

# KIC 006425928

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006425928-01	OBS	No	388.897100	286.200000	1296.3	2.469	14.2	4.6	0.55	3862	2.02	0.08
006425928-03	OBS	No	0.591473	132.101126	130.8	3.672	11.8	10.2	0.55	3862	0.67	471.70
006425928-04	OBS	No	98.272540	141.043509	2570.5	2.354	10.0	7.7	0.55	3862	2.75	0.52
006425928-05	OBS	No	64.649405	176.749087	1531.7	2.663	9.6	5.1	0.55	3862	2.23	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006425928-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
006425928-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006425928-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006425928-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST

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

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

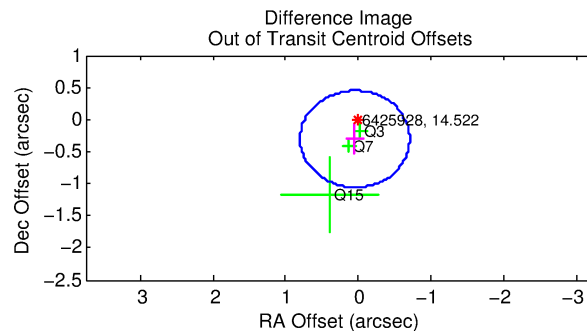
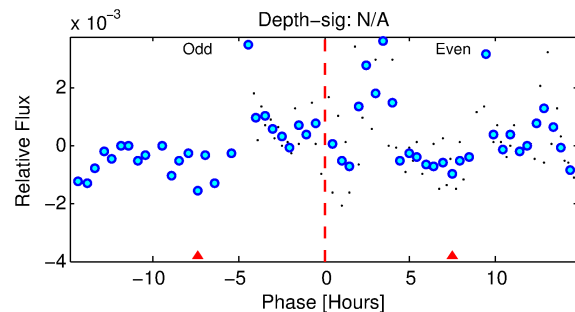
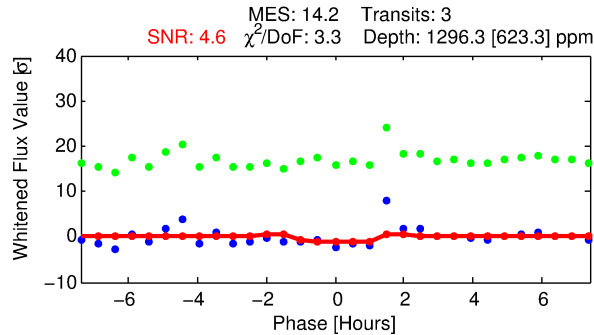
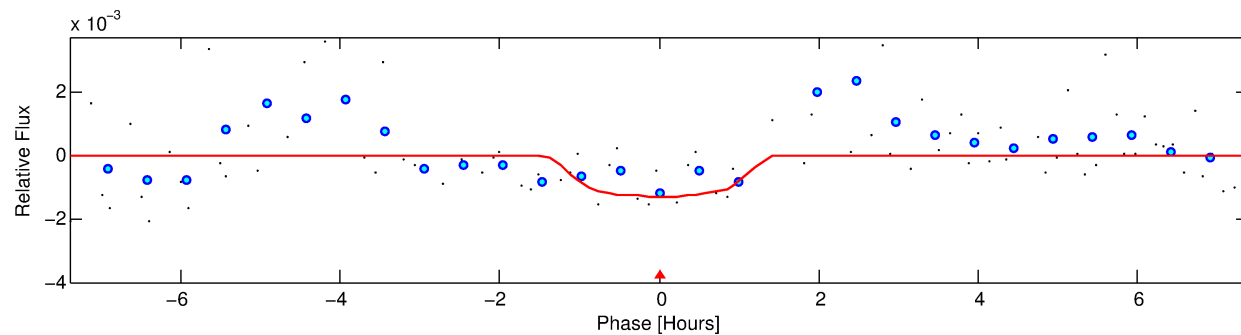
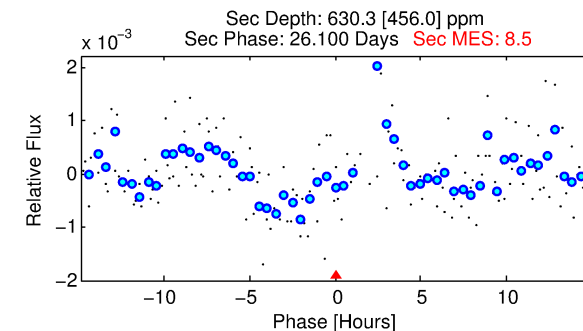
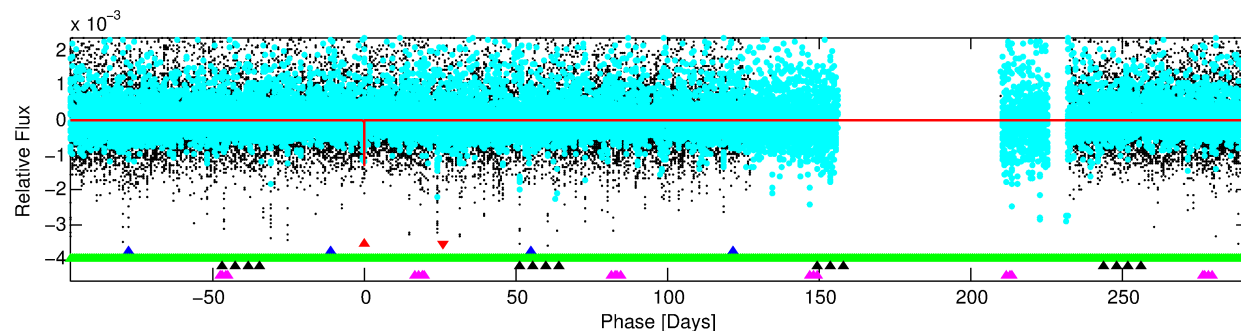
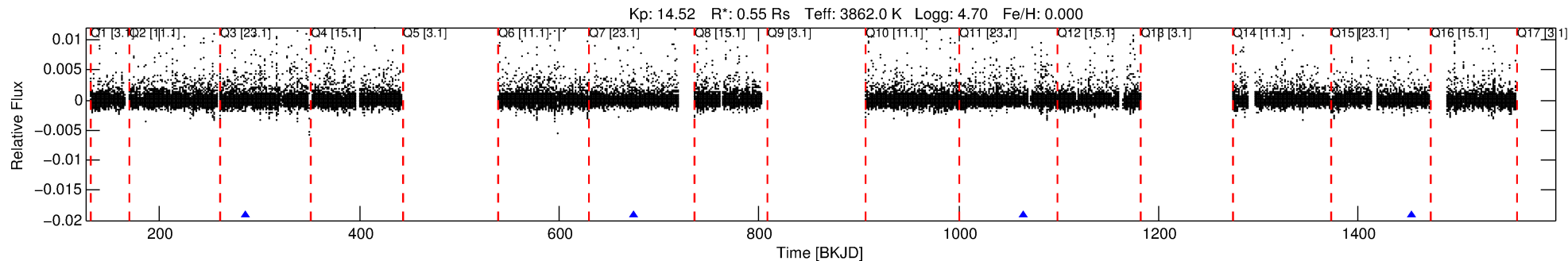
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006425928-01

No Significant Match Found

# DV One-Page Summary

KIC: 6425928 Candidate: 1 of 5 Period: 388.897 d



## DV Fit Results:

Period = 388.89710 [0.00815] d  
Epoch = 286.2000 [0.0191] BKJD  
Rp/R\* = 0.0336 [0.2273]  
a/R\* = 1081.06 [28249.18]  
b = 0.51 [38.33]  
Seff = 0.08 [0.01]  
Teq = 137 [3] K  
Rp = 2.02 [13.66] Re  
a = 0.8564 [0.0326] AU  
Ag = 62215.20 [842083.70] [0.07σ]  
Teff = 3337 [11292] K [0.28σ]

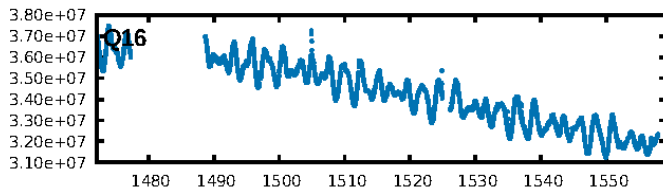
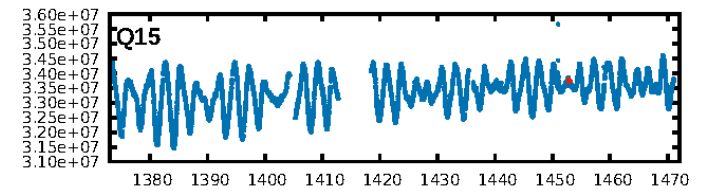
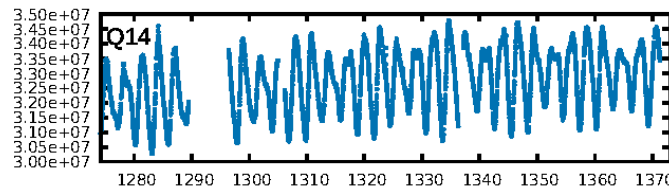
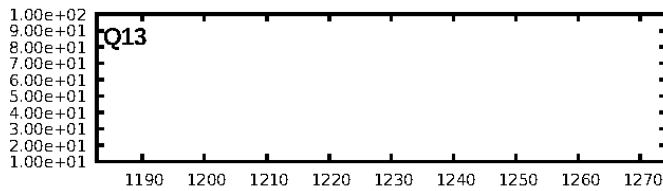
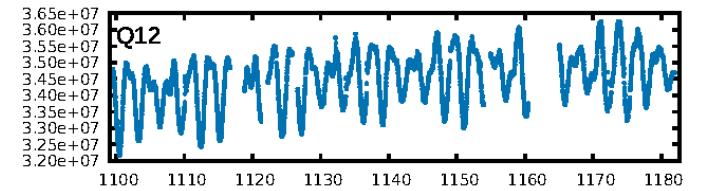
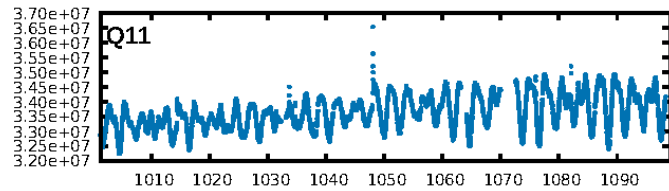
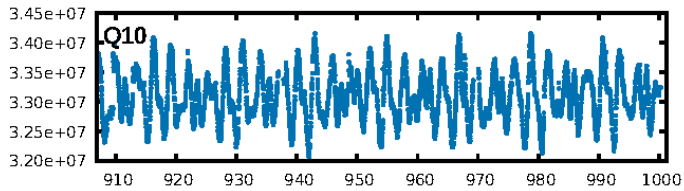
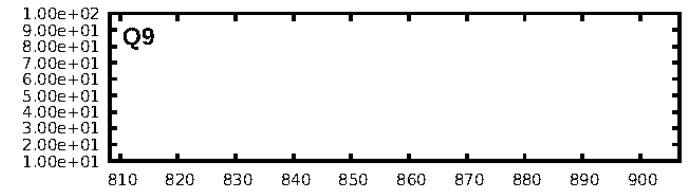
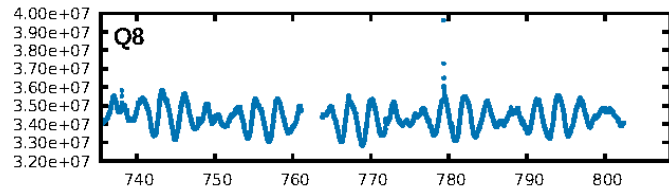
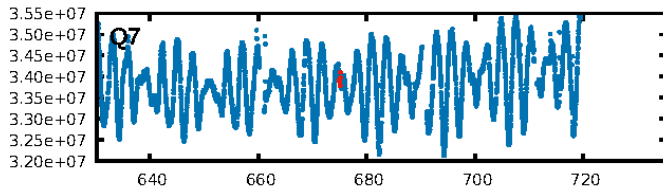
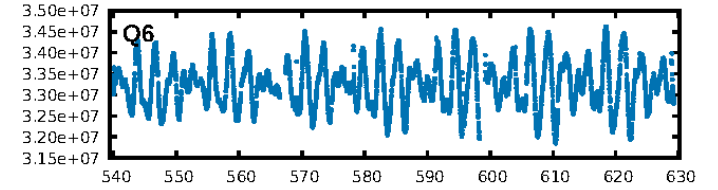
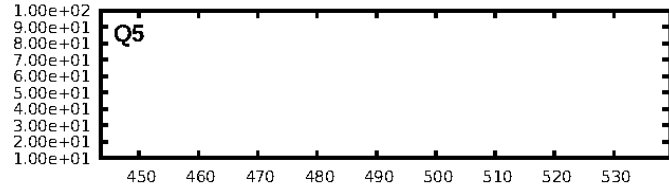
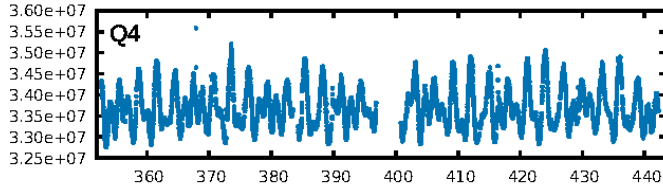
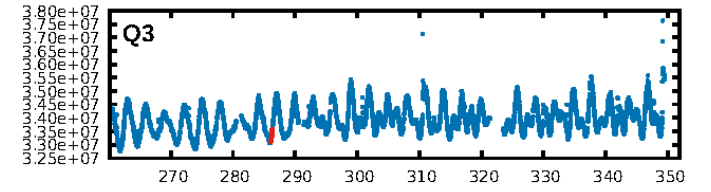
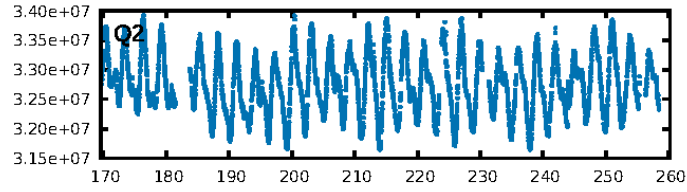
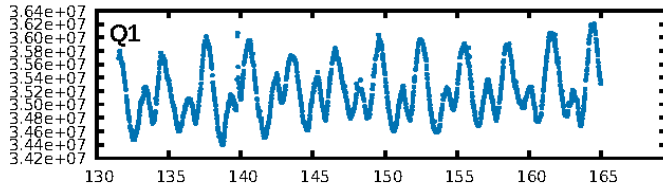
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [398.23σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.5%  
ModelChiSquareGof-sig: 23.7%  
Bootstrap-pfa: 3.22e-19  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.4143  
Centroid-sig: 1.1%  
Centroid-so: 1.503 arcsec [1.64σ]  
OotOffset-rm: 0.308 arcsec [1.22σ]  
KicOffset-rm: 0.371 arcsec [1.74σ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

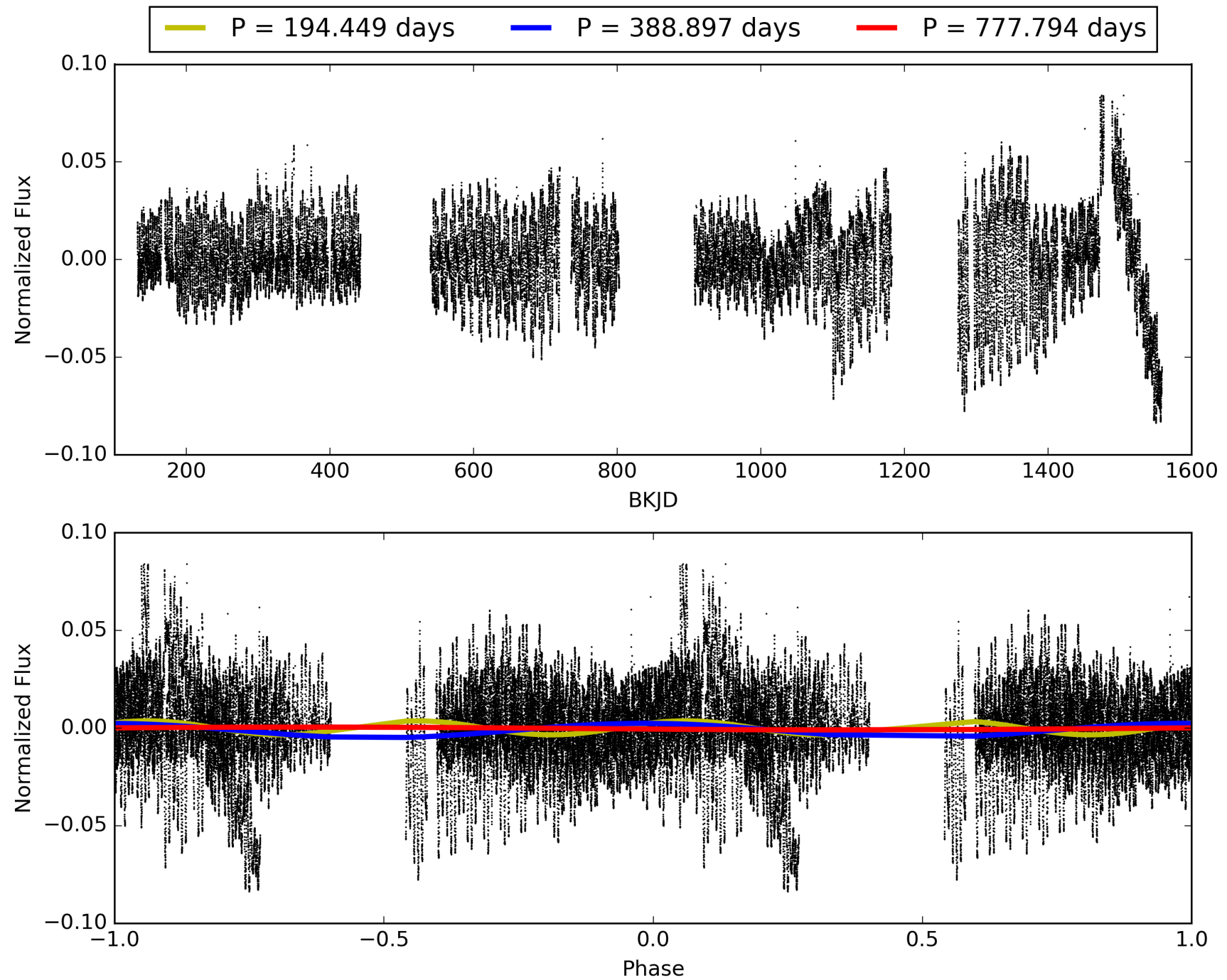
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:43:52 Z

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

# TCE 006425928-01, PDC Light Curves



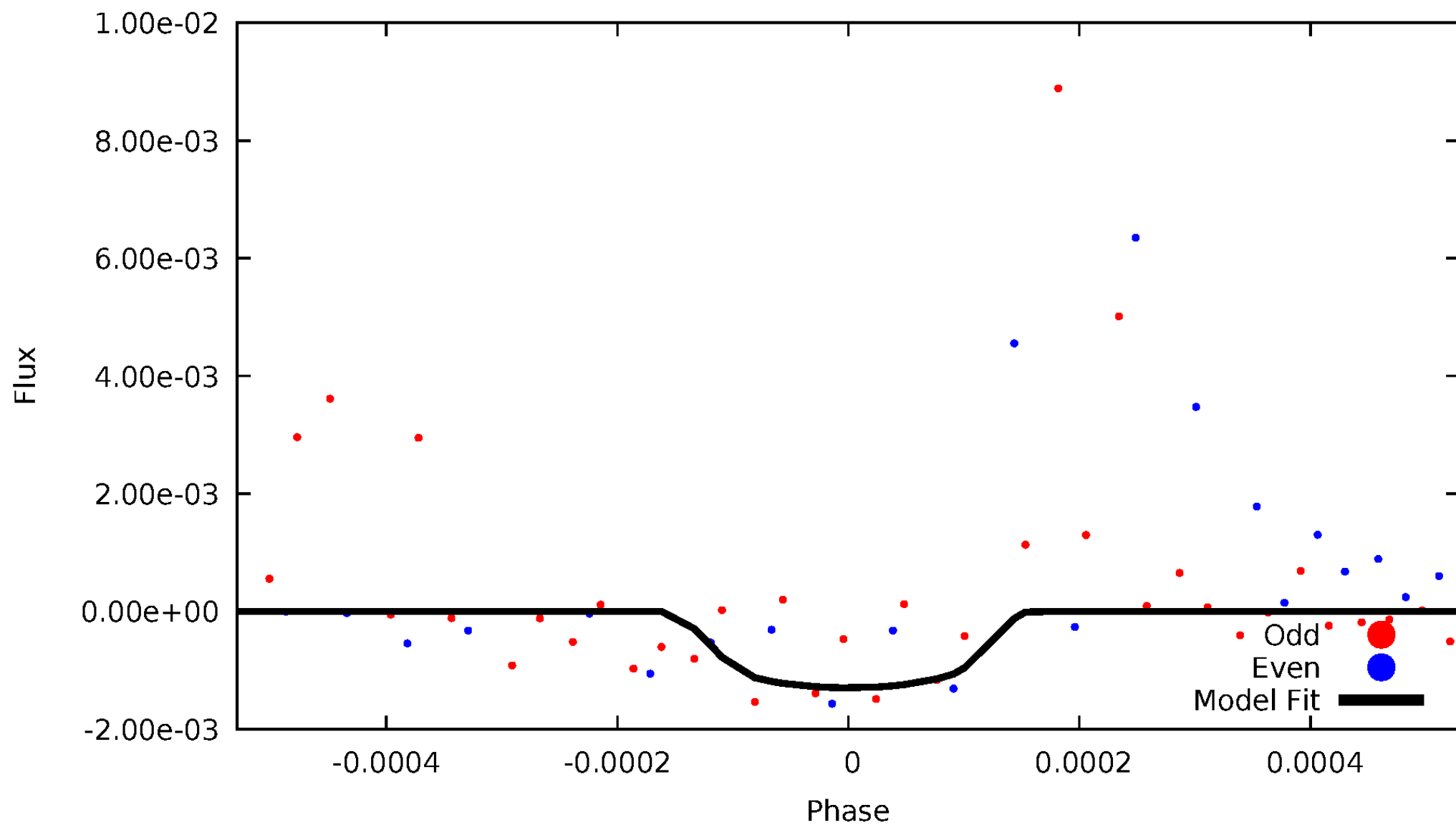
TCE 006425928-01





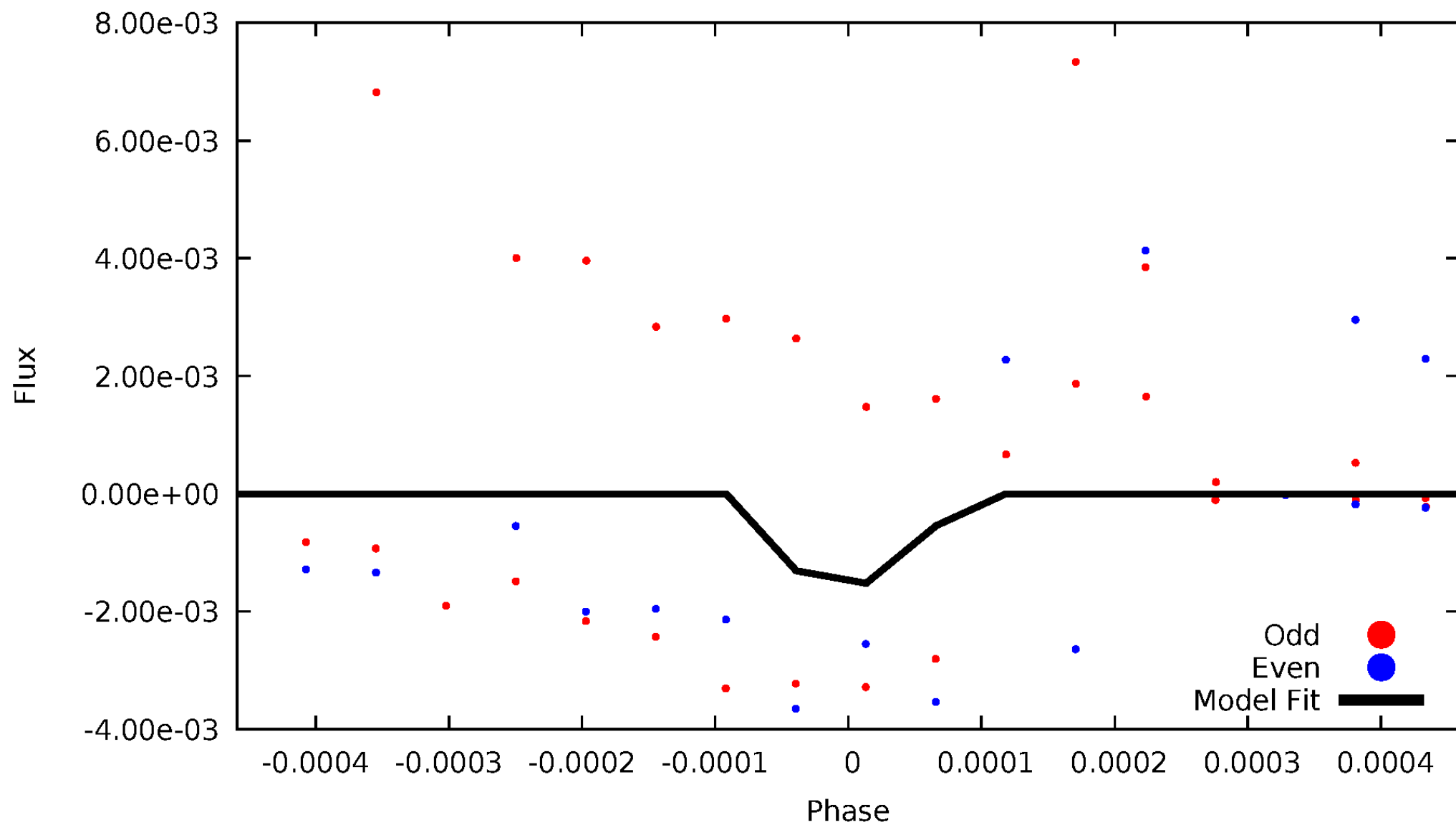
# DV Odd/Even

TCE 006425928-01

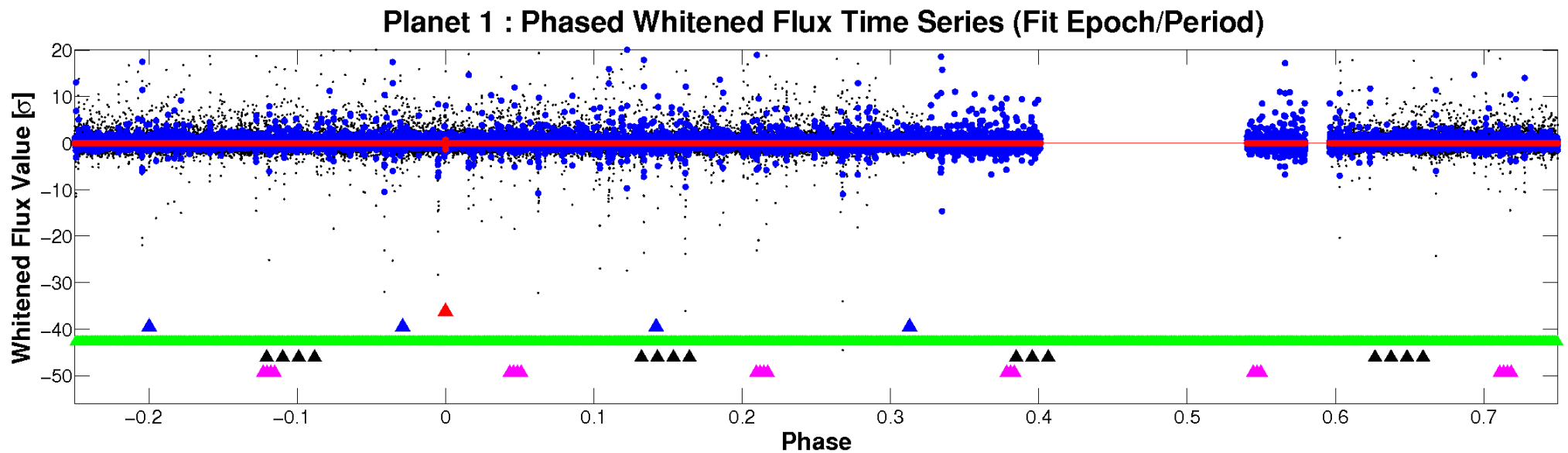
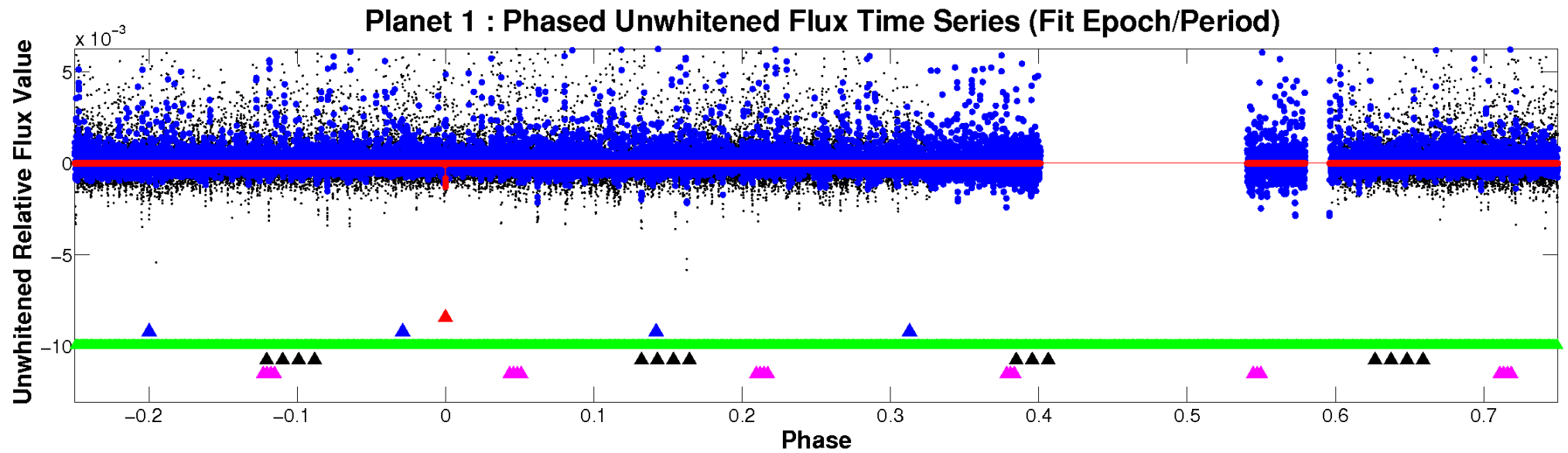


# ALT Odd/Even

TCE 006425928-01

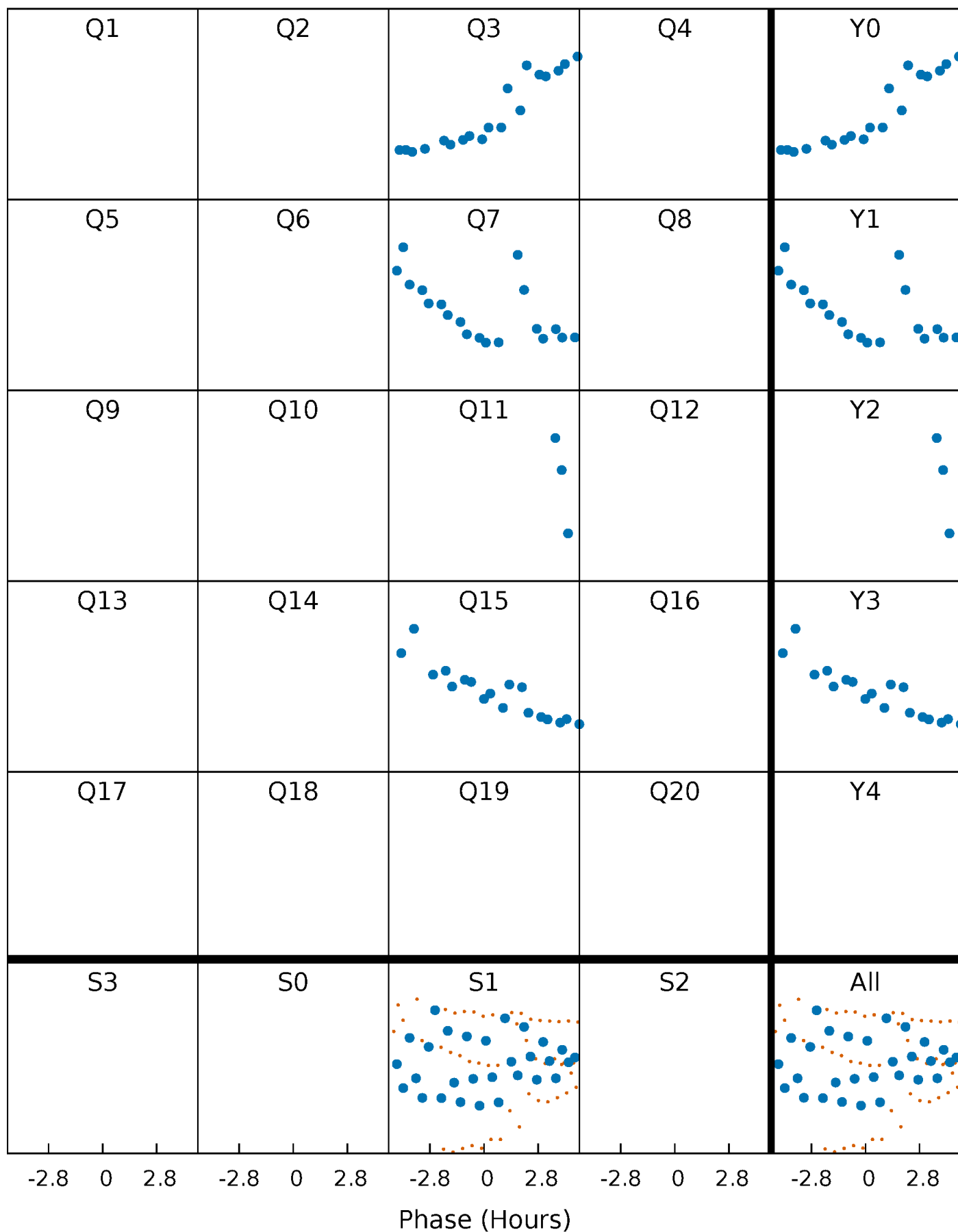


# Non-Whitened Vs. Whitened Light Curve



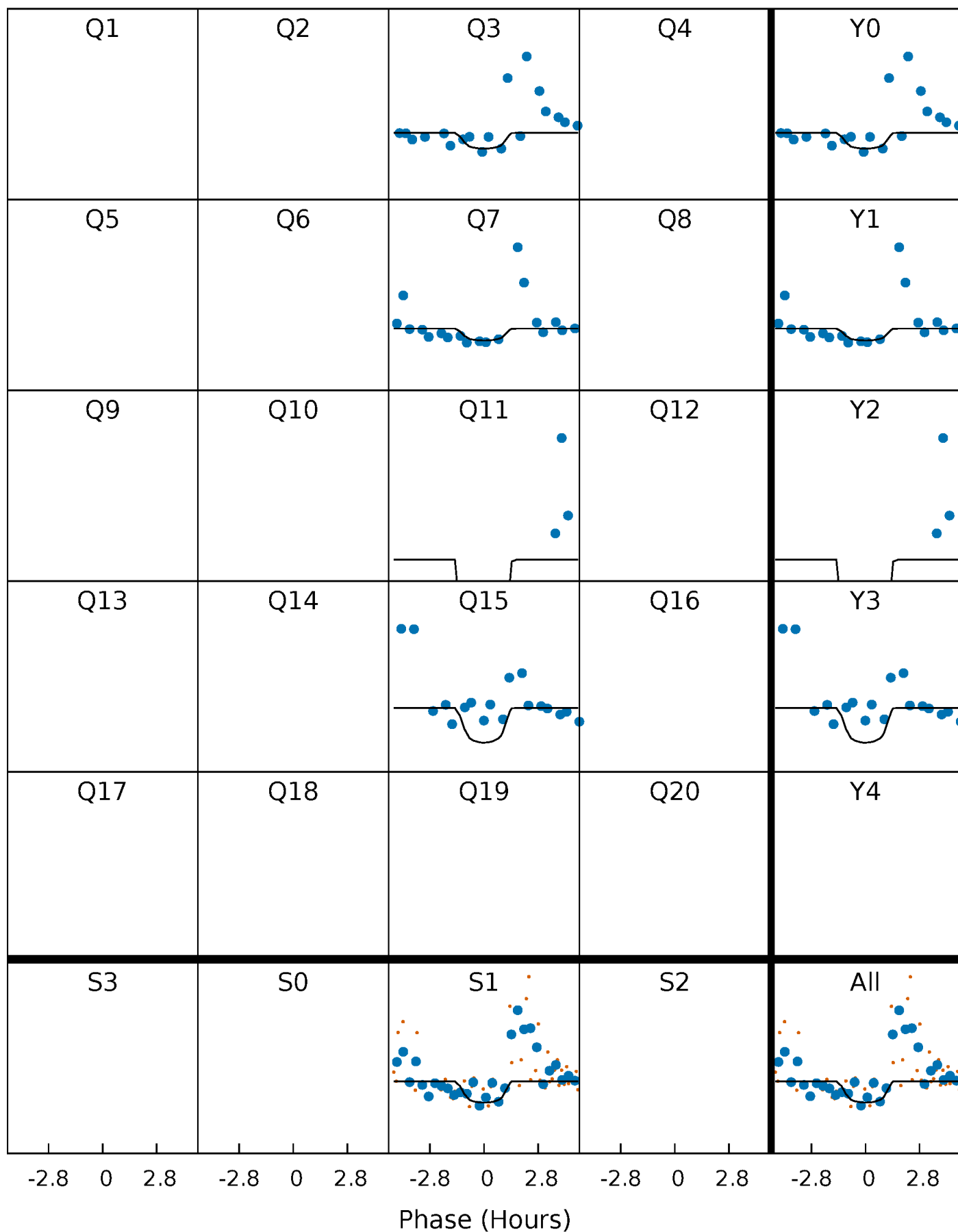
# PDC Quarter-Phased Transit Curves

TCE 006425928-01 P=388.897100 Days  $T_0=286.200000$  (BKJD)



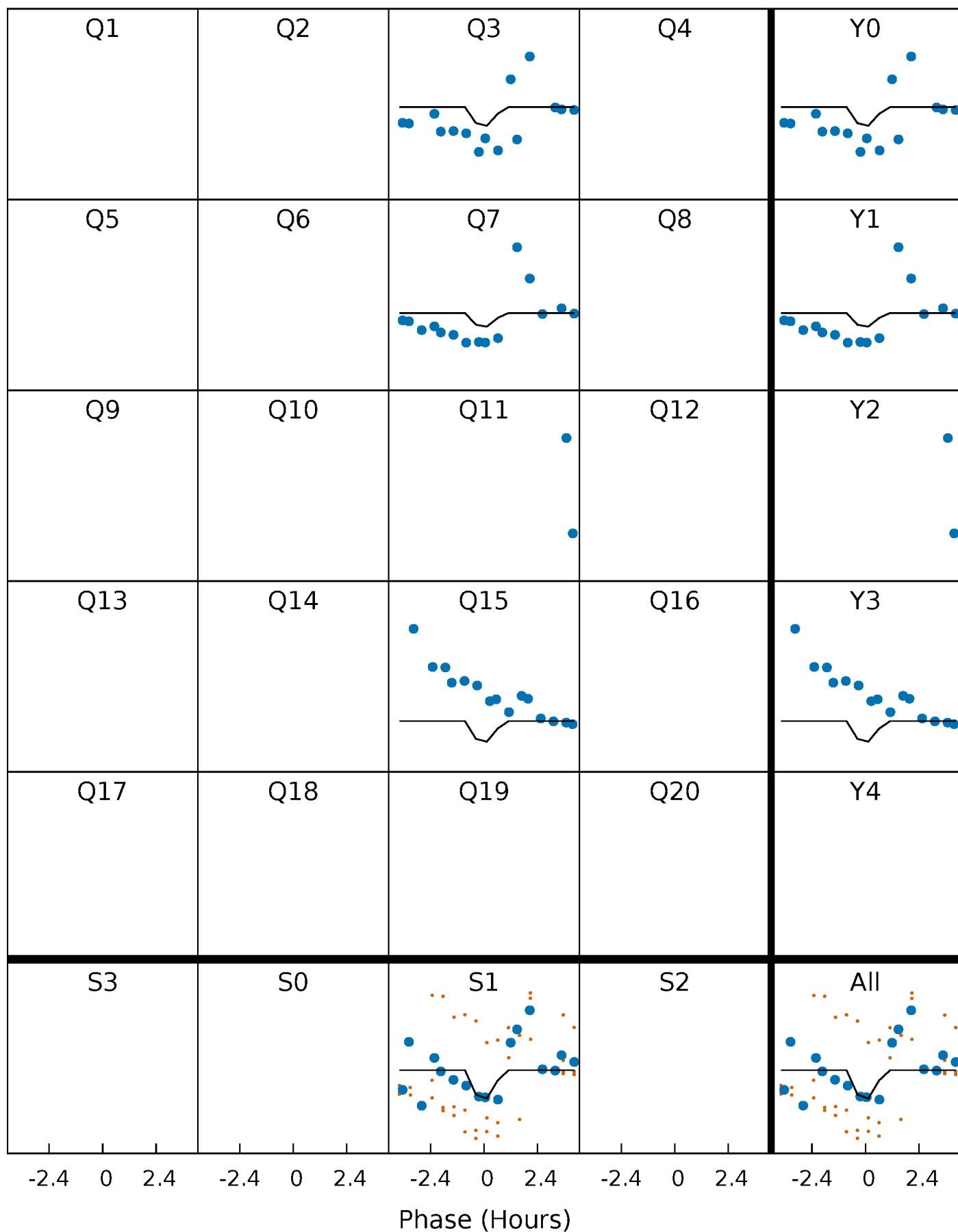
# DV Quarter-Phased Transit Curves

TCE 006425928-01 P=388.897100 Days  $T_0=286.200000$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006425928-01 P=388.891514 Days  $T_0=286.209883$  (BKJD)

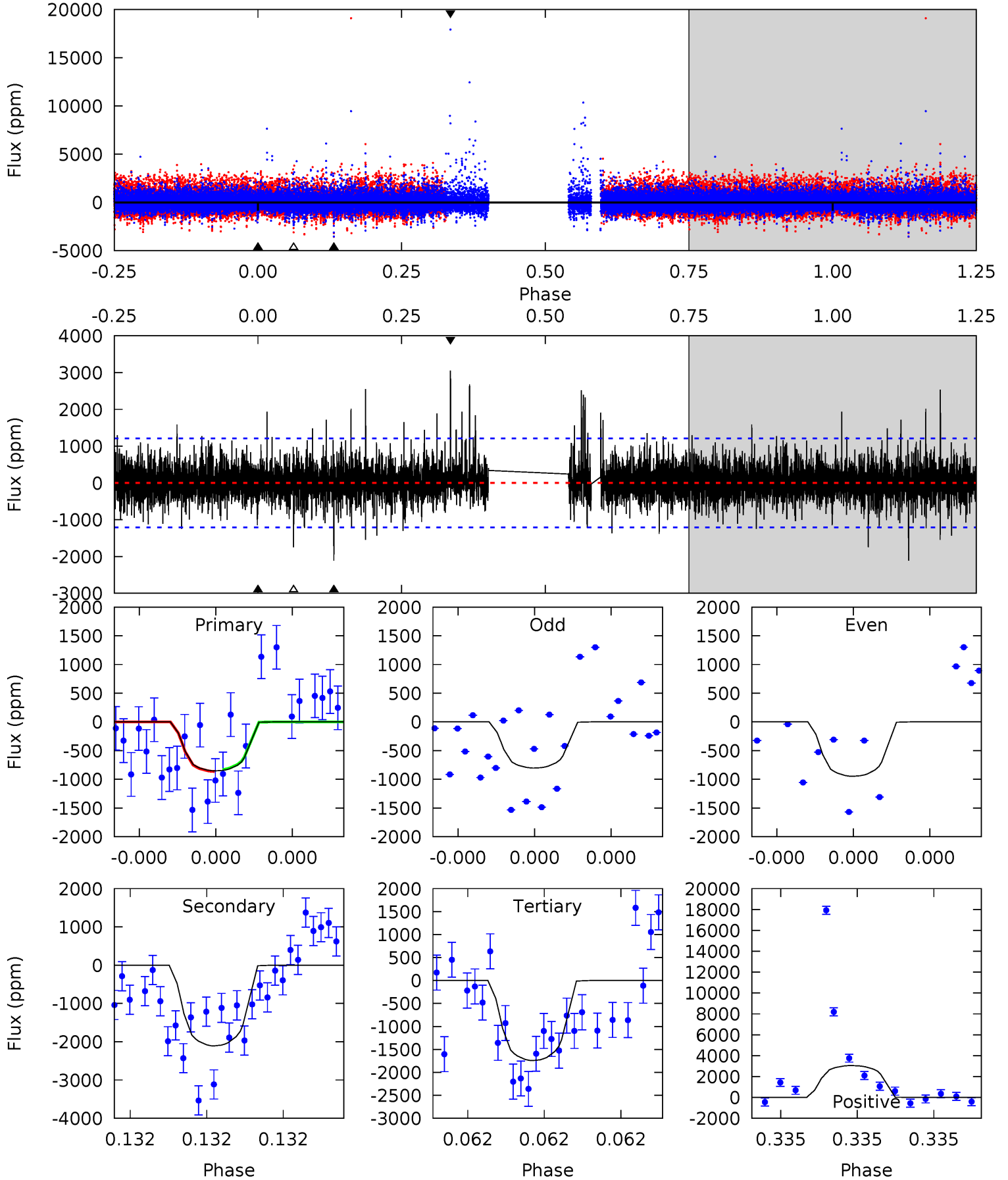




# DV Model-Shift Uniqueness Test

006425928-01, P = 388.897100 Days, E = 286.200000 Days

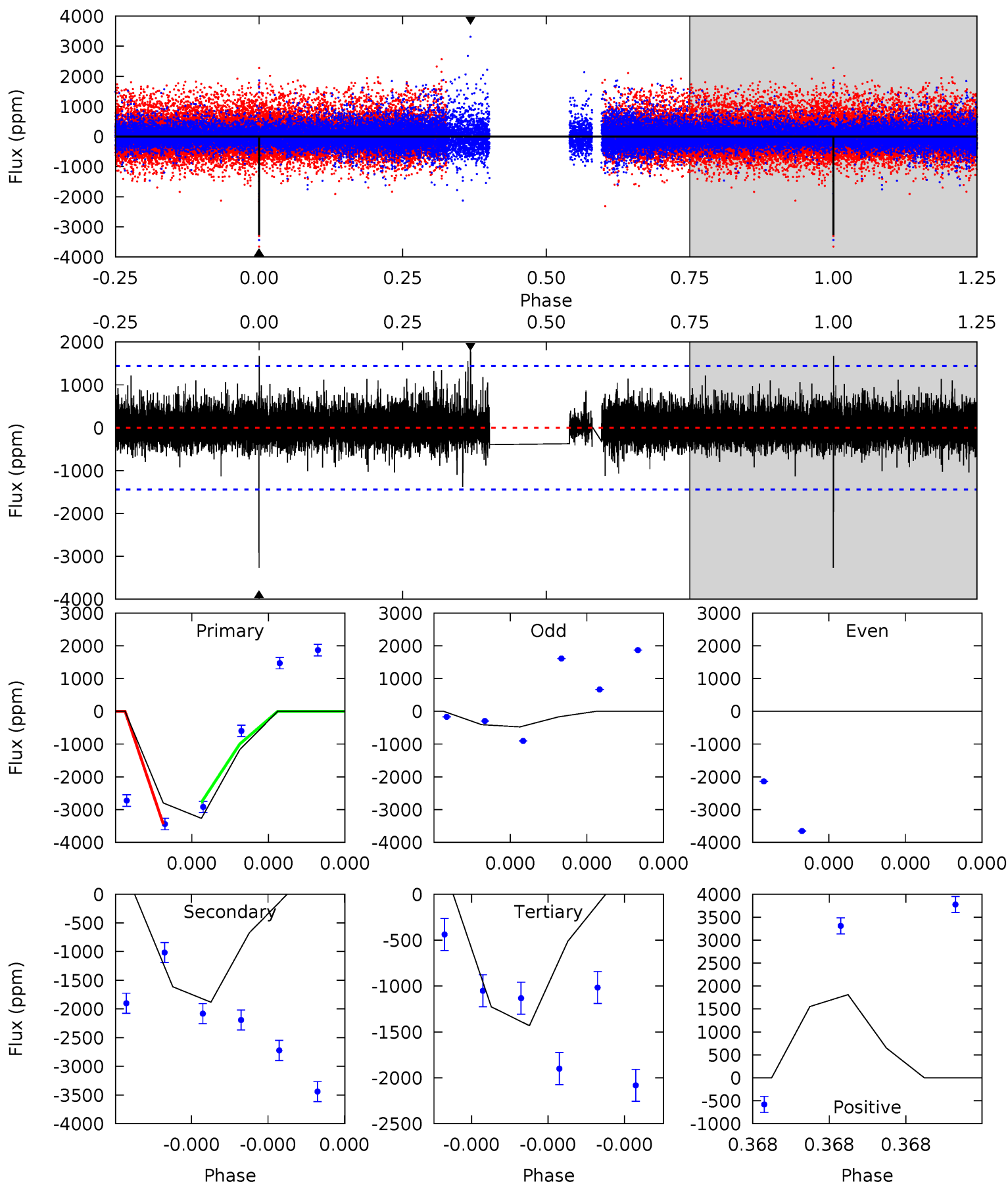
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.01	9.90	8.19	14.3	5.68	3.64	1.72	-4.18	-10.3	1.72	-4.42	0.24	0.99	0.59	0.08



# Alt Model-Shift Uniqueness Test

006425928-01, P = 388.891514 Days, E = 286.209883 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
13.2	7.61	5.79	7.33	5.84	3.88	0.96	7.42	5.88	1.82	0.28	0	0.47	0.36	0



### Stellar Parameters For KIC 006425928

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3862^{+50}_{-50}$	$4.699^{+0.030}_{-0.012}$	$0.000^{+0.100}_{-0.100}$	$0.551^{+0.019}_{-0.025}$	$0.553^{+0.025}_{-0.021}$	$4.663^{+0.558}_{-0.256}$
	+1%/-1%	+1%/-0%	+inf%/-inf%	+3%/-5%	+5%/-4%	+12%/-5%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006425928-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2109 \pm 213$	$10.51^{+10.15}_{-7.38}$	$190^{+3}_{-3}$	$2618^{+1061}_{-400}$	$7875^{+73656}_{-5899}$
Alt.	$-1882 \pm 247$	$9.88^{+10.77}_{-6.86}$	$190^{+3}_{-3}$	$2616^{+1009}_{-432}$	$7973^{+75559}_{-6245}$

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

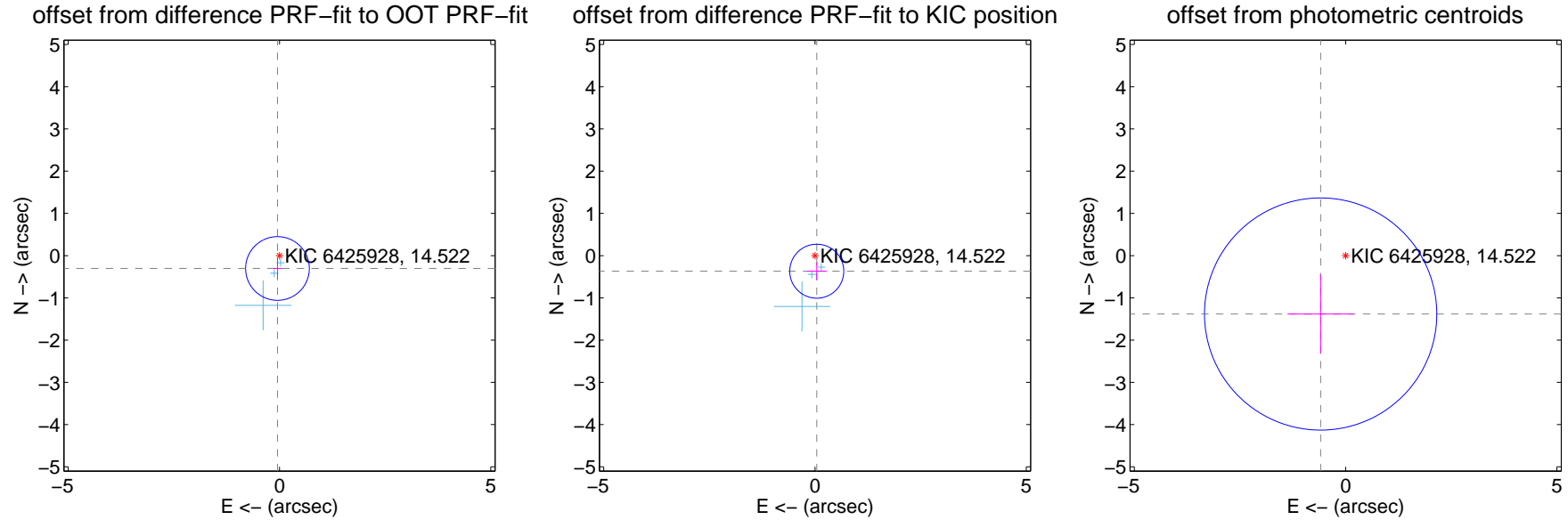
## DV Centroid Data

Supplemental centroid analysis for 006425928-01. Kepler magnitude: 14.52. Transit SNR 4.62

There are 3 quarters with good PRF difference image offsets

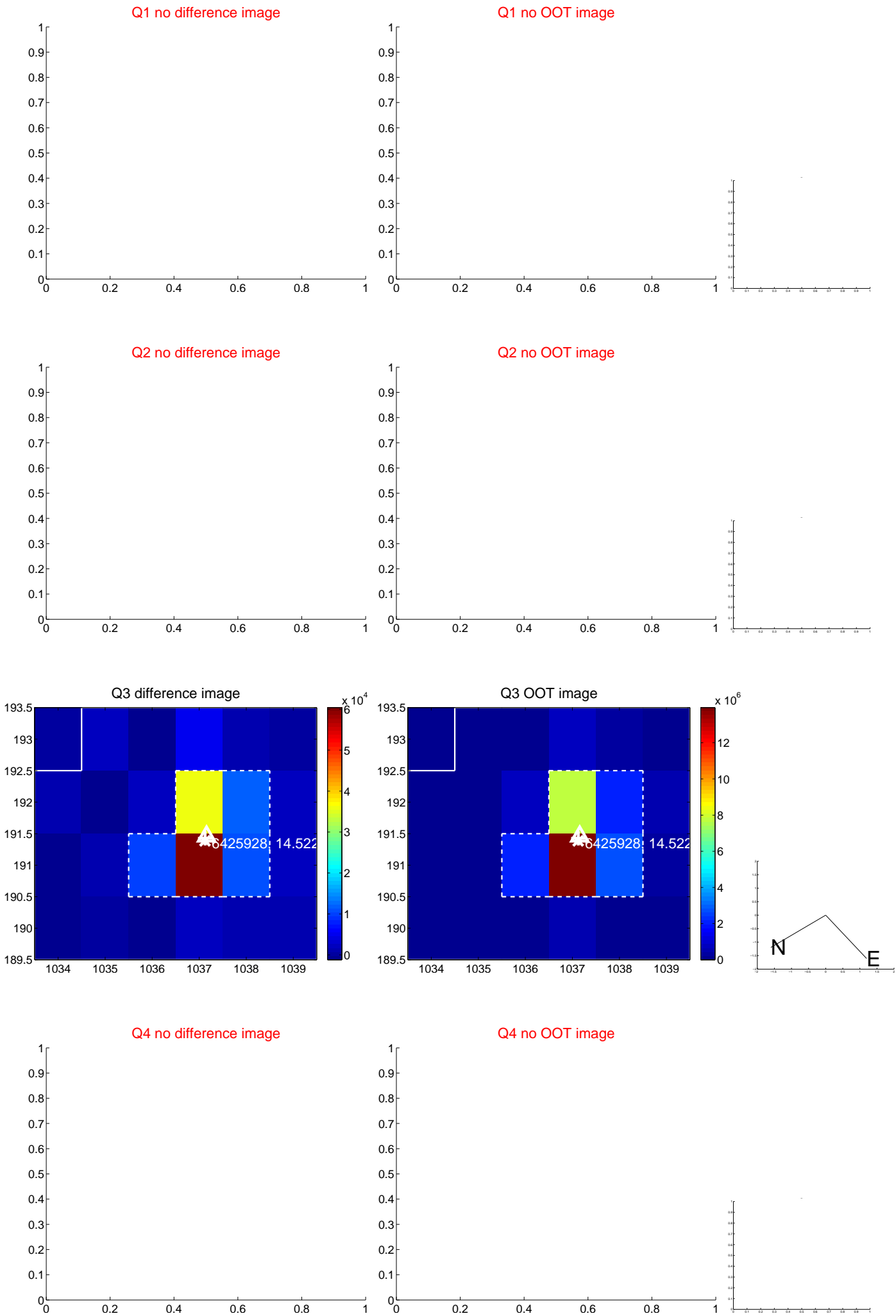
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.308 \pm 0.251$	1.22	$0.048 \pm 0.113$	$-0.304 \pm 0.241$
PRF-fit source offset from KIC position	$0.371 \pm 0.213$	1.74	$-0.042 \pm 0.236$	$-0.369 \pm 0.213$
photometric centroid source offset	$1.50 \pm 0.92$	1.64	$0.59 \pm 0.79$	$-1.38 \pm 0.94$



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.

Q5 no difference image



Q5 no OOT image



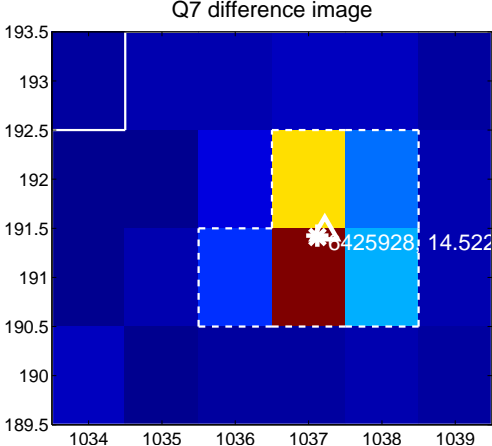
Q6 no difference image



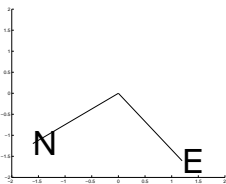
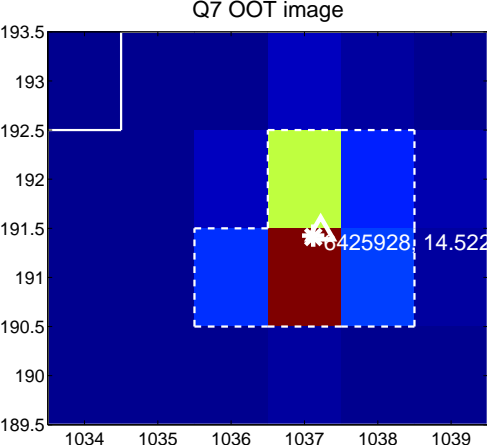
Q6 no OOT image



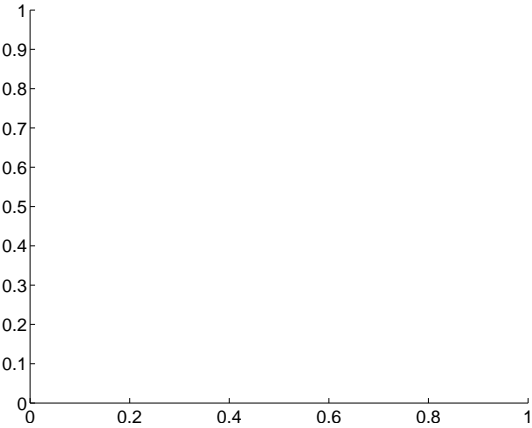
Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image

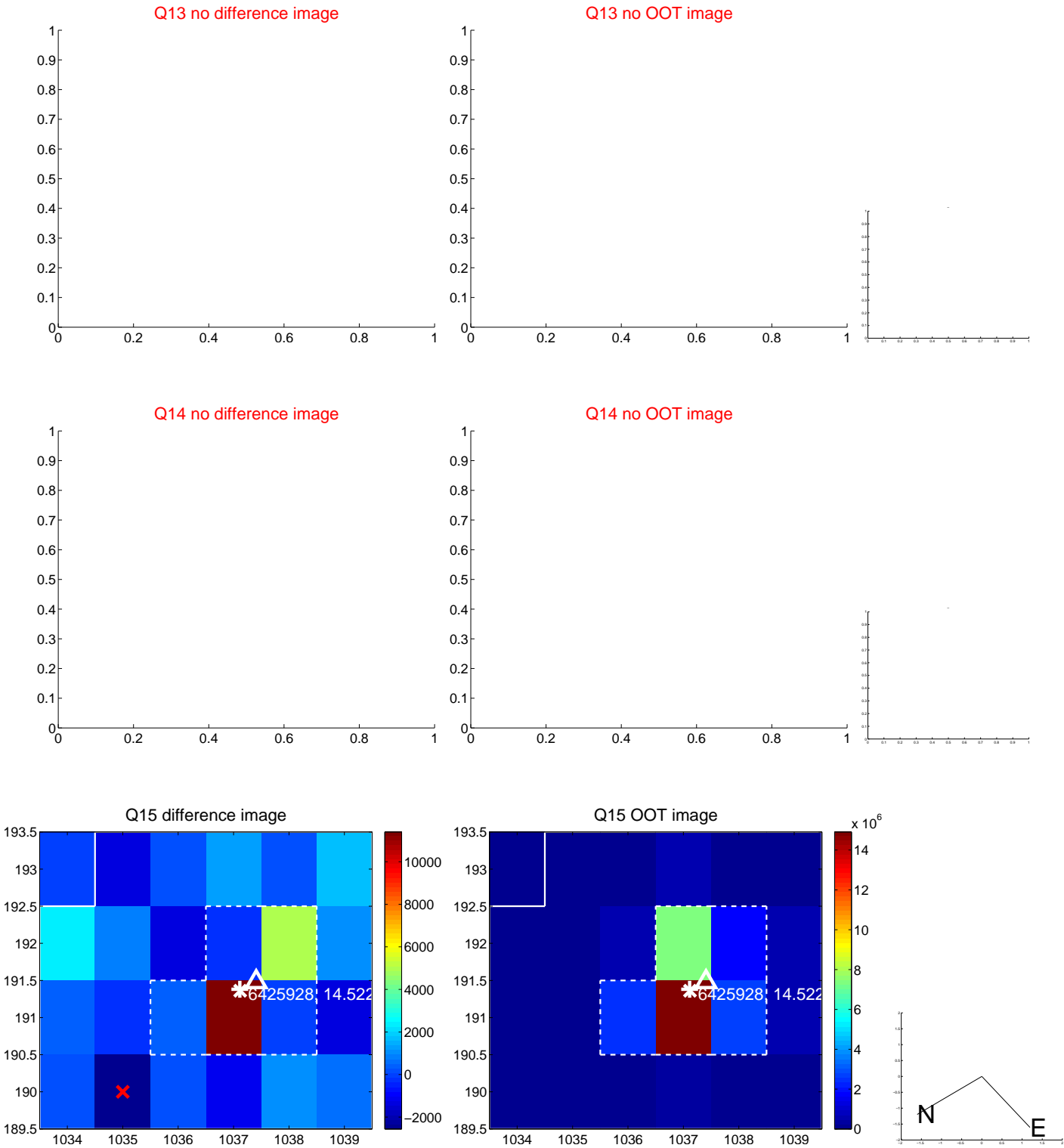




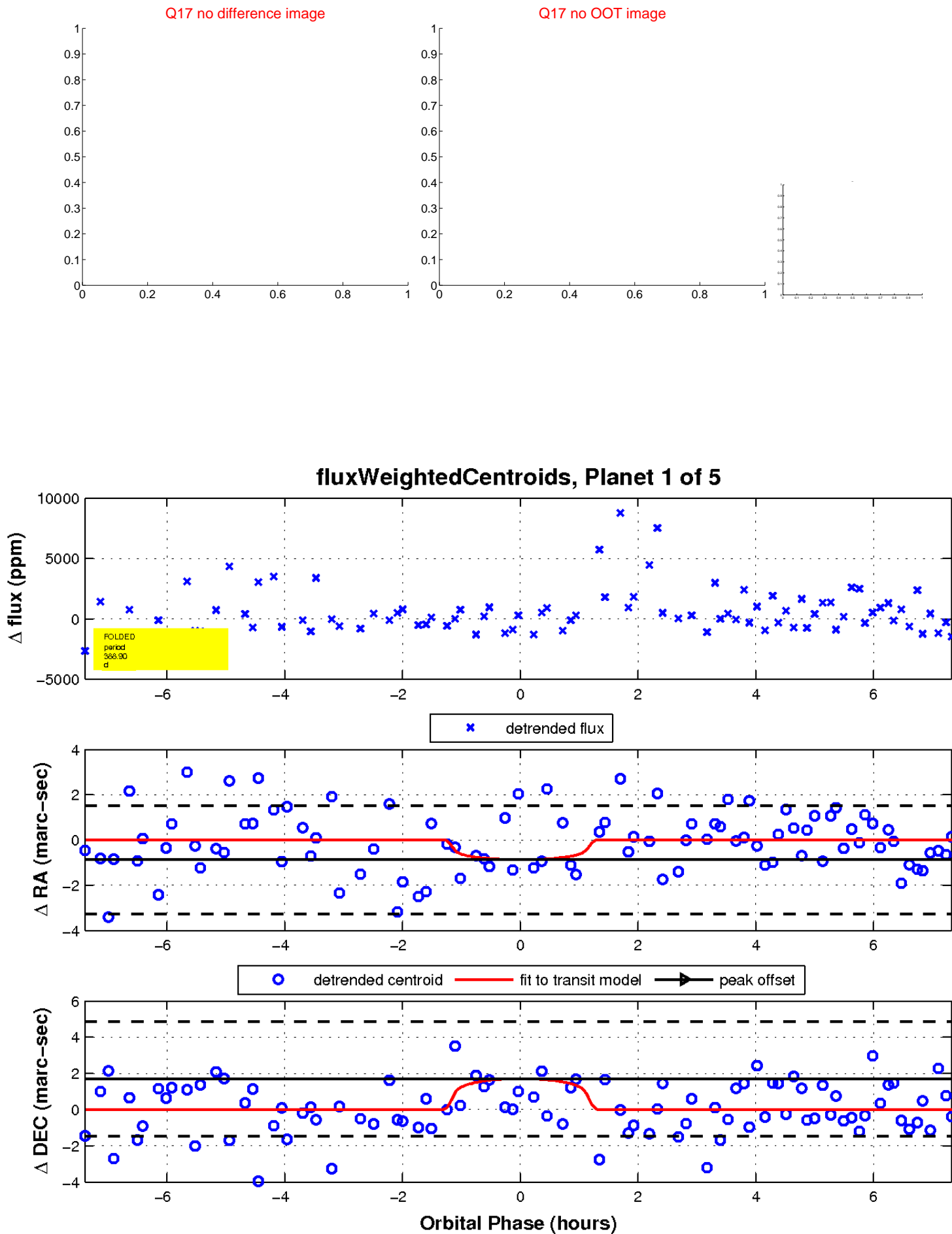
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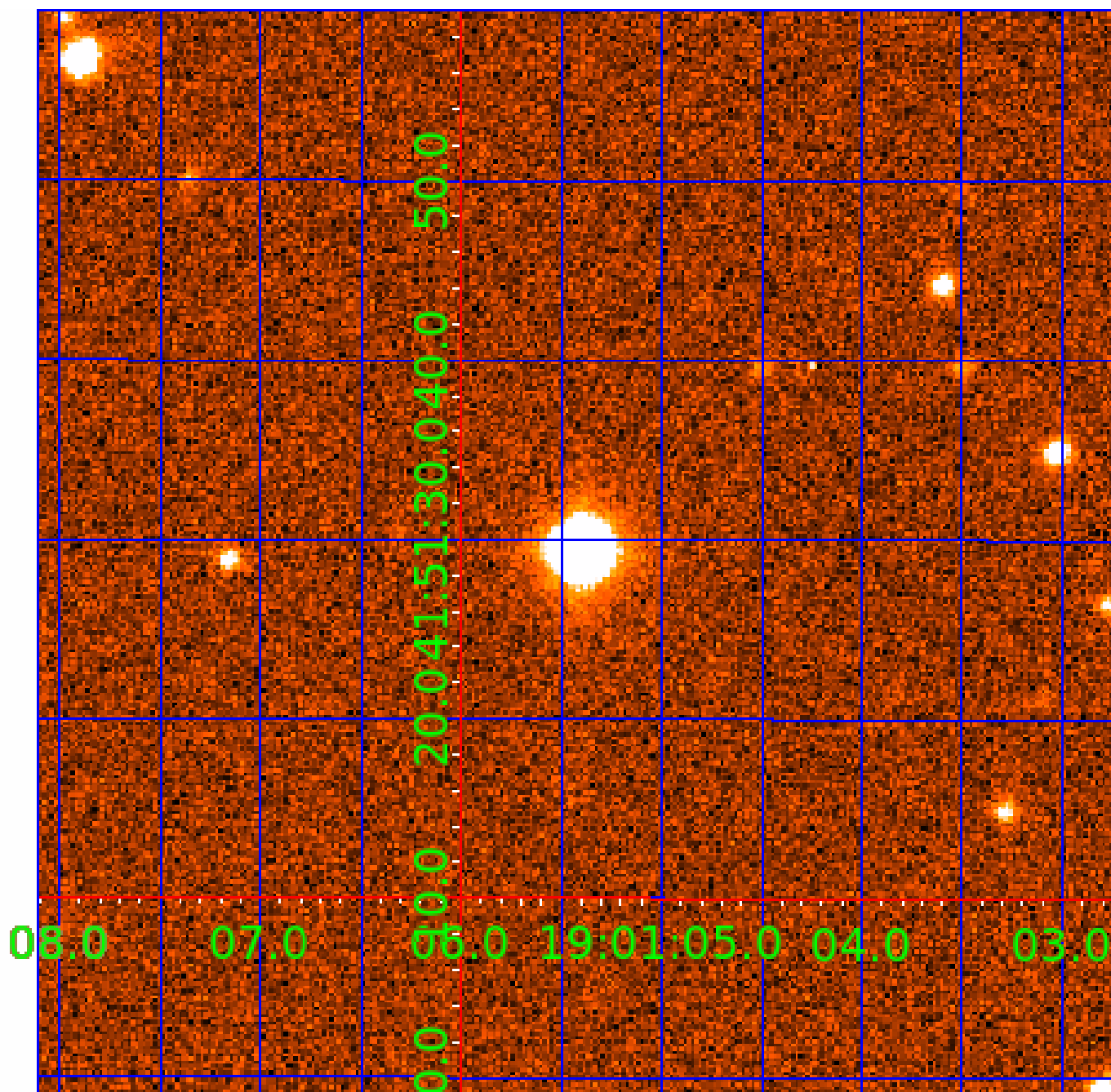


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UKIRT Image

Declination



# KIC 006425928

## Q1-17 DR25 TCE Parameters

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006425928-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006425928-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006425928-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST

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

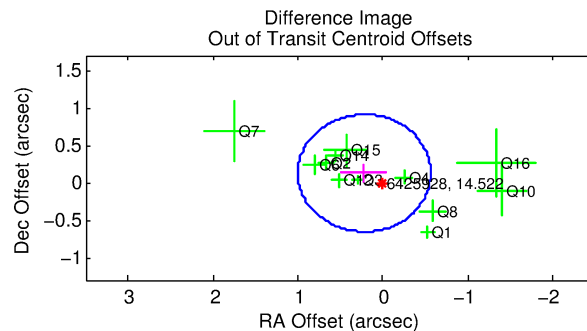
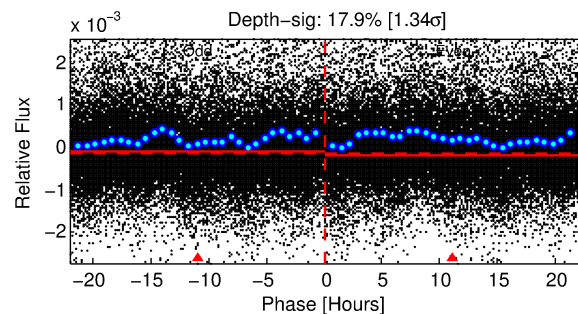
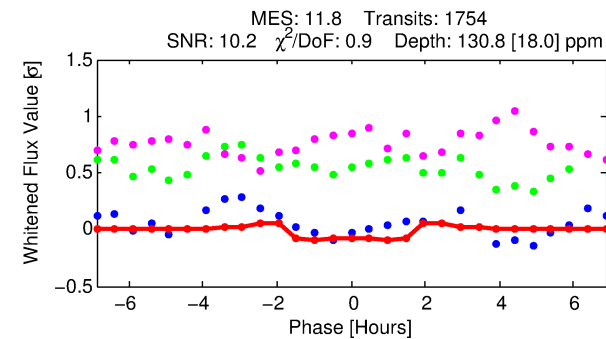
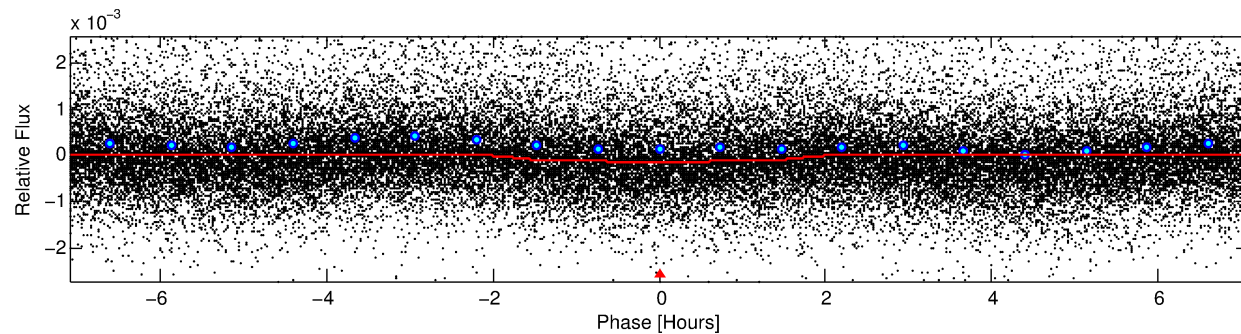
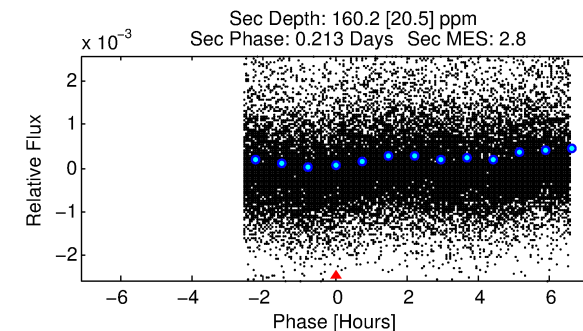
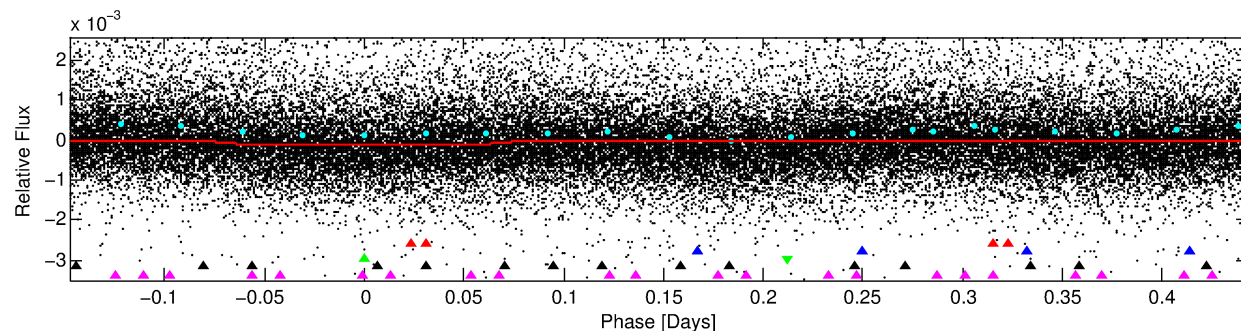
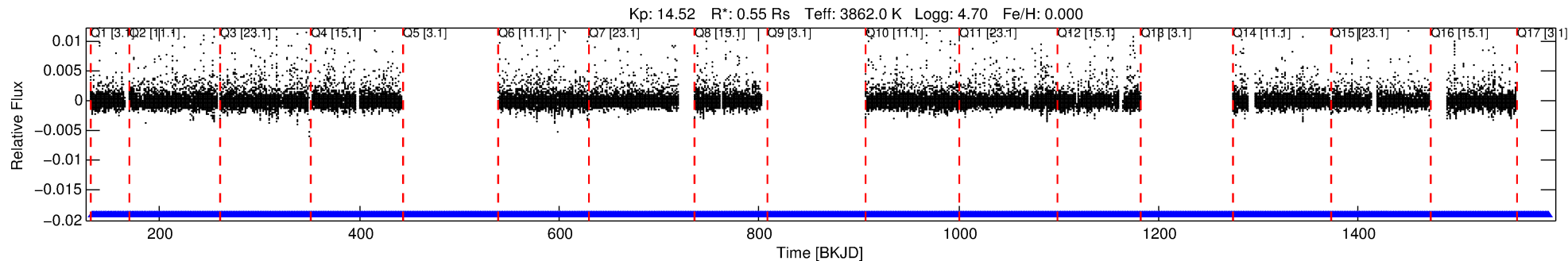
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006425928-03

No Significant Match Found

# DV One-Page Summary

KIC: 6425928 Candidate: 3 of 5 Period: 0.591 d



## DV Fit Results:

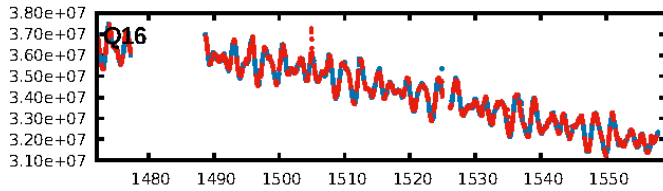
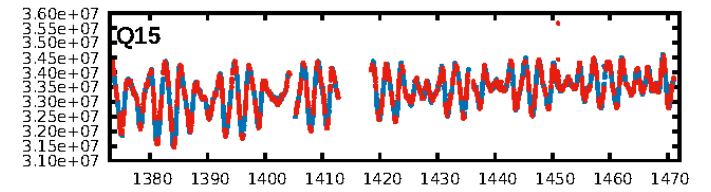
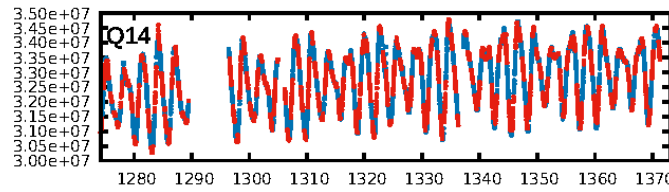
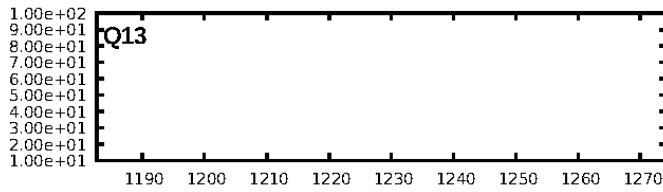
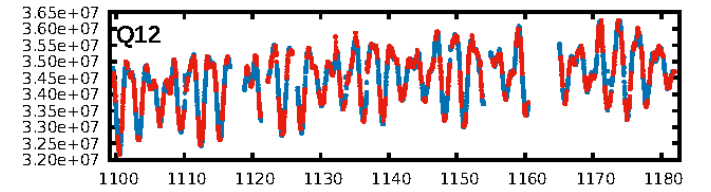
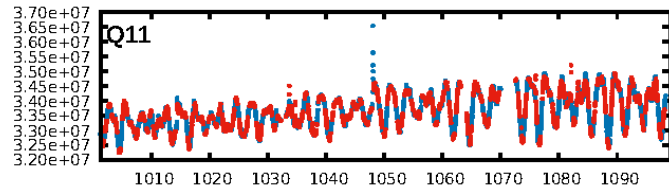
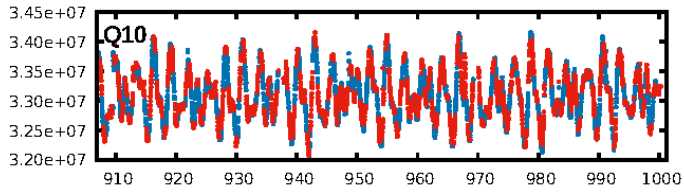
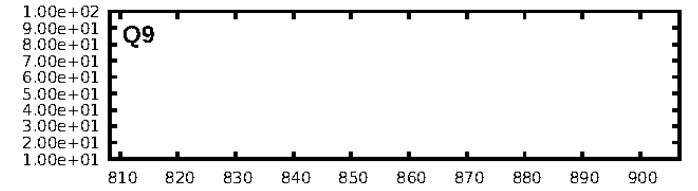
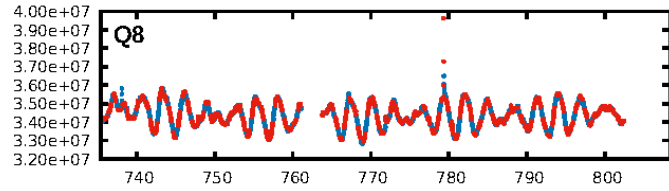
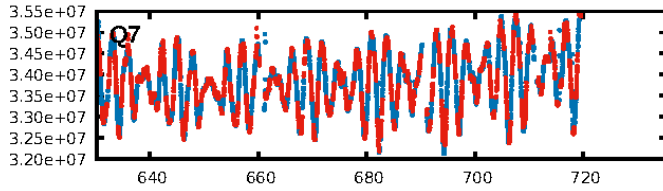
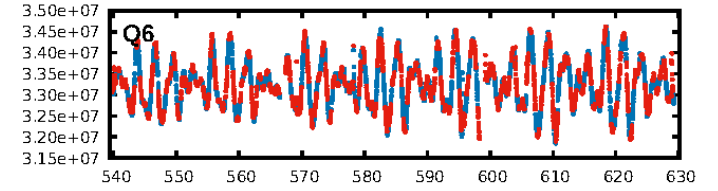
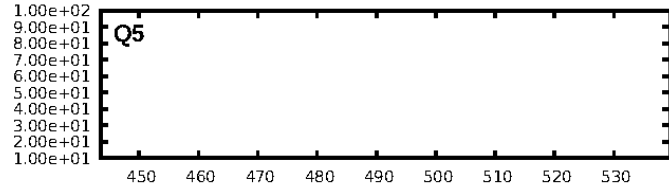
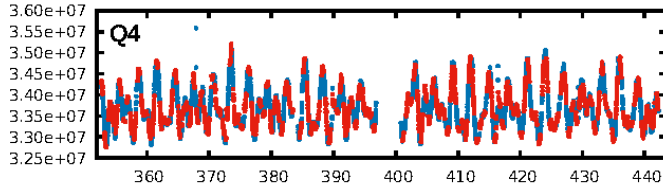
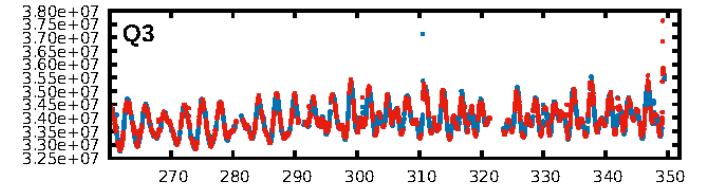
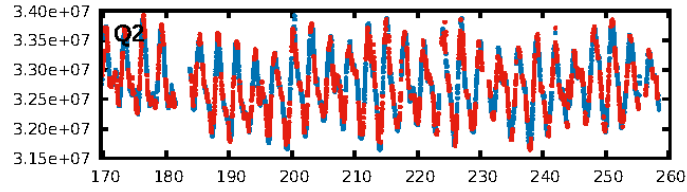
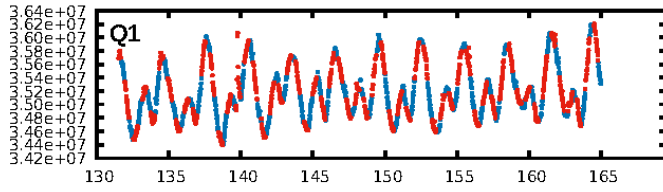
Period = 0.59147 [0.00001] d  
Epoch = 132.1011 [0.0020] BKJD  
Rp/R\* = 0.0111 [0.0070]  
a/R\* = 1.23 [1.06]  
b = 0.69 [1.97]  
Seff = 471.70 [35.67]  
Teq = 1188 [22] K  
Rp = 0.67 [0.42] Re  
a = 0.0113 [0.0004] AU  
Ag = 25.20 [31.77] [0.76σ]  
Teff = 4117 [1297] K [2.26σ]

## DV Diagnostic Results:

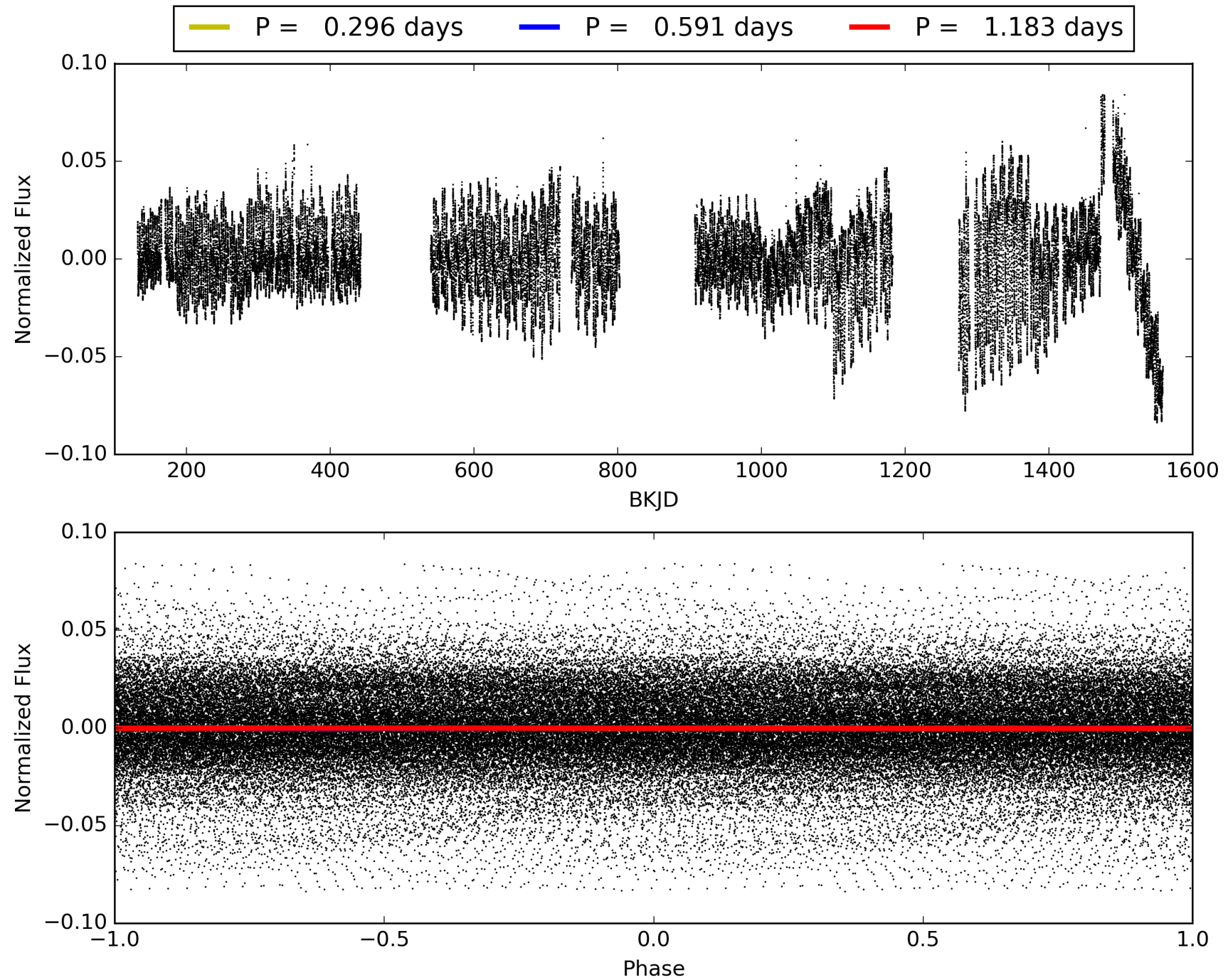
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [338.96σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.71e-26  
RollingBand-fgt: 1.00 [1697/1697]  
**GhostDiagnostic-chr: 0.3565**  
Centroid-sig: 24.8%  
Centroid-so: 0.285 arcsec [1.05σ]  
OotOffset-rm: 0.251 arcsec [0.96σ]  
KicOffset-rm: 0.100 arcsec [0.39σ]  
OotOffset-st: 4/3/4/1 [12]  
KicOffset-st: 4/3/4/1 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 1.00 [13/13]



# TCE 006425928-03, PDC Light Curves

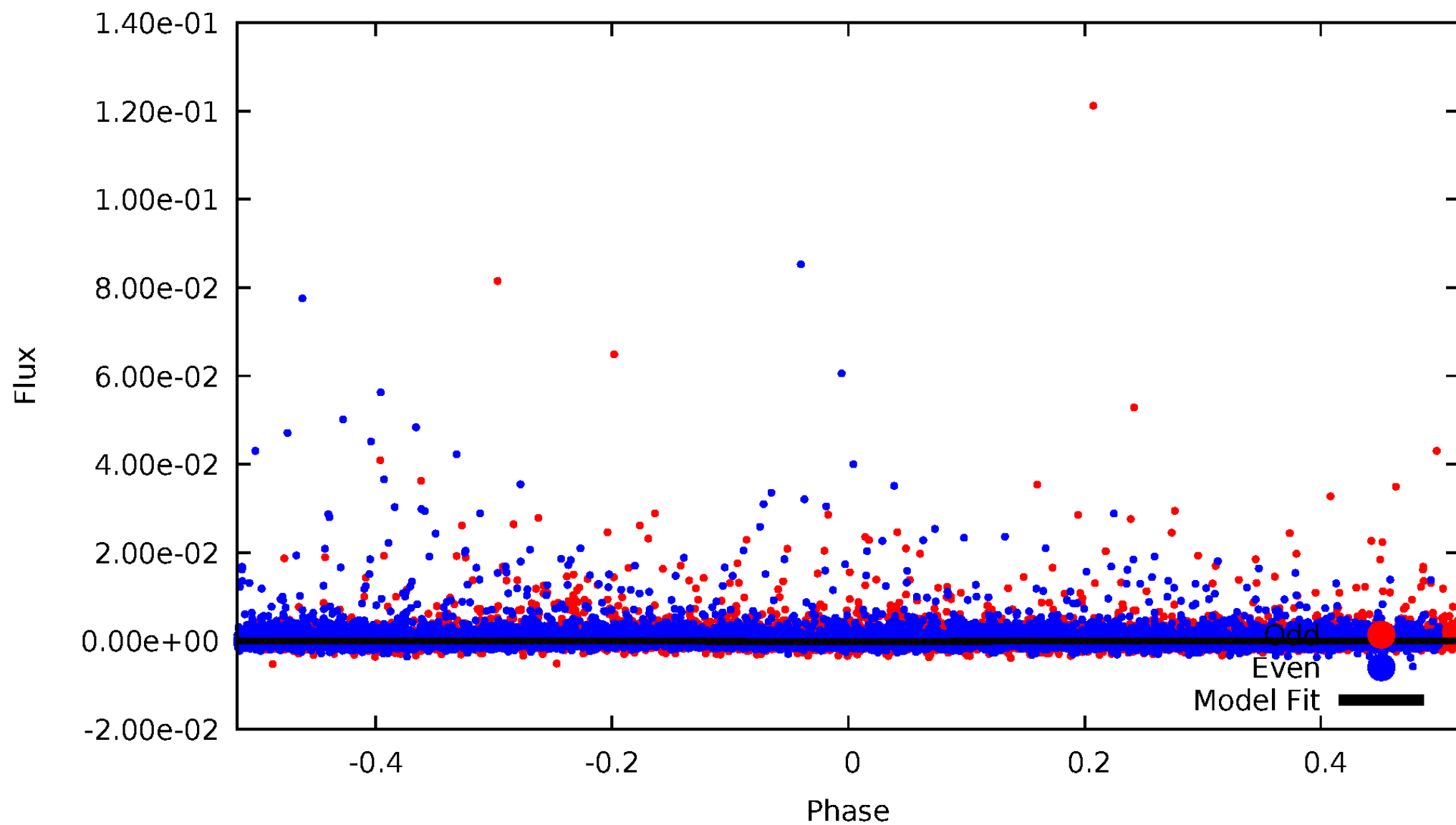


TCE 006425928-03



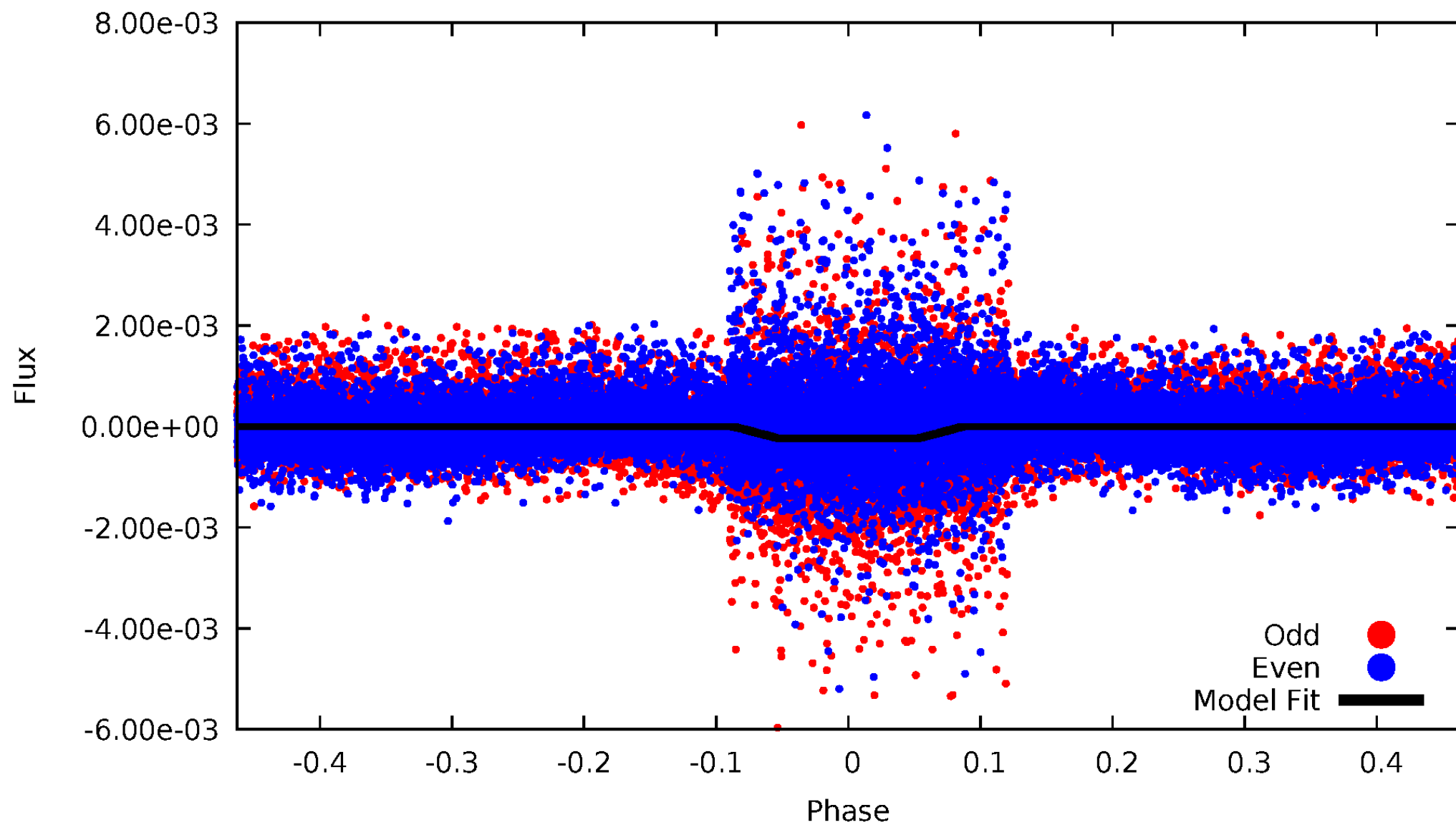
# DV Odd/Even

TCE 006425928-03



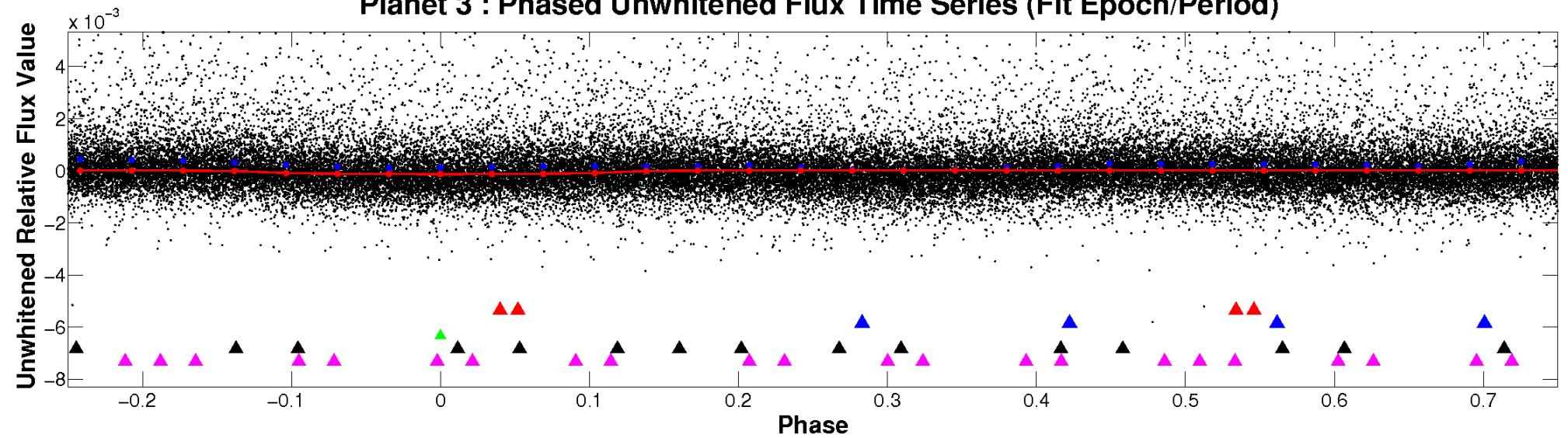
# ALT Odd/Even

TCE 006425928-03

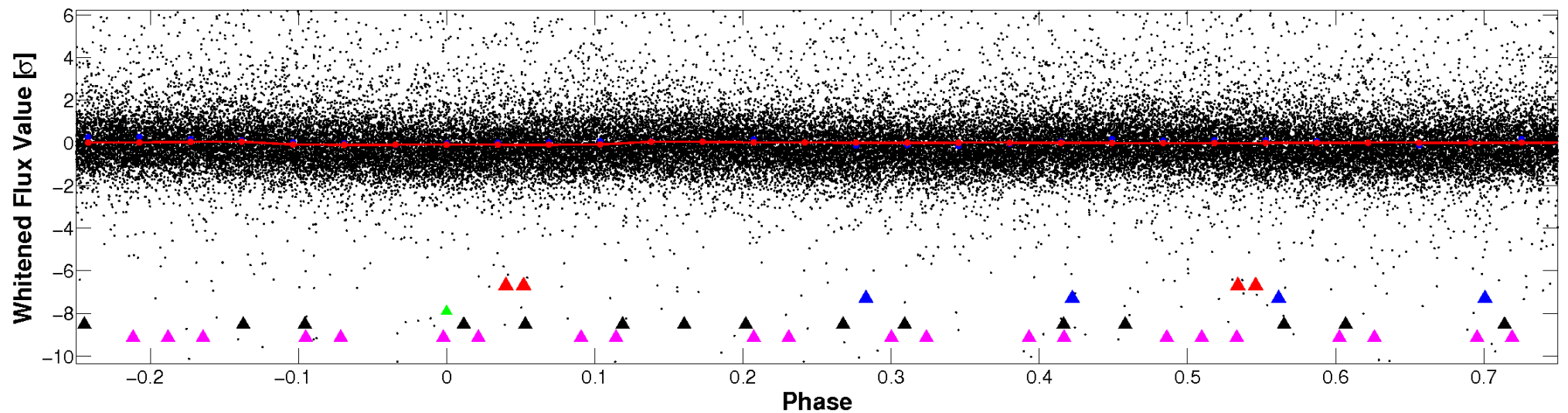


# Non-Whitened Vs. Whitened Light Curve

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



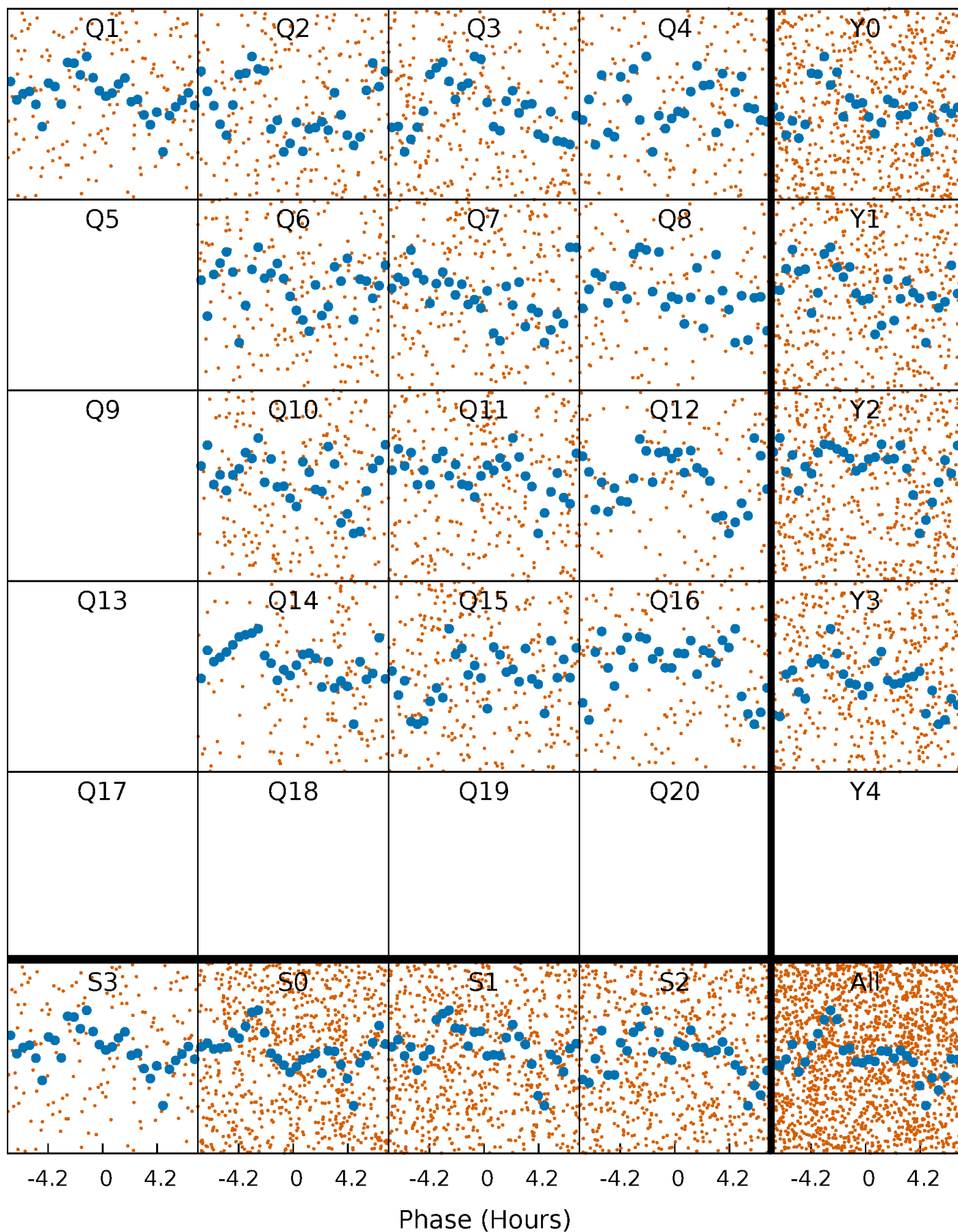
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

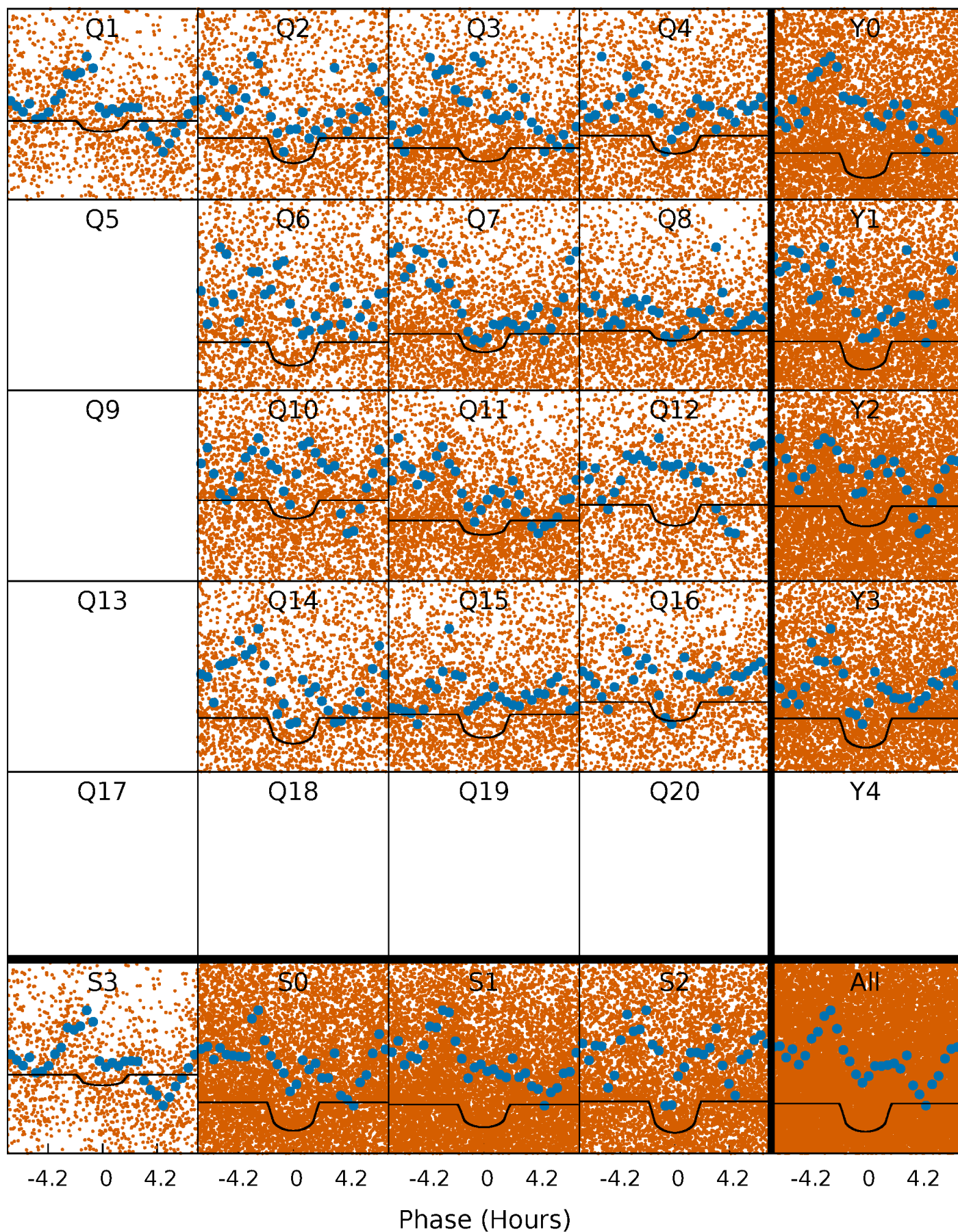
TCE 006425928-03 P= 0.591473 Days  $T_0=132.101126$  (BKJD)





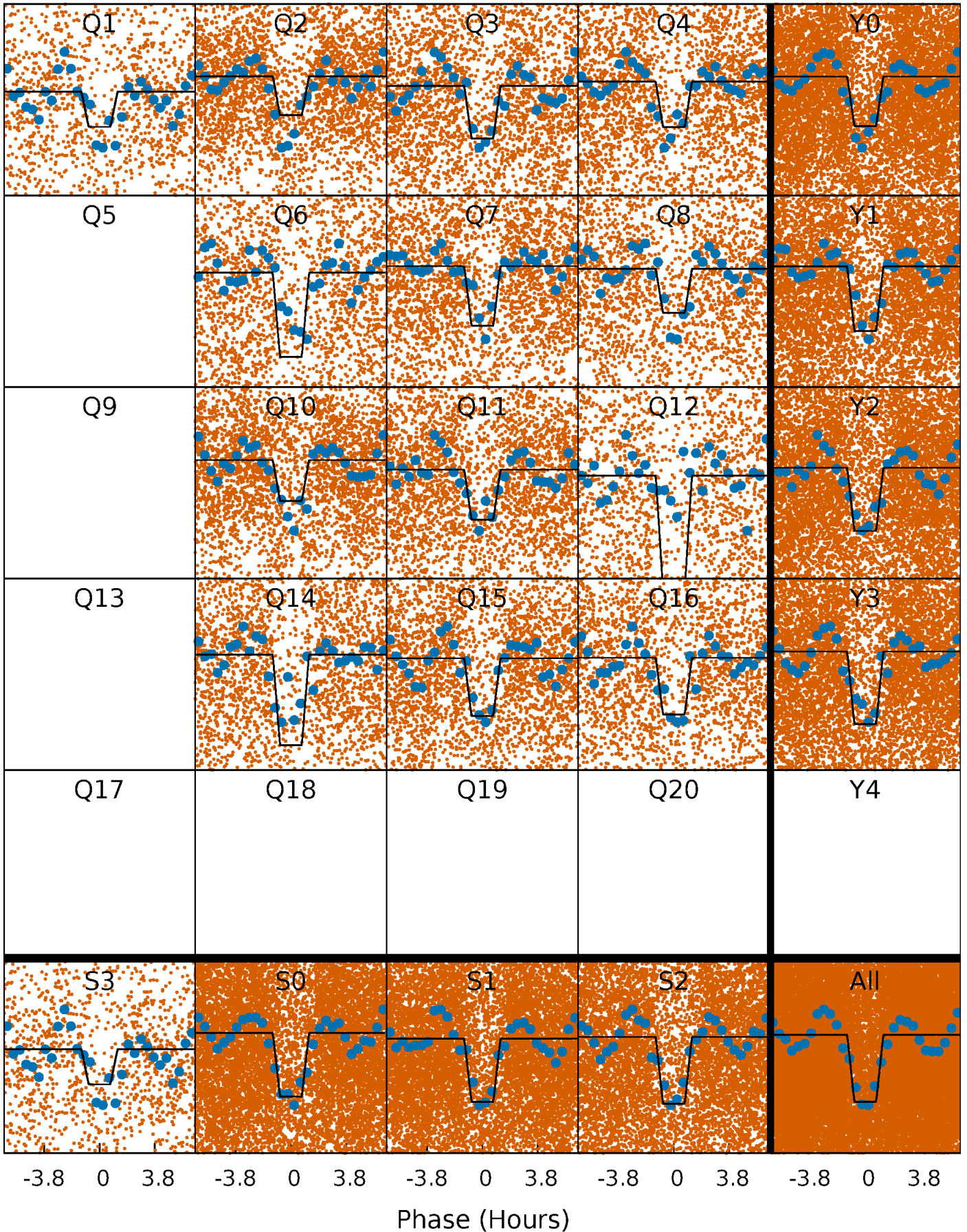
# DV Quarter-Phased Transit Curves

TCE 006425928-03 P= 0.591473 Days  $T_0=132.101126$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006425928-03   P= 0.591467 Days    $T_0=131.503500$  (BKJD)

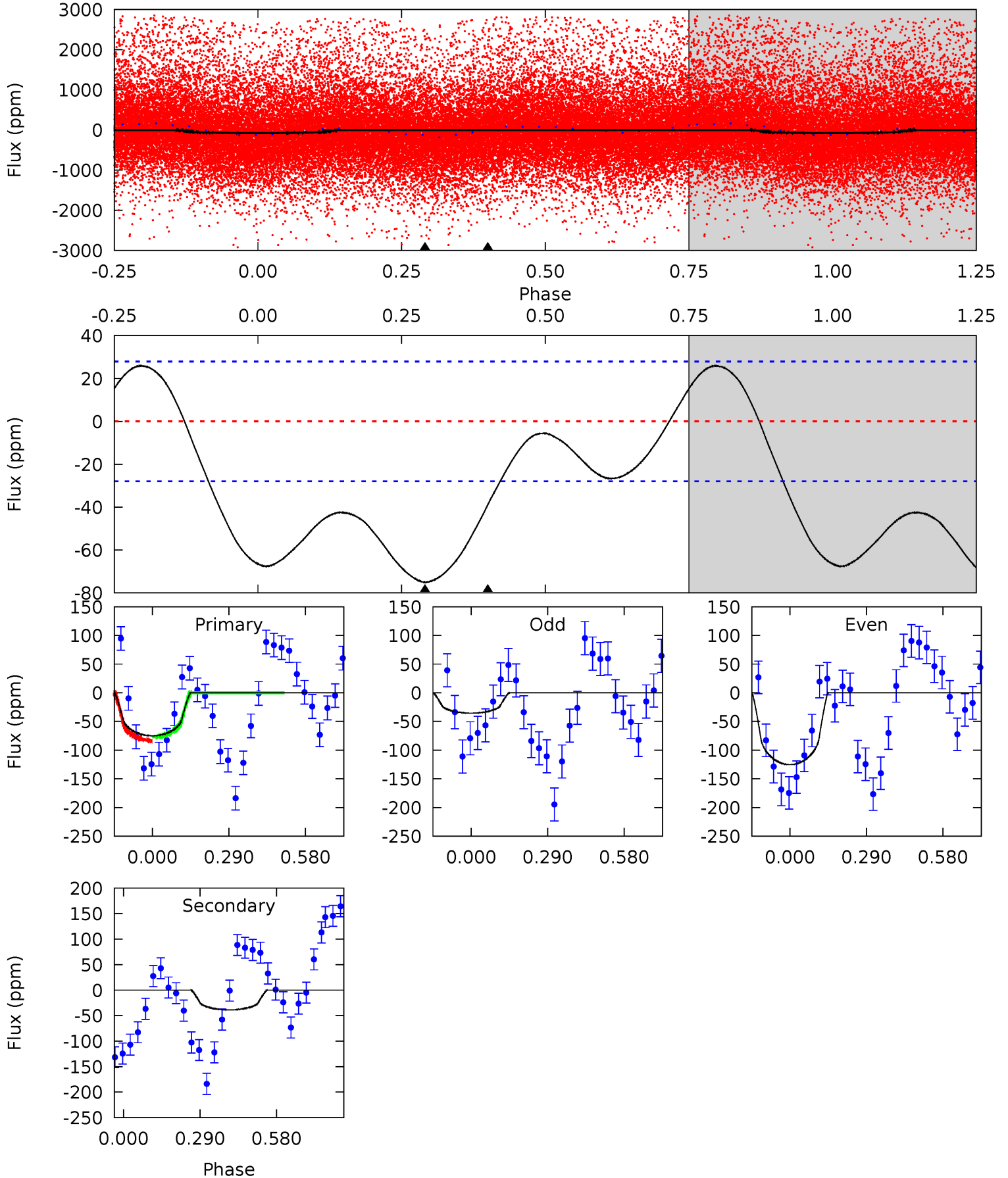




# DV Model-Shift Uniqueness Test

006425928-03, P = 0.591473 Days, E = 131.509653 Days

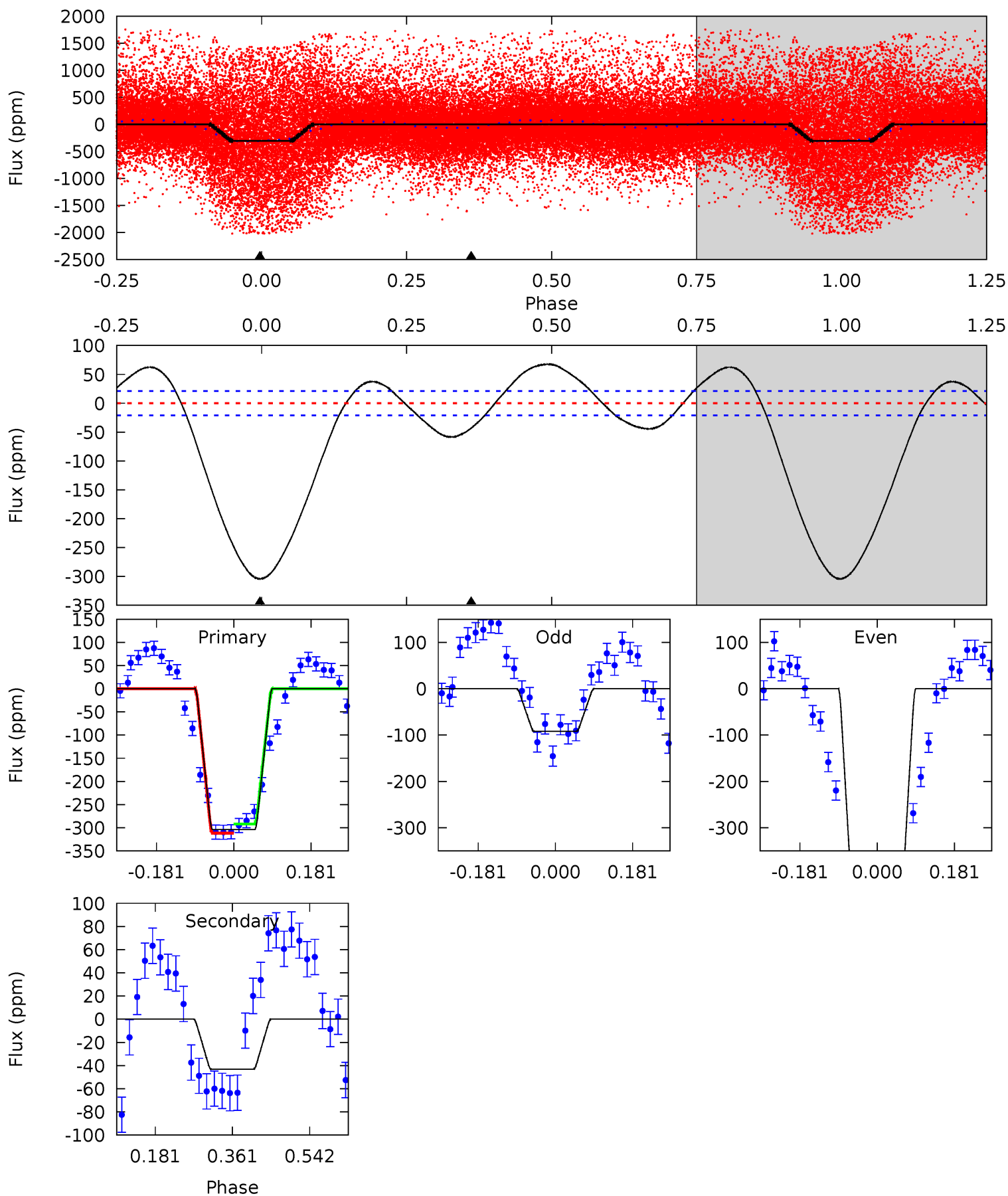
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	6.02	0	0	4.34	1.06	4.70	11.6	11.6	6.02	6.02	7.18	-4.12	0.26	0.50



# Alt Model-Shift Uniqueness Test

006425928-03, P = 0.591467 Days, E = 131.503500 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
64.0	9.09	0	0	4.44	1.34	7.54	64.0	64.0	9.09	9.09	39.2	1.07	0.18	2.11



### Stellar Parameters For KIC 006425928

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3862^{+50}_{-50}$	$4.699^{+0.030}_{-0.012}$	$0.000^{+0.100}_{-0.100}$	$0.551^{+0.019}_{-0.025}$	$0.553^{+0.025}_{-0.021}$	$4.663^{+0.558}_{-0.256}$
	+1%/-1%	+1%/-0%	+inf%/-inf%	+3%/-5%	+5%/-4%	+12%/-5%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006425928-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-39 \pm 6$	$0.68^{+0.41}_{-0.35}$	$1653^{+27}_{-28}$	$3156^{+853}_{-423}$	$5.771^{+18.878}_{-3.486}$
Alt.	$-43 \pm 5$	$0.94^{+0.40}_{-0.41}$	$1654^{+25}_{-29}$	$2919^{+544}_{-305}$	$3.531^{+7.273}_{-1.806}$

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

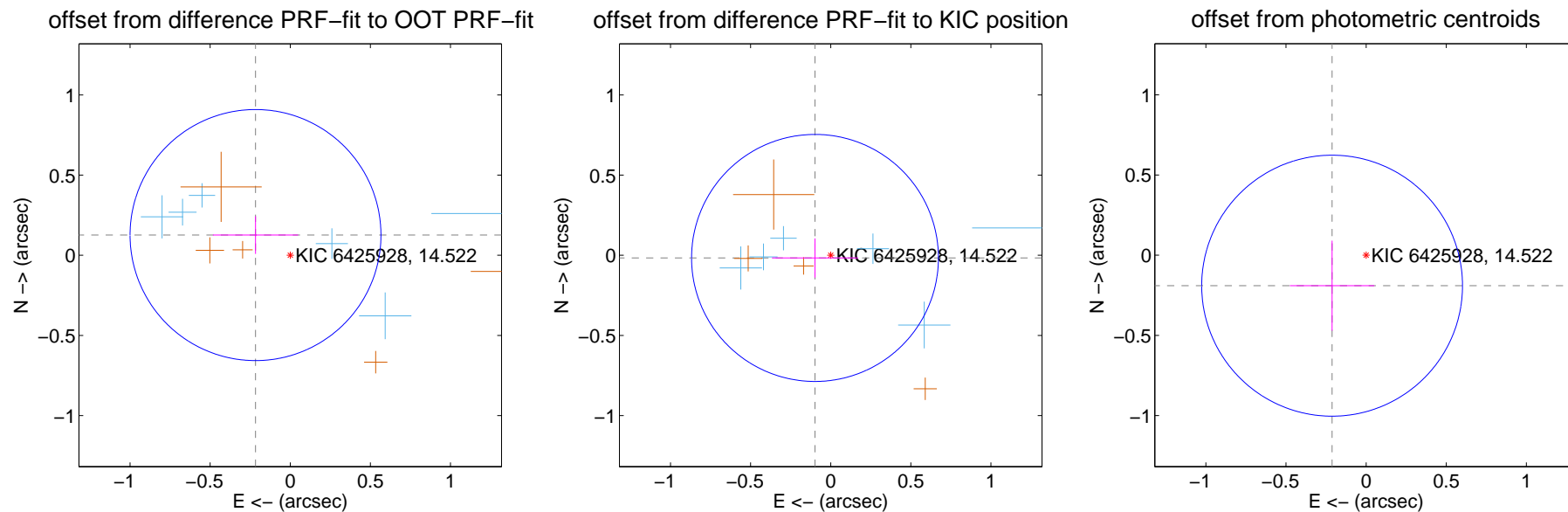
## DV Centroid Data

Supplemental centroid analysis for 006425928-03. Kepler magnitude: 14.52. Transit SNR 10.22

There are 7 quarters with good PRF difference image offsets

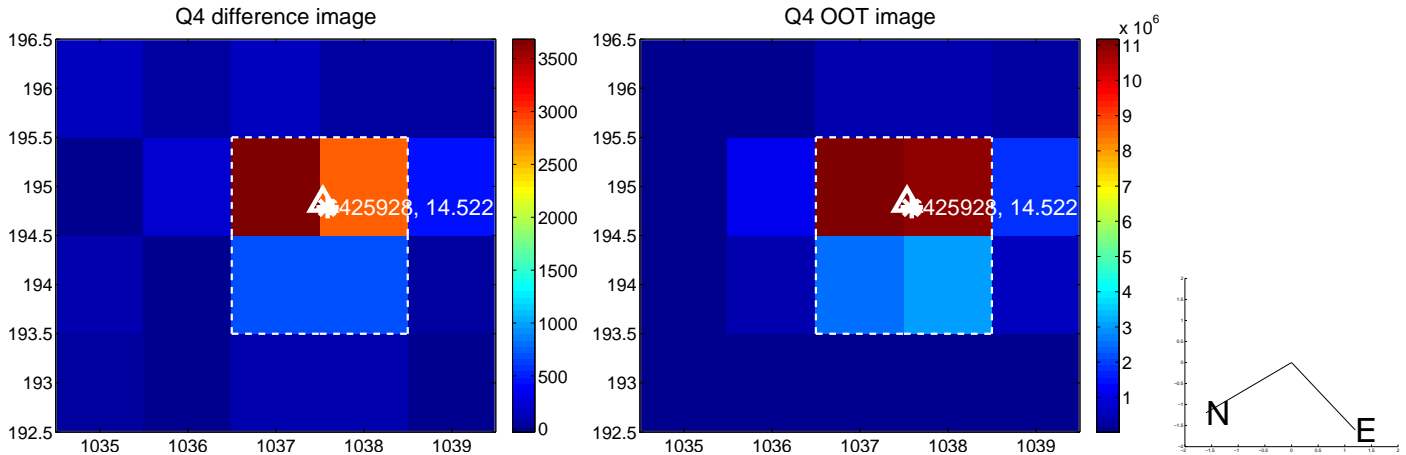
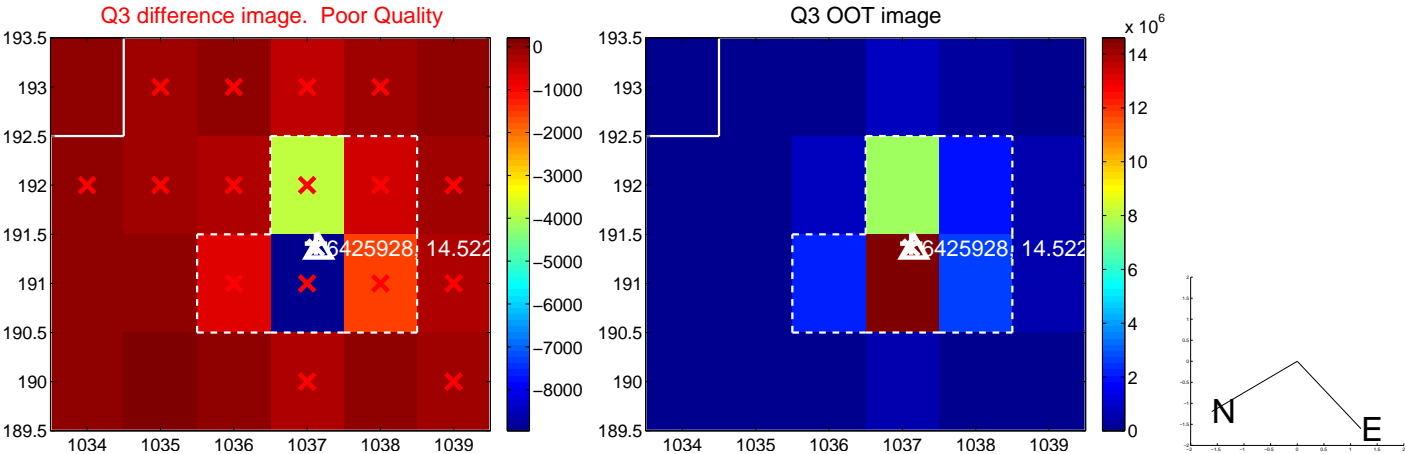
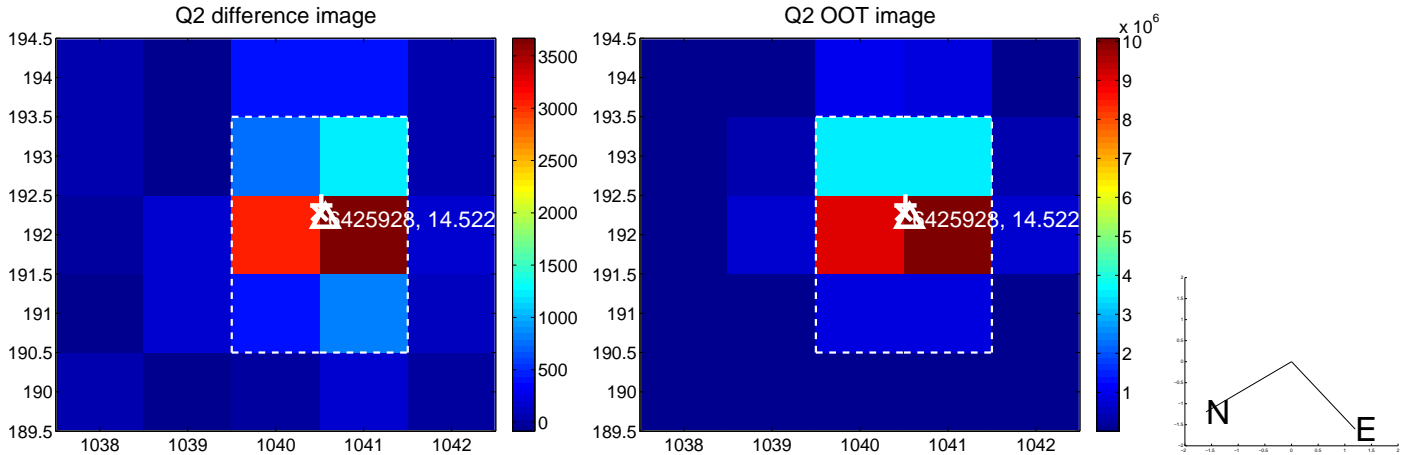
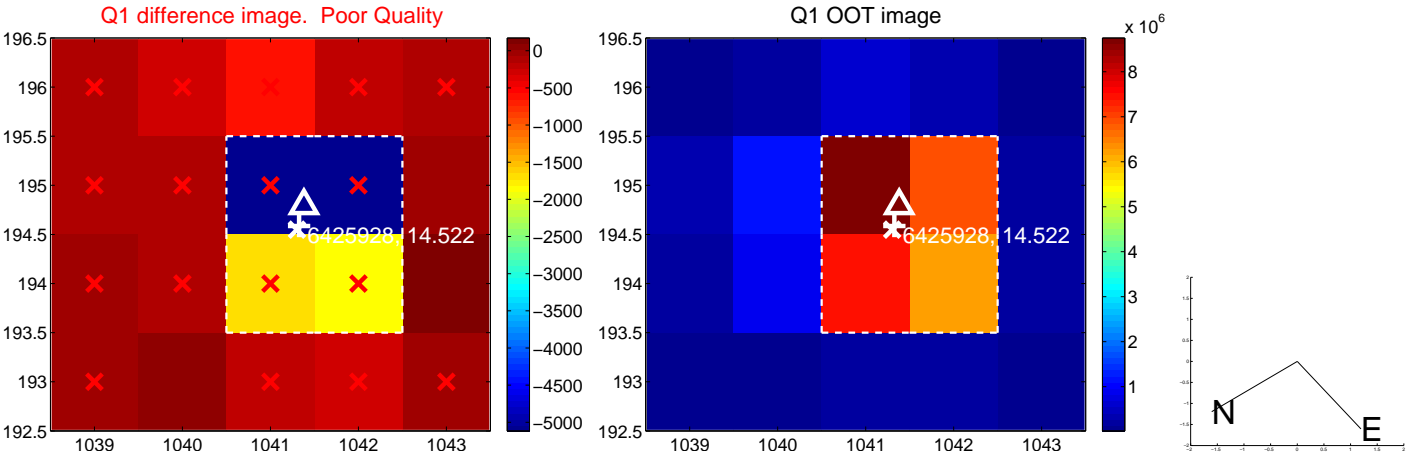
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.251 \pm 0.261$	0.96	$0.217 \pm 0.266$	$0.126 \pm 0.118$
PRF-fit source offset from KIC position	$0.100 \pm 0.257$	0.39	$0.098 \pm 0.269$	$-0.017 \pm 0.122$
photometric centroid source offset	$0.28 \pm 0.27$	1.05	$0.21 \pm 0.26$	$-0.19 \pm 0.28$

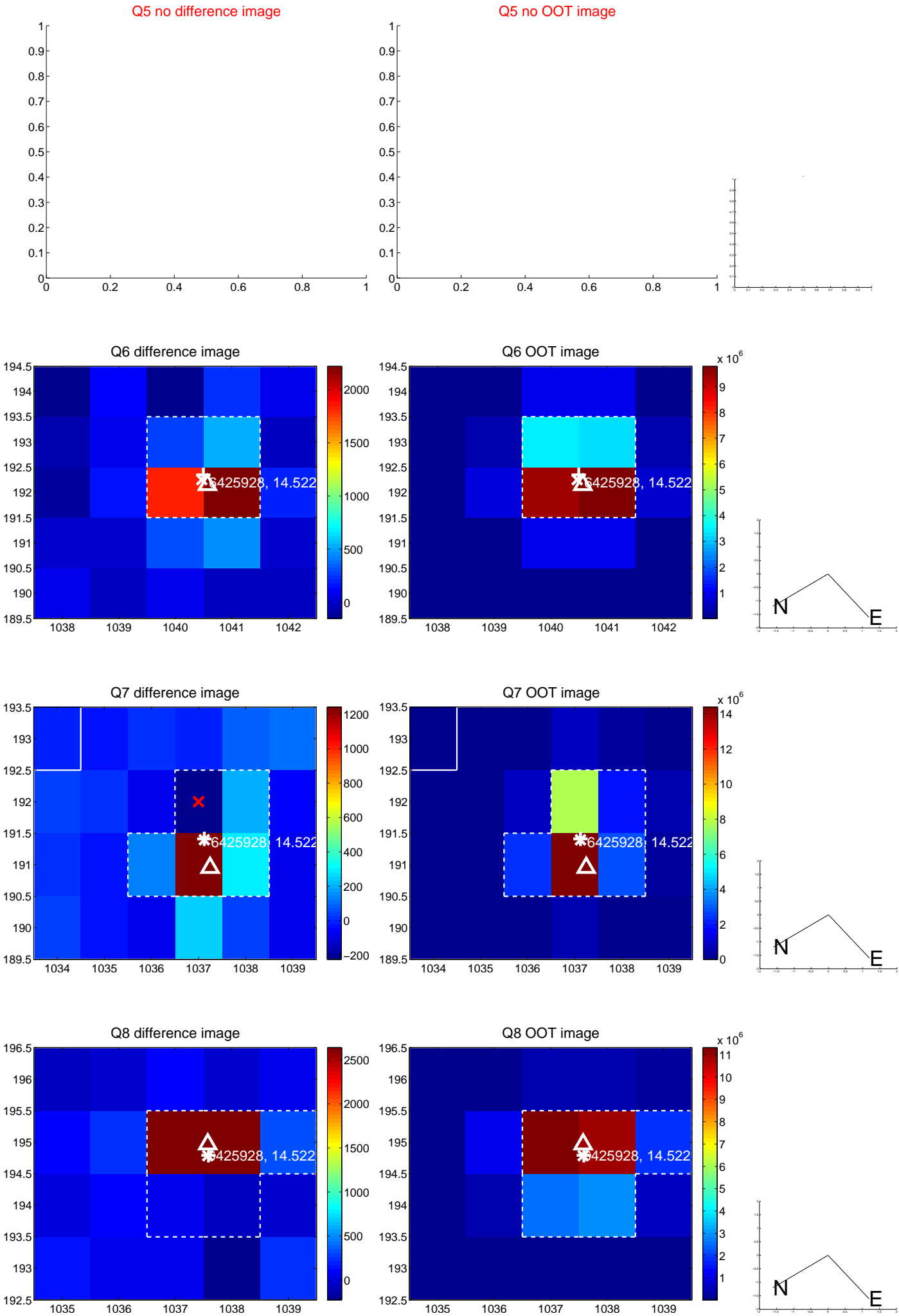


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

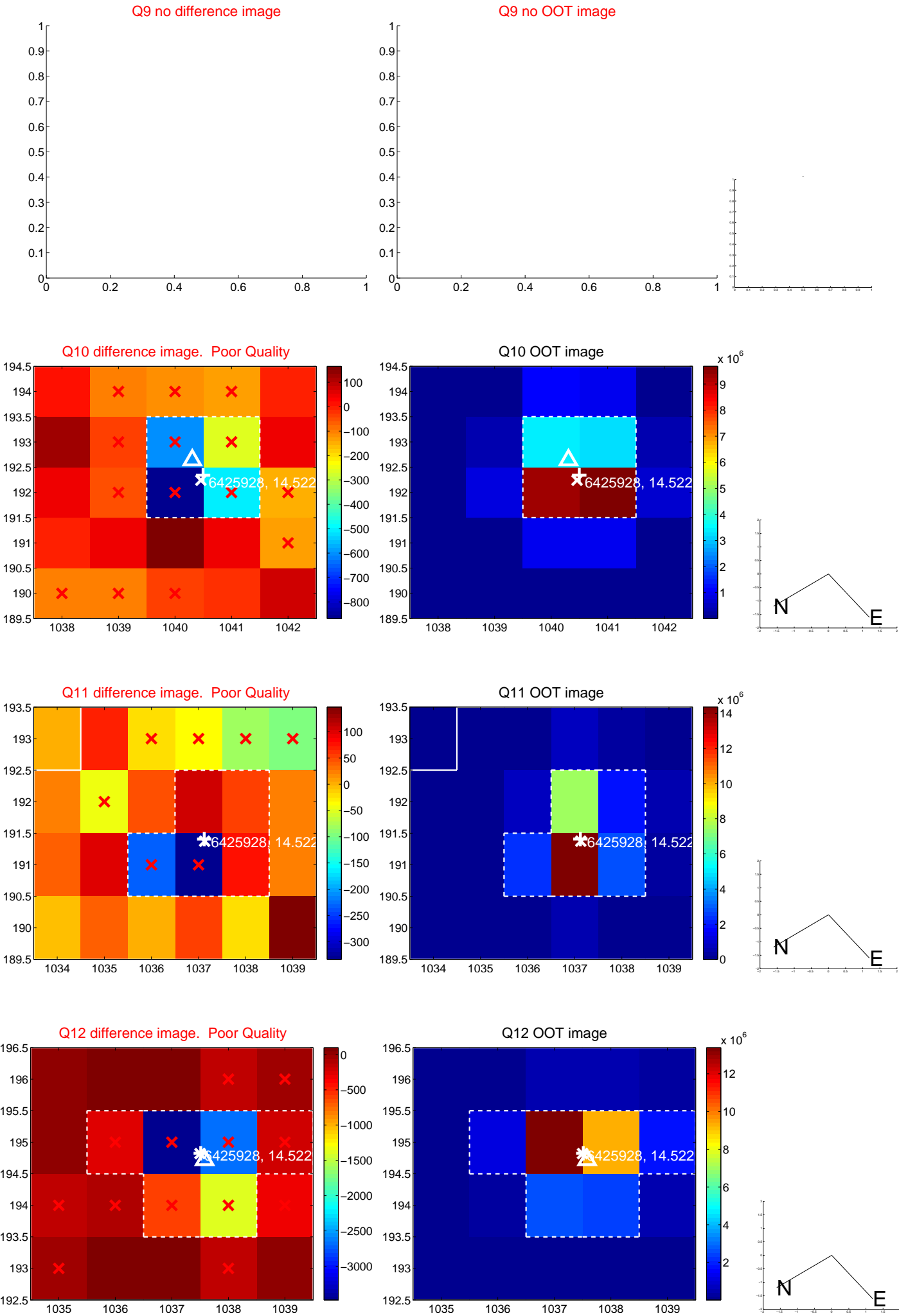


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

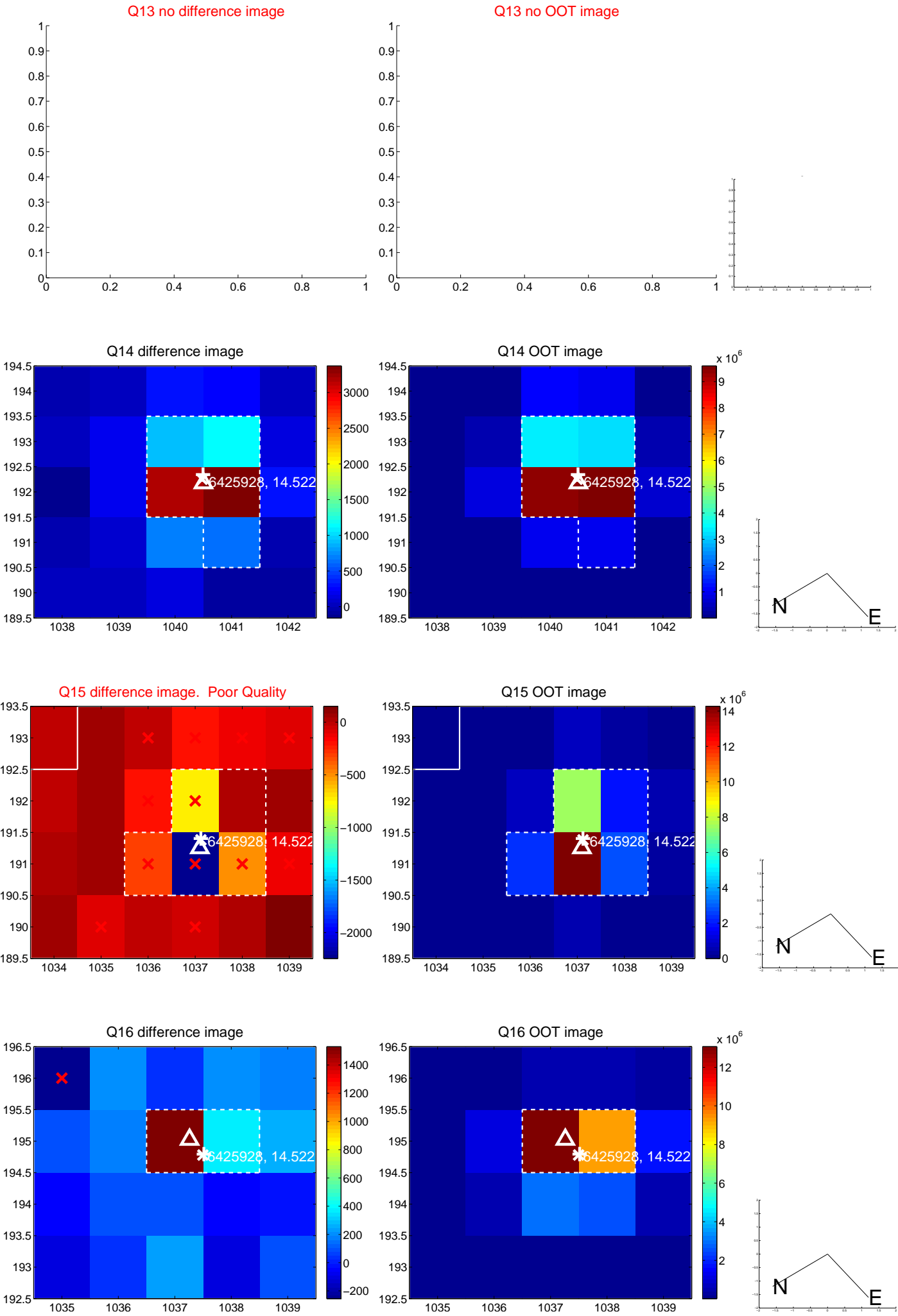




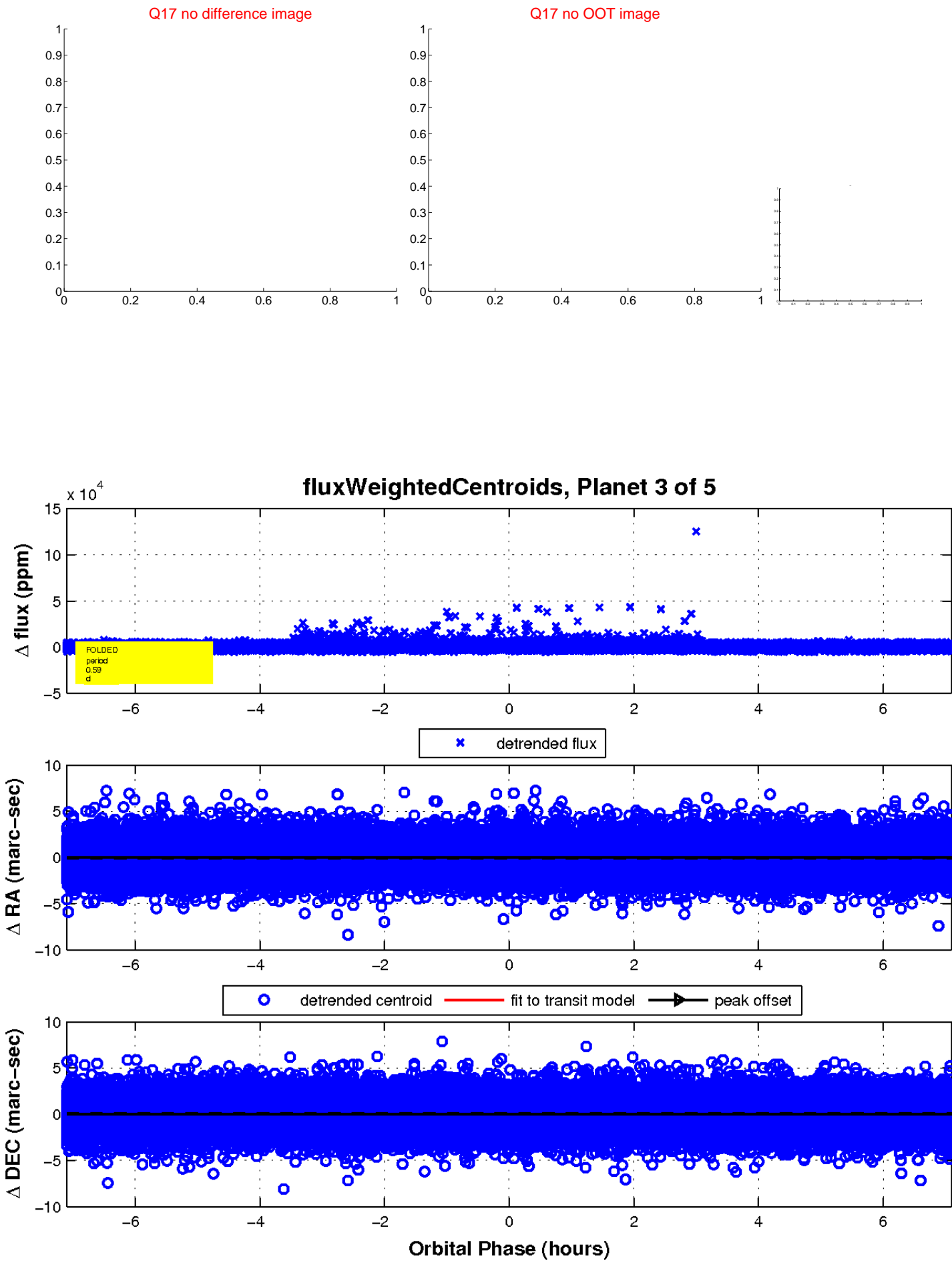
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

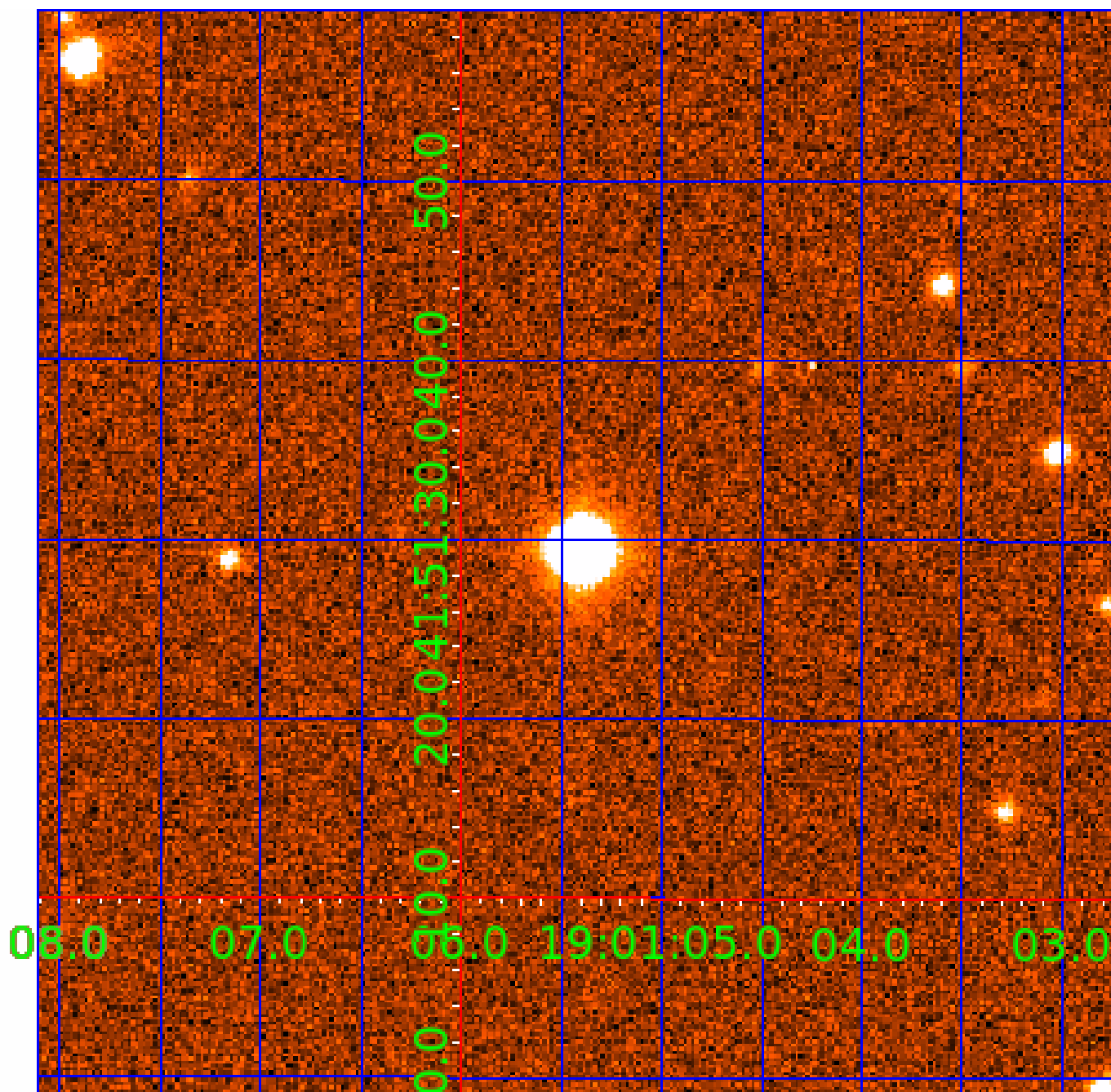


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006425928

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006425928-01	OBS	No	388.897100	286.200000	1296.3	2.469	14.2	4.6	0.55	3862	2.02	0.08
006425928-03	OBS	No	0.591473	132.101126	130.8	3.672	11.8	10.2	0.55	3862	0.67	471.70
006425928-04	OBS	No	98.272540	141.043509	2570.5	2.354	10.0	7.7	0.55	3862	2.75	0.52
006425928-05	OBS	No	64.649405	176.749087	1531.7	2.663	9.6	5.1	0.55	3862	2.23	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006425928-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
006425928-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006425928-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006425928-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST

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

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

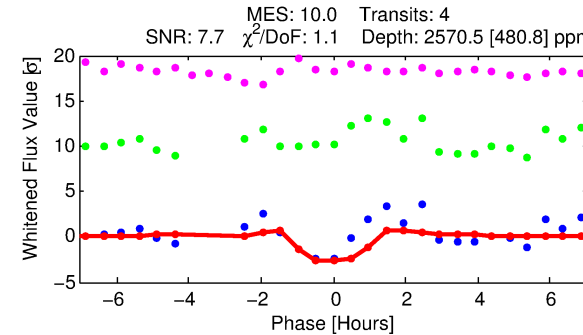
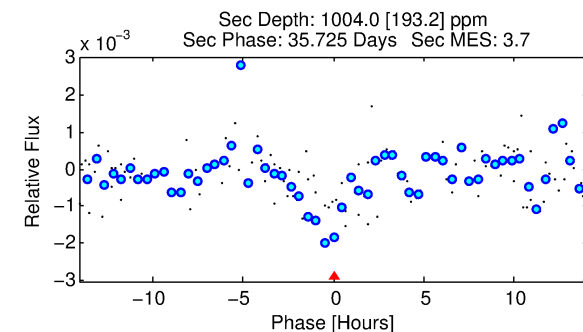
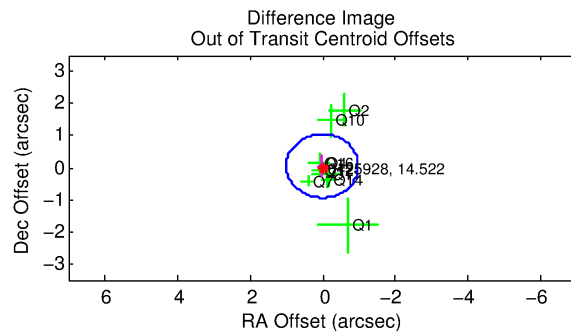
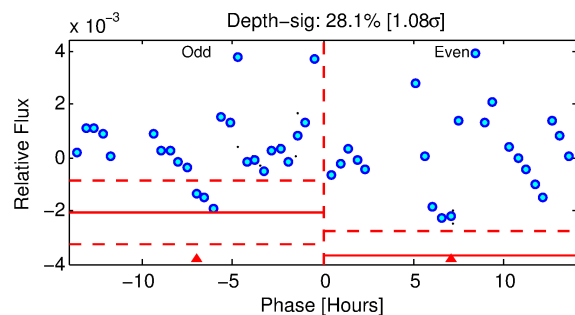
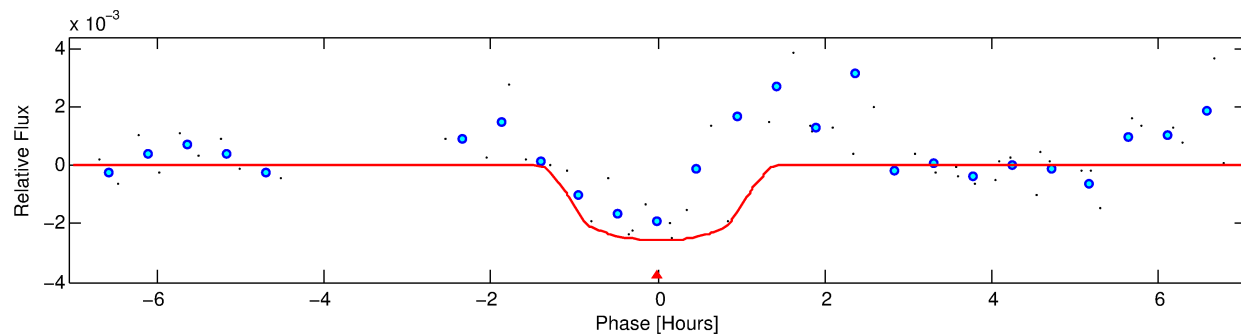
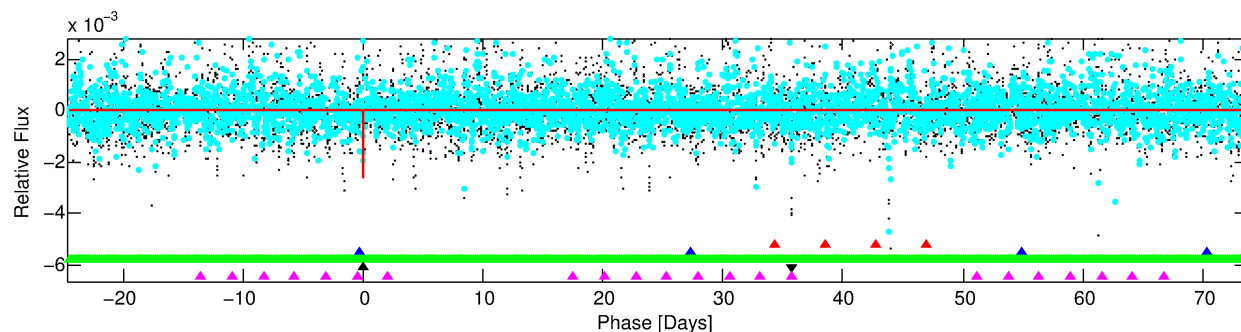
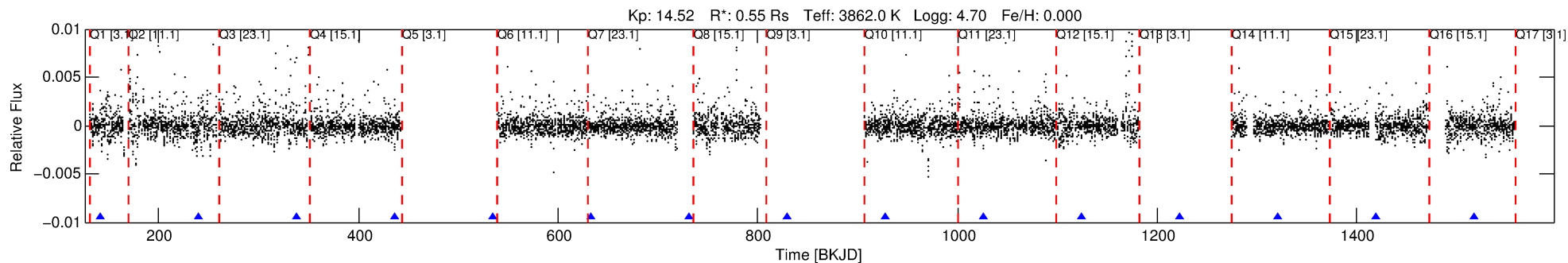
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006425928-04

No Significant Match Found

# DV One-Page Summary

KIC: 6425928 Candidate: 4 of 5 Period: 98.273 d



## DV Fit Results:

Period = 98.27254 [0.00174] d  
Epoch = 141.0435 [0.0126] BKJD  
Rp/R\* = 0.0457 [0.2229]  
a/R\* = 328.77 [6072.43]  
b = 0.18 [103.68]  
Seff = 0.52 [0.04]  
Teq = 216 [4] K  
Rp = 2.75 [13.40] Re  
a = 0.3423 [0.0130] AU  
Ag = 8561.96 [83470.40] [0.10 $\sigma$ ]  
Teffp = 3215 [7835] K [0.38 $\sigma$ ]

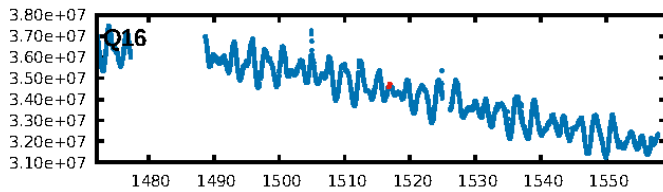
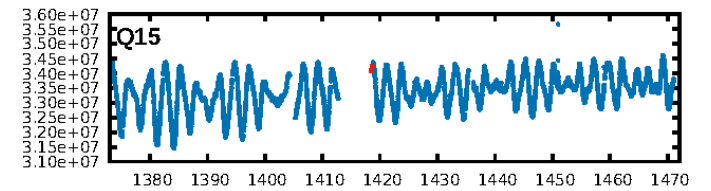
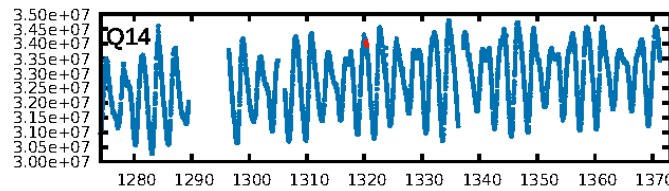
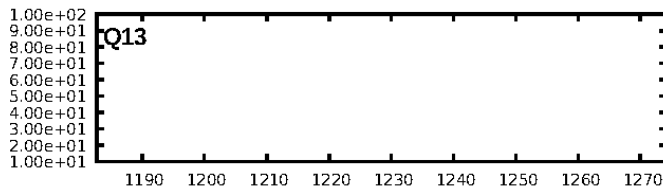
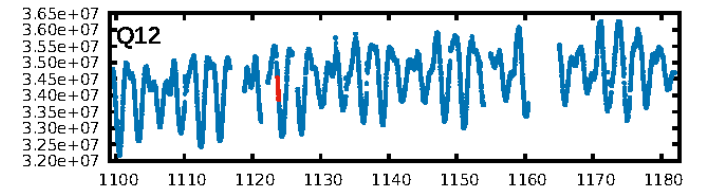
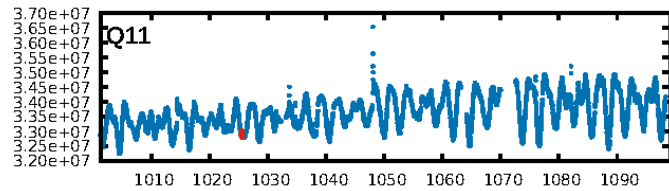
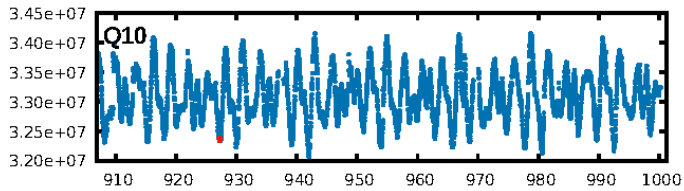
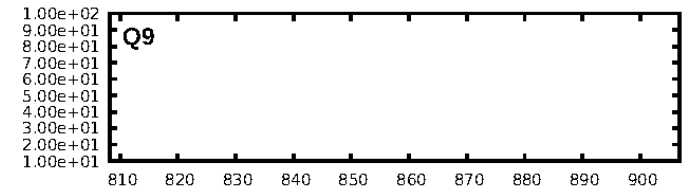
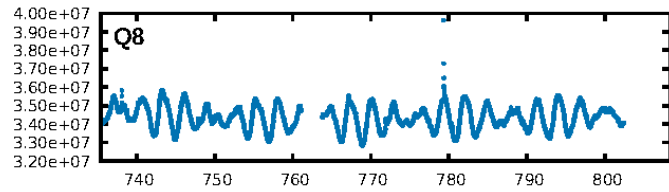
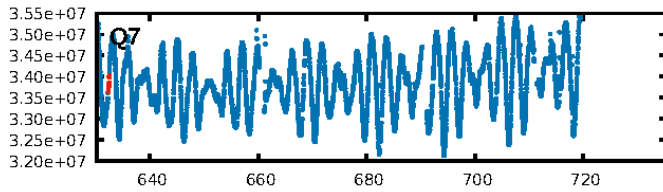
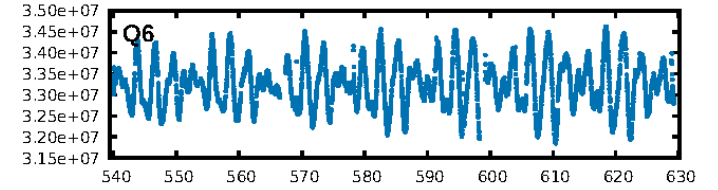
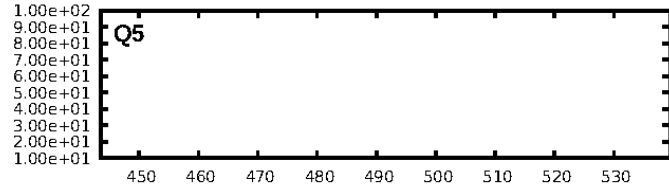
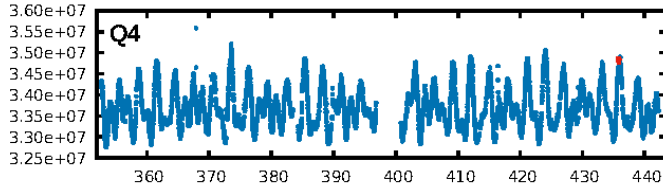
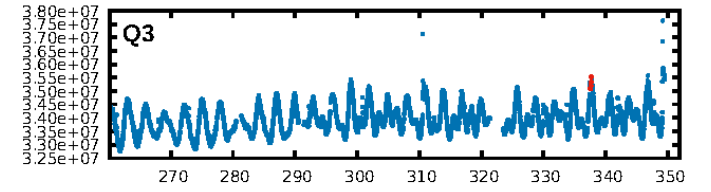
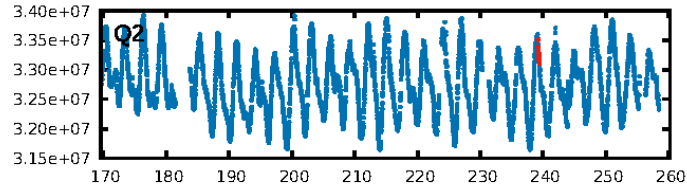
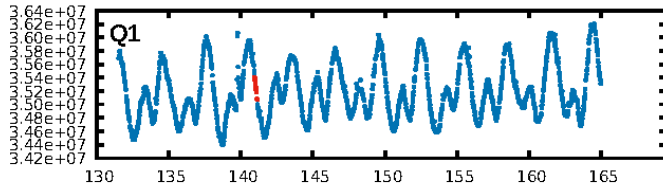
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [227.04 $\sigma$ ]  
LongPeriod-sig: 100.0% [1367.05 $\sigma$ ]  
ModelChiSquare2-sig: 64.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 8.24e-12**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.2651**  
Centroid-sig: 44.5%  
Centroid-so: 0.141 arcsec [0.65 $\sigma$ ]  
OotOffset-rm: 0.055 arcsec [0.17 $\sigma$ ]  
KicOffset-rm: 0.036 arcsec [0.14 $\sigma$ ]  
OotOffset-st: 3/2/3/1 [9]  
KicOffset-st: 3/2/3/1 [9]  
DiffImageQuality-fgm: 0.56 [5/9]  
DiffImageOverlap-fno: 0.00 [0/10]

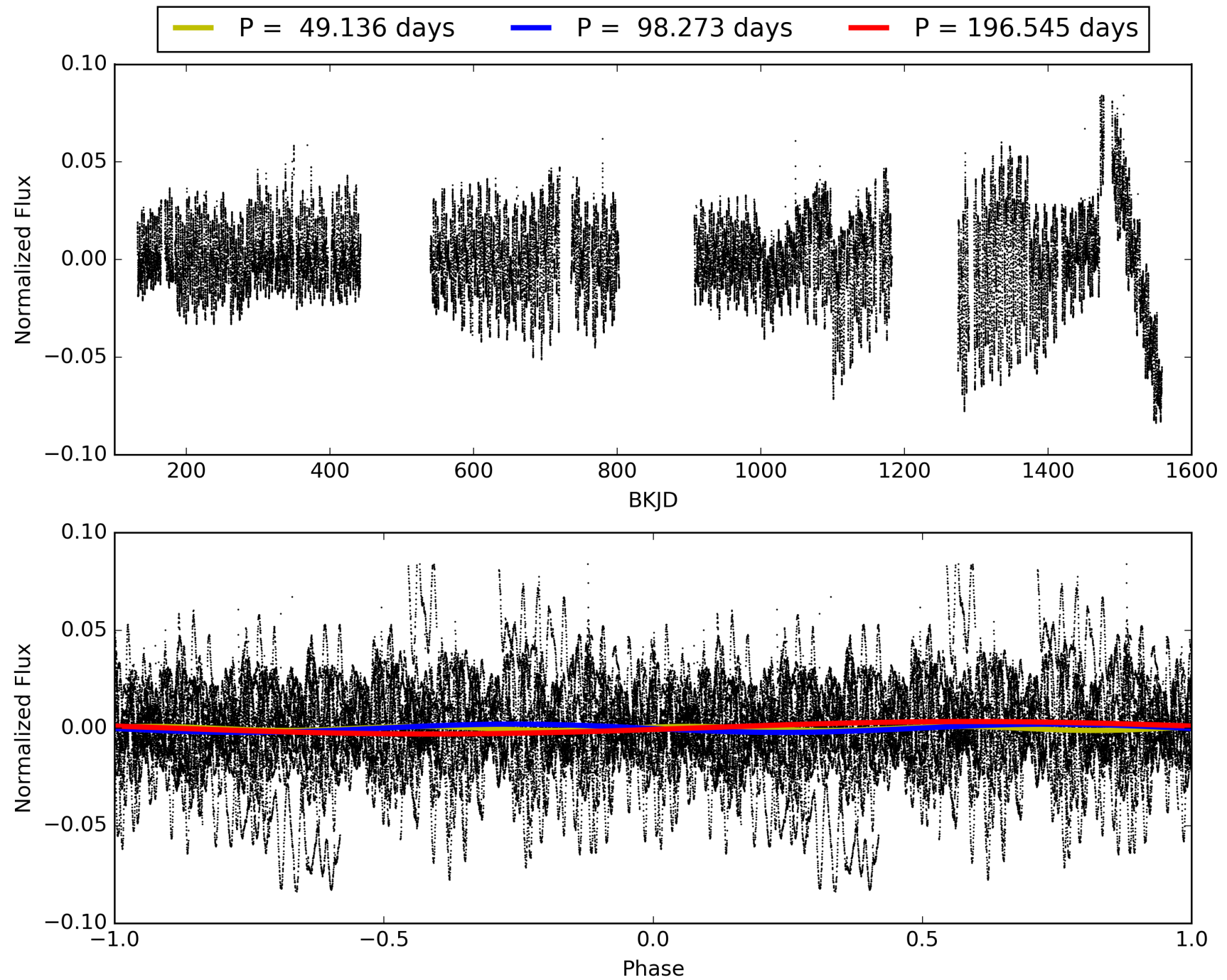
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:44:24 Z

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

# TCE 006425928-04, PDC Light Curves



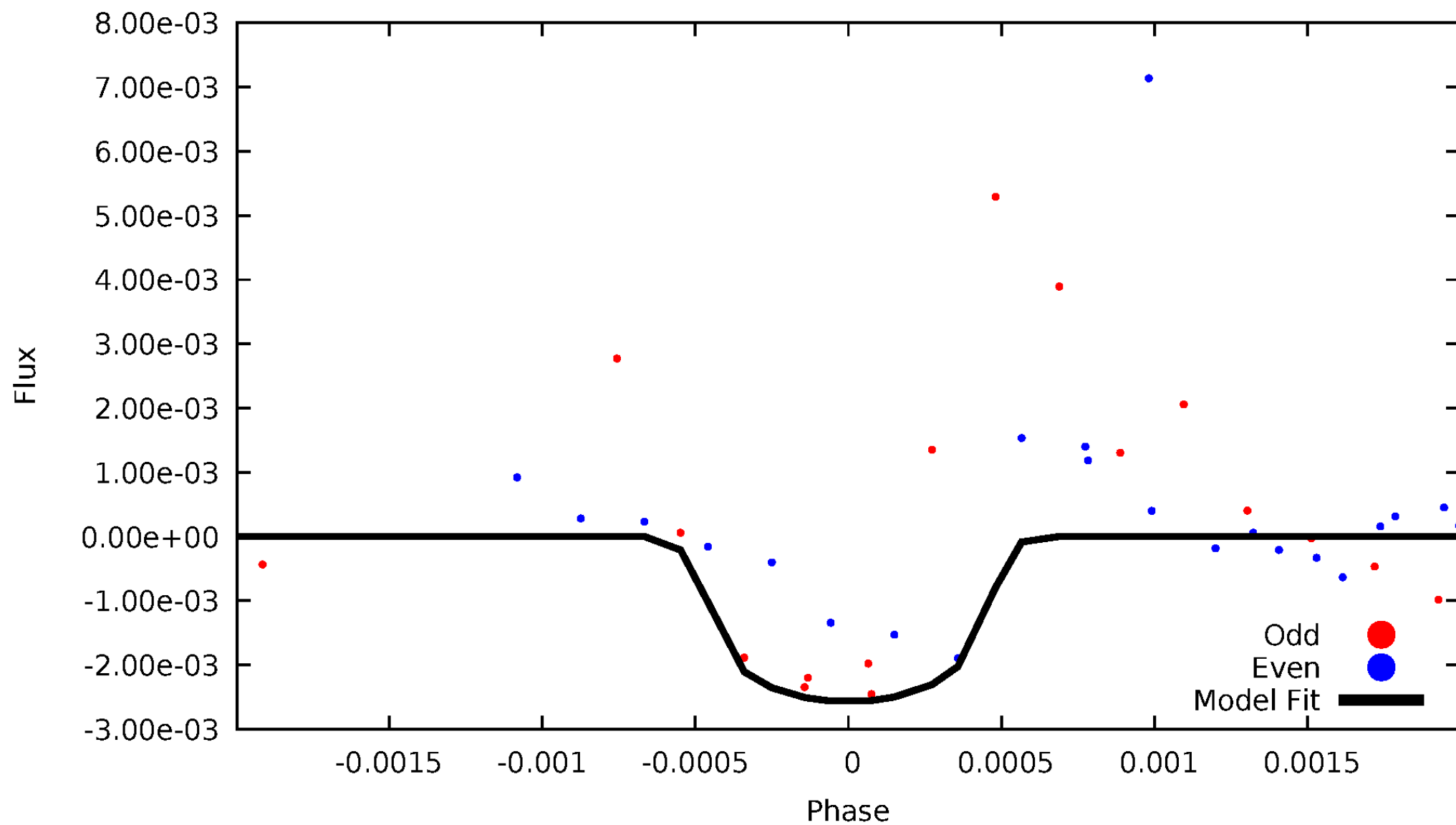
TCE 006425928-04





# DV Odd/Even

TCE 006425928-04



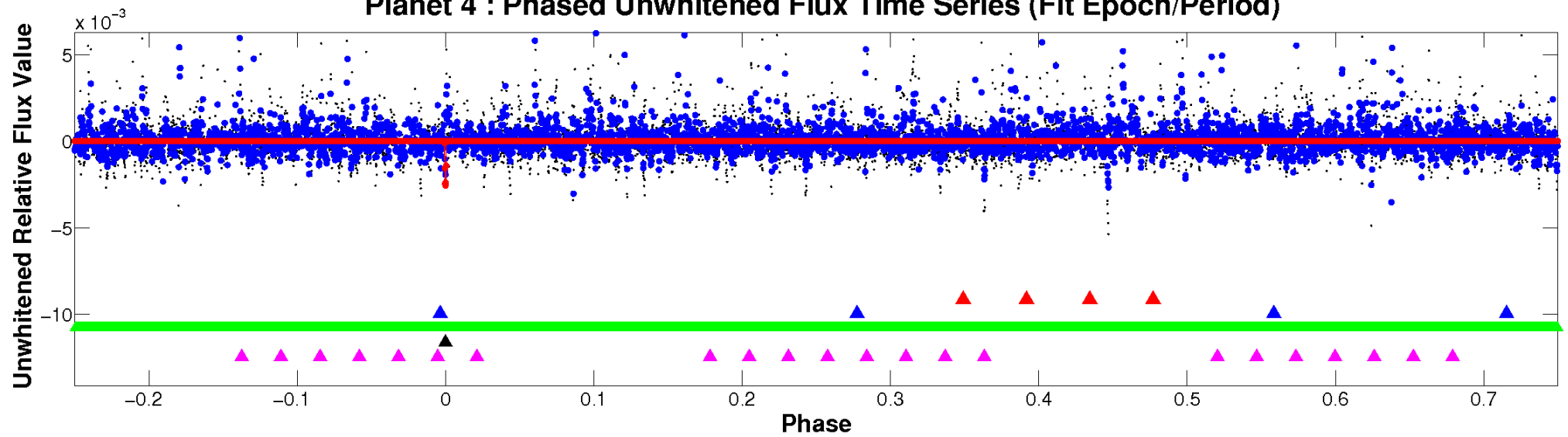


ALT Odd/Even

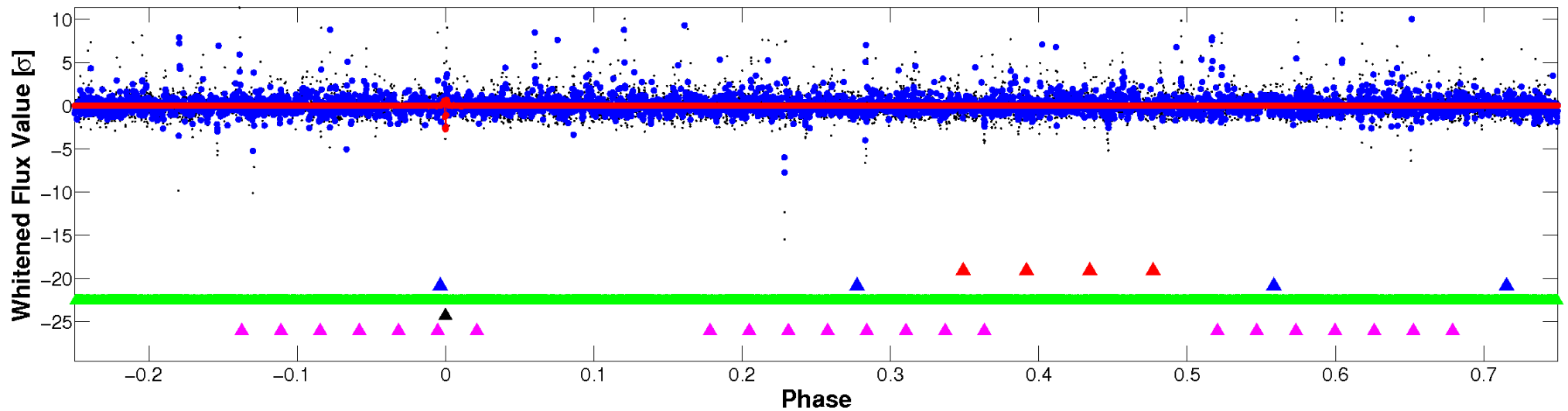
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

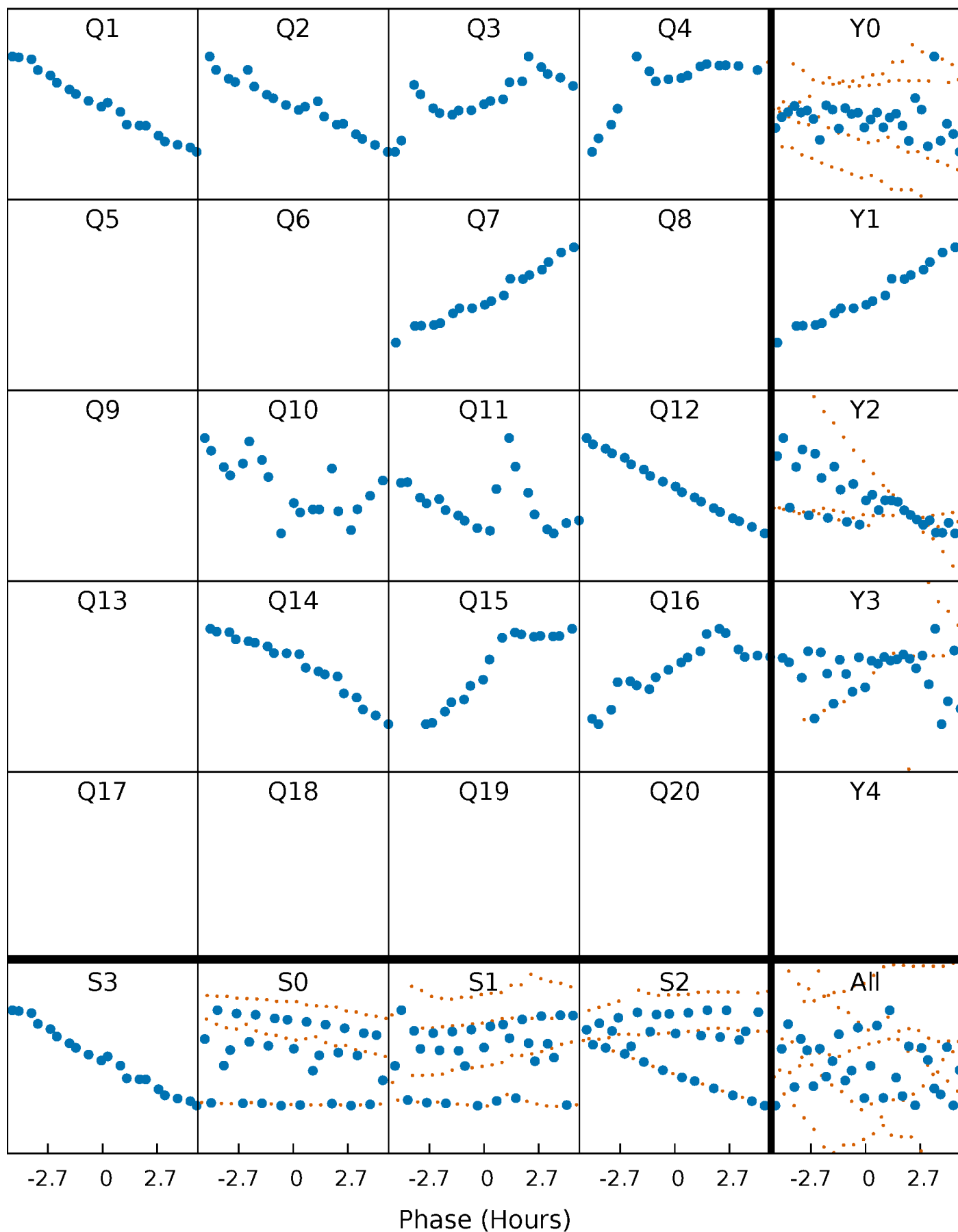


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



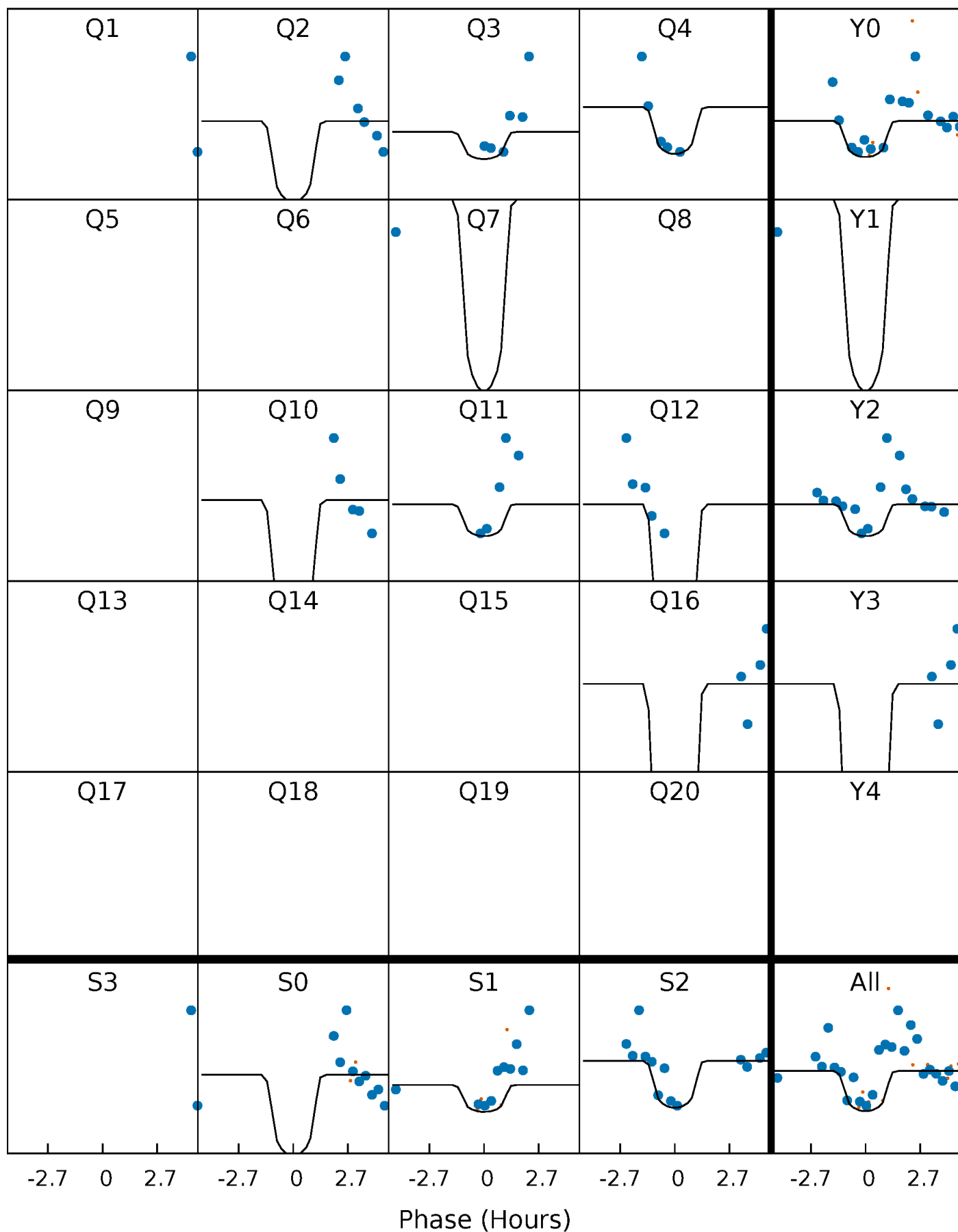
# PDC Quarter-Phased Transit Curves

TCE 006425928-04   P= 98.272540 Days    $T_0=141.043509$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 006425928-04   P= 98.272540 Days    $T_0=141.043509$  (BKJD)

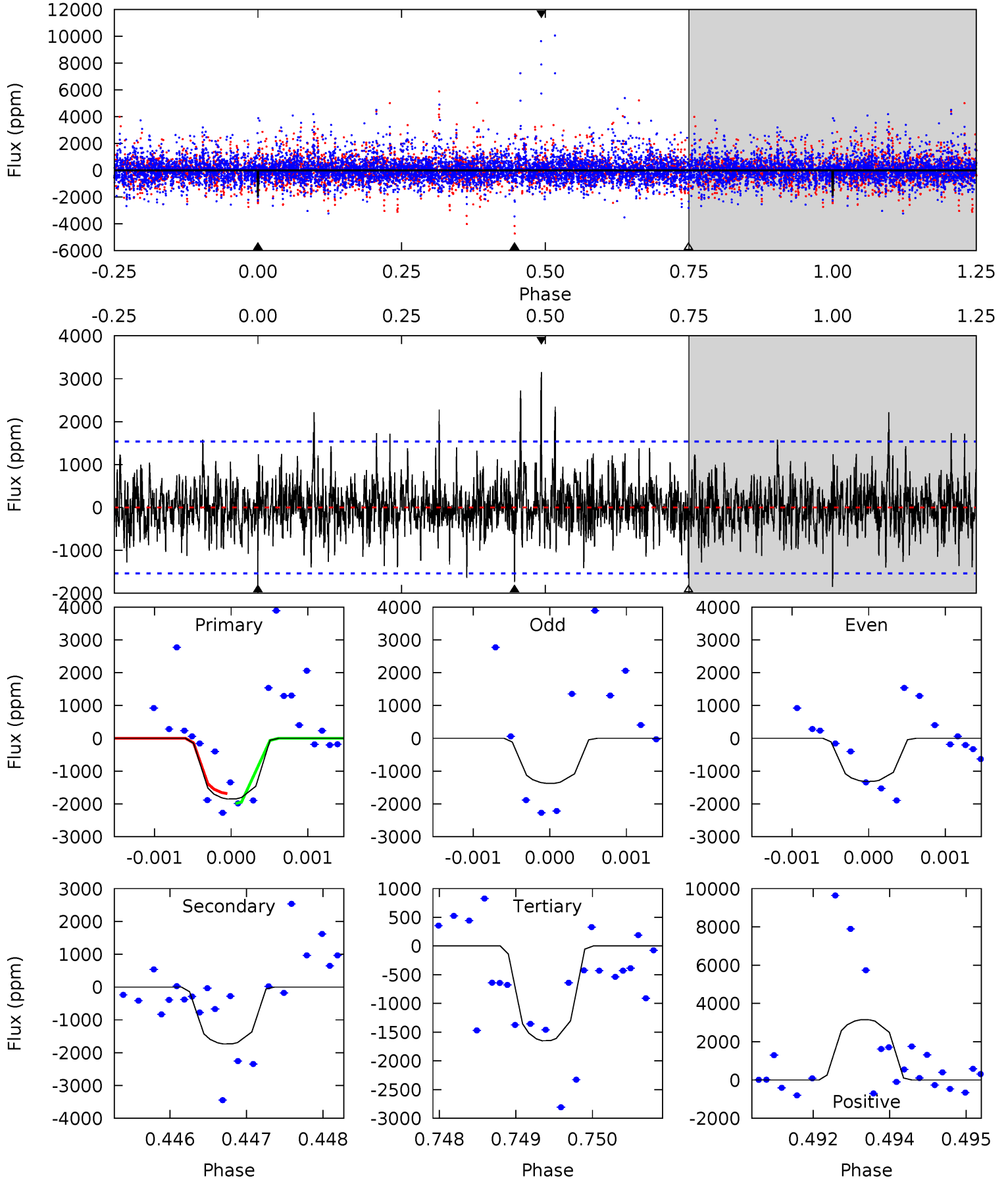


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

006425928-04, P = 98.272540 Days, E = 42.770969 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
6.54	6.13	5.83	11.1	5.43	3.26	1.65	0.71	-4.60	0.30	-5.01	0.08	1.14	0.63	0.48





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 006425928

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3862^{+50}_{-50}$	$4.699^{+0.030}_{-0.012}$	$0.000^{+0.100}_{-0.100}$	$0.551^{+0.019}_{-0.025}$	$0.553^{+0.025}_{-0.021}$	$4.663^{+0.558}_{-0.256}$
	+1%/-1%	+1%/-0%	+inf%/-inf%	+3%/-5%	+5%/-4%	+12%/-5%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006425928-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1734 \pm 283$	$9.95^{+10.87}_{-7.03}$	$301^{+5}_{-5}$	$2574^{+1045}_{-413}$	$1103^{+12458}_{-857}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

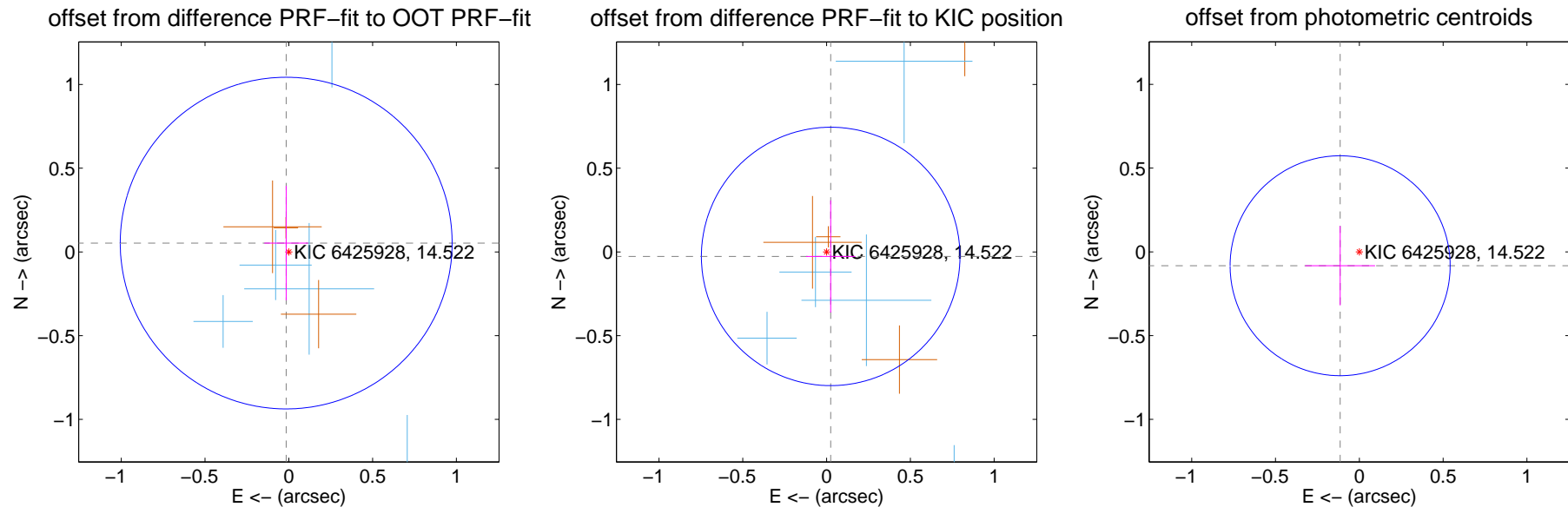
## DV Centroid Data

Supplemental centroid analysis for 006425928-04. Kepler magnitude: 14.52. Transit SNR 7.73

There are 5 quarters with good PRF difference image offsets

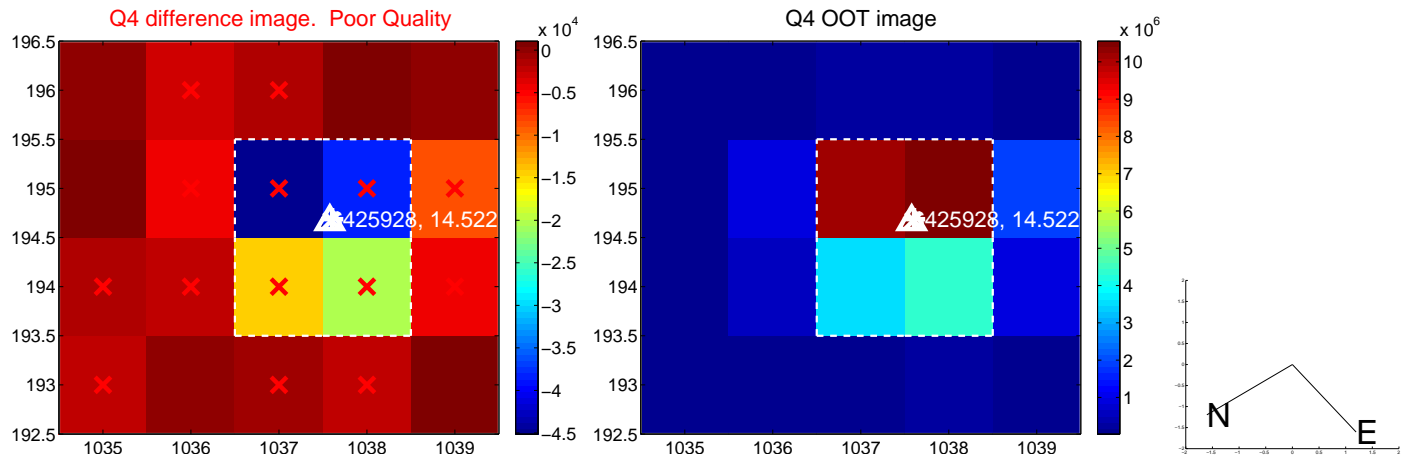
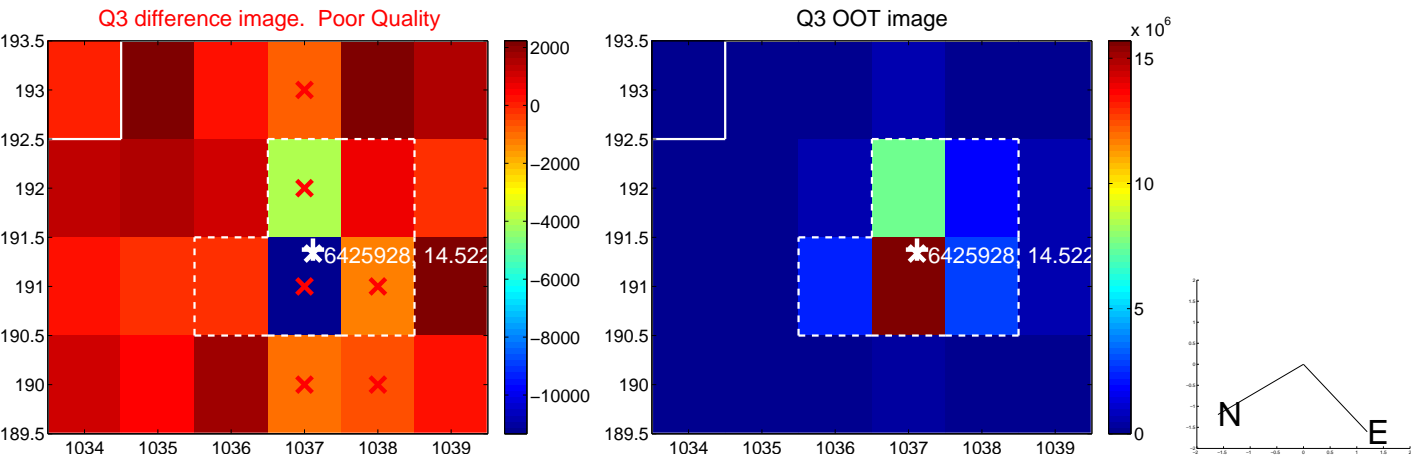
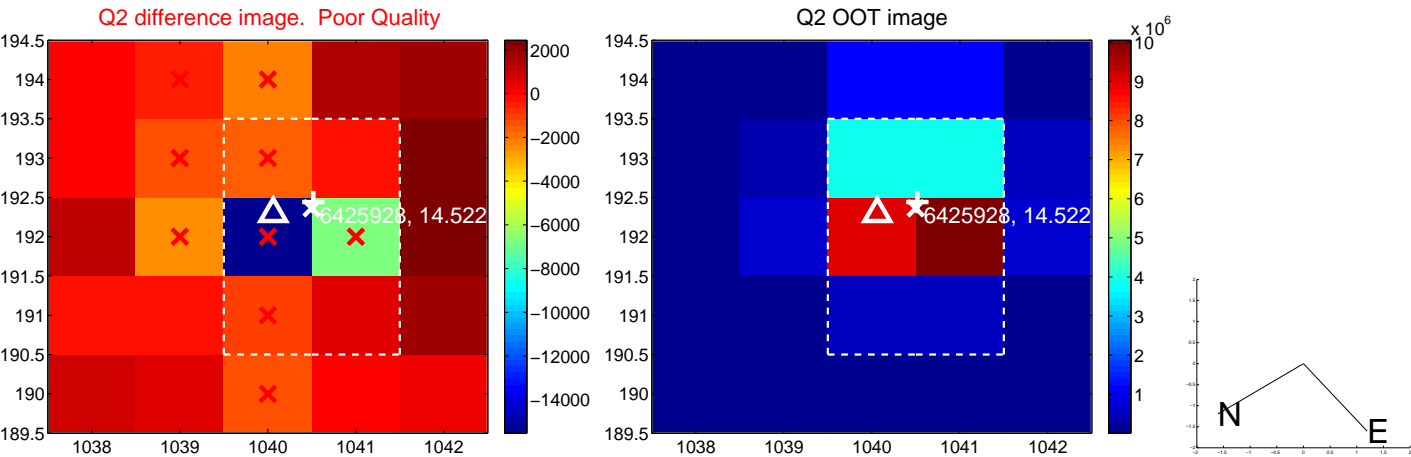
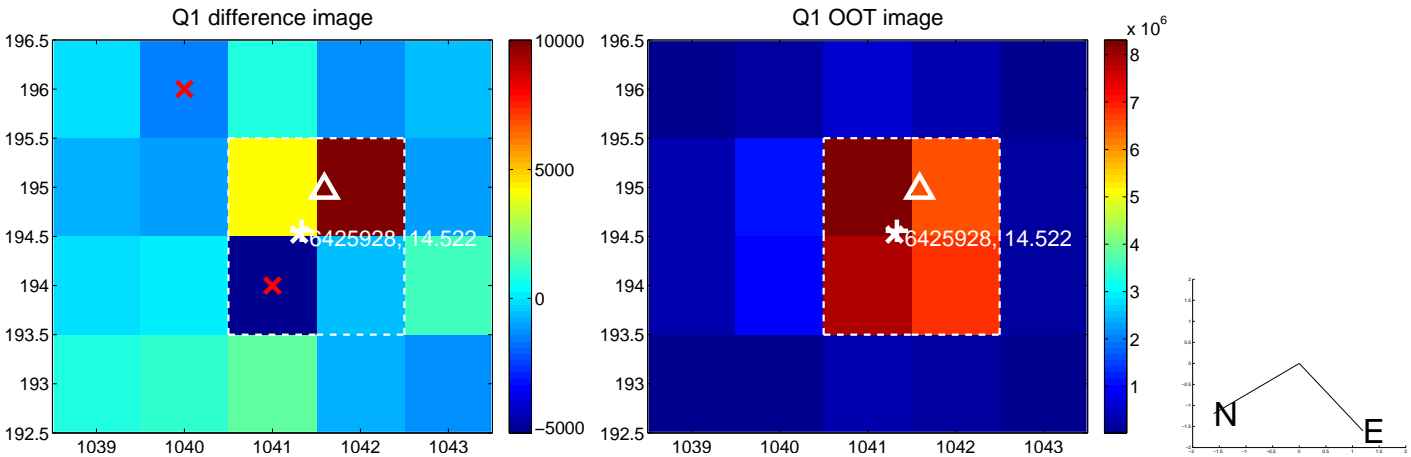
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.055 \pm 0.330$	0.17	$0.016 \pm 0.131$	$0.053 \pm 0.341$
PRF-fit source offset from KIC position	$0.036 \pm 0.257$	0.14	$-0.025 \pm 0.147$	$-0.027 \pm 0.335$
photometric centroid source offset	$0.14 \pm 0.22$	0.65	$0.11 \pm 0.21$	$-0.08 \pm 0.24$



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.

Q5 no difference image



Q5 no OOT image



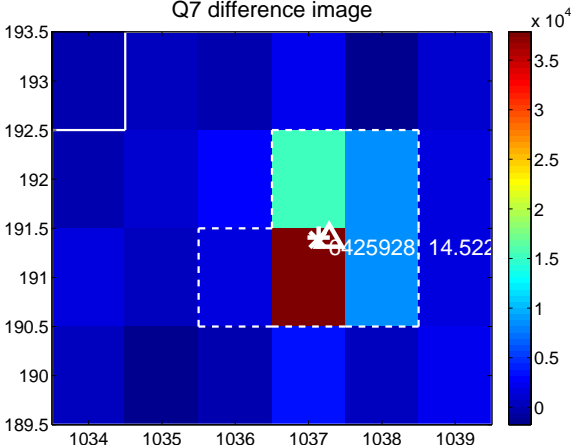
Q6 no difference image



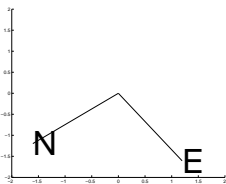
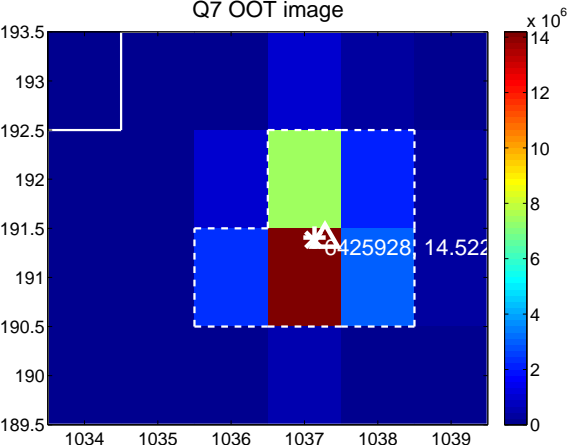
Q6 no OOT image



Q7 difference image



Q7 OOT image



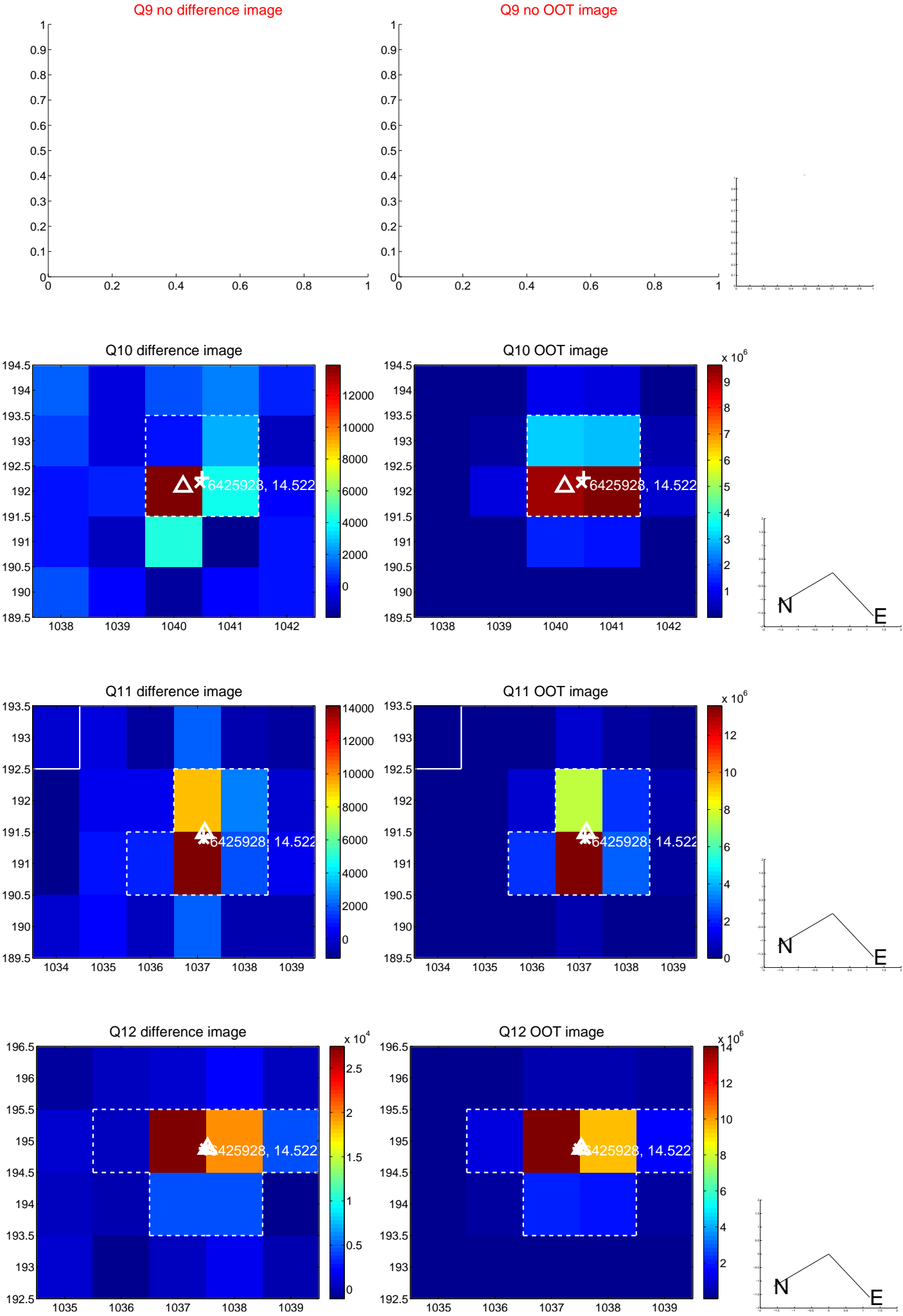
Q8 no difference image



Q8 no OOT image

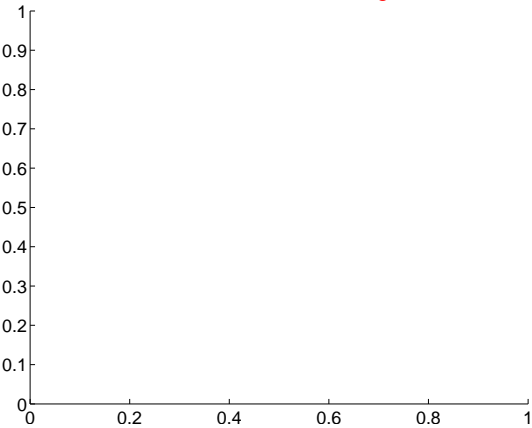


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

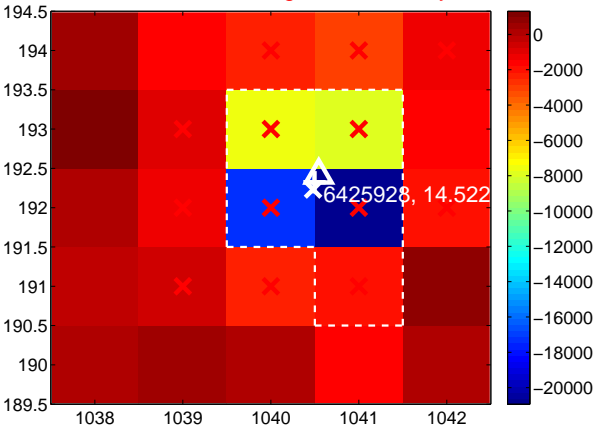
Q13 no difference image



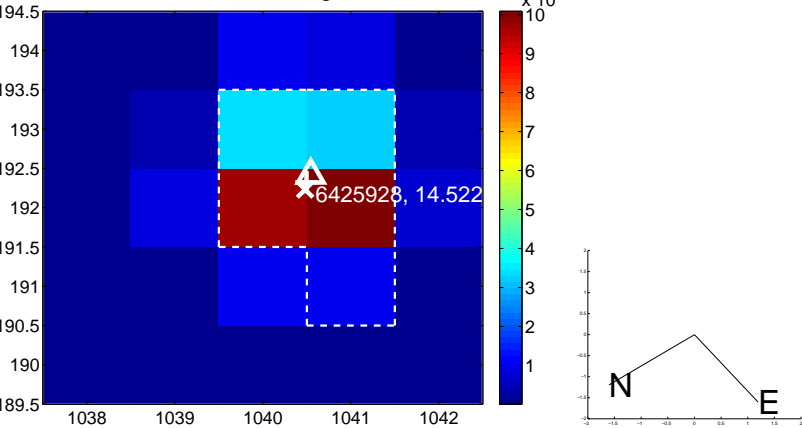
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



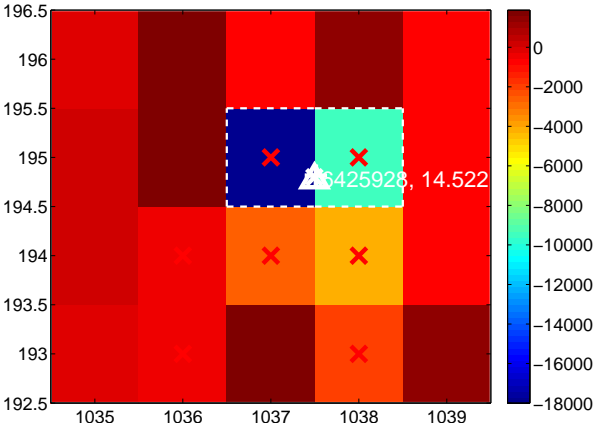
Q15 no difference image



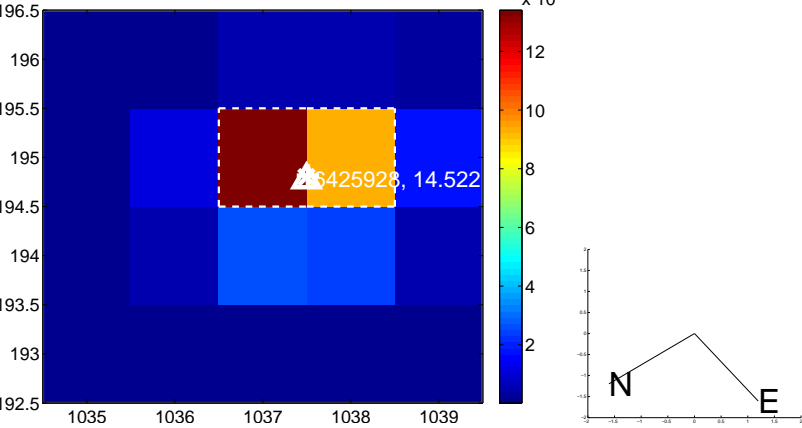
Q15 no OOT image



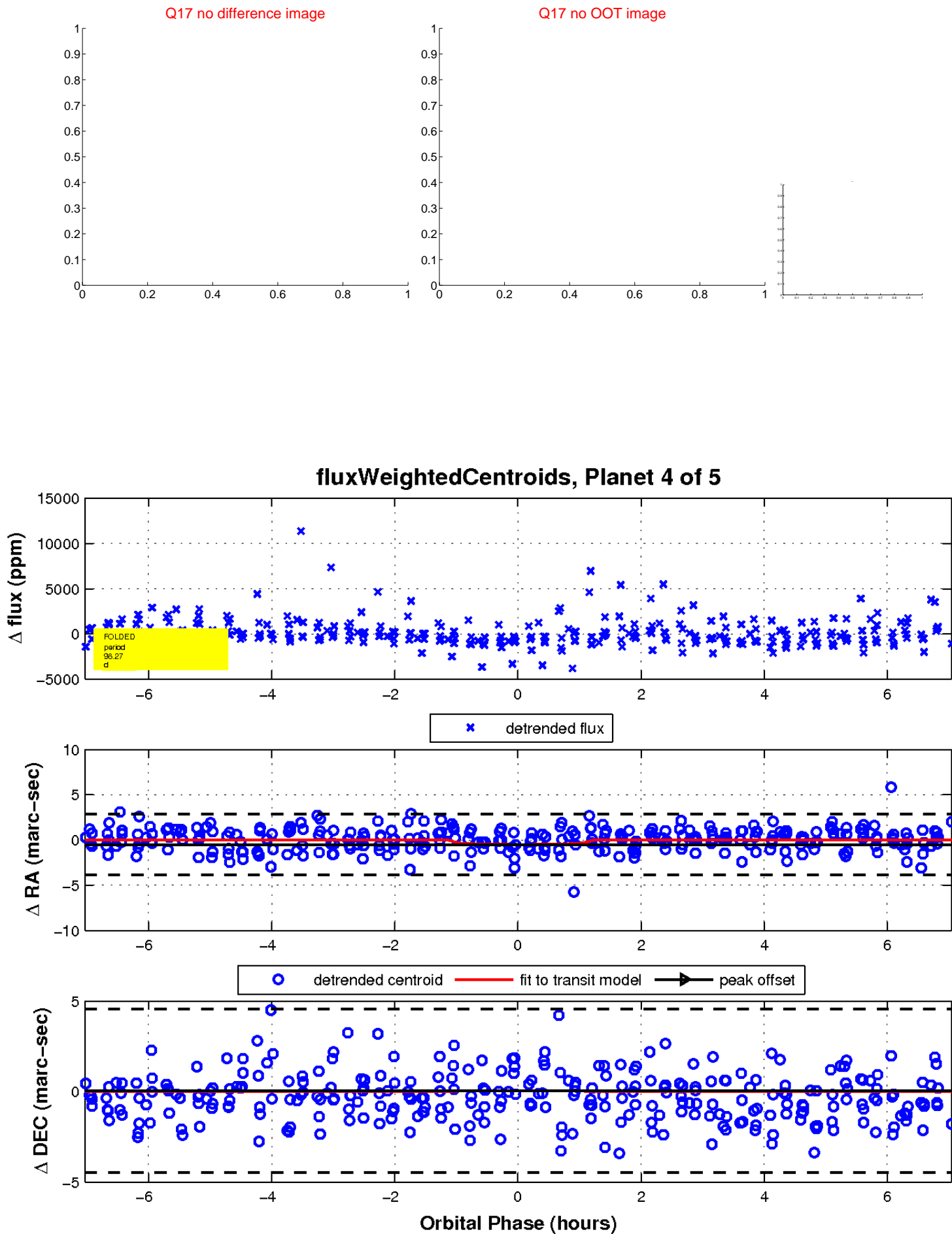
Q16 difference image. Poor Quality



Q16 OOT image



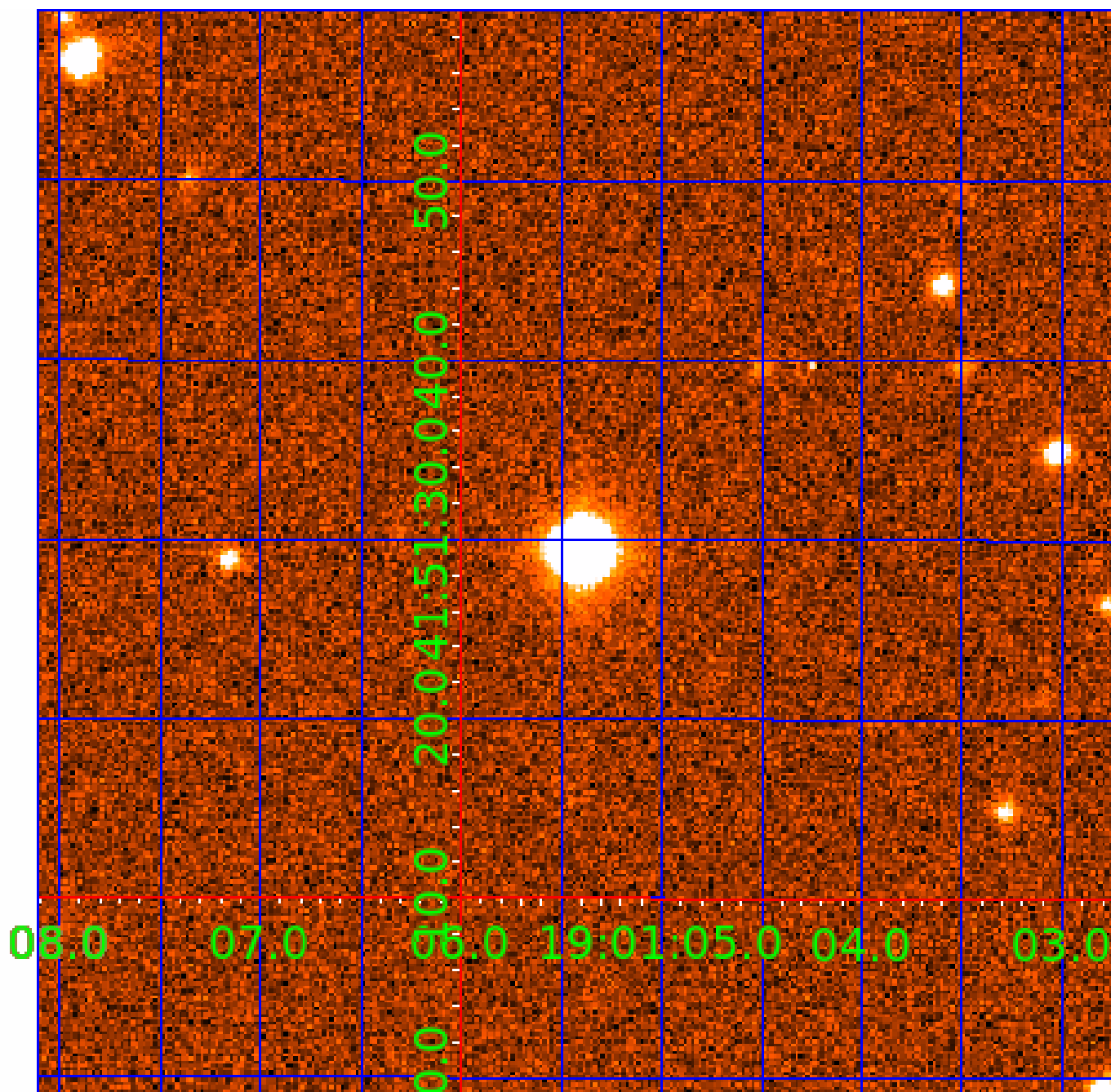
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 006425928

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006425928-01	OBS	No	388.897100	286.200000	1296.3	2.469	14.2	4.6	0.55	3862	2.02	0.08
006425928-03	OBS	No	0.591473	132.101126	130.8	3.672	11.8	10.2	0.55	3862	0.67	471.70
006425928-04	OBS	No	98.272540	141.043509	2570.5	2.354	10.0	7.7	0.55	3862	2.75	0.52
006425928-05	OBS	No	64.649405	176.749087	1531.7	2.663	9.6	5.1	0.55	3862	2.23	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006425928-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
006425928-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006425928-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
006425928-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST

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

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

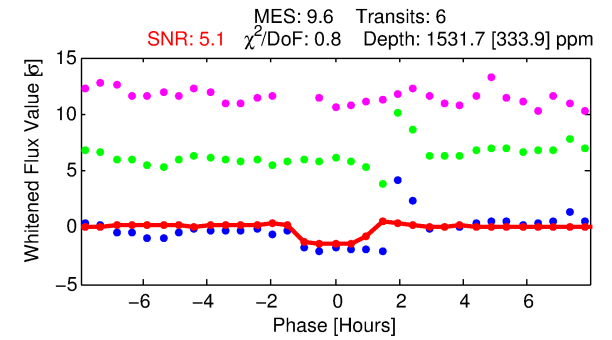
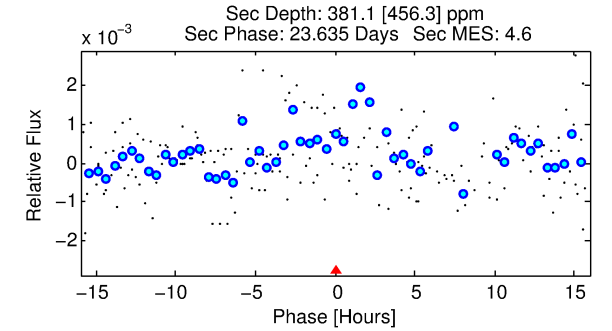
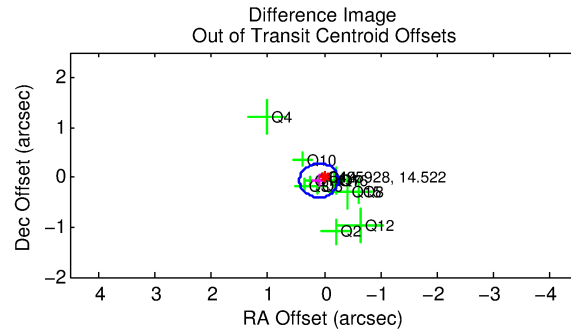
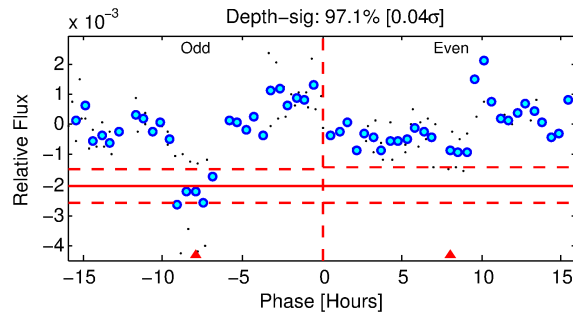
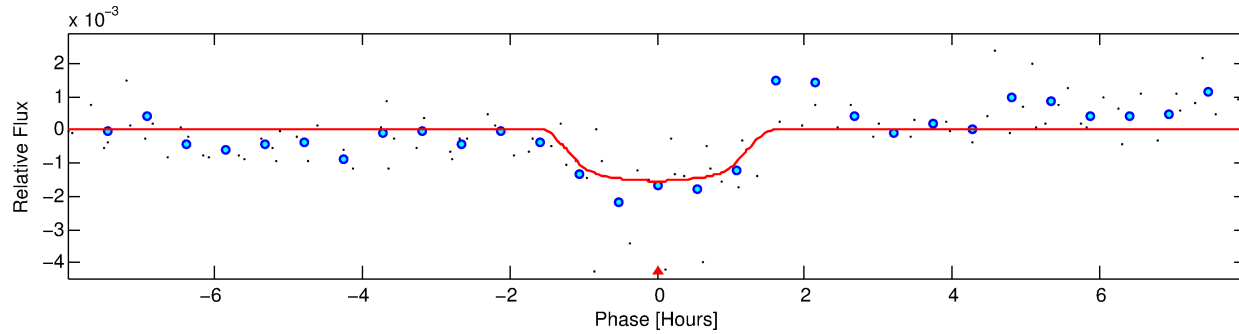
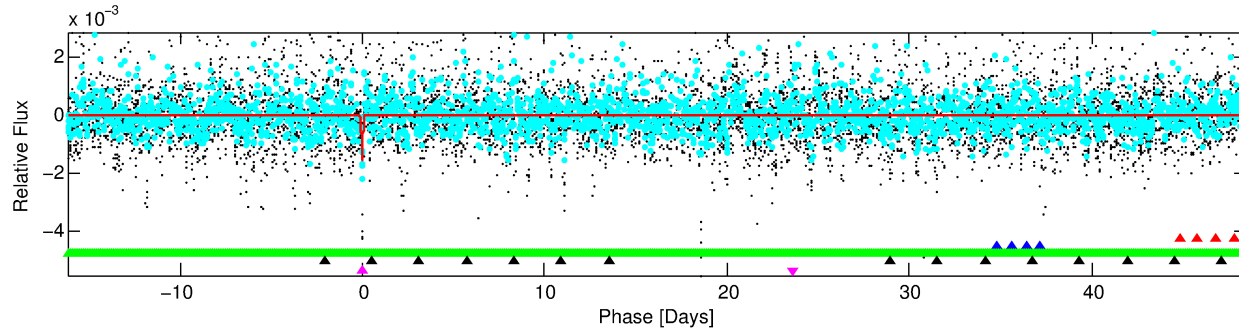
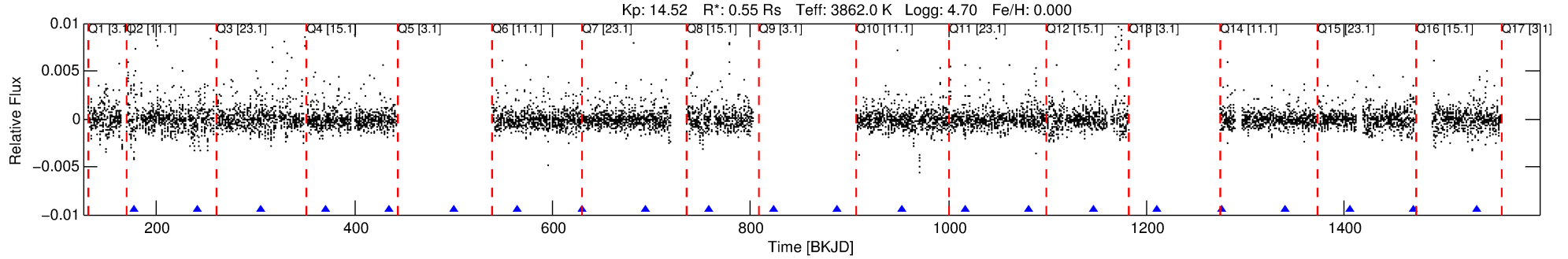
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006425928-05

No Significant Match Found

# DV One-Page Summary

KIC: 6425928 Candidate: 5 of 5 Period: 64.649 d



## DV Fit Results:

Period = 64.64941 [0.00100] d  
Epoch = 176.7491 [0.0121] BKJD  
Rp/R\* = 0.0371 [0.1981]  
a/R\* = 158.66 [3305.98]  
b = 0.59 [23.77]  
Seff = 0.90 [0.07]  
Teq = 249 [5] K  
Rp = 2.23 [11.91] Re  
a = 0.2589 [0.0098] AU  
Ag = 2824.60 [30357.09] [0.09σ]  
Teff = 2801 [7527] K [0.34σ]

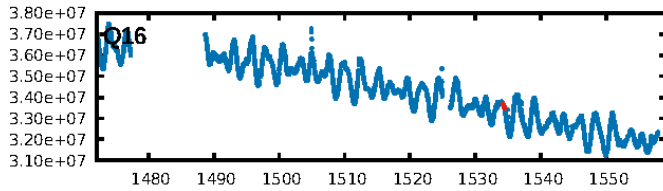
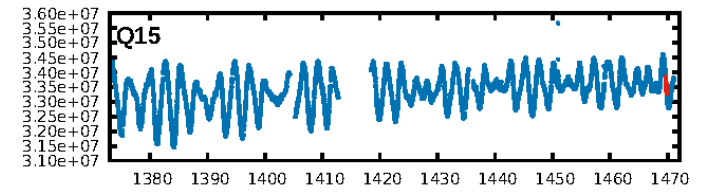
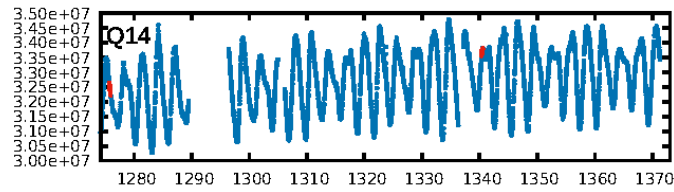
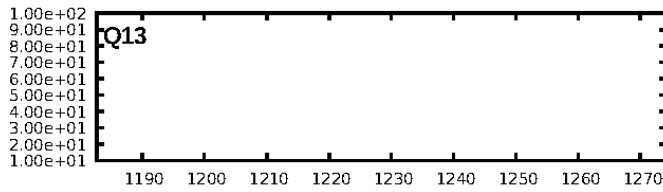
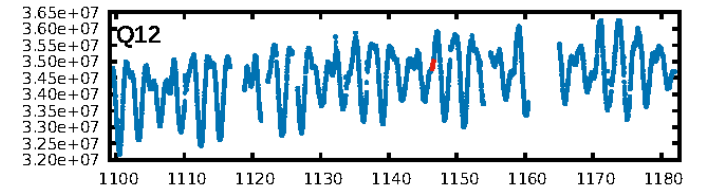
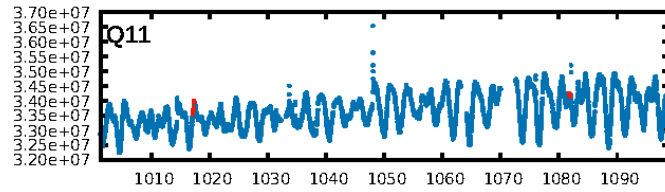
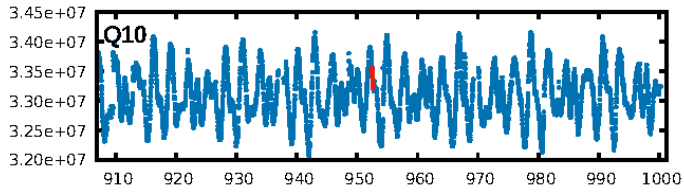
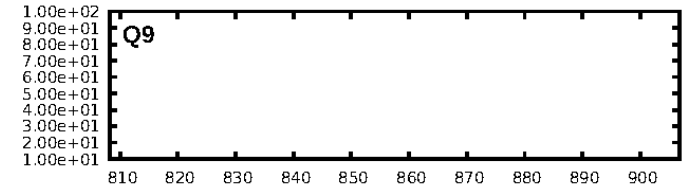
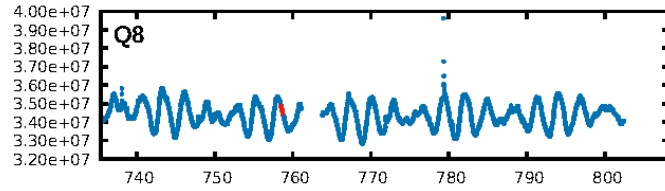
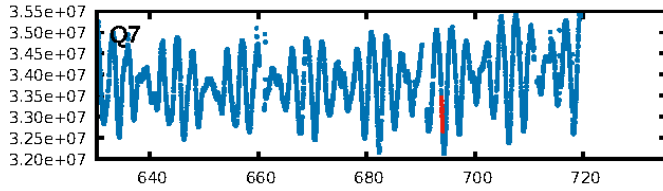
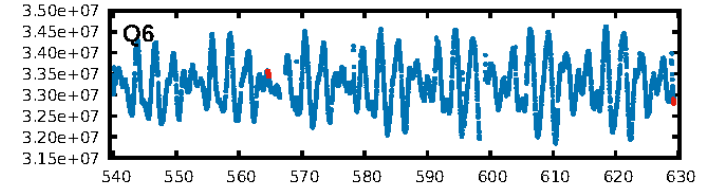
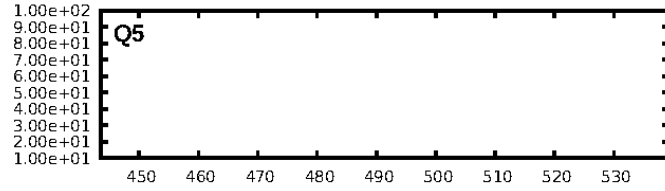
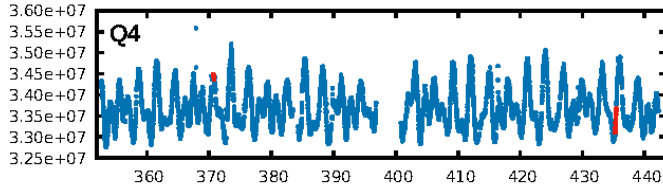
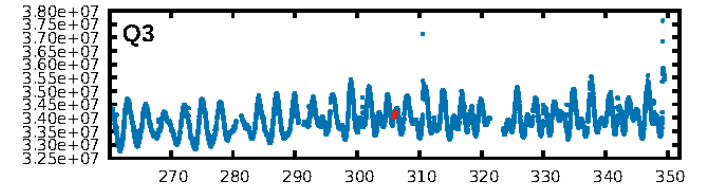
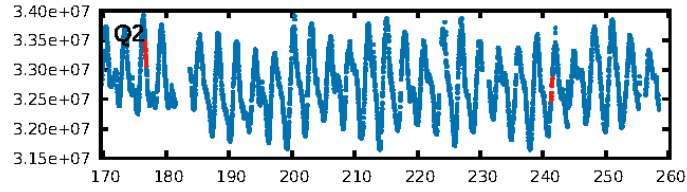
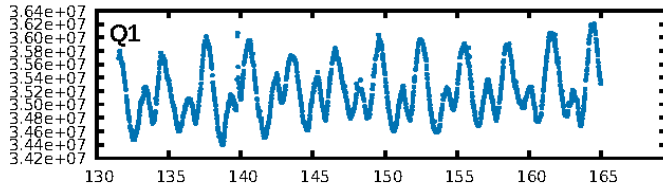
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [338.96σ]  
LongPeriod-sig: 100.0% [227.04σ]  
ModelChiSquare2-sig: 3.7%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 6.94e-12**  
RollingBand-fgt: 1.00 [6/6]  
**GhostDiagnostic-chr: 0.135**  
Centroid-sig: 2.9%  
Centroid-so: 0.511 arcsec [1.75σ]  
OotOffset-rm: 0.118 arcsec [1.03σ]  
OotOffset-st: 4/4/4/0 [12]  
KicOffset-rm: 0.216 arcsec [1.04σ]  
KicOffset-st: 4/4/4/0 [12]  
DiffImageQuality-fgm: 0.42 [5/12]  
DiffImageOverlap-fno: 0.00 [0/12]

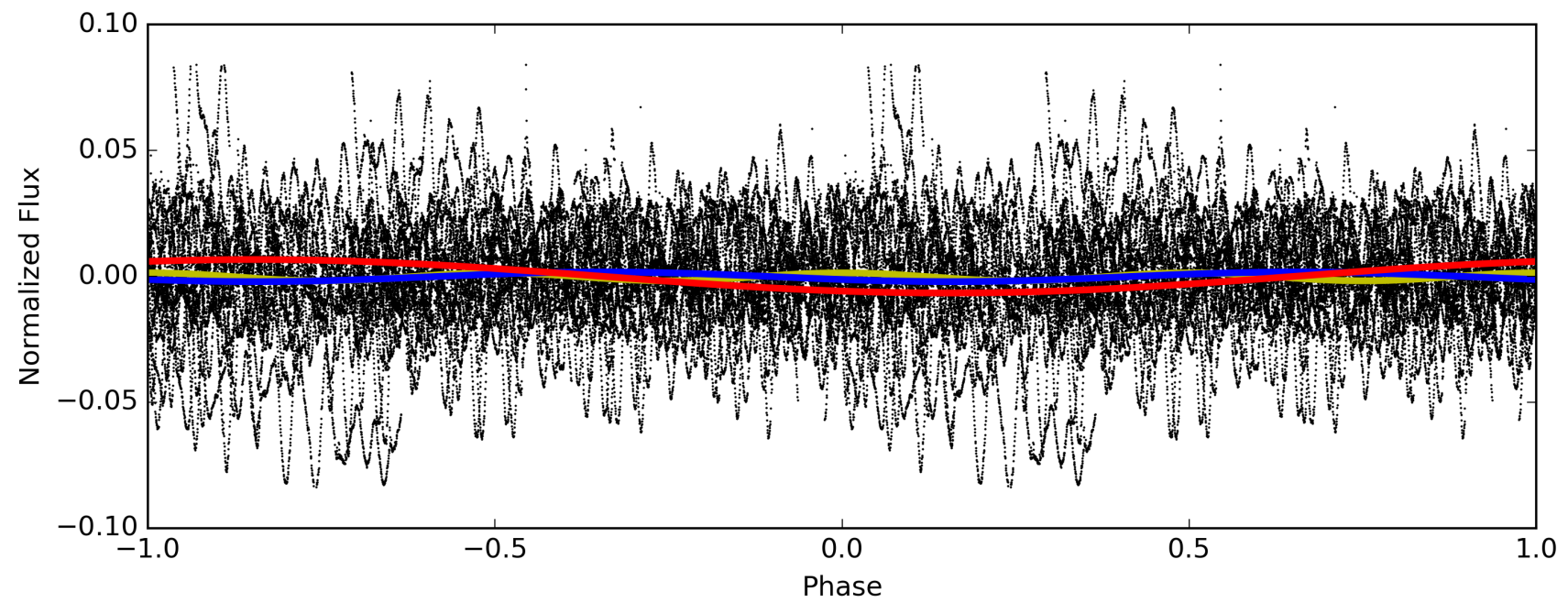
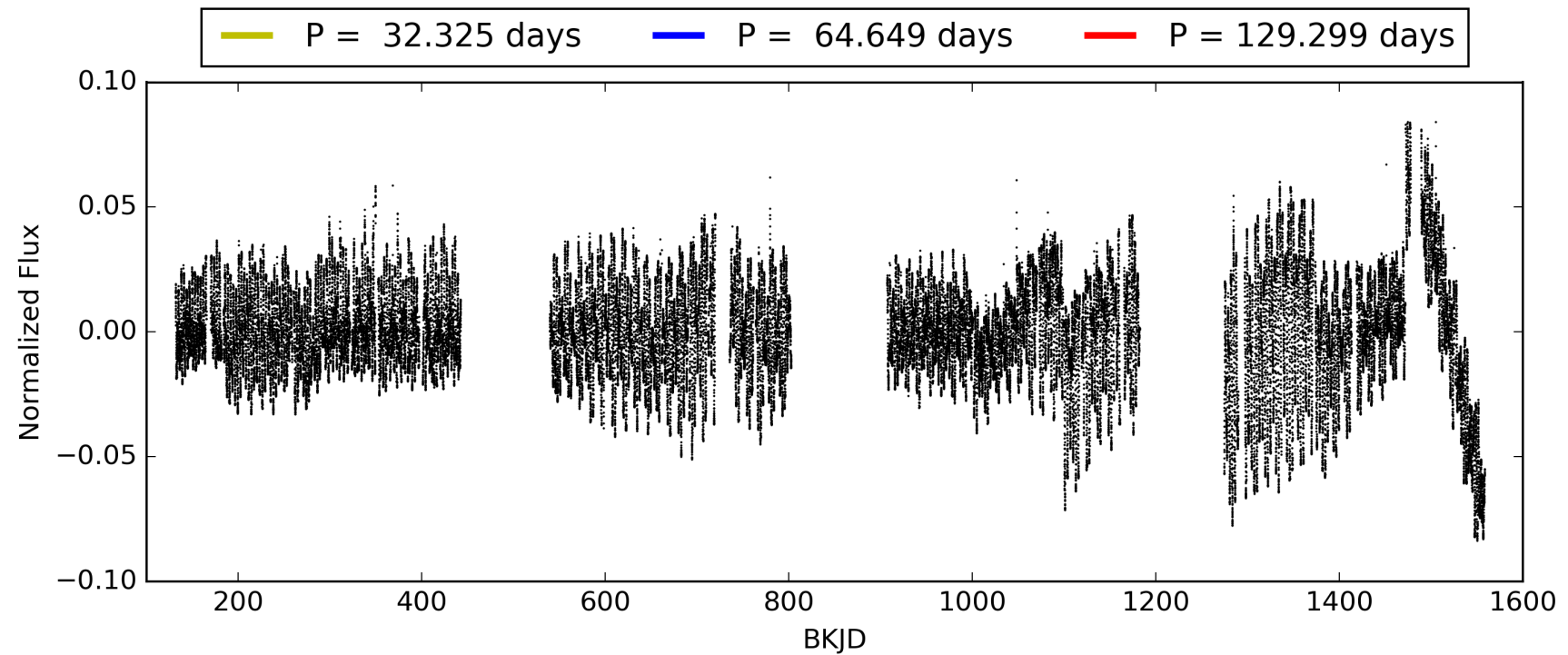
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:44:28 Z

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

# TCE 006425928-05, PDC Light Curves

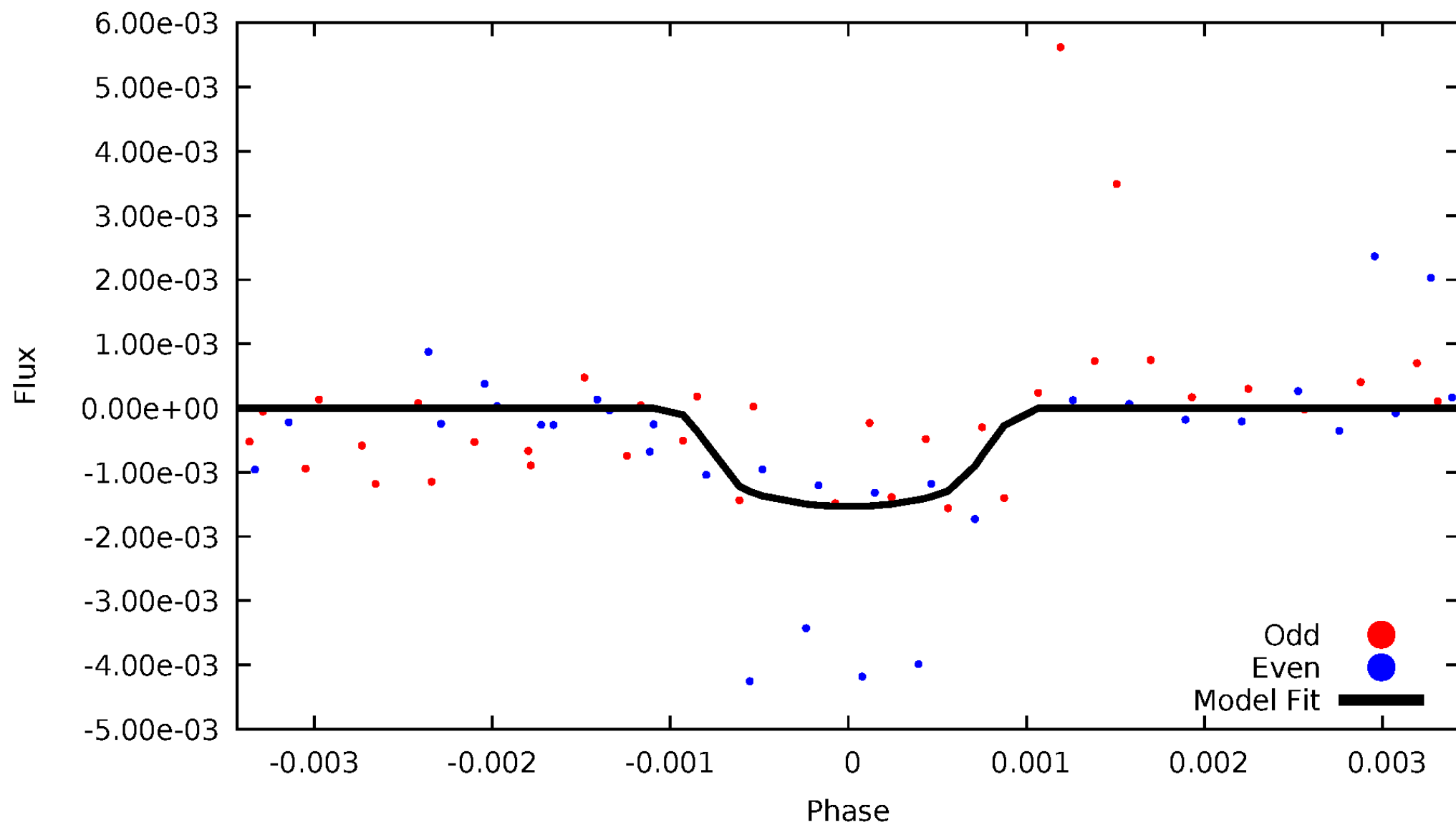


TCE 006425928-05



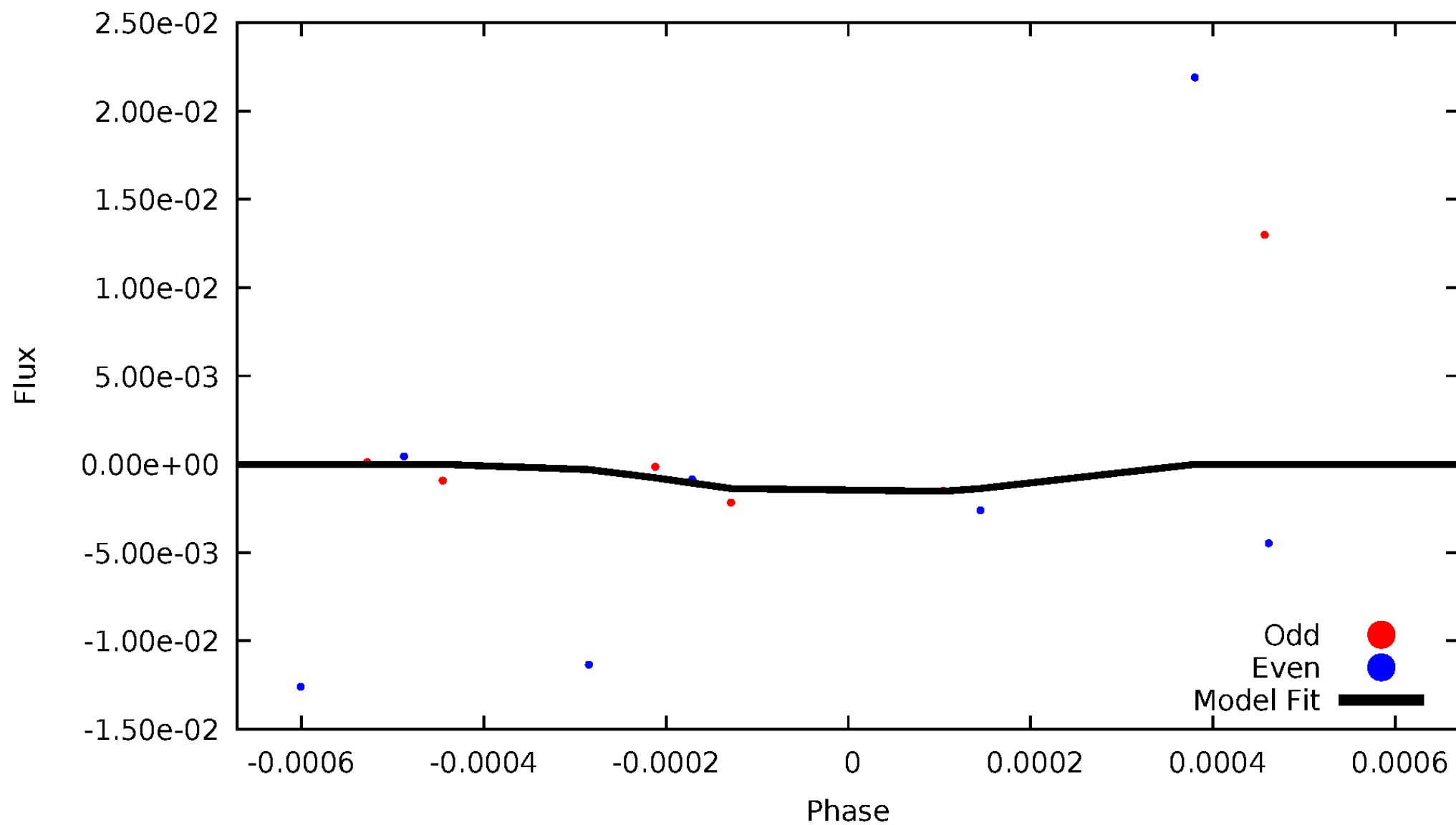
# DV Odd/Even

TCE 006425928-05



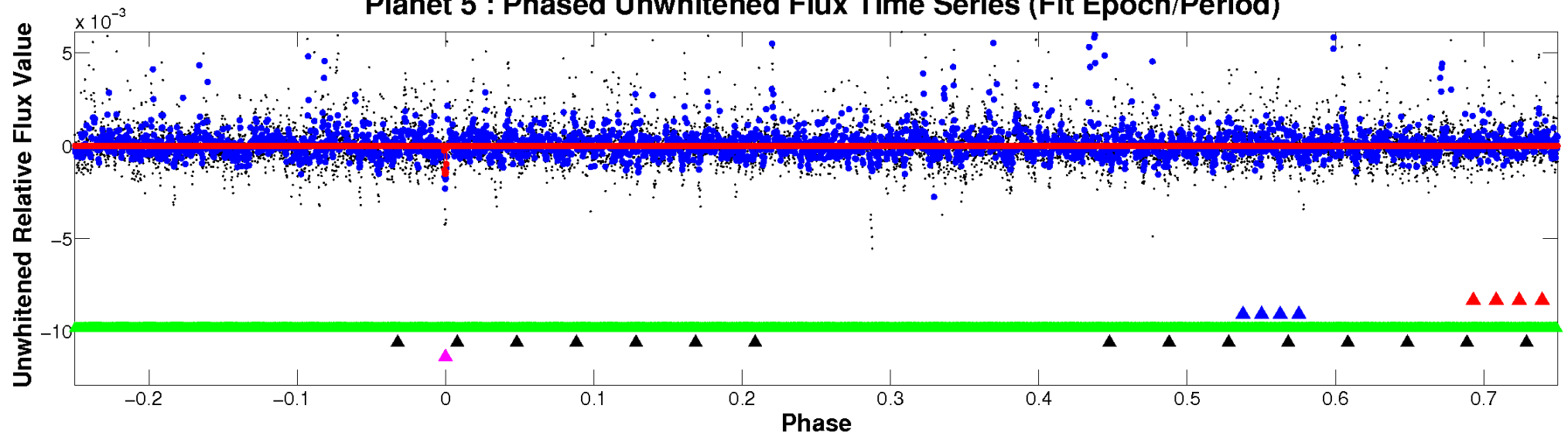
# ALT Odd/Even

TCE 006425928-05

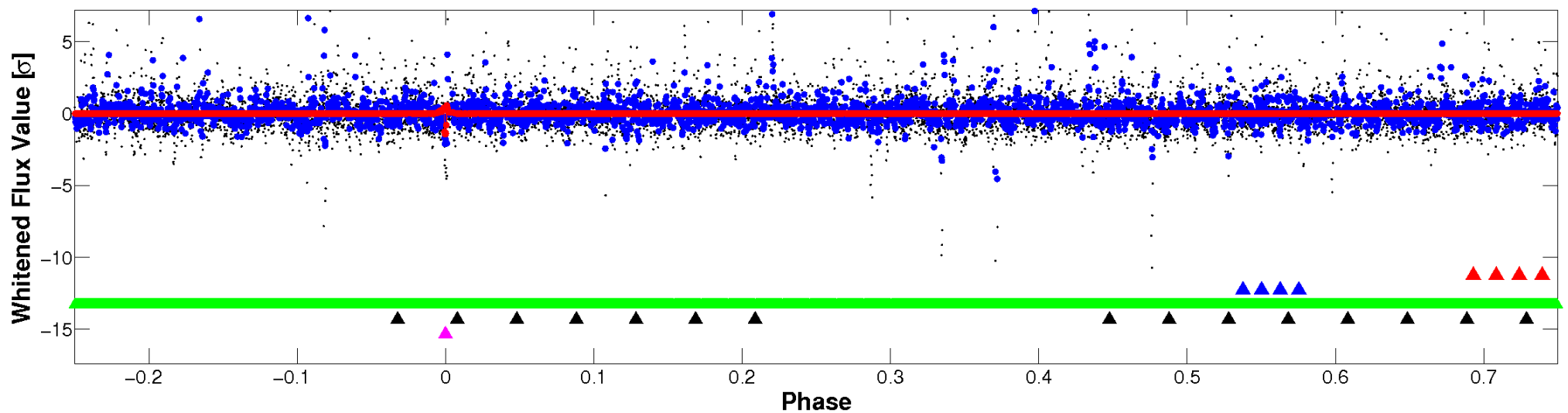


# Non-Whitened Vs. Whitened Light Curve

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



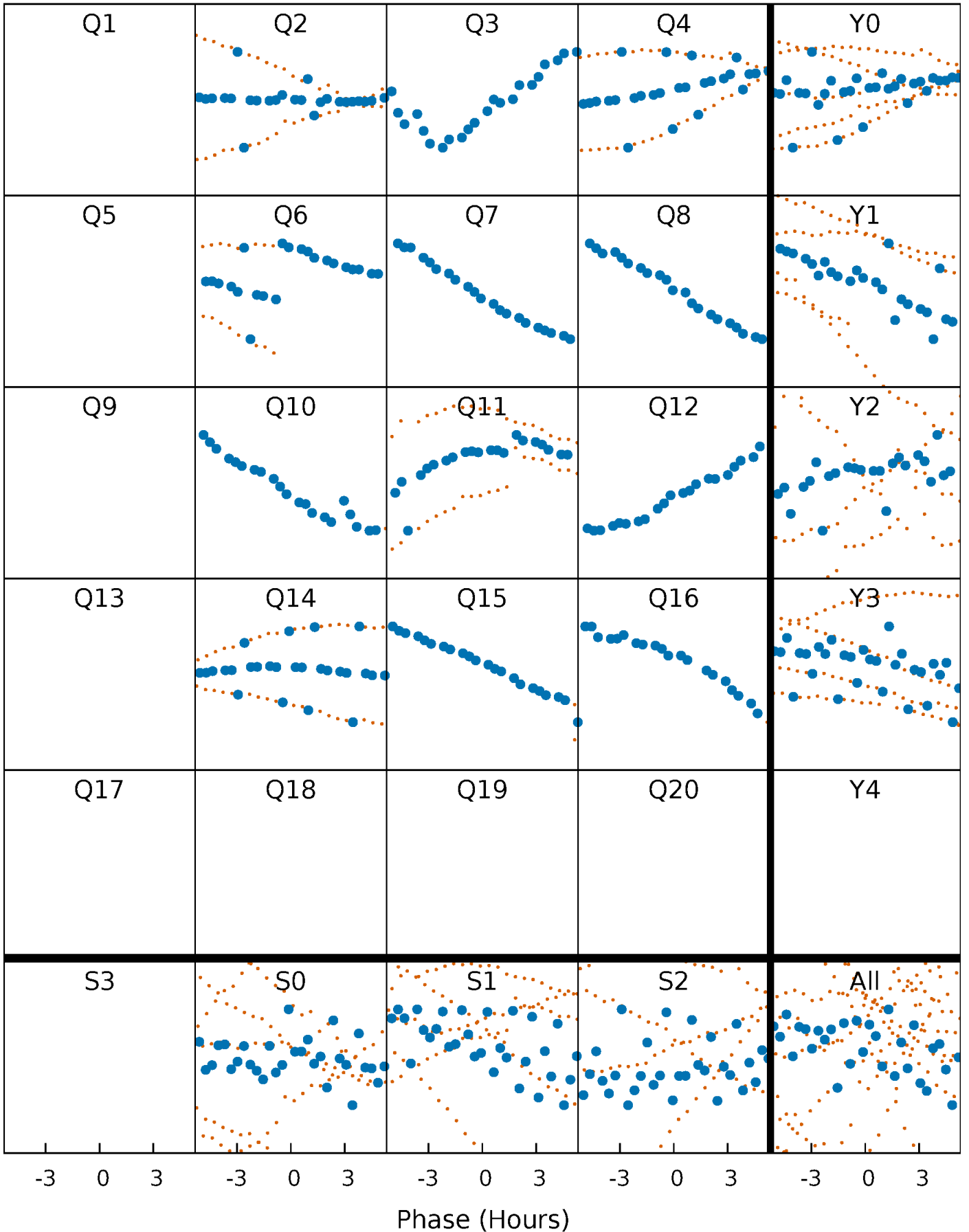
Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





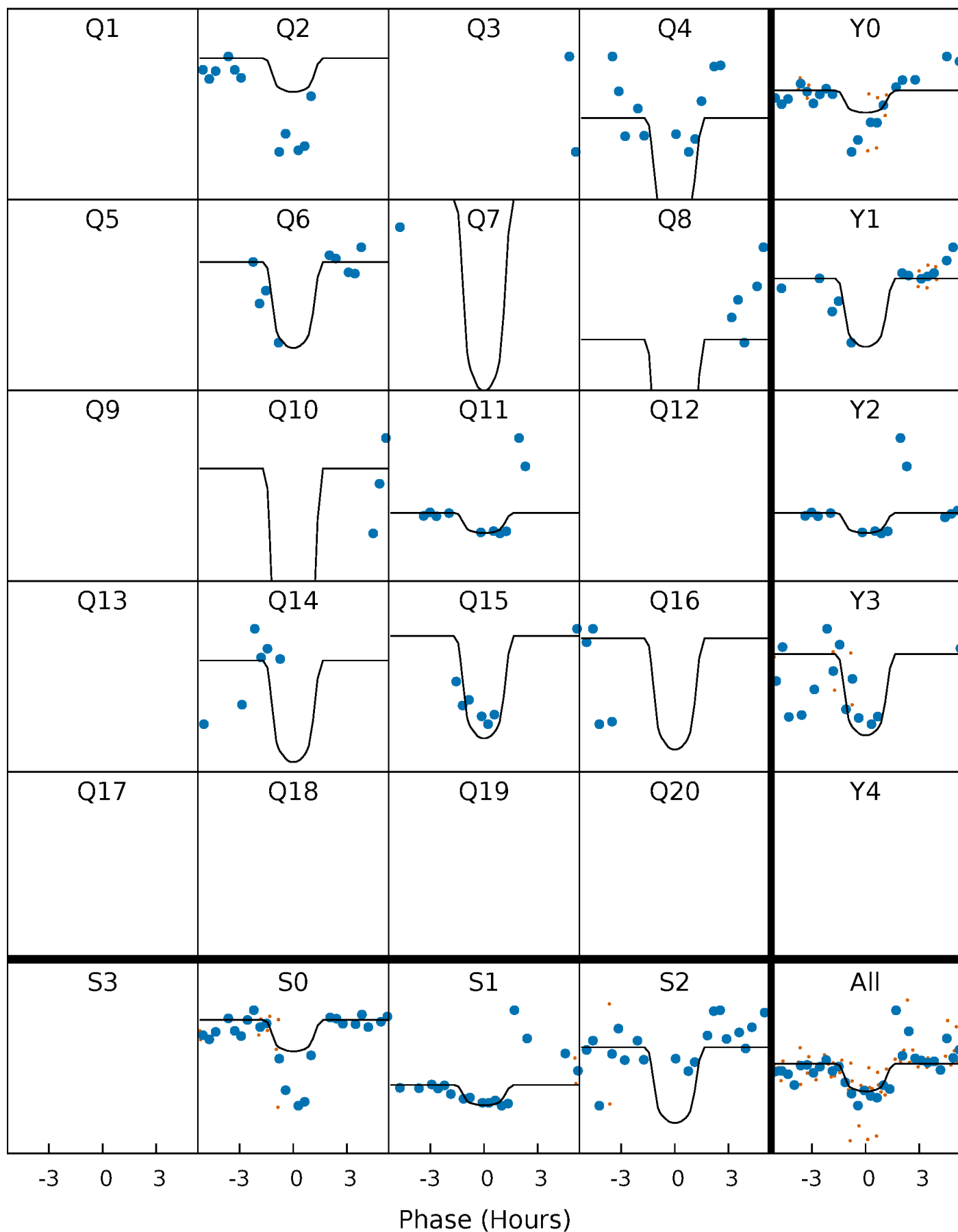
# PDC Quarter-Phased Transit Curves

TCE 006425928-05     $P = 64.649405$  Days     $T_0 = 176.749087$  (BKJD)



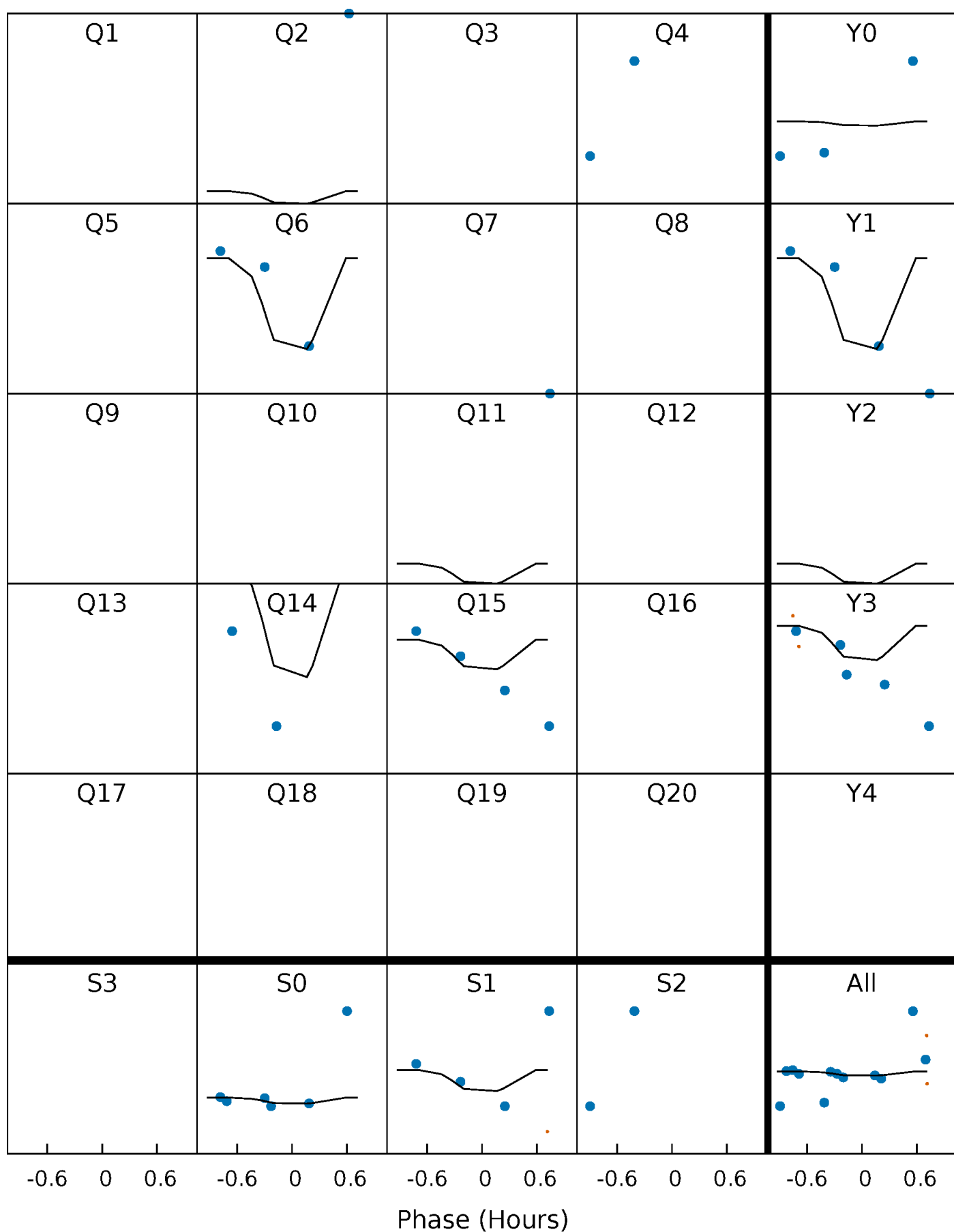
# DV Quarter-Phased Transit Curves

TCE 006425928-05     $P = 64.649405$  Days     $T_0 = 176.749087$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

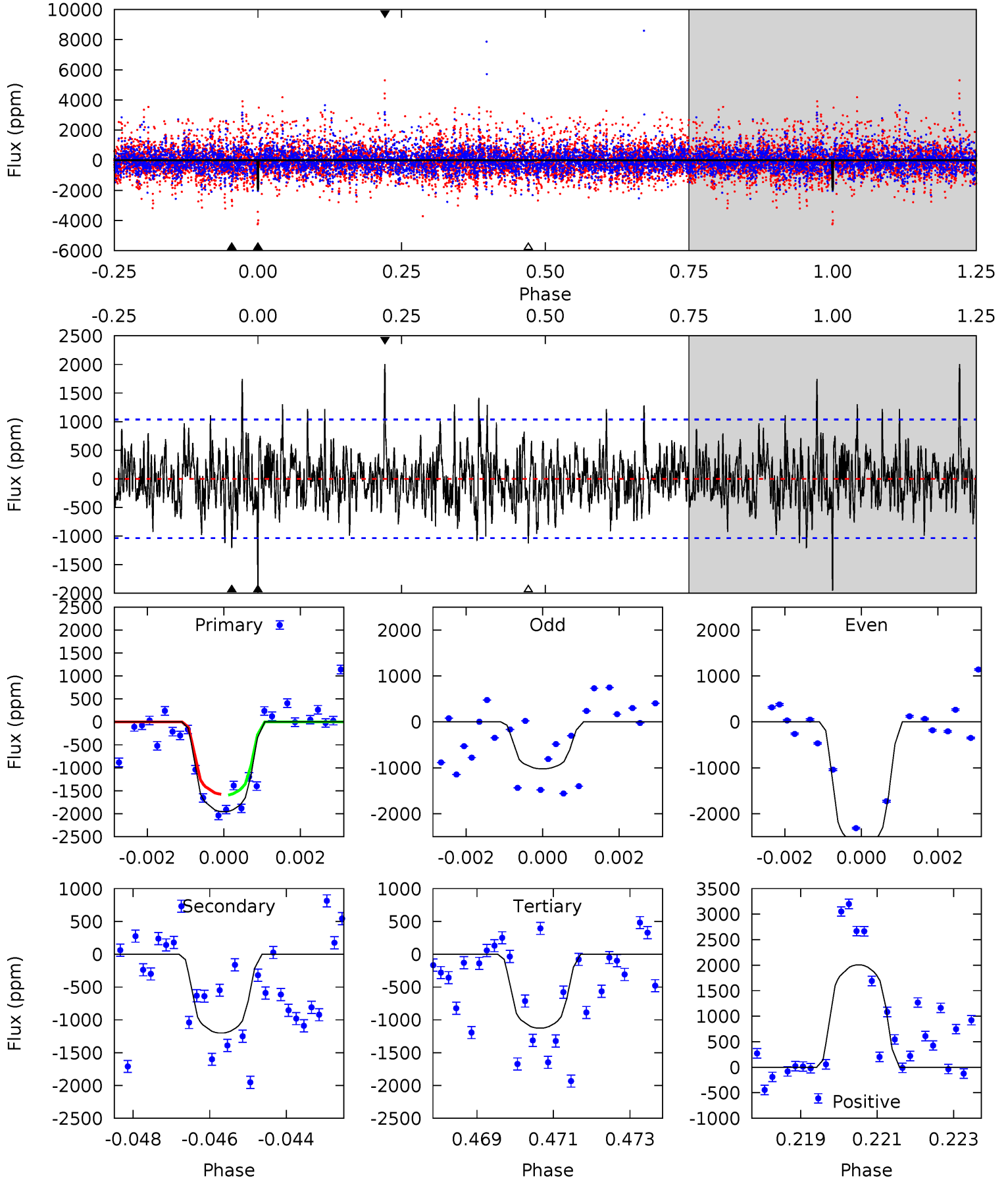
TCE 006425928-05 P= 64.651417 Days  $T_0=176.688708$  (BKJD)



# DV Model-Shift Uniqueness Test

006425928-05, P = 64.649405 Days, E = 112.099682 Days

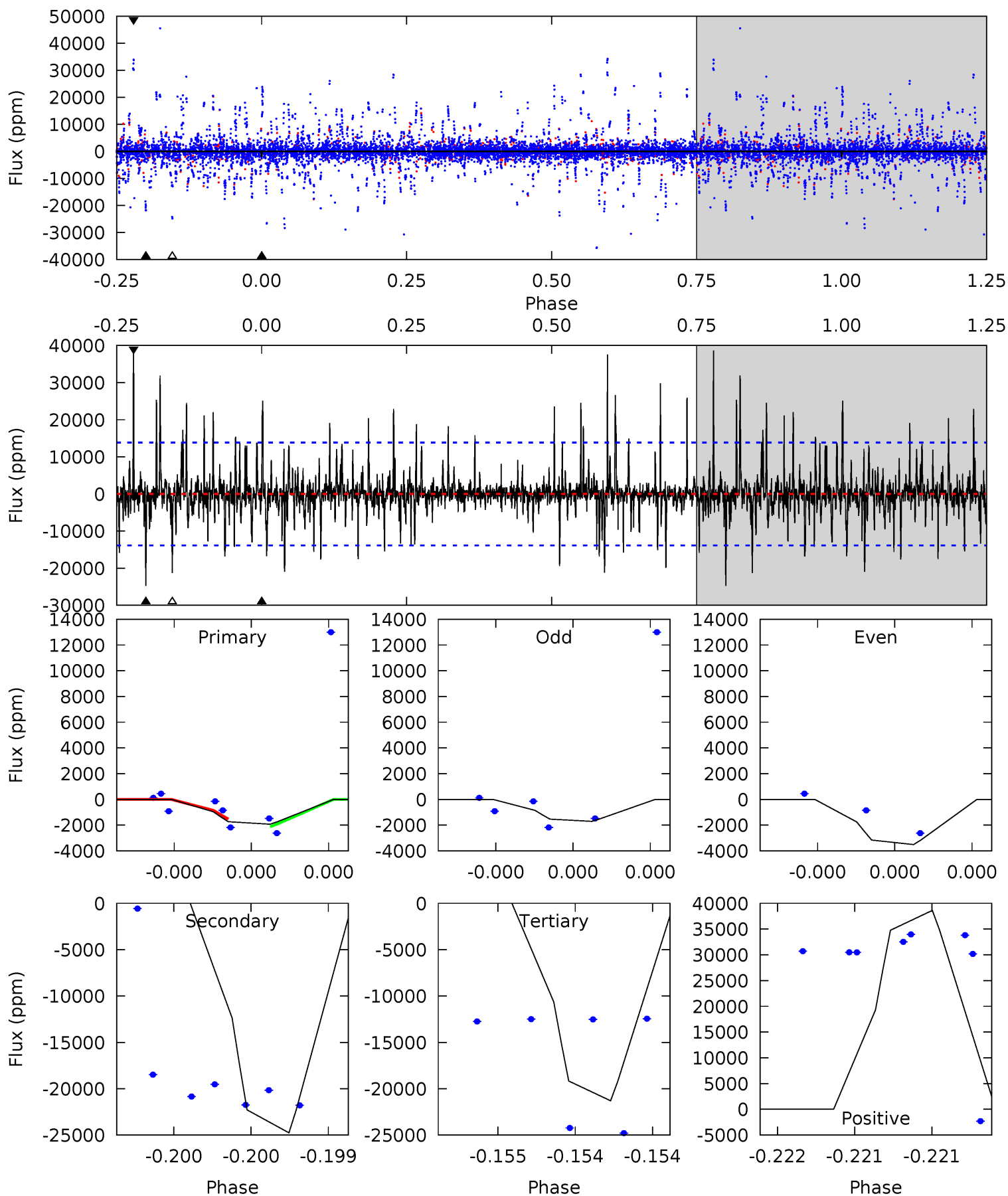
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	6.17	5.78	10.3	5.33	3.09	1.99	4.26	-0.25	0.38	-4.13	3.68	1.05	0.51	0.04



# Alt Model-Shift Uniqueness Test

006425928-05, P = 64.651417 Days, E = 112.037291 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.78	10.0	8.61	15.6	5.60	3.52	1.71	-7.83	-14.8	1.40	-5.61	0.20	1.00	0.61	0.11



### Stellar Parameters For KIC 006425928

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3862^{+50}_{-50}$	$4.699^{+0.030}_{-0.012}$	$0.000^{+0.100}_{-0.100}$	$0.551^{+0.019}_{-0.025}$	$0.553^{+0.025}_{-0.021}$	$4.663^{+0.558}_{-0.256}$
	+1%/-1%	+1%/-0%	+inf%/-inf%	+3%/-5%	+5%/-4%	+12%/-5%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006425928-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1200 \pm 195$	$9.21^{+8.22}_{-6.40}$	$346^{+5}_{-5}$	$2518^{+992}_{-349}$	$529^{+5199}_{-385}$
Alt.	$-24756 \pm 2474$	$8.76^{+9.53}_{-5.75}$	$346^{+5}_{-6}$	$3964^{+2361}_{-813}$	$12256^{+94479}_{-9387}$

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

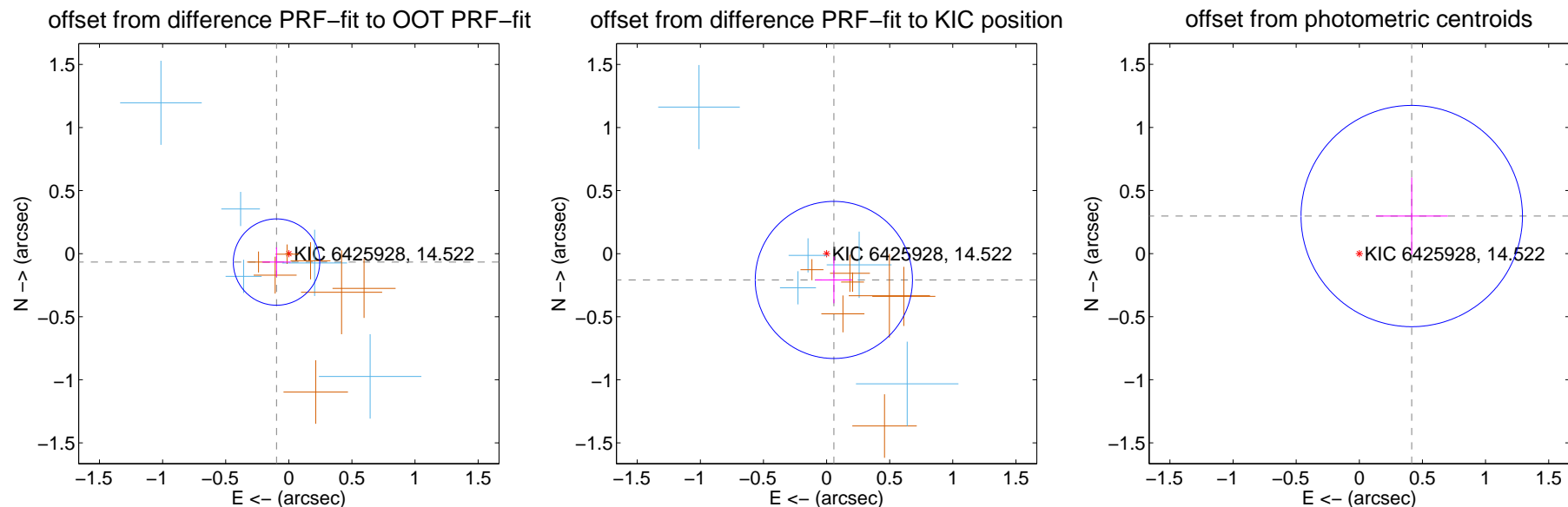
## DV Centroid Data

Supplemental centroid analysis for 006425928-05. Kepler magnitude: 14.52. Transit SNR 5.06

There are 5 quarters with good PRF difference image offsets

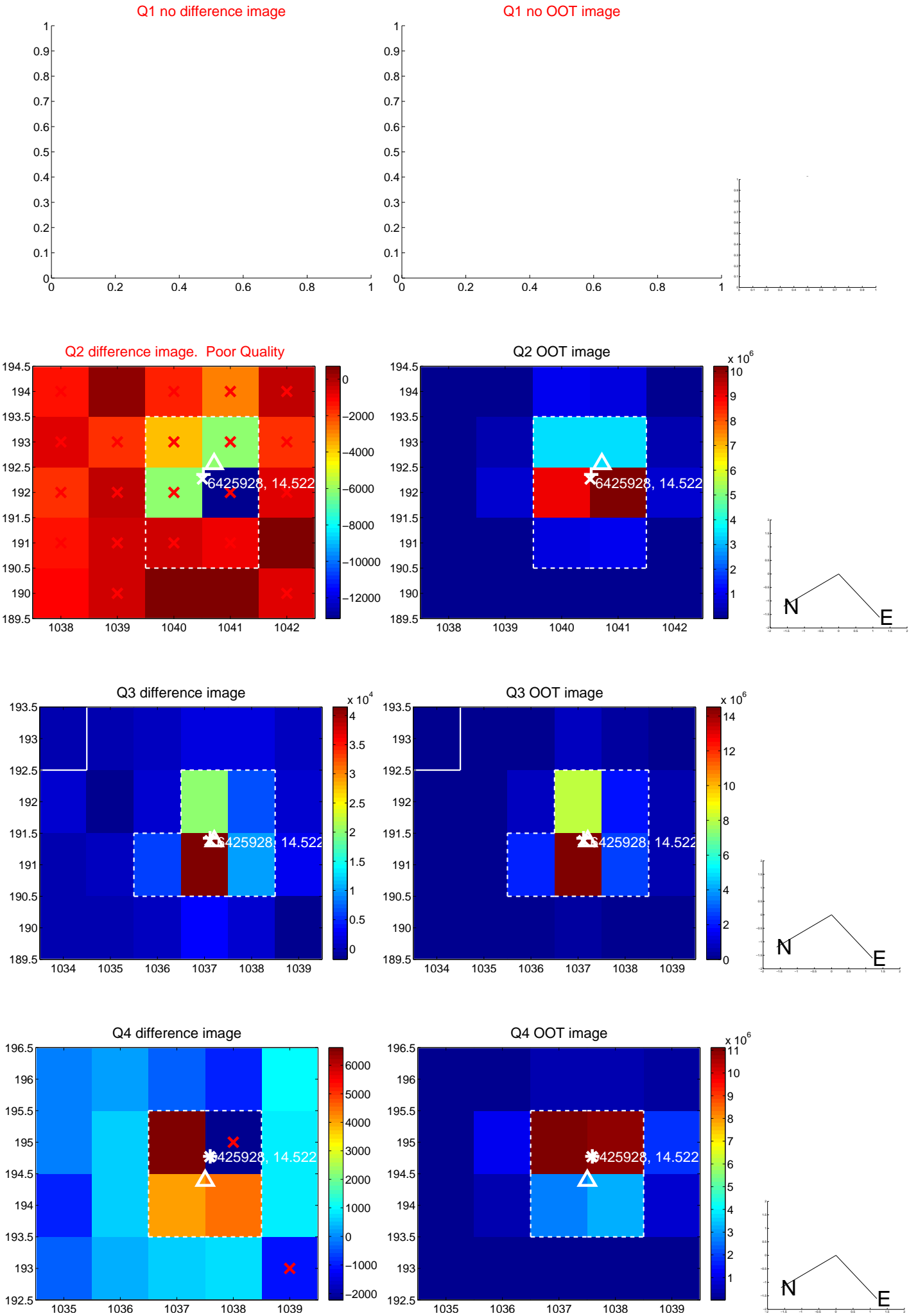
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.118 \pm 0.114$	1.03	$0.097 \pm 0.113$	$-0.067 \pm 0.116$
PRF-fit source offset from KIC position	$0.216 \pm 0.208$	1.04	$-0.058 \pm 0.146$	$-0.208 \pm 0.185$
photometric centroid source offset	$0.51 \pm 0.29$	1.75	$-0.42 \pm 0.28$	$0.30 \pm 0.31$



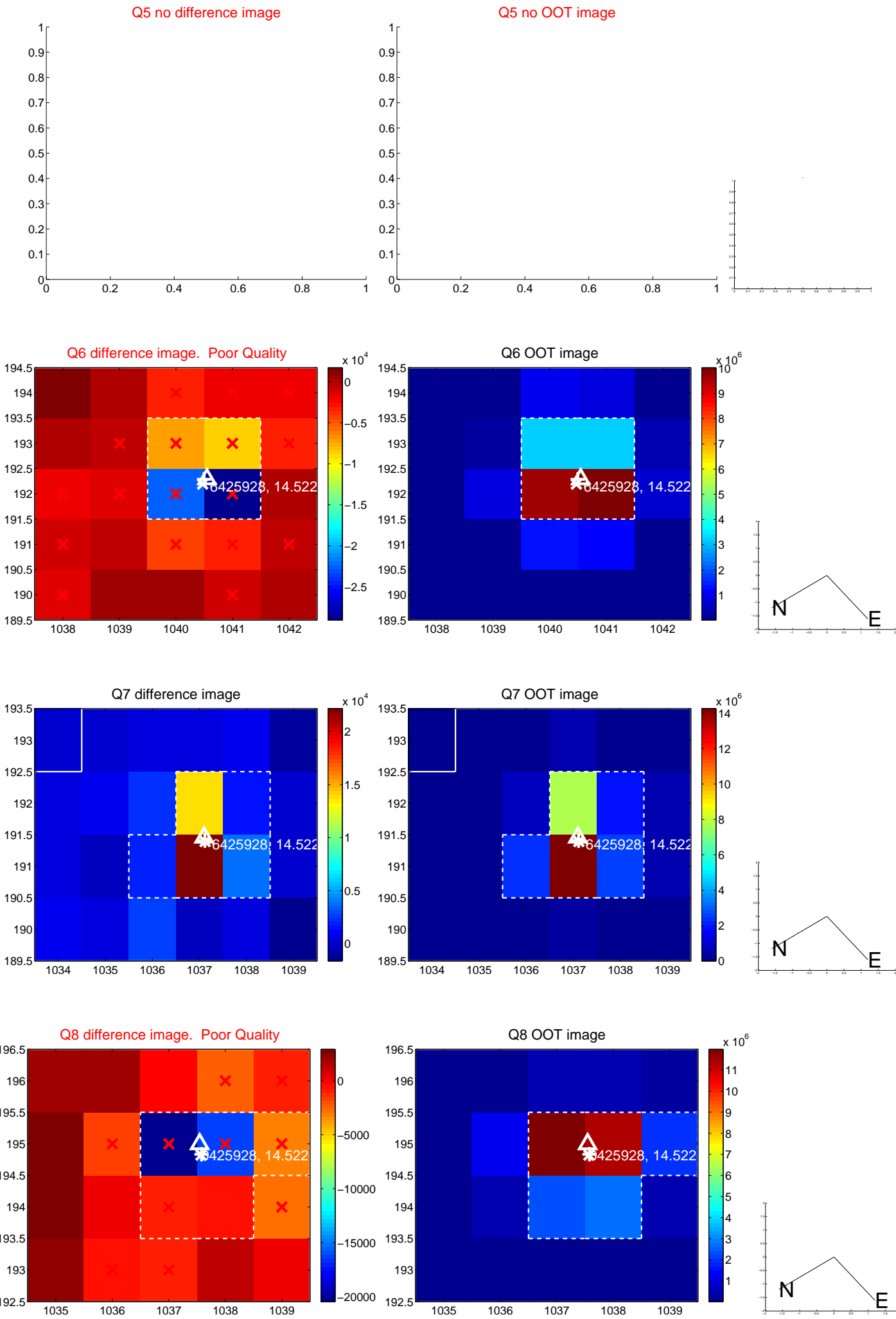
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

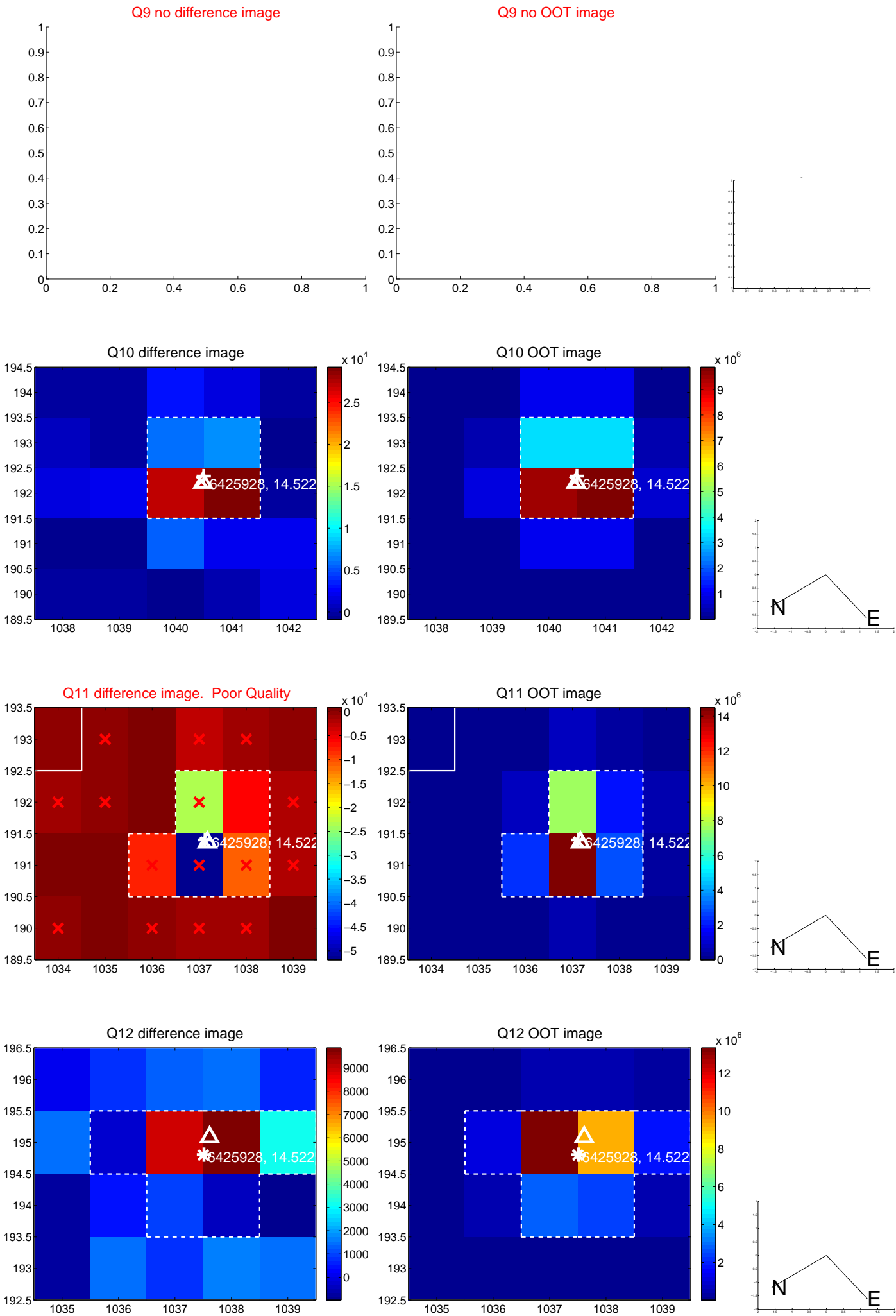




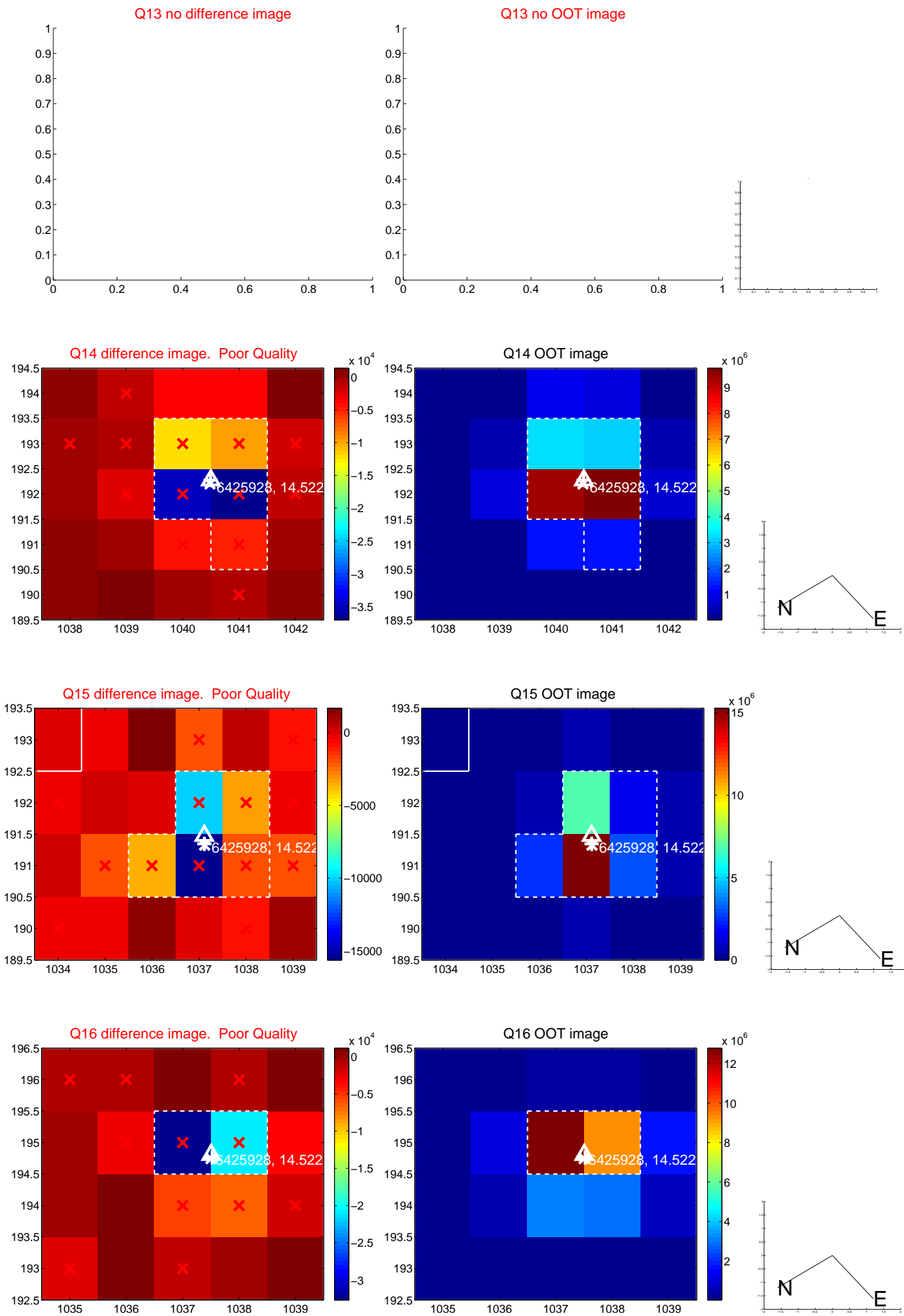
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



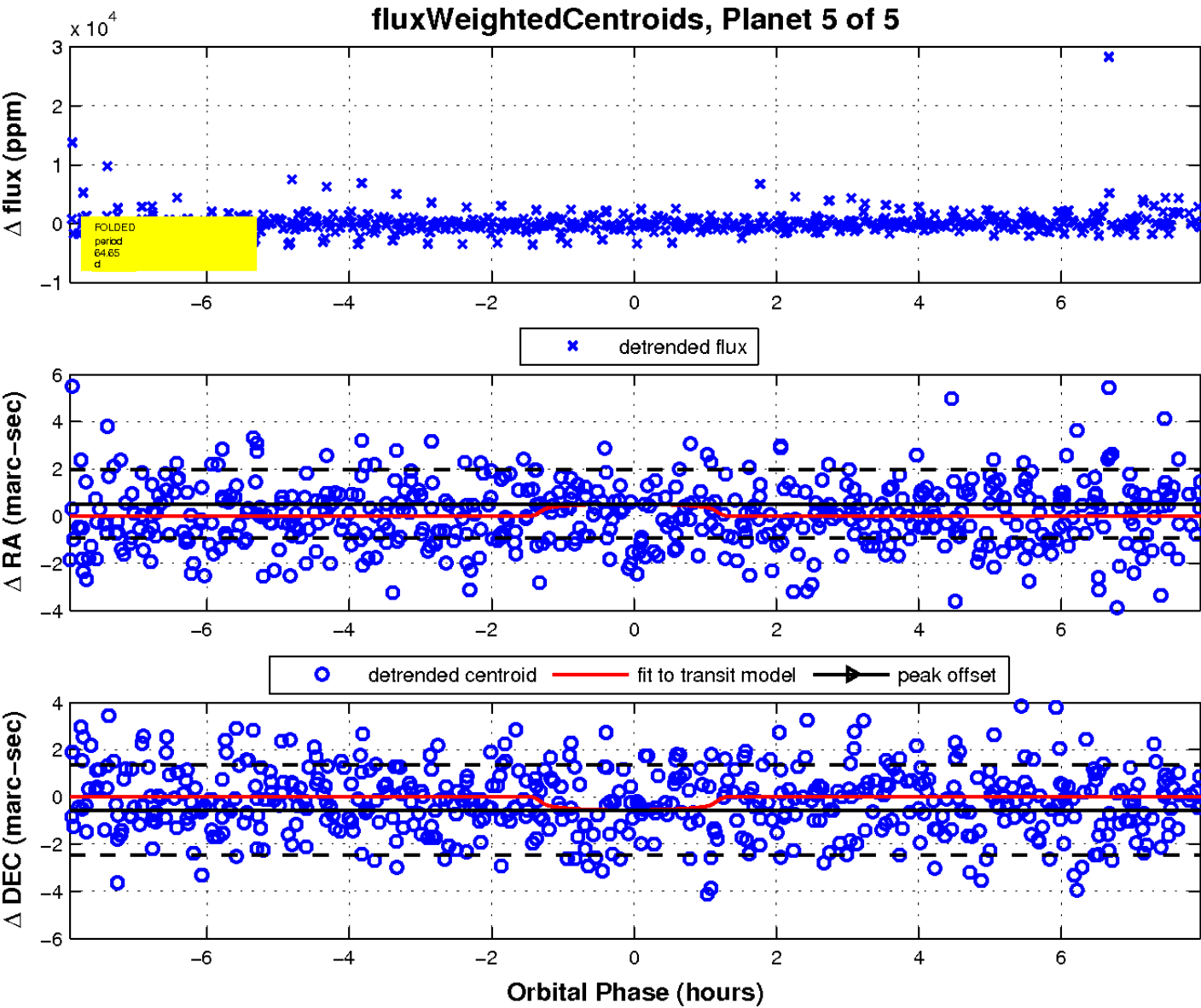
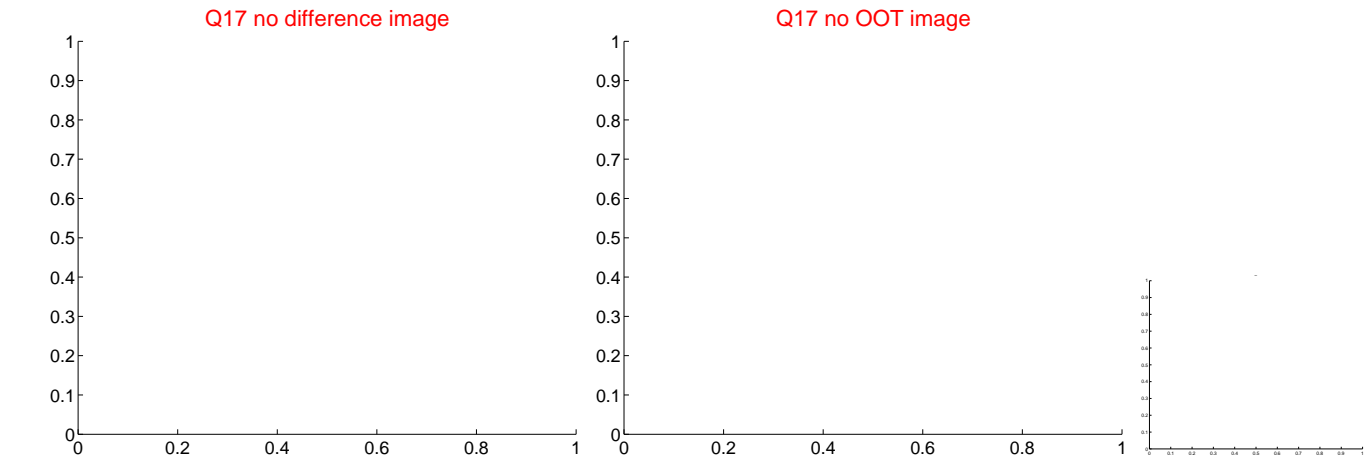
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

