

# KIC 009791381

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009791381-01	OBS	No	0.539350	131.514066	643.7	1.141	13.6	18.7	4.34	7153	13.03	0.00
009791381-02	OBS	No	0.539347	131.650649	706.5	1.168	16.0	21.6	4.34	7153	11.74	0.00
009791381-03	OBS	No	0.539345	131.785994	154.8	1.500	15.2	5.6	4.34	7153	5.58	0.00
009791381-04	OBS	No	0.539345	131.923494	177.1	1.500	15.5	-1.0	4.34	7153	5.81	165431.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009791381-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009791381-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
009791381-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
009791381-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—NO_FITS—SAME_NTL_PERIOD—CENT_NOFITS

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

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

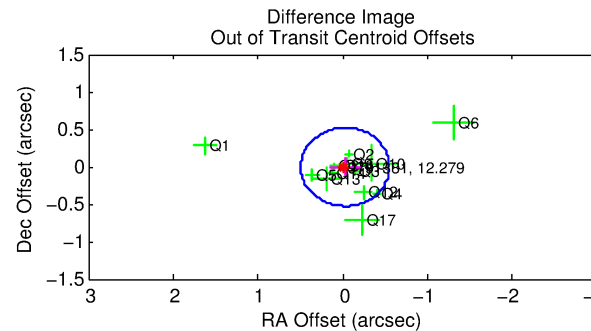
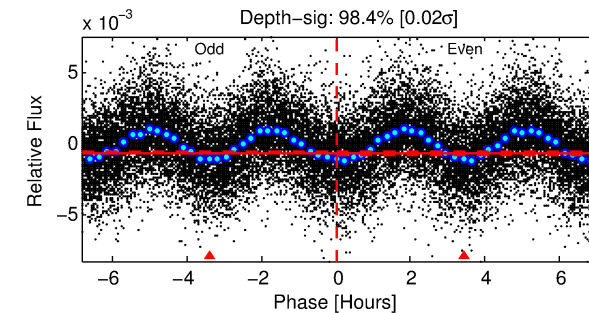
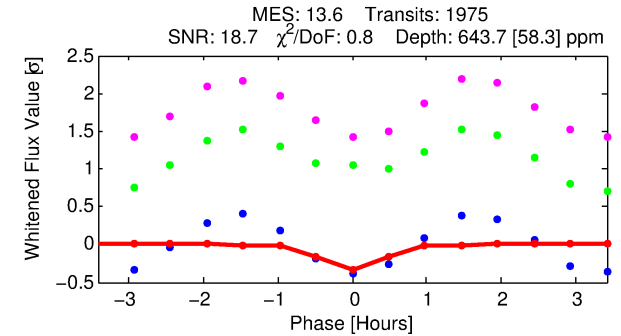
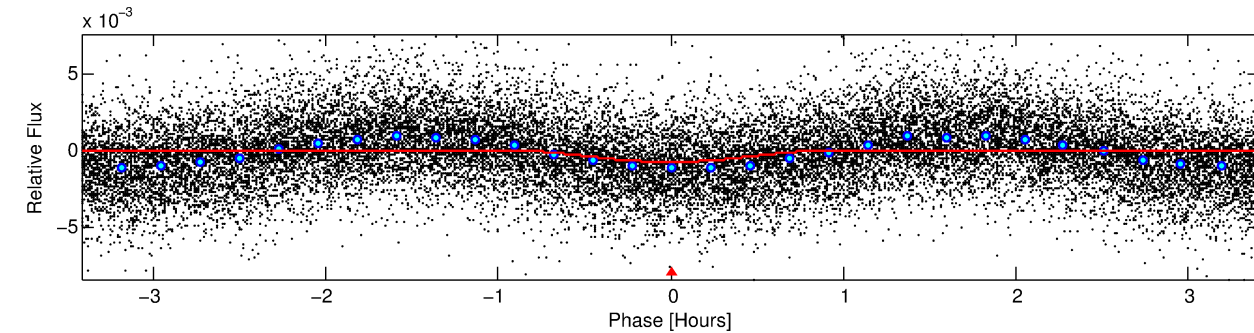
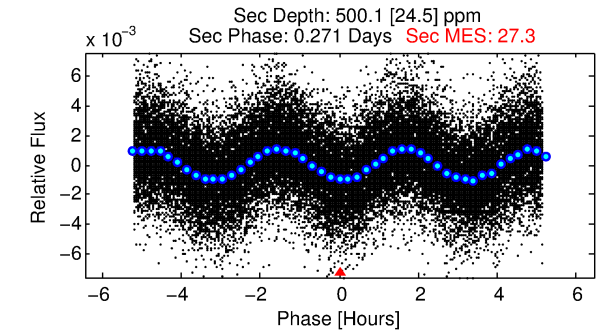
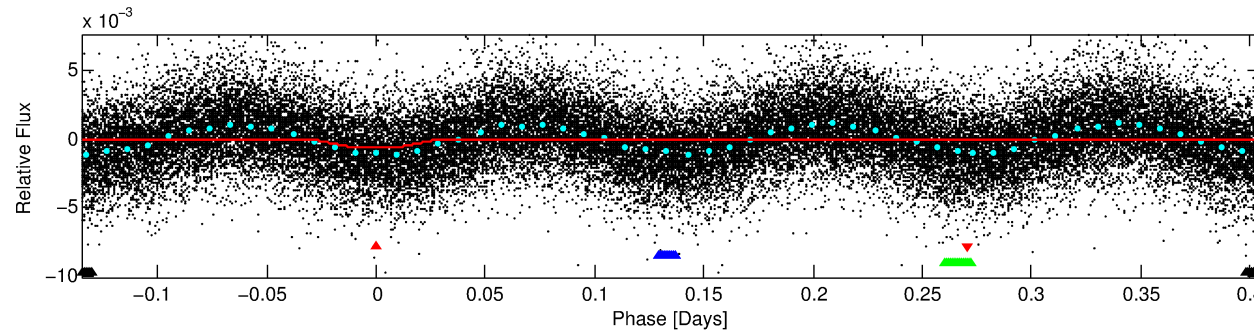
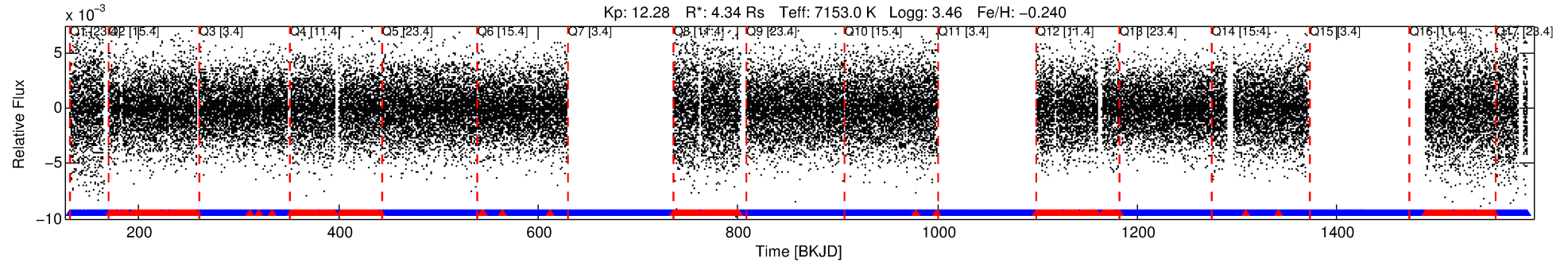
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009791381-01

No Significant Match Found

# DV One-Page Summary

KIC: 9791381 Candidate: 1 of 4 Period: 0.539 d



## DV Fit Results:

Period = 0.53935 [0.00001] d  
Epoch = 131.5141 [0.0011] BKJD  
Rp/R\* = 0.0275 [0.0084]  
a/R\* = 2.02 [2.44]  
b = 0.90 [0.35]  
Seff = N/A  
Teq = N/A  
Rp = 13.03 [8.61] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

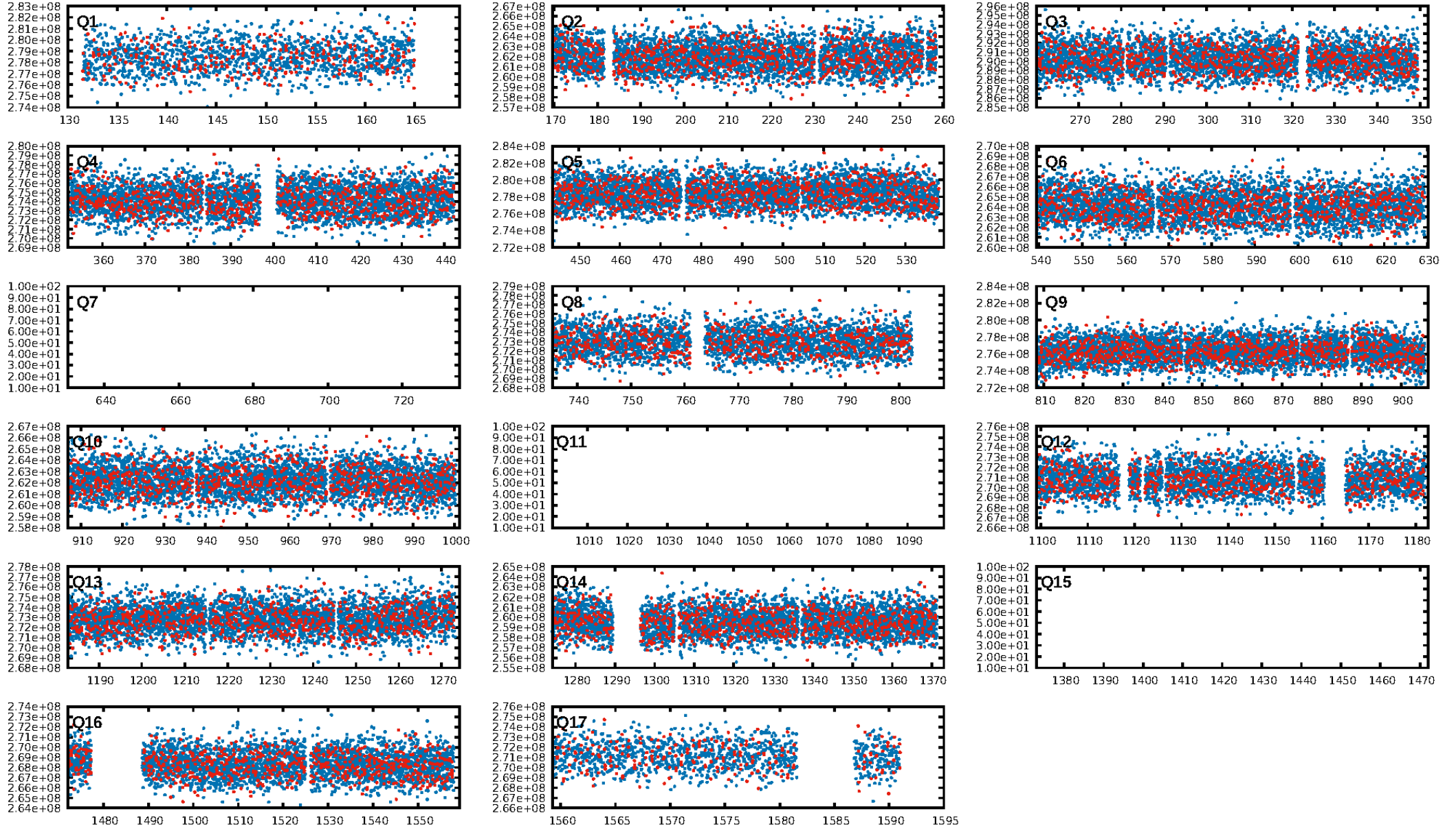
## DV Diagnostic Results:

**ShortPeriod-sig: 0.0% [0.00σ]**  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
**RollingBand-fgt: 0.74 [1380/1863]**  
GhostDiagnostic-chr: 3.629  
Centroid-sig: 43.7%  
**Centroid-so: 0.223 arcsec [4.69σ]**  
OotOffset-rm: 0.028 arcsec [0.16σ]  
KicOffset-rm: 0.076 arcsec [0.46σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:16:34 Z

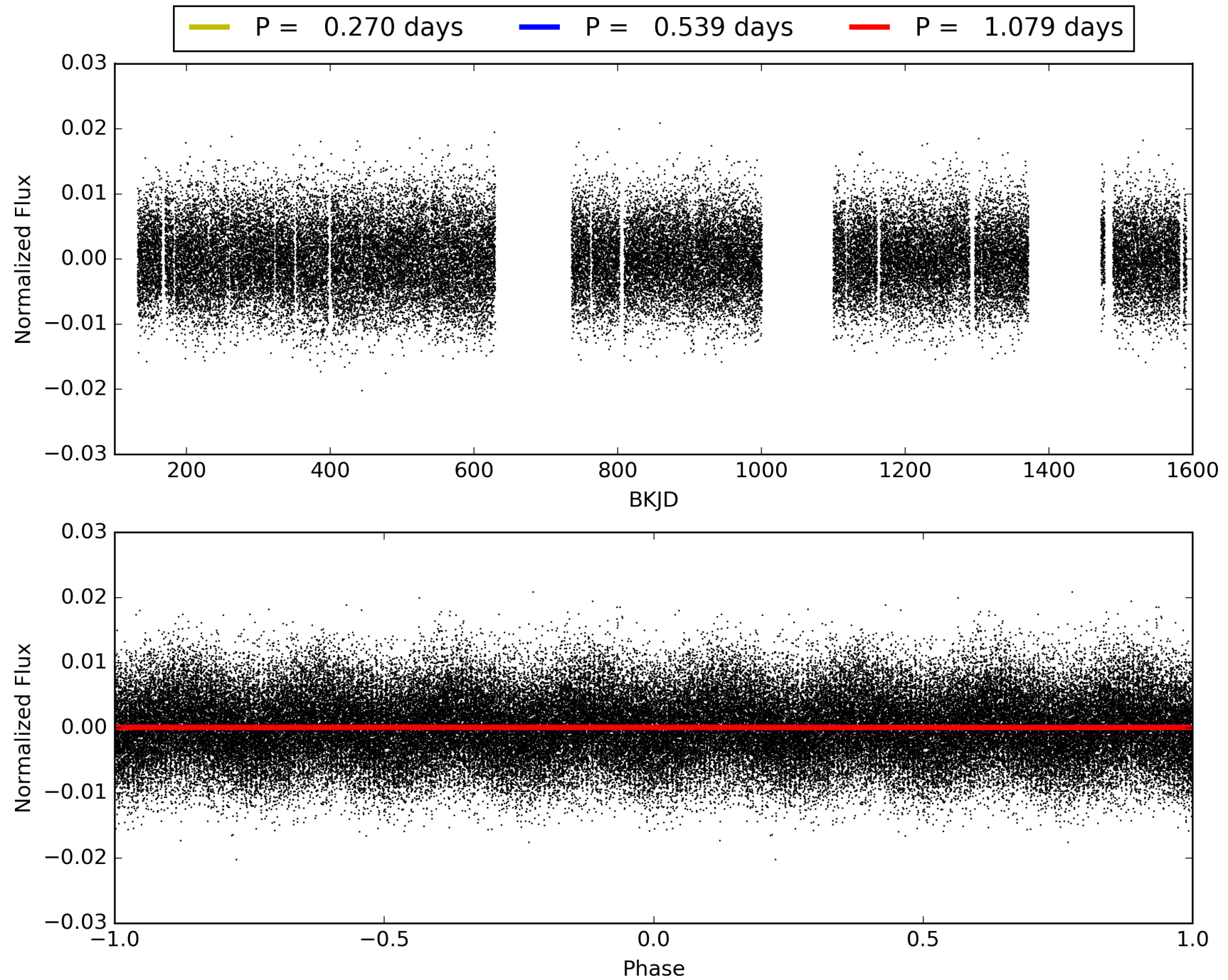
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009791381-01, PDC Light Curves





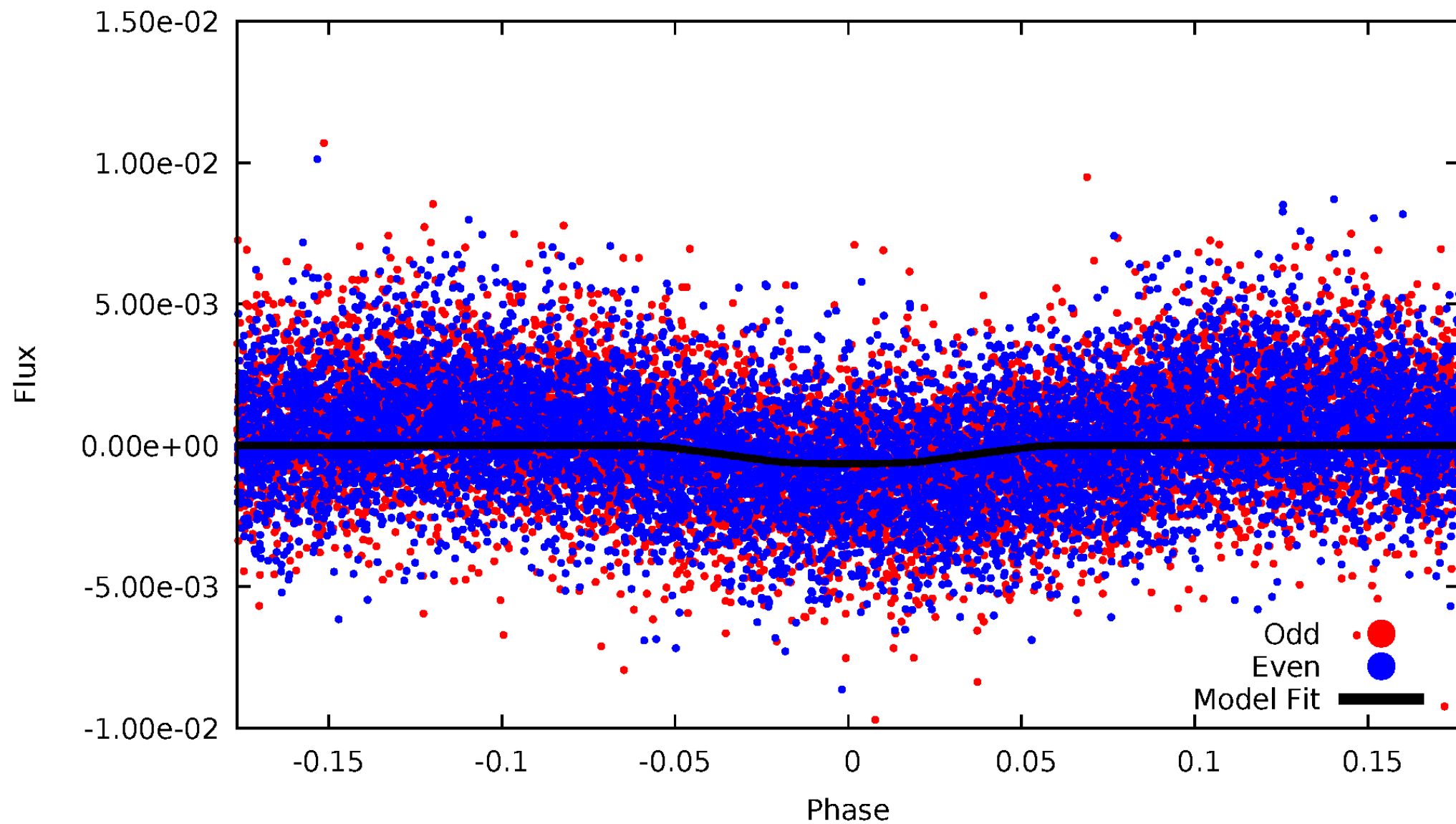
TCE 009791381-01





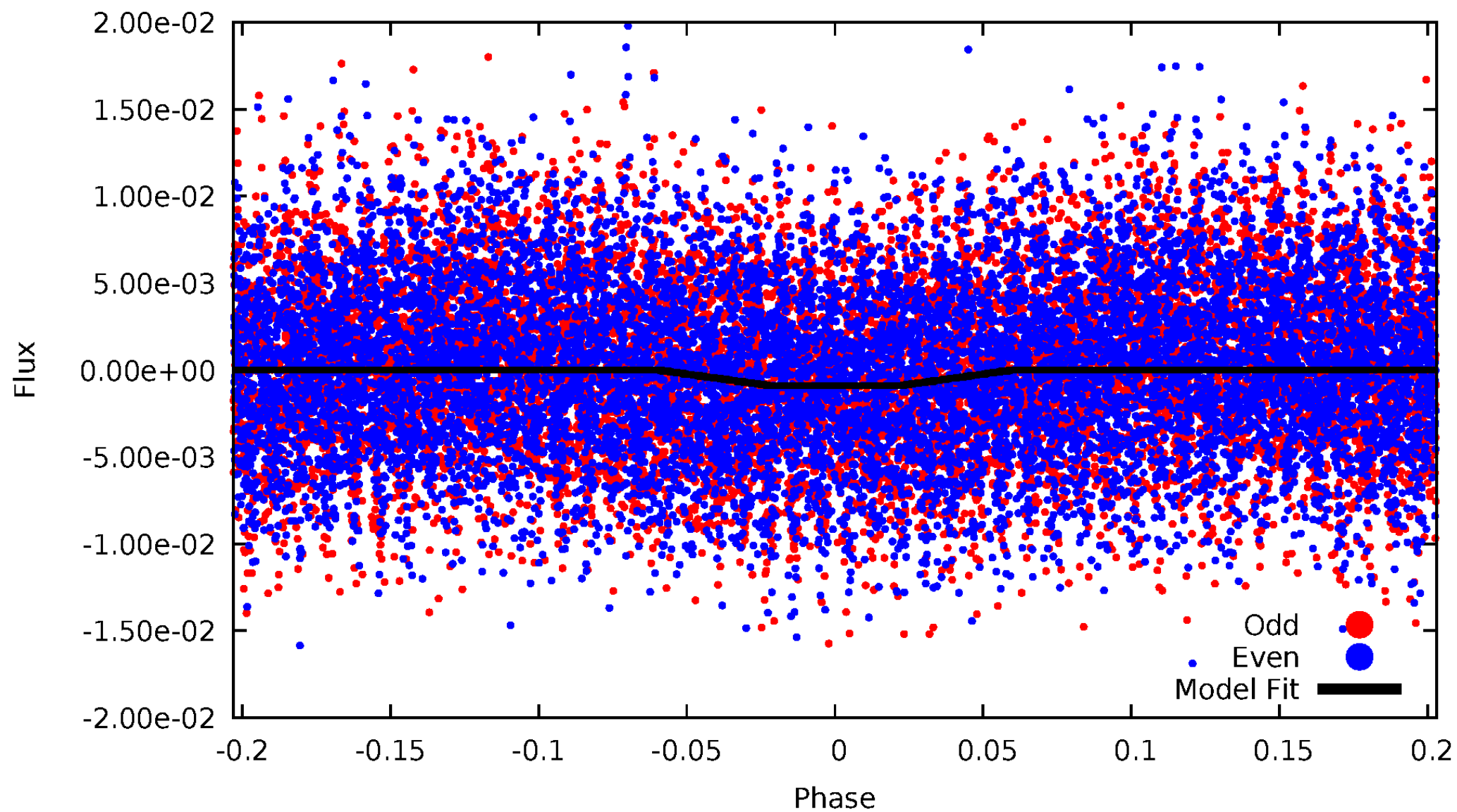
# DV Odd/Even

TCE 009791381-01

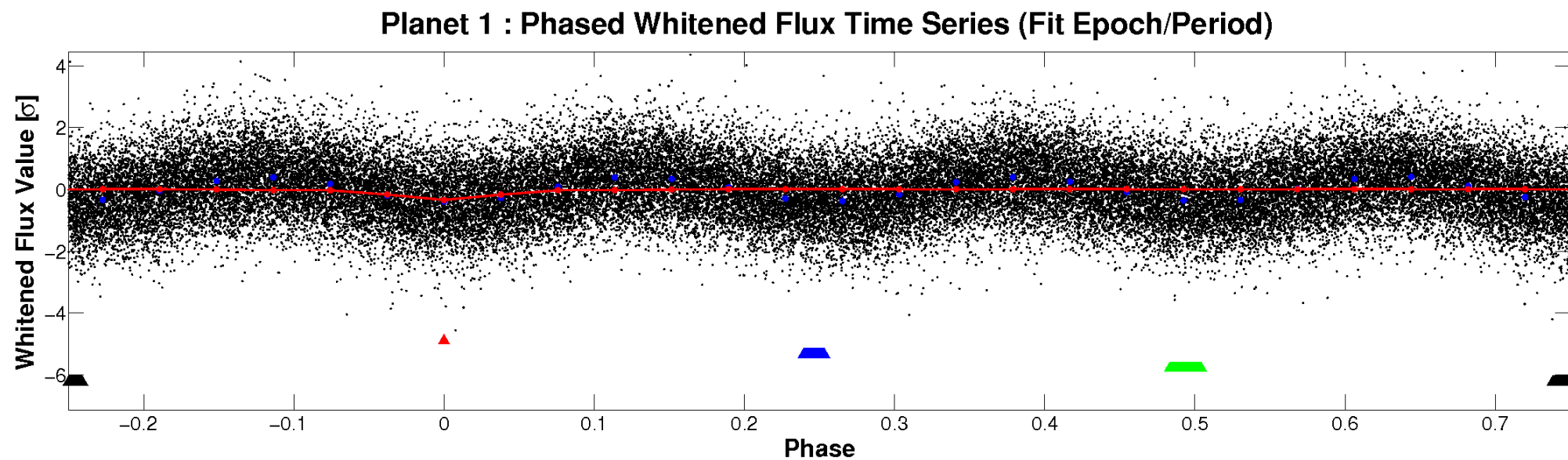
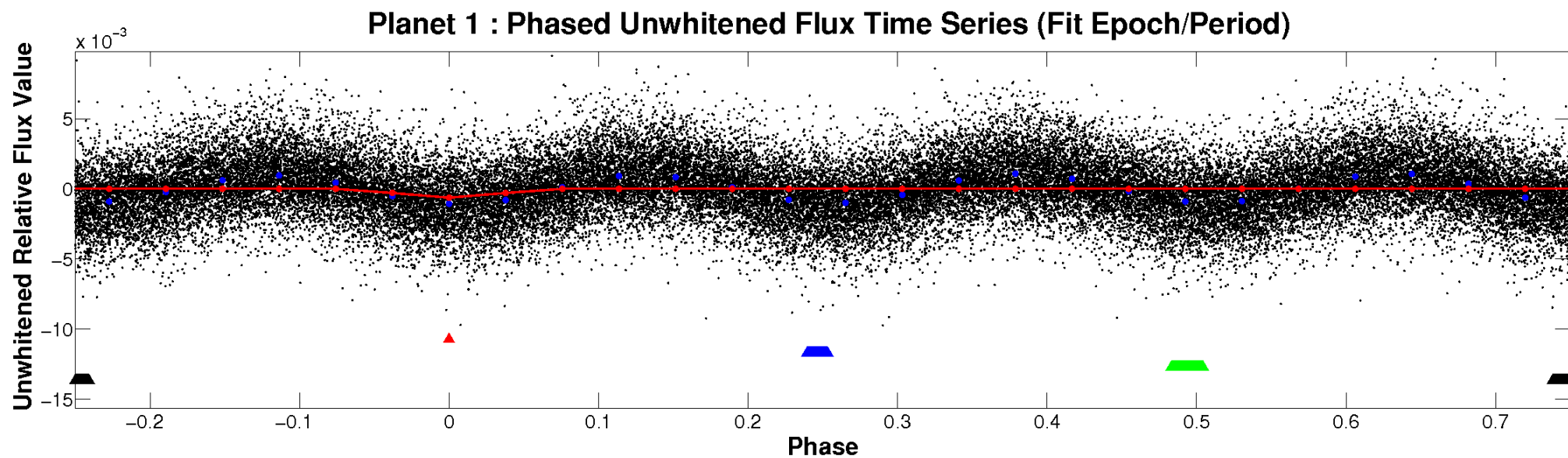


# ALT Odd/Even

TCE 009791381-01



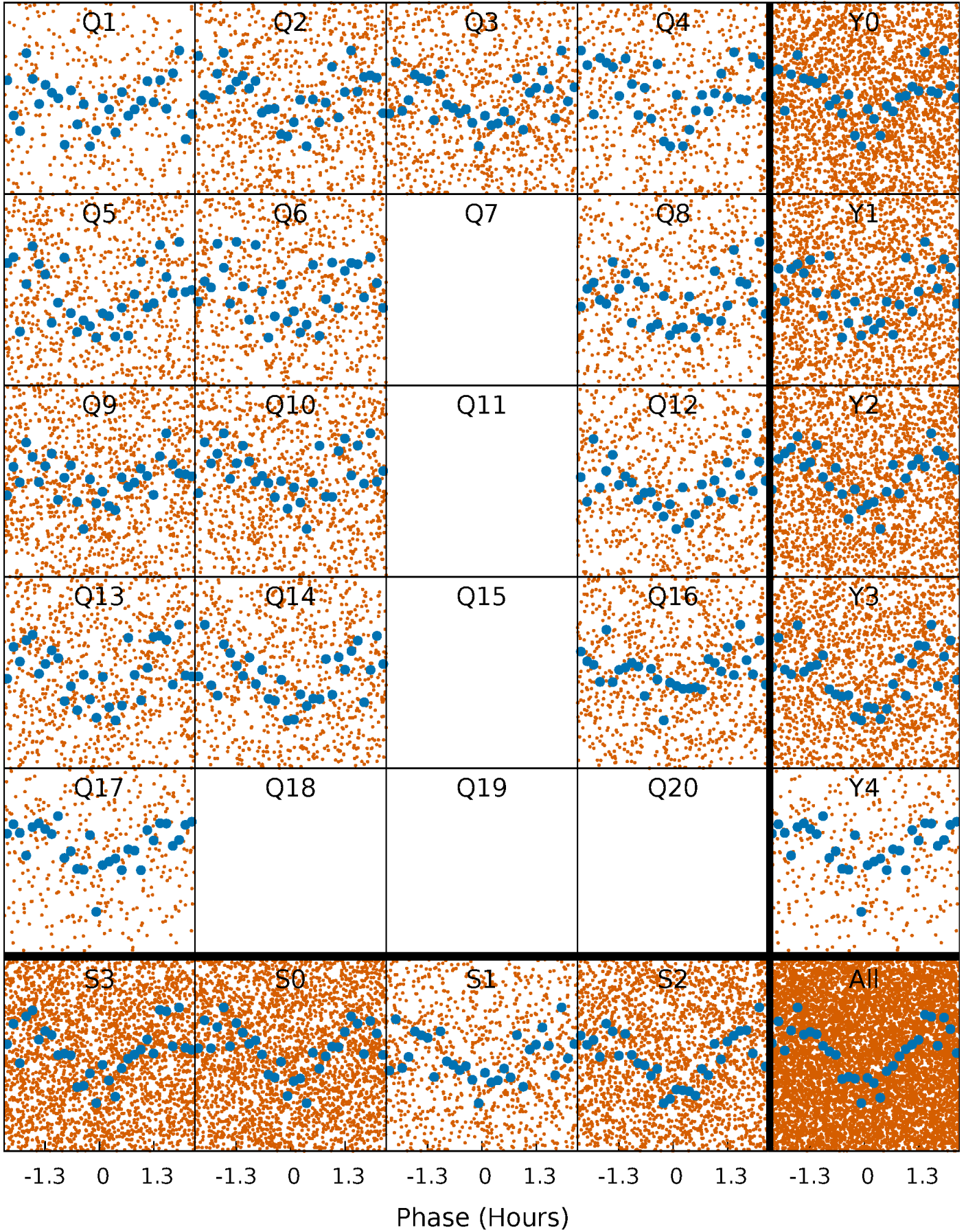
# Non-Whitened Vs. Whitened Light Curve





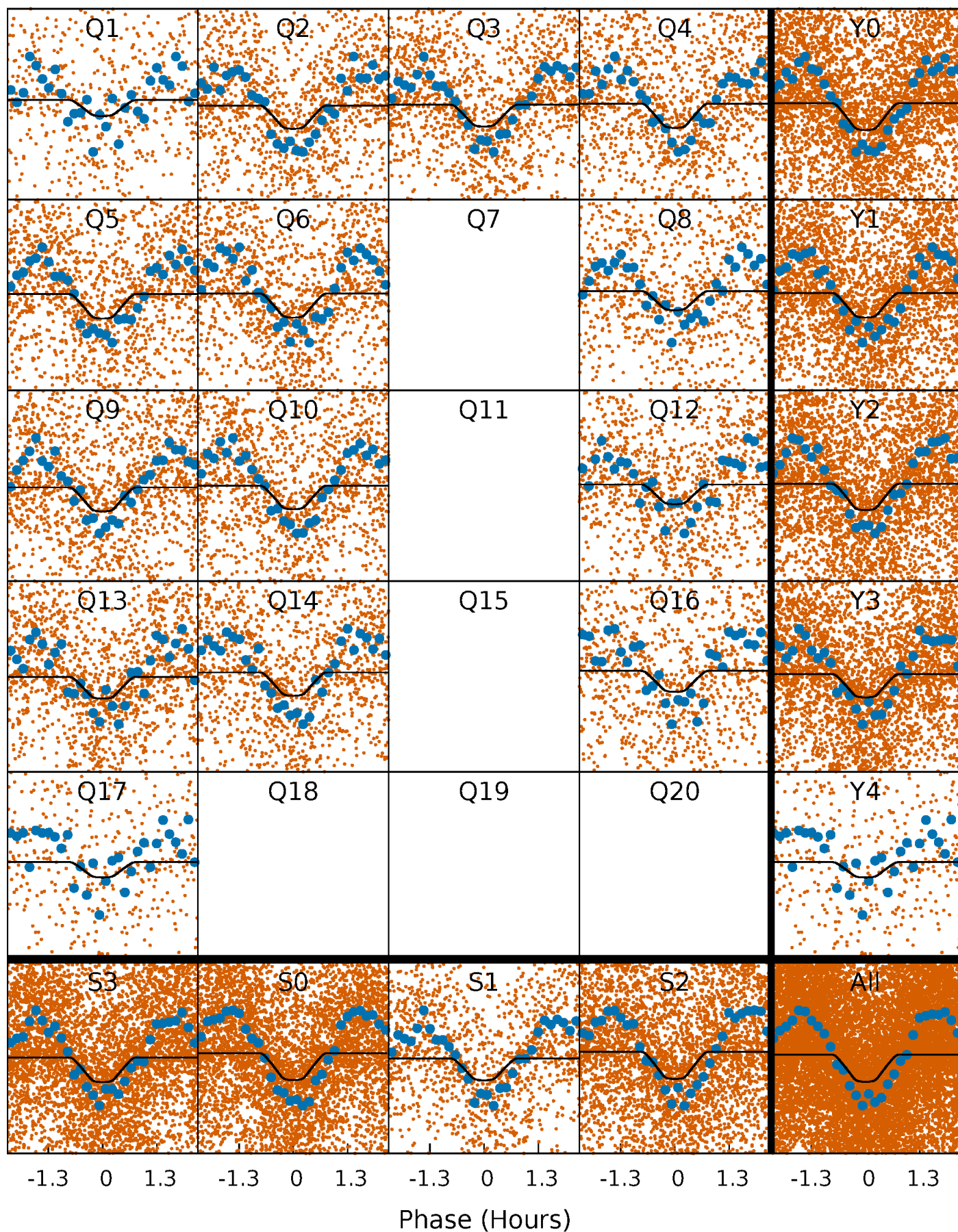
# PDC Quarter-Phased Transit Curves

TCE 009791381-01 P= 0.539350 Days  $T_0=131.514067$  (BKJD)



# DV Quarter-Phased Transit Curves

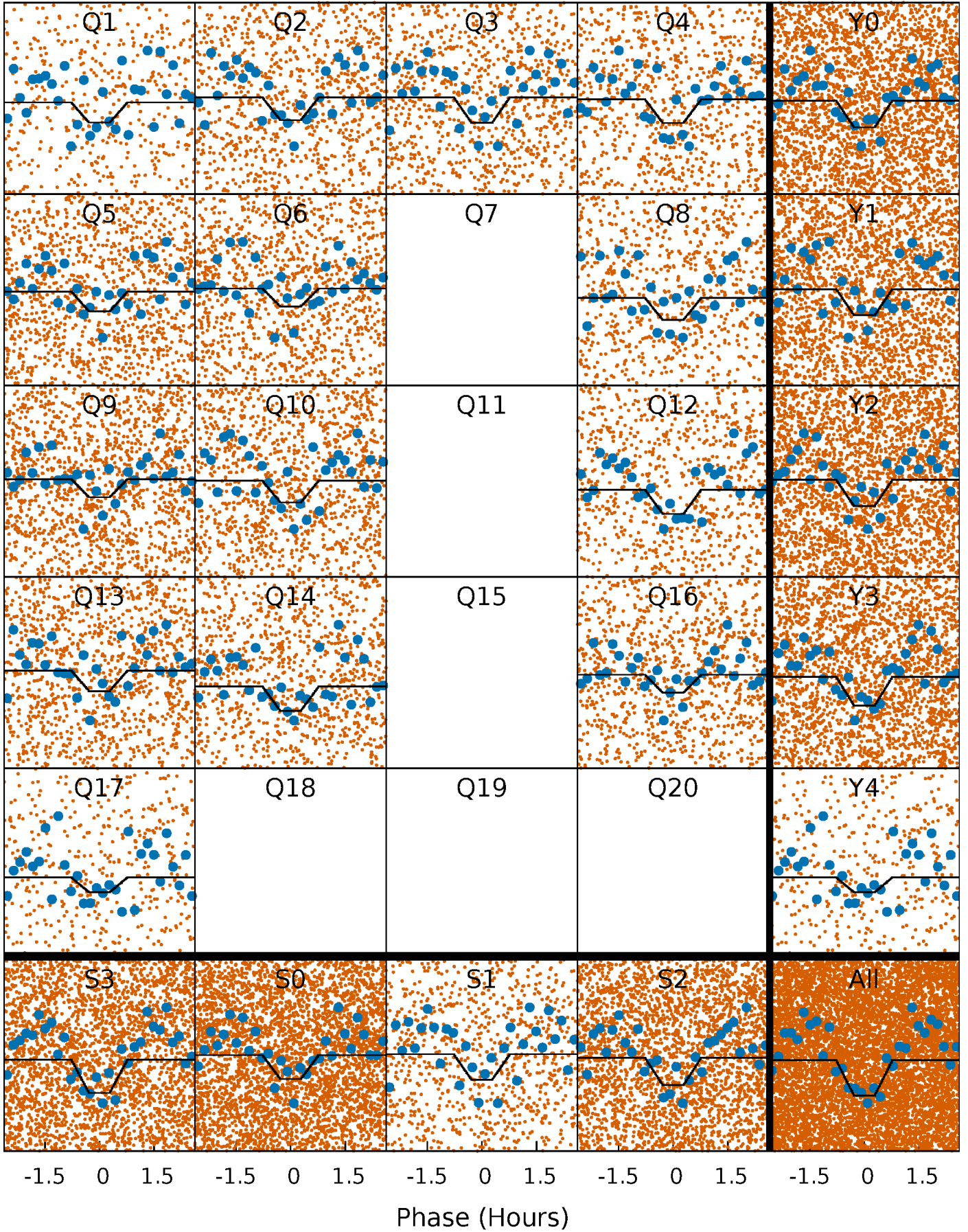
TCE 009791381-01 P= 0.539350 Days  $T_0=131.514067$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 009791381-01 P= 0.539351 Days  $T_0=131.514136$  (BKJD)

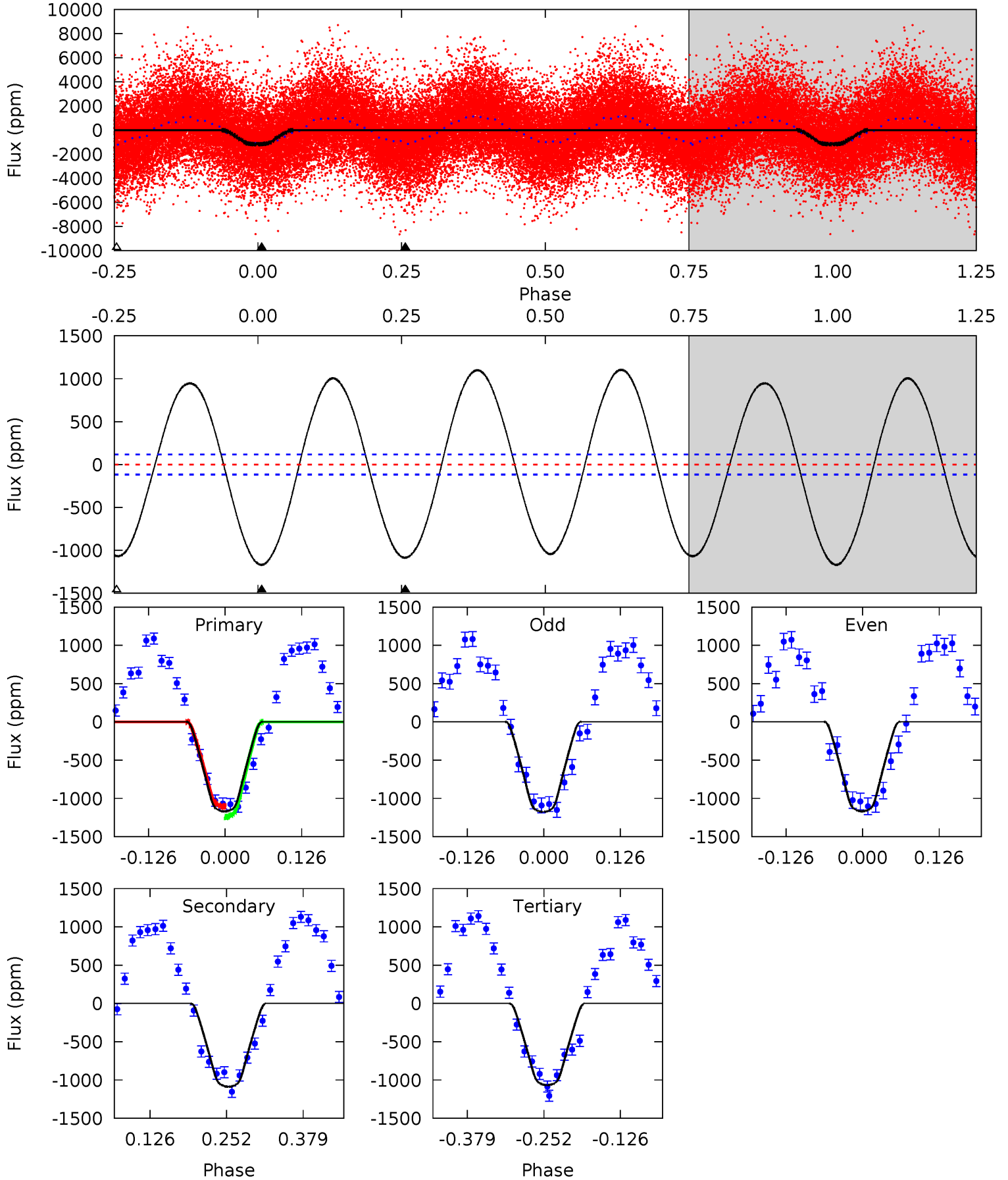




# DV Model-Shift Uniqueness Test

009791381-01, P = 0.539350 Days, E = 130.974717 Days

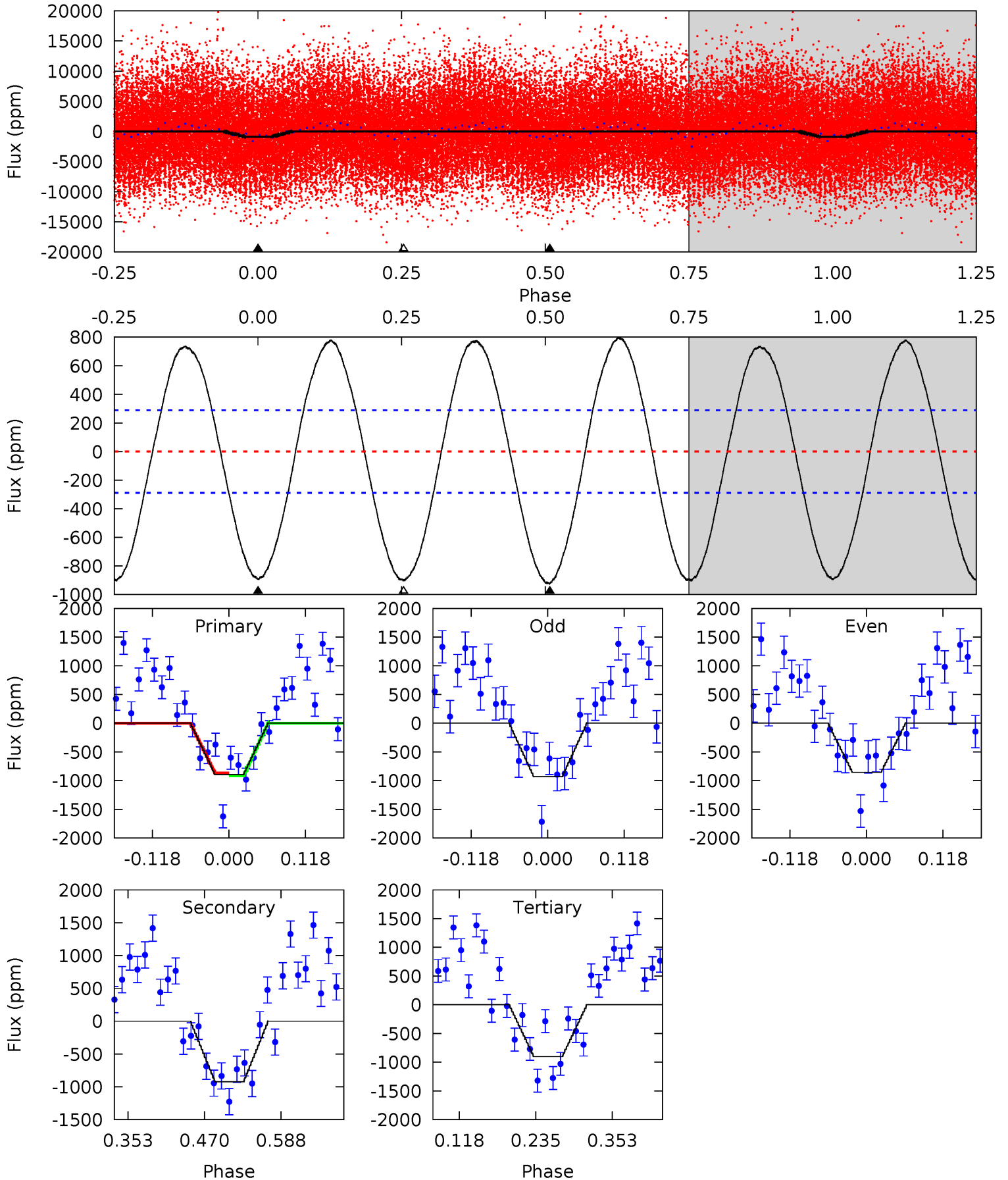
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.2	42.0	41.2	0	4.52	1.53	28.9	3.99	45.2	0.79	42.0	0.14	1.02	0.49	2.76



# Alt Model-Shift Uniqueness Test

009791381-01, P = 0.539351 Days, E = 130.974785 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	14.5	14.2	0	4.53	1.57	9.49	-0.14	14.0	0.33	14.5	0.58	0.91	0.46	0.42



### Stellar Parameters For KIC 009791381

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7153^{+224}_{-299}$	$3.464^{+0.666}_{-0.074}$	$-0.240^{+0.250}_{-0.300}$	$4.339^{+0.300}_{-2.546}$	$1.996^{+0.074}_{-0.668}$	$0.034^{+0.382}_{-0.009}$
	+3%/-4%	+19%/-2%	+104%/-125%	+7%/-59%	+4%/-33%	+1109%/-25%
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 009791381-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1087 \pm 26$	$11.01^{+4.85}_{-4.19}$	$6962^{+460}_{-1018}$	$7380^{+2479}_{-1507}$	$1.245^{+1.933}_{-0.603}$
Alt.	$-924 \pm 64$	$12.30^{+4.74}_{-4.78}$	$6961^{+484}_{-1012}$	$6407^{+1938}_{-1476}$	$0.870^{+1.284}_{-0.418}$

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



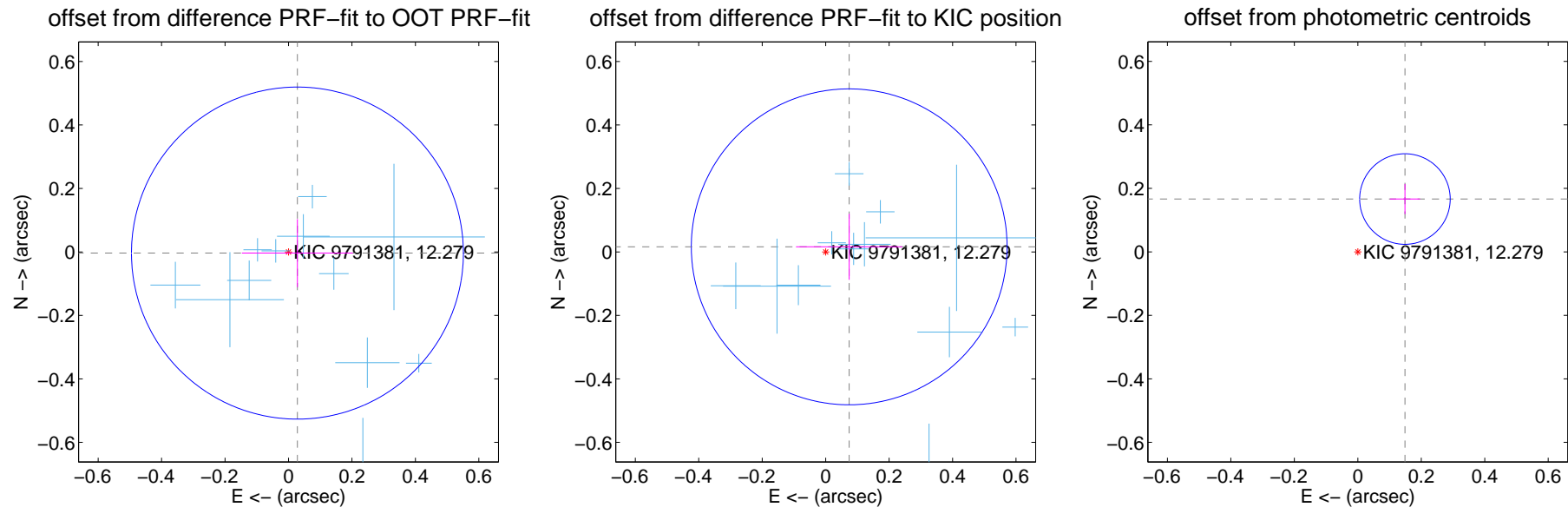
## DV Centroid Data

Supplemental centroid analysis for 009791381-01. Kepler magnitude: 12.28. Transit SNR 18.73

There are 13 quarters with good PRF difference image offsets

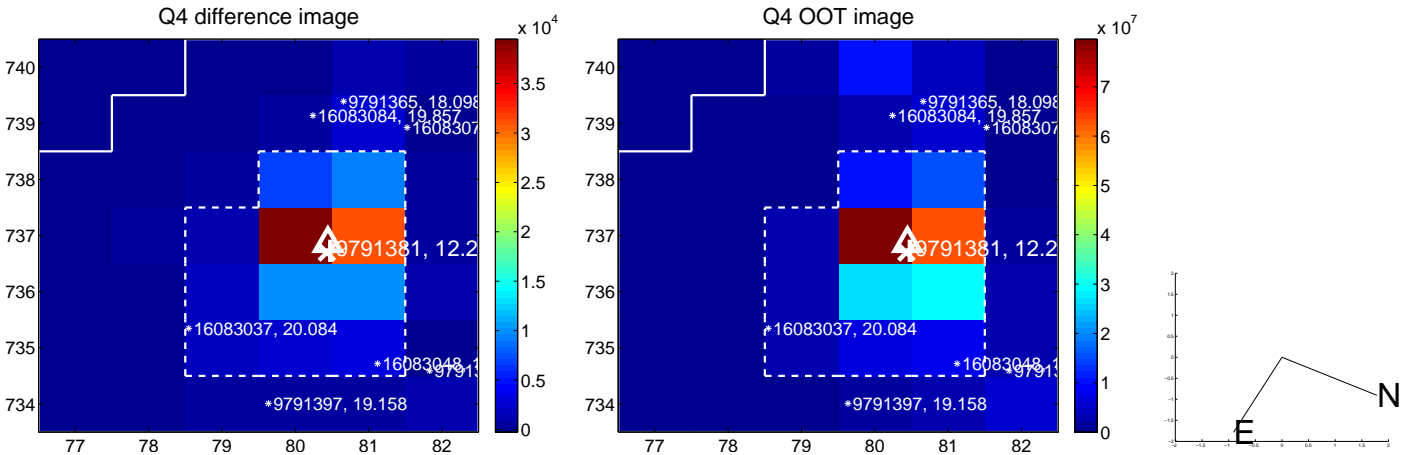
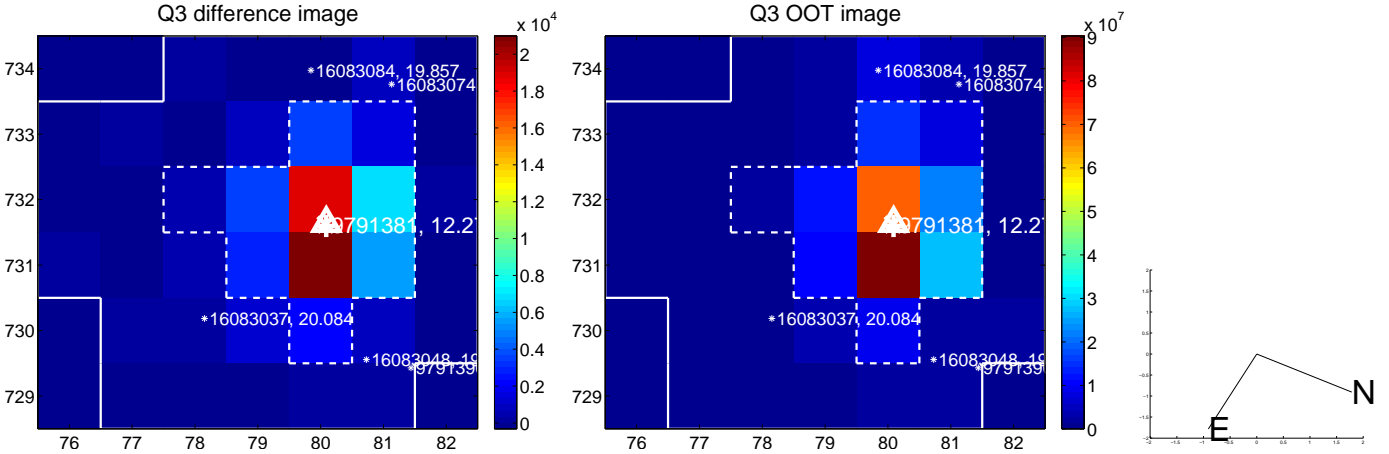
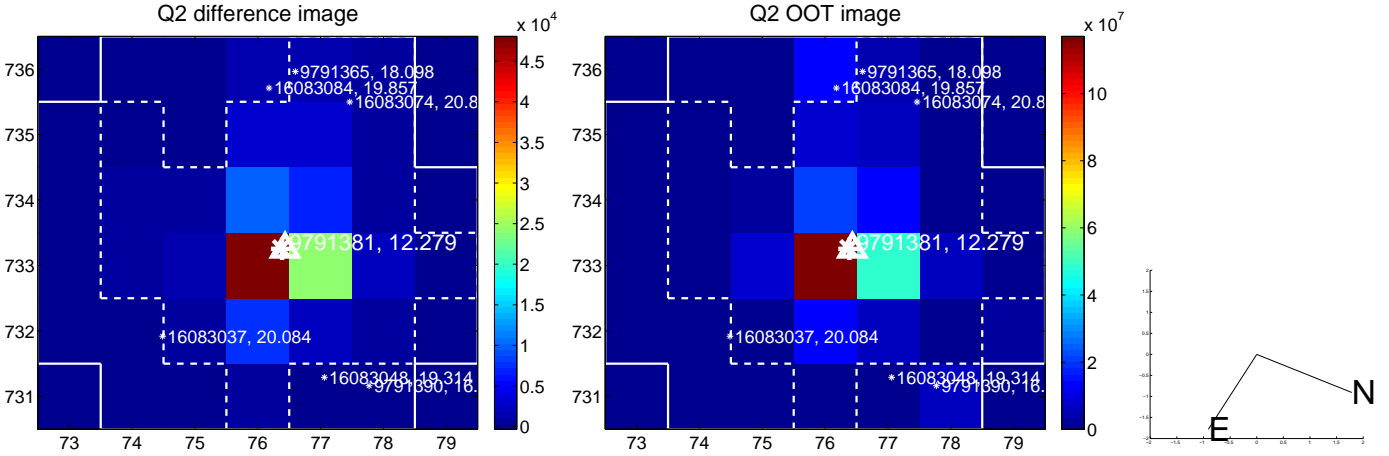
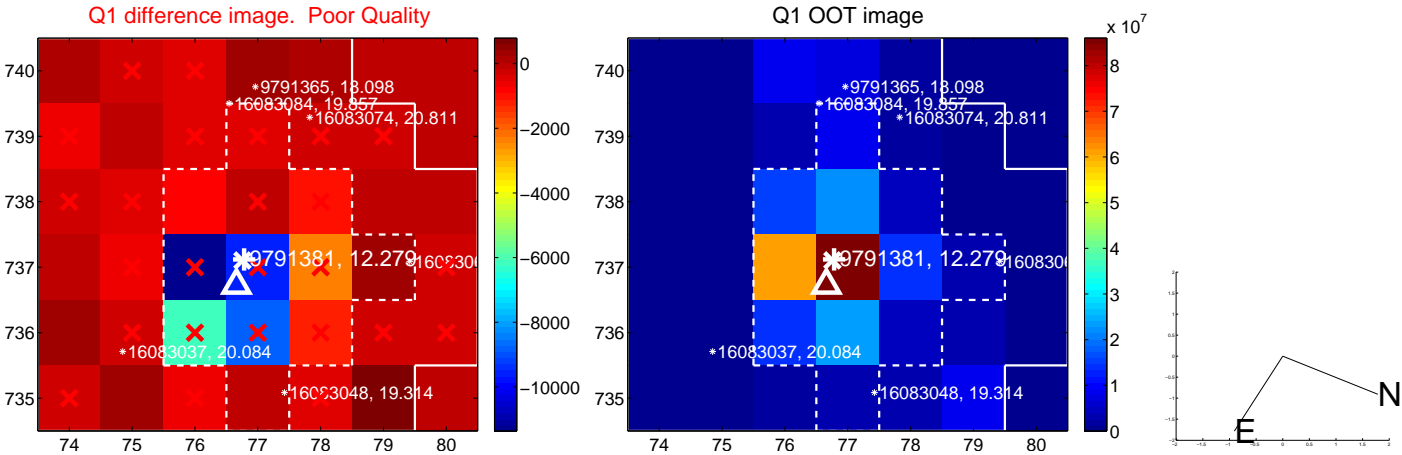
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.028 \pm 0.174$	0.16	$-0.028 \pm 0.175$	$-0.004 \pm 0.107$
PRF-fit source offset from KIC position	$0.076 \pm 0.166$	0.46	$-0.074 \pm 0.168$	$0.016 \pm 0.104$
photometric centroid source offset	$0.22 \pm 0.05$	4.69	$-0.15 \pm 0.05$	$0.17 \pm 0.05$

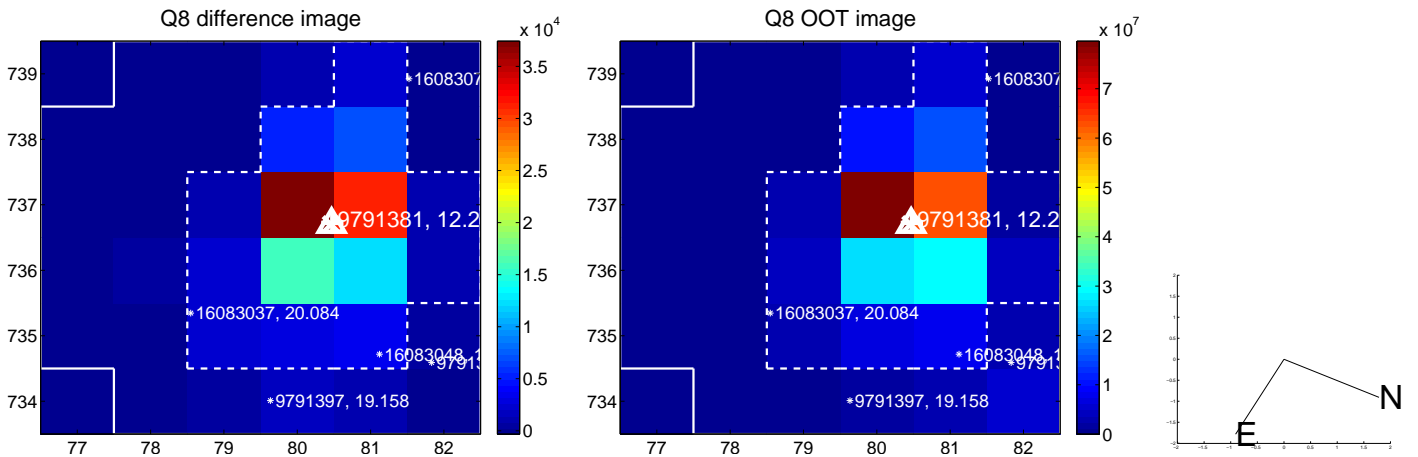
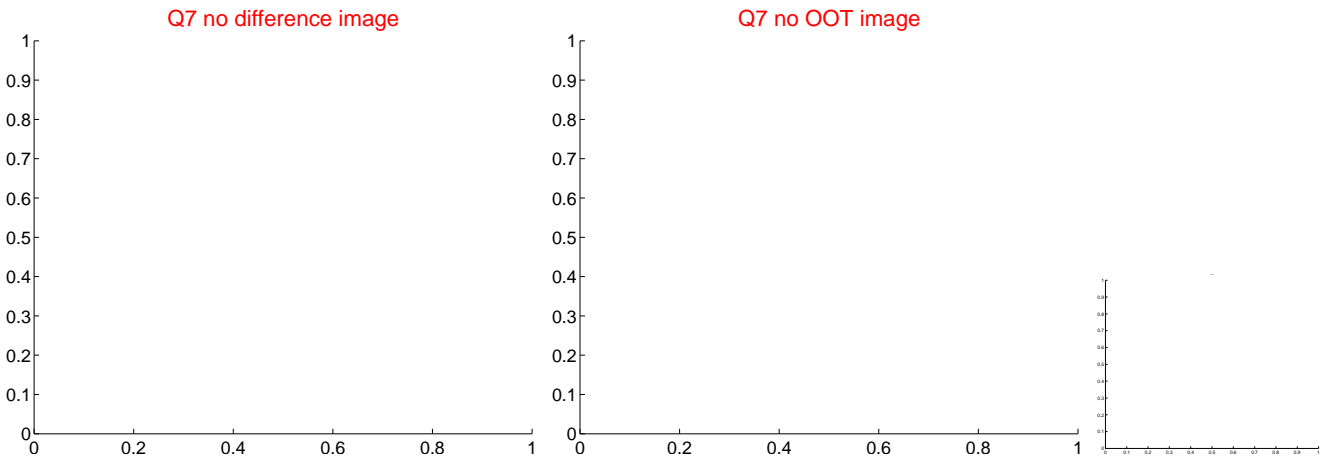
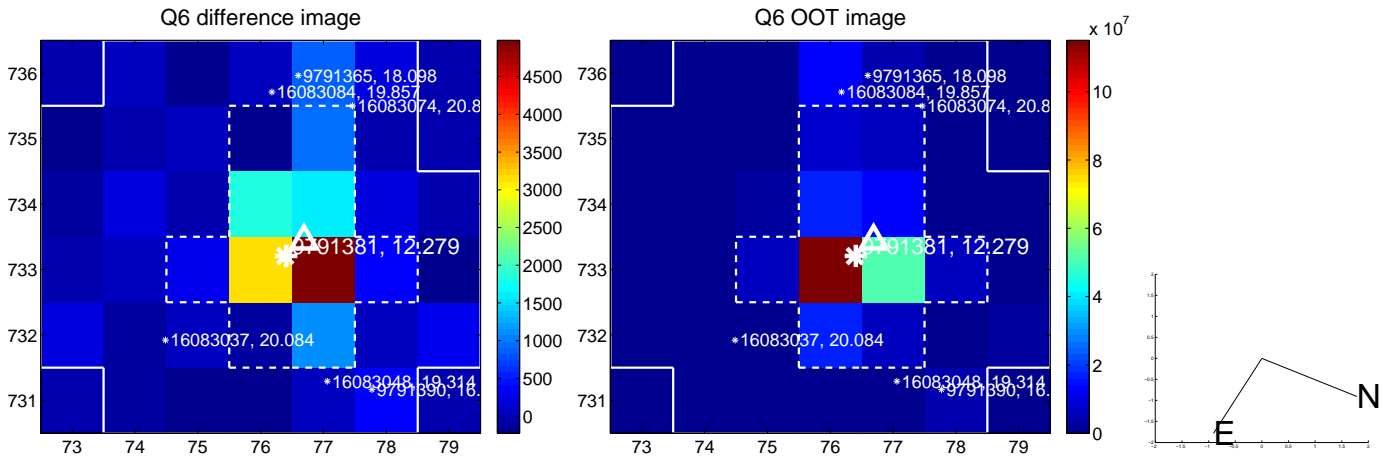
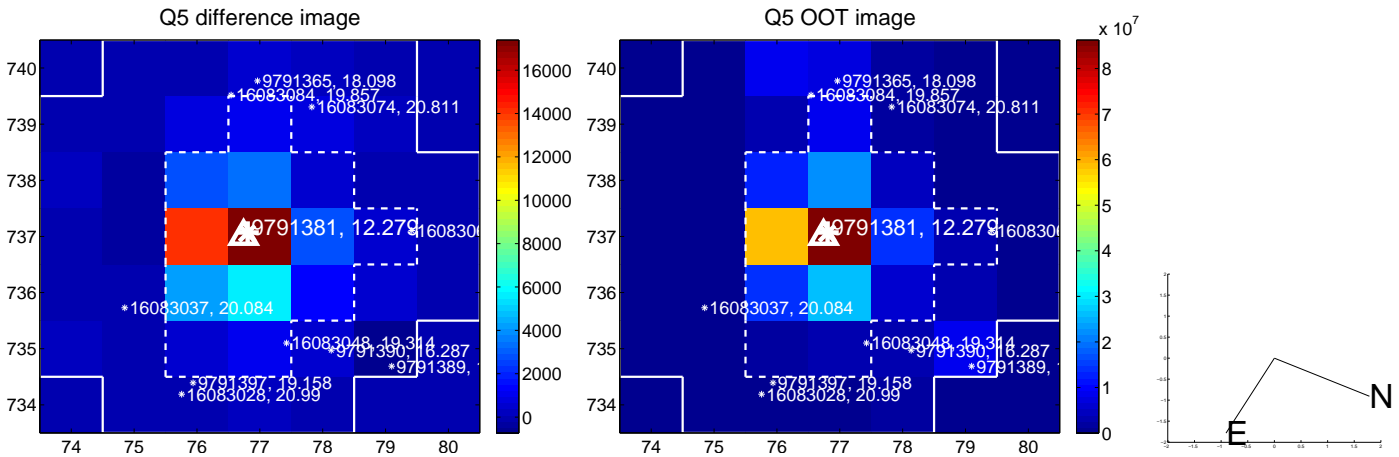


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

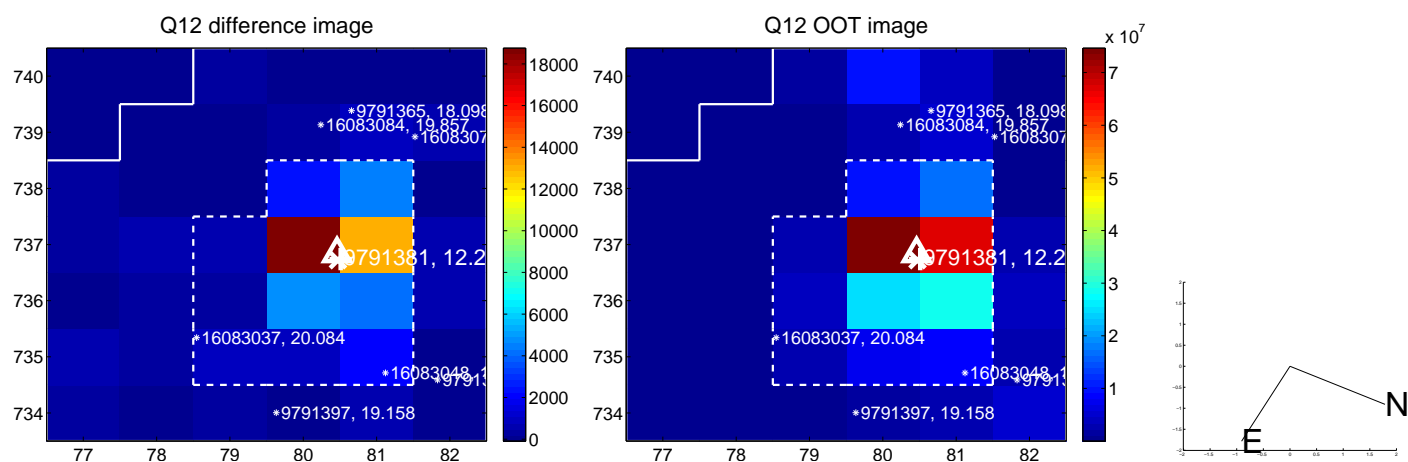
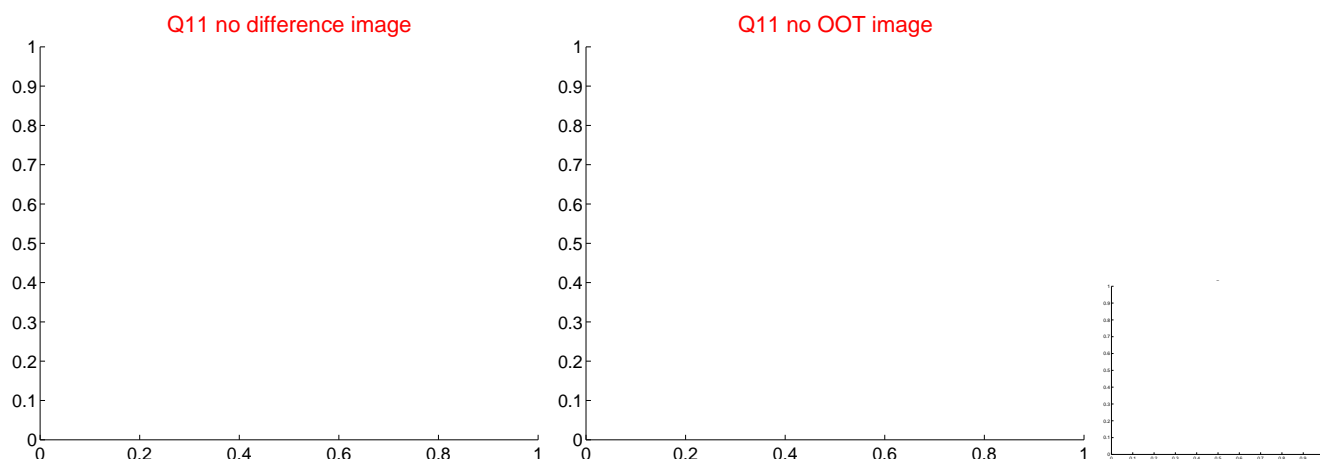
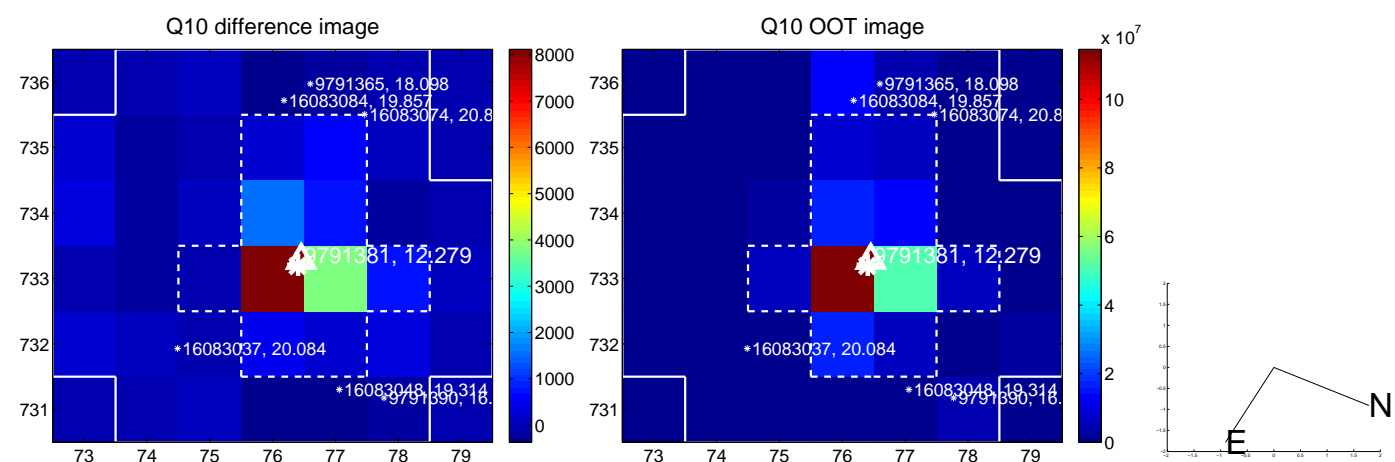
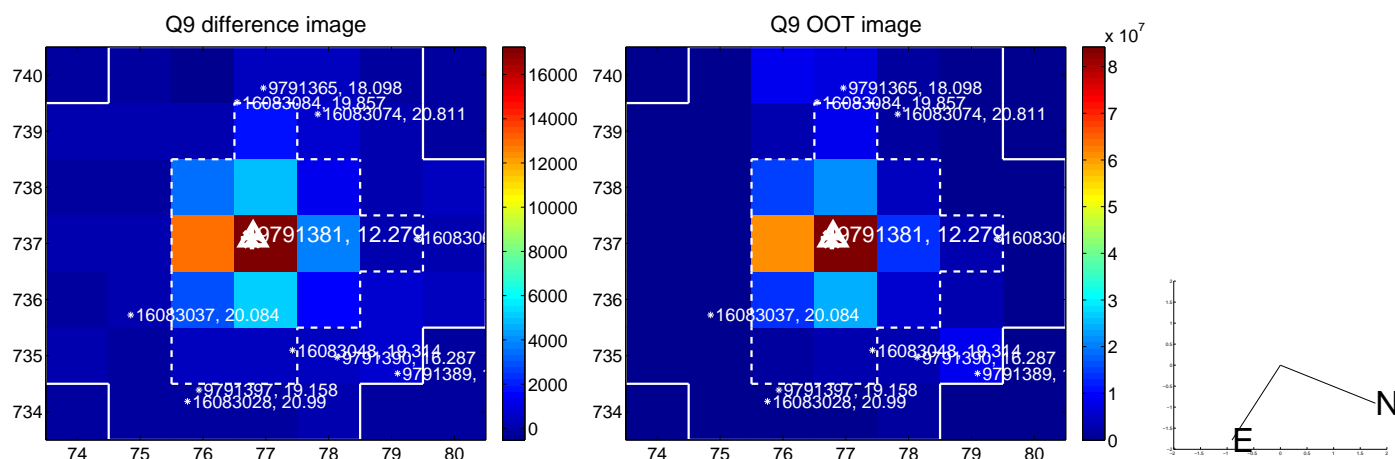


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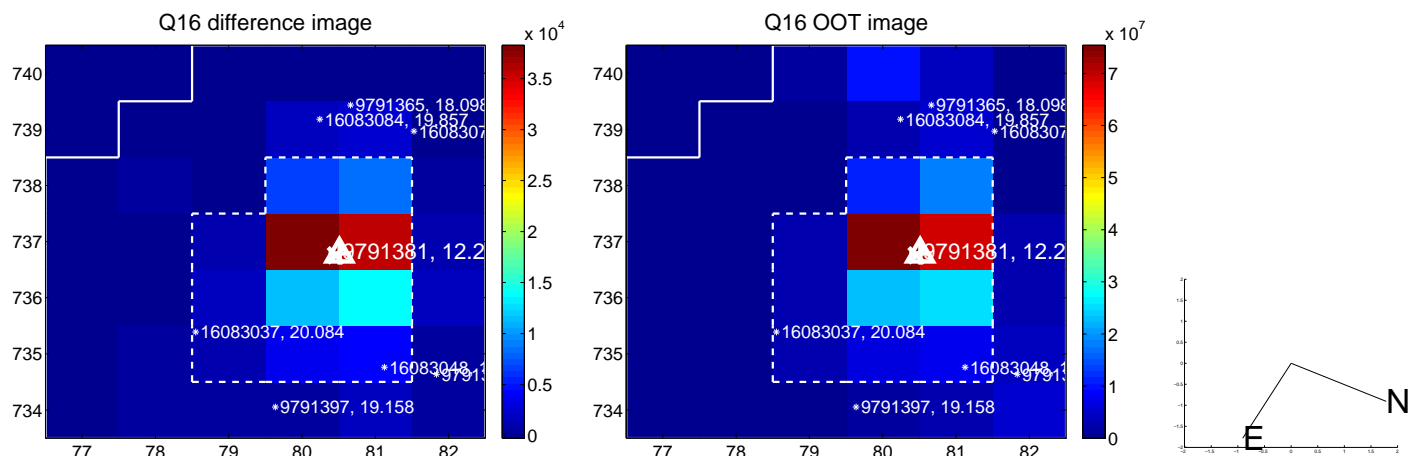
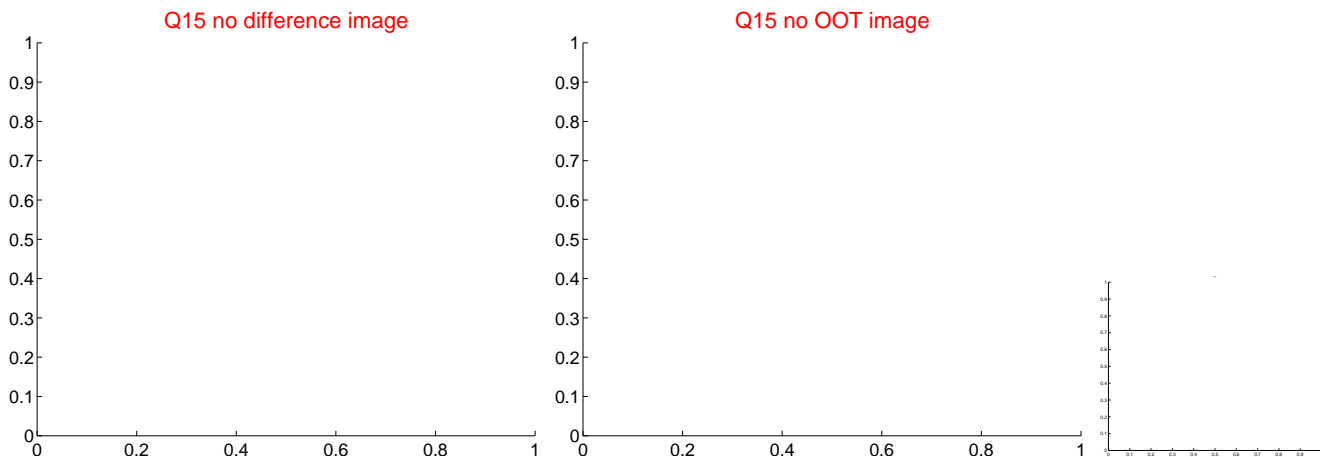
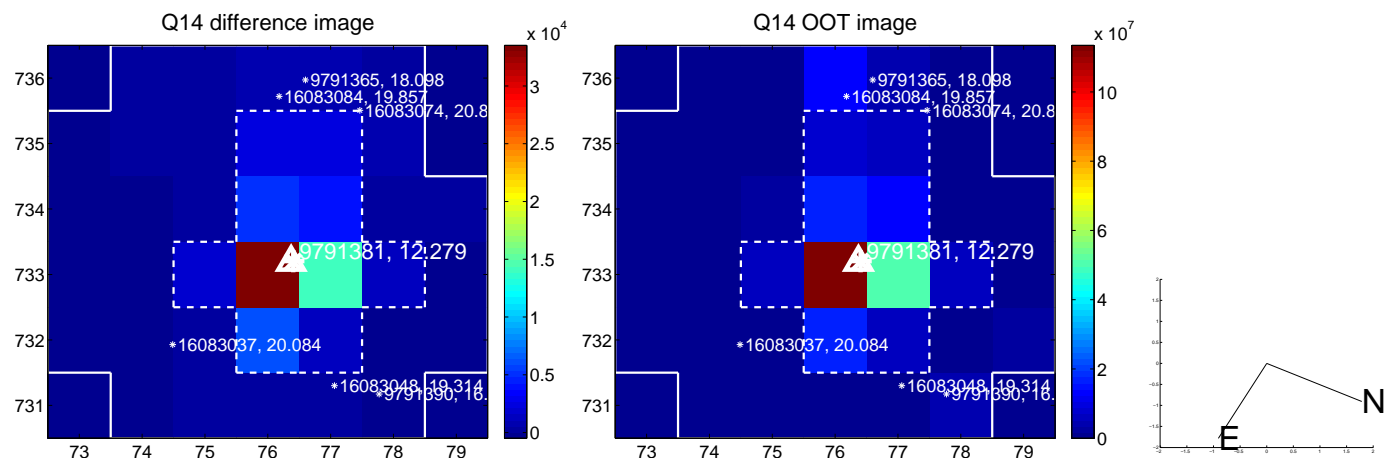
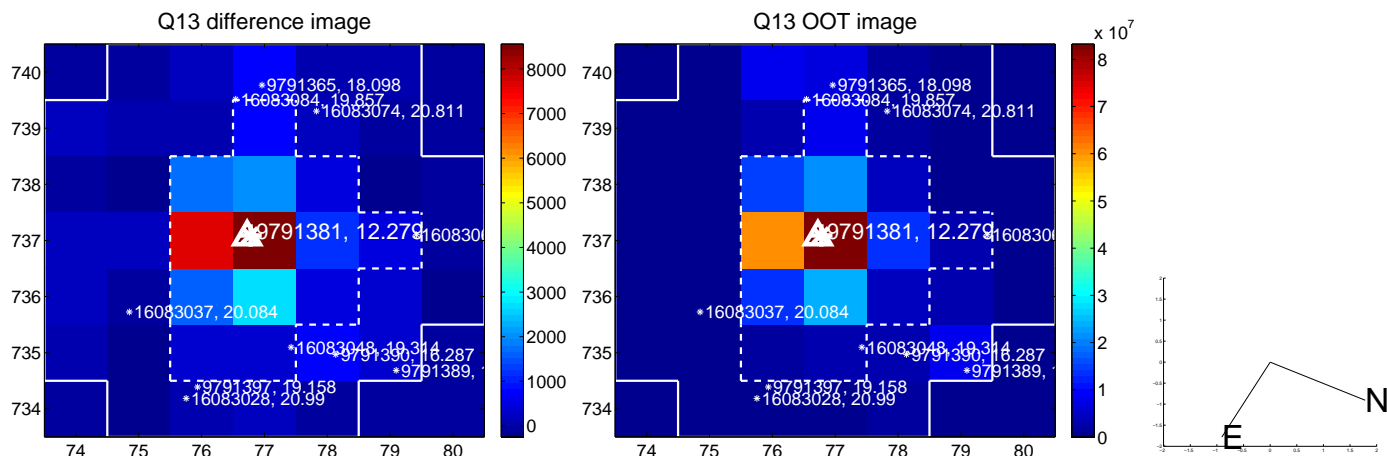




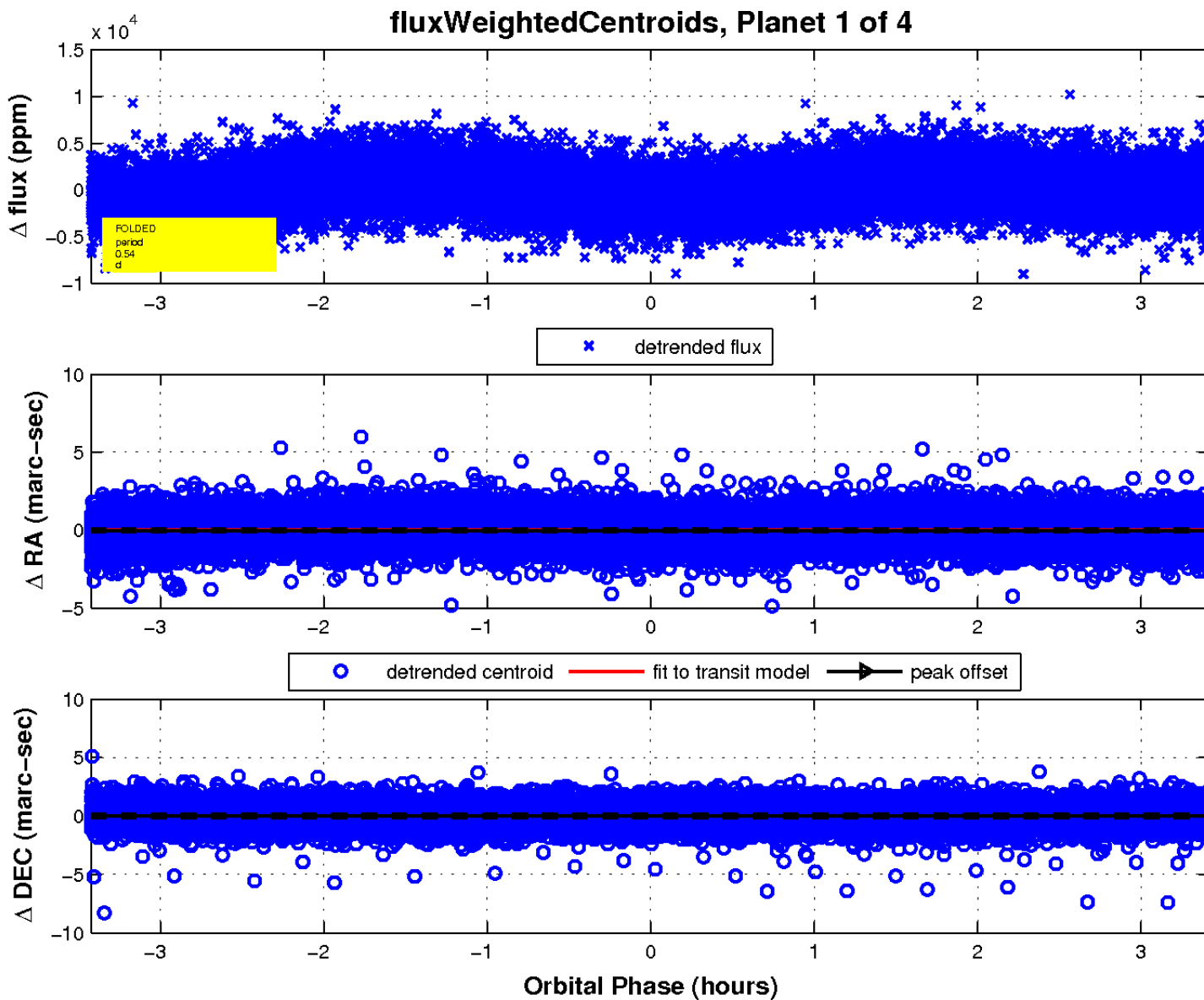
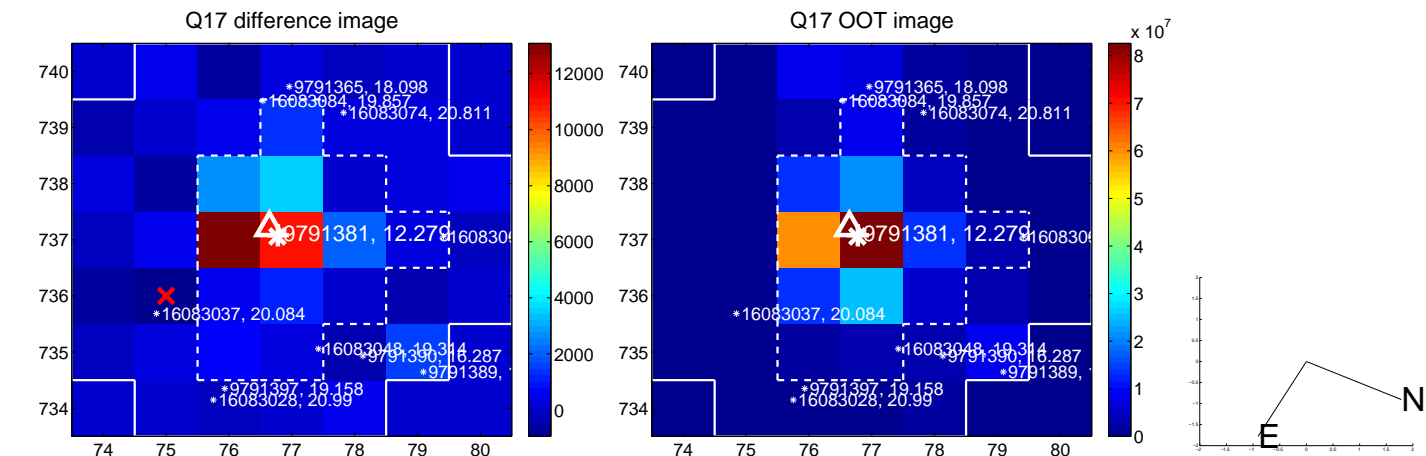
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

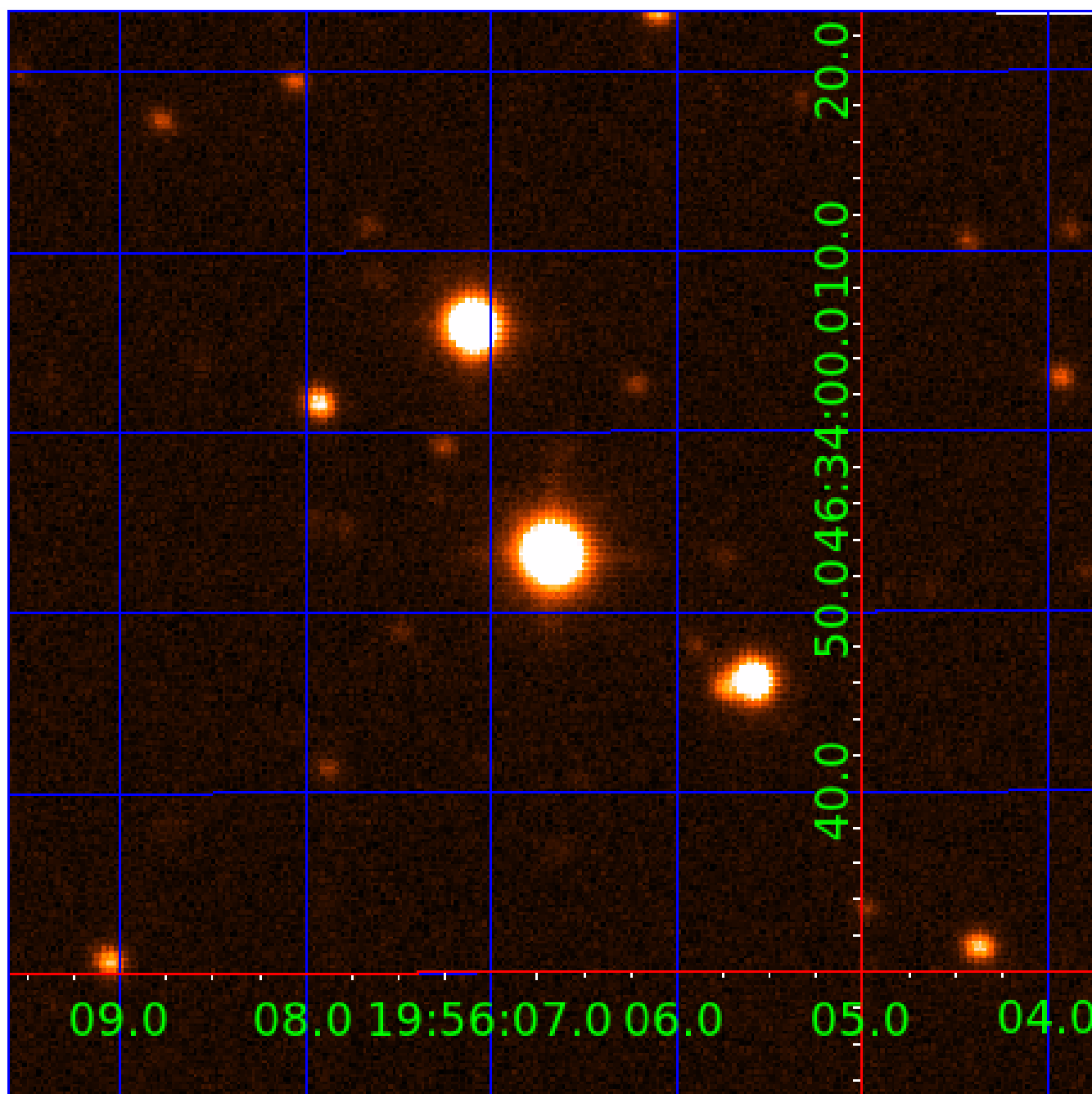


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009791381

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009791381-01	OBS	No	0.539350	131.514066	643.7	1.141	13.6	18.7	4.34	7153	13.03	0.00
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009791381-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009791381-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
009791381-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
009791381-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—NO_FITS—SAME_NTL_PERIOD—CENT_NOFITS

**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.

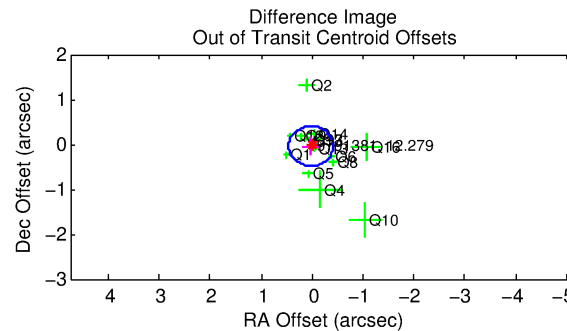
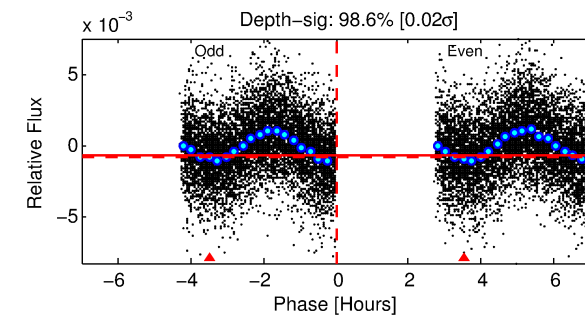
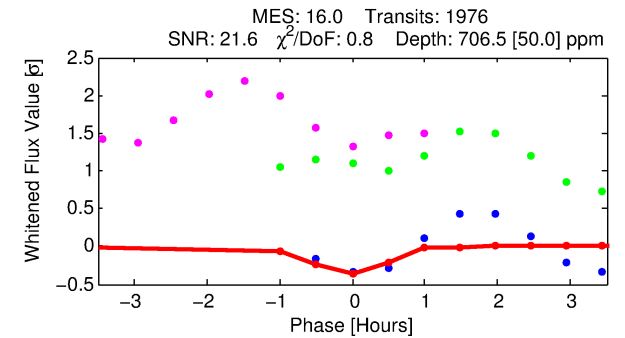
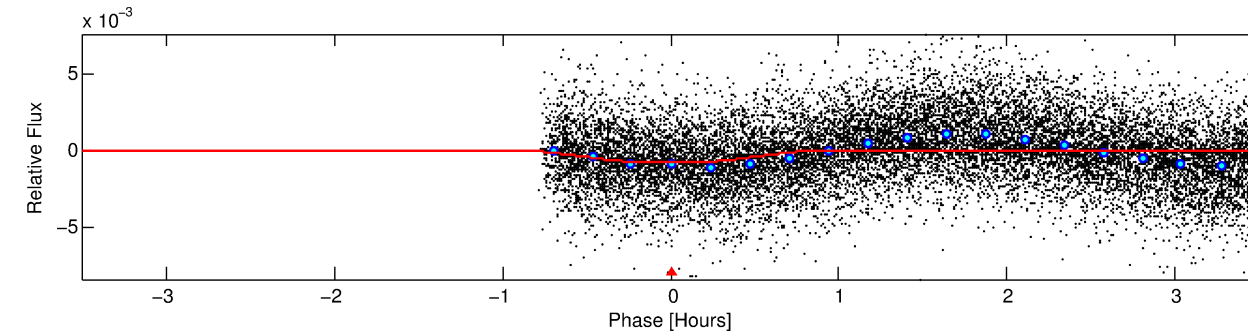
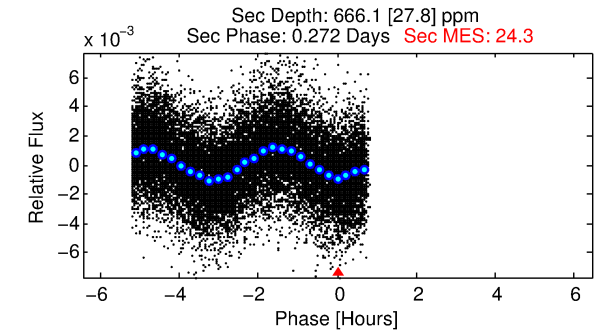
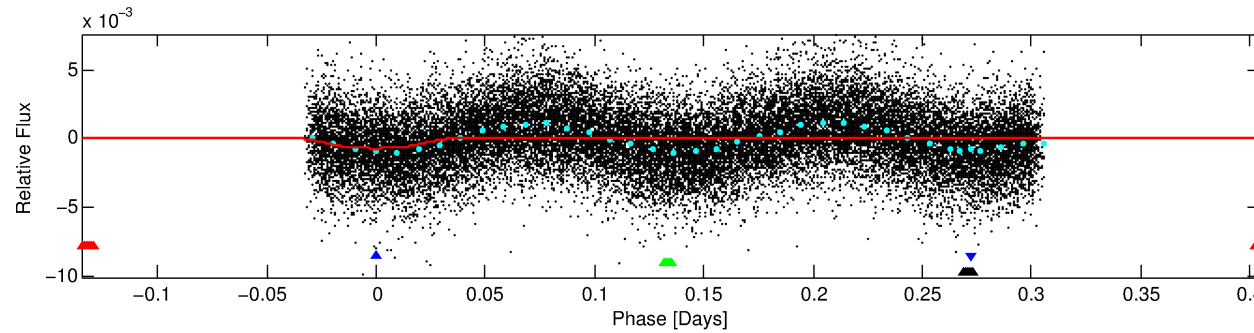
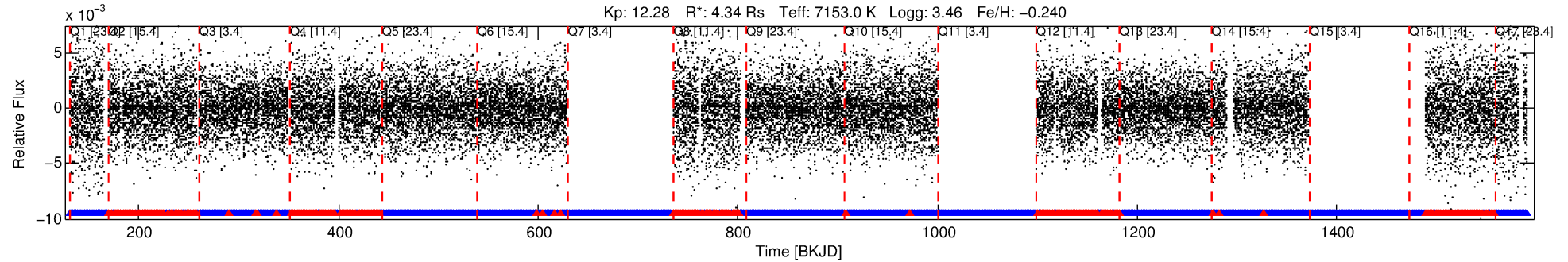
Ephemeris Match Information For 009791381-02

No Significant Match Found



# DV One-Page Summary

KIC: 9791381 Candidate: 2 of 4 Period: 0.539 d



## DV Fit Results:

Period = 0.53935 [0.00001] d  
Epoch = 131.6506 [0.0010] BKJD  
Rp/R\* = 0.0248 [0.0098]  
a/R\* = 3.51 [6.47]  
b = 0.31 [5.98]  
Seff = N/A  
Teq = N/A  
Rp = 11.74 [8.31] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

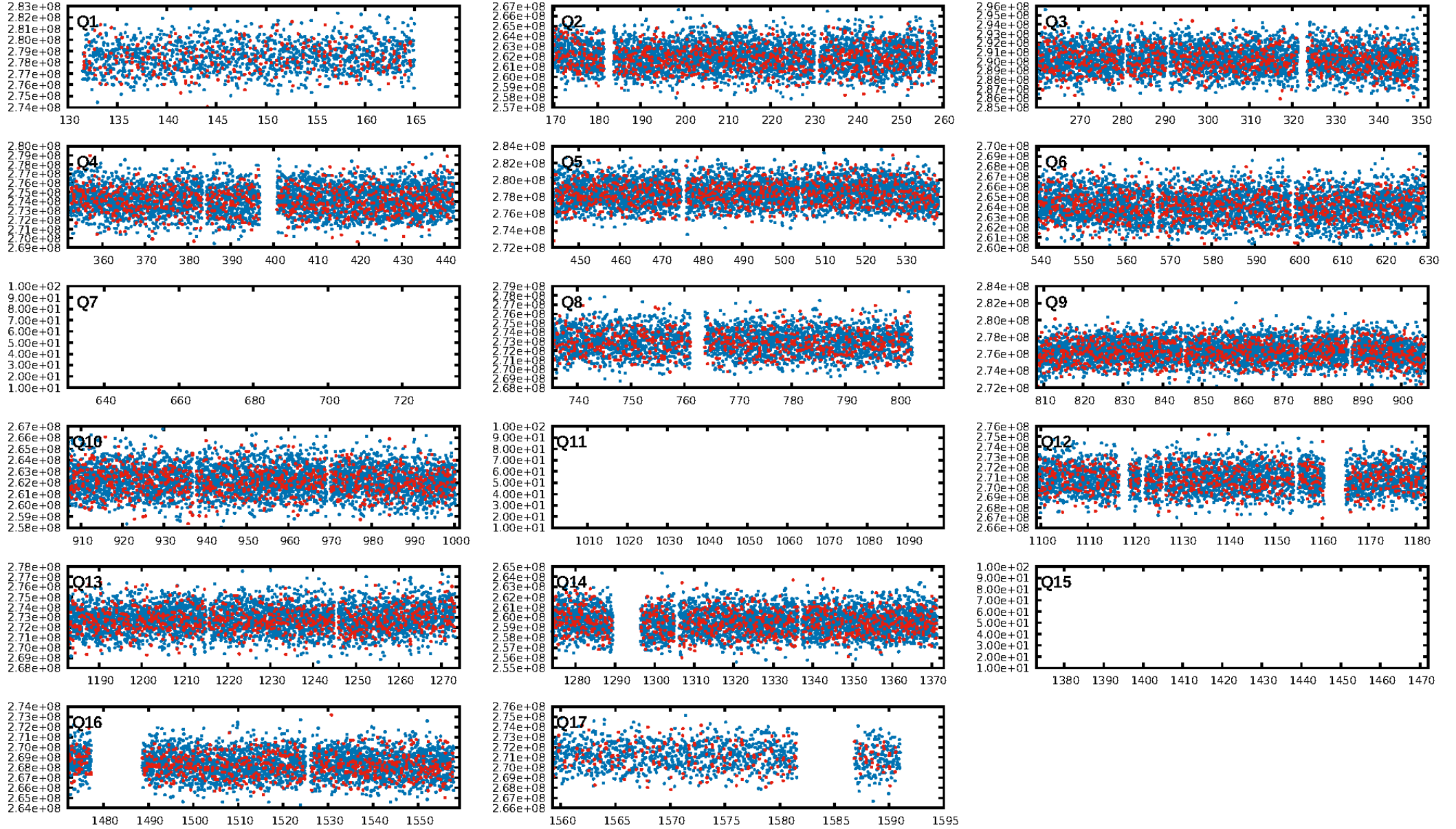
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.76 [1420/1865]  
GhostDiagnostic-chr: 4.427  
Centroid-sig: 1.3%  
Centroid-so: 0.195 arcsec [4.78σ]  
OotOffset-rm: 0.050 arcsec [0.34σ]  
KicOffset-rm: 0.048 arcsec [0.31σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 0.00 [0/14]

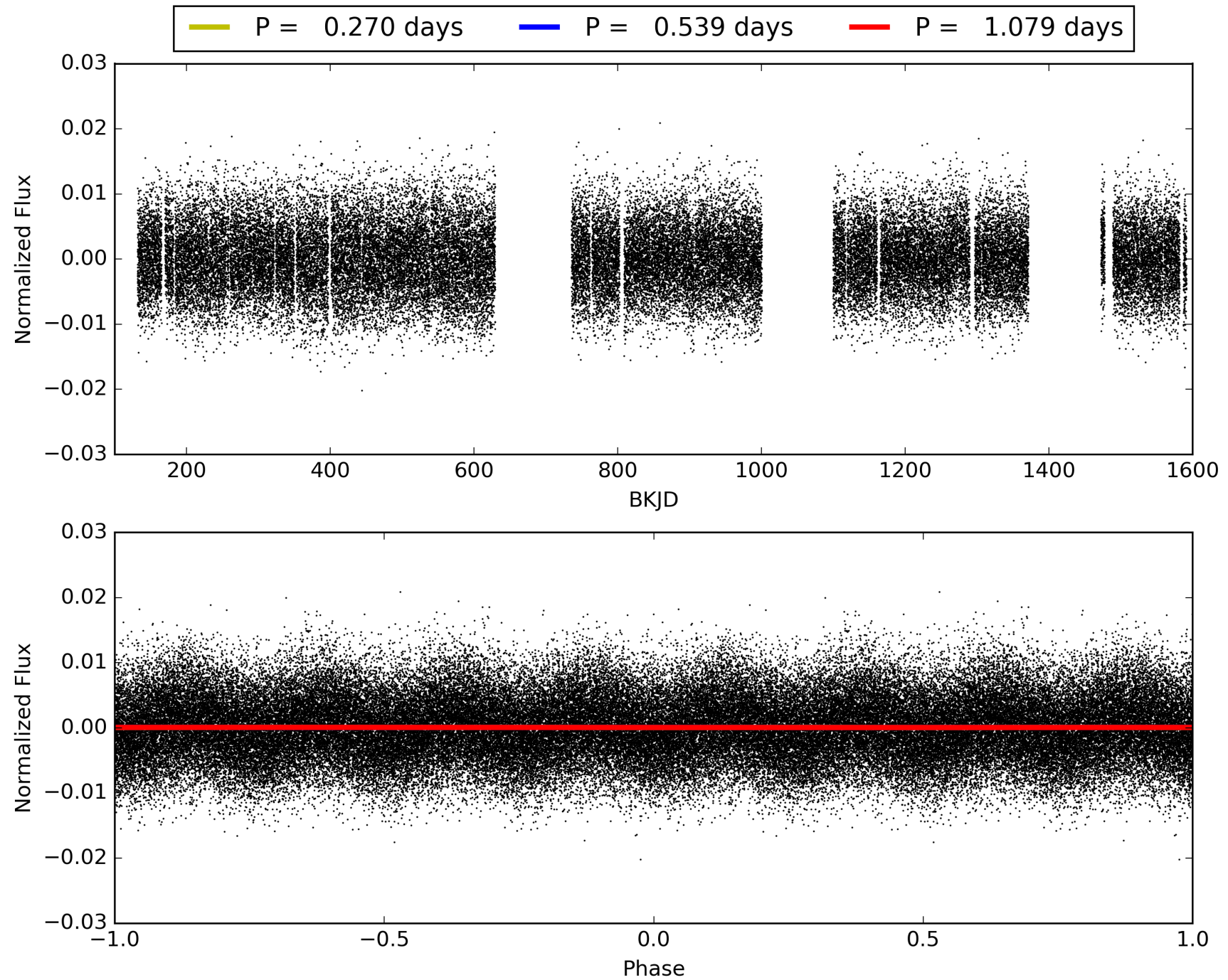
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009791381-02, PDC Light Curves

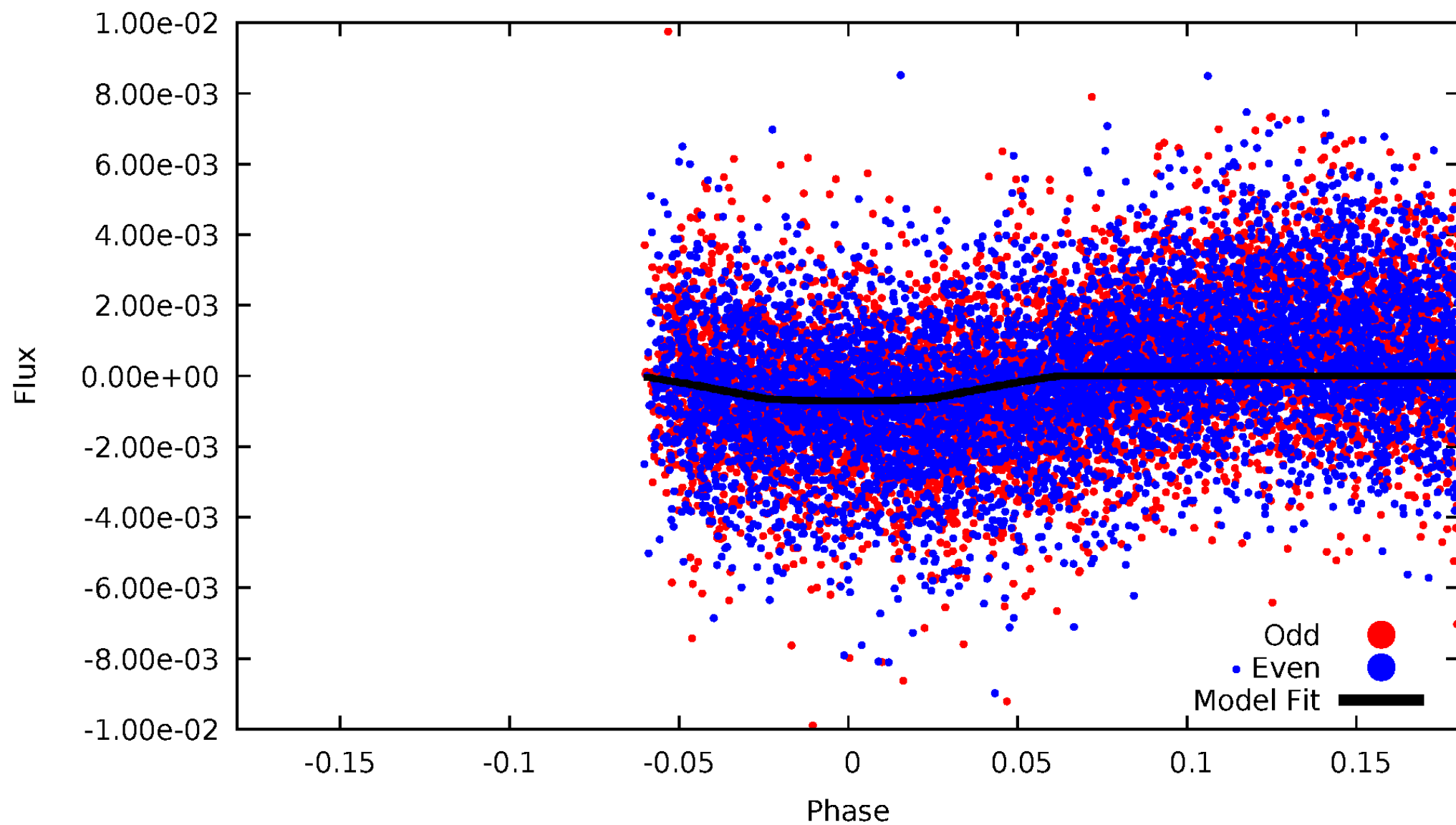


TCE 009791381-02



# DV Odd/Even

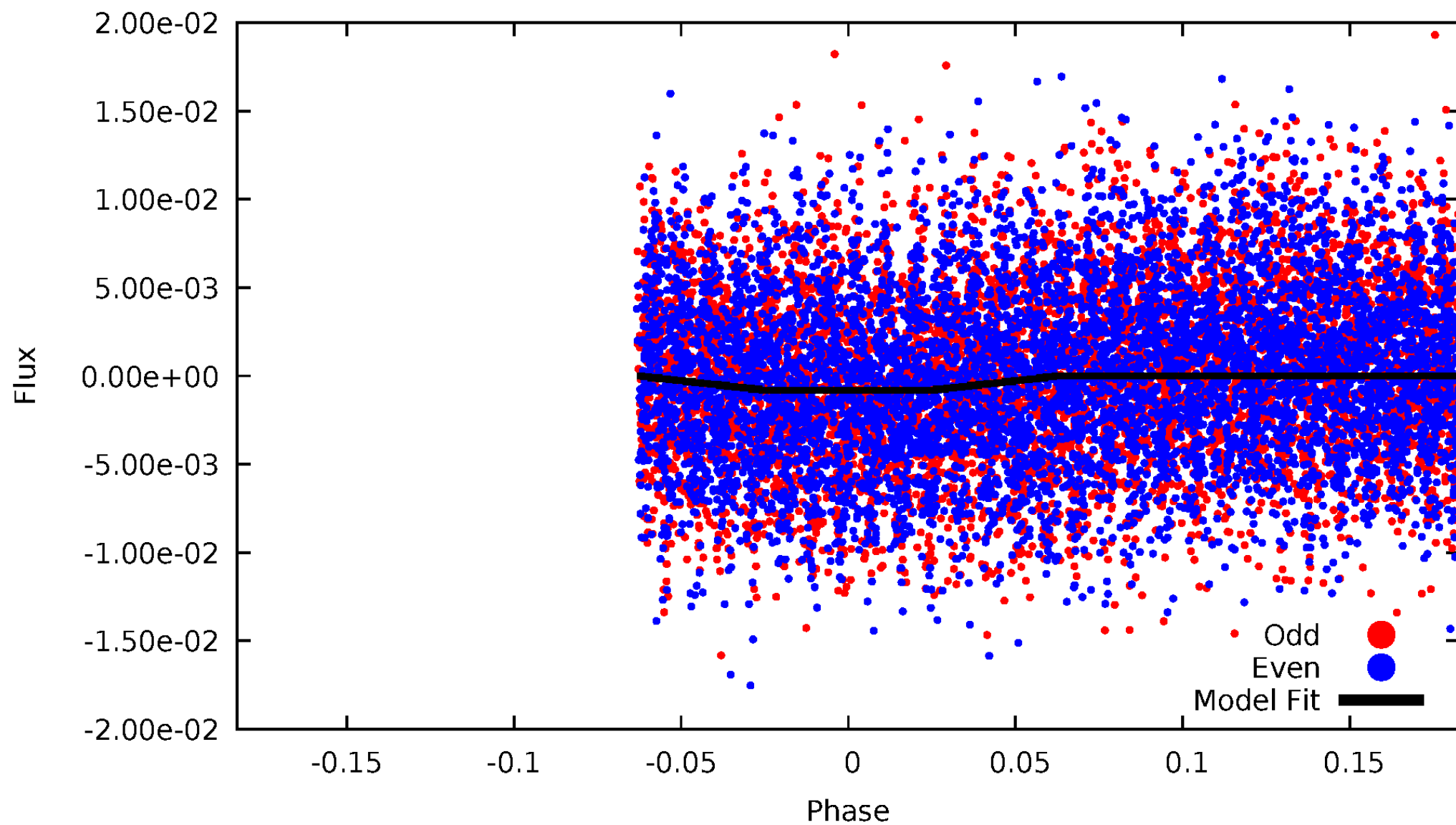
TCE 009791381-02





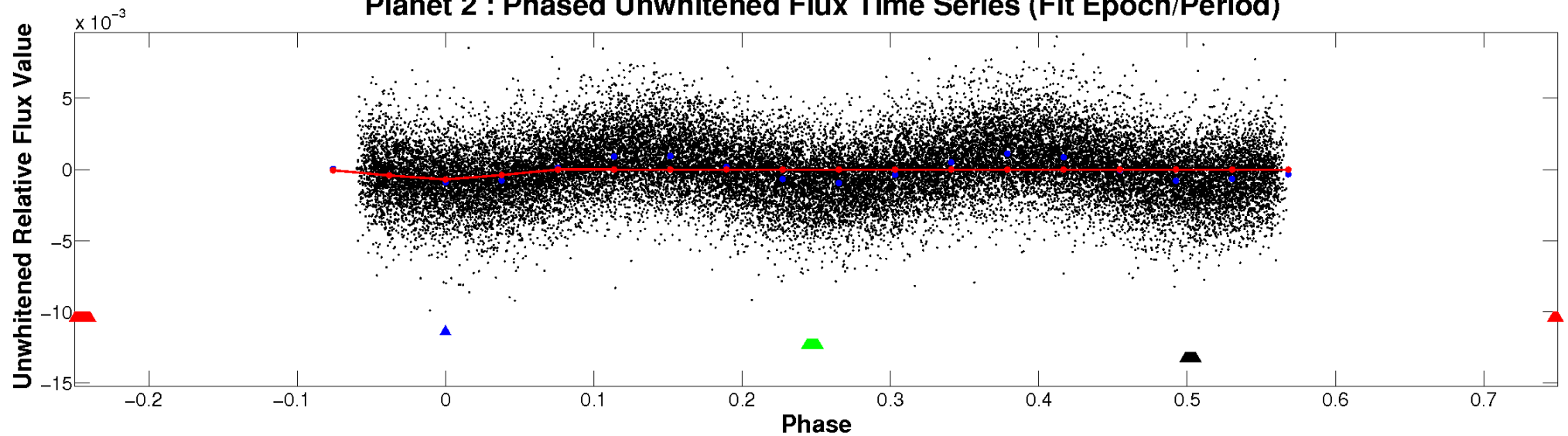
# ALT Odd/Even

TCE 009791381-02

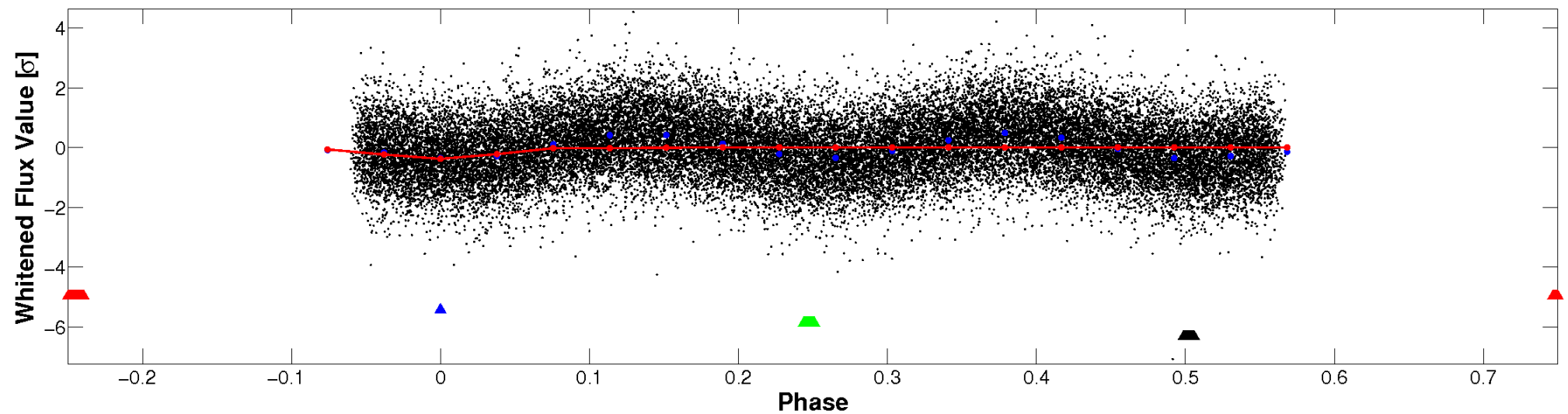


# Non-Whitened Vs. Whitened Light Curve

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

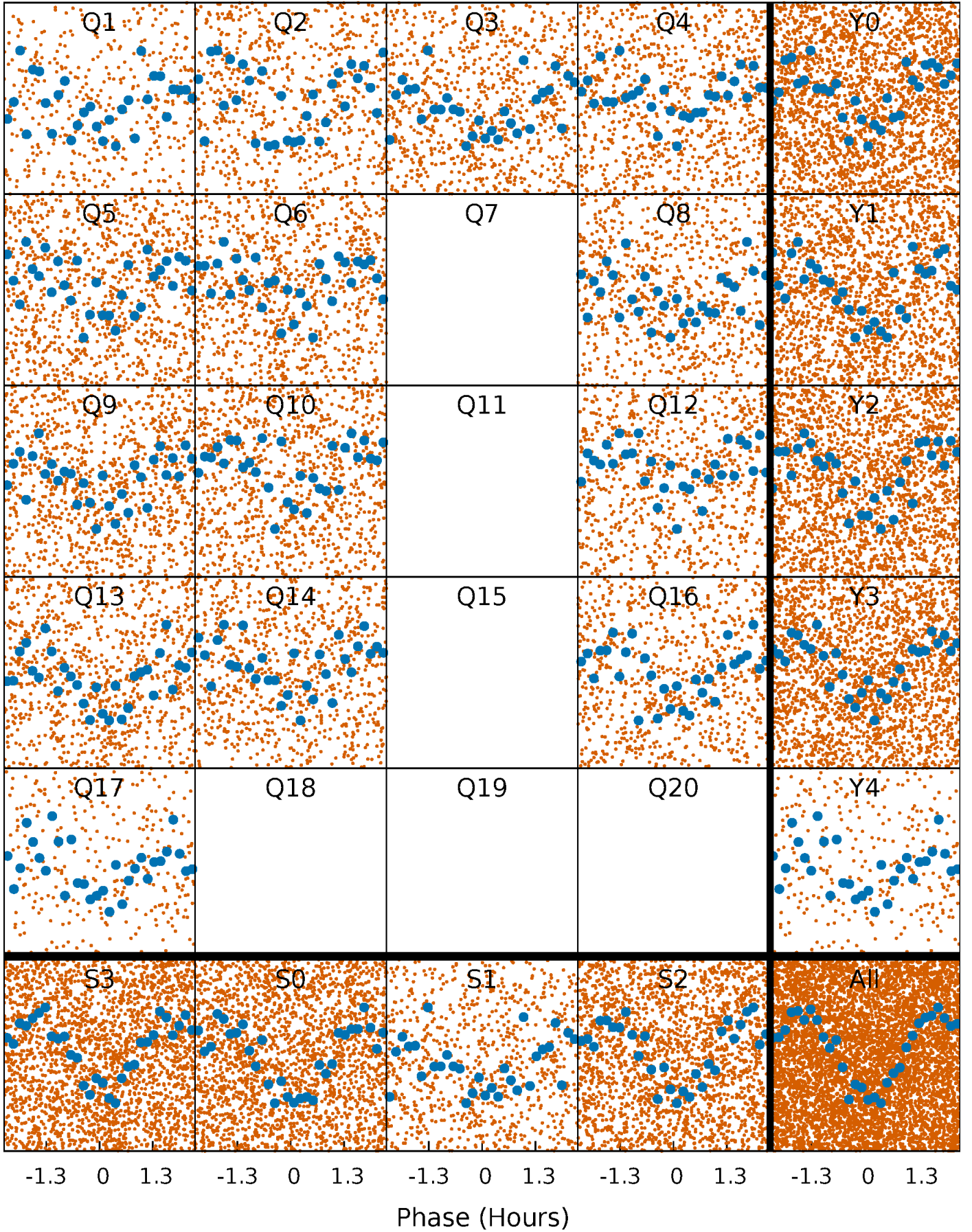


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



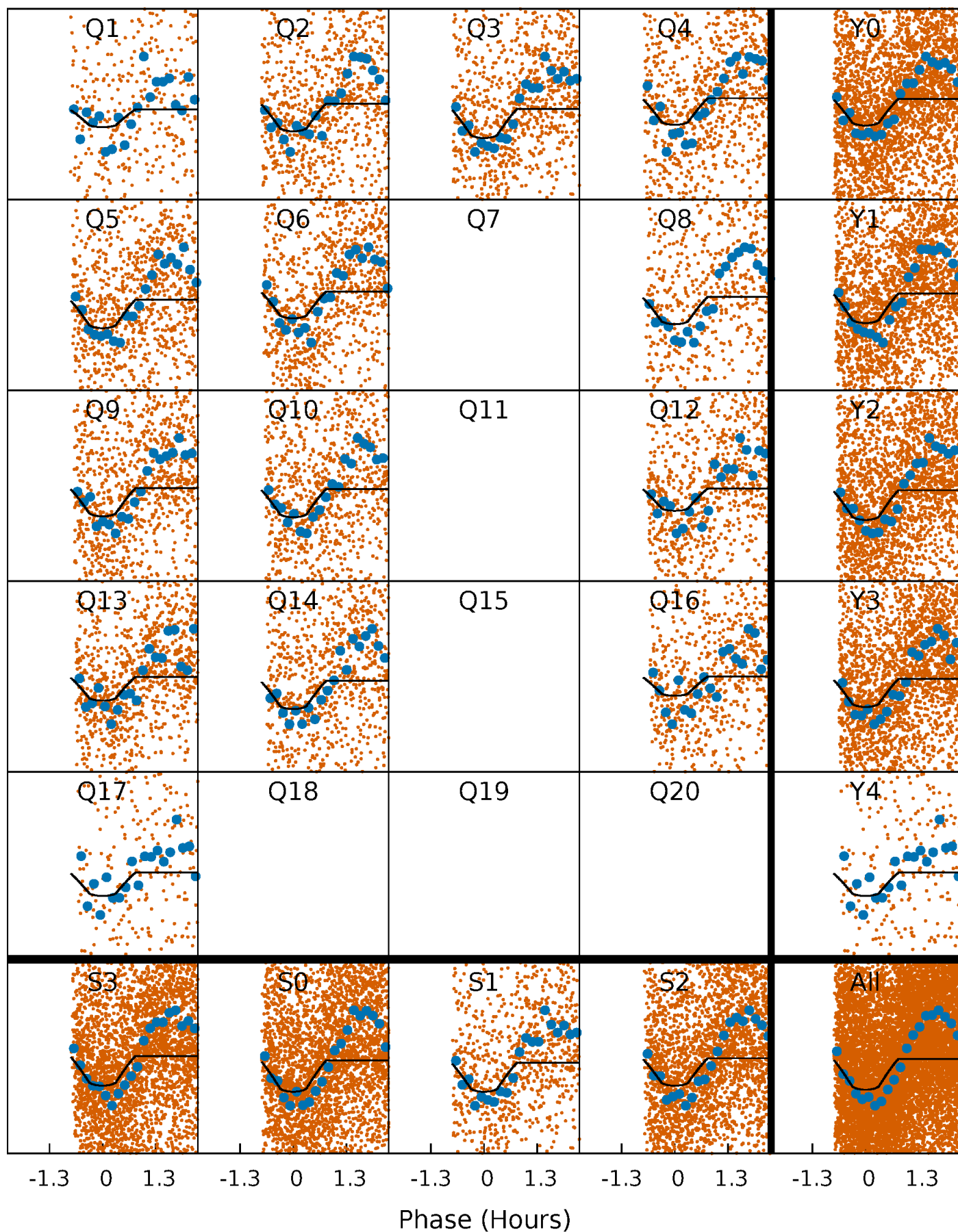
# PDC Quarter-Phased Transit Curves

TCE 009791381-02   P= 0.539347 Days    $T_0=131.650648$  (BKJD)



# DV Quarter-Phased Transit Curves

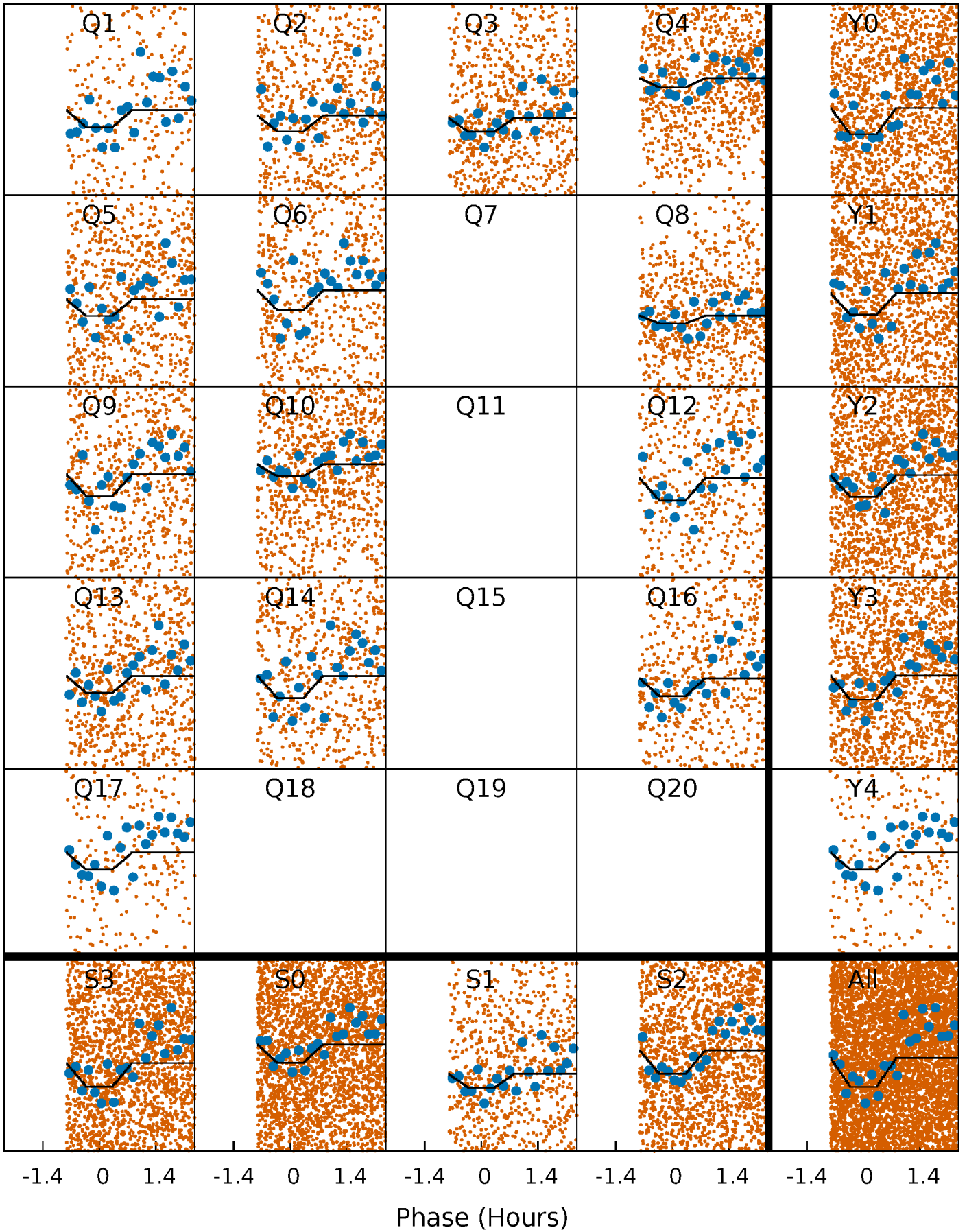
TCE 009791381-02   P= 0.539347 Days    $T_0=131.650648$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

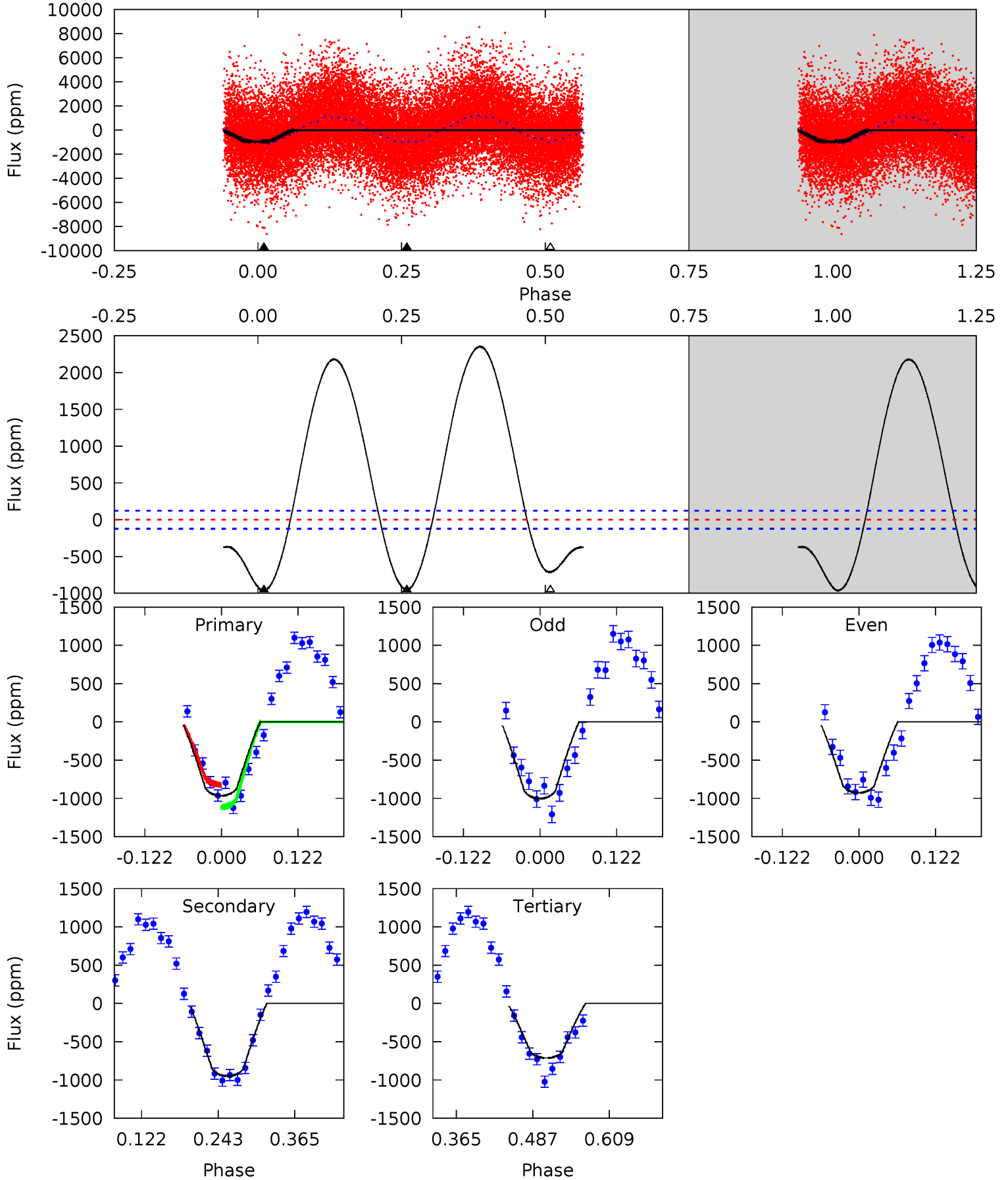
TCE 009791381-02   P= 0.539350 Days    $T_0=131.651099$  (BKJD)



# DV Model-Shift Uniqueness Test

009791381-02, P = 0.539347 Days, E = 131.111301 Days

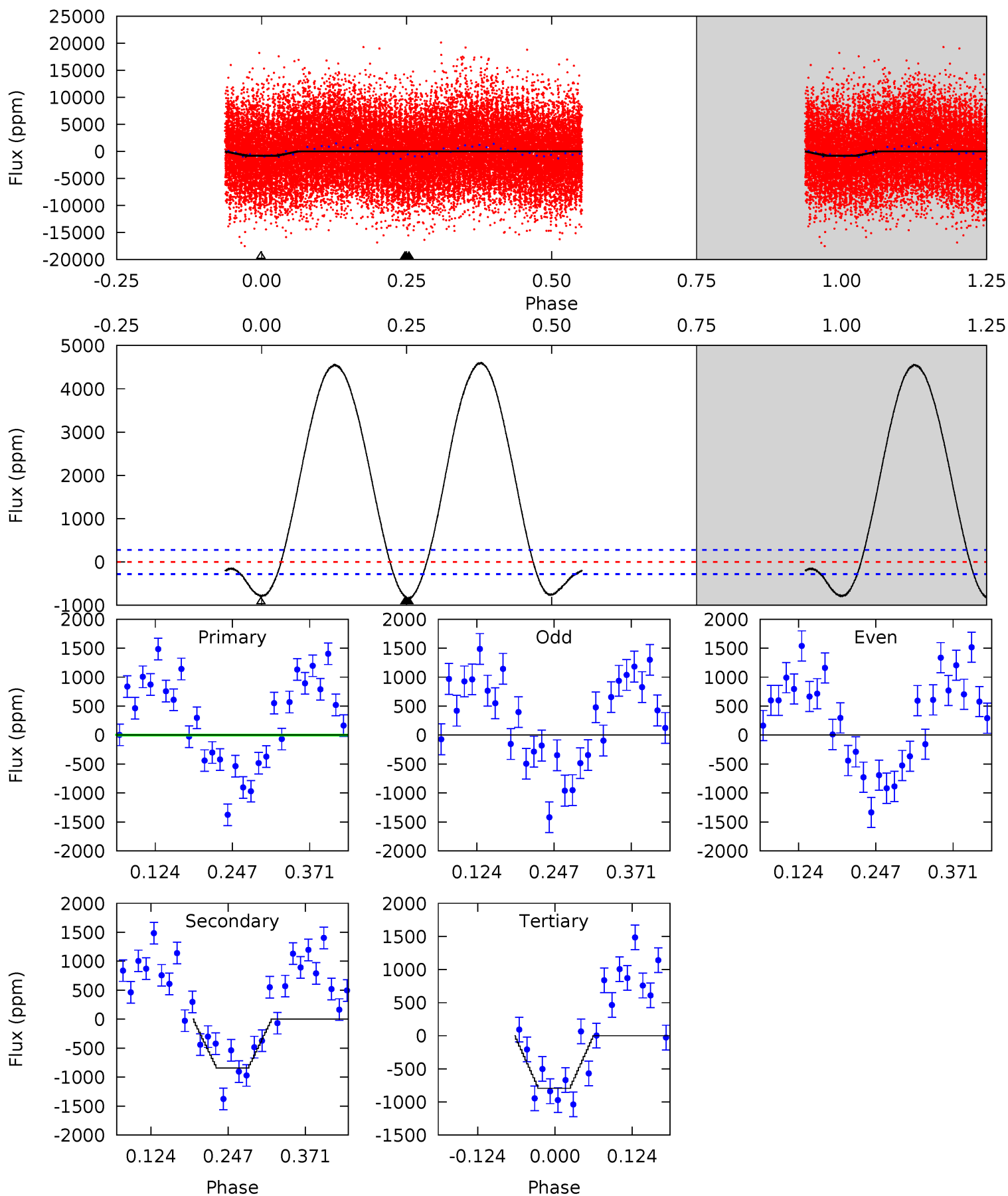
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.8	35.2	26.4	0	4.52	1.55	42.5	9.38	35.8	8.81	35.2	1.40	1.00	0.71	5.69



# Alt Model-Shift Uniqueness Test

009791381-02, P = 0.539350 Days, E = 131.111749 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
12.9	13.7	12.8	0	4.52	1.54	30.4	0.07	12.9	0.83	13.7	0.18	0.92	0.84	0.11



### Stellar Parameters For KIC 009791381

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7153^{+224}_{-299}$	$3.464^{+0.666}_{-0.074}$	$-0.240^{+0.250}_{-0.300}$	$4.339^{+0.300}_{-2.546}$	$1.996^{+0.074}_{-0.668}$	$0.034^{+0.382}_{-0.009}$
	+3%/-4%	+19%/-2%	+104%/-125%	+7%/-59%	+4%/-33%	+1109%/-25%
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 009791381-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-950 \pm 27$	$10.25^{+5.21}_{-5.06}$	$6972^{+466}_{-1061}$	$7467^{+3870}_{-1875}$	$1.296^{+3.655}_{-0.722}$
Alt.	$-844 \pm 62$	$11.61^{+5.14}_{-4.67}$	$6950^{+454}_{-1071}$	$6387^{+2430}_{-1583}$	$0.898^{+1.533}_{-0.467}$

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



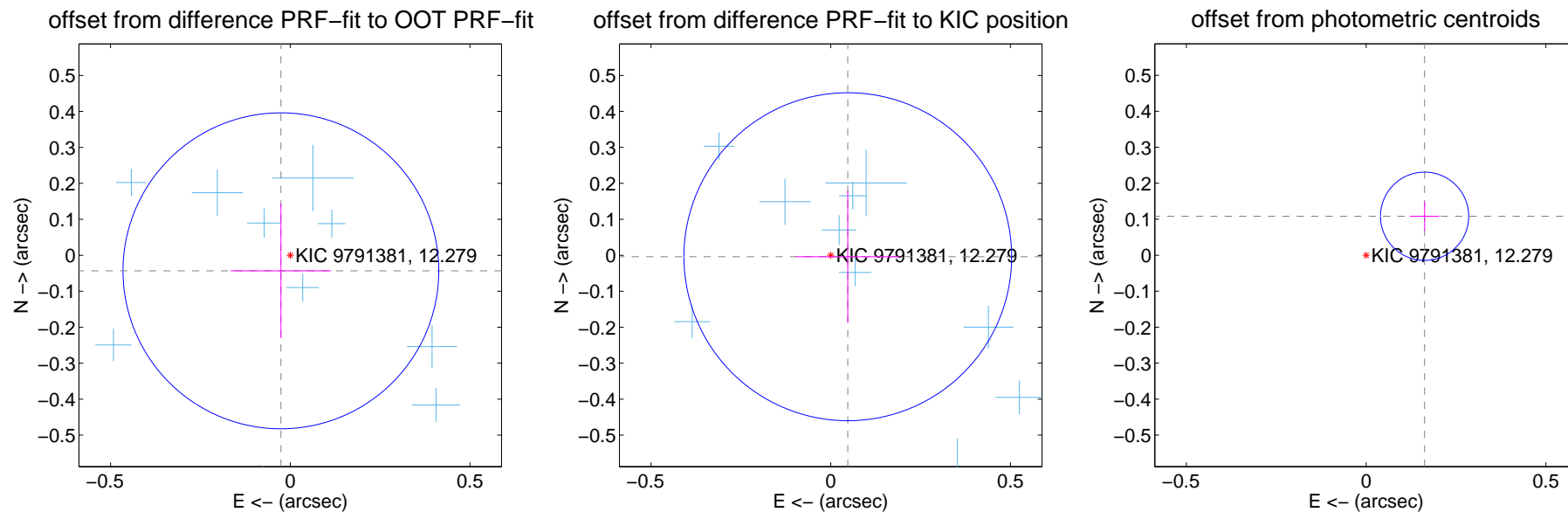
## DV Centroid Data

Supplemental centroid analysis for 009791381-02. Kepler magnitude: 12.28. Transit SNR 21.62

There are 13 quarters with good PRF difference image offsets

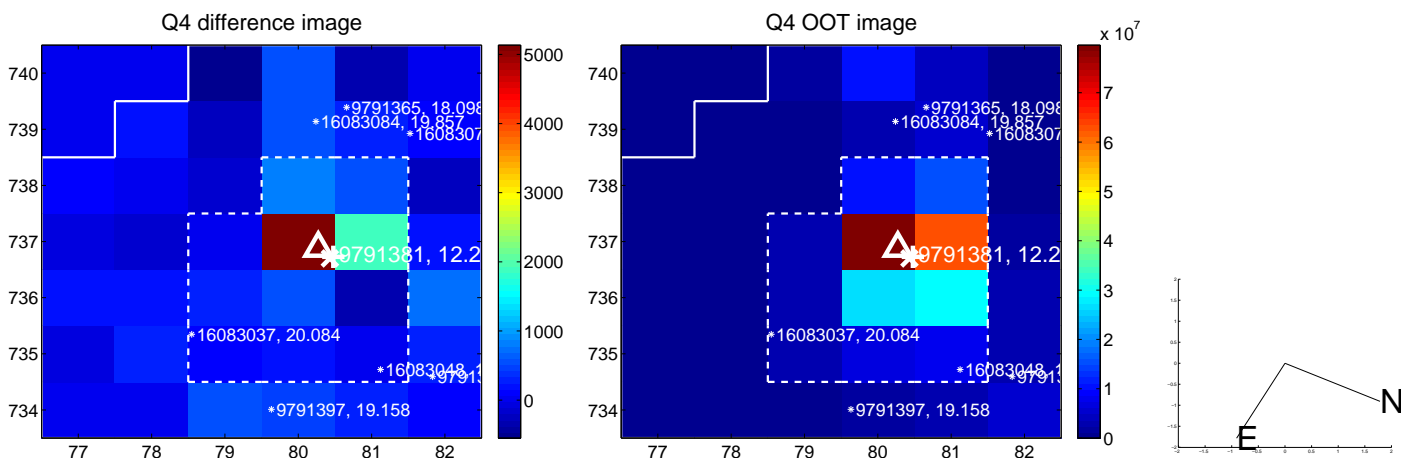
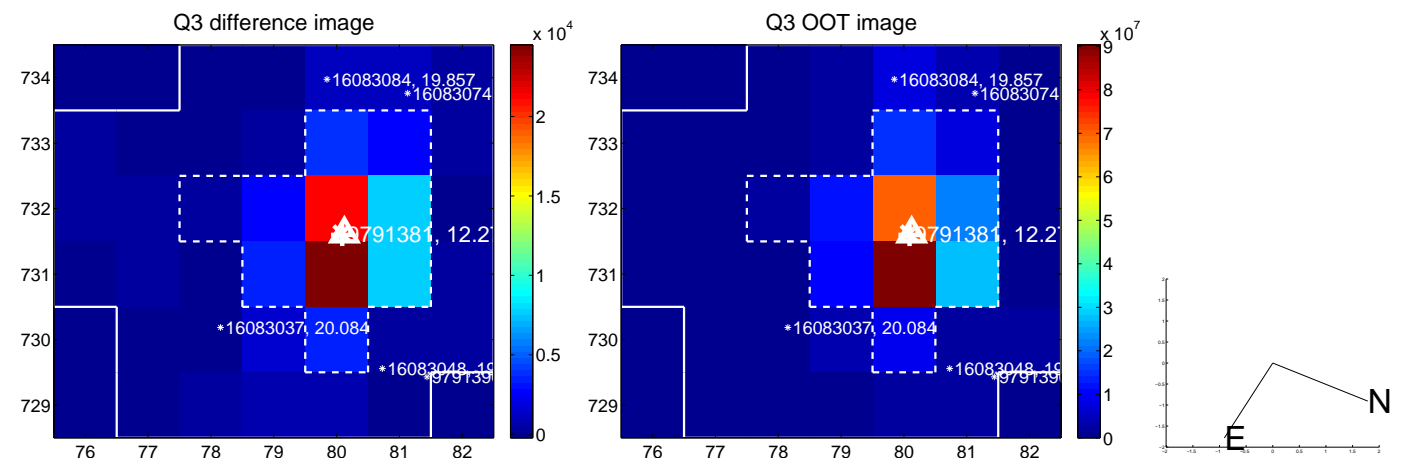
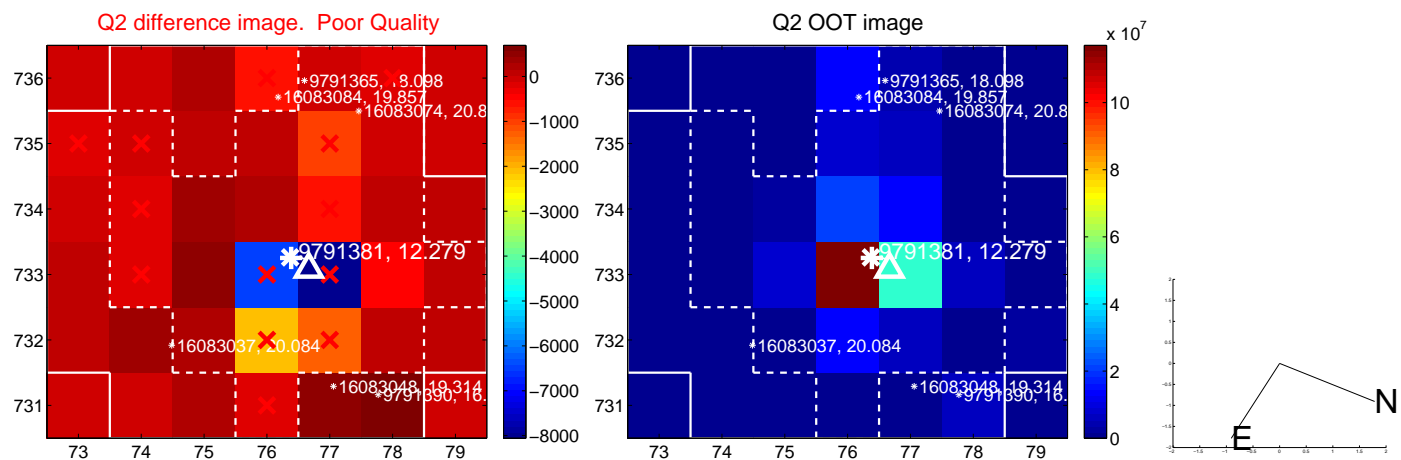
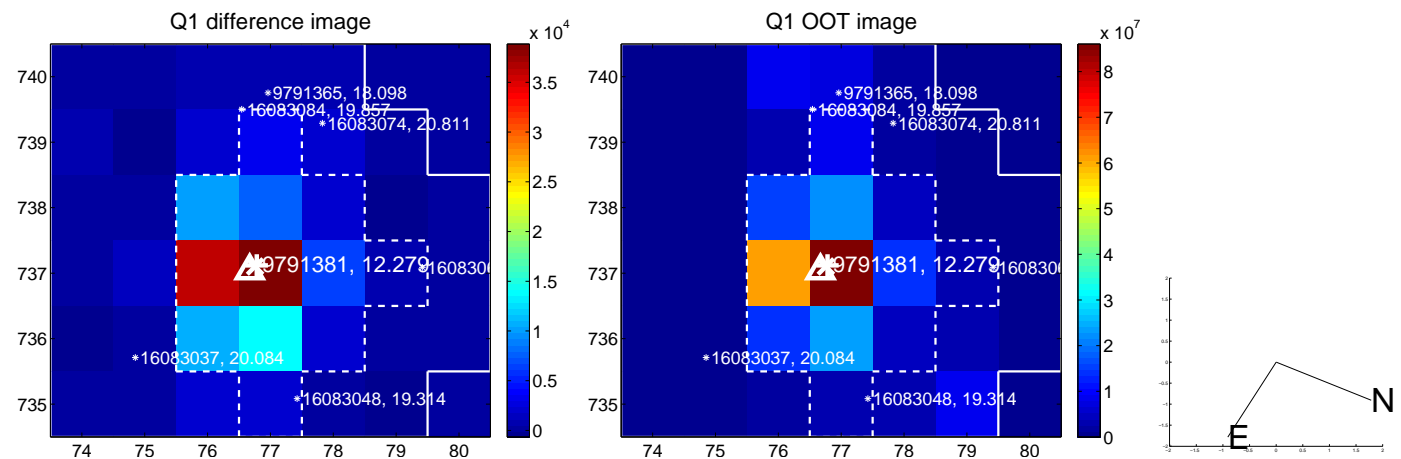
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.050 \pm 0.146$	0.34	$0.026 \pm 0.139$	$-0.043 \pm 0.187$
PRF-fit source offset from KIC position	$0.048 \pm 0.152$	0.31	$-0.047 \pm 0.145$	$-0.004 \pm 0.183$
photometric centroid source offset	$0.20 \pm 0.04$	4.78	$-0.16 \pm 0.04$	$0.11 \pm 0.04$

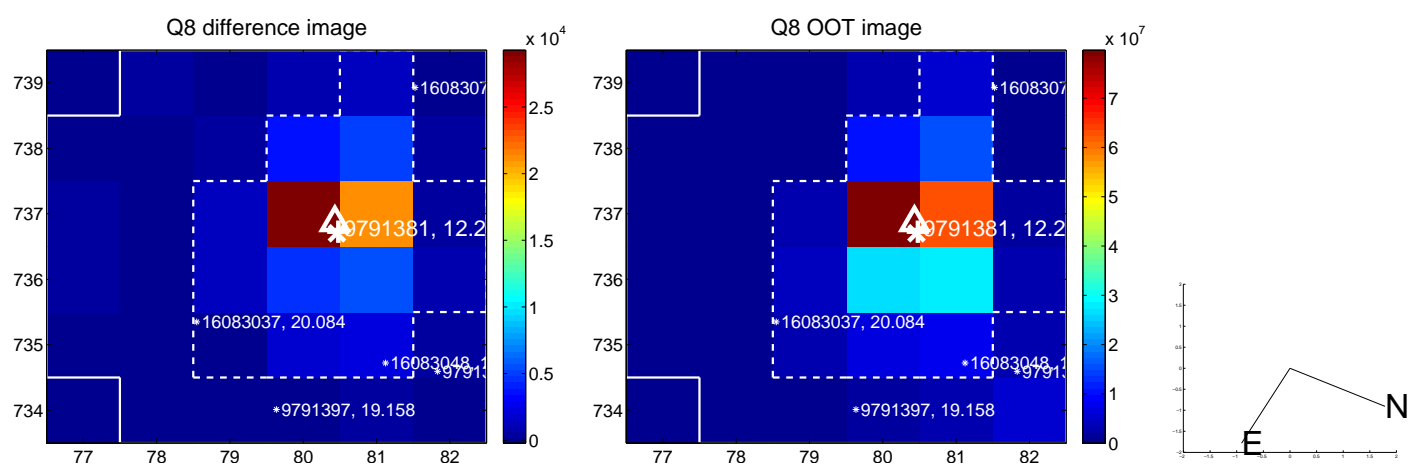
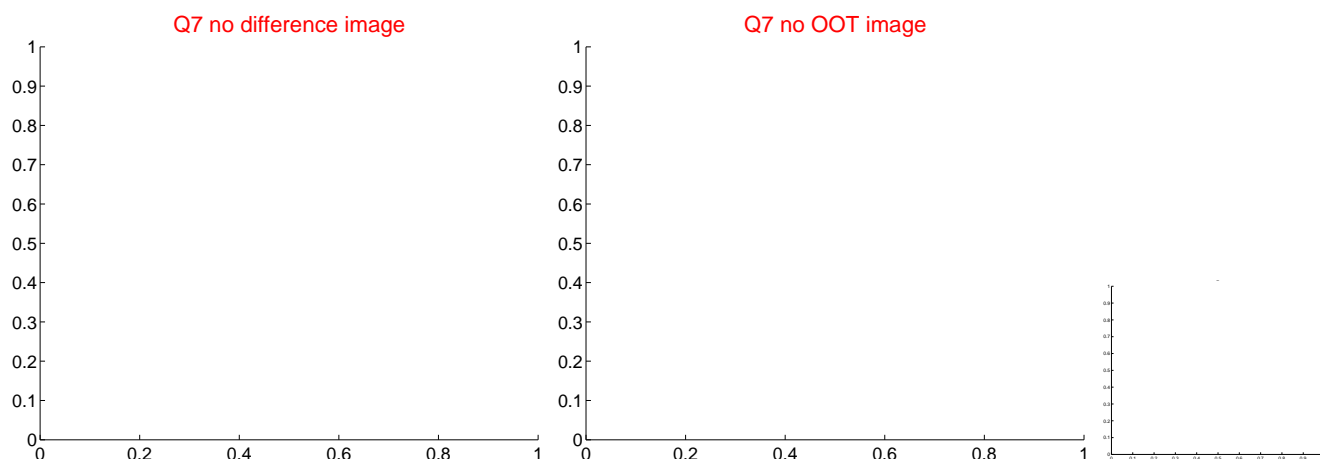
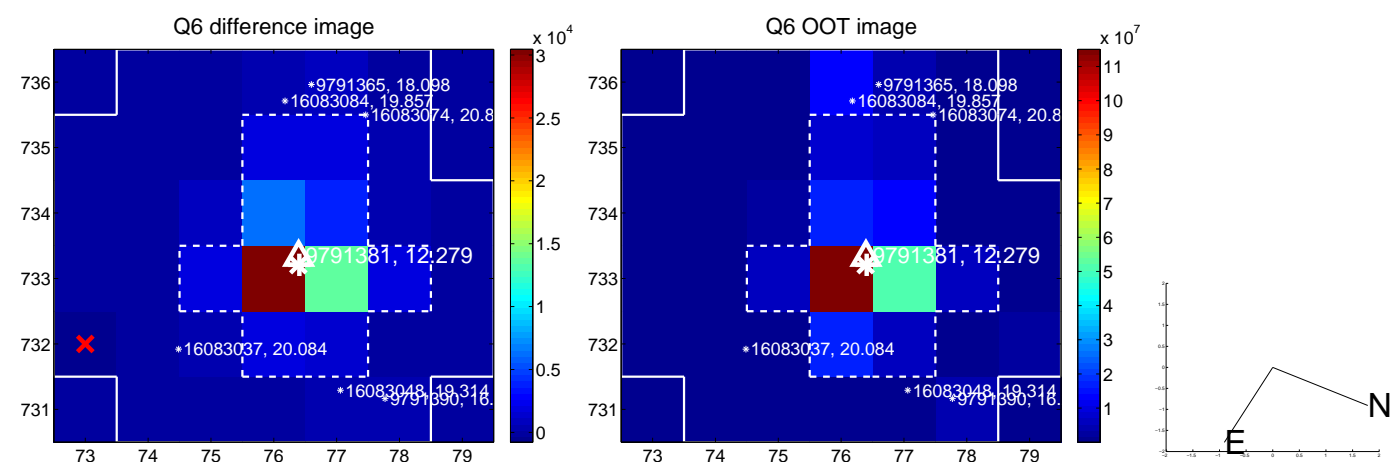
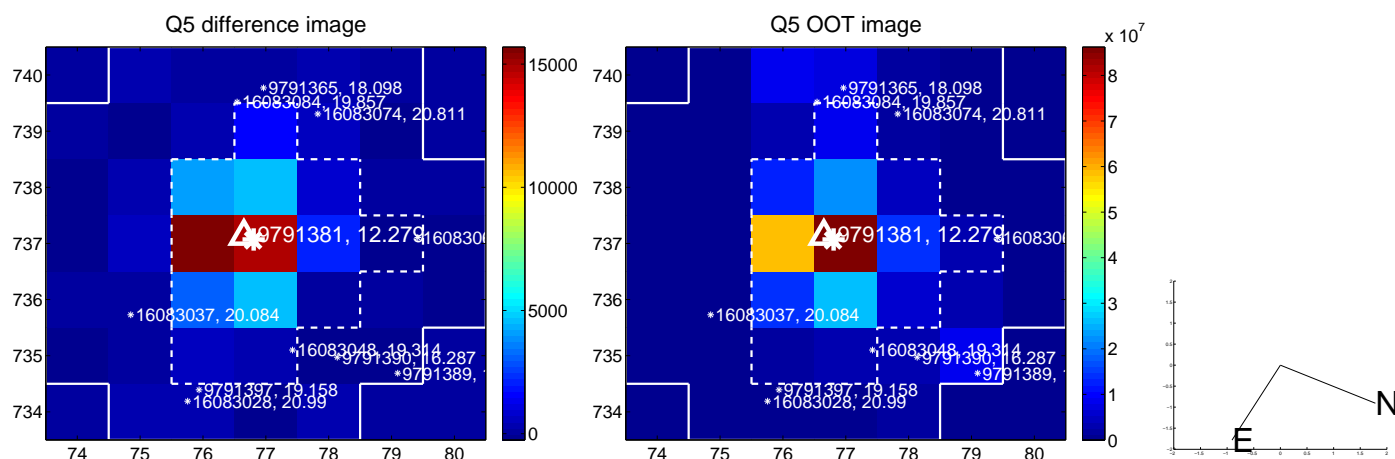


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

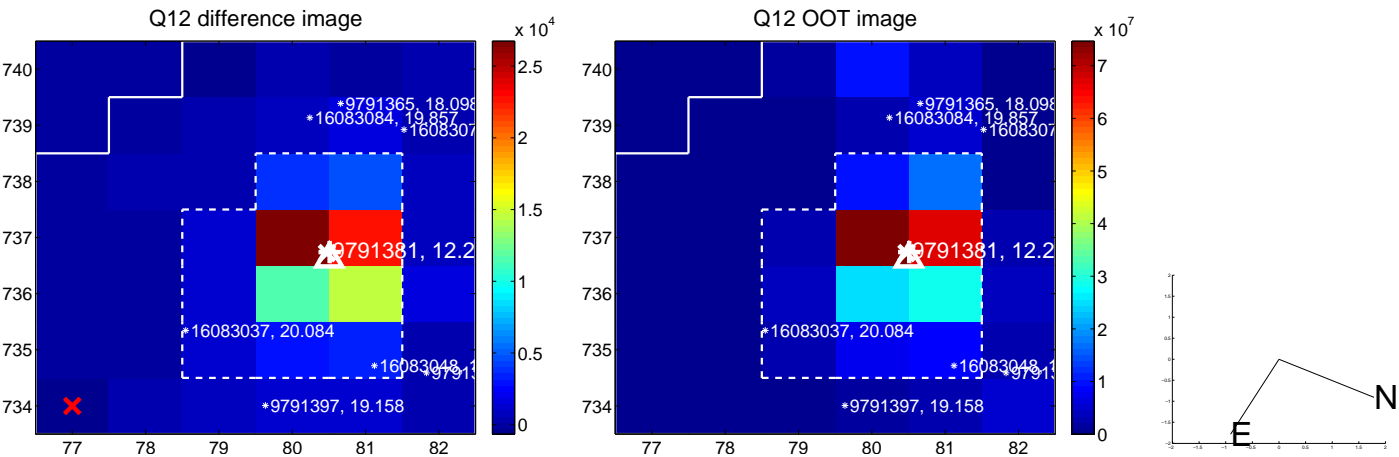
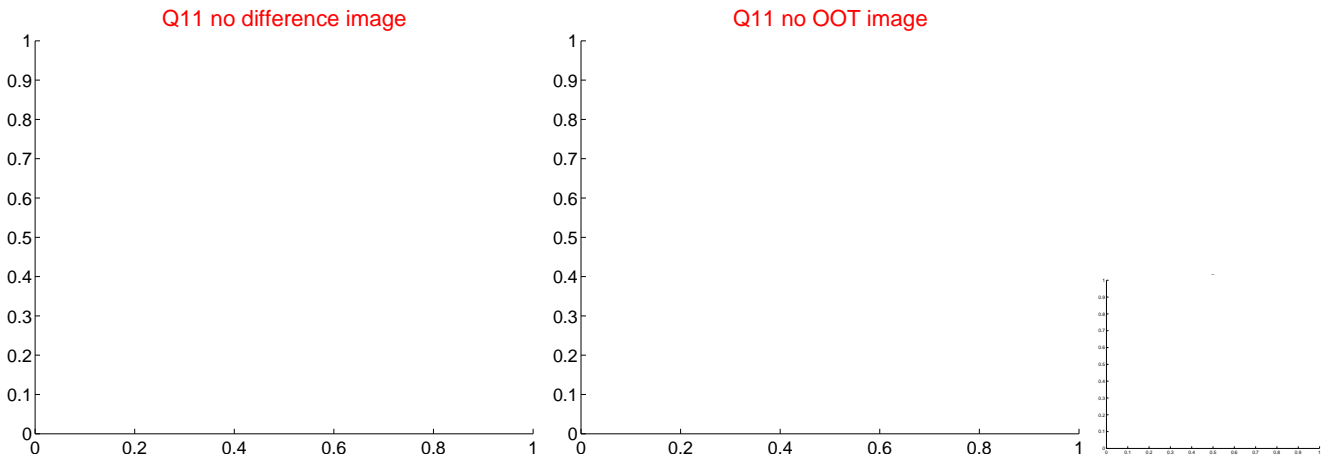
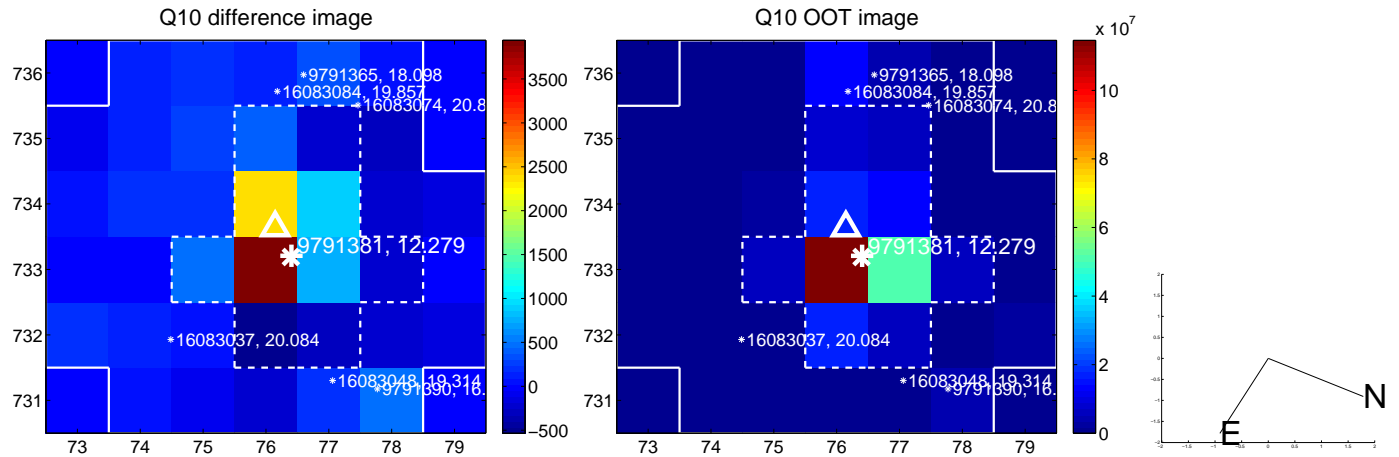
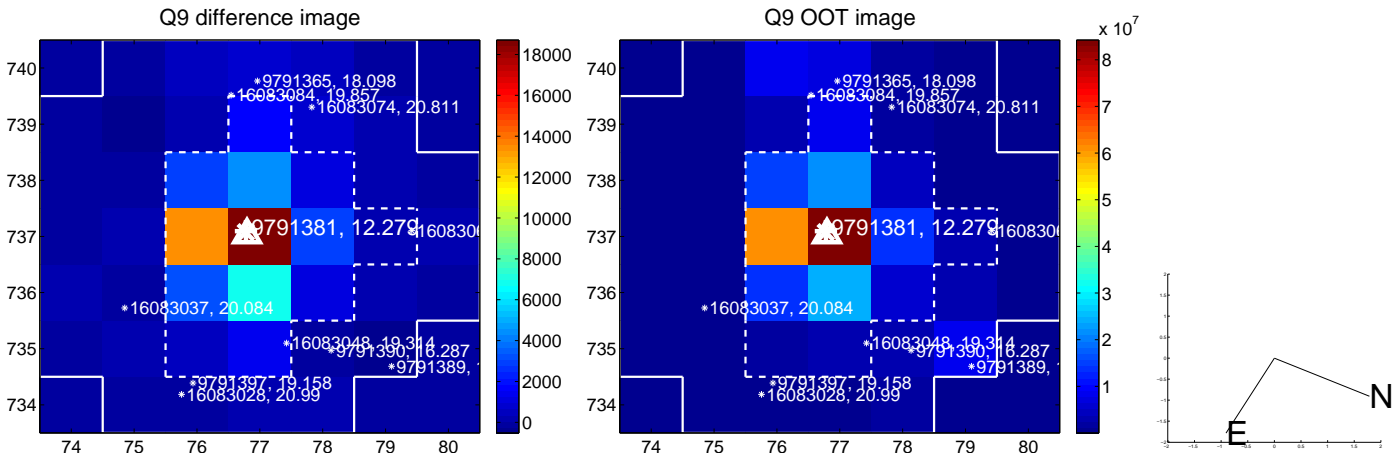
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



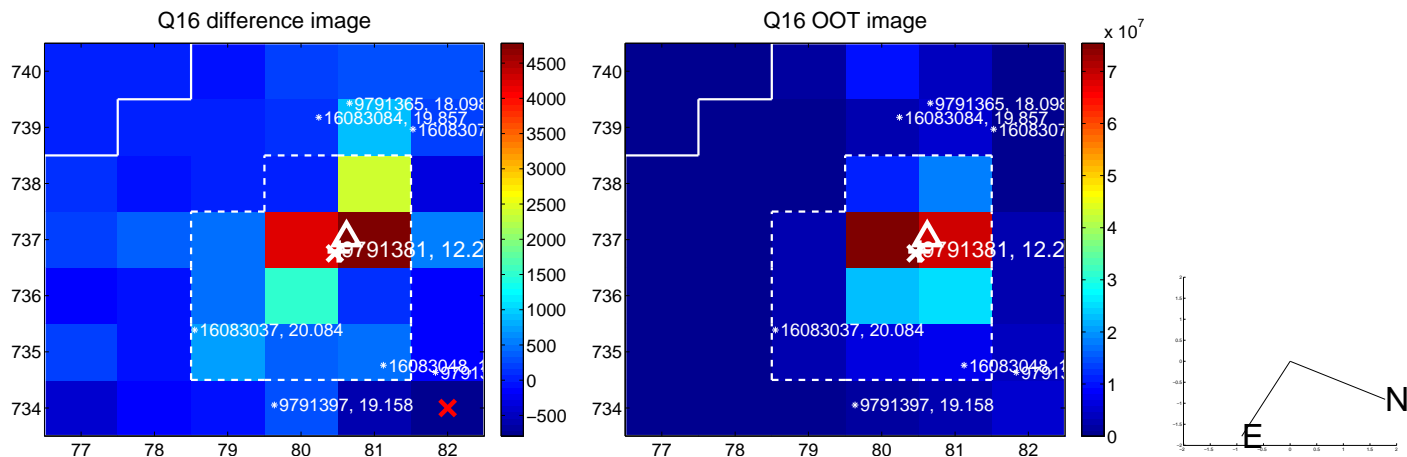
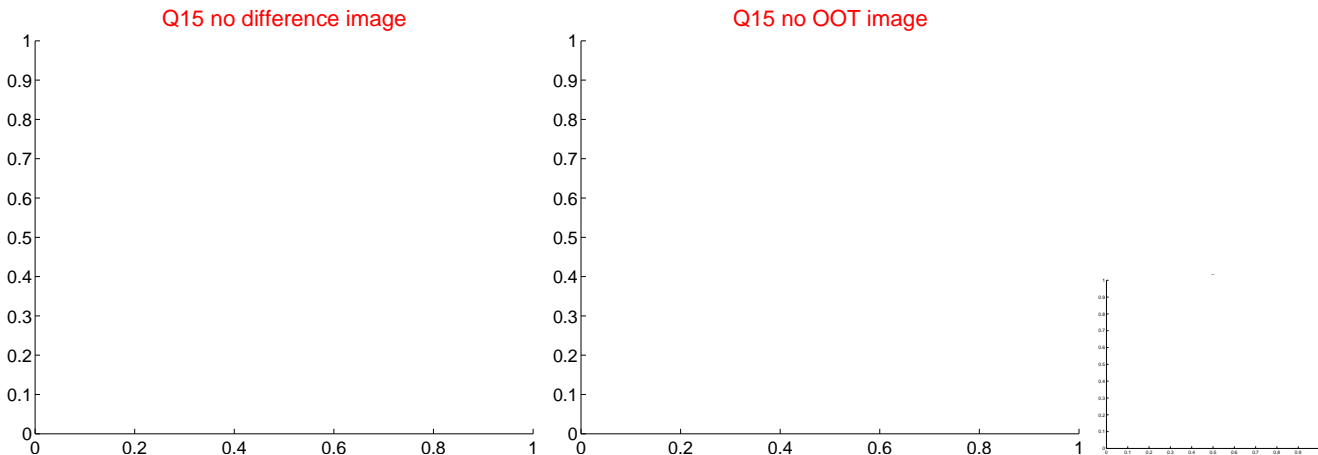
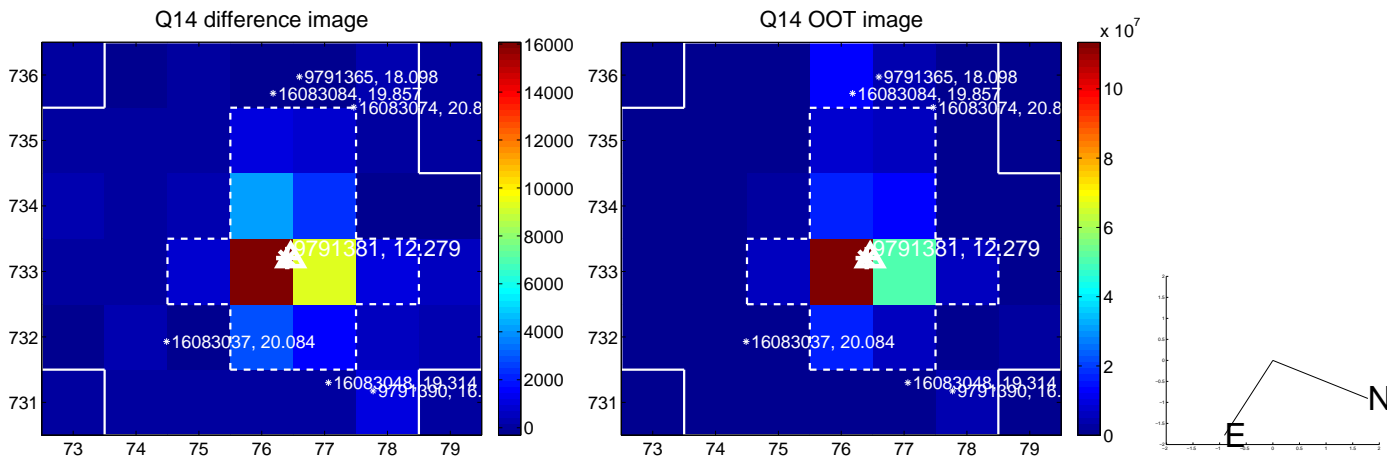
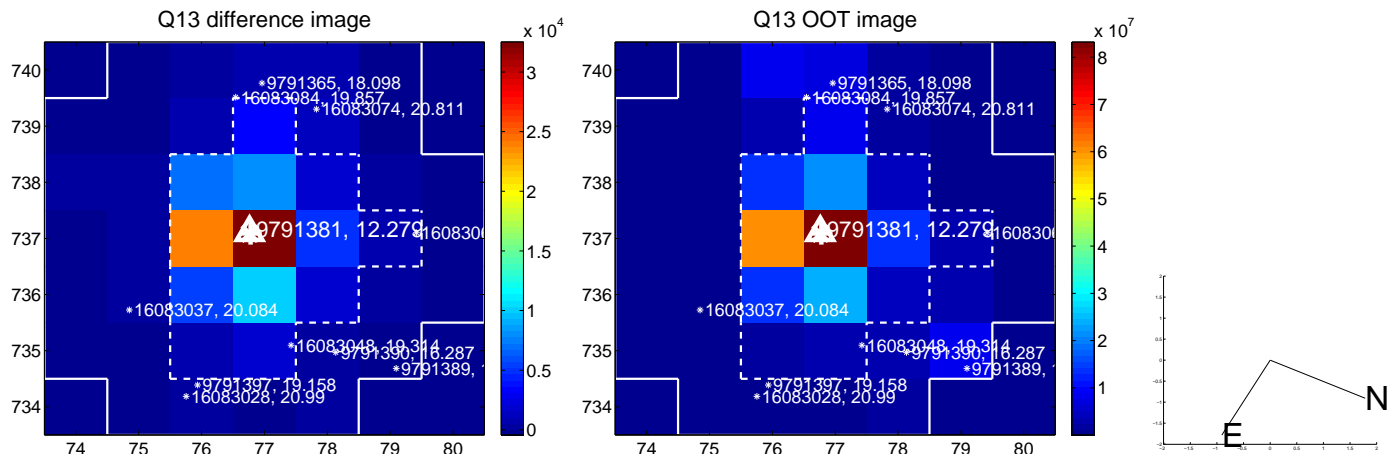
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

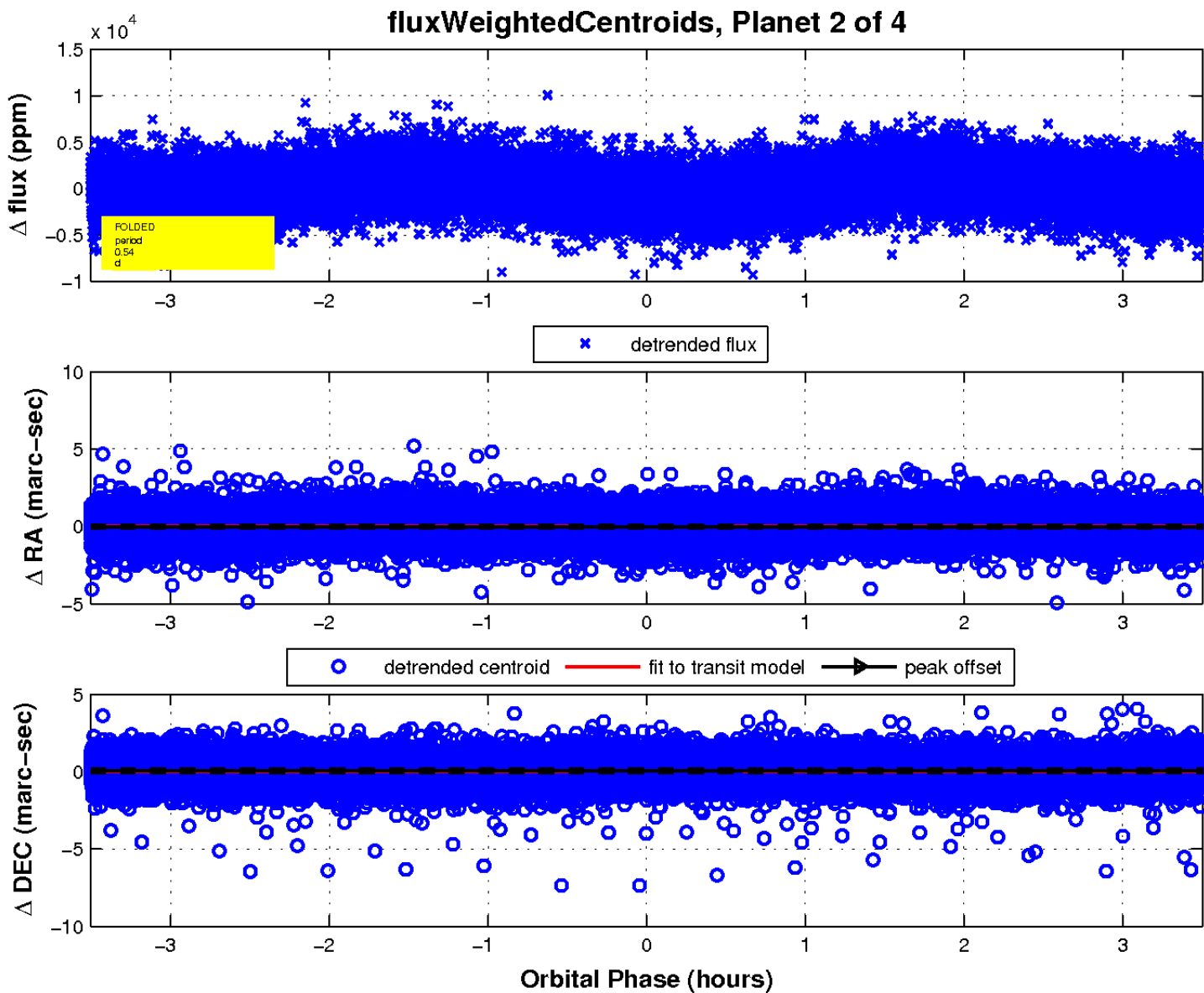
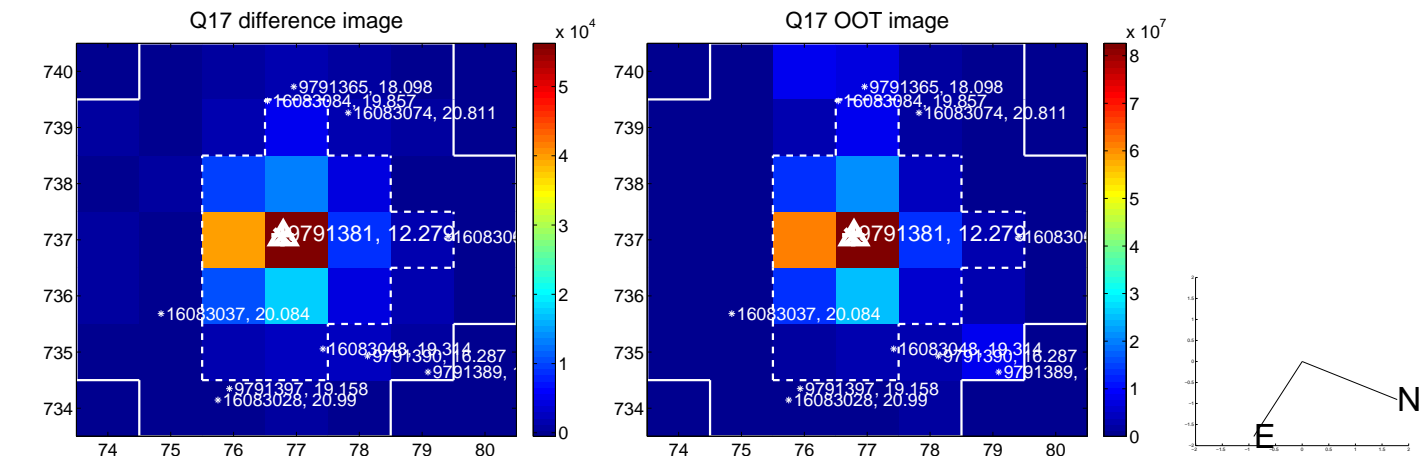


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



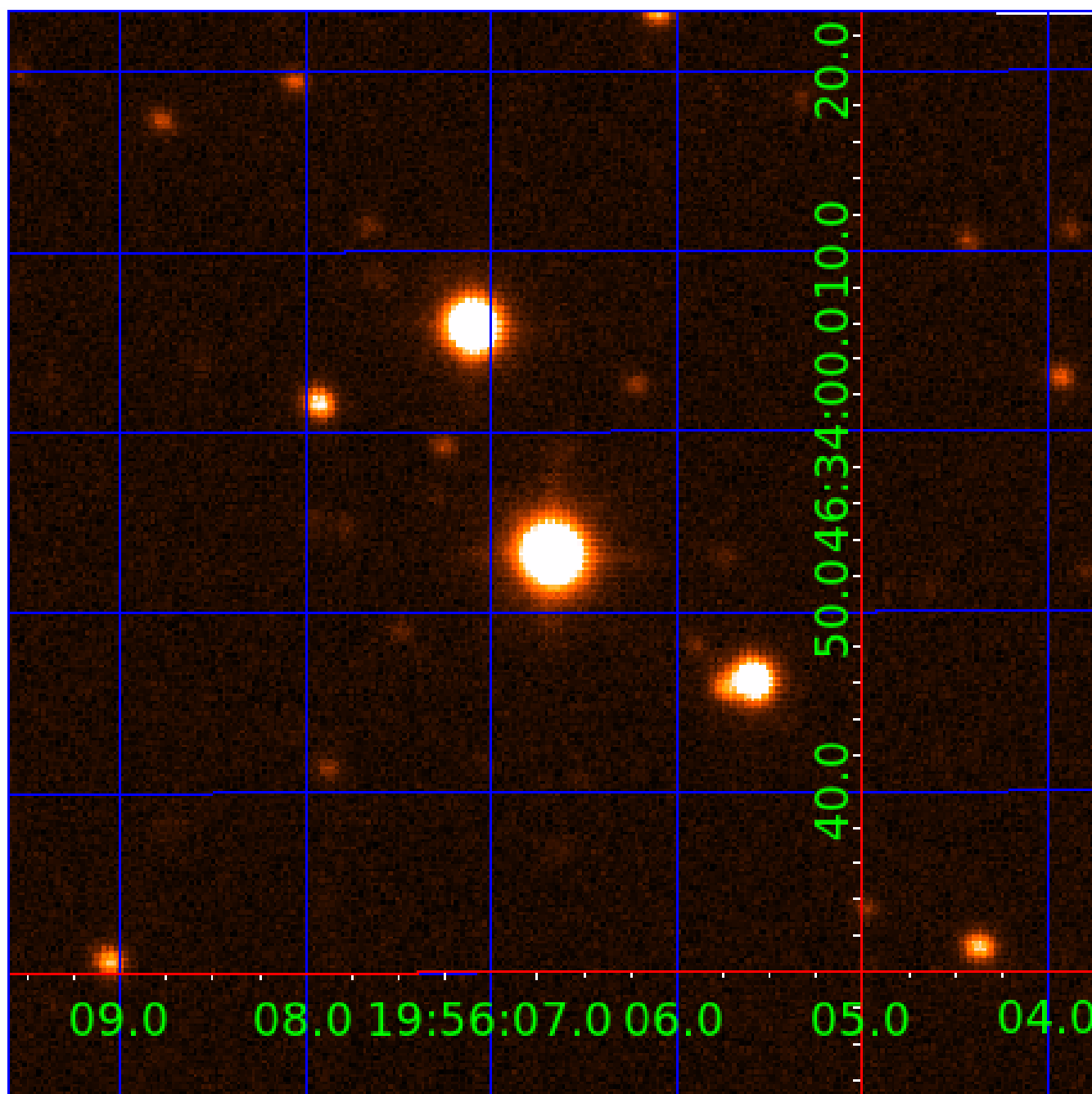


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009791381

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009791381-01	OBS	No	0.539350	131.514066	643.7	1.141	13.6	18.7	4.34	7153	13.03	0.00
009791381-02	OBS	No	0.539347	131.650649	706.5	1.168	16.0	21.6	4.34	7153	11.74	0.00
009791381-03	OBS	No	0.539345	131.785994	154.8	1.500	15.2	5.6	4.34	7153	5.58	0.00
009791381-04	OBS	No	0.539345	131.923494	177.1	1.500	15.5	-1.0	4.34	7153	5.81	165431.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009791381-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009791381-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
009791381-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
009791381-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—NO_FITS—SAME_NTL_PERIOD—CENT_NOFITS

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

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

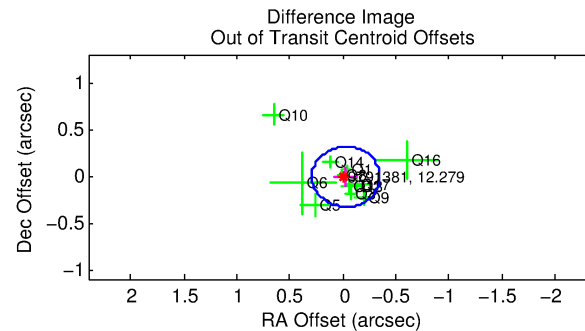
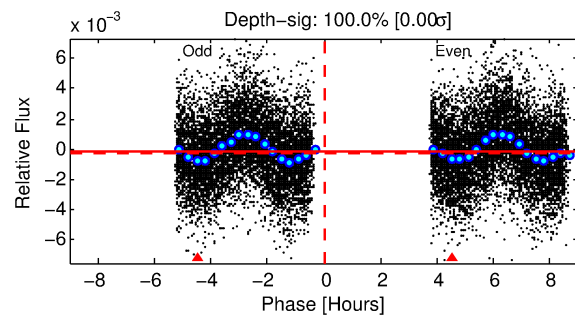
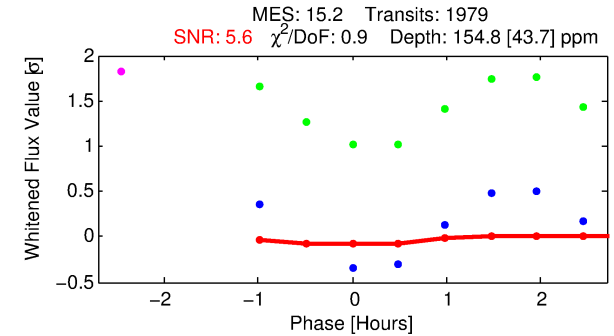
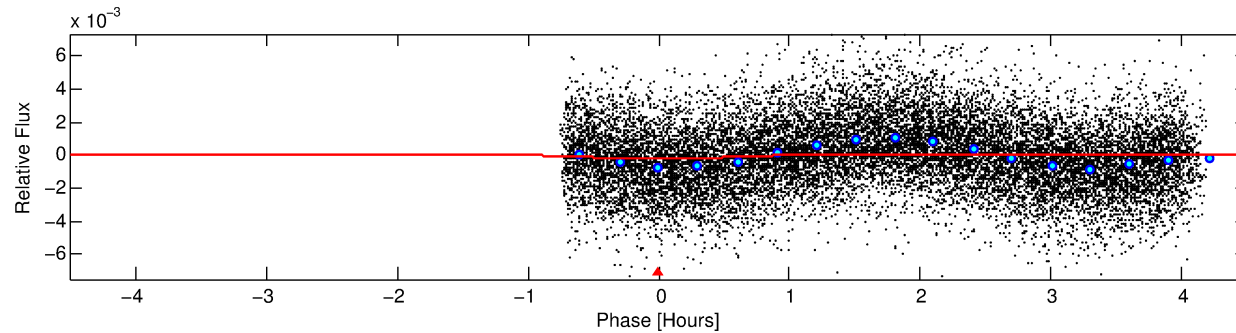
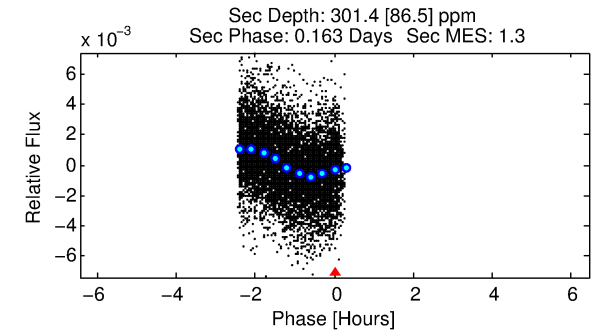
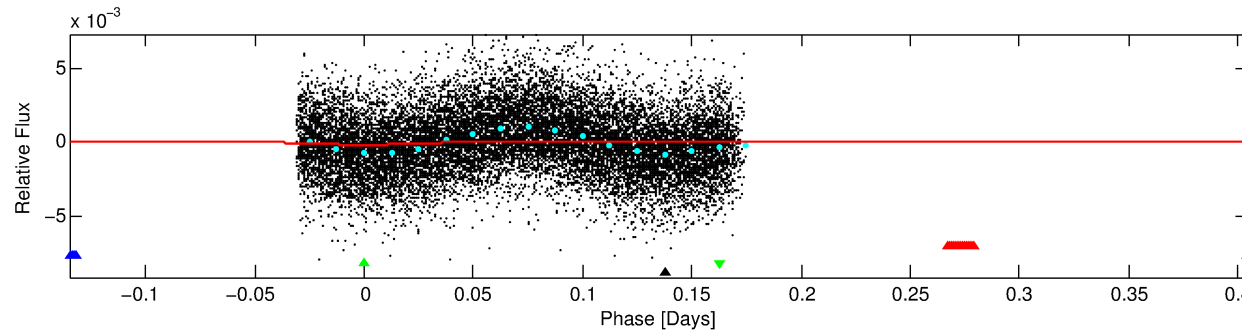
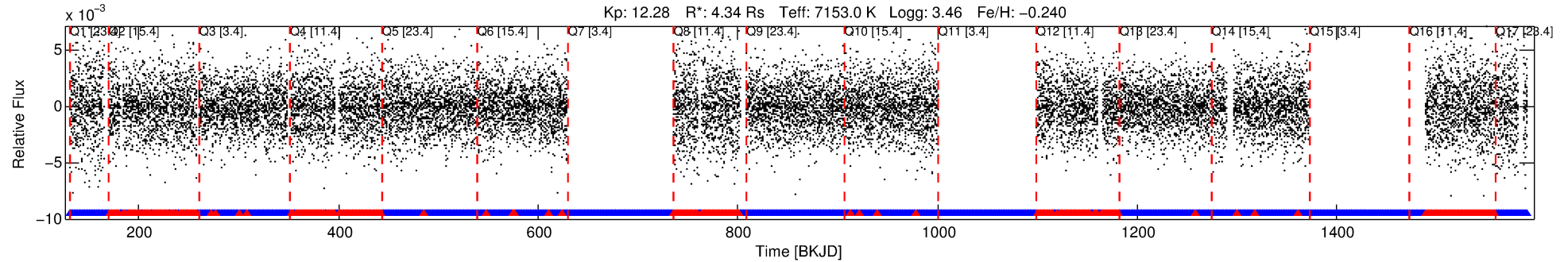
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009791381-03

No Significant Match Found

# DV One-Page Summary

KIC: 9791381 Candidate: 3 of 4 Period: 0.539 d



## DV Fit Results:

Period = 0.53935 [0.00002] d  
Epoch = 131.7860 [0.0053] BKJD  
Rp/R\* = 0.0118 [0.0183]  
a/R\* = 2.52 [16.73]  
b = 0.50 [11.92]  
Seff = N/A  
Teq = N/A  
Rp = 5.58 [9.28] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

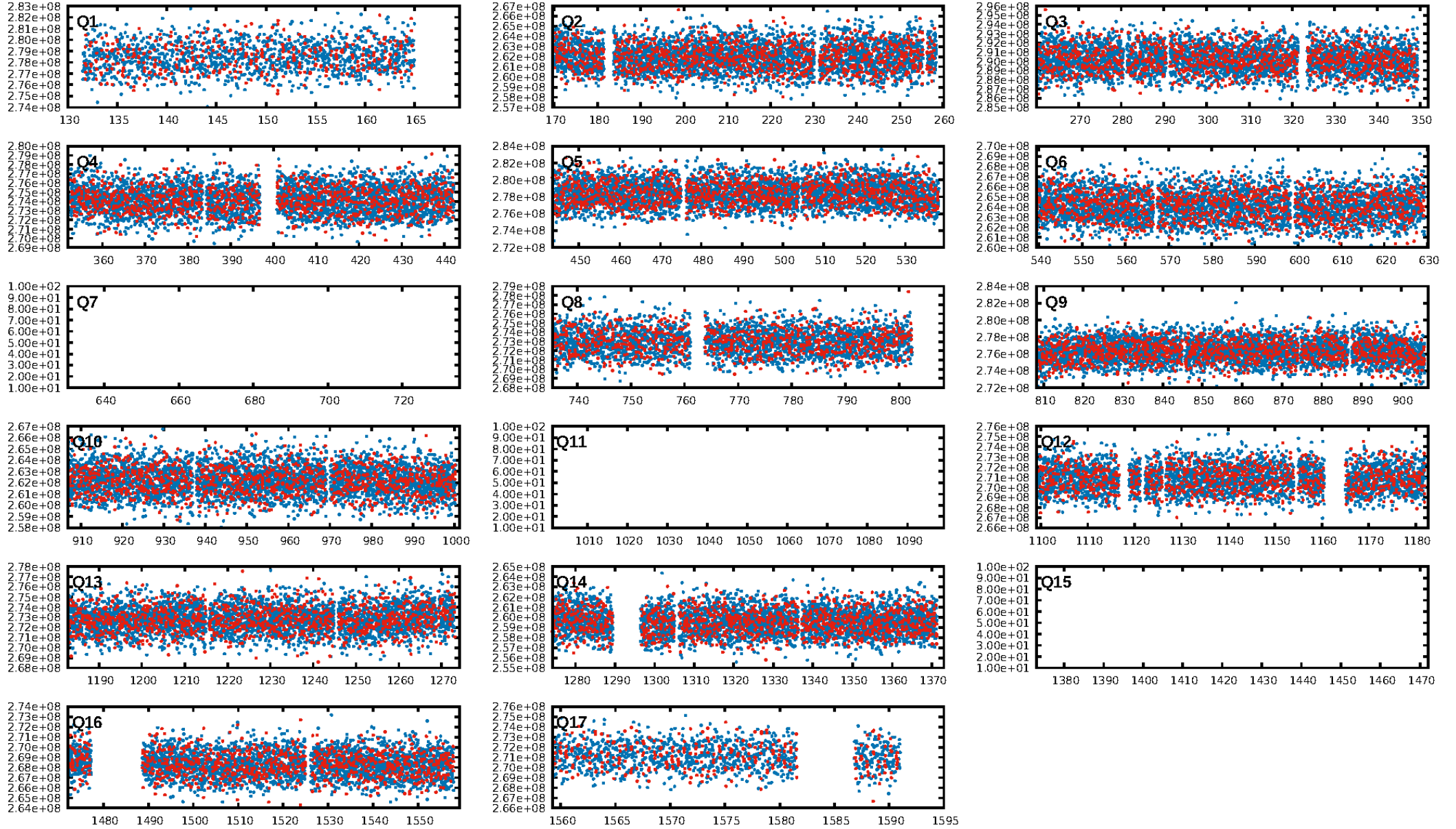
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.74 [1390/1867]  
GhostDiagnostic-chr: 2.06  
Centroid-sig: 16.9%  
Centroid-so: 0.293 arcsec [1.77σ]  
OotOffset-rm: 0.031 arcsec [0.29σ]  
KicOffset-rm: 0.094 arcsec [0.85σ]  
OotOffset-st: 4/1/2/5 [12]  
KicOffset-st: 4/1/2/5 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:16:52 Z

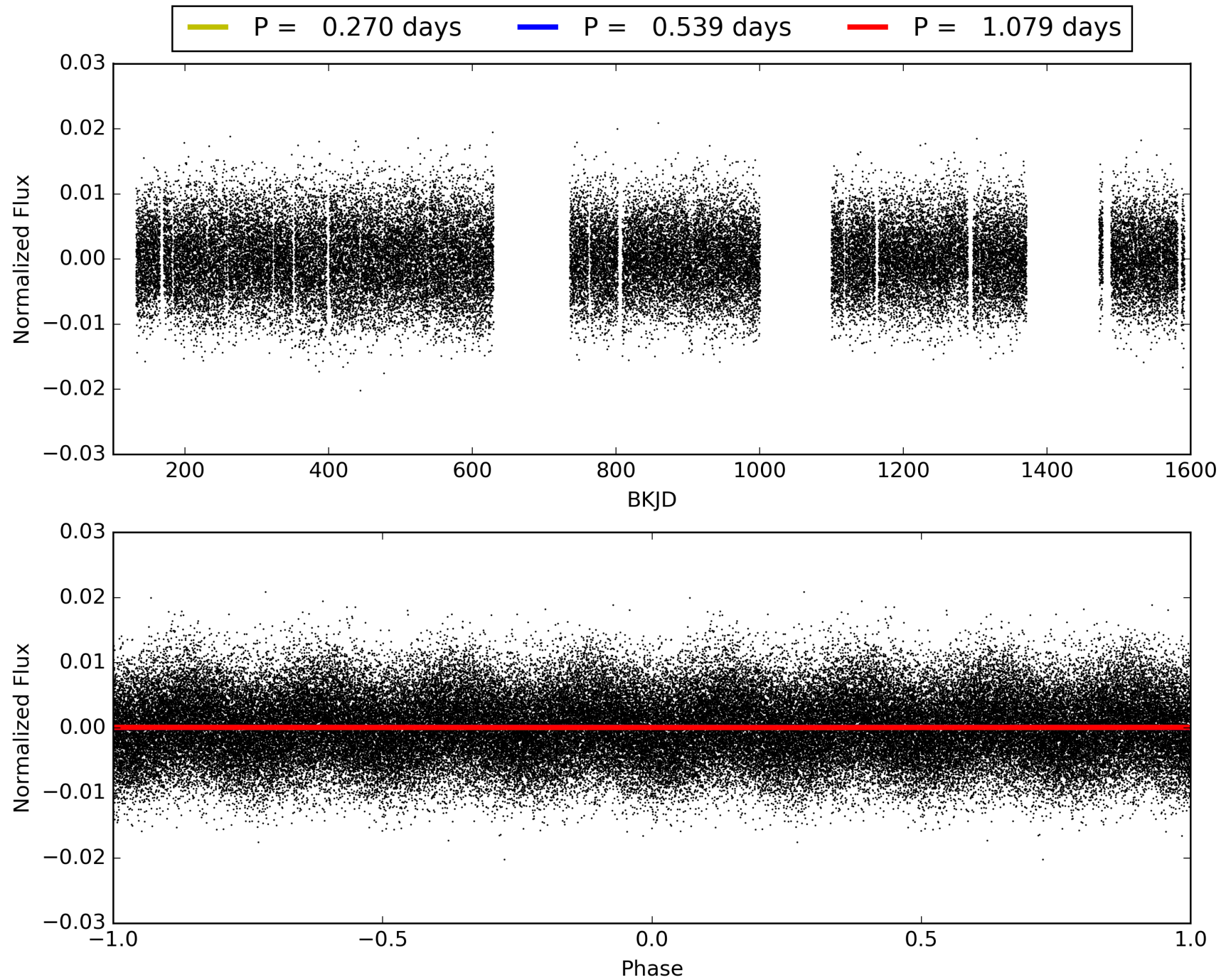
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009791381-03, PDC Light Curves



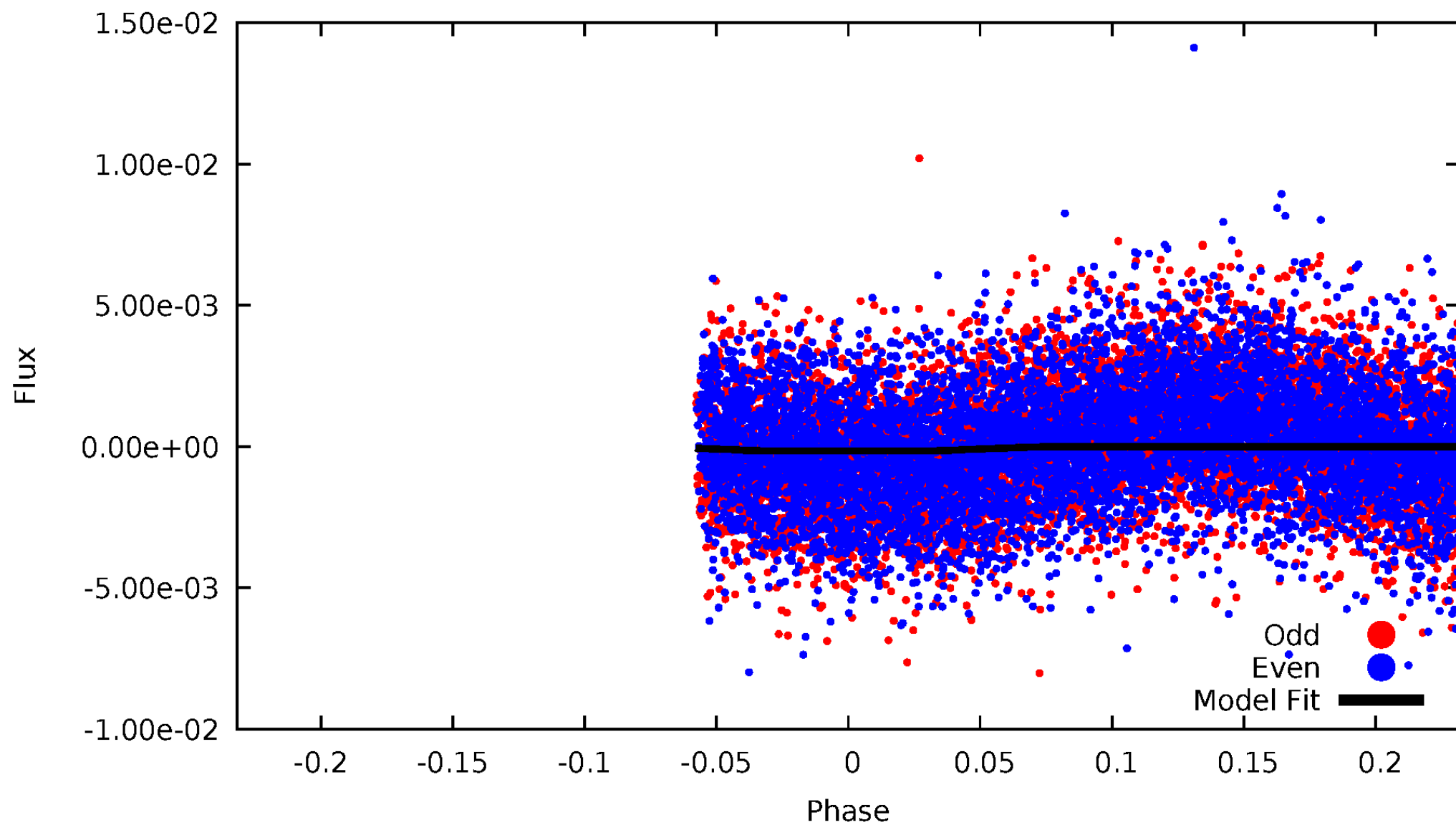


TCE 009791381-03



# DV Odd/Even

TCE 009791381-03



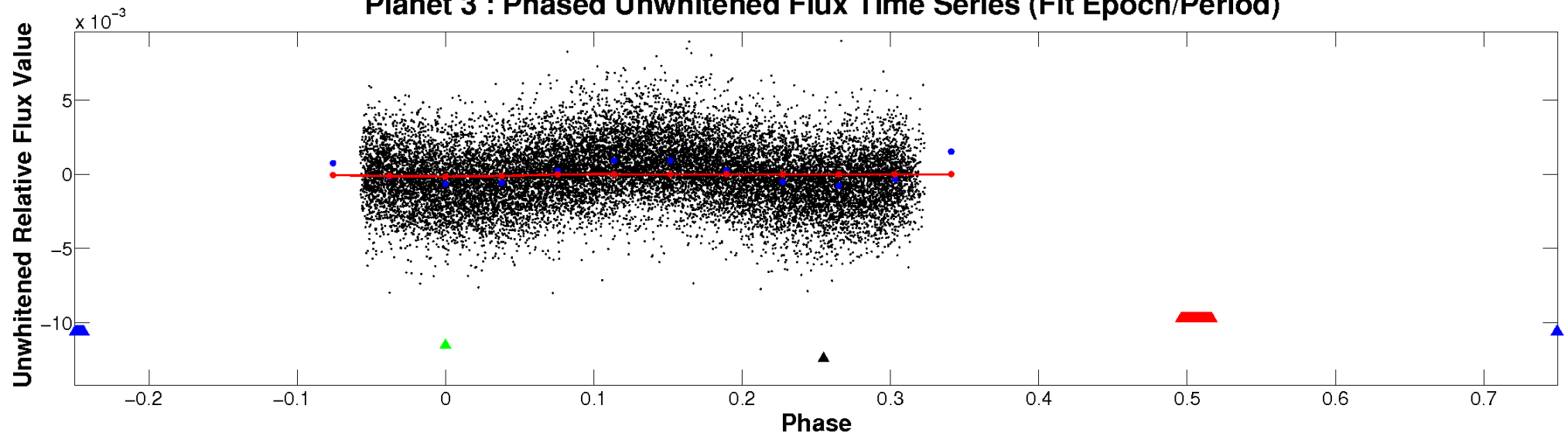


ALT Odd/Even

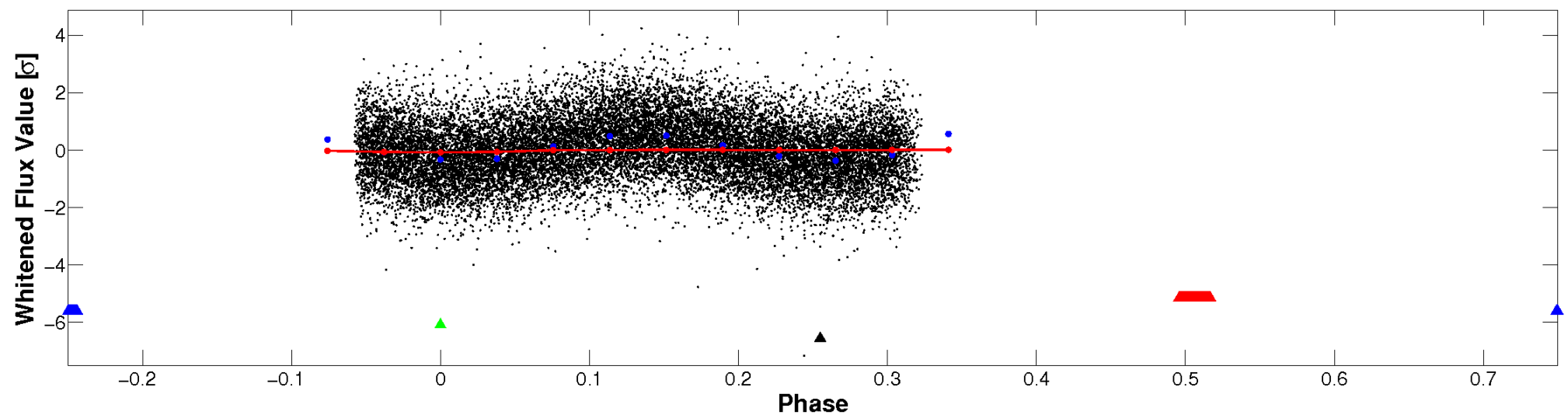
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



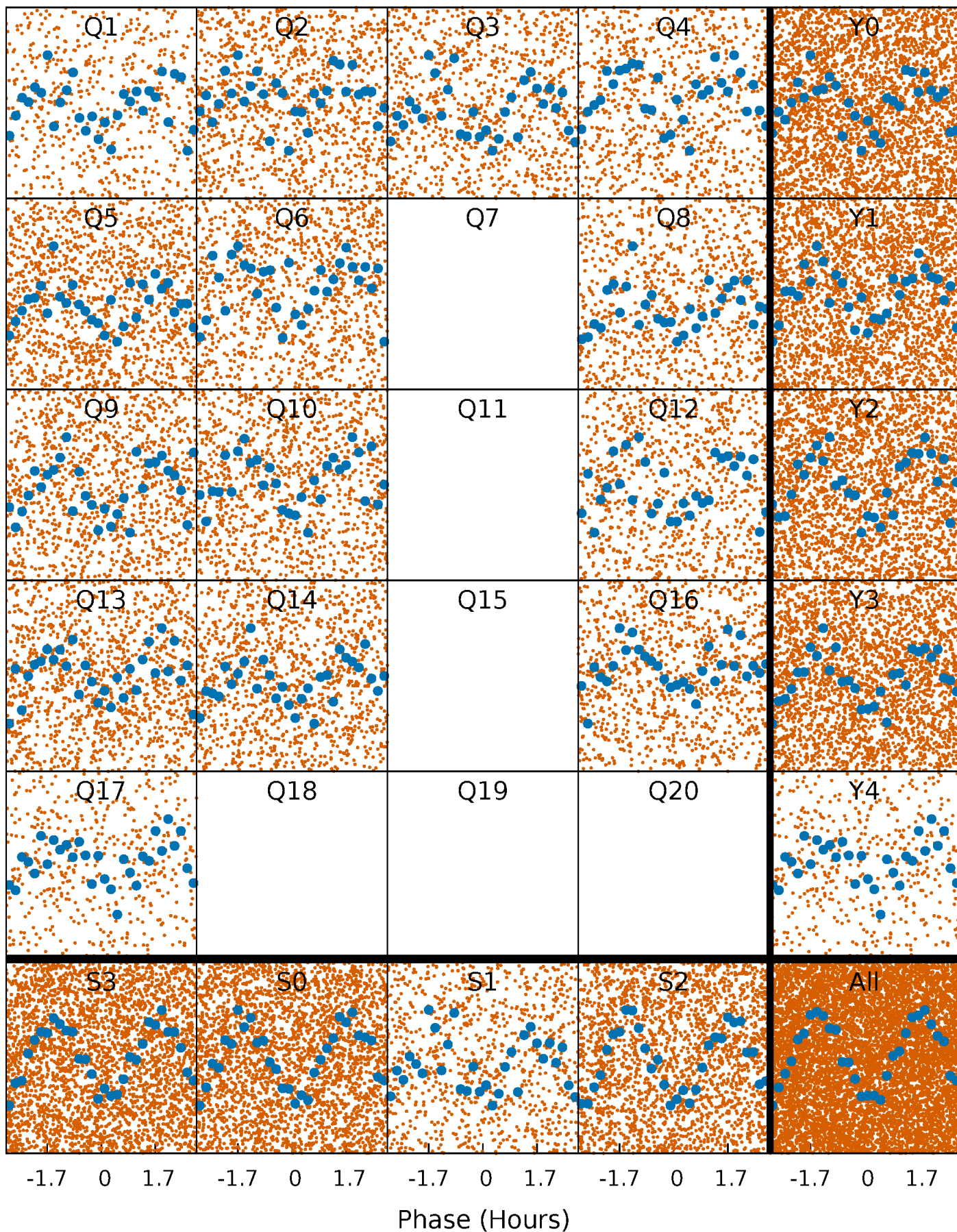
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





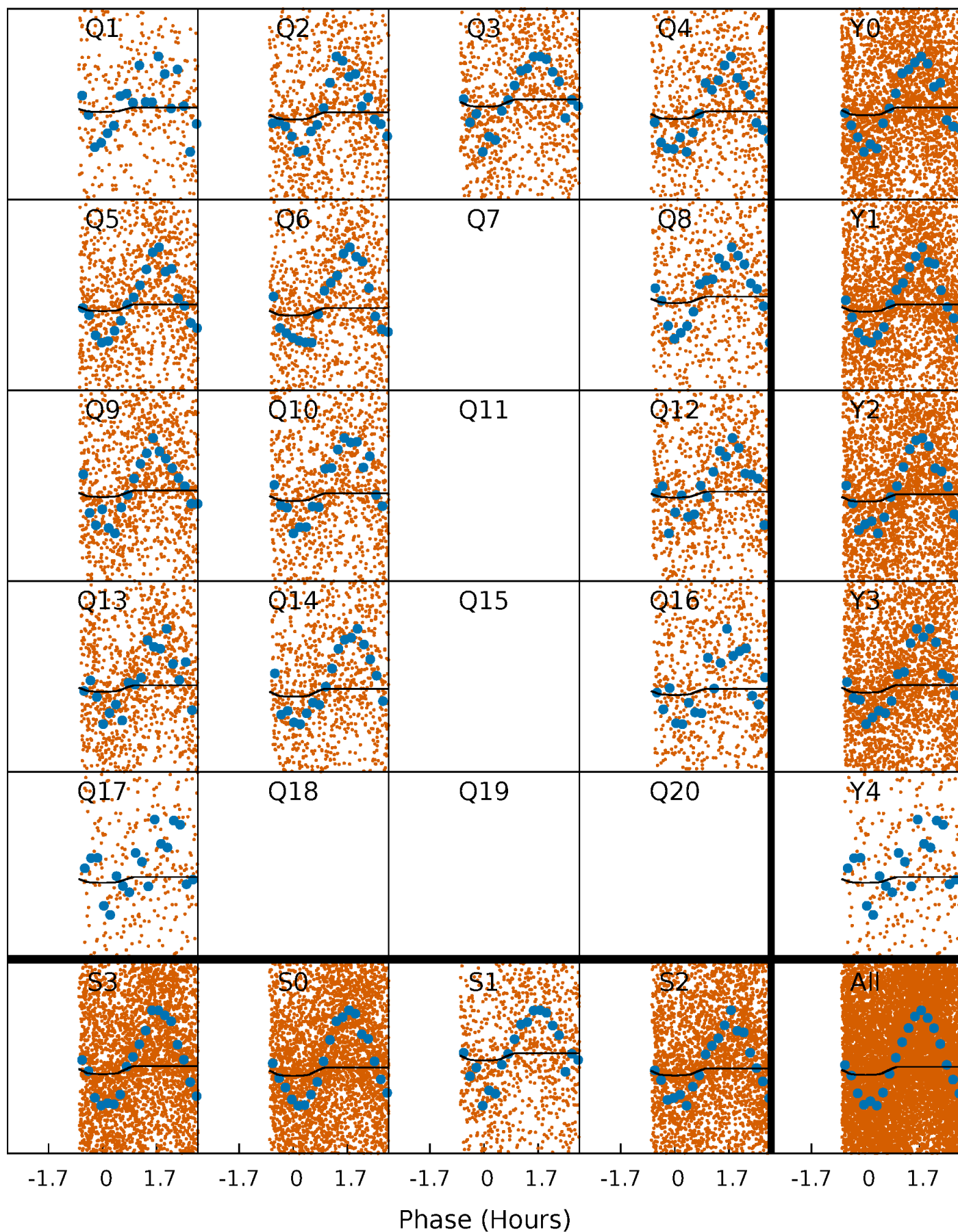
# PDC Quarter-Phased Transit Curves

TCE 009791381-03 P= 0.539345 Days  $T_0=131.785994$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 009791381-03   P= 0.539345 Days    $T_0=131.785994$  (BKJD)

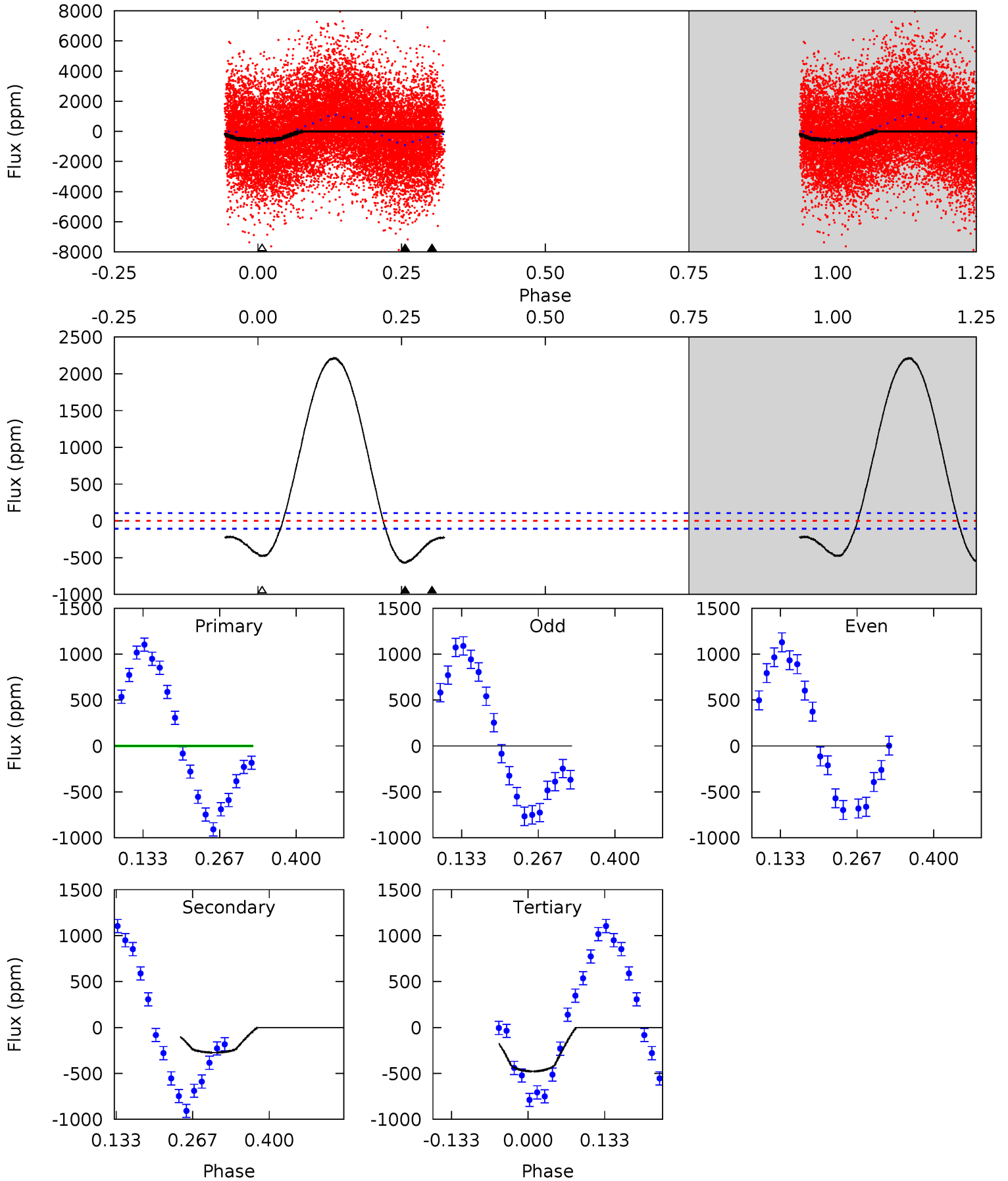


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

009791381-03, P = 0.539345 Days, E = 131.246649 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
24.2	11.6	20.2	0	4.50	1.50	42.7	3.91	24.2	-8.68	11.6	1.23	1.00	0.80	6.85



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.



### Stellar Parameters For KIC 009791381

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7153^{+224}_{-299}$	$3.464^{+0.666}_{-0.074}$	$-0.240^{+0.250}_{-0.300}$	$4.339^{+0.300}_{-2.546}$	$1.996^{+0.074}_{-0.668}$	$0.034^{+0.382}_{-0.009}$
	+3%/-4%	+19%/-2%	+104%/-125%	+7%/-59%	+4%/-33%	+1109%/-25%
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 009791381-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-273 \pm 24$	$7.09^{+7.44}_{-4.68}$	$6984^{+477}_{-1079}$	$6080^{+8296}_{-10690}$	$0.806^{+5.568}_{-0.620}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

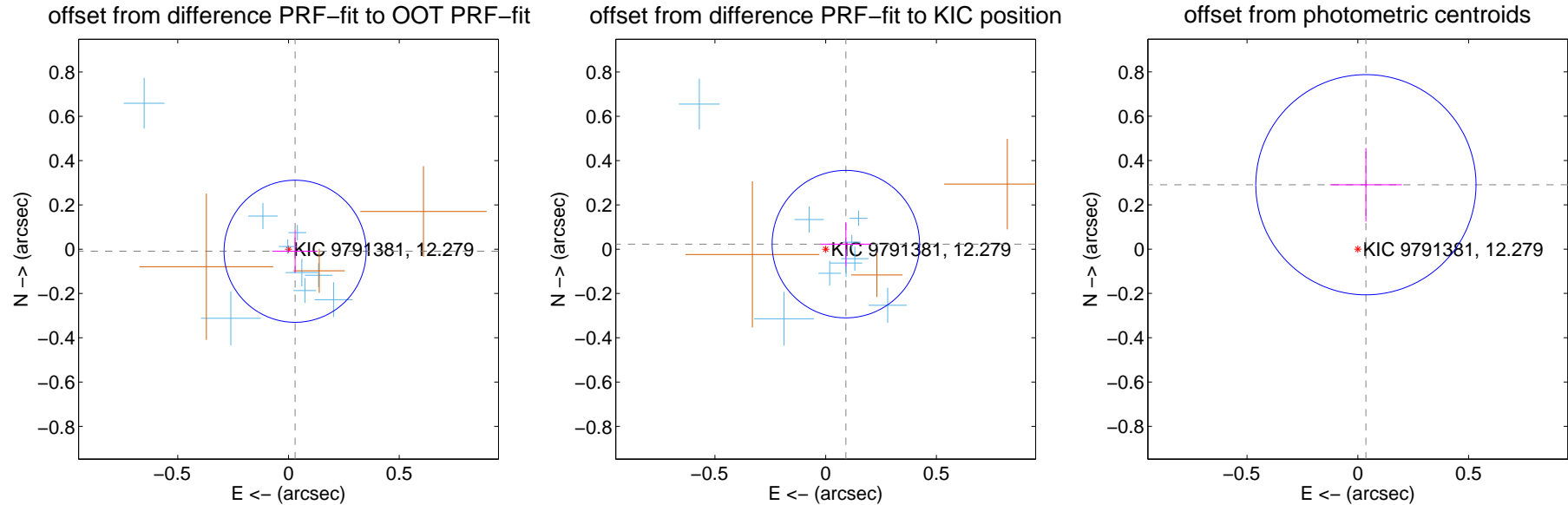
## DV Centroid Data

Supplemental centroid analysis for 009791381-03. Kepler magnitude: 12.28. Transit SNR 5.55

There are 9 quarters with good PRF difference image offsets

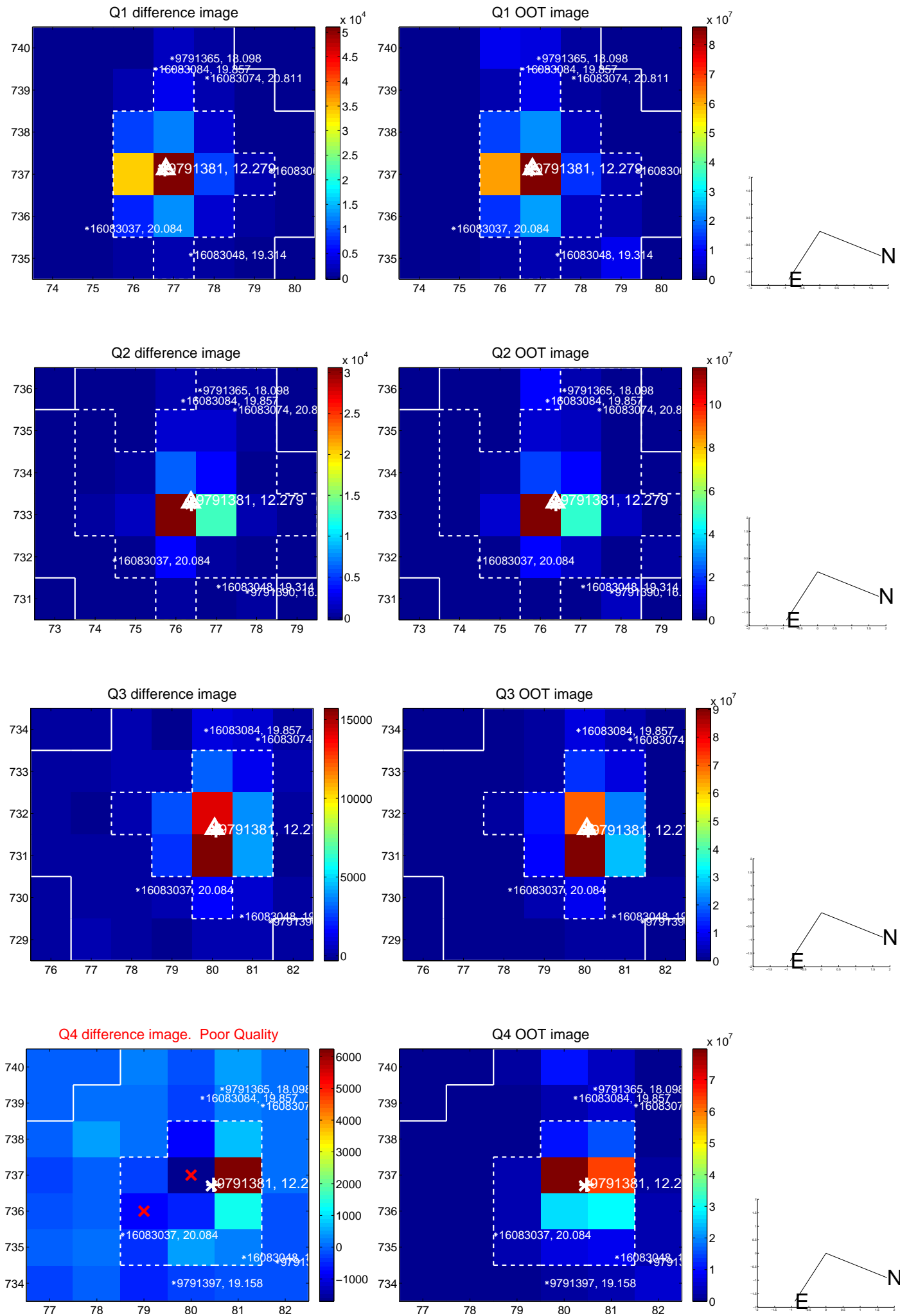
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.031 \pm 0.107$	0.29	$-0.030 \pm 0.102$	$-0.009 \pm 0.095$
PRF-fit source offset from KIC position	$0.094 \pm 0.111$	0.85	$-0.091 \pm 0.115$	$0.023 \pm 0.100$
photometric centroid source offset	$0.29 \pm 0.17$	1.77	$-0.04 \pm 0.16$	$0.29 \pm 0.17$

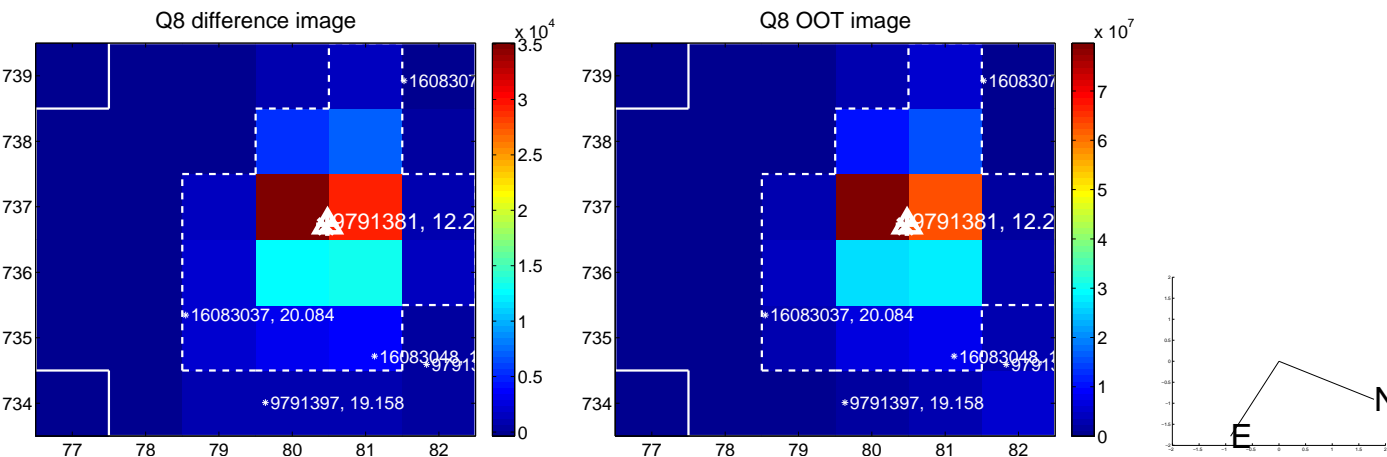
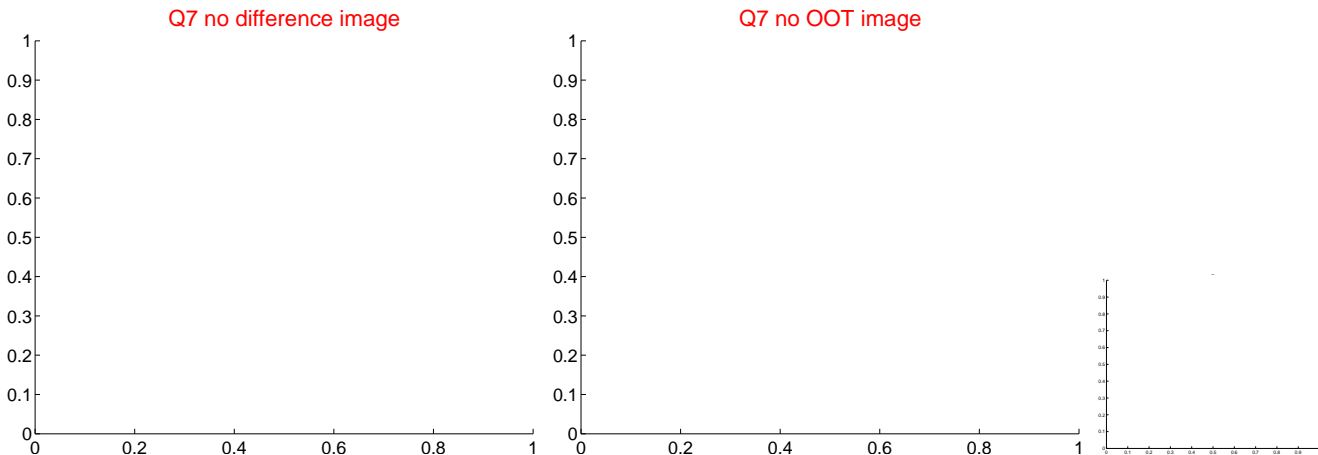
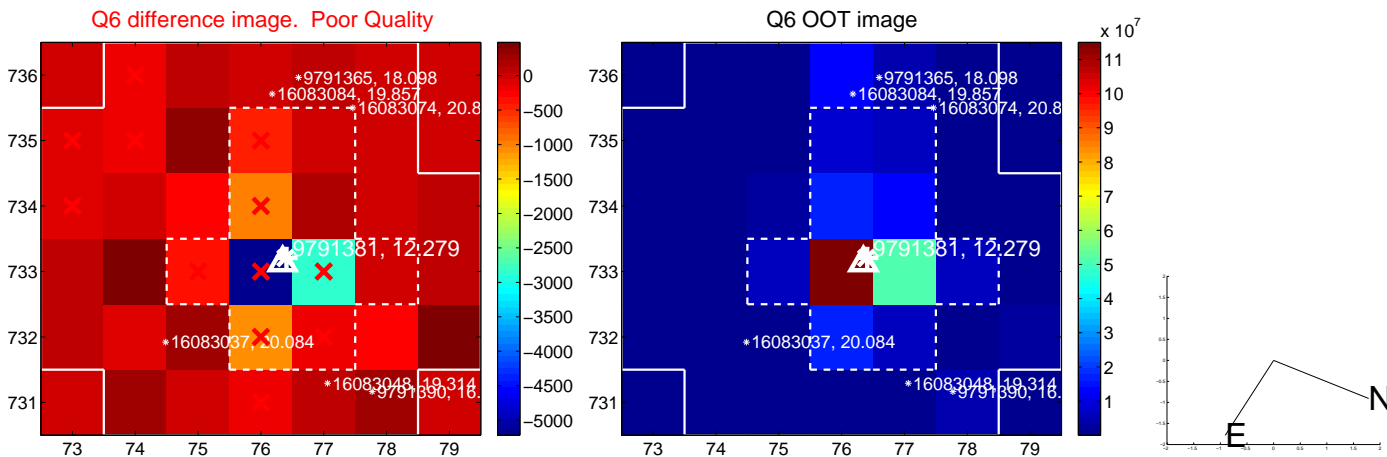
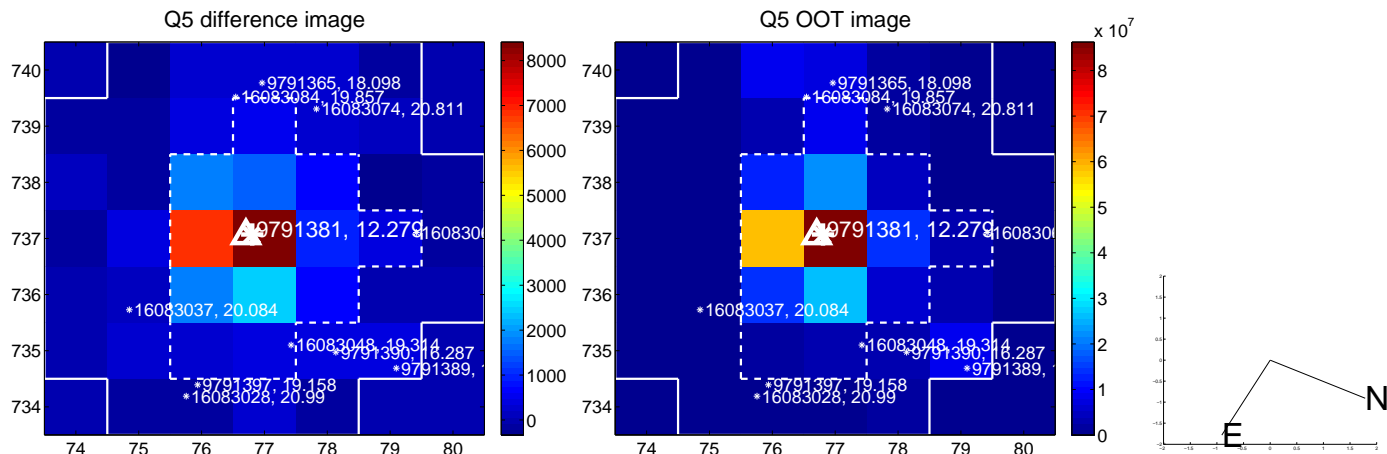


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

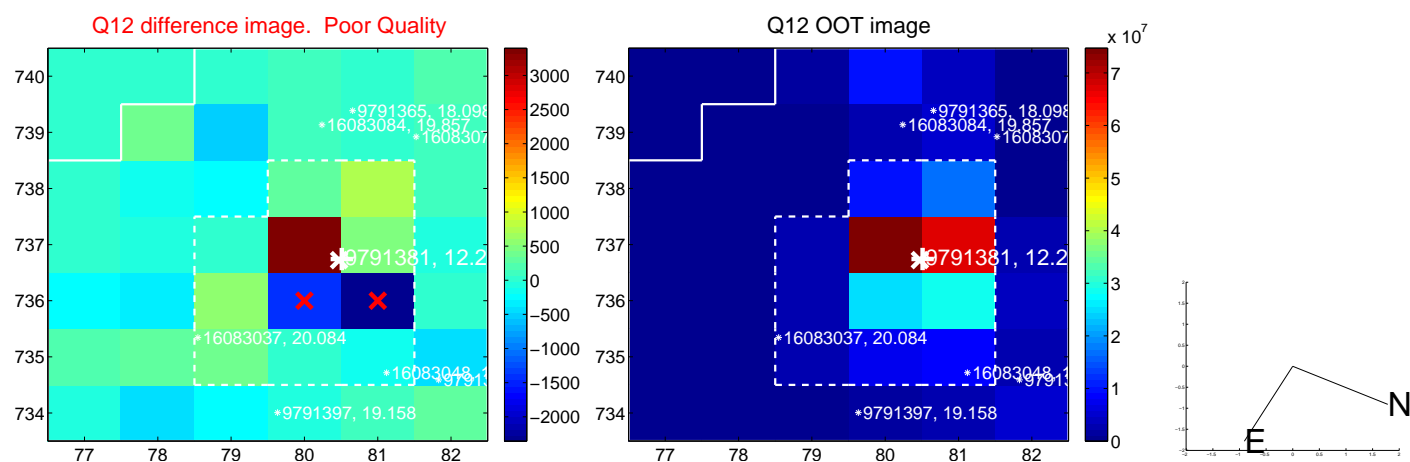
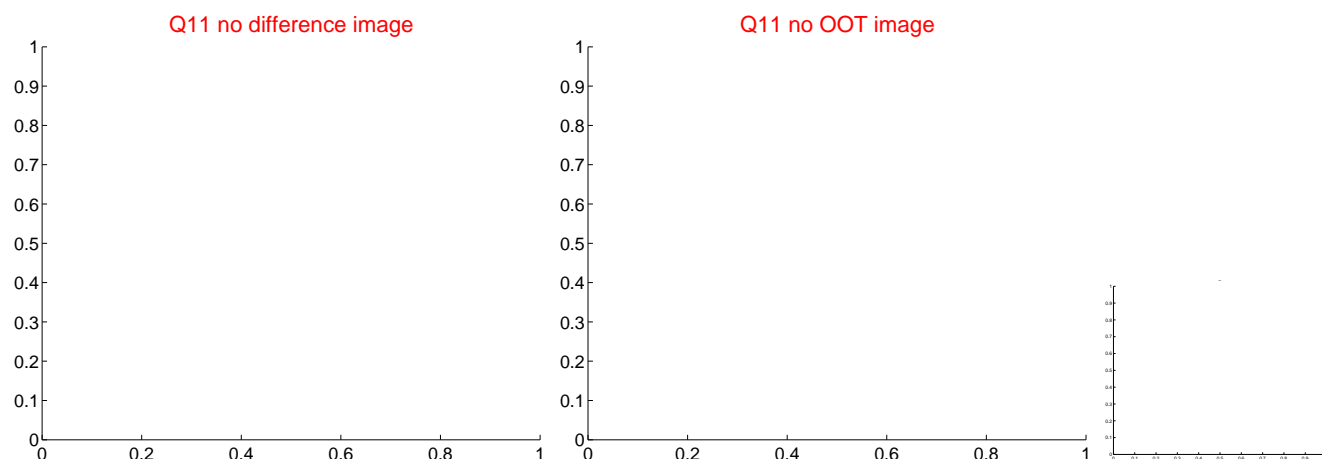
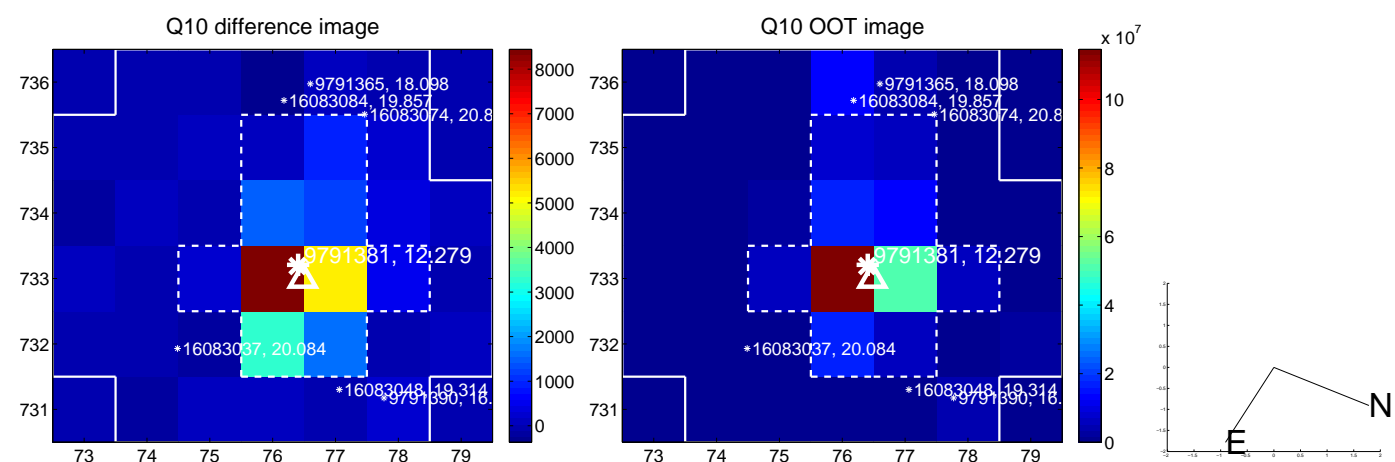
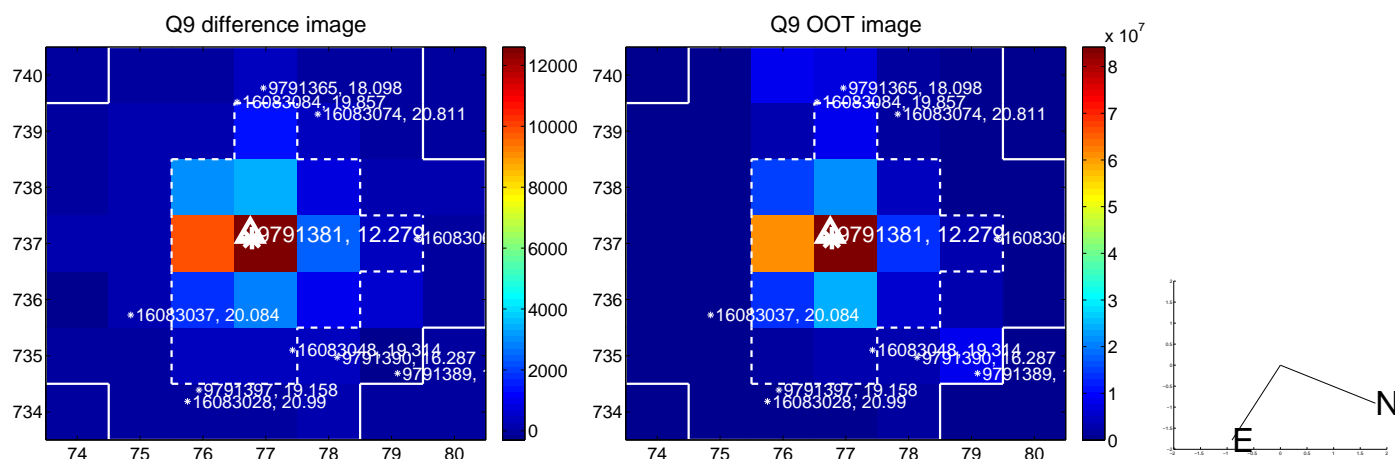
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

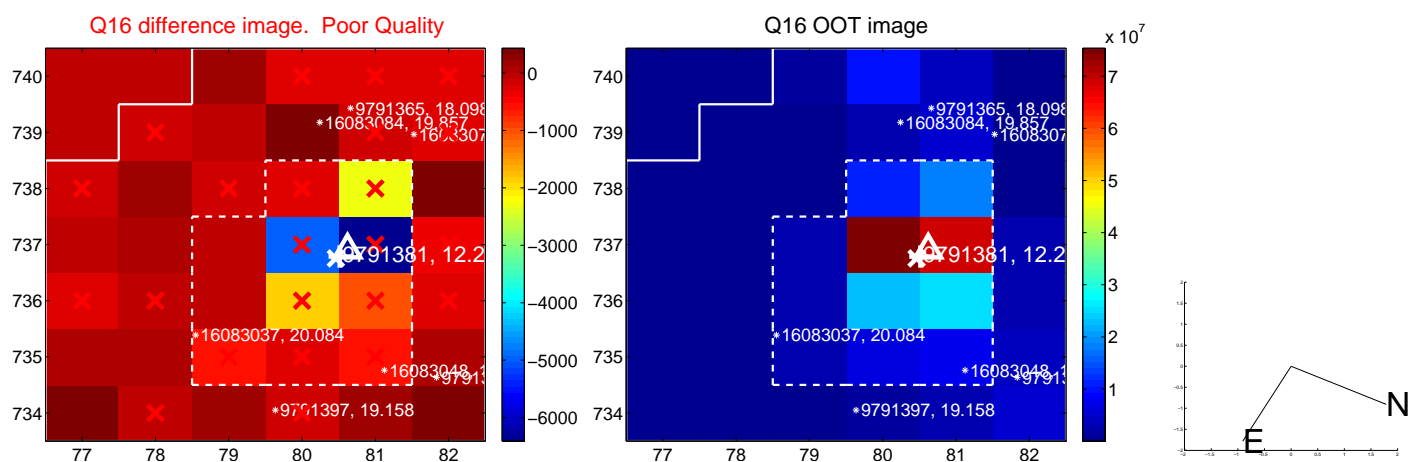
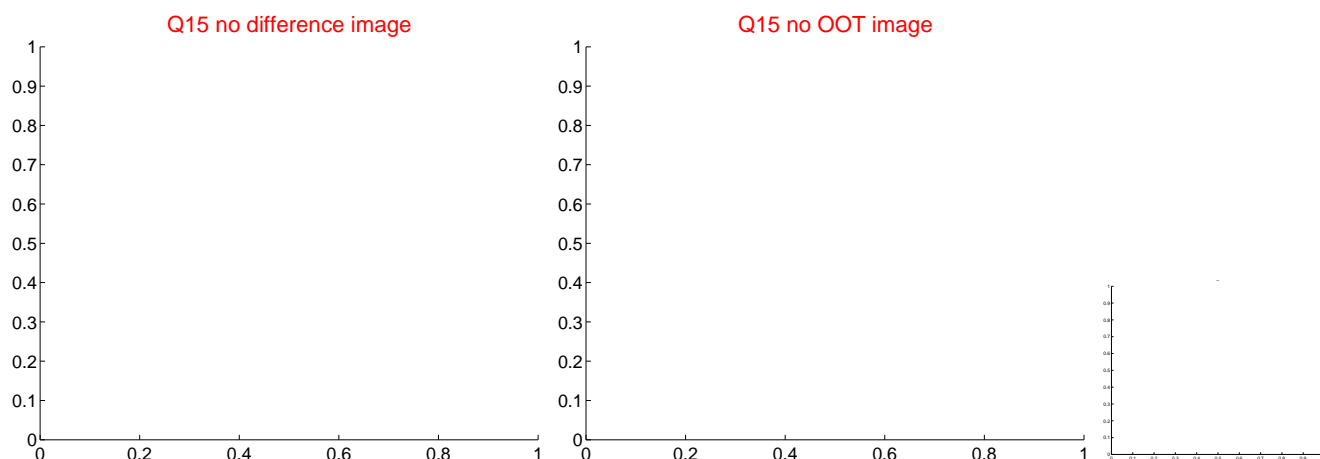
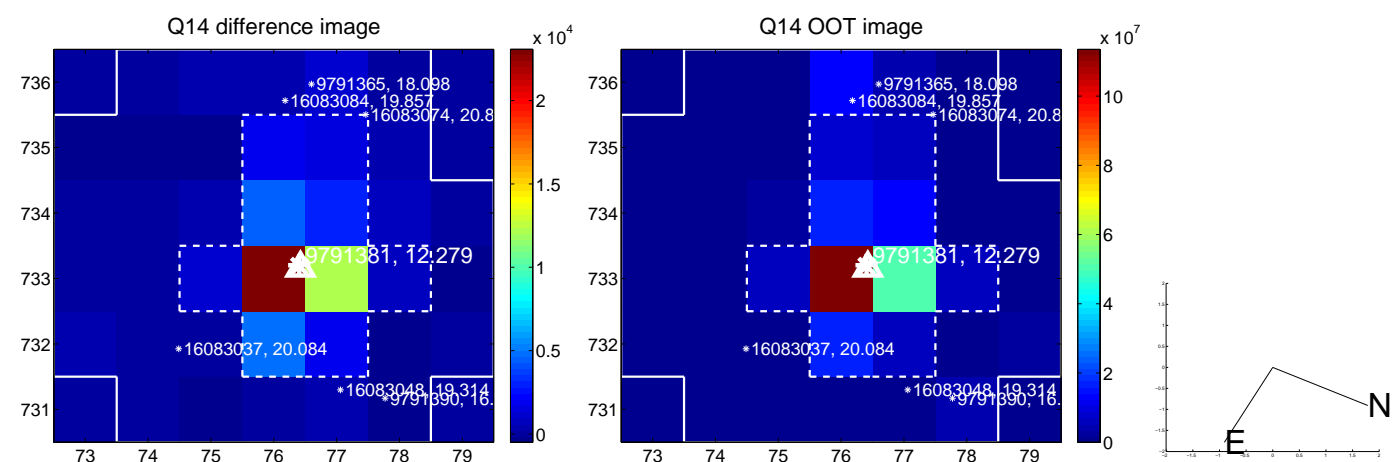
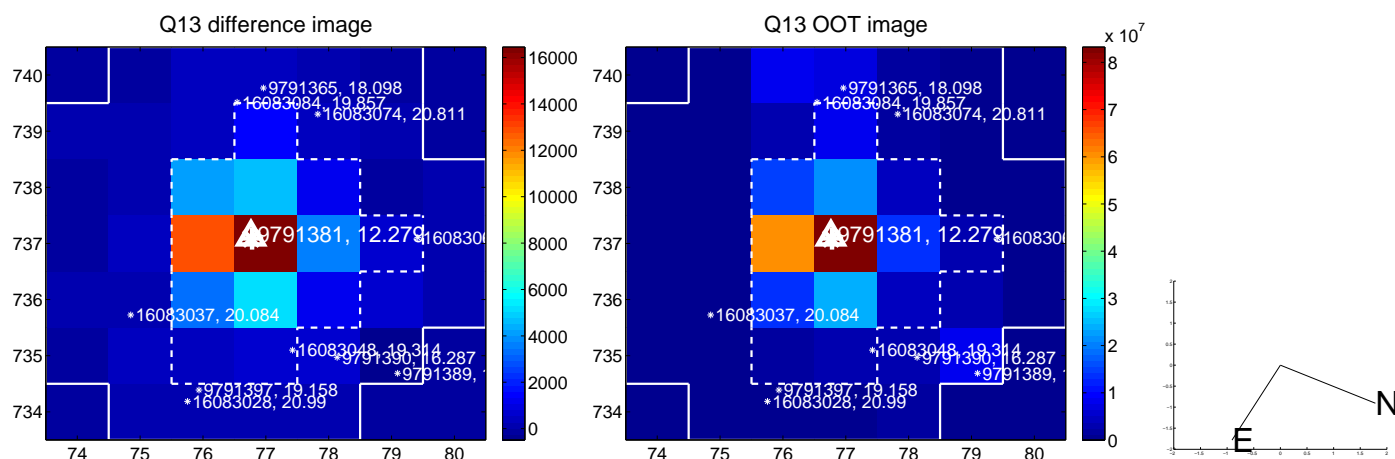


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

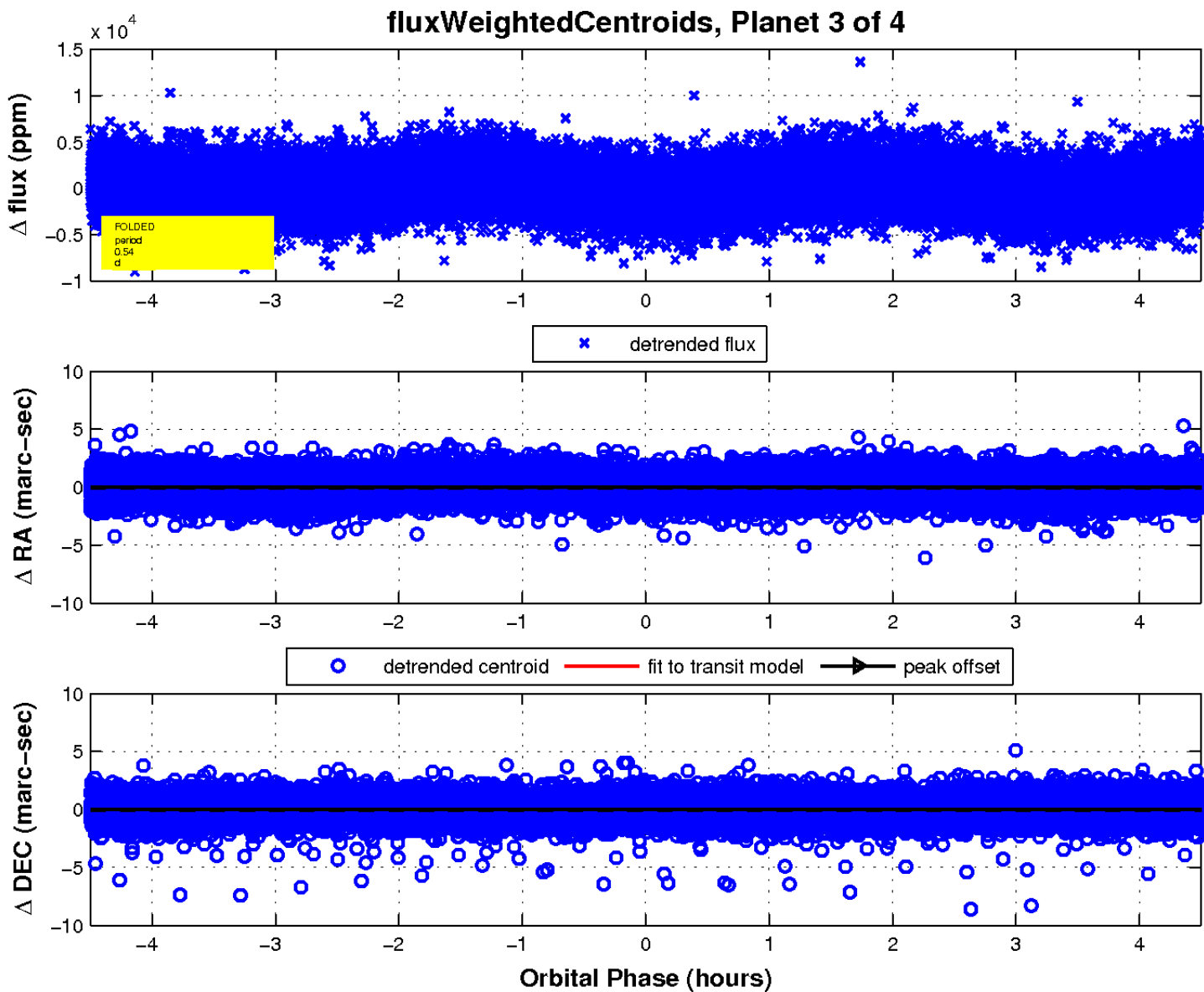
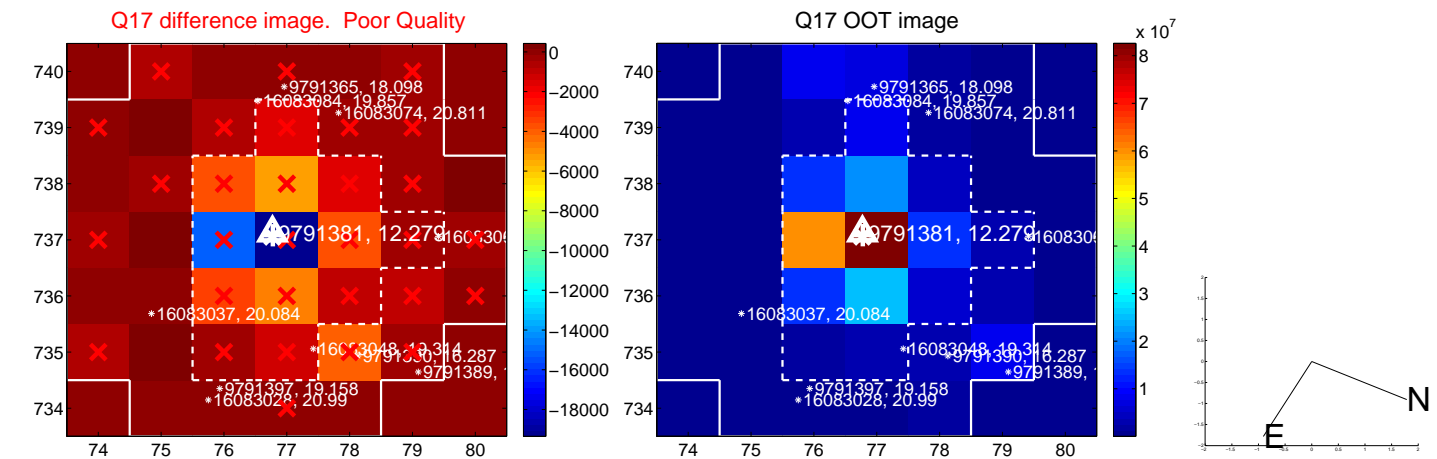




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

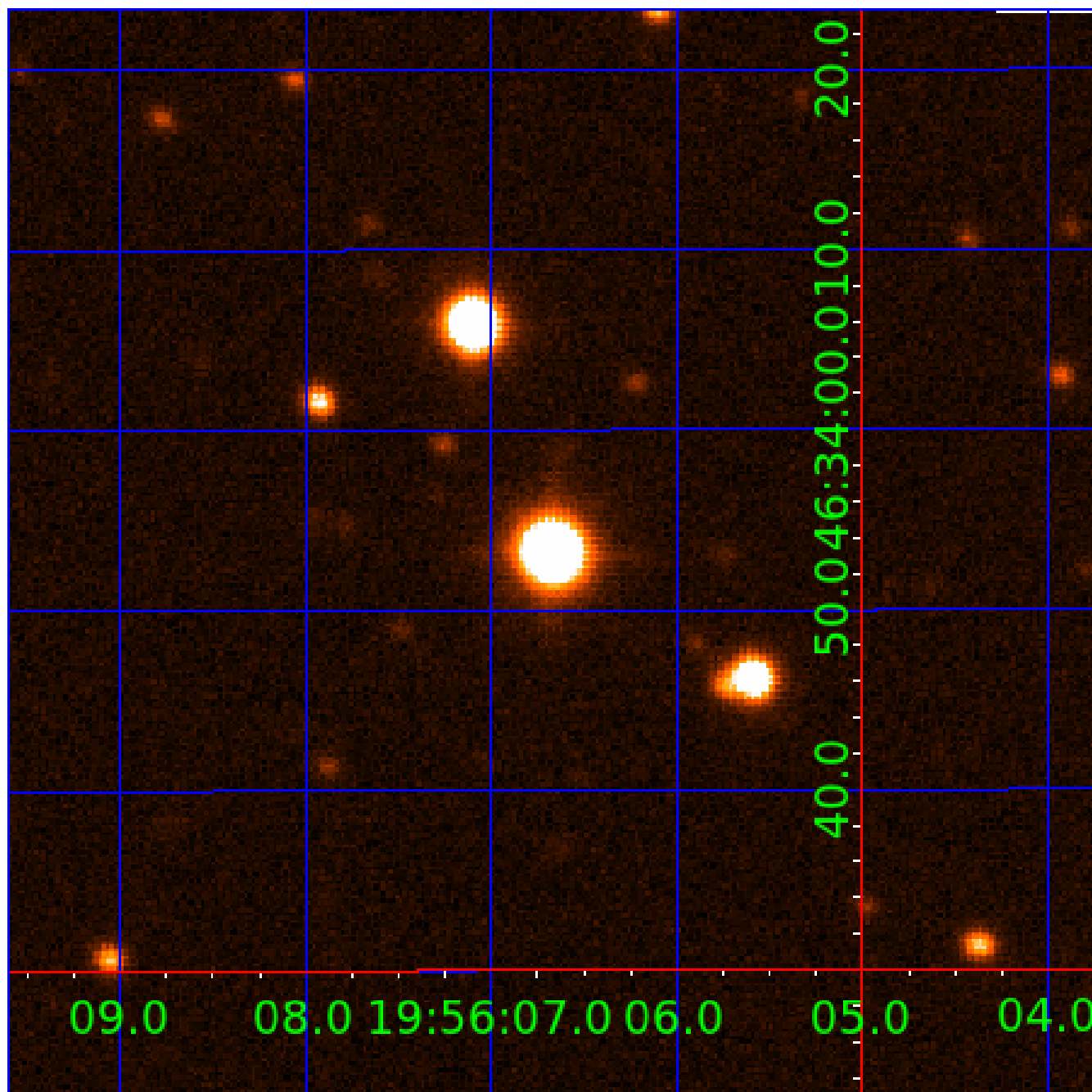


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

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# KIC 009791381

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009791381-01	OBS	No	0.539350	131.514066	643.7	1.141	13.6	18.7	4.34	7153	13.03	0.00
009791381-02	OBS	No	0.539347	131.650649	706.5	1.168	16.0	21.6	4.34	7153	11.74	0.00
009791381-03	OBS	No	0.539345	131.785994	154.8	1.500	15.2	5.6	4.34	7153	5.58	0.00
009791381-04	OBS	No	0.539345	131.923494	177.1	1.500	15.5	-1.0	4.34	7153	5.81	165431.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009791381-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009791381-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
009791381-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
009791381-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—NO_FITS—SAME_NTL_PERIOD—CENT_NOFITS

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

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

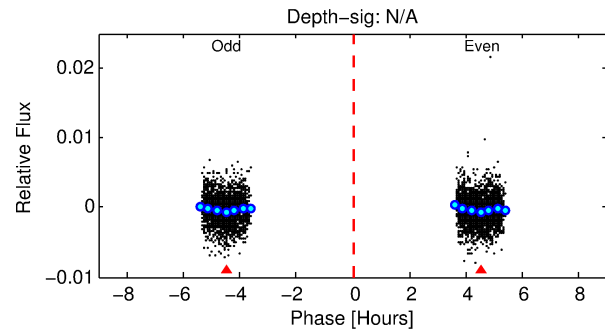
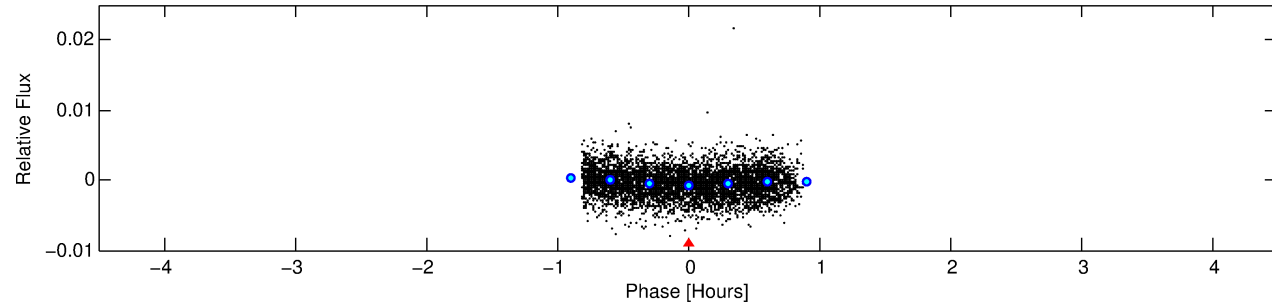
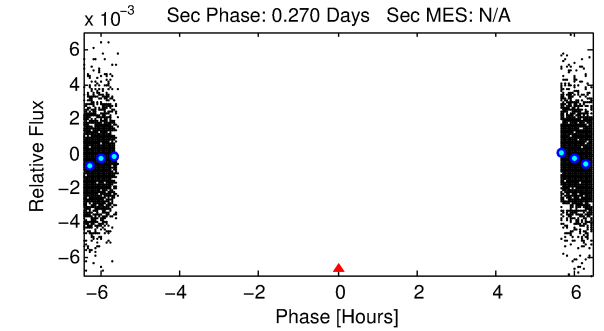
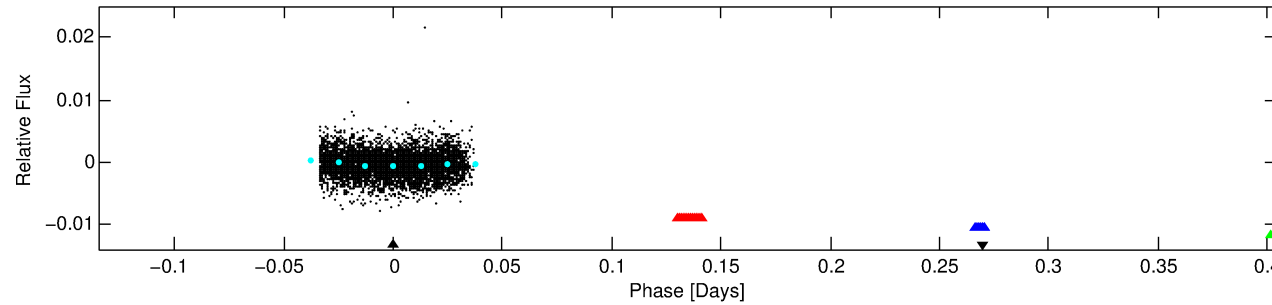
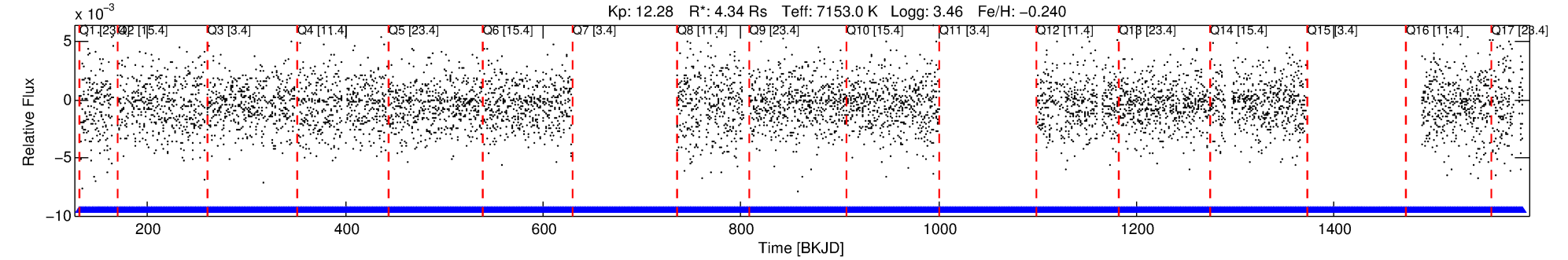
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009791381-04

No Significant Match Found

# DV One-Page Summary

KIC: 9791381 Candidate: 4 of 4 Period: 0.539 d



## TPS TCE Results:

Period = 0.53935 d  
Epoch = 131.9235 BKJD

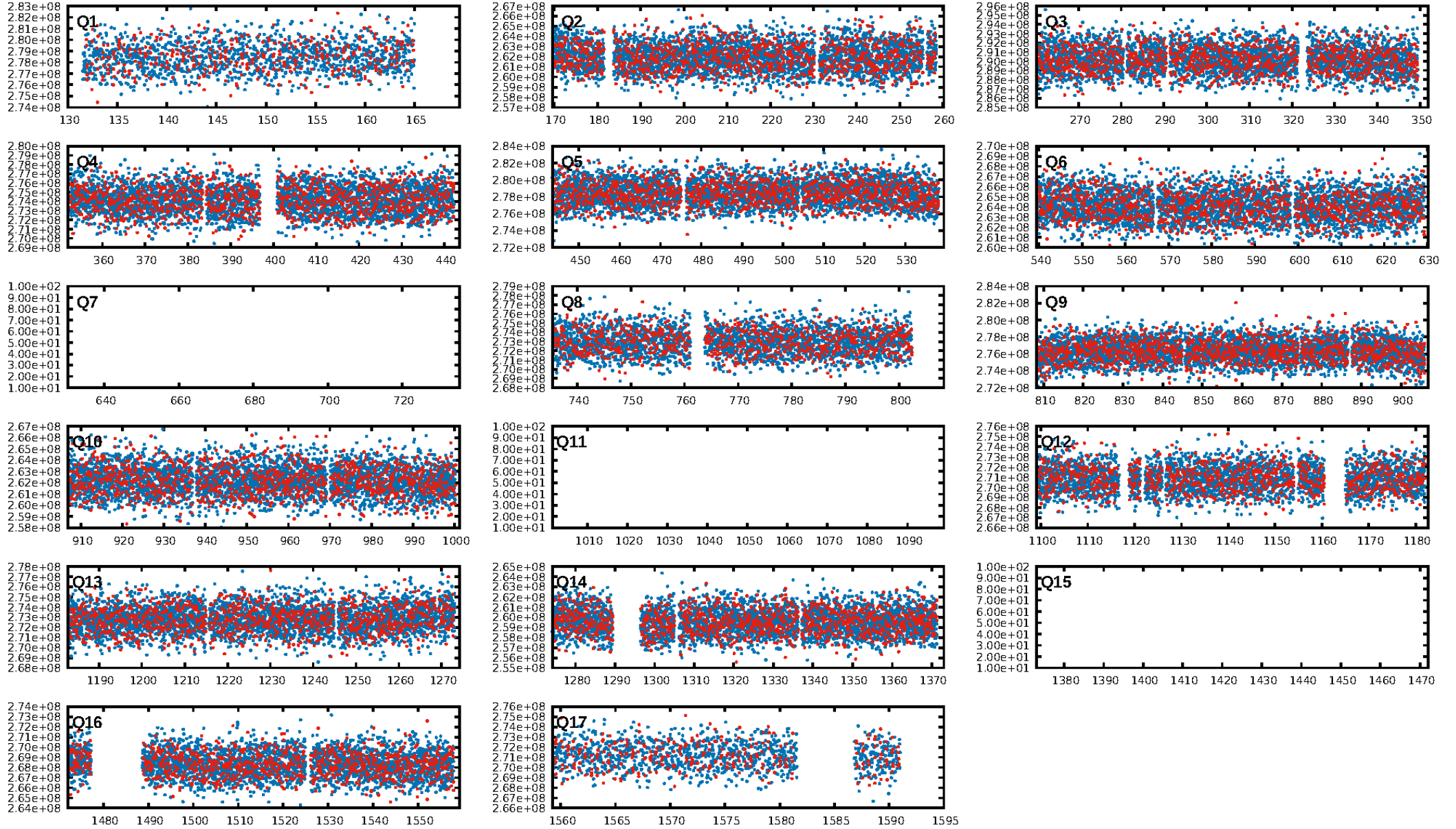
DV fit results are unavailable

## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: N/A

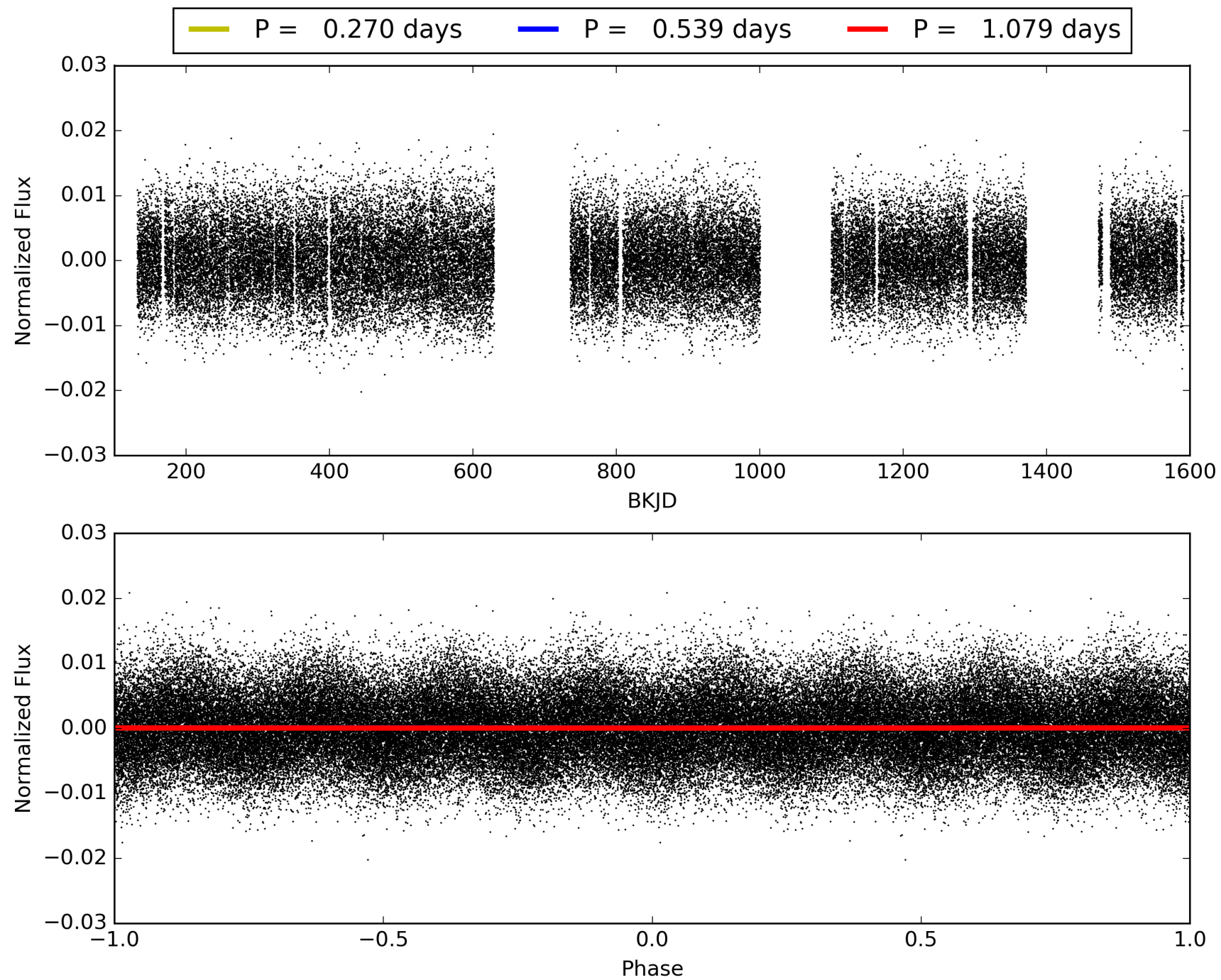
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

# TCE 009791381-04, PDC Light Curves



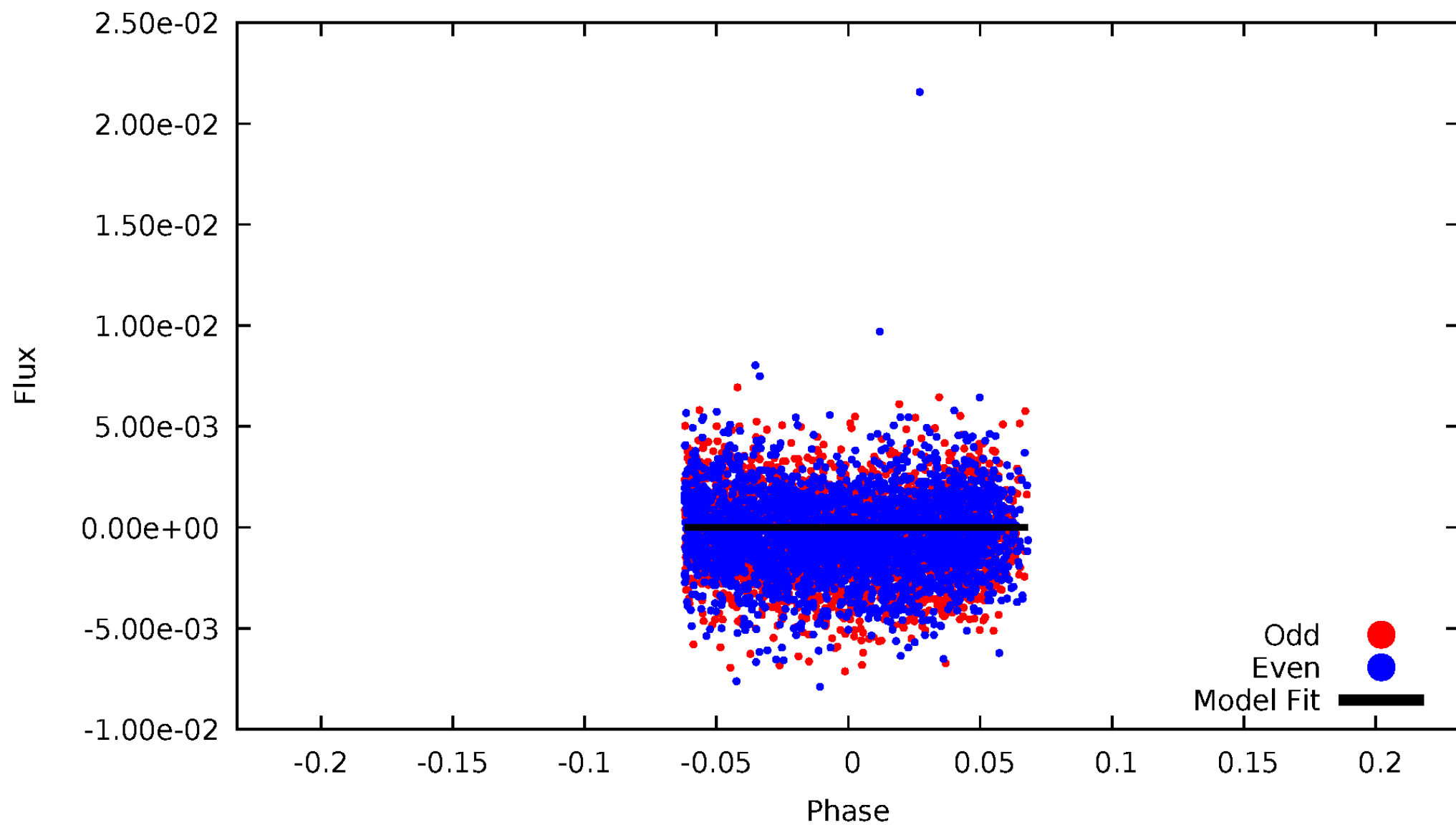


TCE 009791381-04



DV Odd/Even

TCE 009791381-04

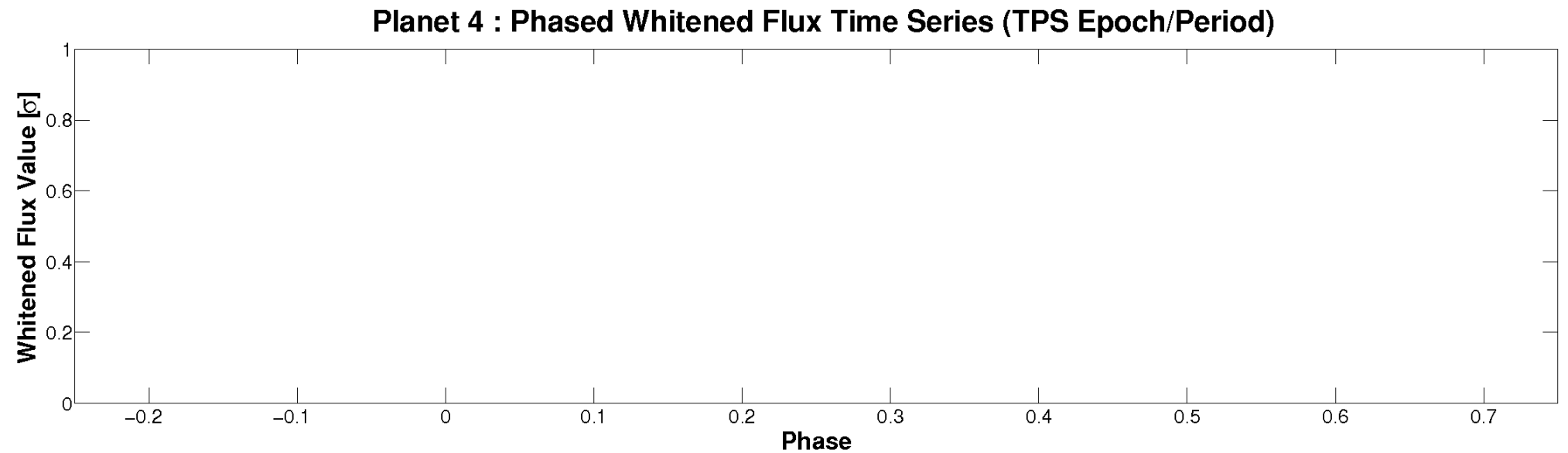
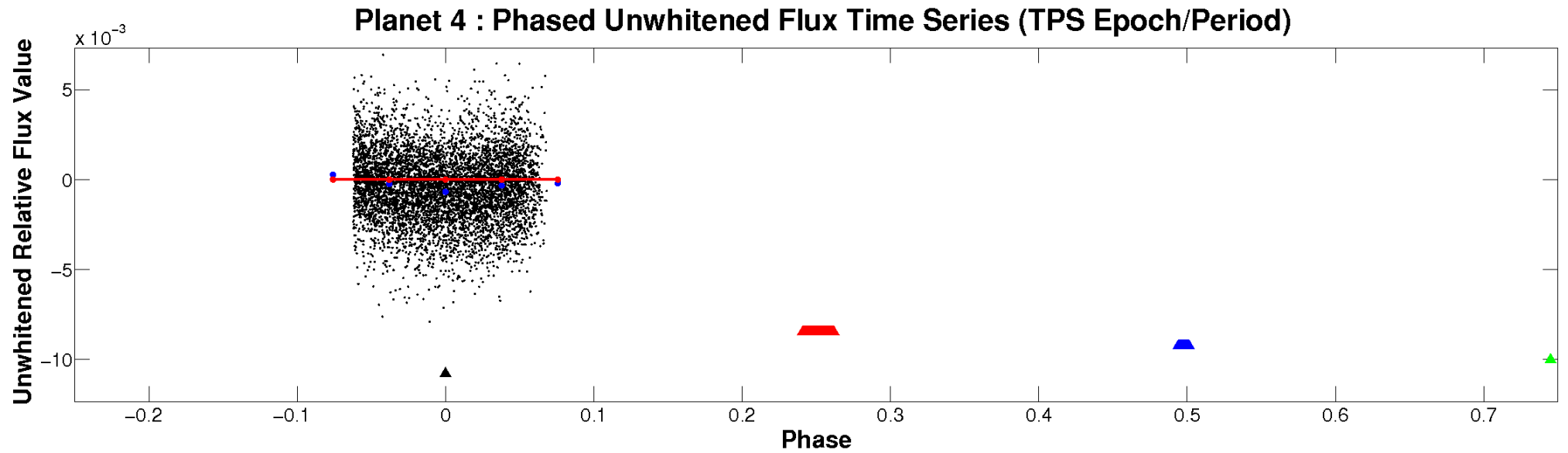




ALT Odd/Even

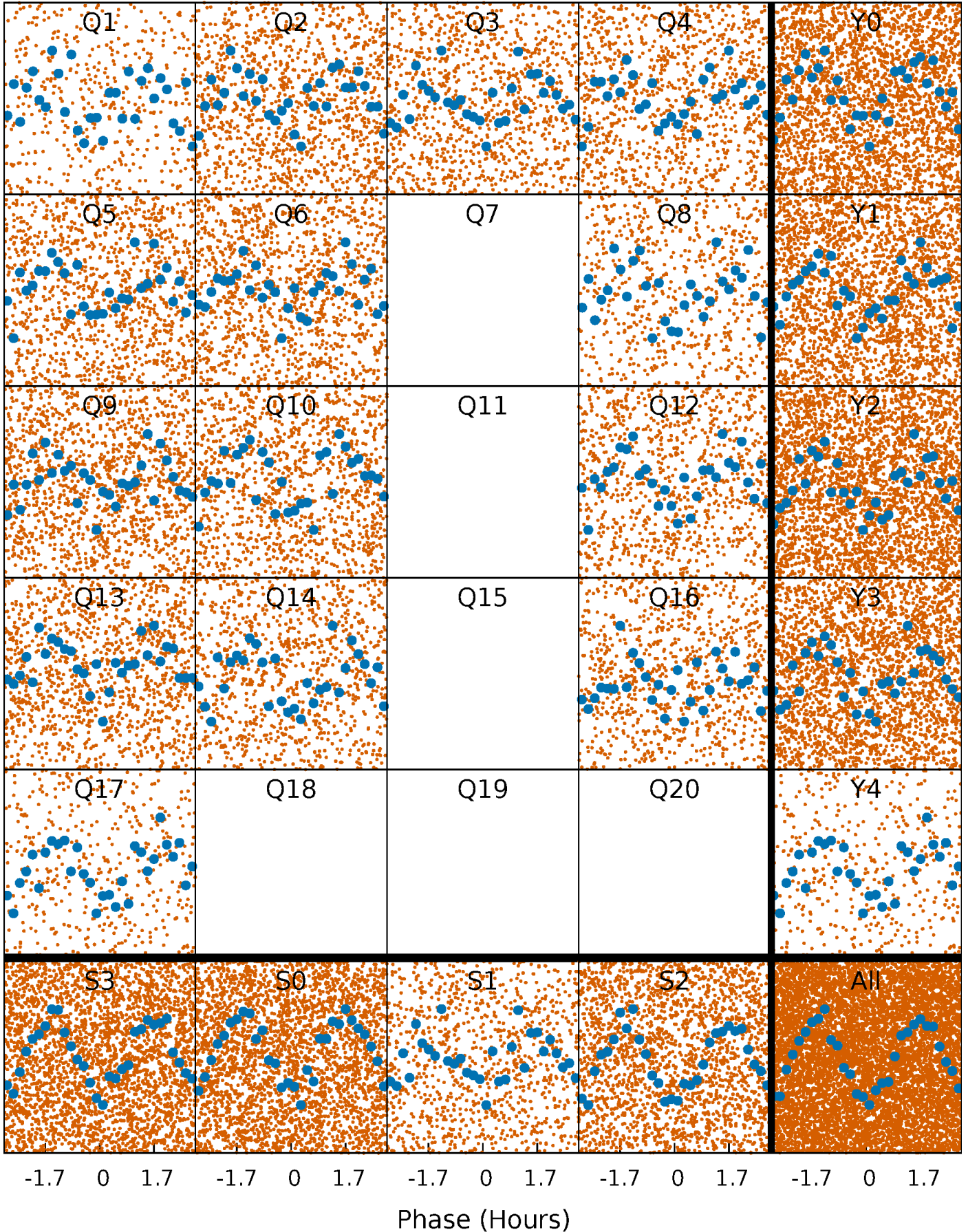
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

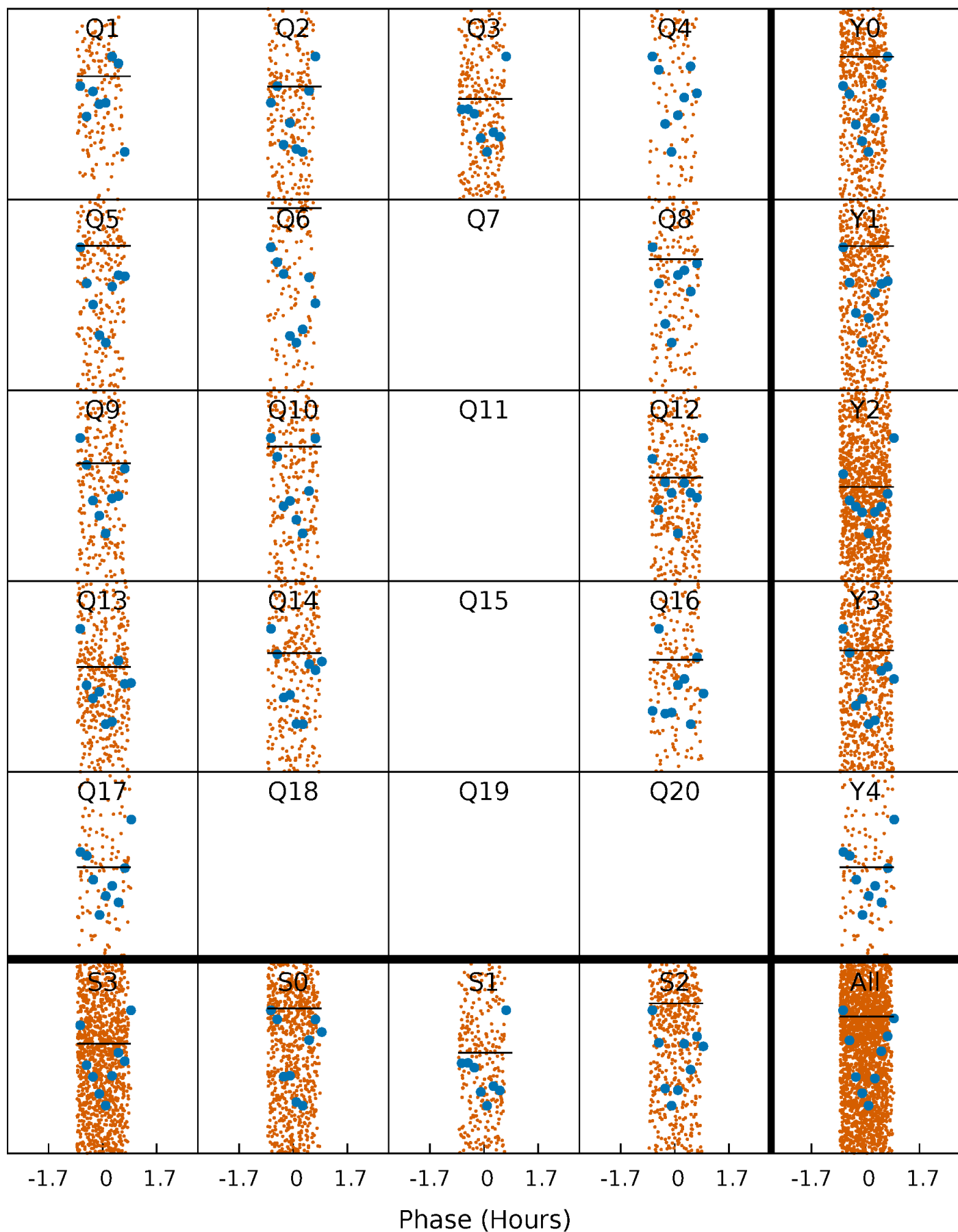
TCE 009791381-04   P= 0.539345 Days    $T_0=131.923494$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 009791381-04   P= 0.539345 Days    $T_0=131.923494$  (BKJD)

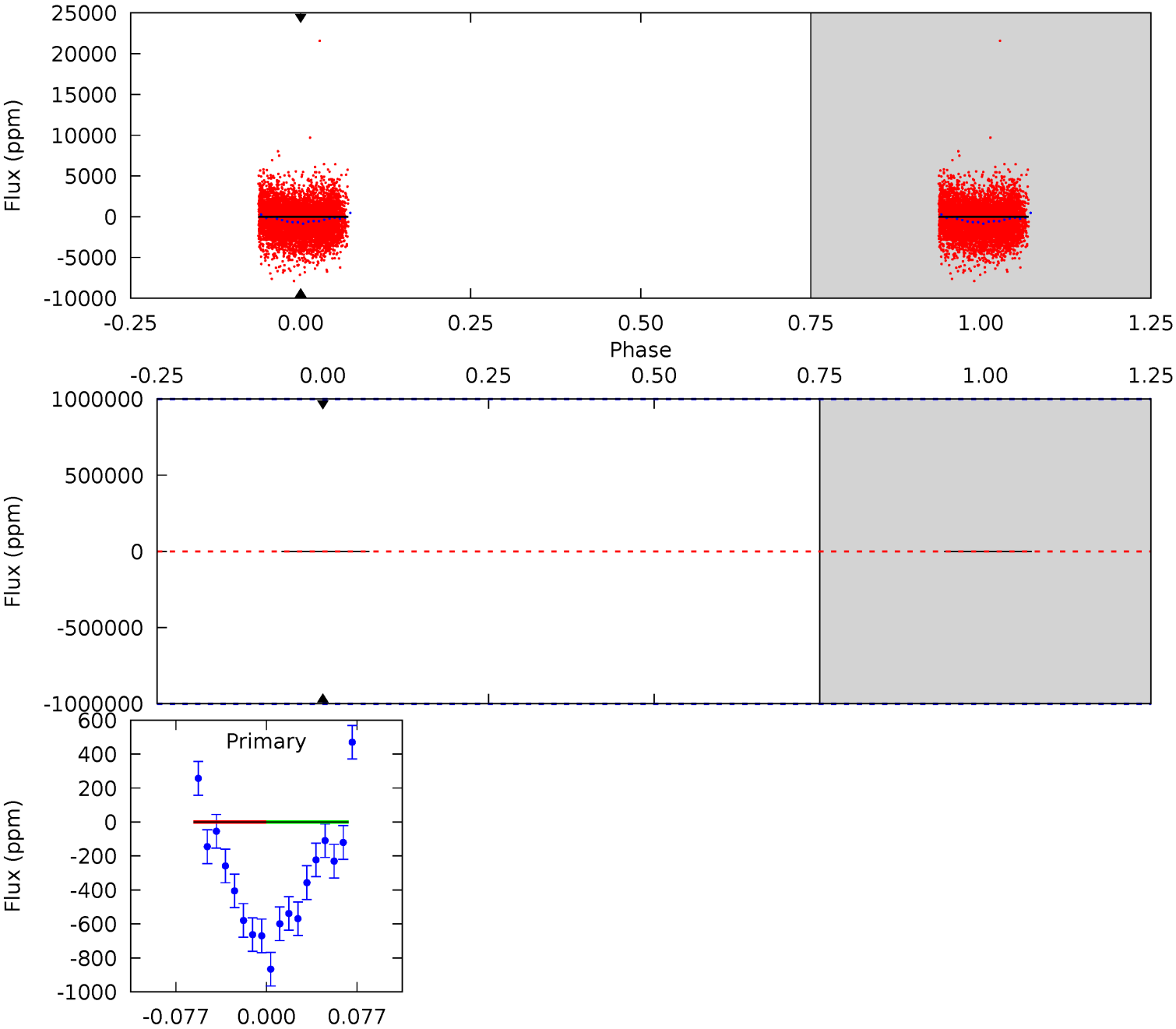


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

009791381-04, P = 0.539345 Days, E = 131.384149 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

This plot does not exist for this TCE.

### Stellar Parameters For KIC 009791381

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7153^{+224}_{-299}$	$3.464^{+0.666}_{-0.074}$	$-0.240^{+0.250}_{-0.300}$	$4.339^{+0.300}_{-2.546}$	$1.996^{+0.074}_{-0.668}$	$0.034^{+0.382}_{-0.009}$
	+3%/-4%	+19%/-2%	+104%/-125%	+7%/-59%	+4%/-33%	+1109%/-25%
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 009791381-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$28.93^{+33.59}_{-20.82}$	$6933^{+514}_{-1030}$	$4358^{+41060}_{-35723}$	$0.383^{+35.747}_{-26.046}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

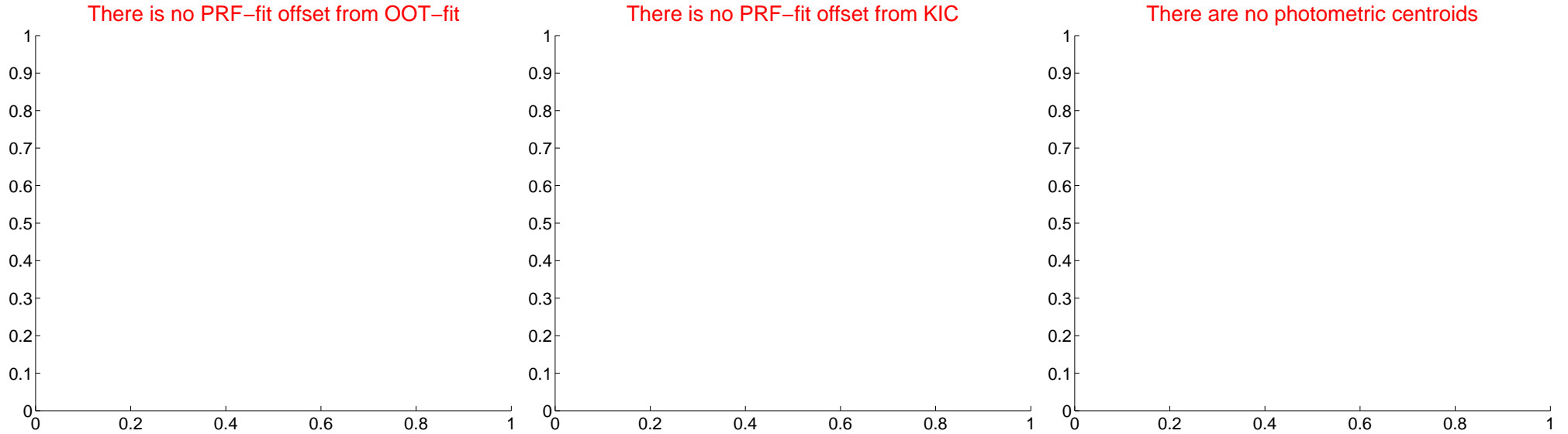
## DV Centroid Data

Supplemental centroid analysis for 009791381-04. Kepler magnitude: 12.28. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



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.



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



folded centroid time series figure for this object.

# UKIRT Image

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