

# KIC 005218441

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005218441-01	OBS	0407.01	3.613758	131.671257	4648.7	5.773	492.8	493.2	0.91	5986	6.86	462.29
005218441-02	OBS	No	1.806880	131.673657	240.4	5.114	26.3	27.0	0.91	5986	1.65	1164.90
005218441-03	OBS	No	3.614484	133.949888	0.0	42.756	8.6	0.0	0.91	5986	0.01	462.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005218441-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

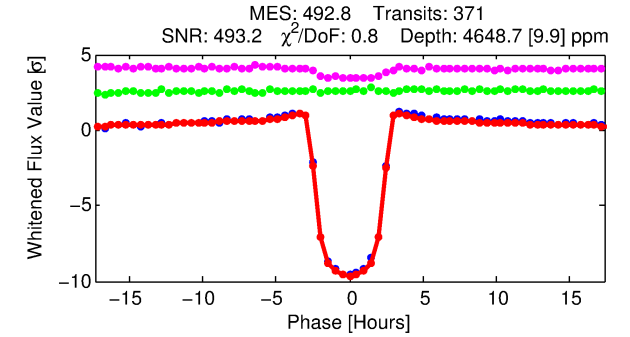
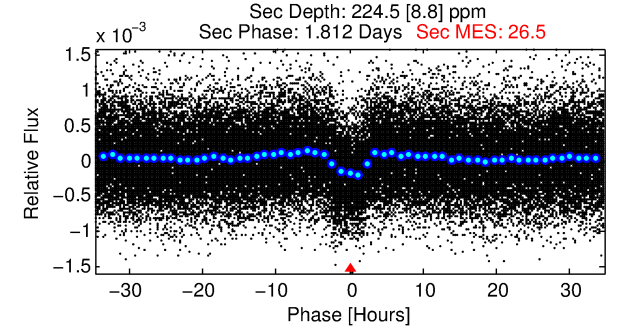
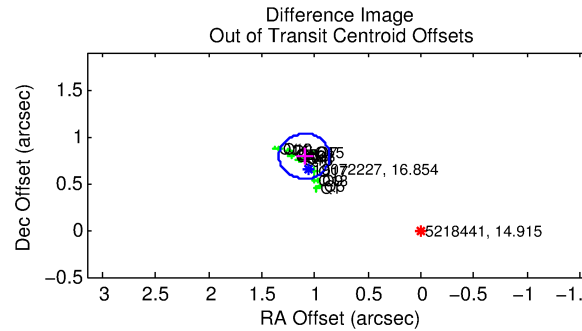
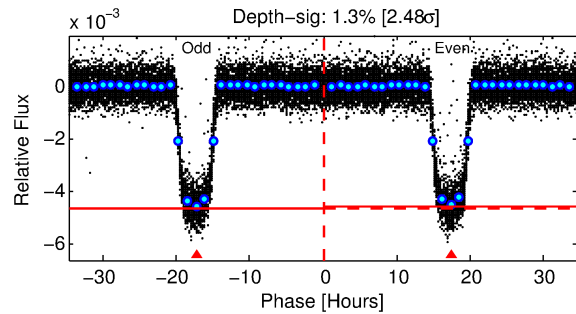
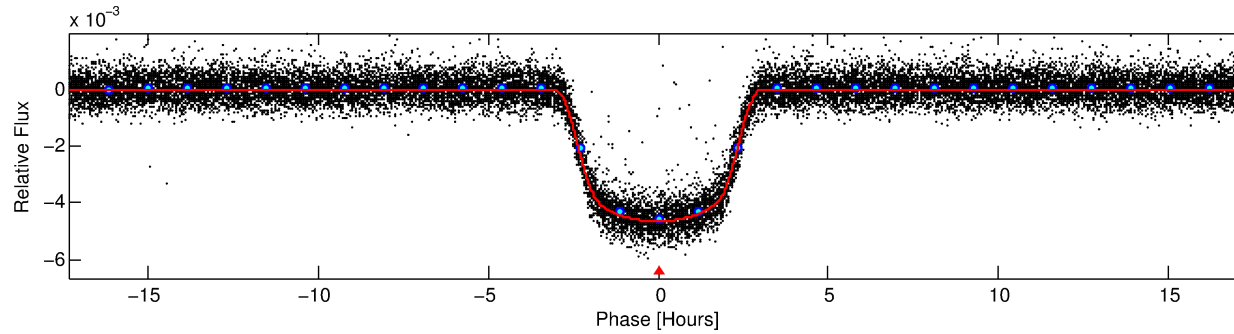
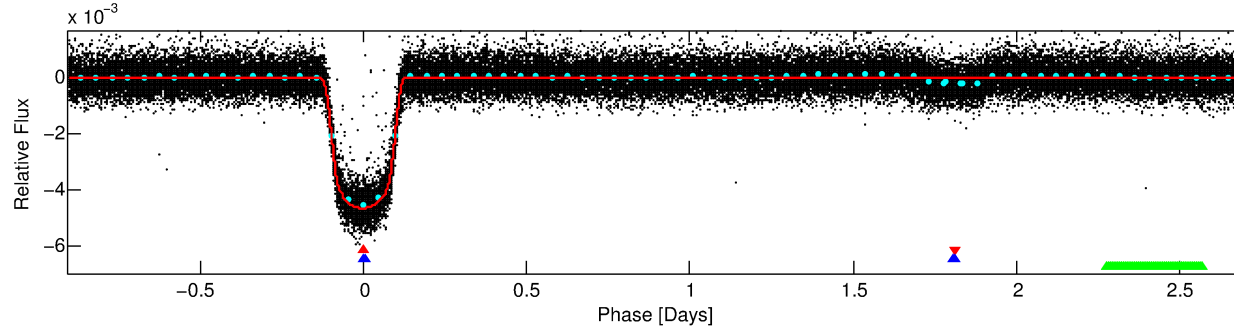
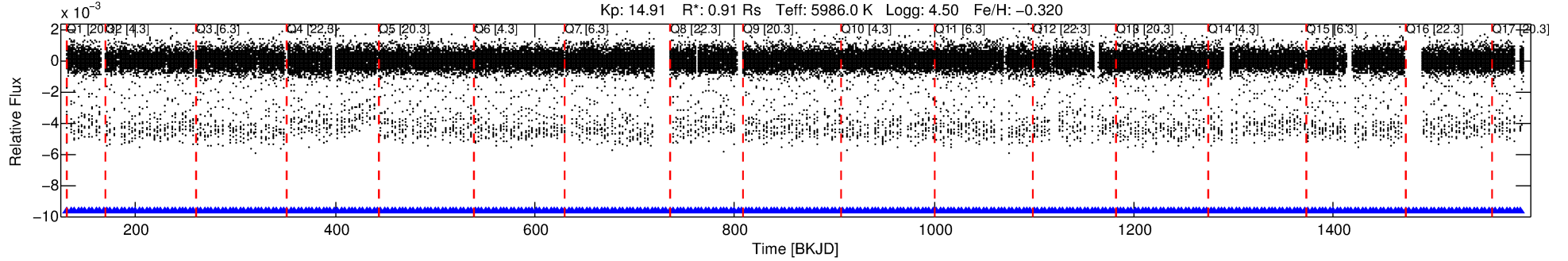
Ephemeris Match Information For 005218441-01

No Significant Match Found

# DV One-Page Summary

KIC: 5218441 Candidate: 1 of 3 Period: 3.614 d  
KOI: K00407.01 Corr: 0.997

Kp: 14.91 R\*: 0.91 Rs Teff: 5986.0 K Logg: 4.50 Fe/H: -0.320



## DV Fit Results:

Period = 3.61376 [0.00000] d  
Epoch = 131.6713 [0.0002] BKJD  
Rp/R\* = 0.0694 [0.0002]  
a/R\* = 3.48 [0.03]  
b = 0.81 [0.00]  
Seff = 462.29 [174.99]  
Teq = 1182 [112] K  
Rp = 6.86 [2.00] Re  
a = 0.0452 [0.0111] AU  
Ag = 5.36 [1.92] [2.27σ]  
Teffp = 2781 [92] K [11.03σ]

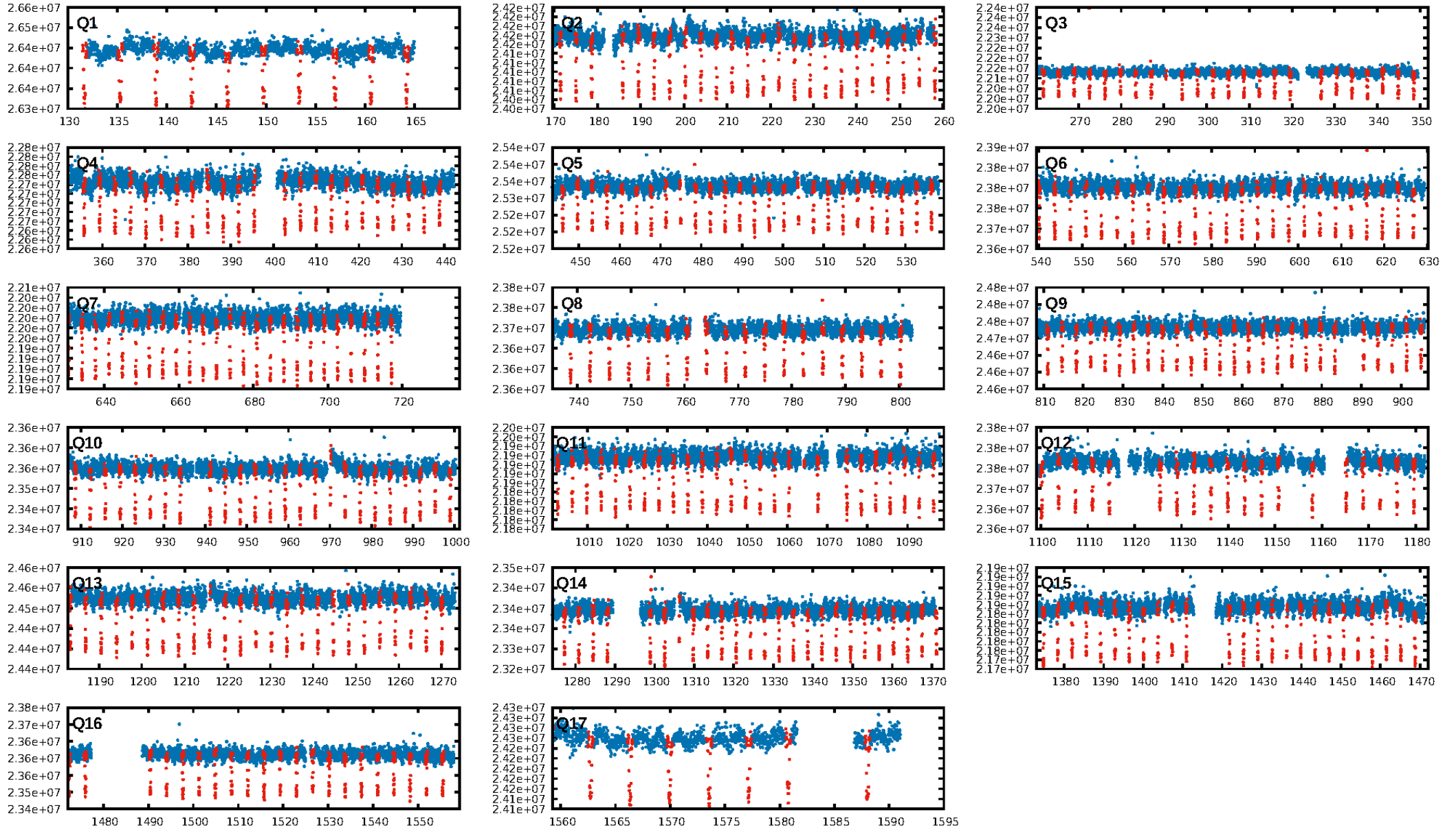
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.62σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [354/354]  
GhostDiagnostic-chr: 5.988  
Centroid-sig: 0.0%  
Centroid-so: 1.468 arcsec [47.19σ]  
OotOffset-rm: 1.353 arcsec [16.91σ]  
KicOffset-rm: 1.257 arcsec [18.29σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

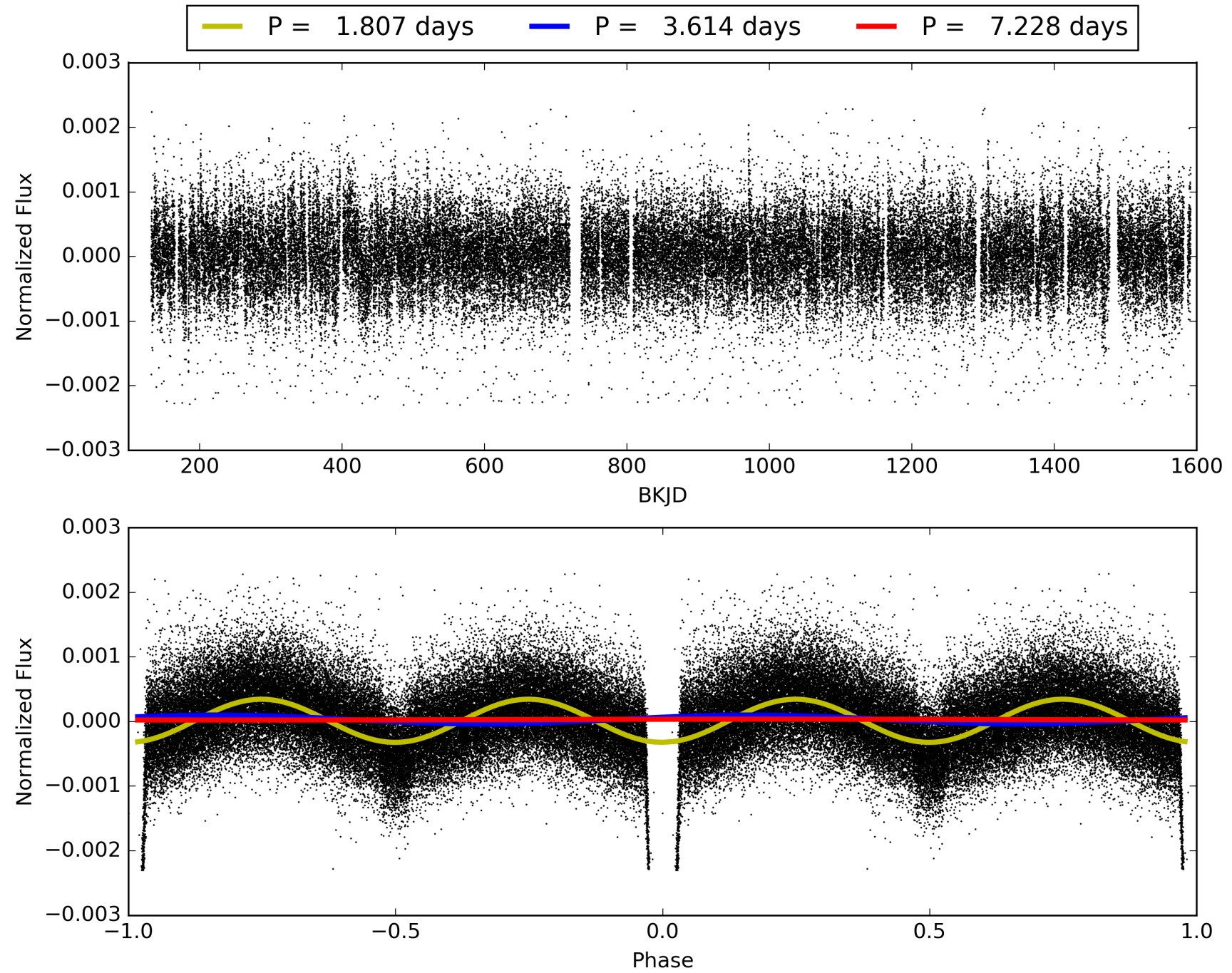
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:56:28 Z

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

# TCE 005218441-01, PDC Light Curves

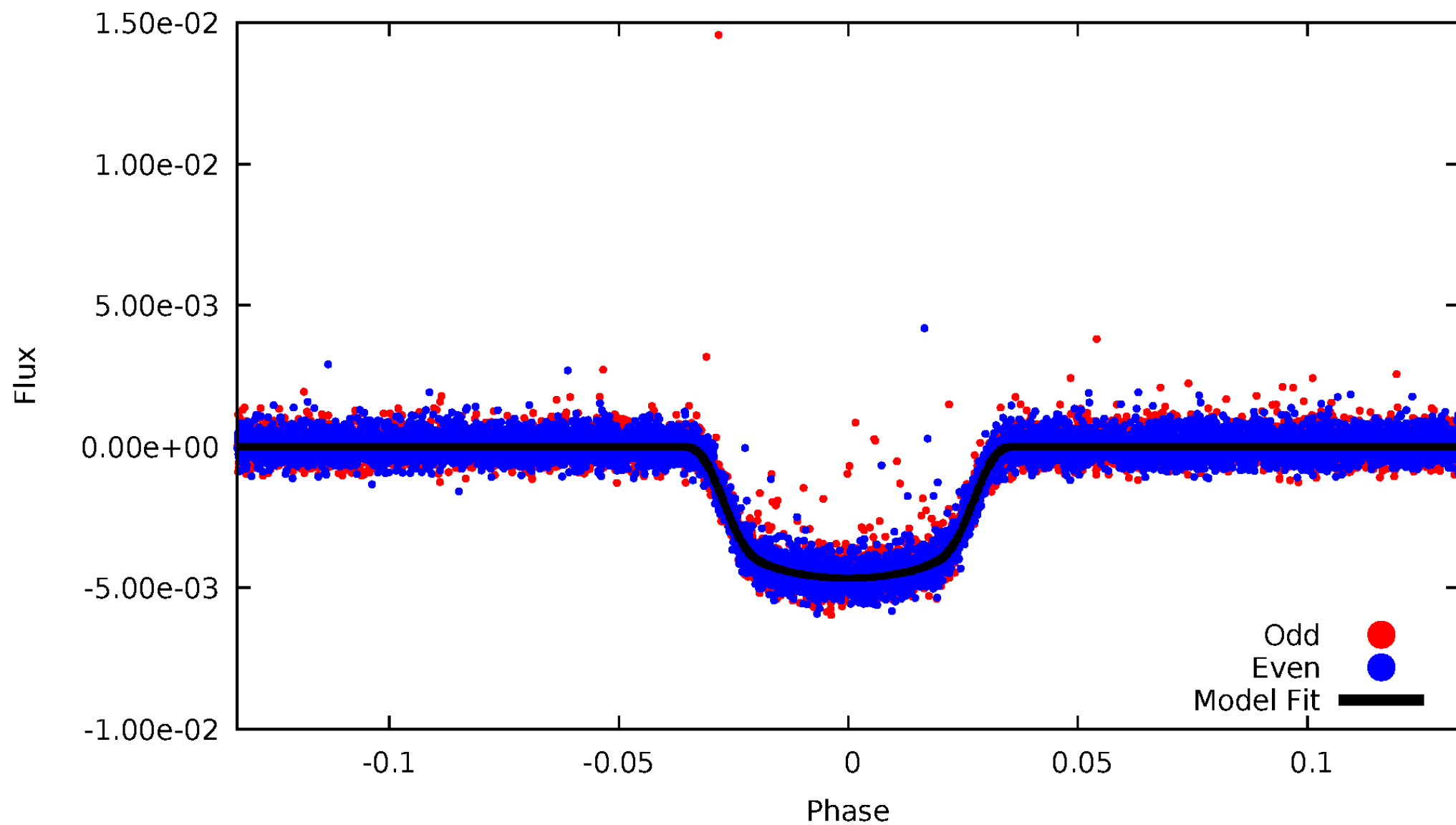


TCE 005218441-01



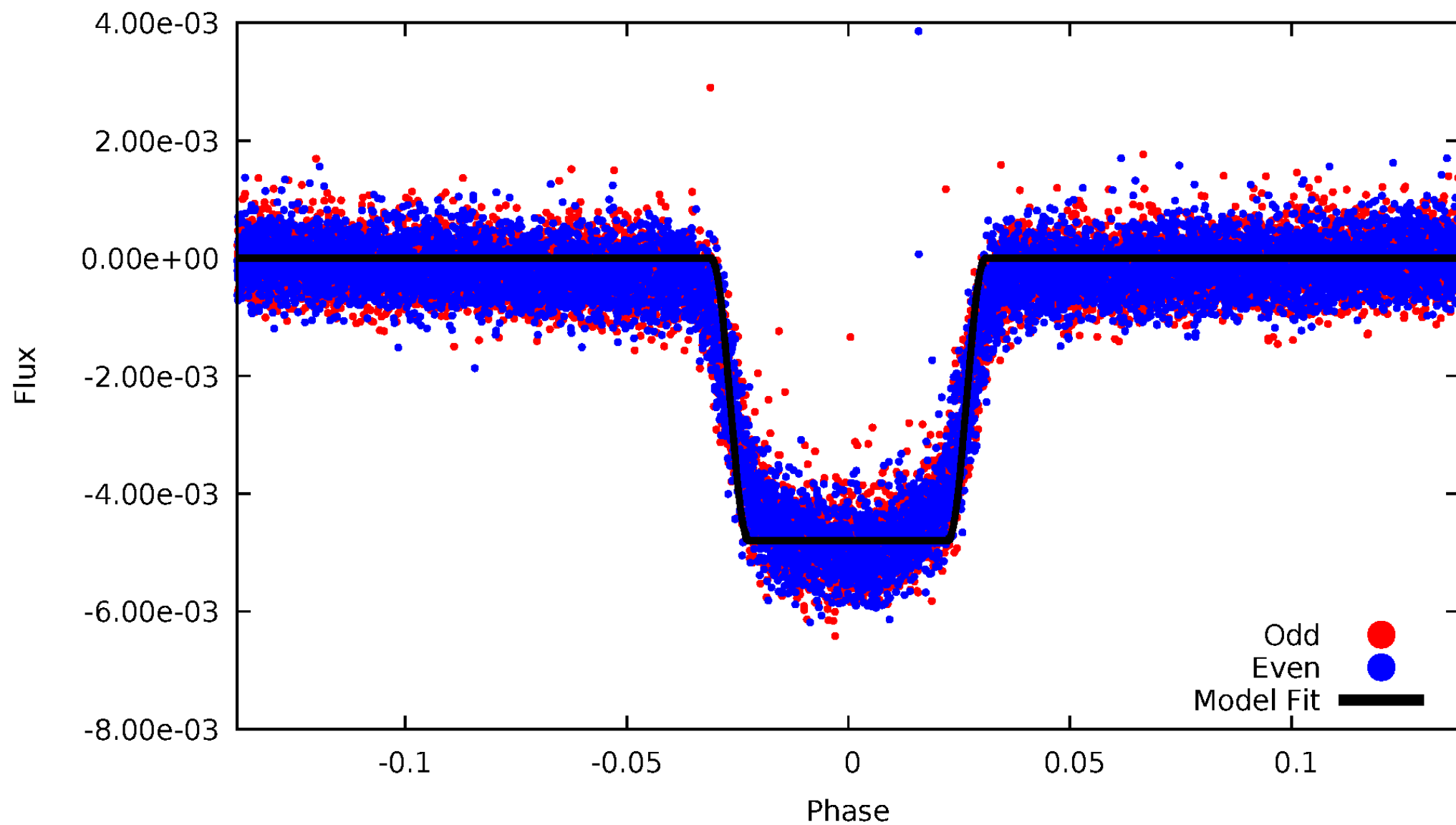
# DV Odd/Even

TCE 005218441-01



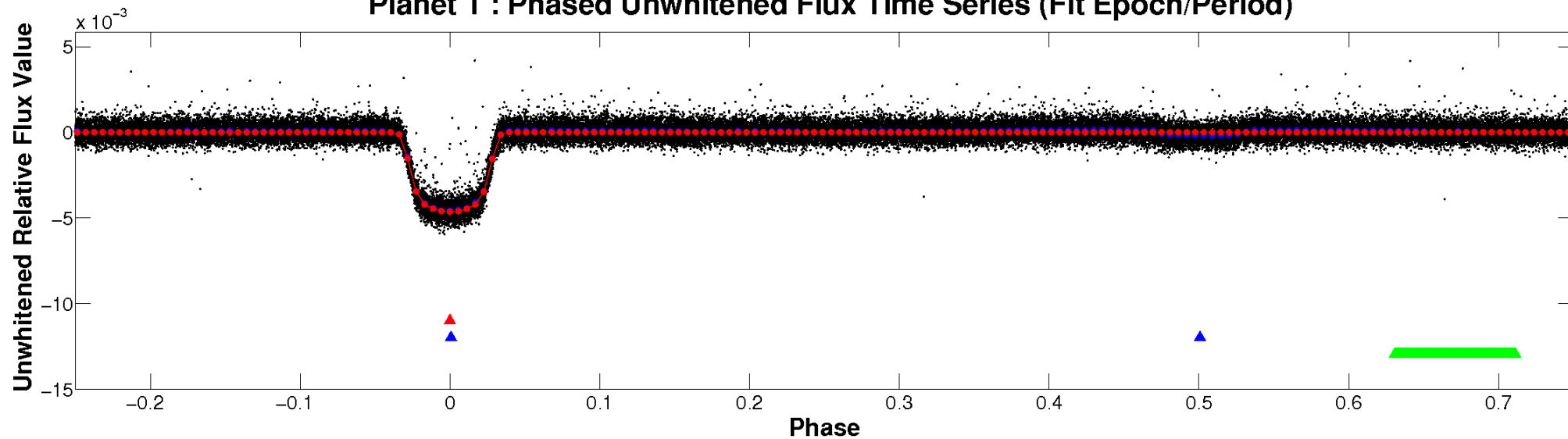
# ALT Odd/Even

TCE 005218441-01

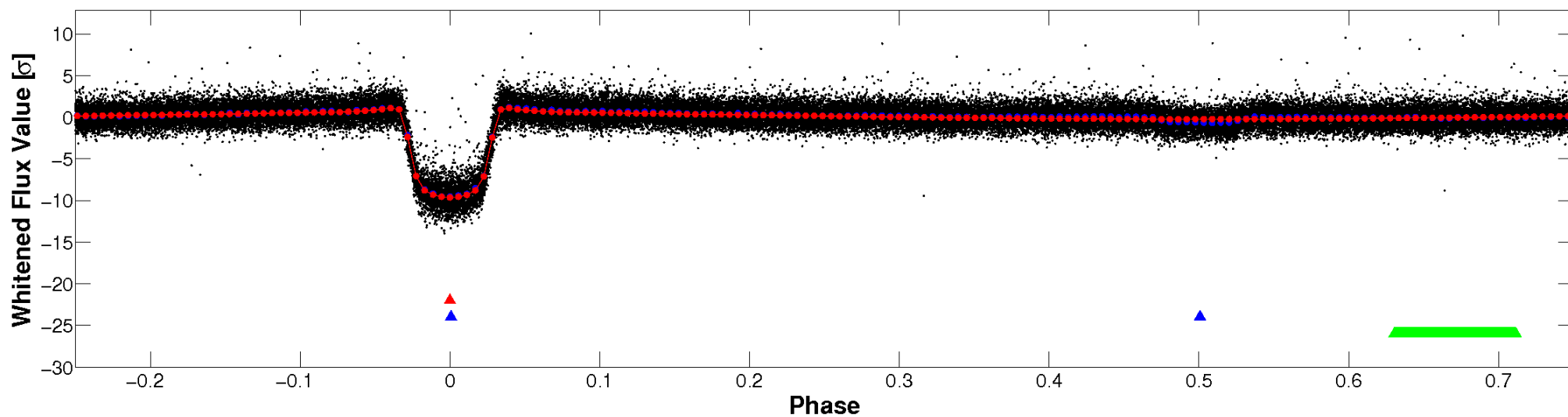


# Non-Whitened Vs. Whitened Light Curve

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



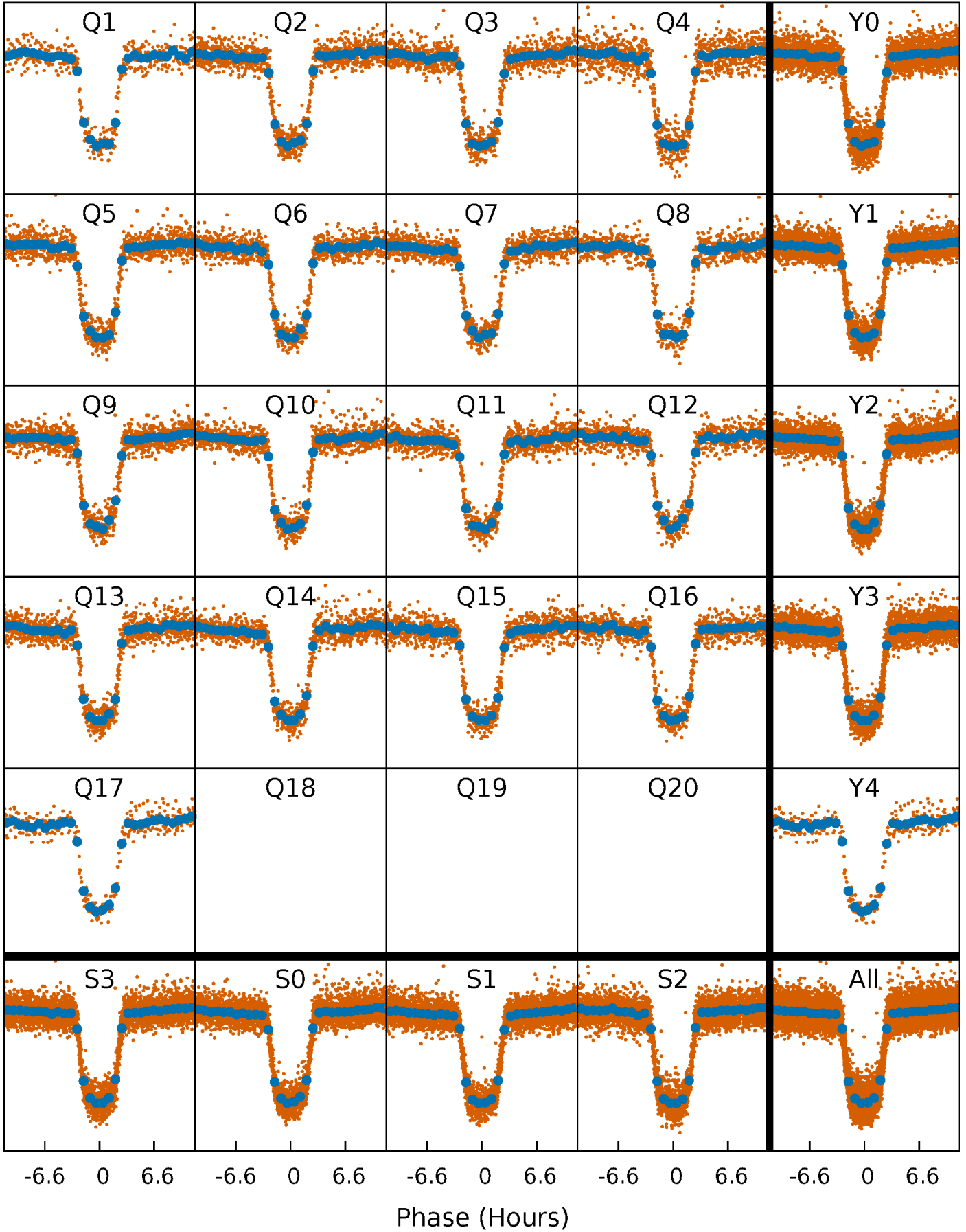
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

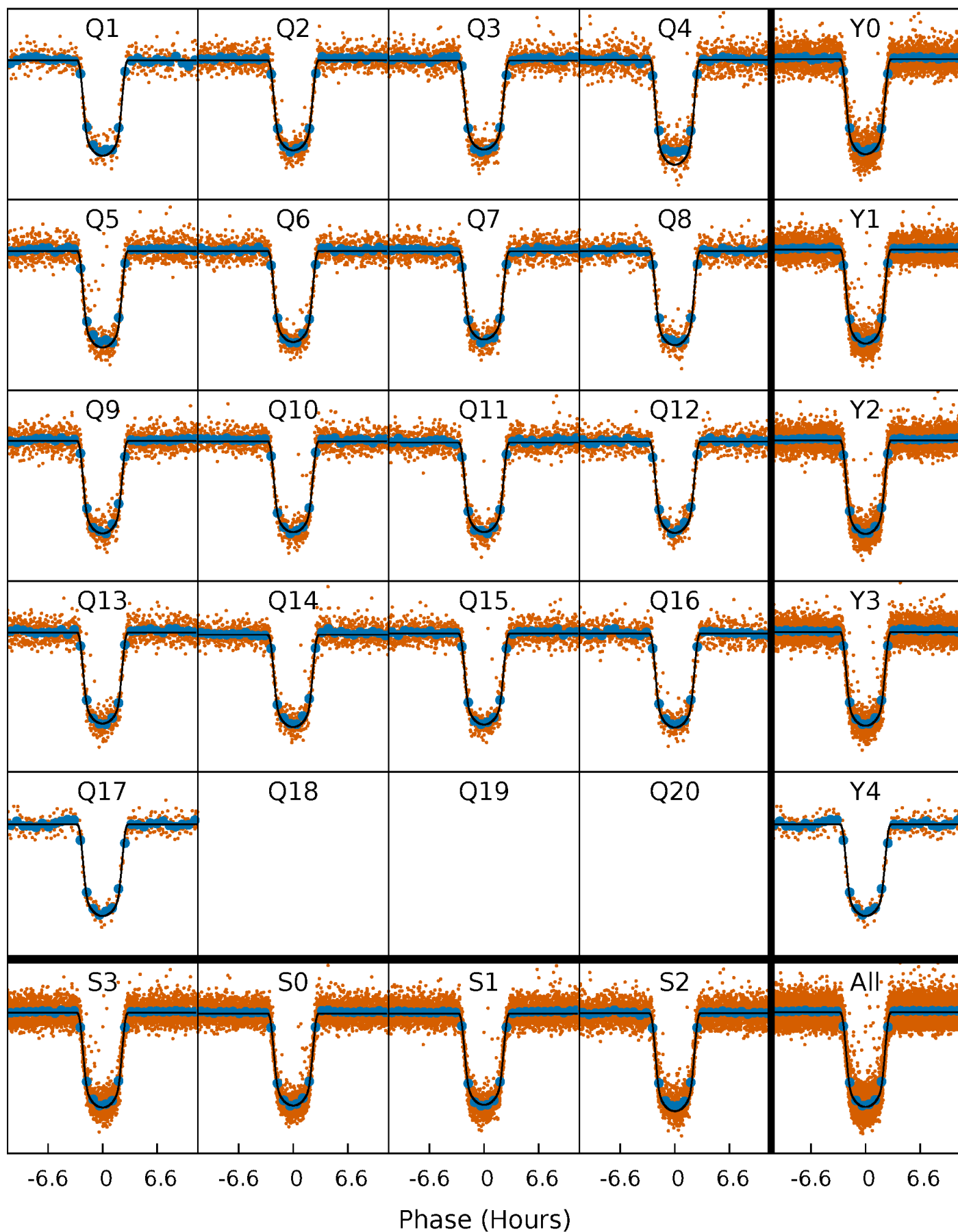
TCE 005218441-01 P= 3.613758 Days  $T_0=131.671257$  (BKJD)





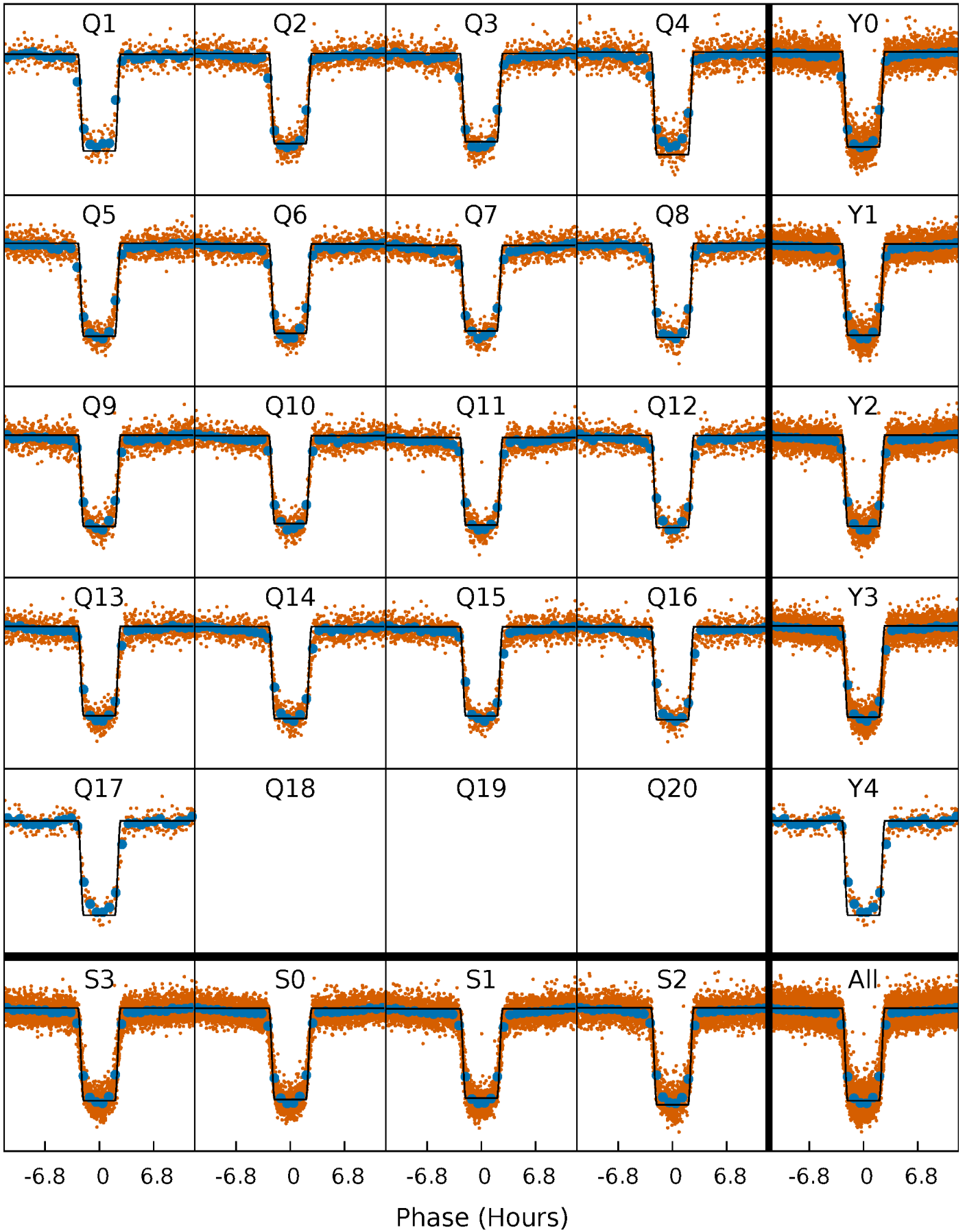
# DV Quarter-Phased Transit Curves

TCE 005218441-01 P= 3.613758 Days  $T_0=131.671257$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

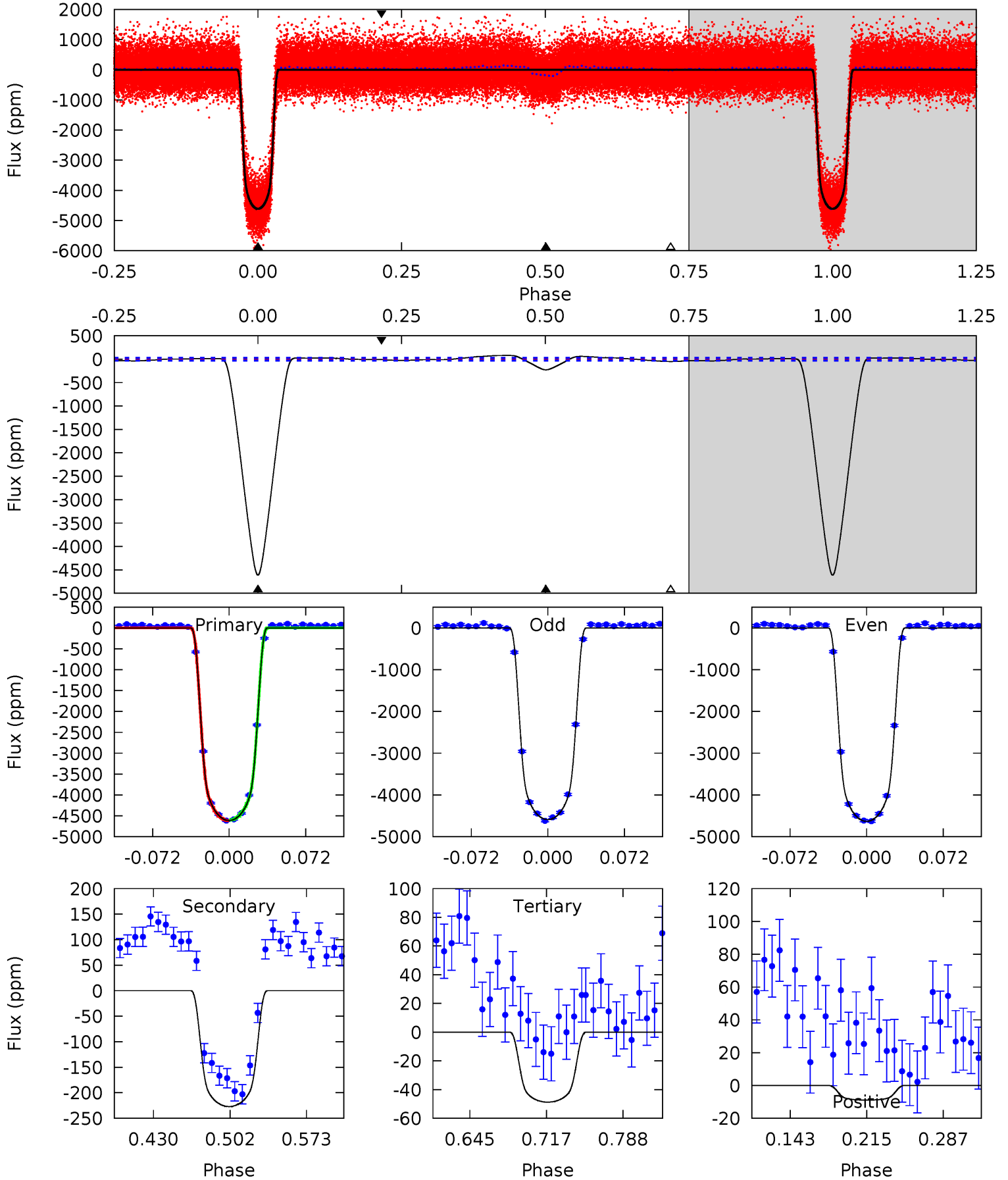
TCE 005218441-01 P= 3.613714 Days  $T_0=131.679808$  (BKJD)



# DV Model-Shift Uniqueness Test

005218441-01, P = 3.613758 Days, E = 128.057499 Days

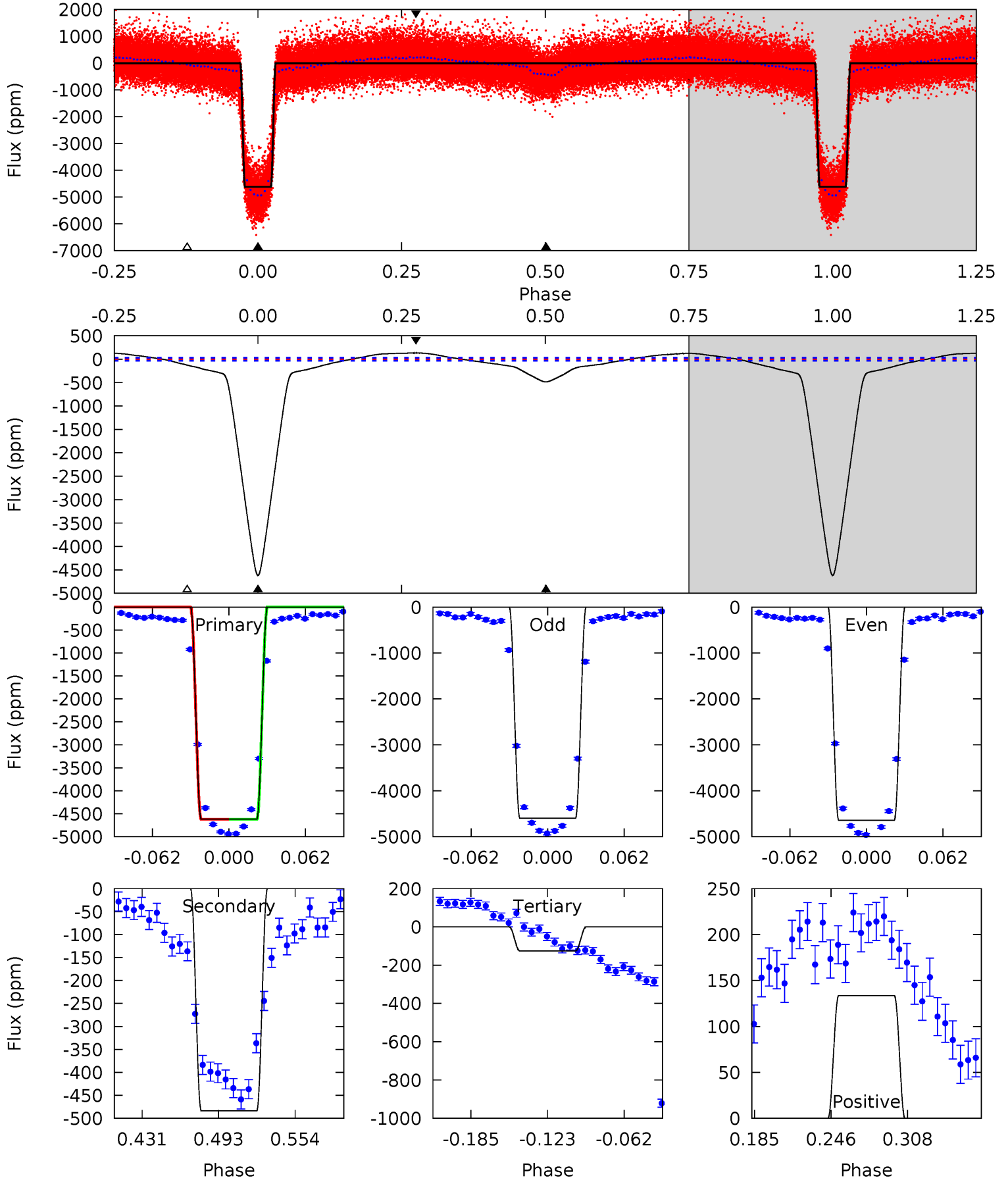
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
757.4	37.3	8.01	-1.47	4.63	1.80	4.95	749.4	758.8	29.3	38.7	3.34	0.99	0.02	1.18



# Alt Model-Shift Uniqueness Test

005218441-01, P = 3.613714 Days, E = 128.066094 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
679.1	71.1	18.5	19.7	4.67	1.87	17.2	660.7	659.5	52.6	51.5	3.21	1.00	0.03	0.29



### Stellar Parameters For KIC 005218441

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5986^{+168}_{-189}$	$4.498^{+0.065}_{-0.195}$	$-0.320^{+0.300}_{-0.300}$	$0.906^{+0.264}_{-0.094}$	$0.942^{+0.117}_{-0.117}$	$1.786^{+0.478}_{-0.902}$
	+3%/-3%	+1%/-4%	+94%/-94%	+29%/-10%	+12%/-12%	+27%/-51%
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 005218441-01 / KOI 0407.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-227 \pm 6$	$7.03^{+1.21}_{-0.54}$	$1683^{+114}_{-85}$	$3298^{+62}_{-63}$	$5.152^{+0.736}_{-1.227}$
Alt.	$-483 \pm 7$	$6.93^{+1.09}_{-0.45}$	$1676^{+117}_{-74}$	$3748^{+75}_{-77}$	$11^{+2}_{-2}$

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

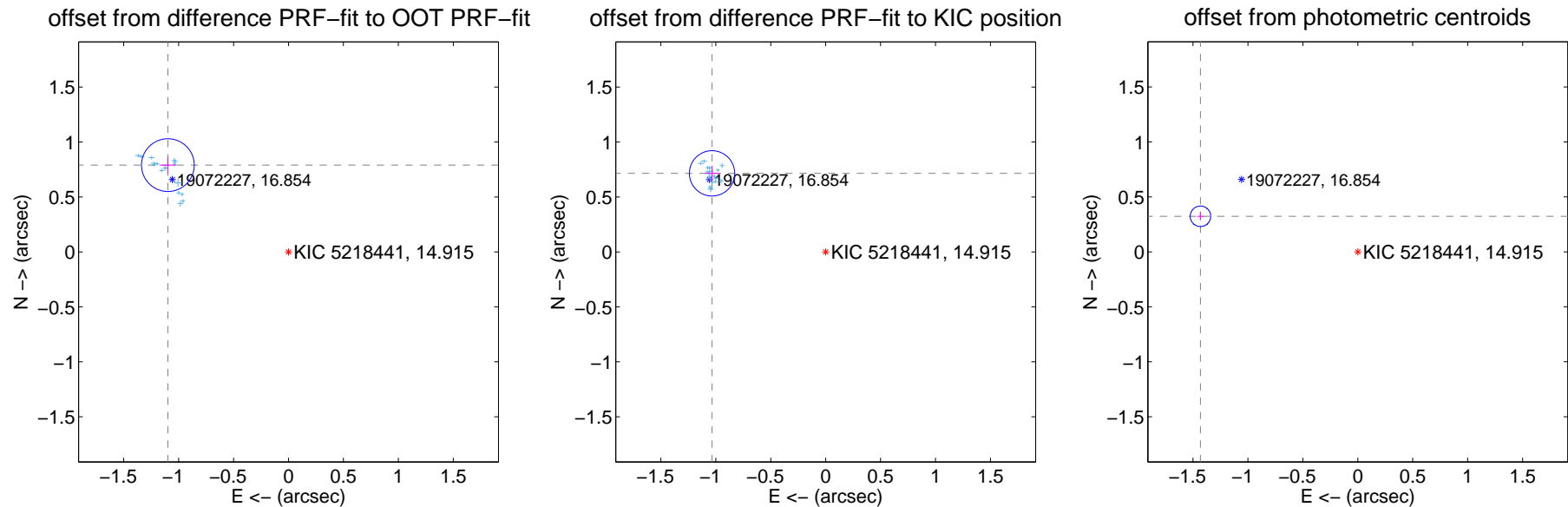
## DV Centroid Data

Supplemental centroid analysis for 005218441-01. Kepler magnitude: 14.91. Transit SNR 493.17

There are 17 quarters with good PRF difference image offsets

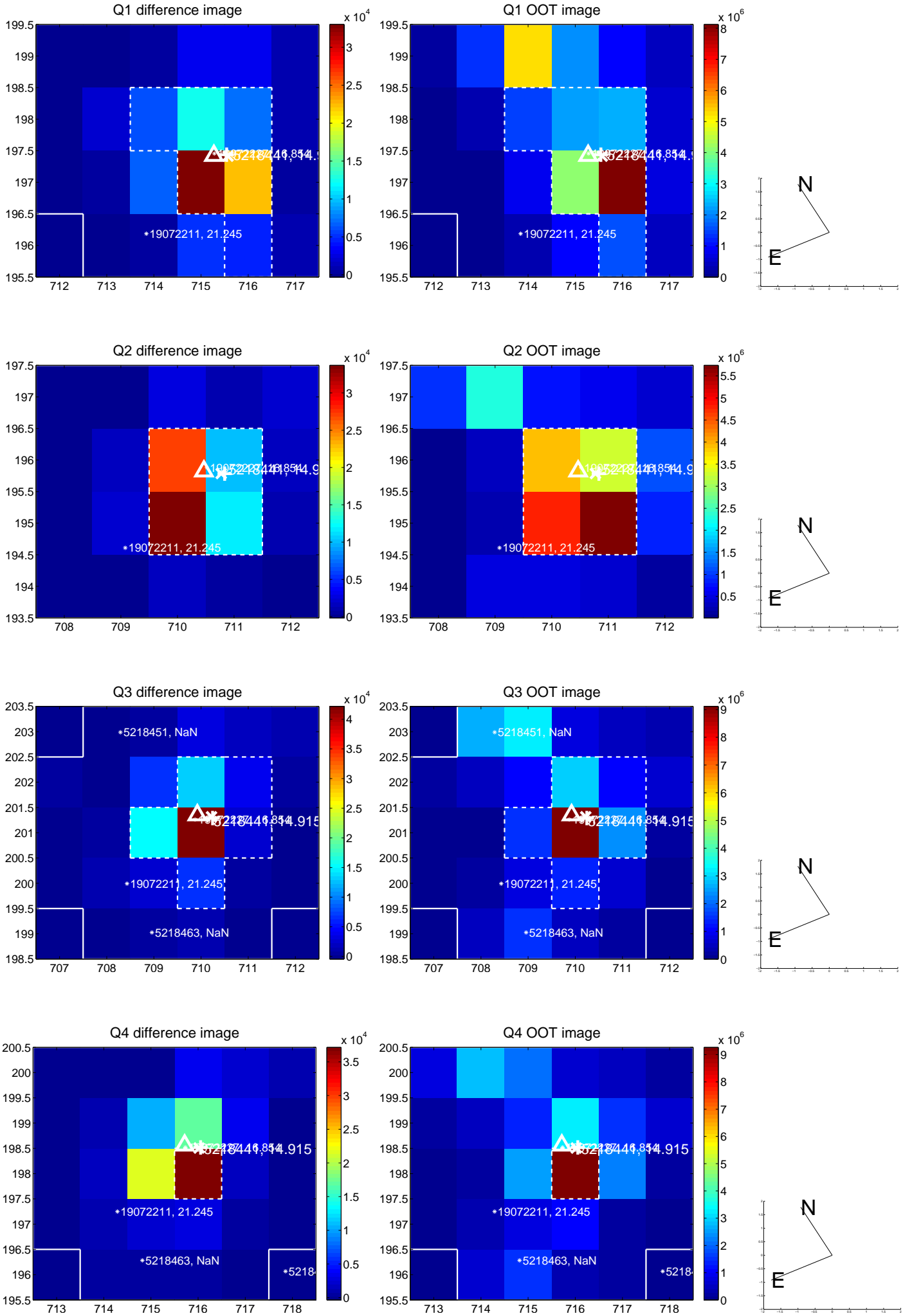
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.353 \pm 0.080$	16.91	$1.098 \pm 0.074$	$0.790 \pm 0.075$
PRF-fit source offset from KIC position	$1.257 \pm 0.069$	18.29	$1.034 \pm 0.068$	$0.715 \pm 0.069$
photometric centroid source offset	$1.47 \pm 0.03$	47.19	$1.43 \pm 0.03$	$0.32 \pm 0.04$



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.

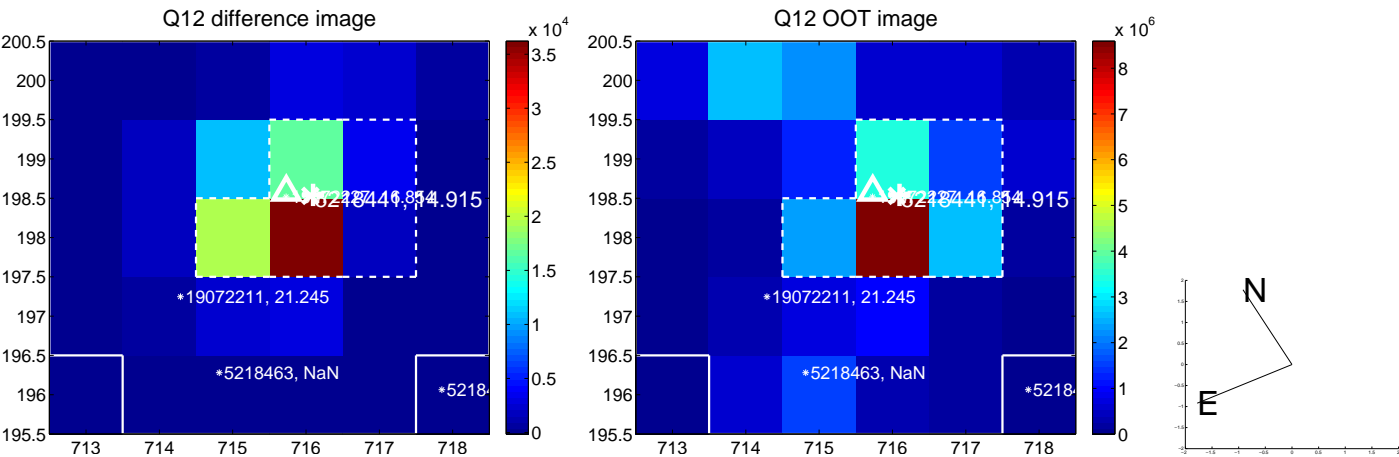
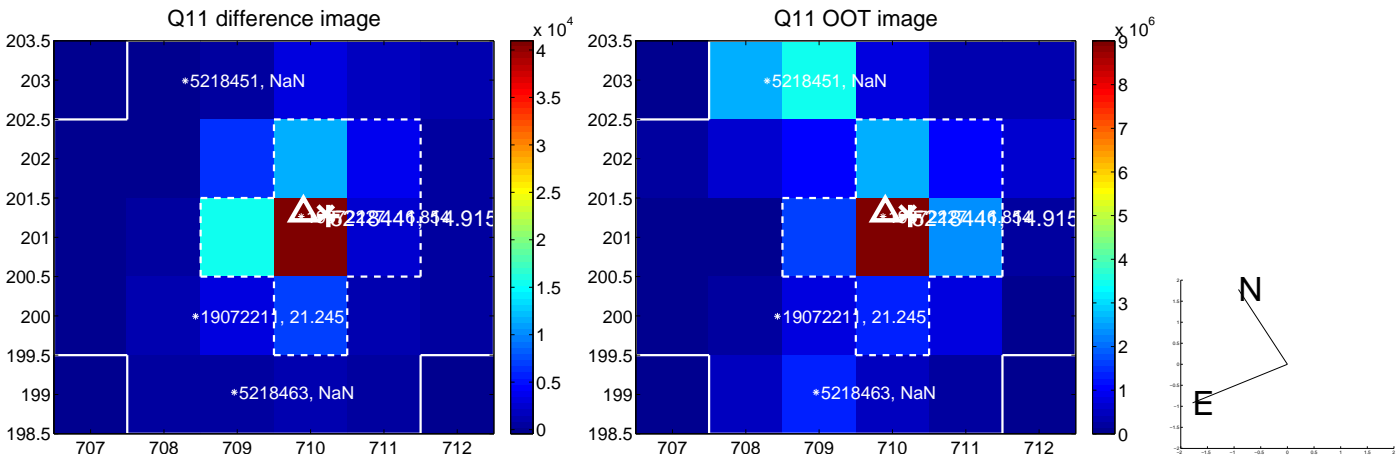
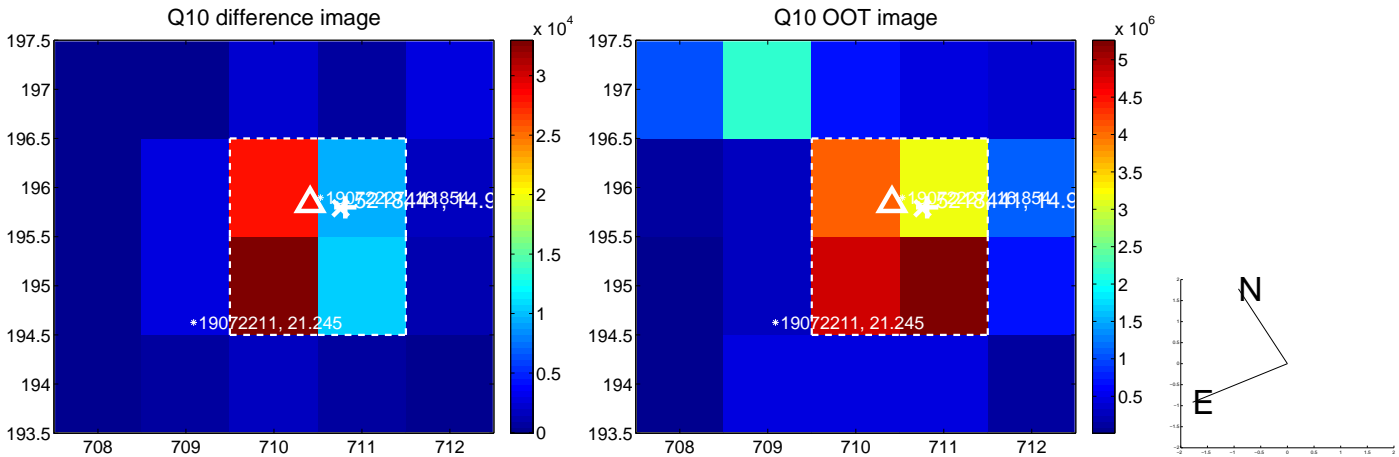
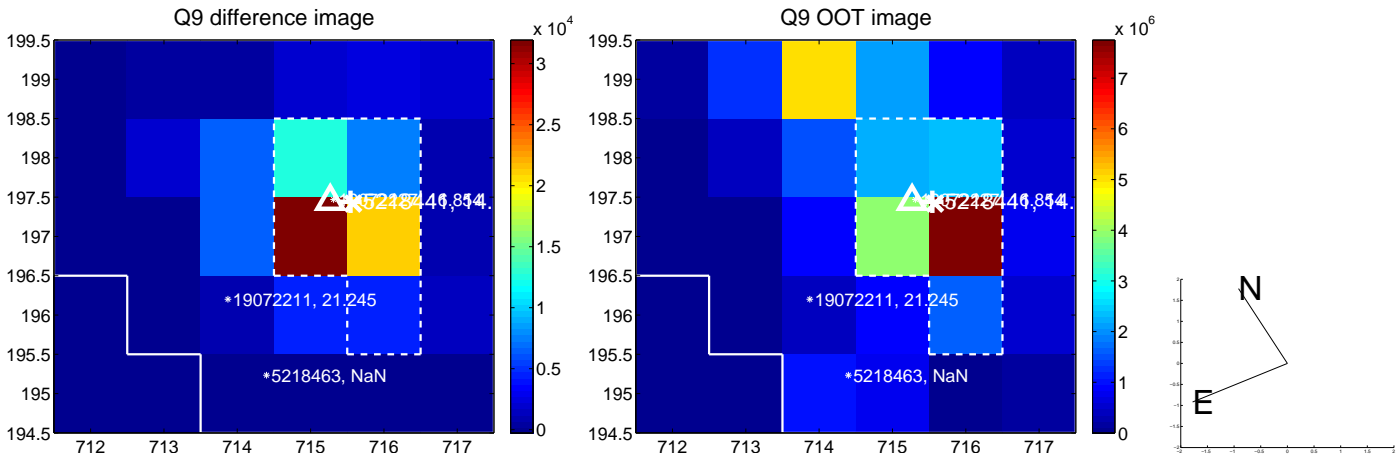
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





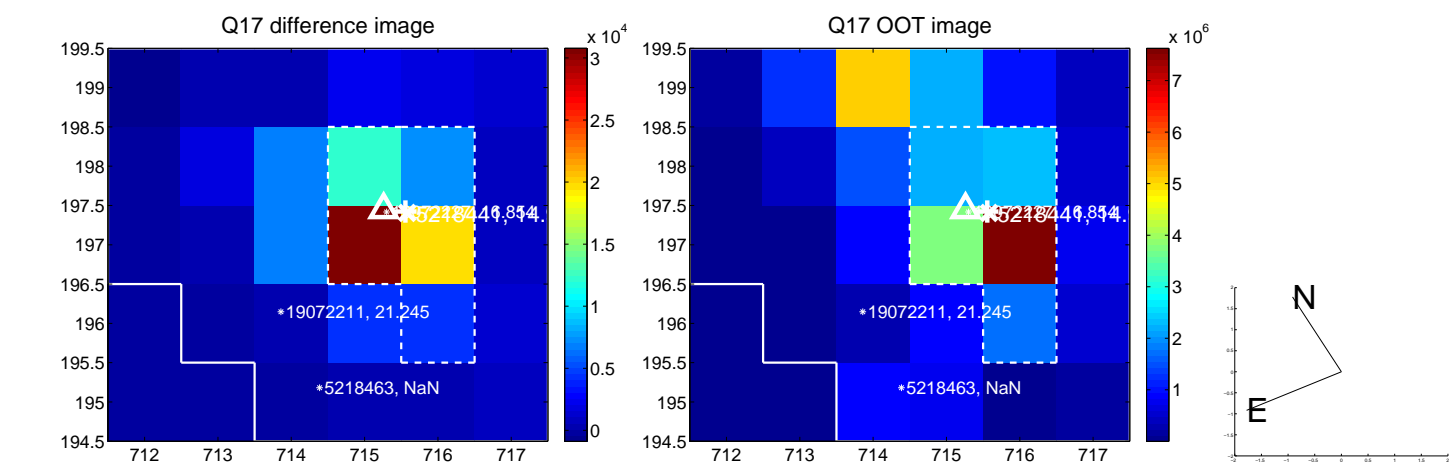


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

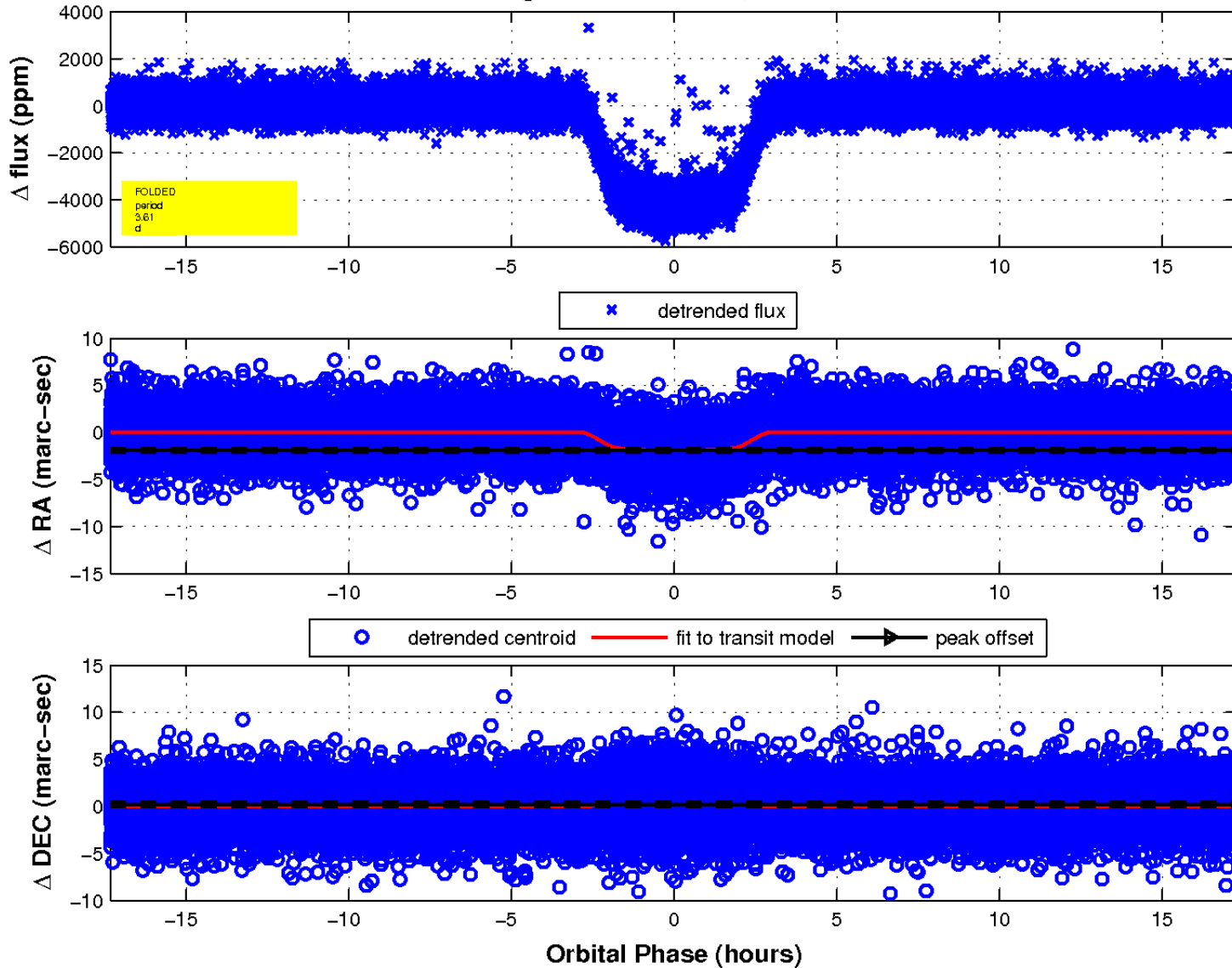




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

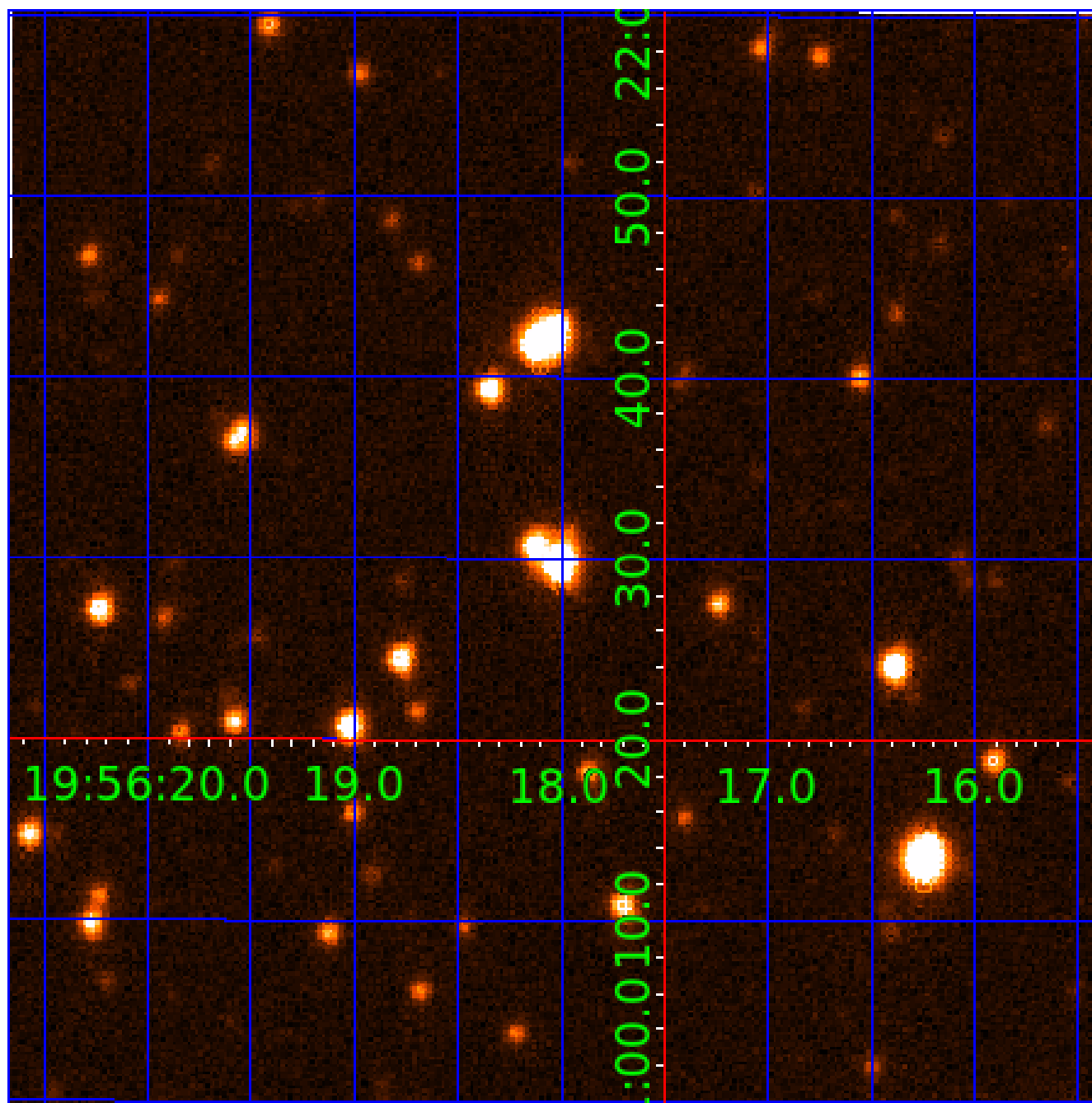


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 005218441

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005218441-01	OBS	0407.01	3.613758	131.671257	4648.7	5.773	492.8	493.2	0.91	5986	6.86	462.29
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005218441-03	OBS	No	3.614484	133.949888	0.0	42.756	8.6	0.0	0.91	5986	0.01	462.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005218441-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

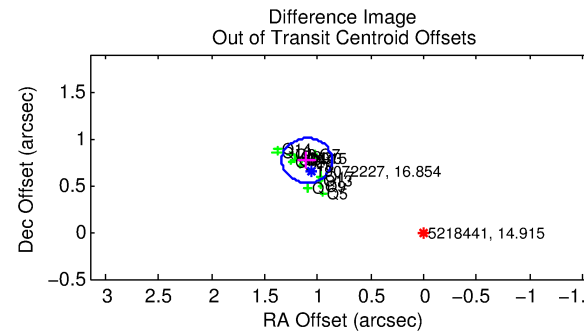
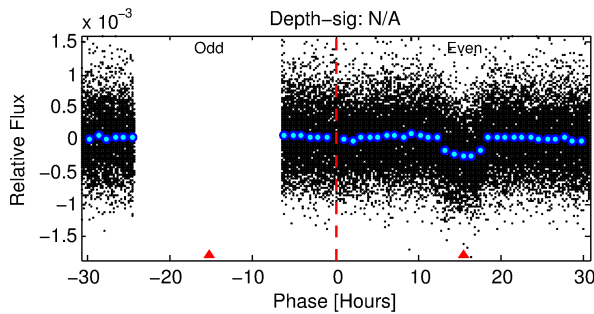
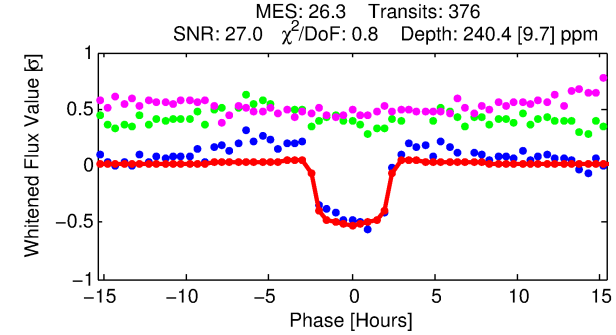
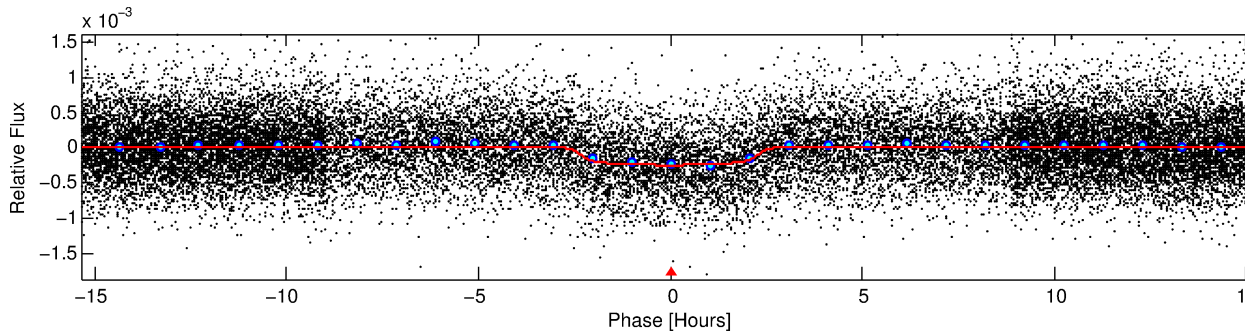
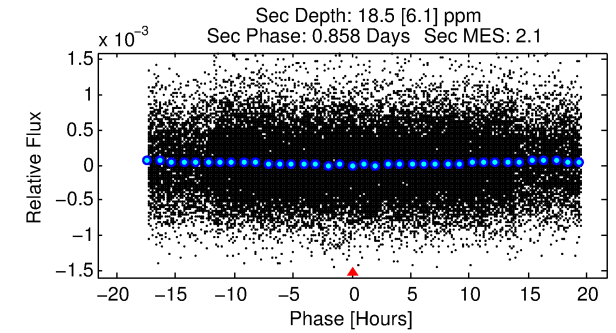
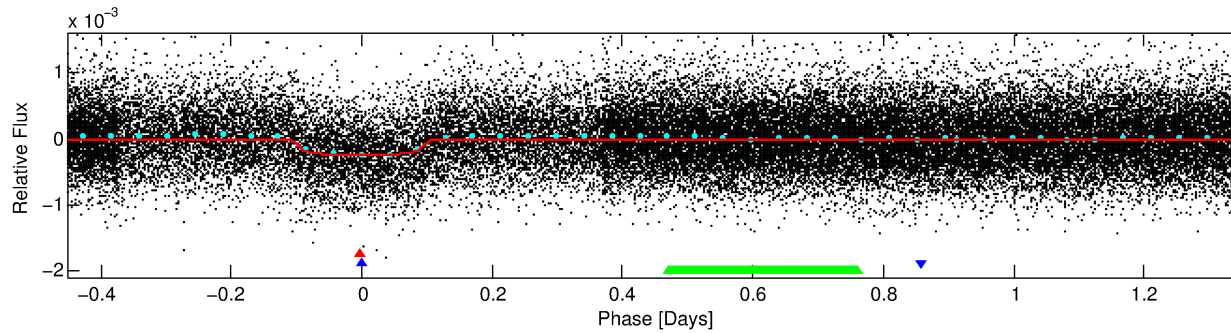
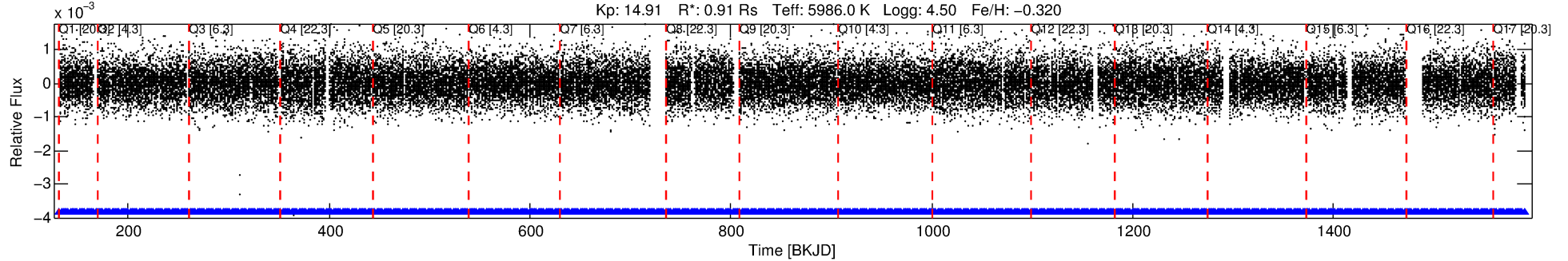
Ephemeris Match Information For 005218441-02

No Significant Match Found

# DV One-Page Summary

KIC: 5218441 Candidate: 2 of 3 Period: 1.807 d  
KOI: K00407 Corr: No Ephemeris Match

Kp: 14.91 R\*: 0.91 Rs Teff: 5986.0 K Logg: 4.50 Fe/H: -0.320



## DV Fit Results:

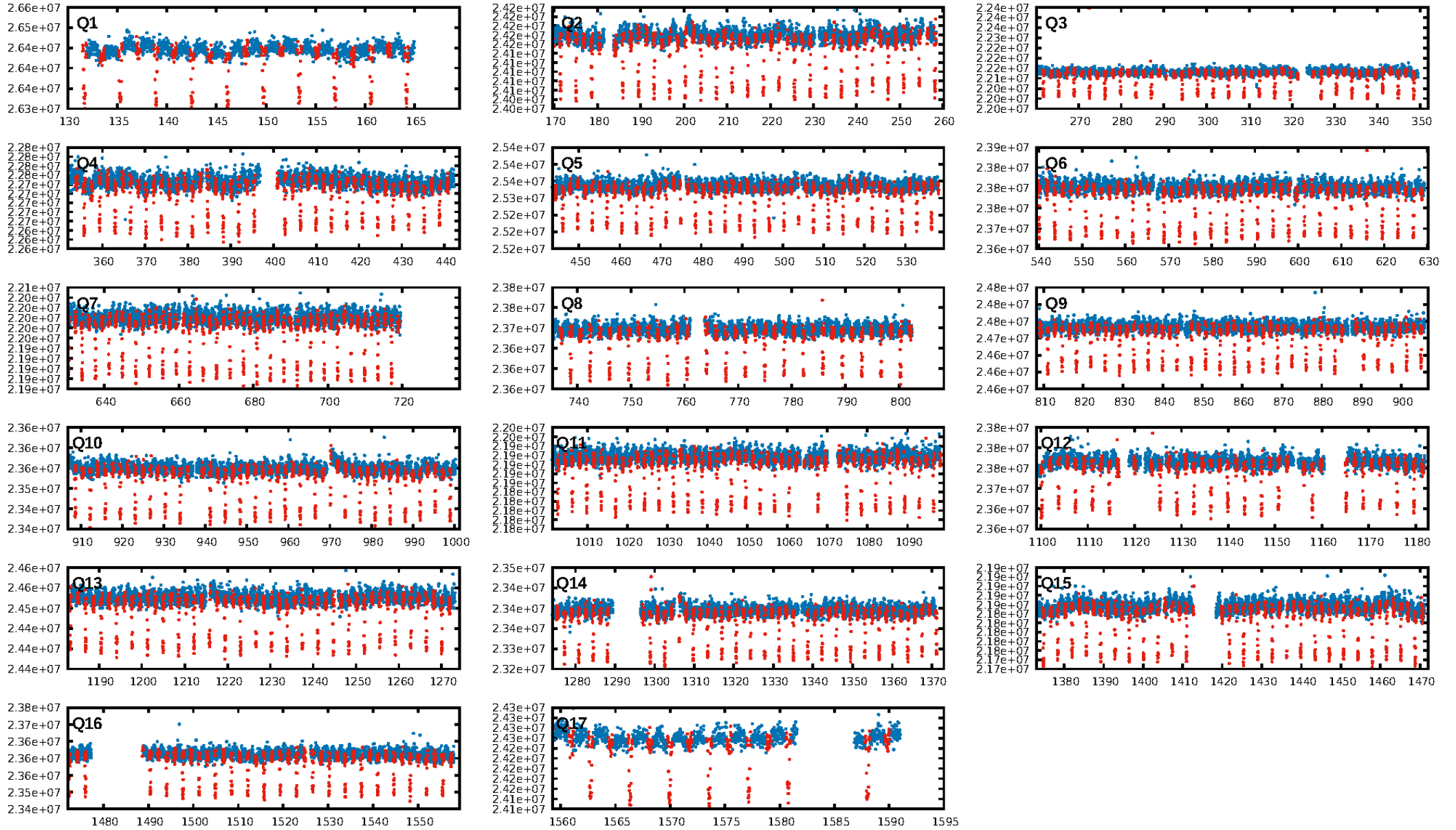
Period = 1.80688 [0.00001] d  
Epoch = 131.6737 [0.0022] BKJD  
Rp/R\* = 0.0167 [0.0016]  
a/R\* = 1.59 [0.47]  
b = 0.90 [0.11]  
Seff = 1164.90 [440.96]  
Teq = 1490 [141] K  
Rp = 1.65 [0.51] Re  
a = 0.0285 [0.0070] AU  
Ag = 3.02 [1.58] [1.28σ]  
Teffp = 3037 [305] K [4.61σ]

## DV Diagnostic Results:

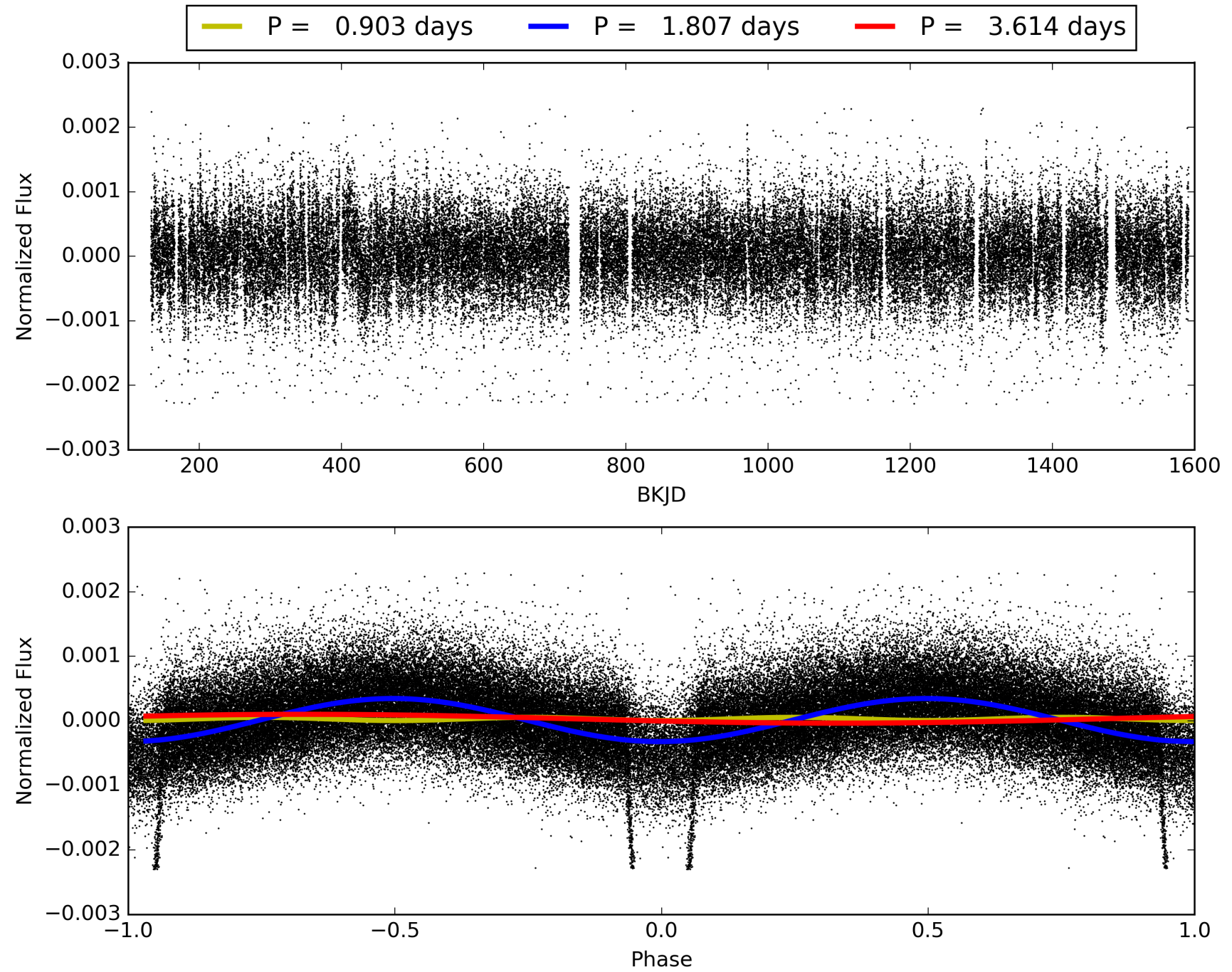
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.62σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [360/360]  
GhostDiagnostic-chr: -4.178  
Centroid-sig: 0.0%  
Centroid-so: 1.524 arcsec [3.62σ]  
OotOffset-rm: 1.344 arcsec [16.96σ]  
KicOffset-rm: 1.251 arcsec [18.06σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]



# TCE 005218441-02, PDC Light Curves

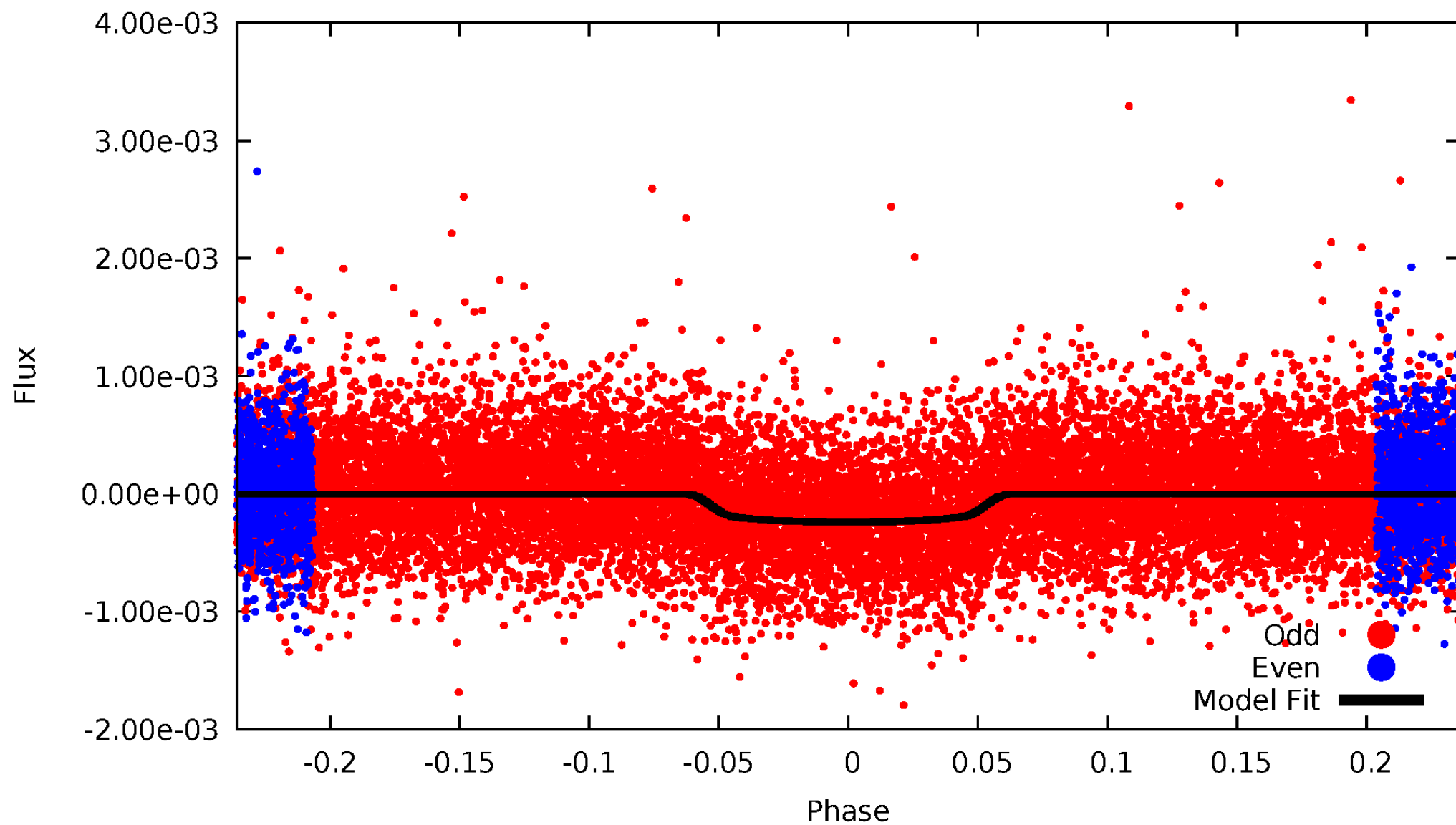


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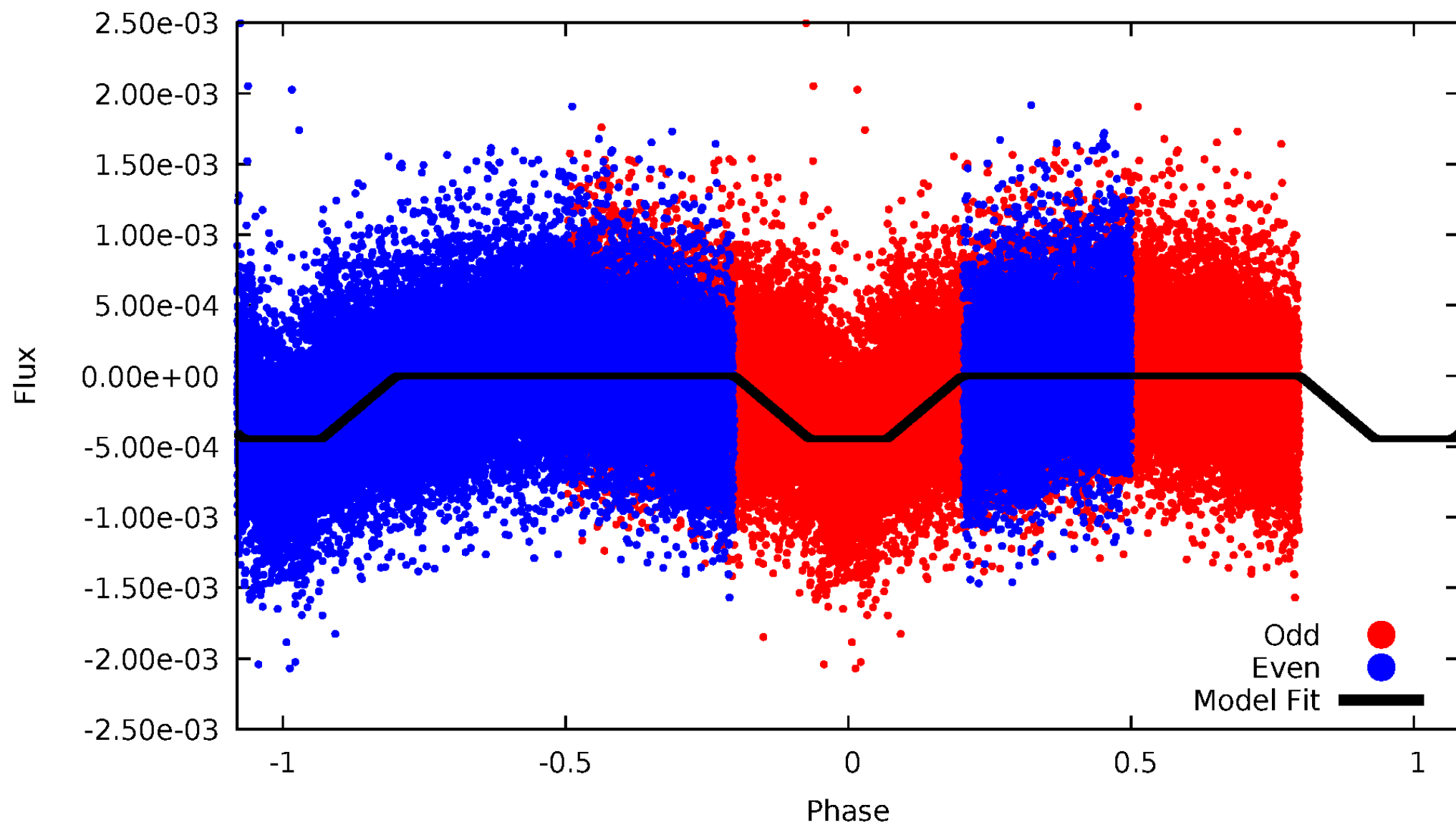
# DV Odd/Even

TCE 005218441-02



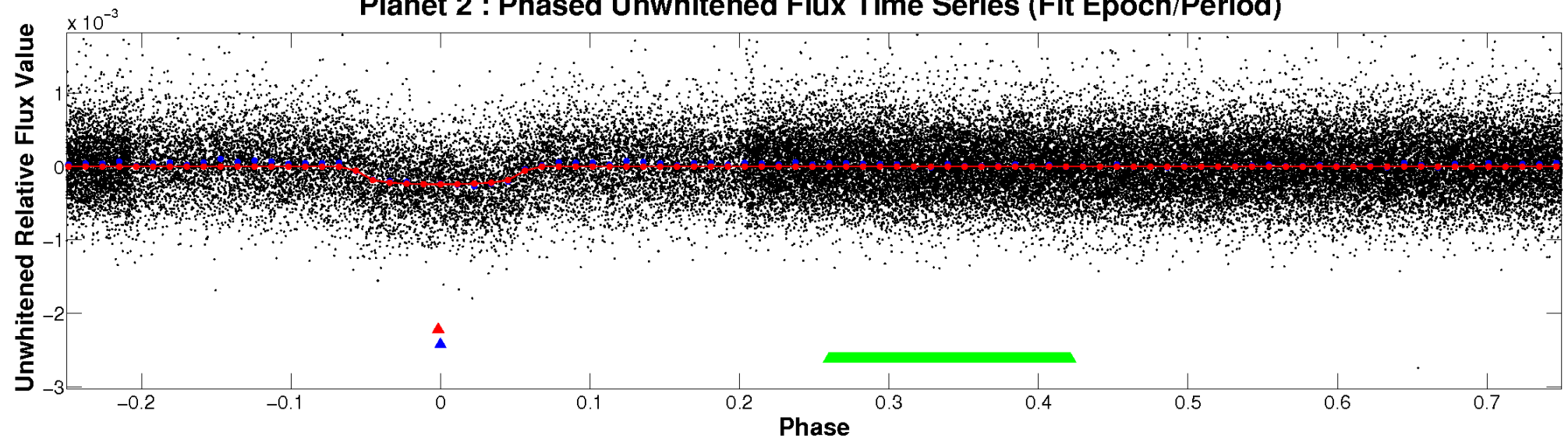
# ALT Odd/Even

TCE 005218441-02

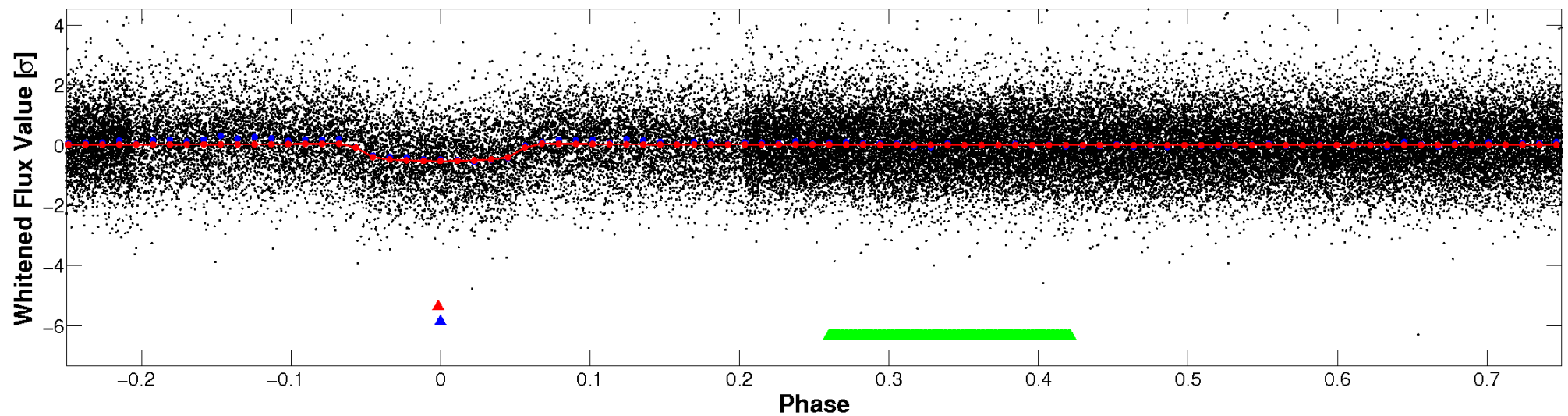


# Non-Whitened Vs. Whitened Light Curve

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



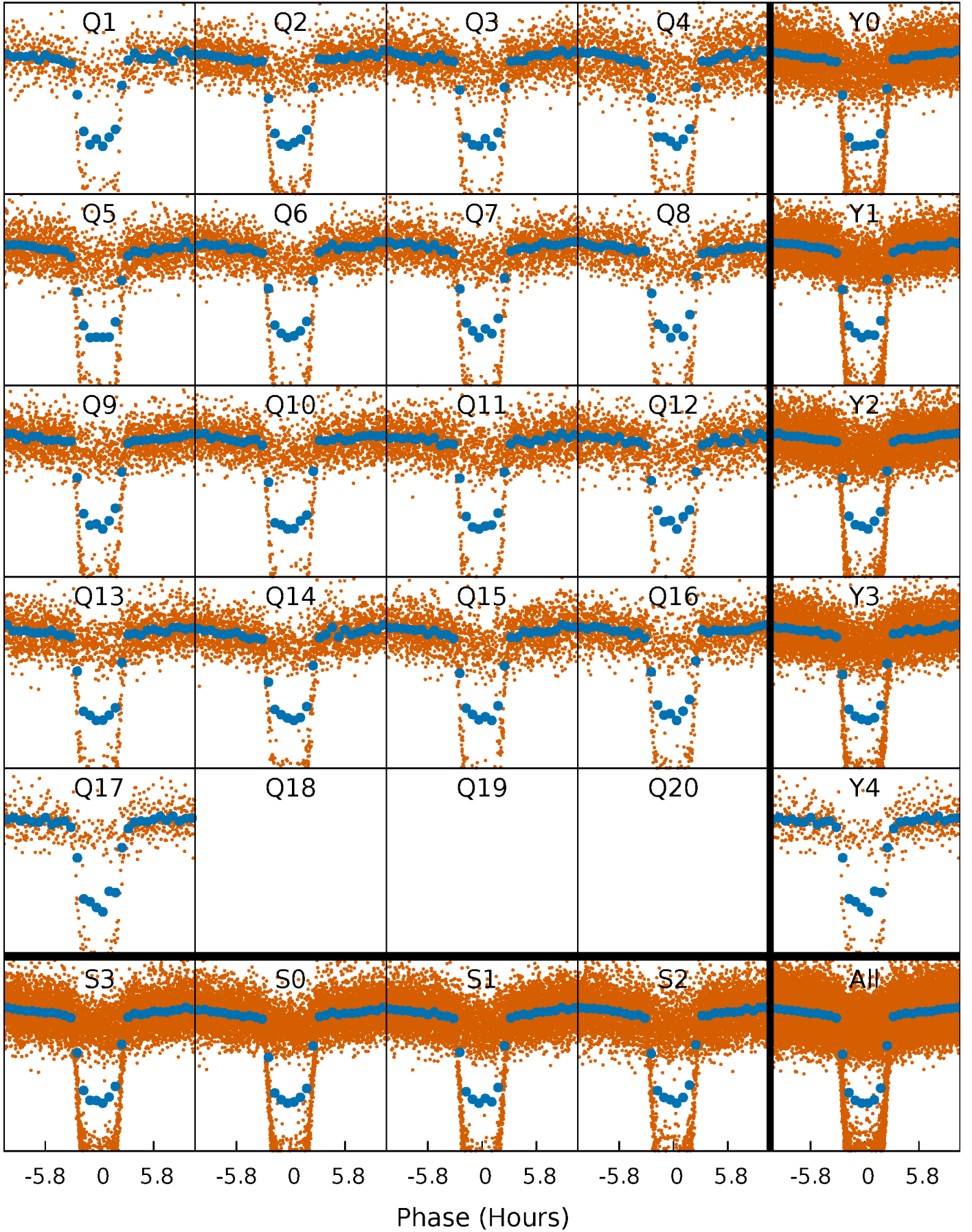
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





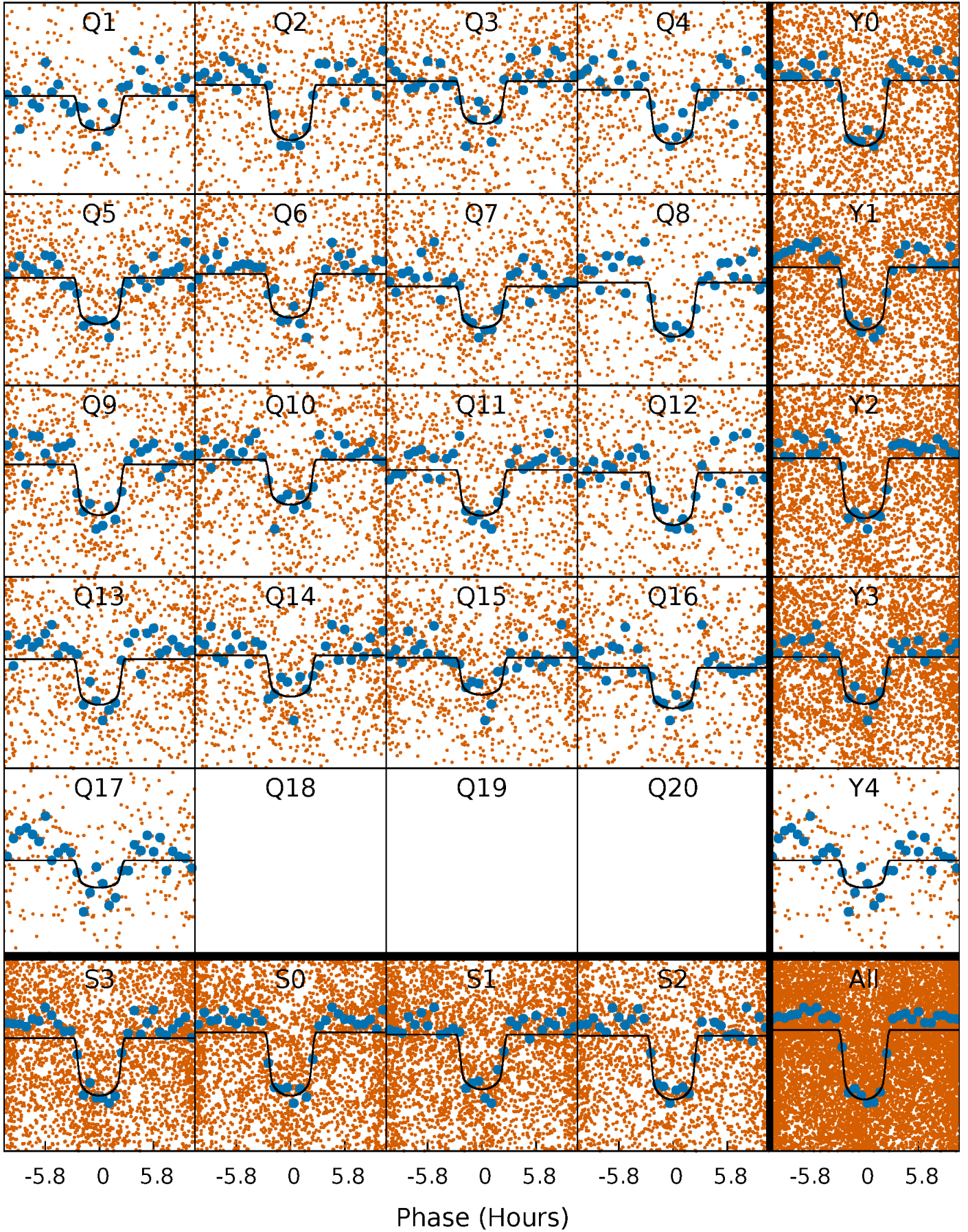
# PDC Quarter-Phased Transit Curves

TCE 005218441-02   P= 1.806880 Days    $T_0=131.673657$  (BKJD)



# DV Quarter-Phased Transit Curves

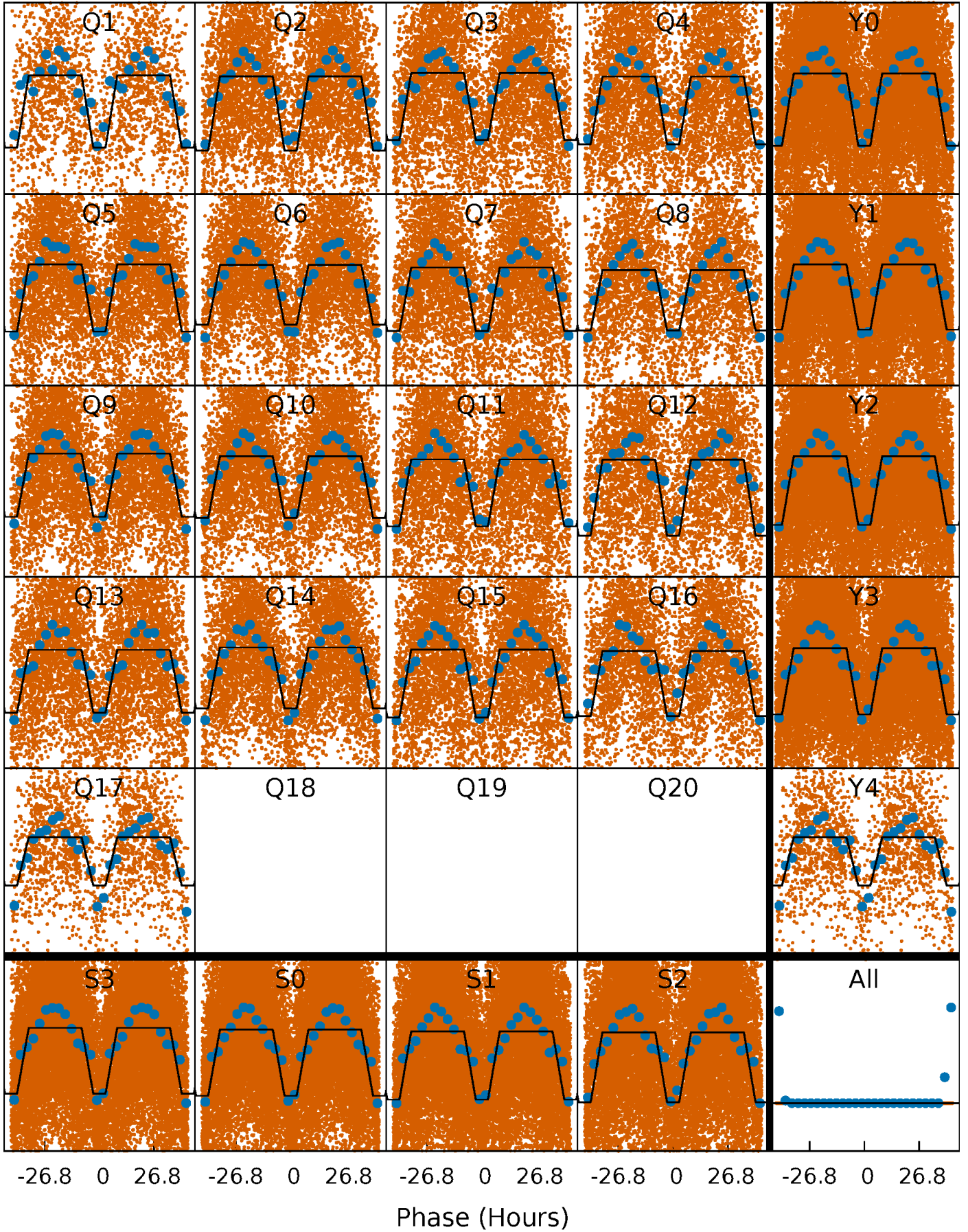
TCE 005218441-02   P= 1.806880 Days    $T_0=131.673657$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

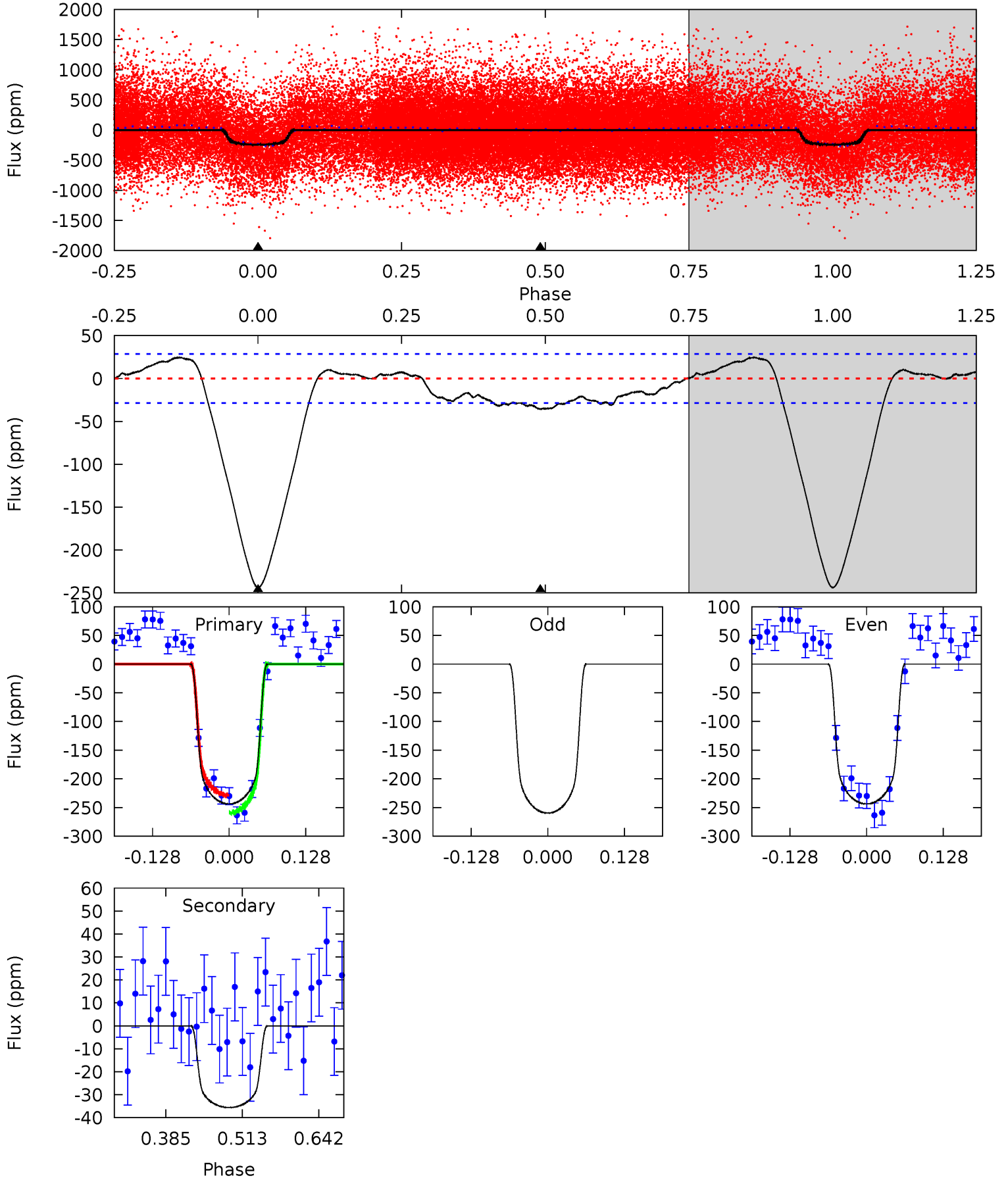
TCE 005218441-02   P= 1.806895 Days    $T_0=131.663818$  (BKJD)



# DV Model-Shift Uniqueness Test

005218441-02, P = 1.806880 Days, E = 131.673657 Days

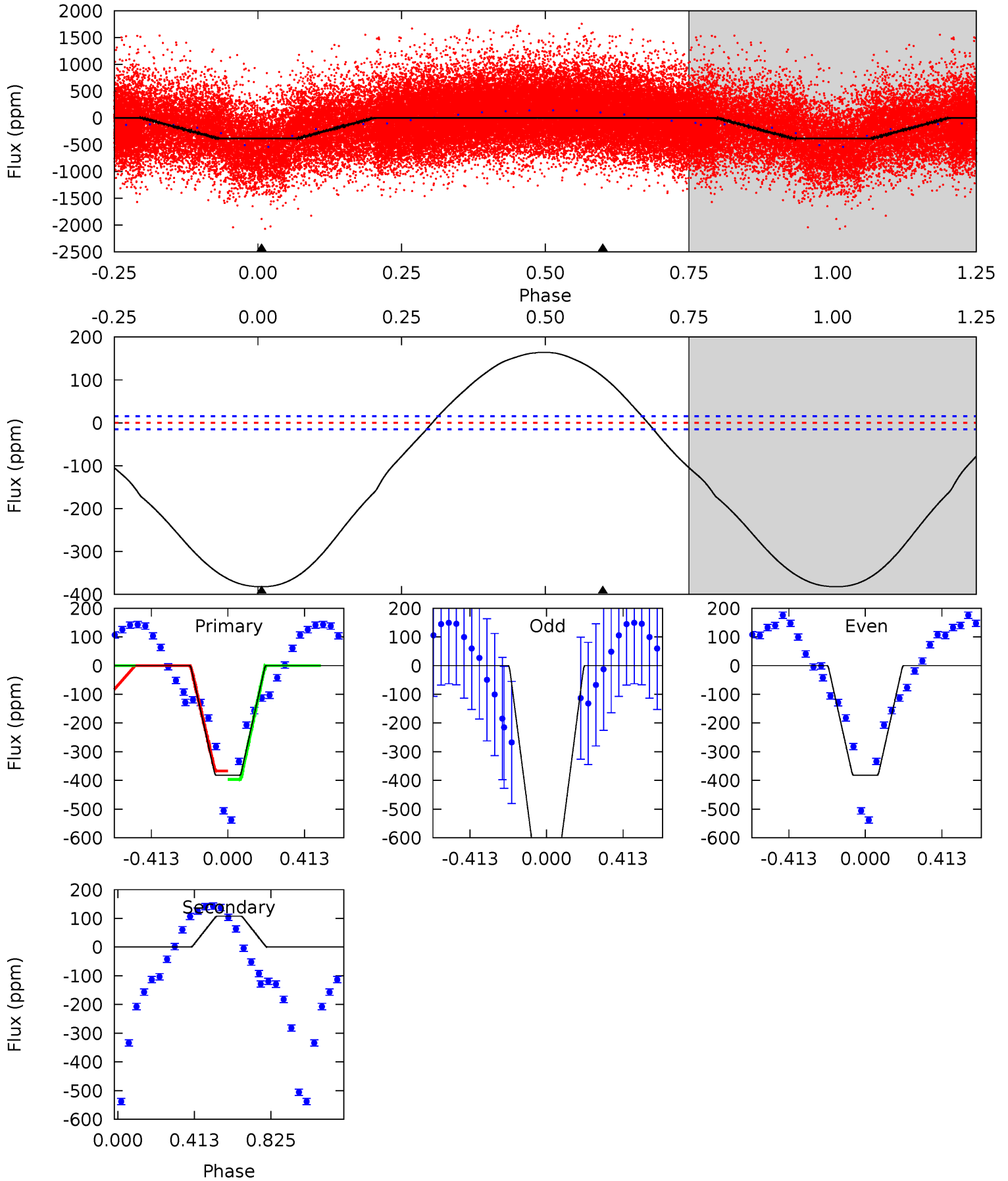
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.5	5.62	0	0	4.51	1.52	2.09	38.5	38.5	5.62	5.62	1.46	1.02	0.09	2.45



# Alt Model-Shift Uniqueness Test

005218441-02, P = 1.806895 Days, E = 131.663818 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
107.5	-30.3	0	0	4.26	0.82	9.63	107.5	107.5	-30.3	-30.3	6.43	1.07	0.30	3.96



### Stellar Parameters For KIC 005218441

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5986^{+168}_{-189}$	$4.498^{+0.065}_{-0.195}$	$-0.320^{+0.300}_{-0.300}$	$0.906^{+0.264}_{-0.094}$	$0.942^{+0.117}_{-0.117}$	$1.786^{+0.478}_{-0.902}$
	+3%/-3%	+1%/-4%	+94%/-94%	+29%/-10%	+12%/-12%	+27%/-51%
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 005218441-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-36 \pm 6$	$1.70^{+0.27}_{-0.22}$	$2118^{+149}_{-107}$	$3874^{+211}_{-209}$	$5.325^{+2.045}_{-1.551}$
Alt.	$108 \pm 4$	$2.15^{+0.34}_{-0.24}$	$2106^{+153}_{-101}$	$-4419^{+166}_{-182}$	$-10.291^{+2.520}_{-2.694}$

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

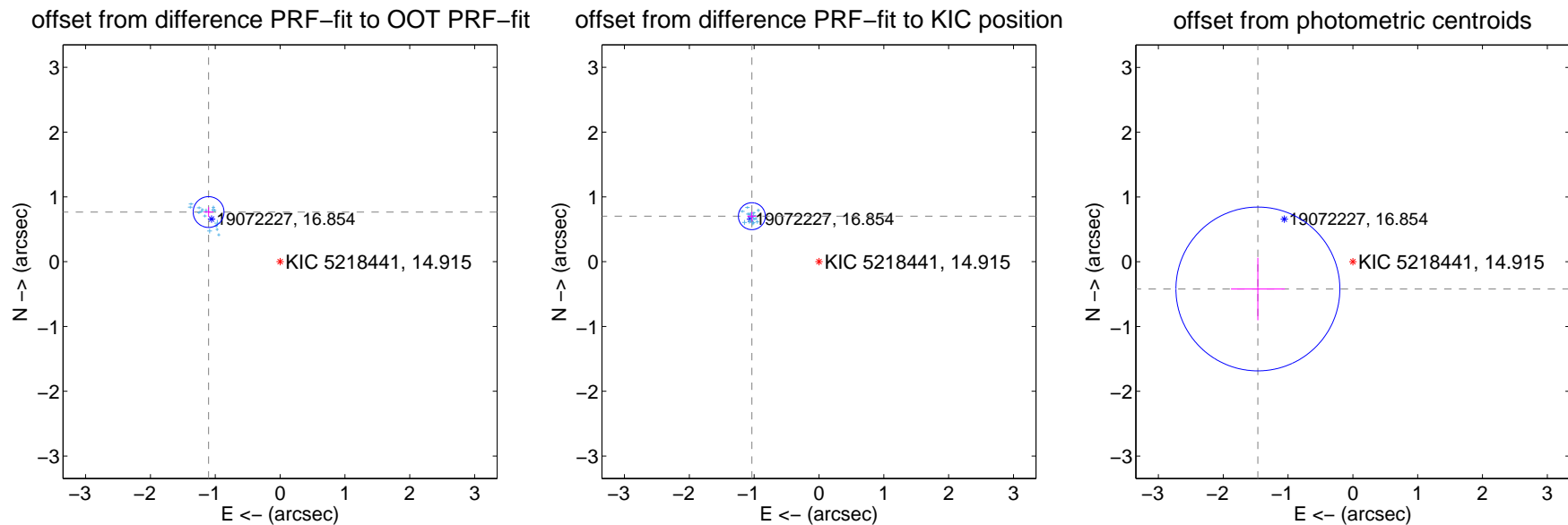
## DV Centroid Data

Supplemental centroid analysis for 005218441-02. Kepler magnitude: 14.91. Transit SNR 26.96

There are 17 quarters with good PRF difference image offsets

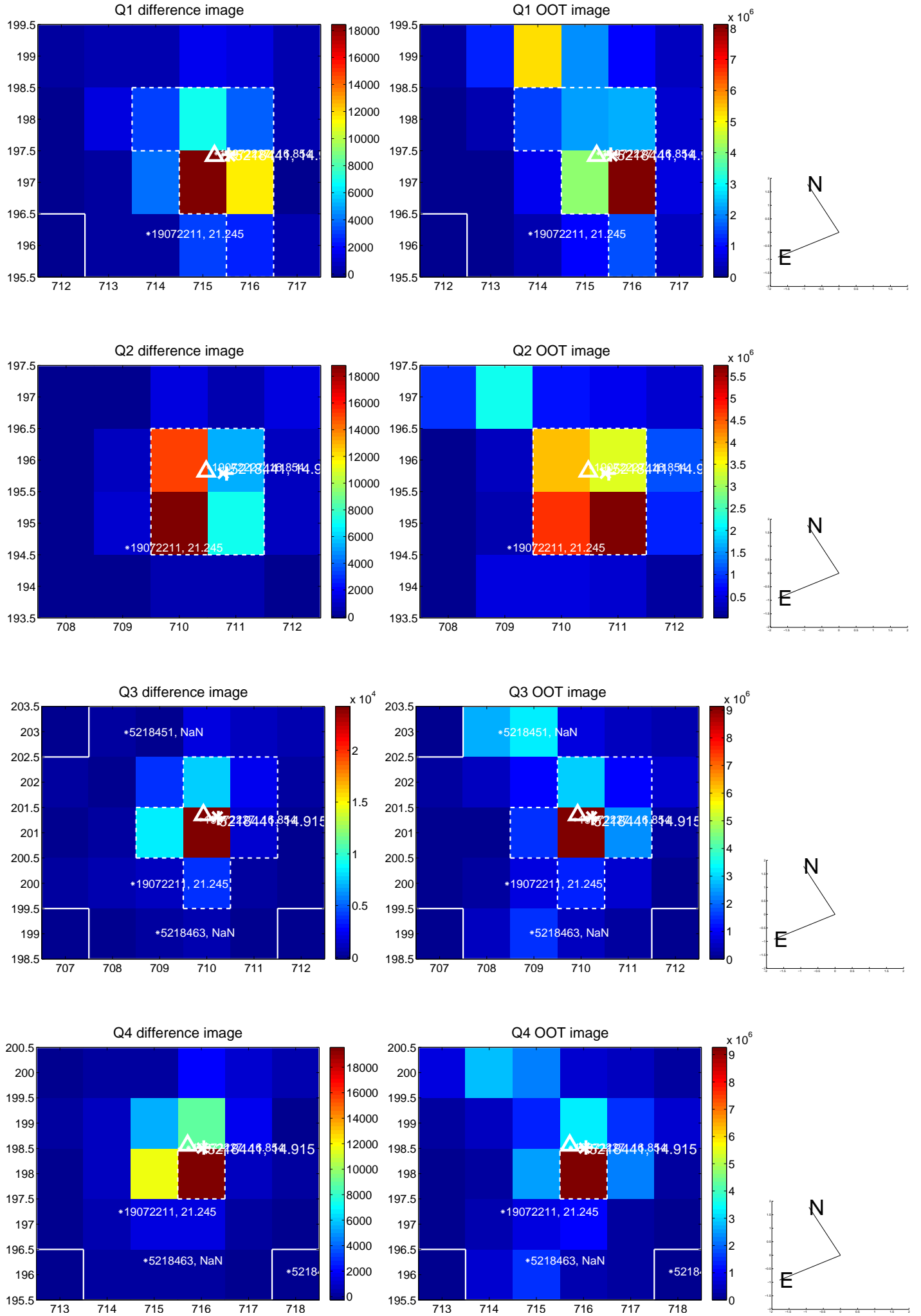
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.344 \pm 0.079$	<b>16.96</b>	$1.103 \pm 0.074$	$0.767 \pm 0.075$
PRF-fit source offset from KIC position	$1.251 \pm 0.069$	<b>18.06</b>	$1.036 \pm 0.069$	$0.703 \pm 0.069$
photometric centroid source offset	$1.52 \pm 0.42$	<b>3.62</b>	$1.47 \pm 0.42$	$-0.42 \pm 0.48$



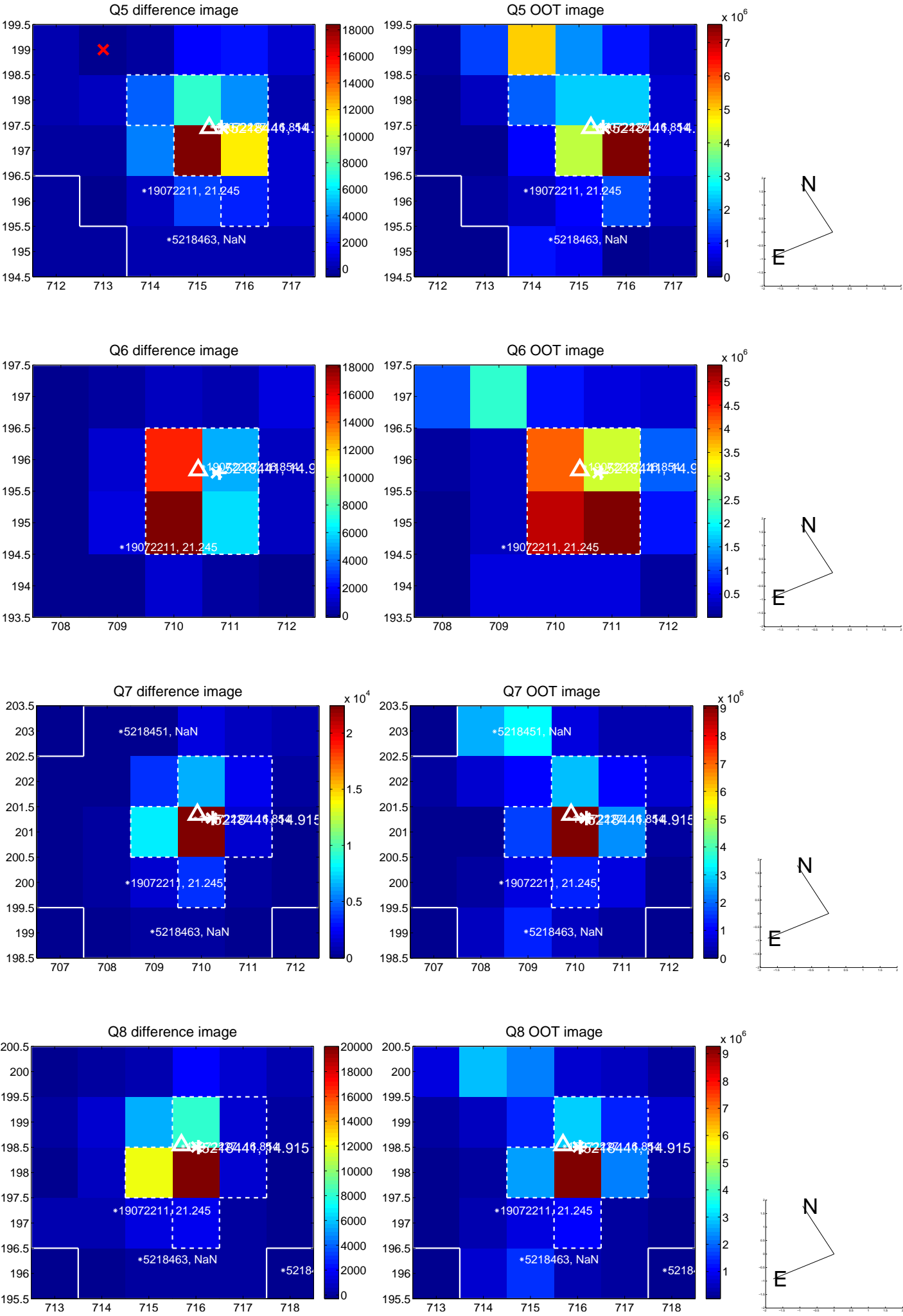
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

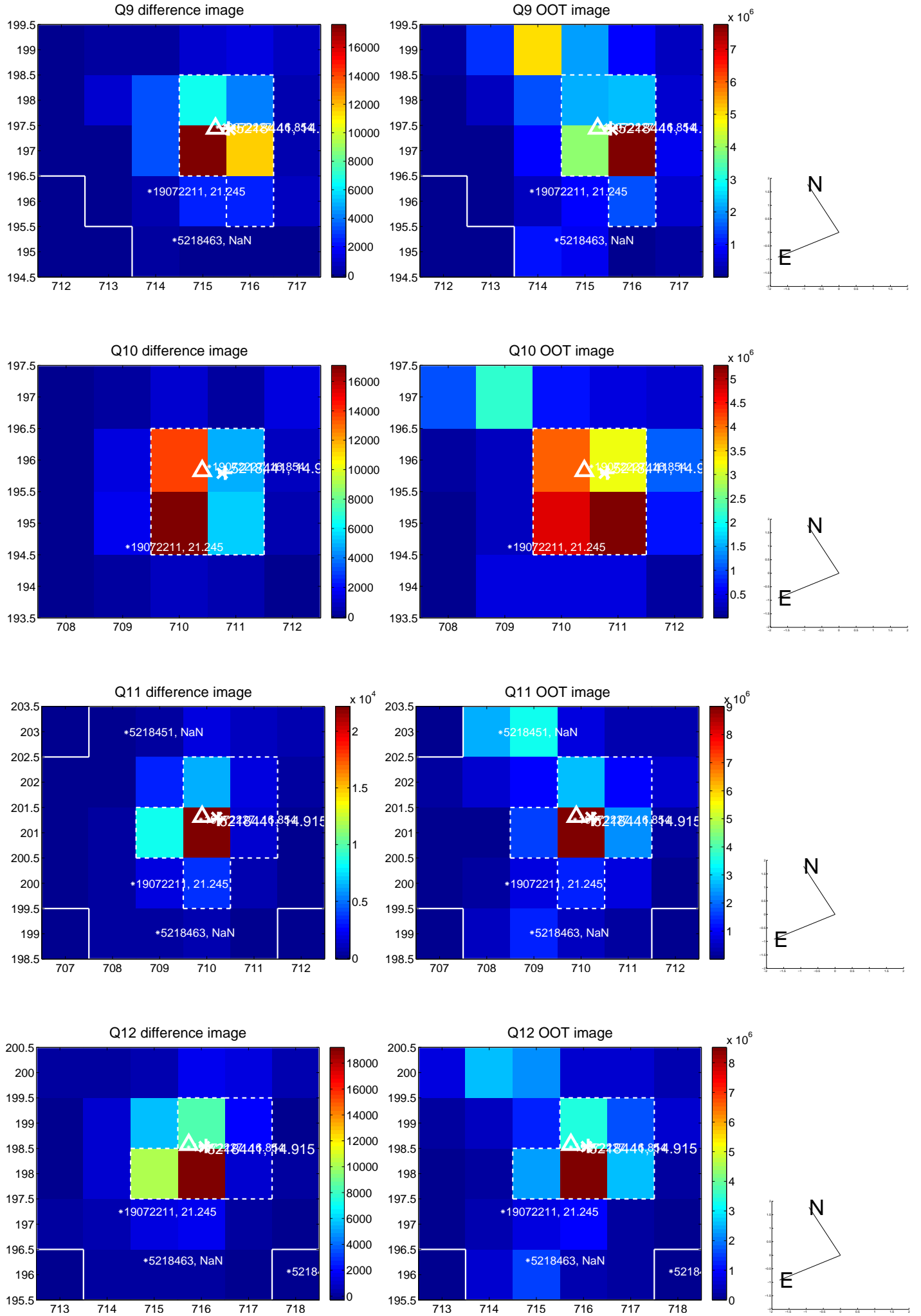




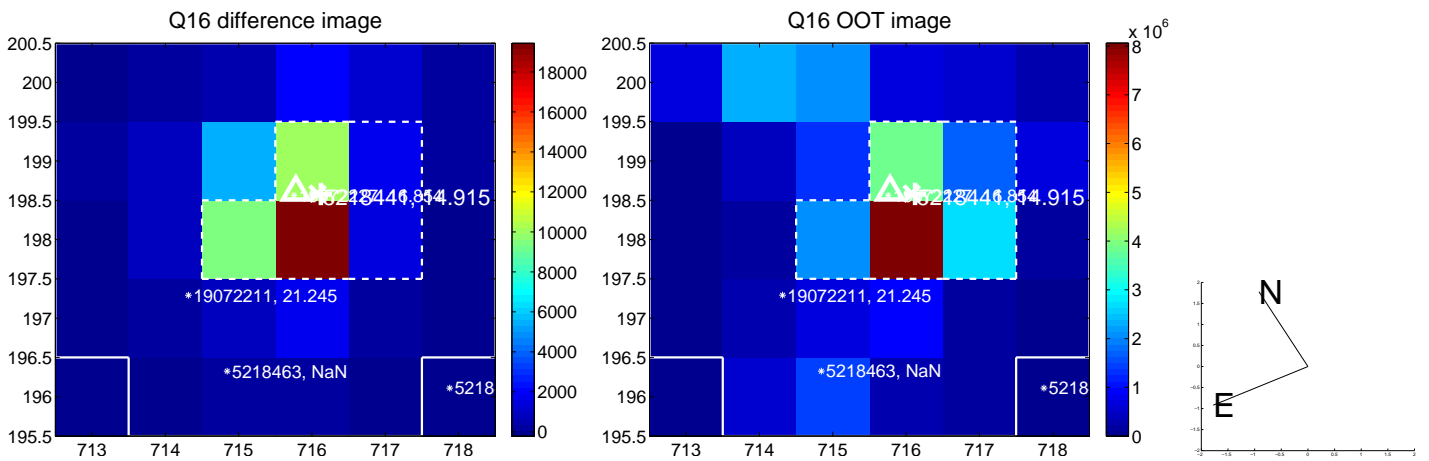
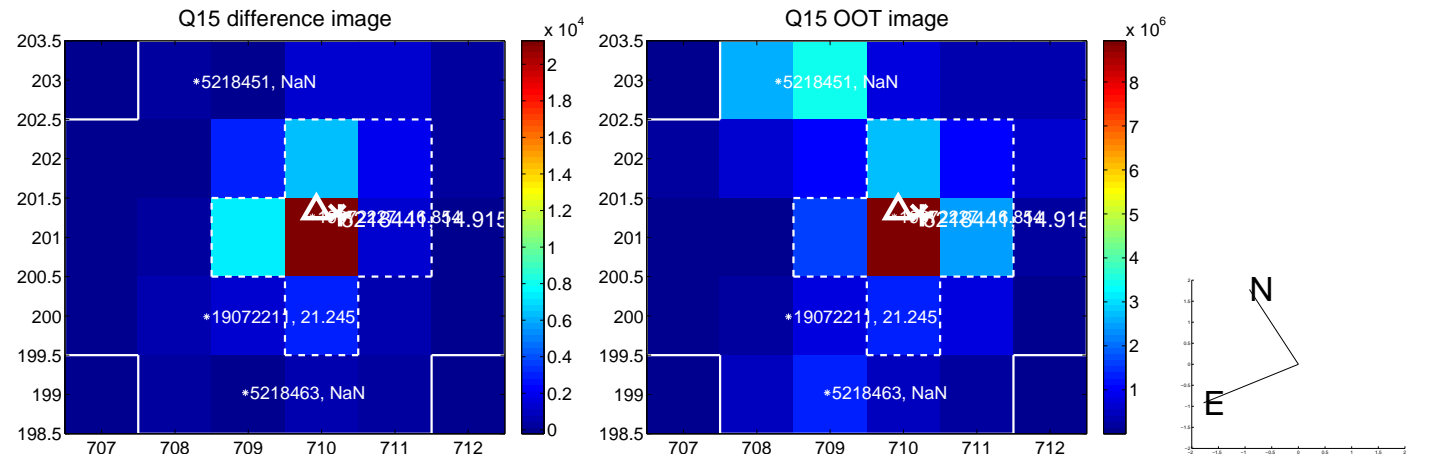
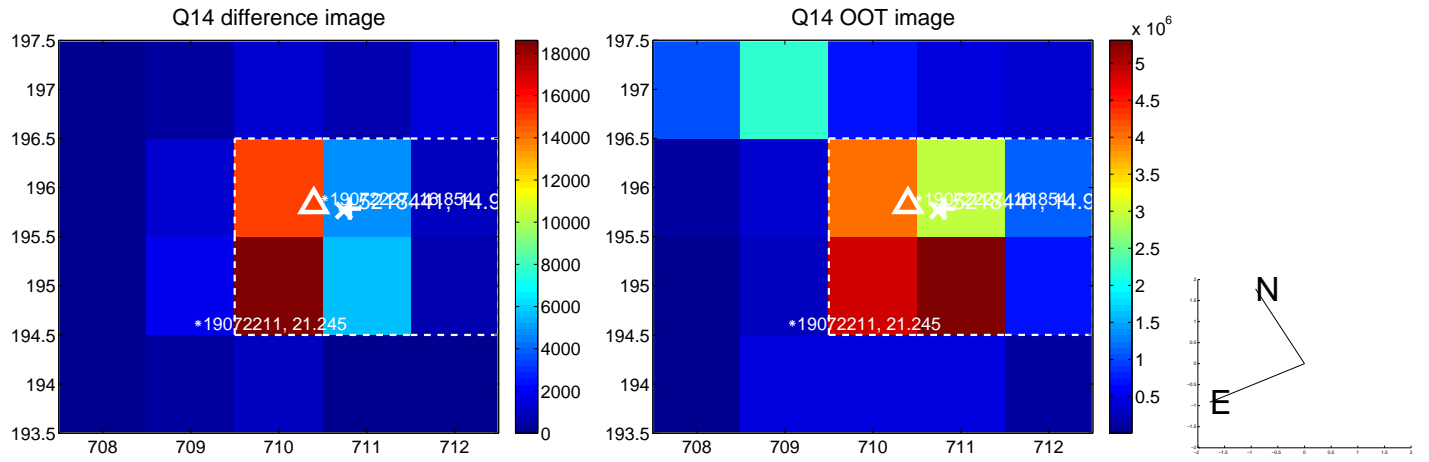
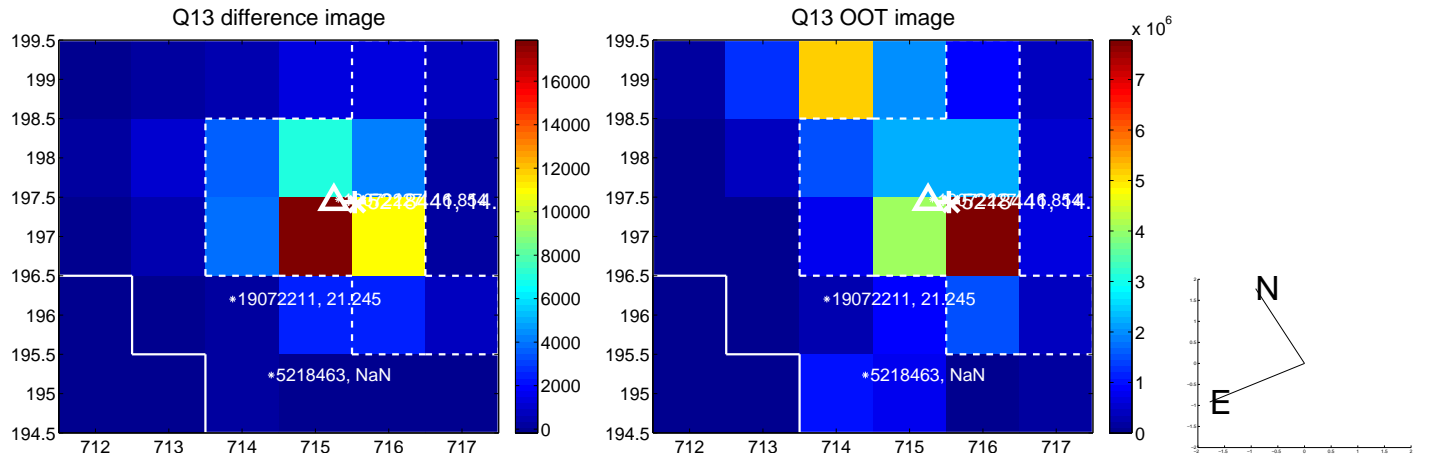
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



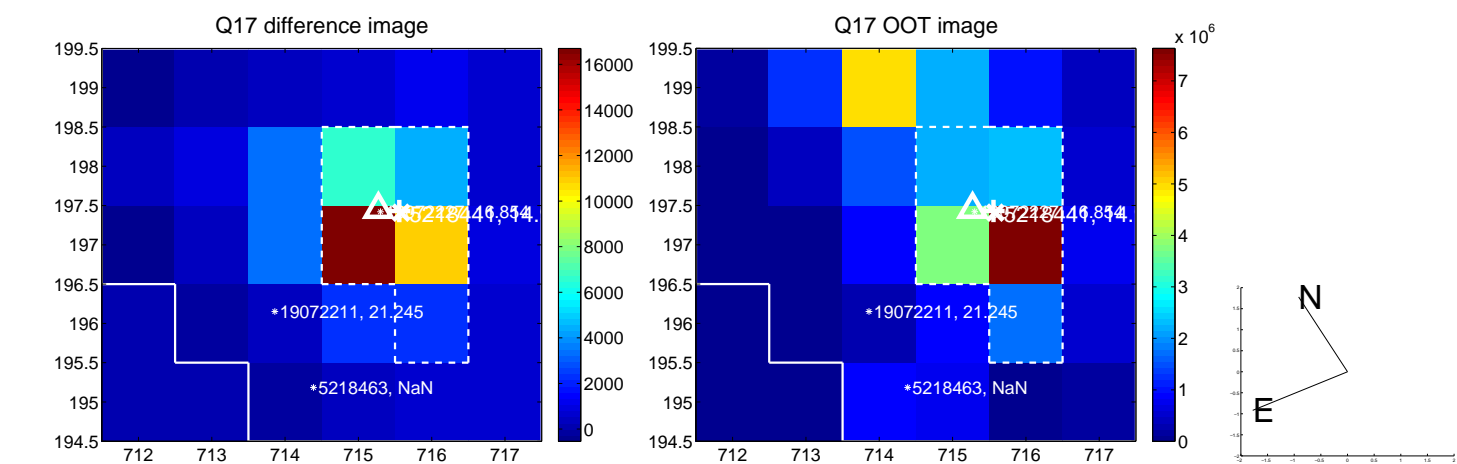
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



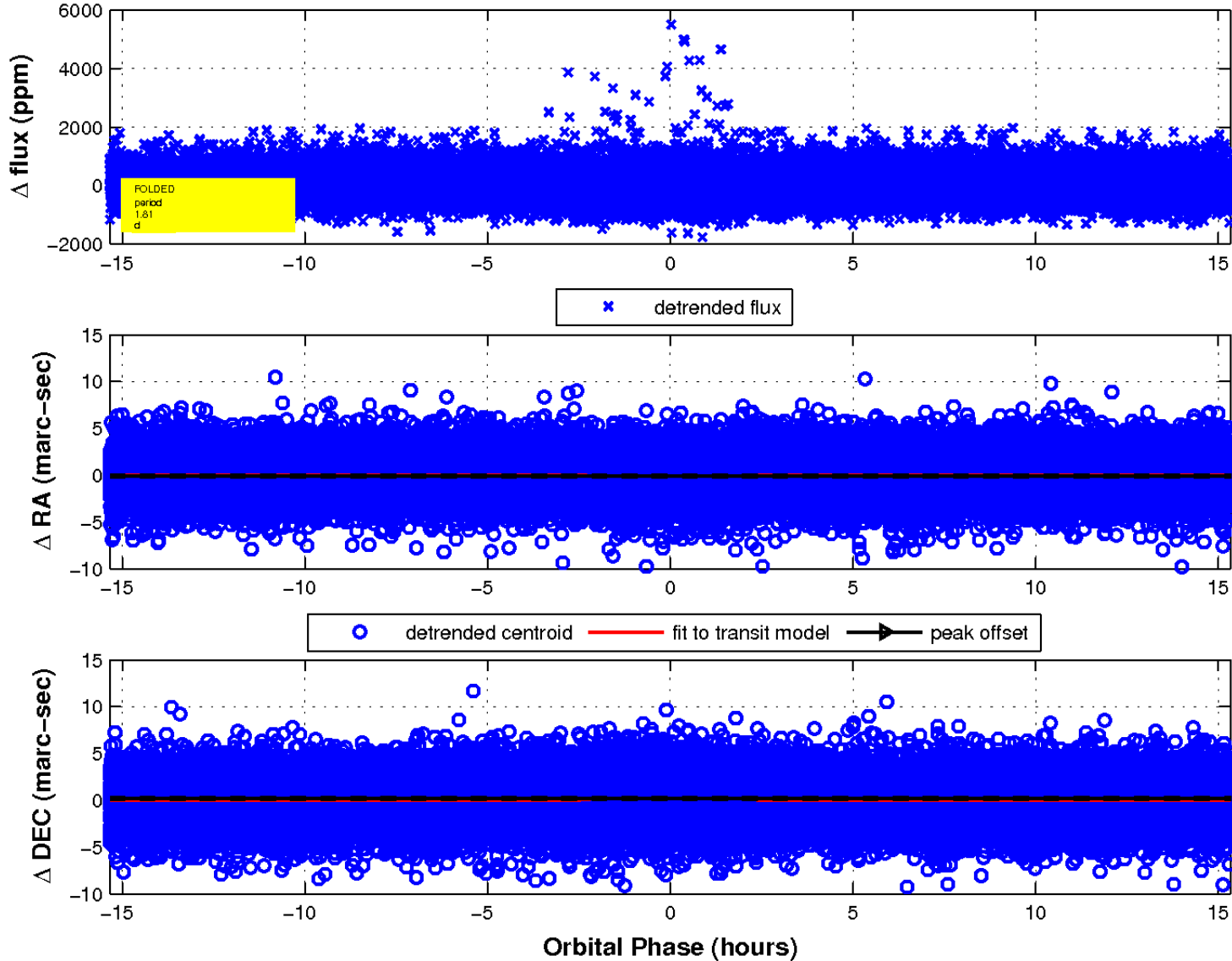
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

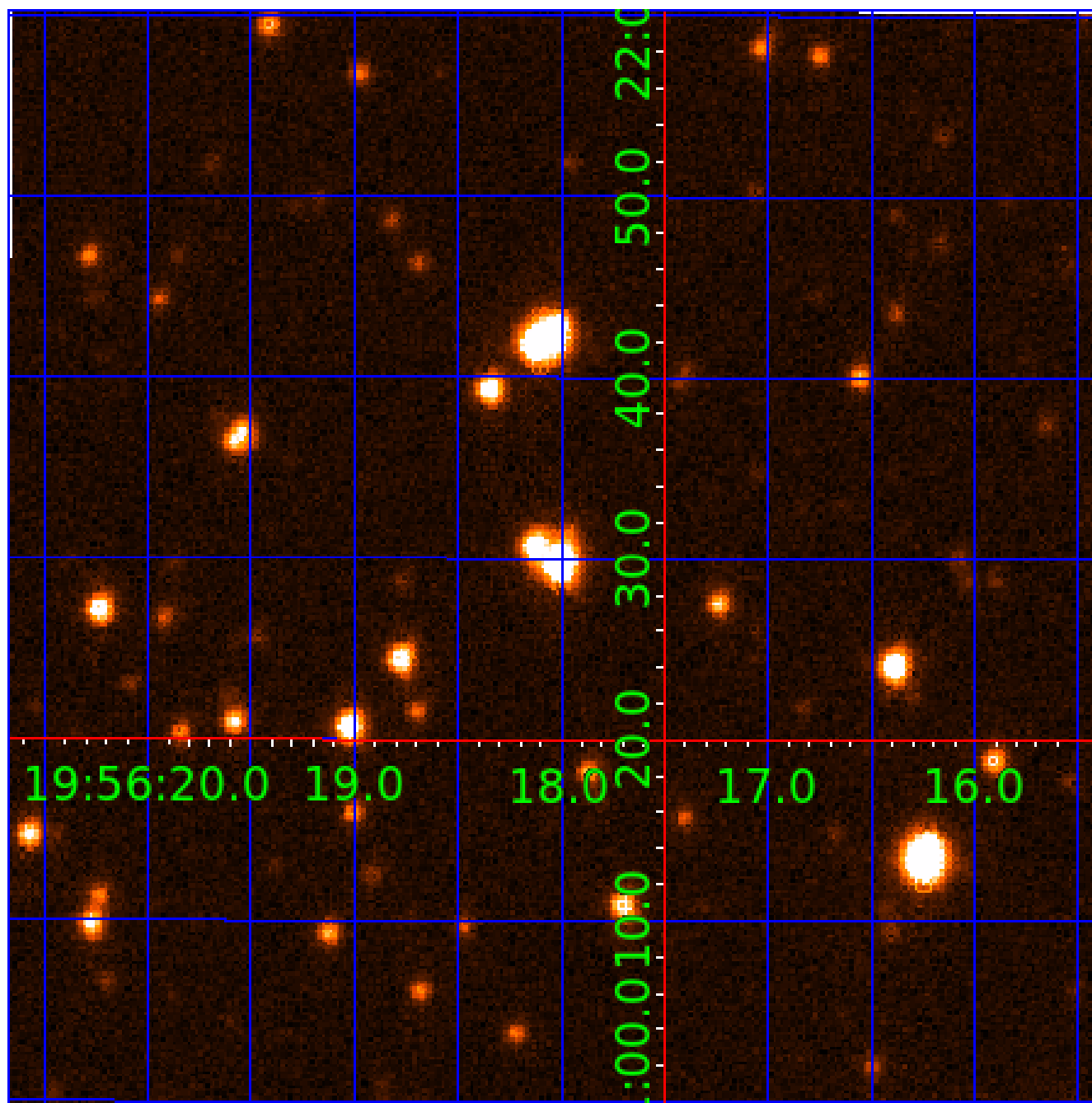


### fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 005218441

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005218441-01	OBS	0407.01	3.613758	131.671257	4648.7	5.773	492.8	493.2	0.91	5986	6.86	462.29
005218441-02	OBS	No	1.806880	131.673657	240.4	5.114	26.3	27.0	0.91	5986	1.65	1164.90
005218441-03	OBS	No	3.614484	133.949888	0.0	42.756	8.6	0.0	0.91	5986	0.01	462.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005218441-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005218441-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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 005218441-03

No Significant Match Found

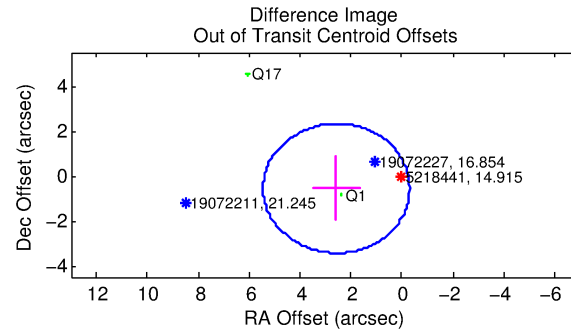
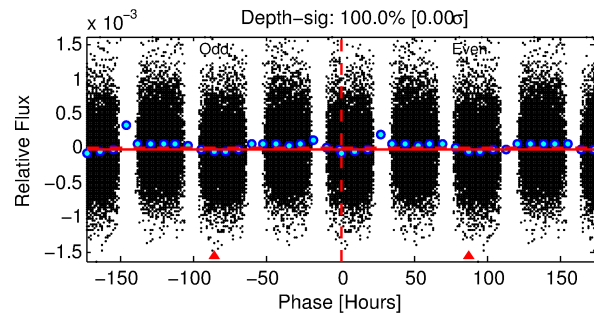
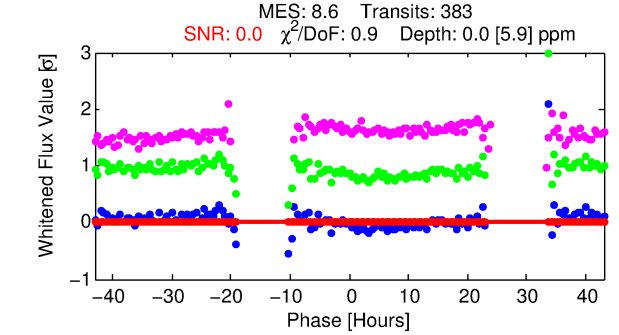
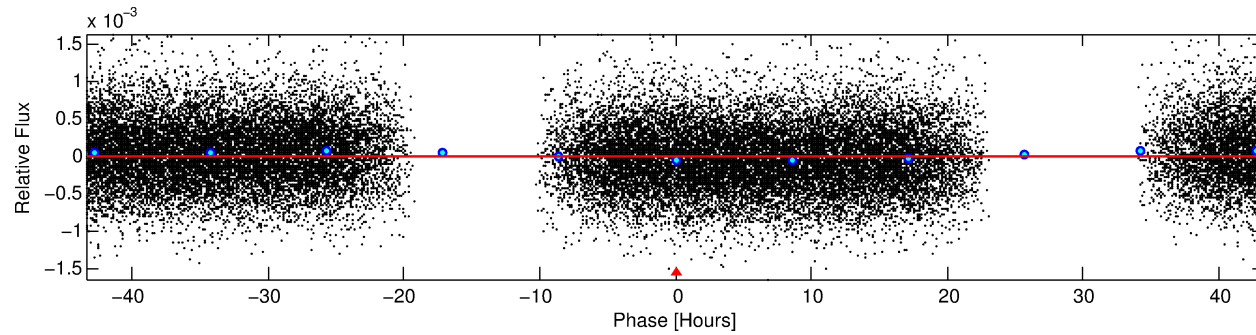
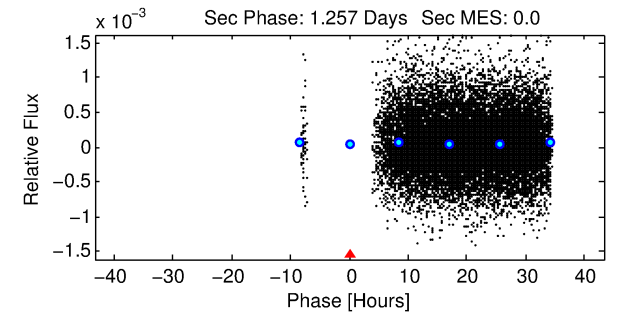
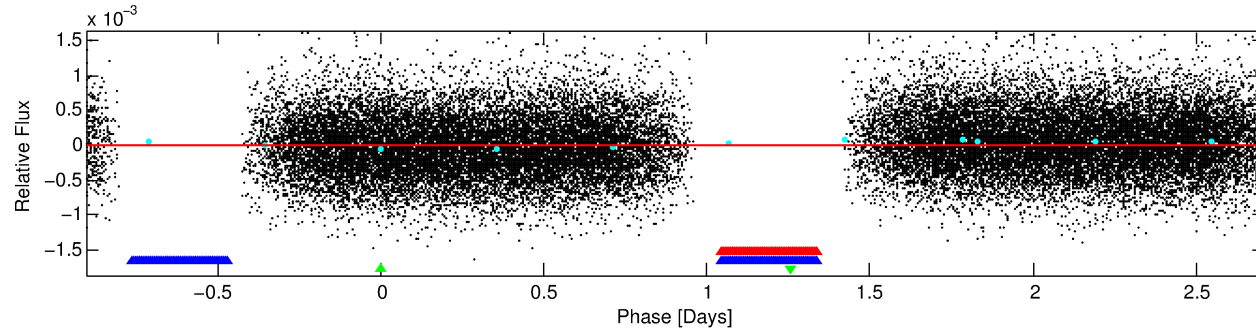
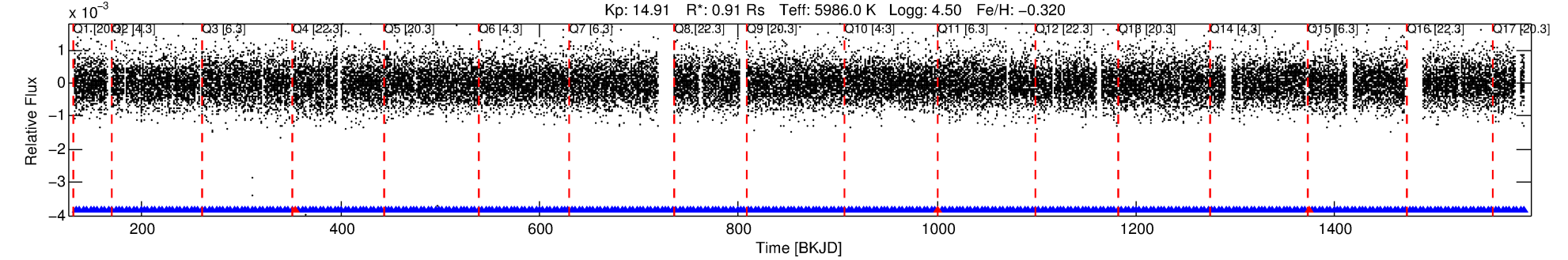


# DV One-Page Summary

KIC: 5218441 Candidate: 3 of 3 Period: 3.614 d

KOI: K00407 Corr: No Ephemeris Match

Kp: 14.91 R\*: 0.91 Rs Teff: 5986.0 K Logg: 4.50 Fe/H: -0.320



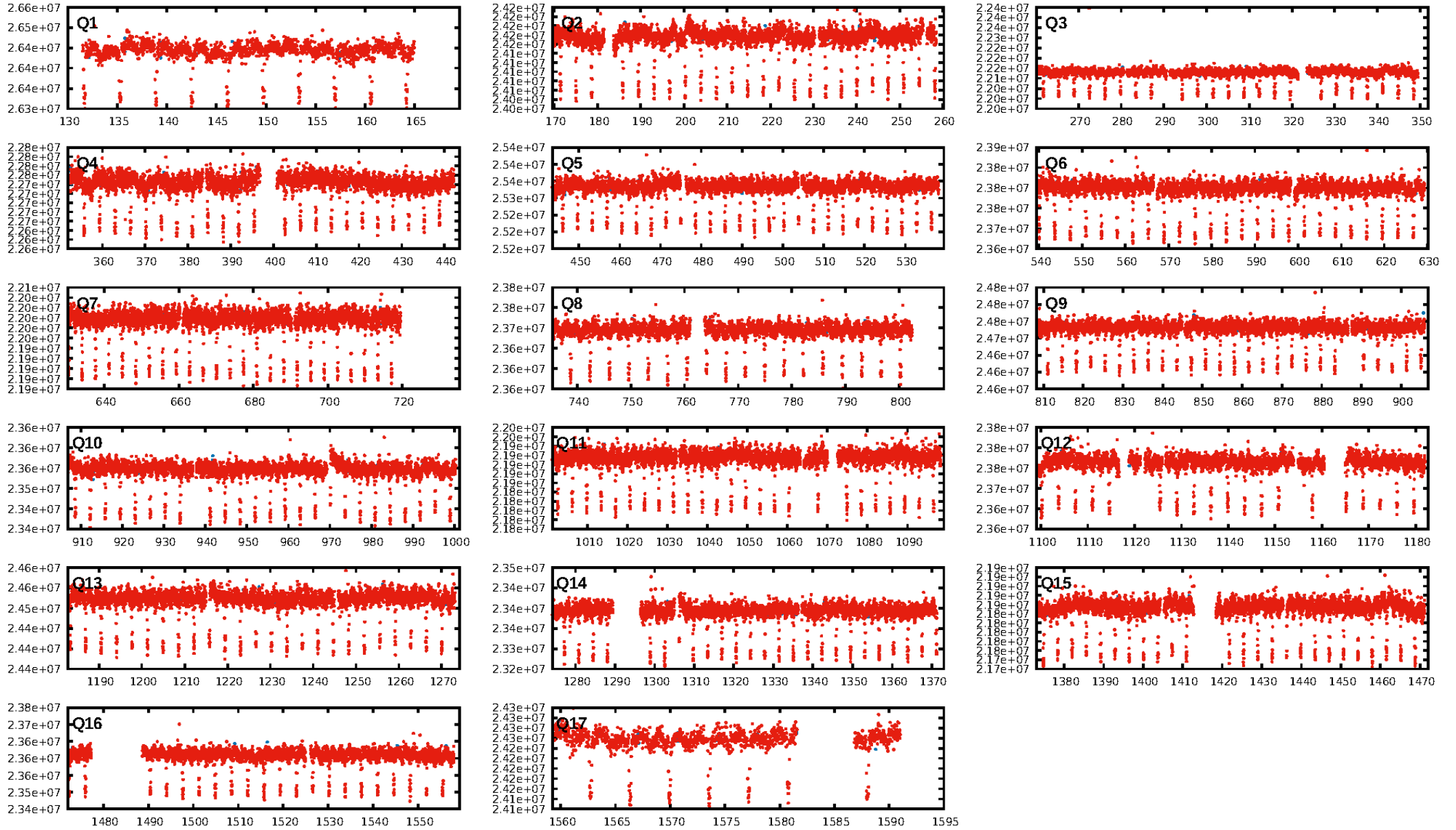
## DV Fit Results:

Period = 3.61448 [1.27801] d  
Epoch = 133.9499 [91.1814] BKJD  
Rp/R\* = 0.0002 [0.1729]  
a/R\* = 1.00 [4.51]  
b = 0.04 [126557.50]  
Seff = 462.17 [279.43]  
Teff = 1182 [179] K  
Rp = 0.02 [17.09] Re  
a = 0.0452 [0.0154] AU  
Ag = N/A  
Teffp = N/A

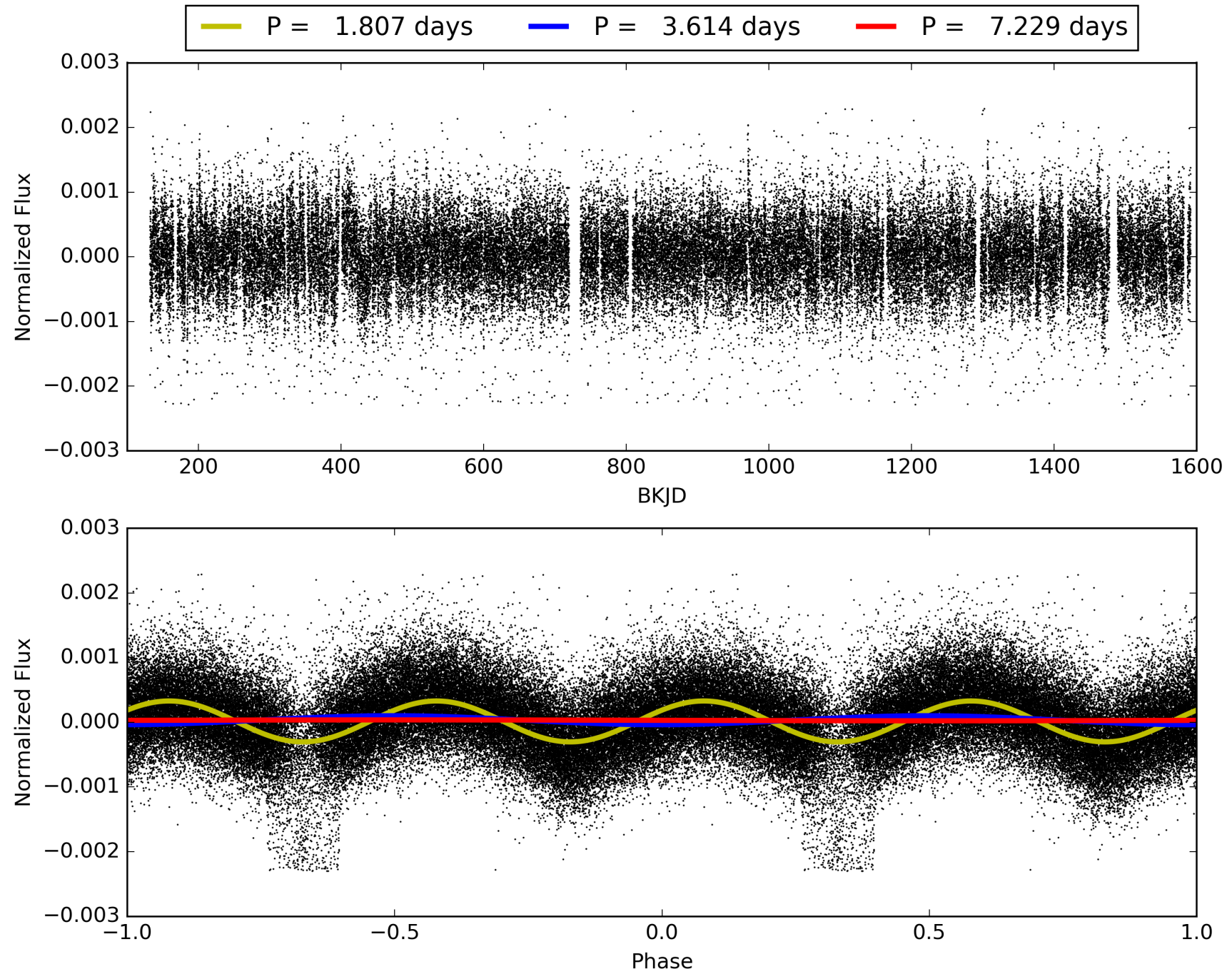
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [363/366]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 2.626 arcsec [2.73σ]  
KicOffset-rm: 2.638 arcsec [1.63σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 005218441-03, PDC Light Curves

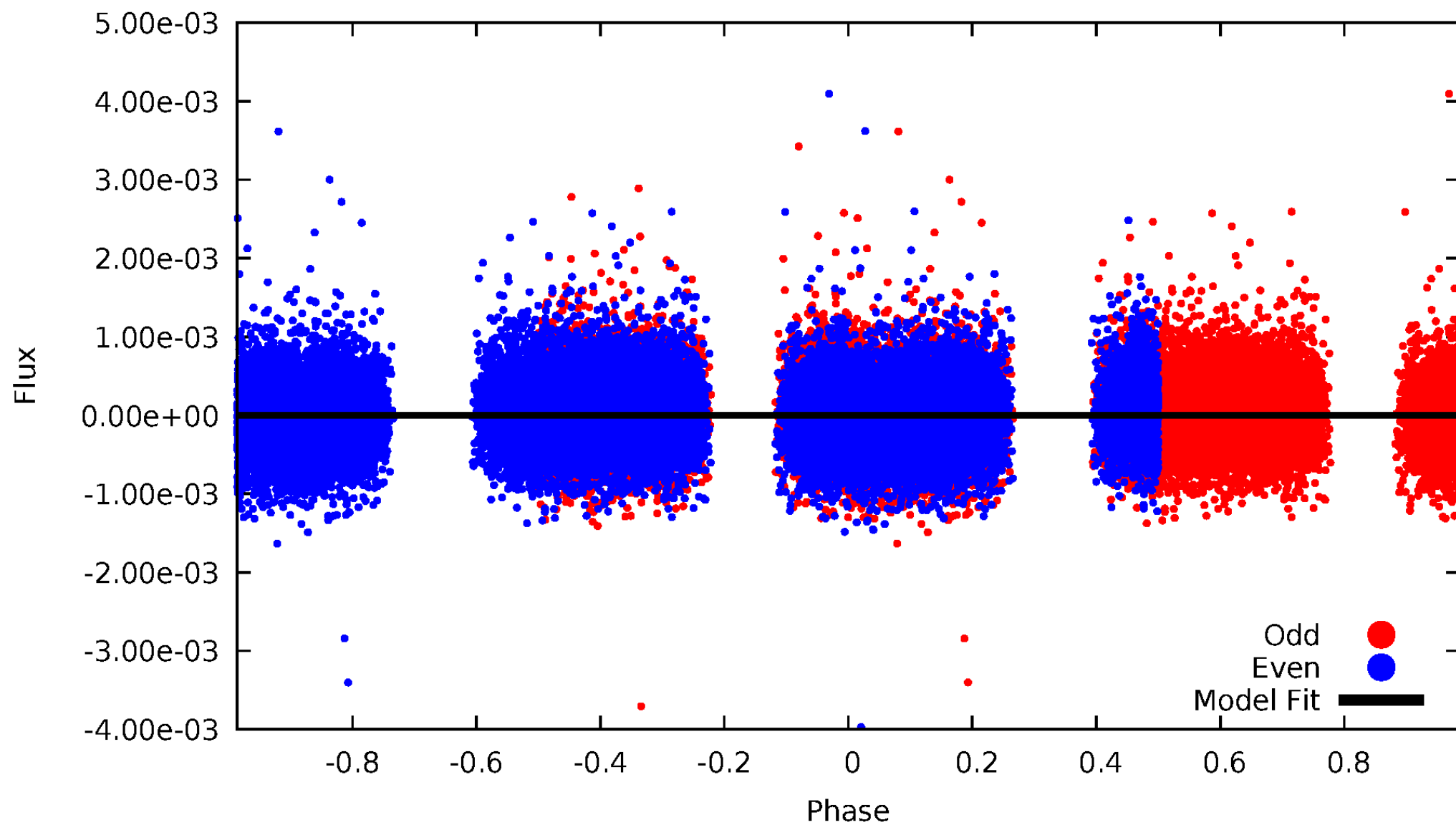


TCE 005218441-03



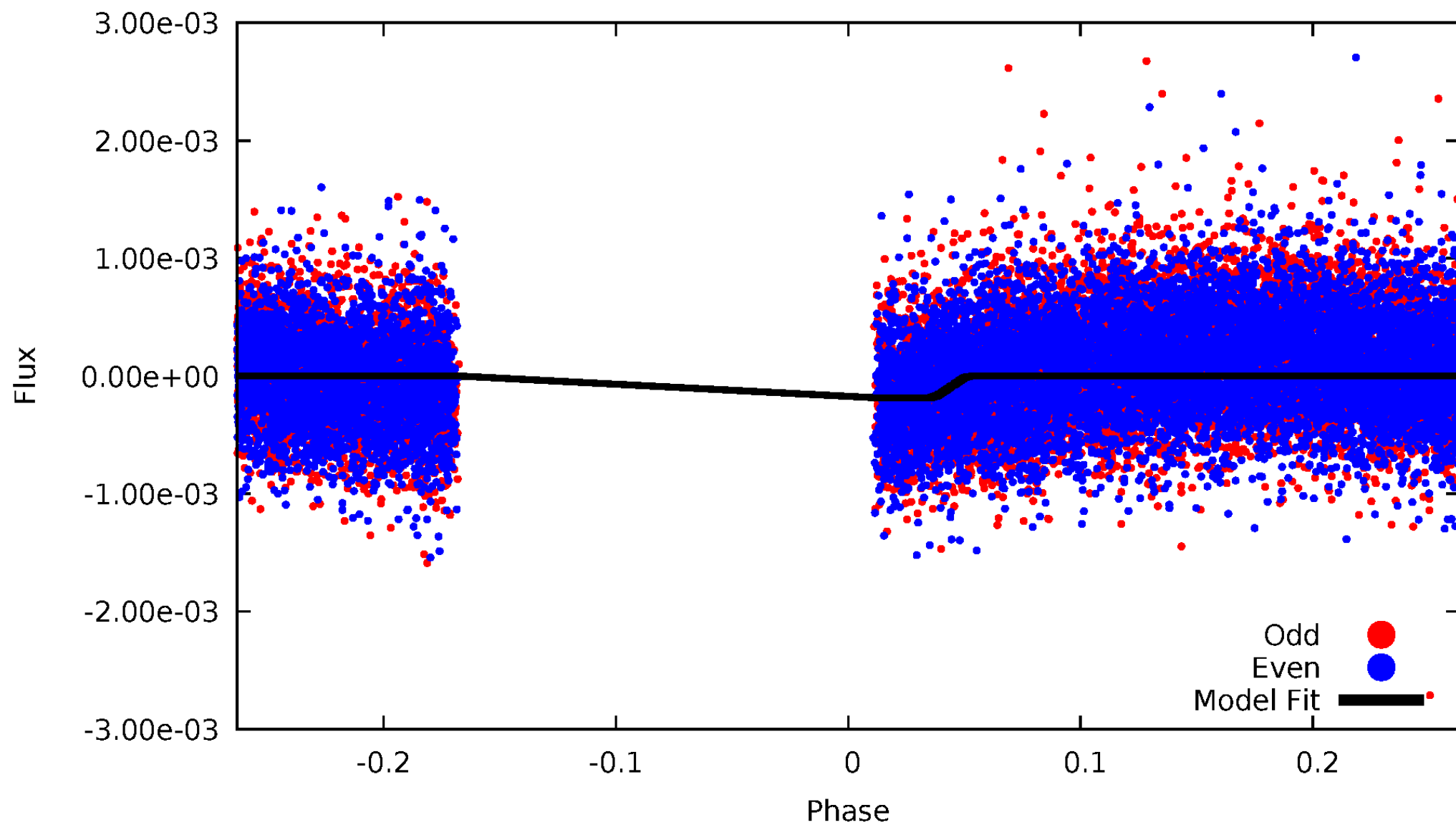
# DV Odd/Even

TCE 005218441-03



# ALT Odd/Even

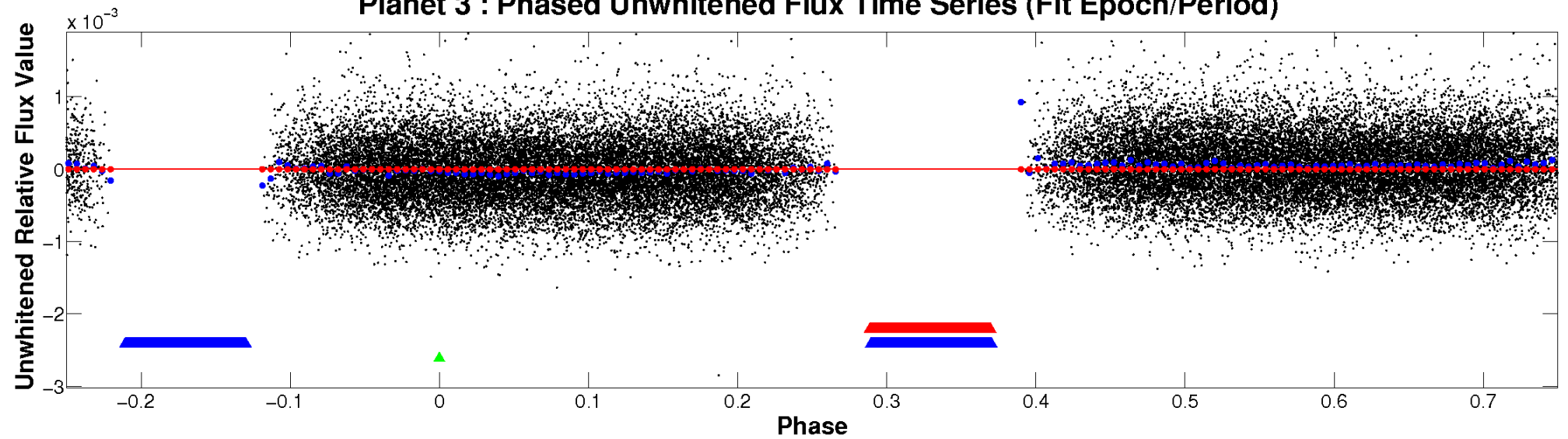
TCE 005218441-03



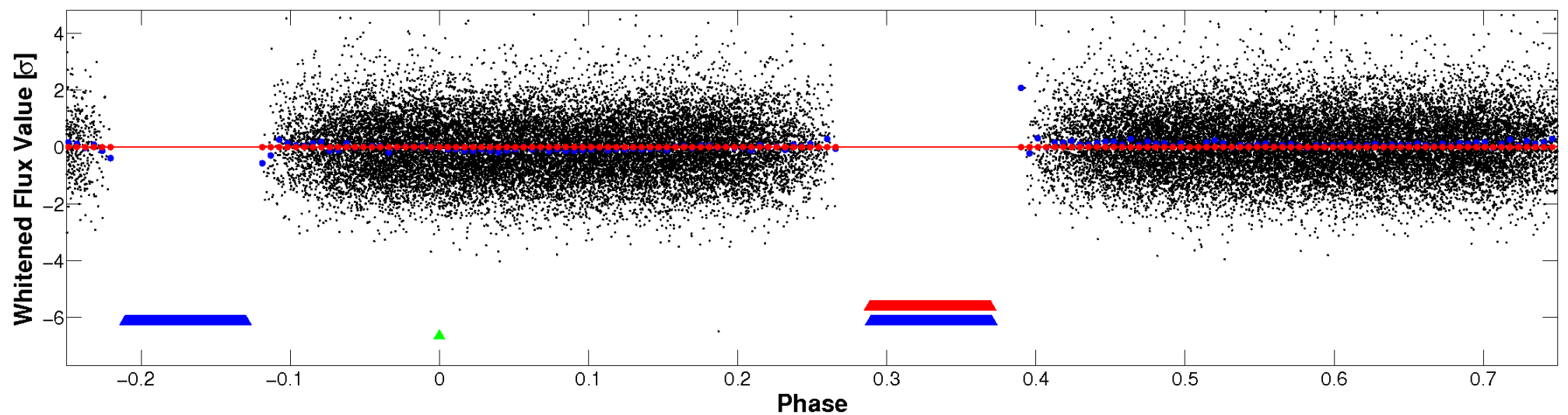


# Non-Whitened Vs. Whitened Light Curve

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



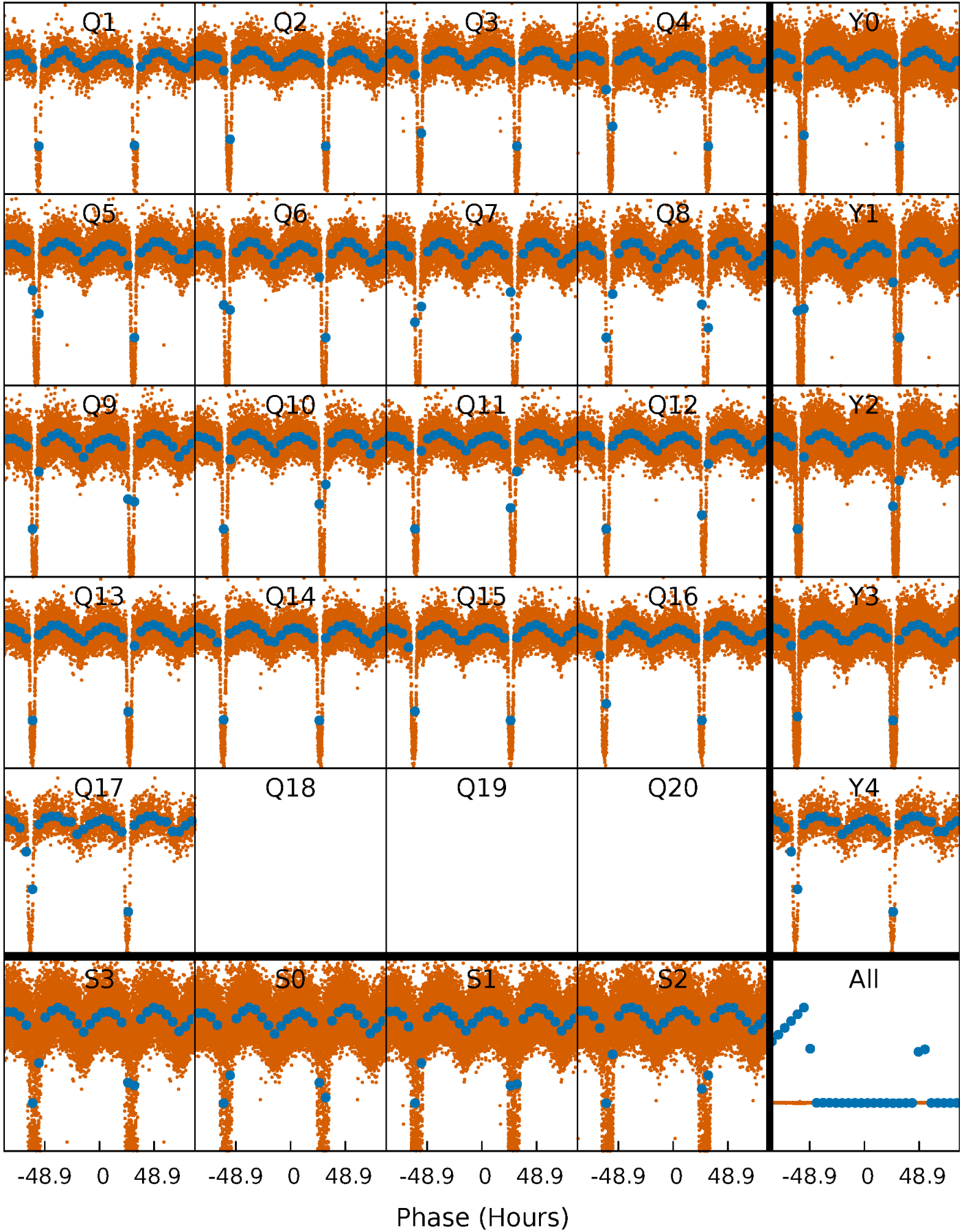
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





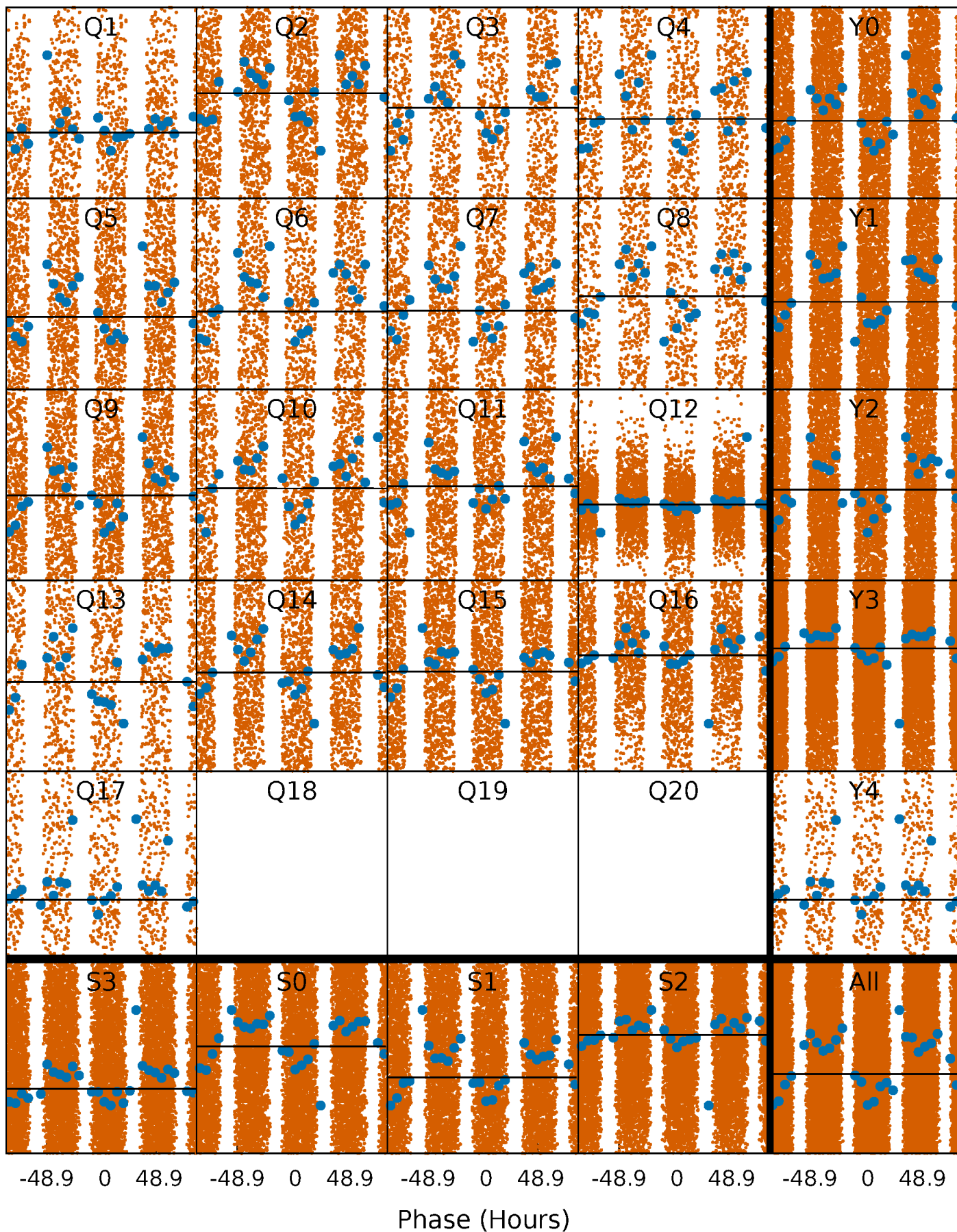
# PDC Quarter-Phased Transit Curves

TCE 005218441-03   P= 3.614484 Days    $T_0=133.949888$  (BKJD)



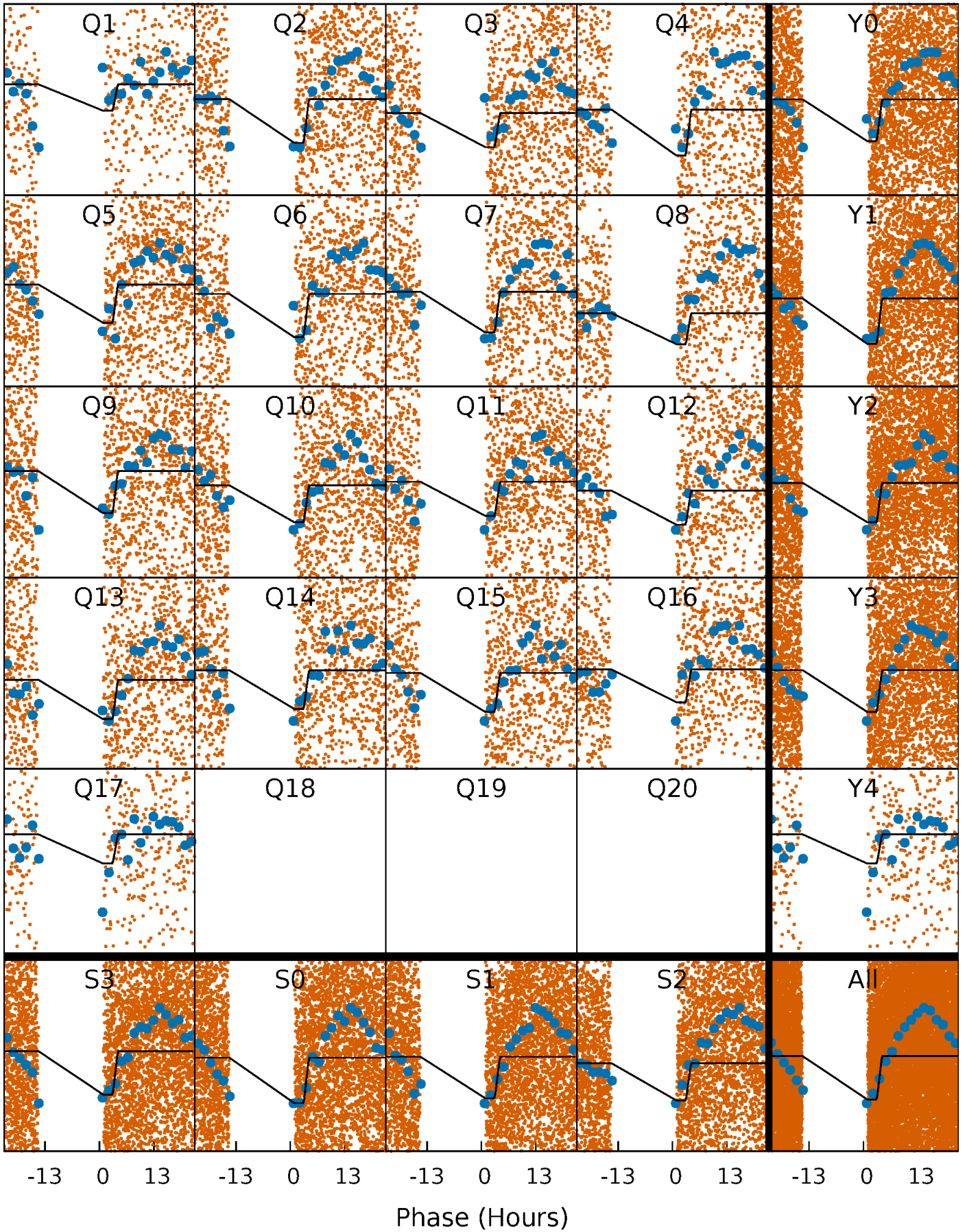
# DV Quarter-Phased Transit Curves

TCE 005218441-03 P= 3.614484 Days  $T_0=133.949888$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005218441-03 P= 3.613799 Days  $T_0=133.755730$  (BKJD)

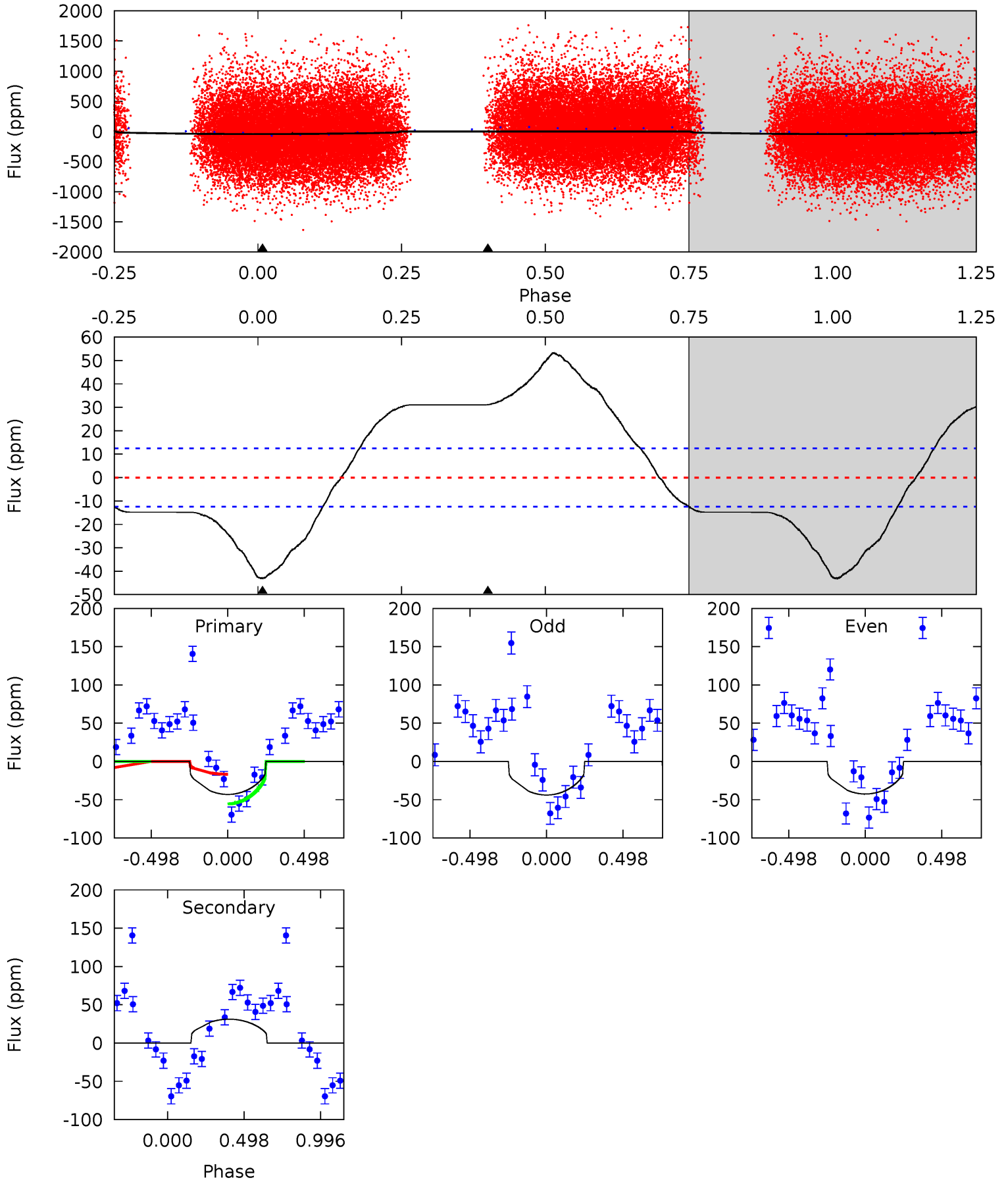




# DV Model-Shift Uniqueness Test

005218441-03, P = 3.614484 Days, E = 130.335404 Days

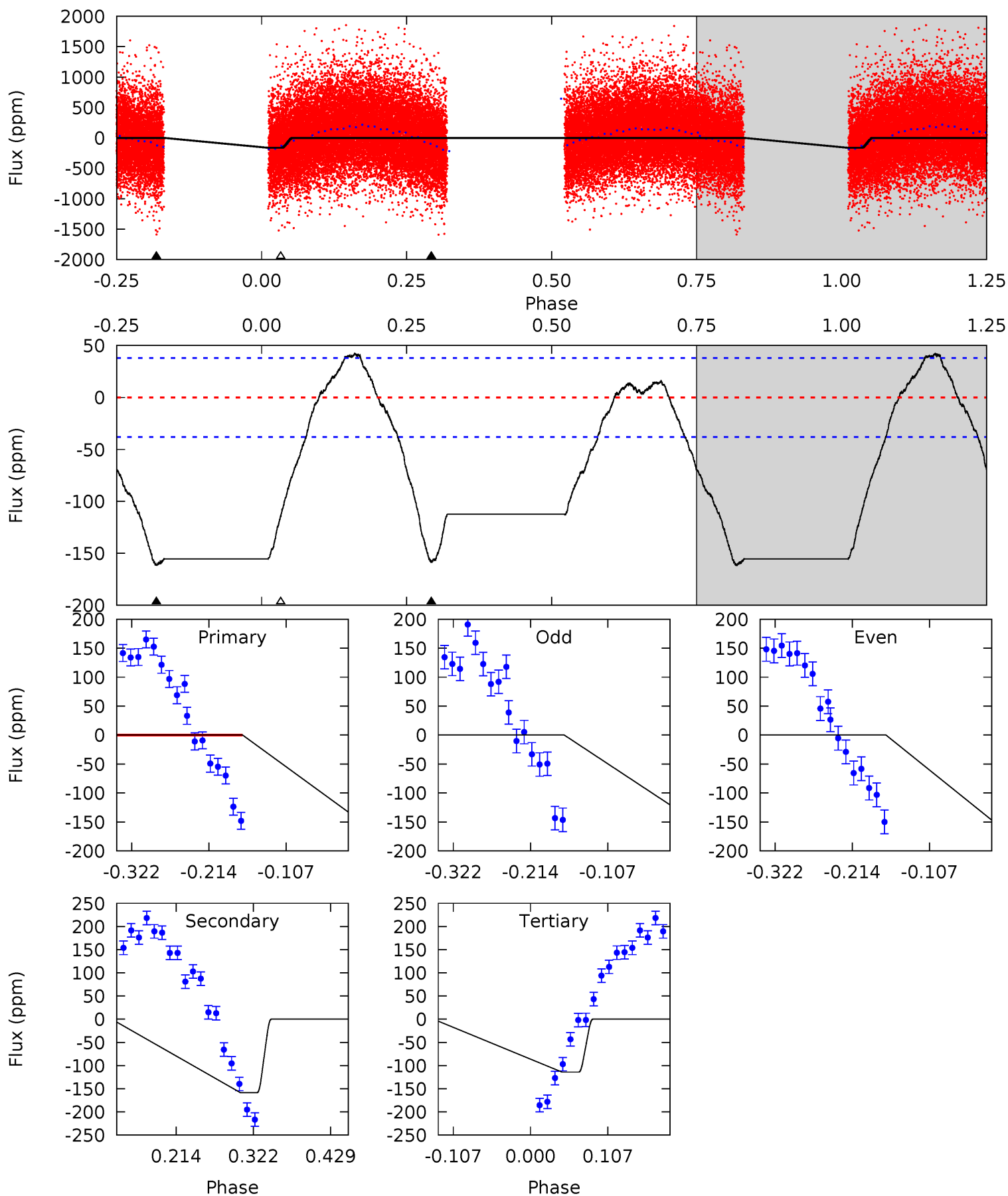
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	-10.5	0	0	4.22	0.68	2.35	14.6	14.6	-10.5	-10.5	0.23	1.04	0.55	5.80



# Alt Model-Shift Uniqueness Test

005218441-03, P = 3.613799 Days, E = 130.141931 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
19.4	19.0	13.7	0	4.55	1.61	5.94	5.71	19.4	5.32	19.0	1.93	1.10	0.21	0



### Stellar Parameters For KIC 005218441

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5986^{+168}_{-189}$	$4.498^{+0.065}_{-0.195}$	$-0.320^{+0.300}_{-0.300}$	$0.906^{+0.264}_{-0.094}$	$0.942^{+0.117}_{-0.117}$	$1.786^{+0.478}_{-0.902}$
	+3%/-3%	+1%/-4%	+94%/-94%	+29%/-10%	+12%/-12%	+27%/-51%
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 005218441-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$31 \pm 3$	$11.52^{+13.12}_{-8.34}$	$1708^{+290}_{-194}$	$-2558^{+215}_{-658}$	$-0.241^{+0.193}_{-3.015}$
Alt.	$-158 \pm 8$	$12.59^{+13.14}_{-8.58}$	$1686^{+284}_{-185}$	$2549^{+1182}_{-4504}$	$0.991^{+9.165}_{-0.750}$

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



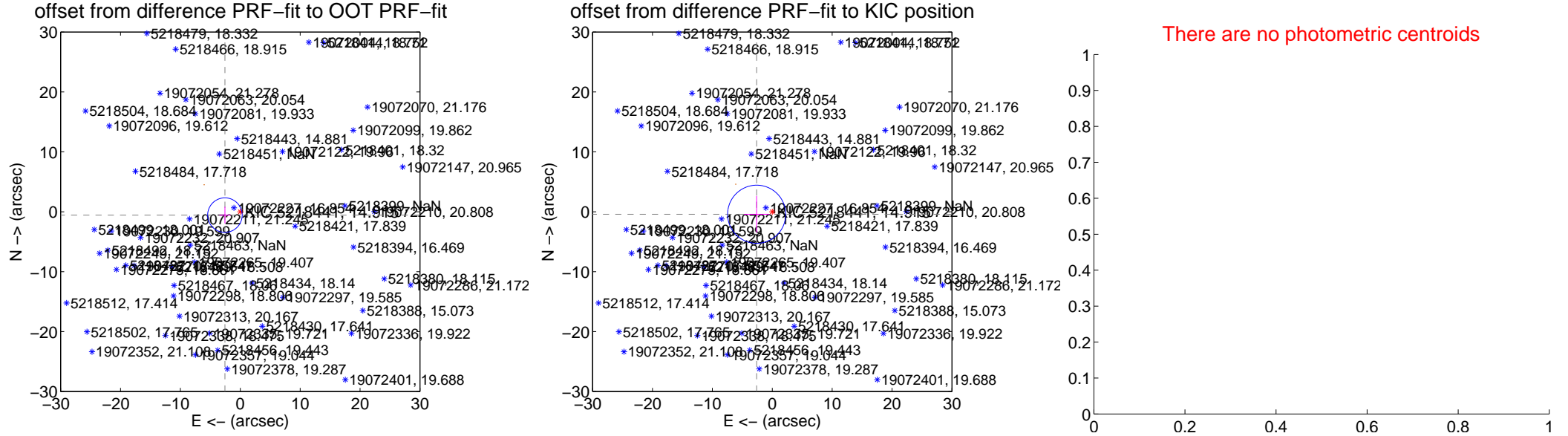
## DV Centroid Data

Supplemental centroid analysis for 005218441-03. Kepler magnitude: 14.91. Transit SNR 0.01

There are 0 quarters with good PRF difference image offsets

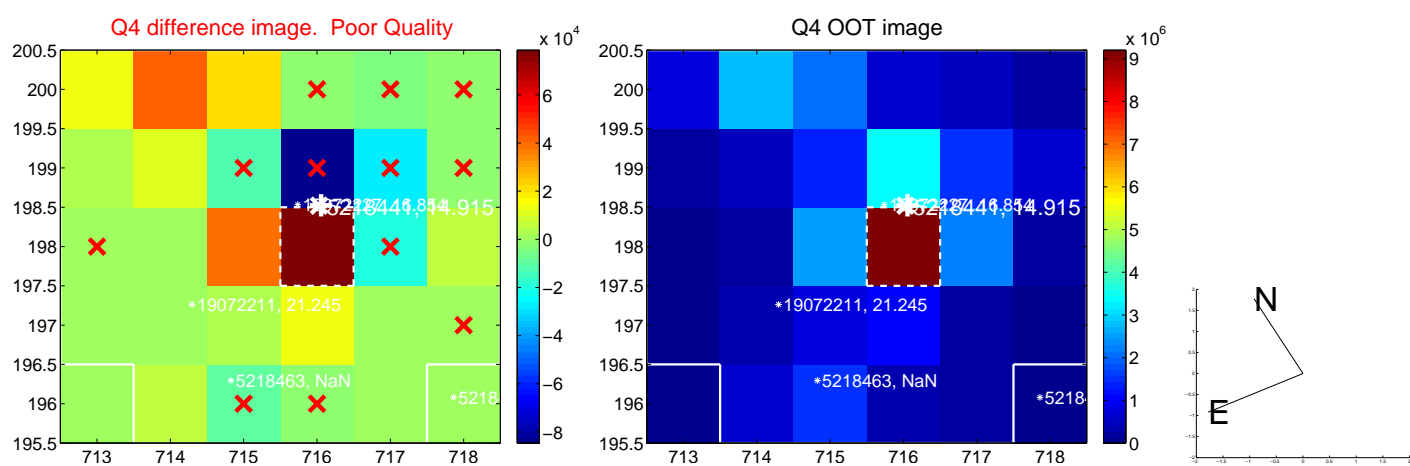
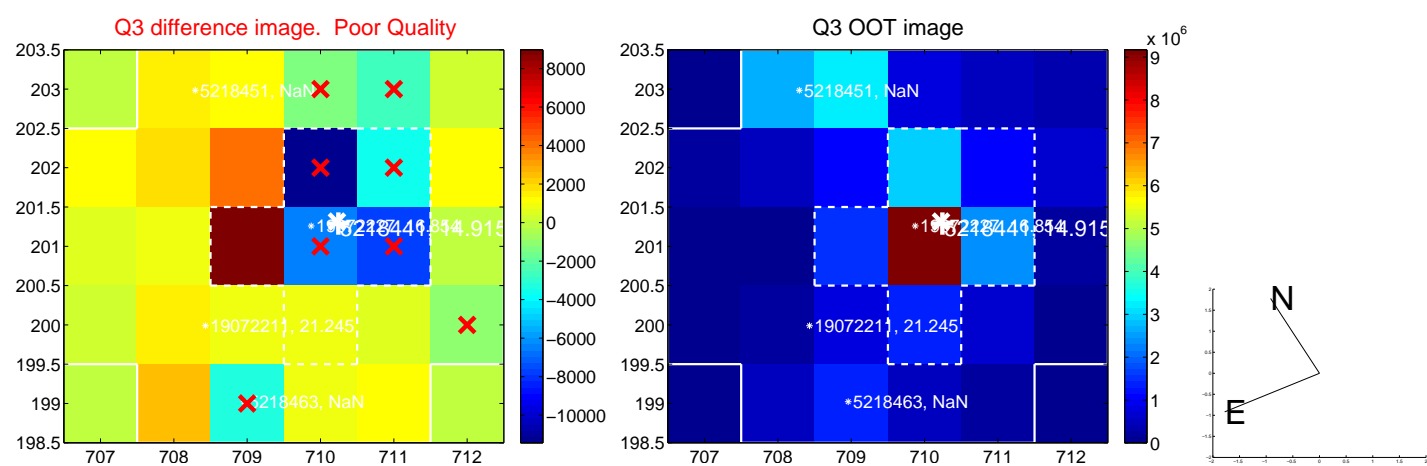
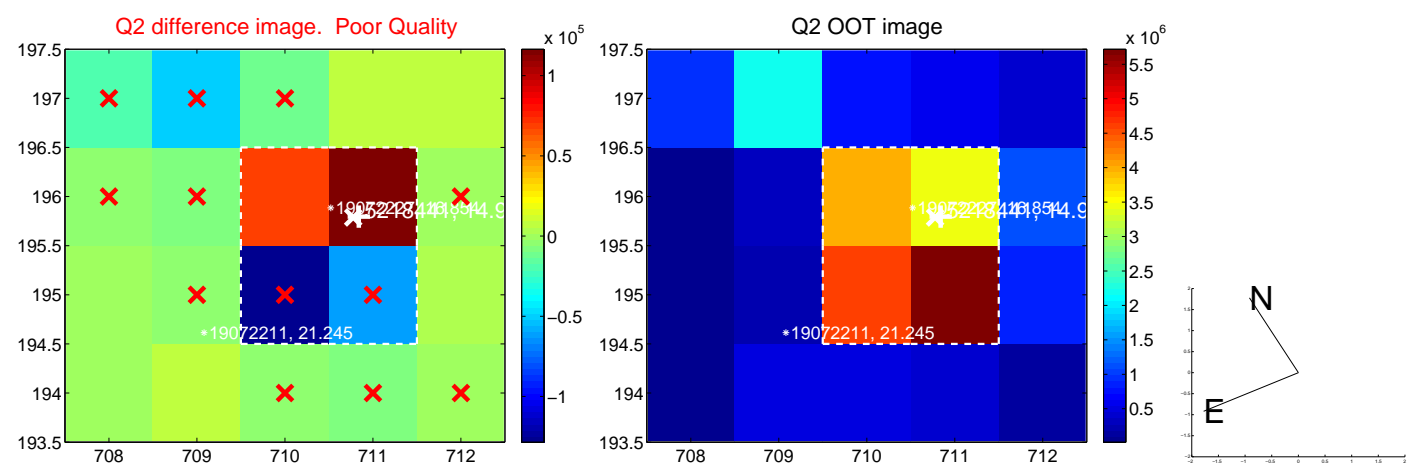
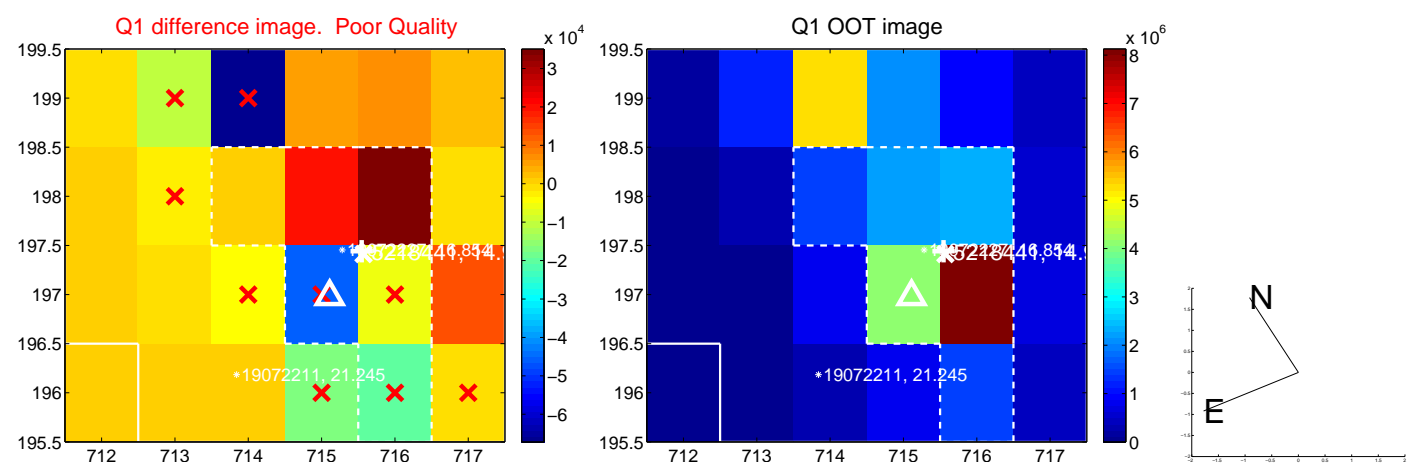
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.626 \pm 0.960$	2.73	$2.566 \pm 0.935$	$-0.557 \pm 1.401$
PRF-fit source offset from KIC position	$2.638 \pm 1.617$	1.63	$2.605 \pm 2.122$	$-0.413 \pm 3.057$
photometric centroid source offset	—	—	—	—

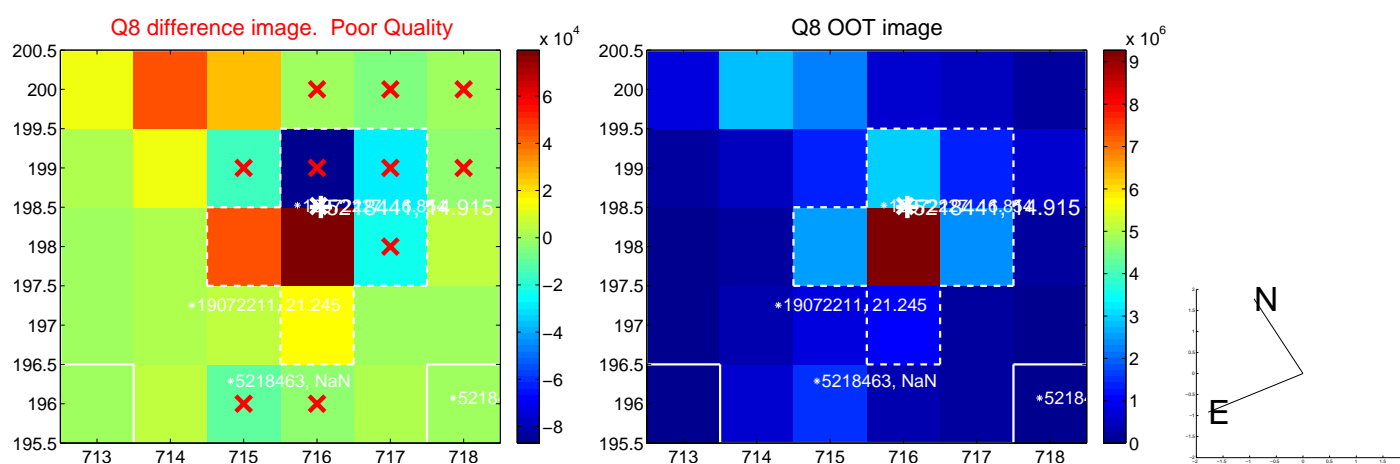
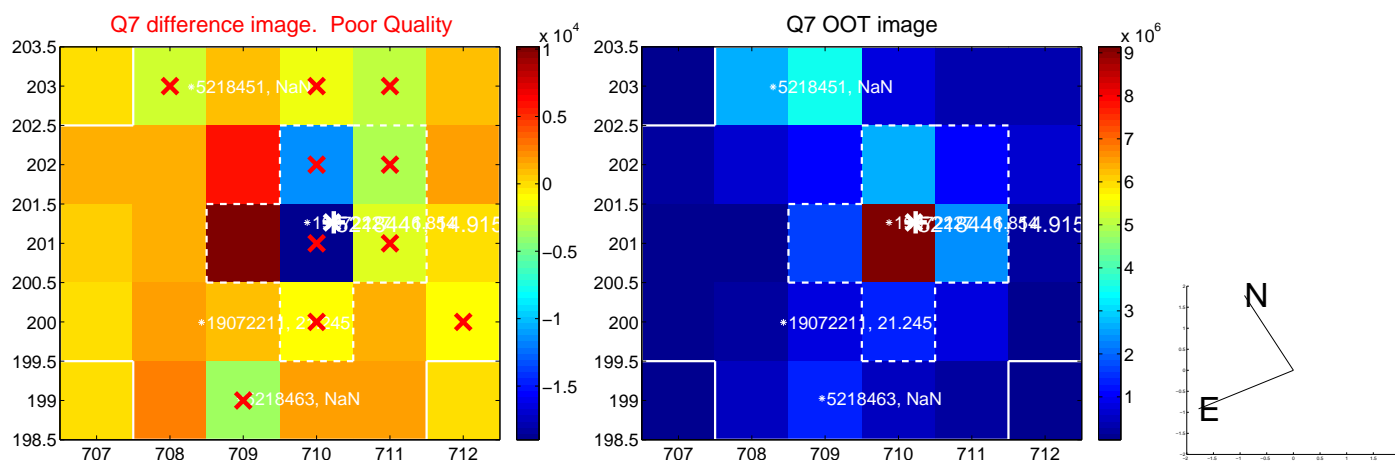
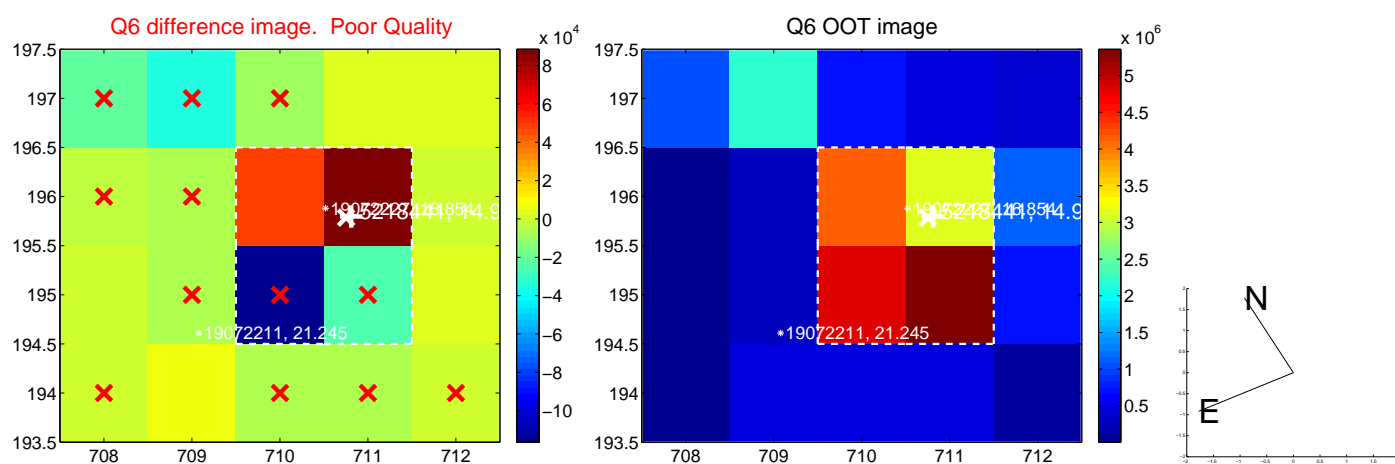
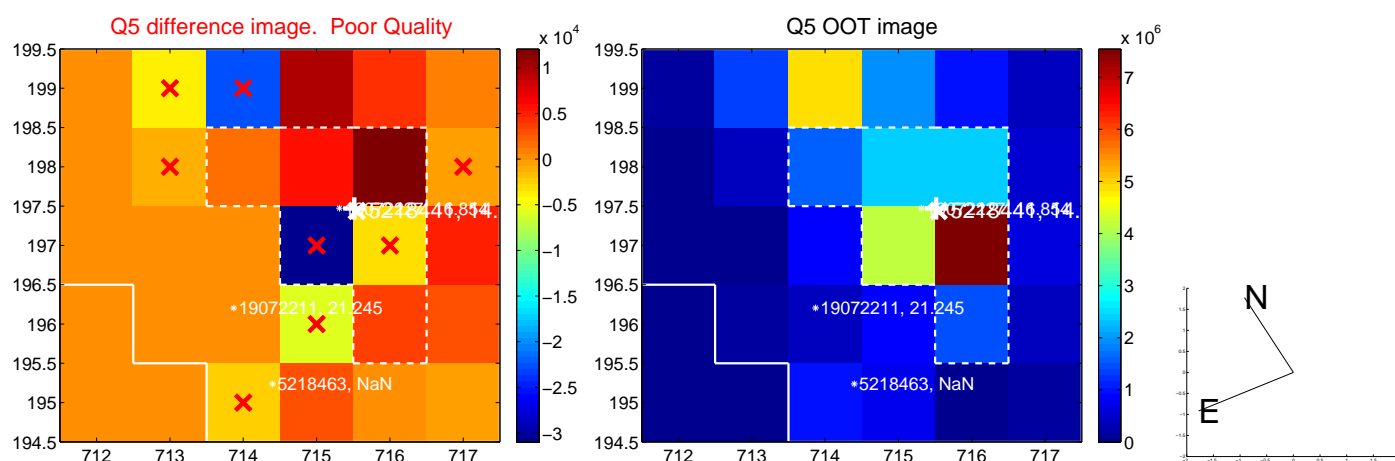


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

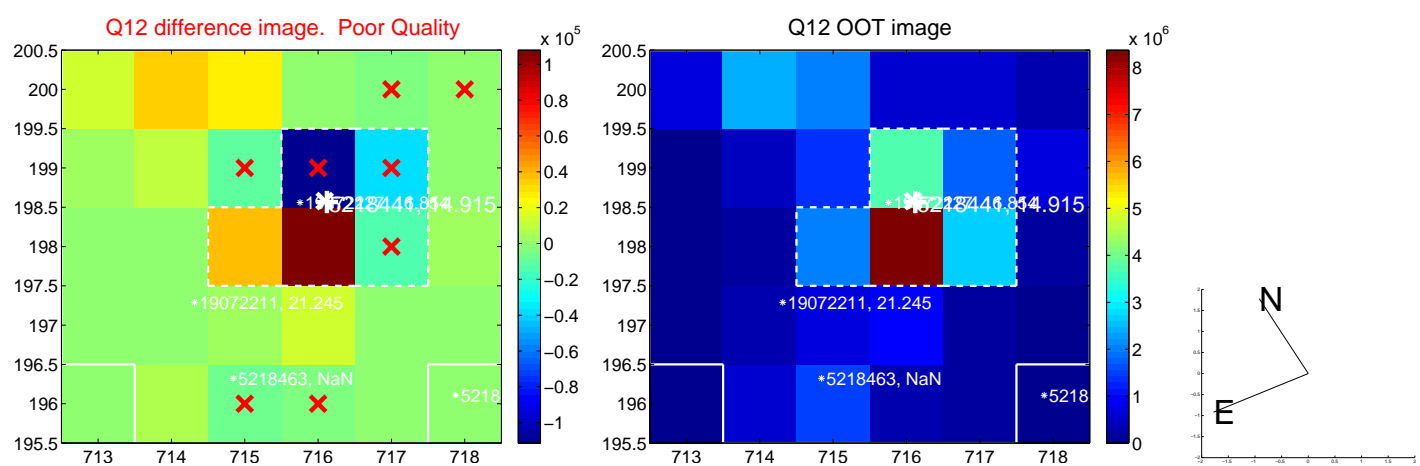
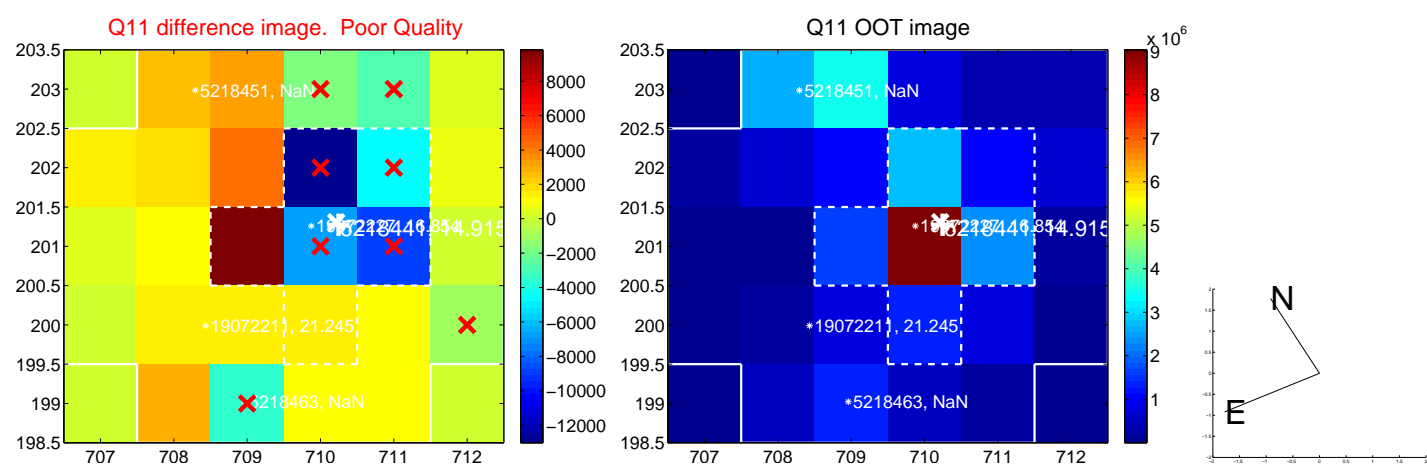
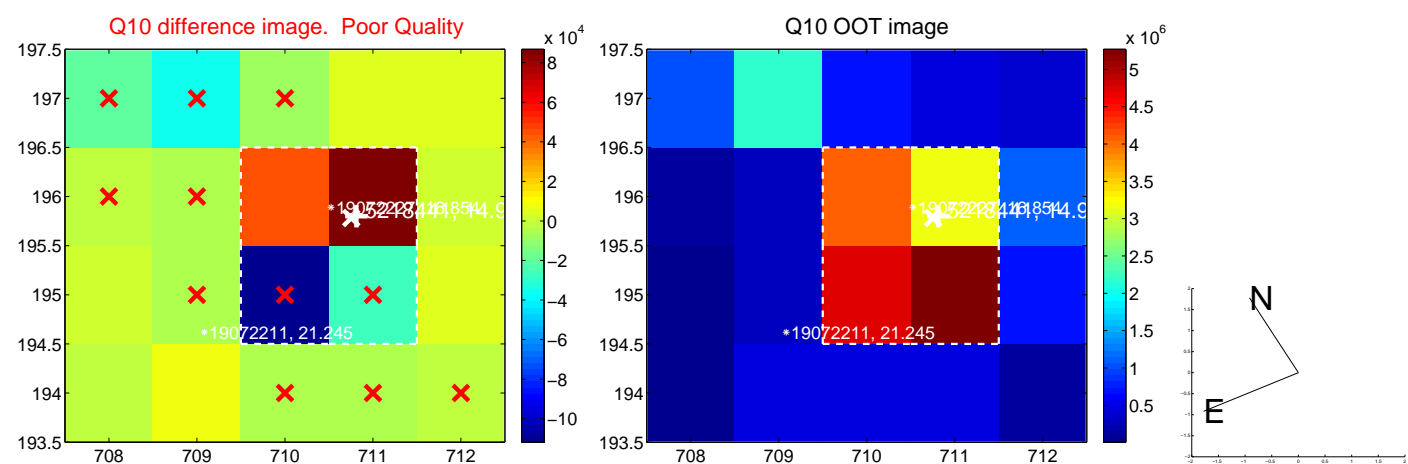
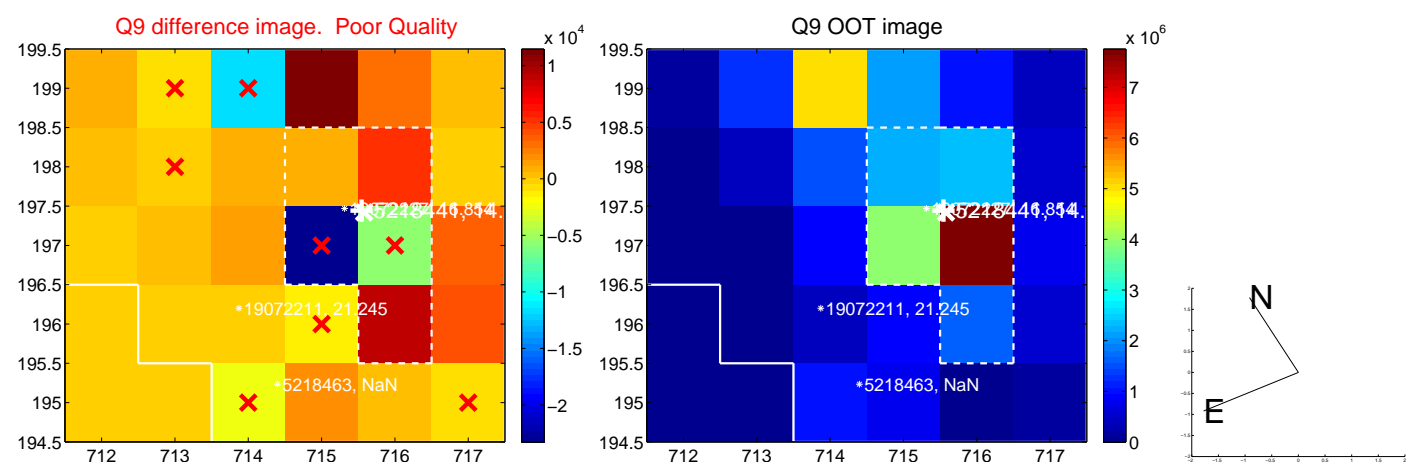
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



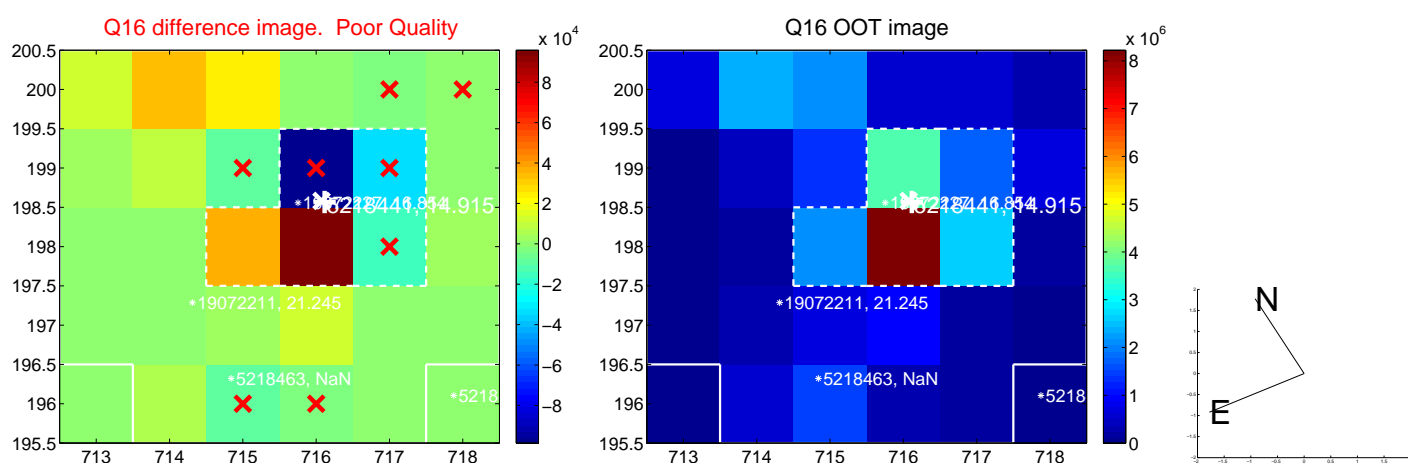
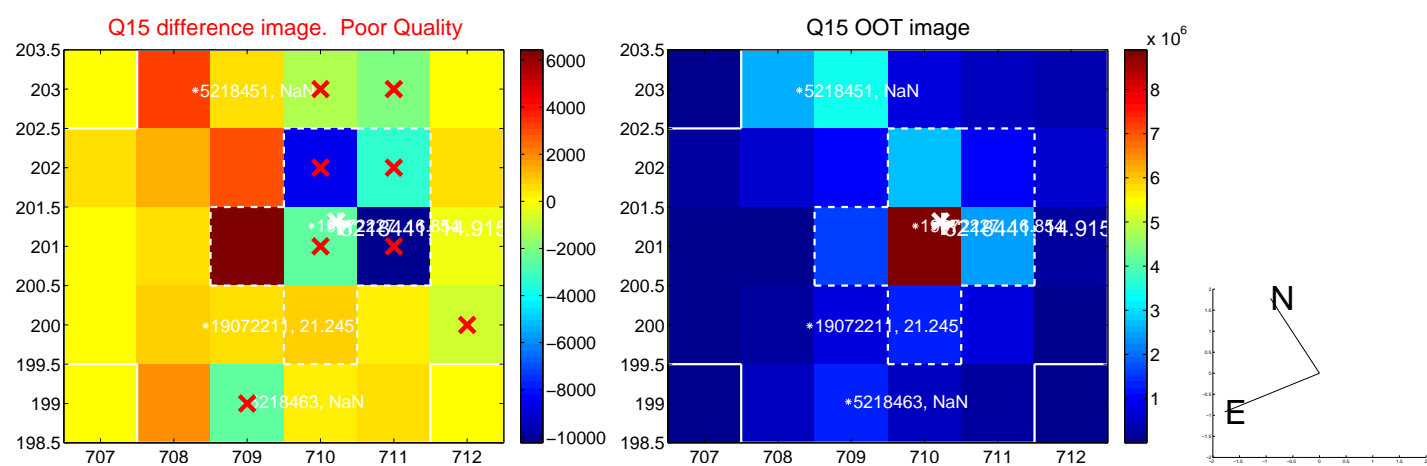
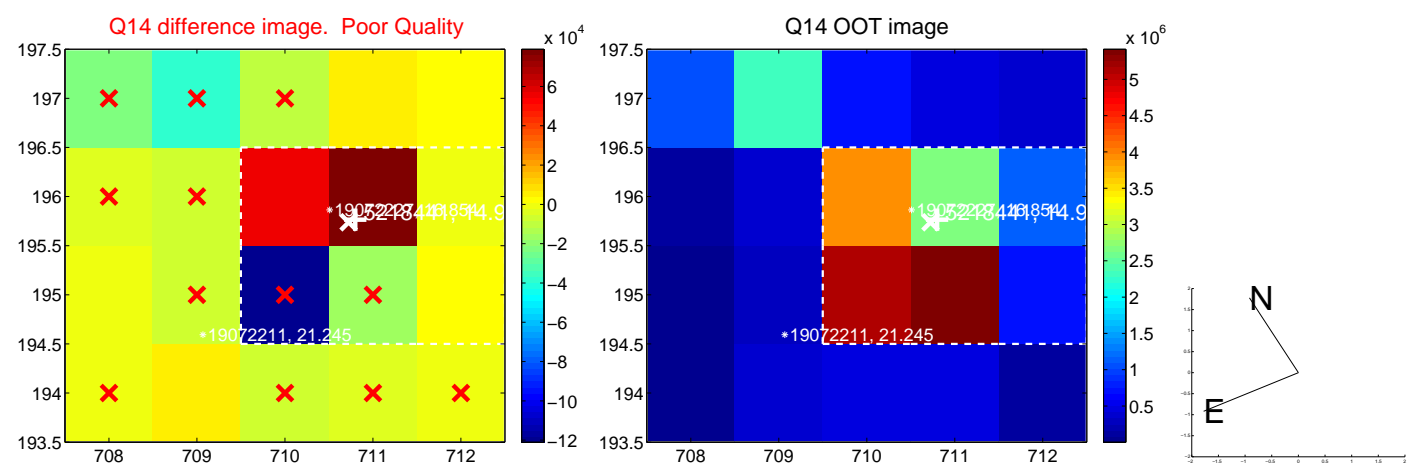
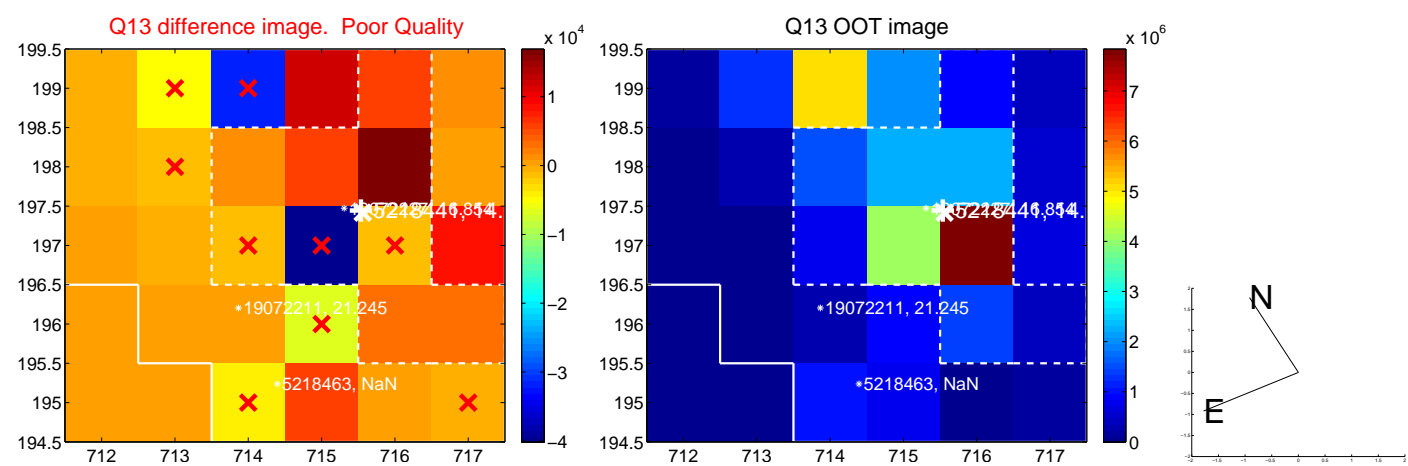
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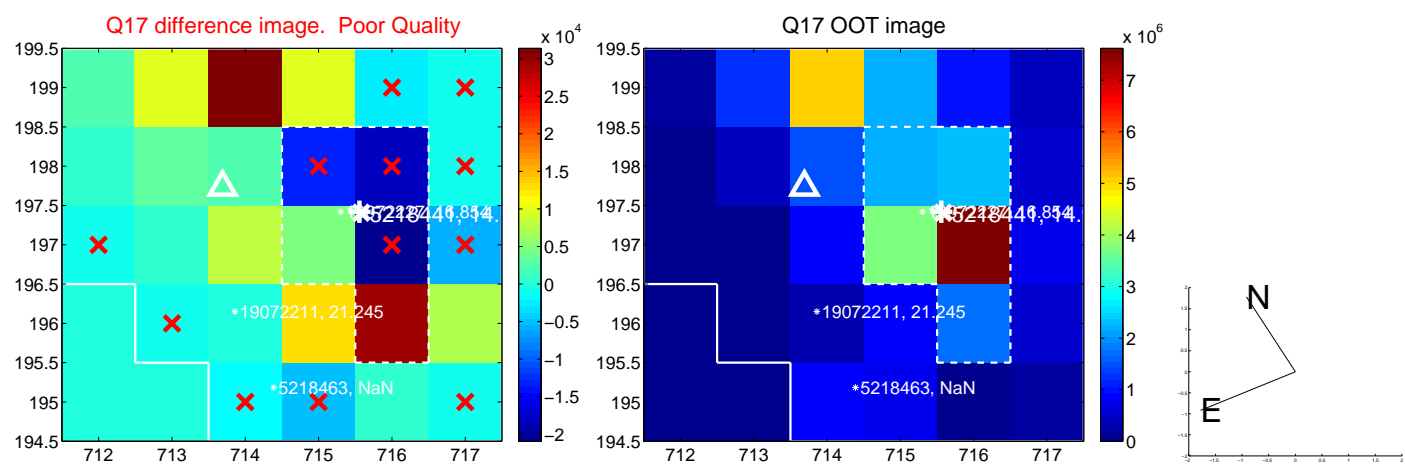
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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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

Declination

