

# KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
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002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

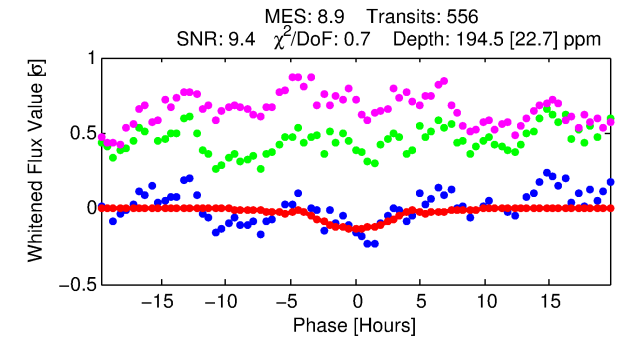
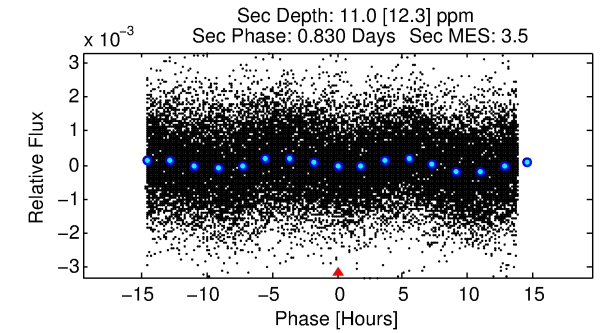
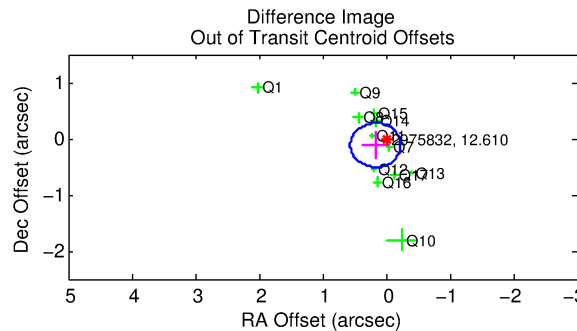
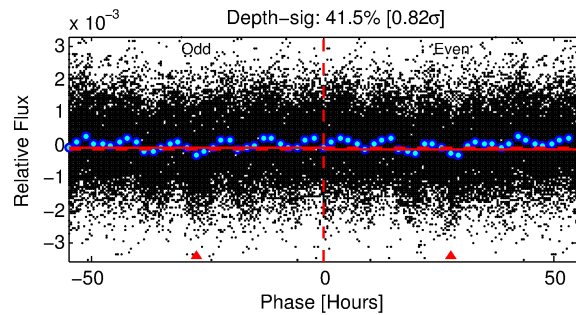
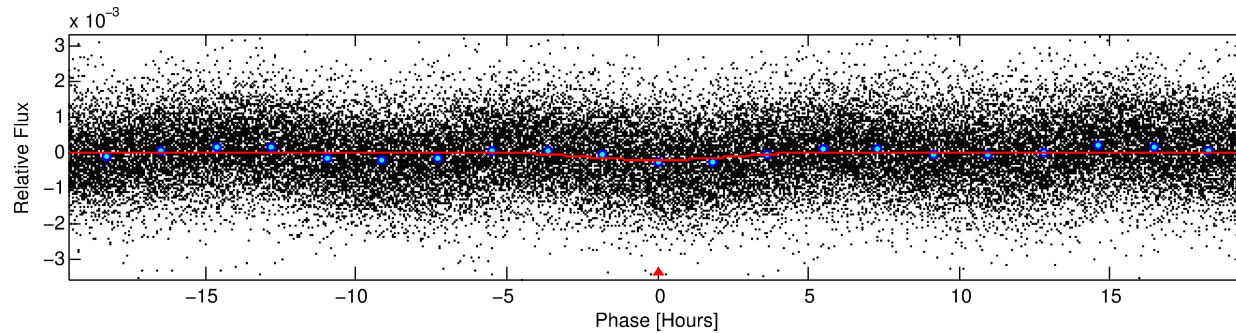
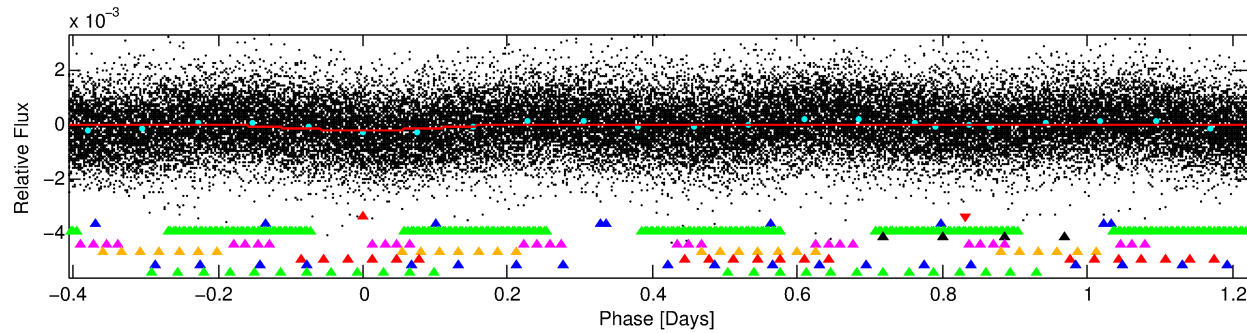
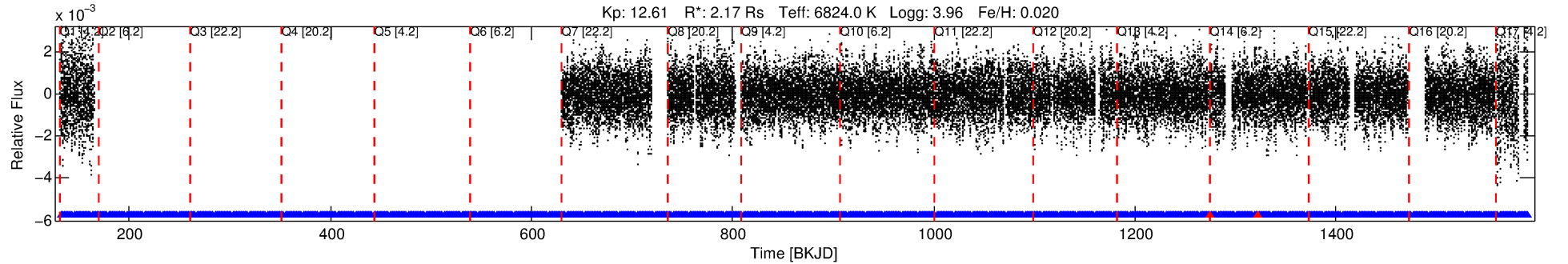
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-01

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 1 of 9 Period: 1.627 d



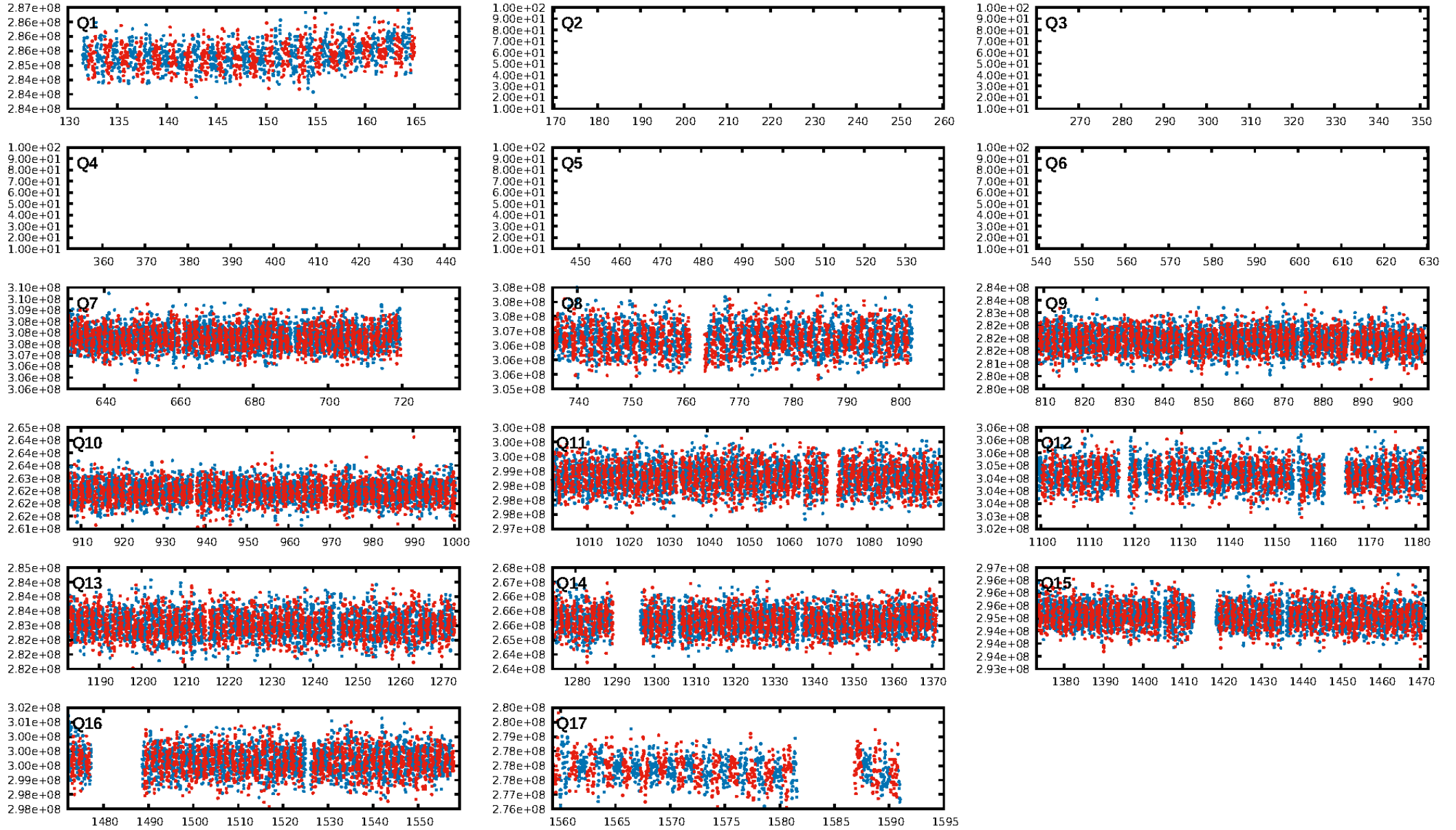
## DV Fit Results:

Period = 1.62723 [0.00003] d  
Epoch = 132.4360 [0.0158] BKJD  
Rp/R\* = 0.0243 [0.0407]  
a/R\* = 1.05 [0.02]  
b = 1.00 [0.06]  
Seff = 9243.26 [4815.26]  
Teq = 2500 [326] K  
Rp = 5.76 [9.85] Re  
a = 0.0315 [0.0099] AU  
Ag = 0.18 [0.65] [-1.26 $\sigma$ ]  
Teffp = 2522 [2234] K [0.01 $\sigma$ ]

## DV Diagnostic Results:

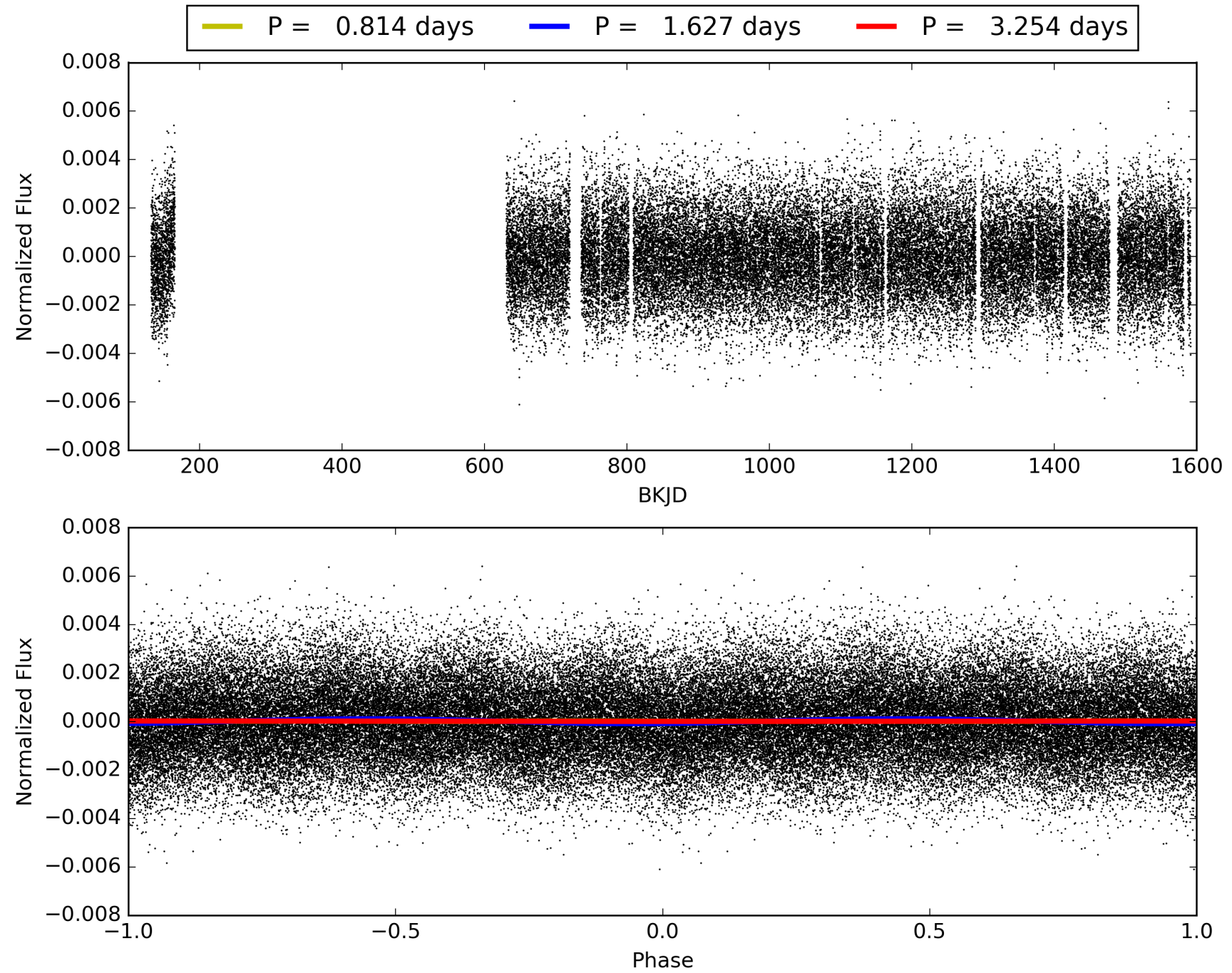
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [10.11 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [516/518]  
GhostDiagnostic-chr: 1.484  
Centroid-sig: 0.0%  
Centroid-so: 0.226 arcsec [1.79 $\sigma$ ]  
OotOffset-rm: 0.204 arcsec [1.56 $\sigma$ ]  
KicOffset-rm: 0.191 arcsec [1.02 $\sigma$ ]  
OotOffset-st: 2/3/3/4 [12]  
KicOffset-st: 2/3/3/4 [12]  
DiffImageQuality-fgm: 0.92 [11/12]  
DiffImageOverlap-fno: 1.00 [12/12]

# TCE 002975832-01, PDC Light Curves





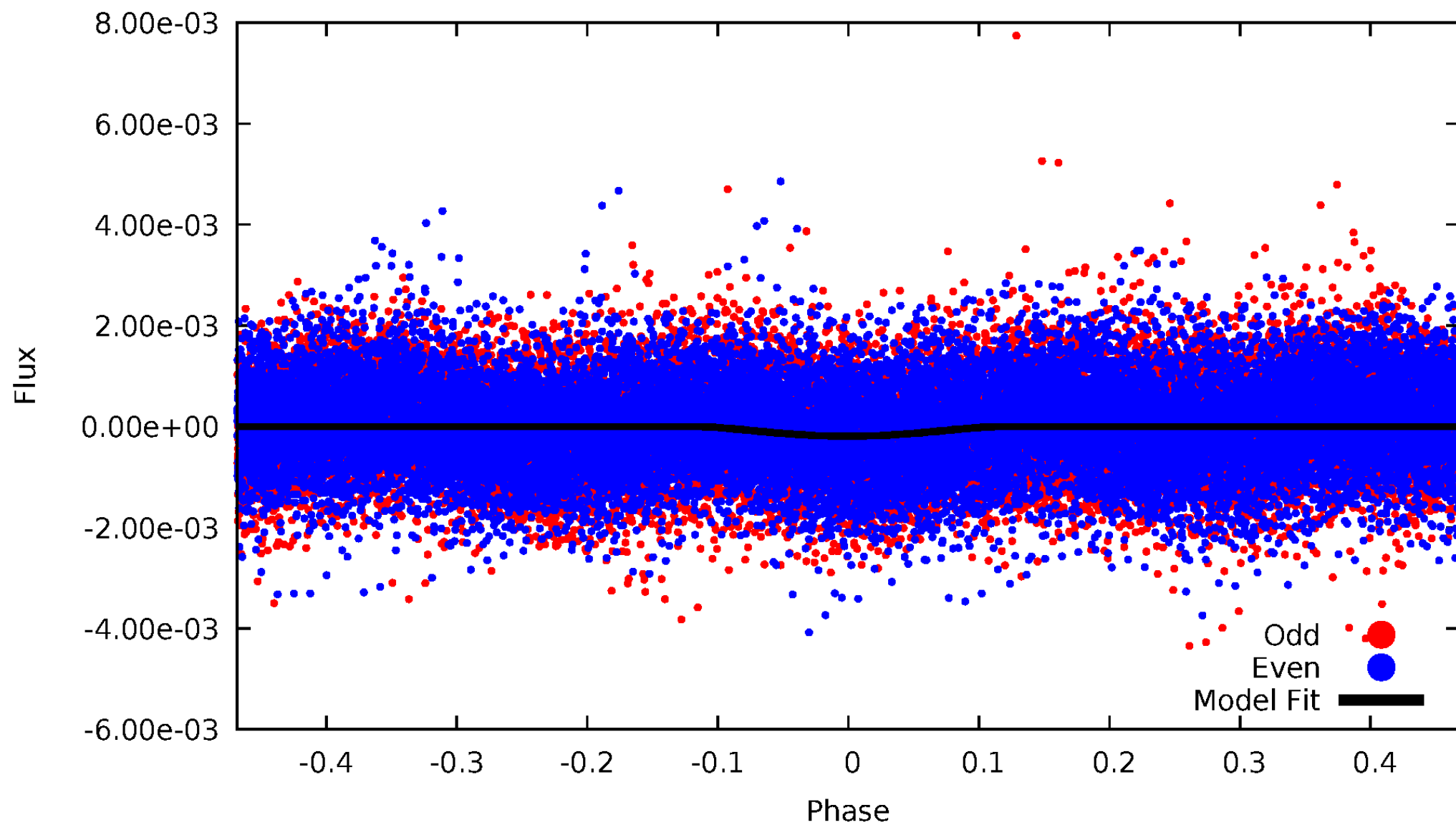
TCE 002975832-01





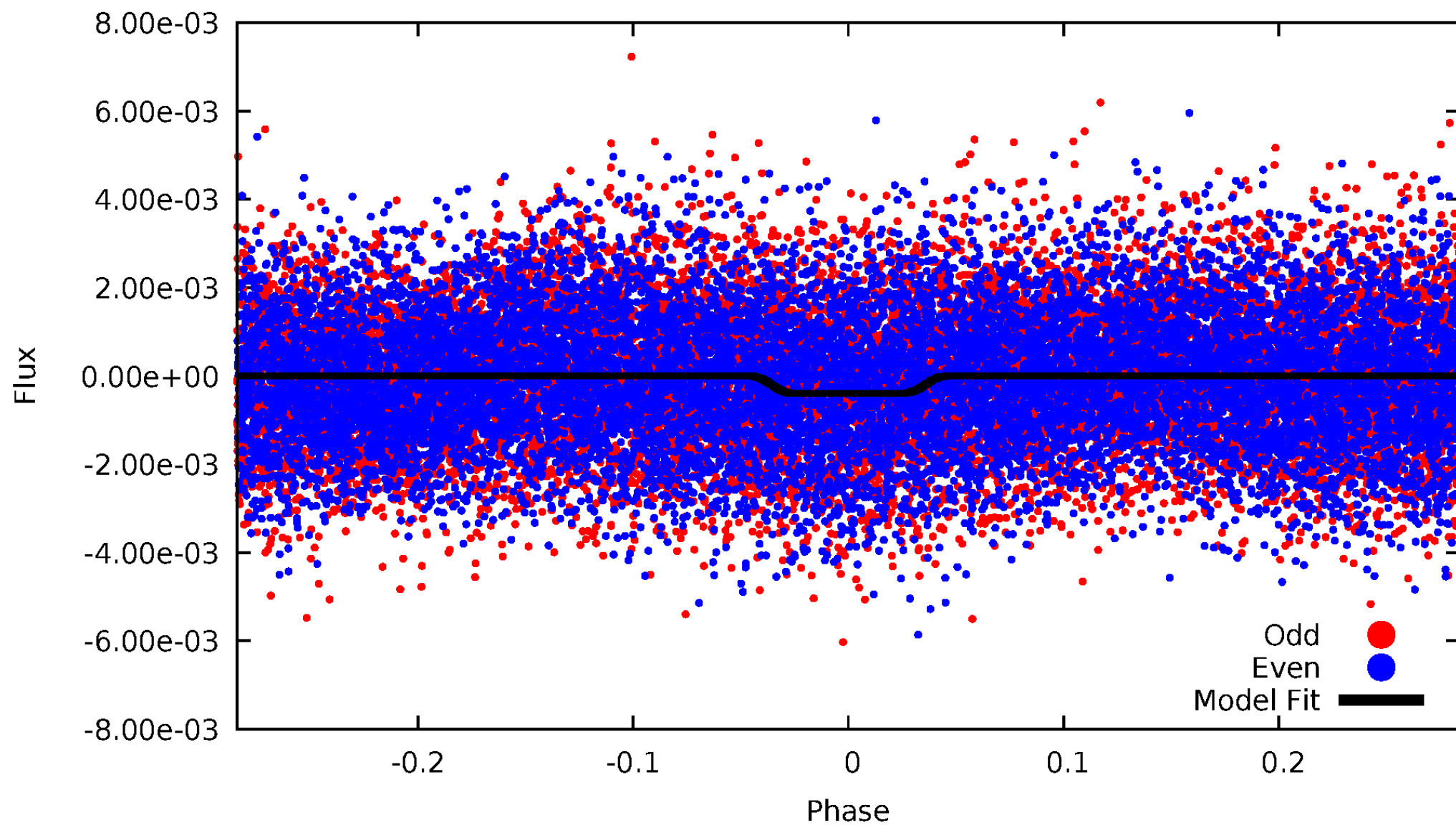
# DV Odd/Even

TCE 002975832-01

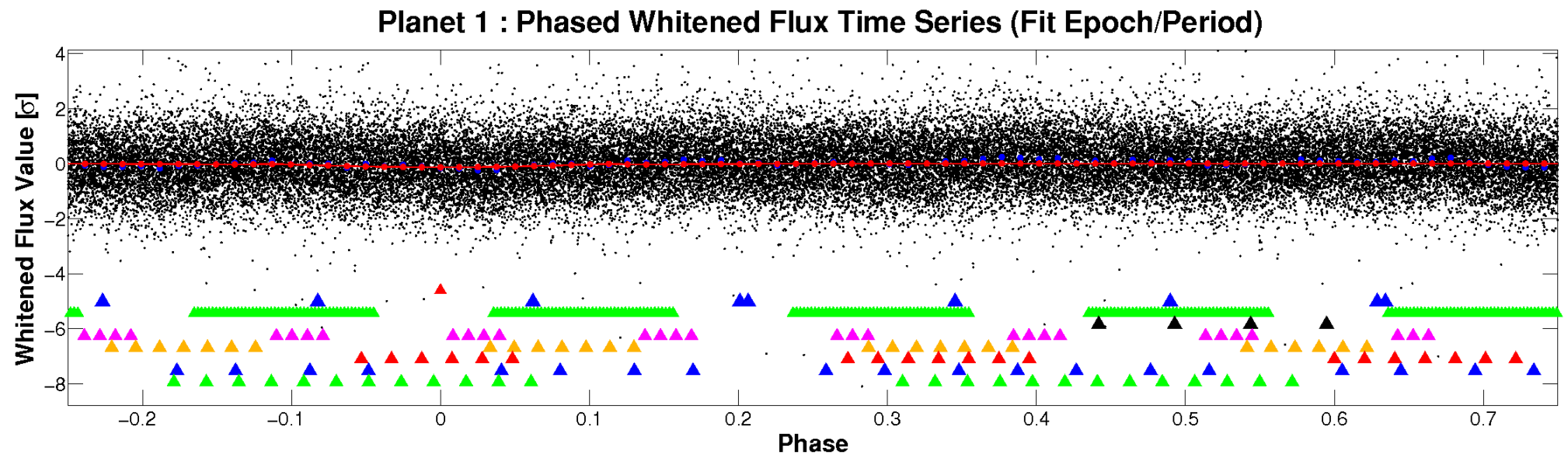
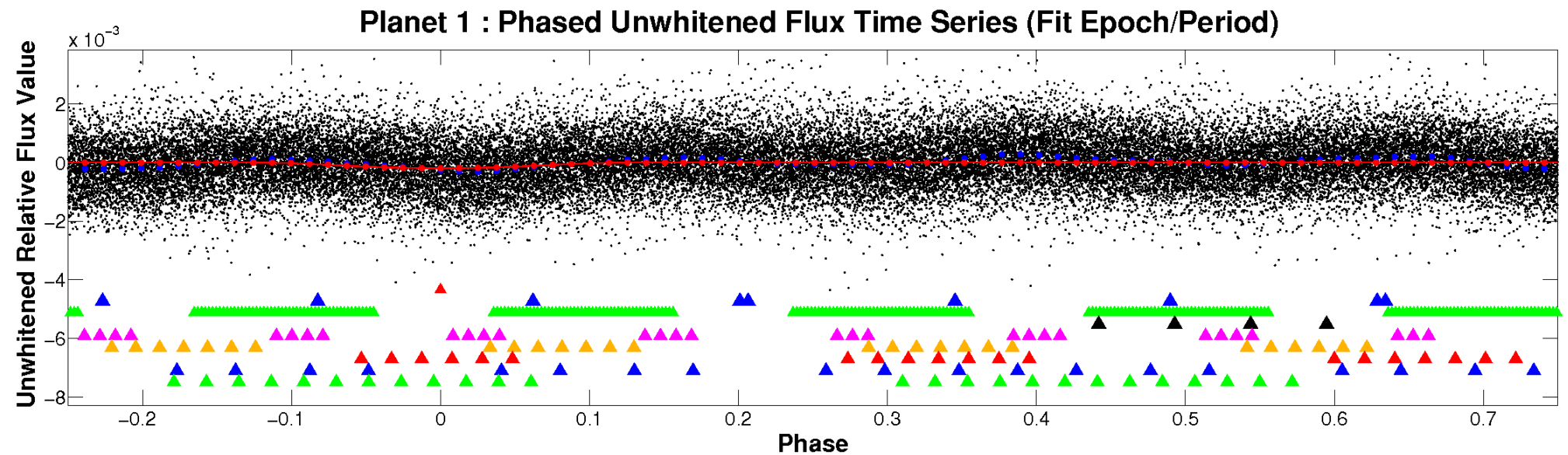


# ALT Odd/Even

TCE 002975832-01



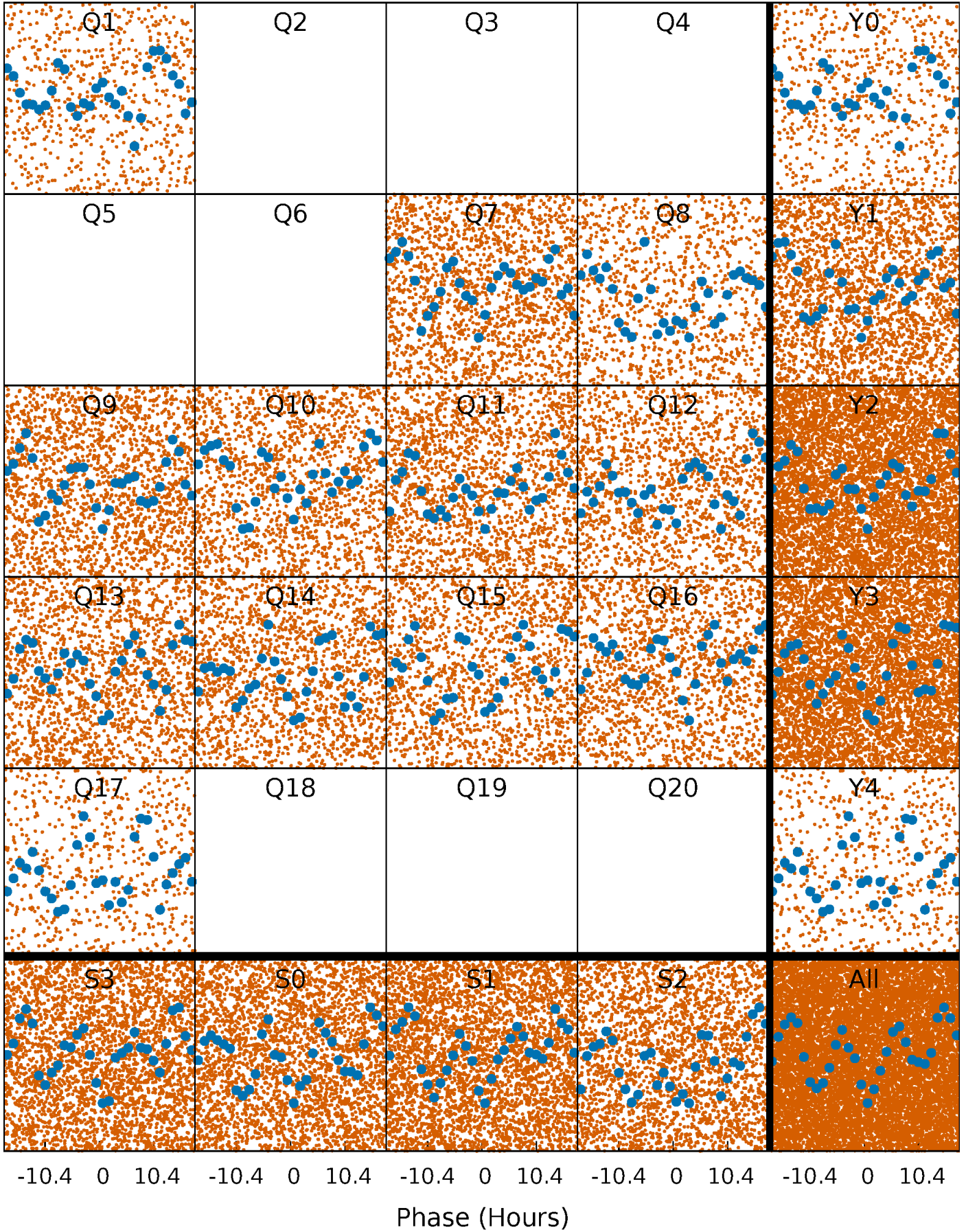
# Non-Whitened Vs. Whitened Light Curve





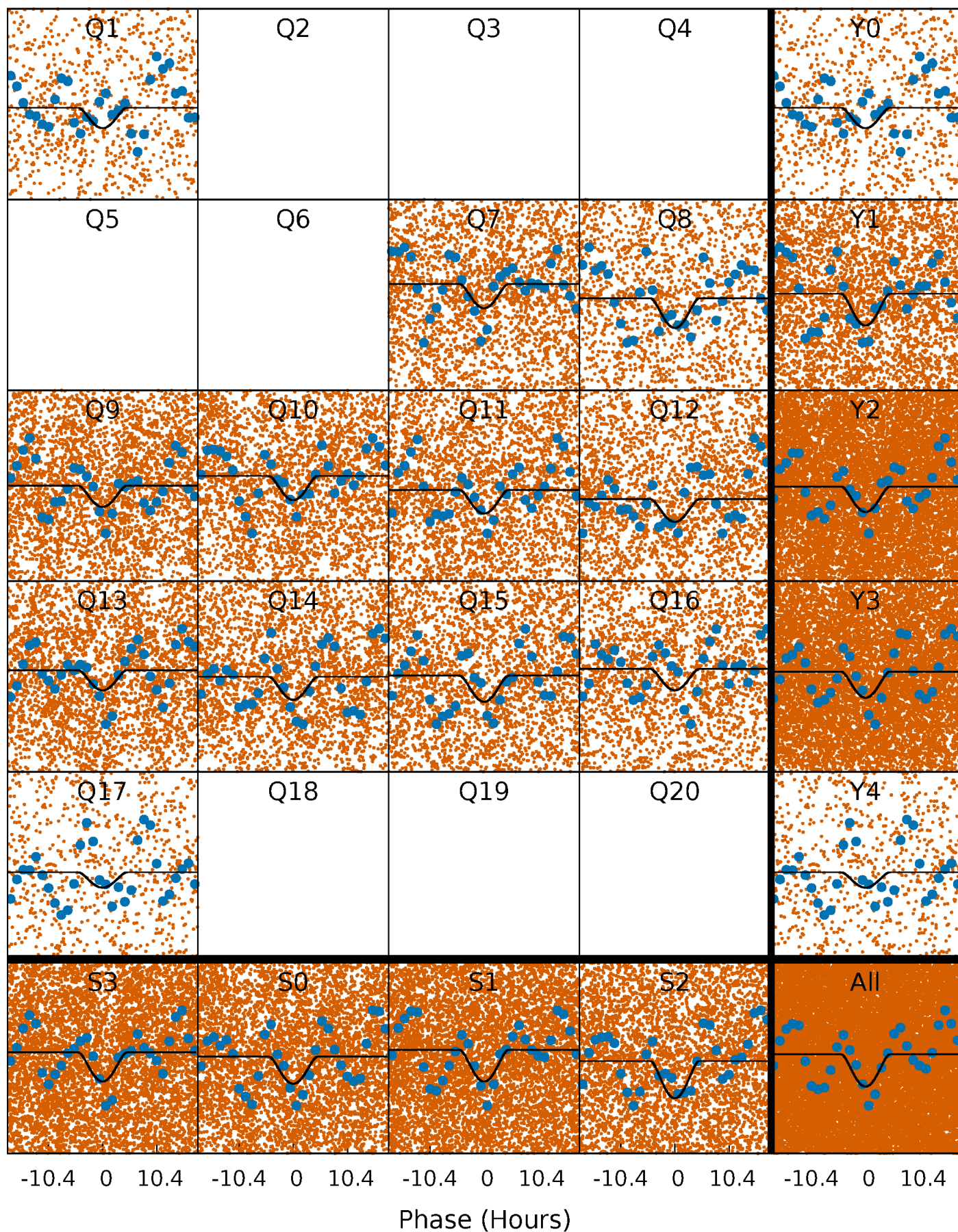
# PDC Quarter-Phased Transit Curves

TCE 002975832-01   P= 1.627229 Days    $T_0=132.435993$  (BKJD)



# DV Quarter-Phased Transit Curves

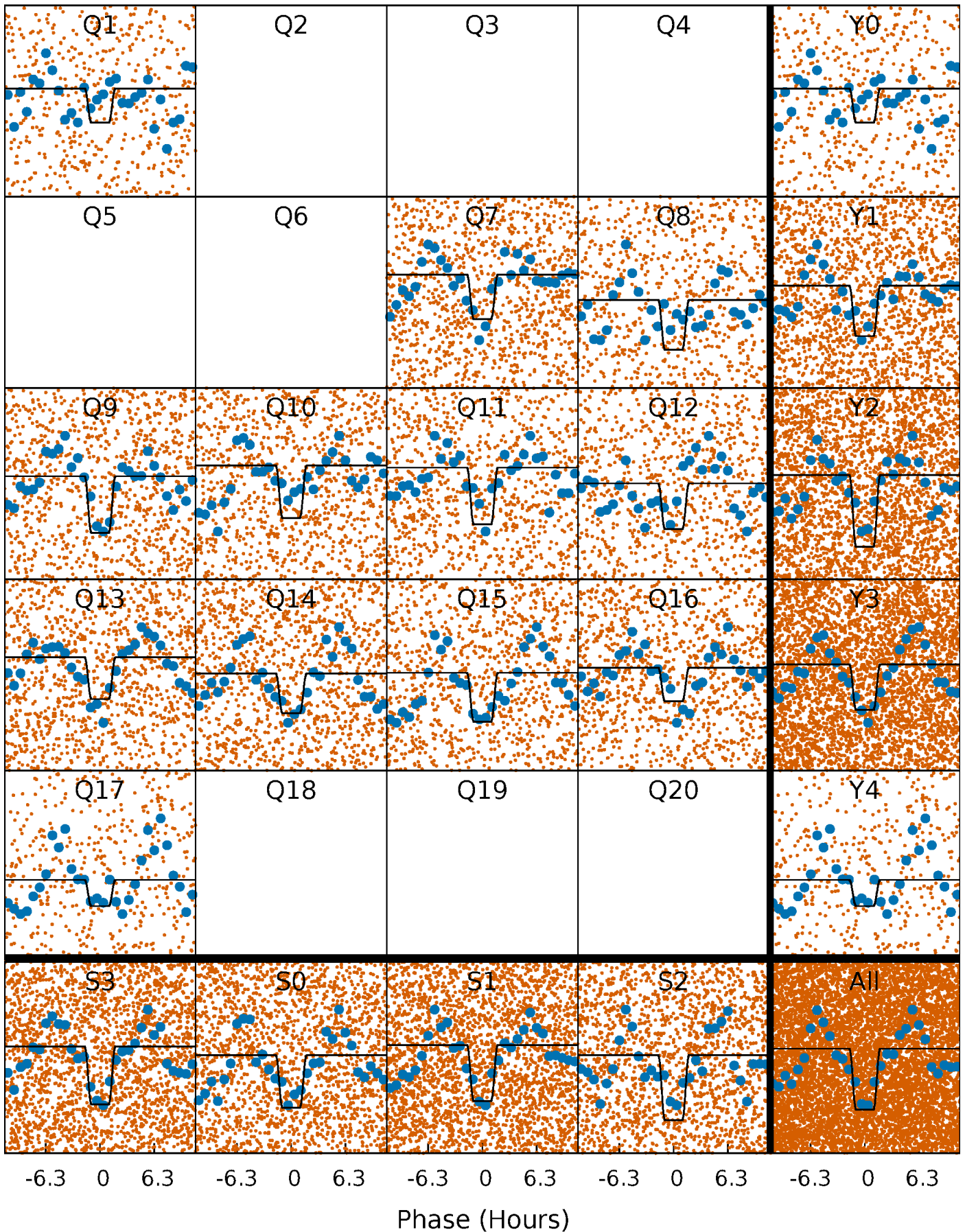
TCE 002975832-01   P= 1.627229 Days    $T_0=132.435993$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 002975832-01 P= 1.627366 Days  $T_0=132.386998$  (BKJD)

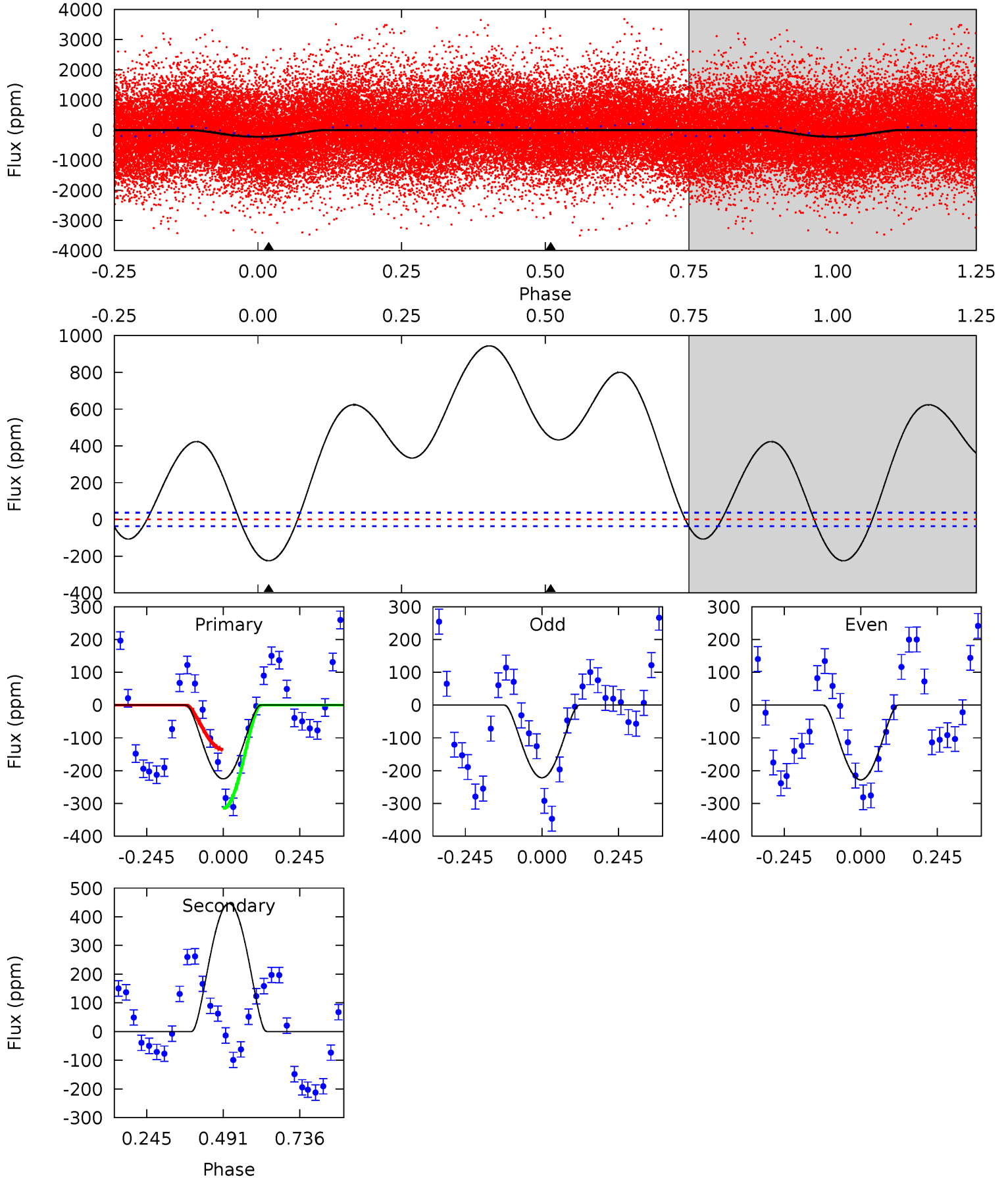




# DV Model-Shift Uniqueness Test

002975832-01, P = 1.627229 Days, E = 130.808764 Days

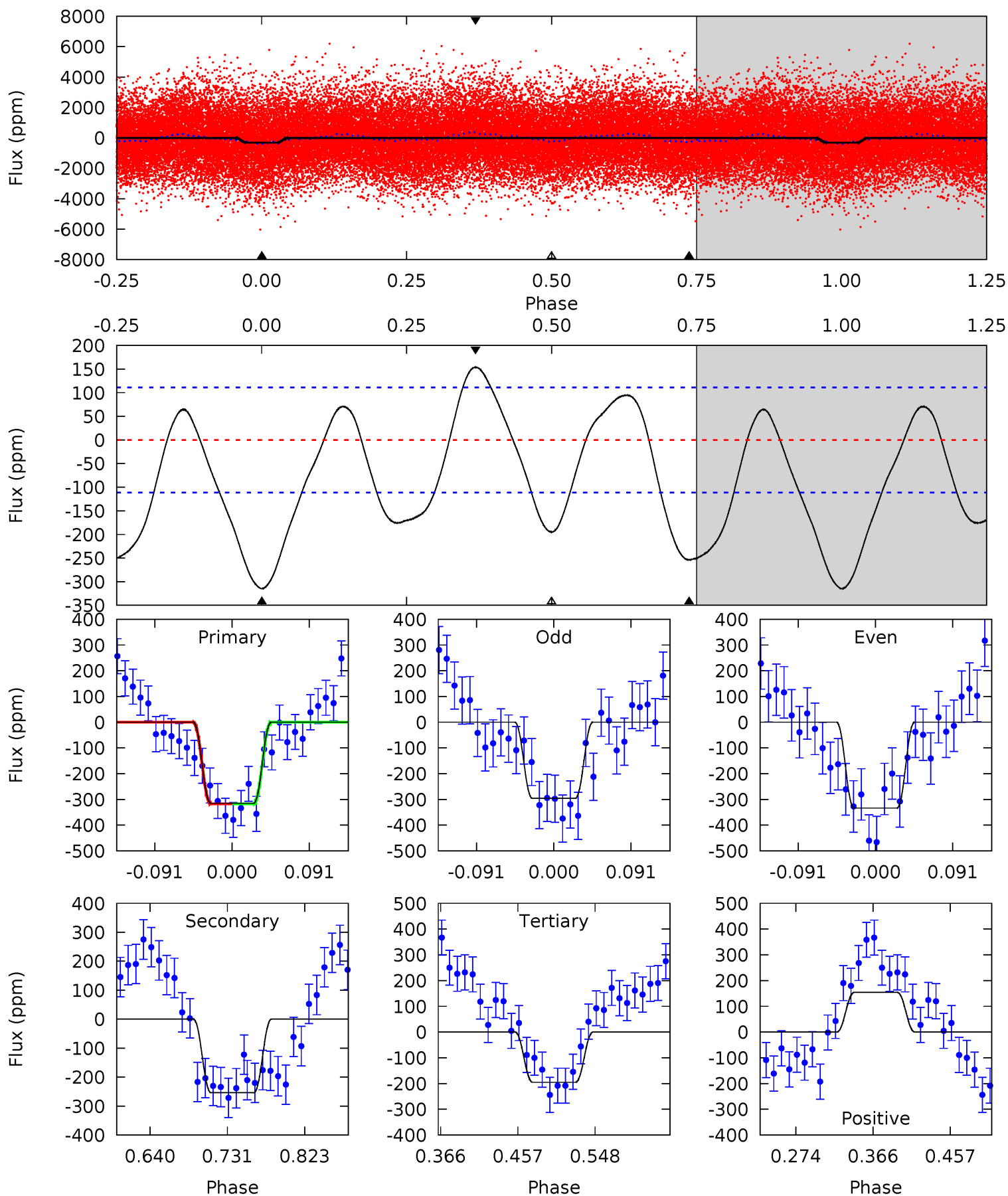
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.6	-52.7	0	0	4.37	1.16	24.1	26.6	26.6	-52.7	-52.7	0.38	1.23	0.81	10.5



# Alt Model-Shift Uniqueness Test

002975832-01, P = 1.627366 Days, E = 130.759632 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
13.0	10.5	8.04	6.35	4.58	1.69	4.18	4.94	6.64	2.43	4.12	0.78	1.06	0.33	0.01



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$446 \pm 8$	$8.41^{+8.68}_{-5.58}$	$3439^{+271}_{-306}$	$-5252^{+1067}_{-3974}$	$-3.370^{+2.539}_{-24.836}$
Alt.	$-254 \pm 24$	$7.84^{+8.44}_{-5.27}$	$3413^{+300}_{-316}$	$4555^{+3530}_{-1369}$	$2.182^{+17.501}_{-1.643}$

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



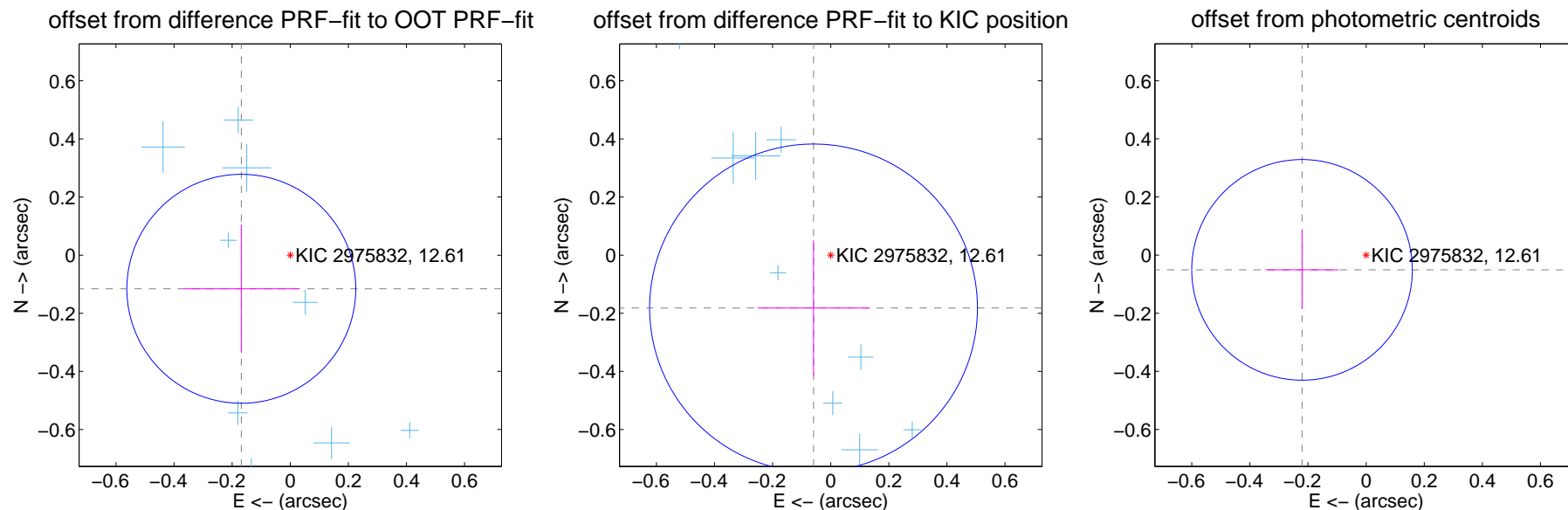
## DV Centroid Data

Supplemental centroid analysis for 002975832-01. Kepler magnitude: 12.61. Transit SNR 9.37

There are 11 quarters with good PRF difference image offsets

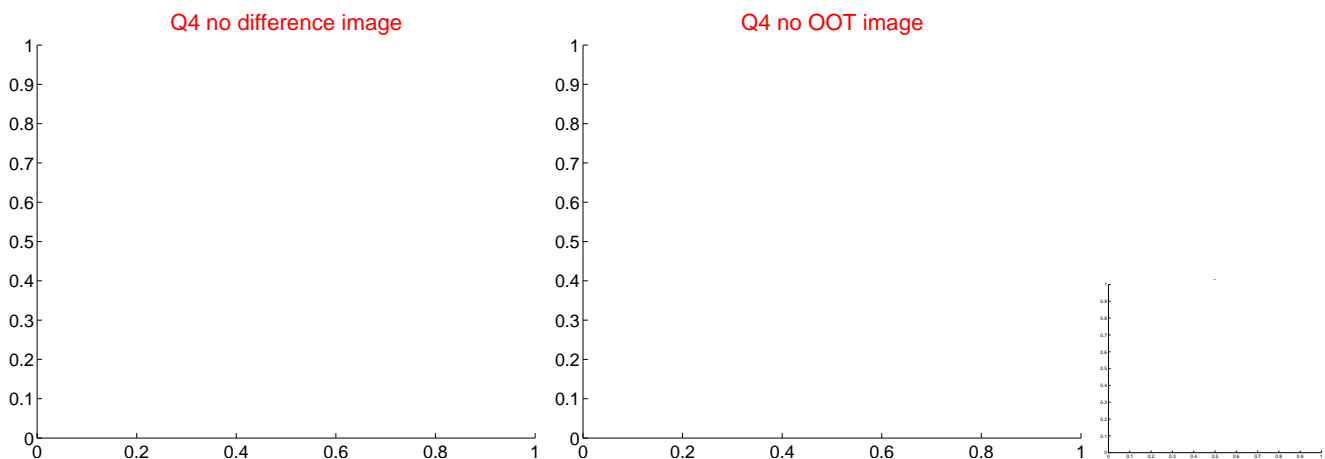
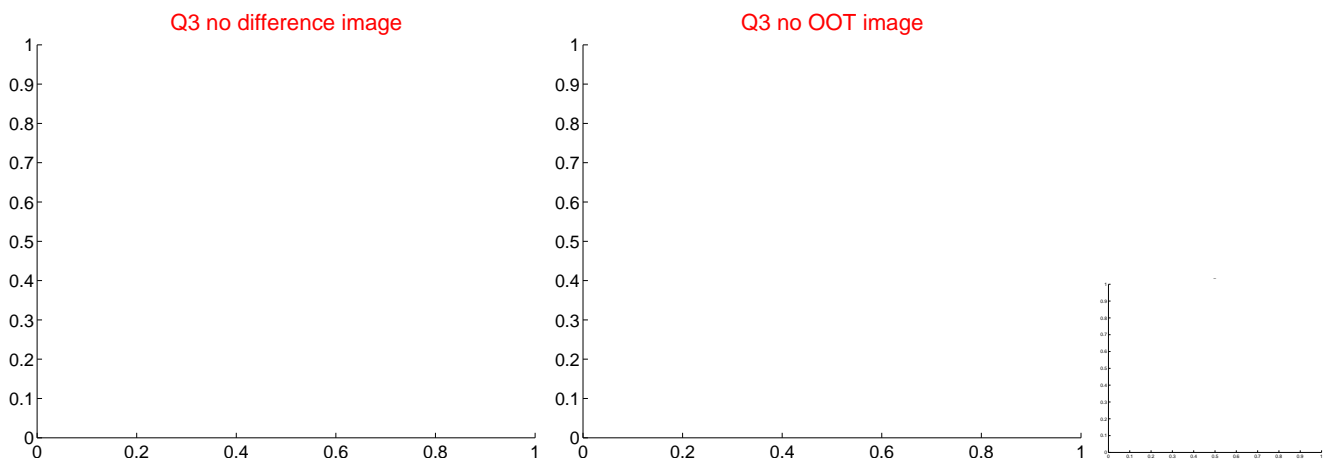
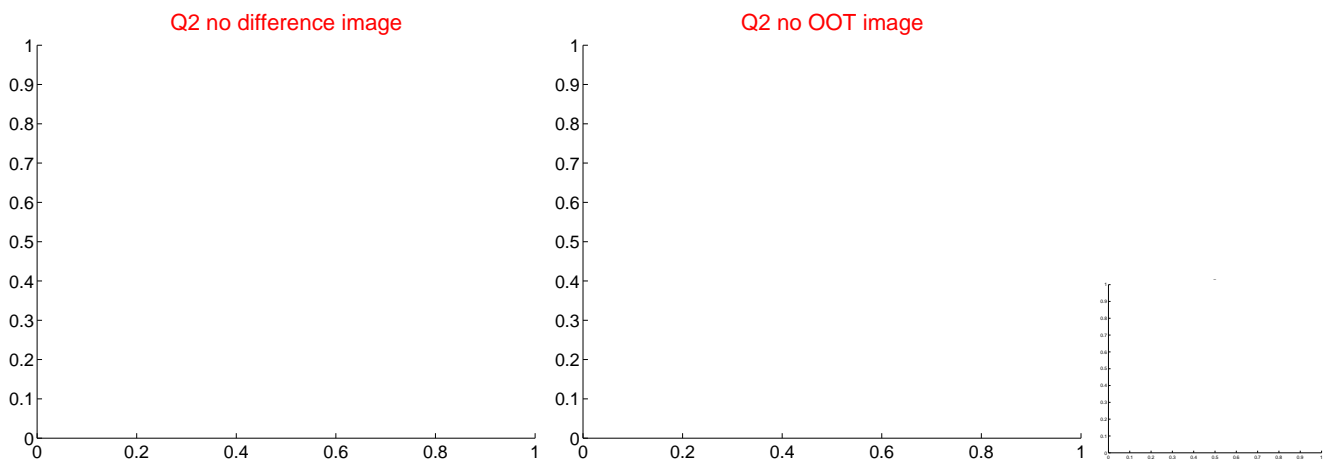
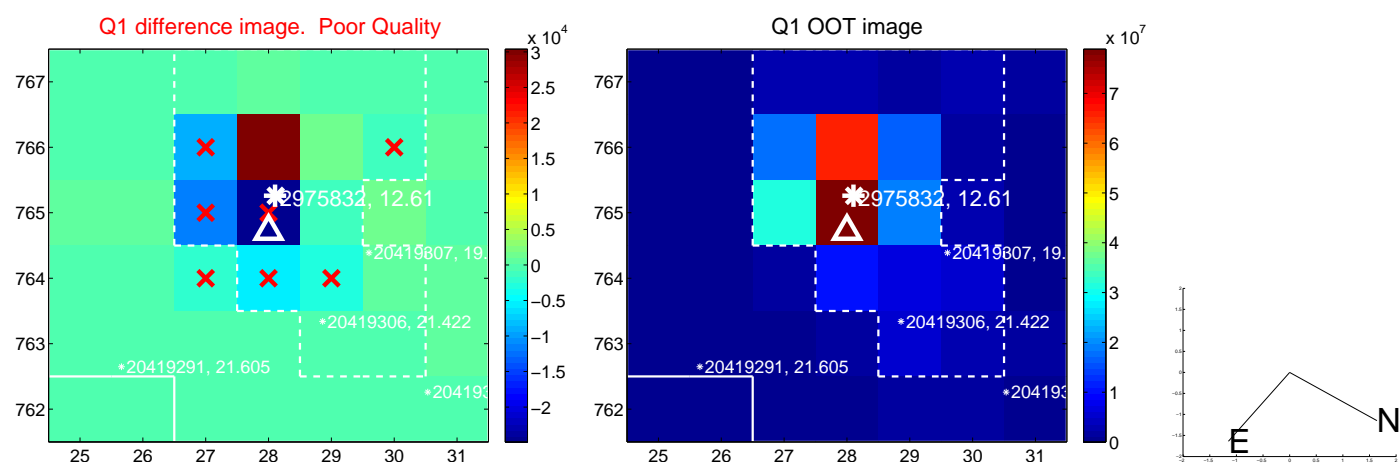
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.204 \pm 0.131$	1.56	$0.169 \pm 0.198$	$-0.116 \pm 0.221$
PRF-fit source offset from KIC position	$0.191 \pm 0.188$	1.02	$0.059 \pm 0.193$	$-0.182 \pm 0.233$
photometric centroid source offset	$0.23 \pm 0.13$	1.79	$0.22 \pm 0.13$	$-0.05 \pm 0.13$

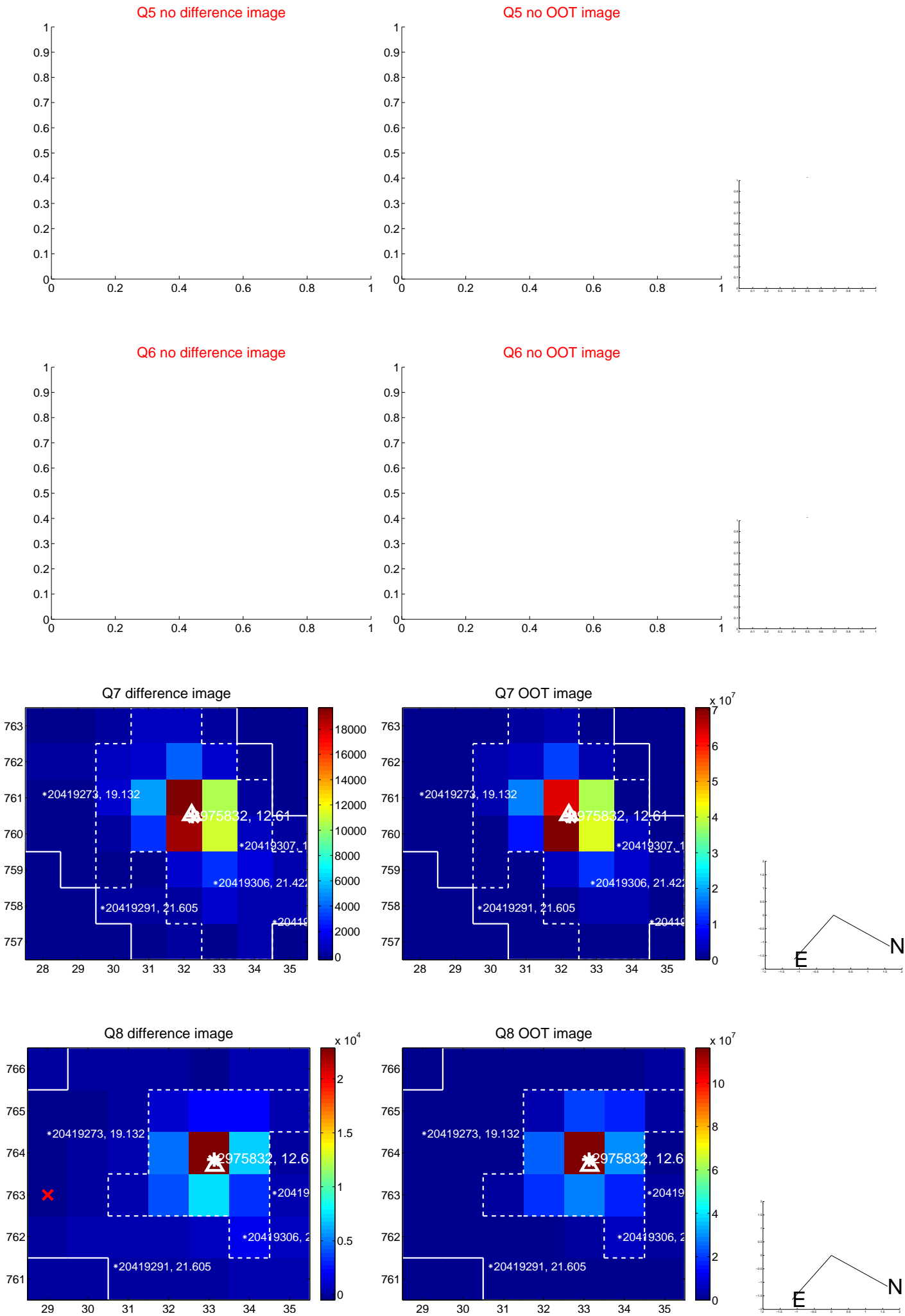


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

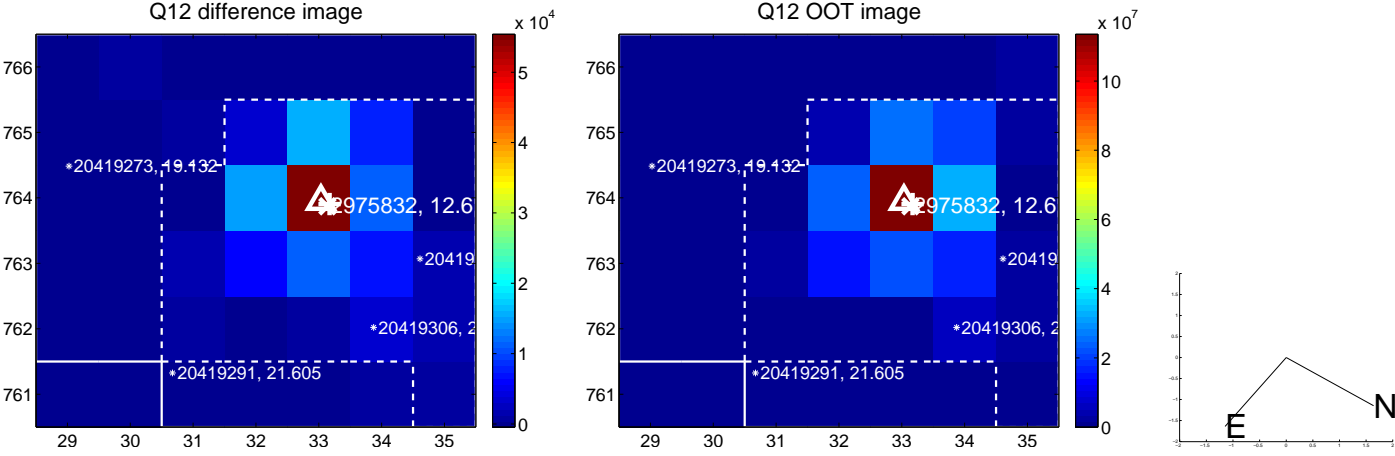
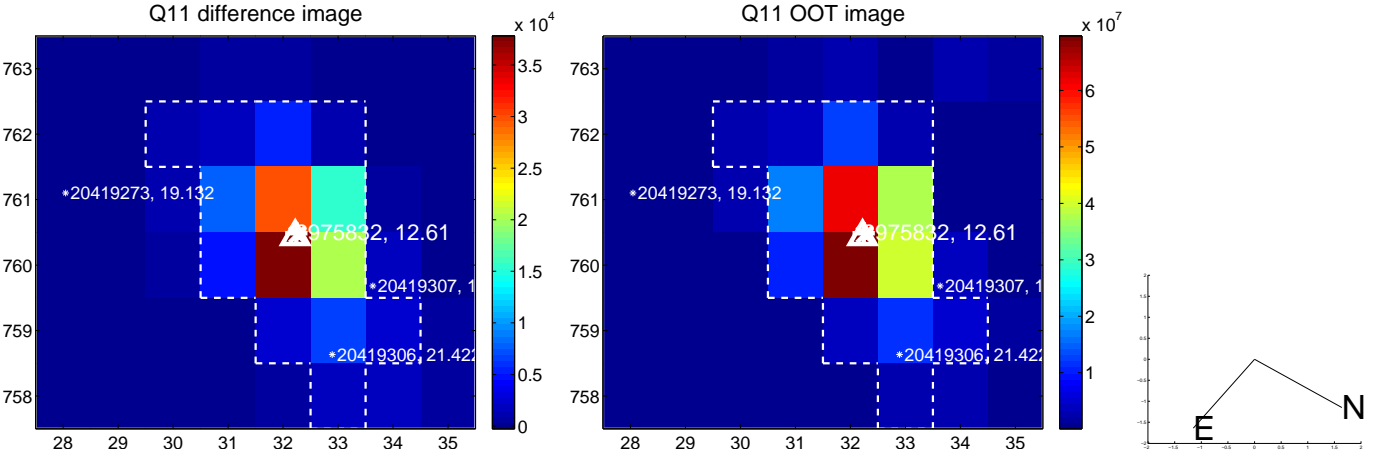
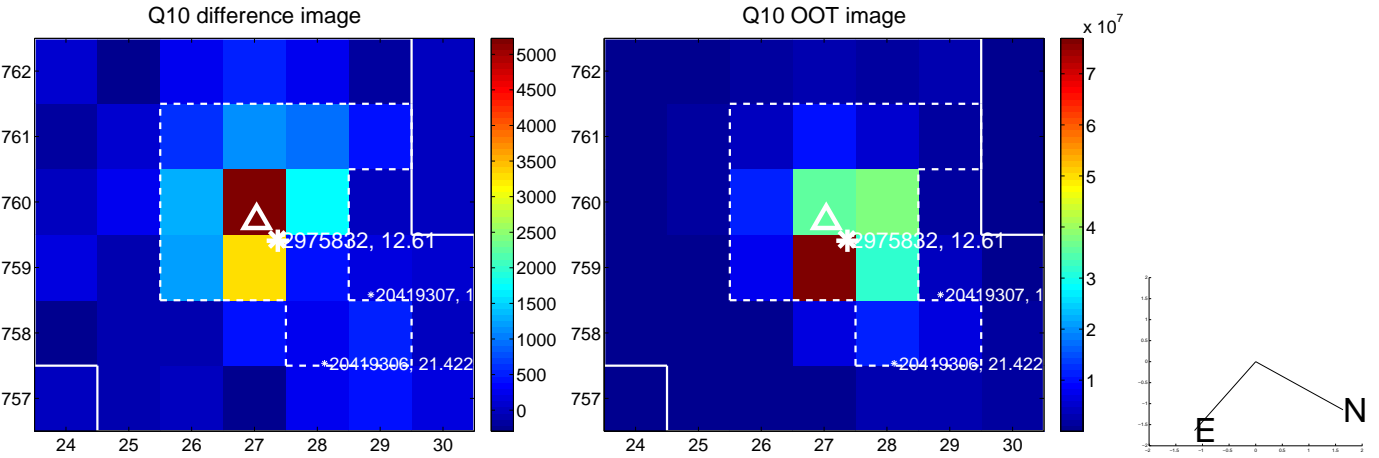
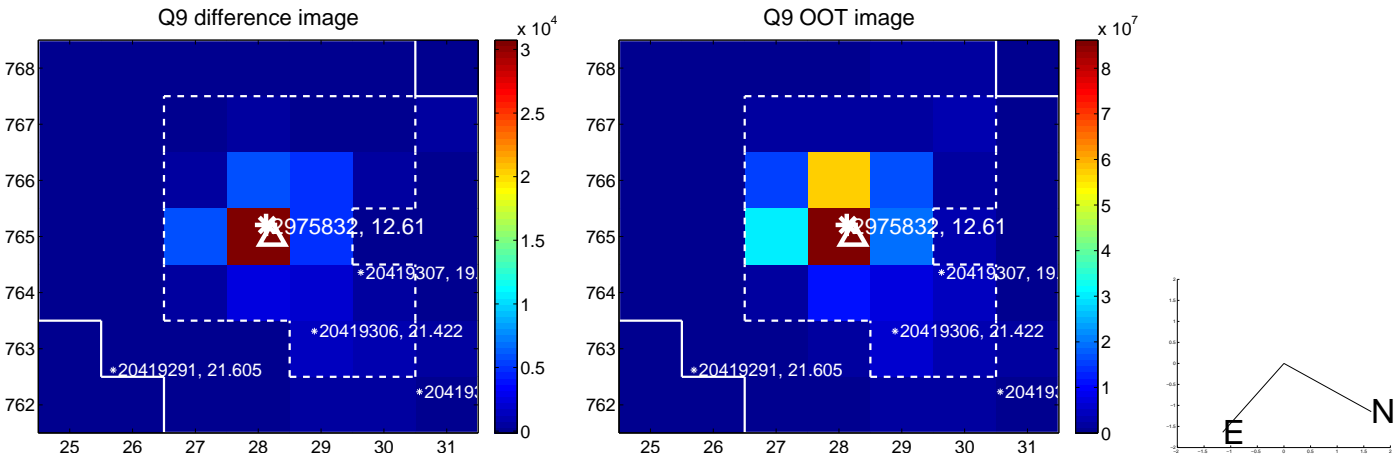


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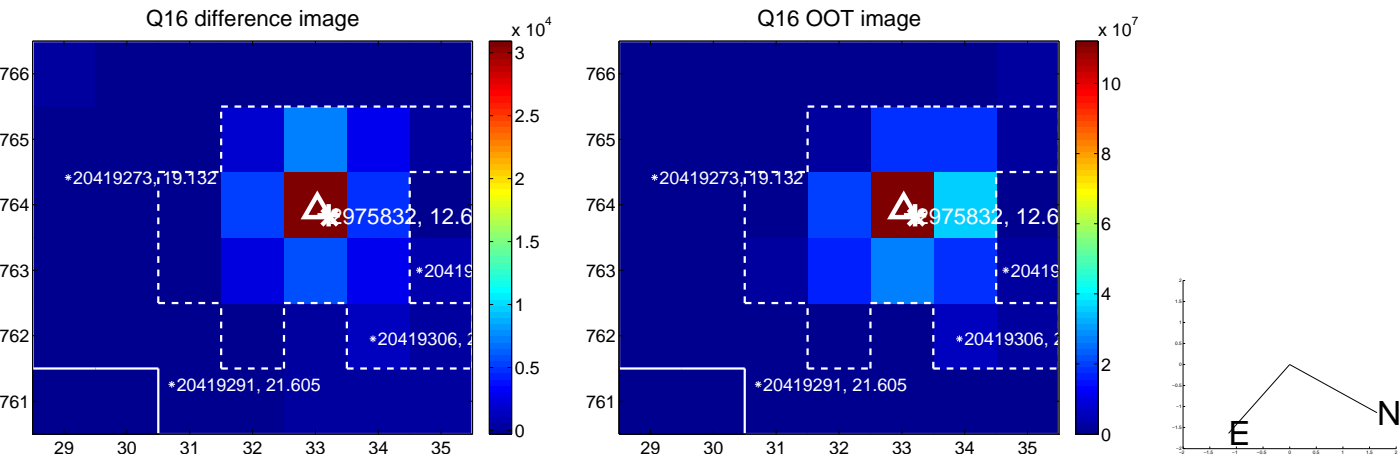
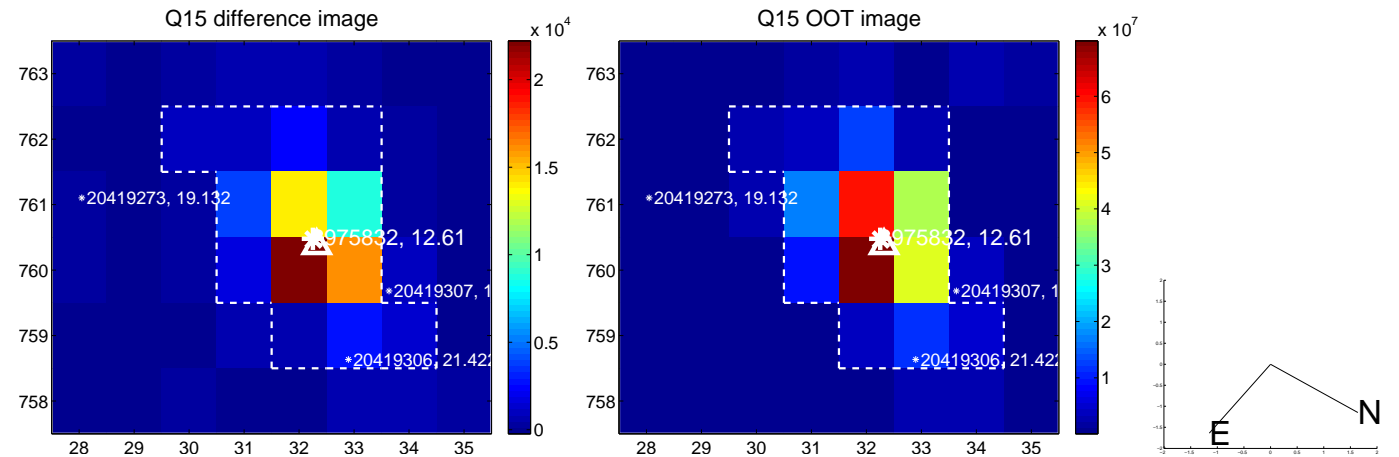
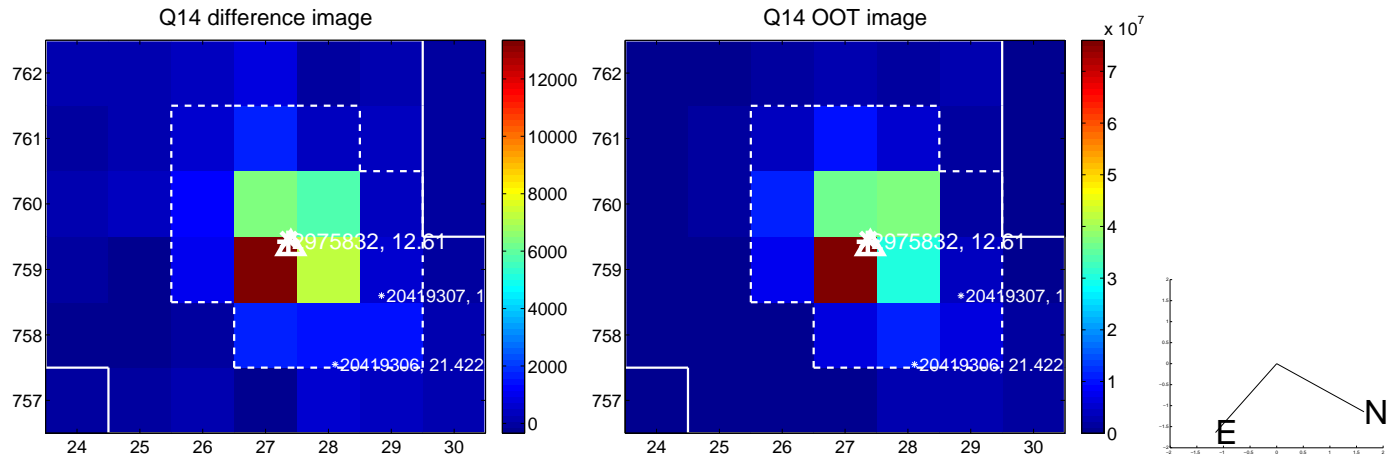
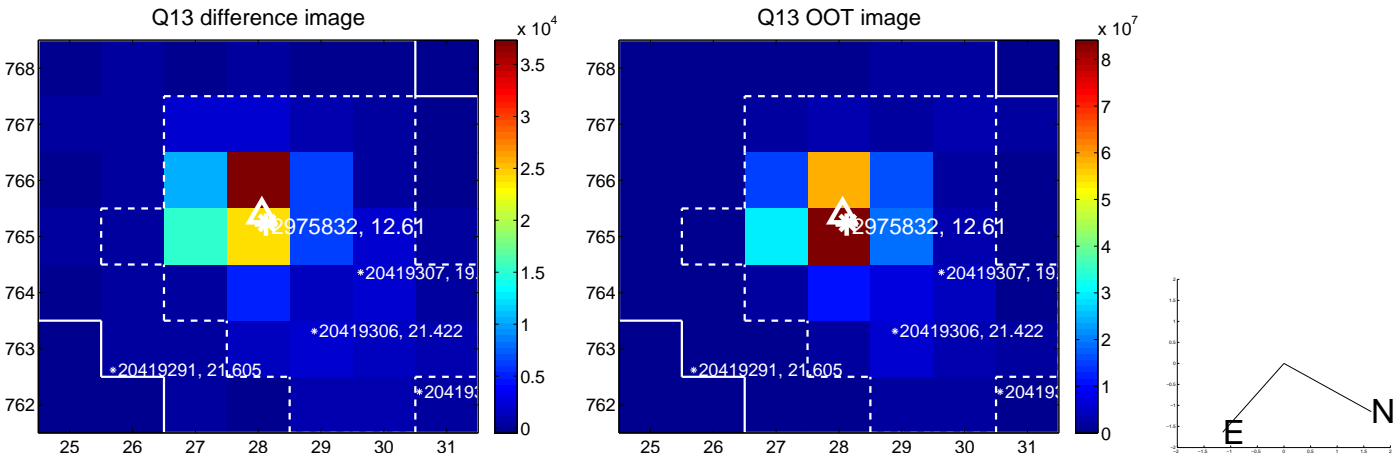




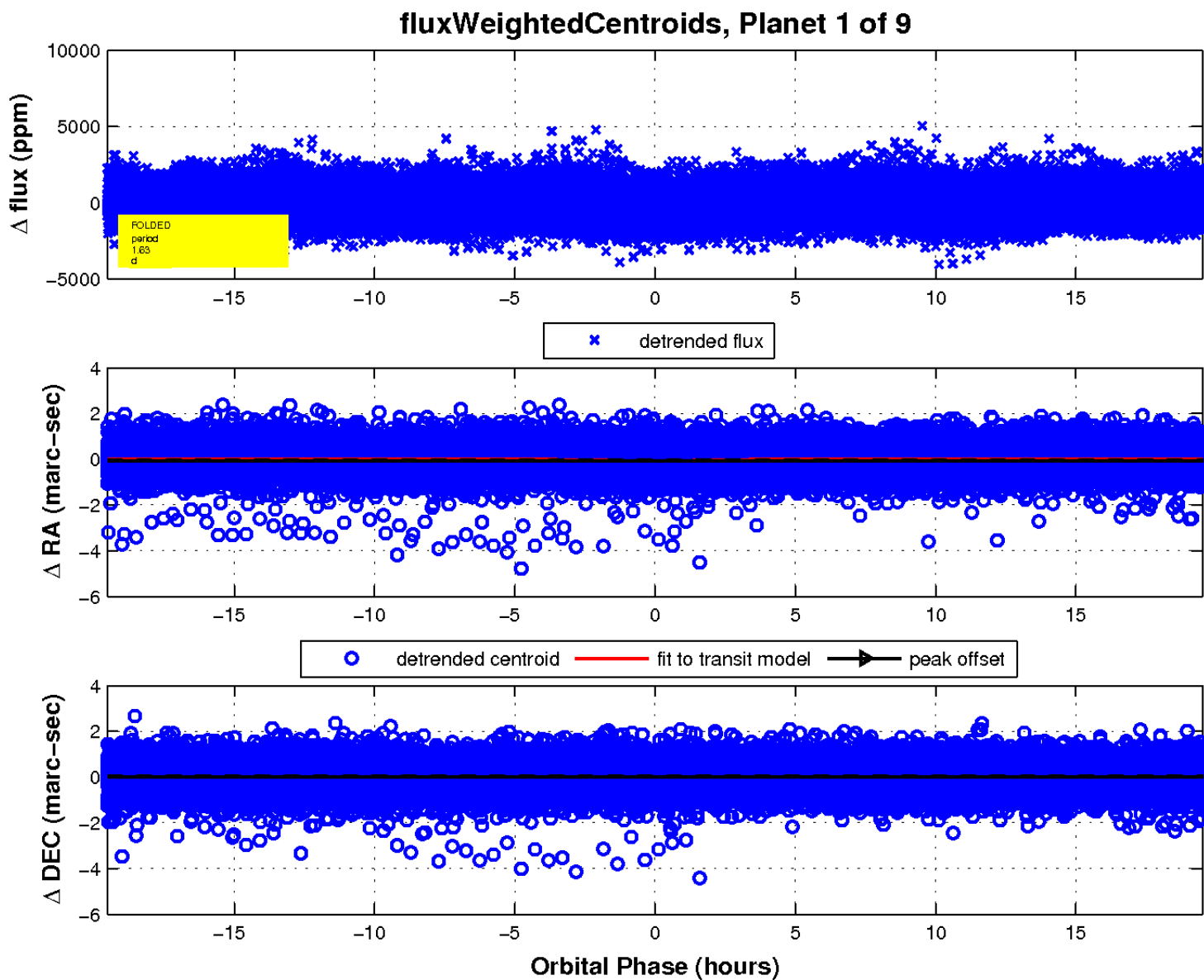
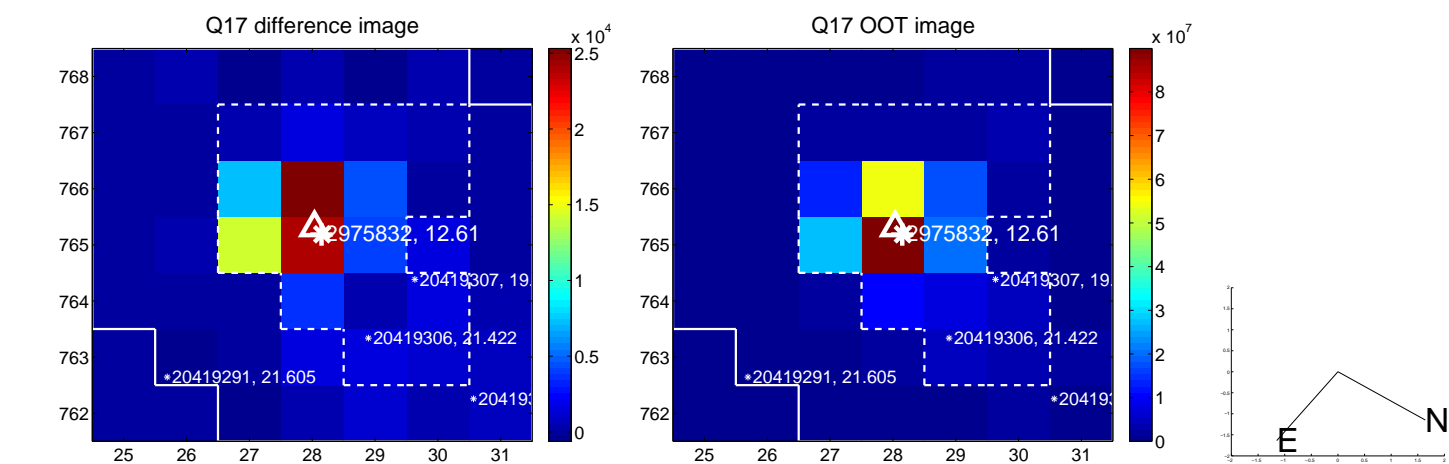
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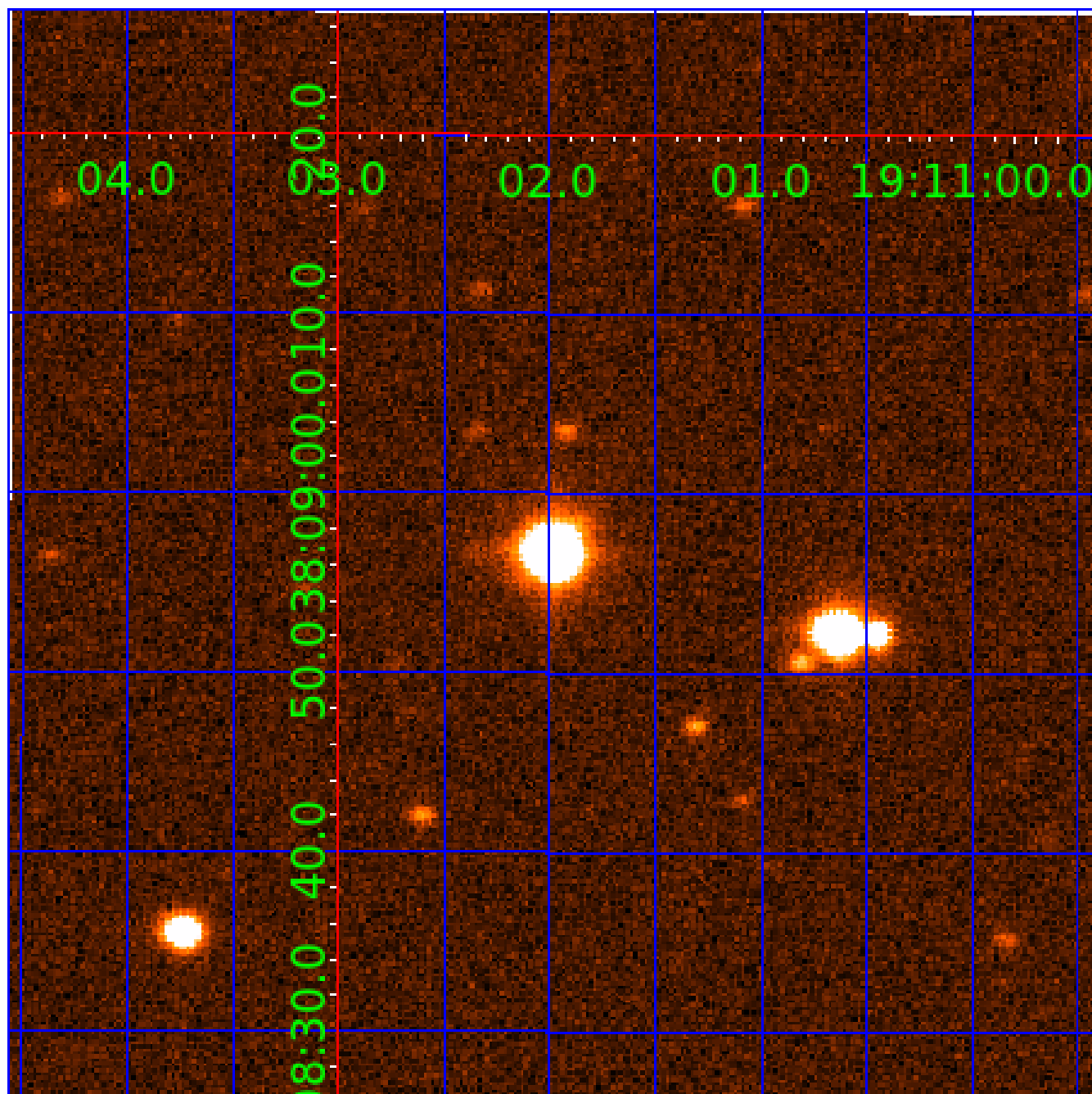


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UKIRT Image

Declination



# KIC 002975832

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002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
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002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
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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.

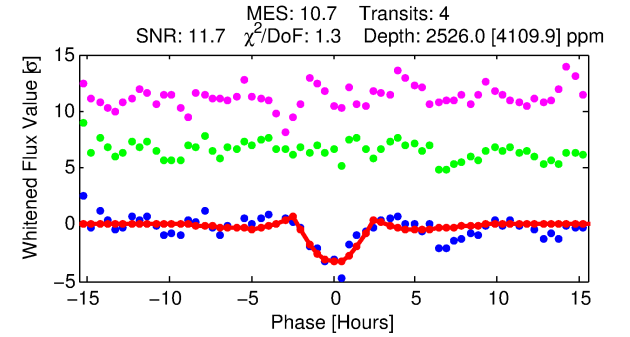
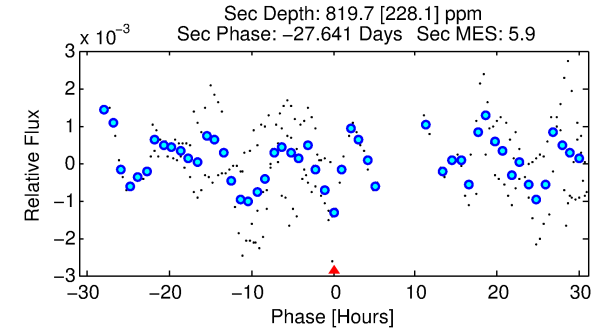
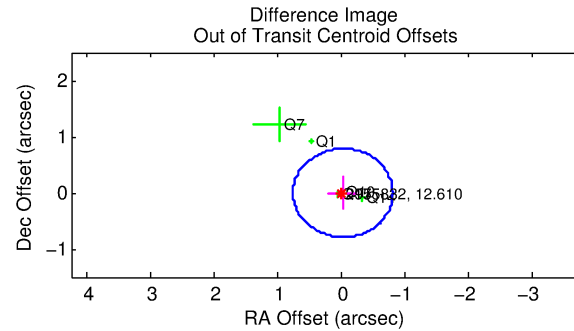
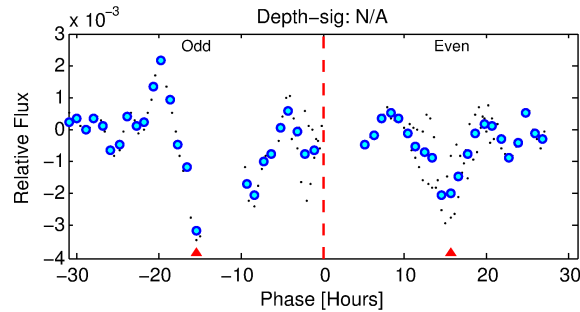
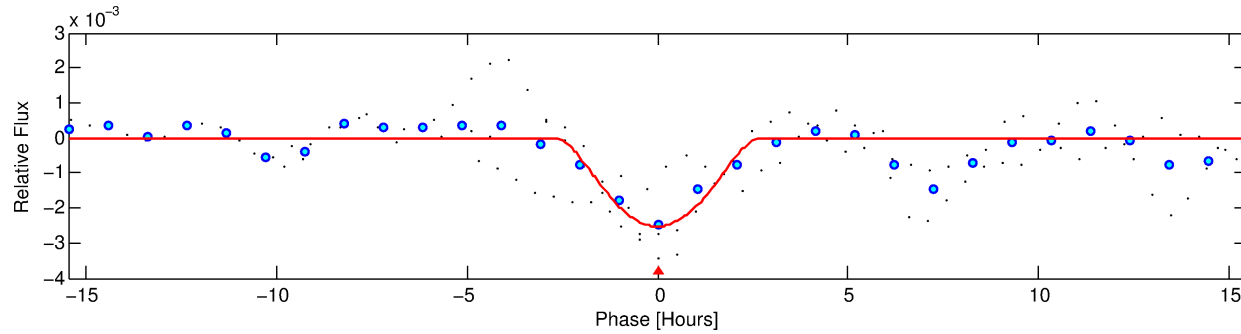
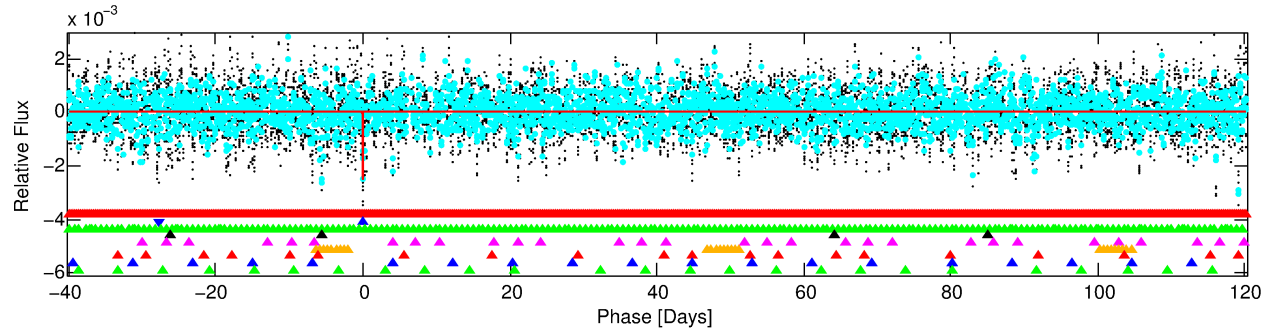
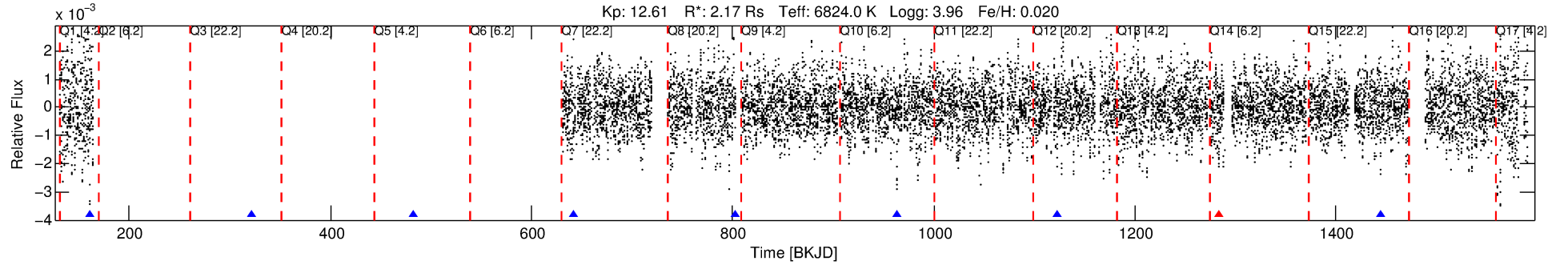
Ephemeris Match Information For 002975832-02

No Significant Match Found



# DV One-Page Summary

KIC: 2975832 Candidate: 2 of 9 Period: 160.400 d



## DV Fit Results:

Period = 160.39958 [0.00252] d  
Epoch = 161.1220 [0.0124] BKJD  
Rp/R\* = 0.0842 [0.1792]  
a/R\* = 99.50 [45.18]  
b = 1.00 [0.16]  
Seff = 20.30 [10.57]  
Teq = 541 [70] K  
Rp = 19.97 [43.02] Re  
a = 0.6723 [0.2119] AU  
Ag = 510.90 [2192.63] [0.23σ]  
Teffp = 3979 [4244] K [0.81σ]

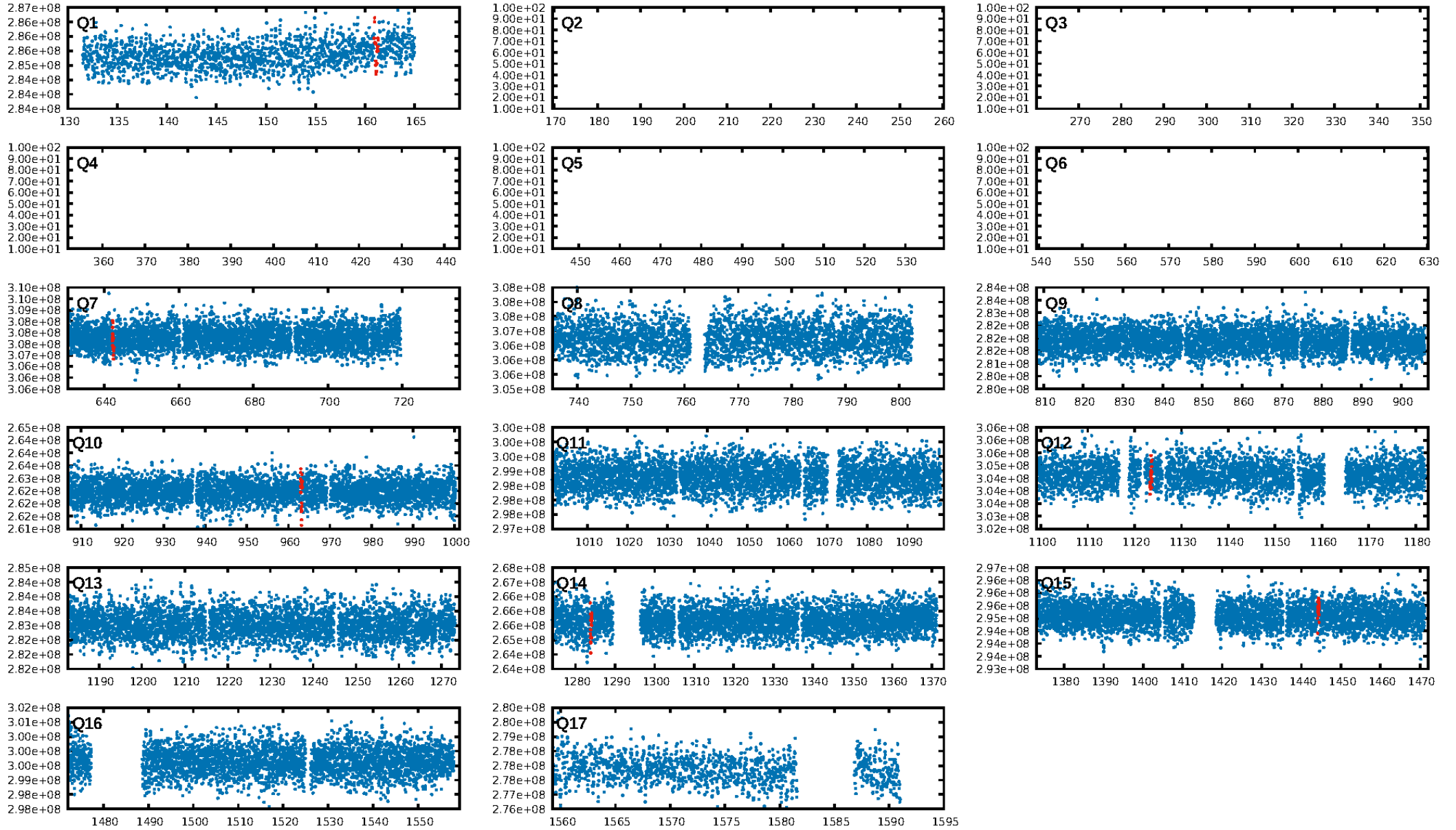
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [169.82σ]  
LongPeriod-sig: 100.0% [877.92σ]  
ModelChiSquare2-sig: 7.3%  
ModelChiSquareGof-sig: 96.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: -0.2907  
Centroid-sig: 2.7%  
Centroid-so: 0.101 arcsec [0.81σ]  
OotOffset-rm: 0.023 arcsec [0.09σ]  
OotOffset-st: 2/2/0/1 [5]  
KicOffset-rm: 0.055 arcsec [0.16σ]  
KicOffset-st: 2/2/0/1 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.20 [1/5]

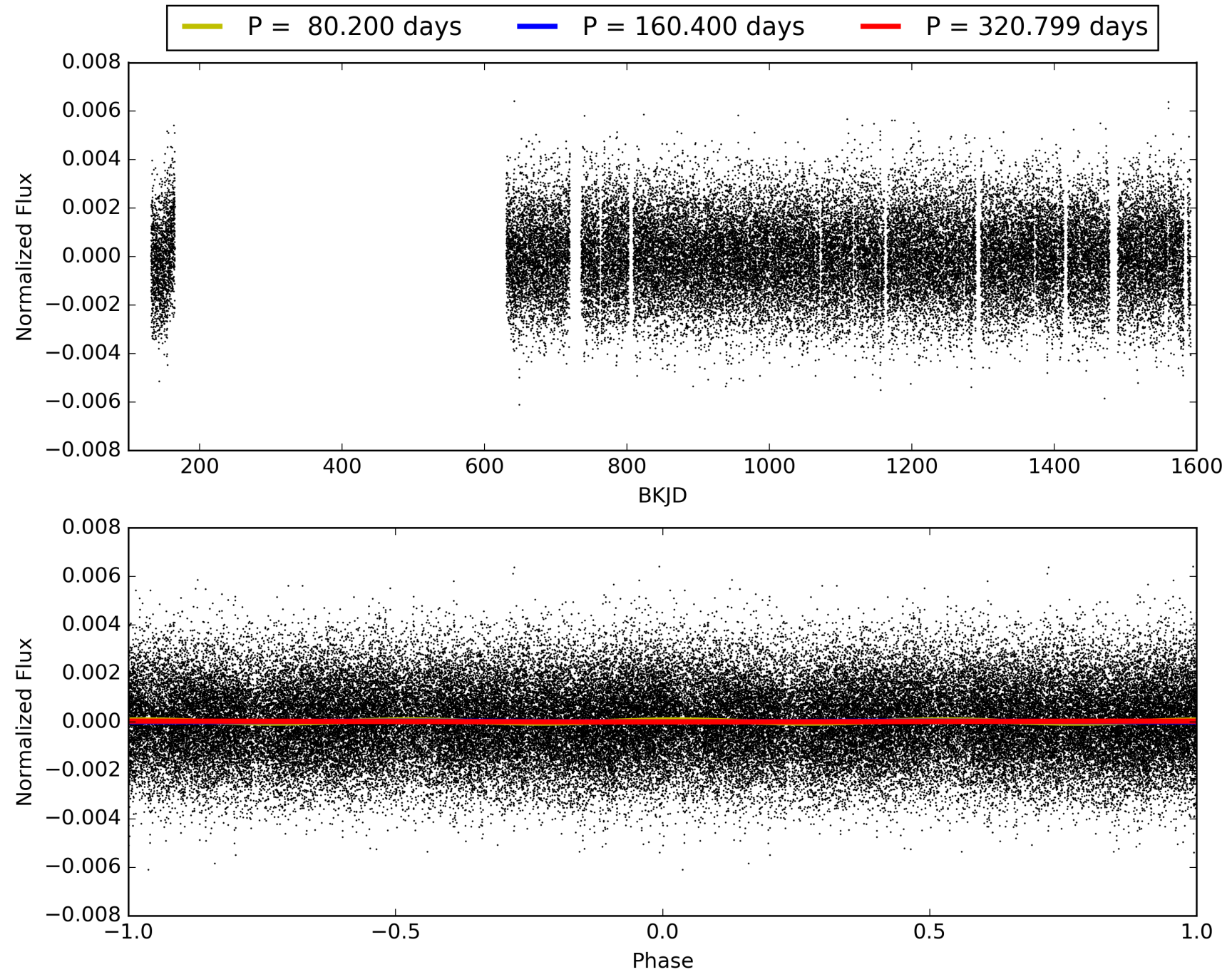
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:08 Z

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

# TCE 002975832-02, PDC Light Curves

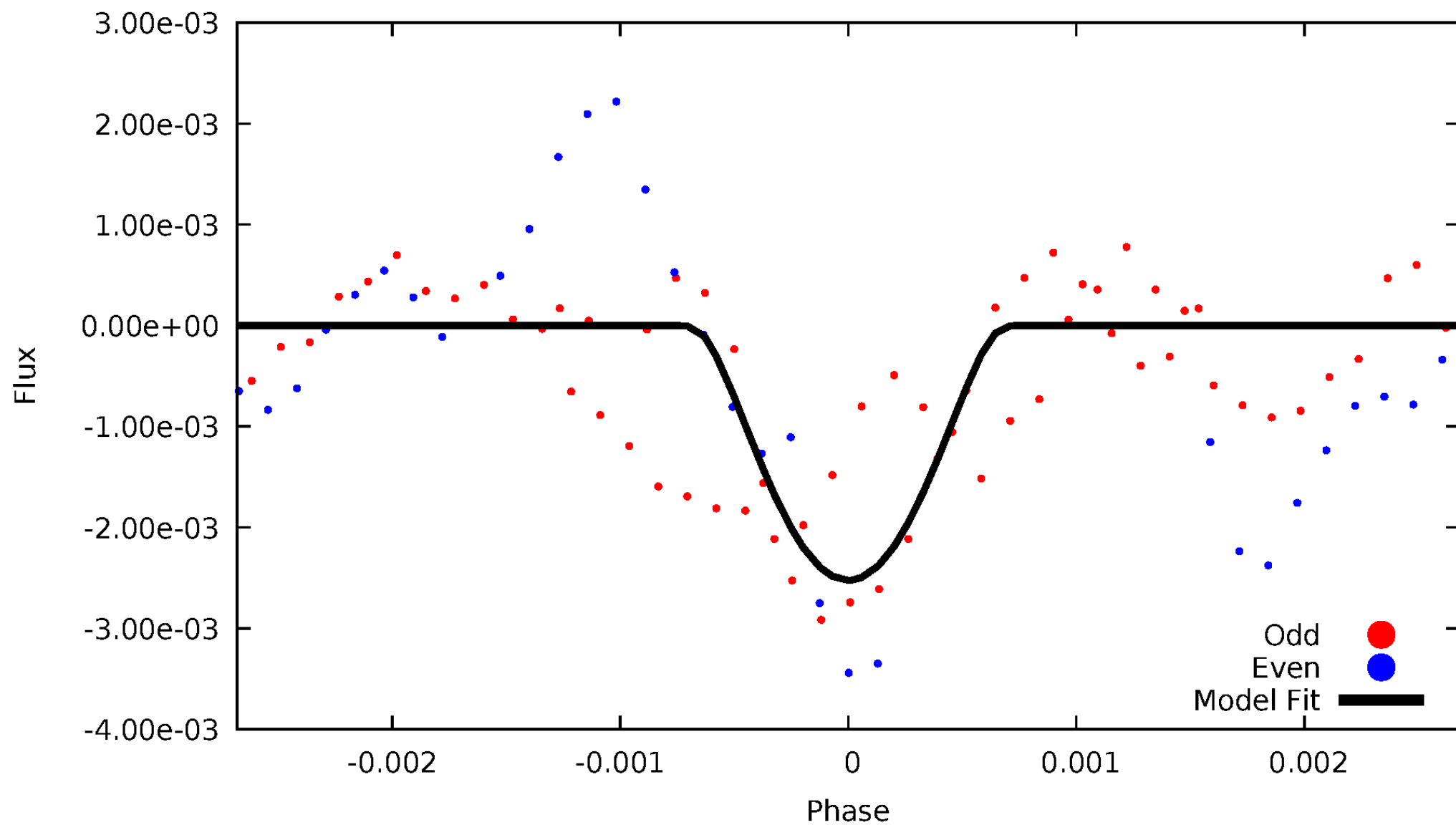


# TCE 002975832-02



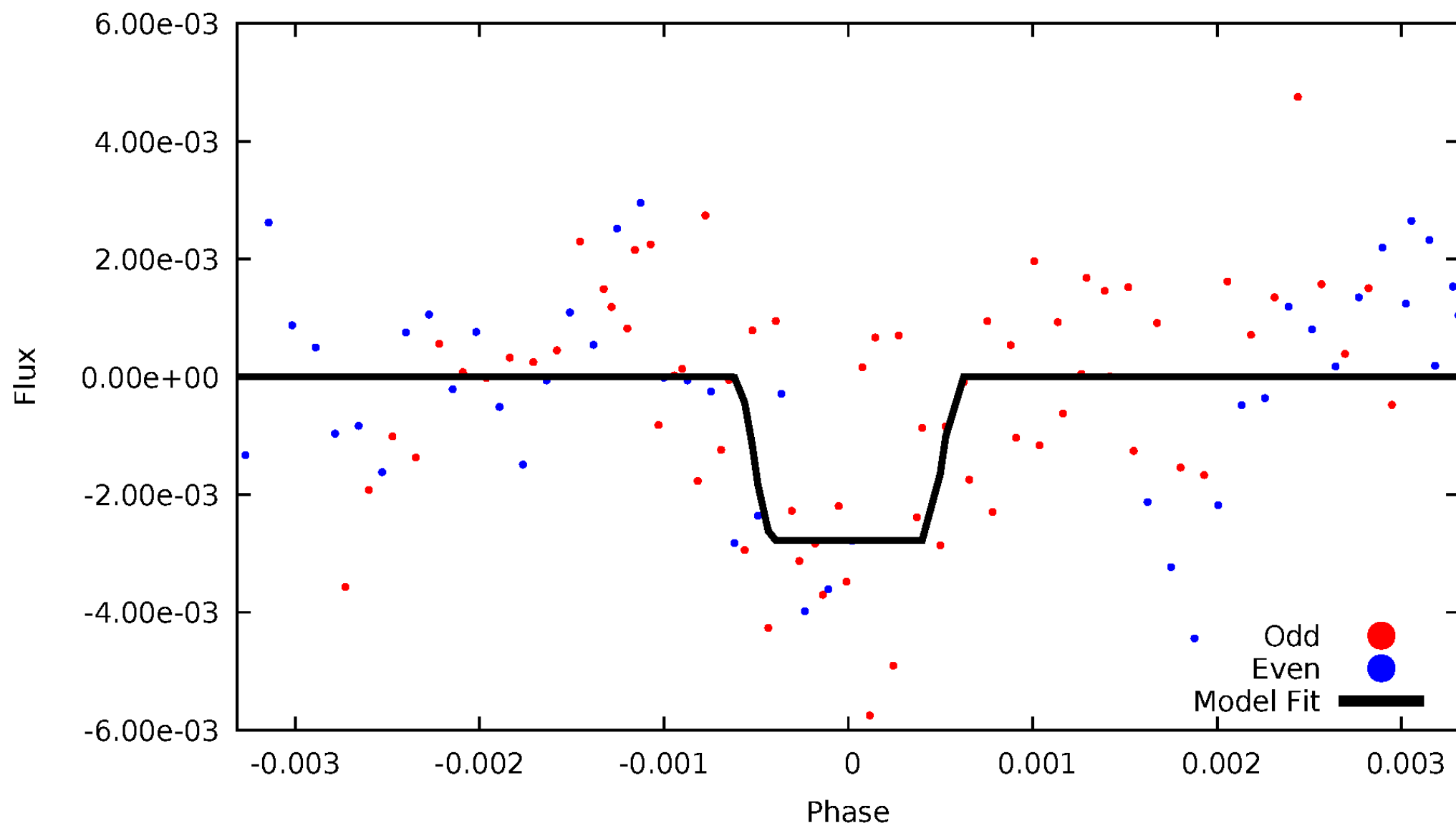
# DV Odd/Even

TCE 002975832-02



# ALT Odd/Even

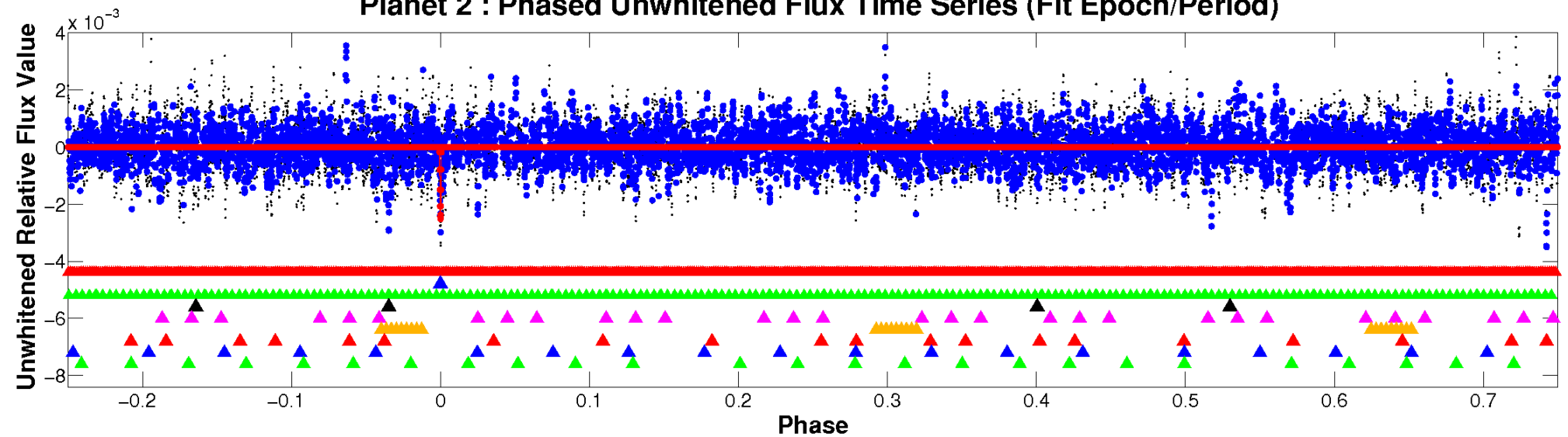
TCE 002975832-02



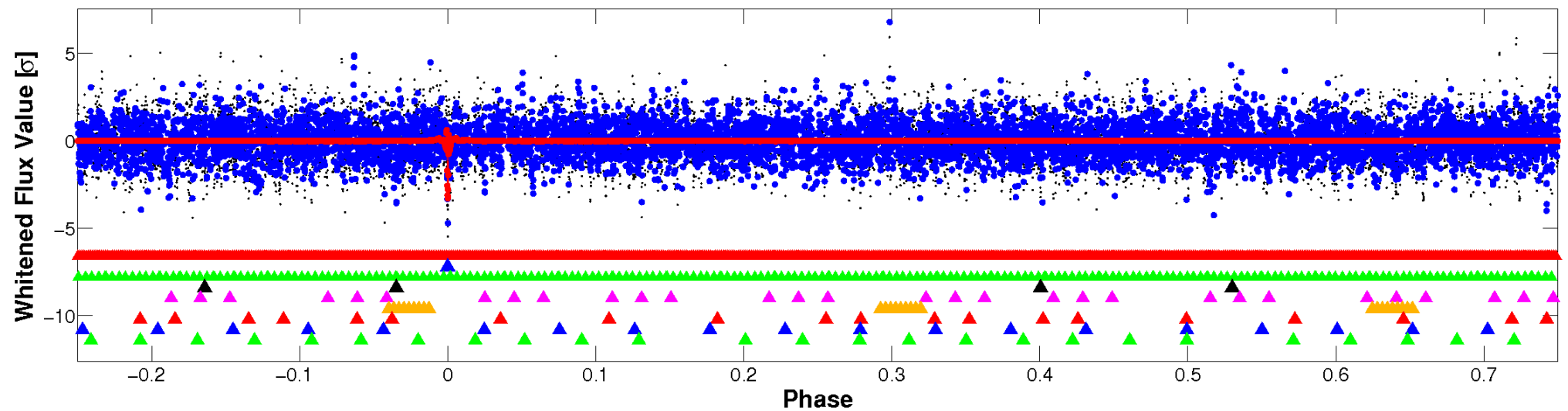


# Non-Whitened Vs. Whitened Light Curve

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

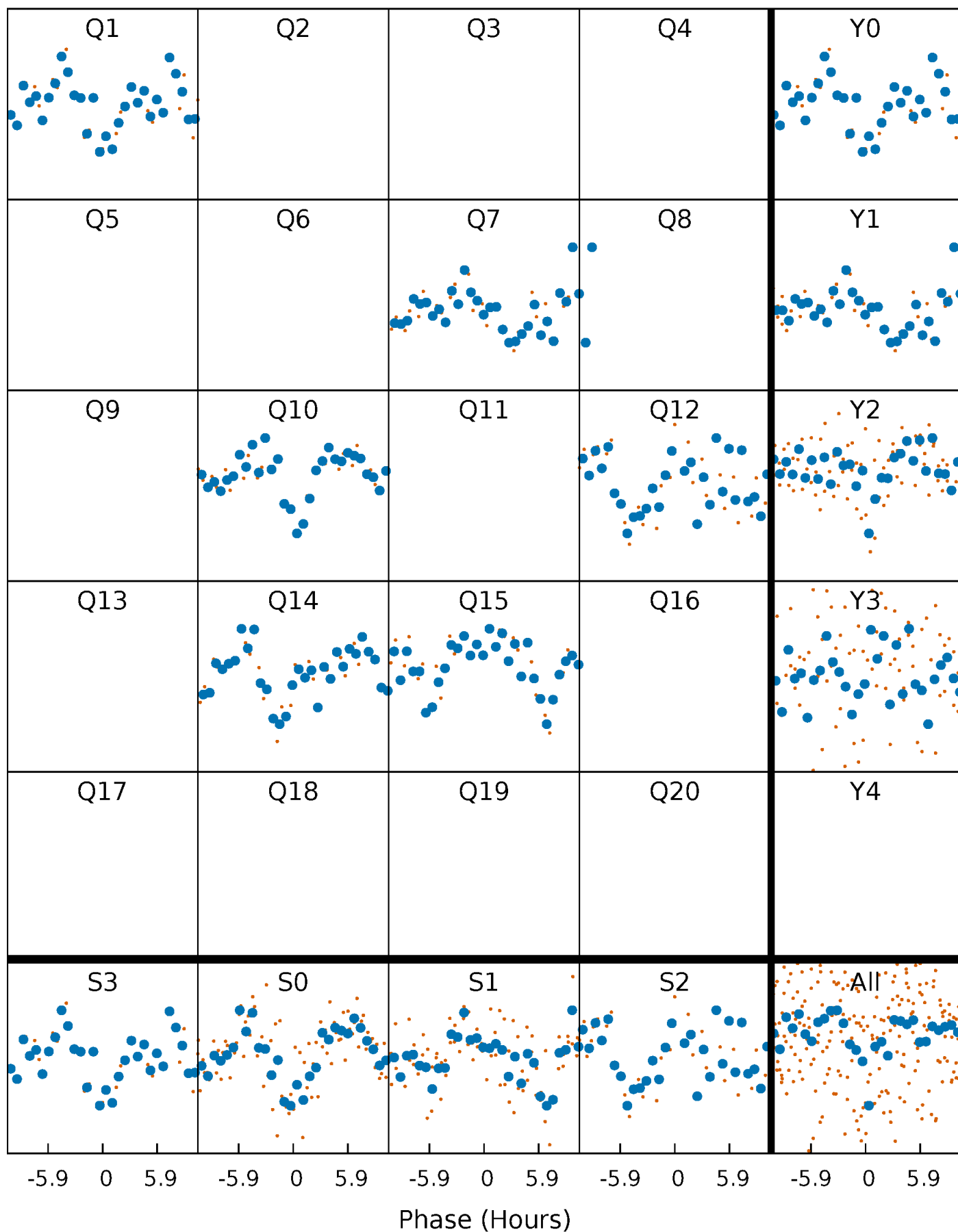


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



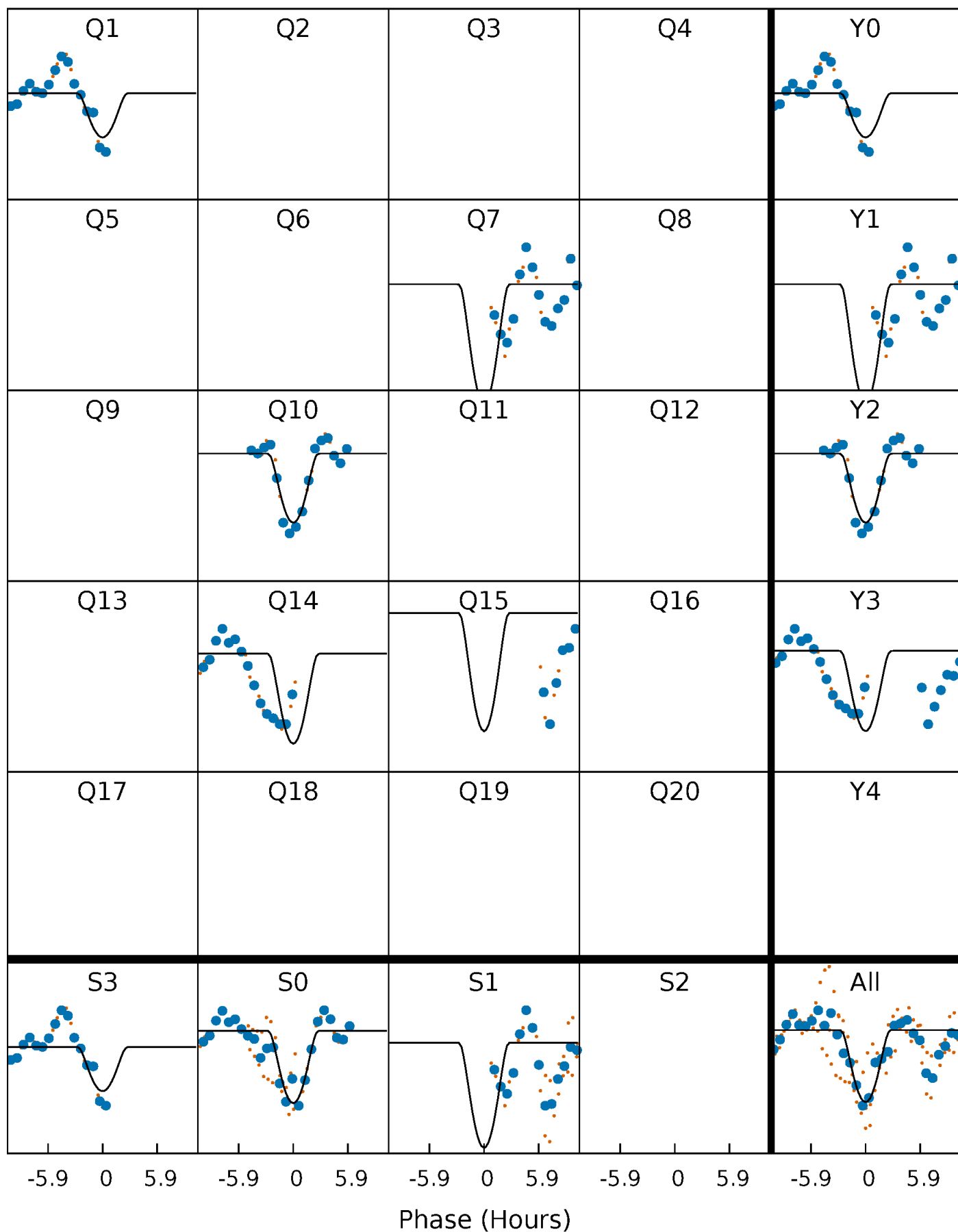
# PDC Quarter-Phased Transit Curves

TCE 002975832-02 P=160.399583 Days  $T_0=161.122046$  (BKJD)



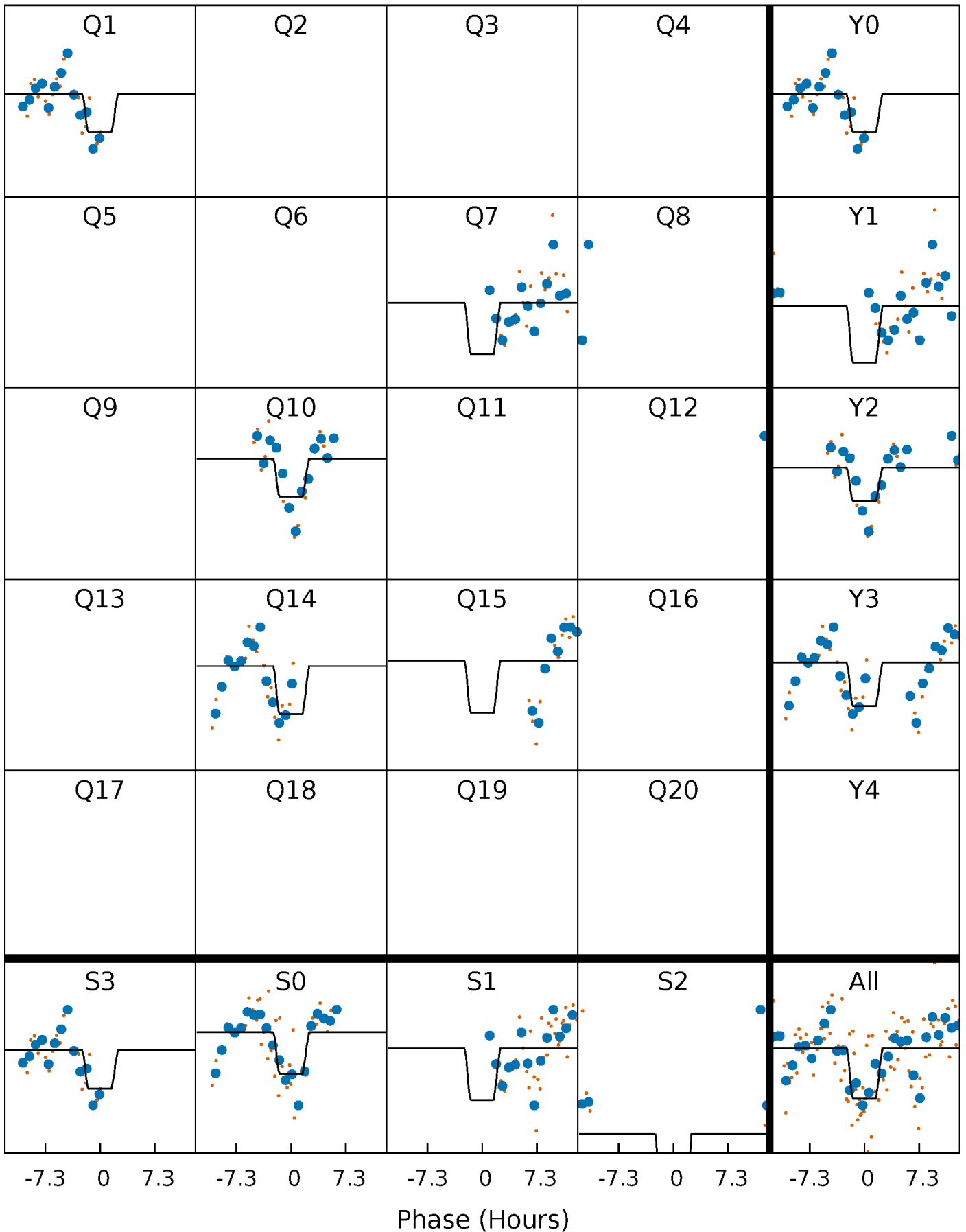
# DV Quarter-Phased Transit Curves

TCE 002975832-02     $P=160.399583$  Days     $T_0=161.122046$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

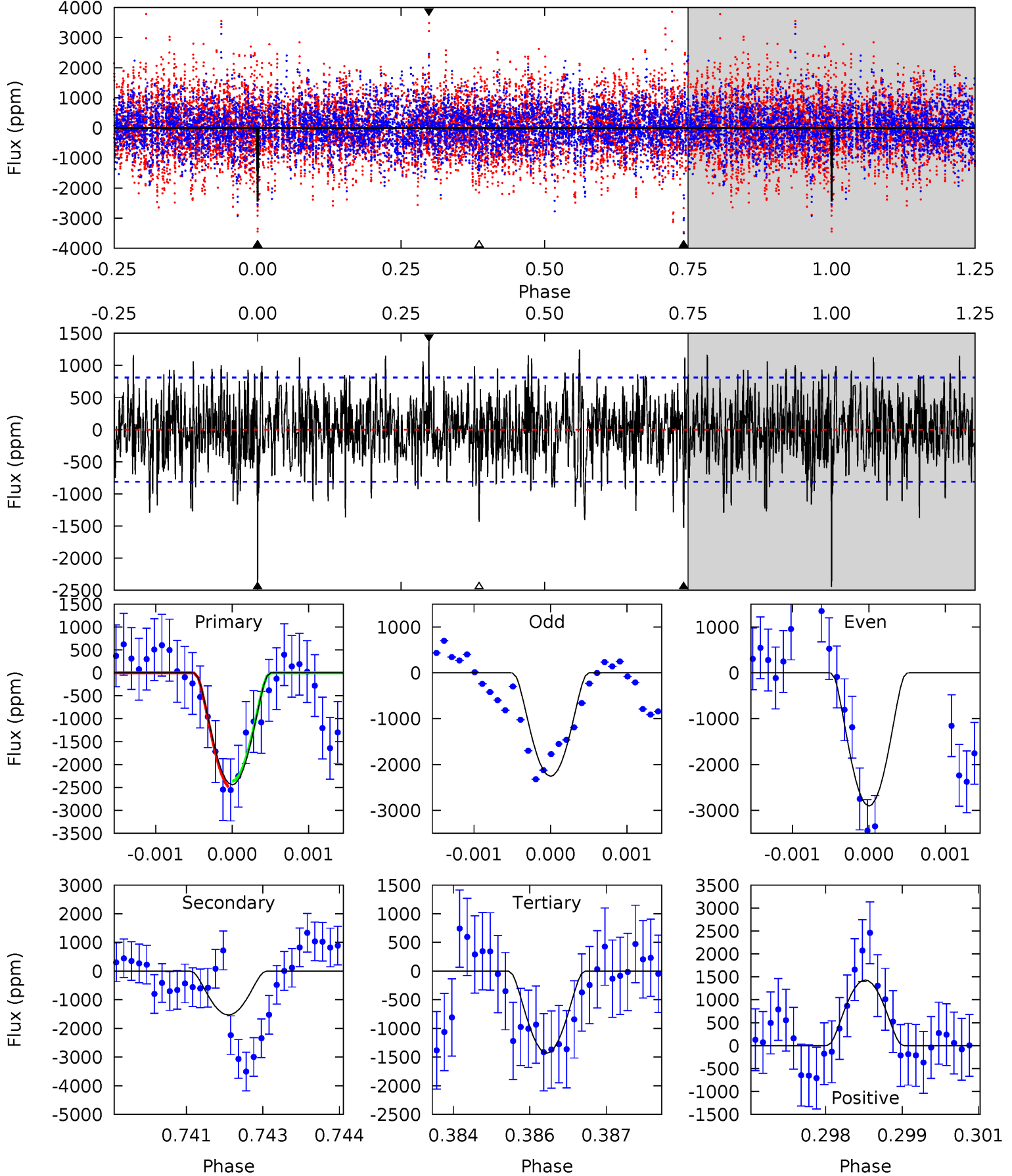
TCE 002975832-02 P=160.396670 Days  $T_0=161.139664$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-02, P = 160.399583 Days, E = 0.722463 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
16.3	10.2	9.52	9.51	5.39	3.19	2.70	6.73	6.74	0.65	0.66	1.85	0.93	0.37	0.43

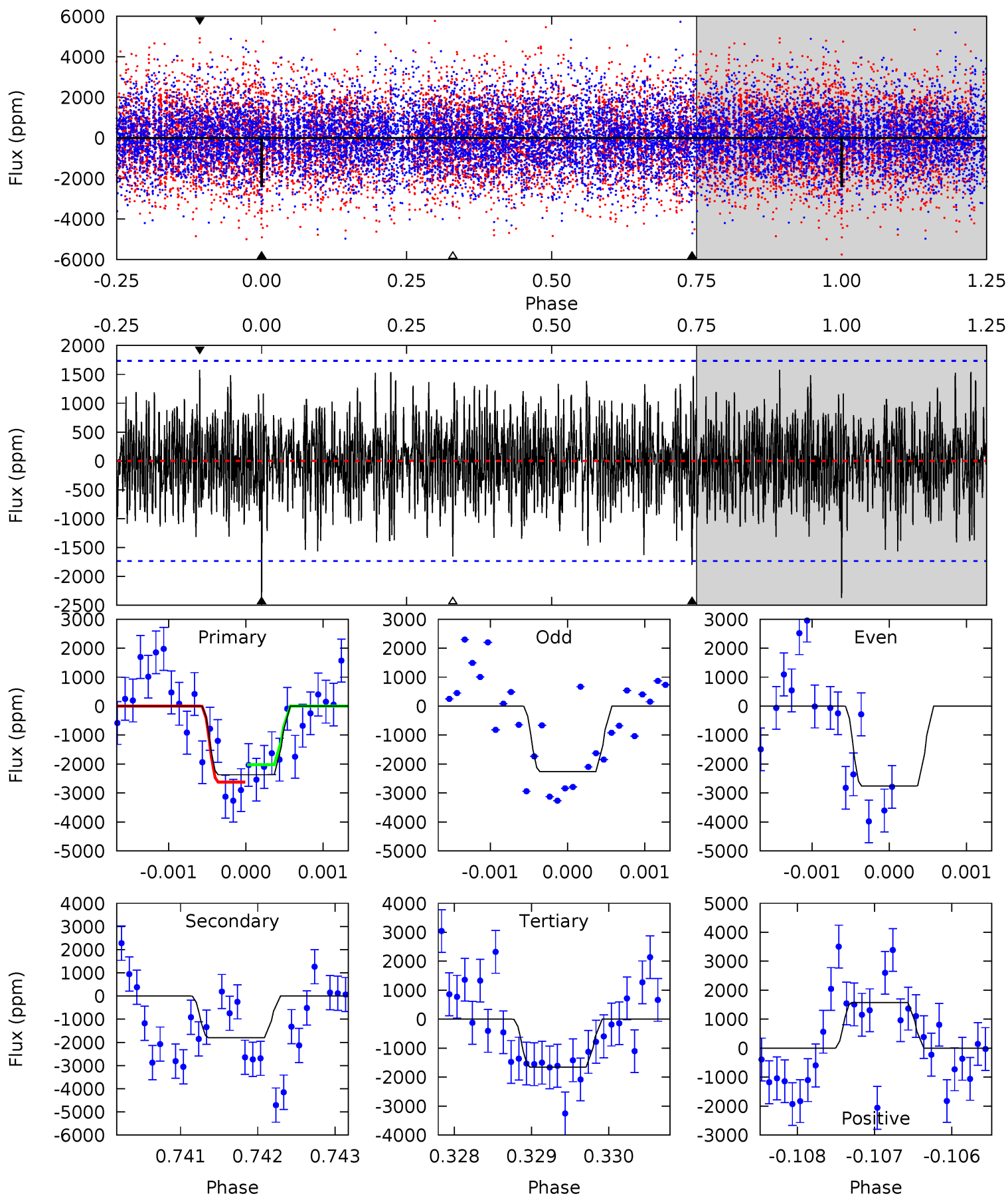




# Alt Model-Shift Uniqueness Test

002975832-02, P = 160.396670 Days, E = 0.742994 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
7.43	5.64	5.18	4.95	5.44	3.27	1.67	2.25	2.49	0.46	0.69	0.65	0.80	0.40	0.93



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1530 \pm 150$	$33.87^{+35.06}_{-22.87}$	$742^{+54}_{-63}$	$3815^{+2198}_{-747}$	$318^{+3034}_{-241}$
Alt.	$-1797 \pm 319$	$34.19^{+34.99}_{-23.84}$	$744^{+58}_{-67}$	$3880^{+2455}_{-746}$	$373^{+3576}_{-282}$

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

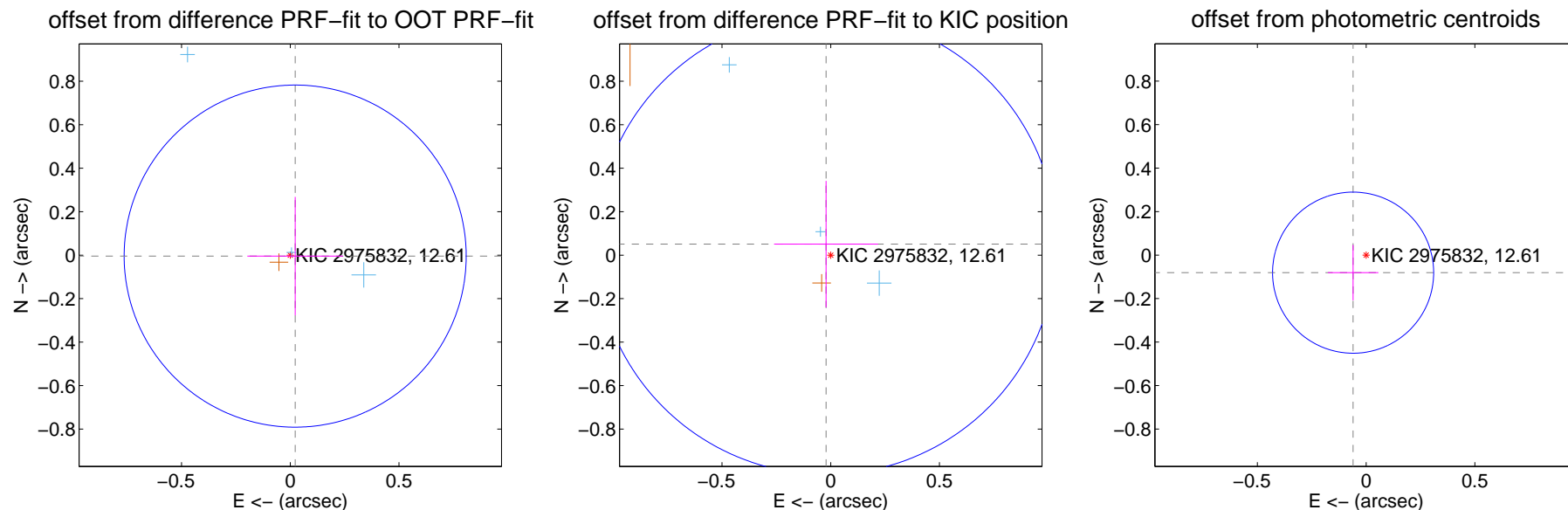
## DV Centroid Data

Supplemental centroid analysis for 002975832-02. Kepler magnitude: 12.61. Transit SNR 11.67

There are 3 quarters with good PRF difference image offsets

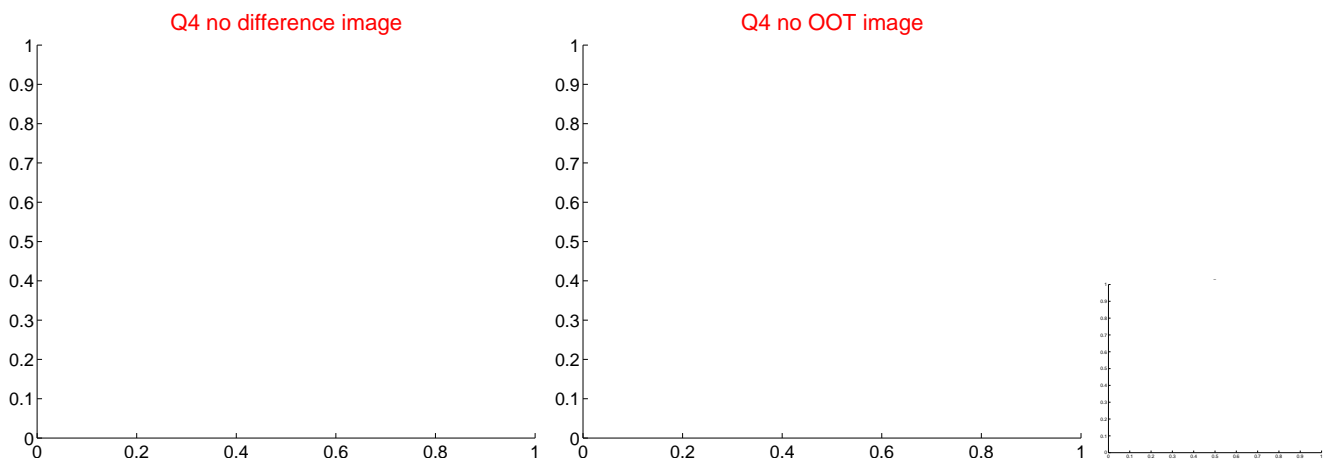
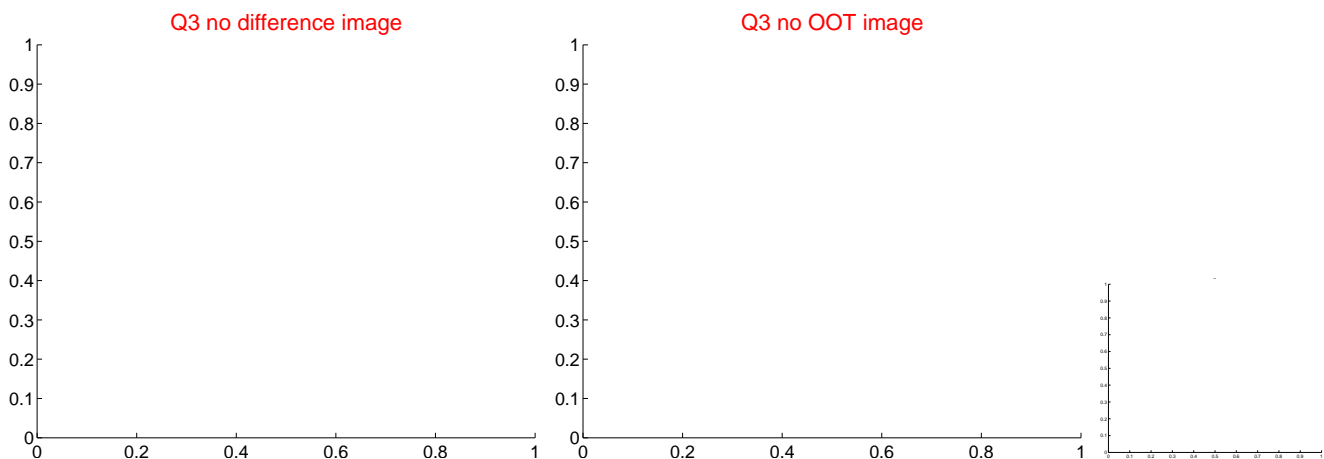
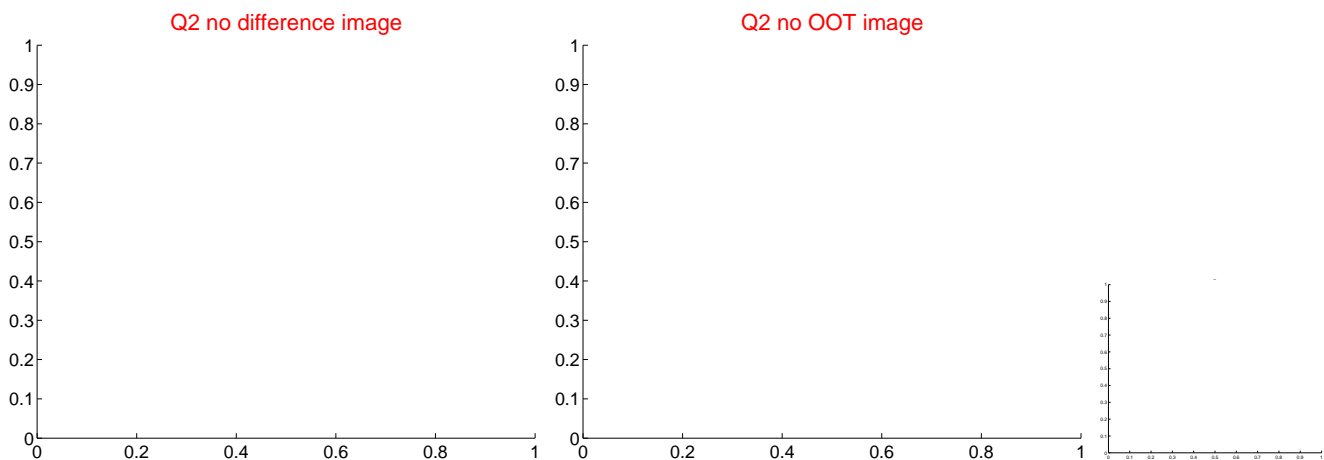
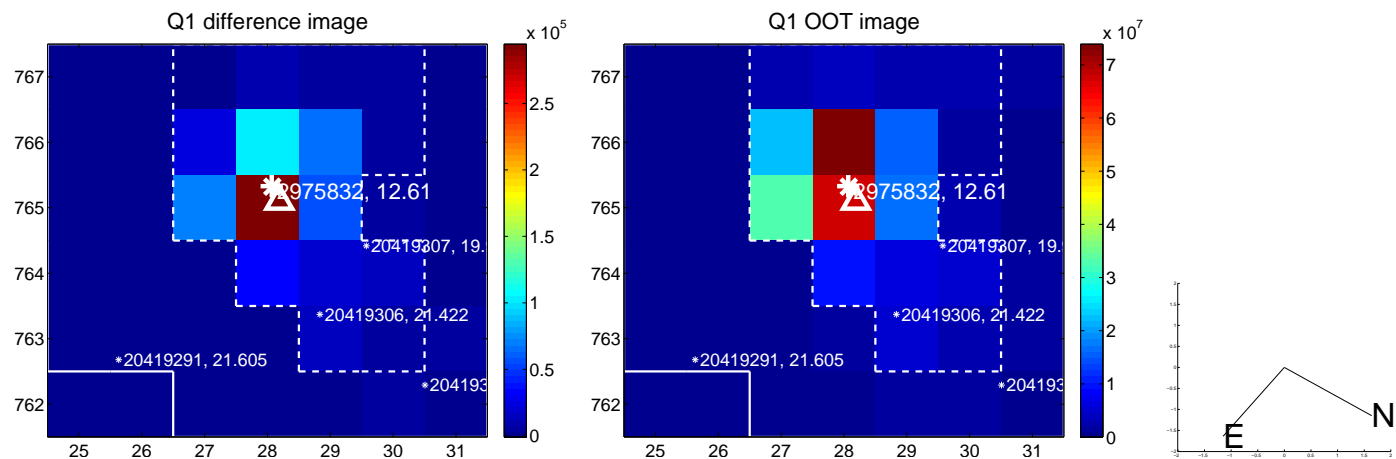
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.023 \pm 0.262$	0.09	$-0.023 \pm 0.220$	$-0.004 \pm 0.272$
PRF-fit source offset from KIC position	$0.055 \pm 0.353$	0.16	$0.021 \pm 0.239$	$0.051 \pm 0.290$
photometric centroid source offset	$0.10 \pm 0.12$	0.81	$0.06 \pm 0.12$	$-0.08 \pm 0.13$

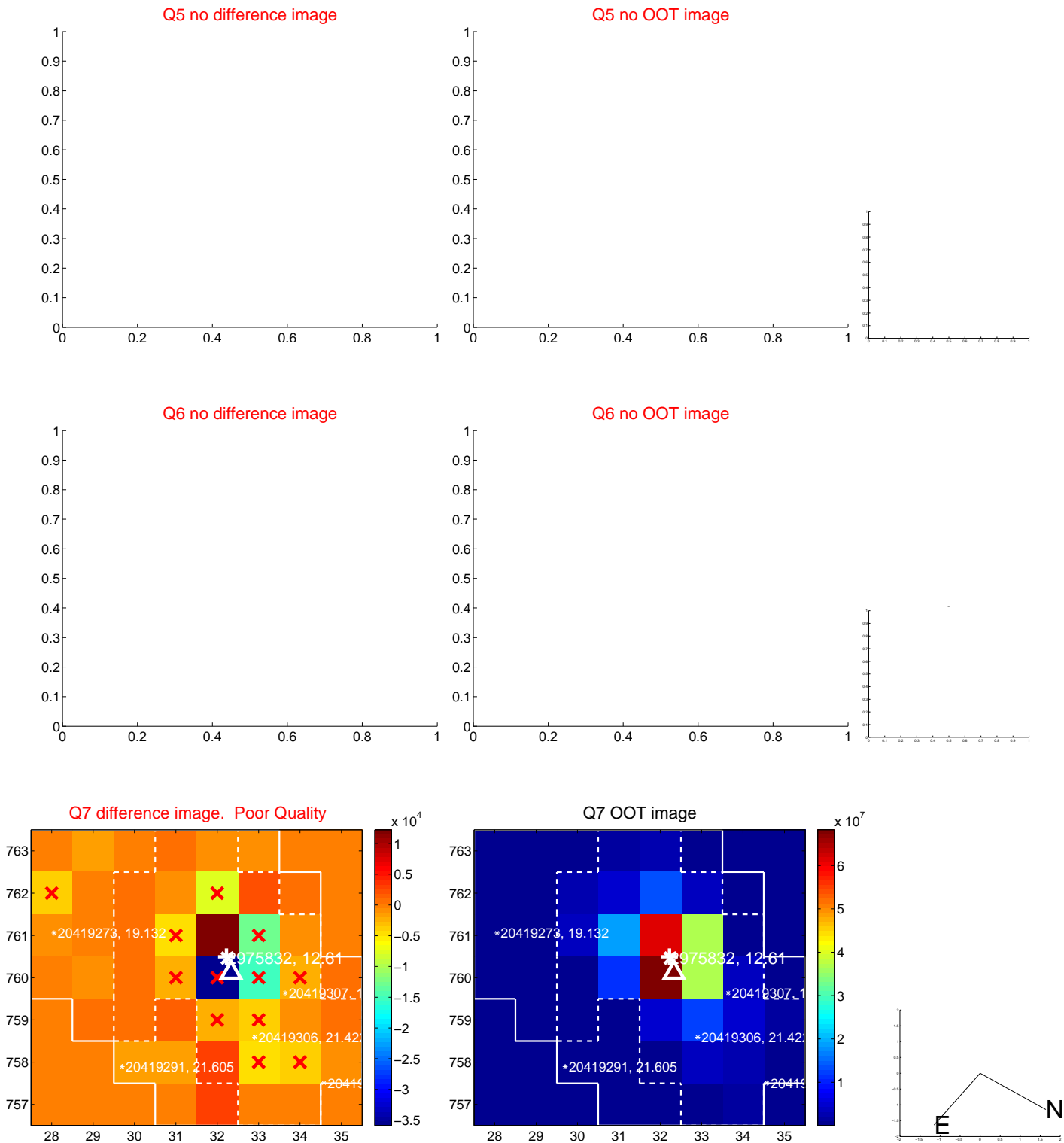


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

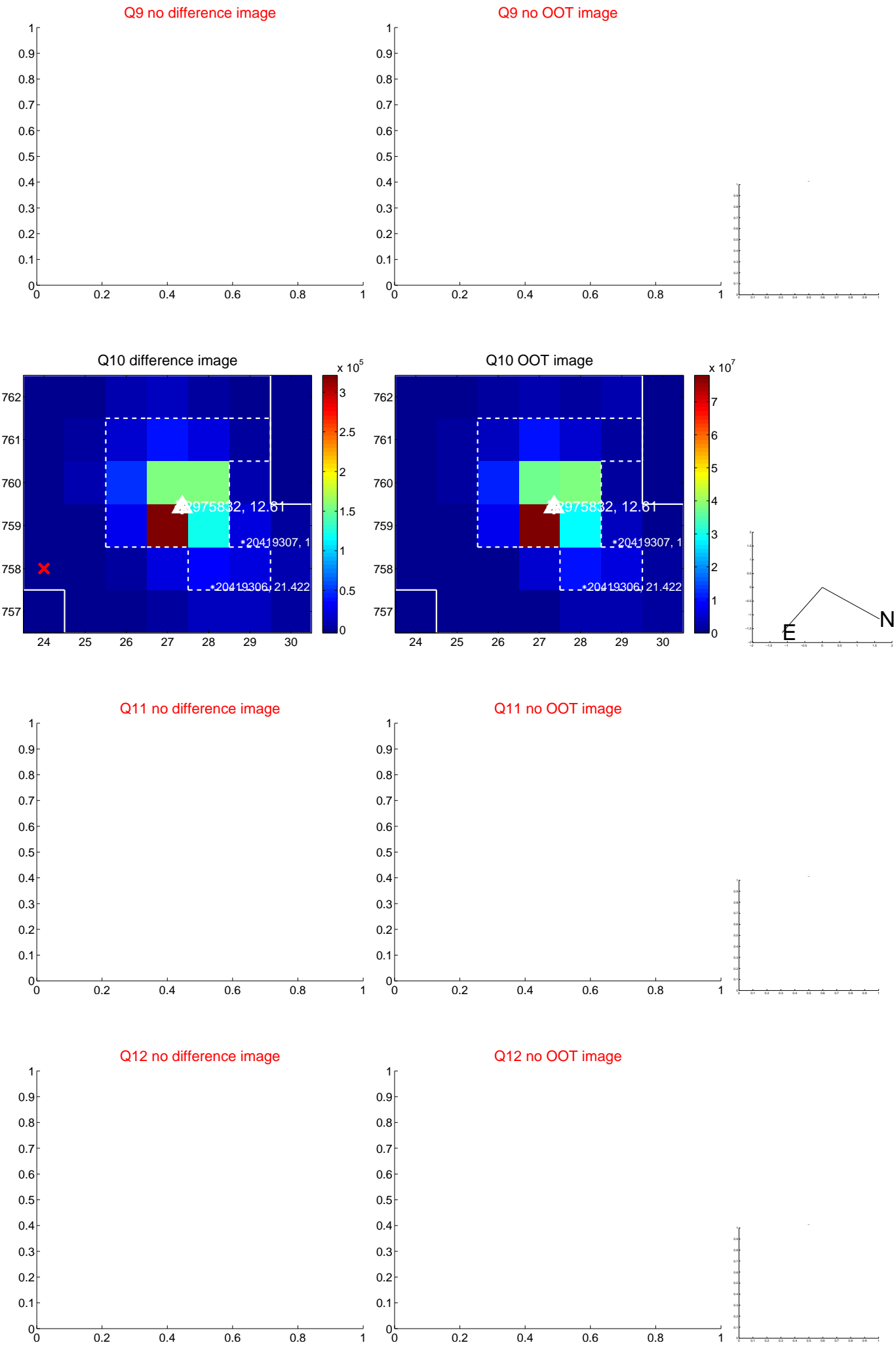


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

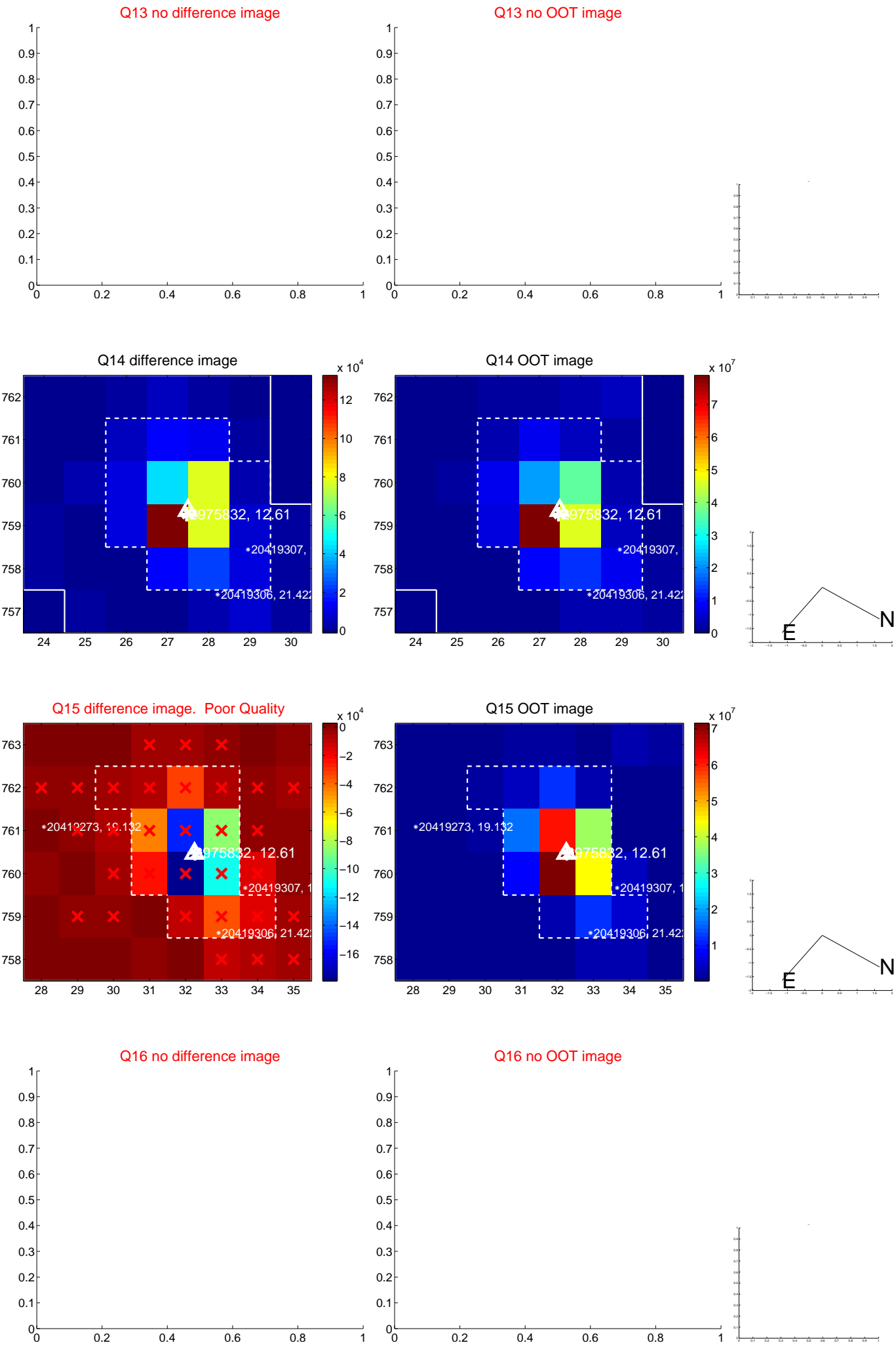




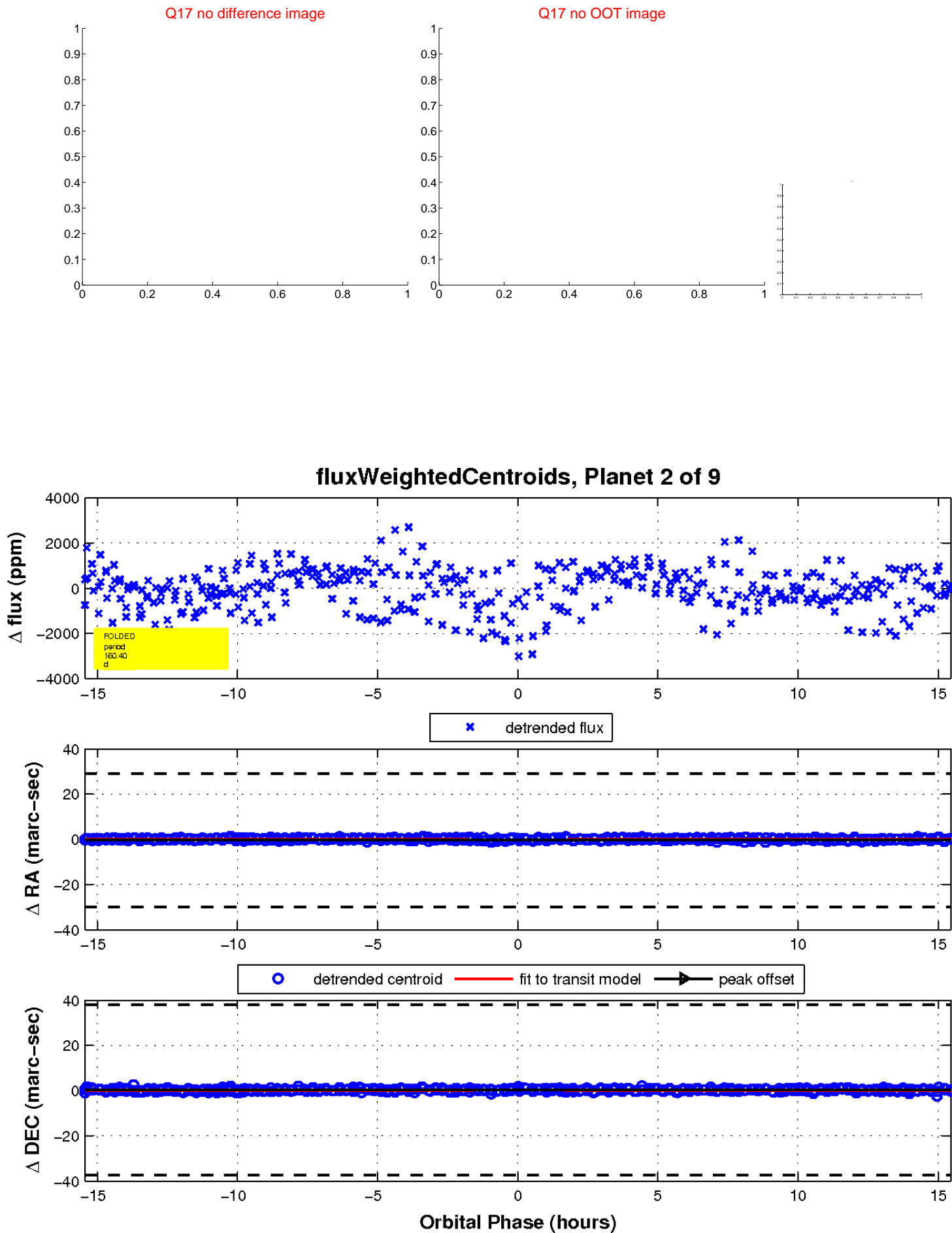
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

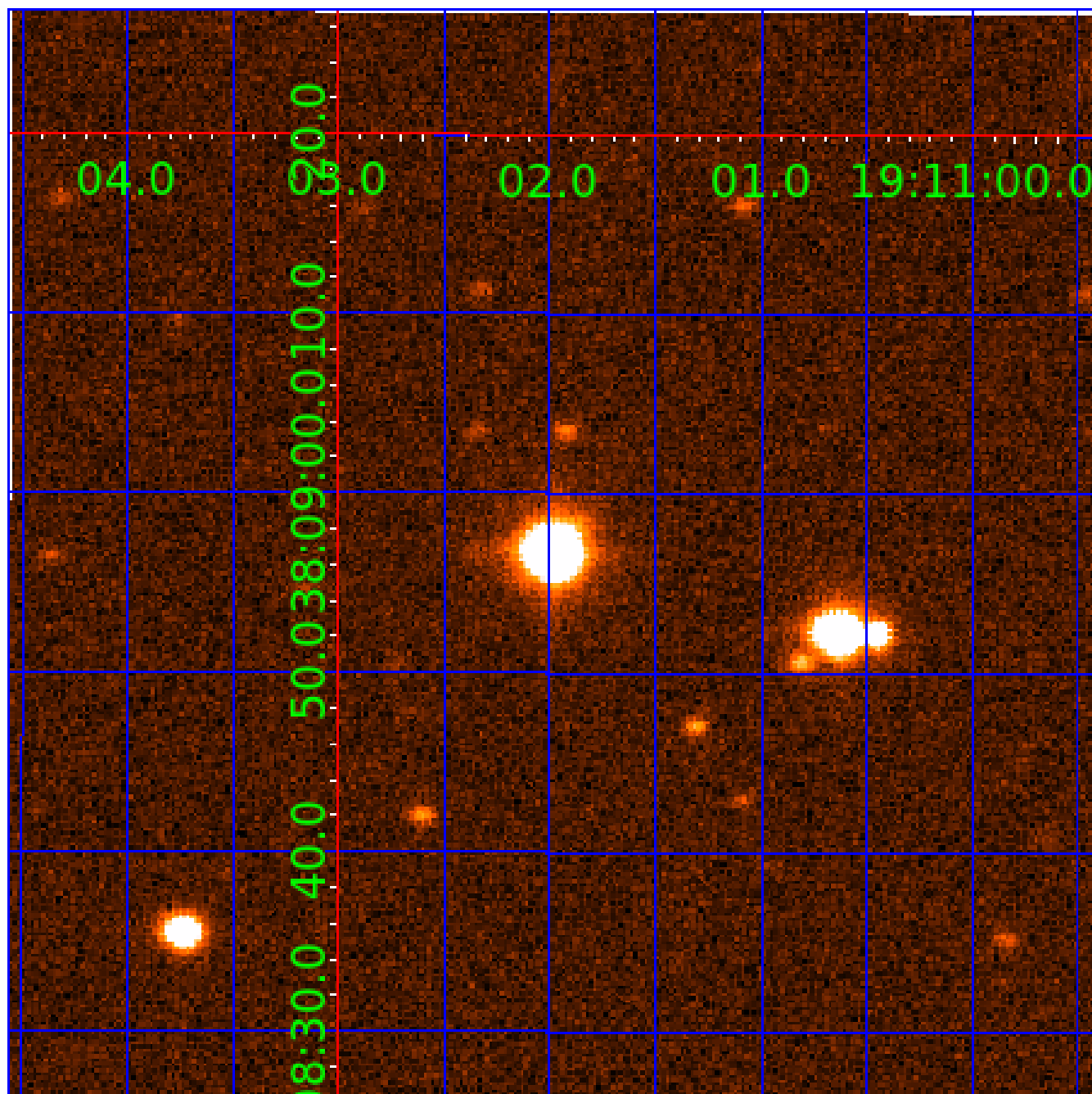


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

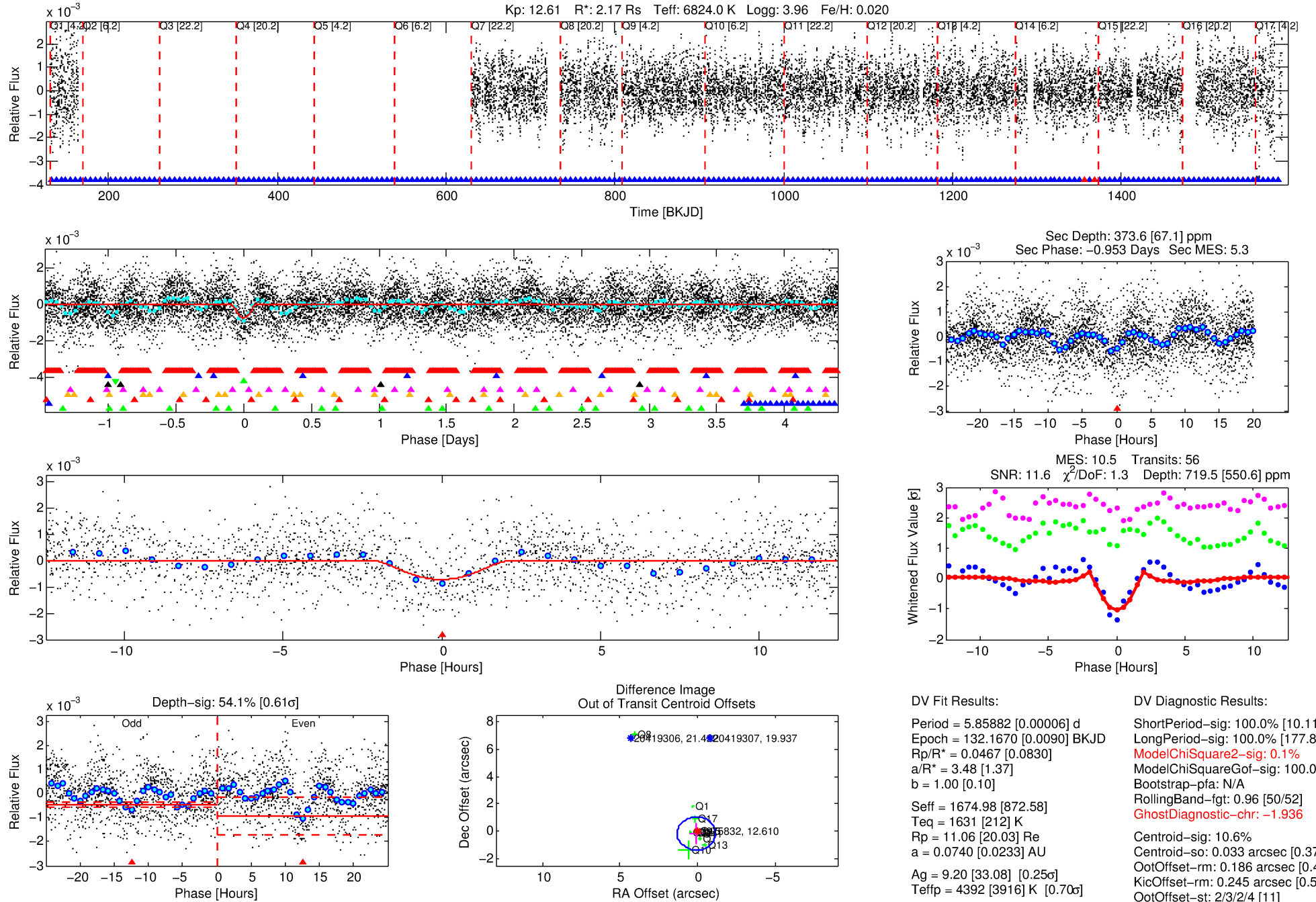
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-03

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 3 of 9 Period: 5.859 d

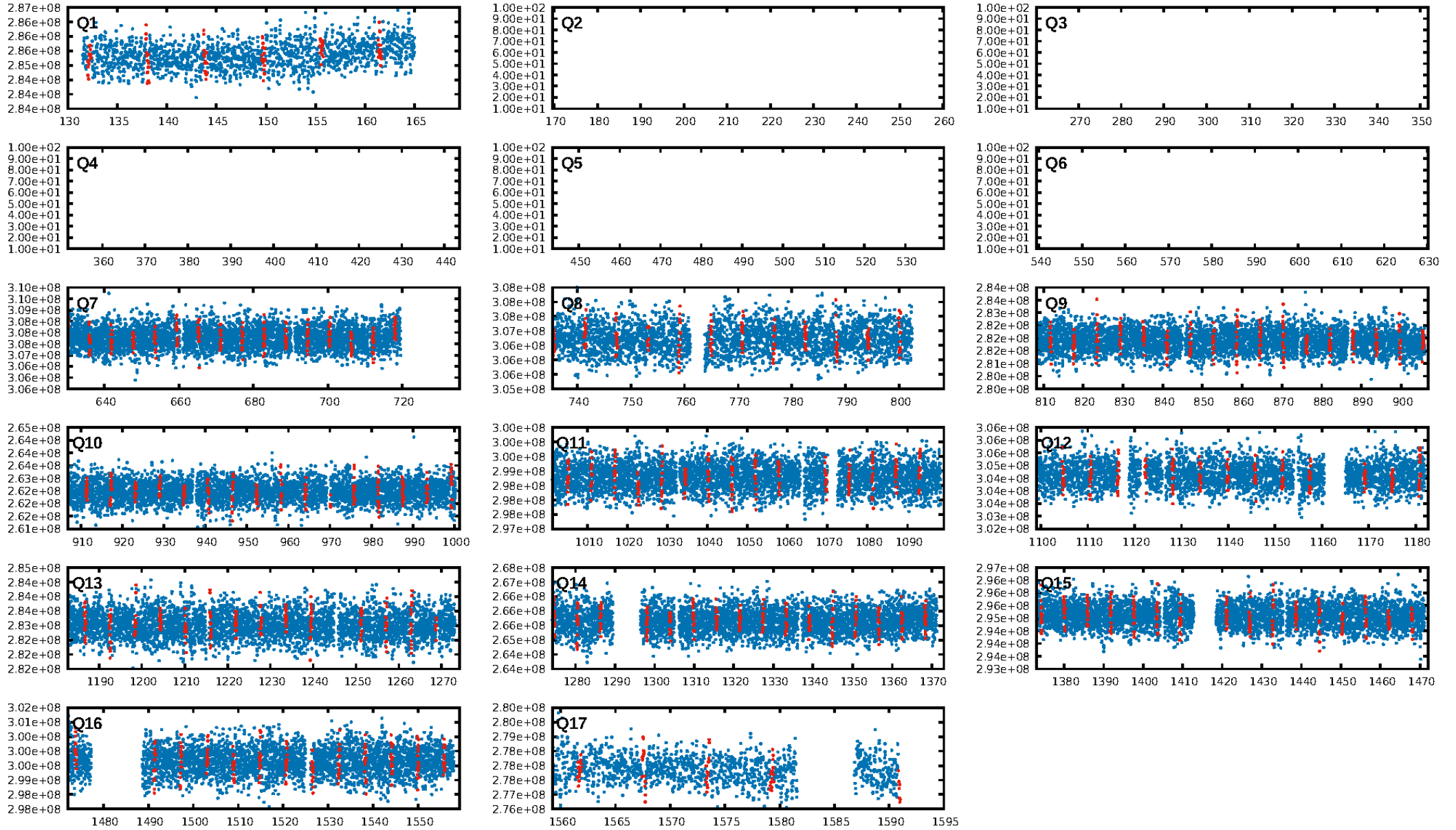


Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:13 Z

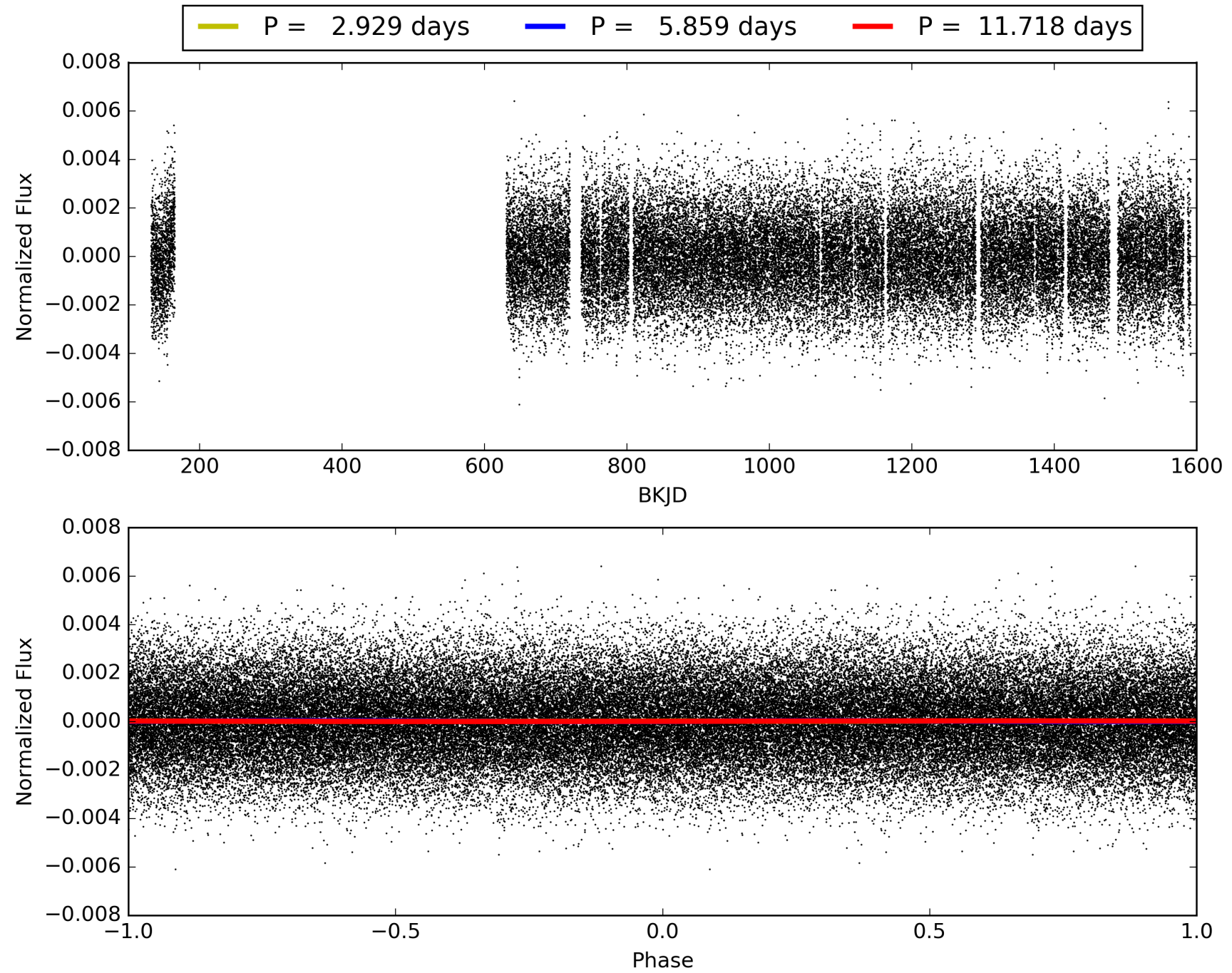
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 002975832-03, PDC Light Curves

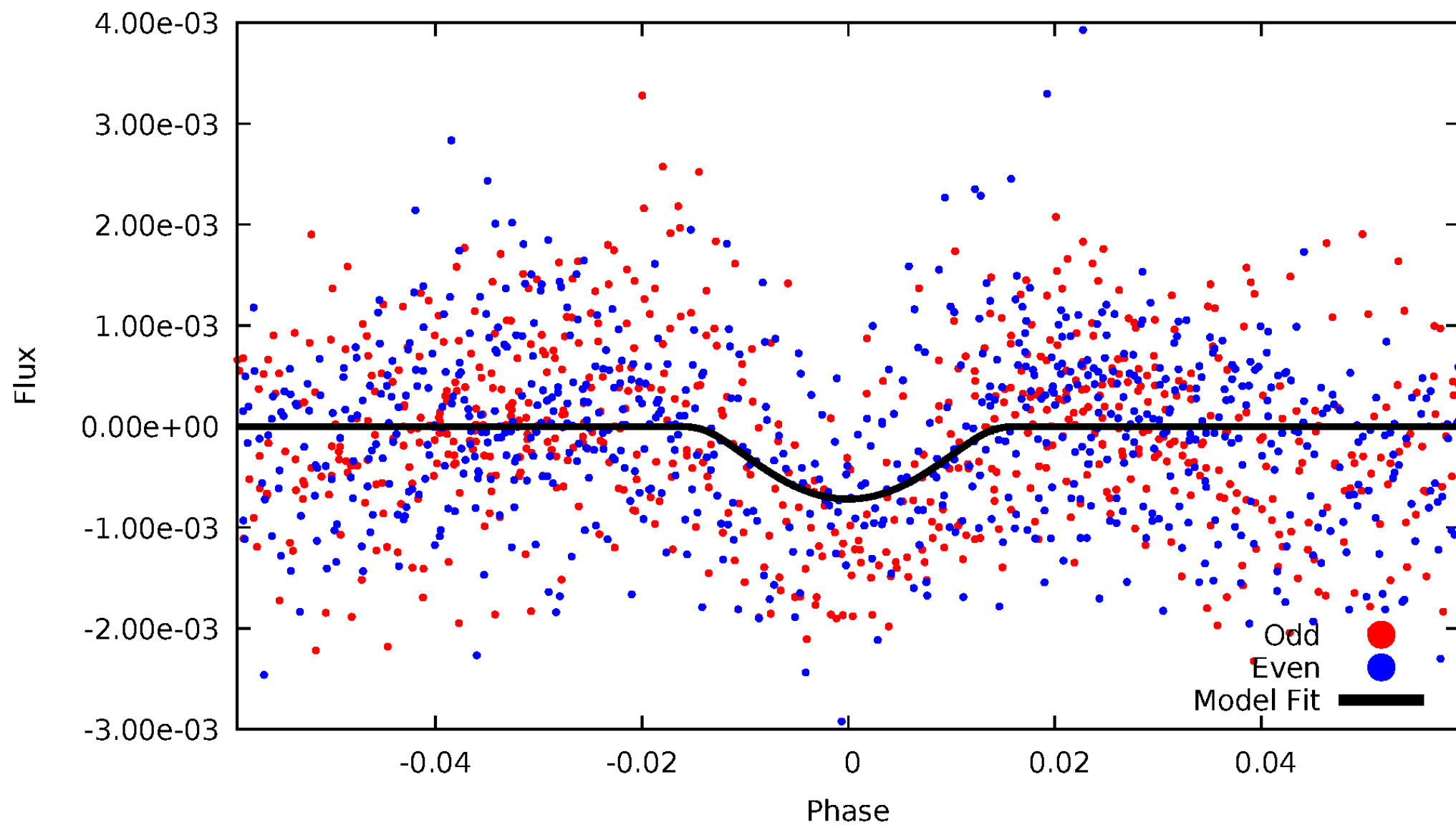


TCE 002975832-03



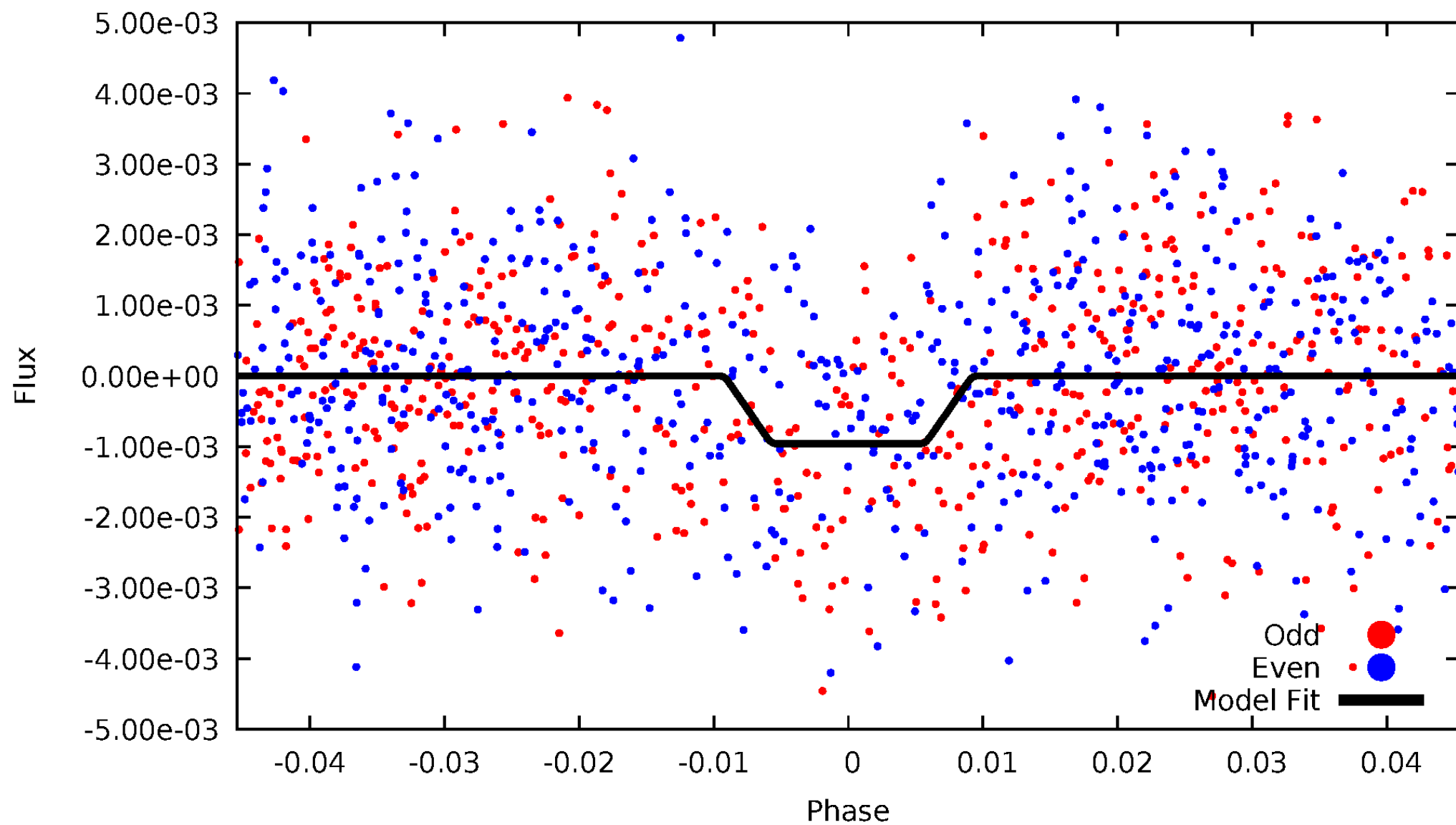
# DV Odd/Even

TCE 002975832-03



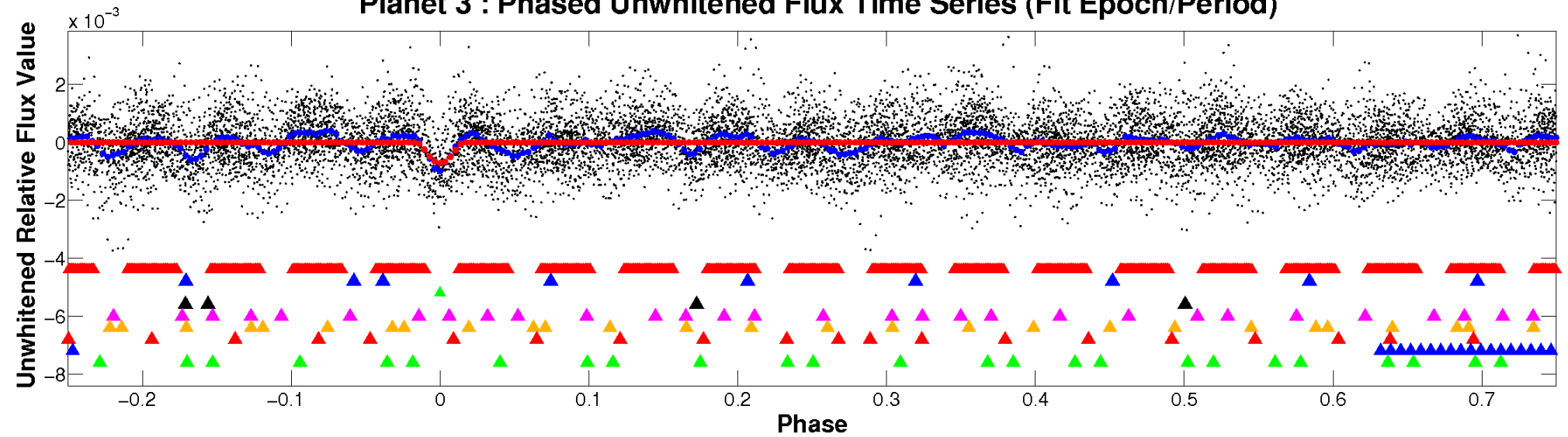
# ALT Odd/Even

TCE 002975832-03

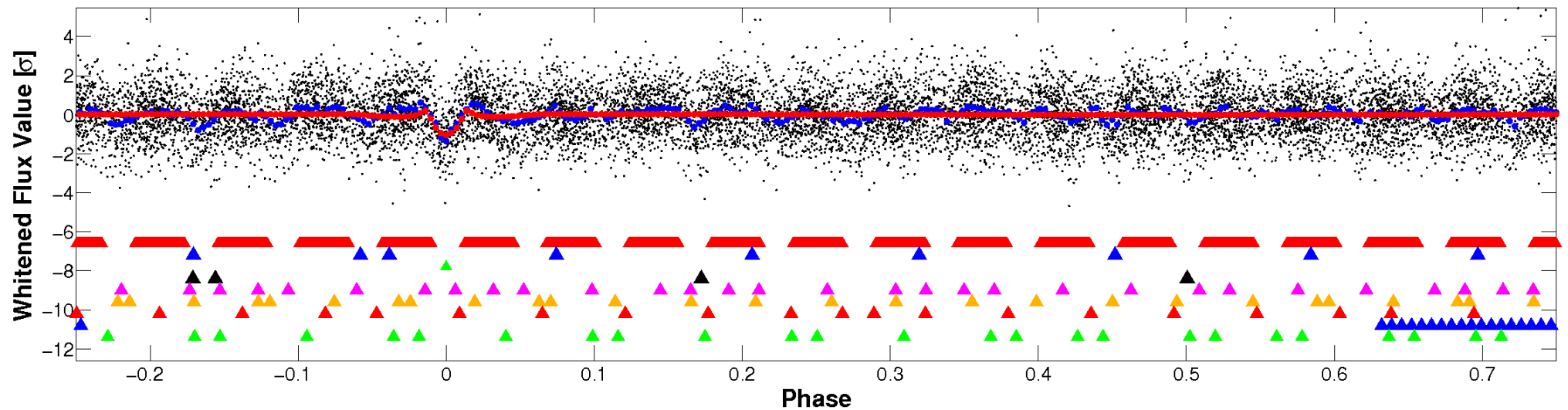


# Non-Whitened Vs. Whitened Light Curve

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



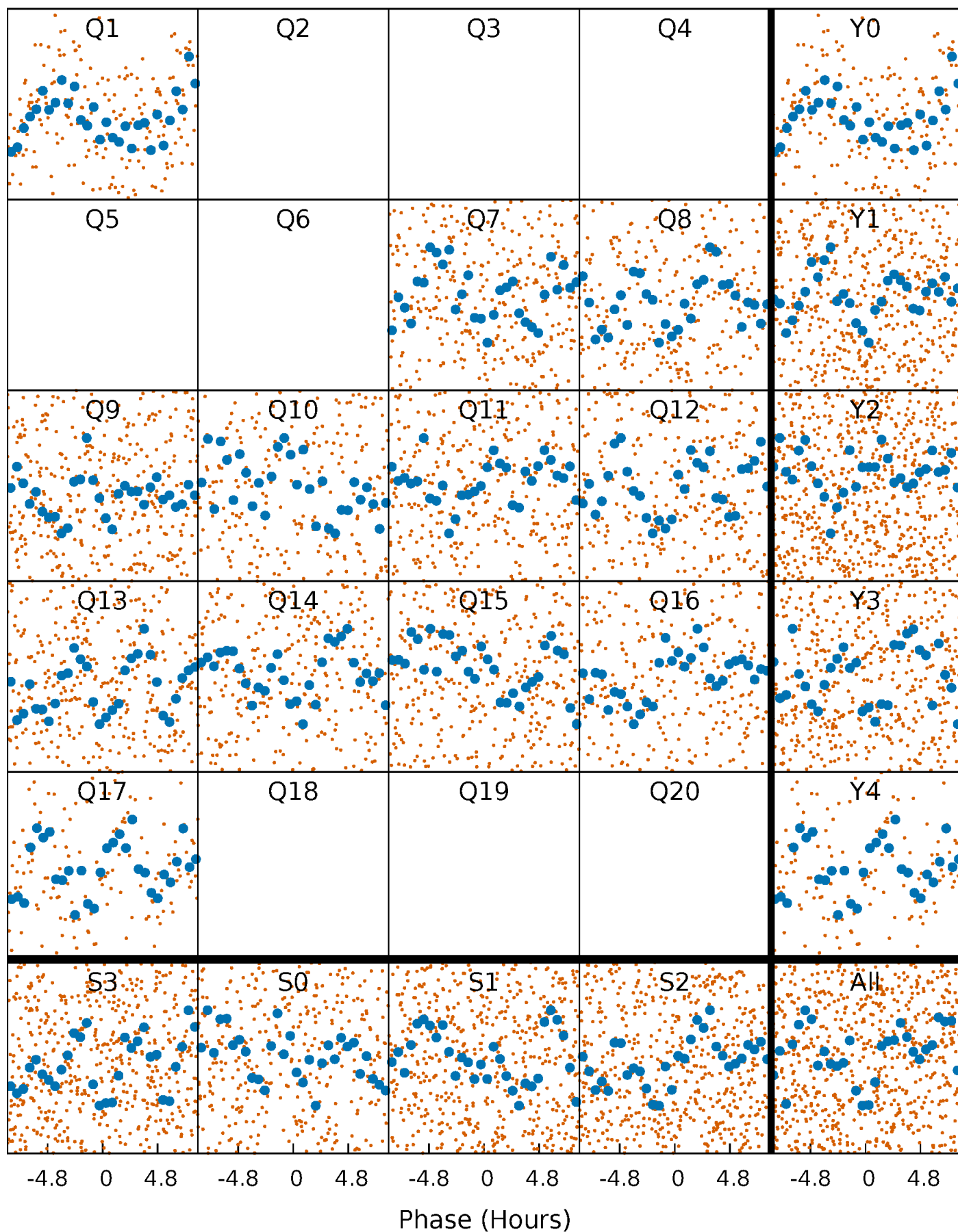
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

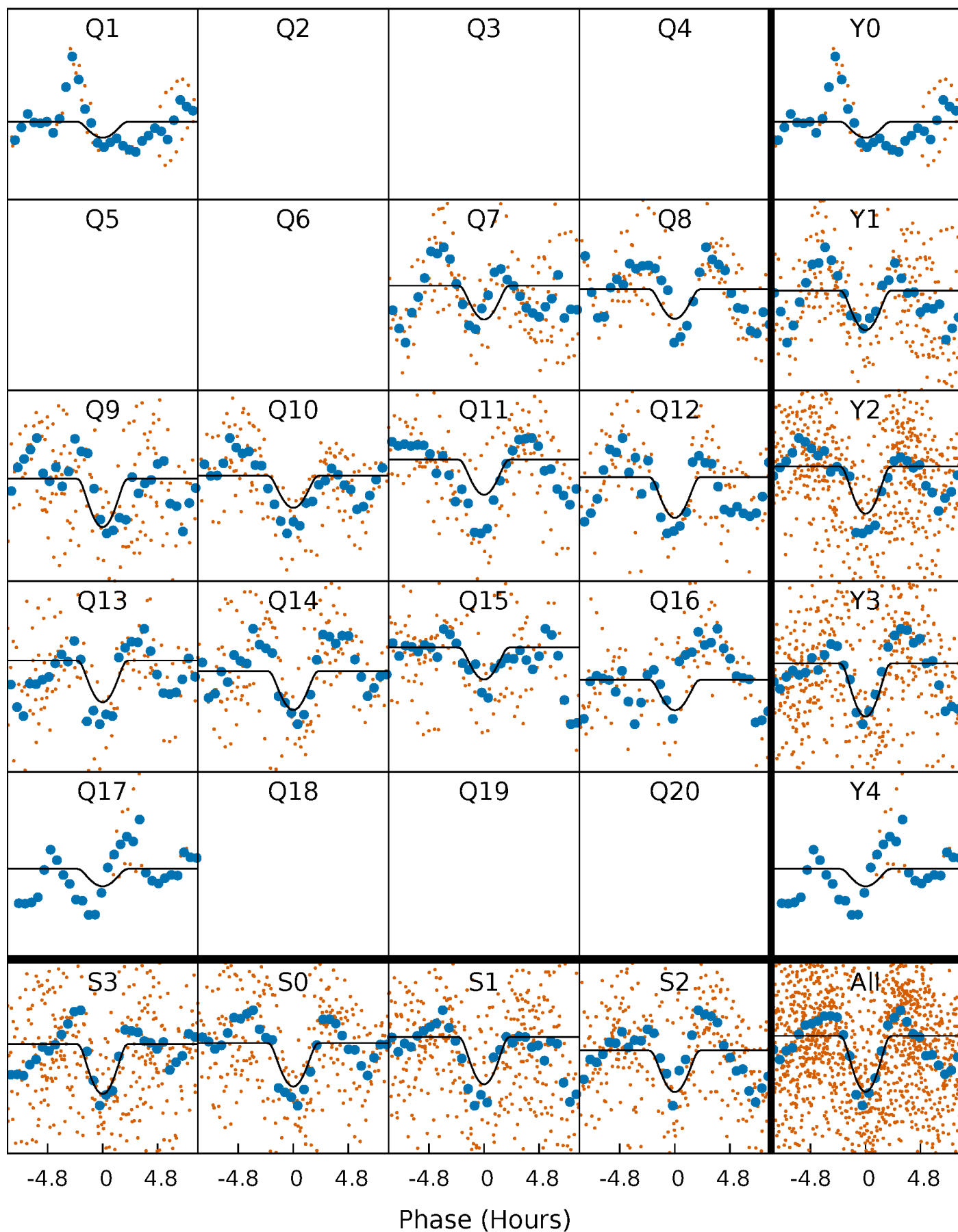
TCE 002975832-03 P= 5.858825 Days  $T_0=132.166980$  (BKJD)





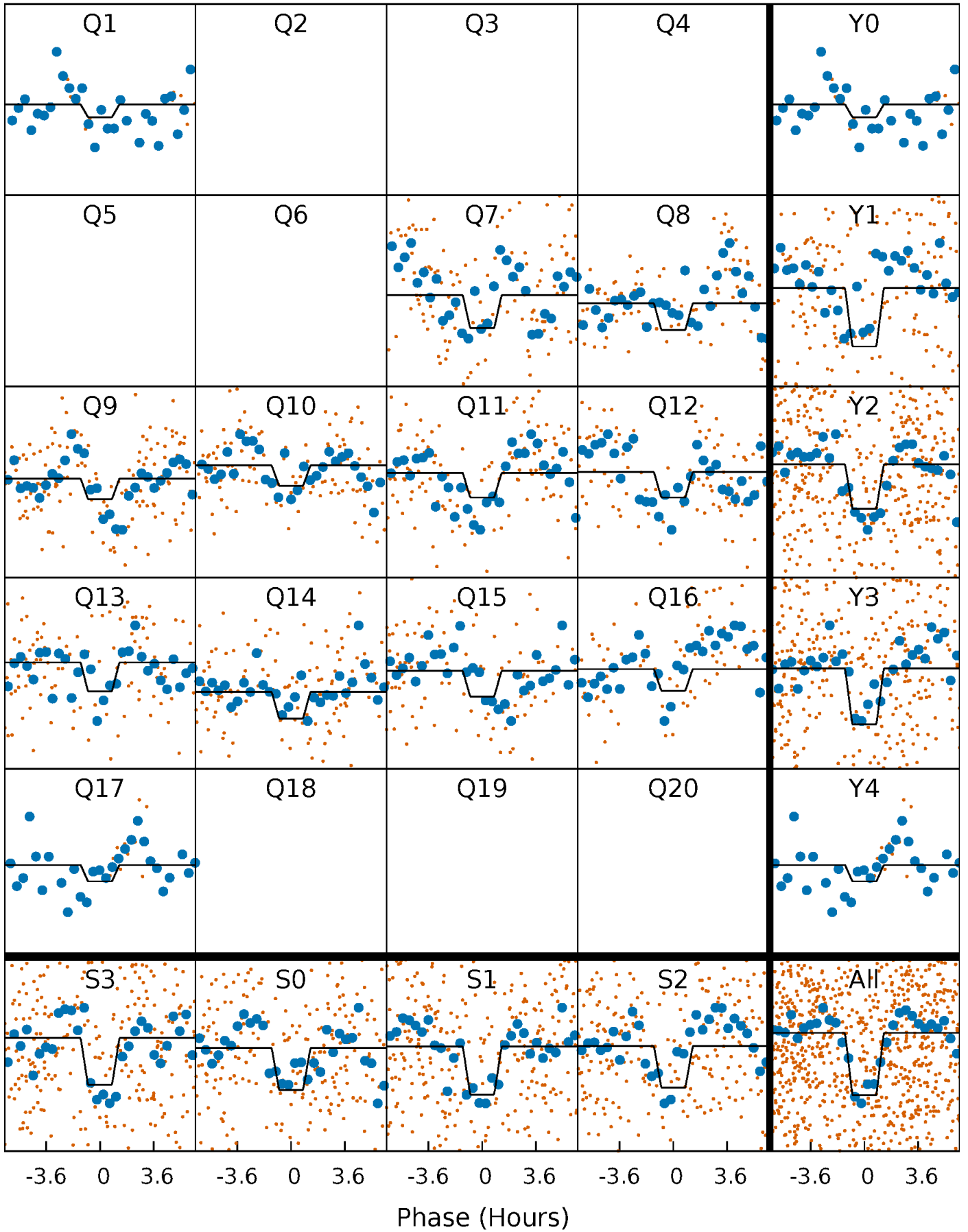
# DV Quarter-Phased Transit Curves

TCE 002975832-03 P= 5.858825 Days  $T_0=132.166980$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

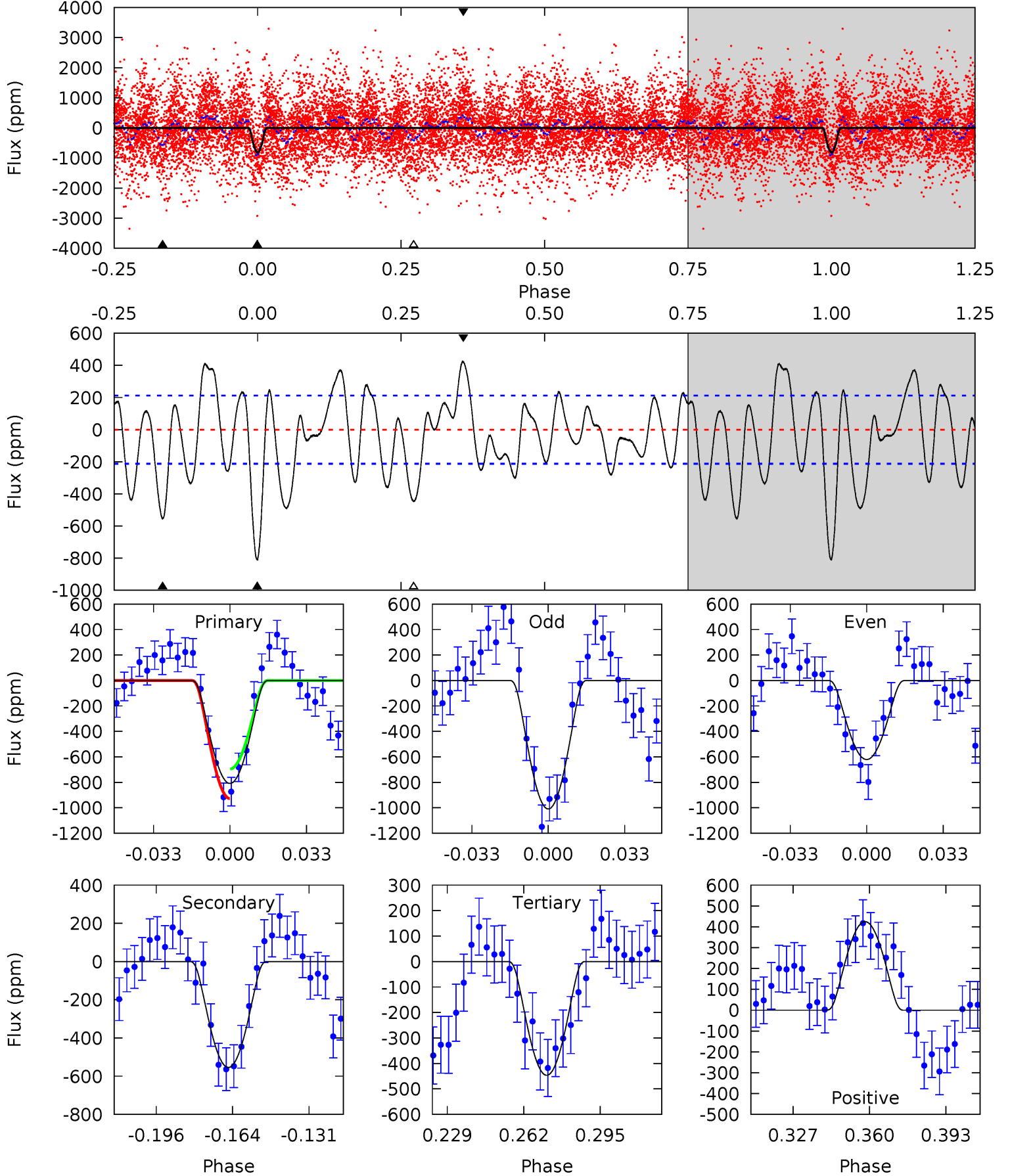
TCE 002975832-03   P= 5.858816 Days    $T_0=132.172201$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-03, P = 5.858825 Days, E = 126.308155 Days

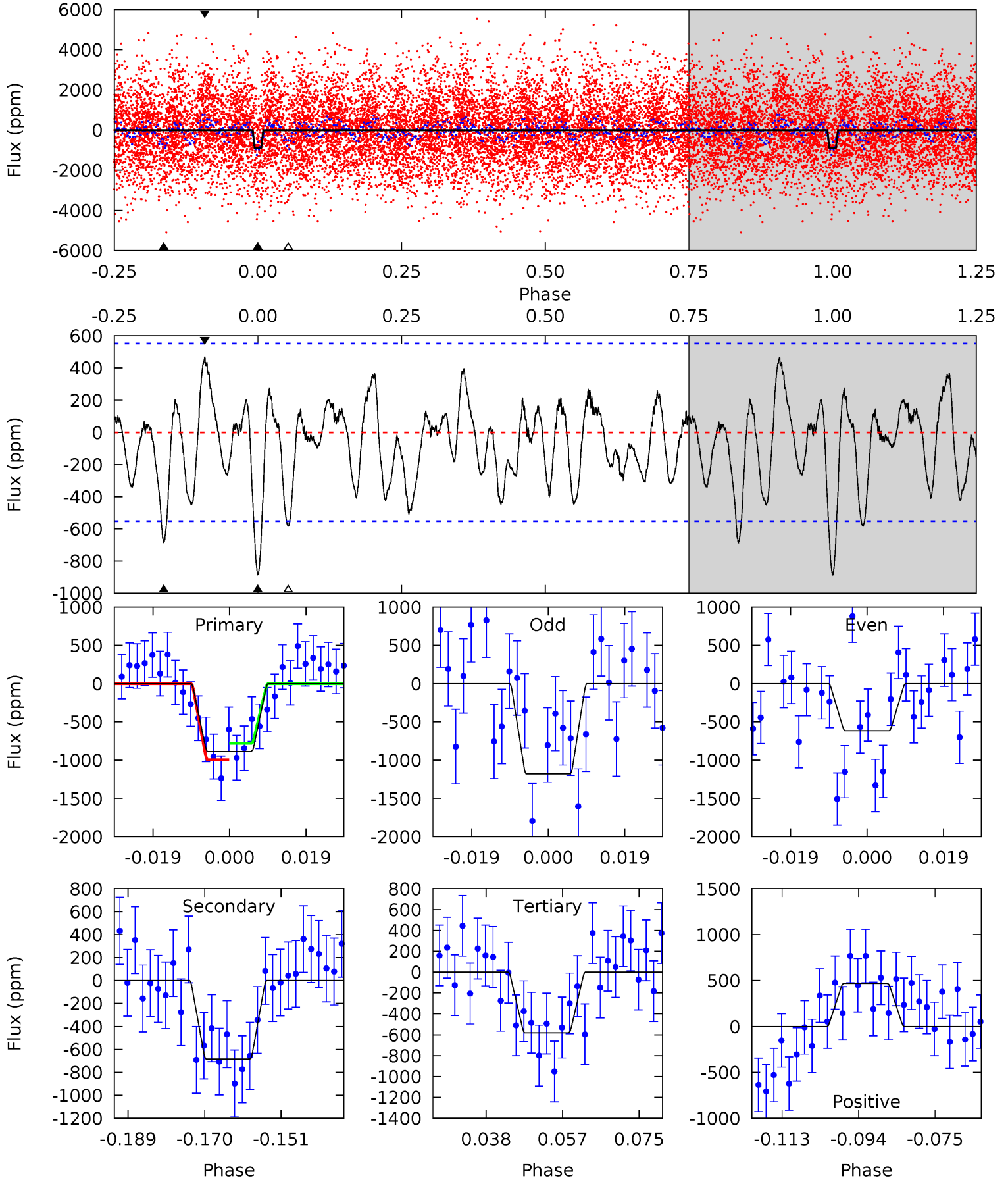
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	12.5	10.1	9.60	4.79	2.14	4.57	8.18	8.67	2.44	2.93	4.39	0.55	0.34	2.63



# Alt Model-Shift Uniqueness Test

002975832-03, P = 5.858816 Days, E = 126.313385 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
7.86	6.07	5.16	4.16	4.90	2.35	1.79	2.70	3.70	0.90	1.91	2.50	1.20	0.35	0.96



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-555 \pm 44$	$17.10^{+17.15}_{-11.49}$	$2246^{+180}_{-201}$	$4055^{+2364}_{-884}$	$5.734^{+46.443}_{-4.318}$
Alt.	$-683 \pm 113$	$14.65^{+17.04}_{-10.47}$	$2239^{+173}_{-210}$	$4428^{+3485}_{-1079}$	$9.572^{+92.237}_{-7.635}$

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

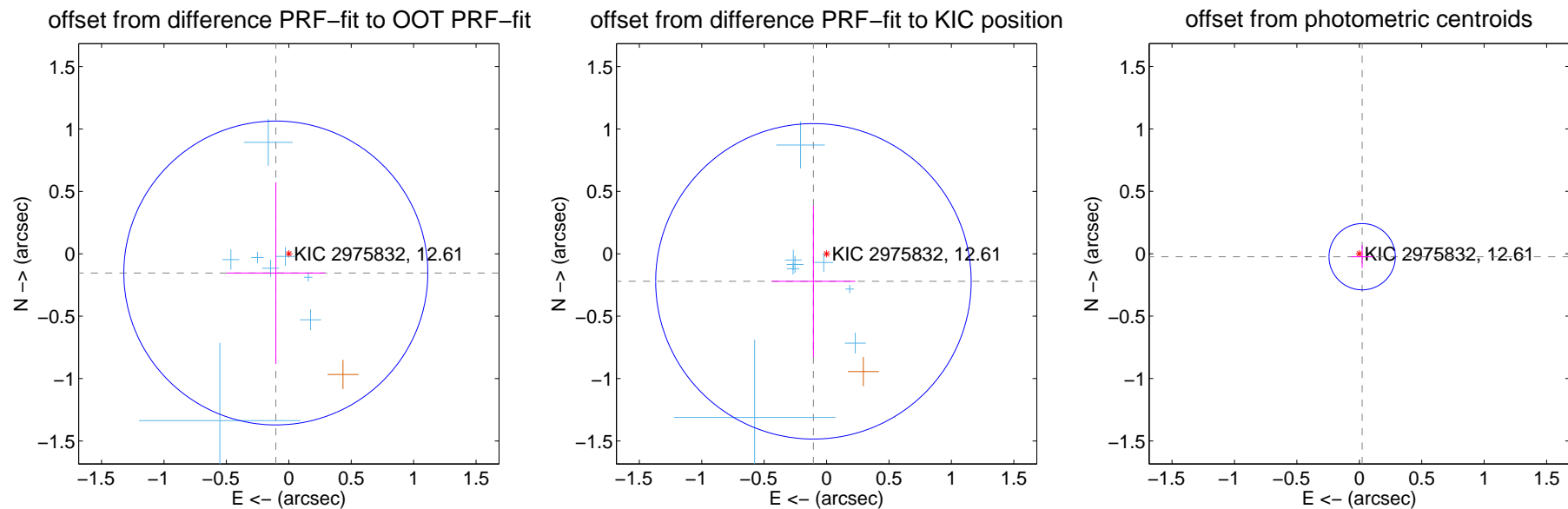
## DV Centroid Data

Supplemental centroid analysis for 002975832-03. Kepler magnitude: 12.61. Transit SNR 11.60

There are 9 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

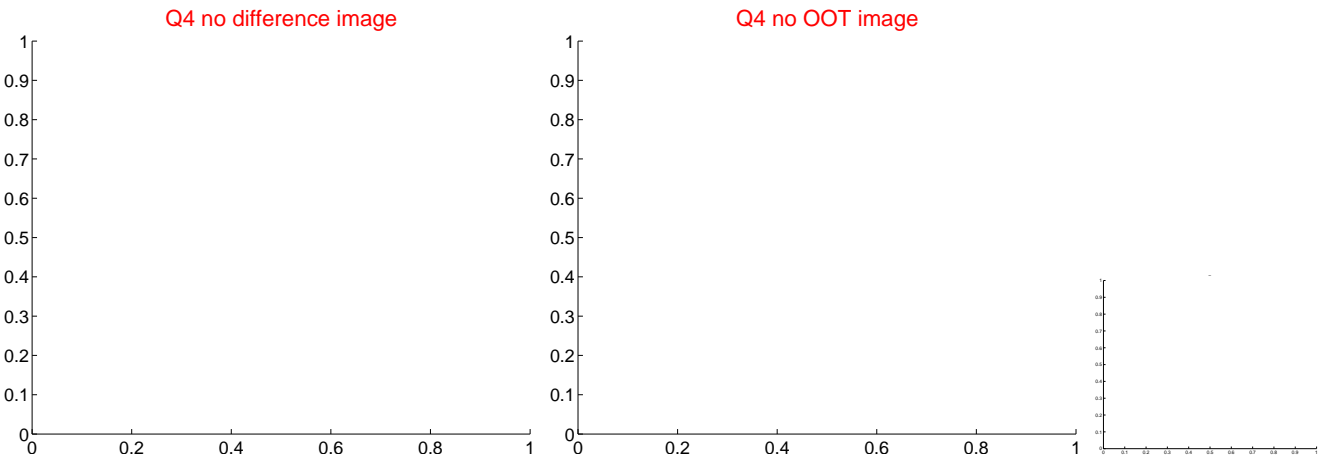
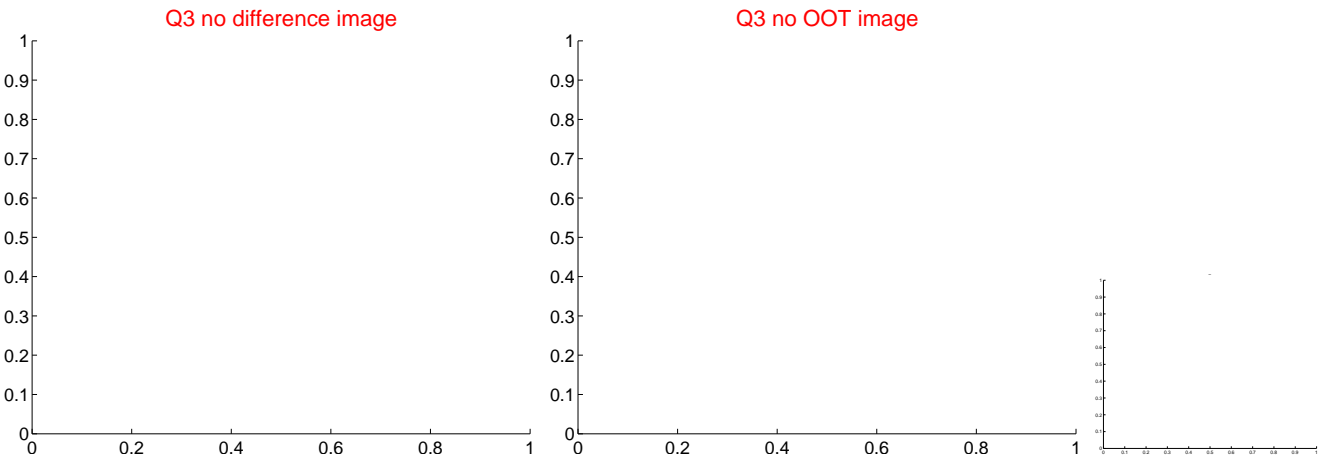
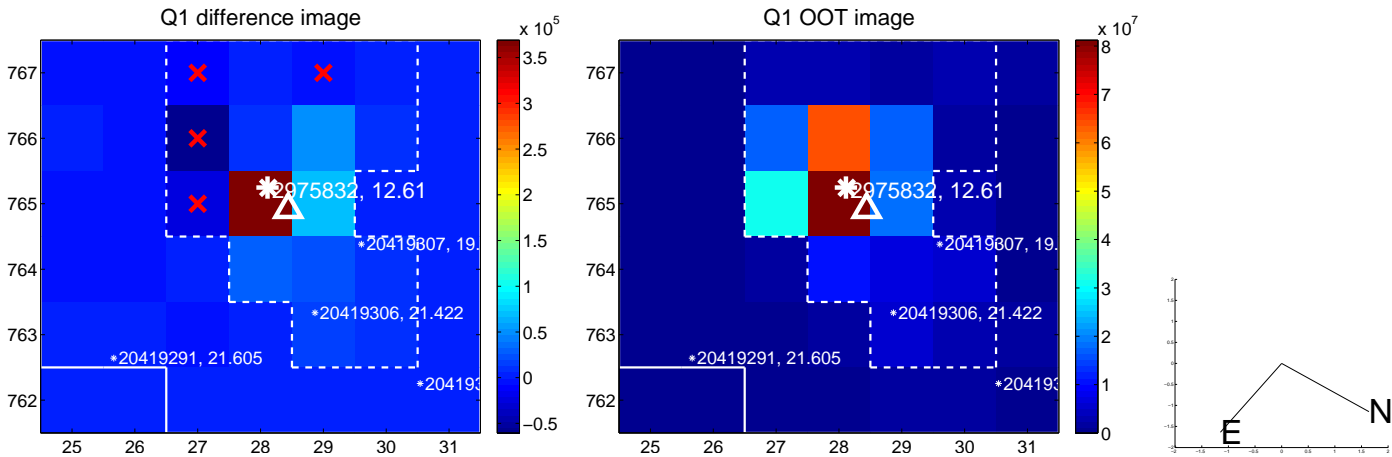
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.186 \pm 0.406$	0.46	$0.104 \pm 0.393$	$-0.154 \pm 0.726$
PRF-fit source offset from KIC position	$0.245 \pm 0.421$	0.58	$0.105 \pm 0.335$	$-0.221 \pm 0.606$
photometric centroid source offset	$0.03 \pm 0.09$	0.37	$-0.02 \pm 0.09$	$-0.02 \pm 0.09$



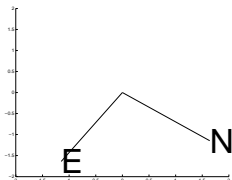
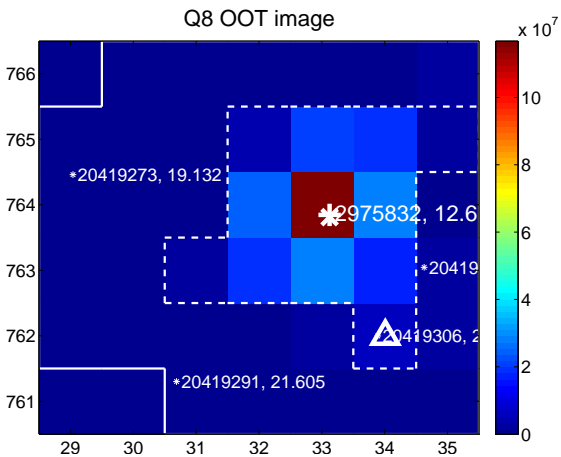
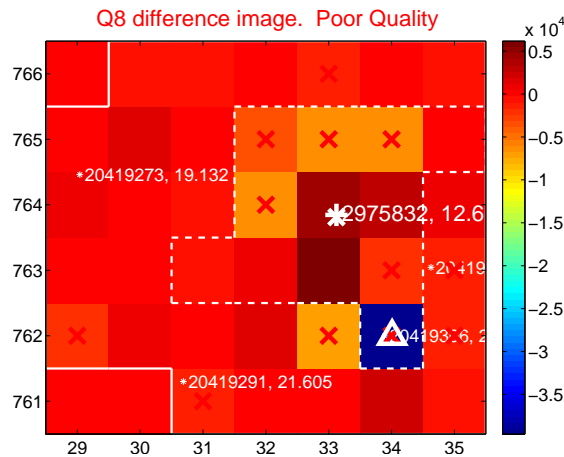
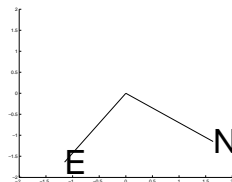
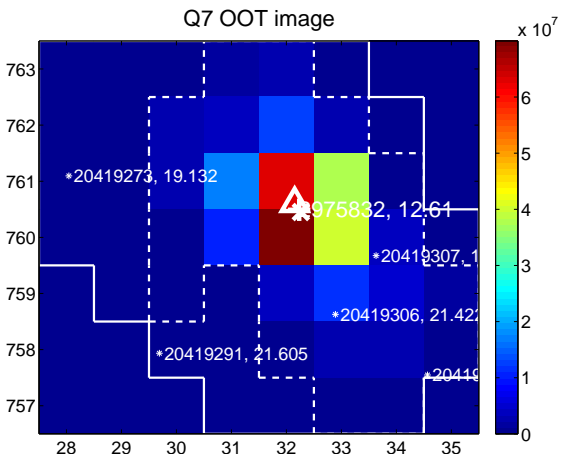
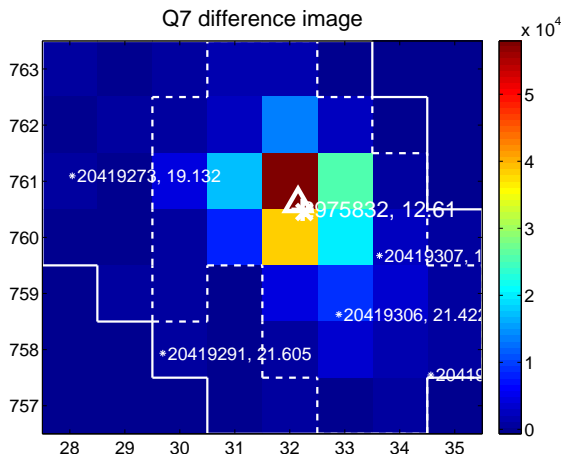
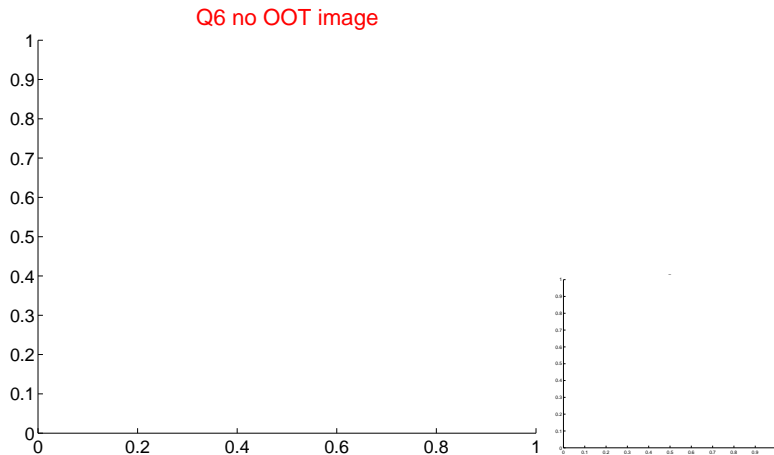
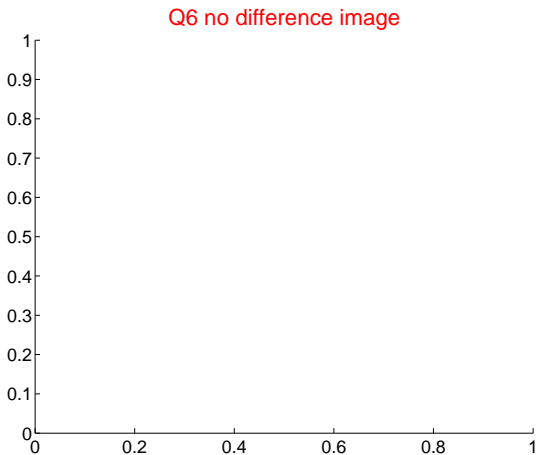
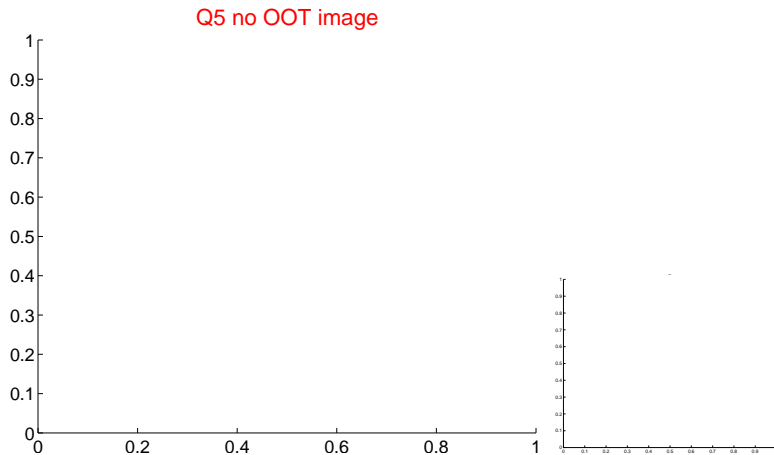
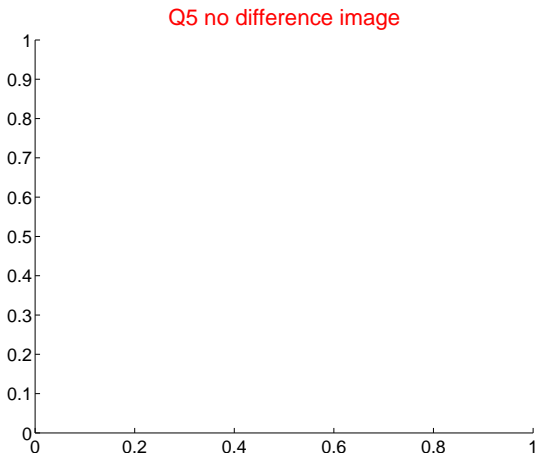
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



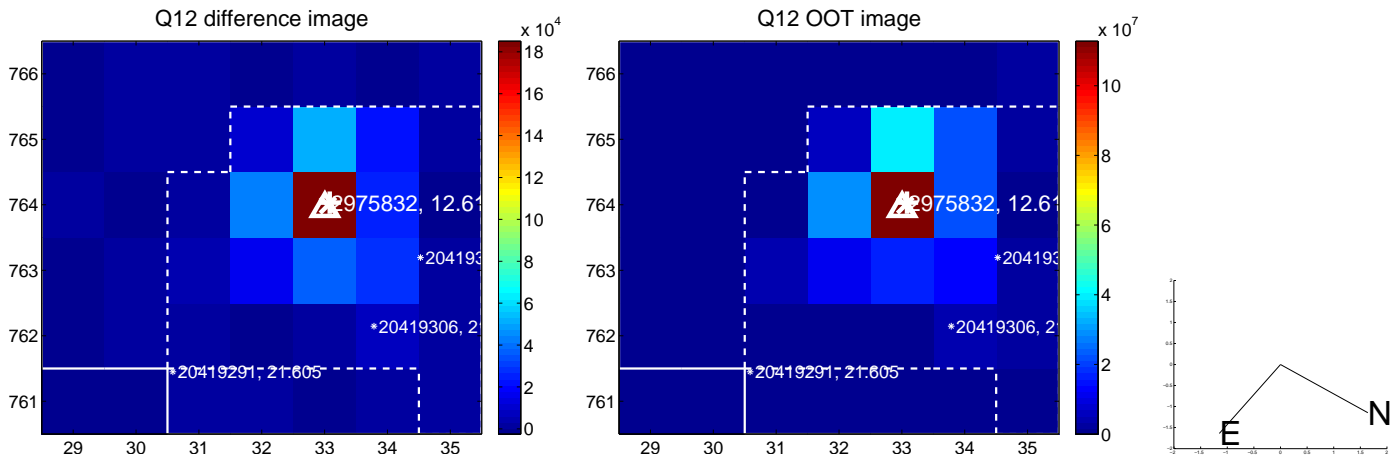
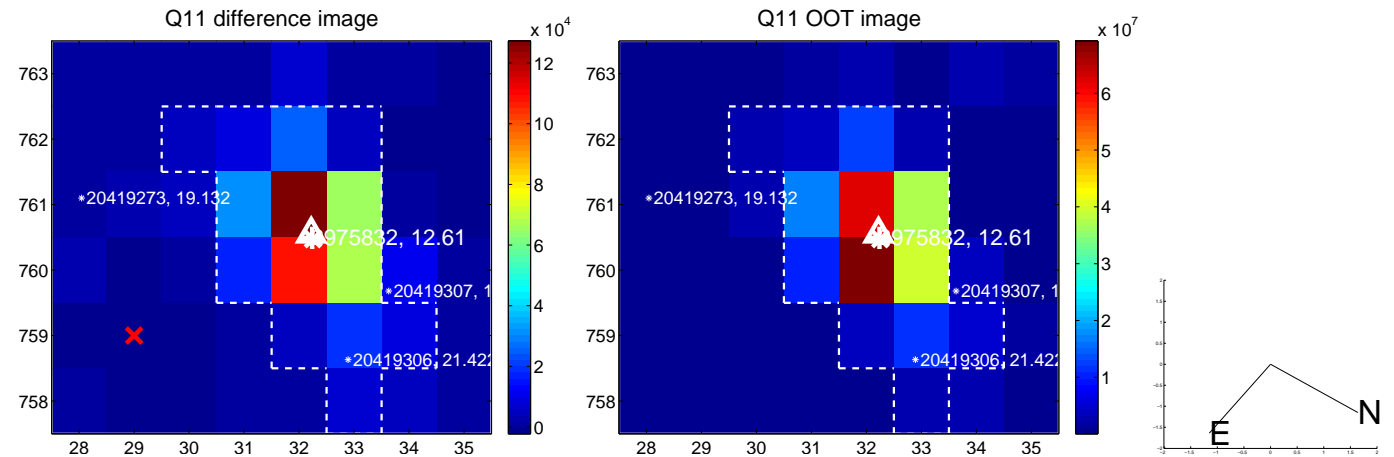
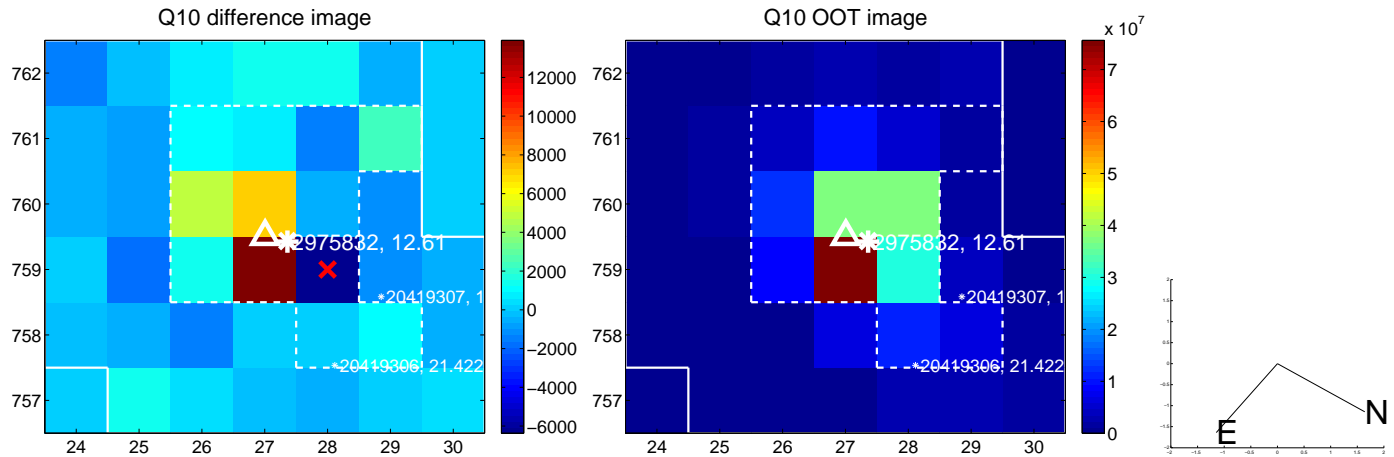
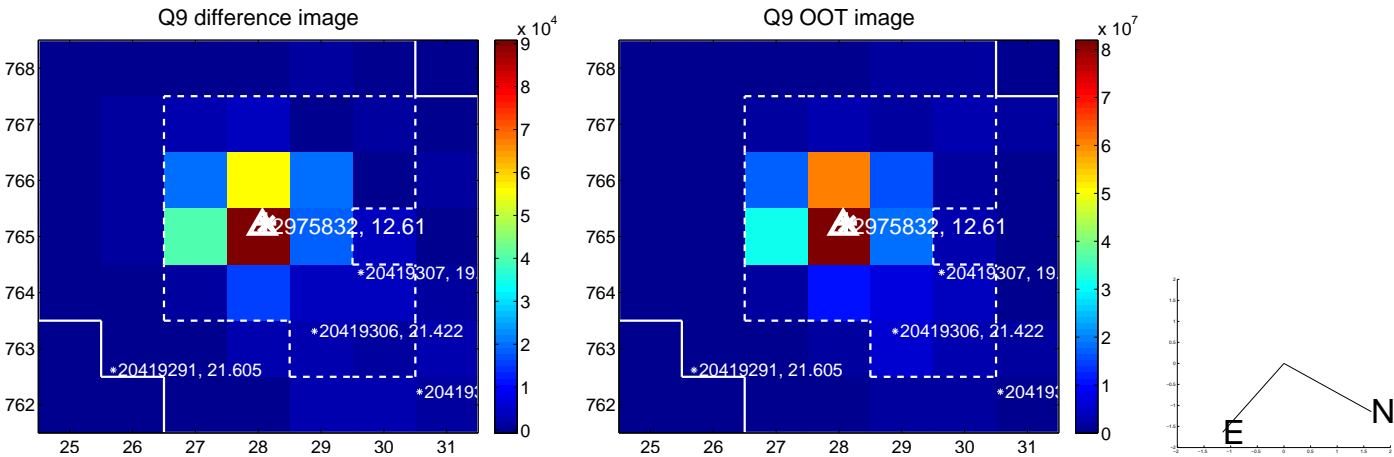
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



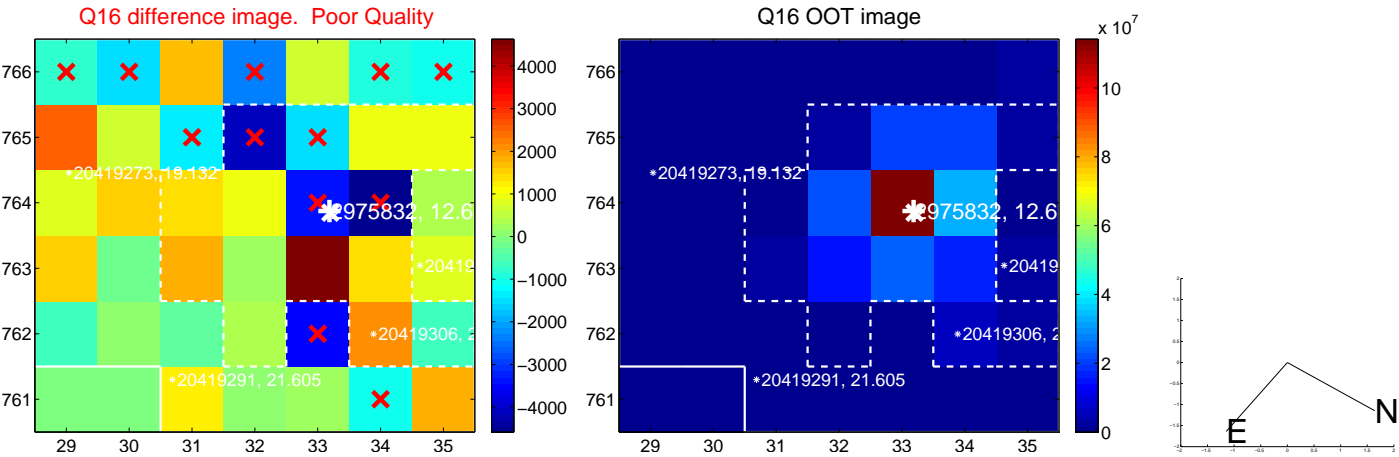
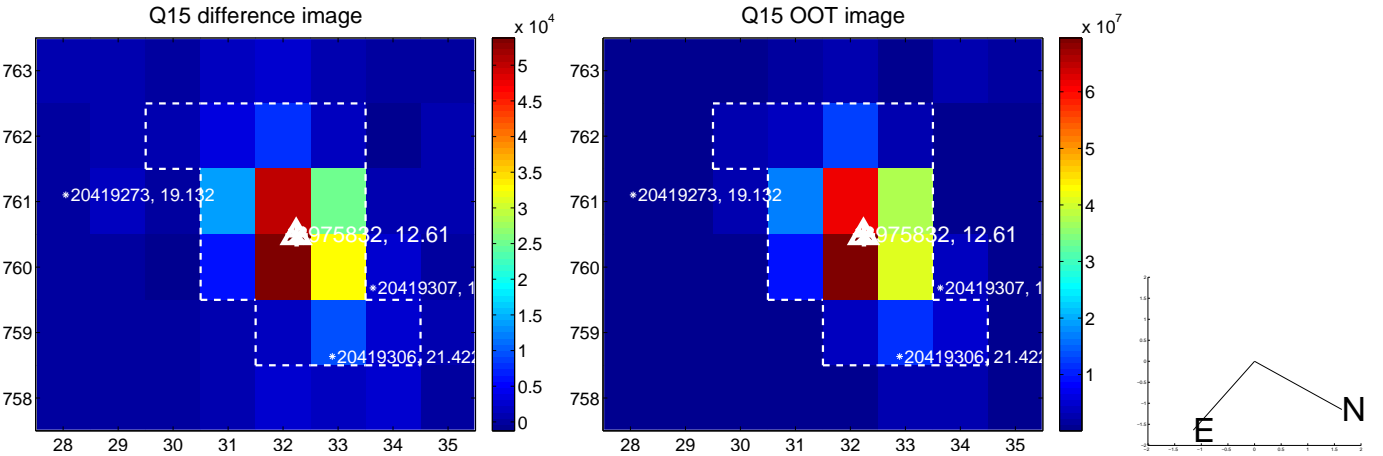
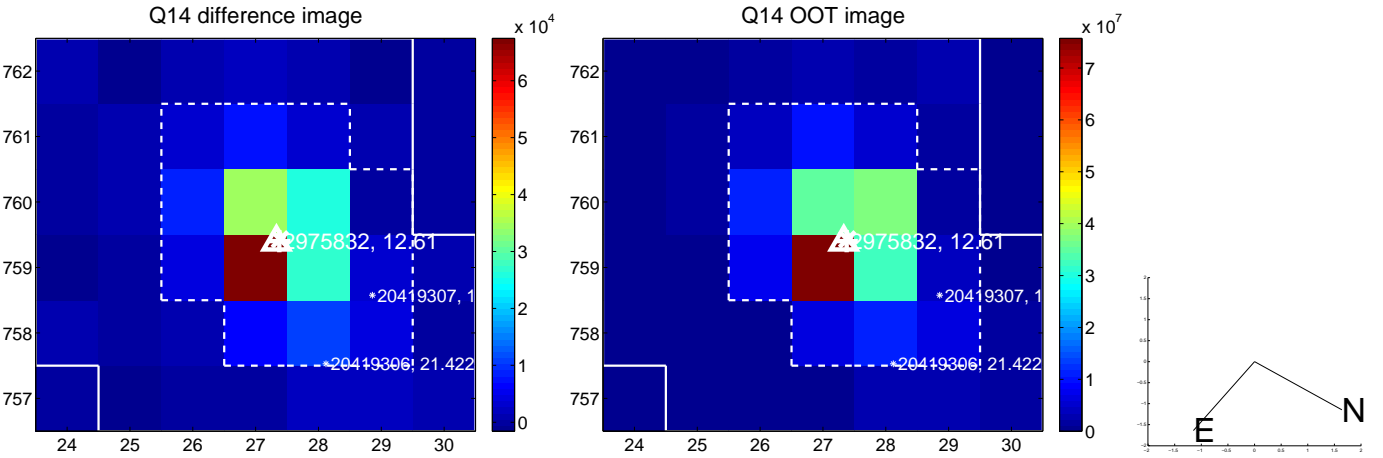
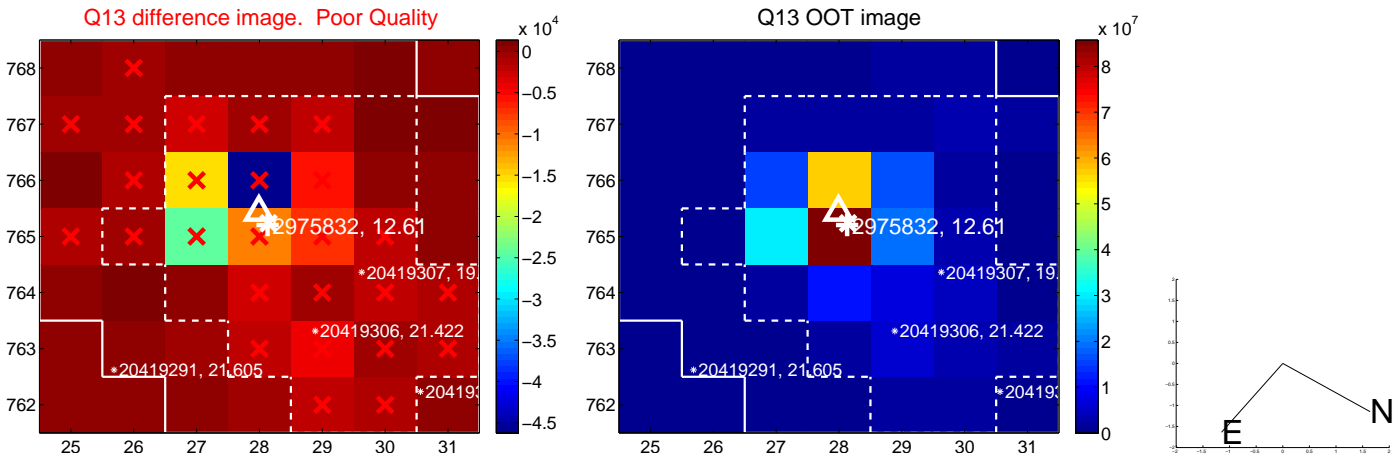
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



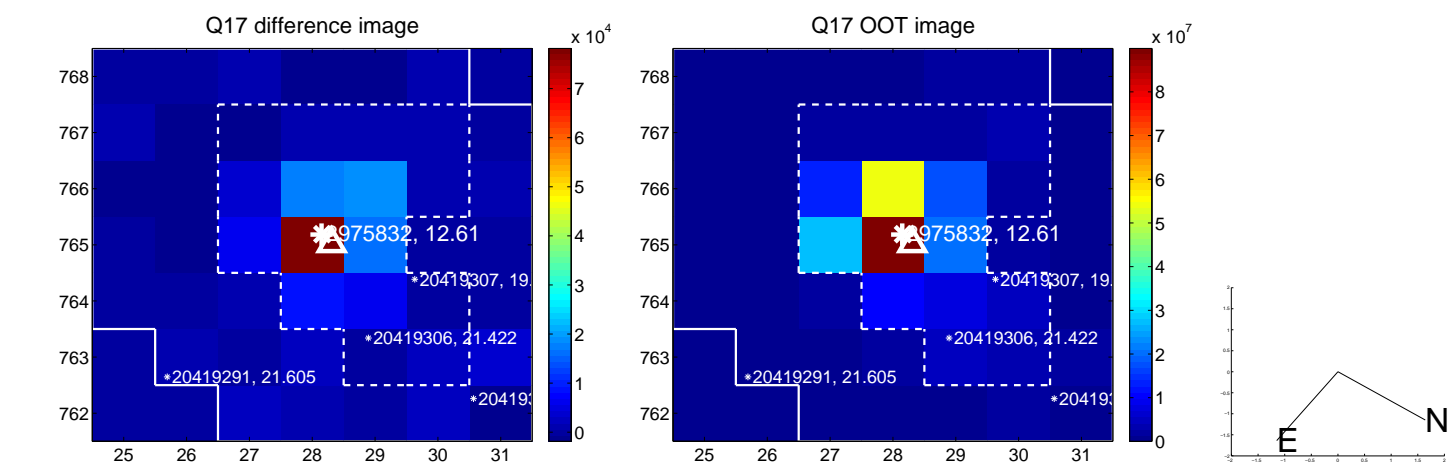
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



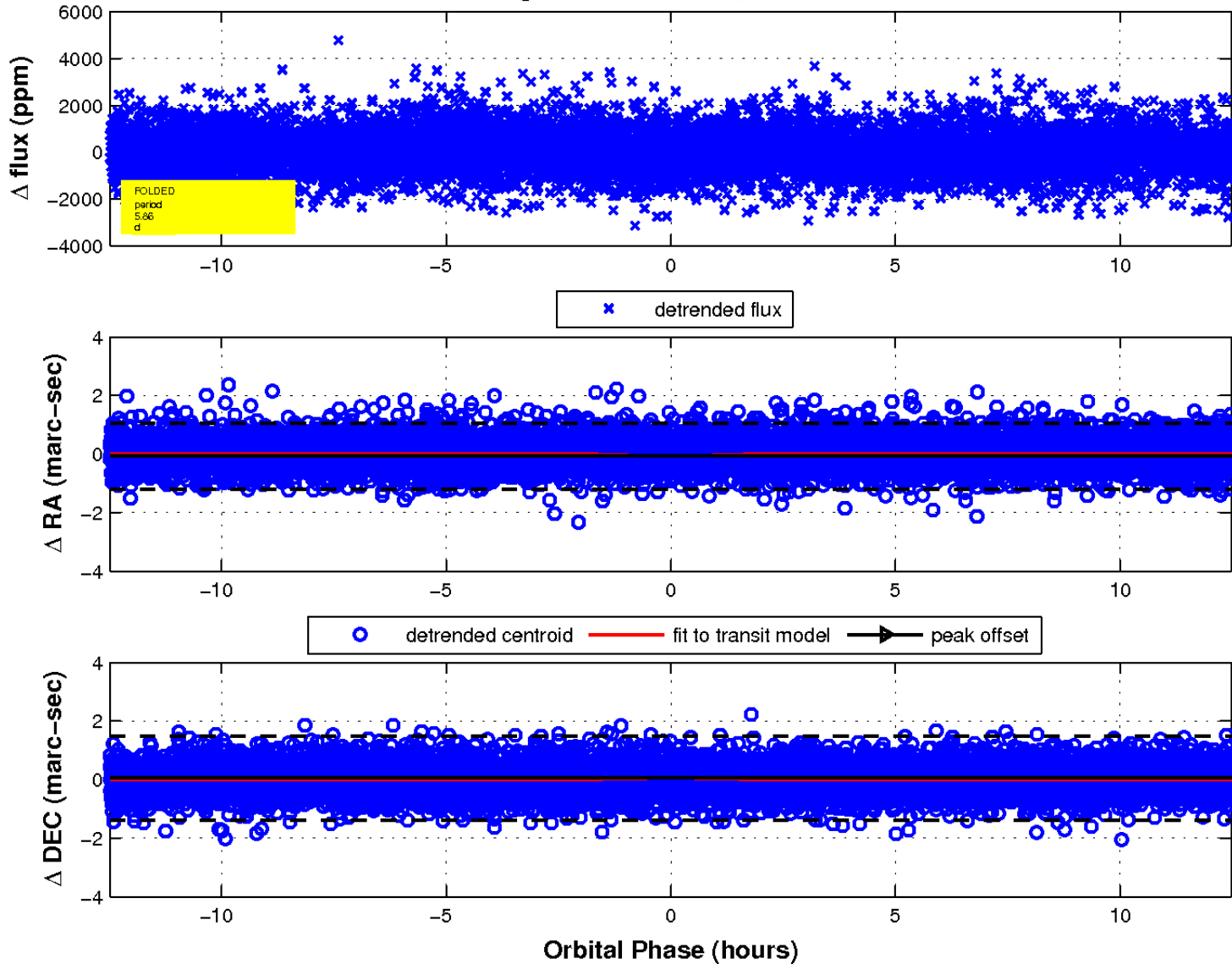
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

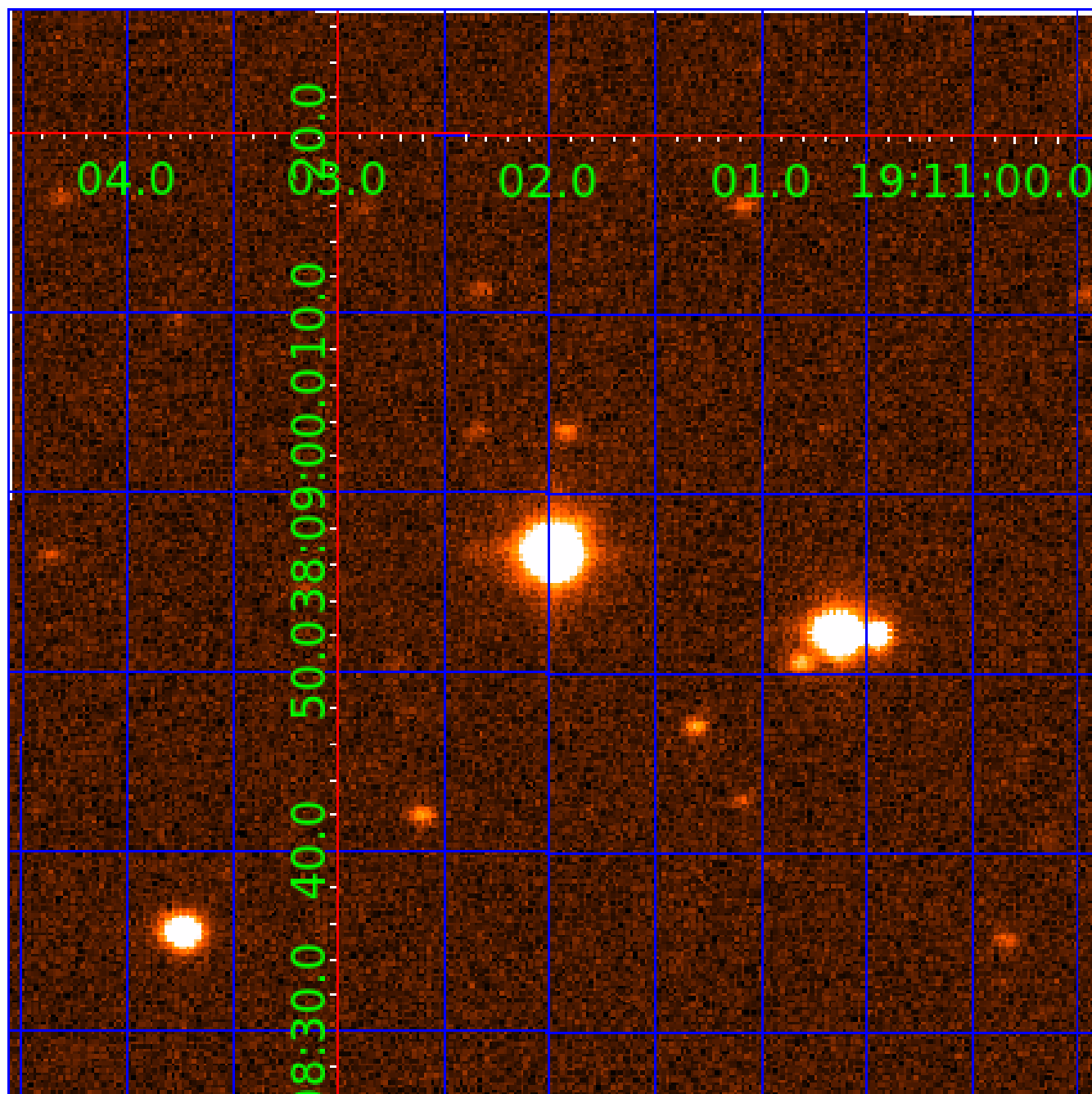


fluxWeightedCentroids, Planet 3 of 9



UKIRT Image

Declination





## KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

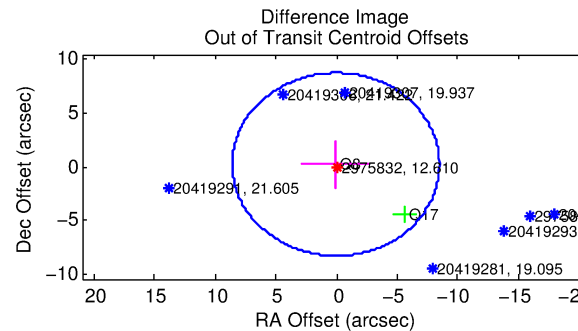
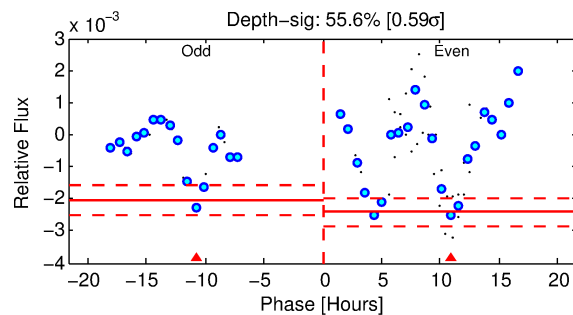
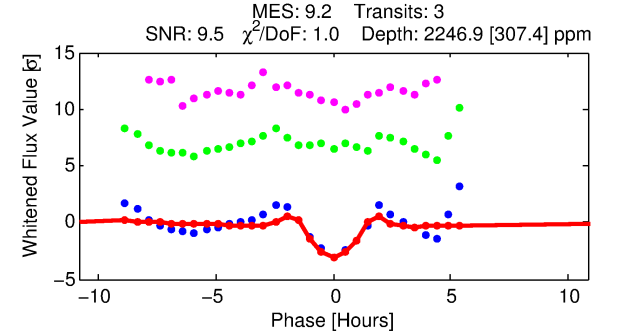
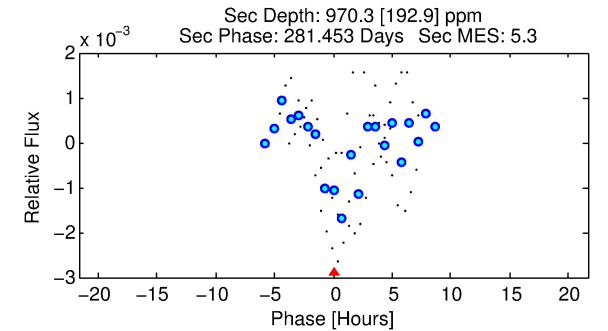
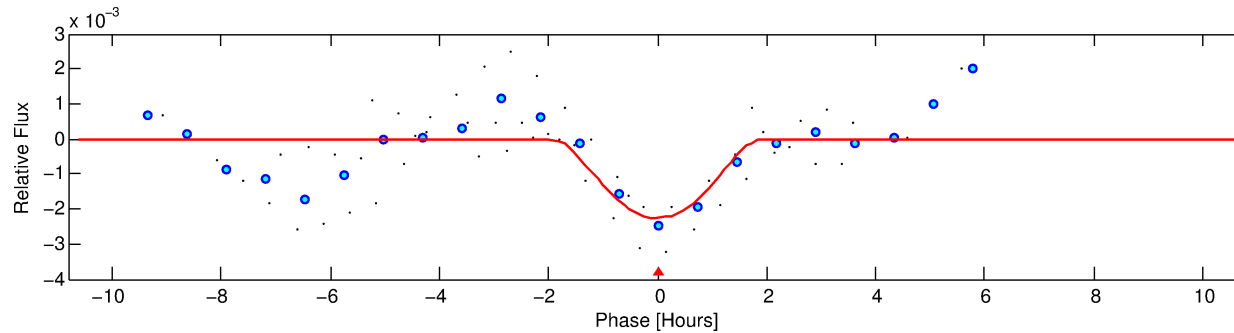
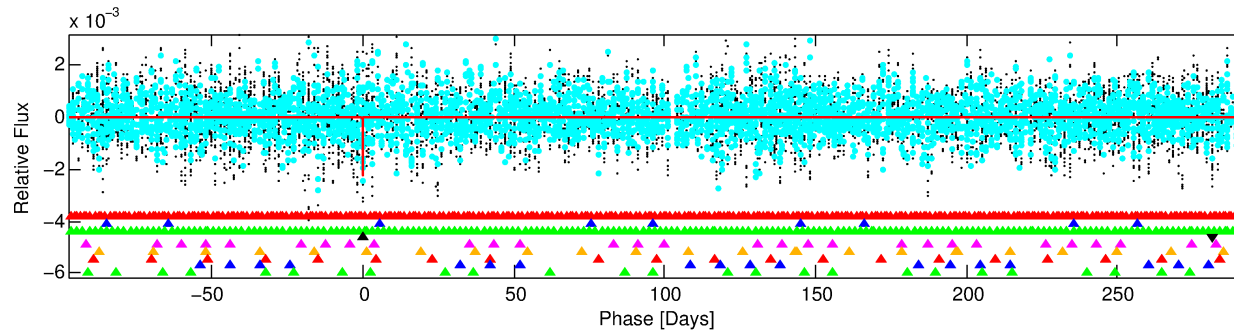
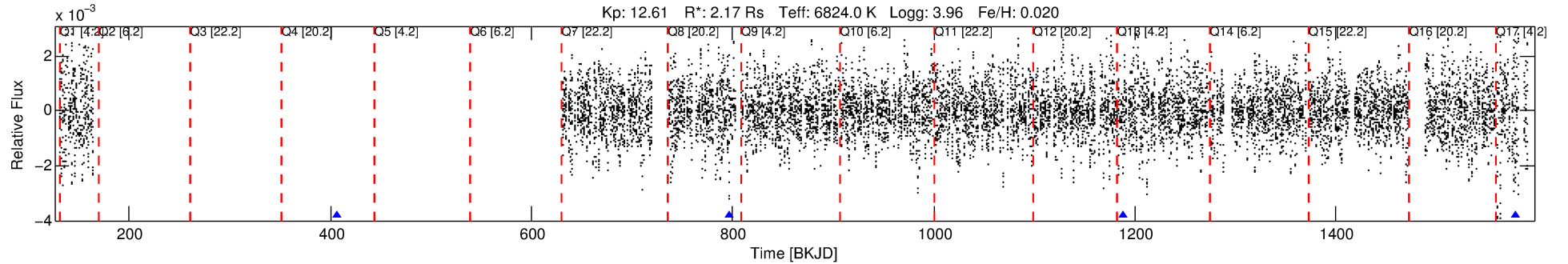
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-04

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 4 of 9 Period: 390.618 d



## DV Fit Results:

Period = 390.61796 [0.00539] d  
Epoch = 406.5294 [0.0111] BKJD  
Rp/R\* = 0.0649 [0.0731]  
a/R\* = 353.58 [139.44]  
b = 0.98 [0.13]  
Seff = 6.20 [3.23]  
Teq = 402 [52] K  
Rp = 15.38 [18.09] Re  
a = 1.2169 [0.3835] AU  
Ag = 3341.23 [7734.15] [0.43σ]  
Teff = 4729 [2681] K [1.61σ]

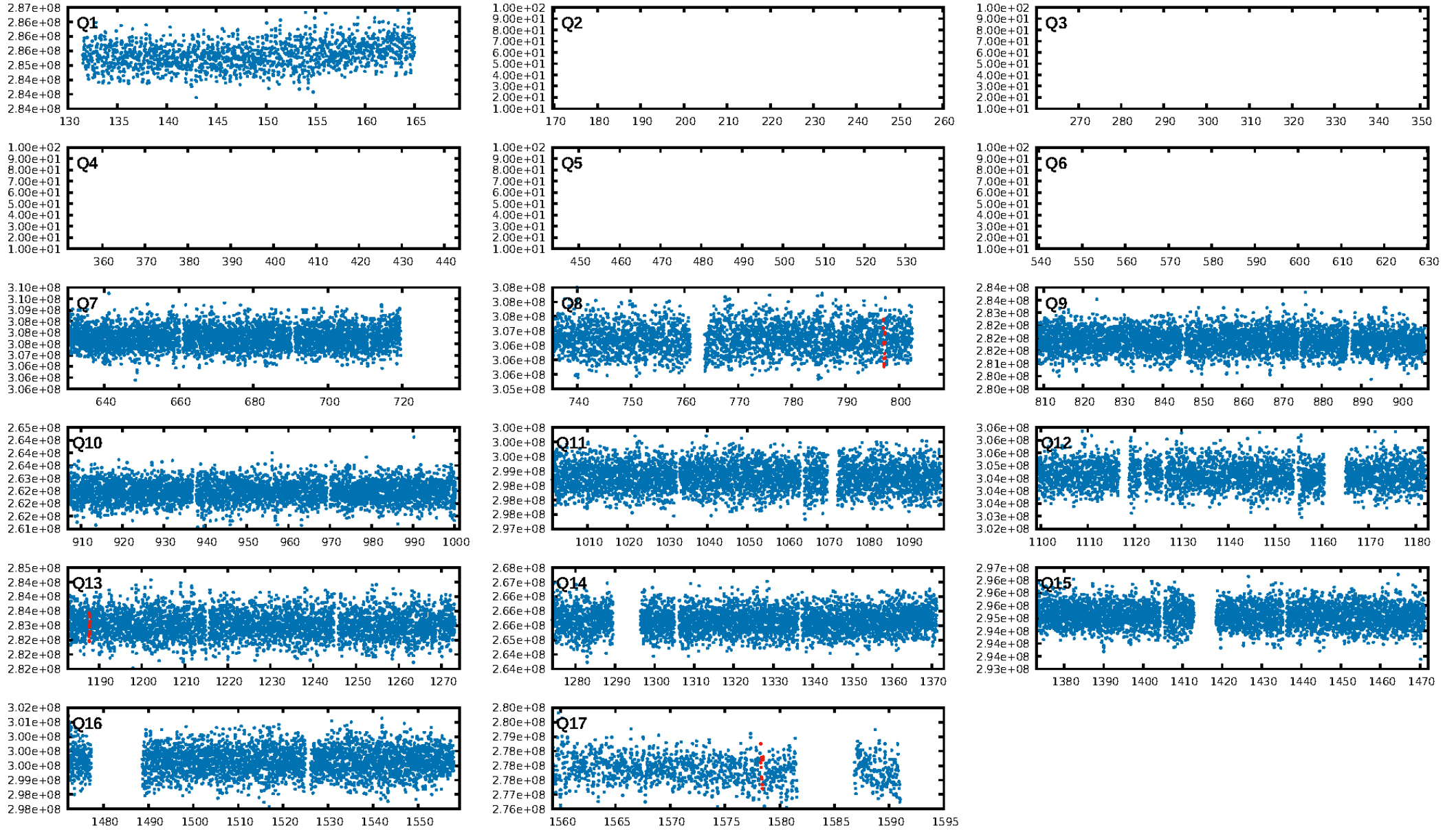
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [877.92σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 66.2%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 2.258  
Centroid-sig: 7.9%  
Centroid-so: 0.250 arcsec [1.06σ]  
OotOffset-rm: 0.216 arcsec [0.08σ]  
KicOffset-rm: 0.192 arcsec [0.18σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

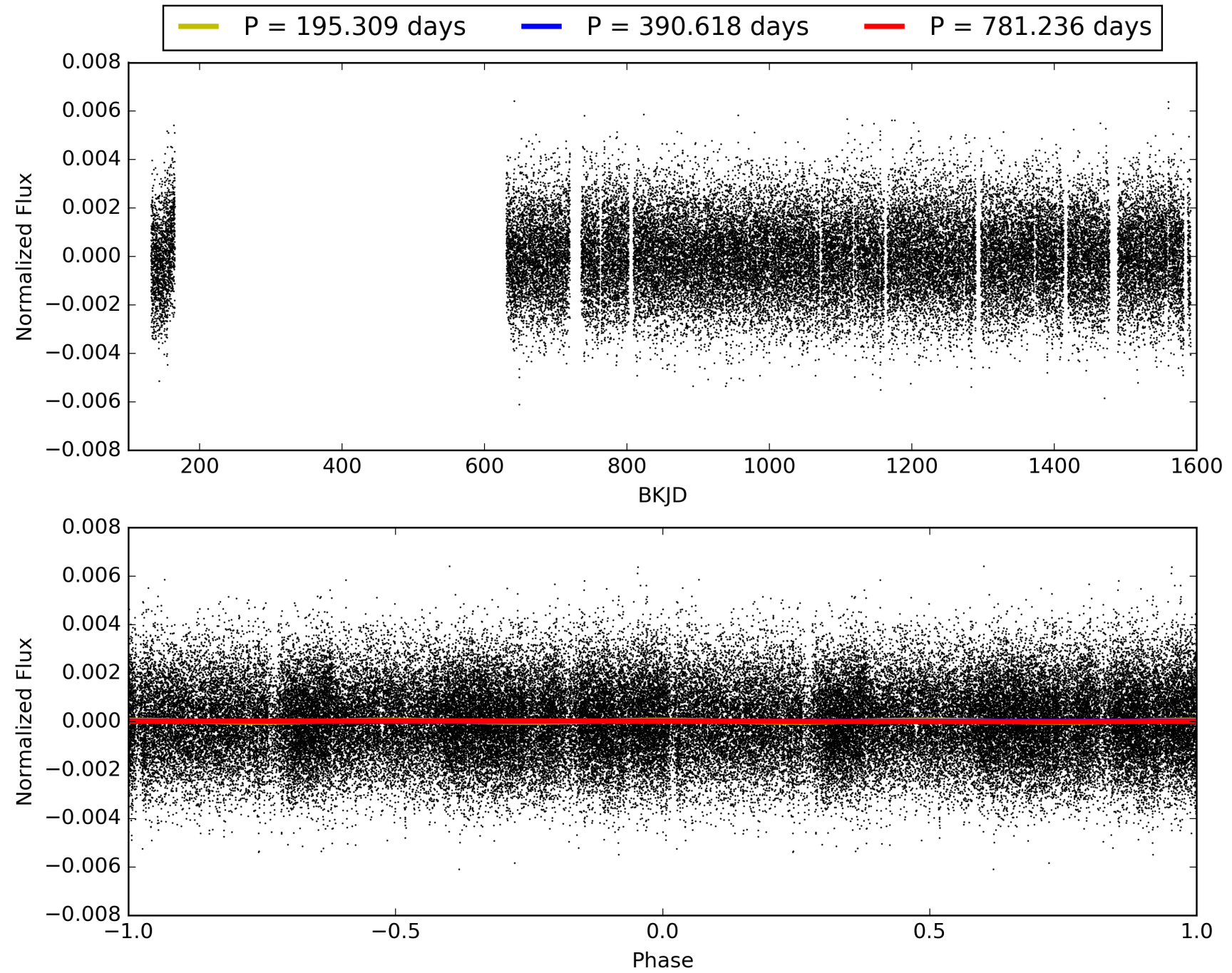
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:18 Z

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

# TCE 002975832-04, PDC Light Curves

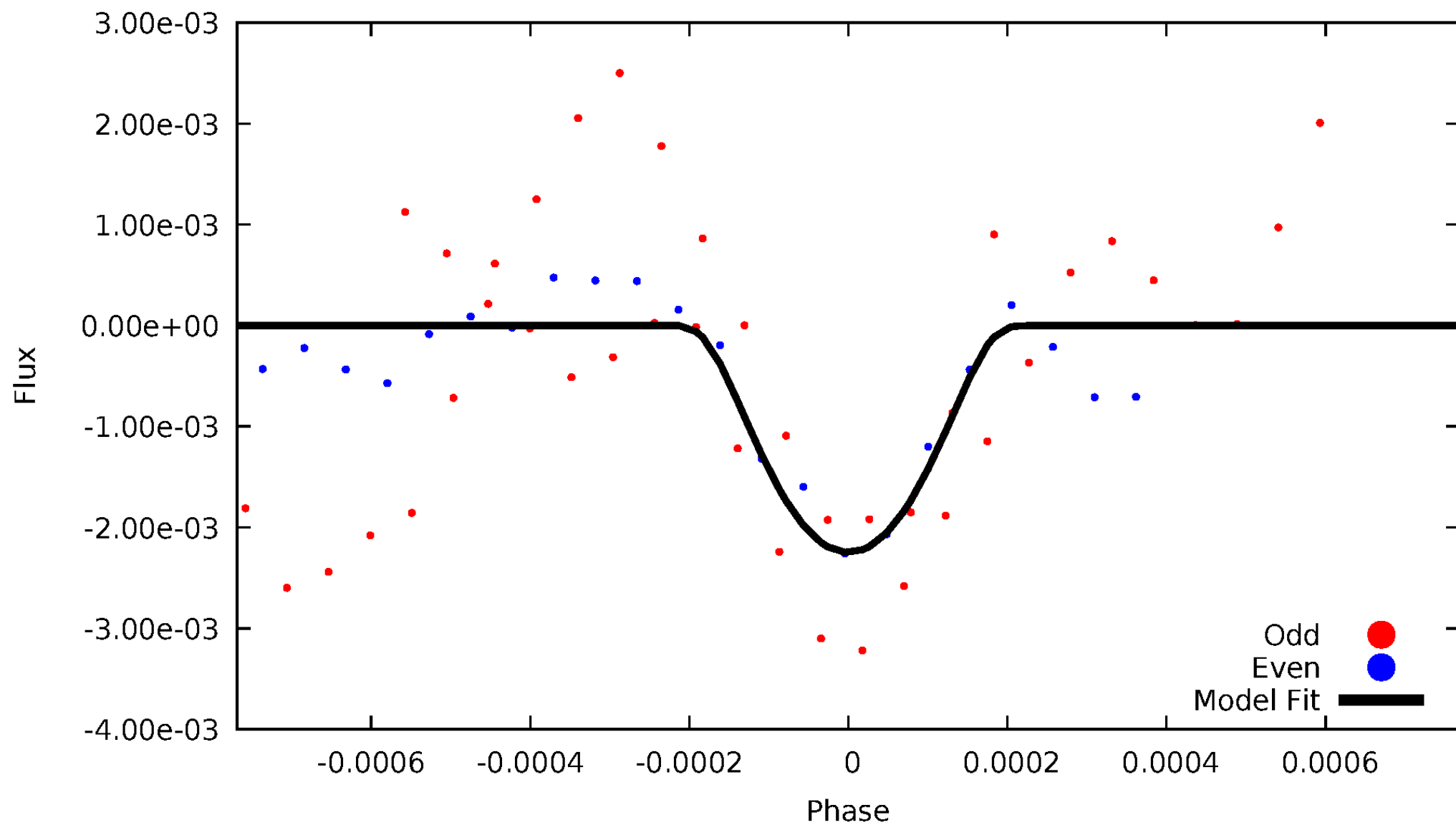


TCE 002975832-04



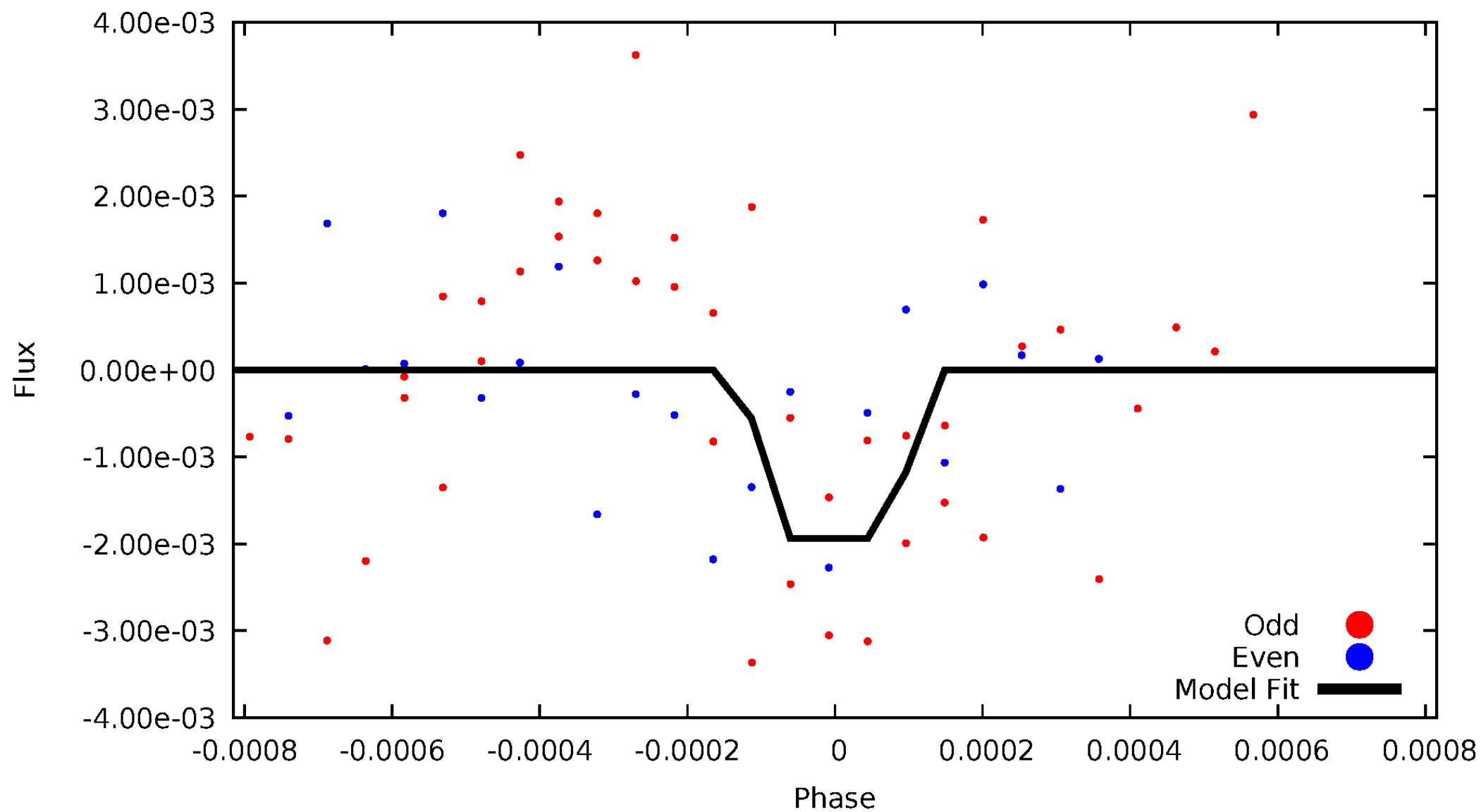
# DV Odd/Even

TCE 002975832-04



# ALT Odd/Even

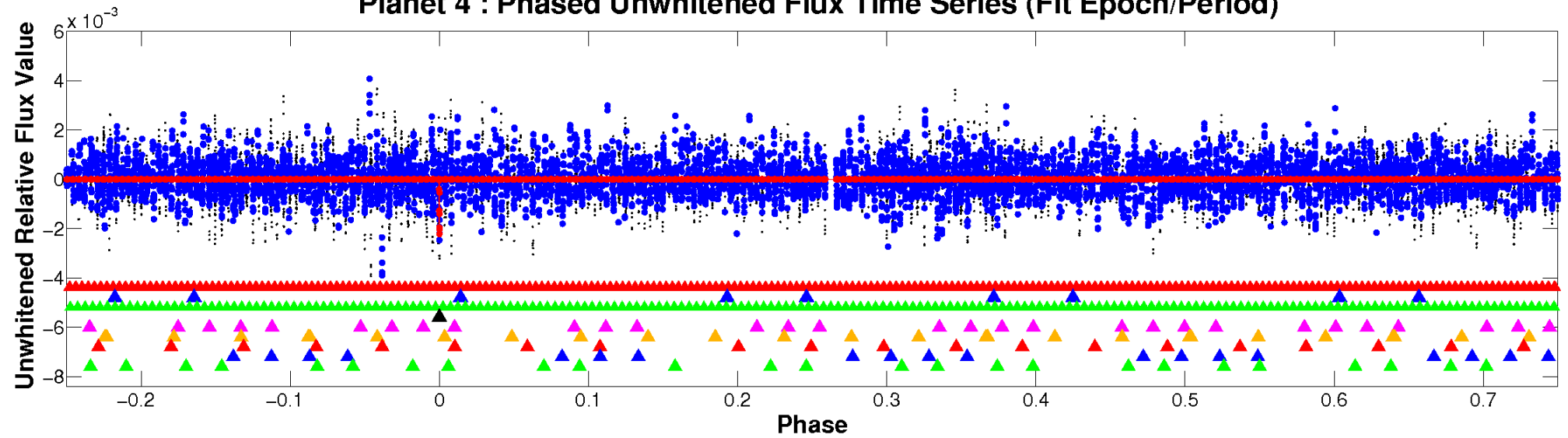
TCE 002975832-04



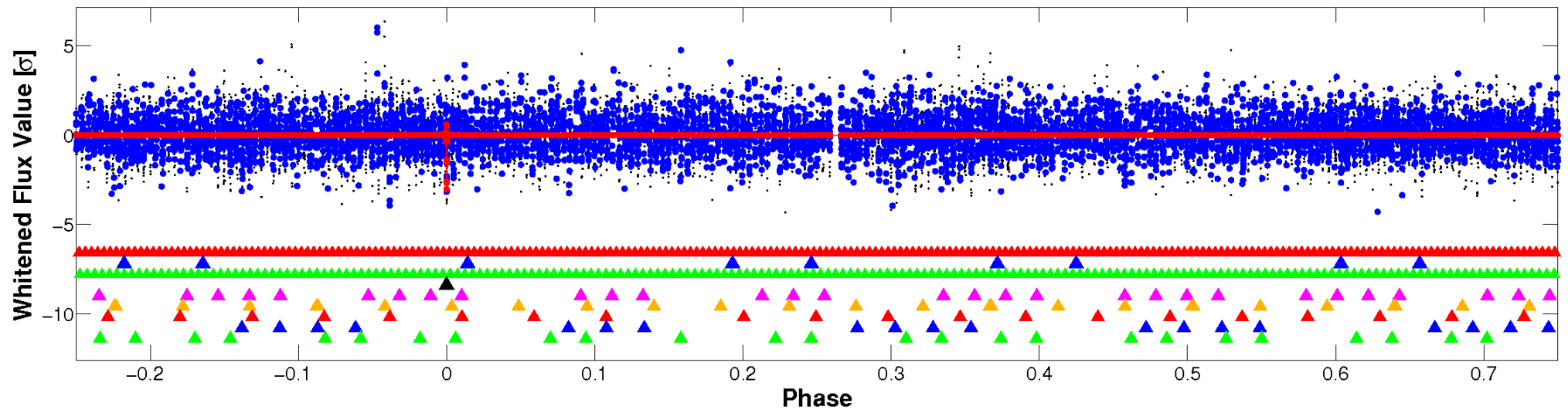


# Non-Whitened Vs. Whitened Light Curve

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



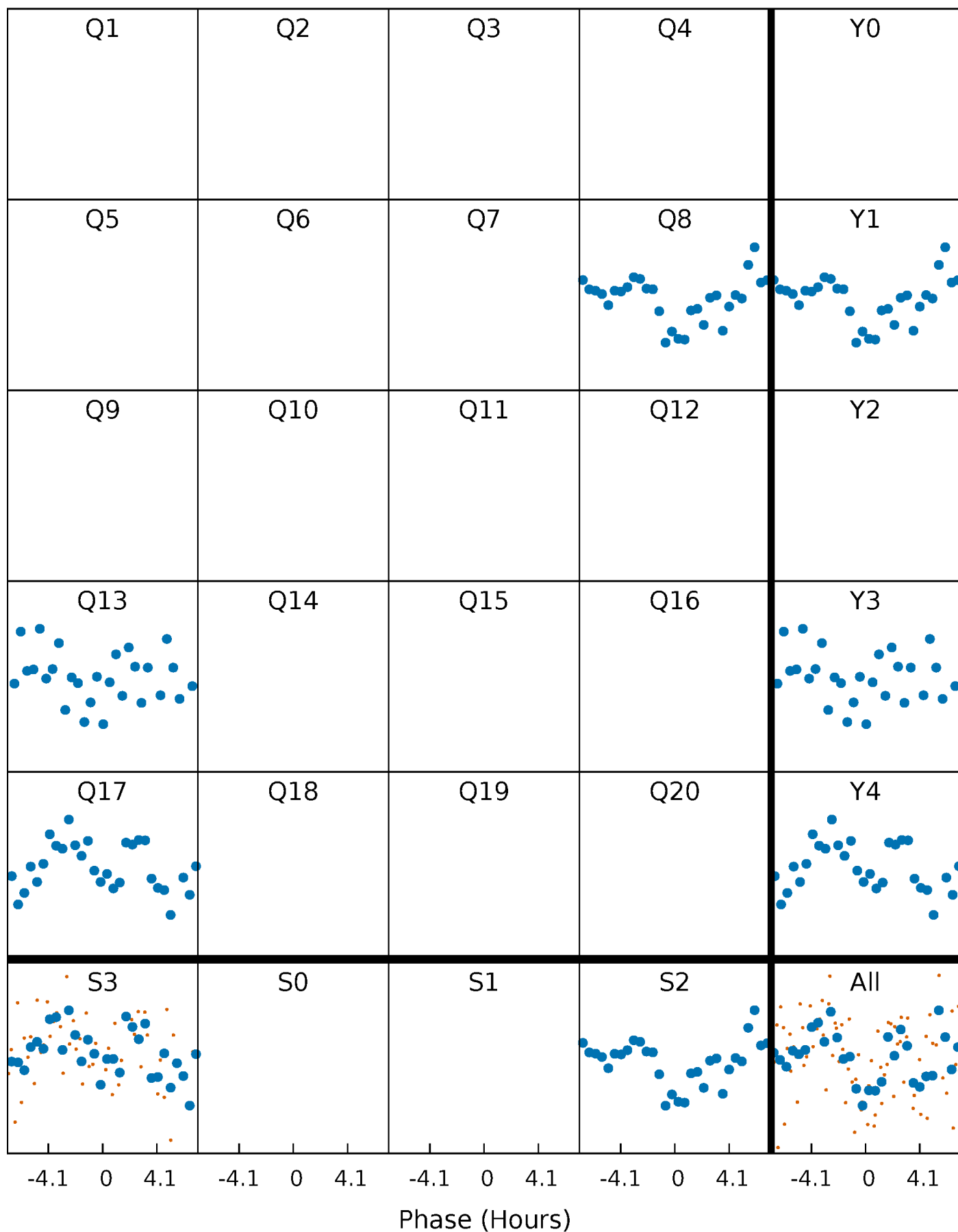
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





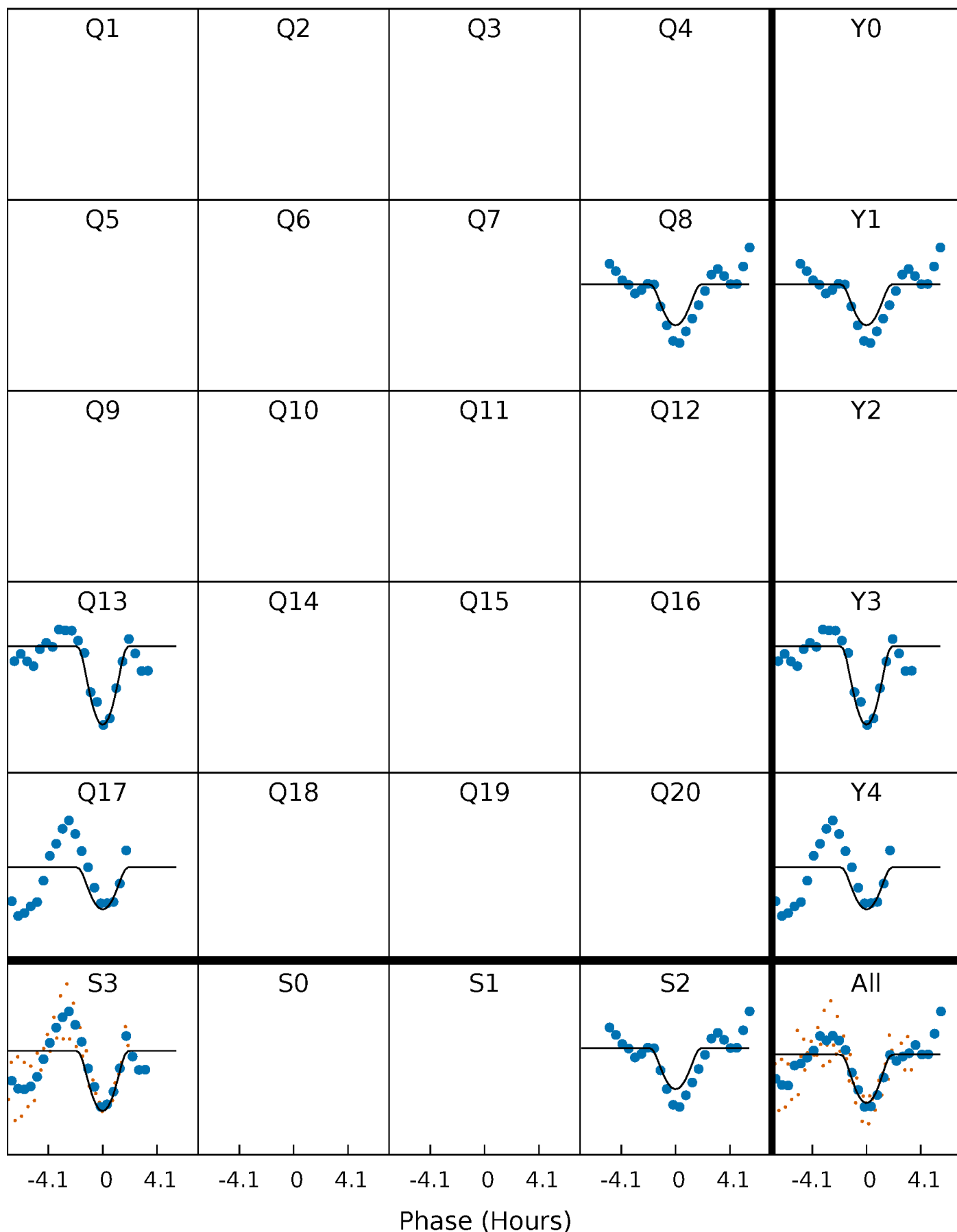
# PDC Quarter-Phased Transit Curves

TCE 002975832-04     $P=390.617964$  Days     $T_0=406.529446$  (BKJD)



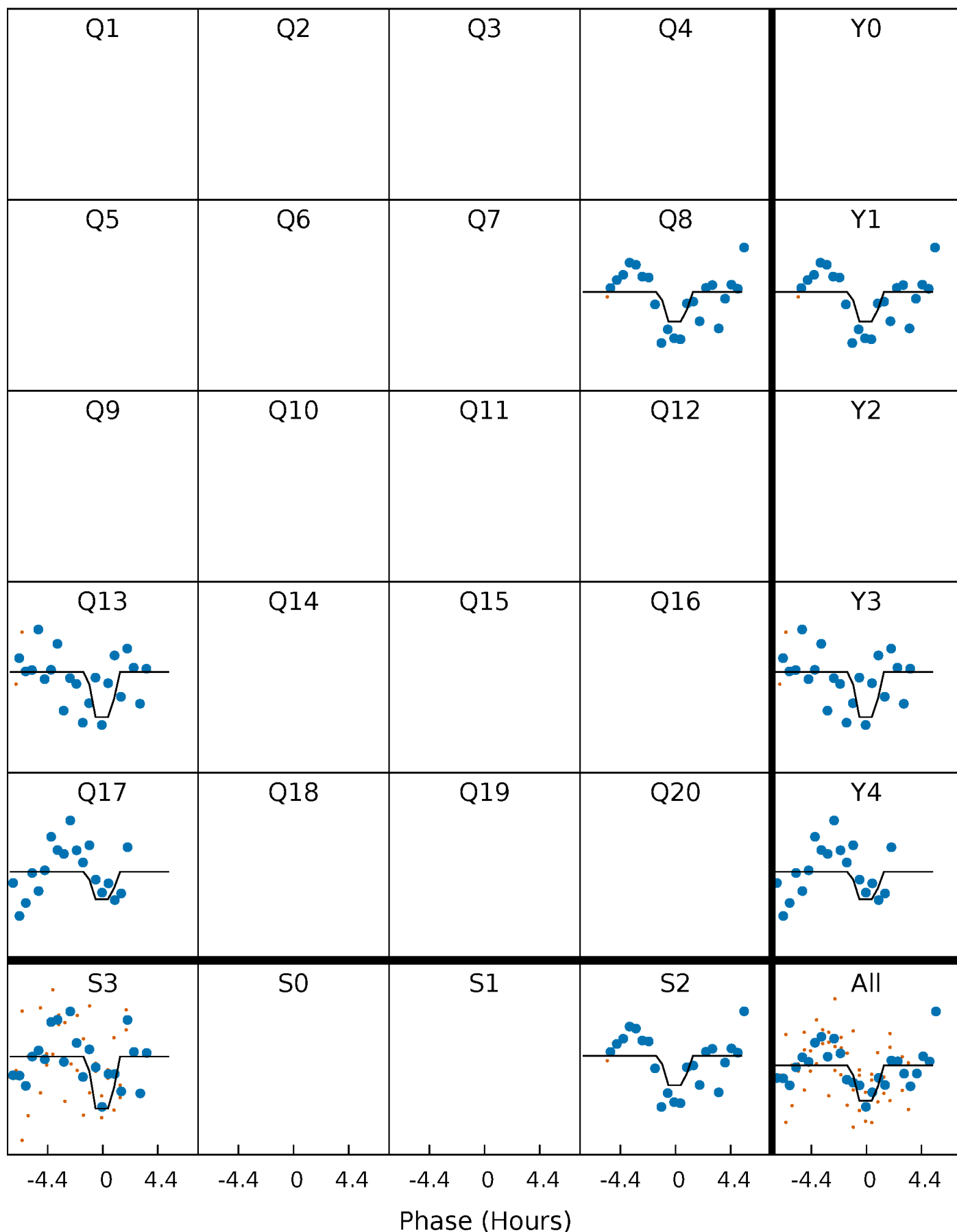
# DV Quarter-Phased Transit Curves

TCE 002975832-04 P=390.617964 Days  $T_0=406.529446$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

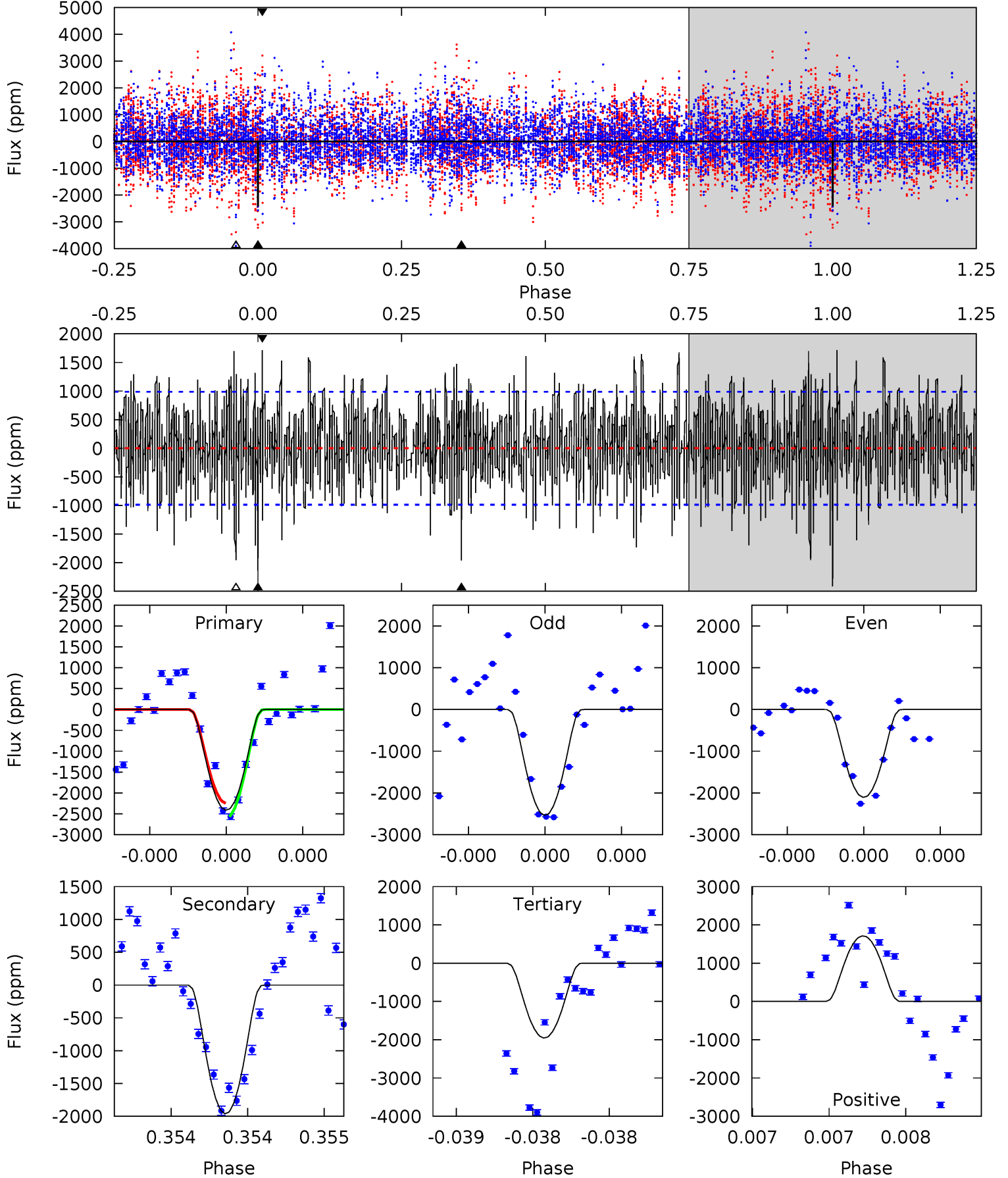
TCE 002975832-04 P=390.609443 Days  $T_0=406.548100$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-04, P = 390.617964 Days, E = 15.911482 Days

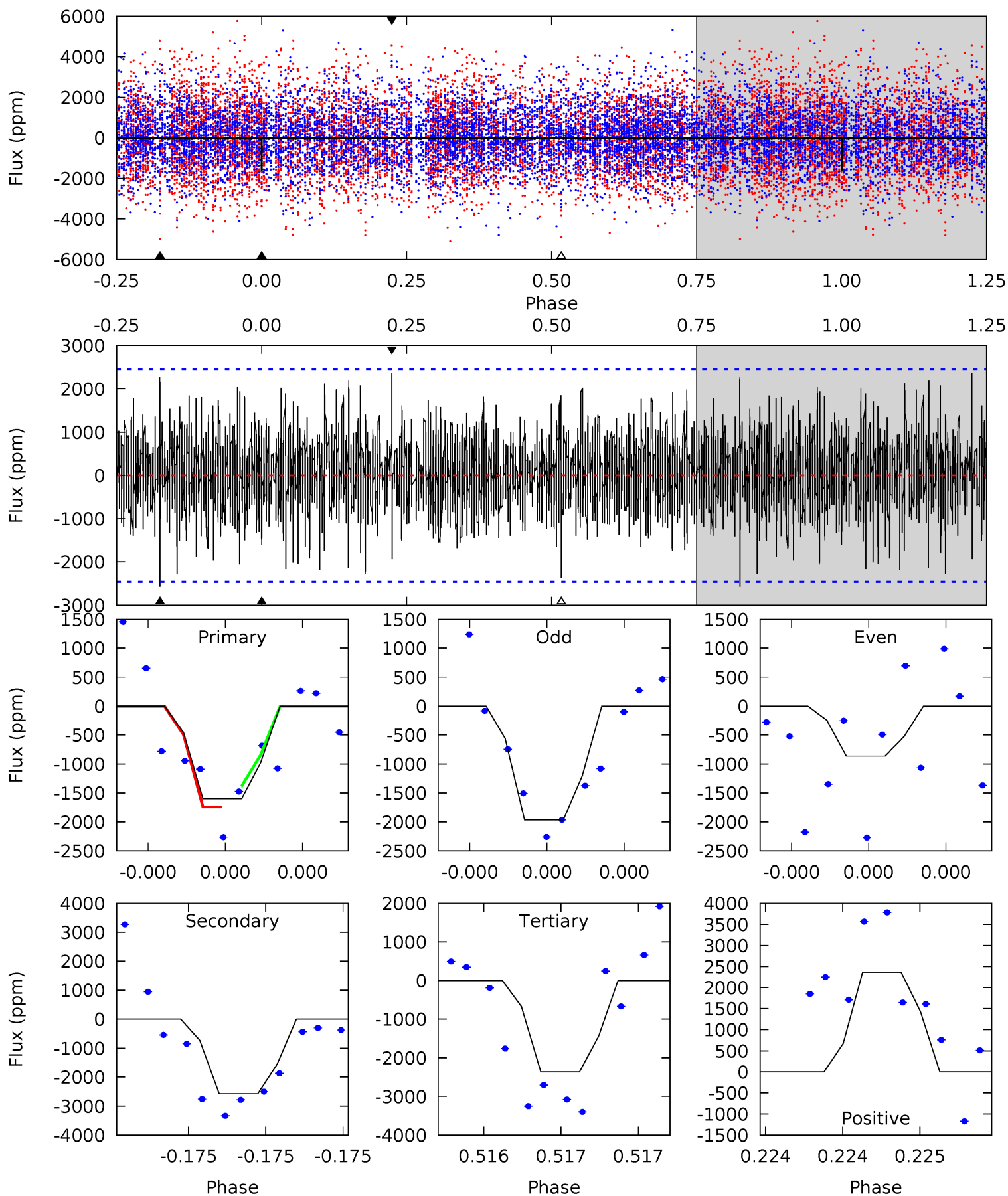
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	11.1	11.1	9.72	5.60	3.51	3.12	2.59	3.95	0.04	1.40	1.17	1.15	0.42	0.90



# Alt Model-Shift Uniqueness Test

002975832-04, P = 390.609443 Days, E = 15.938657 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
3.72	5.99	5.51	5.49	5.72	3.71	1.63	-1.79	-1.77	0.48	0.49	1.20	1.58	0.48	0.41



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1961 \pm 176$	$17.87^{+15.40}_{-11.31}$	$553^{+41}_{-48}$	$5094^{+3467}_{-1053}$	$4820^{+29638}_{-3344}$
Alt.	$-2573 \pm 430$	$15.40^{+14.06}_{-10.15}$	$553^{+43}_{-53}$	$5836^{+5283}_{-1378}$	$8751^{+64872}_{-6406}$

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

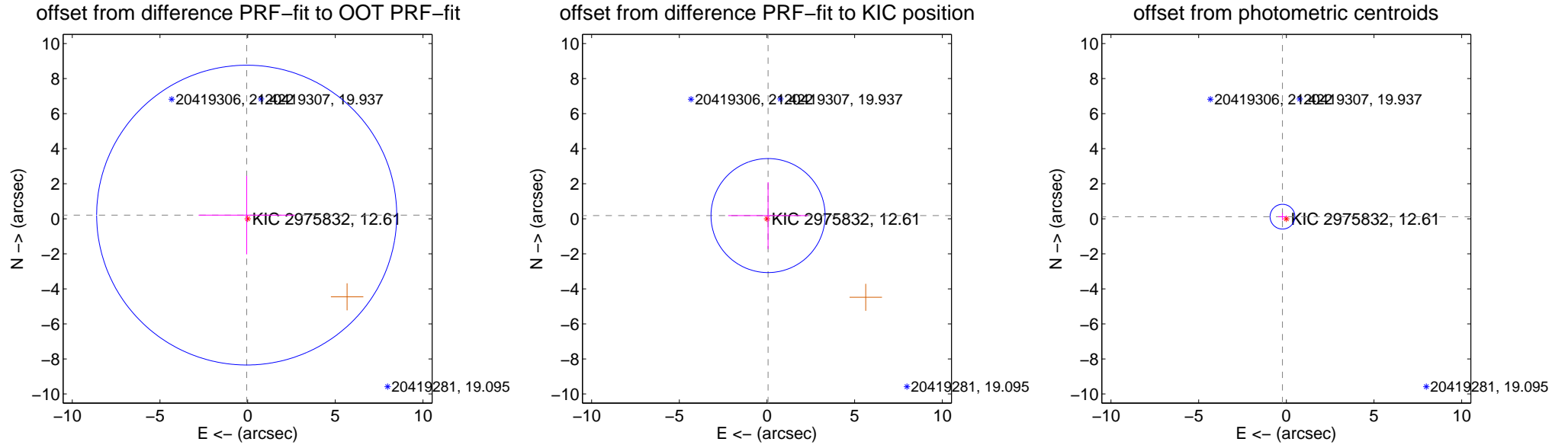
## DV Centroid Data

Supplemental centroid analysis for 002975832-04. Kepler magnitude: 12.61. Transit SNR 9.51

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.216 \pm 2.851$	0.08	$0.054 \pm 2.745$	$0.209 \pm 2.238$
PRF-fit source offset from KIC position	$0.192 \pm 1.084$	0.18	$-0.061 \pm 2.278$	$0.182 \pm 1.909$
photometric centroid source offset	$0.25 \pm 0.24$	1.06	$0.22 \pm 0.24$	$0.12 \pm 0.21$



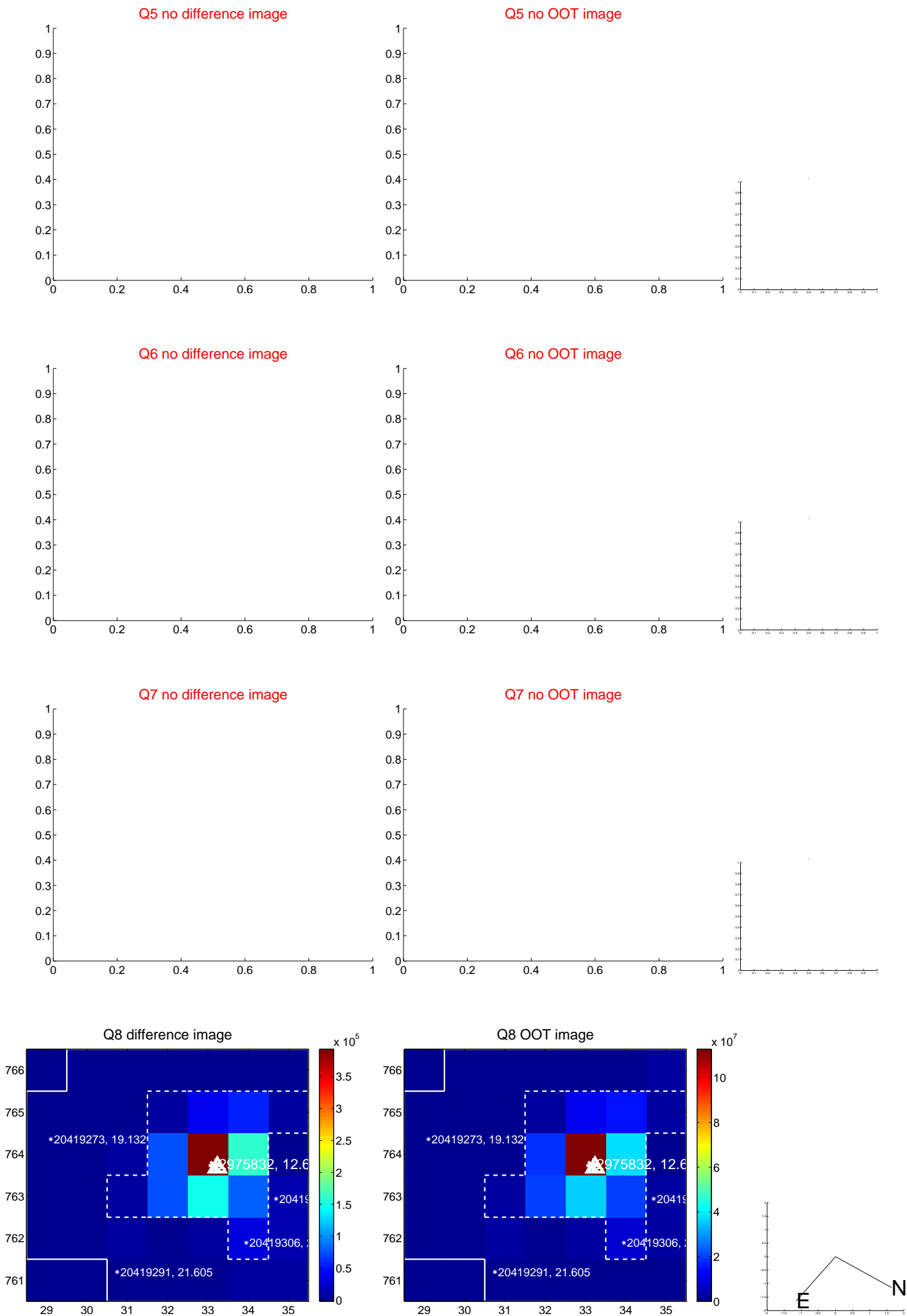
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



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



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



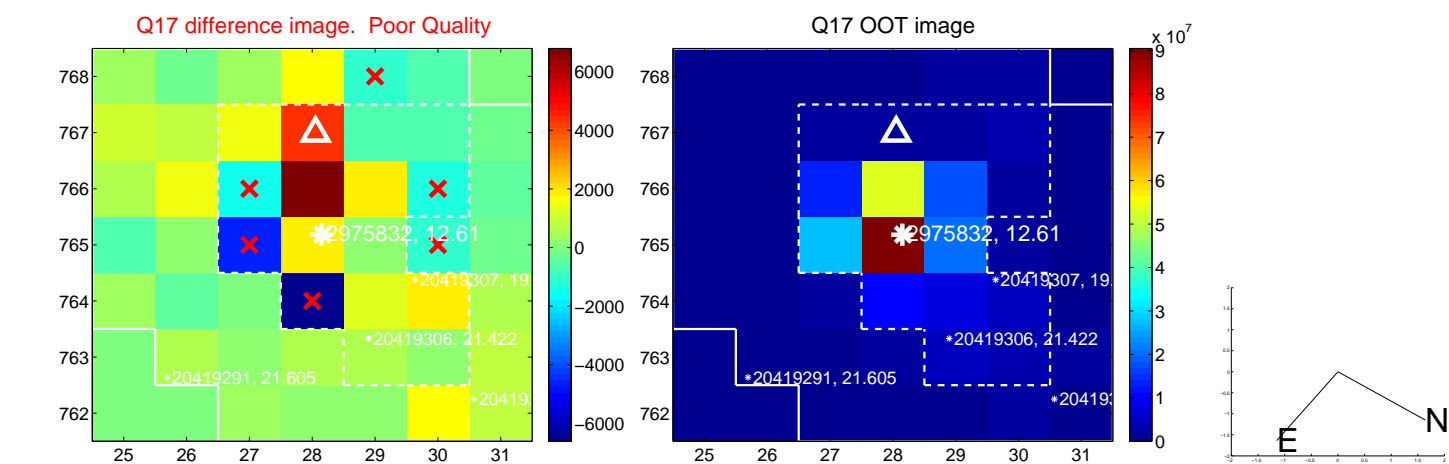
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



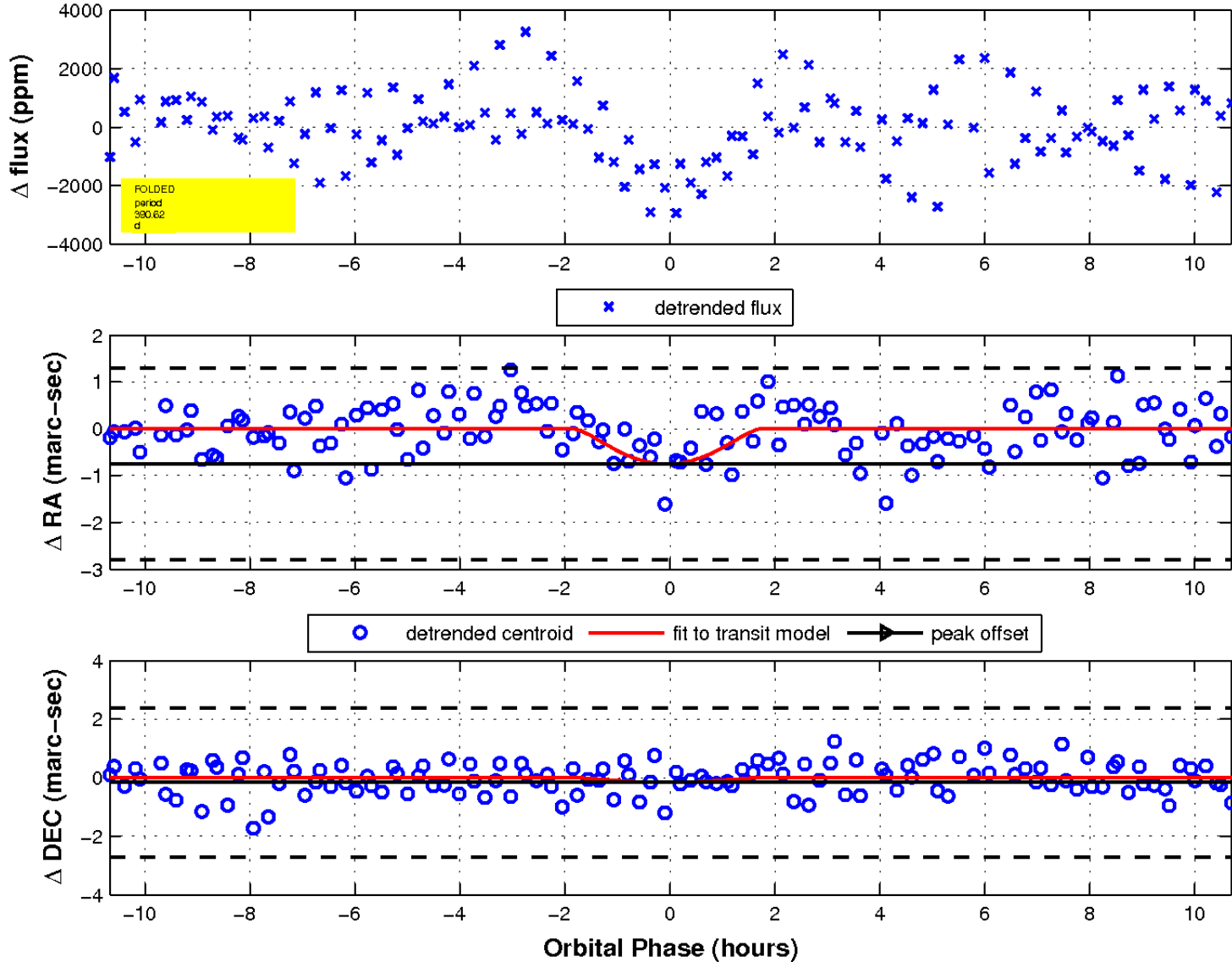
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

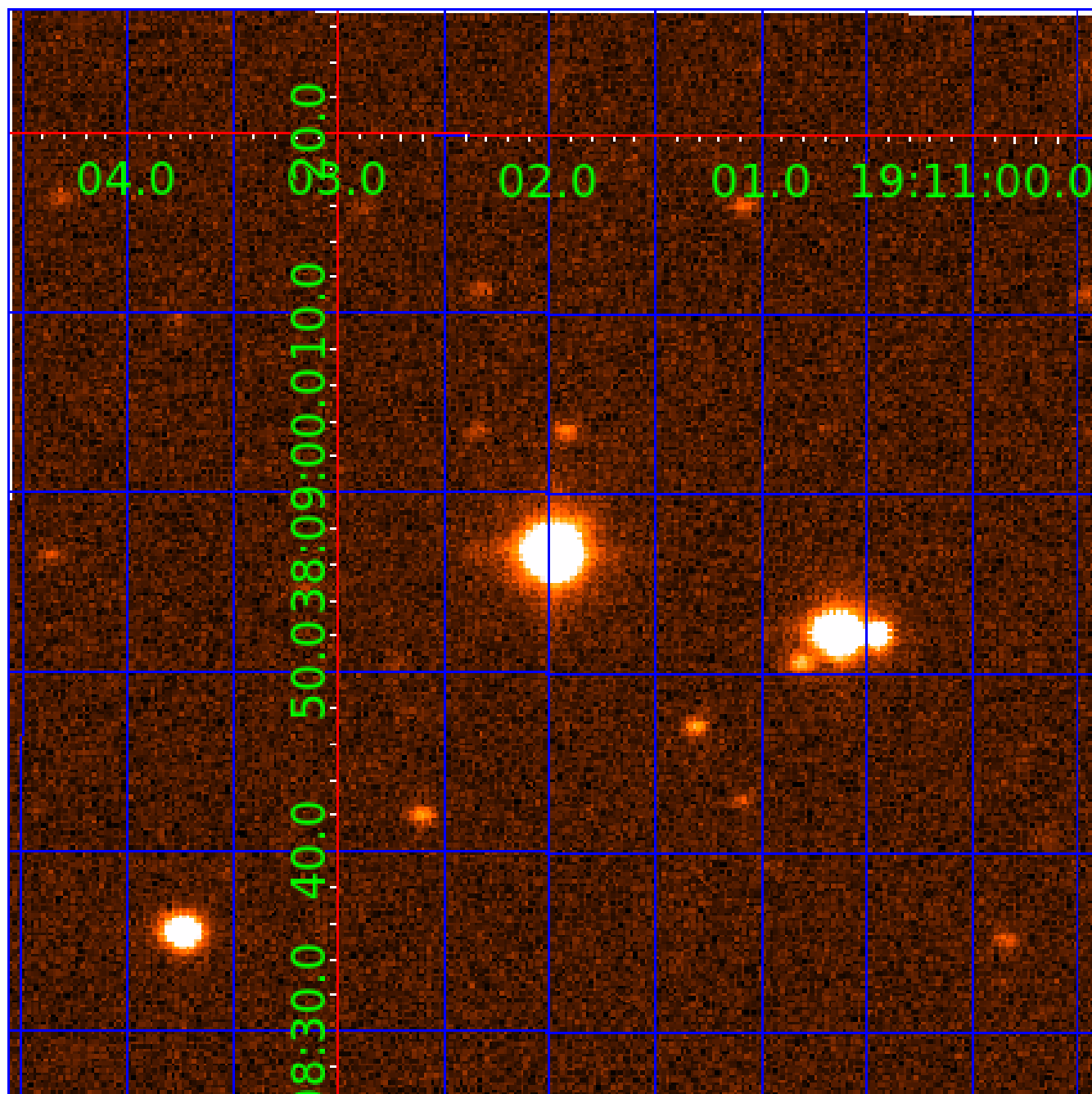


fluxWeightedCentroids, Planet 4 of 9



UKIRT Image

Declination



# KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

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

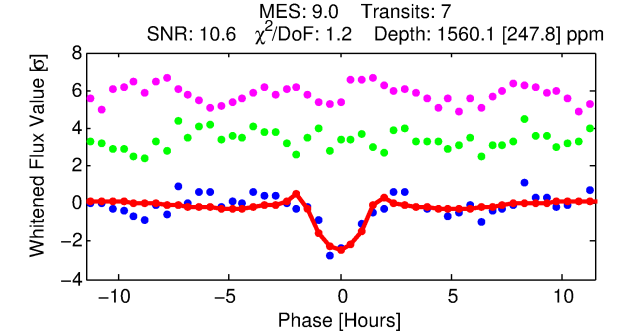
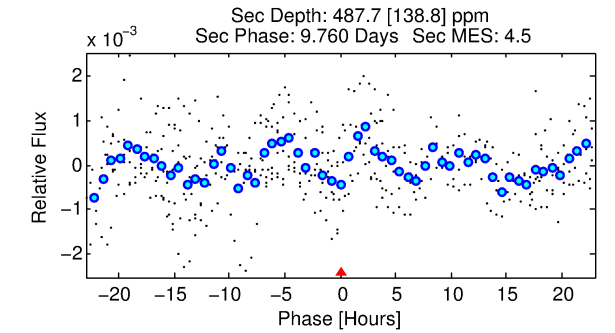
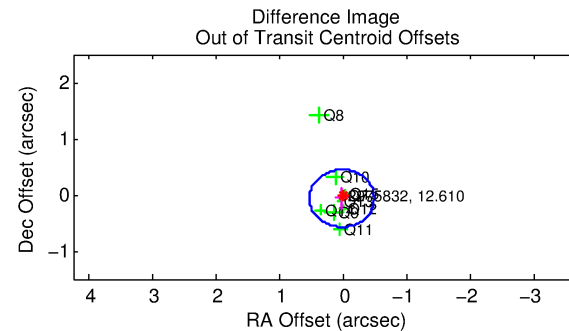
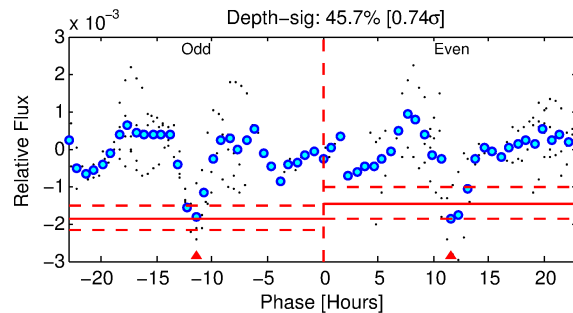
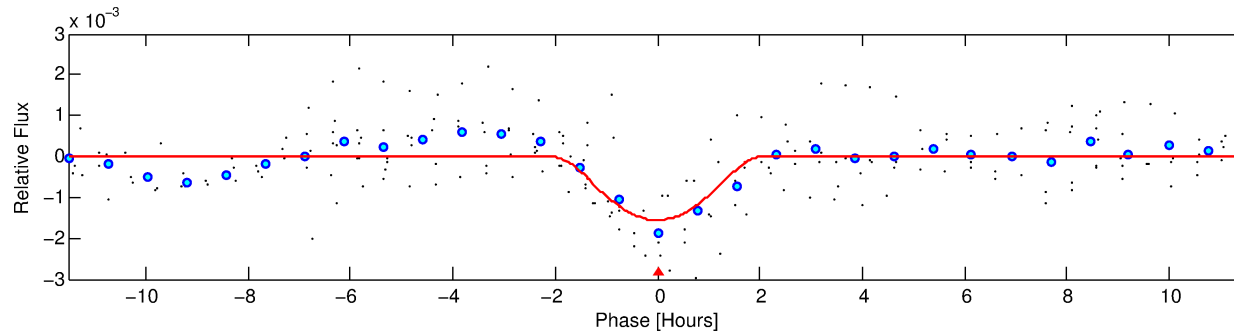
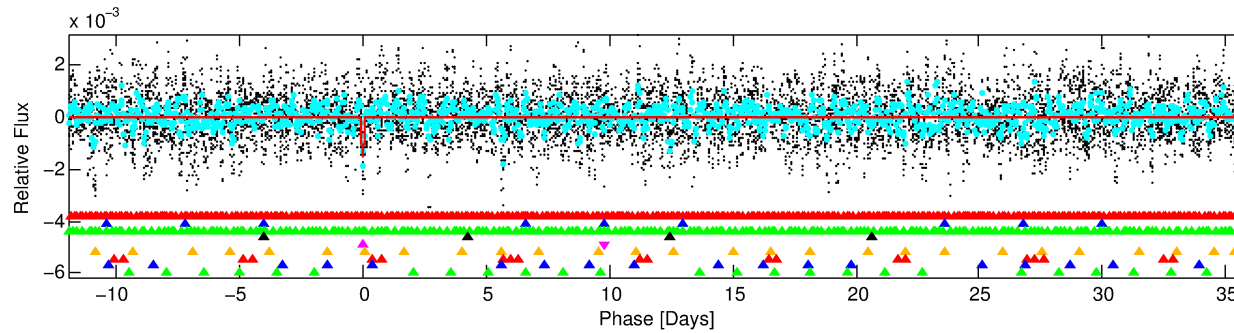
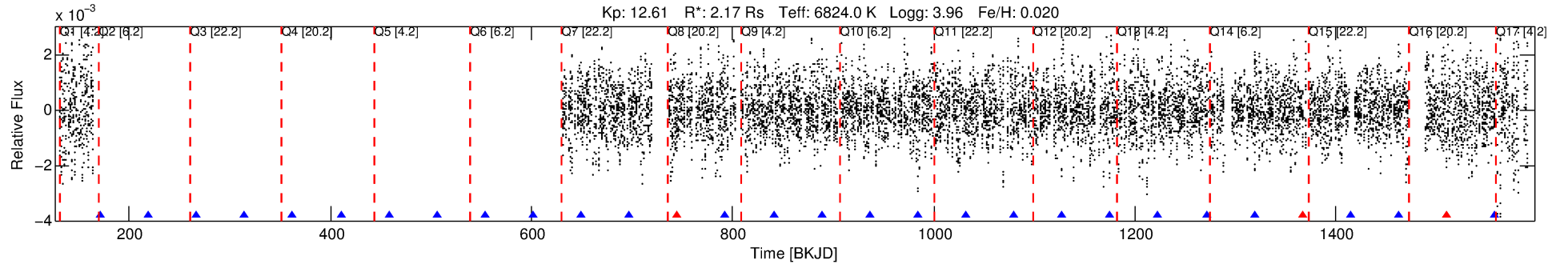
Ephemeris Match Information For 002975832-05

No Significant Match Found



# DV One-Page Summary

KIC: 2975832 Candidate: 5 of 9 Period: 47.802 d



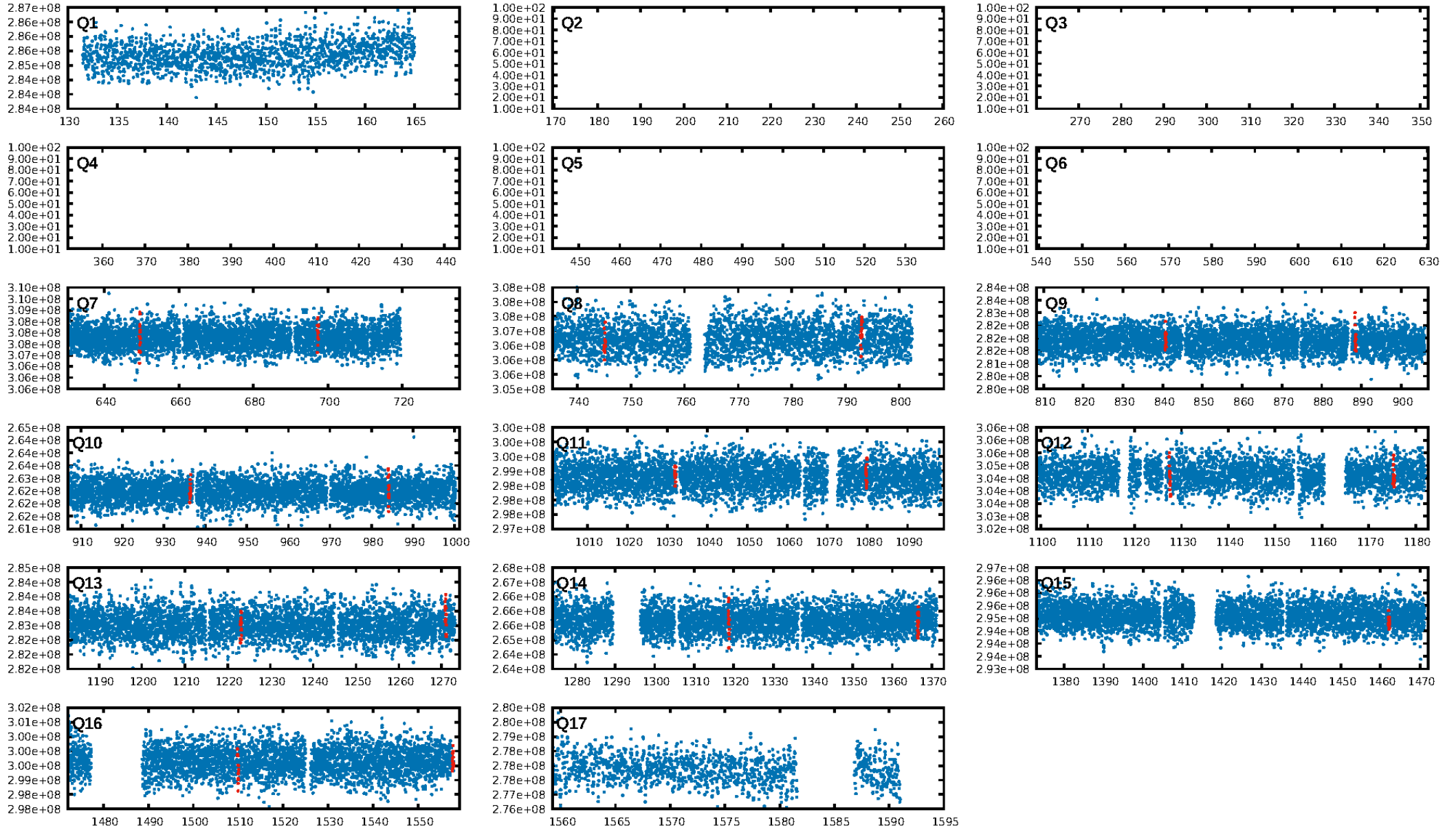
## DV Fit Results:

Period = 47.80197 [0.00066] d  
Epoch = 171.5031 [0.0148] BKJD  
Rp/R\* = 0.0671 [0.1275]  
a/R\* = 35.52 [15.34]  
b = 1.00 [0.18]  
Seff = 101.98 [53.12]  
Teq = 810 [106] K  
Rp = 15.90 [30.72] Re  
a = 0.2999 [0.0945] AU  
Ag = 95.42 [366.87] [0.26 $\sigma$ ]  
Teffp = 3916 [3736] K [0.83 $\sigma$ ]

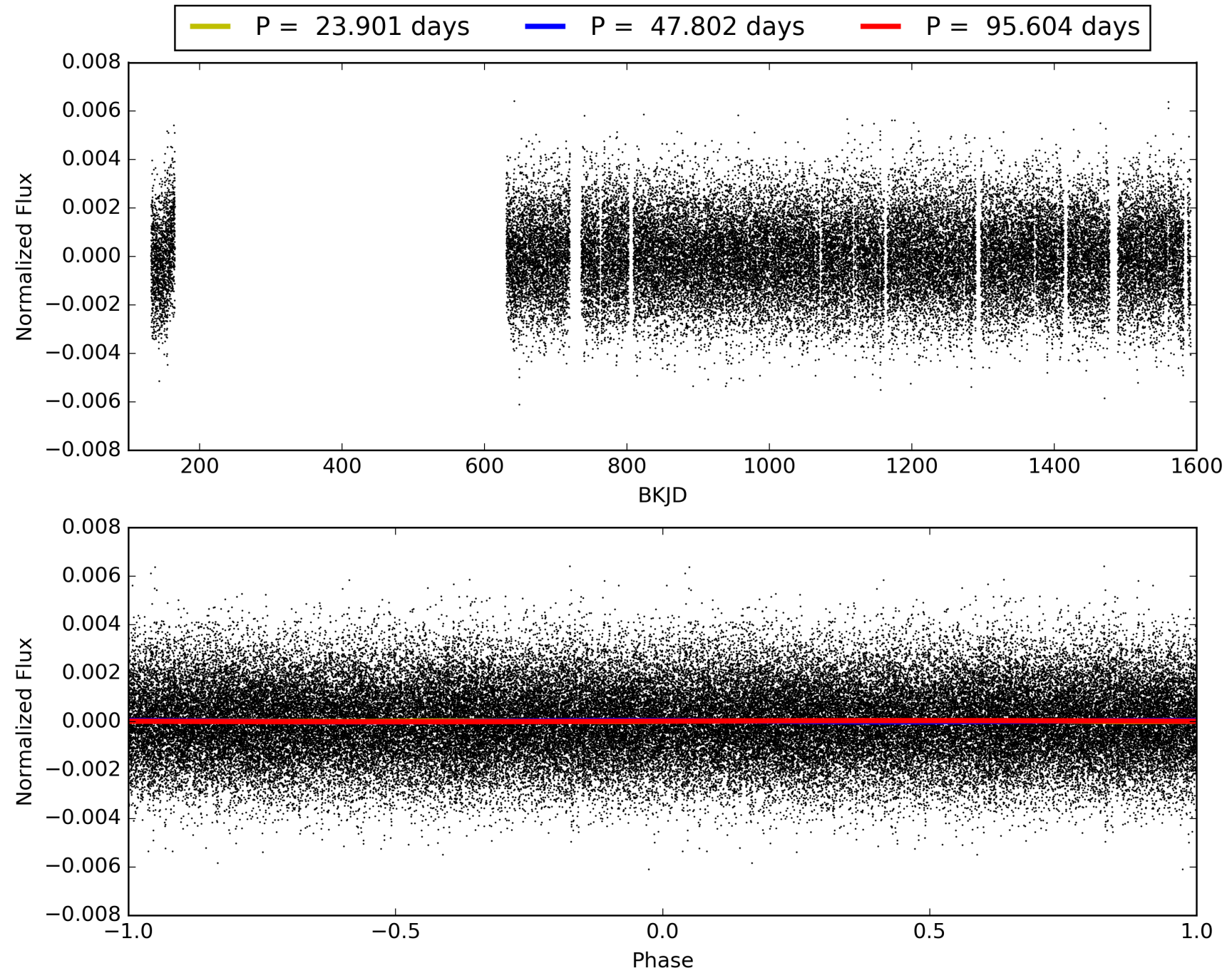
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [177.84 $\sigma$ ]  
LongPeriod-sig: 100.0% [24.04 $\sigma$ ]  
ModelChiSquare2-sig: 7.5%  
ModelChiSquareGof-sig: 98.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.57 [4/7]  
GhostDiagnostic-chr: 0.5015  
Centroid-sig: 36.6%  
Centroid-so: 0.131 arcsec [1.11 $\sigma$ ]  
OotOffset-rm: 0.069 arcsec [0.40 $\sigma$ ]  
KicOffset-rm: 0.167 arcsec [0.77 $\sigma$ ]  
OotOffset-st: 2/3/2/2 [9]  
KicOffset-st: 2/3/2/2 [9]  
DiffImageQuality-fgm: 0.56 [5/9]  
DiffImageOverlap-fno: 0.33 [3/9]

# TCE 002975832-05, PDC Light Curves

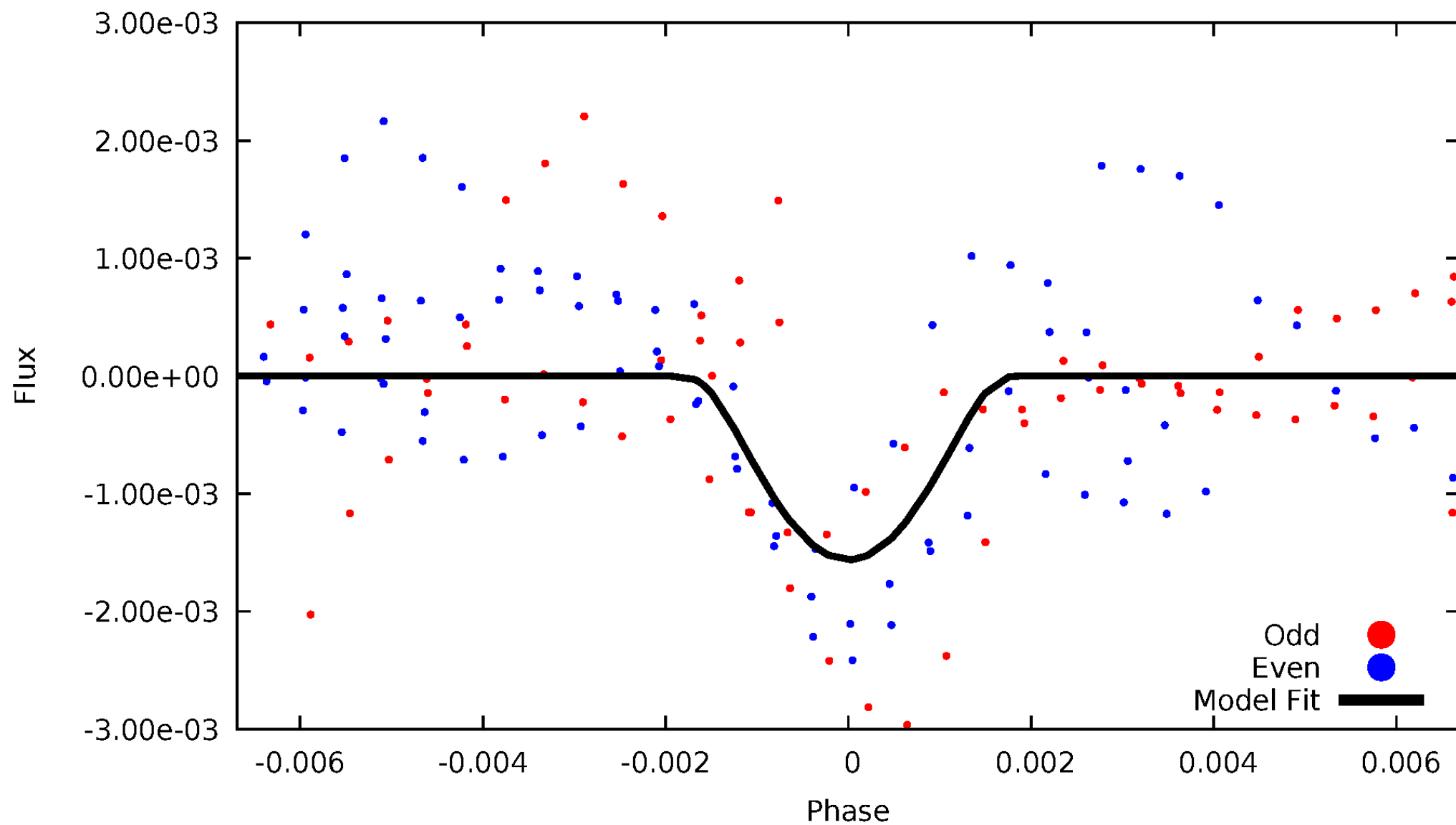


TCE 002975832-05



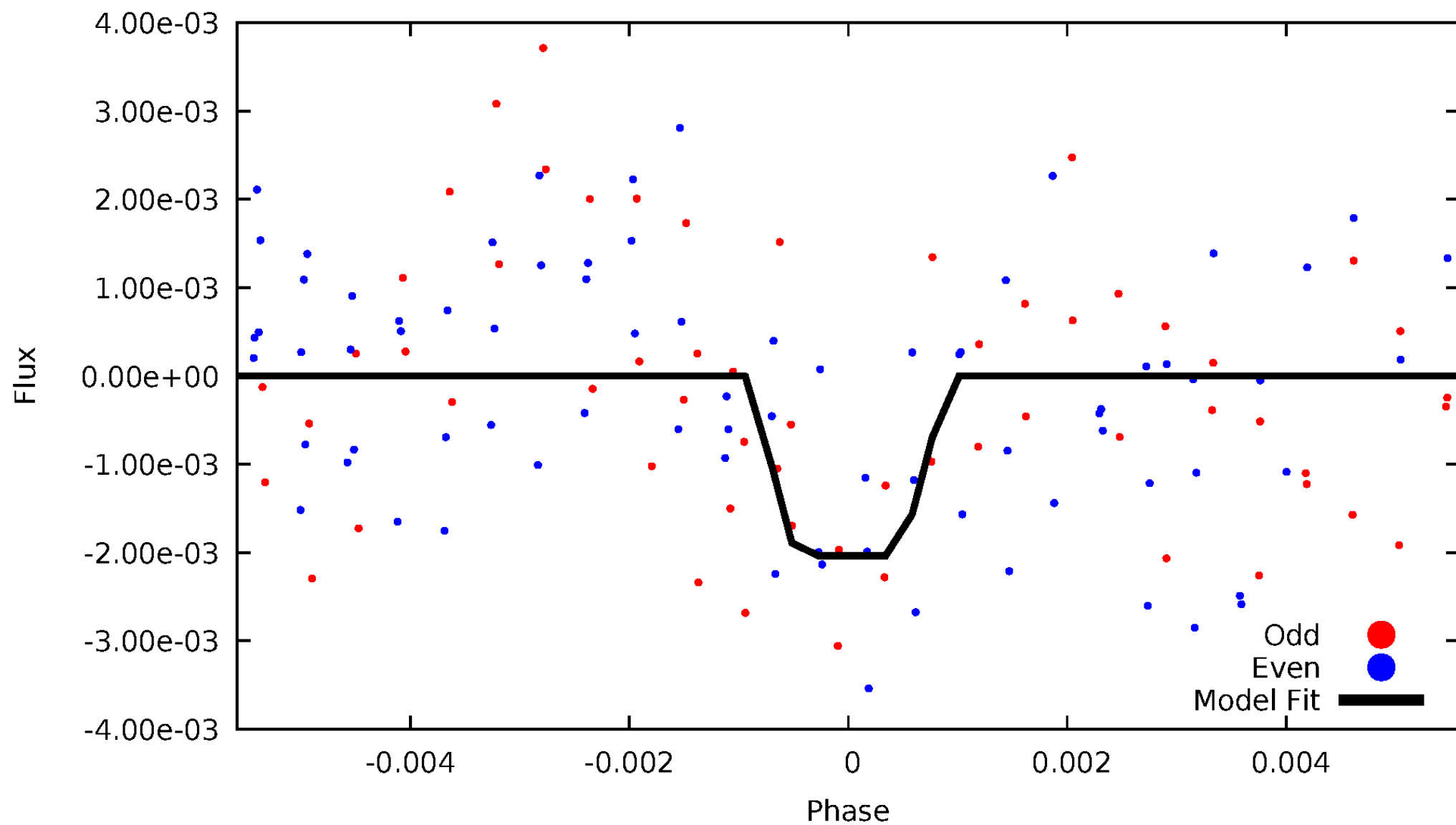
# DV Odd/Even

TCE 002975832-05



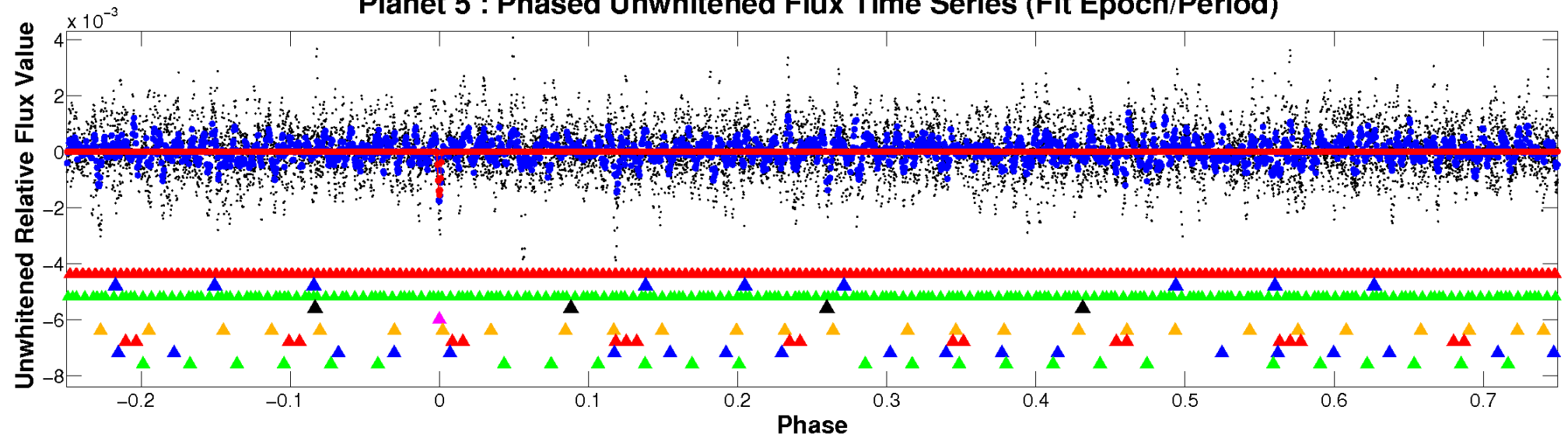
# ALT Odd/Even

TCE 002975832-05

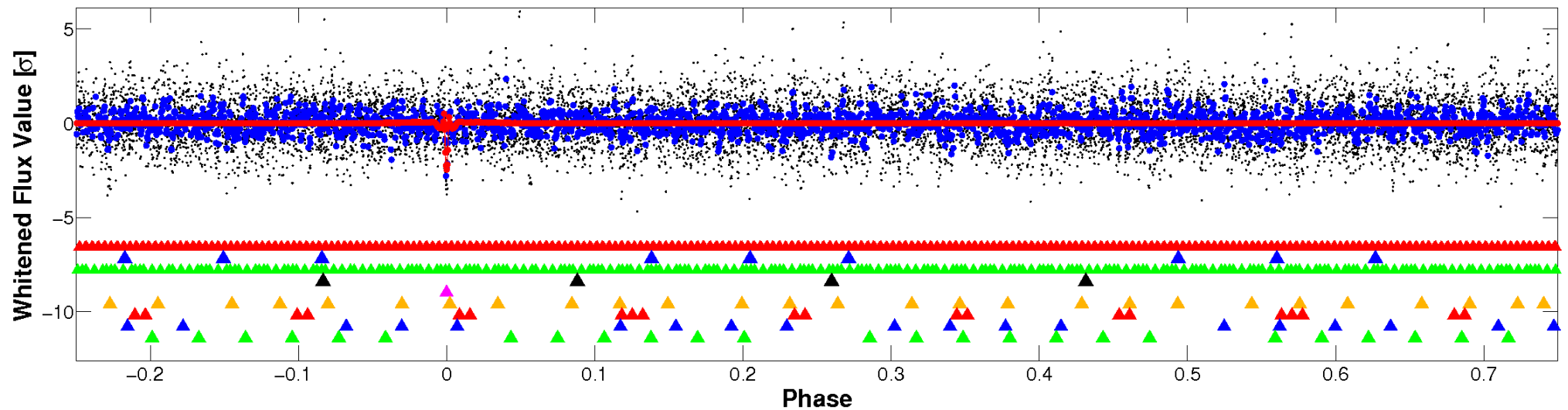


# Non-Whitened Vs. Whitened Light Curve

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



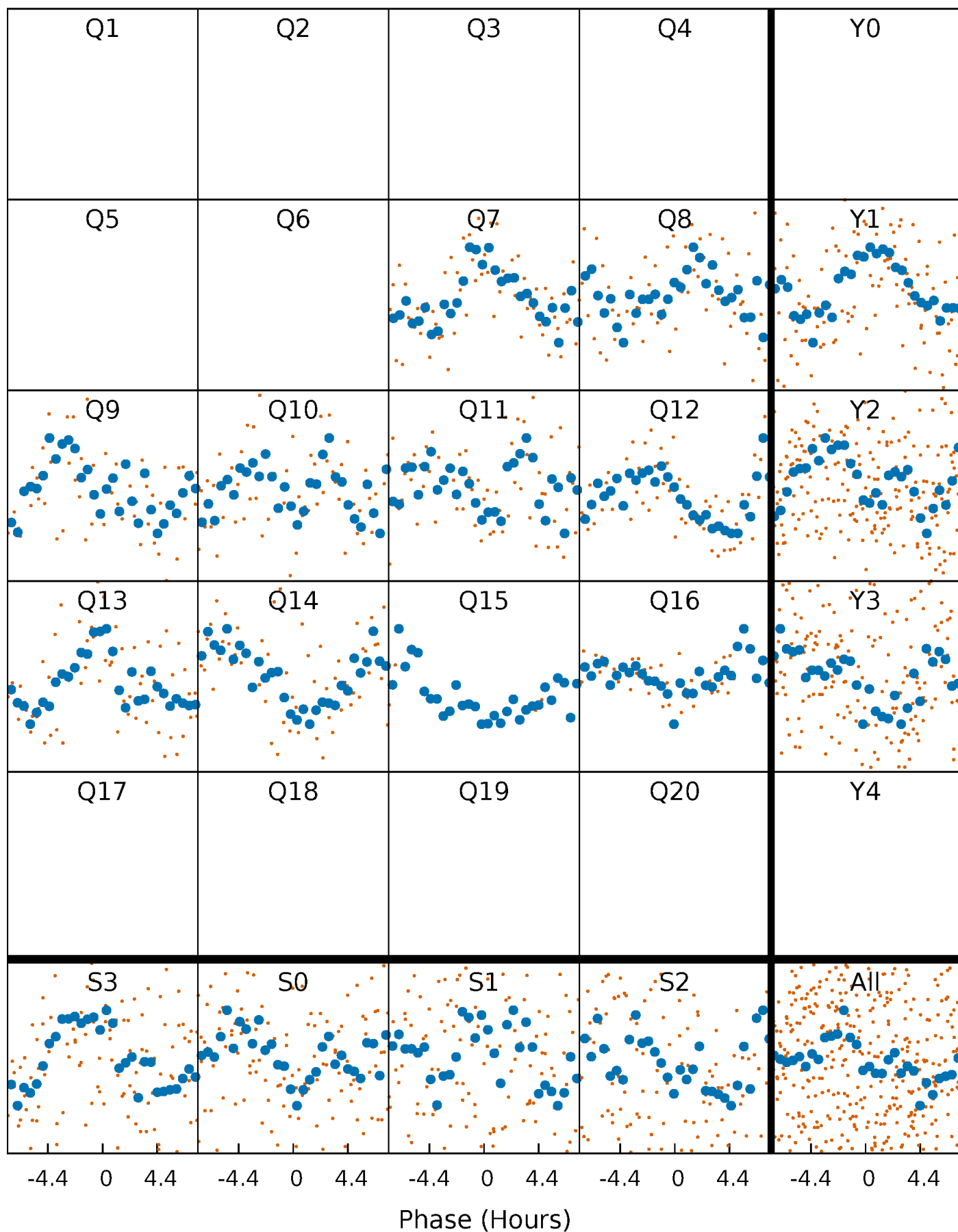
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

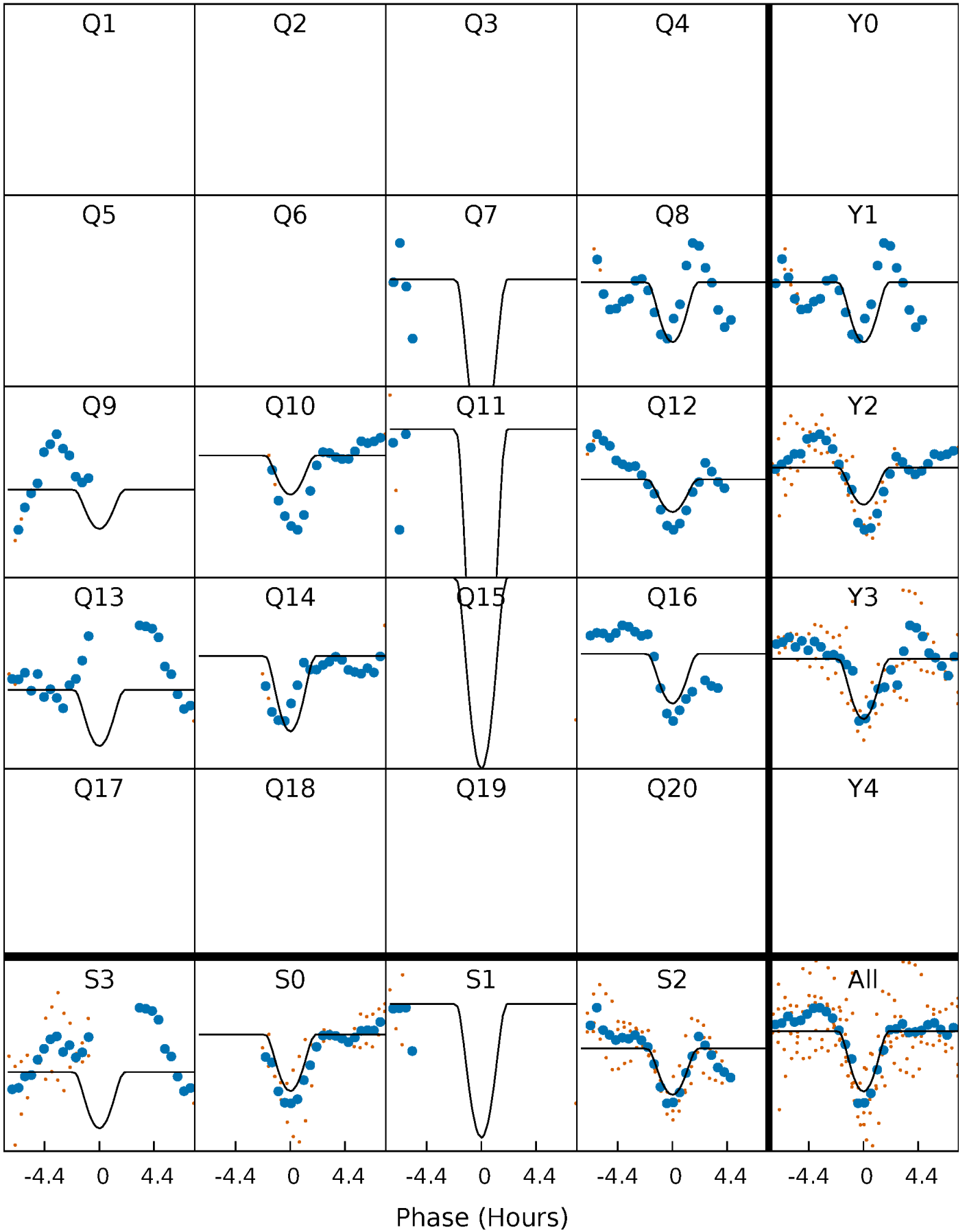
TCE 002975832-05   P= 47.801970 Days    $T_0=171.503131$  (BKJD)





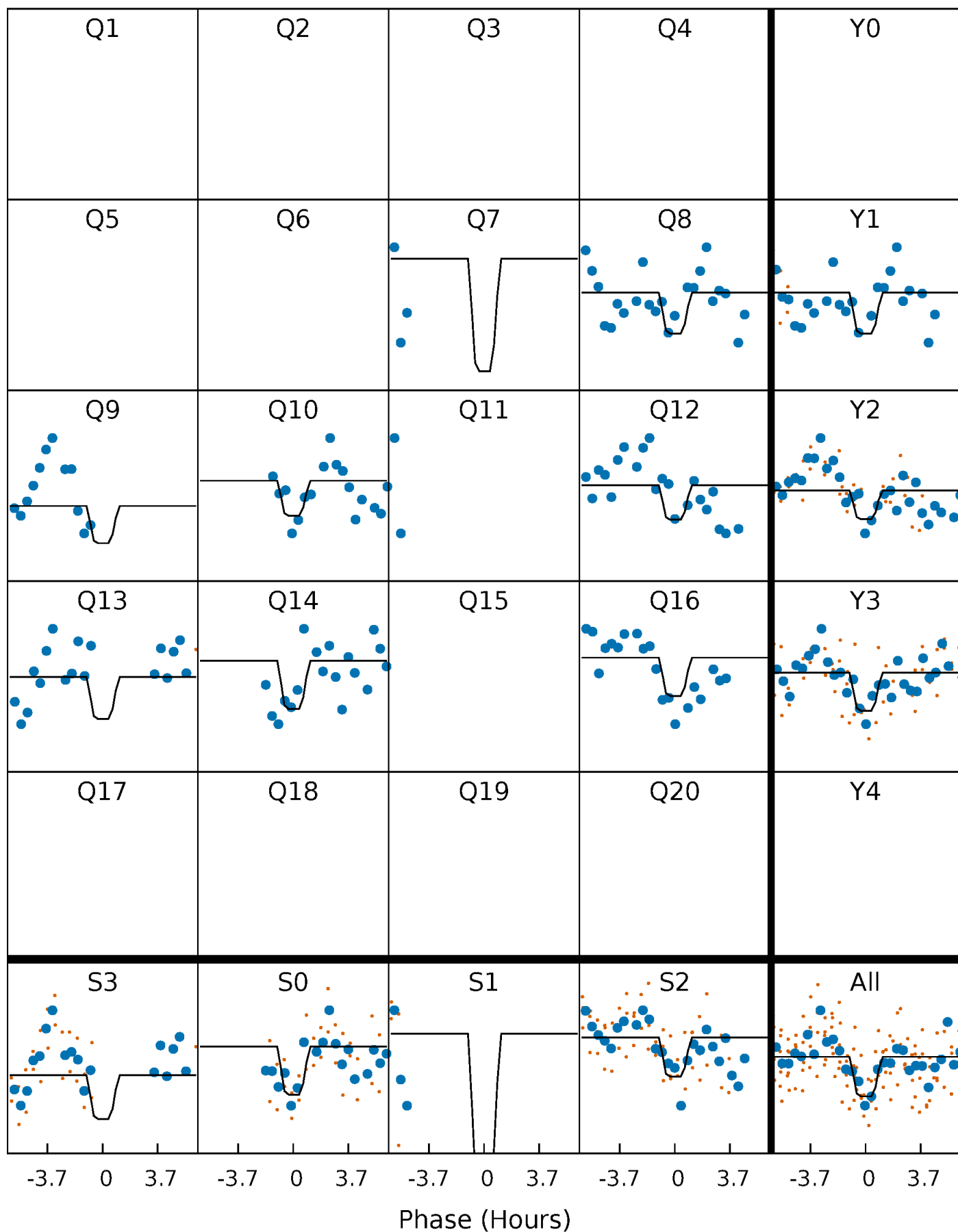
# DV Quarter-Phased Transit Curves

TCE 002975832-05   P= 47.801970 Days    $T_0=171.503131$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

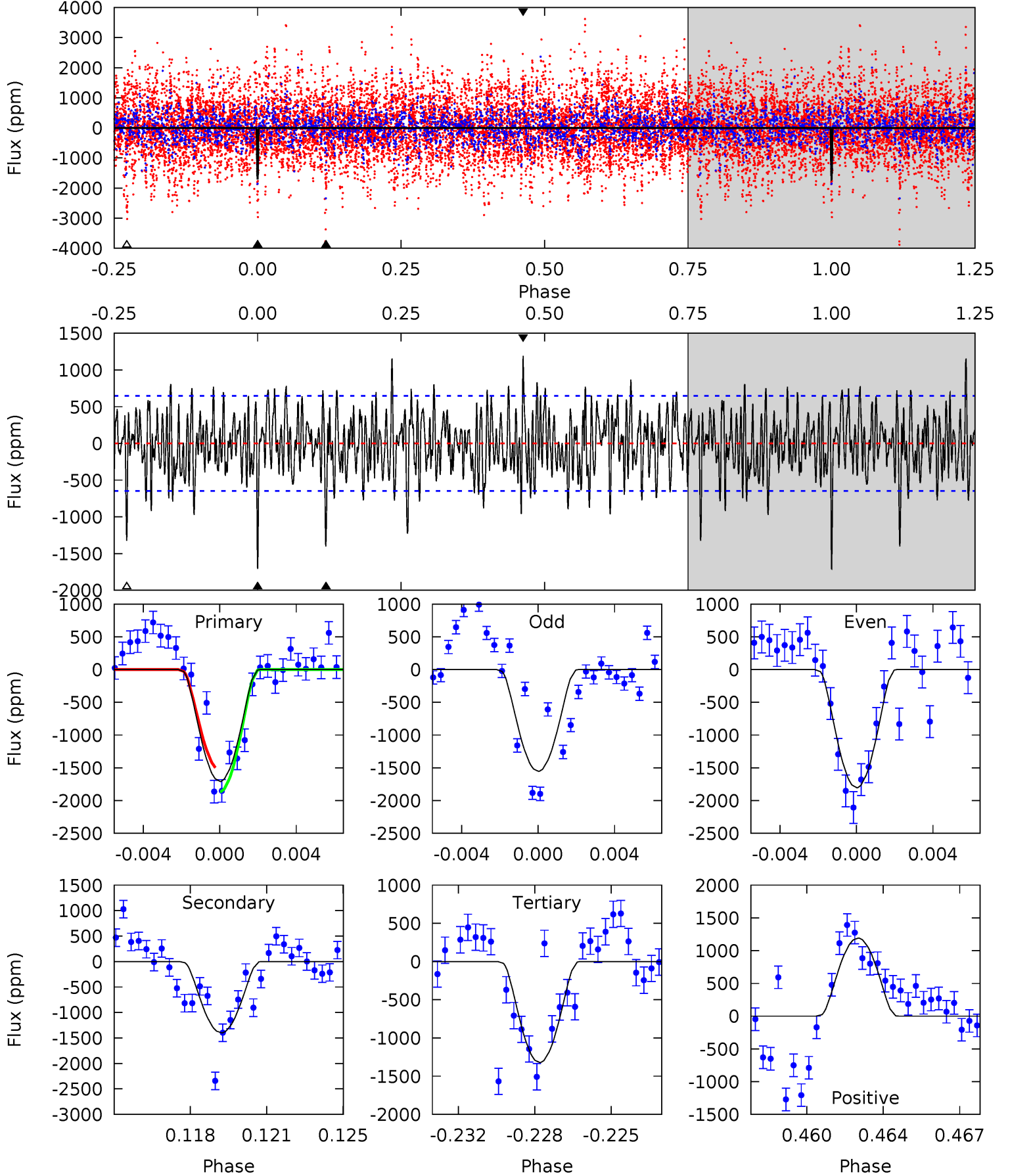
TCE 002975832-05     $P = 47.801754$  Days     $T_0 = 171.501382$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-05,  $P = 47.801970$  Days,  $E = 123.701161$  Days

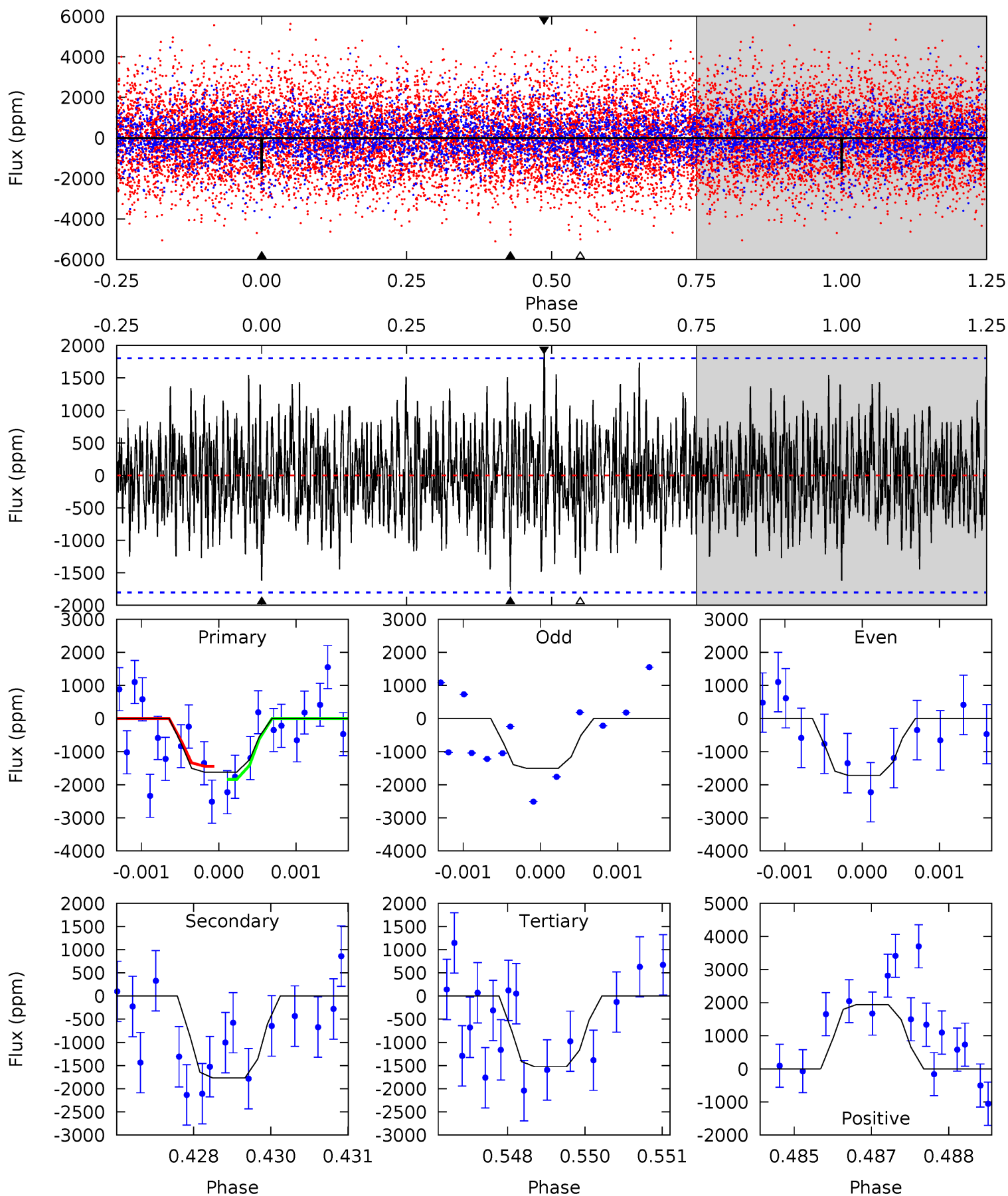
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	11.3	10.7	9.61	5.22	2.91	2.89	3.11	4.16	0.62	1.67	1.01	0.77	0.41	1.48



# Alt Model-Shift Uniqueness Test

002975832-05,  $P = 47.801754$  Days,  $E = 123.699628$  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
4.84	5.28	4.55	5.79	5.38	3.18	1.58	0.29	-0.94	0.73	-0.50	0.32	1.20	0.52	0.59



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1400 \pm 124$	$24.05^{+28.05}_{-16.21}$	$1113^{+86}_{-95}$	$4300^{+2683}_{-991}$	$113^{+939}_{-87}$
Alt.	$-1769 \pm 335$	$24.05^{+22.87}_{-16.05}$	$1113^{+84}_{-101}$	$4479^{+3086}_{-987}$	$155^{+1149}_{-116}$

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

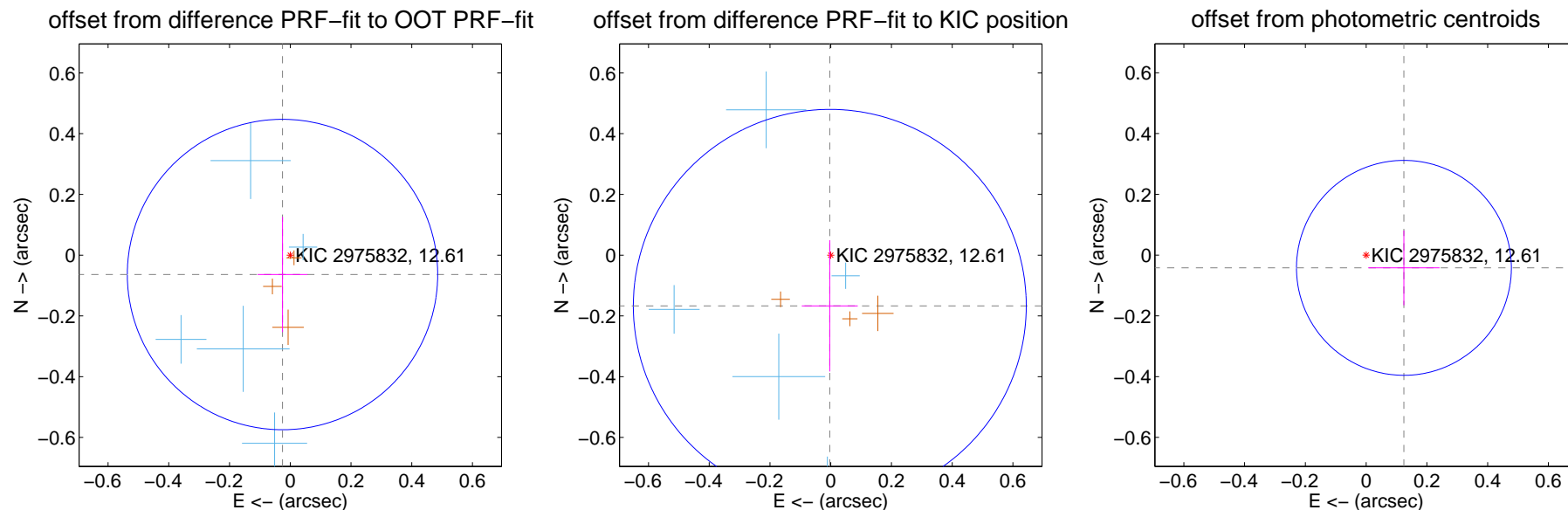
## DV Centroid Data

Supplemental centroid analysis for 002975832-05. Kepler magnitude: 12.61. Transit SNR 10.56

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	$0.069 \pm 0.170$	0.40	$0.026 \pm 0.082$	$-0.064 \pm 0.190$
PRF-fit source offset from KIC position	$0.167 \pm 0.216$	0.77	$0.003 \pm 0.092$	$-0.167 \pm 0.216$
photometric centroid source offset	$0.13 \pm 0.12$	1.11	$-0.12 \pm 0.12$	$-0.04 \pm 0.12$



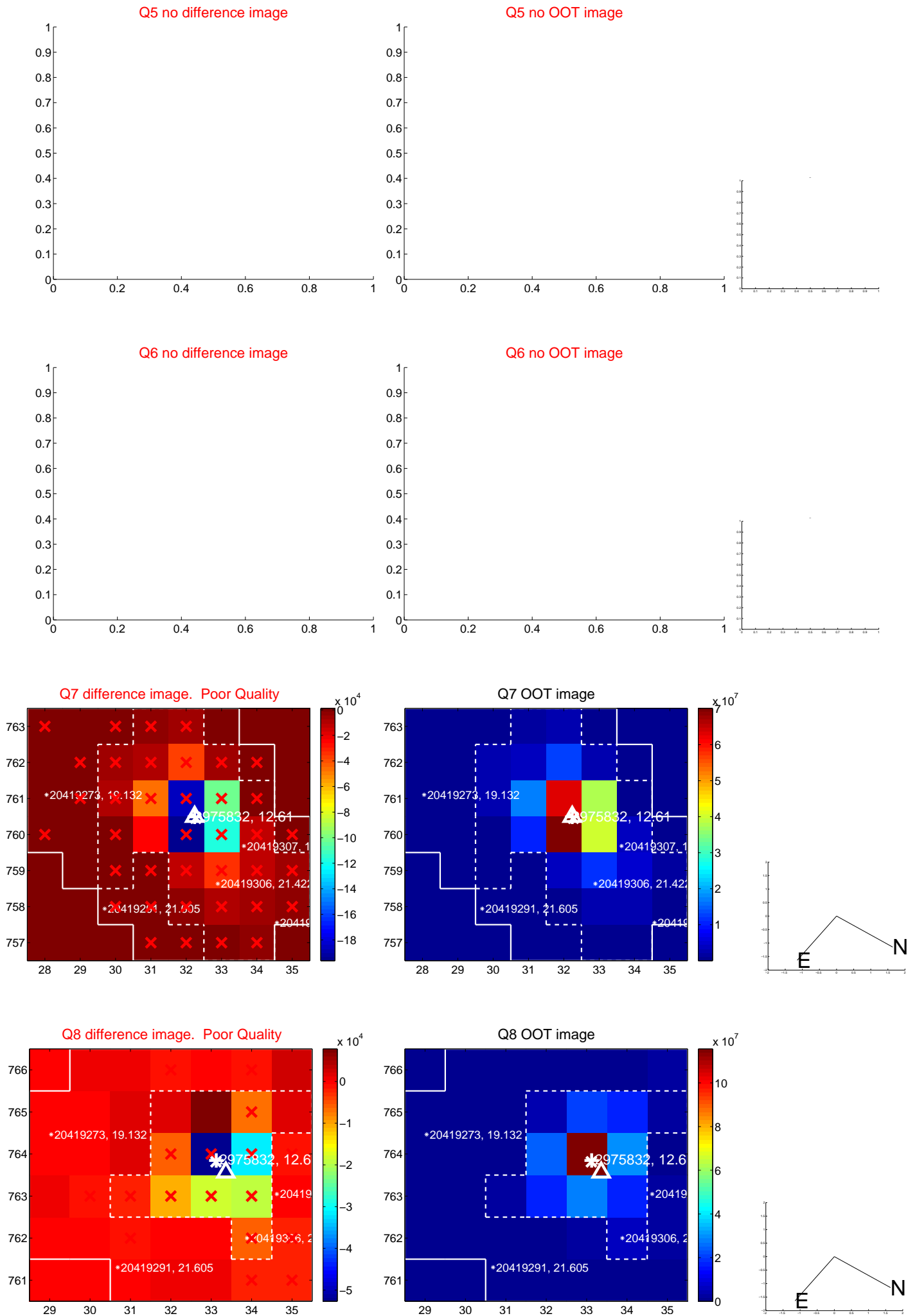
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

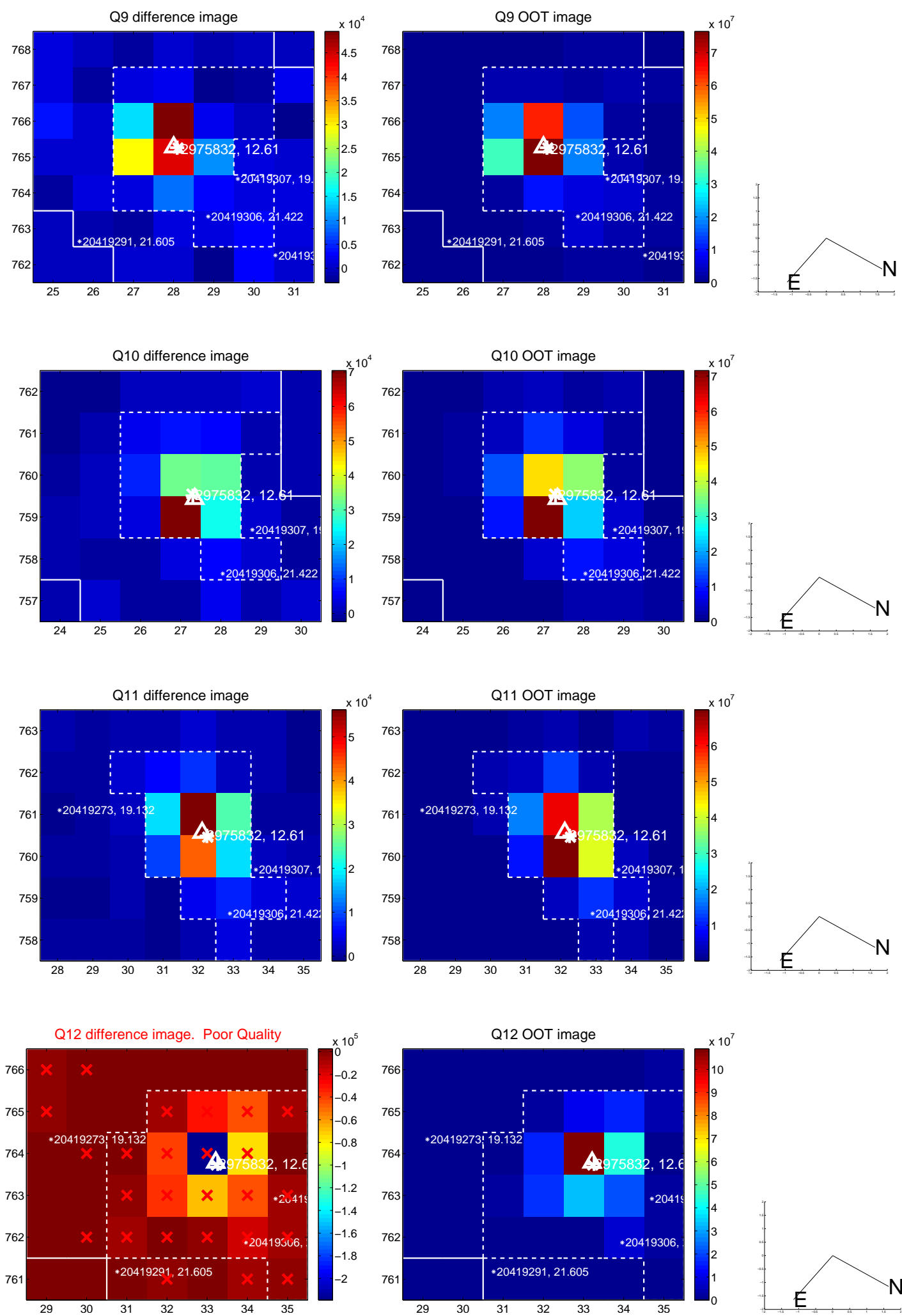




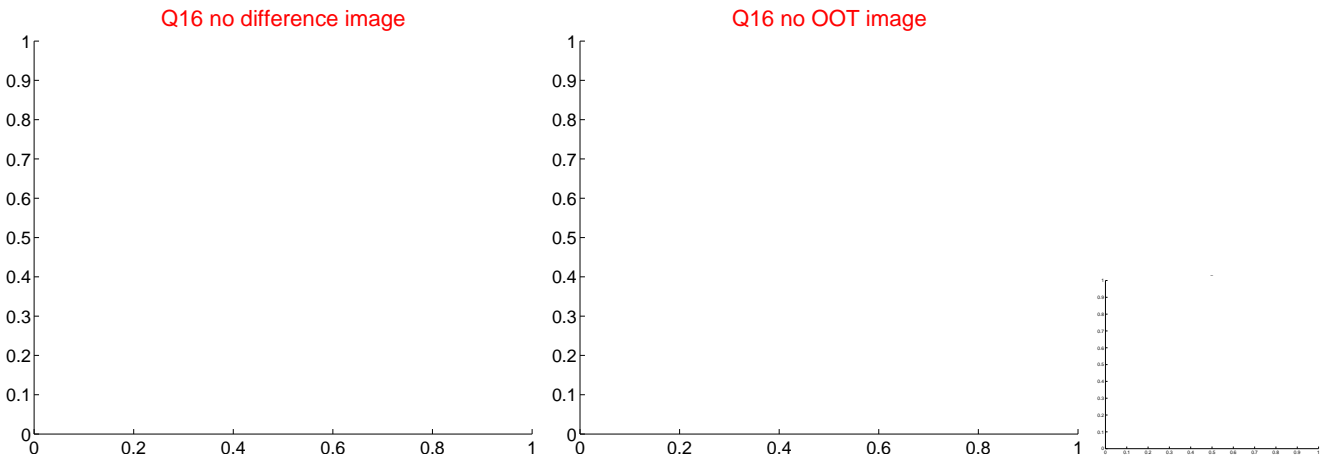
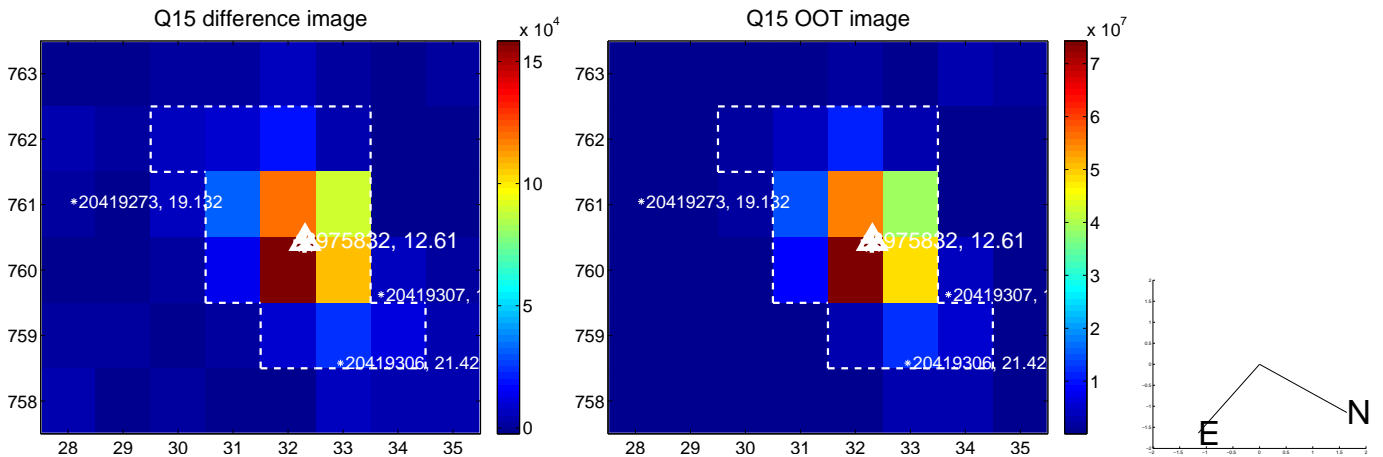
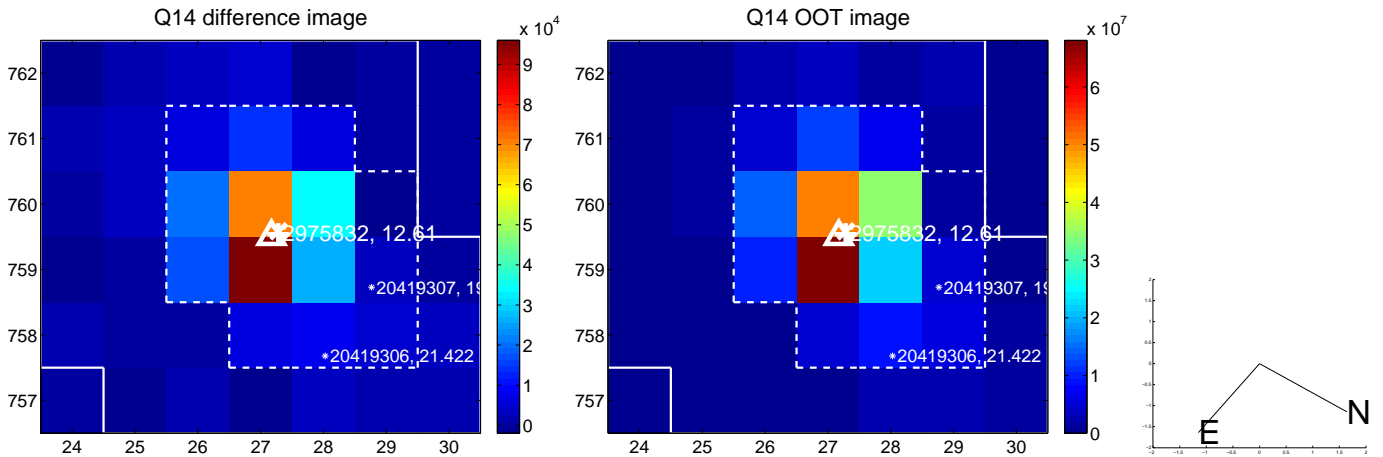
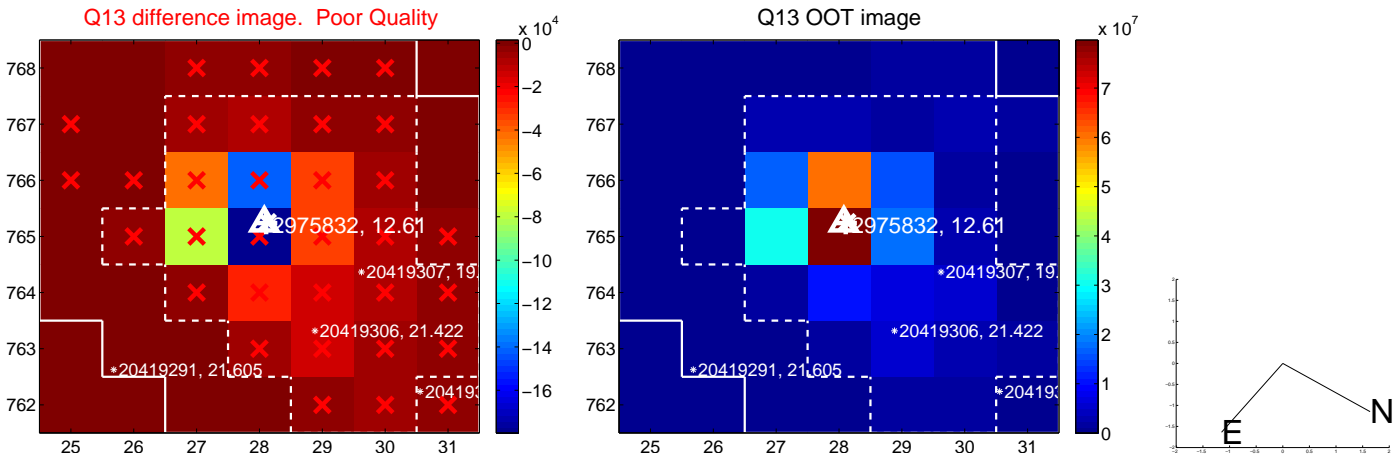
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



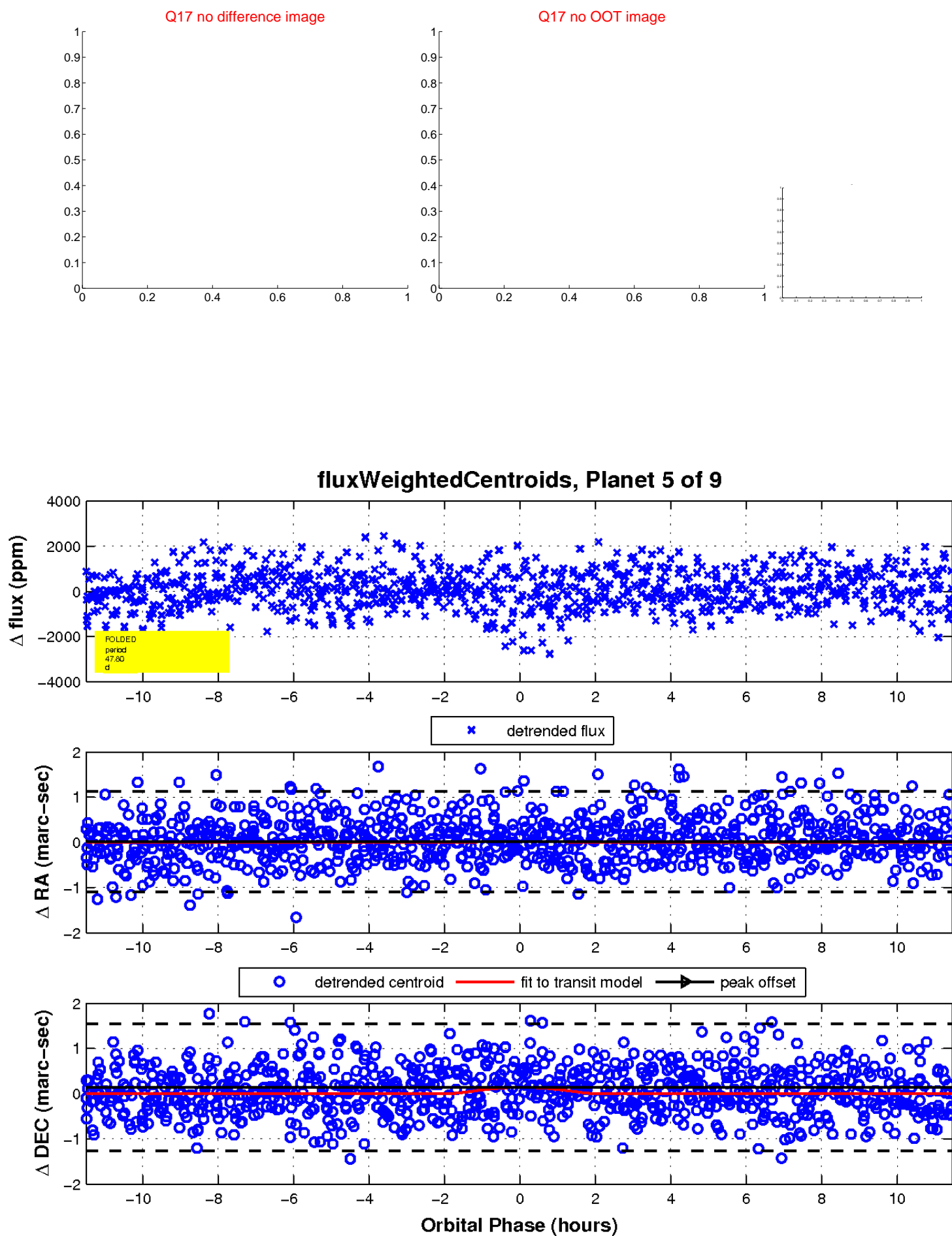
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

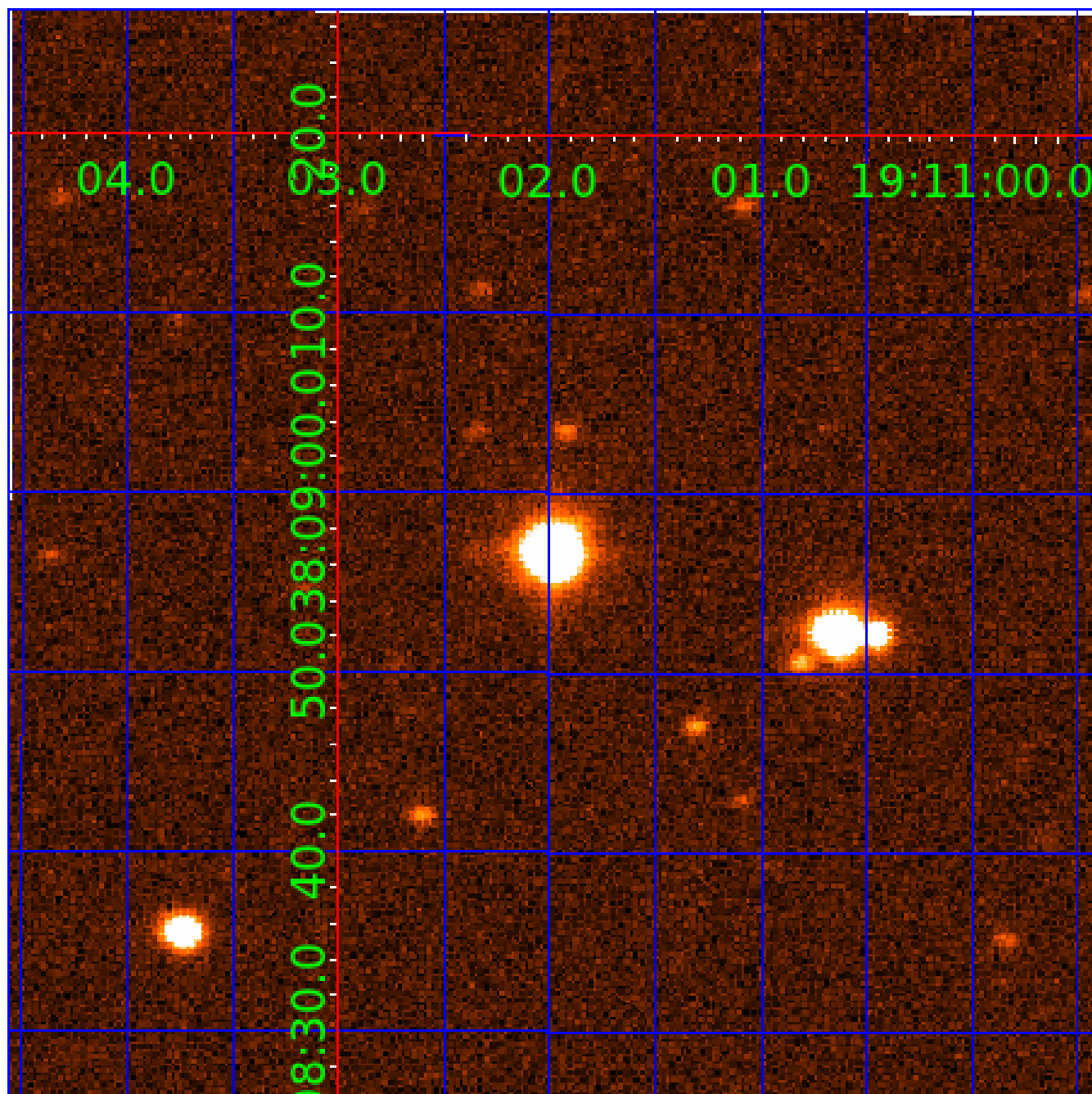


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

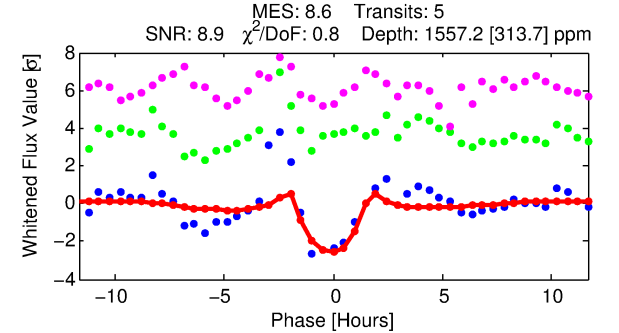
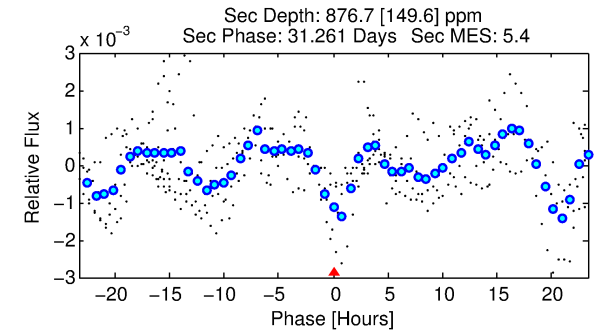
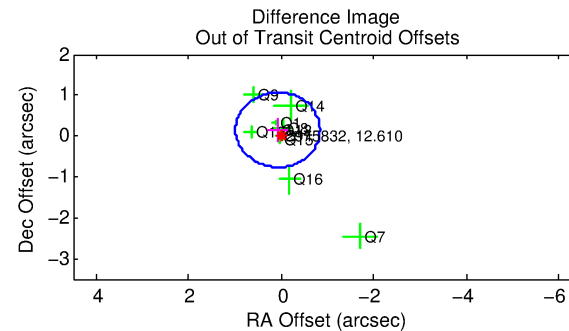
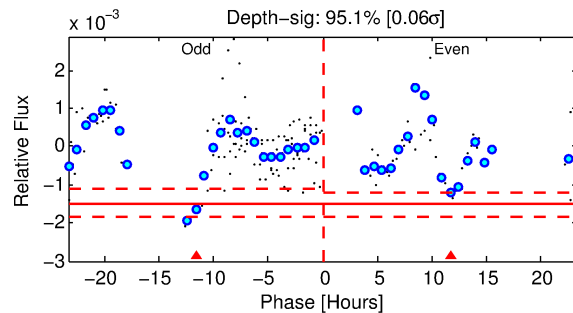
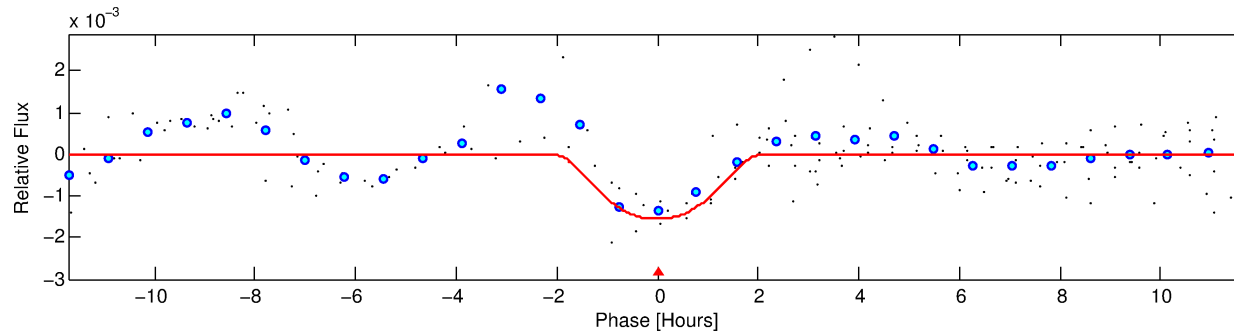
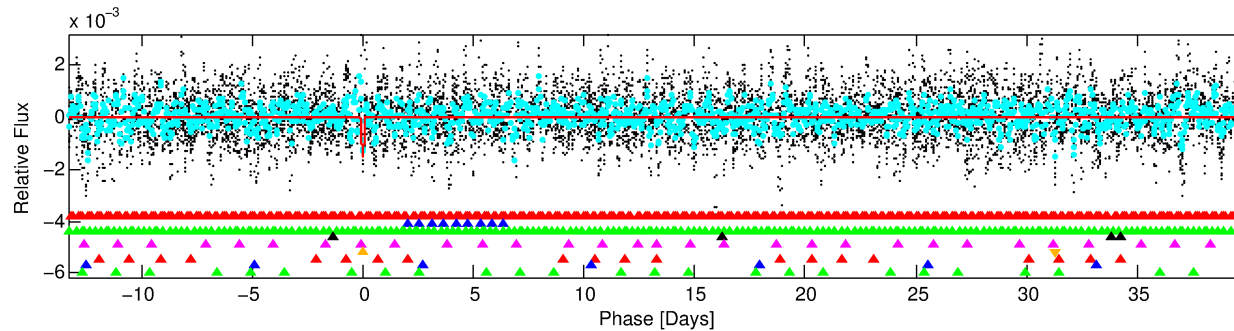
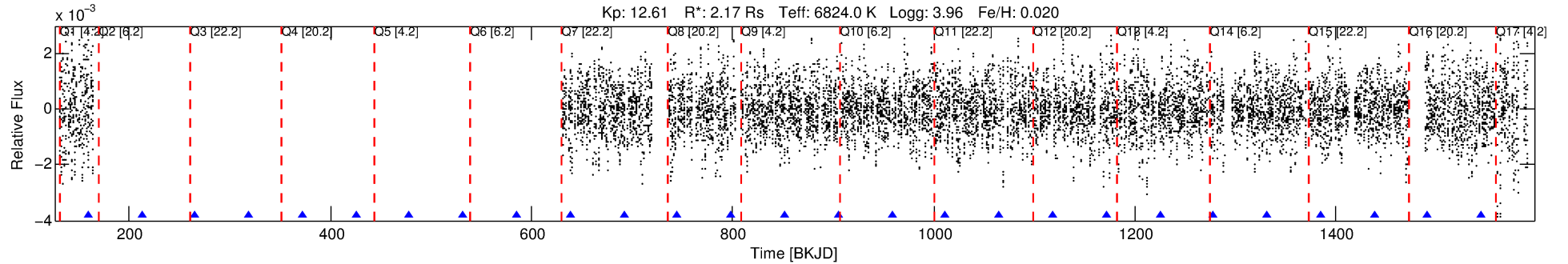
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-06

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 6 of 9 Period: 53.285 d



## DV Fit Results:

Period = 53.28521 [0.00058] d  
Epoch = 159.0963 [0.0111] BKJD  
Rp/R\* = 0.0469 [0.0145]  
a/R\* = 43.13 [9.15]  
b = 0.96 [0.04]  
Seff = 88.23 [45.96]  
Teq = 782 [102] K  
Rp = 11.13 [5.11] Re  
a = 0.3225 [0.1016] AU  
Ag = 404.82 [327.82] [1.23 $\sigma$ ]  
Teffp = 5420 [898] K [5.13 $\sigma$ ]

## DV Diagnostic Results:

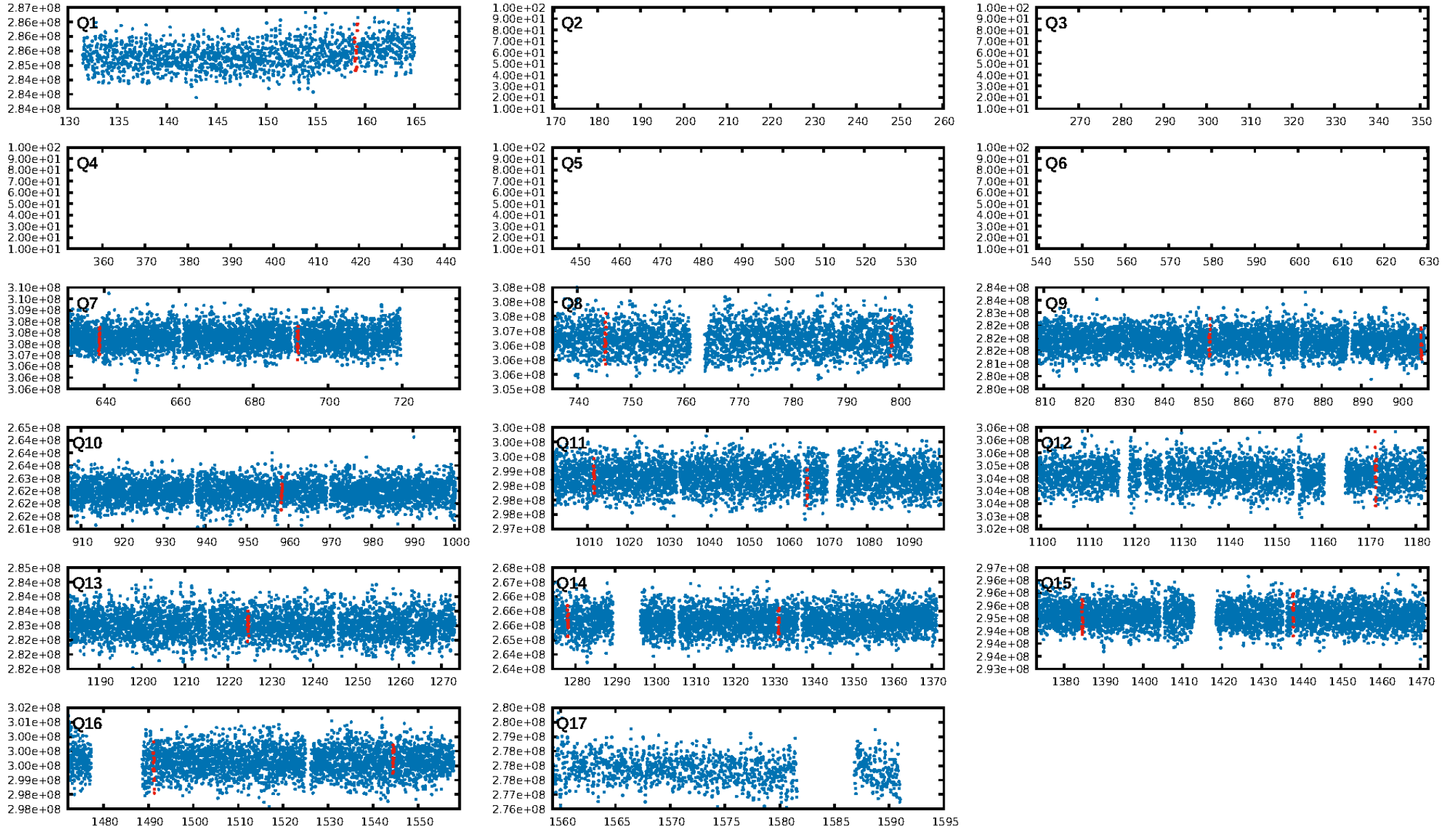
ShortPeriod-sig: 100.0% [24.04 $\sigma$ ]  
LongPeriod-sig: 100.0% [33.32 $\sigma$ ]  
ModelChiSquare2-sig: 40.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.715  
Centroid-sig: 2.9%  
Centroid-so: 0.095 arcsec [0.82 $\sigma$ ]  
OotOffset-rm: 0.168 arcsec [0.55 $\sigma$ ]  
OotOffset-st: 2/3/3/2 [10]  
KicOffset-rm: 0.154 arcsec [0.55 $\sigma$ ]  
KicOffset-st: 2/3/3/2 [10]  
DiffImageQuality-fgm: 0.70 [7/10]  
DiffImageOverlap-fno: 0.27 [3/11]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:26 Z

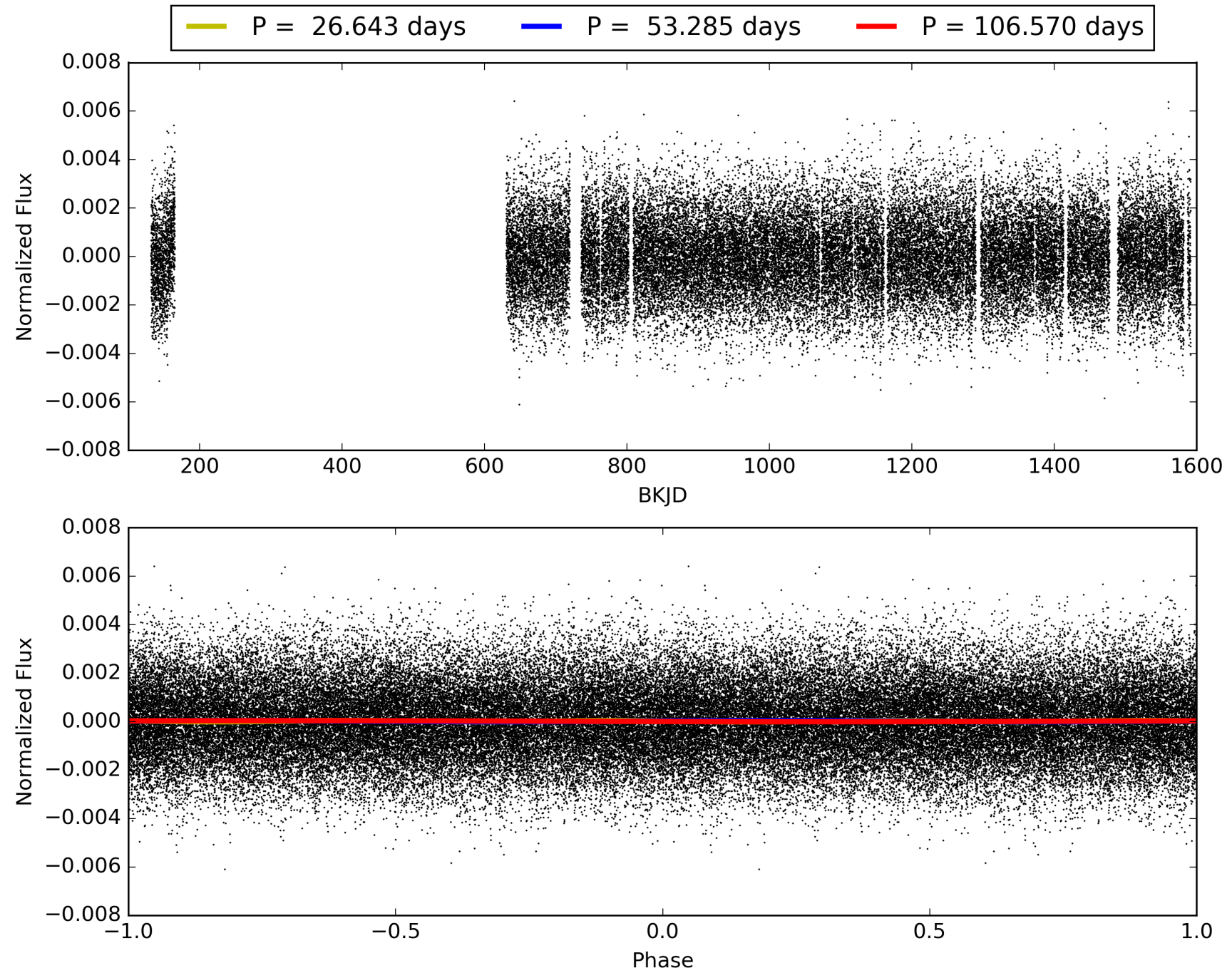
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 002975832-06, PDC Light Curves

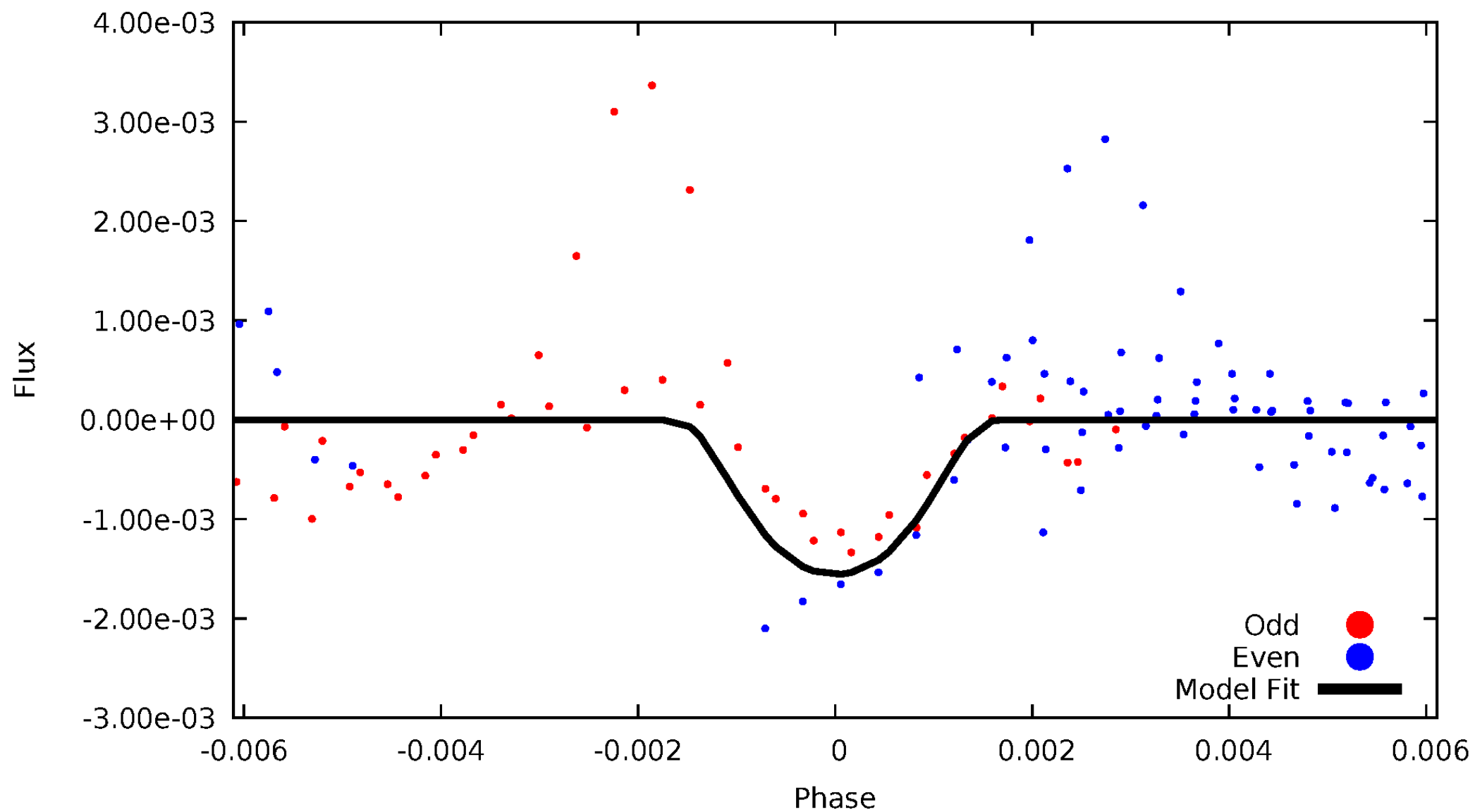


TCE 002975832-06



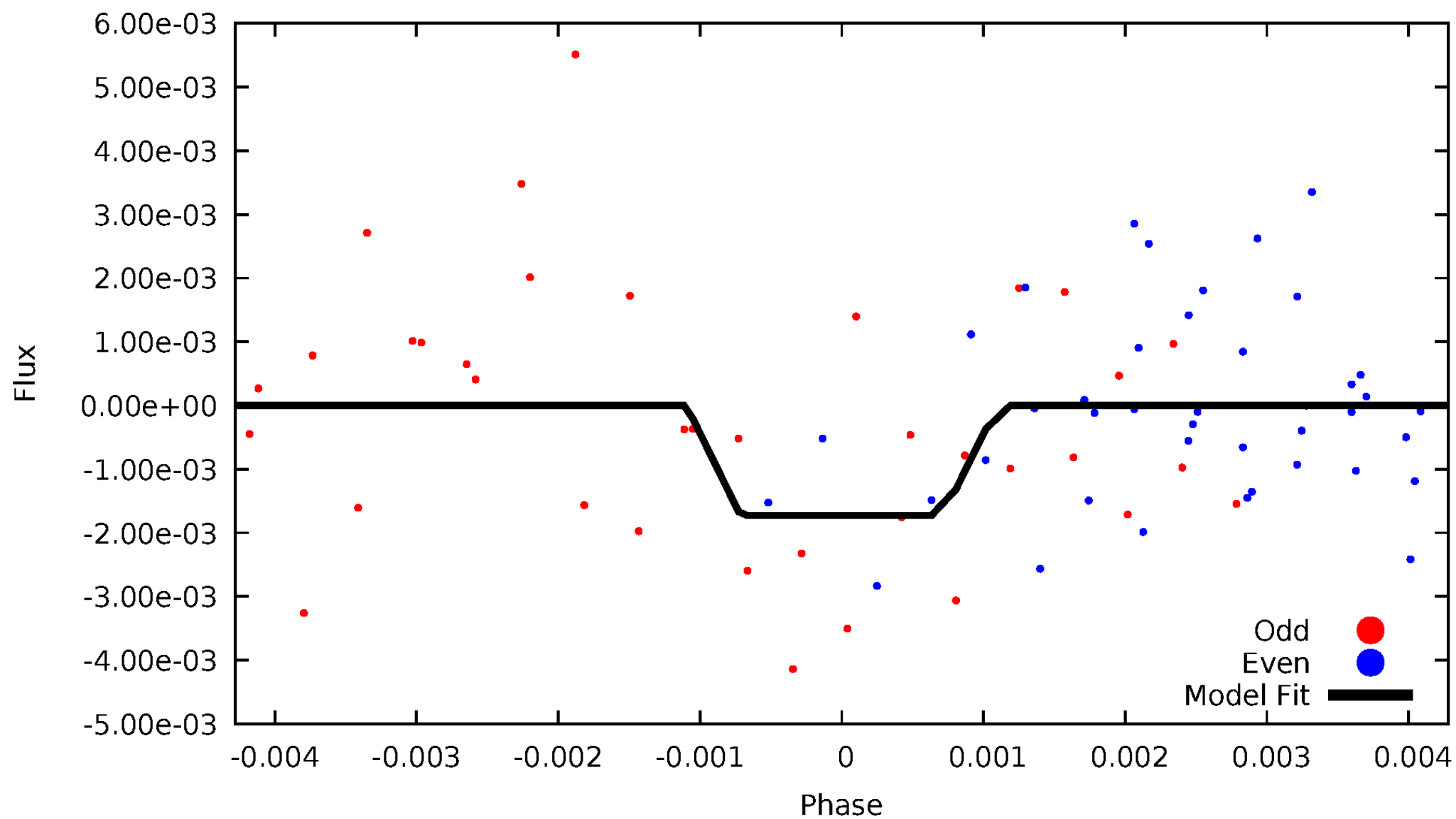
# DV Odd/Even

TCE 002975832-06



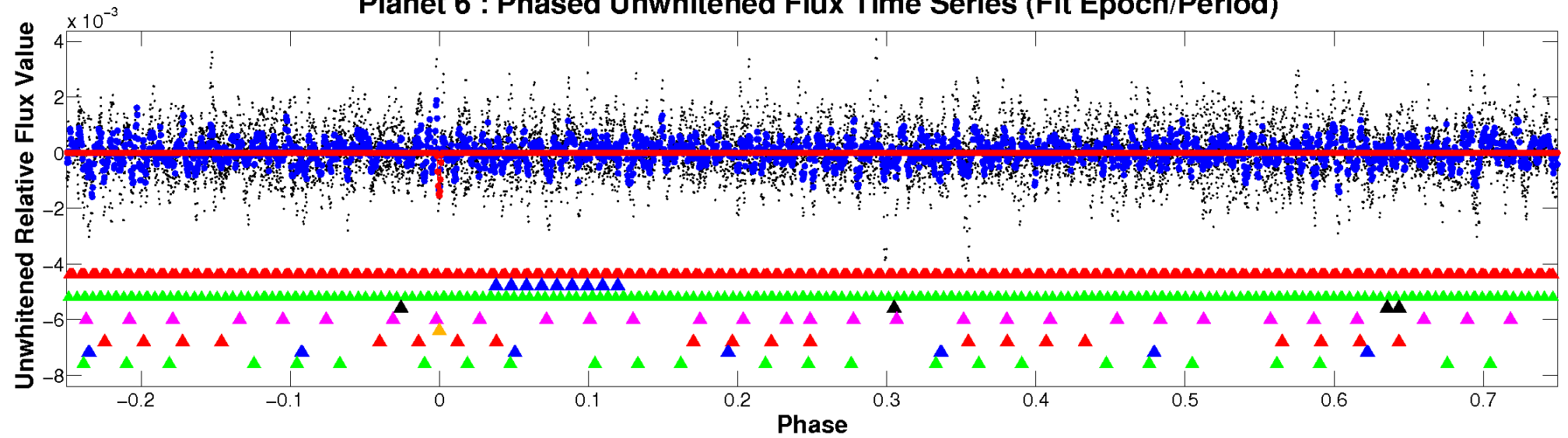
# ALT Odd/Even

TCE 002975832-06

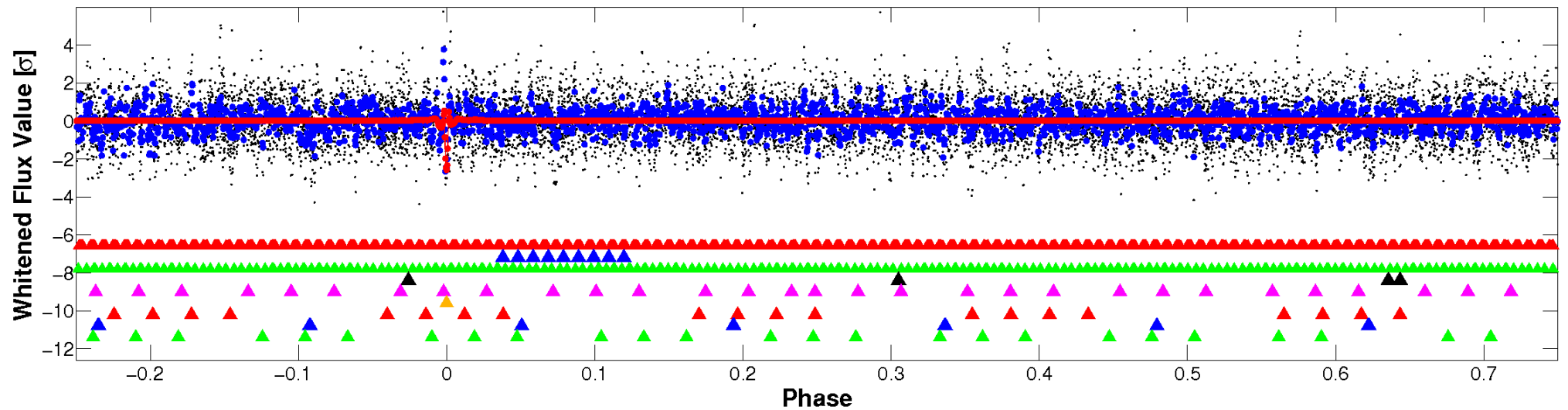


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

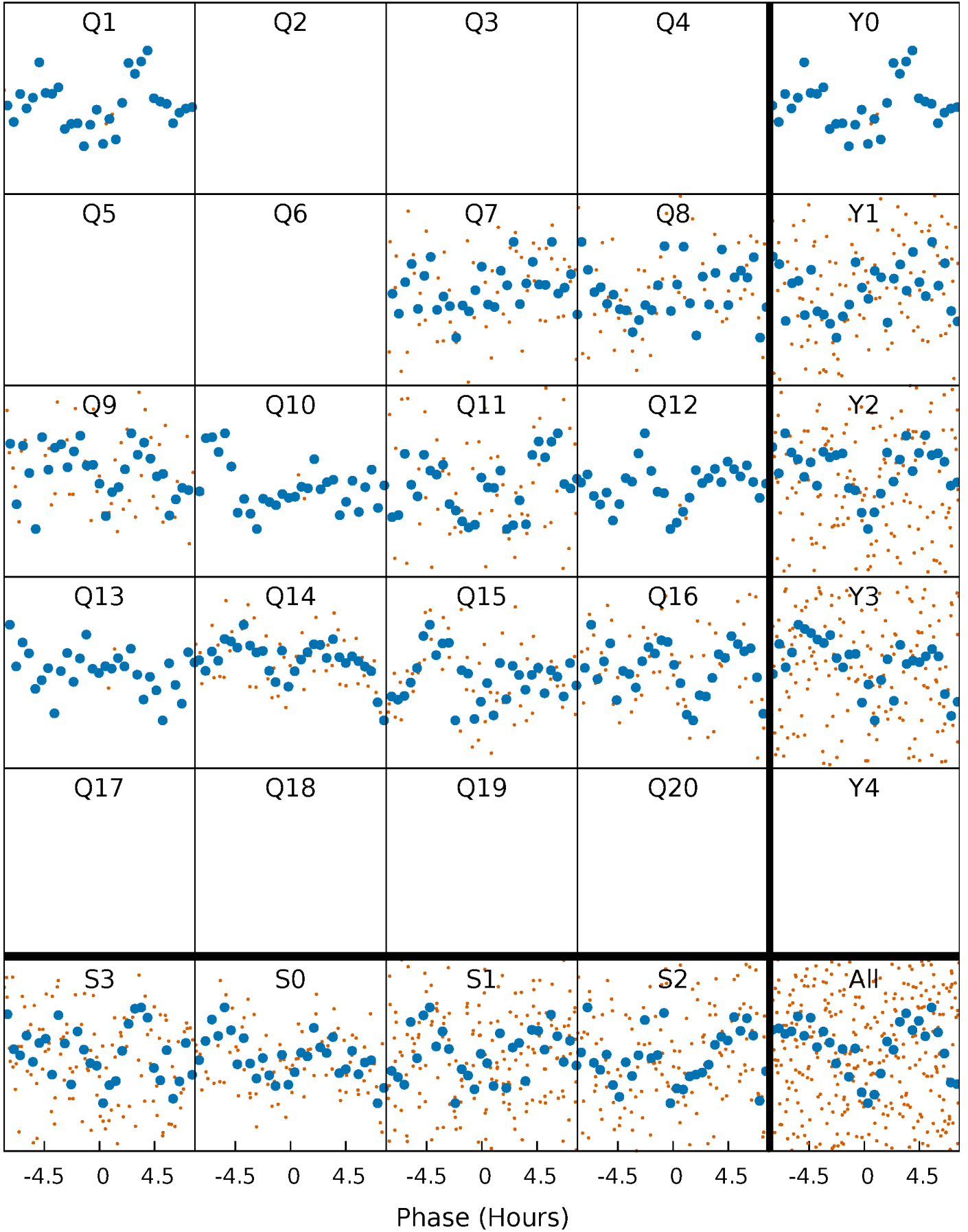


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



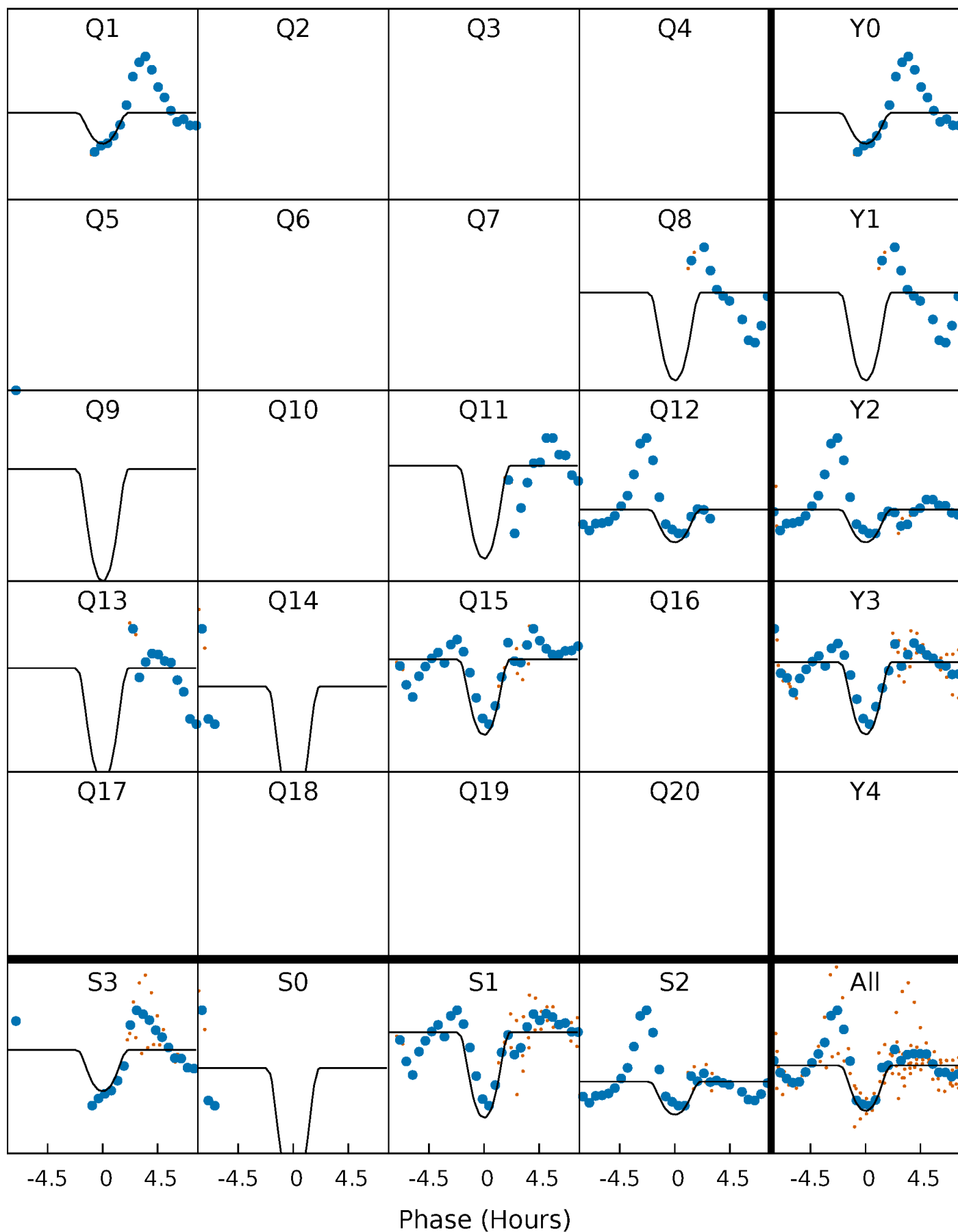
# PDC Quarter-Phased Transit Curves

TCE 002975832-06   P= 53.285211 Days    $T_0=159.096330$  (BKJD)



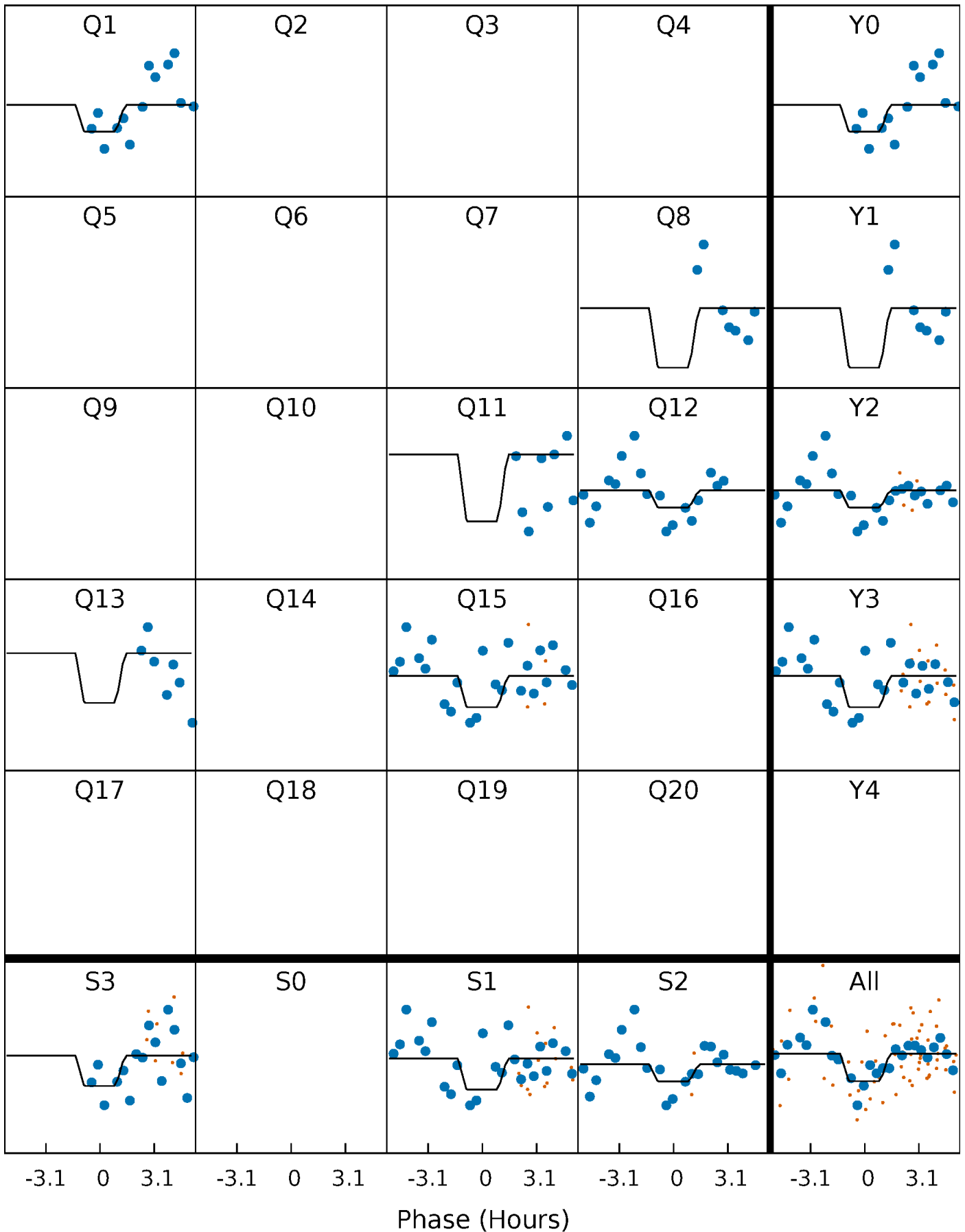
# DV Quarter-Phased Transit Curves

TCE 002975832-06   P= 53.285211 Days    $T_0=159.096330$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 002975832-06 P= 53.285803 Days  $T_0=159.086046$  (BKJD)

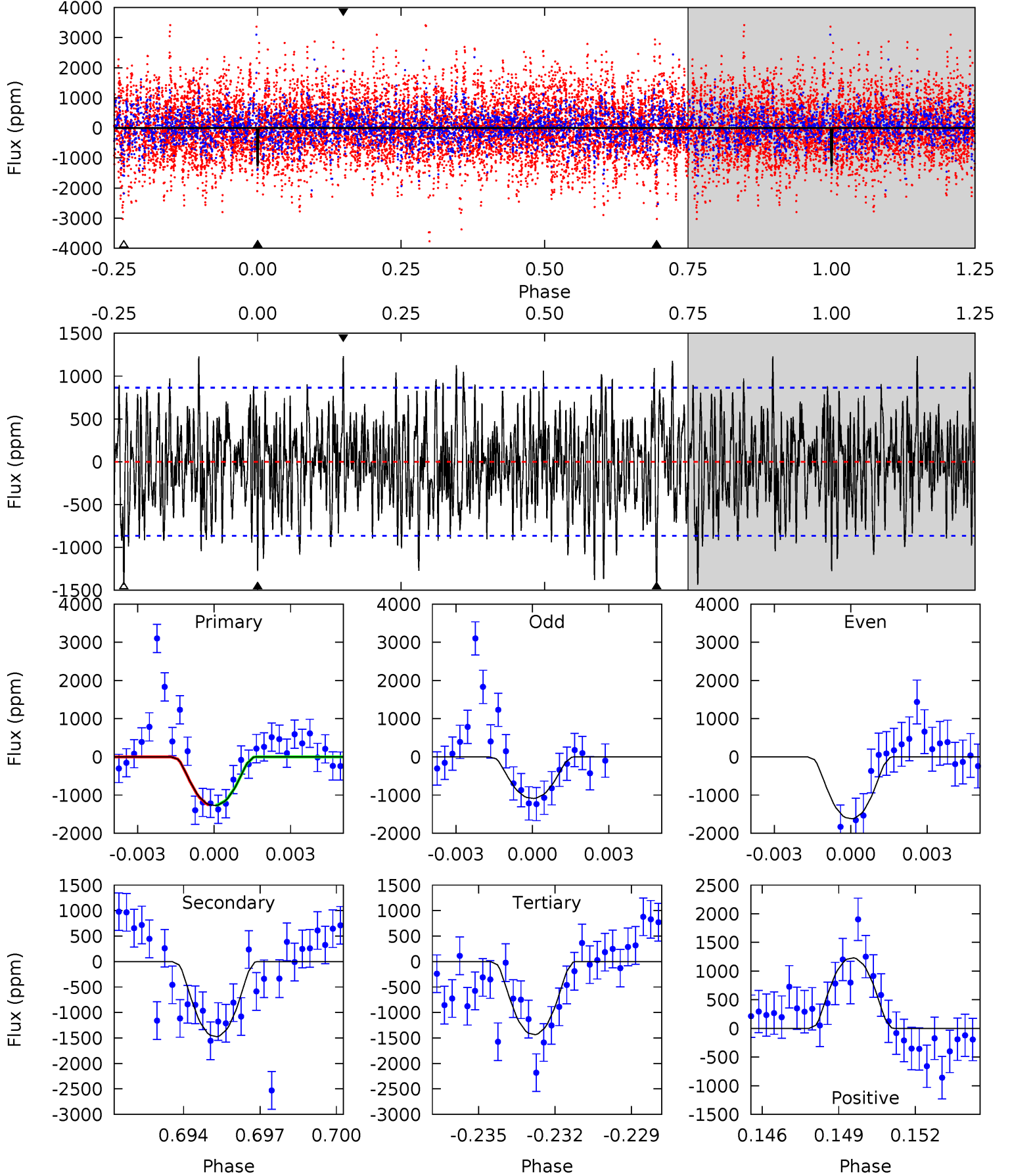




# DV Model-Shift Uniqueness Test

002975832-06, P = 53.285211 Days, E = 105.811119 Days

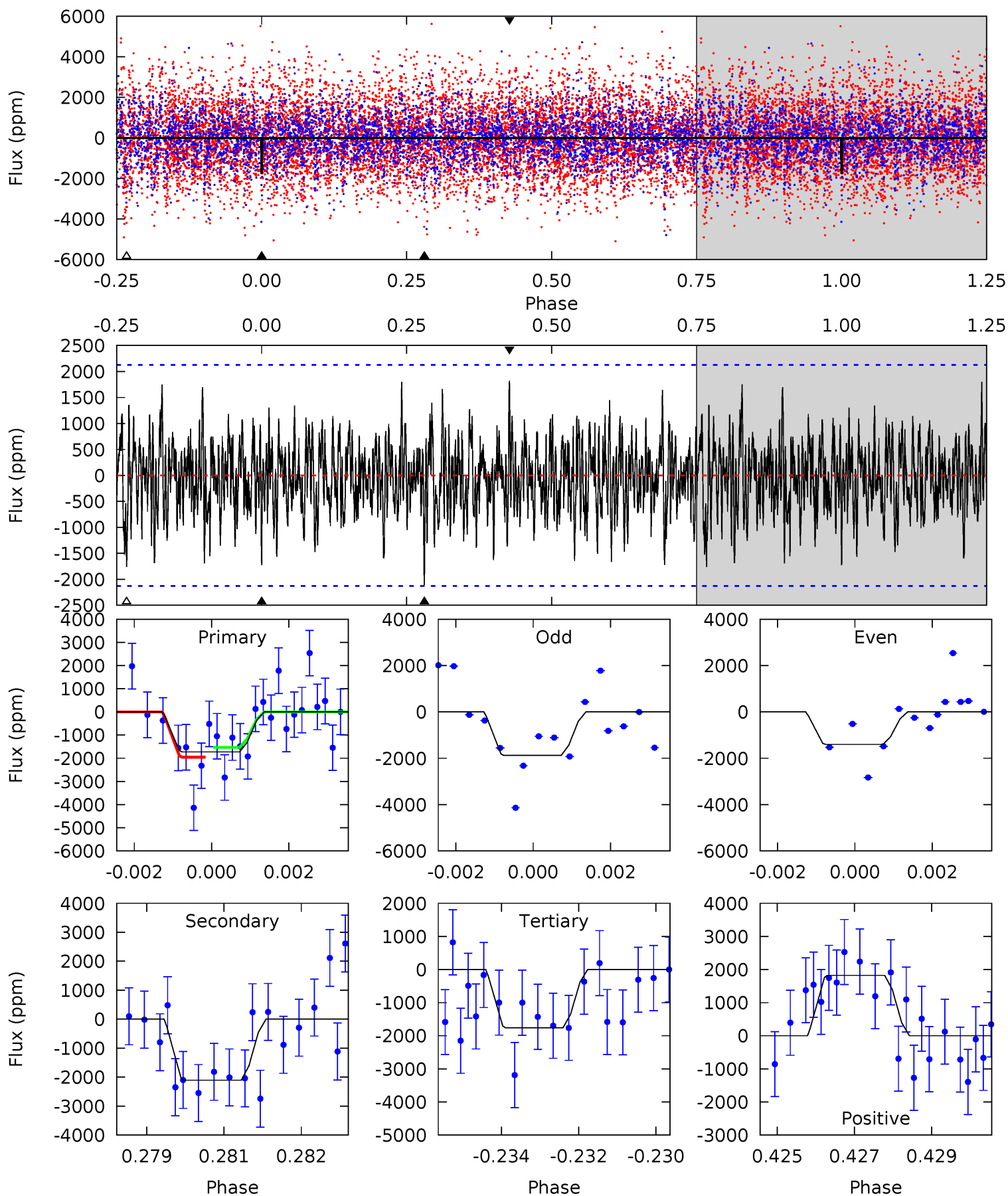
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.74	8.95	8.71	7.47	5.25	2.96	2.61	-0.97	0.26	0.24	1.48	1.57	0.72	0.46	0.03



# Alt Model-Shift Uniqueness Test

002975832-06, P = 53.285803 Days, E = 105.800243 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
4.34	5.30	4.43	4.59	5.35	3.13	1.42	-0.09	-0.24	0.86	0.71	0.61	1.10	0.46	0.51



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1475 \pm 165$	$10.49^{+3.99}_{-3.47}$	$1073^{+79}_{-98}$	$6159^{+1378}_{-817}$	$767^{+966}_{-385}$
Alt.	$-2106 \pm 398$	$9.50^{+3.58}_{-3.55}$	$1070^{+88}_{-106}$	$7144^{+2081}_{-1114}$	$1344^{+2016}_{-667}$

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

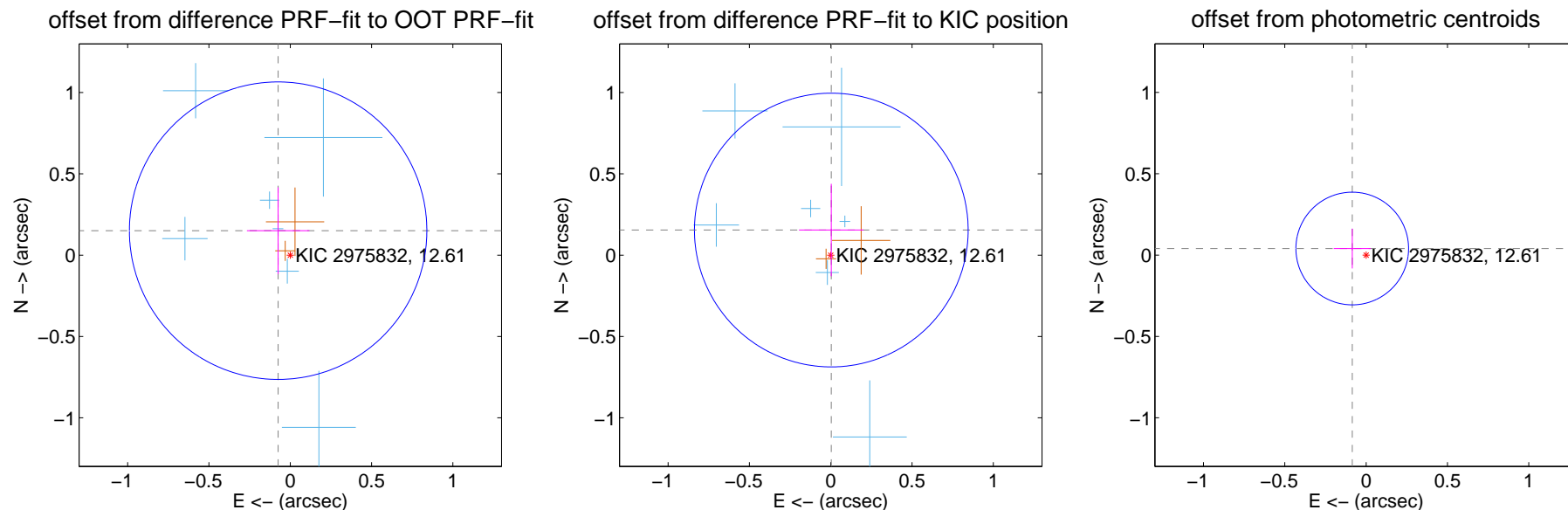
## DV Centroid Data

Supplemental centroid analysis for 002975832-06. Kepler magnitude: 12.61. Transit SNR 8.89

There are 7 quarters with good PRF difference image offsets

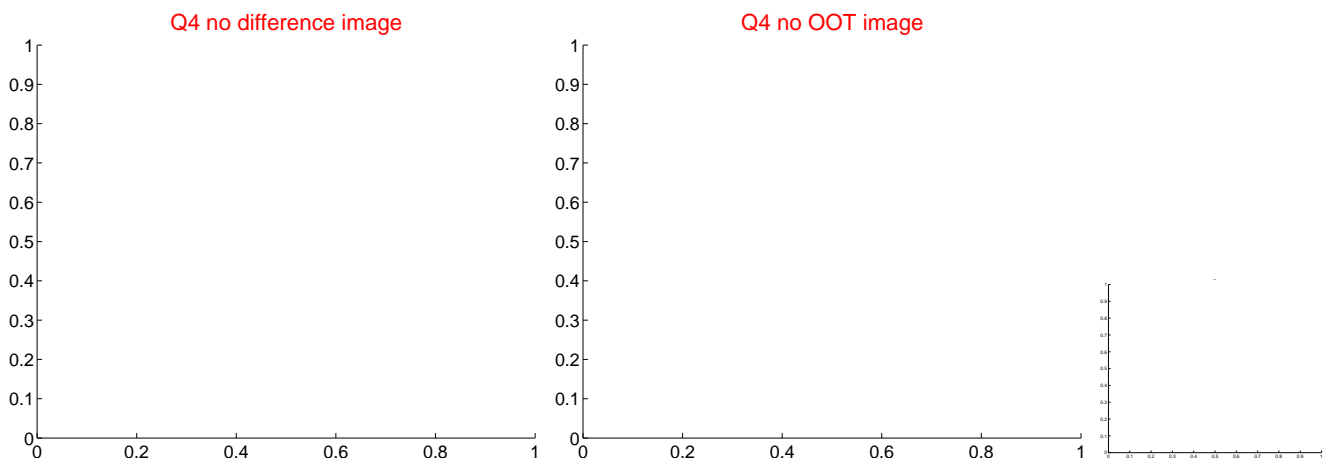
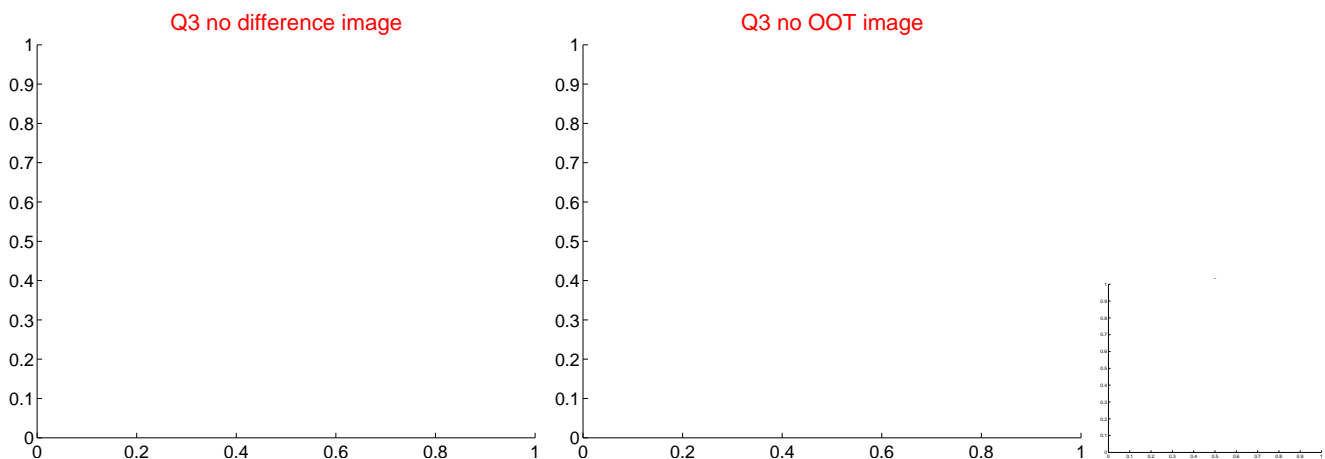
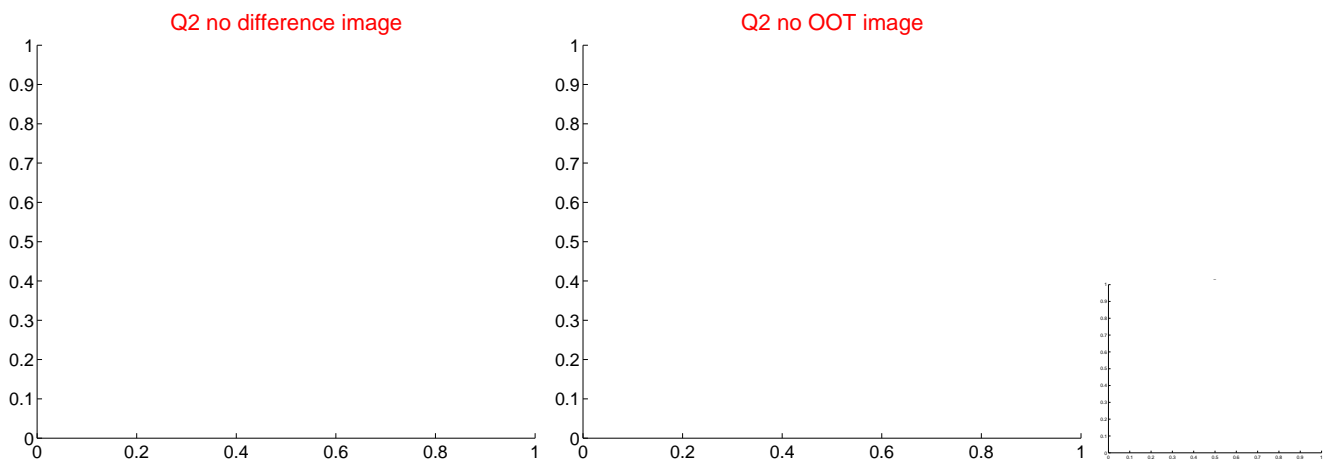
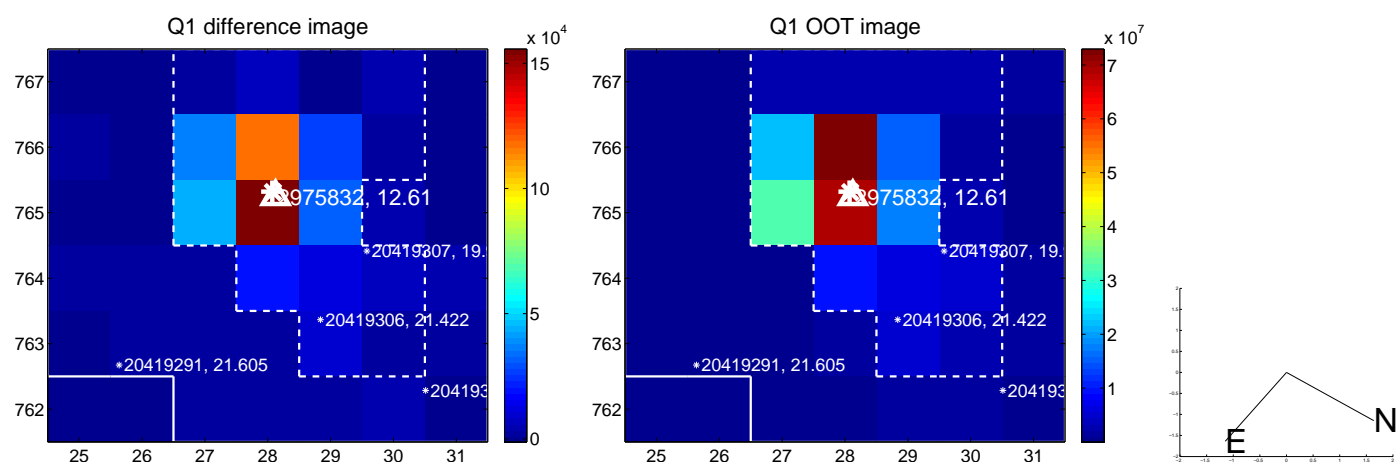
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.168 \pm 0.305$	0.55	$0.075 \pm 0.192$	$0.151 \pm 0.266$
PRF-fit source offset from KIC position	$0.154 \pm 0.281$	0.55	$-0.004 \pm 0.199$	$0.154 \pm 0.284$
photometric centroid source offset	$0.09 \pm 0.12$	0.82	$0.09 \pm 0.11$	$0.04 \pm 0.12$

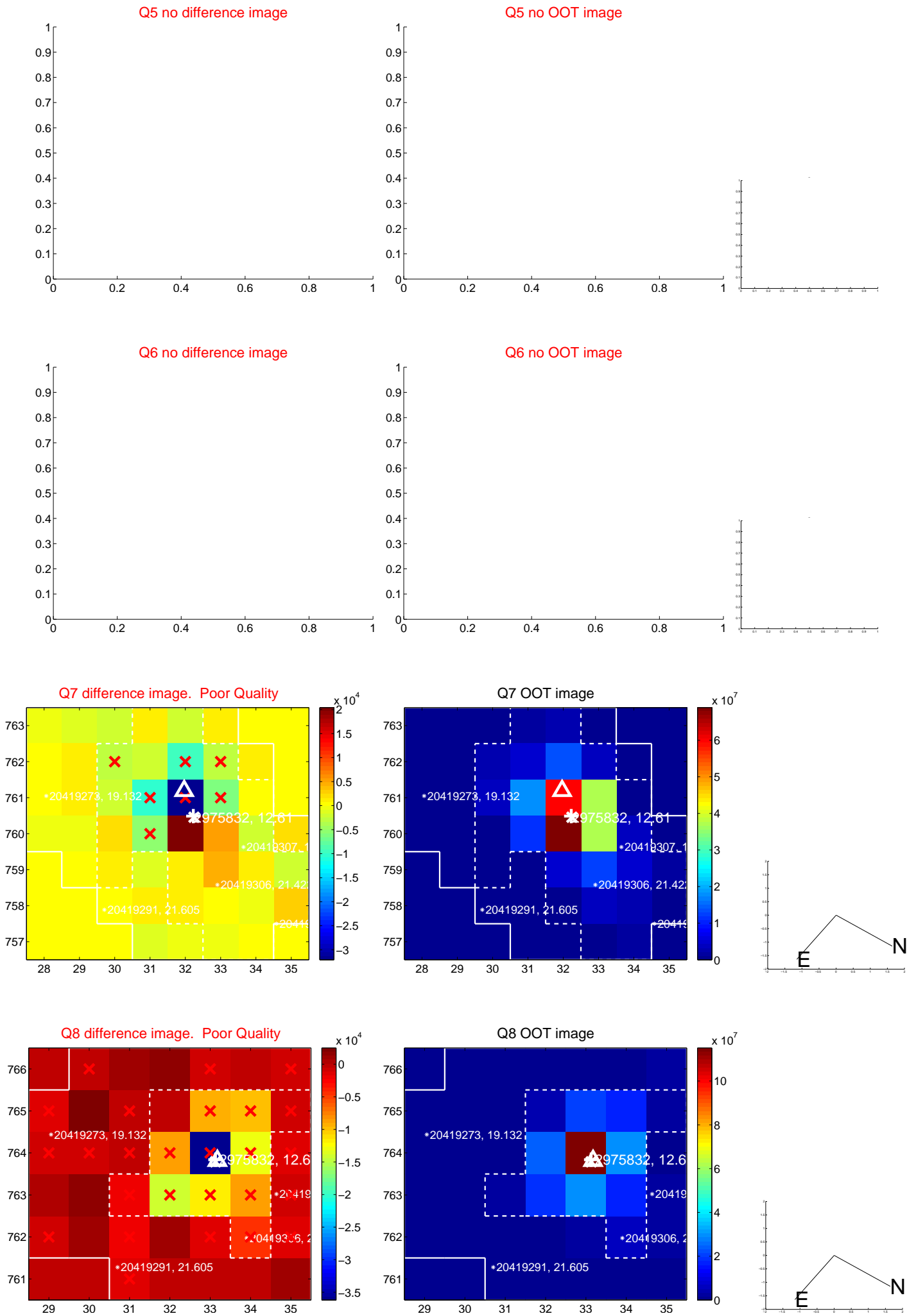


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

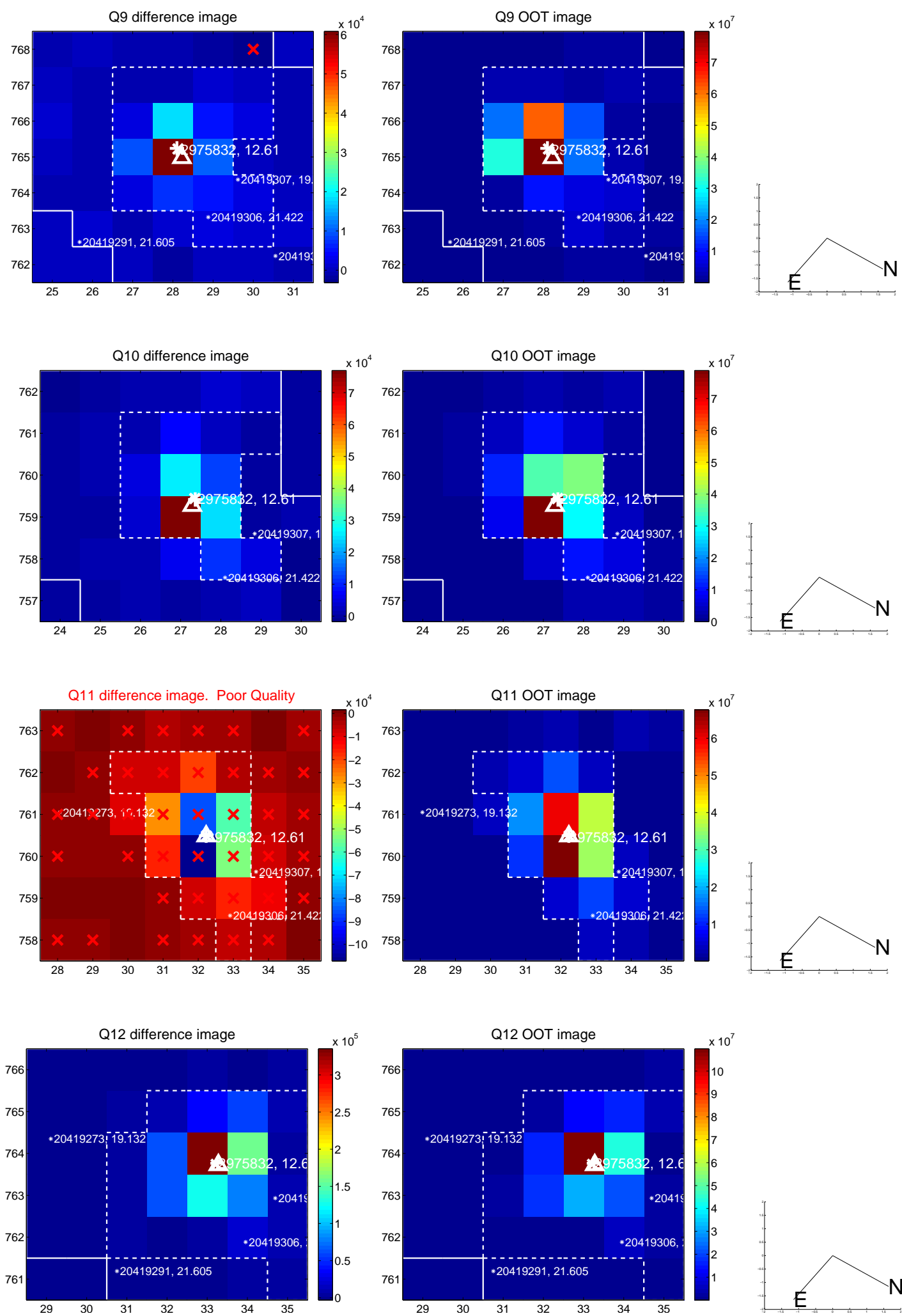
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



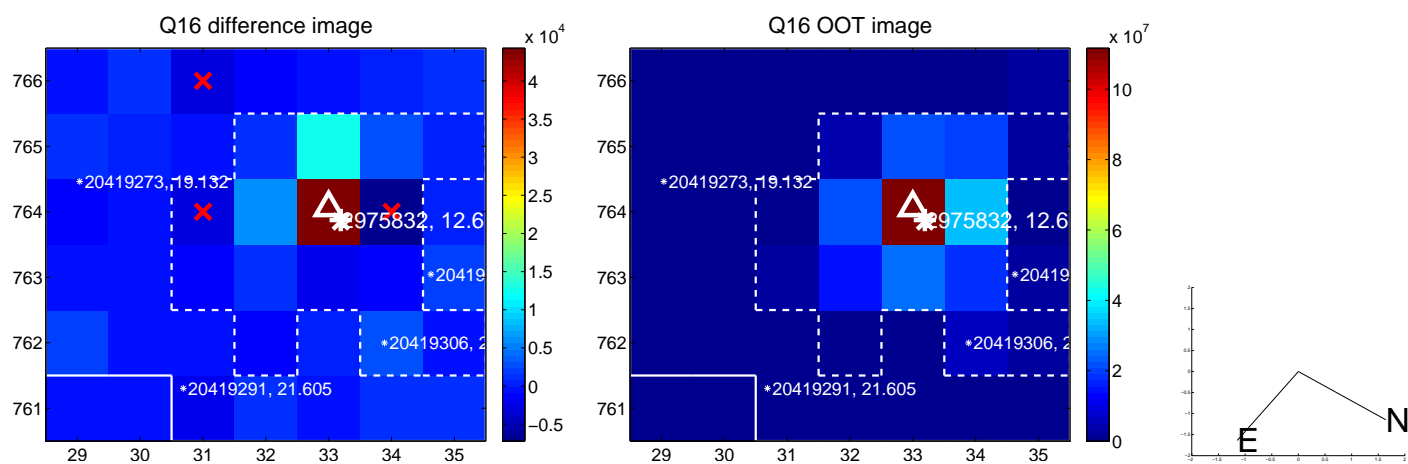
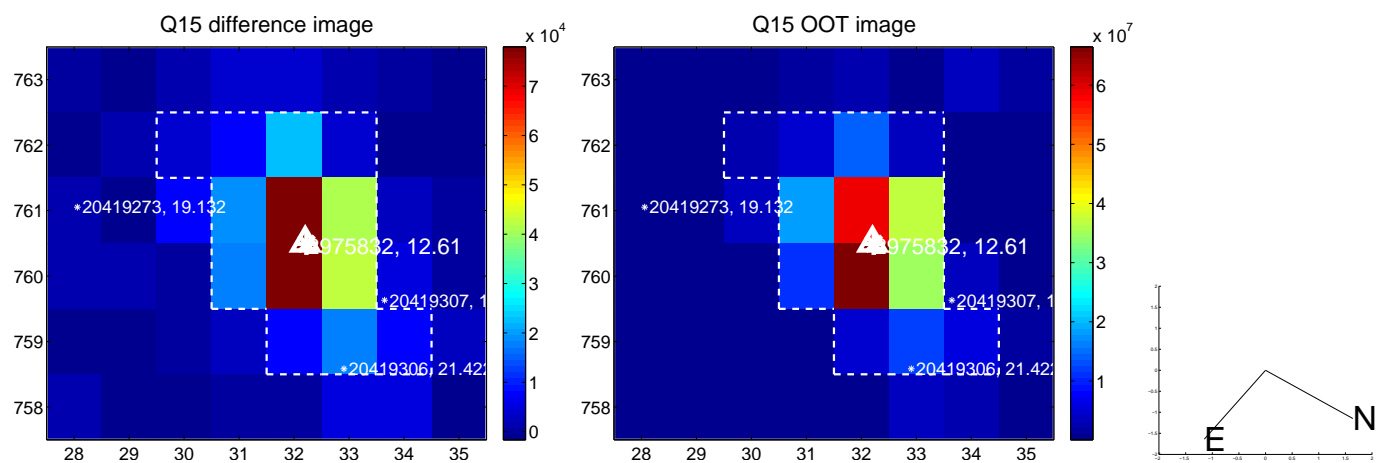
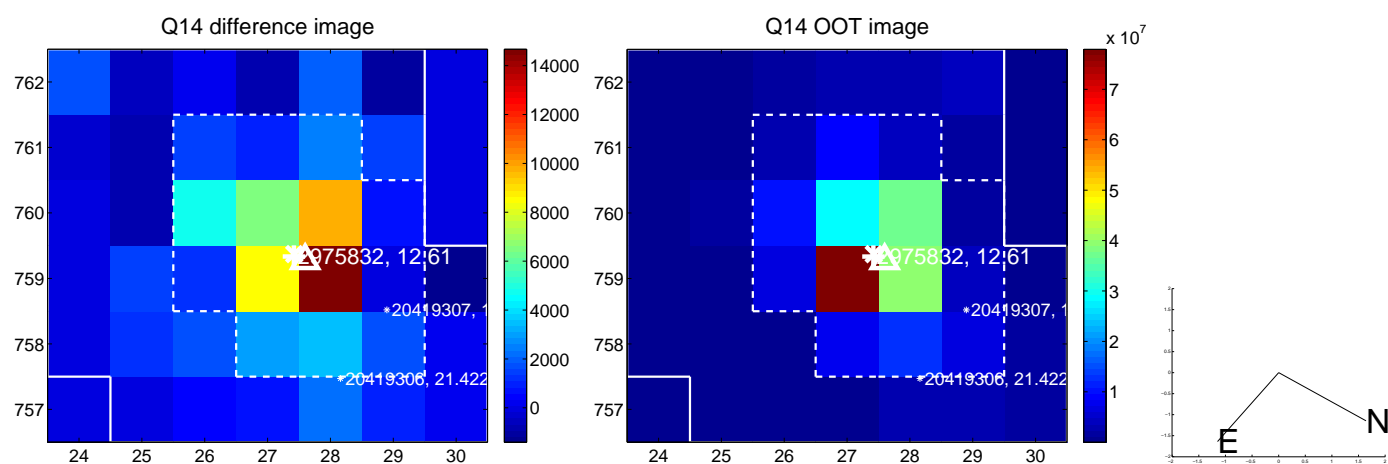
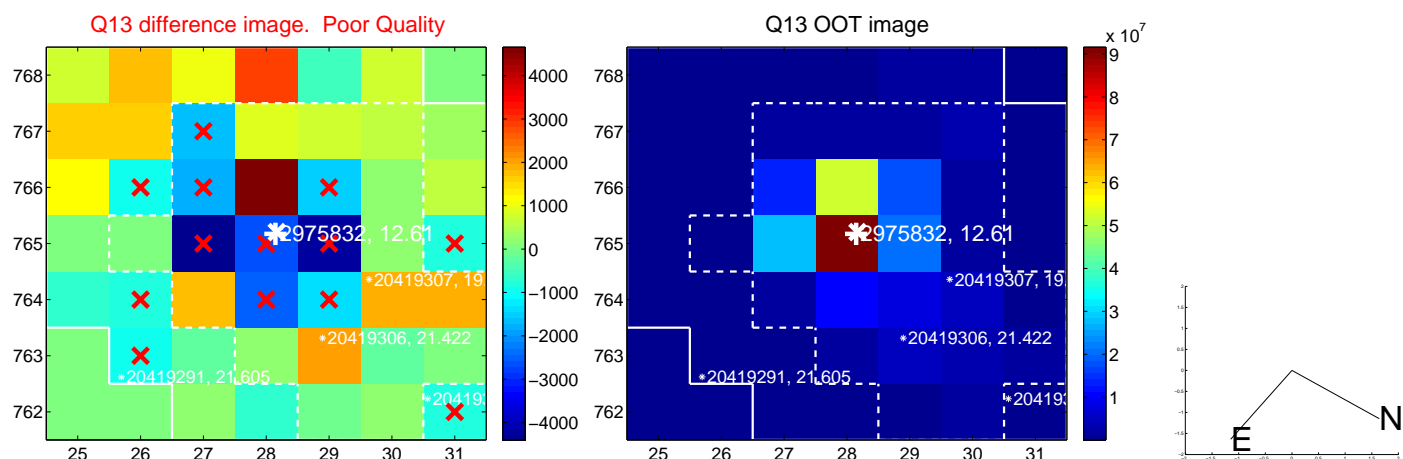
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

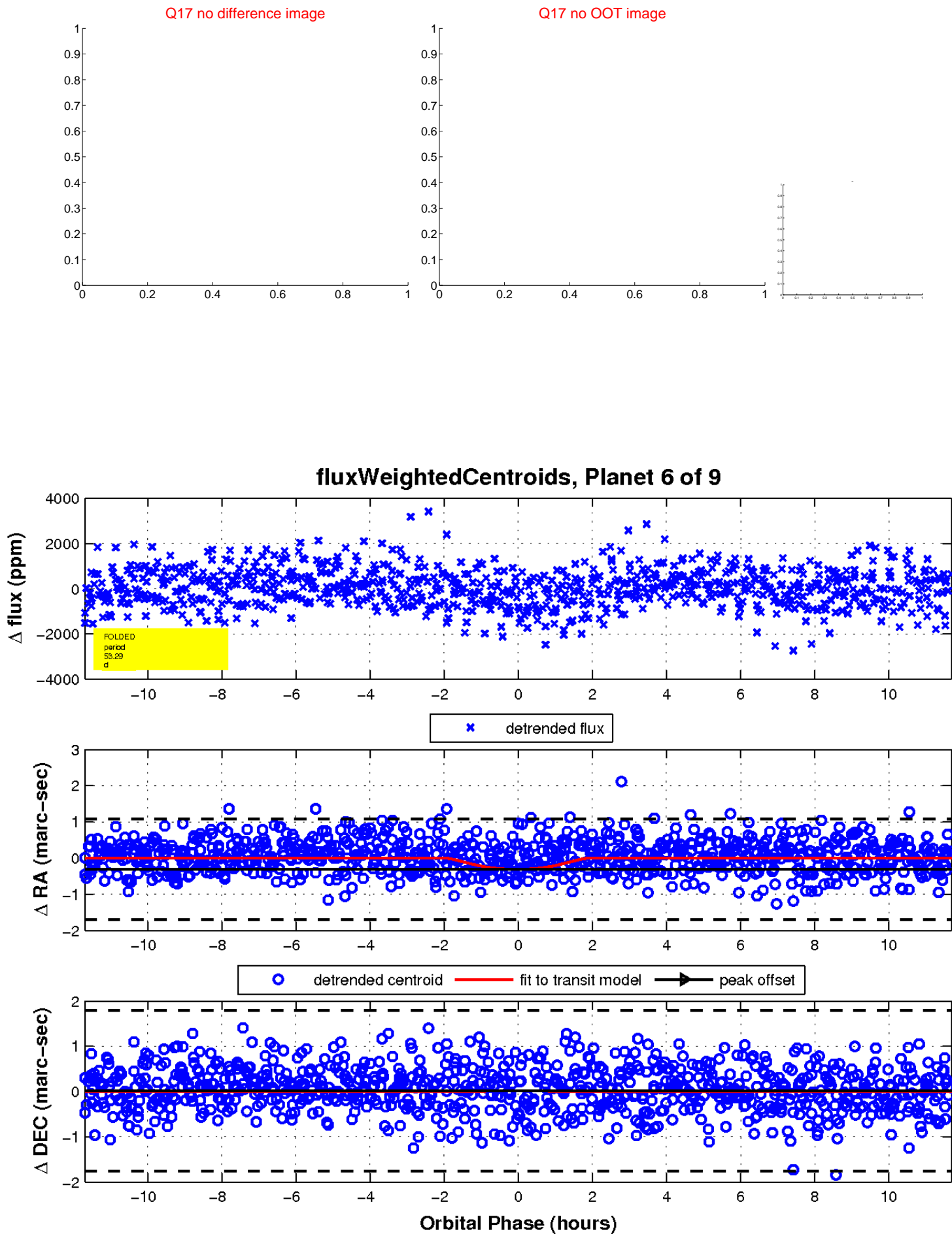


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



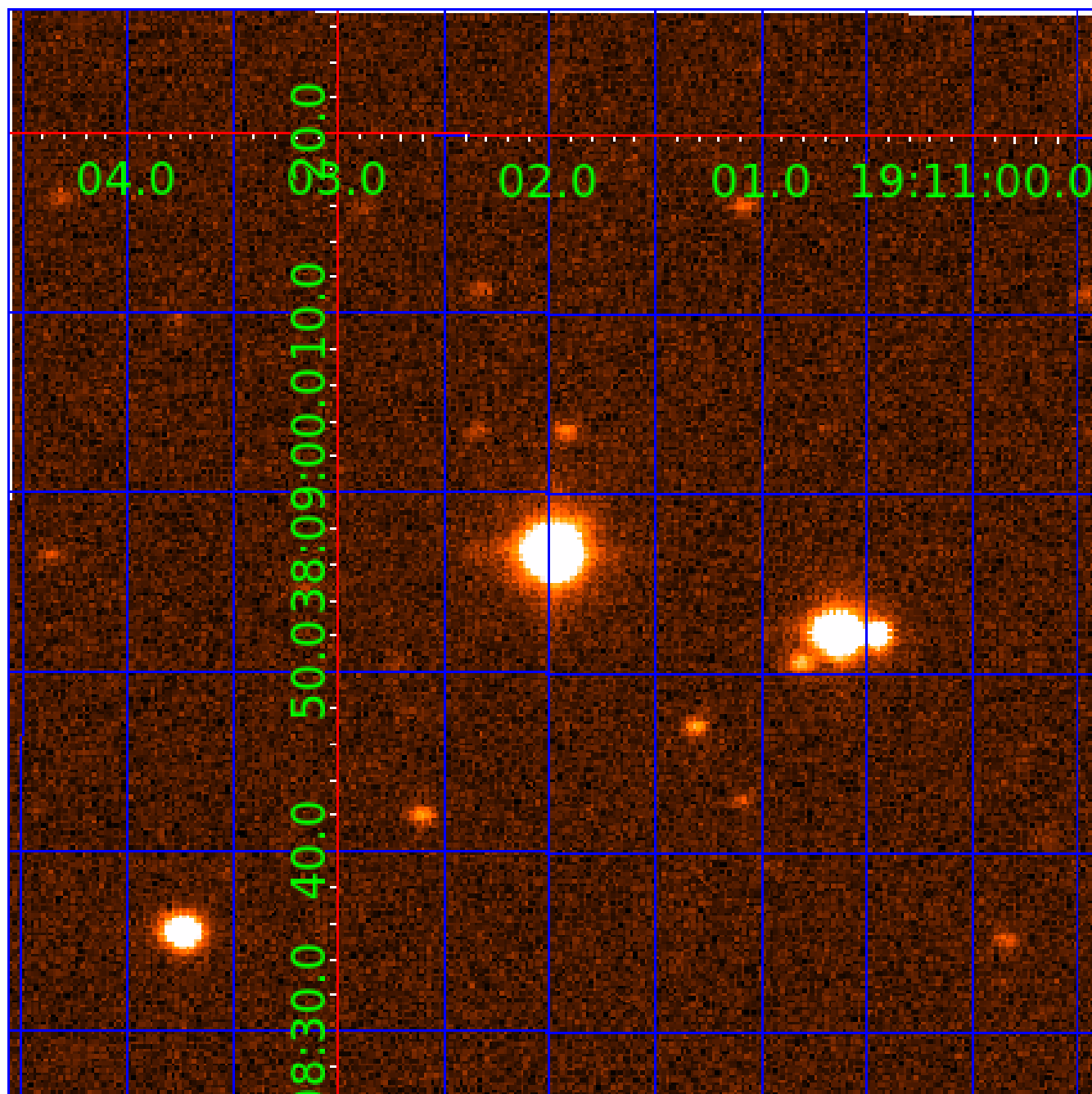


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

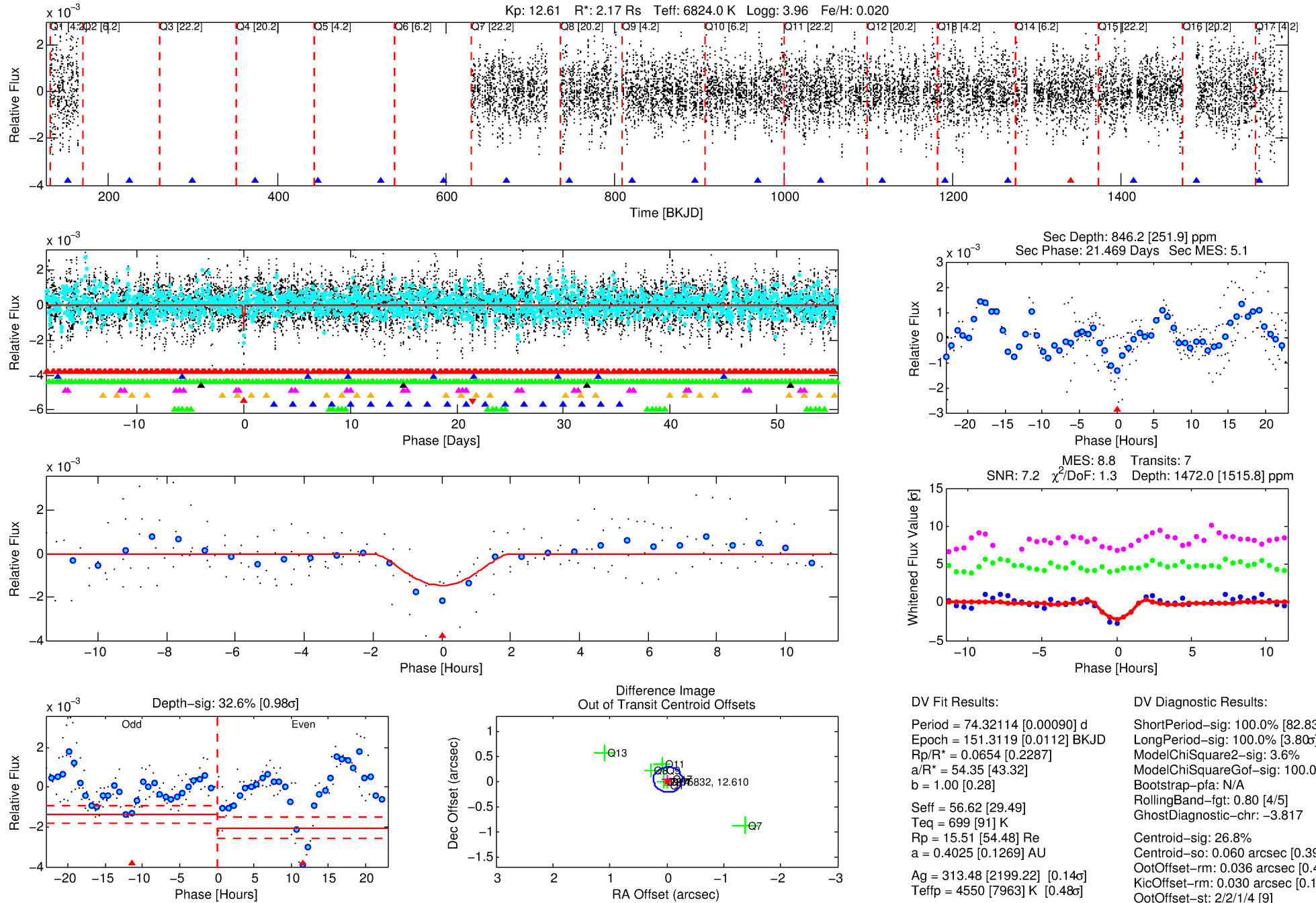
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-07

No Significant Match Found

# DV One-Page Summary

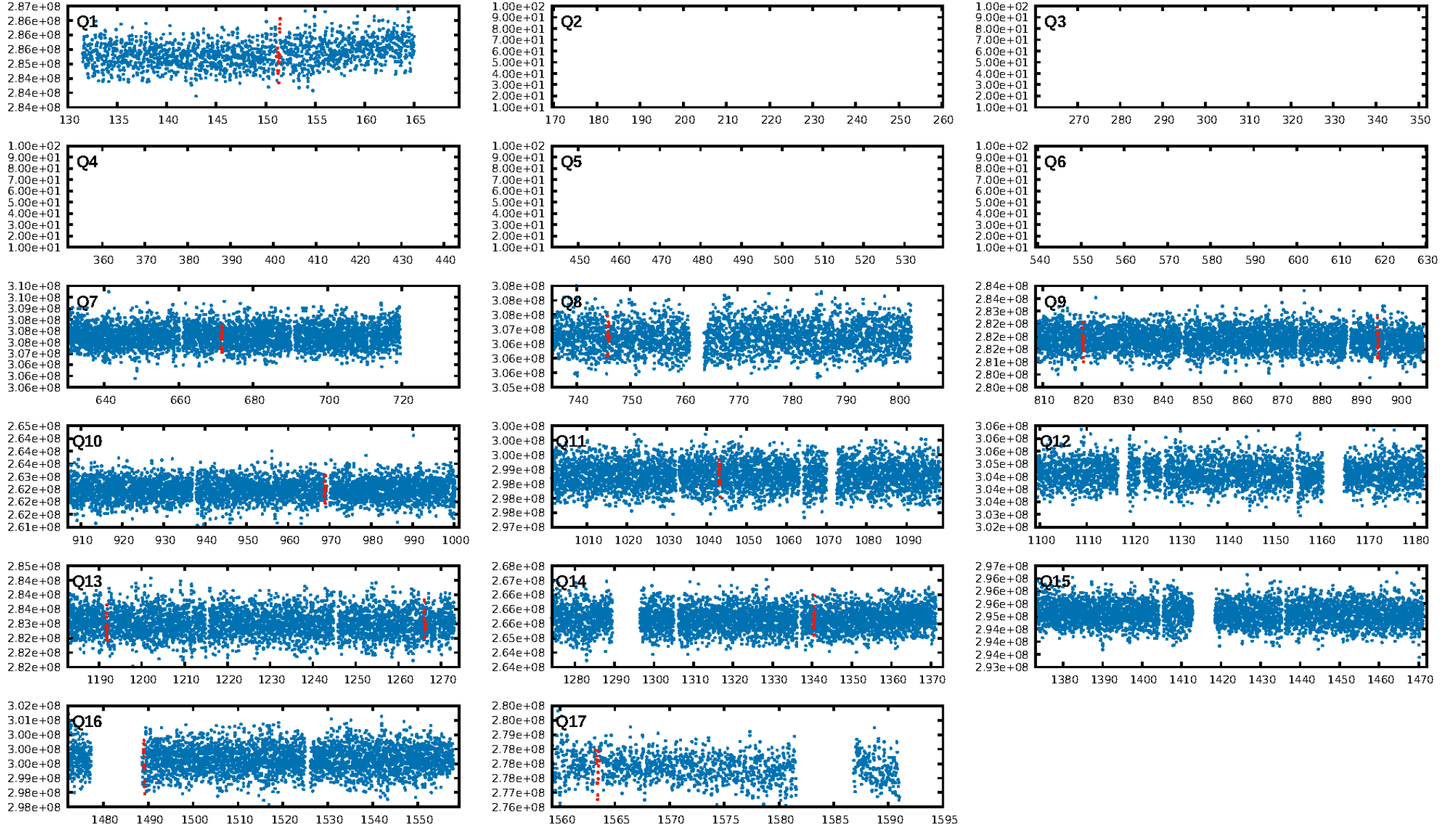
KIC: 2975832 Candidate: 7 of 9 Period: 74.321 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:29 Z

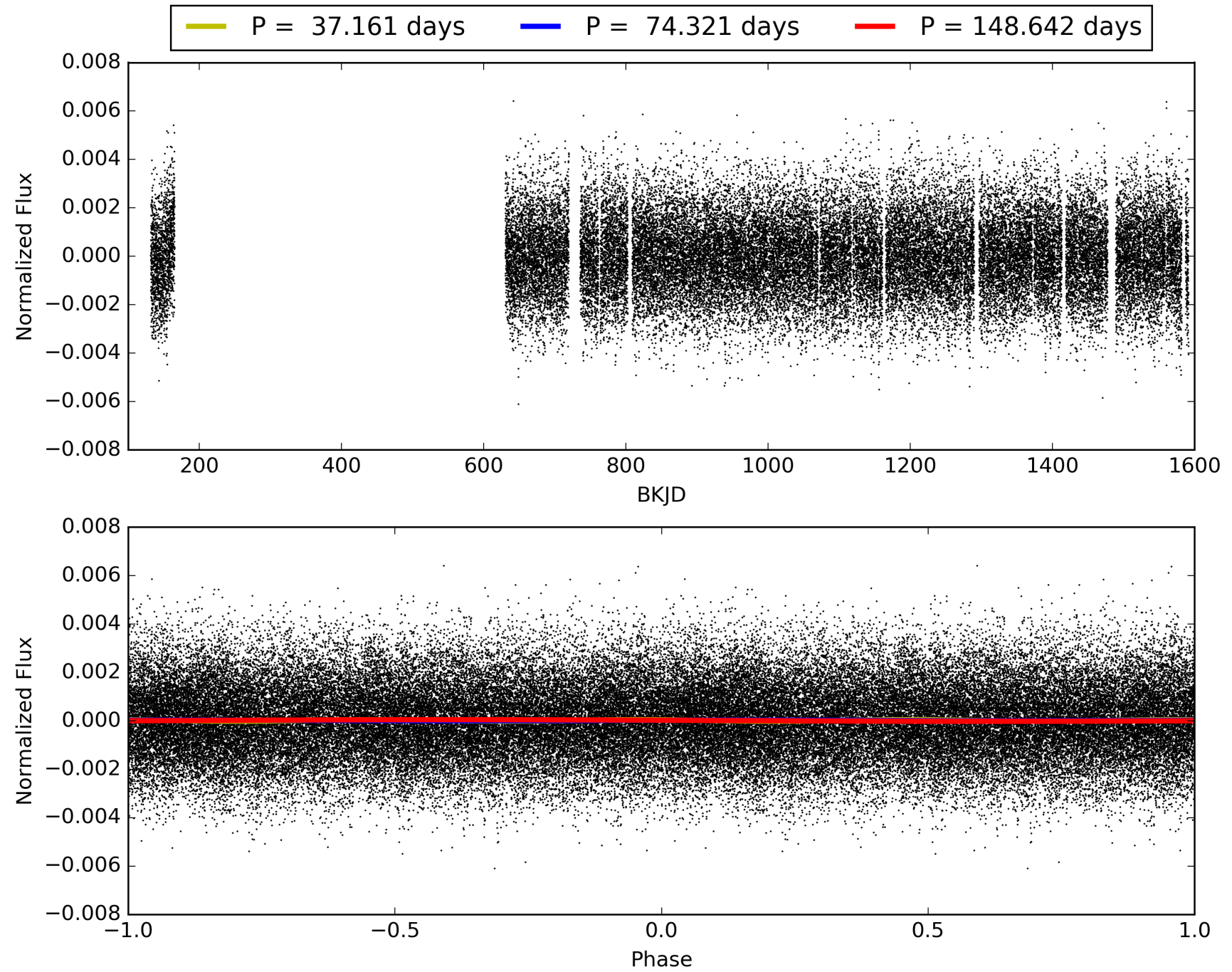
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 002975832-07, PDC Light Curves



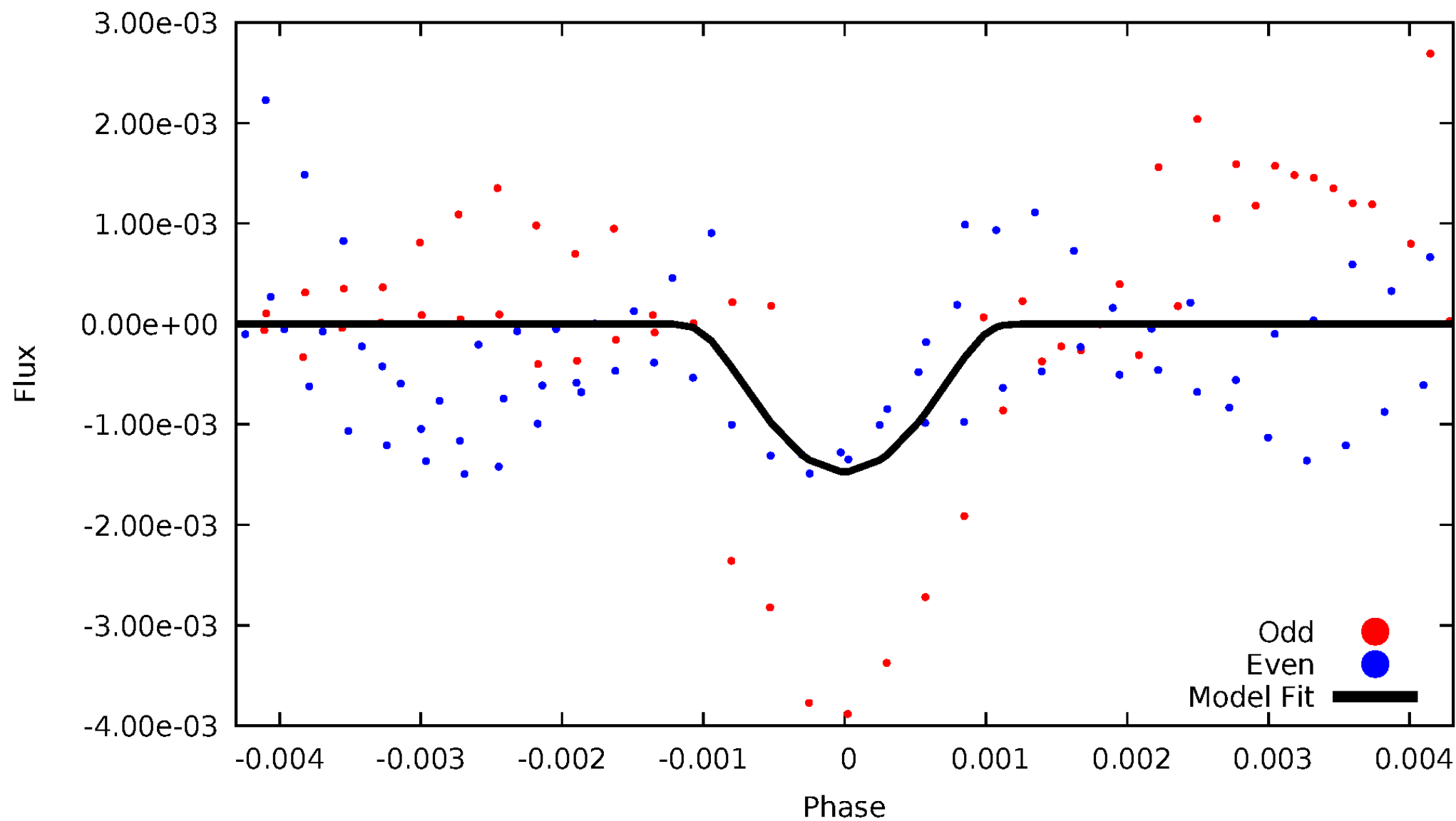


# TCE 002975832-07



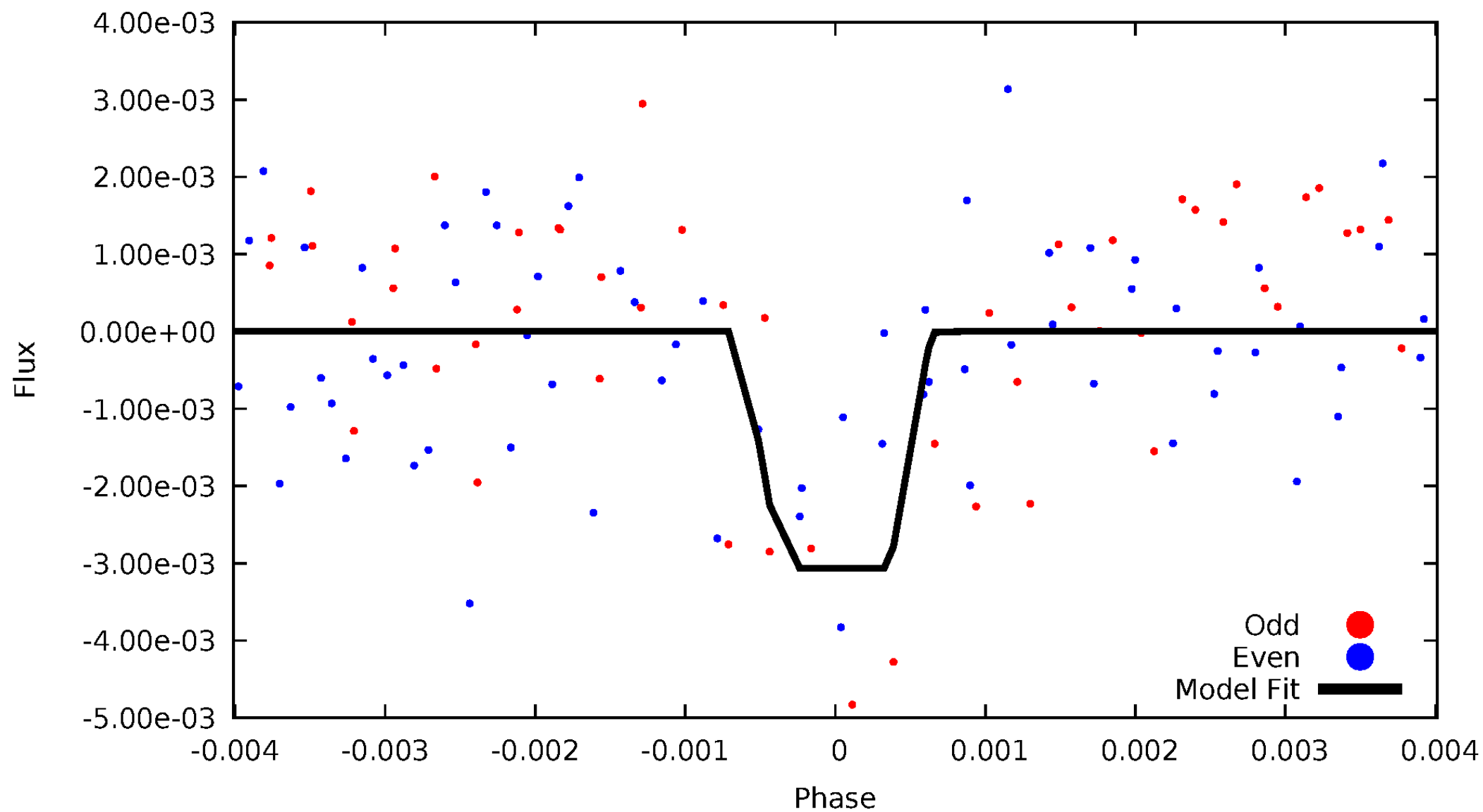
# DV Odd/Even

TCE 002975832-07



# ALT Odd/Even

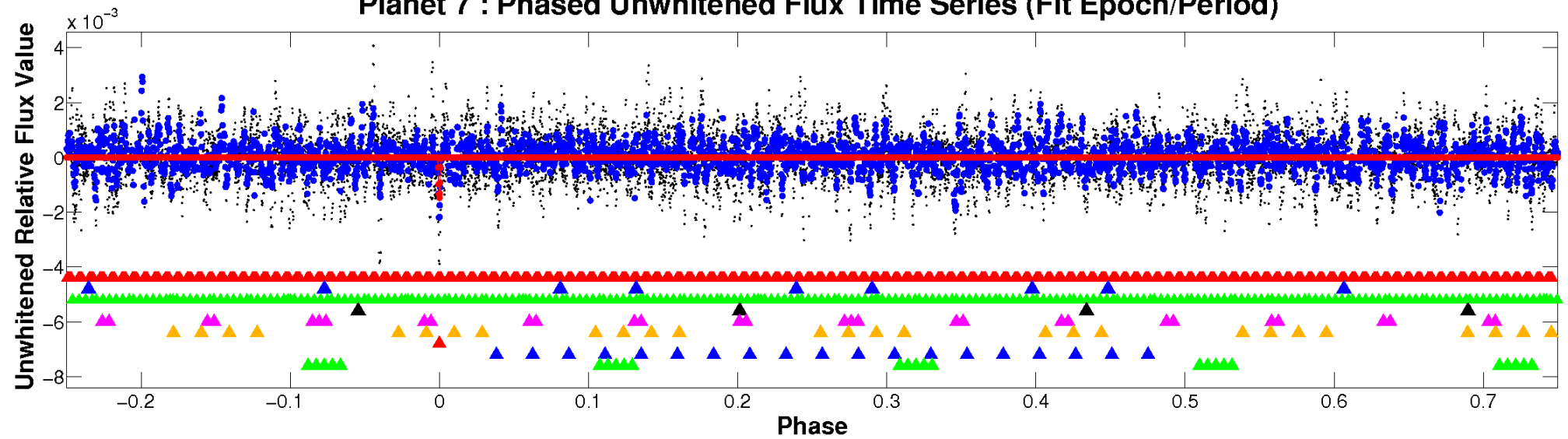
TCE 002975832-07



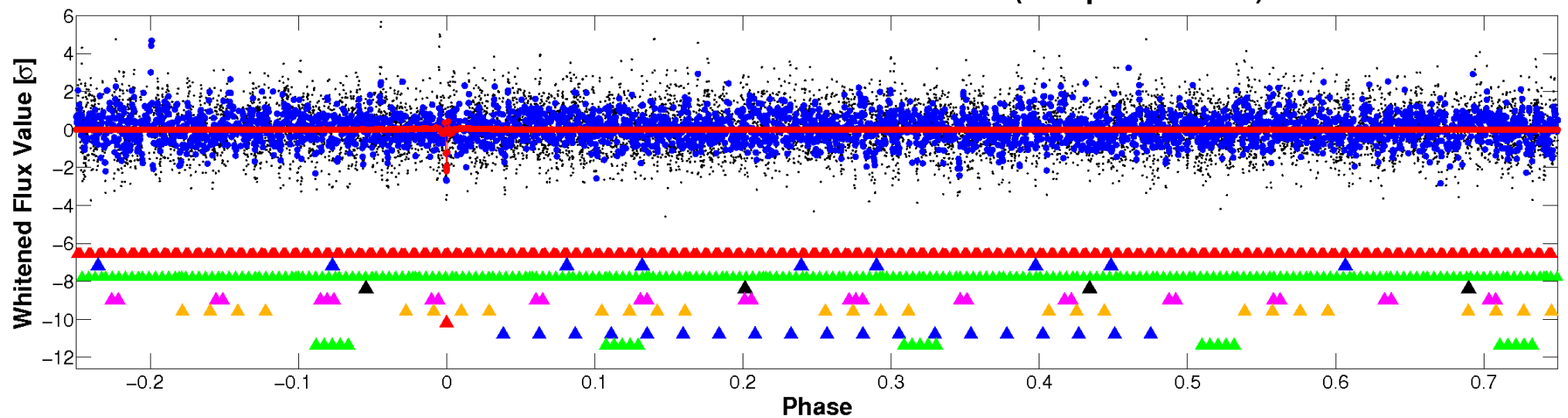


# Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

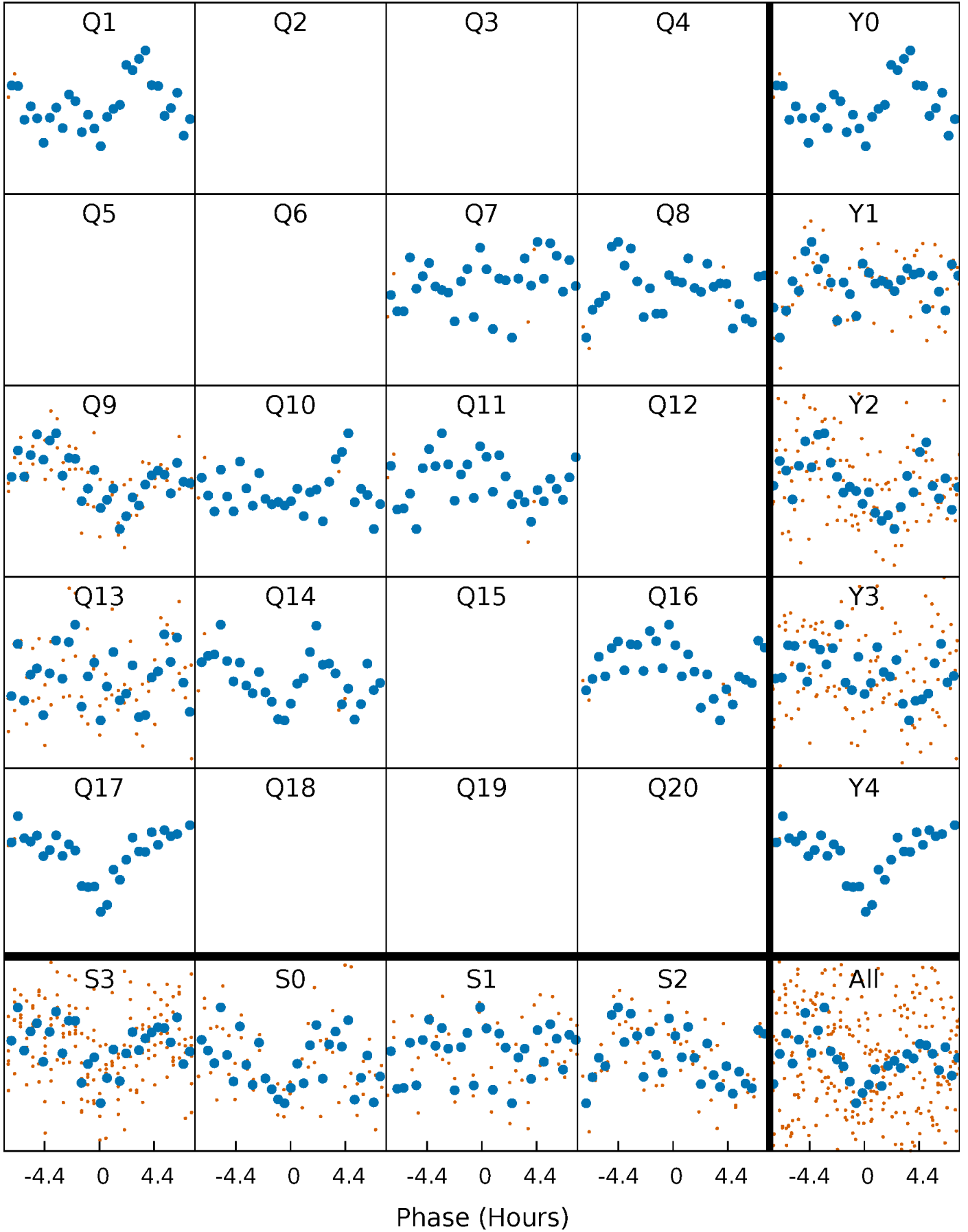


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



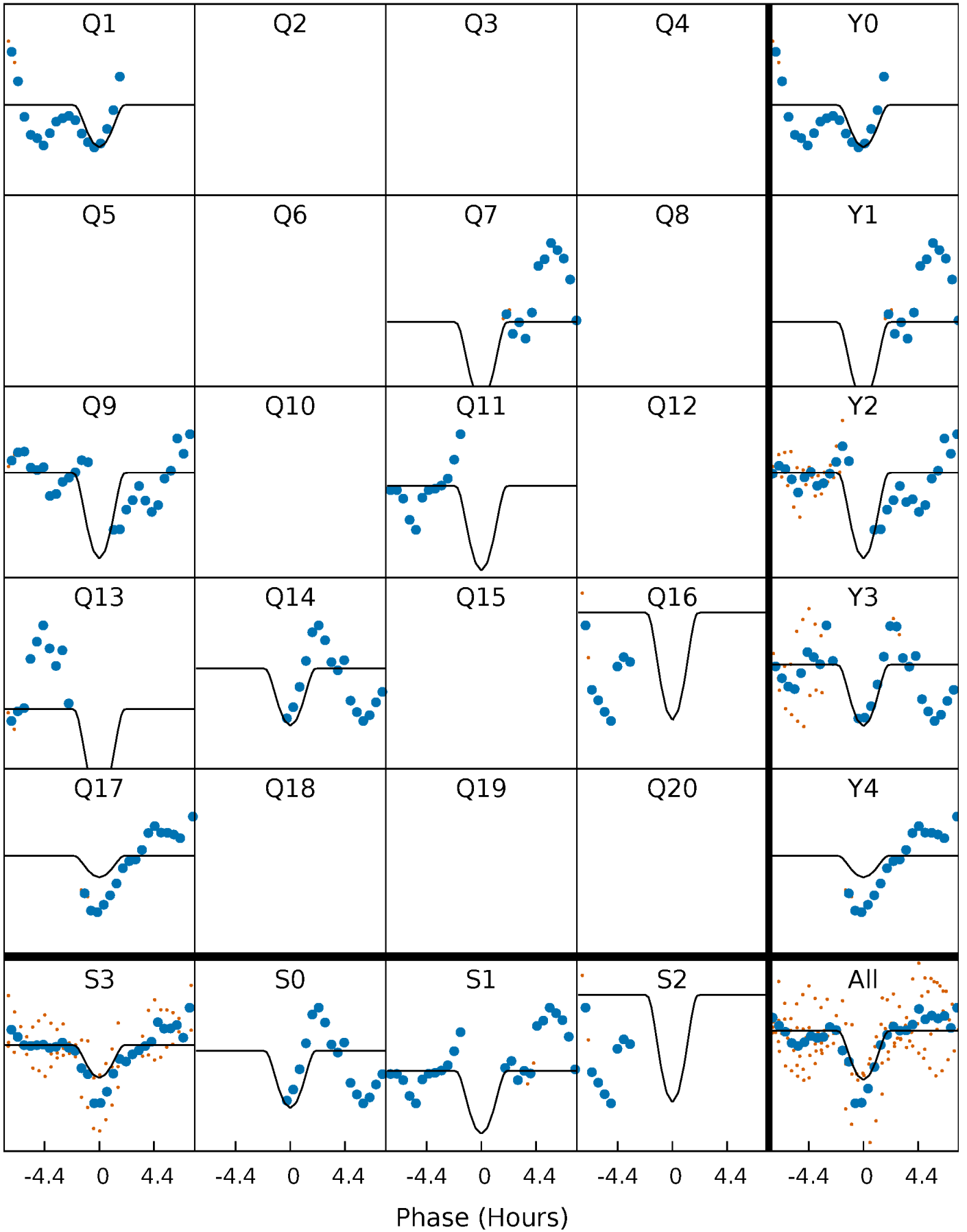
# PDC Quarter-Phased Transit Curves

TCE 002975832-07     $P = 74.321135$  Days     $T_0 = 151.311873$  (BKJD)



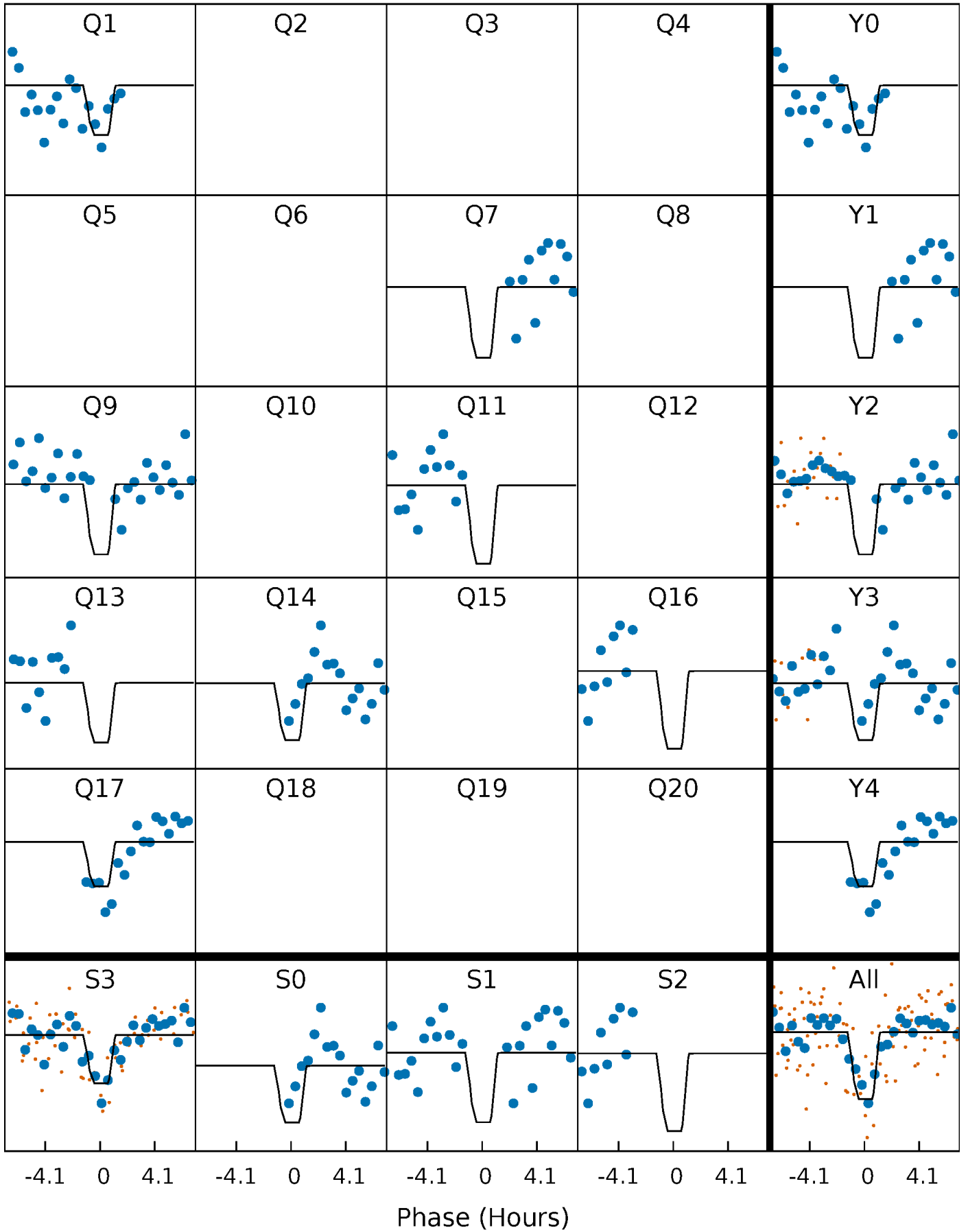
# DV Quarter-Phased Transit Curves

TCE 002975832-07     $P = 74.321135$  Days     $T_0 = 151.311873$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

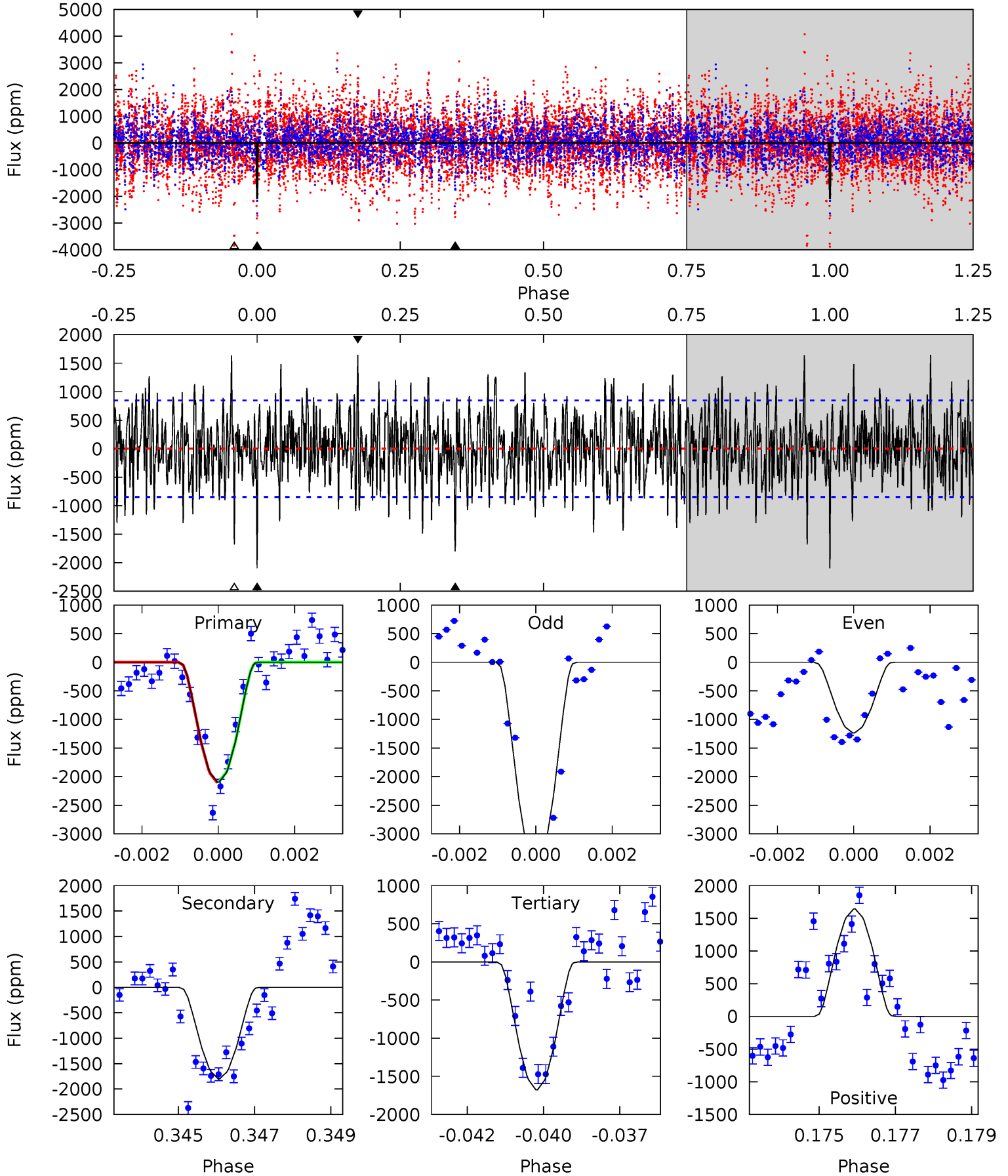
TCE 002975832-07     $P = 74.320825$  Days     $T_0 = 151.311052$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-07, P = 74.321135 Days, E = 76.990738 Days

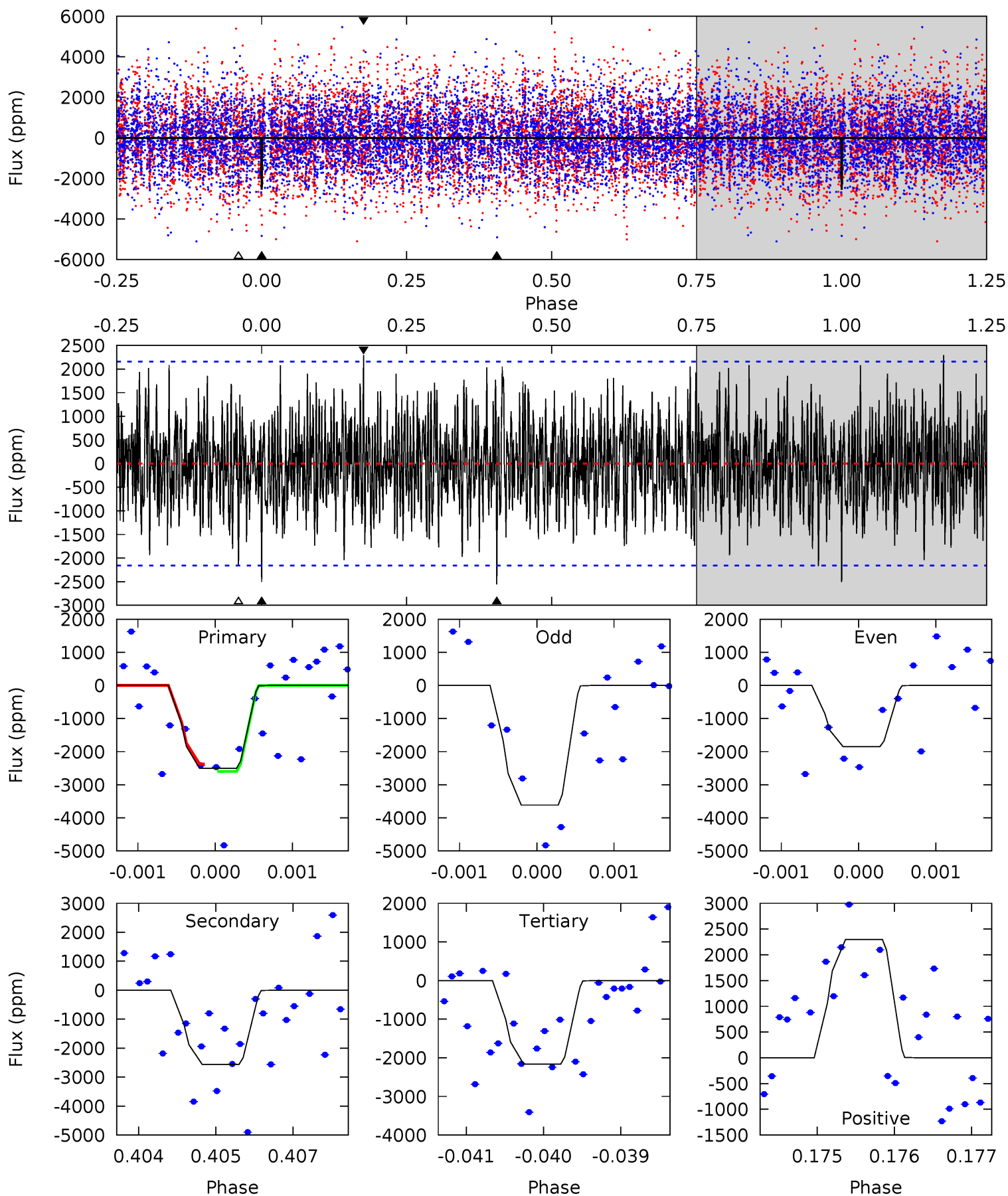
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	11.2	10.5	10.3	5.30	3.04	3.10	2.62	2.83	0.75	0.96	7.25	1.29	0.44	0.07



# Alt Model-Shift Uniqueness Test

002975832-07, P = 74.320825 Days, E = 76.990227 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
6.30	6.43	5.44	5.77	5.42	3.24	1.84	0.86	0.53	0.98	0.65	2.14	0.99	0.47	0.27



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1797 \pm 160$	$40.21^{+41.59}_{-29.02}$	$965^{+69}_{-93}$	$3685^{+2610}_{-678}$	$98^{+1152}_{-74}$
Alt.	$-2558 \pm 398$	$41.66^{+42.27}_{-28.97}$	$959^{+77}_{-90}$	$3881^{+2410}_{-752}$	$129^{+1286}_{-98}$

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

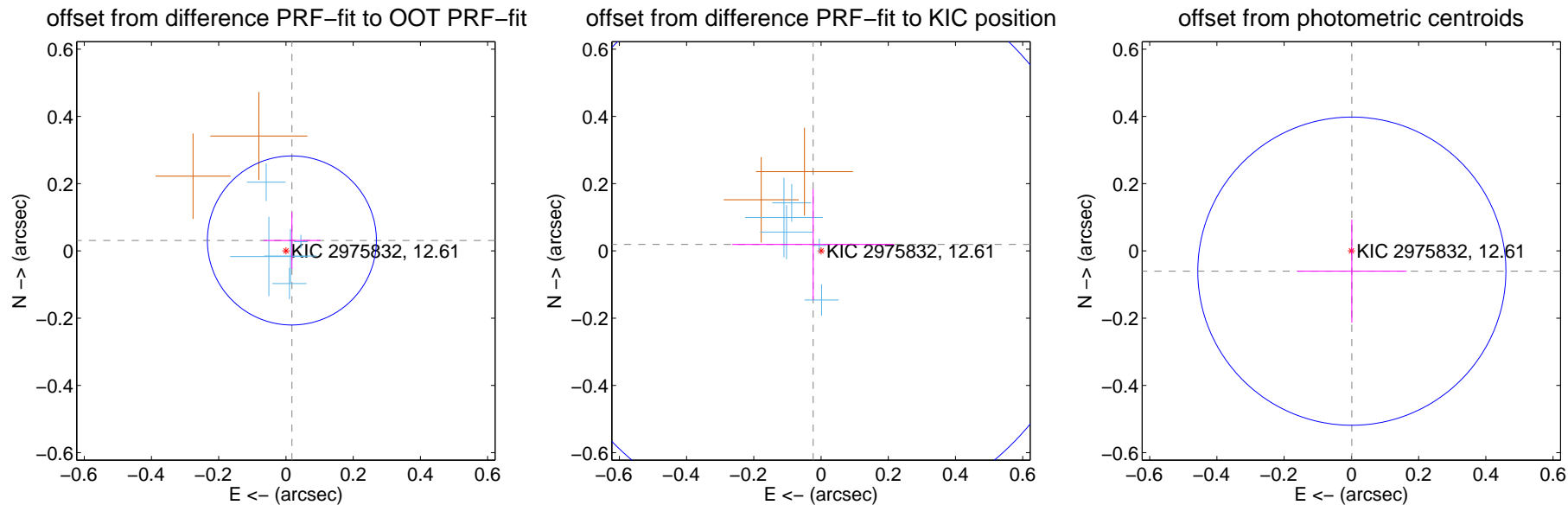
## DV Centroid Data

Supplemental centroid analysis for 002975832-07. Kepler magnitude: 12.61. Transit SNR 7.16

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

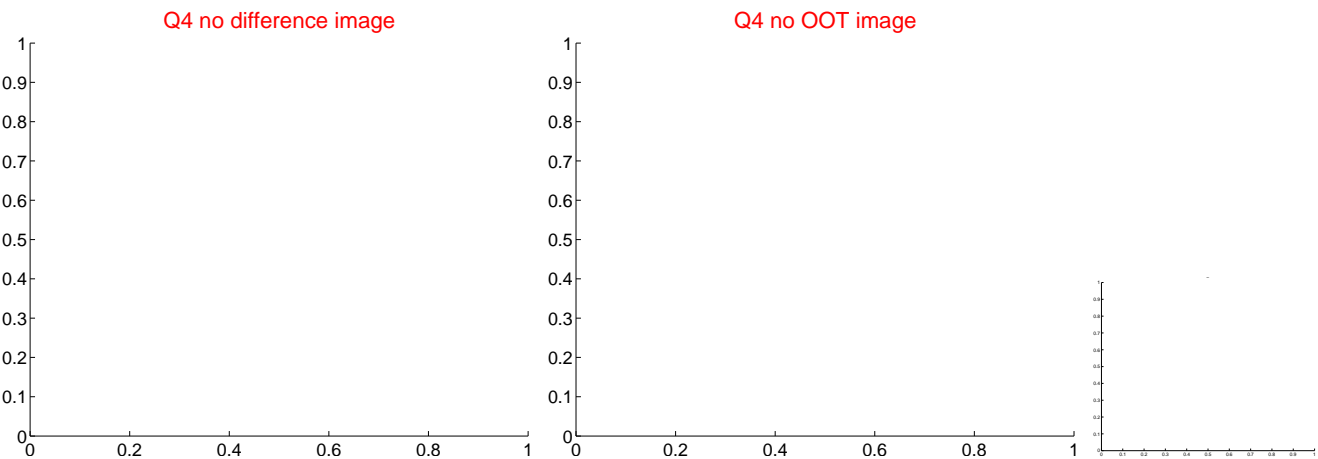
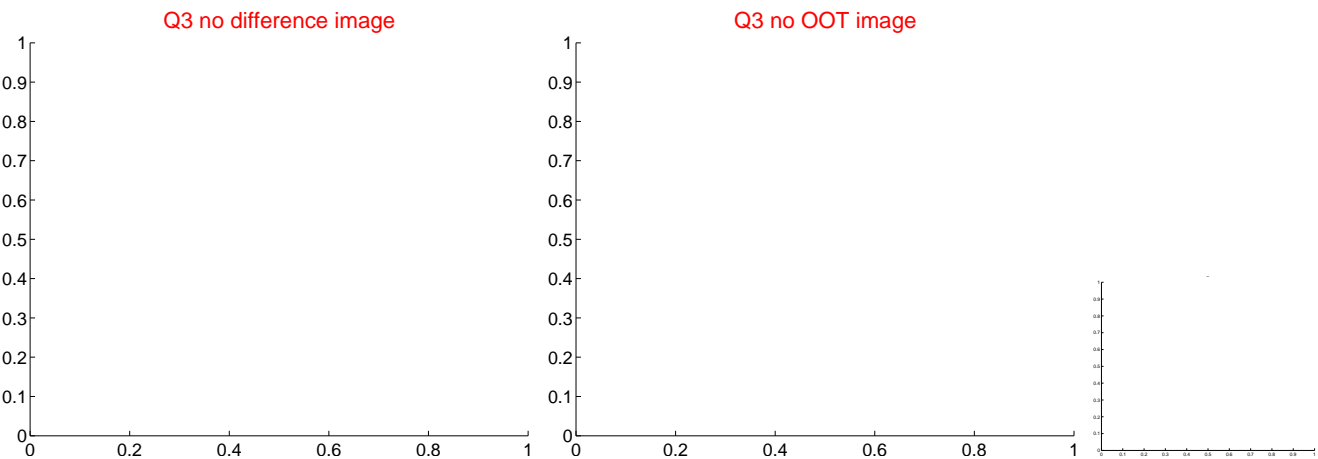
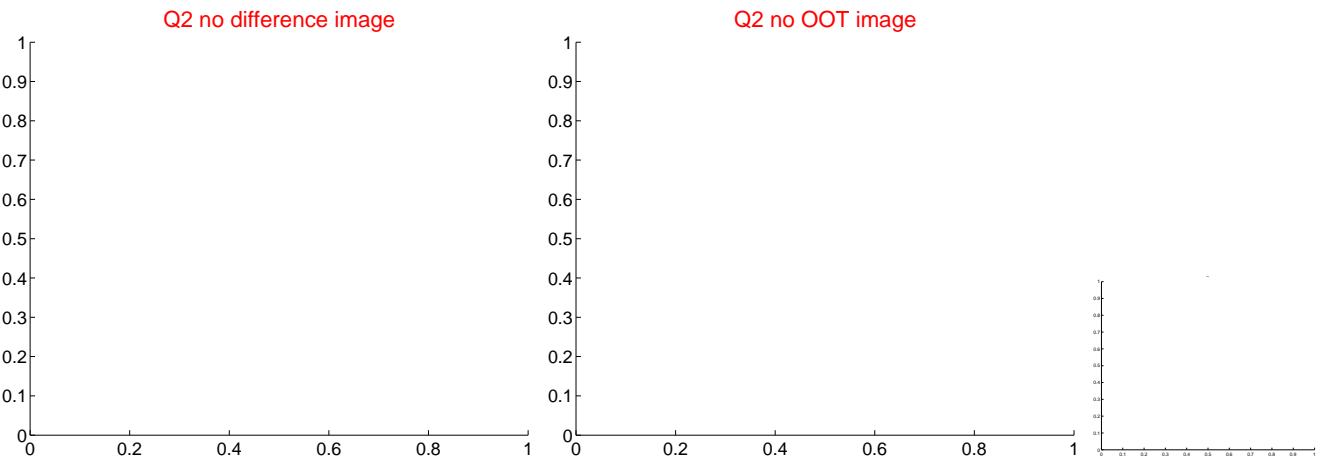
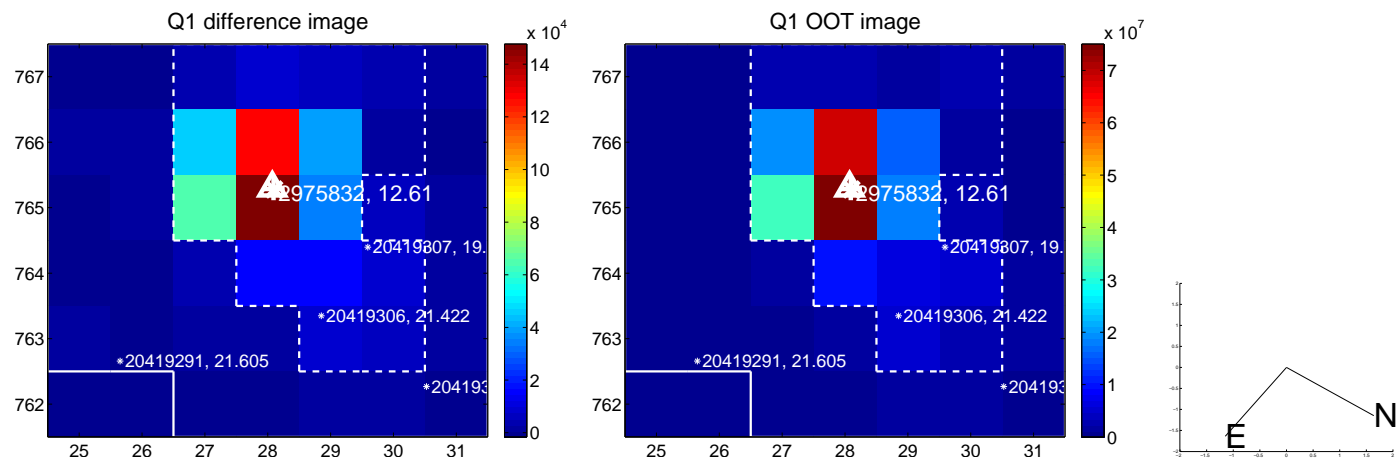
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.036 \pm 0.084$	0.43	$-0.018 \pm 0.085$	$0.031 \pm 0.084$
PRF-fit source offset from KIC position	$0.030 \pm 0.279$	0.11	$0.023 \pm 0.241$	$0.019 \pm 0.165$
photometric centroid source offset	$0.06 \pm 0.15$	0.39	$-0.00 \pm 0.16$	$-0.06 \pm 0.15$



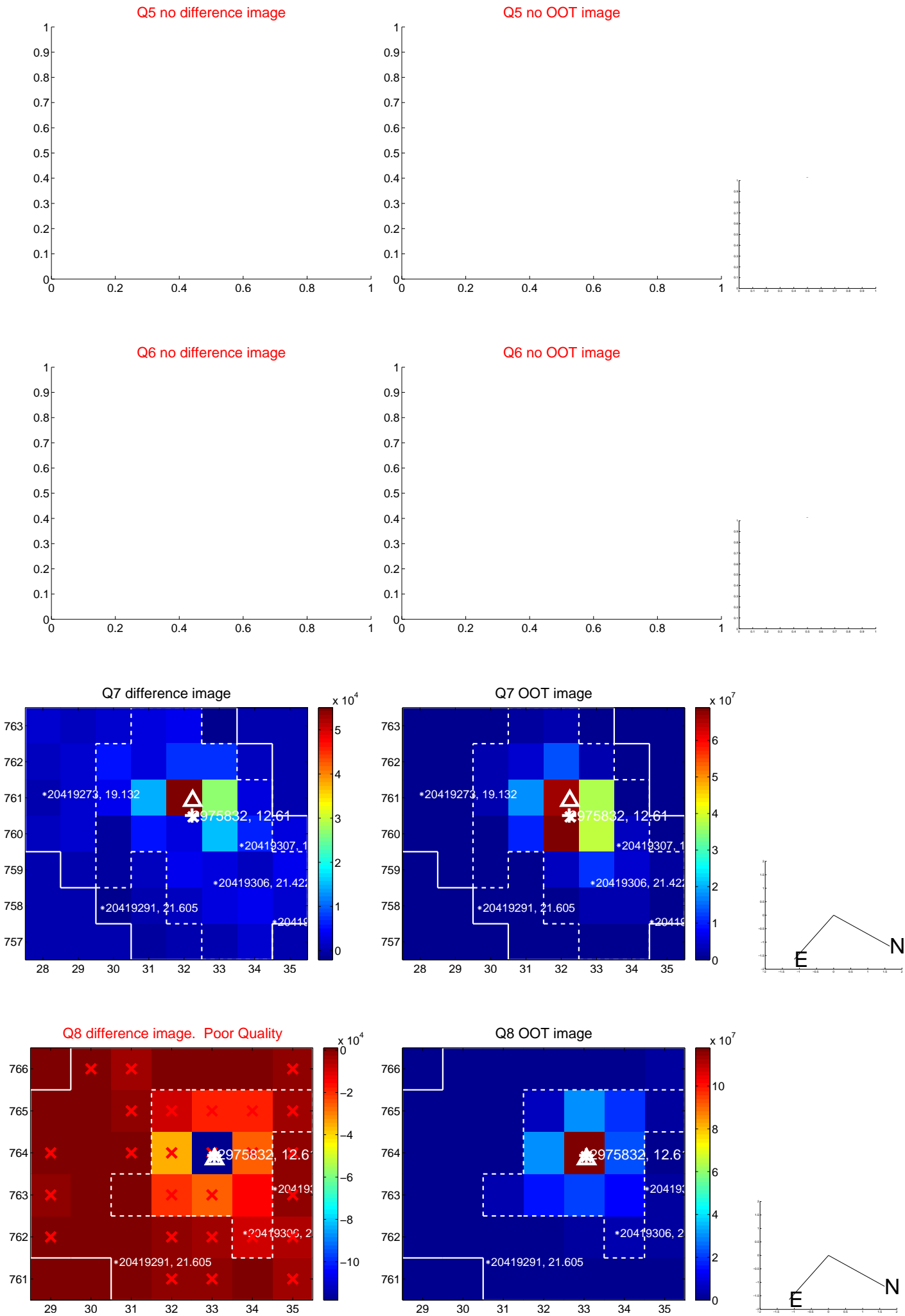
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



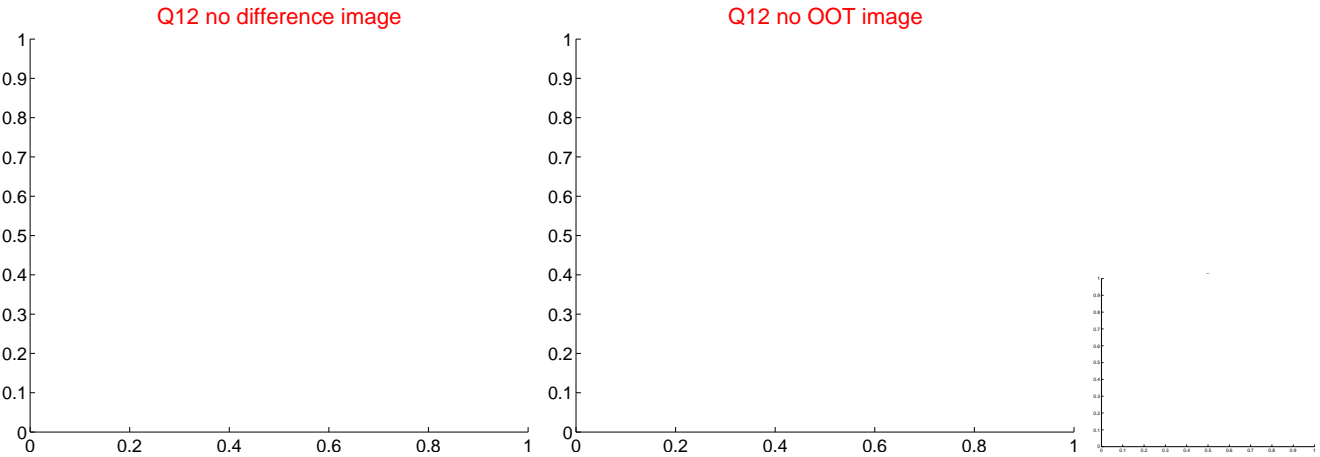
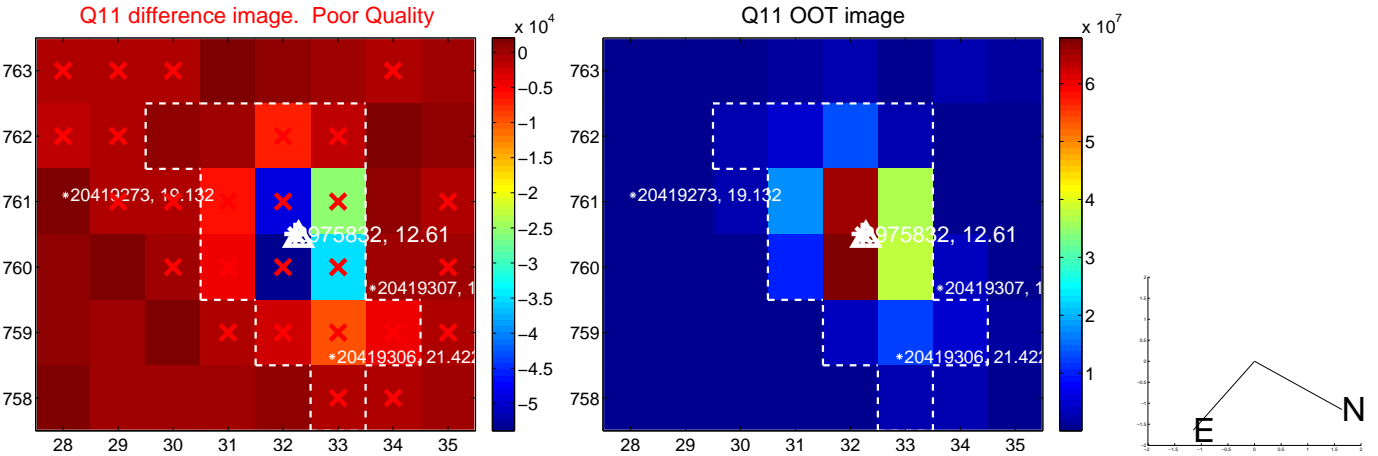
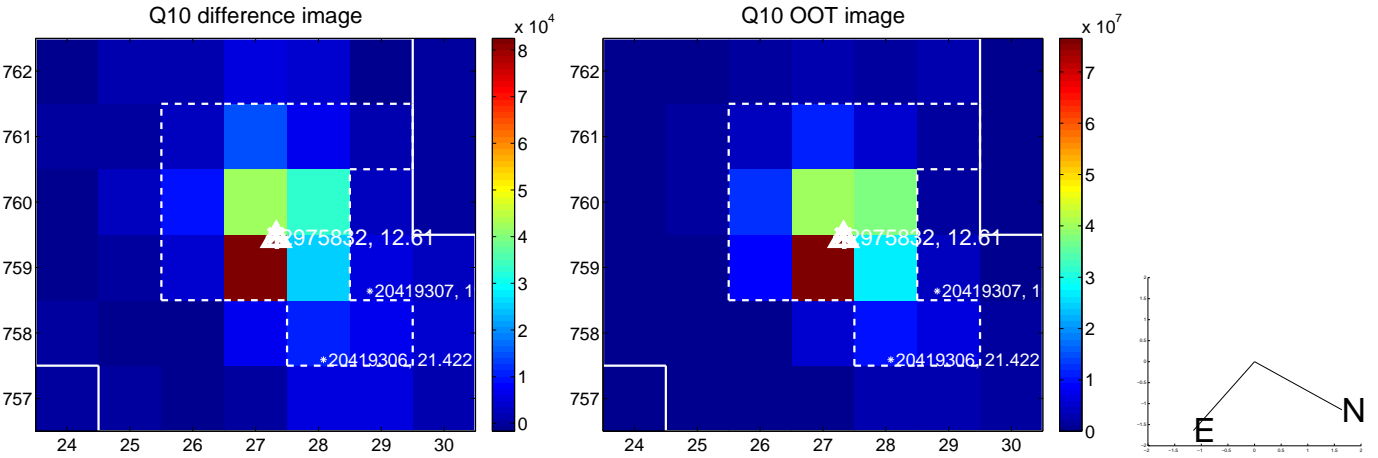
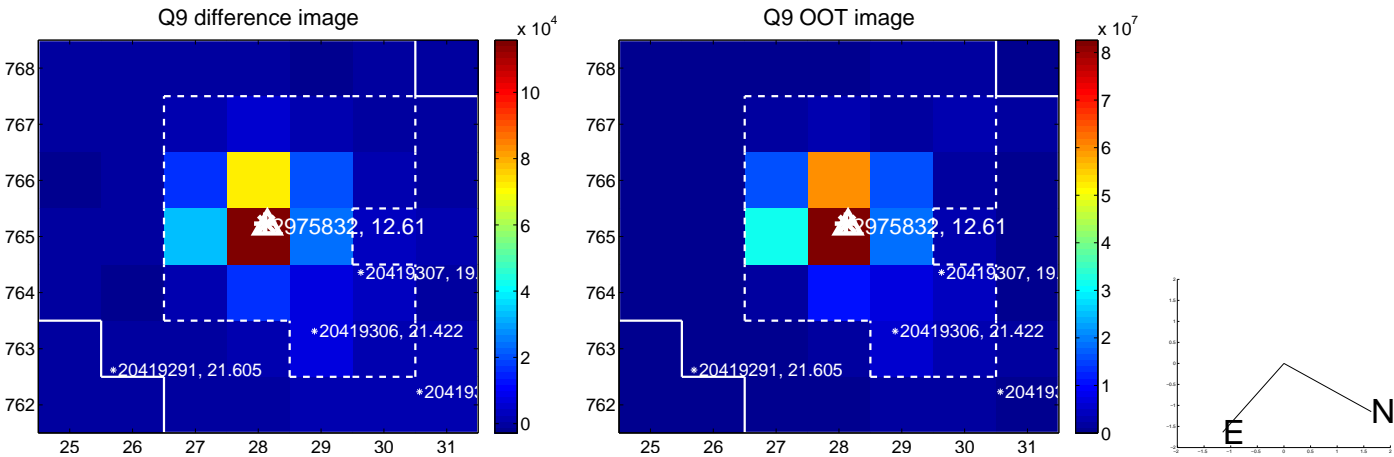
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



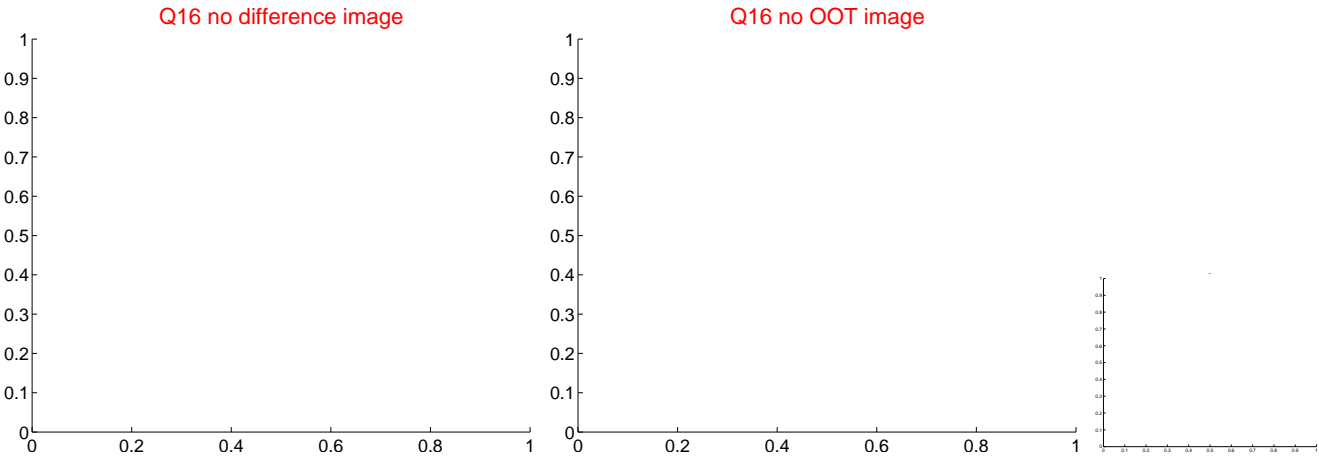
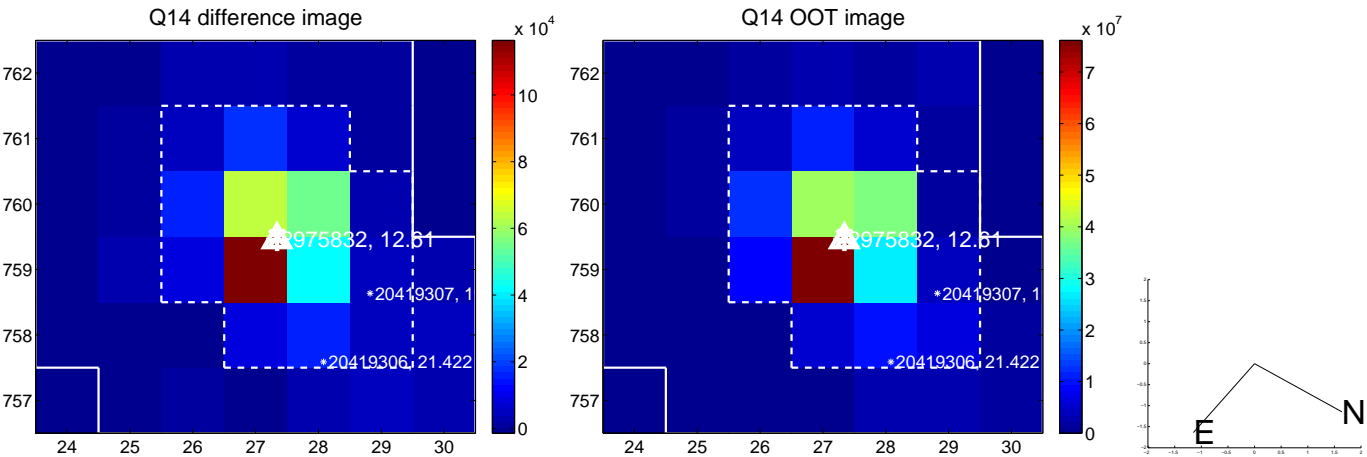
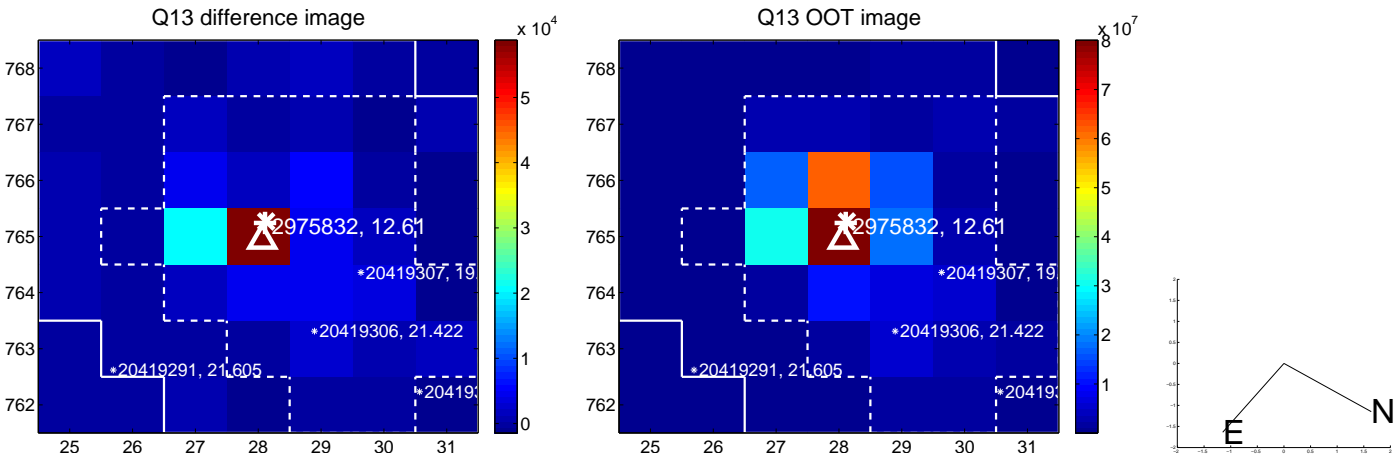
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



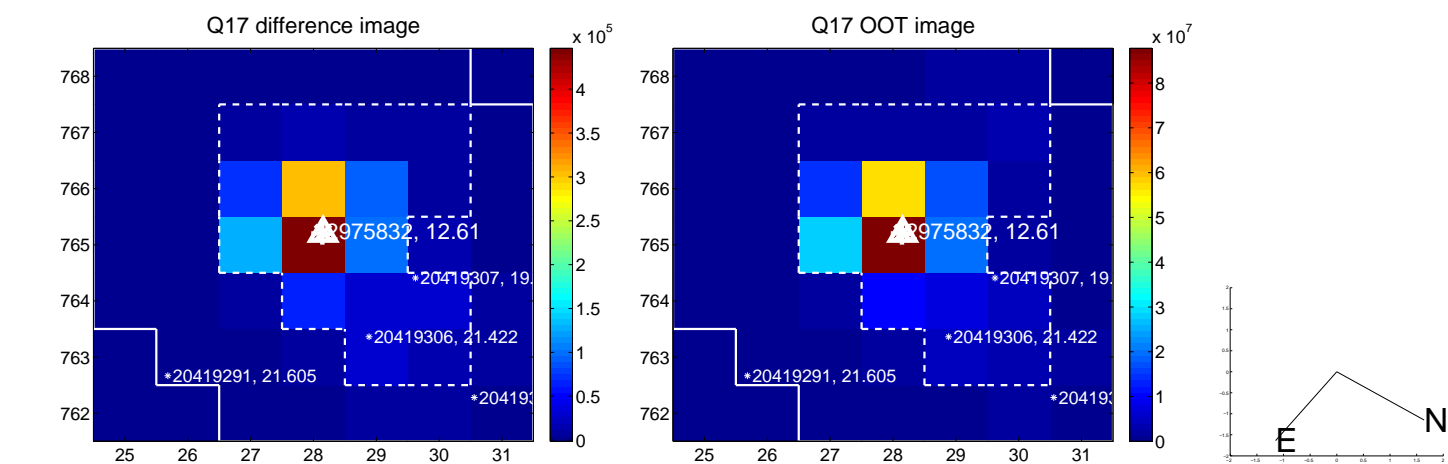
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



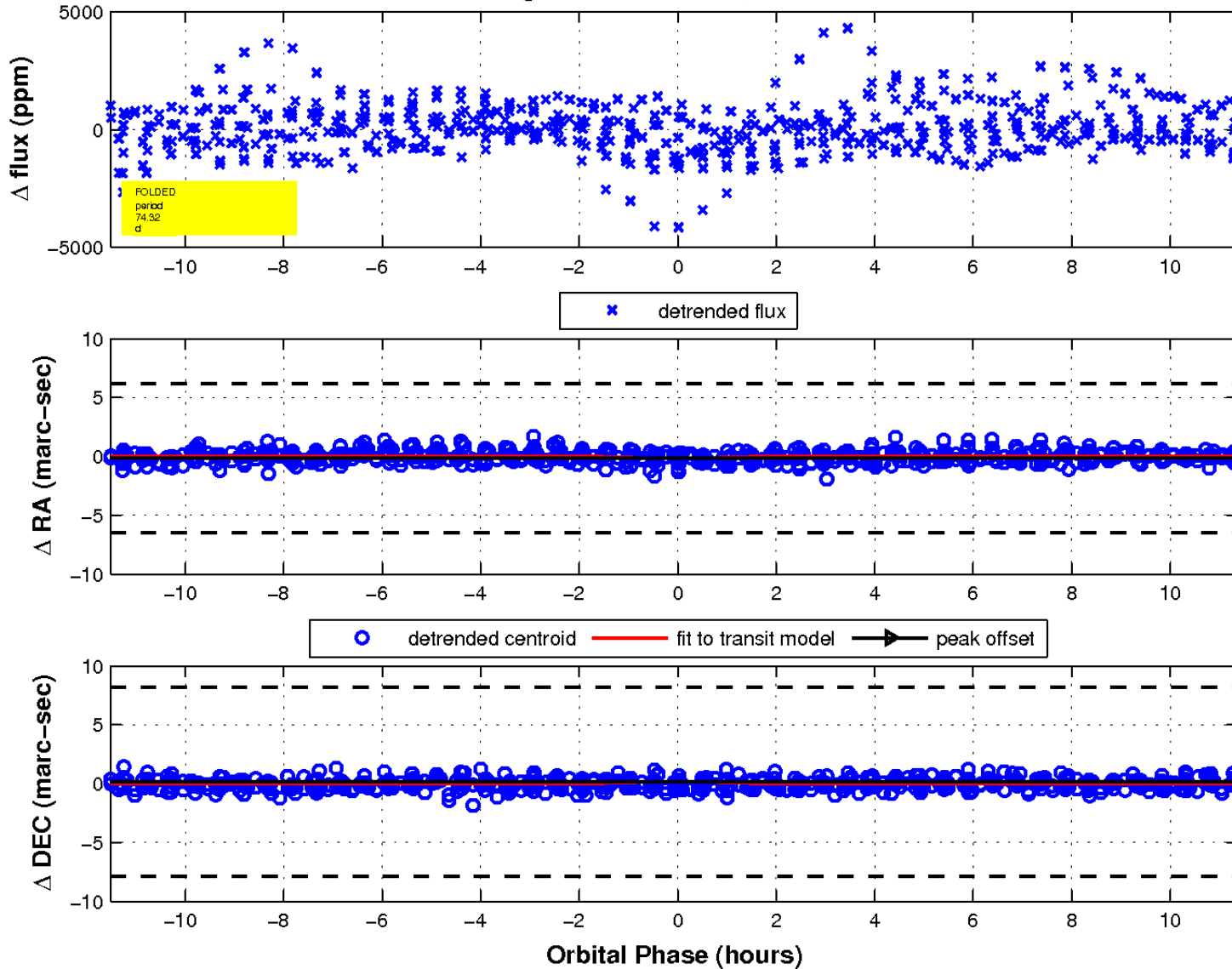
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

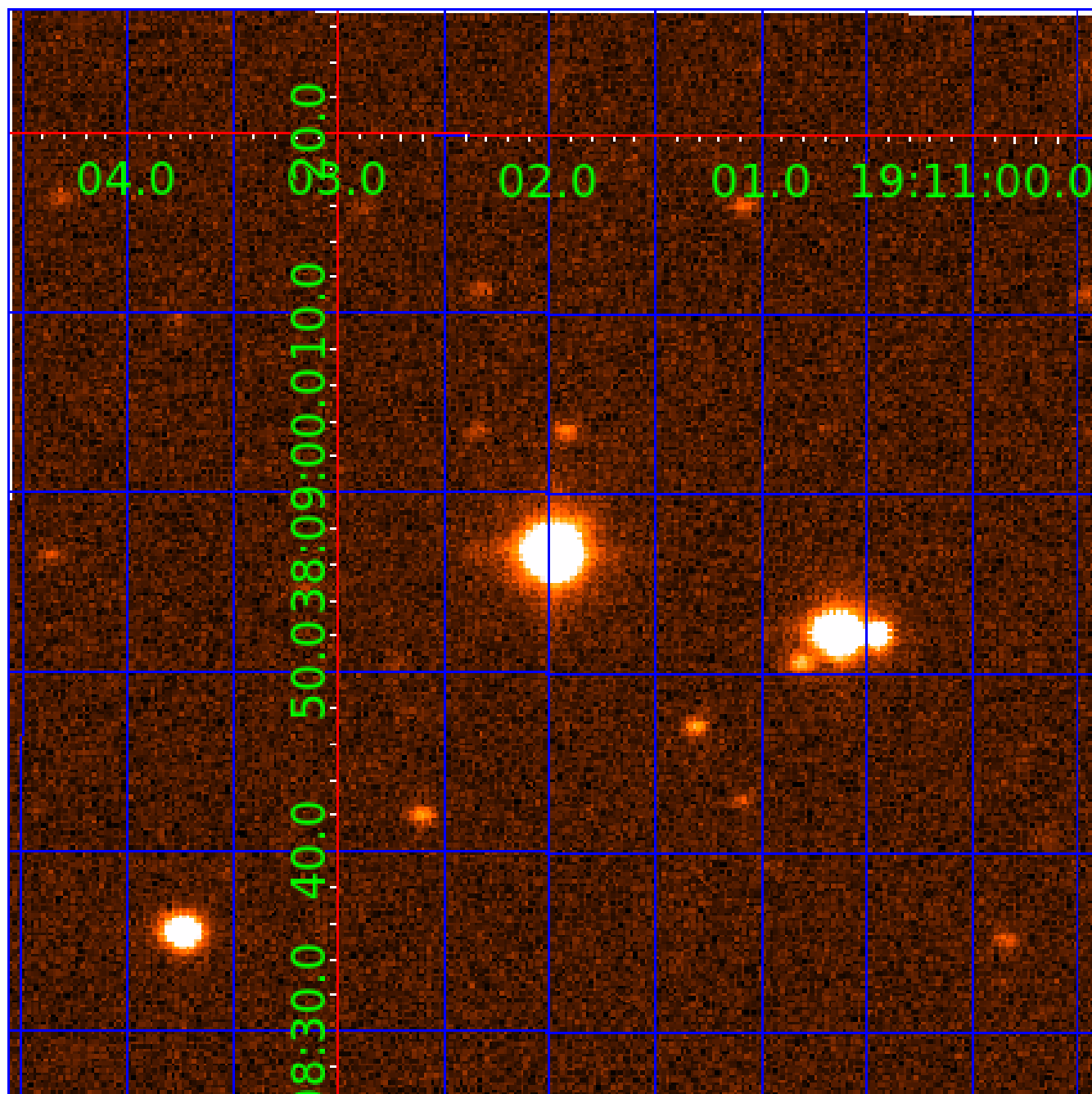


fluxWeightedCentroids, Planet 7 of 9



UKIRT Image

Declination



# KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

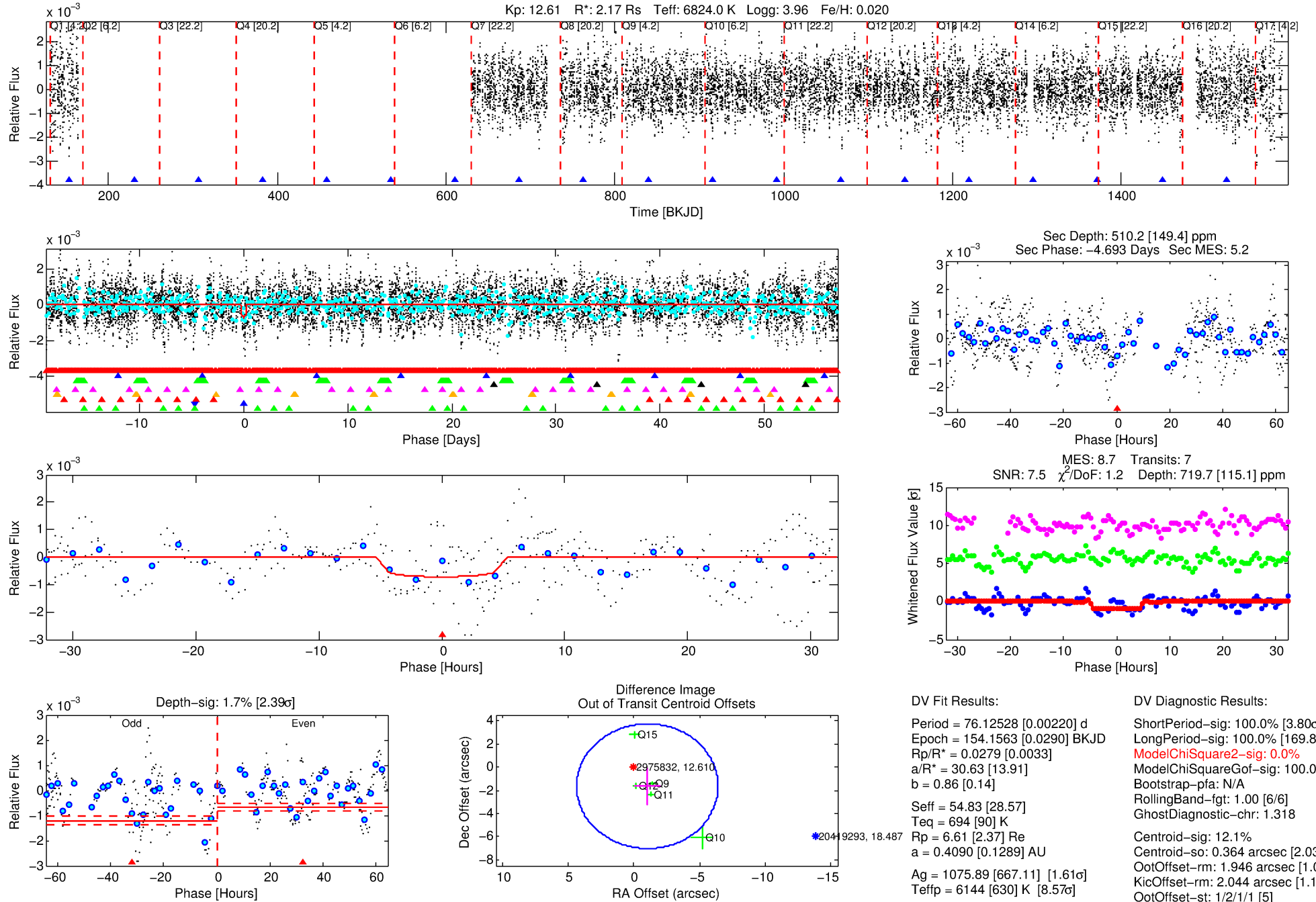
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-08

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 8 of 9 Period: 76.125 d



## DV Fit Results:

Period = 76.12528 [0.00220] d  
Epoch = 154.1563 [0.0290] BKJD  
Rp/R\* = 0.0279 [0.0033]  
a/R\* = 30.63 [13.91]  
b = 0.86 [0.14]  
Seff = 54.83 [28.57]  
Teq = 694 [90] K  
Rp = 6.61 [2.37] Re  
a = 0.4090 [0.1289] AU  
Ag = 1075.89 [667.11] [1.61 $\sigma$ ]  
Teffp = 6144 [630] K [8.57 $\sigma$ ]

## DV Diagnostic Results:

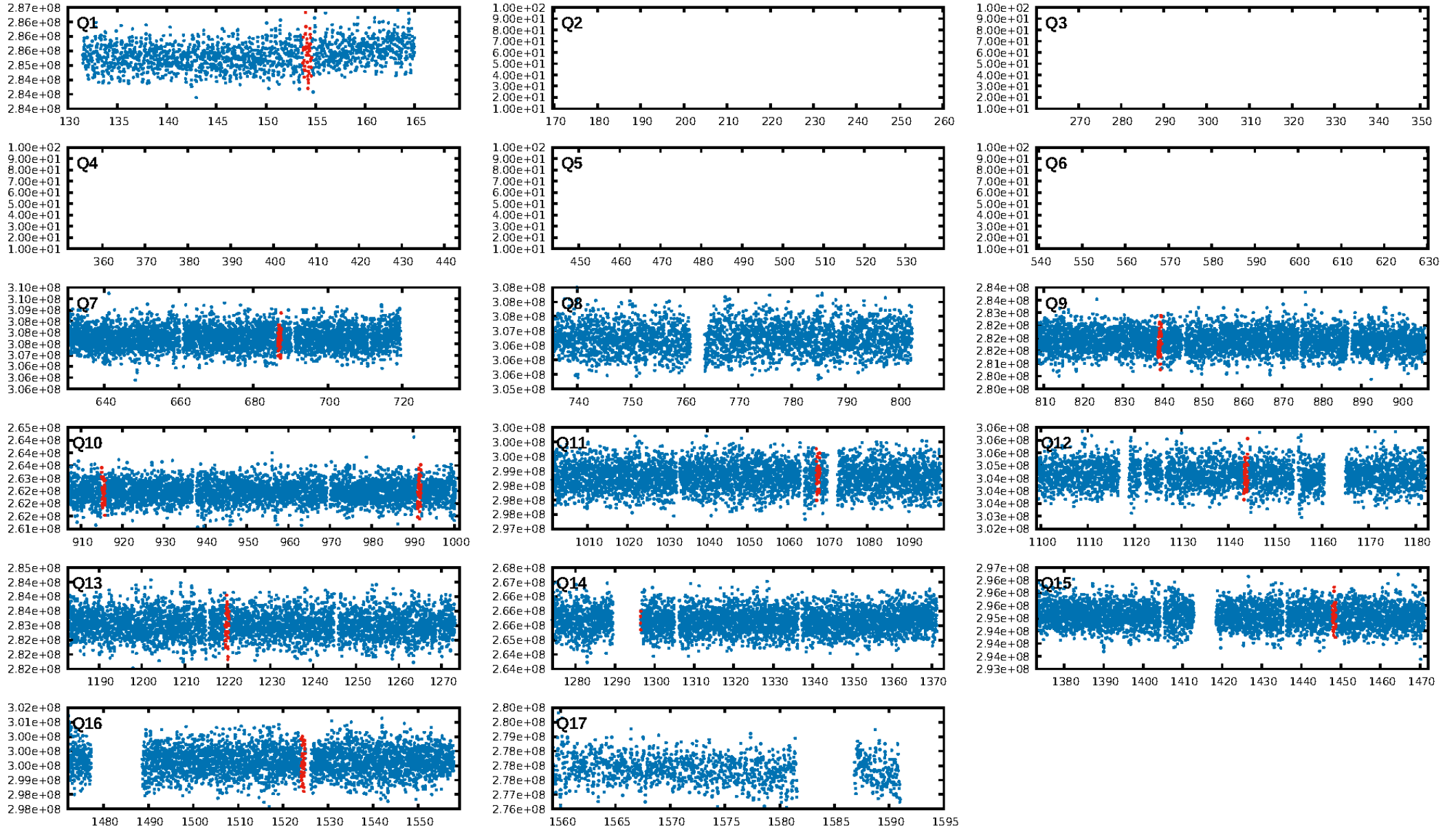
ShortPeriod-sig: 100.0% [3.80 $\sigma$ ]  
LongPeriod-sig: 100.0% [169.82 $\sigma$ ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 1.318  
Centroid-sig: 12.1%  
Centroid-so: 0.364 arcsec [2.03 $\sigma$ ]  
OotOffset-rm: 1.946 arcsec [1.09 $\sigma$ ]  
OotOffset-st: 1/2/1/1 [5]  
KicOffset-rm: 2.044 arcsec [1.19 $\sigma$ ]  
KicOffset-st: 1/2/1/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 0.00 [0/7]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:33 Z

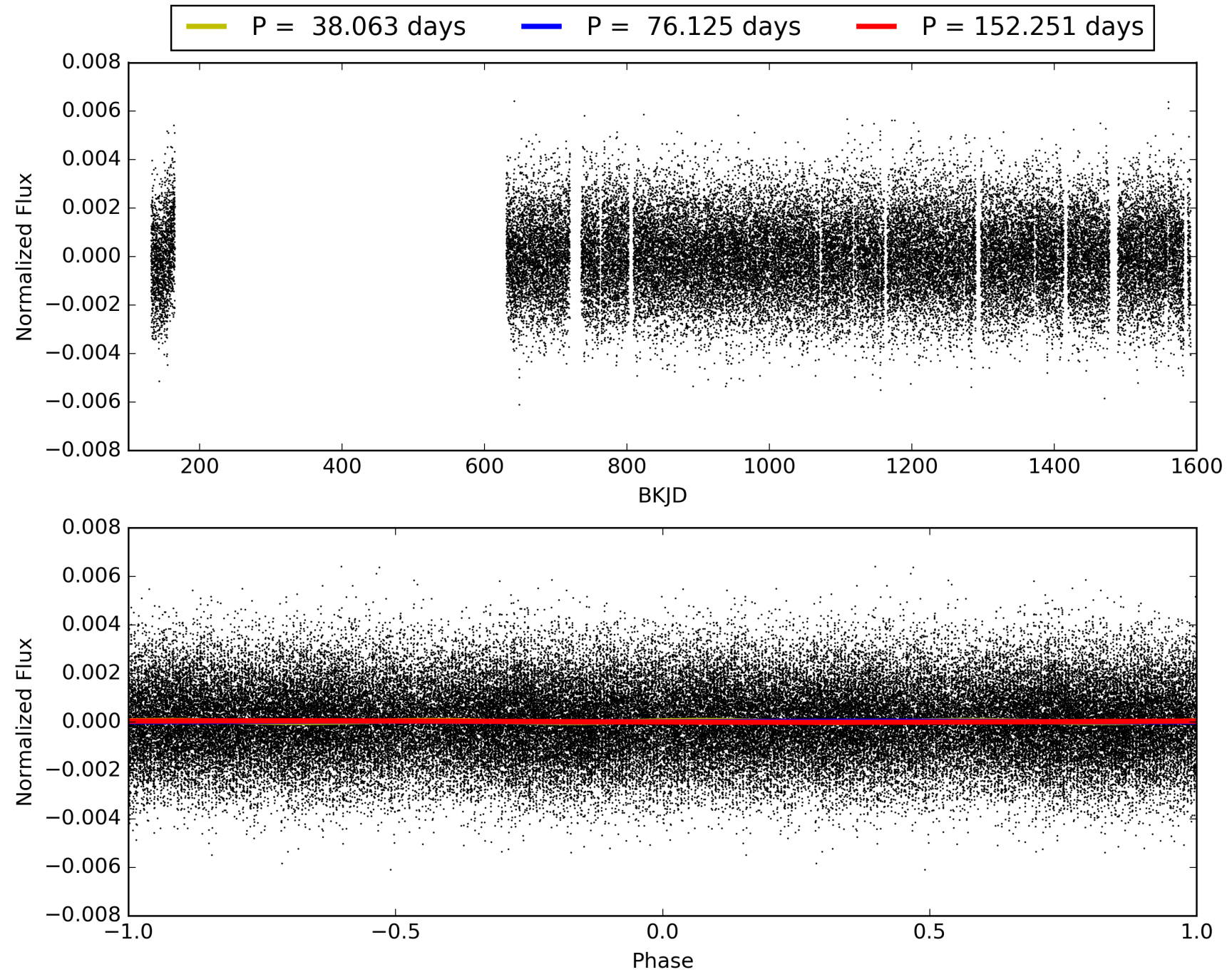
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 002975832-08, PDC Light Curves

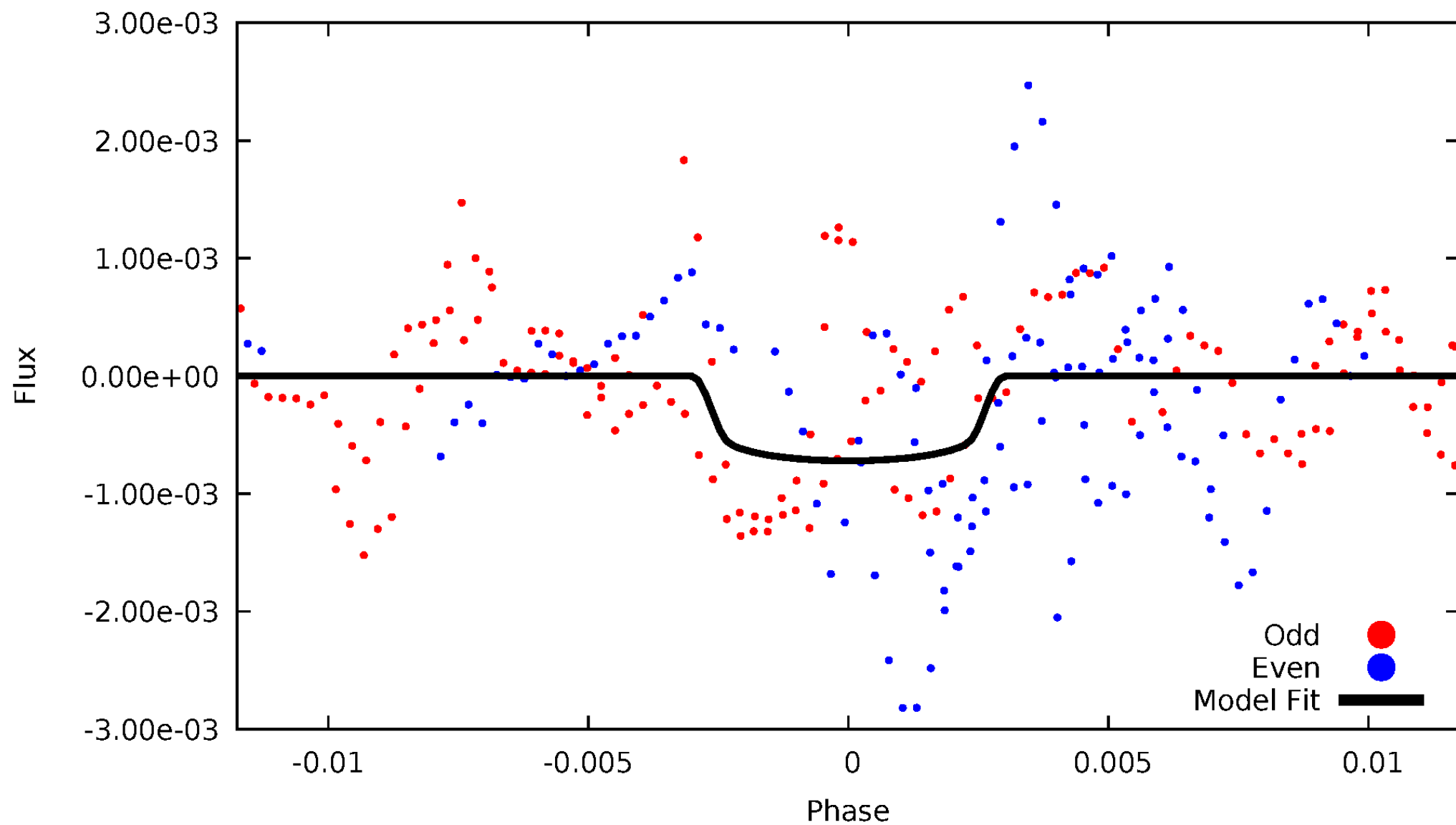


# TCE 002975832-08



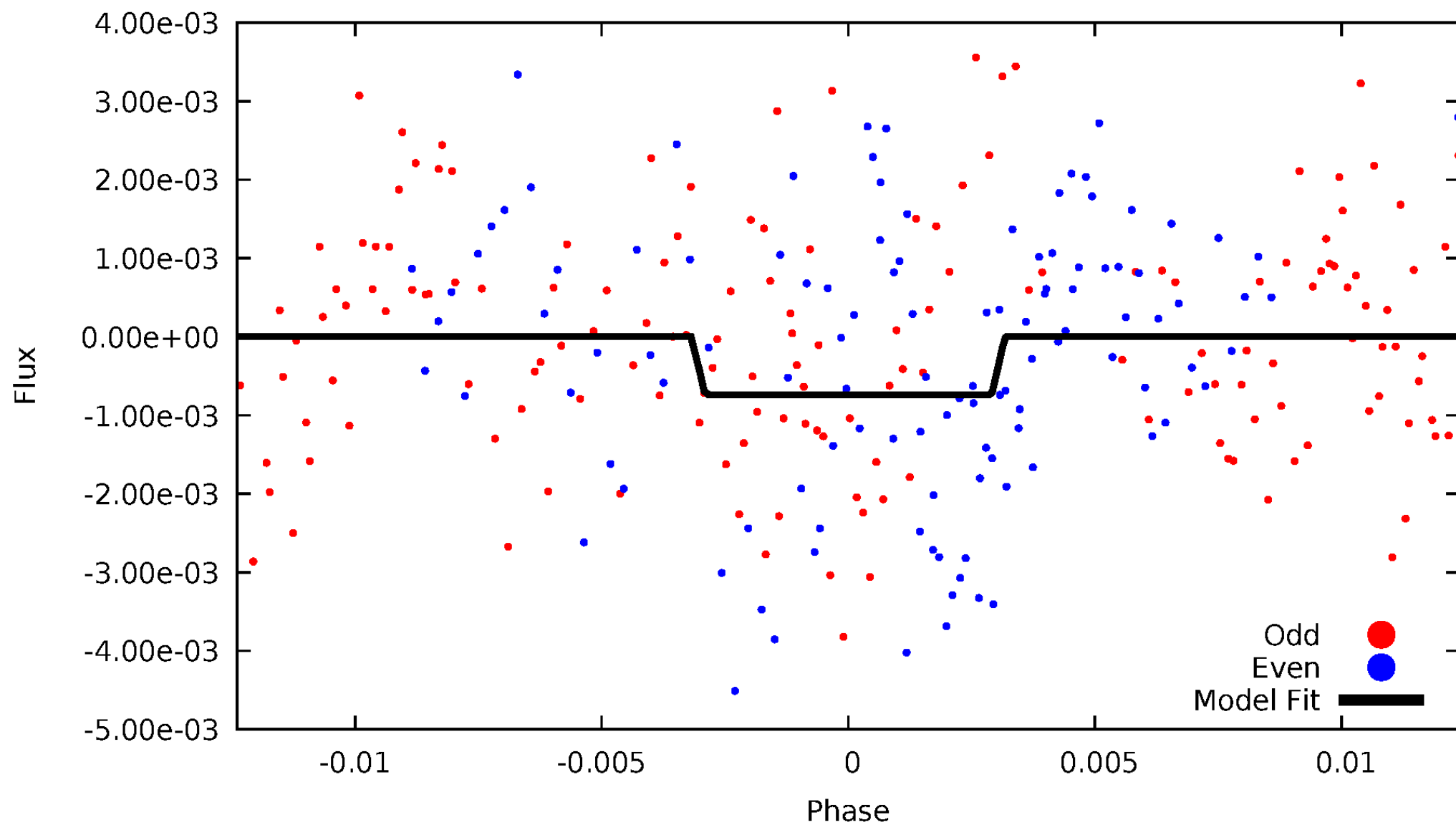
# DV Odd/Even

TCE 002975832-08



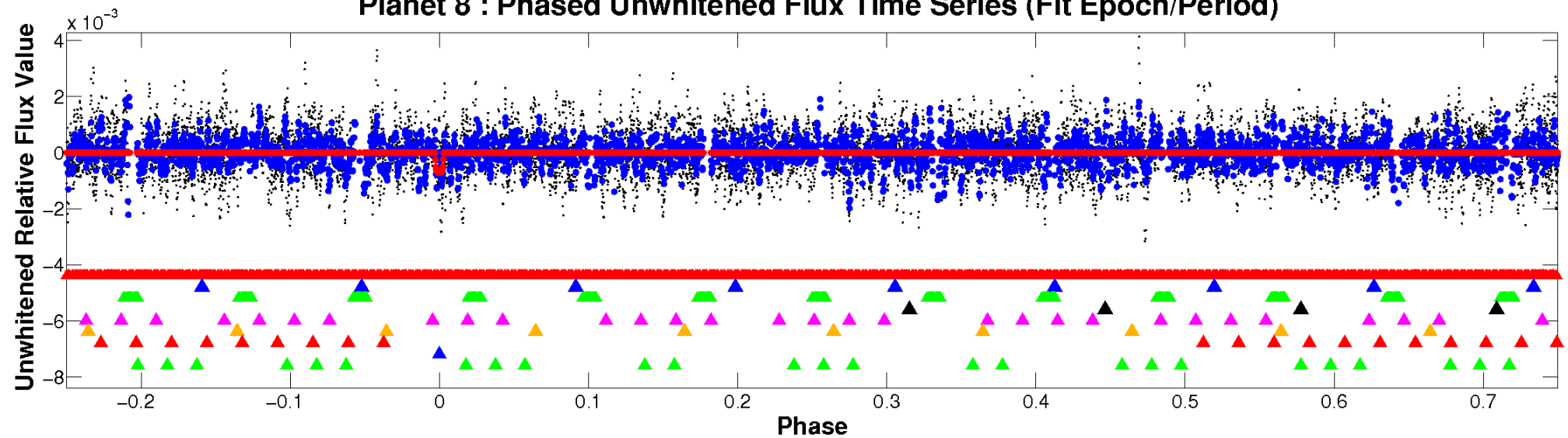
# ALT Odd/Even

TCE 002975832-08

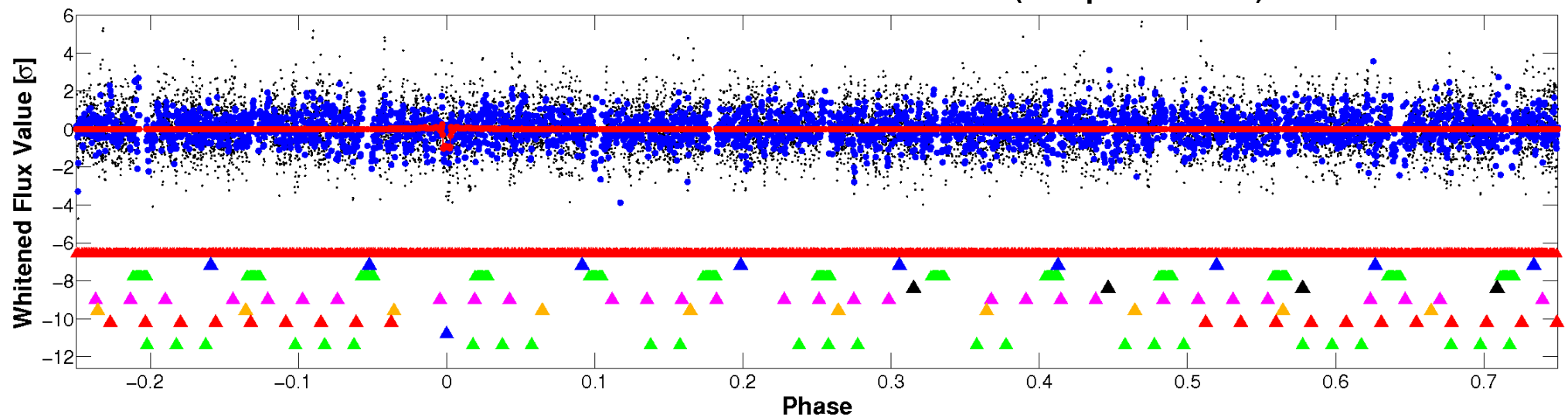


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

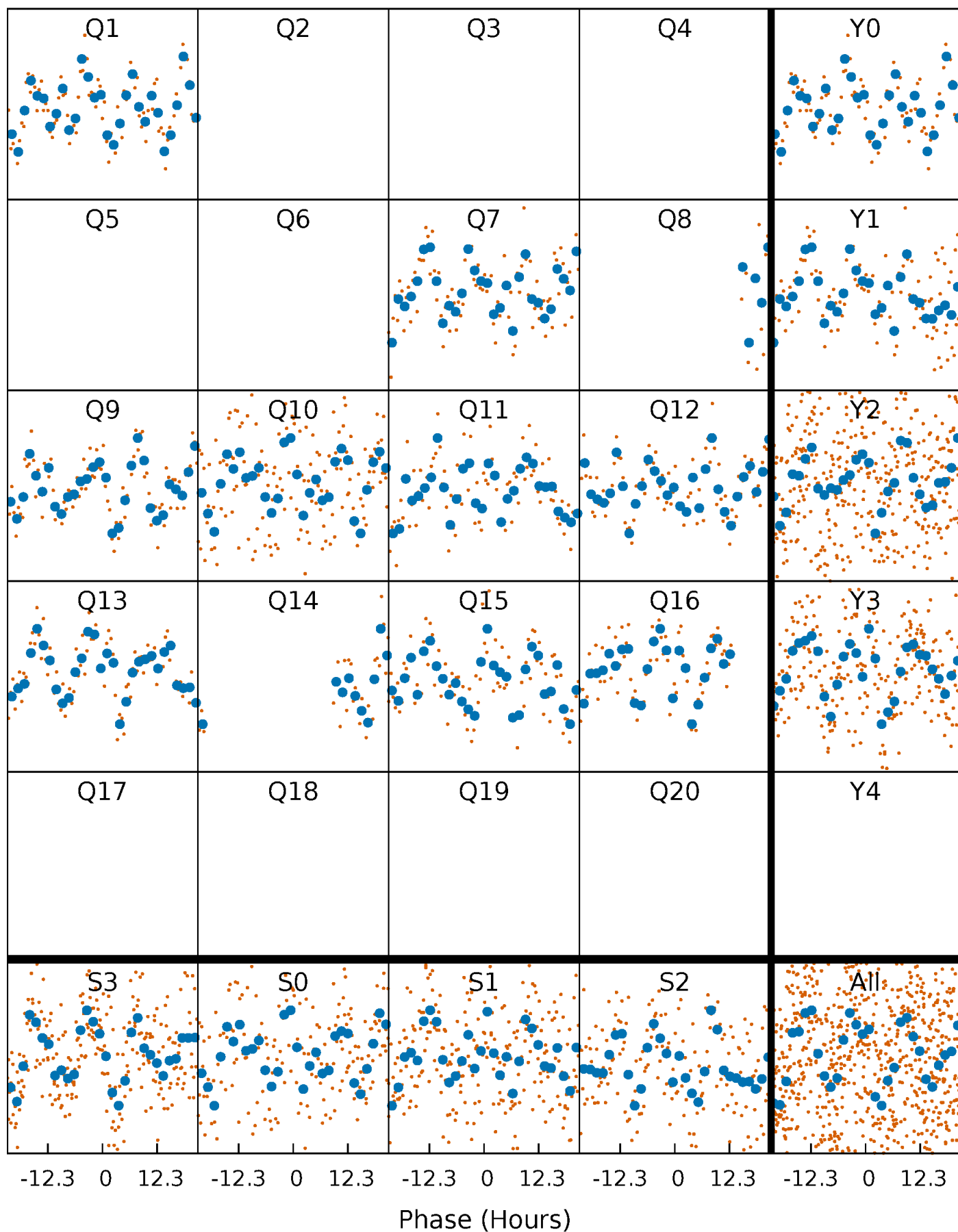


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



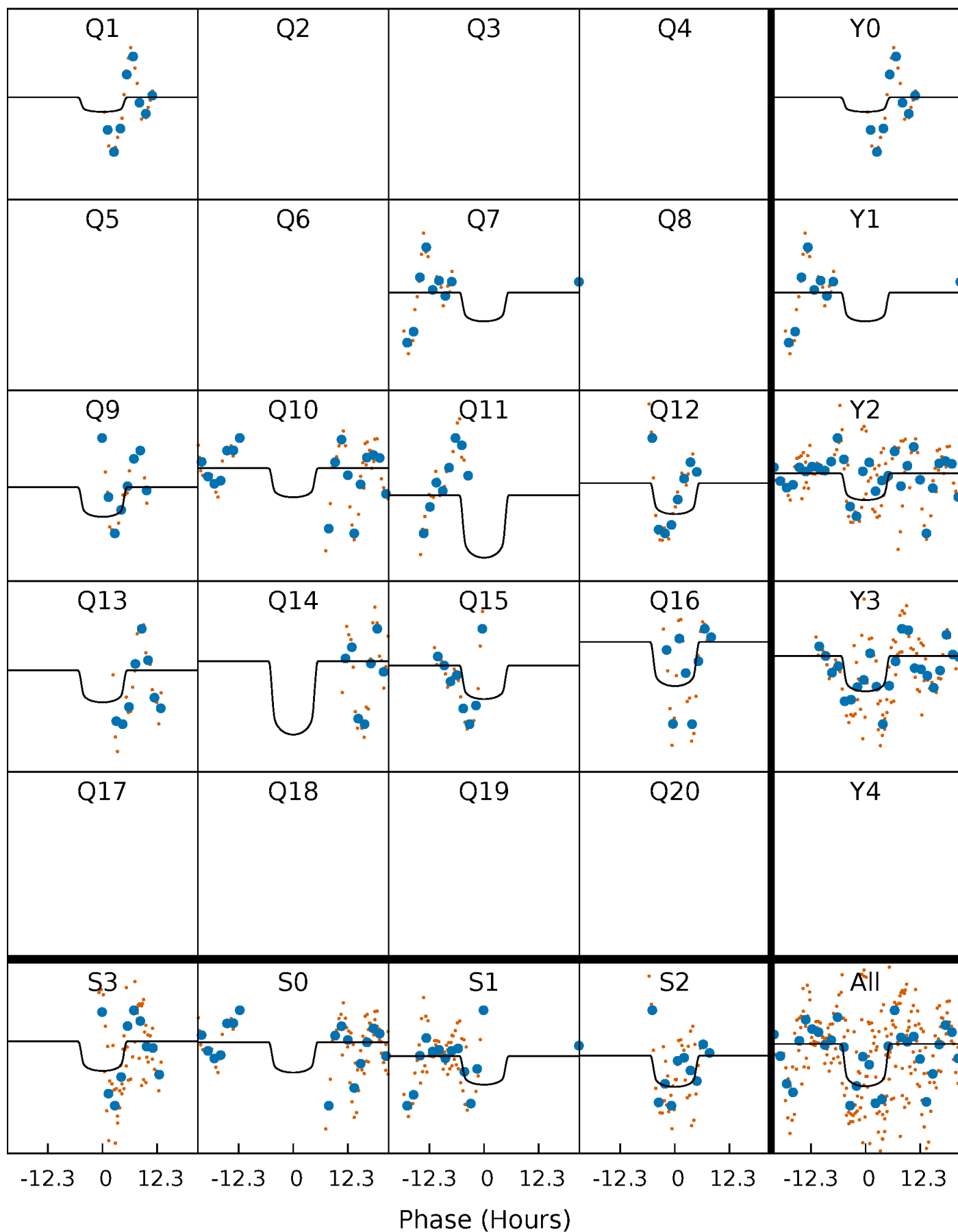
# PDC Quarter-Phased Transit Curves

TCE 002975832-08     $P = 76.125283$  Days     $T_0 = 154.156278$  (BKJD)



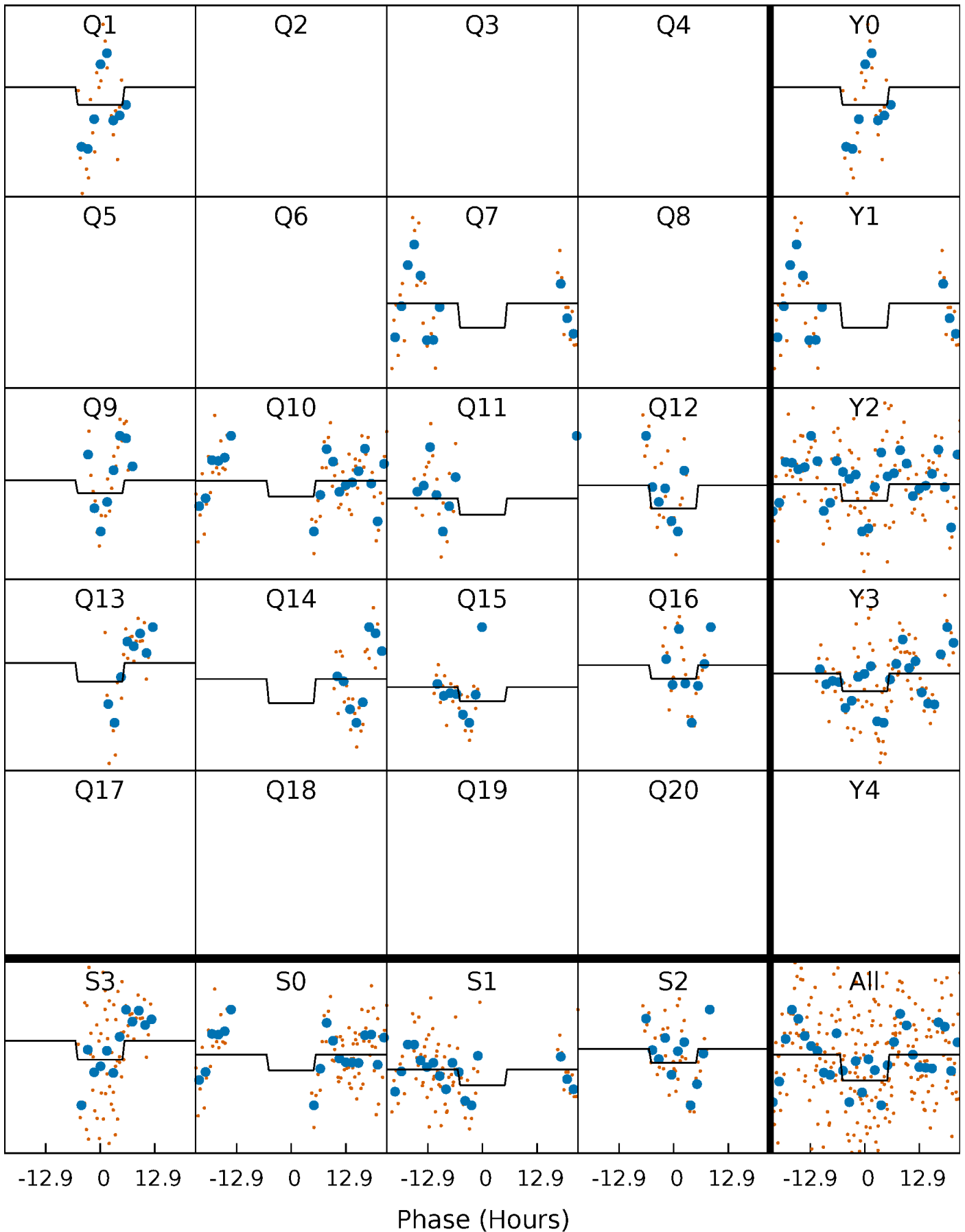
# DV Quarter-Phased Transit Curves

TCE 002975832-08   P= 76.125283 Days    $T_0=154.156278$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 002975832-08   P= 76.112159 Days    $T_0=154.390345$  (BKJD)

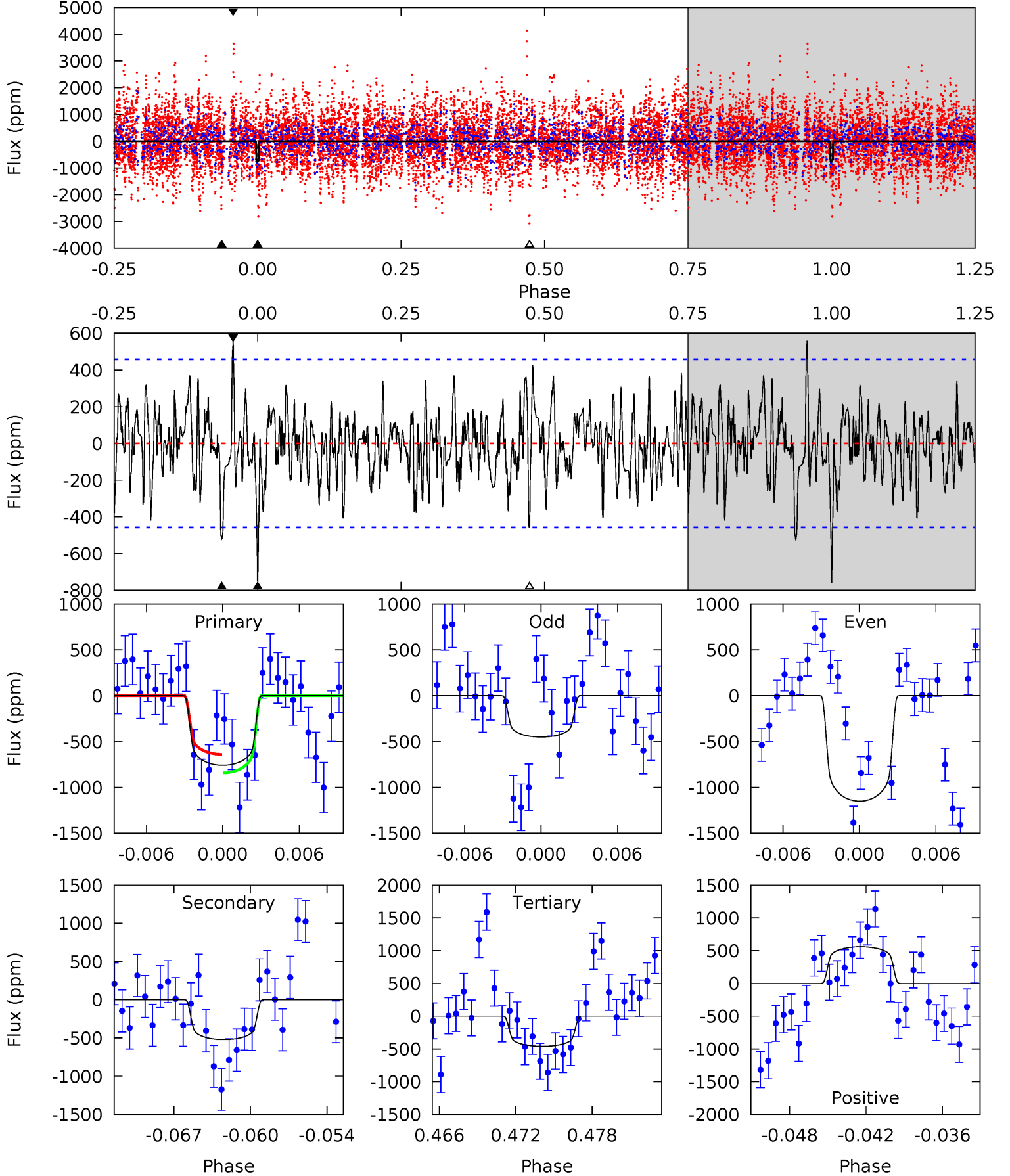




# DV Model-Shift Uniqueness Test

002975832-08, P = 76.125283 Days, E = 78.030995 Days

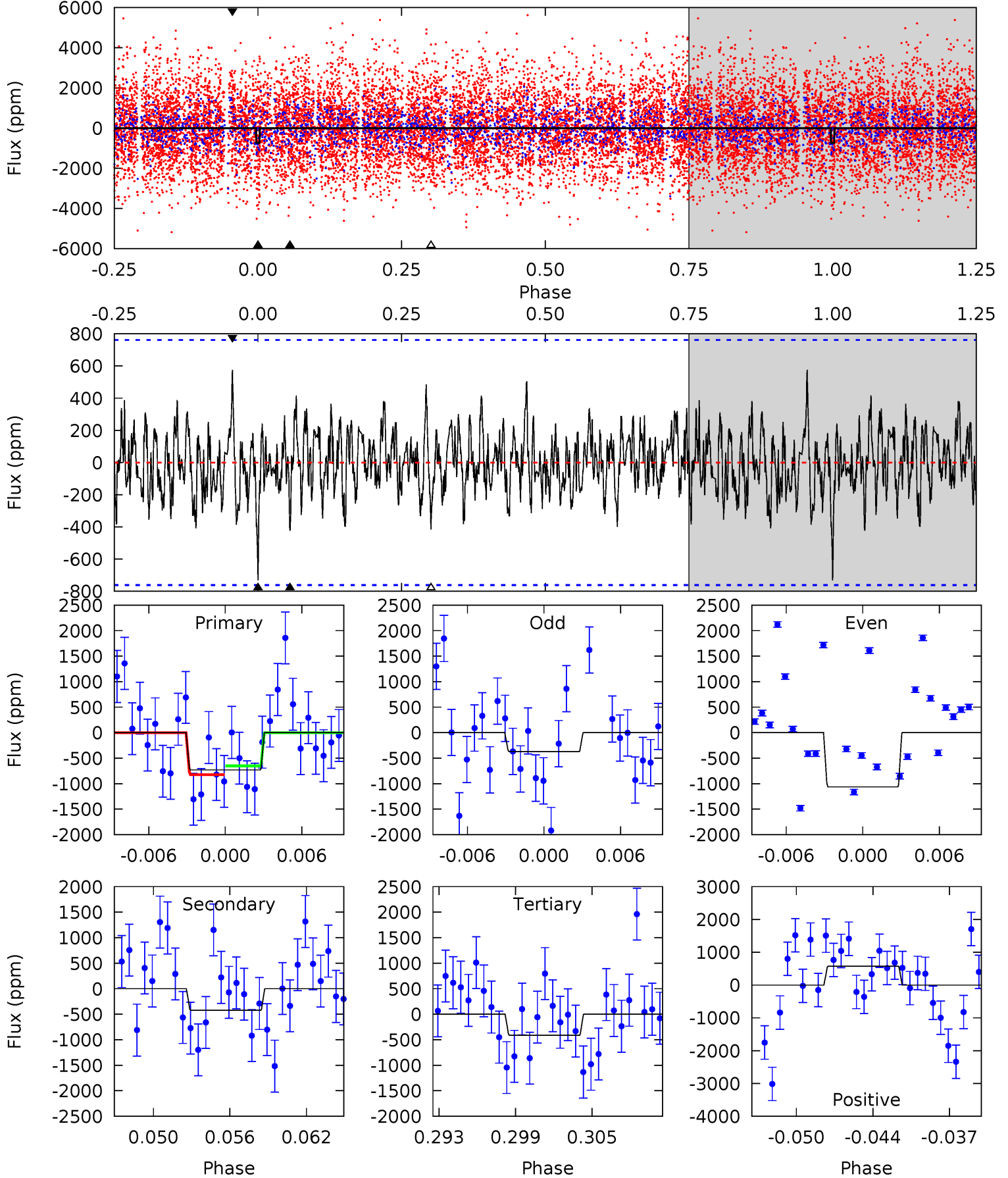
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.48	5.84	5.15	6.25	5.12	2.75	1.78	3.33	2.23	0.69	-0.41	3.92	1.06	0.42	1.10



# Alt Model-Shift Uniqueness Test

002975832-08, P = 76.112159 Days, E = 78.278186 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
4.92	2.85	2.79	3.87	5.12	2.74	1.11	2.13	1.05	0.06	-1.02	2.32	1.28	0.44	0.57



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-522 \pm 89$	$6.38^{+1.36}_{-1.33}$	$951^{+86}_{-88}$	$6120^{+558}_{-449}$	$1194^{+633}_{-412}$
Alt.	$-424 \pm 149$	$6.28^{+1.36}_{-1.35}$	$957^{+77}_{-87}$	$5824^{+717}_{-600}$	$968^{+645}_{-409}$

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

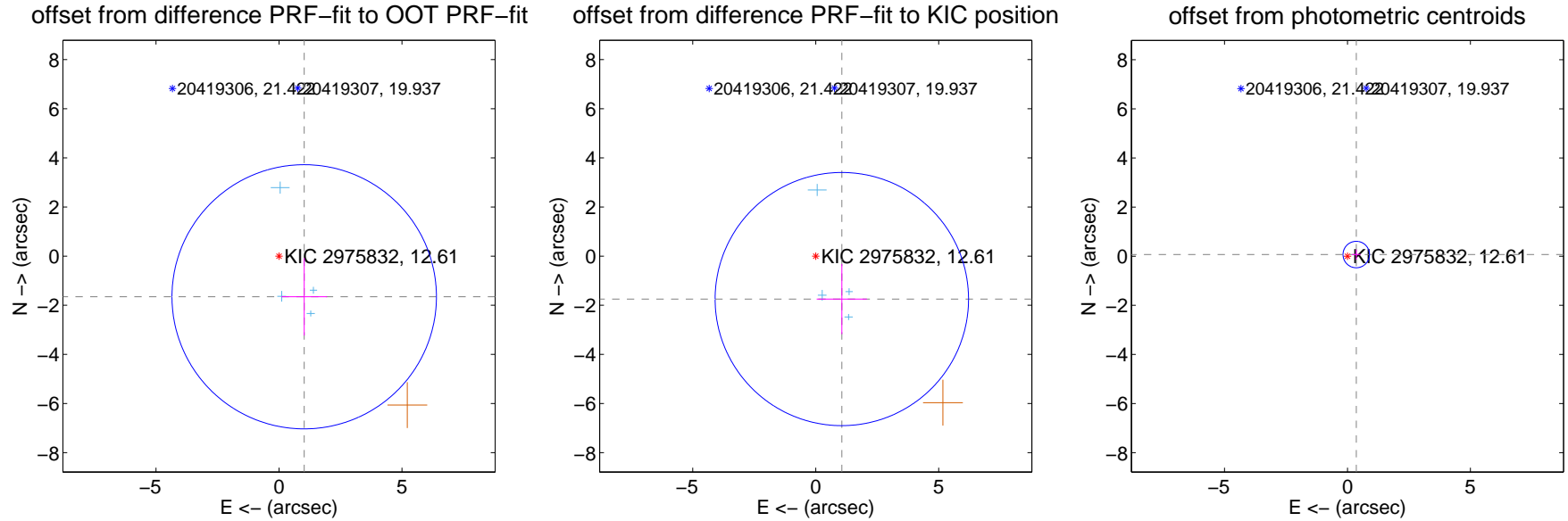
## DV Centroid Data

Supplemental centroid analysis for 002975832-08. Kepler magnitude: 12.61. Transit SNR 7.53

There are 4 quarters with good PRF difference image offsets

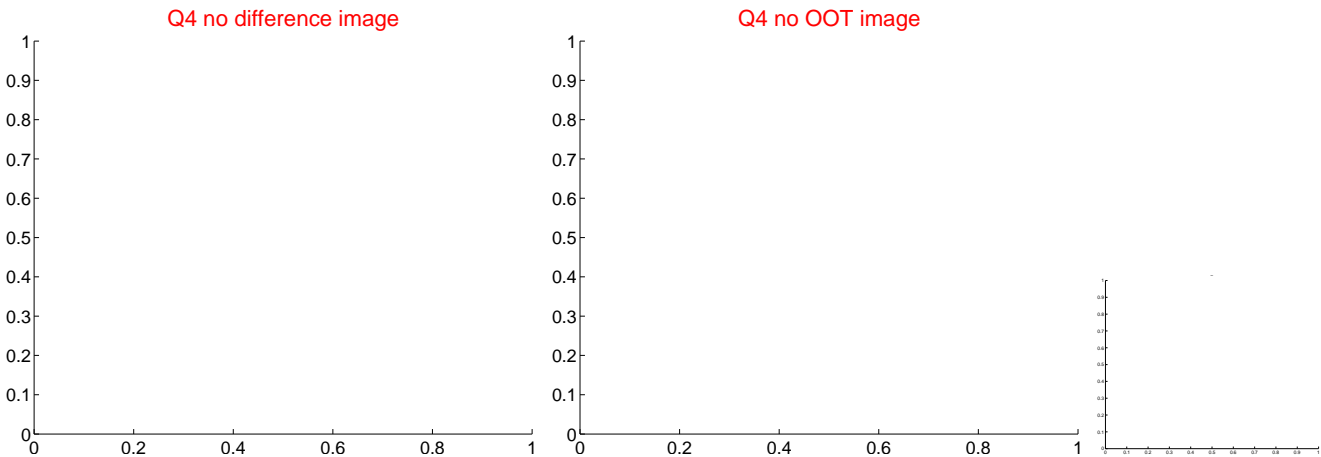
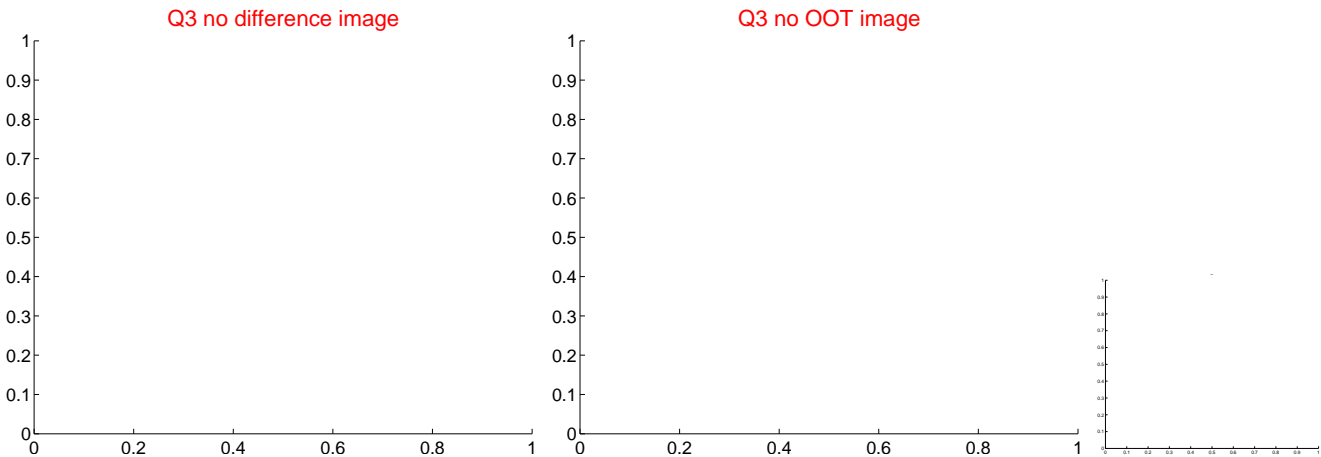
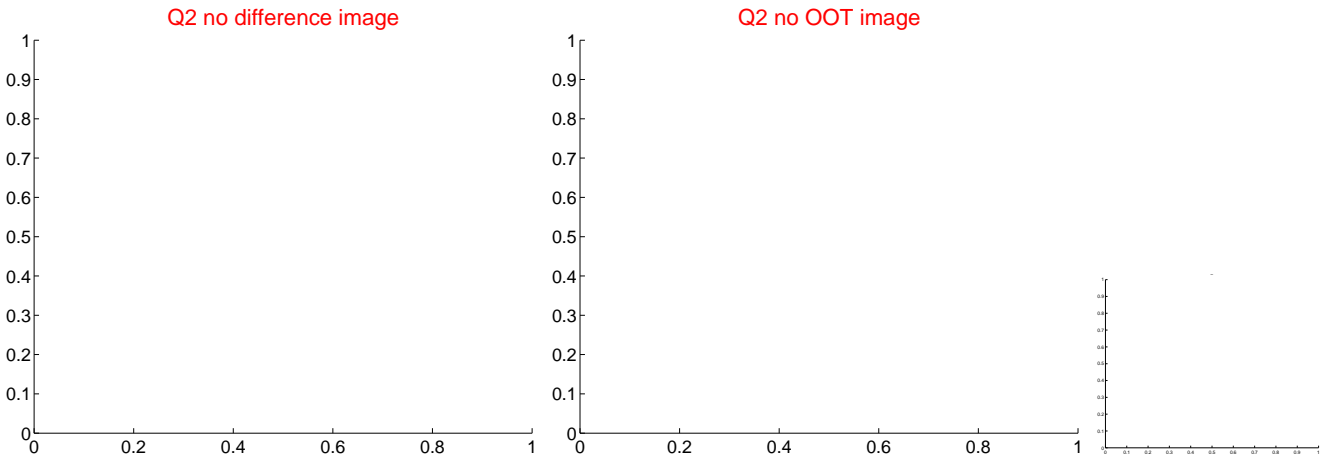
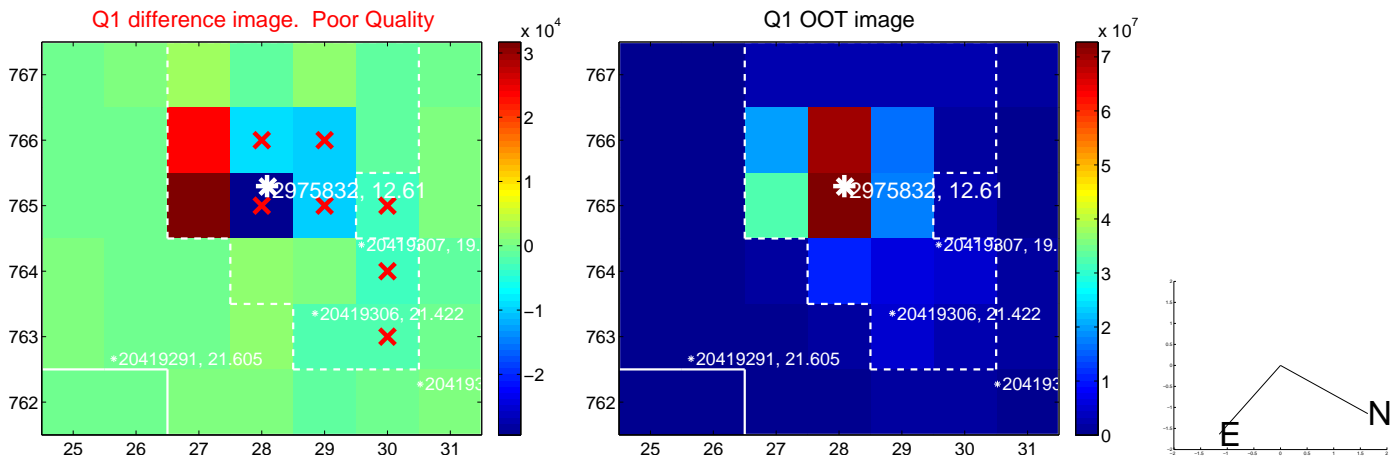
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.946 \pm 1.792$	1.09	$-1.025 \pm 0.929$	$-1.654 \pm 1.576$
PRF-fit source offset from KIC position	$2.044 \pm 1.717$	1.19	$-1.061 \pm 1.021$	$-1.747 \pm 1.429$
photometric centroid source offset	$0.36 \pm 0.18$	2.03	$-0.36 \pm 0.18$	$0.07 \pm 0.21$



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

Q5 no difference image



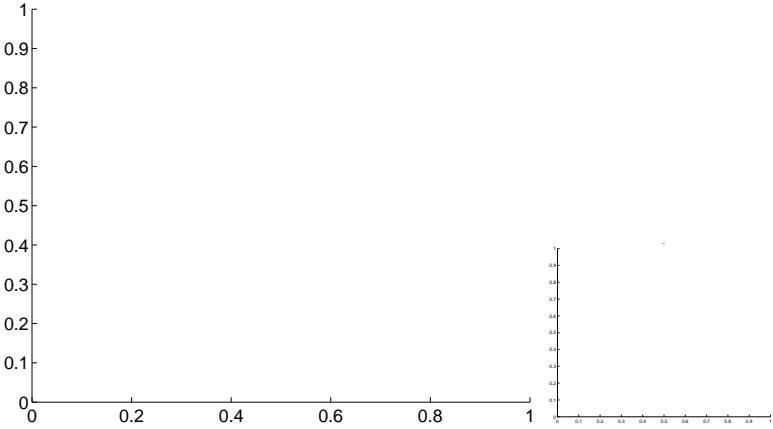
Q5 no OOT image



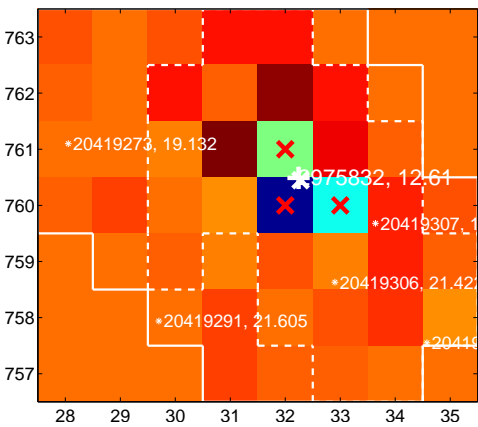
Q6 no difference image



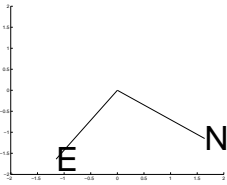
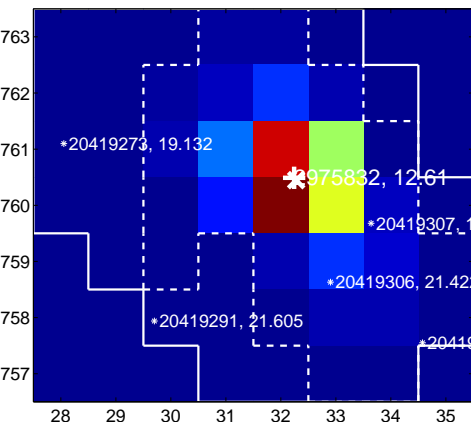
Q6 no OOT image



Q7 difference image. Poor Quality



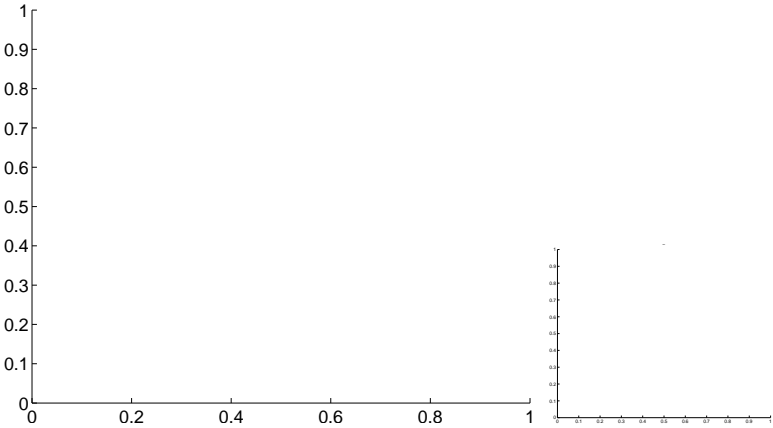
Q7 OOT image



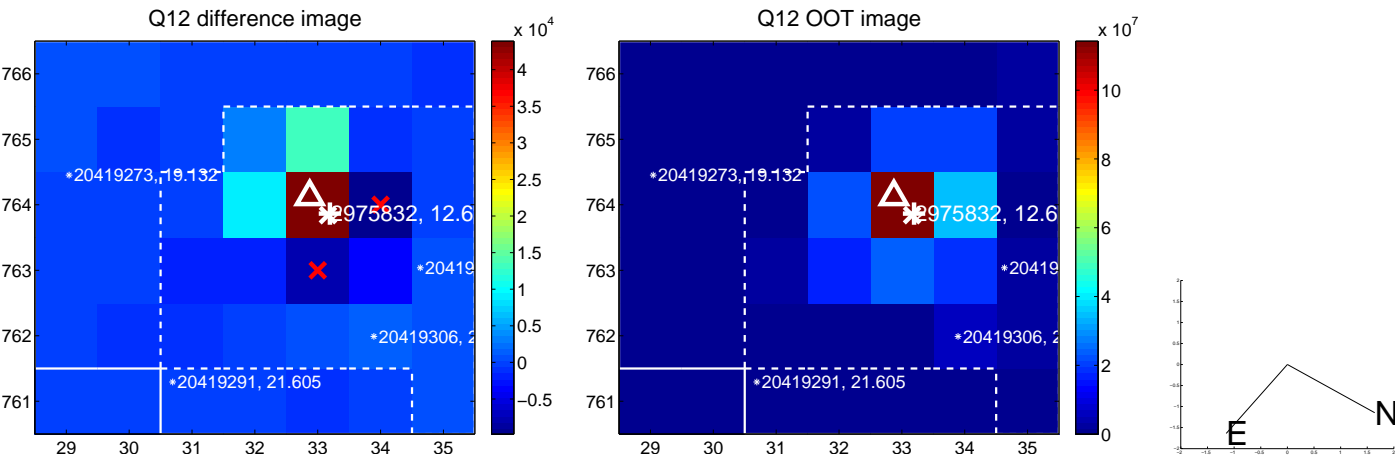
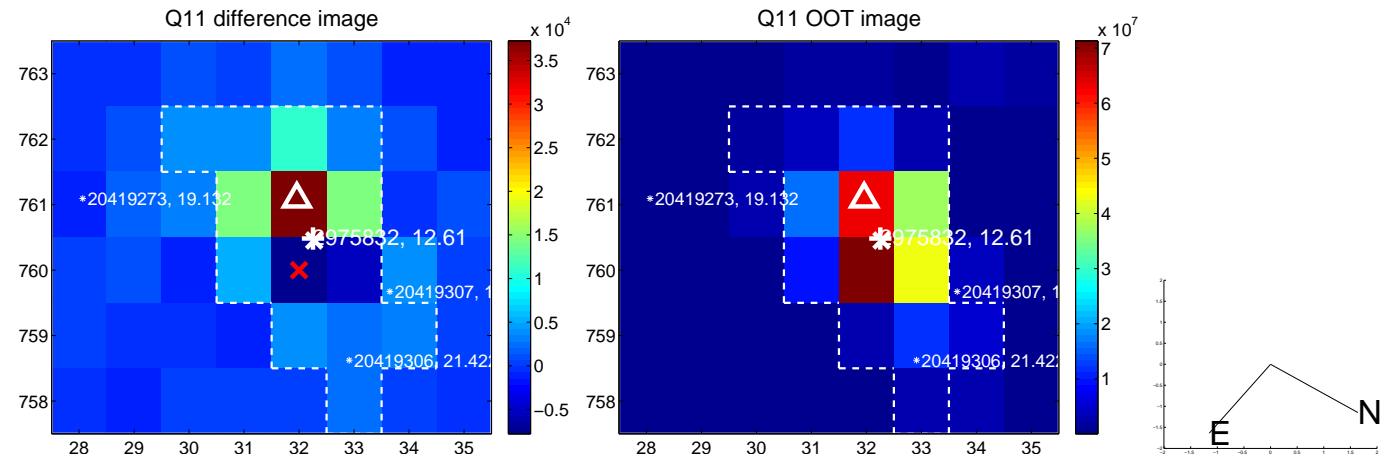
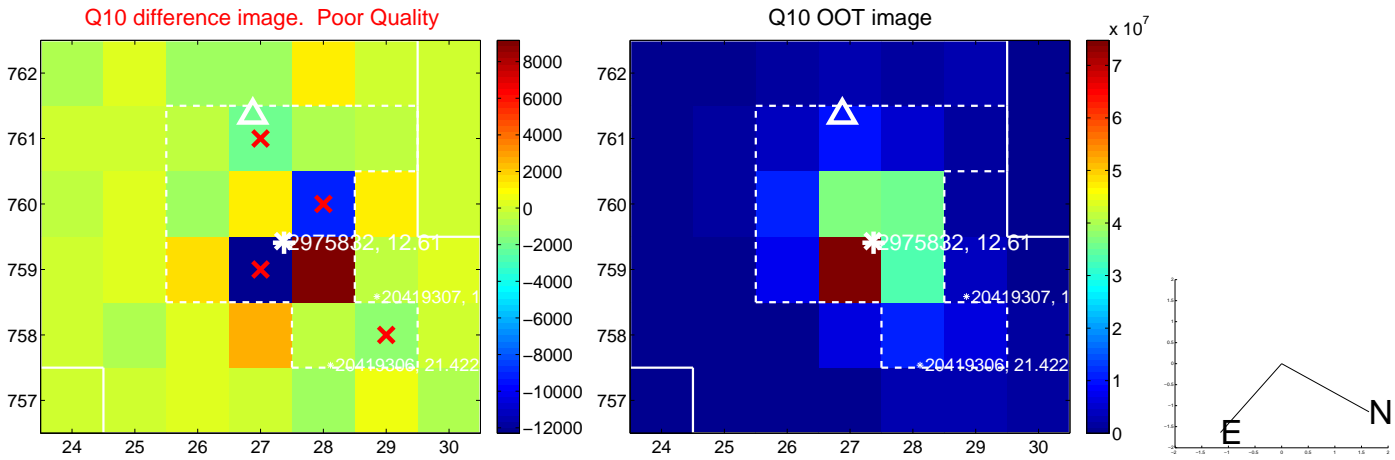
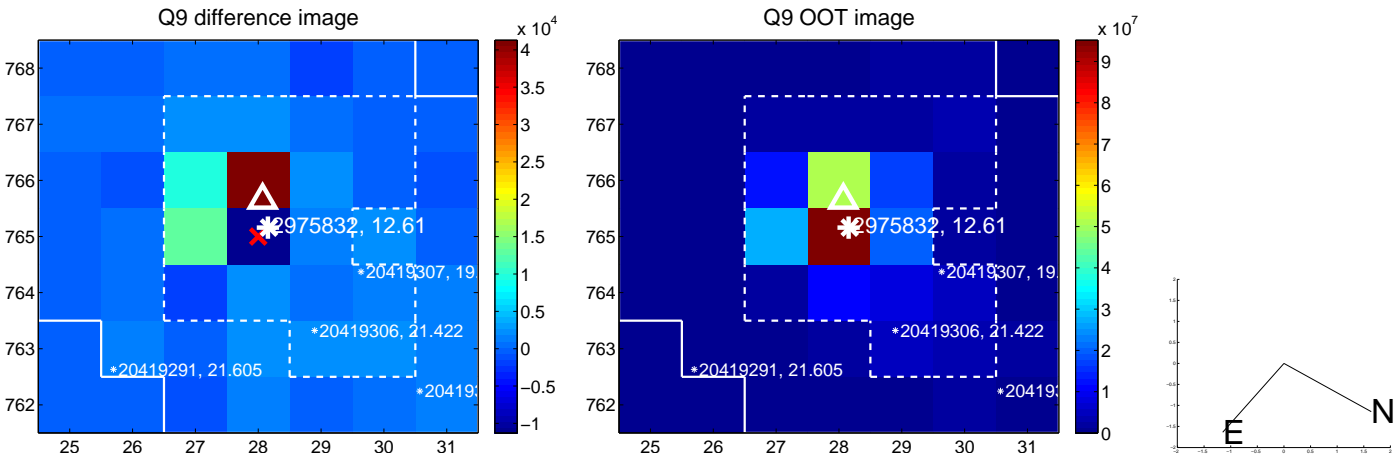
Q8 no difference image



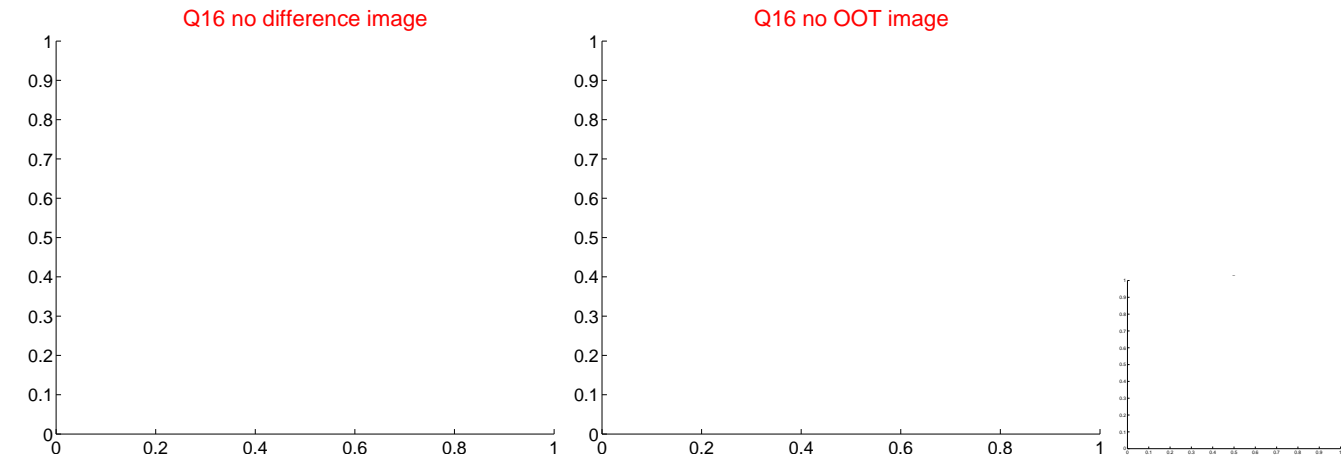
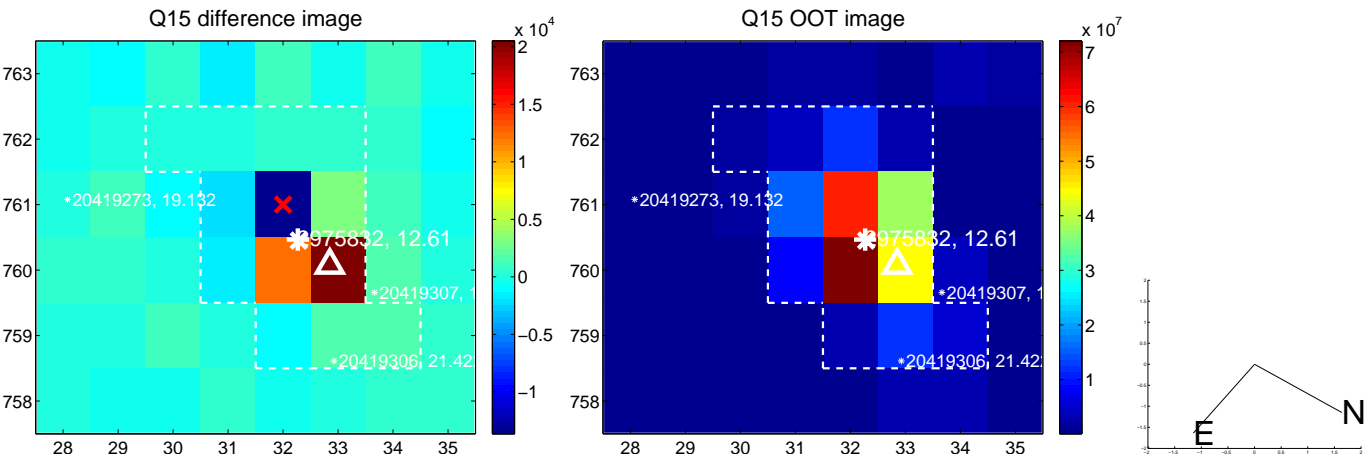
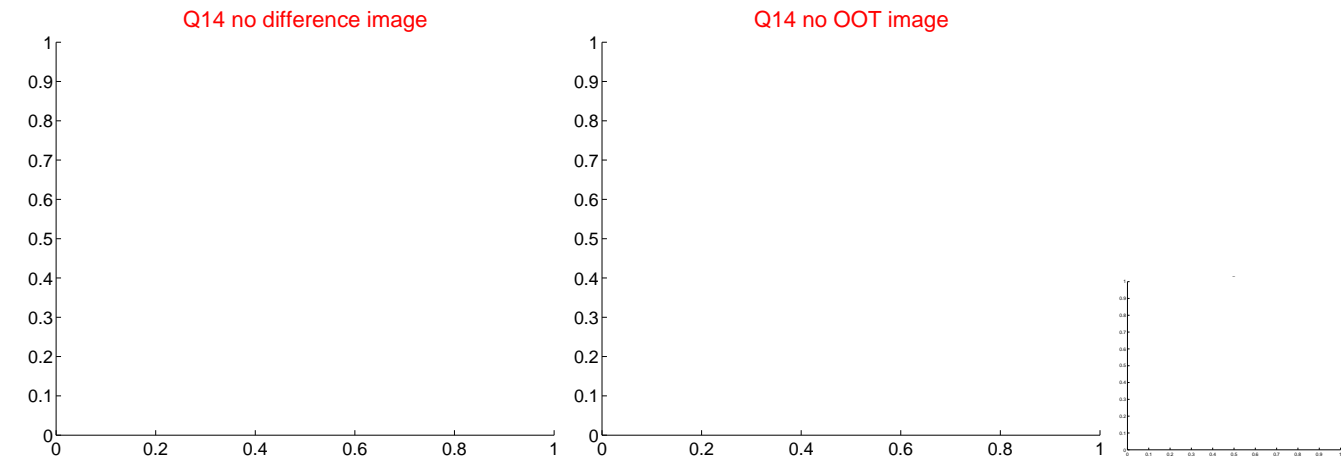
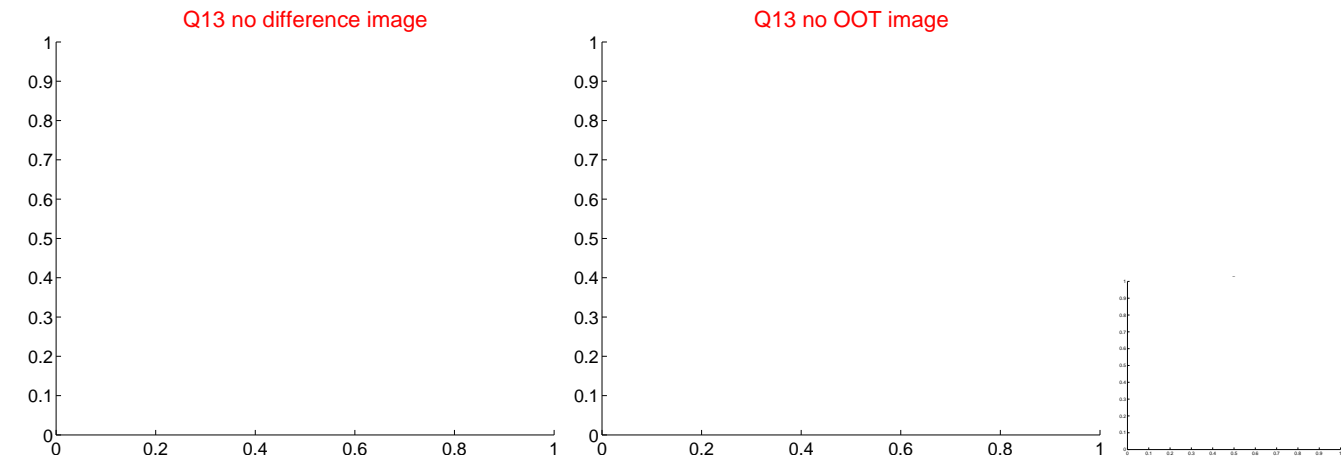
Q8 no OOT image



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

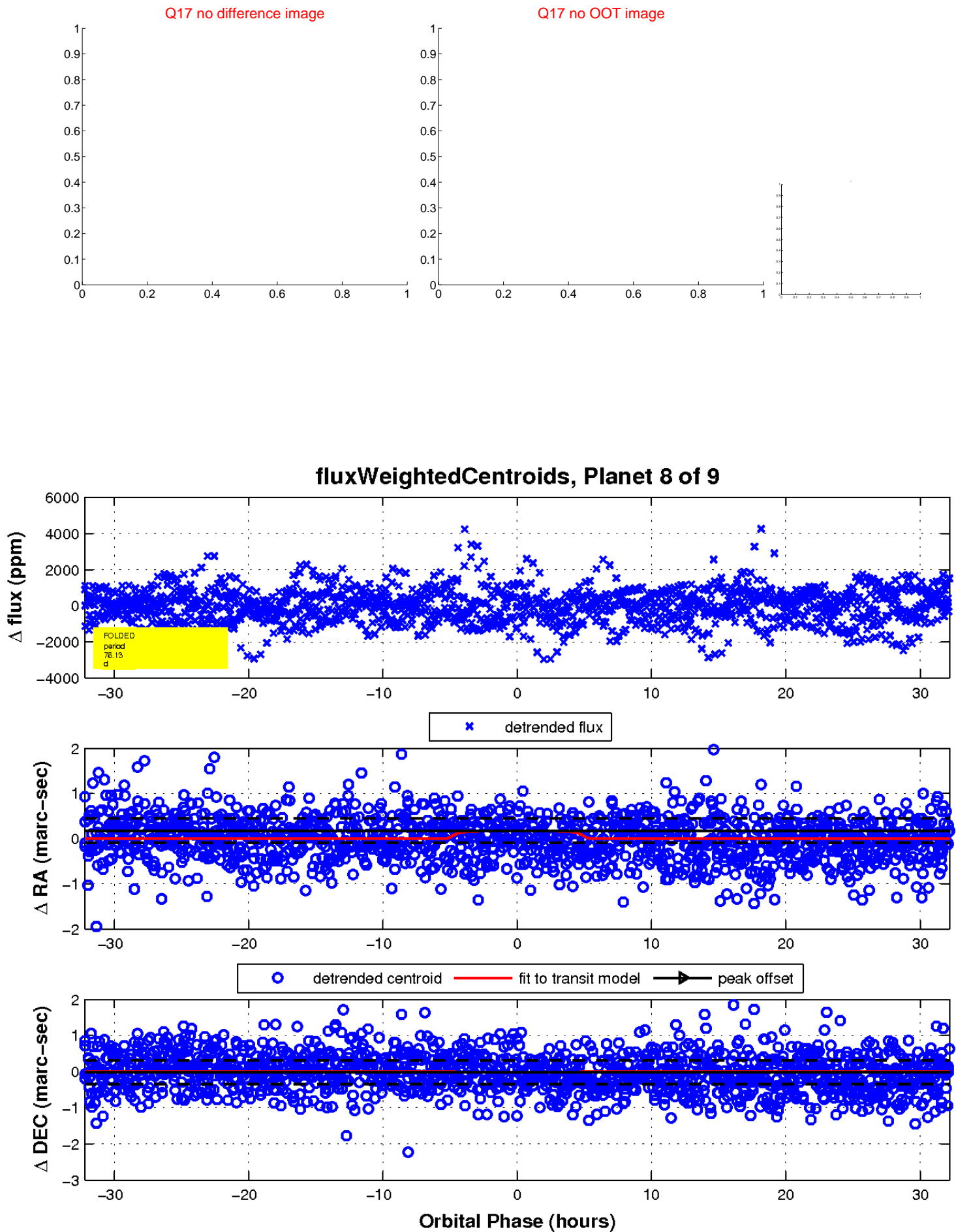


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



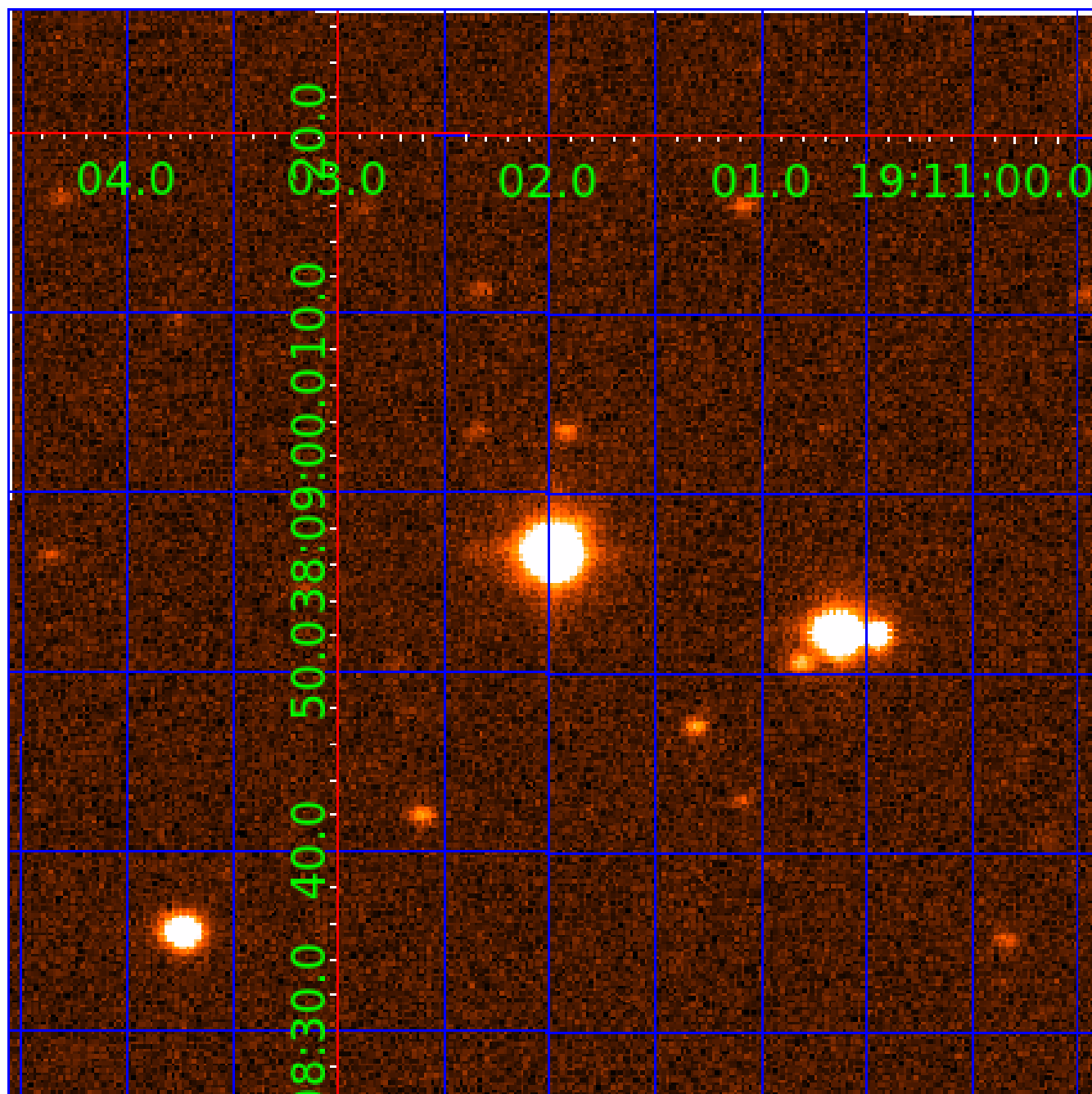


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 002975832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002975832-01	OBS	No	1.627229	132.435993	194.5	9.140	8.9	9.4	2.17	6824	5.75	9243.26
002975832-02	OBS	No	160.399583	161.122046	2526.0	5.160	10.7	11.7	2.17	6824	19.97	20.30
002975832-03	OBS	No	5.858825	132.166980	719.5	4.162	10.5	11.6	2.17	6824	11.06	1674.98
002975832-04	OBS	No	390.617964	406.529446	2246.9	3.603	9.2	9.5	2.17	6824	15.38	6.20
002975832-05	OBS	No	47.801970	171.503131	1560.1	3.837	9.0	10.6	2.17	6824	15.90	101.97
002975832-06	OBS	No	53.285211	159.096330	1557.2	3.905	8.6	8.9	2.17	6824	11.13	88.23
002975832-07	OBS	No	74.321135	151.311873	1472.0	3.841	8.8	7.2	2.17	6824	15.51	56.62
002975832-08	OBS	No	76.125283	154.156278	719.7	10.734	8.7	7.5	2.17	6824	6.61	54.83
002975832-09	OBS	No	59.376130	146.384114	284.0	2.000	8.9	-1.0	2.17	6824	3.70	76.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002975832-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT
002975832-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002975832-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002975832-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002975832-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_UNRESOLVED_OFFSET
002975832-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

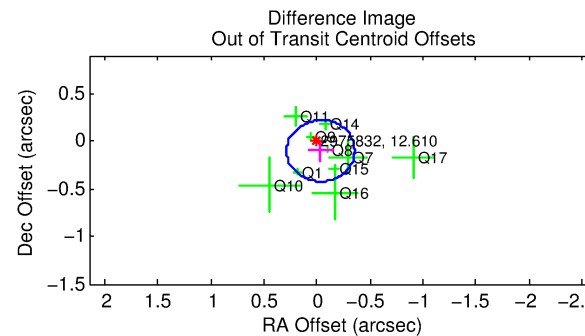
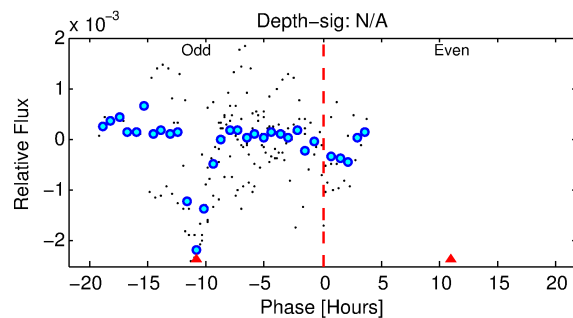
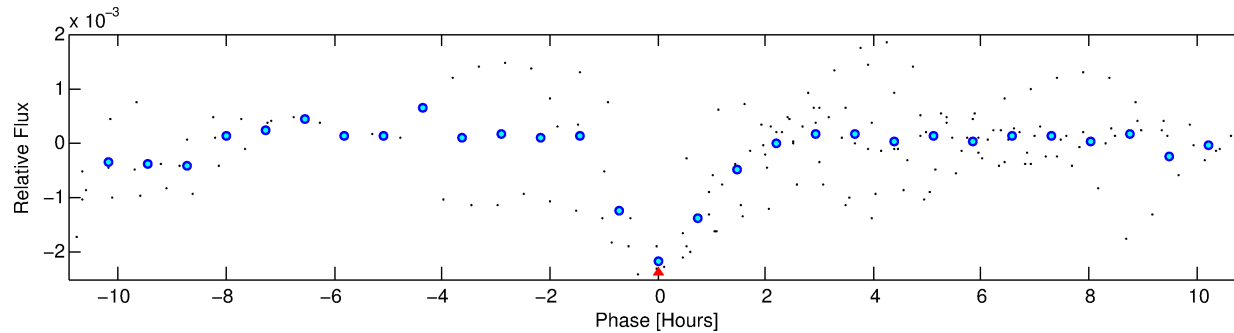
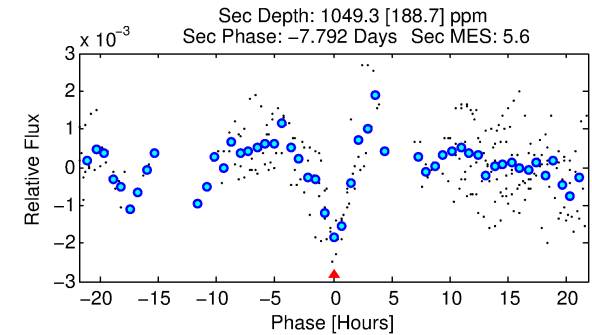
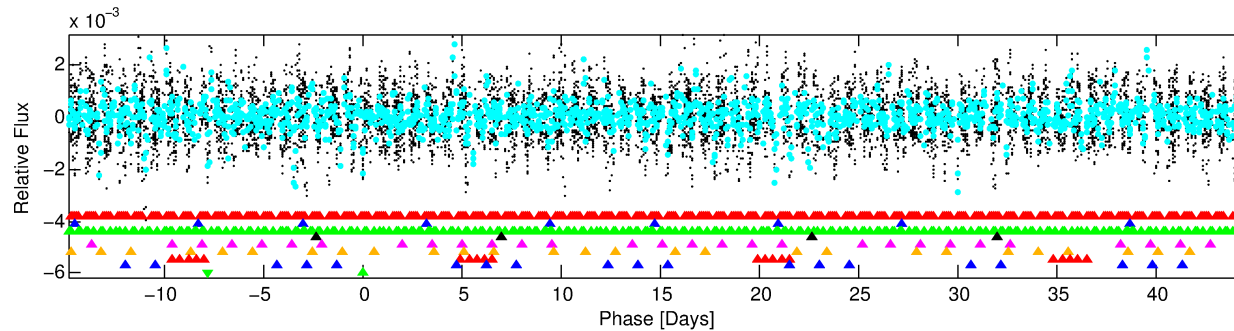
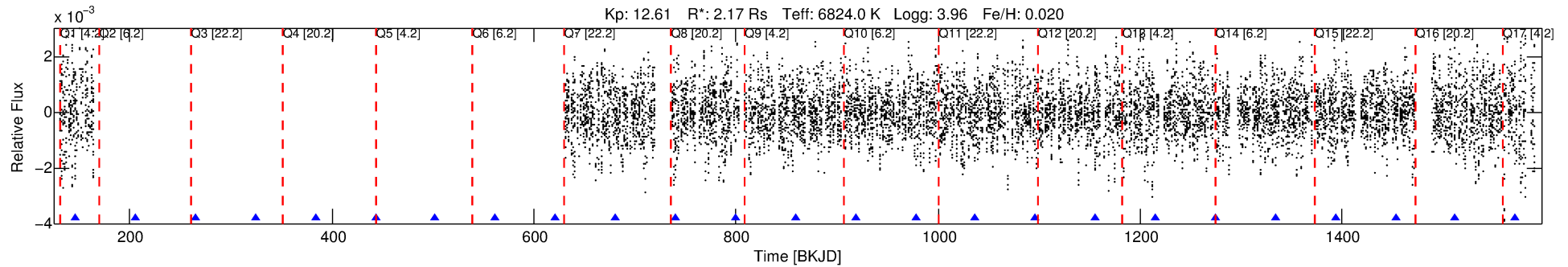
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002975832-09

No Significant Match Found

# DV One-Page Summary

KIC: 2975832 Candidate: 9 of 9 Period: 59.376 d



## TPS TCE Results:

Period = 59.37613 d  
Epoch = 146.3841 BKJD

DV fit results are unavailable

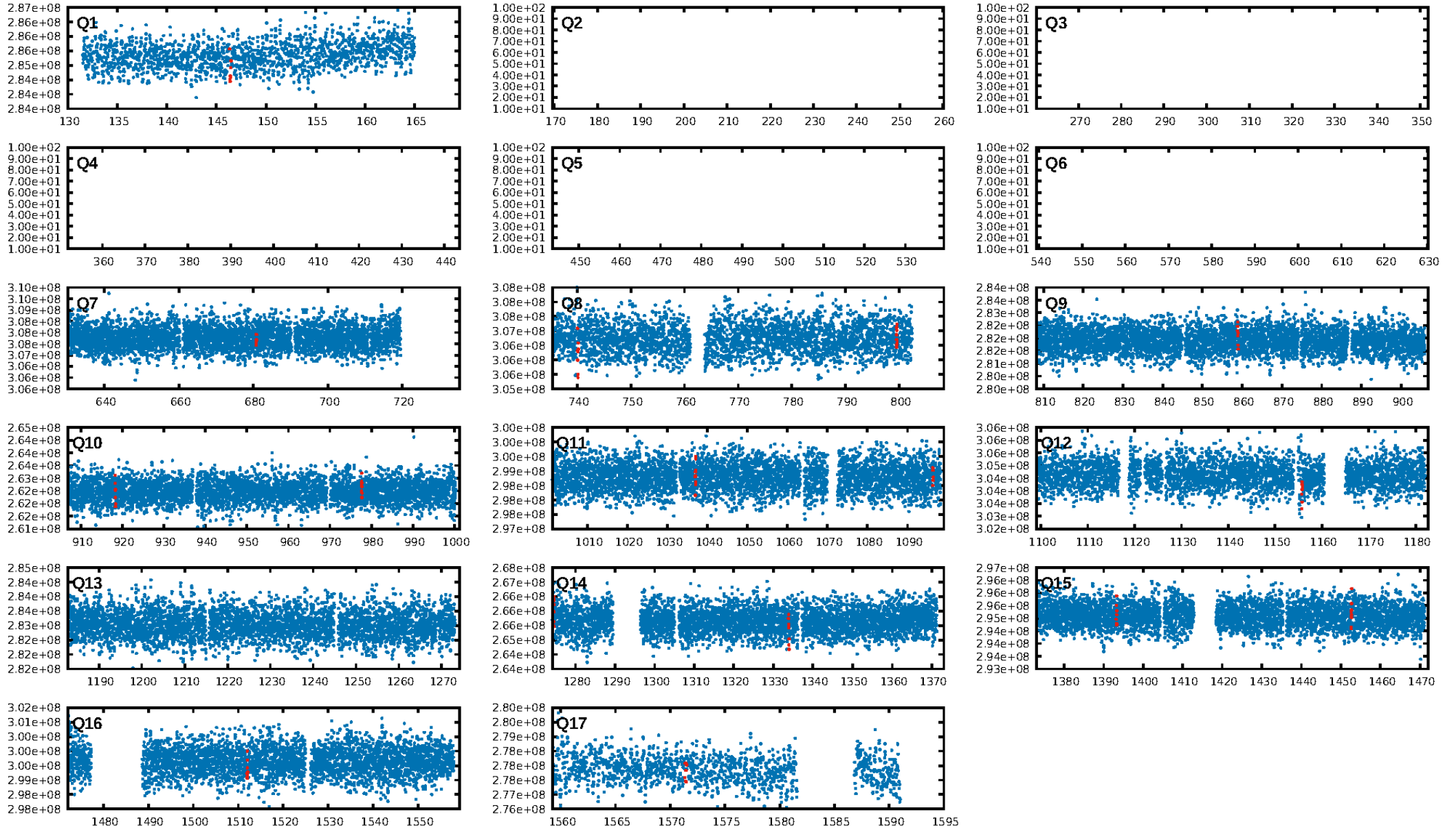
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.32σ]  
LongPeriod-sig: 100.0% [82.83σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -0.5448  
Centroid-sig: 9.5%  
Centroid-so: 0.110 arcsec [1.03σ]  
OotOffset-rm: 0.107 arcsec [0.99σ]  
KicOffset-rm: 0.193 arcsec [1.86σ]  
OotOffset-st: 2/3/2/3 [10]  
KicOffset-st: 2/3/2/3 [10]  
DiffImageQuality-fgm: 0.50 [5/10]  
DiffImageOverlap-fno: 0.40 [4/10]

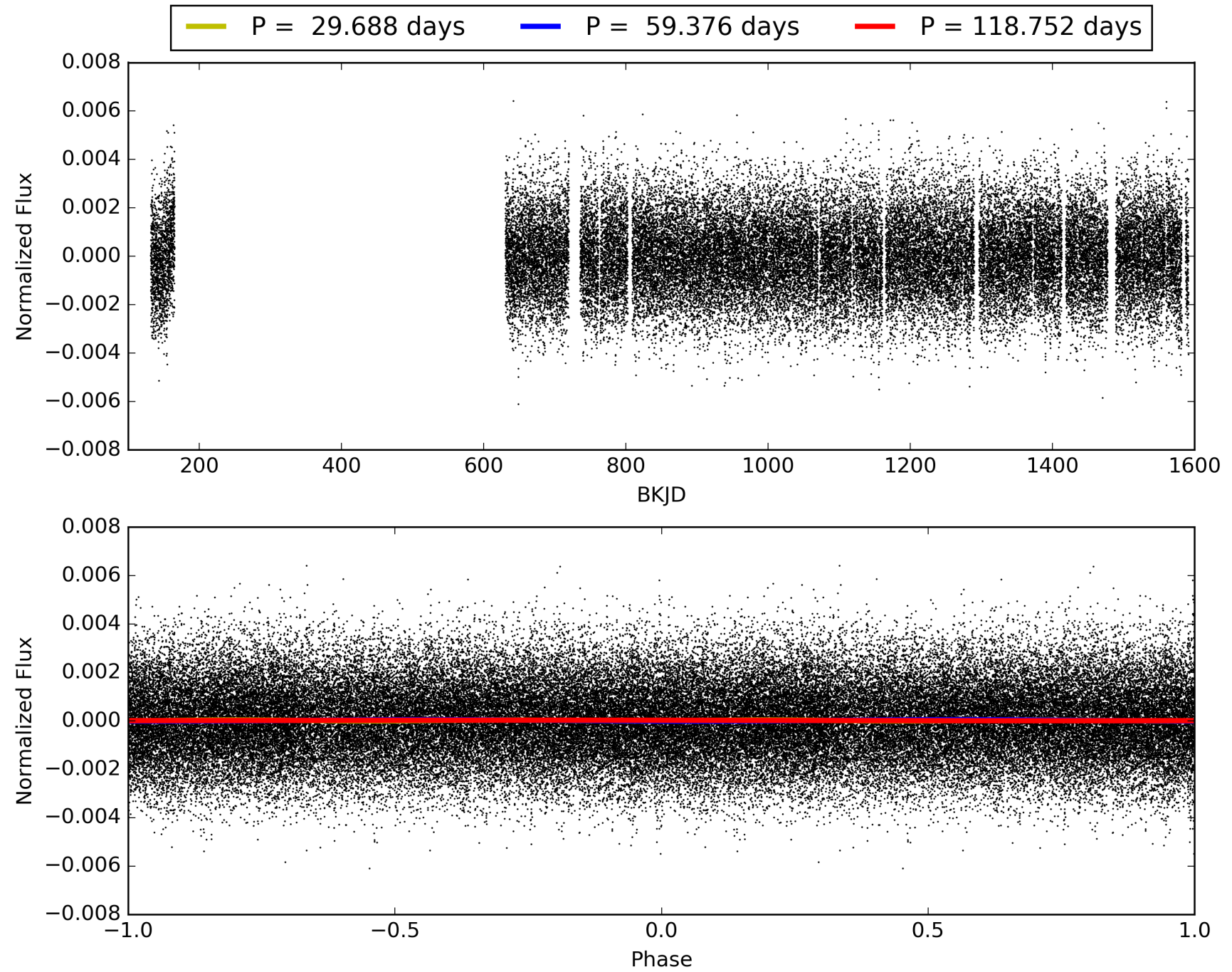
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:27:36 Z

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

# TCE 002975832-09, PDC Light Curves



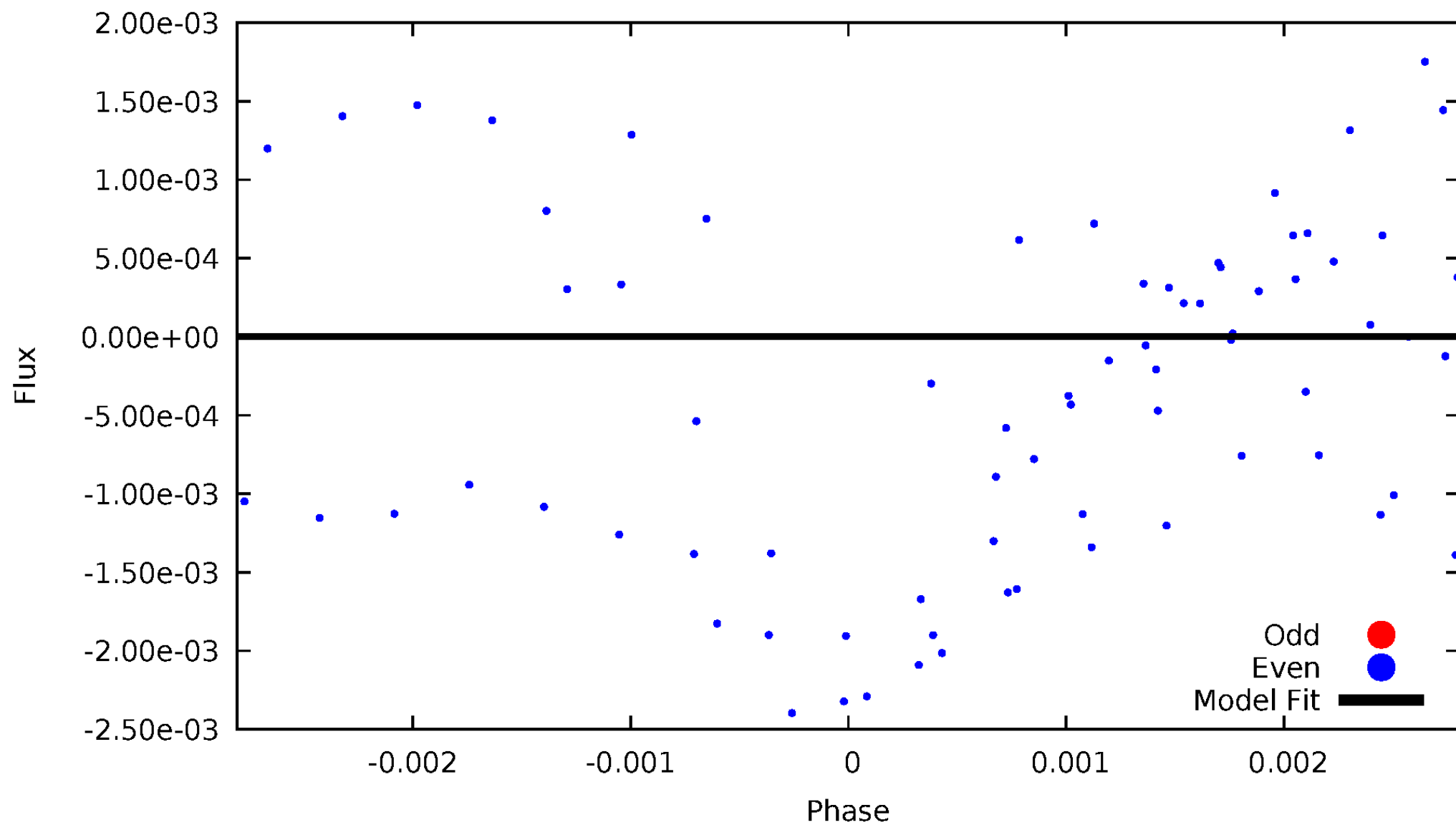
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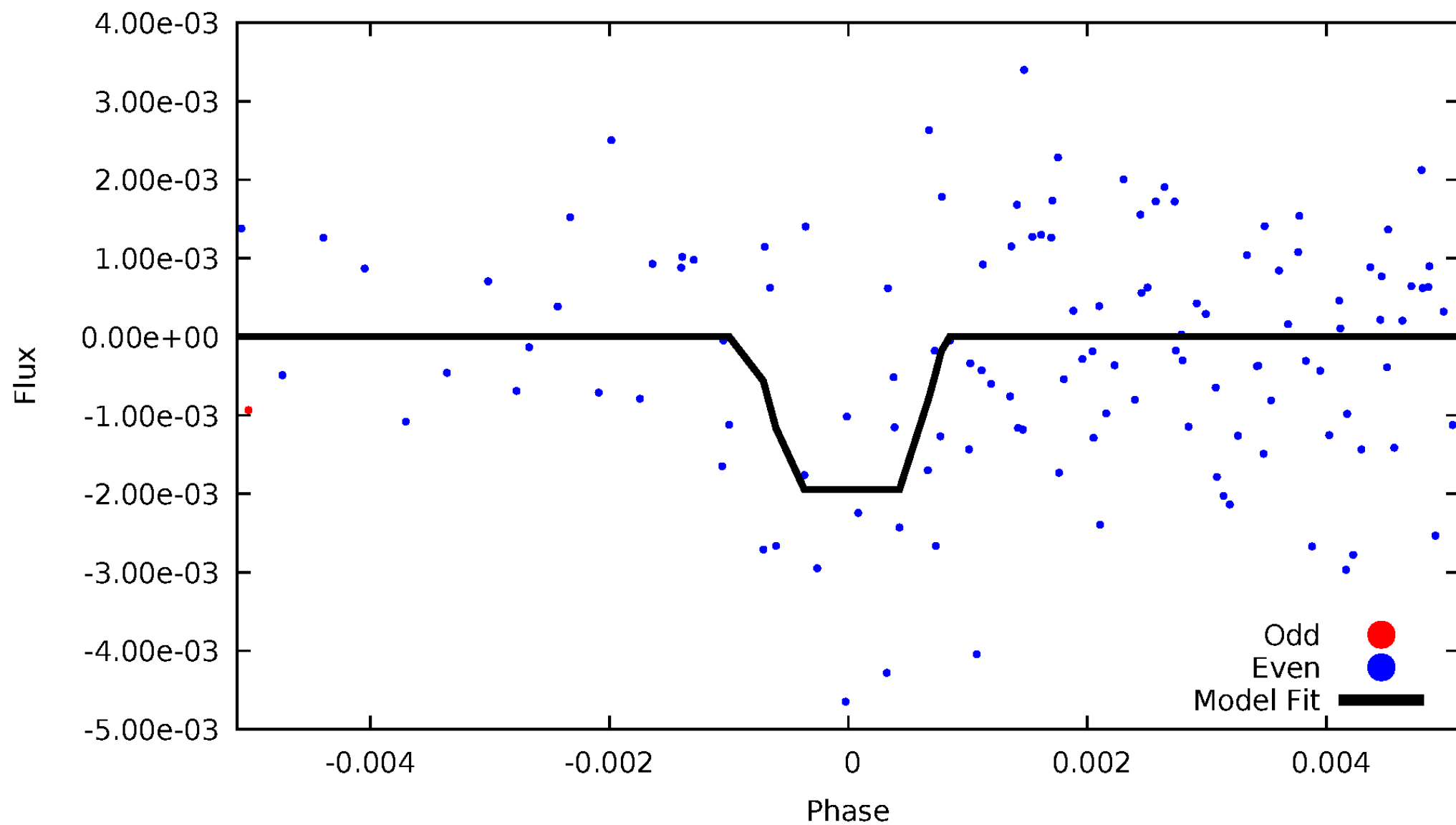
# DV Odd/Even

TCE 002975832-09



# ALT Odd/Even

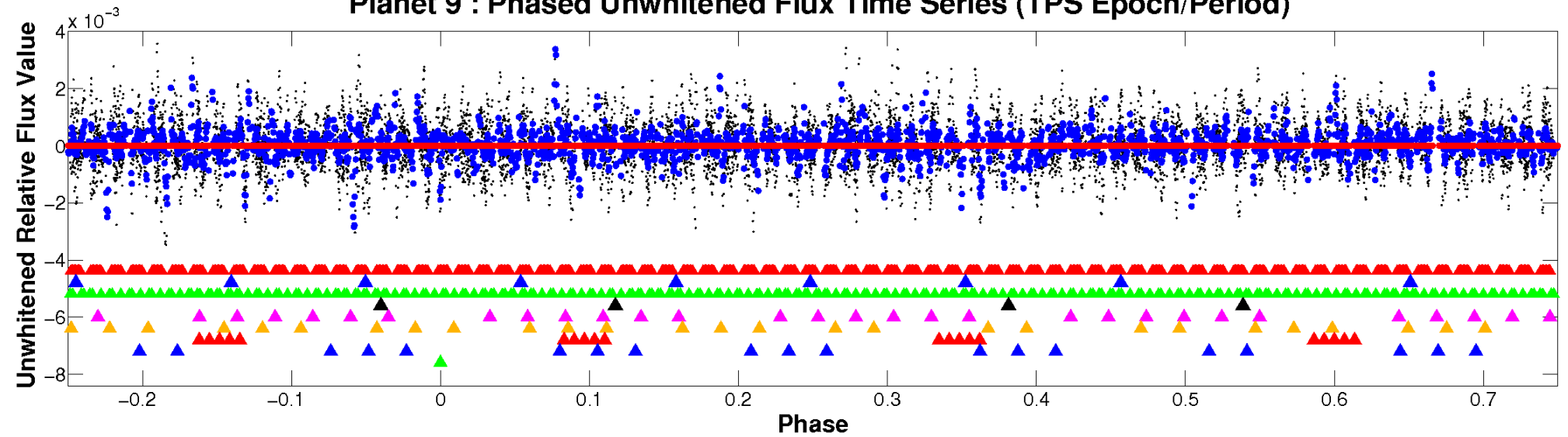
TCE 002975832-09



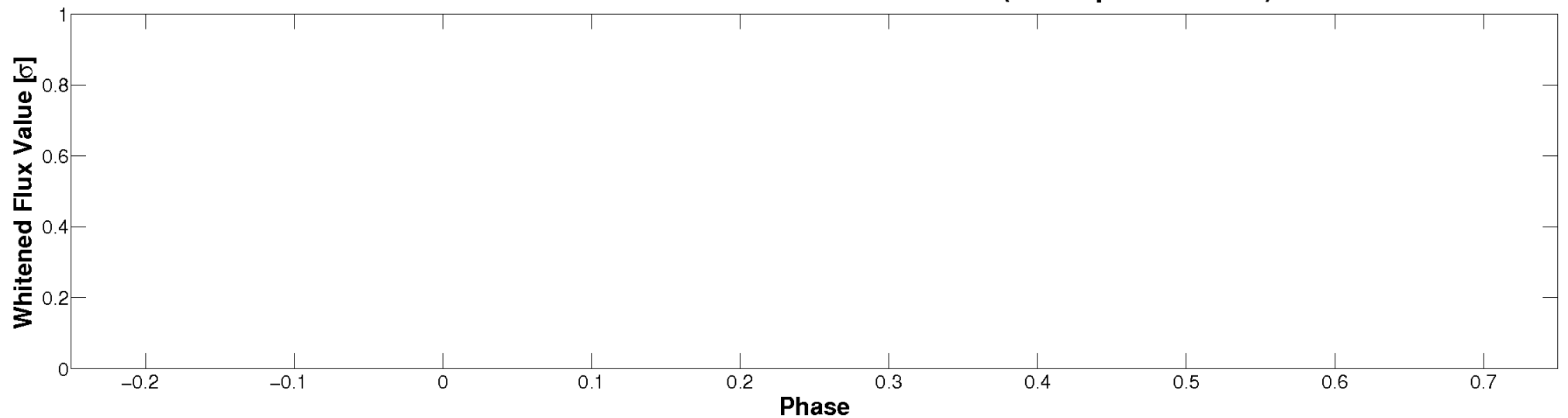


# Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

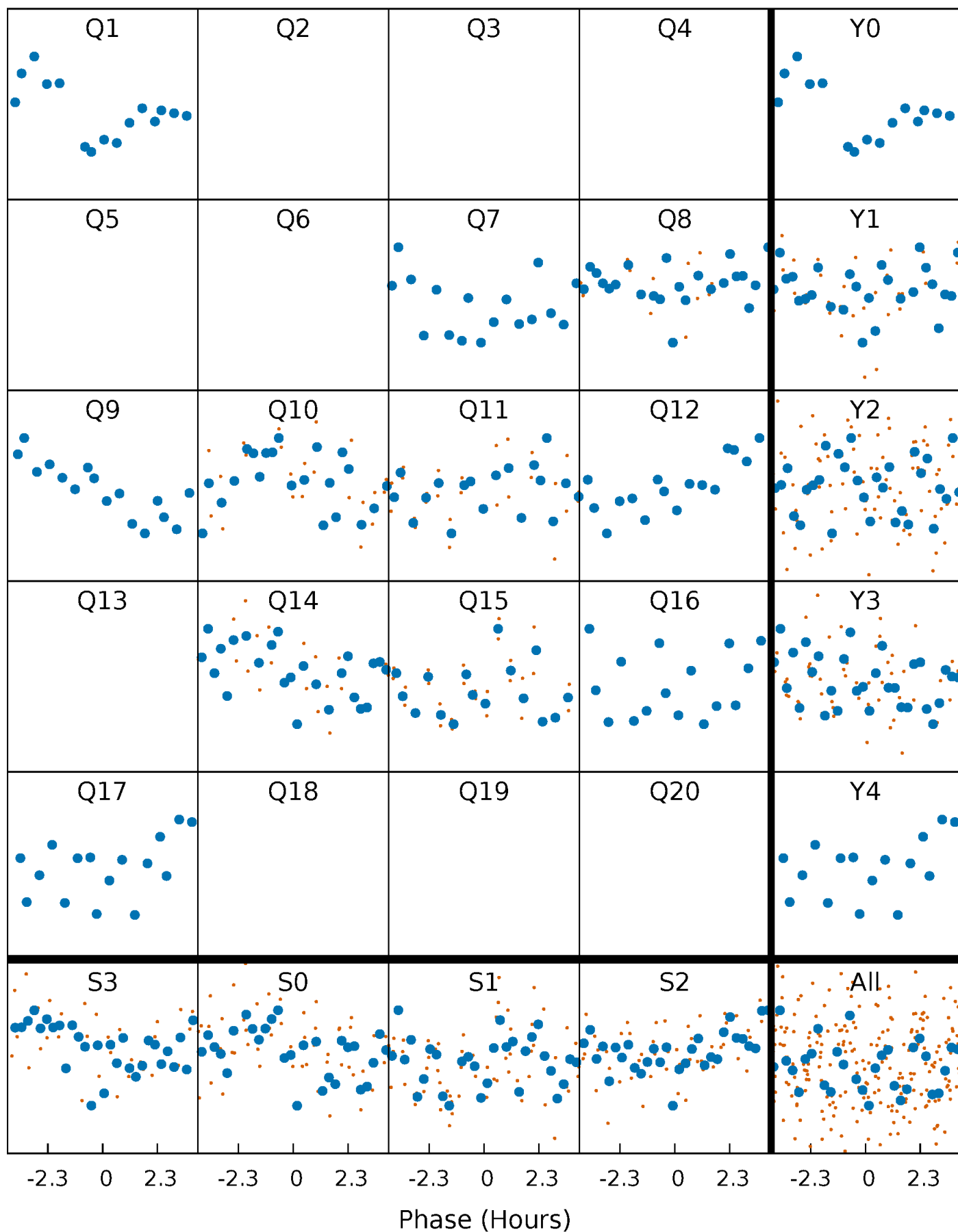


Planet 9 : Phased Whitened Flux Time Series (TPS Epoch/Period)



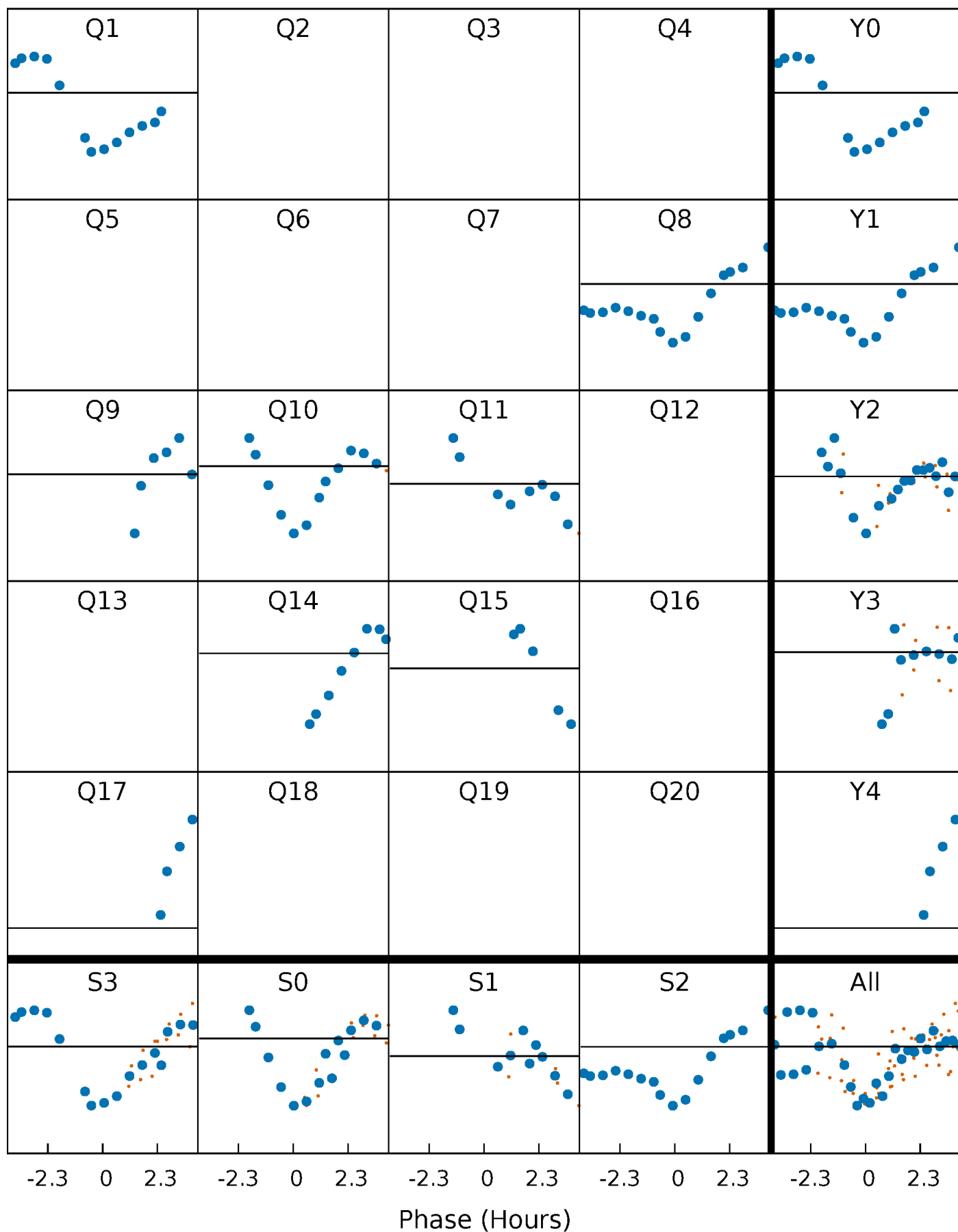
# PDC Quarter-Phased Transit Curves

TCE 002975832-09   P= 59.376130 Days    $T_0=146.384114$  (BKJD)



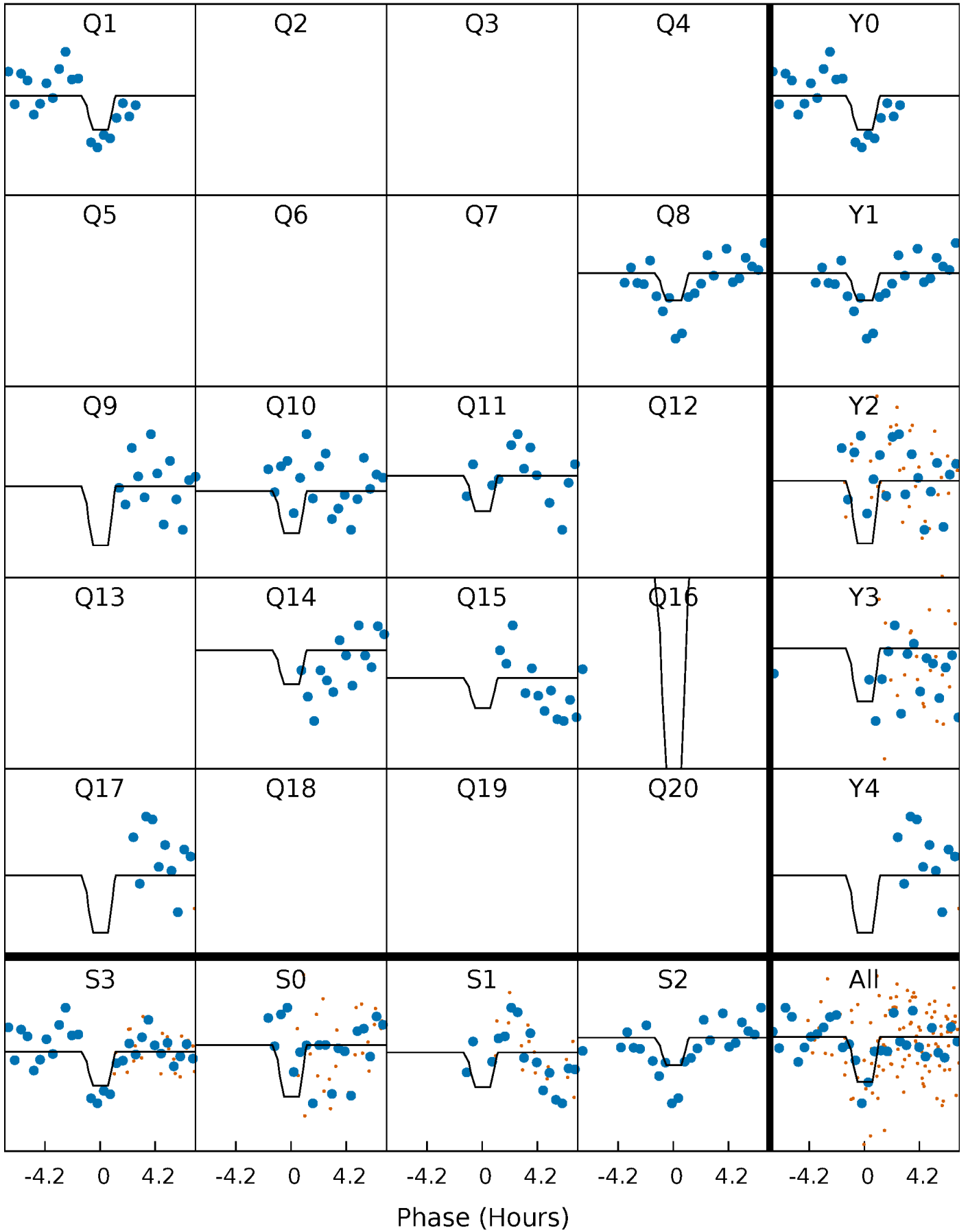
# DV Quarter-Phased Transit Curves

TCE 002975832-09 P= 59.376130 Days  $T_0=146.384114$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

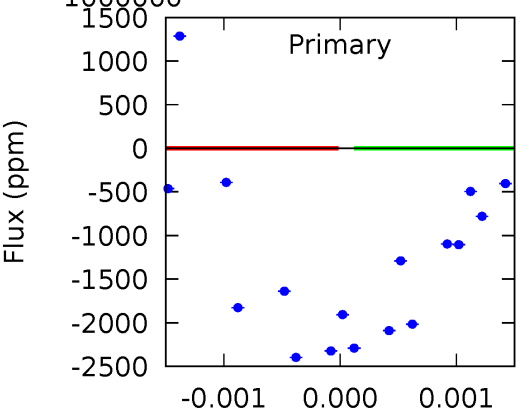
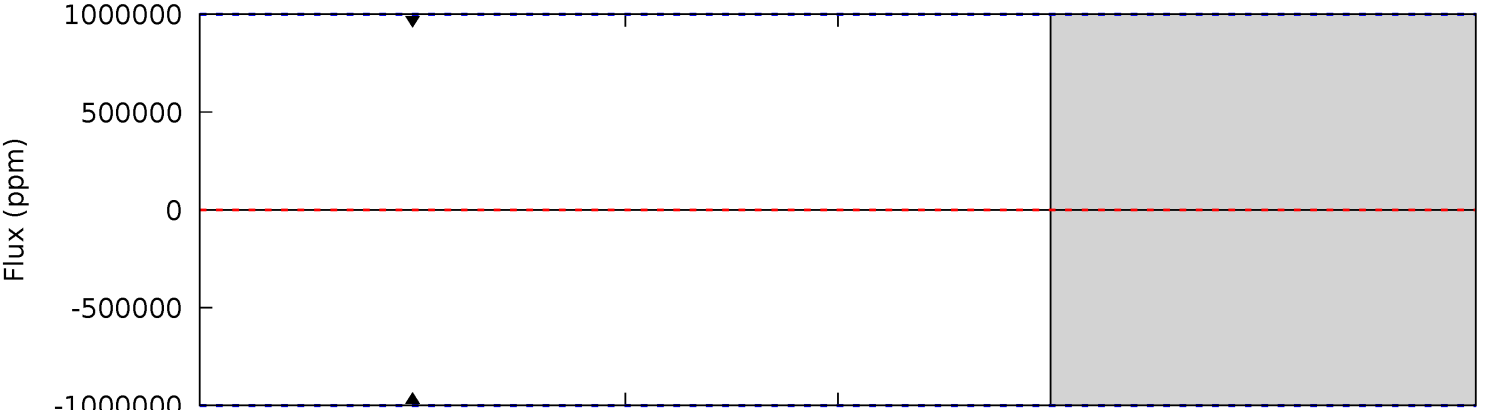
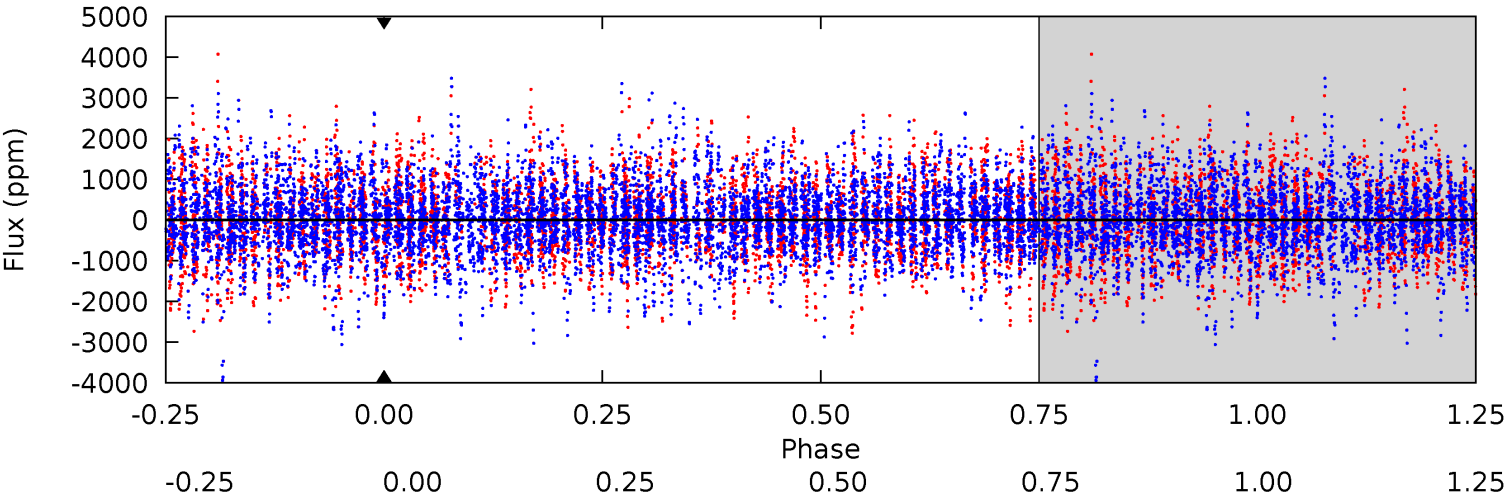
TCE 002975832-09   P= 59.376130 Days    $T_0=146.384244$  (BKJD)



# DV Model-Shift Uniqueness Test

002975832-09, P = 59.376130 Days, E = 87.007984 Days

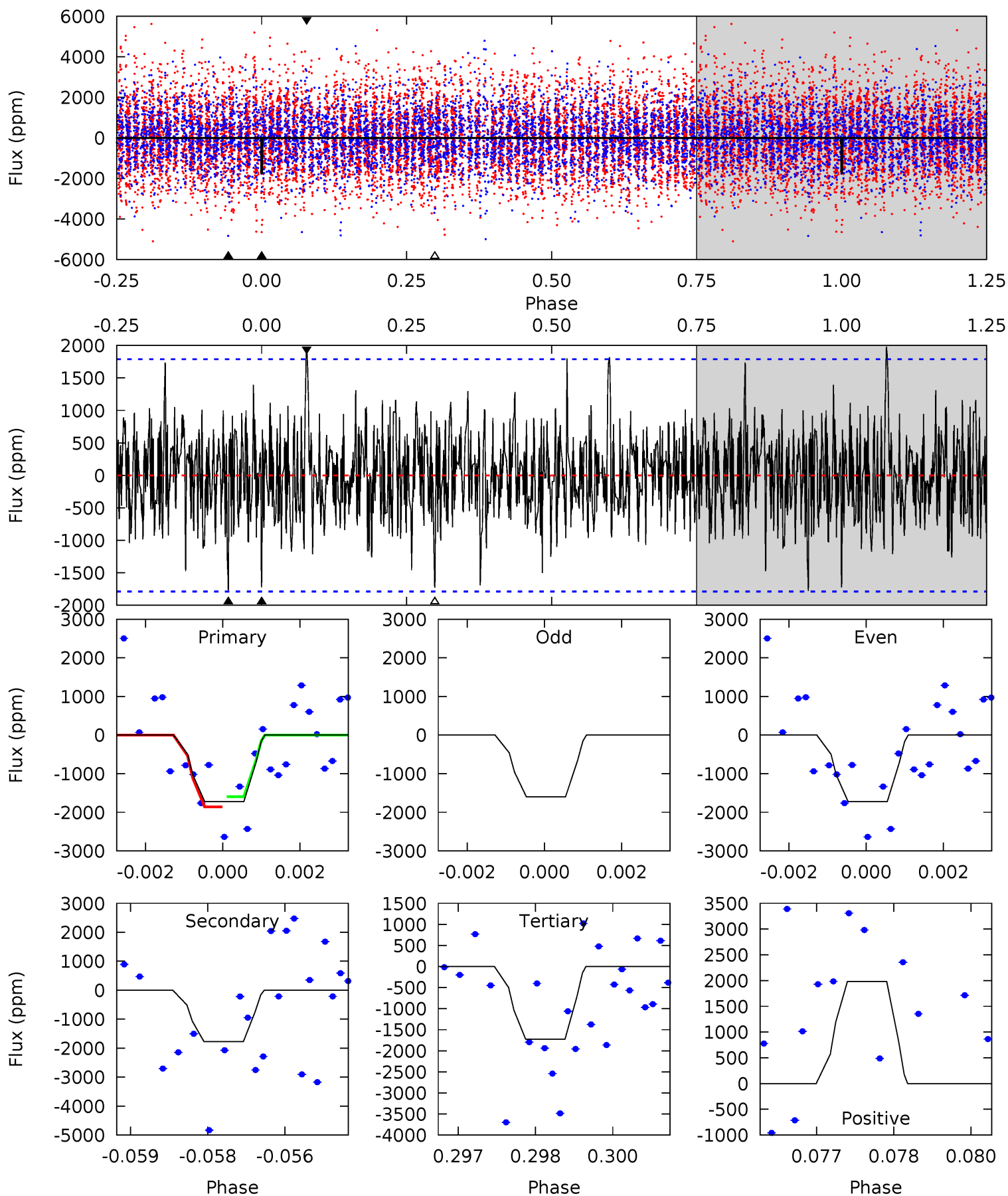
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

002975832-09, P = 59.376130 Days, E = 87.008114 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
5.17	5.33	5.19	5.95	5.37	3.16	1.40	-0.02	-0.78	0.15	-0.62	0.23	0.91	0.53	0.38



### Stellar Parameters For KIC 002975832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6824^{+189}_{-283}$	$3.961^{+0.286}_{-0.154}$	$0.020^{+0.250}_{-0.350}$	$2.173^{+0.603}_{-0.737}$	$1.576^{+0.218}_{-0.326}$	$0.216^{+0.388}_{-0.109}$
	+3%/-4%	+7%/-4%	+1250%/-1750%	+28%/-34%	+14%/-21%	+180%/-51%
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 002975832-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$16.80^{+17.29}_{-12.12}$	$1037^{+78}_{-99}$	$4336^{+28674}_{-31671}$	$167^{+44291}_{-42531}$
Alt.	$-1776 \pm 333$	$19.23^{+19.49}_{-13.25}$	$1035^{+82}_{-87}$	$4837^{+3813}_{-1074}$	$324^{+2559}_{-247}$

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

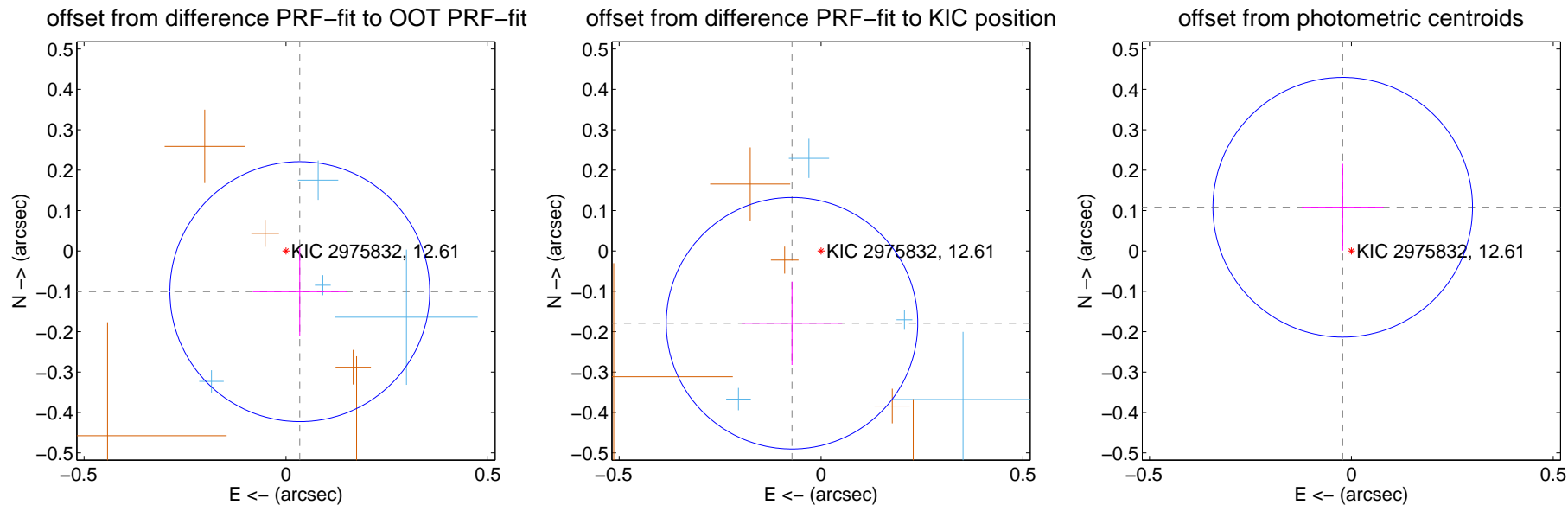
## DV Centroid Data

Supplemental centroid analysis for 002975832-09. Kepler magnitude: 12.61. Transit SNR -1.00

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

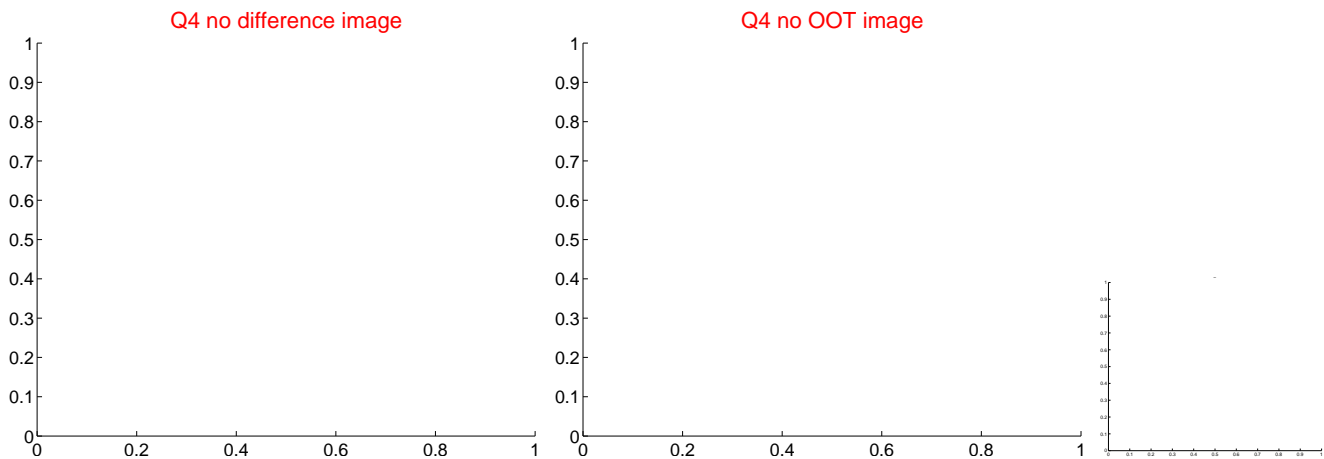
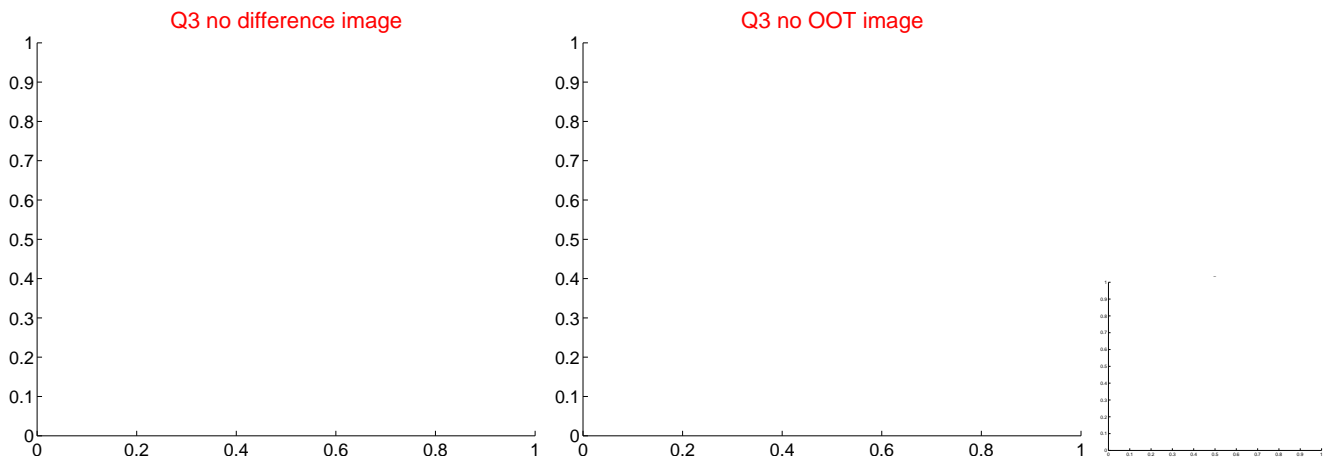
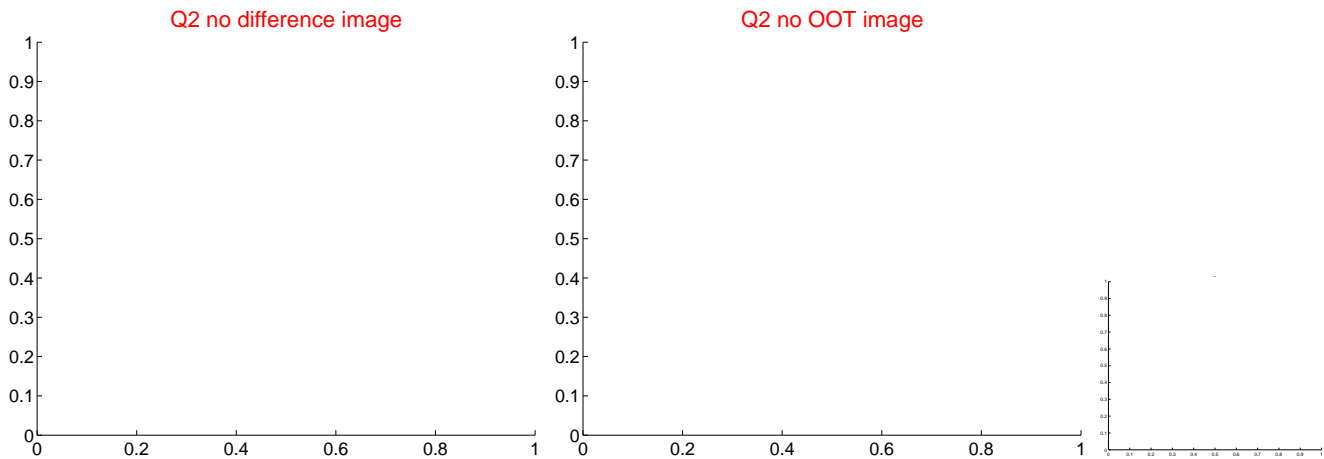
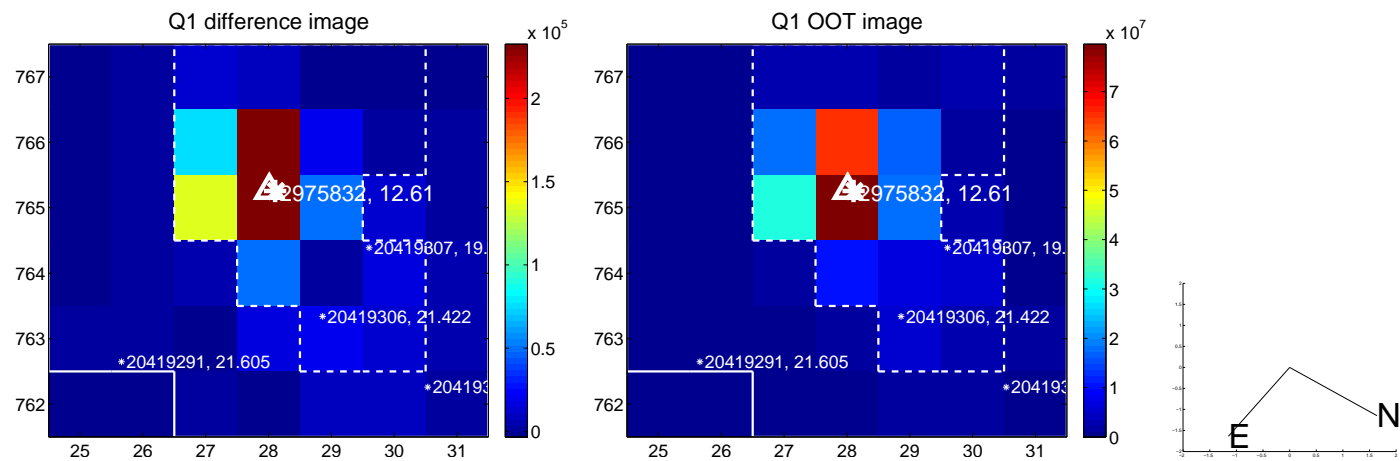
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.107 \pm 0.107$	0.99	$-0.034 \pm 0.116$	$-0.101 \pm 0.109$
PRF-fit source offset from KIC position	$0.193 \pm 0.104$	1.86	$0.072 \pm 0.124$	$-0.179 \pm 0.103$
photometric centroid source offset	$0.11 \pm 0.11$	1.03	$0.02 \pm 0.10$	$0.11 \pm 0.11$



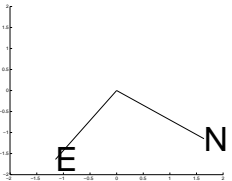
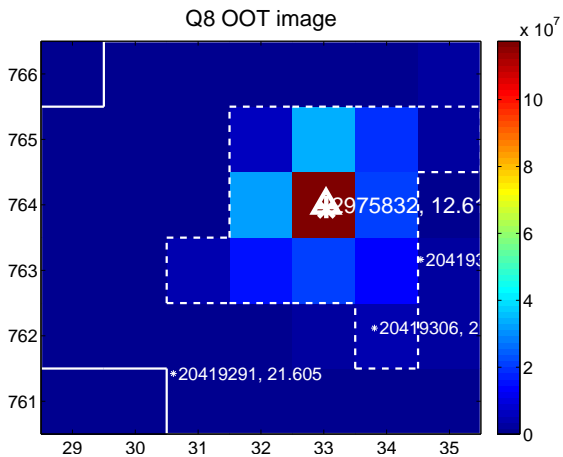
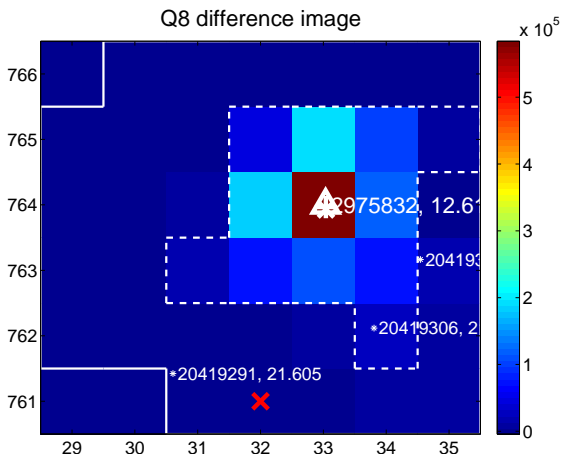
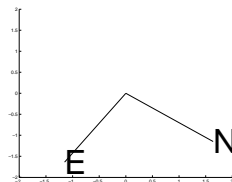
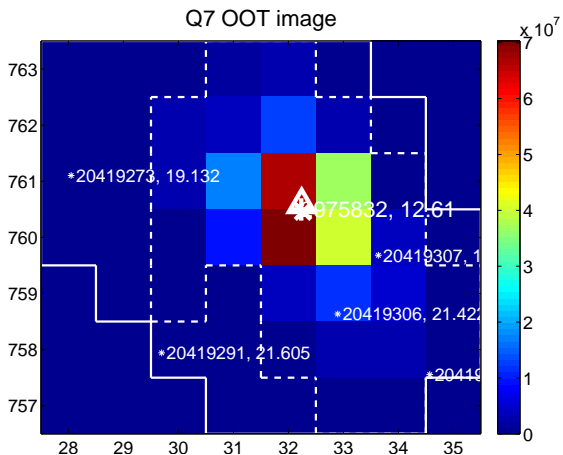
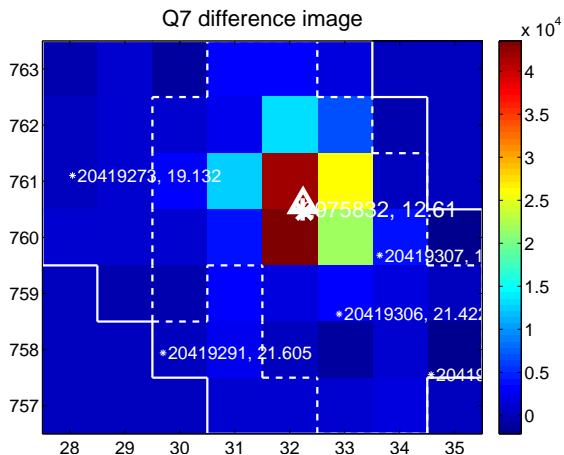
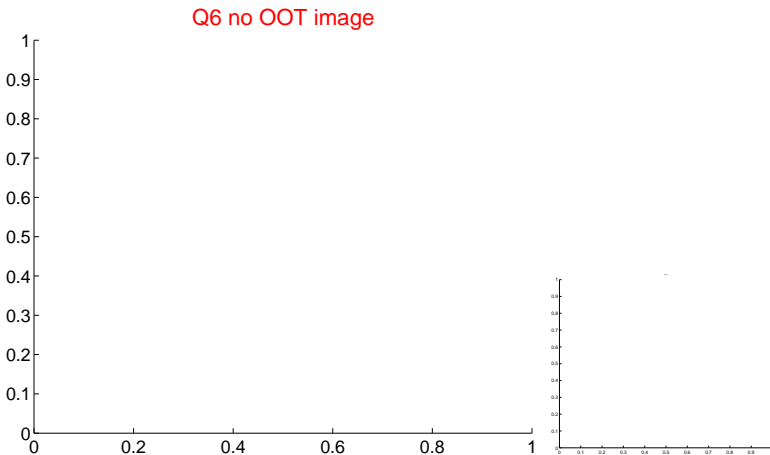
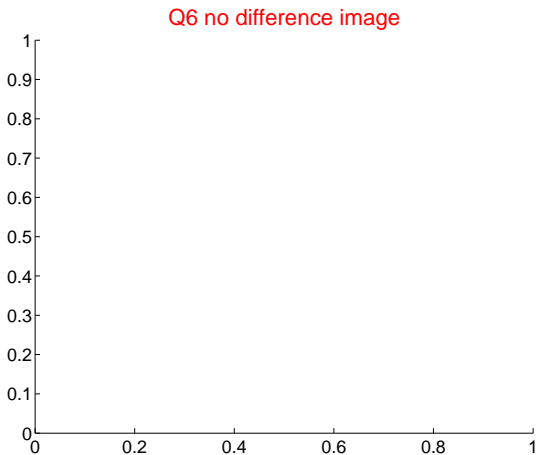
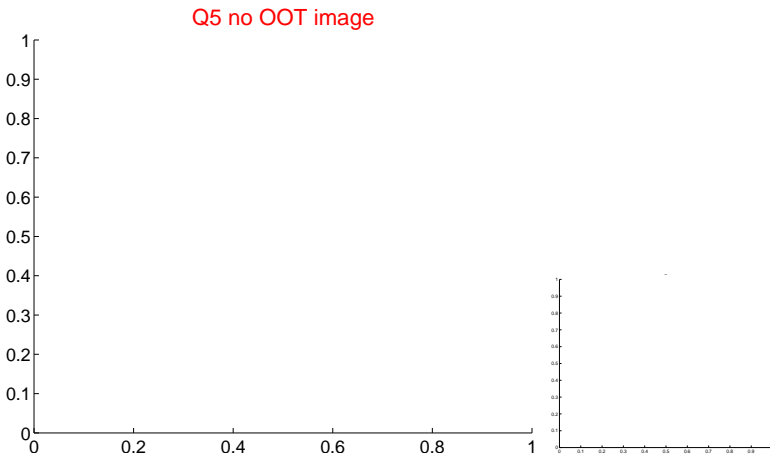
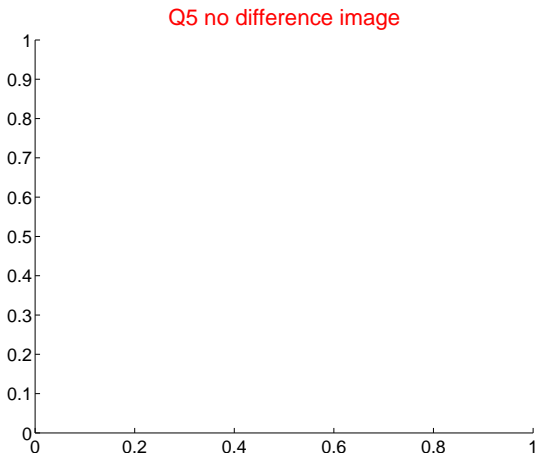
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



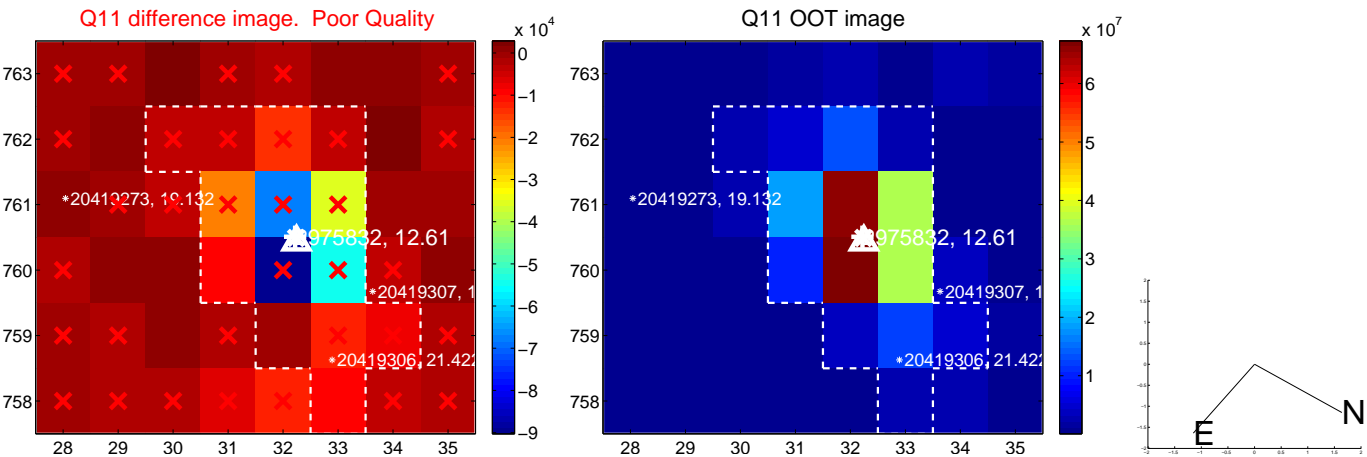
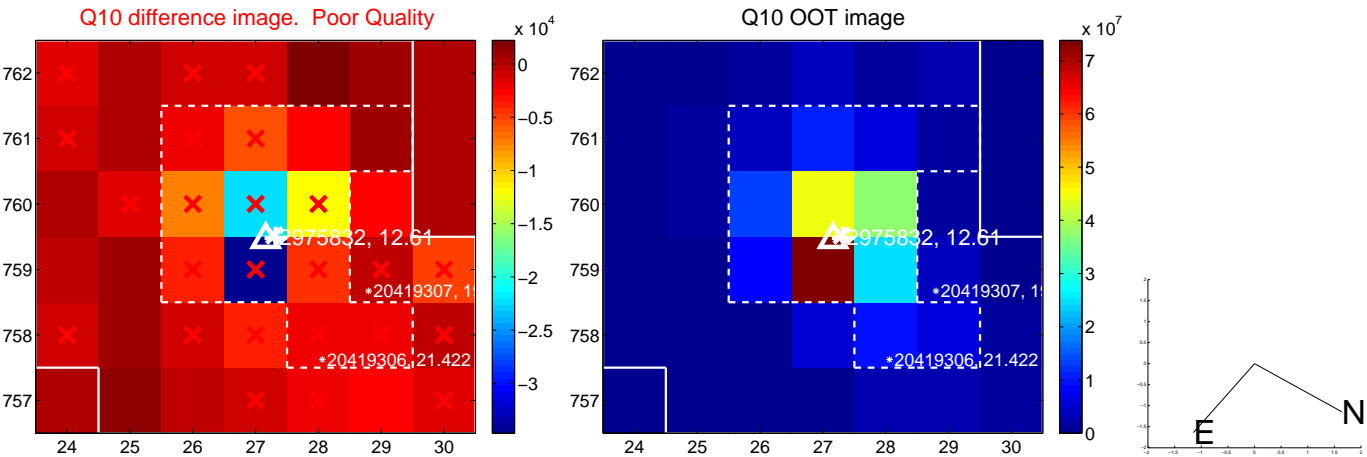
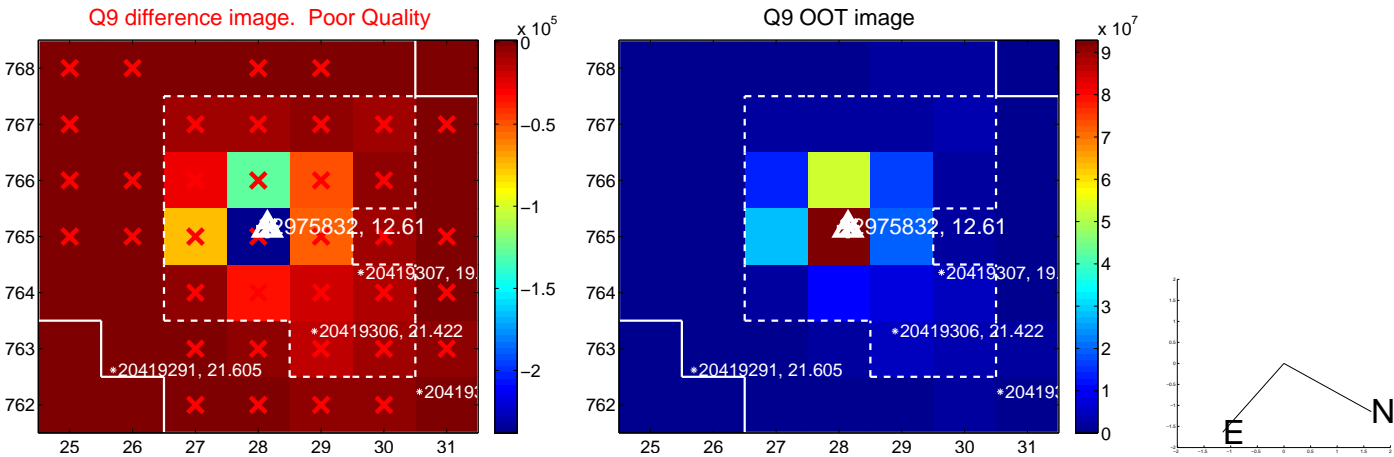
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



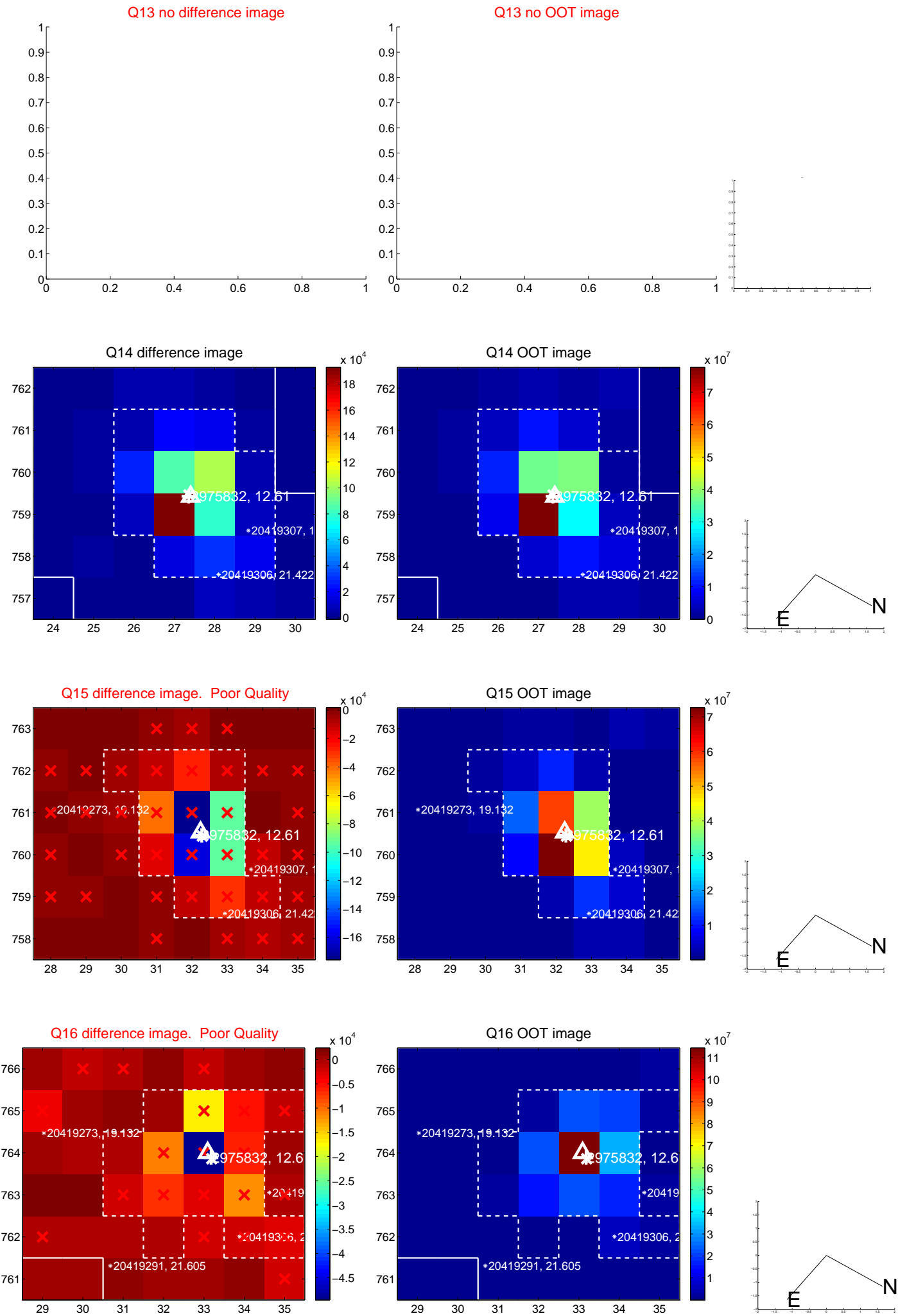
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



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





UKIRT Image

Declination

