

# KIC 010916600

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010916600-01	OBS	2623.01	5.576460	136.437314	52.6	3.848	12.9	12.6	1.24	6187	1.03	463.61
010916600-02	OBS	2623.02	4.026681	134.386606	32.1	3.832	8.2	8.7	1.24	6187	0.79	715.65
010916600-03	OBS	No	265.999086	294.315842	217.6	3.309	8.9	5.6	1.24	6187	1.97	2.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010916600-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

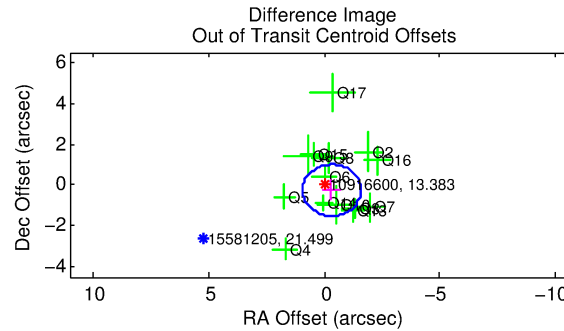
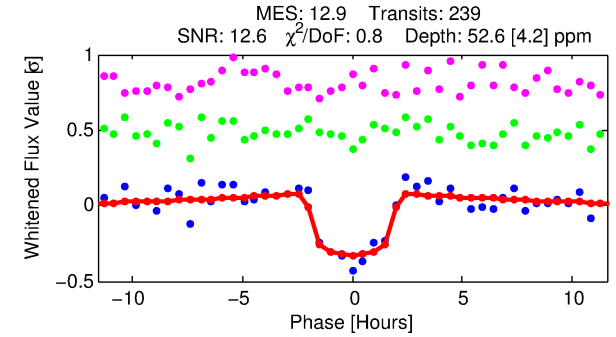
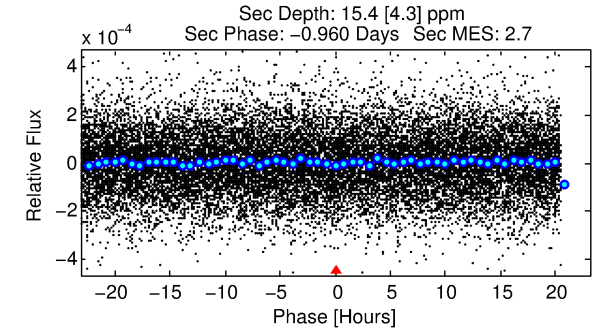
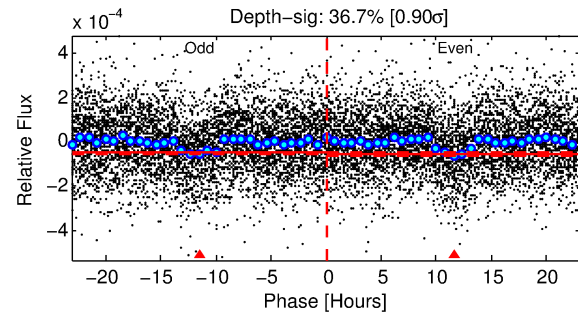
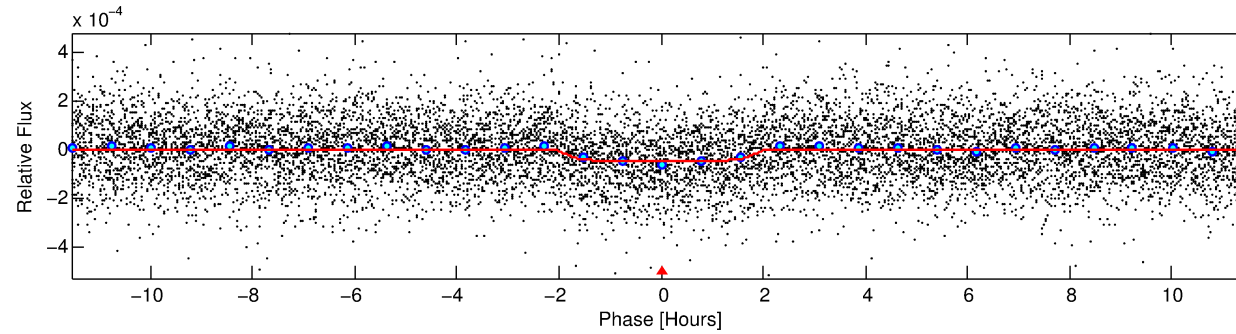
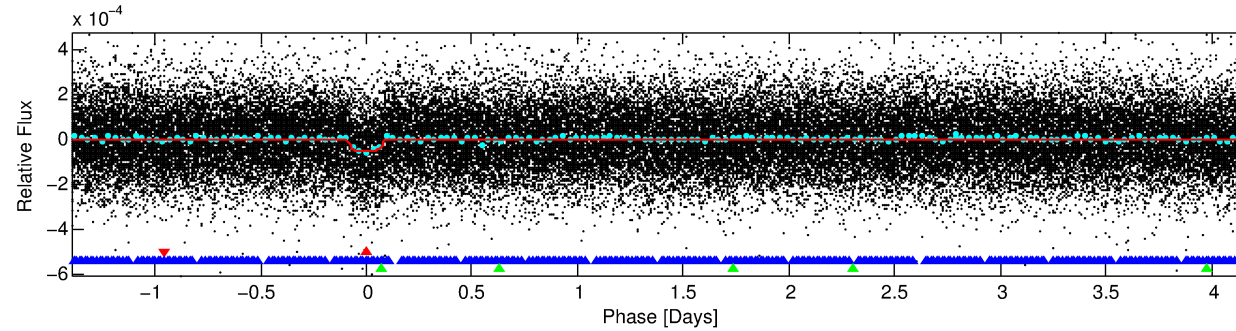
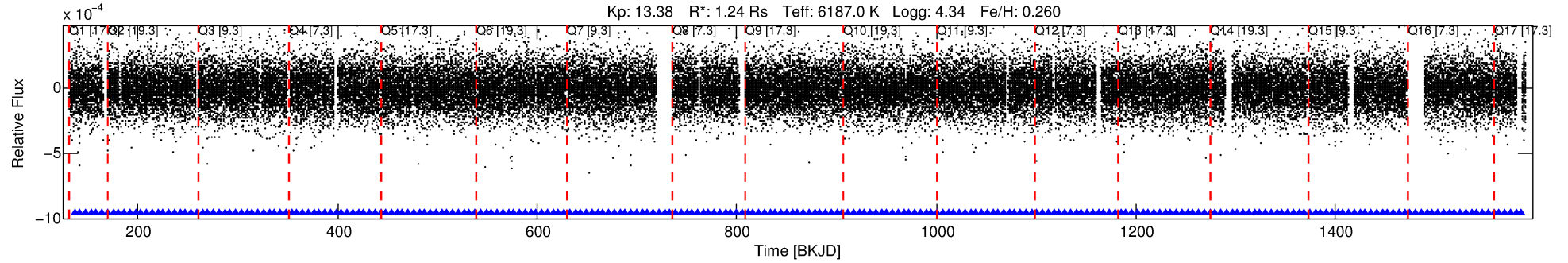
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010916600-01

No Significant Match Found

# DV One-Page Summary

KIC: 10916600 Candidate: 1 of 3 Period: 5.576 d  
KOI: K02623.01 Corr: 0.962



## DV Fit Results:

Period = 5.57646 [0.00003] d  
Epoch = 136.4373 [0.0043] BKJD  
Rp/R\* = 0.0076 [0.0027]  
a/R\* = 5.85 [10.24]  
b = 0.86 [0.55]  
Seff = 463.61 [126.71]  
Teq = 1183 [81] K  
Rp = 1.03 [0.43] Re  
a = 0.0659 [0.0118] AU  
Ag = 34.73 [28.29] [1.19 $\sigma$ ]  
Teffp = 4441 [856] K [3.79 $\sigma$ ]

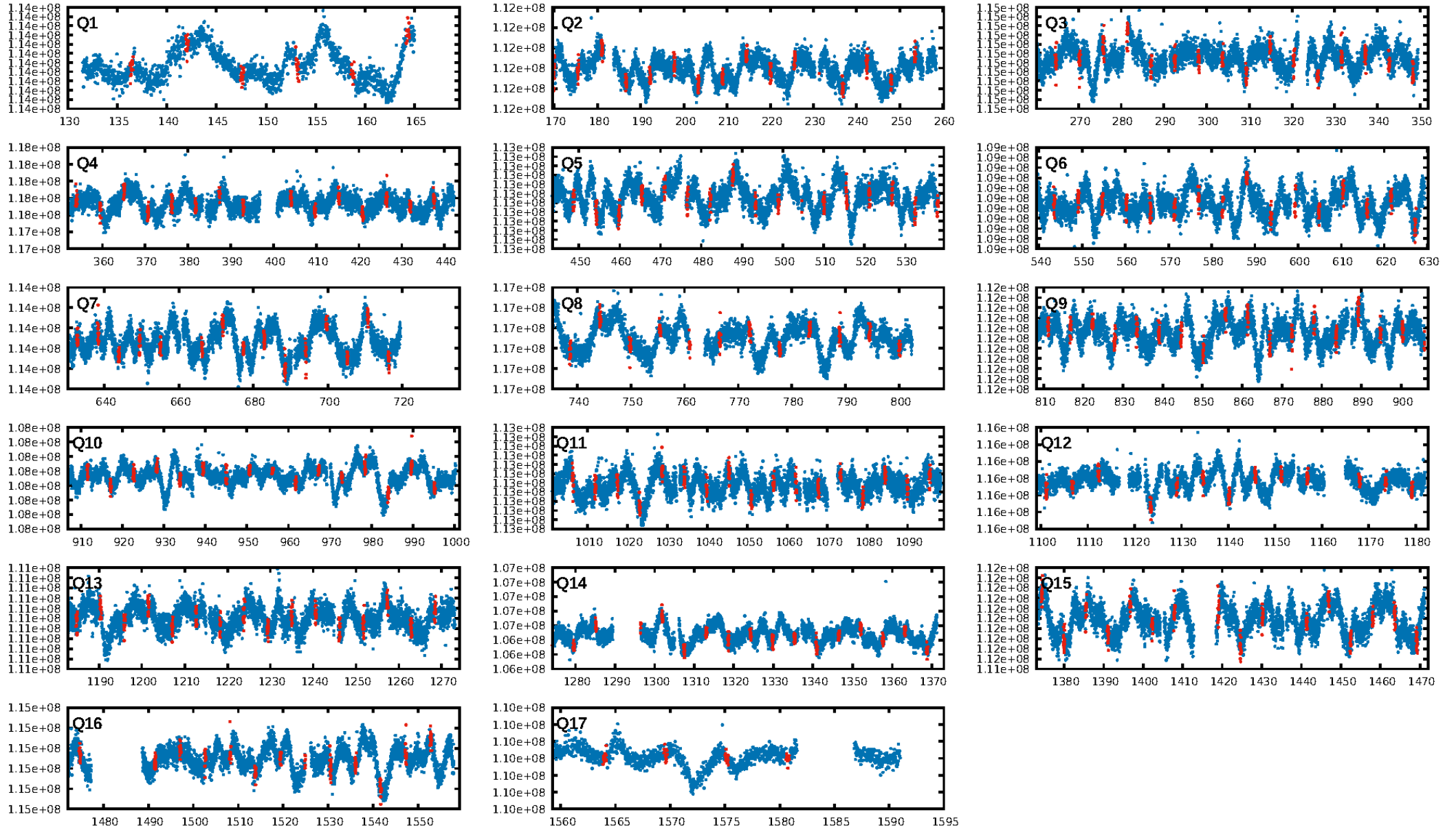
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.85 $\sigma$ ]  
LongPeriod-sig: 100.0% [1231.53 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.29e-37  
RollingBand-fgt: 1.00 [229/229]  
GhostDiagnostic-chr: 2.851  
Centroid-sig: 0.2%  
Centroid-so: 1.730 arcsec [2.31 $\sigma$ ]  
OotOffset-rm: 0.409 arcsec [0.97 $\sigma$ ]  
KicOffset-rm: 0.570 arcsec [1.42 $\sigma$ ]  
OotOffset-st: 4/3/3/4 [14]  
KicOffset-st: 4/3/3/4 [14]  
DiffImageQuality-fgm: 0.79 [11/14]  
DiffImageOverlap-fno: 1.00 [17/17]

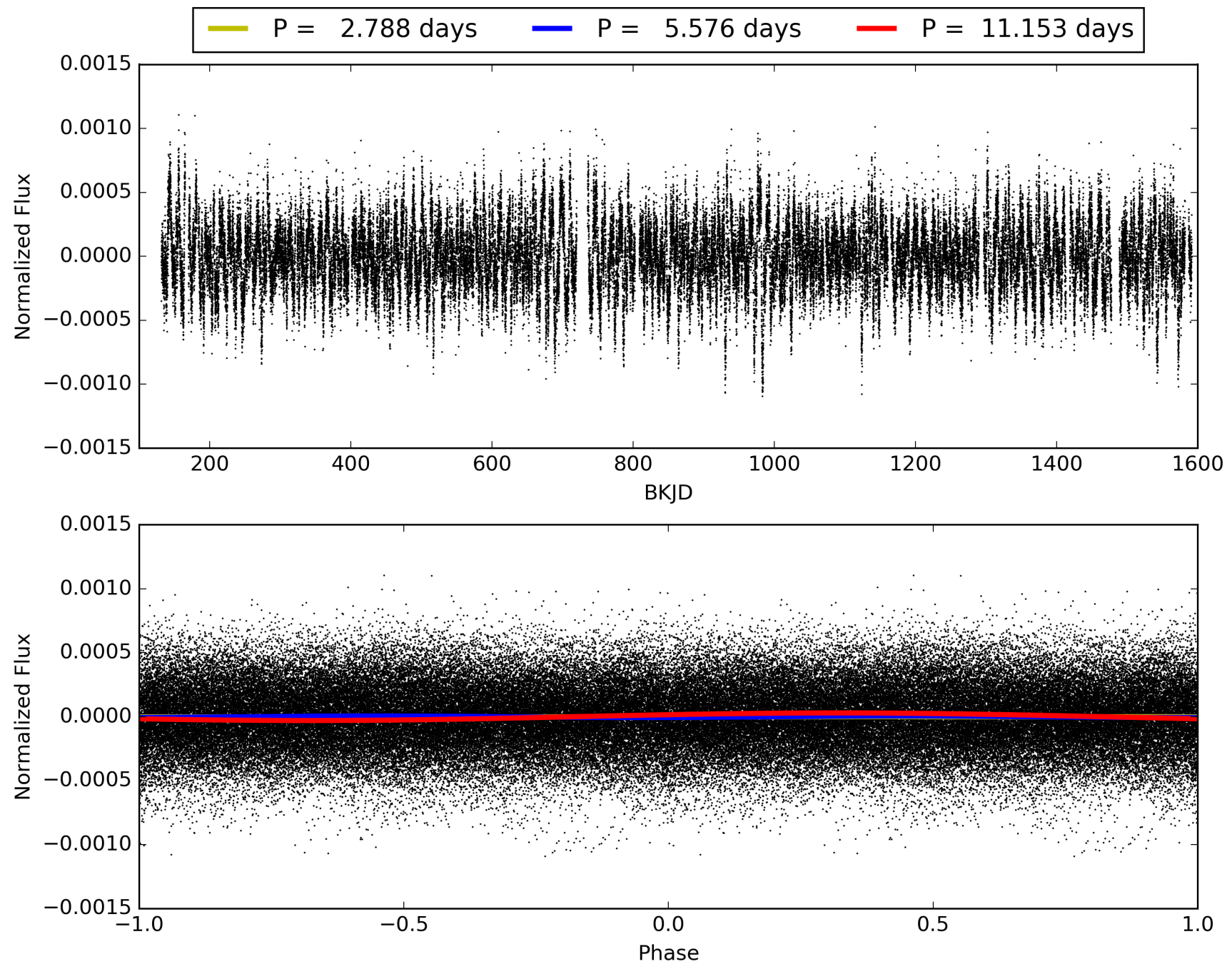
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:02:14 Z

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

# TCE 010916600-01, PDC Light Curves



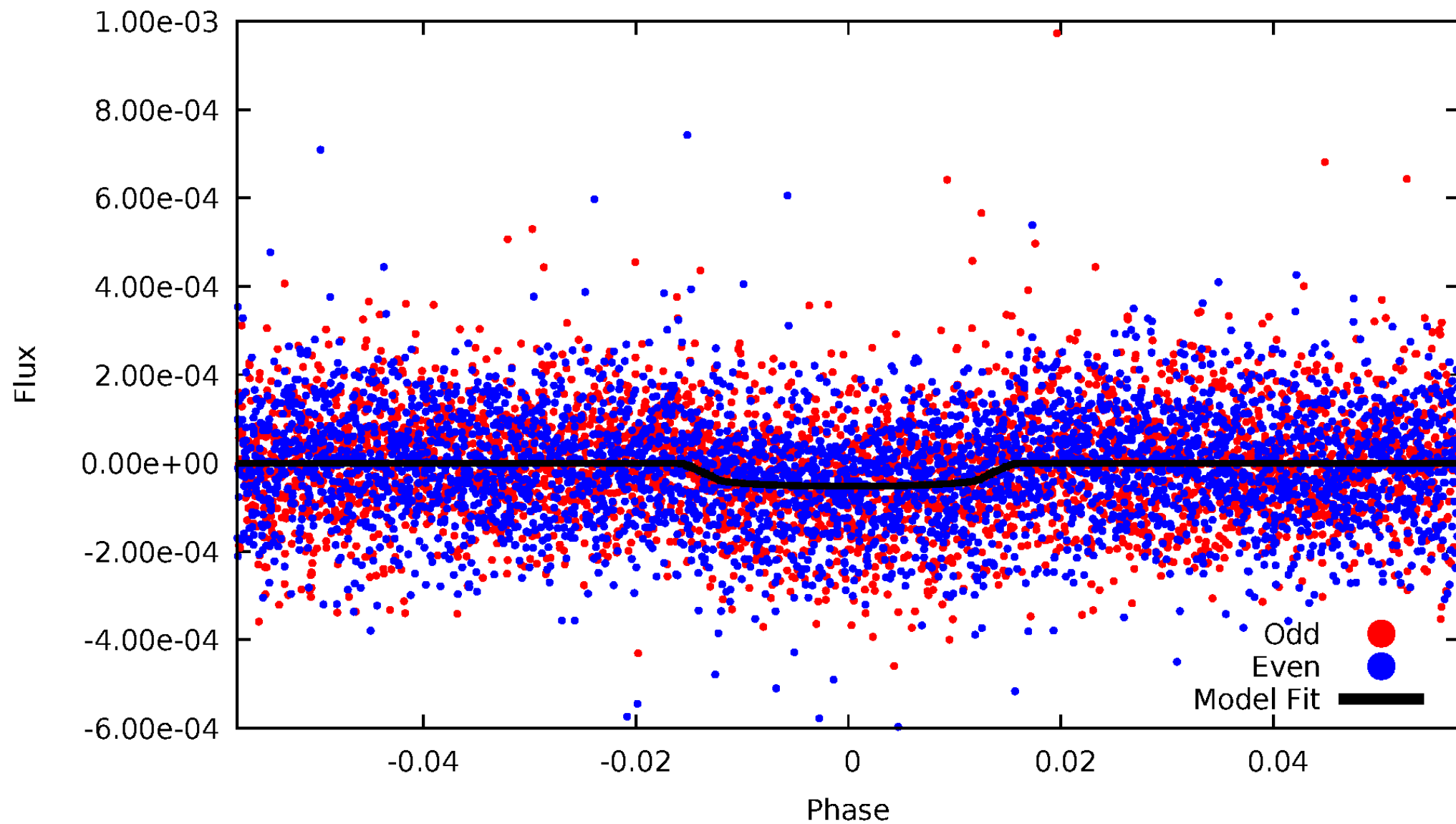
# TCE 010916600-01





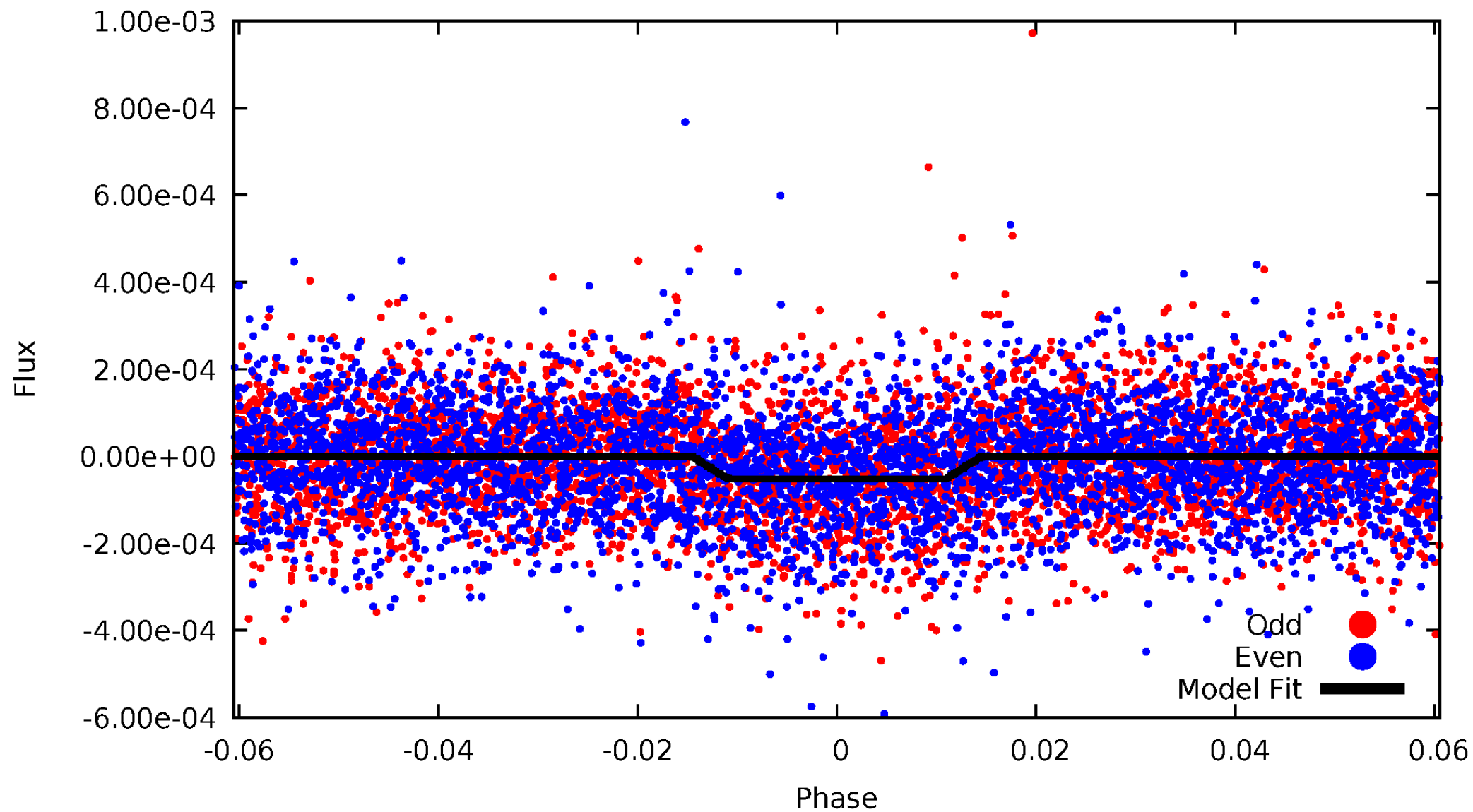
# DV Odd/Even

TCE 010916600-01

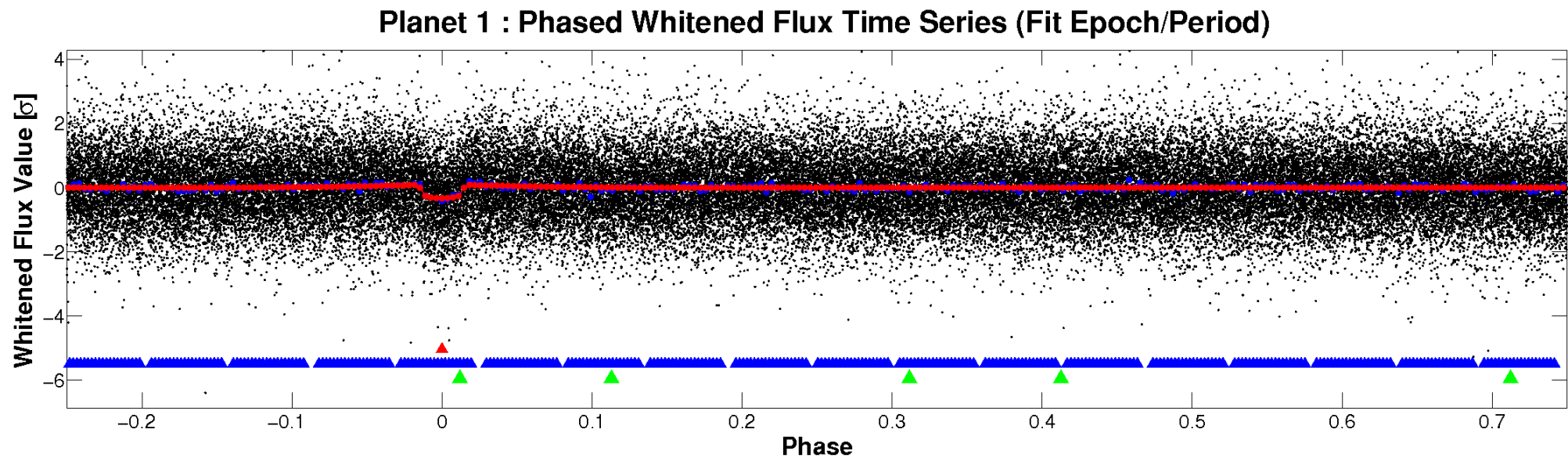
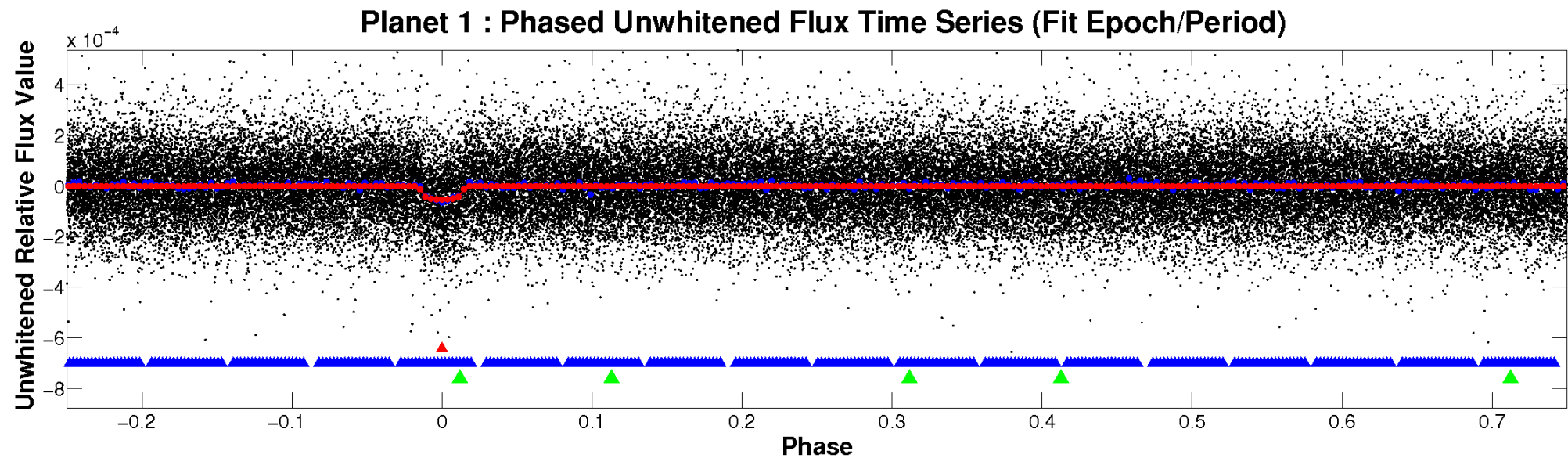


# ALT Odd/Even

TCE 010916600-01

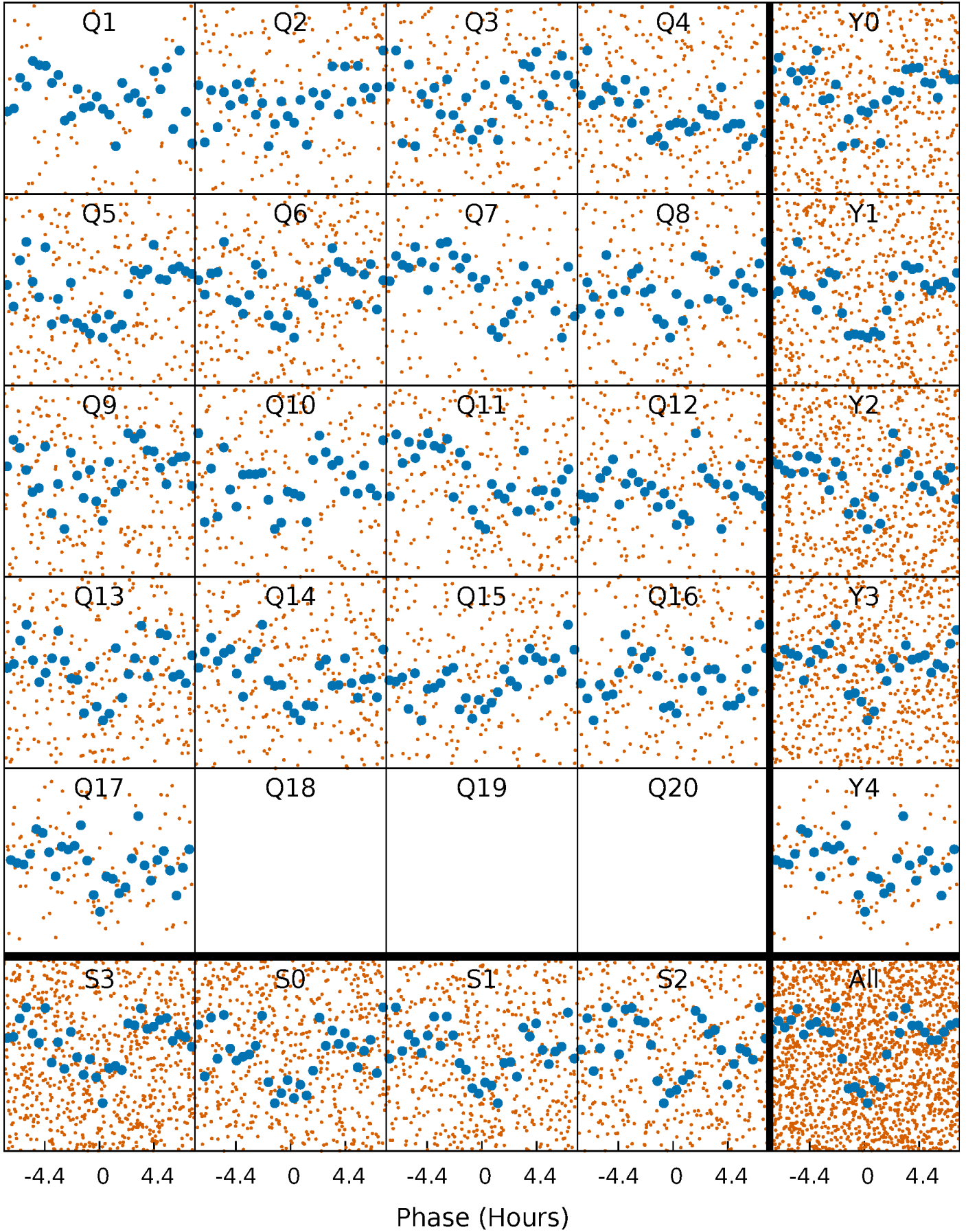


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

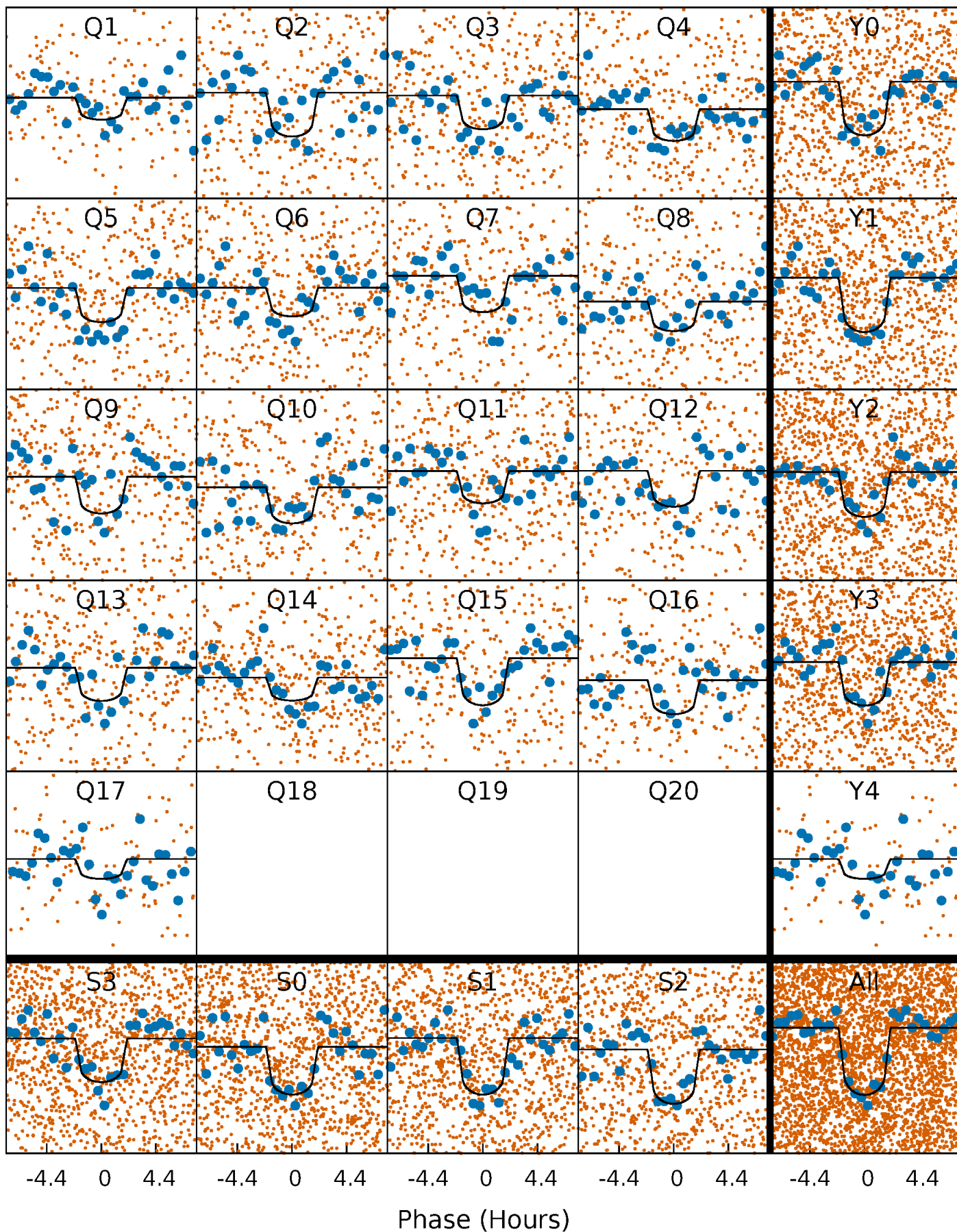
TCE 010916600-01 P= 5.576460 Days  $T_0=136.437314$  (BKJD)





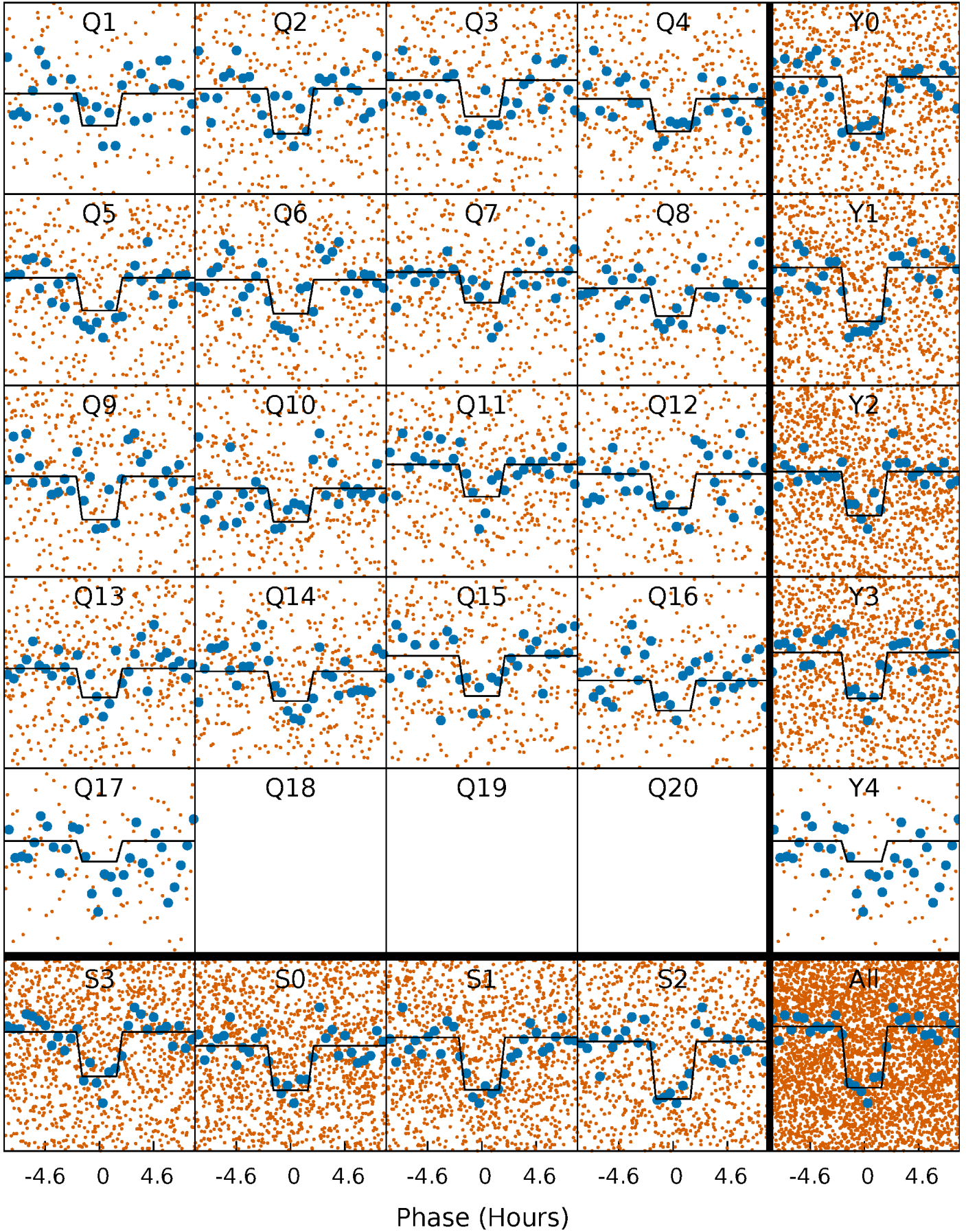
# DV Quarter-Phased Transit Curves

TCE 010916600-01 P= 5.576460 Days  $T_0=136.437314$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

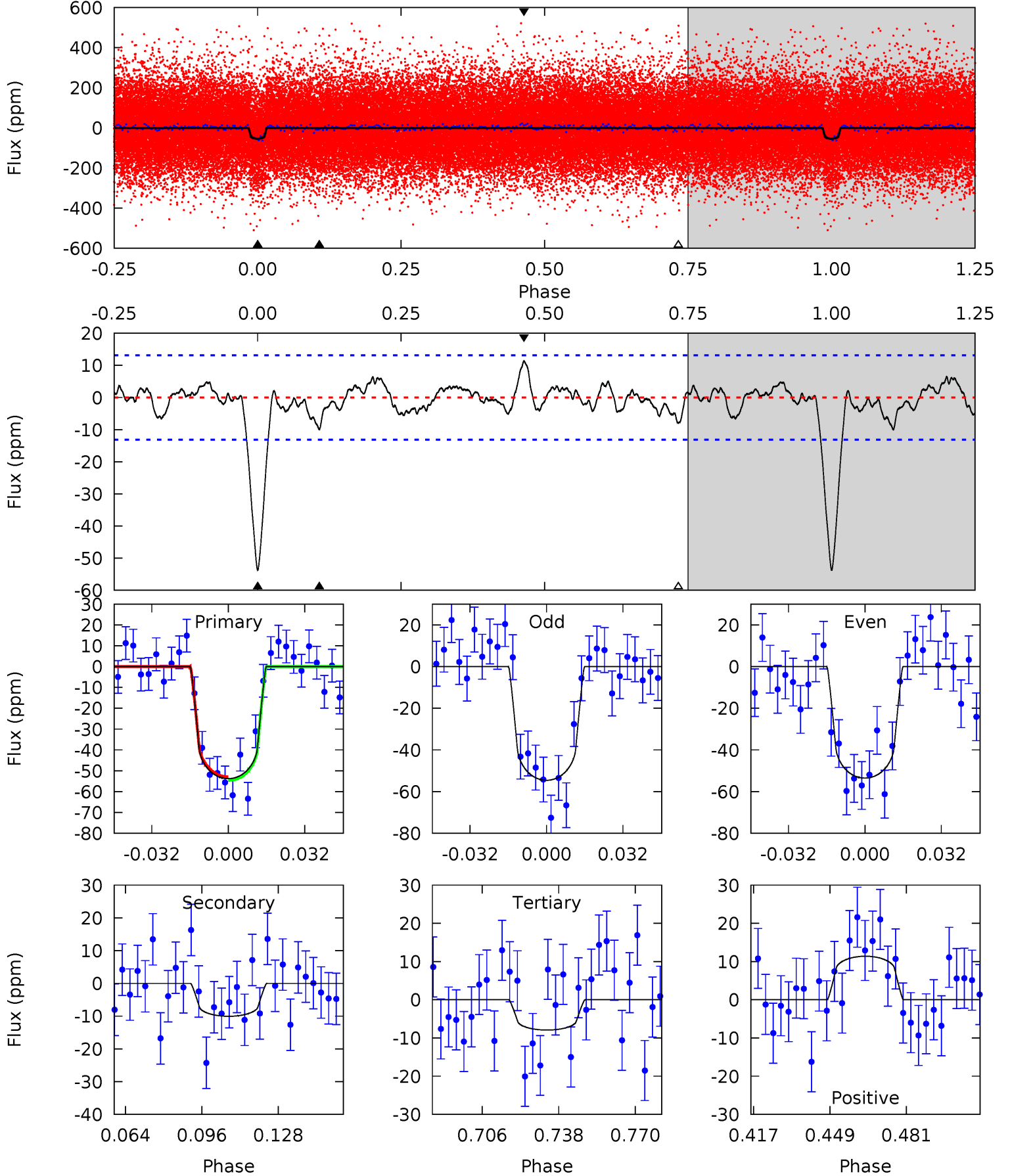
TCE 010916600-01 P= 5.576466 Days  $T_0=136.436333$  (BKJD)



# DV Model-Shift Uniqueness Test

010916600-01, P = 5.576460 Days, E = 130.860854 Days

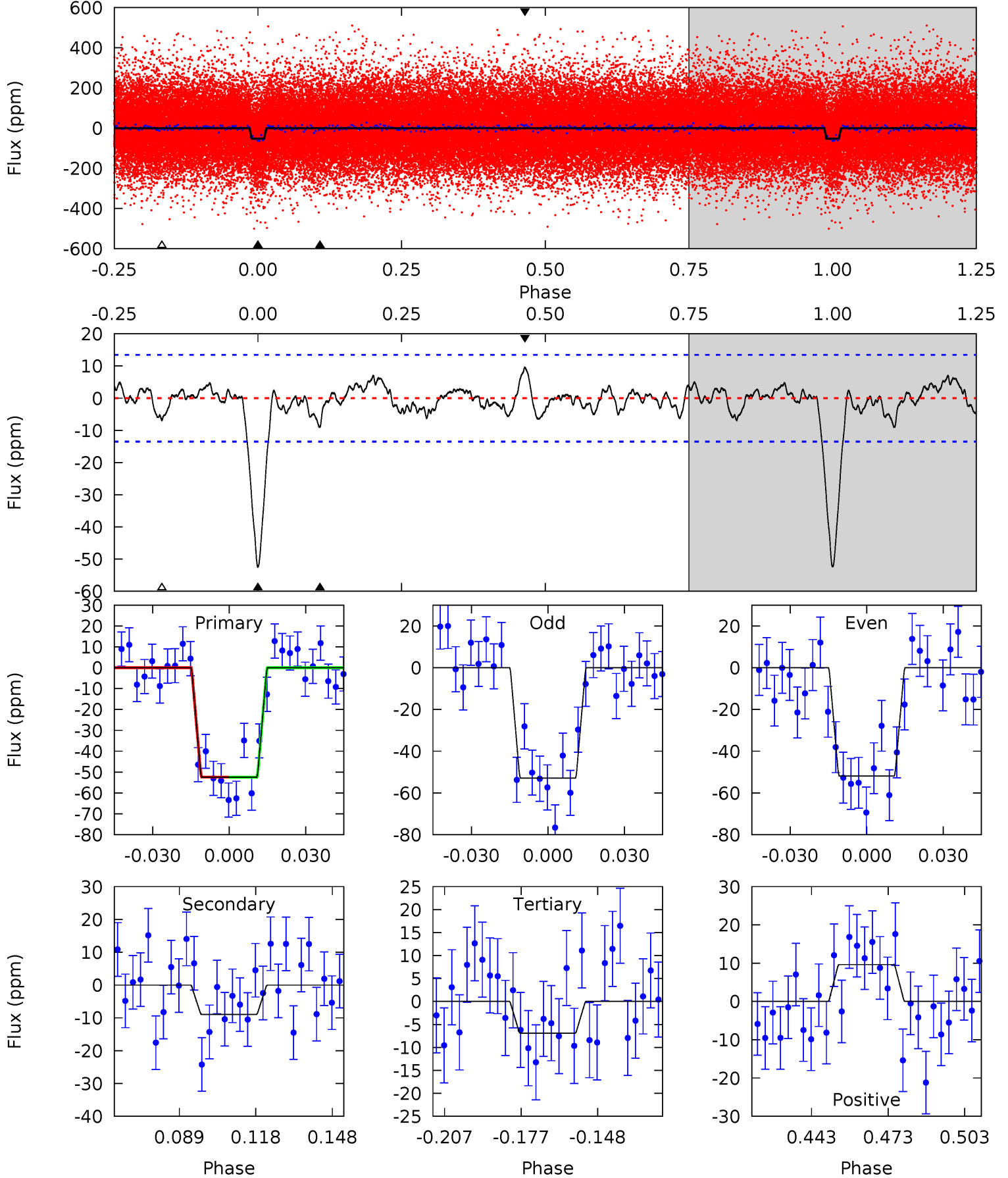
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	3.66	2.89	4.16	4.80	2.14	1.19	16.7	15.5	0.77	-0.49	0.19	1.00	0.17	0.30



# Alt Model-Shift Uniqueness Test

010916600-01, P = 5.576466 Days, E = 130.859867 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
18.7	3.19	2.47	3.44	4.81	2.18	1.07	16.2	15.3	0.72	-0.24	0.18	0.99	0.16	0.02





### Stellar Parameters For KIC 010916600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6187^{+74}_{-80}$	$4.341^{+0.050}_{-0.150}$	$0.260^{+0.150}_{-0.200}$	$1.238^{+0.256}_{-0.091}$	$1.230^{+0.087}_{-0.073}$	$0.913^{+0.180}_{-0.383}$
	+1%/-1%	+1%/-3%	+58%/-77%	+21%/-7%	+7%/-6%	+20%/-42%
Source	SPE90	FLK73	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010916600-01 / KOI 2623.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-10 \pm 3$	$1.07^{+0.37}_{-0.37}$	$1669^{+81}_{-46}$	$4188^{+804}_{-471}$	$20^{+29}_{-10}$
Alt.	$-9 \pm 3$	$1.00^{+0.38}_{-0.35}$	$1666^{+90}_{-45}$	$4217^{+828}_{-522}$	$21^{+30}_{-11}$

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

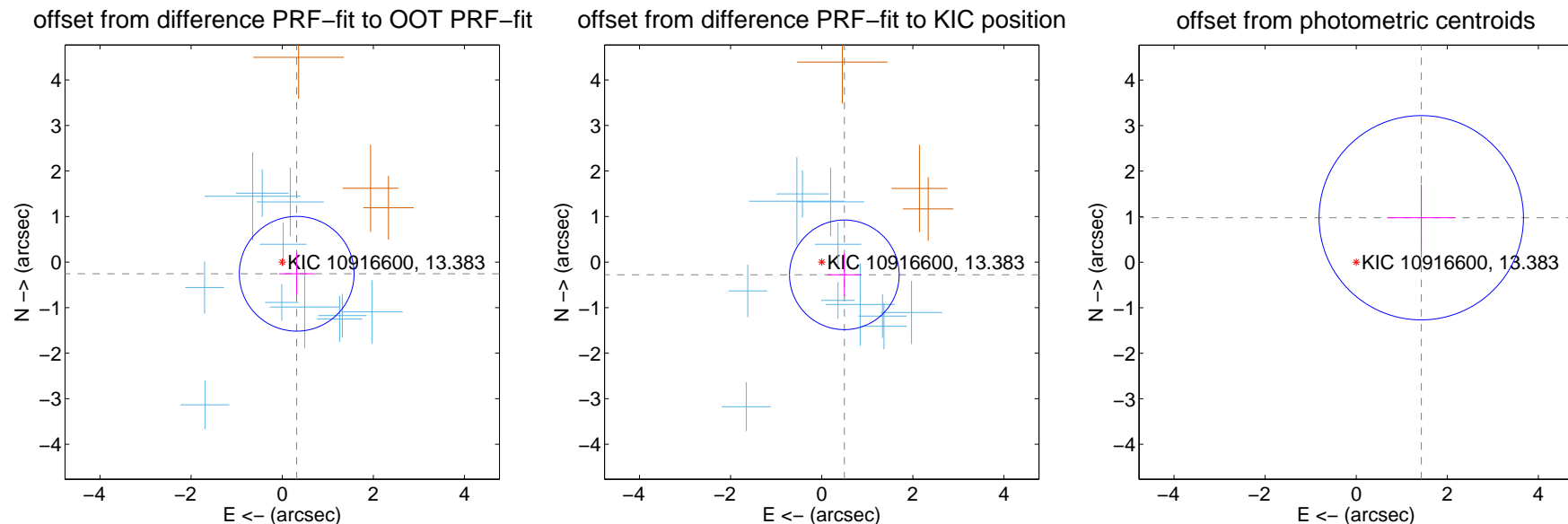
## DV Centroid Data

Supplemental centroid analysis for 010916600-01. Kepler magnitude: 13.38. Transit SNR 12.58

There are 11 quarters with good PRF difference image offsets

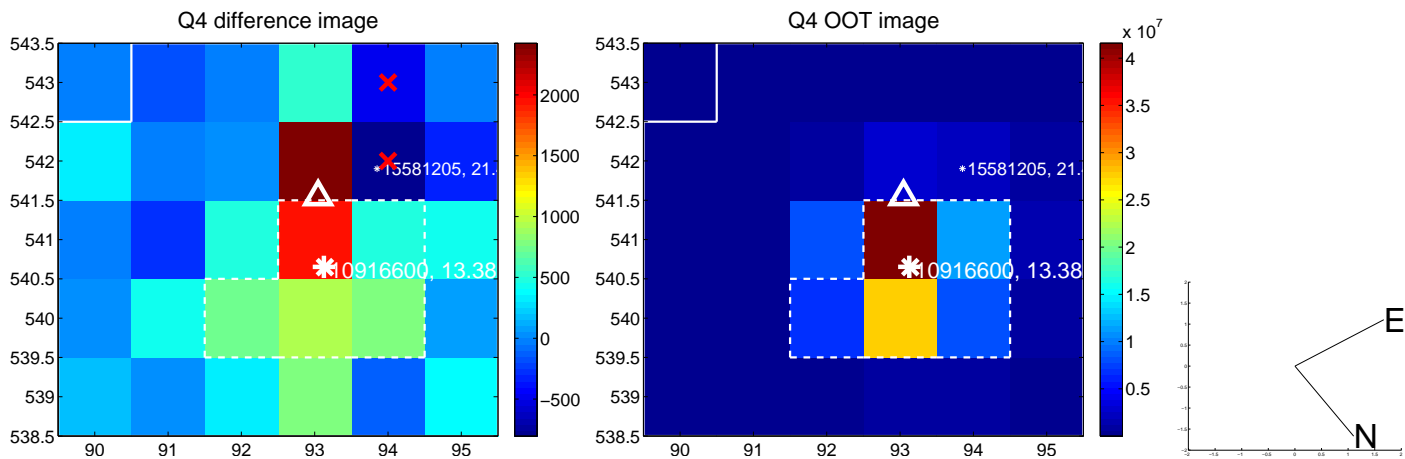
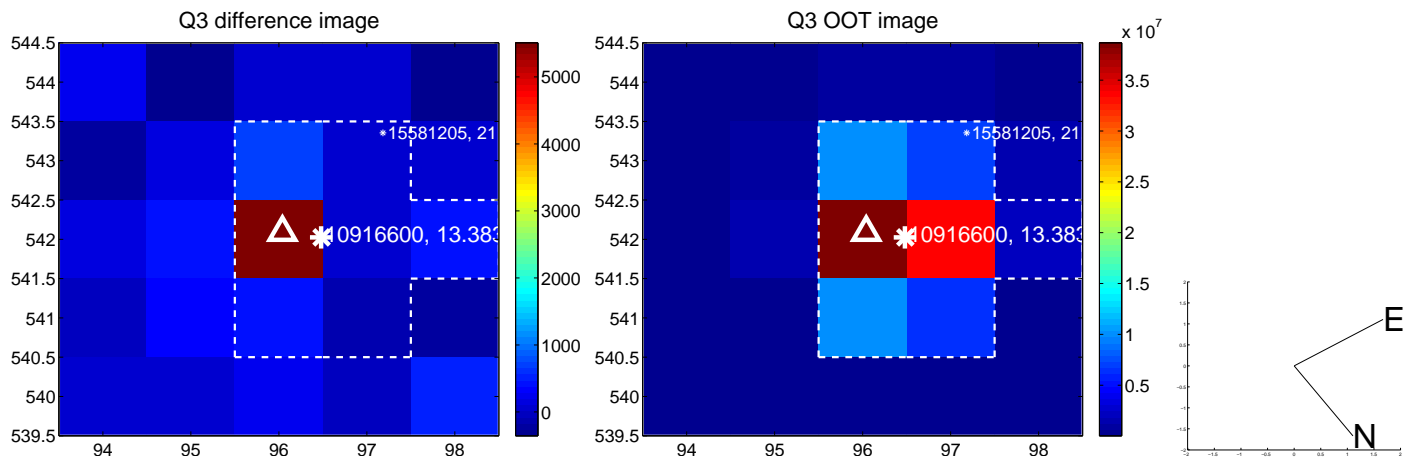
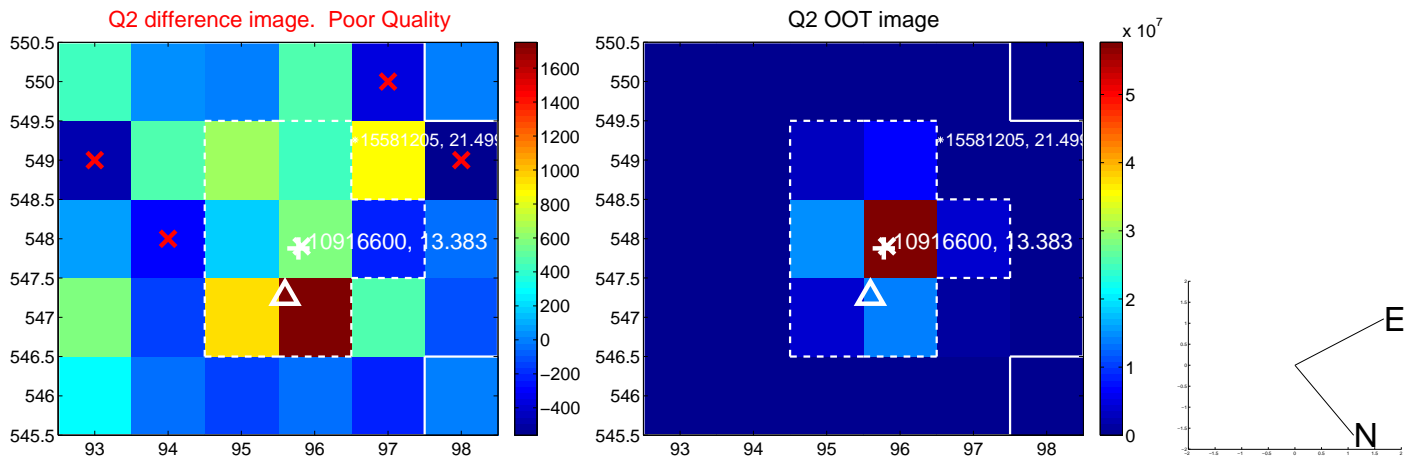
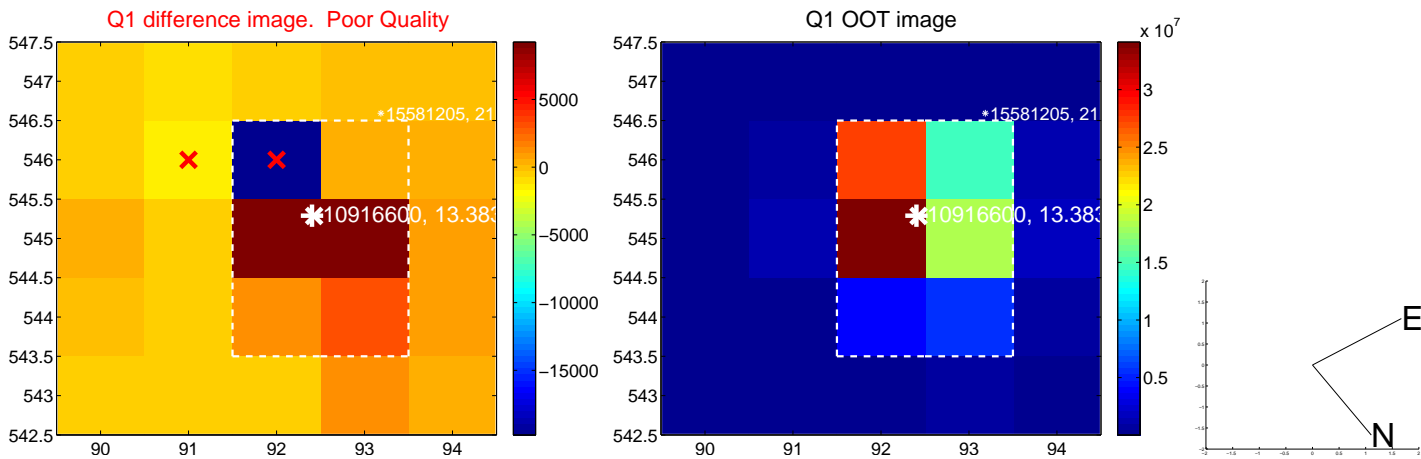
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.409 \pm 0.420$	0.97	$-0.318 \pm 0.388$	$-0.256 \pm 0.465$
PRF-fit source offset from KIC position	$0.570 \pm 0.401$	1.42	$-0.497 \pm 0.378$	$-0.280 \pm 0.466$
photometric centroid source offset	$1.73 \pm 0.75$	2.31	$-1.43 \pm 0.76$	$0.98 \pm 0.73$

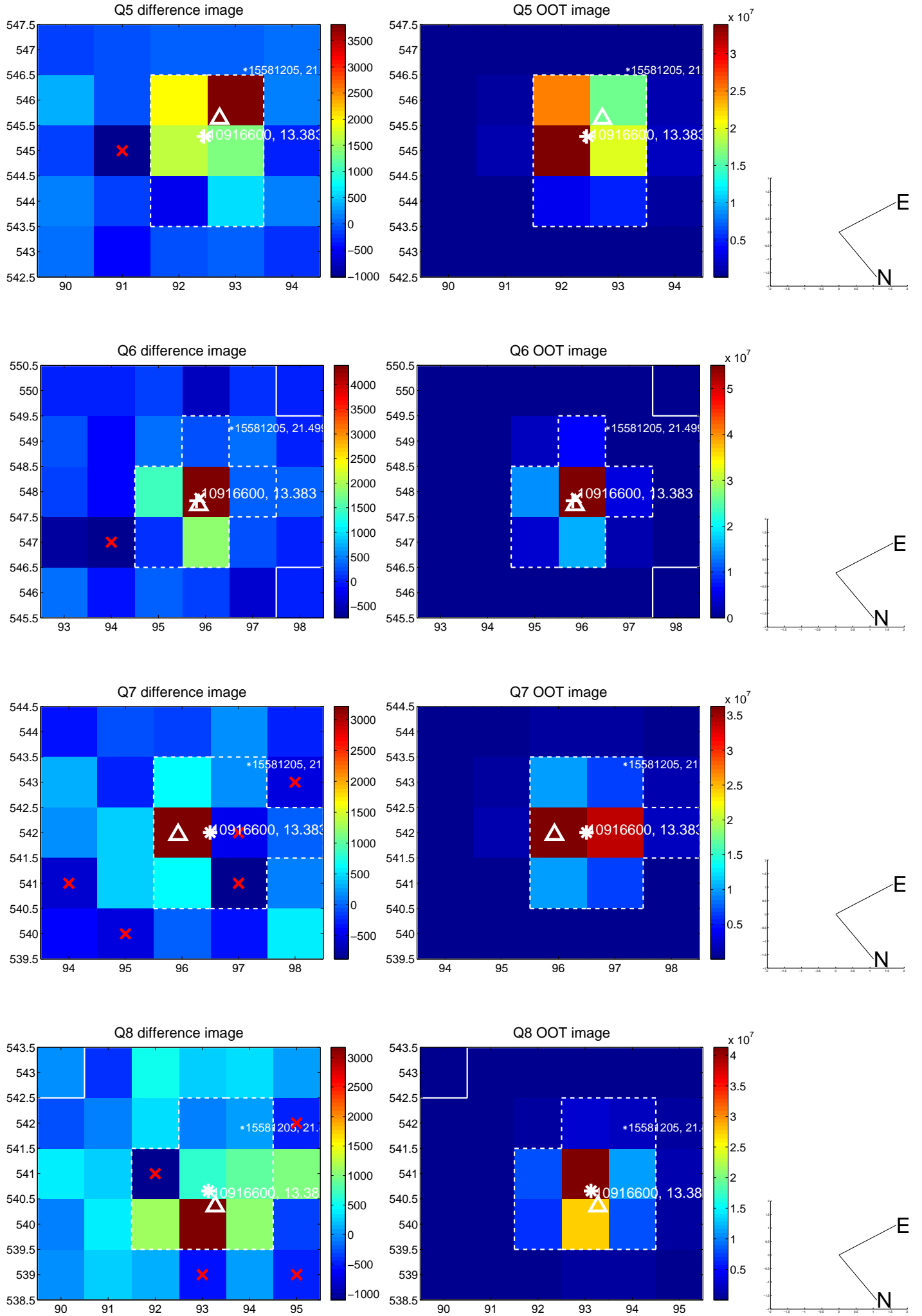


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

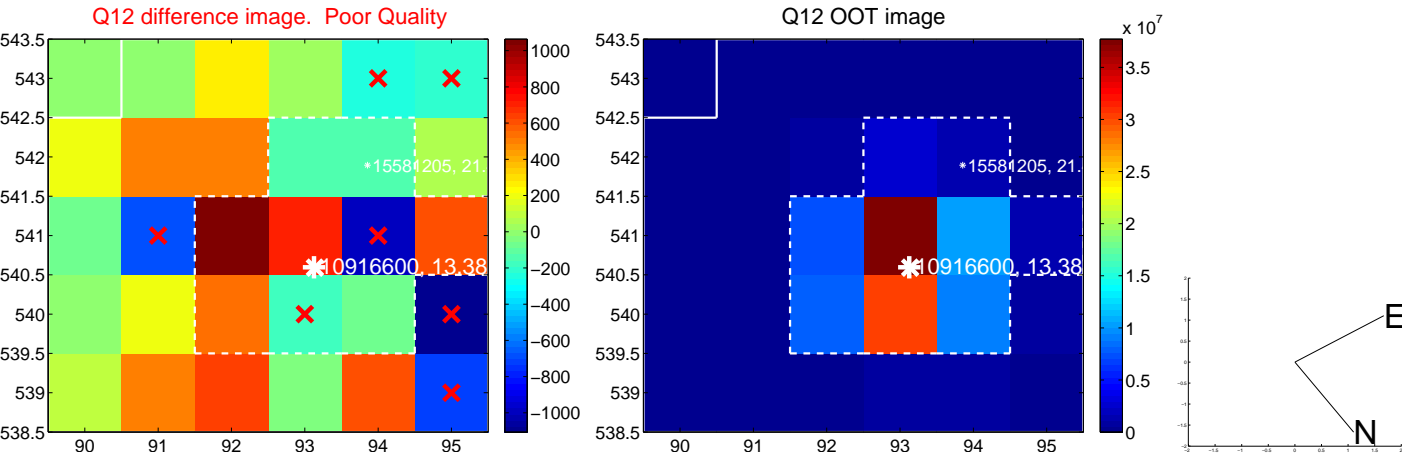
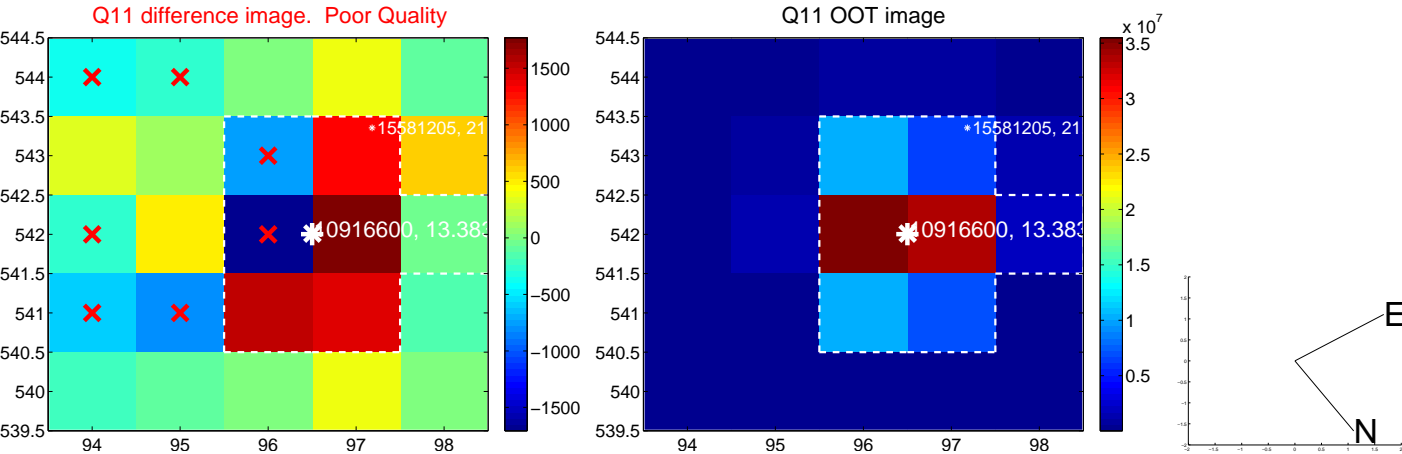
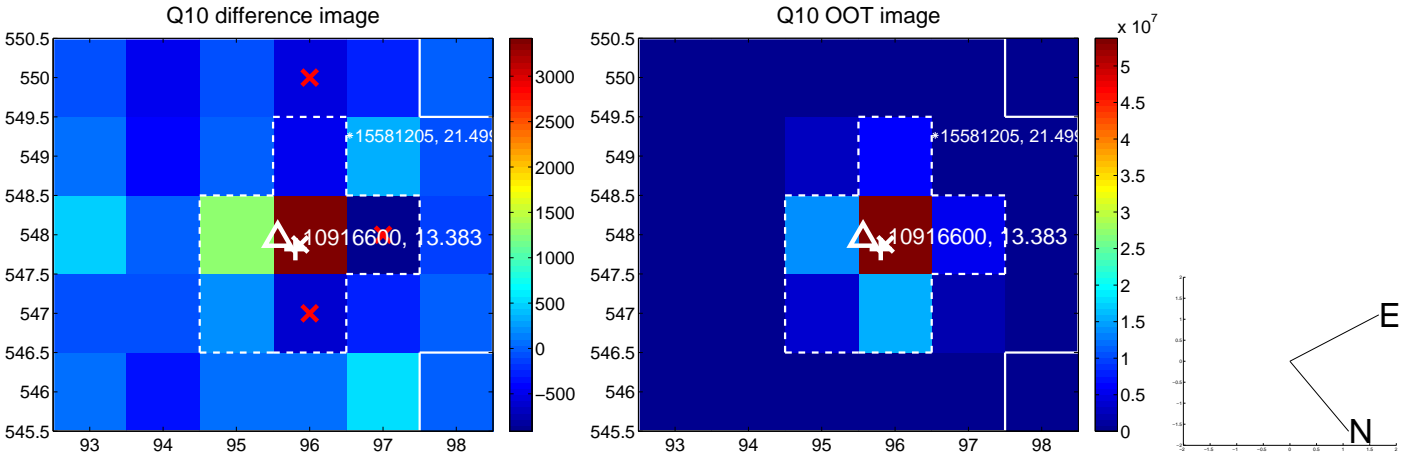
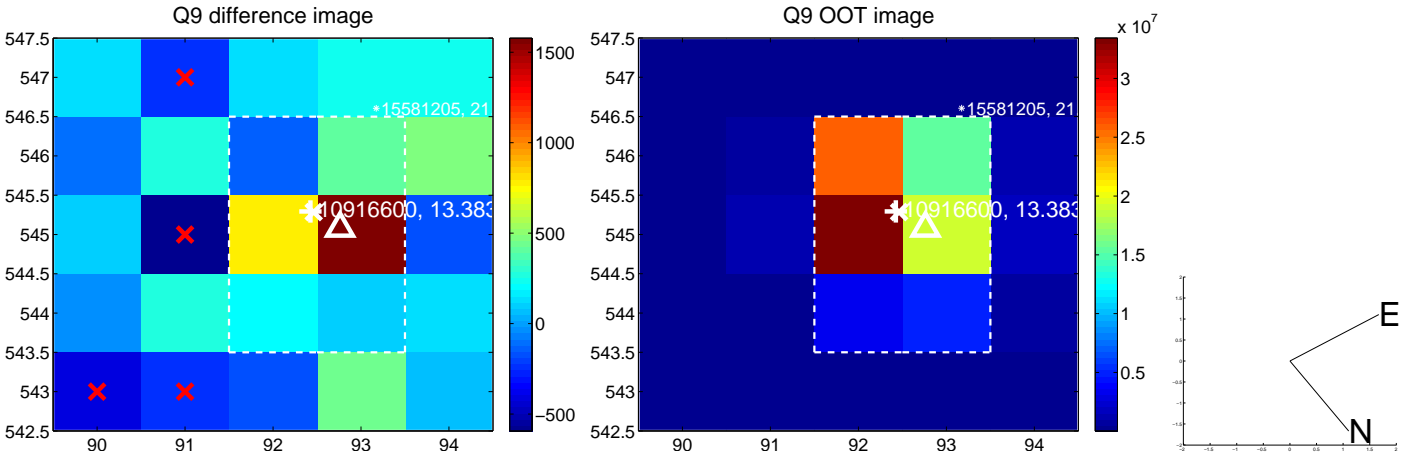


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

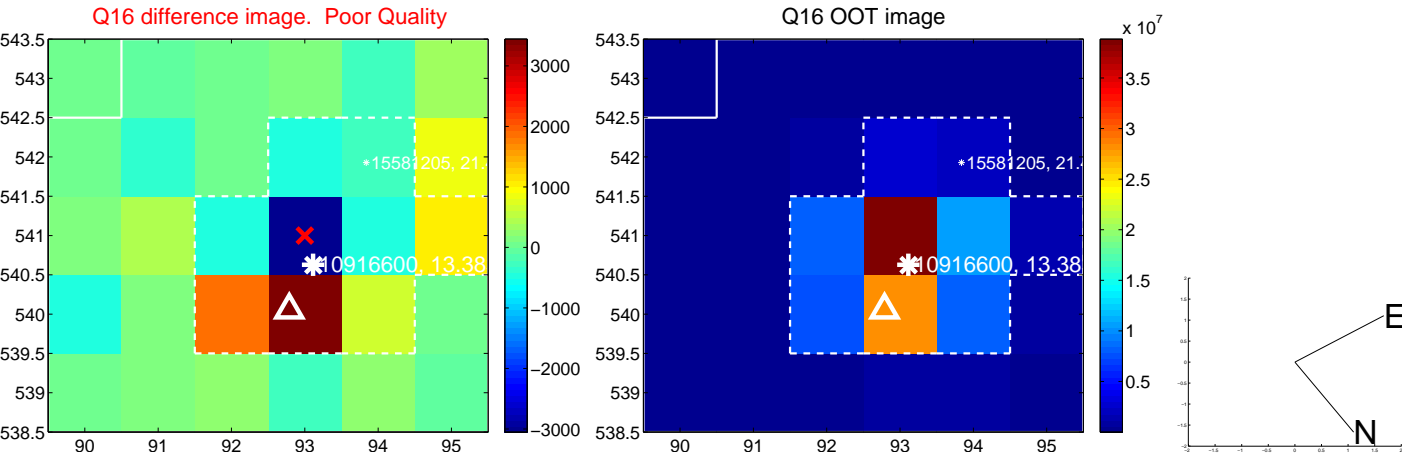
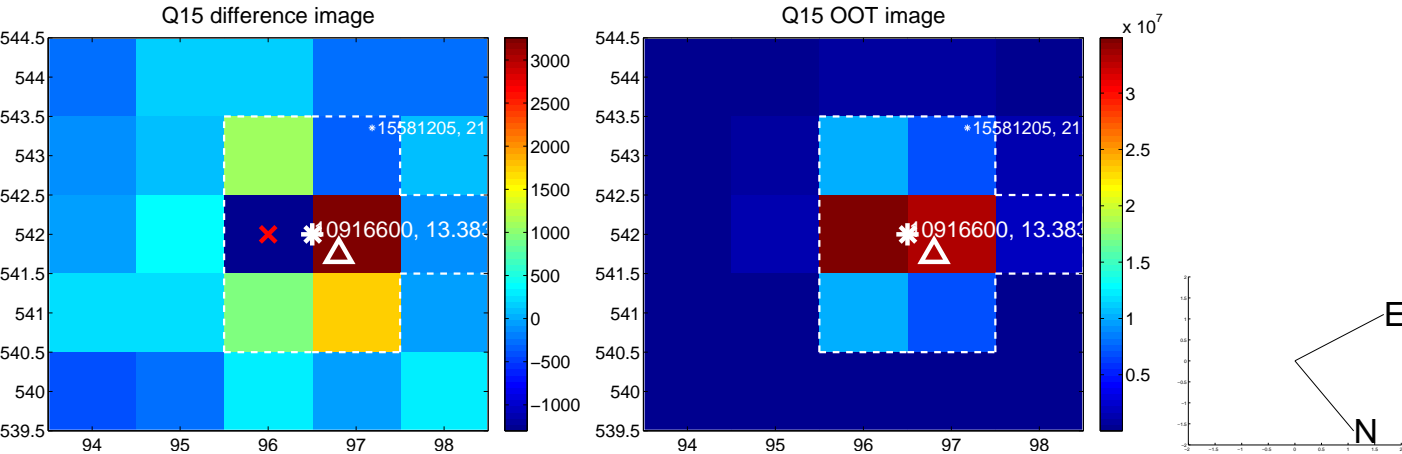
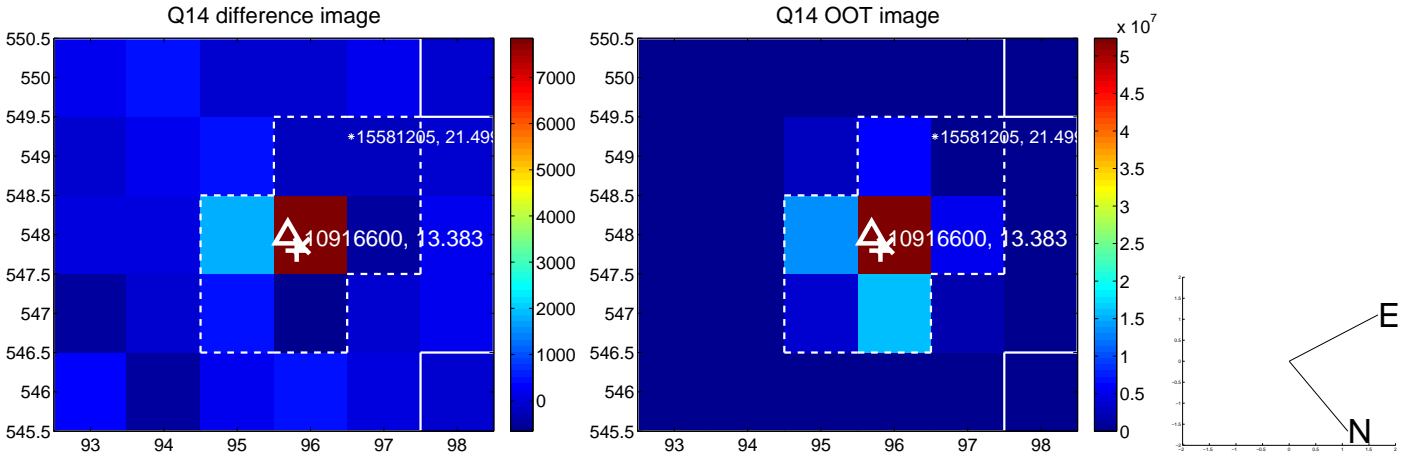
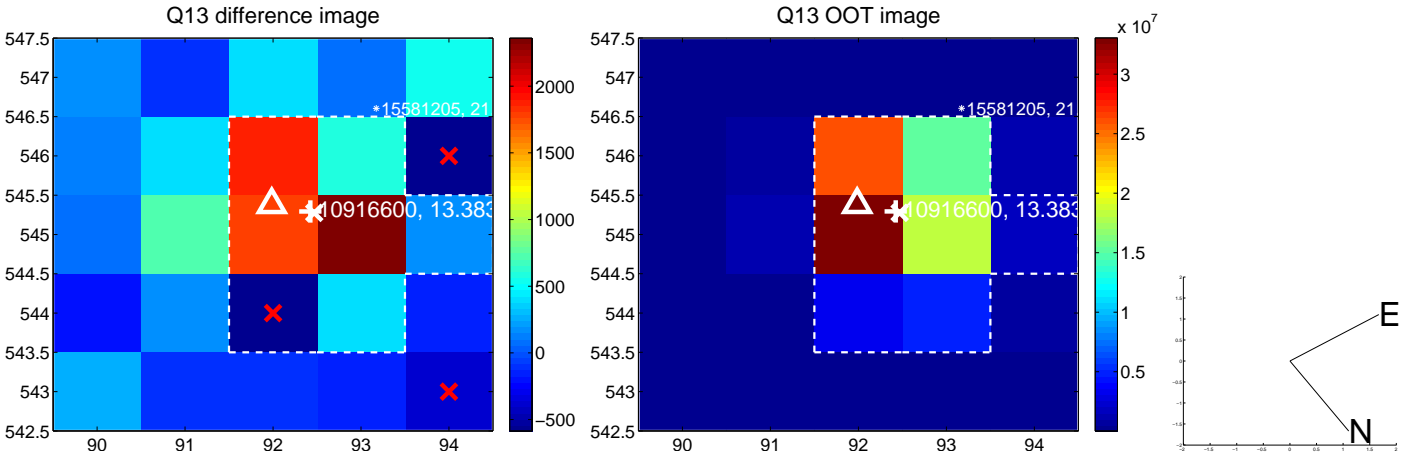




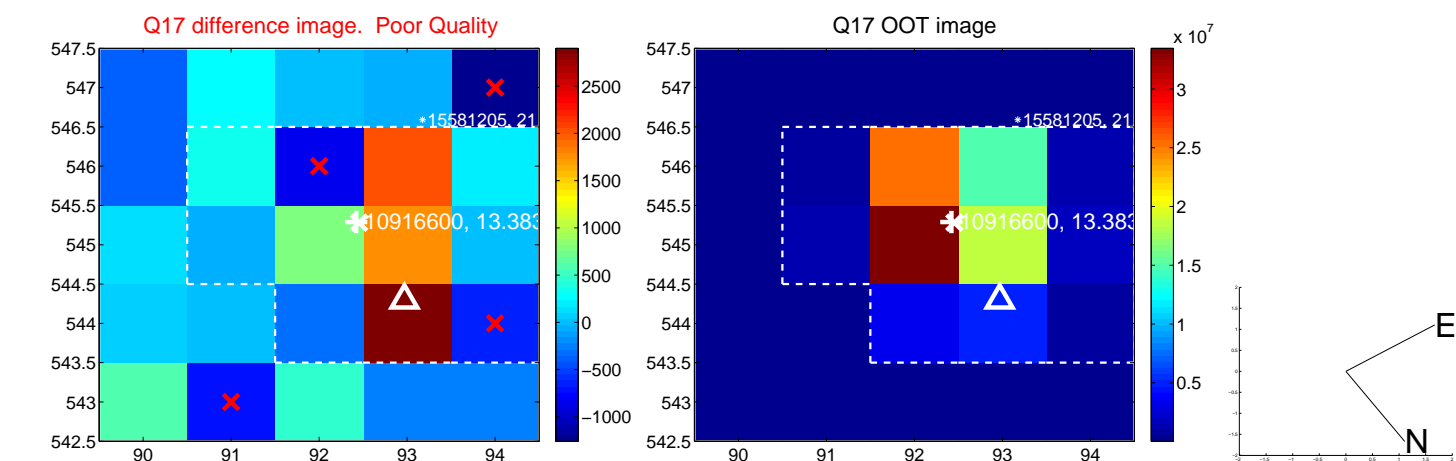
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



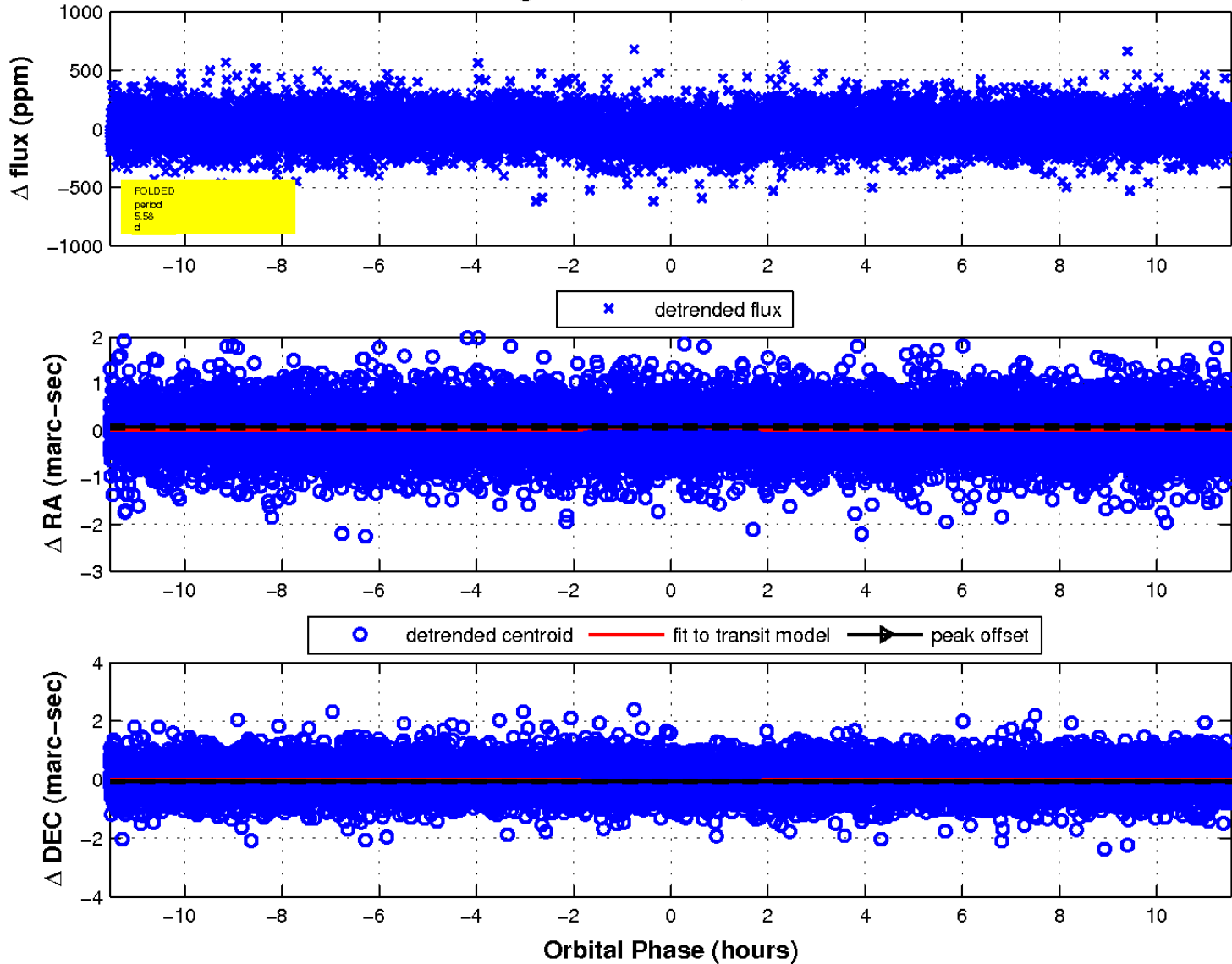
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

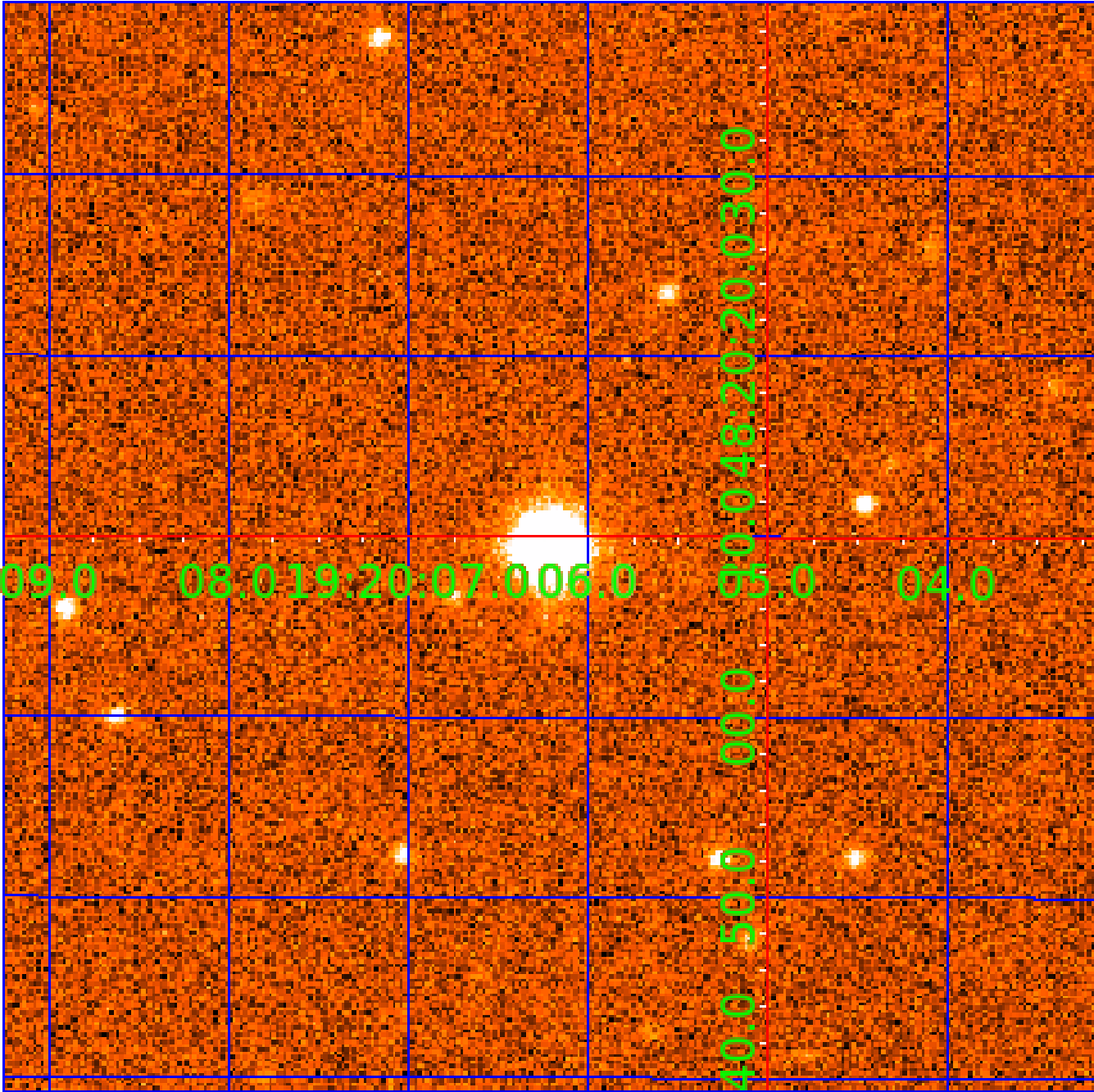


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 010916600

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010916600-01	OBS	2623.01	5.576460	136.437314	52.6	3.848	12.9	12.6	1.24	6187	1.03	463.61
010916600-02	OBS	2623.02	4.026681	134.386606	32.1	3.832	8.2	8.7	1.24	6187	0.79	715.65
010916600-03	OBS	No	265.999086	294.315842	217.6	3.309	8.9	5.6	1.24	6187	1.97	2.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010916600-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

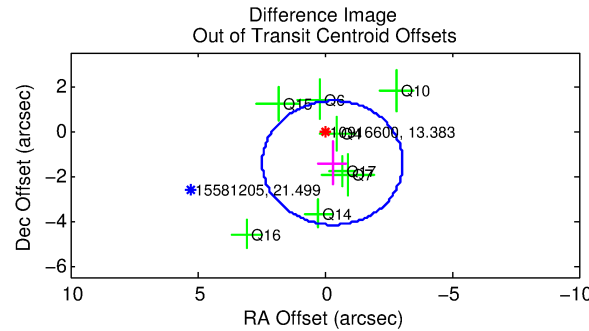
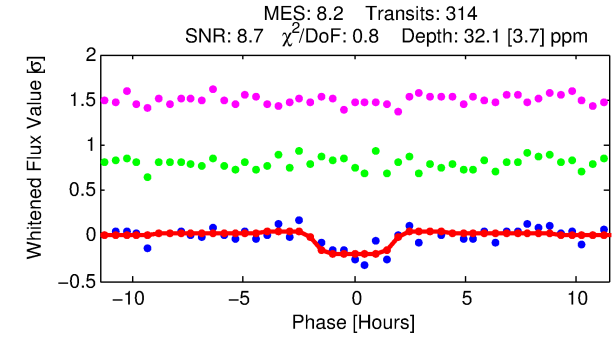
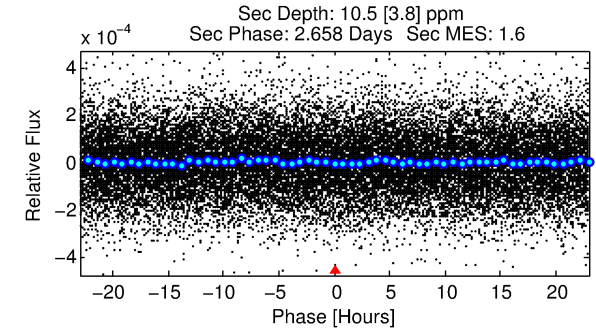
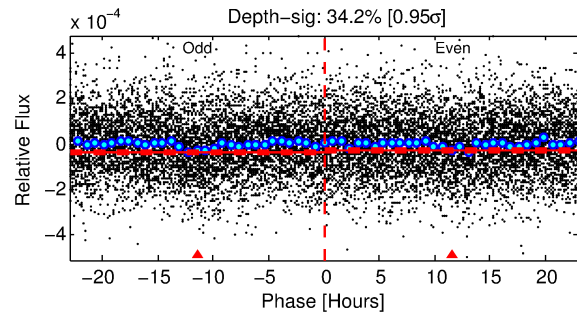
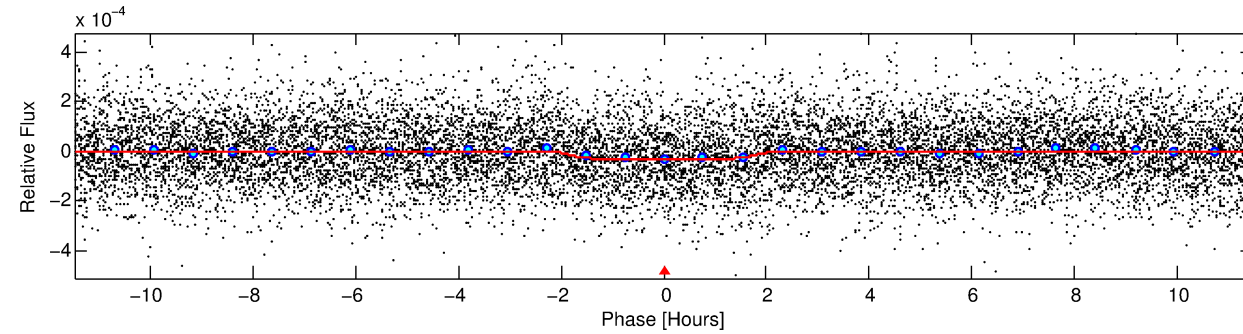
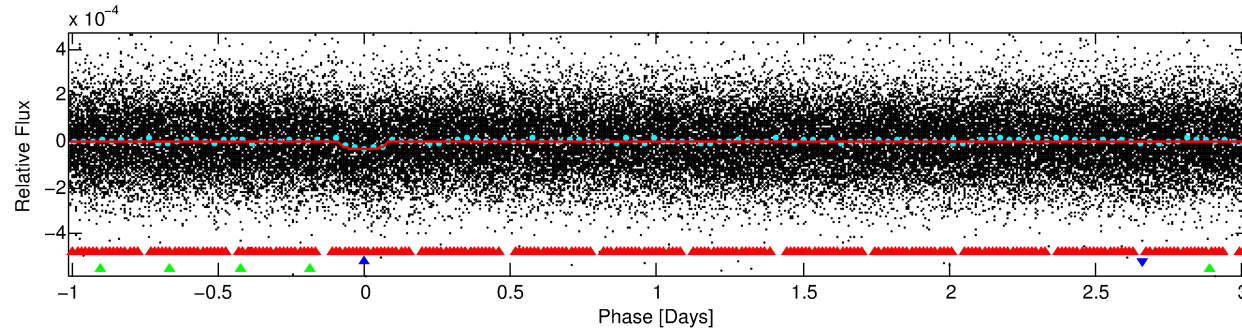
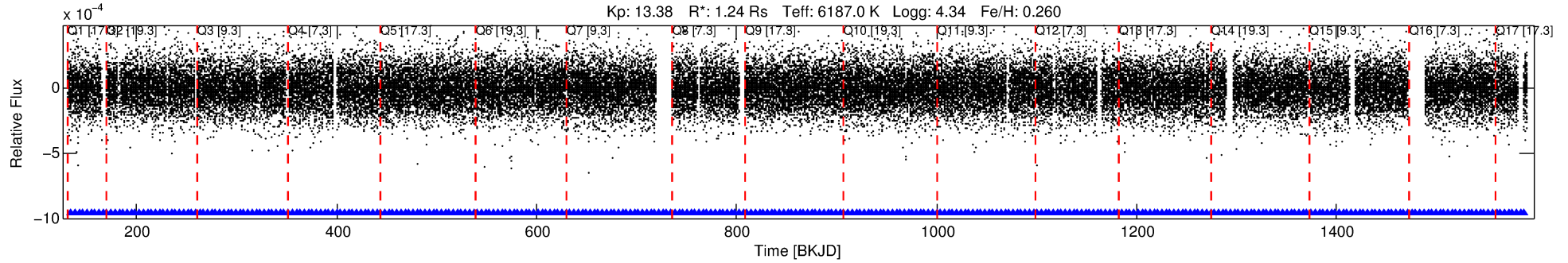
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010916600-02

No Significant Match Found

# DV One-Page Summary

KIC: 10916600 Candidate: 2 of 3 Period: 4.027 d  
KOI: K02623.02 Corr: 0.977



## DV Fit Results:

Period = 4.02668 [0.00003] d  
Epoch = 134.3866 [0.0058] BKJD  
Rp/R\* = 0.0059 [0.0023]  
a/R\* = 4.58 [8.29]  
b = 0.84 [0.69]  
Seff = 715.65 [195.59]  
Teq = 1319 [90] K  
Rp = 0.79 [0.35] Re  
a = 0.0530 [0.0095] AU  
Ag = 25.82 [23.04] [1.08 $\sigma$ ]  
Teffp = 4596 [980] K [3.33 $\sigma$ ]

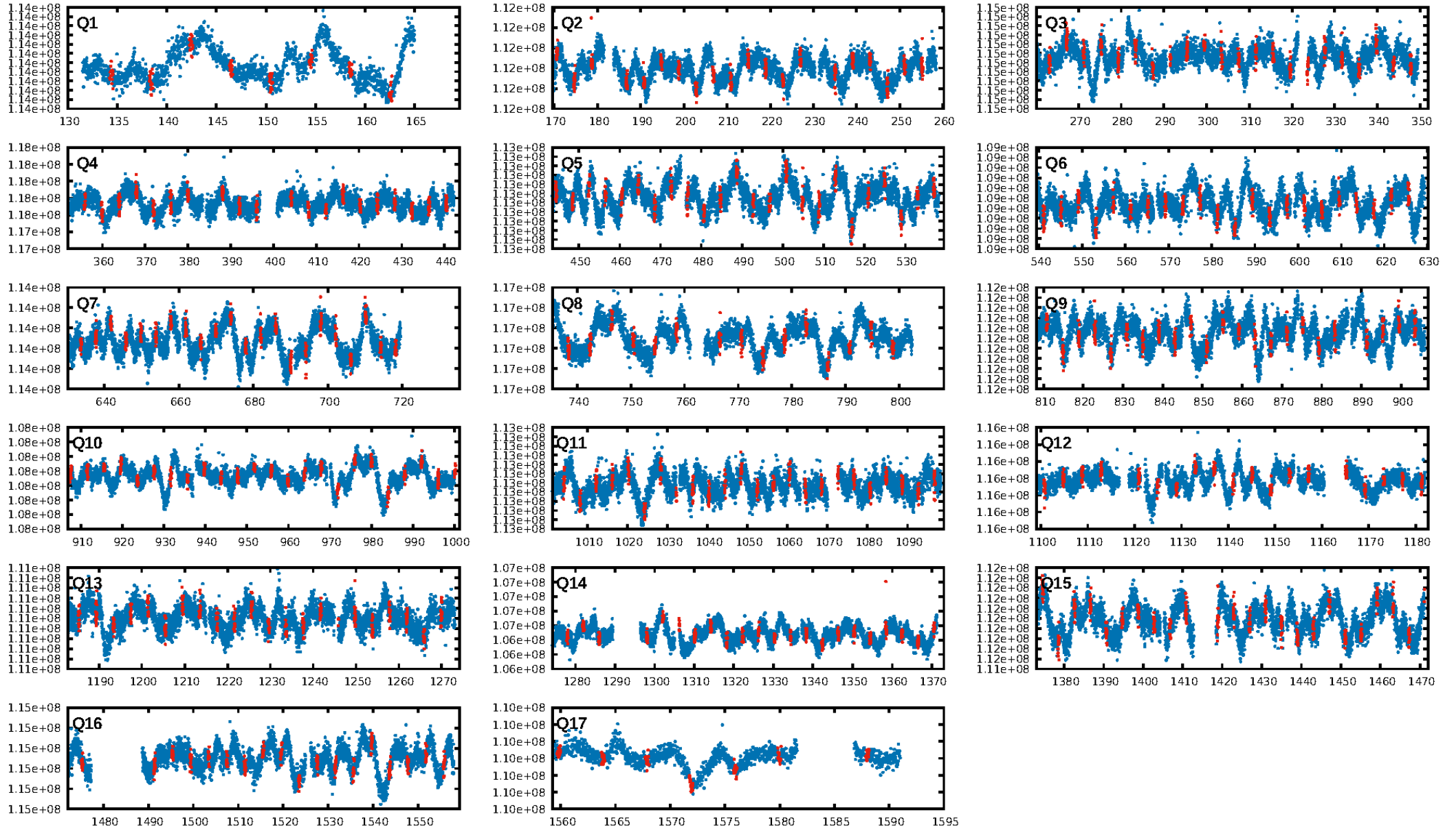
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.85 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.79e-16  
RollingBand-fgt: 1.00 [300/300]  
GhostDiagnostic-chr: 1.531  
Centroid-sig: 2.1%  
Centroid-so: 1.723 arcsec [1.69 $\sigma$ ]  
OotOffset-rm: 1.452 arcsec [1.58 $\sigma$ ]  
KicOffset-rm: 1.481 arcsec [1.62 $\sigma$ ]  
OotOffset-st: 3/2/2/1 [8]  
KicOffset-st: 3/2/2/1 [8]  
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DiffImageOverlap-fno: 1.00 [17/17]

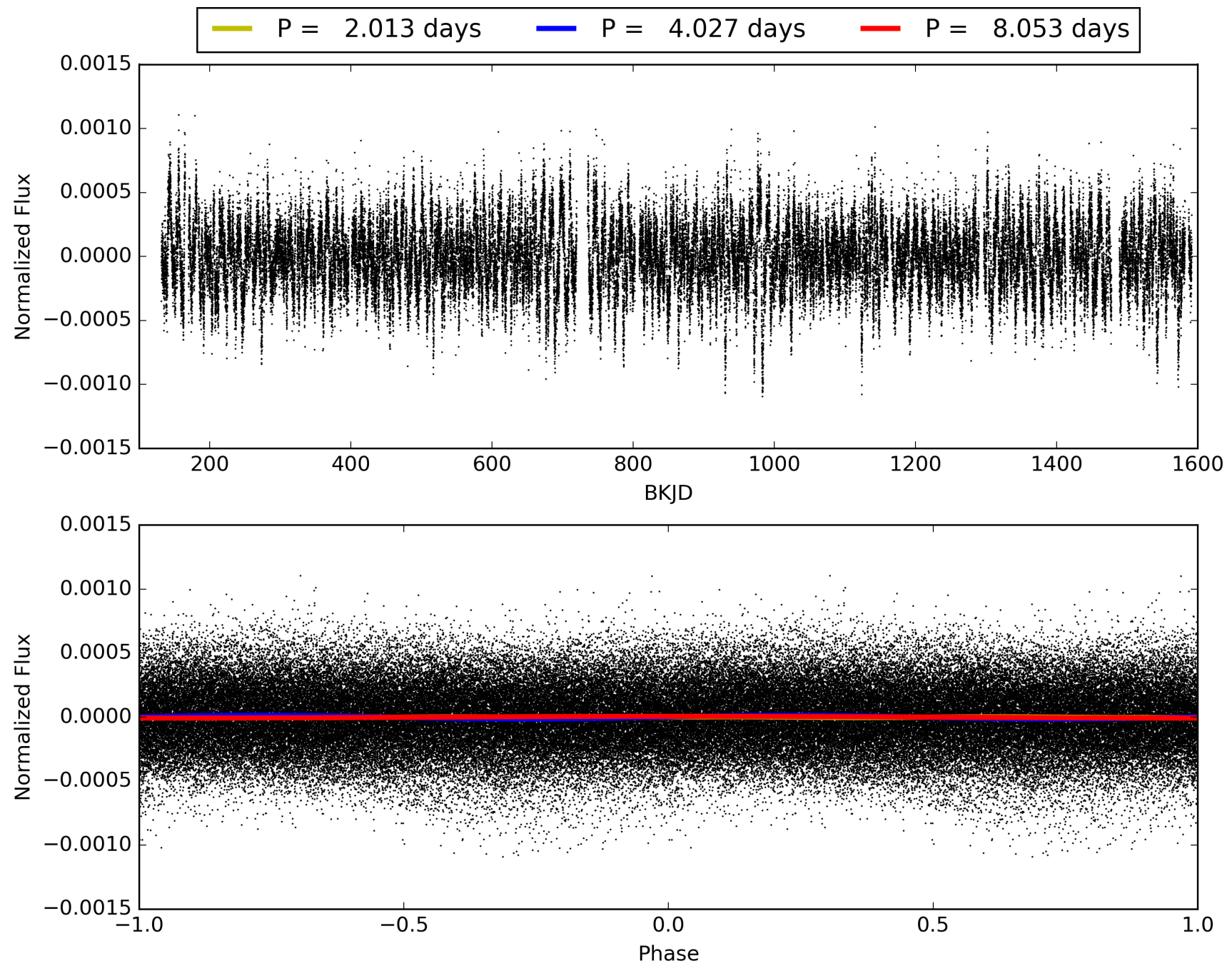
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:02:22 Z

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

# TCE 010916600-02, PDC Light Curves

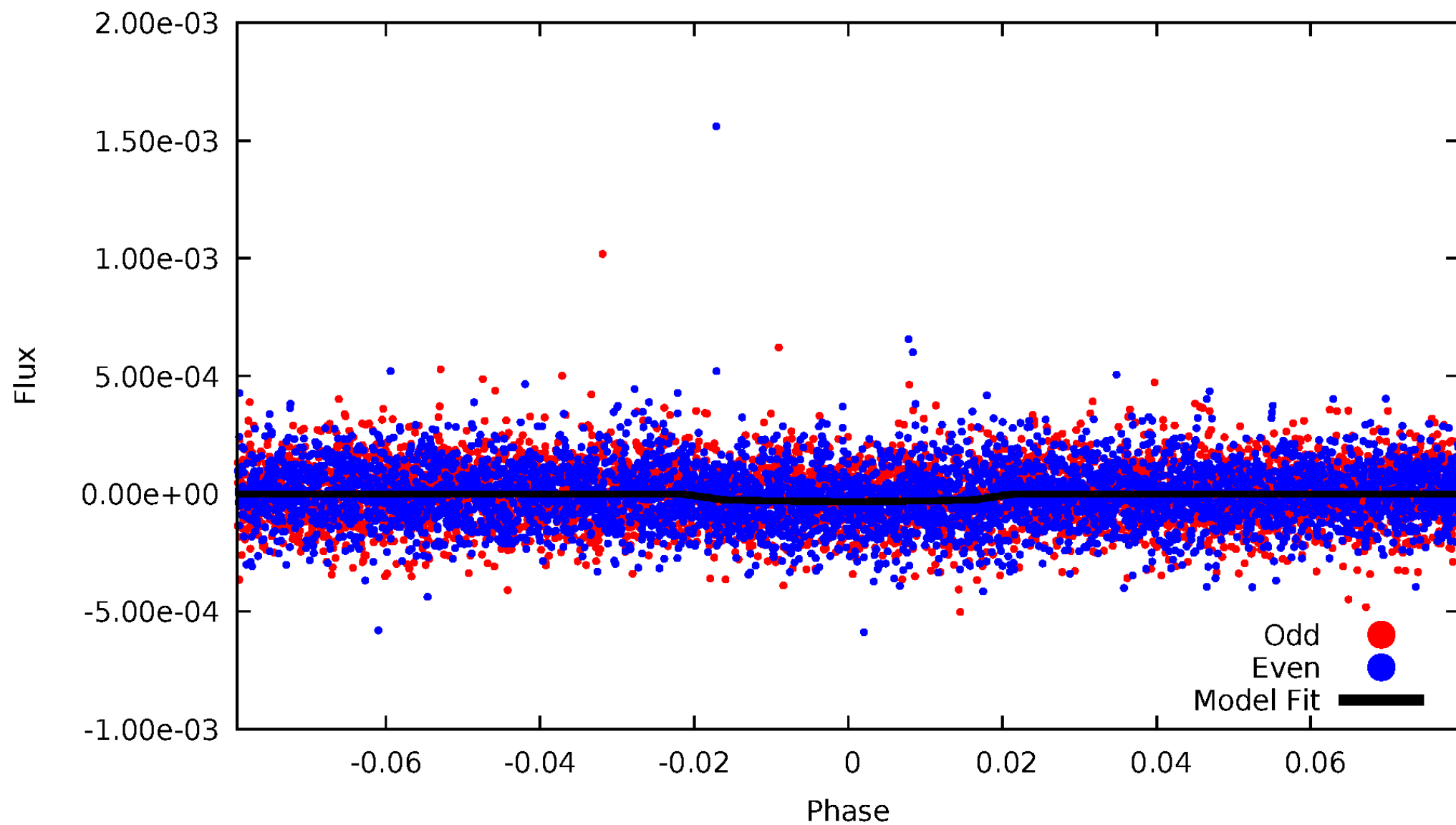


TCE 010916600-02



# DV Odd/Even

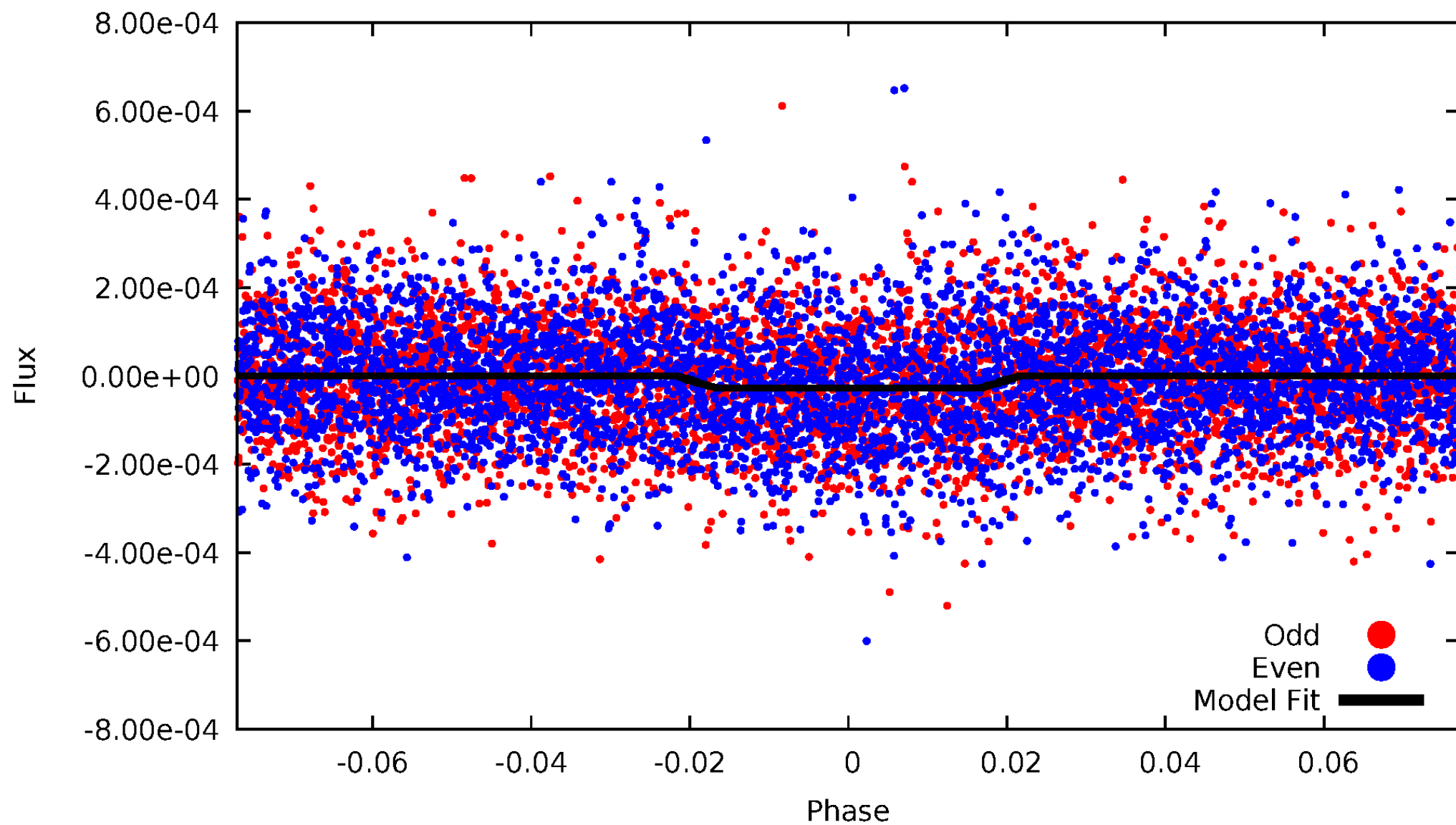
TCE 010916600-02





# ALT Odd/Even

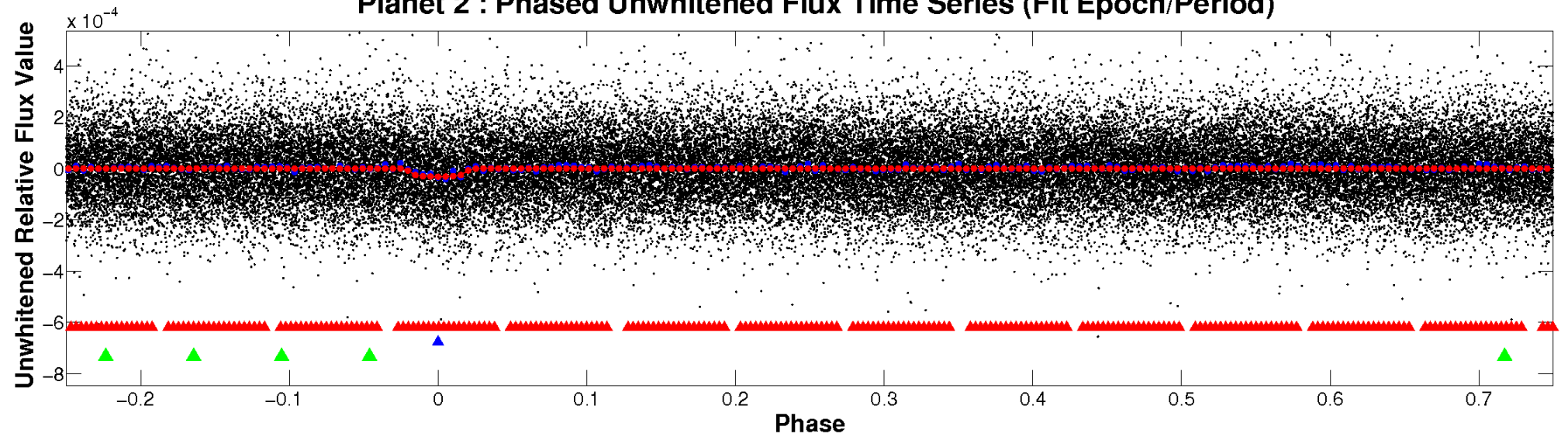
TCE 010916600-02



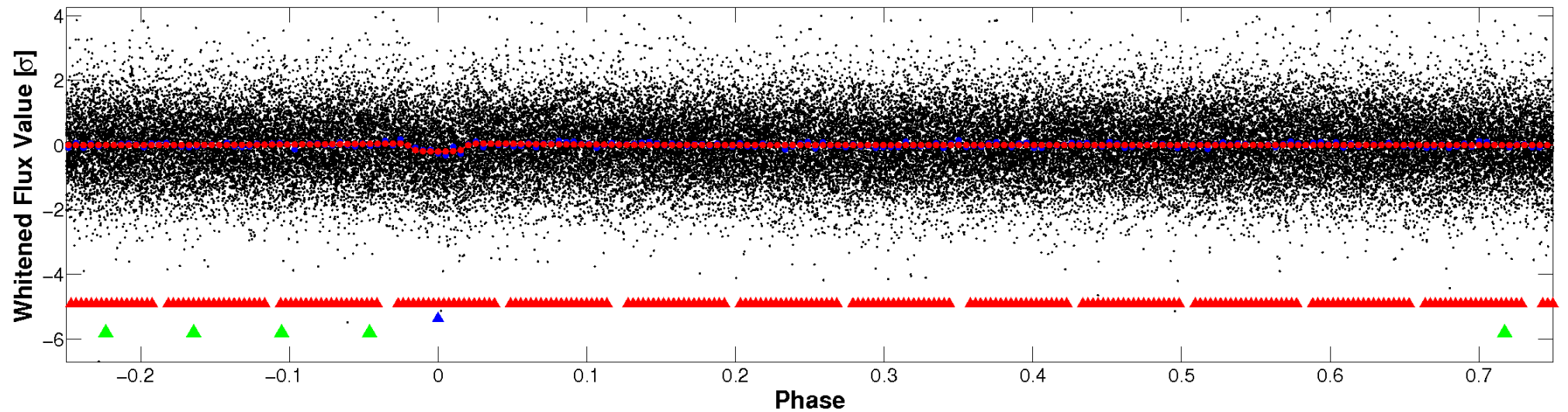


# Non-Whitened Vs. Whitened Light Curve

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

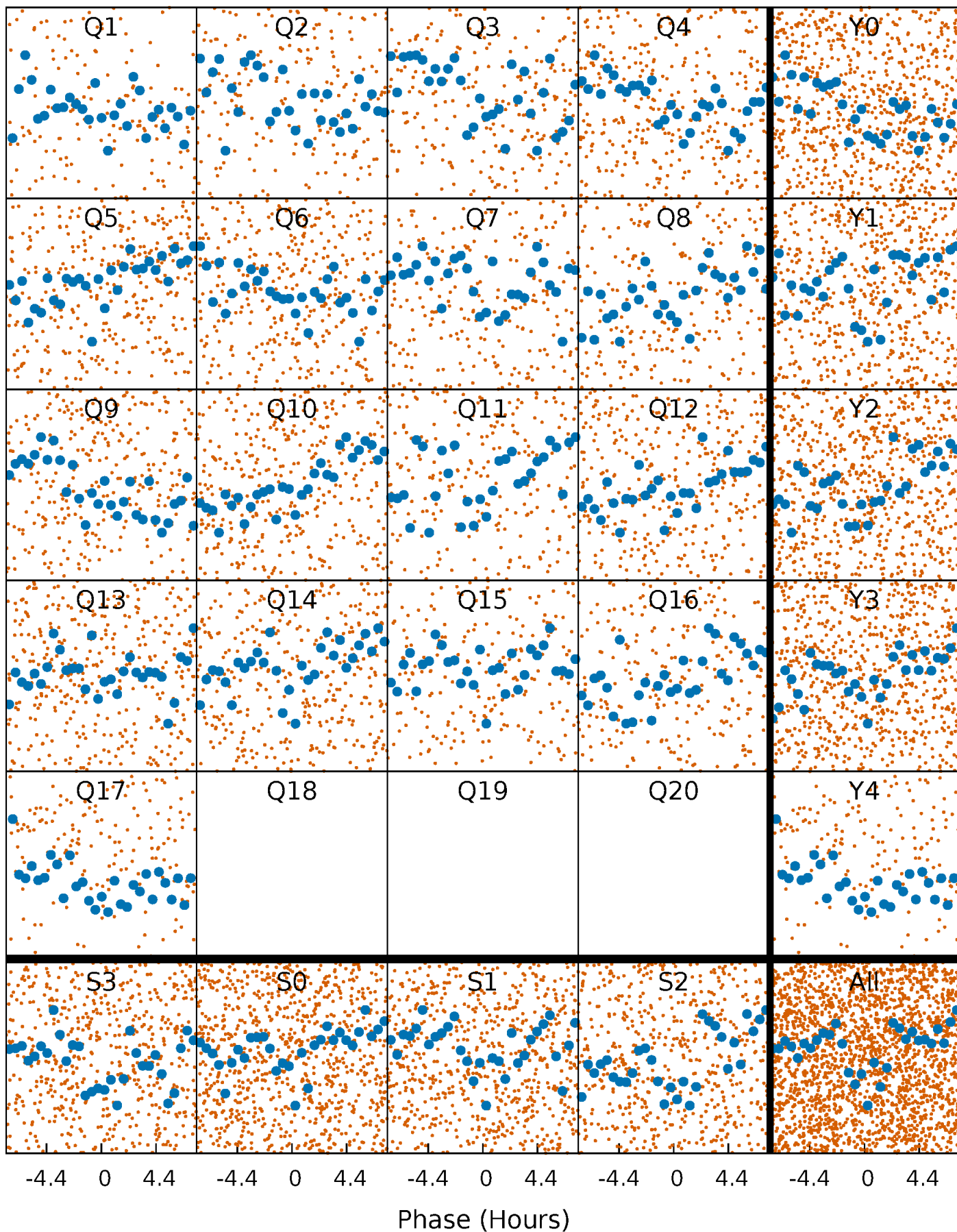


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



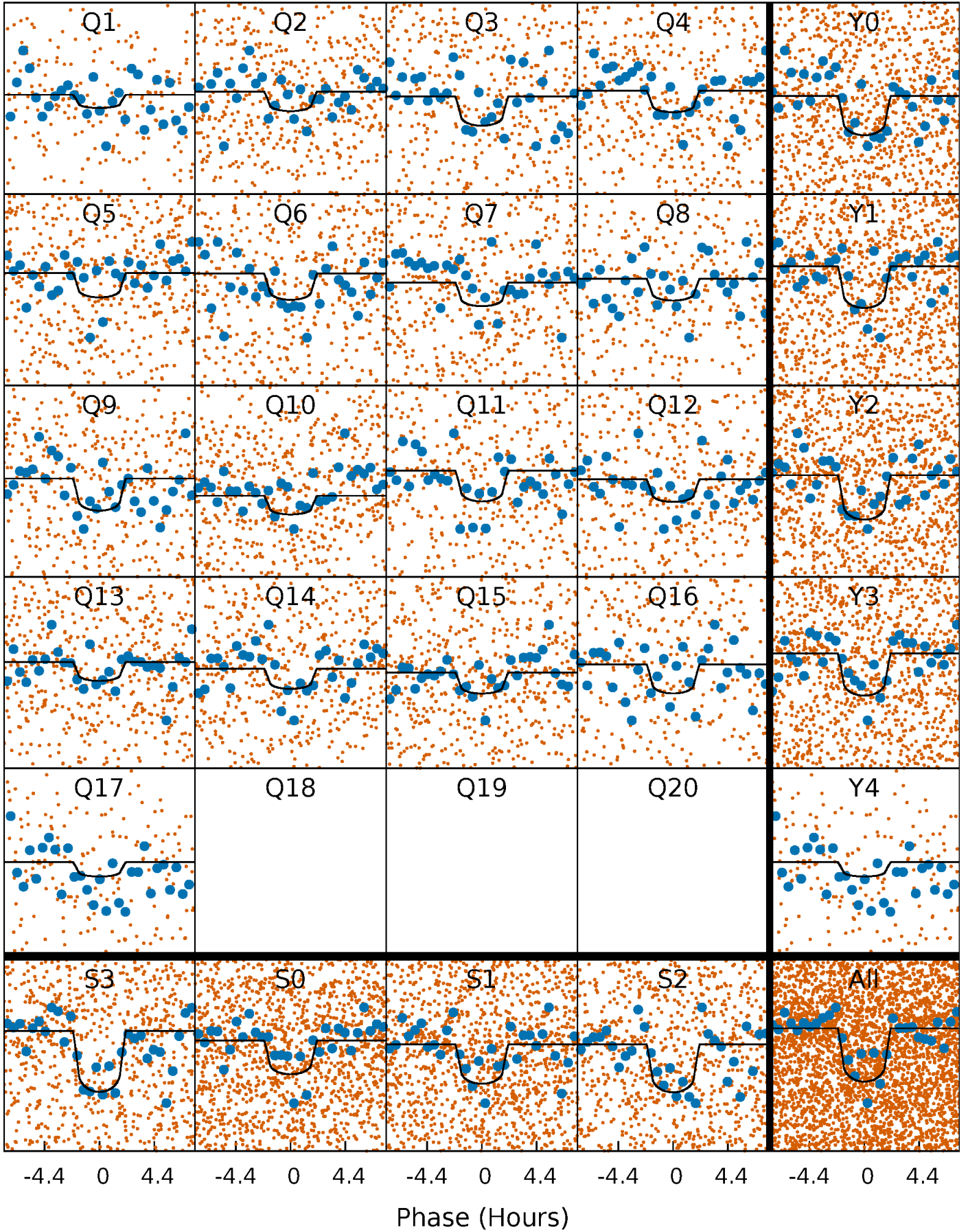
# PDC Quarter-Phased Transit Curves

TCE 010916600-02 P= 4.026681 Days  $T_0=134.386606$  (BKJD)



# DV Quarter-Phased Transit Curves

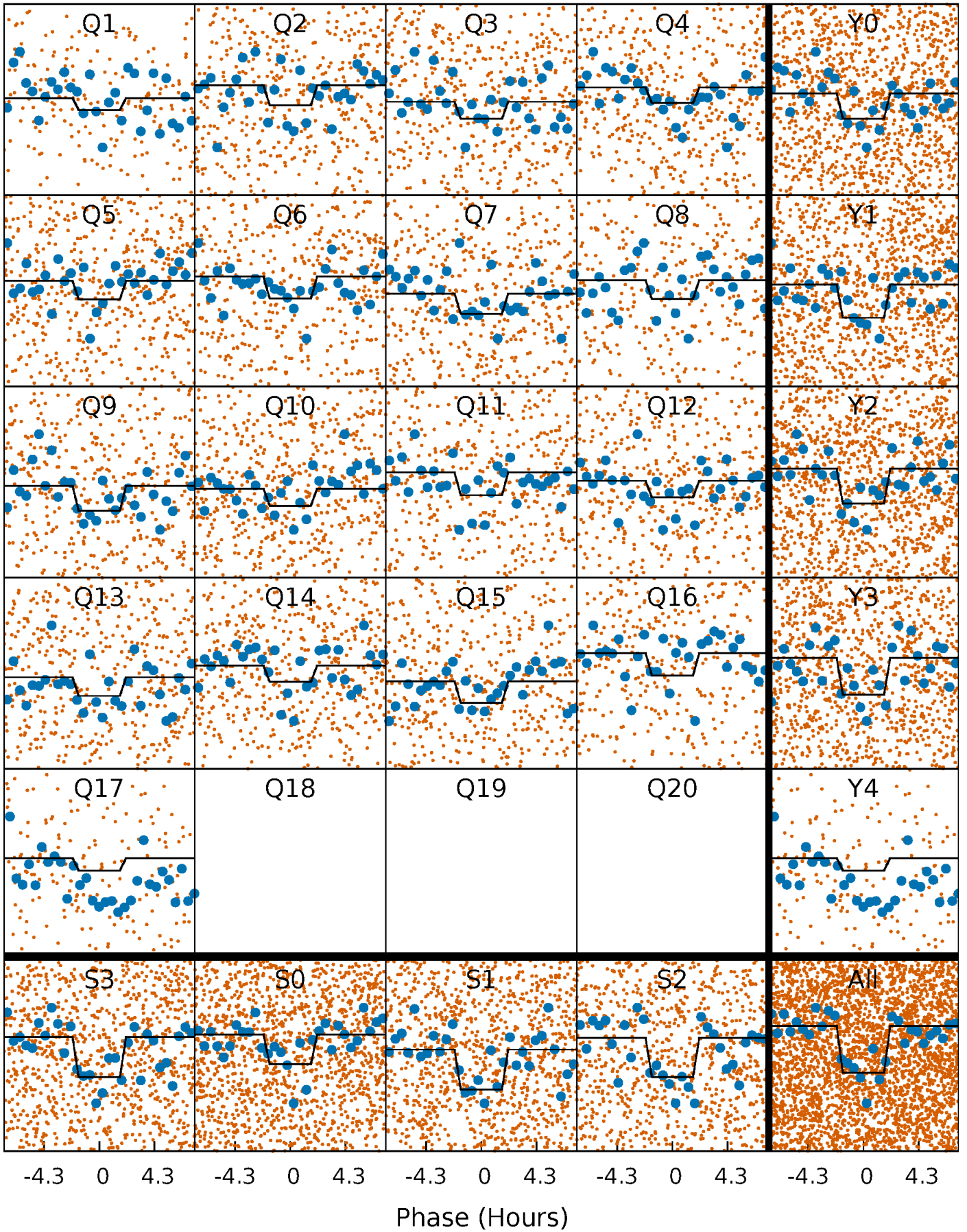
TCE 010916600-02     $P = 4.026681$  Days     $T_0 = 134.386606$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

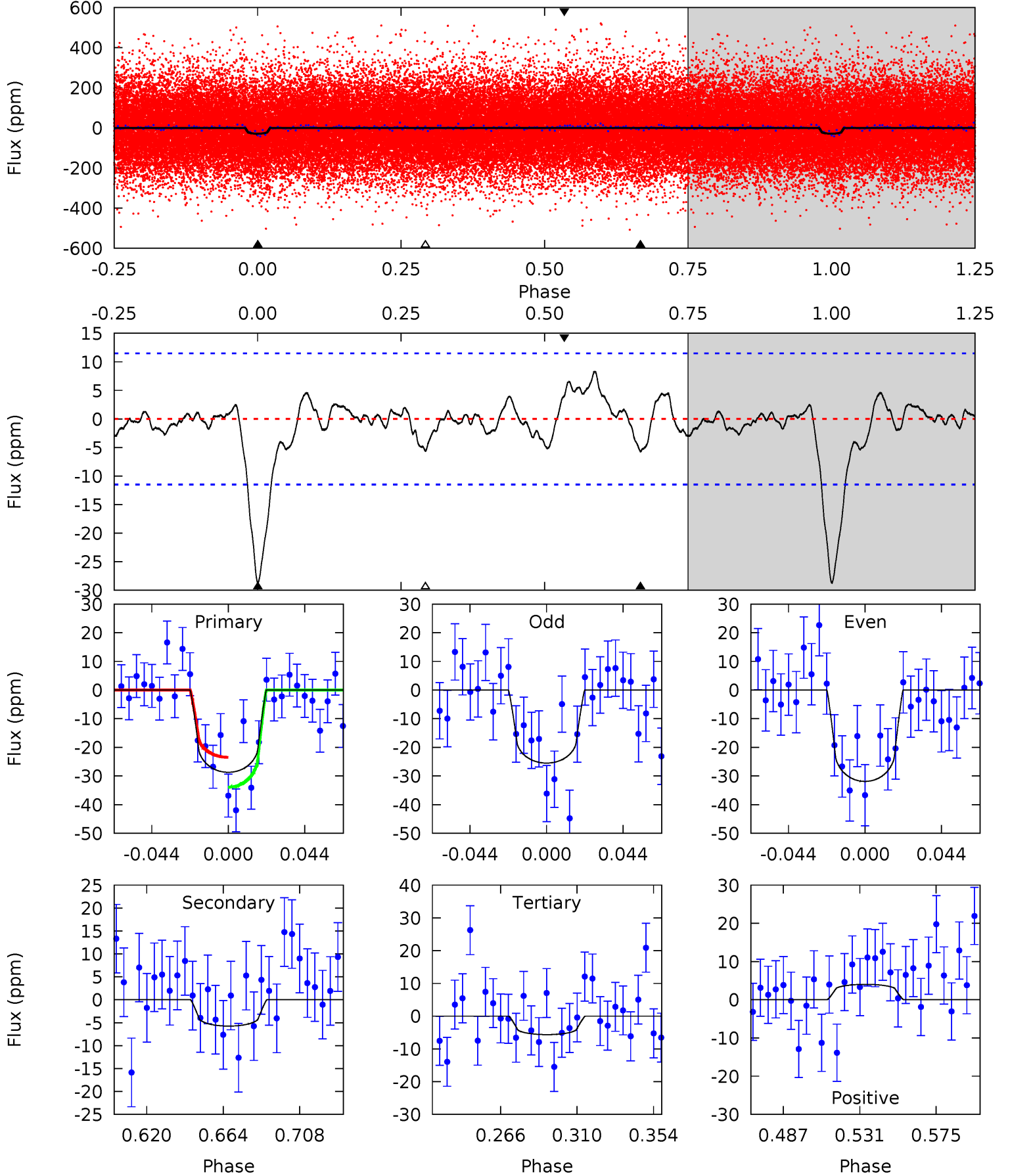
TCE 010916600-02   P= 4.026638 Days    $T_0=134.395904$  (BKJD)



# DV Model-Shift Uniqueness Test

010916600-02, P = 4.026681 Days, E = 130.359925 Days

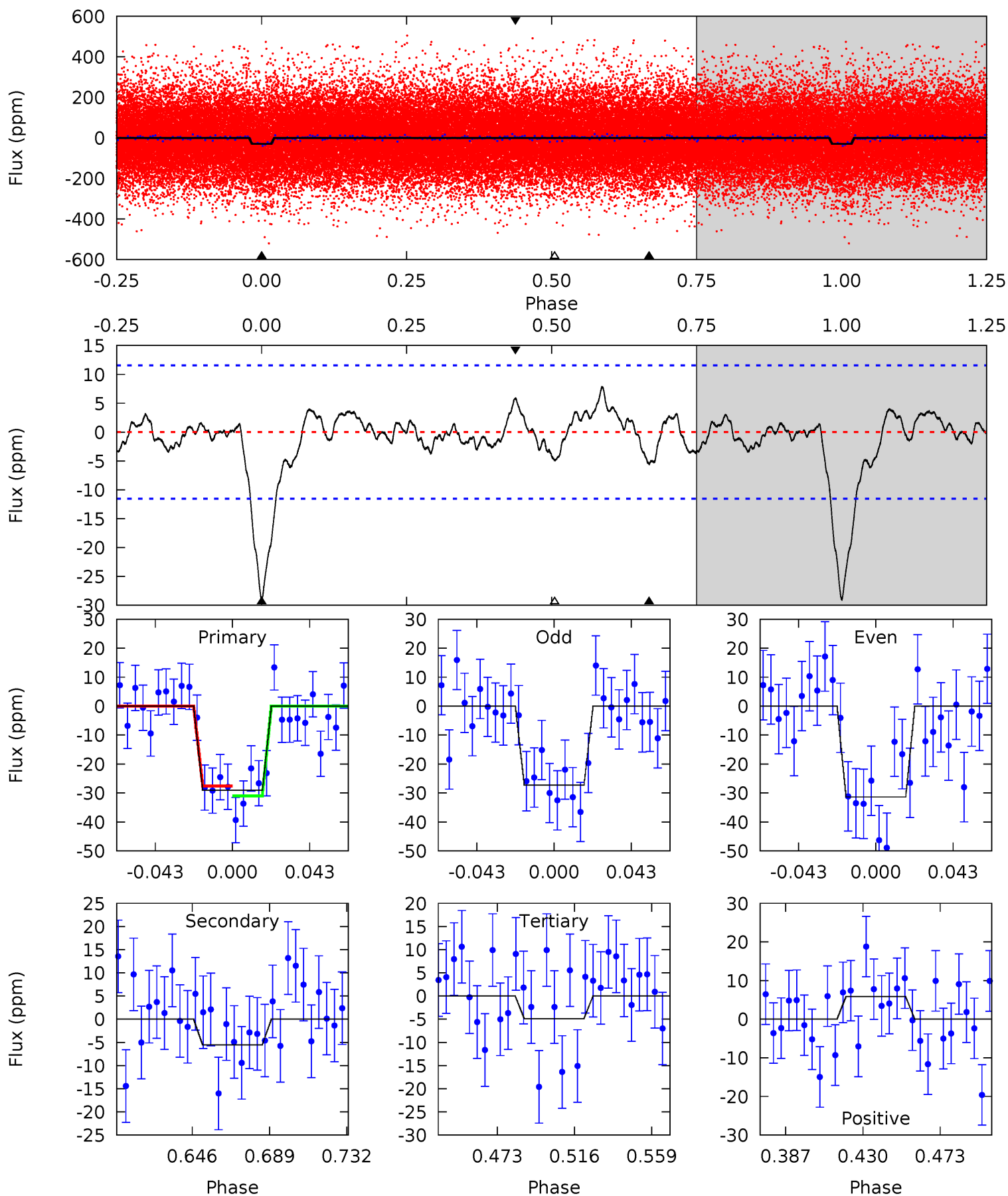
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	2.37	2.33	1.66	4.73	2.01	1.08	9.51	10.2	0.04	0.71	1.32	1.14	0.22	2.15



# Alt Model-Shift Uniqueness Test

010916600-02, P = 4.026638 Days, E = 130.369266 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
11.9	2.29	2.02	2.41	4.74	2.02	1.02	9.91	9.53	0.27	-0.12	0.84	0.87	0.21	0.70



### Stellar Parameters For KIC 010916600

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6187^{+74}_{-80}$	$4.341^{+0.050}_{-0.150}$	$0.260^{+0.150}_{-0.200}$	$1.238^{+0.256}_{-0.091}$	$1.230^{+0.087}_{-0.073}$	$0.913^{+0.180}_{-0.383}$
	+1%/-1%	+1%/-3%	+58%/-77%	+21%/-7%	+7%/-6%	+20%/-42%
Source	SPE90	FLK73	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010916600-02 / KOI 2623.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-6 \pm 2$	$0.82^{+0.33}_{-0.34}$	$1854^{+85}_{-50}$	$4136^{+1058}_{-546}$	$13^{+25}_{-7}$
Alt.	$-6 \pm 2$	$0.76^{+0.30}_{-0.34}$	$1860^{+85}_{-52}$	$4238^{+1255}_{-600}$	$14^{+36}_{-8}$

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

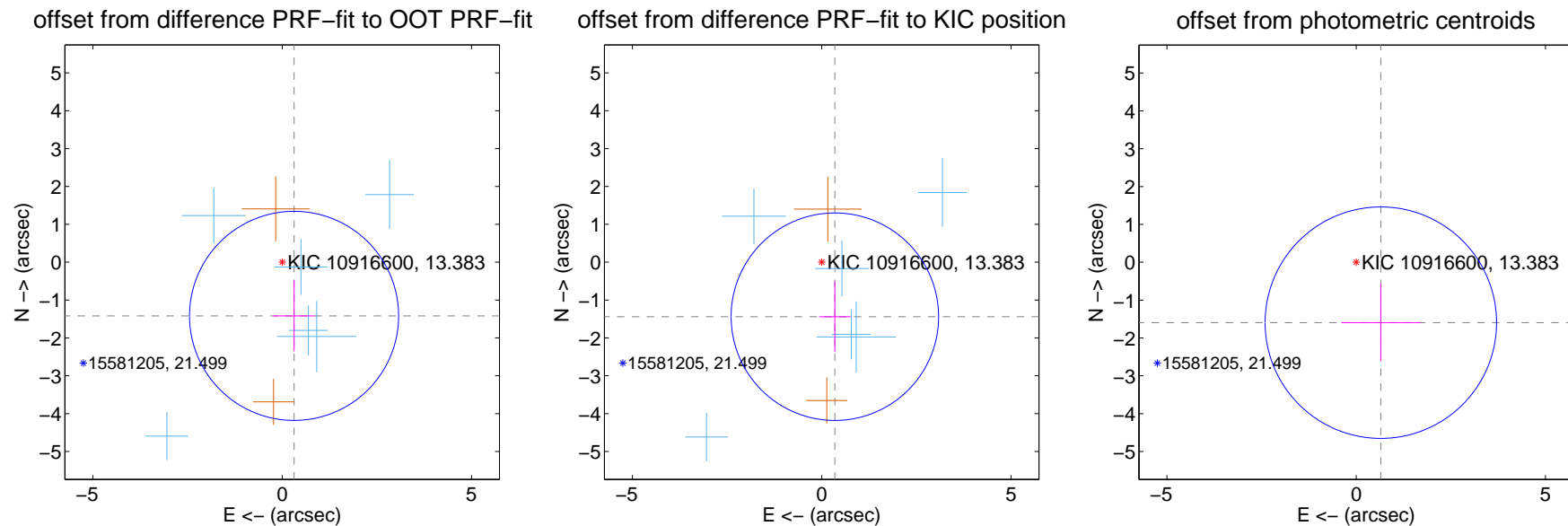
## DV Centroid Data

Supplemental centroid analysis for 010916600-02. Kepler magnitude: 13.38. Transit SNR 8.70

There are 6 quarters with good PRF difference image offsets

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

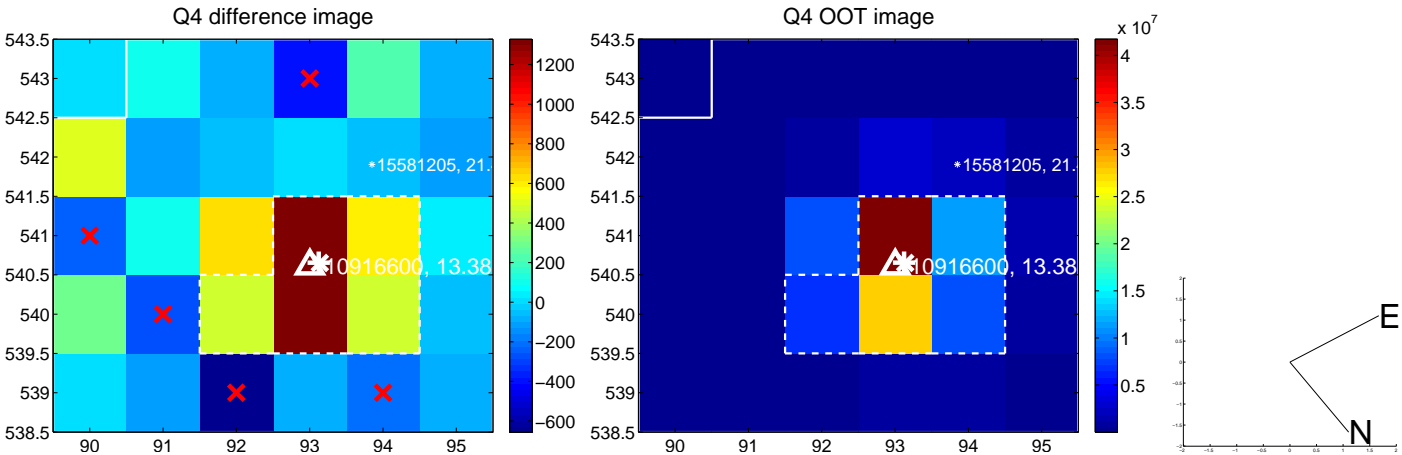
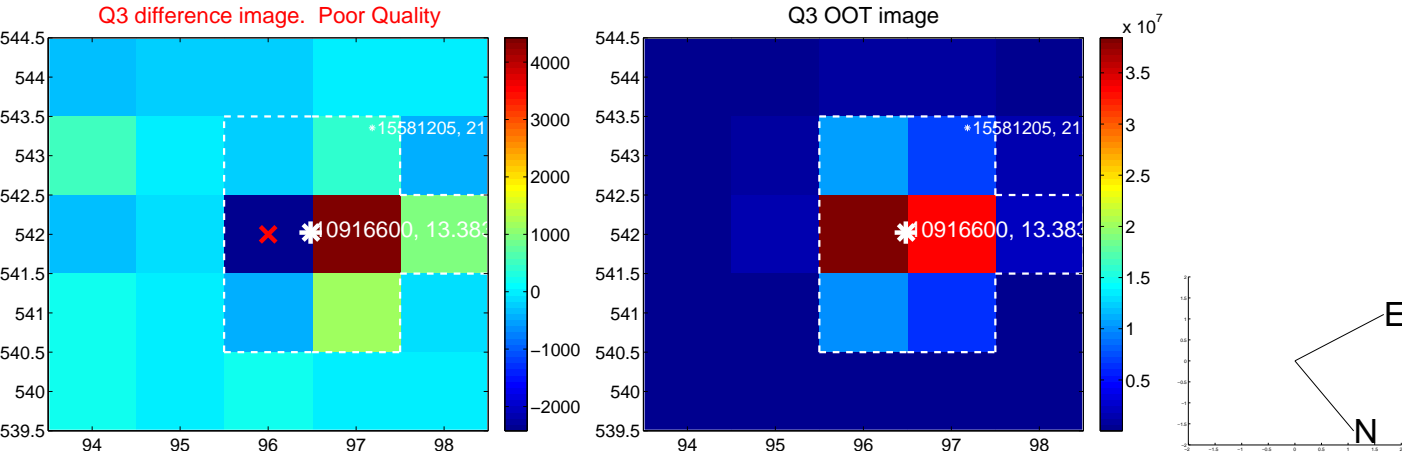
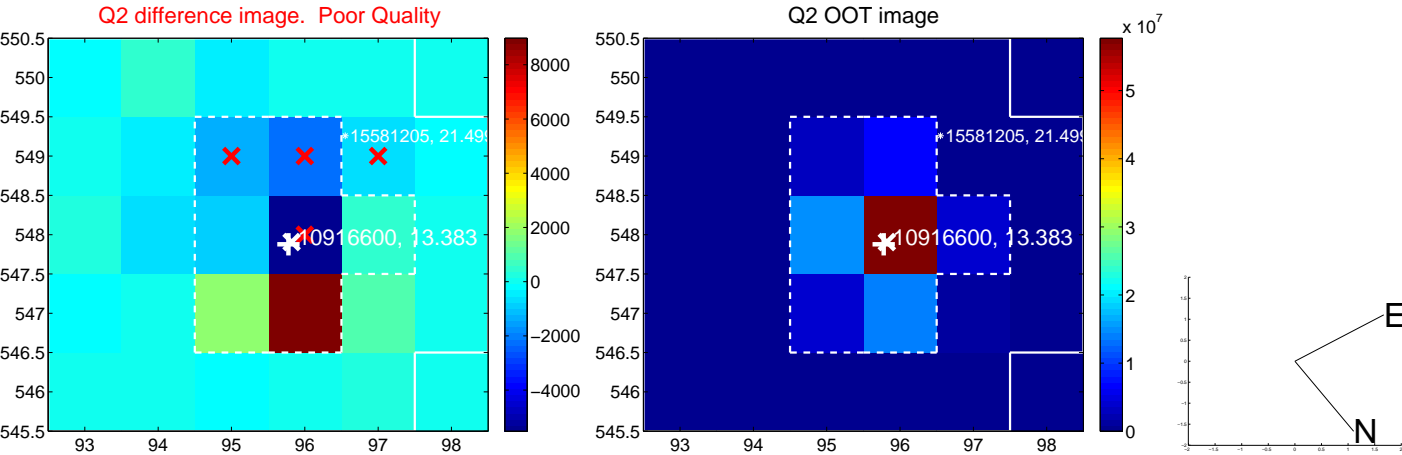
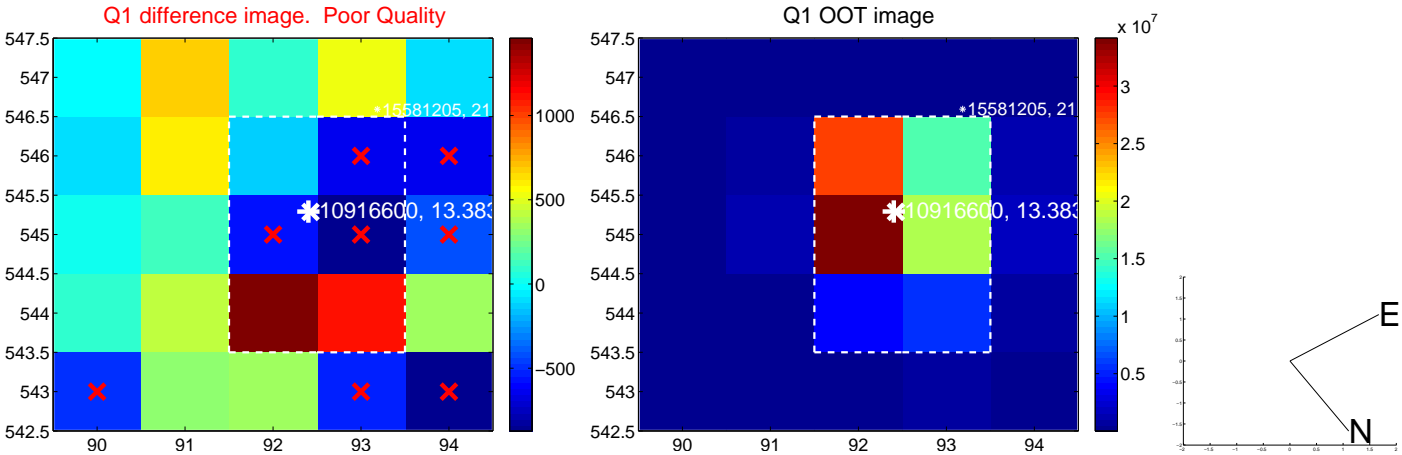
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.452 \pm 0.920$	1.58	$-0.313 \pm 0.548$	$-1.418 \pm 0.935$
PRF-fit source offset from KIC position	$1.481 \pm 0.913$	1.62	$-0.347 \pm 0.418$	$-1.440 \pm 0.934$
photometric centroid source offset	$1.72 \pm 1.02$	1.69	$-0.65 \pm 1.04$	$-1.60 \pm 1.02$



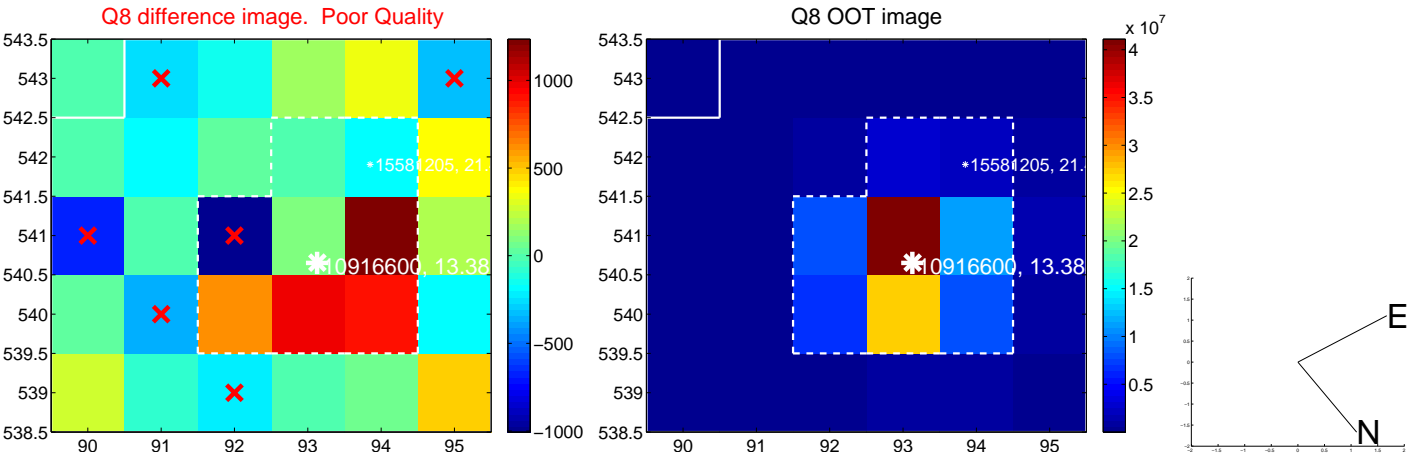
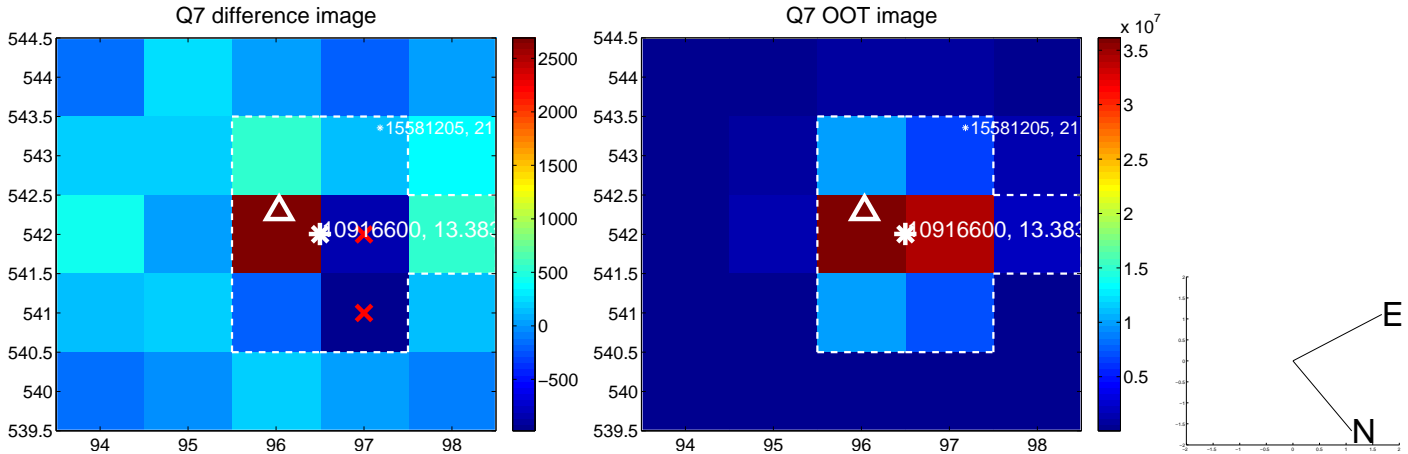
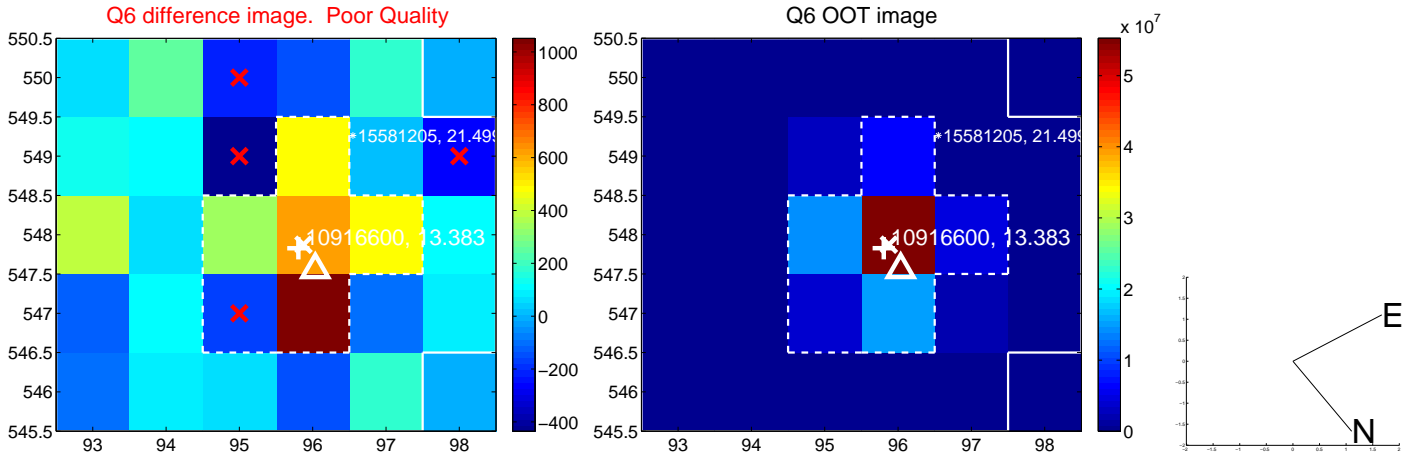
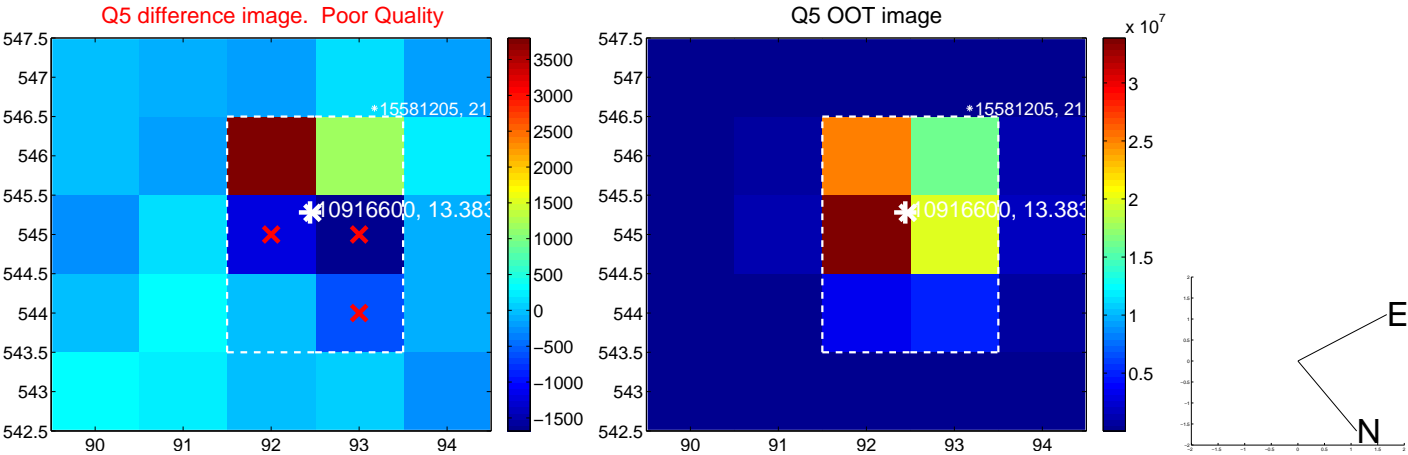
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



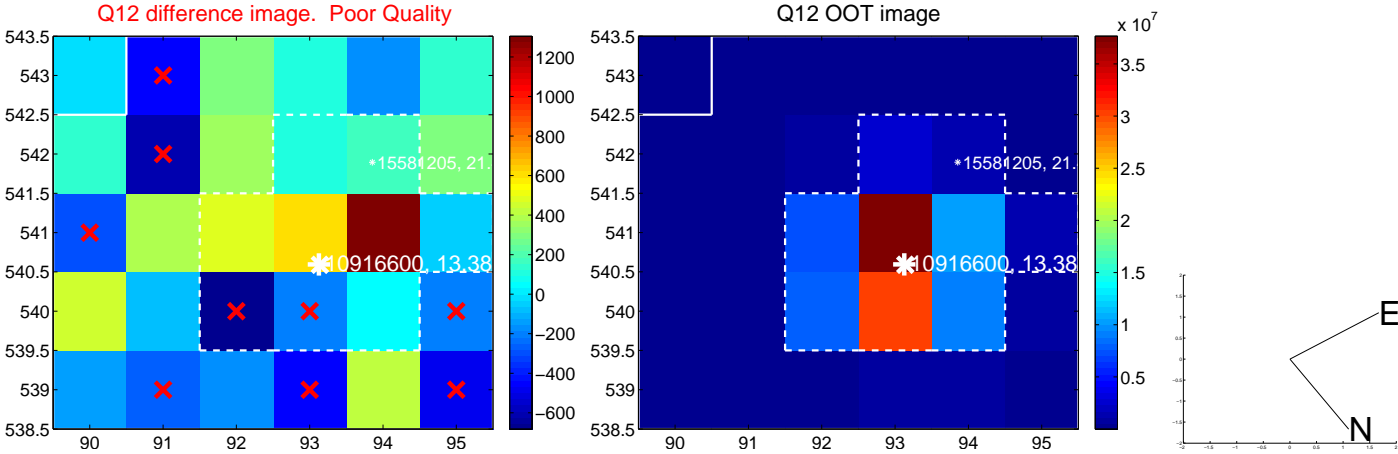
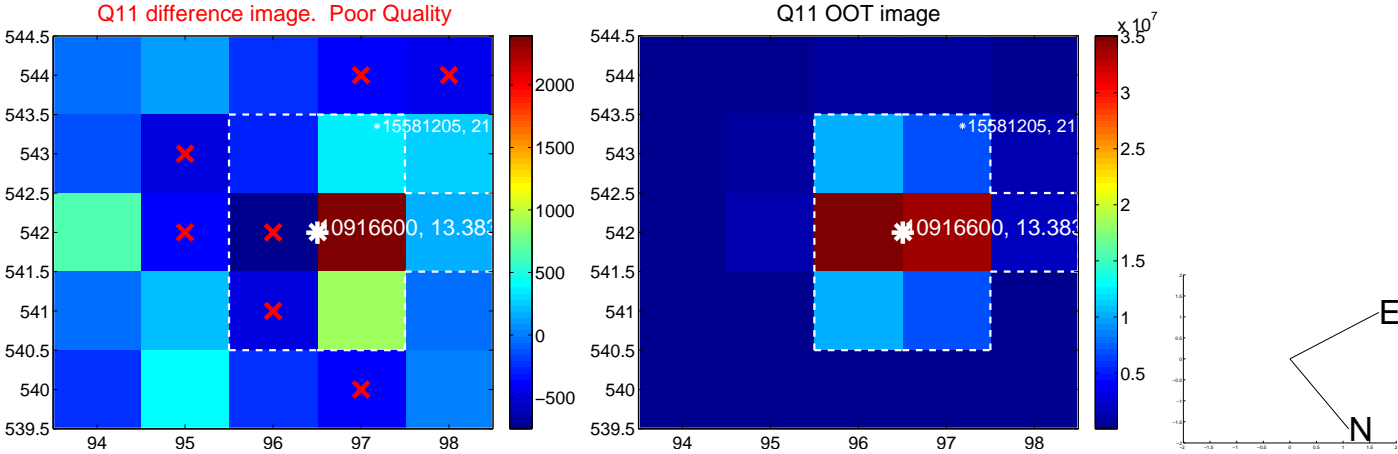
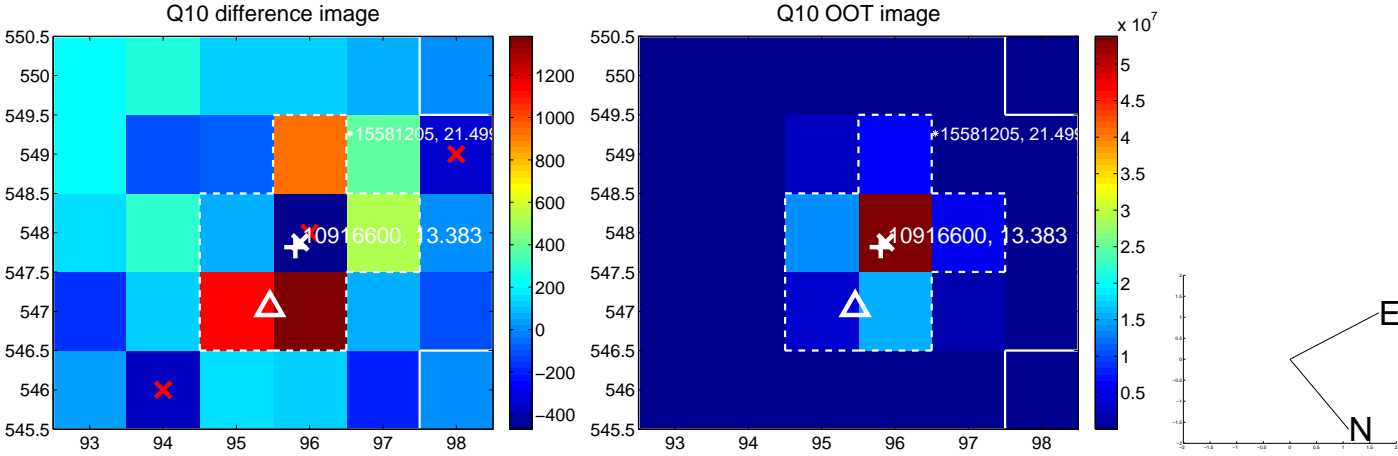
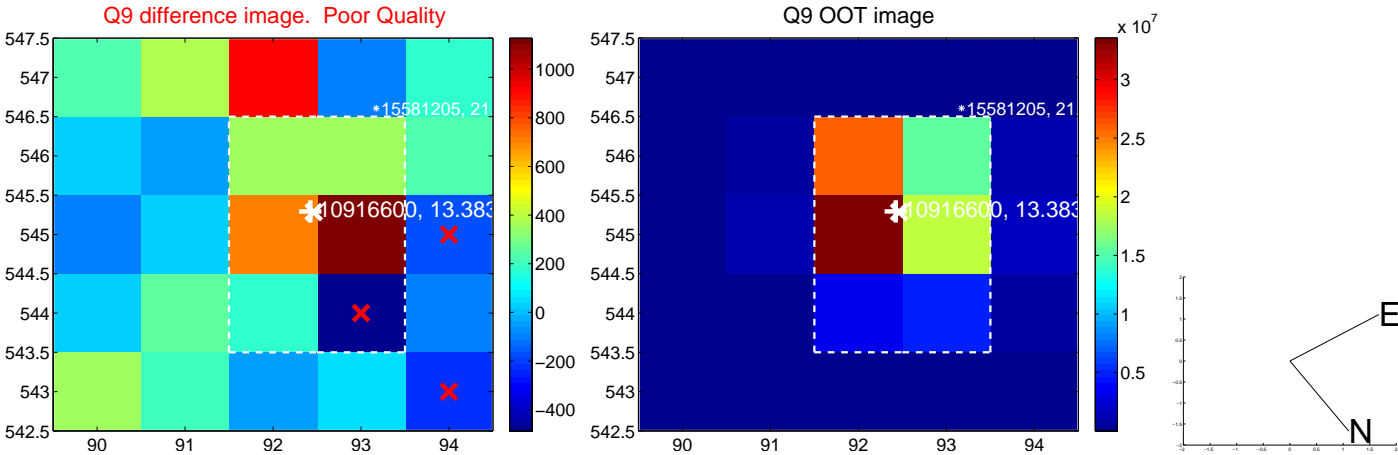
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



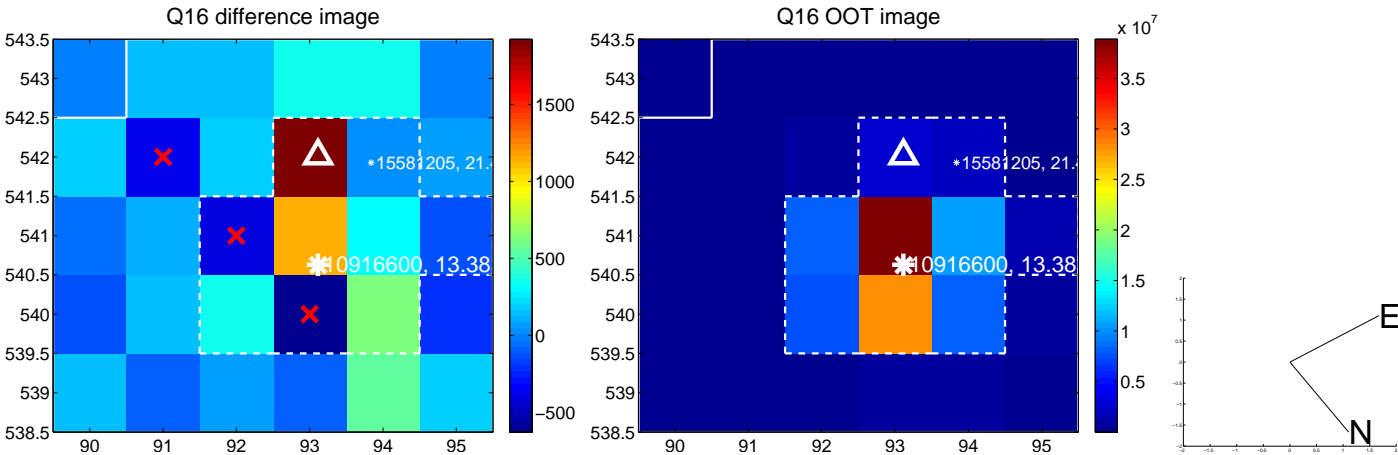
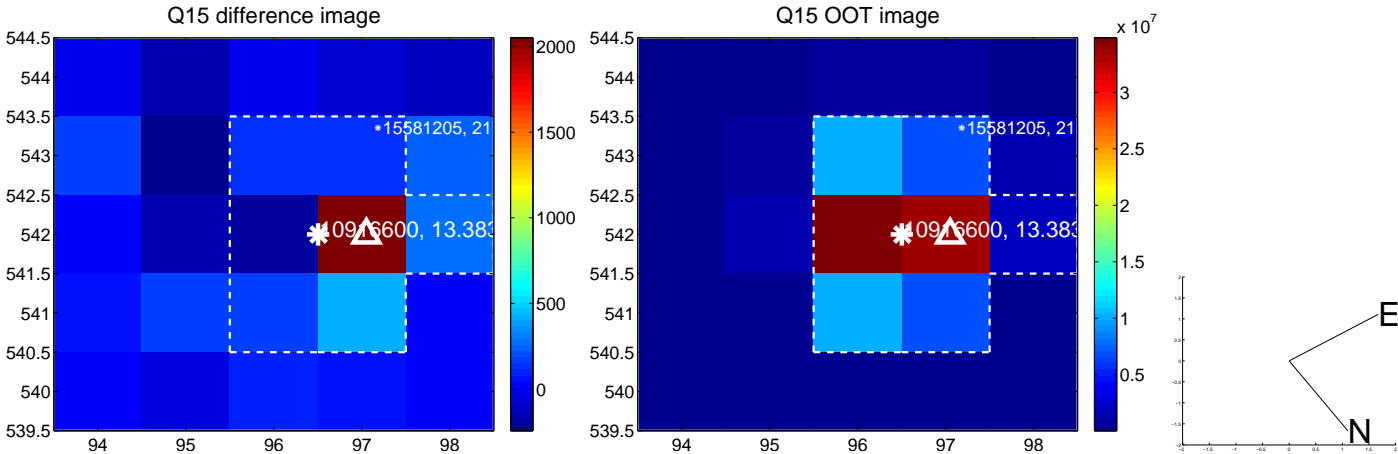
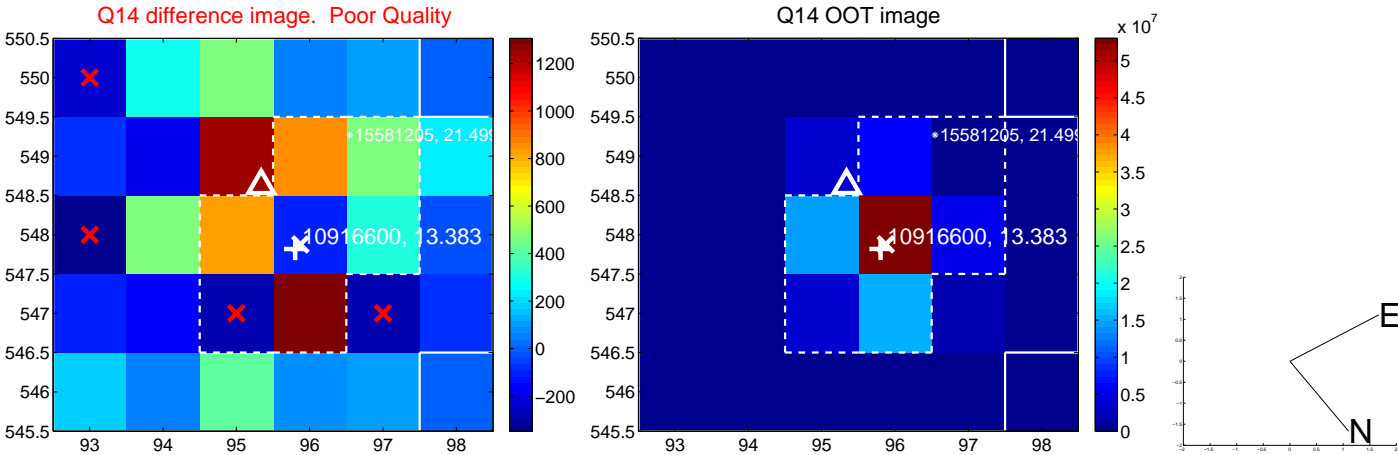
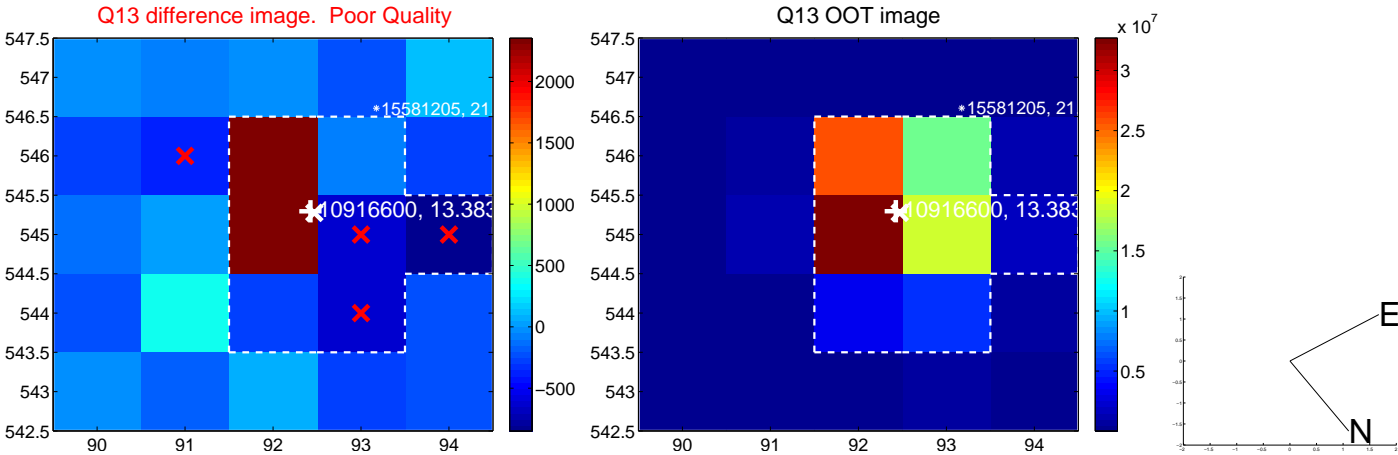
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



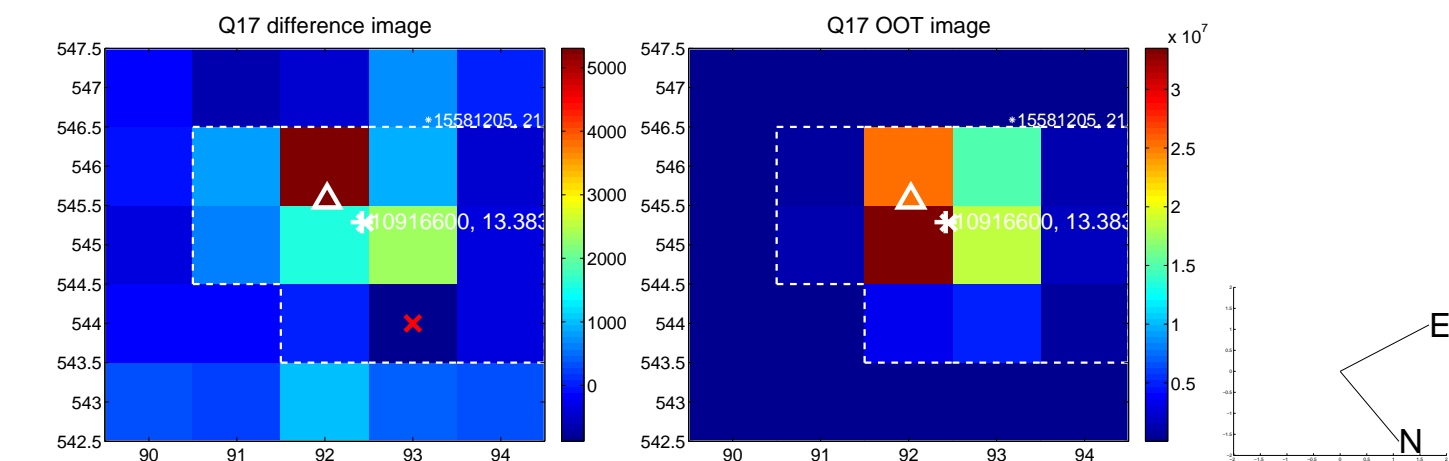
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



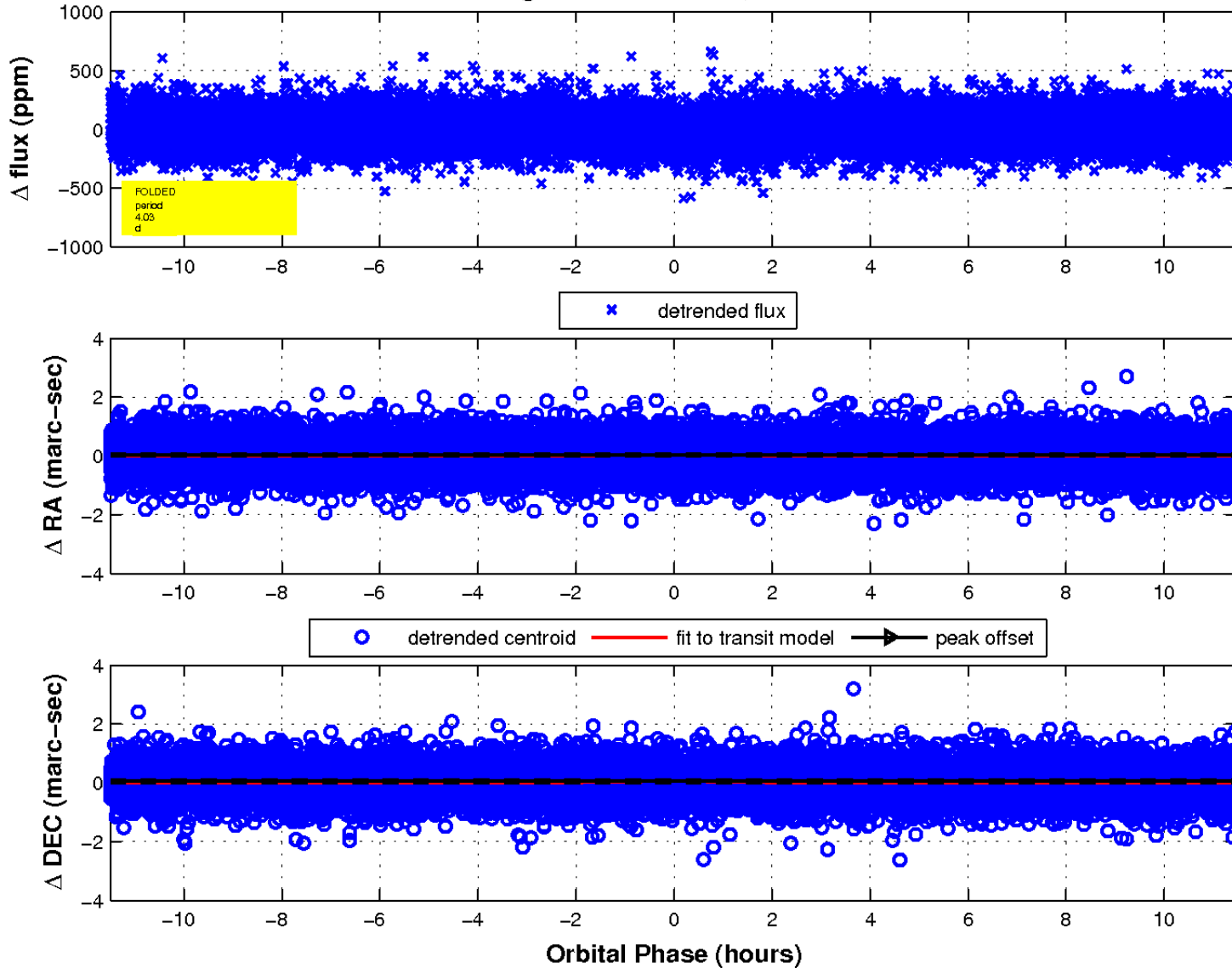
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

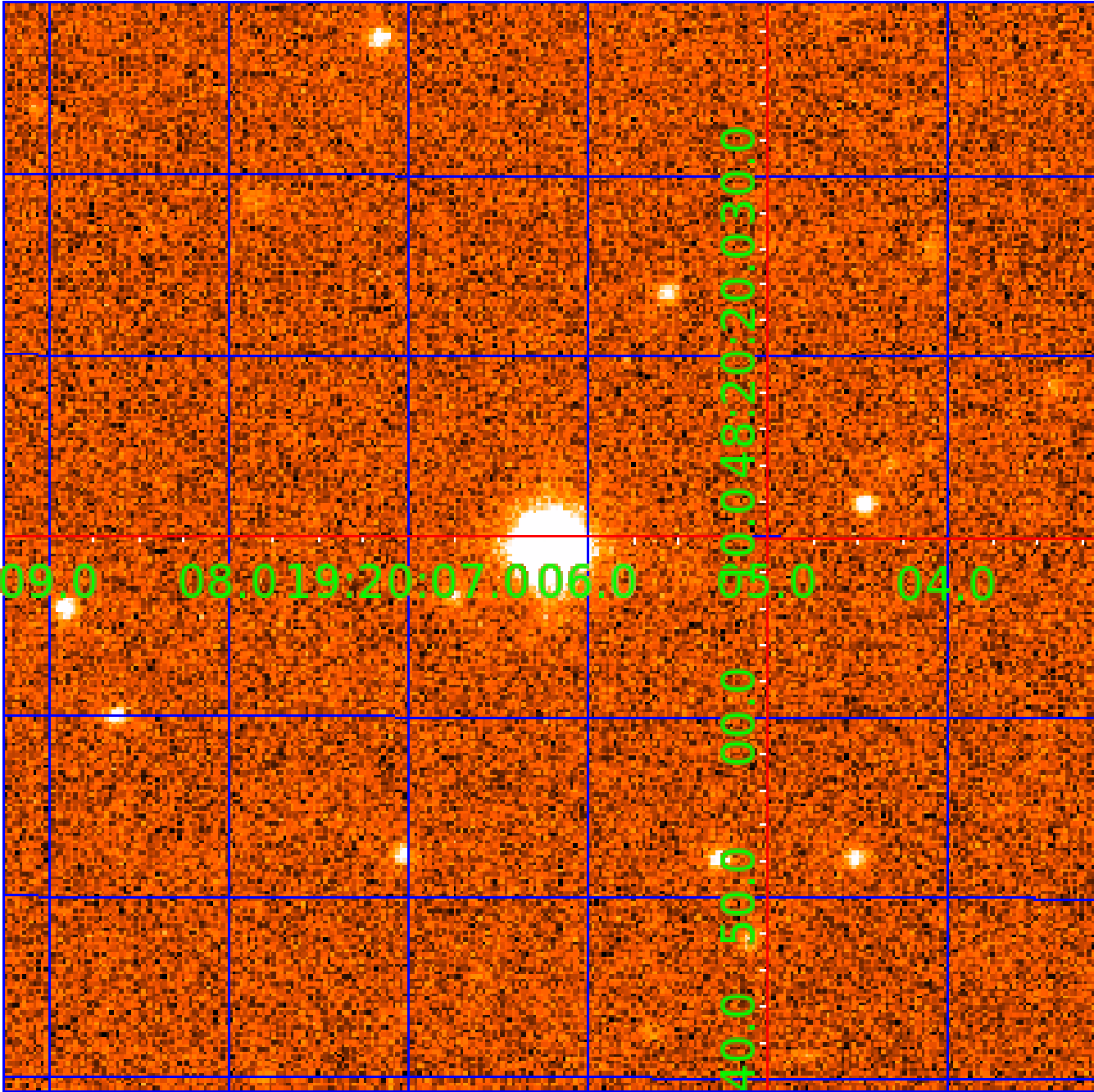


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 010916600

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010916600-01	OBS	2623.01	5.576460	136.437314	52.6	3.848	12.9	12.6	1.24	6187	1.03	463.61
010916600-02	OBS	2623.02	4.026681	134.386606	32.1	3.832	8.2	8.7	1.24	6187	0.79	715.65
010916600-03	OBS	No	265.999086	294.315842	217.6	3.309	8.9	5.6	1.24	6187	1.97	2.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010916600-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010916600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

## Ephemeris Match Information For 010916600-03

No Significant Match Found

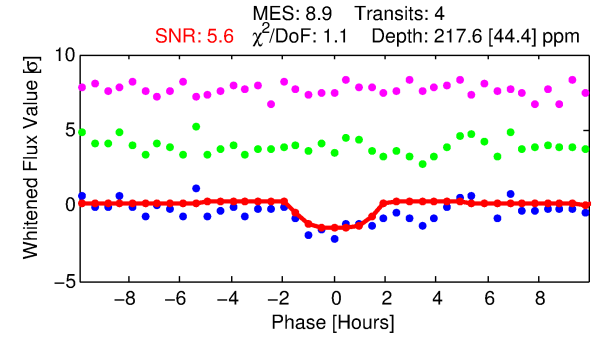
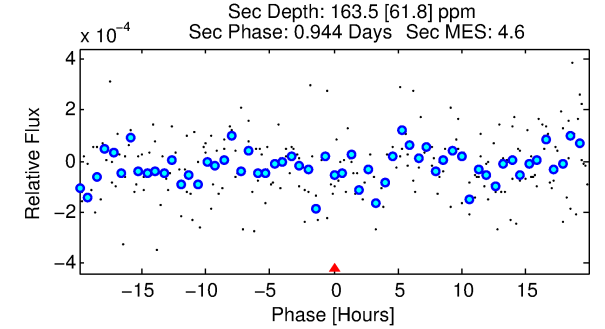
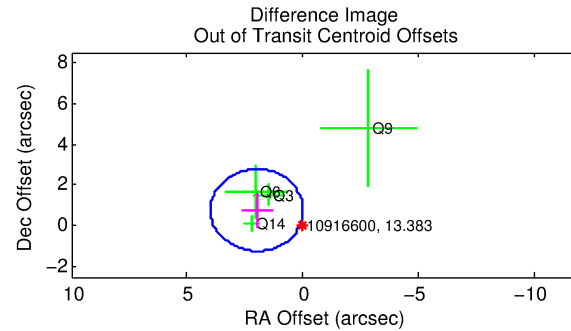
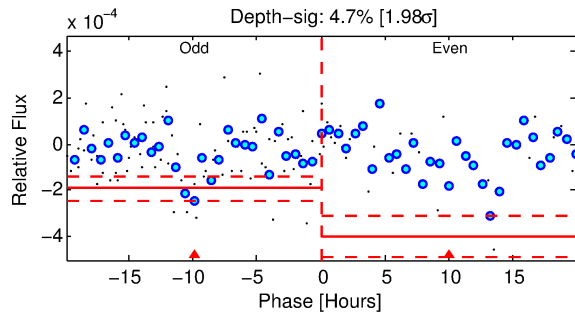
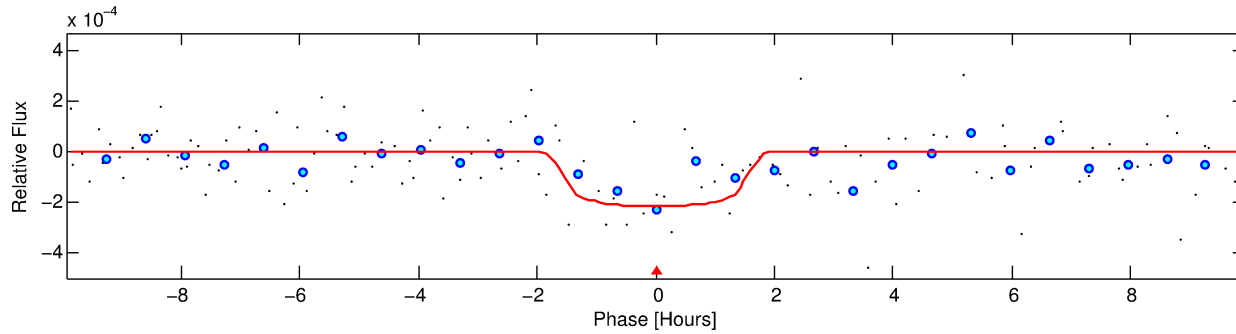
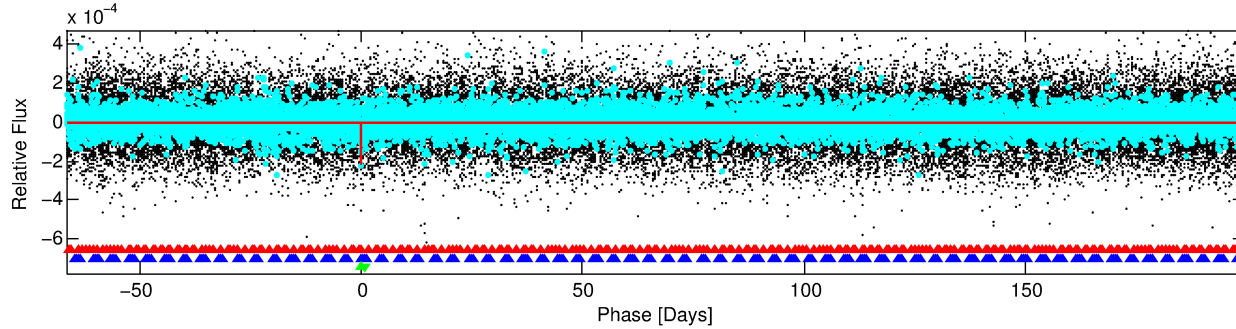
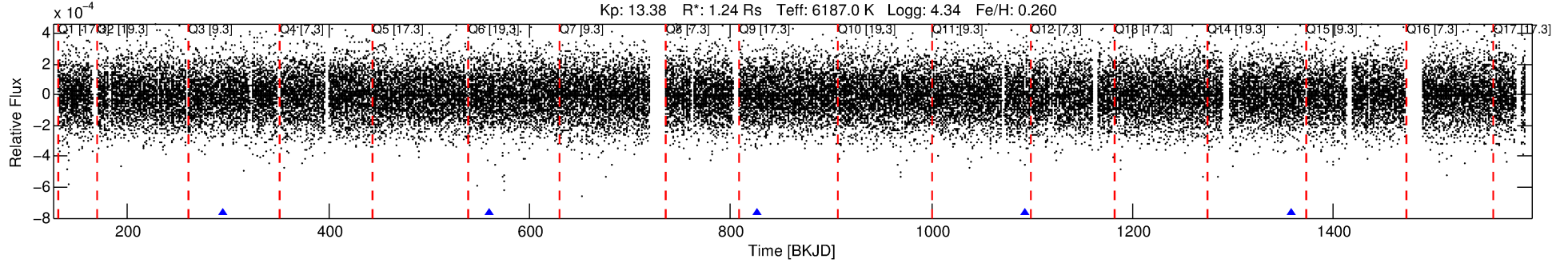


# DV One-Page Summary

KIC: 10916600 Candidate: 3 of 3 Period: 265.999 d

KOI: K02623 Corr: No Ephemeris Match

Kp: 13.38 R\*: 1.24 Rs Teff: 6187.0 K Logg: 4.34 Fe/H: 0.260



## DV Fit Results:

Period = 265.99909 [0.00567] d  
Epoch = 294.3158 [0.0139] BKJD  
Rp/R\* = 0.0146 [0.0298]  
a/R\* = 431.49 [4249.95]  
b = 0.73 [6.31]  
Seff = 2.68 [0.73]  
Teq = 326 [22] K  
Rp = 1.97 [4.04] Re  
a = 0.8665 [0.1556] AU  
Ag = 17383.44 [71415.93] [0.24σ]  
Teff = 5792 [5937] K [0.92σ]

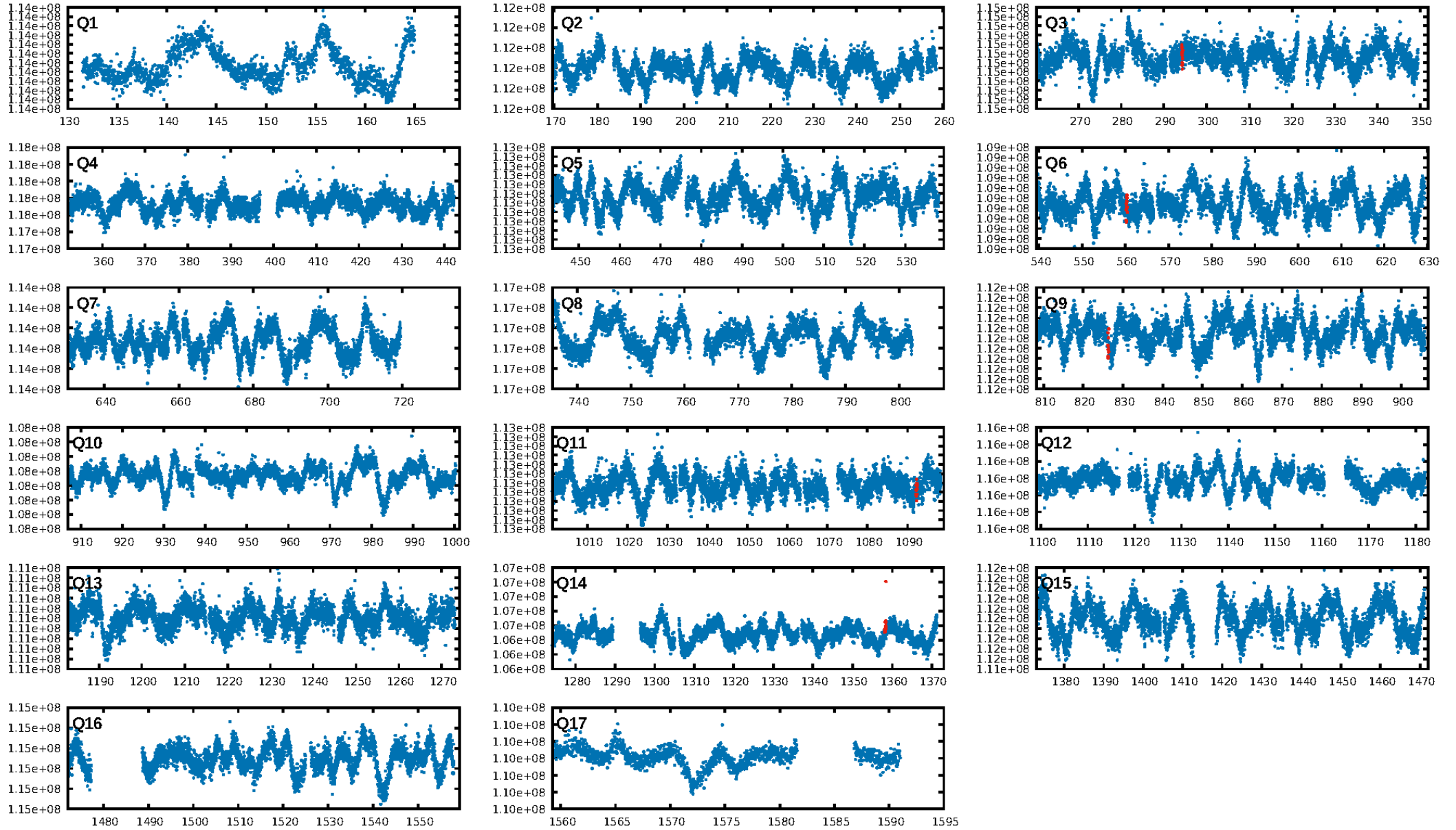
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1231.53σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 13.7%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: 1.97e-17  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.466**  
Centroid-sig: 29.6%  
Centroid-so: 1.785 arcsec [1.31σ]  
**OotOffset-rm: 2.130 arcsec [3.19σ]**  
KicOffset-rm: 1.893 arcsec [2.80σ]  
OotOffset-st: 2/1/0/1 [4]  
KicOffset-st: 2/1/0/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.60 [3/5]

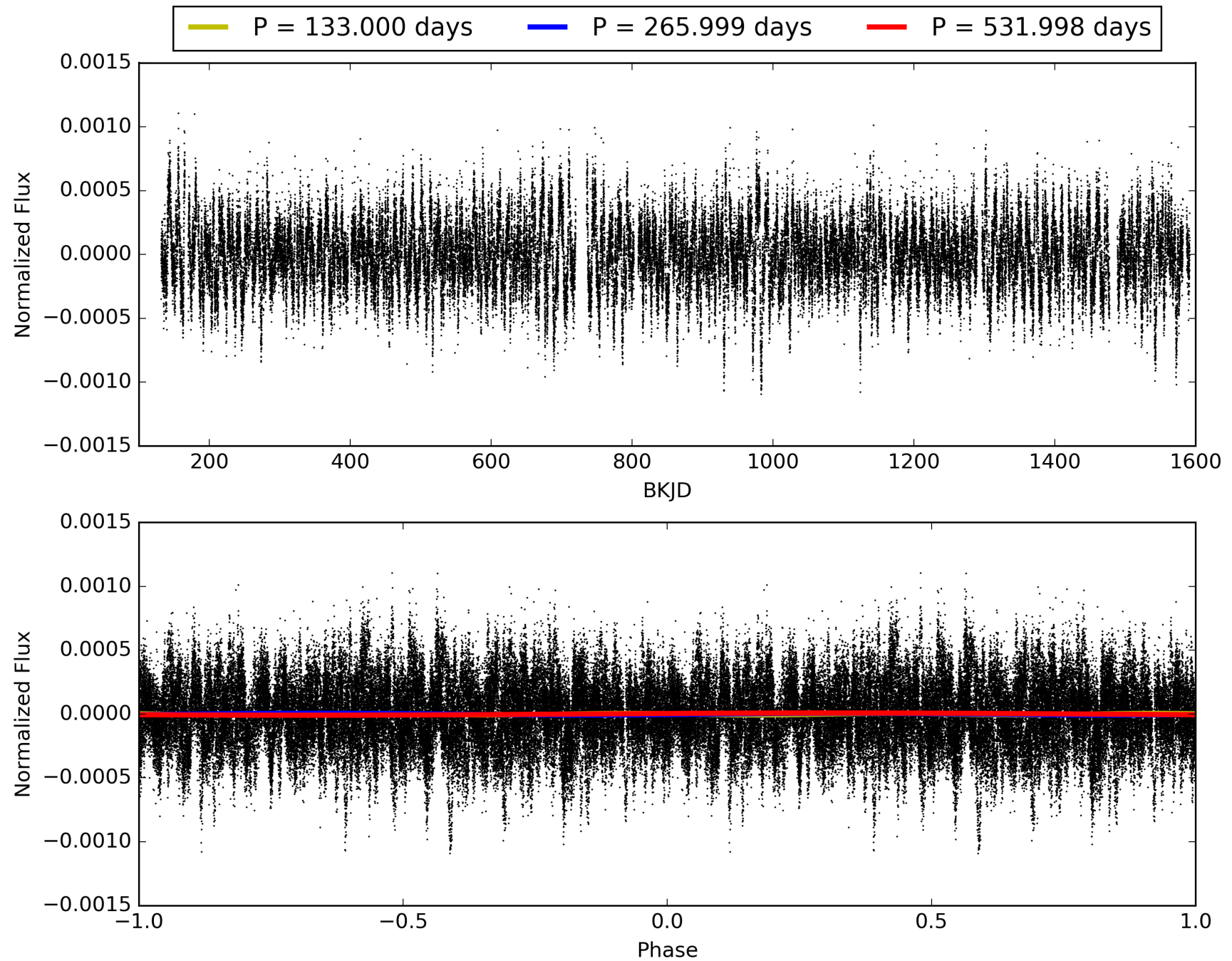
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:02:35 Z

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

# TCE 010916600-03, PDC Light Curves

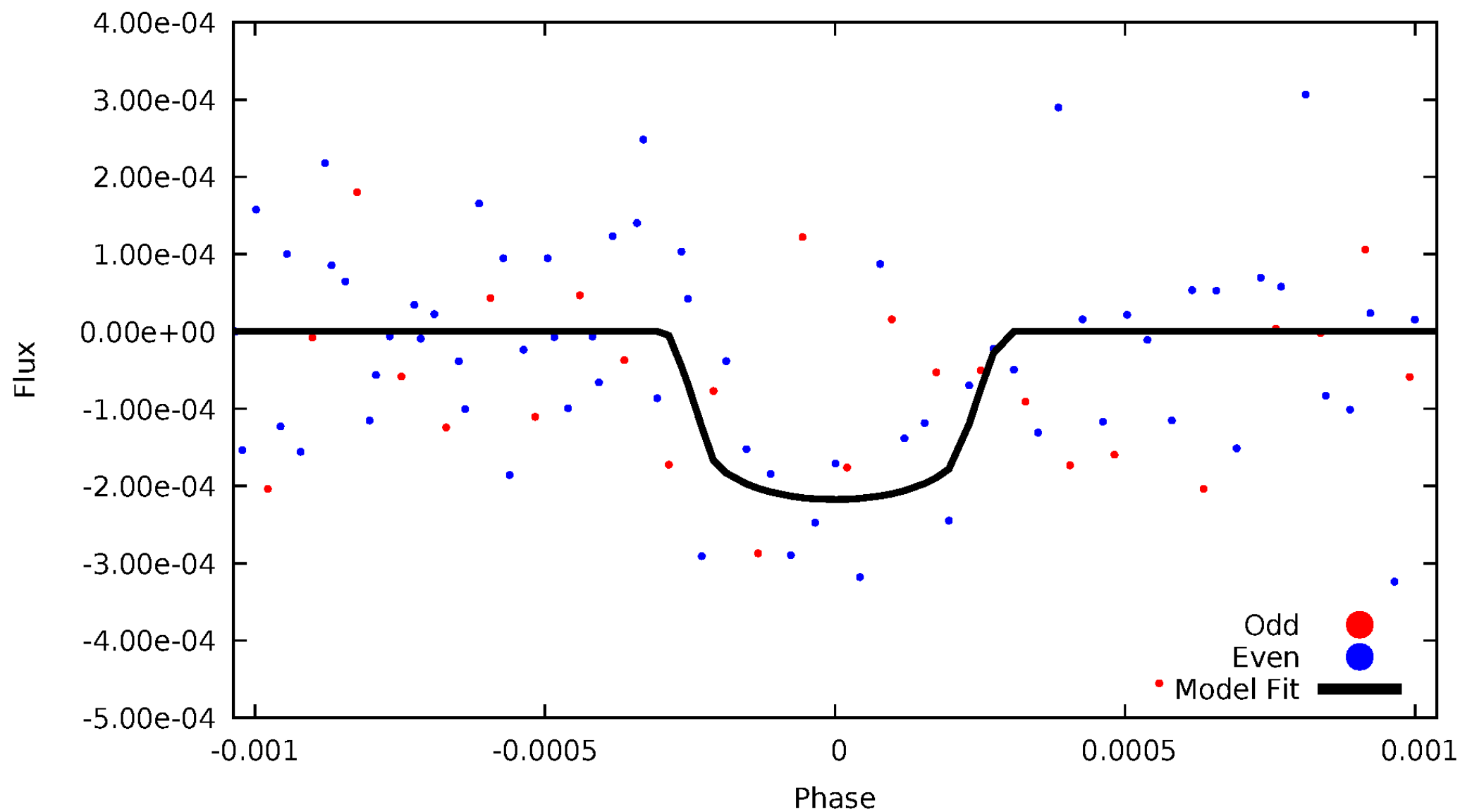


# TCE 010916600-03



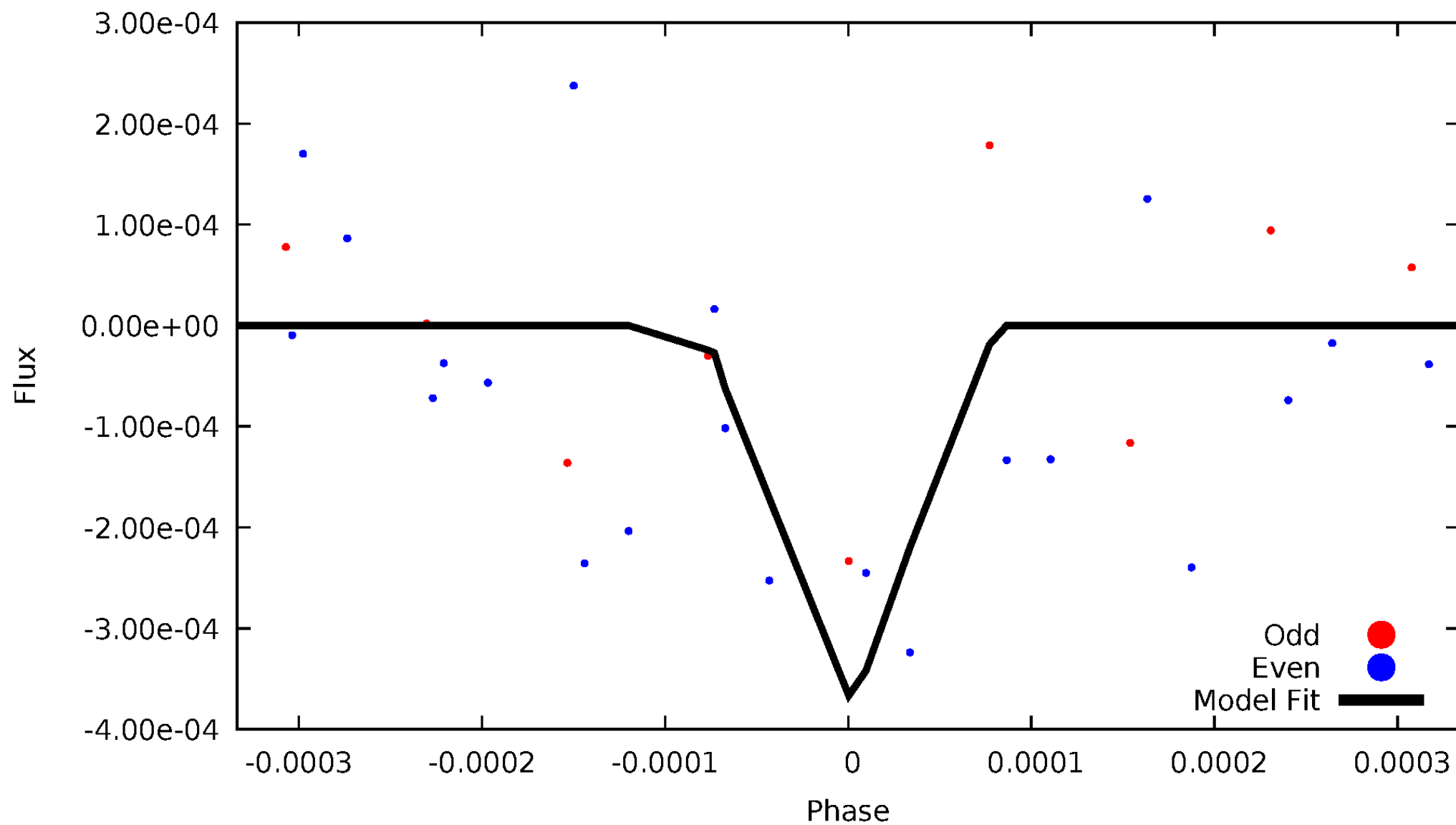
# DV Odd/Even

TCE 010916600-03



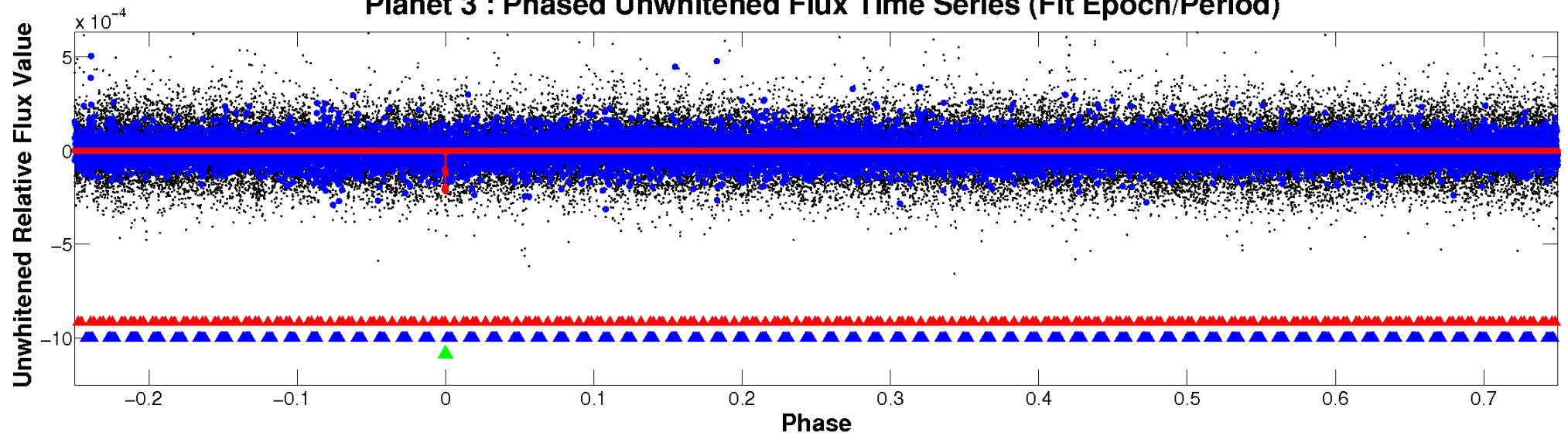
# ALT Odd/Even

TCE 010916600-03

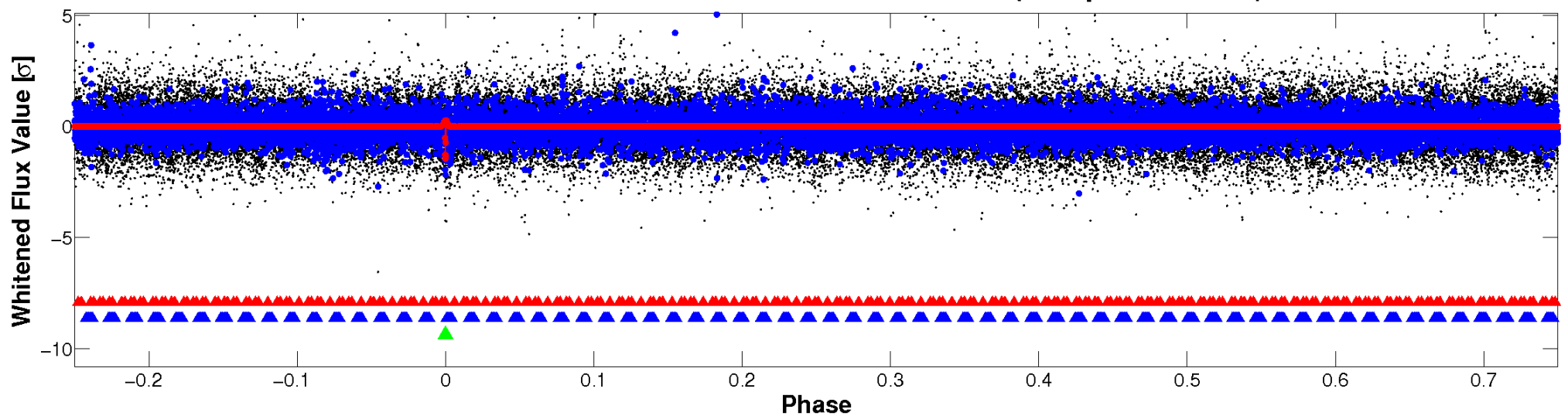


# Non-Whitened Vs. Whitened Light Curve

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



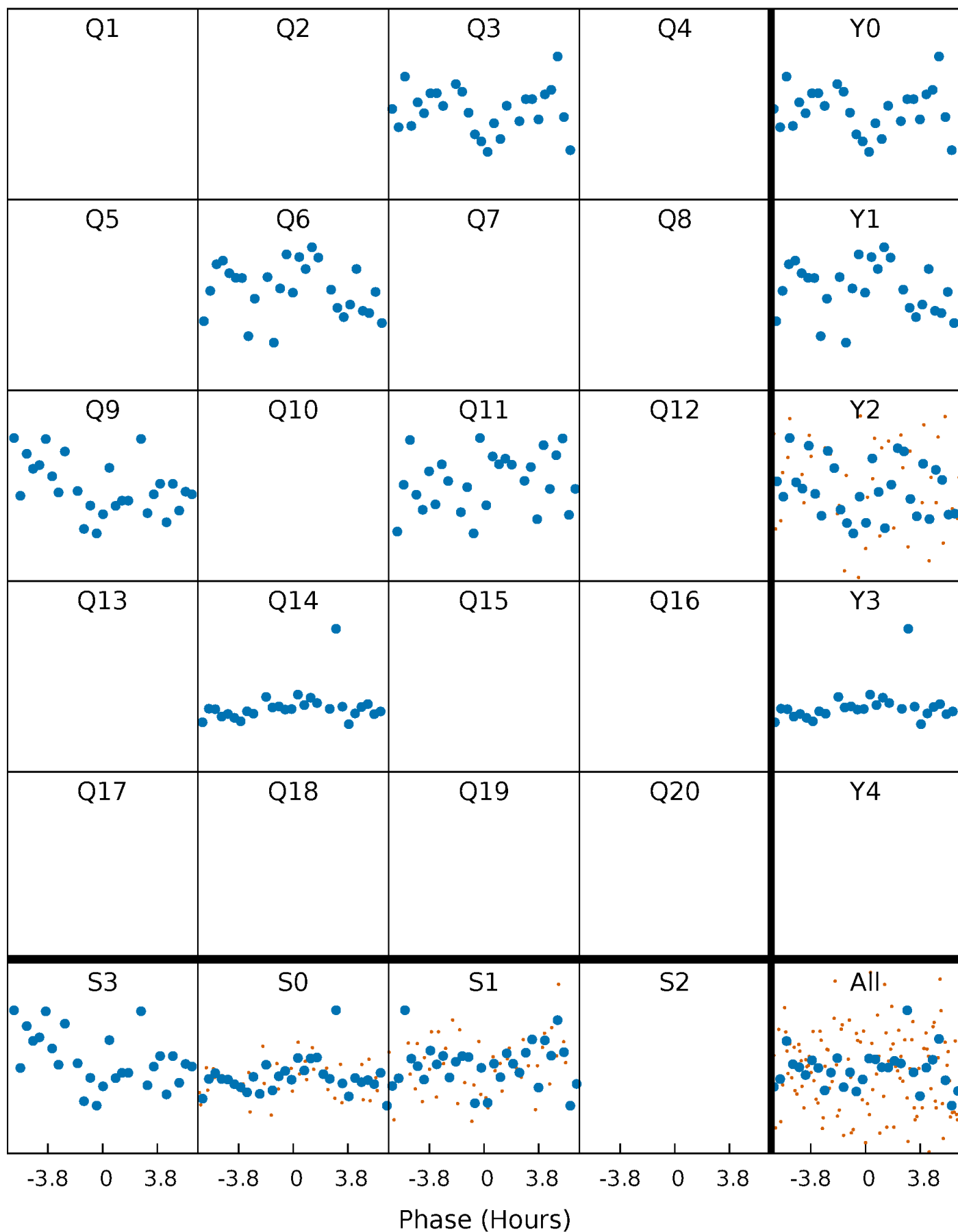
Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





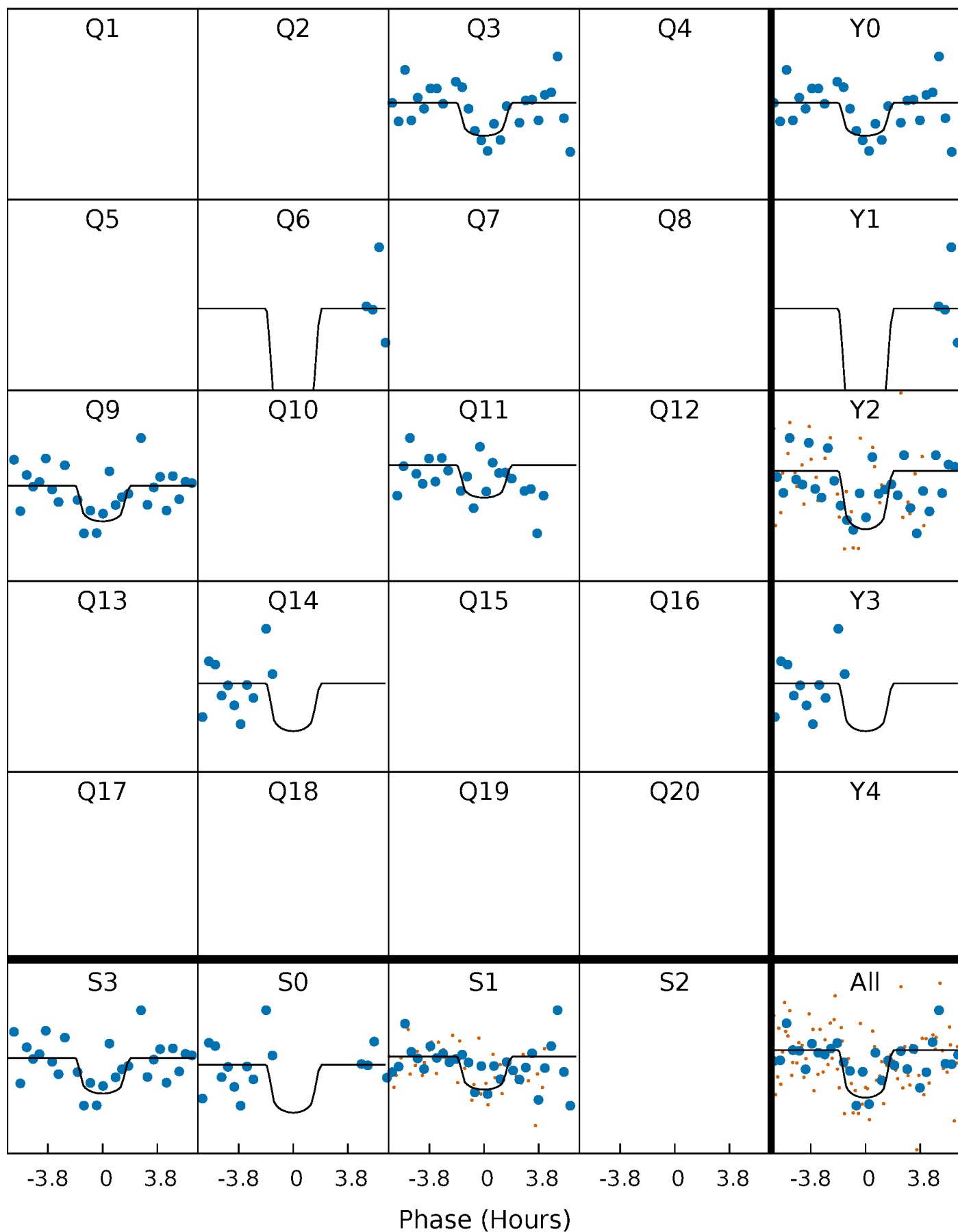
# PDC Quarter-Phased Transit Curves

TCE 010916600-03 P=265.999086 Days  $T_0=294.315842$  (BKJD)



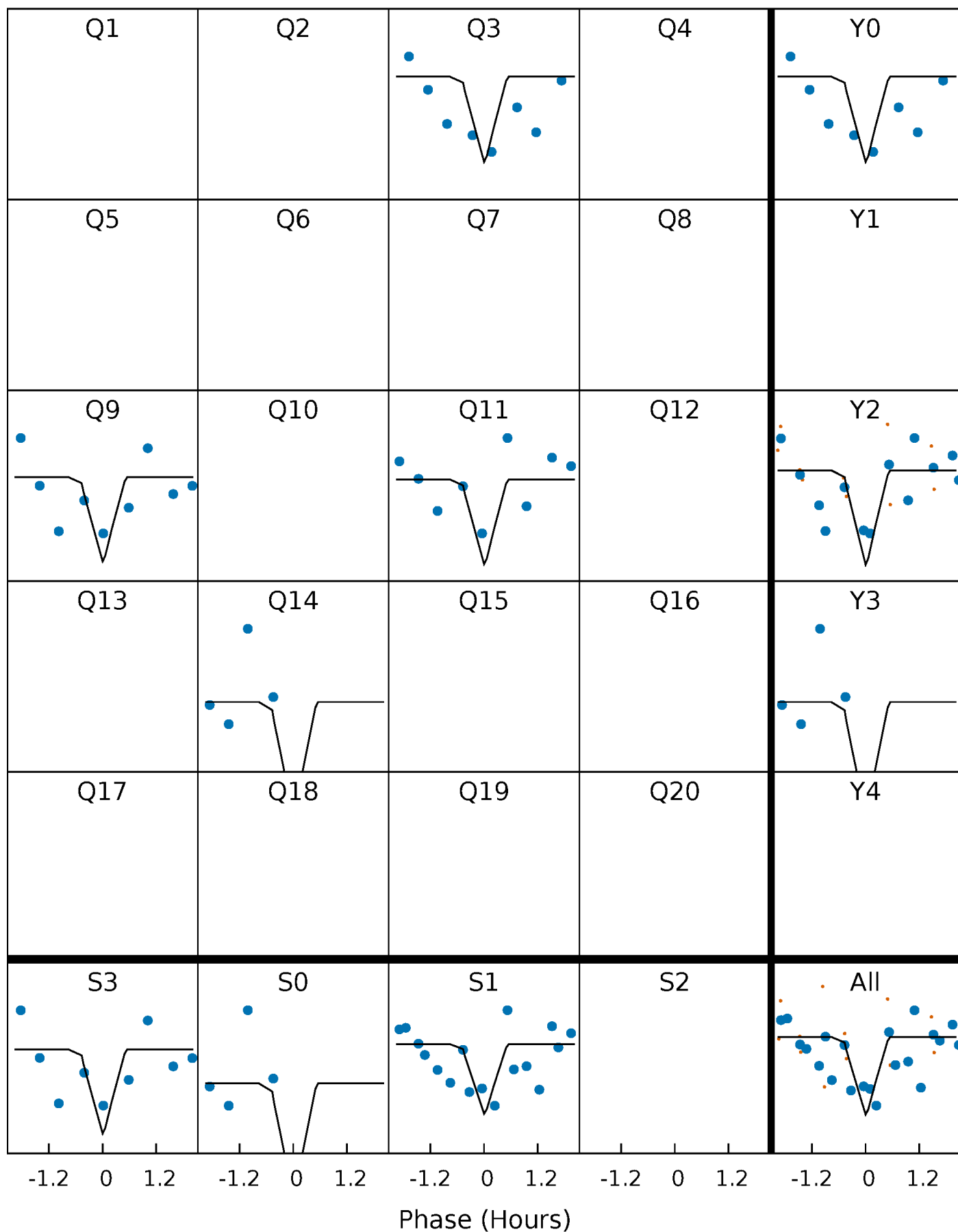
# DV Quarter-Phased Transit Curves

TCE 010916600-03     $P=265.999086$  Days     $T_0=294.315842$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

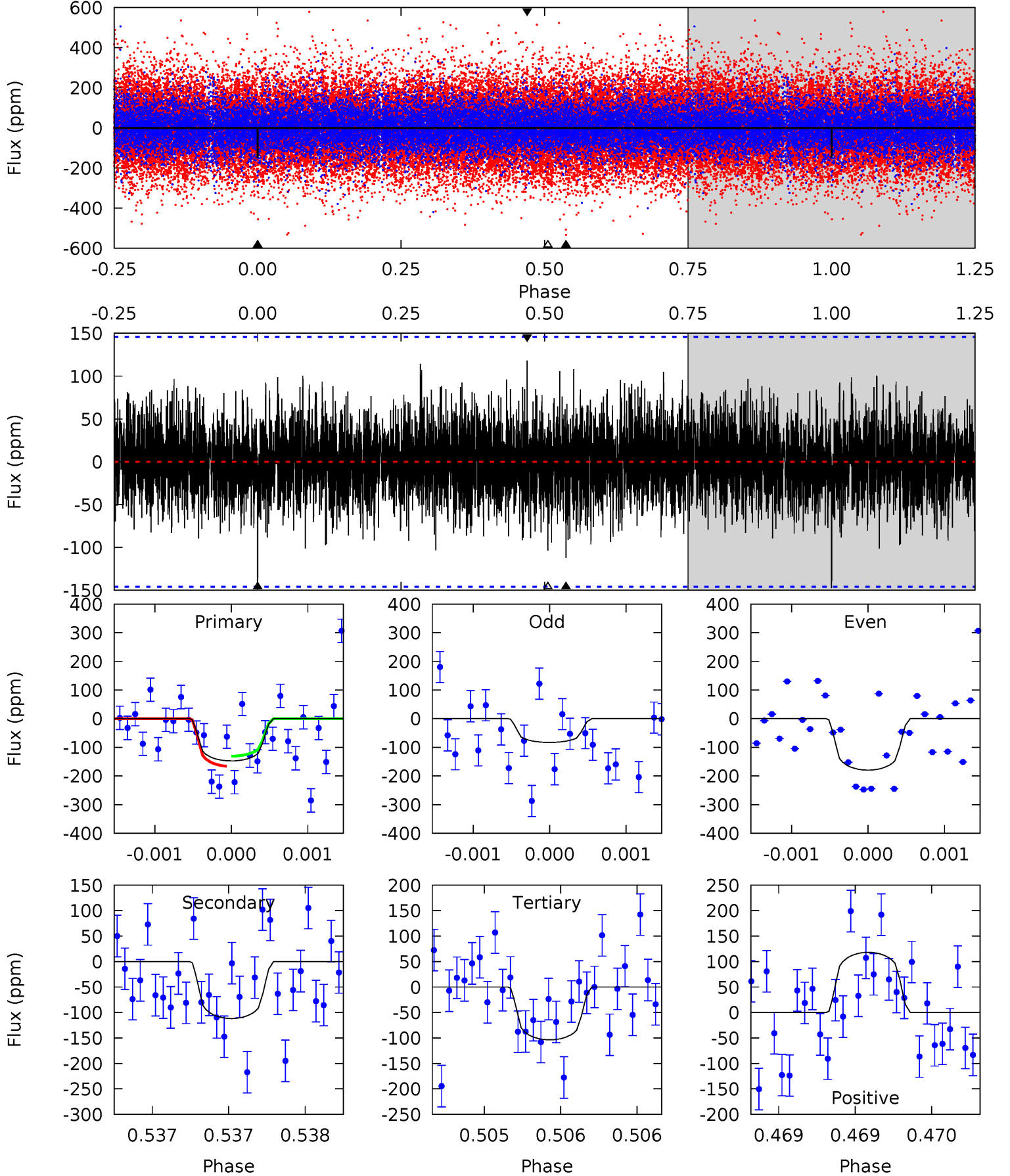
TCE 010916600-03 P=265.986496 Days  $T_0=294.318236$  (BKJD)



# DV Model-Shift Uniqueness Test

010916600-03, P = 265.999086 Days, E = 28.316756 Days

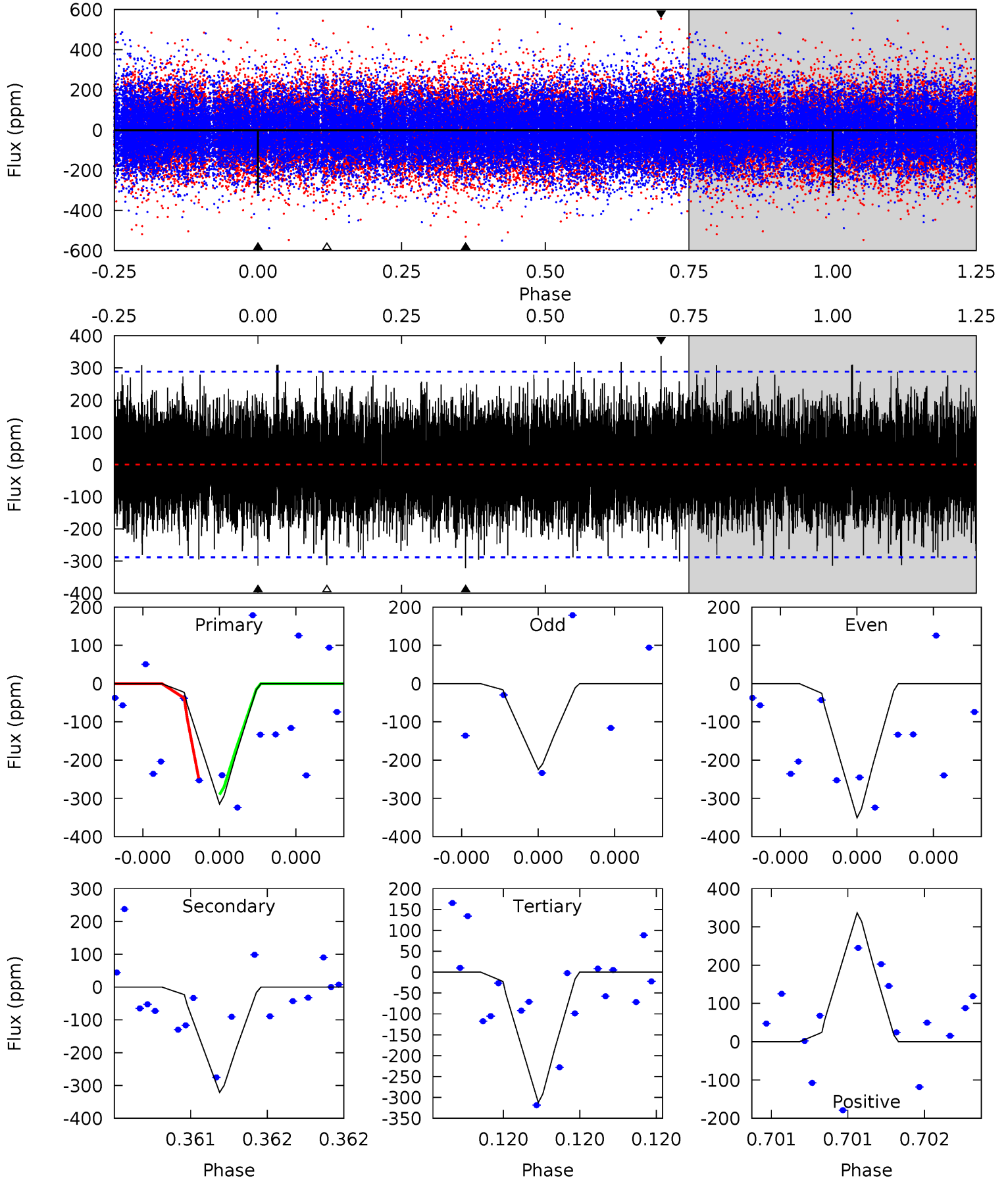
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.61	4.26	3.95	4.50	5.55	3.45	1.18	1.67	1.12	0.31	-0.24	1.72	0.95	0.44	0.67



# Alt Model-Shift Uniqueness Test

010916600-03, P = 265.986496 Days, E = 28.331740 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.29	6.43	6.25	6.73	5.77	3.78	1.57	0.04	-0.44	0.18	-0.31	1.19	1.27	0.51	0.40



### Stellar Parameters For KIC 010916600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6187^{+74}_{-80}$	$4.341^{+0.050}_{-0.150}$	$0.260^{+0.150}_{-0.200}$	$1.238^{+0.256}_{-0.091}$	$1.230^{+0.087}_{-0.073}$	$0.913^{+0.180}_{-0.383}$
	+1%/-1%	+1%/-3%	+58%/-77%	+21%/-7%	+7%/-6%	+20%/-42%
Source	SPE90	FLK73	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010916600-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-112 \pm 26$	$3.64^{+3.54}_{-2.52}$	$461^{+23}_{-15}$	$4162^{+3016}_{-832}$	$3455^{+33292}_{-2625}$
Alt.	$-321 \pm 50$	$3.98^{+3.64}_{-2.66}$	$461^{+23}_{-14}$	$4983^{+3762}_{-1096}$	$8317^{+66510}_{-6118}$

$T_{max}$  = 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

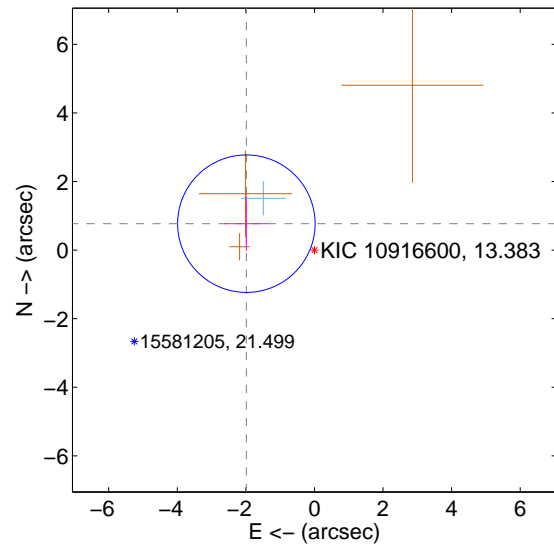
Supplemental centroid analysis for 010916600-03. Kepler magnitude: 13.38. Transit SNR 5.60

There are 1 quarters with good PRF difference image offsets

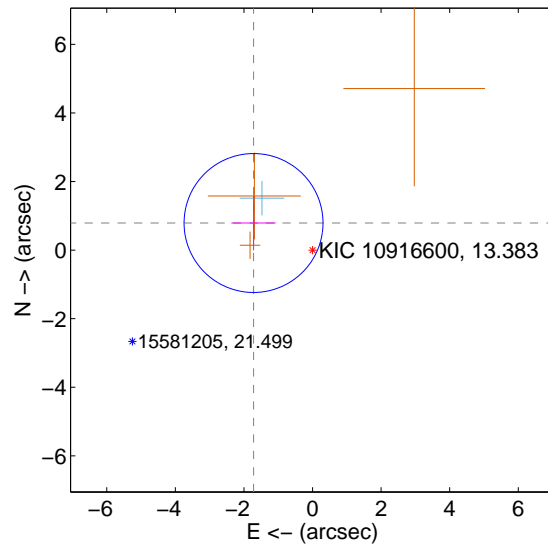
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.130 \pm 0.668$	3.19	$1.985 \pm 0.646$	$0.770 \pm 0.798$
PRF-fit source offset from KIC position	$1.893 \pm 0.675$	2.80	$1.720 \pm 0.646$	$0.790 \pm 0.798$
photometric centroid source offset	$1.78 \pm 1.37$	1.31	$-1.78 \pm 1.37$	$-0.10 \pm 1.29$

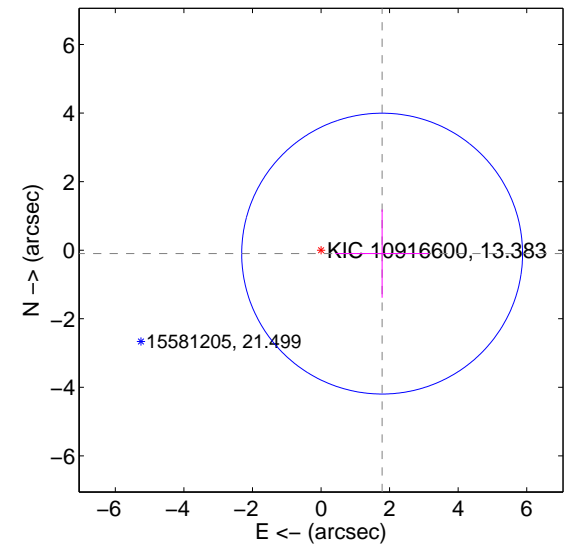
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

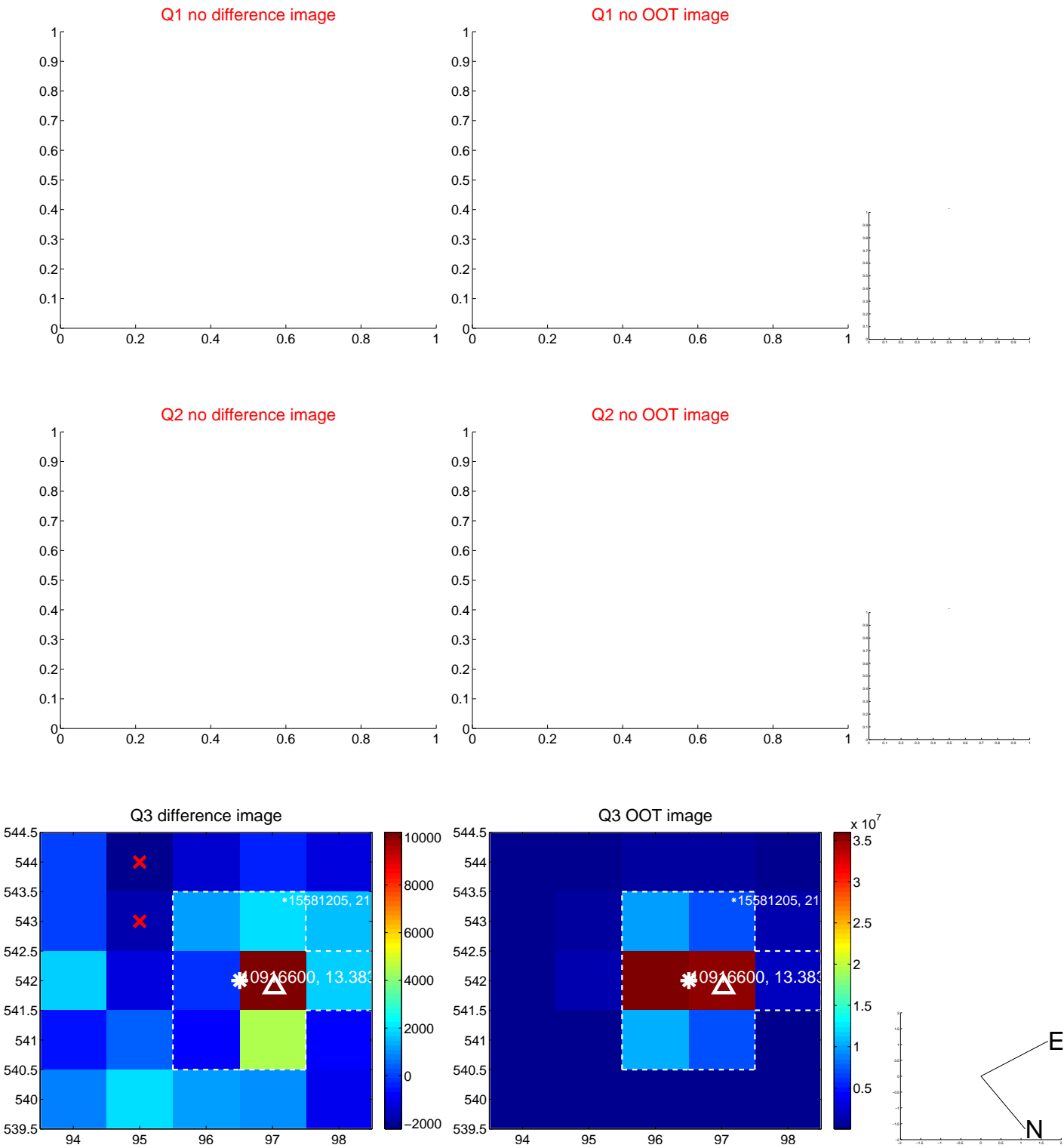


offset from photometric centroids

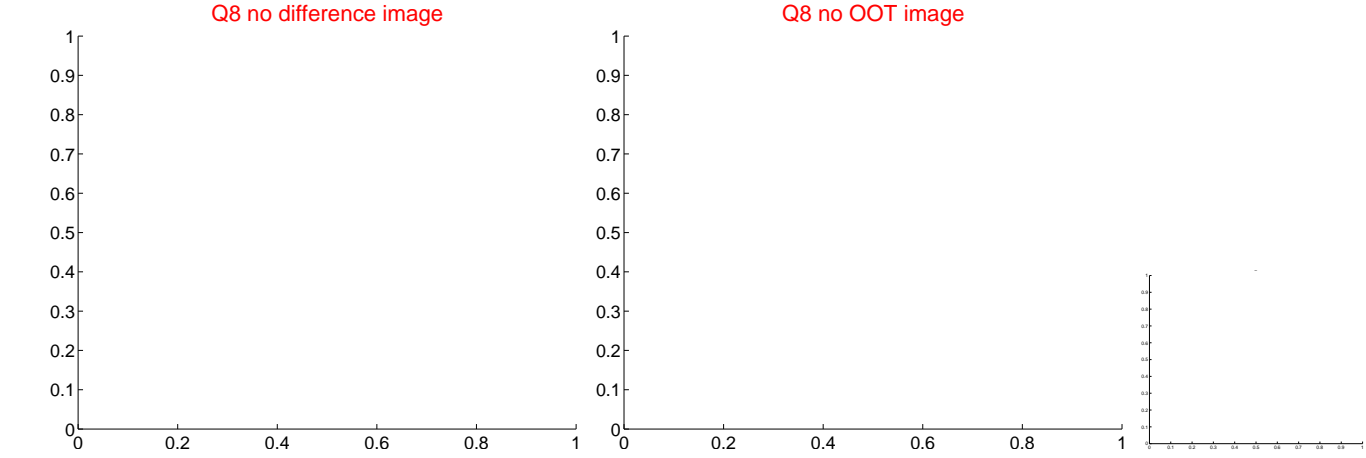
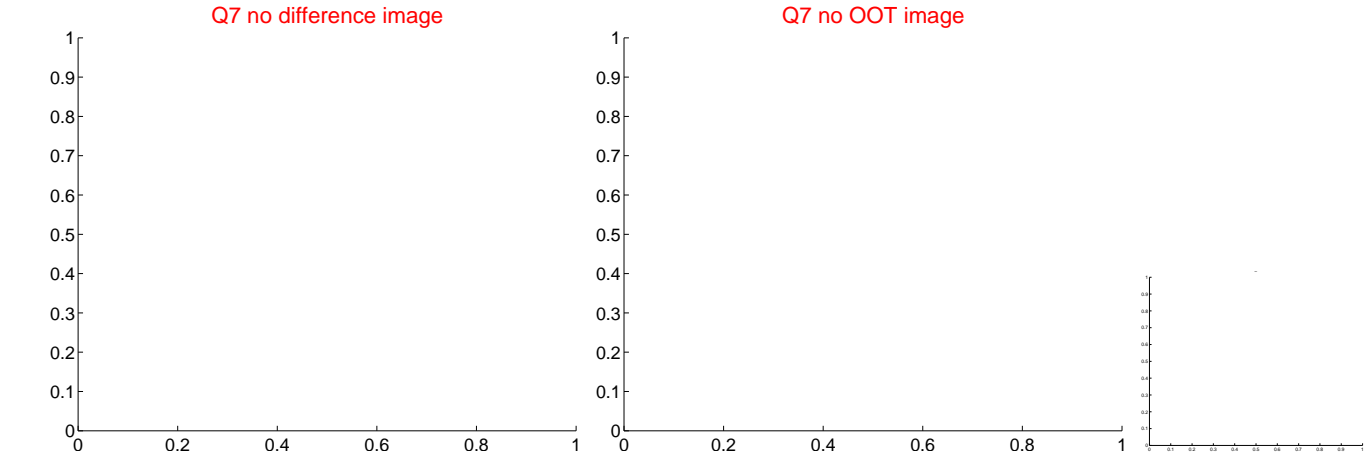
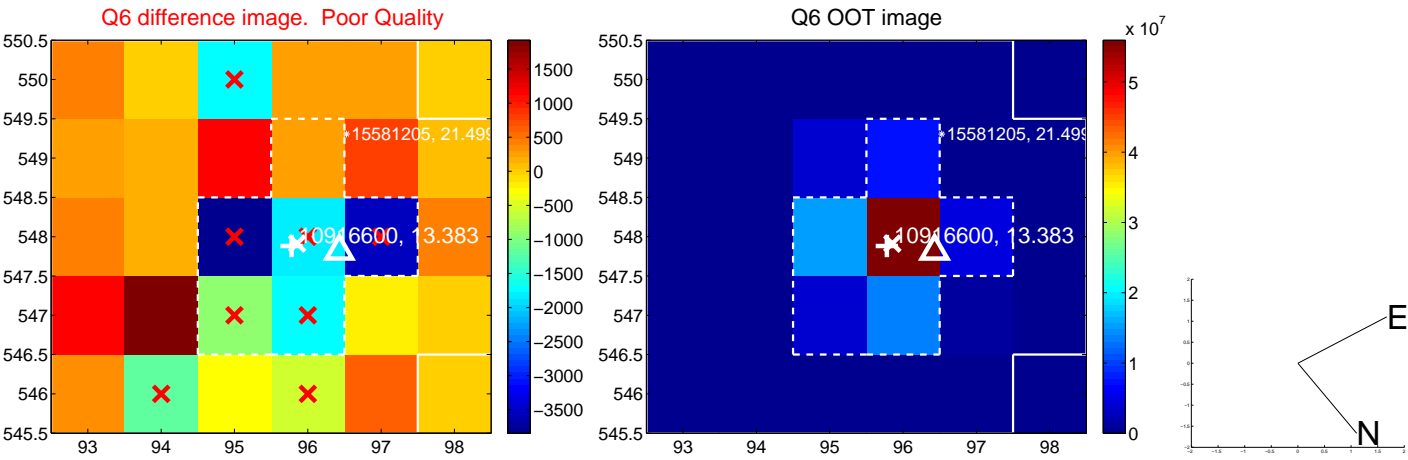
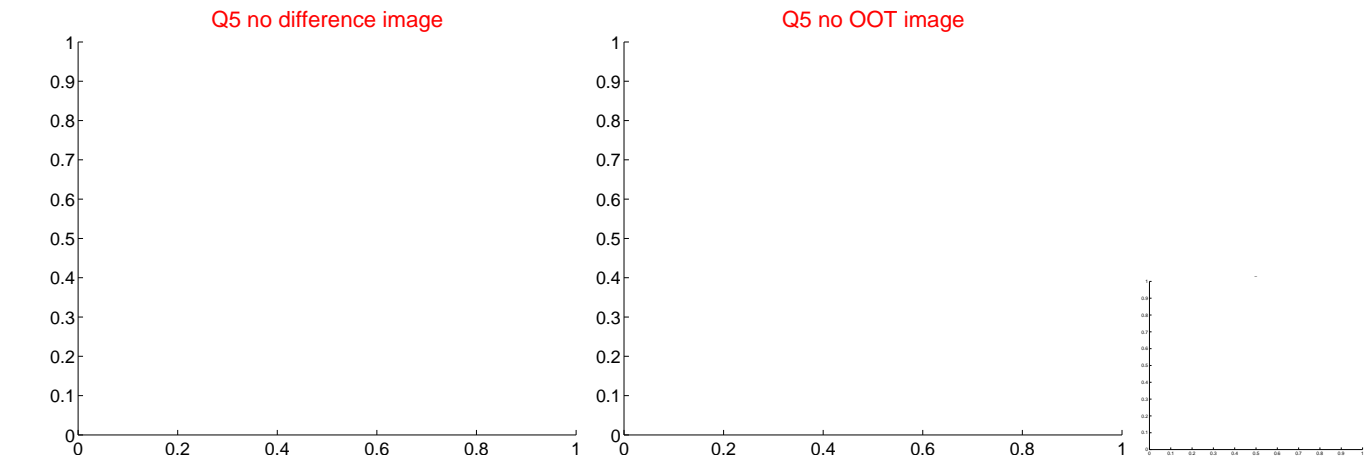


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

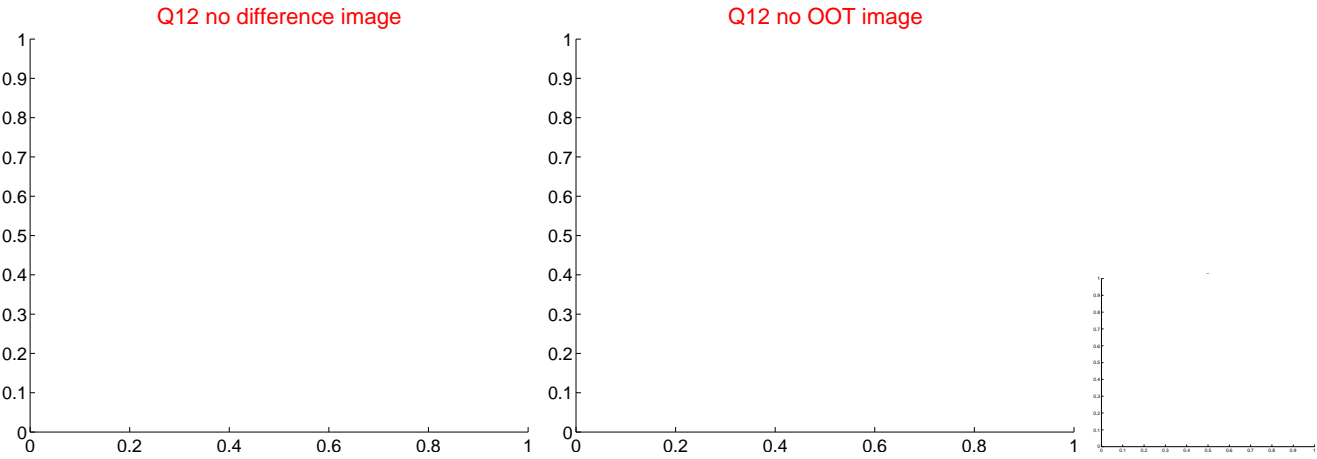
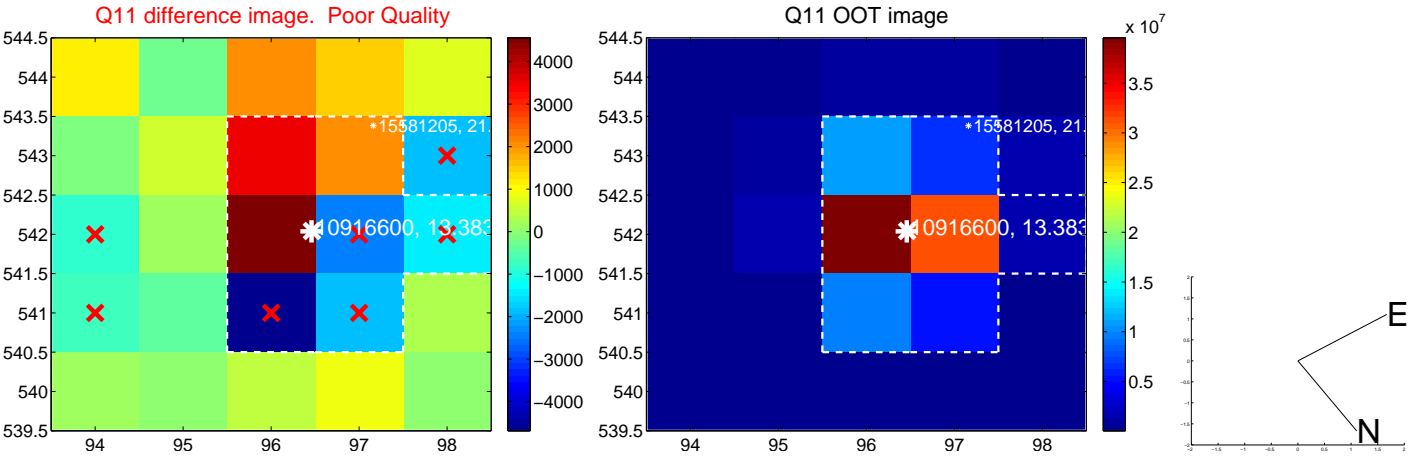
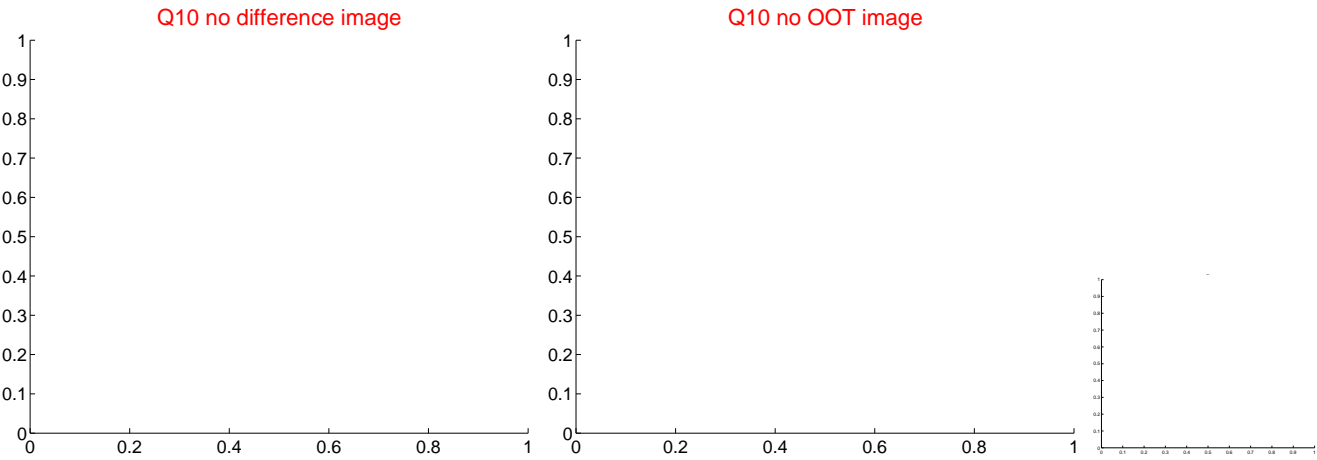
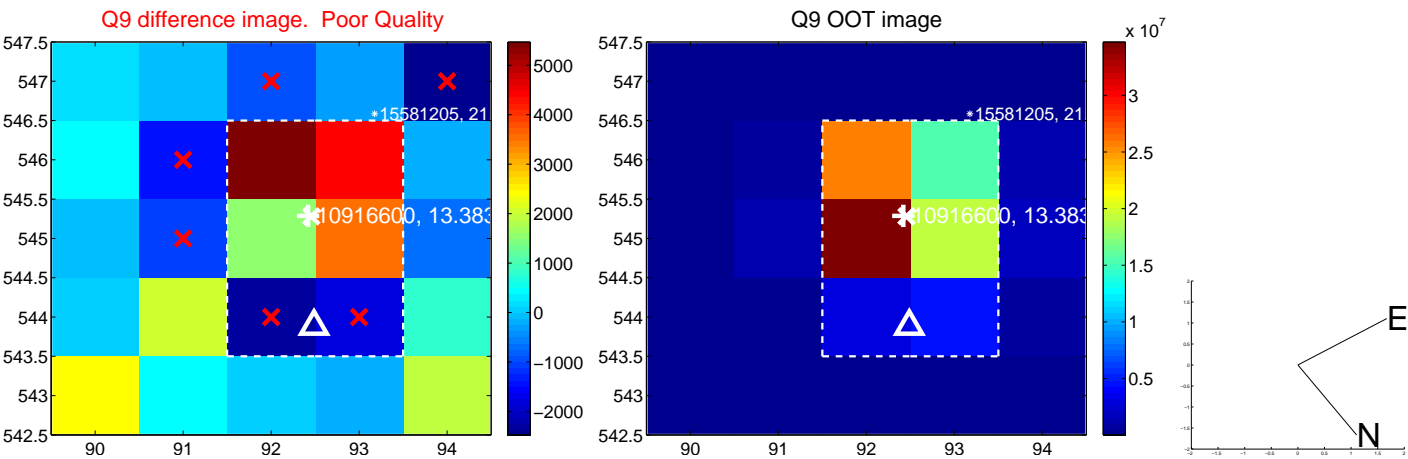
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

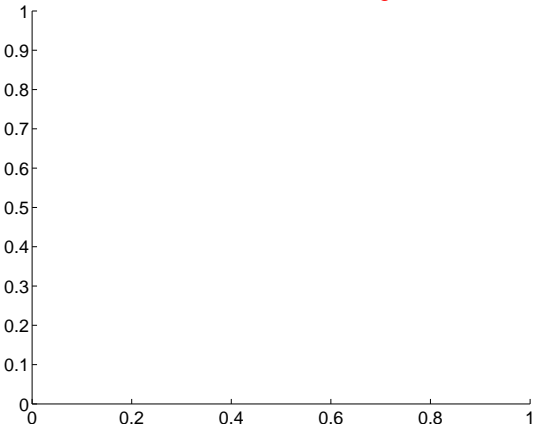


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

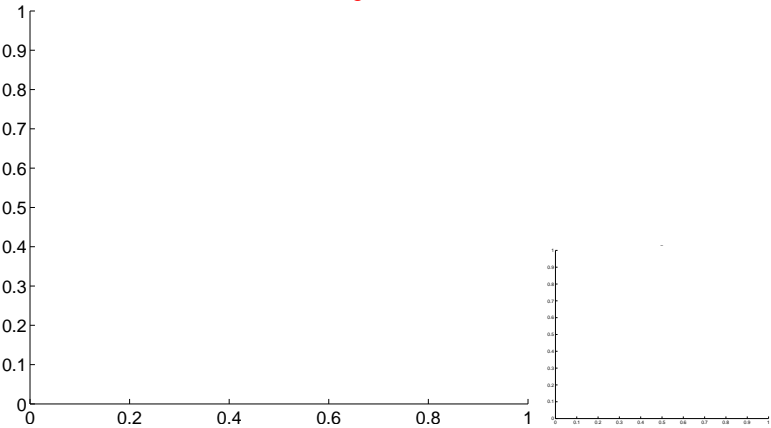


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

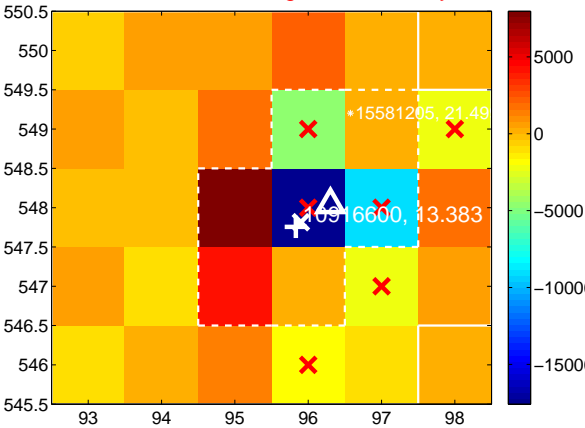
Q13 no difference image



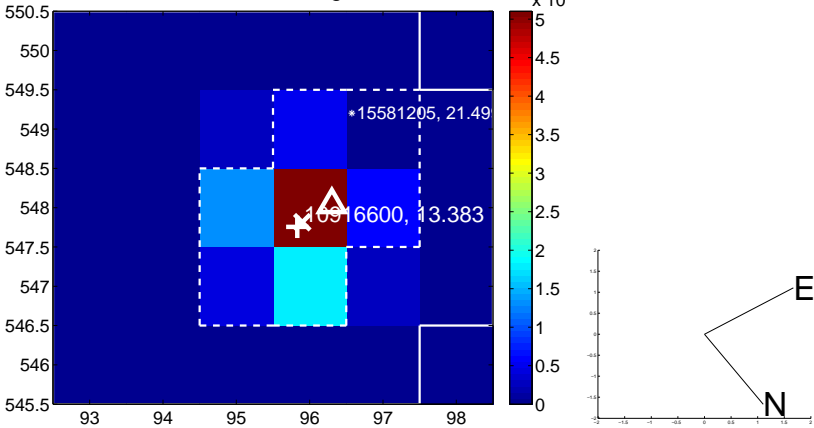
Q13 no OOT image



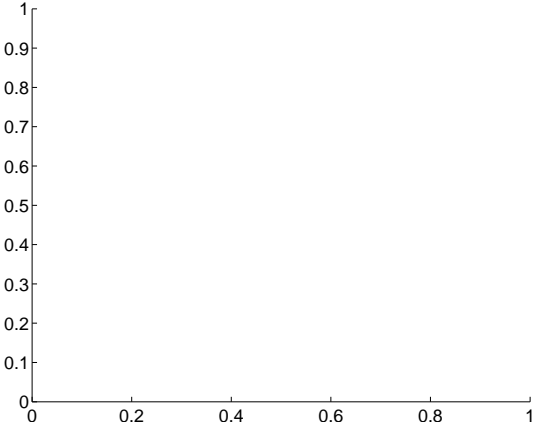
Q14 difference image. Poor Quality



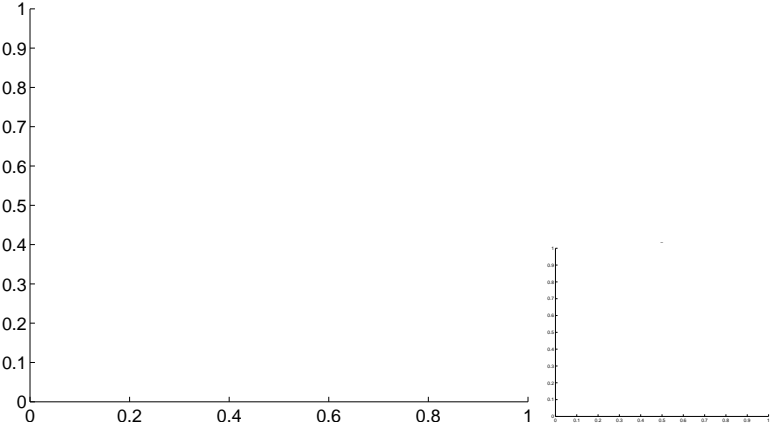
Q14 OOT image



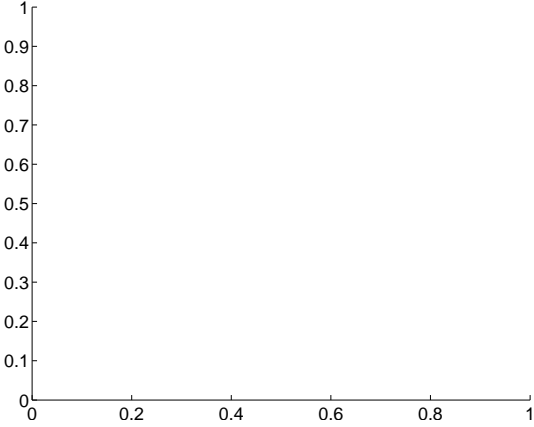
Q15 no difference image



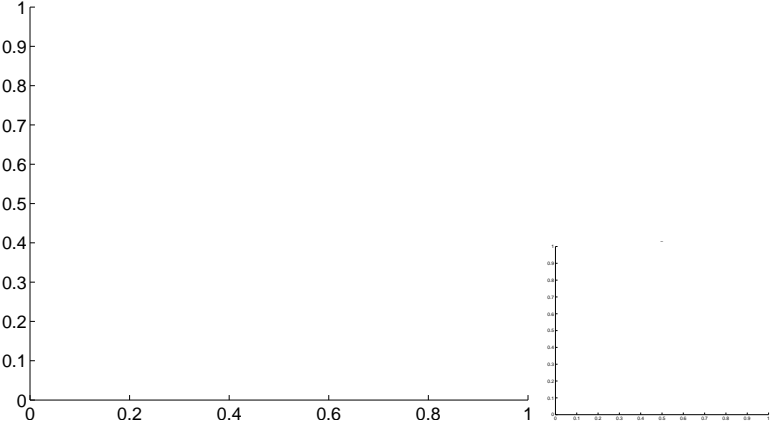
Q15 no OOT image



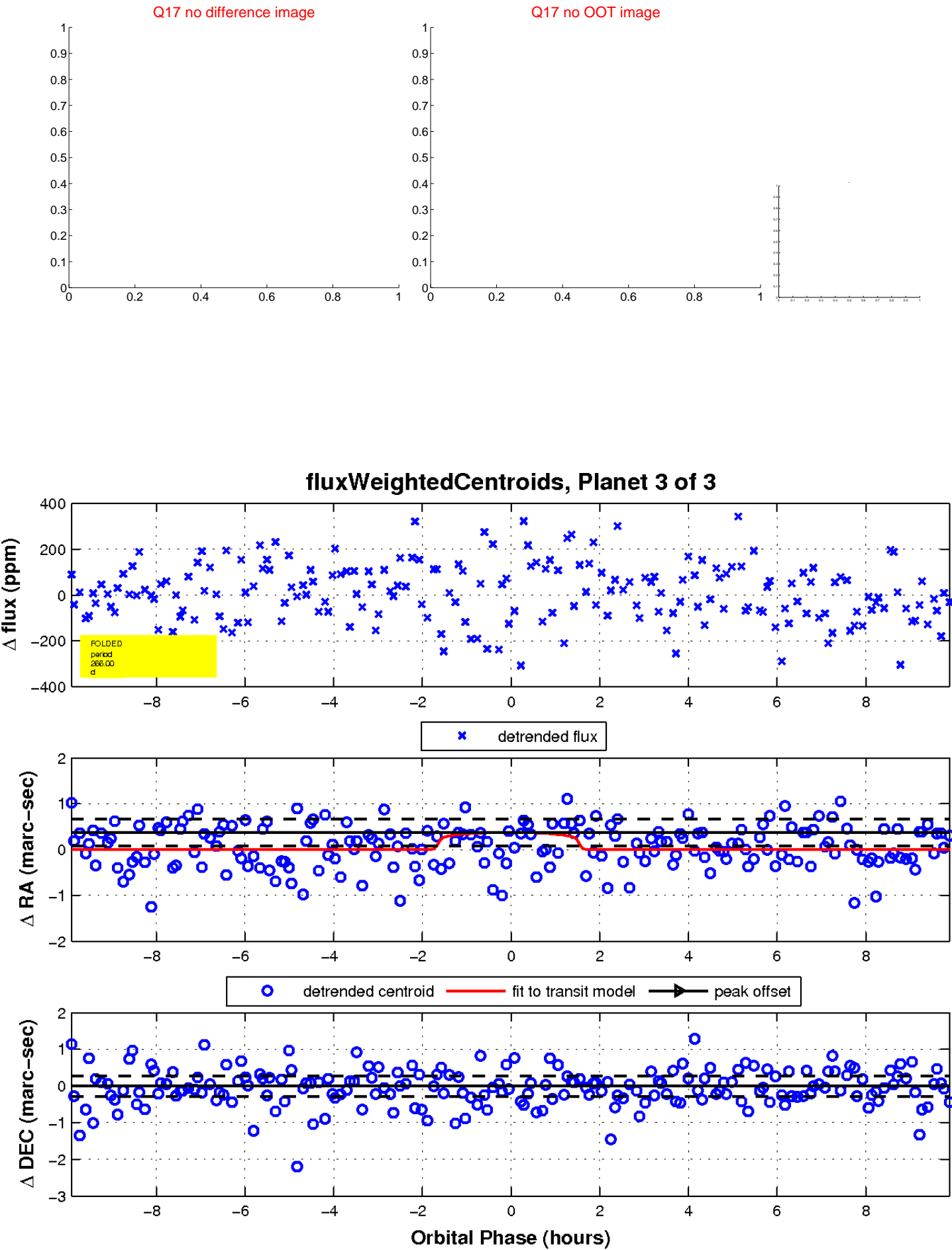
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

