

# KIC 011853905

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011853905-01	OBS	0007.01	3.213662	133.254287	726.4	4.127	294.5	302.3	1.54	5795	4.60	1246.60

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011853905-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

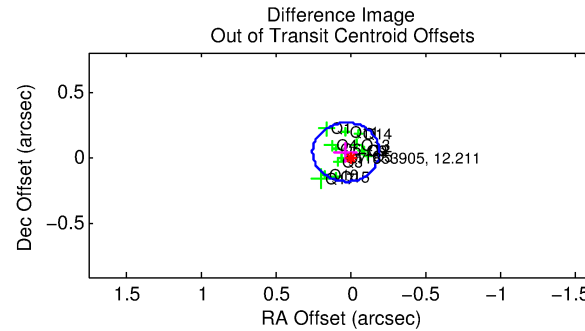
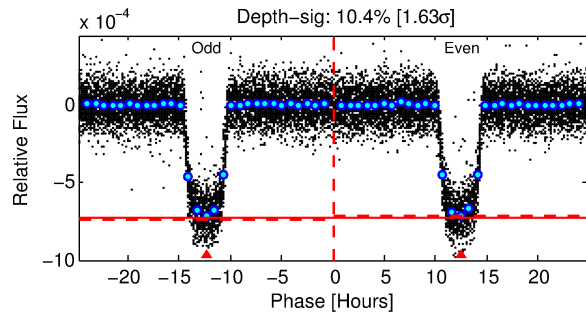
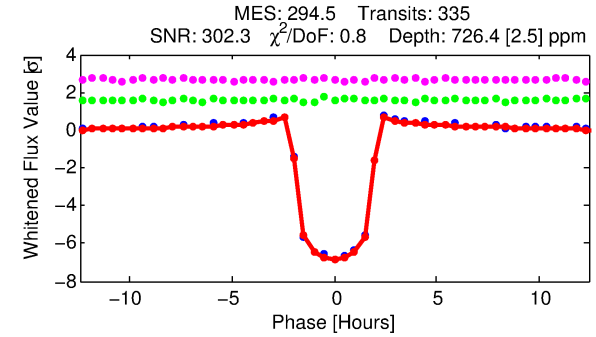
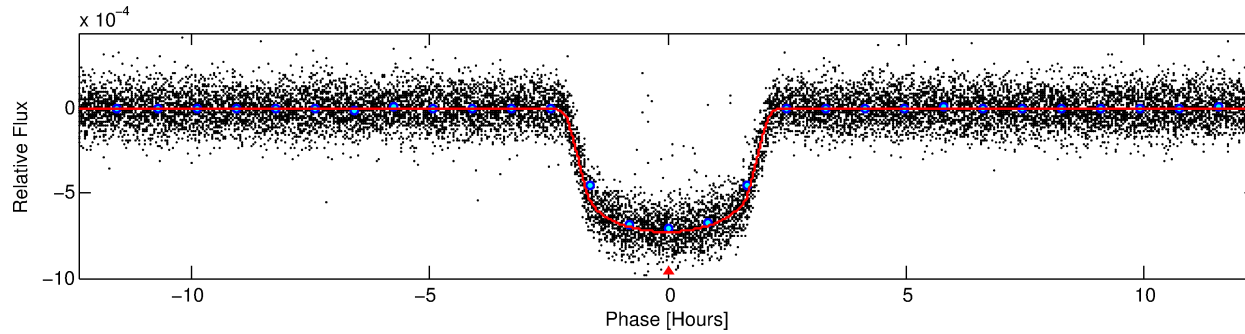
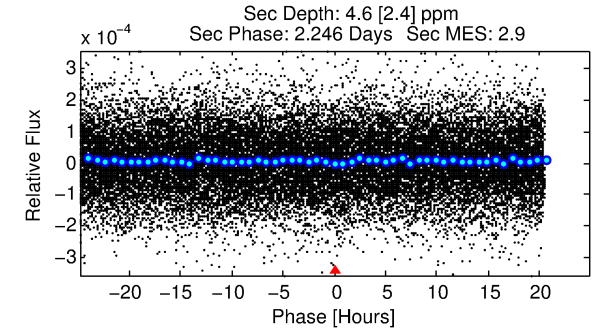
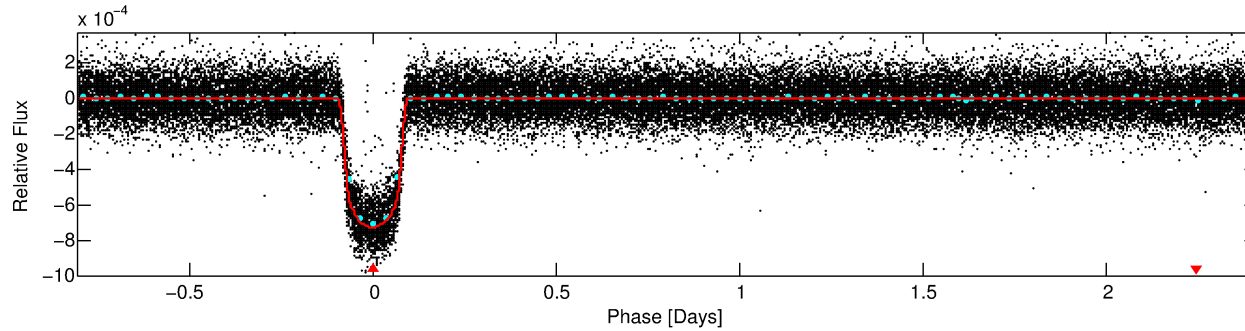
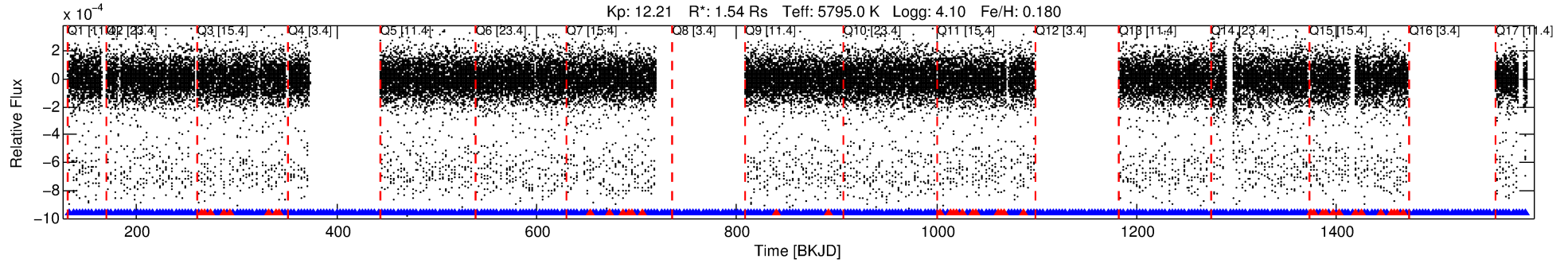
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011853905-01

No Significant Match Found

# DV One-Page Summary

KIC: 11853905 Candidate: 1 of 1 Period: 3.214 d  
KOI: K00007.01 Name: Kepler-4b Corr: 0.984



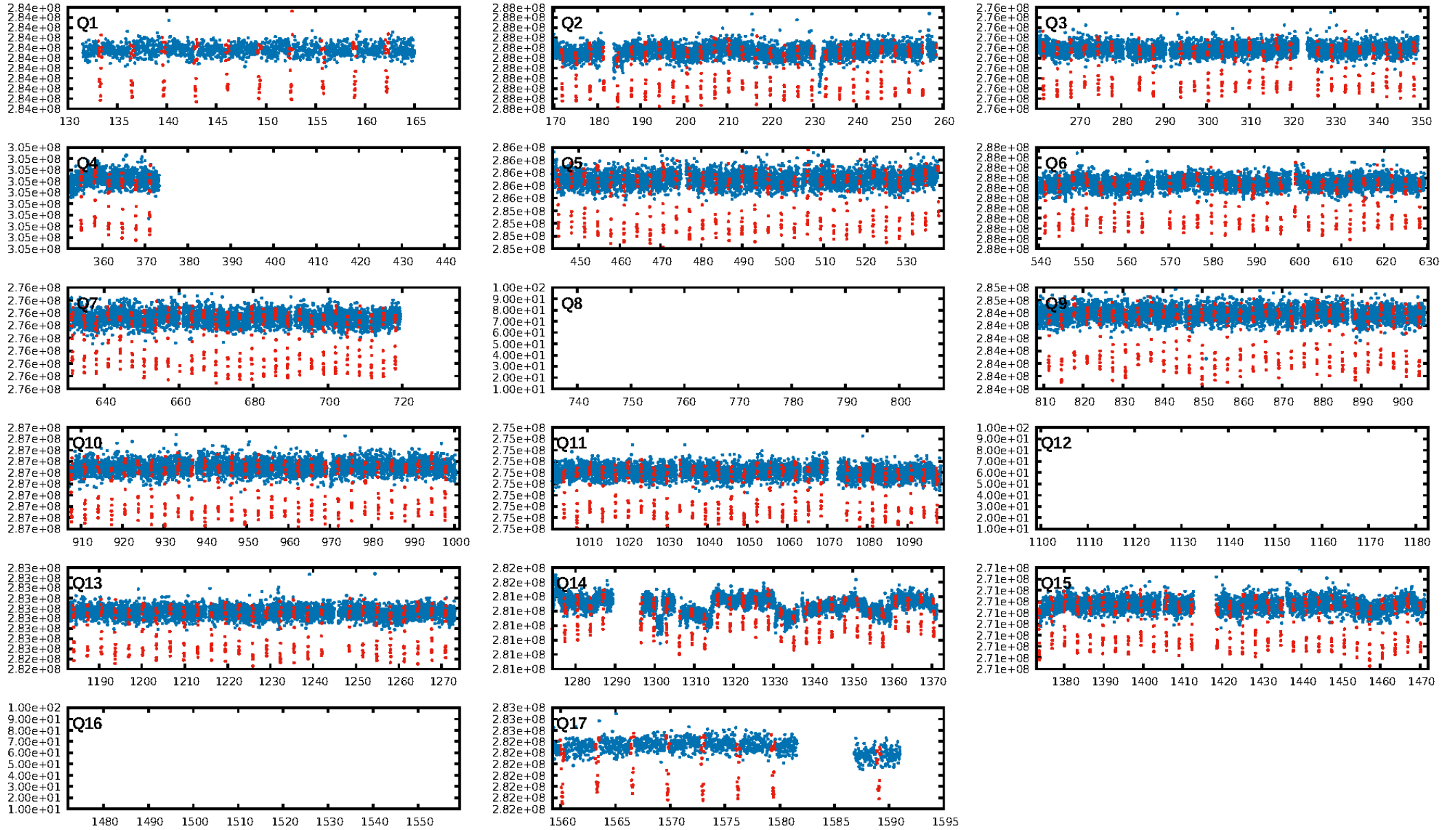
## DV Fit Results:

Period = 3.21366 [0.00000] d  
Epoch = 133.2543 [0.0002] BKJD  
Rp/R\* = 0.0273 [0.0005]  
a/R\* = 4.03 [0.31]  
b = 0.79 [0.04]  
Seff = 1246.60 [105.36]  
Teff = 1515 [32] K  
Rp = 4.60 [0.30] Re  
a = 0.0440 [0.0022] AU  
Ag = 0.23 [0.12] [-6.30σ]  
Teffp = 1628 [212] K [0.53σ]

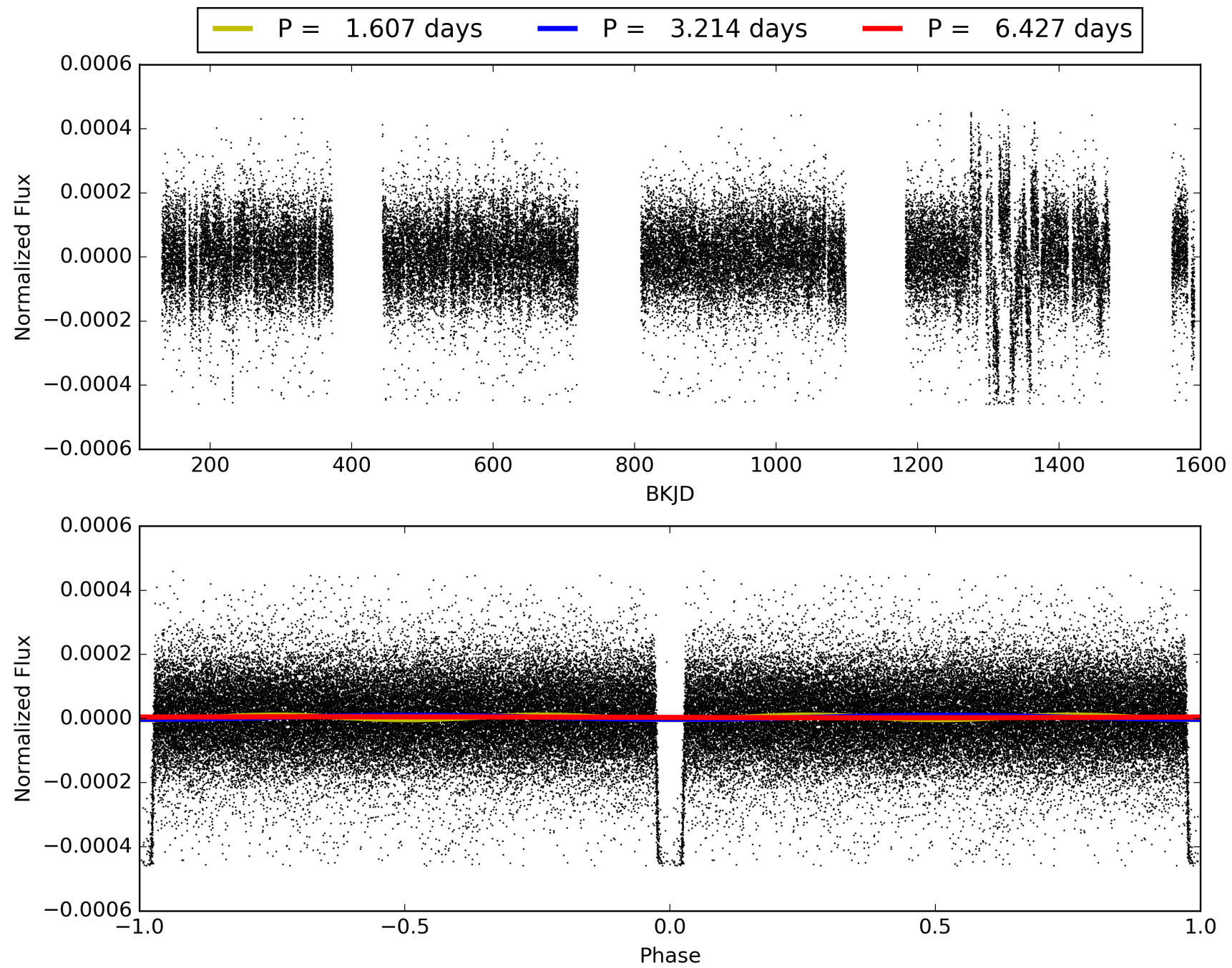
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.87 [271/311]  
GhostDiagnostic-chr: 7.291  
Centroid-sig: 0.0%  
Centroid-so: 0.263 arcsec [6.03σ]  
OotOffset-rm: 0.053 arcsec [0.71σ]  
KicOffset-rm: 0.195 arcsec [2.53σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 011853905-01, PDC Light Curves

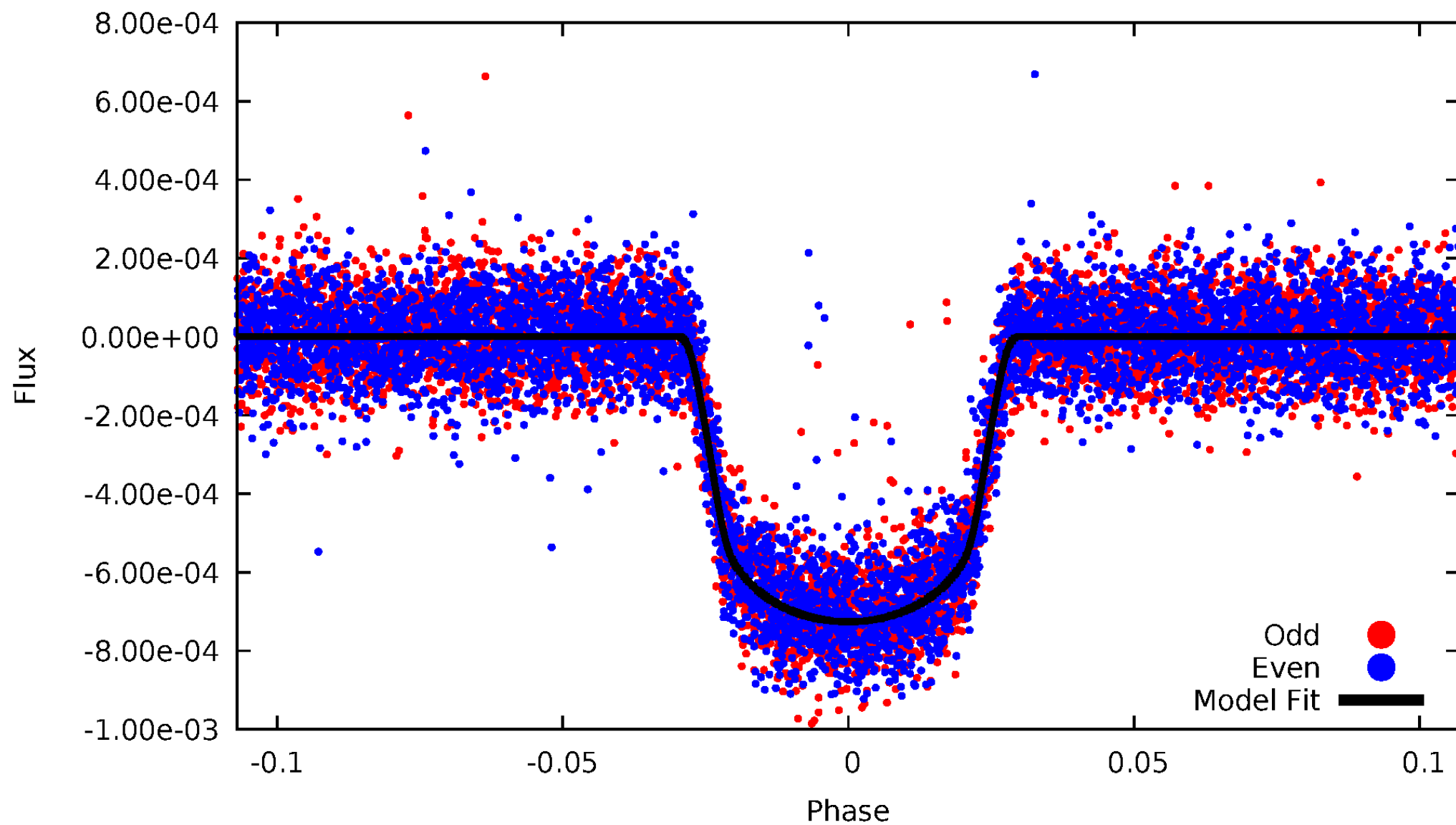


TCE 011853905-01



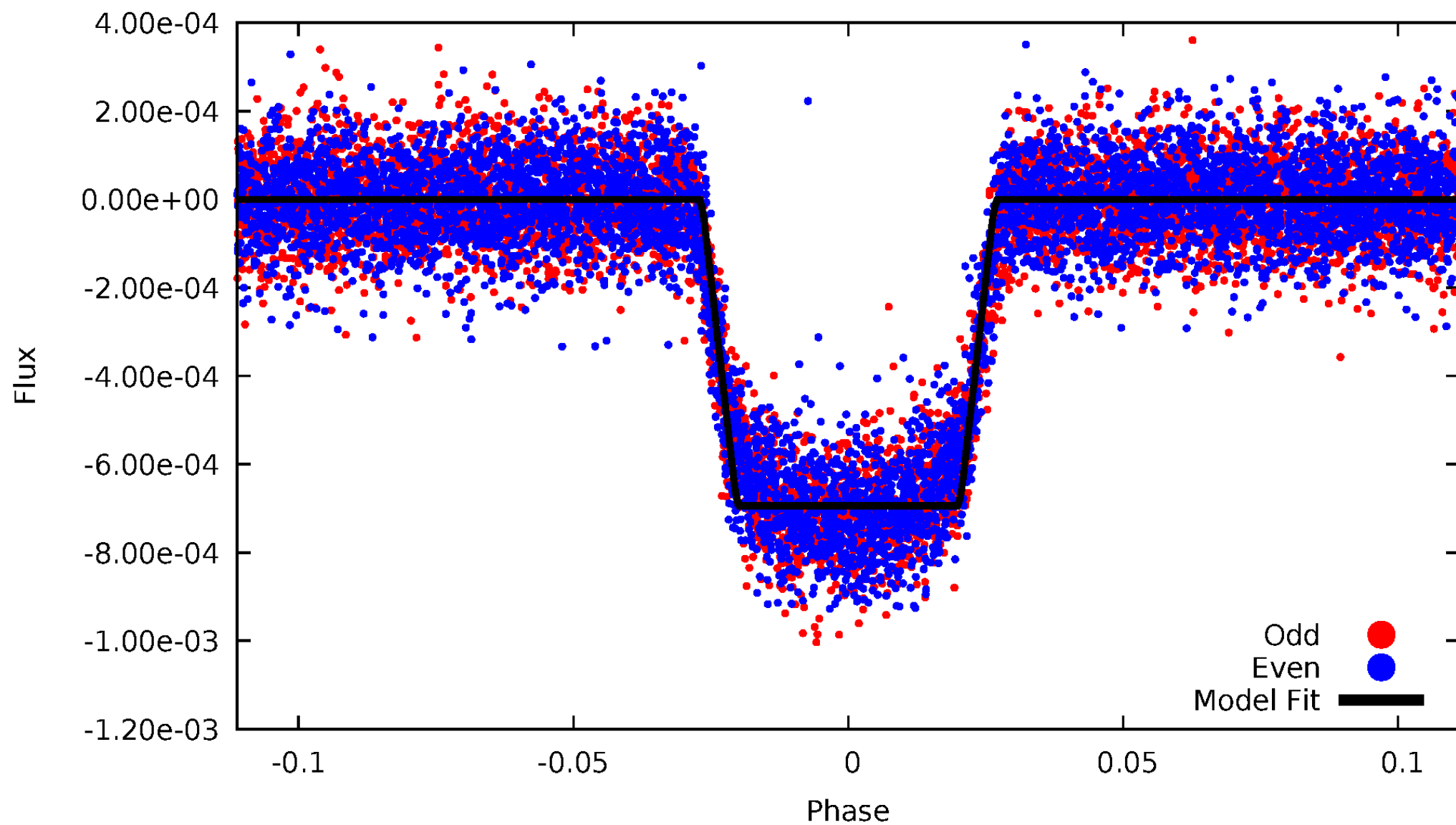
# DV Odd/Even

TCE 011853905-01



# ALT Odd/Even

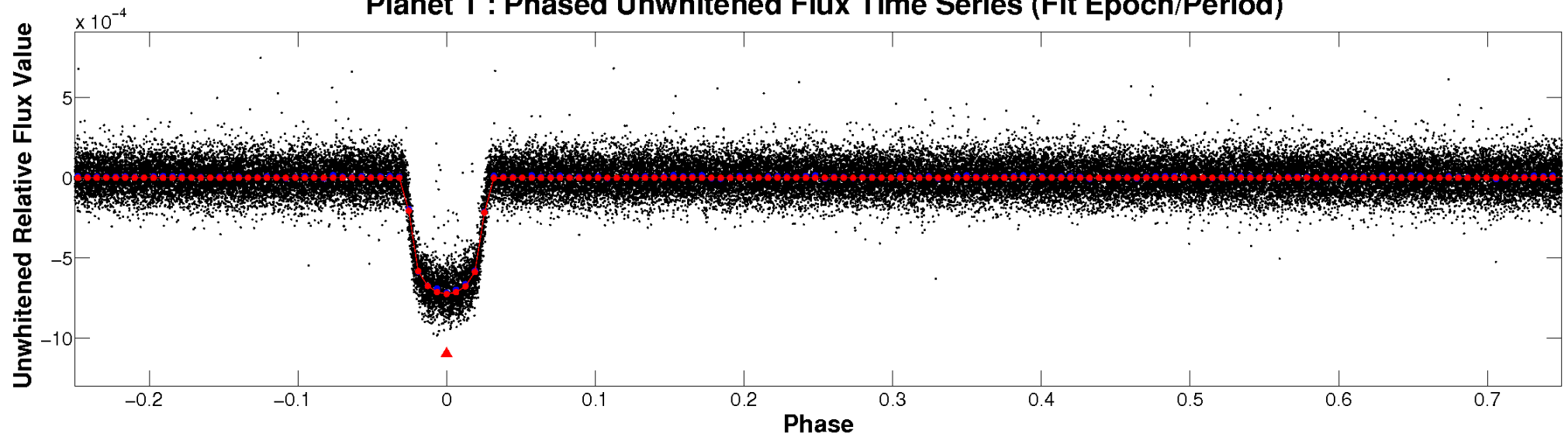
TCE 011853905-01



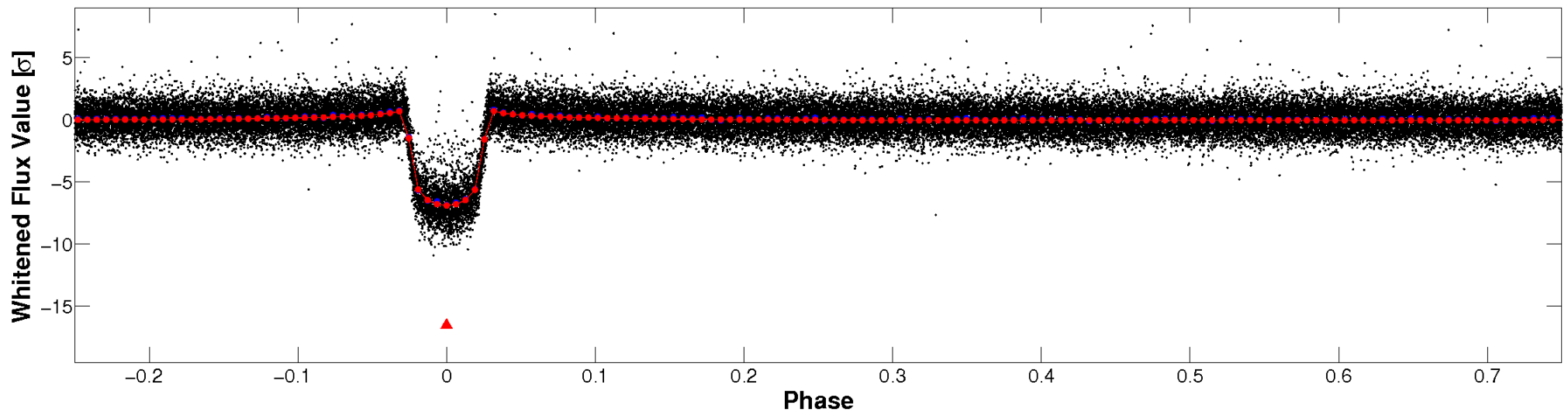


# Non-Whitened Vs. Whitened Light Curve

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

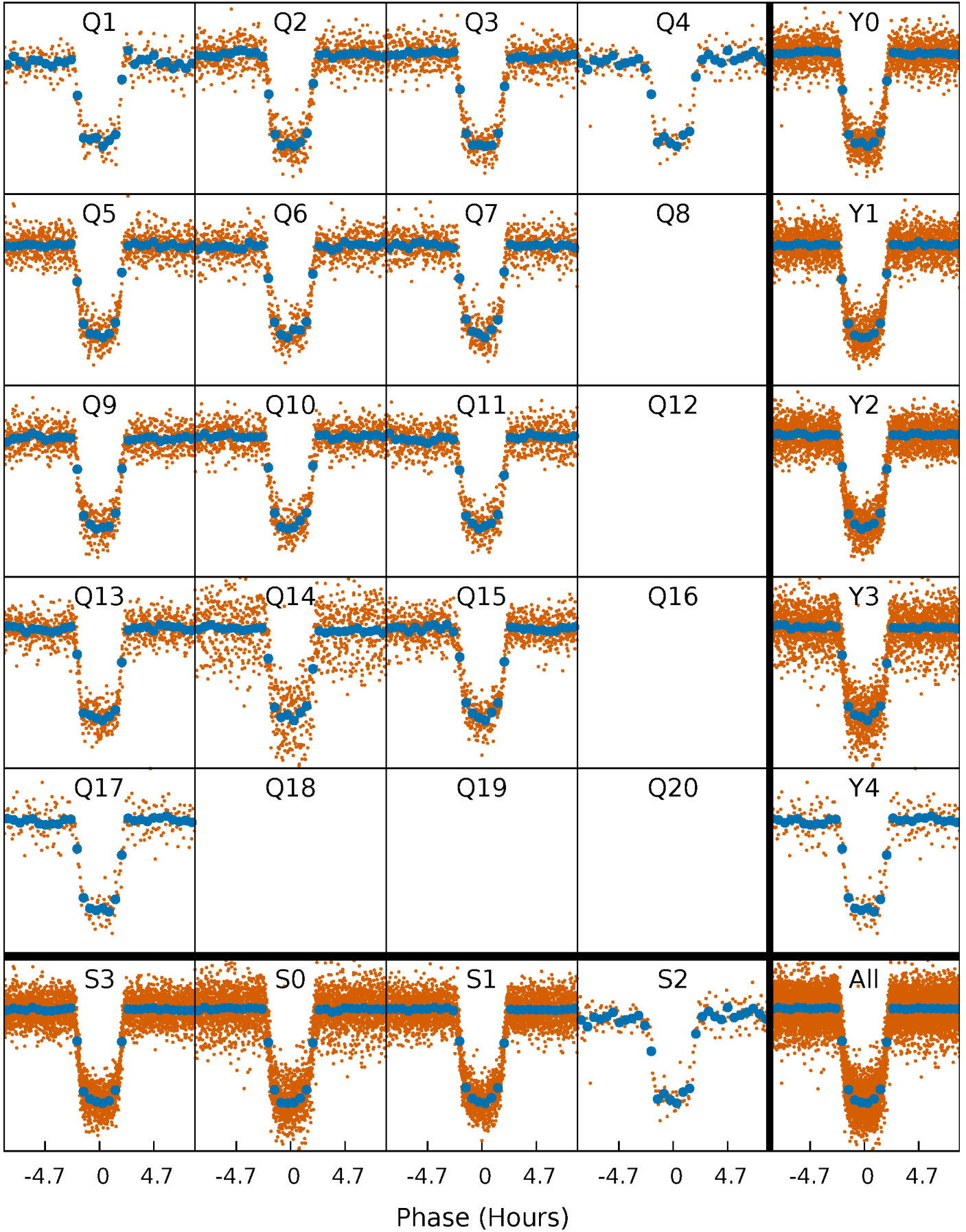


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

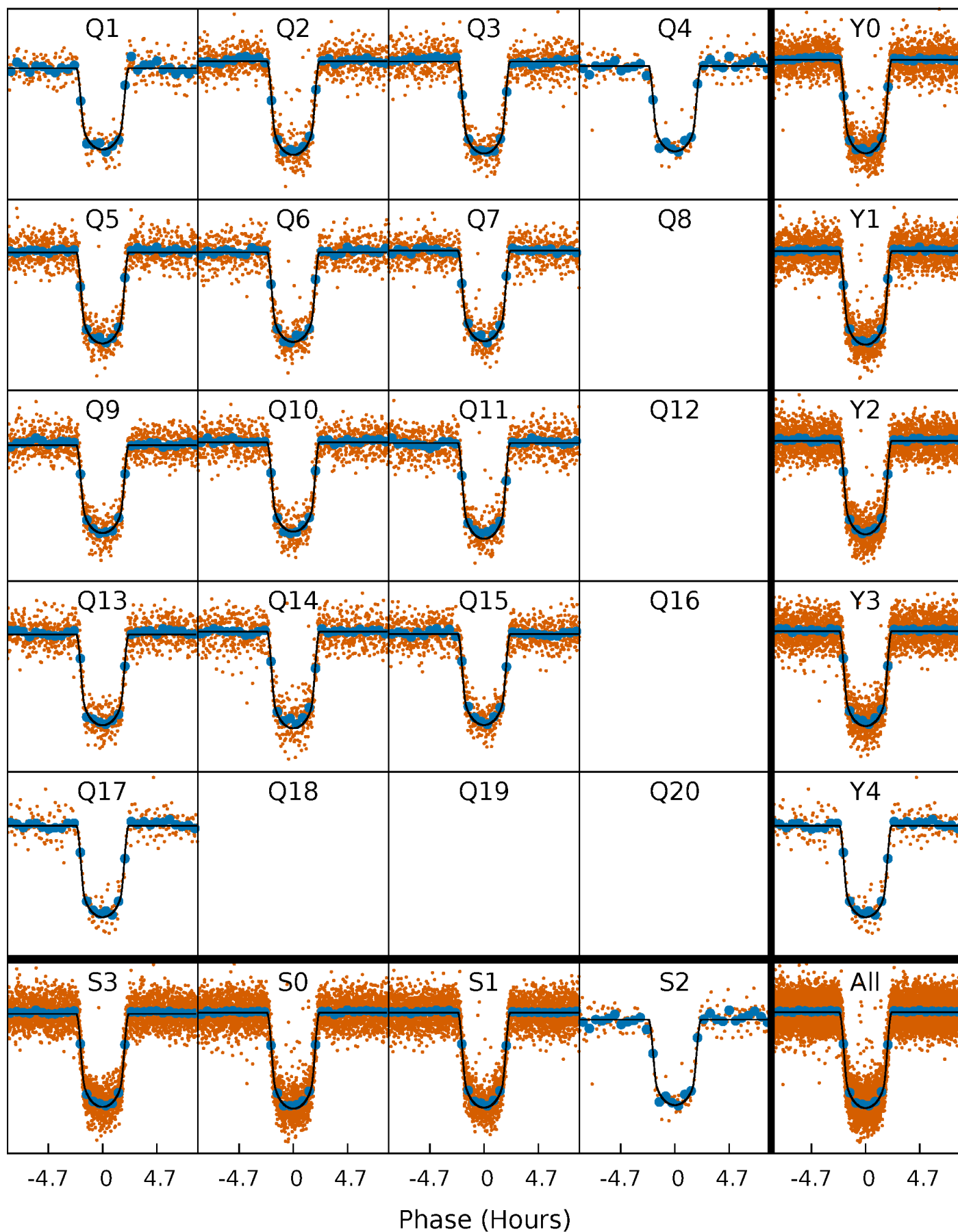
TCE 011853905-01   P= 3.213662 Days    $T_0=133.254287$  (BKJD)





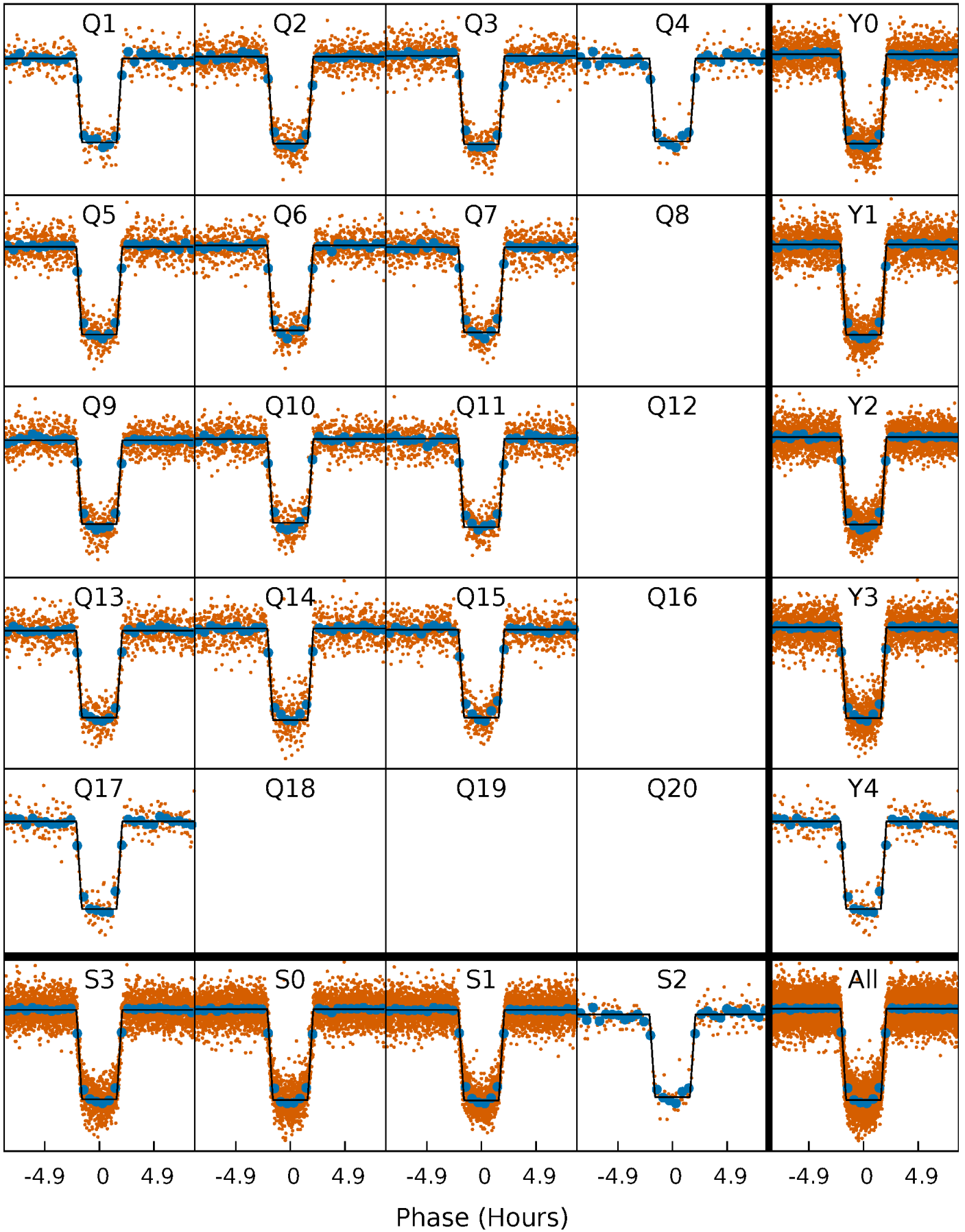
# DV Quarter-Phased Transit Curves

TCE 011853905-01 P= 3.213662 Days  $T_0=133.254287$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

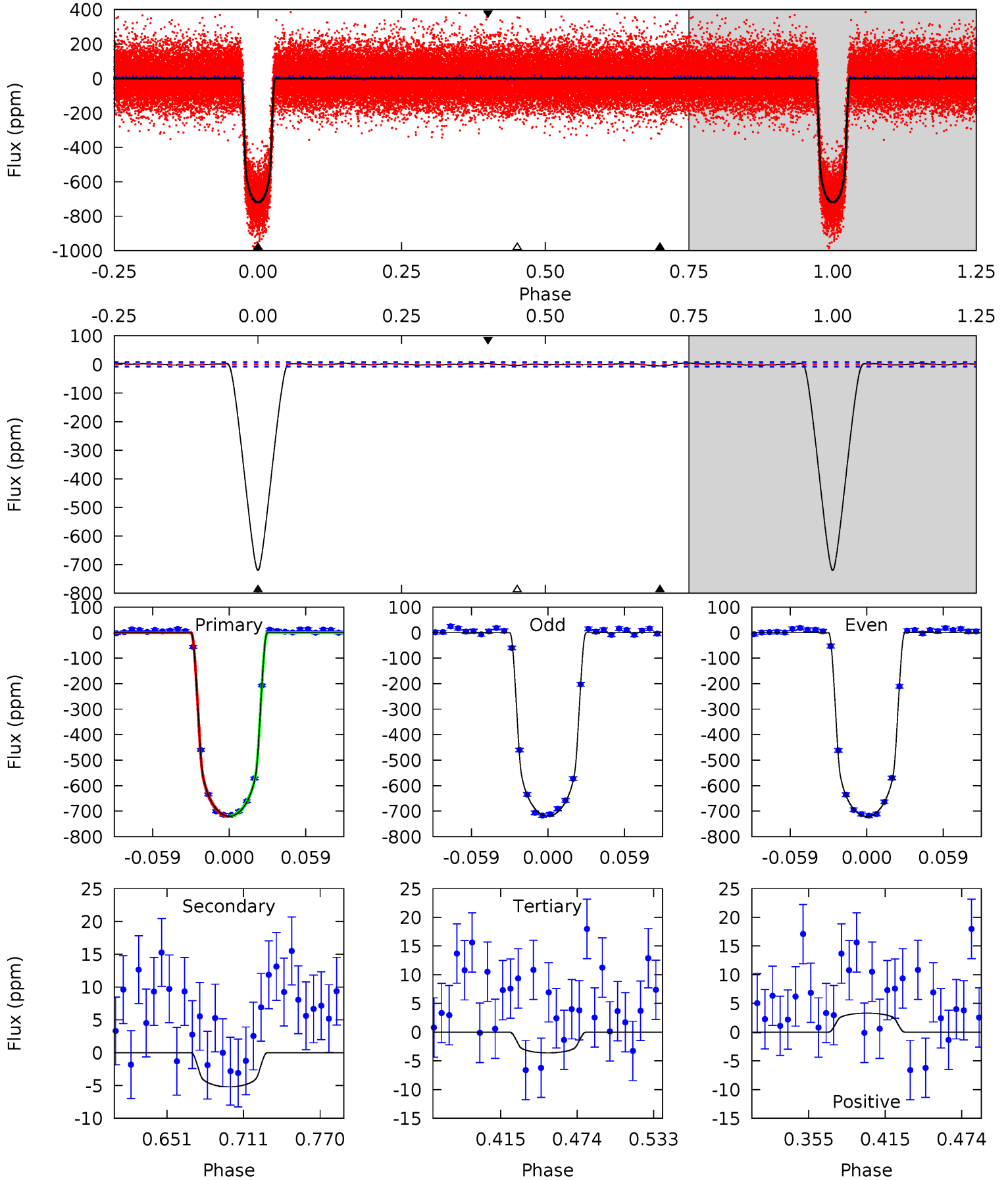
TCE 011853905-01   P= 3.213671 Days    $T_0=133.252434$  (BKJD)



# DV Model-Shift Uniqueness Test

011853905-01, P = 3.213662 Days, E = 130.040625 Days

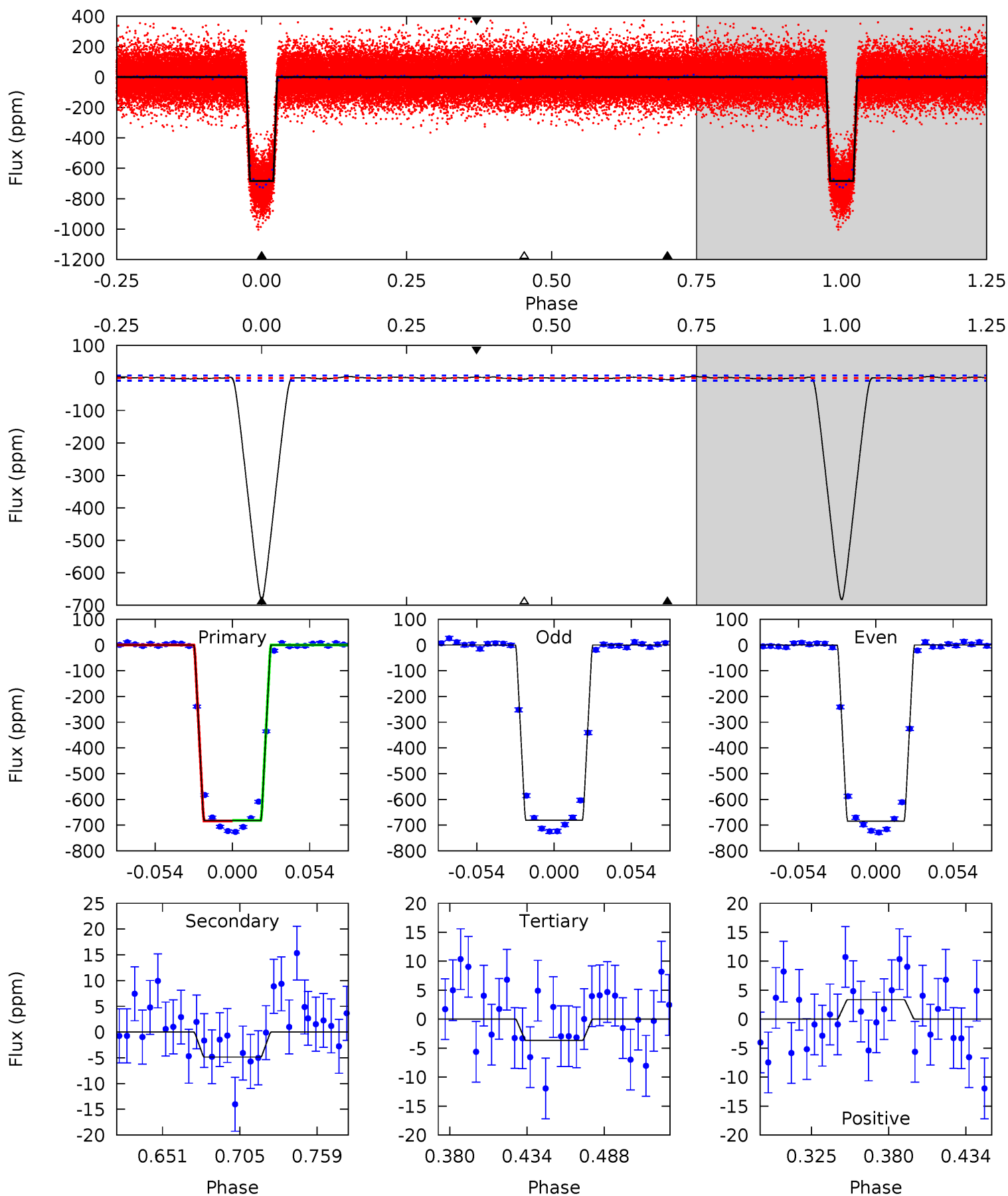
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
429.8	3.11	2.16	1.98	4.67	1.89	1.02	427.6	427.8	0.95	1.13	0.57	0.99	0.01	0.67



# Alt Model-Shift Uniqueness Test

011853905-01, P = 3.213671 Days, E = 130.038763 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
393.2	2.80	2.11	1.94	4.69	1.93	0.96	391.1	391.3	0.68	0.86	0.87	1.00	0.01	0.63



### Stellar Parameters For KIC 011853905

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5795^{+69}_{-77}$	$4.101^{+0.033}_{-0.027}$	$0.180^{+0.150}_{-0.150}$	$1.545^{+0.097}_{-0.087}$	$1.097^{+0.138}_{-0.069}$	$0.419^{+0.056}_{-0.045}$
	+1%/-1%	+1%/-1%	+83%/-83%	+6%/-6%	+13%/-6%	+13%/-11%
Source	SPE72	AST69	SPE72	DSEP		

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

### Secondary Eclipse Parameters for KIC 011853905-01 / KOI 0007.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-5 \pm 2$	$4.59^{+0.24}_{-0.17}$	$2113^{+39}_{-35}$	$-2020^{+4141}_{-273}$	$0.263^{+0.096}_{-0.080}$
Alt.	$-5 \pm 2$	$4.45^{+0.20}_{-0.18}$	$2115^{+40}_{-40}$	$-1996^{+4134}_{-323}$	$0.267^{+0.096}_{-0.095}$

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

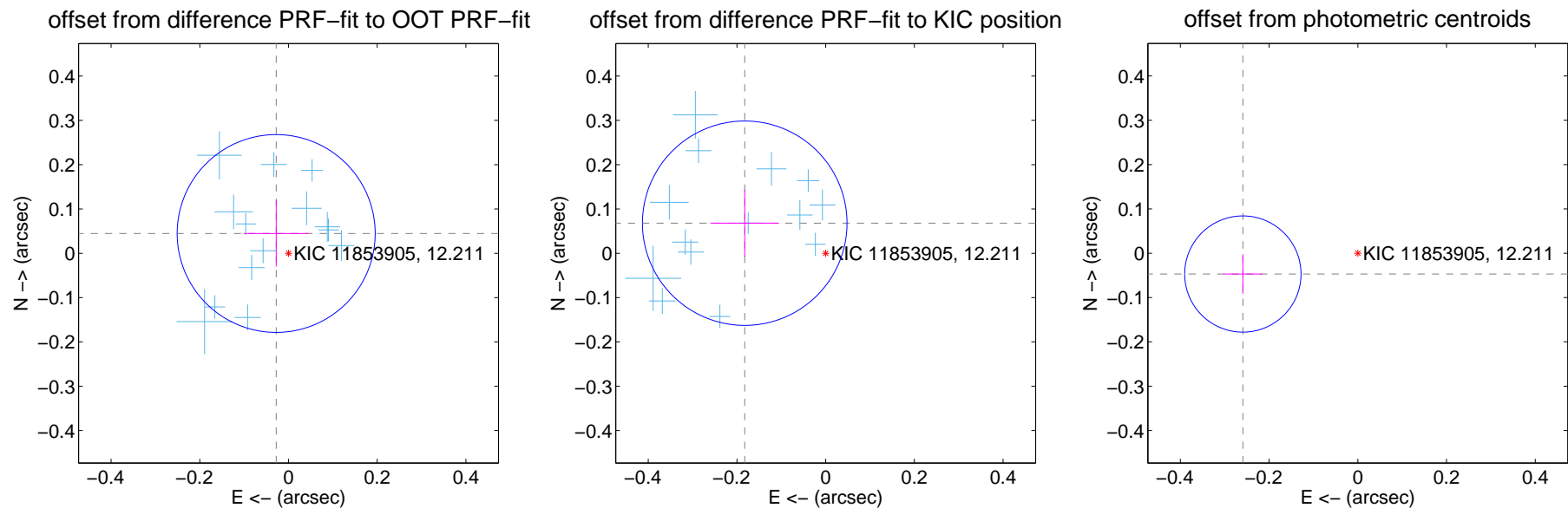
## DV Centroid Data

Supplemental centroid analysis for 011853905-01. Kepler magnitude: 12.21. Transit SNR 302.31

There are 14 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

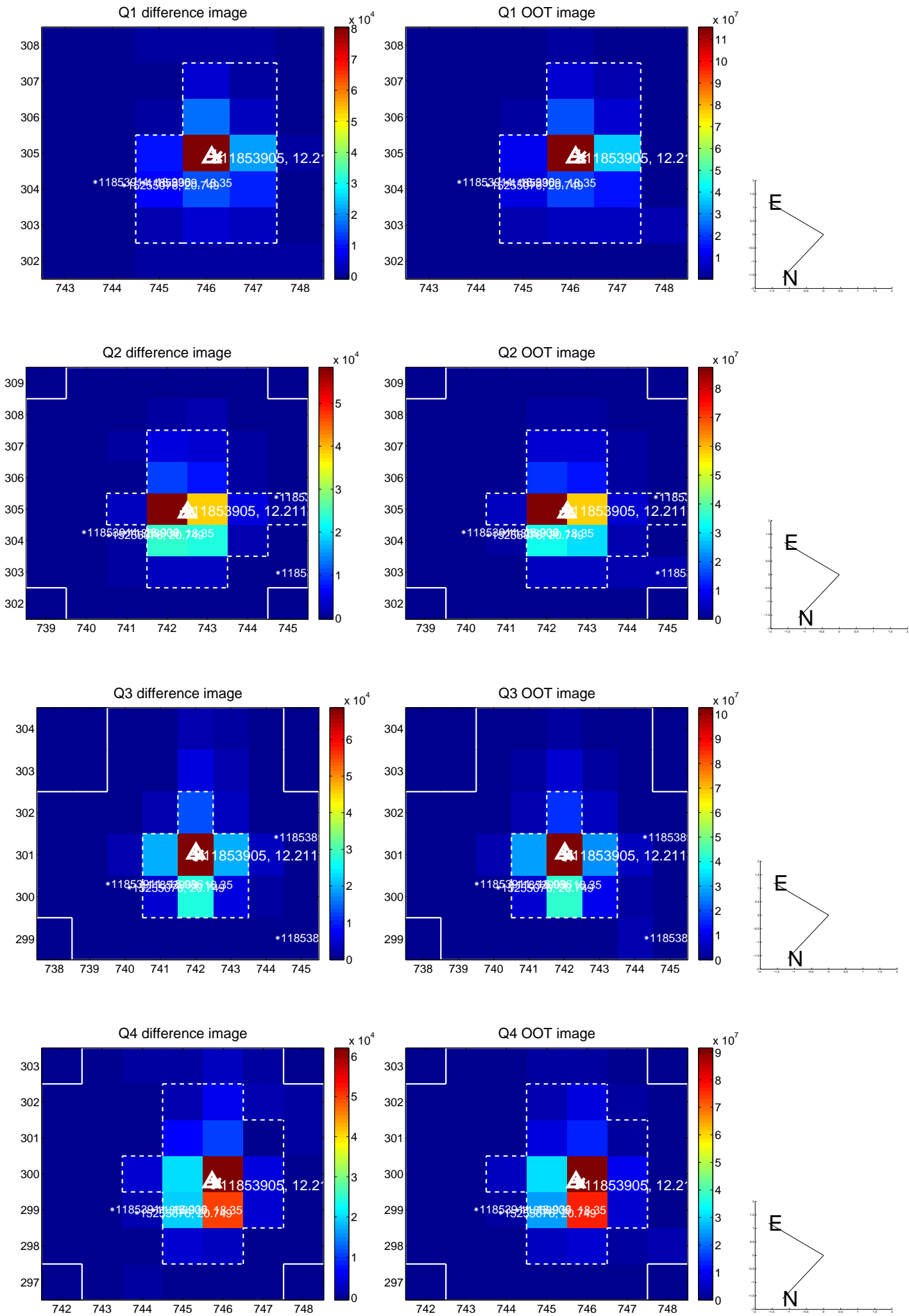
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.053 \pm 0.074$	0.71	$0.028 \pm 0.073$	$0.045 \pm 0.075$
PRF-fit source offset from KIC position	$0.195 \pm 0.077$	2.53	$0.182 \pm 0.077$	$0.068 \pm 0.076$
photometric centroid source offset	$0.26 \pm 0.04$	6.03	$0.26 \pm 0.04$	$-0.05 \pm 0.04$



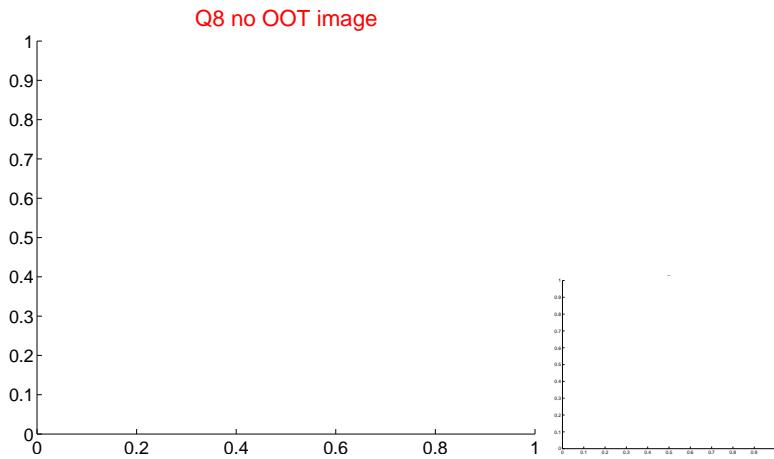
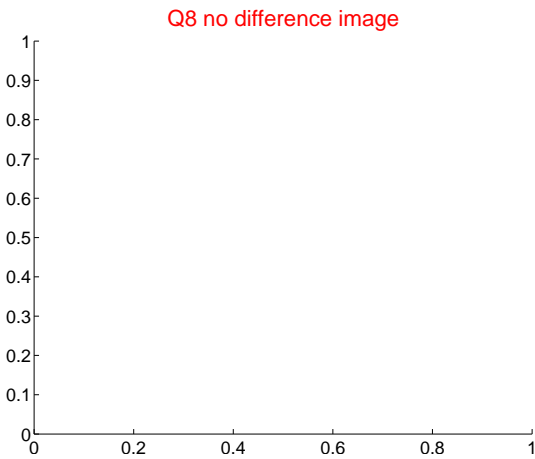
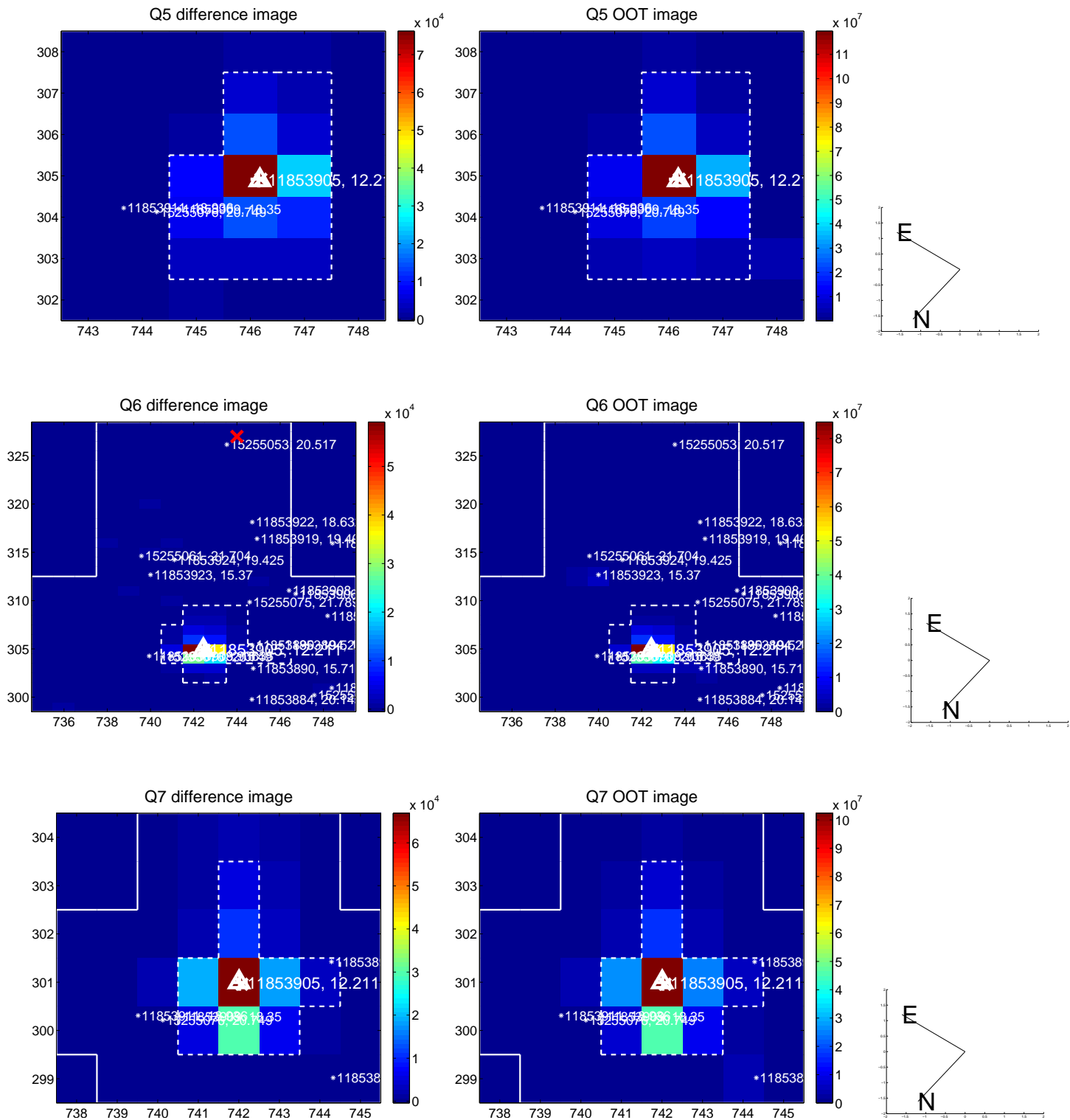
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



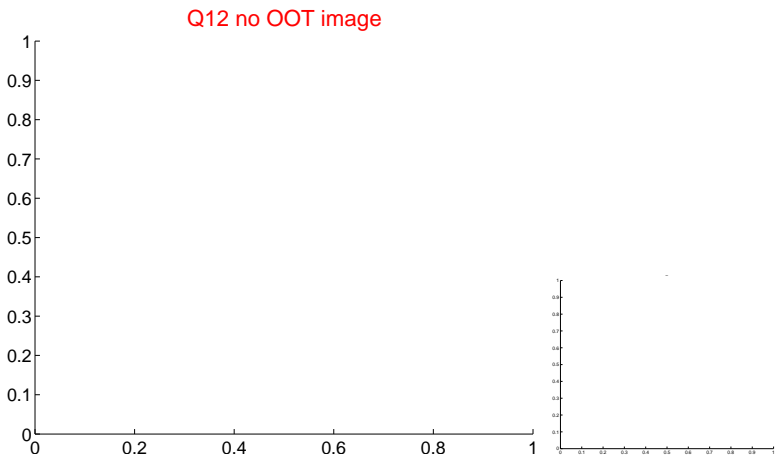
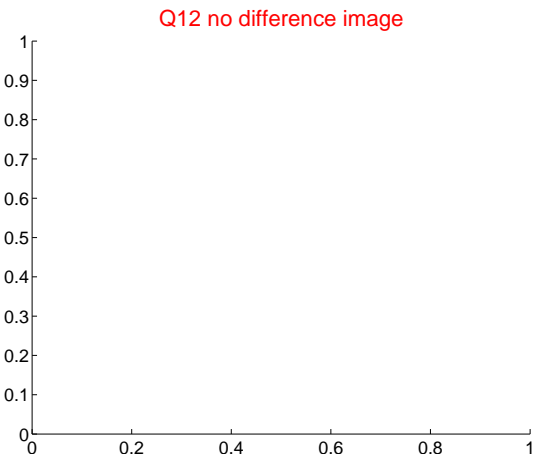
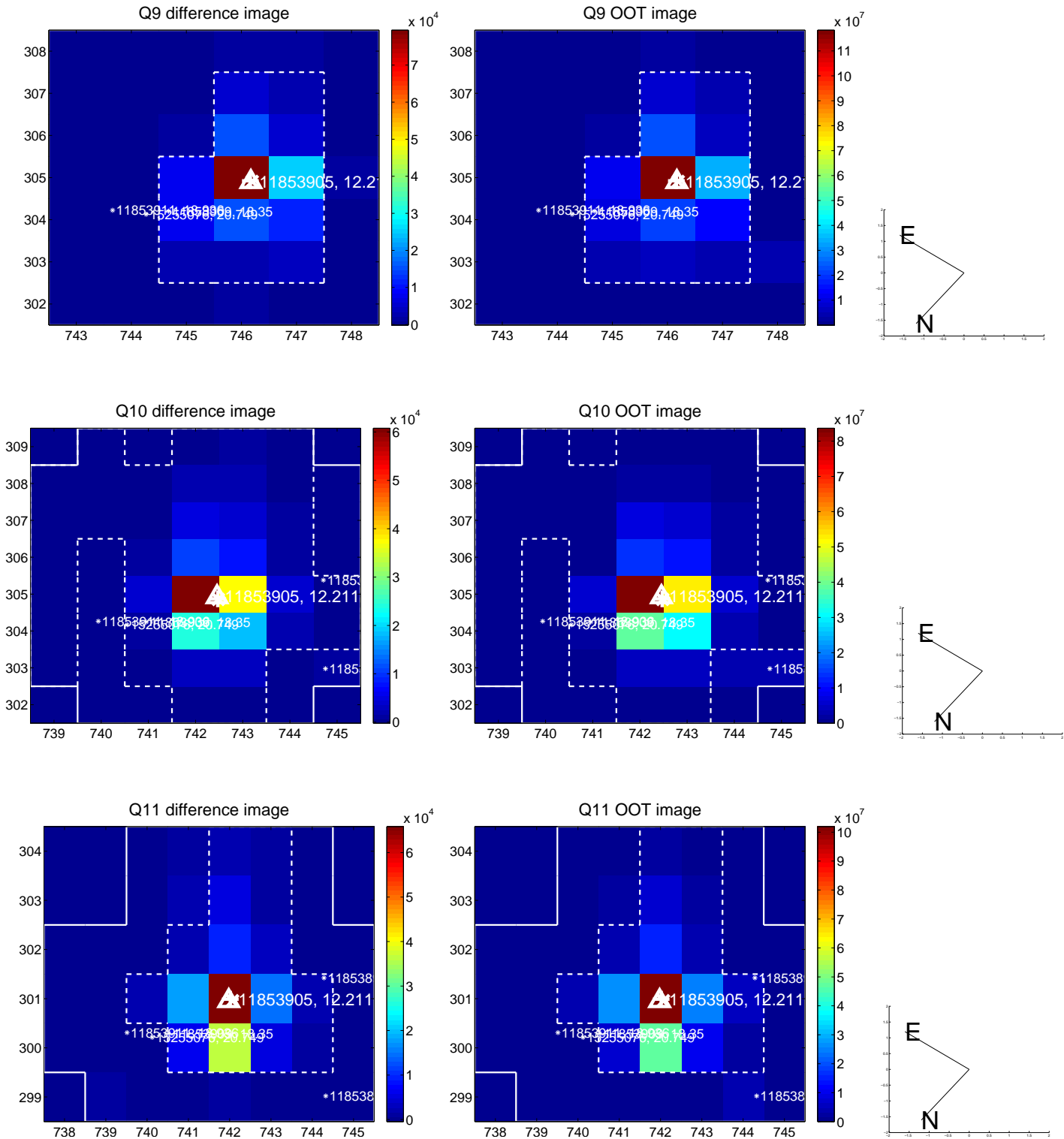
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



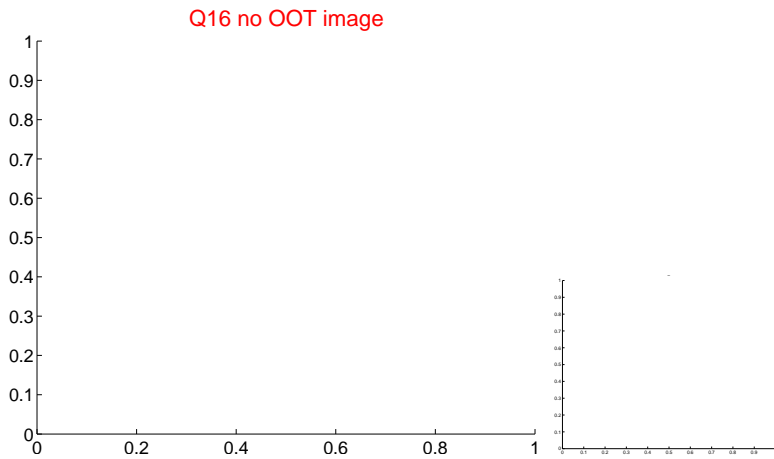
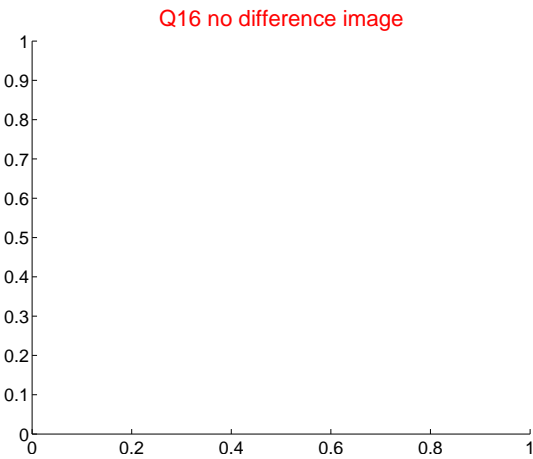
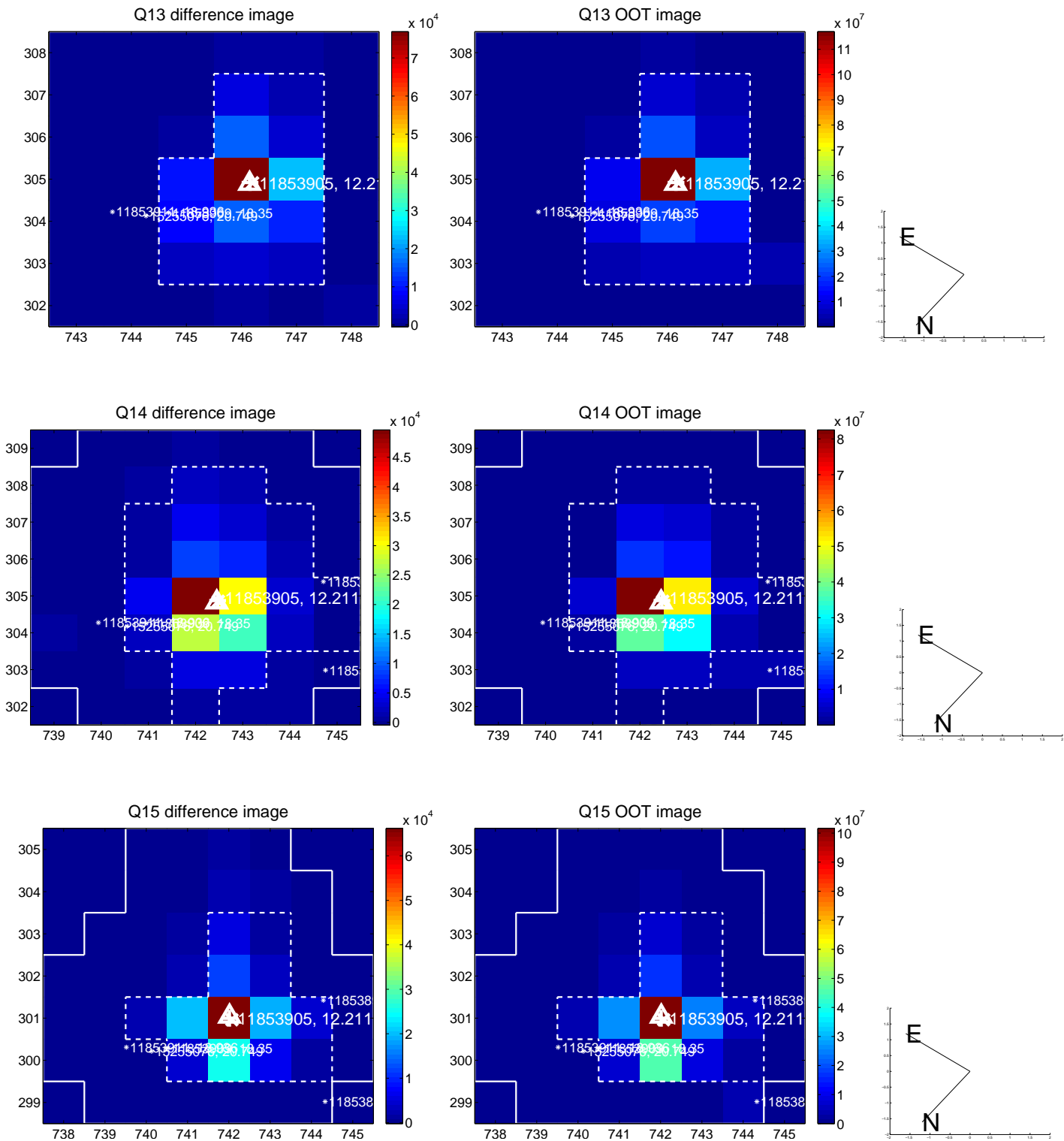
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



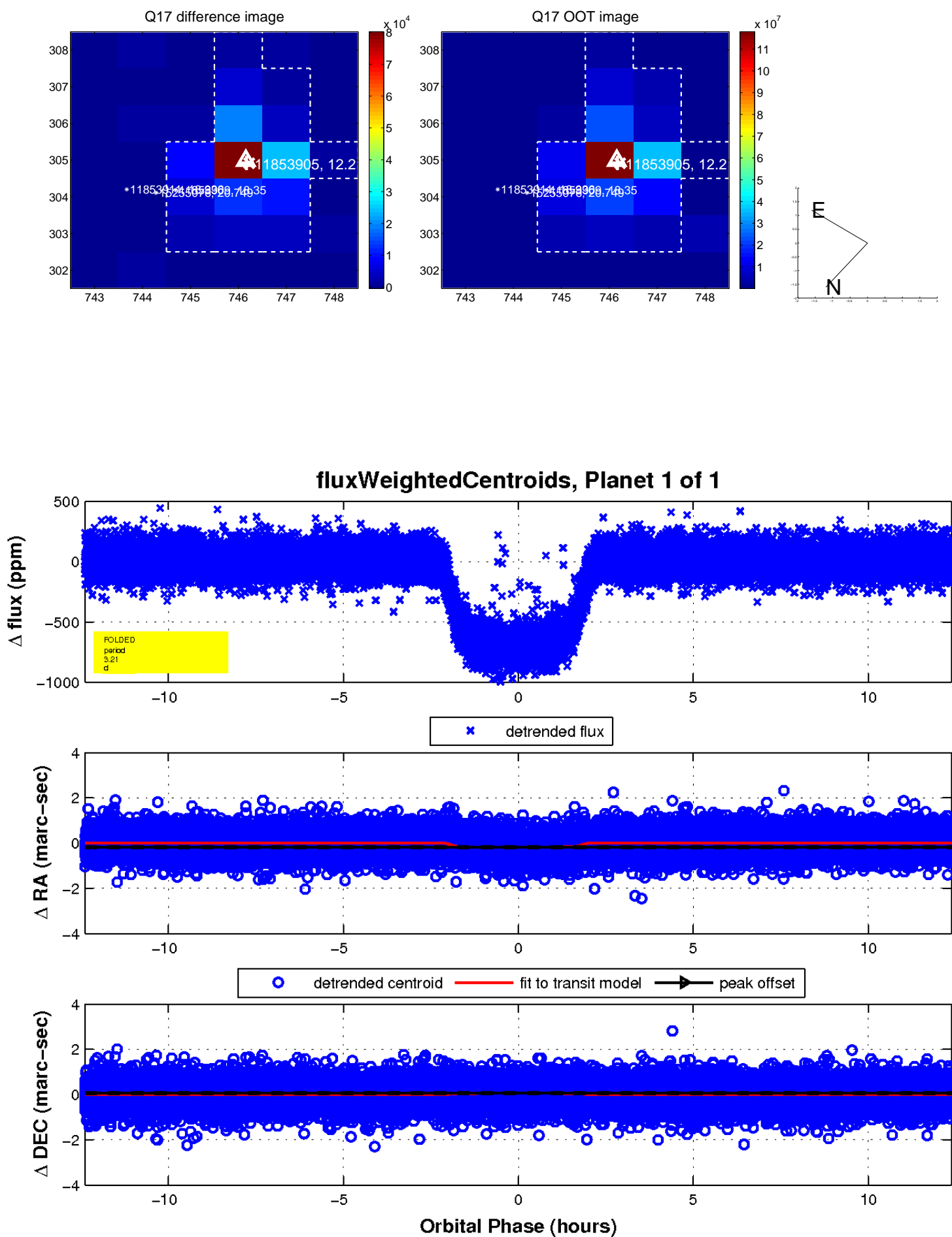
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

