

# KIC 007200102

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007200102-01	OBS	6842.01	14.665785	139.571612	335500.9	2.000	9375.5	-1.0	1.00	5385	54.67	60.97
007200102-02	OBS	No	14.665746	144.564057	110121.6	7.808	3130.7	2501.3	1.00	5385	48.66	60.97
007200102-03	OBS	No	2.451208	132.105680	14.0	4.082	208.5	1.2	1.00	5385	0.47	662.28
007200102-04	OBS	No	14.666185	140.072655	5415.1	4.500	93.5	-1.0	1.00	5385	7.22	60.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200102-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
007200102-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
007200102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007200102-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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.

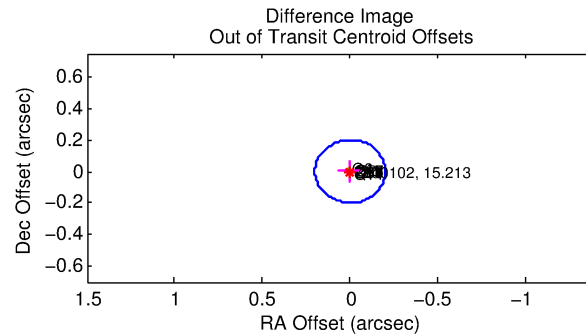
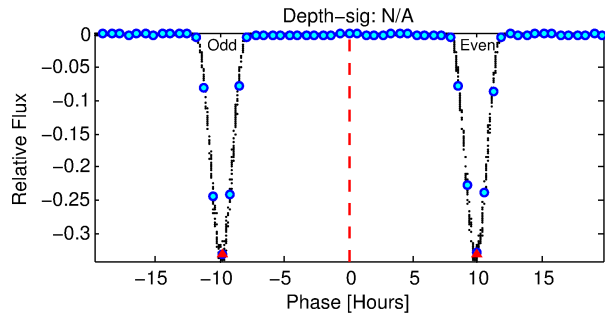
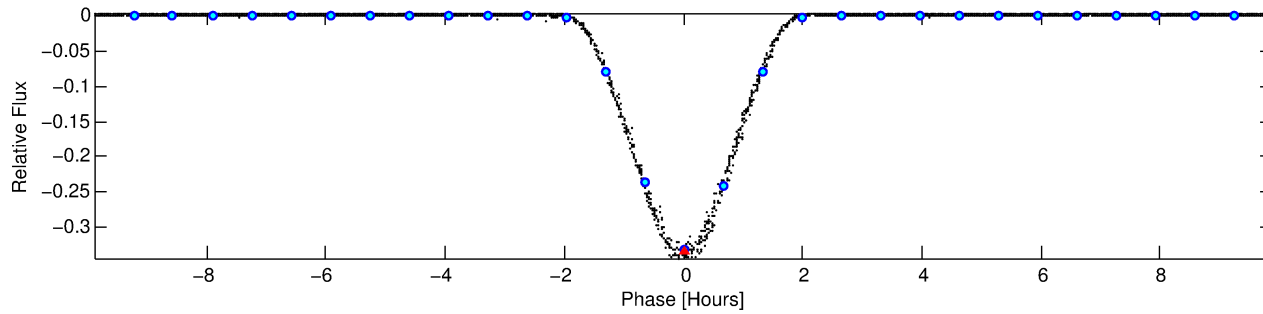
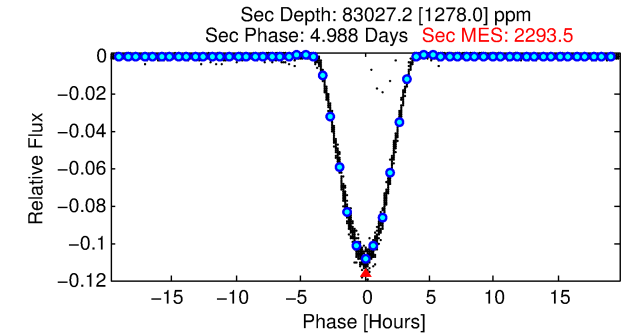
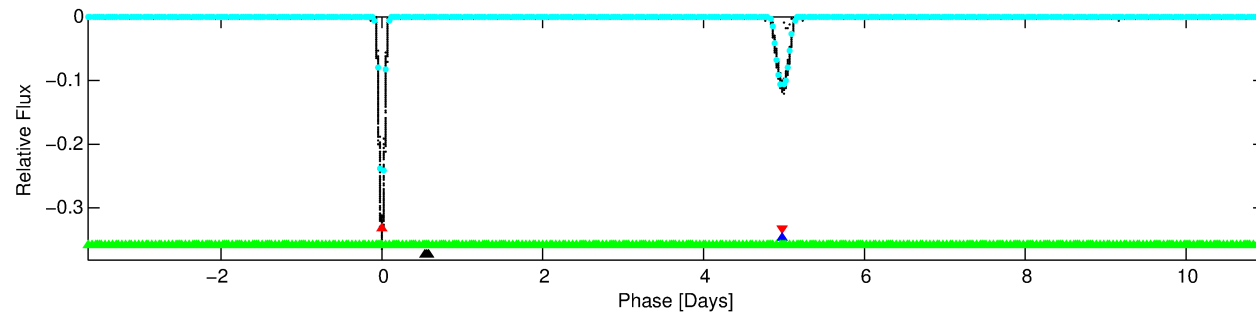
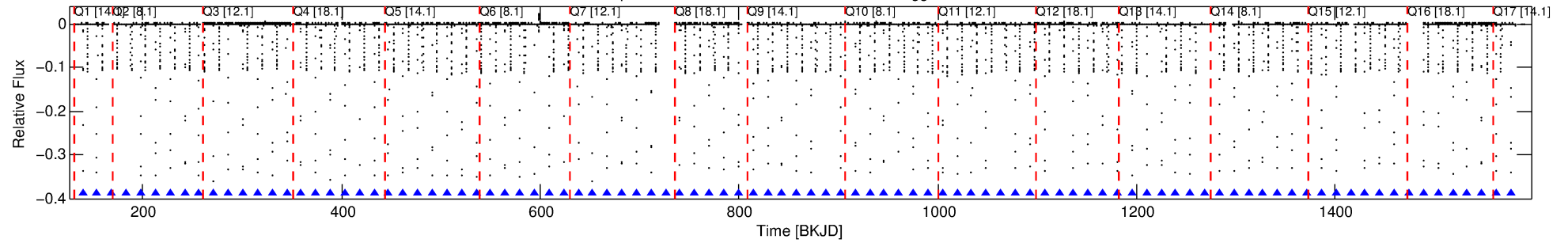
Ephemeris Match Information For 007200102-01

No Significant Match Found

# DV One-Page Summary

KIC: 7200102 Candidate: 1 of 4 Period: 14.666 d  
KOI: K06842 Corr: No Ephemeris Match

Kp: 15.21 R\*: 1.00 Rs Teff: 5385.0 K Logg: 4.37 Fe/H: 0.080



## TPS TCE Results:

Period = 14.66578 d  
Epoch = 139.5716 BKJD

DV fit results are unavailable

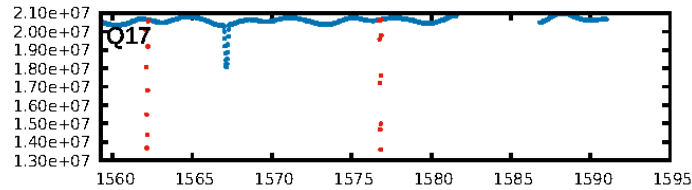
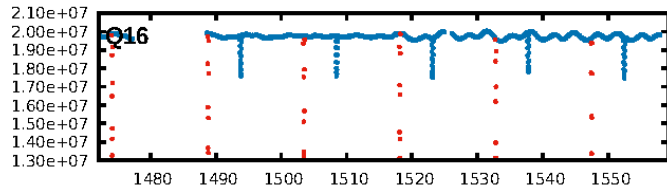
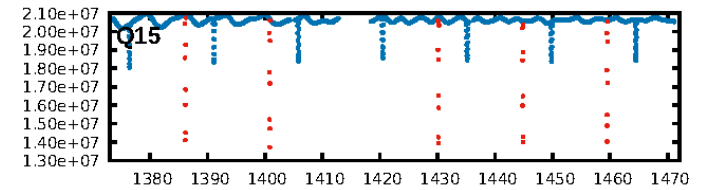
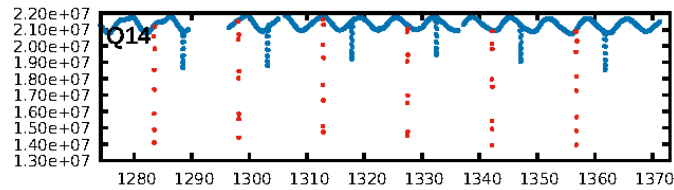
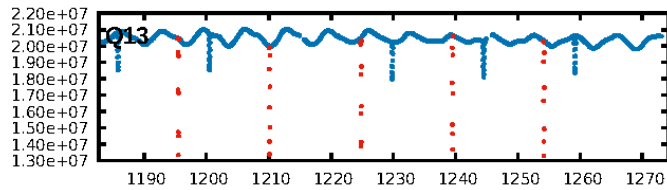
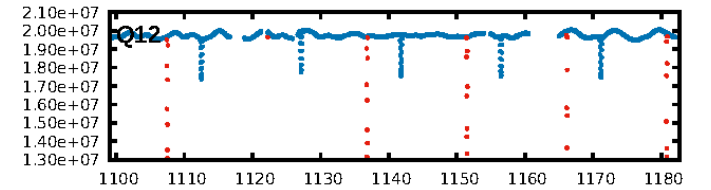
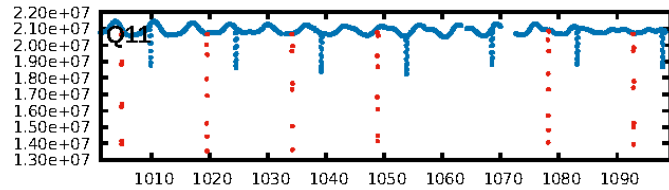
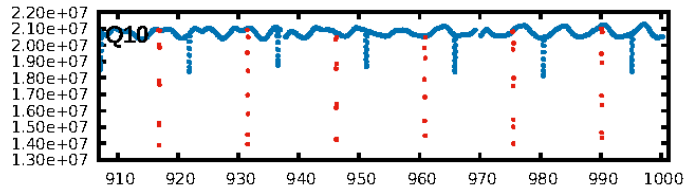
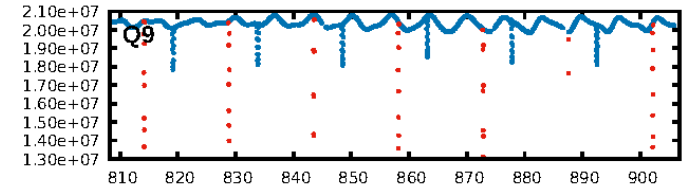
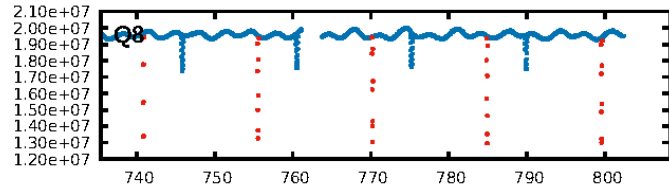
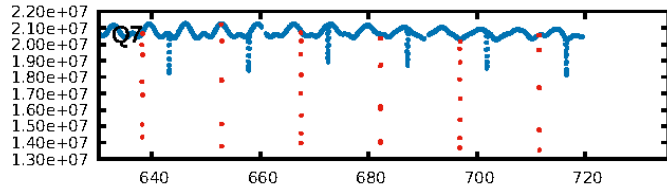
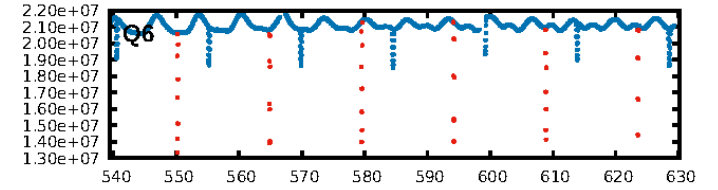
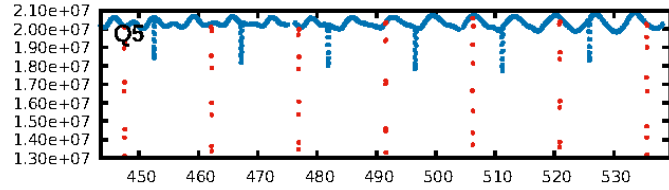
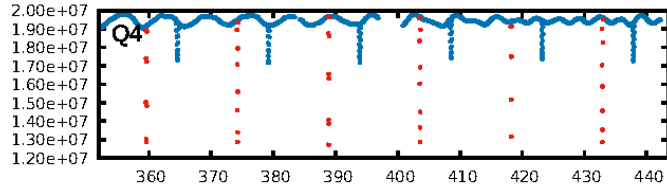
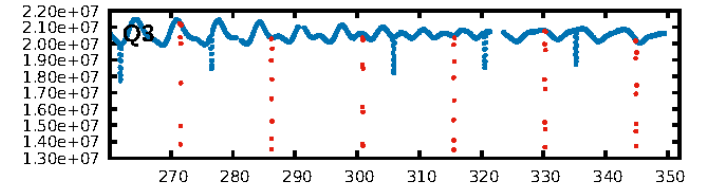
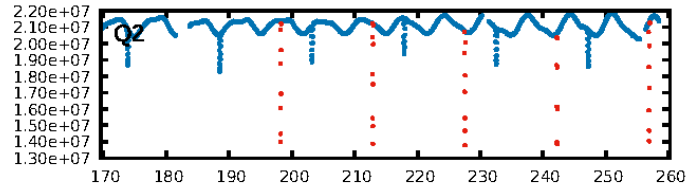
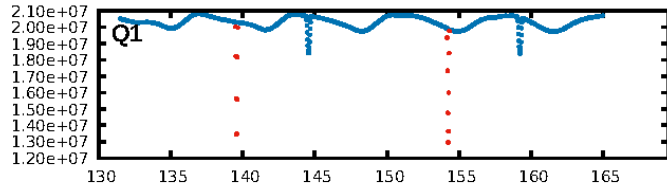
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 0.2% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [87/87]  
GhostDiagnostic-chr: 1.043  
Centroid-sig: 0.0%  
Centroid-so: 0.141 arcsec [158.14 $\sigma$ ]  
OotOffset-rm: 0.002 arcsec [0.04 $\sigma$ ]  
KicOffset-rm: 0.084 arcsec [1.25 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.71 [12/17]

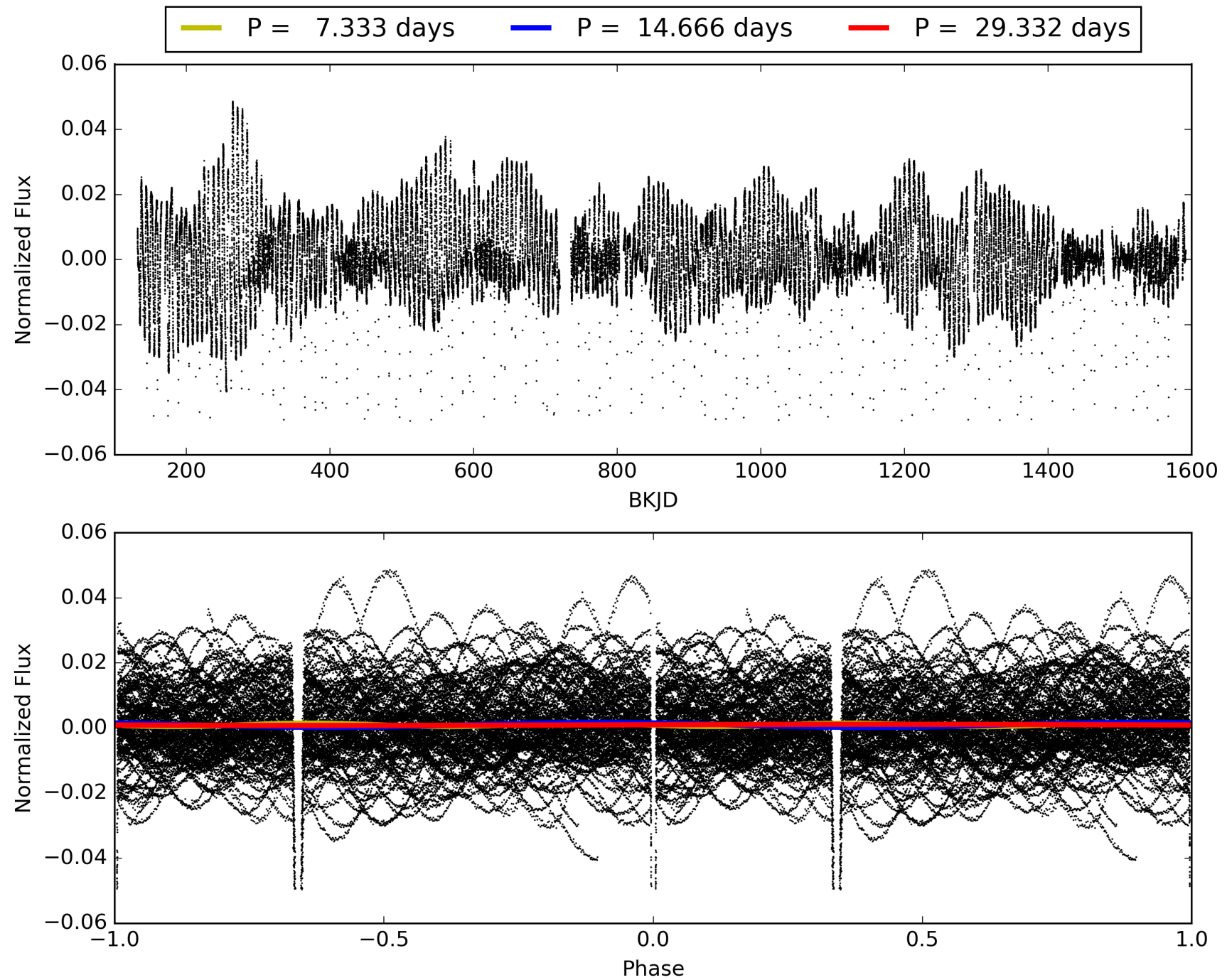
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:23:43 Z

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

# TCE 007200102-01, PDC Light Curves



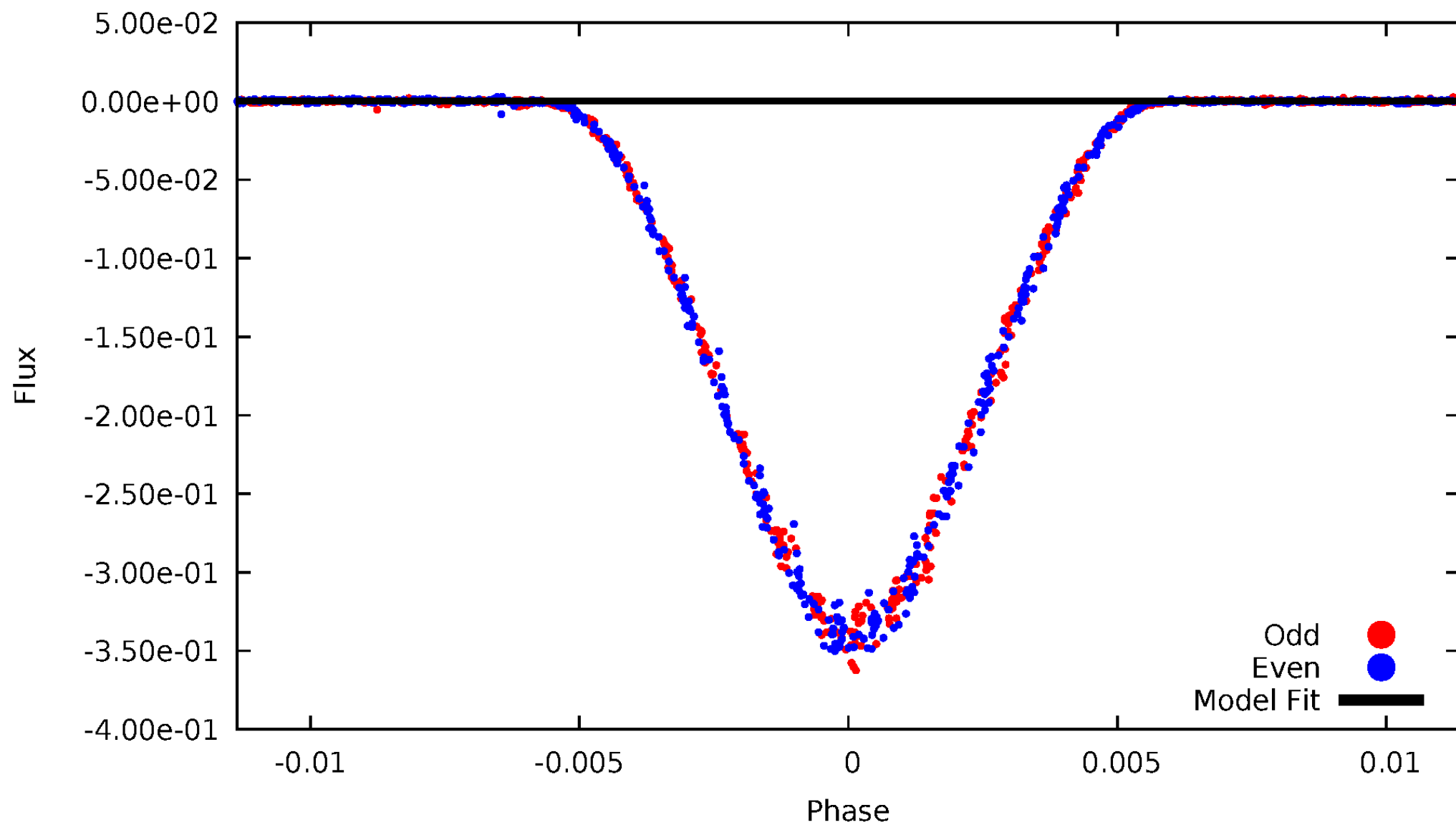
TCE 007200102-01





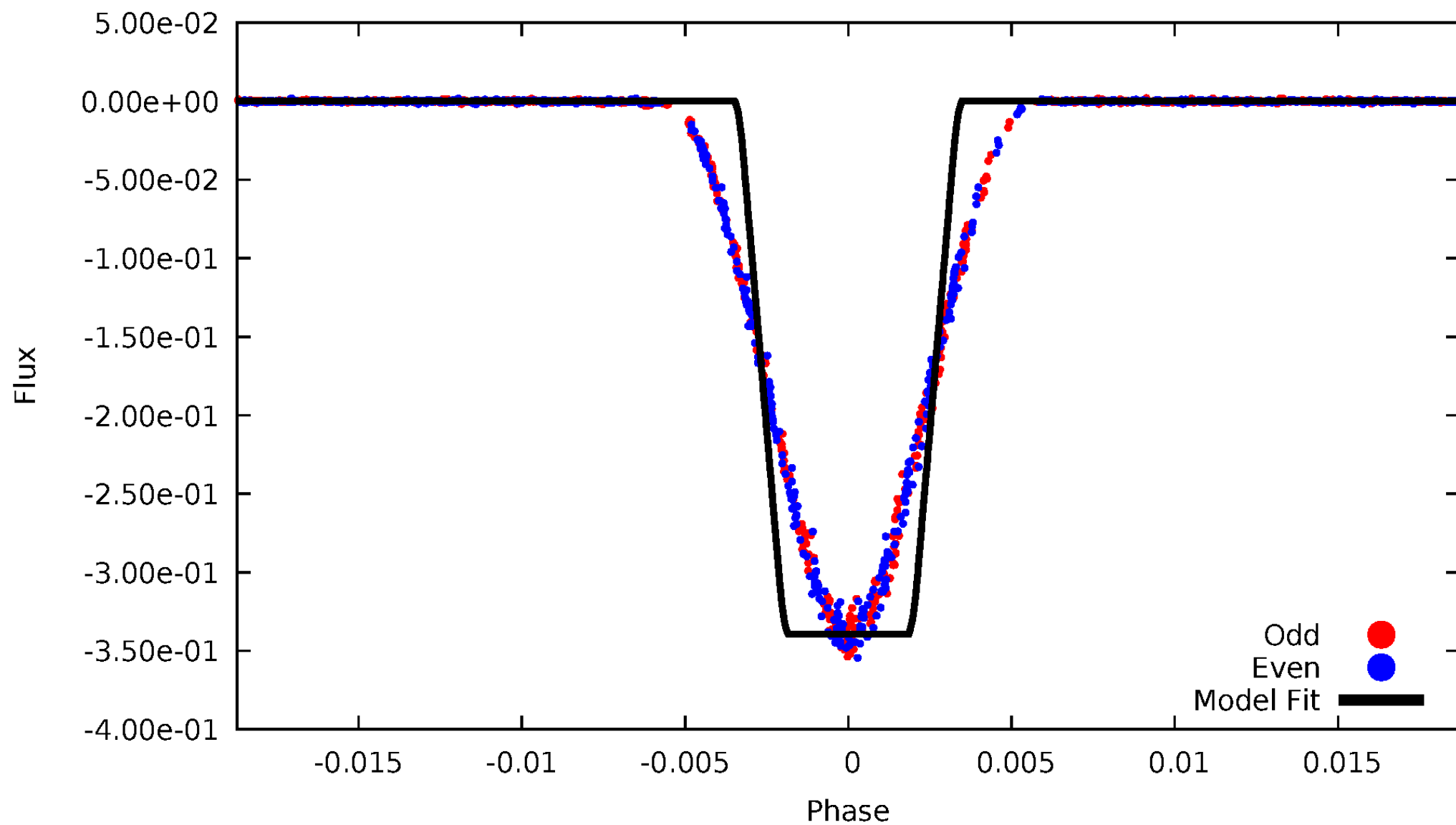
# DV Odd/Even

TCE 007200102-01



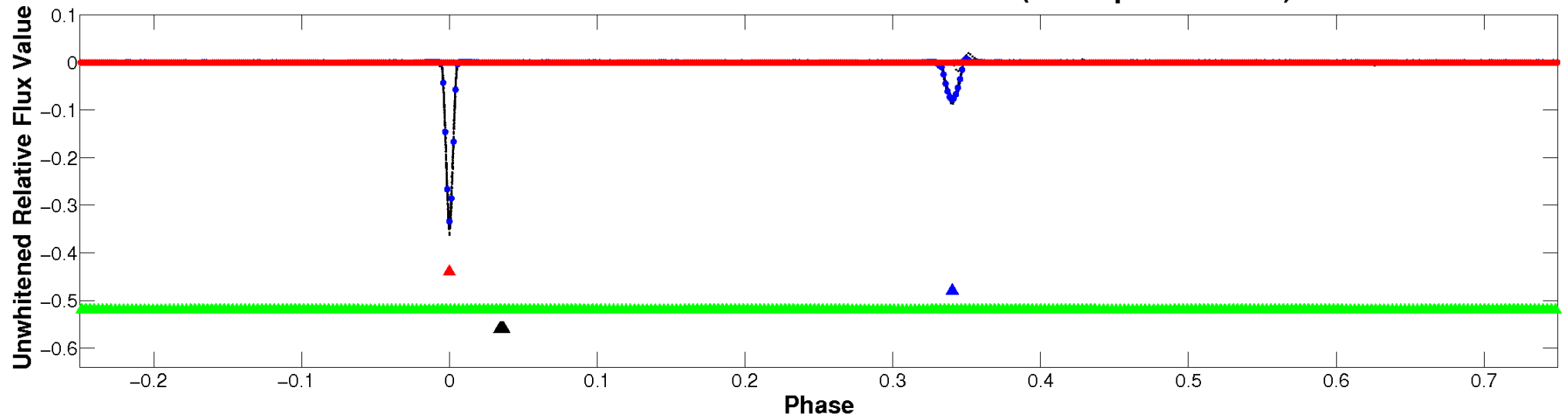
# ALT Odd/Even

TCE 007200102-01



# Non-Whitened Vs. Whitened Light Curve

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

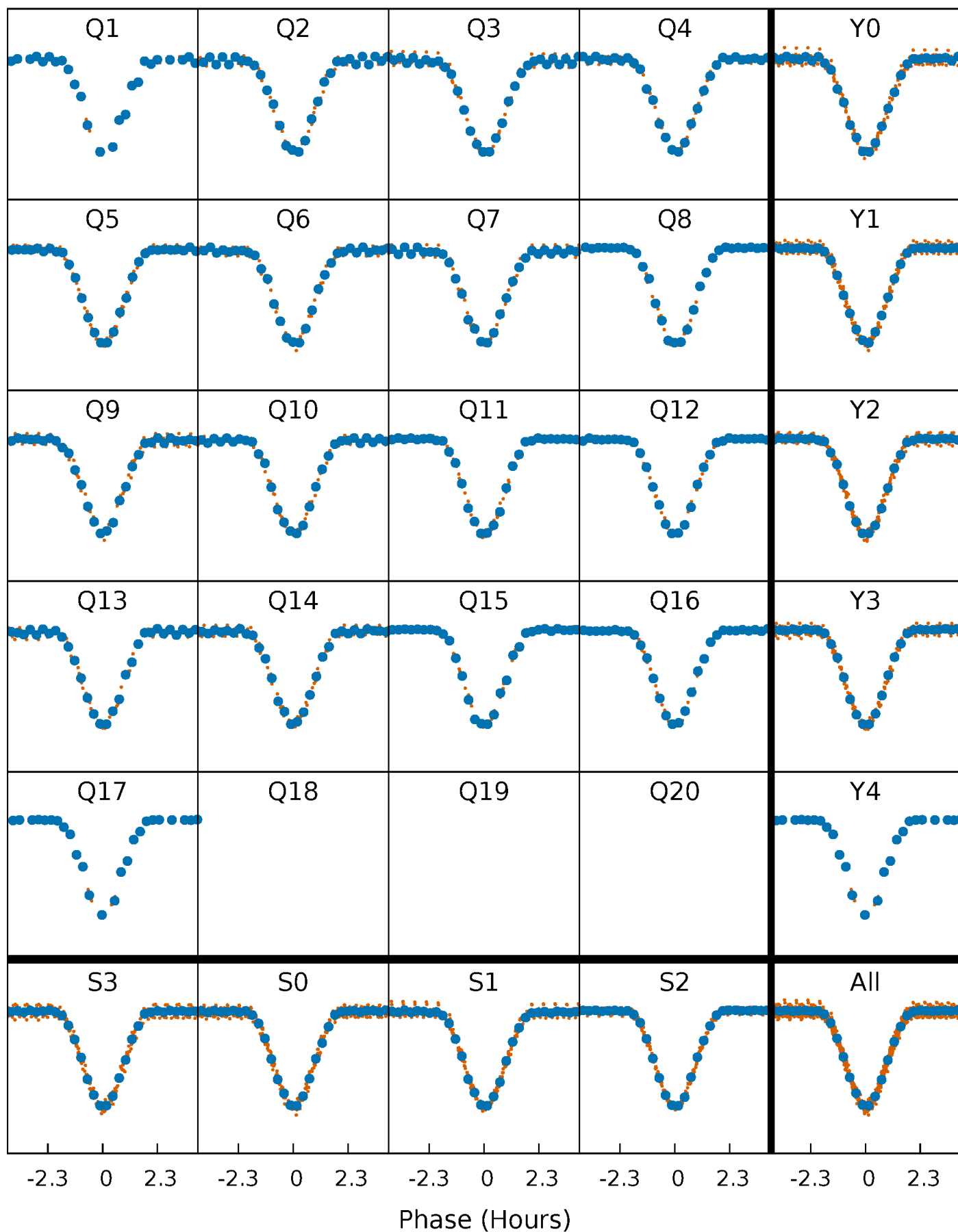


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



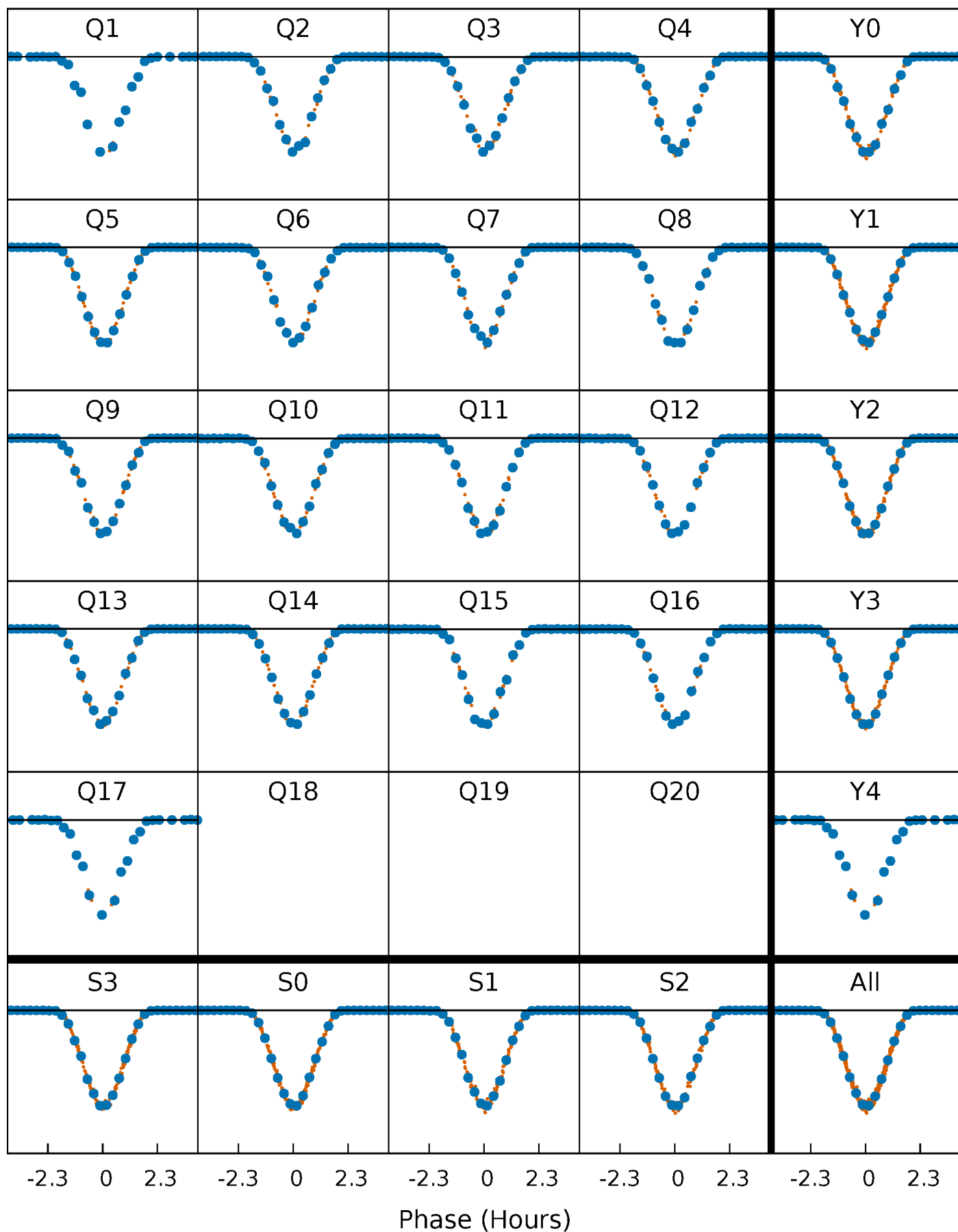
# PDC Quarter-Phased Transit Curves

TCE 007200102-01 P= 14.665785 Days  $T_0=139.571612$  (BKJD)



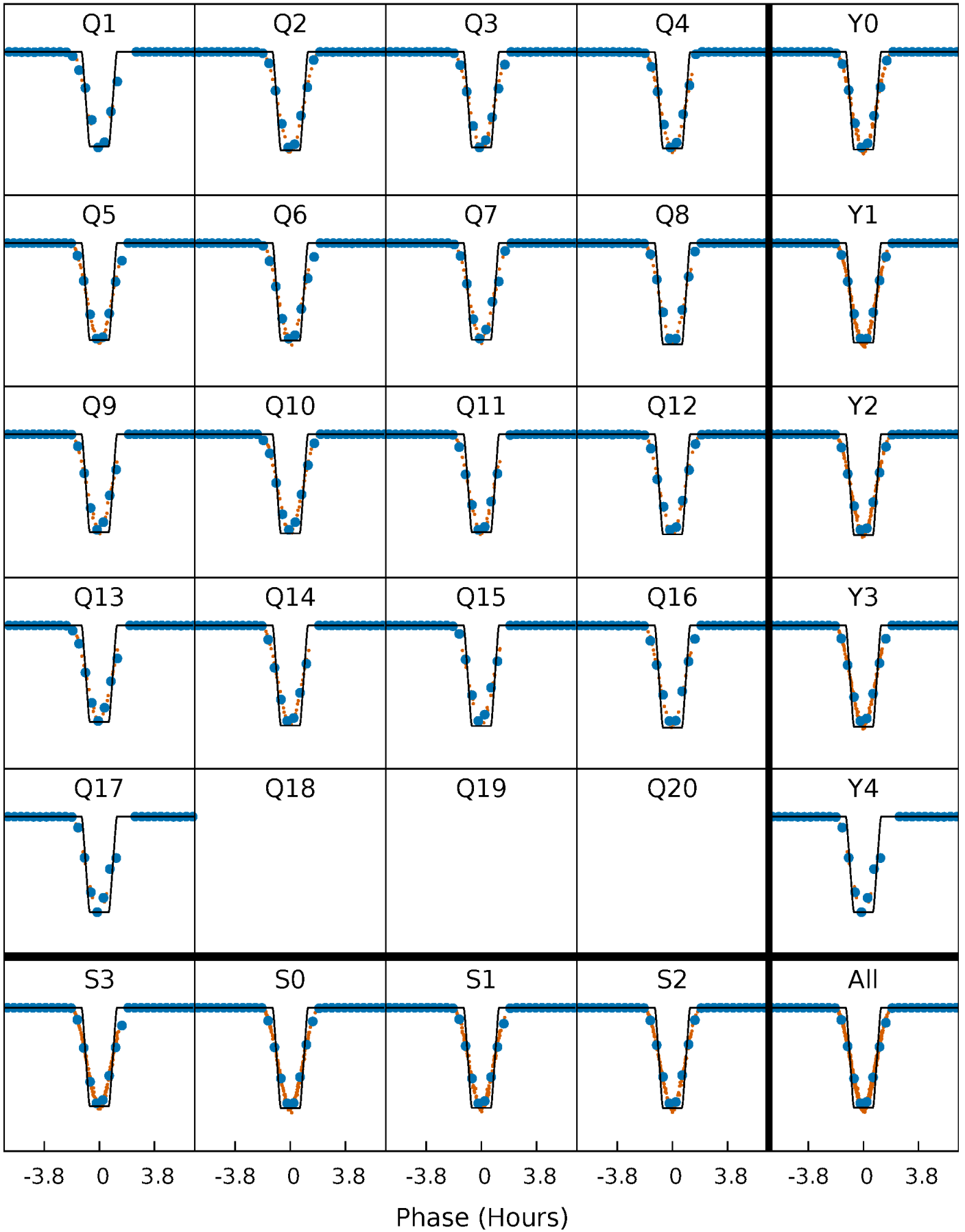
# DV Quarter-Phased Transit Curves

TCE 007200102-01 P= 14.665785 Days  $T_0=139.571612$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007200102-01 P= 14.665785 Days  $T_0=139.572742$  (BKJD)

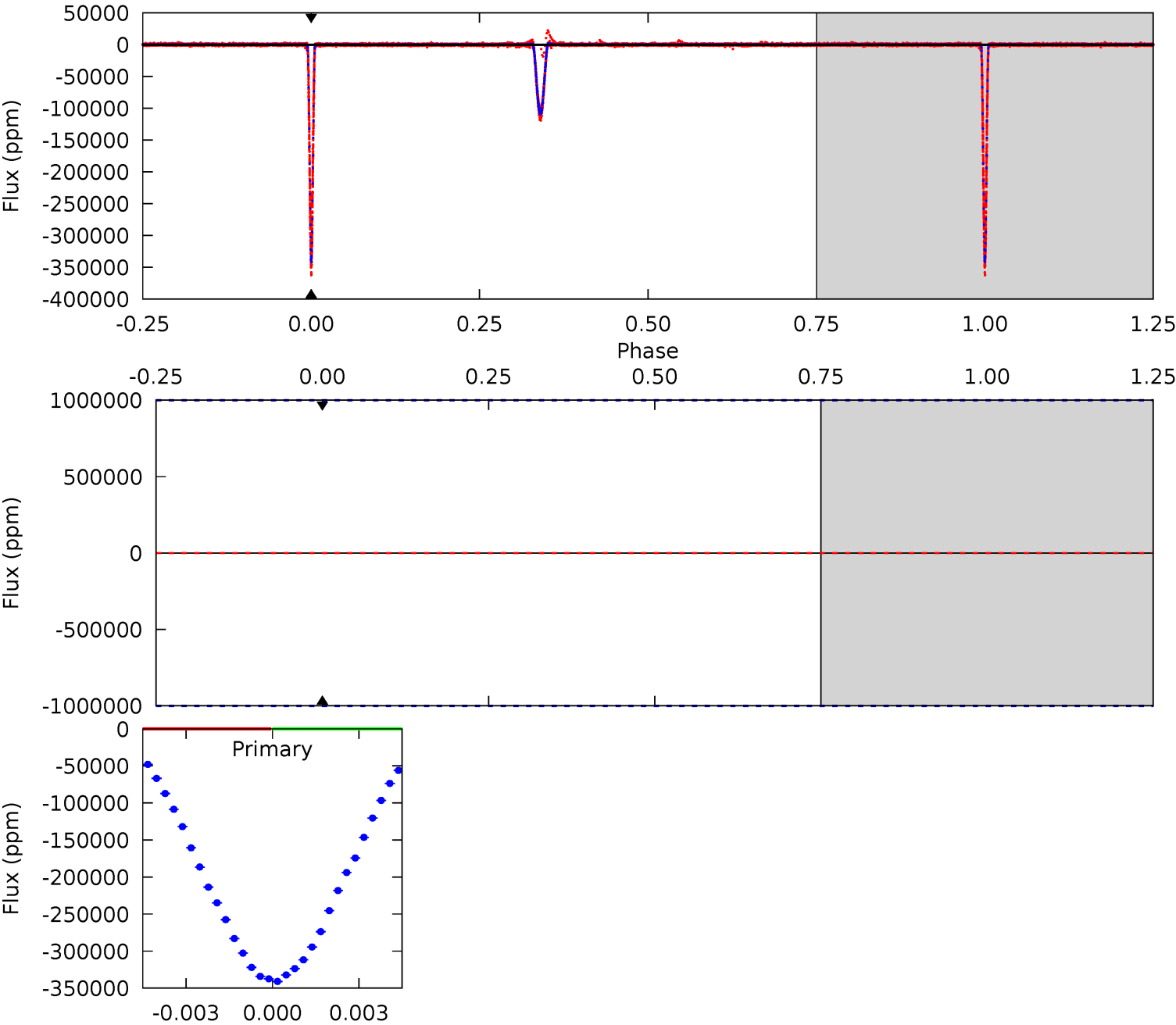




# DV Model-Shift Uniqueness Test

007200102-01, P = 14.665785 Days, E = 124.905827 Days

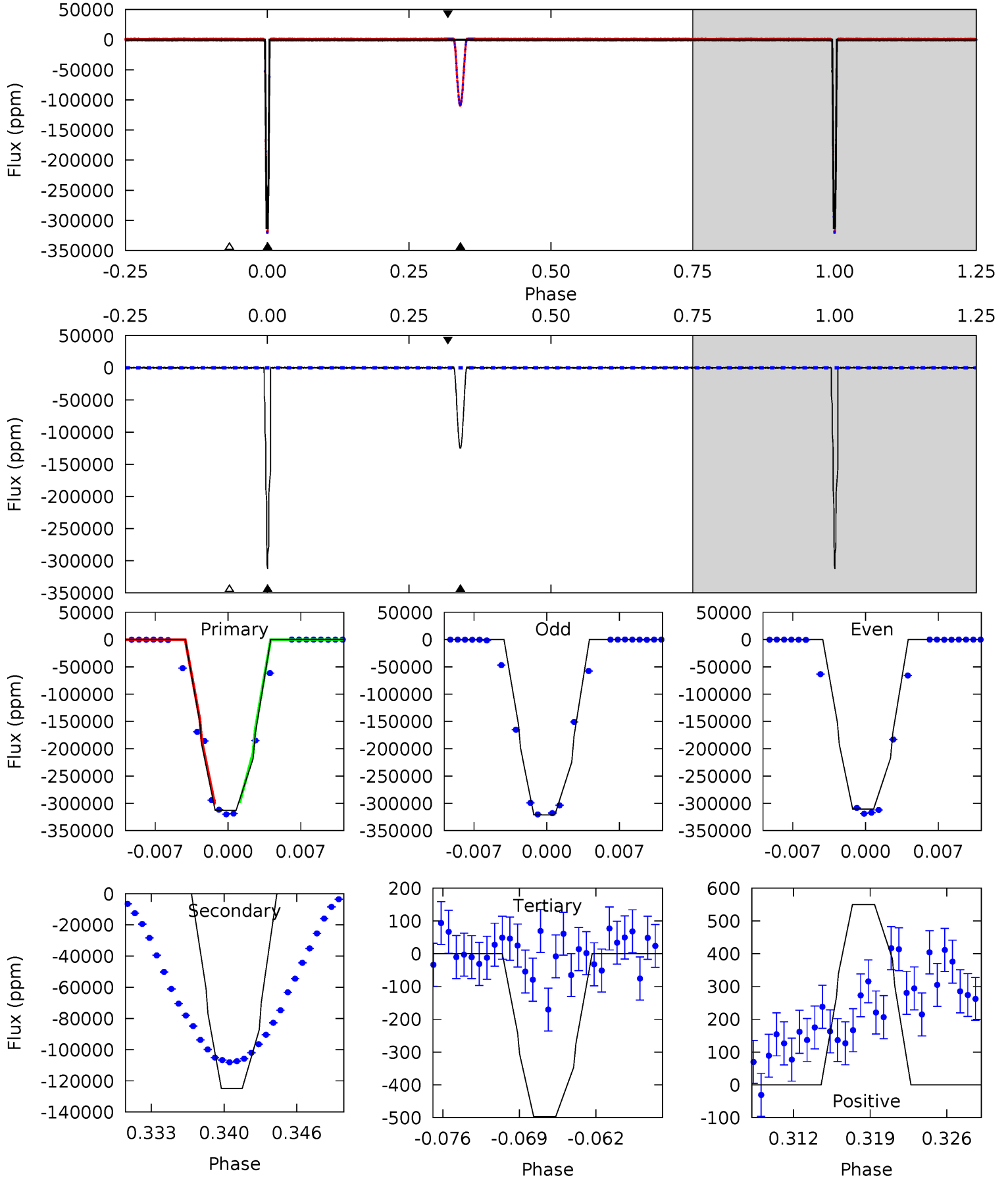
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007200102-01, P = 14.665785 Days, E = 124.906957 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
1276	509.4	2.03	2.24	5.10	2.70	5.21	1274	1274	507.4	507.2	22.5	1.00	0.00	0



### Stellar Parameters For KIC 007200102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5385^{+160}_{-144}$	$4.369^{+0.162}_{-0.198}$	$0.080^{+0.250}_{-0.300}$	$1.002^{+0.294}_{-0.181}$	$0.855^{+0.108}_{-0.063}$	$1.200^{+0.904}_{-0.590}$
	+3%/-3%	+4%/-5%	+312%/-375%	+29%/-18%	+13%/-7%	+75%/-49%
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 007200102-01 / KOI 6842.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$55.88^{+13.23}_{-12.98}$	$1003^{+79}_{-64}$	$-2283^{+6812}_{-2154}$	$-2.280^{+248.549}_{-216.332}$
Alt.	$-124823 \pm 245$	$63.69^{+15.41}_{-13.72}$	$997^{+78}_{-65}$	$4517^{+371}_{-295}$	$247^{+143}_{-91}$

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

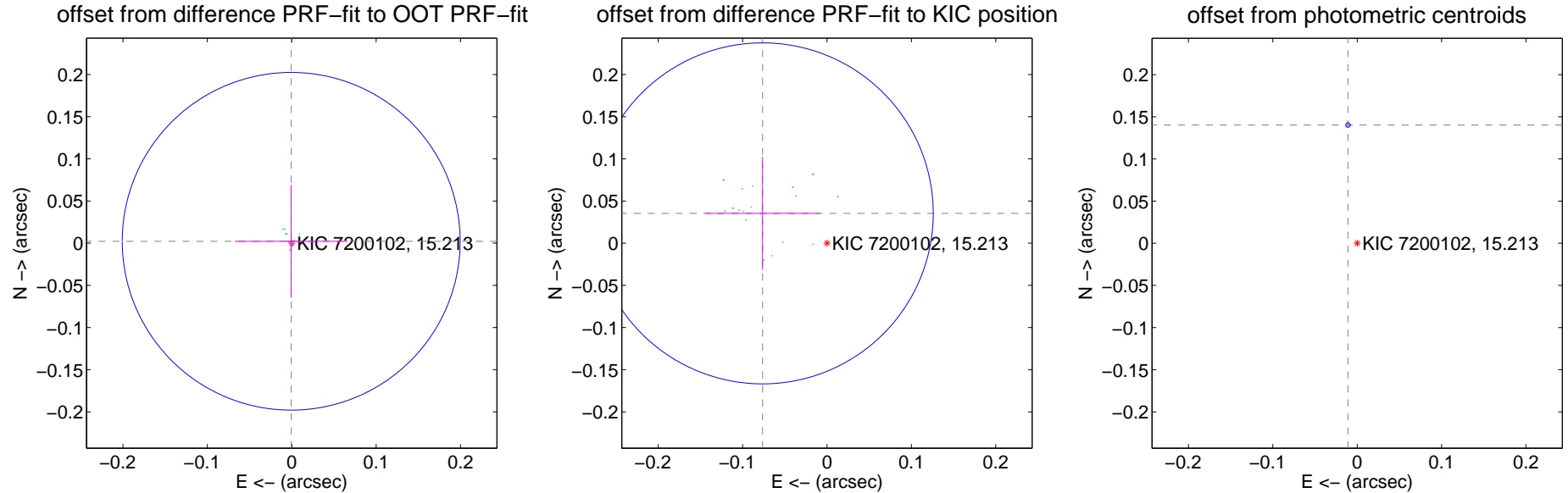
## DV Centroid Data

Supplemental centroid analysis for 007200102-01. Kepler magnitude: 15.21. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

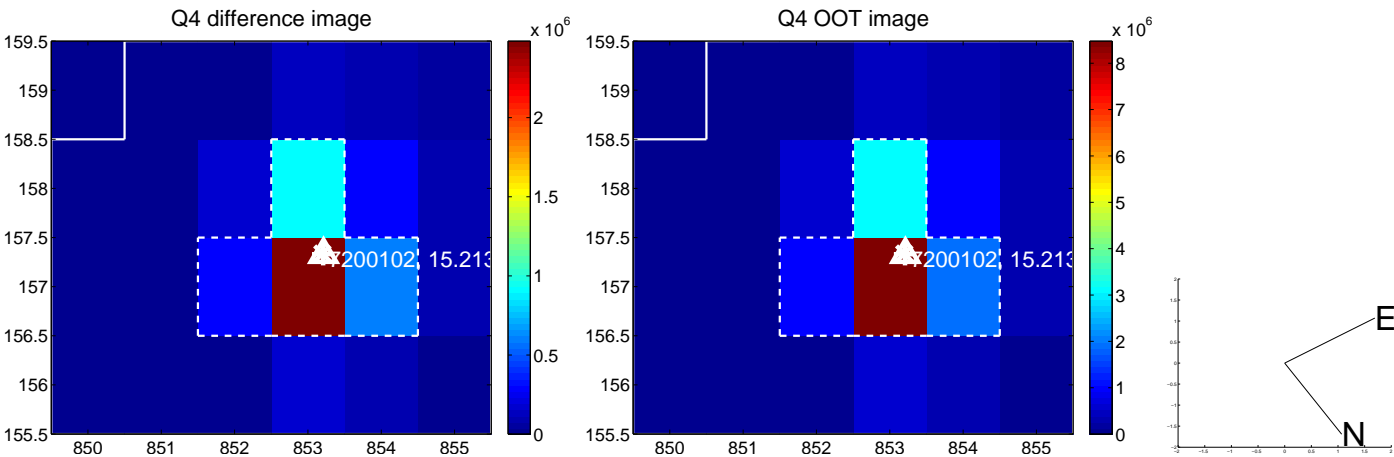
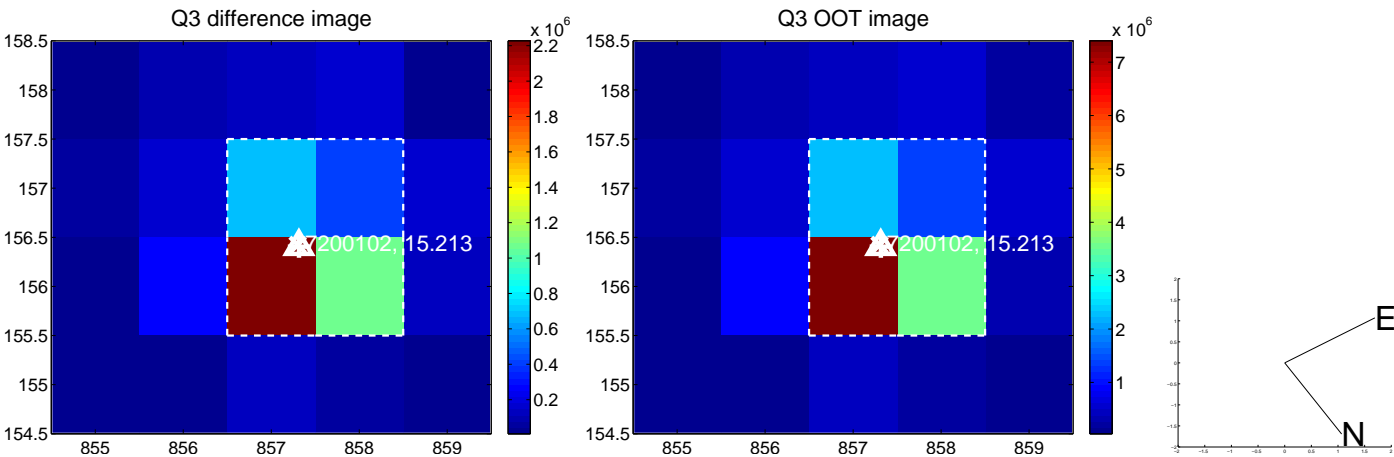
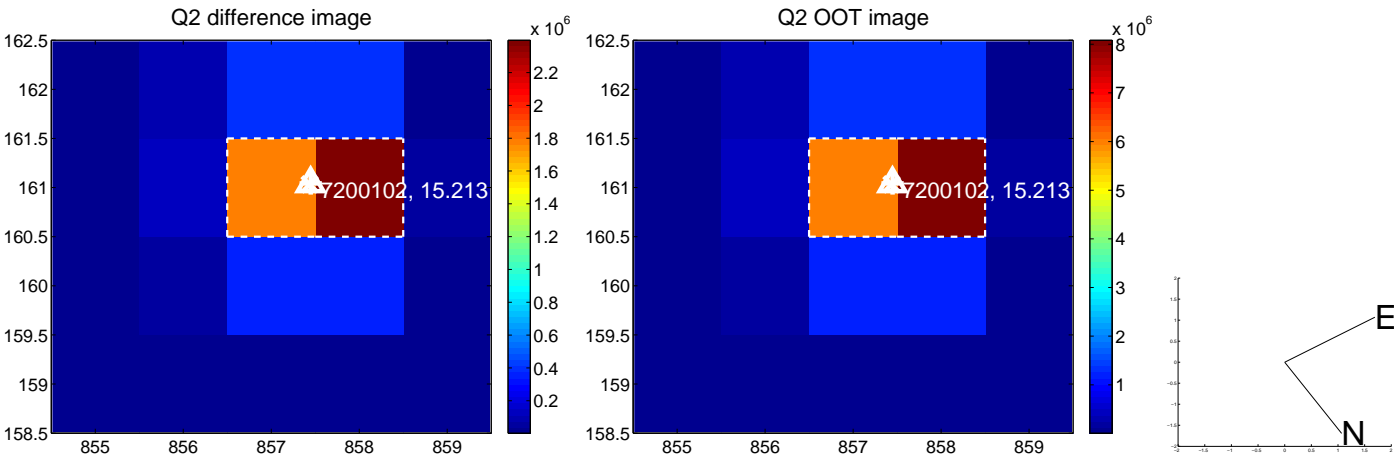
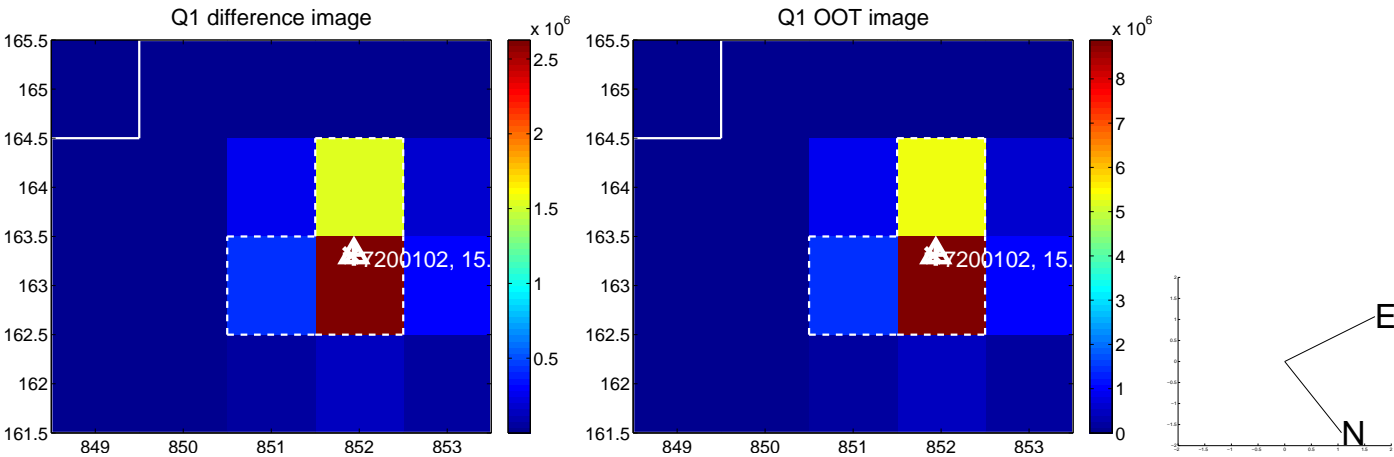
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.002 \pm 0.067$	0.04	$0.001 \pm 0.067$	$0.002 \pm 0.067$
PRF-fit source offset from KIC position	$0.084 \pm 0.067$	1.25	$0.076 \pm 0.067$	$0.035 \pm 0.067$
photometric centroid source offset	$0.14 \pm 0.00$	158.14	$0.01 \pm 0.00$	$0.14 \pm 0.00$

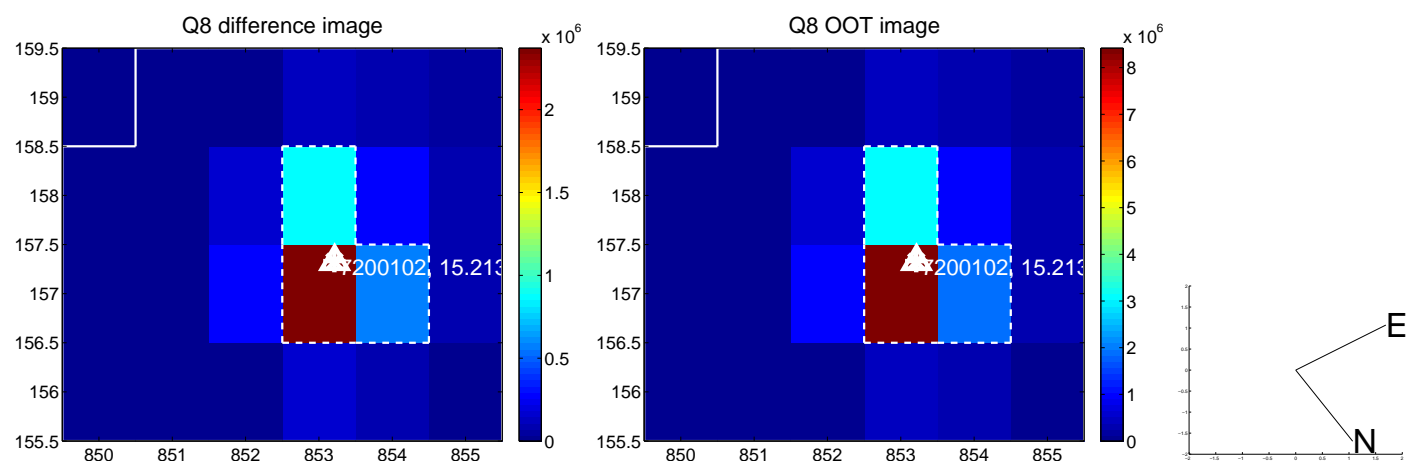
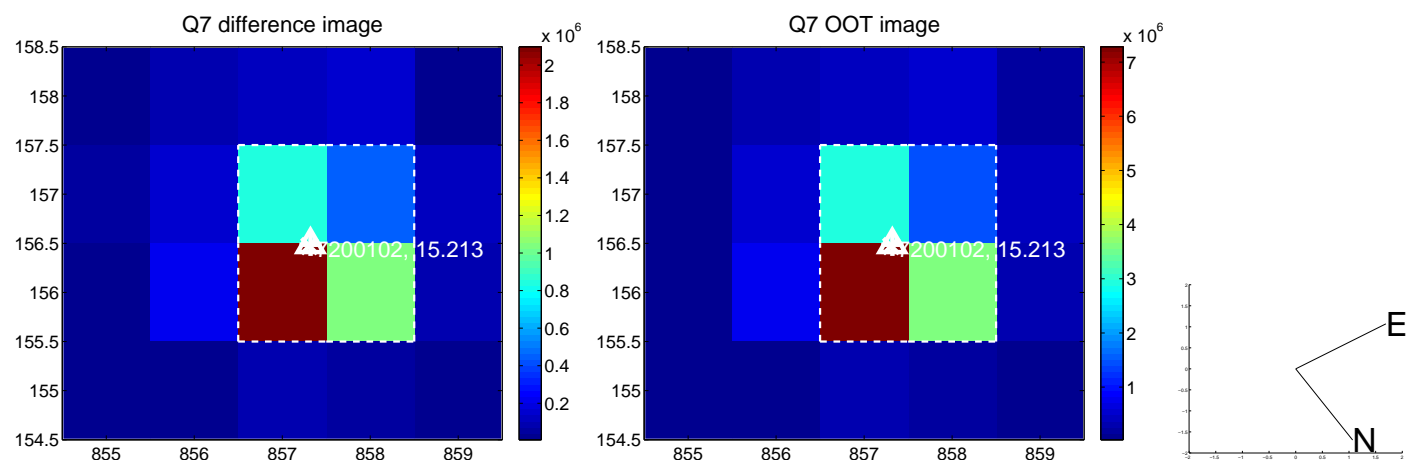
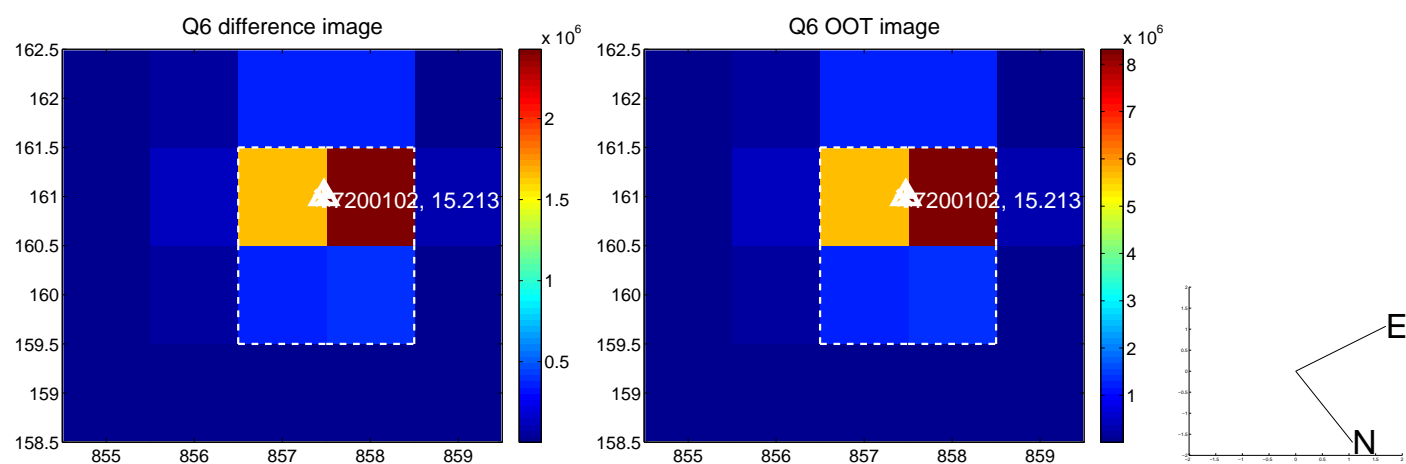
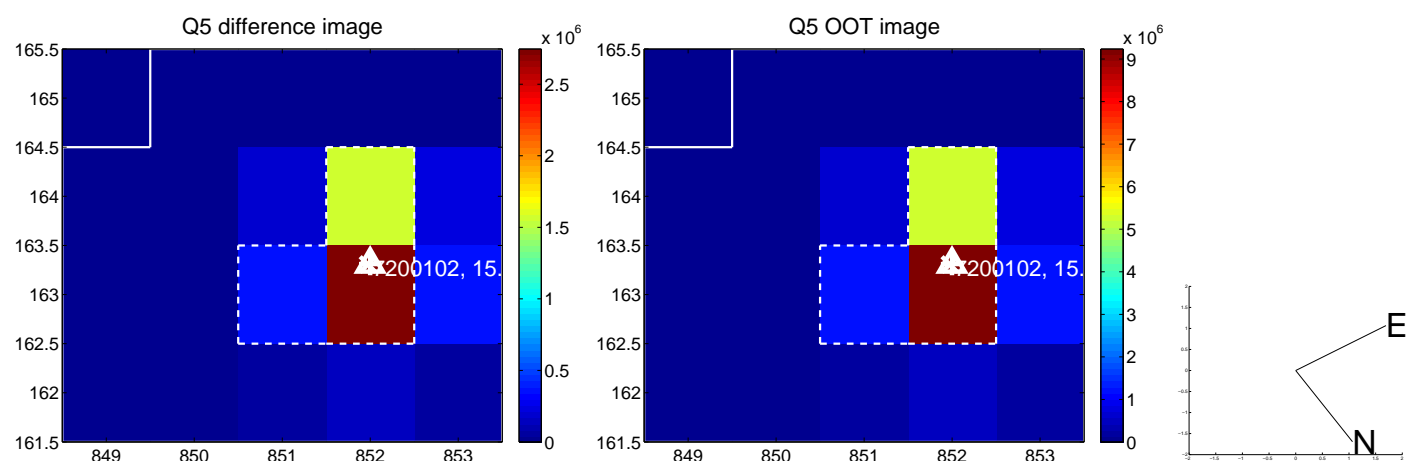


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

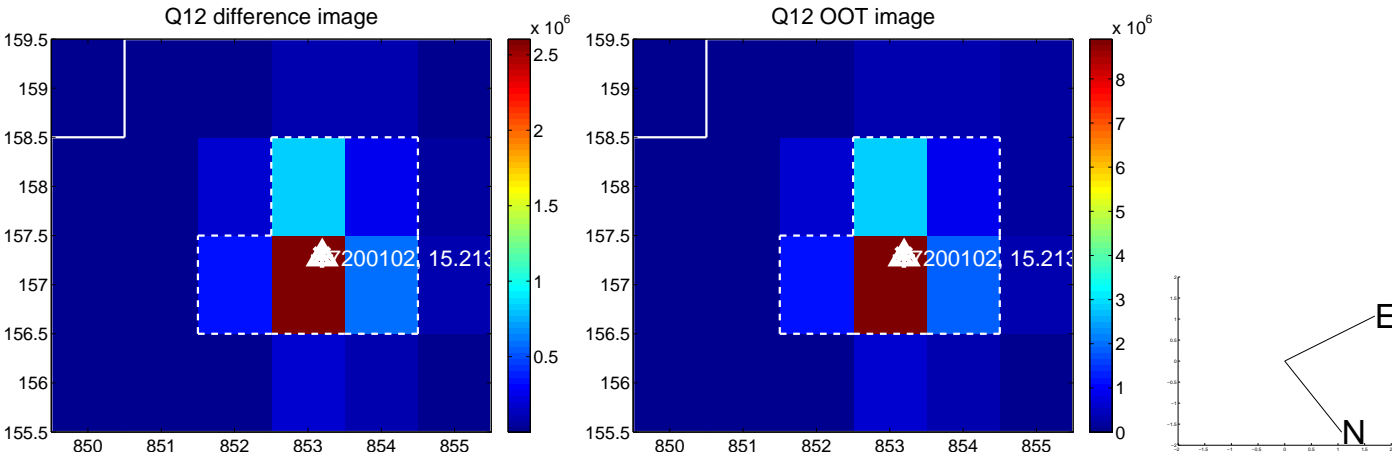
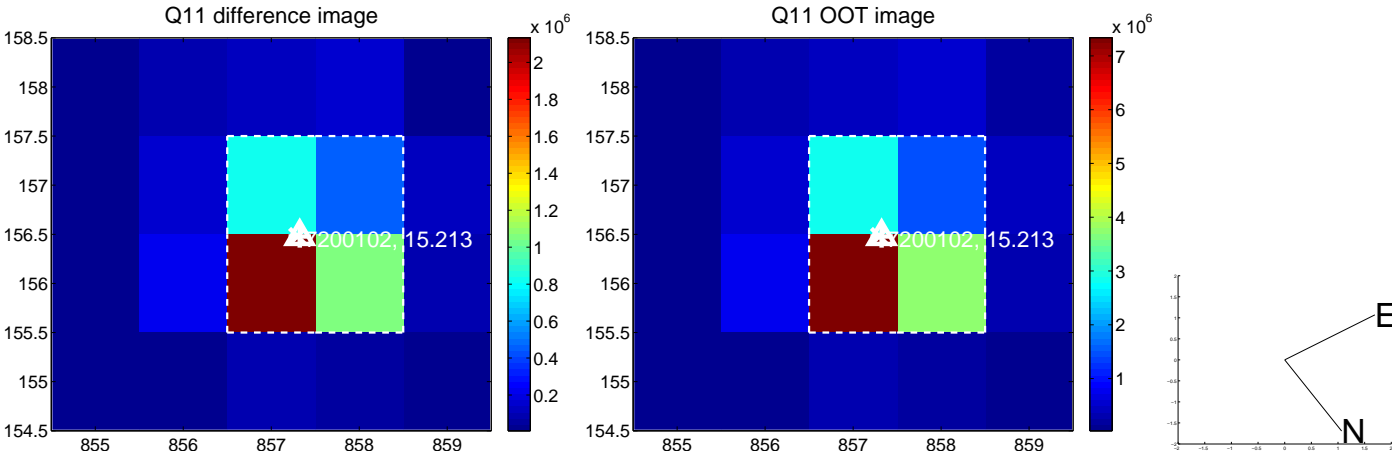
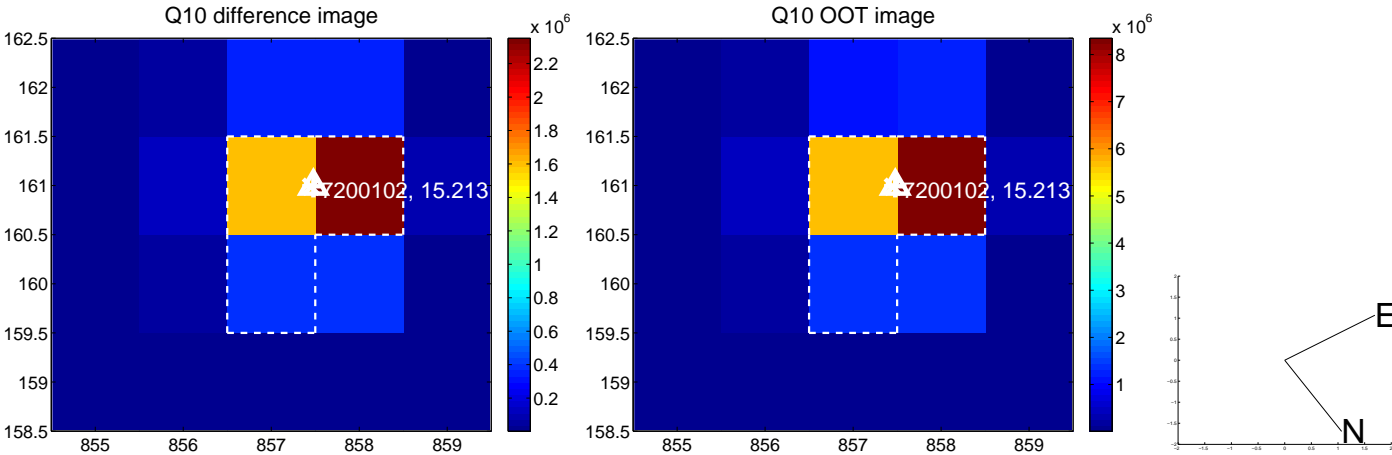
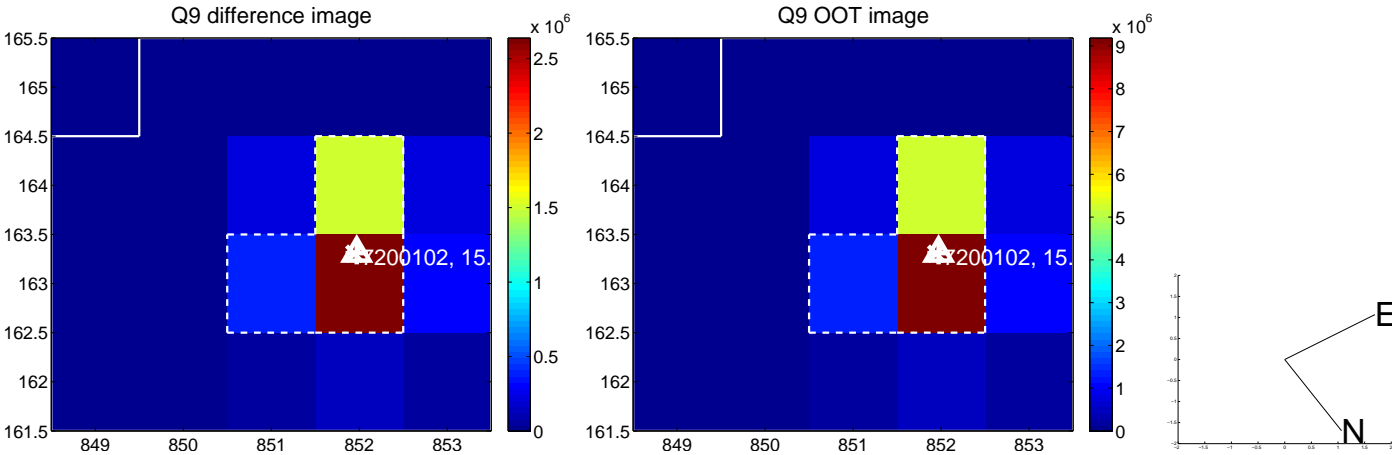


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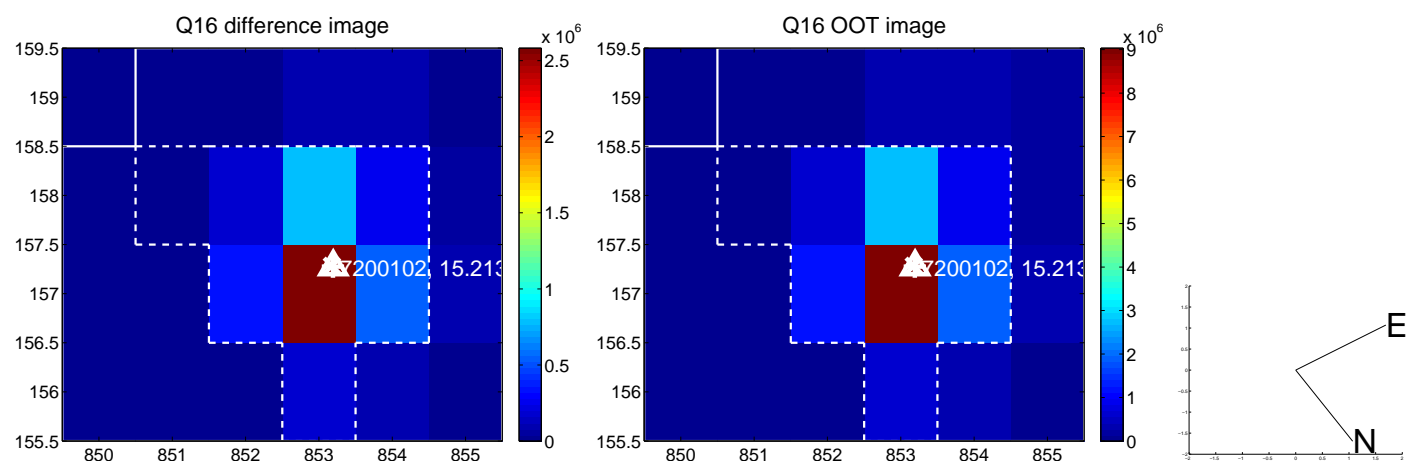
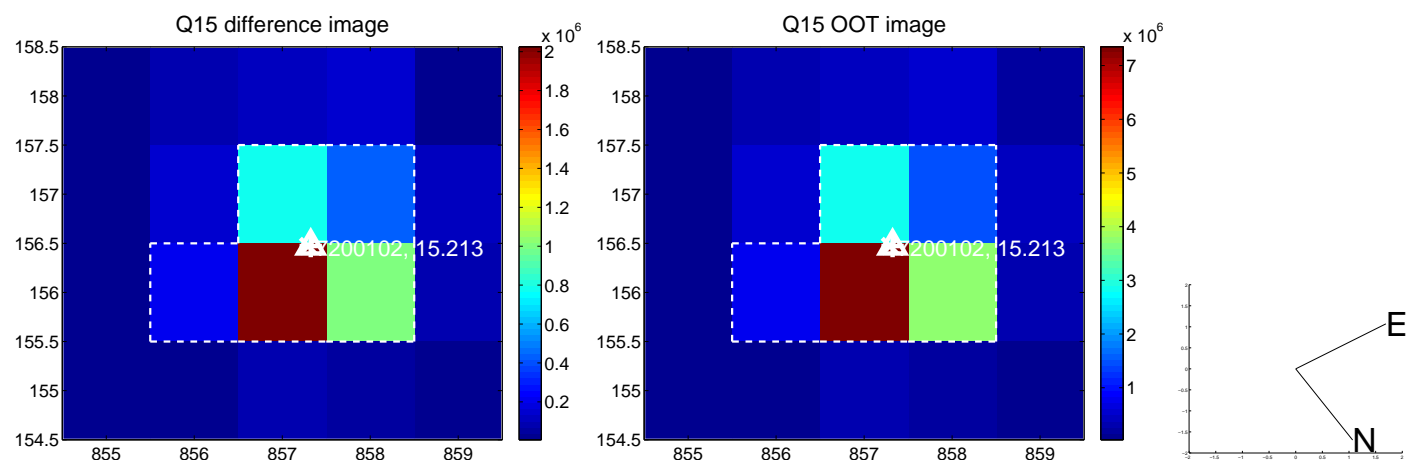
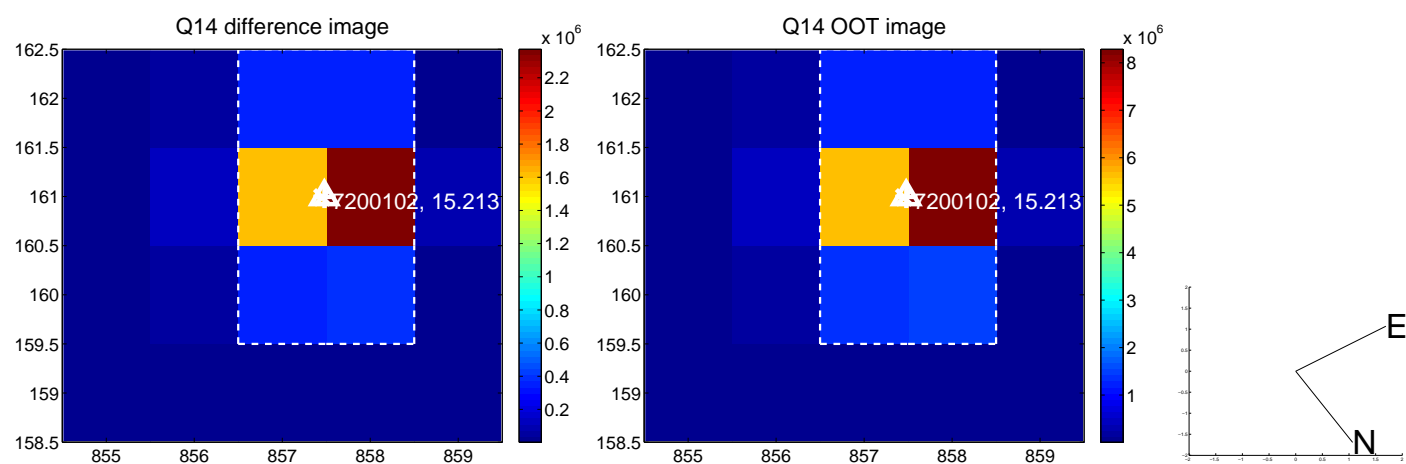
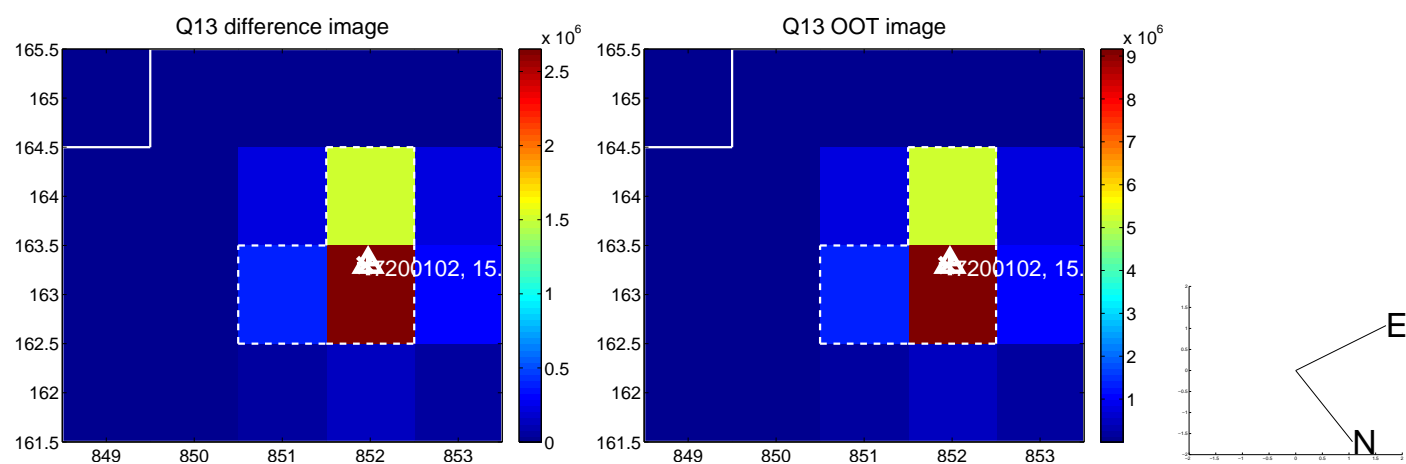




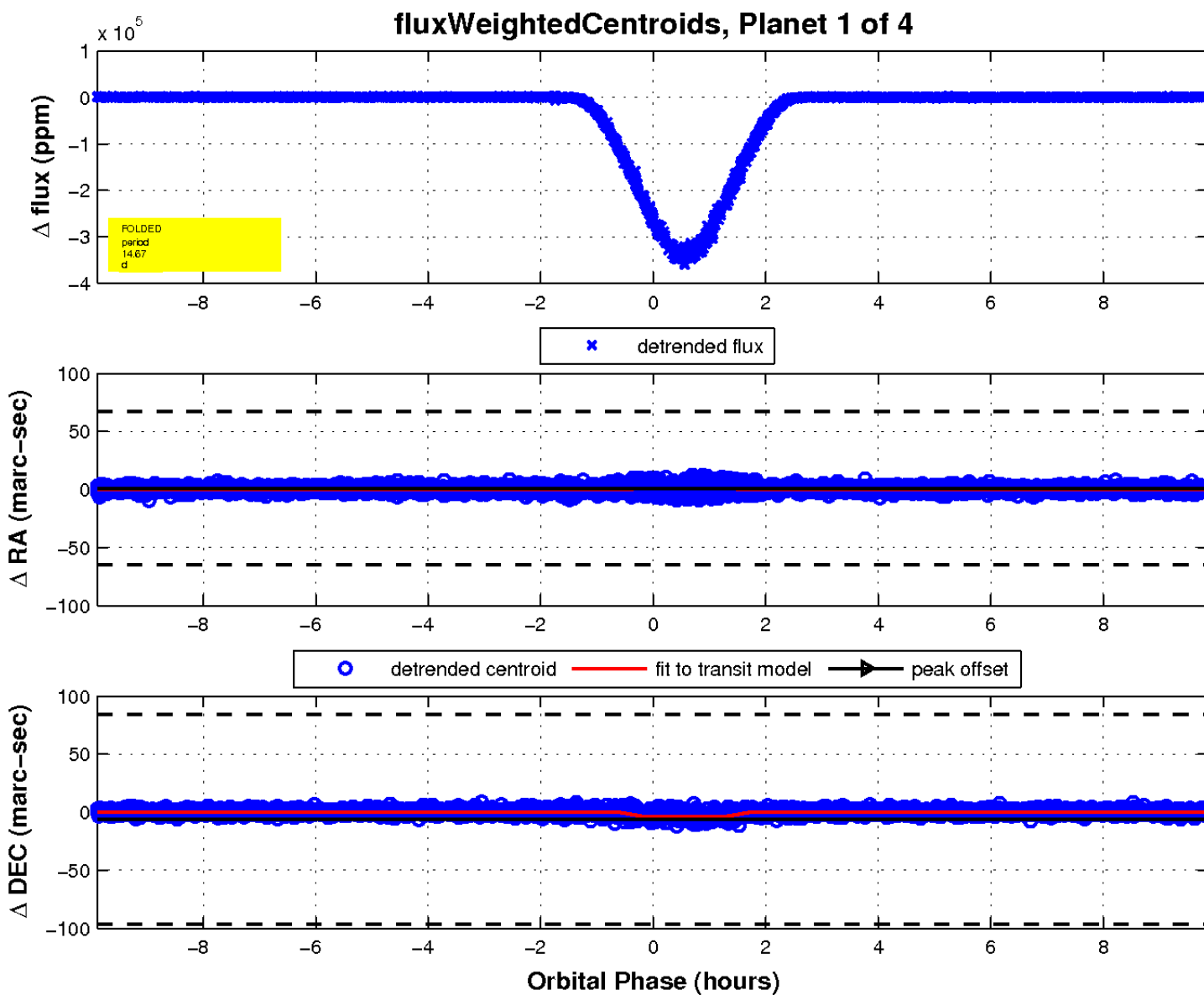
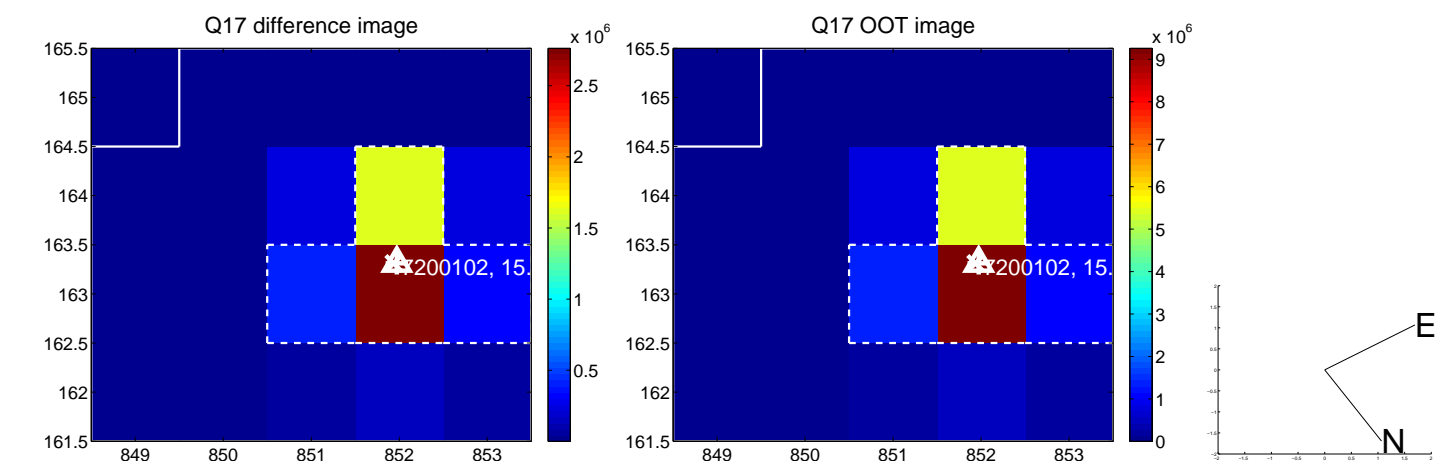
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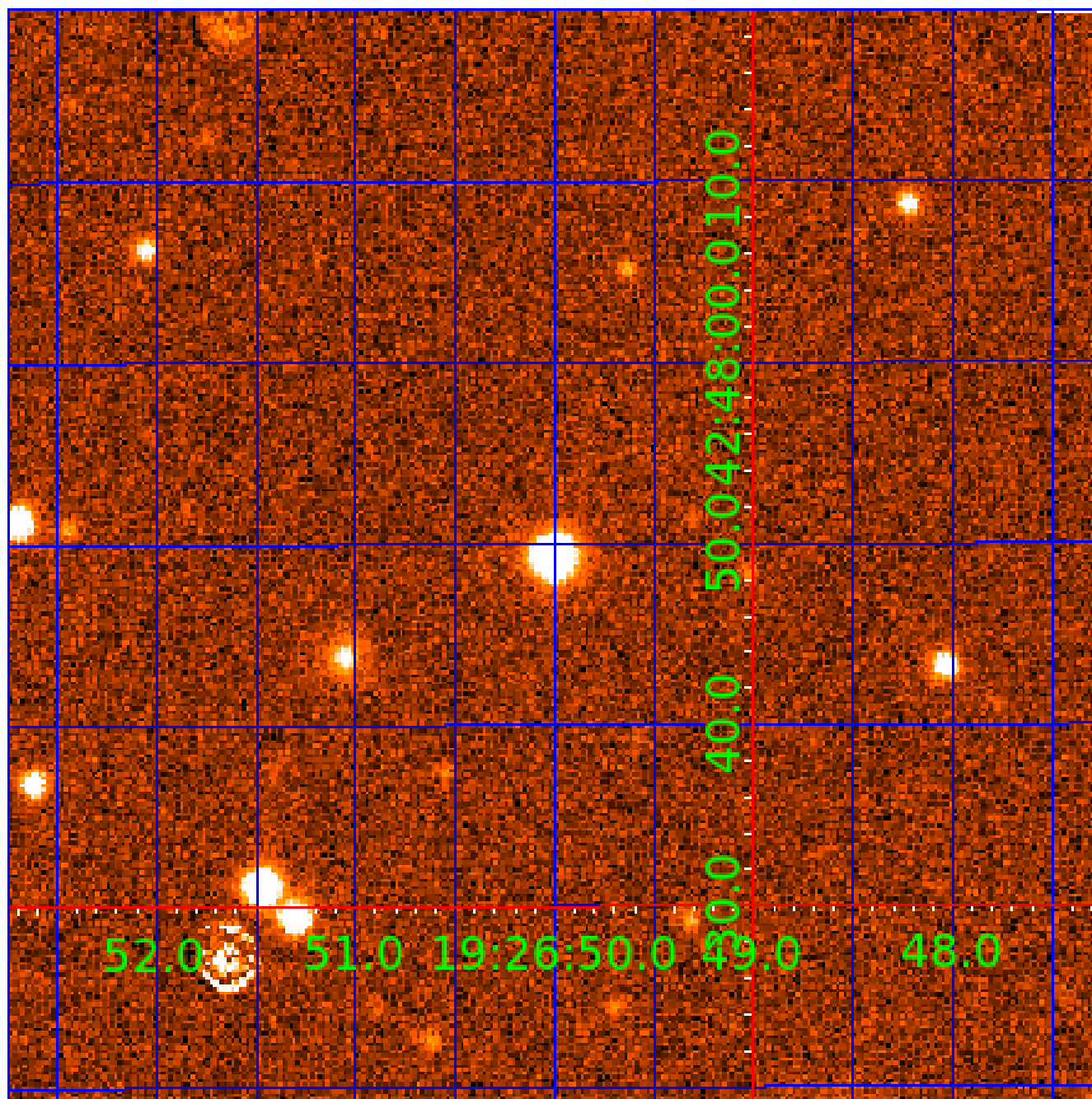


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UKIRT Image

Declination



# KIC 007200102

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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200102-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
007200102-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
007200102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007200102-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—NO_FITS—SAME_NTL_PERIOD—CENT_NOFITS

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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.

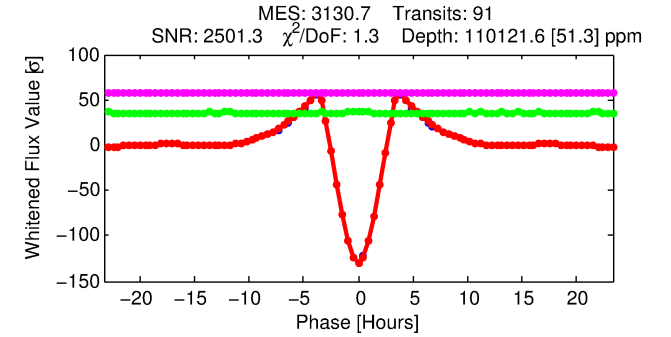
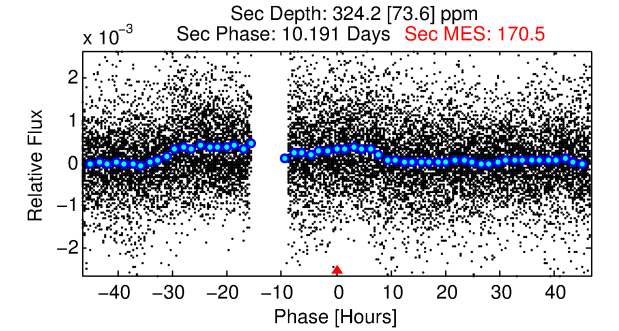
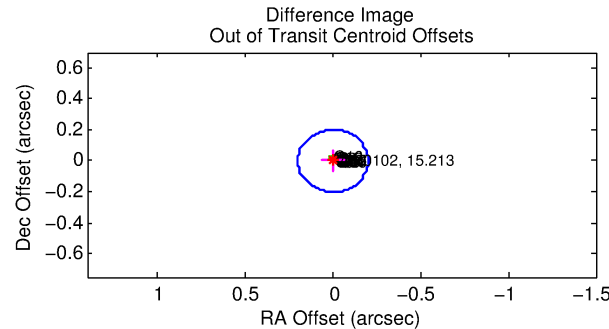
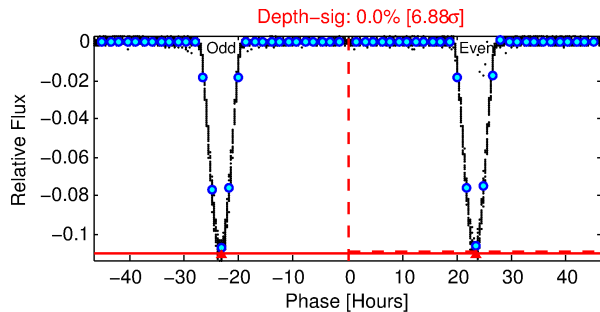
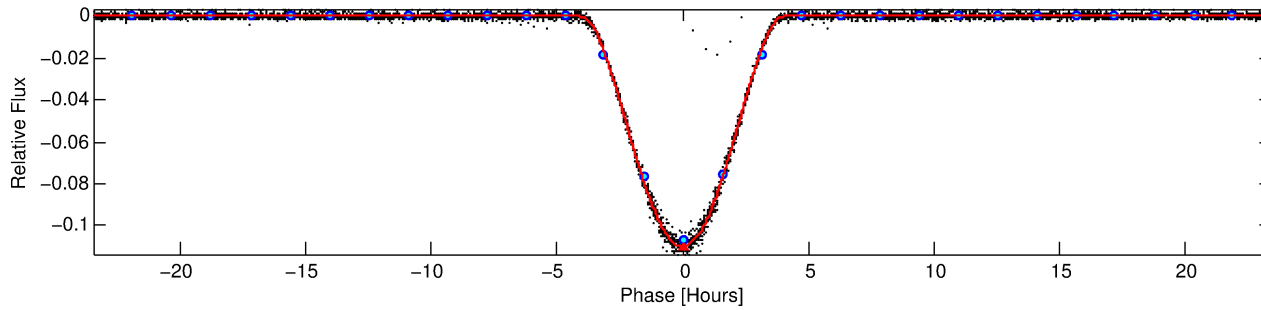
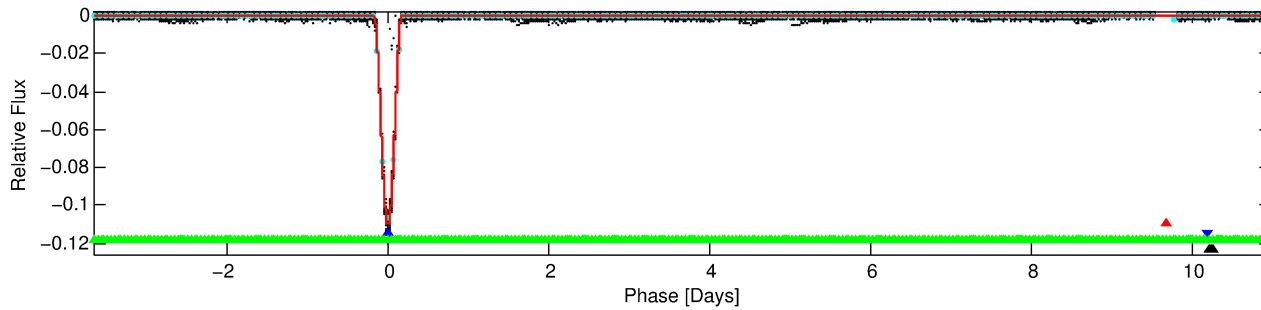
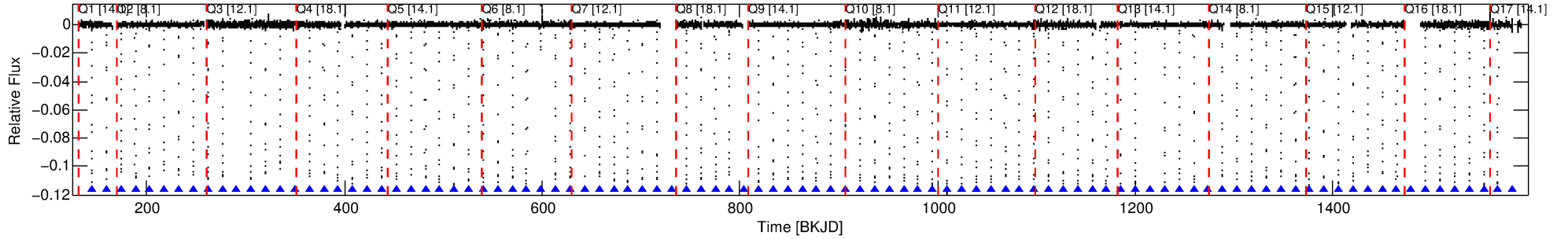
Ephemeris Match Information For 007200102-02

No Significant Match Found

# DV One-Page Summary

KIC: 7200102 Candidate: 2 of 4 Period: 14.666 d  
KOI: K06842 Corr: No Ephemeris Match

Kp: 15.21 R\*: 1.00 Rs Teff: 5385.0 K Logg: 4.37 Fe/H: 0.080



## DV Fit Results:

Period = 14.66575 [0.00000] d  
Epoch = 144.5641 [0.0001] BKJD  
Rp/R\* = 0.4451 [0.0155]  
a/R\* = 16.28 [0.03]  
b = 0.90 [0.02]  
Seff = 60.97 [23.20]  
Teq = 713 [68] K  
Rp = 48.66 [14.38] Re  
a = 0.1114 [0.0276] AU  
Ag = 0.93 [0.40] [-0.16σ]  
Teffp = 1083 [72] K [3.75σ]

## DV Diagnostic Results:

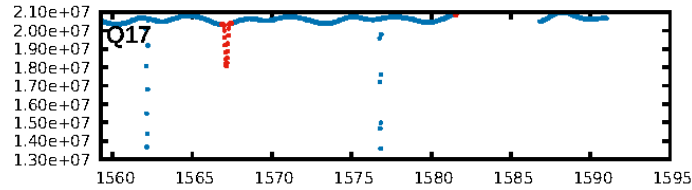
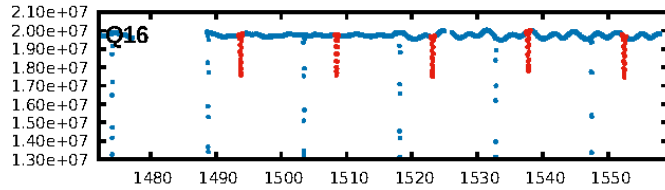
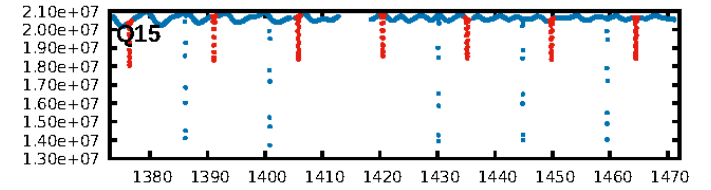
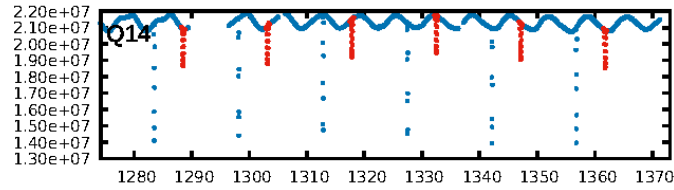
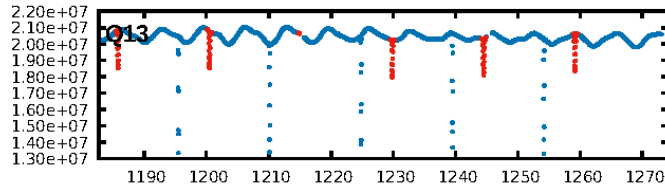
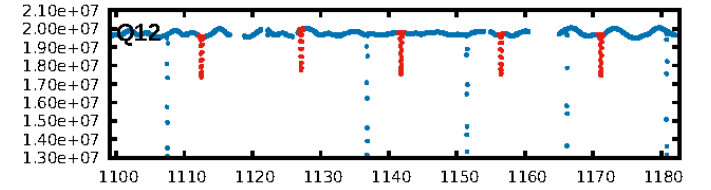
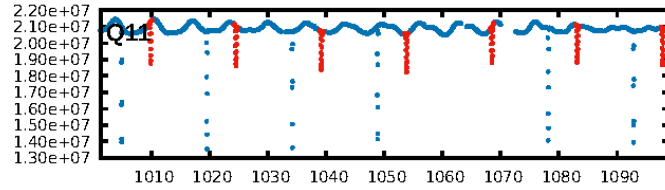
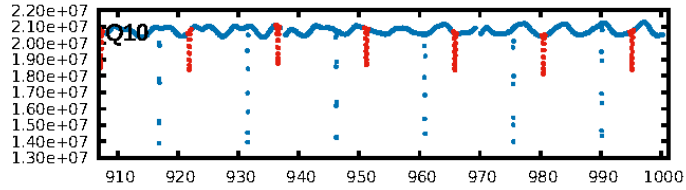
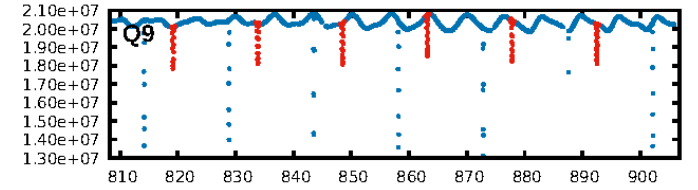
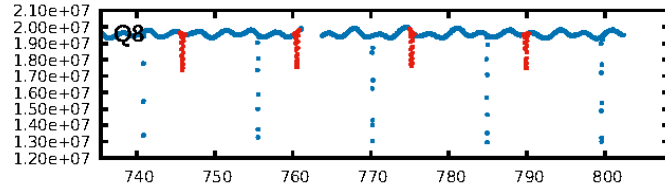
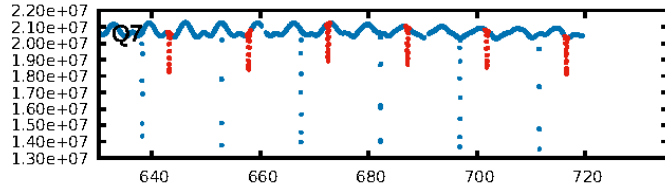
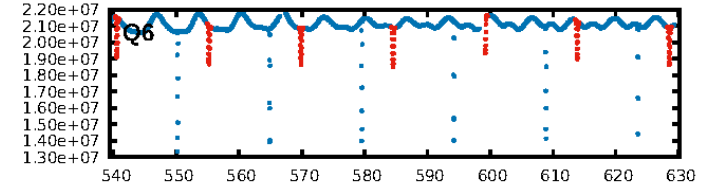
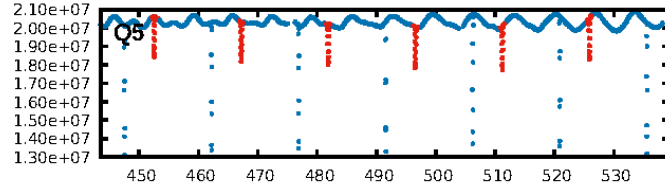
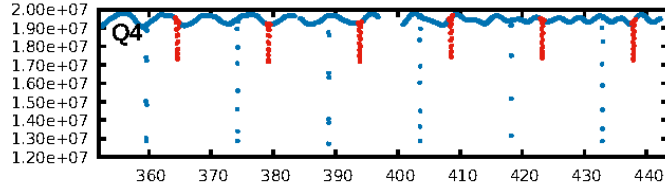
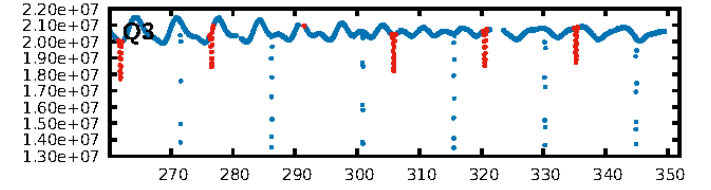
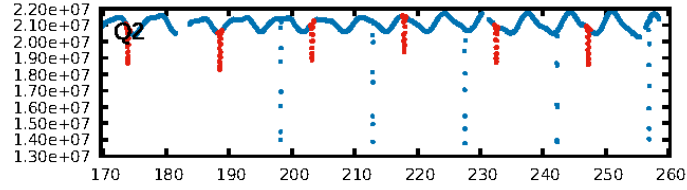
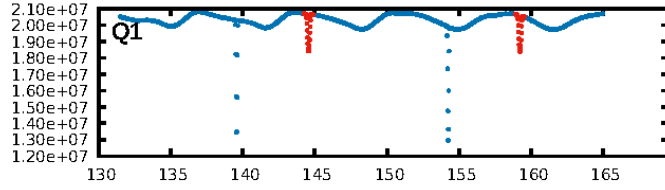
ShortPeriod-sig: 100.0% [33.27σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [88/88]  
GhostDiagnostic-chr: 1.584  
Centroid-sig: 0.0%  
Centroid-so: 0.137 arcsec [72.02σ]  
OotOffset-rm: 0.001 arcsec [0.02σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.077 arcsec [1.15σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.53 [9/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:23:47 Z

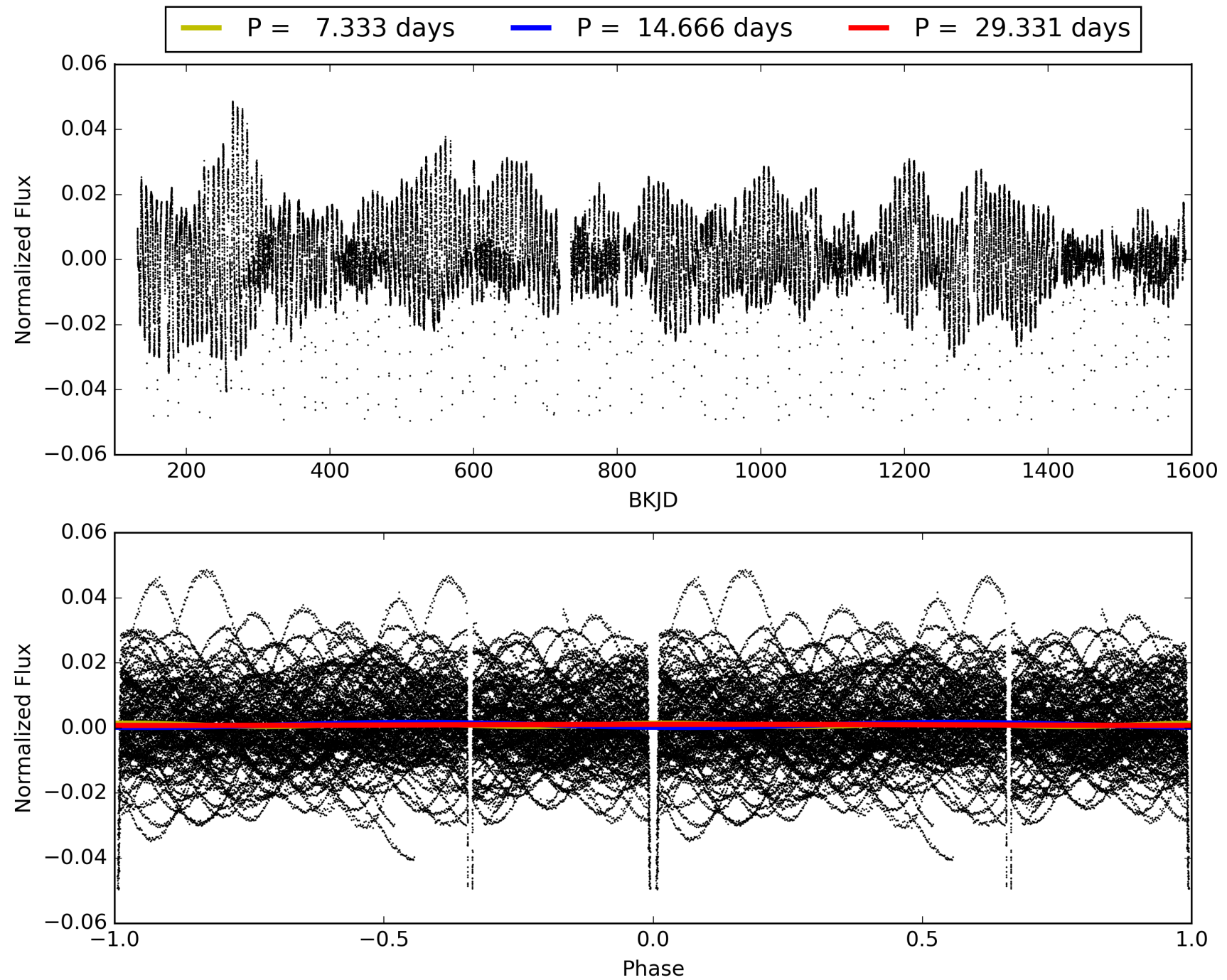
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007200102-02, PDC Light Curves

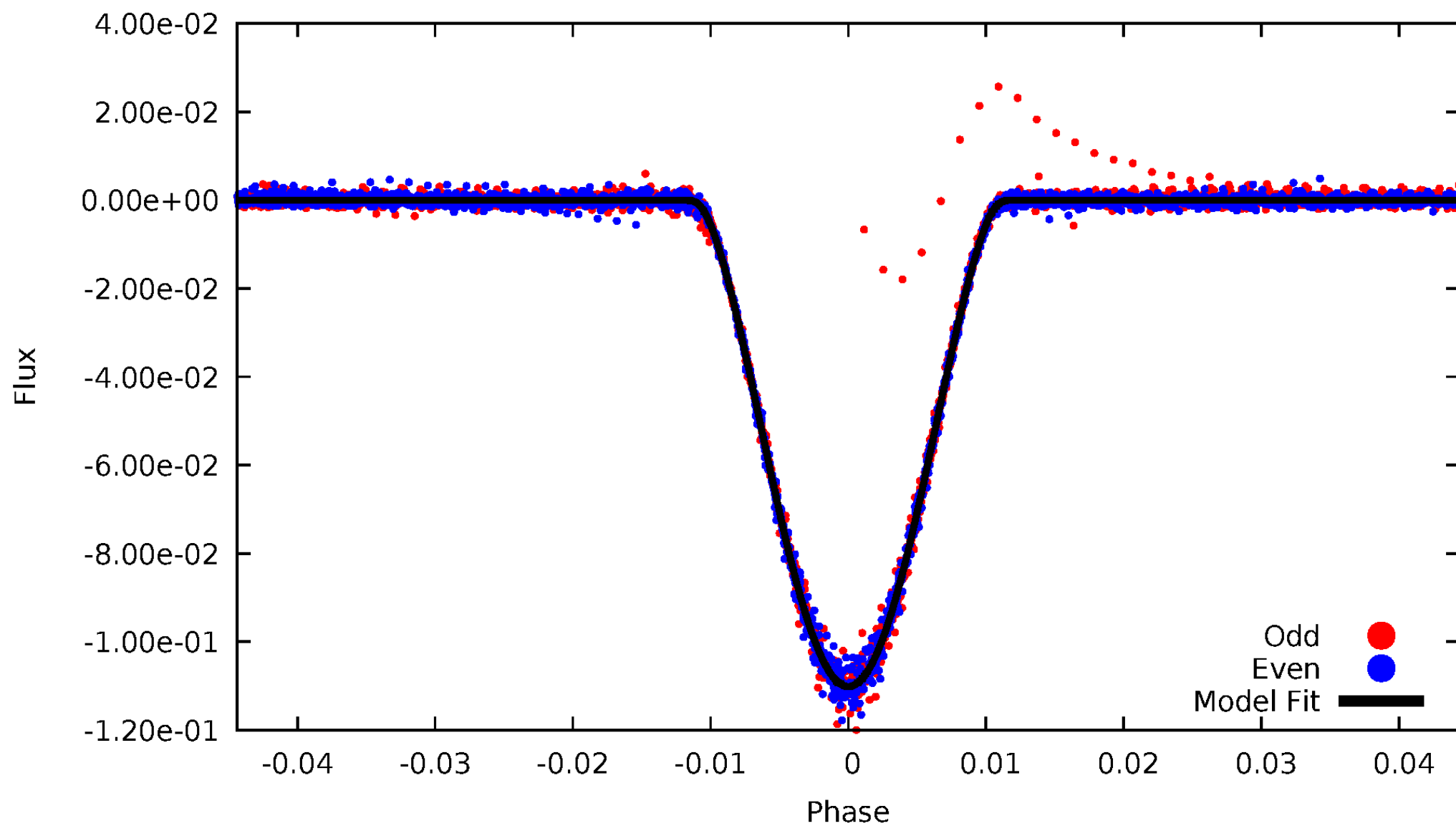


TCE 007200102-02



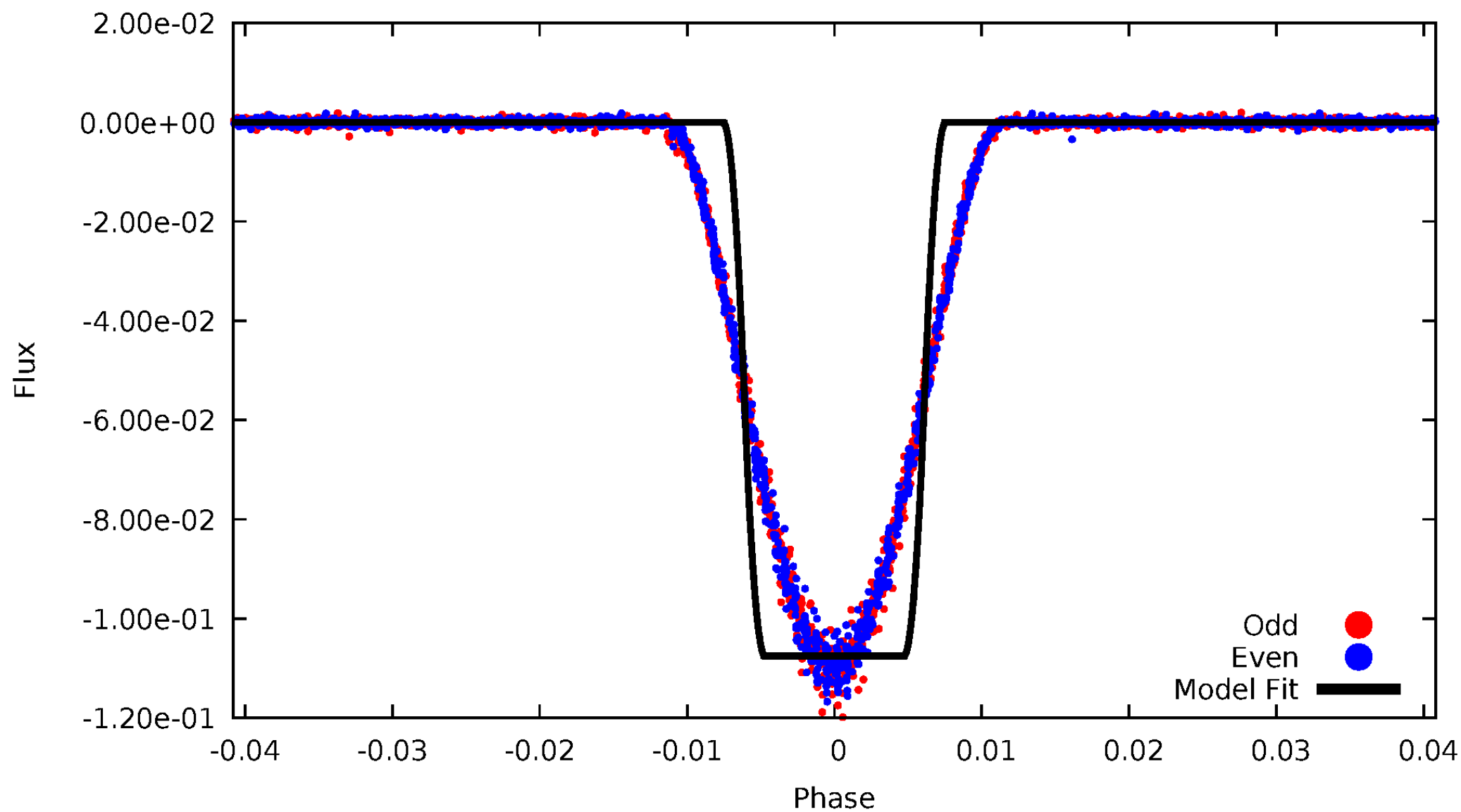
# DV Odd/Even

TCE 007200102-02



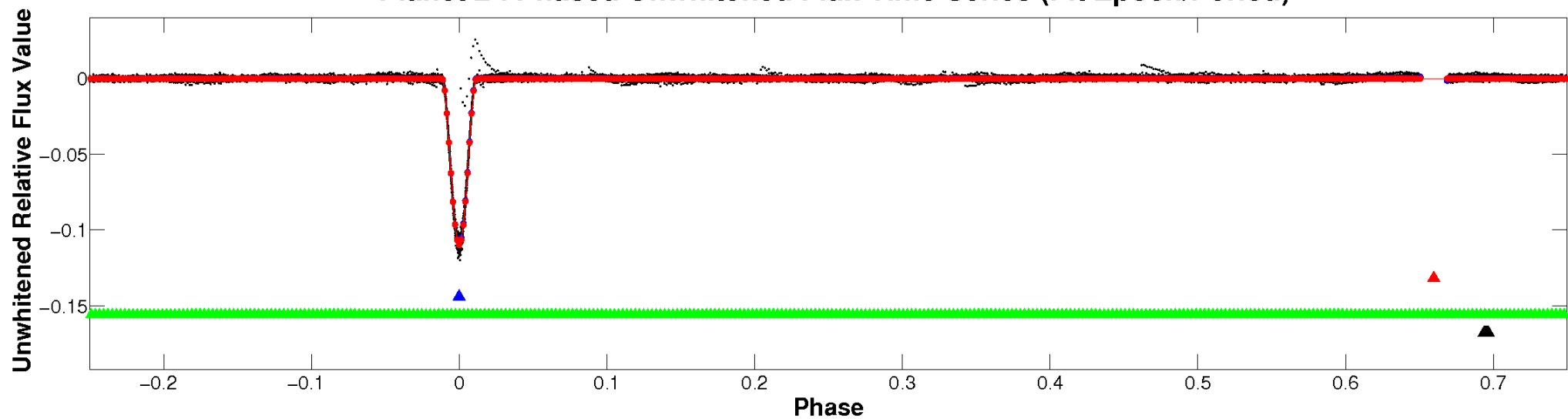
# ALT Odd/Even

TCE 007200102-02

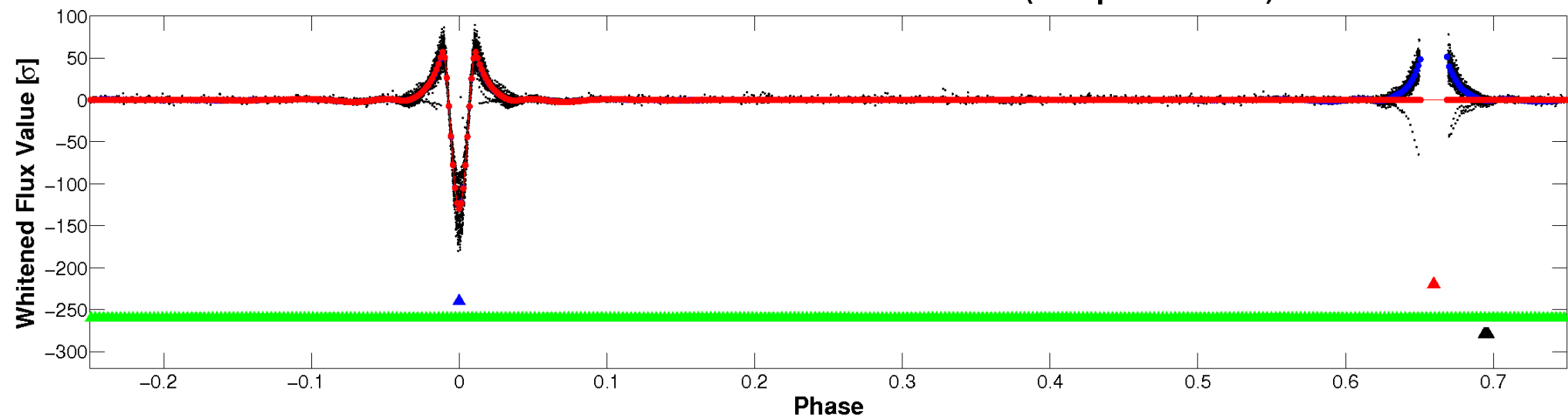


# Non-Whitened Vs. Whitened Light Curve

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

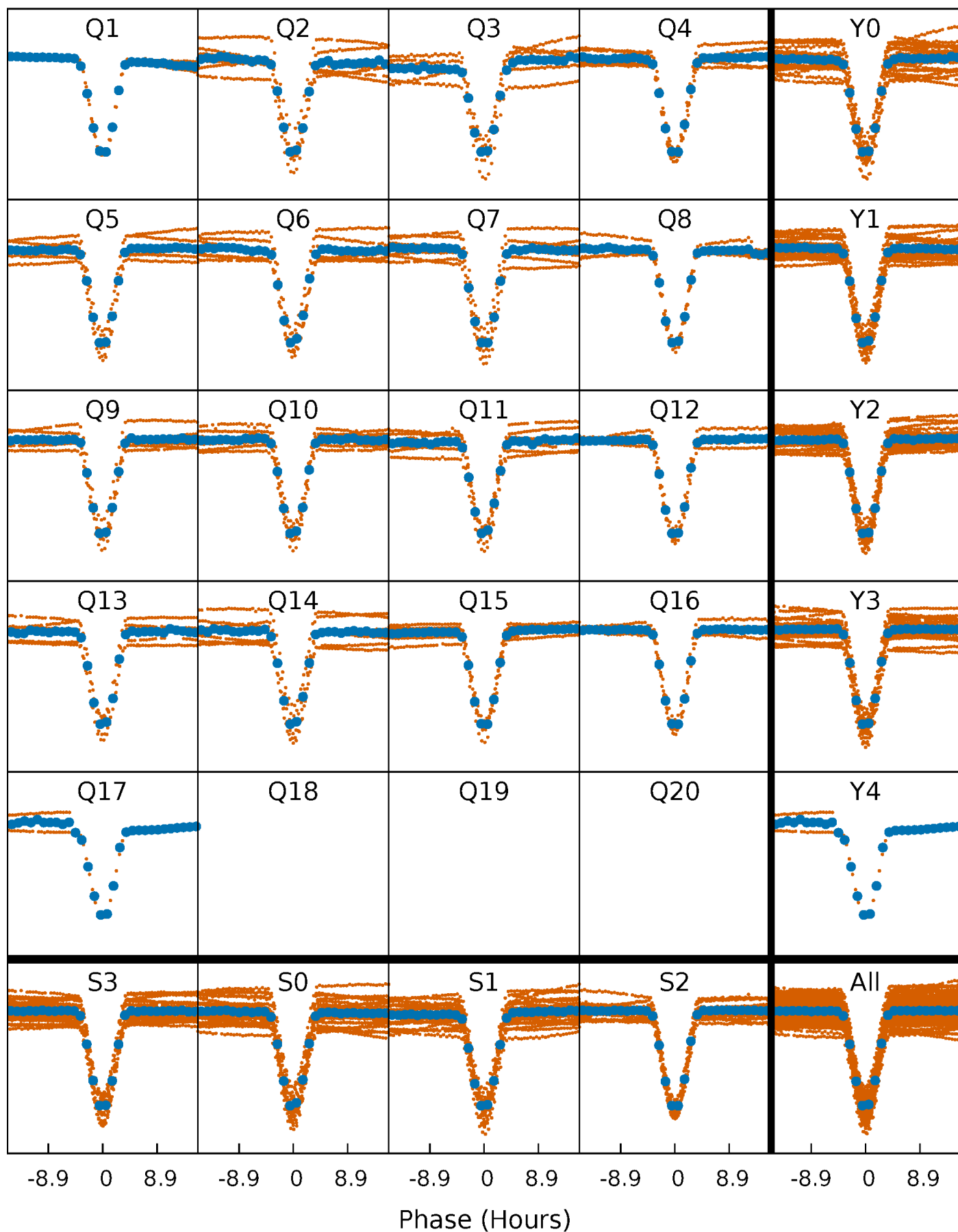


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

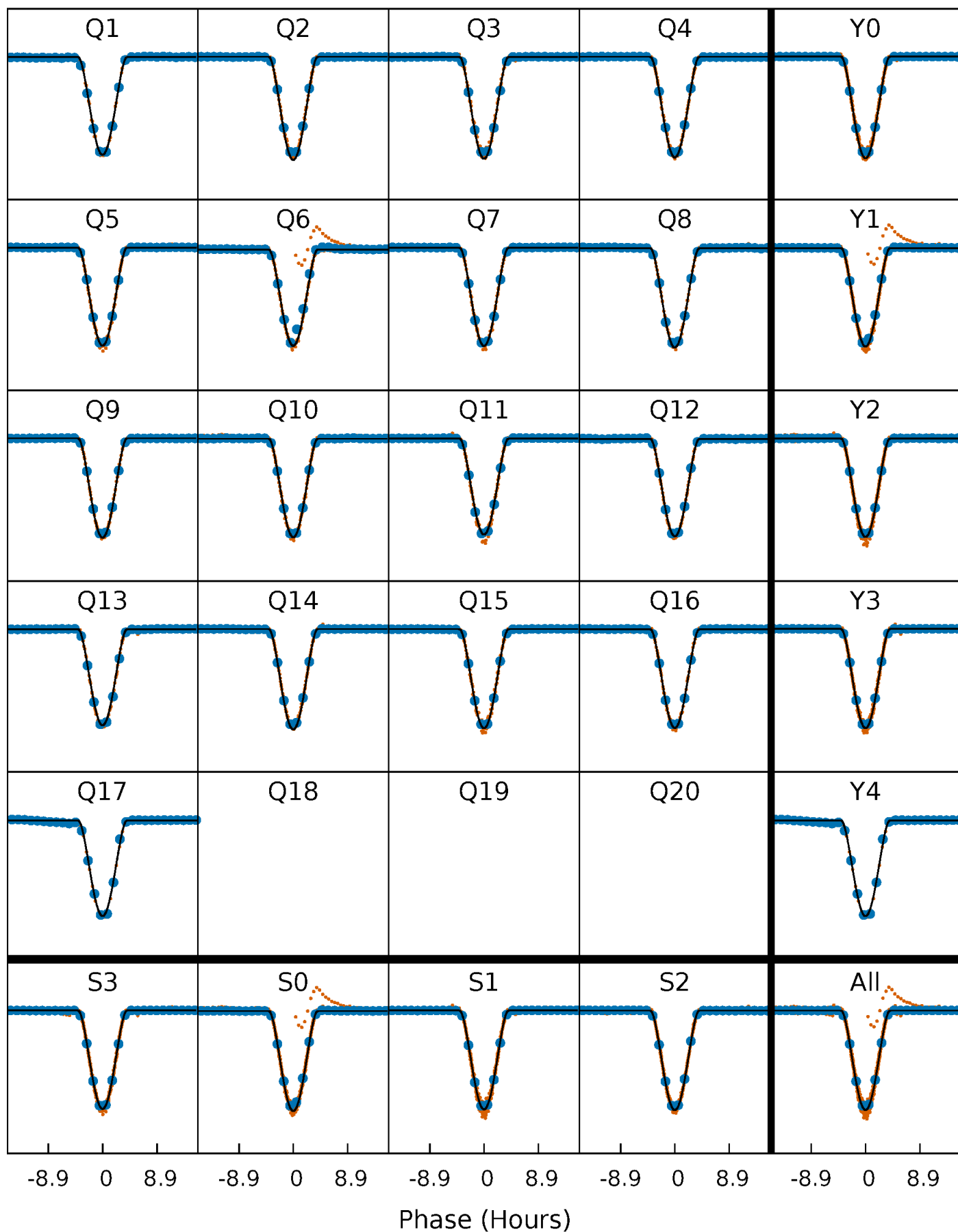
TCE 007200102-02     $P = 14.665746$  Days     $T_0 = 144.564057$  (BKJD)





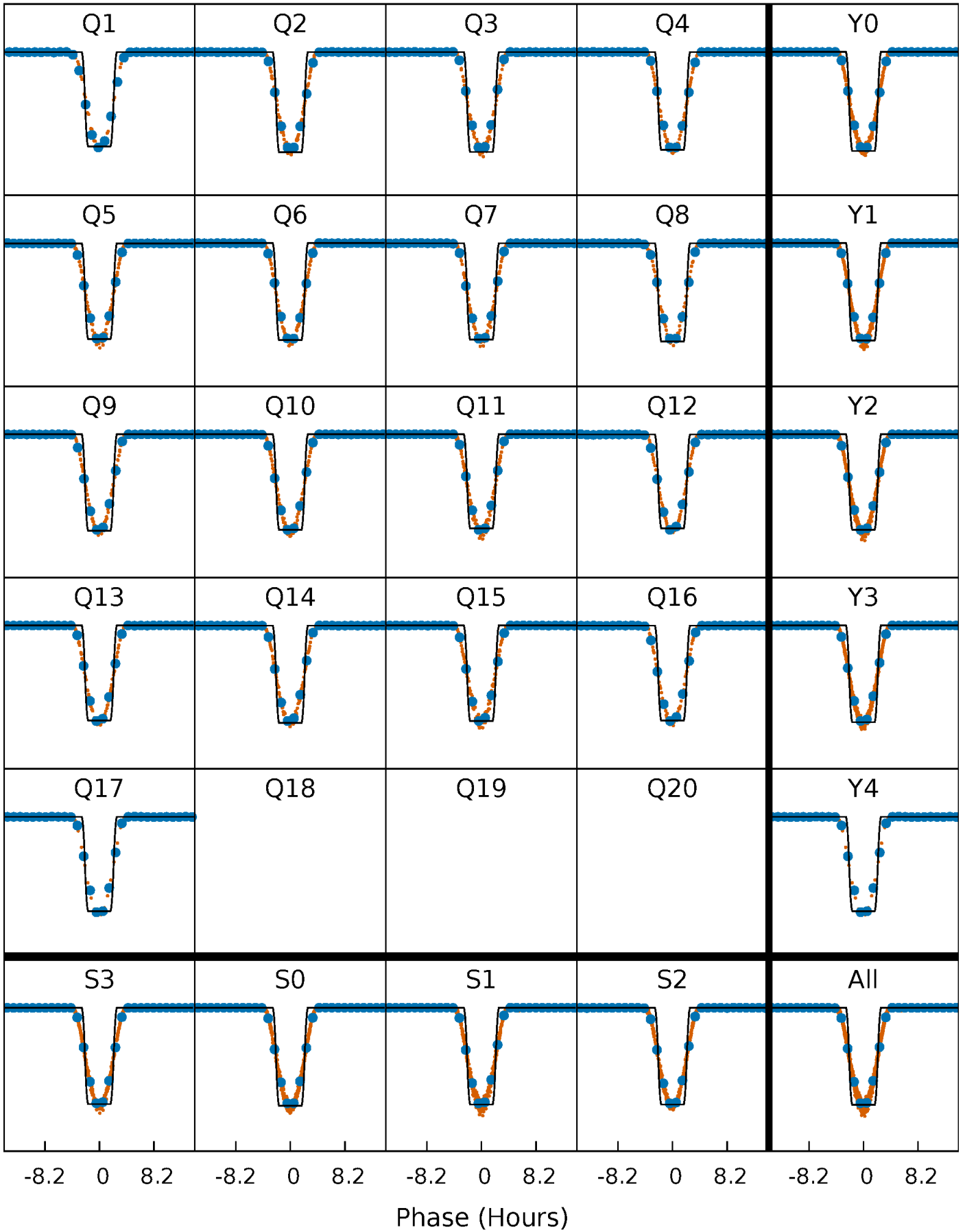
# DV Quarter-Phased Transit Curves

TCE 007200102-02 P= 14.665746 Days  $T_0=144.564057$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

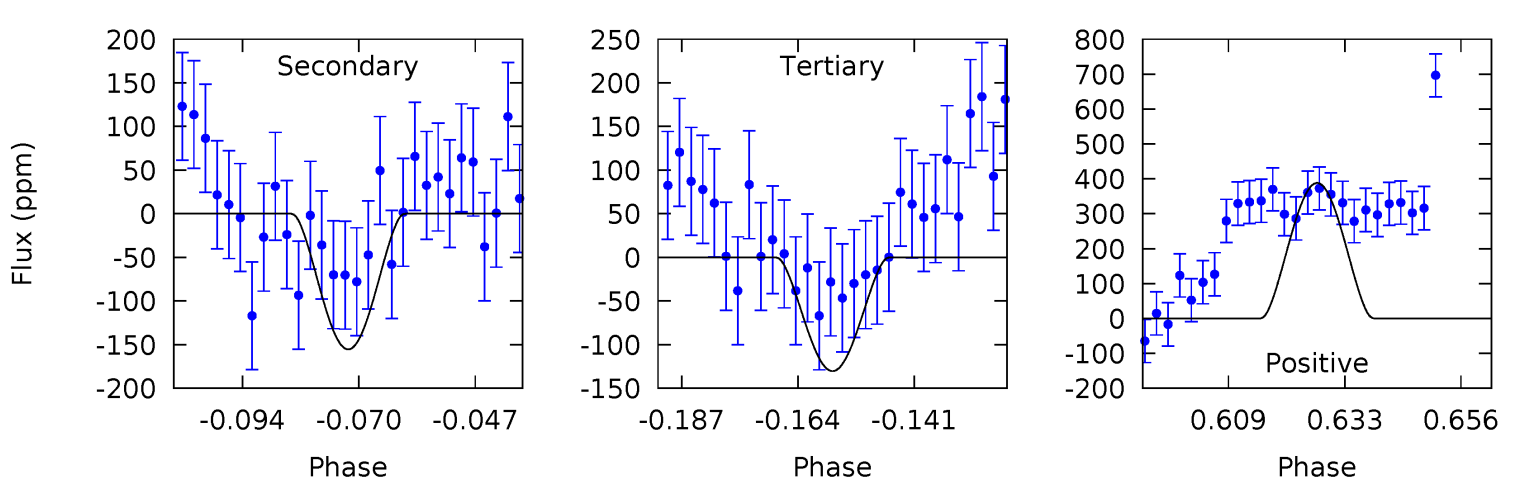
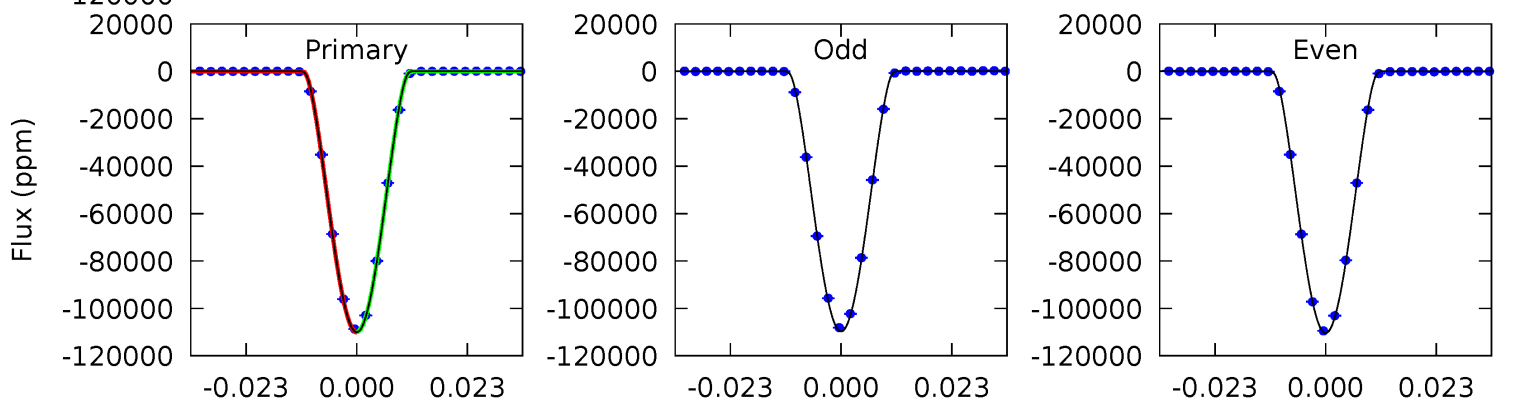
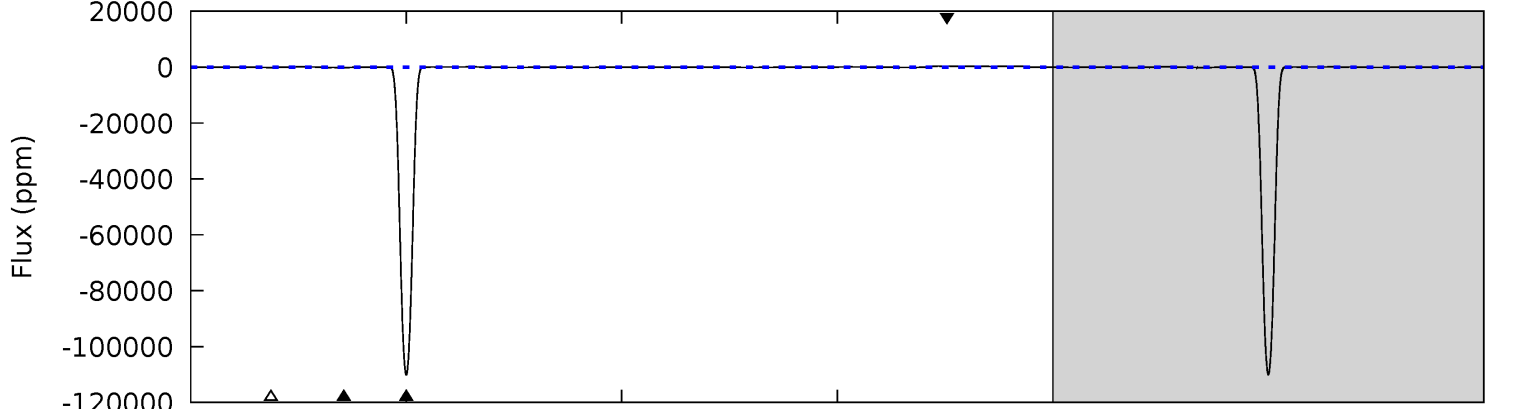
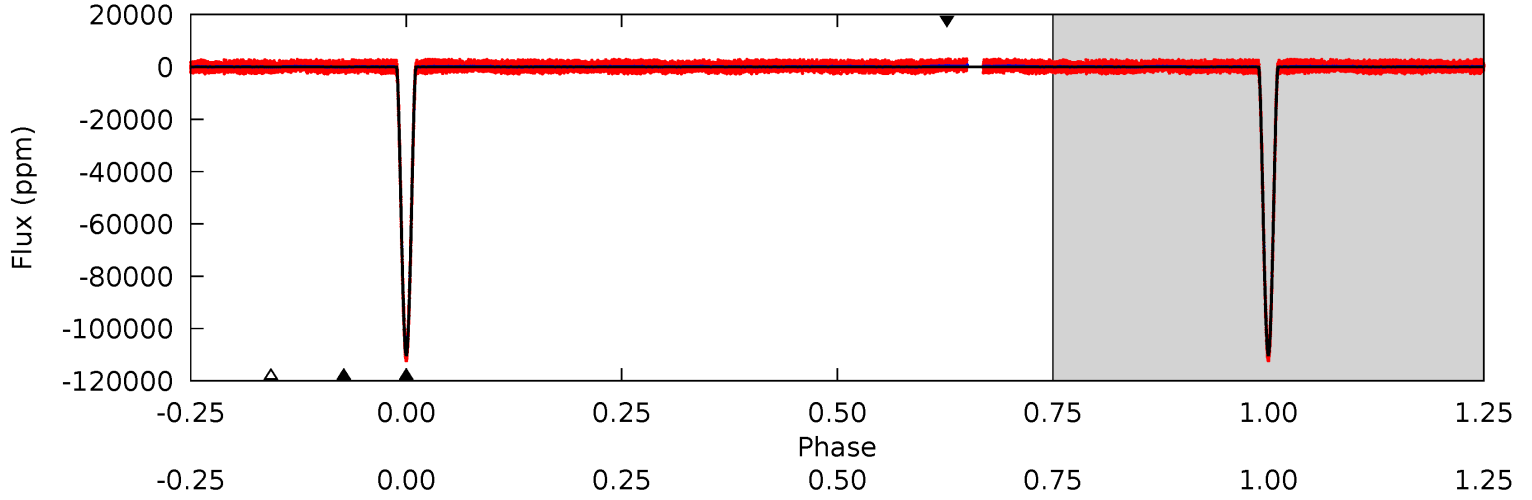
TCE 007200102-02 P= 14.665793 Days  $T_0=144.561585$  (BKJD)



# DV Model-Shift Uniqueness Test

007200102-02, P = 14.665746 Days, E = 129.898311 Days

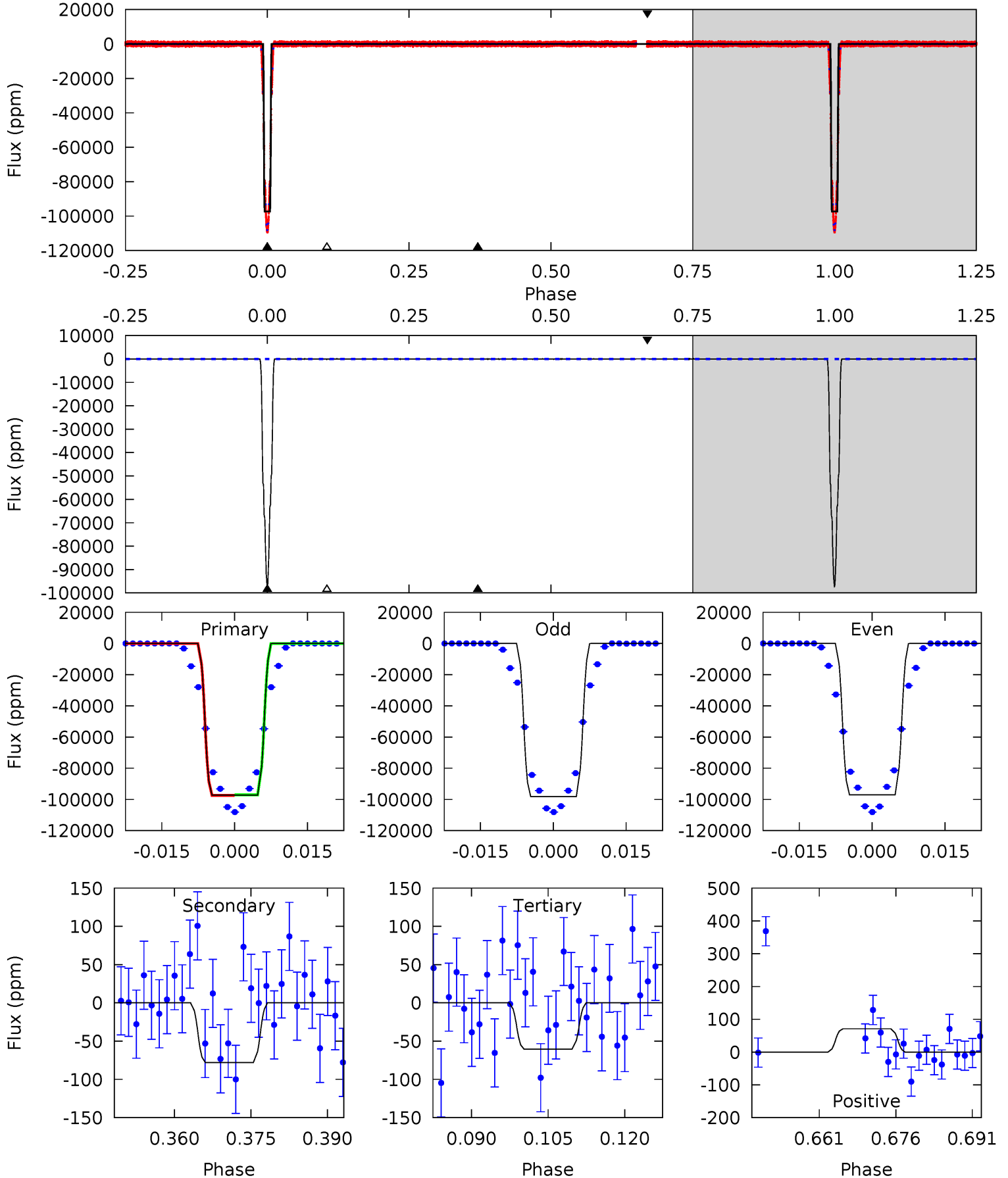
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5308	7.50	6.29	18.7	4.86	2.27	5.59	5302	5290	1.21	-11.2	16.7	0.99	0.00	0



# Alt Model-Shift Uniqueness Test

007200102-02, P = 14.665793 Days, E = 129.895792 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
4149	3.33	2.58	3.03	4.95	2.43	0.86	4146	4146	0.75	0.30	23.8	1.00	0.00	0



### Stellar Parameters For KIC 007200102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5385^{+160}_{-144}$	$4.369^{+0.162}_{-0.198}$	$0.080^{+0.250}_{-0.300}$	$1.002^{+0.294}_{-0.181}$	$0.855^{+0.108}_{-0.063}$	$1.200^{+0.904}_{-0.590}$
	+3%/-3%	+4%/-5%	+312%/-375%	+29%/-18%	+13%/-7%	+75%/-49%
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 007200102-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-155 \pm 21$	$48.43^{+8.89}_{-5.32}$	$996^{+81}_{-61}$	$1728^{+82}_{-234}$	$0.456^{+0.135}_{-0.136}$
Alt.	$-78 \pm 23$	$36.37^{+6.22}_{-4.55}$	$1003^{+82}_{-63}$	$1662^{+150}_{-3278}$	$0.391^{+0.180}_{-0.145}$

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

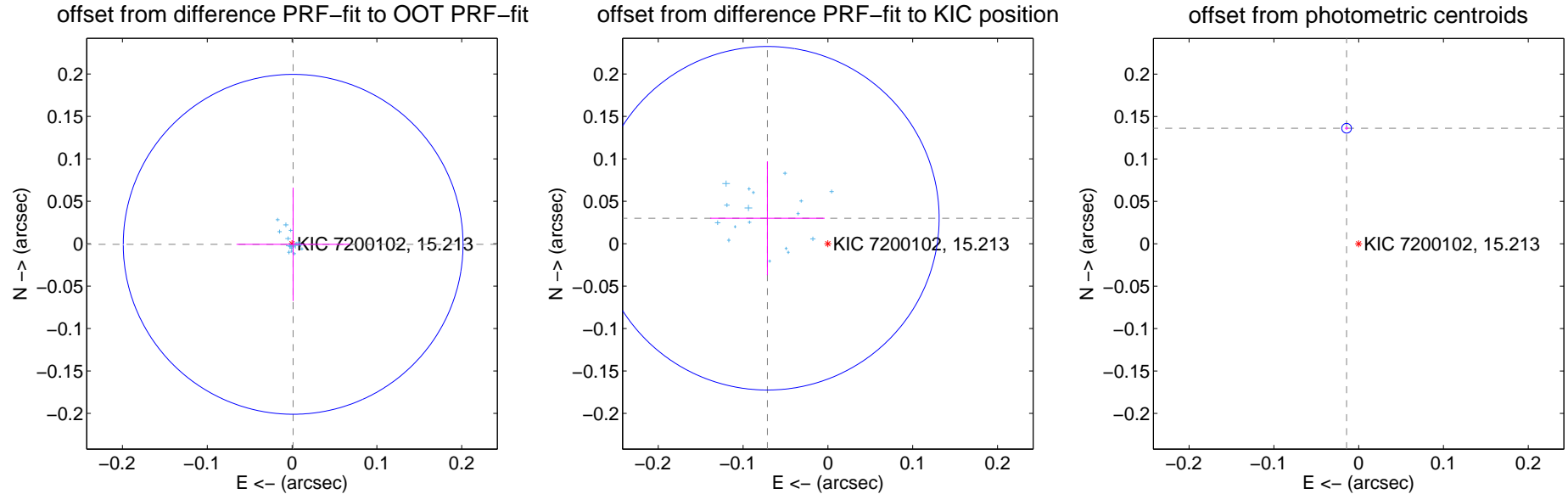
## DV Centroid Data

Supplemental centroid analysis for 007200102-02. Kepler magnitude: 15.21. Transit SNR 2501.25

There are 17 quarters with good PRF difference image offsets

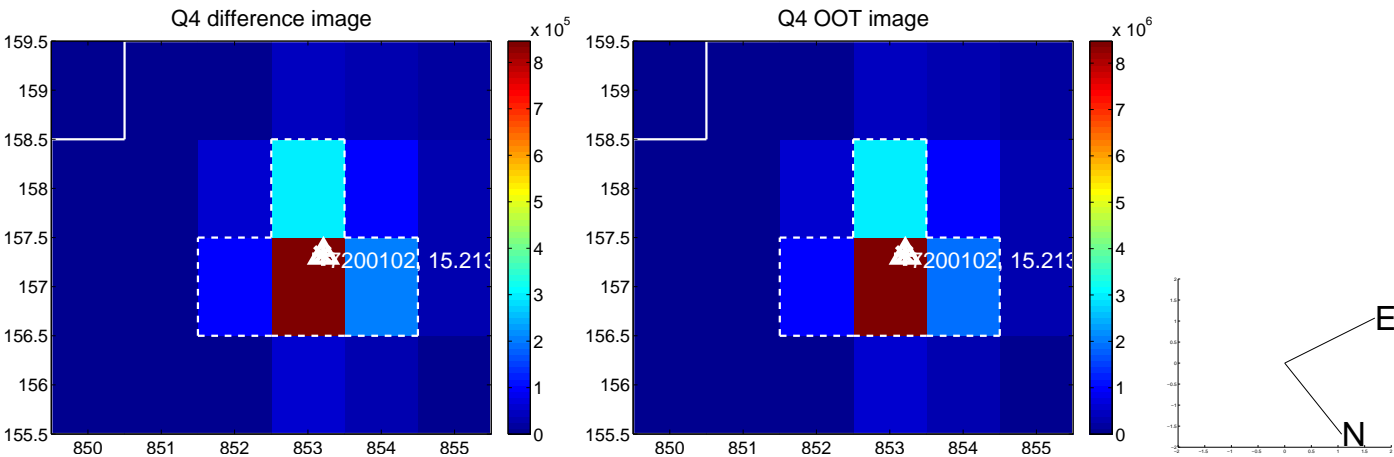
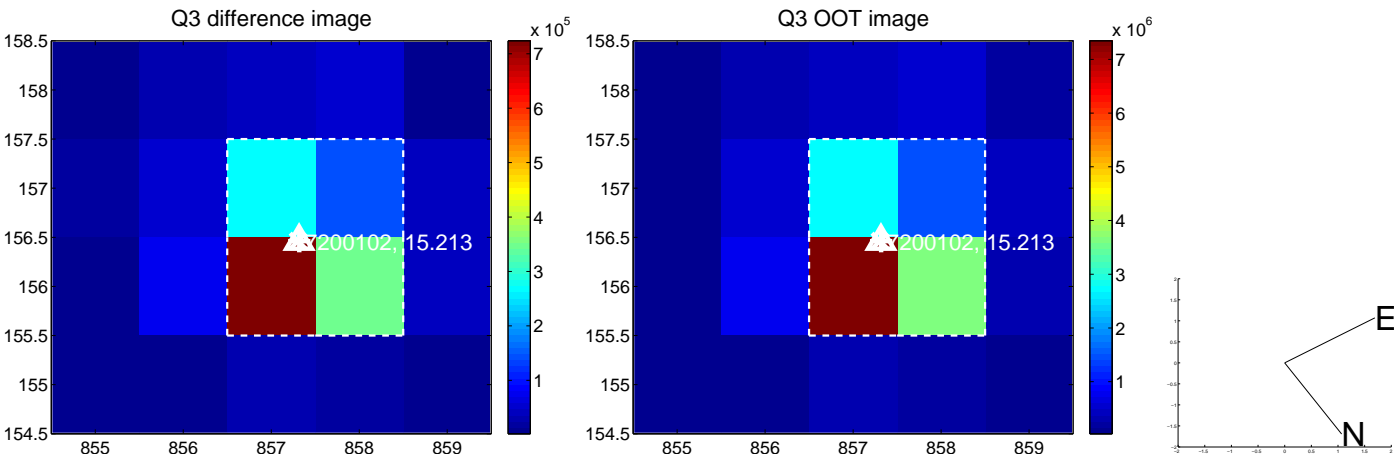
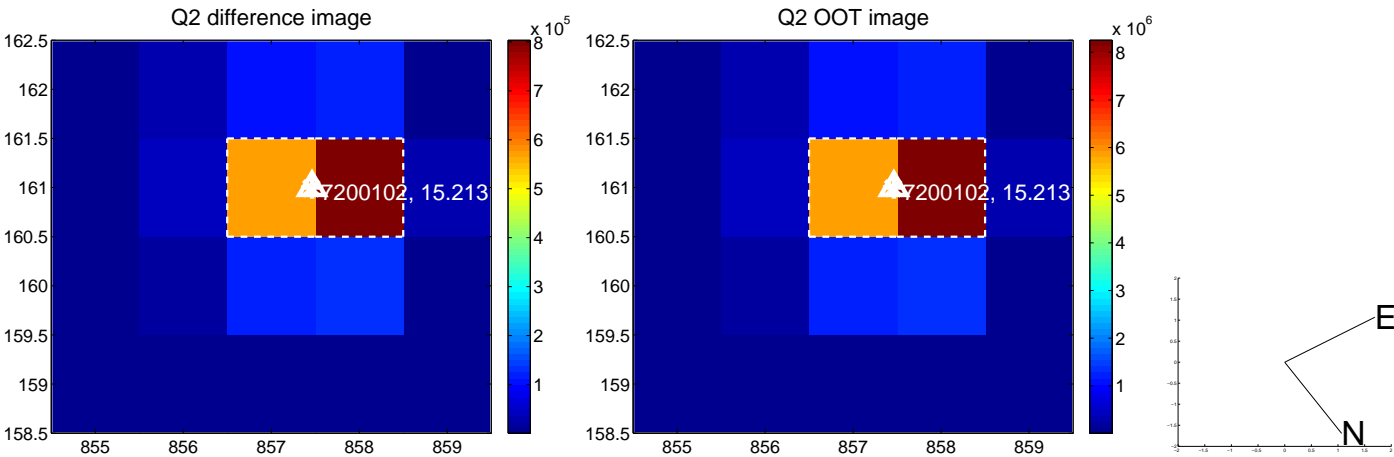
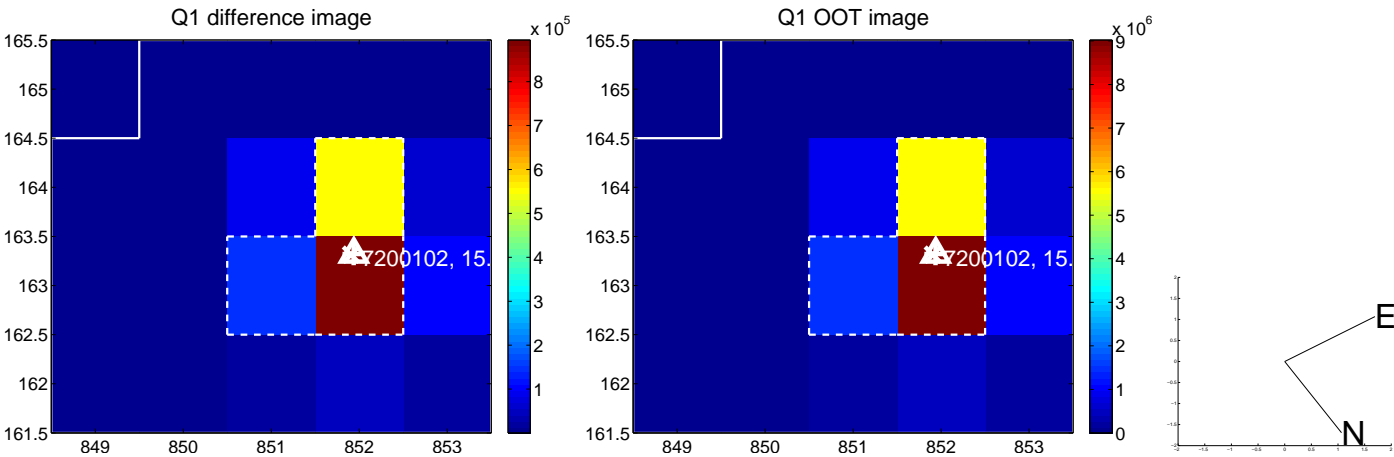
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.001 \pm 0.067$	0.02	$-0.001 \pm 0.067$	$-0.001 \pm 0.067$
PRF-fit source offset from KIC position	$0.077 \pm 0.067$	1.15	$0.071 \pm 0.067$	$0.030 \pm 0.067$
photometric centroid source offset	$0.14 \pm 0.00$	72.02	$0.01 \pm 0.00$	$0.14 \pm 0.00$

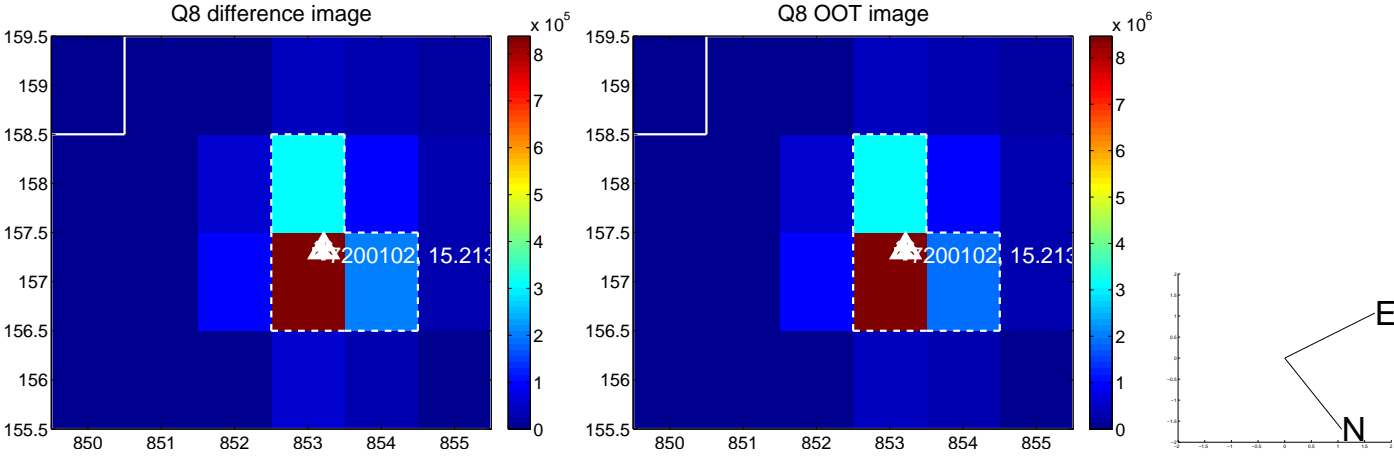
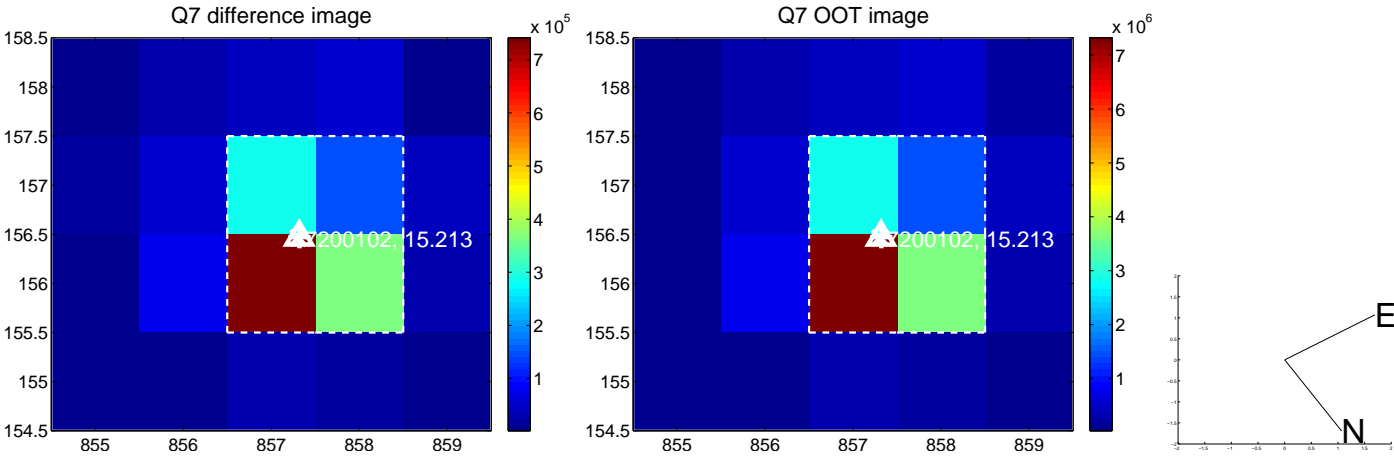
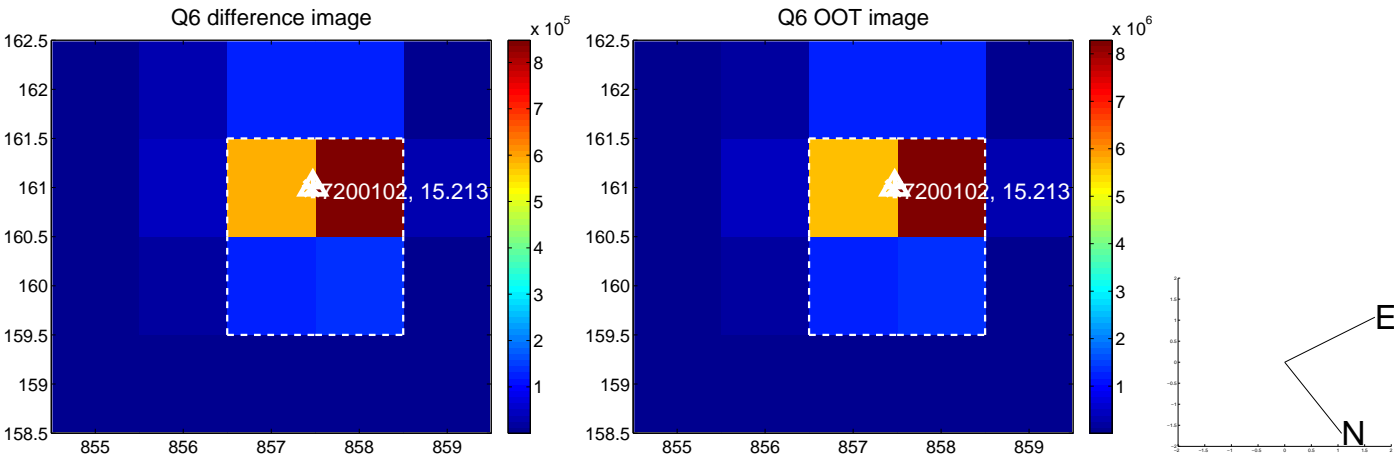
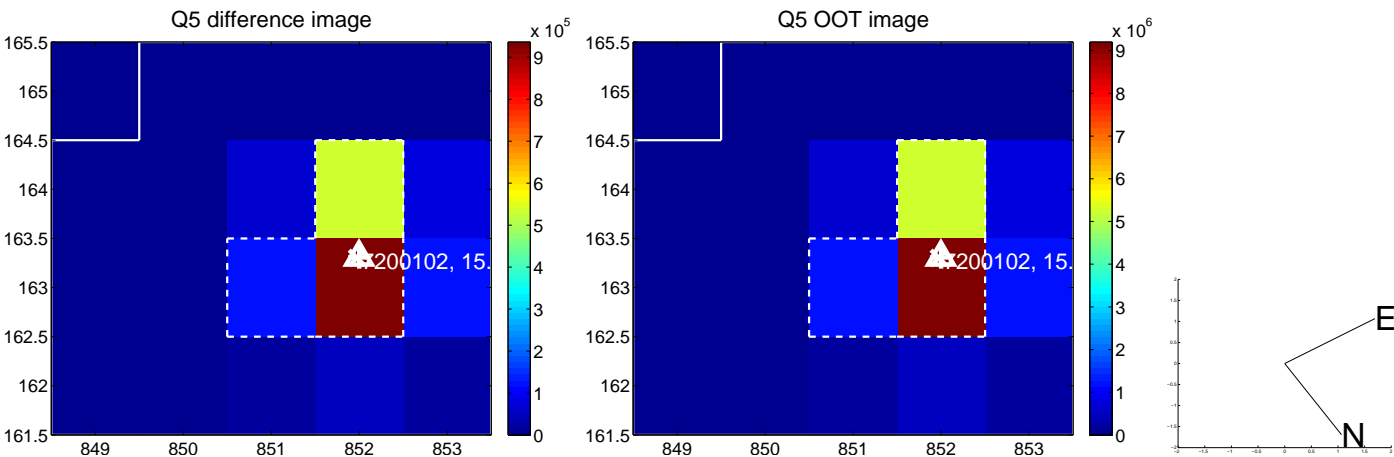


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

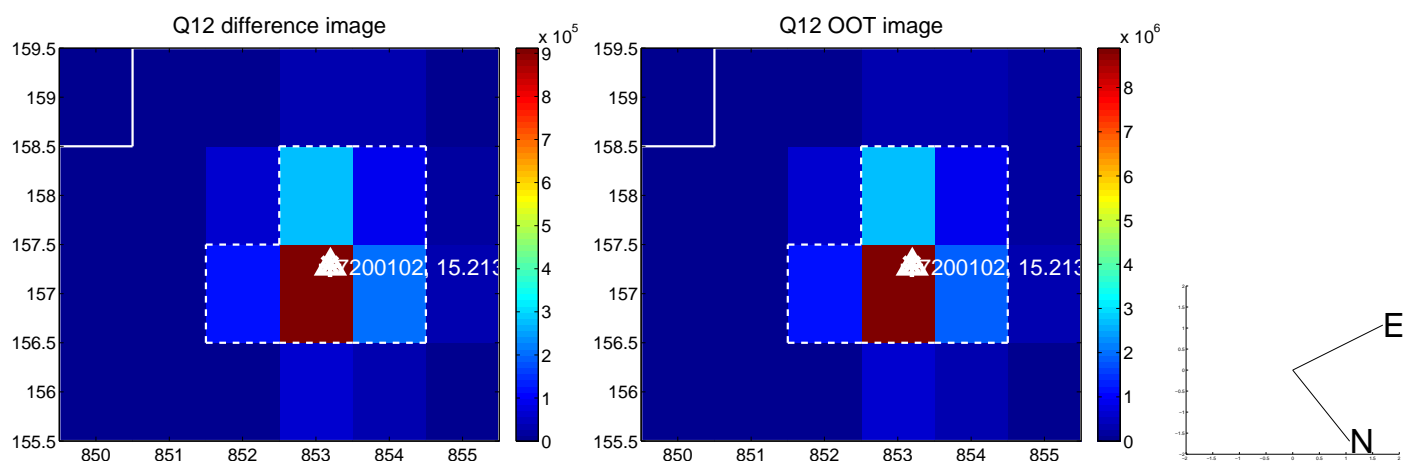
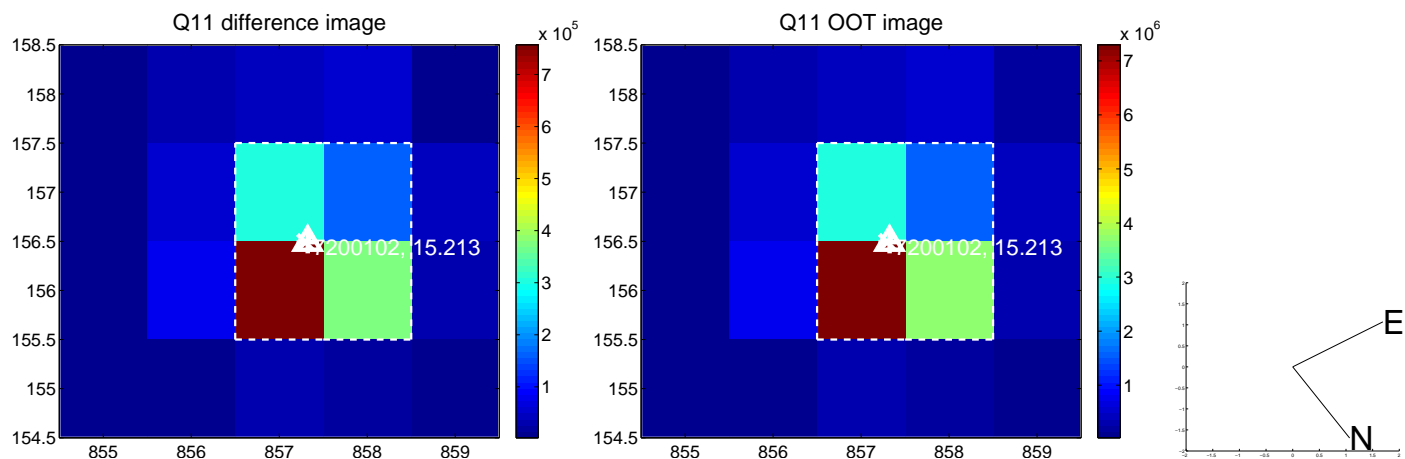
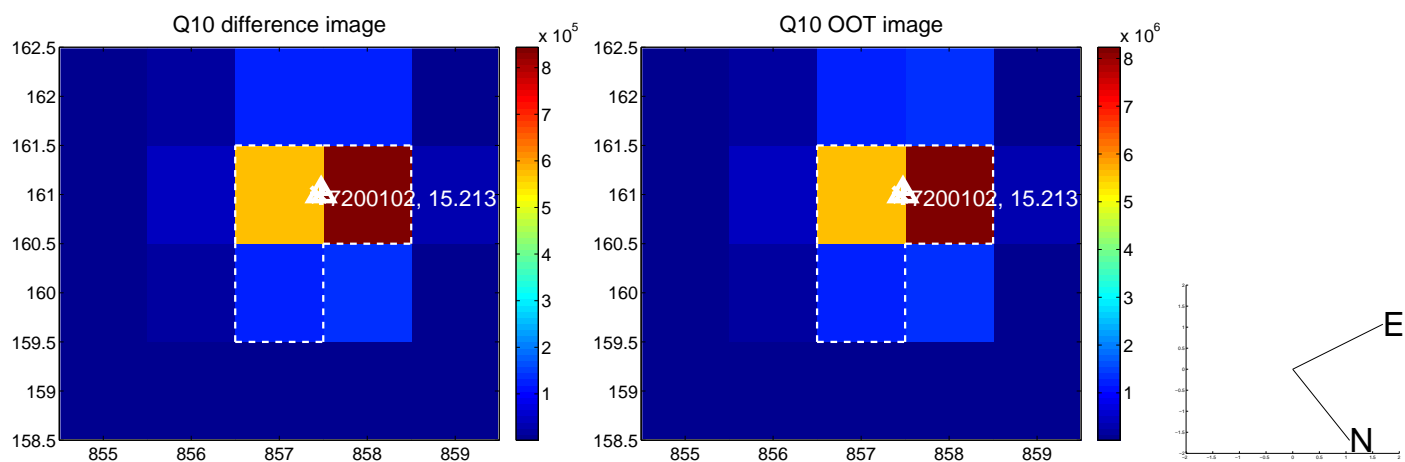
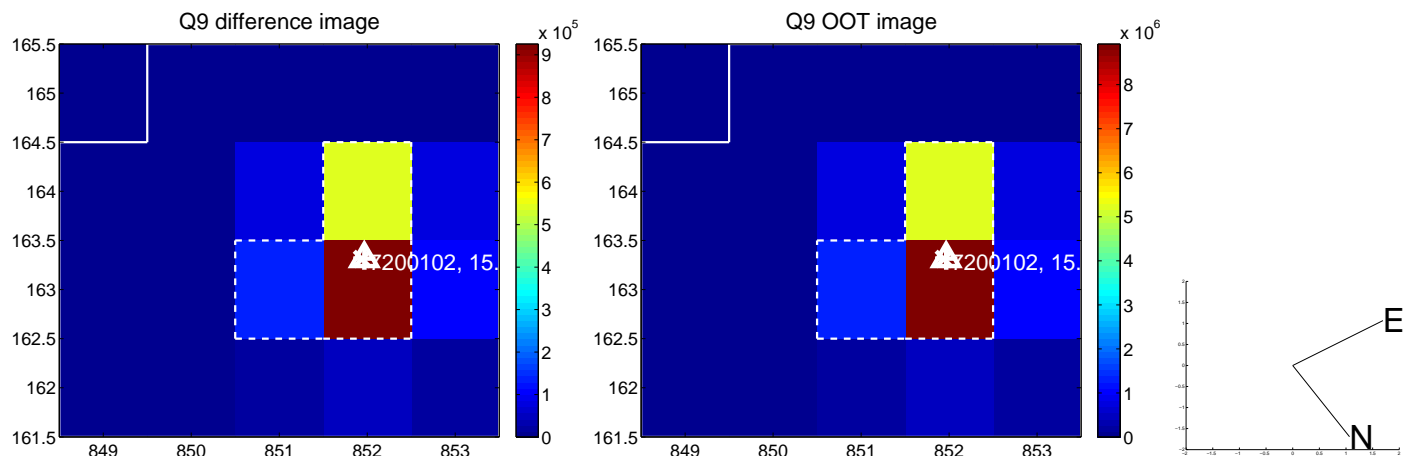


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

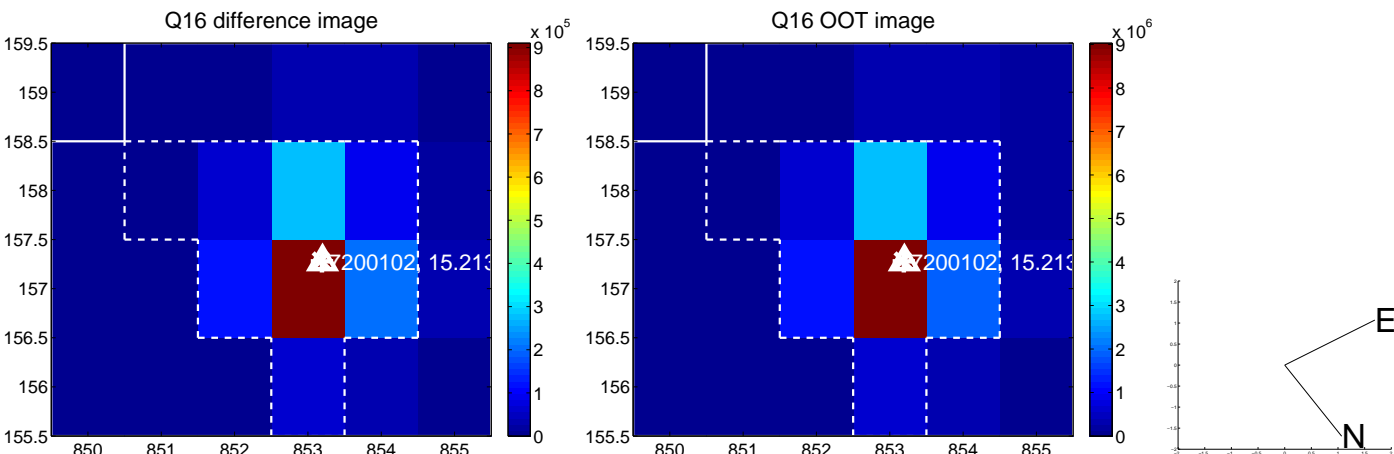
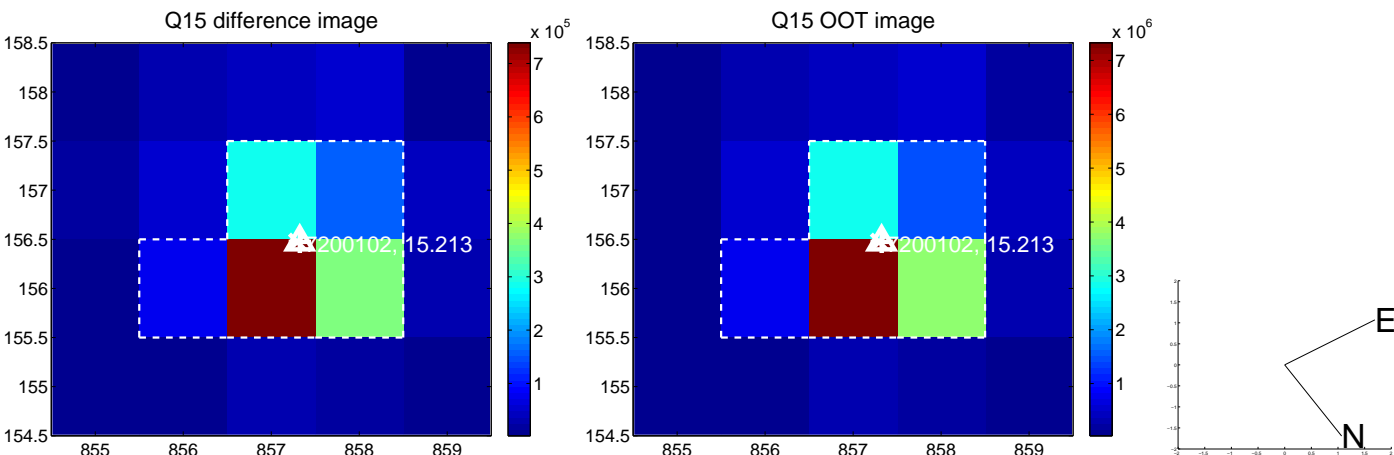
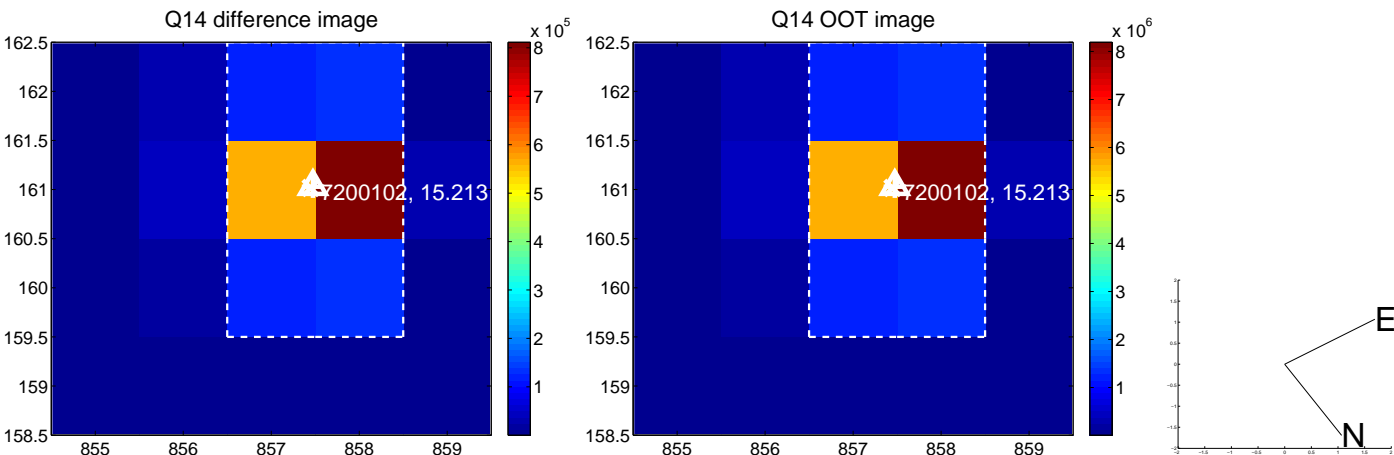
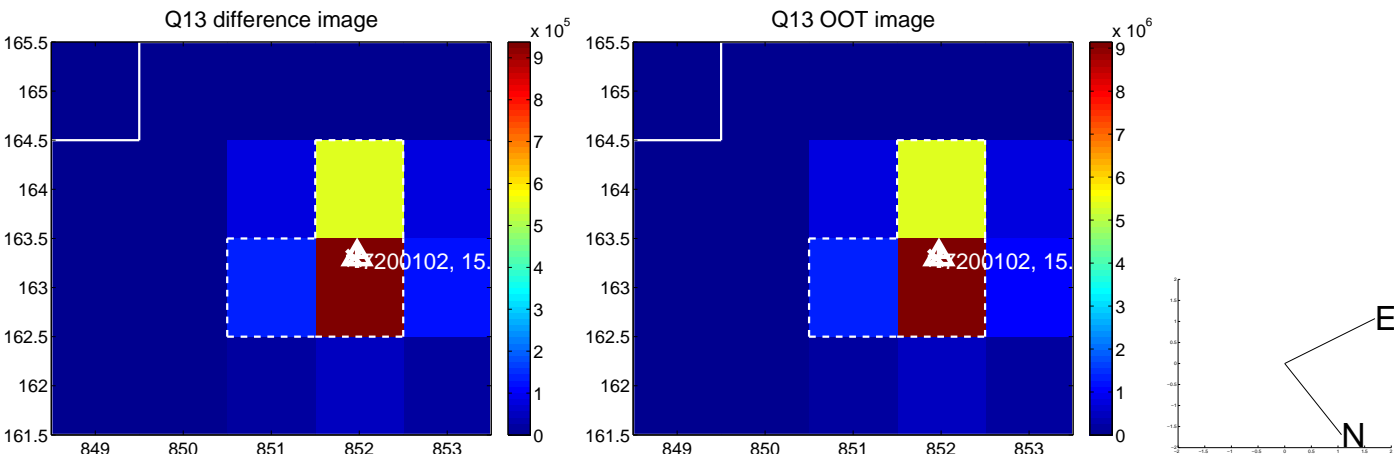




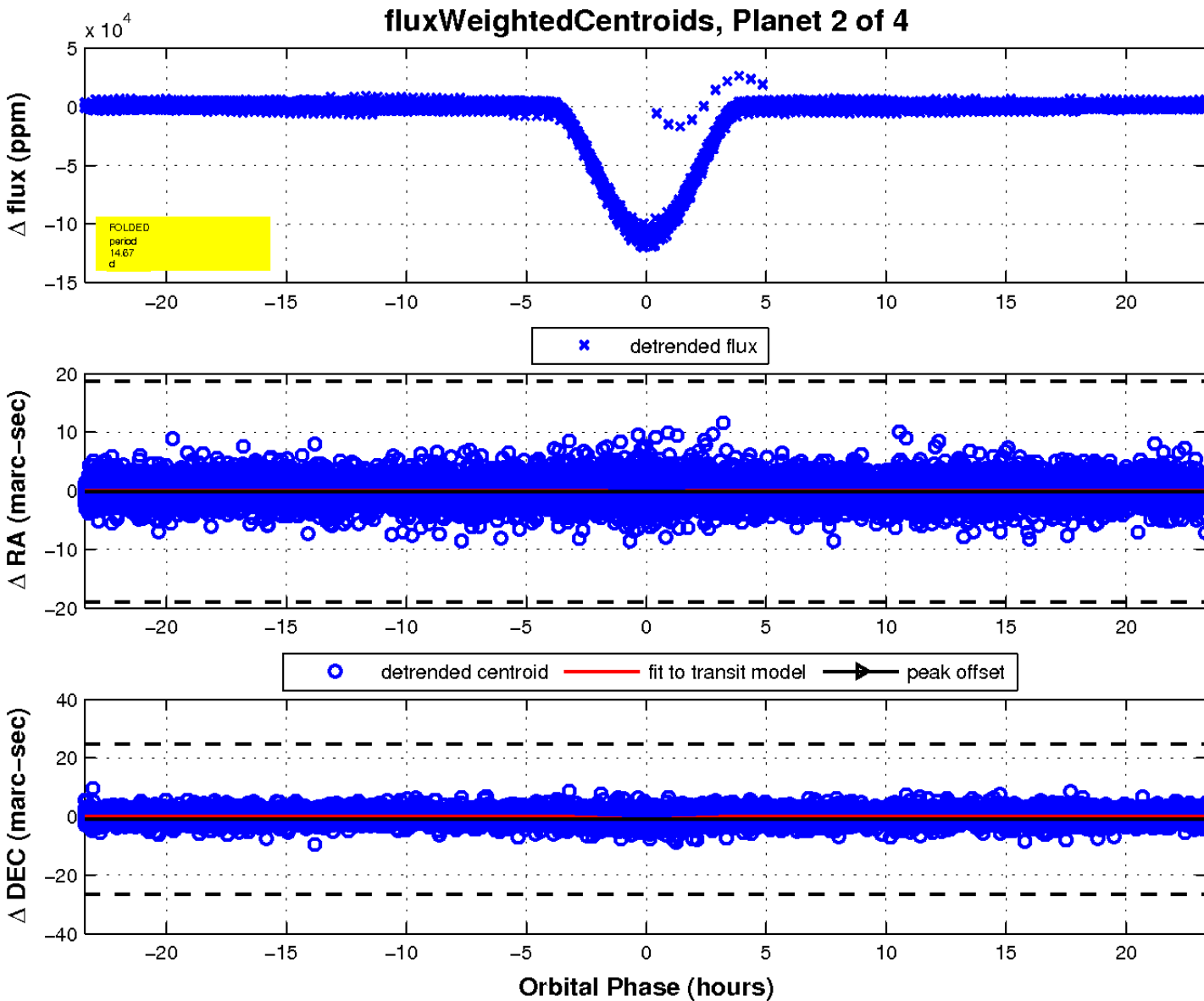
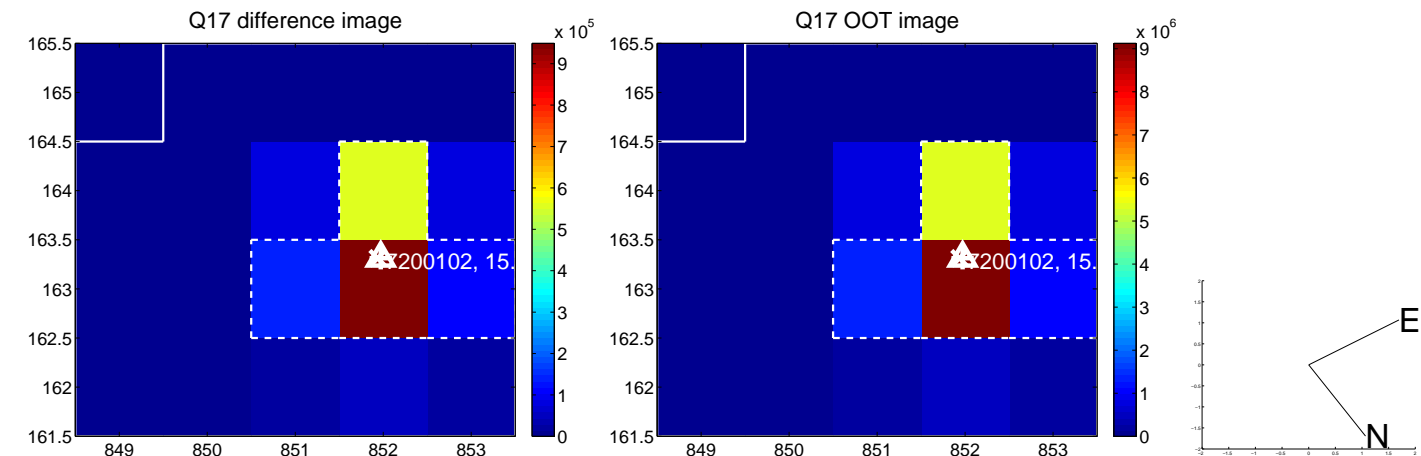
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

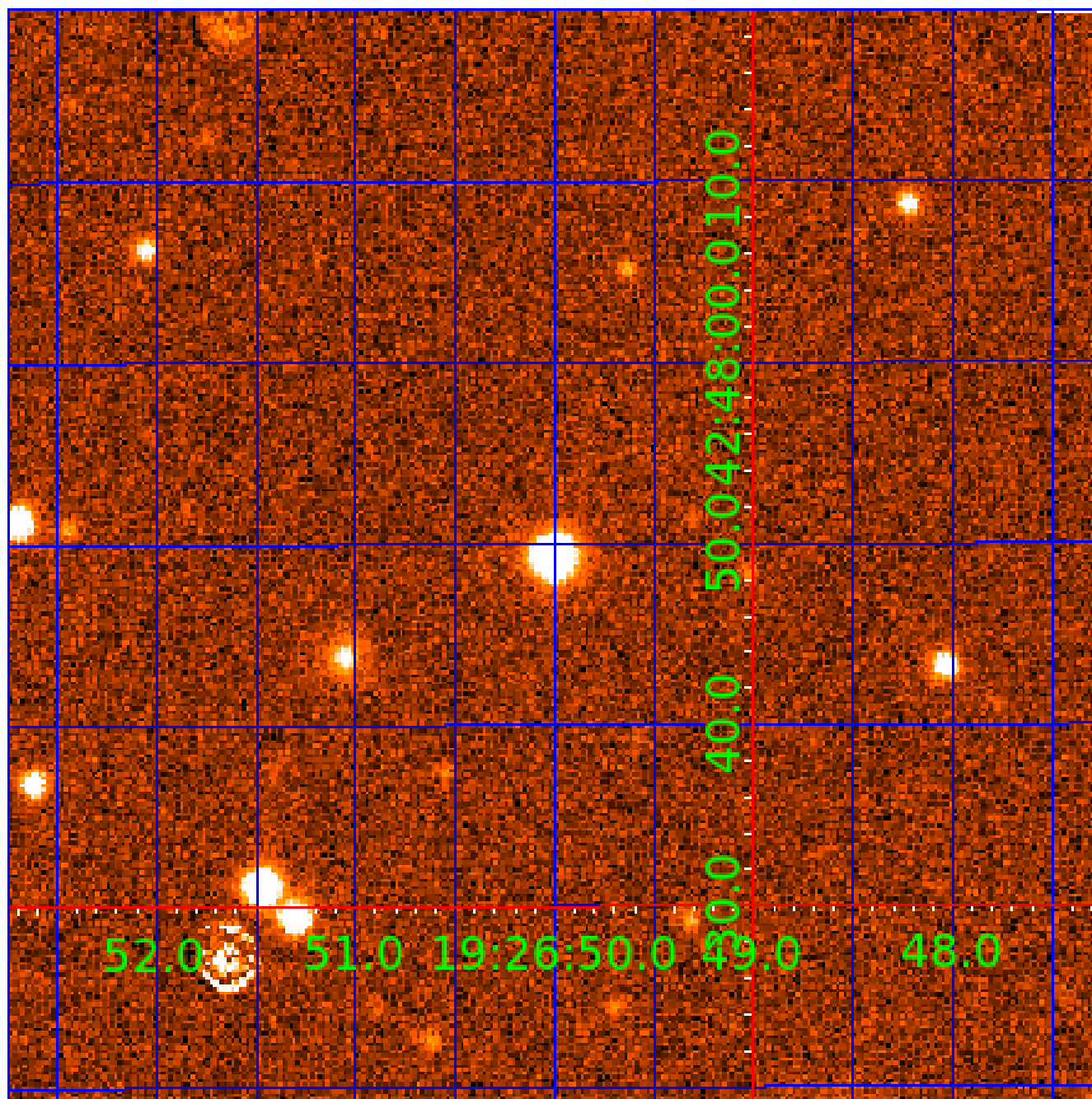


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007200102

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007200102-01	OBS	6842.01	14.665785	139.571612	335500.9	2.000	9375.5	-1.0	1.00	5385	54.67	60.97
007200102-02	OBS	No	14.665746	144.564057	110121.6	7.808	3130.7	2501.3	1.00	5385	48.66	60.97
007200102-03	OBS	No	2.451208	132.105680	14.0	4.082	208.5	1.2	1.00	5385	0.47	662.28
007200102-04	OBS	No	14.666185	140.072655	5415.1	4.500	93.5	-1.0	1.00	5385	7.22	60.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200102-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
007200102-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
007200102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007200102-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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 007200102-03

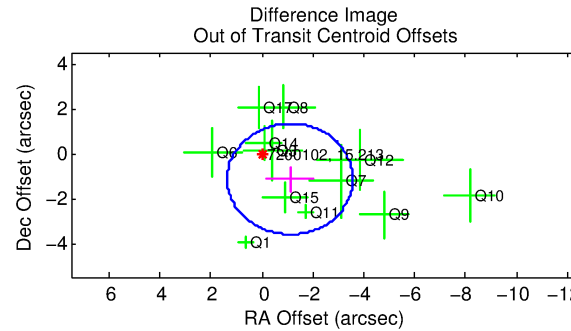
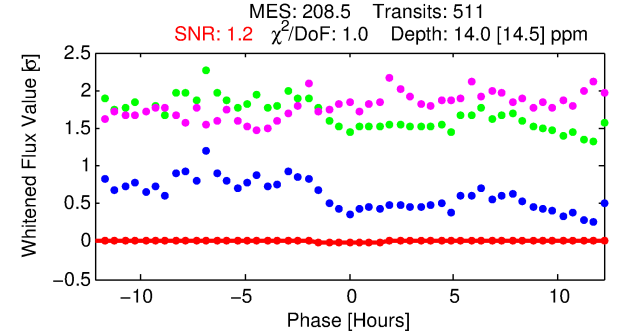
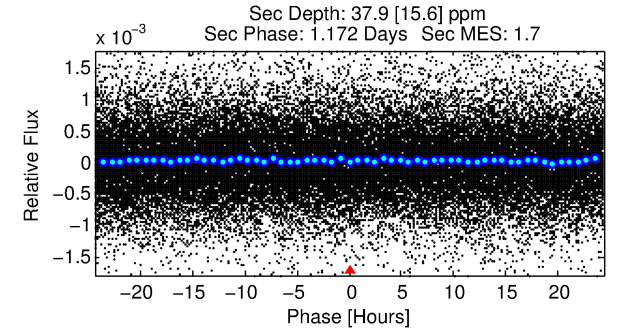
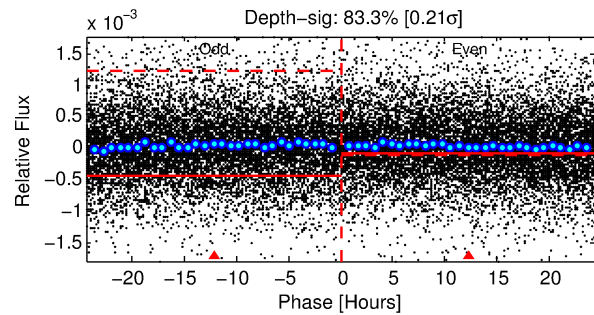
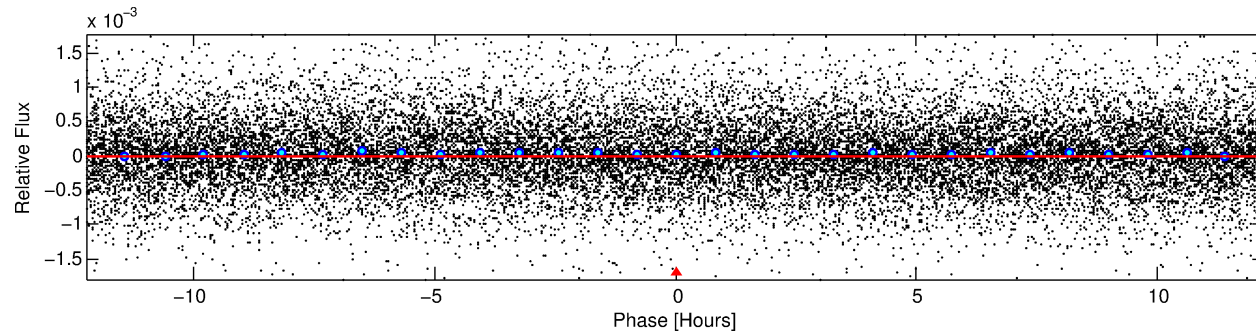
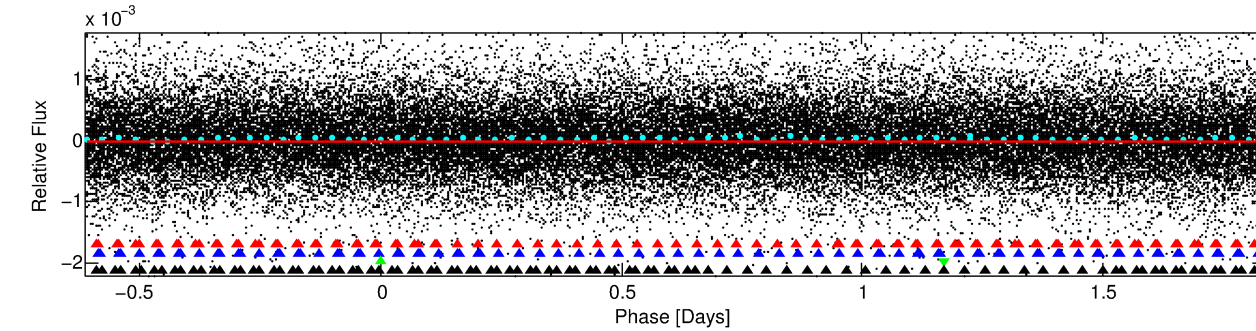
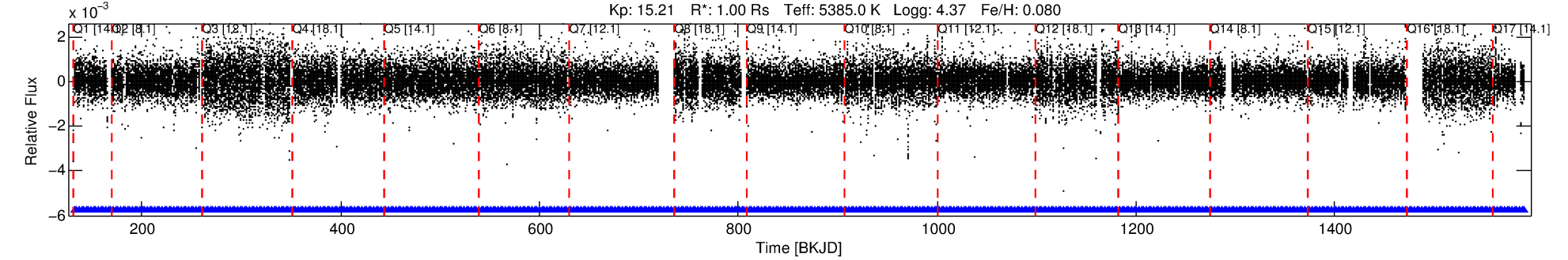
No Significant Match Found

# DV One-Page Summary

KIC: 7200102 Candidate: 3 of 4 Period: 2.451 d

KOI: K06842 Corr: No Ephemeris Match

Kp: 15.21 R\*: 1.00 Rs Teff: 5385.0 K Logg: 4.37 Fe/H: 0.080



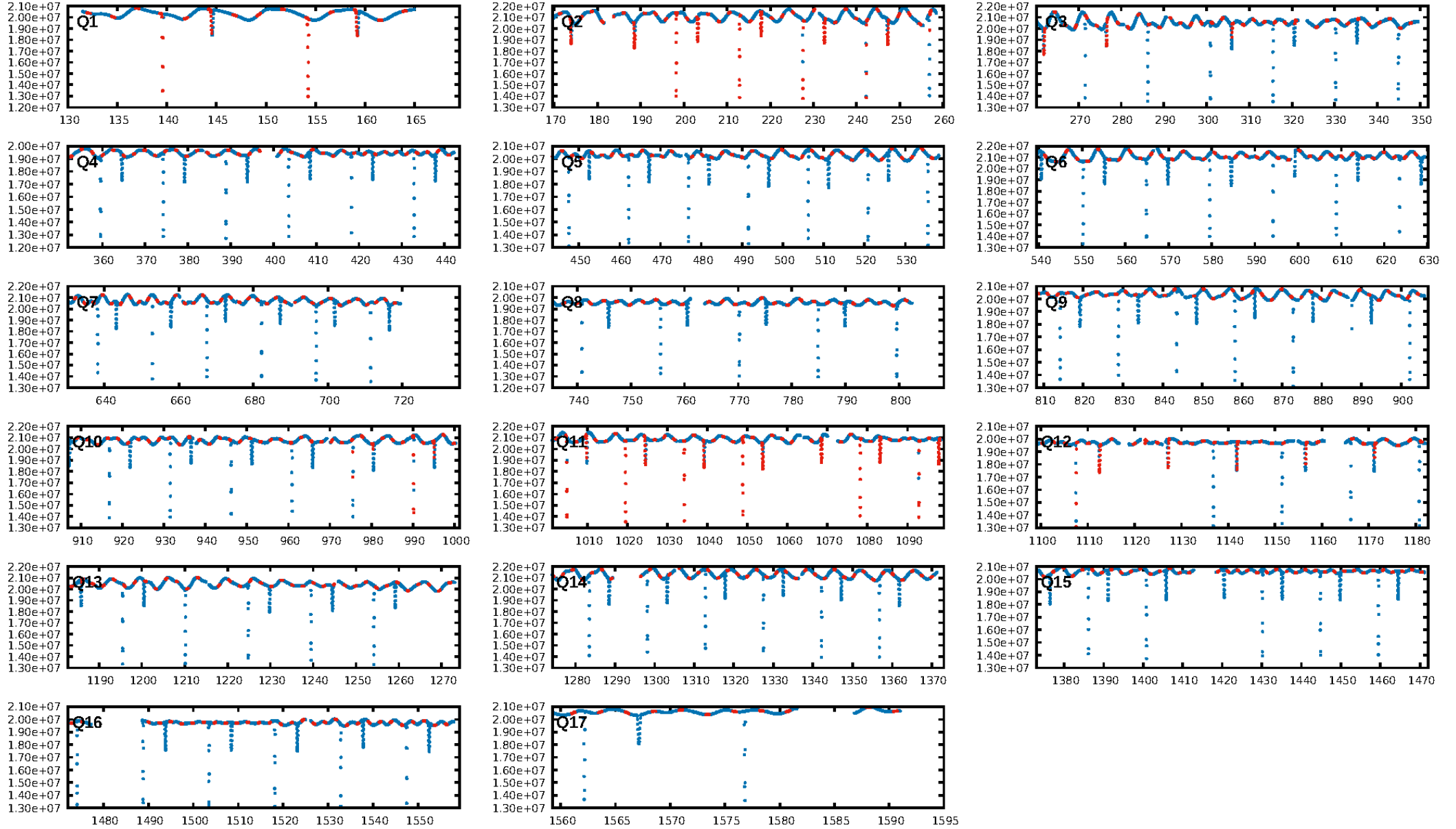
## DV Fit Results:

Period = 2.45121 [0.00016] d  
Epoch = 132.1057 [0.0379] BKJD  
Rp/R\* = 0.0043 [0.0139]  
a/R\* = 1.92 [20.96]  
b = 0.94 [2.00]  
Seff = 662.28 [251.99]  
Teff = 1294 [123] K  
Rp = 0.47 [1.52] Re  
a = 0.0338 [0.0084] AU  
Ag = 105.93 [679.64] [0.15σ]  
Teffp = 6416 [10277] K [0.50σ]

## DV Diagnostic Results:

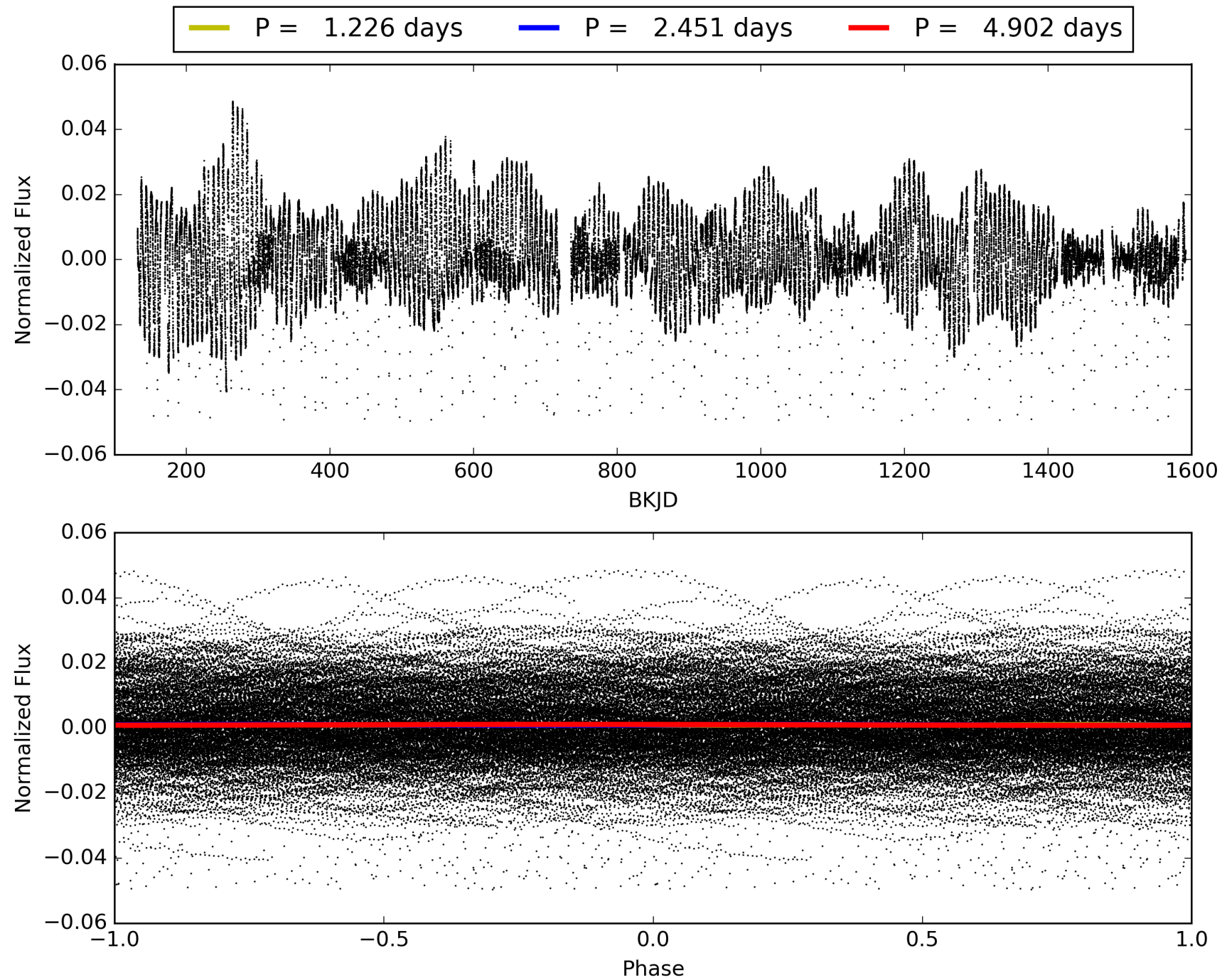
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [33.27σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [488/488]  
GhostDiagnostic-chr: -0.6565  
Centroid-sig: 14.2%  
Centroid-so: 6.885 arcsec [1.19σ]  
OotOffset-rm: 1.590 arcsec [1.93σ]  
KicOffset-rm: 1.499 arcsec [1.94σ]  
OotOffset-st: 3/4/2/3 [12]  
KicOffset-st: 3/4/2/3 [12]  
DiffImageQuality-fgm: 0.25 [3/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007200102-03, PDC Light Curves





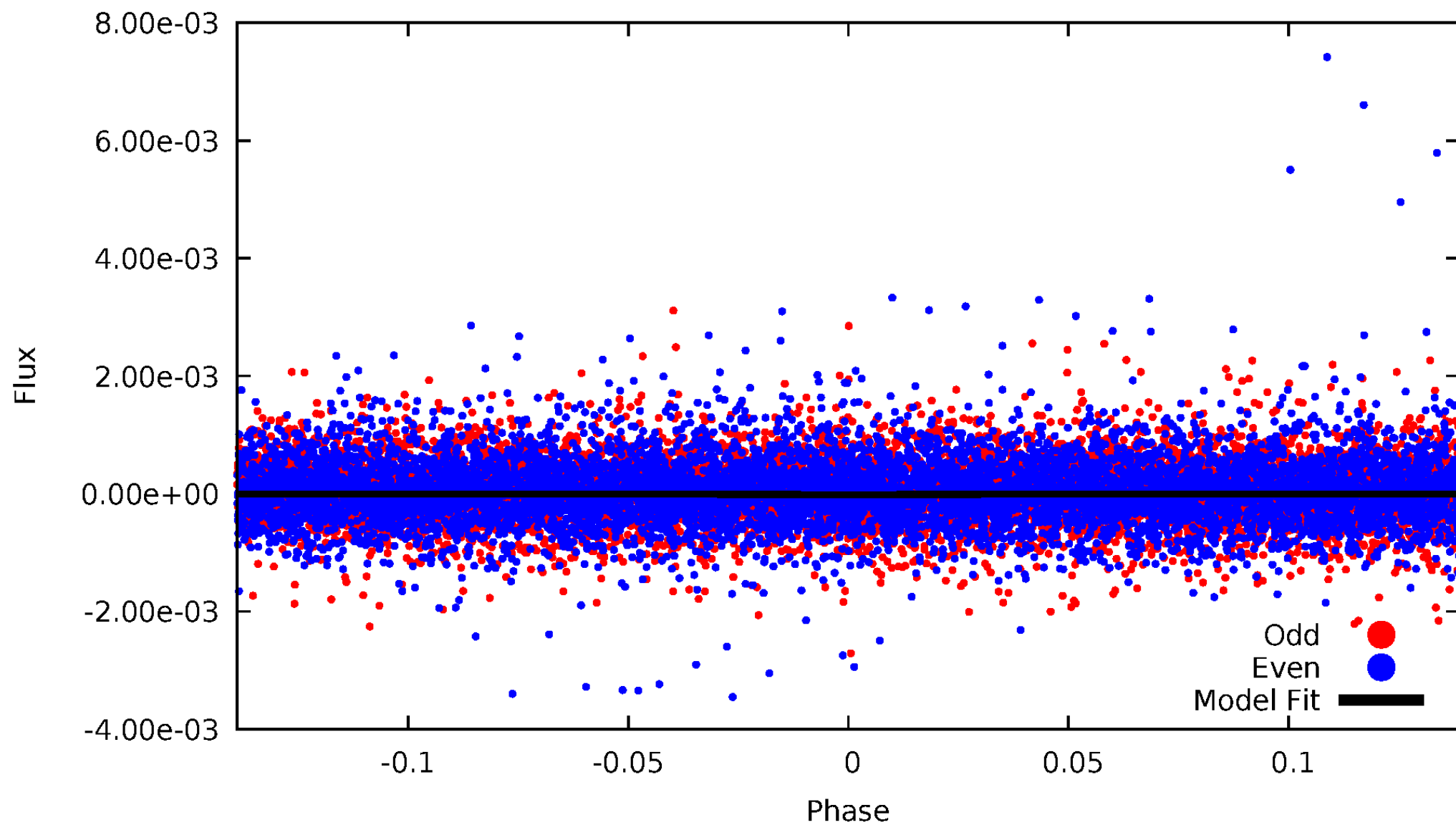
TCE 007200102-03





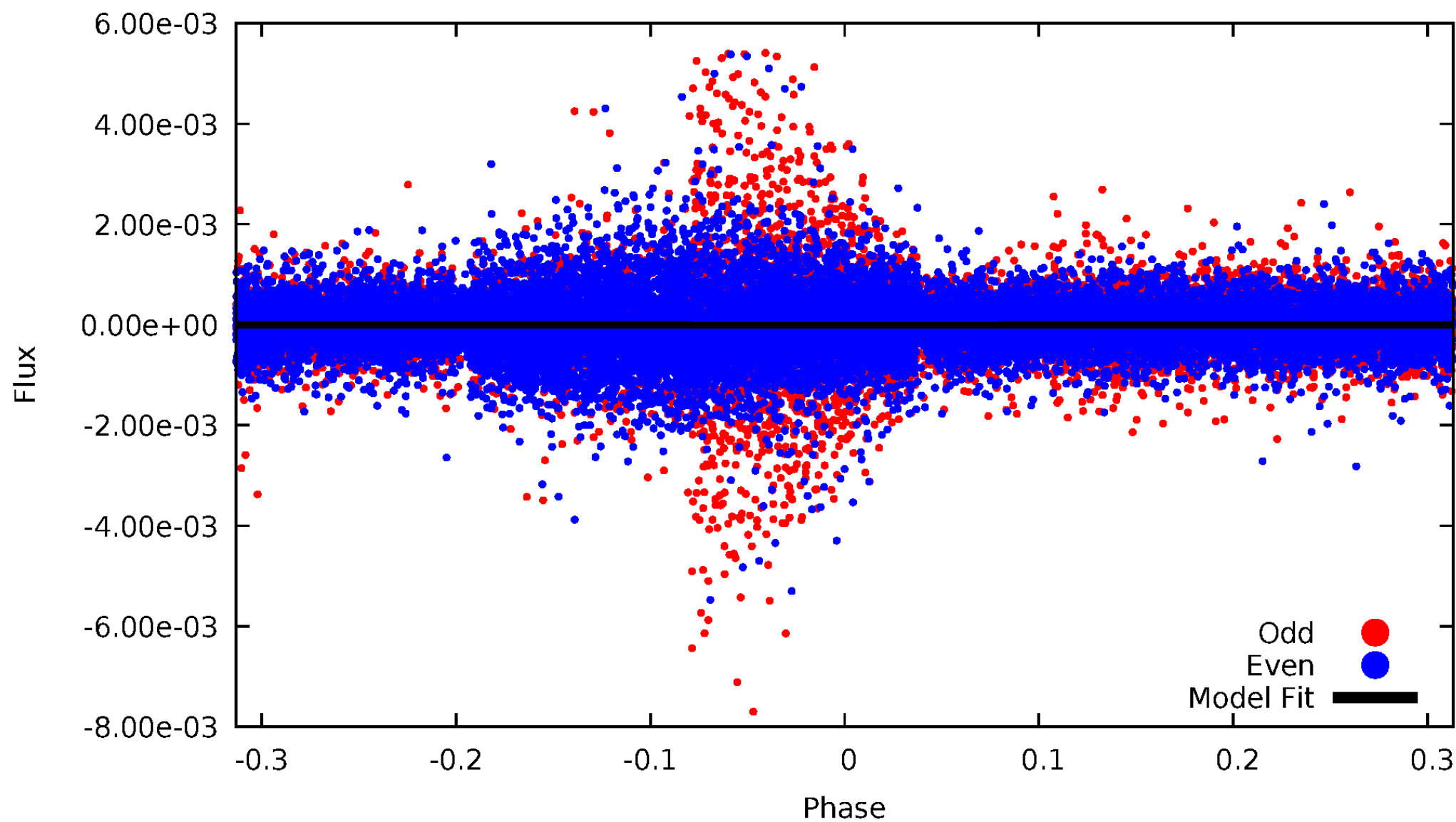
# DV Odd/Even

TCE 007200102-03



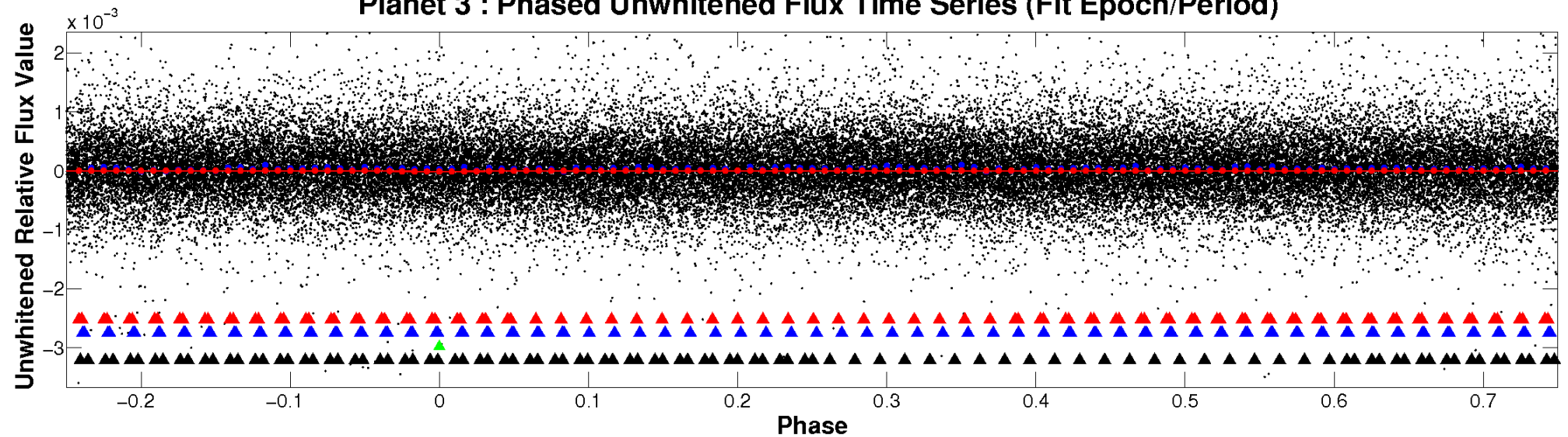
# ALT Odd/Even

TCE 007200102-03

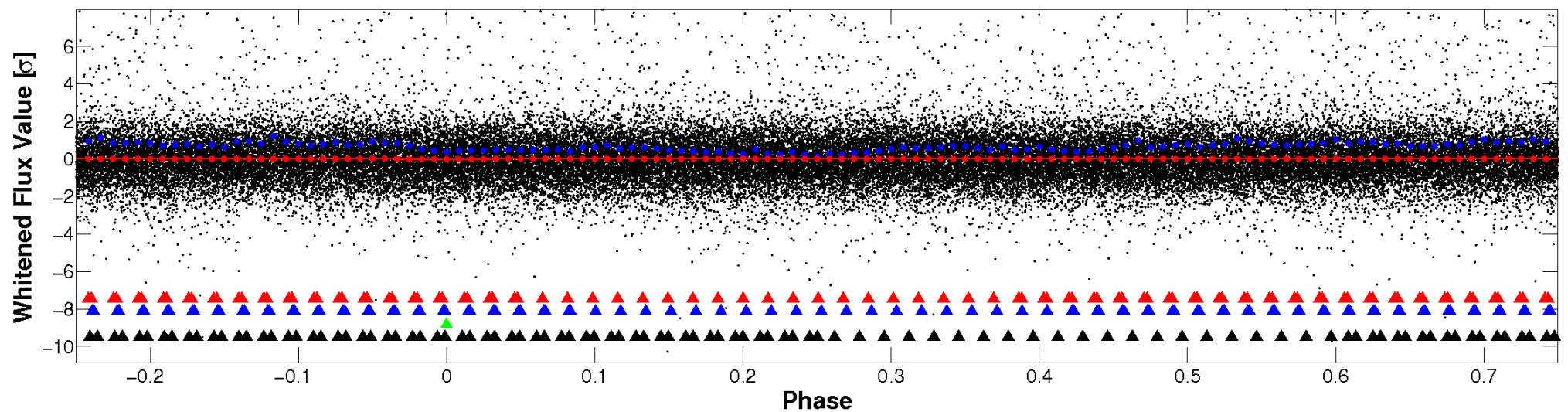


# Non-Whitened Vs. Whitened Light Curve

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

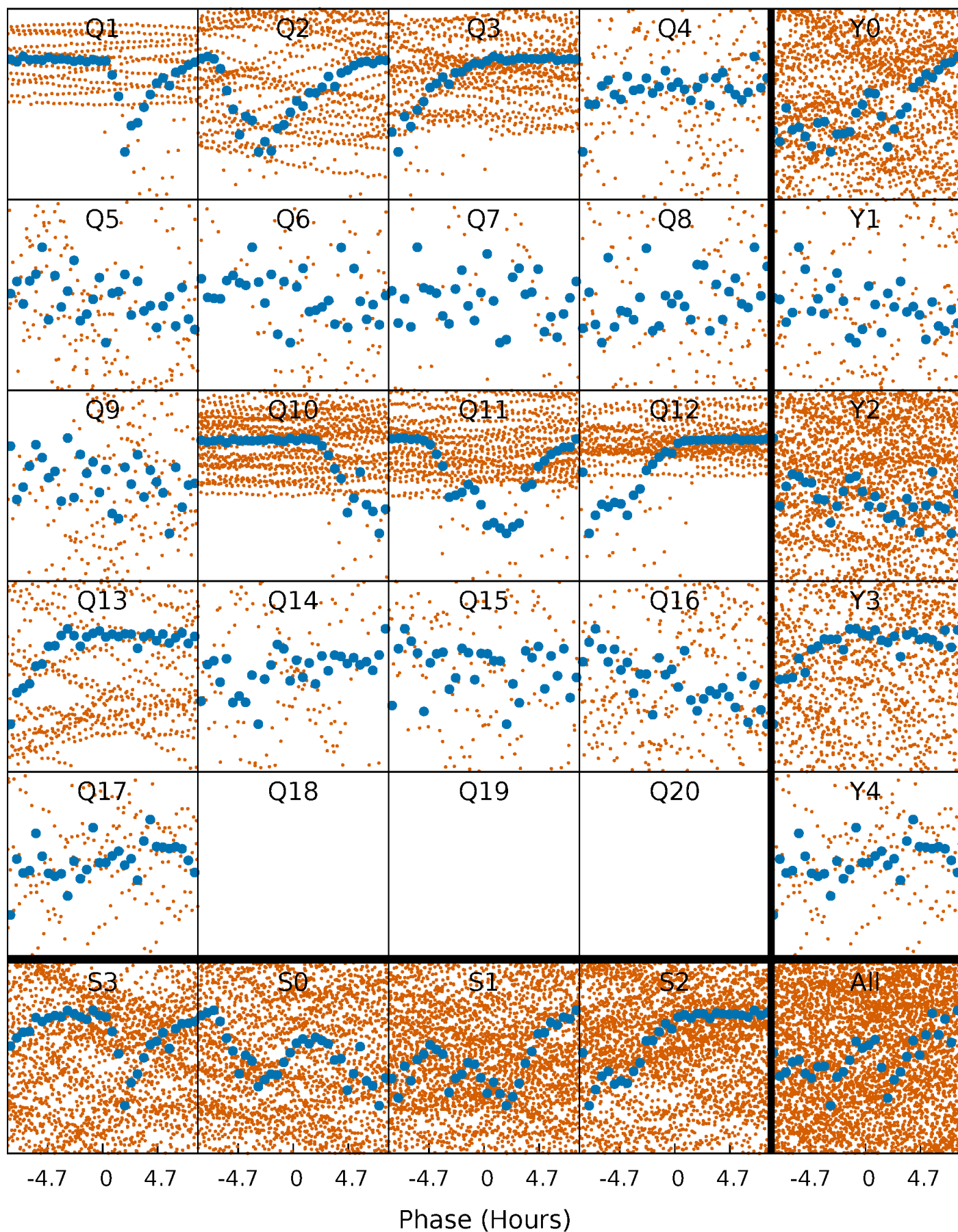


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

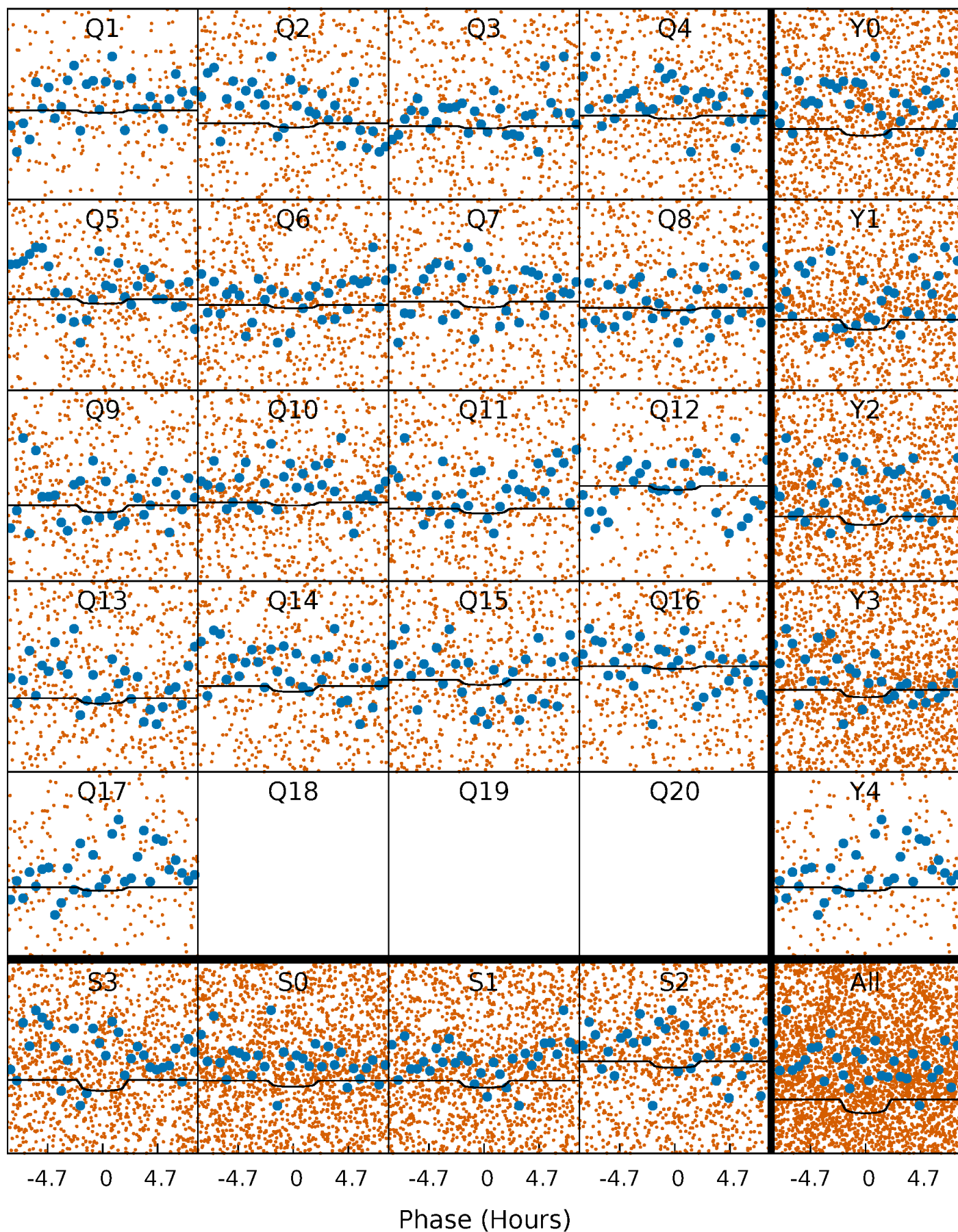
TCE 007200102-03 P= 2.451208 Days  $T_0=132.105680$  (BKJD)





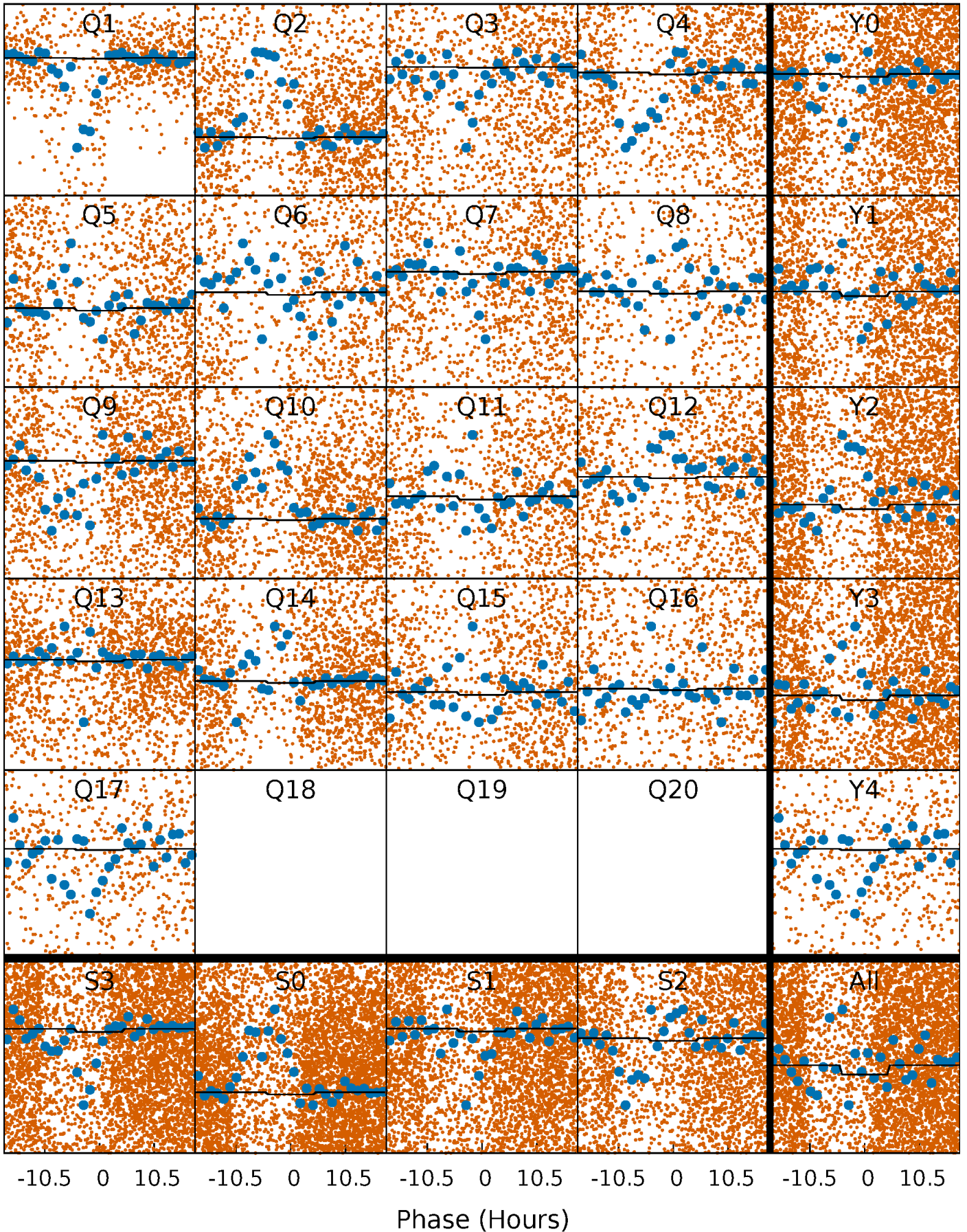
# DV Quarter-Phased Transit Curves

TCE 007200102-03 P= 2.451208 Days  $T_0=132.105680$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007200102-03     $P = 2.444281$  Days     $T_0 = 132.580639$  (BKJD)

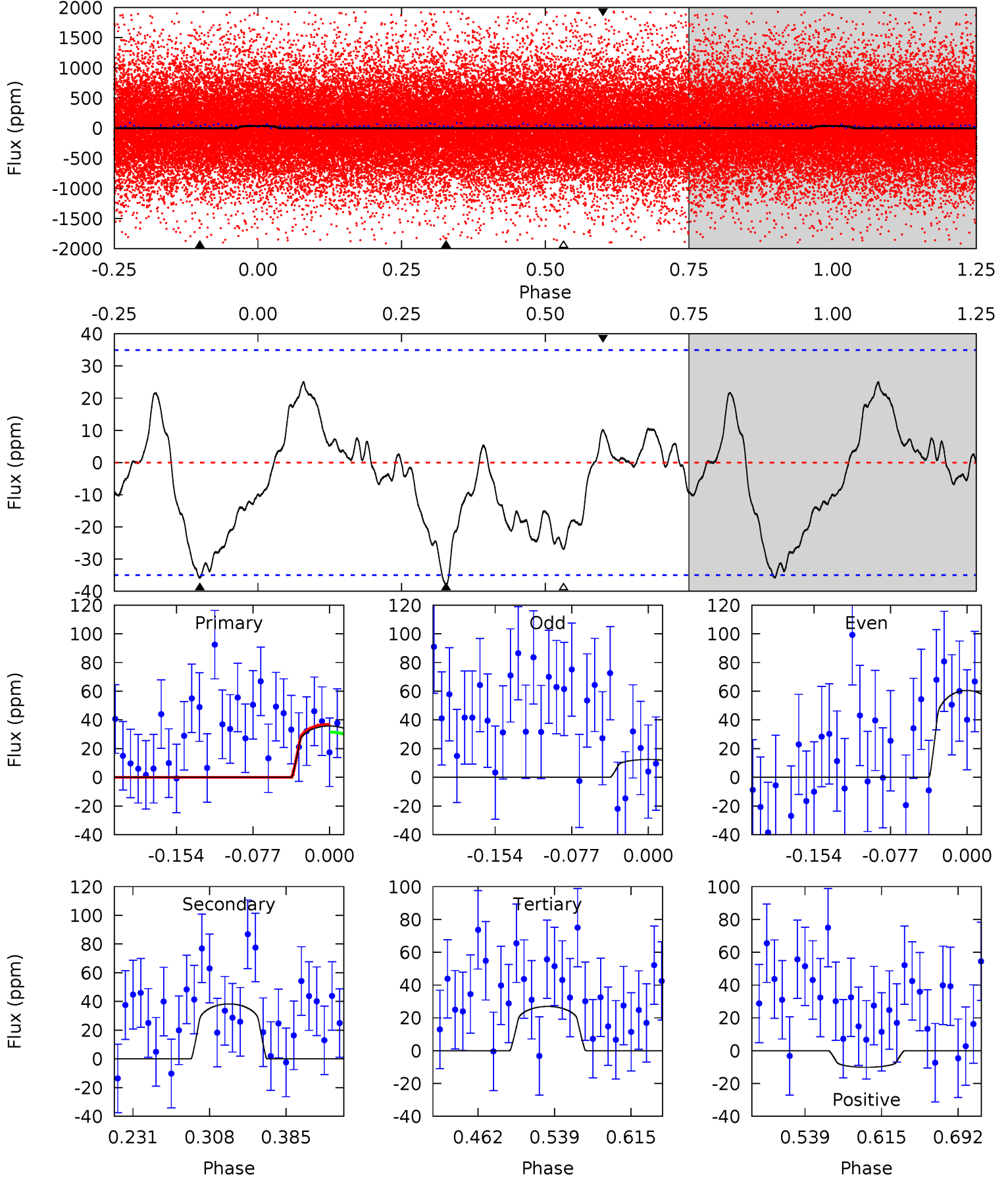




# DV Model-Shift Uniqueness Test

007200102-03, P = 2.451208 Days, E = 129.654472 Days

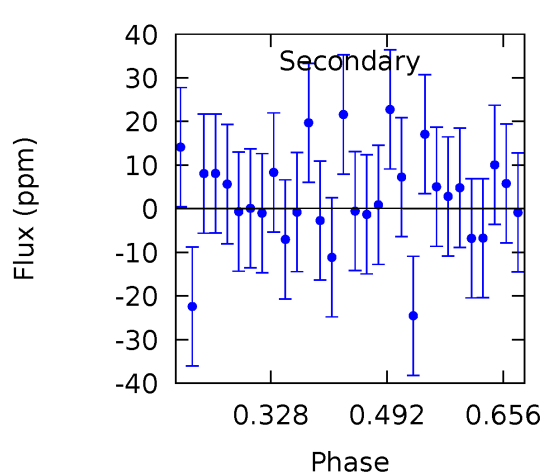
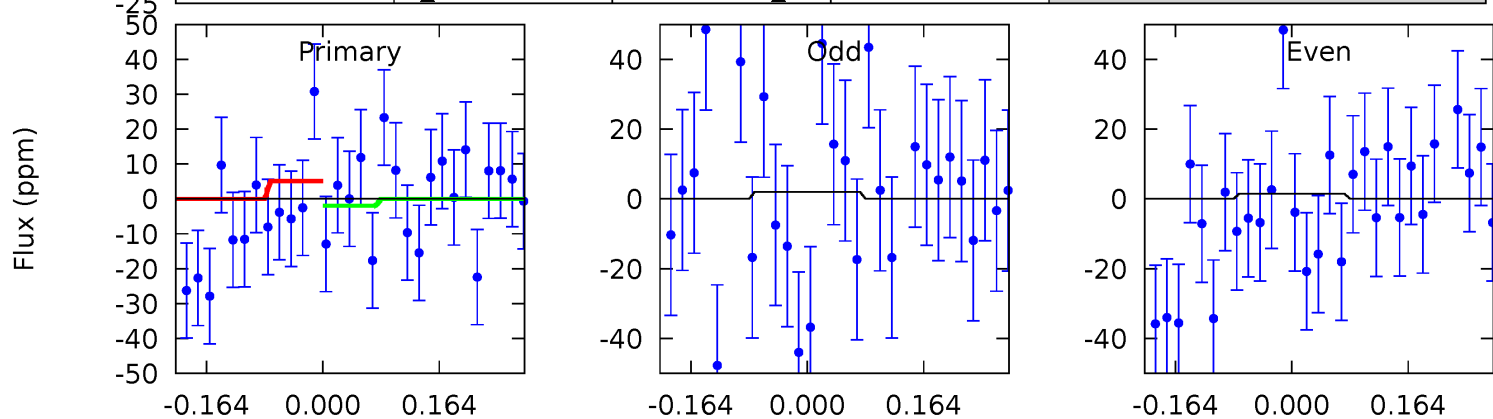
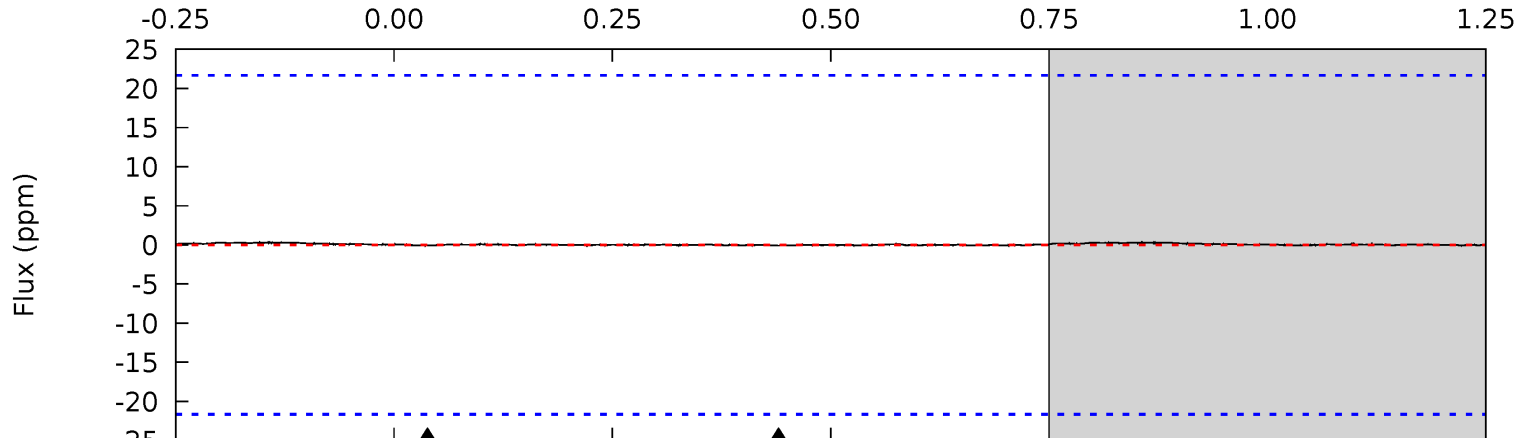
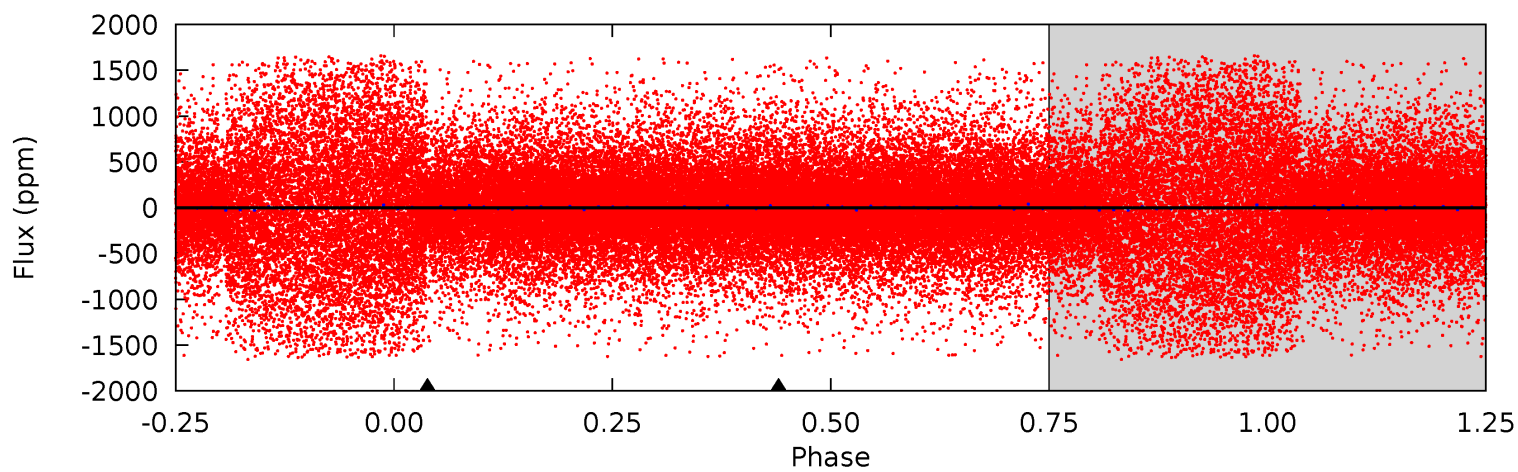
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.72	5.06	3.56	1.34	4.62	1.77	1.60	1.16	3.38	1.49	3.72	3.20	1.93	0.40	0.35



# Alt Model-Shift Uniqueness Test

007200102-03, P = 2.444281 Days, E = 130.136358 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
0.02	0.02	0	0	4.46	1.39	0.02	0.02	0.02	0.02	0.02	0.05	-1.50	0.76	0.23





### Stellar Parameters For KIC 007200102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5385^{+160}_{-144}$	$4.369^{+0.162}_{-0.198}$	$0.080^{+0.250}_{-0.300}$	$1.002^{+0.294}_{-0.181}$	$0.855^{+0.108}_{-0.063}$	$1.200^{+0.904}_{-0.590}$
	+3%/-3%	+4%/-5%	+312%/-375%	+29%/-18%	+13%/-7%	+75%/-49%
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 007200102-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-38 \pm 8$	$1.37^{+1.22}_{-0.95}$	$1812^{+138}_{-110}$	$4061^{+2607}_{-795}$	$13^{+113}_{-10}$
Alt.	$-0 \pm 5$	$1.17^{+1.19}_{-0.82}$	$1821^{+134}_{-111}$	$-2397^{+5591}_{-1022}$	$-0.029^{+3.006}_{-3.999}$

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

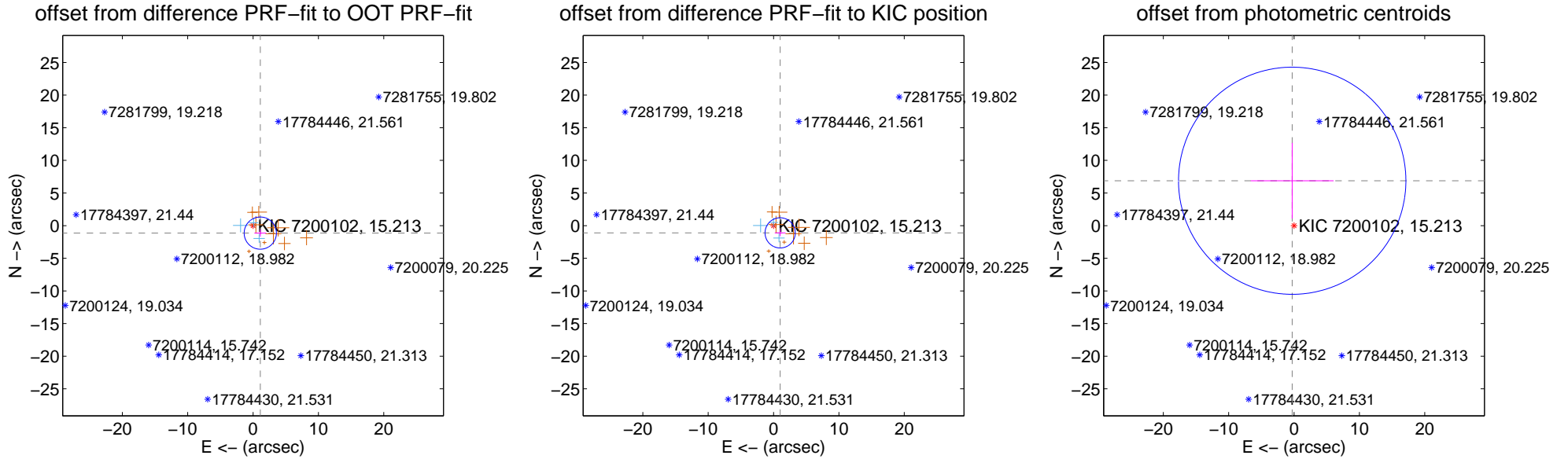
## DV Centroid Data

Supplemental centroid analysis for 007200102-03. Kepler magnitude: 15.21. Transit SNR 1.15

There are 3 quarters with good PRF difference image offsets

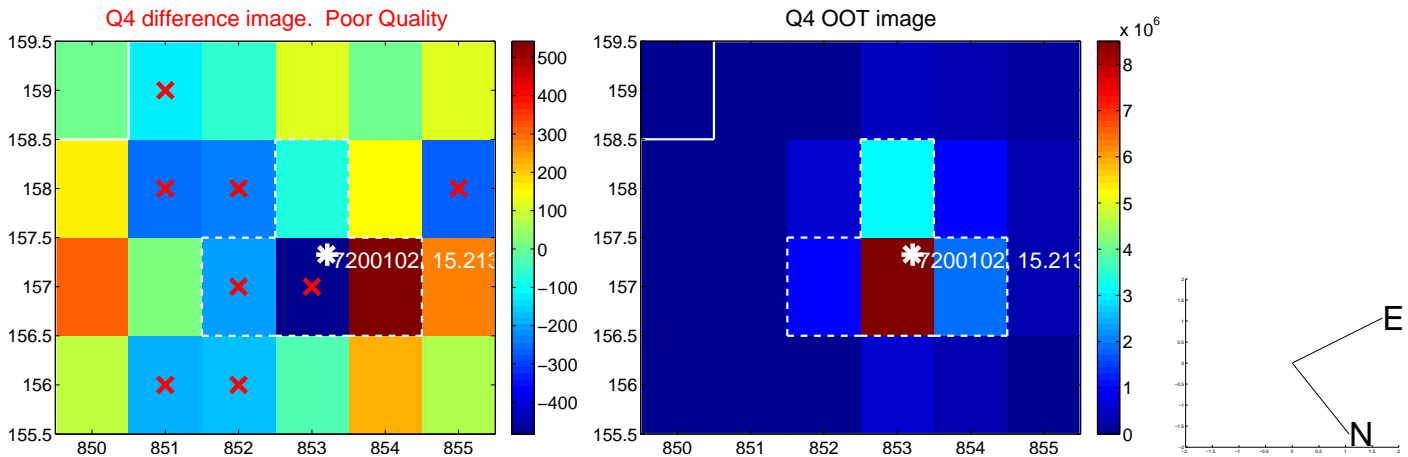
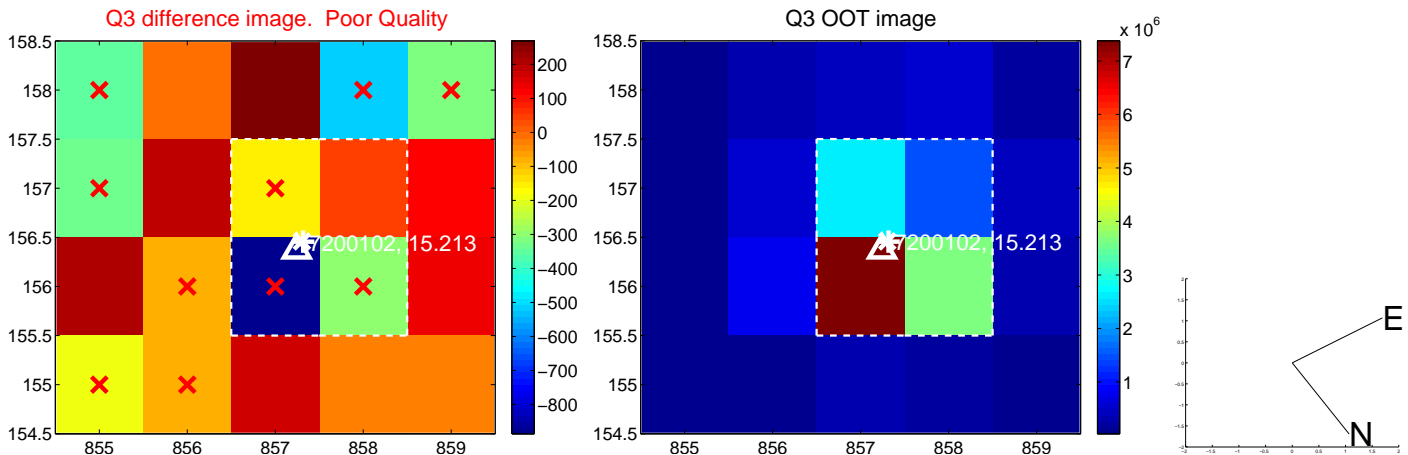
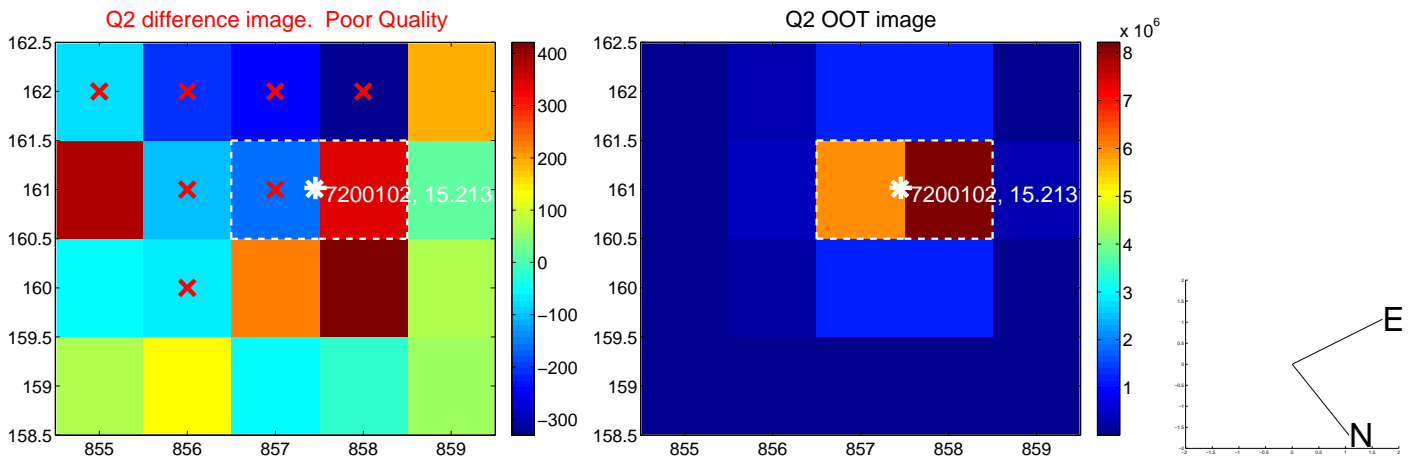
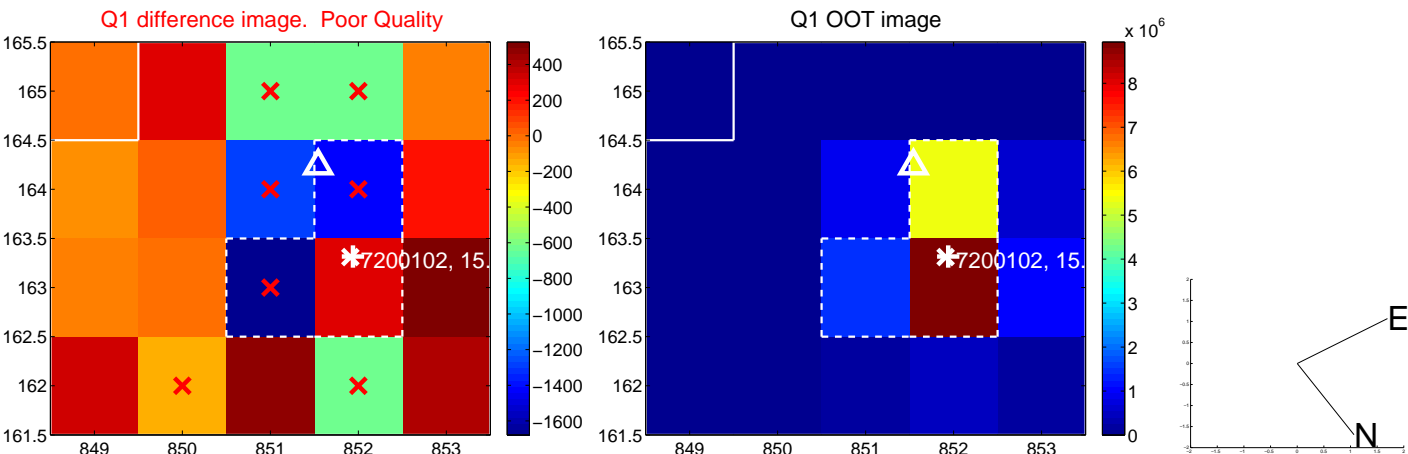
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.590 \pm 0.822$	1.93	$-1.106 \pm 0.902$	$-1.143 \pm 0.540$
PRF-fit source offset from KIC position	$1.499 \pm 0.771$	1.94	$-1.013 \pm 0.832$	$-1.105 \pm 0.509$
photometric centroid source offset	$6.88 \pm 5.80$	1.19	$0.28 \pm 6.34$	$6.88 \pm 5.80$

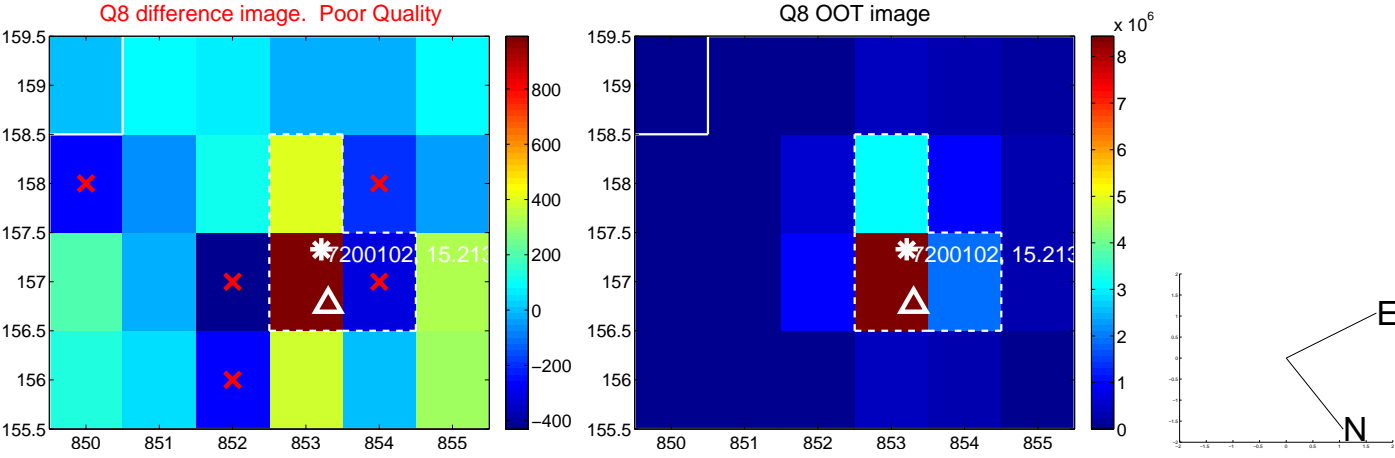
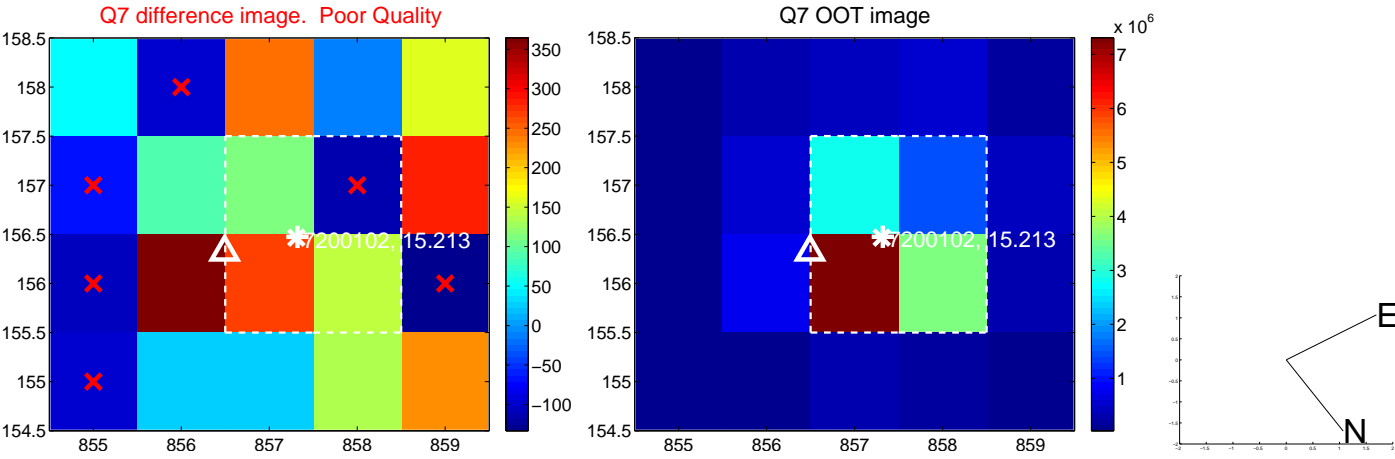
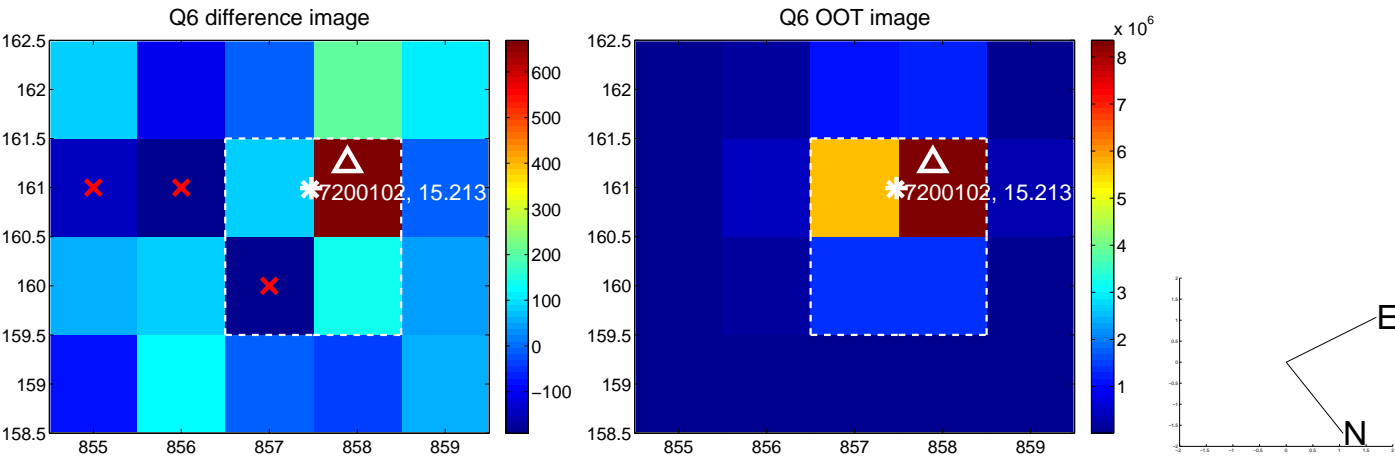
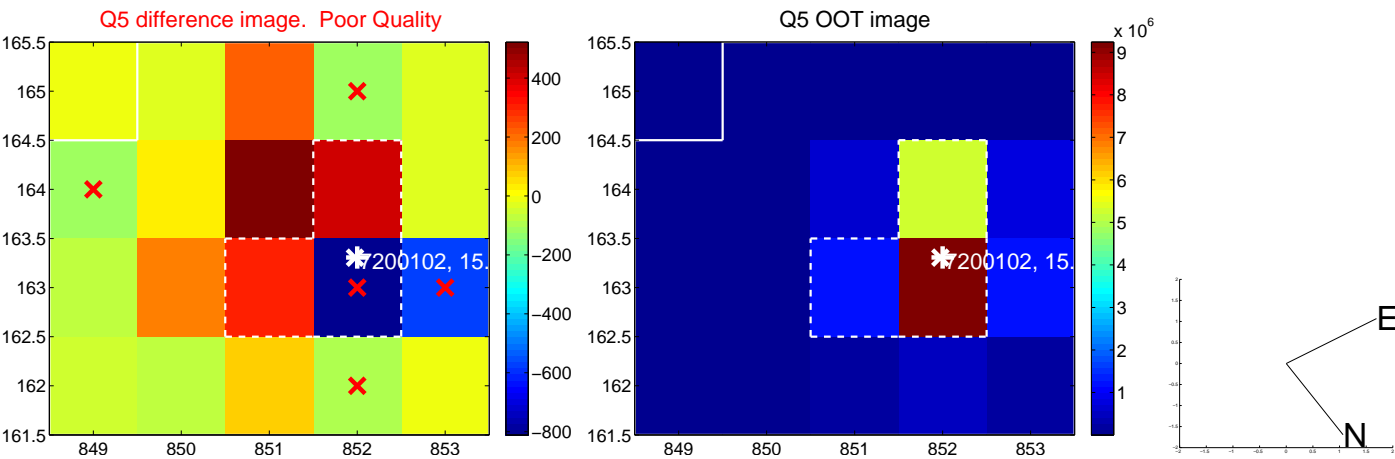


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

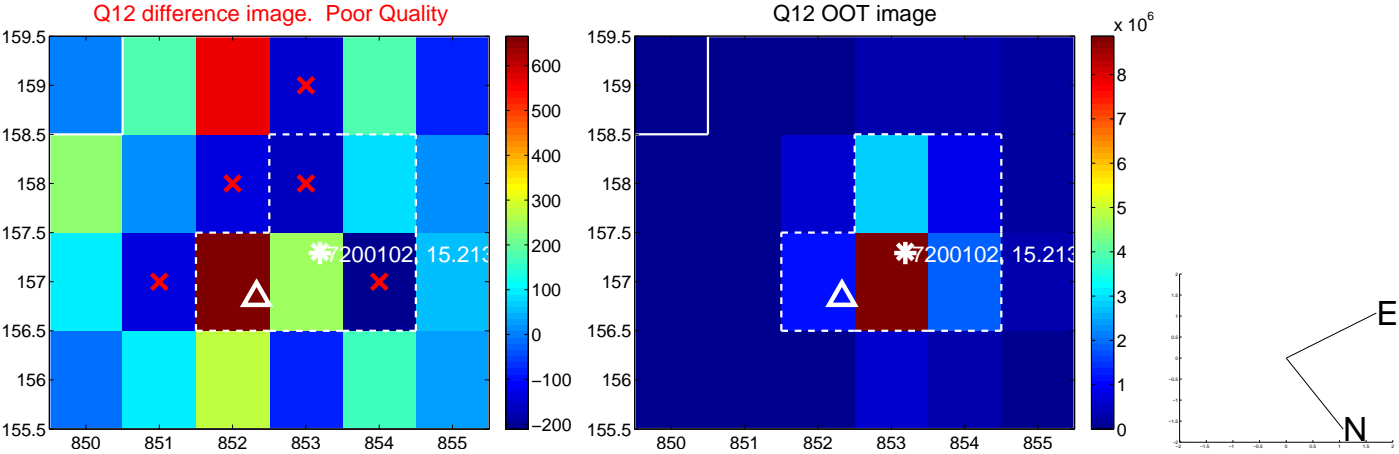
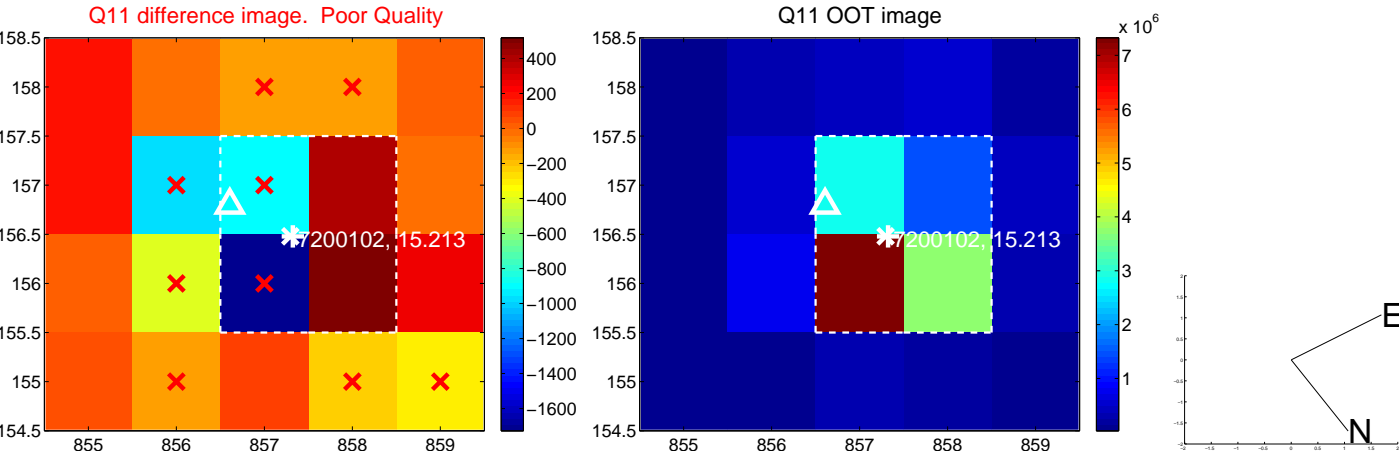
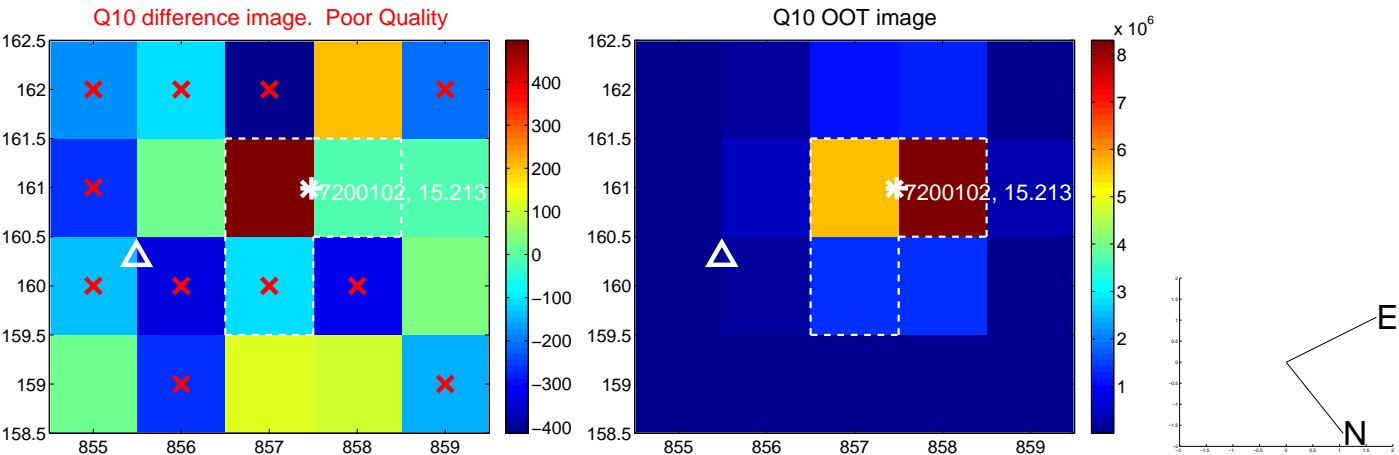
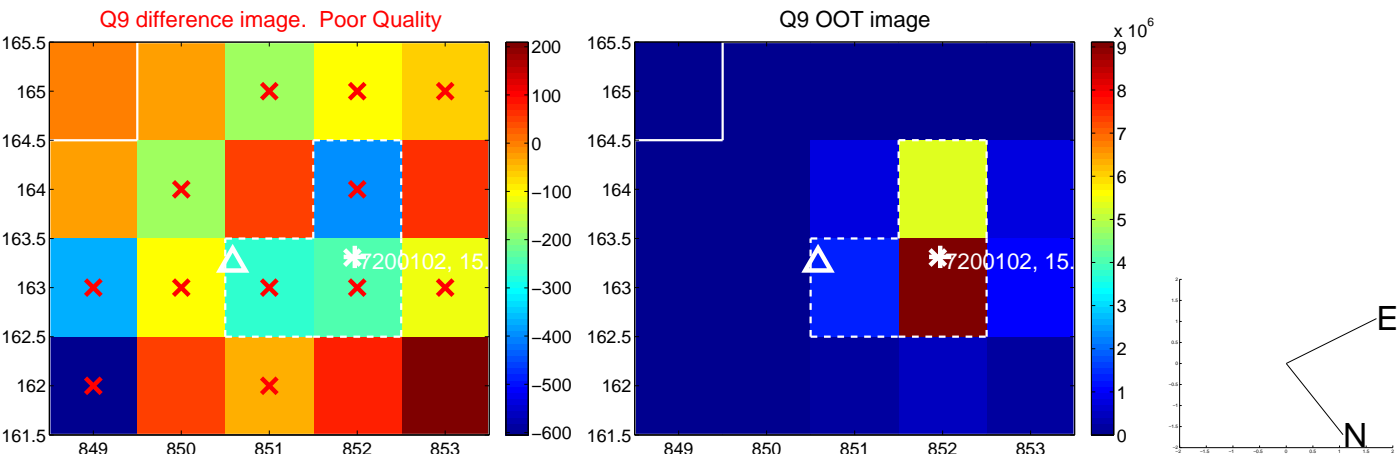
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



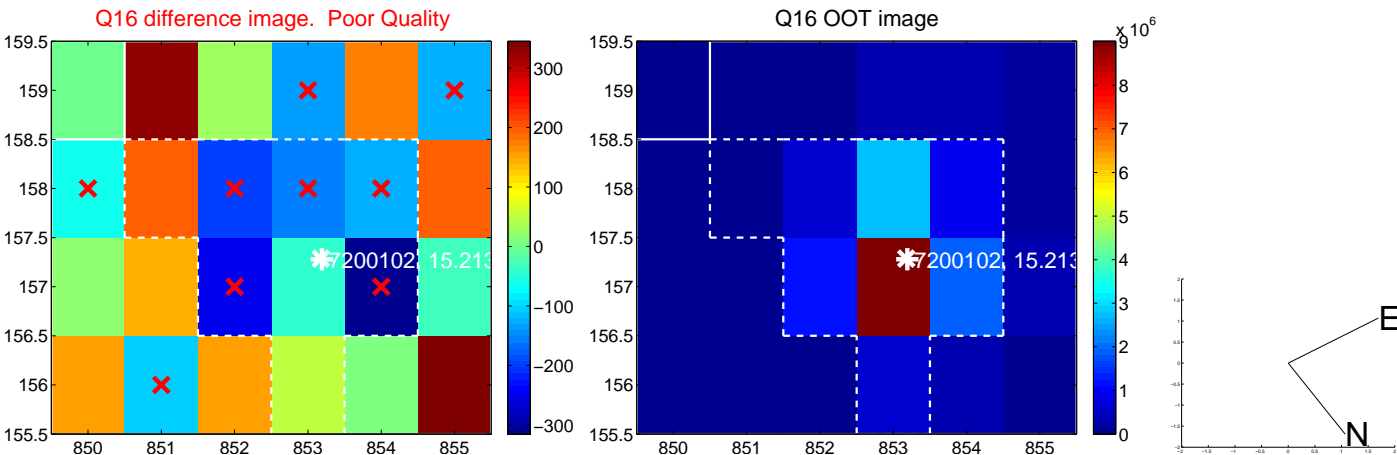
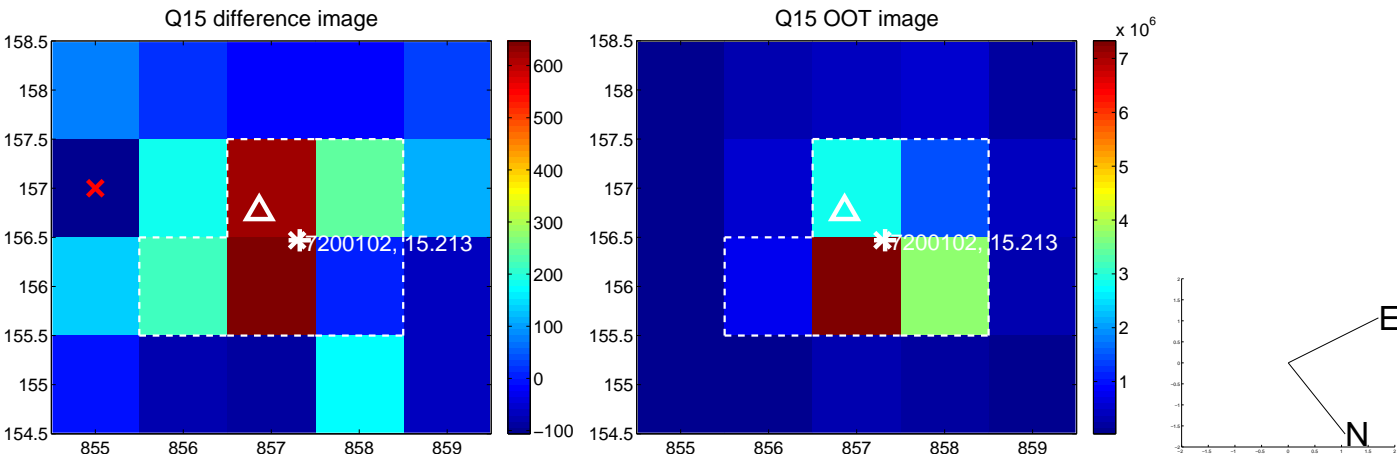
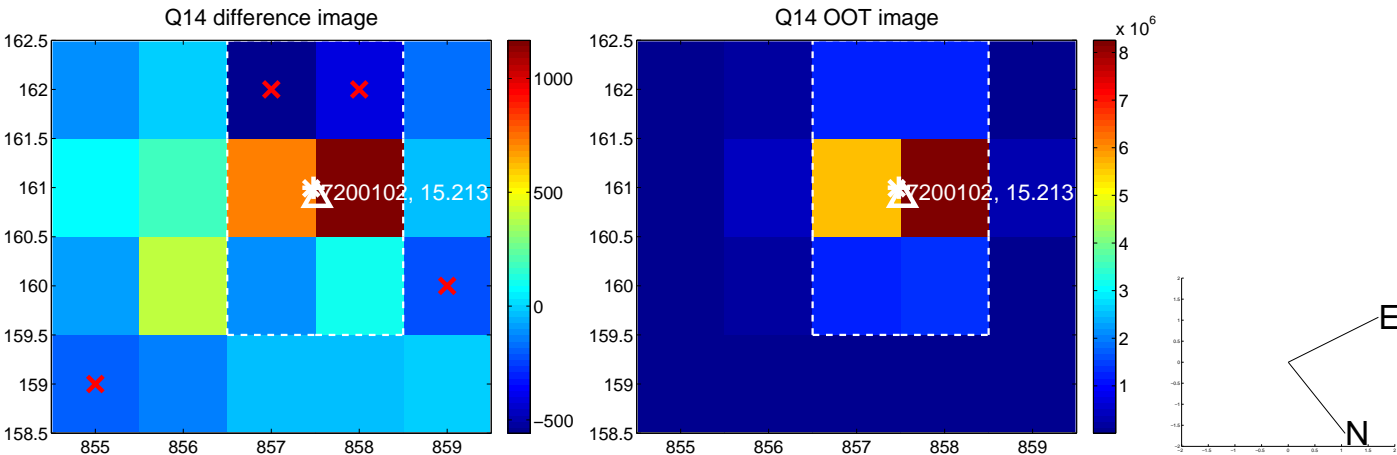
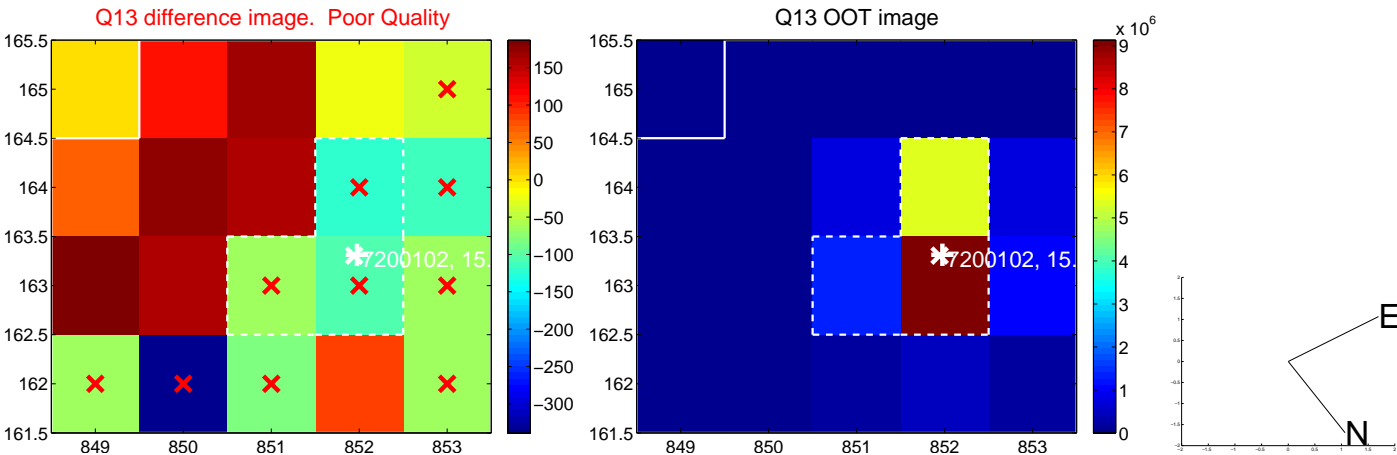
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



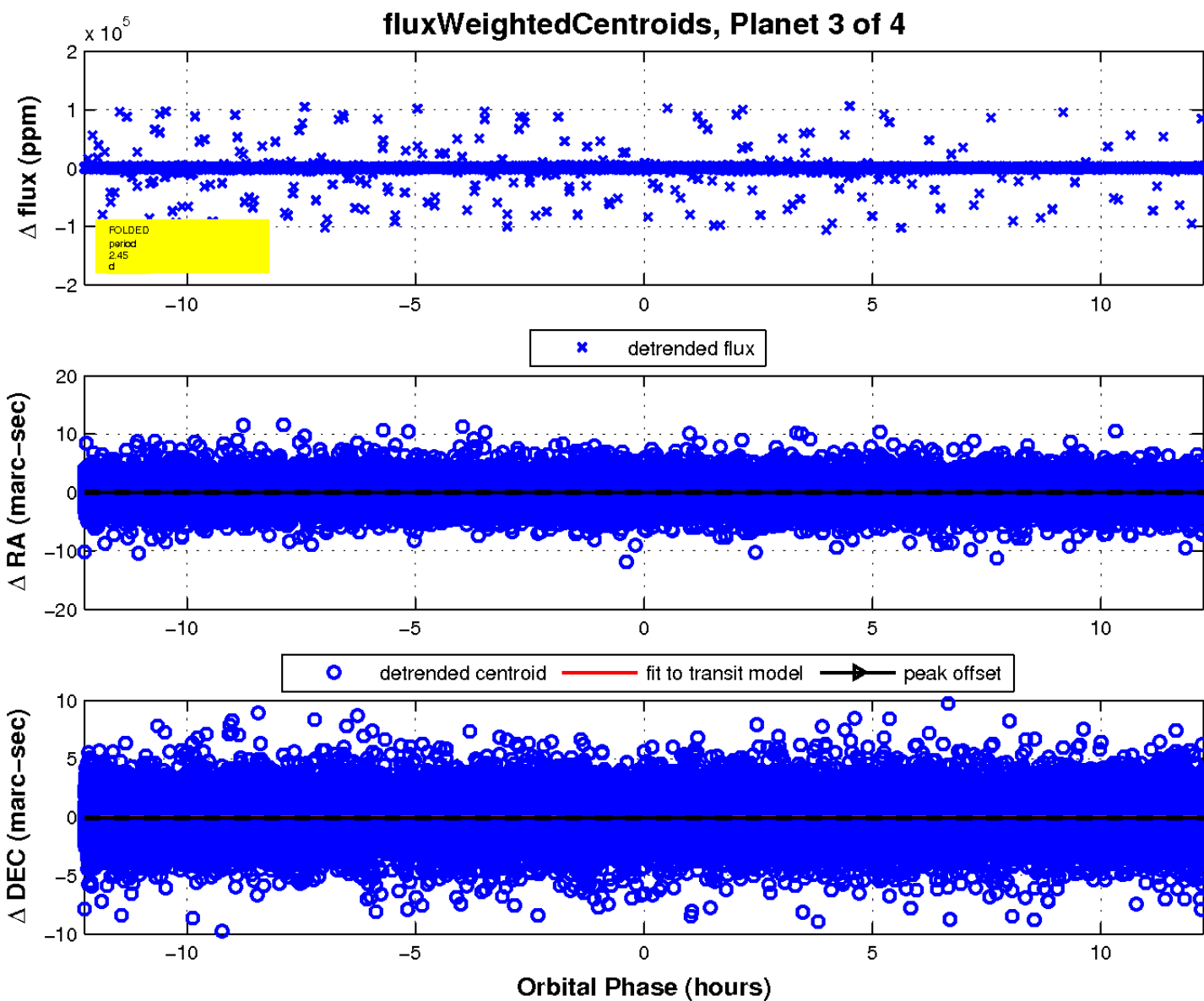
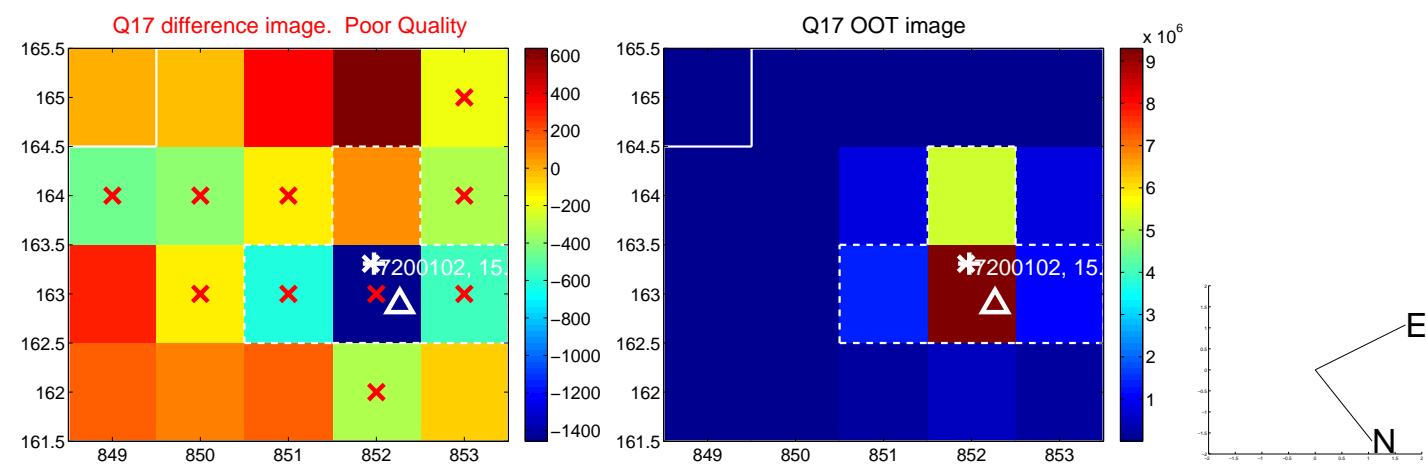
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

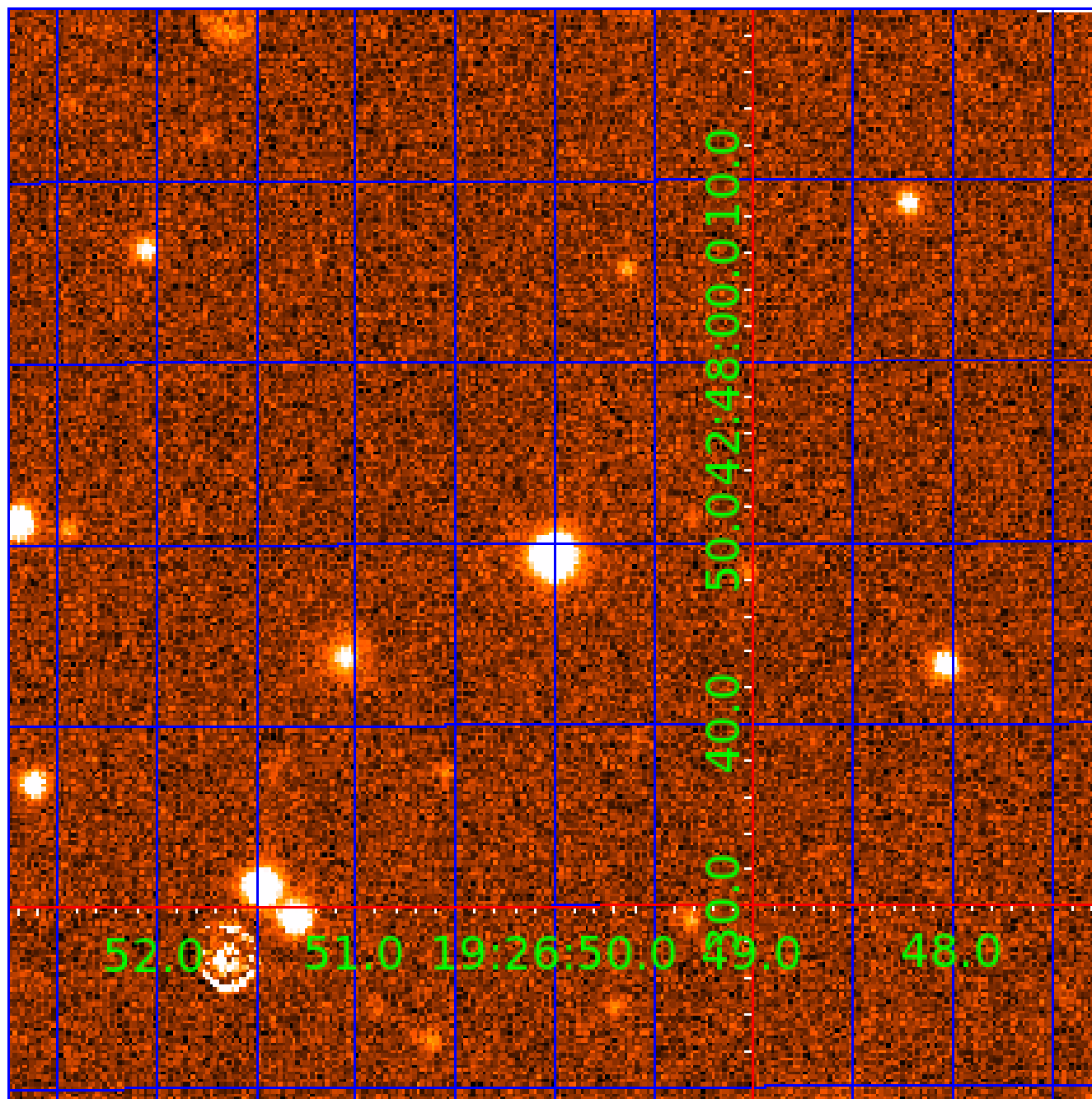


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007200102

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007200102-01	OBS	6842.01	14.665785	139.571612	335500.9	2.000	9375.5	-1.0	1.00	5385	54.67	60.97
007200102-02	OBS	No	14.665746	144.564057	110121.6	7.808	3130.7	2501.3	1.00	5385	48.66	60.97
007200102-03	OBS	No	2.451208	132.105680	14.0	4.082	208.5	1.2	1.00	5385	0.47	662.28
007200102-04	OBS	No	14.666185	140.072655	5415.1	4.500	93.5	-1.0	1.00	5385	7.22	60.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200102-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
007200102-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
007200102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007200102-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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 007200102-04

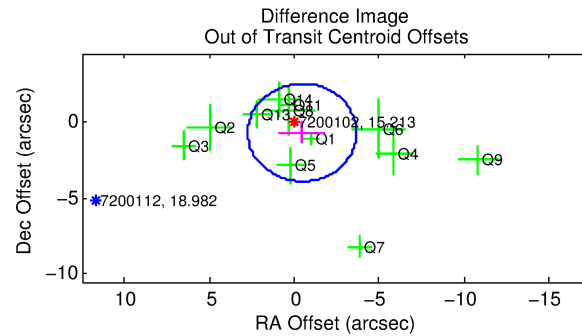
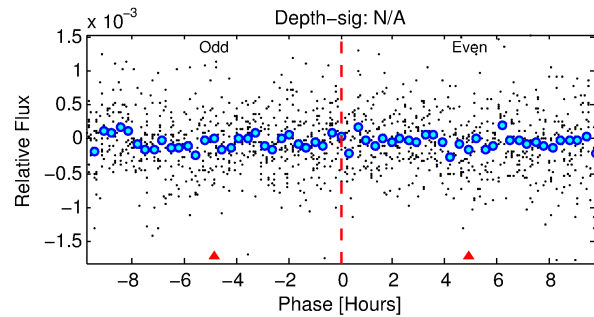
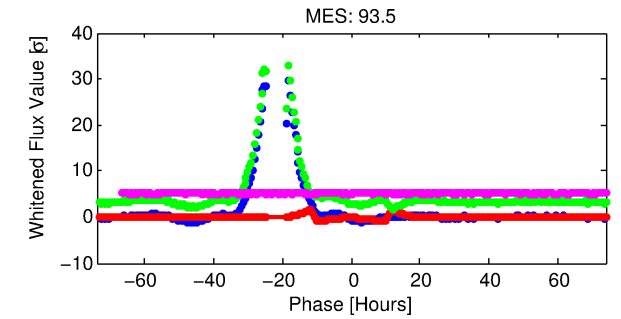
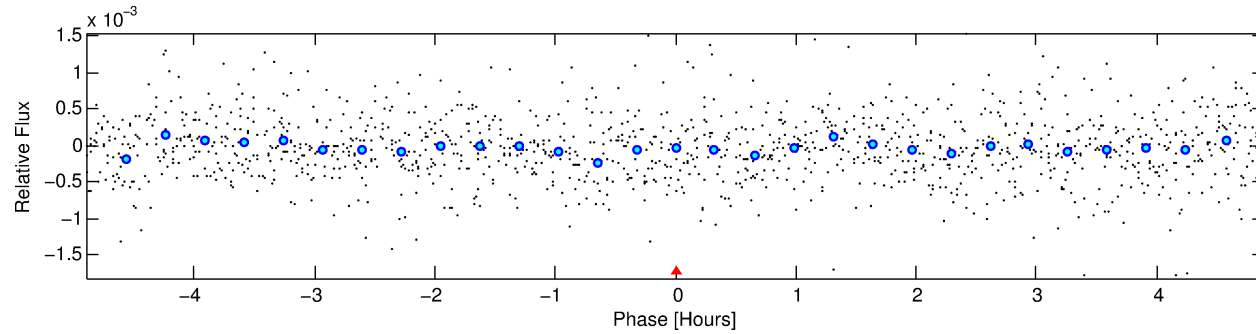
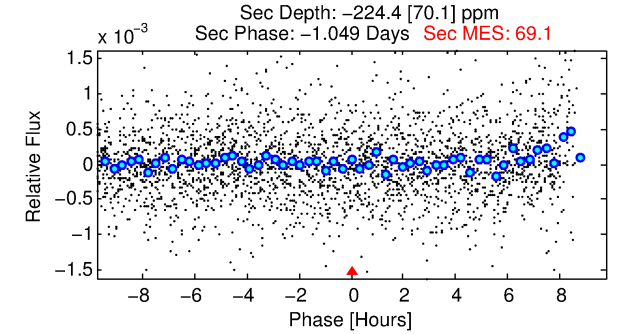
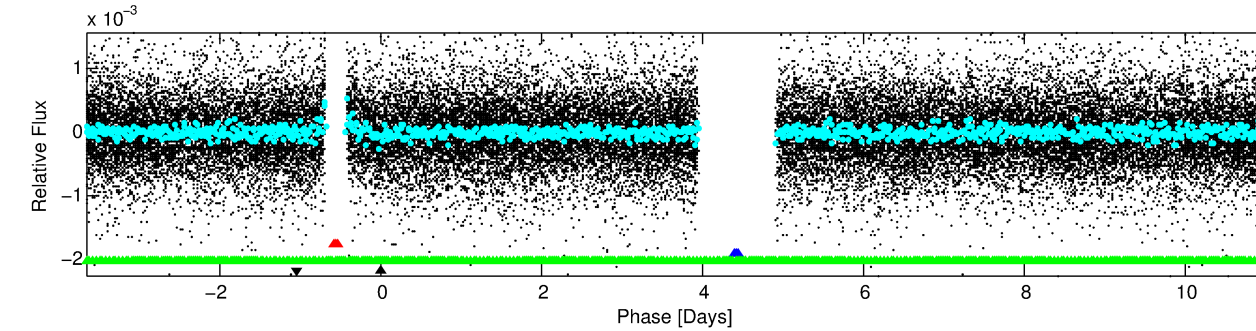
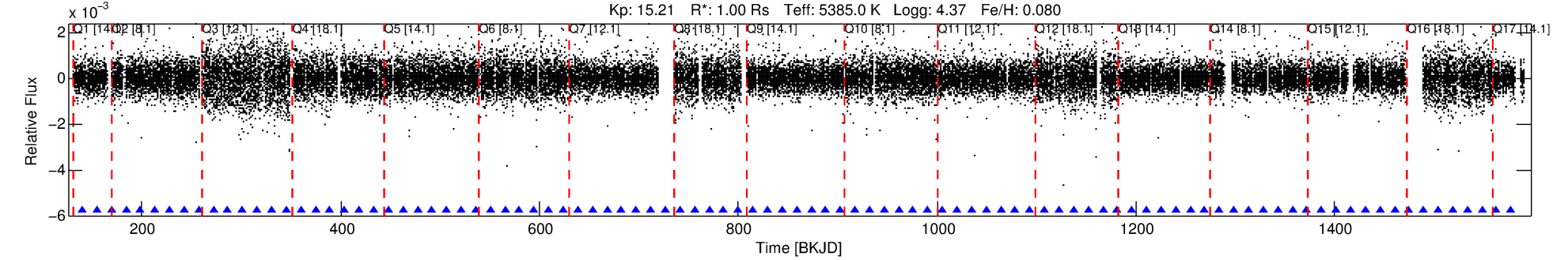
No Significant Match Found

# DV One-Page Summary

KIC: 7200102 Candidate: 4 of 4 Period: 14.666 d

KOI: K06842 Corr: No Ephemeris Match

Kp: 15.21 R\*: 1.00 Rs Teff: 5385.0 K Logg: 4.37 Fe/H: 0.080



TPS TCE Results:

Period = 14.66618 d

Epoch = 140.0727 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00σ]

LongPeriod-sig: N/A

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [65/65]

GhostDiagnostic-chr: -1.053

Centroid-sig: 27.7%

Centroid-so: 1.453 arcsec [1.26σ]

OotOffset-rm: 0.833 arcsec [0.78σ]

KicOffset-rm: 0.754 arcsec [0.67σ]

OotOffset-st: 3/3/2/4 [12]

KicOffset-st: 3/3/2/4 [12]

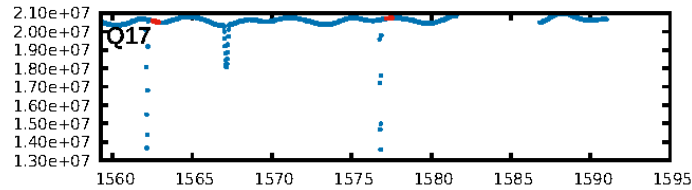
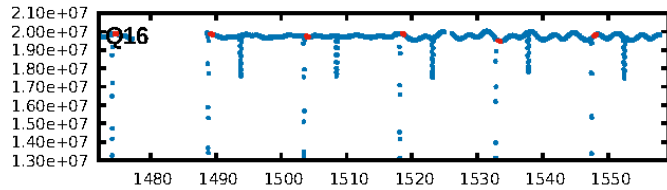
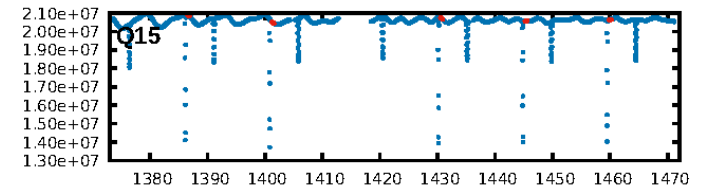
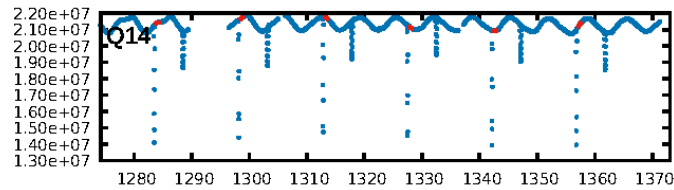
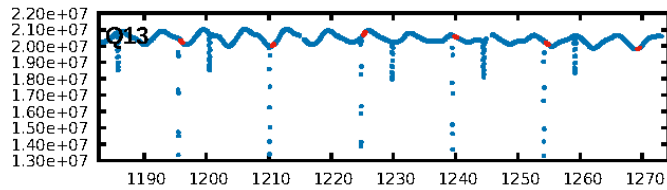
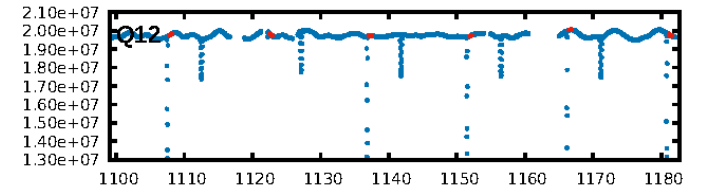
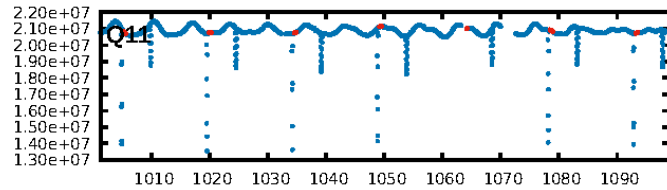
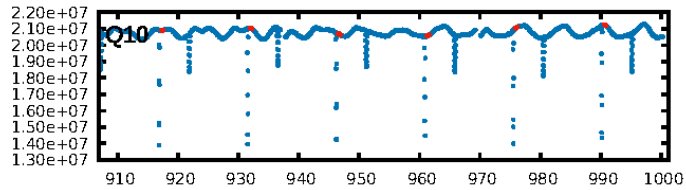
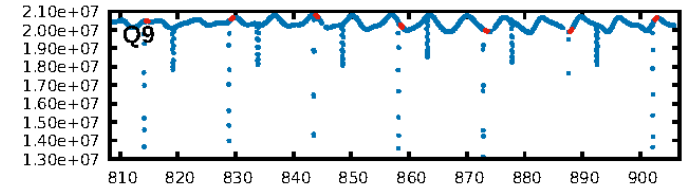
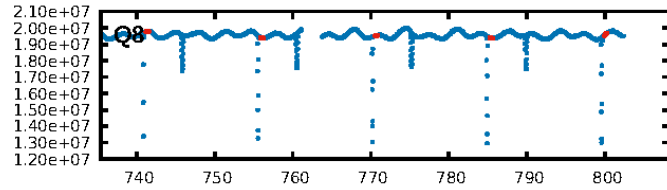
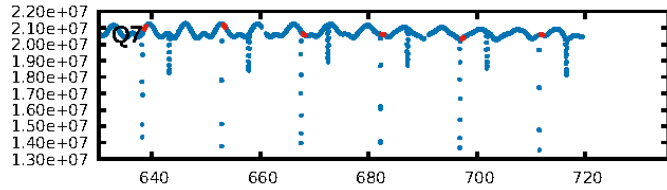
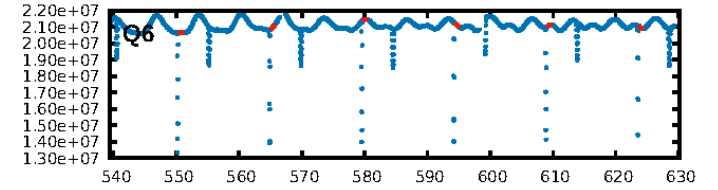
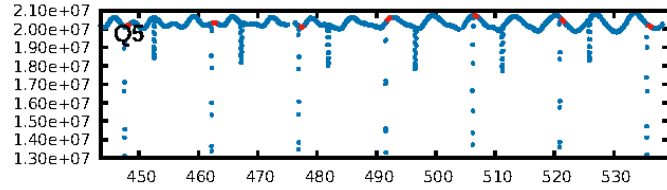
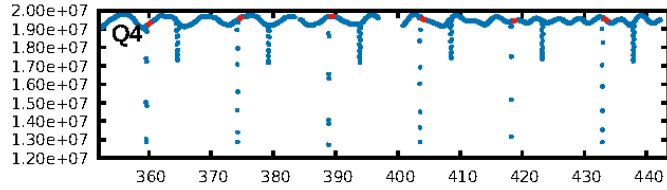
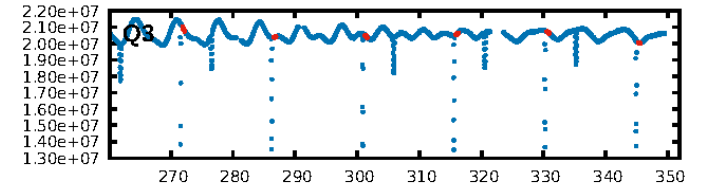
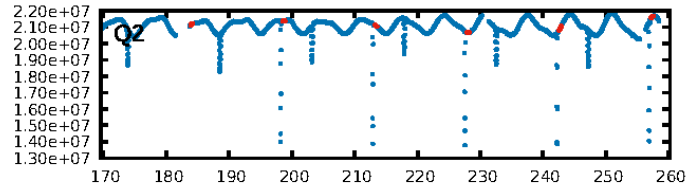
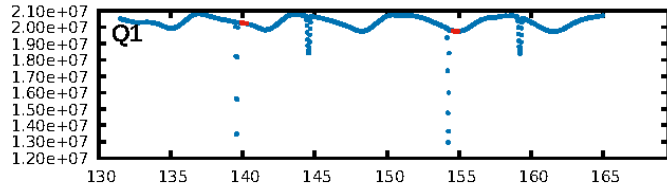
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DiffImageOverlap-fno: 0.76 [13/17]

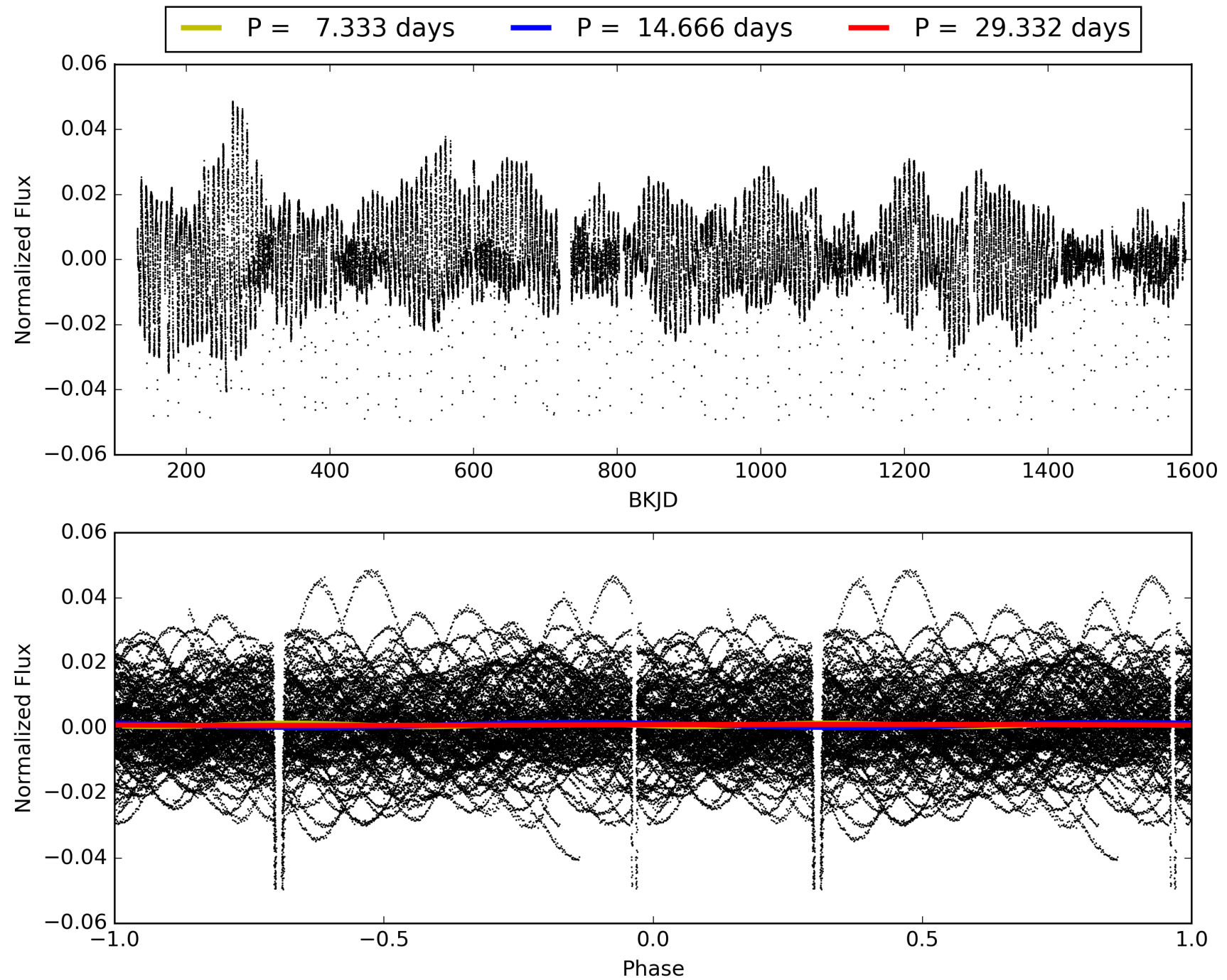
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:24:02 Z

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

# TCE 007200102-04, PDC Light Curves

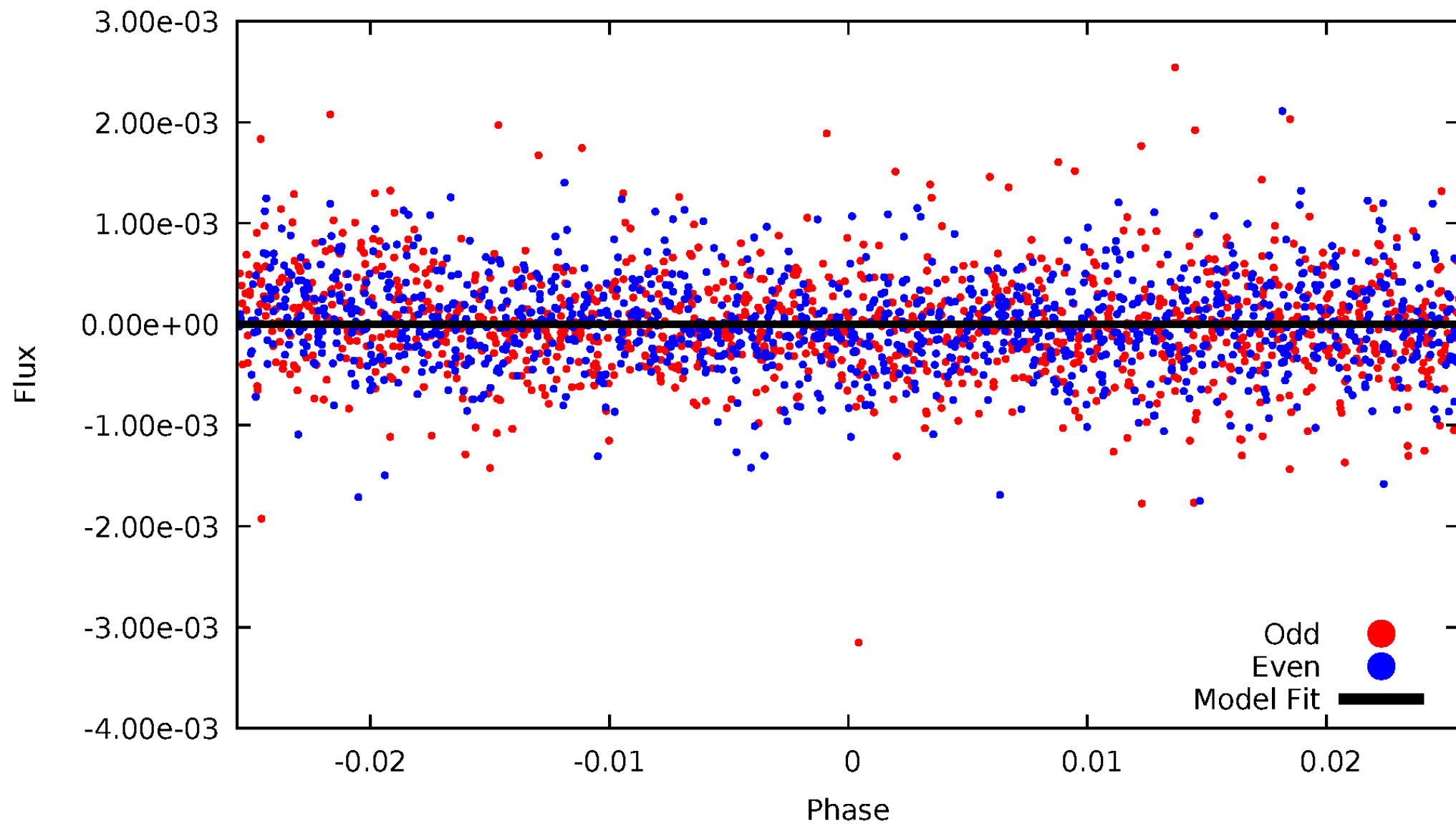


TCE 007200102-04



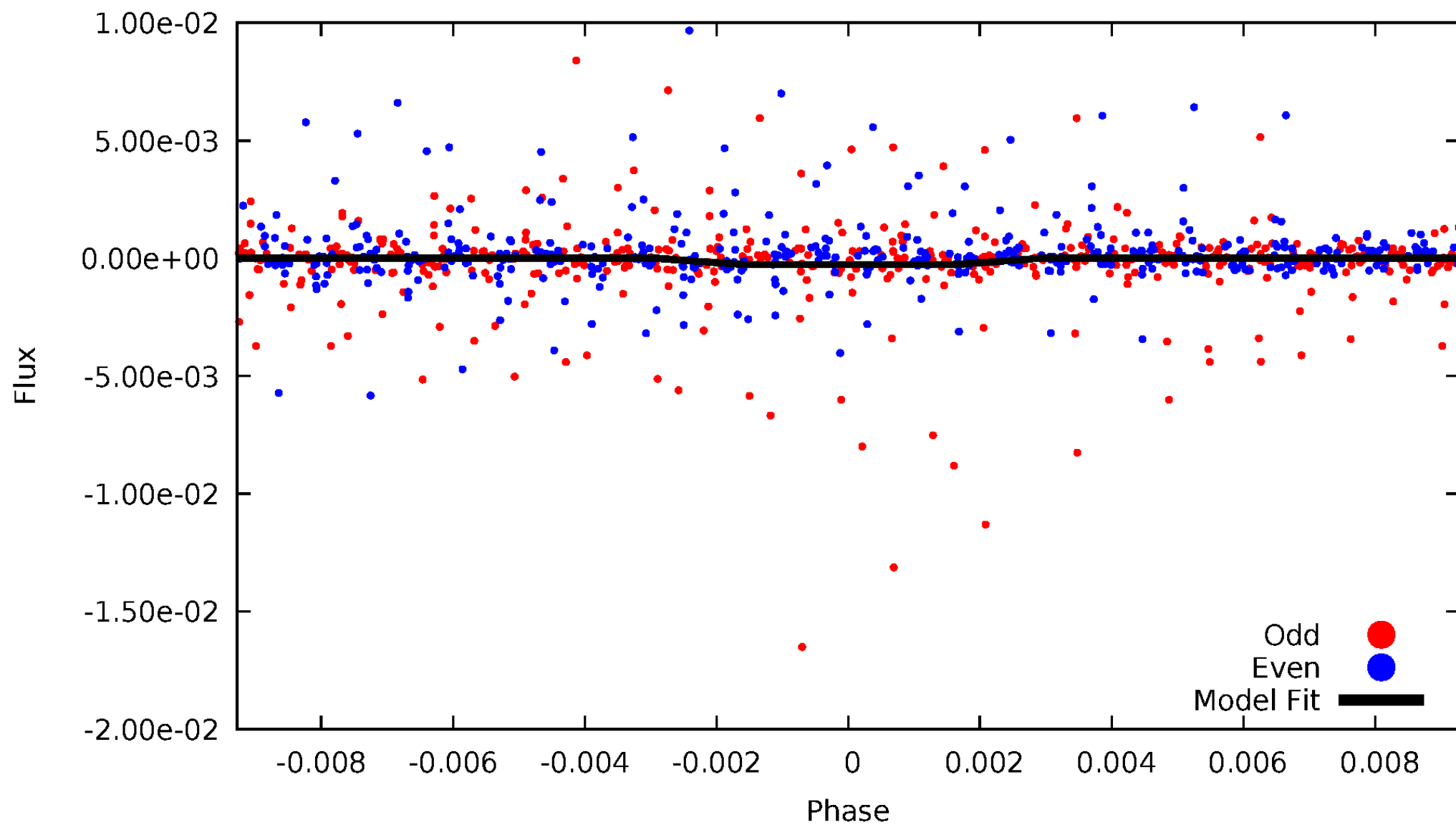
DV Odd/Even

TCE 007200102-04



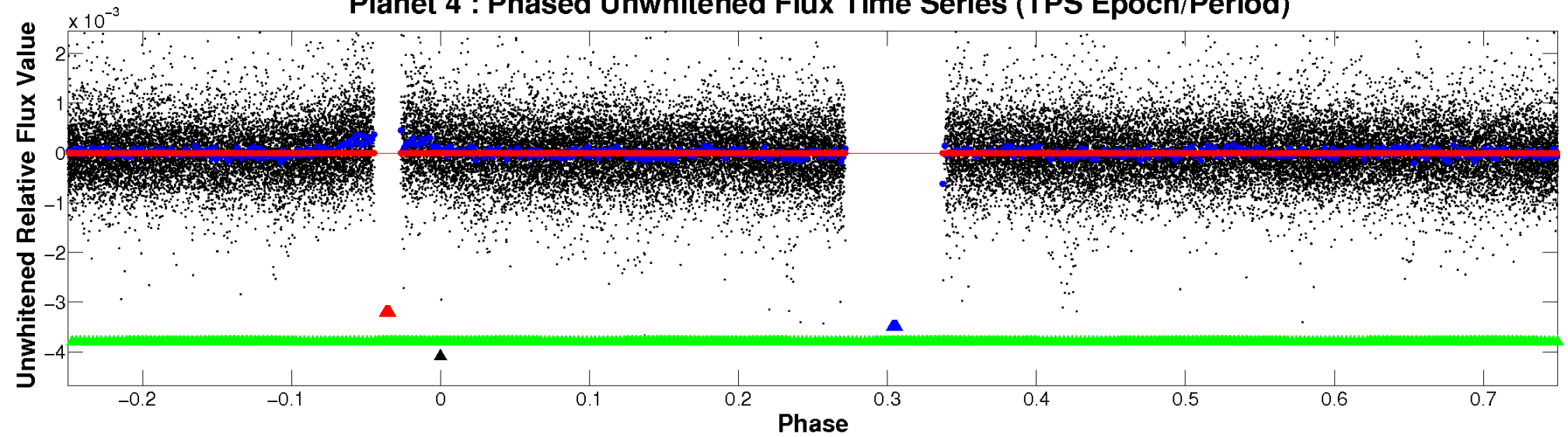
# ALT Odd/Even

TCE 007200102-04



# Non-Whitened Vs. Whitened Light Curve

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



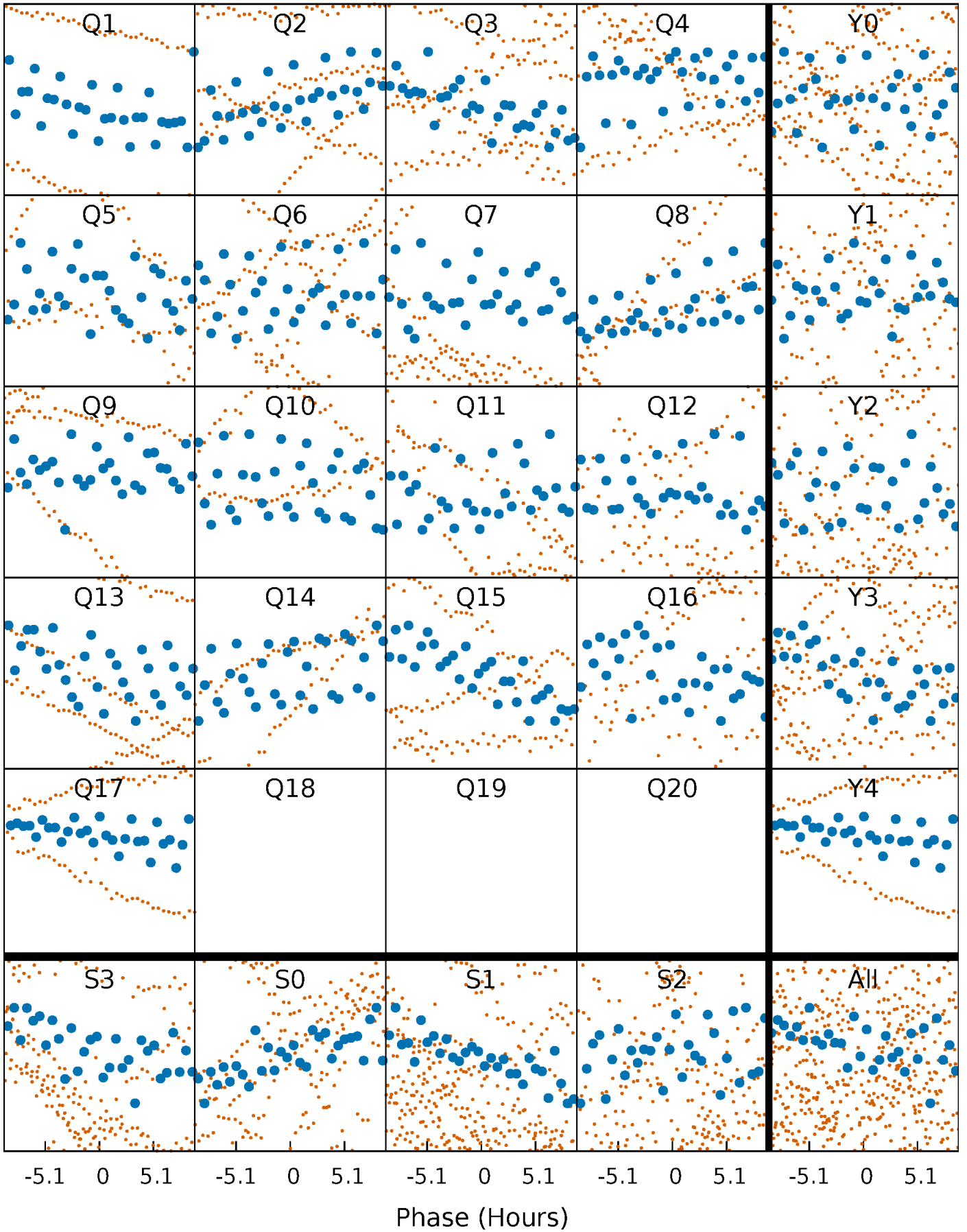
**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**





# PDC Quarter-Phased Transit Curves

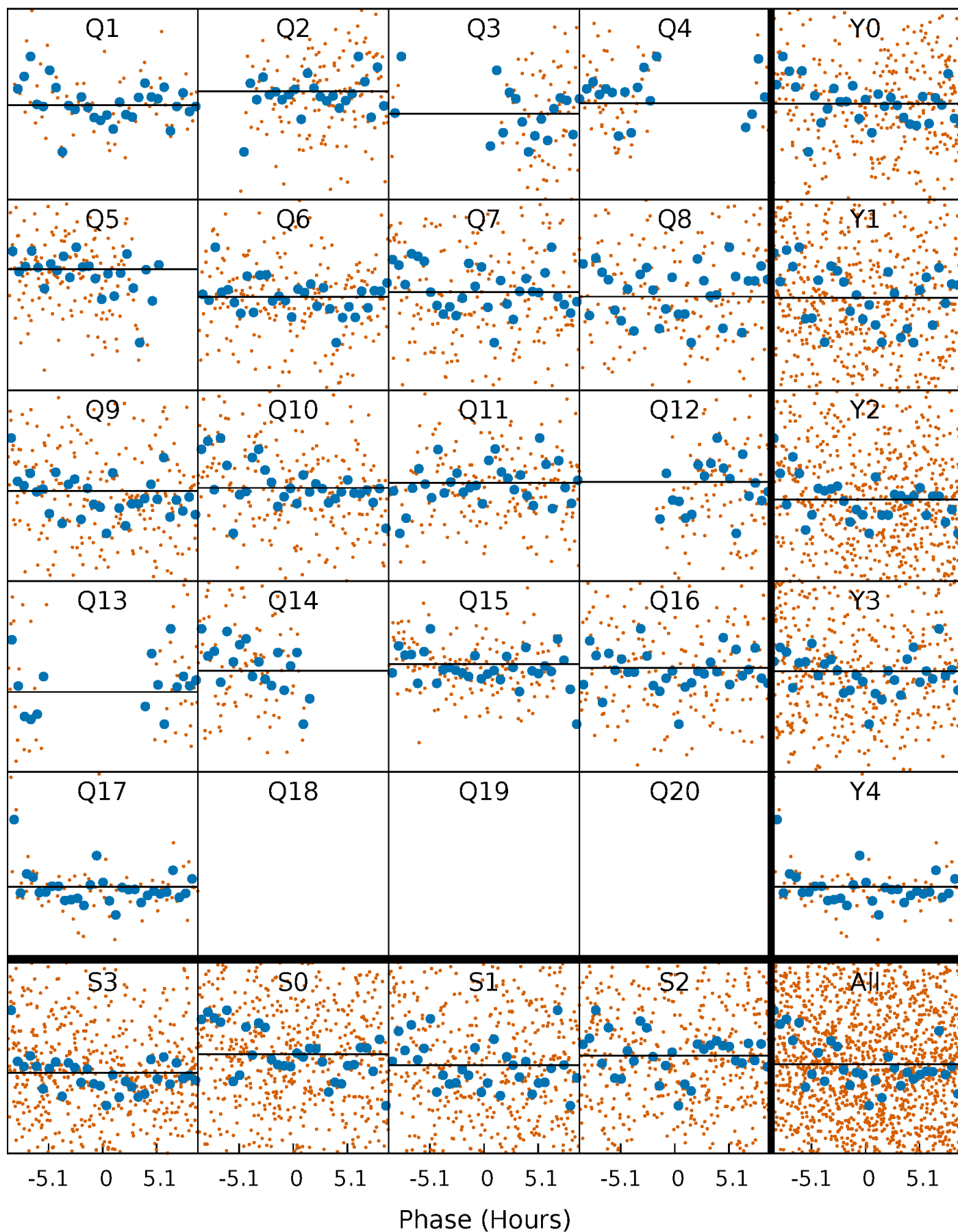
TCE 007200102-04 P= 14.666185 Days  $T_0=140.072655$  (BKJD)





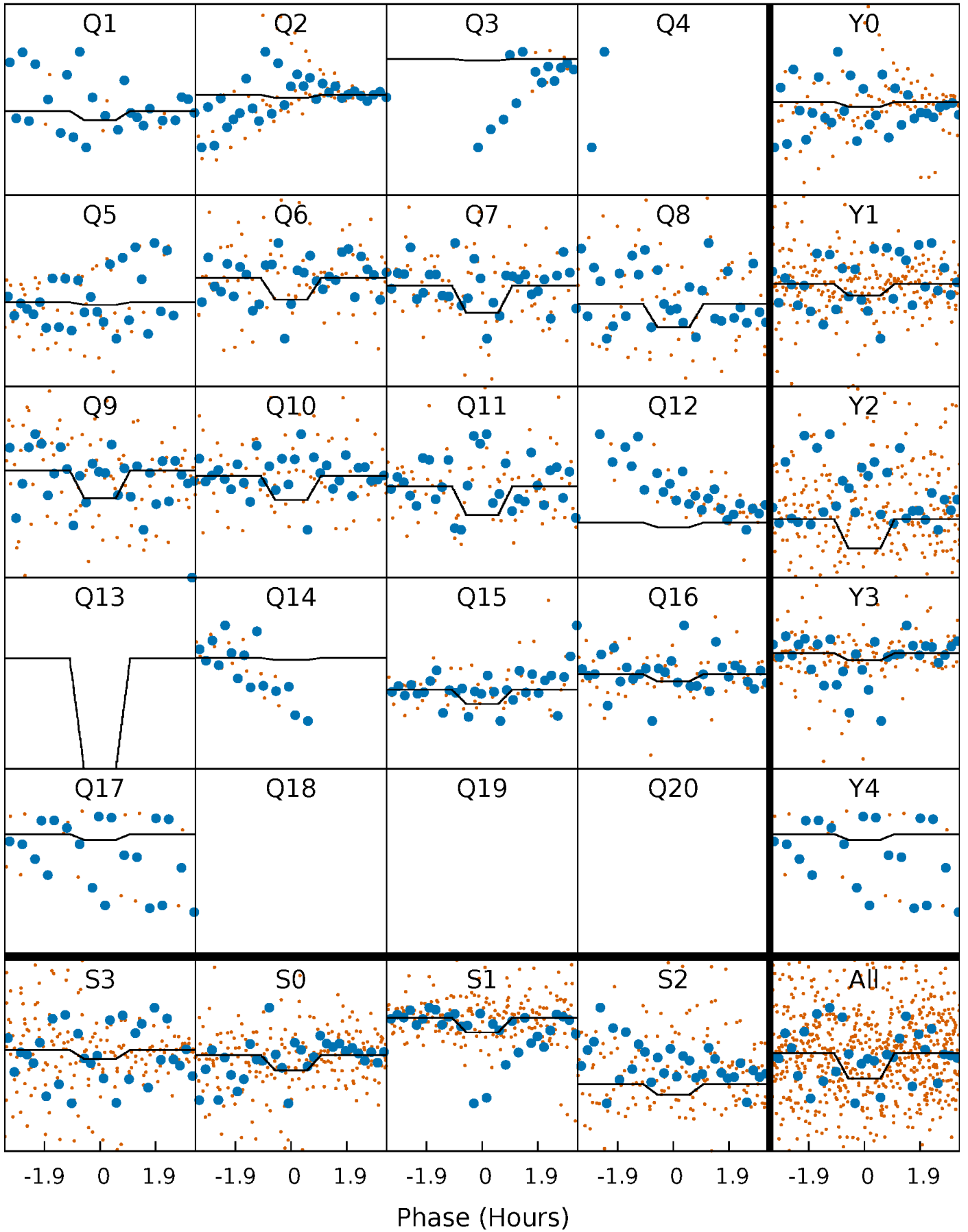
# DV Quarter-Phased Transit Curves

TCE 007200102-04 P= 14.666185 Days  $T_0=140.072655$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

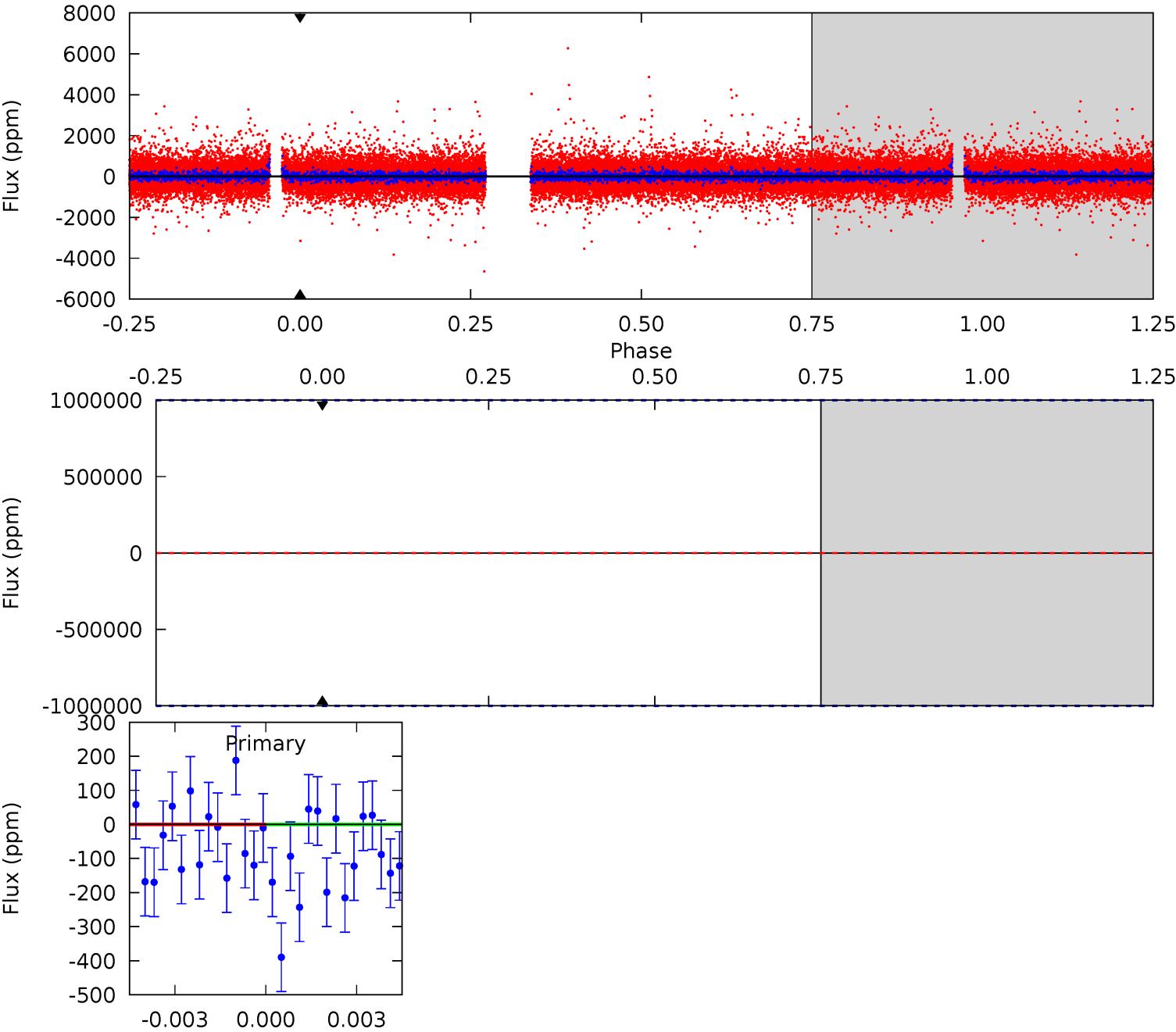
TCE 007200102-04 P= 14.666185 Days  $T_0=140.111029$  (BKJD)



# DV Model-Shift Uniqueness Test

007200102-04, P = 14.666185 Days, E = 125.406470 Days

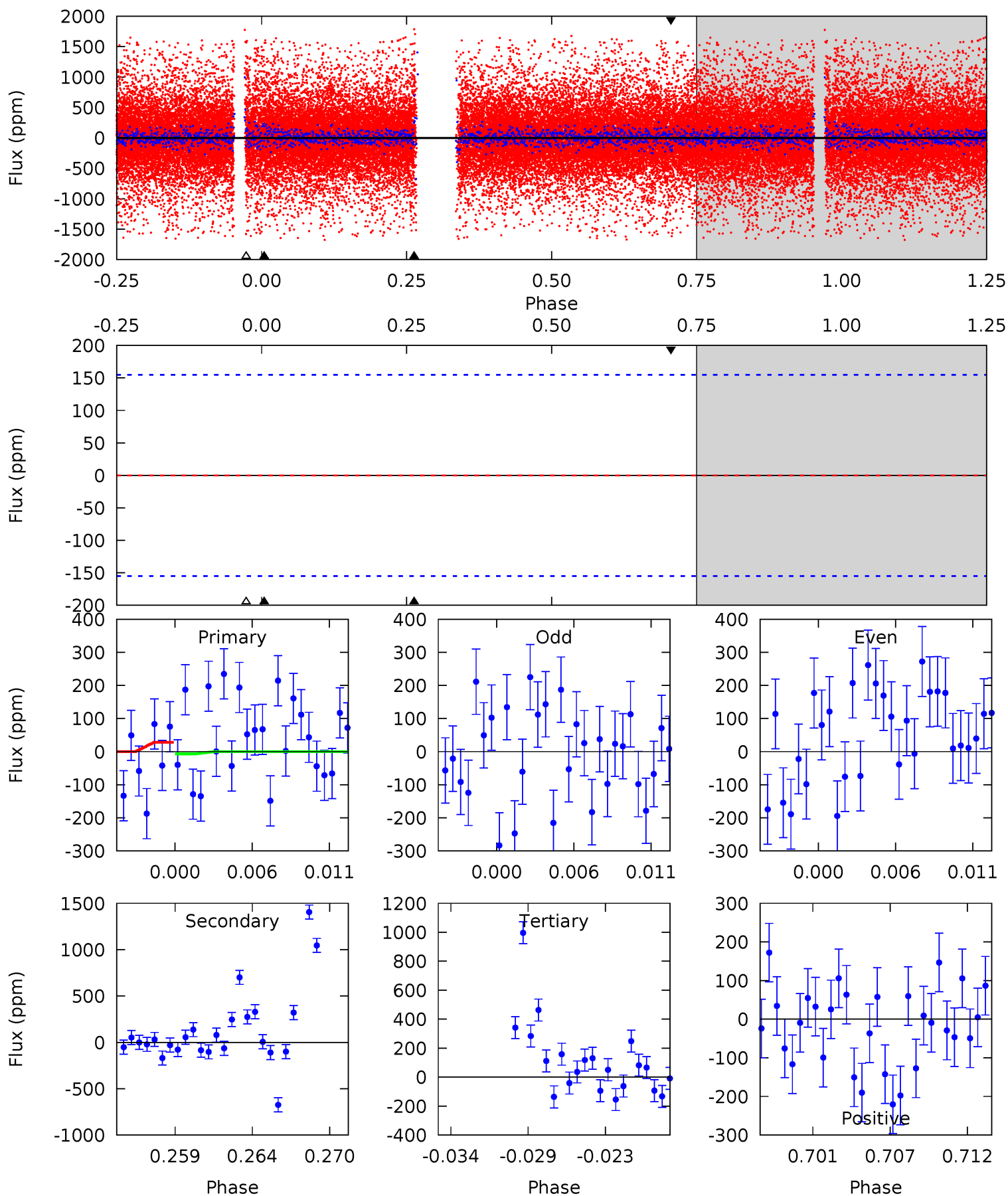
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007200102-04, P = 14.666185 Days, E = 125.444844 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	5.13	2.76	0.00	0	0	0	0	0.03	16.5	0.43	0.36



### Stellar Parameters For KIC 007200102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5385^{+160}_{-144}$	$4.369^{+0.162}_{-0.198}$	$0.080^{+0.250}_{-0.300}$	$1.002^{+0.294}_{-0.181}$	$0.855^{+0.108}_{-0.063}$	$1.200^{+0.904}_{-0.590}$
	+3%/-3%	+4%/-5%	+312%/-375%	+29%/-18%	+13%/-7%	+75%/-49%
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 007200102-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$11.35^{+9.23}_{-7.43}$	$1001^{+79}_{-61}$	$3801^{+10386}_{-14958}$	$98^{+10723}_{-6582}$
Alt.	$-0 \pm 30$	$8.22^{+9.11}_{-5.87}$	$1002^{+81}_{-61}$	$-1861^{+4302}_{-714}$	$0.003^{+4.510}_{-6.041}$

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

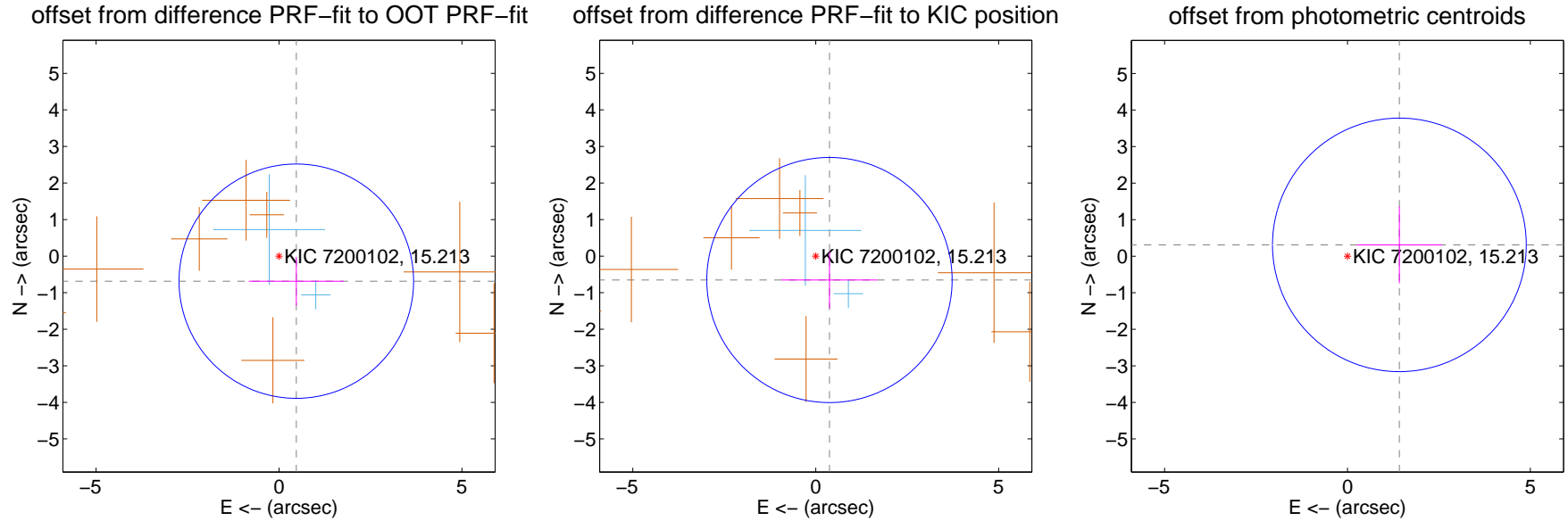
## DV Centroid Data

Supplemental centroid analysis for 007200102-04. Kepler magnitude: 15.21. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

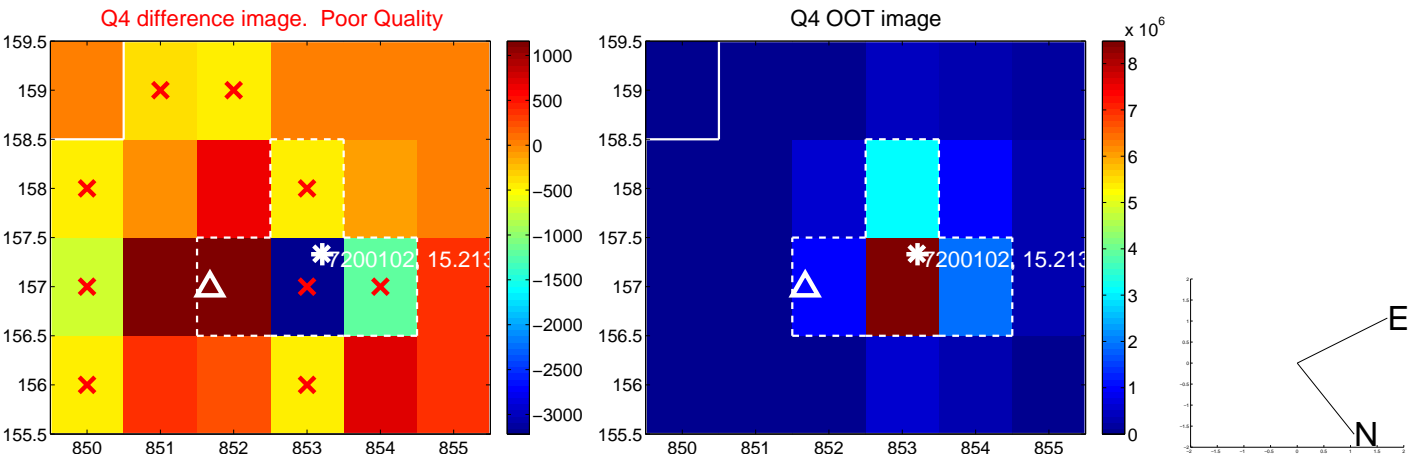
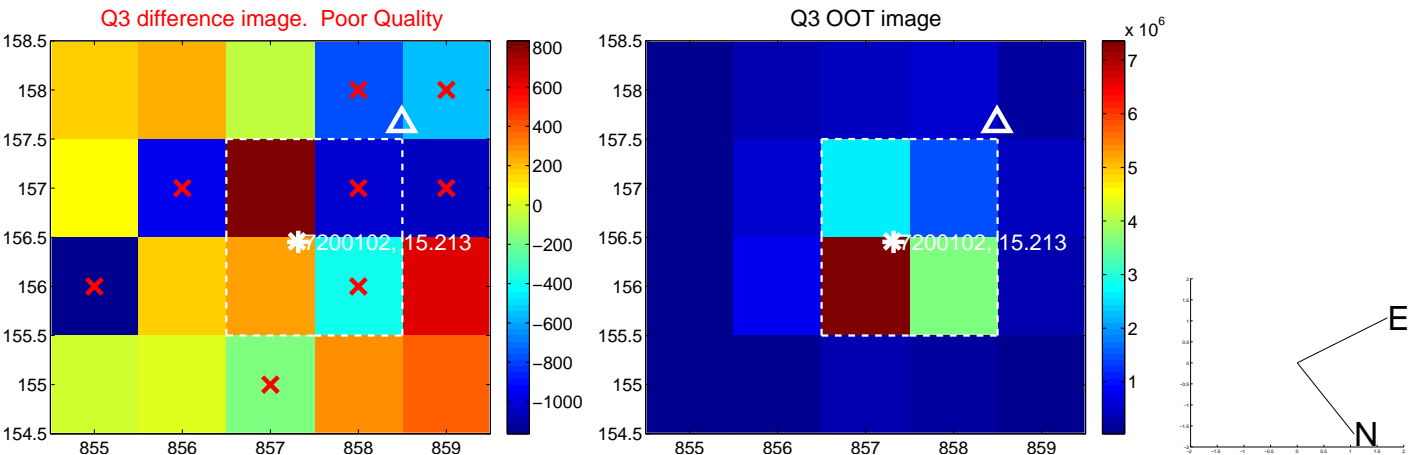
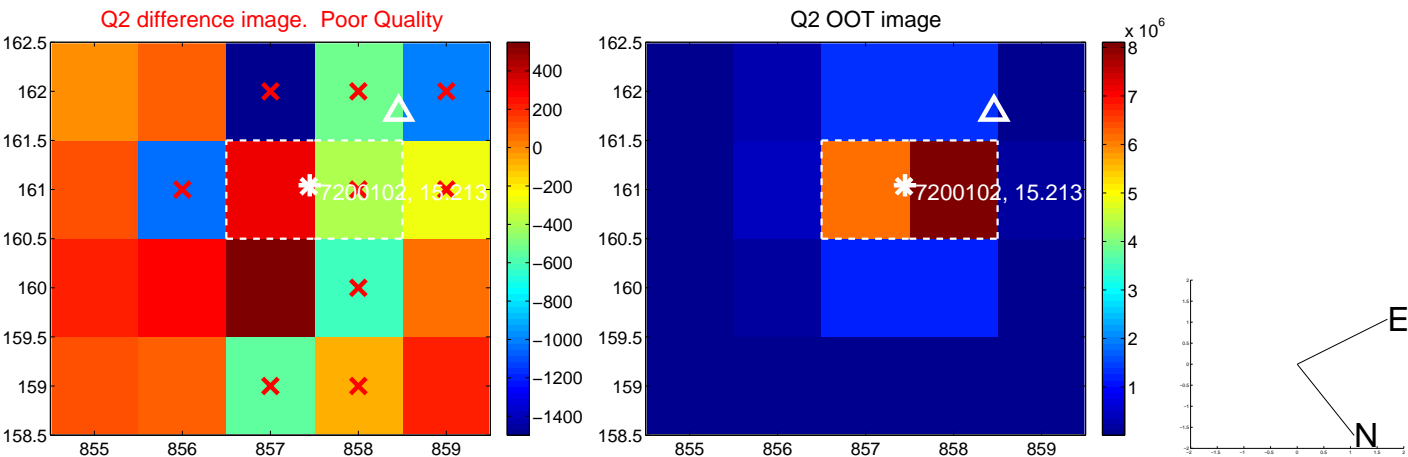
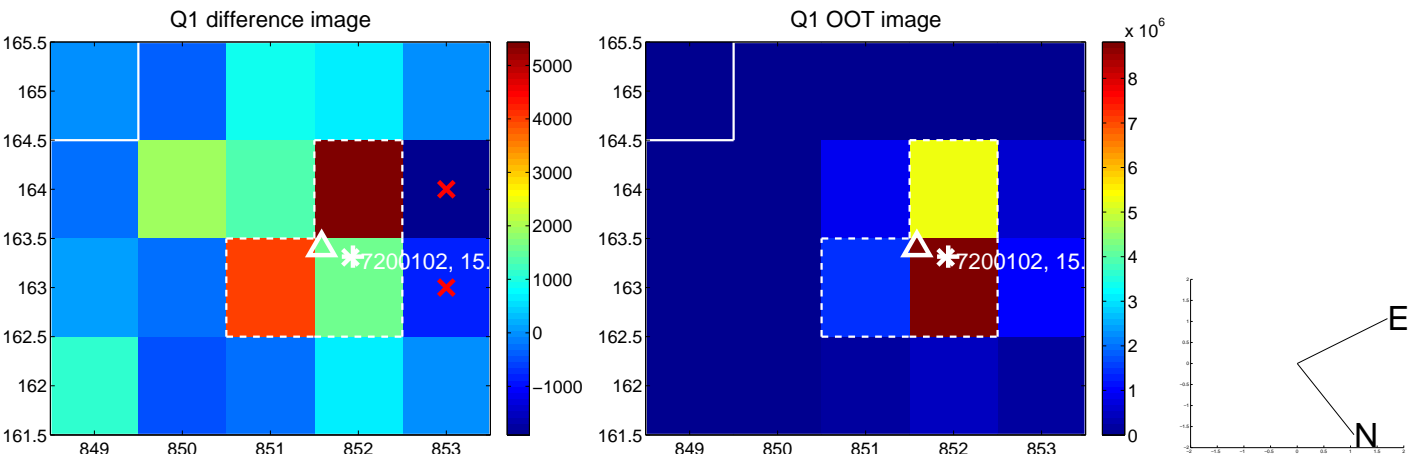
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.833 \pm 1.068$	0.78	$-0.474 \pm 1.296$	$-0.685 \pm 0.663$
PRF-fit source offset from KIC position	$0.754 \pm 1.117$	0.67	$-0.375 \pm 1.315$	$-0.653 \pm 0.773$
photometric centroid source offset	$1.45 \pm 1.16$	1.26	$-1.42 \pm 1.16$	$0.31 \pm 1.05$

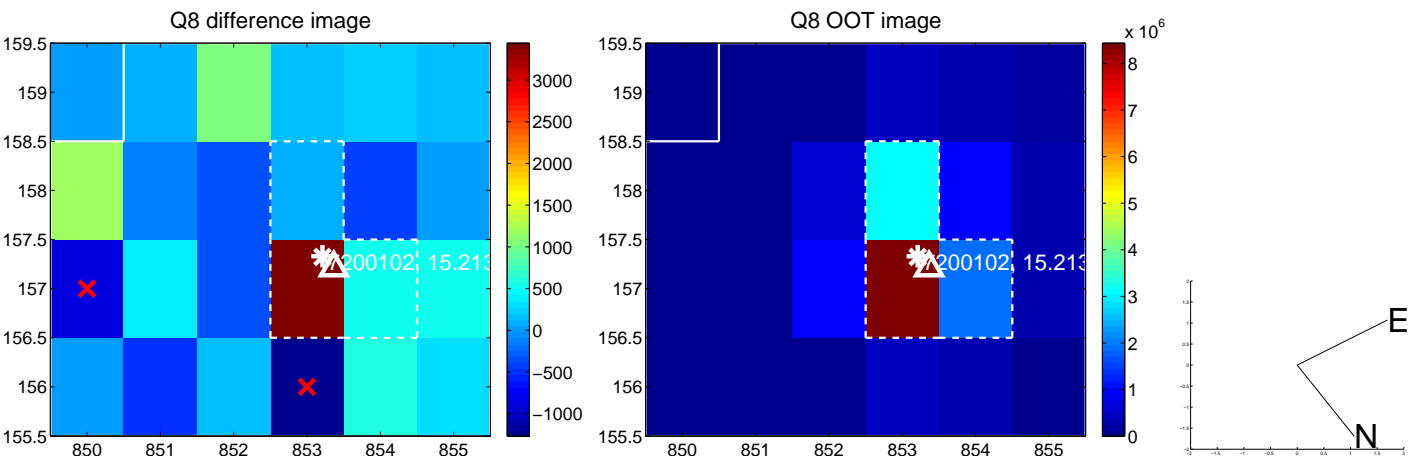
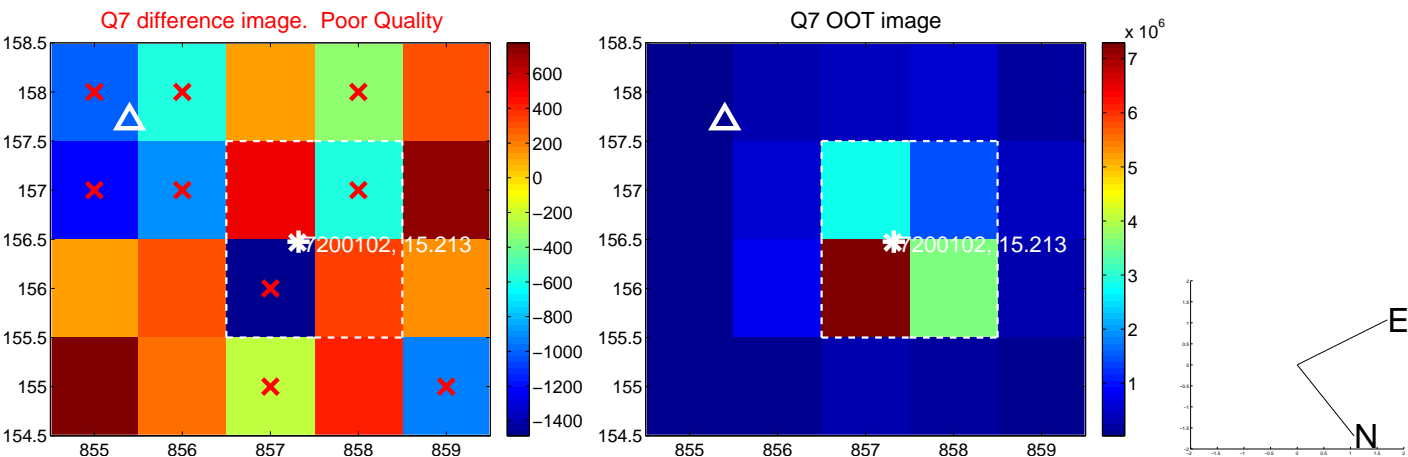
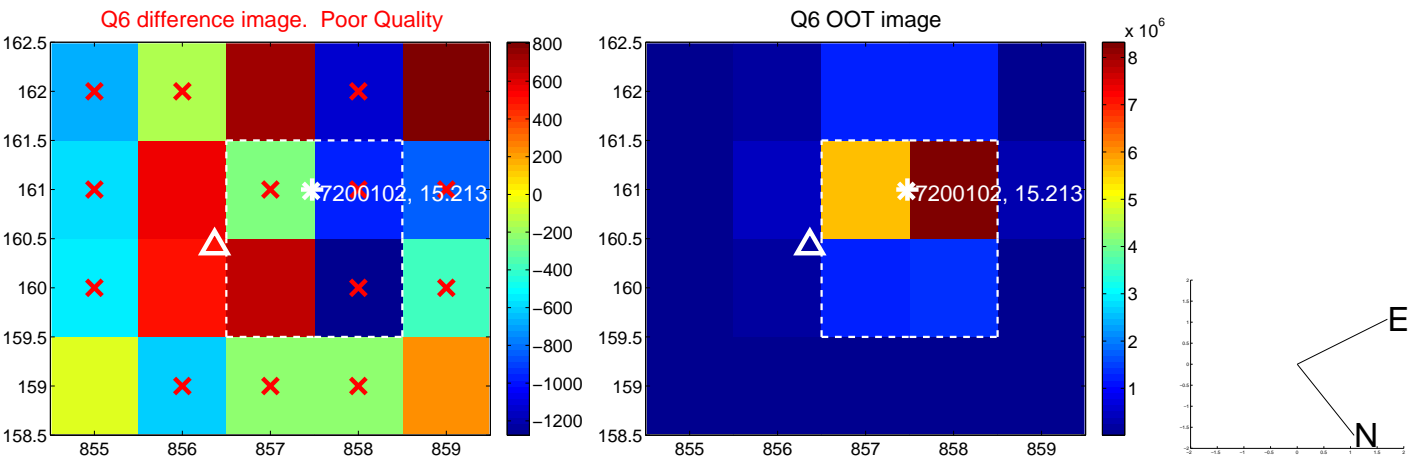
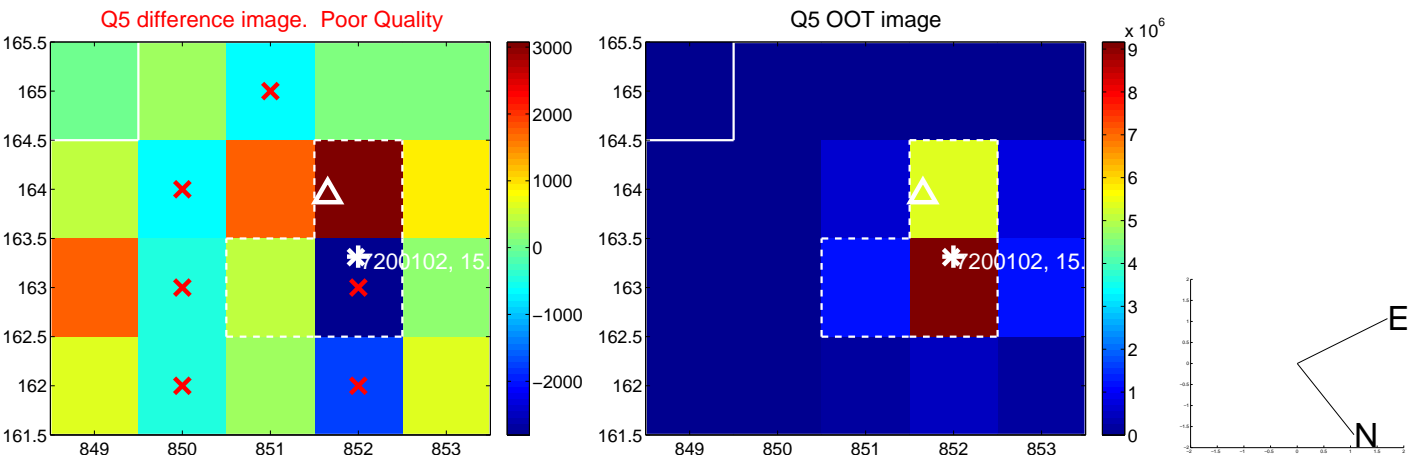


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

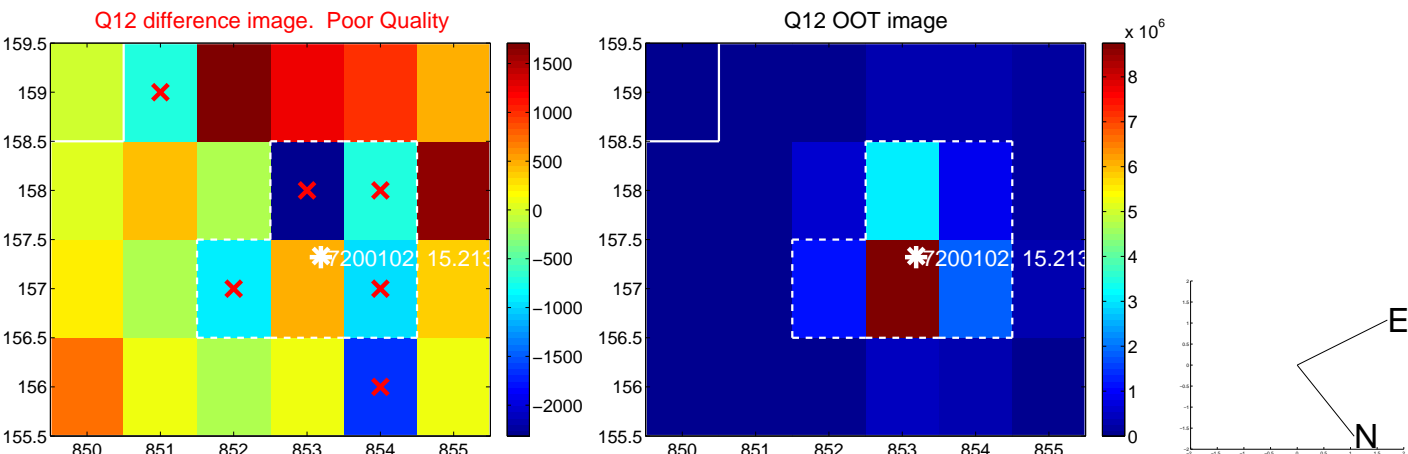
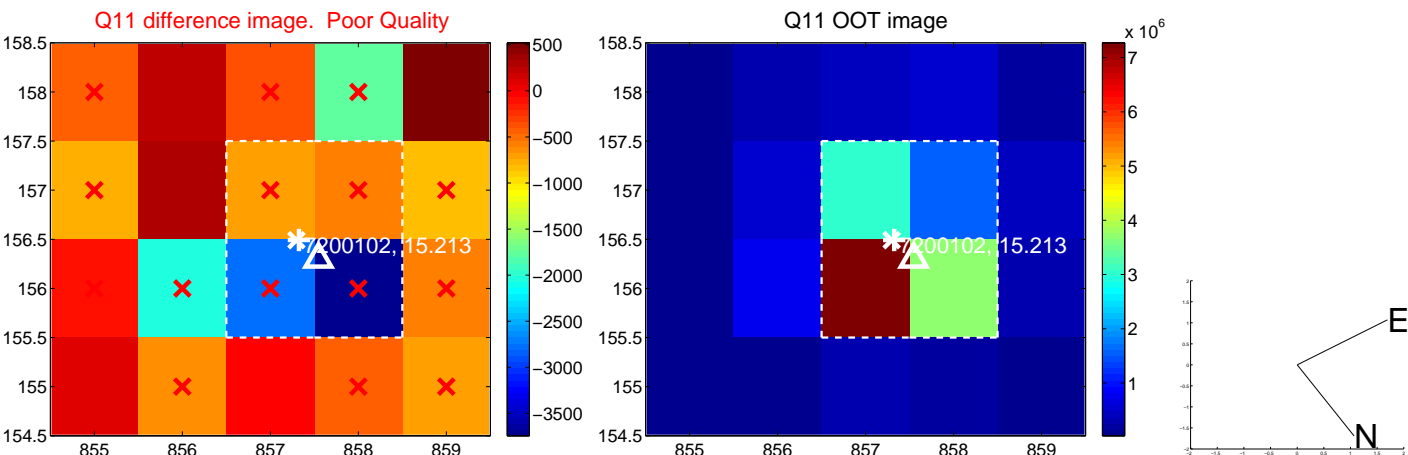
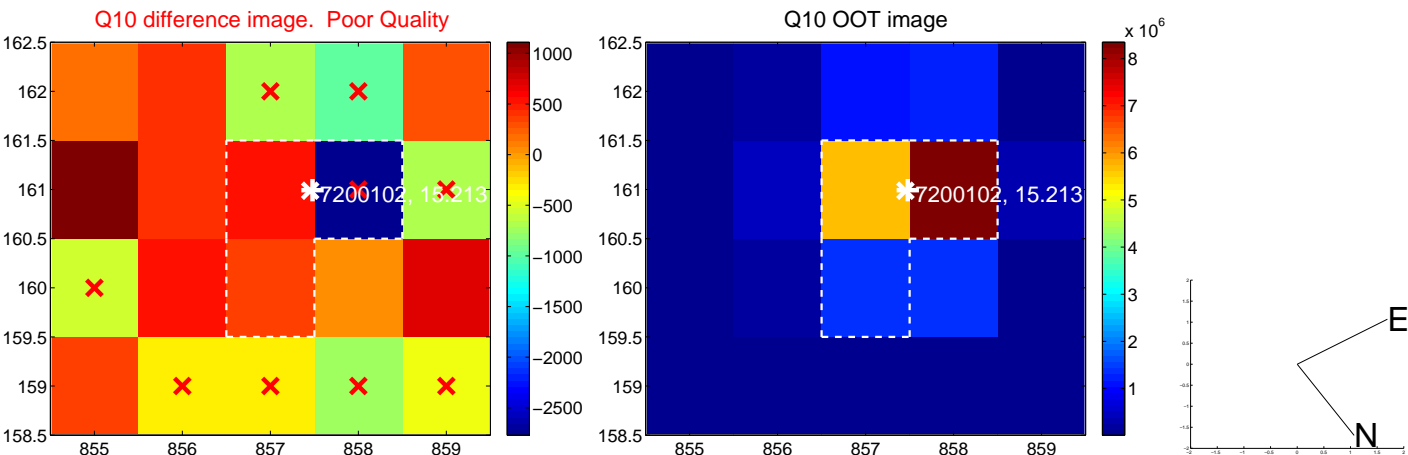
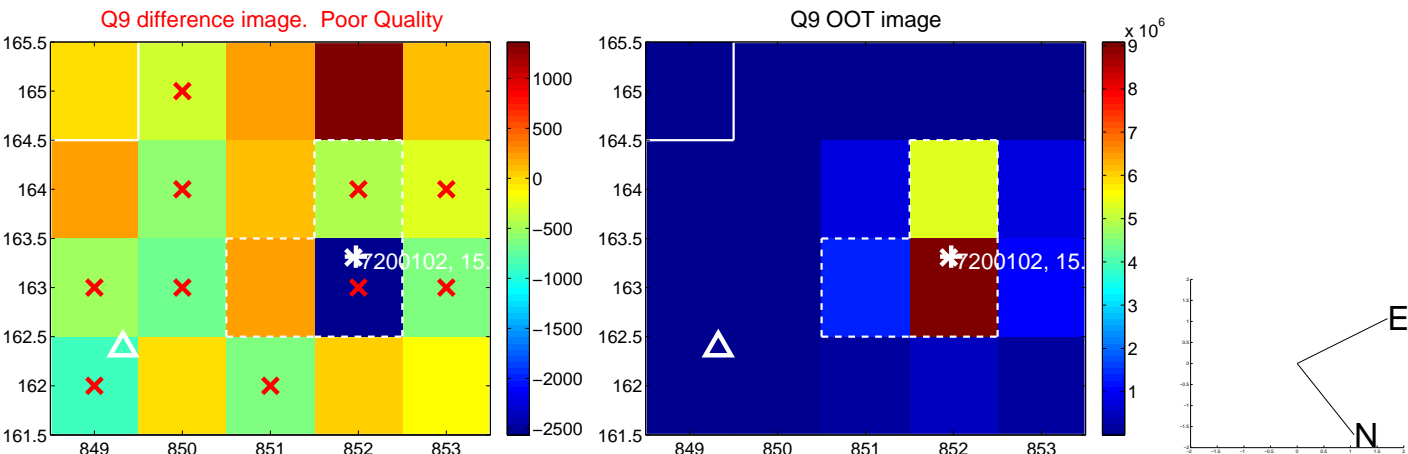


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

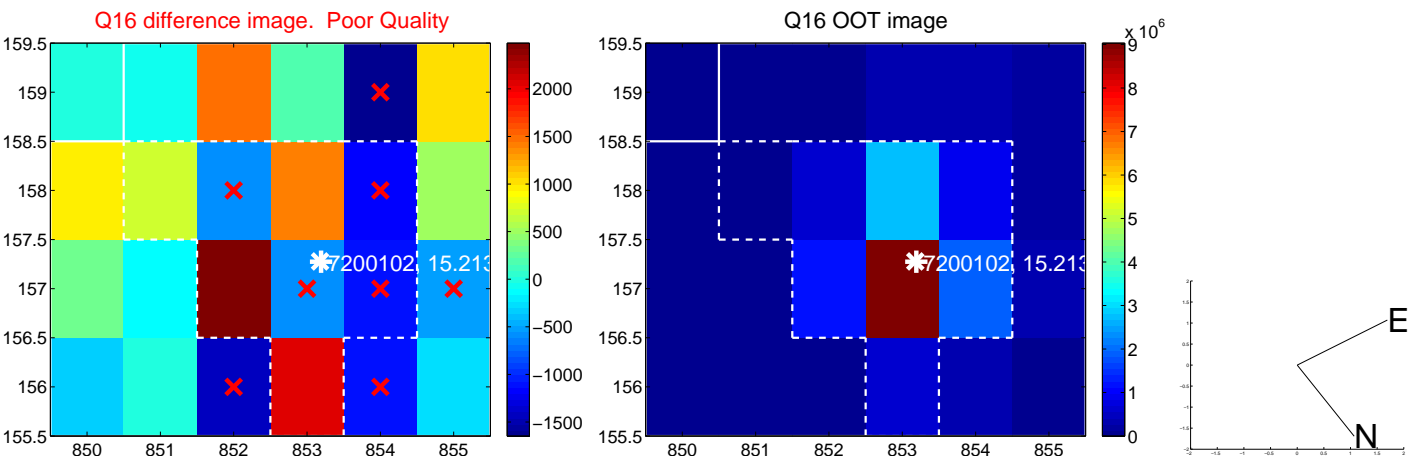
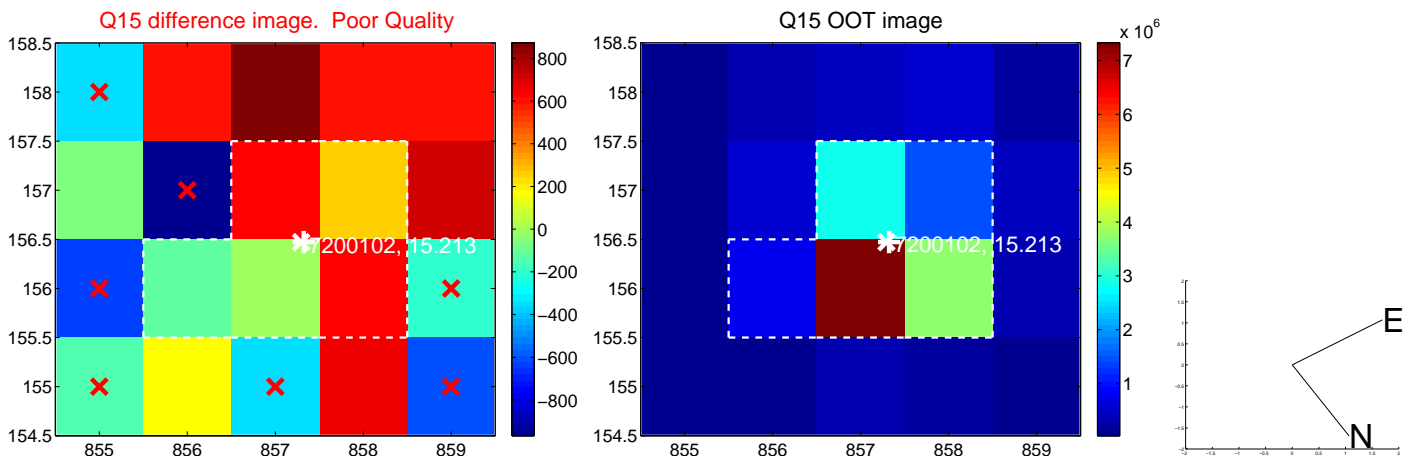
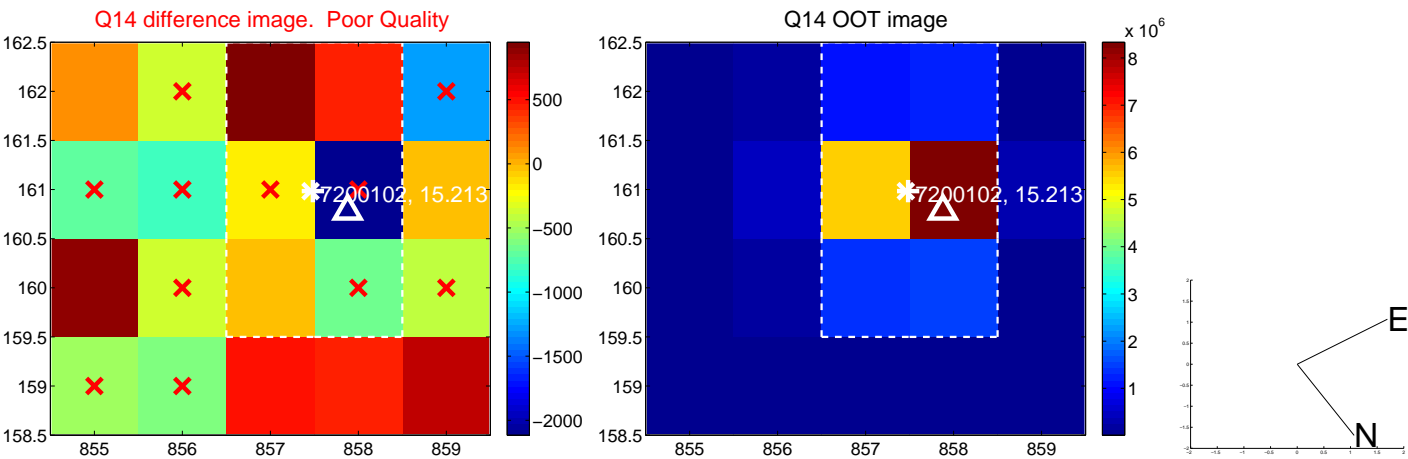
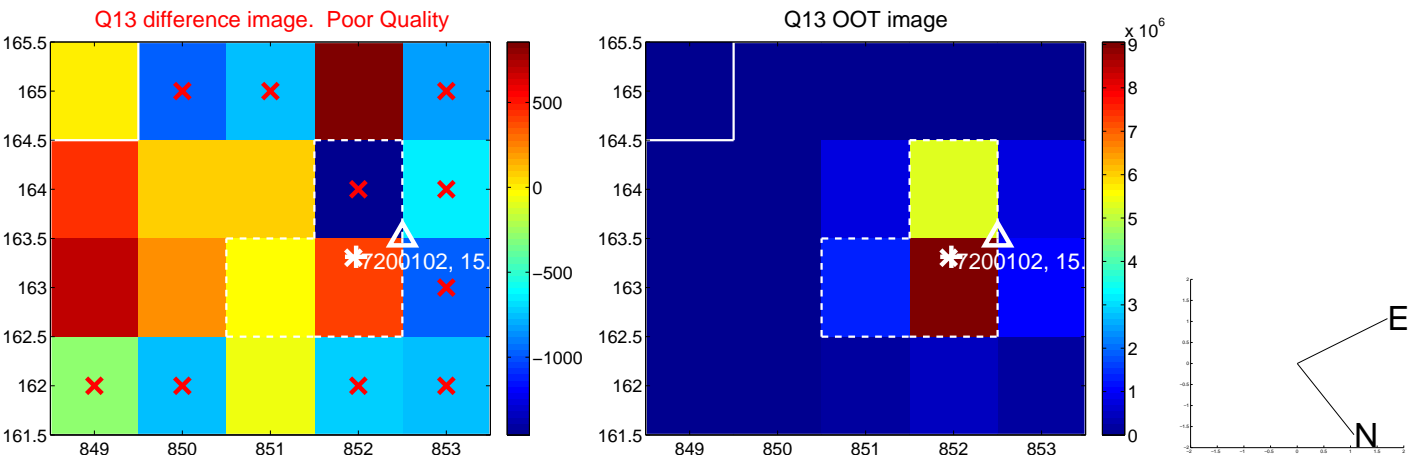




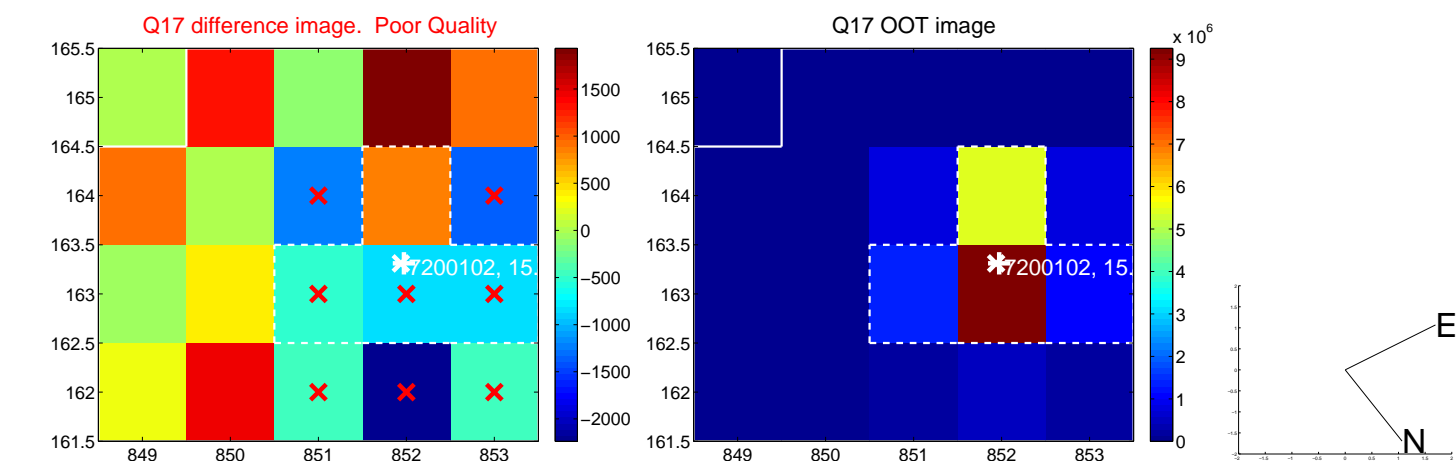
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



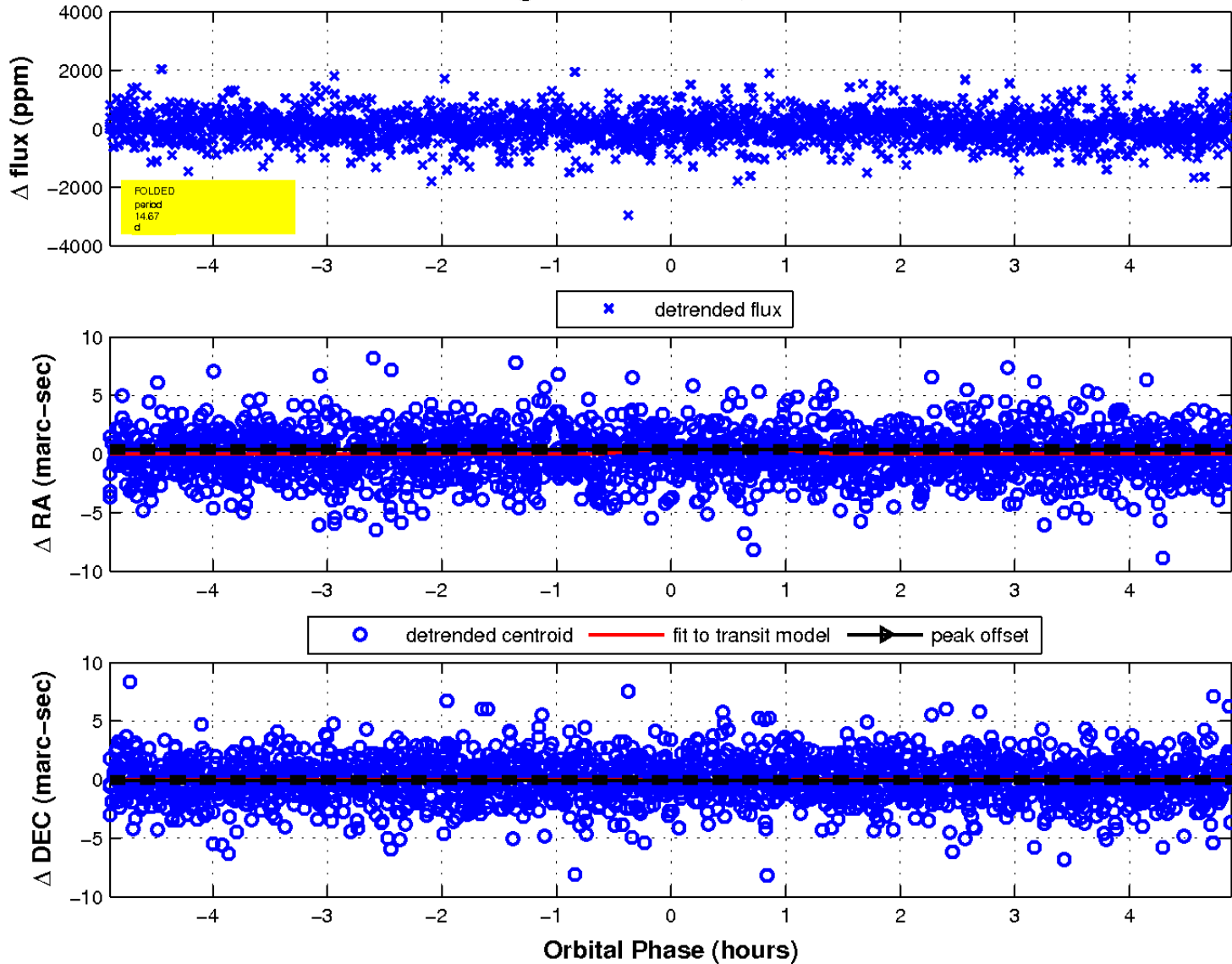
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

