

# KIC 011924366

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011924366-01	OBS	No	0.721508	132.190211	5.1	4.897	8.1	0.7	2.42	7481	0.55	45326.94
011924366-02	OBS	No	30.999685	144.428448	1033.0	3.344	7.7	7.2	2.42	7481	11.42	301.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011924366-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011924366-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

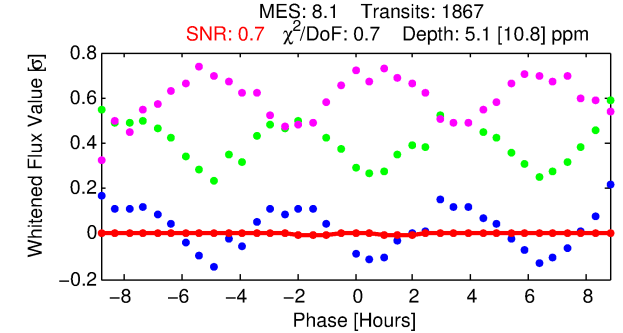
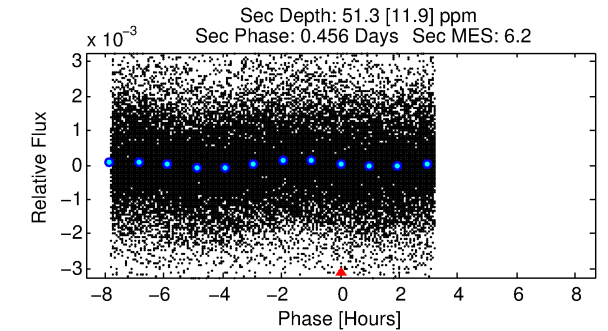
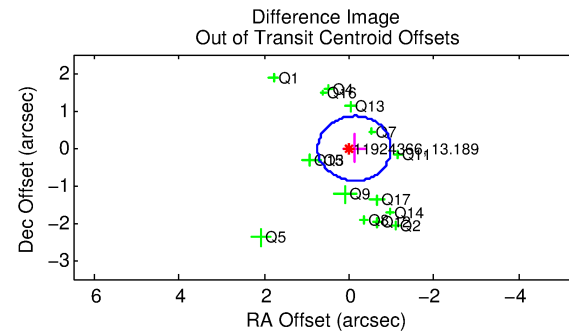
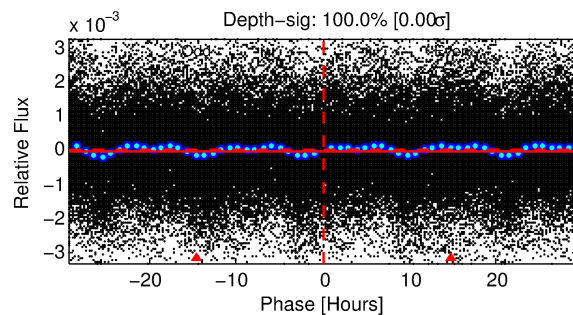
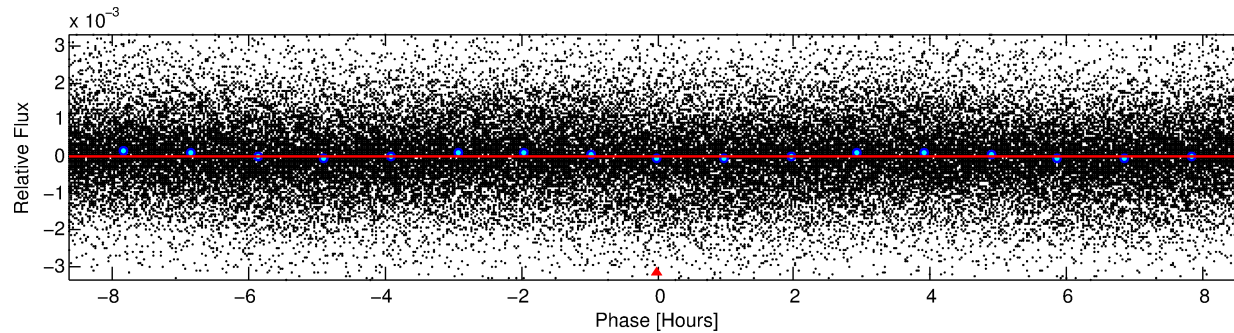
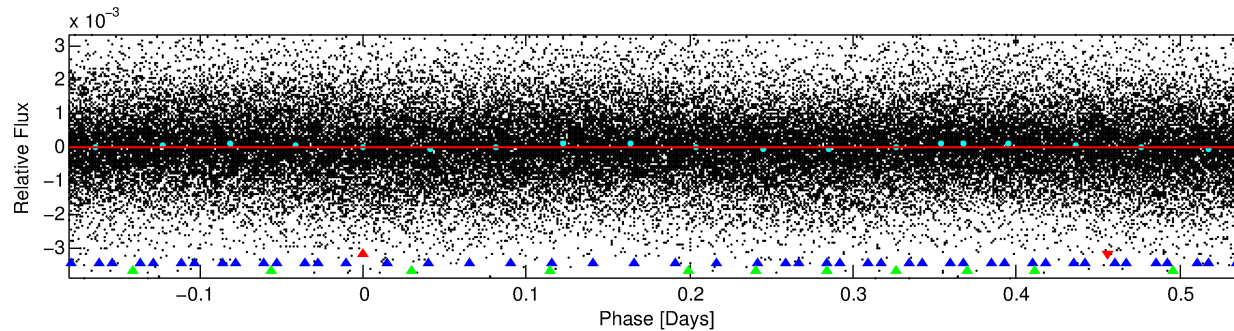
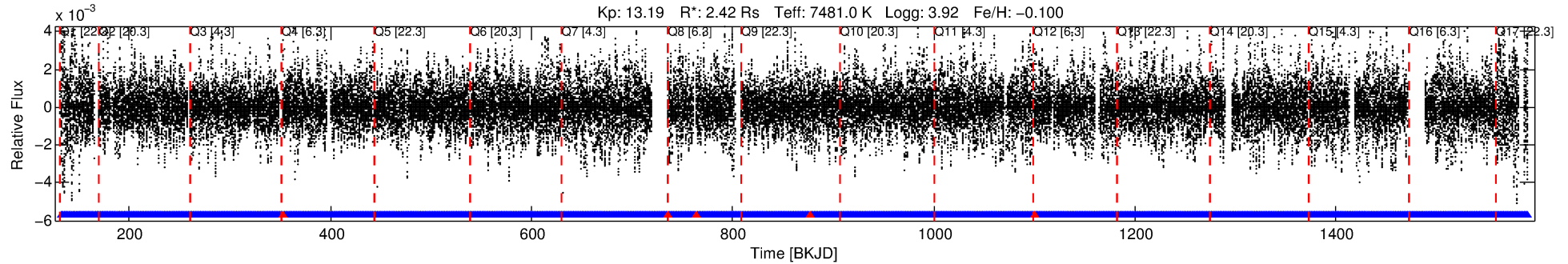
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011924366-01

No Significant Match Found

# DV One-Page Summary

KIC: 11924366 Candidate: 1 of 3 Period: 0.722 d



## DV Fit Results:

Period = 0.72151 [0.00012] d  
Epoch = 132.1902 [0.0173] BKJD  
Rp/R\* = 0.0021 [0.0107]  
a/R\* = 1.29 [17.03]  
b = 0.10 [329.89]  
Seff = 45326.94 [22762.95]  
Teq = 3721 [467] K  
Rp = 0.55 [2.82] Re  
a = 0.0190 [0.0060] AU  
Ag = 33.48 [342.07] [0.09 $\sigma$ ]  
Teffp = 13837 [35312] K [0.29 $\sigma$ ]

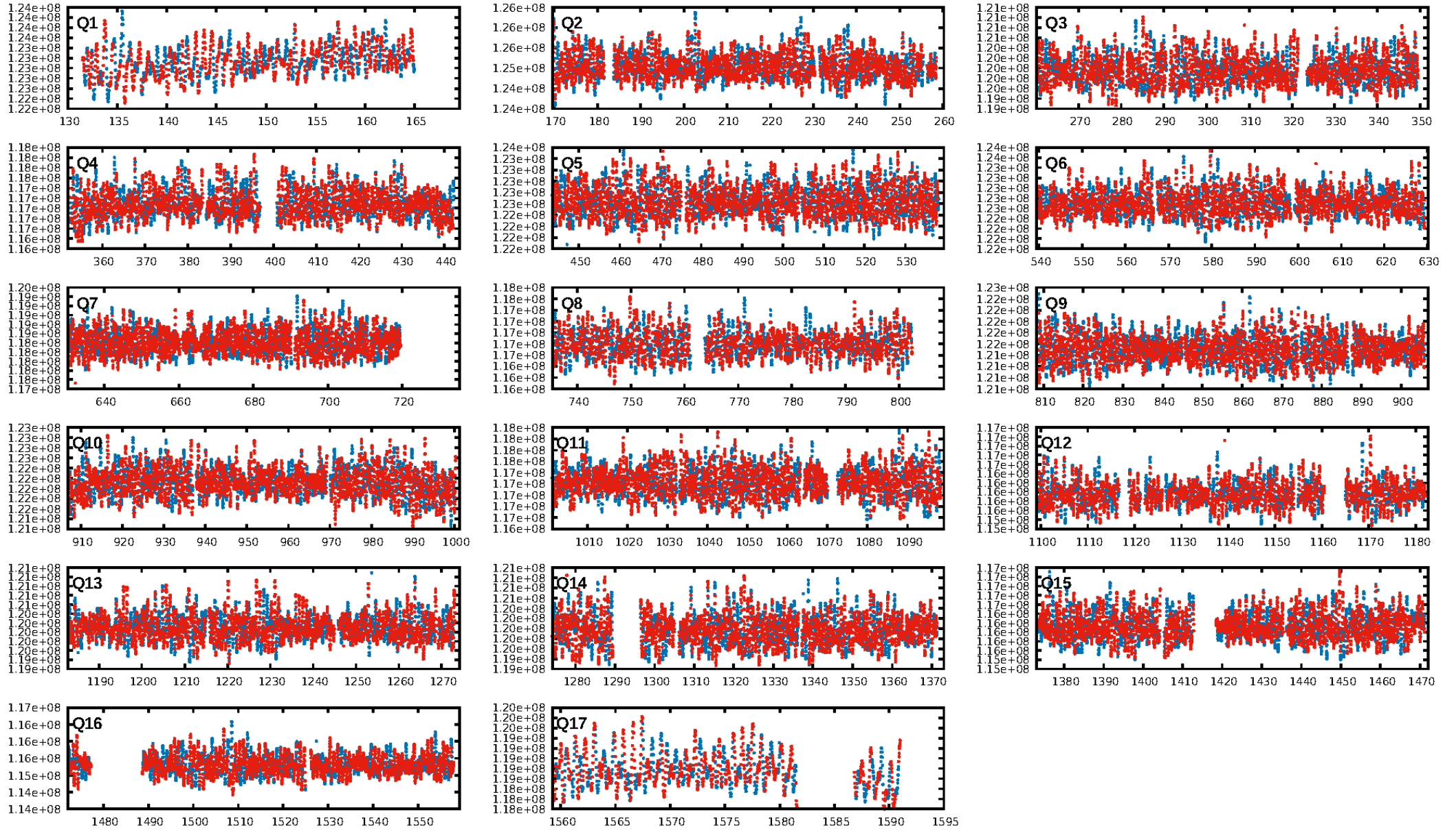
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [122.54 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.93e-15  
RollingBand-fgt: 1.00 [1775/1782]  
GhostDiagnostic-chr: 2.874  
Centroid-sig: 81.6%  
Centroid-so: 1.639 arcsec [0.49 $\sigma$ ]  
OotOffset-rm: 0.134 arcsec [0.46 $\sigma$ ]  
KicOffset-rm: 0.047 arcsec [0.17 $\sigma$ ]  
OotOffset-st: 2/4/4/5 [15]  
KicOffset-st: 2/4/4/5 [15]  
DiffImageQuality-fgm: 0.47 [7/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:58:07 Z

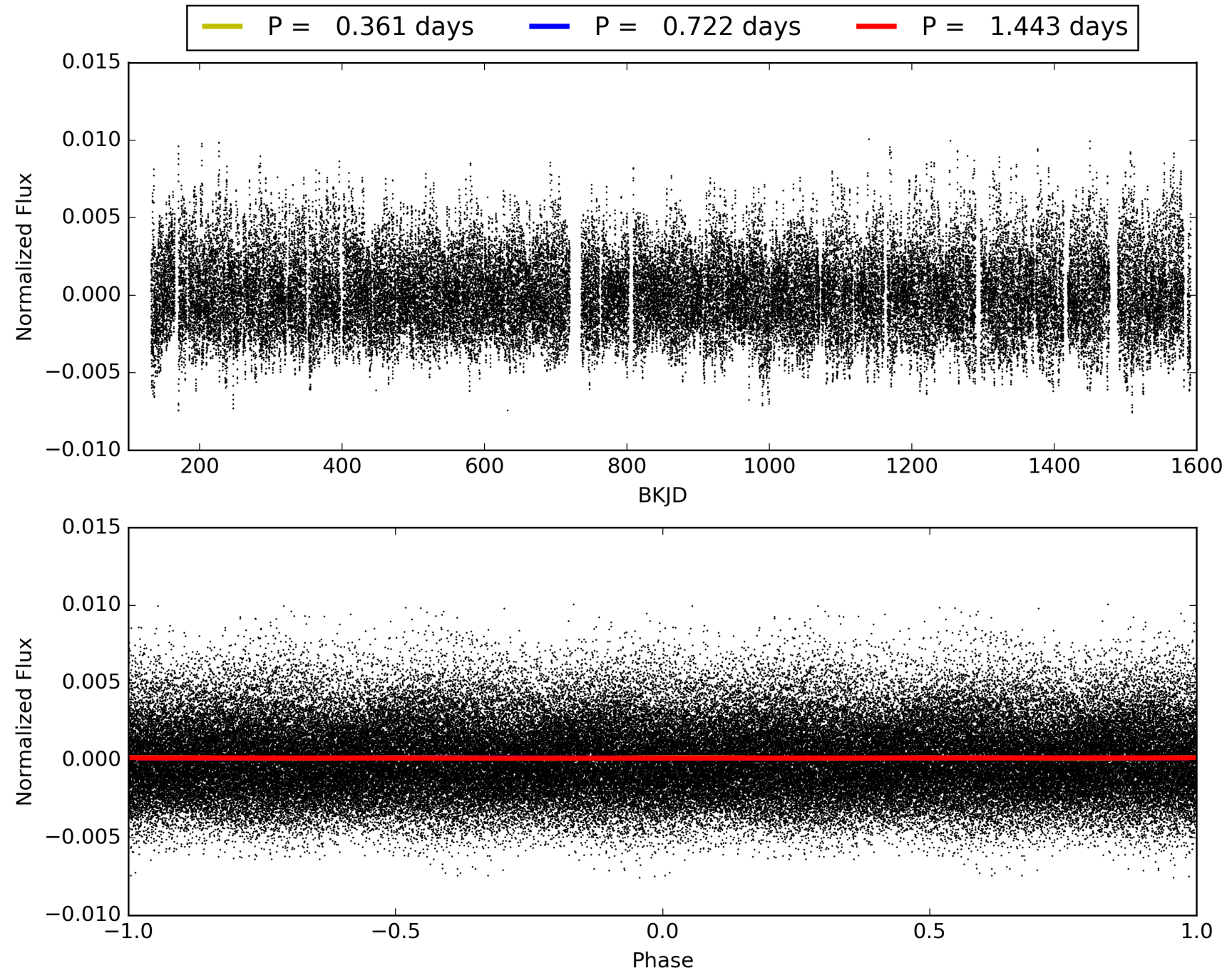
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011924366-01, PDC Light Curves



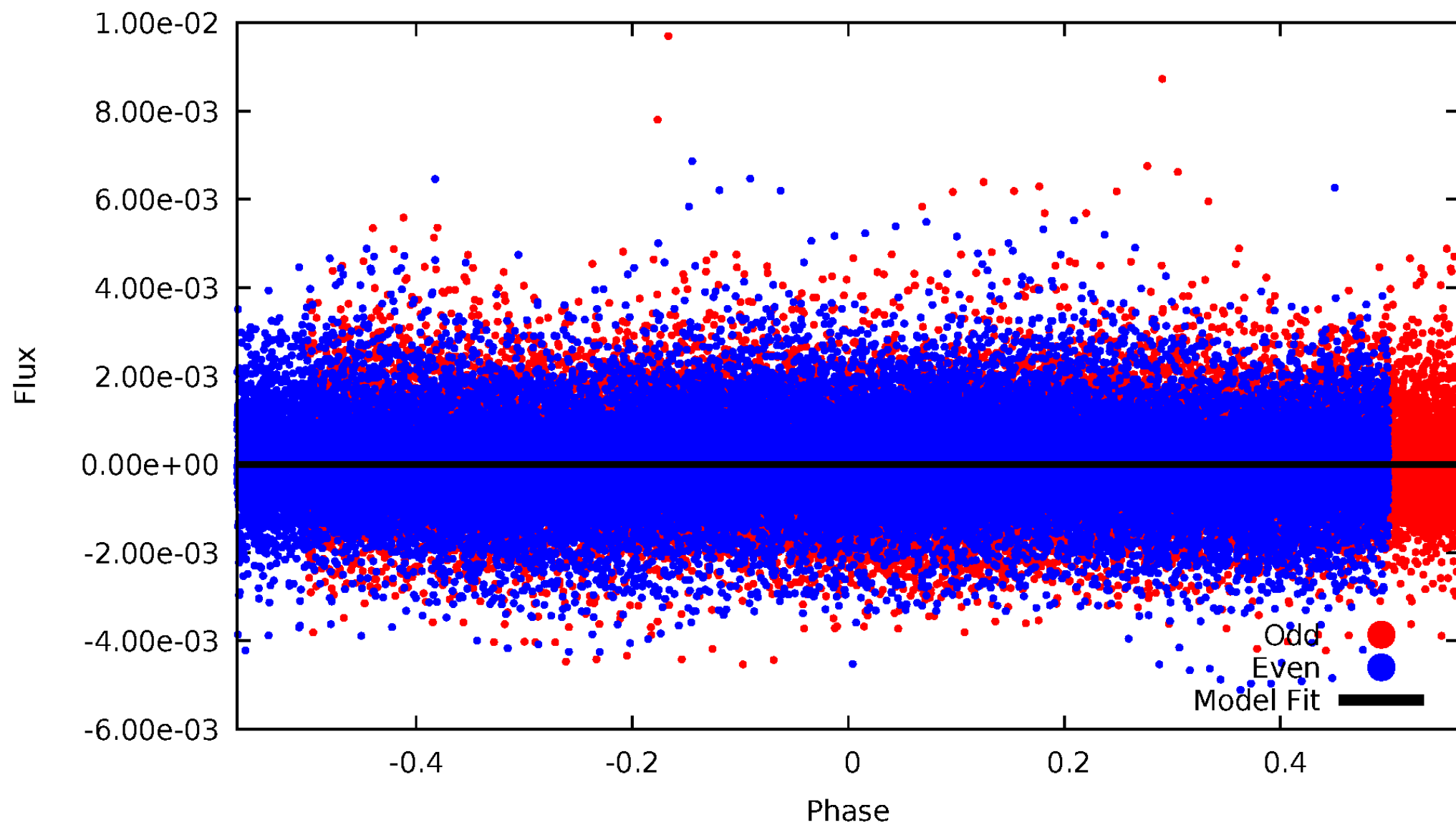


# TCE 011924366-01



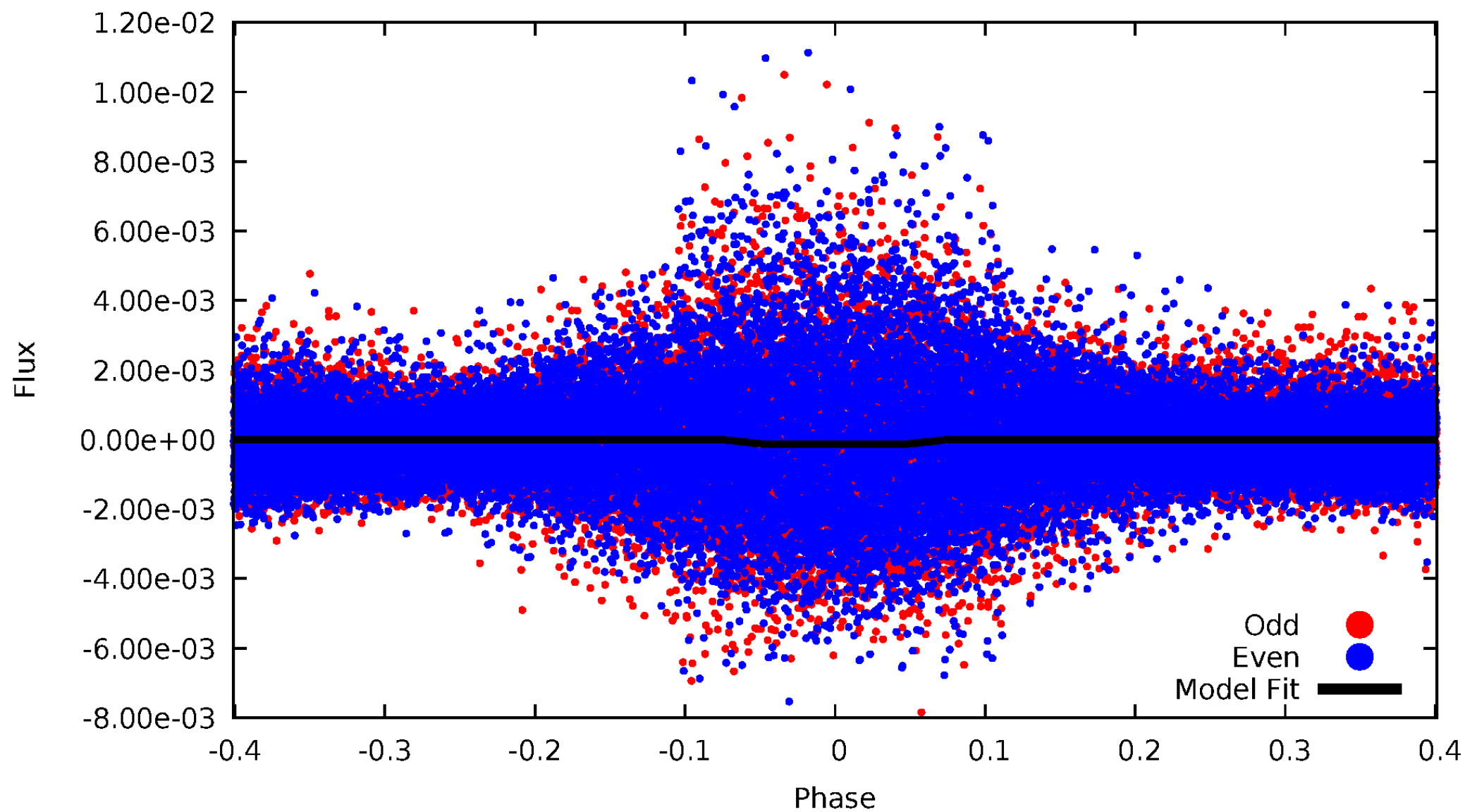
# DV Odd/Even

TCE 011924366-01



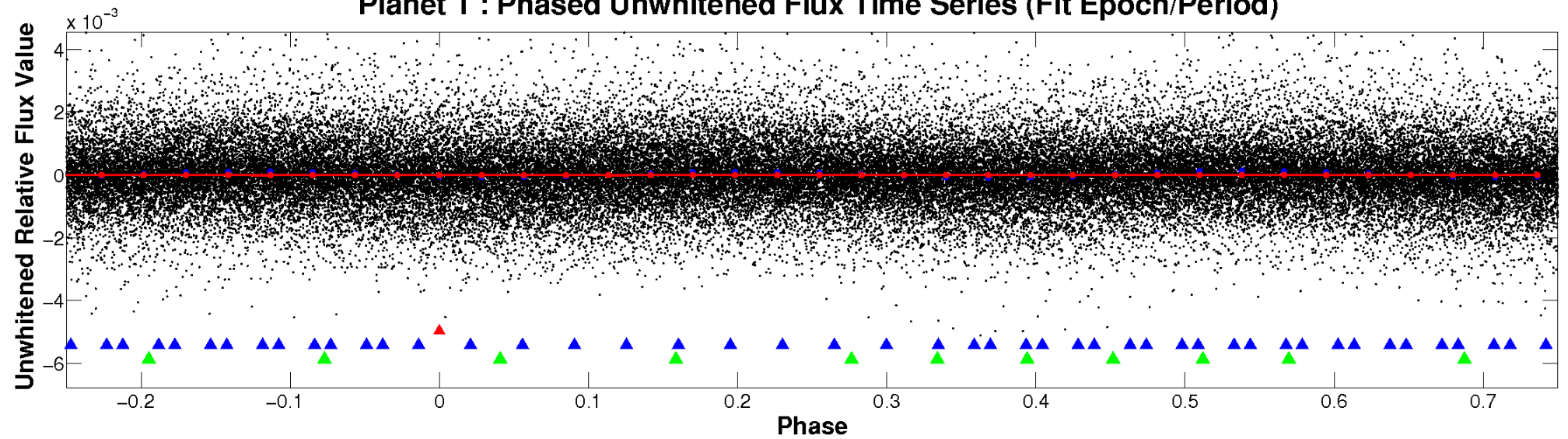
# ALT Odd/Even

TCE 011924366-01

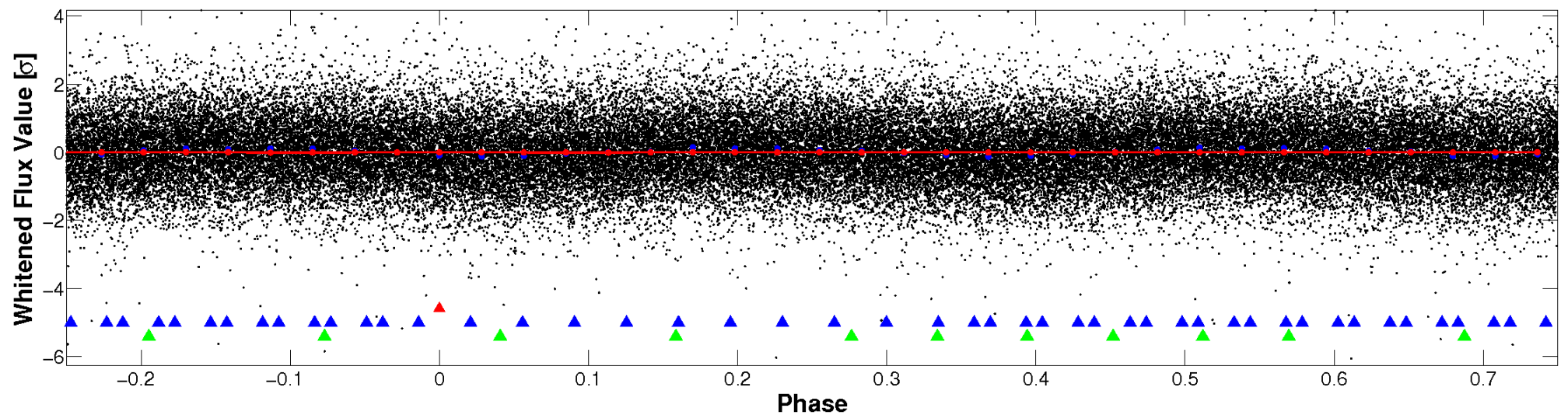


# Non-Whitened Vs. Whitened Light Curve

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



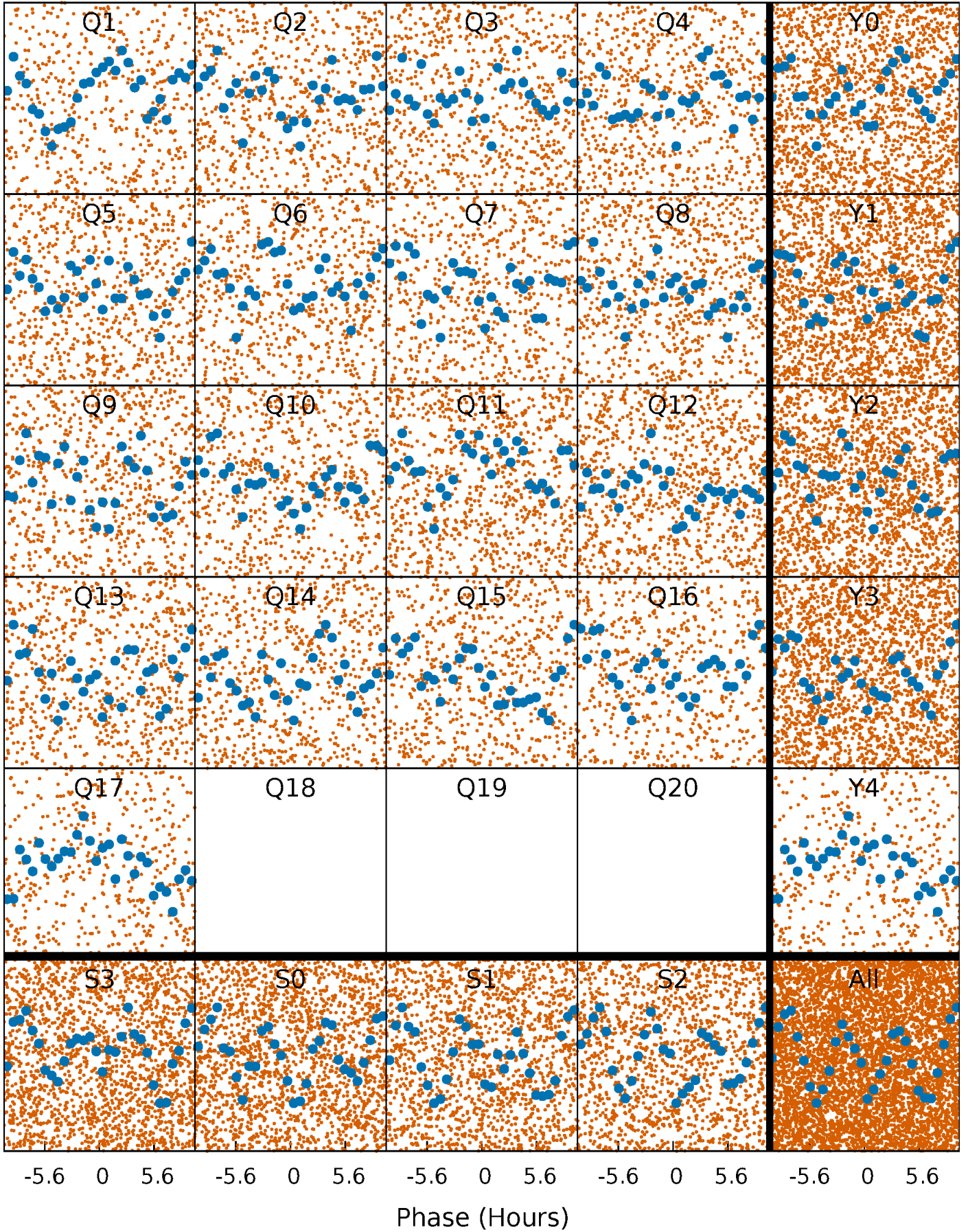
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

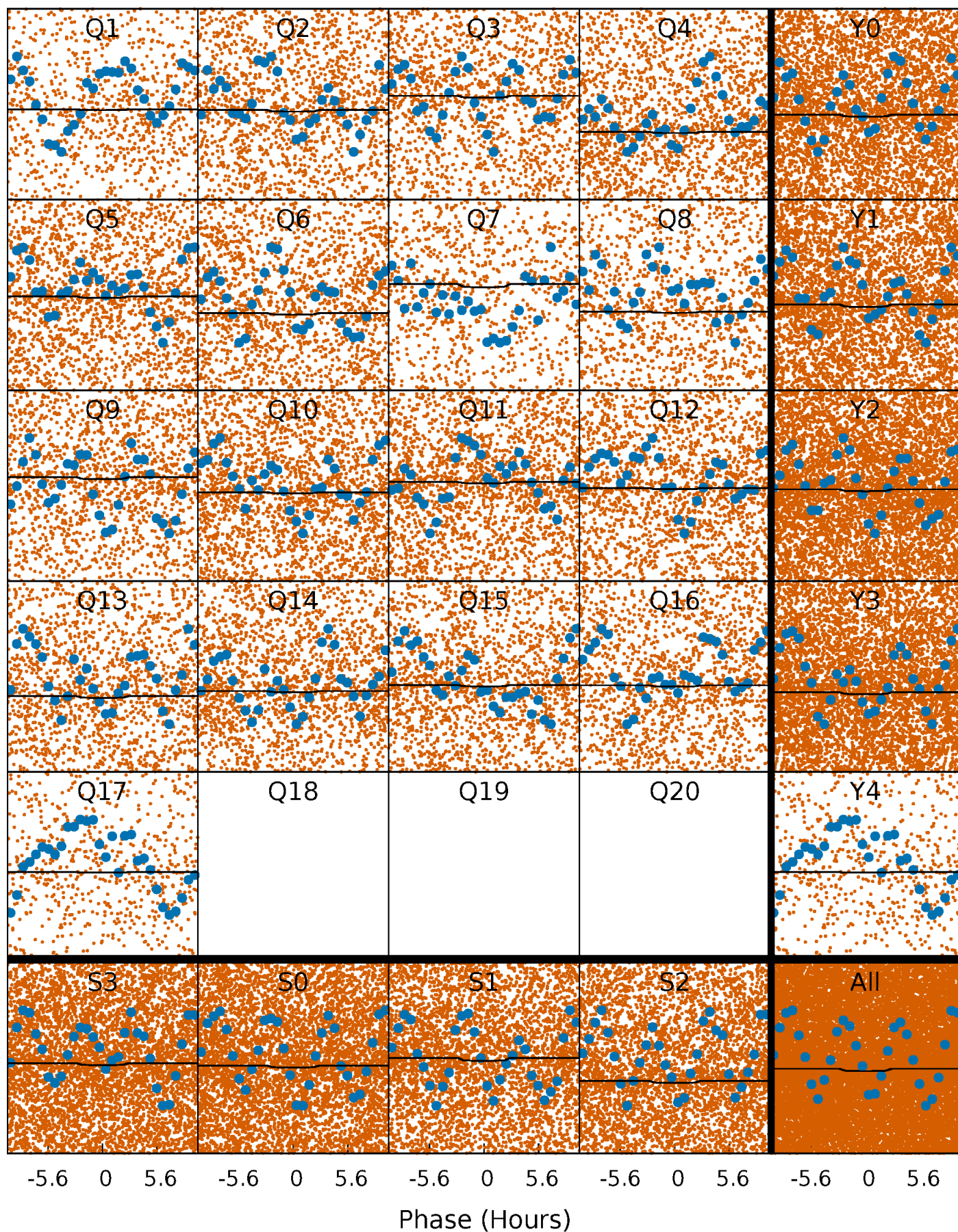
TCE 011924366-01 P= 0.721508 Days  $T_0=132.190211$  (BKJD)





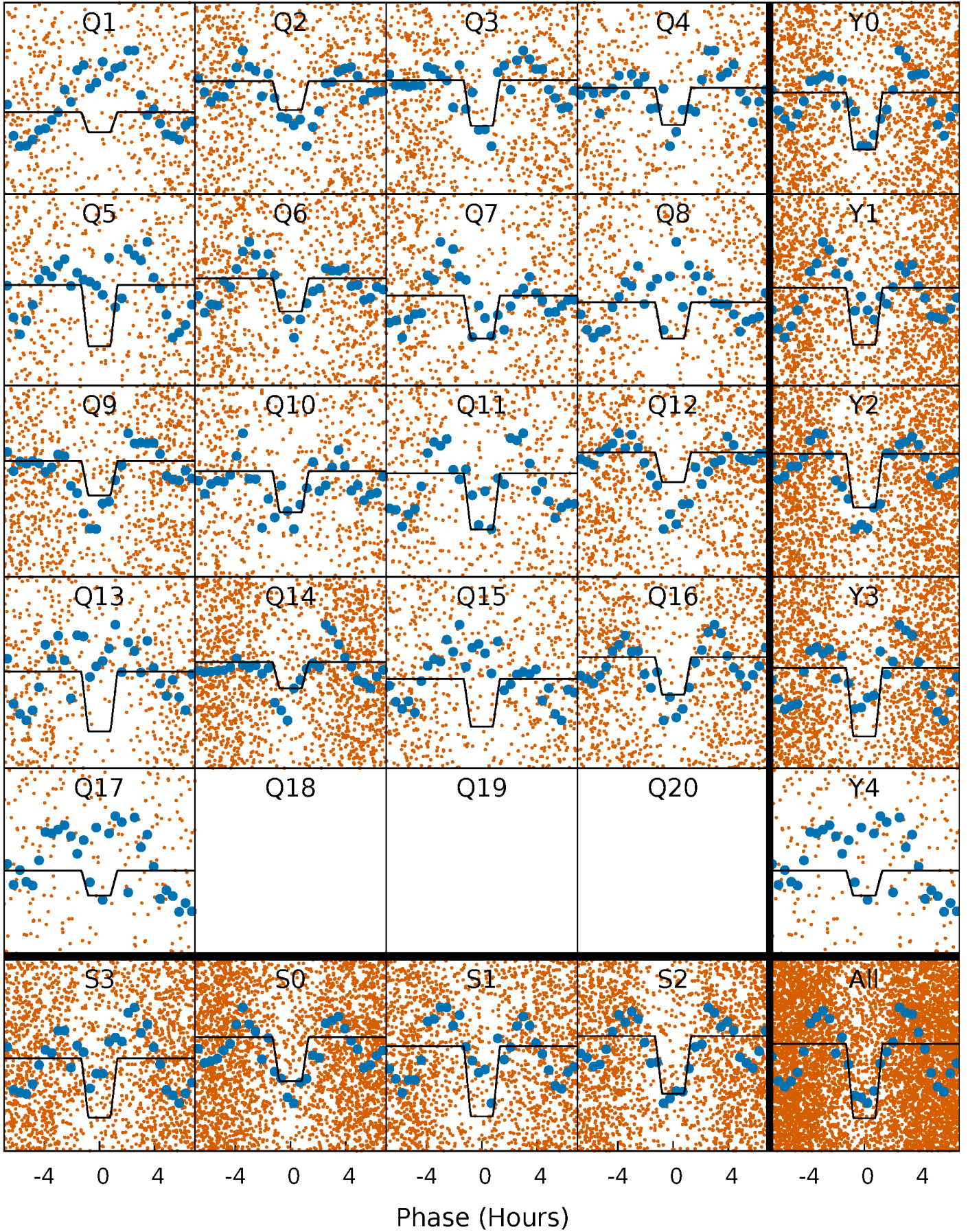
# DV Quarter-Phased Transit Curves

TCE 011924366-01 P= 0.721508 Days  $T_0=132.190211$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011924366-01 P= 0.721524 Days  $T_0=132.203837$  (BKJD)

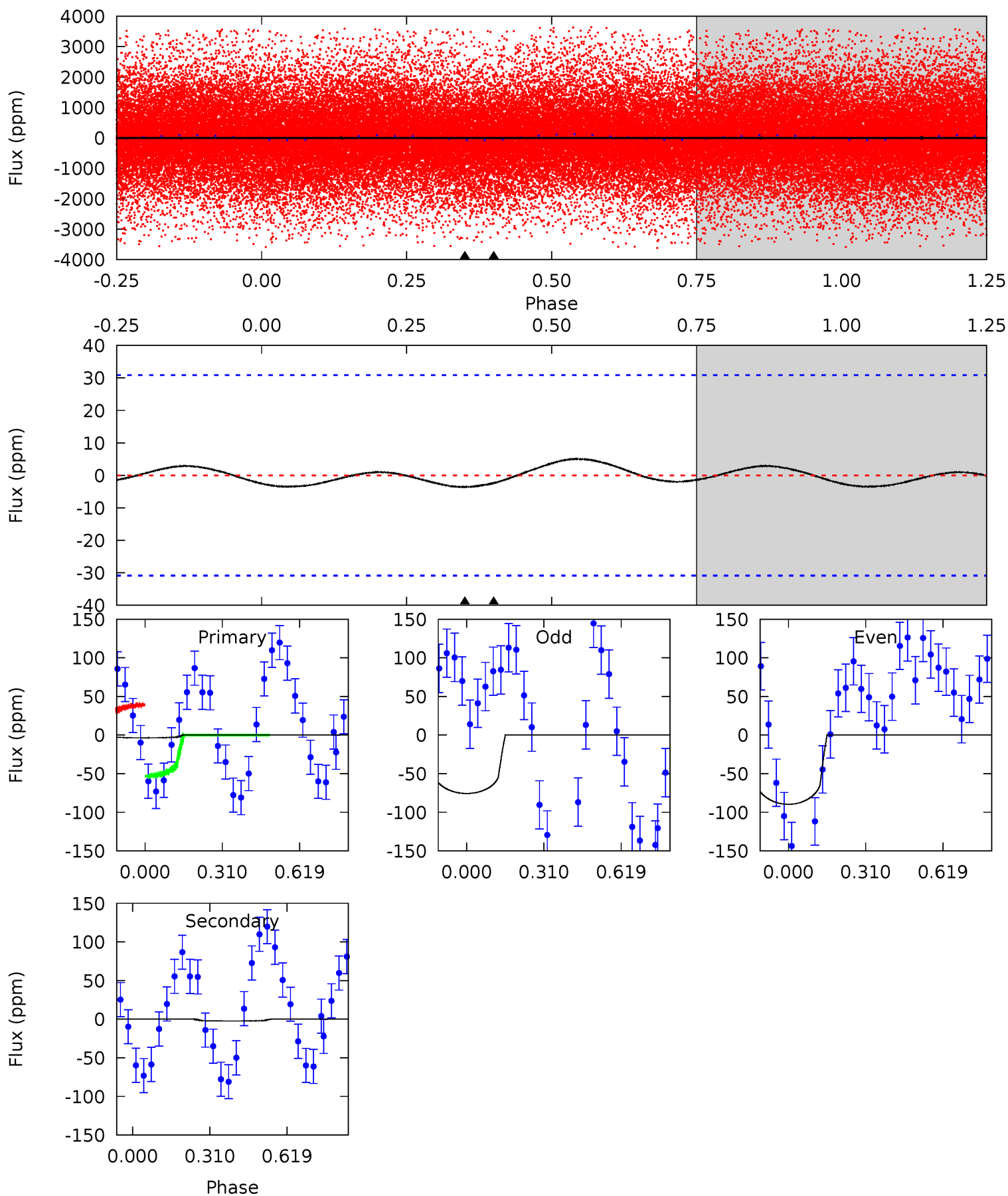




# DV Model-Shift Uniqueness Test

011924366-01,  $P = 0.721508$  Days,  $E = 131.468703$  Days

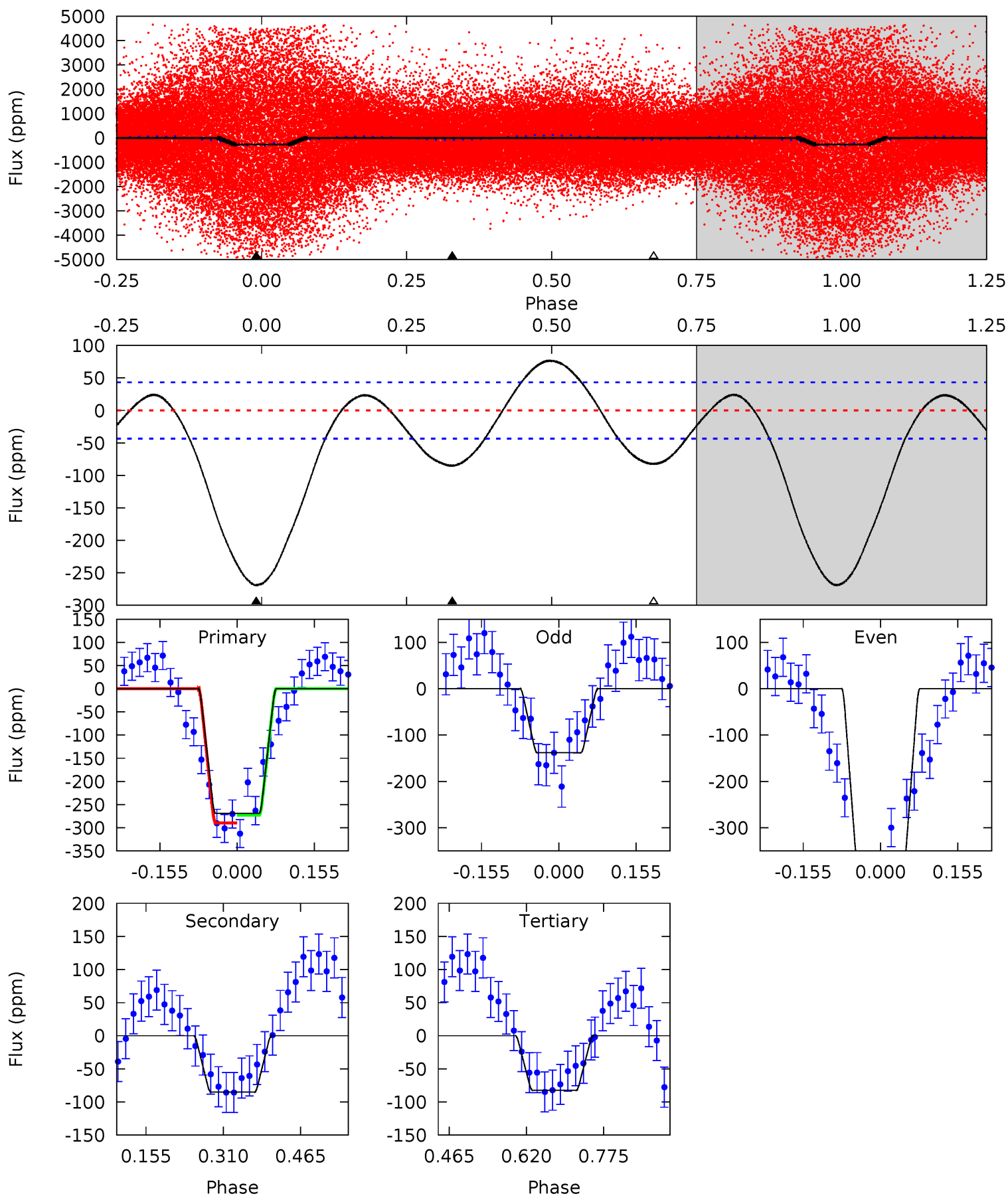
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.50	0.33	0	0	4.32	1.02	0.28	0.50	0.50	0.33	0.33	1.01	-2.71	0.59	0.97



# Alt Model-Shift Uniqueness Test

011924366-01, P = 0.721524 Days, E = 131.482313 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
27.8	8.80	8.50	0	4.47	1.42	5.20	19.3	27.8	0.30	8.80	13.8	0.40	0.22	0.87





### Stellar Parameters For KIC 011924366

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7481^{+209}_{-314}$	$3.917^{+0.266}_{-0.143}$	$-0.100^{+0.200}_{-0.350}$	$2.415^{+0.467}_{-0.867}$	$1.759^{+0.195}_{-0.391}$	$0.176^{+0.341}_{-0.065}$
	+3%/-4%	+7%/-4%	+200%/-350%	+19%/-36%	+11%/-22%	+194%/-37%
Source	KIC0	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 011924366-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2 \pm 7$	$2.27^{+2.18}_{-1.56}$	$5148^{+374}_{-429}$	$-4139^{+9267}_{-726}$	$0.056^{+0.954}_{-0.252}$
Alt.	$-85 \pm 10$	$3.35^{+2.75}_{-2.08}$	$5147^{+374}_{-439}$	$5664^{+5004}_{-1792}$	$1.529^{+7.996}_{-1.094}$

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

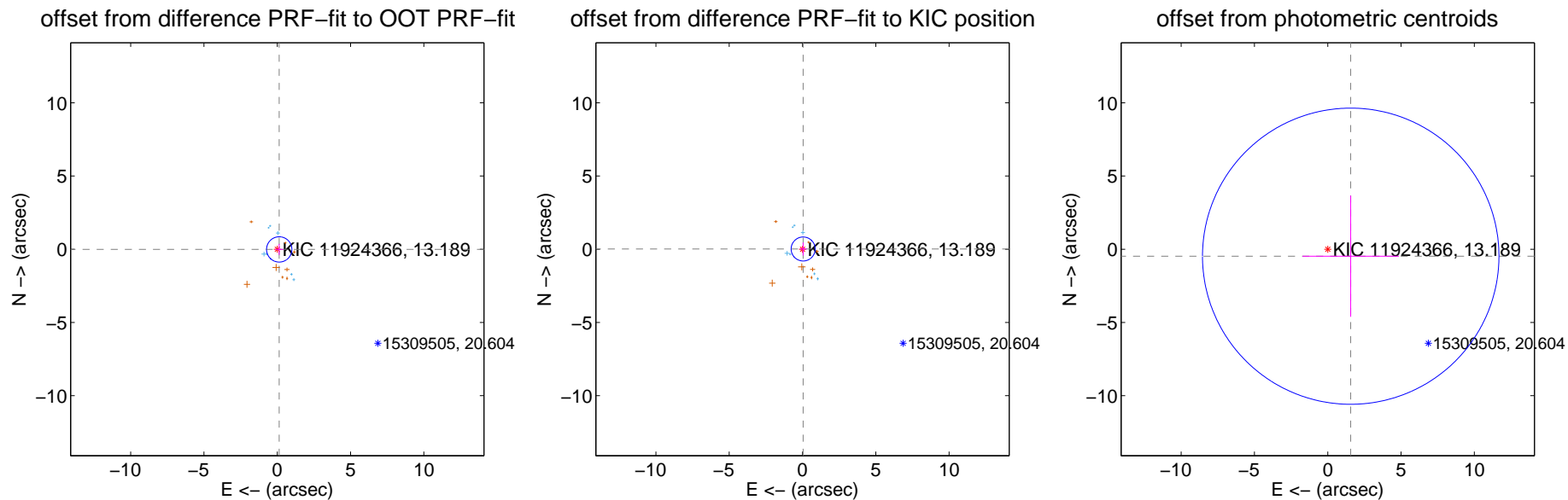
## DV Centroid Data

Supplemental centroid analysis for 011924366-01. Kepler magnitude: 13.19. Transit SNR 0.75

There are 7 quarters with good PRF difference image offsets

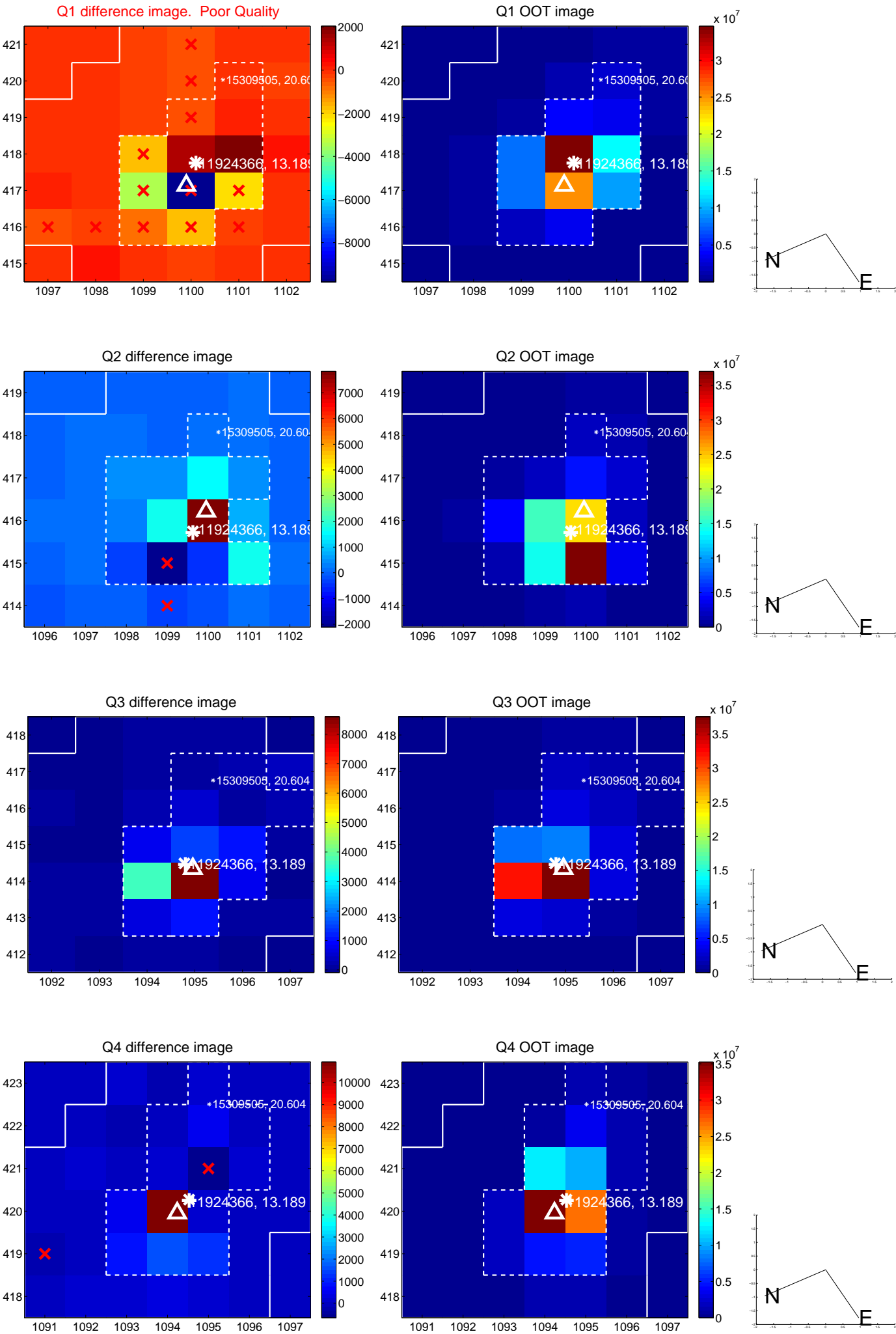
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.134 \pm 0.288$	0.46	$-0.133 \pm 0.273$	$-0.013 \pm 0.378$
PRF-fit source offset from KIC position	$0.047 \pm 0.273$	0.17	$-0.044 \pm 0.237$	$0.017 \pm 0.450$
photometric centroid source offset	$1.64 \pm 3.37$	0.49	$-1.57 \pm 3.29$	$-0.48 \pm 4.14$

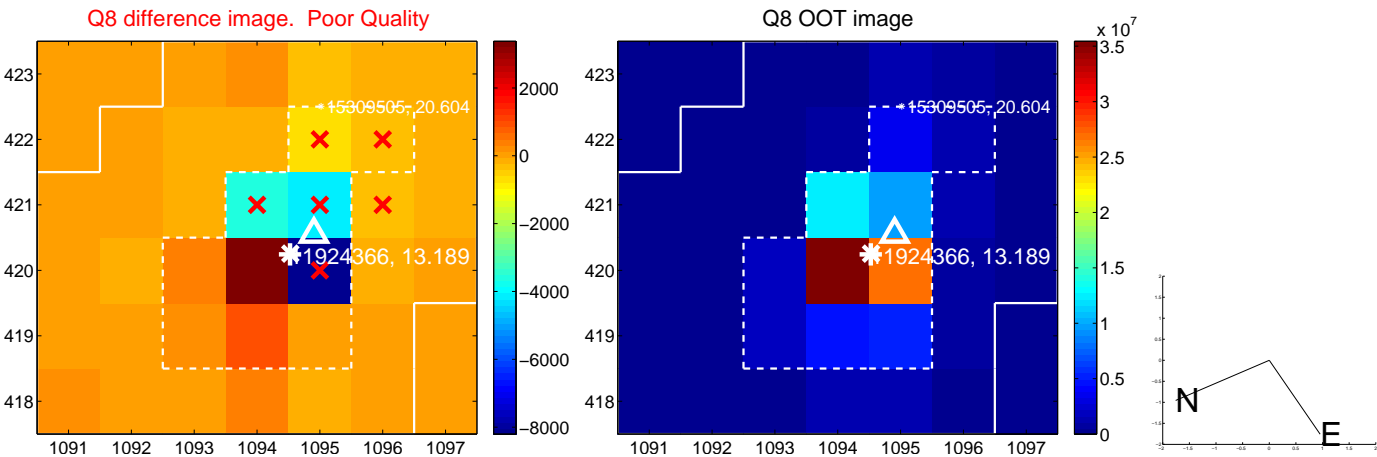
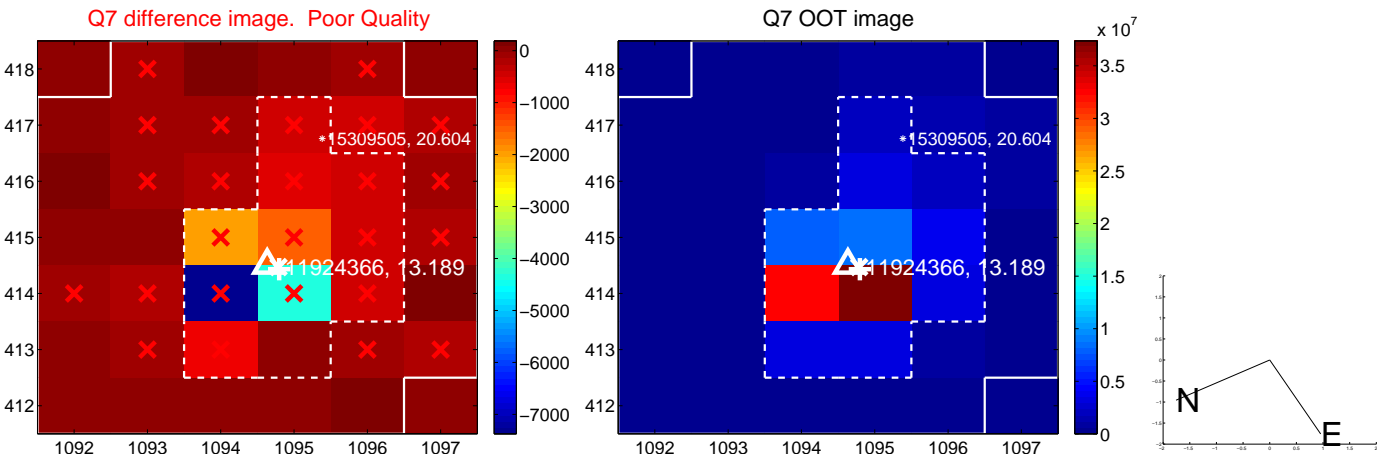
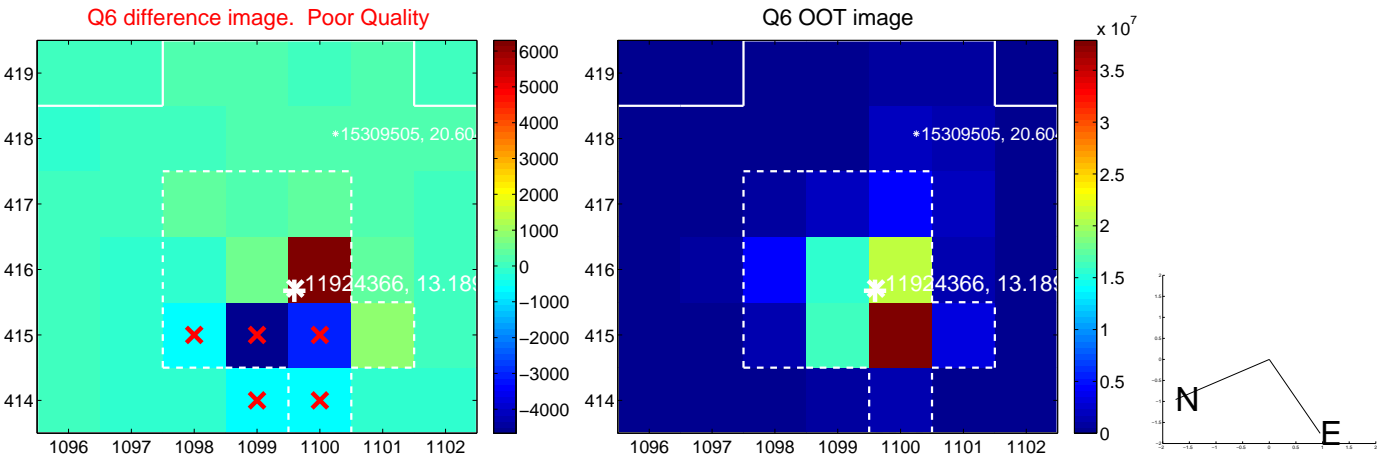
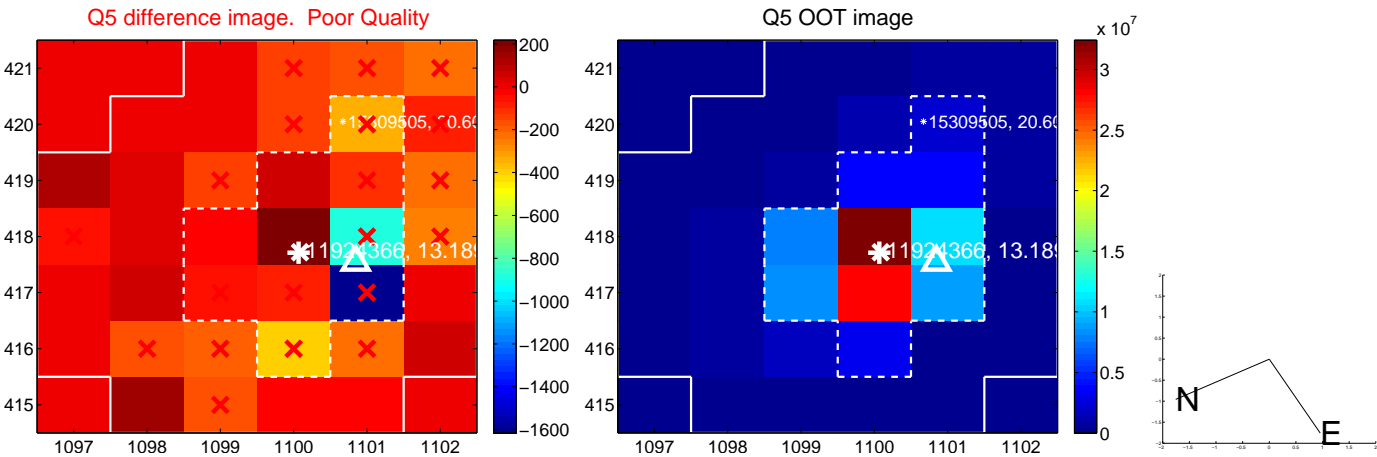


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

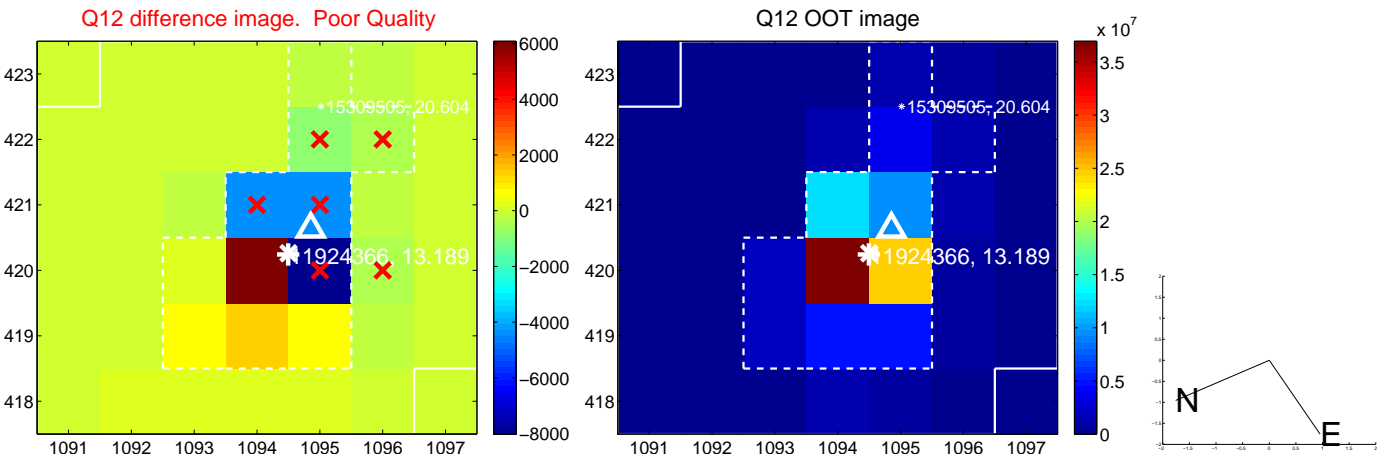
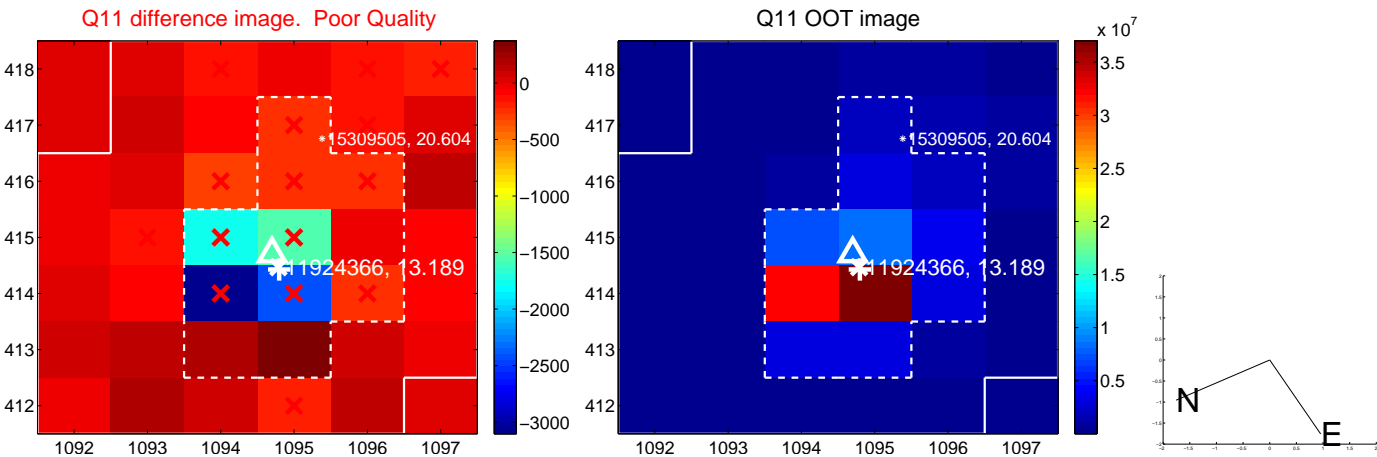
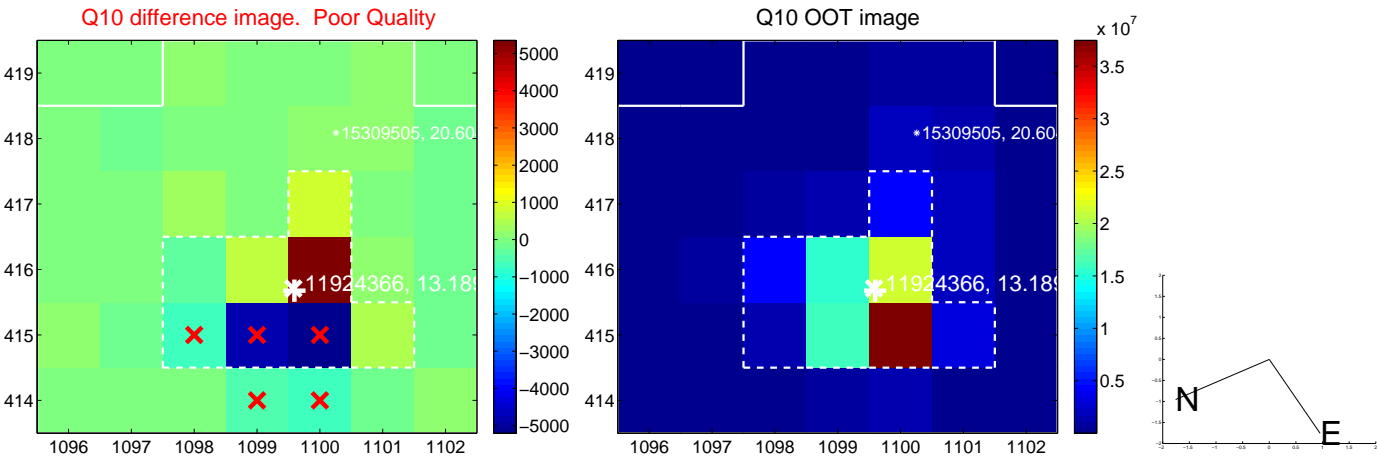
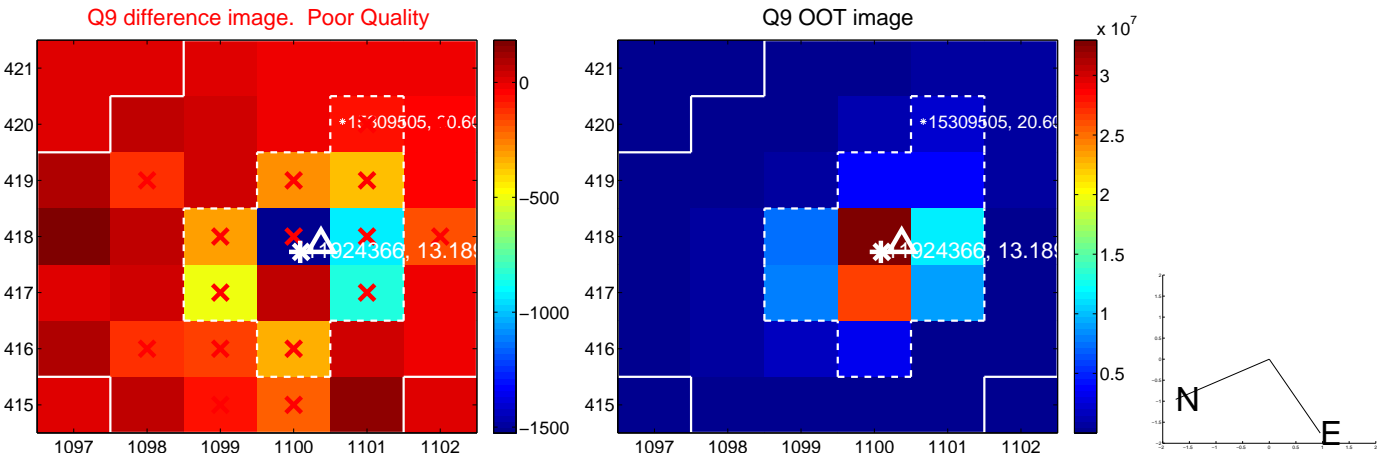


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

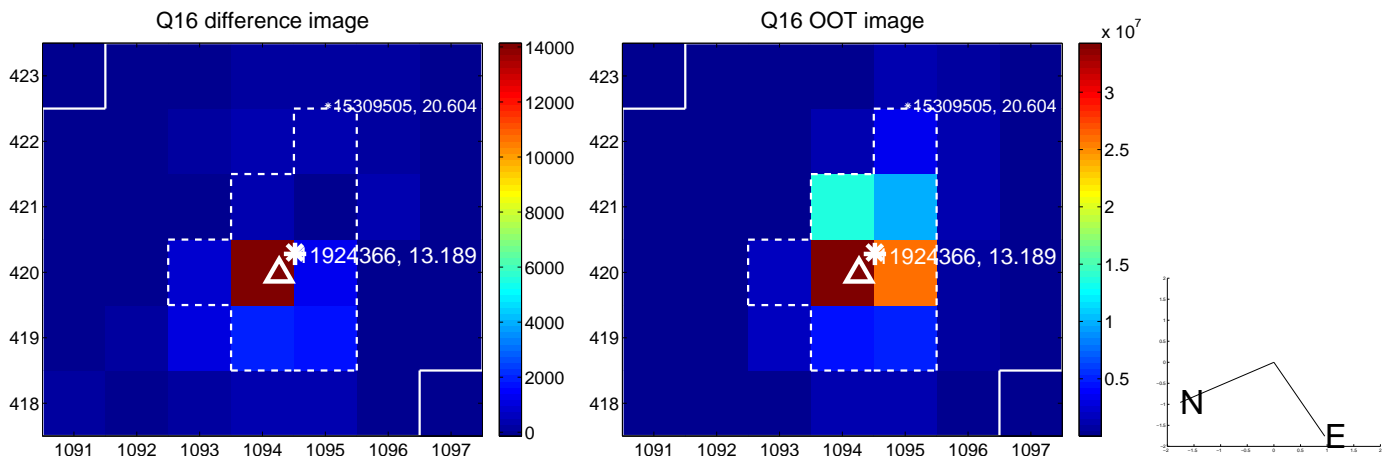
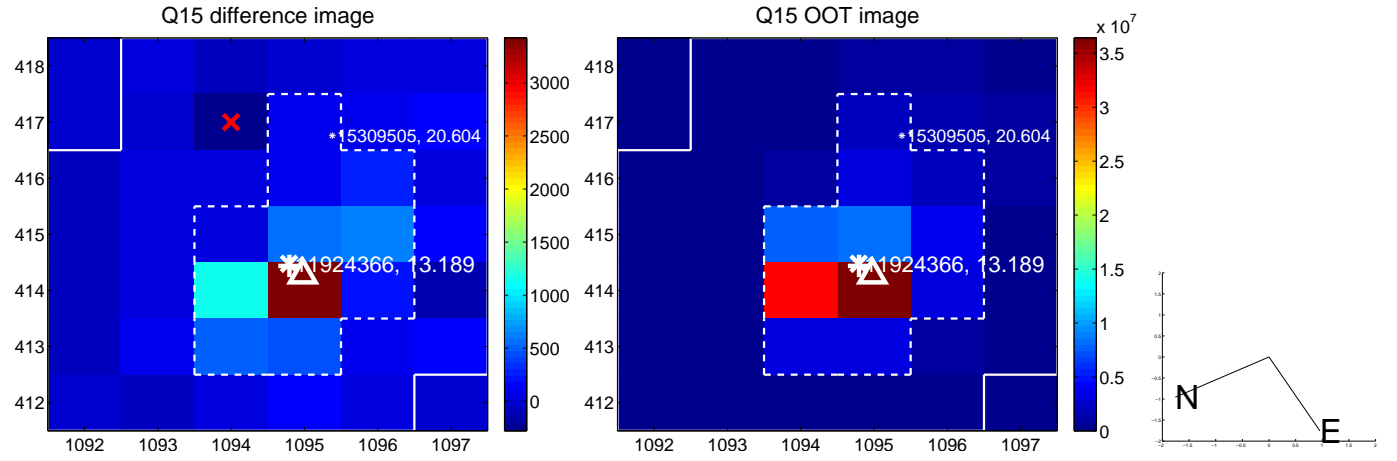
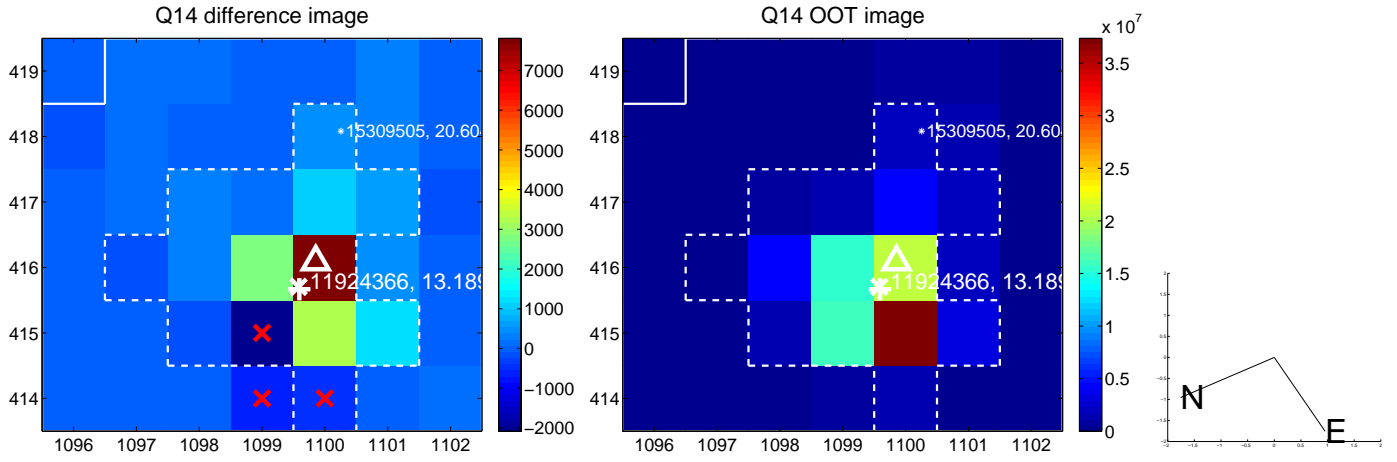
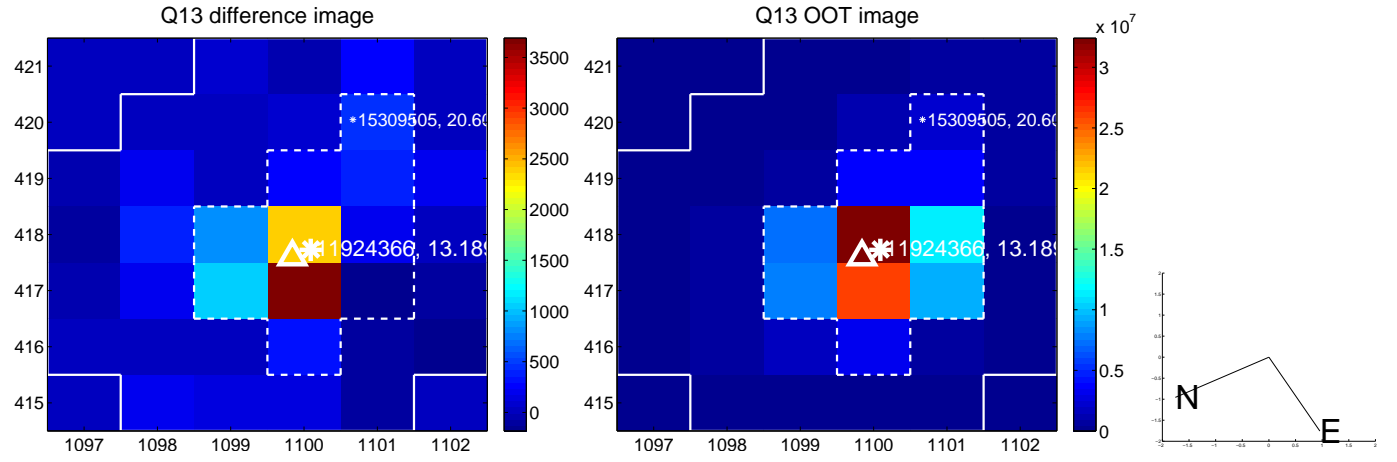




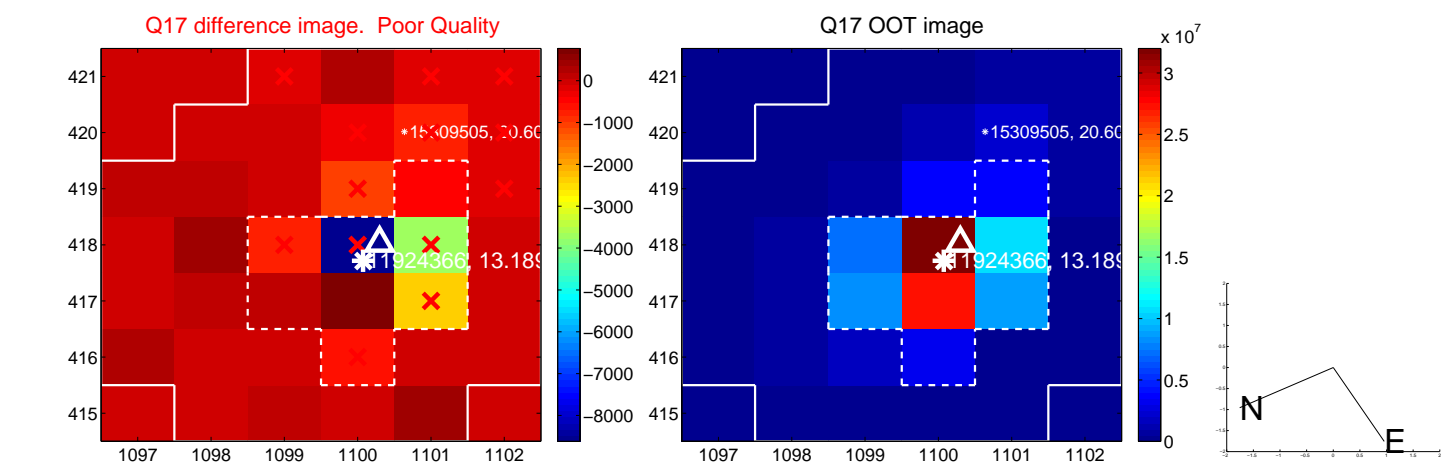
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



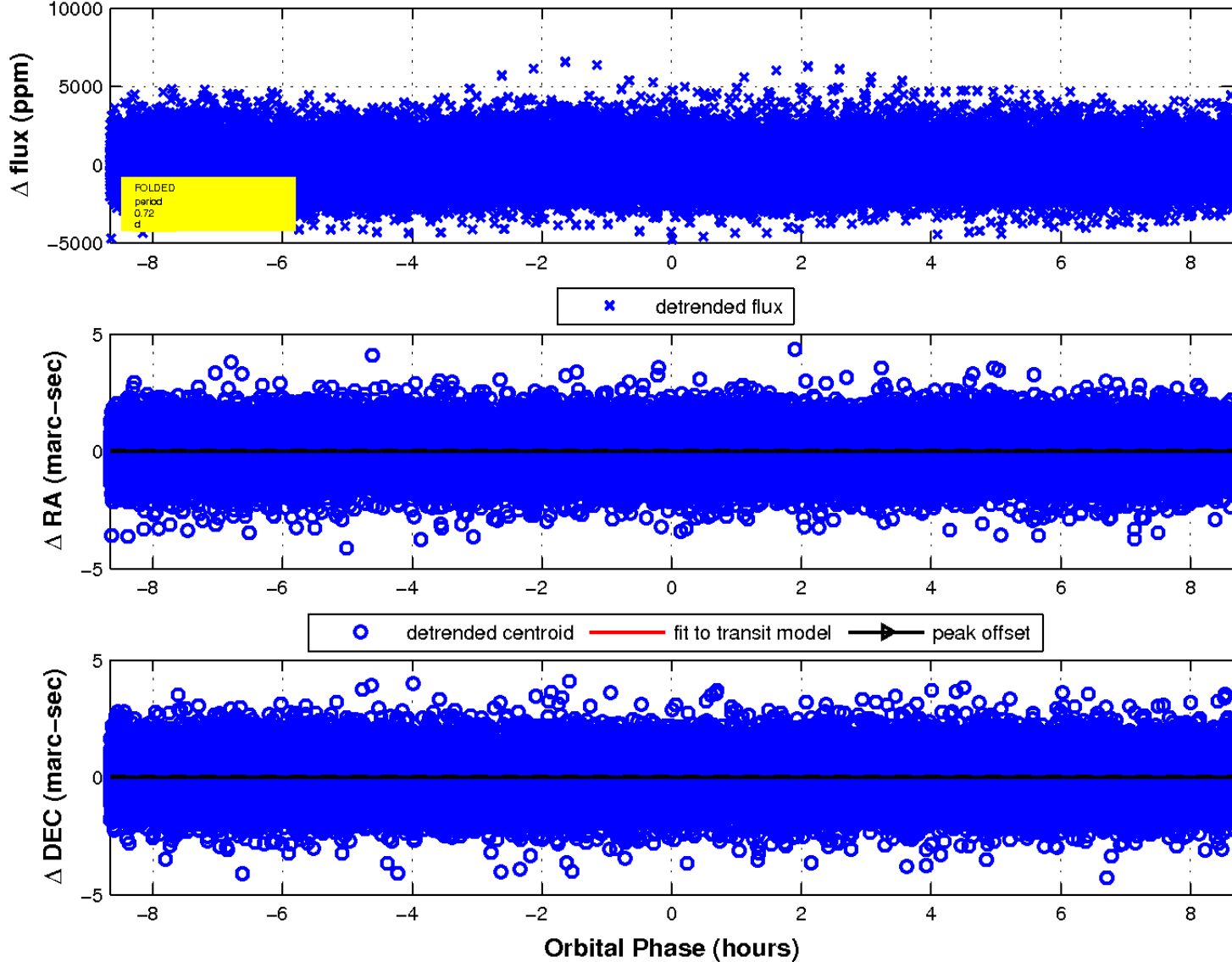
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

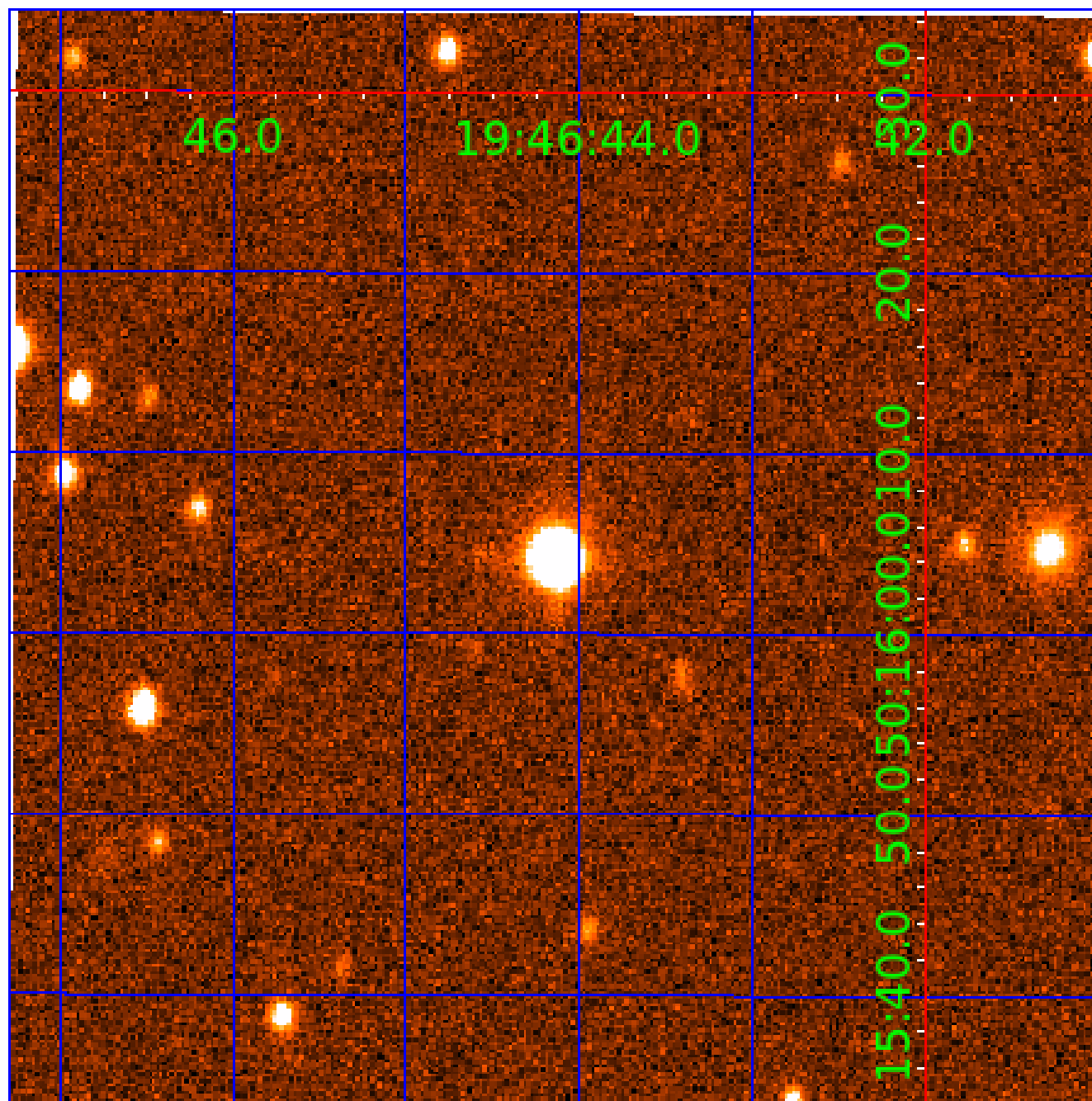


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 011924366

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011924366-01	OBS	No	0.721508	132.190211	5.1	4.897	8.1	0.7	2.42	7481	0.55	45326.94
011924366-02	OBS	No	30.999685	144.428448	1033.0	3.344	7.7	7.2	2.42	7481	11.42	301.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011924366-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011924366-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

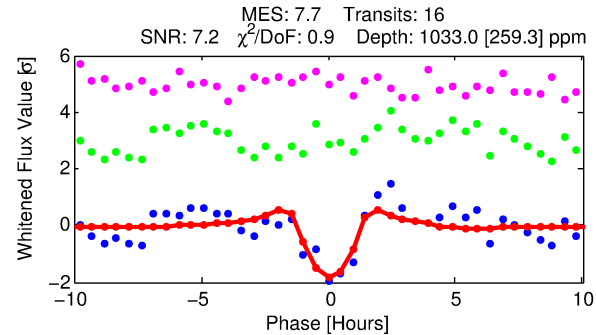
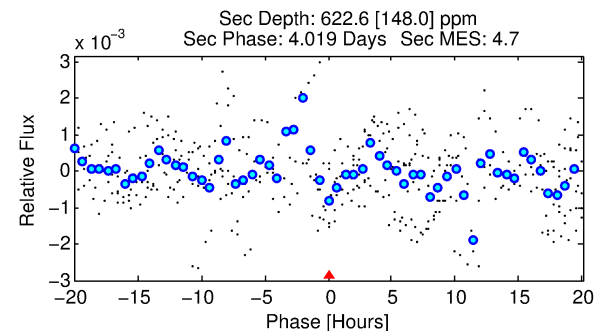
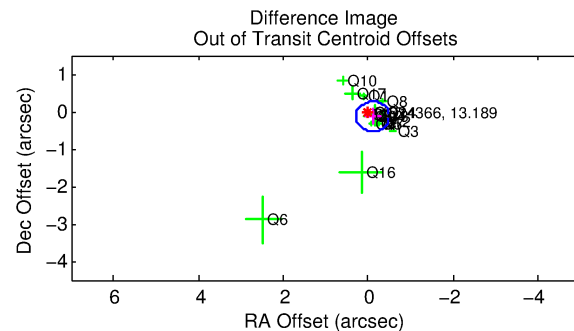
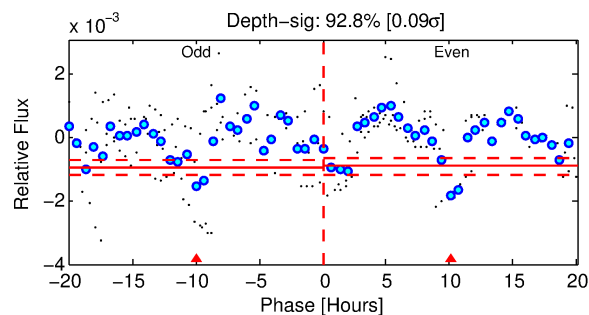
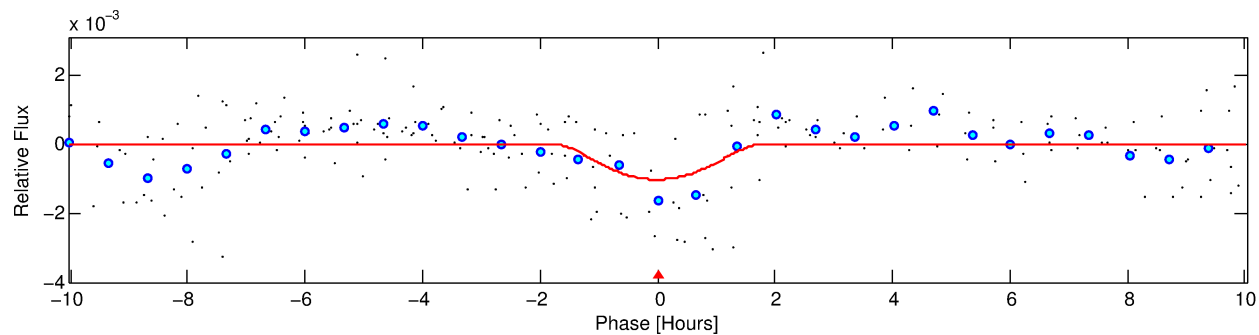
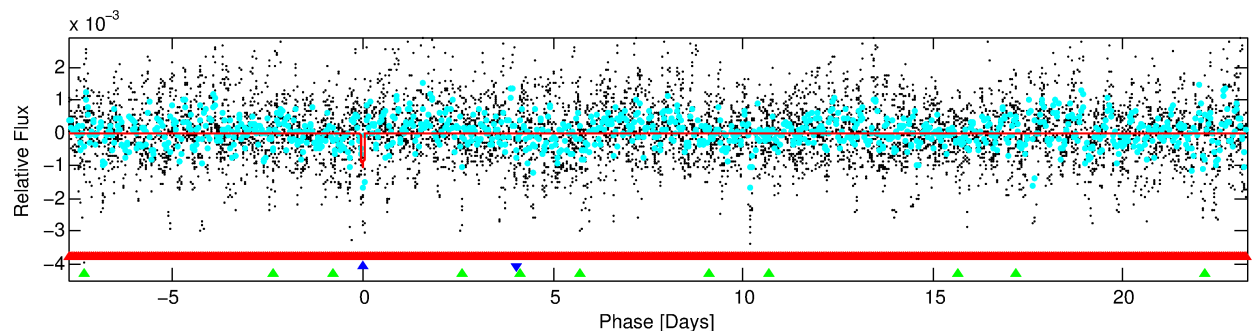
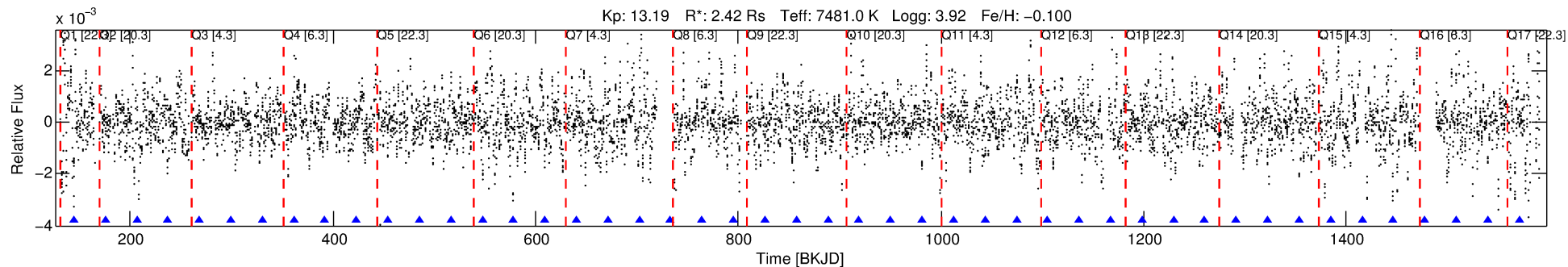
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011924366-02

No Significant Match Found

# DV One-Page Summary

KIC: 11924366 Candidate: 2 of 3 Period: 31.000 d



## DV Fit Results:

Period = 30.99969 [0.00031] d  
Epoch = 144.4284 [0.0081] BKJD  
Rp/R\* = 0.0433 [0.0640]  
a/R\* = 25.19 [14.80]  
b = 0.98 [0.12]  
Seff = 301.21 [151.27]  
Teq = 1062 [133] K  
Rp = 11.42 [17.37] Re  
a = 0.2331 [0.0733] AU  
Ag = 142.72 [428.59] [0.33 $\sigma$ ]  
Teffp = 5677 [4215] K [1.09 $\sigma$ ]

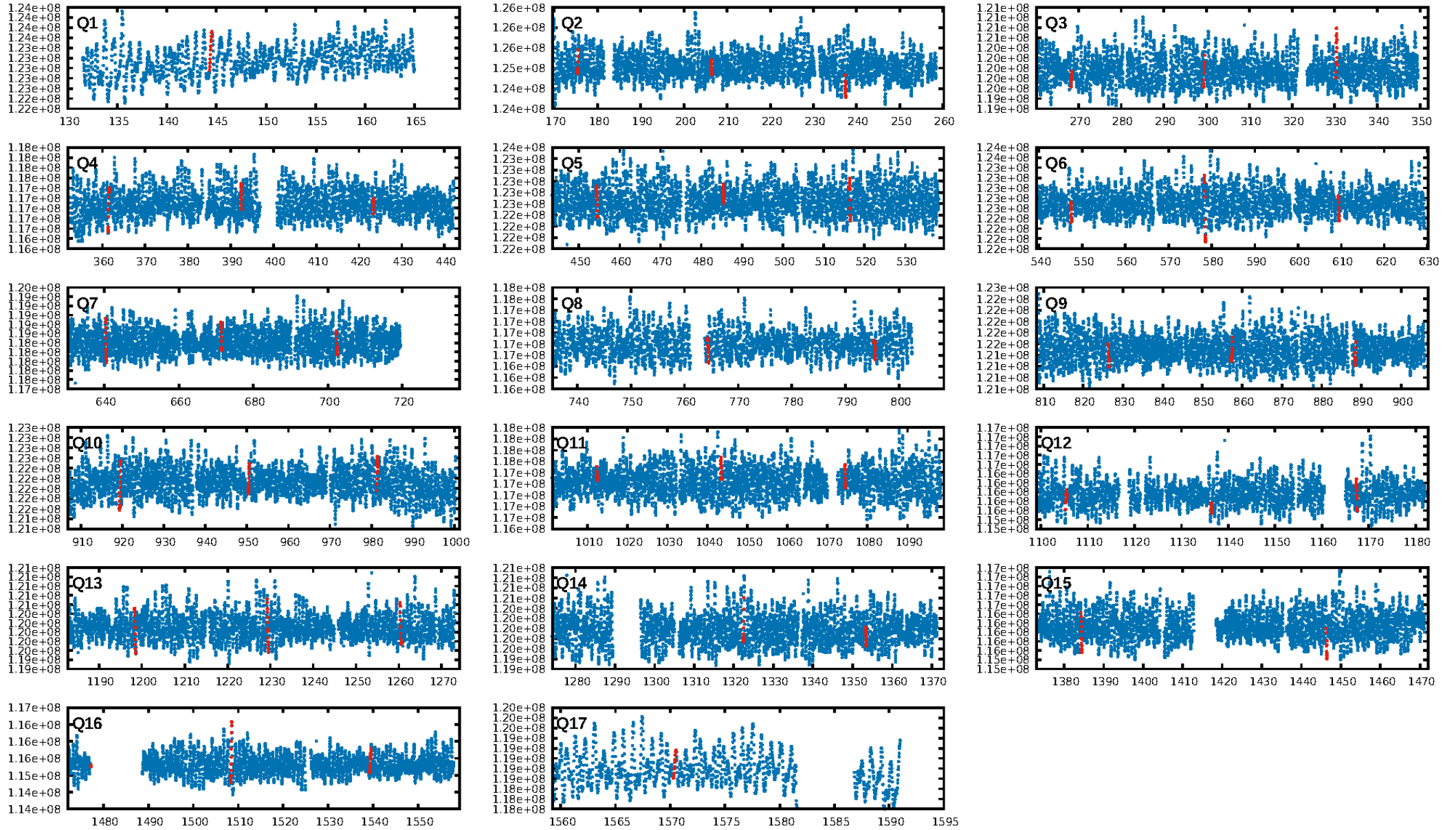
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [122.54 $\sigma$ ]  
LongPeriod-sig: 100.0% [525.36 $\sigma$ ]  
ModelChiSquare2-sig: 31.3%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.64e-10**  
RollingBand-fgt: 1.00 [15/15]  
GhostDiagnostic-chr: 0.62  
Centroid-sig: 58.9%  
Centroid-so: 0.356 arcsec [2.01 $\sigma$ ]  
OotOffset-rm: 0.172 arcsec [1.31 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.090 arcsec [0.55 $\sigma$ ]  
KicOffset-st: 4/4/4/5 [17]  
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DiffImageOverlap-fno: 0.00 [0/17]

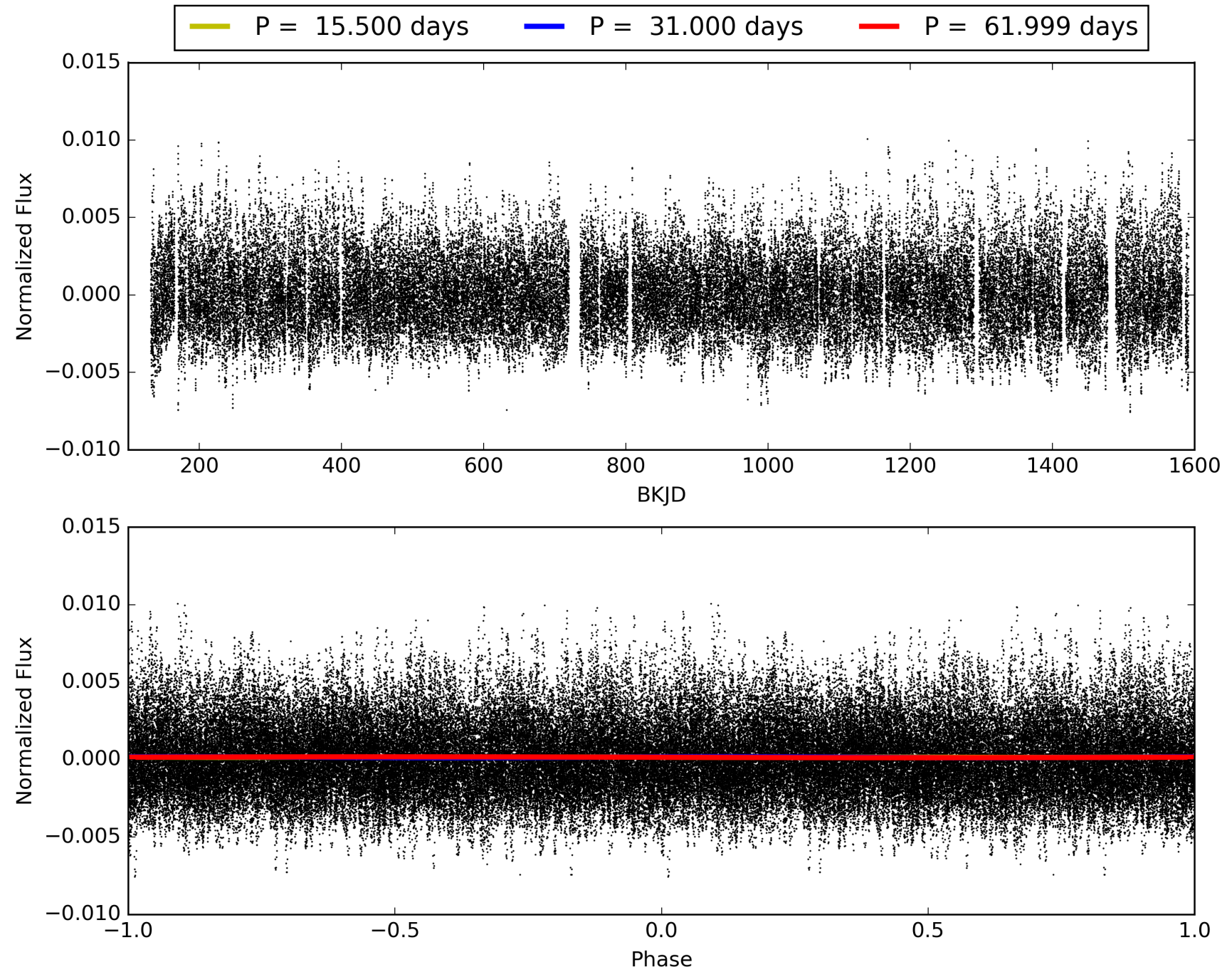
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:58:18 Z

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

# TCE 011924366-02, PDC Light Curves

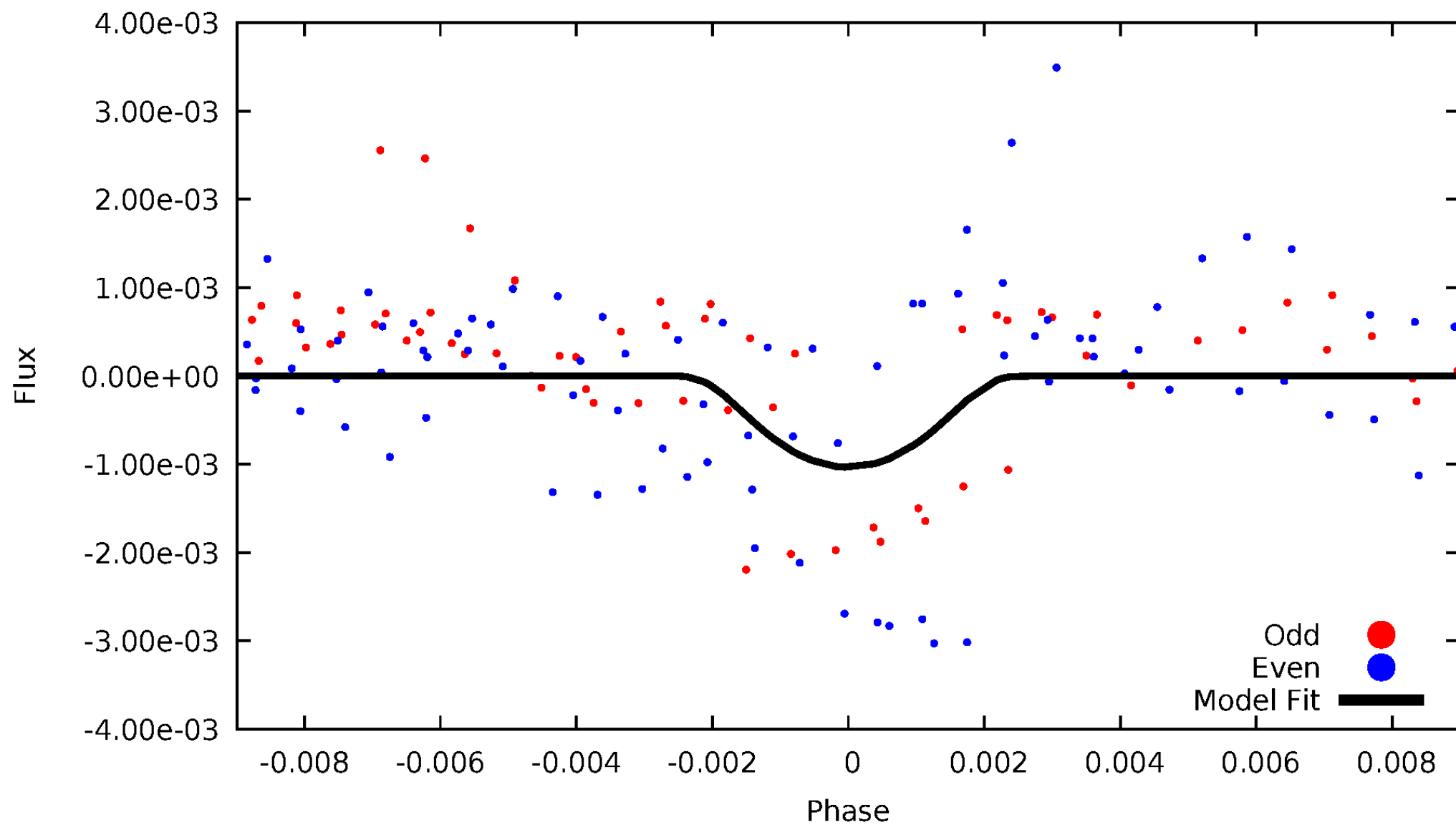


# TCE 011924366-02



# DV Odd/Even

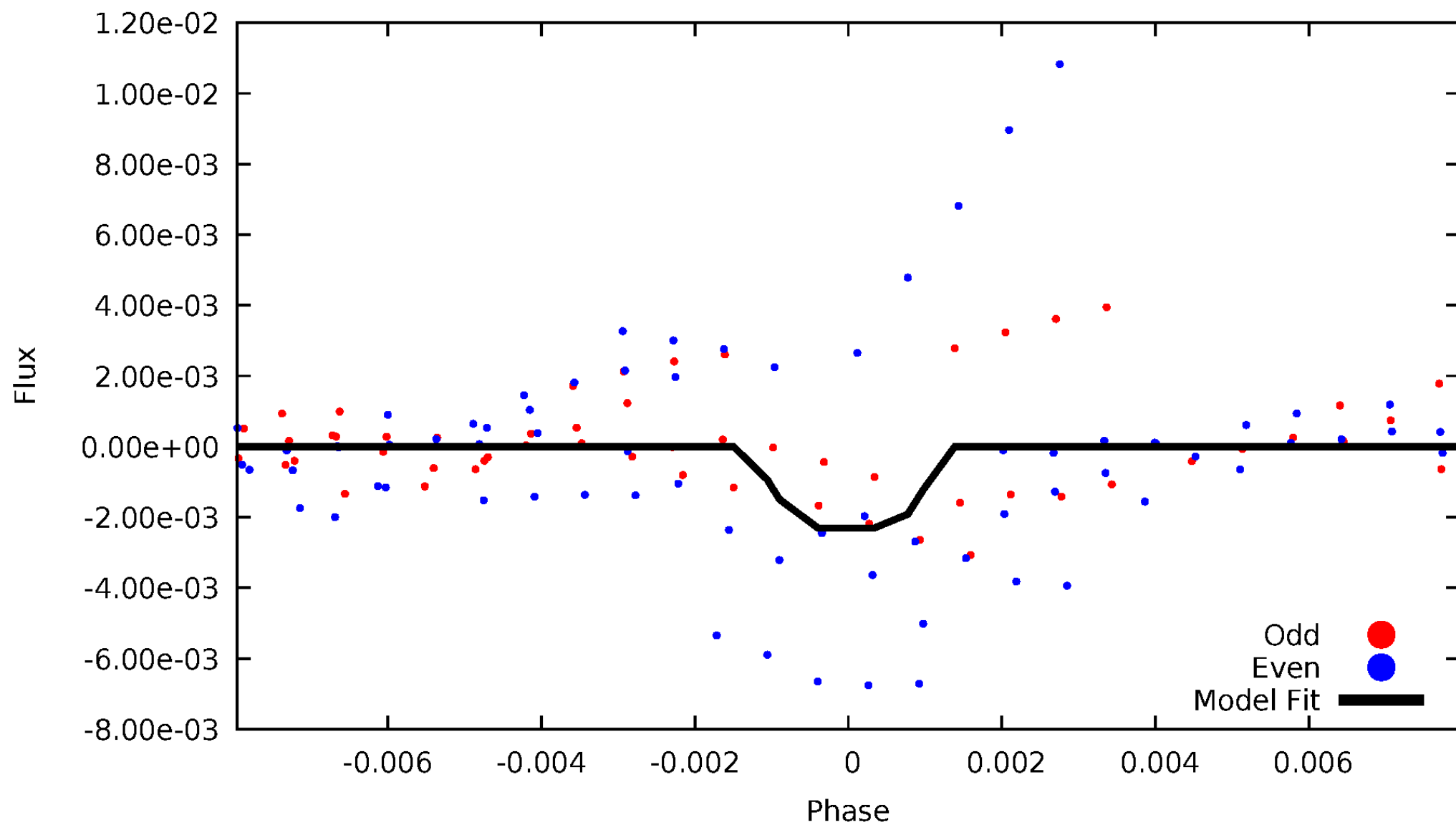
TCE 011924366-02





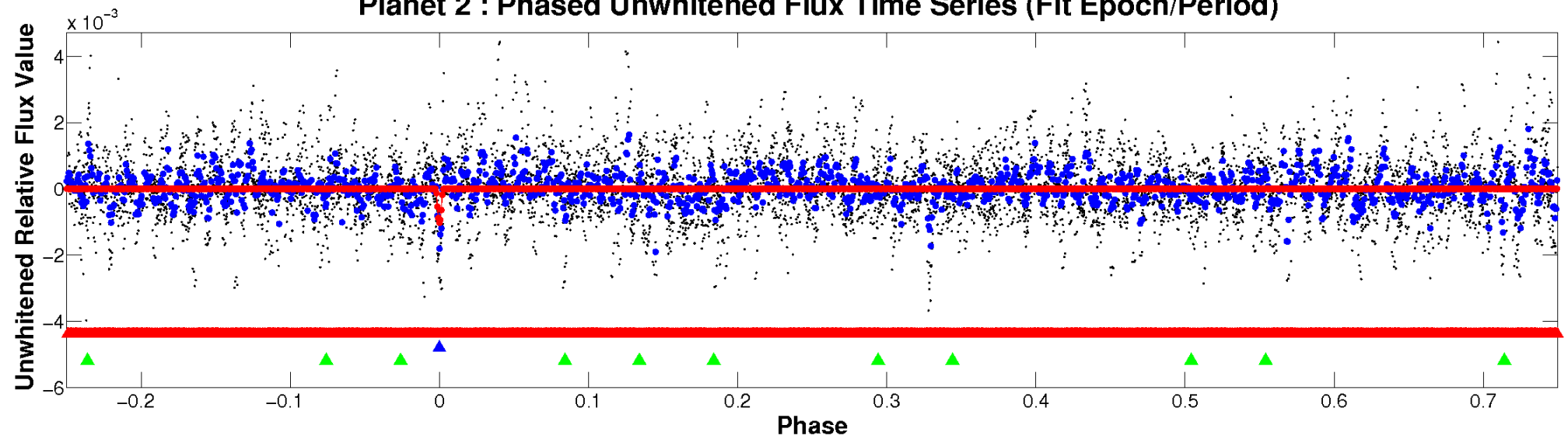
# ALT Odd/Even

TCE 011924366-02

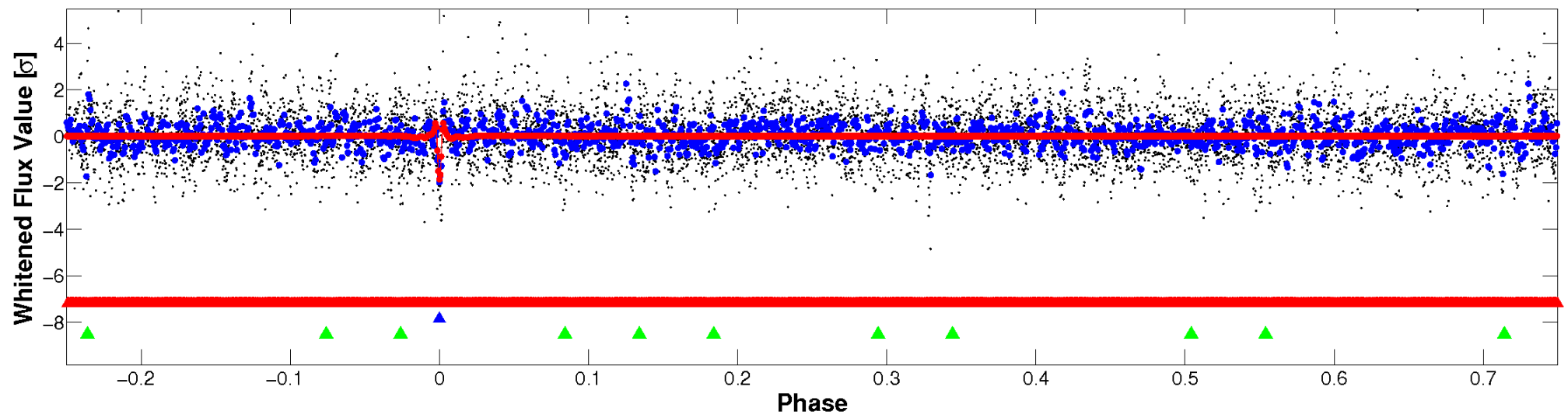


# Non-Whitened Vs. Whitened Light Curve

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

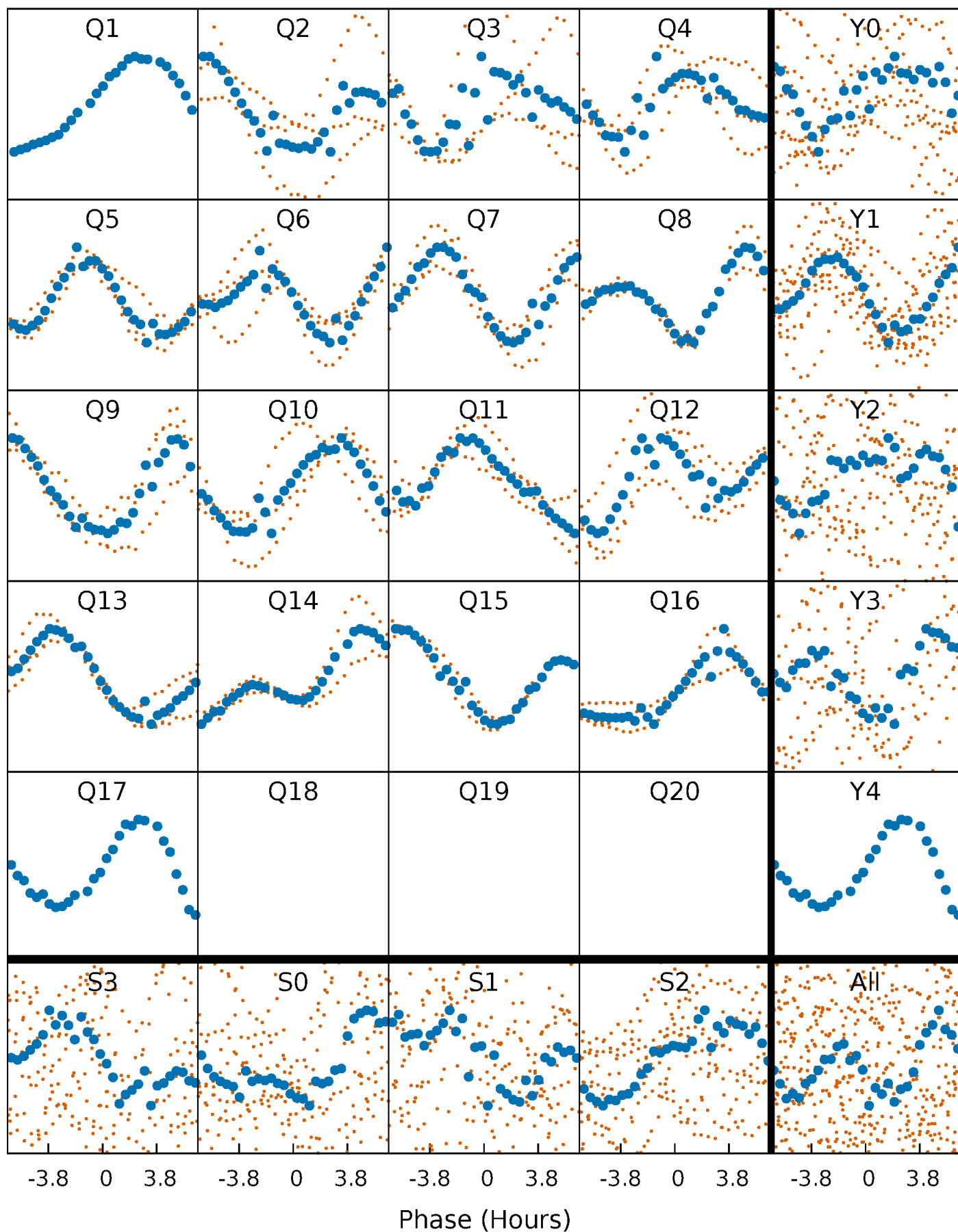


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



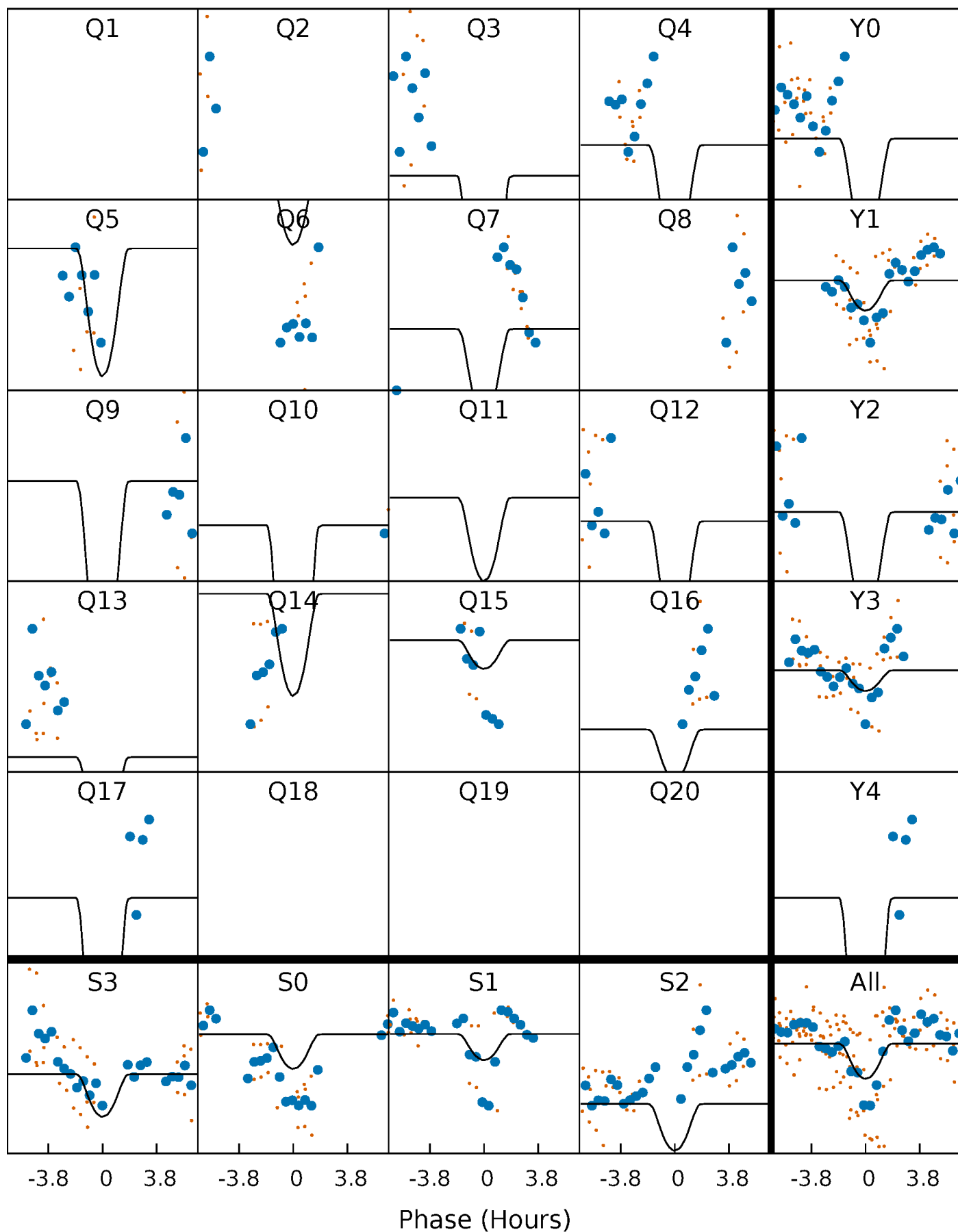
# PDC Quarter-Phased Transit Curves

TCE 011924366-02 P= 30.999685 Days  $T_0=144.428448$  (BKJD)



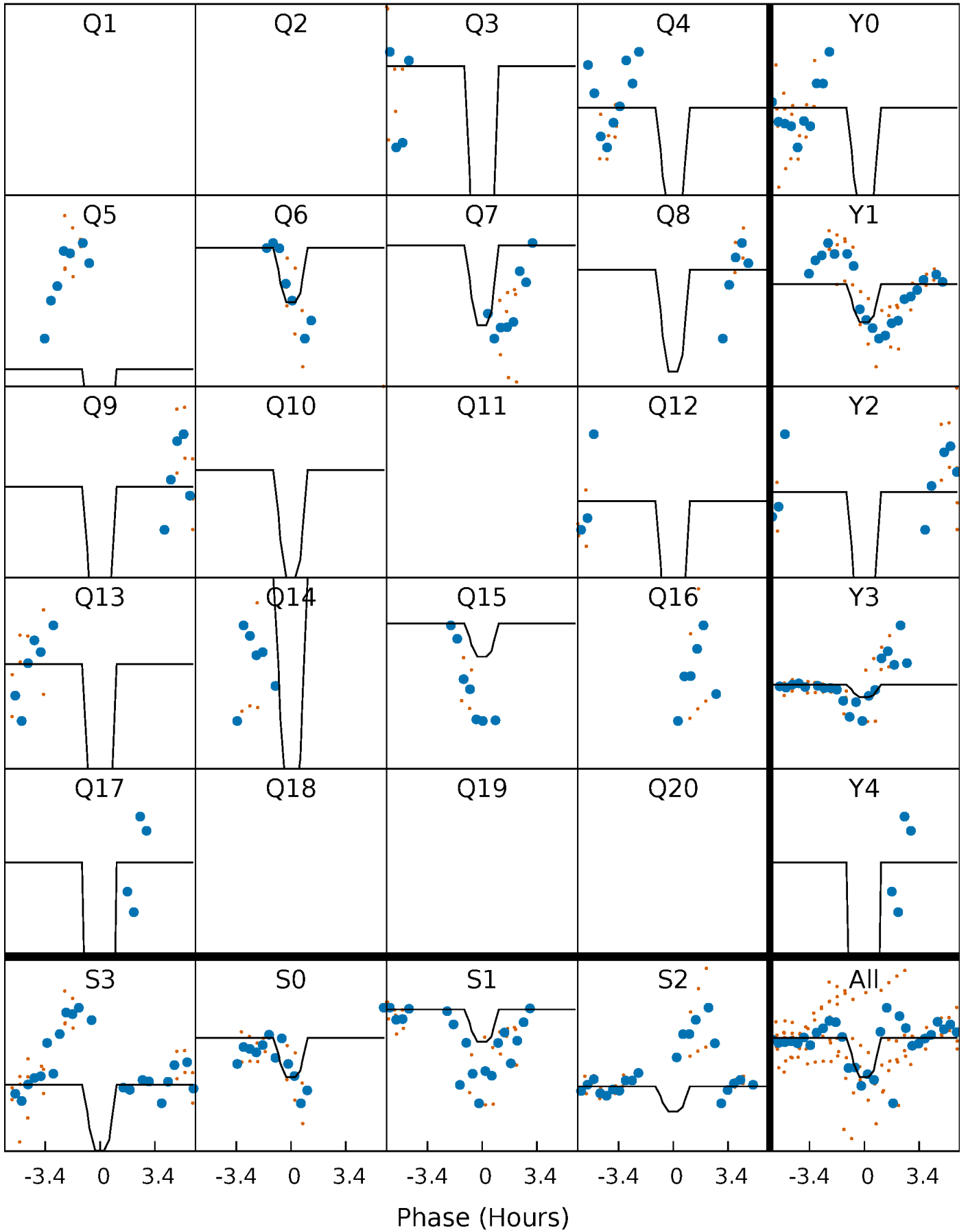
# DV Quarter-Phased Transit Curves

TCE 011924366-02   P= 30.999685 Days    $T_0=144.428448$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

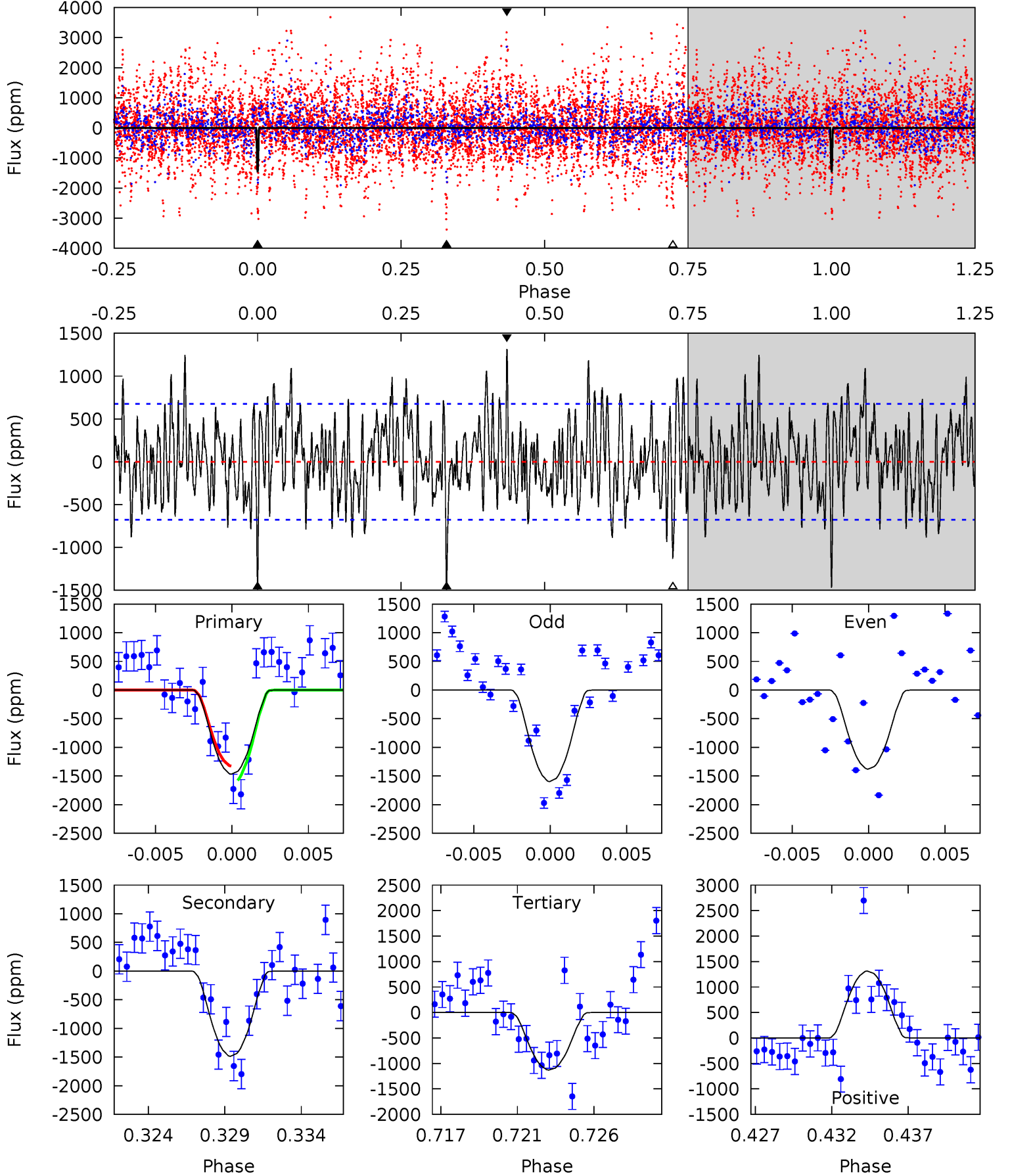
TCE 011924366-02   P= 30.999204 Days    $T_0=144.459216$  (BKJD)



# DV Model-Shift Uniqueness Test

011924366-02, P = 30.999685 Days, E = 113.428763 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
11.2	11.4	8.63	10.0	5.16	2.81	2.99	2.59	1.18	2.73	1.32	0.83	1.17	0.47	0.95

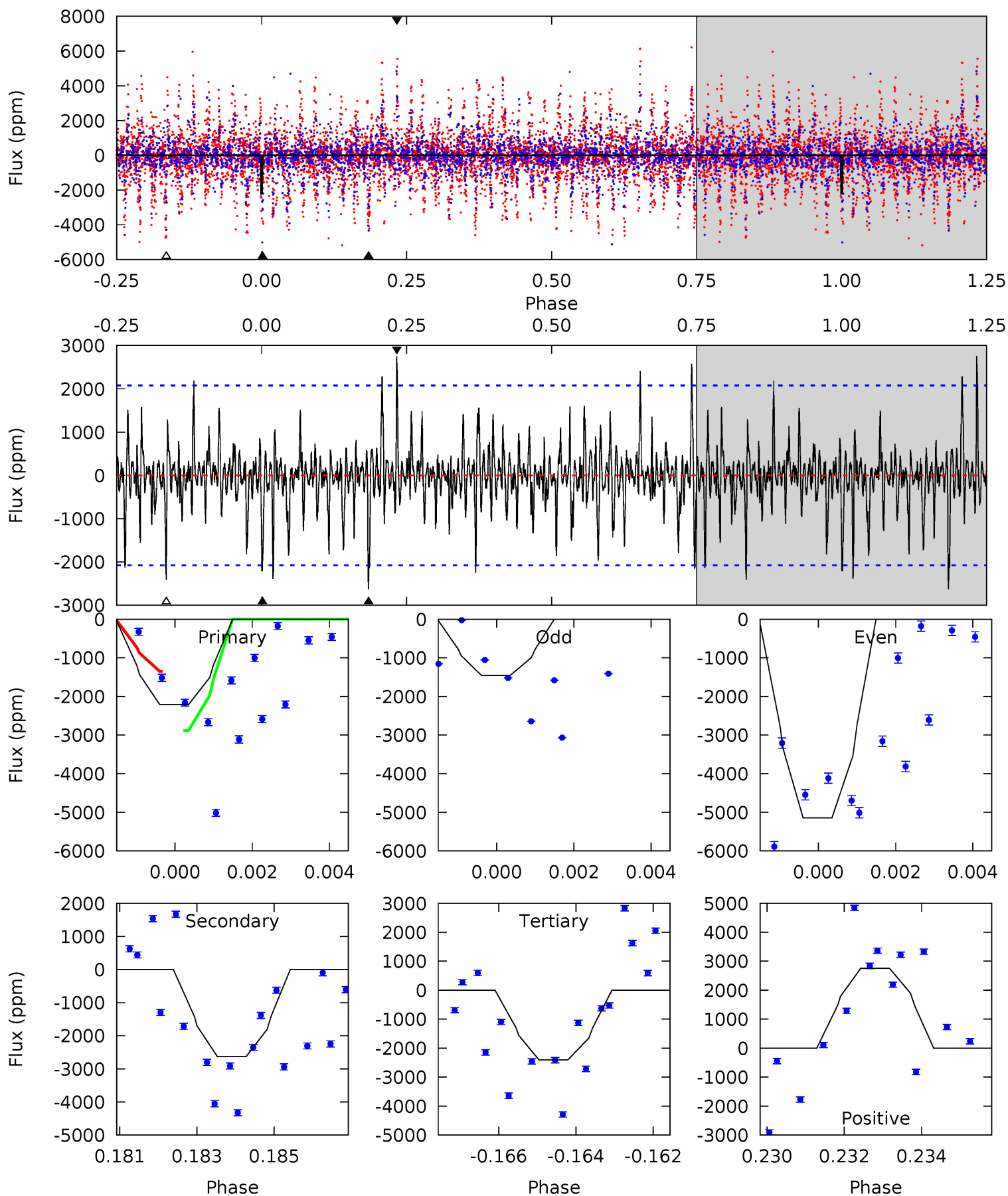




# Alt Model-Shift Uniqueness Test

011924366-02, P = 30.999204 Days, E = 113.460012 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
5.68	6.75	6.18	7.08	5.33	3.10	1.52	-0.50	-1.40	0.57	-0.33	4.95	0.90	0.51	2.00



### Stellar Parameters For KIC 011924366

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7481^{+209}_{-314}$	$3.917^{+0.266}_{-0.143}$	$-0.100^{+0.200}_{-0.350}$	$2.415^{+0.467}_{-0.867}$	$1.759^{+0.195}_{-0.391}$	$0.176^{+0.341}_{-0.065}$
	+3%/-4%	+7%/-4%	+200%/-350%	+19%/-36%	+11%/-22%	+194%/-37%
Source	KIC0	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 011924366-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1488 \pm 131$	$16.06^{+14.81}_{-10.86}$	$1472^{+100}_{-120}$	$5803^{+5772}_{-1412}$	$170^{+1474}_{-125}$
Alt.	$-2628 \pm 389$	$16.21^{+14.00}_{-10.57}$	$1477^{+103}_{-128}$	$6552^{+6402}_{-1669}$	$298^{+1967}_{-218}$

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

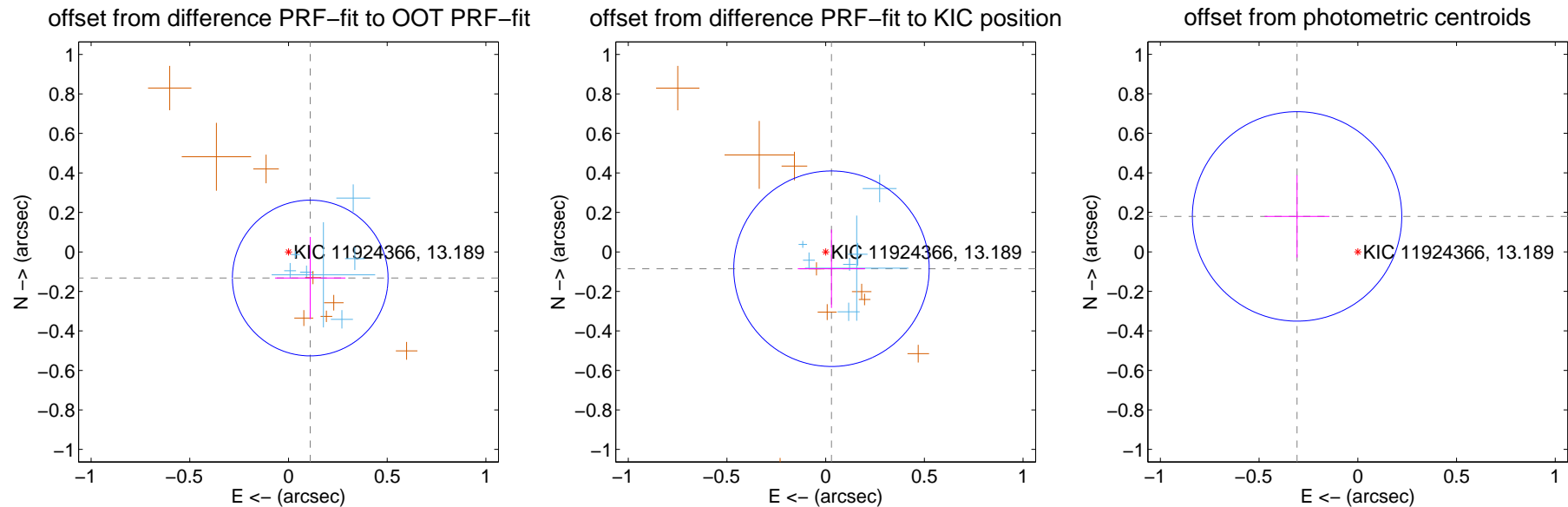
## DV Centroid Data

Supplemental centroid analysis for 011924366-02. Kepler magnitude: 13.19. Transit SNR 7.17

There are 7 quarters with good PRF difference image offsets

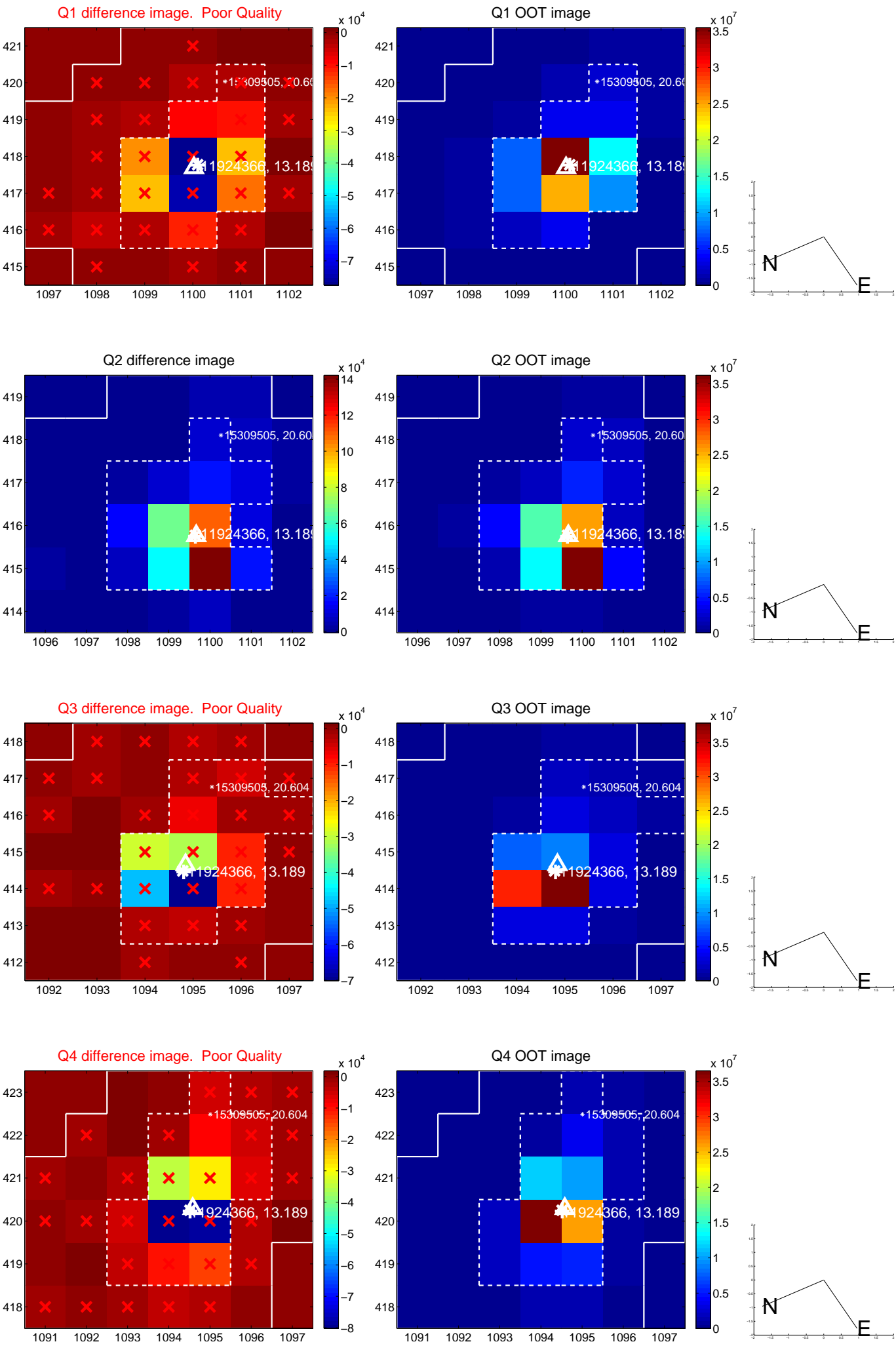
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.172 \pm 0.131$	1.31	$-0.110 \pm 0.179$	$-0.132 \pm 0.208$
PRF-fit source offset from KIC position	$0.090 \pm 0.165$	0.55	$-0.029 \pm 0.171$	$-0.085 \pm 0.199$
photometric centroid source offset	$0.36 \pm 0.18$	2.01	$0.31 \pm 0.16$	$0.18 \pm 0.21$

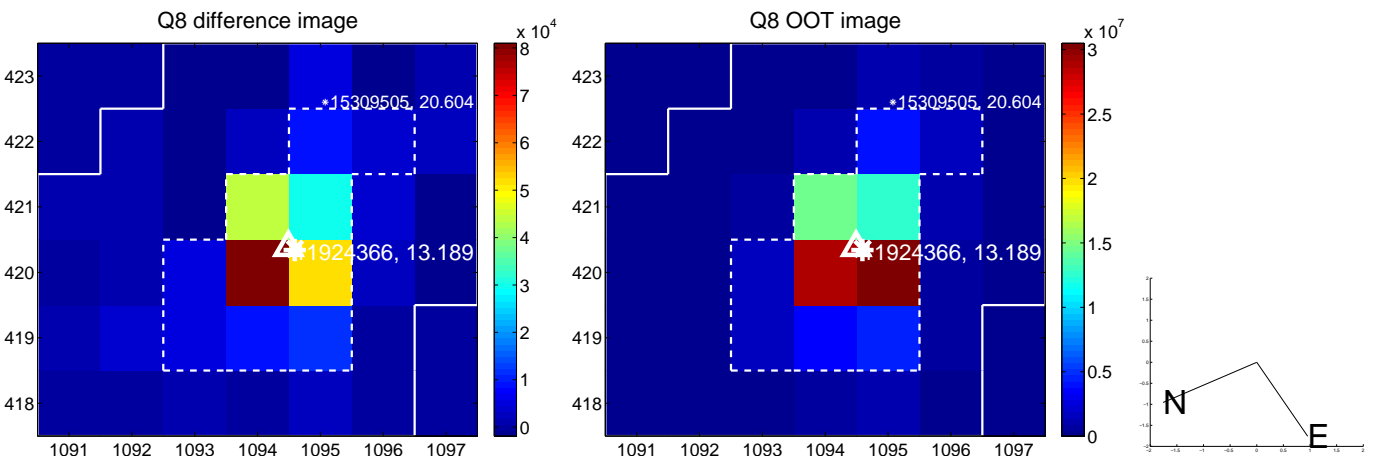
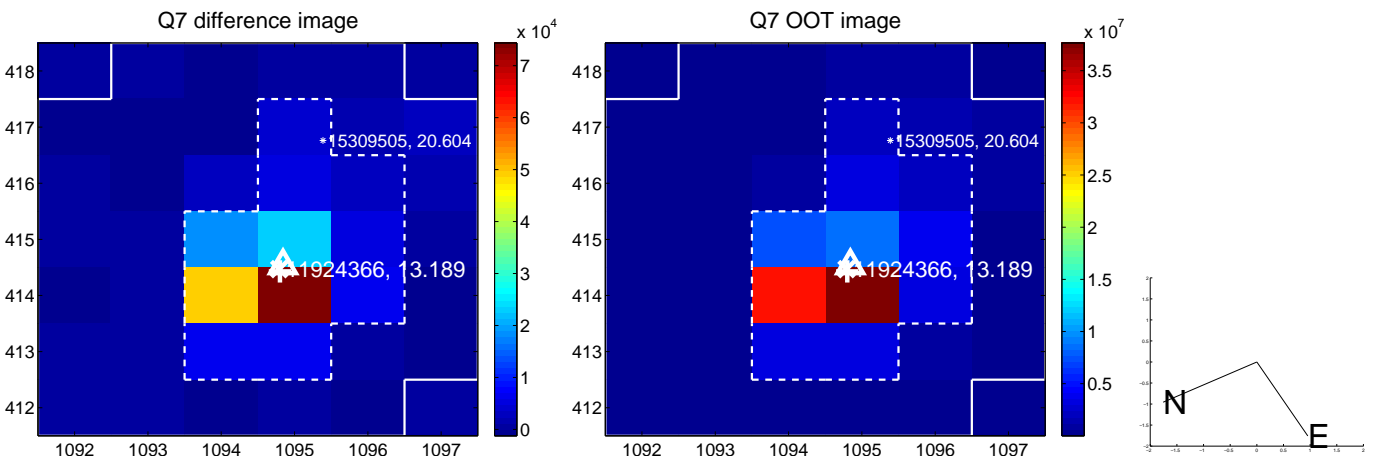
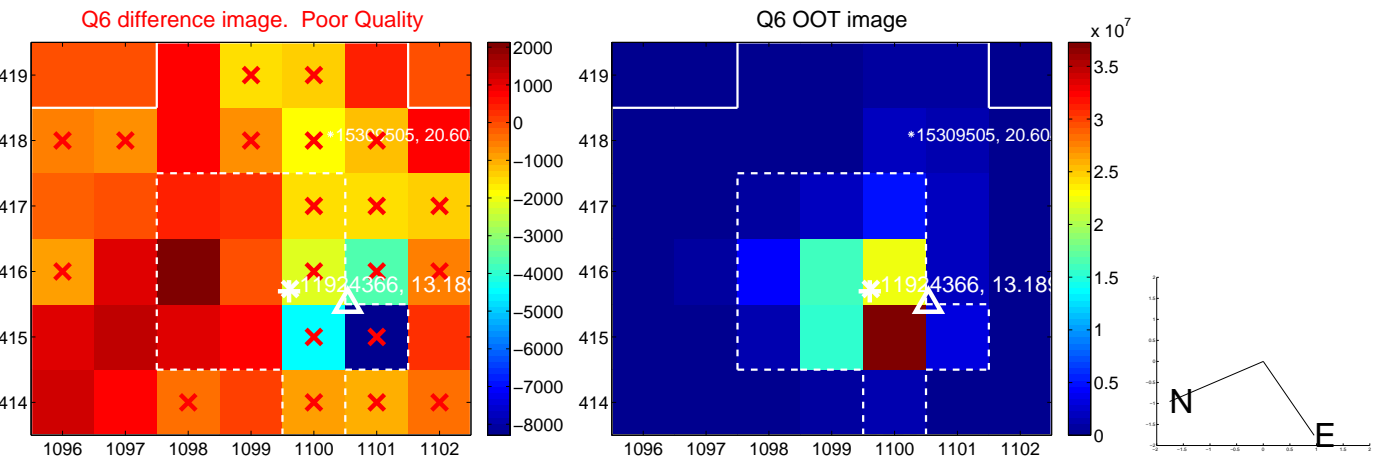
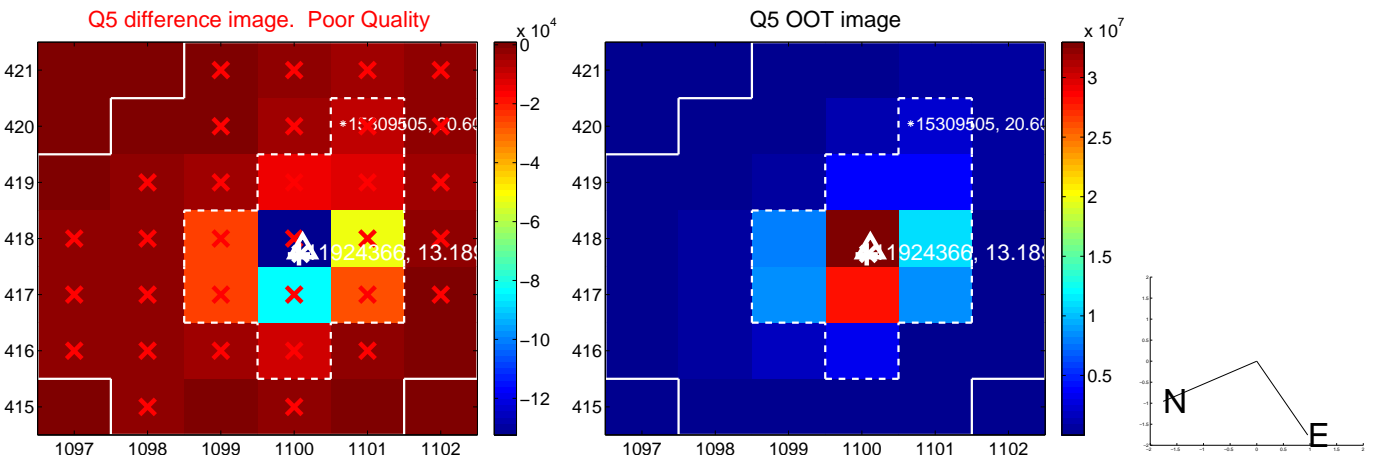


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

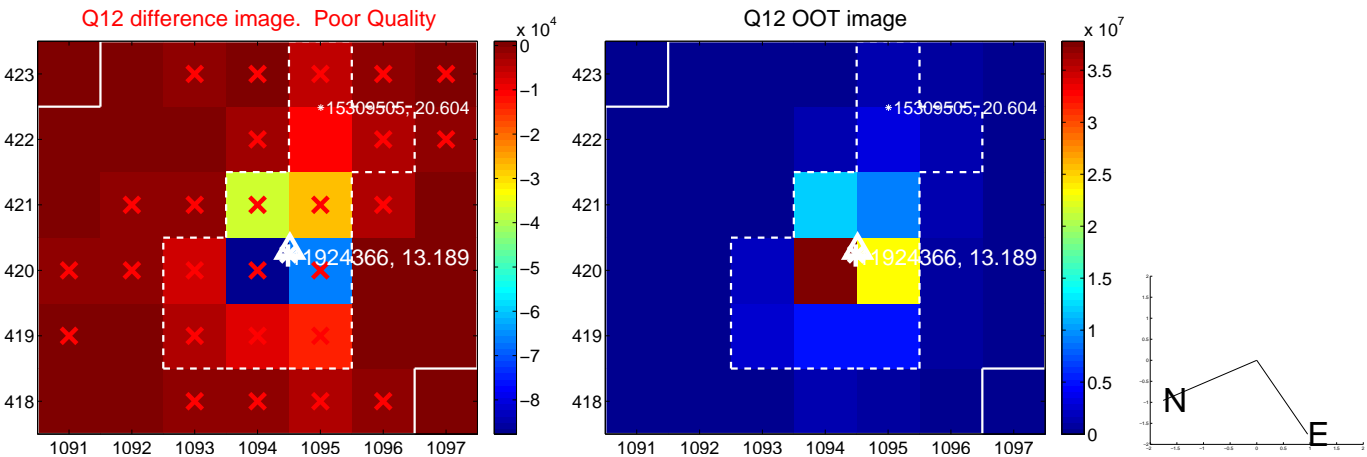
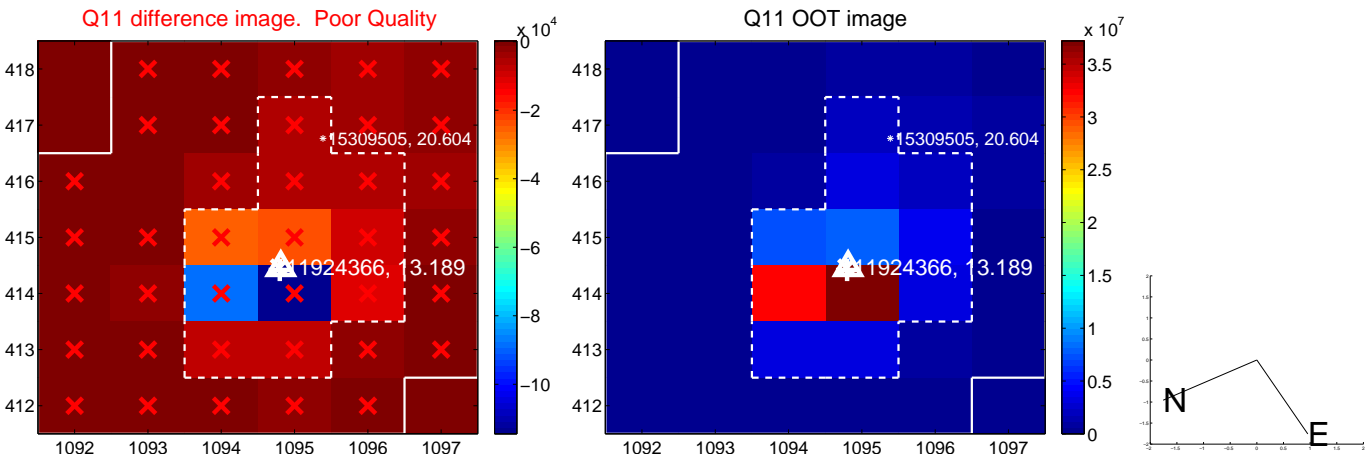
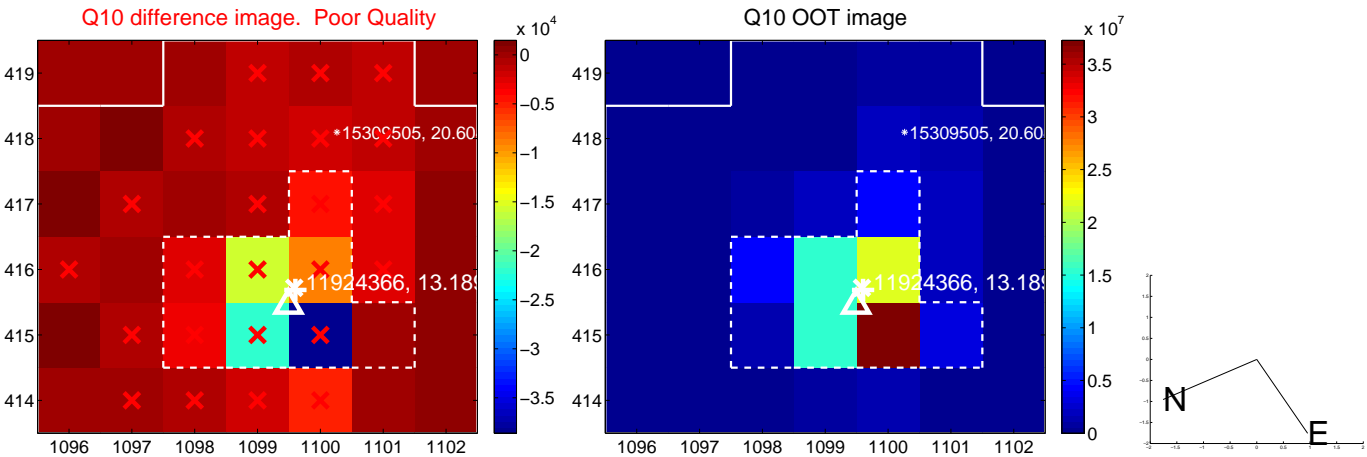
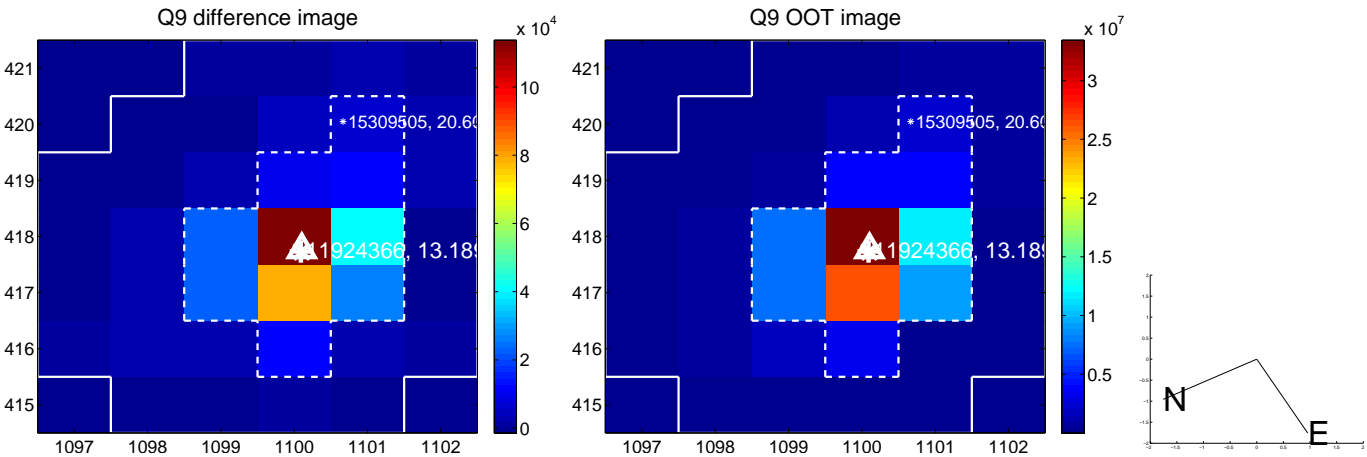
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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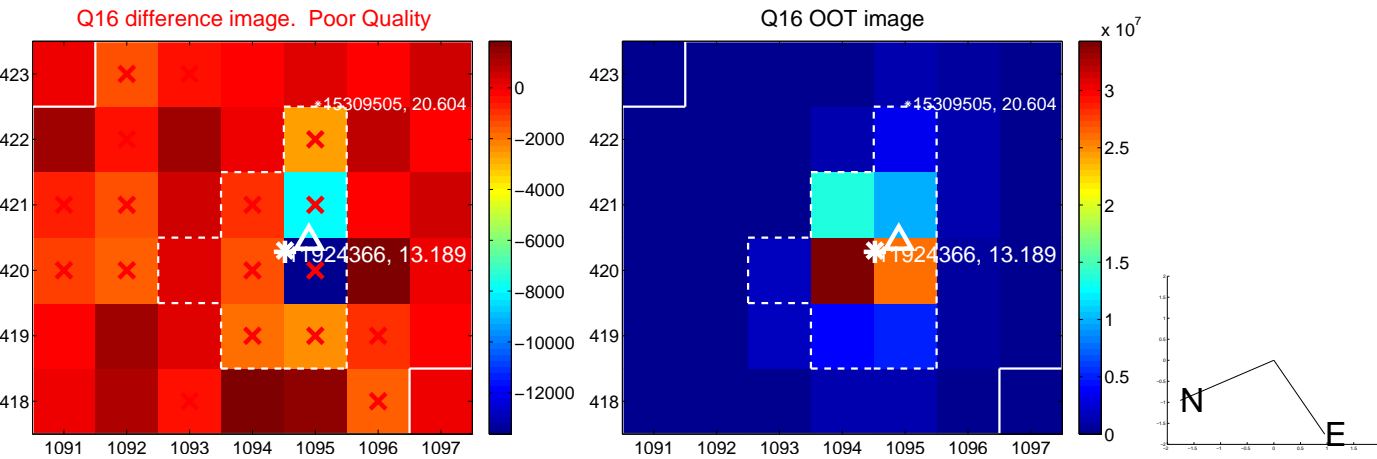
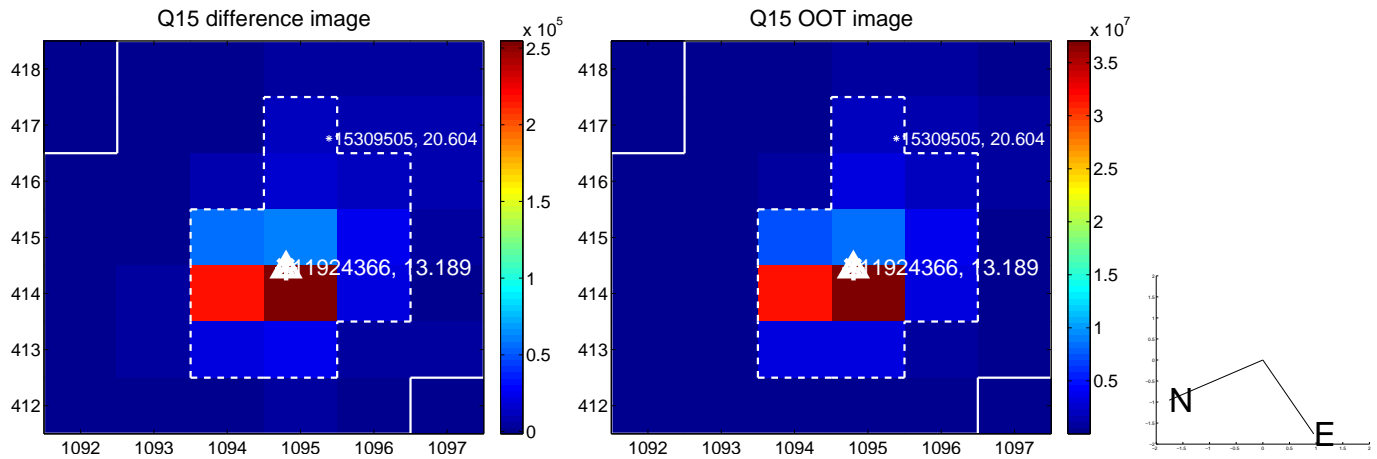
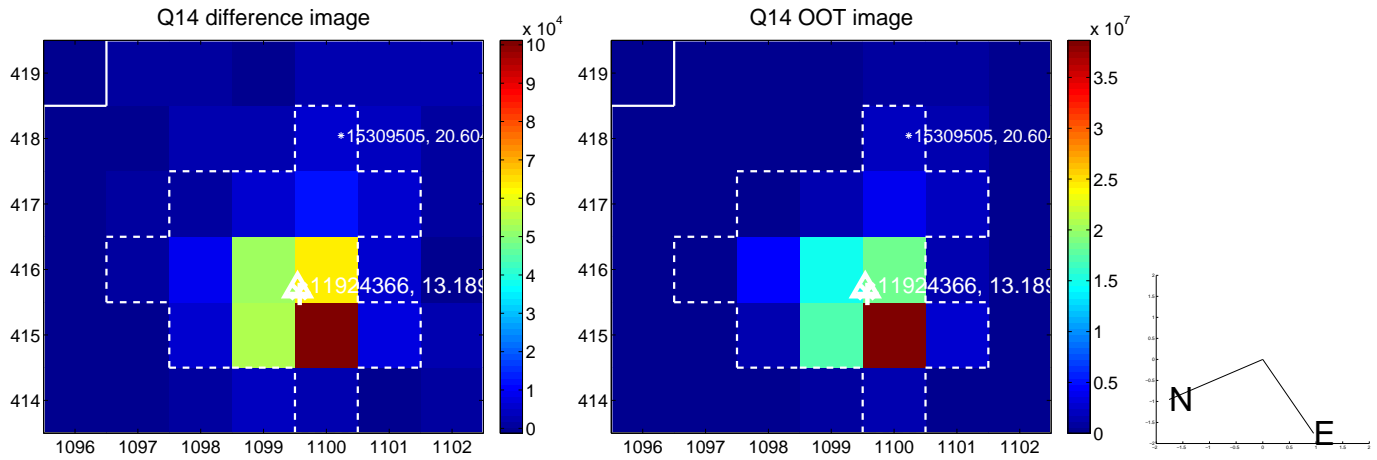
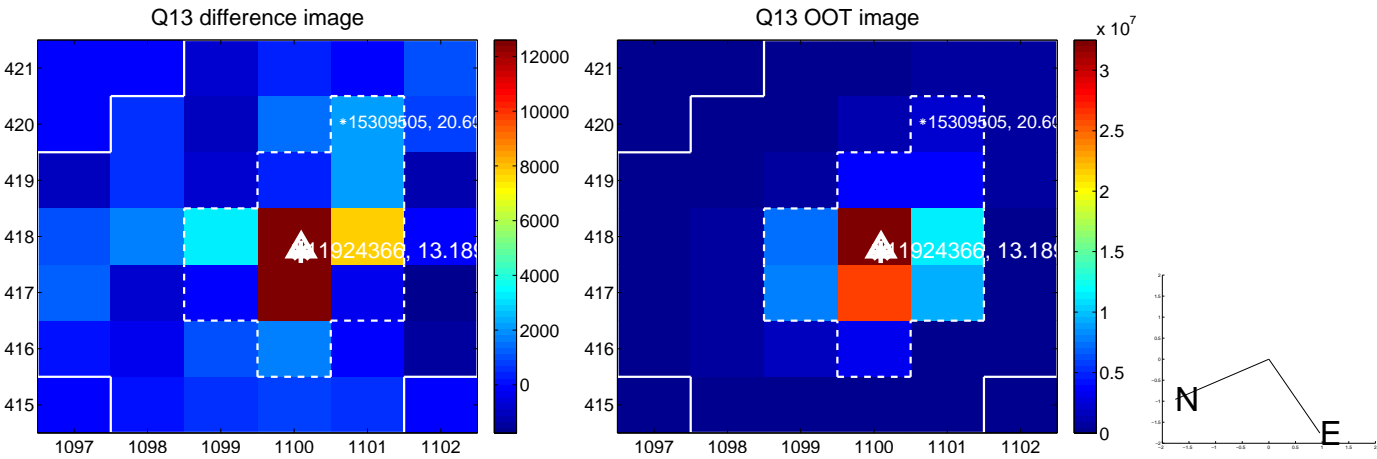


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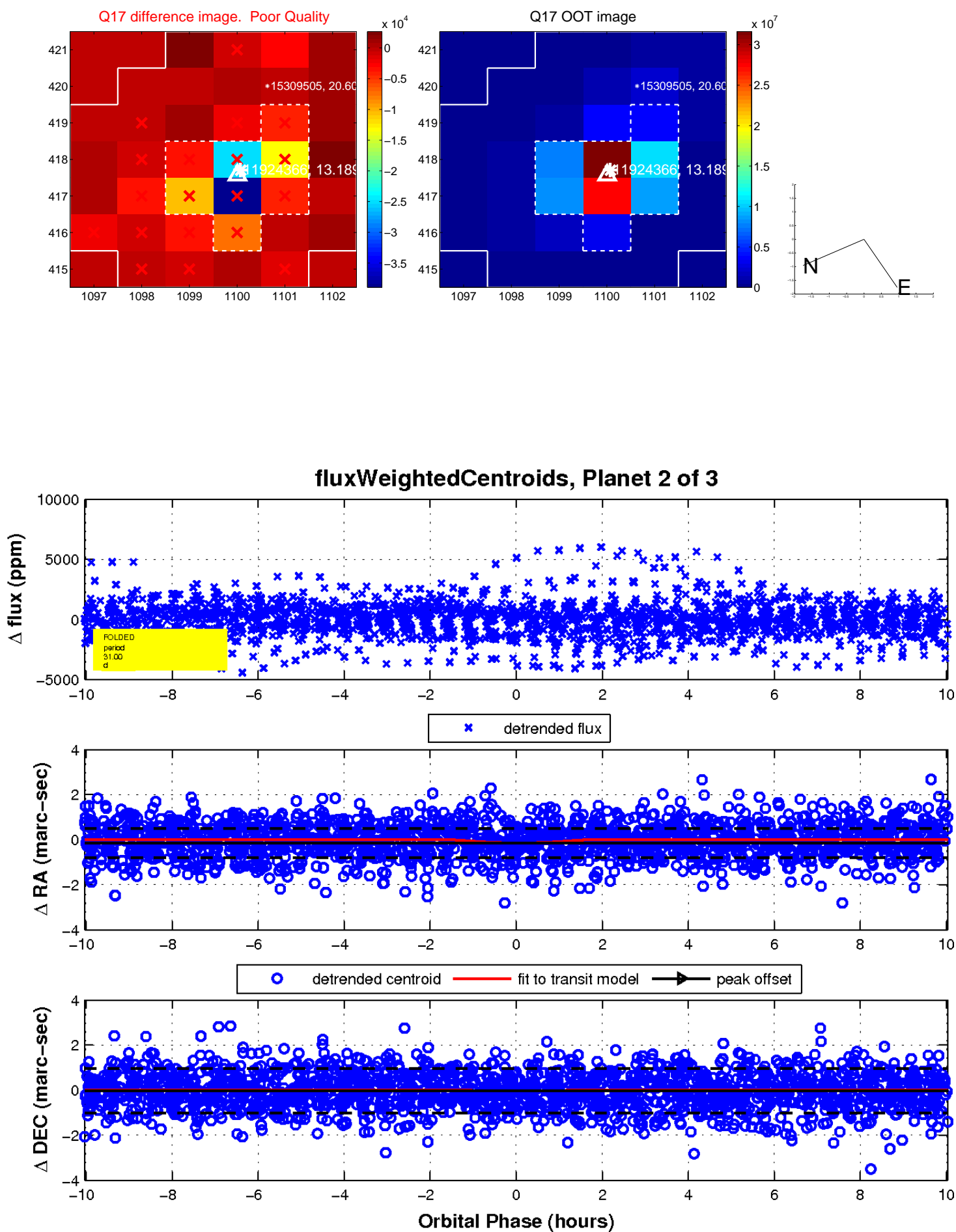




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UKIRT Image

Declination

