

# KIC 005630212

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005630212-01	OBS	No	47.584258	174.146574	1801.4	6.540	17.1	25.0	0.58	3999	4.88	1.70
005630212-02	OBS	No	47.584513	172.833431	2052.1	8.323	19.5	27.2	0.58	3999	5.18	1.70
005630212-03	OBS	No	47.582859	157.103040	2238.1	14.764	11.9	22.5	0.58	3999	3.52	1.70
005630212-04	OBS	No	95.166350	205.585869	4531.7	27.091	13.7	21.3	0.58	3999	4.45	0.67
005630212-05	OBS	No	435.921257	146.703943	535.6	6.064	11.3	4.8	0.58	3999	1.71	0.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630212-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
005630212-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

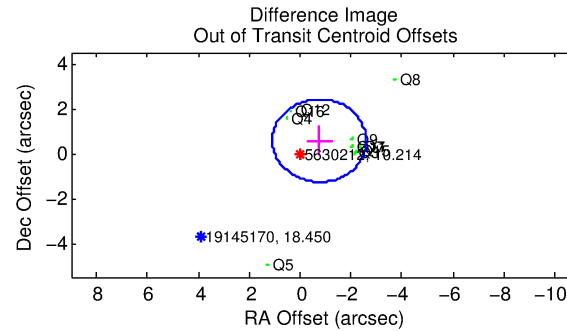
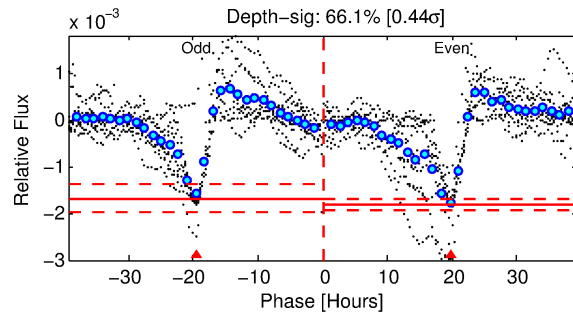
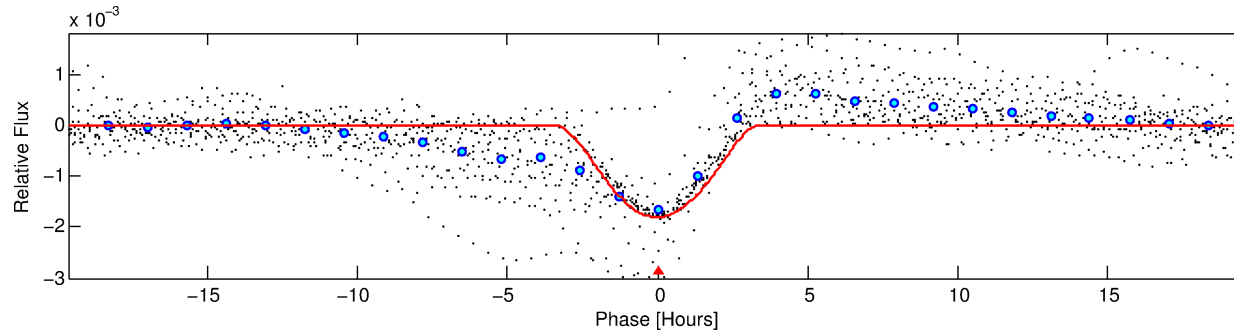
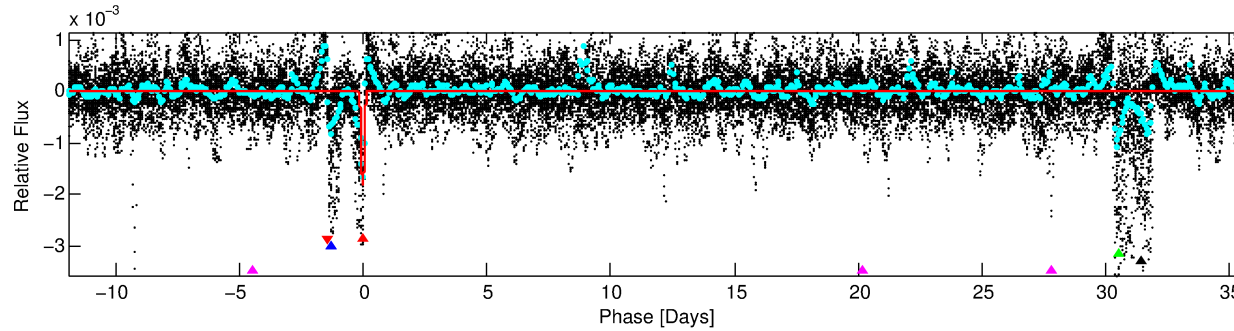
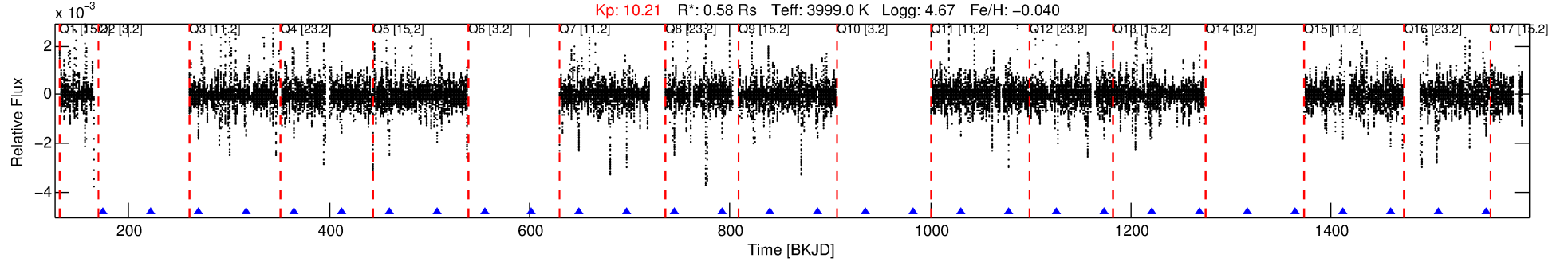
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005630212-01

No Significant Match Found

# DV One-Page Summary

KIC: 5630212 Candidate: 1 of 5 Period: 47.584 d



## DV Fit Results:

Period = 47.58426 [0.00017] d  
Epoch = 174.1466 [0.0029] BKJD  
 $R_p/R^* = 0.0766$  [0.0262]  
 $a/R^* = 22.19$  [1.46]  
 $b = 1.00$  [0.03]  
 $\text{Seff} = 1.70$  [0.34]  
 $T_{\text{eq}} = 291$  [15] K  
 $R_p = 4.88$  [1.78]  $R_e$   
 $a = 0.2146$  [0.0209] AU  
 $A_g = 595.62$  [420.99] [1.41 $\sigma$ ]  
 **$T_{\text{eff}} = 2223$  [396] K [4.88 $\sigma$ ]**

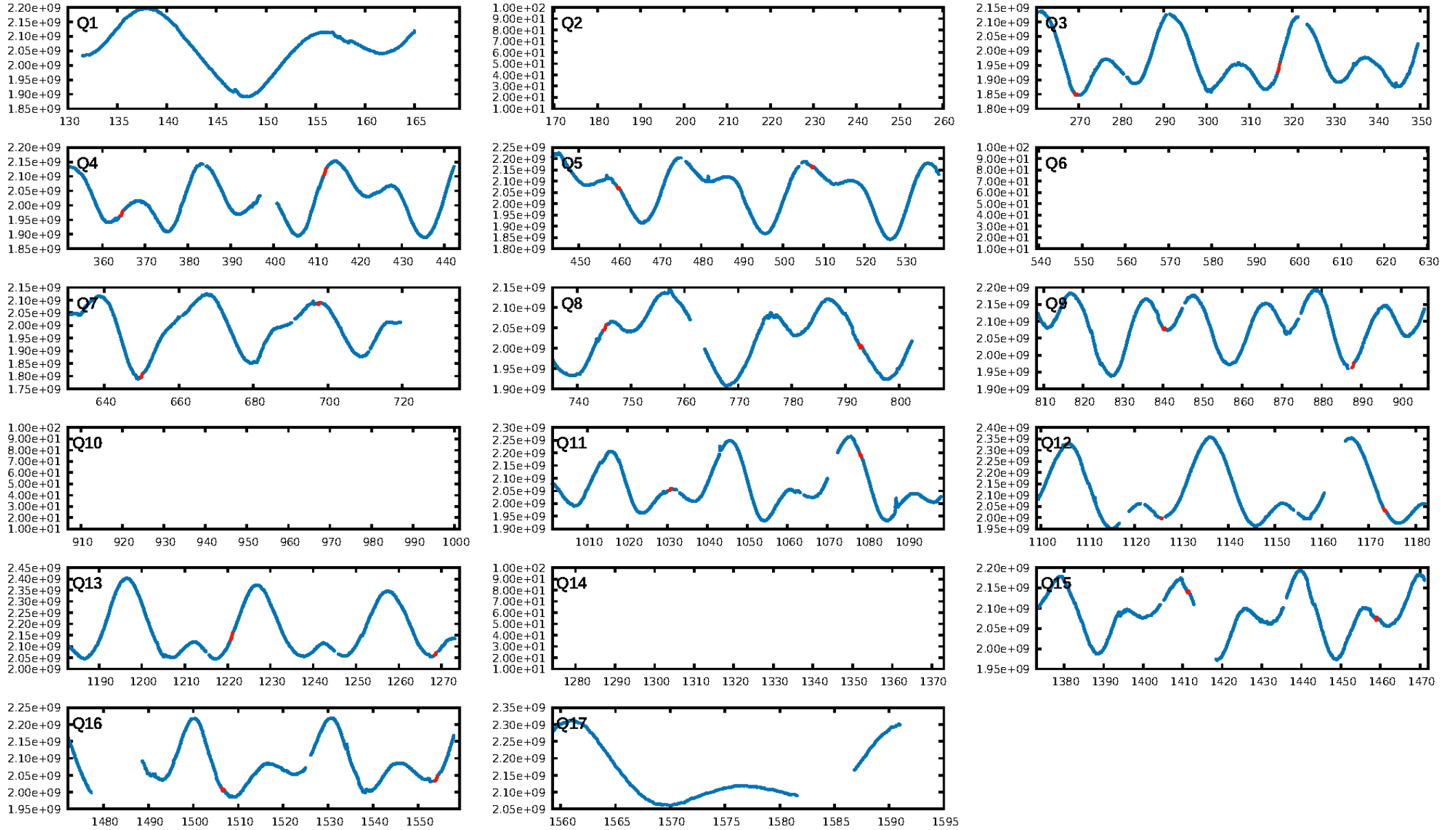
## DV Diagnostic Results:

**ShortPeriod-sig: 0.2% [0.00 $\sigma$ ]**  
**LongPeriod-sig: 0.0% [0.00 $\sigma$ ]**  
ModelChiSquare2-sig: 56.6%  
ModelChiSquareGof-sig: 47.2%  
Bootstrap-pfa: 2.43e-38  
RollingBand-fgt: 1.00 [22/22]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 50.5%  
Centroid-so: 0.279 arcsec [1.99 $\sigma$ ]  
OotOffset-rm: 0.942 arcsec [1.53 $\sigma$ ]  
KicOffset-rm: 1.942 arcsec [2.79 $\sigma$ ]  
OotOffset-st: 0/4/4/2 [10]  
KicOffset-st: 0/4/4/2 [10]  
DiffImageQuality-fgm: 0.00 [0/10]  
DiffImageOverlap-fno: 1.00 [10/10]

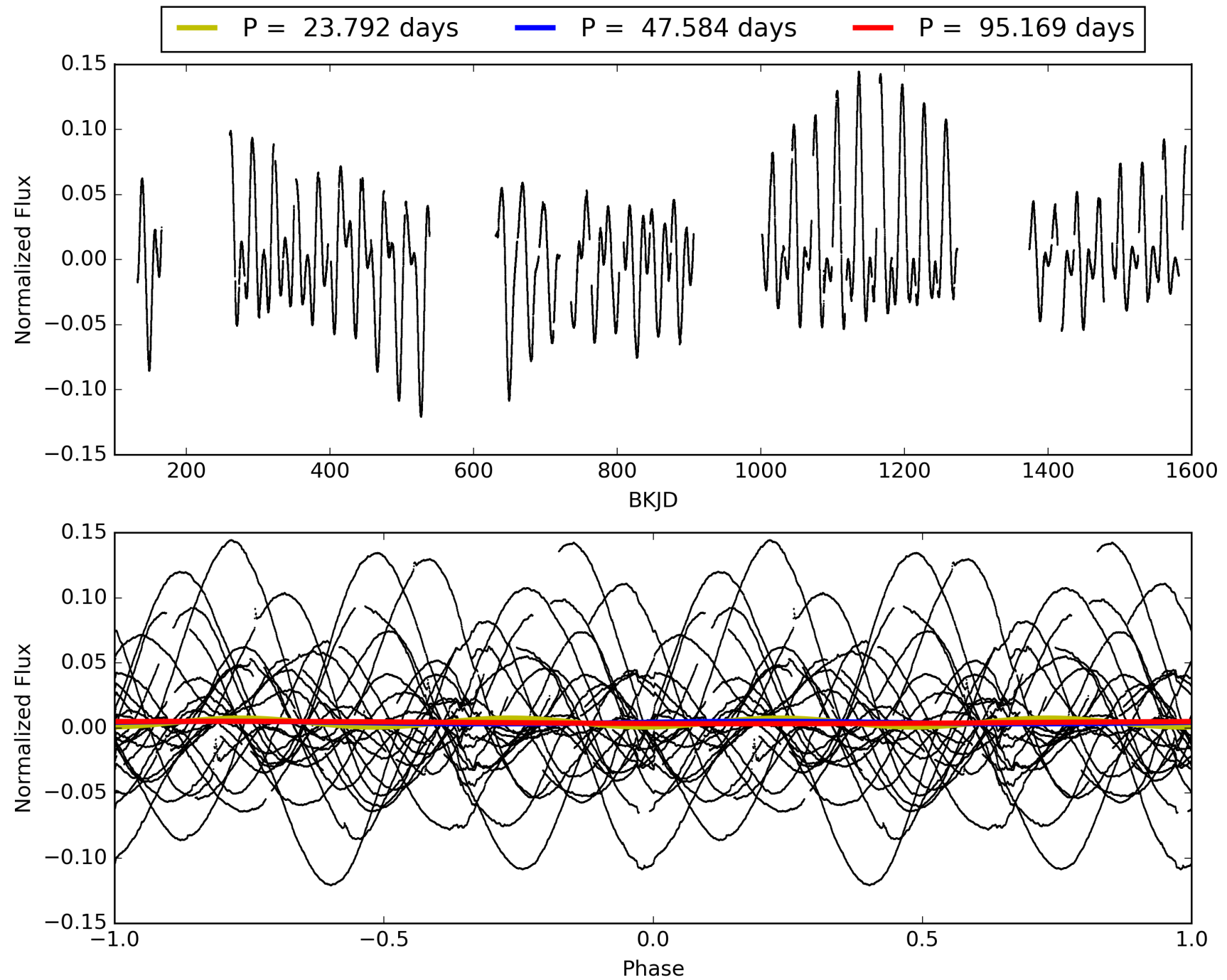
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:52:12 Z

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

# TCE 005630212-01, PDC Light Curves



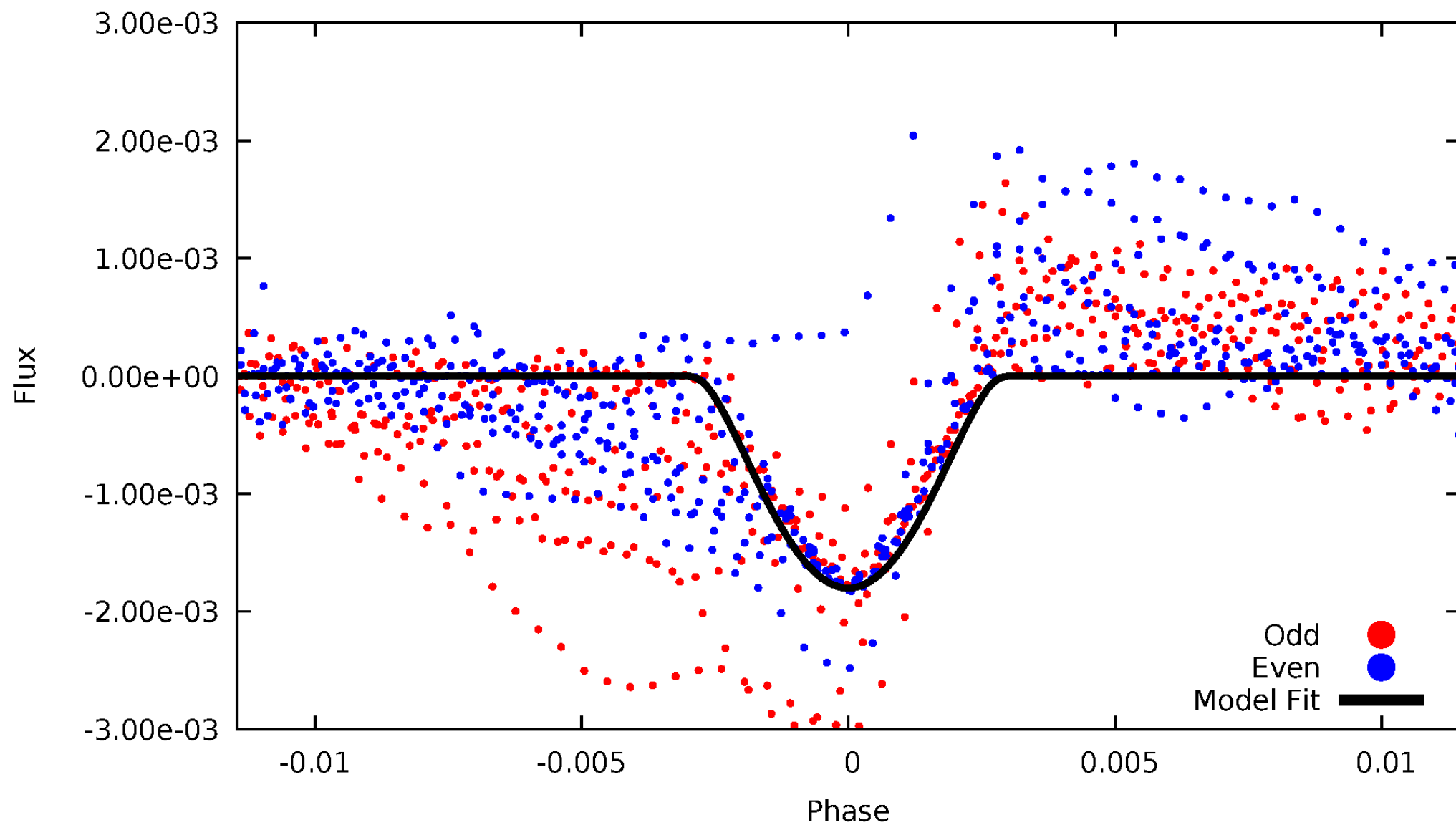
TCE 005630212-01





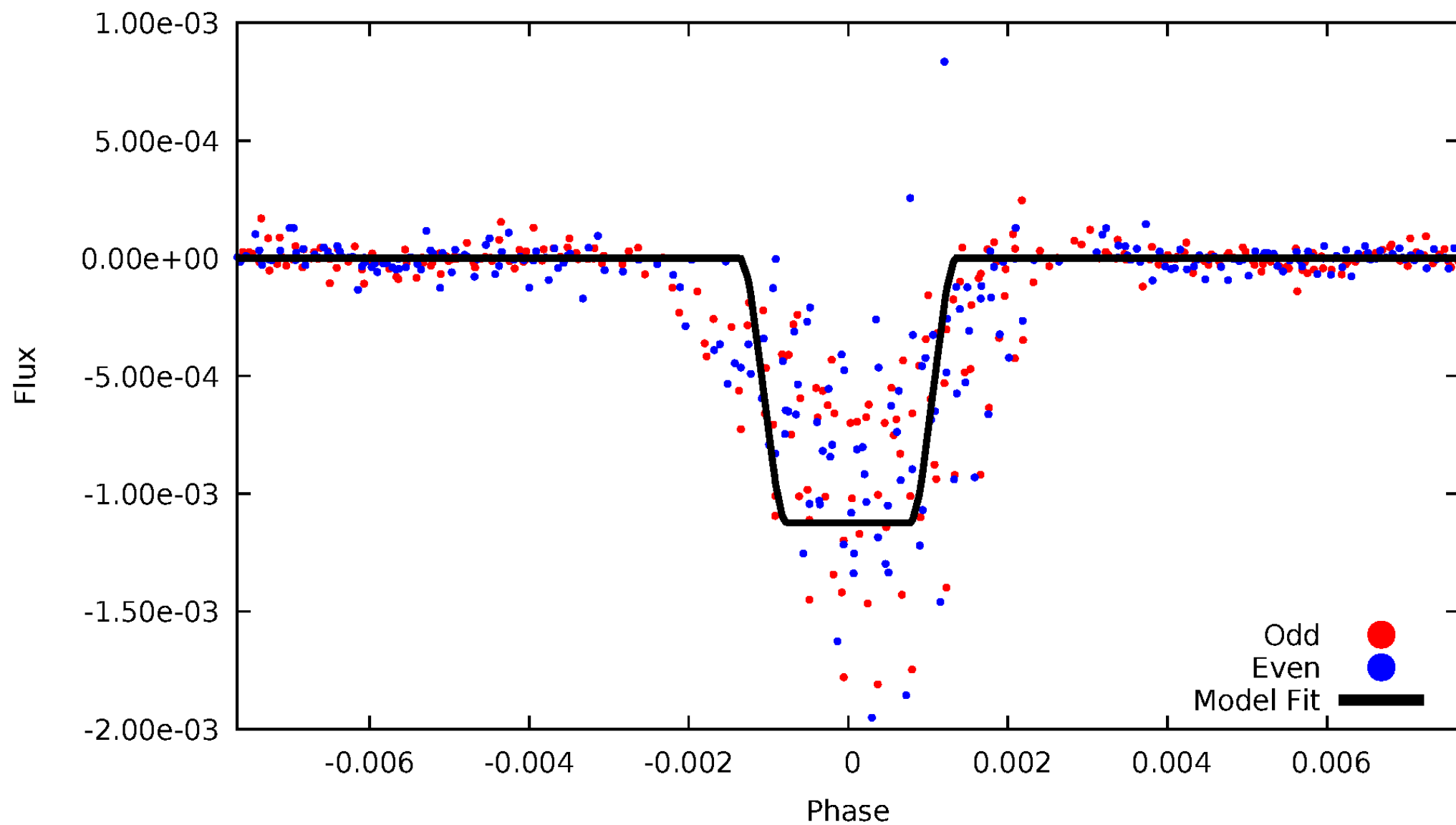
# DV Odd/Even

TCE 005630212-01



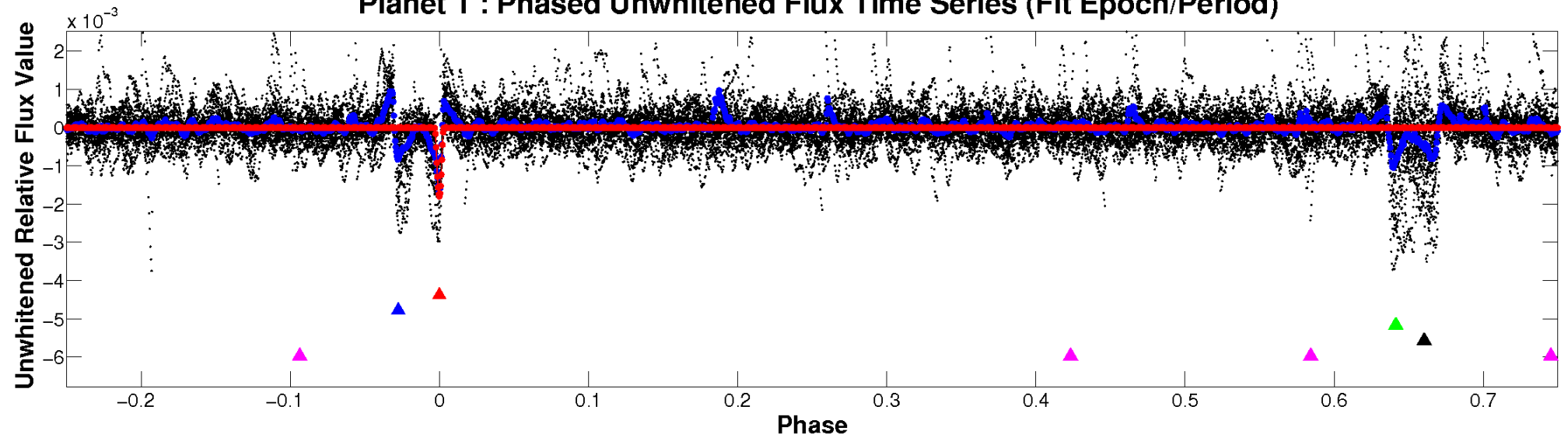
# ALT Odd/Even

TCE 005630212-01

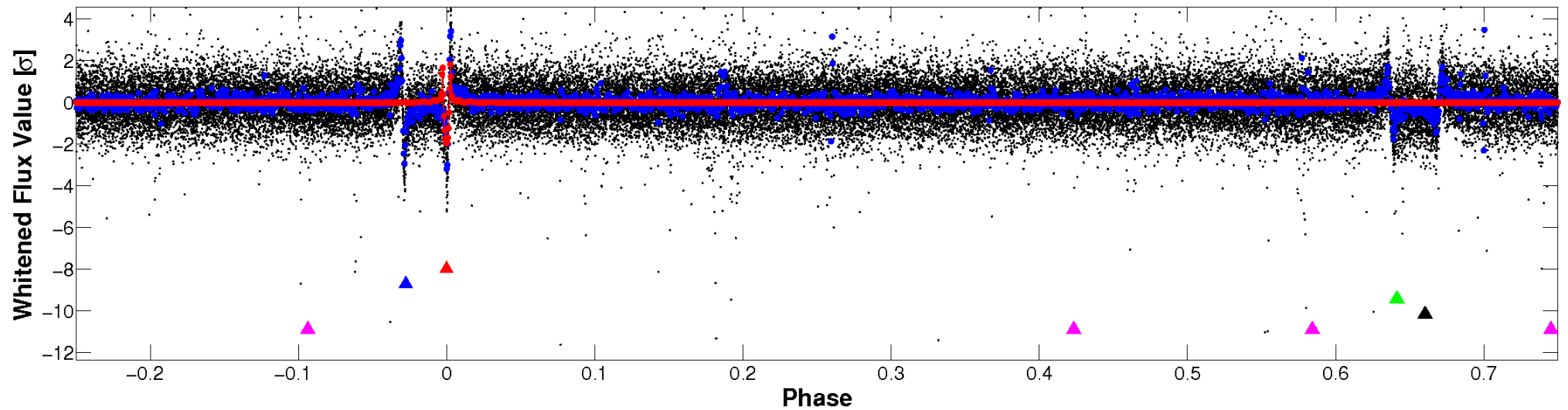


# Non-Whitened Vs. Whitened Light Curve

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

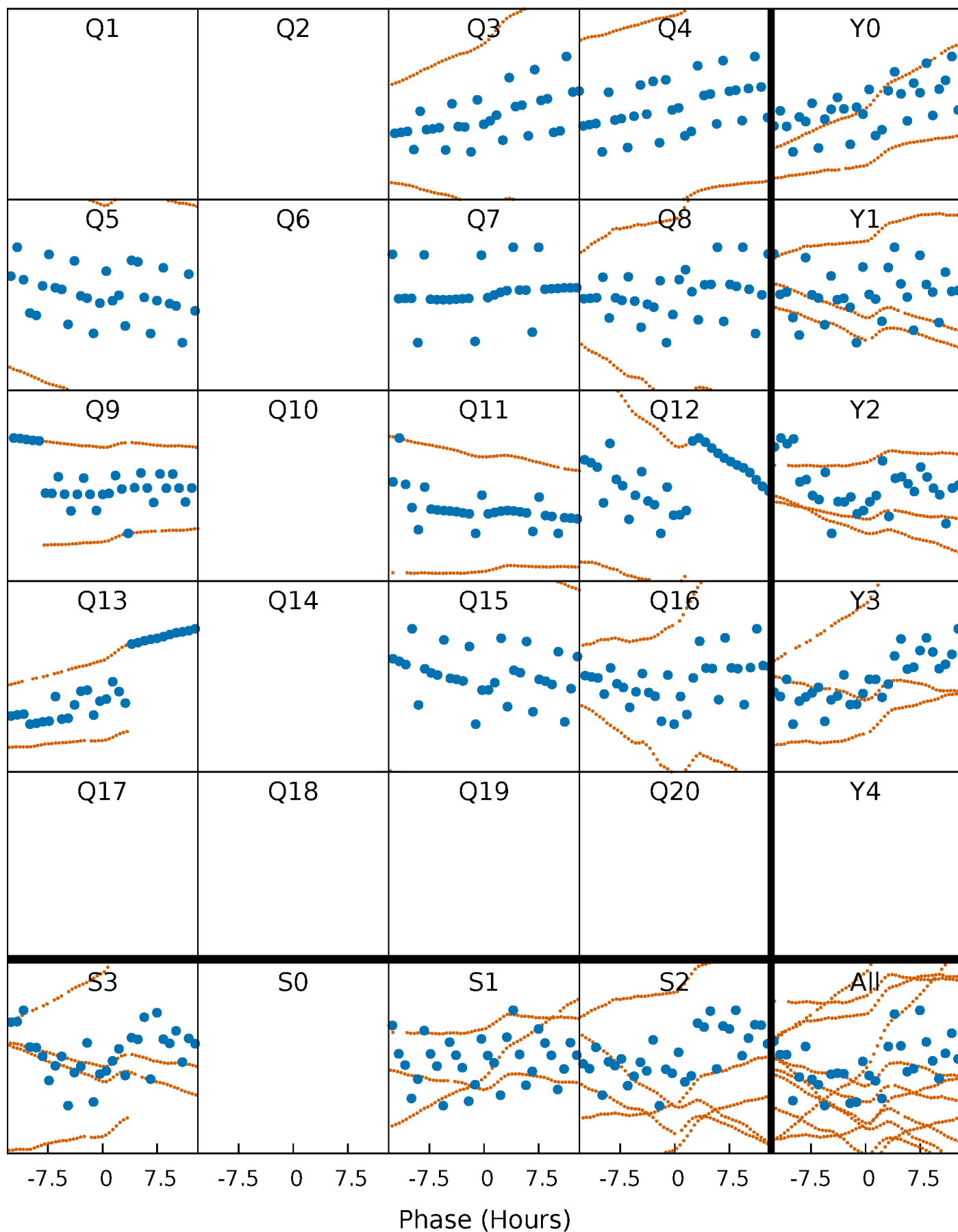


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



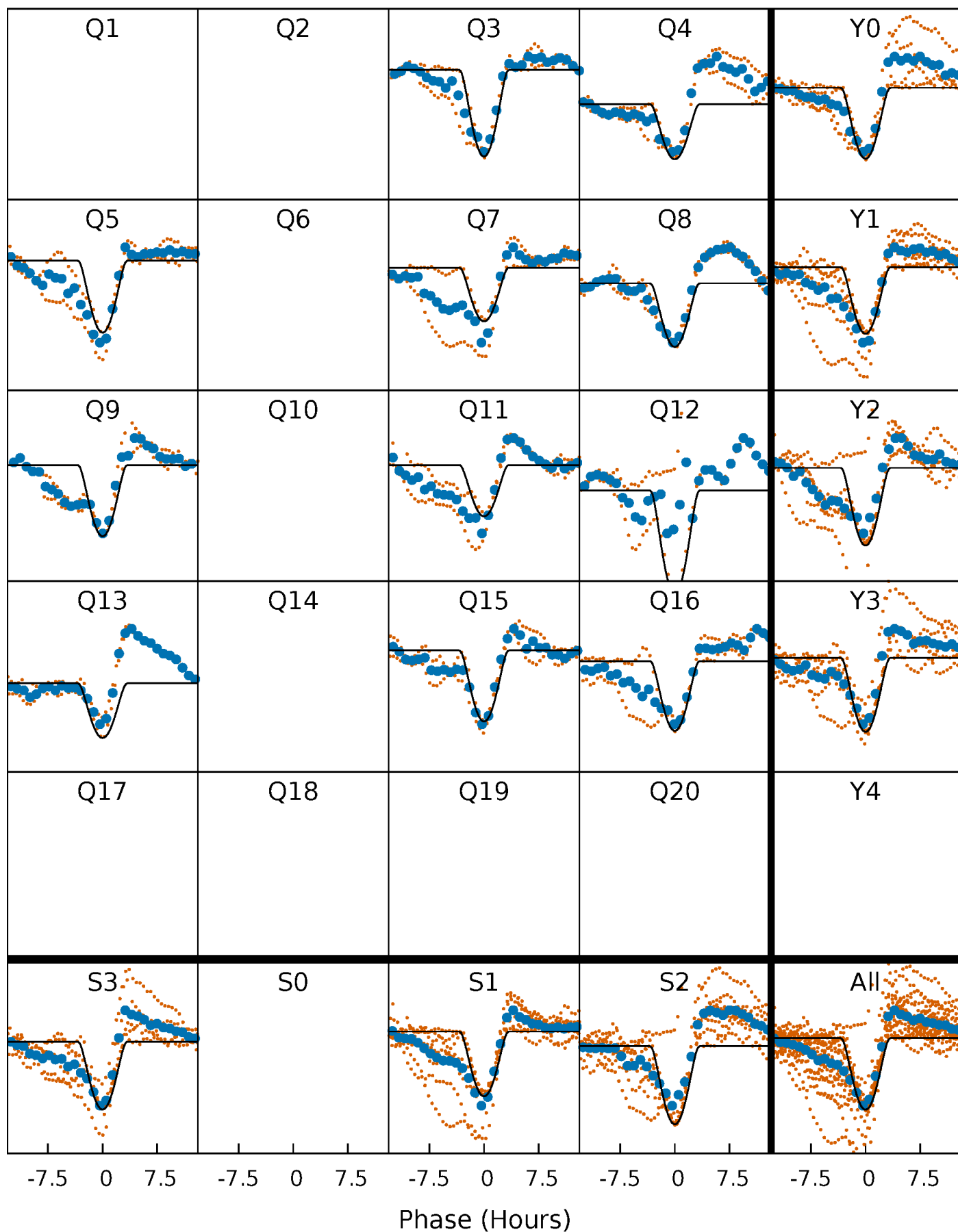
# PDC Quarter-Phased Transit Curves

TCE 005630212-01 P= 47.584258 Days  $T_0=174.146574$  (BKJD)



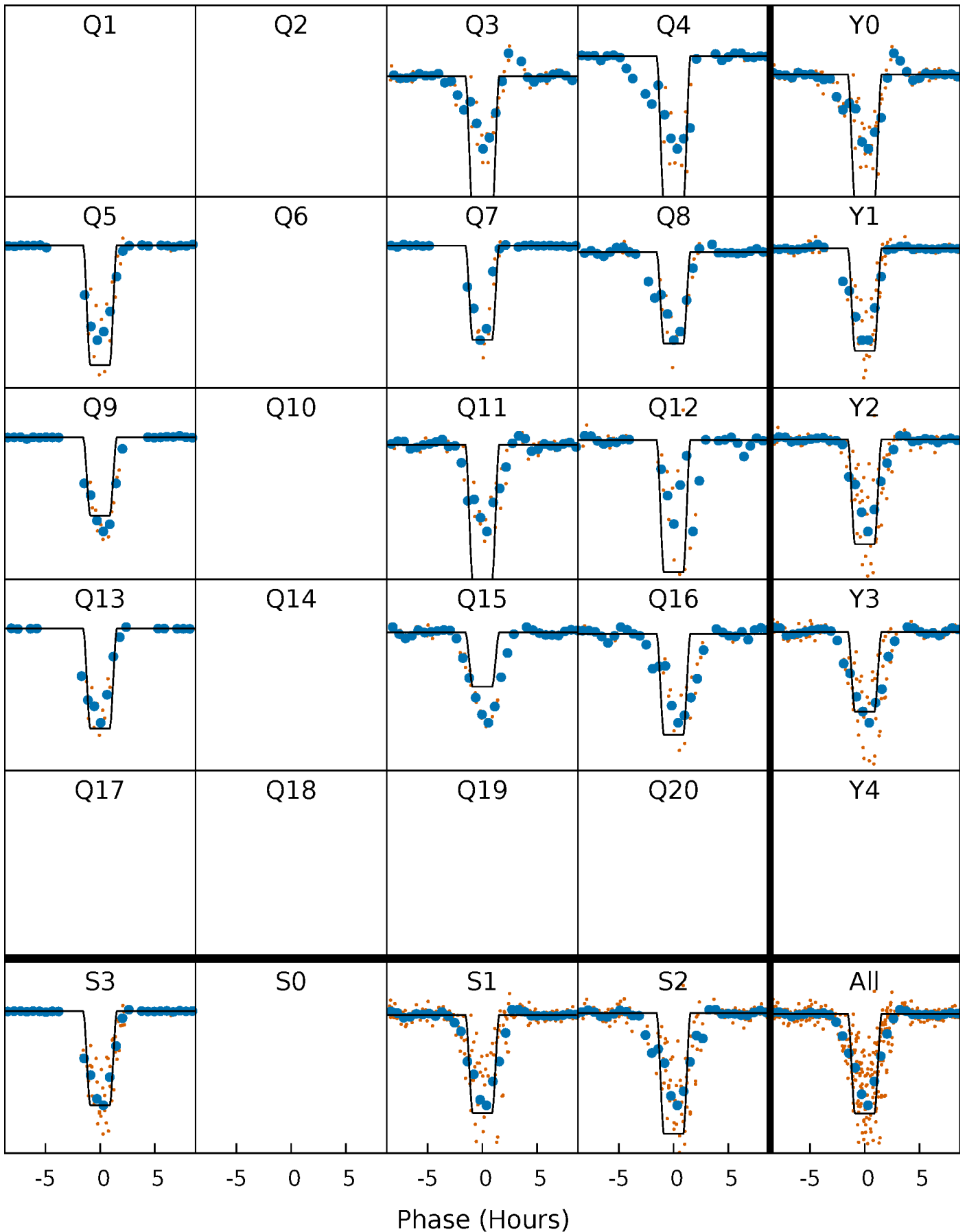
# DV Quarter-Phased Transit Curves

TCE 005630212-01 P= 47.584258 Days  $T_0=174.146574$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005630212-01 P= 47.584012 Days  $T_0=174.152160$  (BKJD)

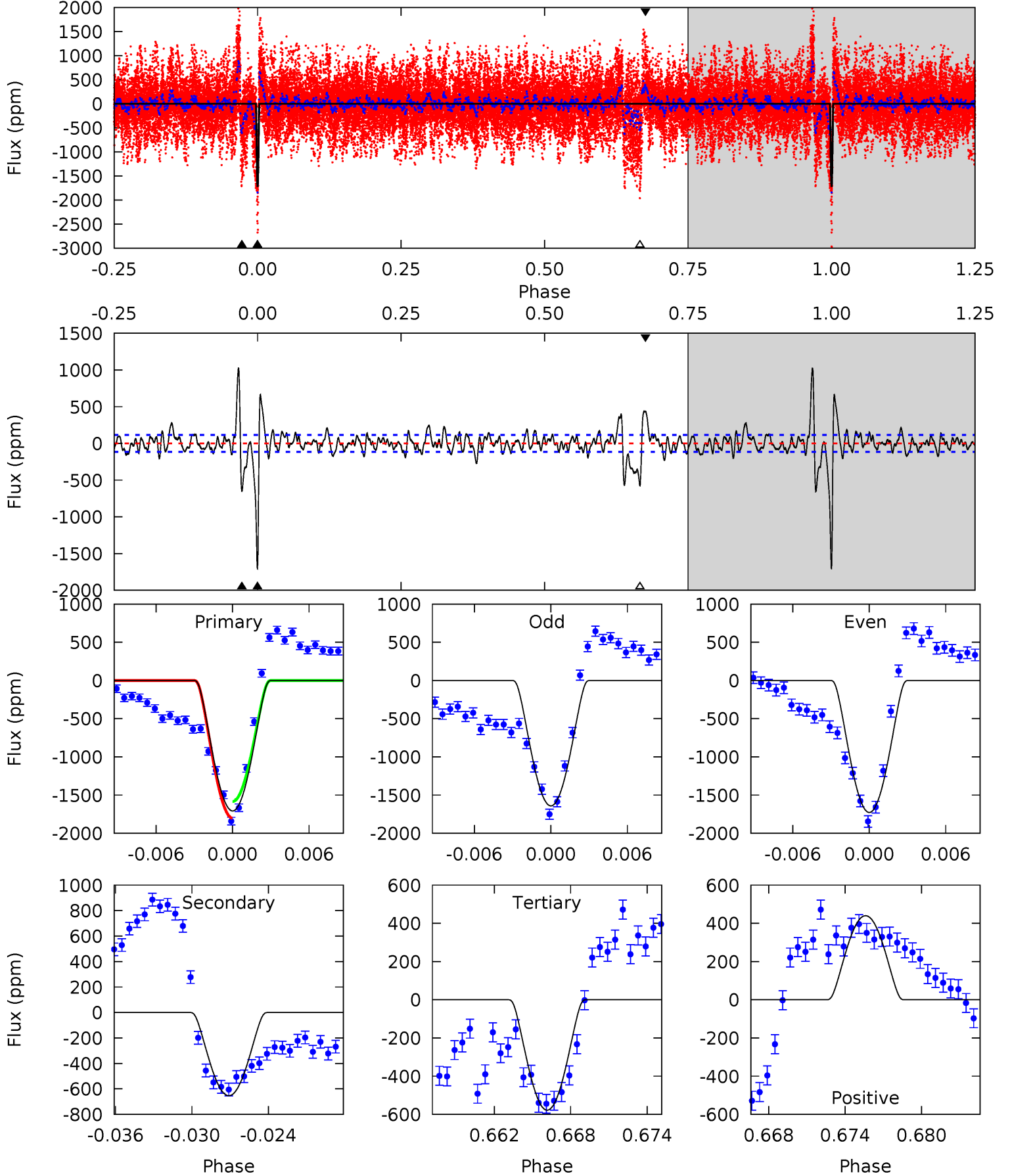




# DV Model-Shift Uniqueness Test

005630212-01, P = 47.584258 Days, E = 126.562316 Days

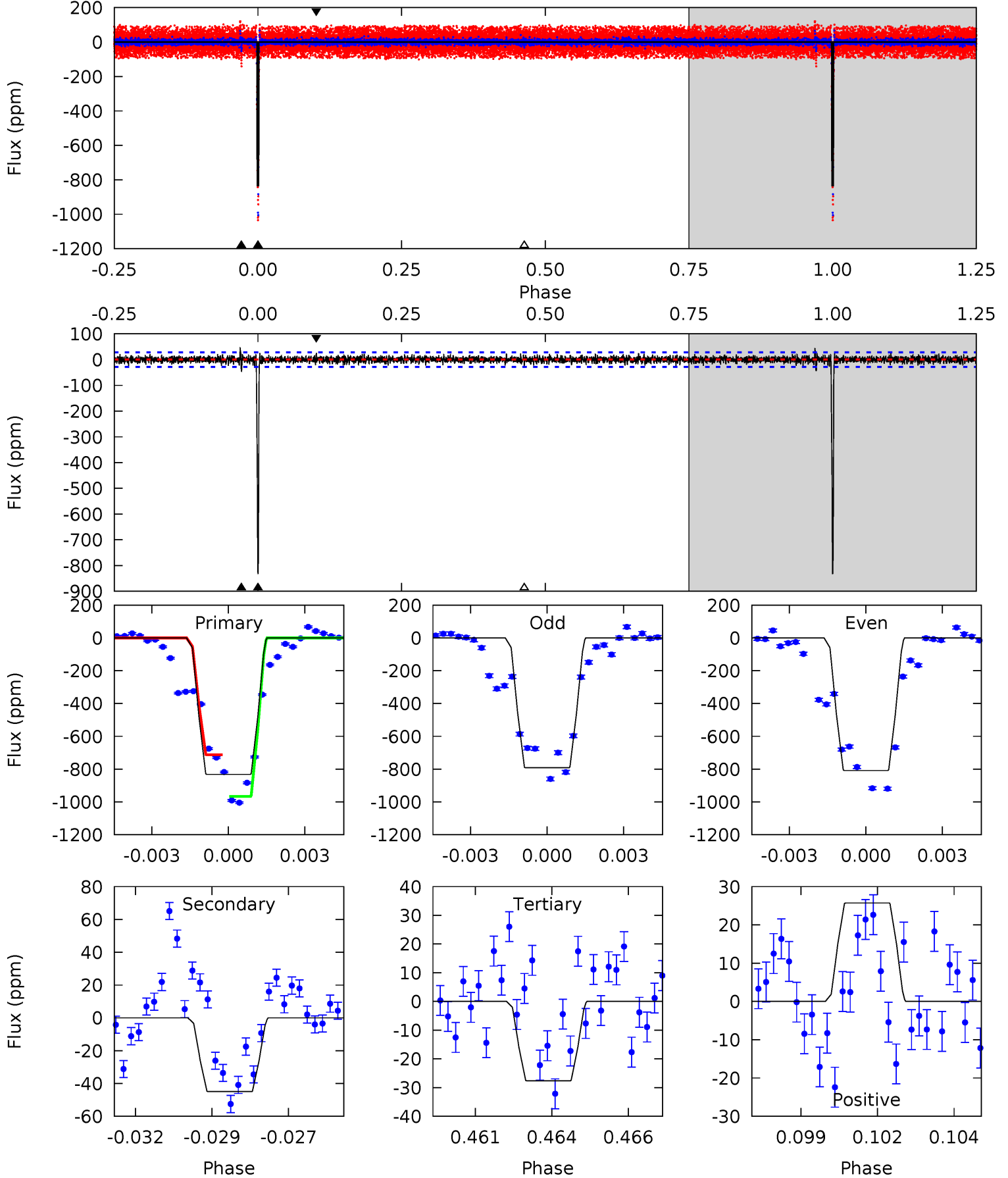
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
75.9	29.0	25.7	19.6	5.12	2.74	5.94	50.2	56.4	3.34	9.48	1.92	0.99	0.38	4.78



# Alt Model-Shift Uniqueness Test

005630212-01, P = 47.584012 Days, E = 126.568148 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
154.0	8.31	5.11	4.76	5.27	3.00	1.32	148.8	149.2	3.20	3.55	1.61	1.02	0.05	0



### Stellar Parameters For KIC 005630212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3999^{+125}_{-153}$	$4.670^{+0.063}_{-0.027}$	$-0.040^{+0.300}_{-0.300}$	$0.584^{+0.046}_{-0.074}$	$0.582^{+0.059}_{-0.066}$	$4.113^{+1.394}_{-0.484}$
	+3%/-4%	+1%/-1%	+750%/-750%	+8%/-13%	+10%/-11%	+34%/-12%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005630212-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-653 \pm 22$	$4.91^{+1.75}_{-1.73}$	$403^{+16}_{-18}$	$2842^{+369}_{-224}$	$687^{+952}_{-305}$
Alt.	$-45 \pm 5$	$2.34^{+1.60}_{-1.44}$	$403^{+16}_{-16}$	$2429^{+703}_{-270}$	$215^{+1231}_{-141}$

$T_{max}$  = 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

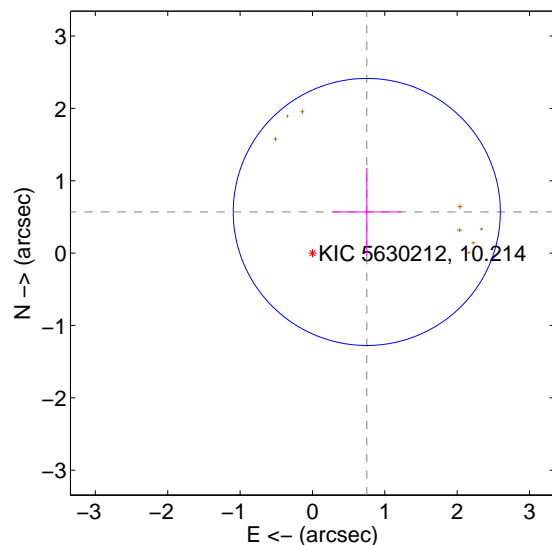
Supplemental centroid analysis for 005630212-01. **Kepler magnitude: 10.21.** Transit SNR 24.99

**There are 0 quarters with good PRF difference image offsets**

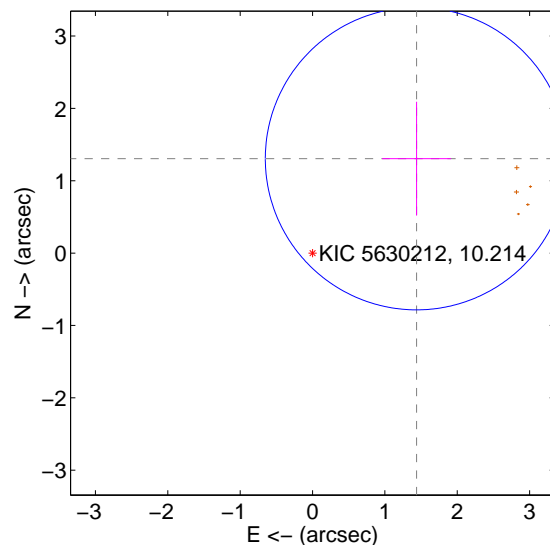
The direct PRF centroid is offset from the target star catalog position by about 1.97 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.942 \pm 0.615$	1.53	$-0.751 \pm 0.474$	$0.569 \pm 0.610$
PRF-fit source offset from KIC position	$1.942 \pm 0.697$	2.79	$-1.438 \pm 0.476$	$1.306 \pm 0.786$
photometric centroid source offset	$0.28 \pm 0.14$	1.99	$-0.10 \pm 0.09$	$0.26 \pm 0.15$

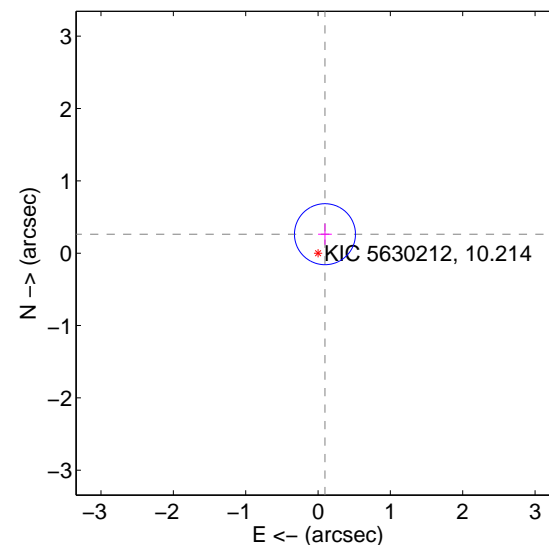
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



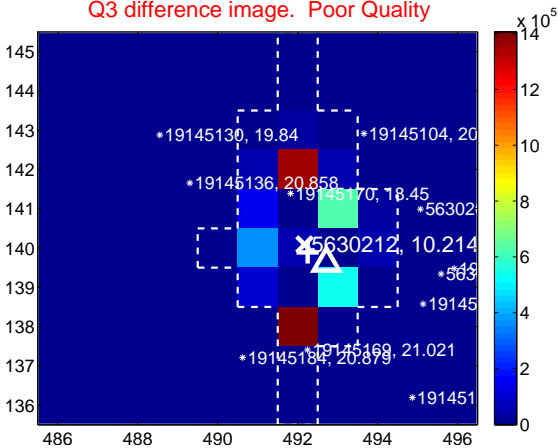
Q2 no difference image



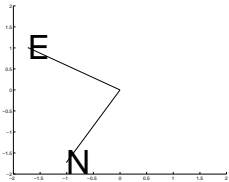
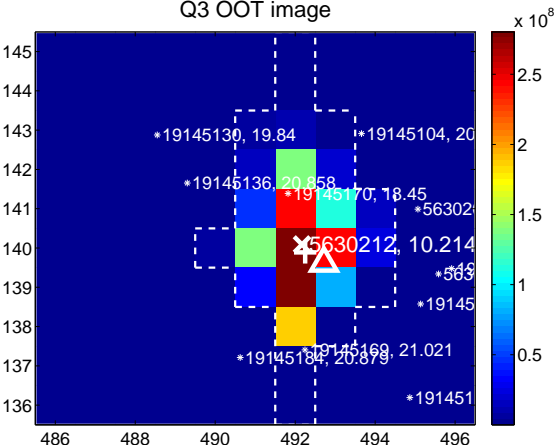
Q2 no OOT image



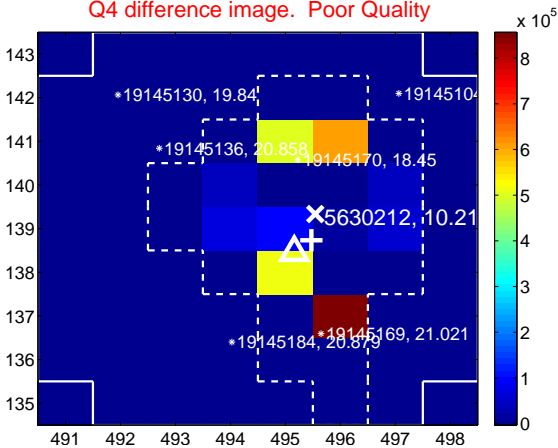
Q3 difference image. Poor Quality



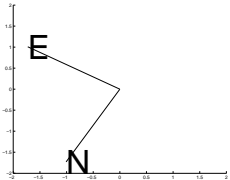
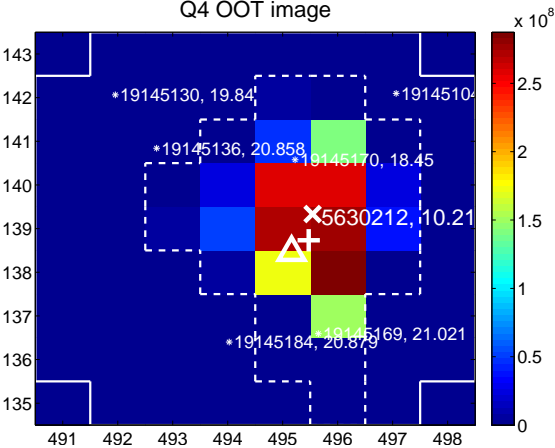
Q3 OOT image



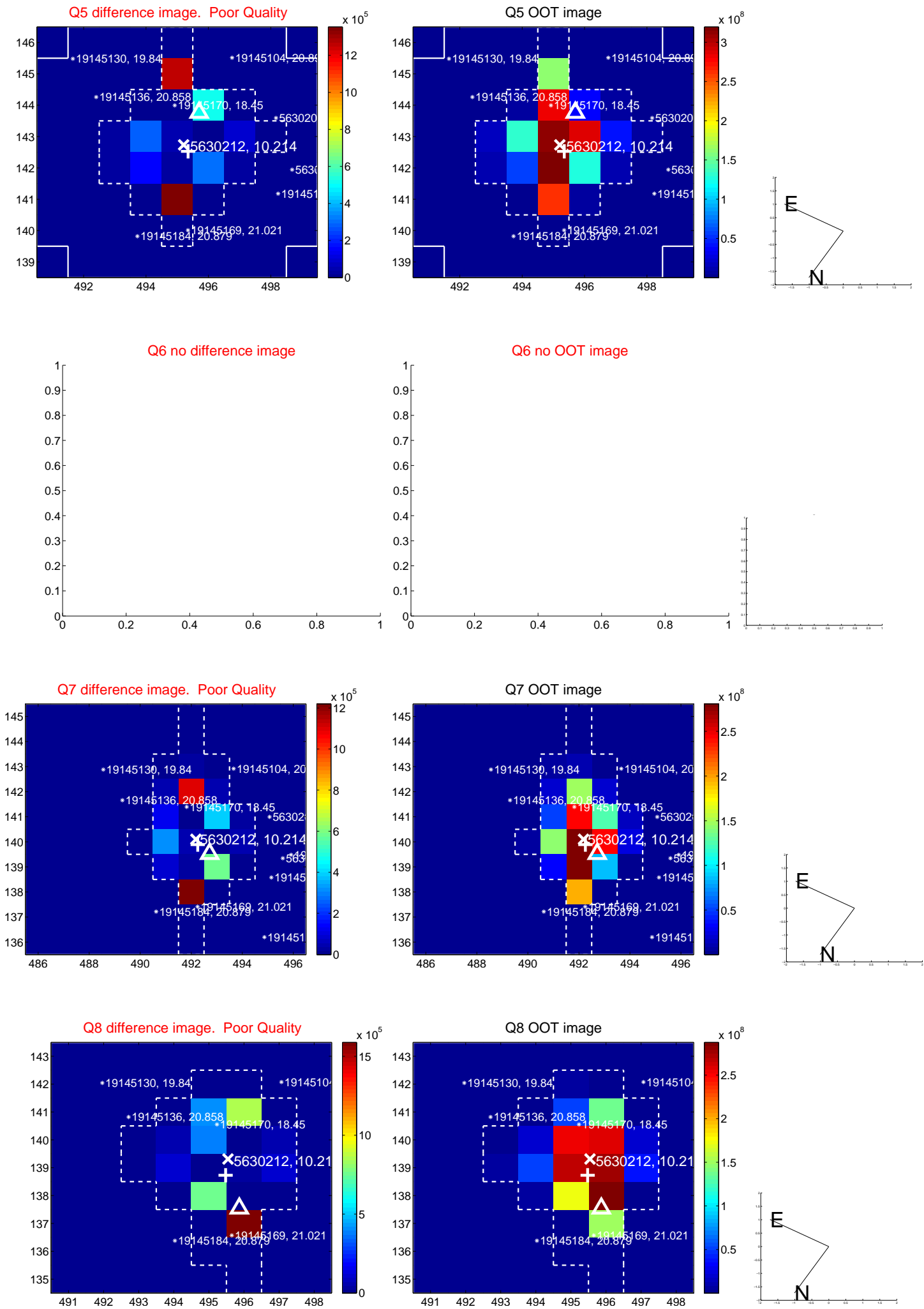
Q4 difference image. Poor Quality



Q4 OOT image

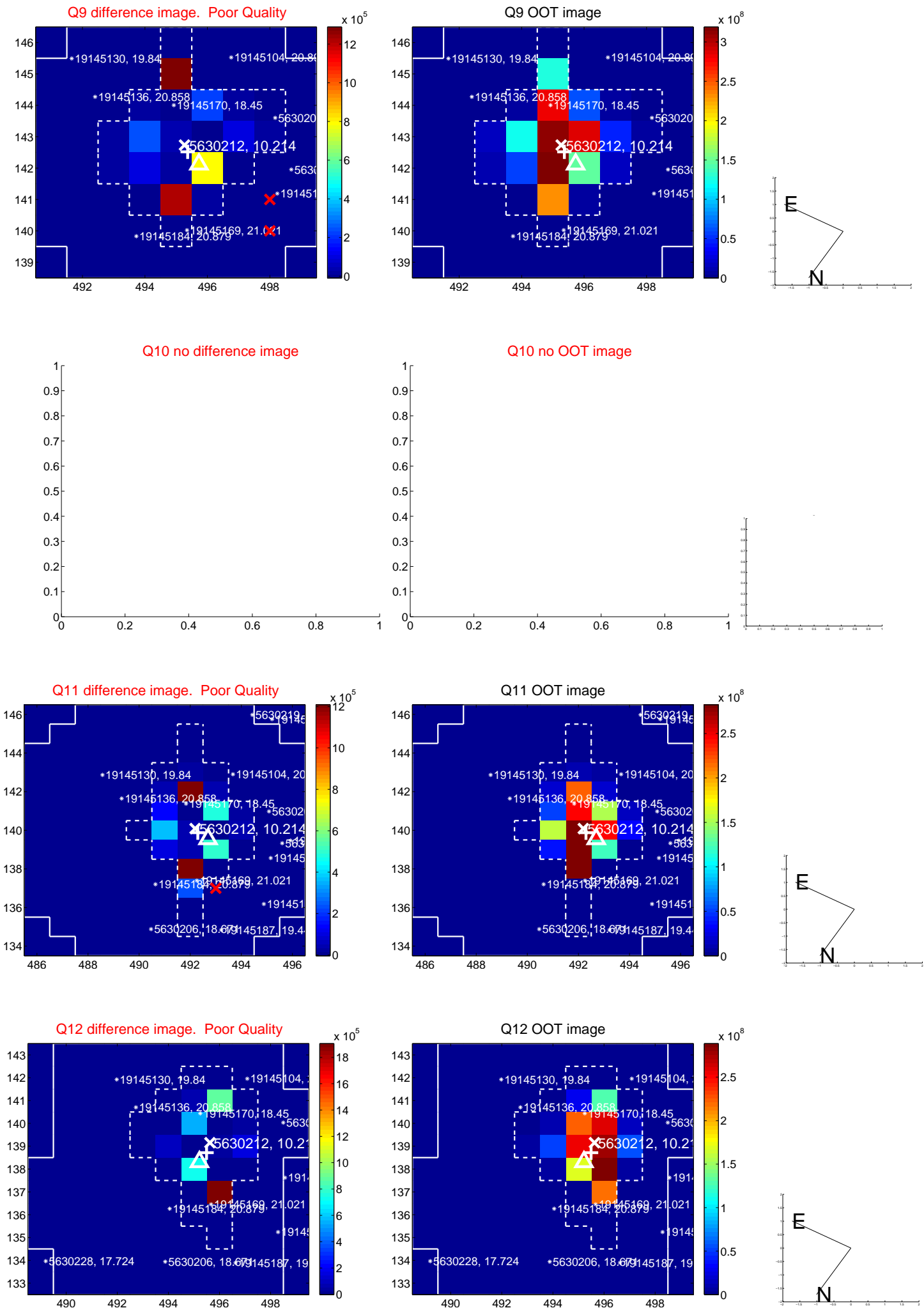


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



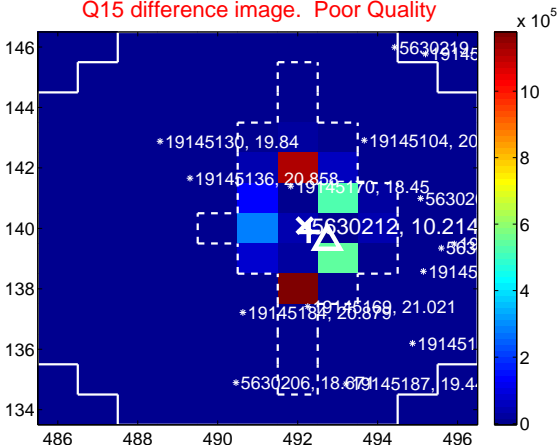
Q14 no difference image



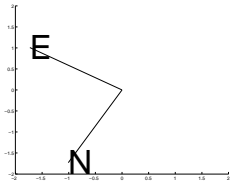
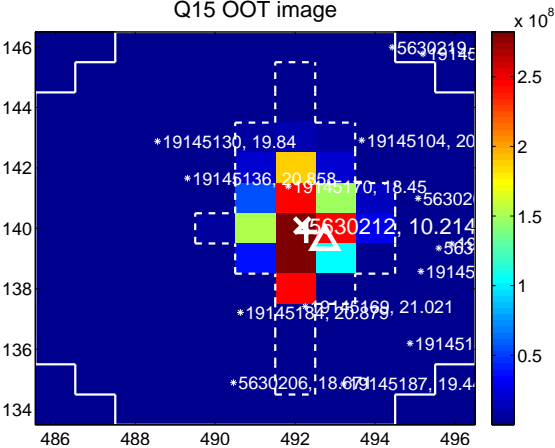
Q14 no OOT image



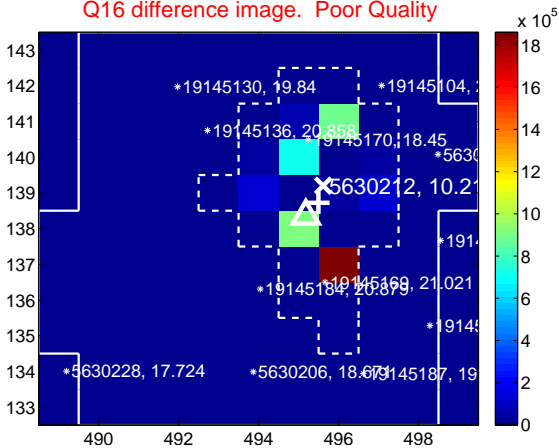
Q15 difference image. Poor Quality



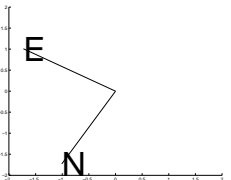
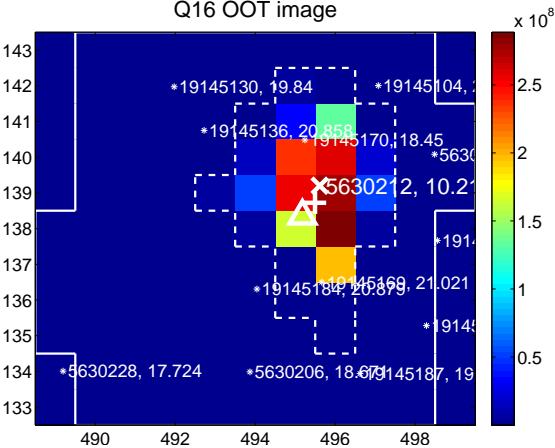
Q15 OOT image



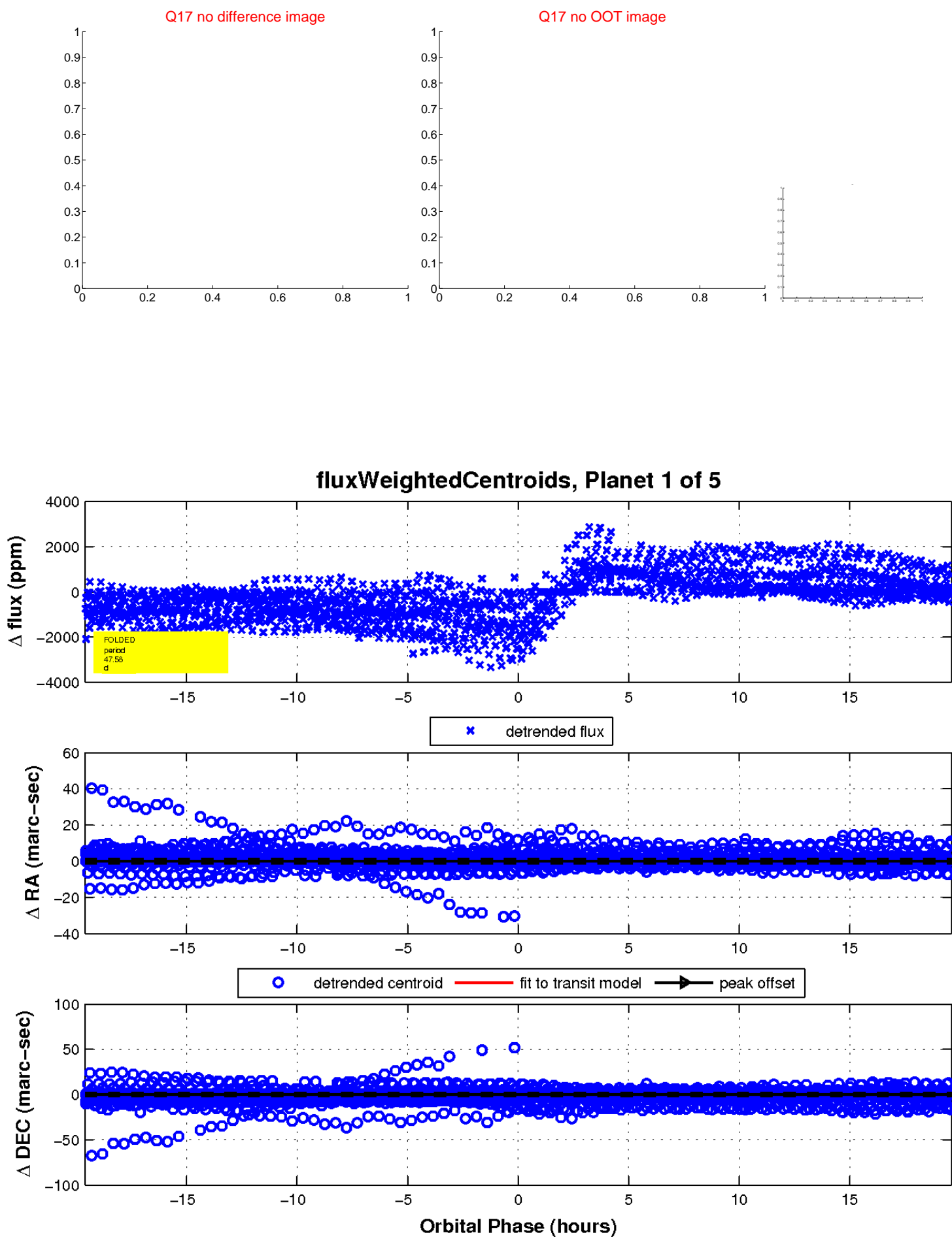
Q16 difference image. Poor Quality



Q16 OOT image

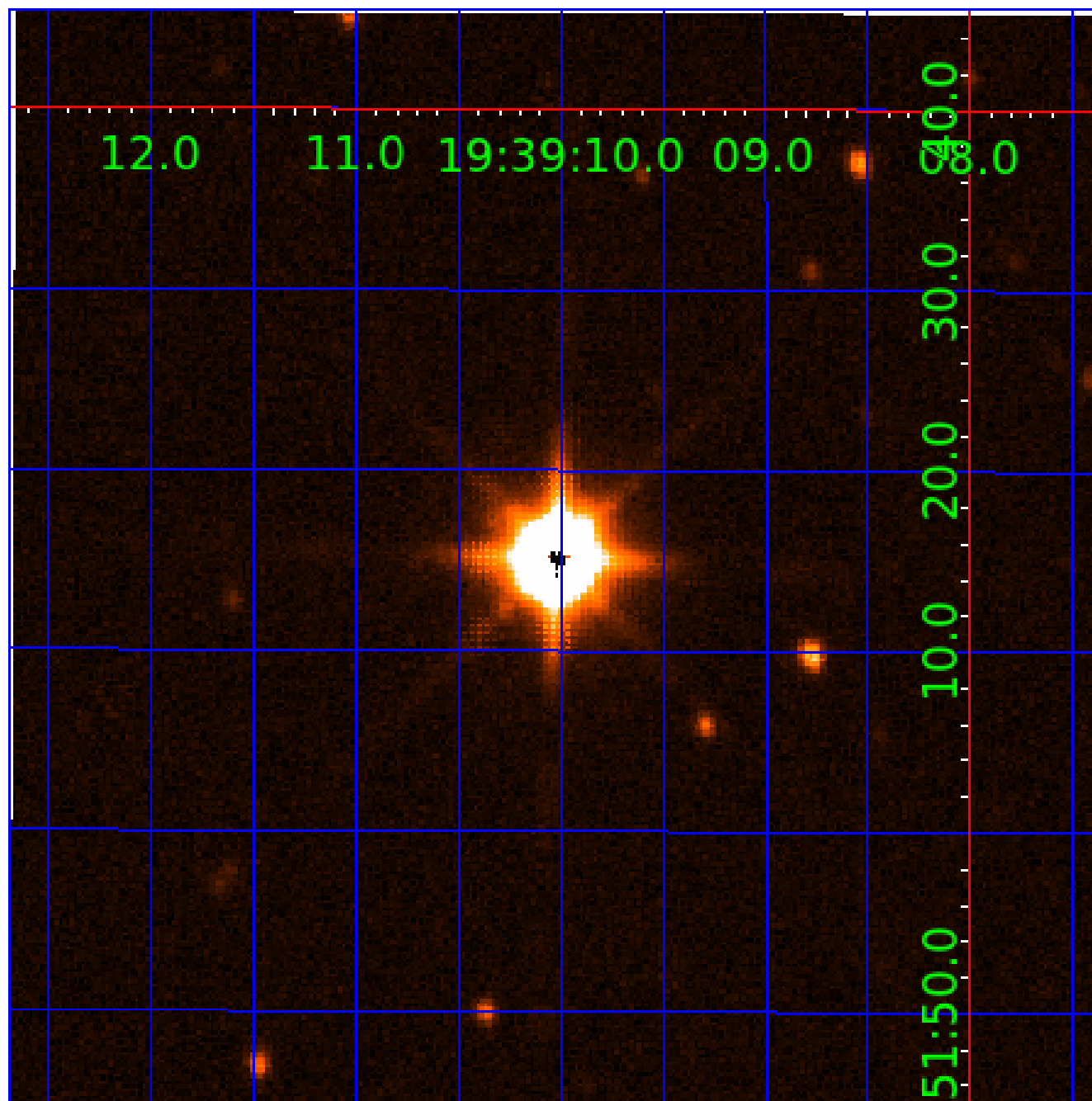


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005630212

## Q1-17 DR25 TCE Parameters

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

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630212-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
005630212-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

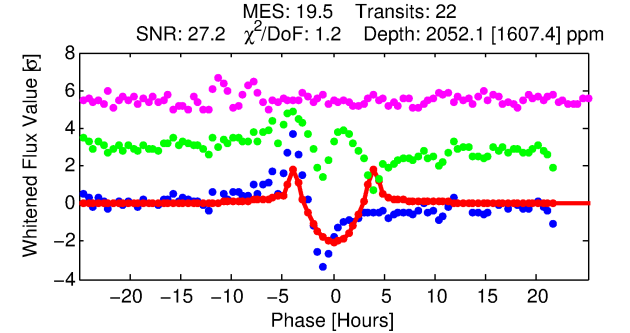
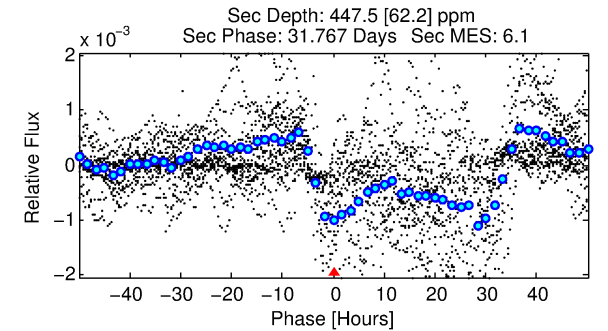
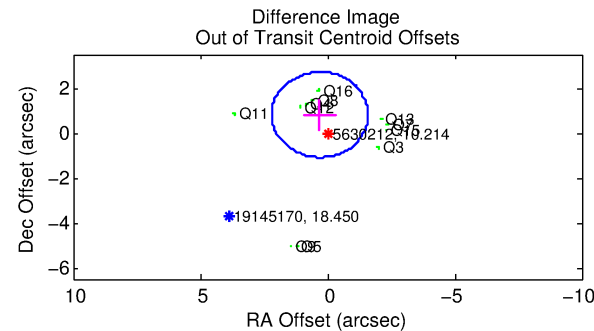
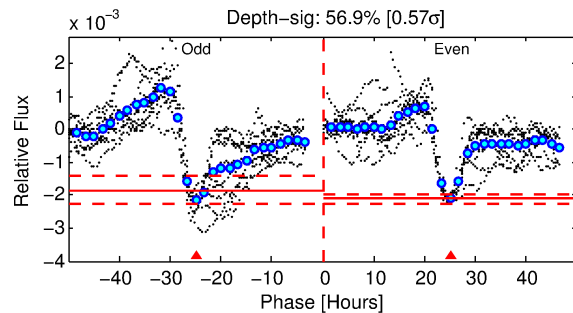
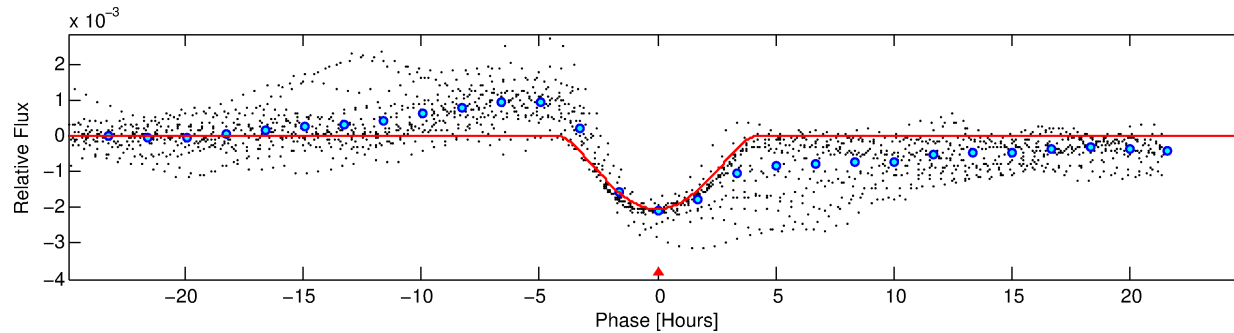
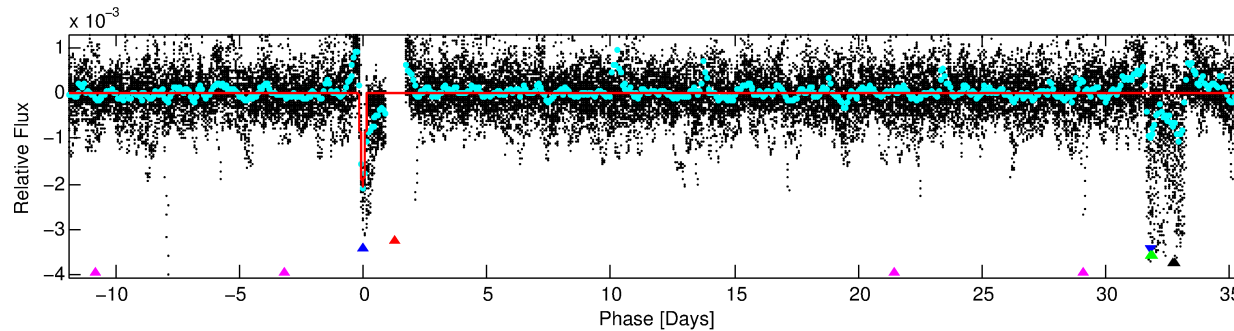
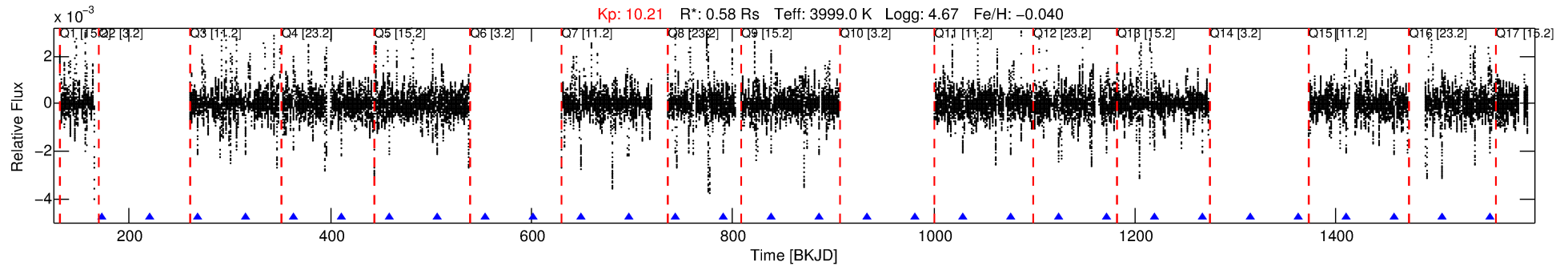
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005630212-02

No Significant Match Found

# DV One-Page Summary

KIC: 5630212 Candidate: 2 of 5 Period: 47.585 d



## DV Fit Results:

Period = 47.58451 [0.00021] d  
Epoch = 172.8334 [0.0037] BKJD  
 $R_p/R^* = 0.0813$  [0.0293]  
 $a/R^* = 17.99$  [1.20]  
 $b = 1.00$  [0.00]  
 $\text{Seff} = 1.70$  [0.34]  
 $T_{\text{eq}} = 291$  [15] K  
 $R_p = 5.18$  [1.98]  $R_e$   
 $a = 0.2146$  [0.0209] AU  
 $A_g = 422.57$  [314.83] [1.34 $\sigma$ ]  
 $T_{\text{eff}} = 2040$  [382] K [4.57 $\sigma$ ]

## DV Diagnostic Results:

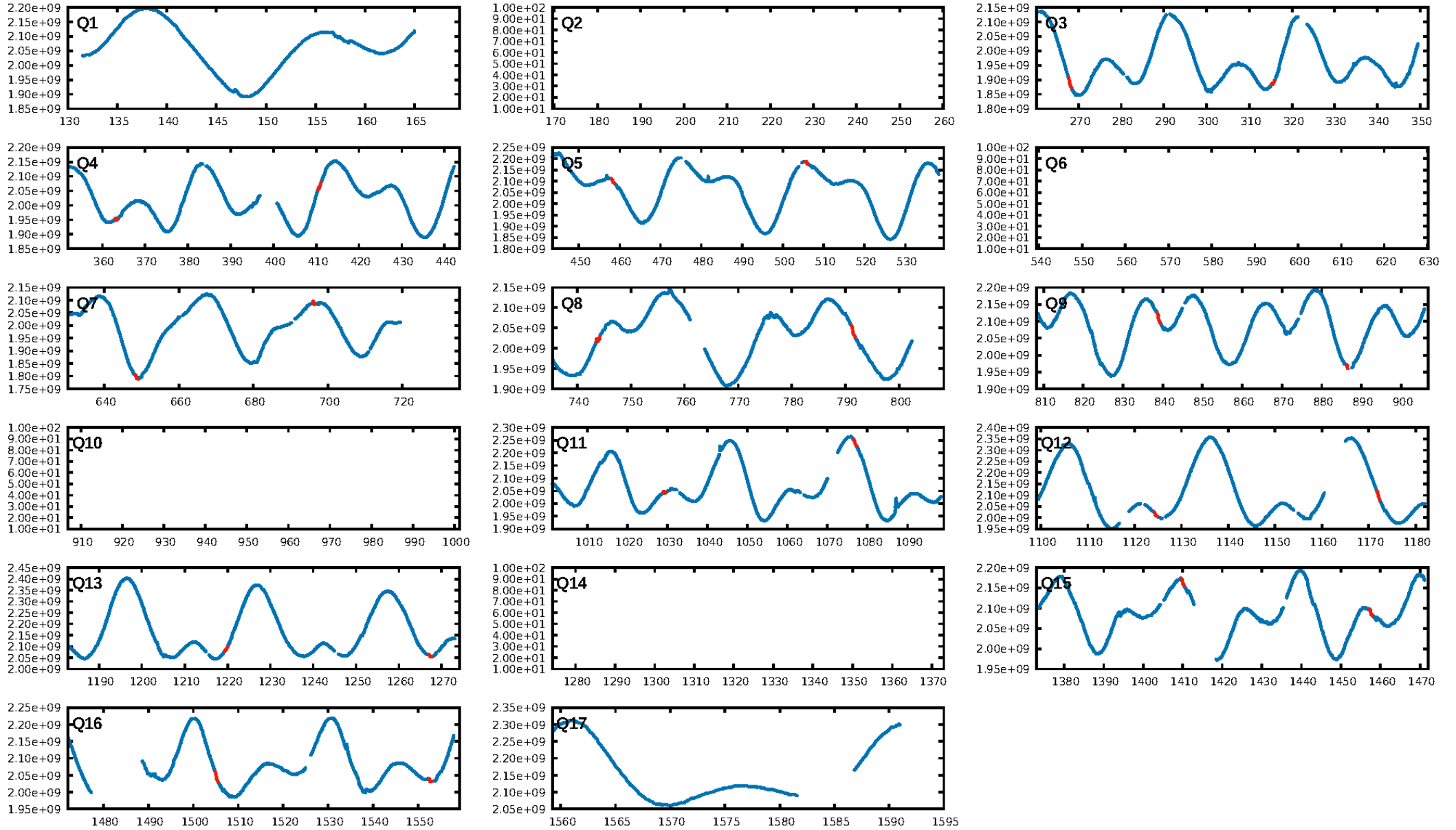
ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 100.0% [40.29 $\sigma$ ]  
ModelChiSquare2-sig: 69.4%  
ModelChiSquareGof-sig: 36.1%  
Bootstrap-pfa: 1.85e-48  
RollingBand-fgt: 1.00 [22/22]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 1.2%  
Centroid-so: 0.135 arcsec [1.25 $\sigma$ ]  
OotOffset-rm: 0.865 arcsec [1.37 $\sigma$ ]  
KicOffset-rm: 1.587 arcsec [1.70 $\sigma$ ]  
OotOffset-st: 0/4/4/3 [11]  
KicOffset-st: 0/4/4/3 [11]  
DiffImageQuality-fgm: 0.00 [0/11]  
DiffImageOverlap-fno: 1.00 [11/11]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:52:17 Z

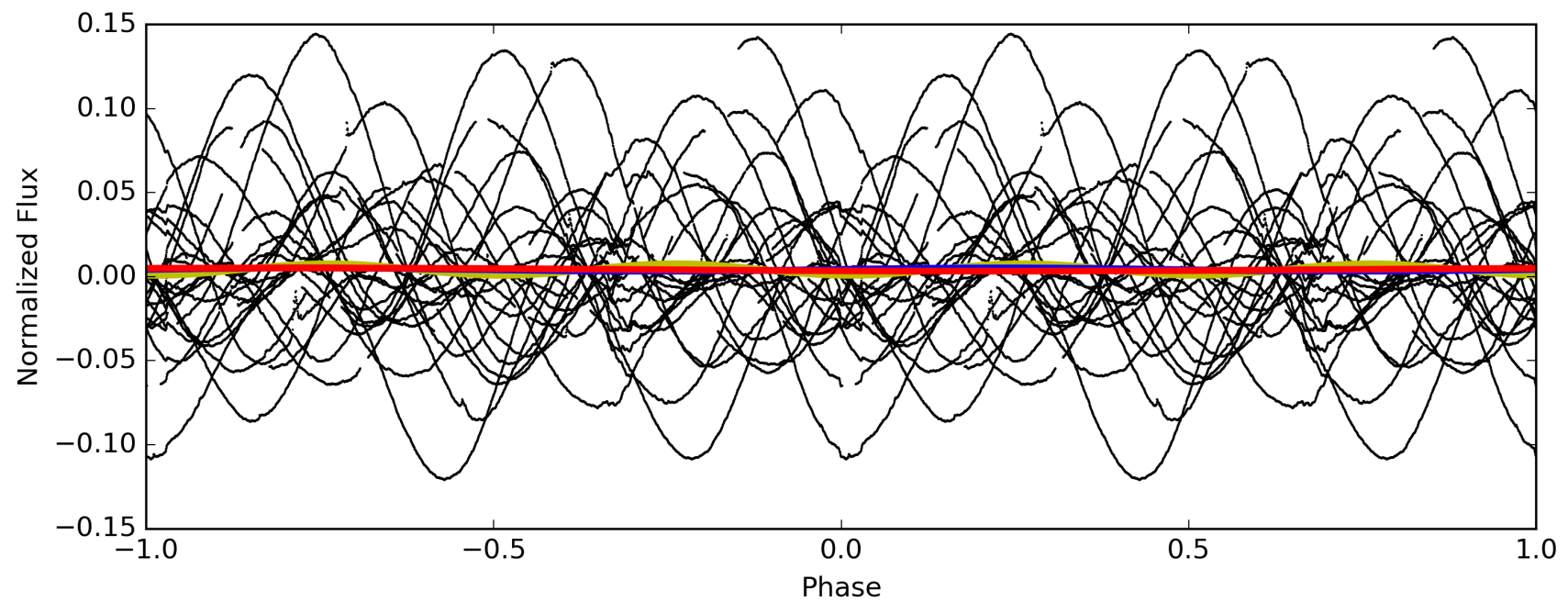
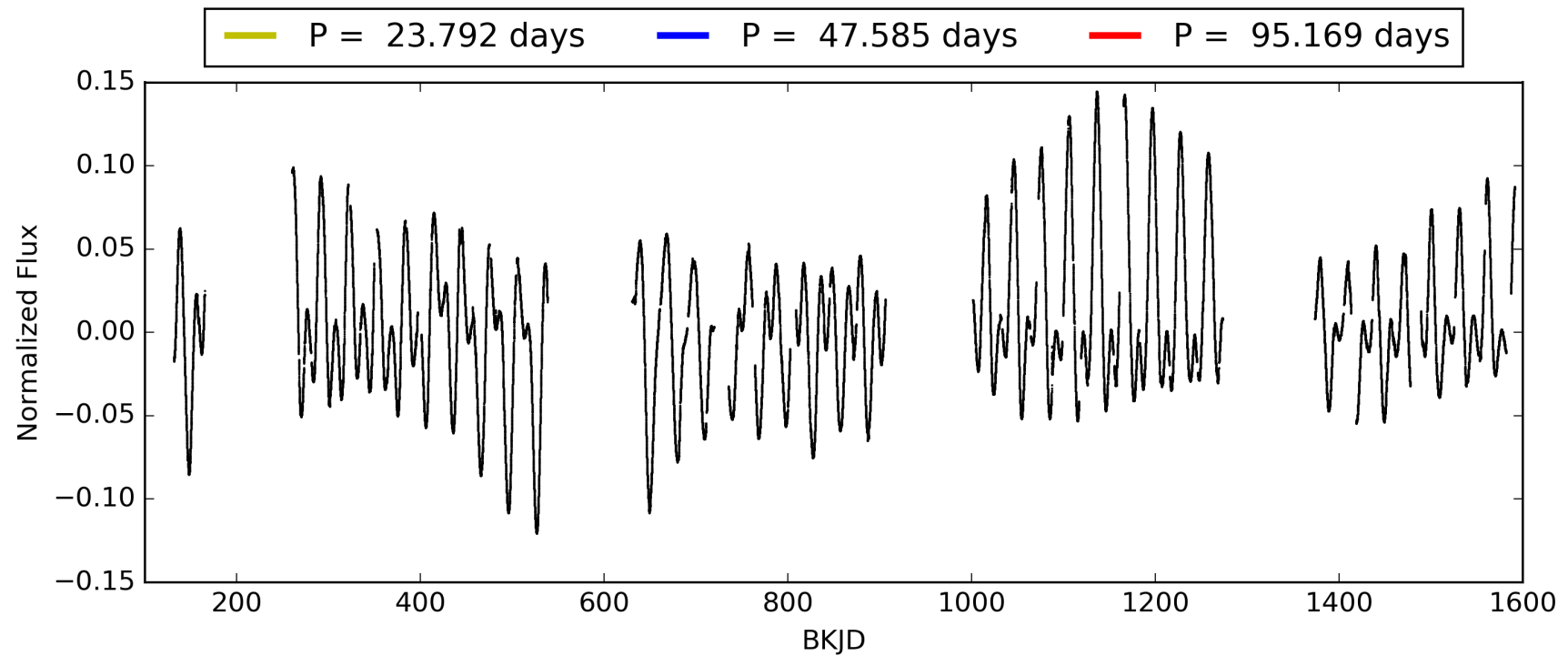
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005630212-02, PDC Light Curves

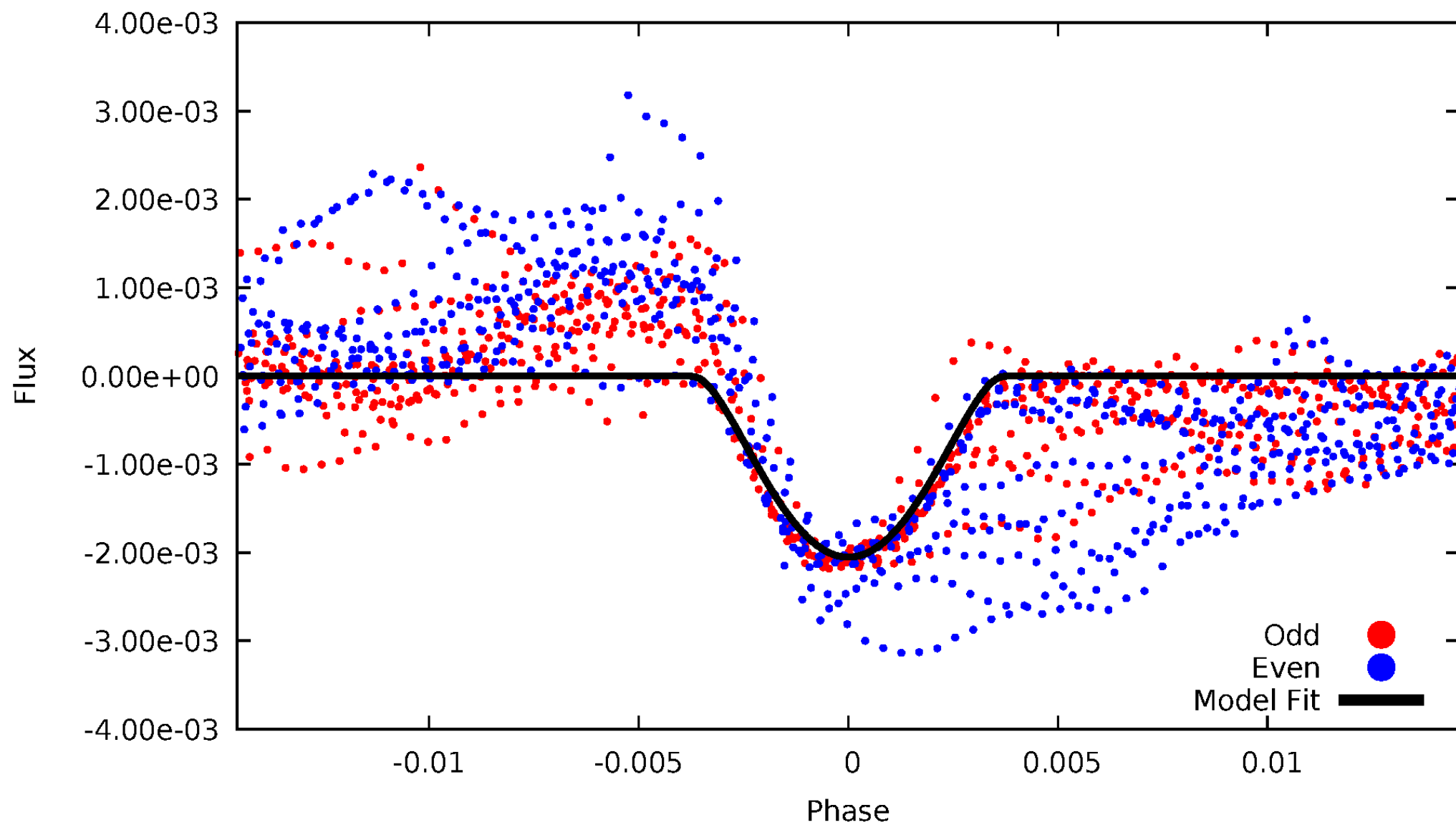


TCE 005630212-02



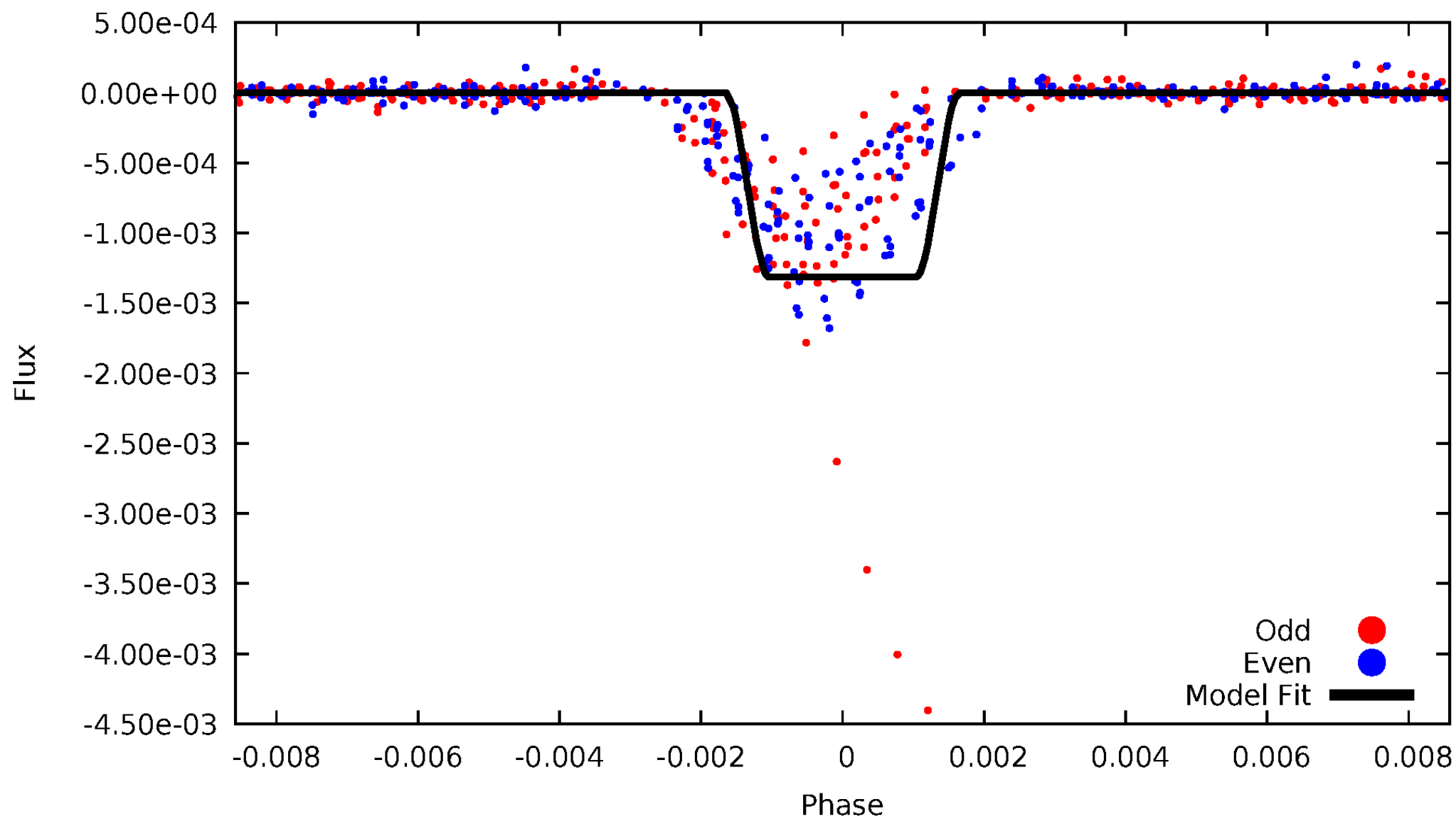
# DV Odd/Even

TCE 005630212-02



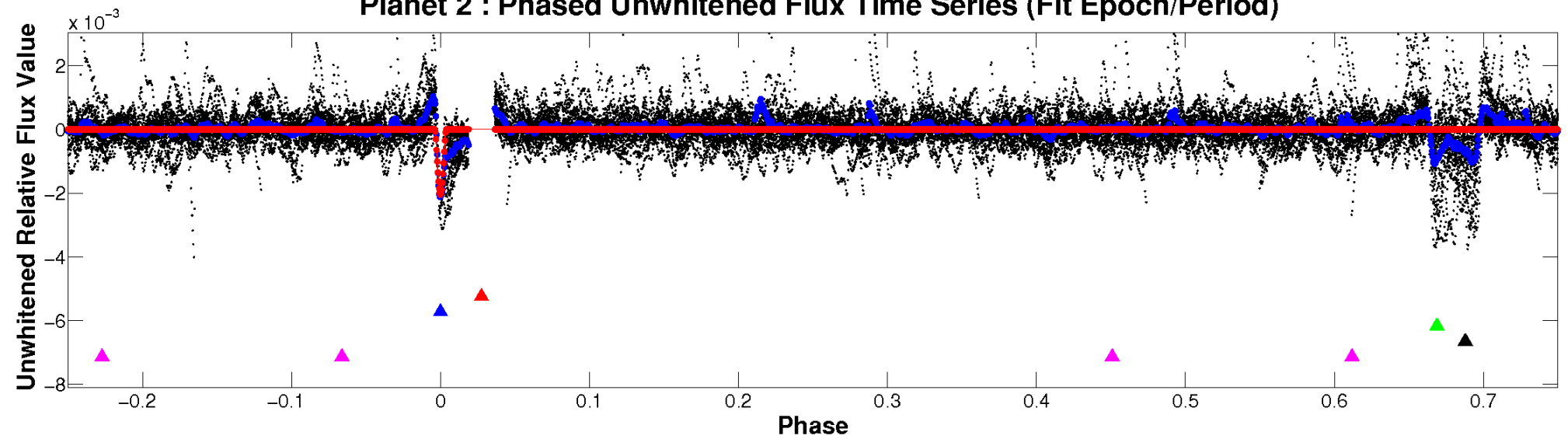
# ALT Odd/Even

TCE 005630212-02

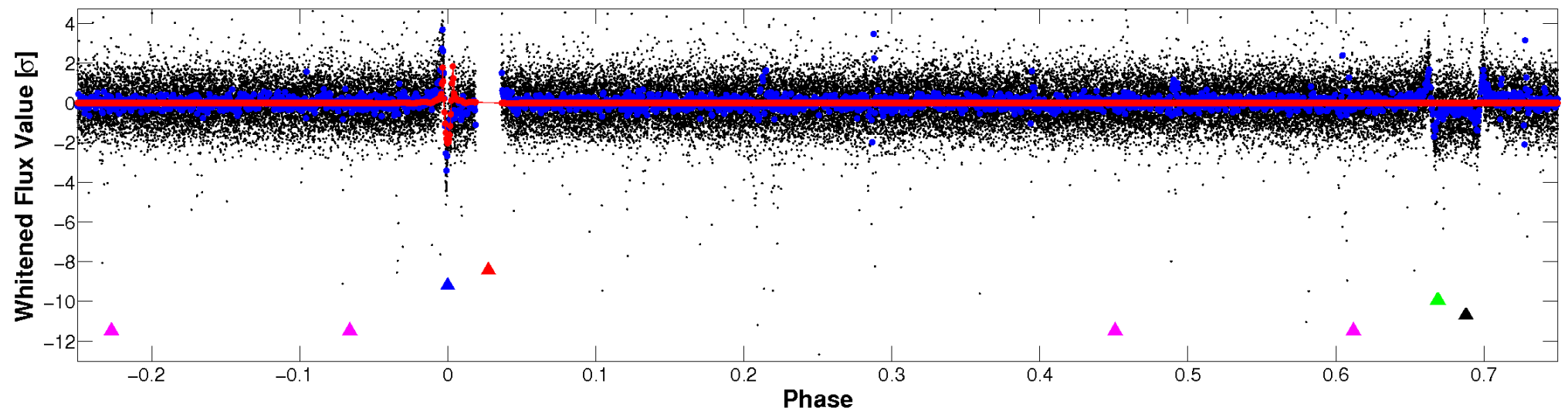


# Non-Whitened Vs. Whitened Light Curve

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

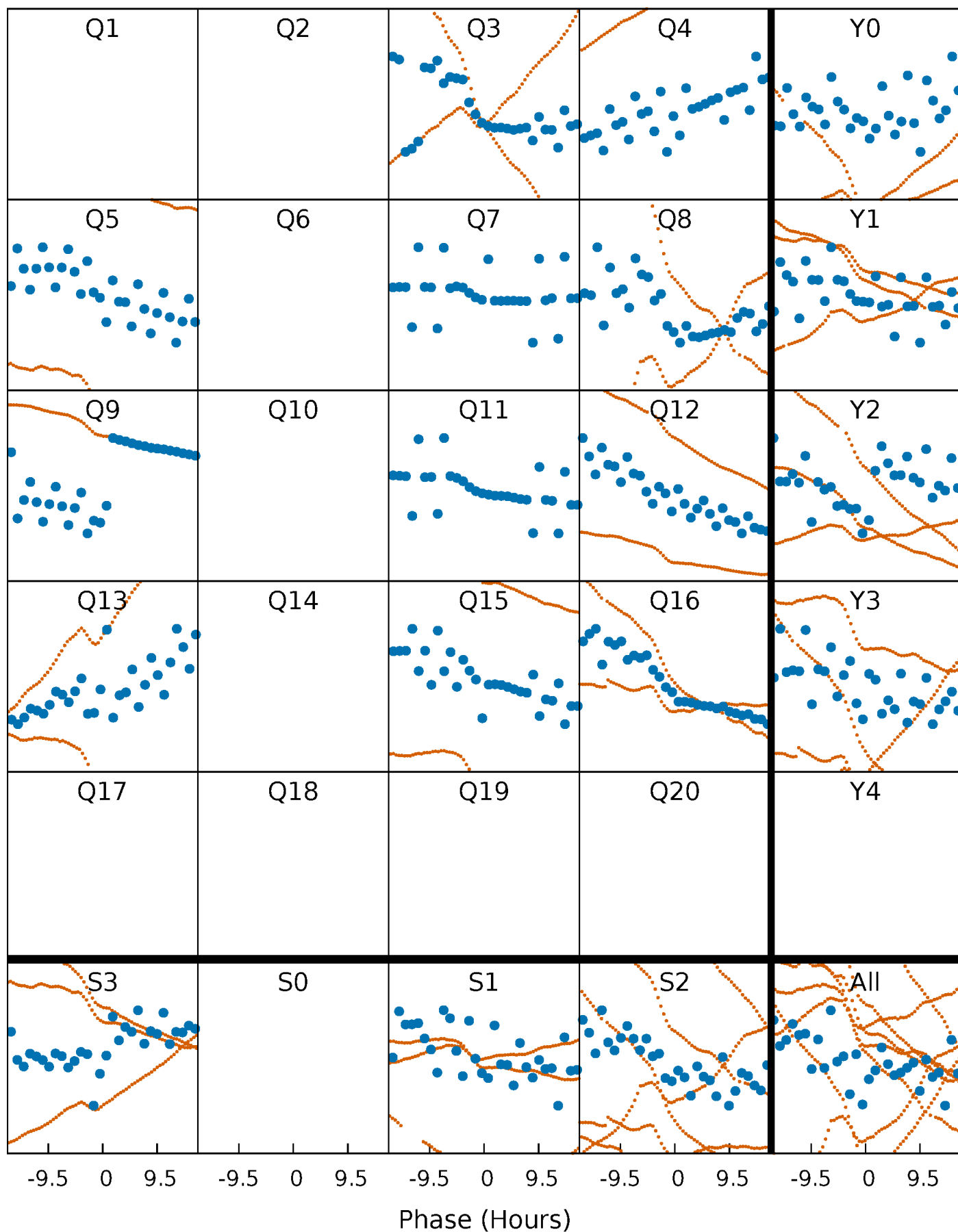


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

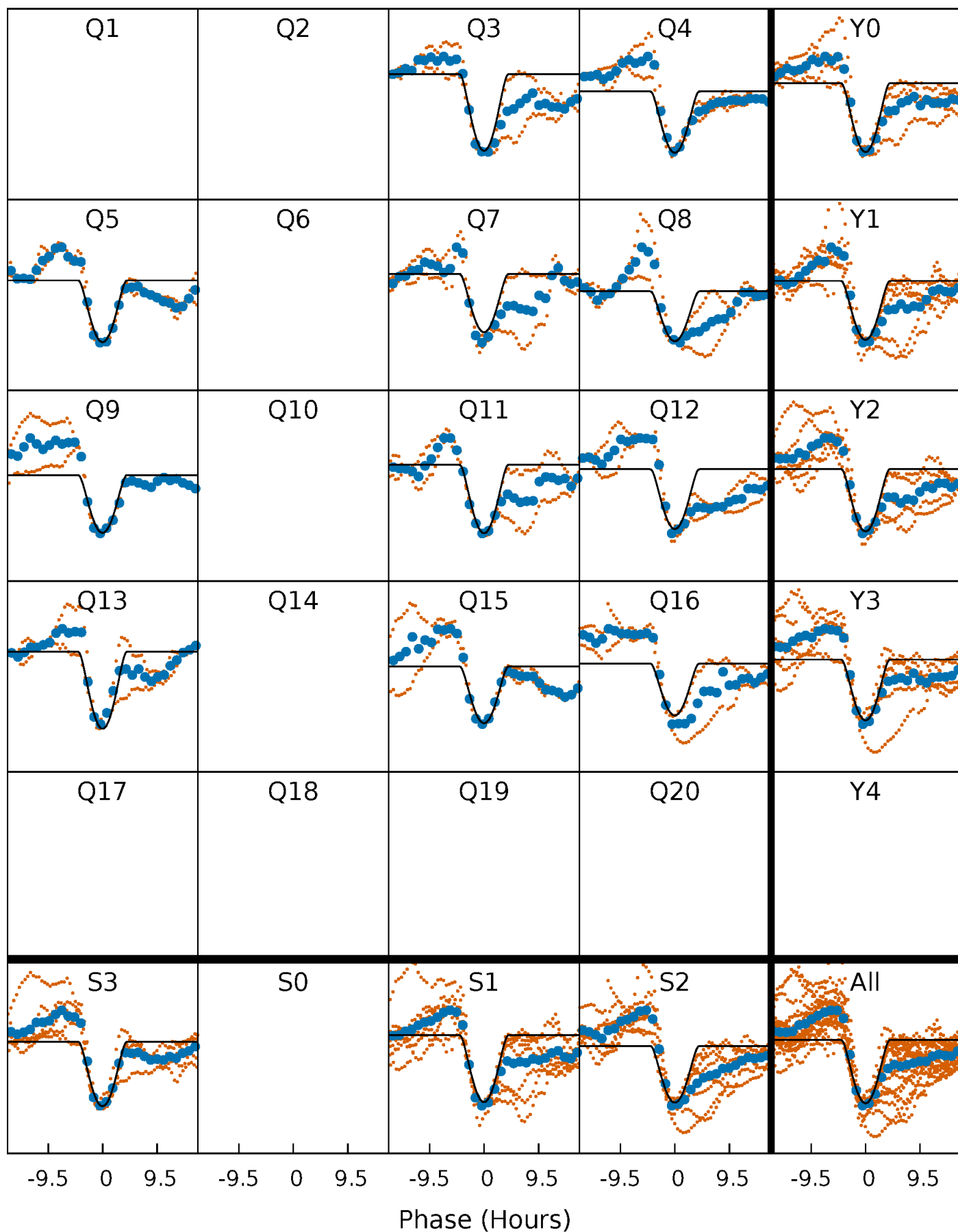
TCE 005630212-02 P= 47.584513 Days  $T_0=172.833431$  (BKJD)





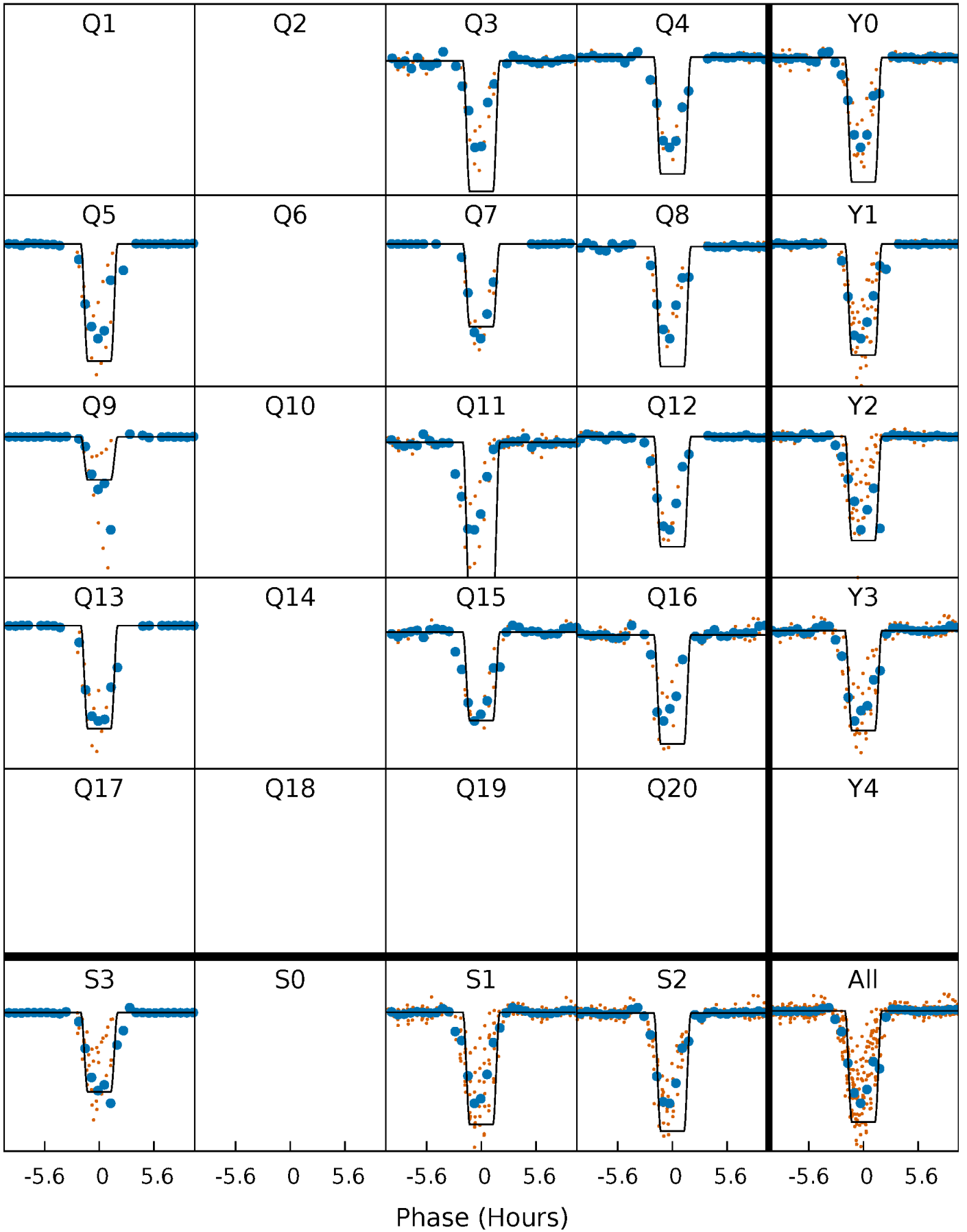
# DV Quarter-Phased Transit Curves

TCE 005630212-02 P= 47.584513 Days  $T_0=172.833431$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

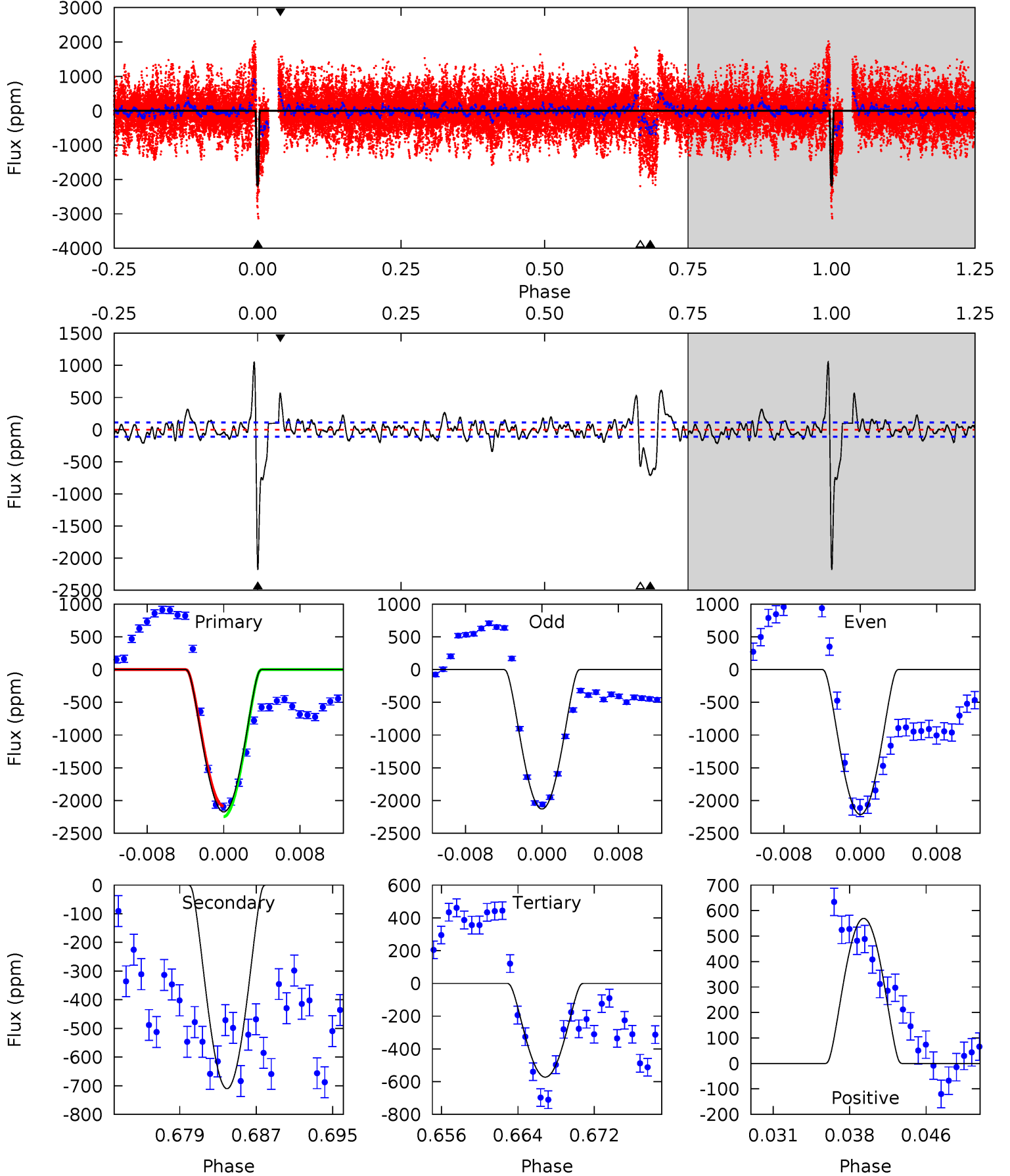
TCE 005630212-02 P= 47.584684 Days  $T_0=172.808868$  (BKJD)



# DV Model-Shift Uniqueness Test

005630212-02,  $P = 47.584513$  Days,  $E = 125.248918$  Days

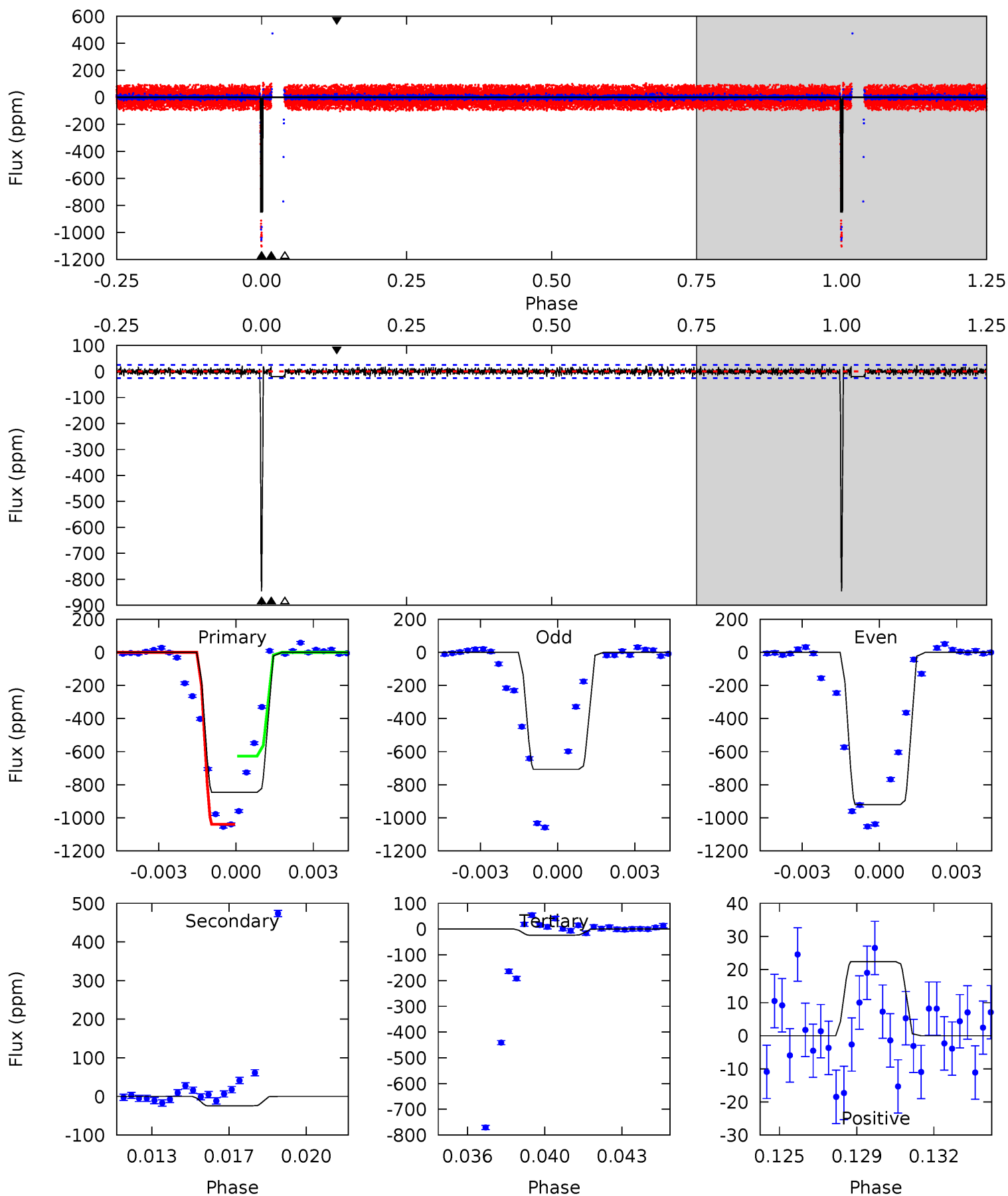
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
99.4	32.5	26.2	26.0	5.08	2.67	6.96	73.3	73.4	6.30	6.44	1.96	1.01	0.33	3.61



# Alt Model-Shift Uniqueness Test

005630212-02, P = 47.584684 Days, E = 125.224184 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
173.5	4.98	4.85	4.58	5.23	2.94	1.22	168.7	168.9	0.13	0.39	21.1	1.07	0.03	0



### Stellar Parameters For KIC 005630212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3999^{+125}_{-153}$	$4.670^{+0.063}_{-0.027}$	$-0.040^{+0.300}_{-0.300}$	$0.584^{+0.046}_{-0.074}$	$0.582^{+0.059}_{-0.066}$	$4.113^{+1.394}_{-0.484}$
	+3%/-4%	+1%/-1%	+750%/-750%	+8%/-13%	+10%/-11%	+34%/-12%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005630212-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-710 \pm 22$	$5.06^{+2.01}_{-1.93}$	$402^{+17}_{-17}$	$2844^{+428}_{-245}$	$710^{+1157}_{-347}$
Alt.	$-24 \pm 5$	$2.48^{+1.87}_{-1.48}$	$402^{+16}_{-14}$	$2238^{+578}_{-260}$	$102^{+521}_{-70}$

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

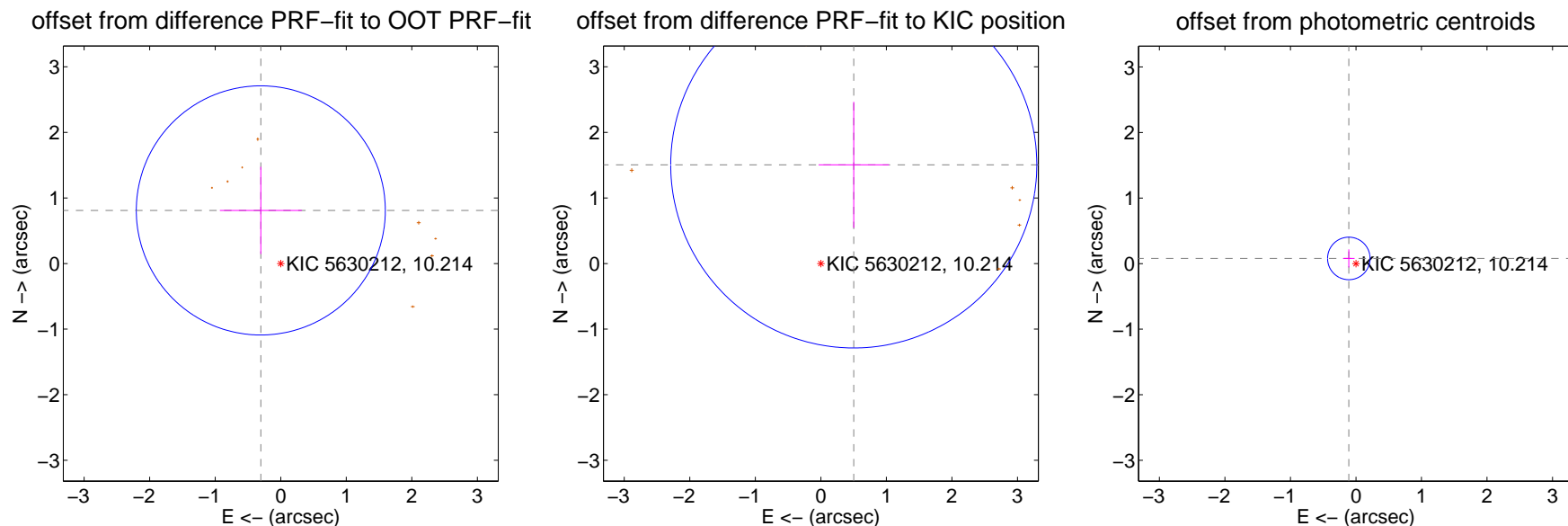
## DV Centroid Data

Supplemental centroid analysis for 005630212-02. **Kepler magnitude: 10.21.** Transit SNR 27.18

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.75 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.865 \pm 0.633$	1.37	$0.304 \pm 0.625$	$0.810 \pm 0.665$
PRF-fit source offset from KIC position	$1.587 \pm 0.931$	1.70	$-0.502 \pm 0.537$	$1.505 \pm 0.961$
photometric centroid source offset	$0.13 \pm 0.11$	1.25	$0.11 \pm 0.09$	$0.08 \pm 0.14$



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.

Q1 no difference image



Q1 no OOT image



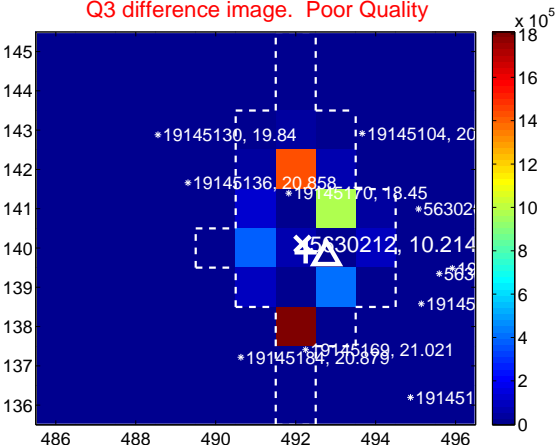
Q2 no difference image



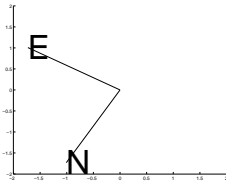
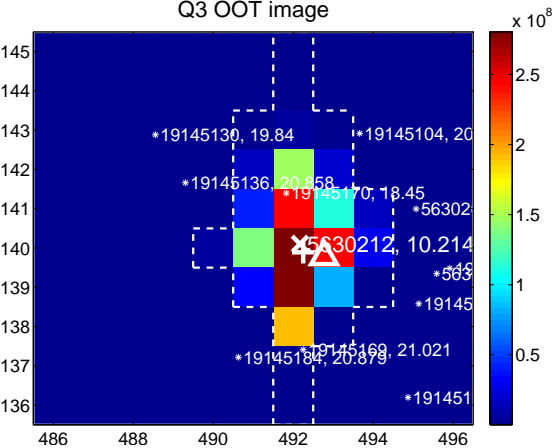
Q2 no OOT image



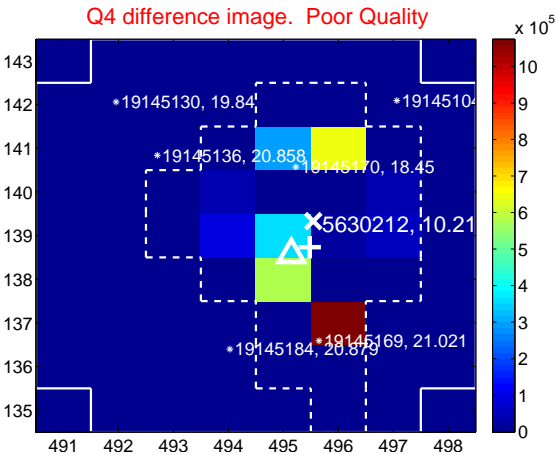
Q3 difference image. Poor Quality



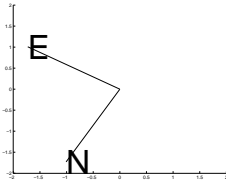
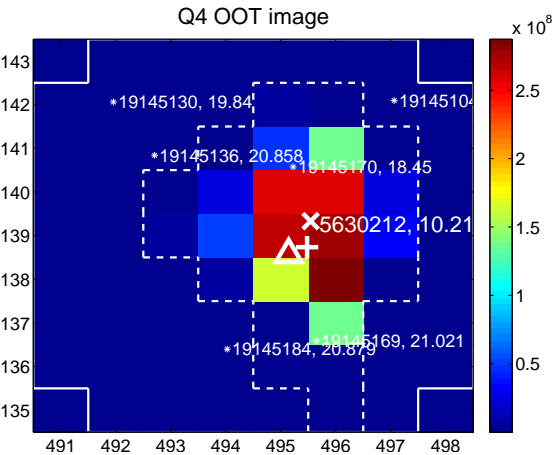
Q3 OOT image



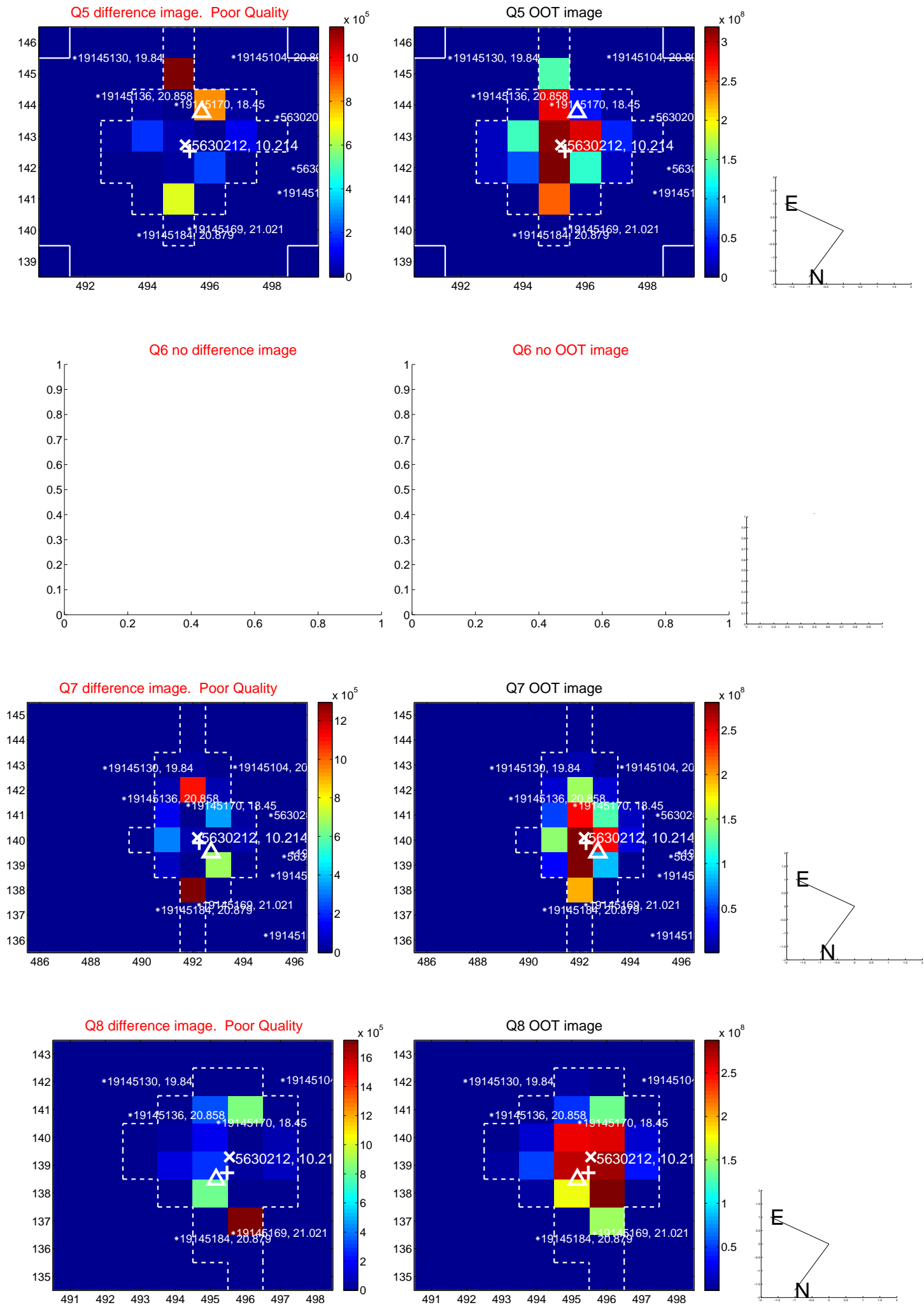
Q4 difference image. Poor Quality



Q4 OOT image

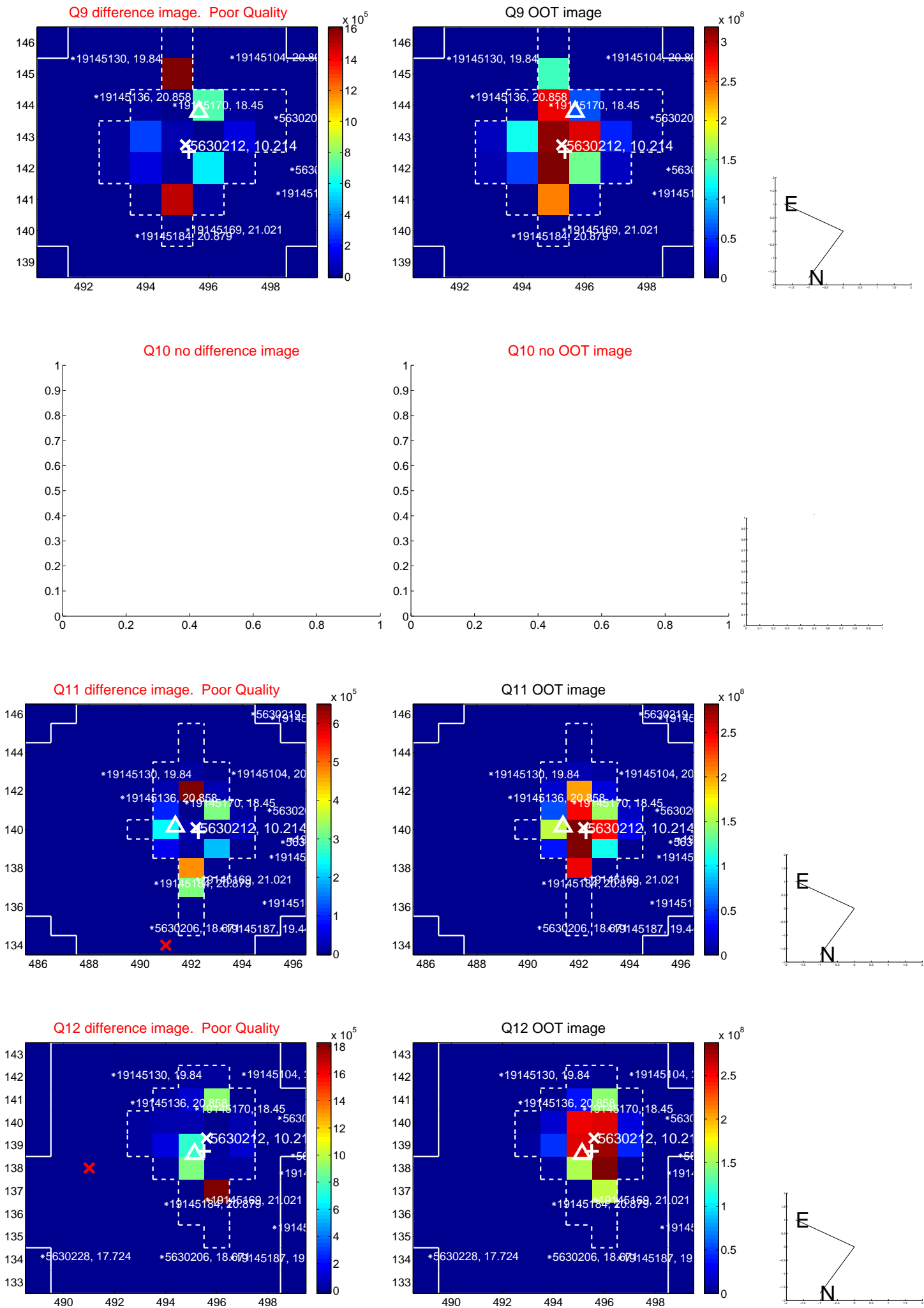


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

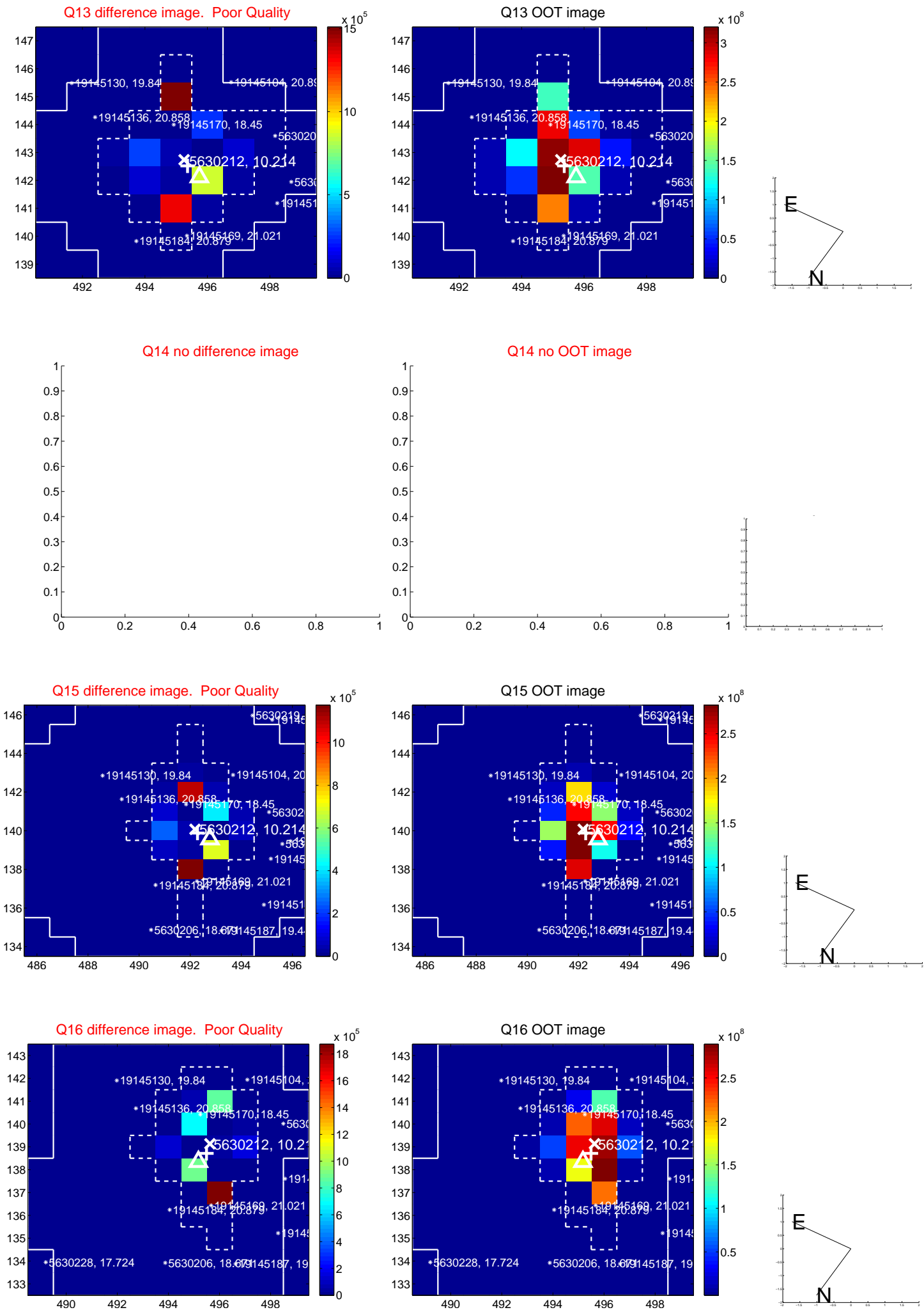




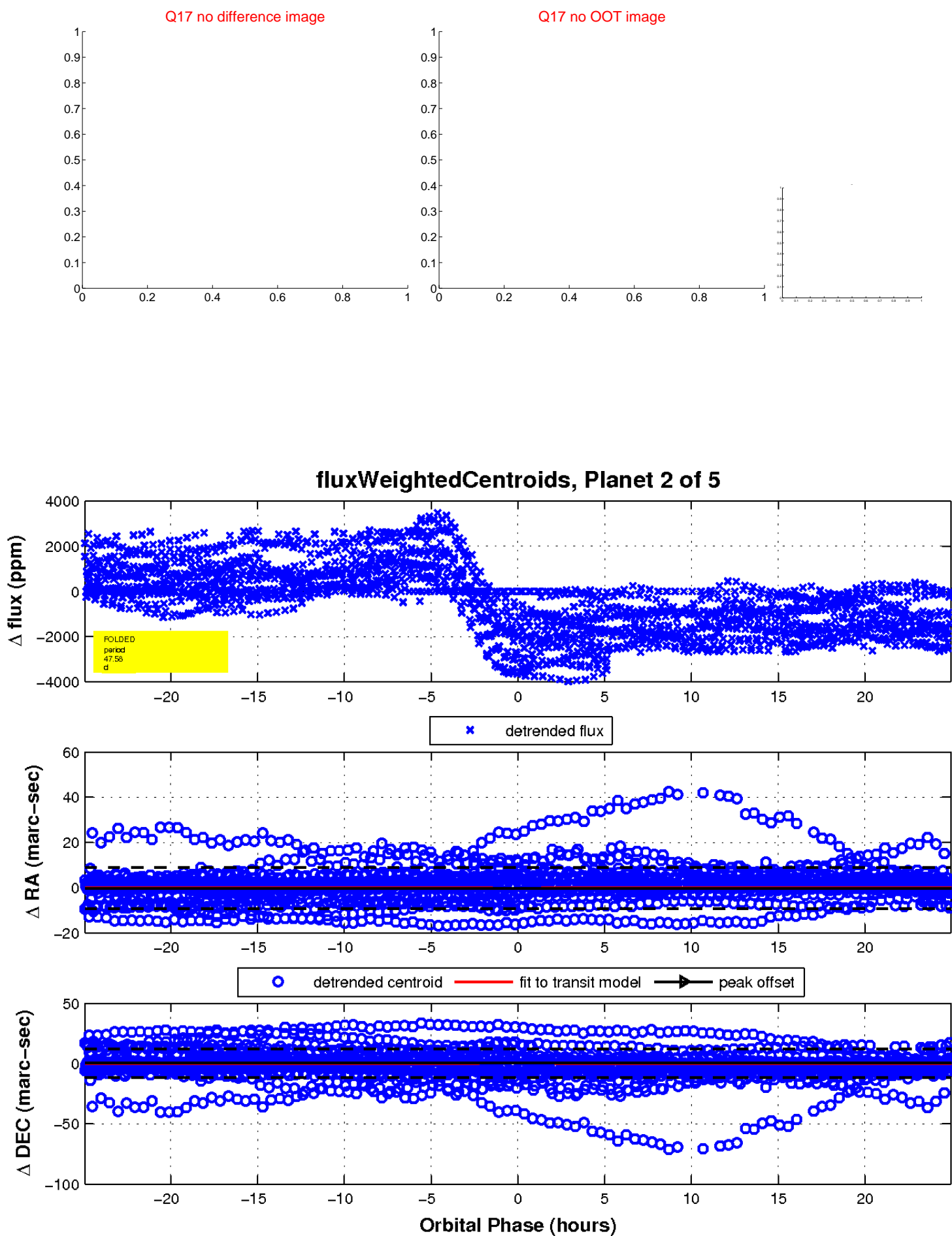
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

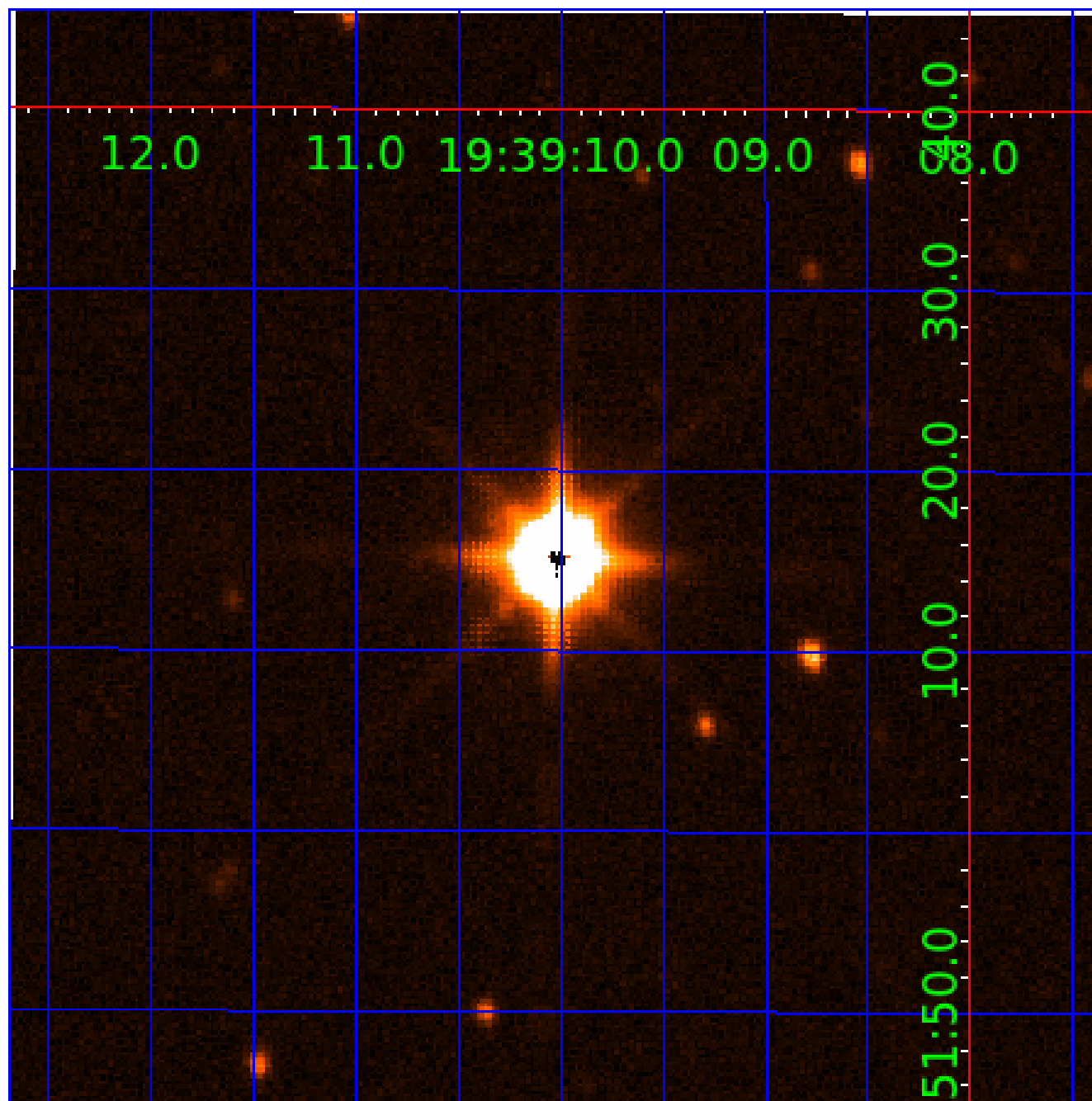


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005630212

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005630212-01	OBS	No	47.584258	174.146574	1801.4	6.540	17.1	25.0	0.58	3999	4.88	1.70
005630212-02	OBS	No	47.584513	172.833431	2052.1	8.323	19.5	27.2	0.58	3999	5.18	1.70
005630212-03	OBS	No	47.582859	157.103040	2238.1	14.764	11.9	22.5	0.58	3999	3.52	1.70
005630212-04	OBS	No	95.166350	205.585869	4531.7	27.091	13.7	21.3	0.58	3999	4.45	0.67
005630212-05	OBS	No	435.921257	146.703943	535.6	6.064	11.3	4.8	0.58	3999	1.71	0.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630212-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
005630212-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

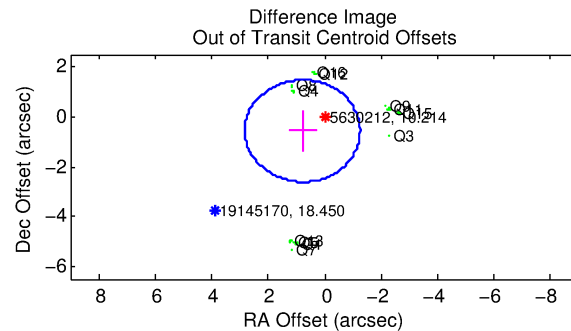
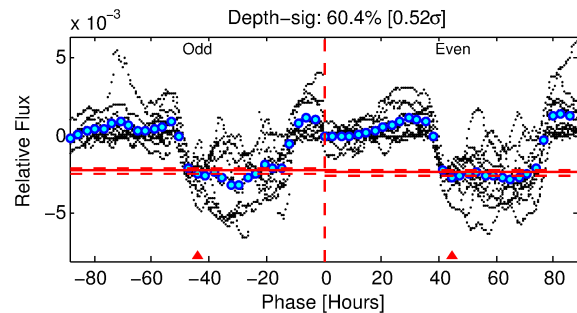
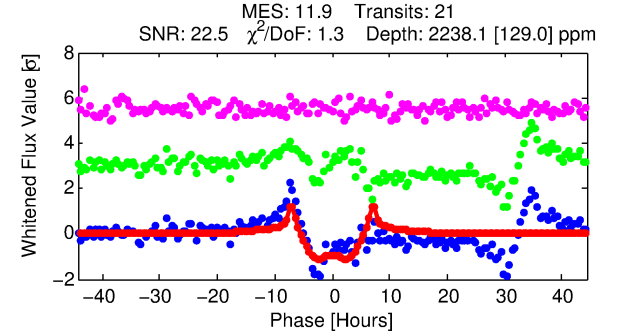
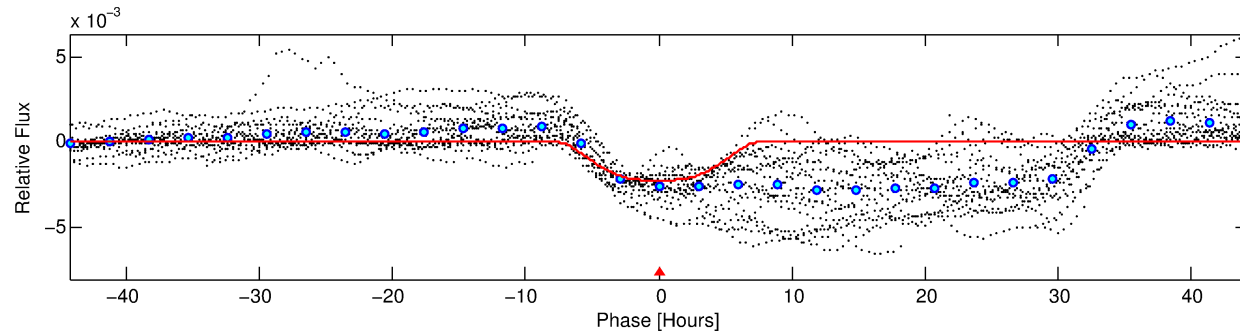
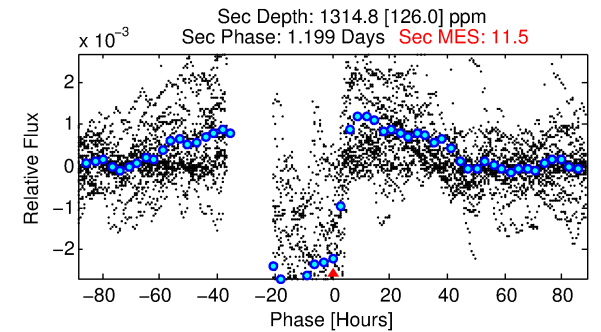
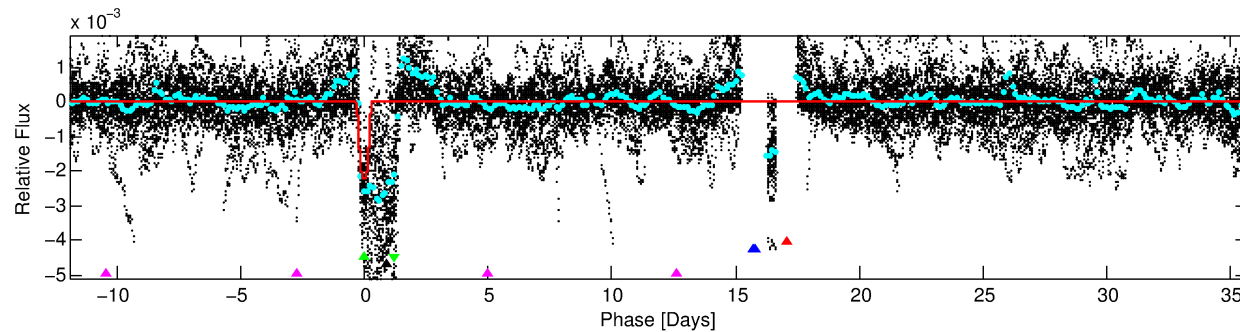
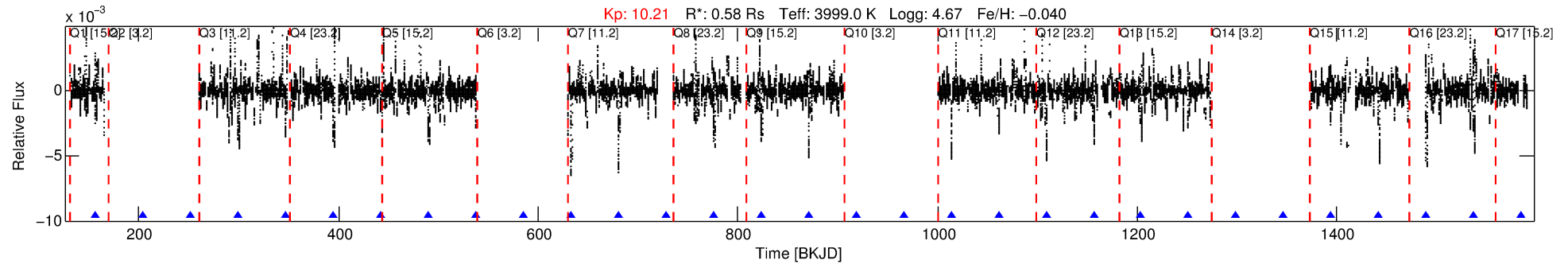
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005630212-03

No Significant Match Found

# DV One-Page Summary

KIC: 5630212 Candidate: 3 of 5 Period: 47.583 d



## DV Fit Results:

Period = 47.58286 [0.00040] d  
Epoch = 157.1030 [0.0070] BKJD  
Rp/R\* = 0.0552 [0.0017]  
a/R\* = 12.03 [0.25]  
b = 0.94 [0.00]  
Seff = 1.70 [0.34]  
Teq = 291 [15] K  
Rp = 3.52 [0.46] Re  
a = 0.2146 [0.0209] AU  
Ag = 2689.98 [461.21] [5.83σ]  
Teffp = 3241 [154] K [19.02σ]

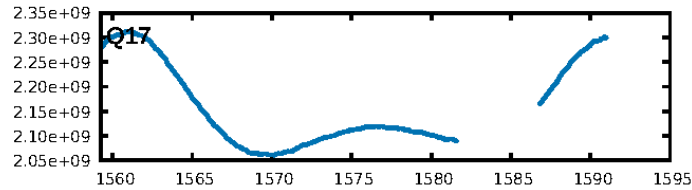
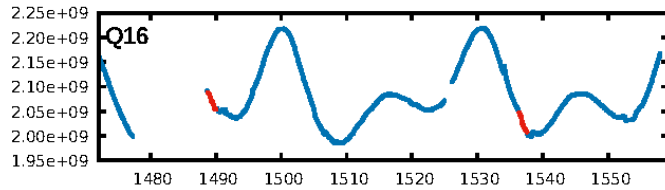
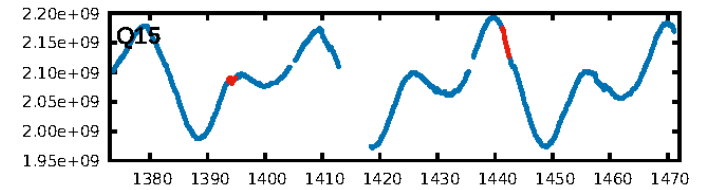
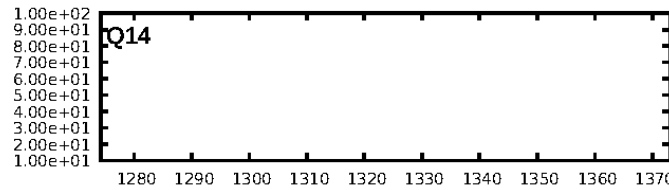
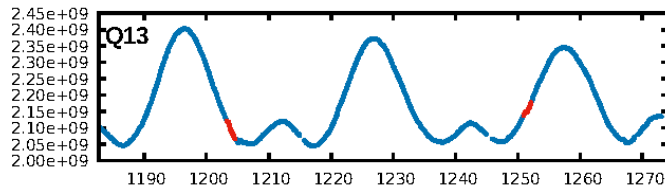
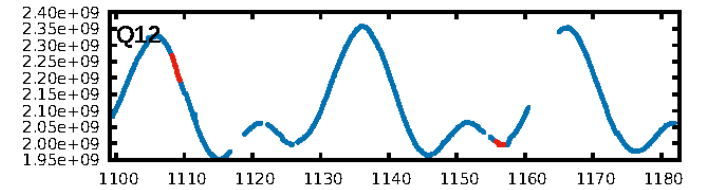
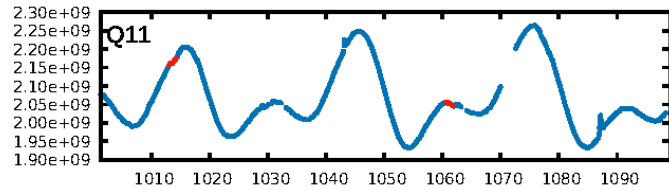
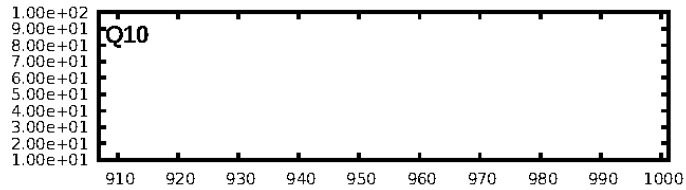
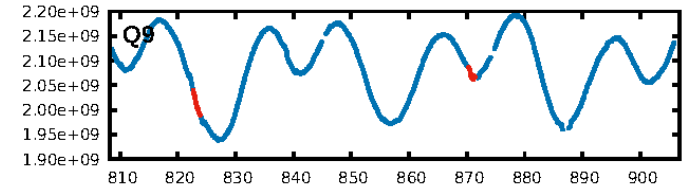
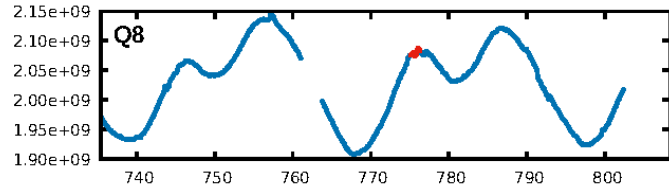
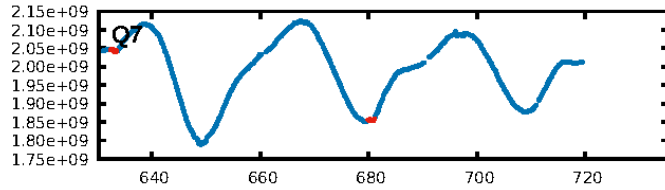
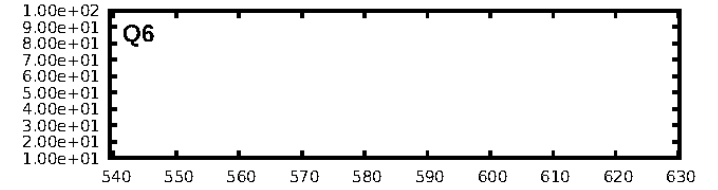
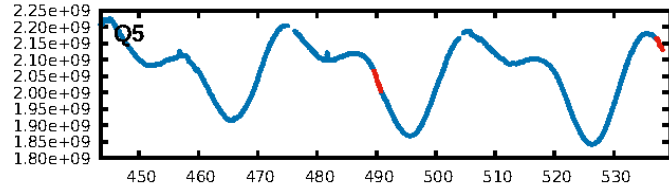
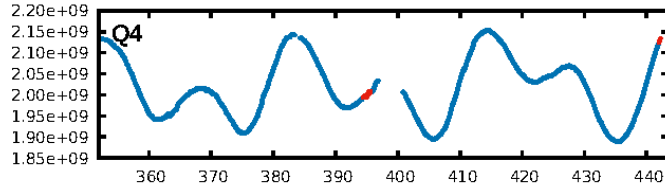
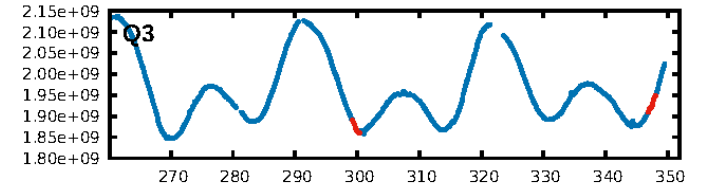
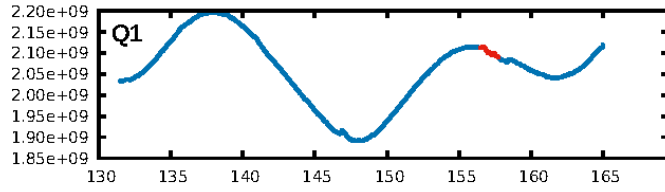
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.2% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 39.0%  
Bootstrap-pfa: 5.71e-18  
RollingBand-fgt: 1.00 [20/20]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 6.9%  
Centroid-so: 0.415 arcsec [2.74σ]  
OotOffset-rm: 0.970 arcsec [1.42σ]  
KicOffset-rm: 0.289 arcsec [0.32σ]  
OotOffset-st: 0/4/4/4 [12]  
KicOffset-st: 0/4/4/4 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 0.50 [6/12]

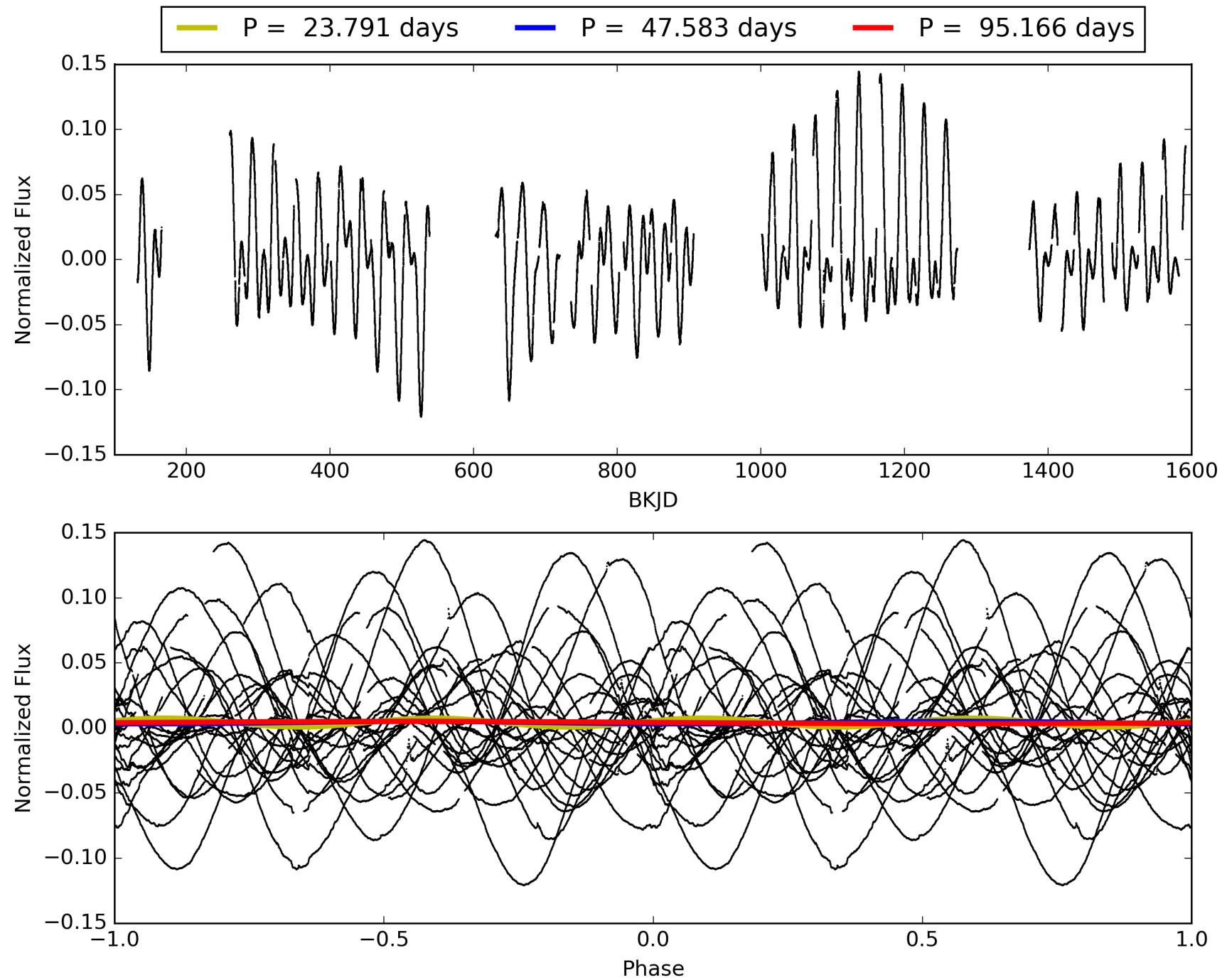
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:52:23 Z

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

# TCE 005630212-03, PDC Light Curves



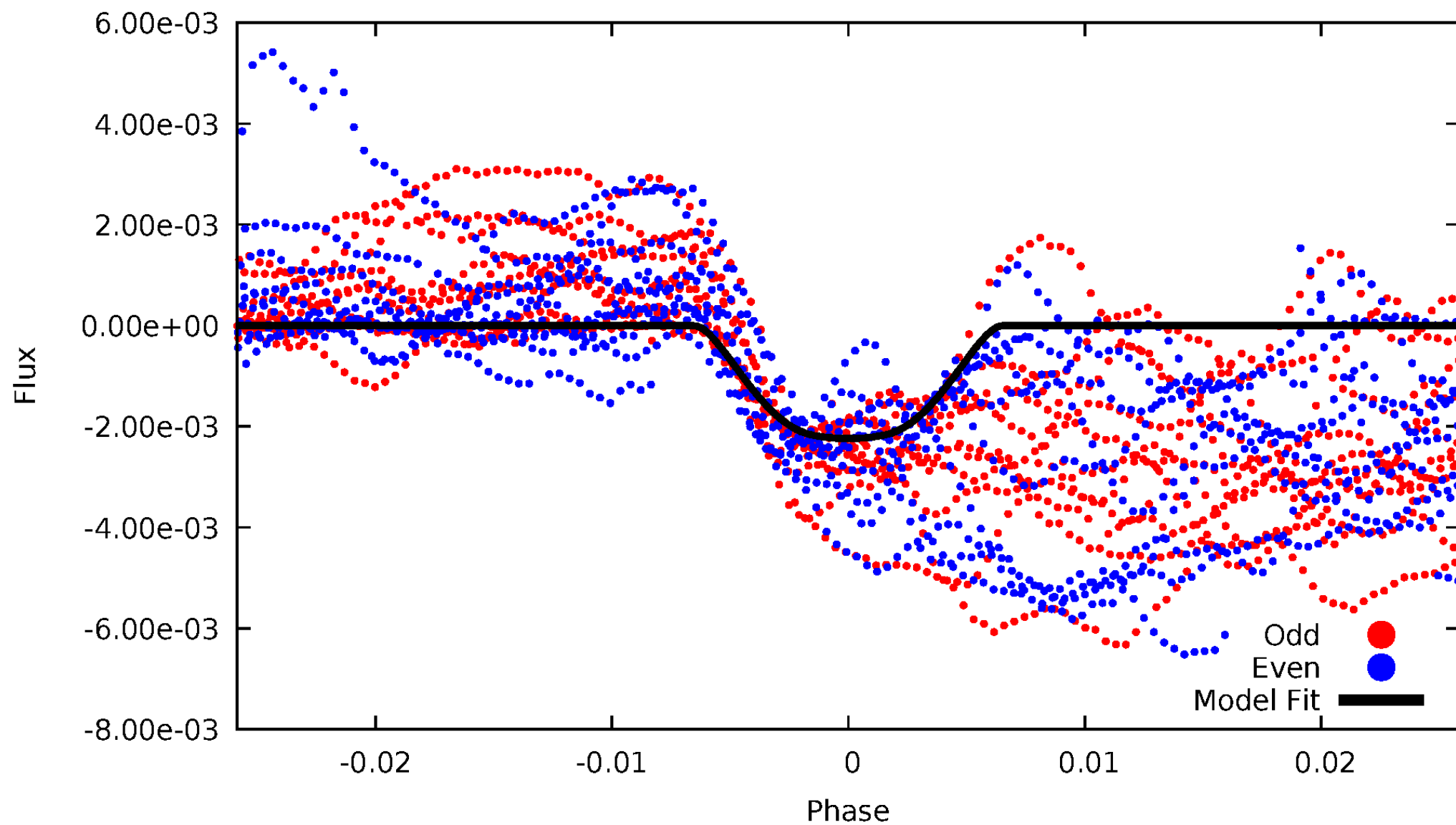
TCE 005630212-03





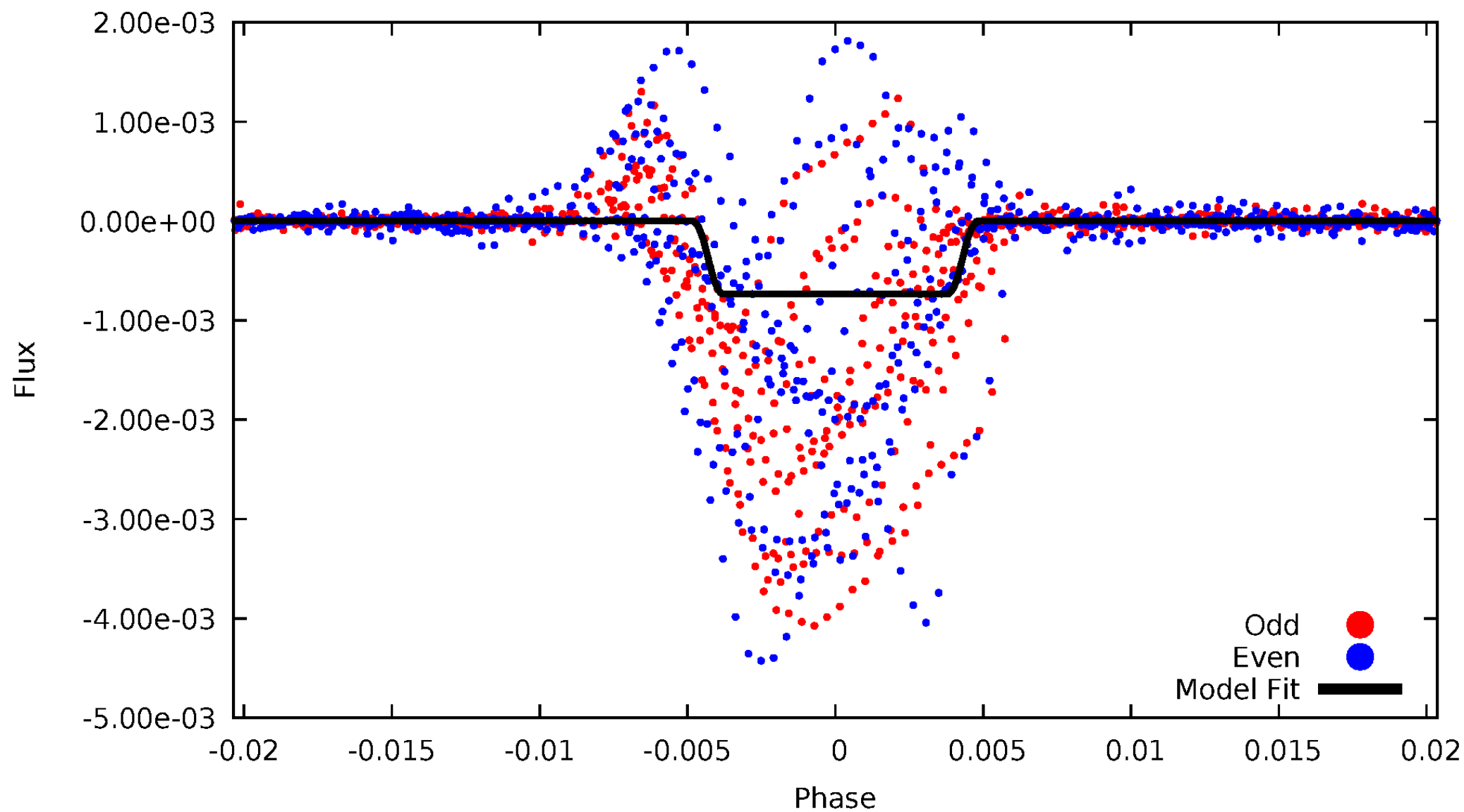
# DV Odd/Even

TCE 005630212-03



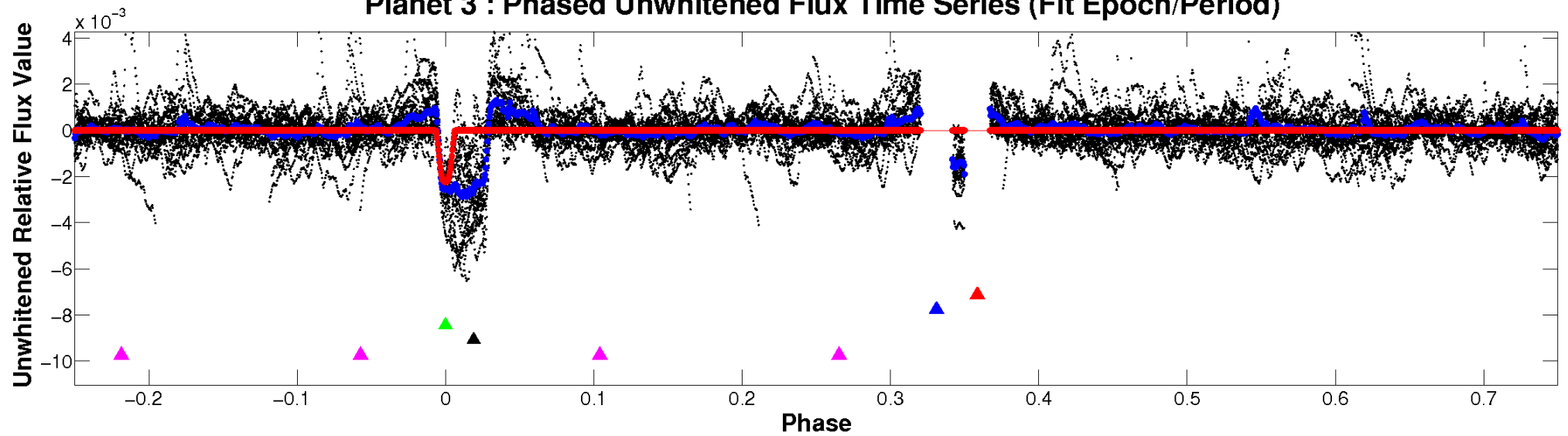
# ALT Odd/Even

TCE 005630212-03

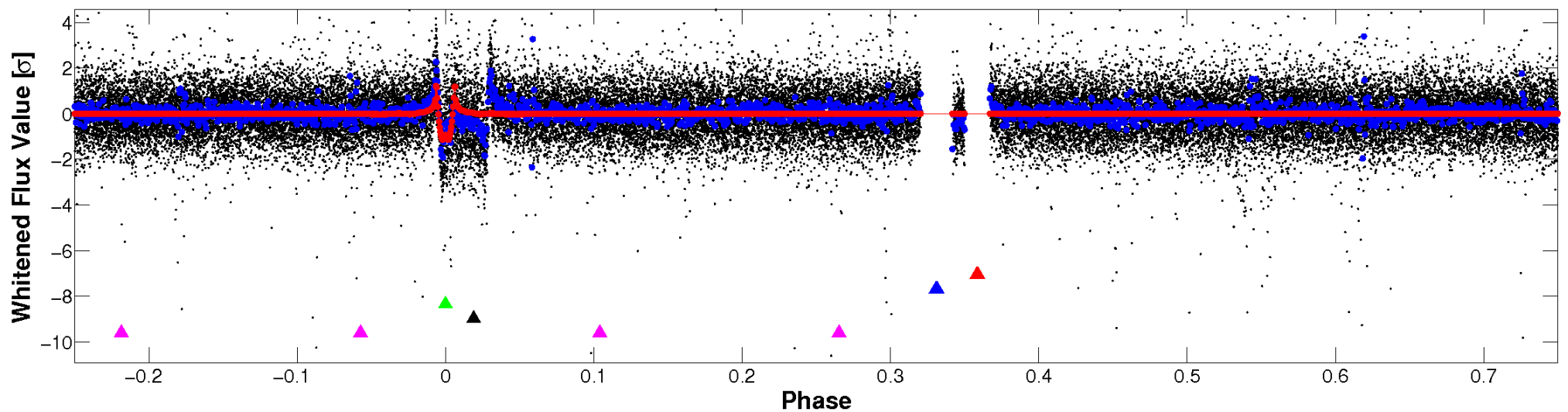


# Non-Whitened Vs. Whitened Light Curve

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

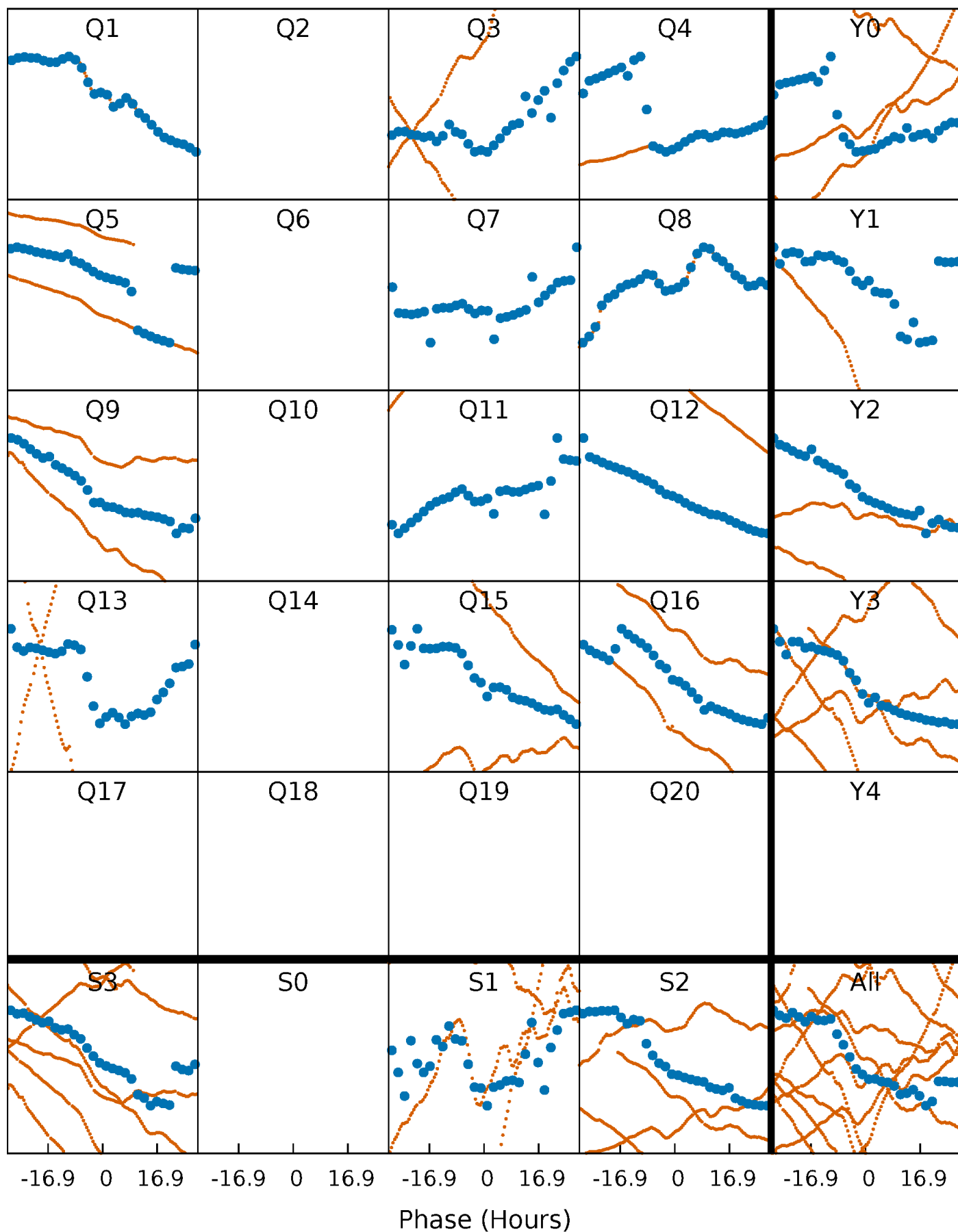


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



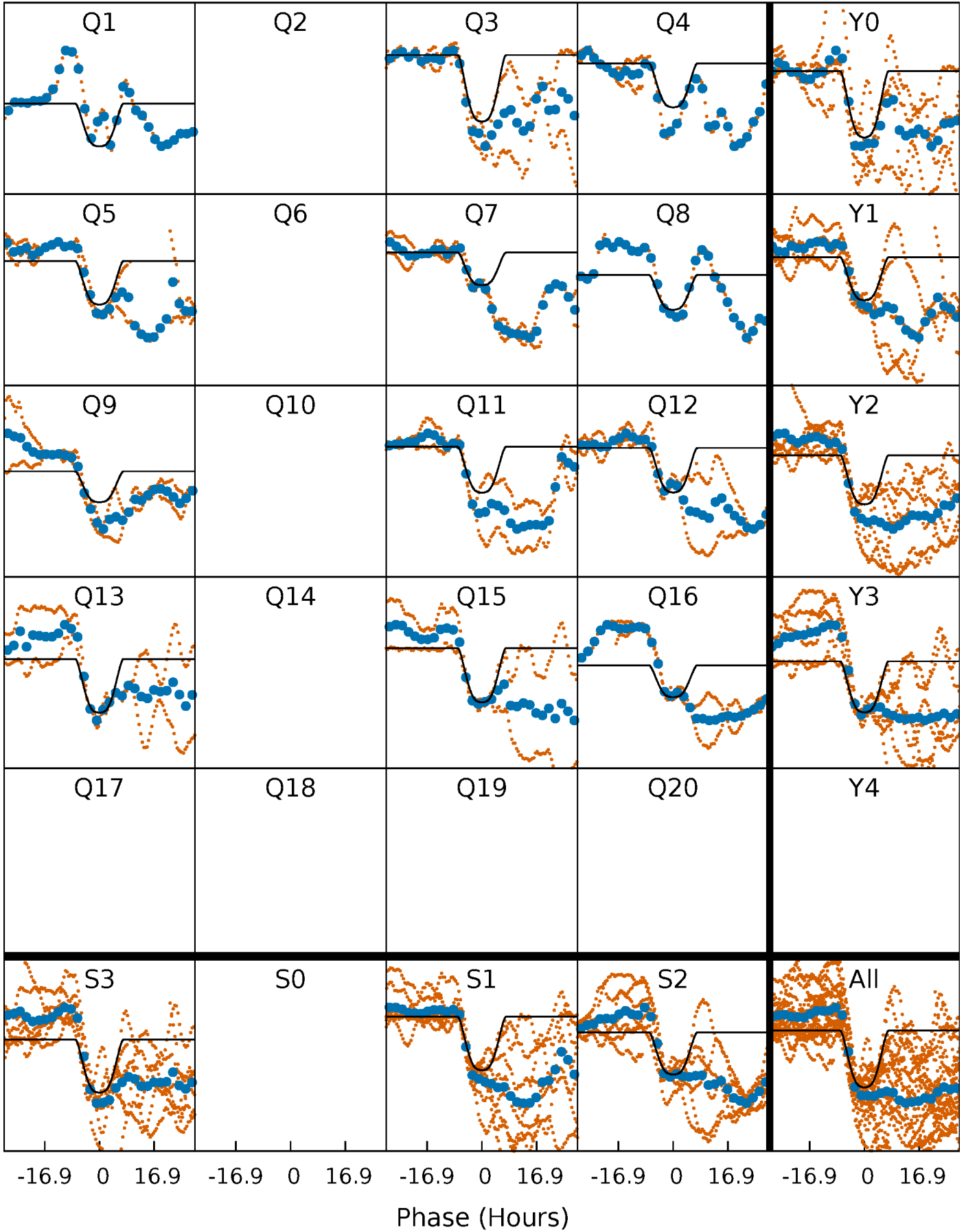
# PDC Quarter-Phased Transit Curves

TCE 005630212-03 P= 47.582859 Days  $T_0=157.103040$  (BKJD)



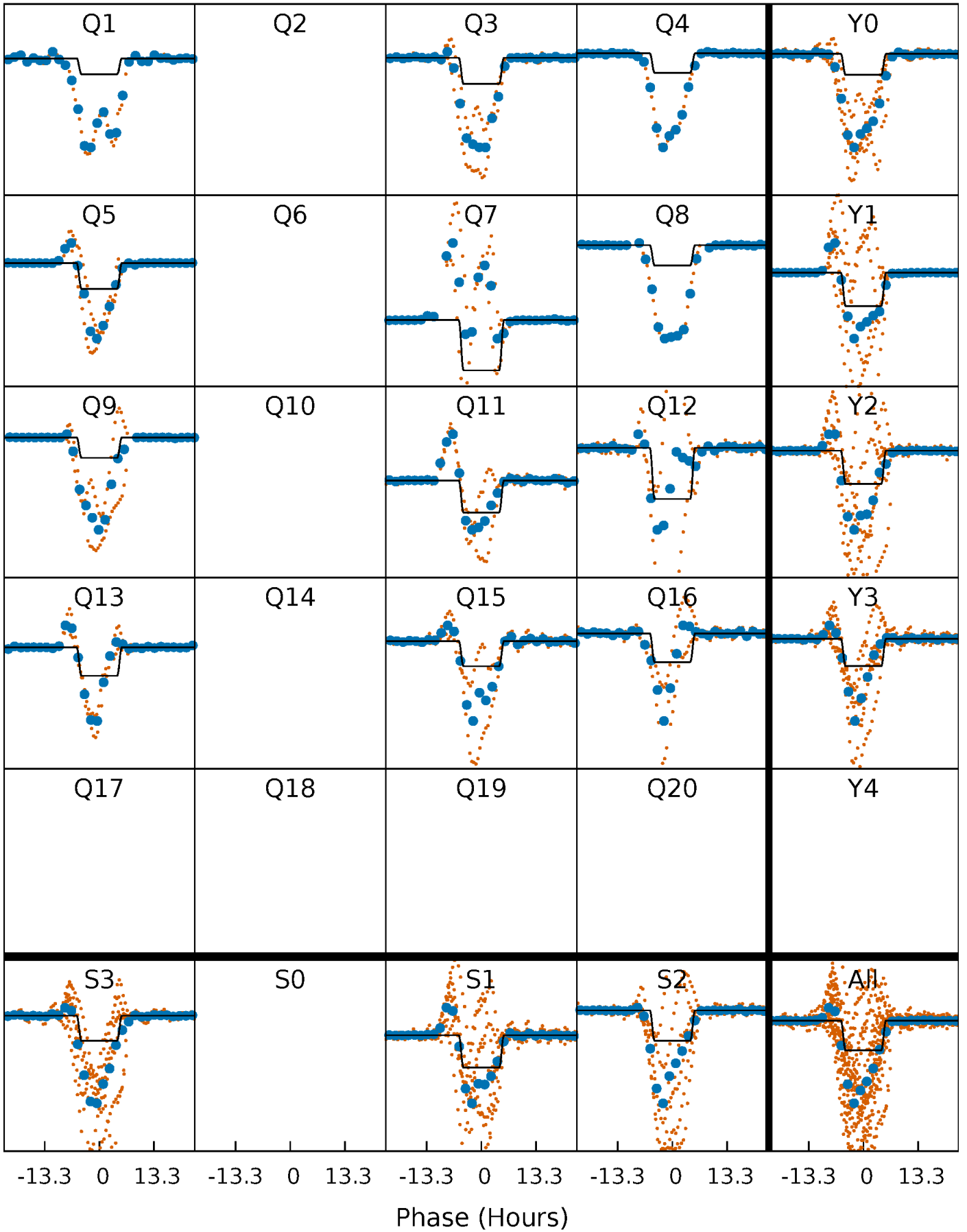
# DV Quarter-Phased Transit Curves

TCE 005630212-03   P= 47.582859 Days    $T_0=157.103040$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

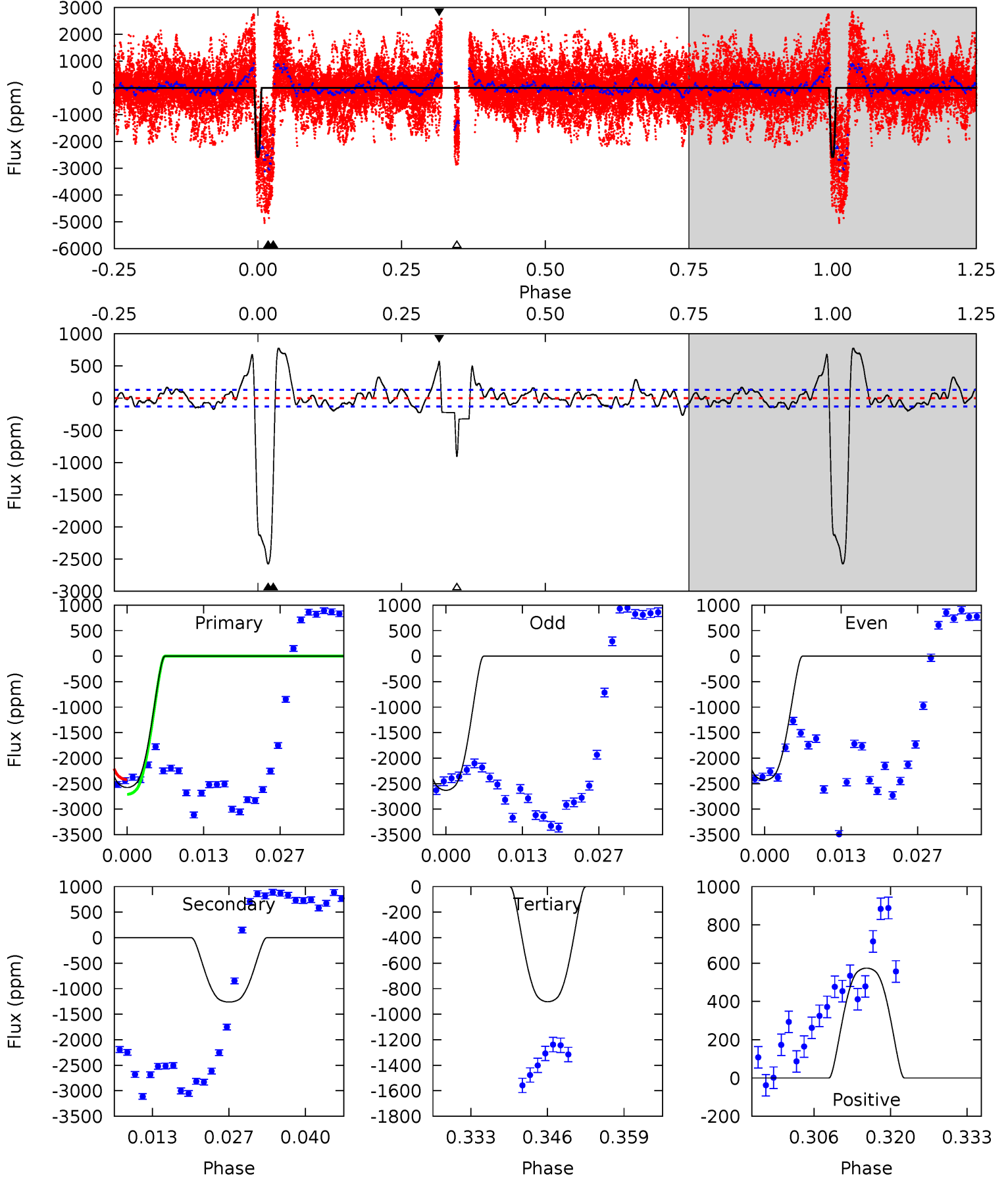
TCE 005630212-03   P= 47.582676 Days    $T_0=157.113669$  (BKJD)



# DV Model-Shift Uniqueness Test

005630212-03, P = 47.582859 Days, E = 109.520181 Days

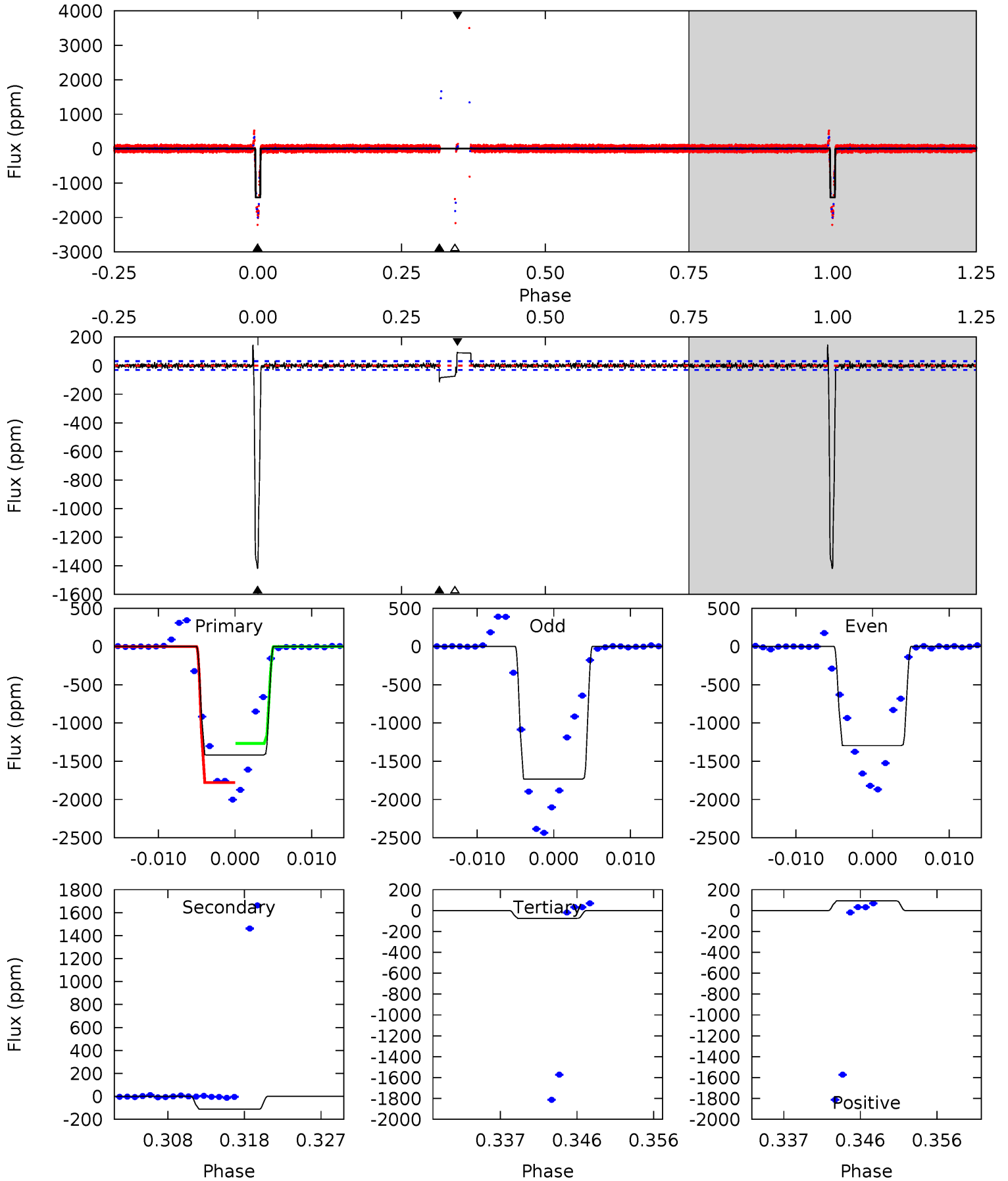
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
99.5	48.7	34.9	22.2	4.97	2.48	9.38	64.6	77.3	13.9	26.6	3.82	1.07	0.23	5.55



# Alt Model-Shift Uniqueness Test

005630212-03, P = 47.582676 Days, E = 109.530993 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
231.9	18.3	12.2	15.2	5.03	2.59	1.13	219.8	216.8	6.13	3.11	38.4	0.95	0.09	0





### Stellar Parameters For KIC 005630212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3999^{+125}_{-153}$	$4.670^{+0.063}_{-0.027}$	$-0.040^{+0.300}_{-0.300}$	$0.584^{+0.046}_{-0.074}$	$0.582^{+0.059}_{-0.066}$	$4.113^{+1.394}_{-0.484}$
	+3%/-4%	+1%/-1%	+750%/-750%	+8%/-13%	+10%/-11%	+34%/-12%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005630212-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1262 \pm 26$	$3.48^{+0.22}_{-0.22}$	$403^{+15}_{-18}$	$3452^{+111}_{-131}$	$2665^{+300}_{-235}$
Alt.	$-112 \pm 6$	$1.71^{+0.14}_{-0.16}$	$403^{+16}_{-17}$	$2975^{+94}_{-110}$	$980^{+184}_{-145}$

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

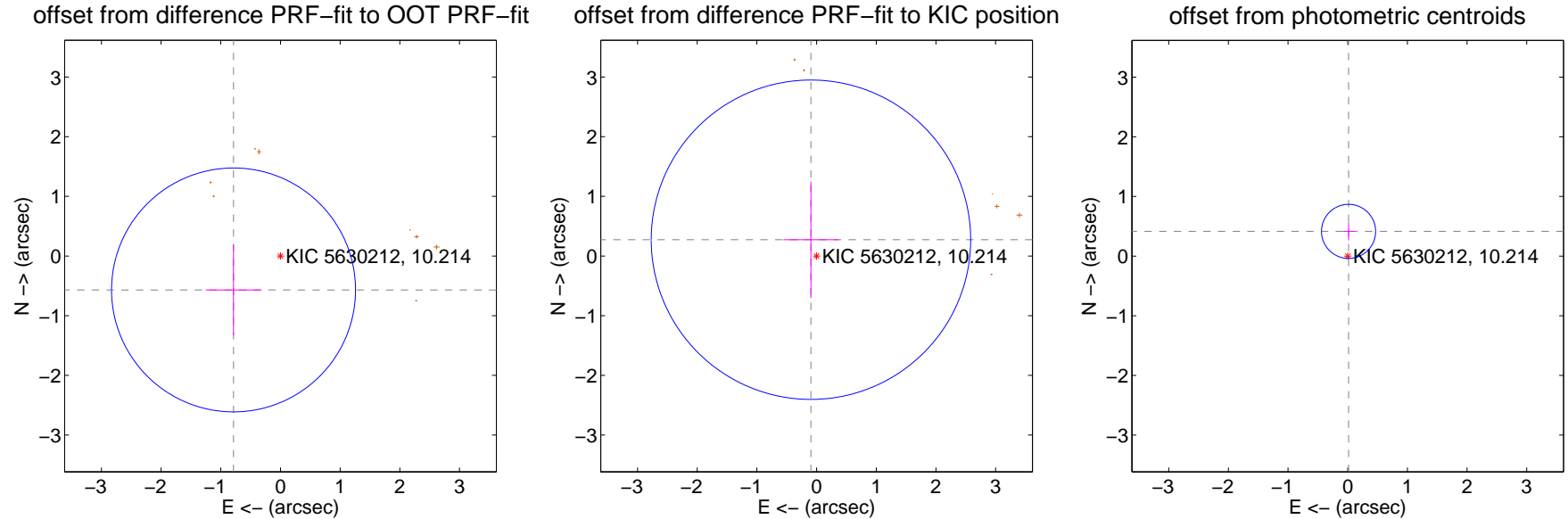
## DV Centroid Data

Supplemental centroid analysis for 005630212-03. **Kepler magnitude: 10.21.** Transit SNR 22.51

**There are 1 quarters with good PRF difference image offsets**

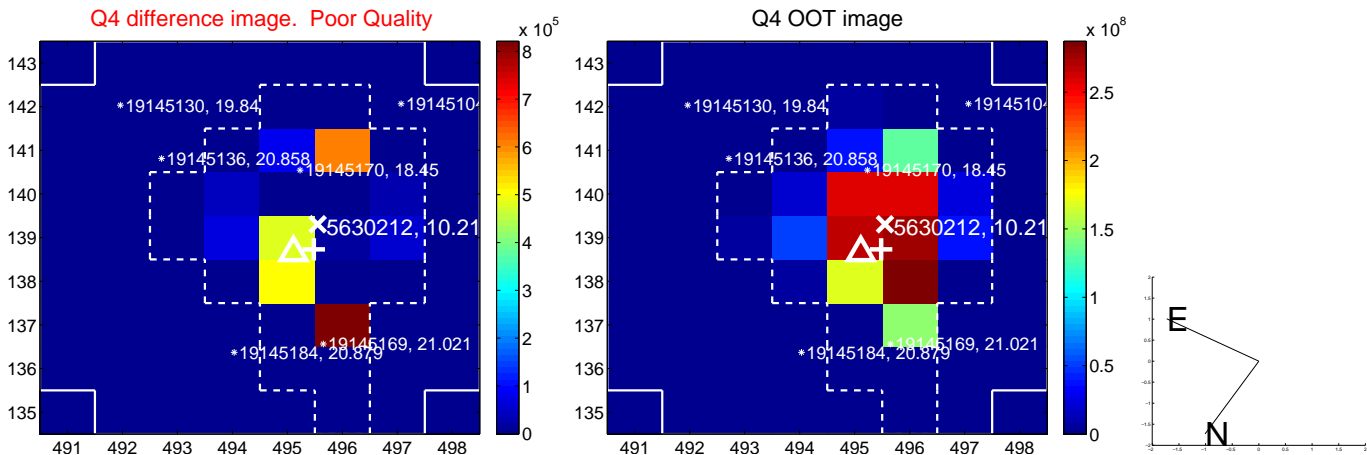
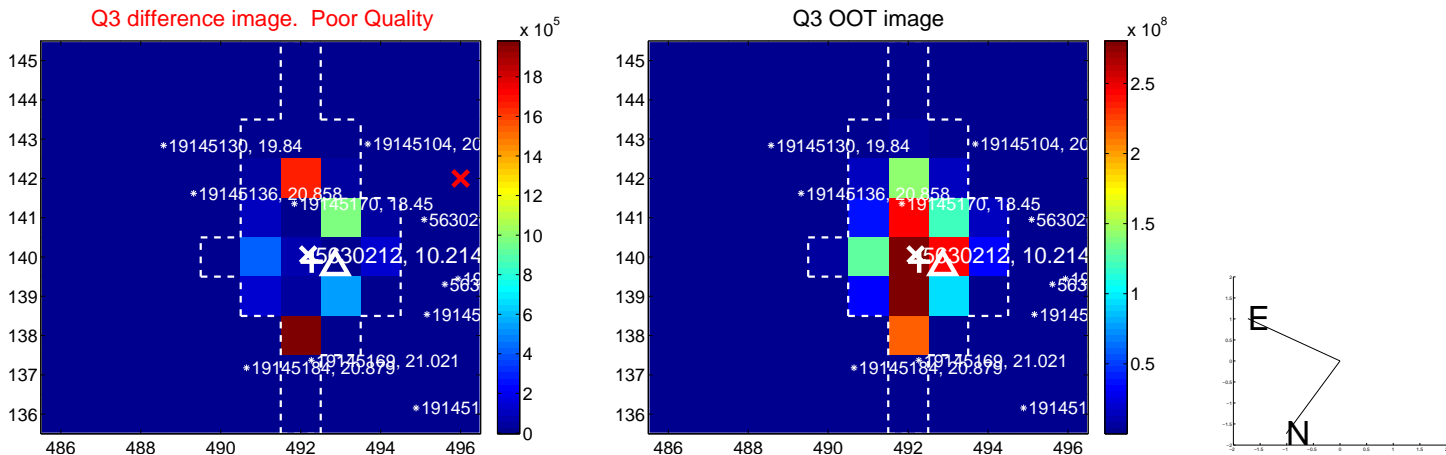
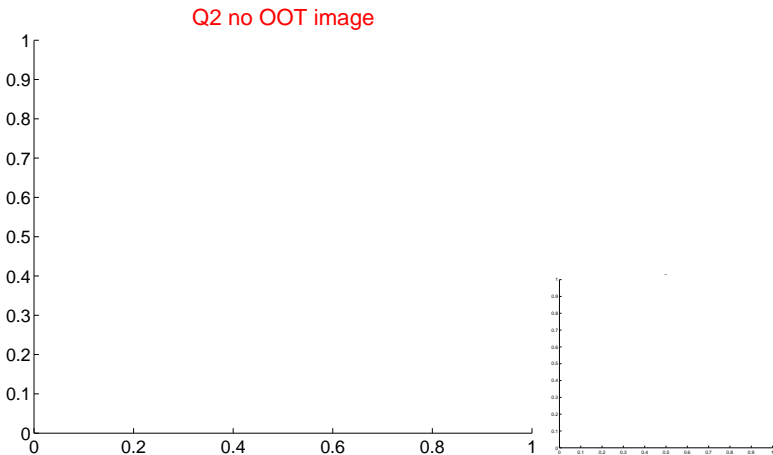
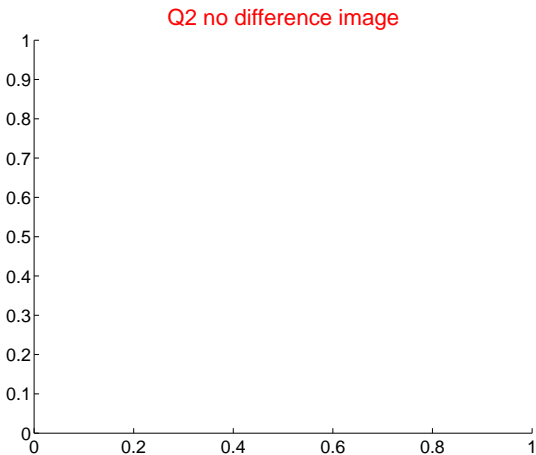
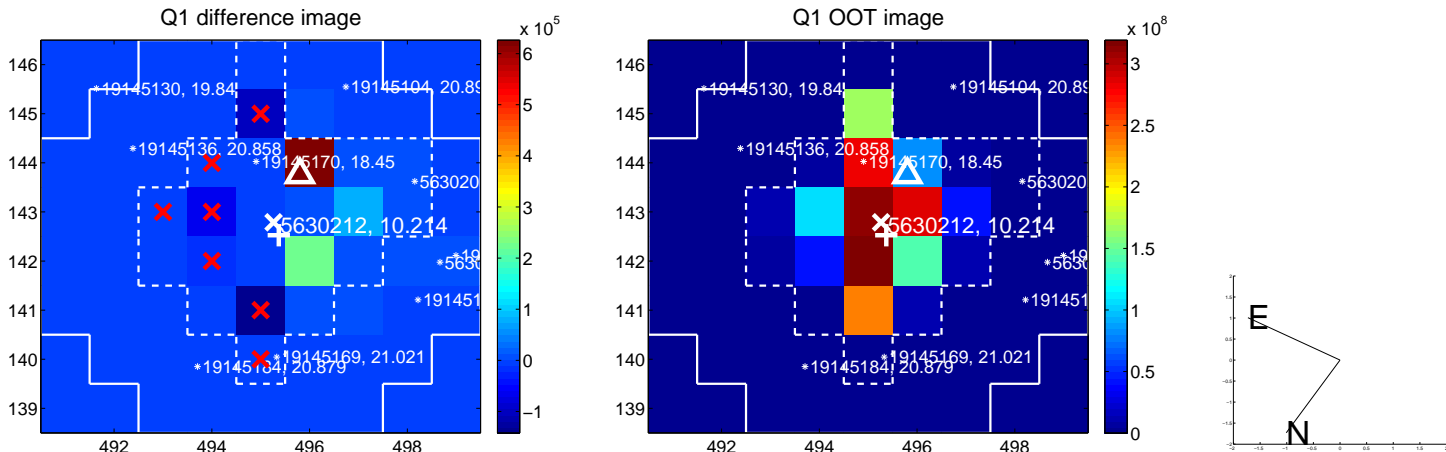
The direct PRF centroid is offset from the target star catalog position by about 1.87 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.970 \pm 0.681$	1.42	$0.786 \pm 0.465$	$-0.569 \pm 0.760$
PRF-fit source offset from KIC position	$0.289 \pm 0.892$	0.32	$0.094 \pm 0.463$	$0.273 \pm 0.975$
photometric centroid source offset	$0.41 \pm 0.15$	2.74	$-0.01 \pm 0.10$	$0.41 \pm 0.15$

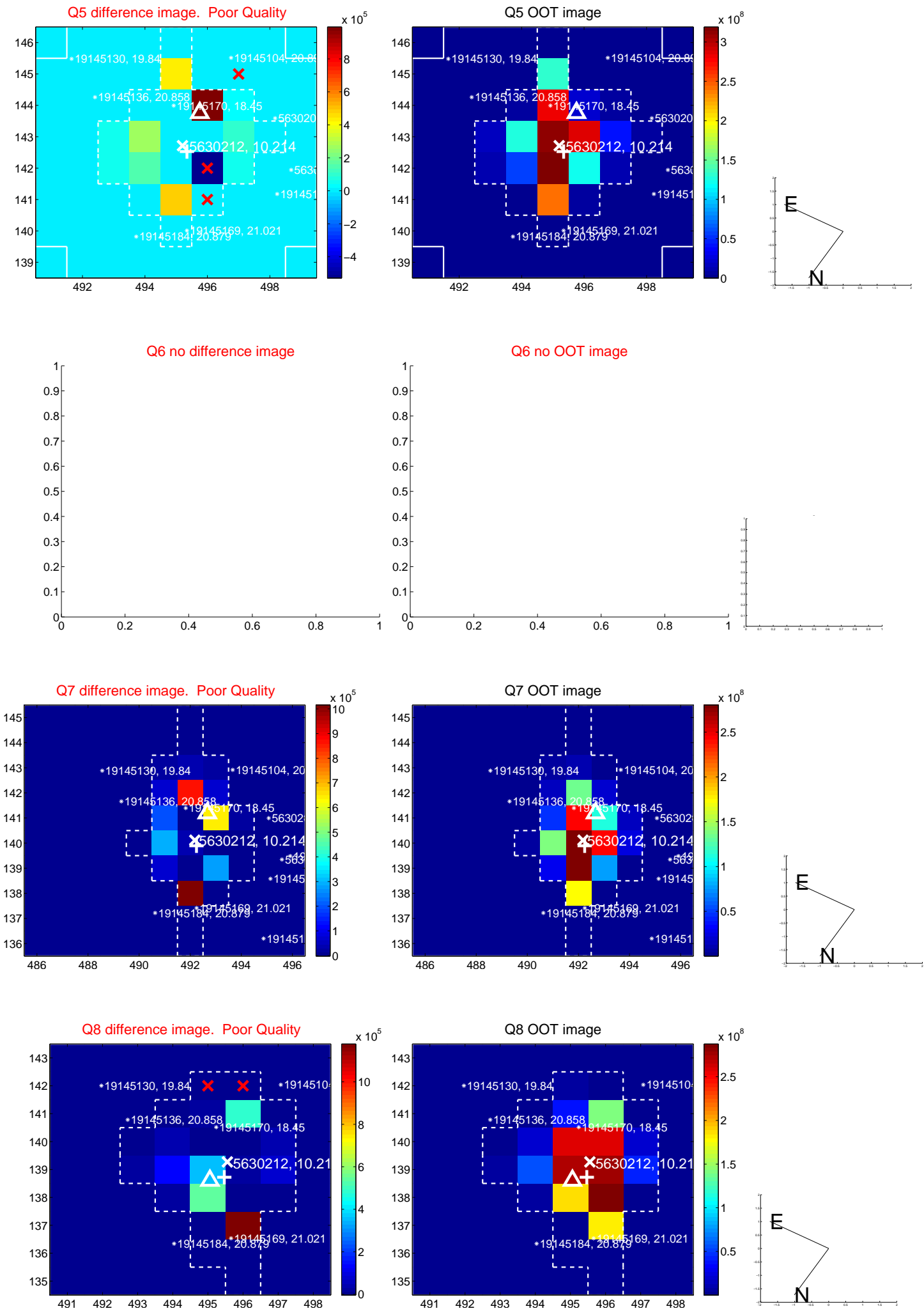


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

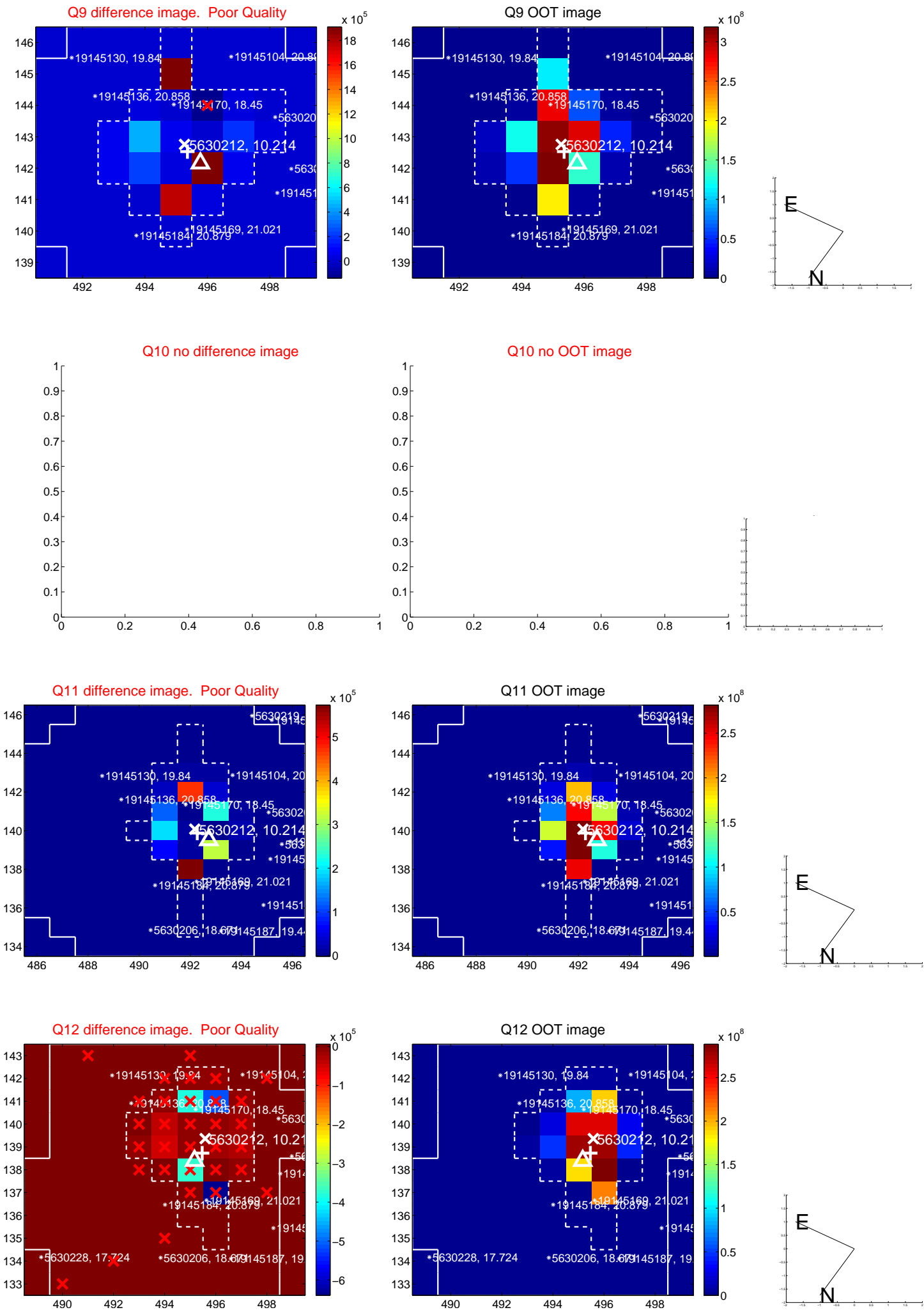
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



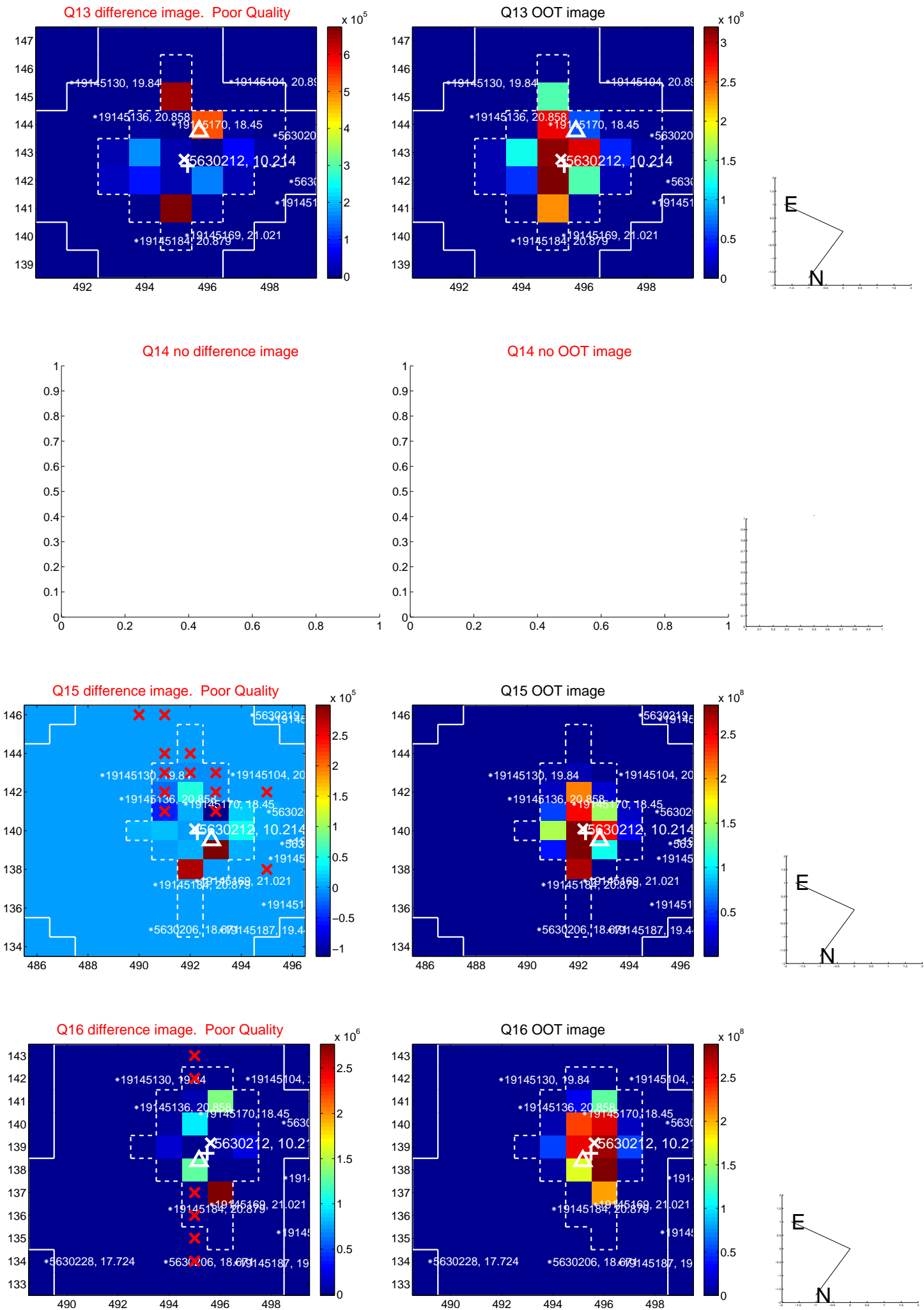
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



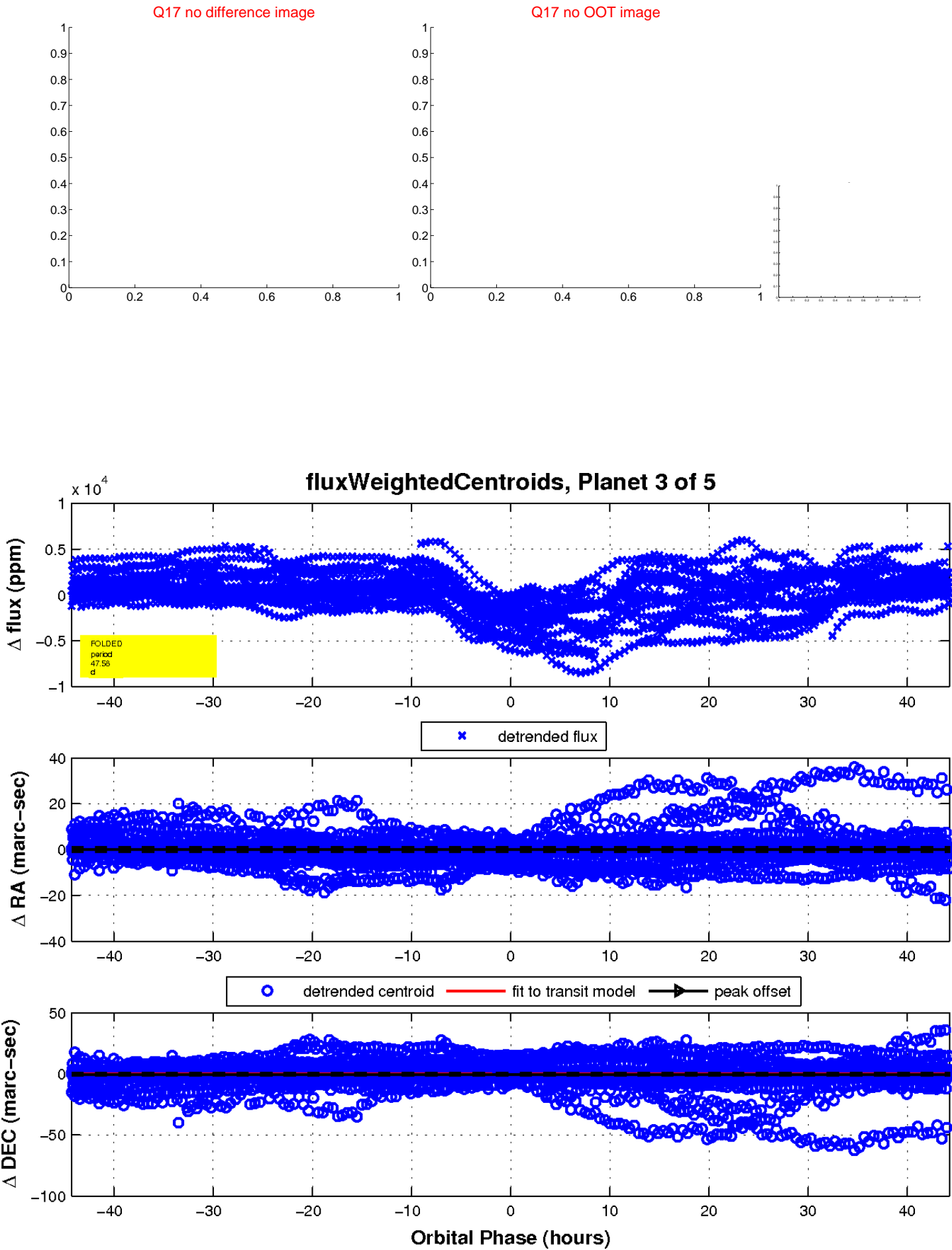
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

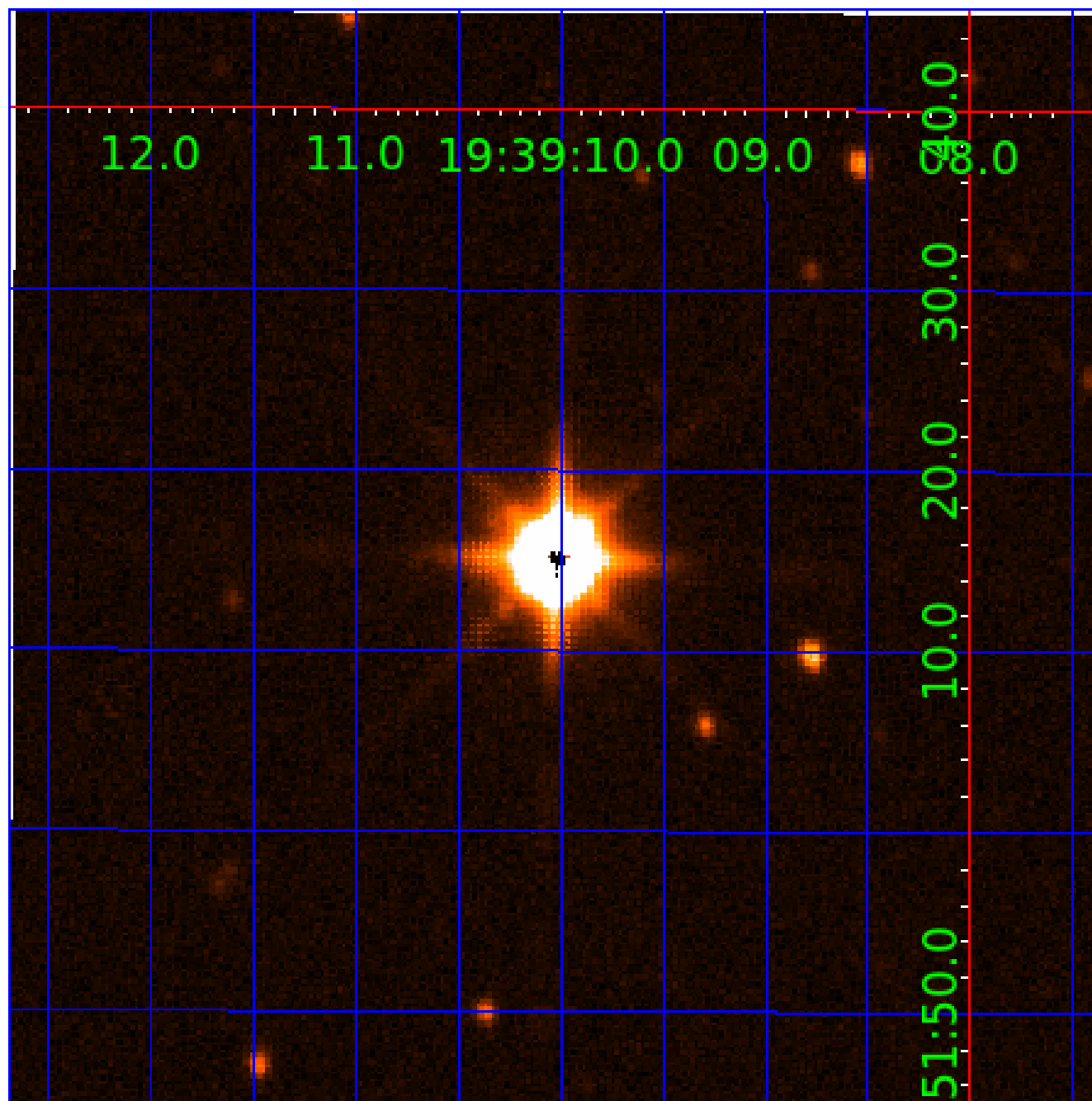


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005630212

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005630212-01	OBS	No	47.584258	174.146574	1801.4	6.540	17.1	25.0	0.58	3999	4.88	1.70
005630212-02	OBS	No	47.584513	172.833431	2052.1	8.323	19.5	27.2	0.58	3999	5.18	1.70
005630212-03	OBS	No	47.582859	157.103040	2238.1	14.764	11.9	22.5	0.58	3999	3.52	1.70
005630212-04	OBS	No	95.166350	205.585869	4531.7	27.091	13.7	21.3	0.58	3999	4.45	0.67
005630212-05	OBS	No	435.921257	146.703943	535.6	6.064	11.3	4.8	0.58	3999	1.71	0.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630212-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
005630212-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

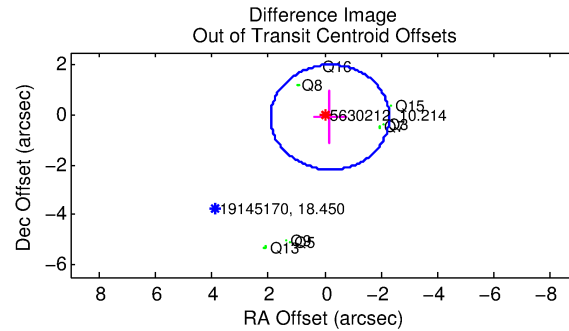
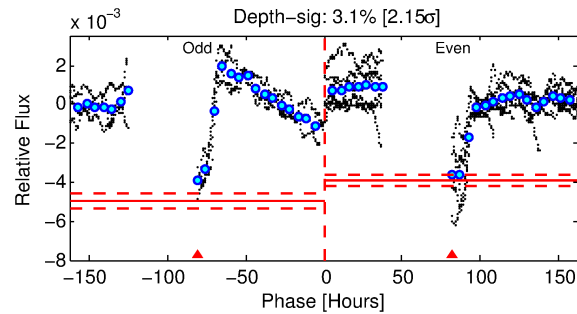
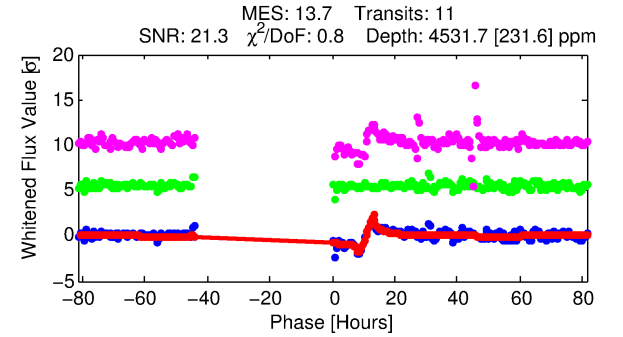
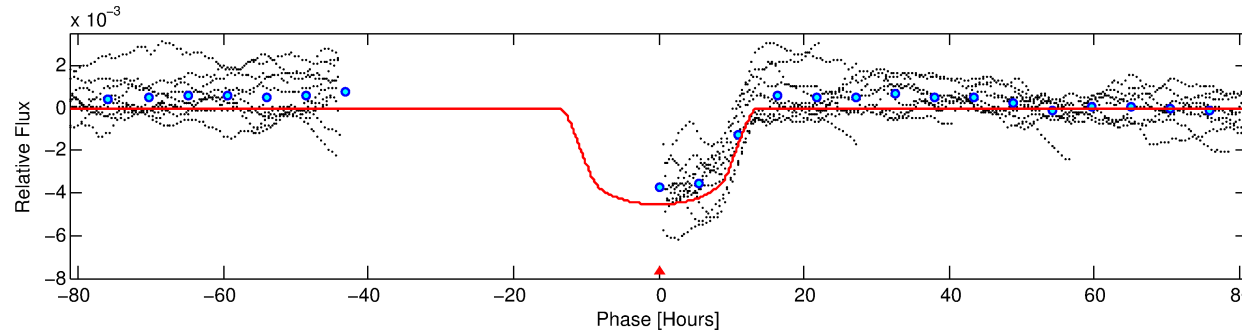
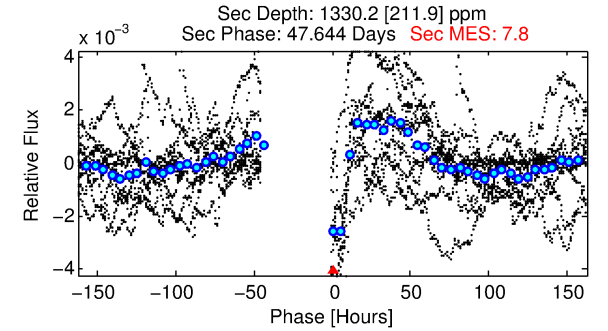
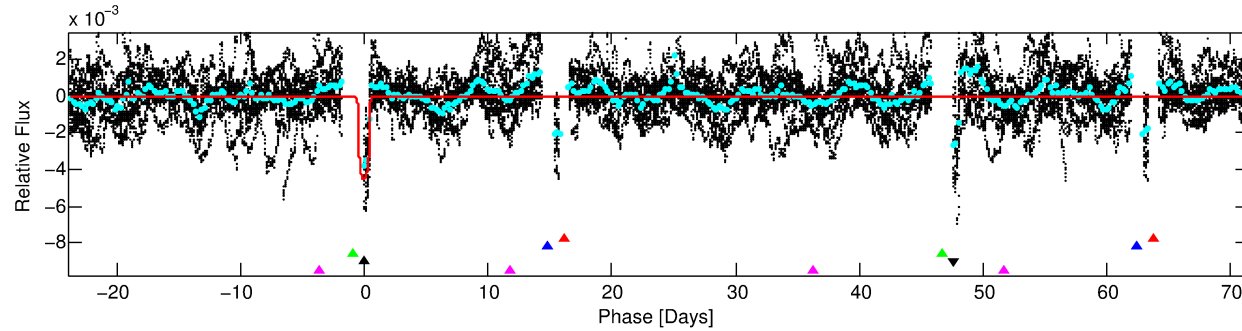
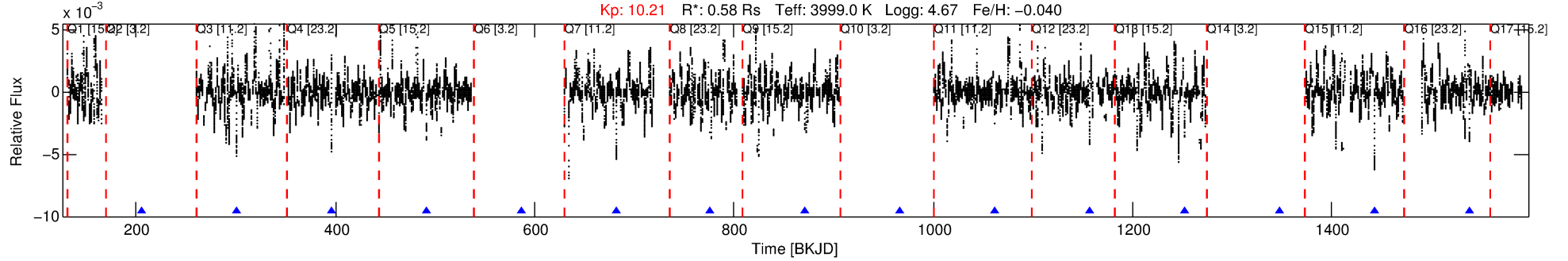
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005630212-04

No Significant Match Found

# DV One-Page Summary

KIC: 5630212 Candidate: 4 of 5 Period: 95.166 d



## DV Fit Results:

Period = 95.16635 [0.00079] d  
Epoch = 205.5859 [0.0277] BKJD  
 $R_p/R^* = 0.0699$  [0.0016]  
 $a/R^* = 18.33$  [0.69]  
 $b = 0.82$  [0.01]  
 $S_{\text{eff}} = 0.67$  [0.13]  
 $T_{\text{eq}} = 231$  [12] K  
 $R_p = 4.45$  [0.57]  $R_e$   
 $a = 0.3406$  [0.0332] AU  
 **$A_g = 4280.15$  [898.42] [4.76σ]**  
 **$T_{\text{eff}} = 2889$  [163] K [16.26σ]**

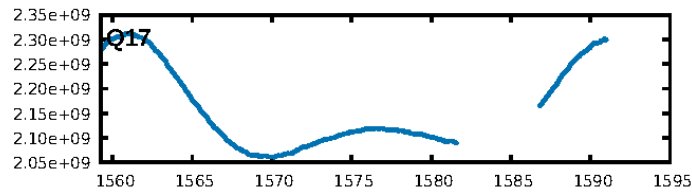
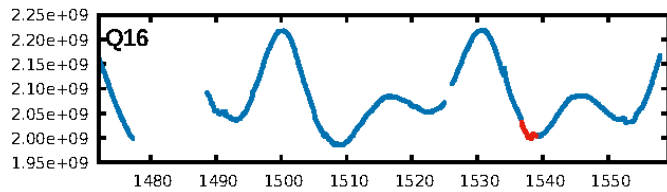
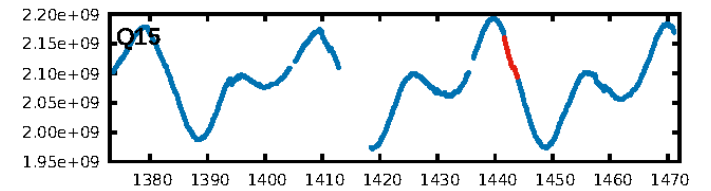
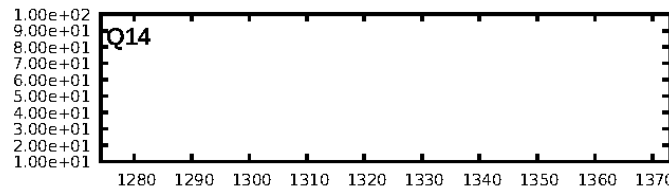
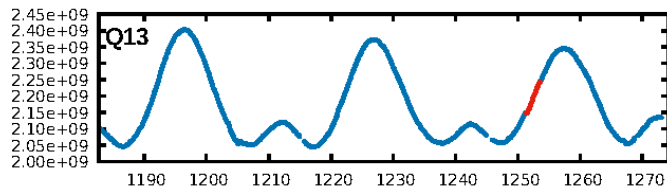
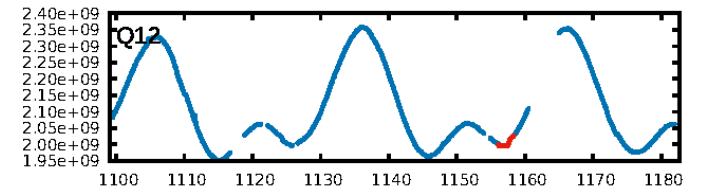
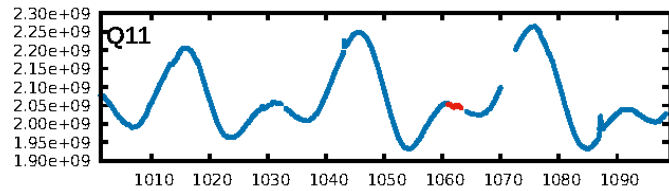
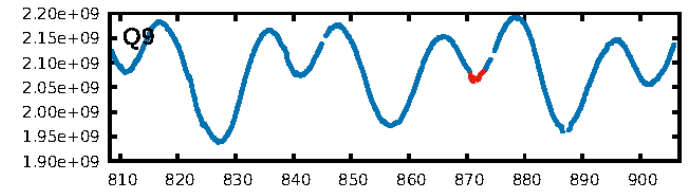
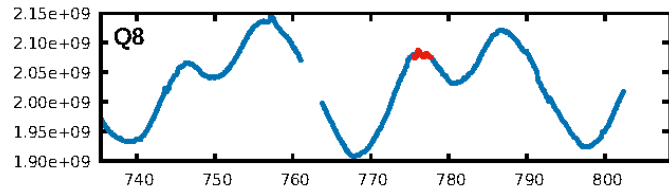
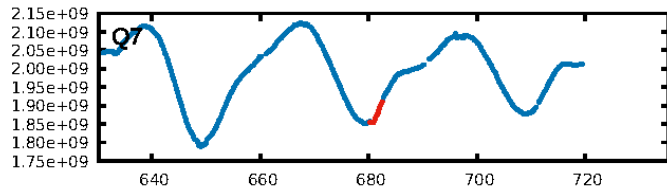
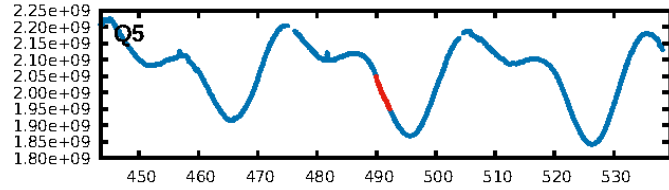
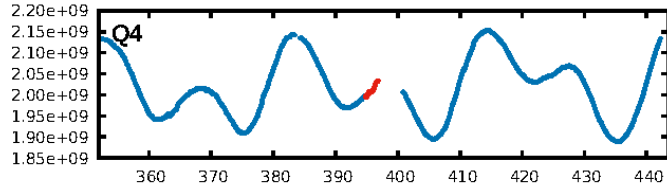
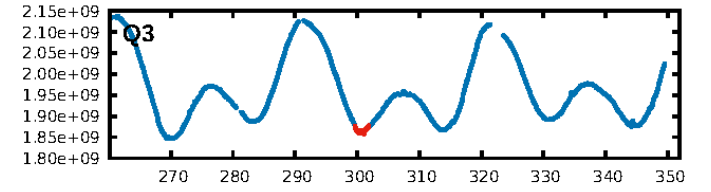
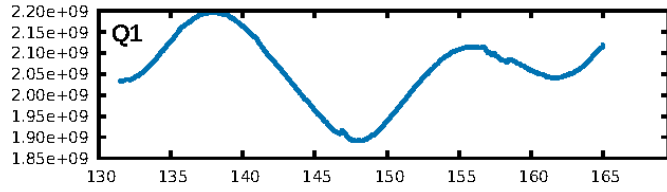
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.29σ]  
LongPeriod-sig: 100.0% [294.58σ]  
ModelChiSquare2-sig: 30.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.38e-16  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 2.2%  
Centroid-so: 0.049 arcsec [0.37σ]  
OotOffset-rm: 0.213 arcsec [0.30σ]  
KicOffset-rm: 0.818 arcsec [1.34σ]  
OotOffset-st: 0/3/2/3 [8]  
KicOffset-st: 0/3/2/3 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 0.00 [0/8]

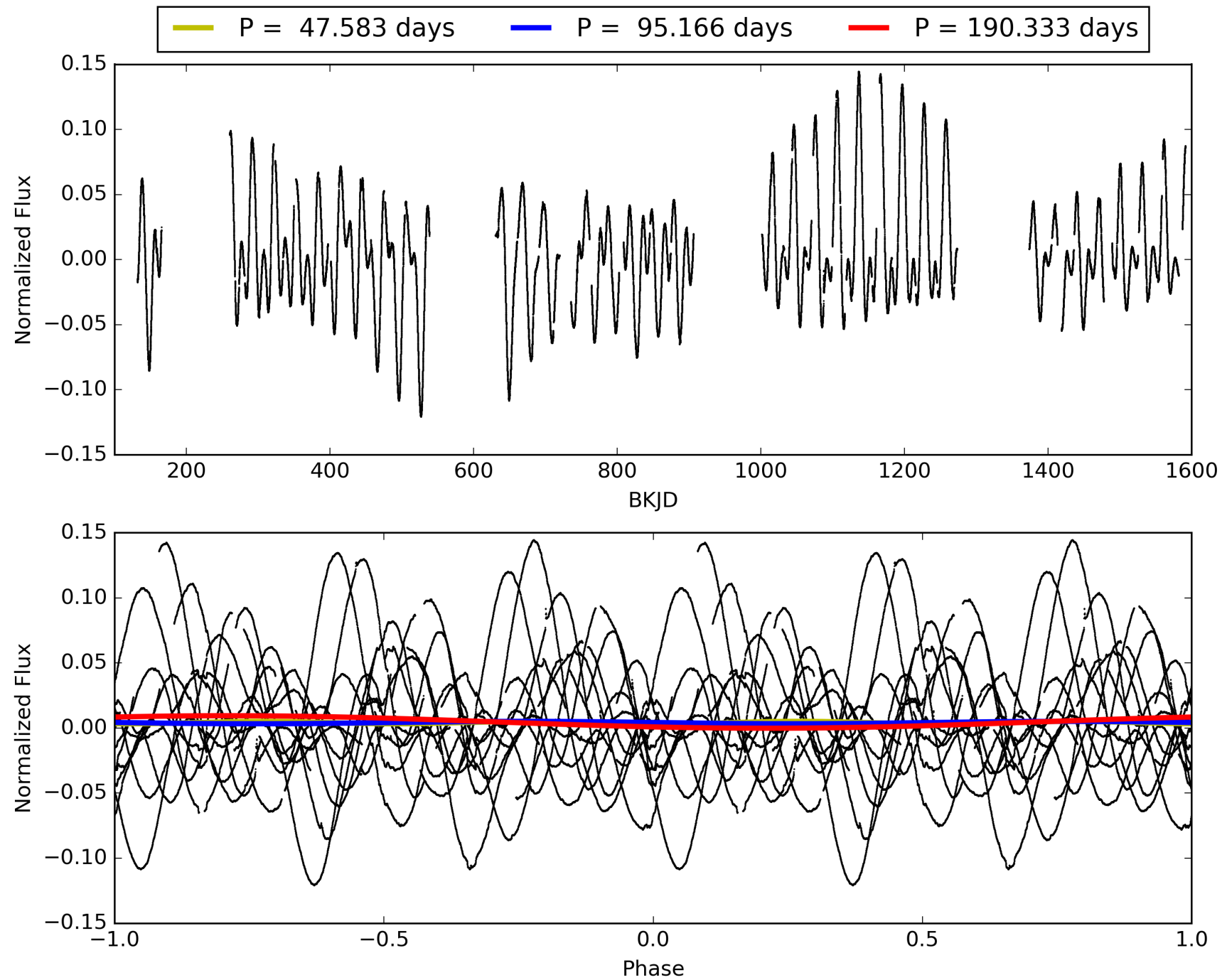
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:52:29 Z

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

# TCE 005630212-04, PDC Light Curves

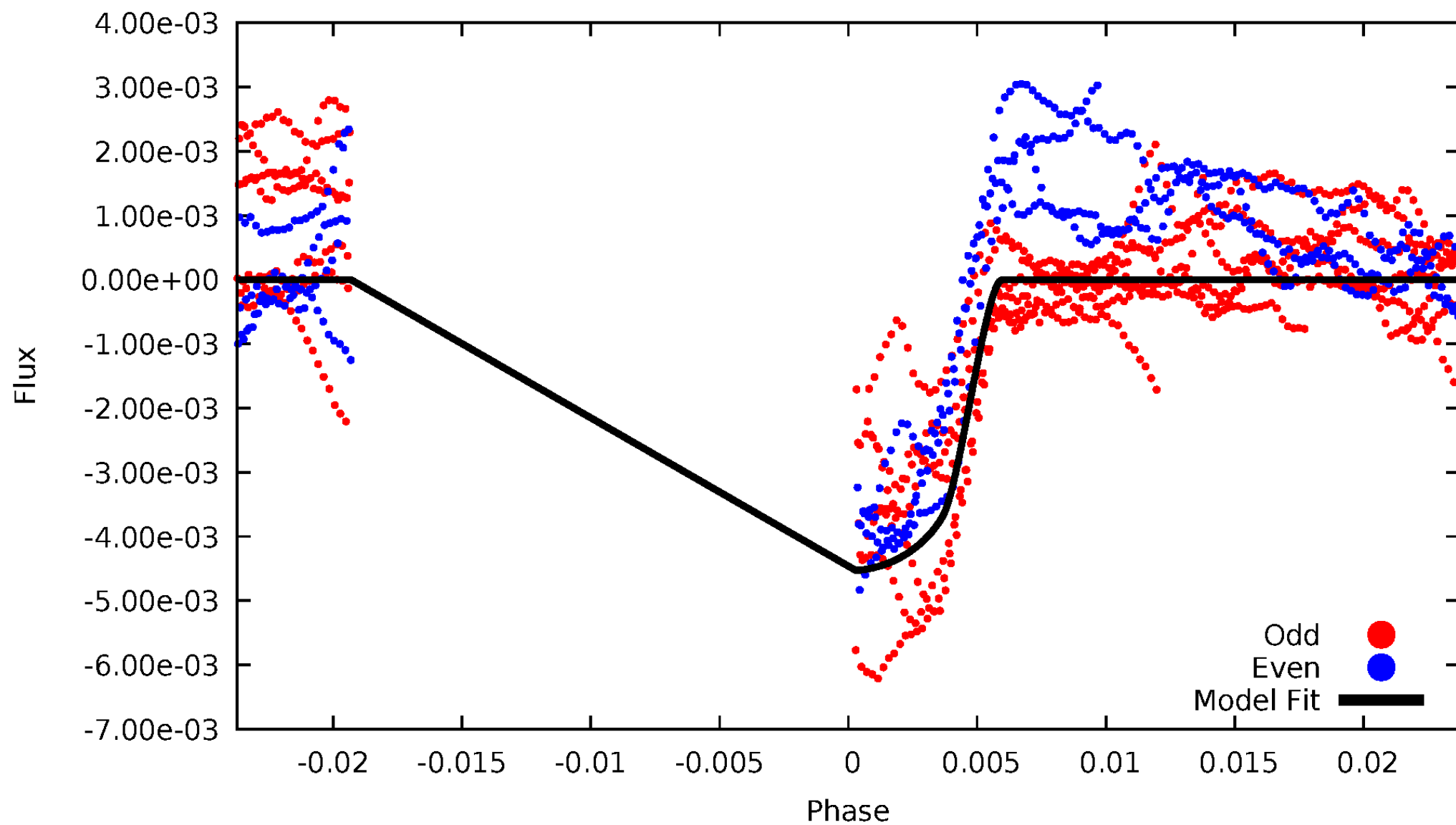


# TCE 005630212-04



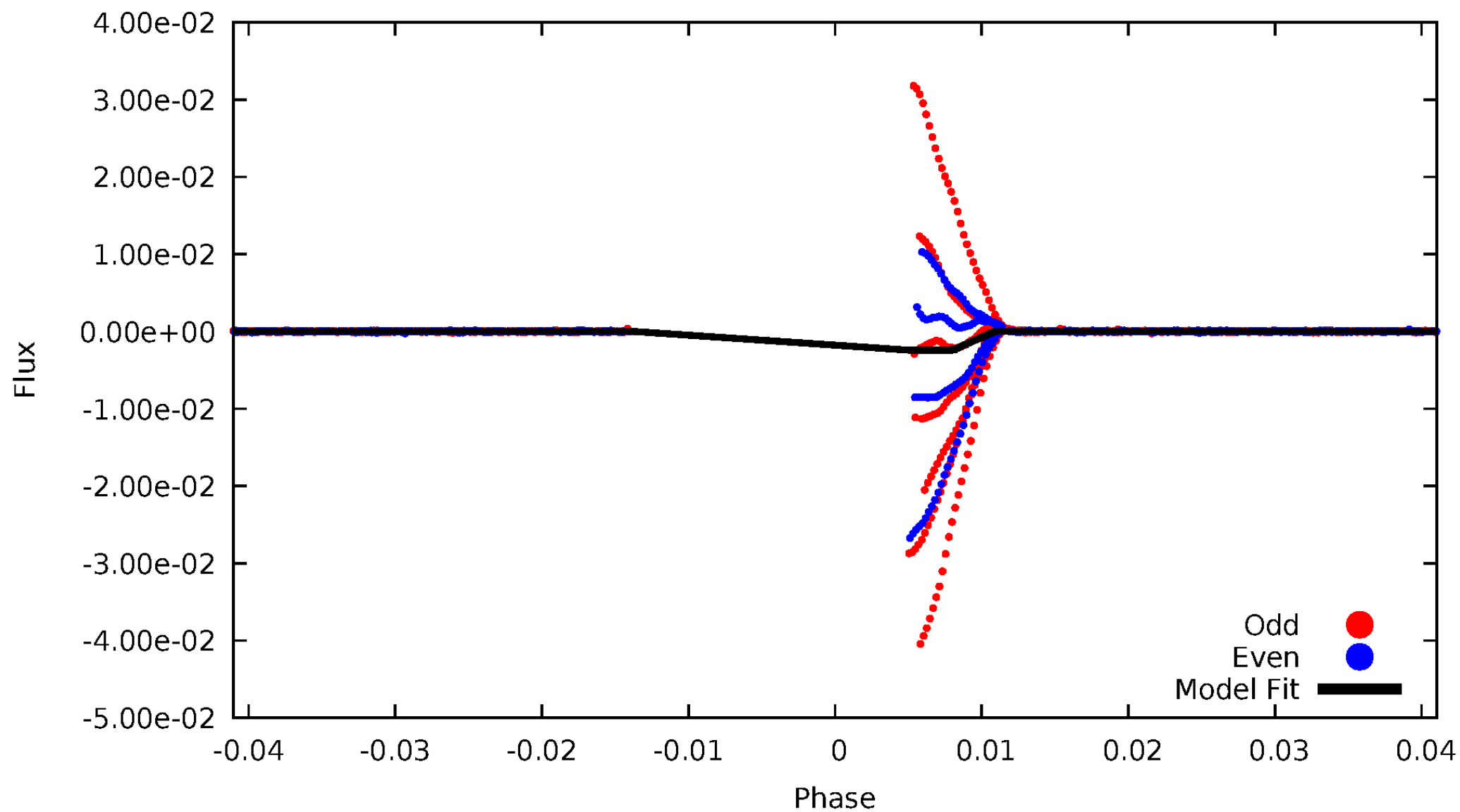
# DV Odd/Even

TCE 005630212-04



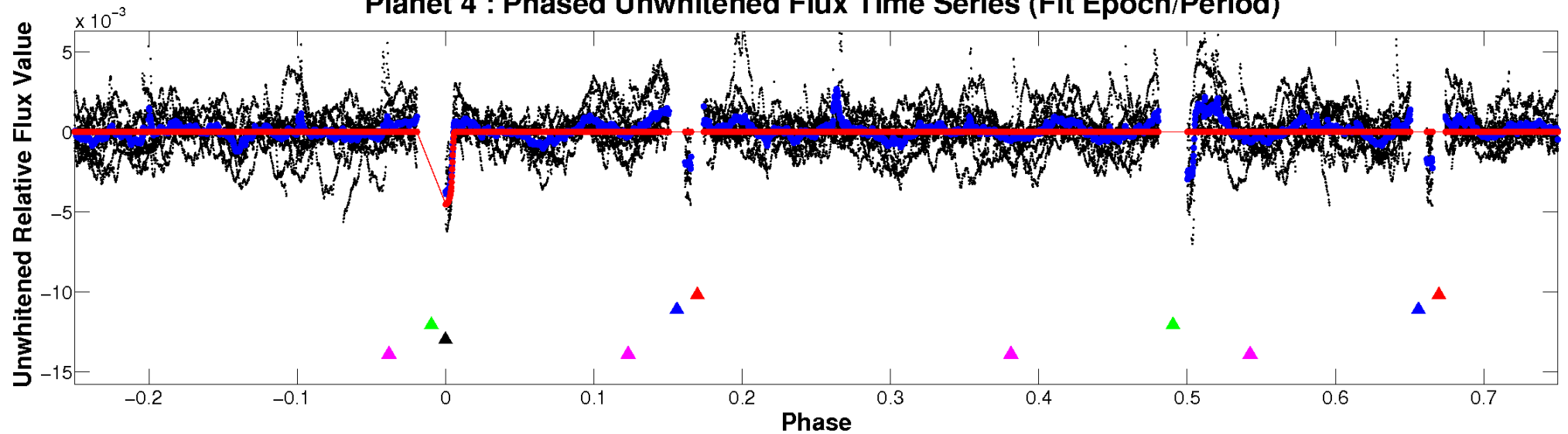
# ALT Odd/Even

TCE 005630212-04

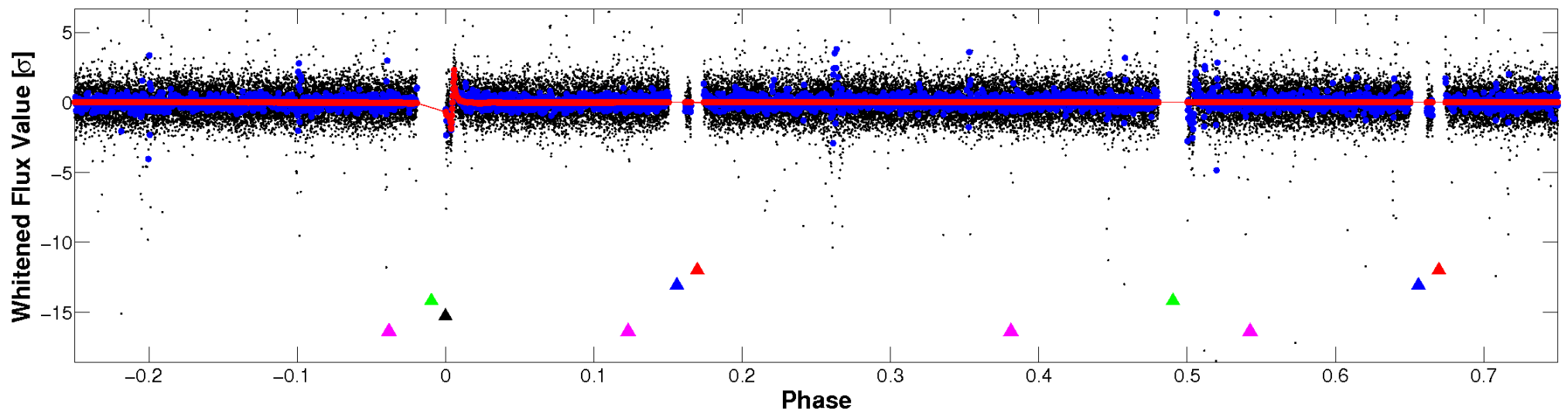


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

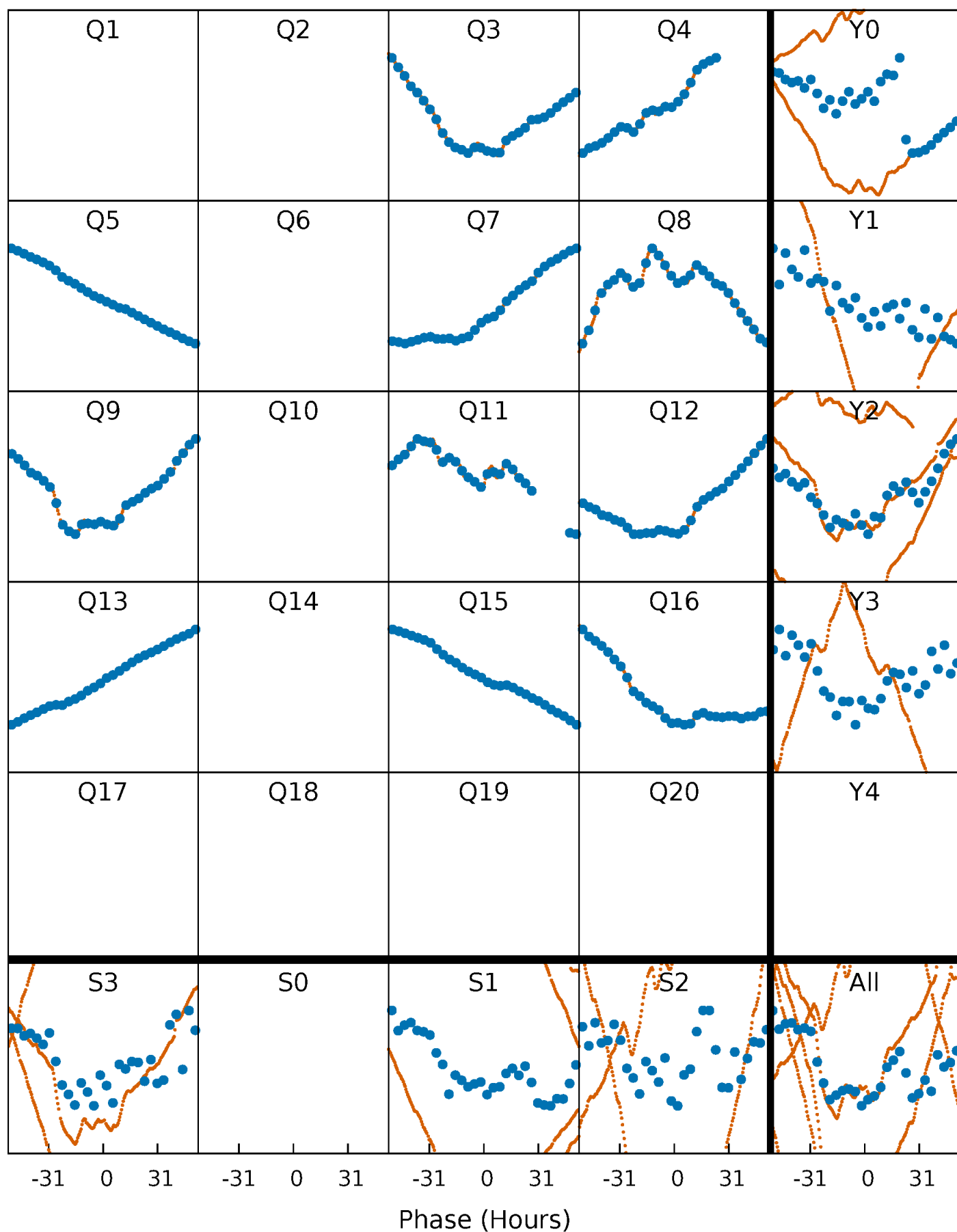


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

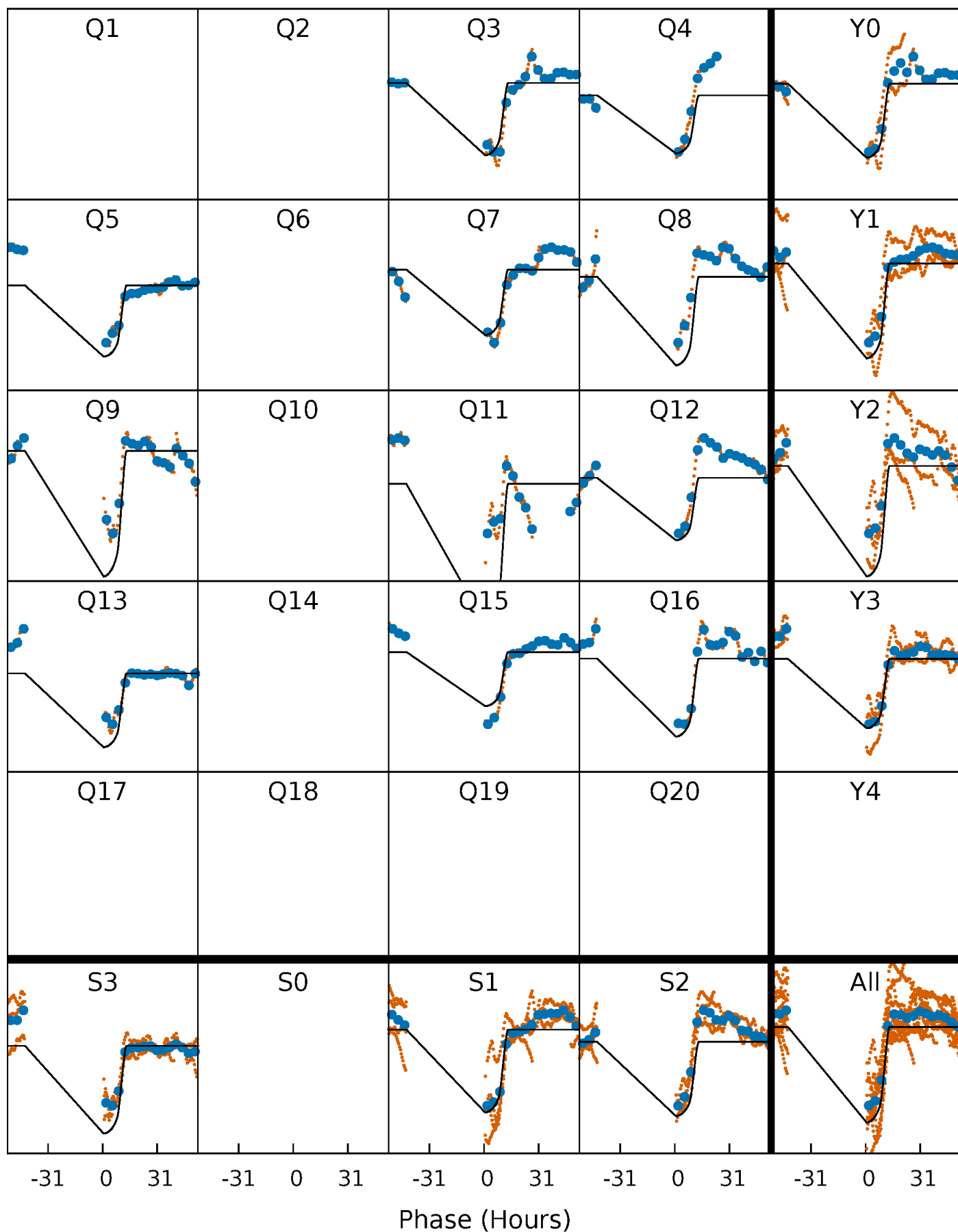
TCE 005630212-04 P= 95.166350 Days  $T_0=205.585869$  (BKJD)





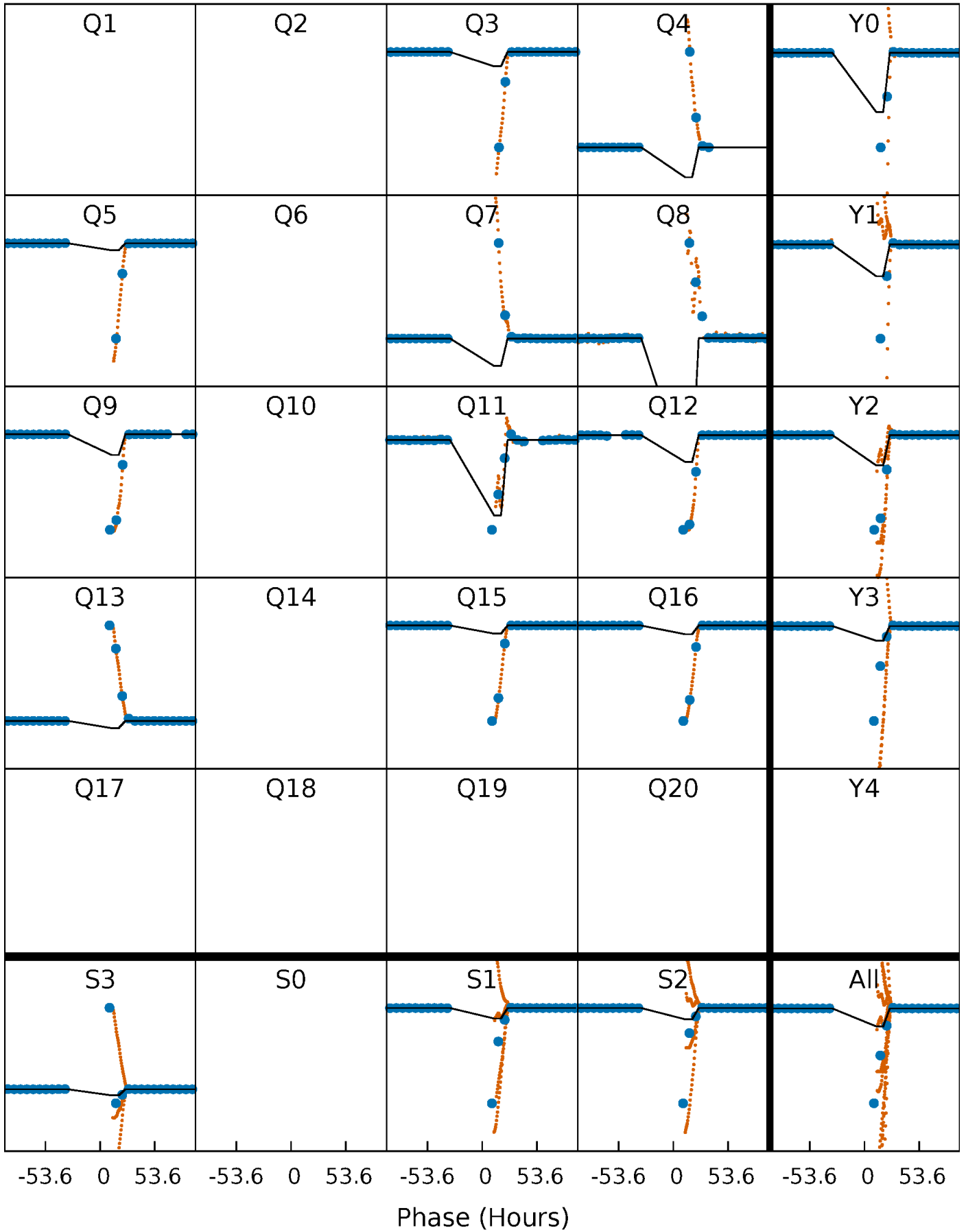
# DV Quarter-Phased Transit Curves

TCE 005630212-04 P= 95.166350 Days  $T_0=205.585869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

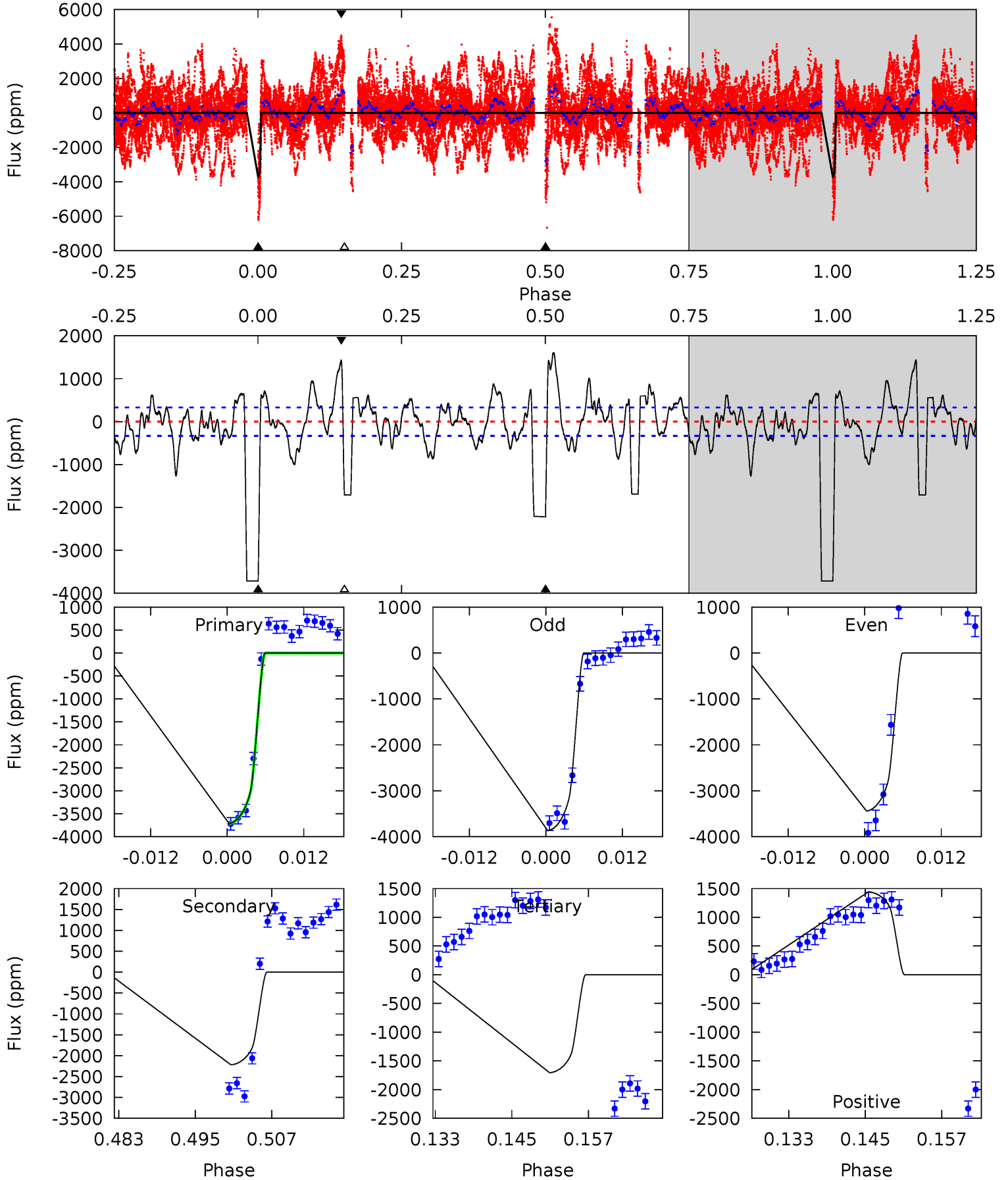
TCE 005630212-04   P= 95.172711 Days    $T_0=205.049882$  (BKJD)



# DV Model-Shift Uniqueness Test

005630212-04, P = 95.166350 Days, E = 110.419519 Days

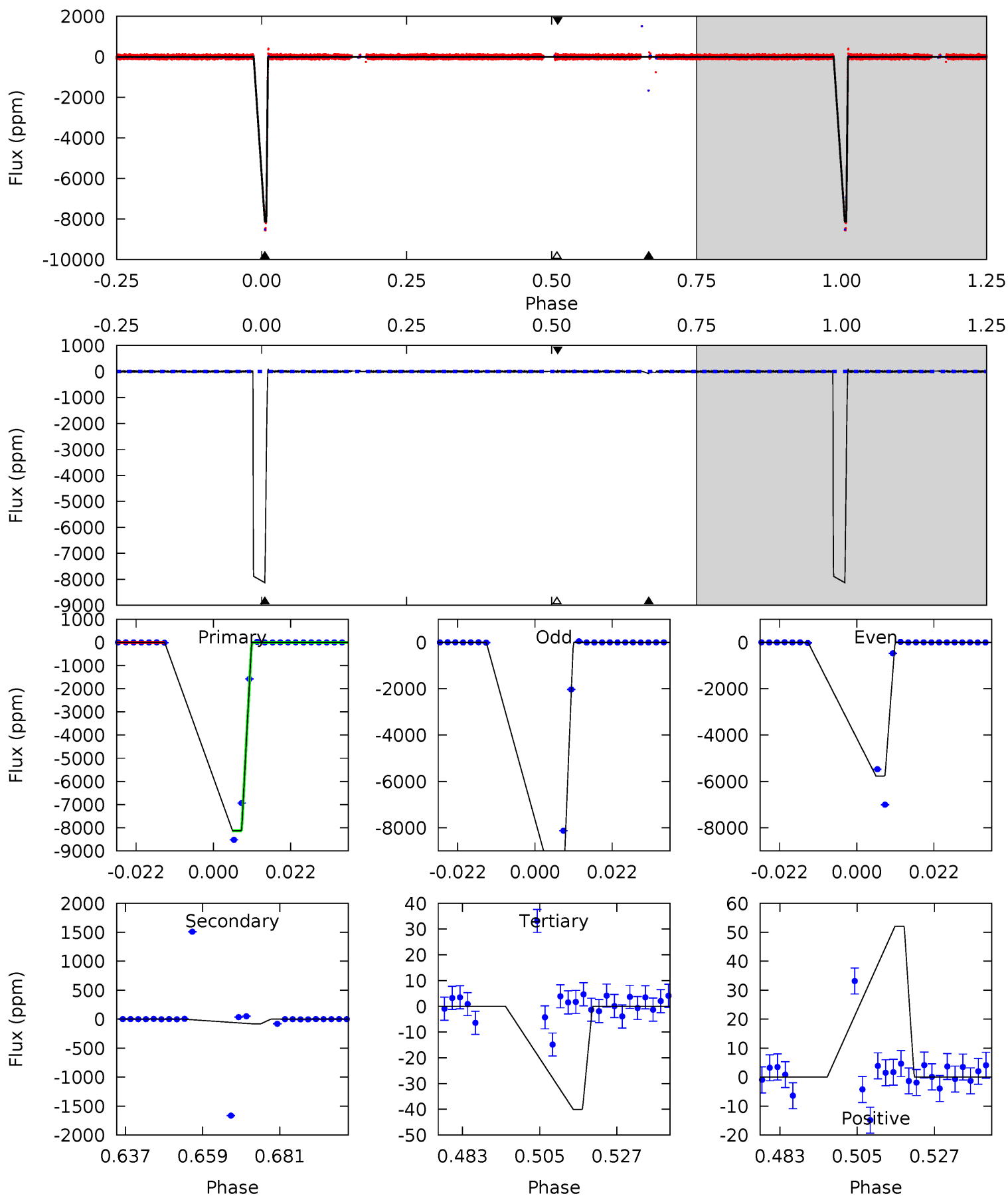
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.8	33.4	25.7	21.7	4.99	2.51	7.47	30.2	34.1	7.70	11.6	3.10	1.04	0.30	0



# Alt Model-Shift Uniqueness Test

005630212-04, P = 95.172711 Days, E = 109.877171 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
1155	11.3	5.69	7.40	4.87	2.29	1.46	1150	1148	5.63	3.92	363.2	0.78	0.01	0



### Stellar Parameters For KIC 005630212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3999^{+125}_{-153}$	$4.670^{+0.063}_{-0.027}$	$-0.040^{+0.300}_{-0.300}$	$0.584^{+0.046}_{-0.074}$	$0.582^{+0.059}_{-0.066}$	$4.113^{+1.394}_{-0.484}$
	+3%/-4%	+1%/-1%	+750%/-750%	+8%/-13%	+10%/-11%	+34%/-12%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005630212-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2219 \pm 67$	$4.42^{+0.25}_{-0.31}$	$320^{+13}_{-14}$	$3504^{+99}_{-126}$	$7364^{+819}_{-592}$
Alt.	$-80 \pm 7$	$3.10^{+0.18}_{-0.21}$	$320^{+12}_{-15}$	$2437^{+67}_{-69}$	$532^{+77}_{-66}$

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

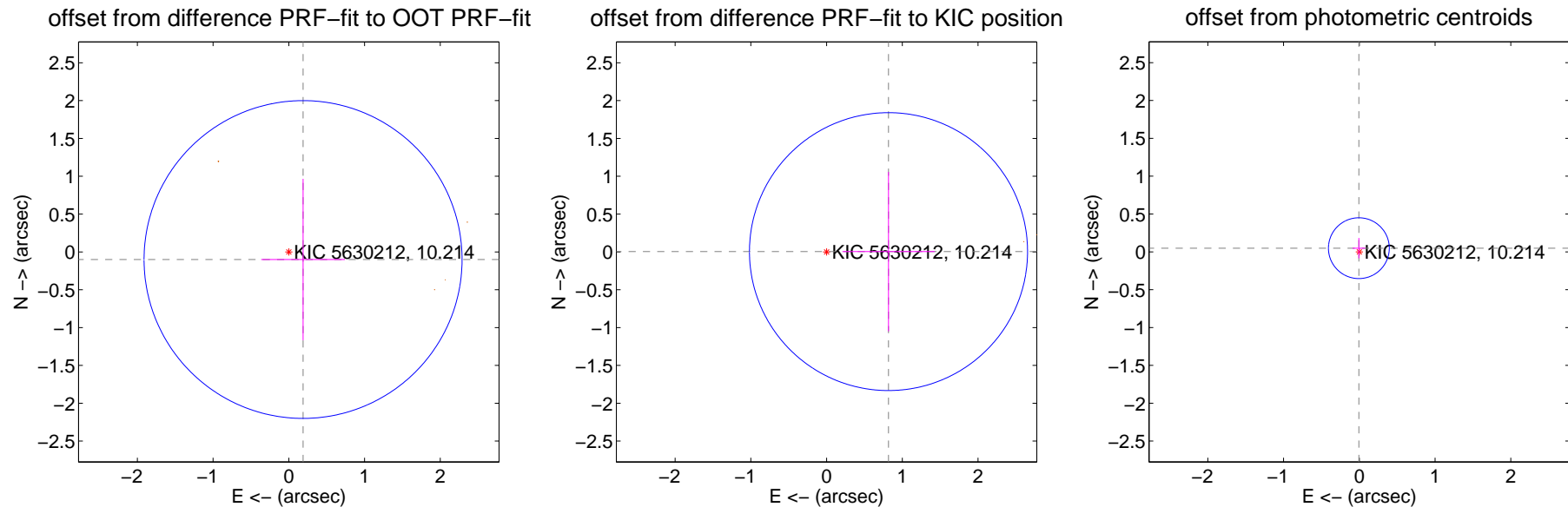
## DV Centroid Data

Supplemental centroid analysis for 005630212-04. **Kepler magnitude: 10.21.** Transit SNR 21.28

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.86 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.213 \pm 0.700$	0.30	$-0.188 \pm 0.552$	$-0.101 \pm 1.067$
PRF-fit source offset from KIC position	$0.818 \pm 0.612$	1.34	$-0.818 \pm 0.610$	$0.004 \pm 1.054$
photometric centroid source offset	$0.05 \pm 0.13$	0.37	$0.01 \pm 0.08$	$0.05 \pm 0.13$



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.

Q1 no difference image



Q1 no OOT image



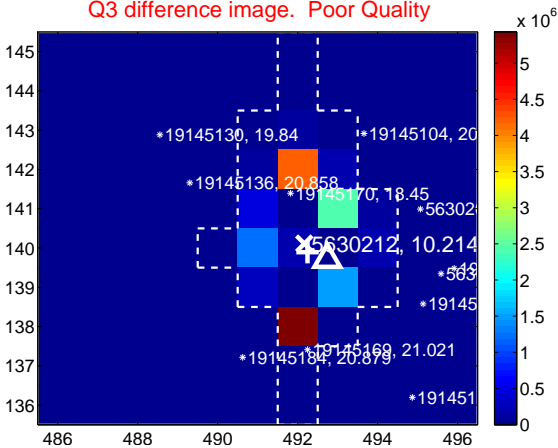
Q2 no difference image



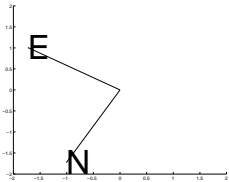
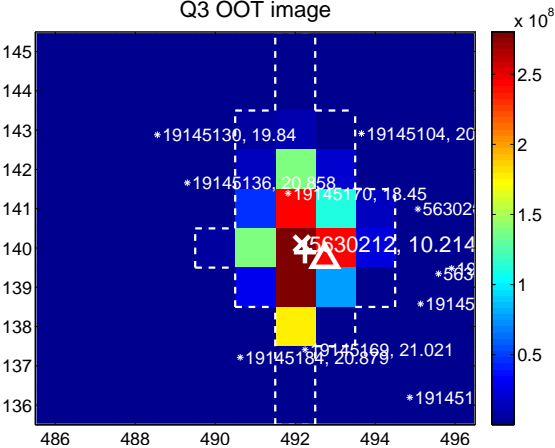
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



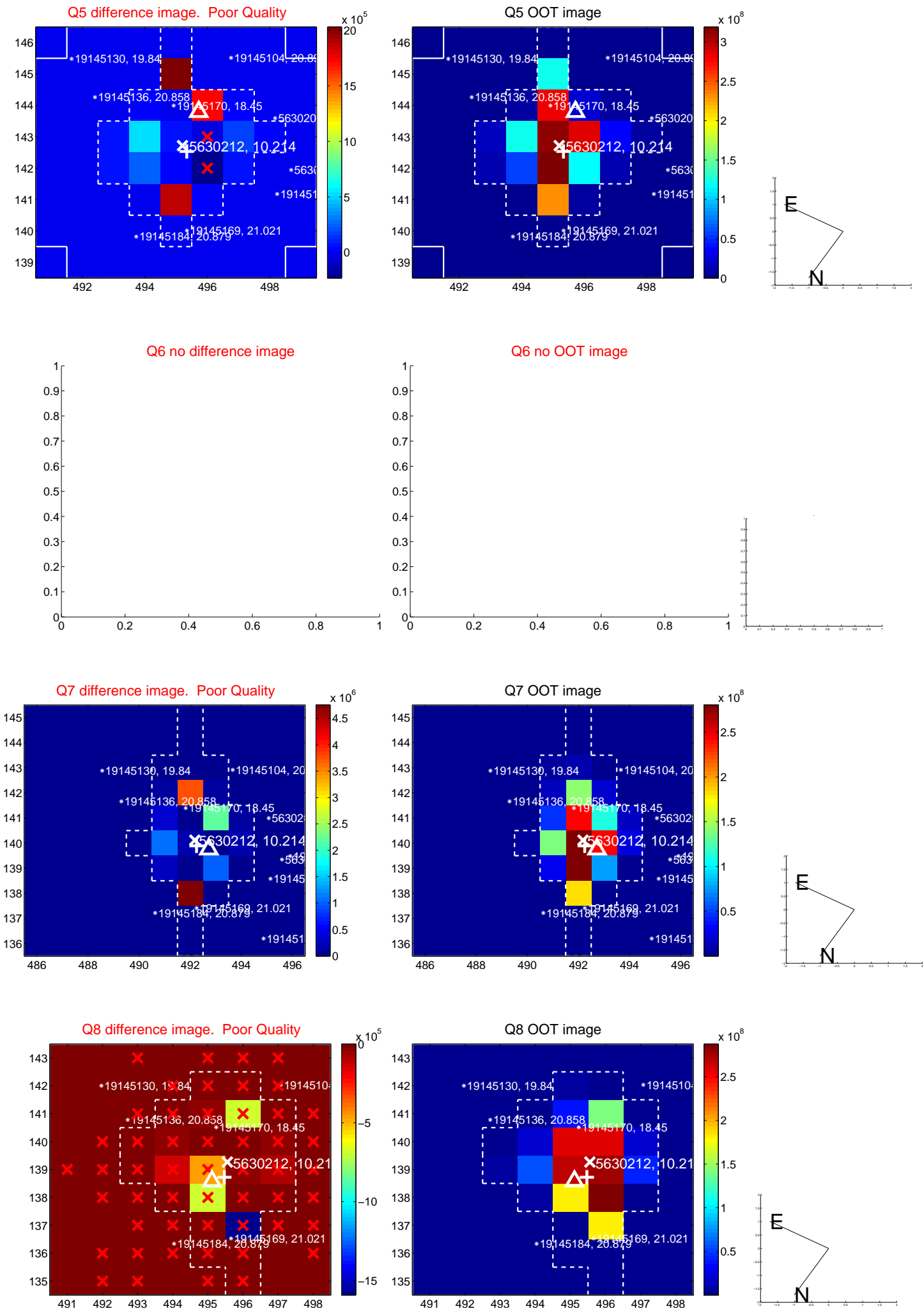
Q4 no difference image



Q4 no OOT image

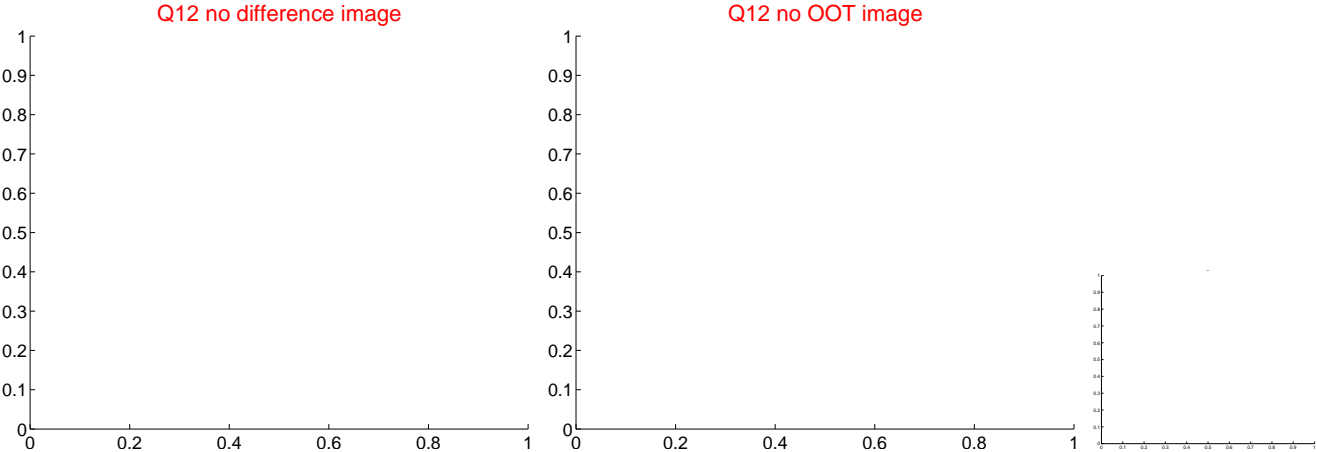
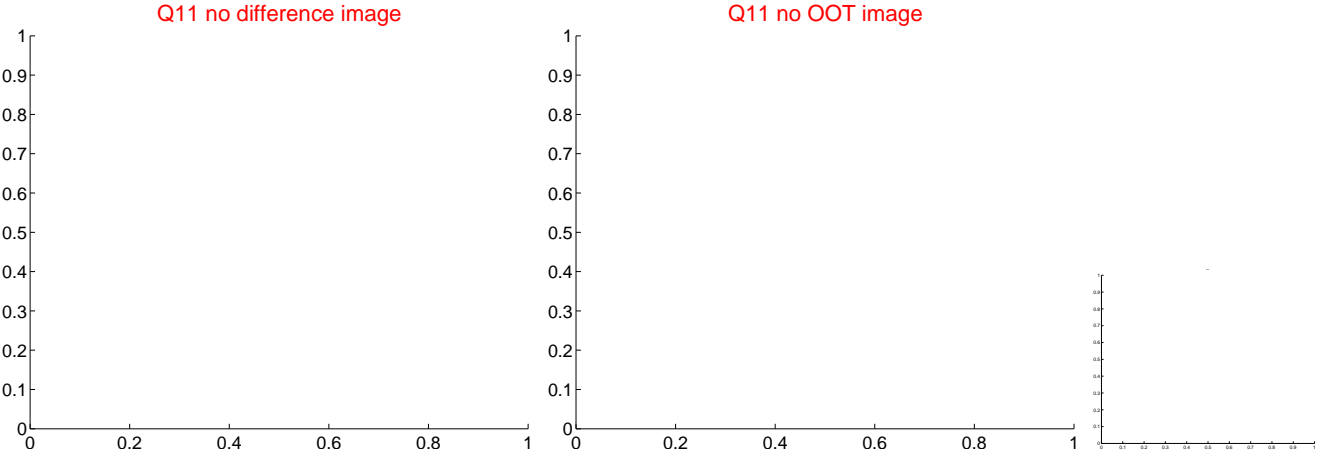
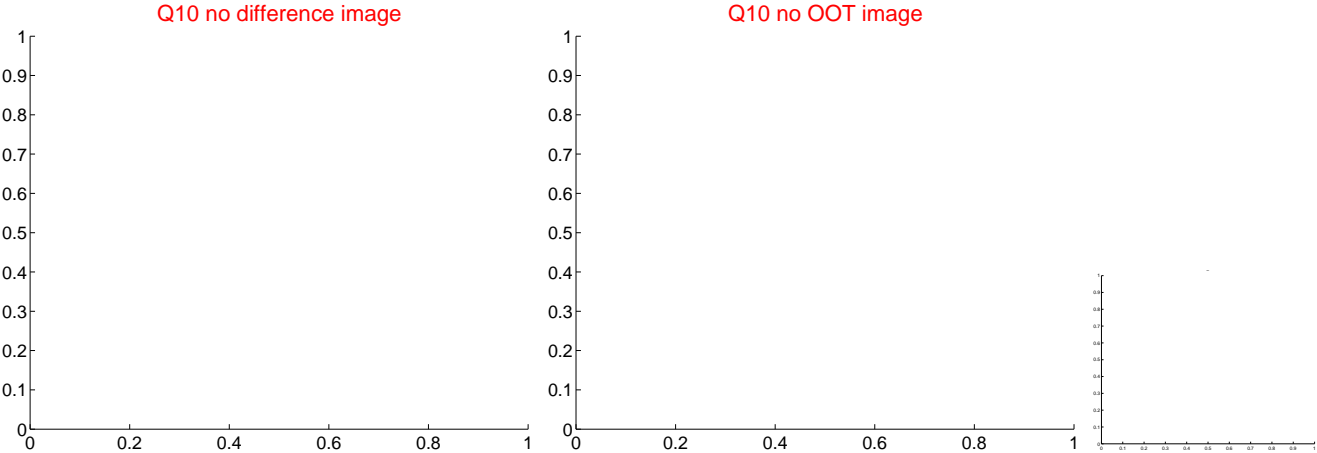
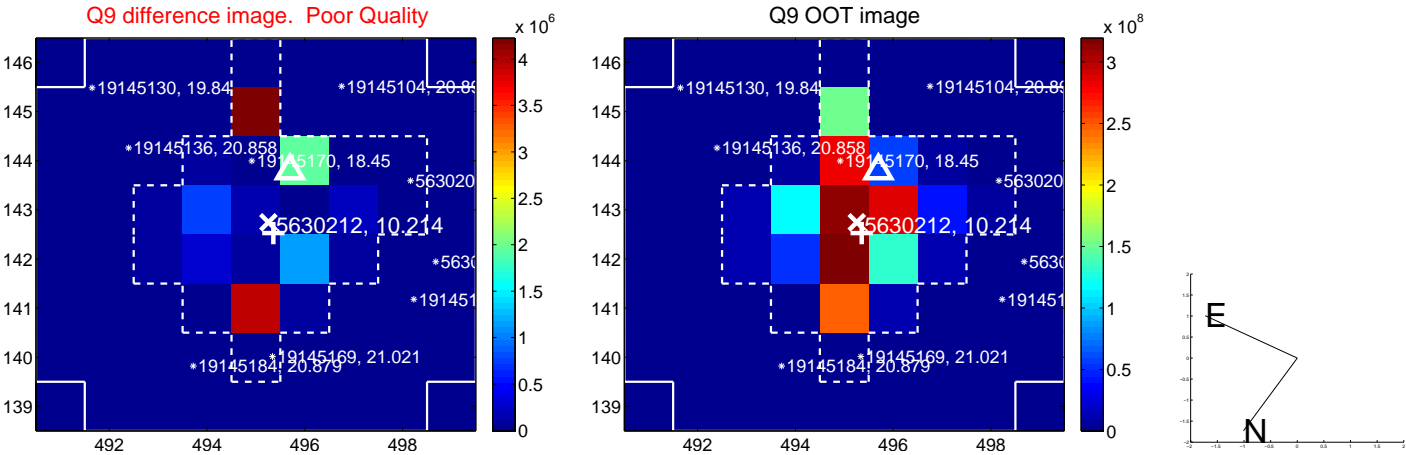


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

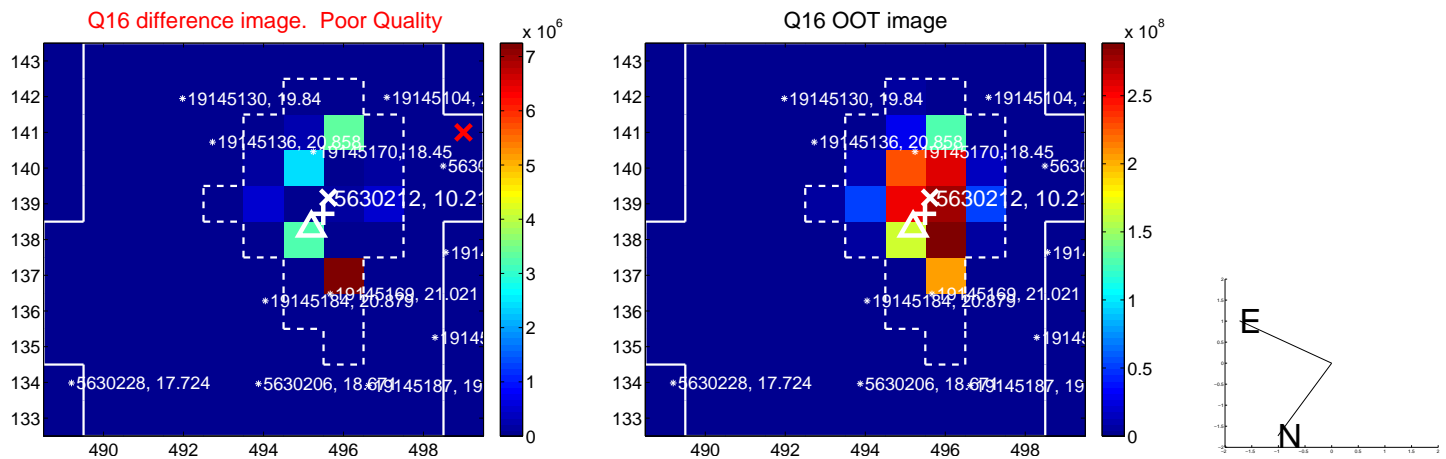
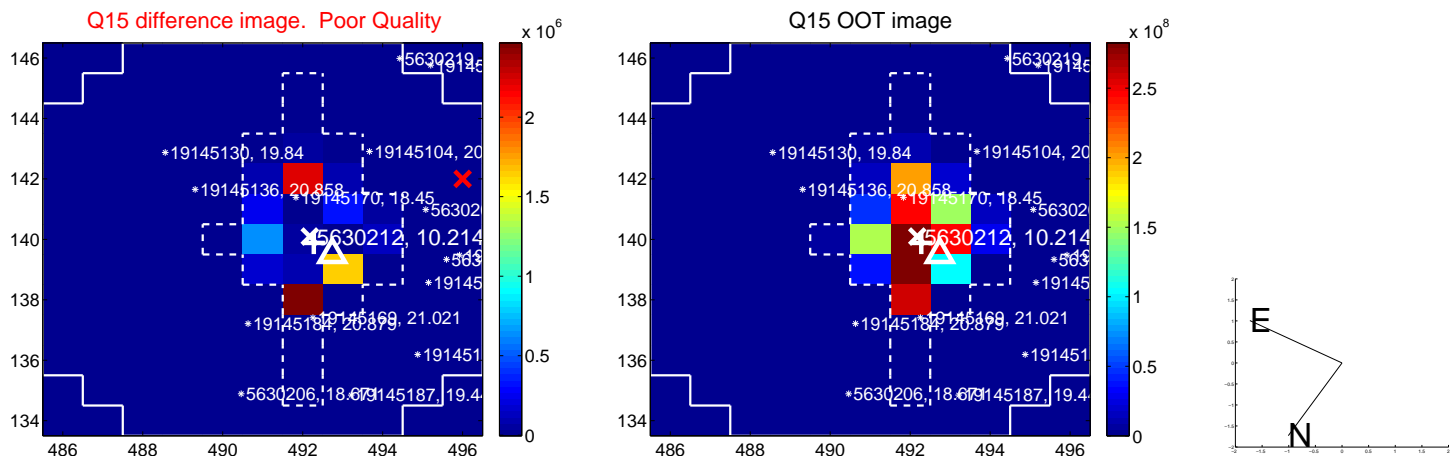
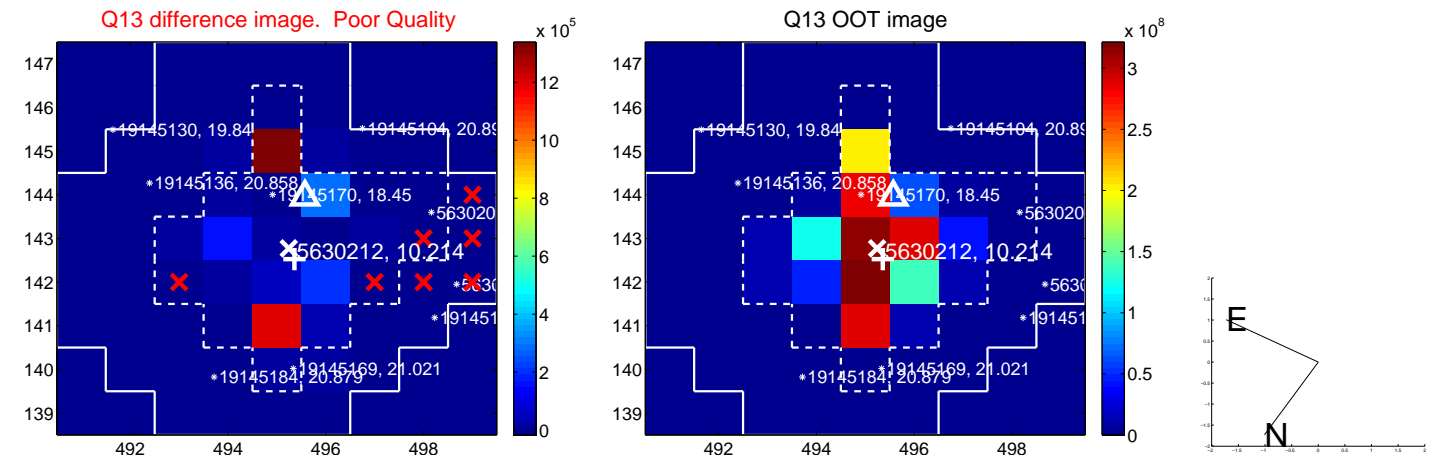




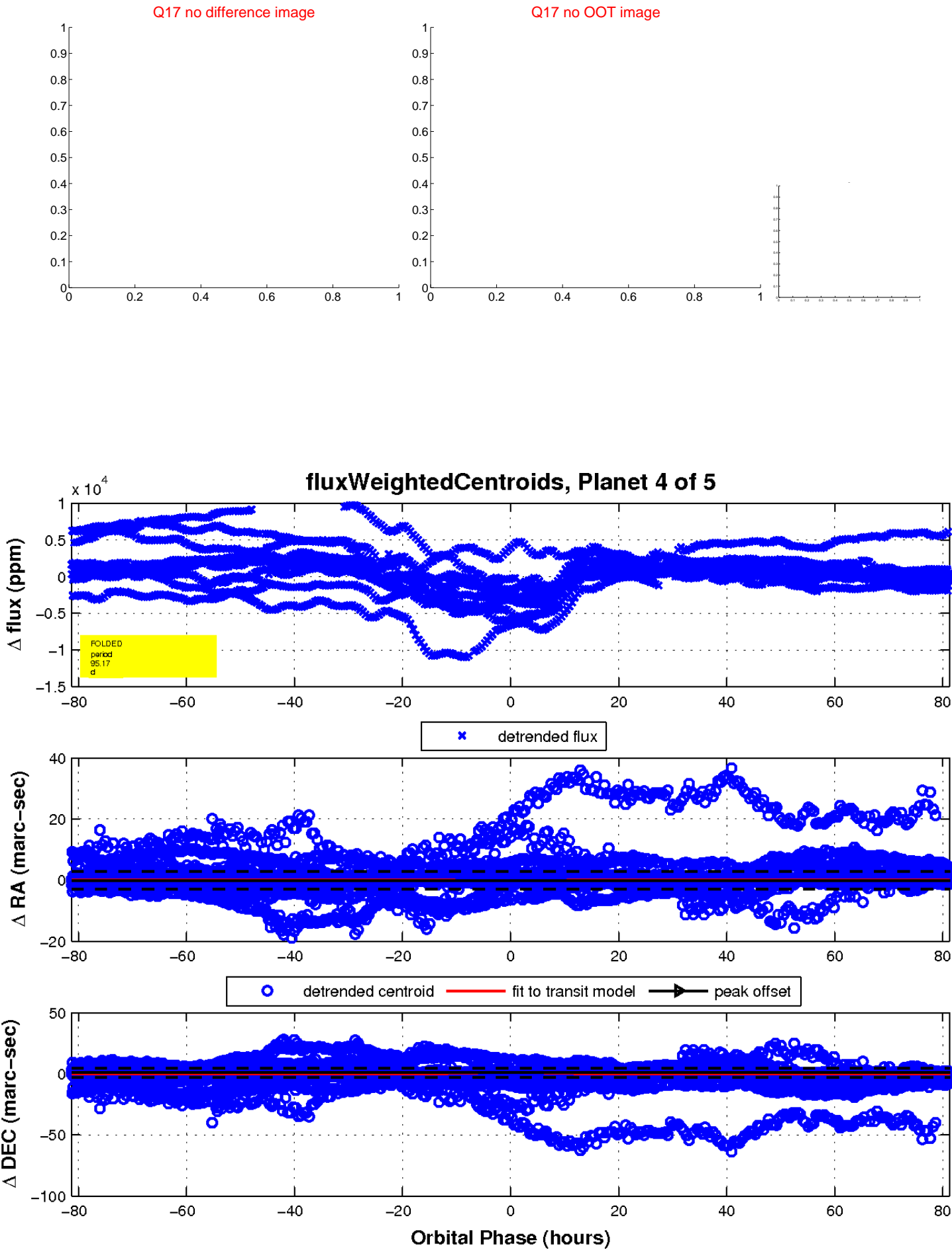
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

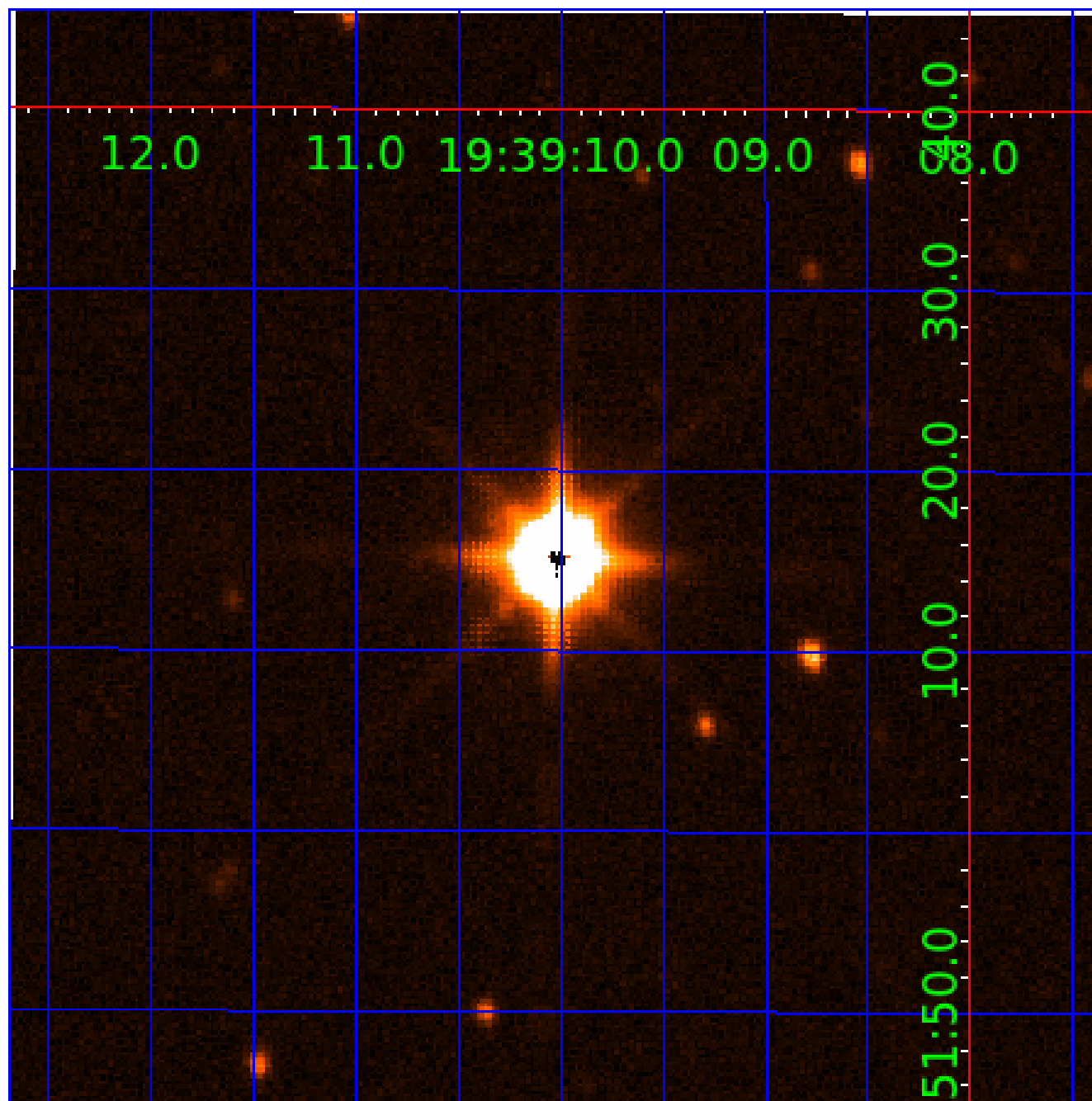


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005630212

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005630212-01	OBS	No	47.584258	174.146574	1801.4	6.540	17.1	25.0	0.58	3999	4.88	1.70
005630212-02	OBS	No	47.584513	172.833431	2052.1	8.323	19.5	27.2	0.58	3999	5.18	1.70
005630212-03	OBS	No	47.582859	157.103040	2238.1	14.764	11.9	22.5	0.58	3999	3.52	1.70
005630212-04	OBS	No	95.166350	205.585869	4531.7	27.091	13.7	21.3	0.58	3999	4.45	0.67
005630212-05	OBS	No	435.921257	146.703943	535.6	6.064	11.3	4.8	0.58	3999	1.71	0.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630212-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
005630212-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED
005630212-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

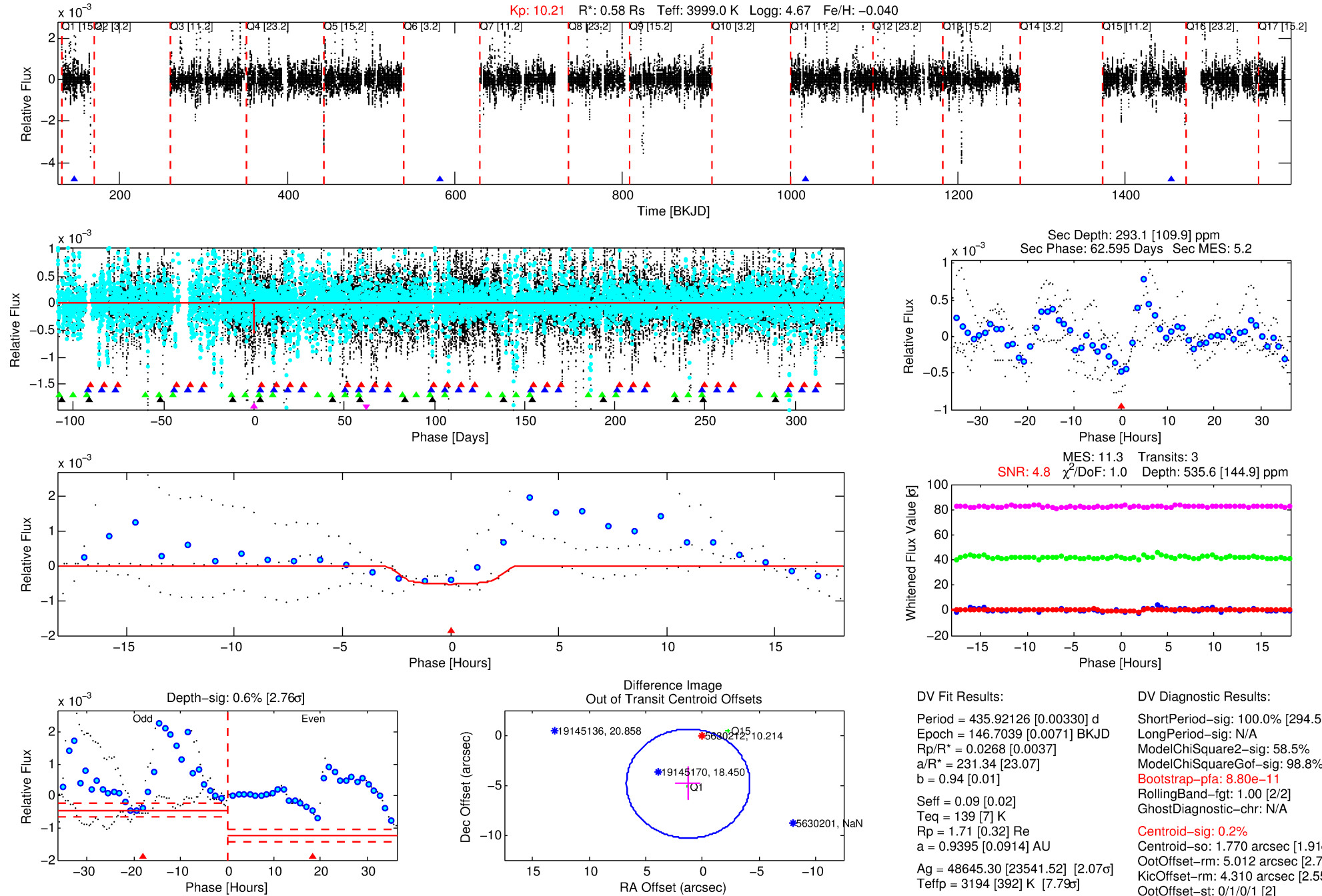
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005630212-05

No Significant Match Found

# DV One-Page Summary

KIC: 5630212 Candidate: 5 of 5 Period: 435.921 d



## DV Fit Results:

Period = 435.92126 [0.00330] d  
Epoch = 146.7039 [0.0071] BKJD  
Rp/R\* = 0.0268 [0.0037]  
a/R\* = 231.34 [23.07]  
b = 0.94 [0.01]  
Seff = 0.09 [0.02]  
Teq = 139 [7] K  
Rp = 1.71 [0.32] Re  
a = 0.9395 [0.0914] AU  
Ag = 48645.30 [23541.52] [2.07σ]  
Teffp = 3194 [392] K [7.79σ]

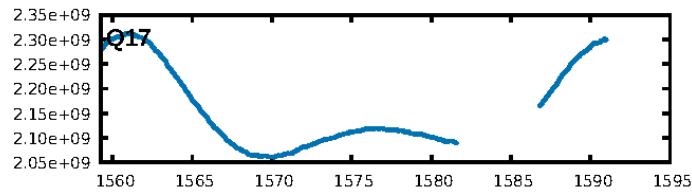
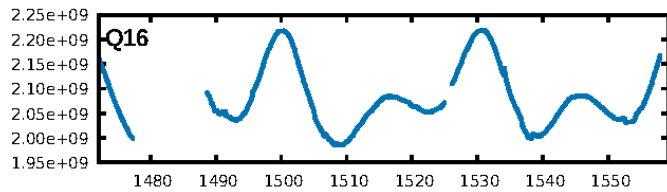
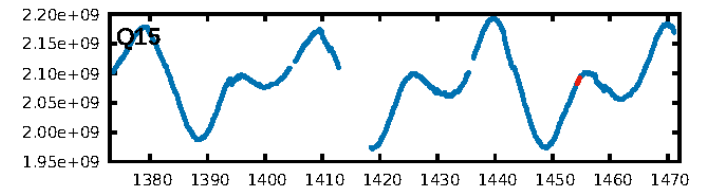
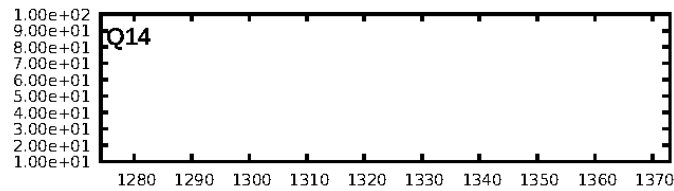
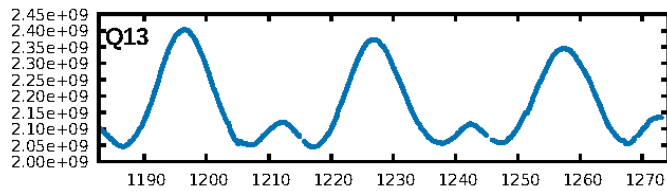
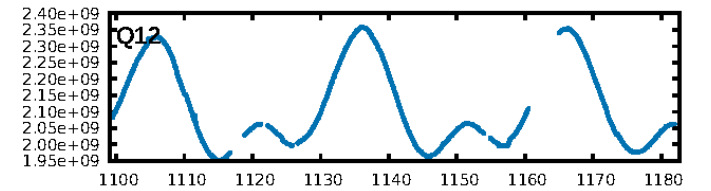
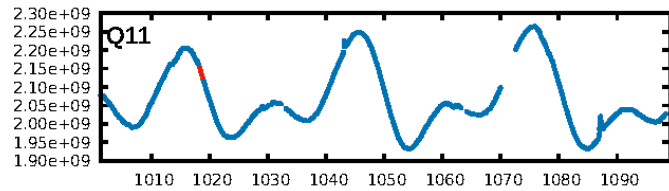
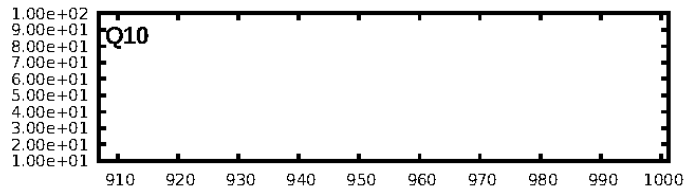
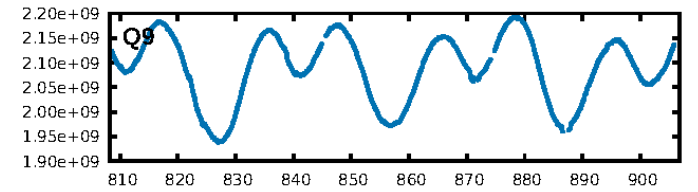
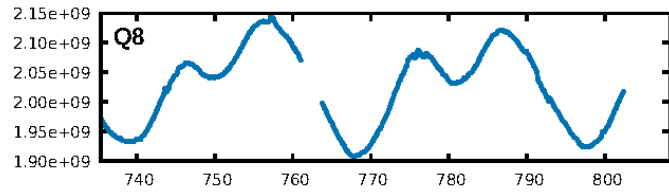
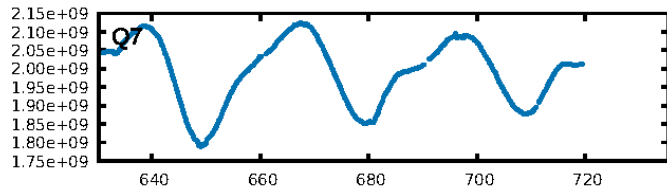
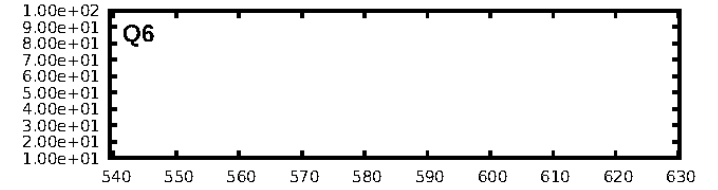
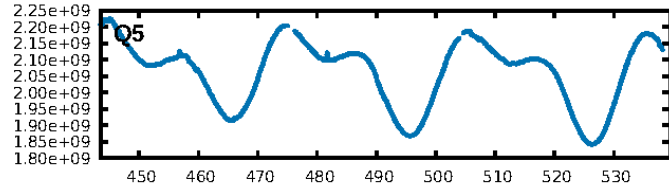
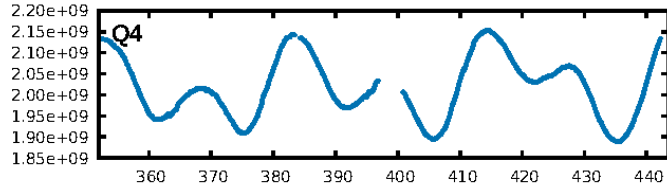
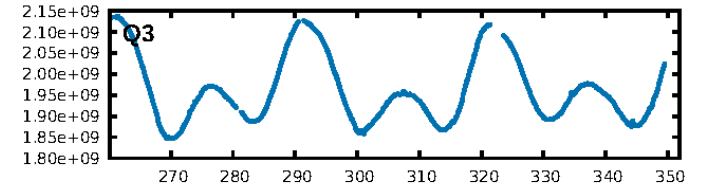
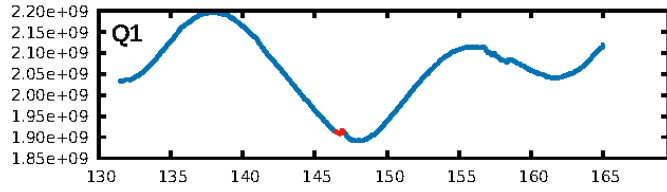
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [294.58σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 58.5%  
ModelChiSquareGof-sig: 98.8%  
**Bootstrap-pfa: 8.80e-11**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: N/A  
**Centroid-sig: 0.2%**  
Centroid-so: 1.770 arcsec [1.91σ]  
OotOffset-rm: 5.012 arcsec [2.75σ]  
KicOffset-rm: 4.310 arcsec [2.55σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

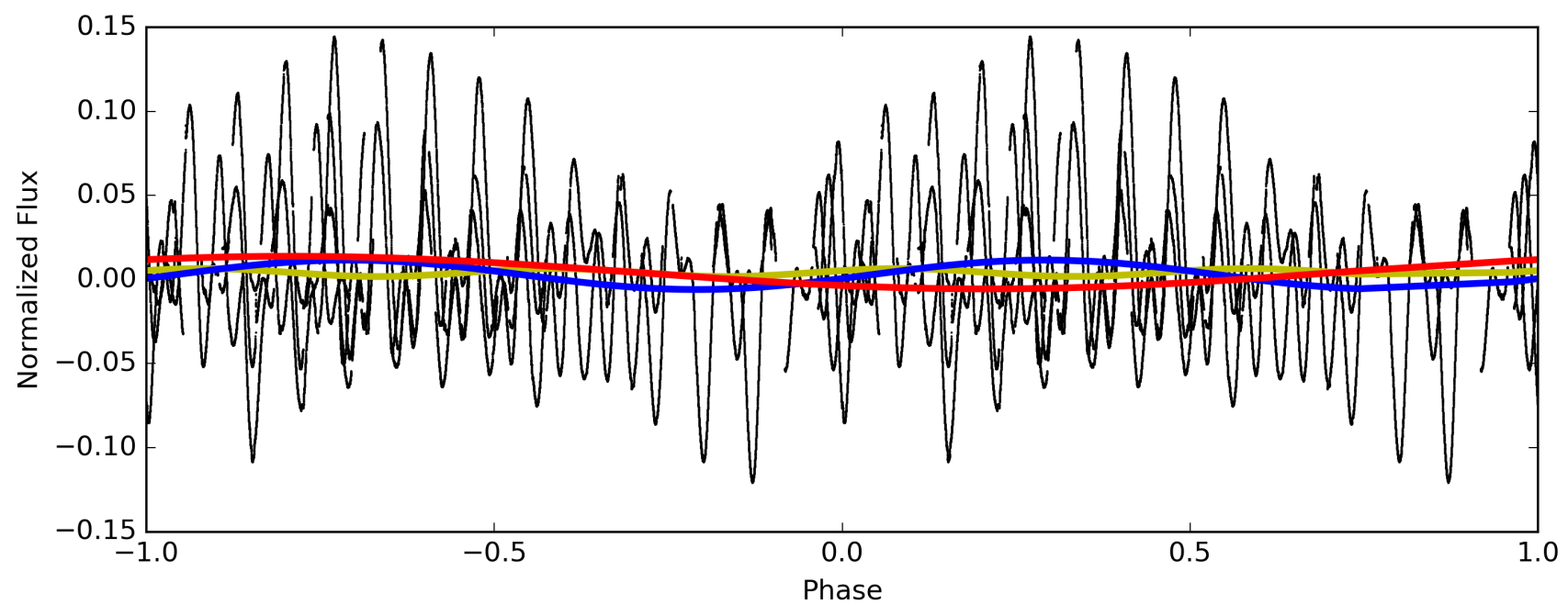
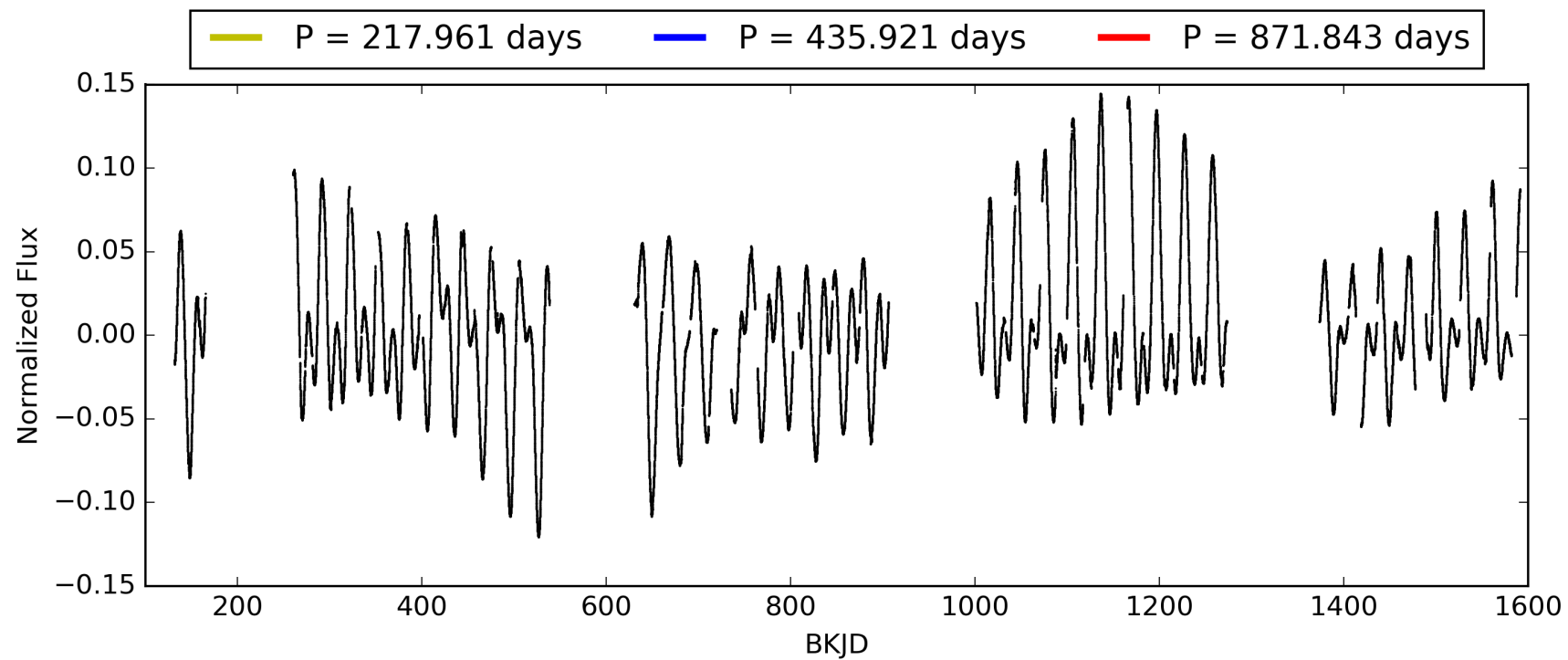
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:52:39 Z

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

# TCE 005630212-05, PDC Light Curves



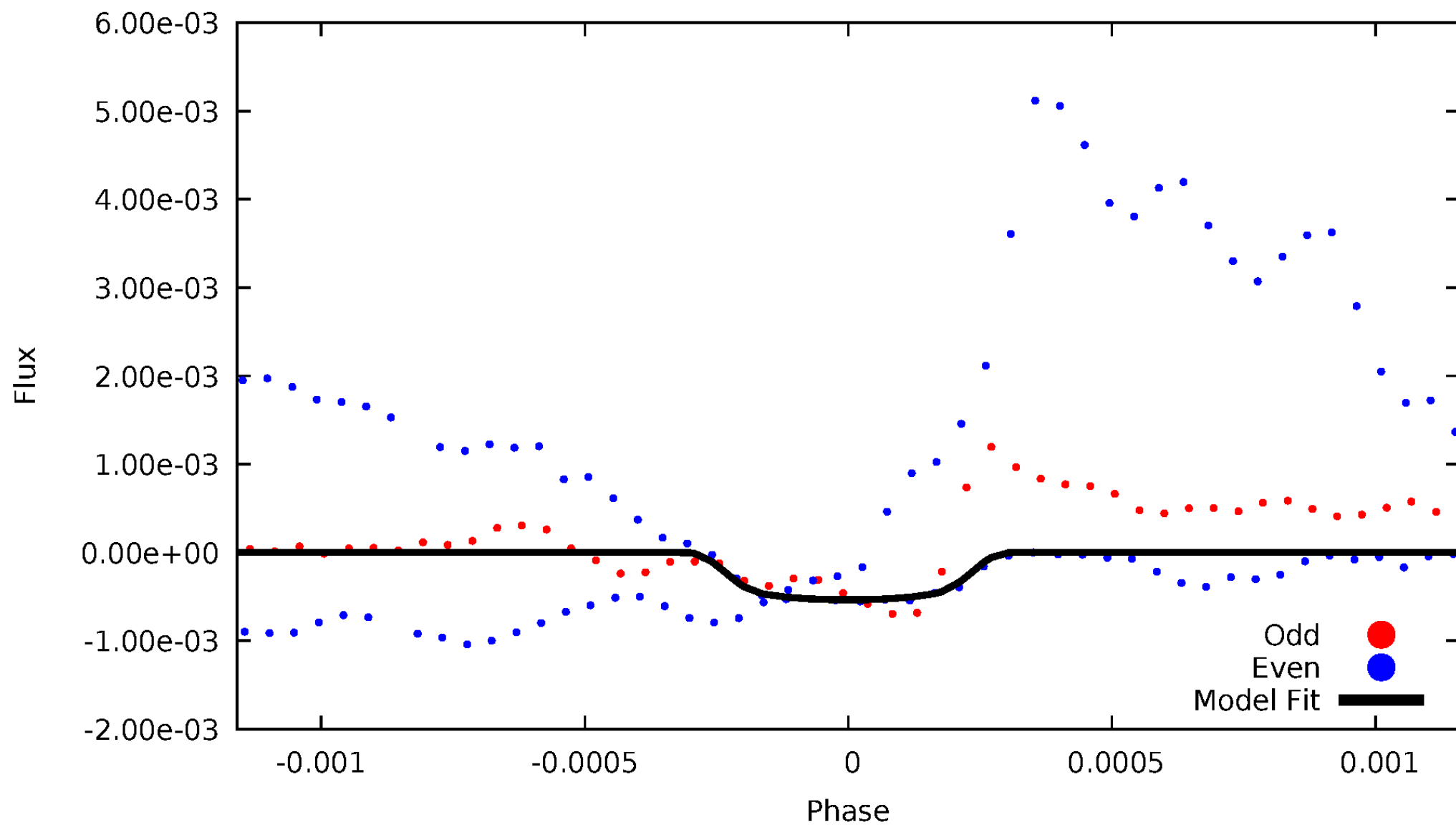
TCE 005630212-05





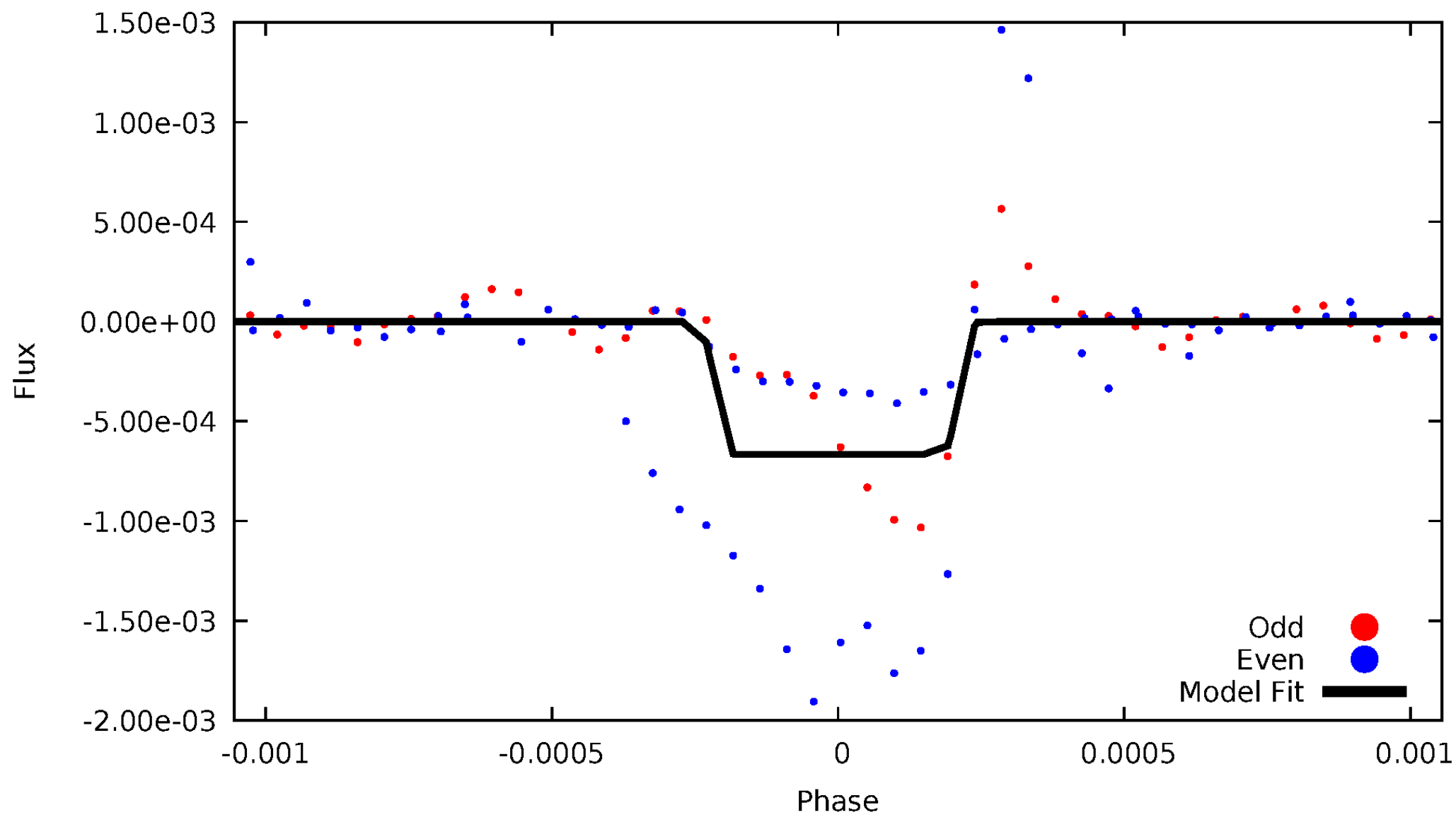
# DV Odd/Even

TCE 005630212-05



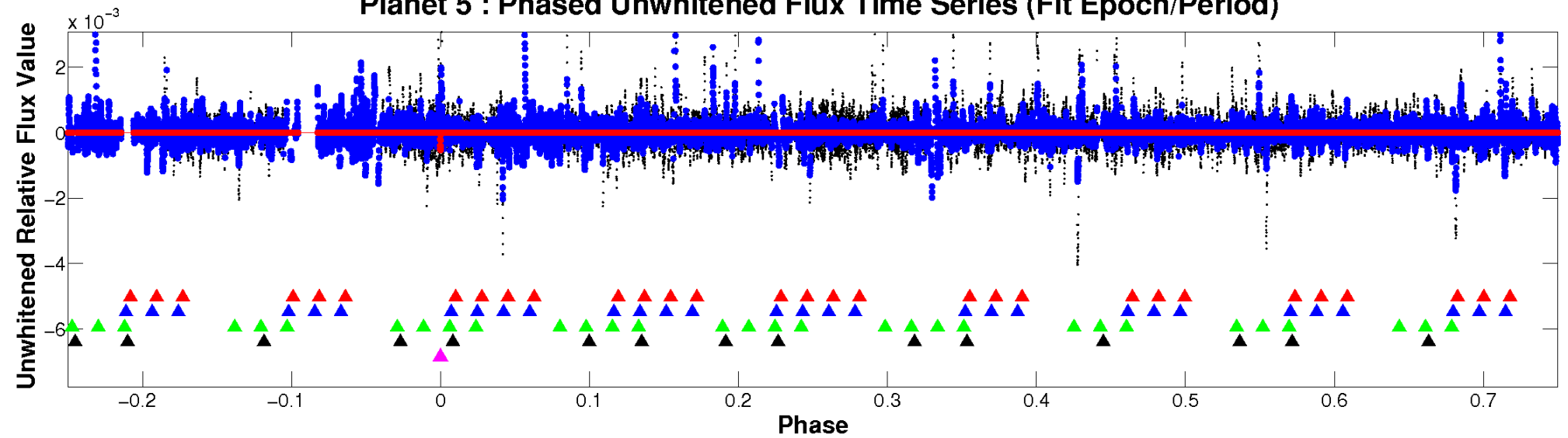
# ALT Odd/Even

TCE 005630212-05

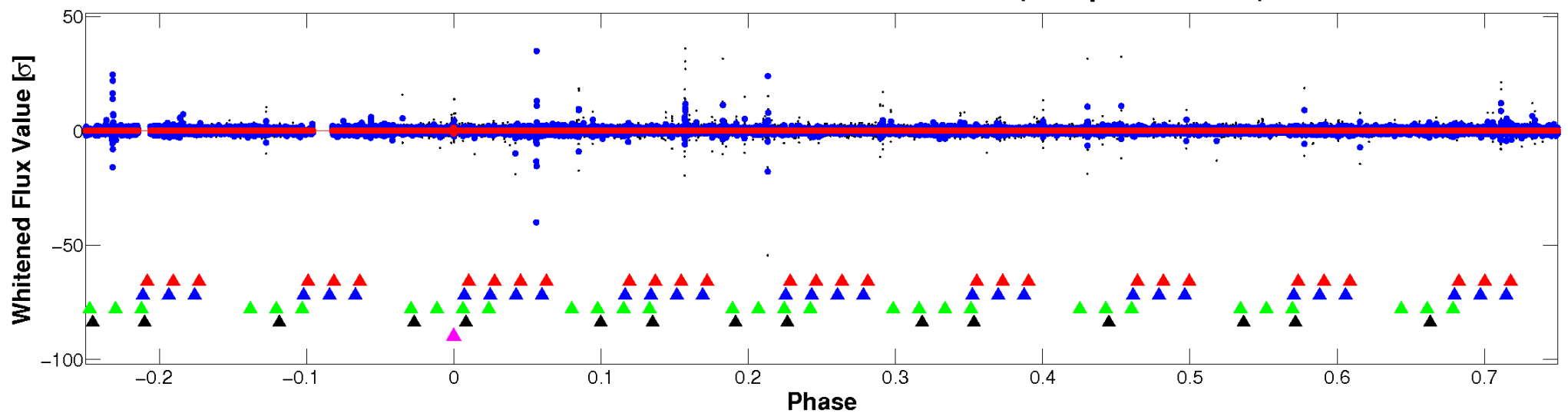


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

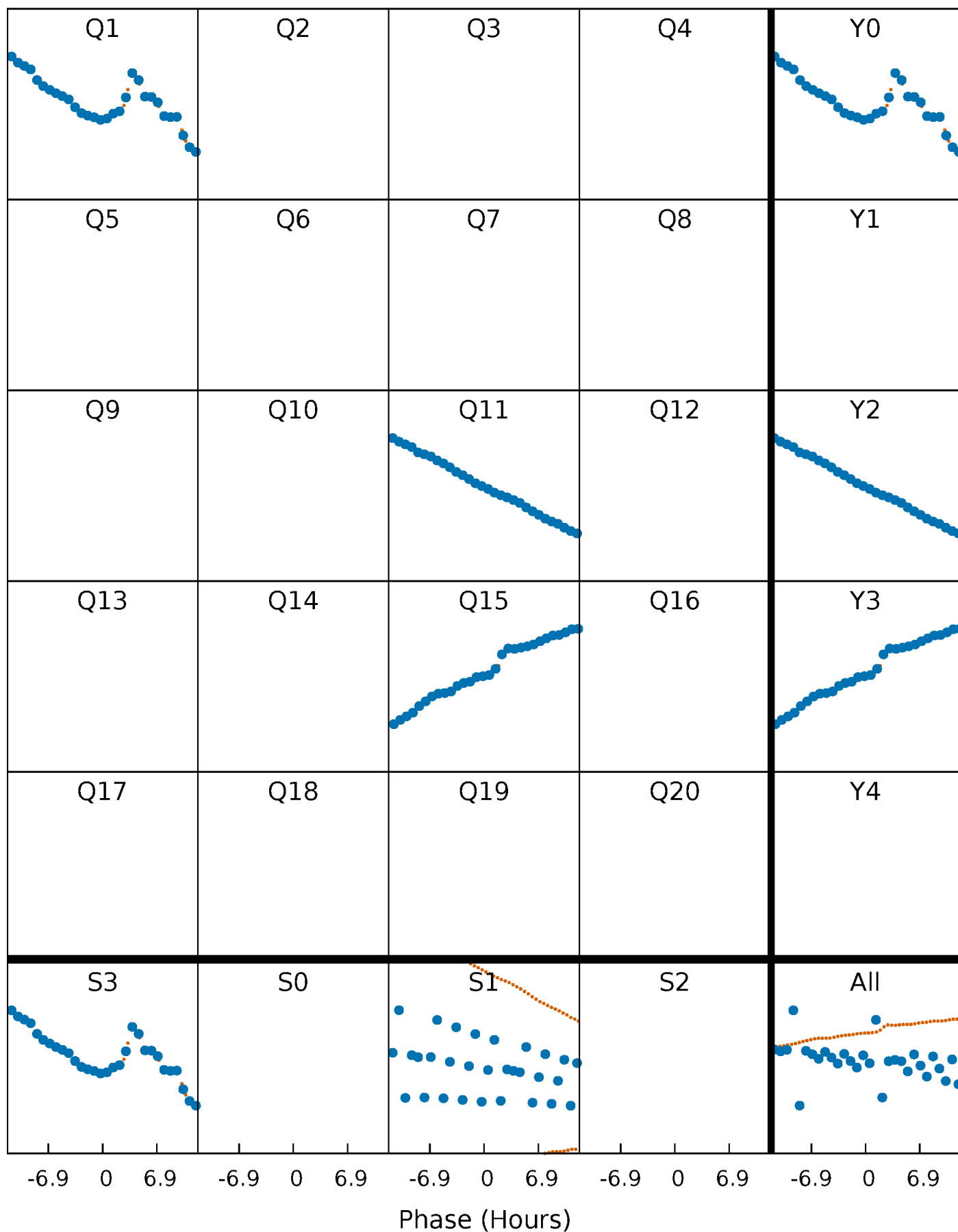


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



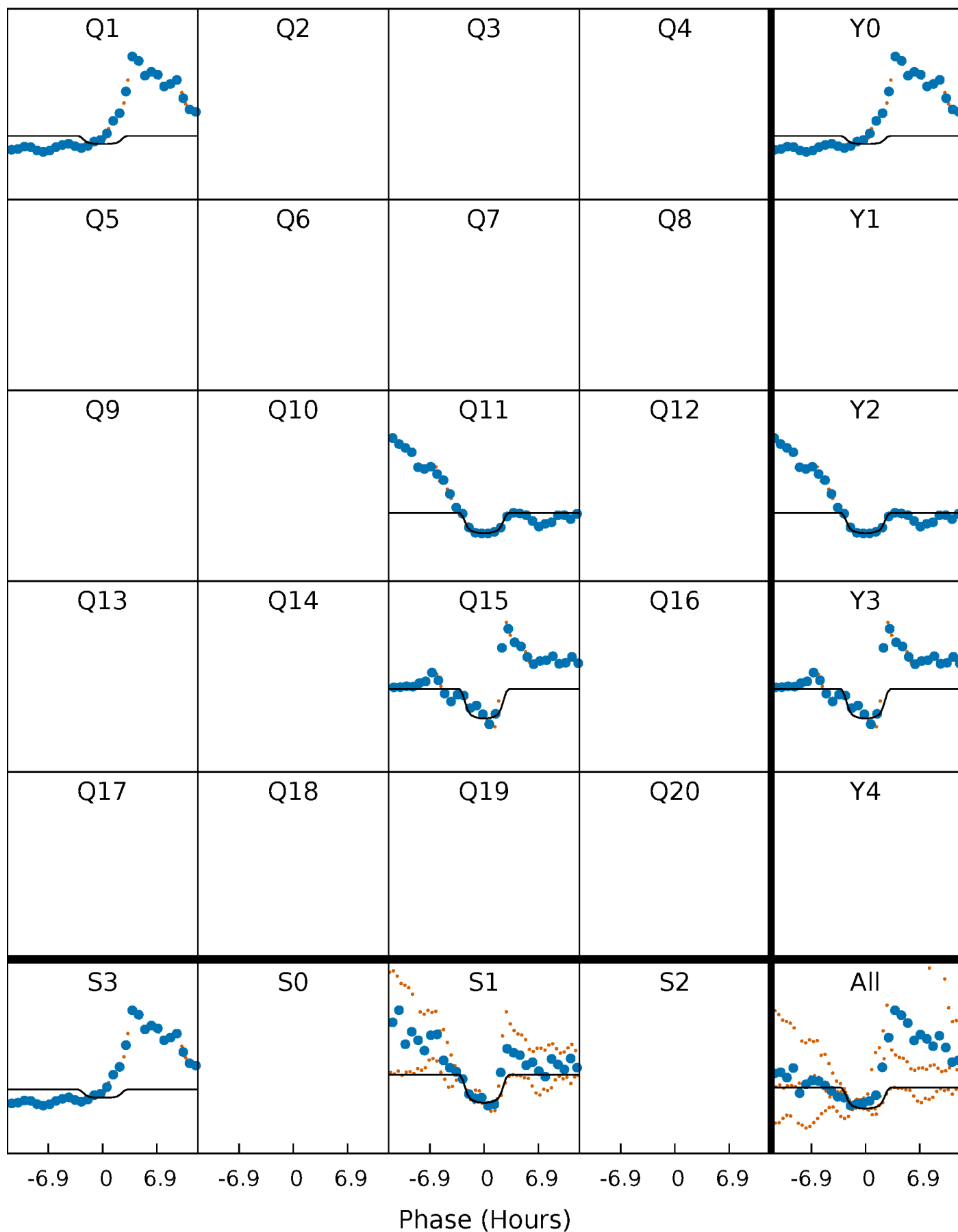
# PDC Quarter-Phased Transit Curves

TCE 005630212-05     $P=435.921257$  Days     $T_0=146.703943$  (BKJD)



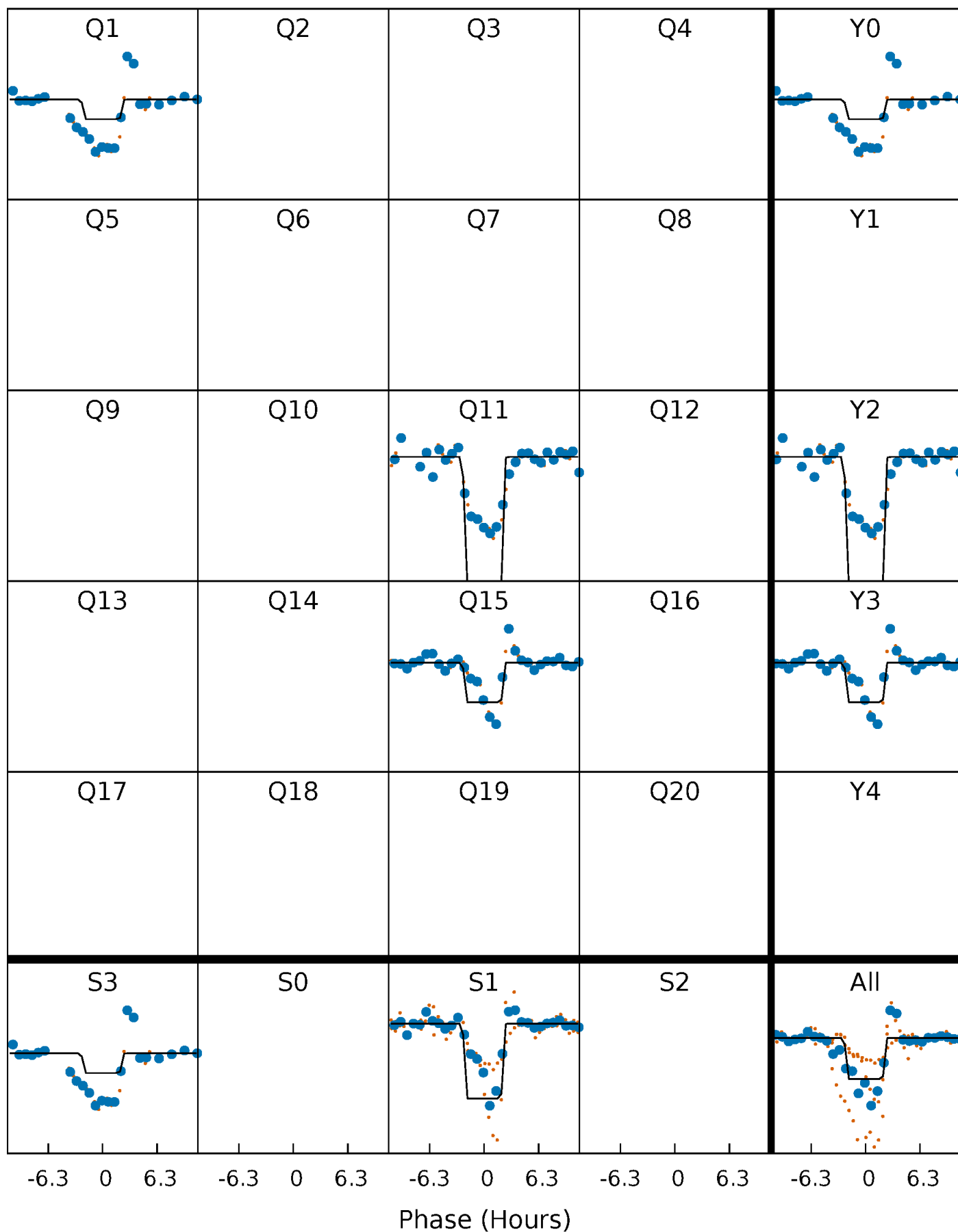
# DV Quarter-Phased Transit Curves

TCE 005630212-05     $P=435.921257$  Days     $T_0=146.703943$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

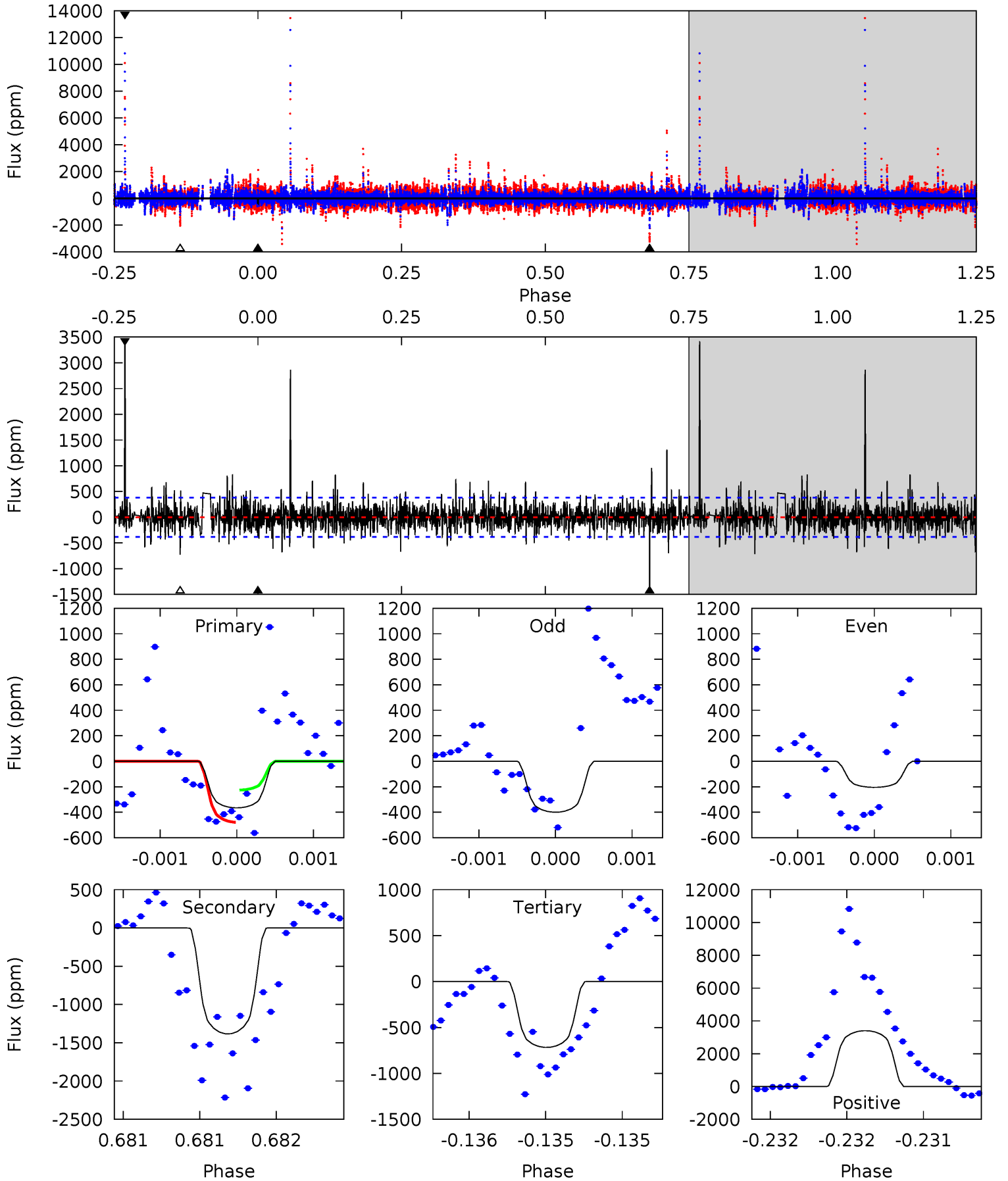
TCE 005630212-05     $P=435.909135$  Days     $T_0=146.734088$  (BKJD)



# DV Model-Shift Uniqueness Test

005630212-05, P = 435.921257 Days, E = 146.703943 Days

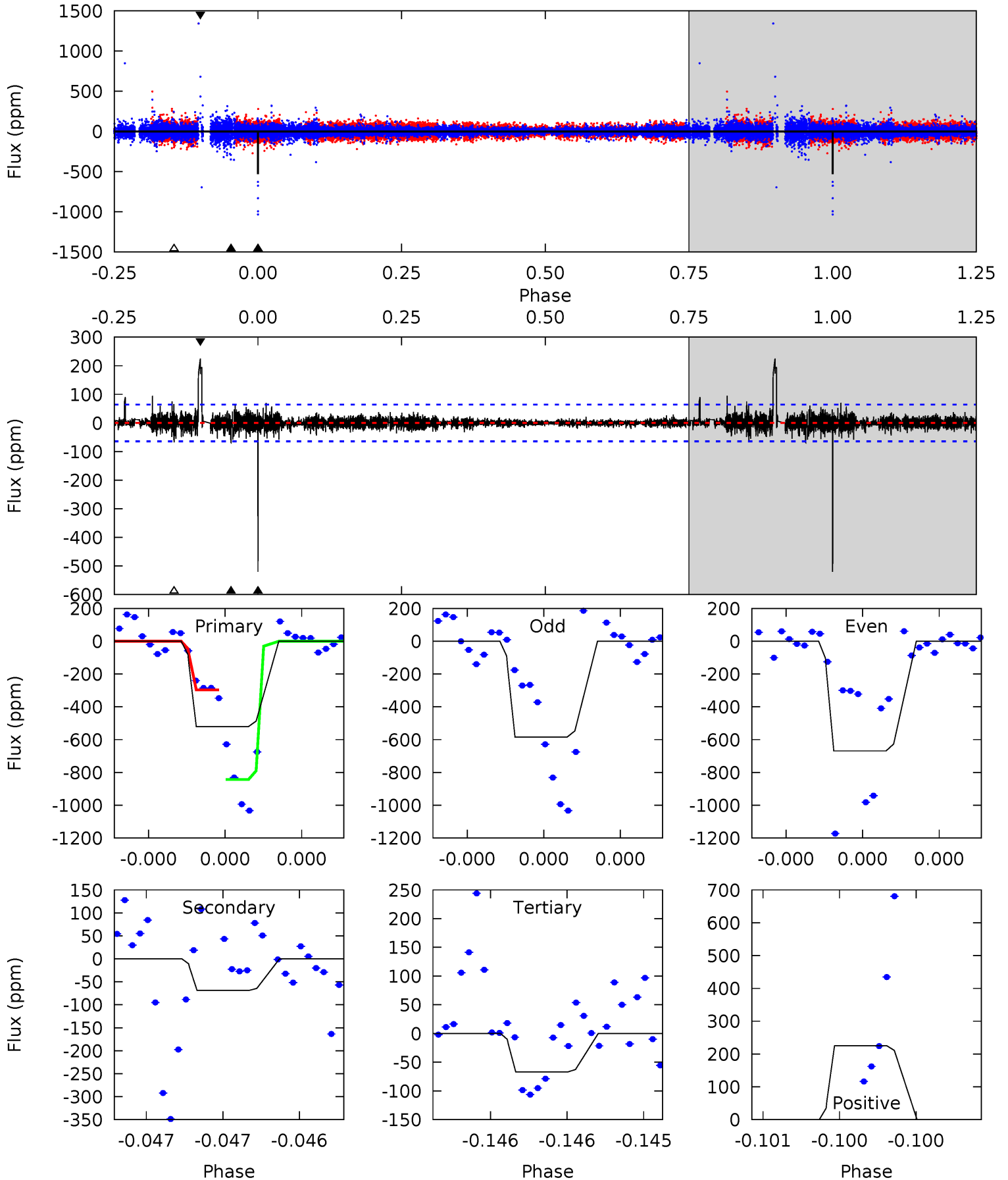
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.30	20.1	10.4	49.3	5.54	3.43	2.84	-5.09	-44.0	9.67	-29.3	1.07	0.67	0.71	1.83



# Alt Model-Shift Uniqueness Test

005630212-05, P = 435.909135 Days, E = 146.734088 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.3	5.98	5.83	19.6	5.58	3.50	0.95	39.5	25.7	0.15	-13.6	2.93	1.42	0.30	24.6





### Stellar Parameters For KIC 005630212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3999^{+125}_{-153}$	$4.670^{+0.063}_{-0.027}$	$-0.040^{+0.300}_{-0.300}$	$0.584^{+0.046}_{-0.074}$	$0.582^{+0.059}_{-0.066}$	$4.113^{+1.394}_{-0.484}$
	+3%/-4%	+1%/-1%	+750%/-750%	+8%/-13%	+10%/-11%	+34%/-12%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005630212-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1384 \pm 69$	$1.68^{+0.28}_{-0.26}$	$193^{+8}_{-8}$	$4519^{+339}_{-290}$	$240442^{+92237}_{-61222}$
Alt.	$-69 \pm 11$	$1.61^{+0.28}_{-0.23}$	$192^{+7}_{-8}$	$2823^{+155}_{-150}$	$12731^{+5670}_{-3538}$

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

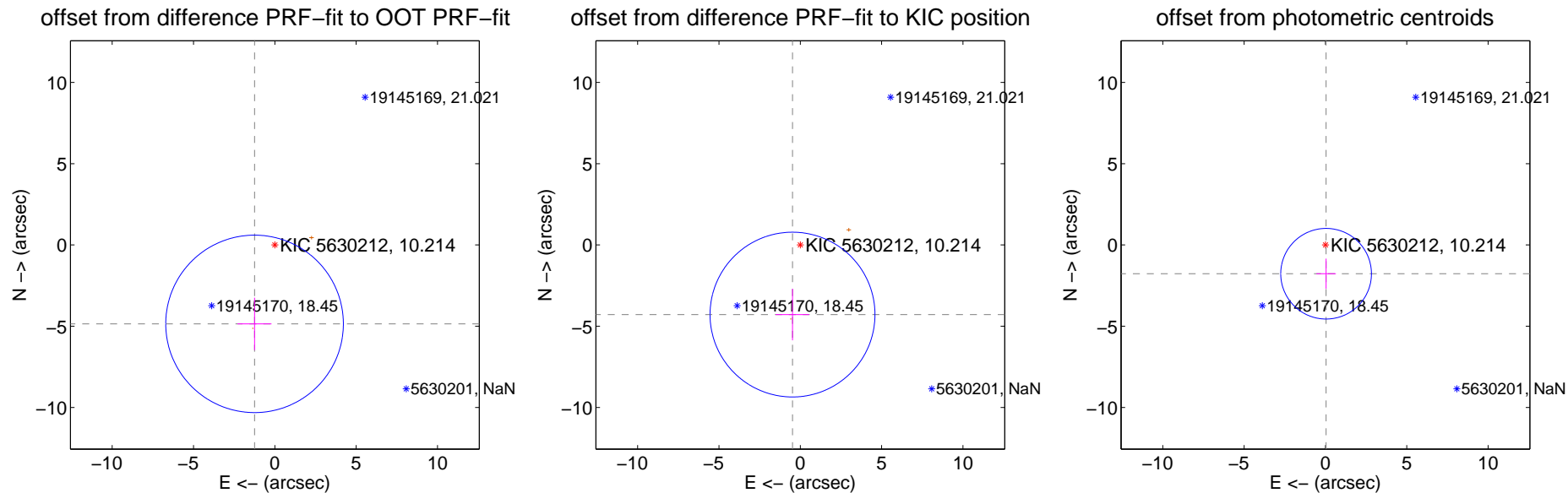
## DV Centroid Data

Supplemental centroid analysis for 005630212-05. **Kepler magnitude: 10.21.** Transit SNR 4.82

**There are 0 quarters with good PRF difference image offsets**

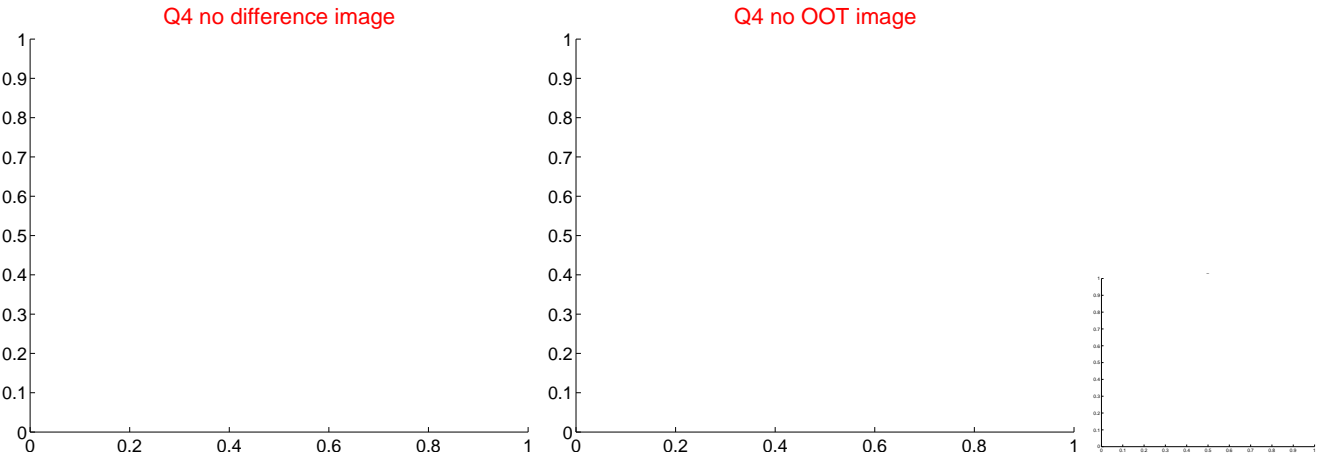
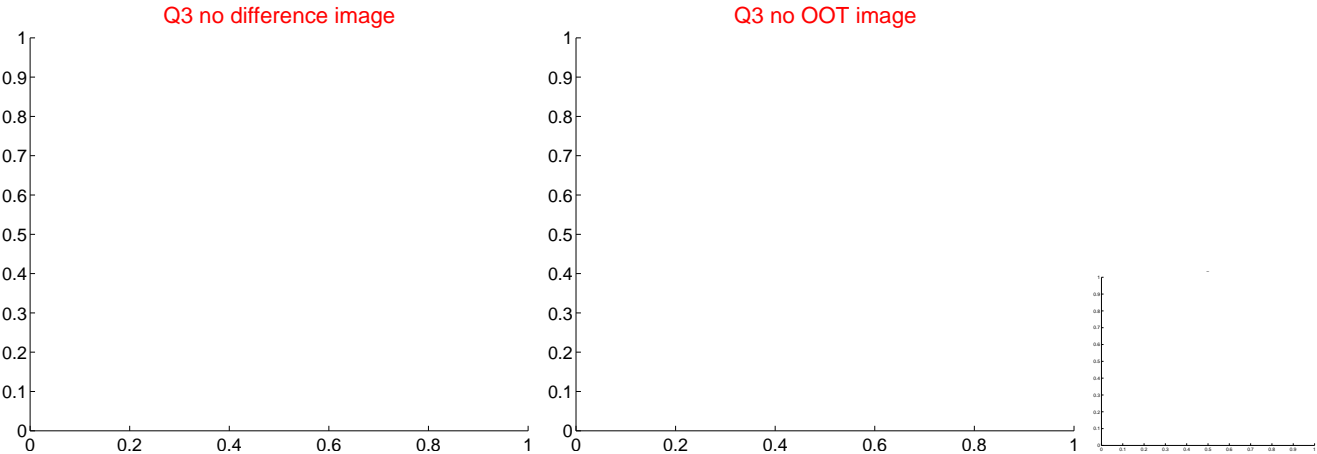
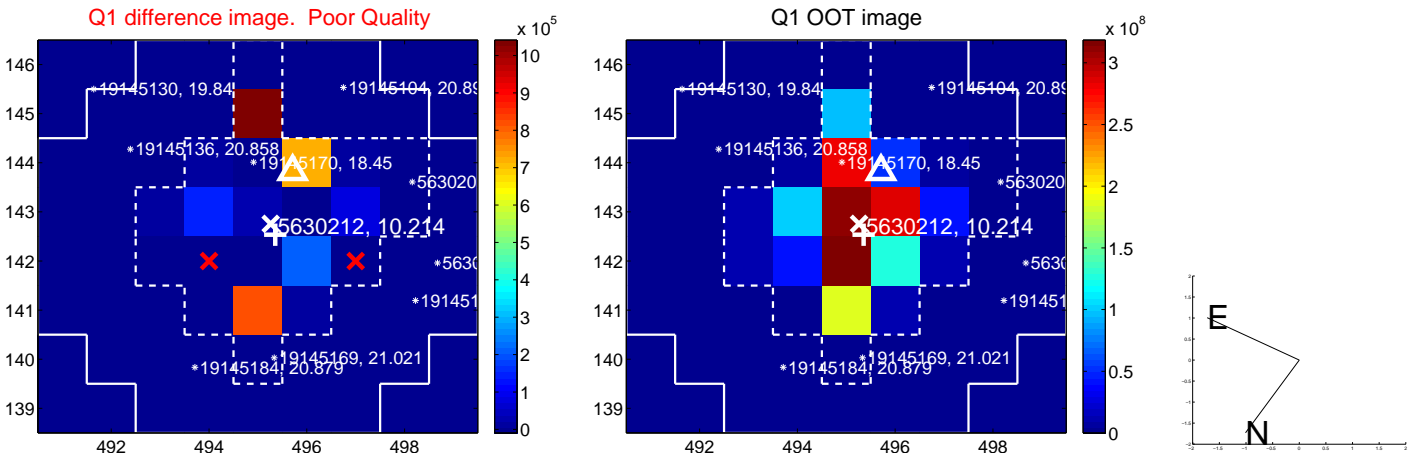
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.012 \pm 1.820$	2.75	$1.247 \pm 1.044$	$-4.855 \pm 1.611$
PRF-fit source offset from KIC position	$4.310 \pm 1.690$	2.55	$0.480 \pm 1.031$	$-4.283 \pm 1.585$
photometric centroid source offset	$1.77 \pm 0.93$	1.91	$-0.04 \pm 0.60$	$-1.77 \pm 0.93$



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.

Q9 no difference image



Q9 no OOT image



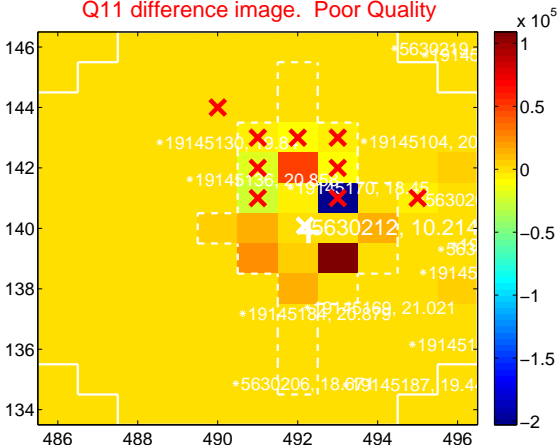
Q10 no difference image



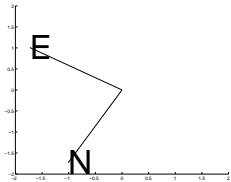
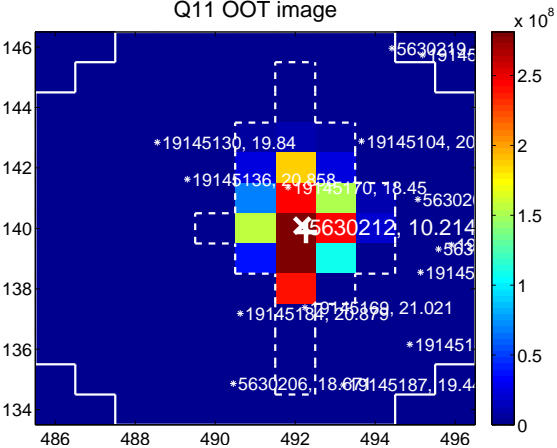
Q10 no OOT image



Q11 difference image. Poor Quality



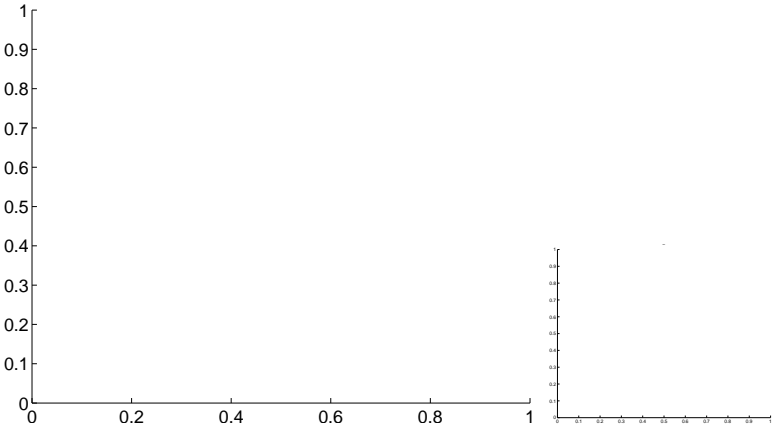
Q11 OOT image



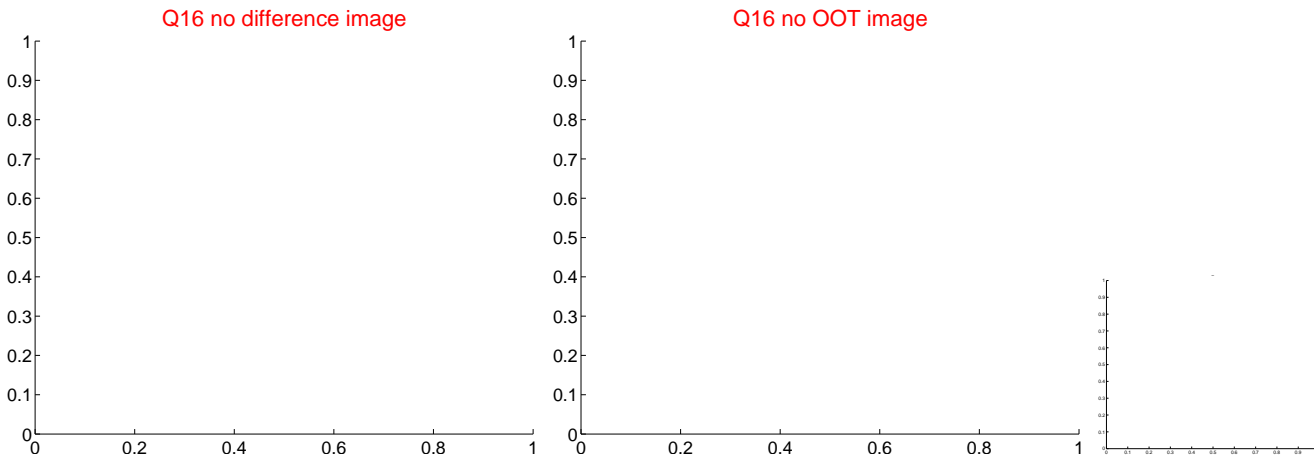
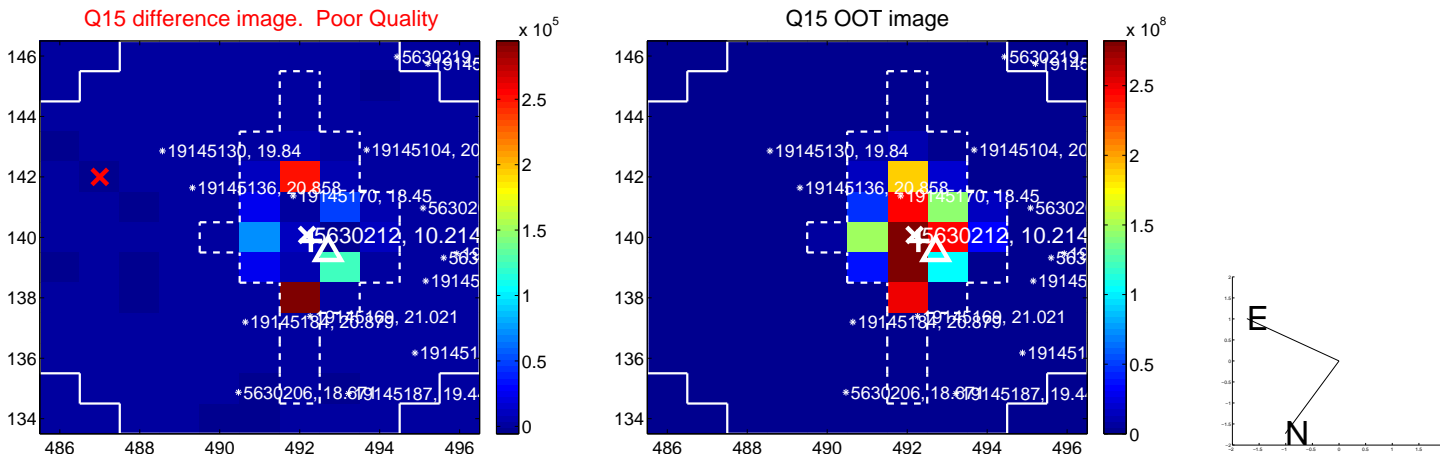
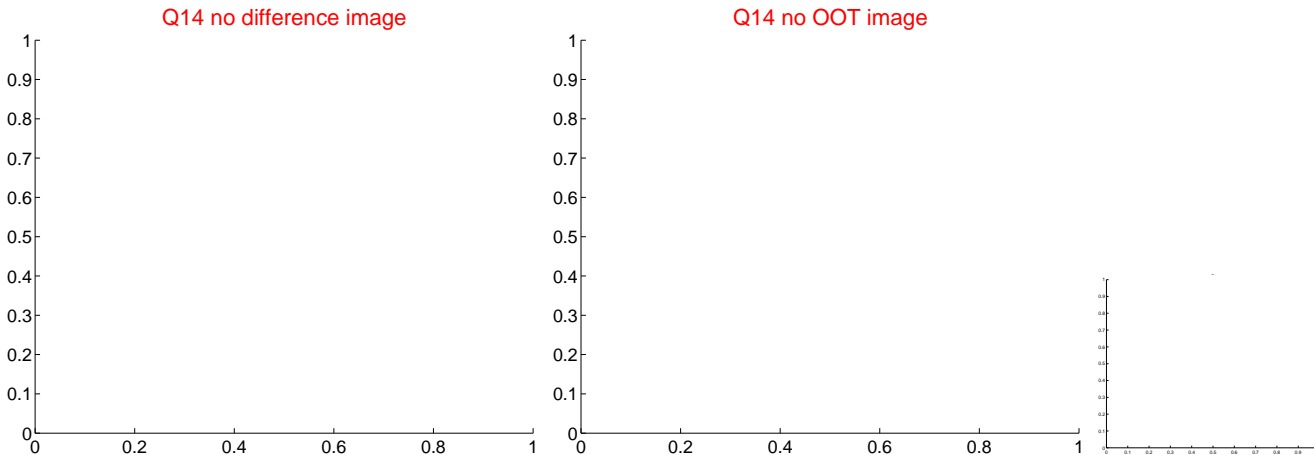
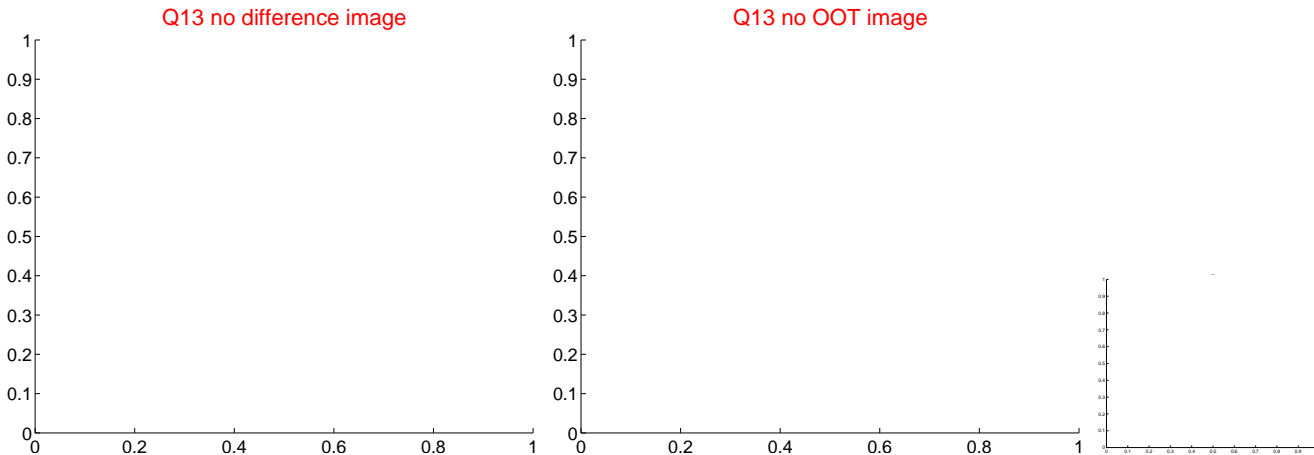
Q12 no difference image



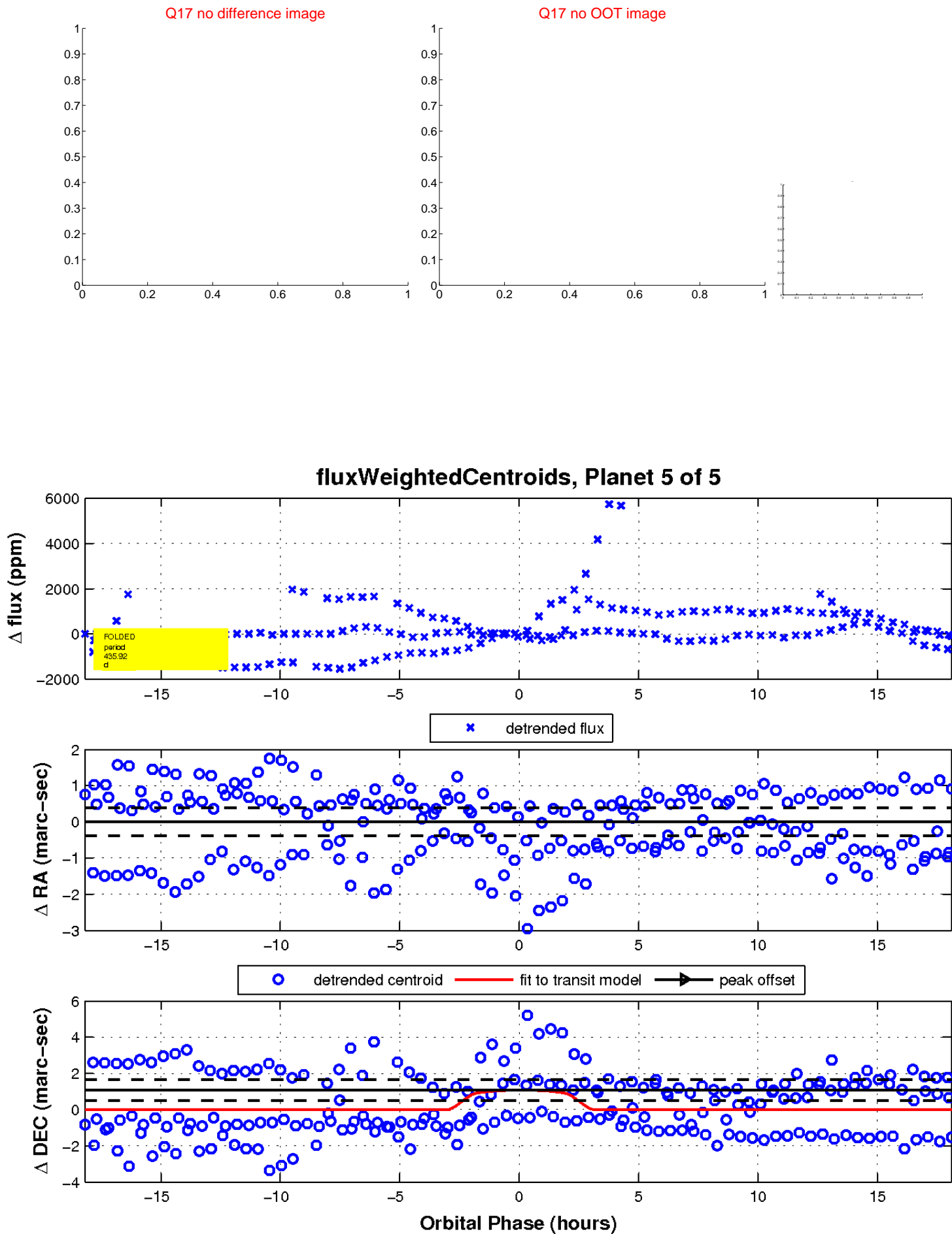
Q12 no OOT image



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

