

# KIC 007975471

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007975471-01	OBS	No	1.295323	132.279273	55.7	5.801	8.0	7.1	0.82	5443	0.61	1116.69
007975471-02	OBS	No	109.871736	156.531850	557.1	15.891	11.8	6.1	0.82	5443	2.09	3.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007975471-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007975471-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

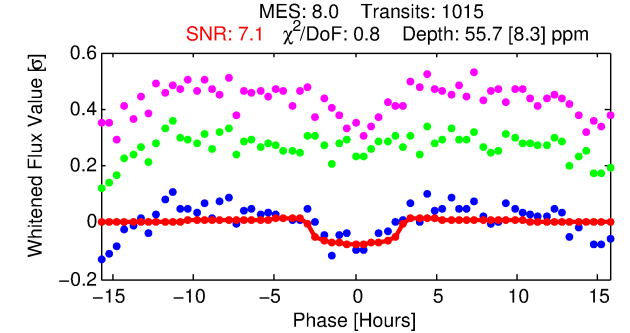
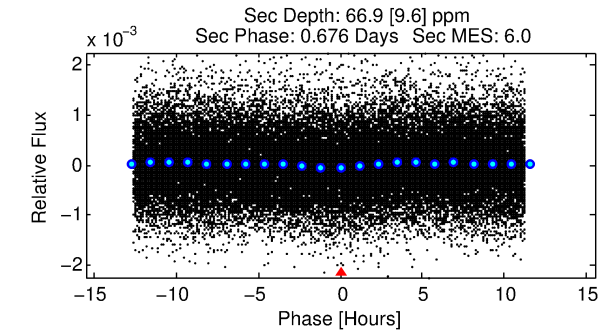
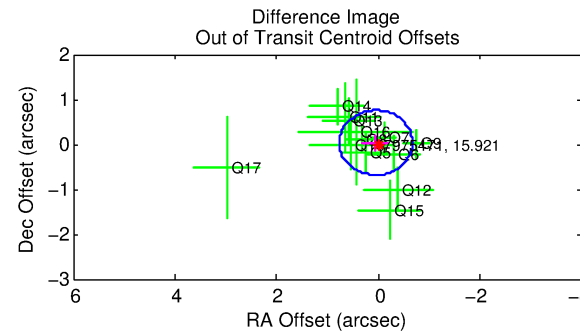
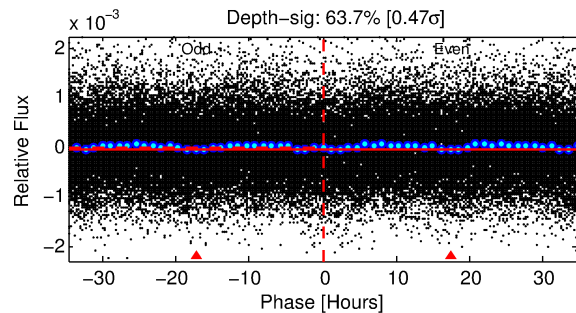
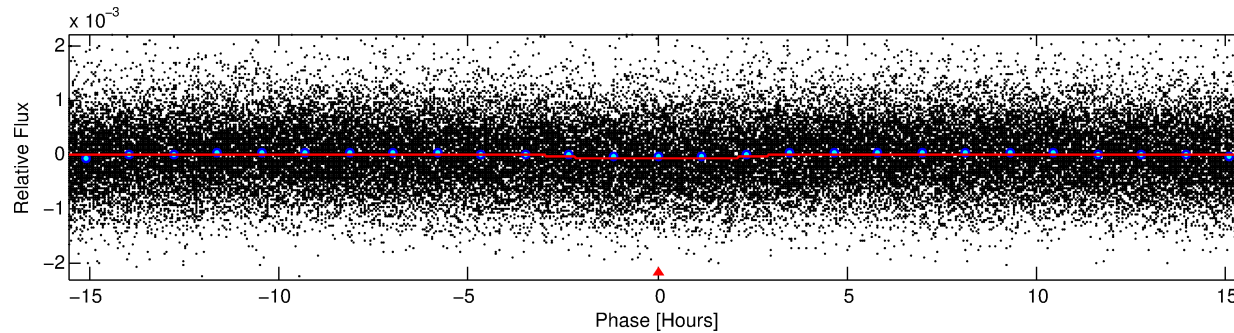
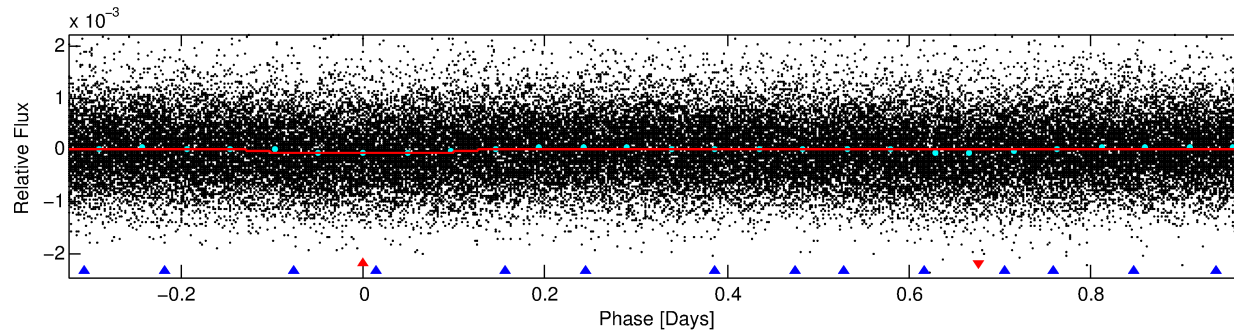
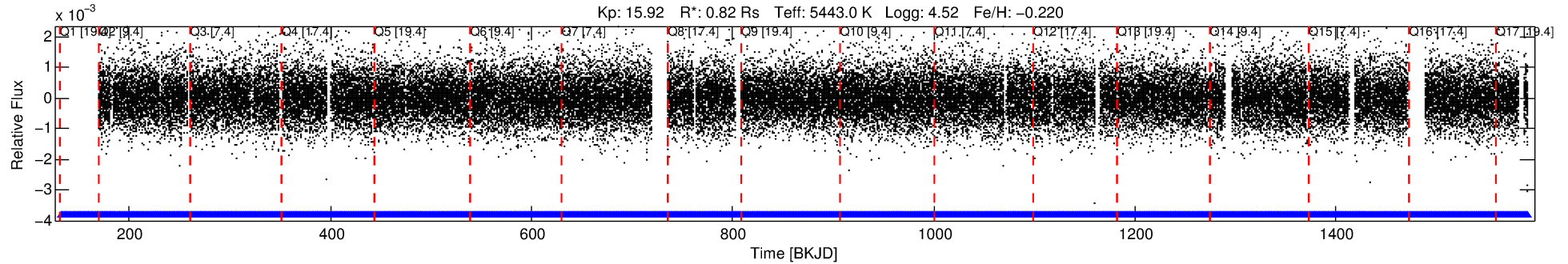
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007975471-01

No Significant Match Found

# DV One-Page Summary

KIC: 7975471 Candidate: 1 of 2 Period: 1.295 d



## DV Fit Results:

Period = 1.29532 [0.00002] d  
Epoch = 132.2793 [0.0082] BKJD  
Rp/R\* = 0.0069 [0.0108]  
a/R\* = 1.71 [7.20]  
b = 0.40 [13.33]  
Seff = 1116.69 [294.76]  
Teq = 1474 [97] K  
Rp = 0.61 [0.97] Re  
a = 0.0217 [0.0035] AU  
Ag = 46.17 [145.16] [0.31 $\sigma$ ]  
Teffp = 5941 [4661] K [0.96 $\sigma$ ]

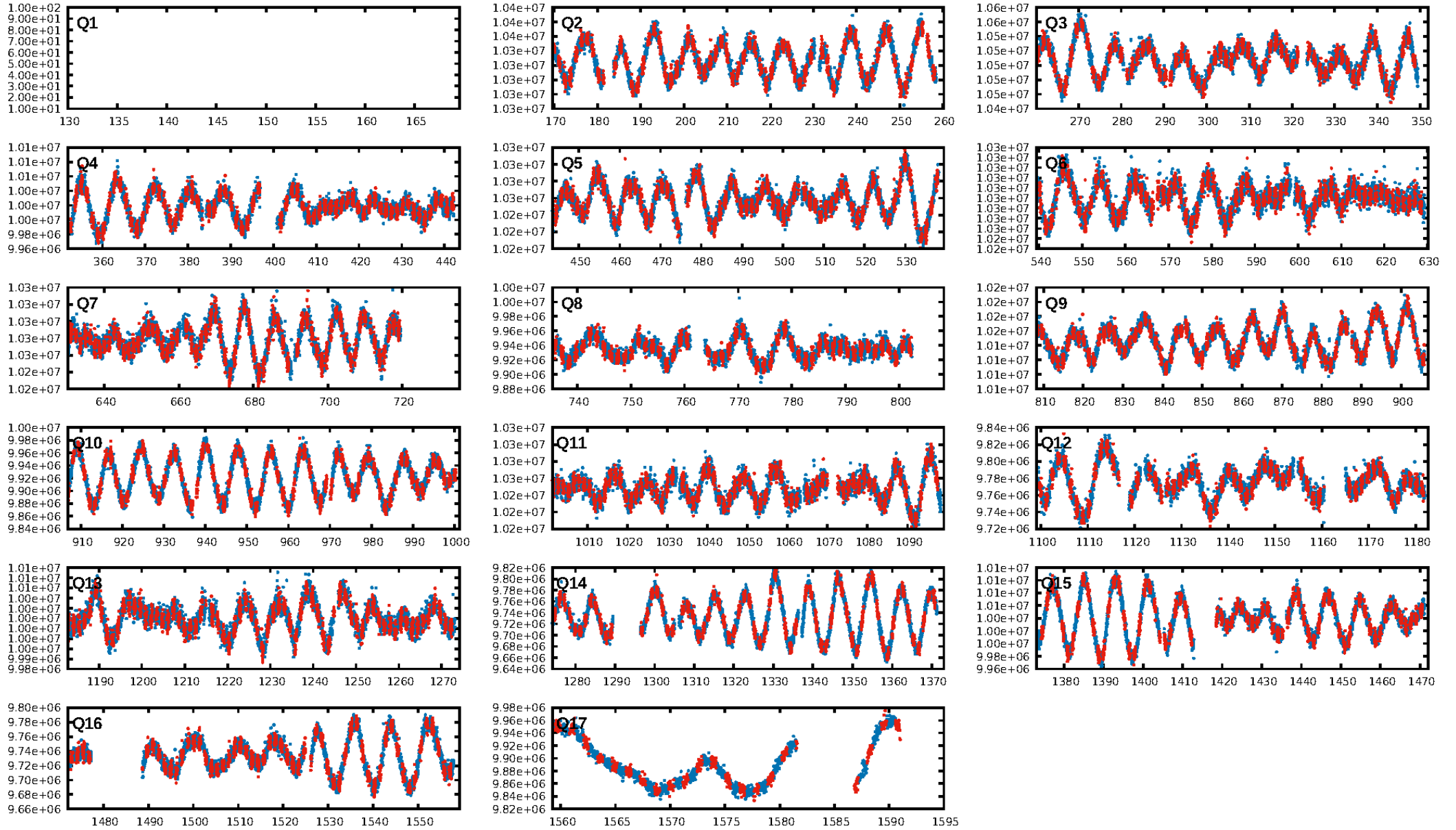
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [154.03 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.40e-14  
RollingBand-fgt: 1.00 [994/994]  
GhostDiagnostic-chr: 1.235  
Centroid-sig: 0.0%  
Centroid-so: 4.740 arcsec [2.98 $\sigma$ ]  
OotOffset-rm: 0.064 arcsec [0.27 $\sigma$ ]  
KicOffset-rm: 0.021 arcsec [0.11 $\sigma$ ]  
OotOffset-st: 3/3/3/4 [13]  
KicOffset-st: 3/3/3/4 [13]  
DiffImageQuality-fgm: 0.85 [11/13]  
DiffImageOverlap-fno: 1.00 [16/16]

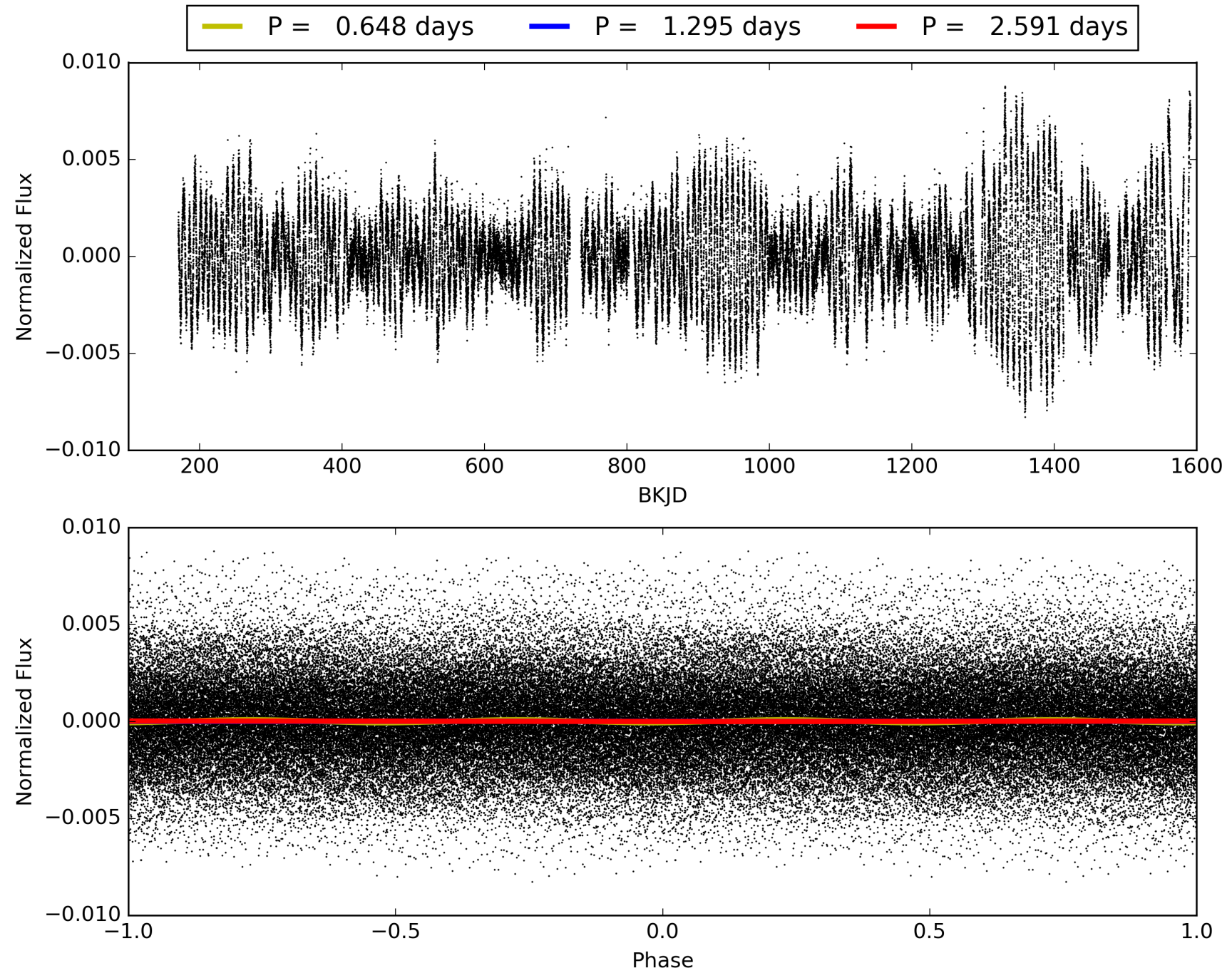
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:23:55 Z

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

# TCE 007975471-01, PDC Light Curves



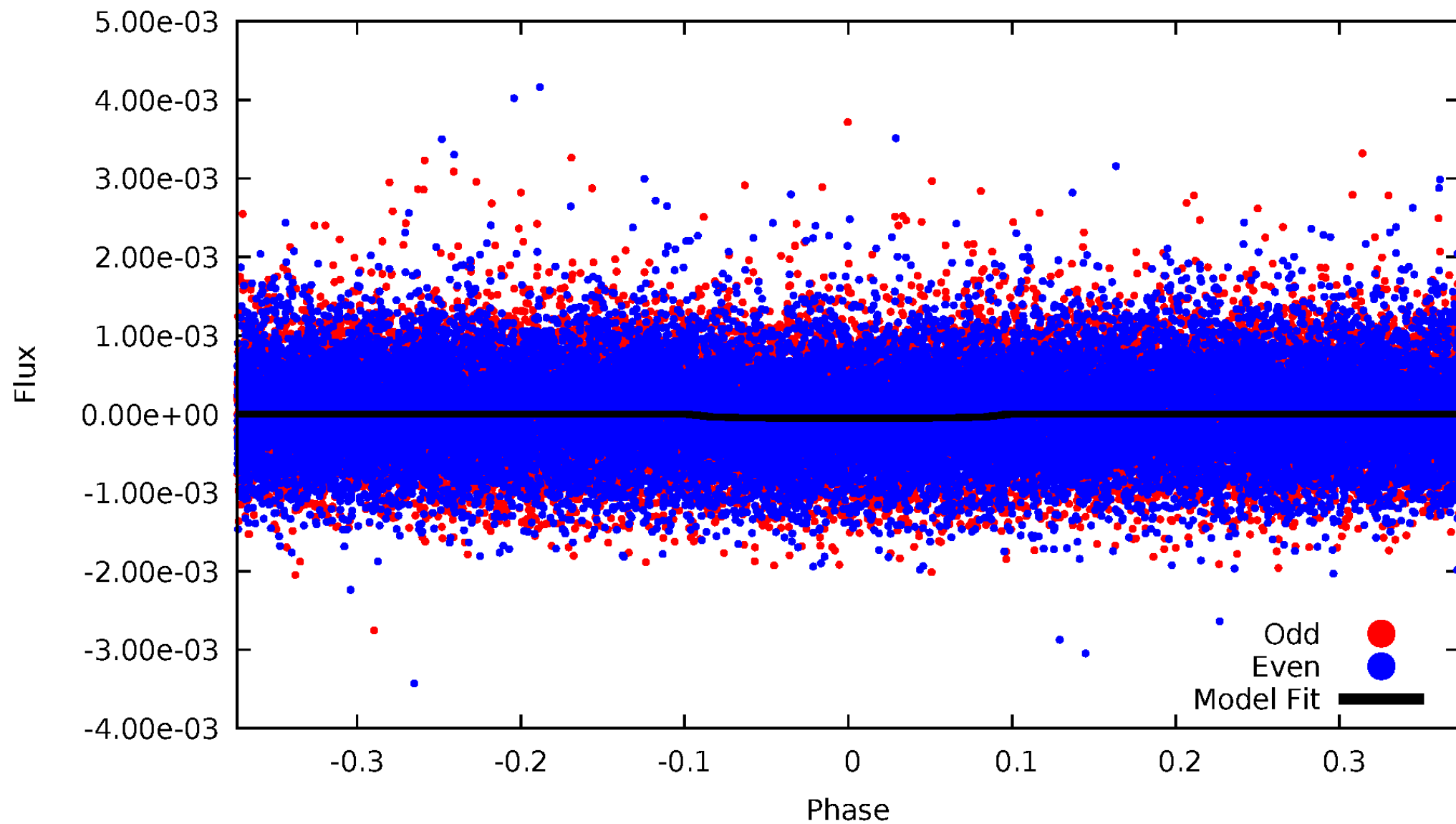
TCE 007975471-01





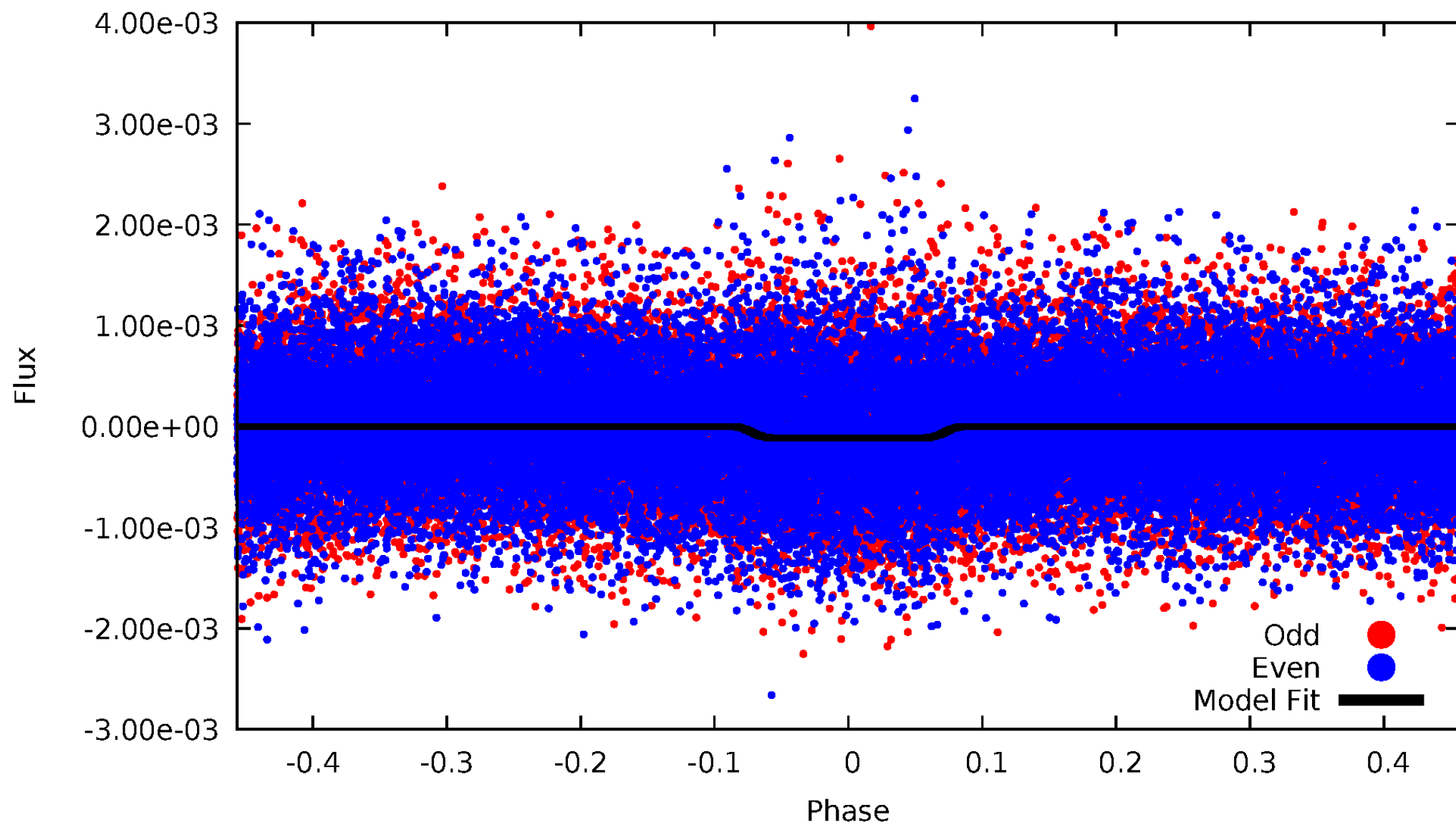
# DV Odd/Even

TCE 007975471-01

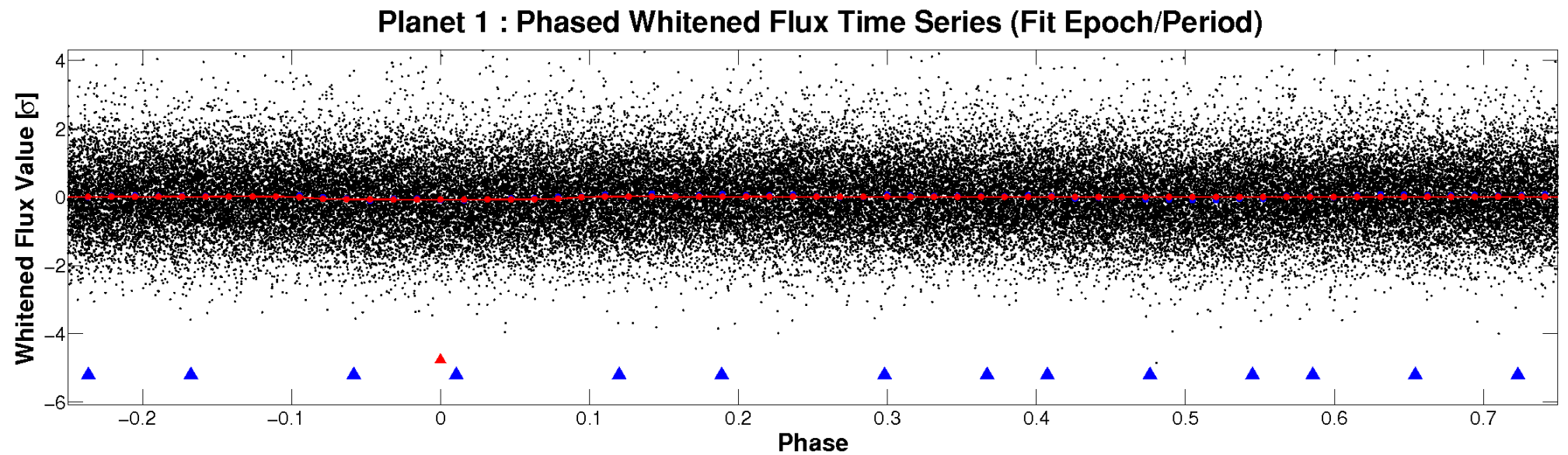
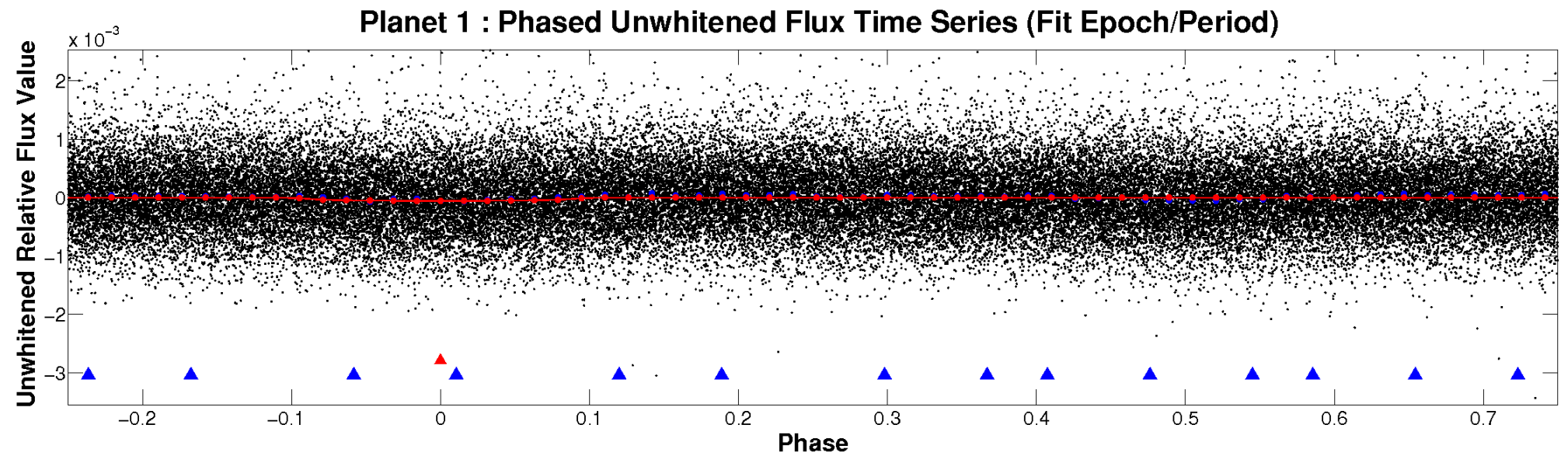


# ALT Odd/Even

TCE 007975471-01

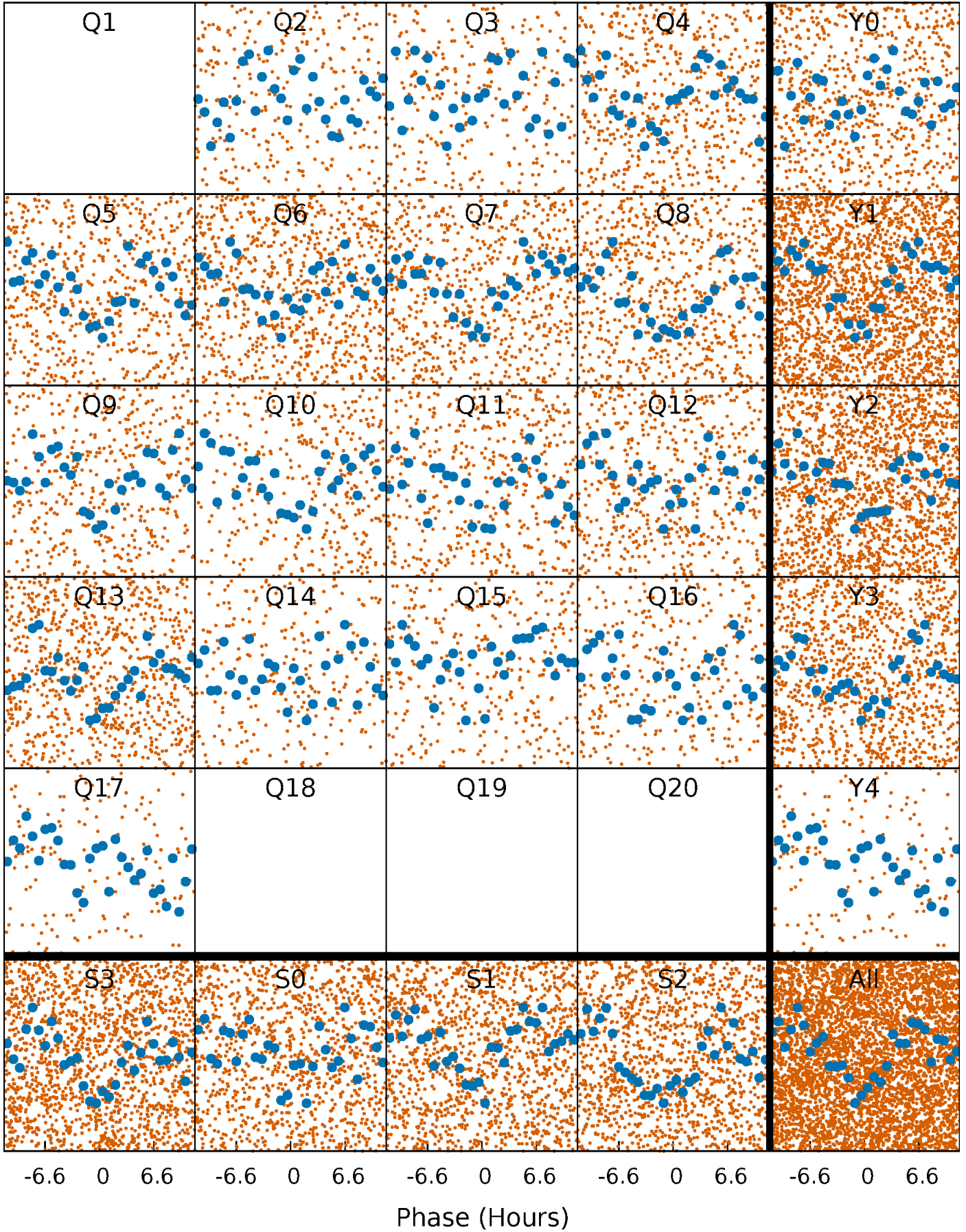


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

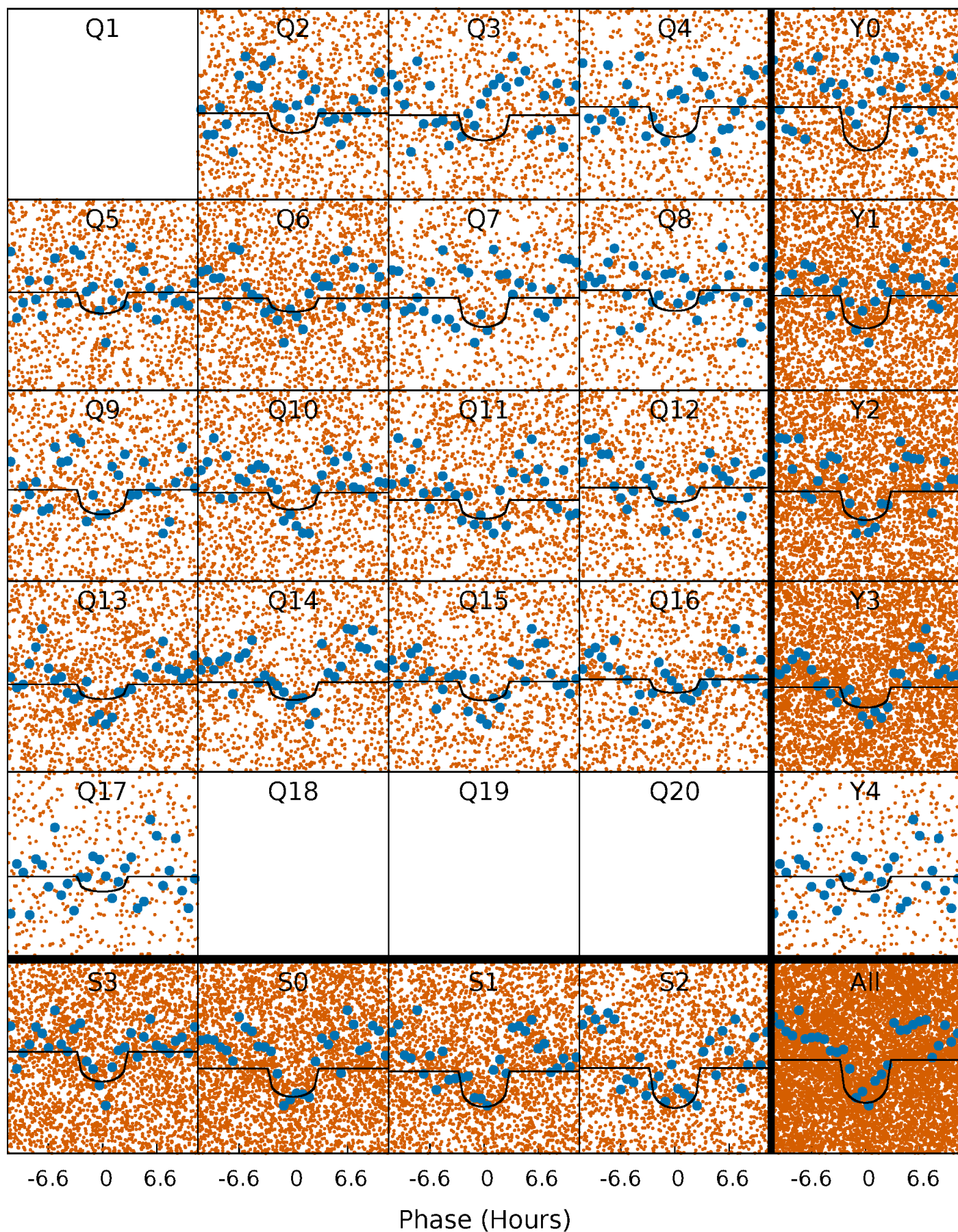
TCE 007975471-01 P= 1.295323 Days  $T_0=132.279273$  (BKJD)





# DV Quarter-Phased Transit Curves

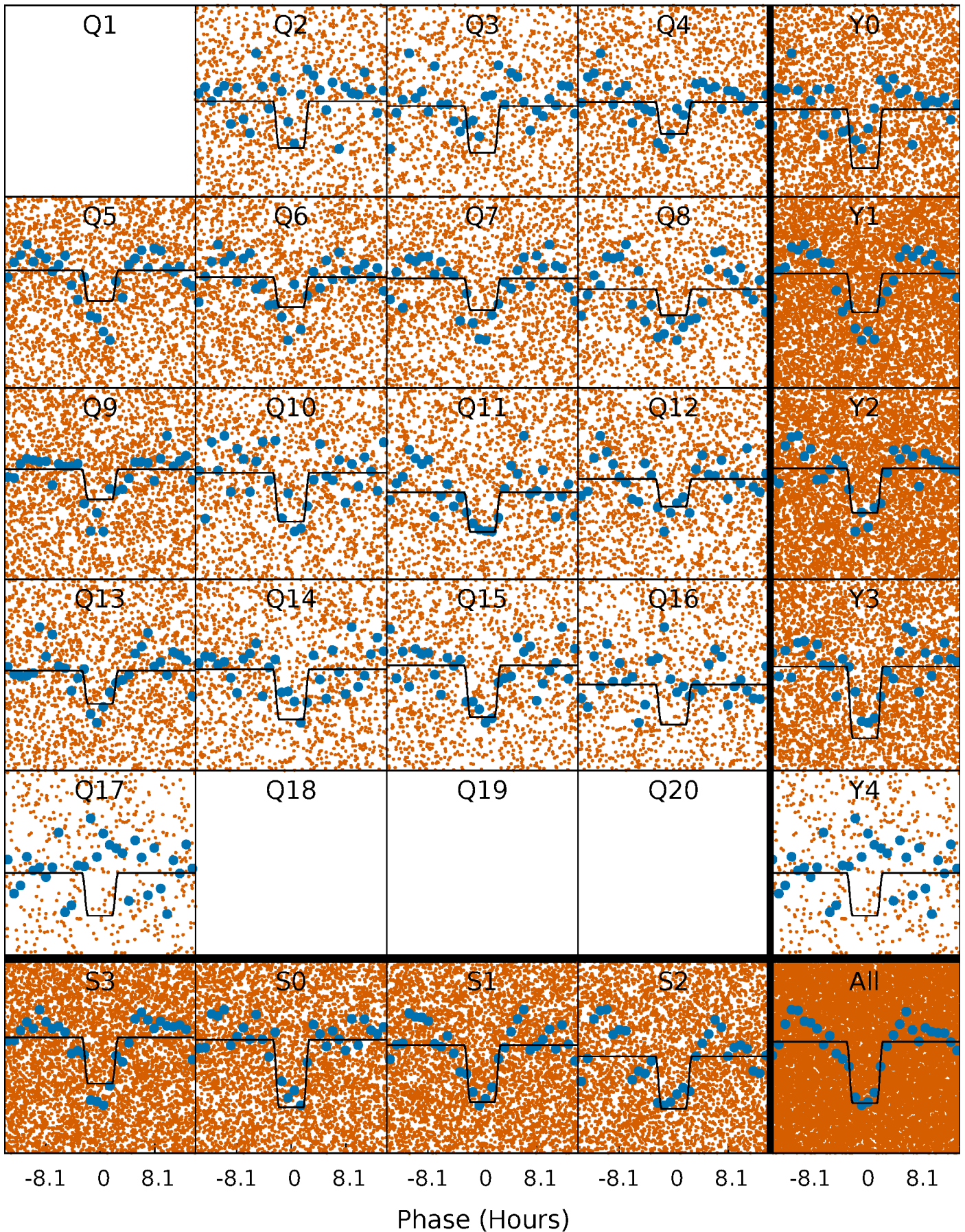
TCE 007975471-01 P= 1.295323 Days  $T_0=132.279273$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

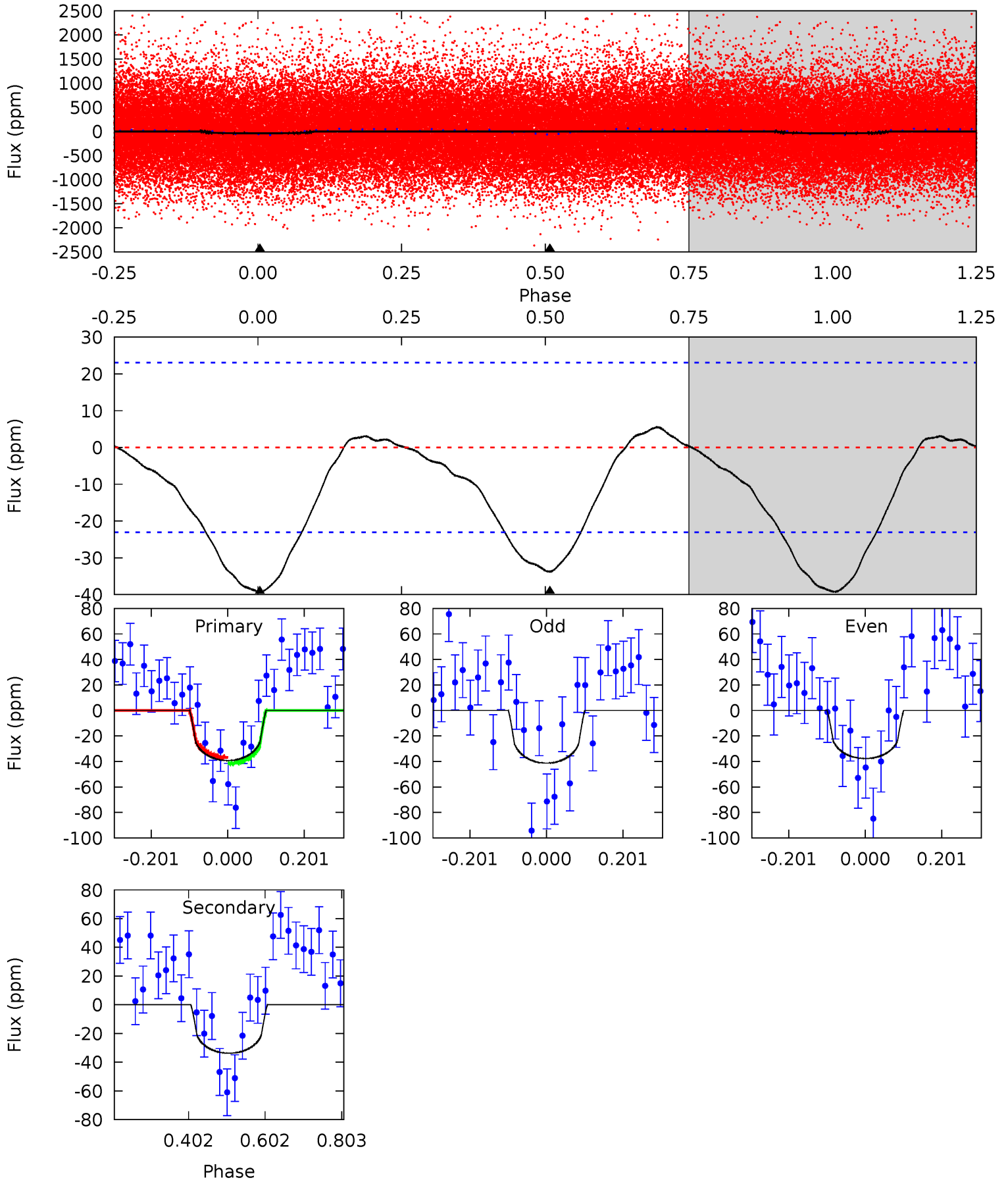
TCE 007975471-01 P= 1.295391 Days  $T_0=132.235337$  (BKJD)



# DV Model-Shift Uniqueness Test

007975471-01, P = 1.295323 Days, E = 132.279273 Days

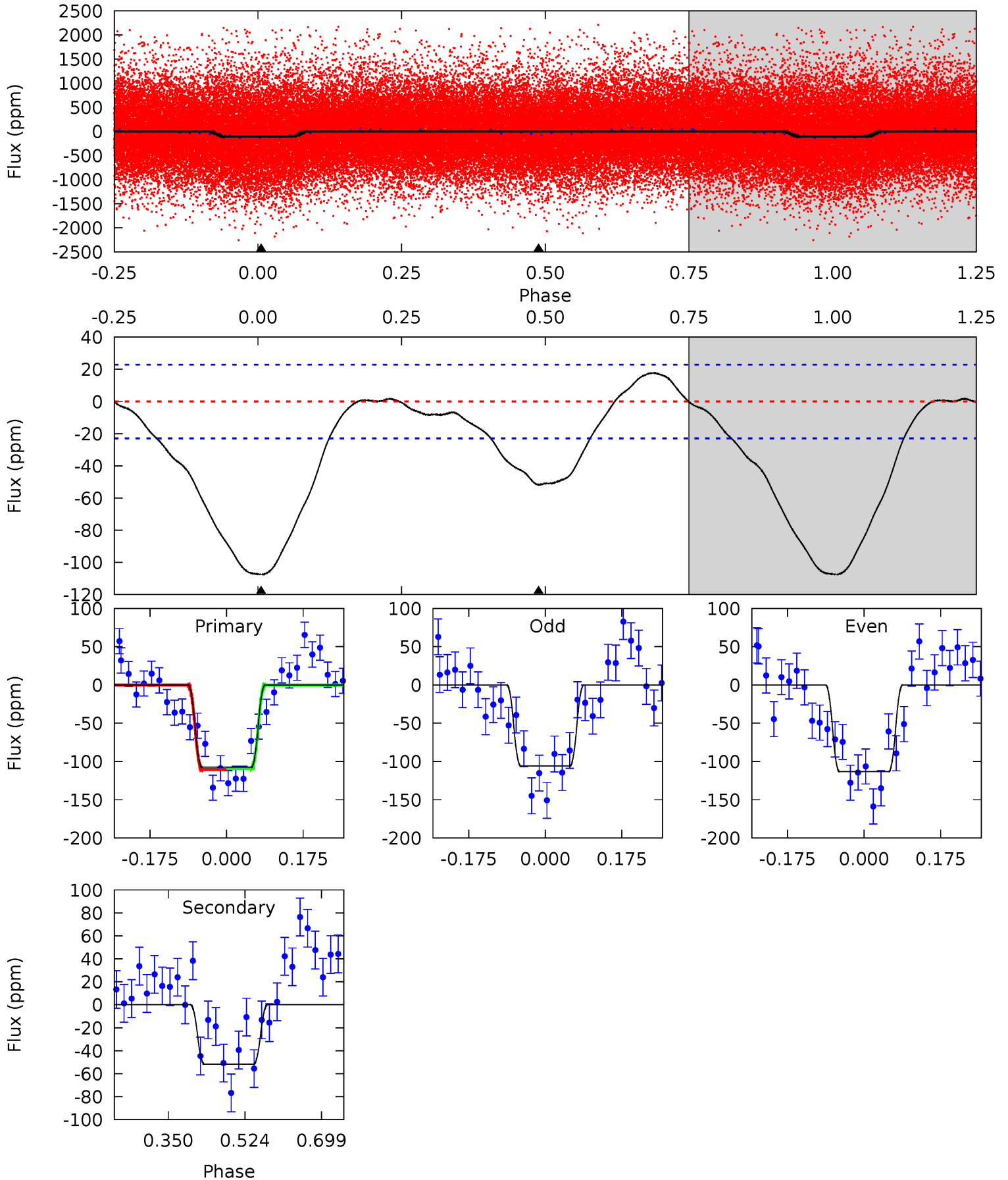
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.52	6.47	0	0	4.42	1.28	0.44	7.52	7.52	6.47	6.47	0.34	0.82	0.12	0.46



# Alt Model-Shift Uniqueness Test

007975471-01, P = 1.295391 Days, E = 132.235337 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
20.9	10.0	0	0	4.45	1.36	2.05	20.9	20.9	10.0	10.0	0.73	0.92	0.14	0.09





### Stellar Parameters For KIC 007975471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5443^{+178}_{-162}$	$4.523^{+0.067}_{-0.124}$	$-0.220^{+0.300}_{-0.300}$	$0.819^{+0.157}_{-0.085}$	$0.816^{+0.107}_{-0.071}$	$2.093^{+0.600}_{-0.736}$
	+3%/-3%	+1%/-3%	+136%/-136%	+19%/-10%	+13%/-9%	+29%/-35%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007975471-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-34 \pm 5$	$0.96^{+0.83}_{-0.66}$	$2079^{+112}_{-97}$	$4211^{+2969}_{-828}$	$9.264^{+85.228}_{-6.476}$
Alt.	$-52 \pm 5$	$1.18^{+0.90}_{-0.74}$	$2083^{+112}_{-94}$	$4238^{+2393}_{-777}$	$9.584^{+58.558}_{-6.517}$

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

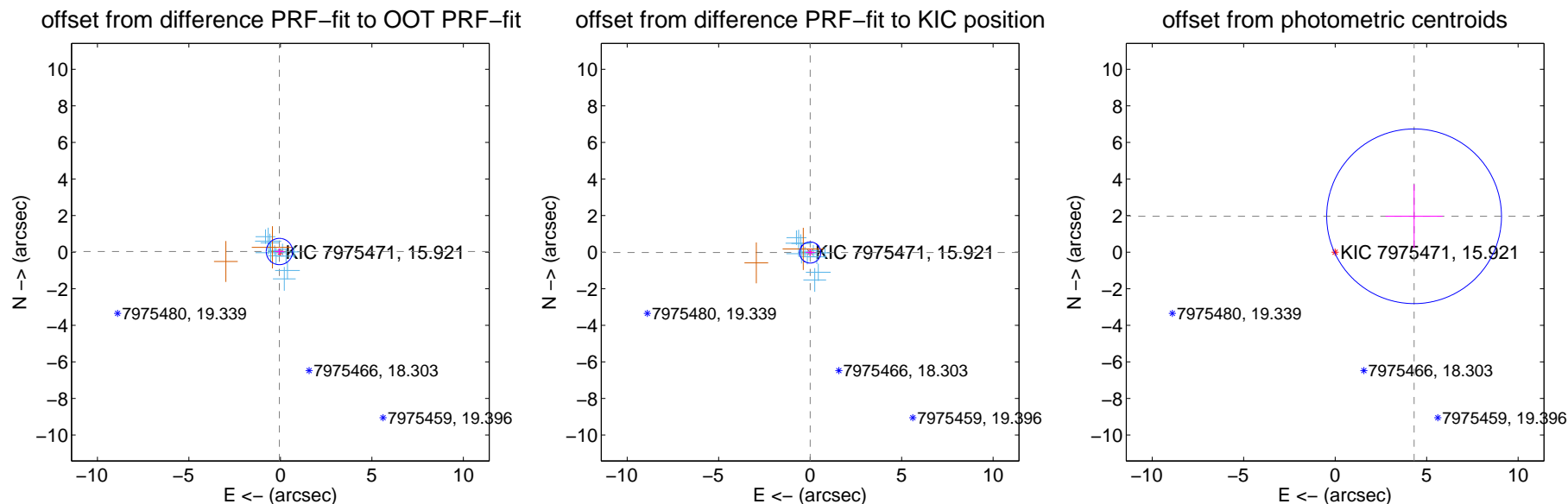
## DV Centroid Data

Supplemental centroid analysis for 007975471-01. Kepler magnitude: 15.92. Transit SNR 7.09

There are 11 quarters with good PRF difference image offsets

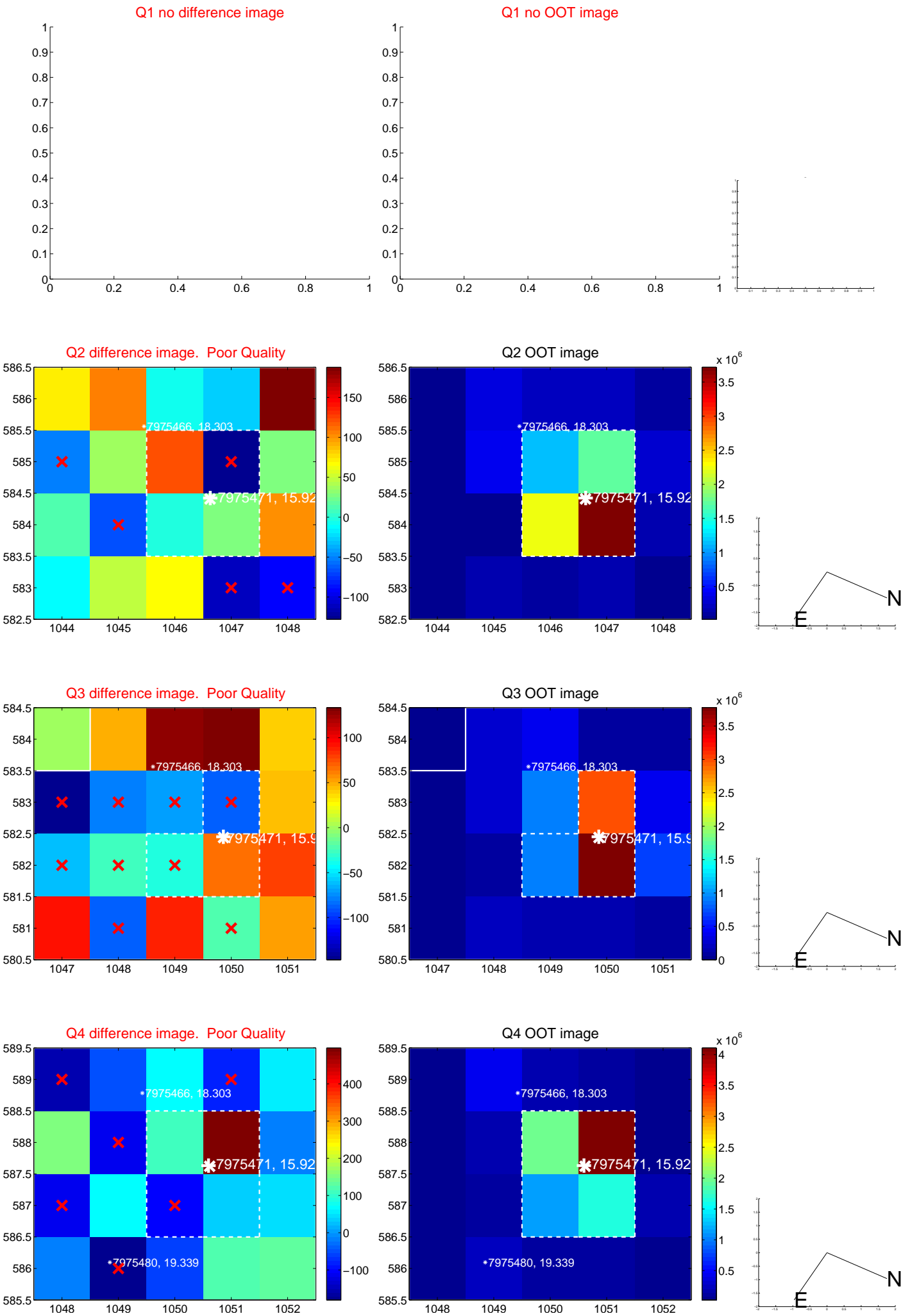
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.064 \pm 0.240$	0.27	$0.054 \pm 0.254$	$0.035 \pm 0.165$
PRF-fit source offset from KIC position	$0.021 \pm 0.193$	0.11	$-0.003 \pm 0.249$	$-0.020 \pm 0.185$
photometric centroid source offset	$4.74 \pm 1.59$	2.98	$-4.32 \pm 1.56$	$1.96 \pm 1.75$

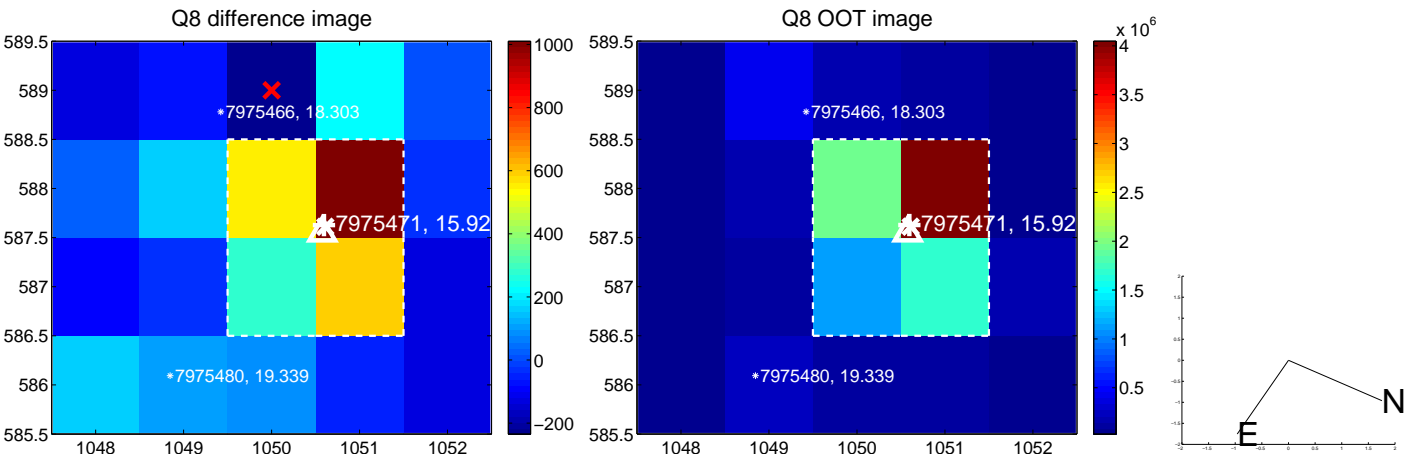
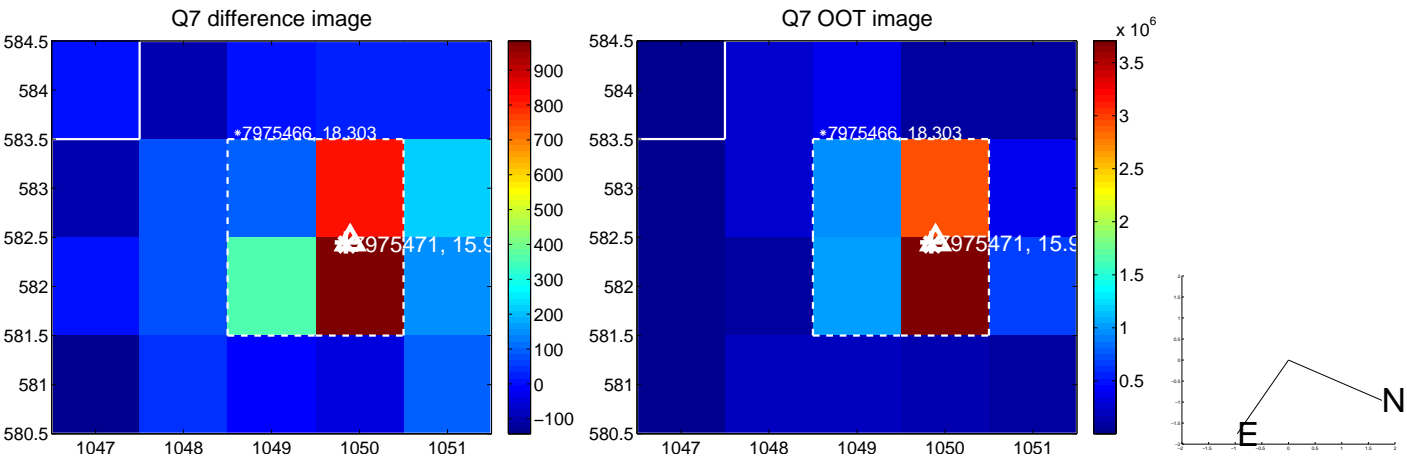
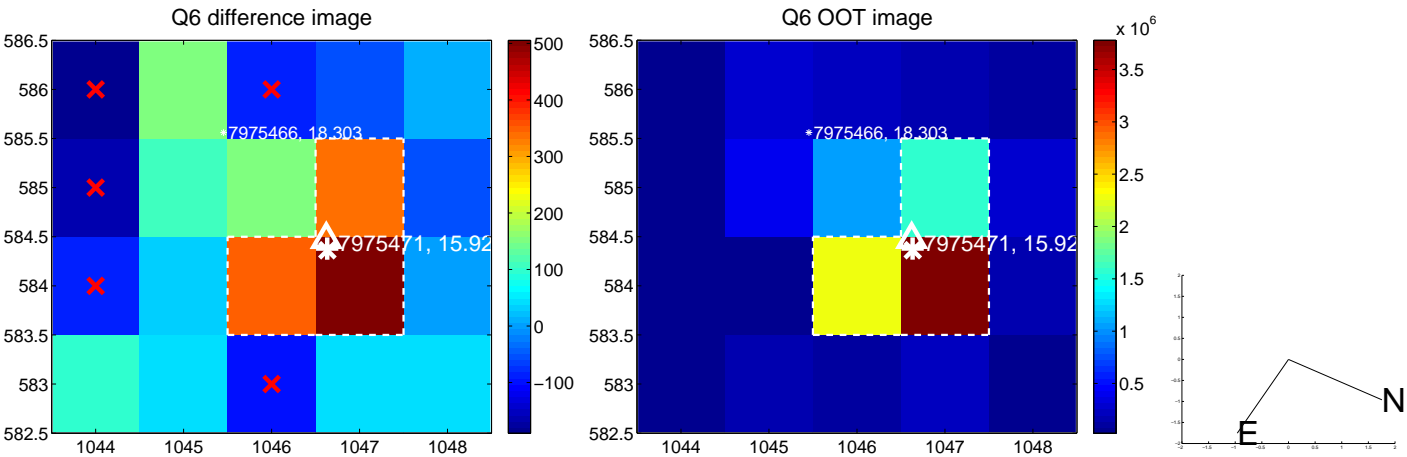
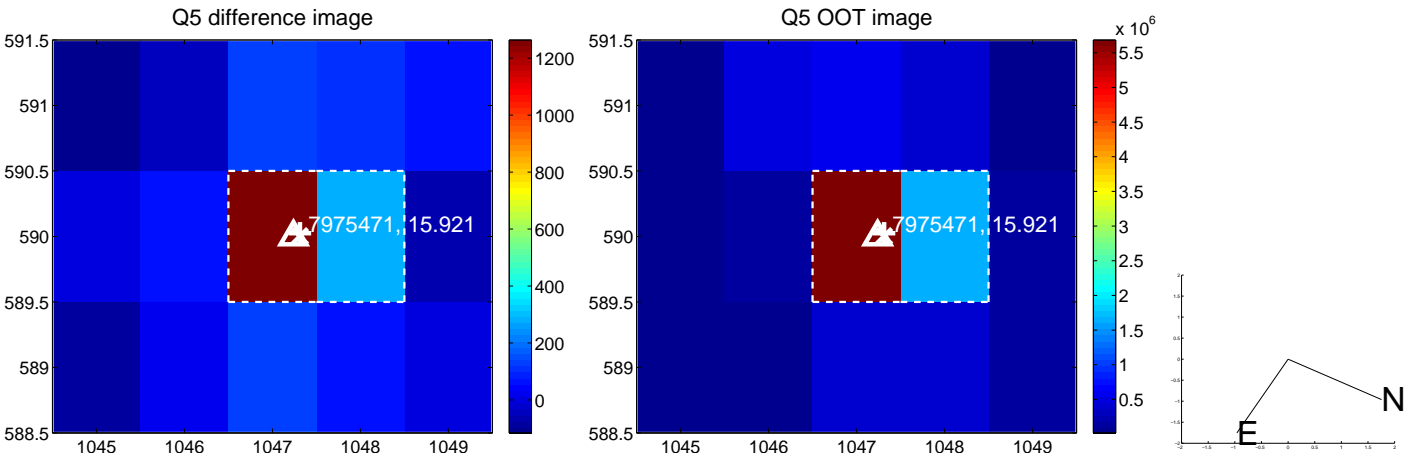


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

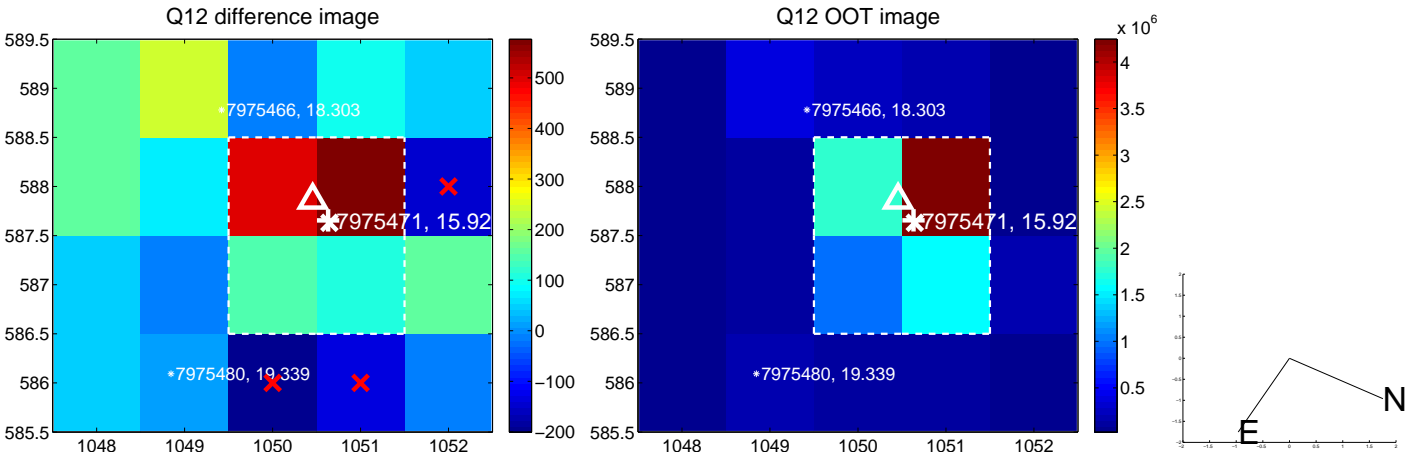
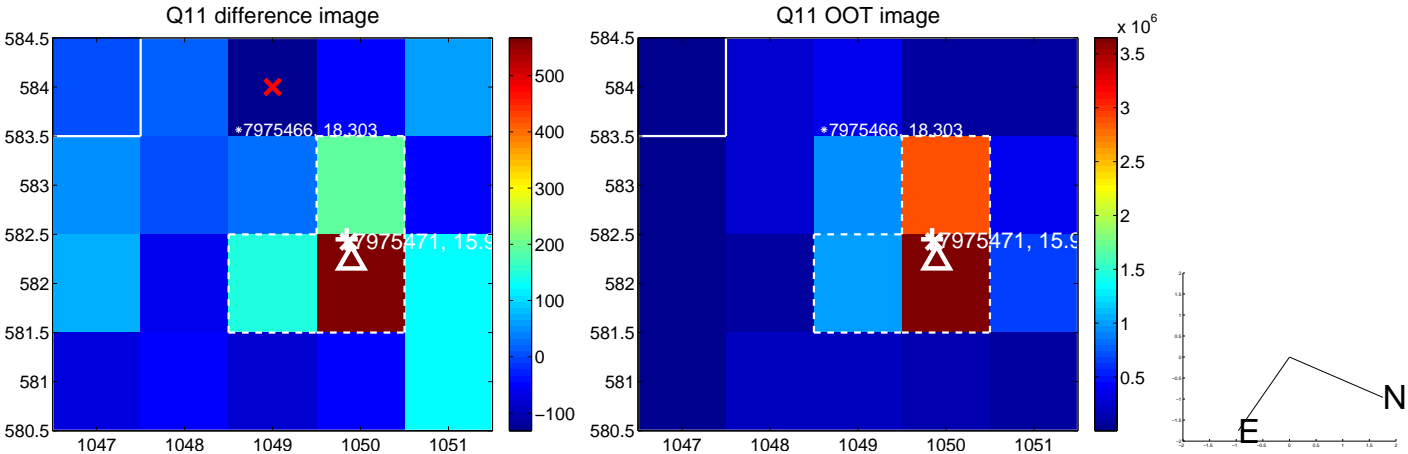
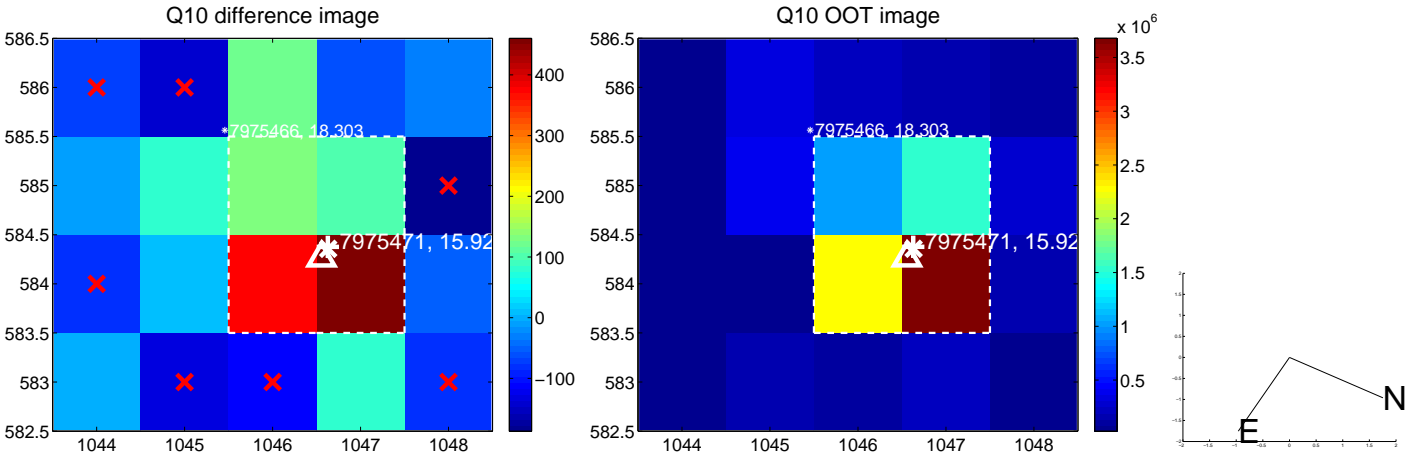
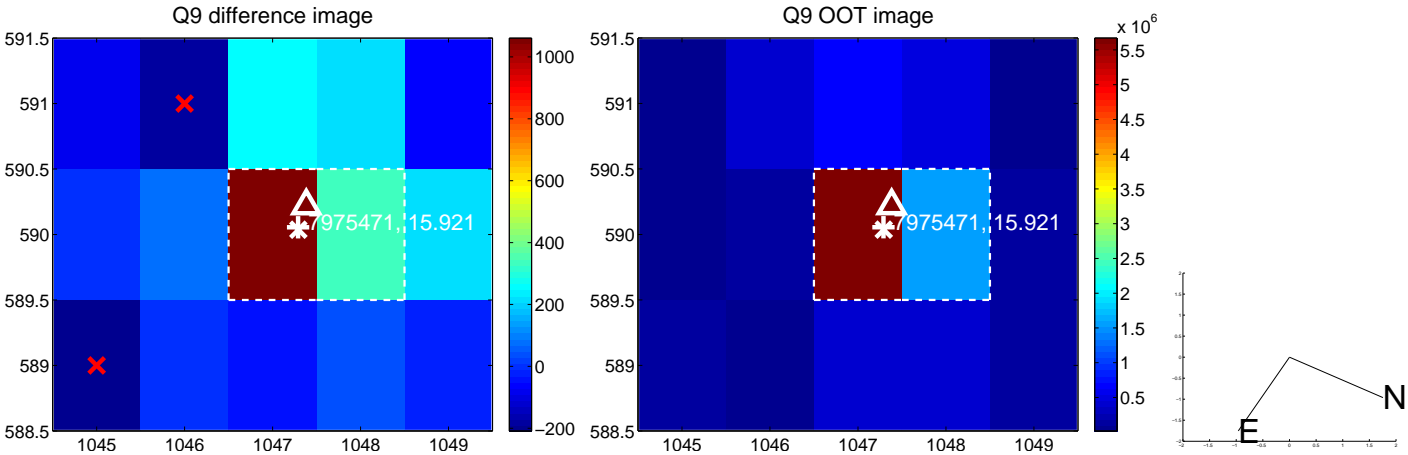


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

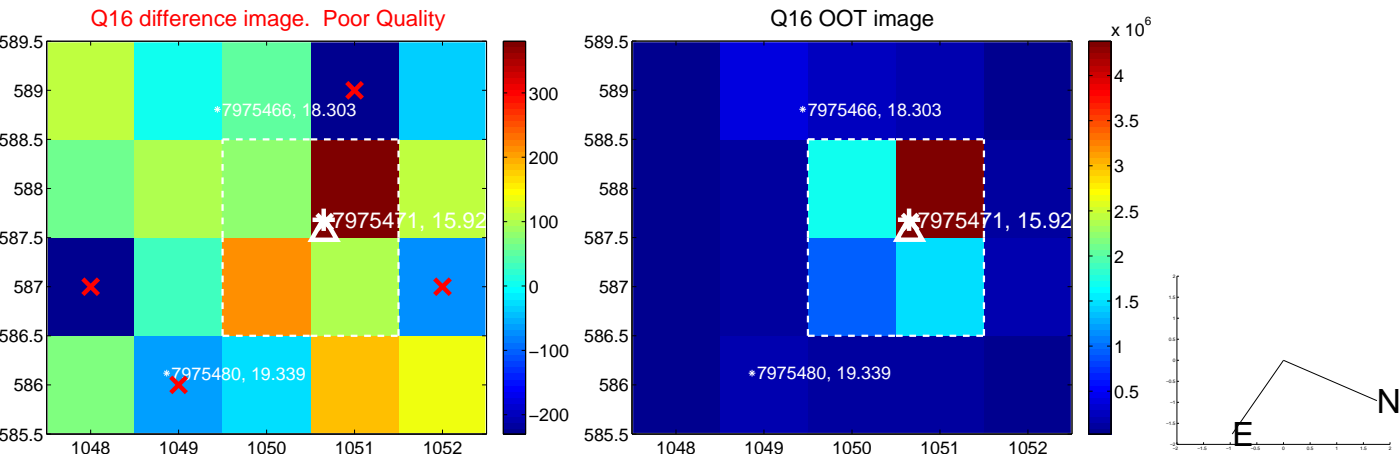
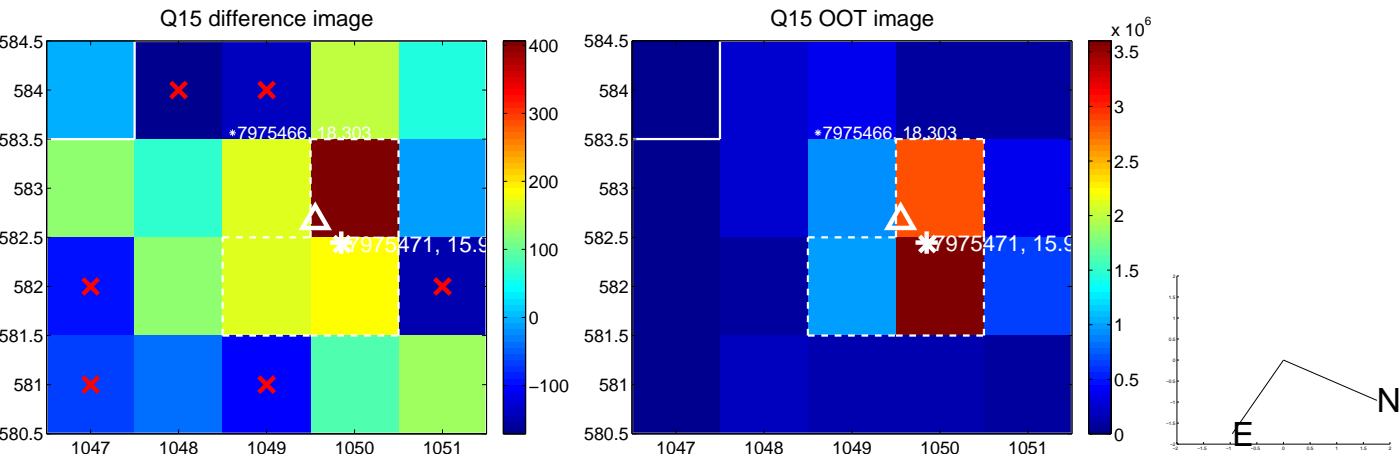
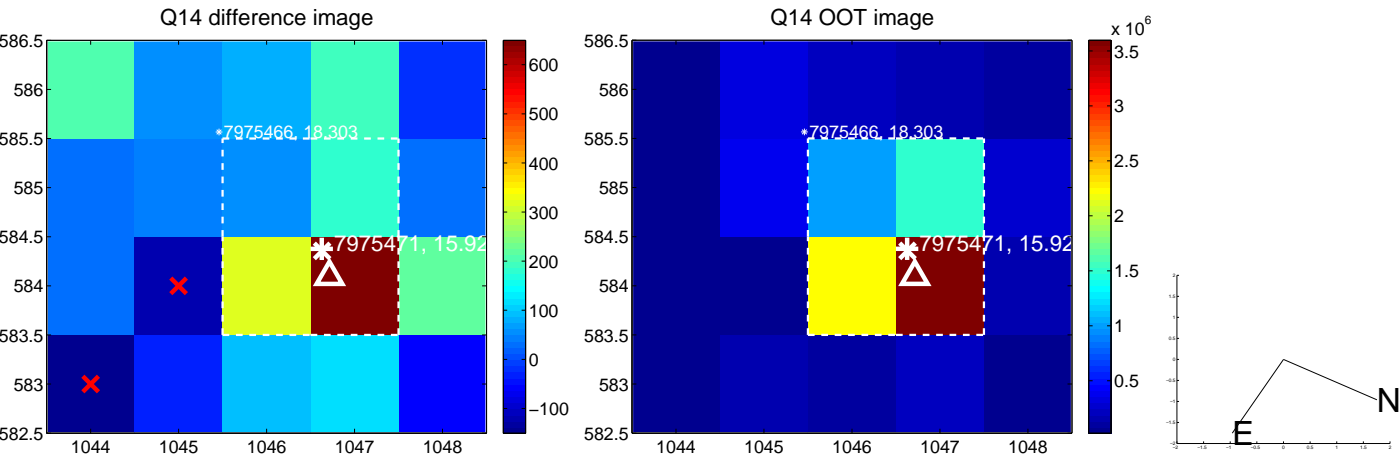
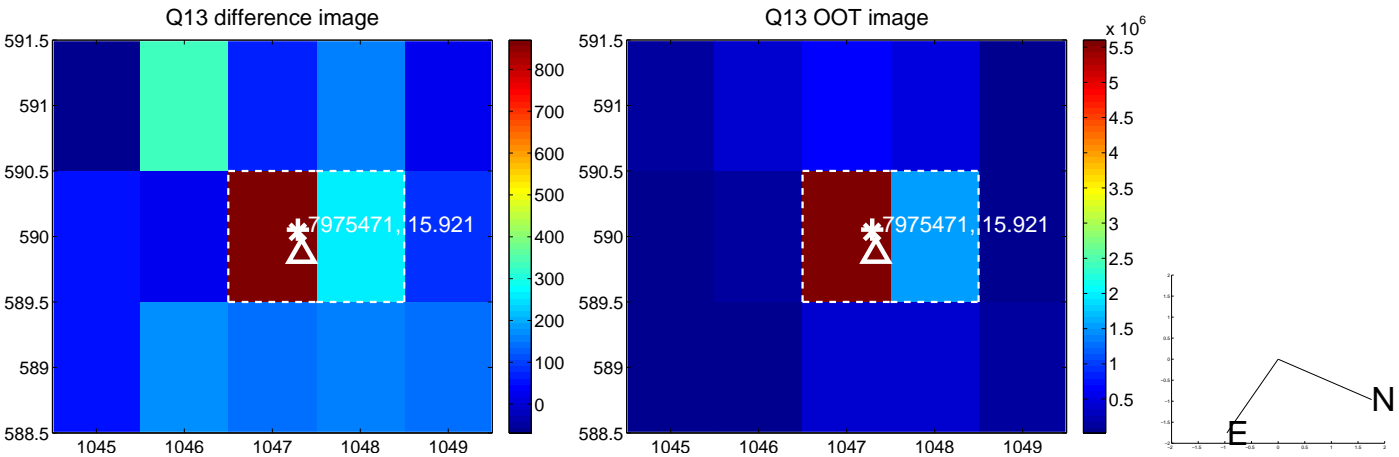




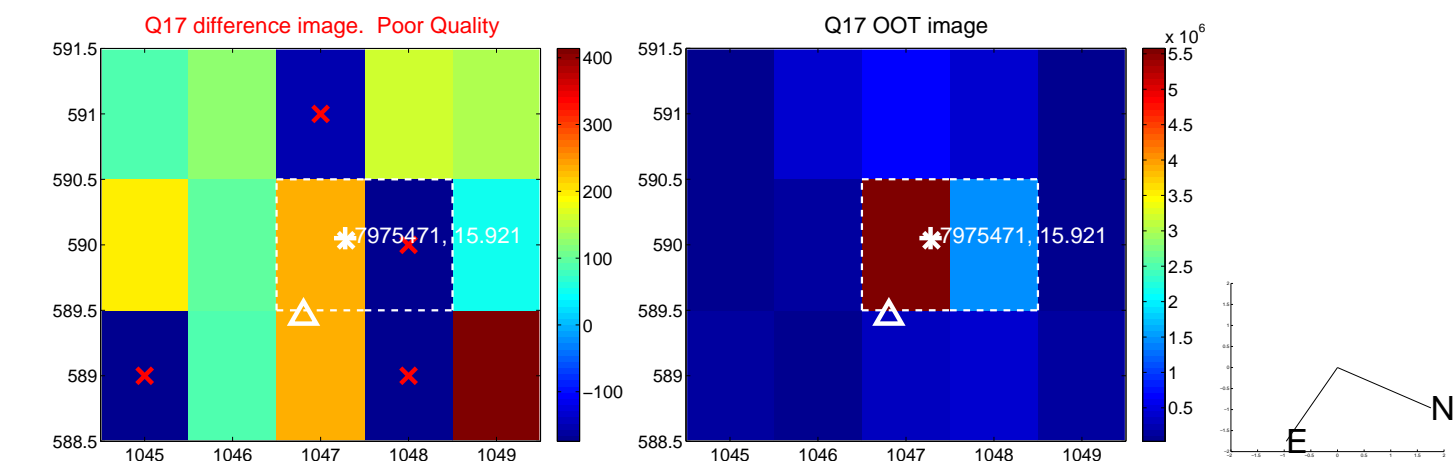
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



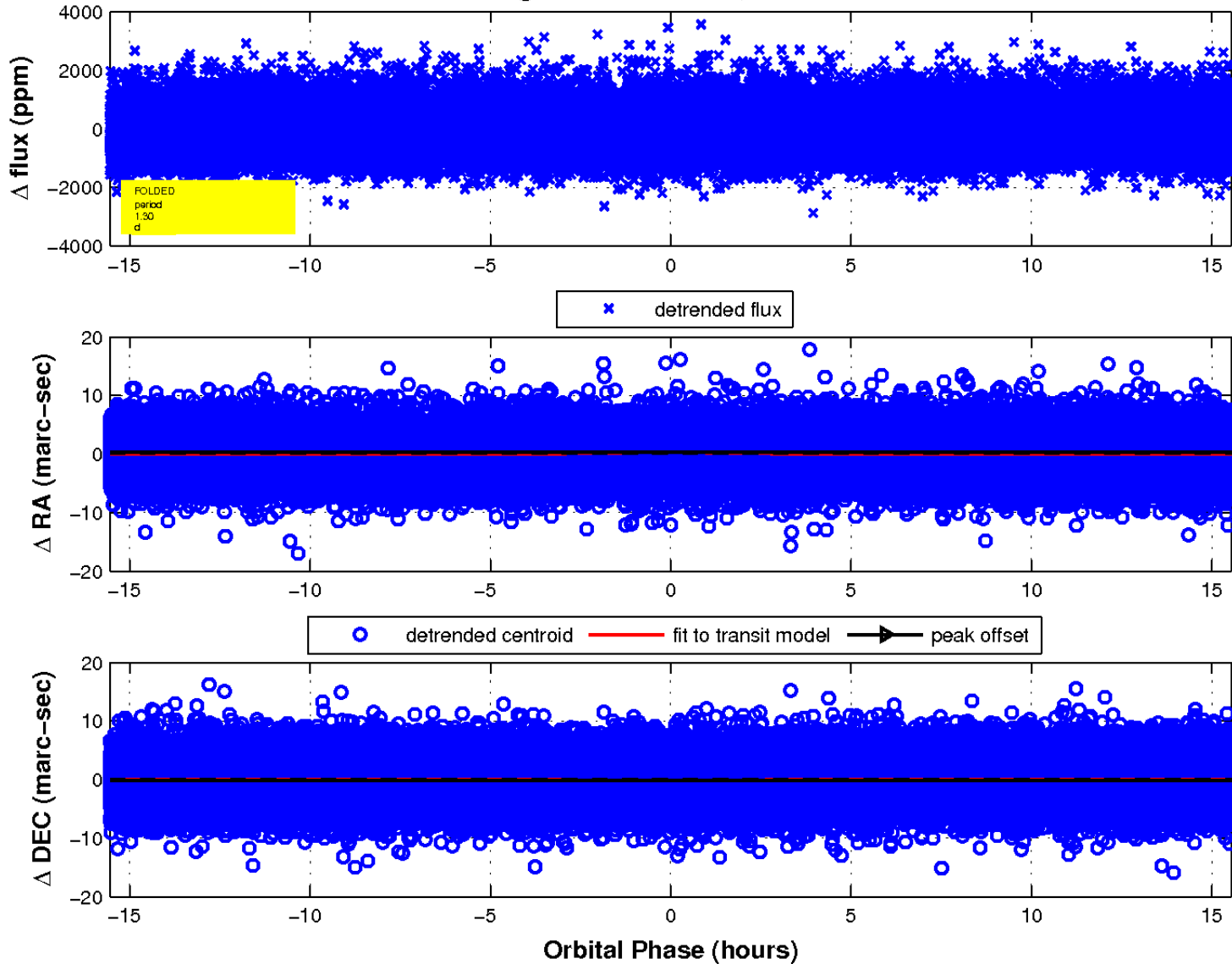
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

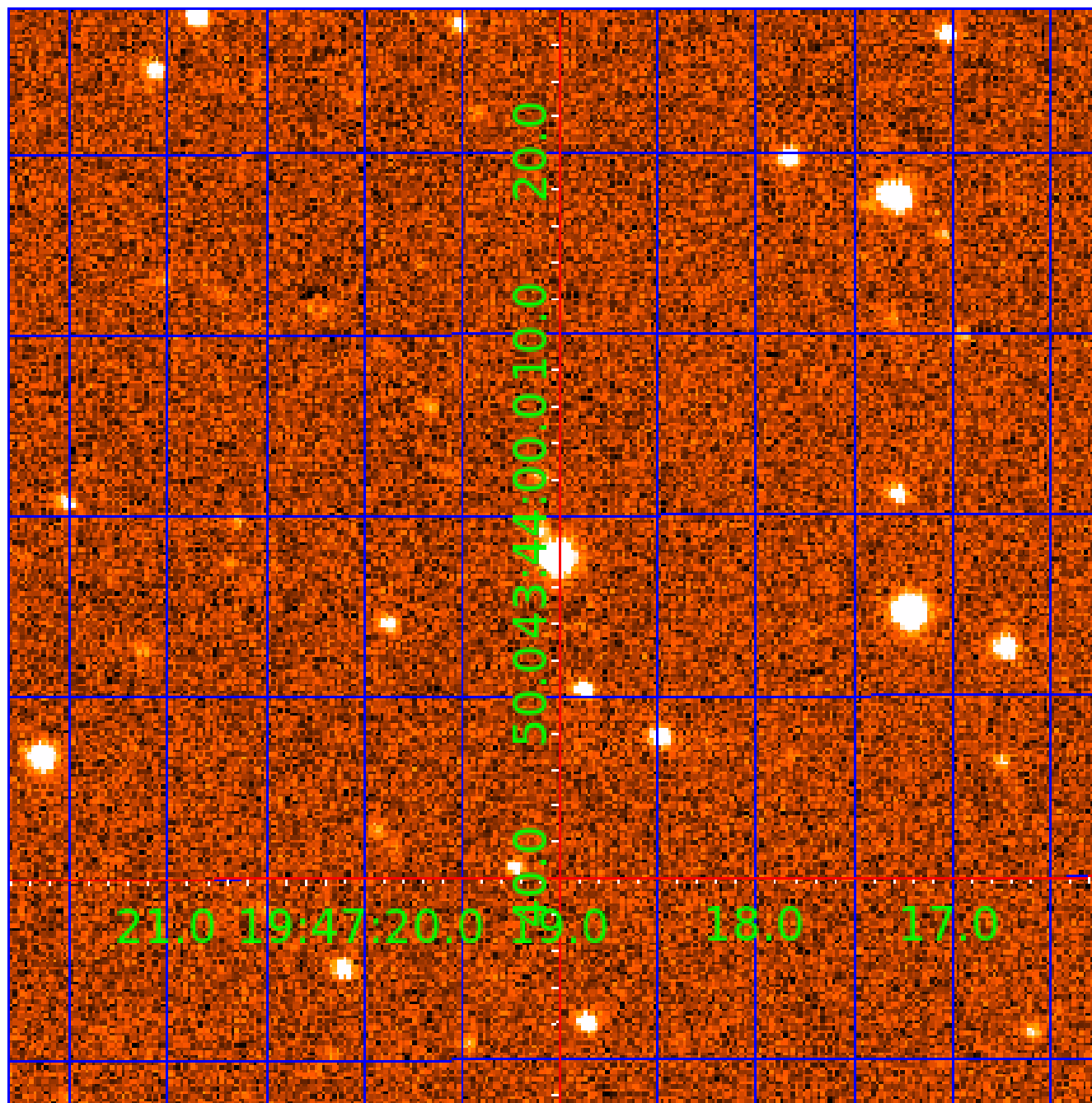


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 007975471

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007975471-01	OBS	No	1.295323	132.279273	55.7	5.801	8.0	7.1	0.82	5443	0.61	1116.69
007975471-02	OBS	No	109.871736	156.531850	557.1	15.891	11.8	6.1	0.82	5443	2.09	3.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007975471-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007975471-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

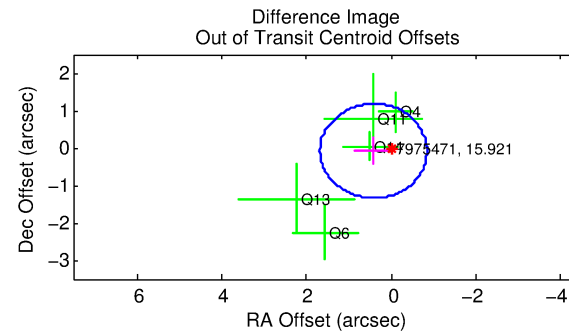
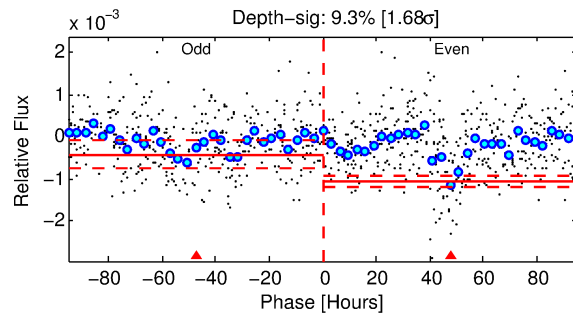
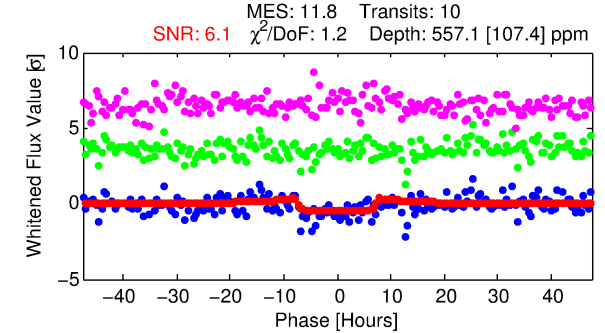
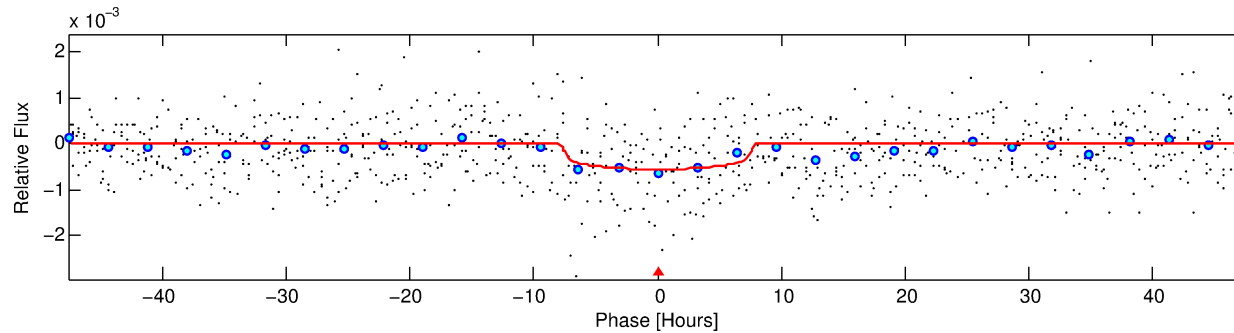
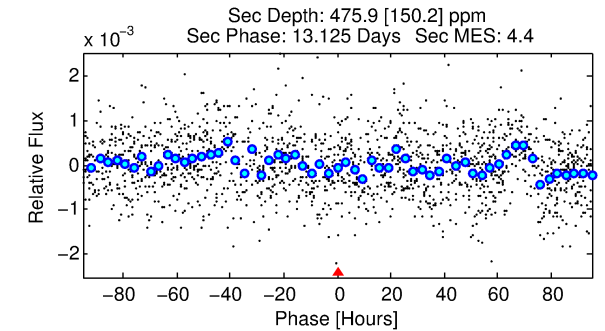
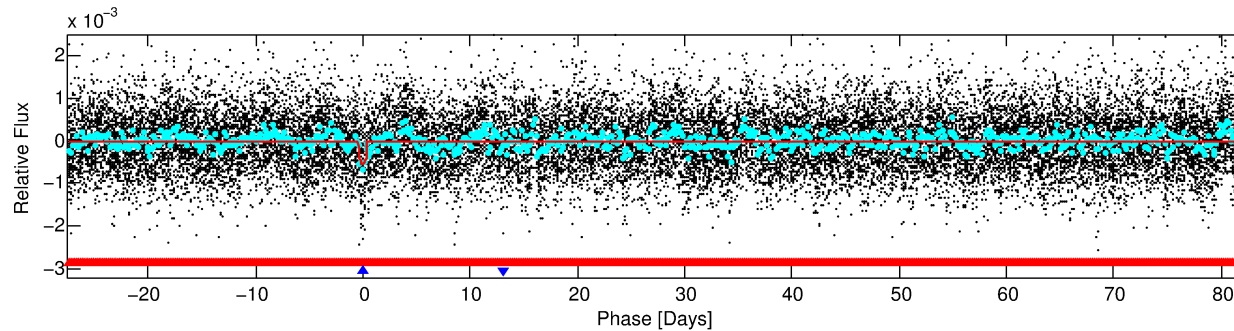
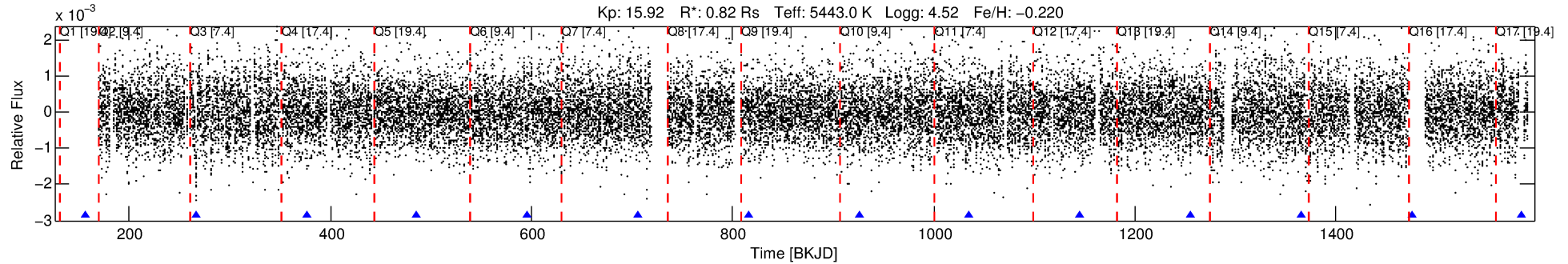
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007975471-02

No Significant Match Found

# DV One-Page Summary

KIC: 7975471 Candidate: 2 of 2 Period: 109.872 d



## DV Fit Results:

Period = 109.87174 [0.00473] d  
Epoch = 156.5319 [0.0322] BKJD  
Rp/R\* = 0.0234 [0.0103]  
a/R\* = 37.22 [64.44]  
b = 0.74 [1.06]  
Seff = 3.00 [0.79]  
Teq = 335 [22] K  
Rp = 2.09 [1.00] Re  
a = 0.4196 [0.0669] AU  
Ag = 10510.25 [10102.42] [1.04σ]  
Teffp = 5252 [1238] K [3.97σ]

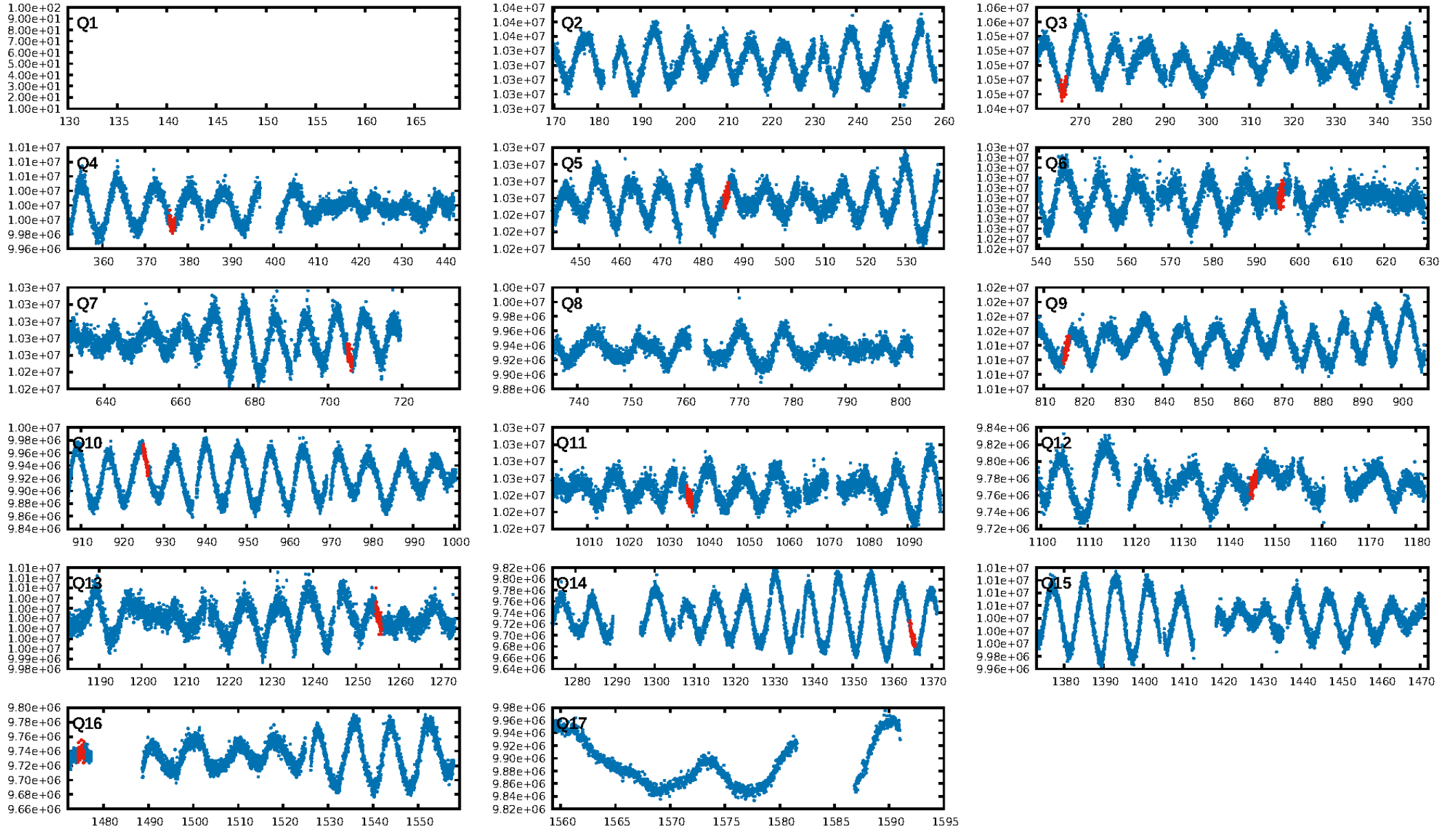
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [154.03σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.84e-20  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: -0.1432  
Centroid-sig: 2.6%  
Centroid-so: 1.925 arcsec [1.84σ]  
OotOffset-rm: 0.426 arcsec [1.01σ]  
OotOffset-st: 2/1/1/1 [5]  
KicOffset-rm: 0.414 arcsec [0.74σ]  
KicOffset-st: 2/1/1/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 0.00 [0/10]

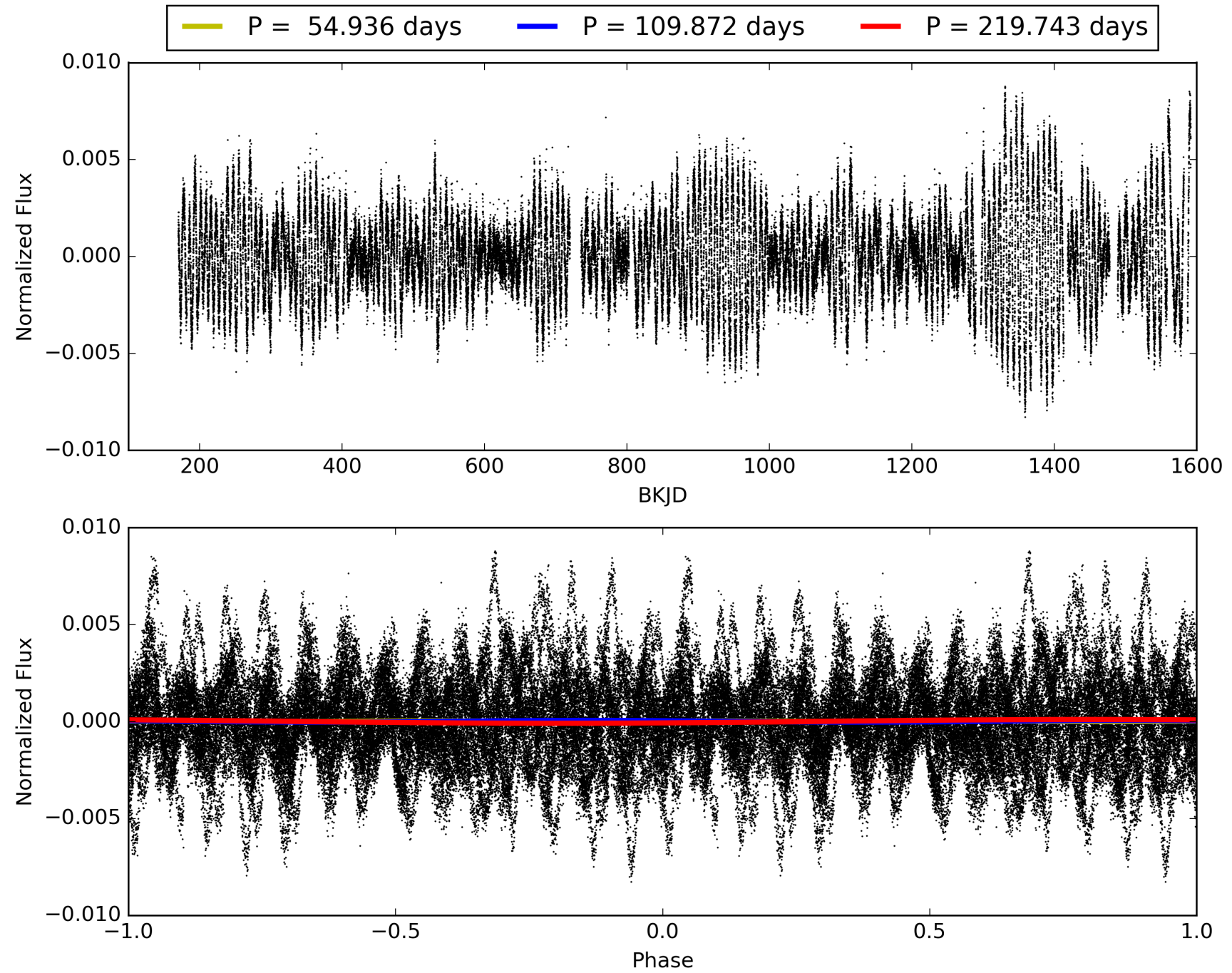
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:24:05 Z

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

# TCE 007975471-02, PDC Light Curves



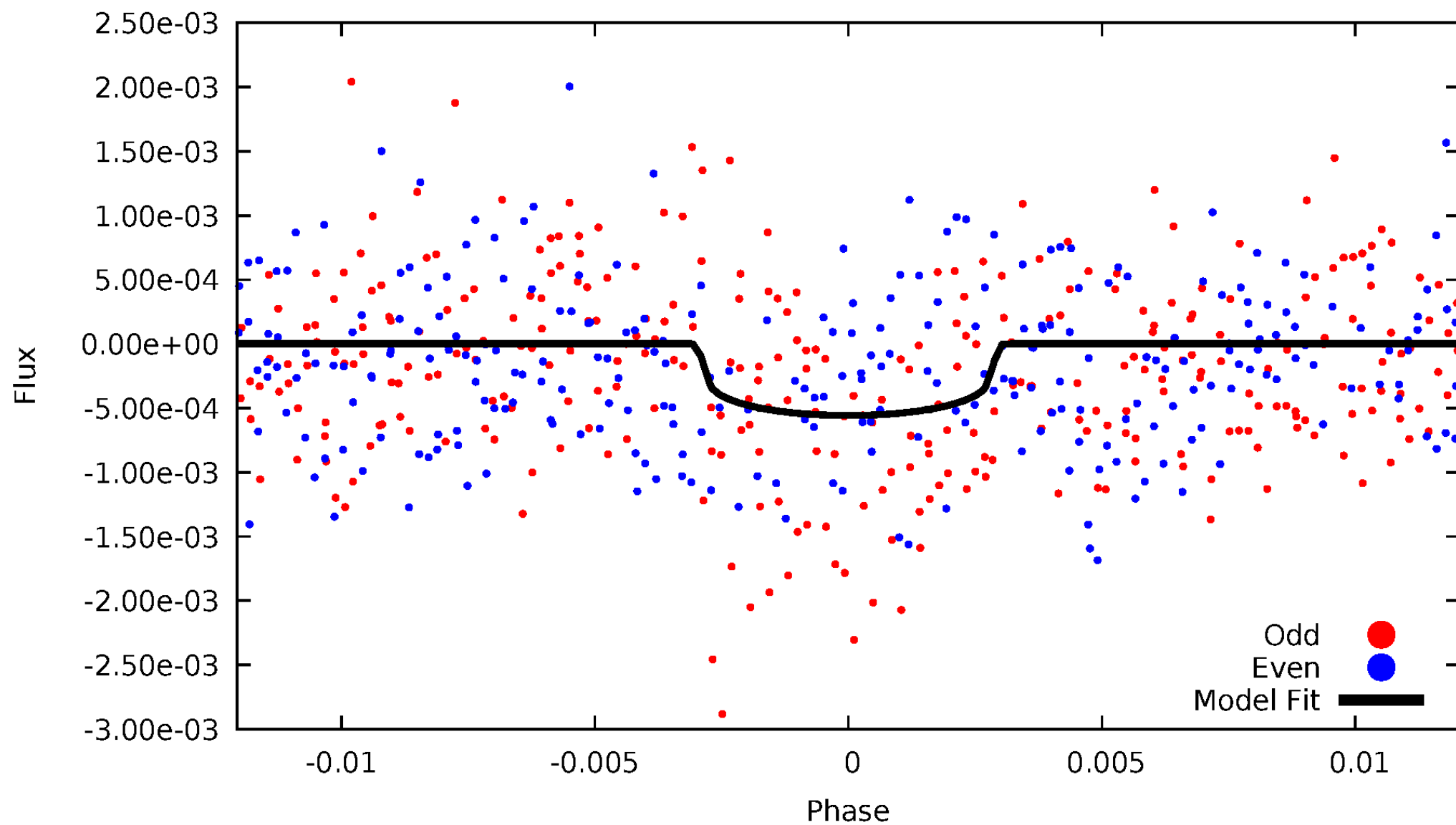
TCE 007975471-02





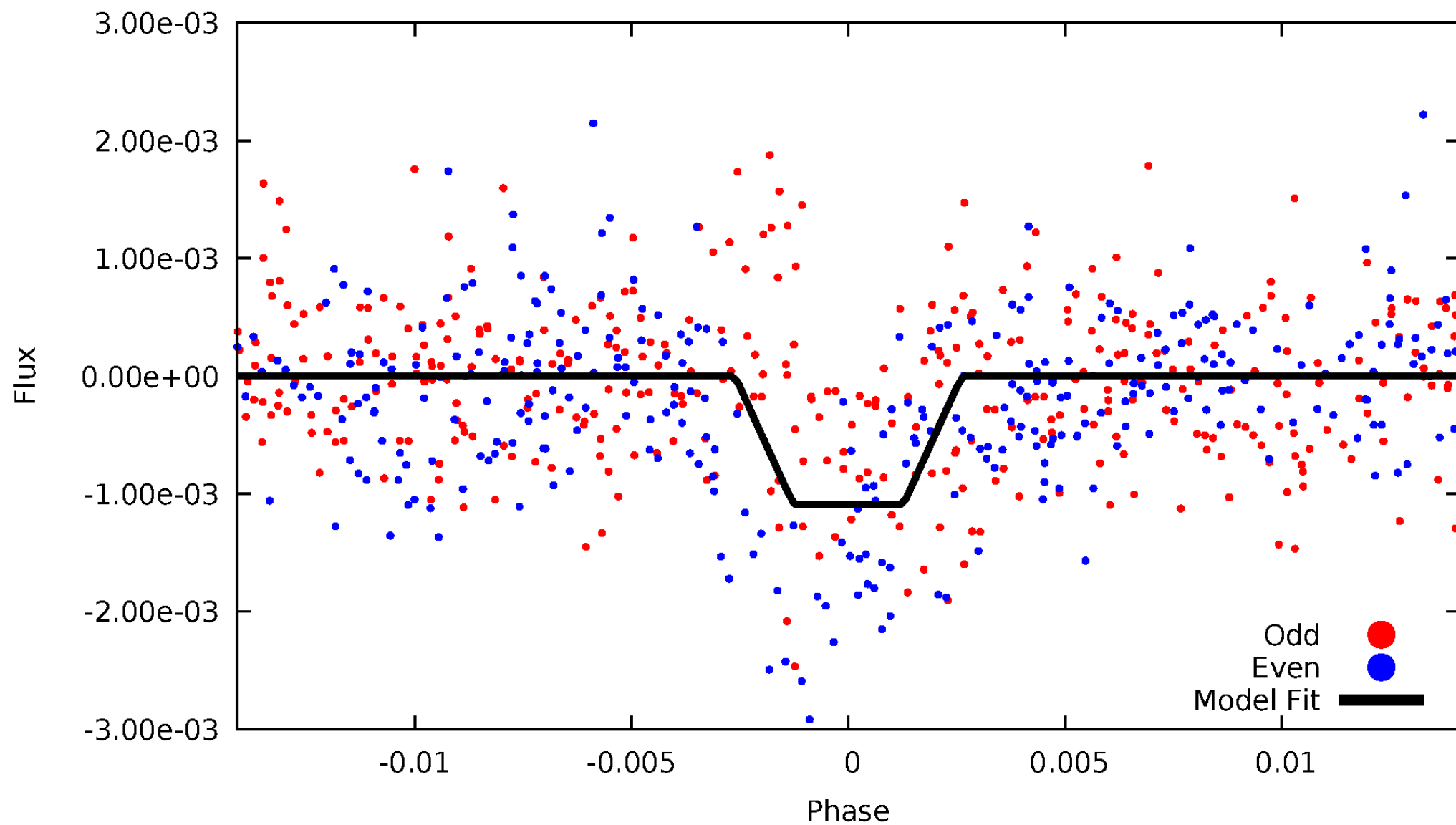
# DV Odd/Even

TCE 007975471-02



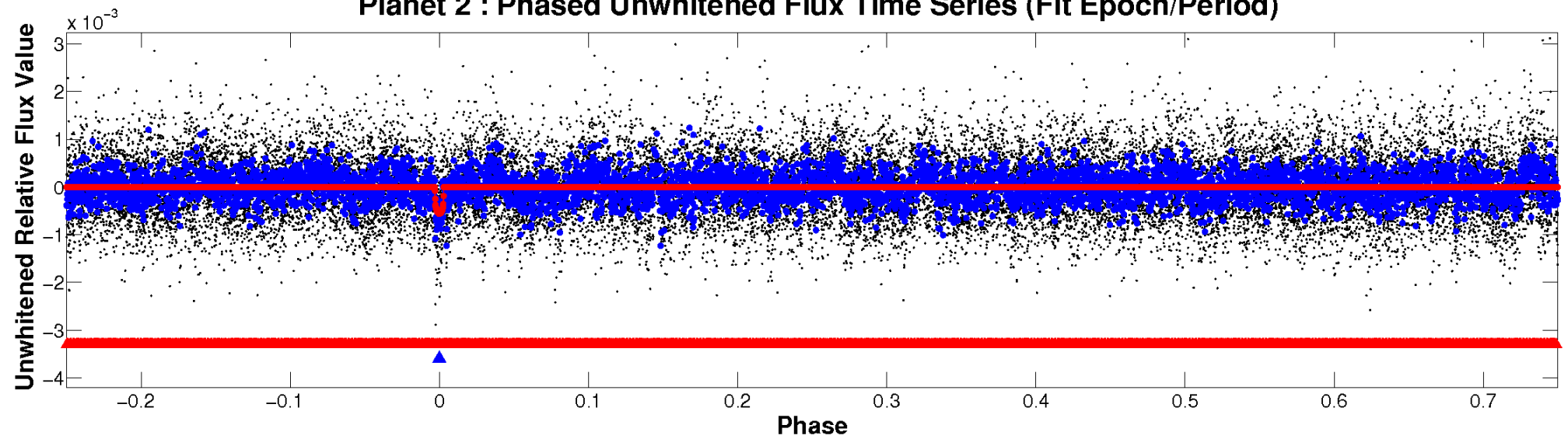
# ALT Odd/Even

TCE 007975471-02

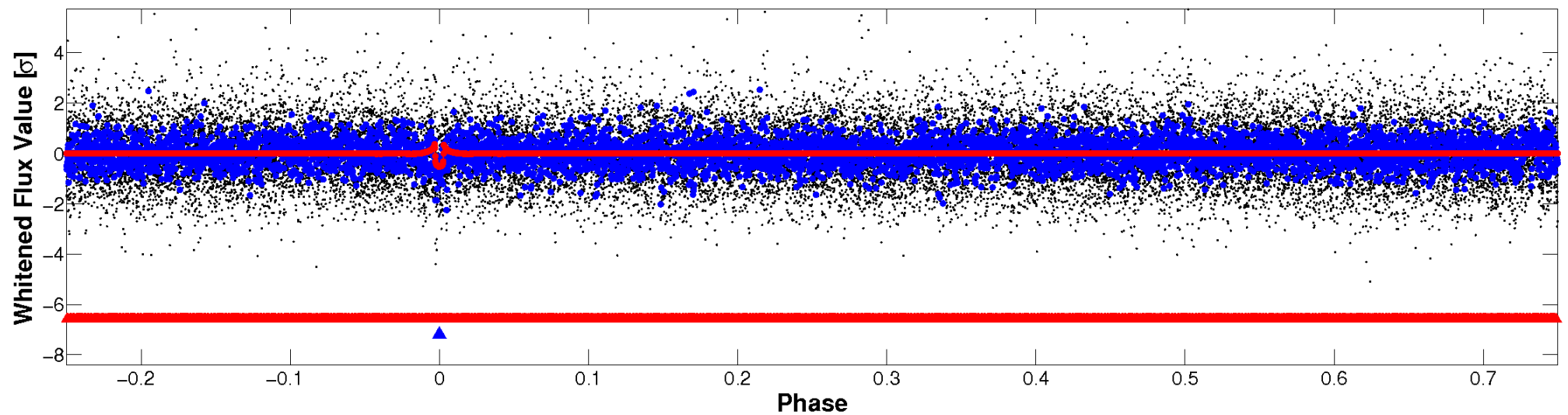


# Non-Whitened Vs. Whitened Light Curve

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

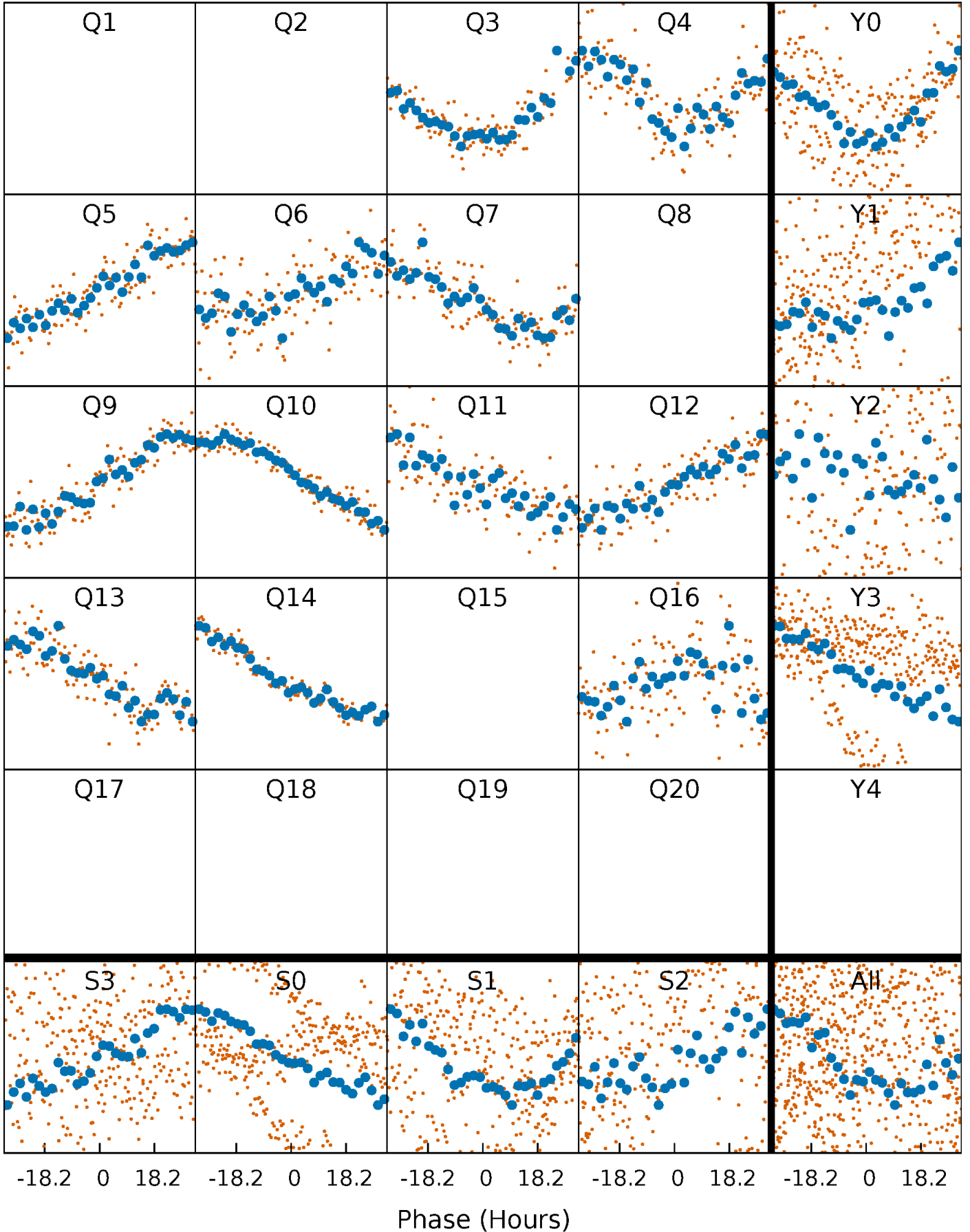


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



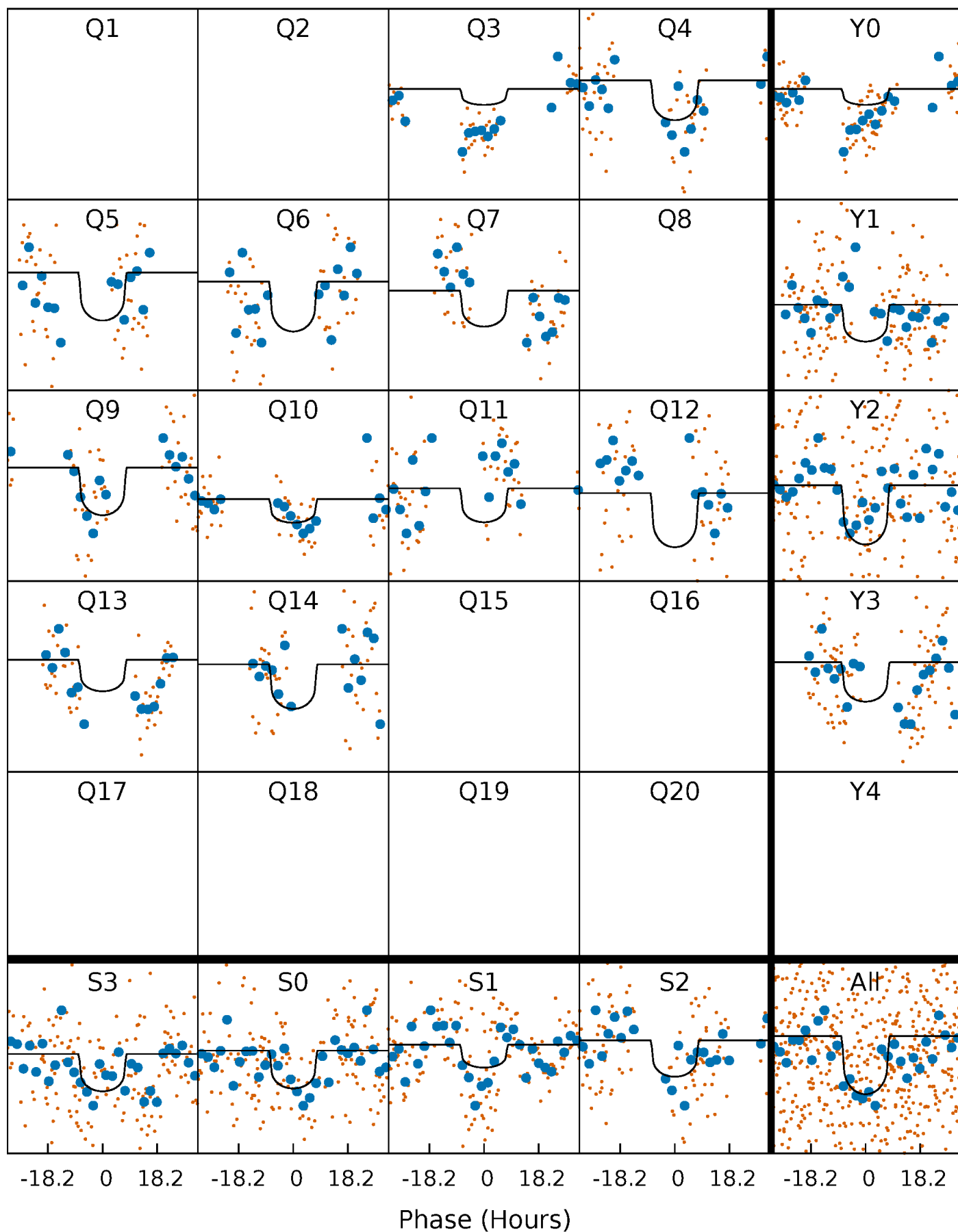
# PDC Quarter-Phased Transit Curves

TCE 007975471-02   P=109.871736 Days    $T_0=156.531850$  (BKJD)



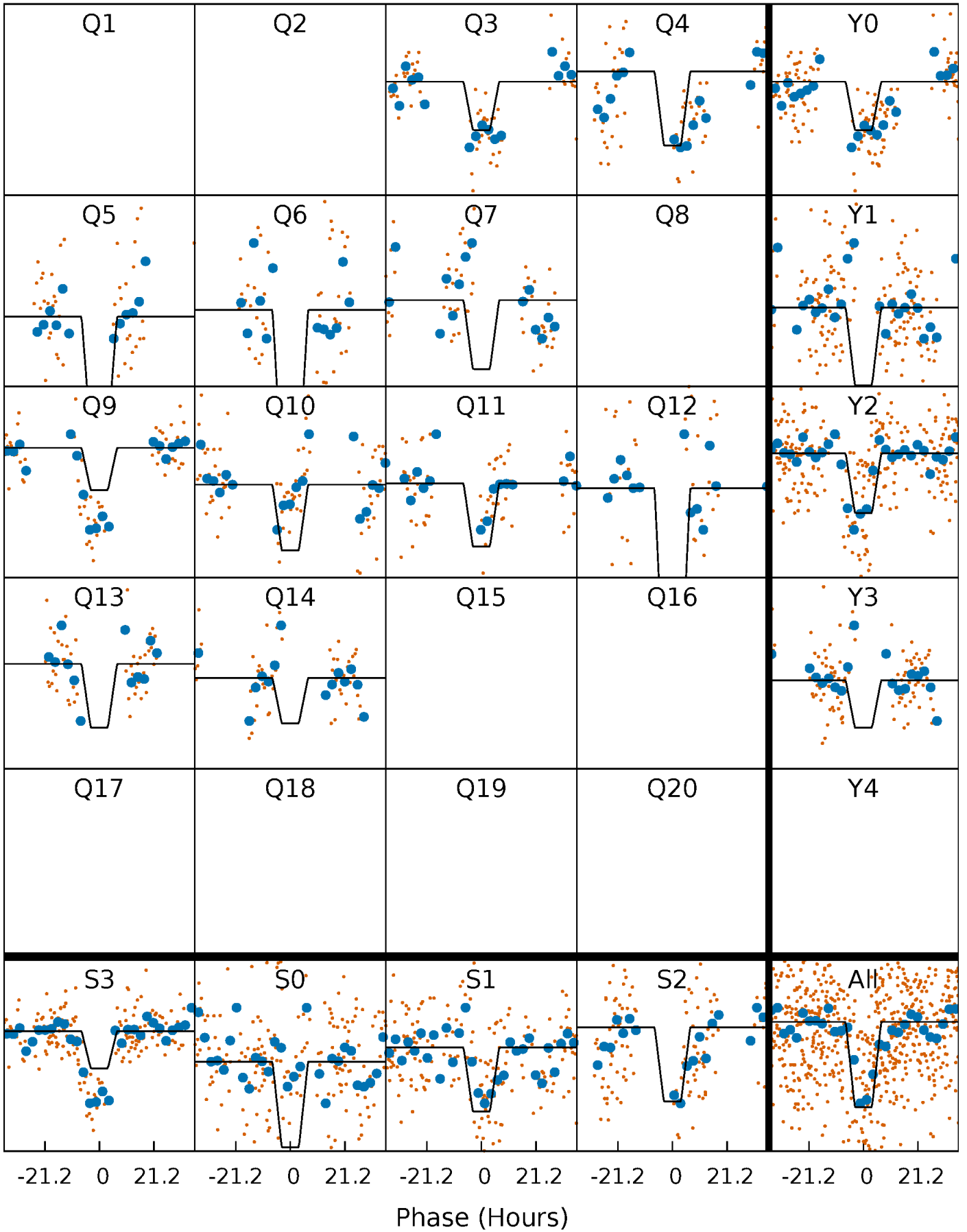
# DV Quarter-Phased Transit Curves

TCE 007975471-02 P=109.871736 Days  $T_0=156.531850$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007975471-02 P=109.891782 Days  $T_0=156.373995$  (BKJD)

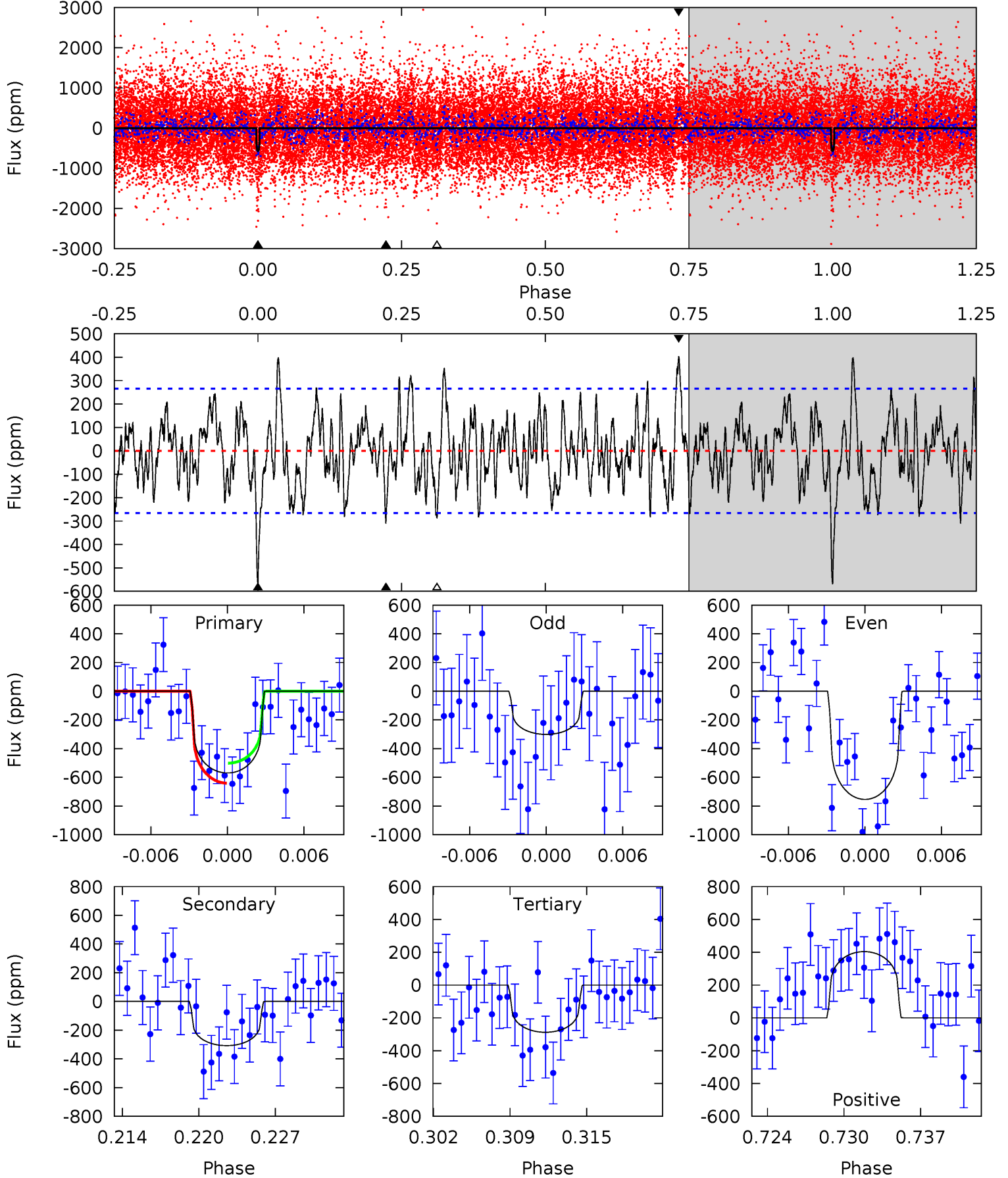




# DV Model-Shift Uniqueness Test

007975471-02, P = 109.871736 Days, E = 156.531850 Days

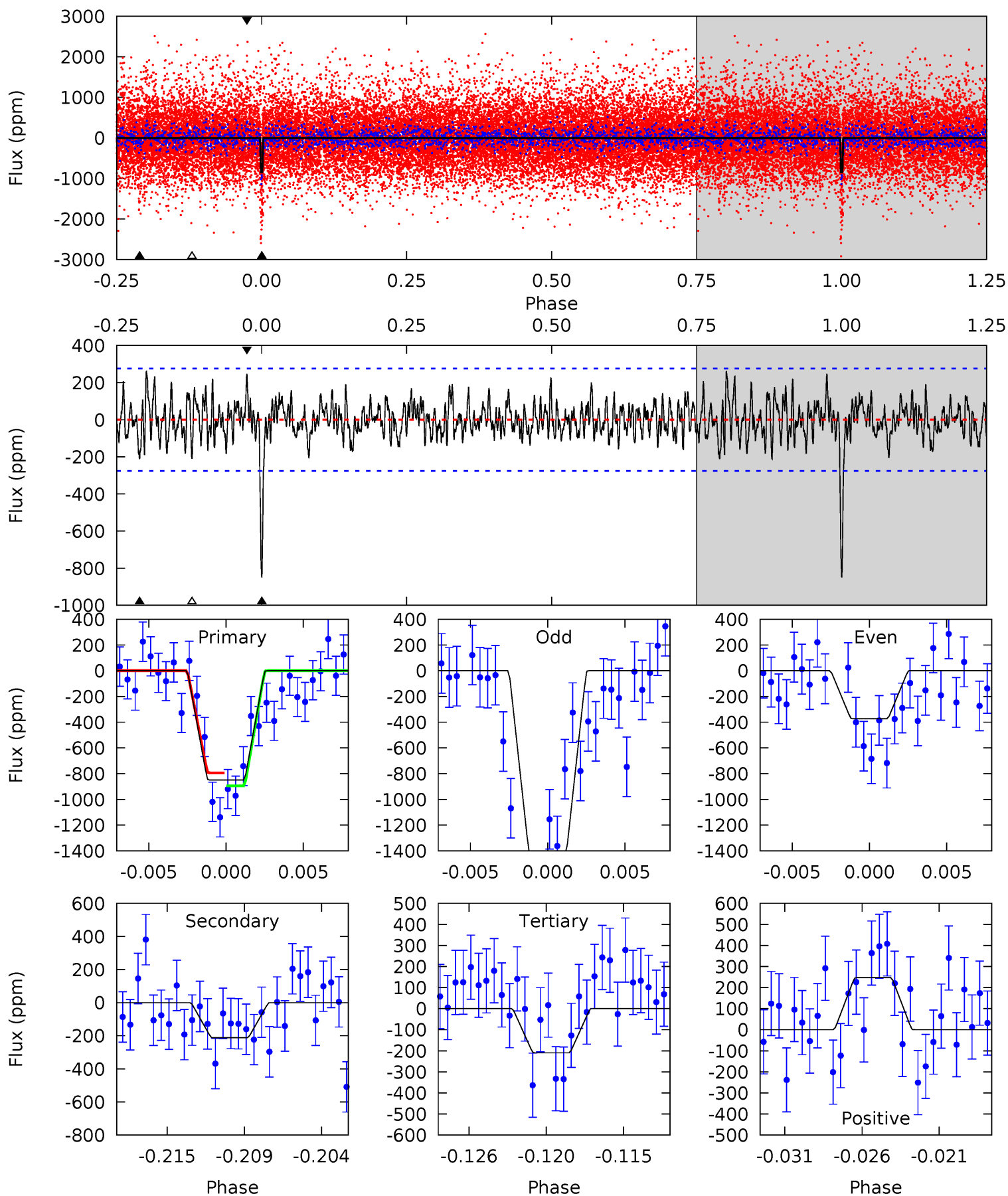
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	5.93	5.55	7.78	5.11	2.73	2.44	5.43	3.20	0.38	-1.85	4.29	1.27	0.41	1.34



# Alt Model-Shift Uniqueness Test

007975471-02, P = 109.891782 Days, E = 156.373995 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
15.8	3.95	3.92	4.61	5.15	2.79	1.43	11.9	11.2	0.04	-0.66	9.63	1.13	0.24	0.93



### Stellar Parameters For KIC 007975471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5443^{+178}_{-162}$	$4.523^{+0.067}_{-0.124}$	$-0.220^{+0.300}_{-0.300}$	$0.819^{+0.157}_{-0.085}$	$0.816^{+0.107}_{-0.071}$	$2.093^{+0.600}_{-0.736}$
	+3%/-3%	+1%/-3%	+136%/-136%	+19%/-10%	+13%/-9%	+29%/-35%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007975471-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-308 \pm 52$	$2.20^{+0.90}_{-0.96}$	$473^{+26}_{-21}$	$4744^{+1427}_{-598}$	$6022^{+13447}_{-2944}$
Alt.	$-212 \pm 54$	$2.99^{+1.07}_{-0.94}$	$472^{+26}_{-20}$	$3940^{+647}_{-426}$	$2321^{+2668}_{-1130}$

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

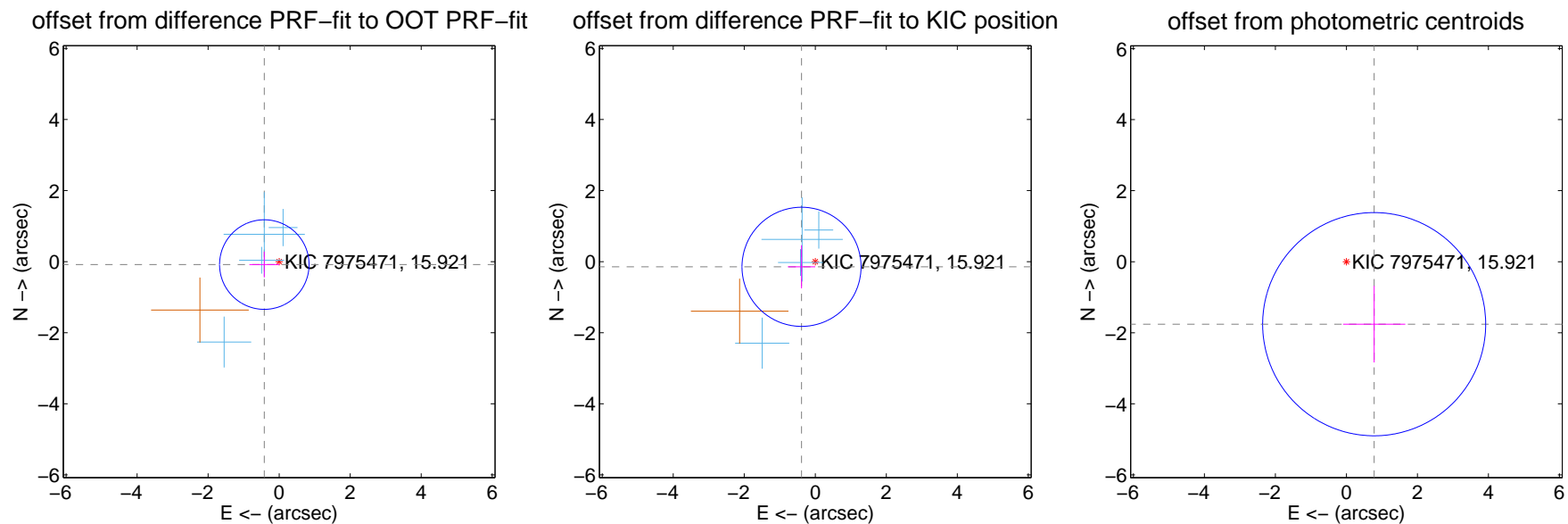
## DV Centroid Data

Supplemental centroid analysis for 007975471-02. Kepler magnitude: 15.92. Transit SNR 6.05

There are 4 quarters with good PRF difference image offsets

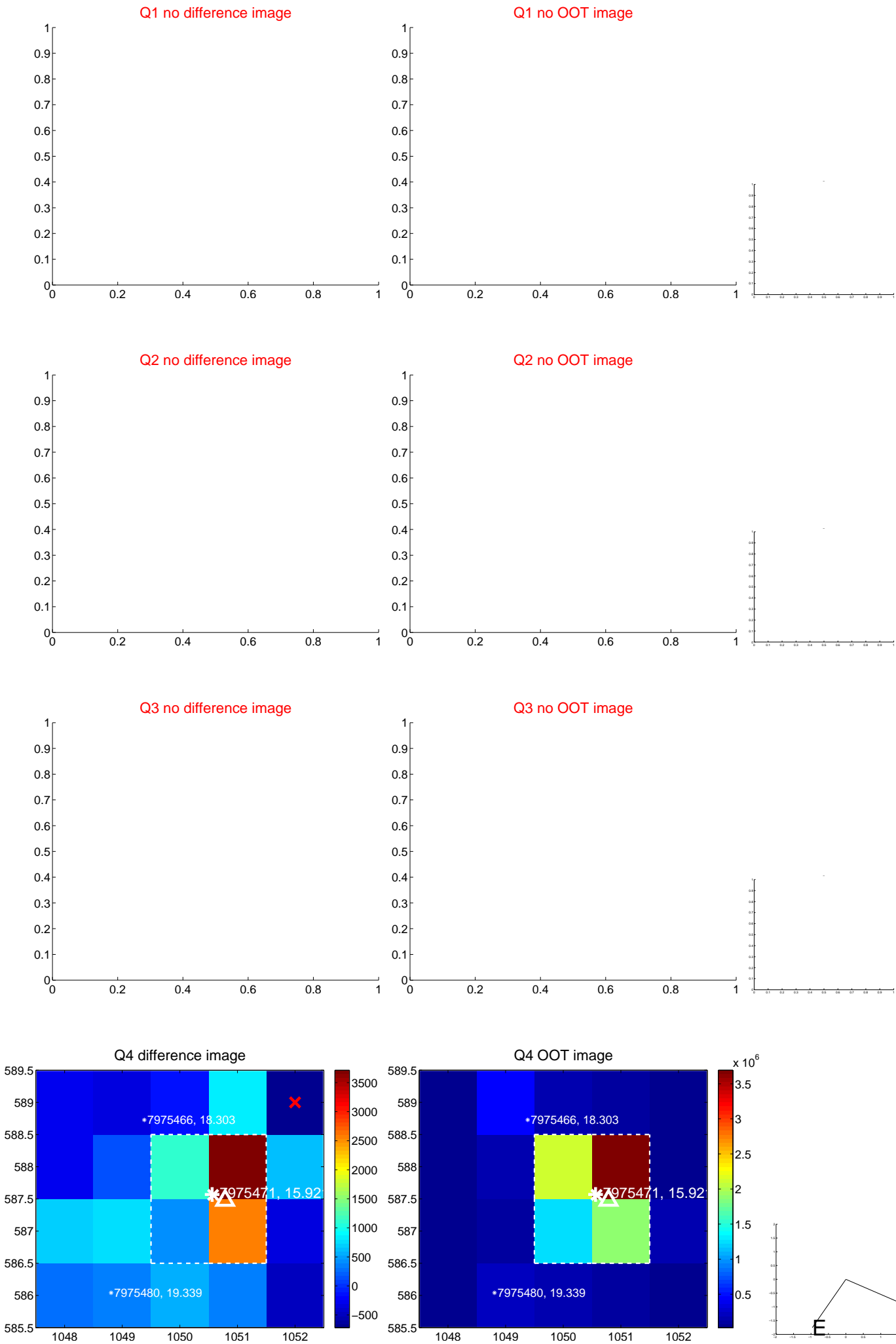
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.426 \pm 0.420$	1.01	$0.418 \pm 0.422$	$-0.082 \pm 0.362$
PRF-fit source offset from KIC position	$0.414 \pm 0.559$	0.74	$0.387 \pm 0.384$	$-0.145 \pm 0.608$
photometric centroid source offset	$1.93 \pm 1.05$	1.84	$-0.78 \pm 0.88$	$-1.76 \pm 1.08$

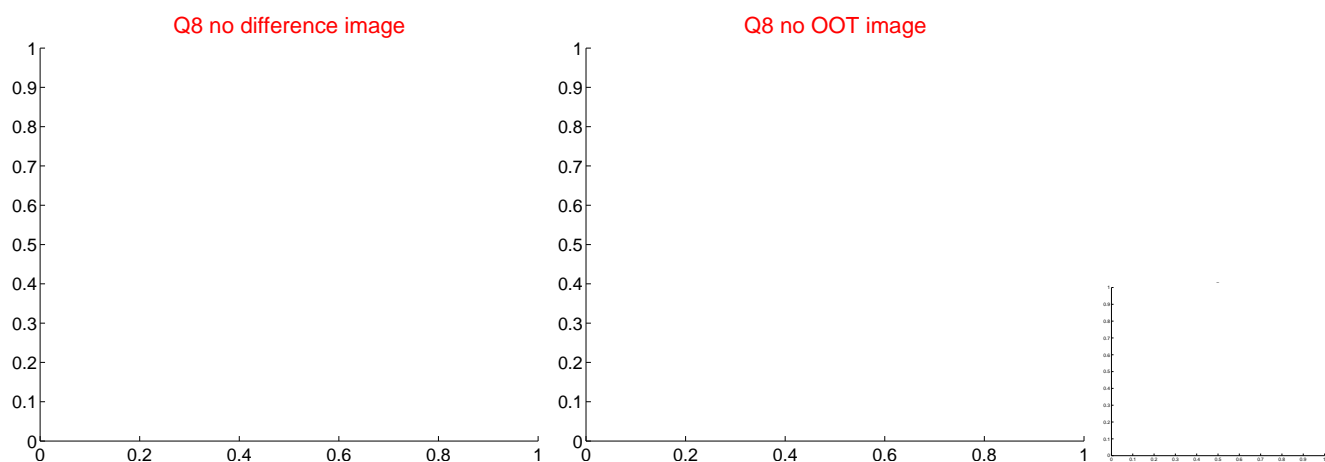
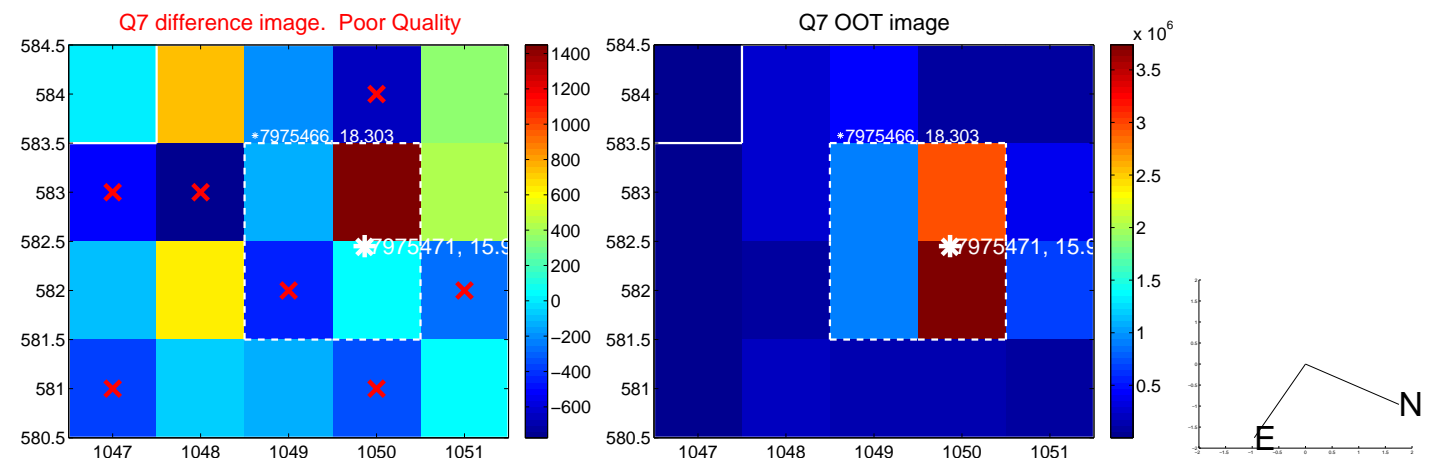
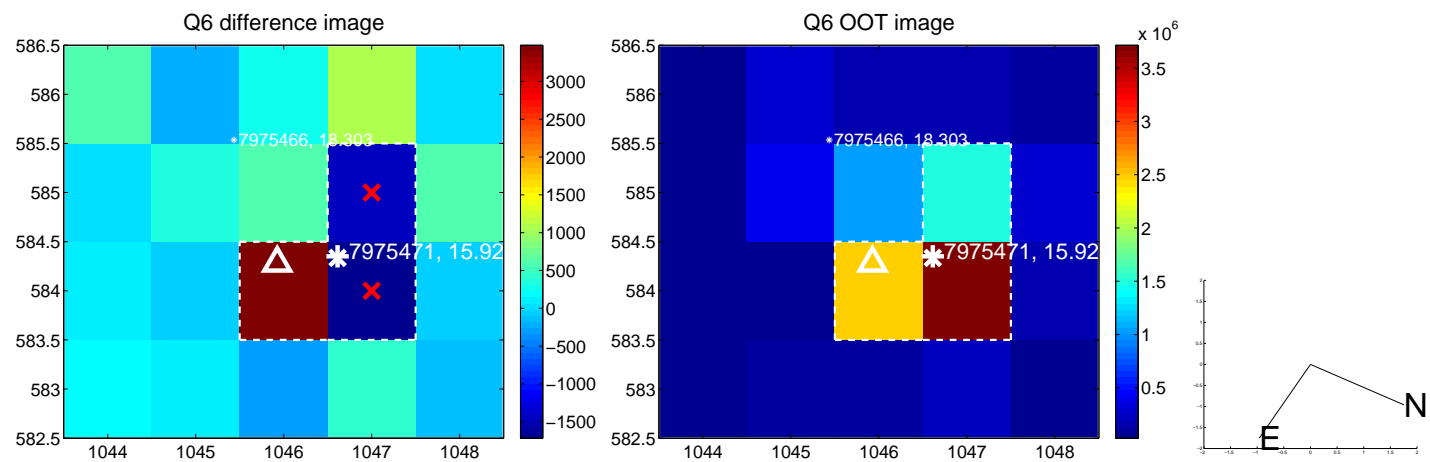
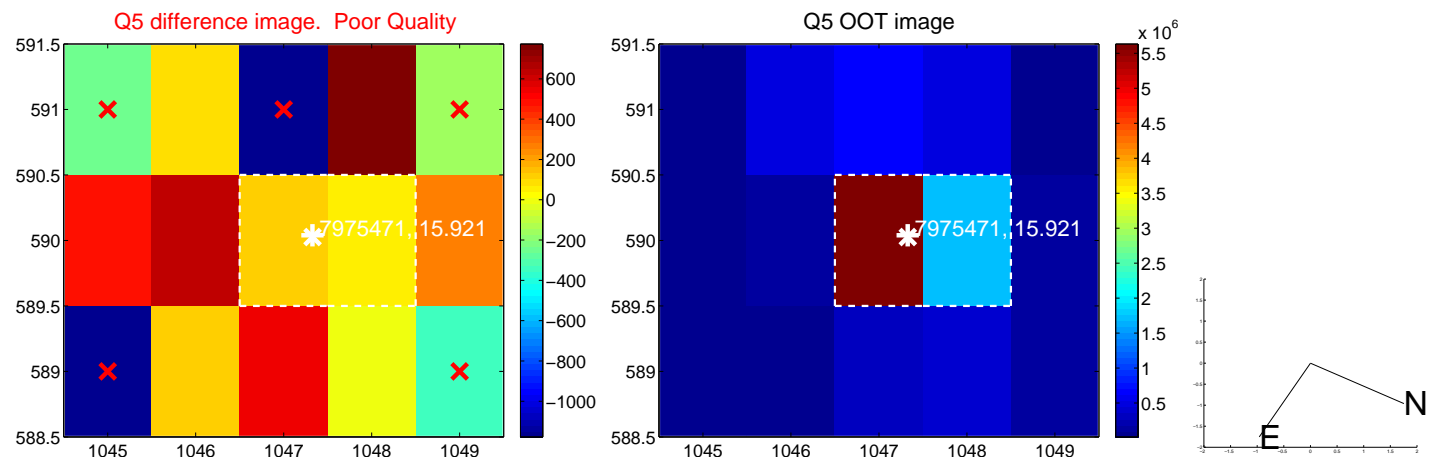


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

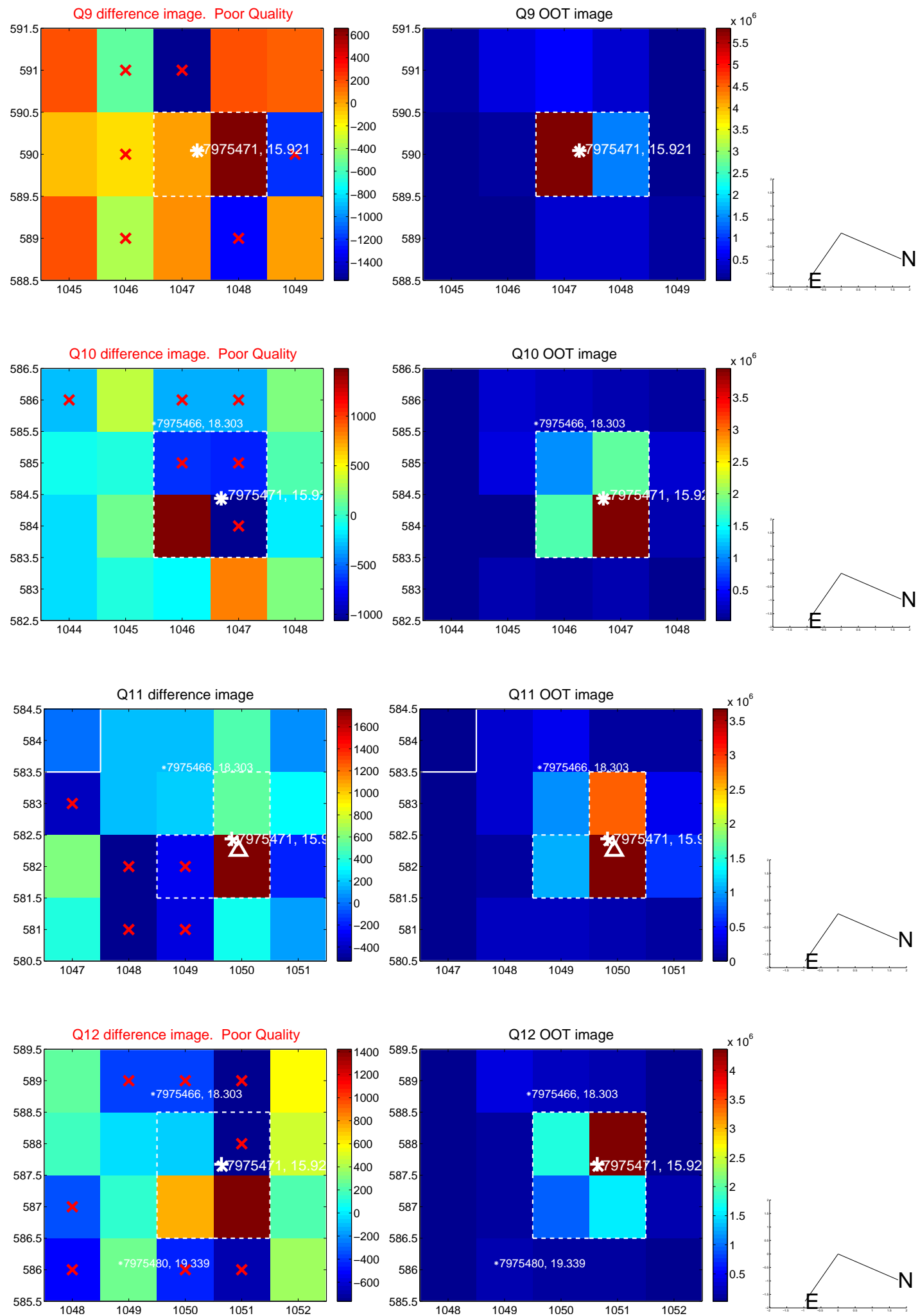


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

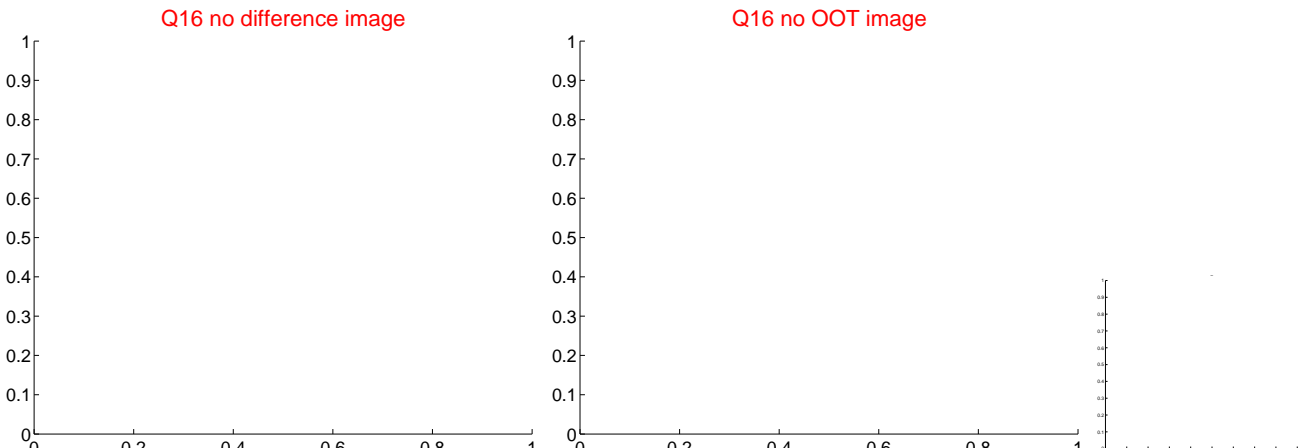
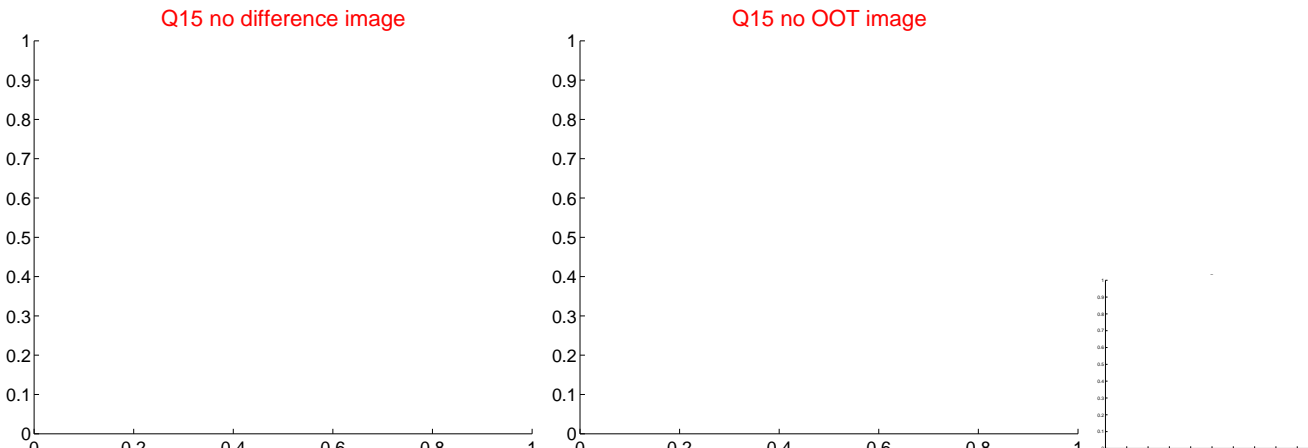
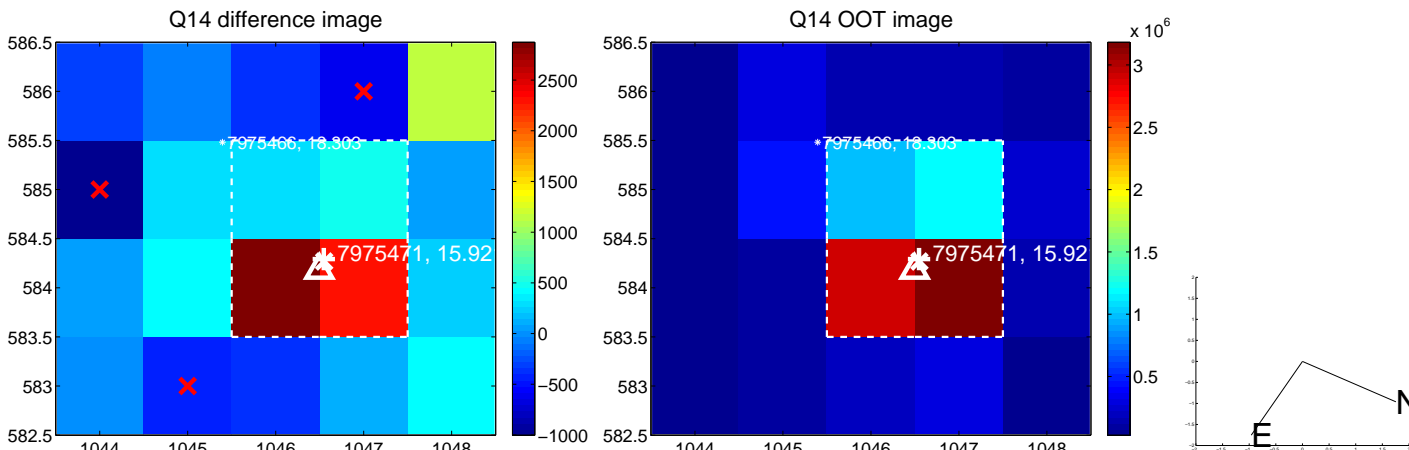
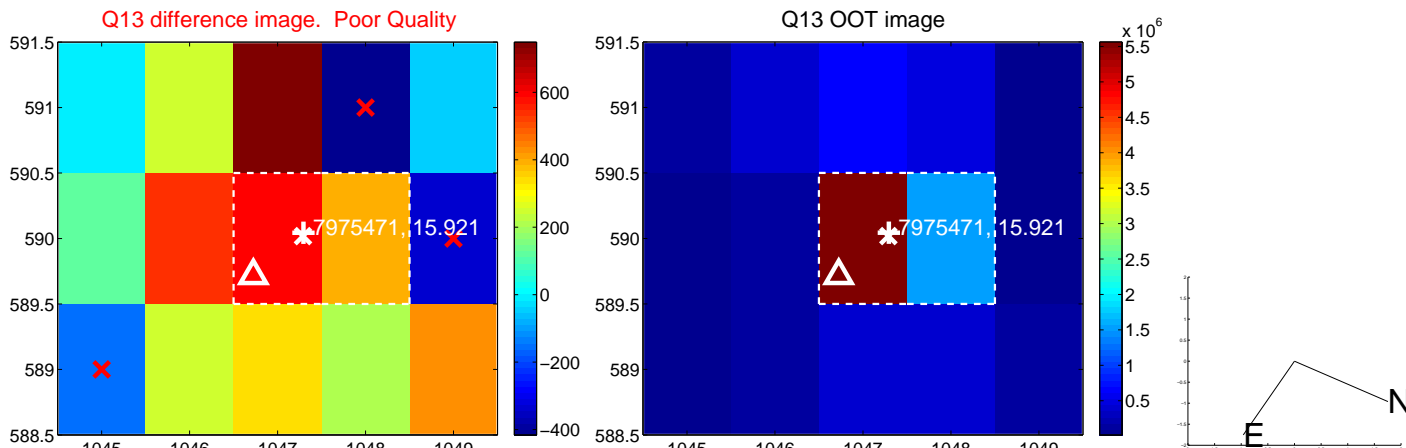




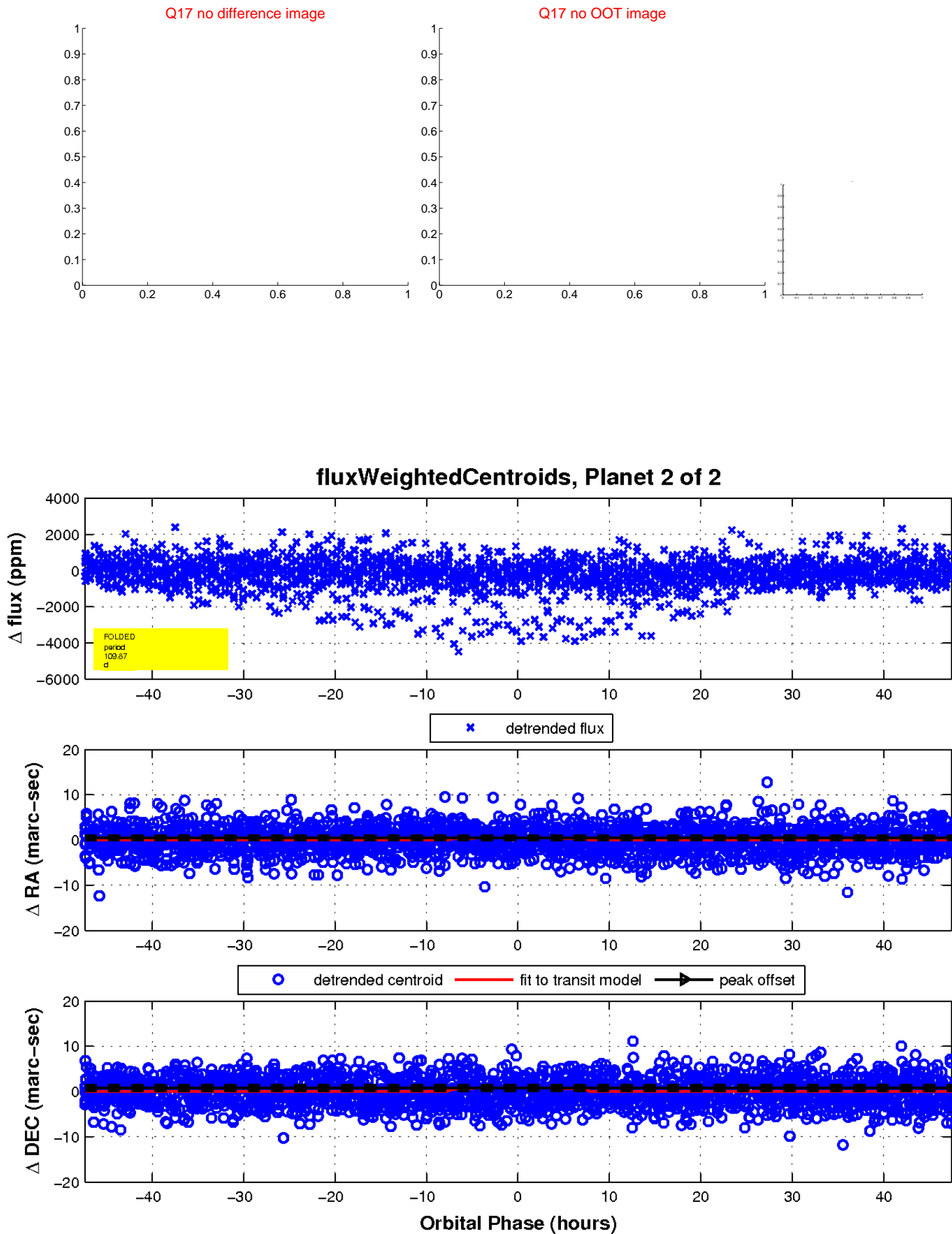
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

