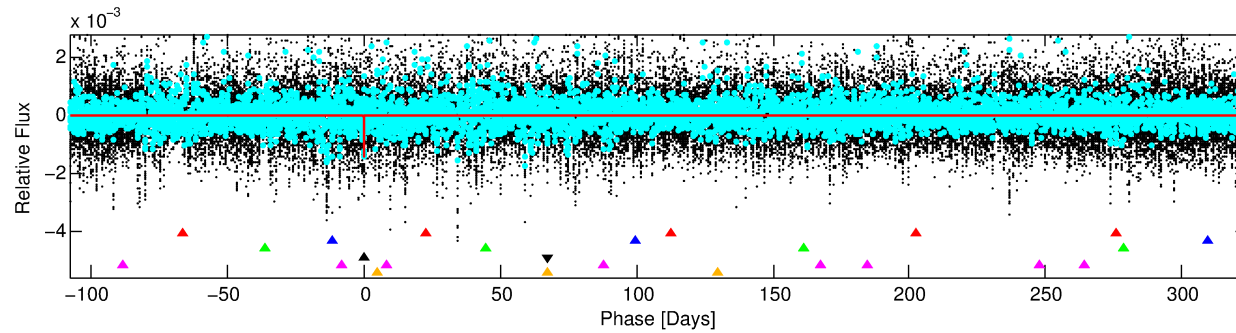
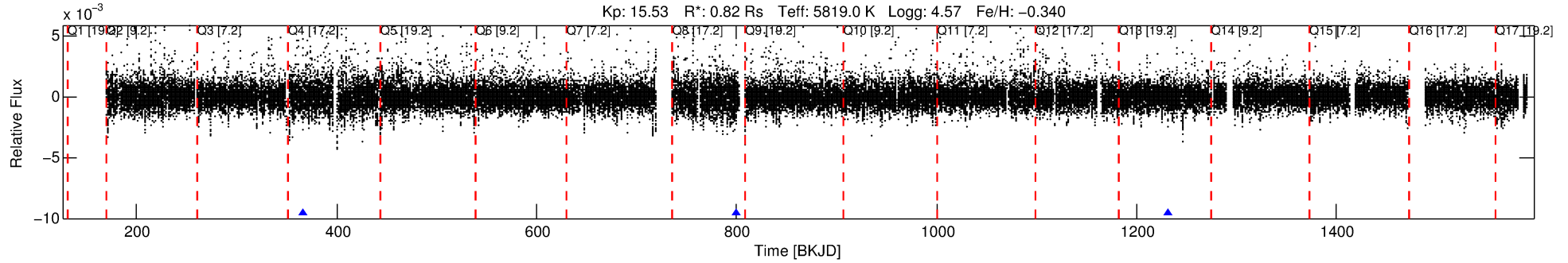
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007966841-04

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 4 of 6 Period: 432.374 d



## DV Fit Results:

Period = 432.37392 [0.01201] d  
Epoch = 366.8195 [0.0130] BKJD  
Rp/R\* = 0.0368 [0.0255]  
a/R\* = 359.73 [1110.75]  
b = 0.66 [2.69]  
Seff = 0.59 [0.21]  
Teq = 224 [20] K  
Rp = 3.29 [2.45] Re  
a = 1.0810 [0.2498] AU  
Ag = 67777.95 [99066.84] [0.68σ]  
Teffp = 5578 [1990] K [2.69σ]

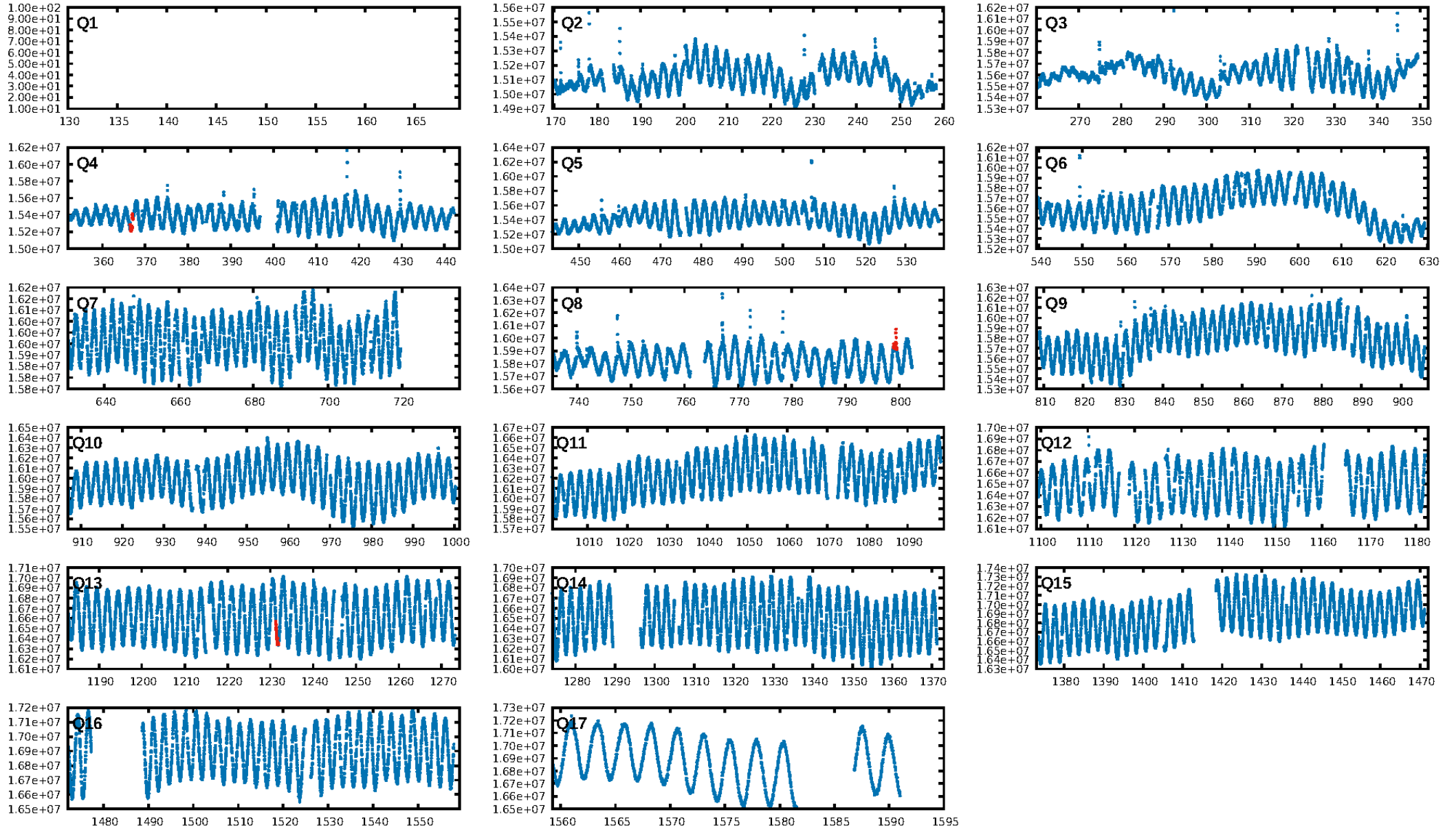
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [252.58σ]  
LongPeriod-sig: 100.0% [170.51σ]  
ModelChiSquare2-sig: 11.7%  
ModelChiSquareGof-sig: 94.1%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.2061  
Centroid-sig: 21.2%  
Centroid-so: 1.148 arcsec [0.71σ]  
OotOffset-rm: 0.127 arcsec [0.79σ]  
OotOffset-st: 0/0/2/0 [2]  
KicOffset-rm: 0.034 arcsec [0.21σ]  
KicOffset-st: 0/0/2/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:25 Z

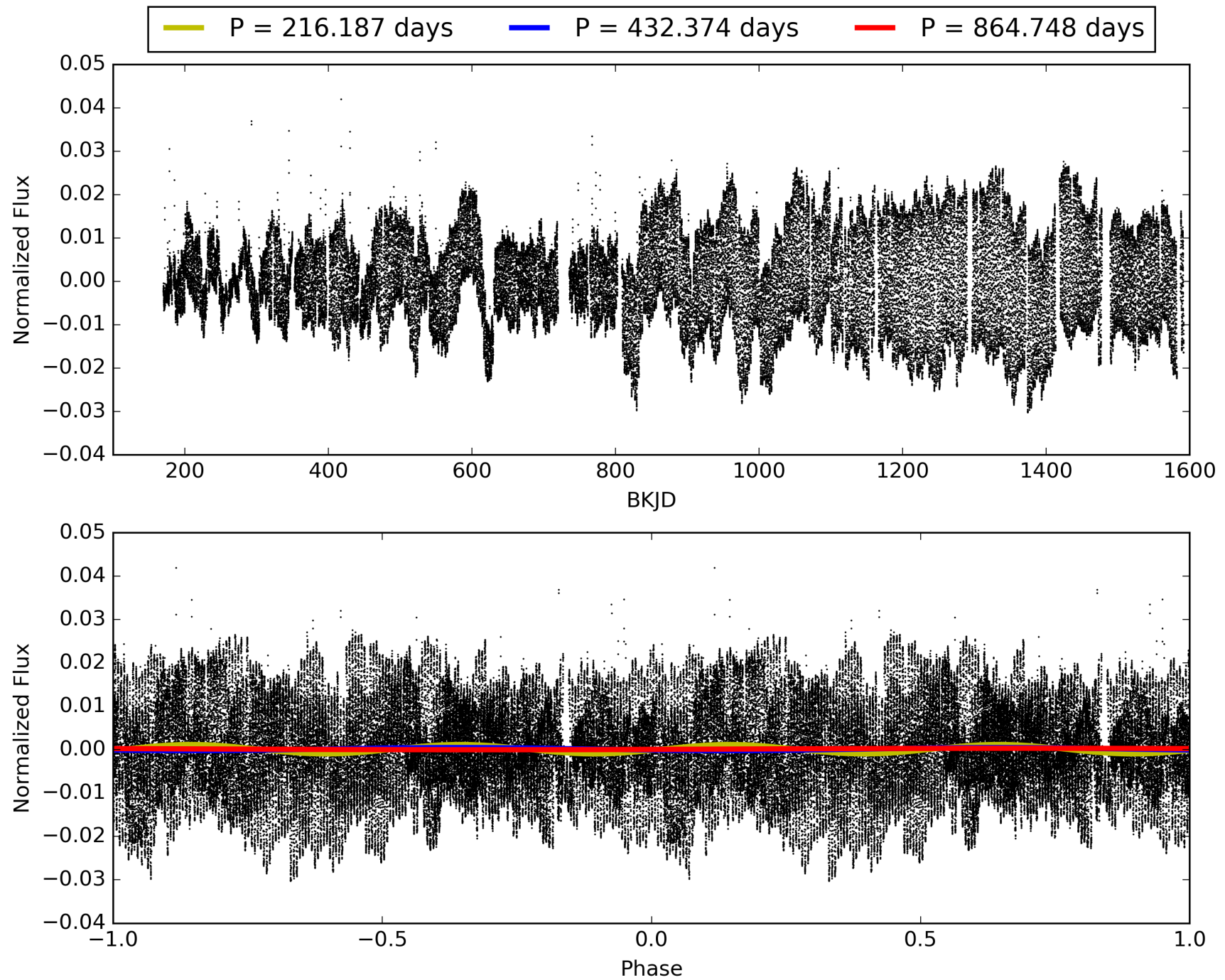
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007966841-04, PDC Light Curves





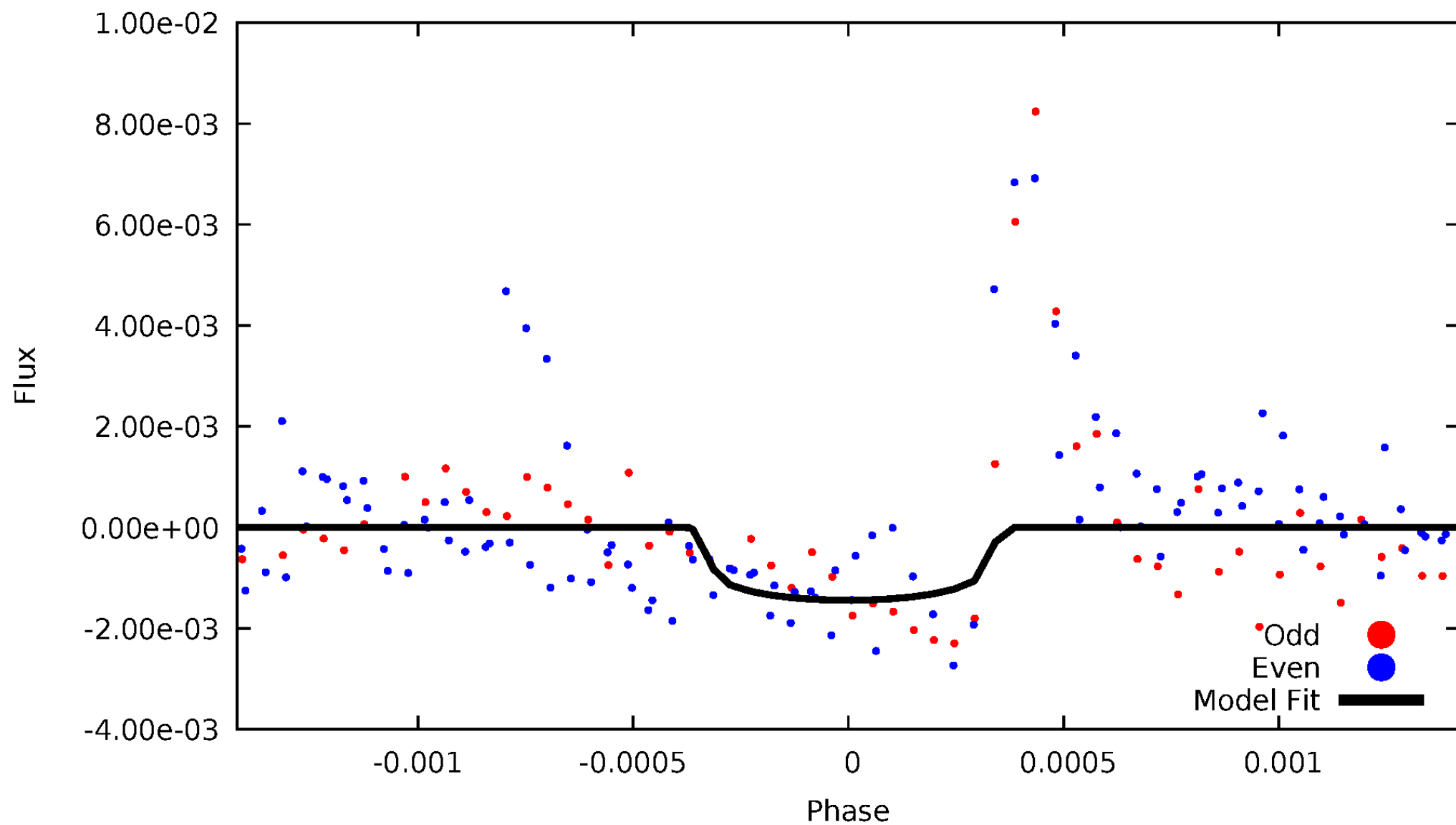
TCE 007966841-04





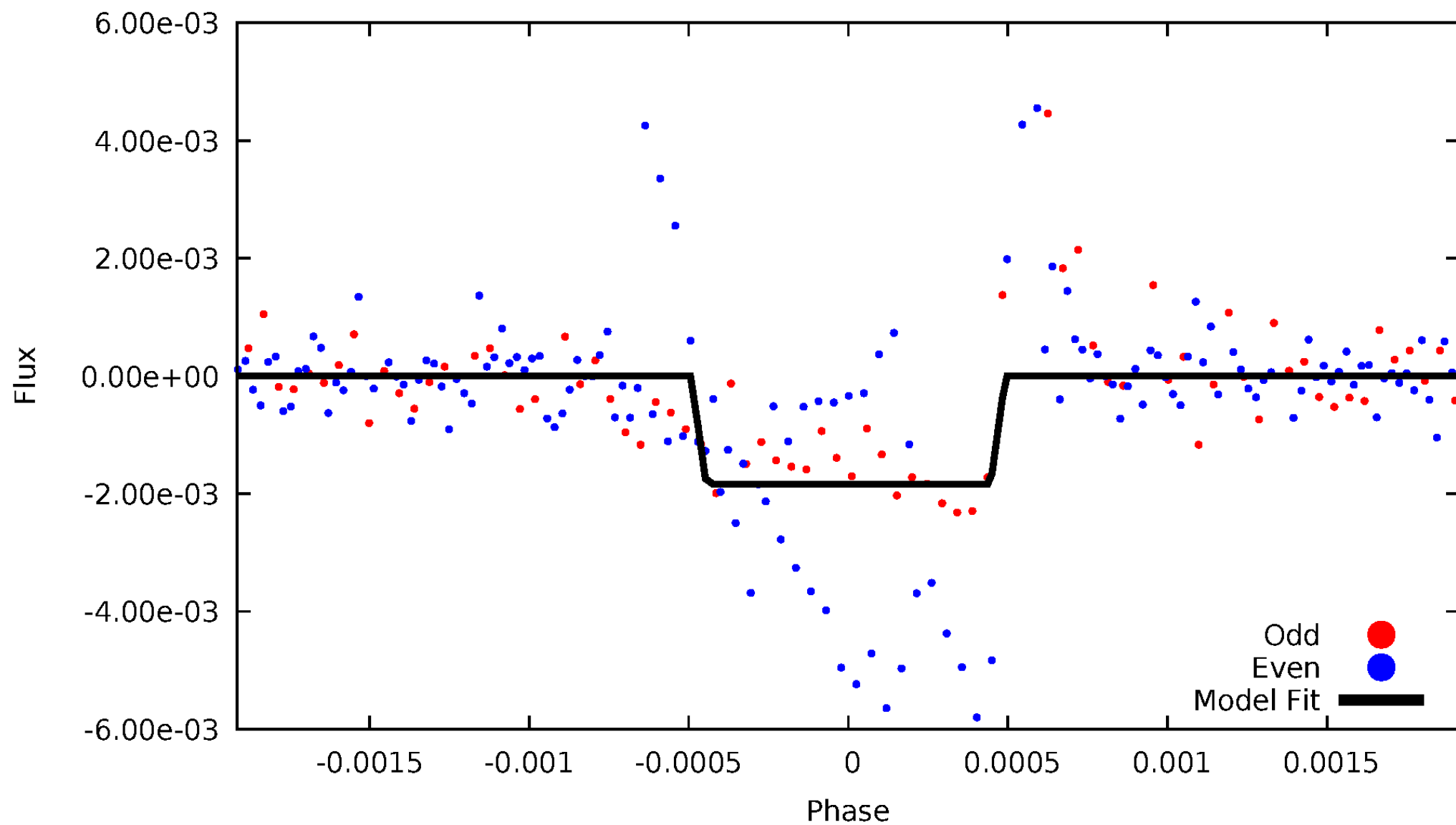
# DV Odd/Even

TCE 007966841-04



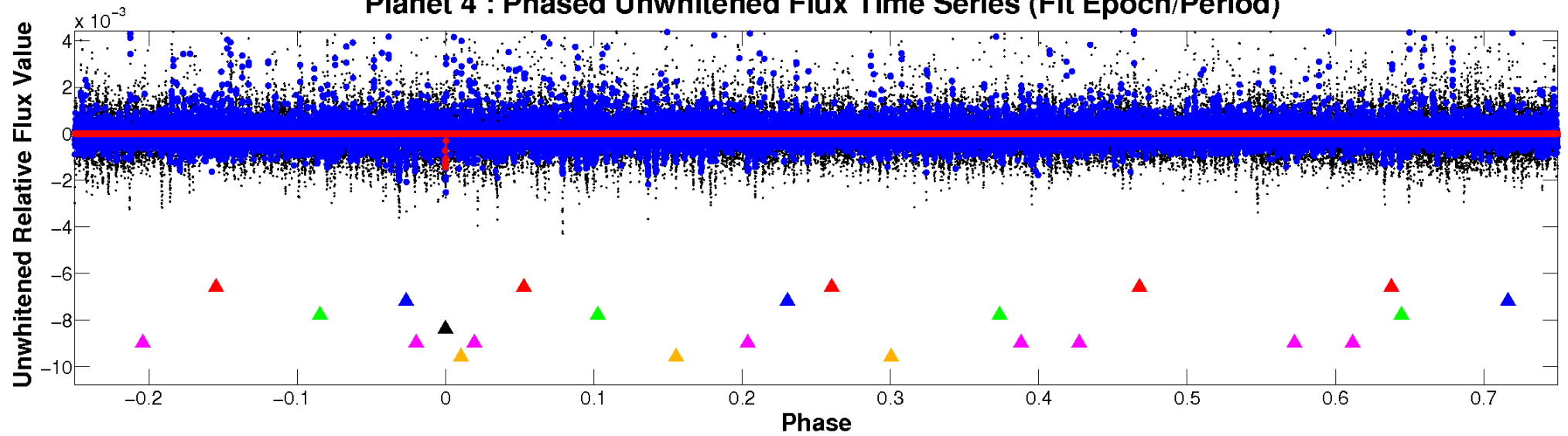
# ALT Odd/Even

TCE 007966841-04

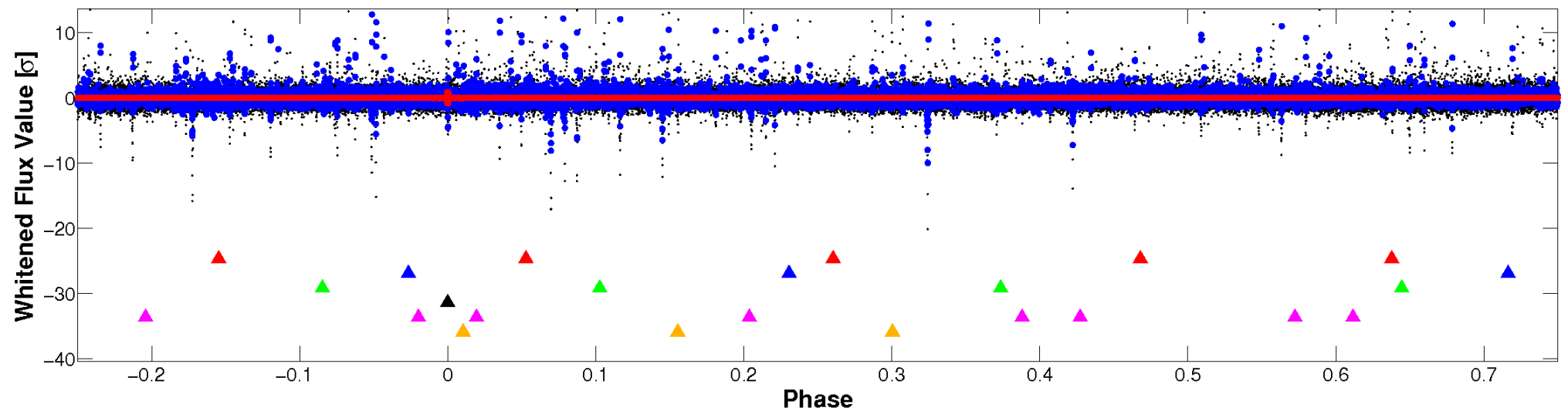


# Non-Whitened Vs. Whitened Light Curve

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

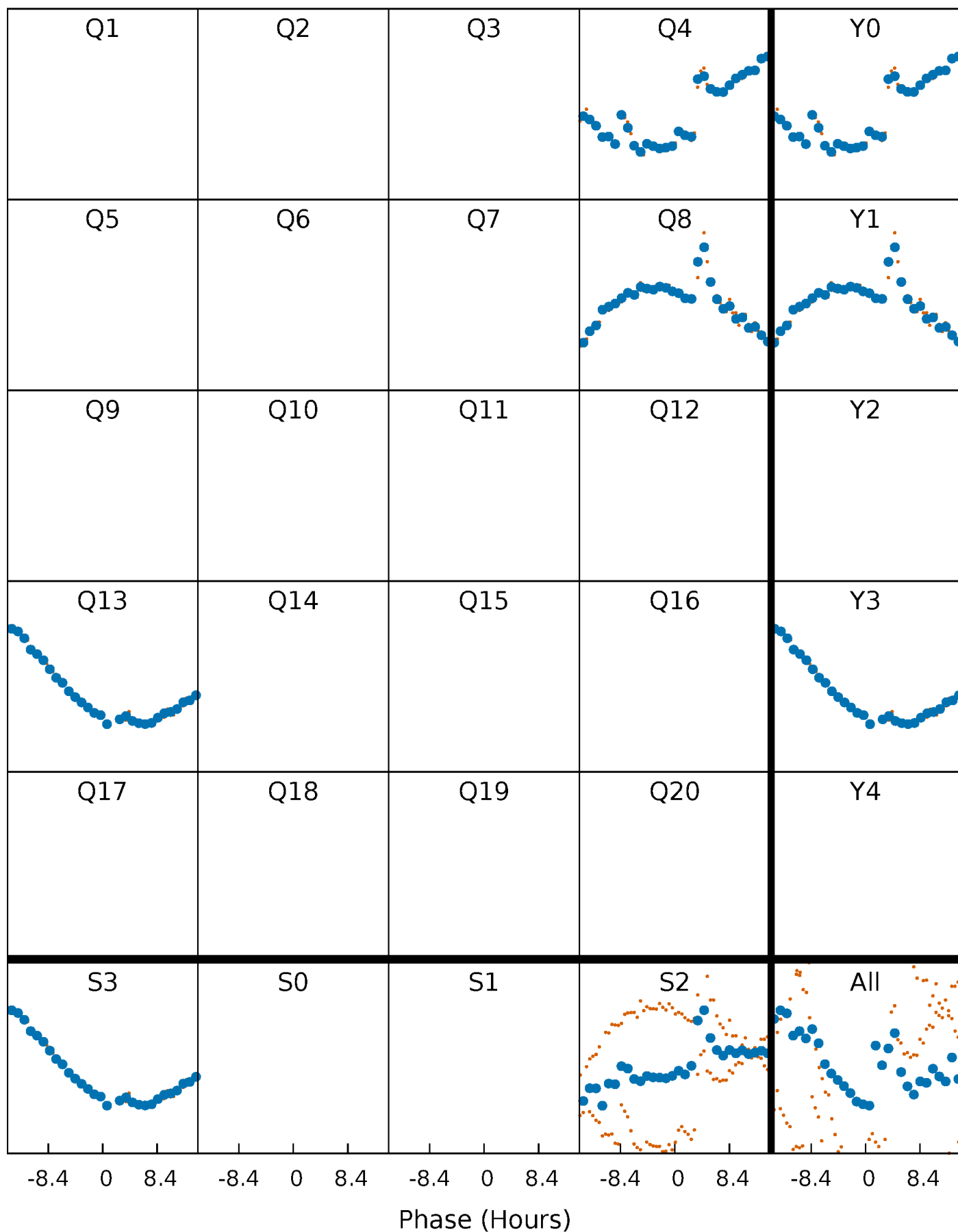


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



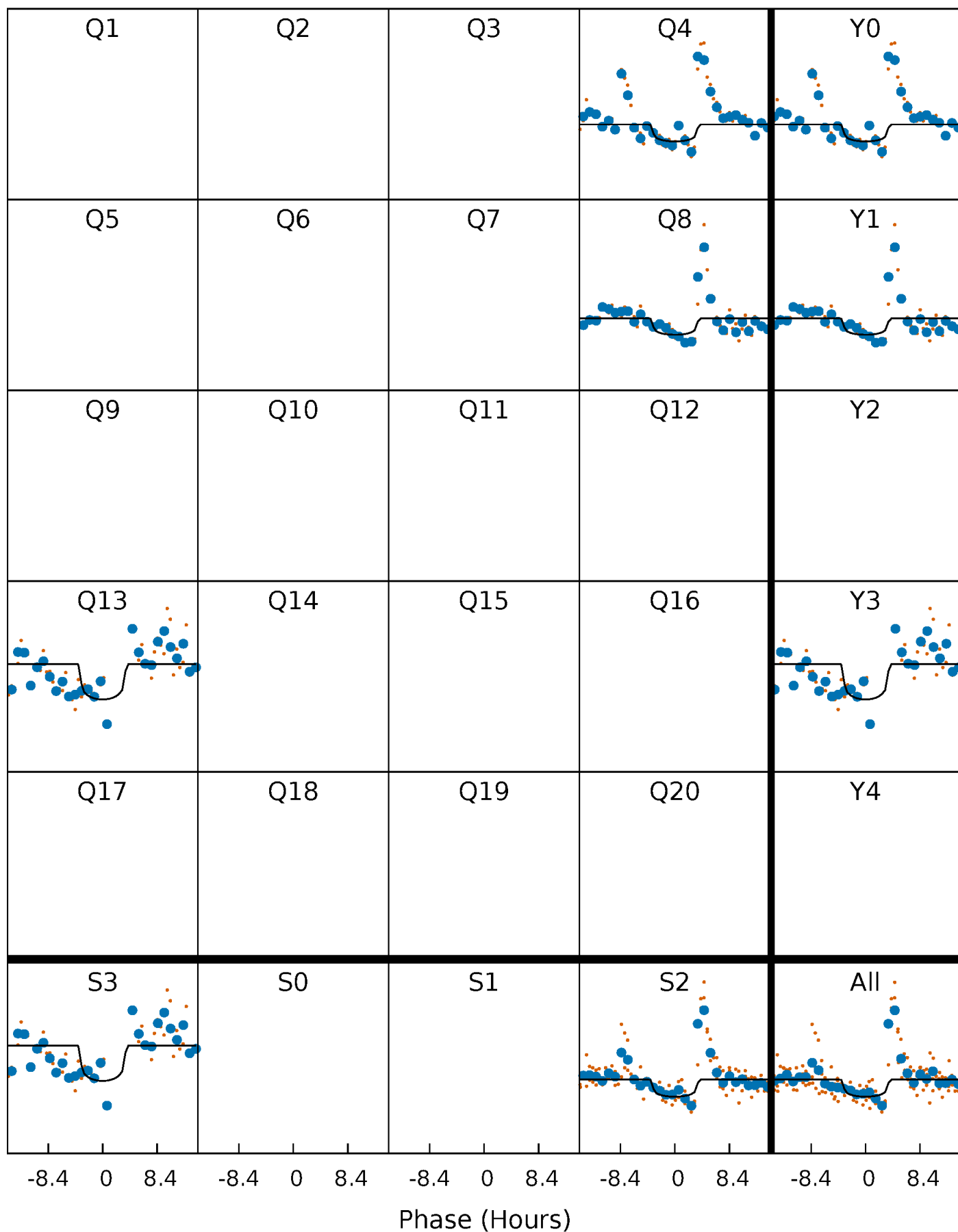
# PDC Quarter-Phased Transit Curves

TCE 007966841-04 P=432.373917 Days  $T_0=366.819488$  (BKJD)



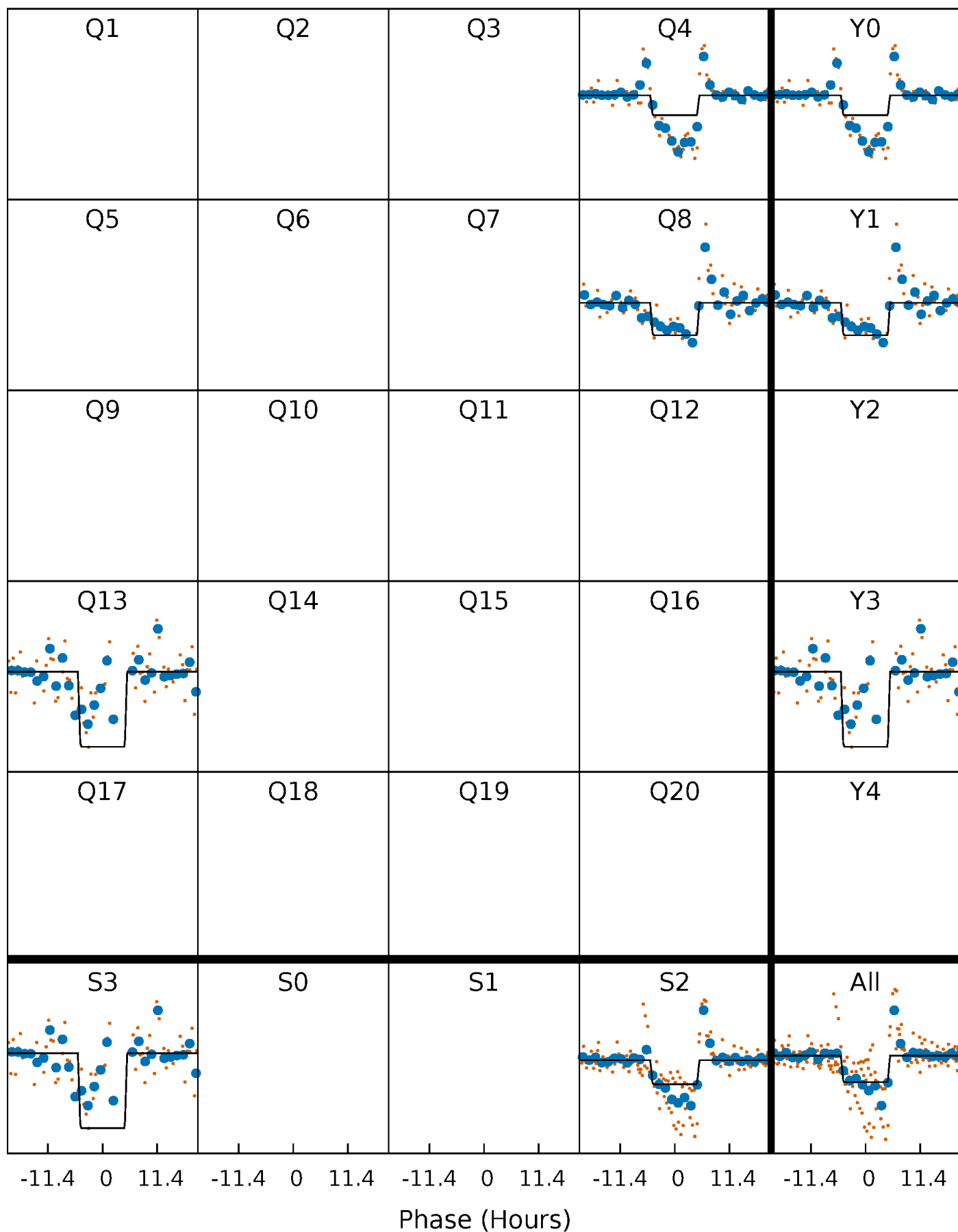
# DV Quarter-Phased Transit Curves

TCE 007966841-04     $P=432.373917$  Days     $T_0=366.819488$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

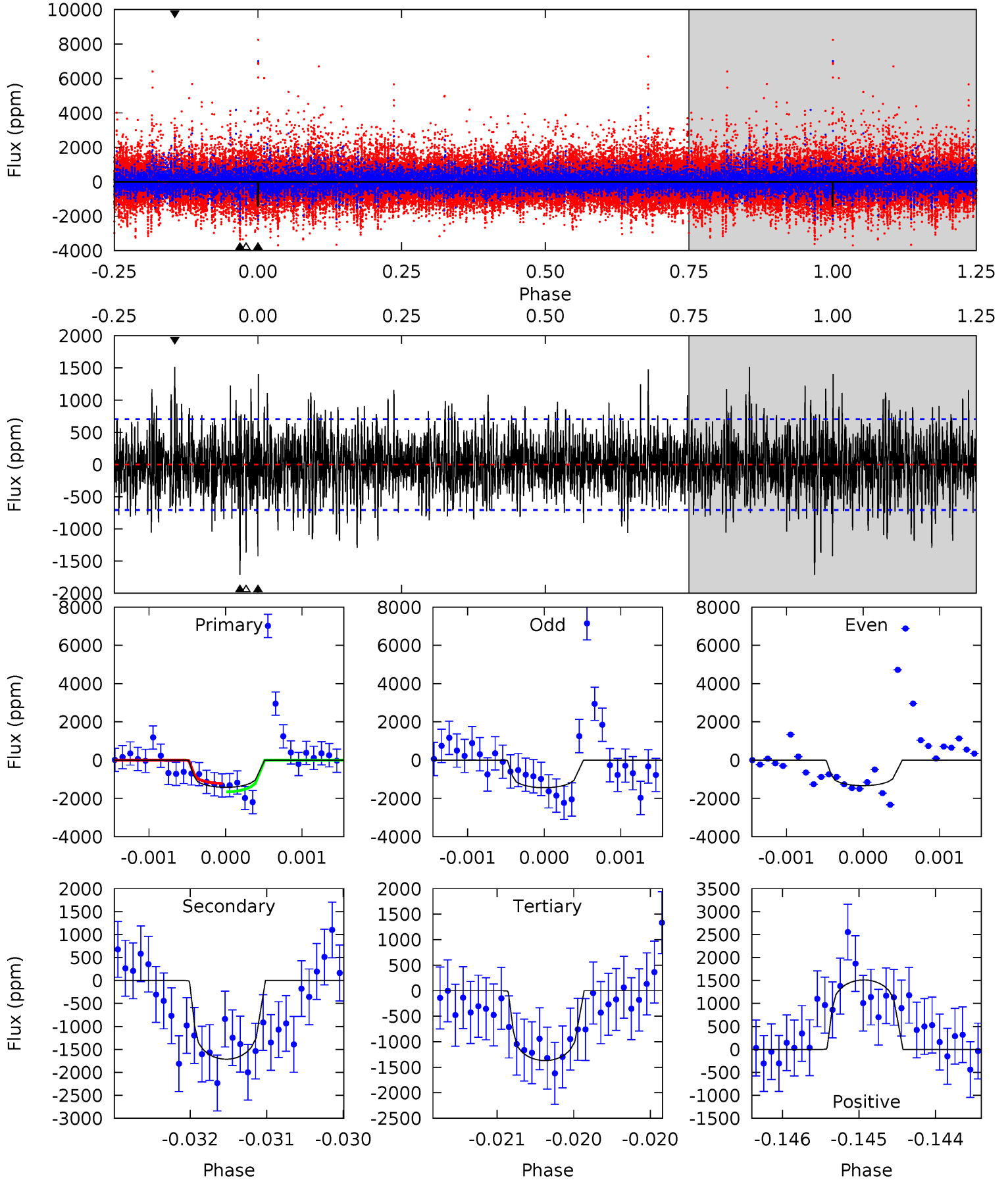
TCE 007966841-04     $P=432.380941$  Days     $T_0=366.750909$  (BKJD)



# DV Model-Shift Uniqueness Test

007966841-04, P = 432.373917 Days, E = 366.819488 Days

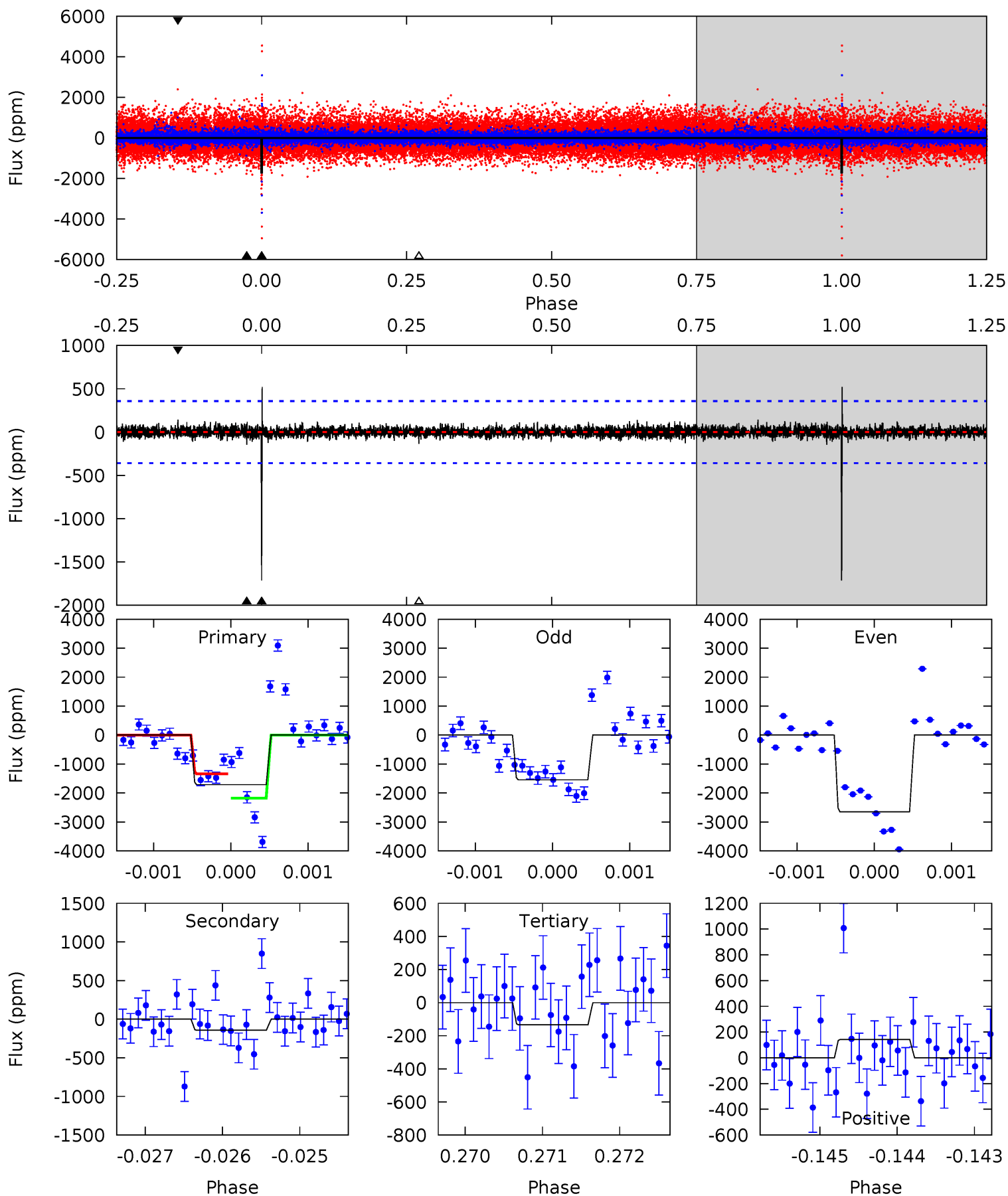
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	13.4	10.7	11.8	5.50	3.37	2.69	0.41	-0.71	2.69	1.58	0.33	1.01	0.47	1.69



# Alt Model-Shift Uniqueness Test

007966841-04, P = 432.380941 Days, E = 366.750909 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
26.1	2.19	2.04	2.17	5.46	3.30	0.48	24.0	23.9	0.15	0.02	8.97	1.32	0.23	0





### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1715 \pm 128$	$3.70^{+2.37}_{-1.98}$	$320^{+18}_{-14}$	$5982^{+3150}_{-1179}$	$79021^{+276825}_{-49067}$
Alt.	$-144 \pm 66$	$4.15^{+2.75}_{-2.15}$	$322^{+19}_{-15}$	$3453^{+1041}_{-543}$	$4528^{+16128}_{-3083}$

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

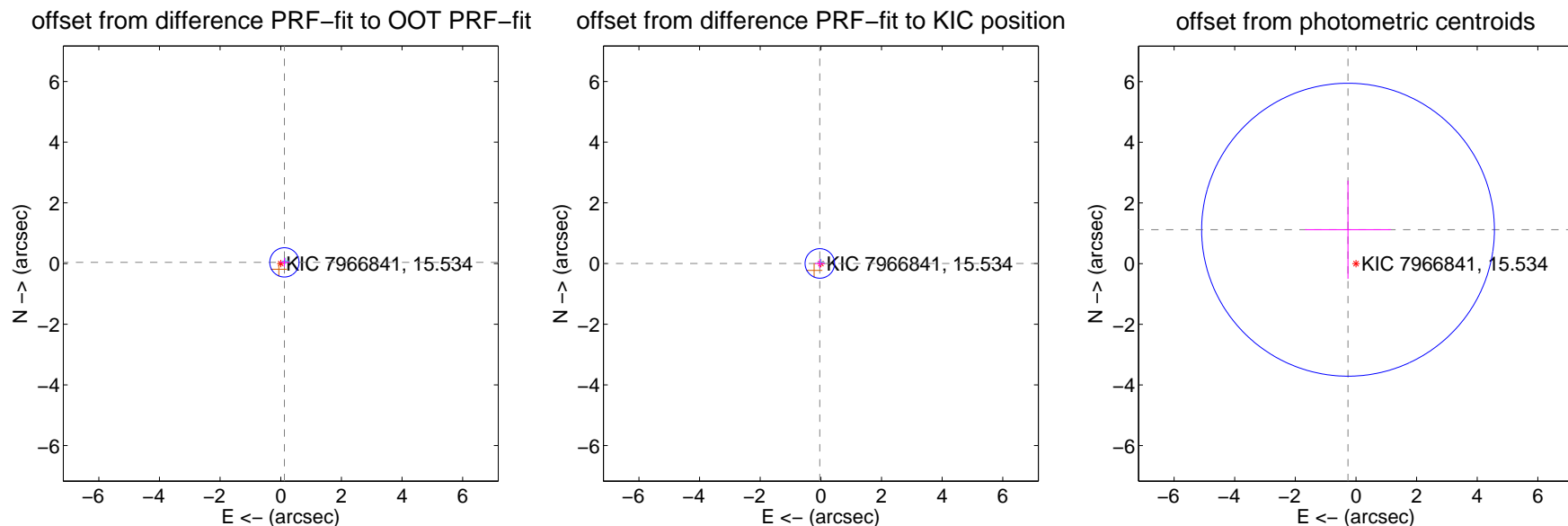
## DV Centroid Data

Supplemental centroid analysis for 007966841-04. Kepler magnitude: 15.53. Transit SNR 5.12

There are 1 quarters with good PRF difference image offsets

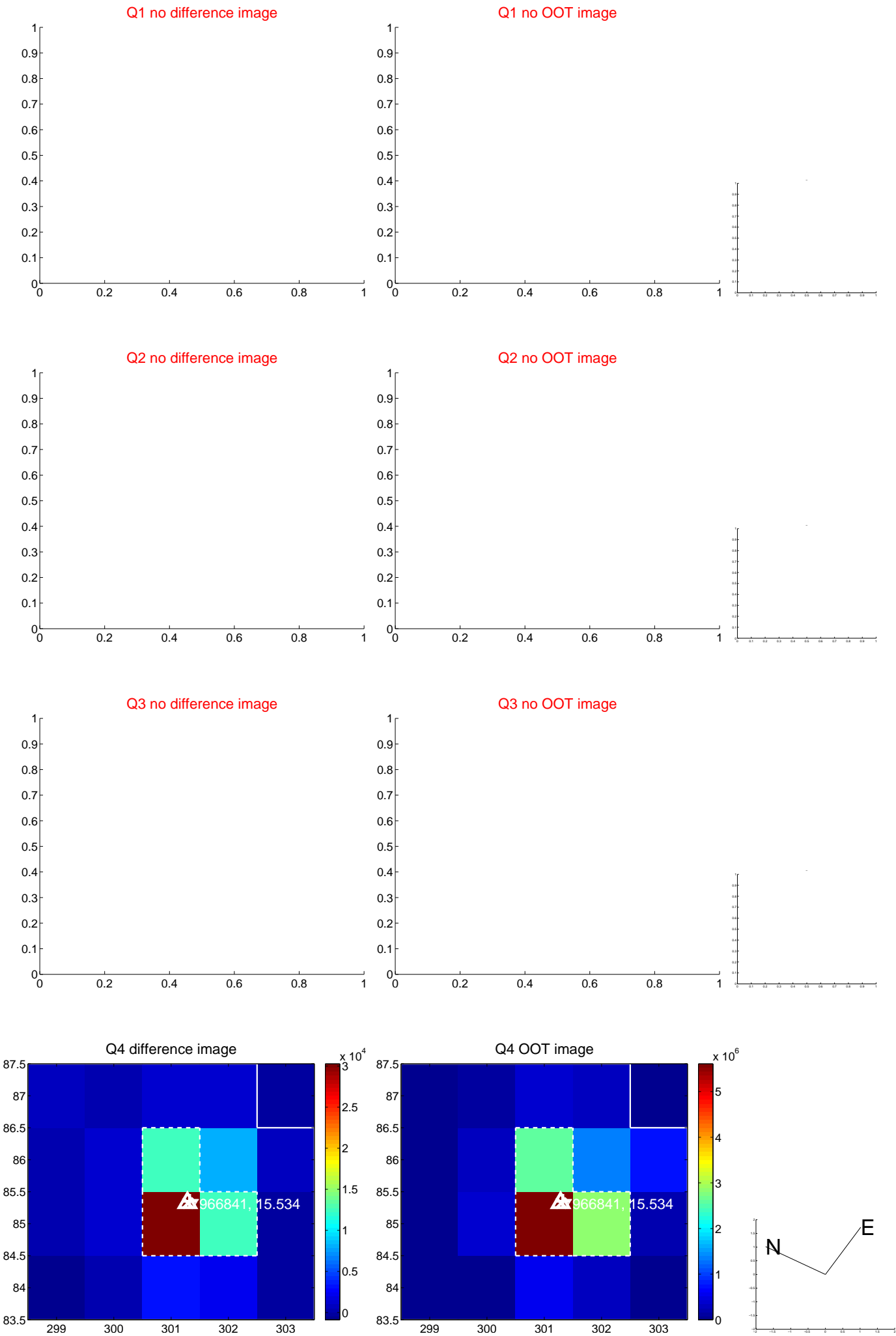
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.127 \pm 0.161$	0.79	$-0.121 \pm 0.162$	$0.039 \pm 0.147$
PRF-fit source offset from KIC position	$0.034 \pm 0.162$	0.21	$0.034 \pm 0.162$	$0.003 \pm 0.147$
photometric centroid source offset	$1.15 \pm 1.61$	0.71	$0.26 \pm 1.42$	$1.12 \pm 1.62$

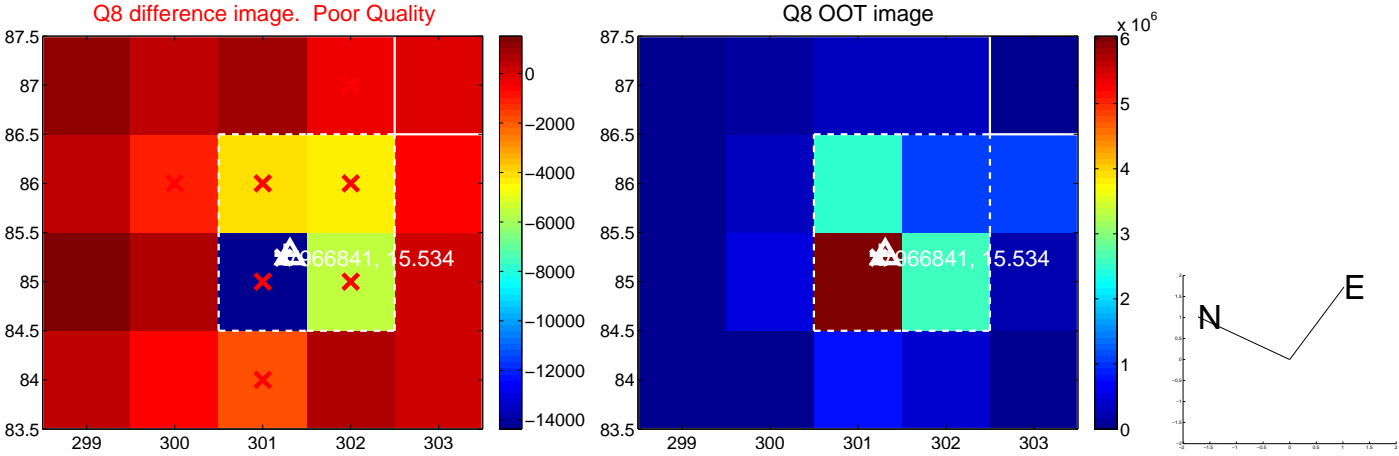
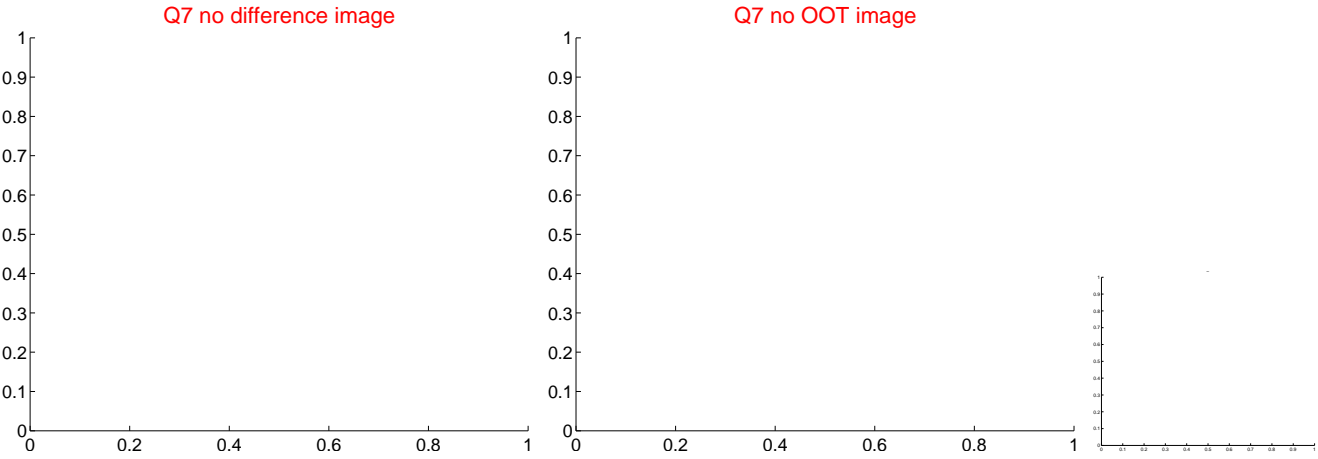
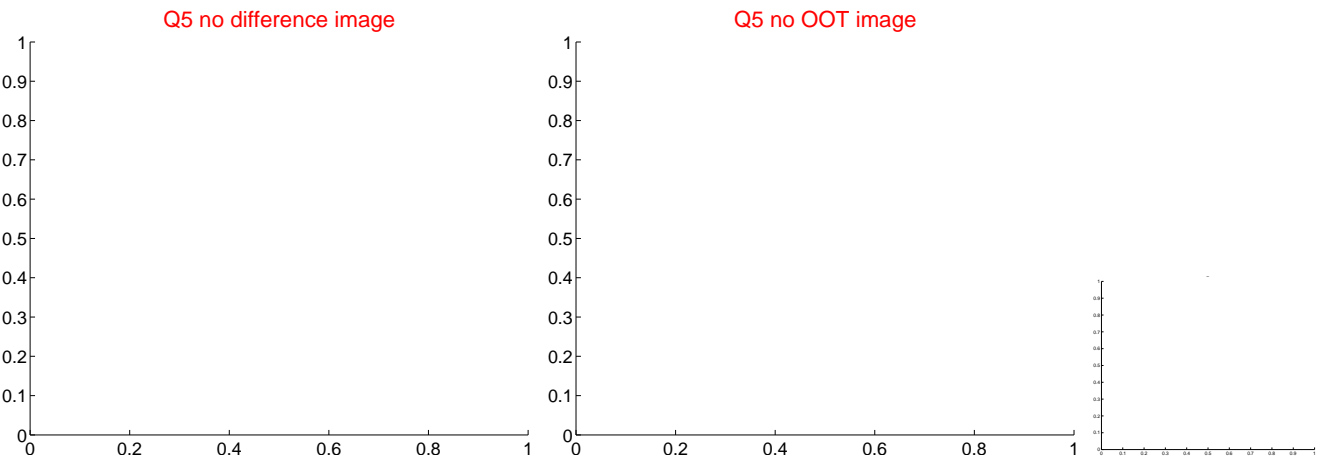


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



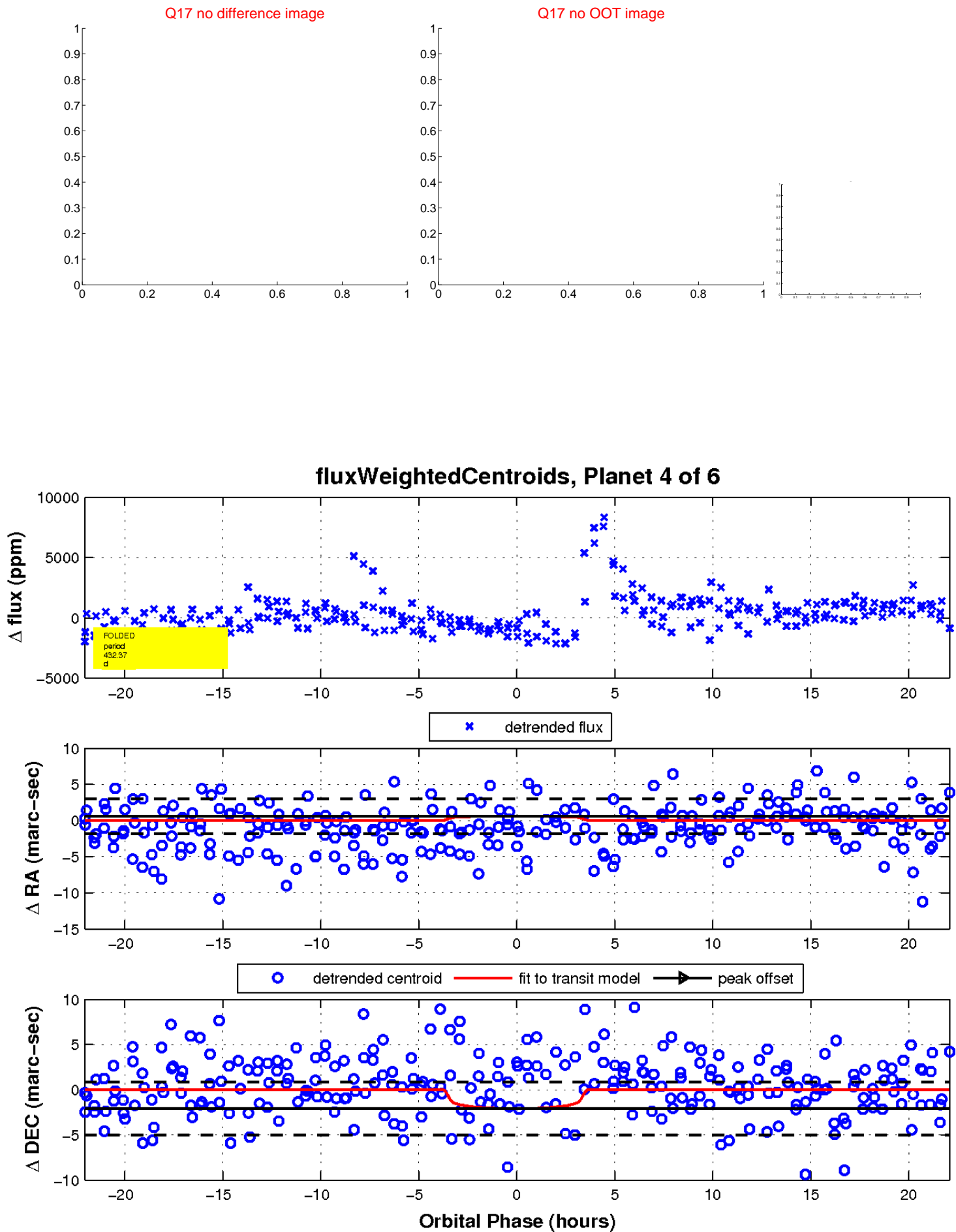
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

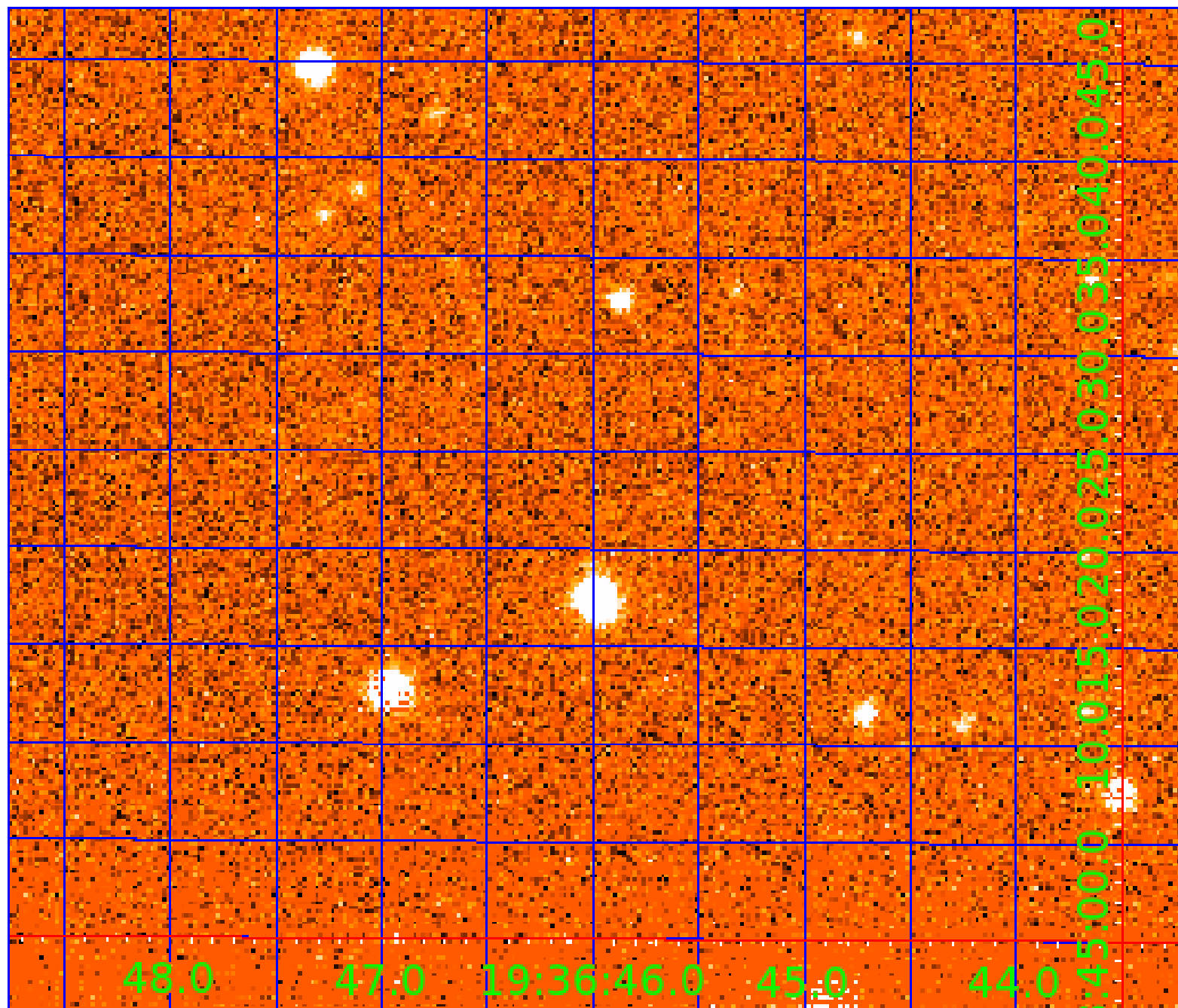


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
007966841-03	OBS	No	315.248349	330.237593	1797.5	13.566	12.8	8.0	0.82	5819	4.19	0.90
007966841-04	OBS	No	432.373917	366.819488	1443.3	7.365	13.4	5.1	0.82	5819	3.29	0.59
007966841-05	OBS	No	176.341019	181.932535	1719.2	3.559	11.2	7.6	0.82	5819	3.51	1.95
007966841-06	OBS	No	495.076667	371.337077	1667.5	4.863	12.3	7.2	0.82	5819	3.42	0.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007966841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

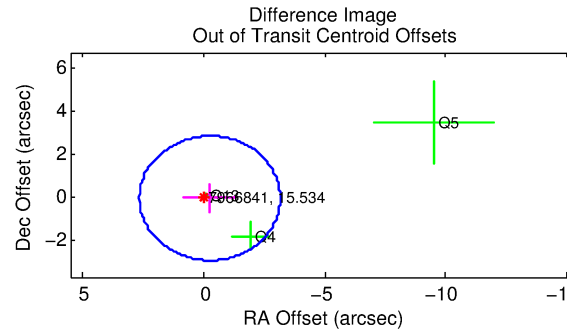
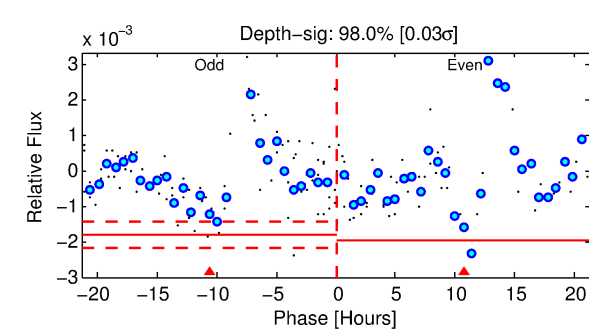
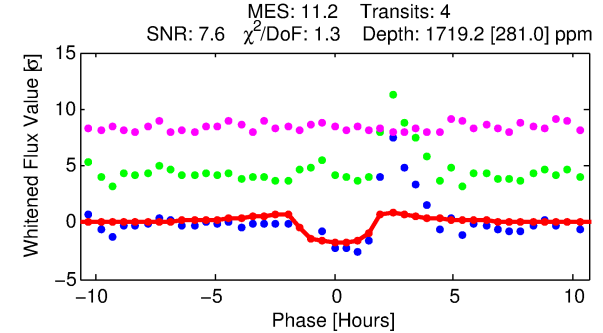
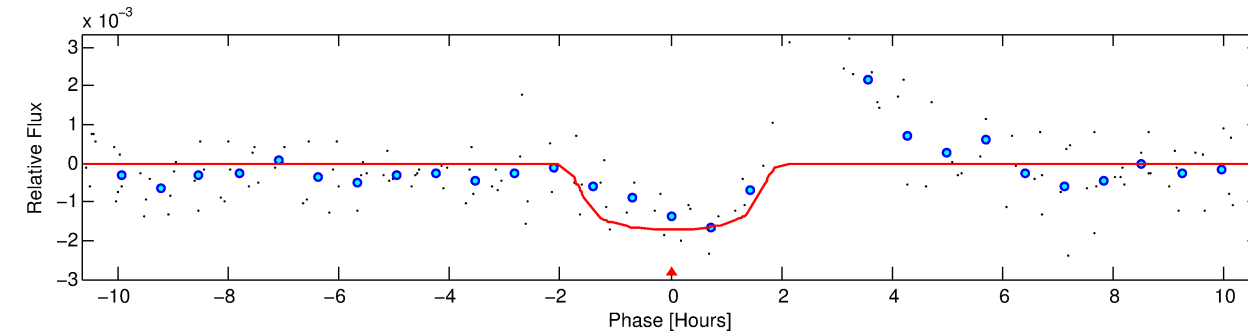
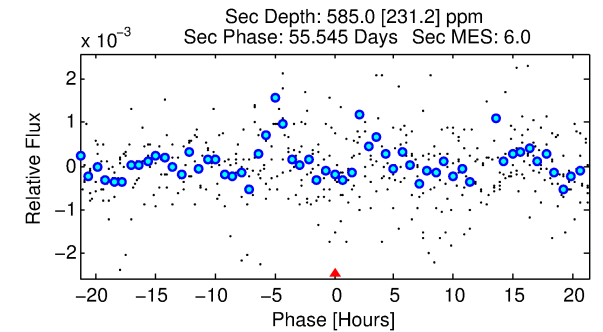
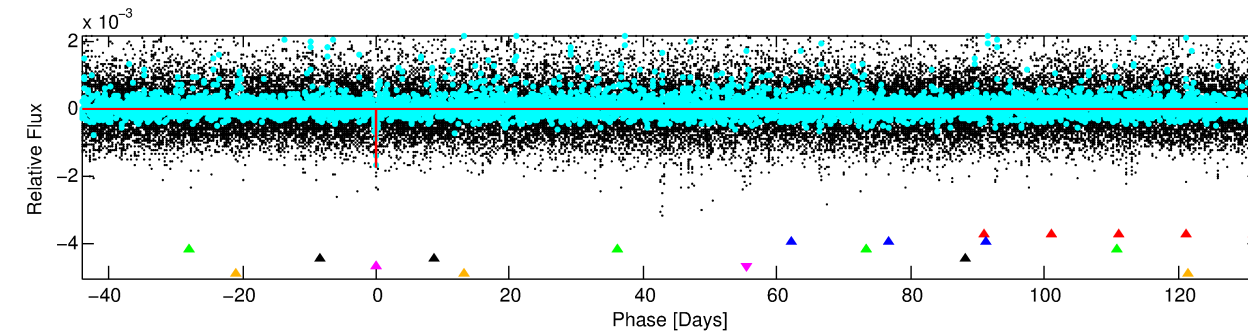
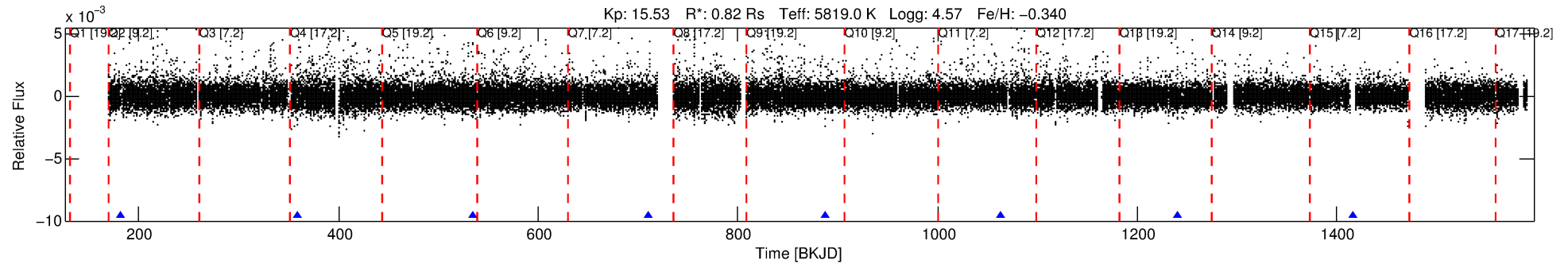
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007966841-05

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 5 of 6 Period: 176.341 d



## DV Fit Results:

Period = 176.34102 [0.00224] d  
Epoch = 181.9325 [0.0086] BKJD  
Rp/R\* = 0.0392 [0.1335]  
a/R\* = 335.74 [5343.12]  
b = 0.54 [20.94]  
Seff = 1.95 [0.70]  
Teq = 301 [27] K  
Rp = 3.51 [11.99] Re  
a = 0.5945 [0.1374] AU  
Ag = 9221.96 [62926.10] [0.15σ]  
Teffp = 4568 [7784] K [0.55σ]

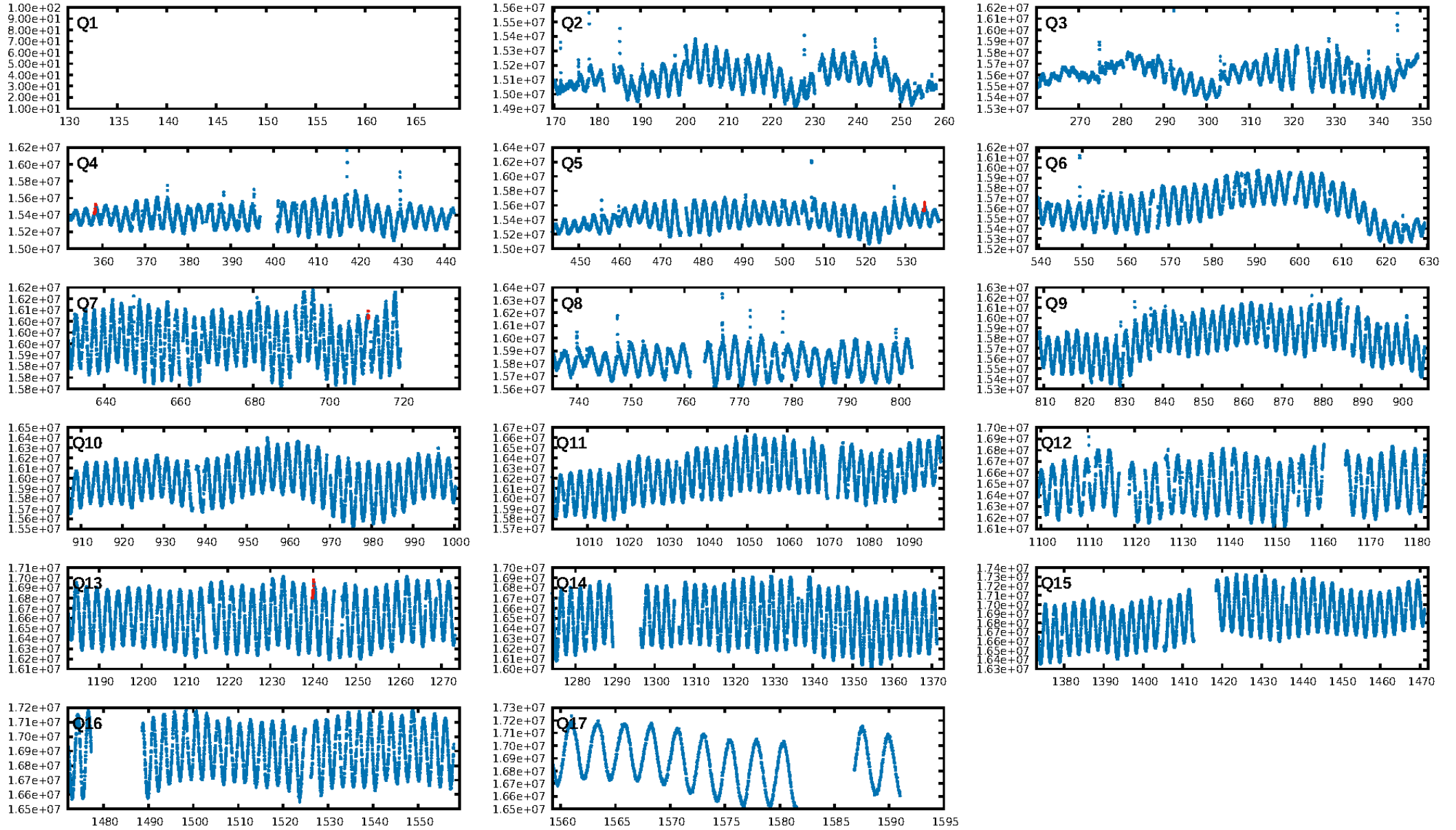
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [237.70σ]  
ModelChiSquare2-sig: 58.0%  
ModelChiSquareGof-sig: 98.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.537  
Centroid-sig: 4.9%  
Centroid-so: 1.521 arcsec [1.12σ]  
OotOffset-rm: 0.268 arcsec [0.28σ]  
KicOffset-rm: 0.251 arcsec [0.34σ]  
OotOffset-st: 0/0/1/2 [3]  
KicOffset-st: 0/0/1/2 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

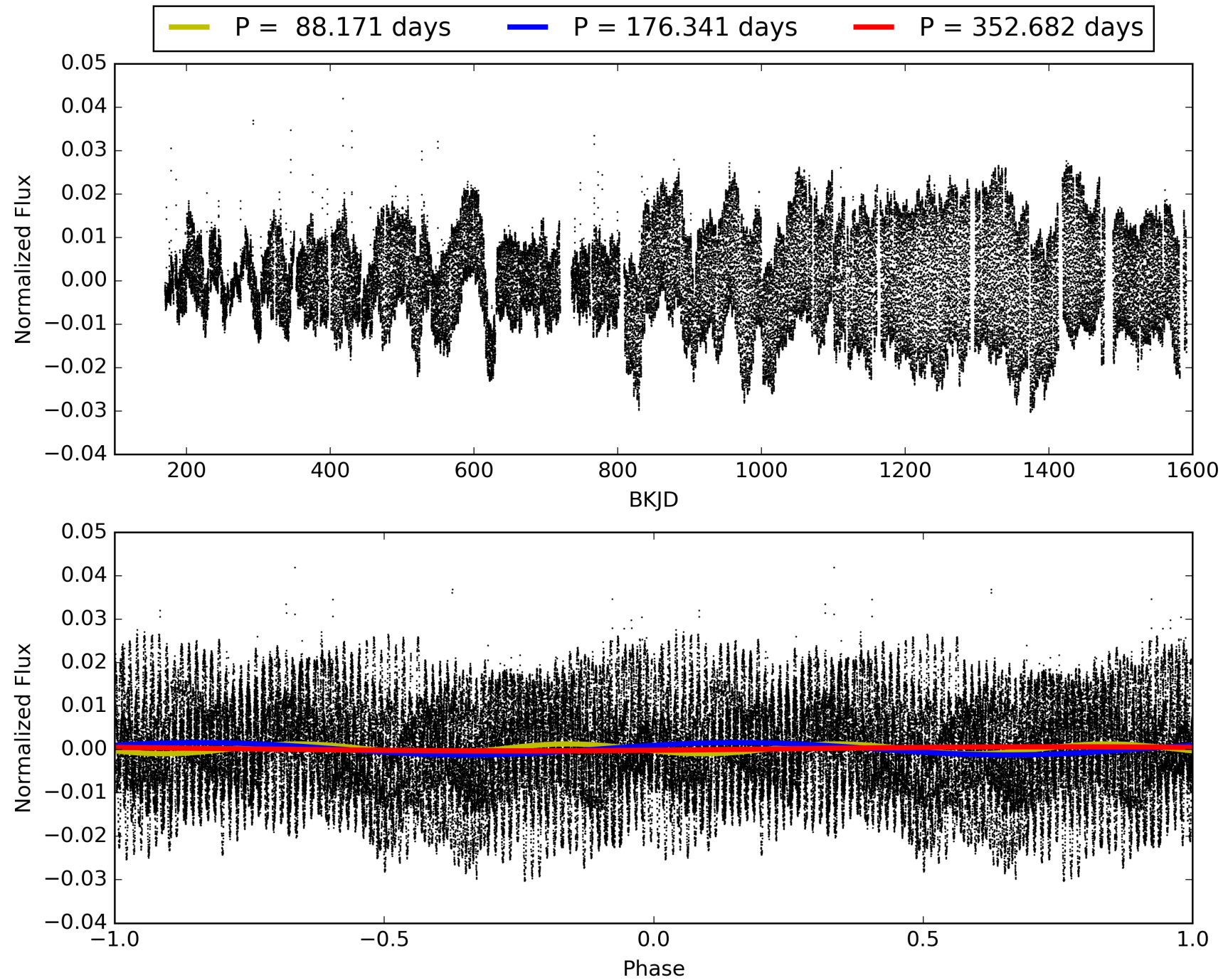
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:36 Z

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

# TCE 007966841-05, PDC Light Curves

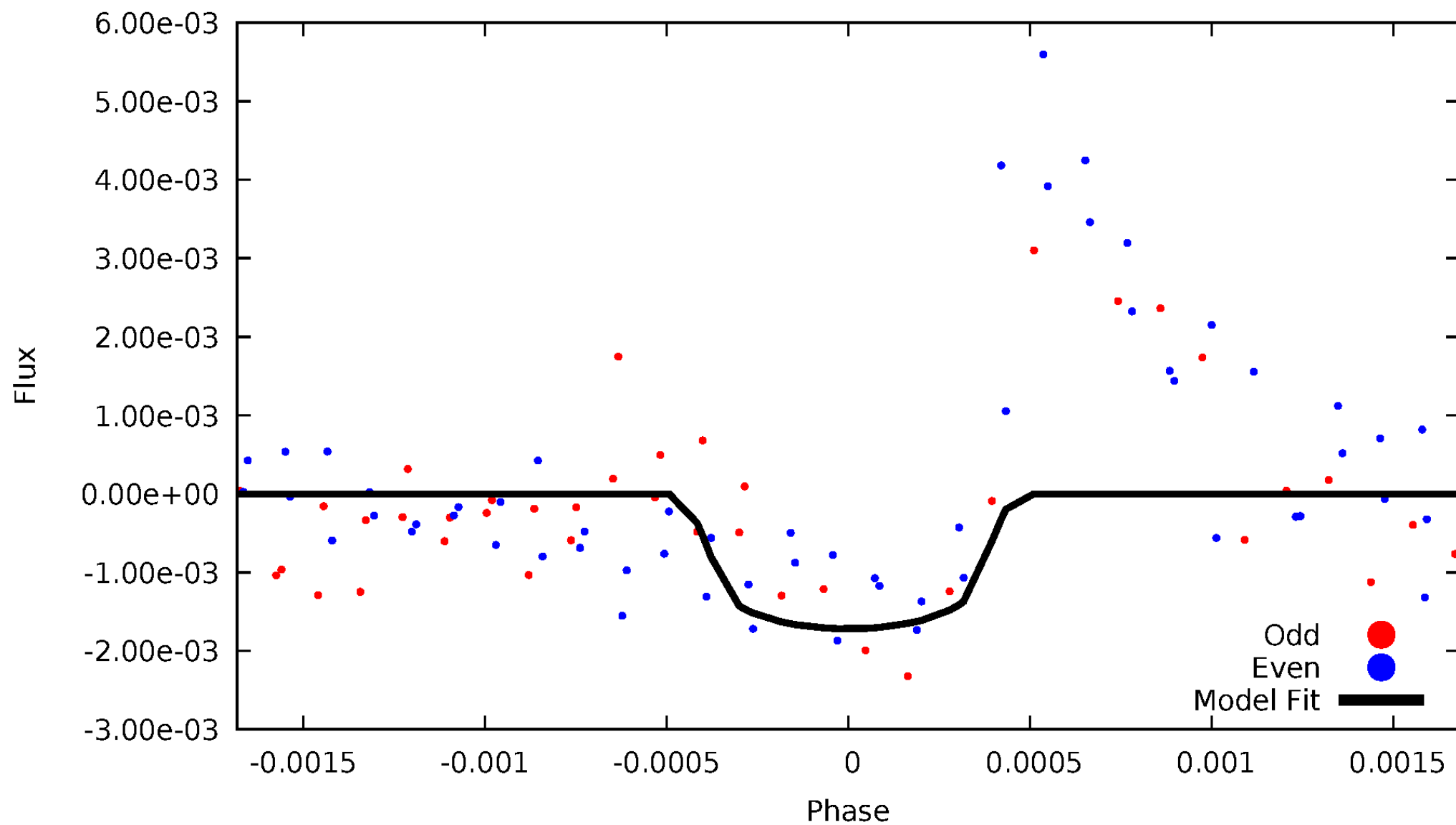


TCE 007966841-05



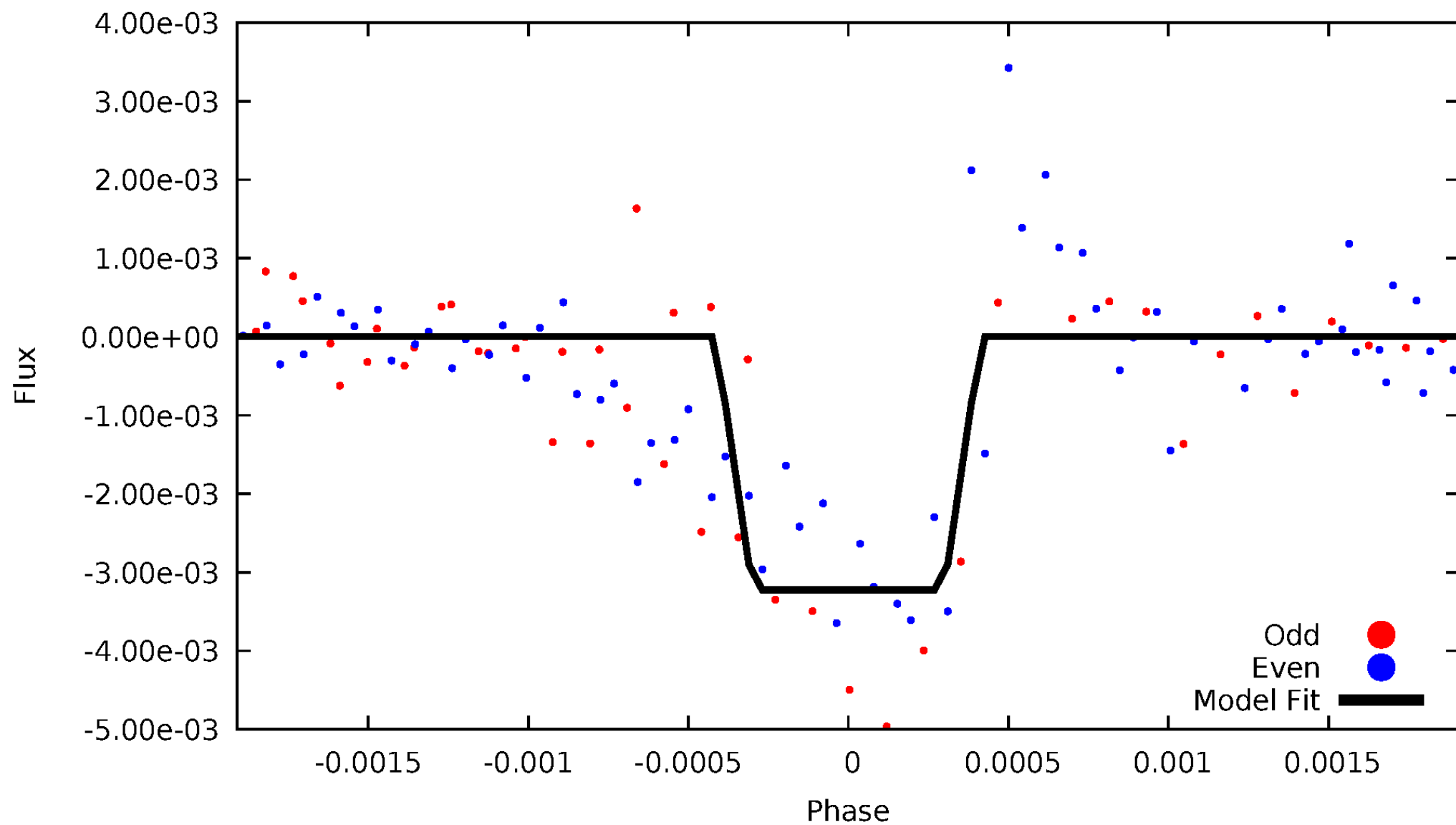
# DV Odd/Even

TCE 007966841-05



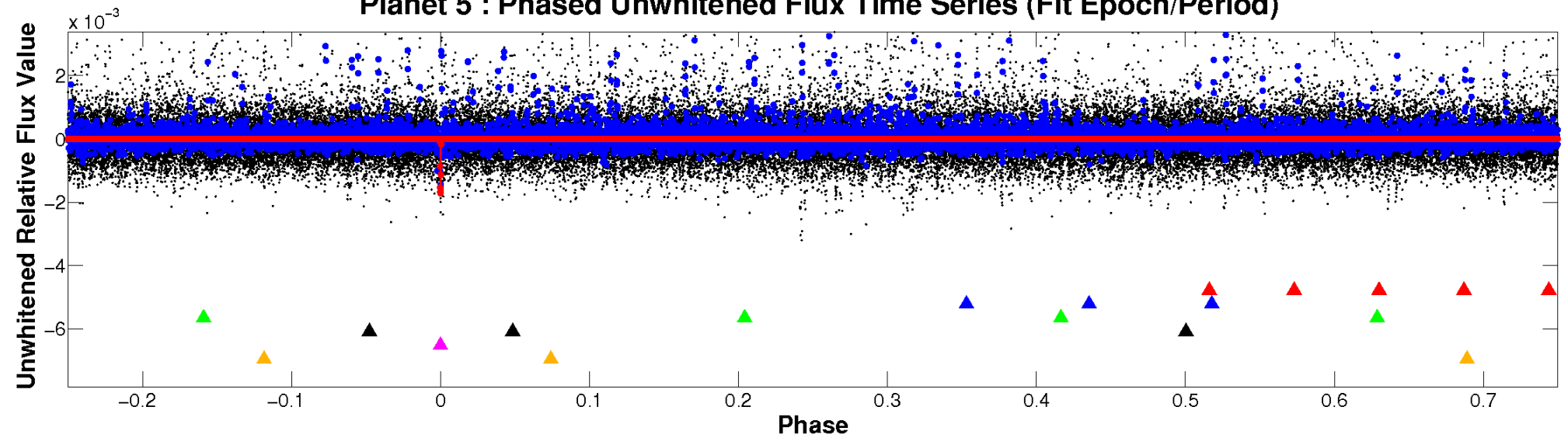
# ALT Odd/Even

TCE 007966841-05

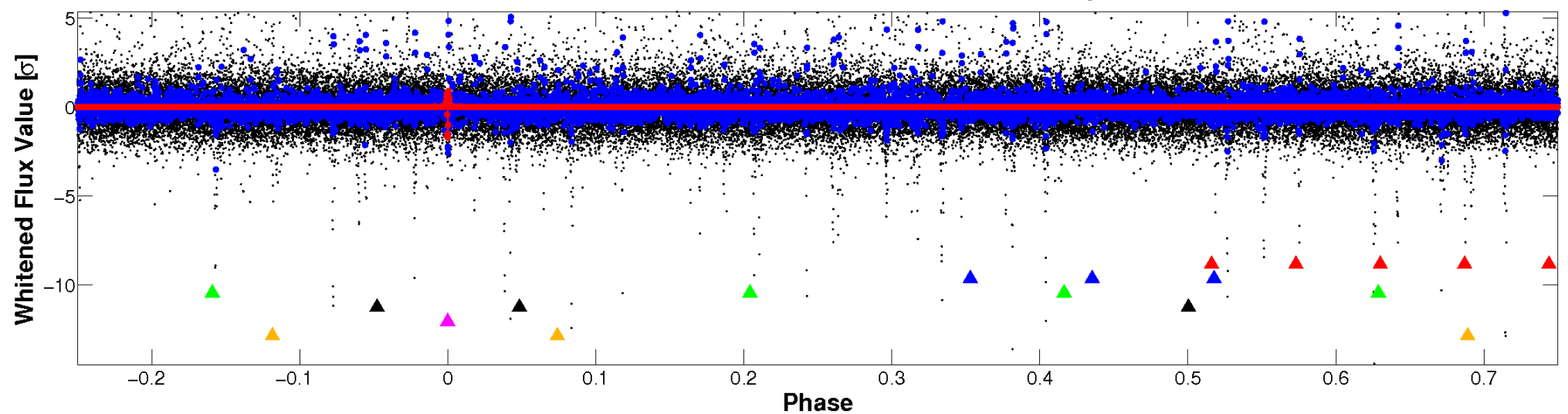


# Non-Whitened Vs. Whitened Light Curve

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



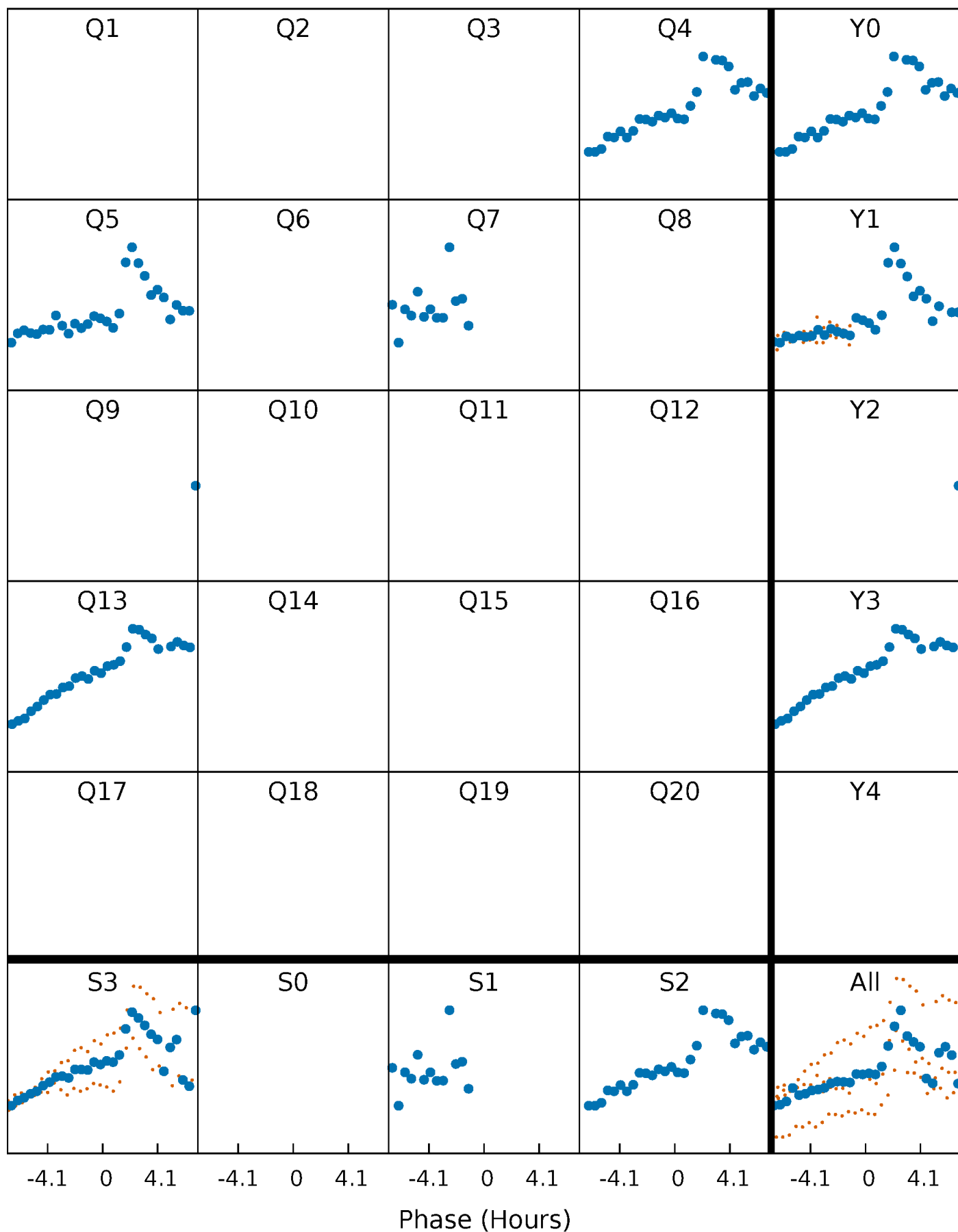
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

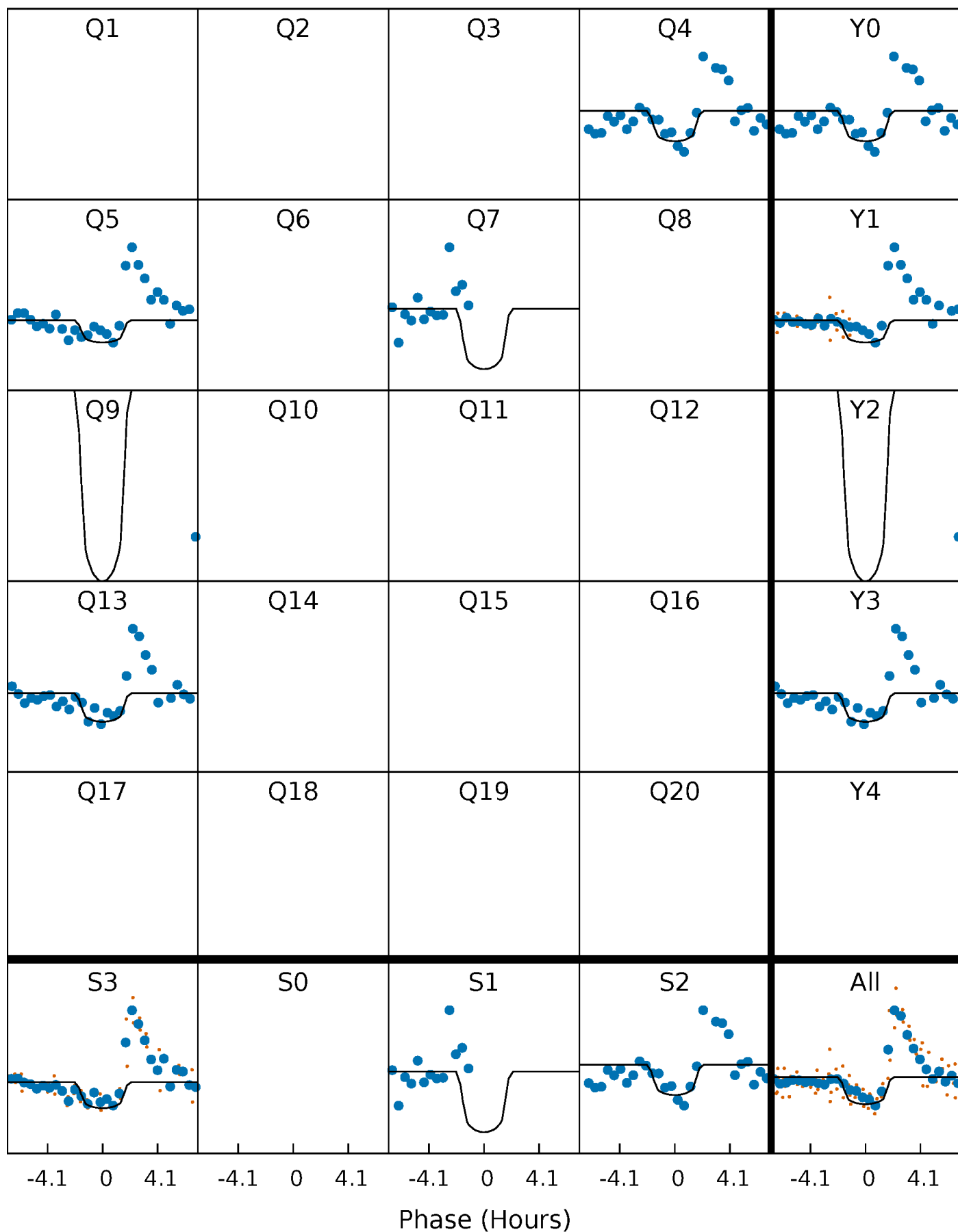
TCE 007966841-05   P=176.341019 Days    $T_0=181.932535$  (BKJD)





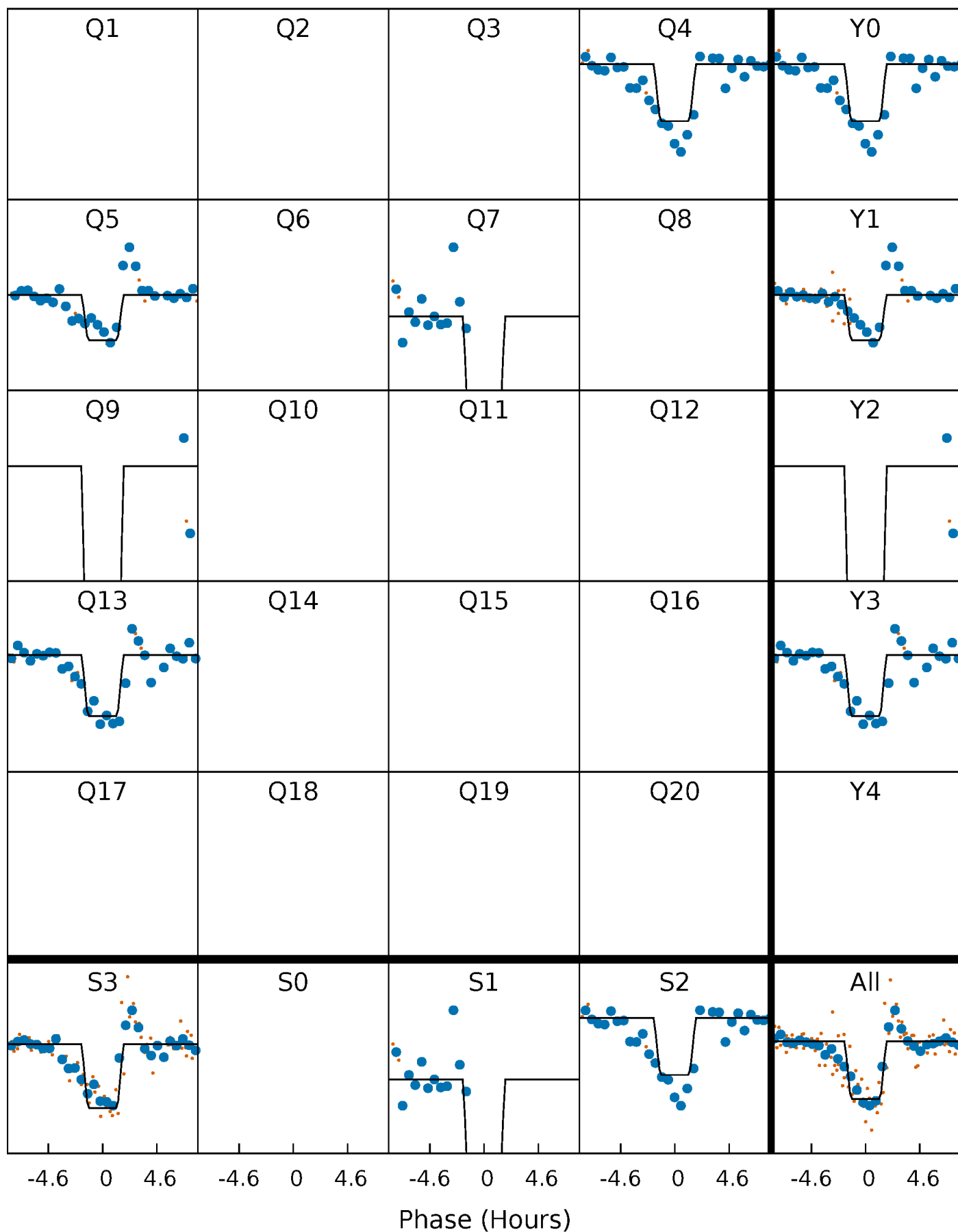
# DV Quarter-Phased Transit Curves

TCE 007966841-05     $P=176.341019$  Days     $T_0=181.932535$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

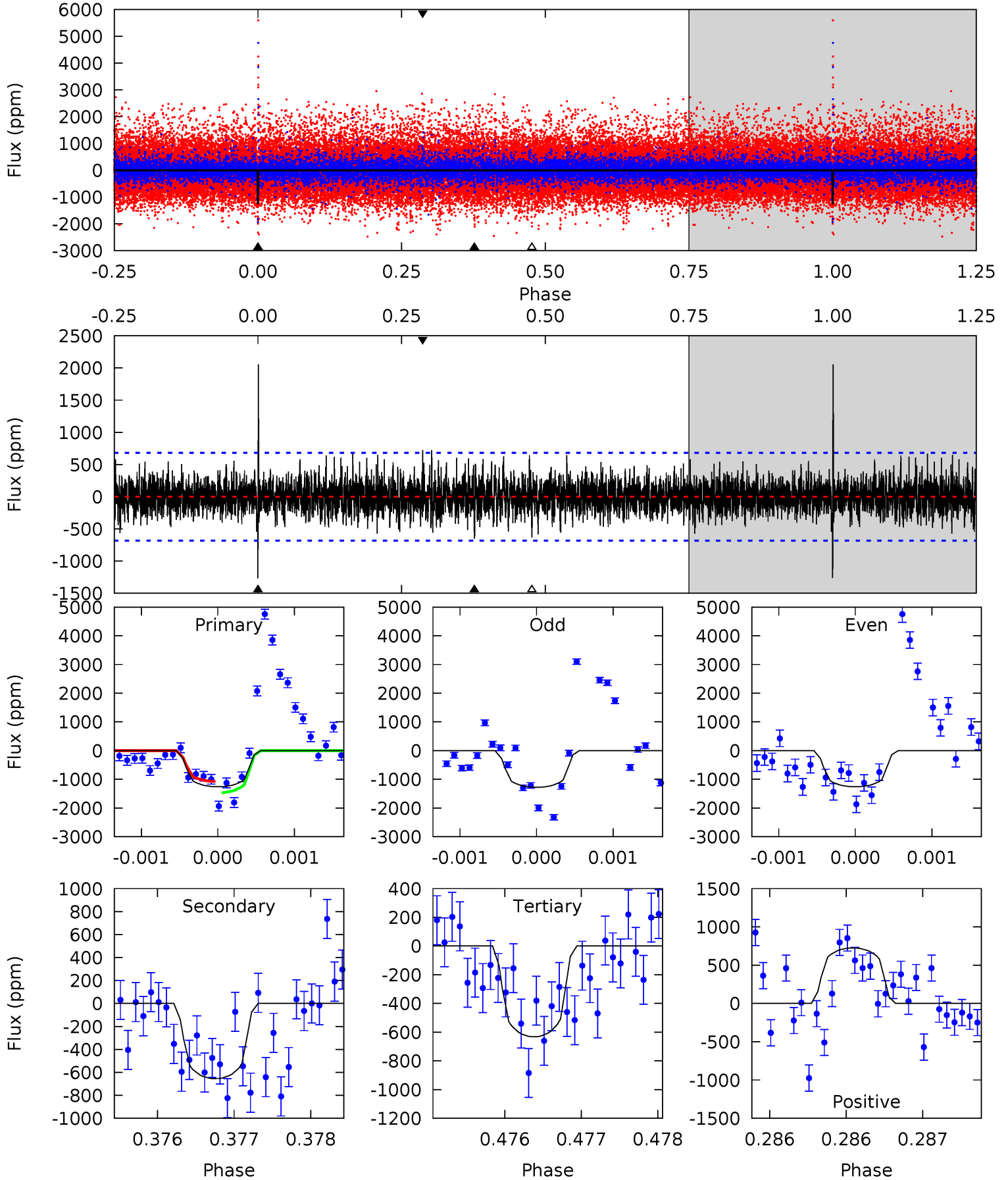
TCE 007966841-05     $P=176.339712$  Days     $T_0=181.941500$  (BKJD)



# DV Model-Shift Uniqueness Test

007966841-05, P = 176.341019 Days, E = 5.591516 Days

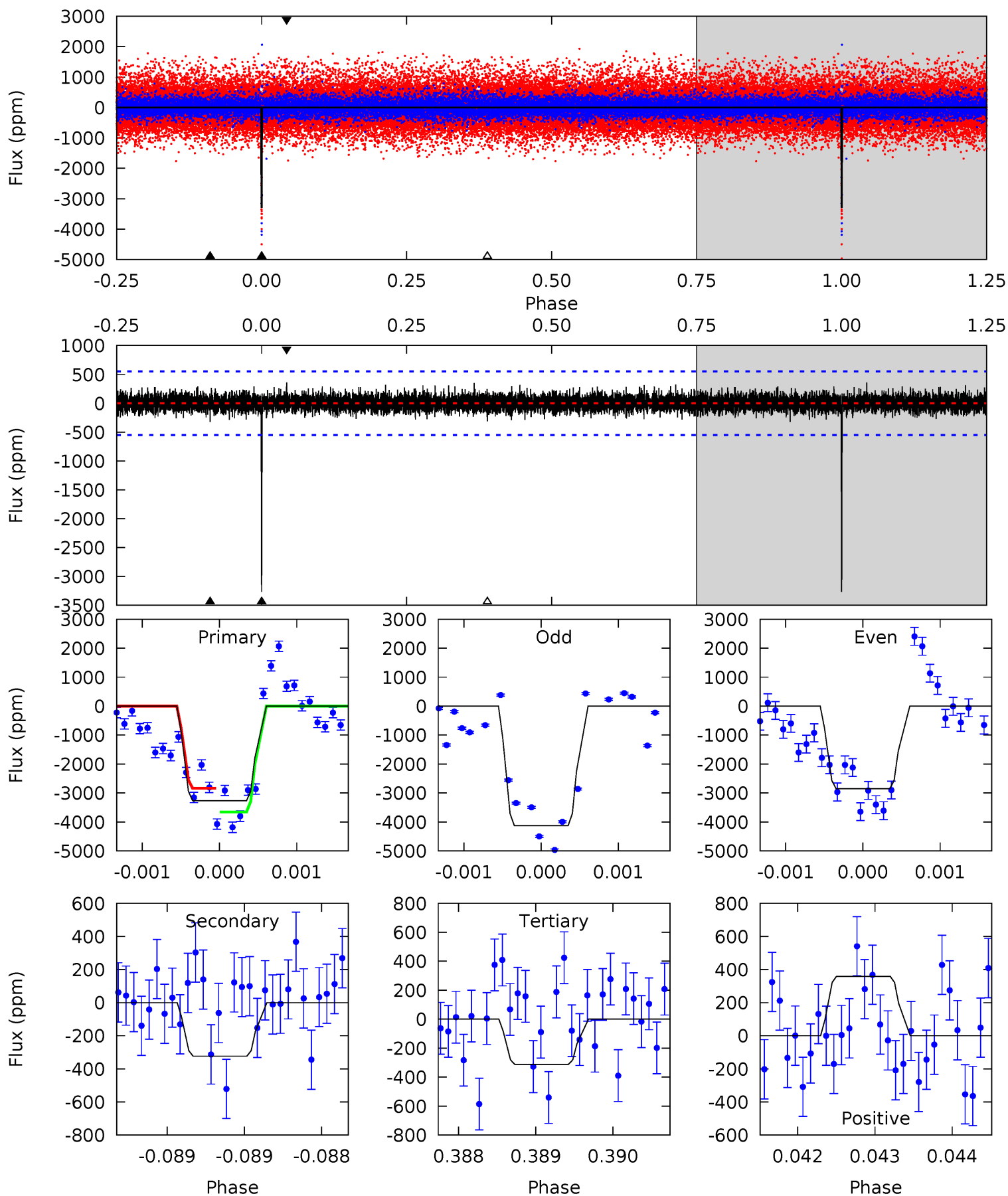
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	5.24	5.06	5.80	5.47	3.32	1.40	5.03	4.29	0.18	-0.56	0.07	0.75	0.62	1.57



# Alt Model-Shift Uniqueness Test

007966841-05, P = 176.339712 Days, E = 5.601788 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
32.6	3.22	3.10	3.57	5.50	3.36	0.84	29.5	29.0	0.12	-0.35	6.05	0.98	0.10	4.09



### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-655 \pm 125$	$9.77^{+10.23}_{-6.96}$	$431^{+26}_{-18}$	$3397^{+1924}_{-638}$	$1359^{+12742}_{-1051}$
Alt.	$-323 \pm 100$	$11.52^{+10.27}_{-7.84}$	$431^{+29}_{-19}$	$2931^{+1235}_{-465}$	$474^{+4150}_{-350}$

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

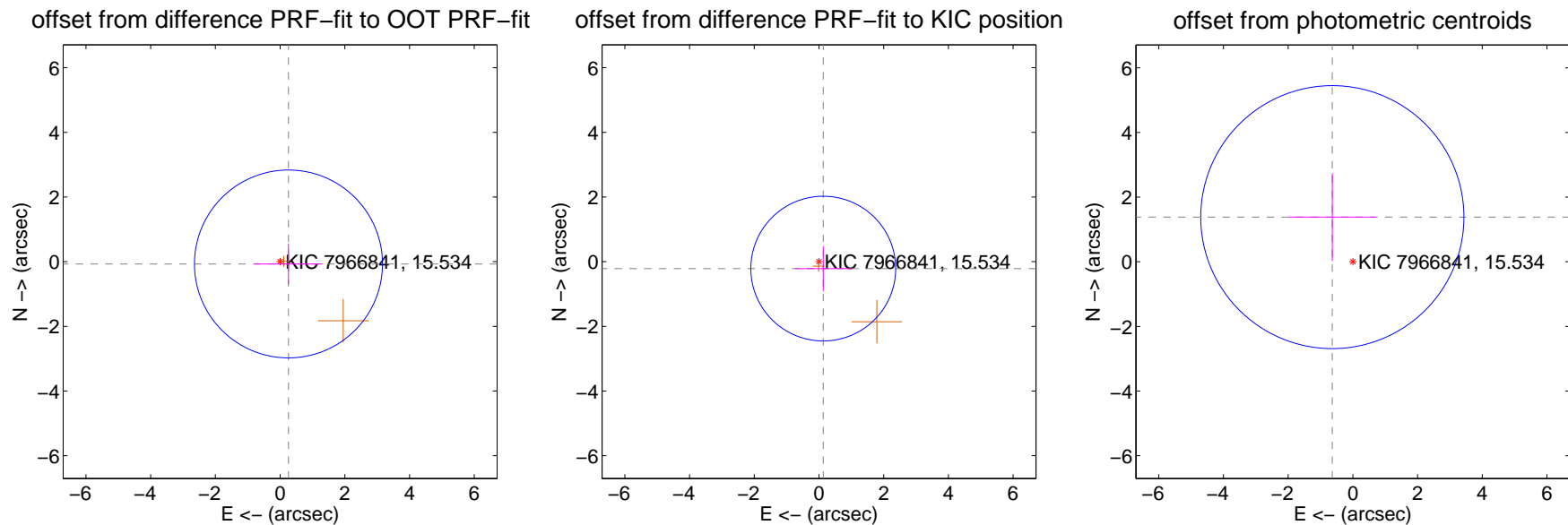
## DV Centroid Data

Supplemental centroid analysis for 007966841-05. Kepler magnitude: 15.53. Transit SNR 7.60

There are 0 quarters with good PRF difference image offsets

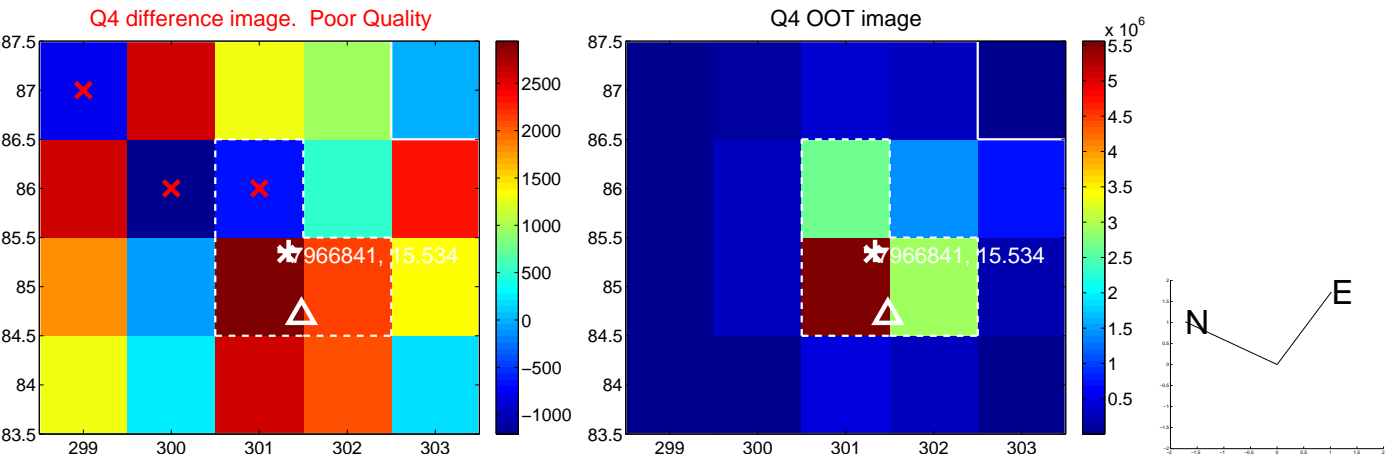
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.268 \pm 0.969$	0.28	$-0.259 \pm 1.058$	$-0.070 \pm 0.632$
PRF-fit source offset from KIC position	$0.251 \pm 0.746$	0.34	$-0.132 \pm 0.865$	$-0.214 \pm 0.695$
photometric centroid source offset	$1.52 \pm 1.36$	1.12	$0.63 \pm 1.34$	$1.38 \pm 1.36$

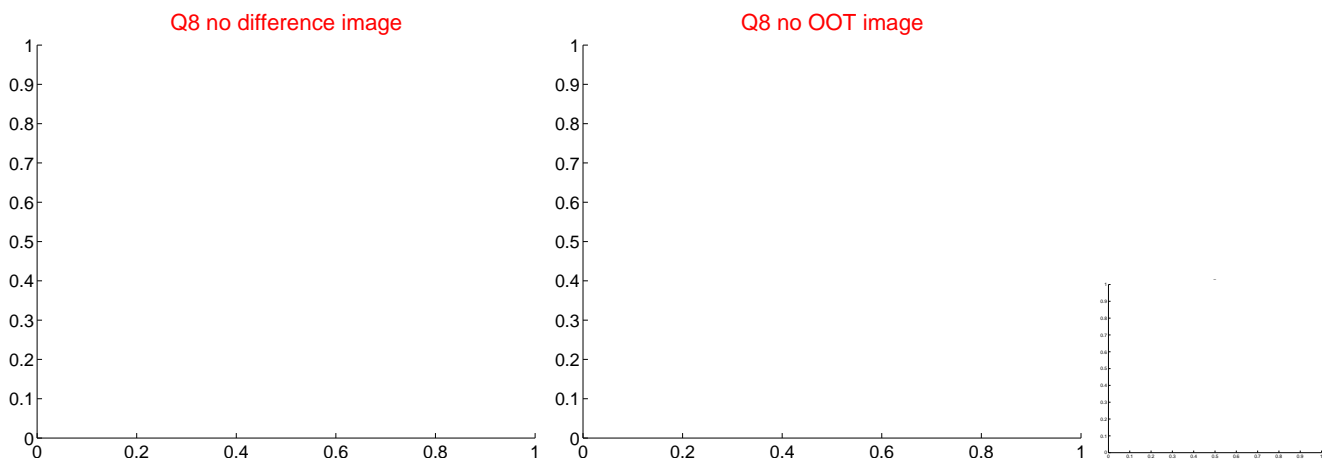
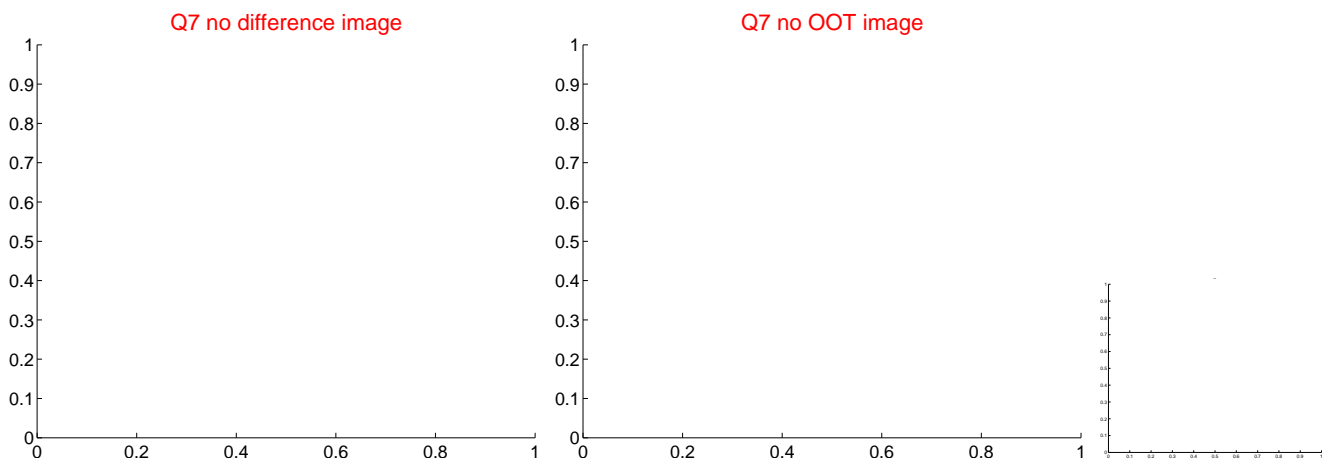
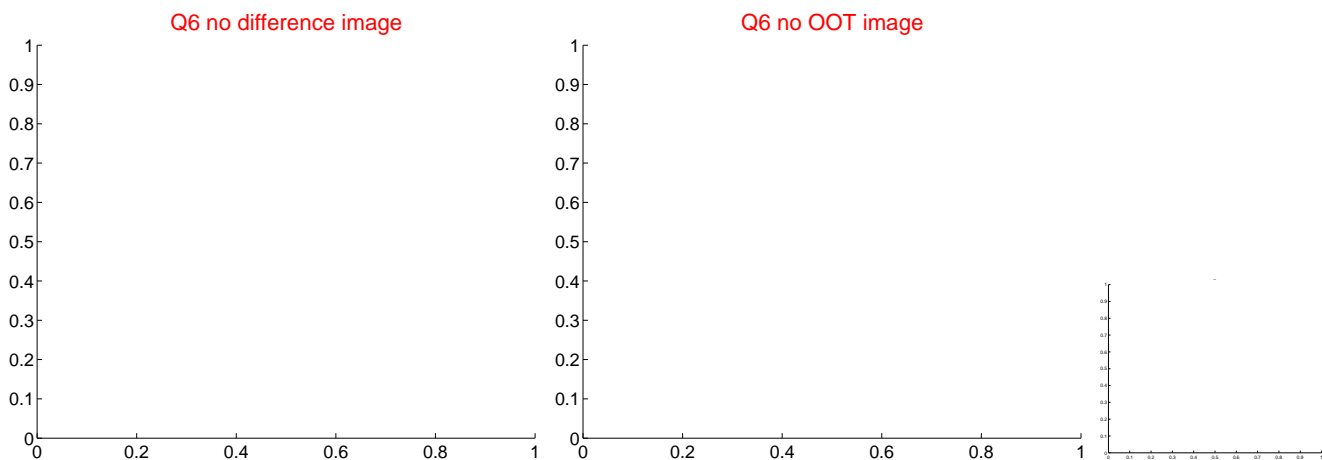
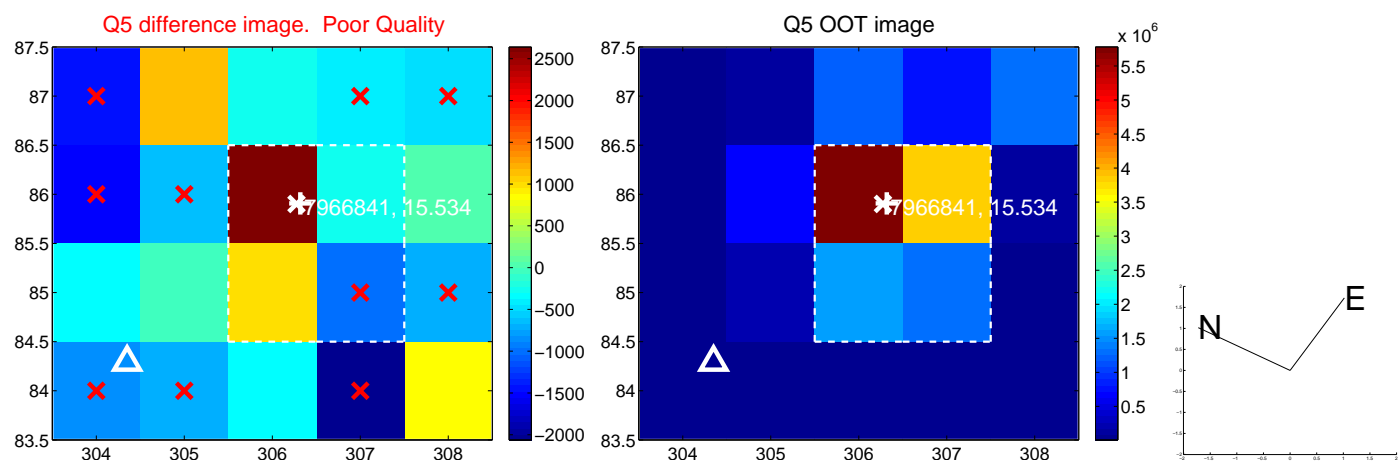


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

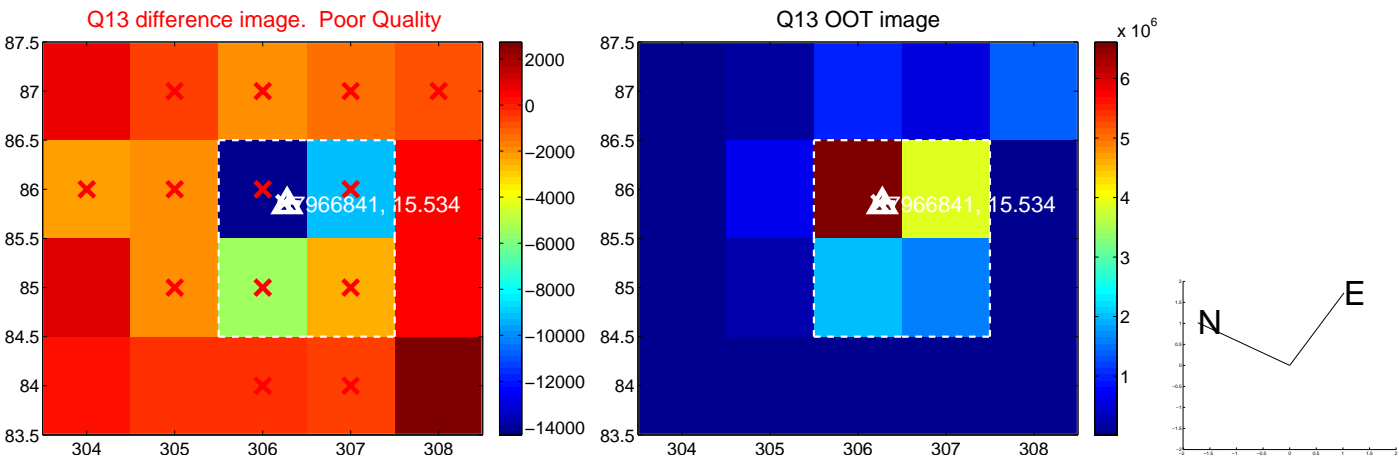




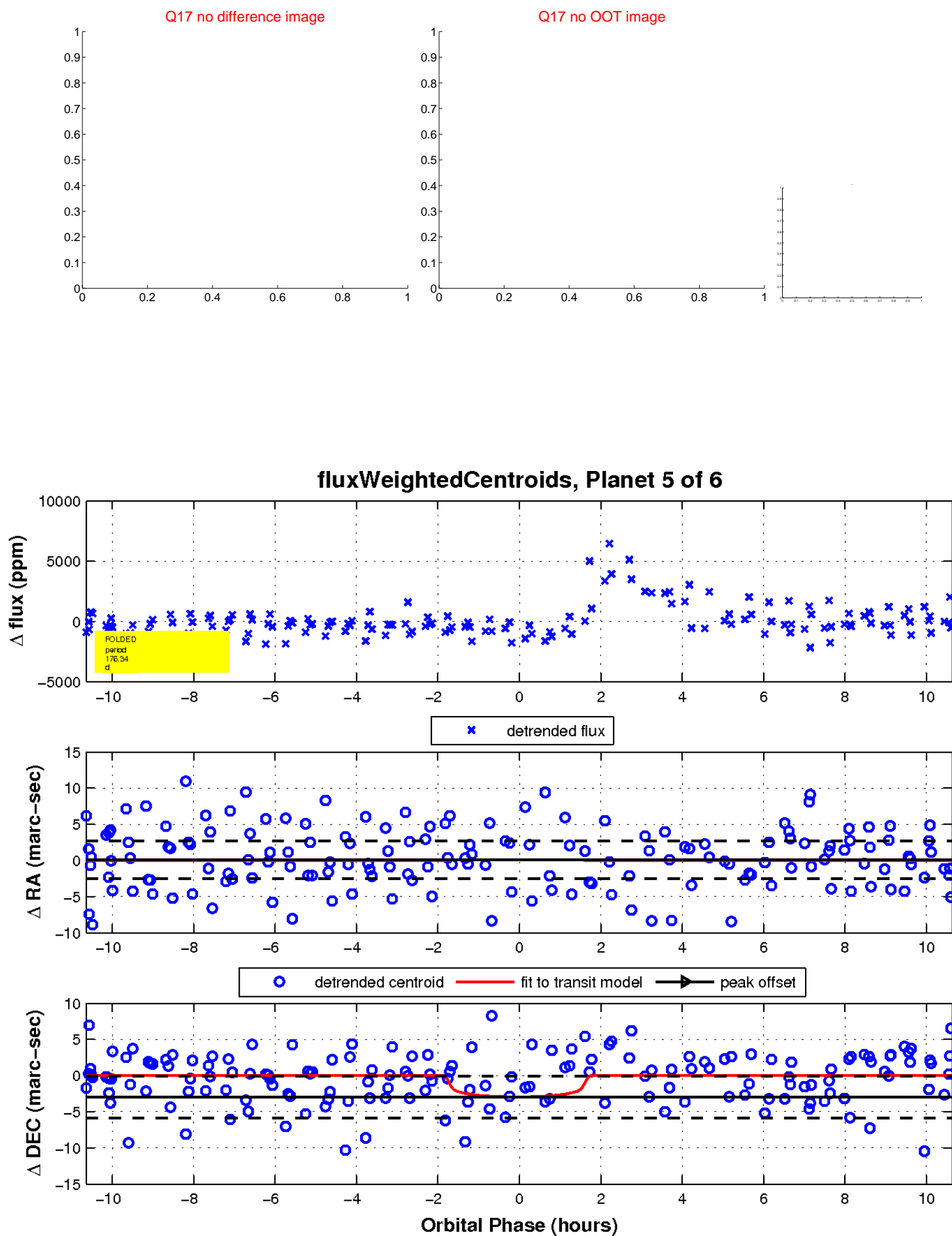
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

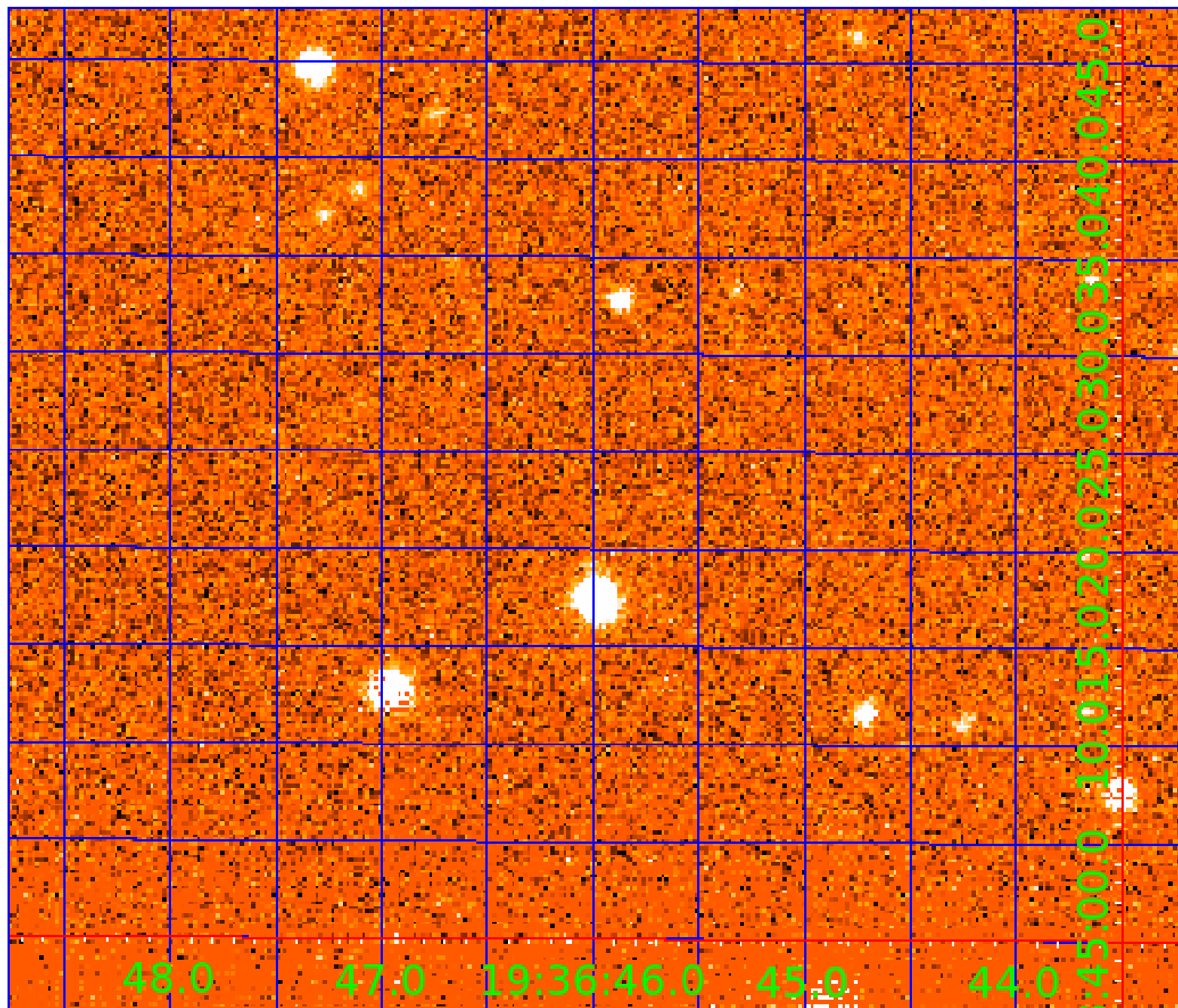


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007966841

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007966841-01	OBS	No	342.635524	136.781112	2006.6	4.297	17.2	8.8	0.82	5819	3.65	0.81
007966841-02	OBS	No	543.541414	244.191299	1636.8	4.408	13.6	6.3	0.82	5819	3.42	0.44
007966841-03	OBS	No	315.248349	330.237593	1797.5	13.566	12.8	8.0	0.82	5819	4.19	0.90
007966841-04	OBS	No	432.373917	366.819488	1443.3	7.365	13.4	5.1	0.82	5819	3.29	0.59
007966841-05	OBS	No	176.341019	181.932535	1719.2	3.559	11.2	7.6	0.82	5819	3.51	1.95
007966841-06	OBS	No	495.076667	371.337077	1667.5	4.863	12.3	7.2	0.82	5819	3.42	0.49

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007966841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007966841-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007966841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
007966841-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

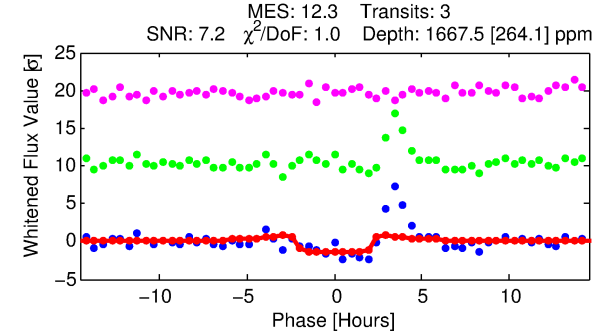
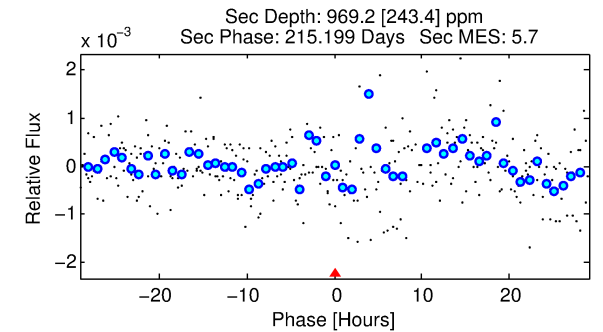
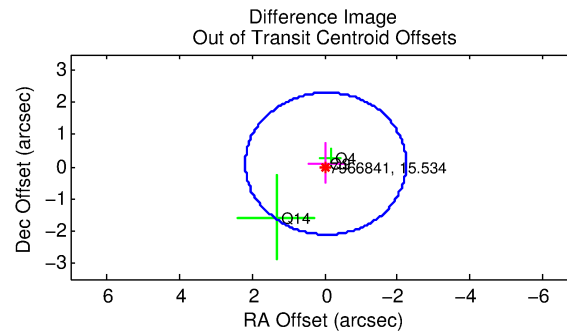
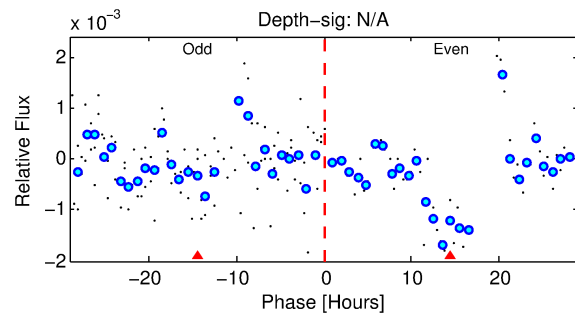
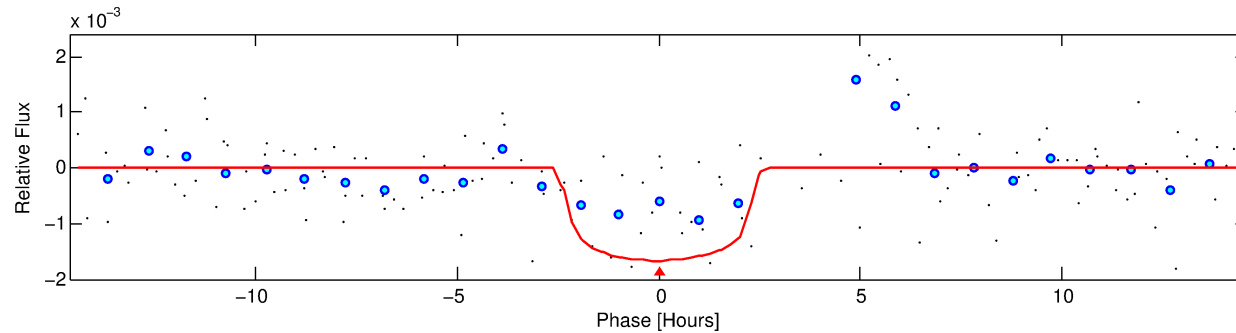
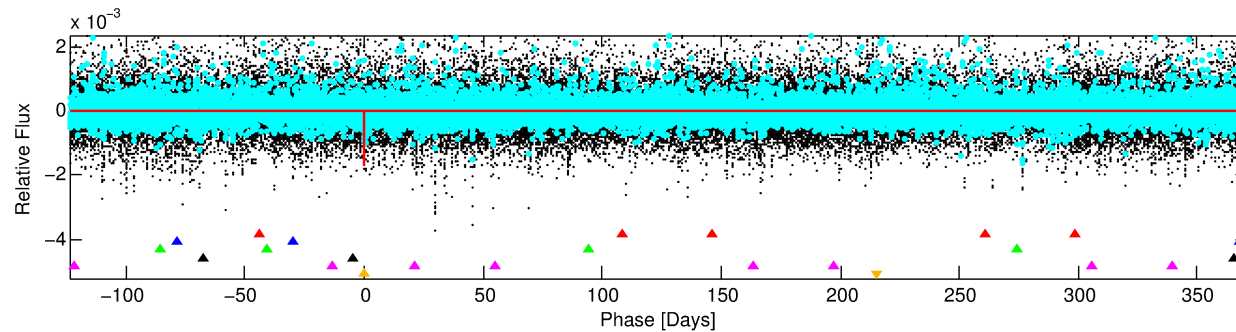
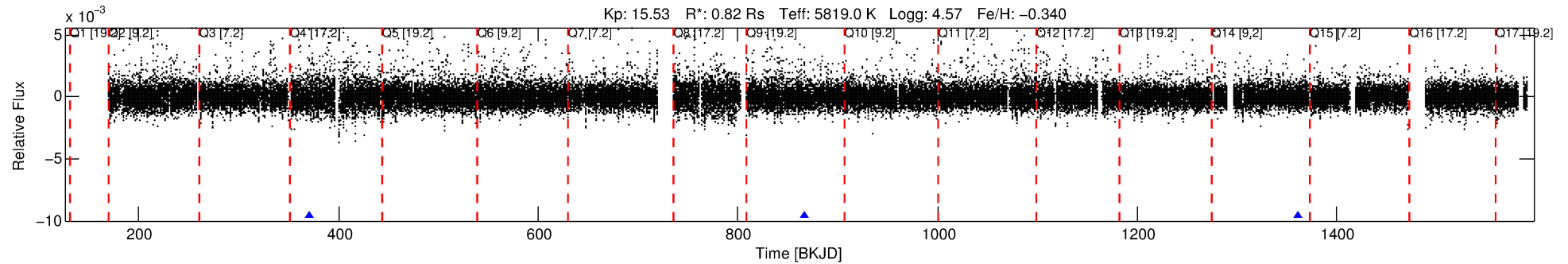
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007966841-06

No Significant Match Found

# DV One-Page Summary

KIC: 7966841 Candidate: 6 of 6 Period: 495.077 d



## DV Fit Results:

Period = 495.07667 [0.00746] d  
Epoch = 371.3371 [0.0098] BKJD  
Rp/R\* = 0.0383 [0.0369]  
a/R\* = 716.41 [3158.33]  
b = 0.48 [7.15]  
Seff = 0.49 [0.18]  
Teq = 214 [19] K  
Rp = 3.42 [3.44] Re  
a = 1.1831 [0.2734] AU  
Ag = 63635.97 [125737.91] [0.51σ]  
Teffp = 5248 [2559] K [1.97σ]

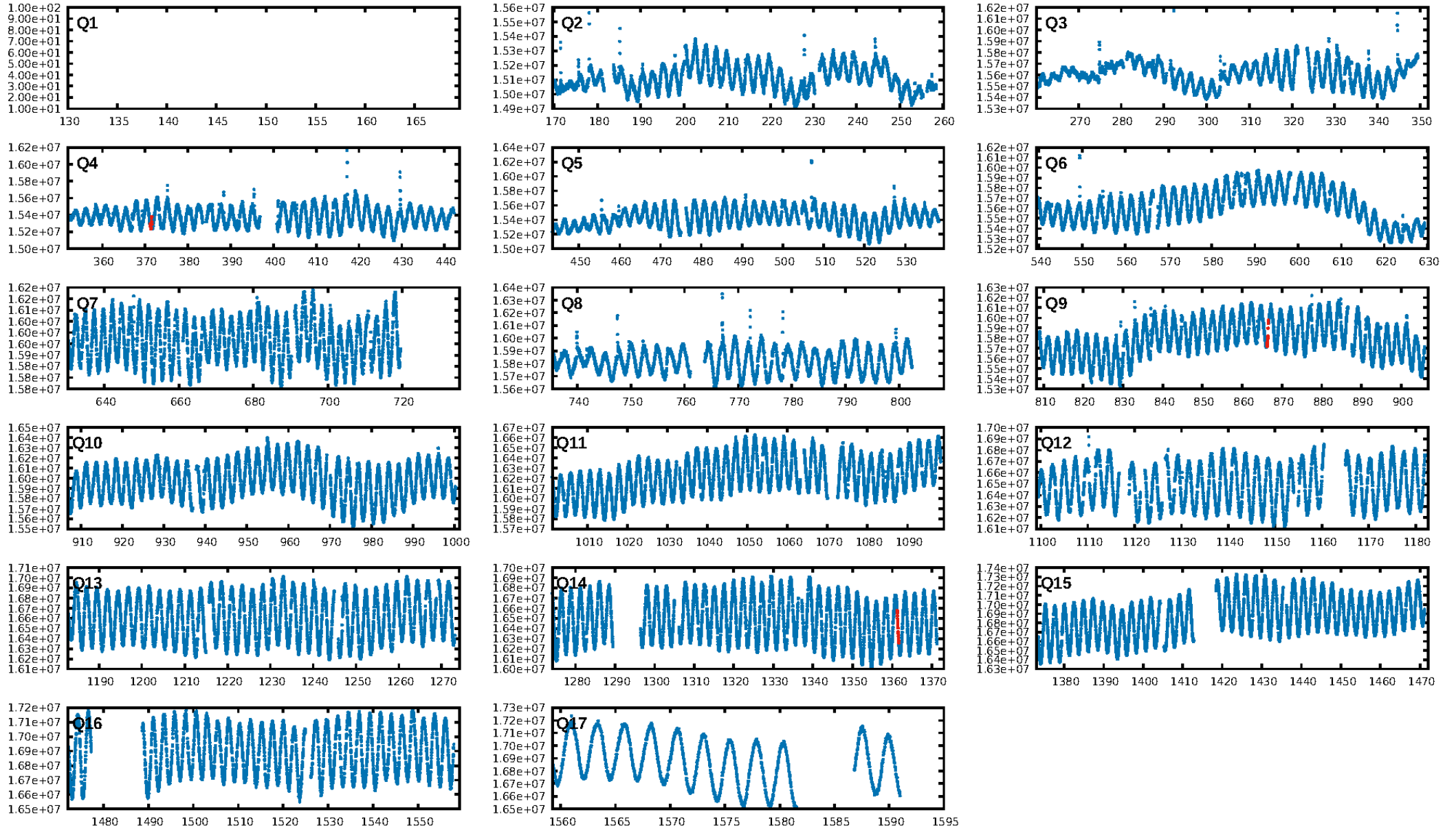
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [170.51σ]  
LongPeriod-sig: 100.0% [177.22σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 78.1%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.4382  
Centroid-sig: 1.6%  
Centroid-so: 2.228 arcsec [1.60σ]  
OotOffset-rm: 0.100 arcsec [0.13σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.101 arcsec [0.27σ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:51 Z

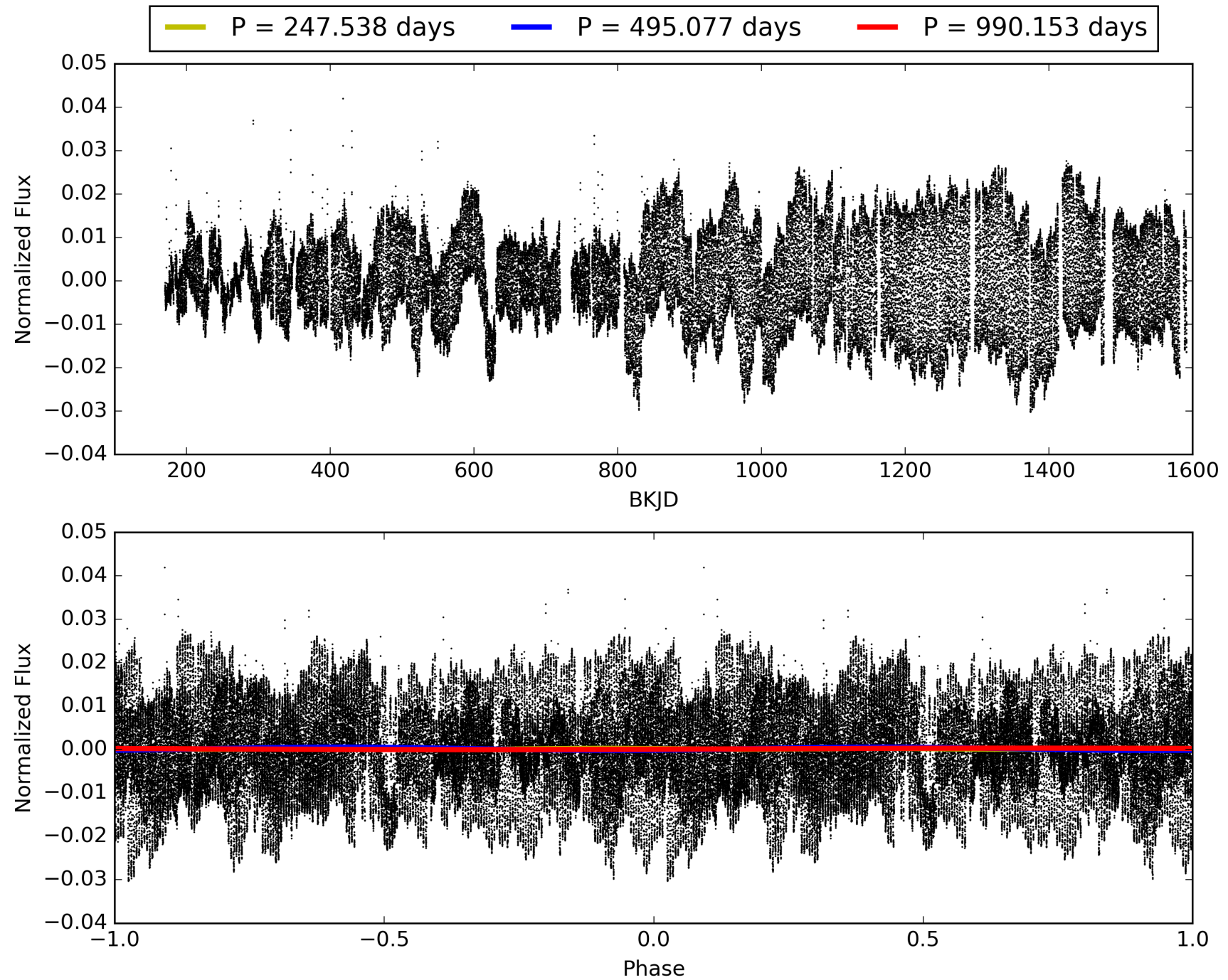
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007966841-06, PDC Light Curves





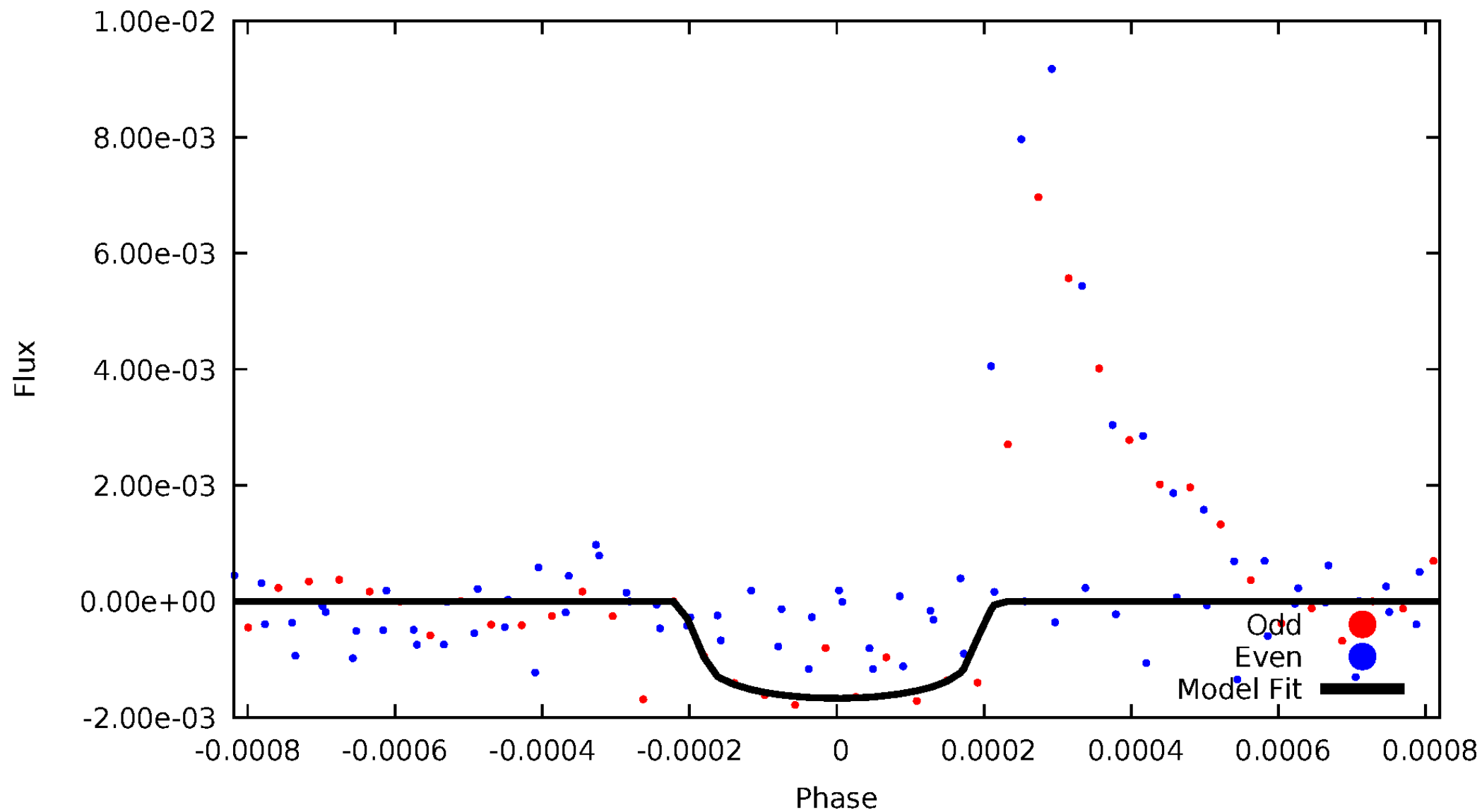
TCE 007966841-06





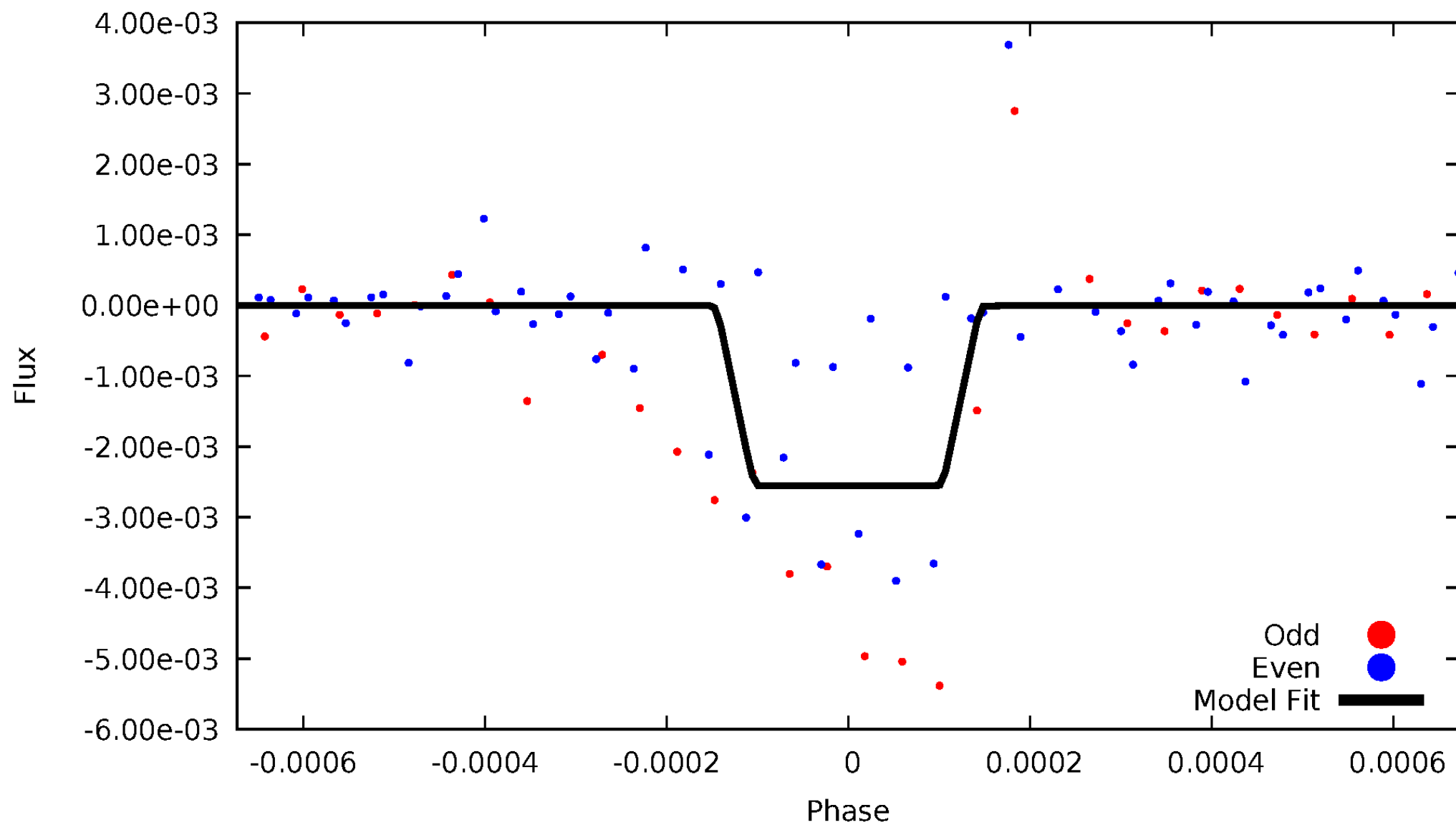
# DV Odd/Even

TCE 007966841-06



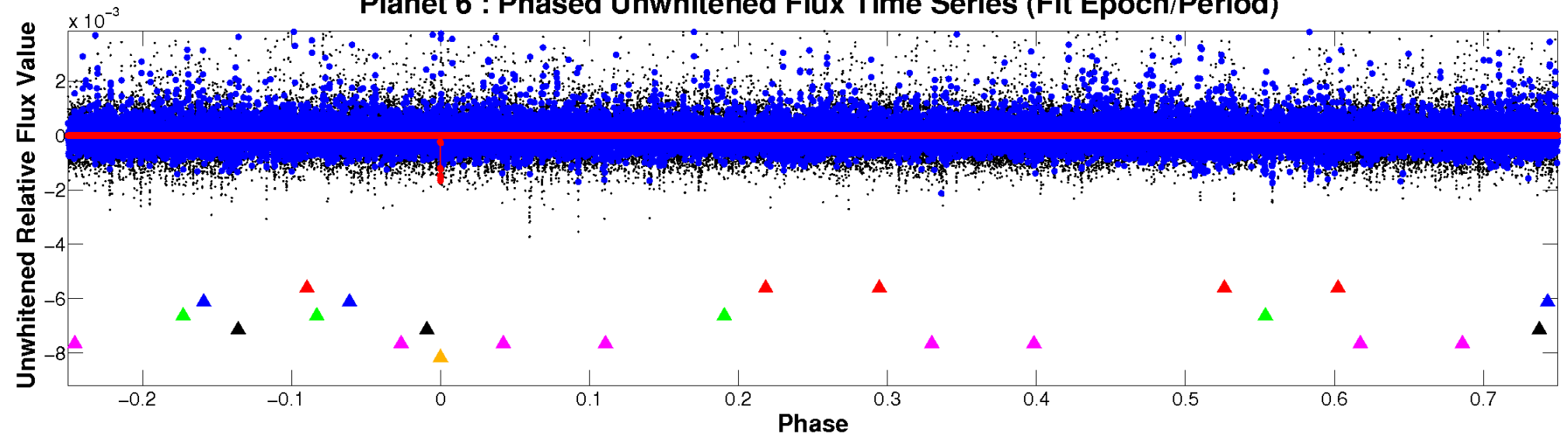
# ALT Odd/Even

TCE 007966841-06

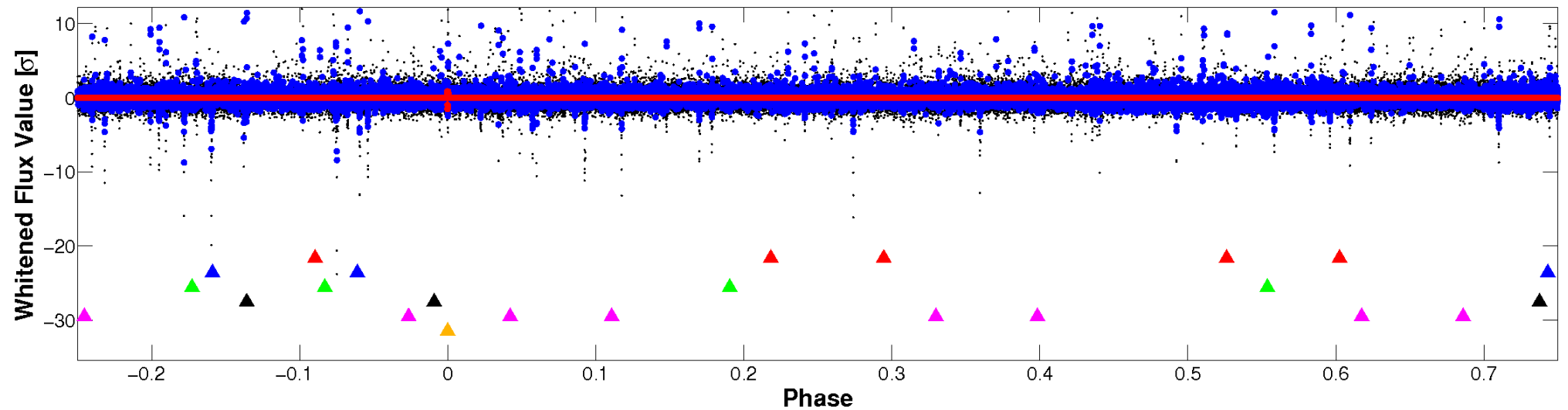


# Non-Whitened Vs. Whitened Light Curve

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

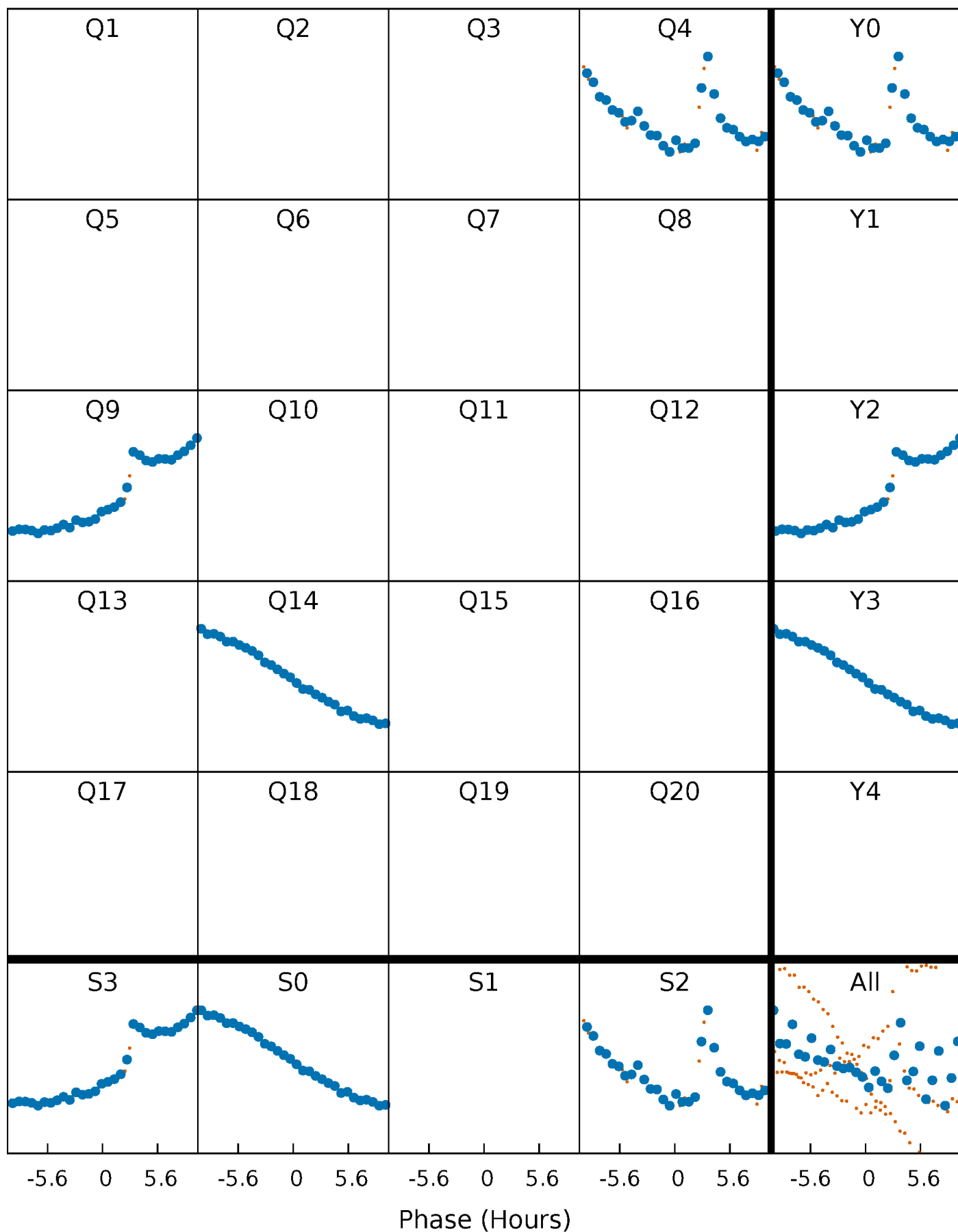


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



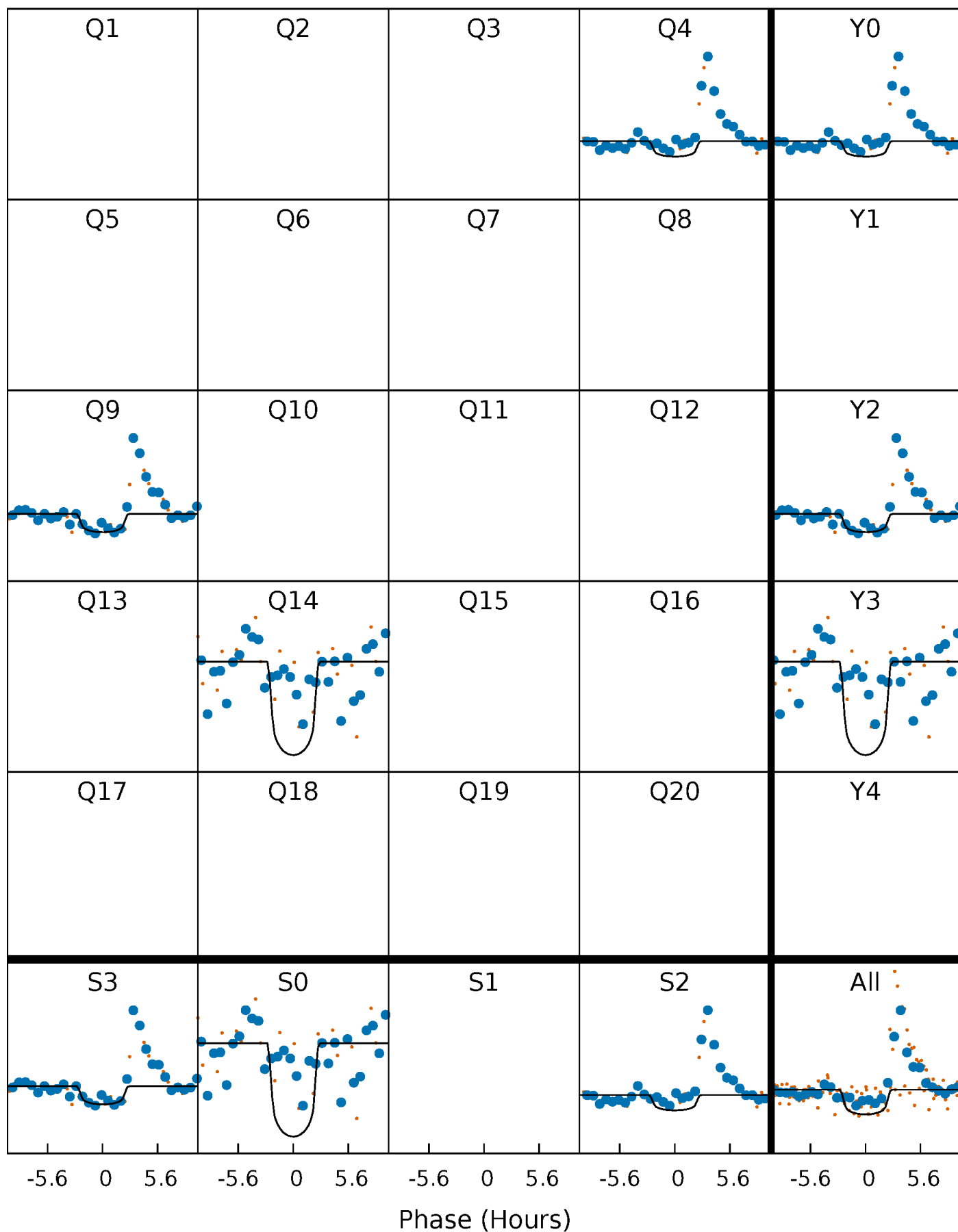
# PDC Quarter-Phased Transit Curves

TCE 007966841-06 P=495.076667 Days  $T_0=371.337077$  (BKJD)



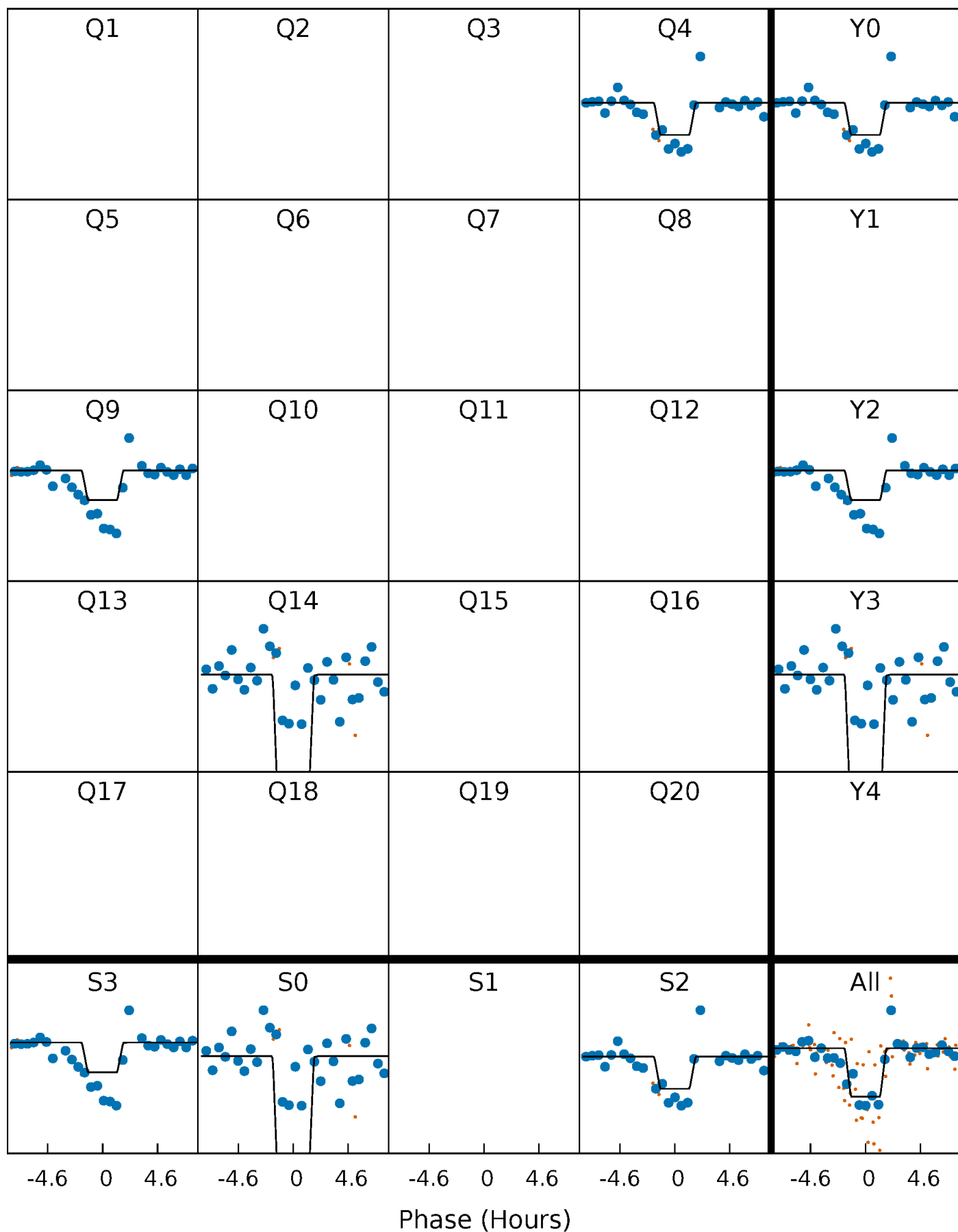
# DV Quarter-Phased Transit Curves

TCE 007966841-06     $P=495.076667$  Days     $T_0=371.337077$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

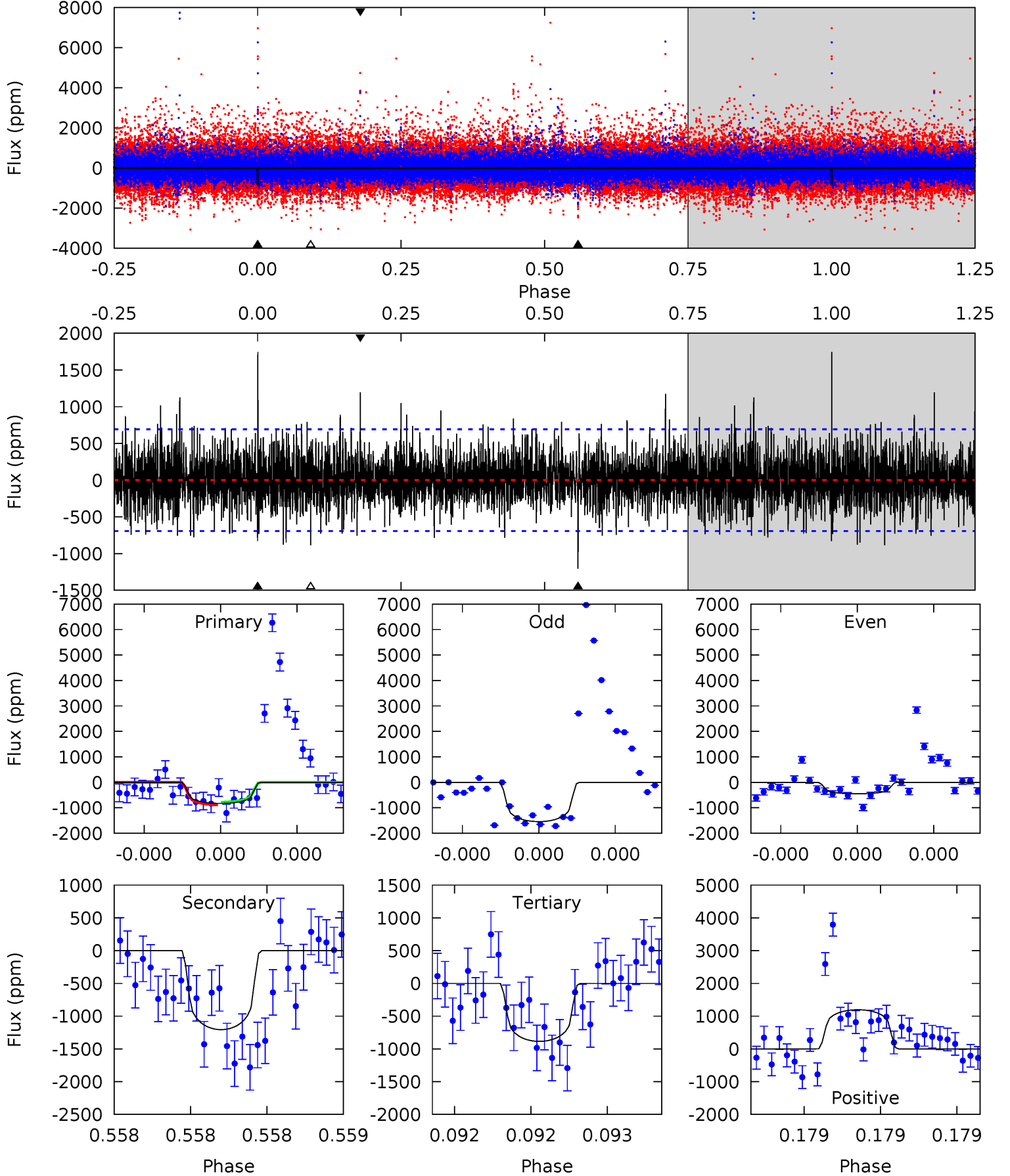
TCE 007966841-06 P=495.084725 Days  $T_0=371.373899$  (BKJD)



# DV Model-Shift Uniqueness Test

007966841-06, P = 495.076667 Days, E = 371.337077 Days

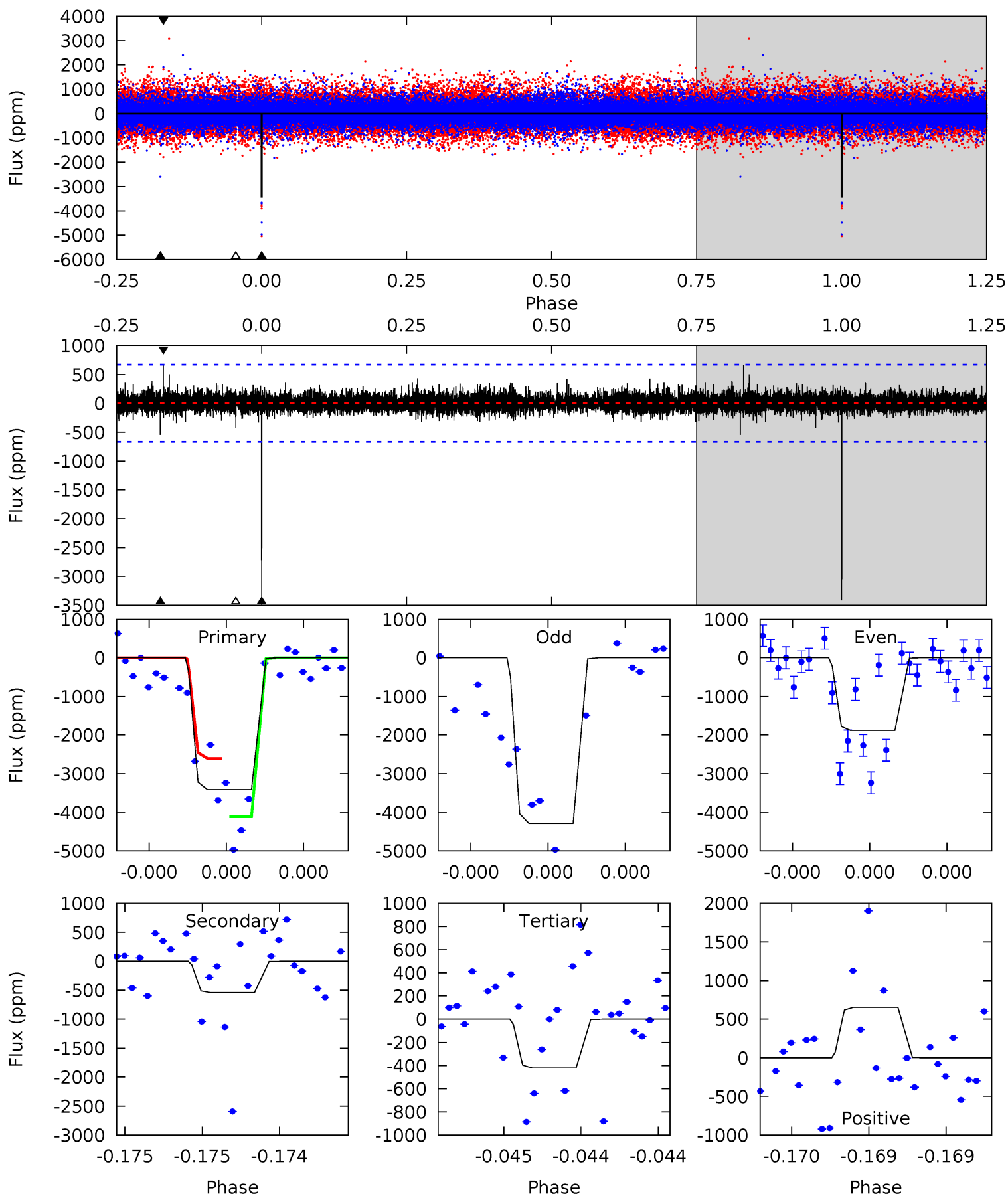
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.69	9.74	7.15	9.65	5.60	3.52	1.99	-0.46	-2.97	2.59	0.09	3.07	1.53	0.59	0.45



# Alt Model-Shift Uniqueness Test

007966841-06, P = 495.084725 Days, E = 371.373899 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
28.9	4.59	3.56	5.54	5.67	3.63	0.70	25.3	23.3	1.04	-0.95	11.6	0.80	0.16	6.62





### Stellar Parameters For KIC 007966841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5819^{+157}_{-174}$	$4.565^{+0.035}_{-0.184}$	$-0.340^{+0.300}_{-0.300}$	$0.820^{+0.225}_{-0.075}$	$0.903^{+0.101}_{-0.111}$	$2.304^{+0.442}_{-1.163}$
	+3%/-3%	+1%/-4%	+88%/-88%	+27%/-9%	+11%/-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 007966841-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1206 \pm 124$	$4.13^{+3.24}_{-2.59}$	$306^{+19}_{-13}$	$5251^{+3445}_{-1136}$	$54453^{+348887}_{-37865}$
Alt.	$-543 \pm 118$	$5.04^{+3.37}_{-3.05}$	$306^{+19}_{-12}$	$4119^{+1787}_{-642}$	$16298^{+76819}_{-10372}$

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

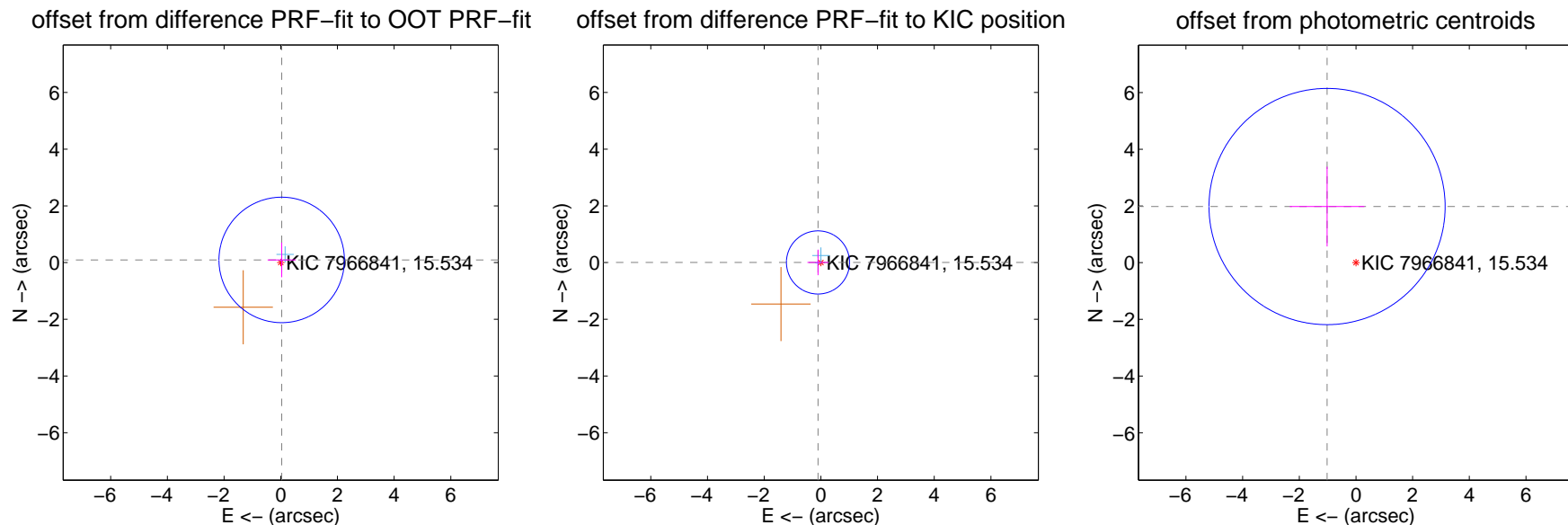
## DV Centroid Data

Supplemental centroid analysis for 007966841-06. Kepler magnitude: 15.53. Transit SNR 7.16

There are 2 quarters with good PRF difference image offsets

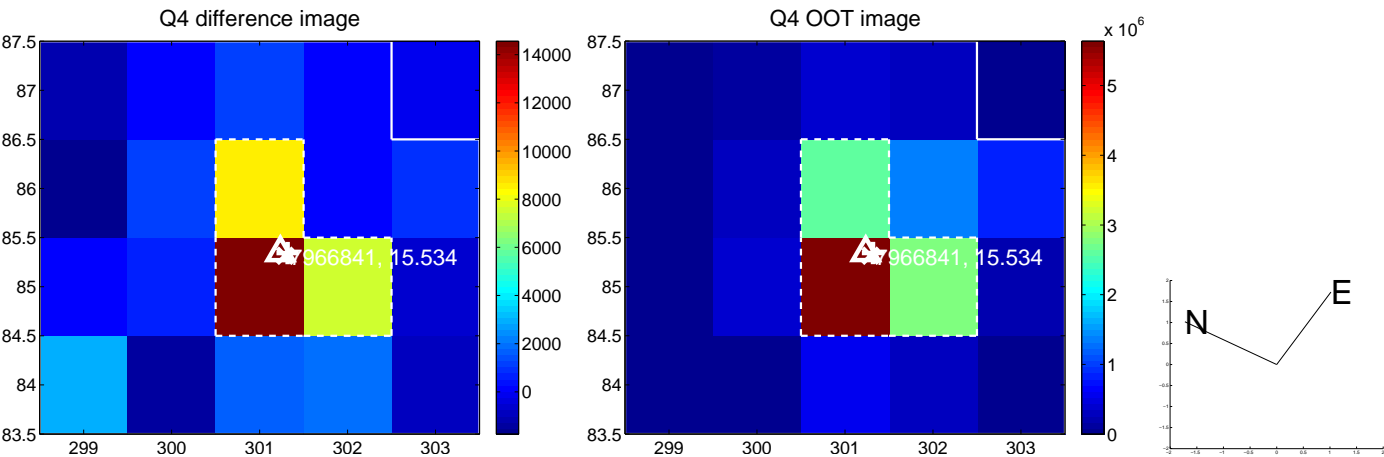
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.100 \pm 0.738$	0.13	$-0.033 \pm 0.494$	$0.094 \pm 0.611$
PRF-fit source offset from KIC position	$0.101 \pm 0.371$	0.27	$0.101 \pm 0.371$	$0.005 \pm 0.452$
photometric centroid source offset	$2.23 \pm 1.39$	1.60	$1.02 \pm 1.32$	$1.98 \pm 1.41$



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.

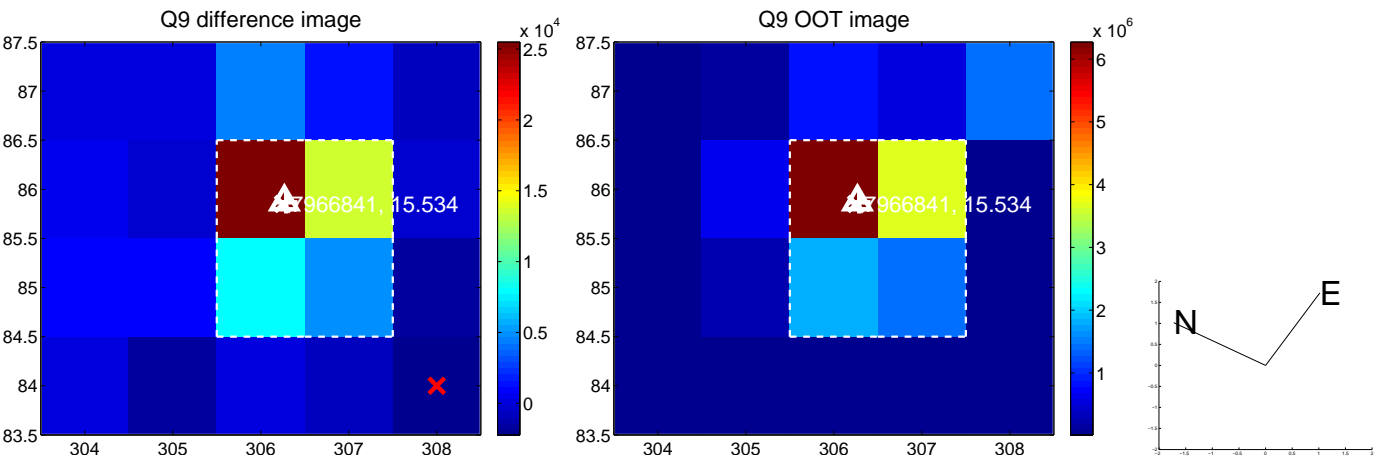
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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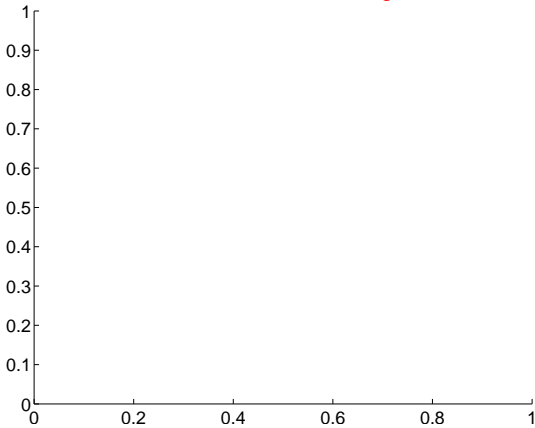


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

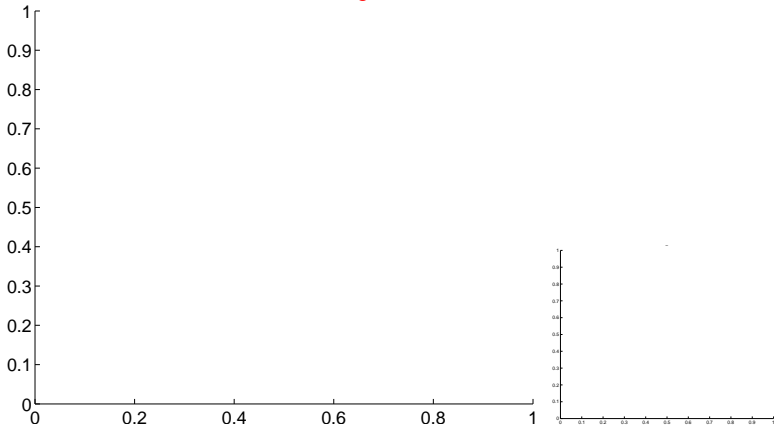


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

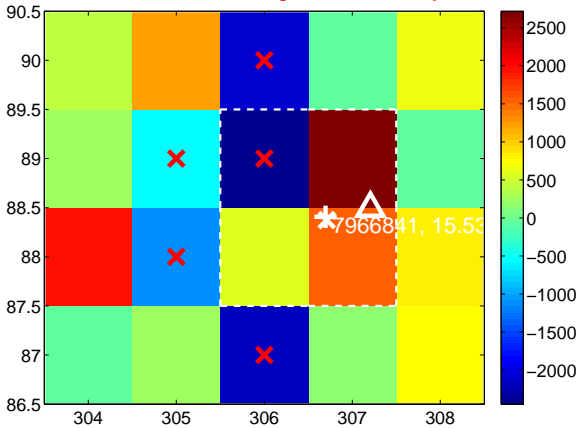
Q13 no difference image



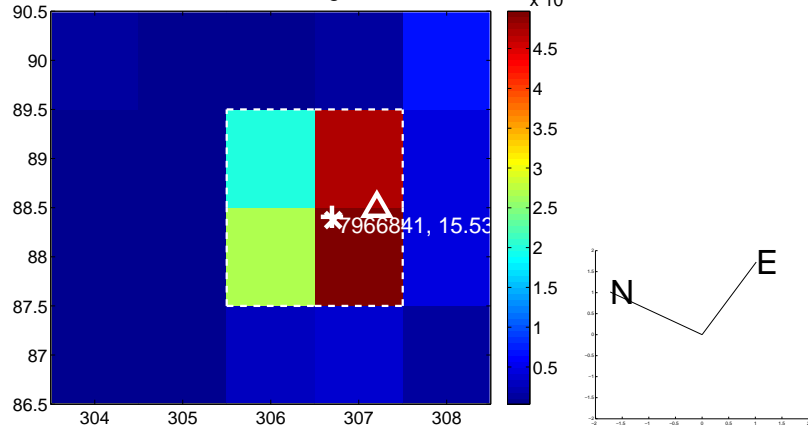
Q13 no OOT image



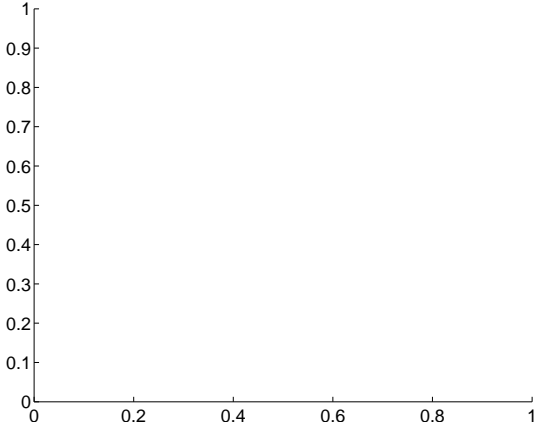
Q14 difference image. Poor Quality



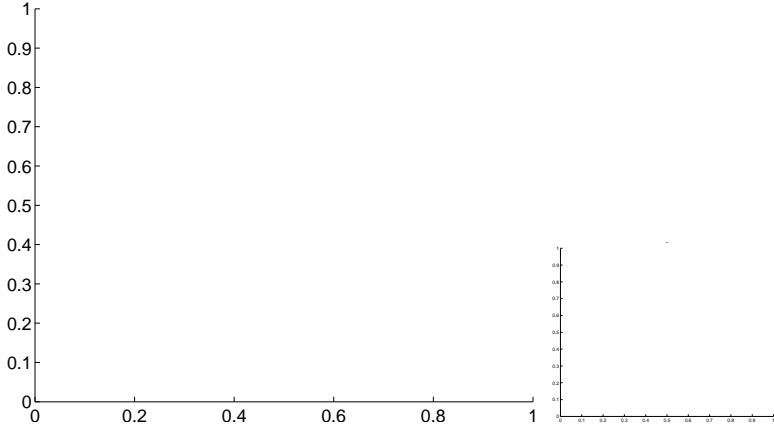
Q14 OOT image



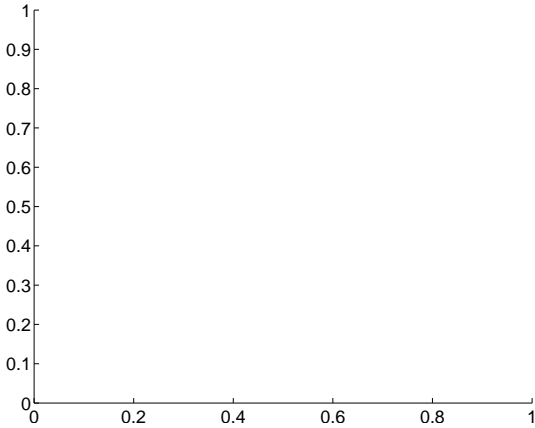
Q15 no difference image



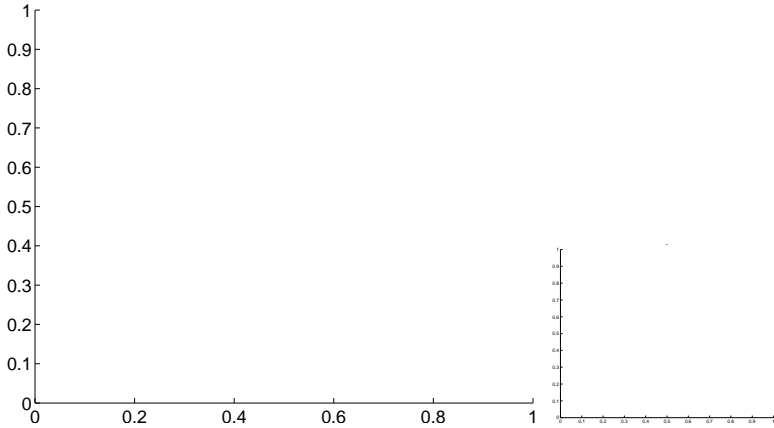
Q15 no OOT image



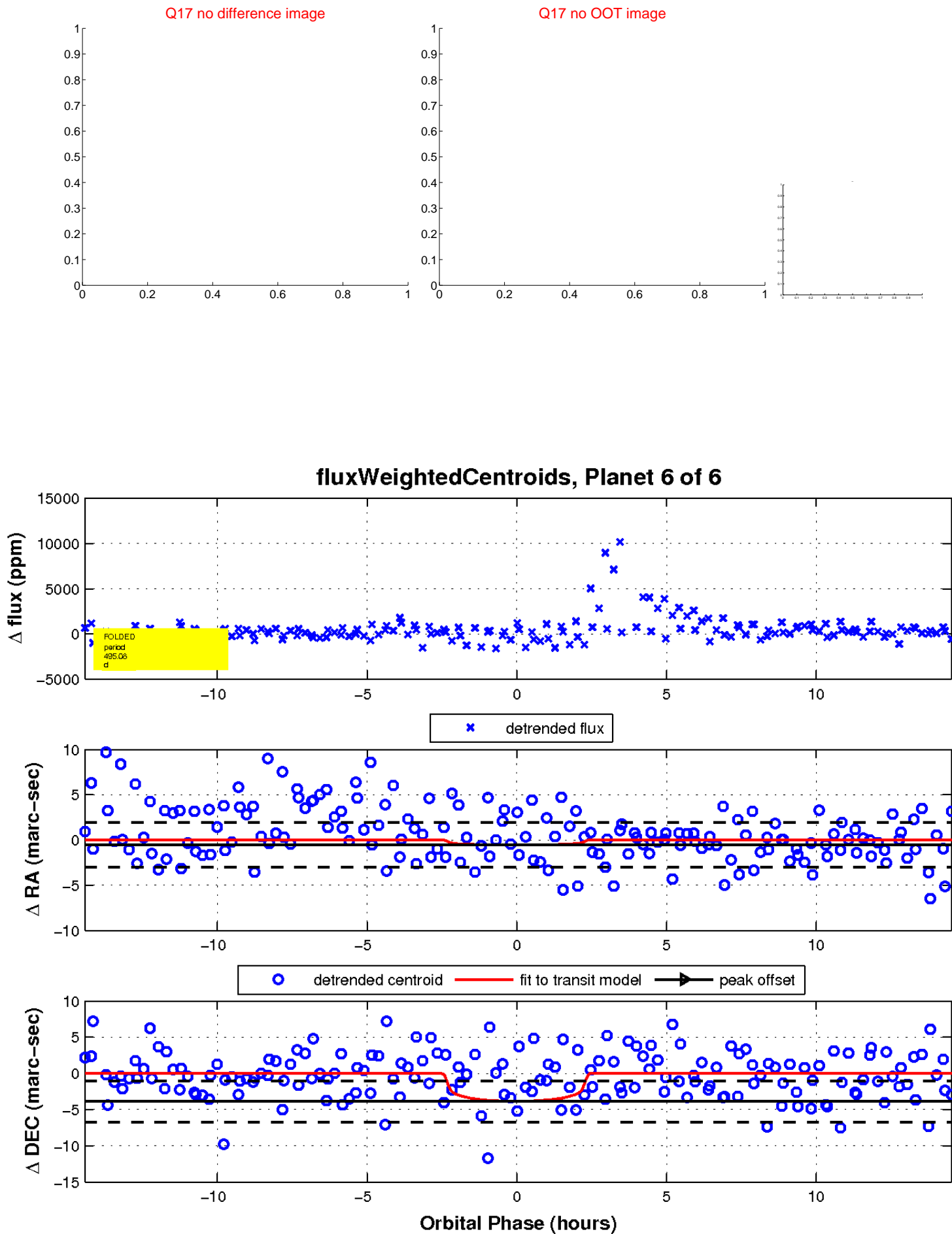
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

