

# KIC 005651327

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005651327-01	OBS	No	0.540903	131.545167	43.7	1.448	9.9	8.3	1.59	6798	1.09	26169.51
005651327-02	OBS	No	26.060792	133.029958	27.1	6.033	7.8	0.7	1.59	6798	0.96	149.27
005651327-03	OBS	No	99.545511	162.339506	534.1	4.862	7.2	6.0	1.59	6798	3.96	25.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005651327-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005651327-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005651327-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

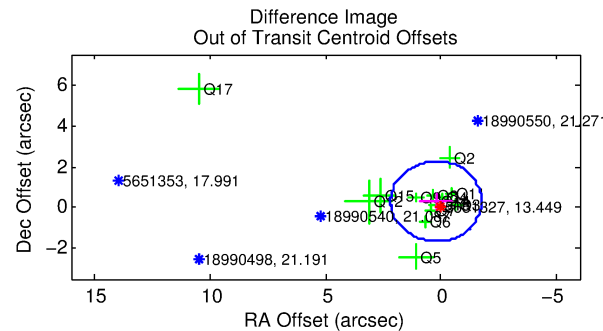
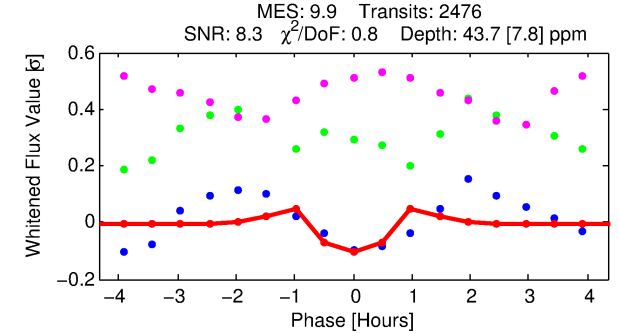
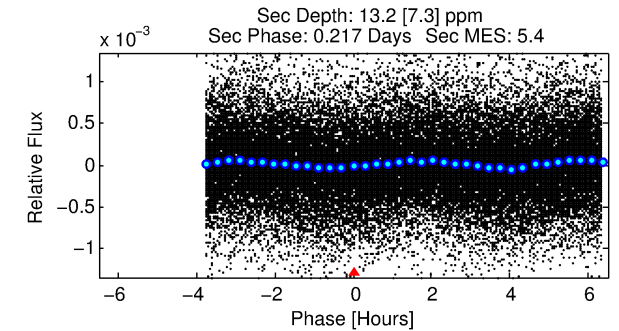
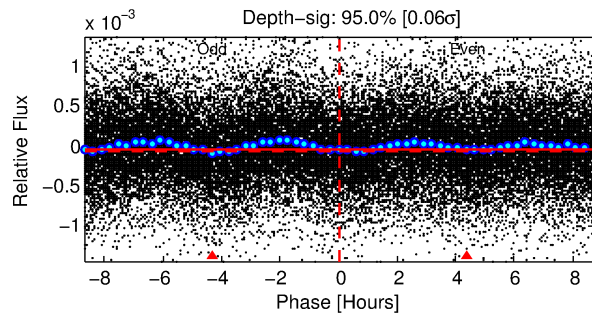
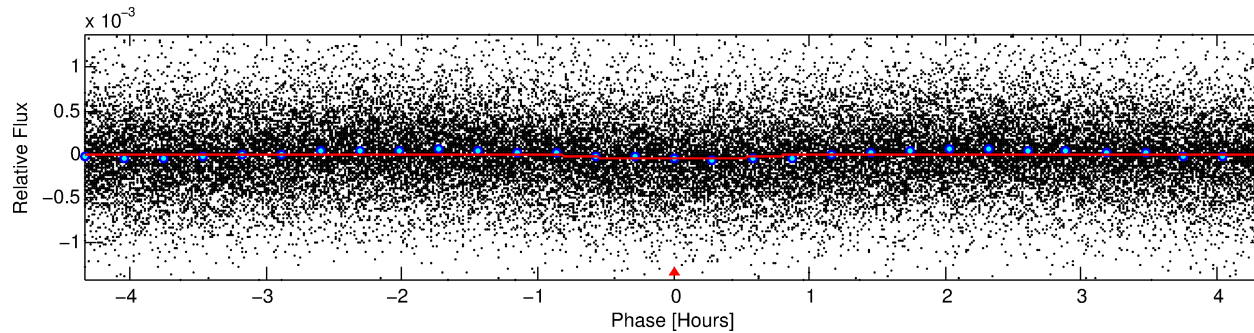
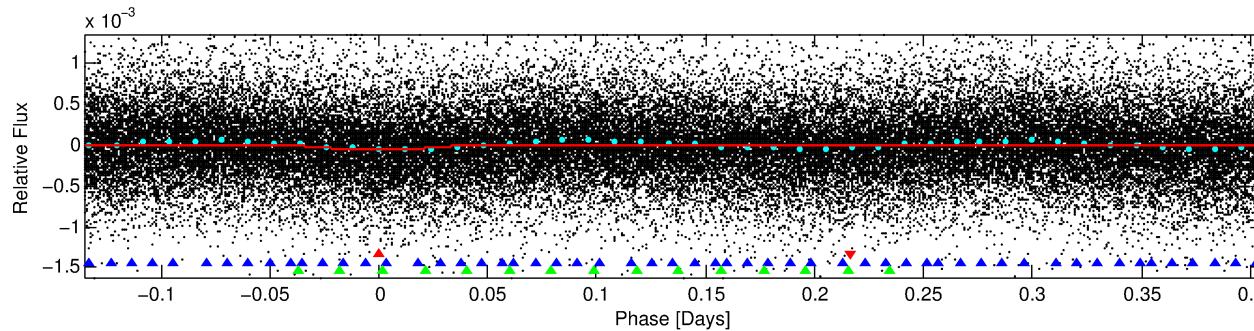
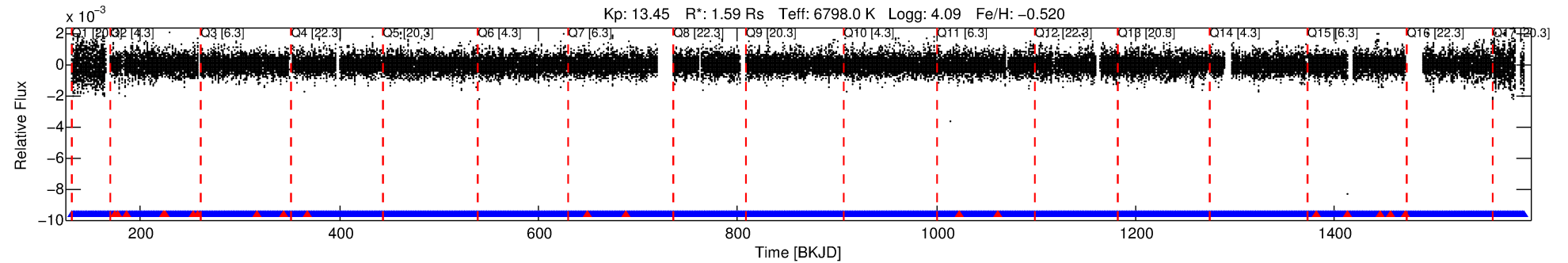
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005651327-01

No Significant Match Found

# DV One-Page Summary

KIC: 5651327 Candidate: 1 of 3 Period: 0.541 d



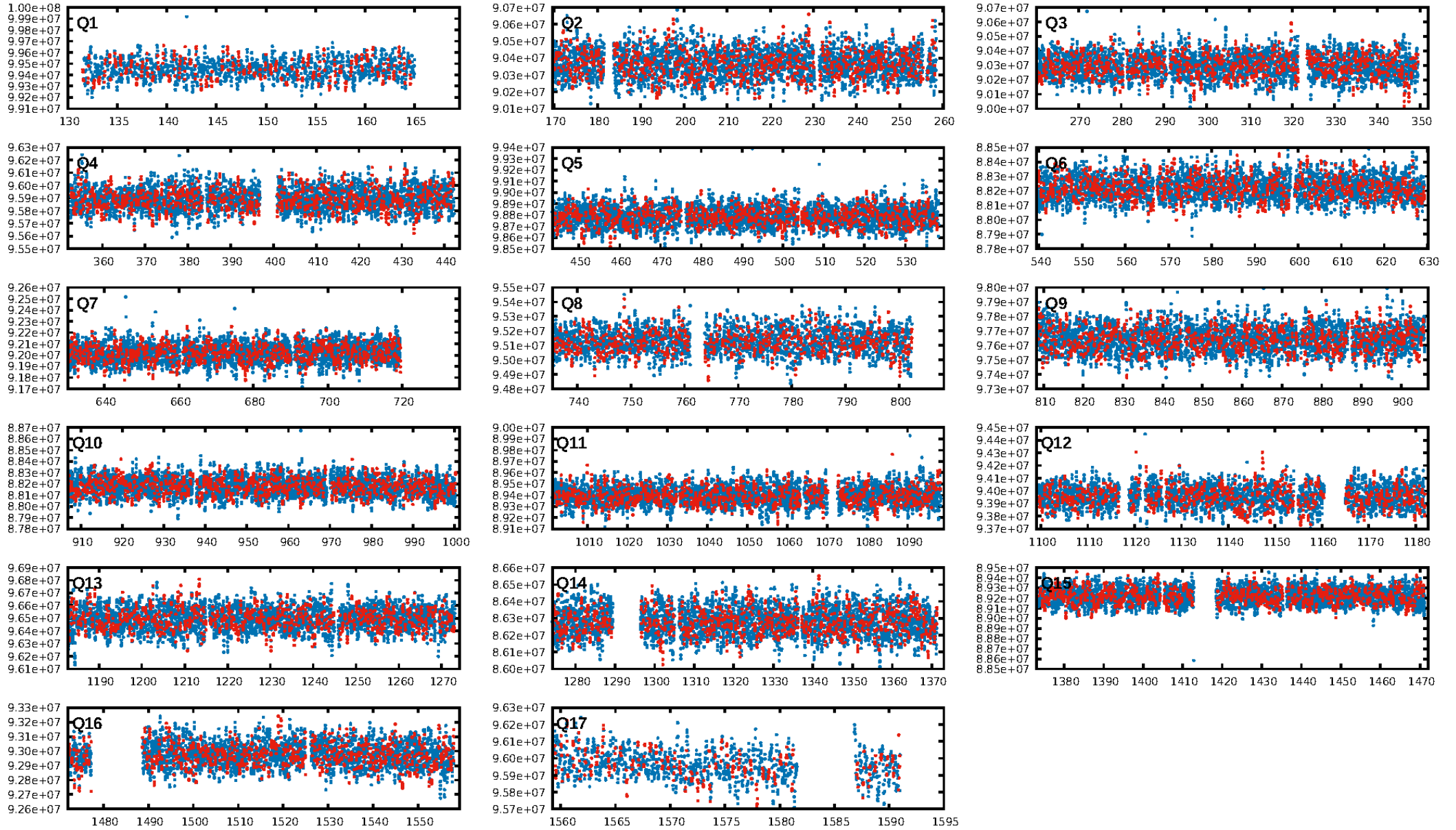
## DV Fit Results:

Period = 0.54090 [0.00001] d  
Epoch = 131.5452 [0.0016] BKJD  
Rp/R\* = 0.0063 [0.0018]  
a/R\* = 2.61 [3.36]  
b = 0.49 [2.37]  
Seff = 26169.51 [12665.02]  
Teq = 3243 [392] K  
Rp = 1.09 [0.43] Re  
a = 0.0136 [0.0038] AU  
Ag = 1.12 [1.03] [0.12 $\sigma$ ]  
Teffp = 5164 [1040] K [1.73 $\sigma$ ]

## DV Diagnostic Results:

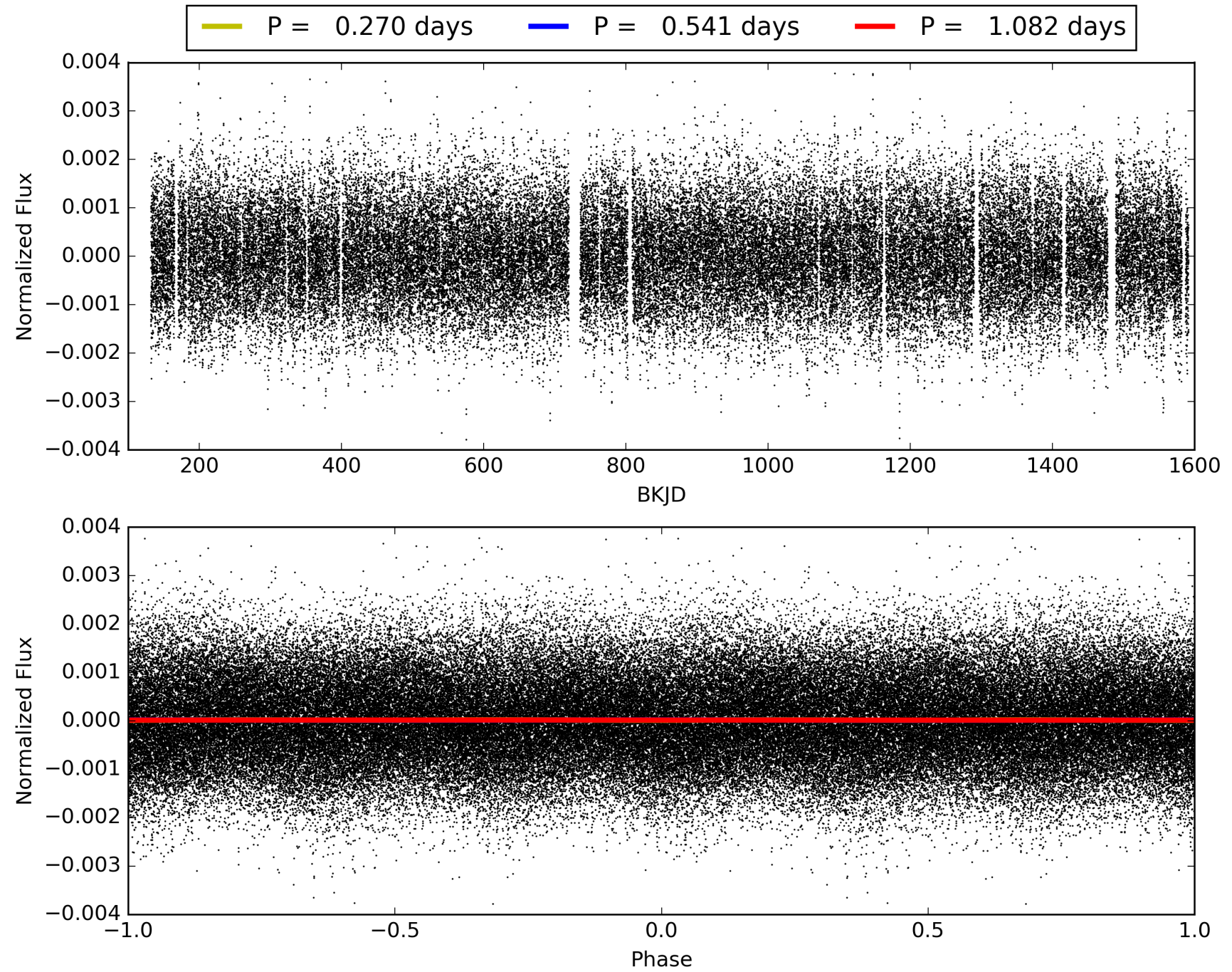
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [98.72 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.47e-19  
RollingBand-fgt: 0.99 [2346/2365]  
GhostDiagnostic-chr: 1.373  
Centroid-sig: N/A  
Centroid-so: 0.676 arcsec [0.83 $\sigma$ ]  
OotOffset-rm: 0.370 arcsec [0.57 $\sigma$ ]  
KicOffset-rm: 0.373 arcsec [0.54 $\sigma$ ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 0.71 [10/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005651327-01, PDC Light Curves





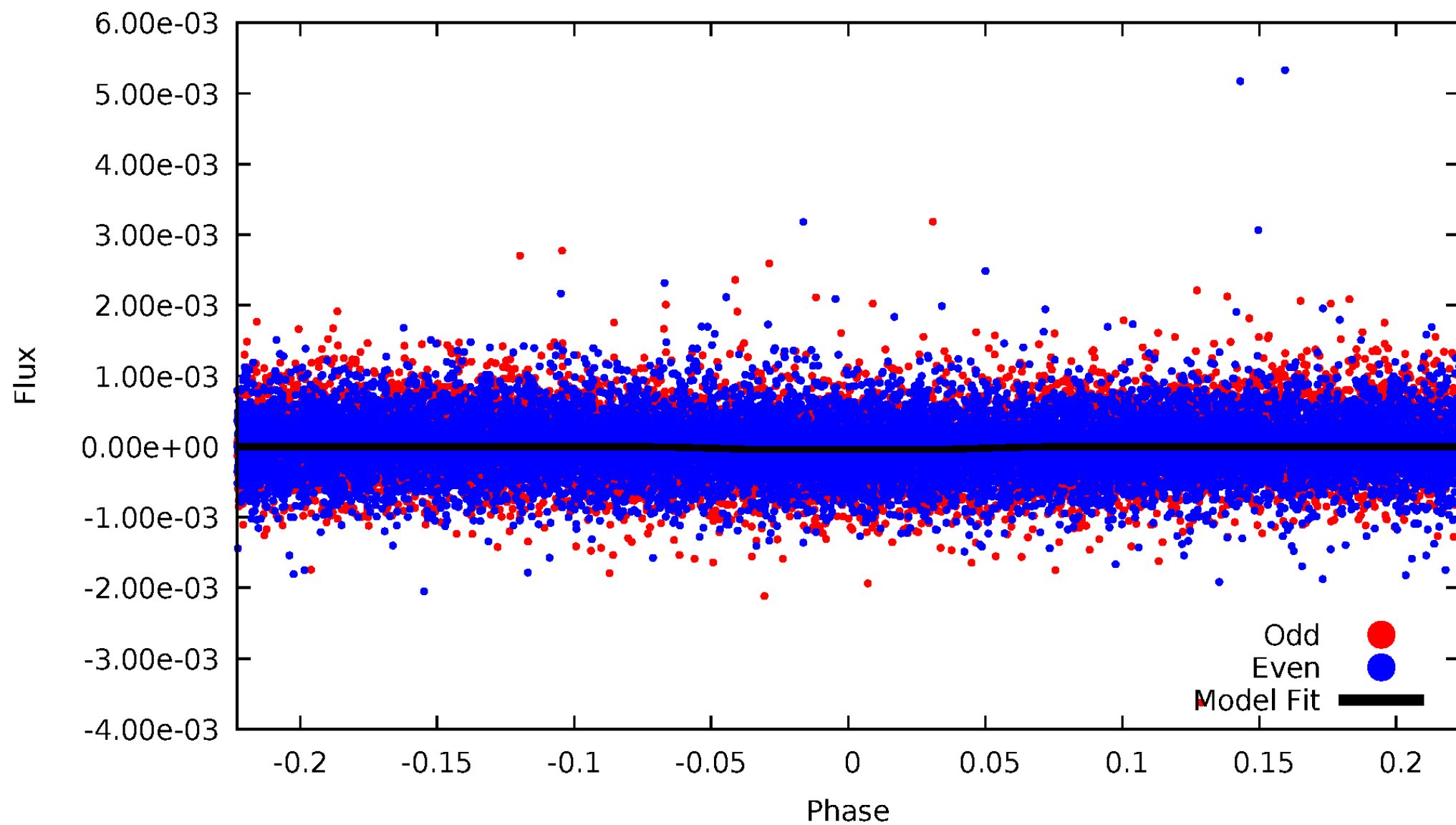
# TCE 005651327-01





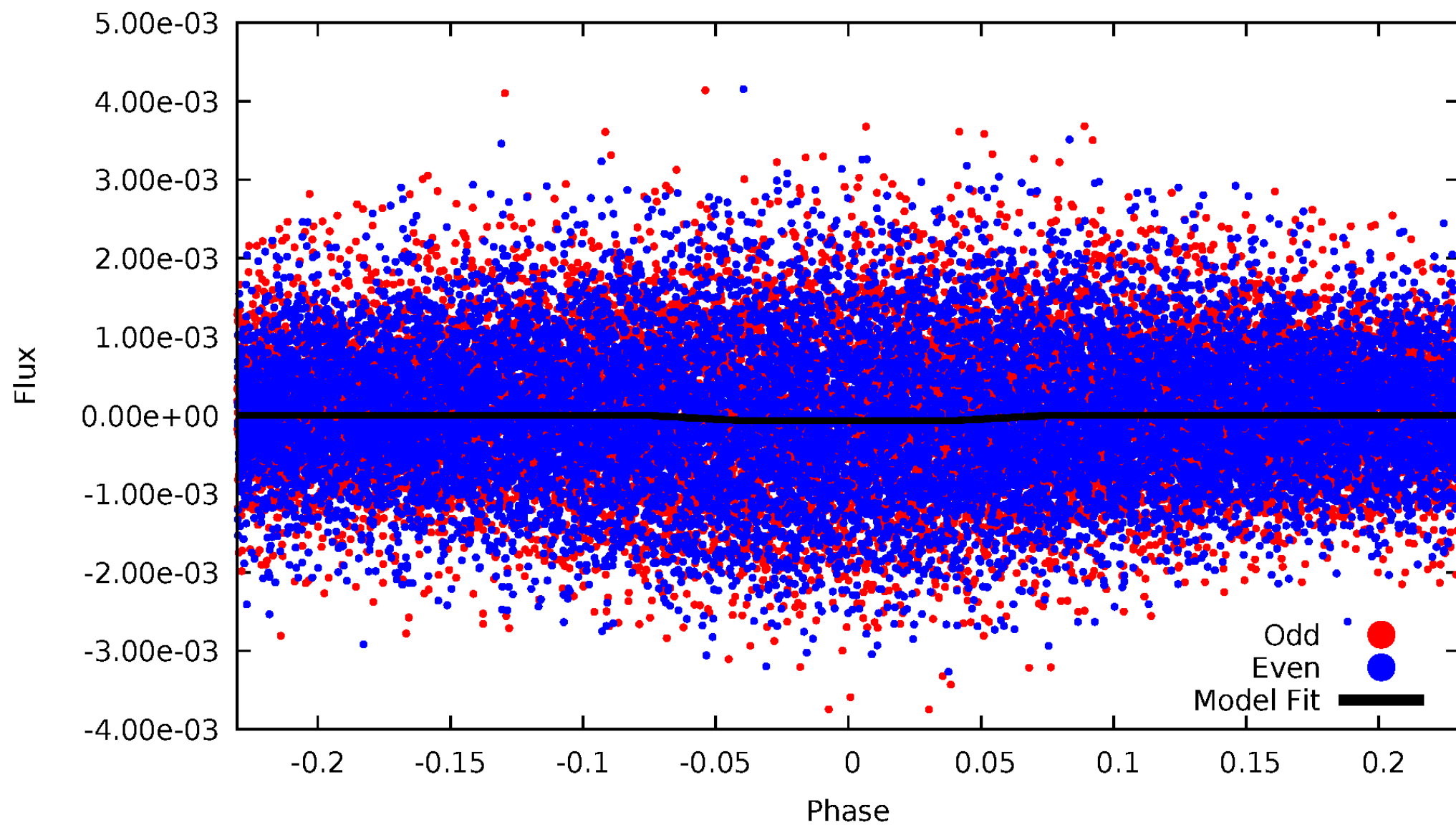
# DV Odd/Even

TCE 005651327-01



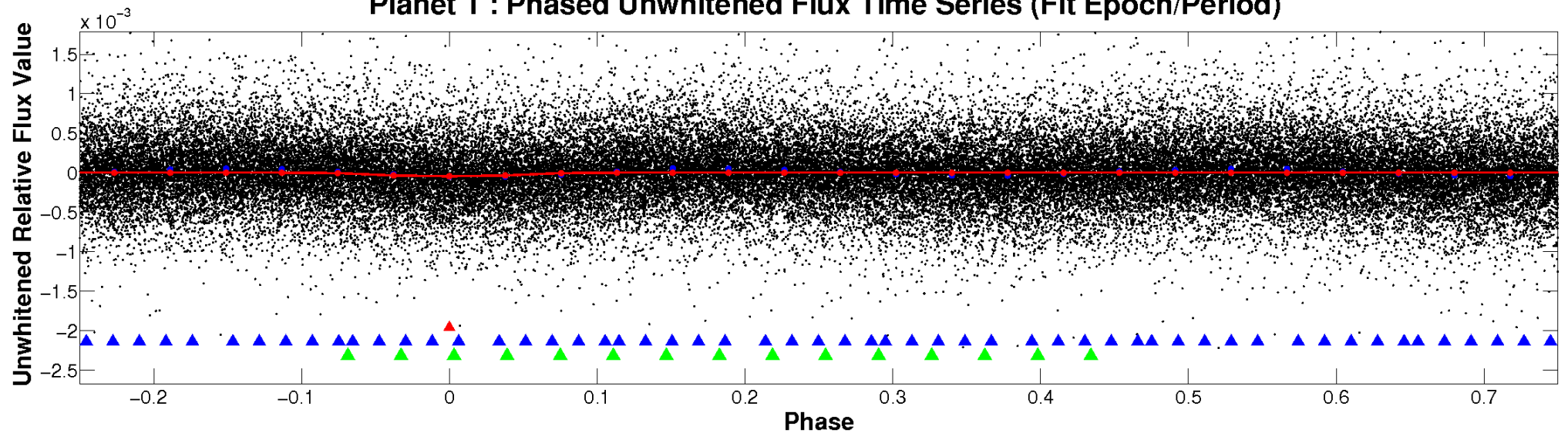
# ALT Odd/Even

TCE 005651327-01

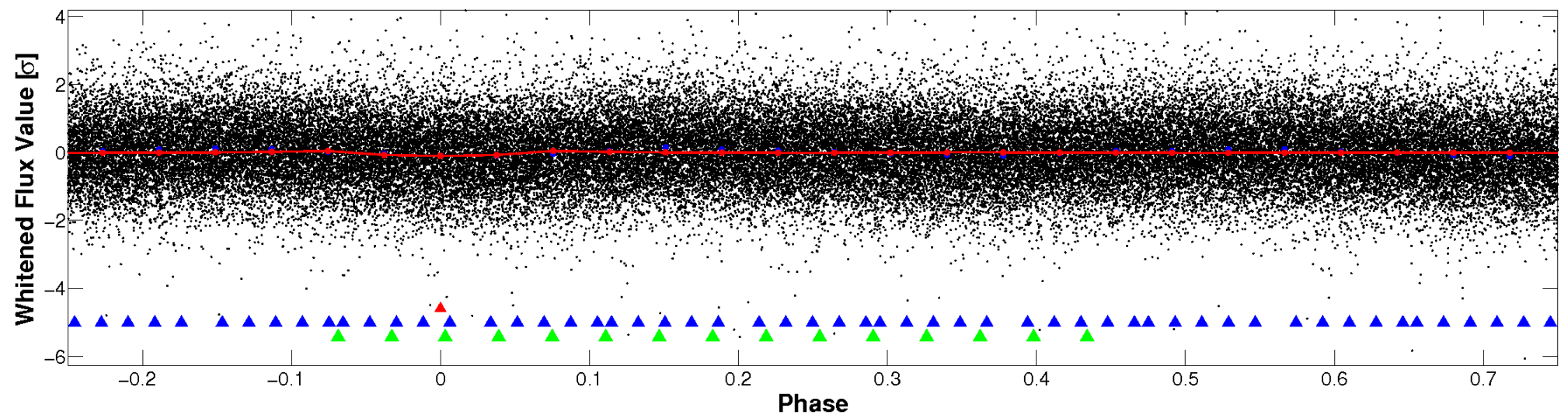


# Non-Whitened Vs. Whitened Light Curve

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



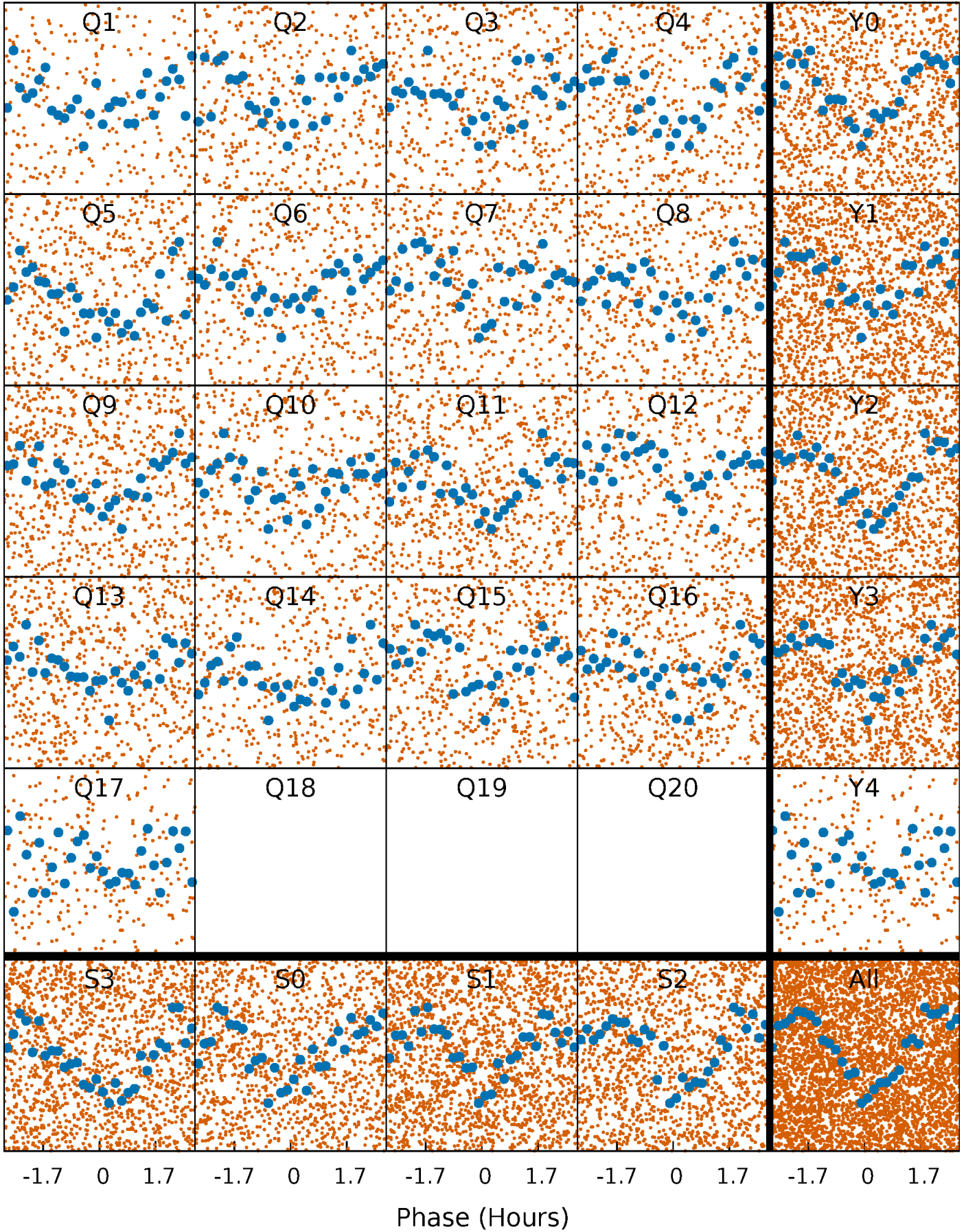
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





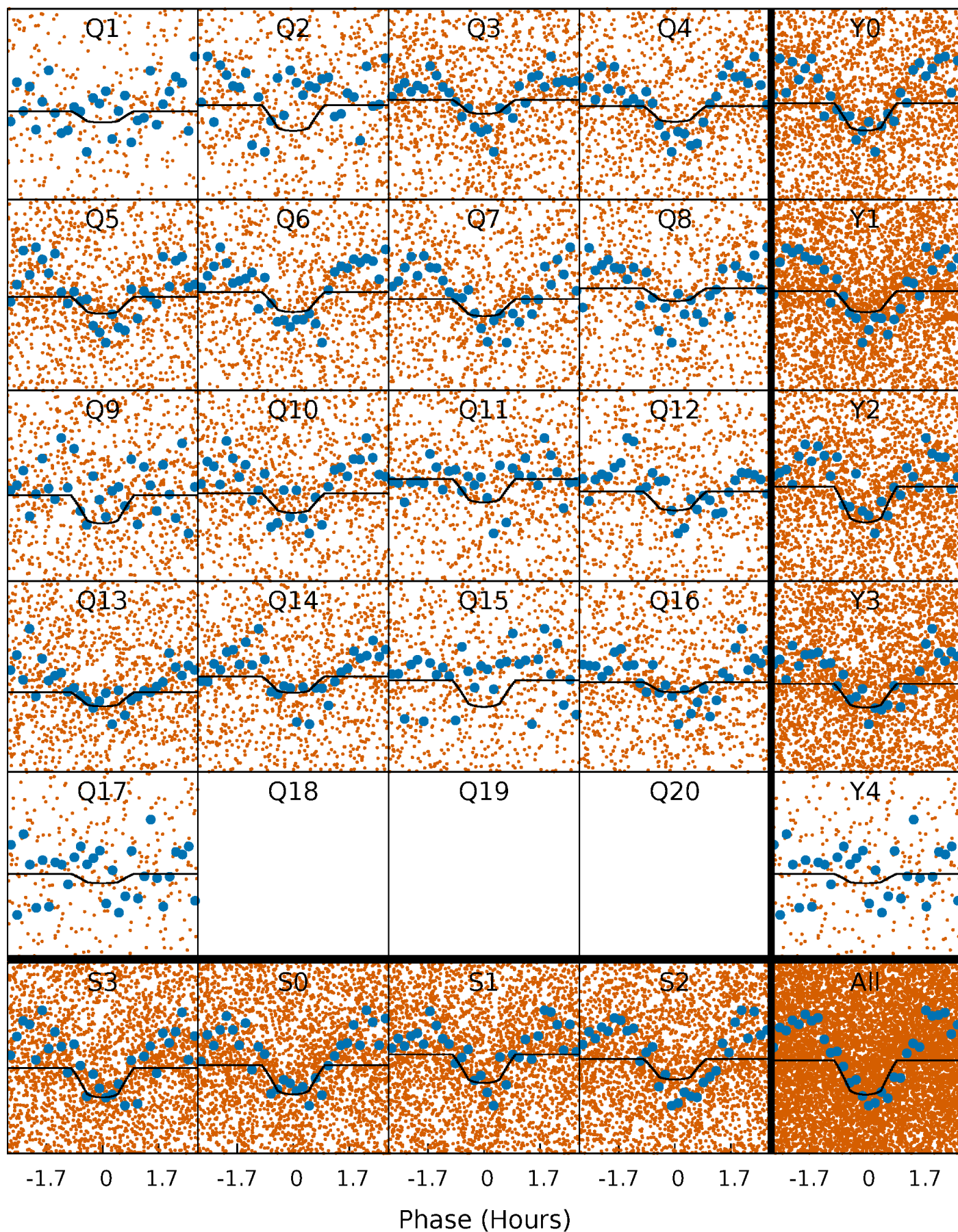
# PDC Quarter-Phased Transit Curves

TCE 005651327-01 P= 0.540903 Days  $T_0=131.545167$  (BKJD)



# DV Quarter-Phased Transit Curves

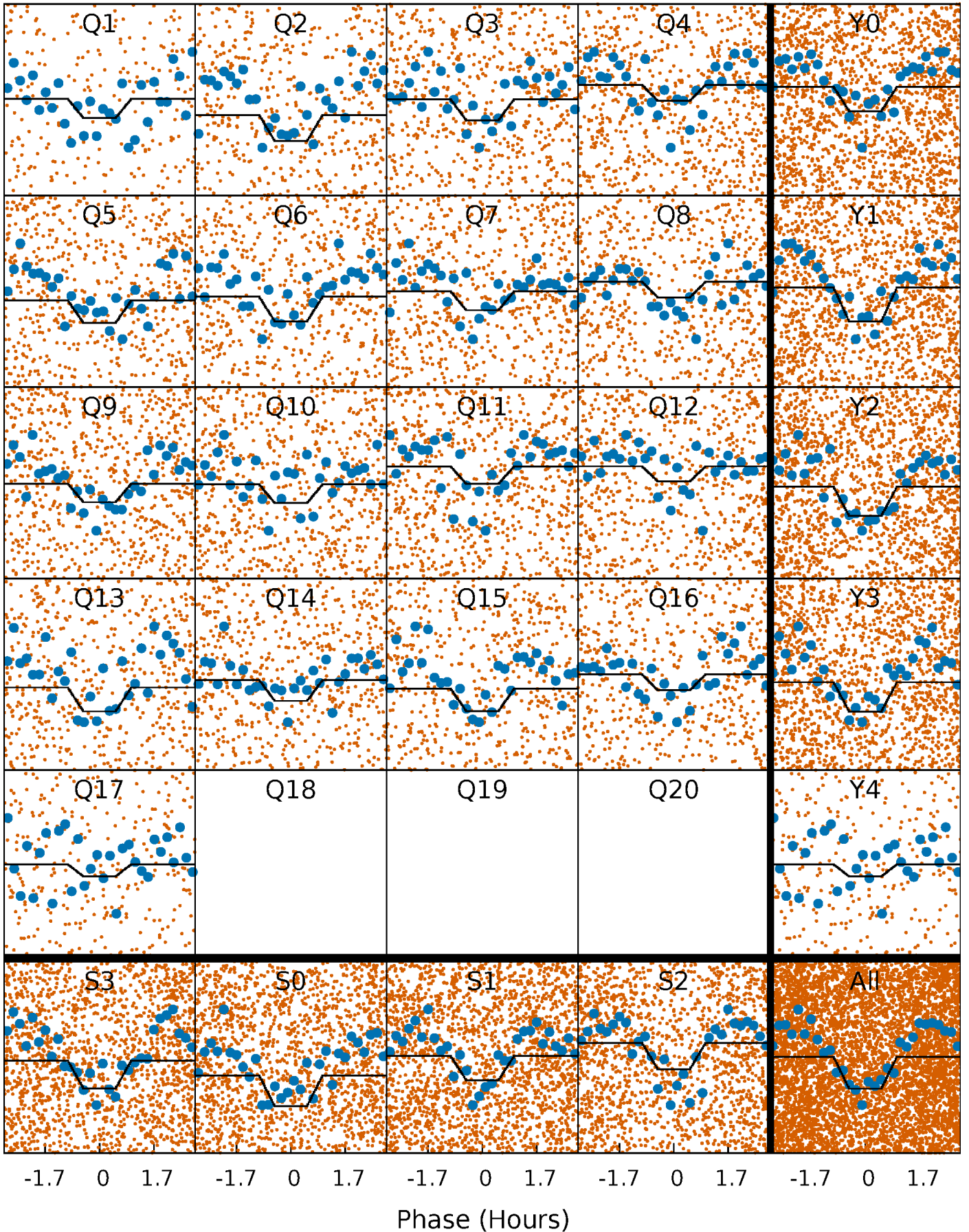
TCE 005651327-01 P= 0.540903 Days  $T_0=131.545167$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 005651327-01 P= 0.540911 Days  $T_0=131.542351$  (BKJD)

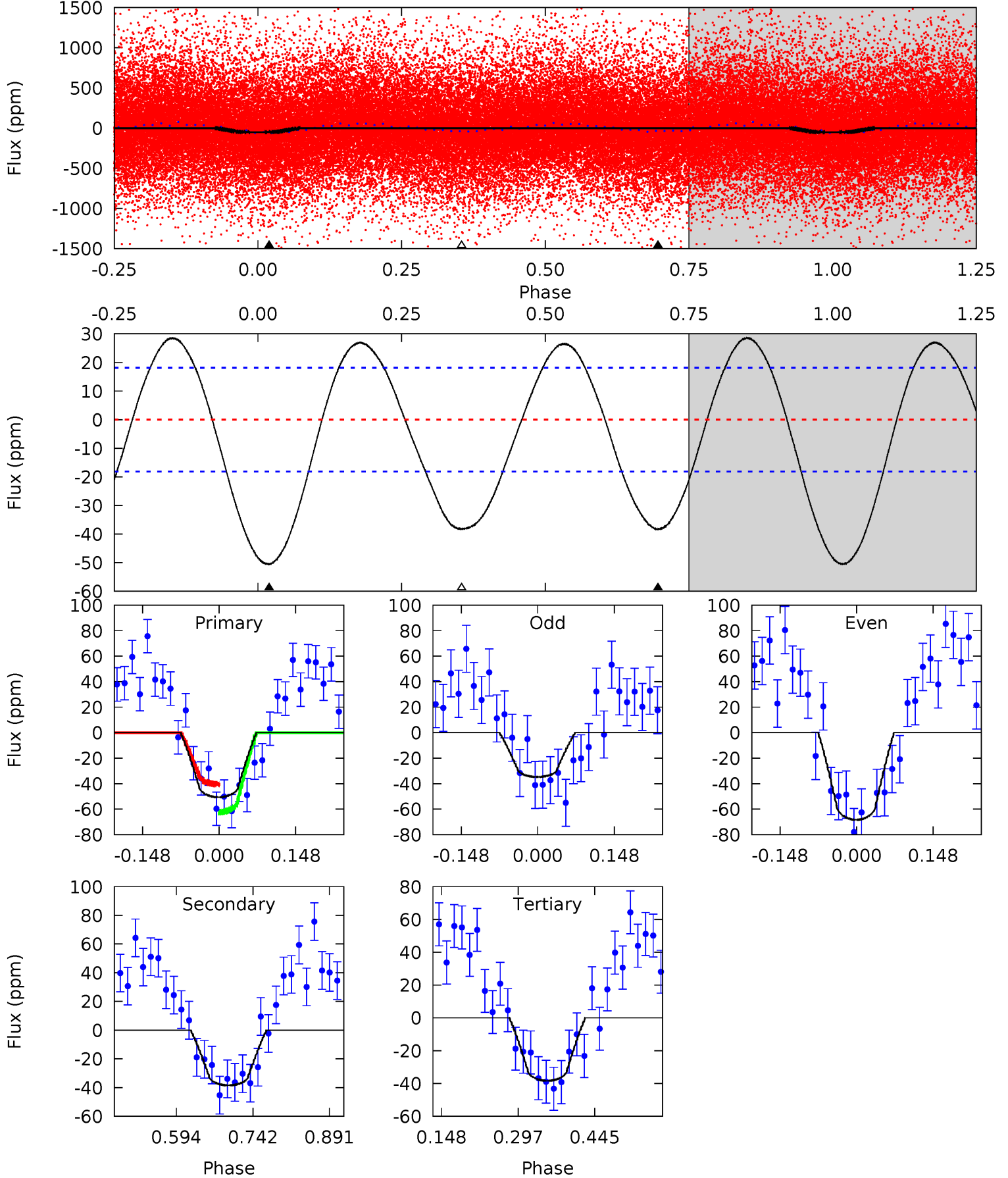




# DV Model-Shift Uniqueness Test

005651327-01, P = 0.540903 Days, E = 131.004264 Days

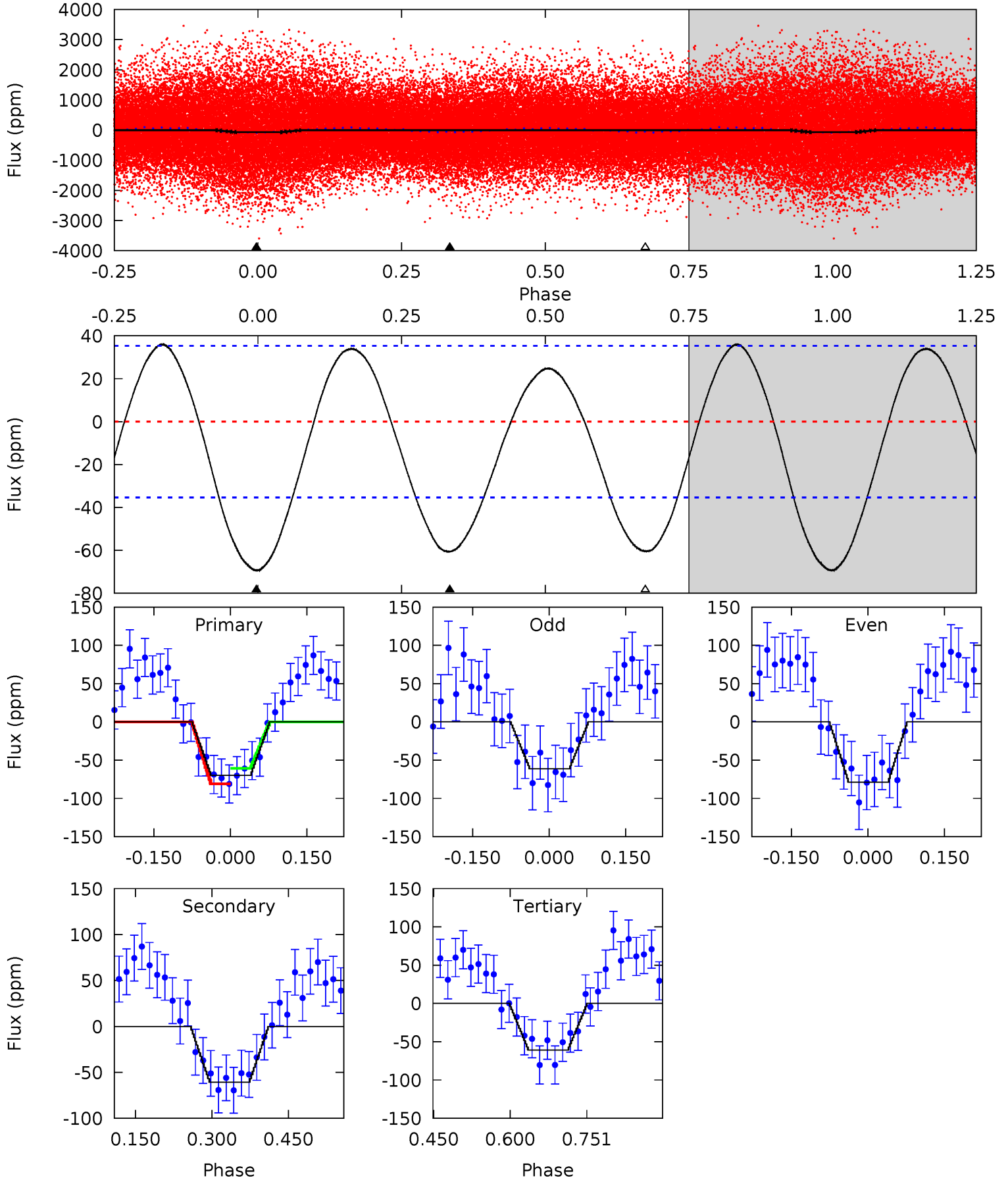
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	9.51	9.48	0	4.48	1.45	5.95	3.05	12.5	0.03	9.51	4.11	1.01	0.36	2.71



# Alt Model-Shift Uniqueness Test

005651327-01, P = 0.540911 Days, E = 131.001440 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.85	7.72	7.71	0	4.48	1.44	4.33	1.14	8.85	0.01	7.72	1.12	0.60	0.34	1.15



### Stellar Parameters For KIC 005651327

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6798^{+214}_{-262}$	$4.093^{+0.273}_{-0.168}$	$-0.520^{+0.250}_{-0.300}$	$1.586^{+0.444}_{-0.444}$	$1.137^{+0.178}_{-0.146}$	$0.401^{+0.634}_{-0.192}$
	+3%/-4%	+7%/-4%	+48%/-58%	+28%/-28%	+16%/-13%	+158%/-48%
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 005651327-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-38 \pm 4$	$1.07^{+0.37}_{-0.35}$	$4469^{+379}_{-374}$	$6580^{+1565}_{-930}$	$3.475^{+3.930}_{-1.627}$
Alt.	$-61 \pm 8$	$1.40^{+0.40}_{-0.35}$	$4480^{+359}_{-392}$	$6360^{+987}_{-663}$	$3.106^{+2.361}_{-1.180}$

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



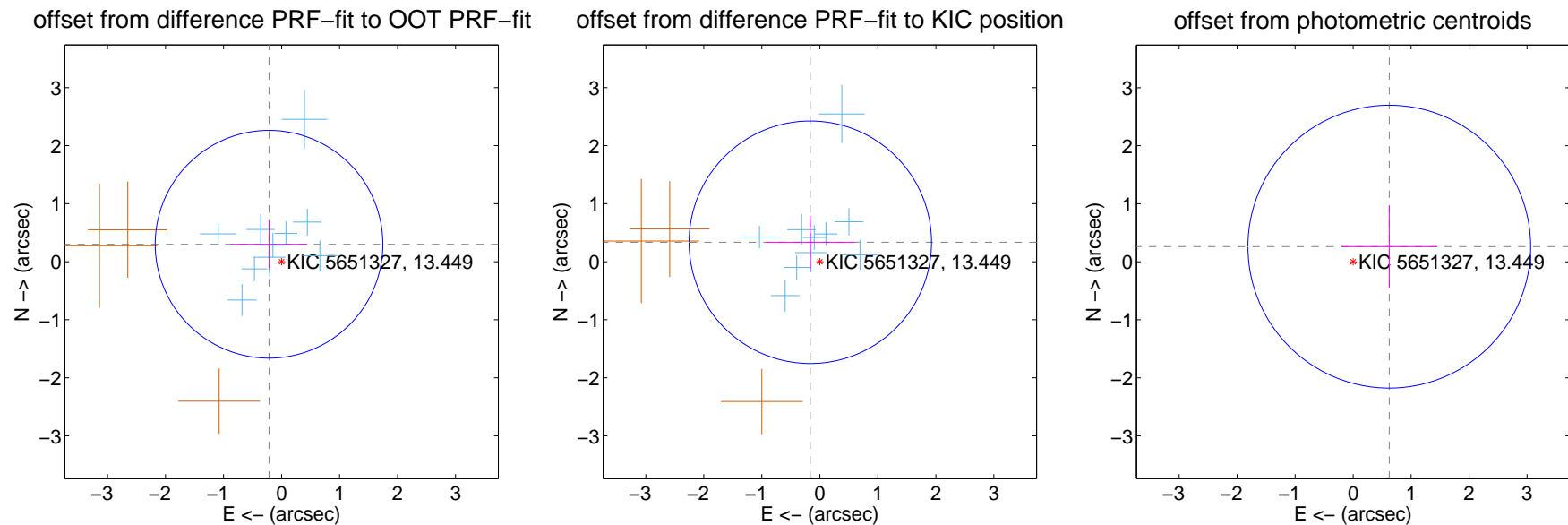
## DV Centroid Data

Supplemental centroid analysis for 005651327-01. Kepler magnitude: 13.45. Transit SNR 8.26

There are 10 quarters with good PRF difference image offsets

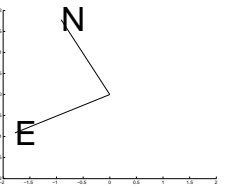
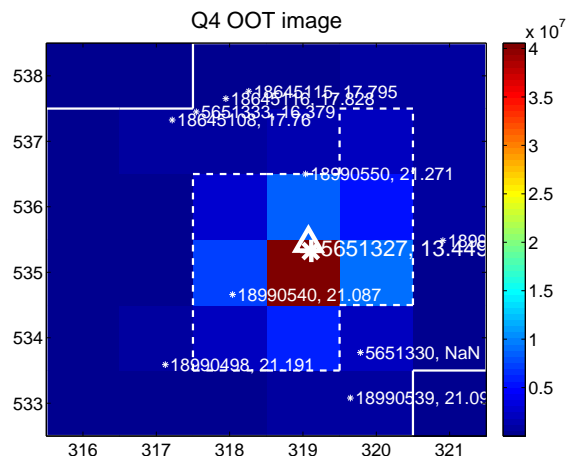
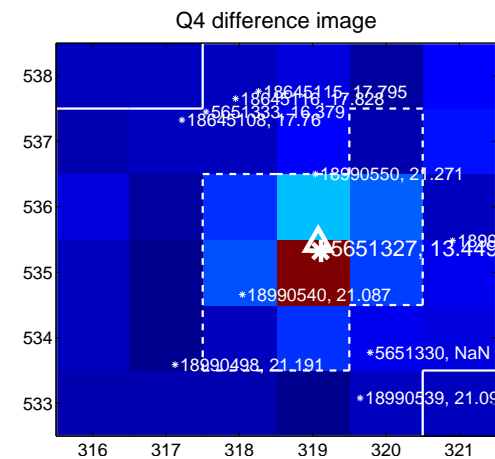
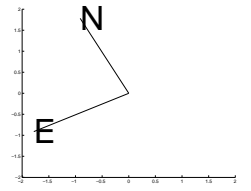
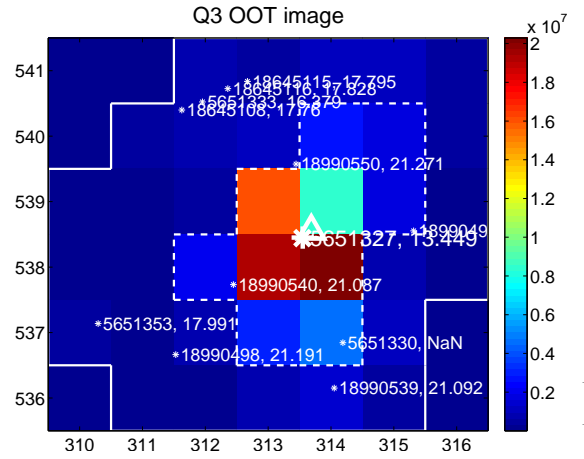
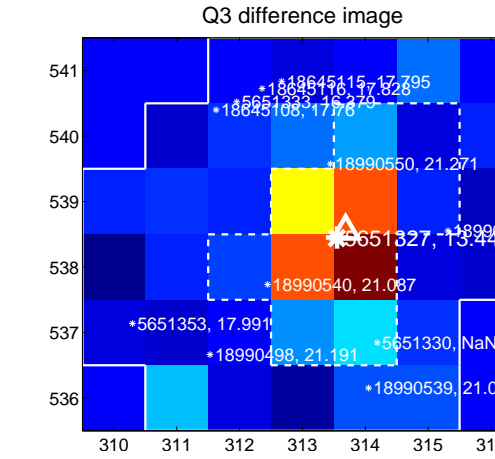
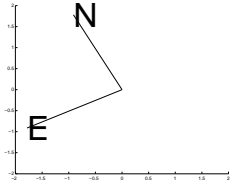
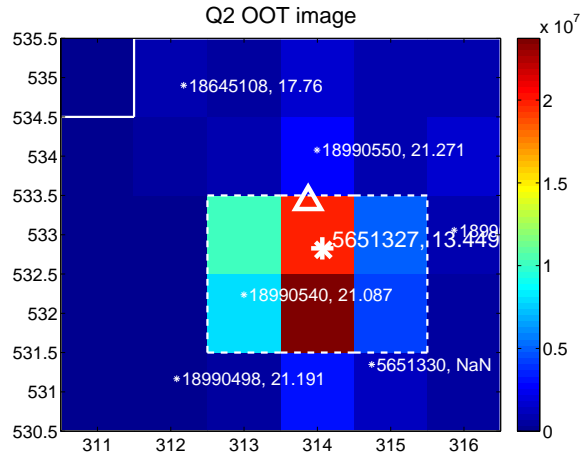
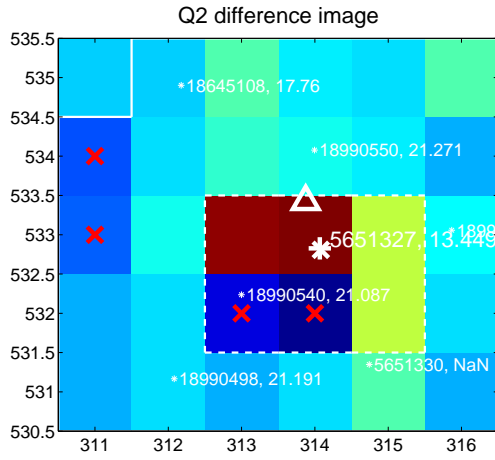
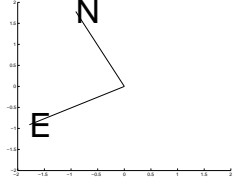
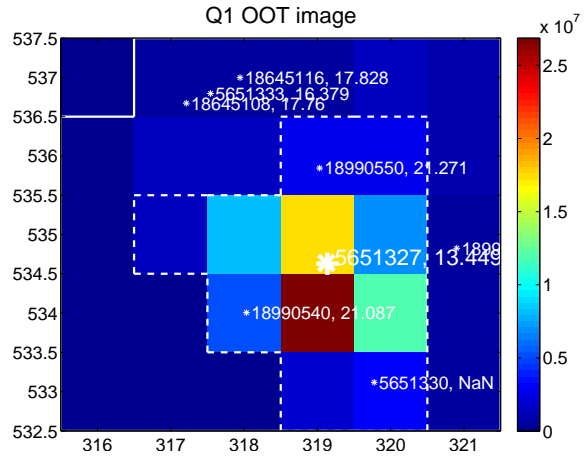
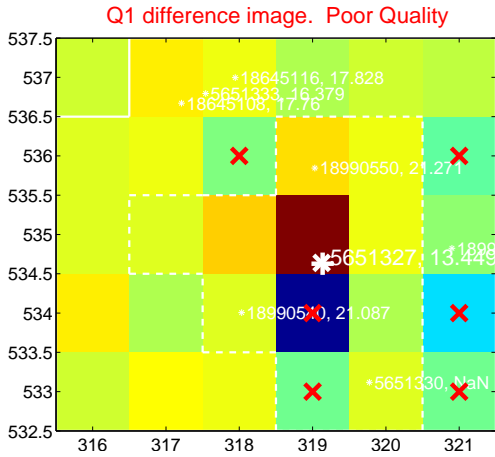
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.370 \pm 0.654$	0.57	$0.216 \pm 0.659$	$0.301 \pm 0.410$
PRF-fit source offset from KIC position	$0.373 \pm 0.697$	0.54	$0.165 \pm 0.761$	$0.335 \pm 0.455$
photometric centroid source offset	$0.68 \pm 0.81$	0.83	$-0.62 \pm 0.83$	$0.26 \pm 0.71$

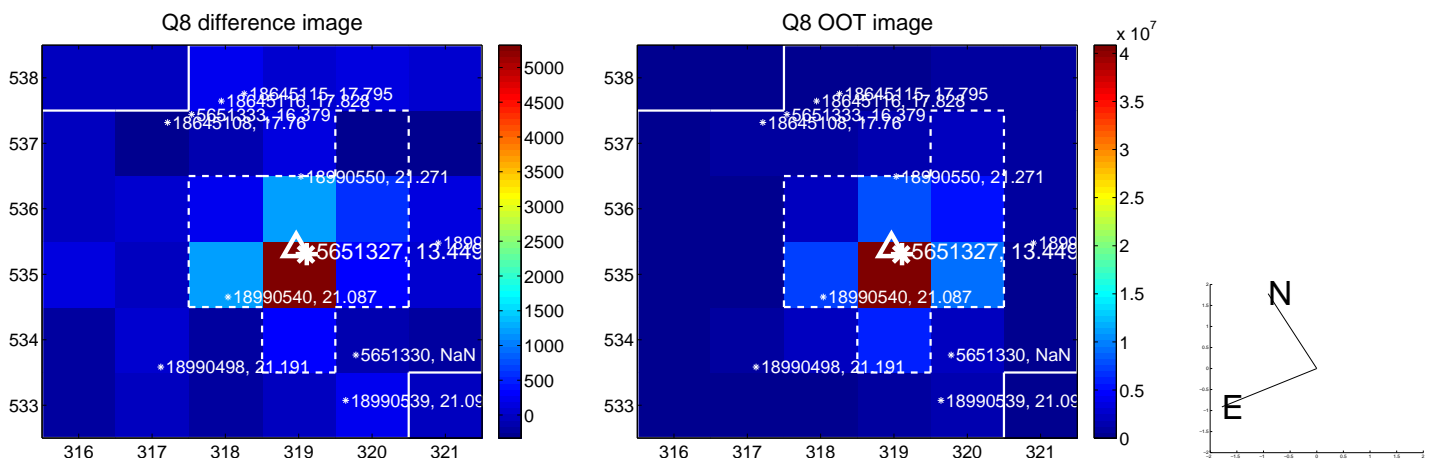
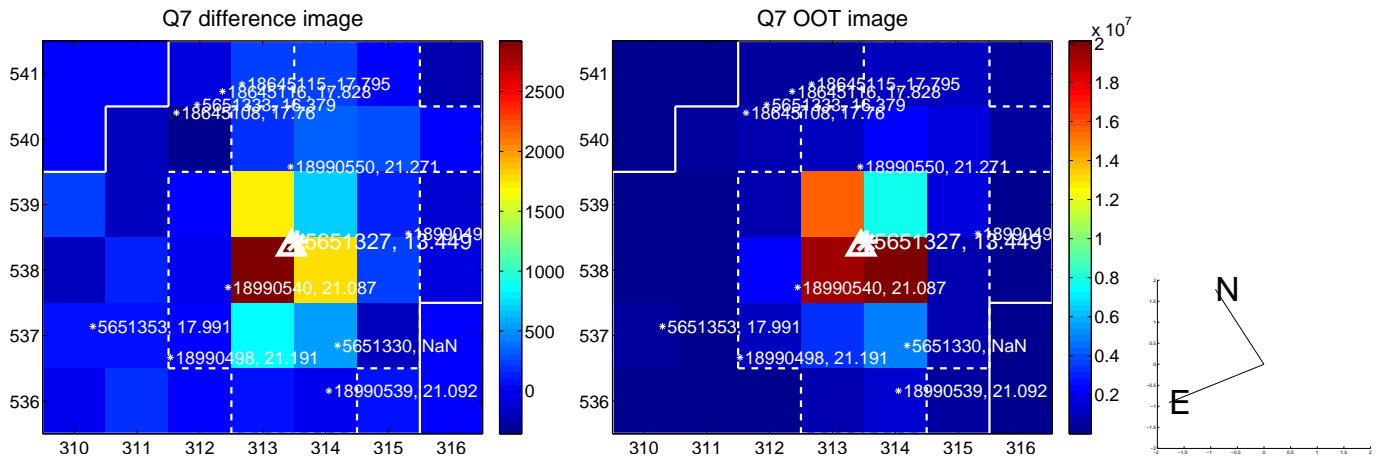
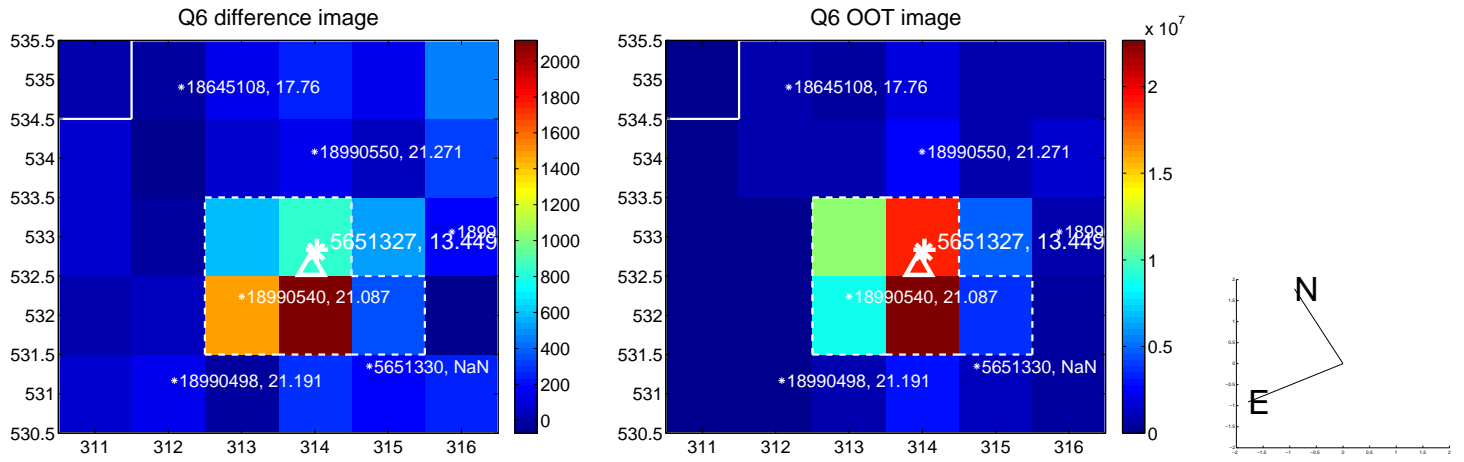
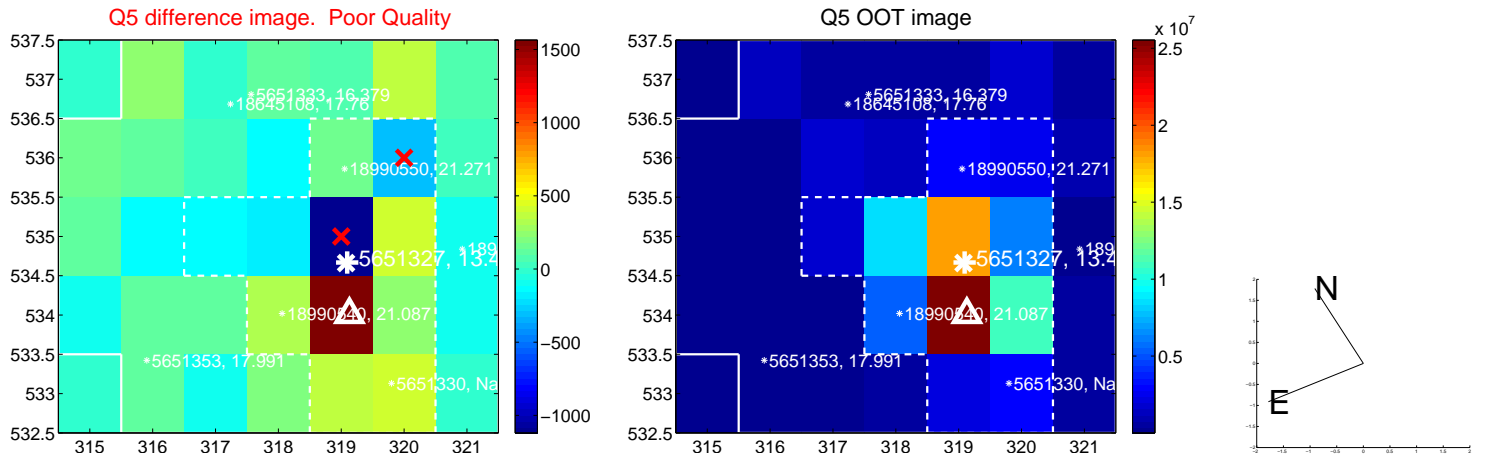


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

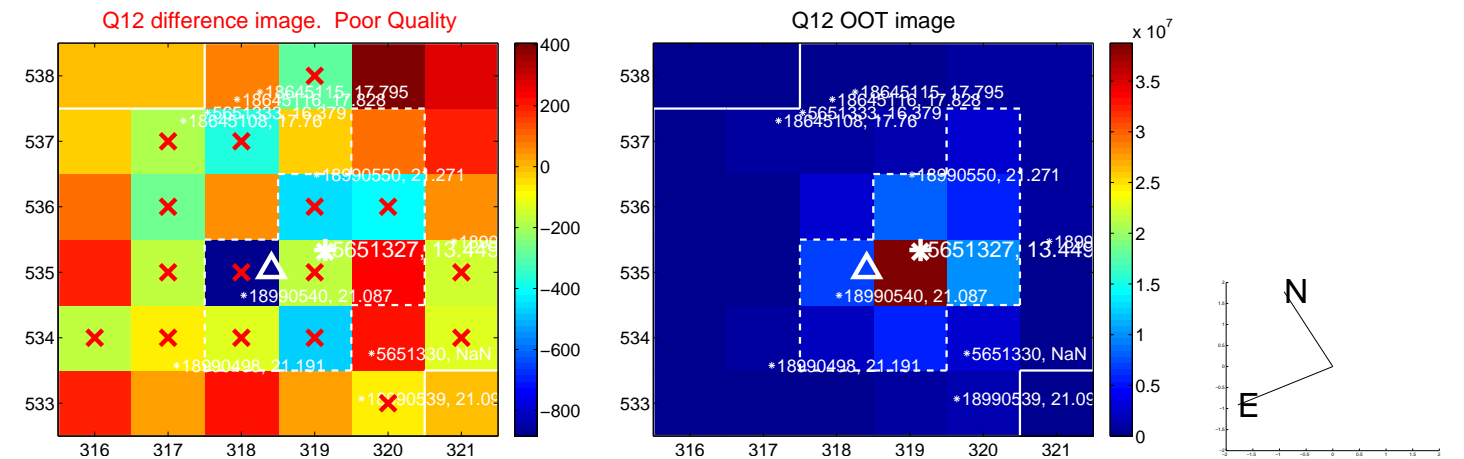
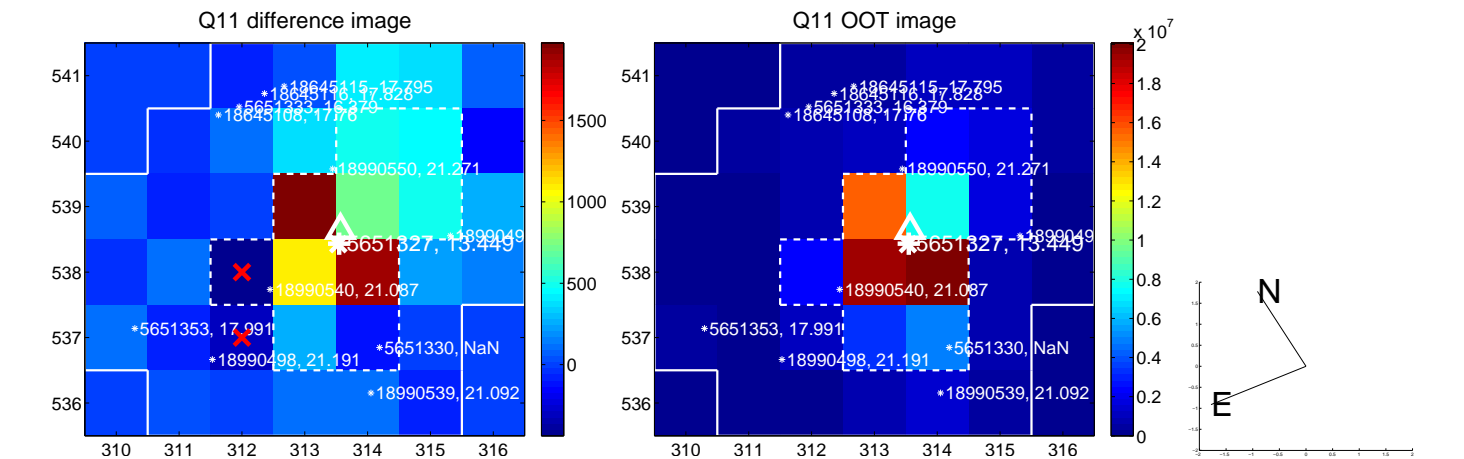
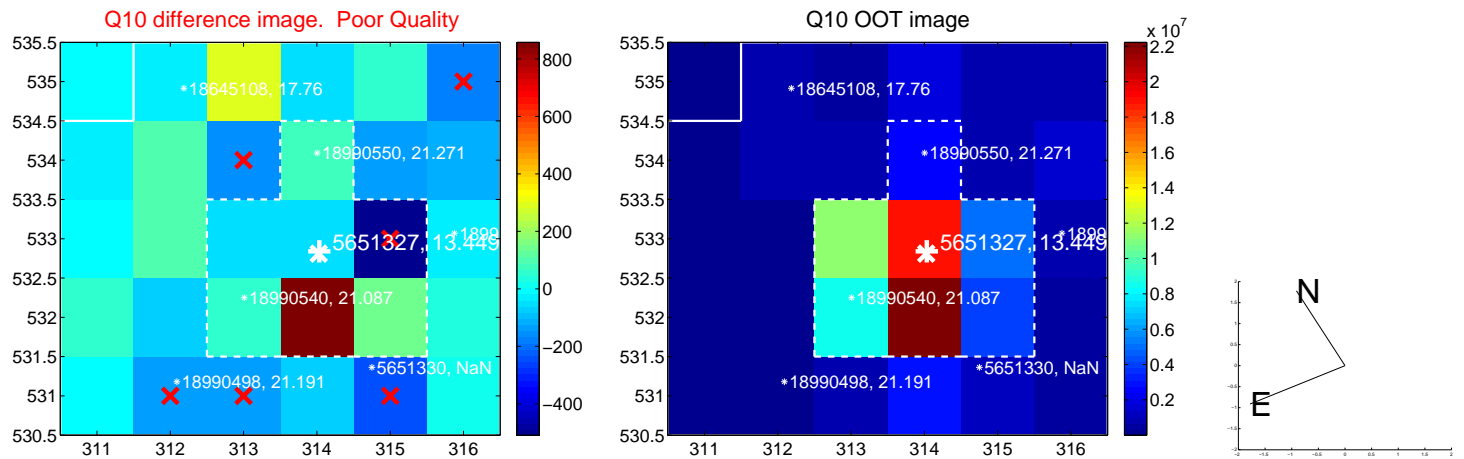
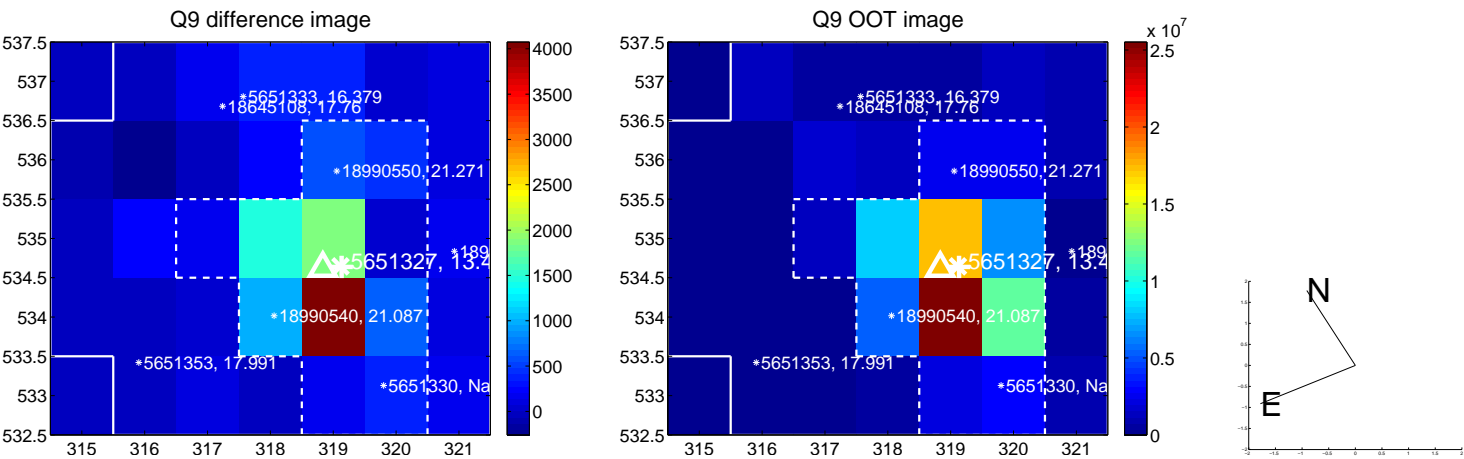
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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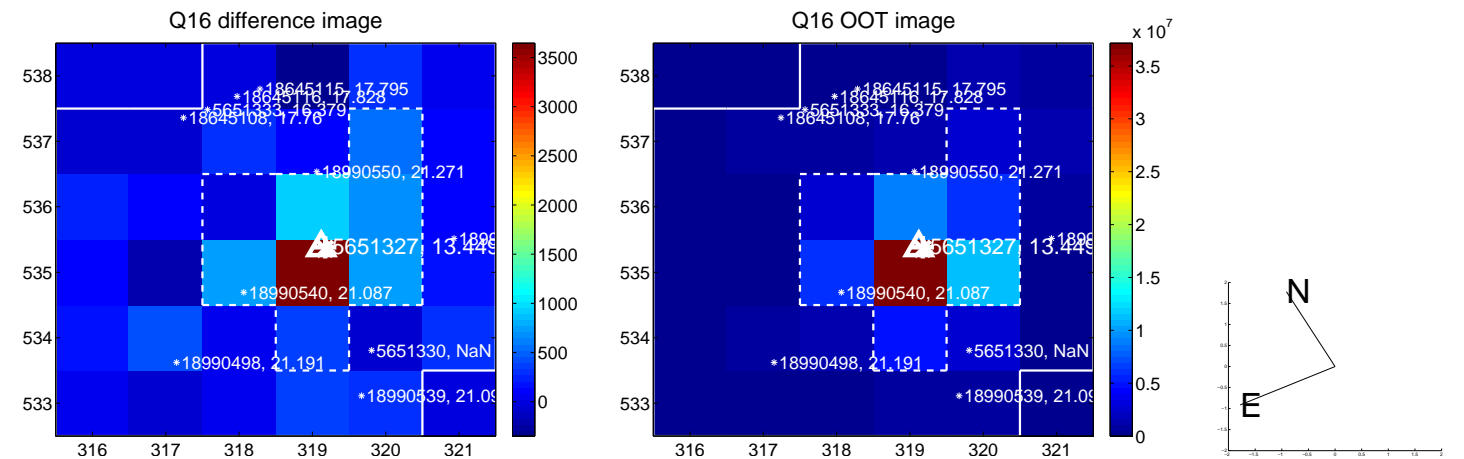
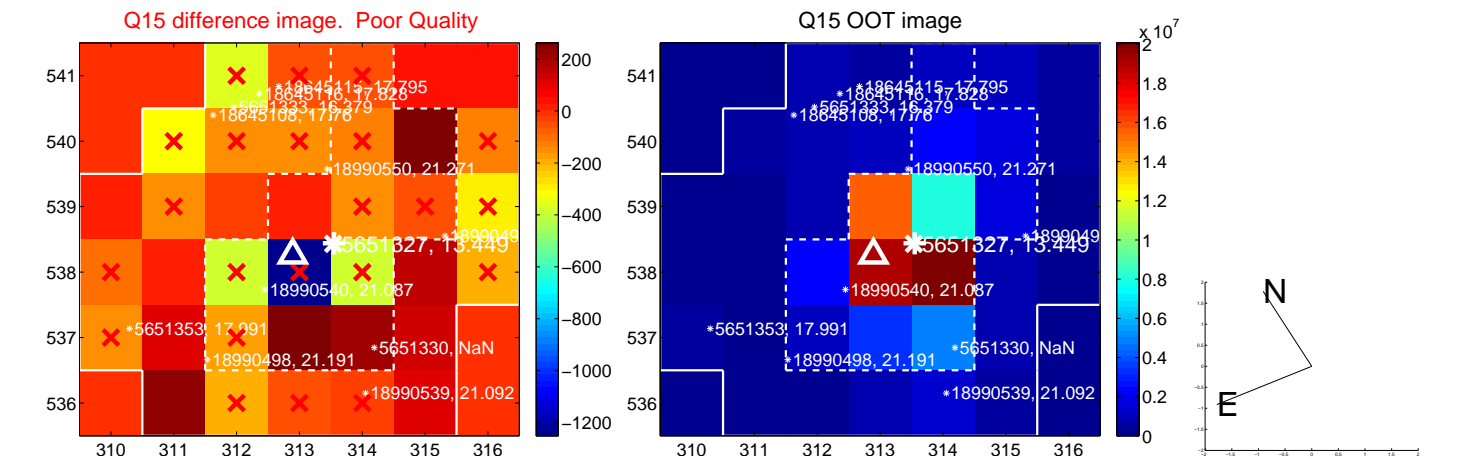
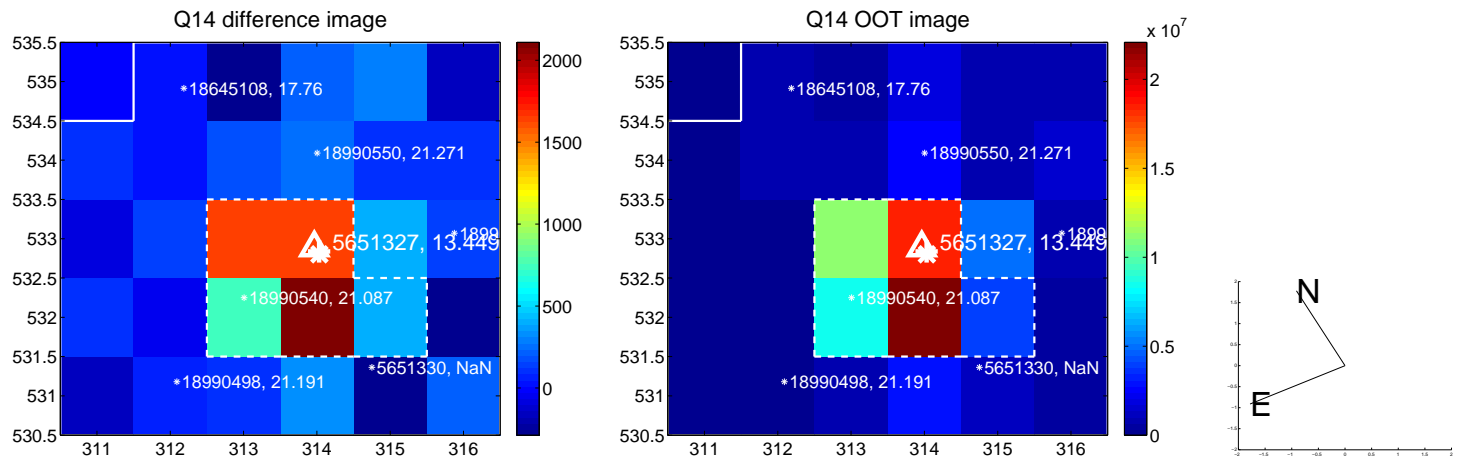
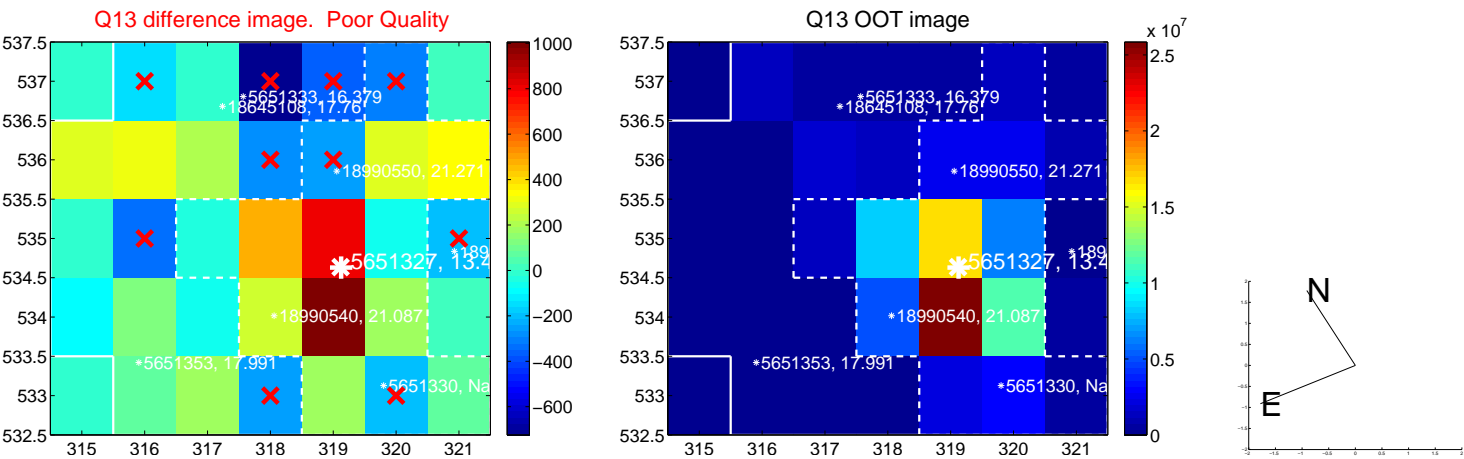


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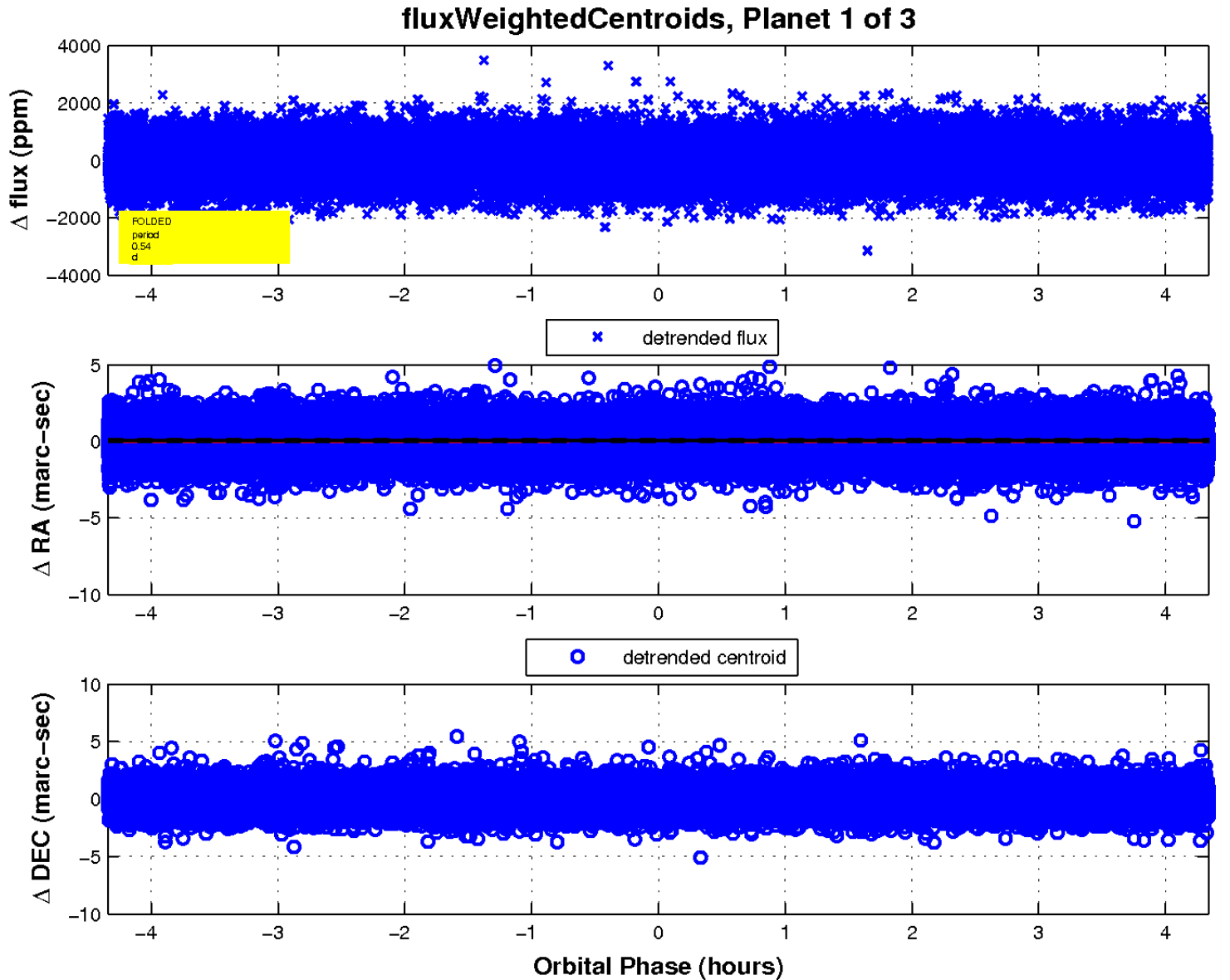
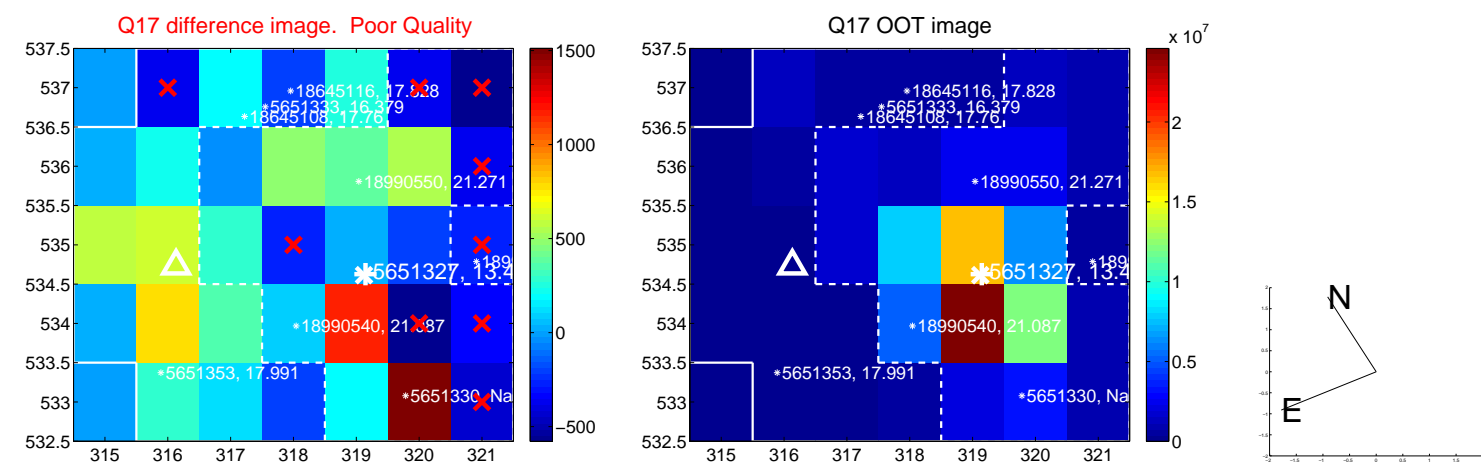




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

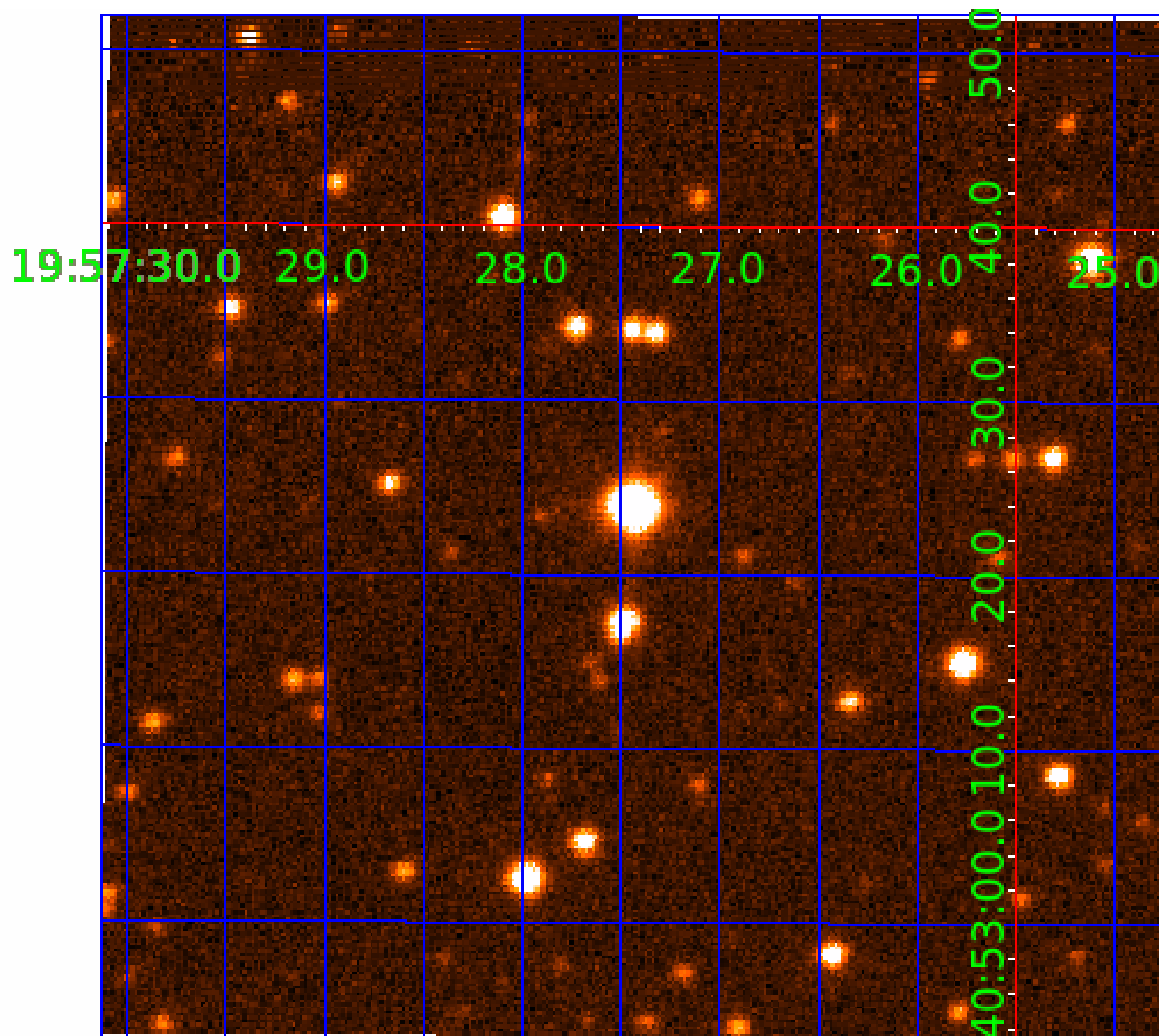


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005651327

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005651327-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005651327-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005651327-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT

**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.

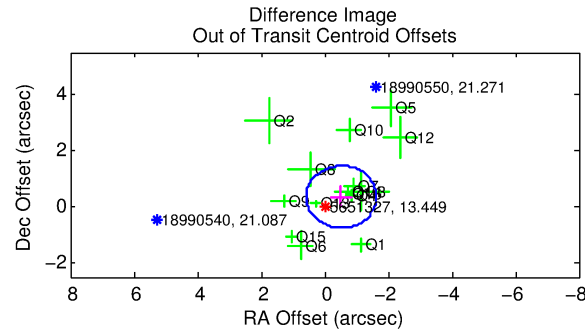
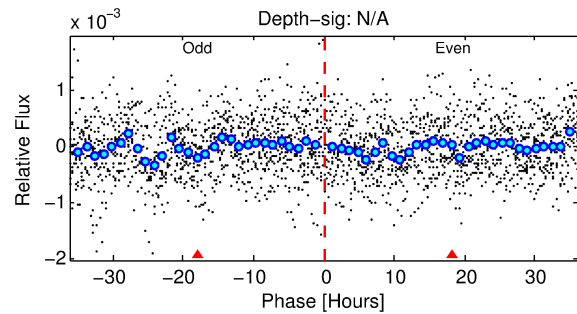
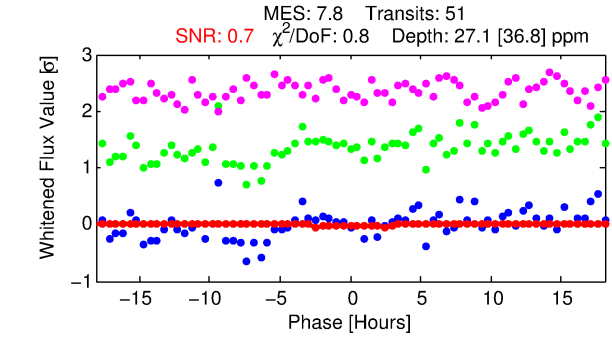
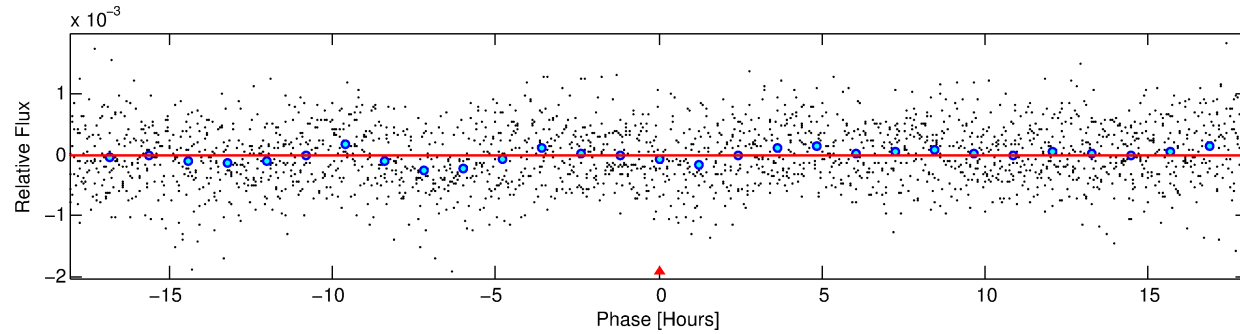
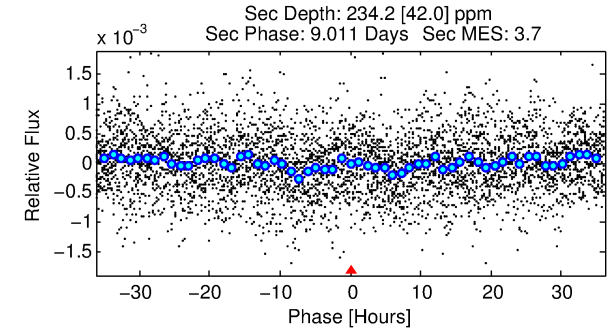
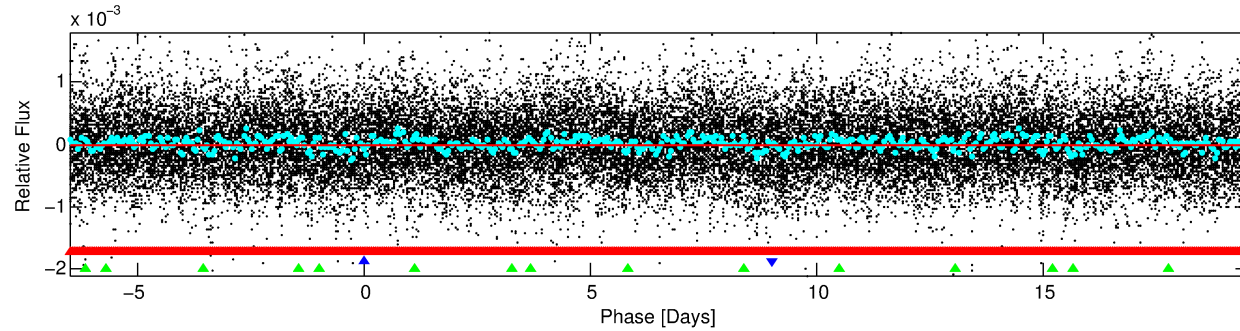
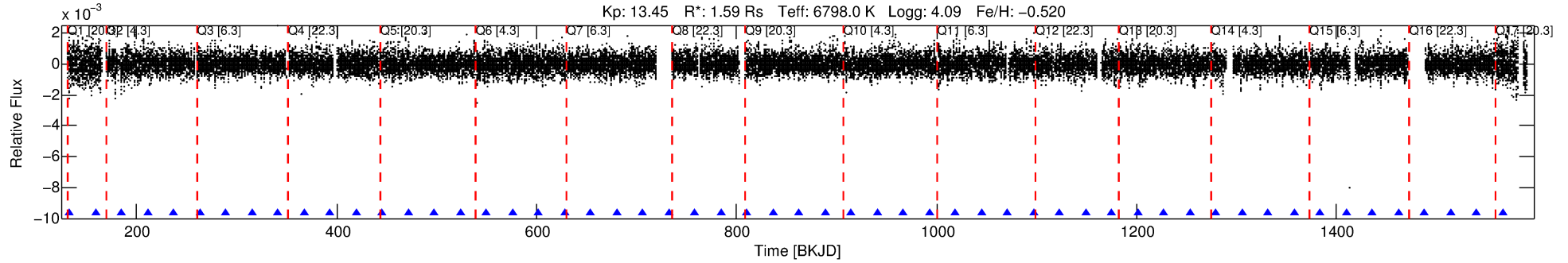
Ephemeris Match Information For 005651327-02

No Significant Match Found



# DV One-Page Summary

KIC: 5651327 Candidate: 2 of 3 Period: 26.061 d



## DV Fit Results:

Period = 26.06079 [0.00222] d  
Epoch = 133.0300 [0.0675] BKJD  
Rp/R\* = 0.0055 [0.0092]  
a/R\* = 15.06 [134.27]  
b = 0.90 [1.96]  
Seff = 149.27 [72.24]  
Teq = 891 [108] K  
Rp = 0.96 [1.61] Re  
a = 0.1796 [0.0504] AU  
Ag = 4522.22 [15148.97] [0.30σ]  
Teffp = 11300 [9385] K [1.1σ]

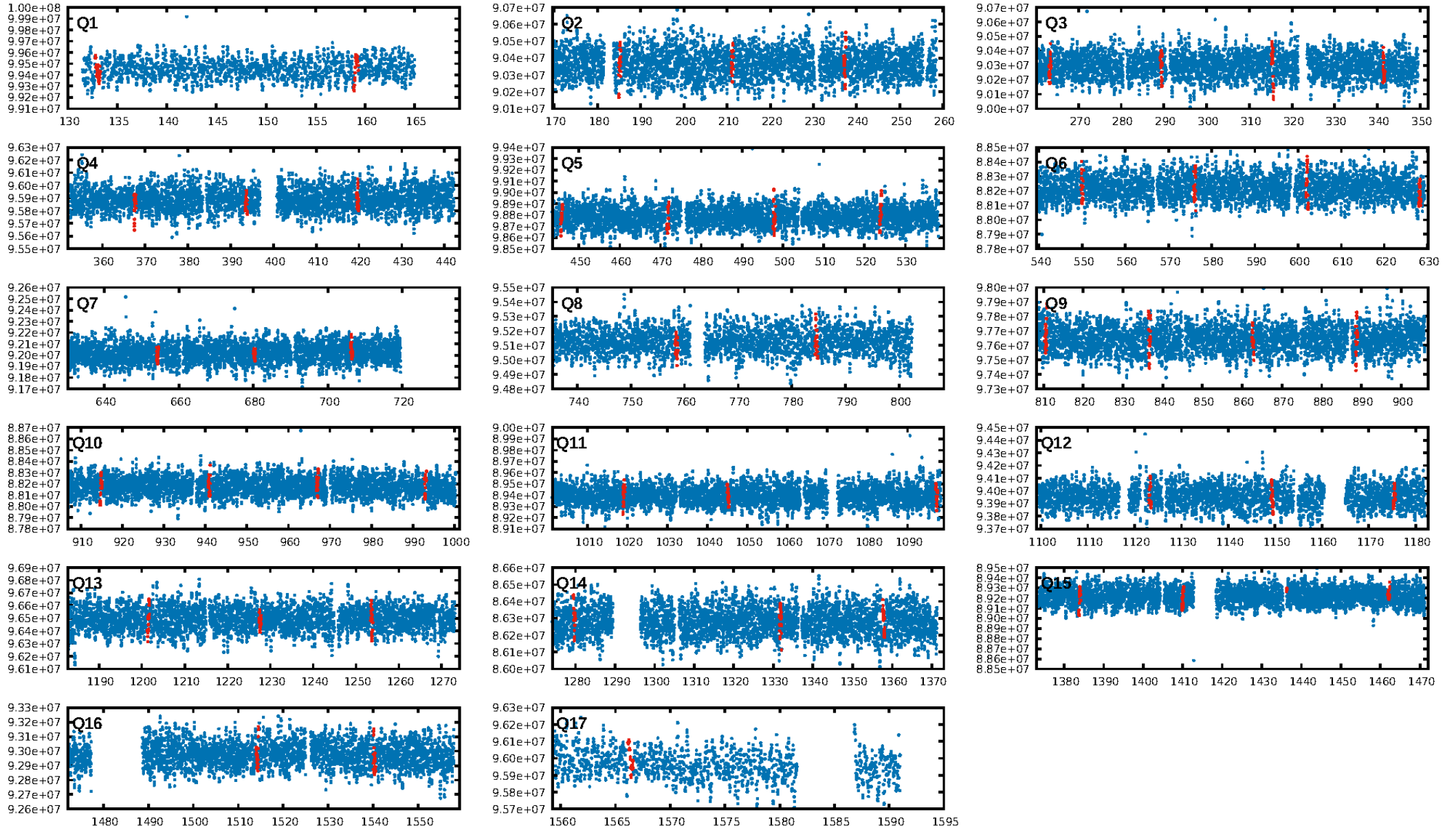
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [98.72σ]  
LongPeriod-sig: 100.0% [227.61σ]  
ModelChiSquare2-sig: 39.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.09e-13  
RollingBand-fgt: 1.00 [48/48]  
GhostDiagnostic-chr: -1.186  
Centroid-sig: N/A  
Centroid-so: 9.210 arcsec [2.14σ]  
OotOffset-rm: 0.626 arcsec [1.70σ]  
KicOffset-rm: 0.698 arcsec [1.74σ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.33 [5/15]  
DiffImageOverlap-fno: 0.00 [0/17]

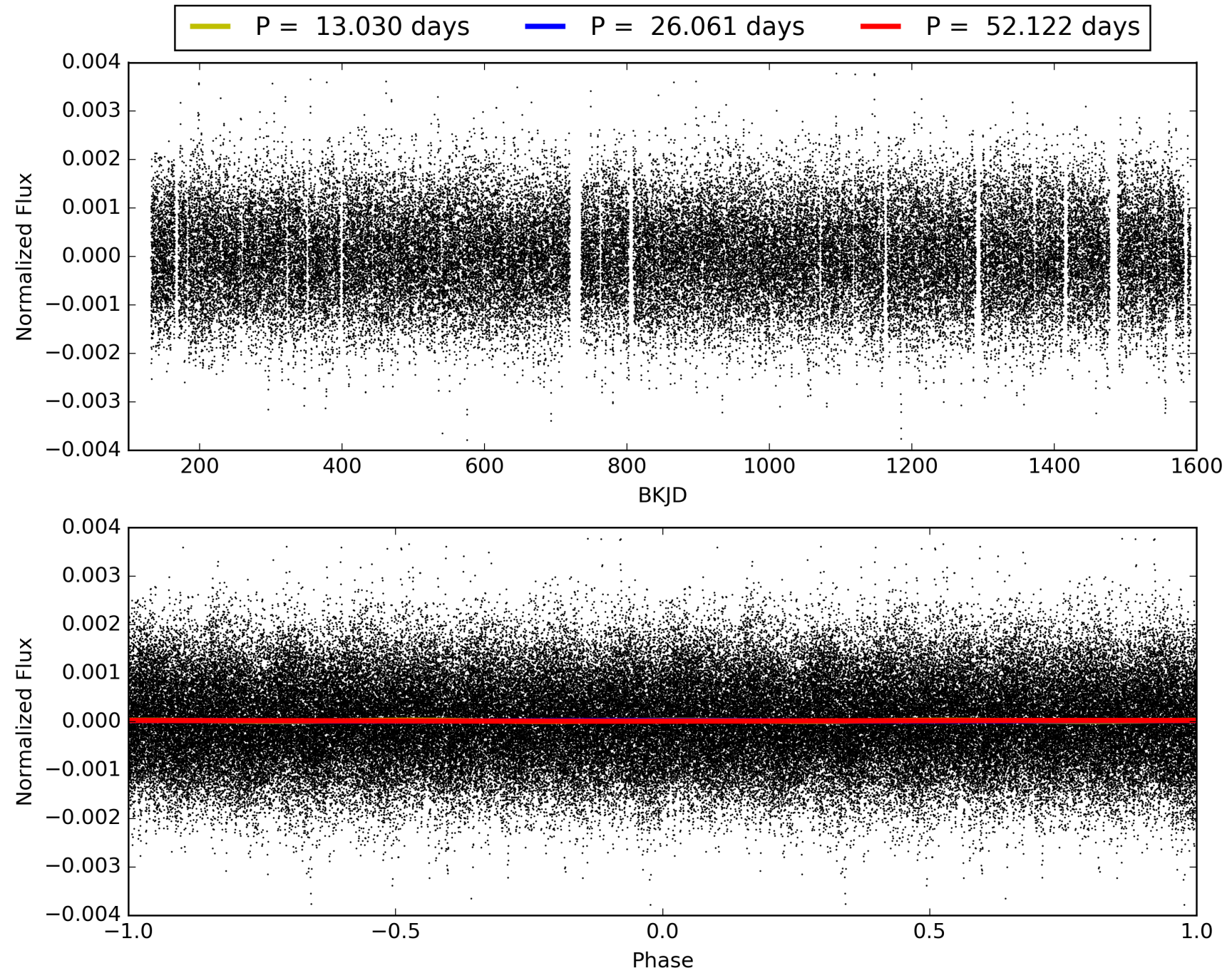
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:38 Z

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

# TCE 005651327-02, PDC Light Curves

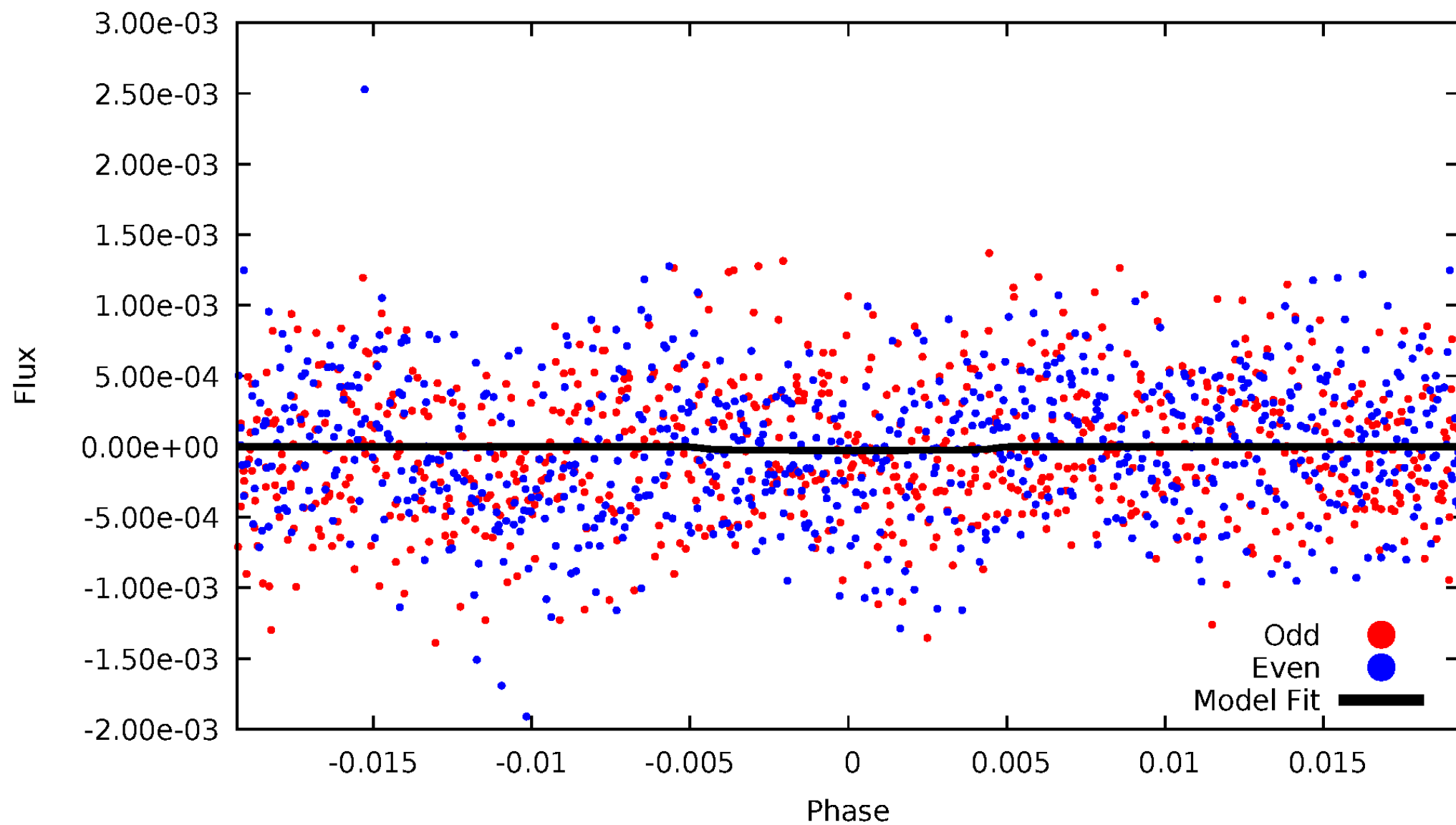


TCE 005651327-02



# DV Odd/Even

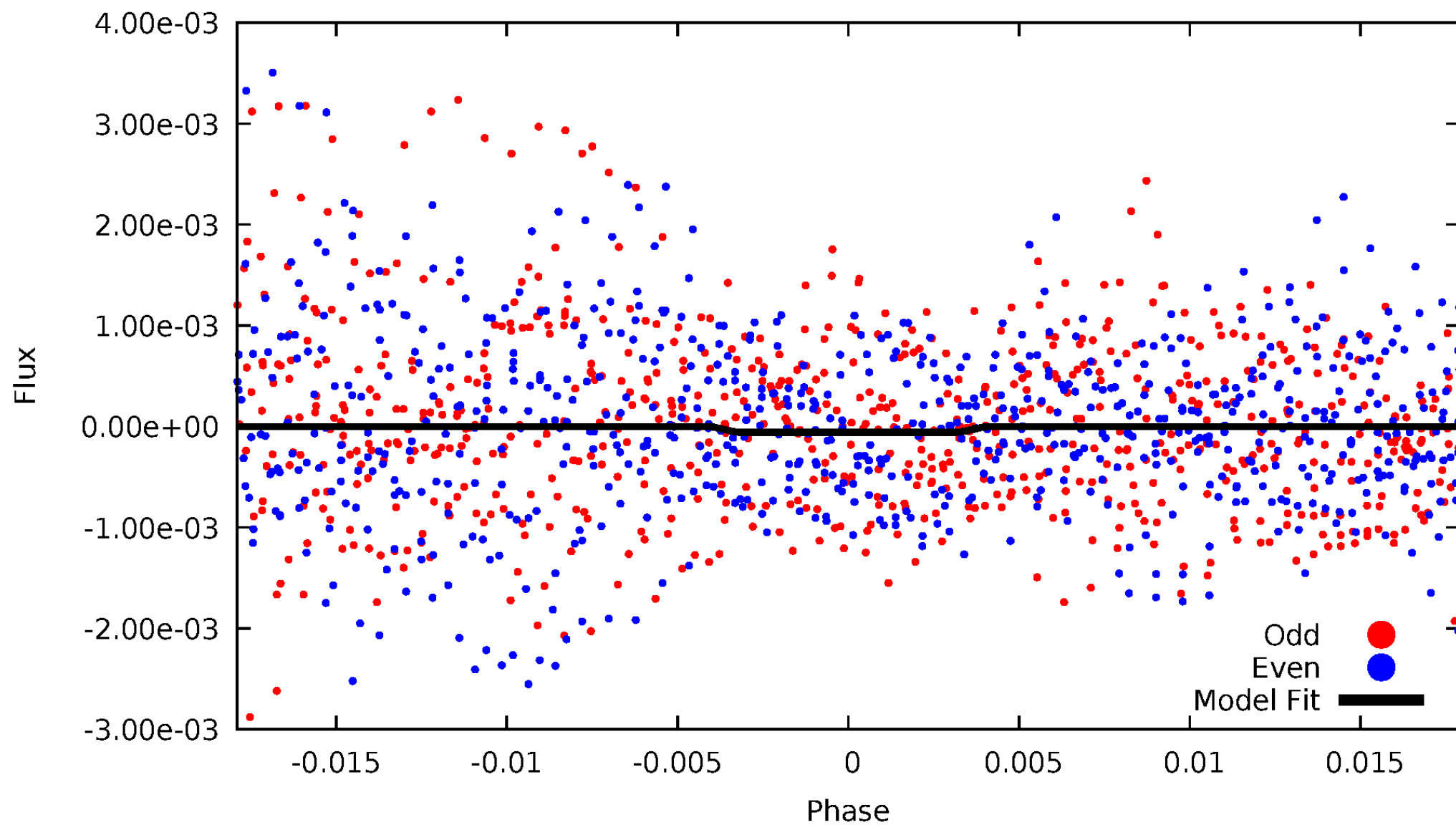
TCE 005651327-02





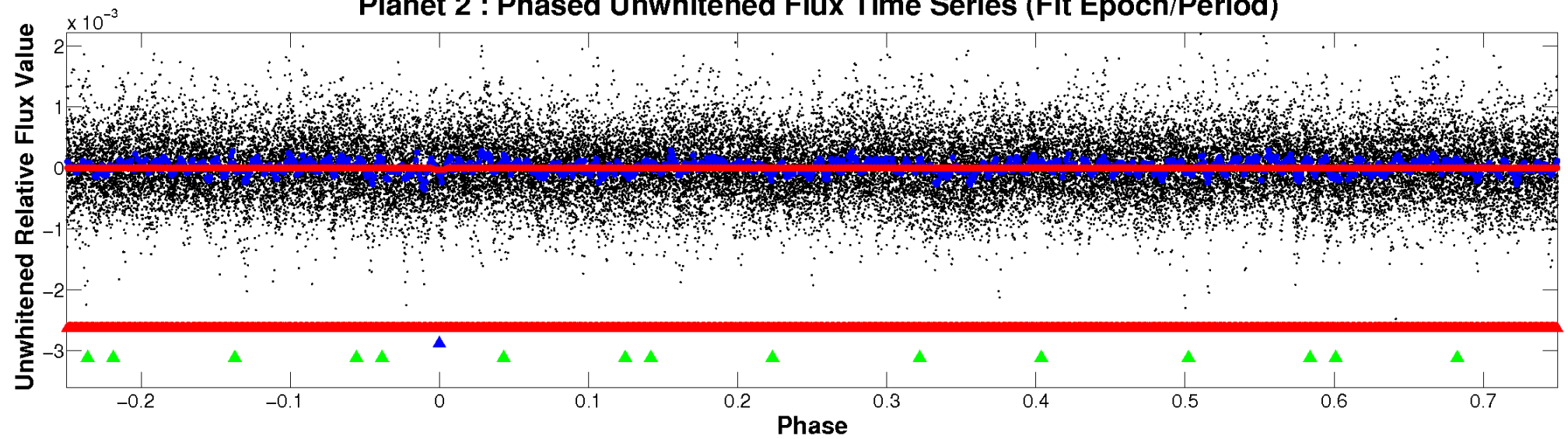
# ALT Odd/Even

TCE 005651327-02

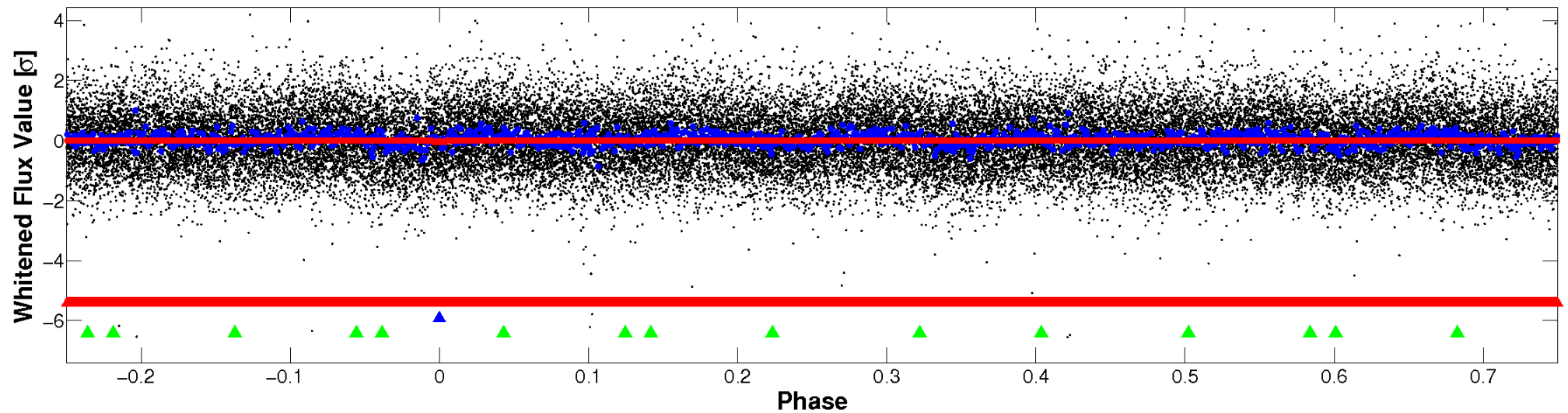


# Non-Whitened Vs. Whitened Light Curve

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

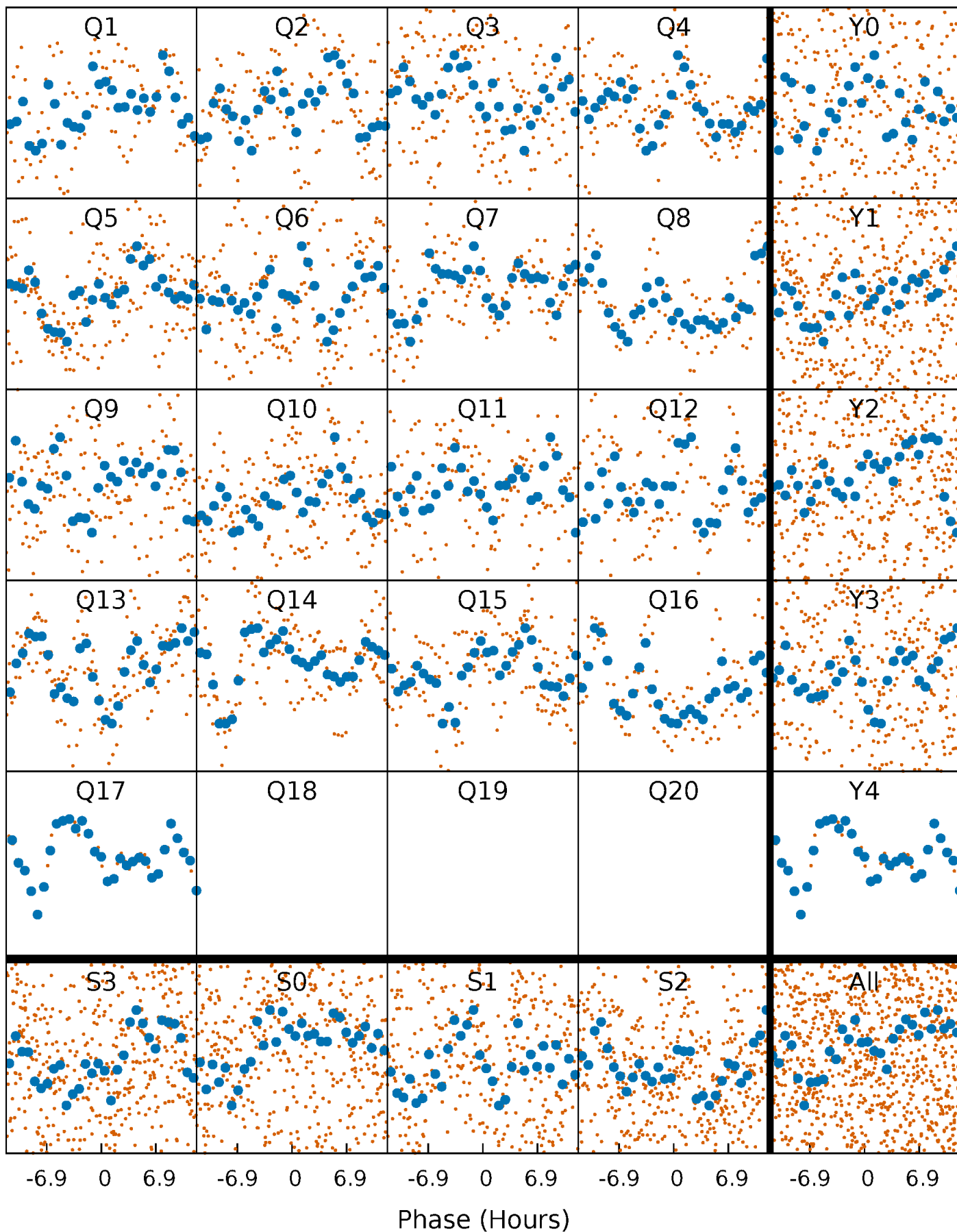


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



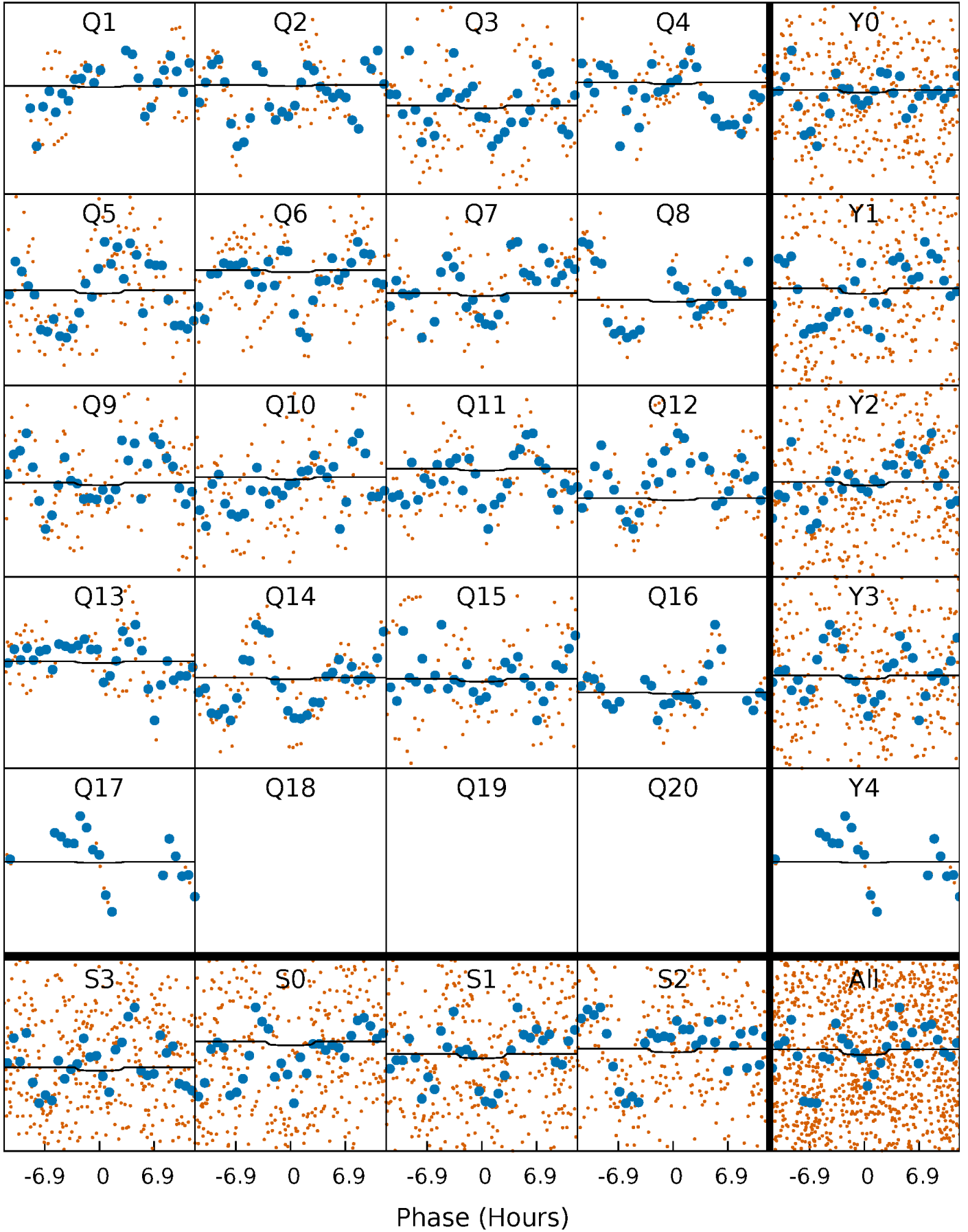
# PDC Quarter-Phased Transit Curves

TCE 005651327-02 P= 26.060792 Days  $T_0=133.029958$  (BKJD)



# DV Quarter-Phased Transit Curves

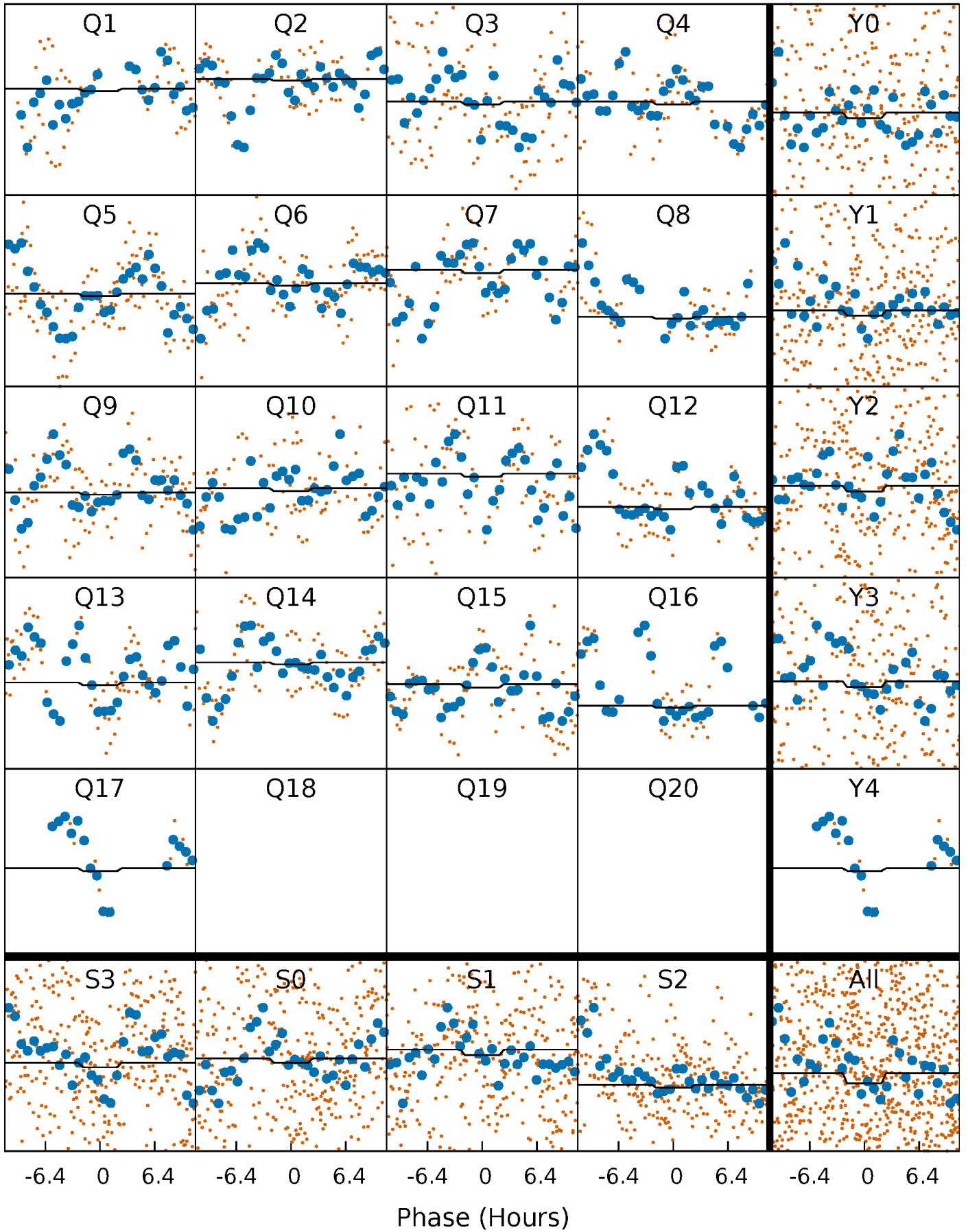
TCE 005651327-02 P= 26.060792 Days  $T_0=133.029958$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

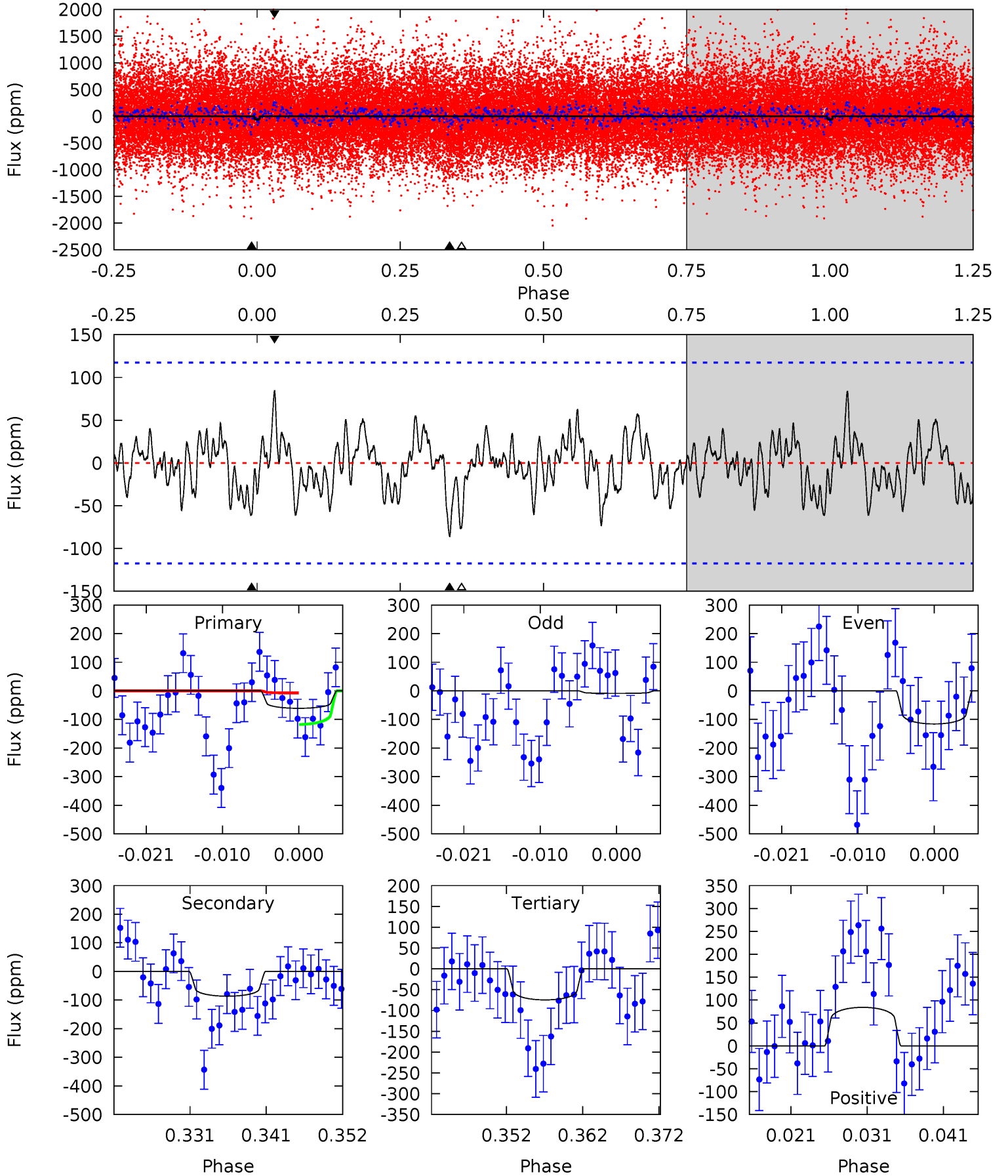
TCE 005651327-02 P= 26.060547 Days  $T_0=133.050509$  (BKJD)



# DV Model-Shift Uniqueness Test

005651327-02, P = 26.060792 Days, E = 106.969166 Days

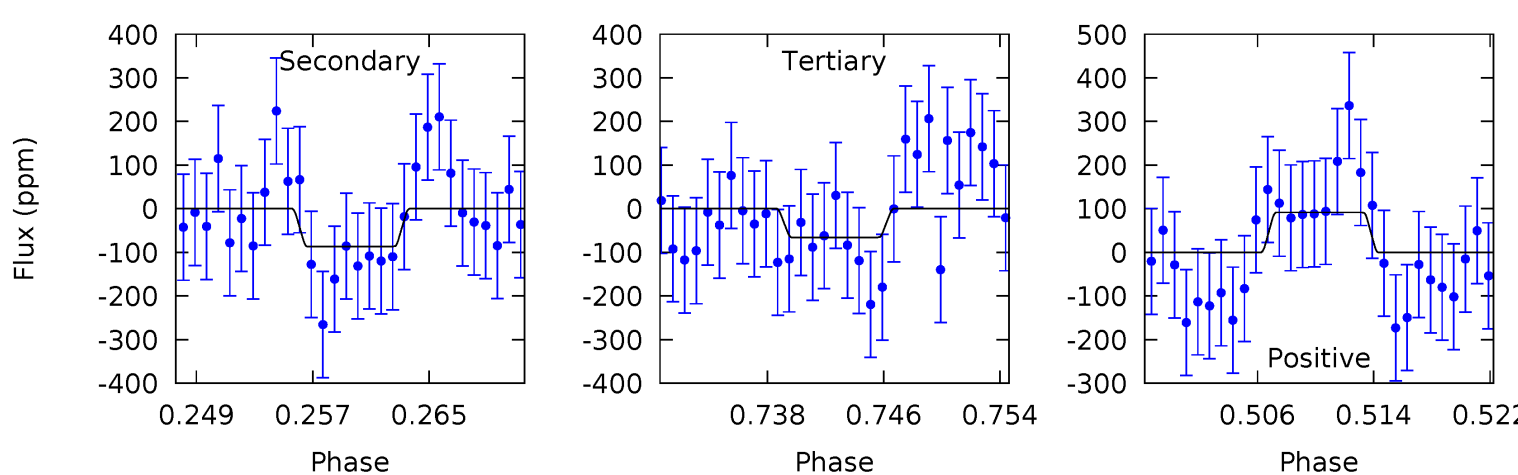
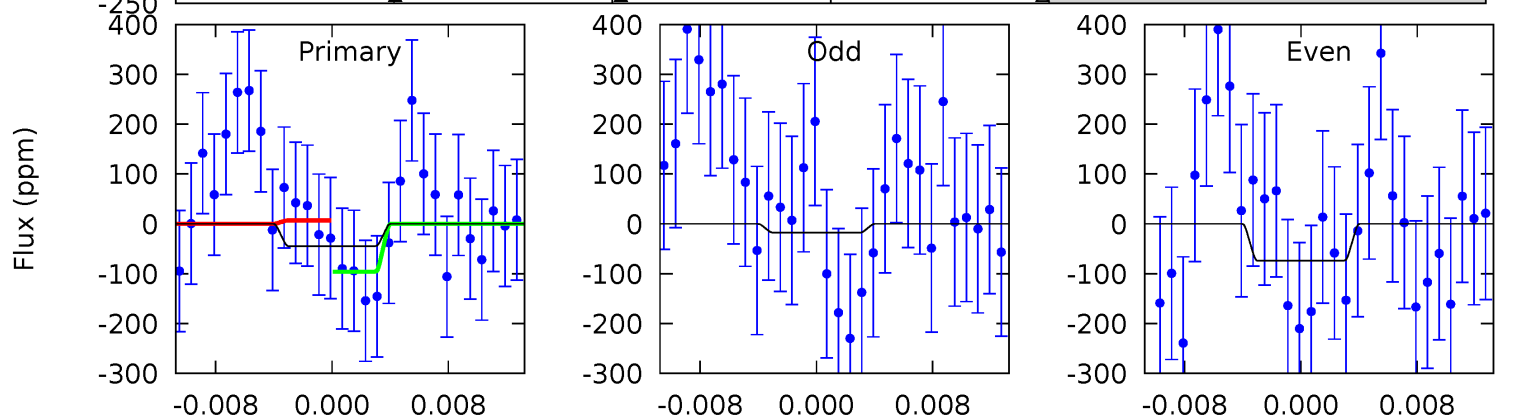
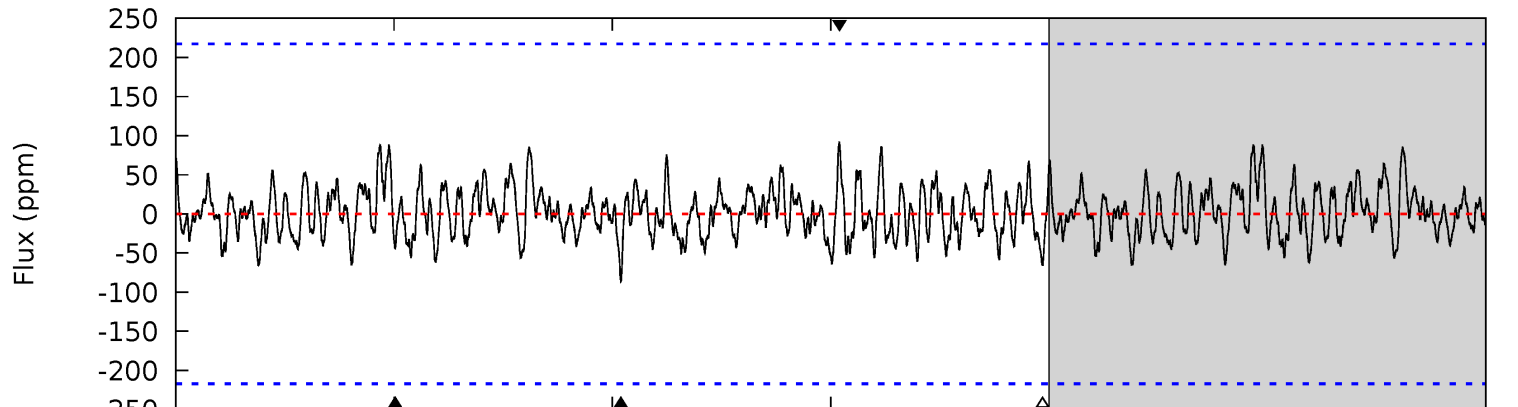
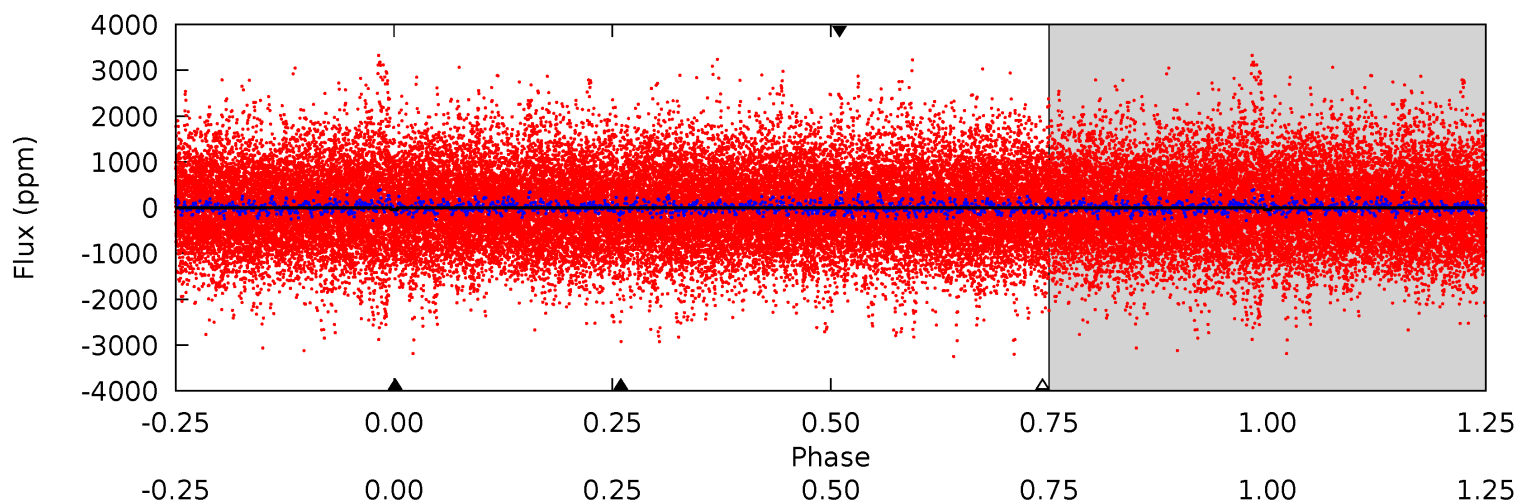
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.61	3.70	3.19	3.59	5.02	2.56	1.12	-0.58	-0.98	0.50	0.10	2.29	1.40	0.49	2.36



# Alt Model-Shift Uniqueness Test

005651327-02, P = 26.060547 Days, E = 106.989962 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.04	2.02	1.54	2.14	5.06	2.64	0.69	-0.49	-1.09	0.49	-0.12	0.66	0.47	0.51	1.05



### Stellar Parameters For KIC 005651327

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6798^{+214}_{-262}$	$4.093^{+0.273}_{-0.168}$	$-0.520^{+0.250}_{-0.300}$	$1.586^{+0.444}_{-0.444}$	$1.137^{+0.178}_{-0.146}$	$0.401^{+0.634}_{-0.192}$
	+3%/-4%	+7%/-4%	+48%/-58%	+28%/-28%	+16%/-13%	+158%/-48%
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 005651327-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-86 \pm 23$	$1.54^{+1.42}_{-1.06}$	$1230^{+94}_{-98}$	$6949^{+8722}_{-1983}$	$637^{+5537}_{-470}$
Alt.	$-87 \pm 43$	$1.78^{+1.40}_{-1.11}$	$1227^{+105}_{-109}$	$6241^{+4740}_{-1702}$	$448^{+2564}_{-343}$

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



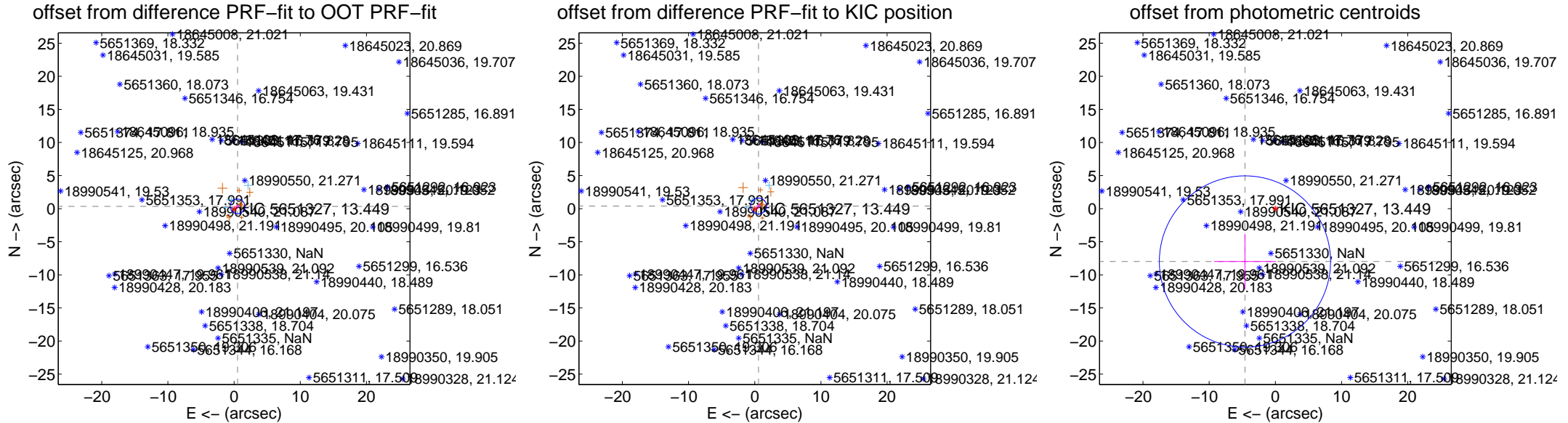
## DV Centroid Data

Supplemental centroid analysis for 005651327-02. Kepler magnitude: 13.45. Transit SNR 0.70

There are 5 quarters with good PRF difference image offsets

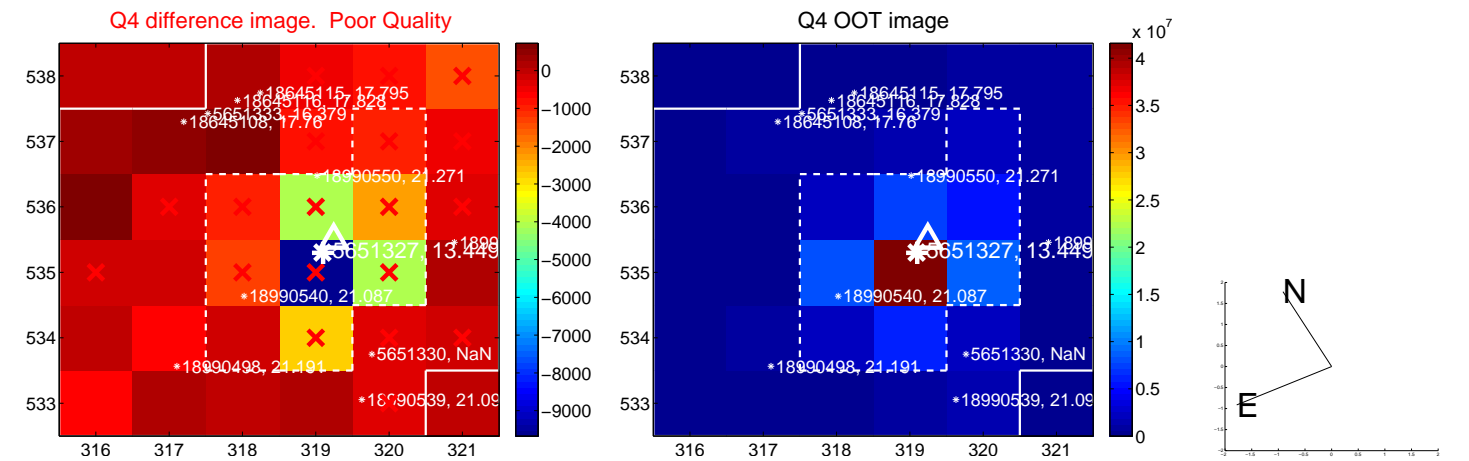
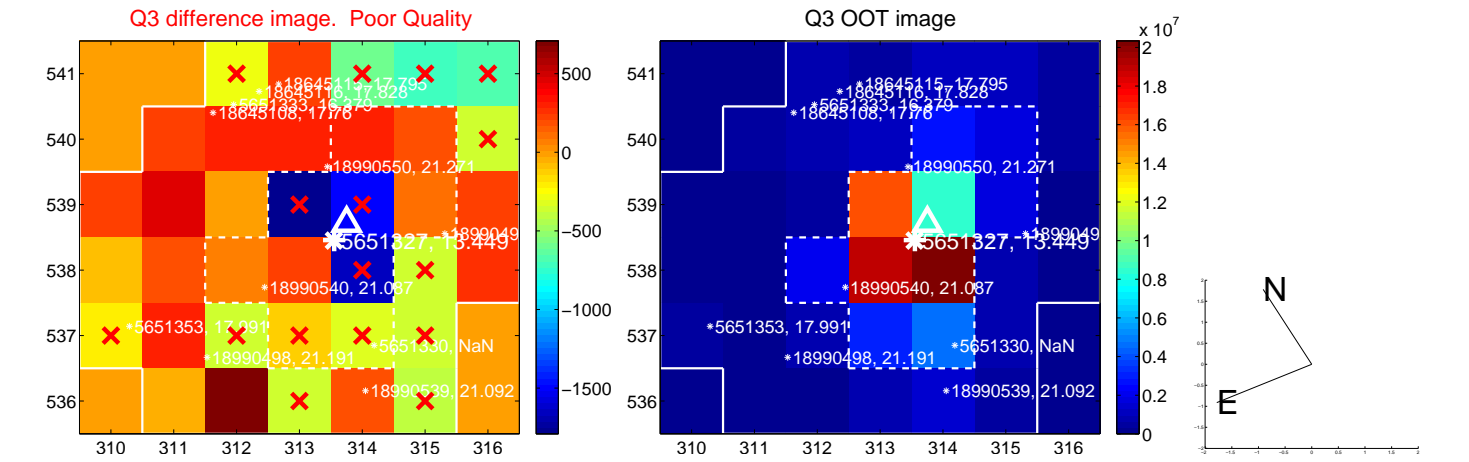
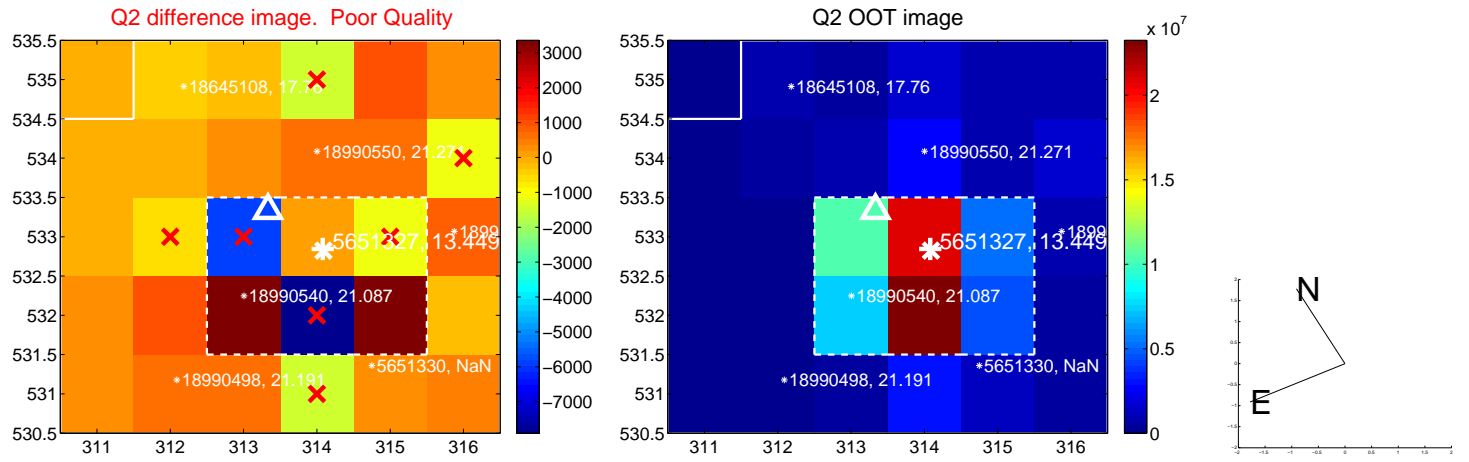
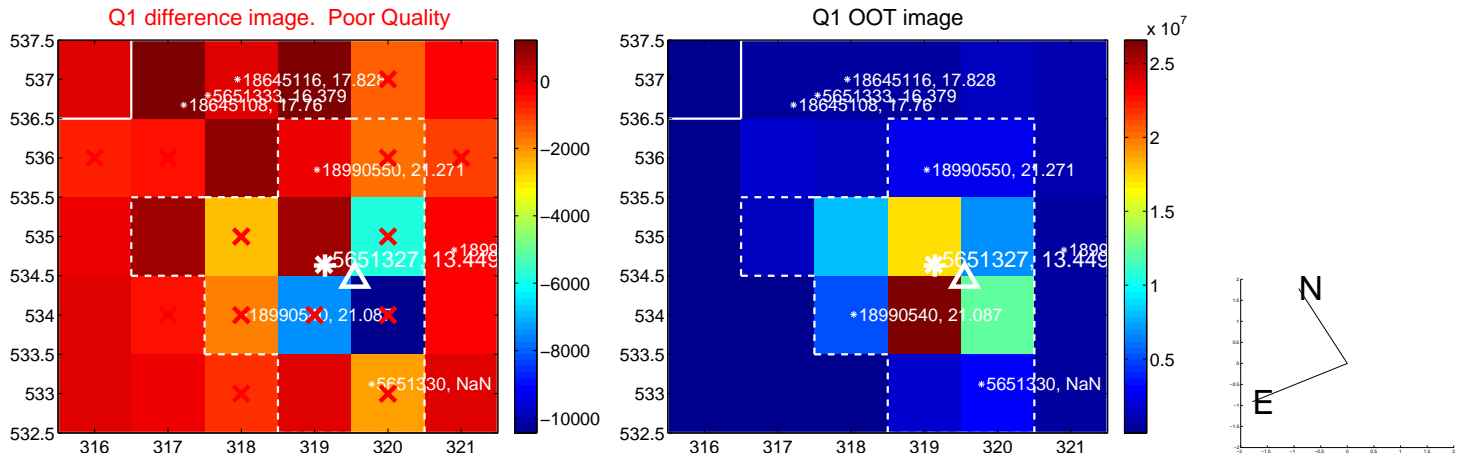
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.626 \pm 0.369$	1.70	$-0.519 \pm 0.310$	$0.350 \pm 0.371$
PRF-fit source offset from KIC position	$0.698 \pm 0.402$	1.74	$-0.574 \pm 0.304$	$0.397 \pm 0.411$
photometric centroid source offset	$9.21 \pm 4.31$	2.14	$4.60 \pm 4.68$	$-7.98 \pm 4.18$

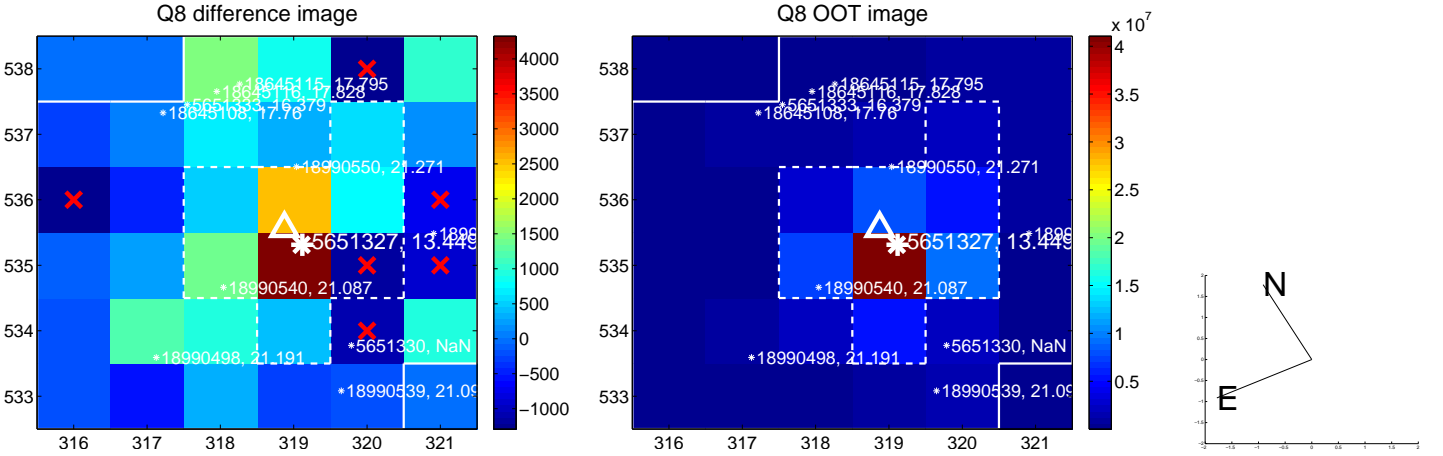
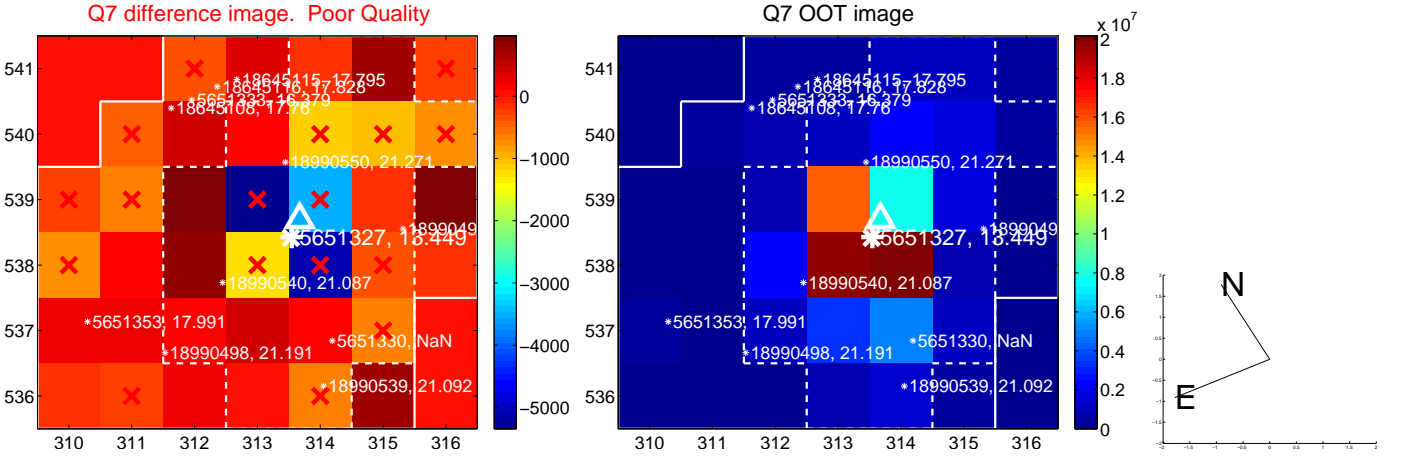
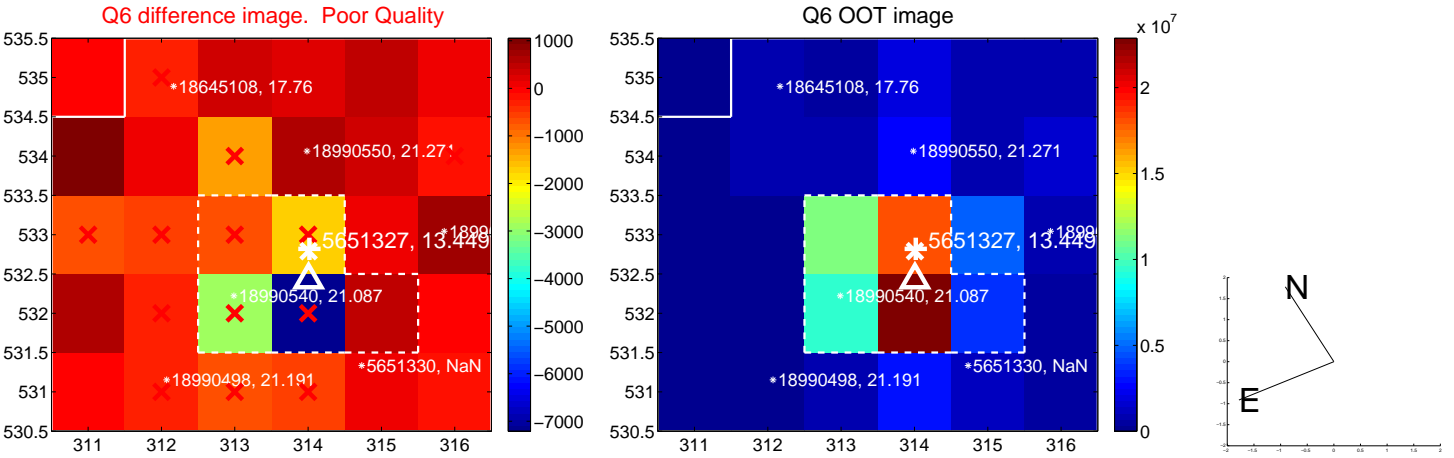
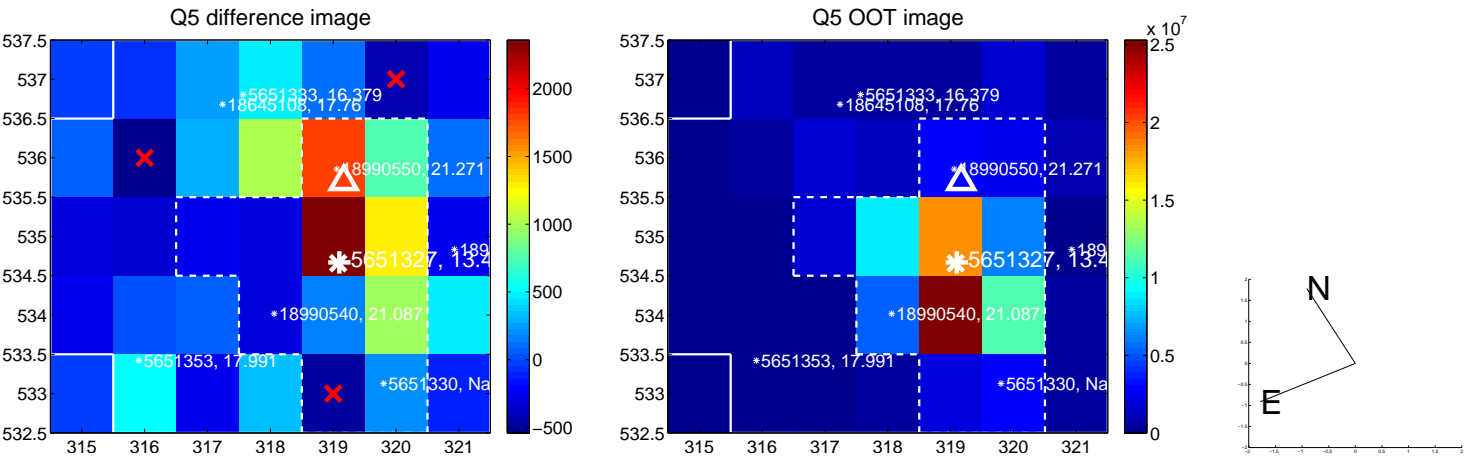


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

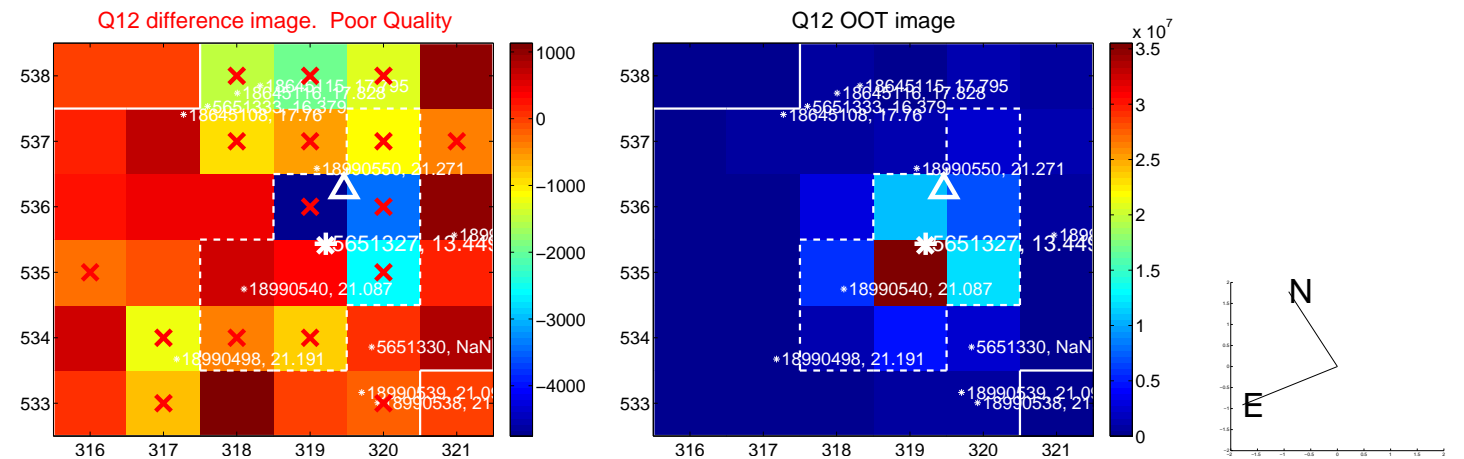
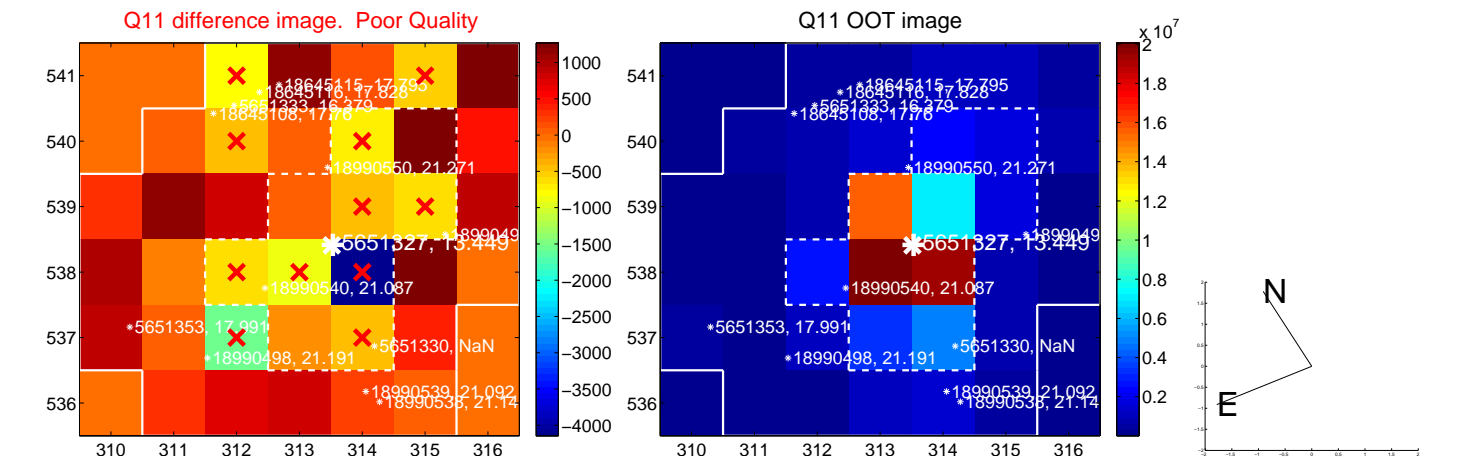
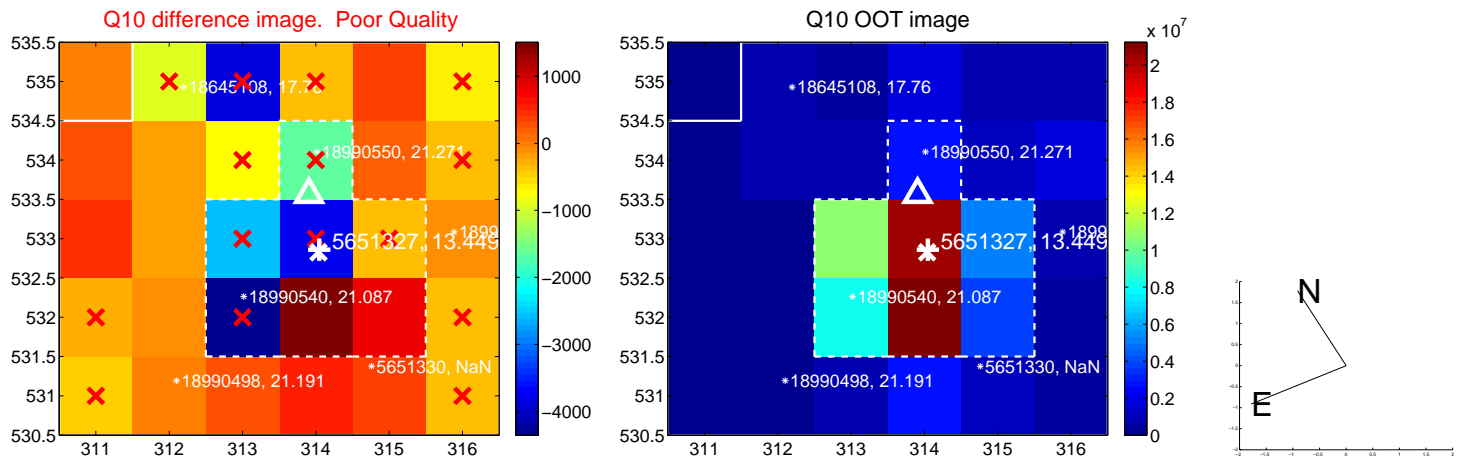
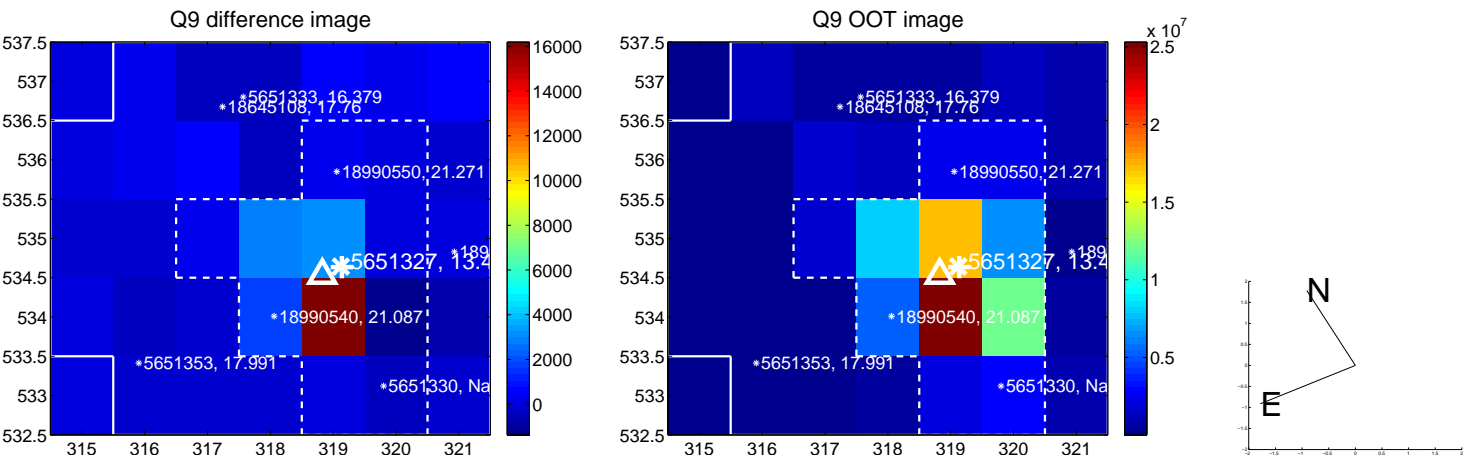
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



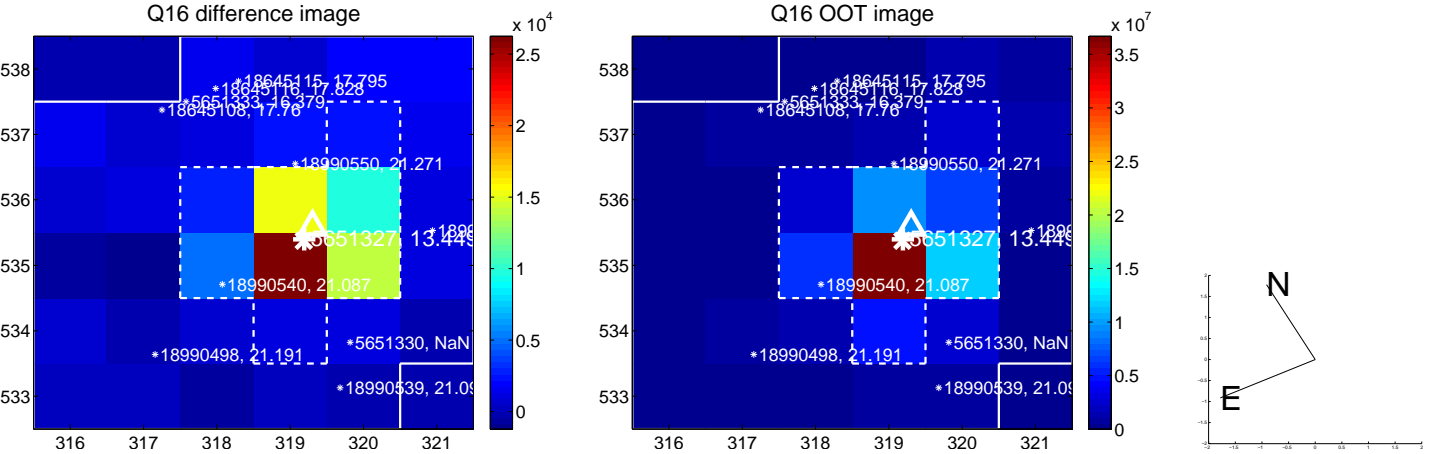
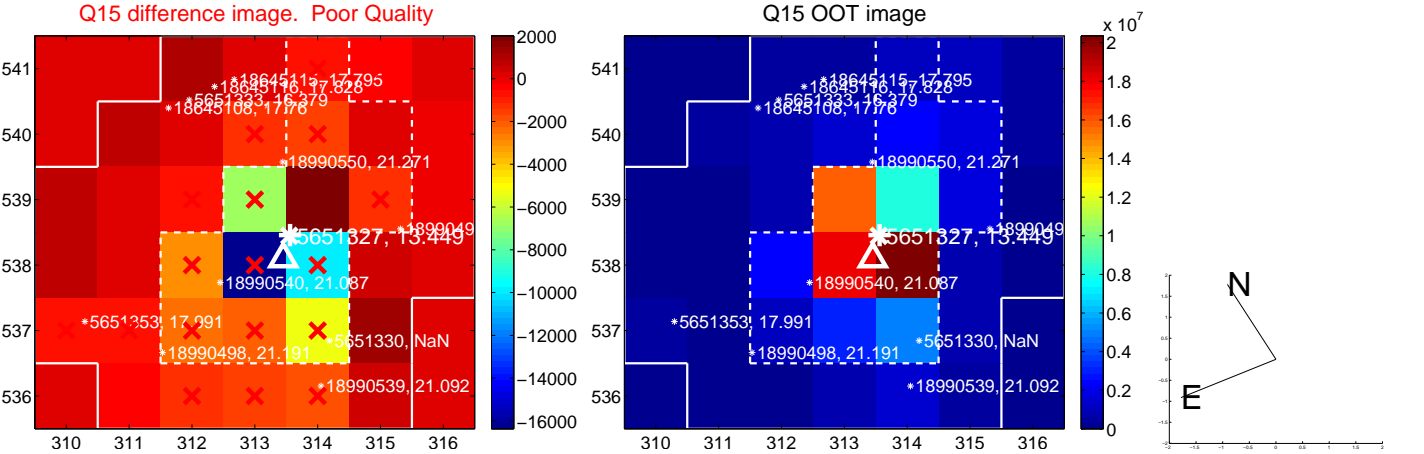
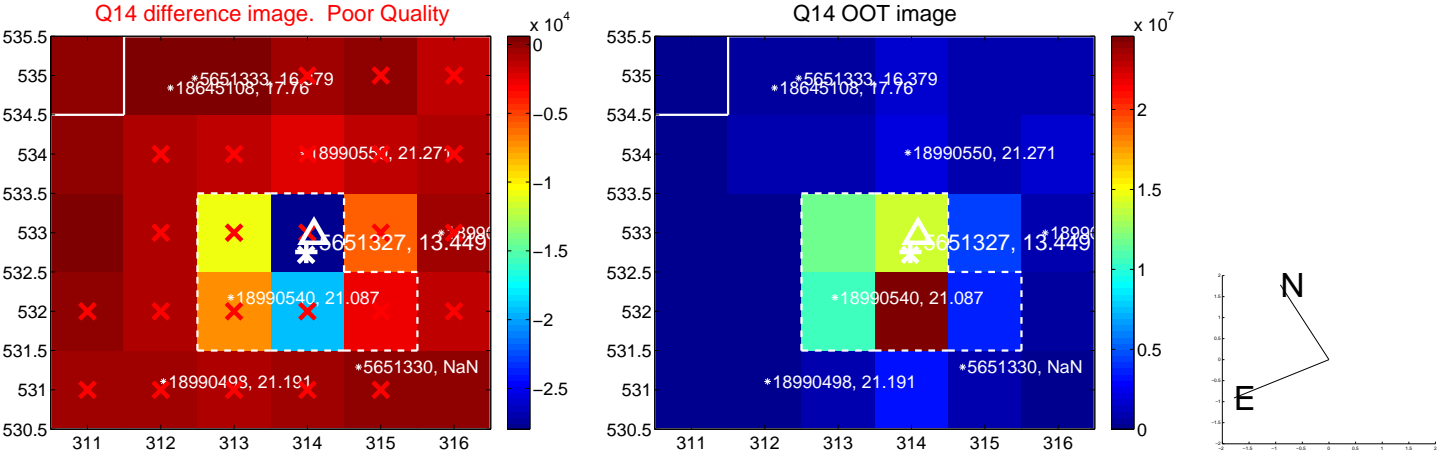
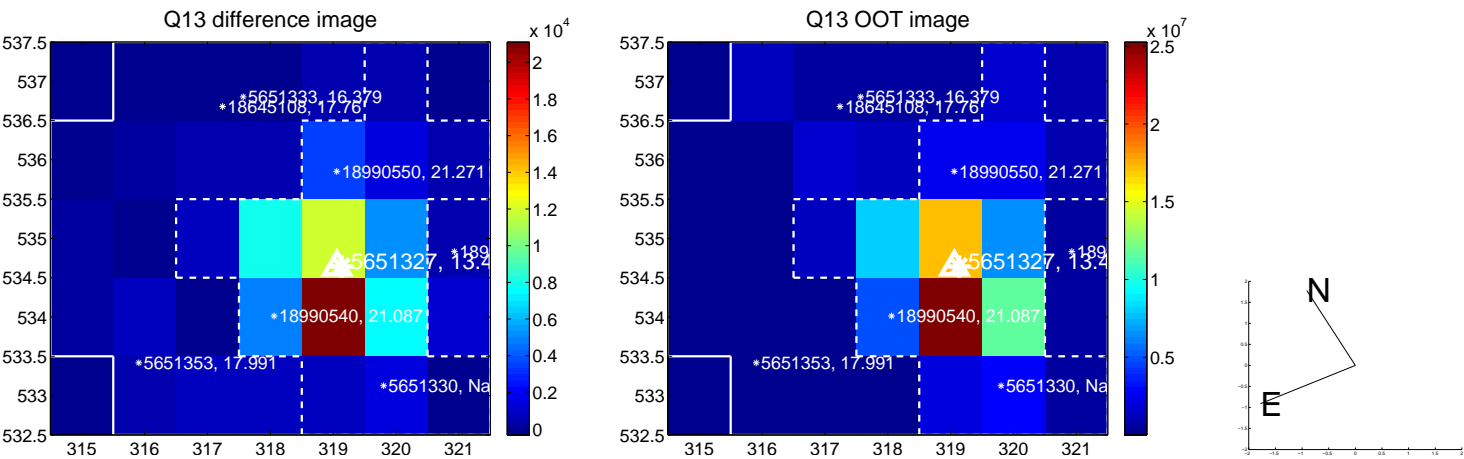
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

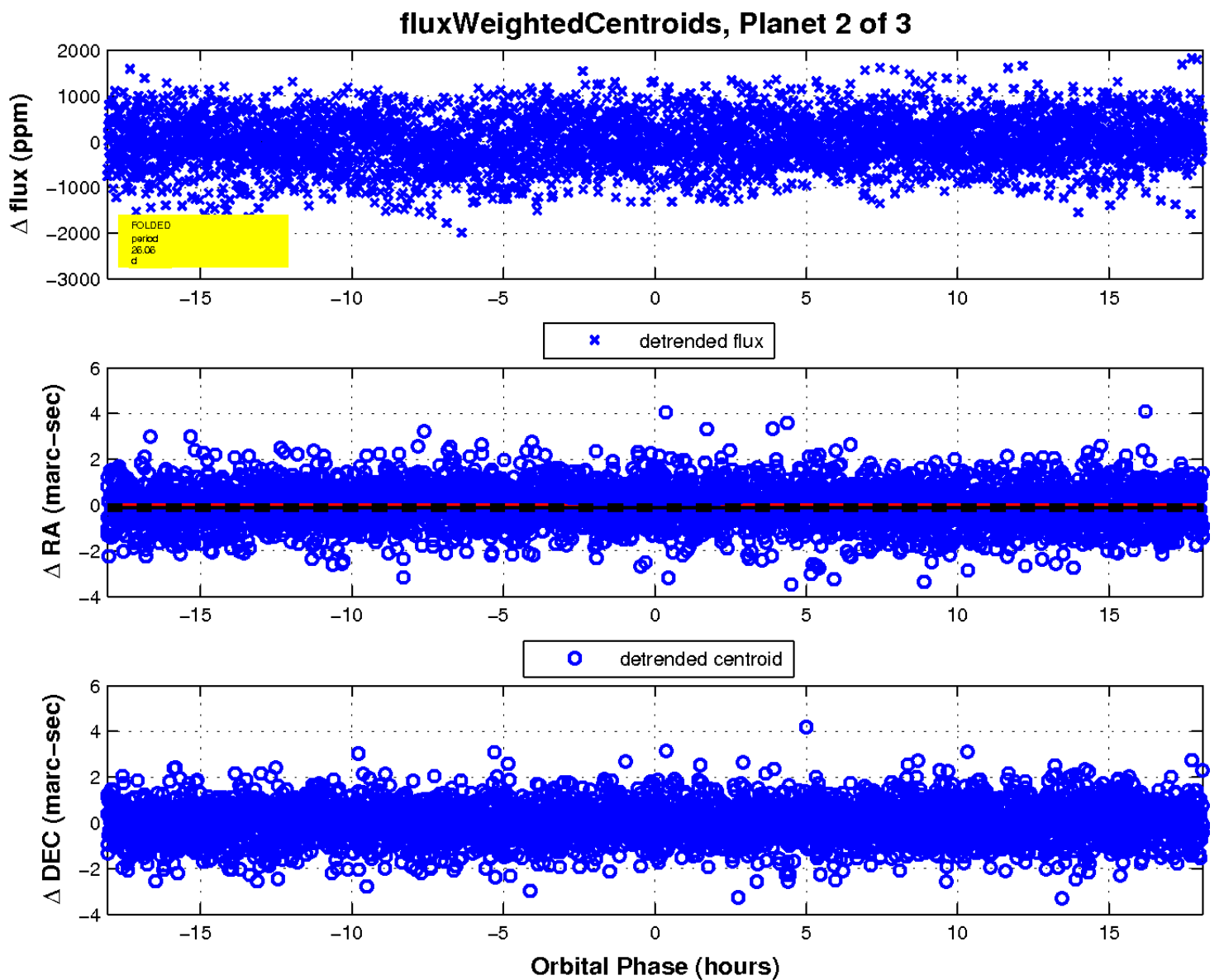
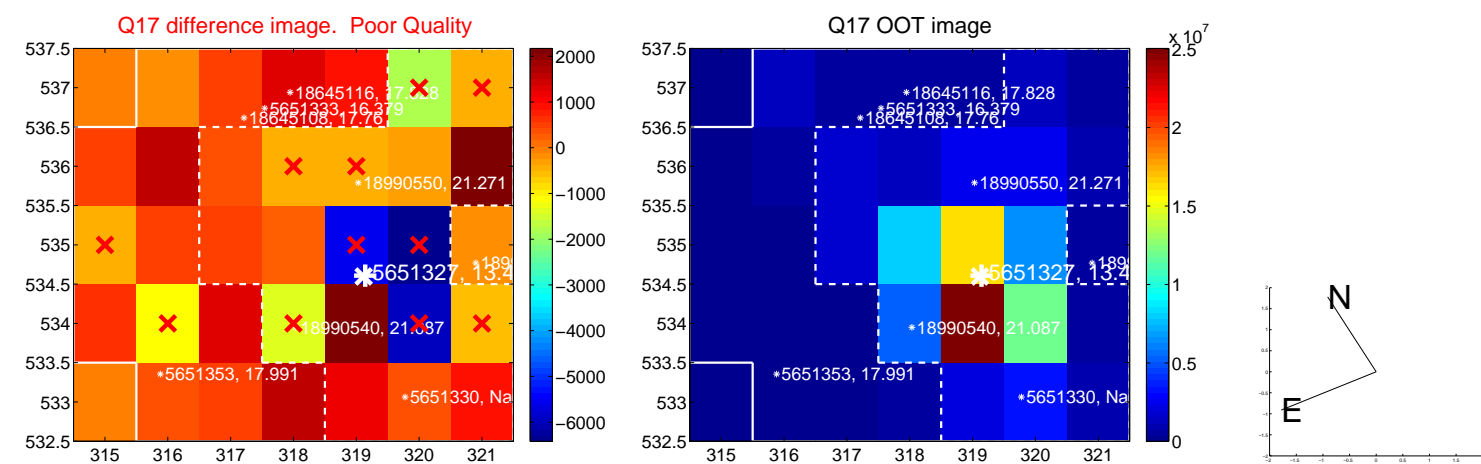


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

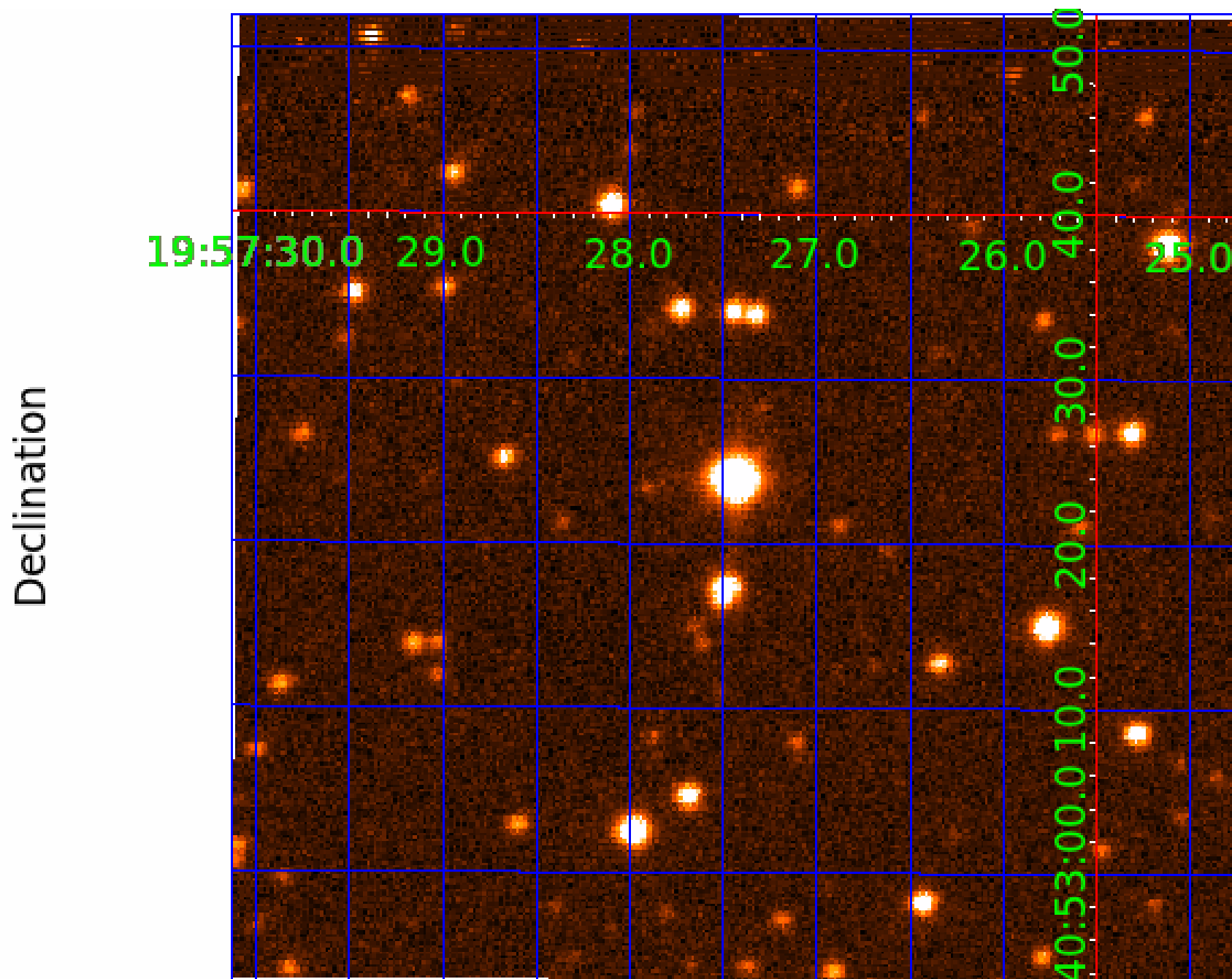




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 005651327

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005651327-01	OBS	No	0.540903	131.545167	43.7	1.448	9.9	8.3	1.59	6798	1.09	26169.51
005651327-02	OBS	No	26.060792	133.029958	27.1	6.033	7.8	0.7	1.59	6798	0.96	149.27
005651327-03	OBS	No	99.545511	162.339506	534.1	4.862	7.2	6.0	1.59	6798	3.96	25.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005651327-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005651327-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005651327-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

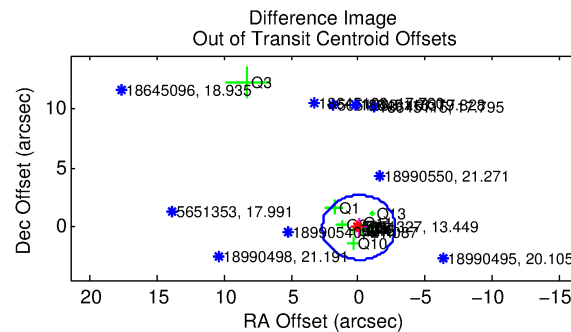
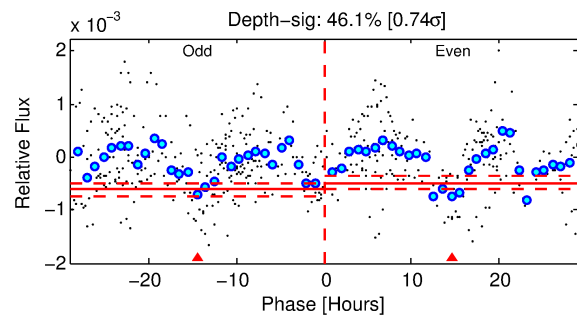
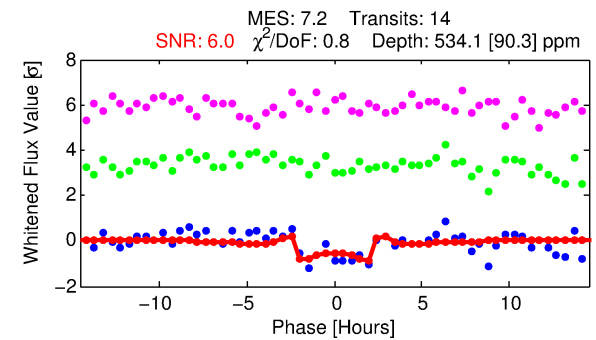
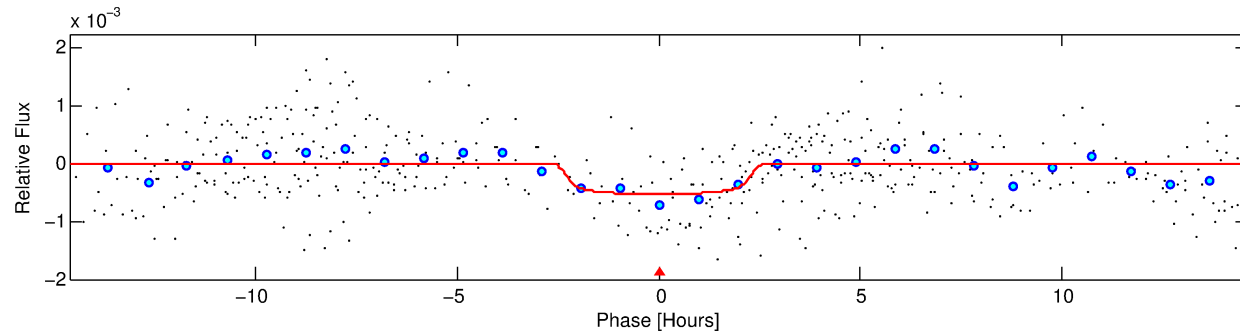
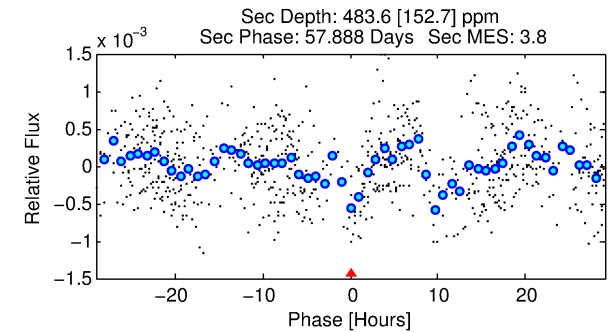
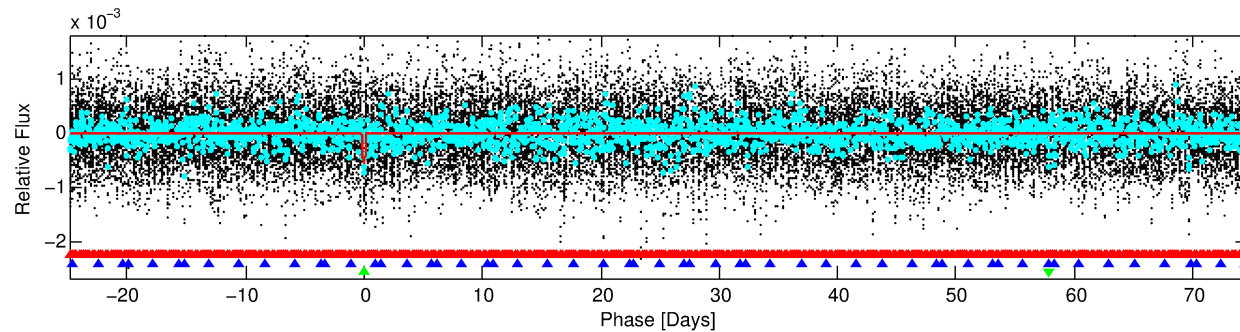
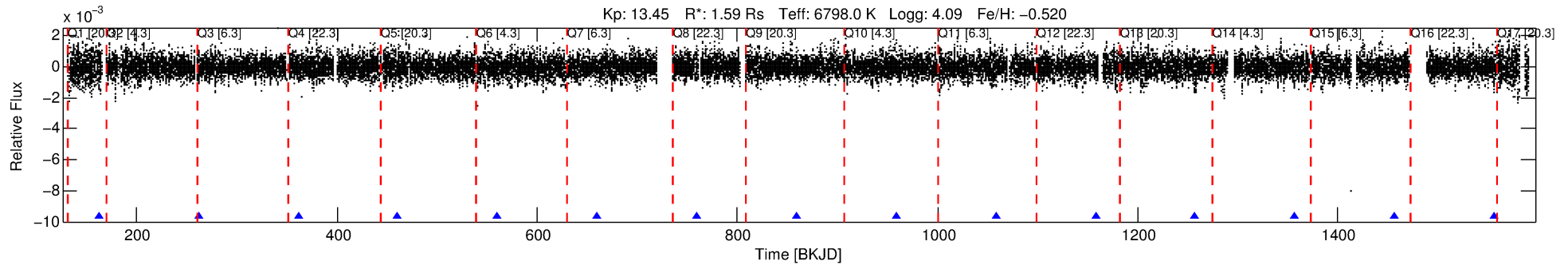
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005651327-03

No Significant Match Found

# DV One-Page Summary

KIC: 5651327 Candidate: 3 of 3 Period: 99.546 d



## DV Fit Results:

Period = 99.54551 [0.00090] d  
Epoch = 162.3395 [0.0094] BKJD  
Rp/R\* = 0.0229 [0.0072]  
a/R\* = 111.32 [187.43]  
b = 0.73 [1.05]  
Seff = 25.00 [12.10]  
Teq = 570 [69] K  
Rp = 3.96 [1.67] Re  
a = 0.4388 [0.1231] AU  
Ag = 3264.11 [2747.77] [1.19σ]  
Teffp = 6663 [1204] K [5.05σ]

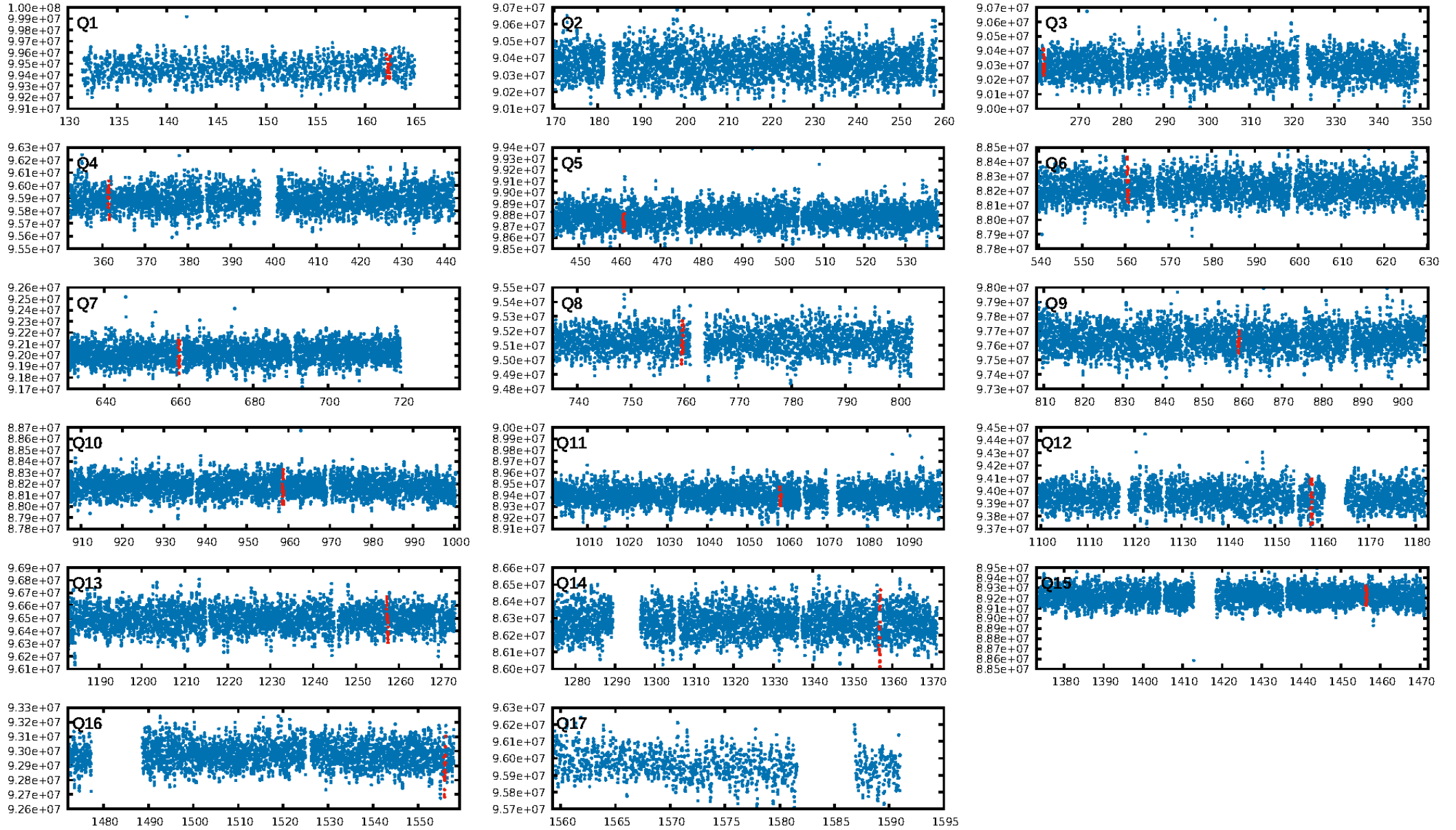
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [227.61σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 20.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 6.70e-11**  
RollingBand-fgt: 1.00 [13/13]  
GhostDiagnostic-chr: -1.718  
Centroid-sig: N/A  
Centroid-so: 0.510 arcsec [1.09σ]  
OotOffset-rm: 0.085 arcsec [0.09σ]  
KicOffset-rm: 0.132 arcsec [0.28σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.57 [8/14]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:45 Z

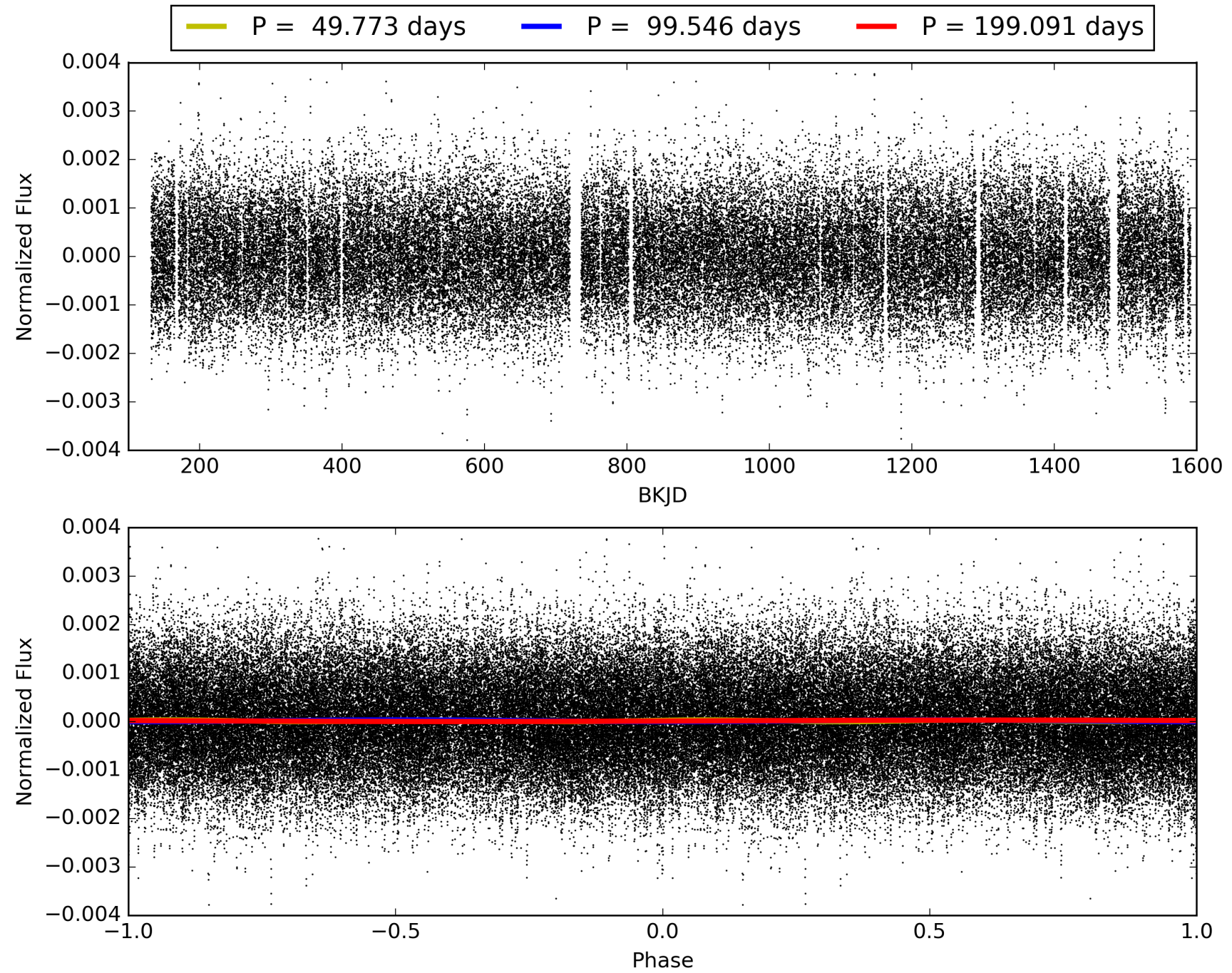
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005651327-03, PDC Light Curves



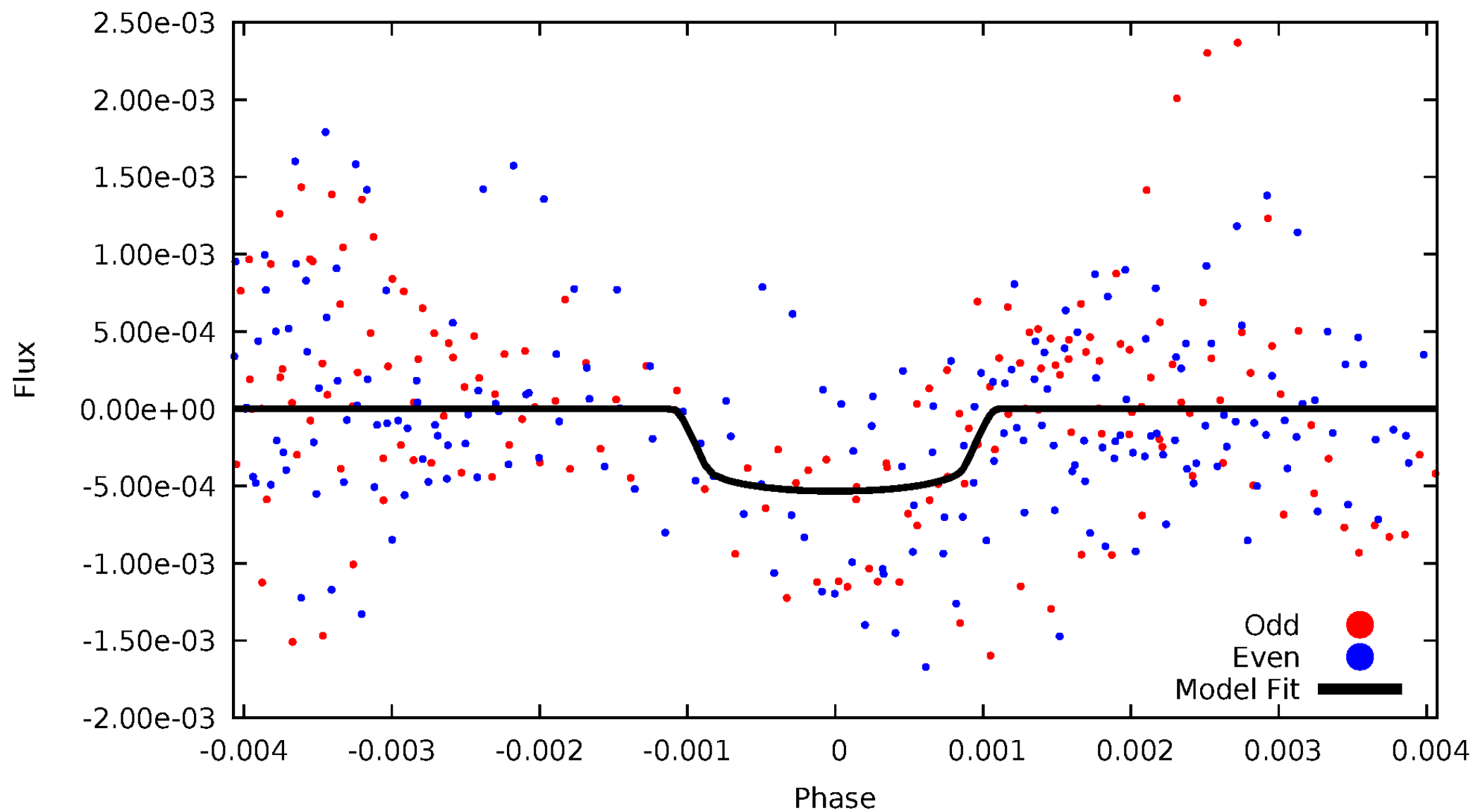


TCE 005651327-03



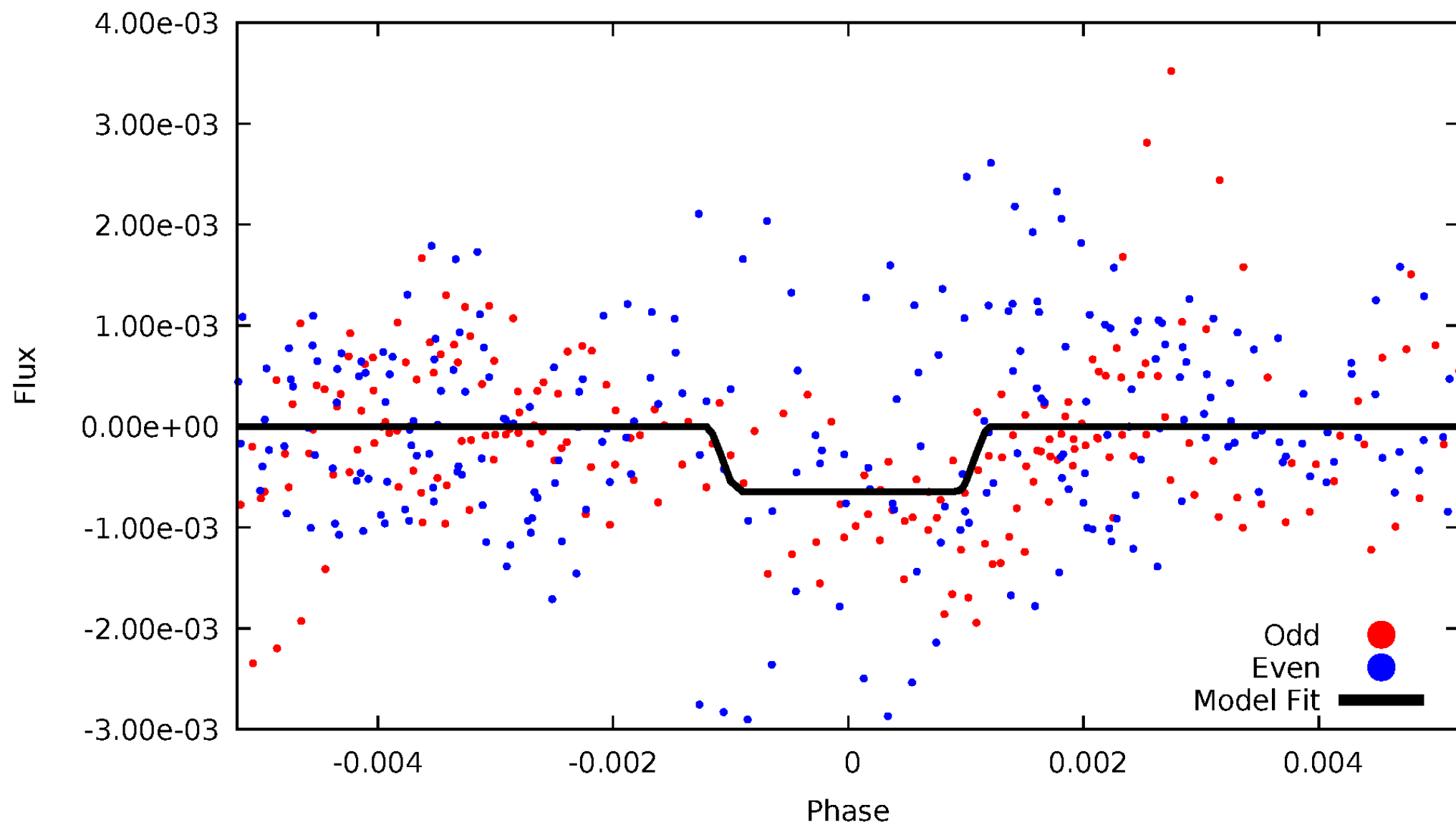
# DV Odd/Even

TCE 005651327-03



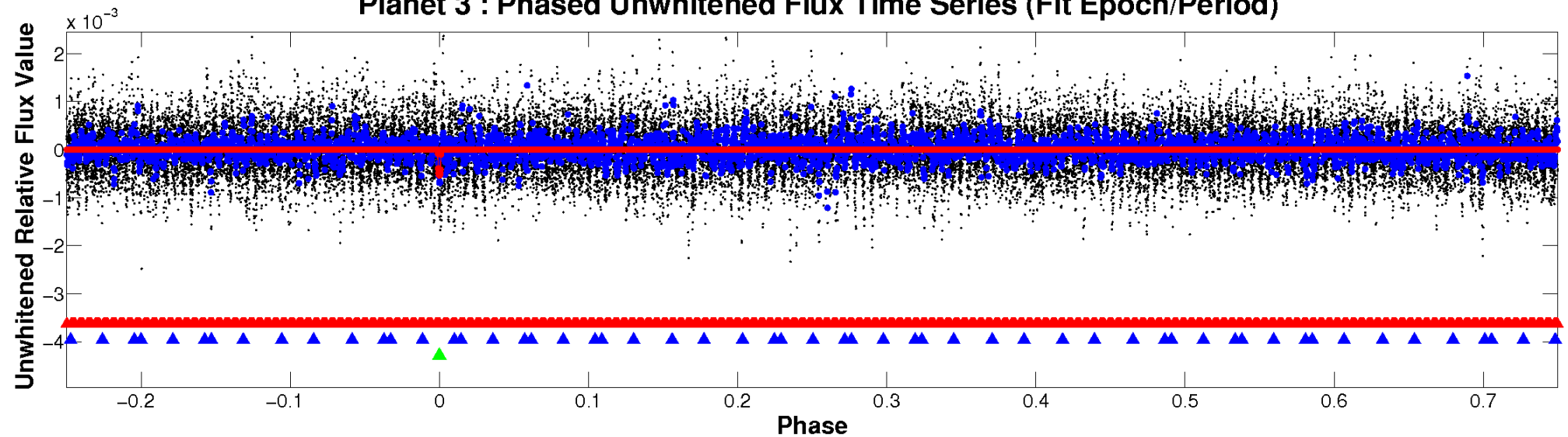
# ALT Odd/Even

TCE 005651327-03

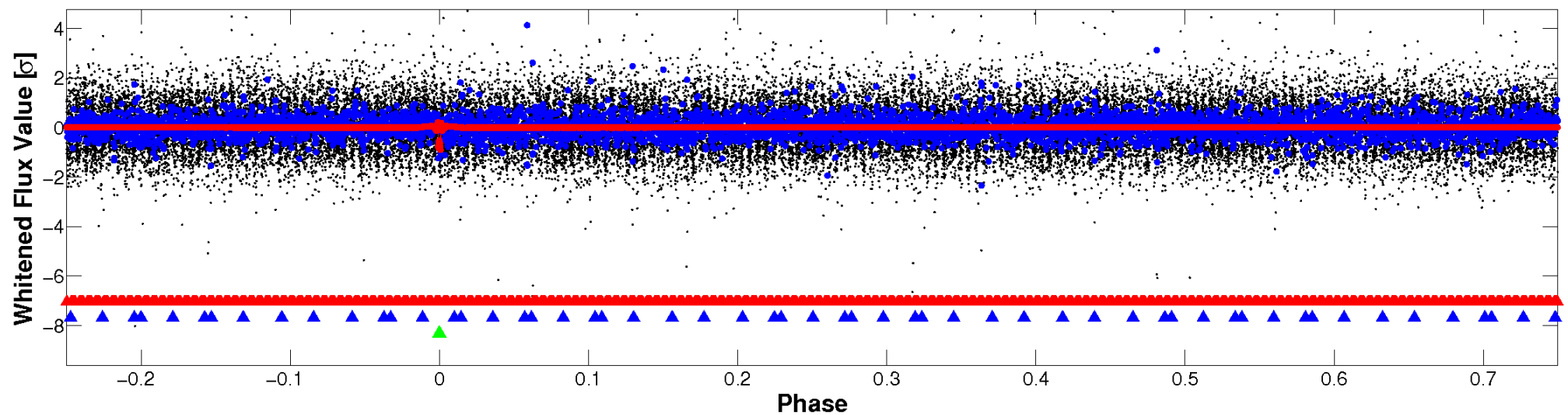


# Non-Whitened Vs. Whitened Light Curve

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

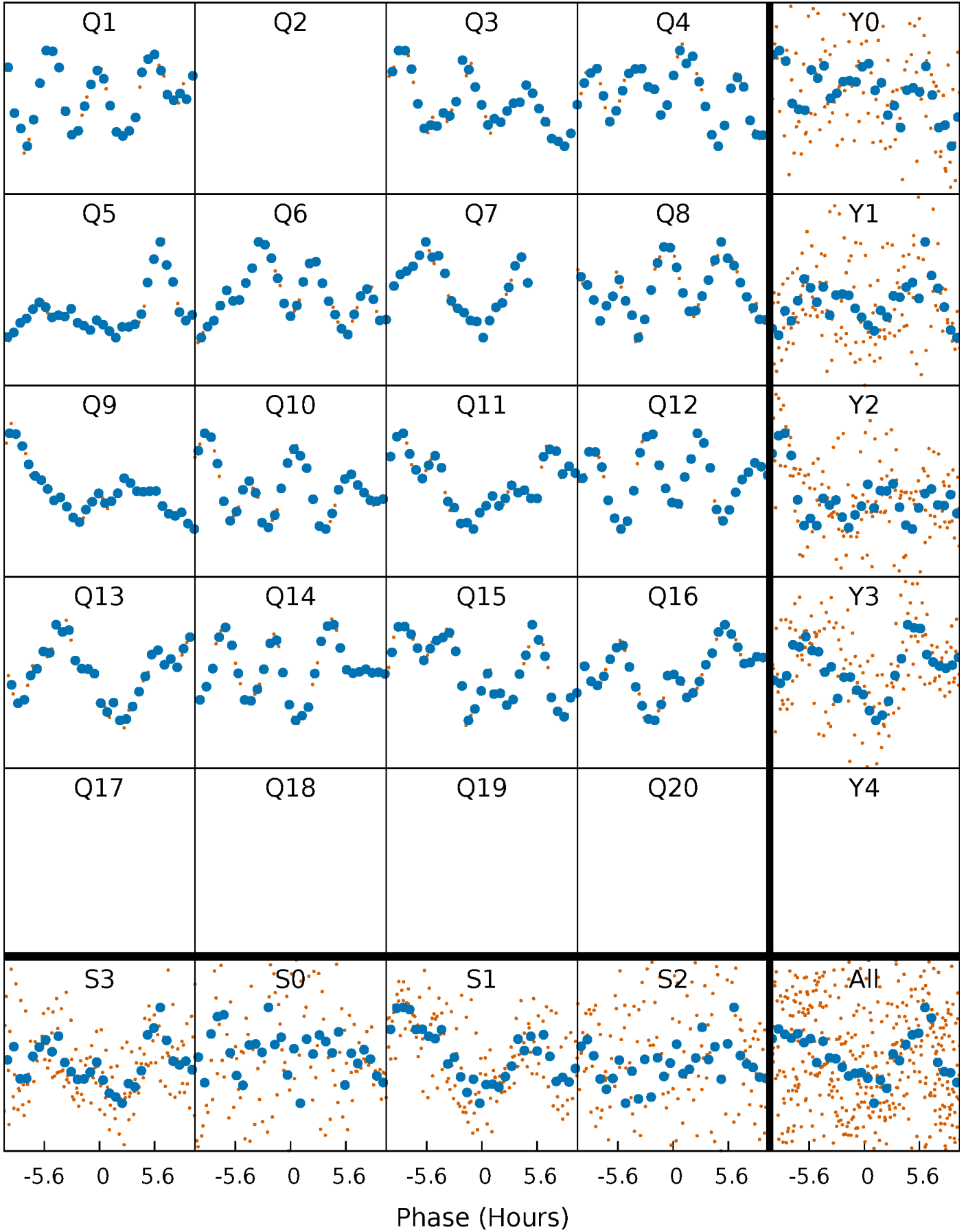


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

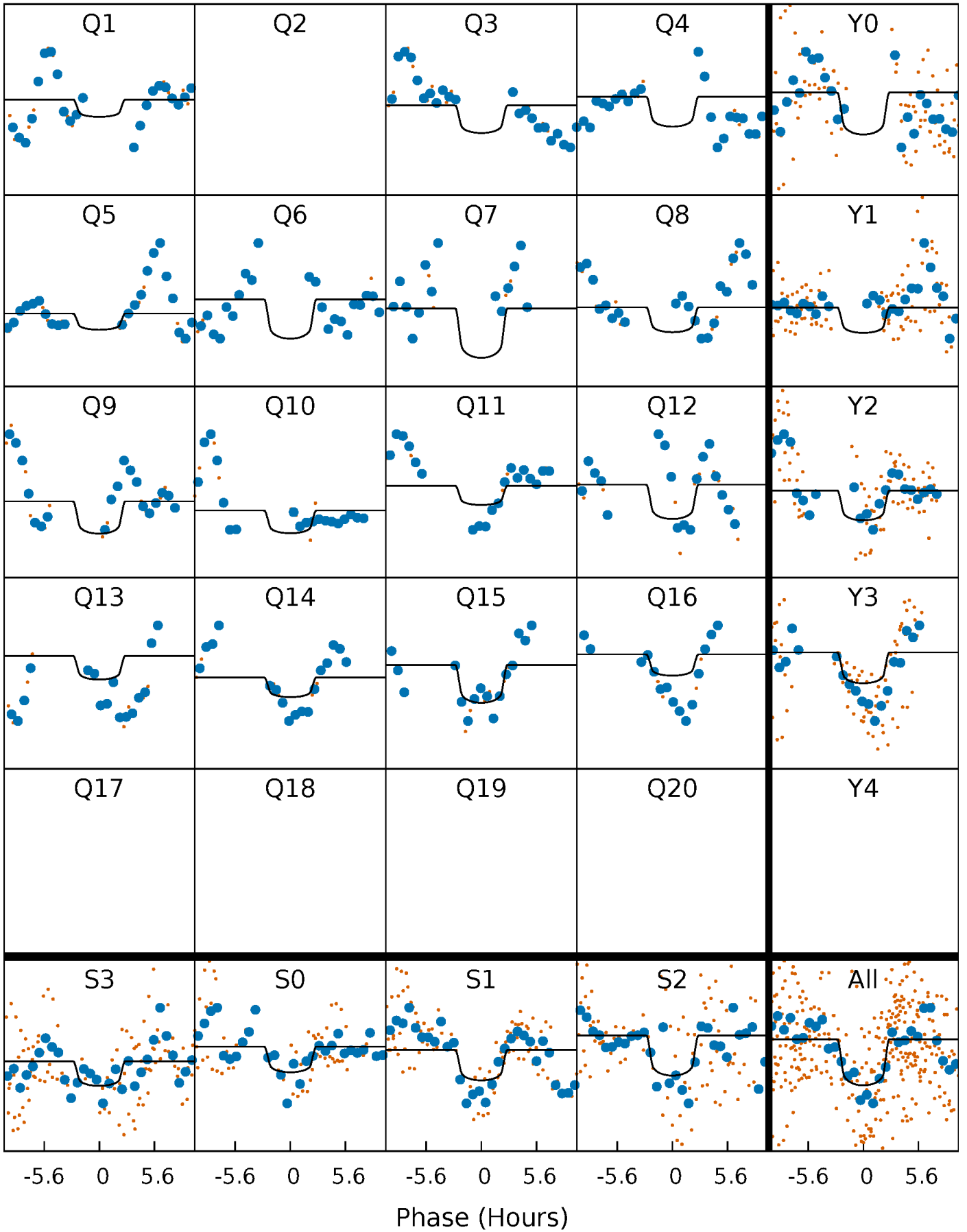
TCE 005651327-03   P= 99.545511 Days    $T_0=162.339506$  (BKJD)





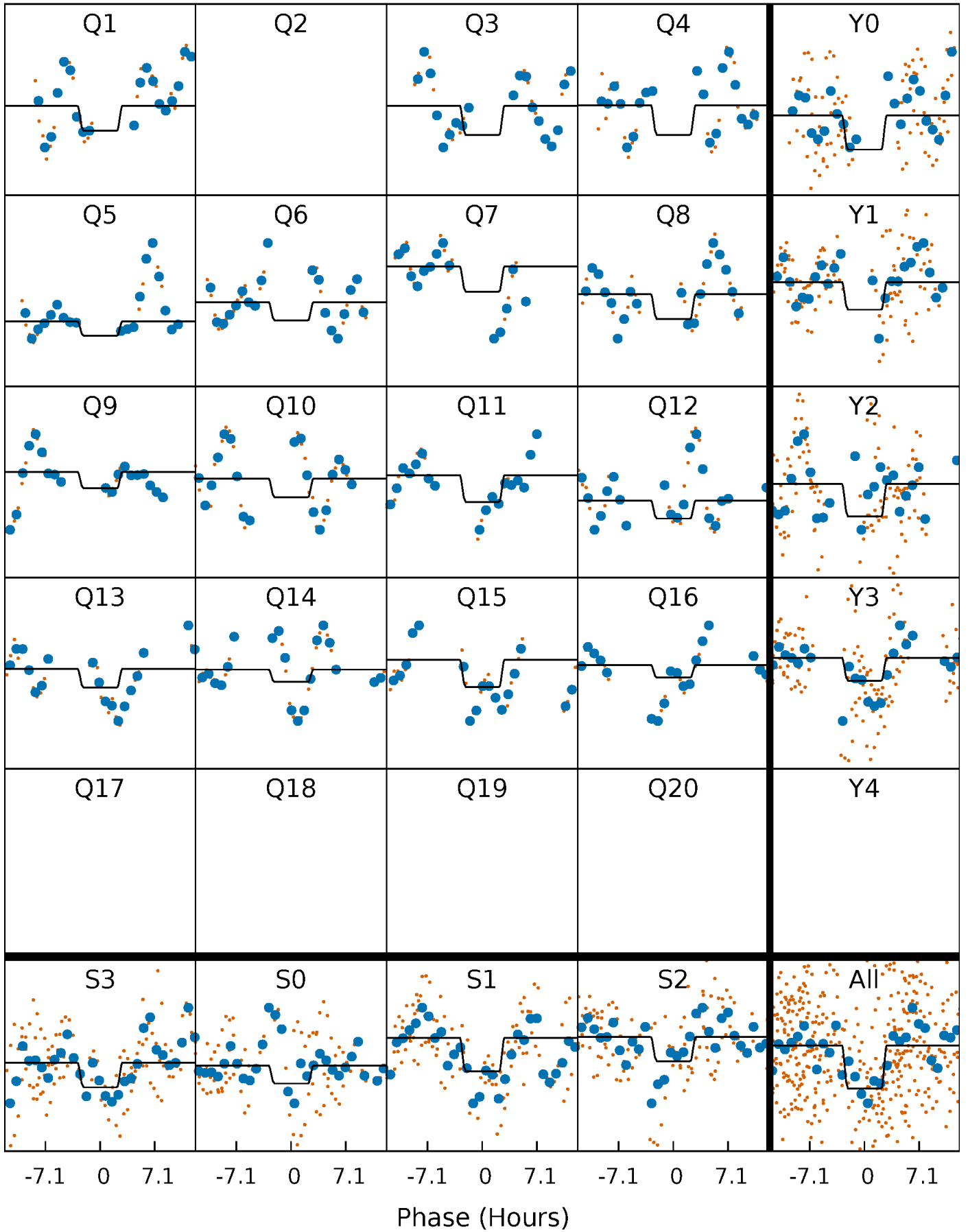
# DV Quarter-Phased Transit Curves

TCE 005651327-03 P= 99.545511 Days  $T_0=162.339506$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

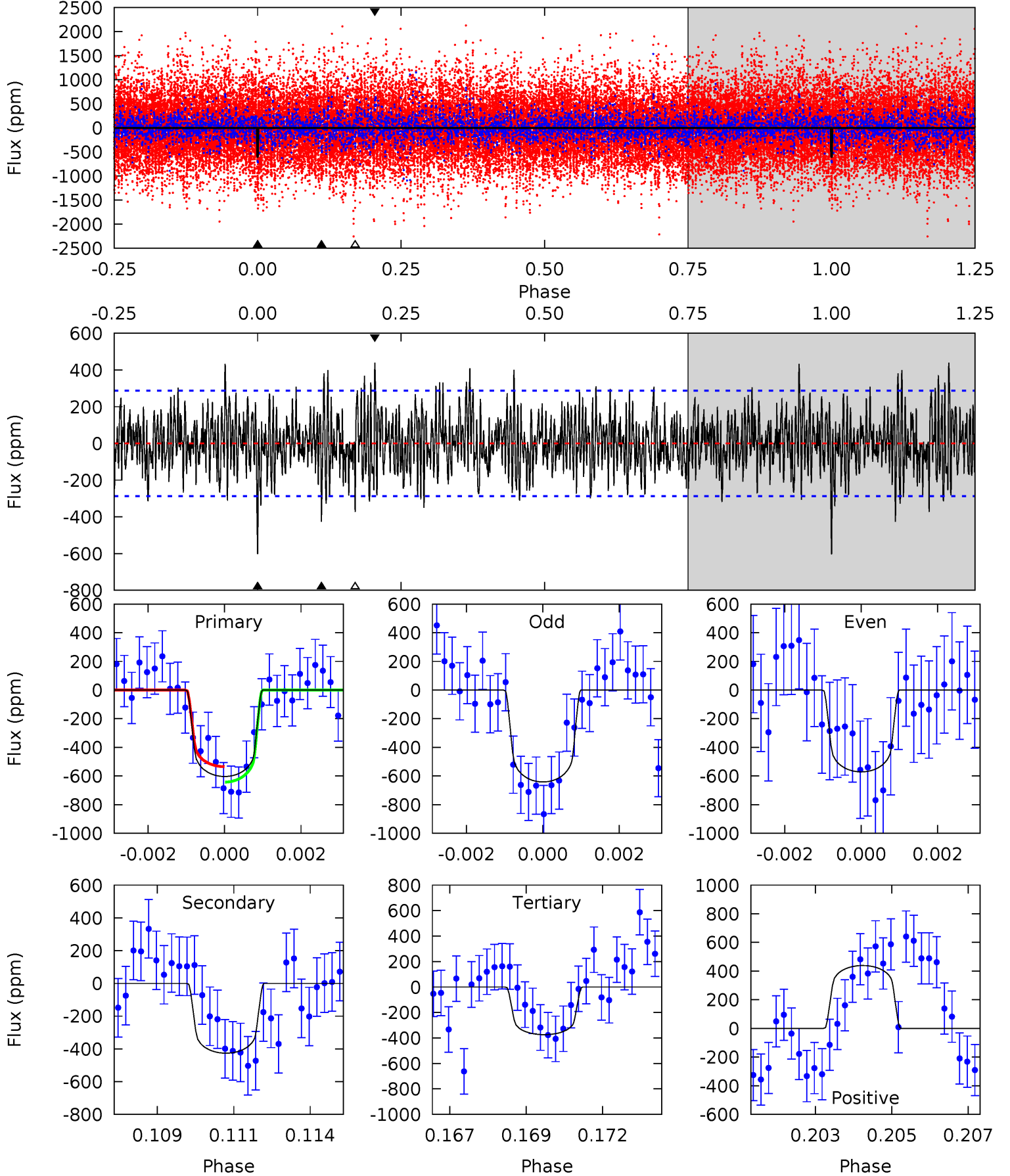
TCE 005651327-03 P= 99.547855 Days  $T_0=162.309805$  (BKJD)



# DV Model-Shift Uniqueness Test

005651327-03, P = 99.545511 Days, E = 62.793995 Days

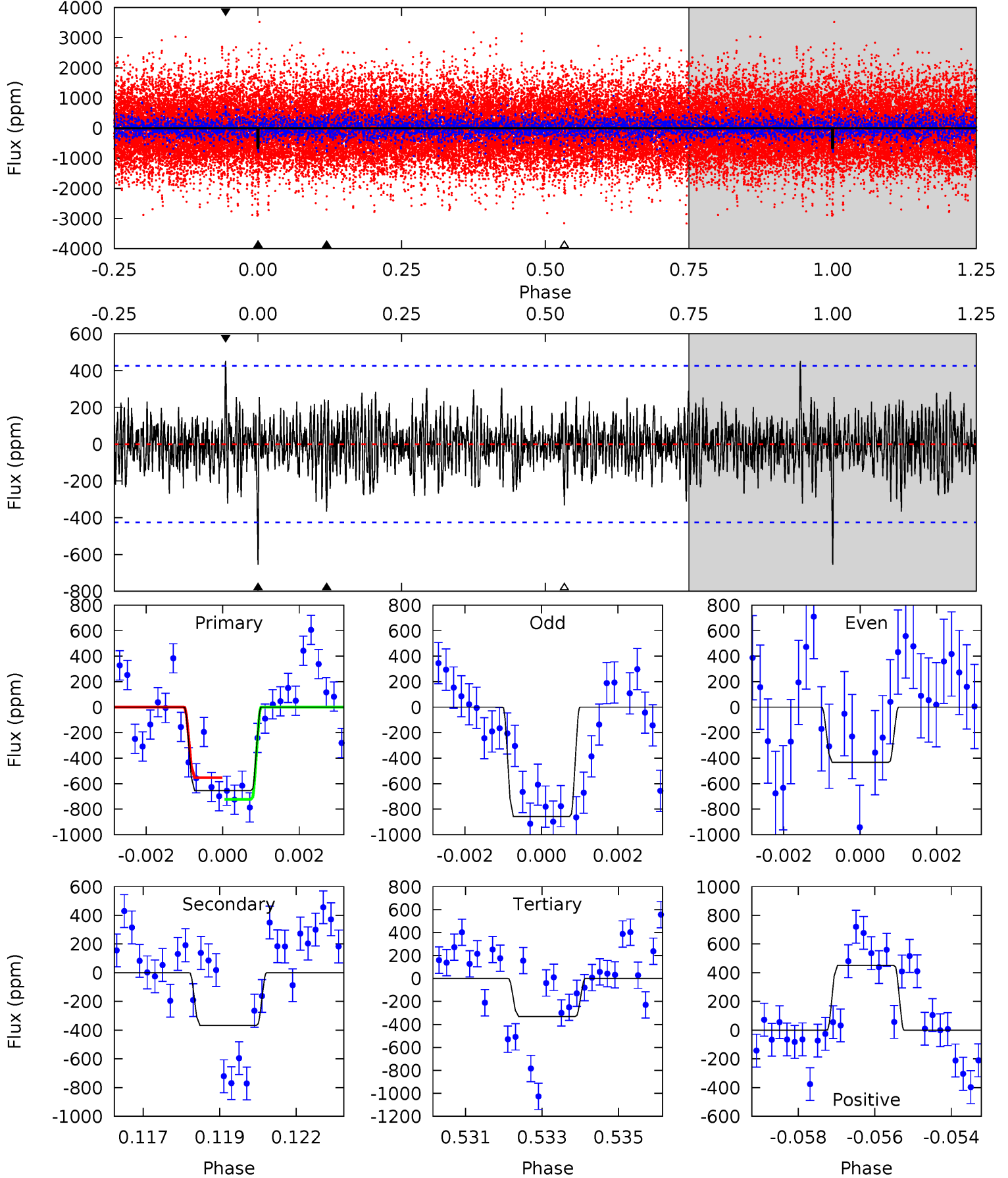
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	7.88	6.91	8.11	5.31	3.06	2.37	4.25	3.05	0.97	-0.23	0.65	1.45	0.42	0.95



# Alt Model-Shift Uniqueness Test

005651327-03, P = 99.547855 Days, E = 62.761950 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.15	4.56	4.13	5.61	5.29	3.03	1.26	4.02	2.53	0.43	-1.05	2.65	0.64	0.41	1.03



### Stellar Parameters For KIC 005651327

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6798^{+214}_{-262}$	$4.093^{+0.273}_{-0.168}$	$-0.520^{+0.250}_{-0.300}$	$1.586^{+0.444}_{-0.444}$	$1.137^{+0.178}_{-0.146}$	$0.401^{+0.634}_{-0.192}$
	+3%/-4%	+7%/-4%	+48%/-58%	+28%/-28%	+16%/-13%	+158%/-48%
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 005651327-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-426 \pm 54$	$3.83^{+1.52}_{-1.26}$	$788^{+63}_{-69}$	$6360^{+1581}_{-813}$	$3004^{+3842}_{-1443}$
Alt.	$-367 \pm 80$	$4.22^{+1.53}_{-1.30}$	$789^{+56}_{-62}$	$5861^{+1195}_{-794}$	$2118^{+2397}_{-1016}$

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



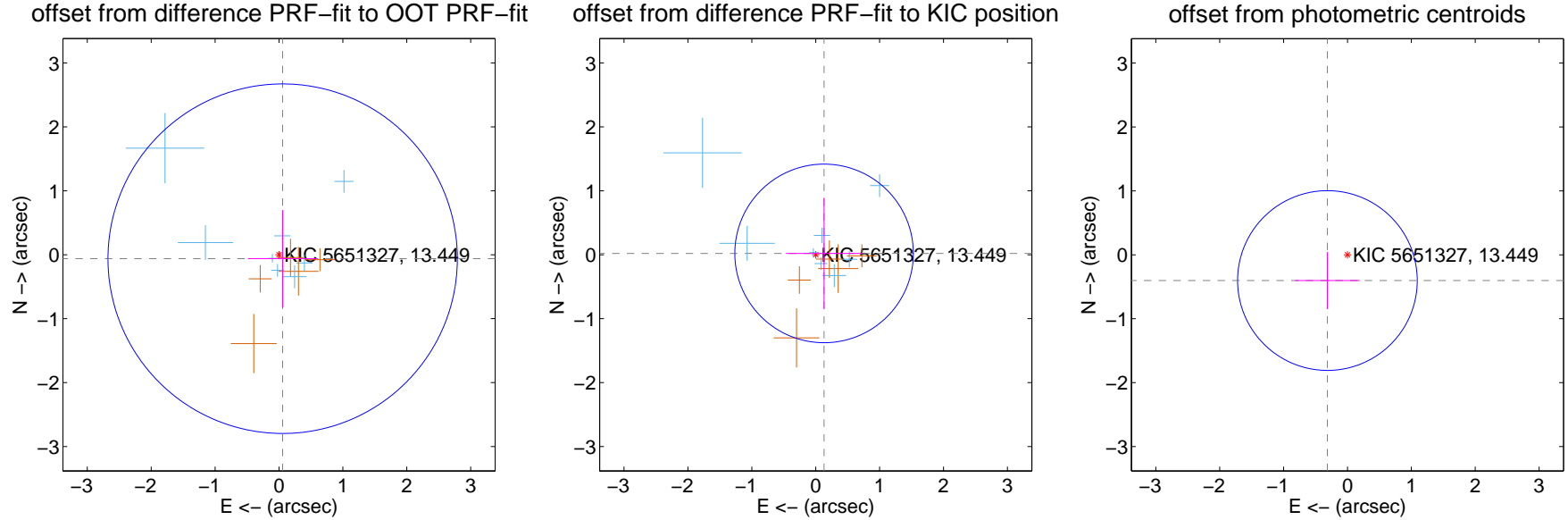
## DV Centroid Data

Supplemental centroid analysis for 005651327-03. Kepler magnitude: 13.45. Transit SNR 6.01

There are 8 quarters with good PRF difference image offsets

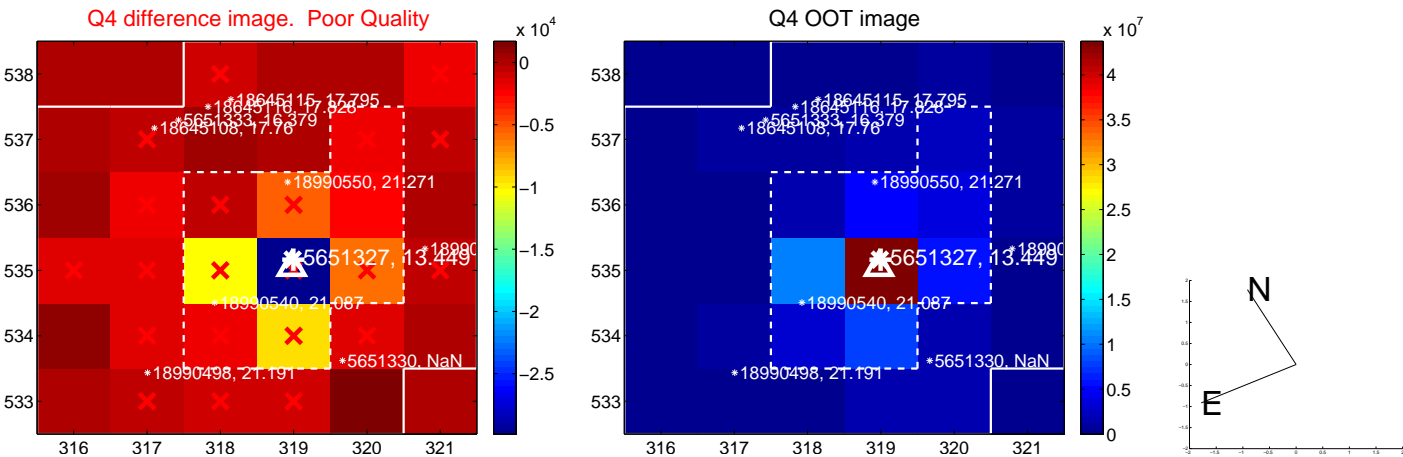
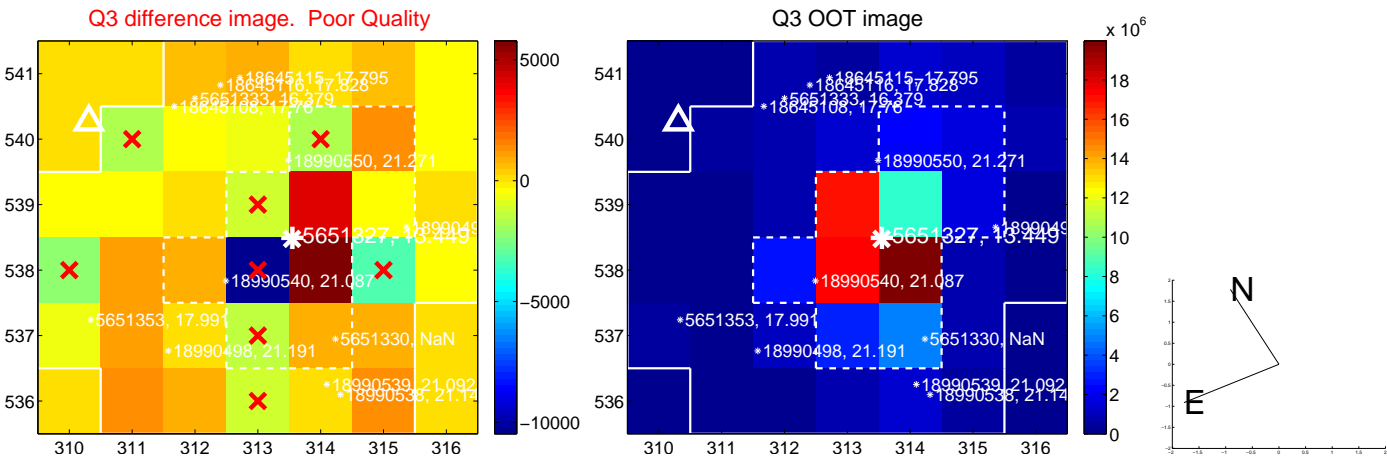
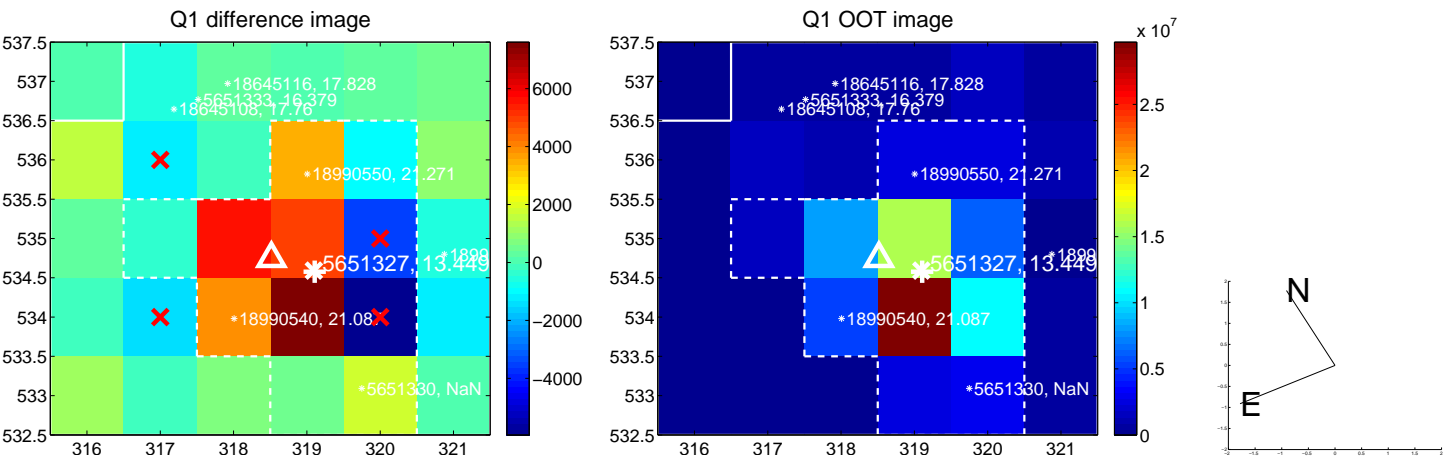
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.085 \pm 0.911$	0.09	$-0.057 \pm 0.545$	$-0.062 \pm 0.761$
PRF-fit source offset from KIC position	$0.132 \pm 0.465$	0.28	$-0.131 \pm 0.597$	$0.020 \pm 0.868$
photometric centroid source offset	$0.51 \pm 0.47$	1.09	$0.31 \pm 0.50$	$-0.40 \pm 0.45$

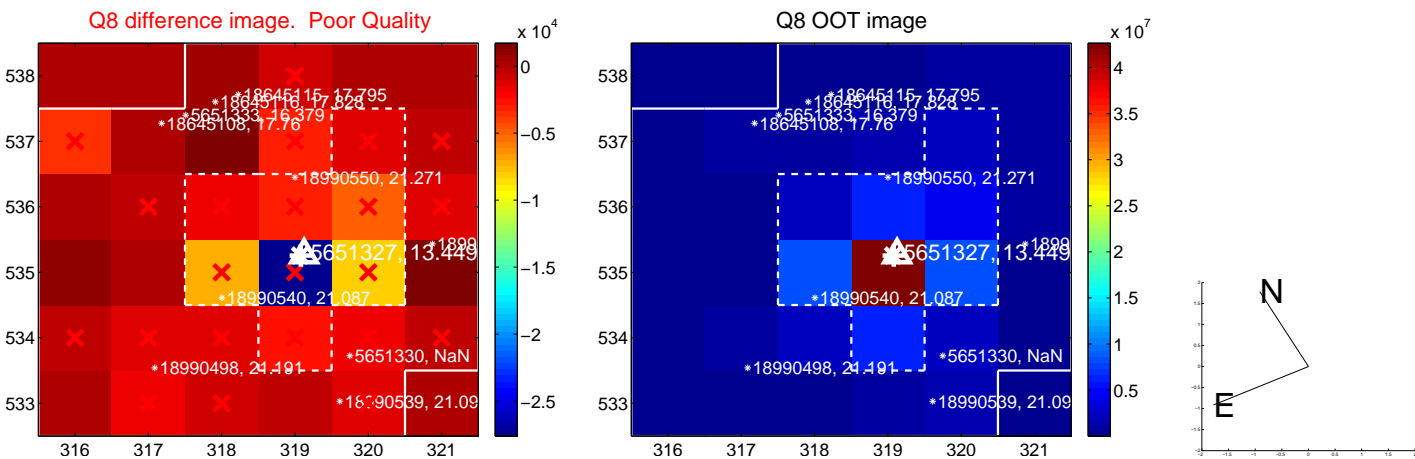
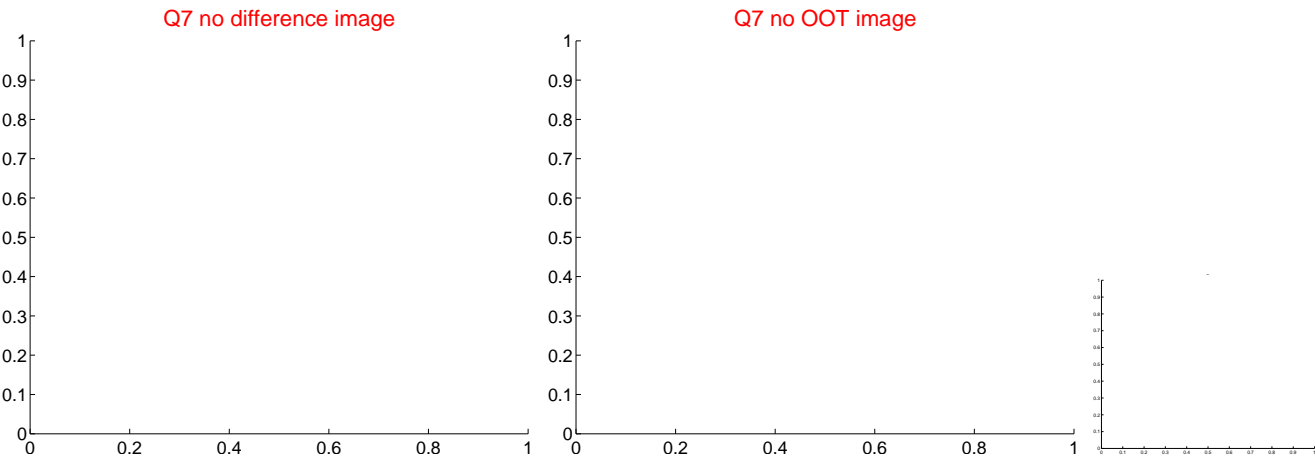
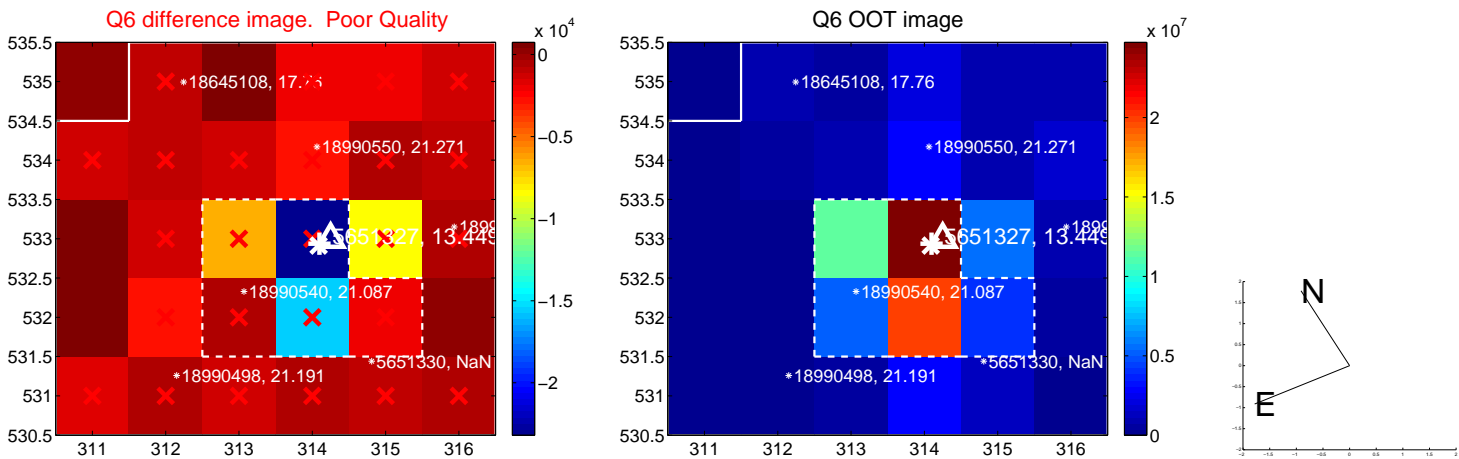
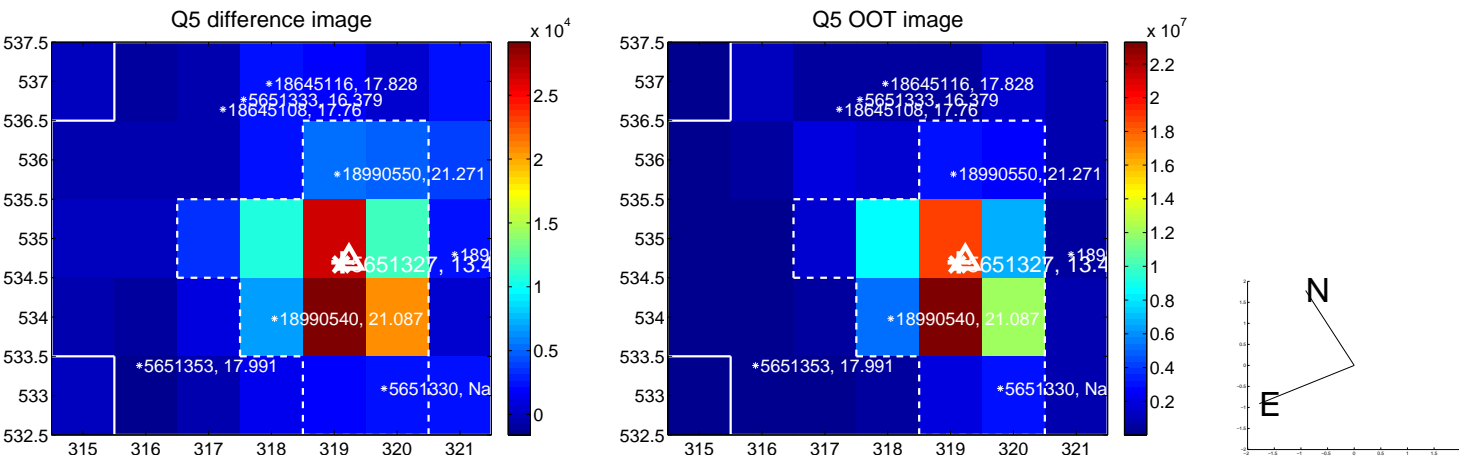


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

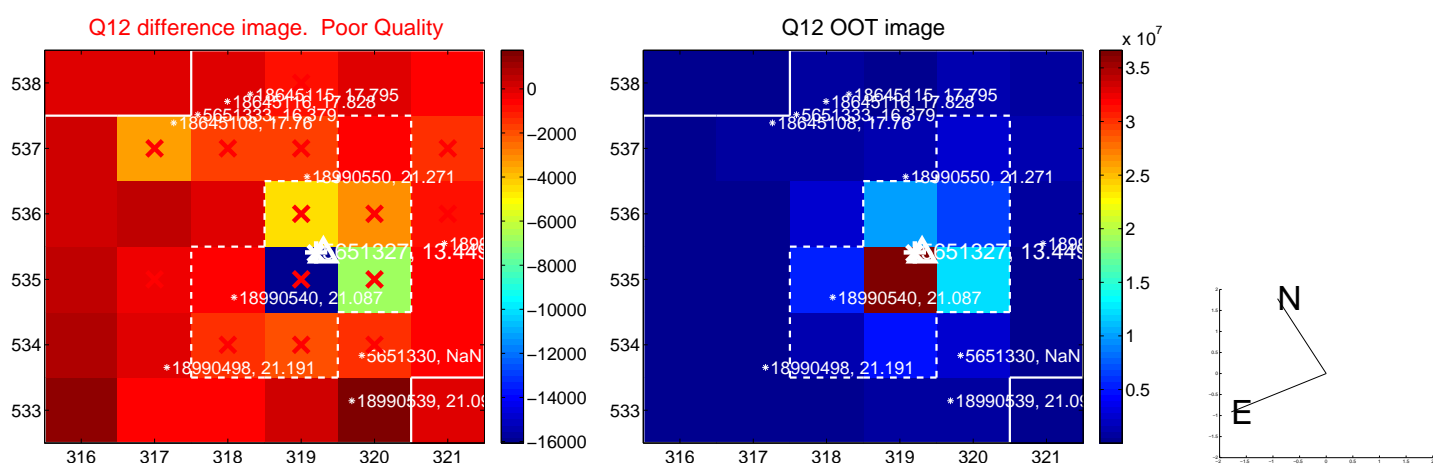
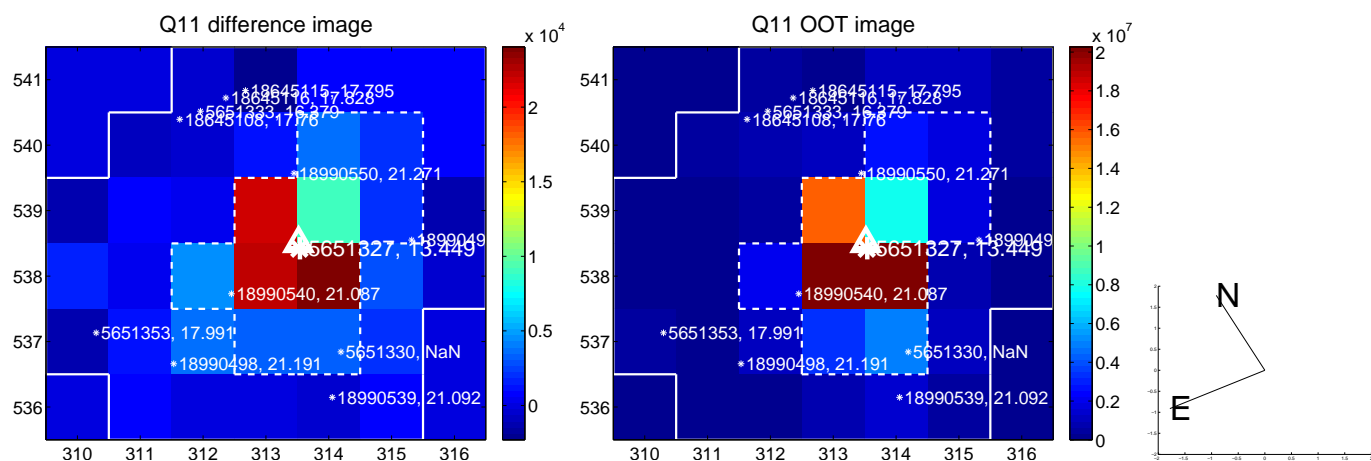
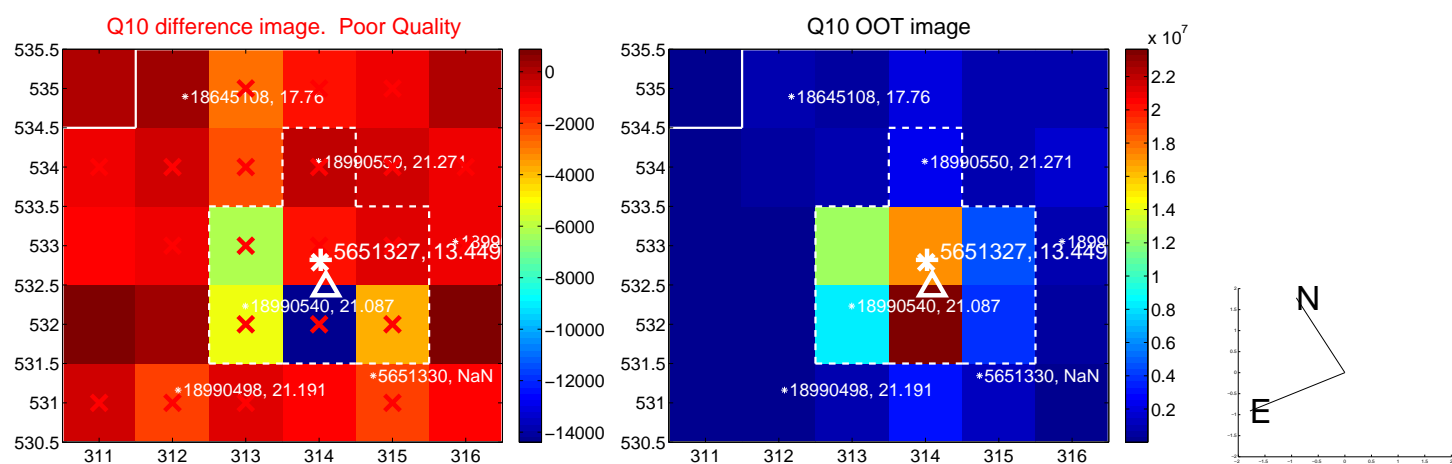
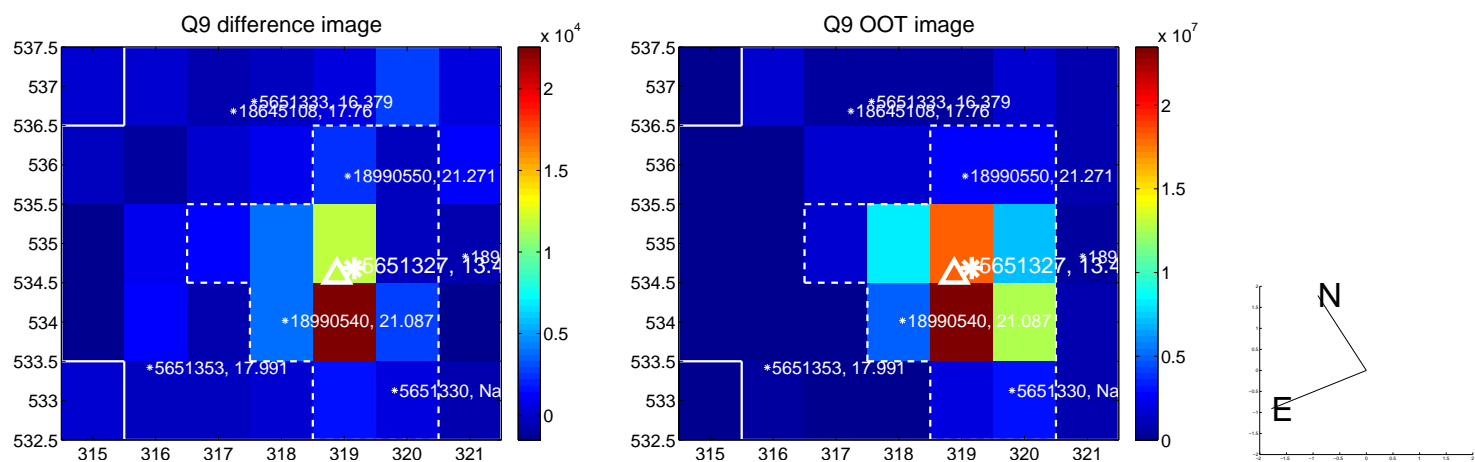
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



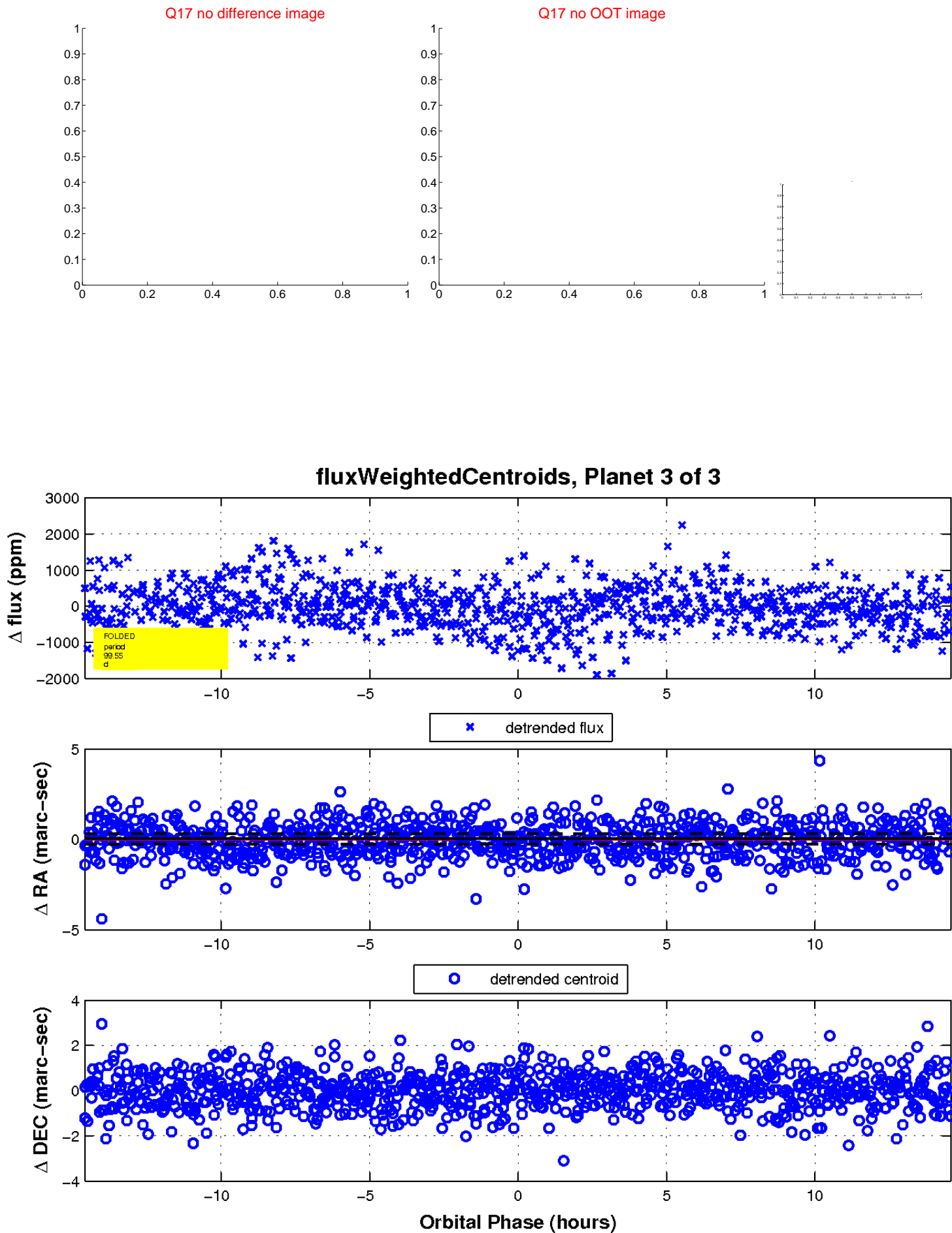
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.







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



UKIRT Image

