

# KIC 004741126

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004741126-01	OBS	1534.01	20.422238	146.985022	186.8	6.597	26.8	27.7	1.30	6119	2.14	89.93
004741126-02	OBS	1534.02	7.638480	138.243360	69.5	4.178	13.6	14.4	1.30	6119	1.26	333.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741126-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004741126-02	OBS	PC	0.99	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.

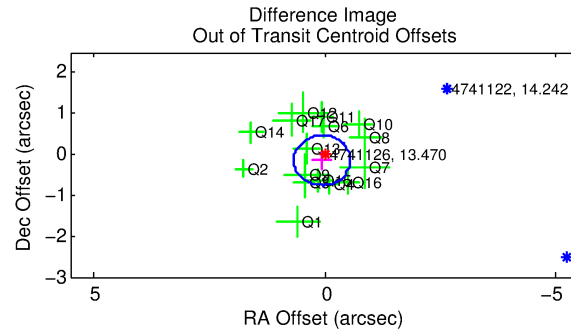
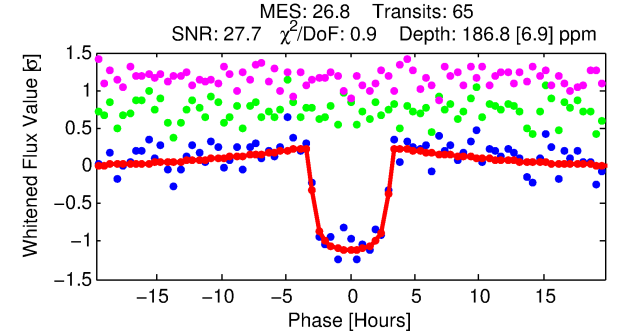
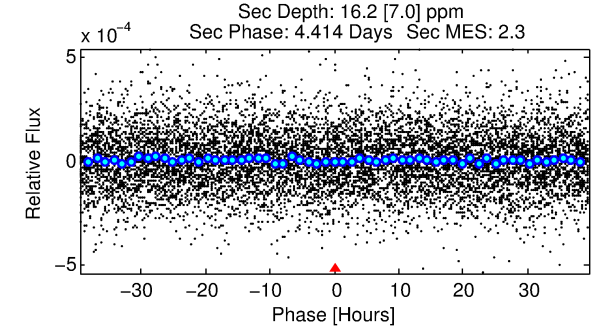
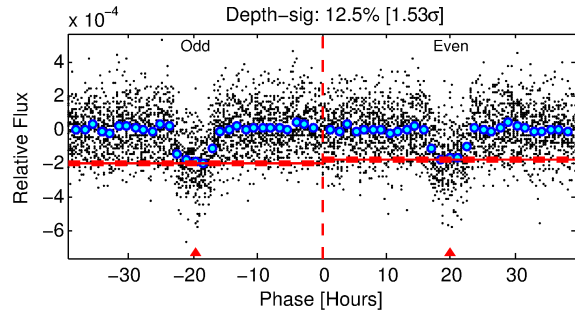
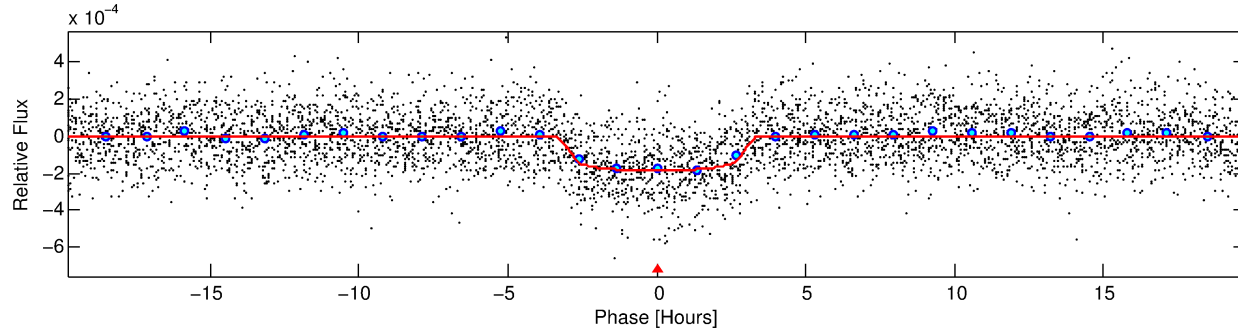
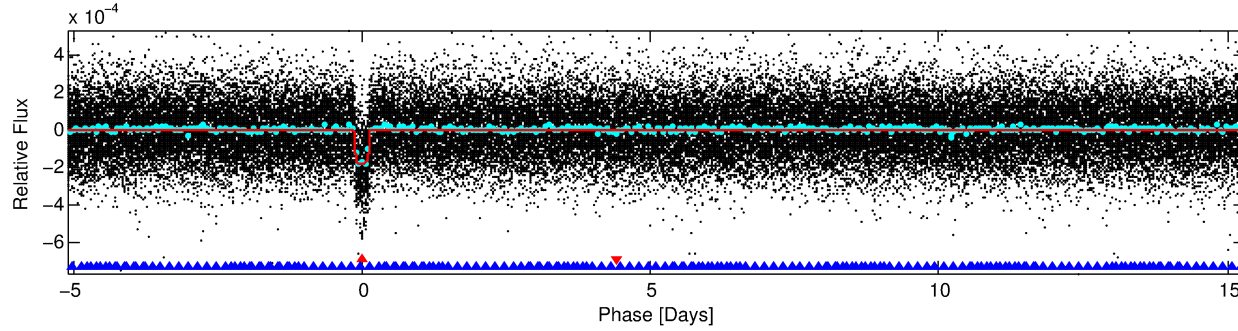
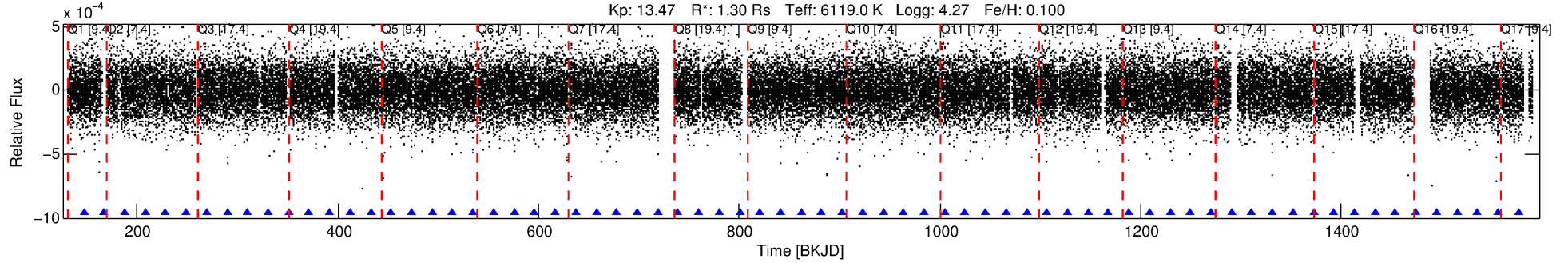
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004741126-01

No Significant Match Found

# DV One-Page Summary

KIC: 4741126 Candidate: 1 of 2 Period: 20.422 d  
KOI: K01534.01 Corr: 0.969



## DV Fit Results:

Period = 20.42224 [0.00011] d  
Epoch = 146.9850 [0.0042] BKJD  
Rp/R\* = 0.0151 [0.0008]  
a/R\* = 10.04 [2.68]  
b = 0.92 [0.04]  
Seff = 89.93 [20.56]  
Teff = 785 [45] K  
Rp = 2.14 [0.39] Re  
a = 0.1535 [0.0223] AU  
Ag = 45.85 [22.70] [1.98 $\sigma$ ]  
Teffp = 3159 [361] K [6.53 $\sigma$ ]

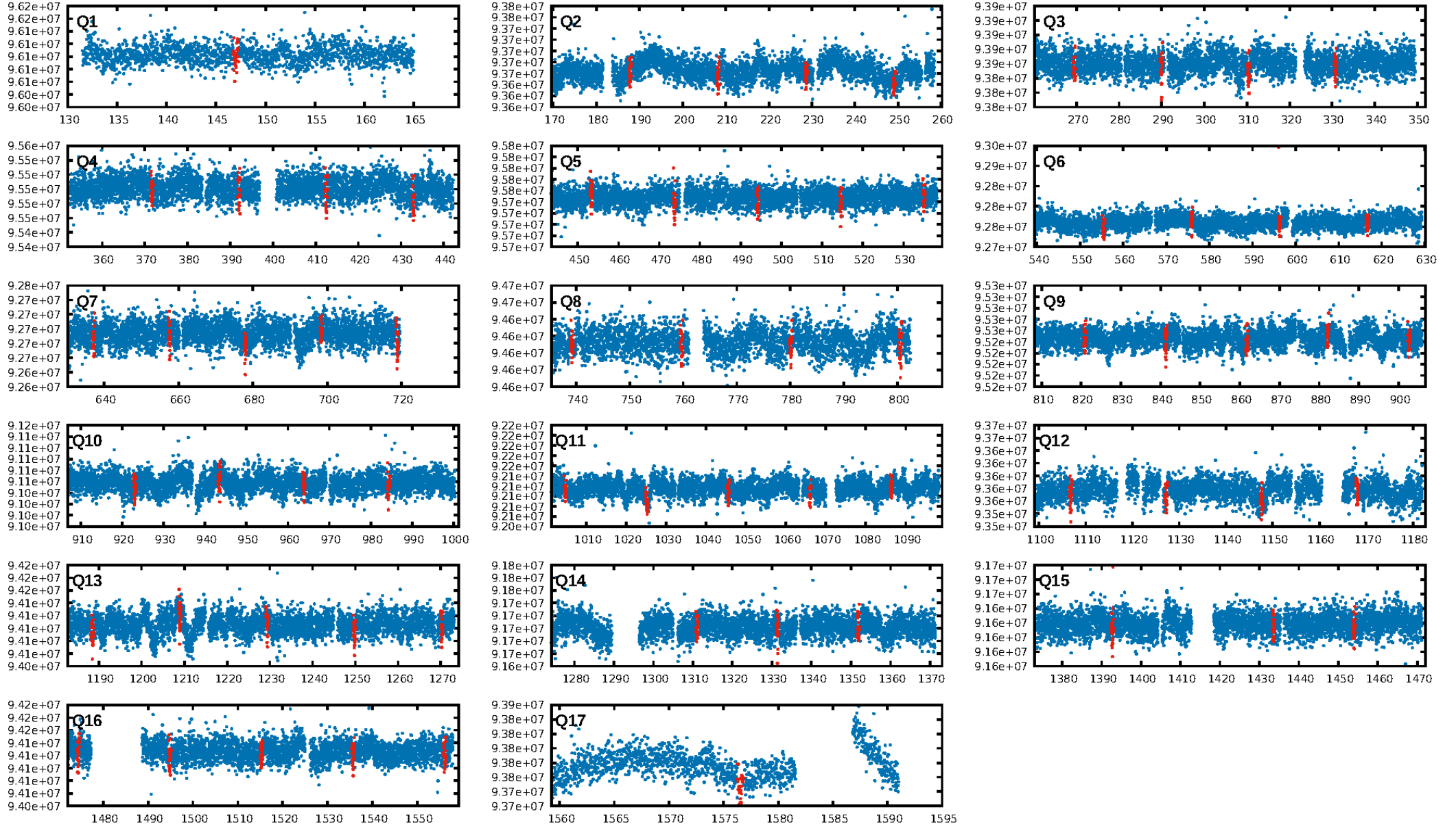
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.29 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 86.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.69e-149  
RollingBand-fgt: 1.00 [63/63]  
GhostDiagnostic-chr: 7.749  
Centroid-sig: 78.3%  
Centroid-so: 0.239 arcsec [0.65 $\sigma$ ]  
OotOffset-rm: 0.155 arcsec [0.76 $\sigma$ ]  
KicOffset-rm: 0.287 arcsec [1.42 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

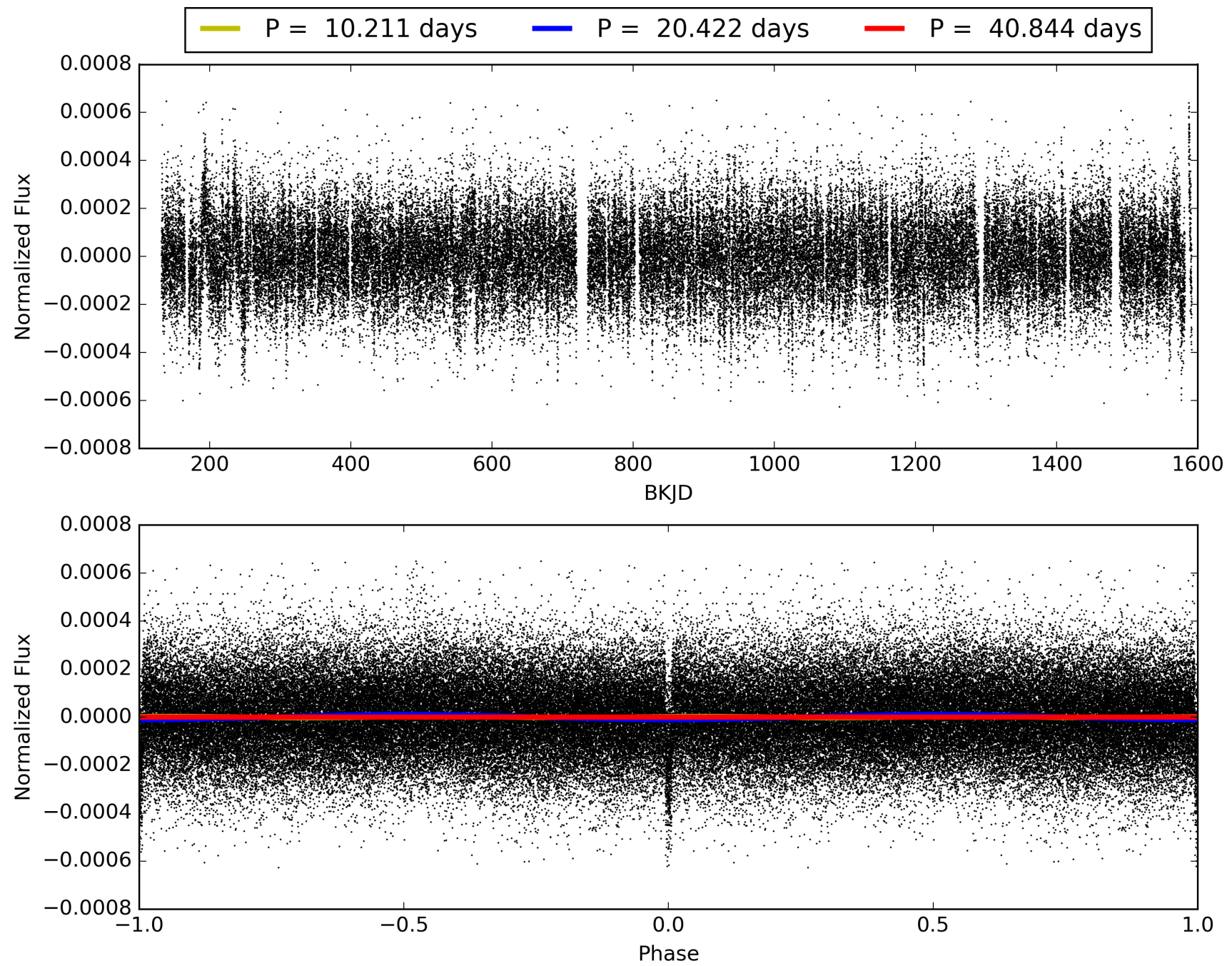
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:01 Z

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

# TCE 004741126-01, PDC Light Curves

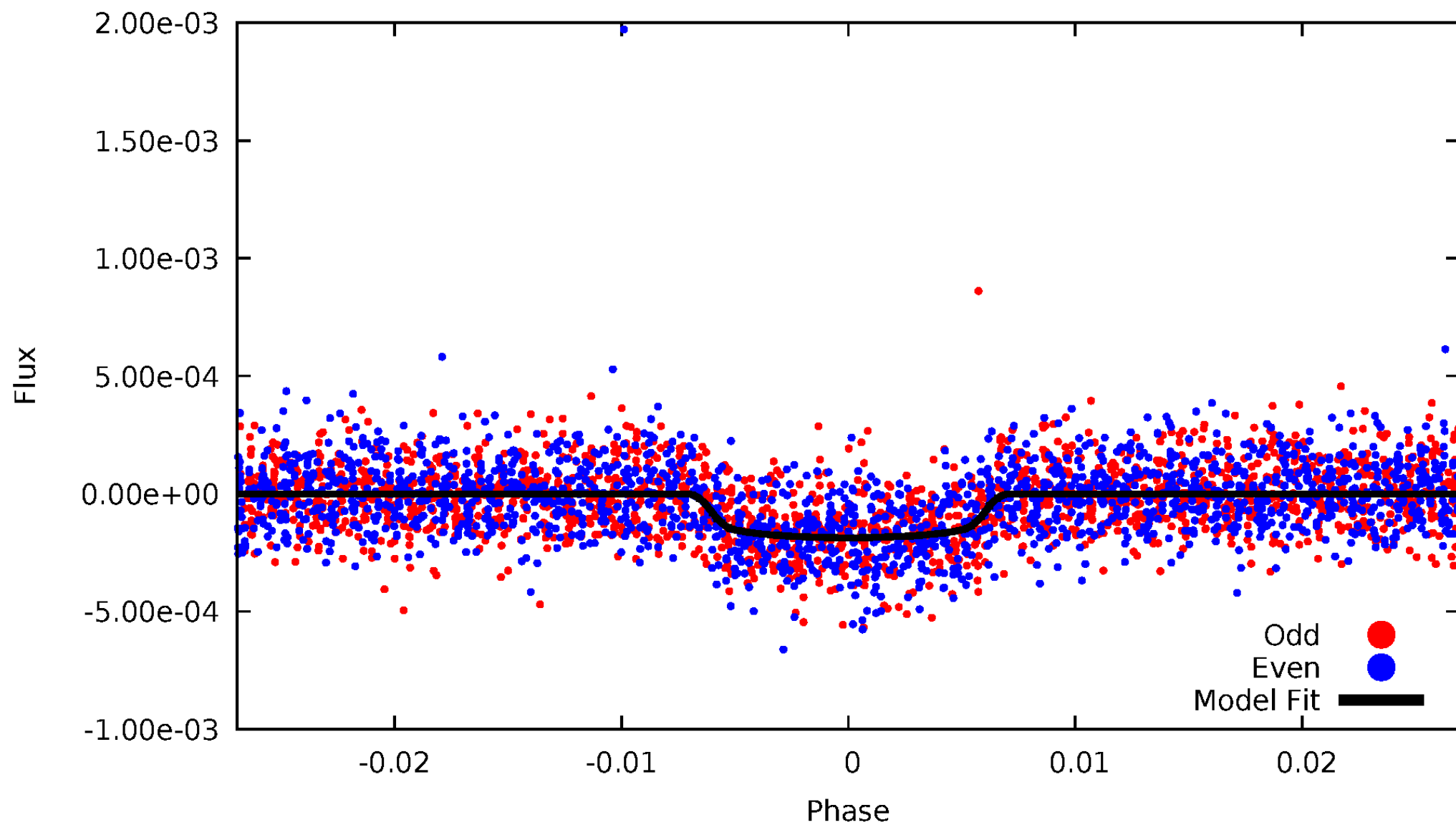


TCE 004741126-01



# DV Odd/Even

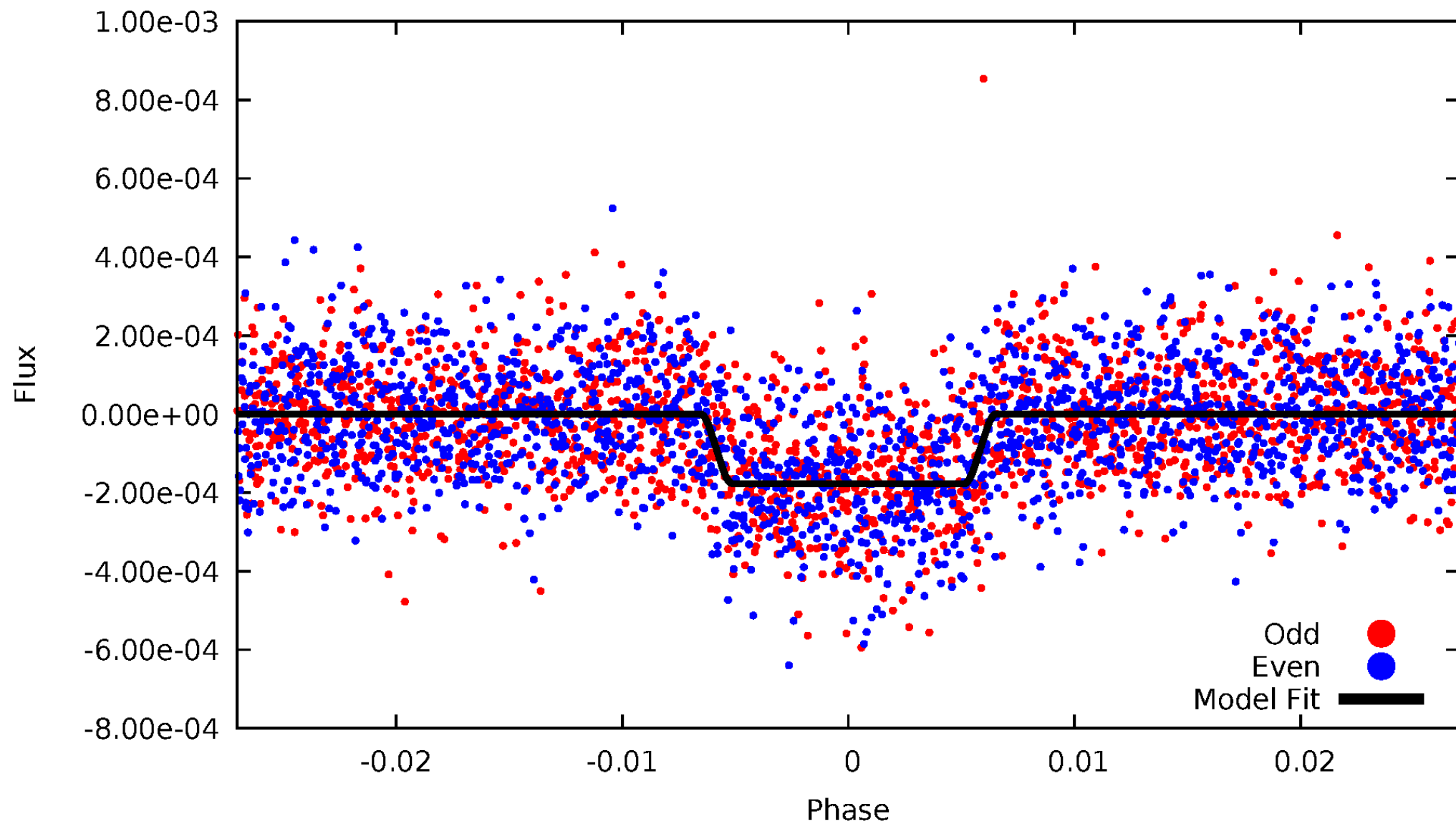
TCE 004741126-01





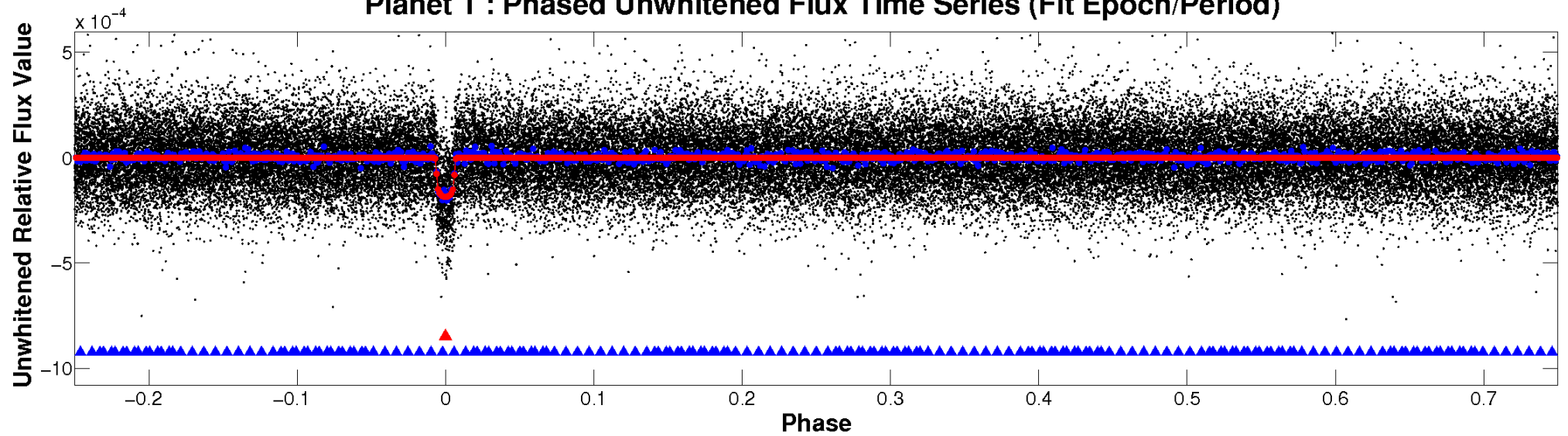
# ALT Odd/Even

TCE 004741126-01

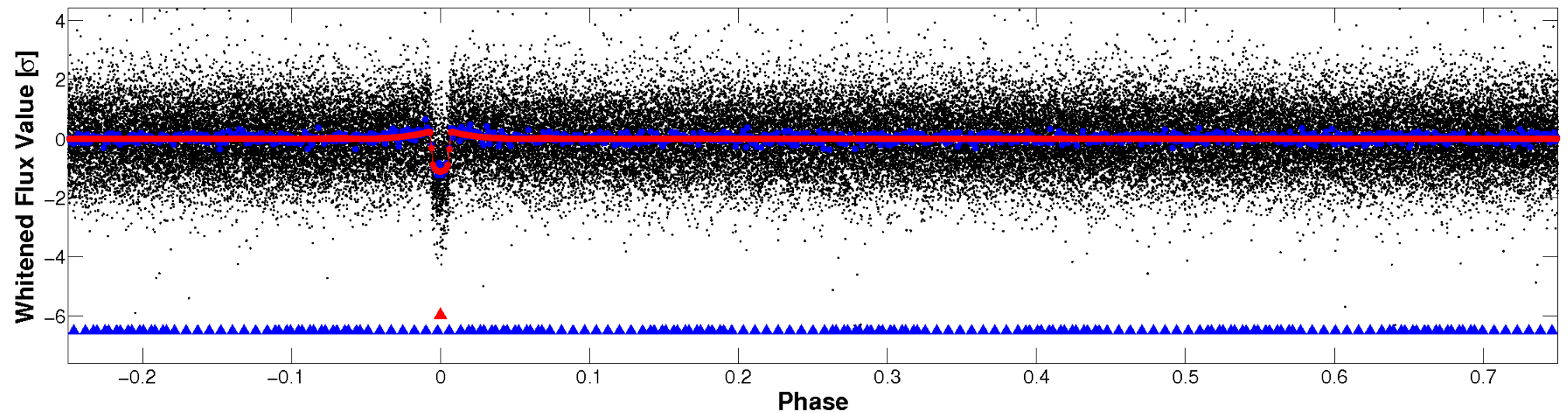


# Non-Whitened Vs. Whitened Light Curve

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

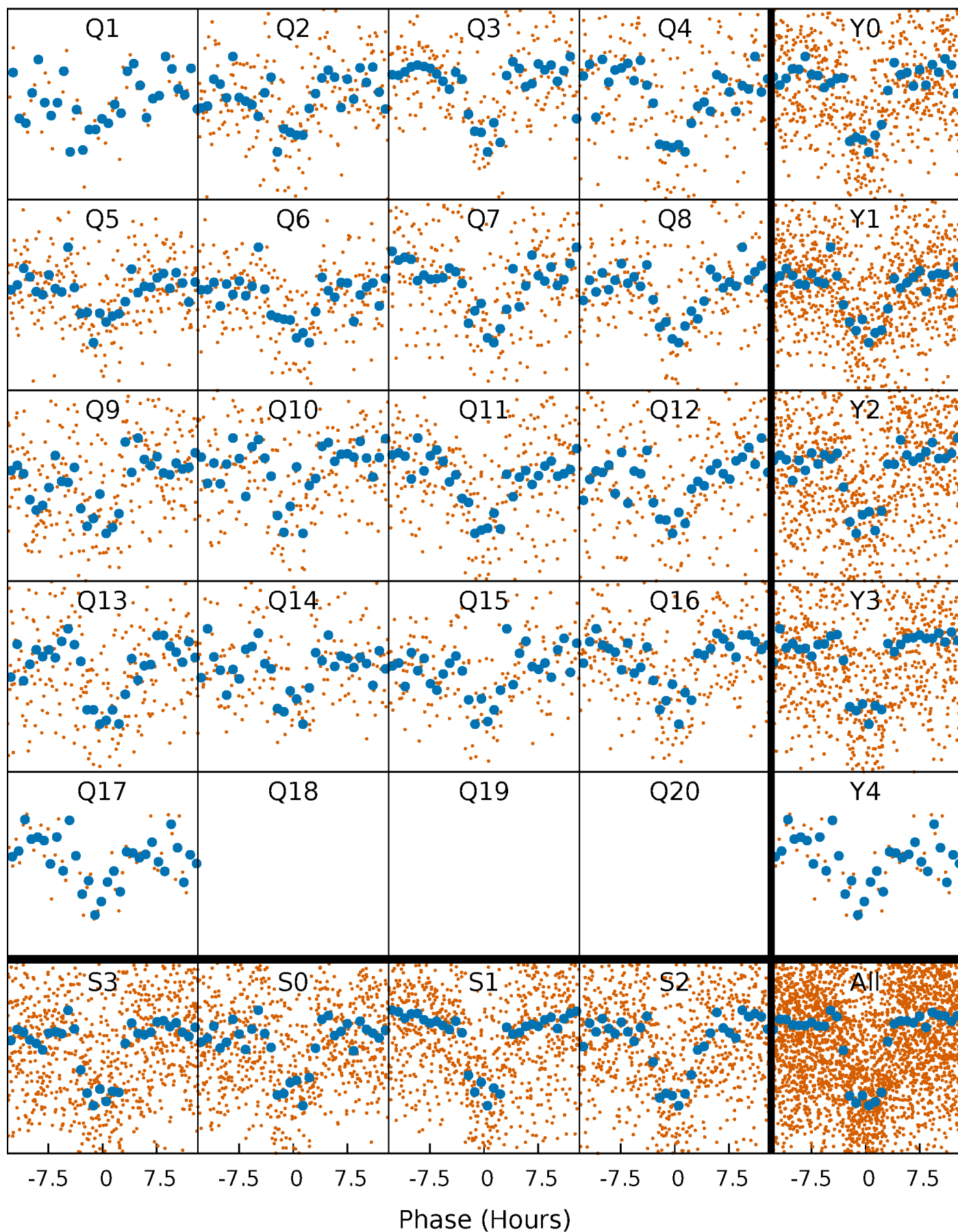


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

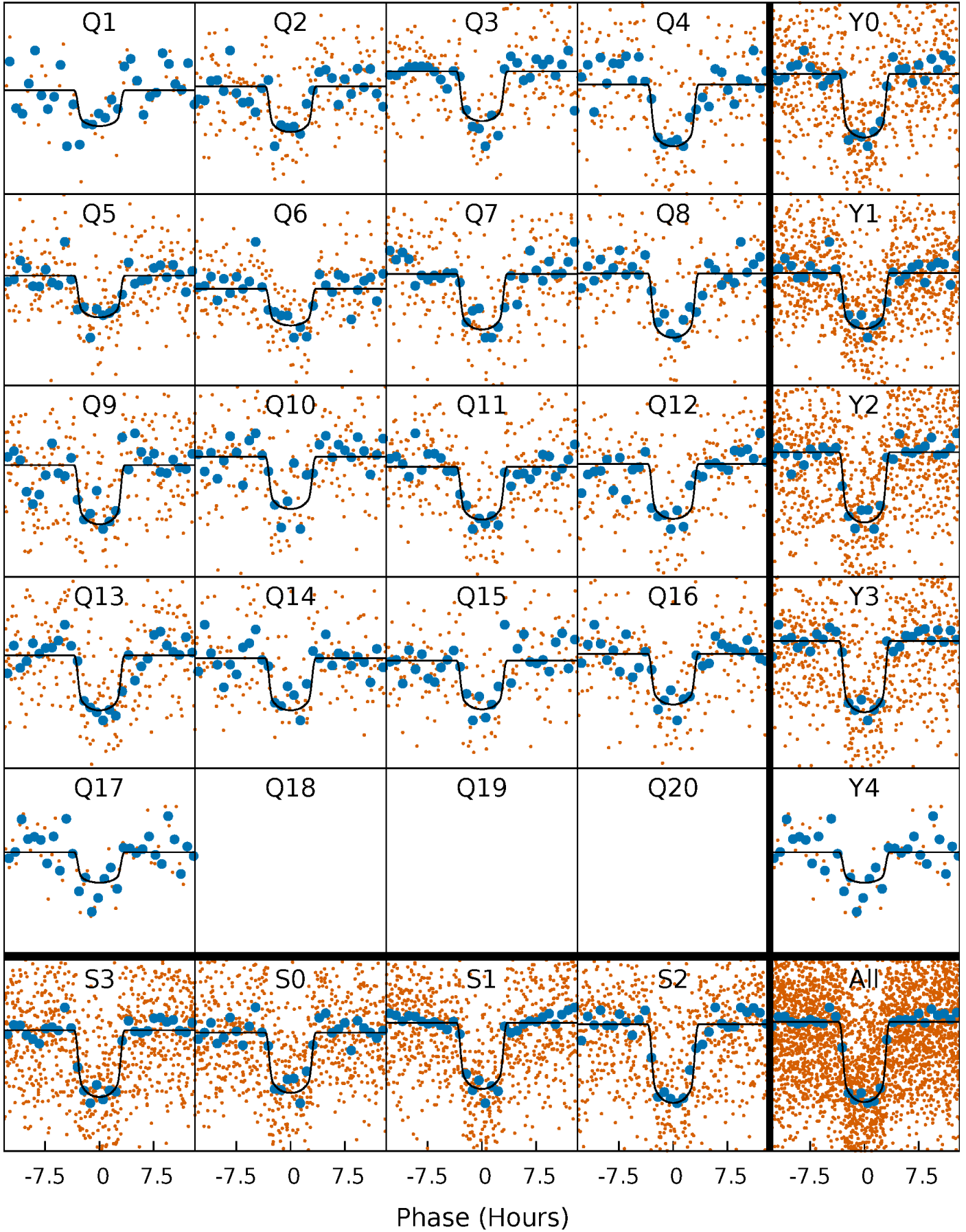
TCE 004741126-01 P= 20.422238 Days  $T_0=146.985022$  (BKJD)





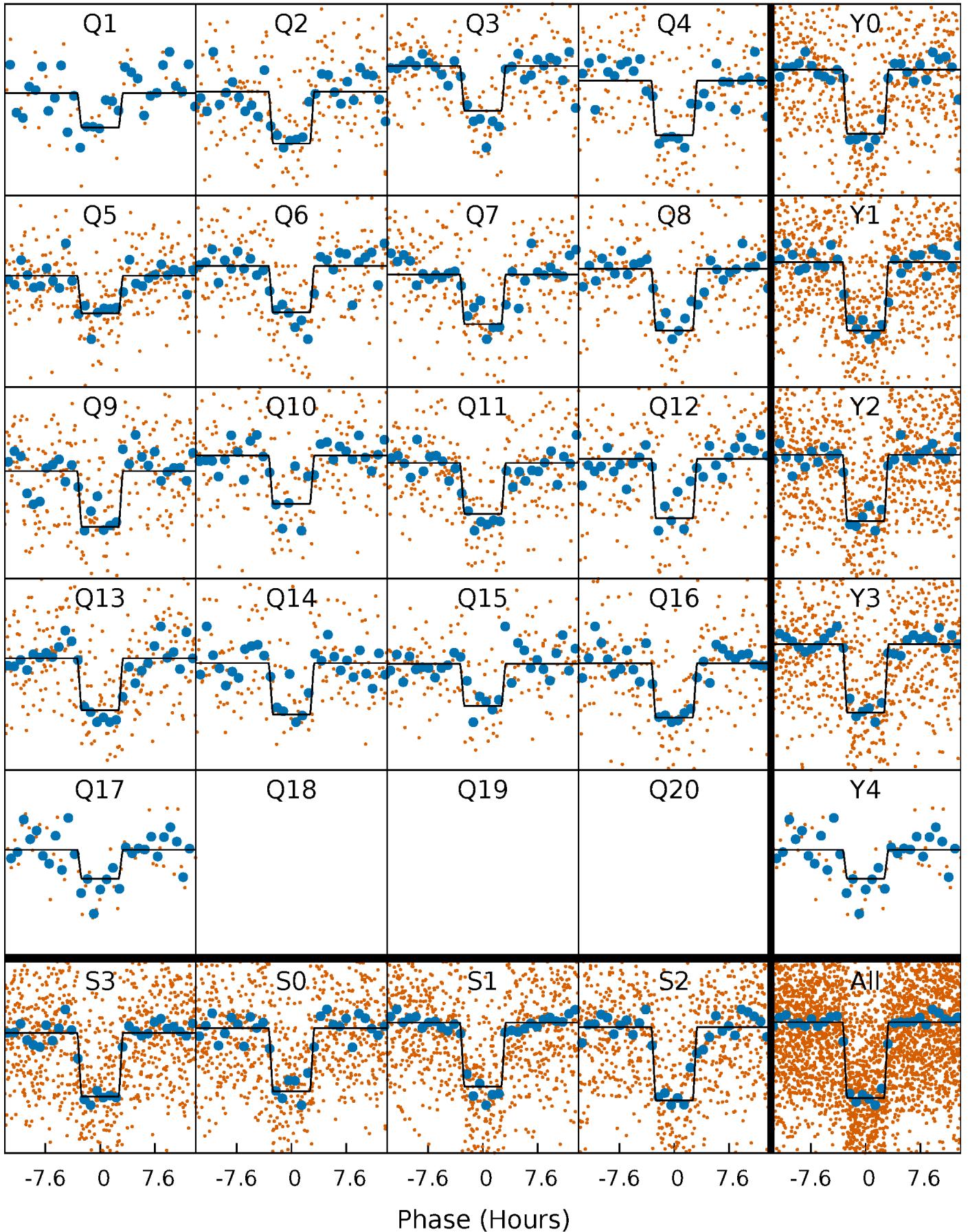
# DV Quarter-Phased Transit Curves

TCE 004741126-01 P= 20.422238 Days  $T_0=146.985022$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

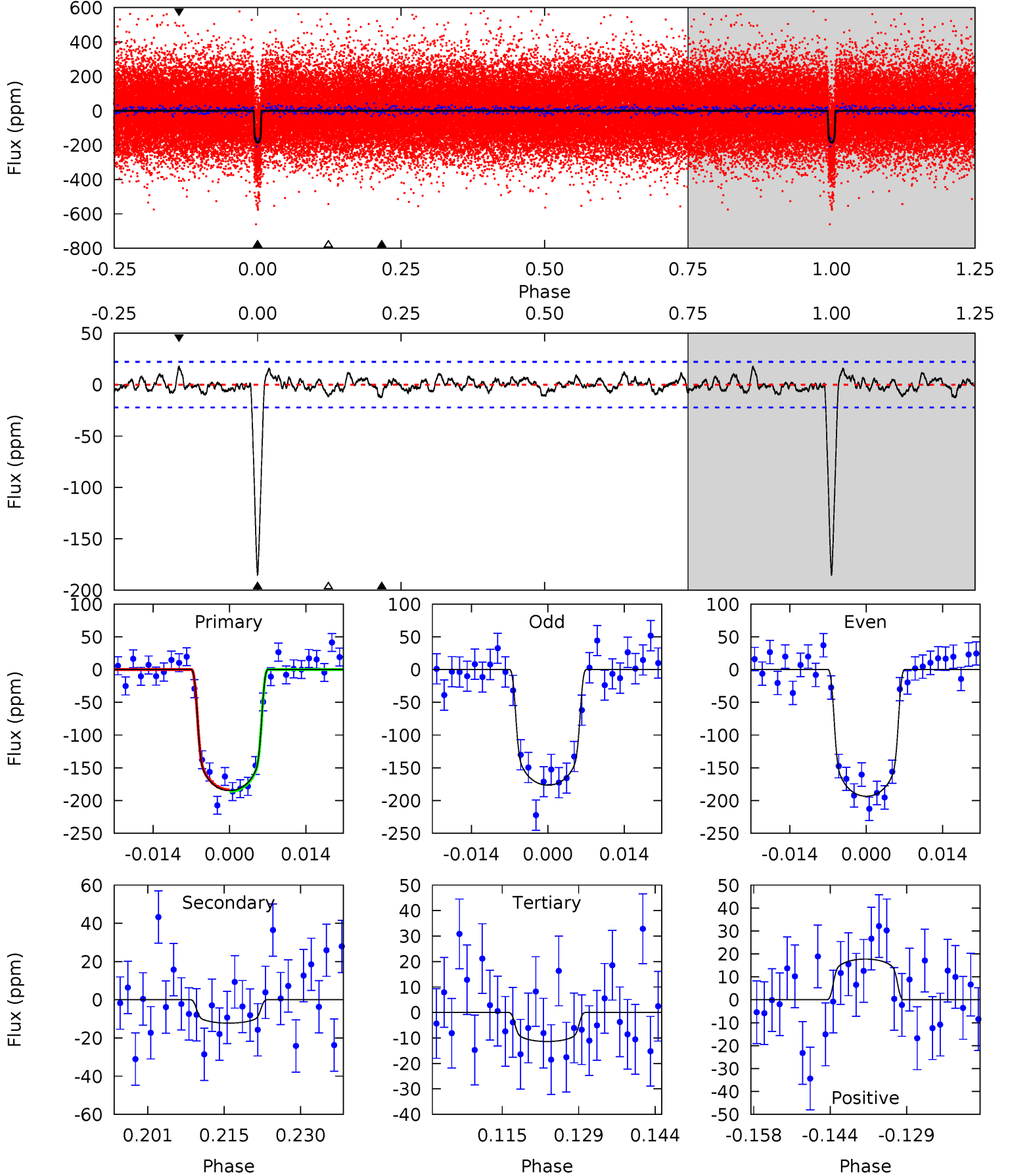
TCE 004741126-01 P= 20.422107 Days  $T_0=146.988011$  (BKJD)



# DV Model-Shift Uniqueness Test

004741126-01, P = 20.422238 Days, E = 126.562784 Days

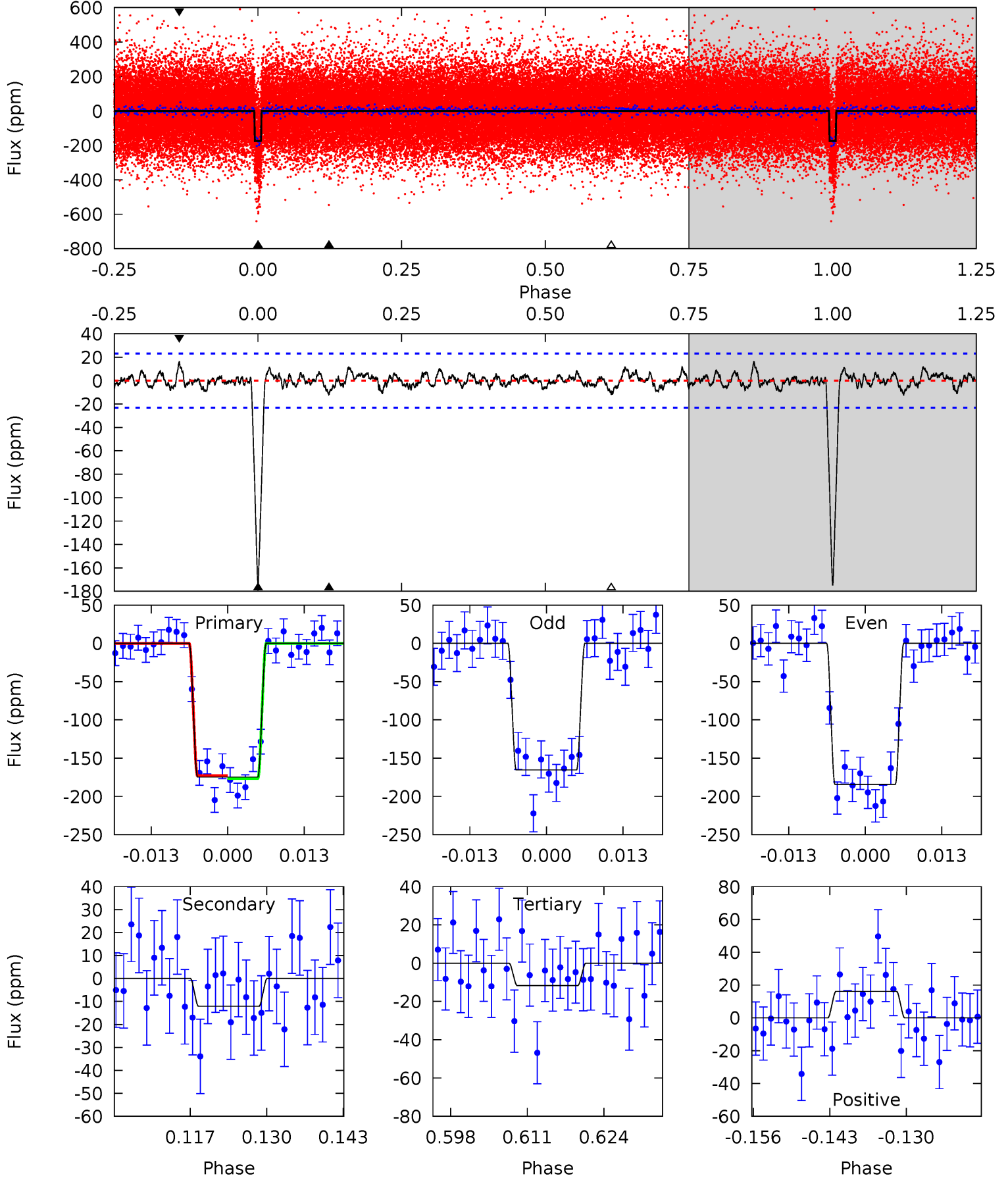
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.3	2.74	2.55	3.97	4.96	2.45	1.09	38.8	37.4	0.19	-1.23	1.90	1.02	0.09	0.28



# Alt Model-Shift Uniqueness Test

004741126-01, P = 20.422107 Days, E = 126.565904 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
37.5	2.60	2.52	3.47	4.98	2.48	0.92	35.0	34.0	0.08	-0.88	2.02	1.02	0.08	0.40



### Stellar Parameters For KIC 004741126

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6119^{+110}_{-135}$	$4.274^{+0.115}_{-0.115}$	$0.100^{+0.150}_{-0.150}$	$1.299^{+0.225}_{-0.184}$	$1.157^{+0.093}_{-0.102}$	$0.744^{+0.393}_{-0.257}$
	+2%/-2%	+3%/-3%	+150%/-150%	+17%/-14%	+8%/-9%	+53%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 004741126-01 / KOI 1534.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-12 \pm 4$	$2.15^{+0.23}_{-0.22}$	$1094^{+55}_{-51}$	$3433^{+192}_{-253}$	$34^{+15}_{-14}$
Alt.	$-12 \pm 5$	$1.87^{+0.25}_{-0.19}$	$1096^{+53}_{-53}$	$3557^{+231}_{-268}$	$42^{+21}_{-16}$

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



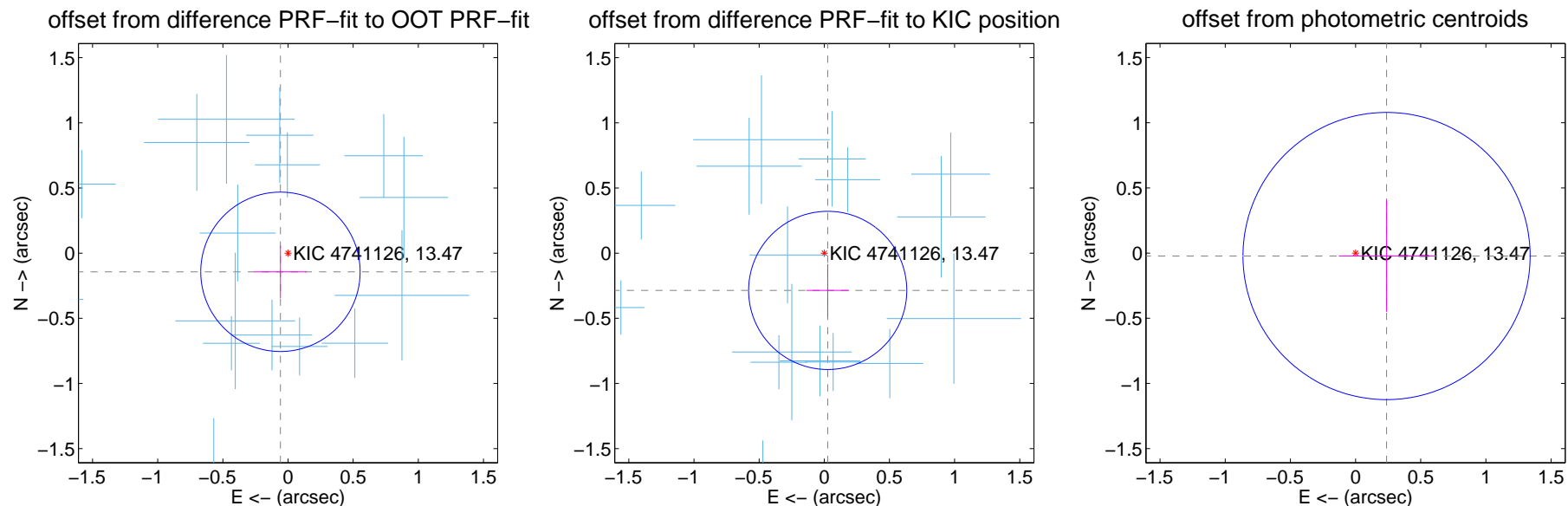
## DV Centroid Data

Supplemental centroid analysis for 004741126-01. Kepler magnitude: 13.47. Transit SNR 27.74

There are 16 quarters with good PRF difference image offsets

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

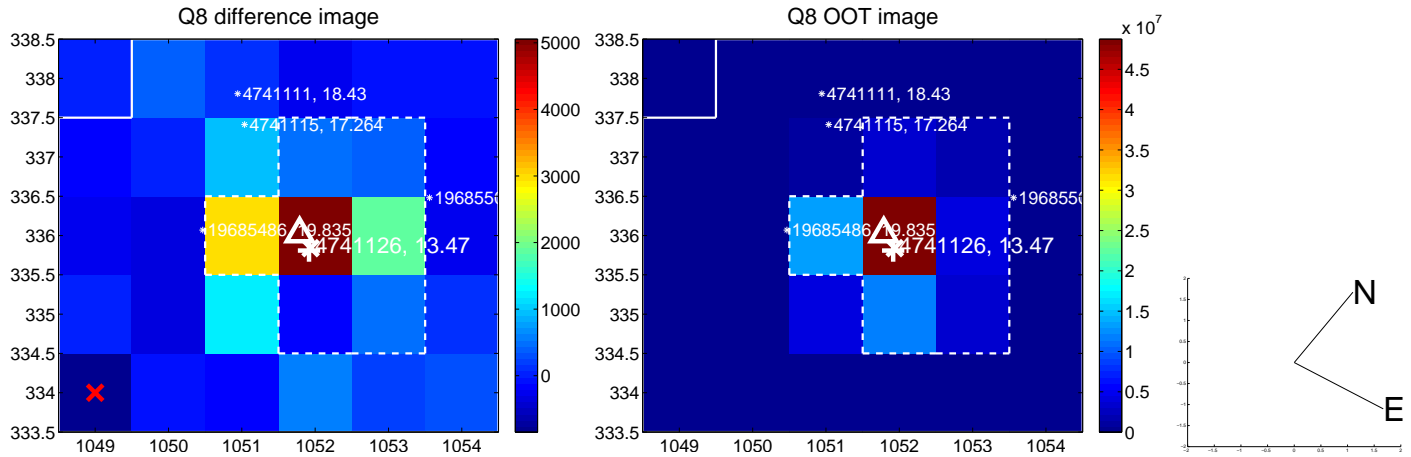
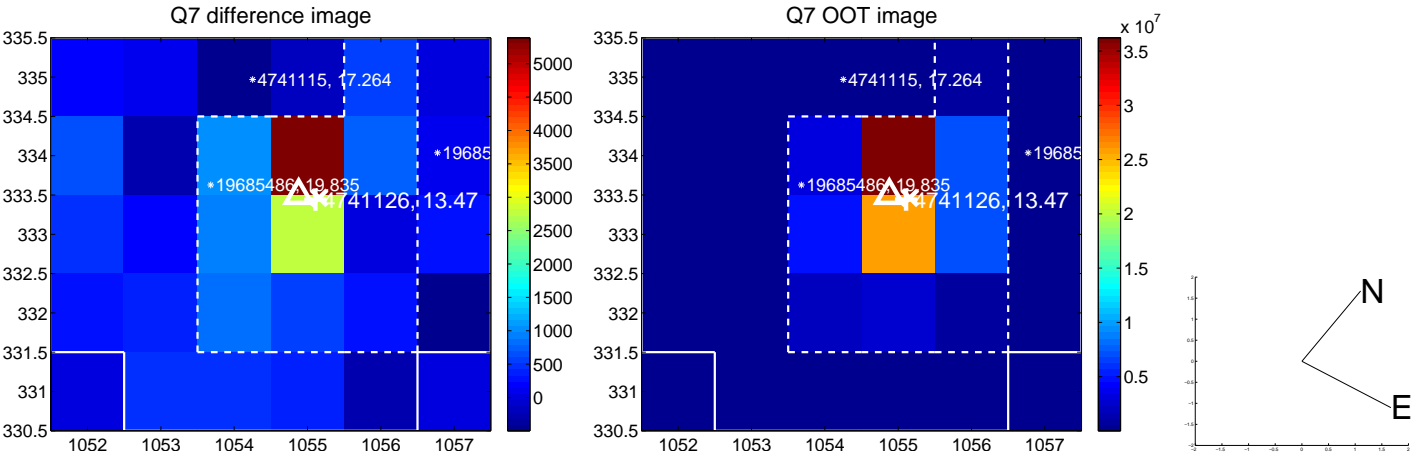
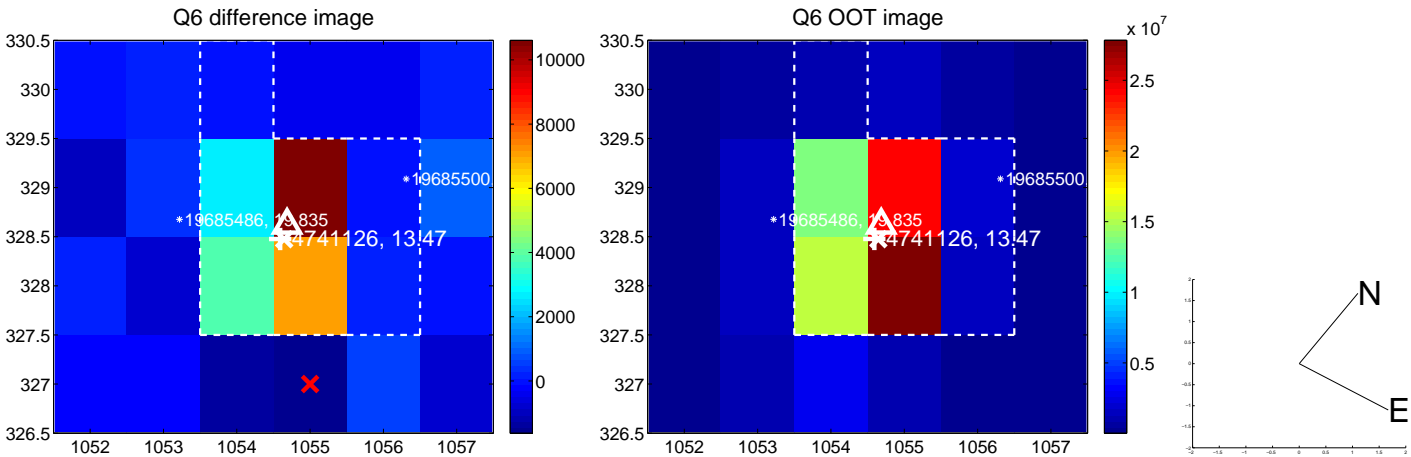
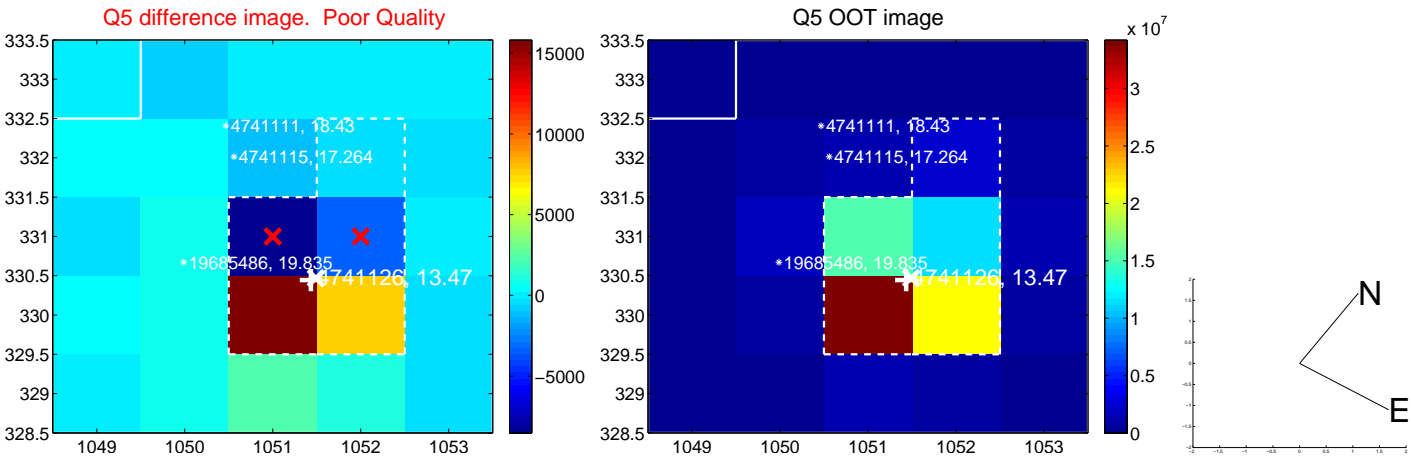
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.155 \pm 0.204$	0.76	$0.058 \pm 0.201$	$-0.143 \pm 0.201$
PRF-fit source offset from KIC position	$0.287 \pm 0.202$	1.42	$-0.026 \pm 0.164$	$-0.286 \pm 0.203$
photometric centroid source offset	$0.24 \pm 0.37$	0.65	$-0.24 \pm 0.37$	$-0.02 \pm 0.43$



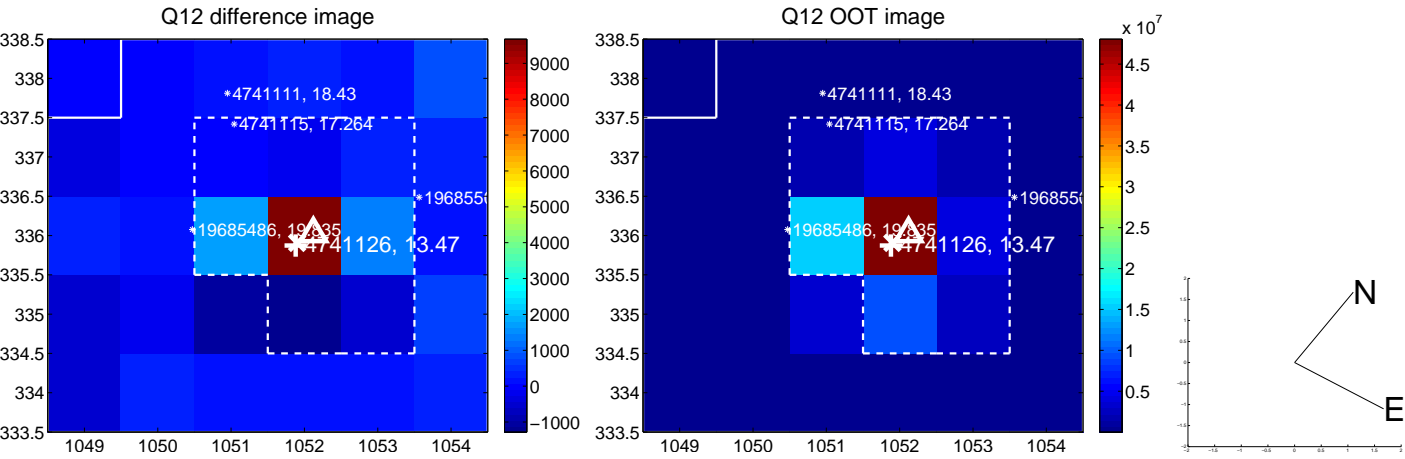
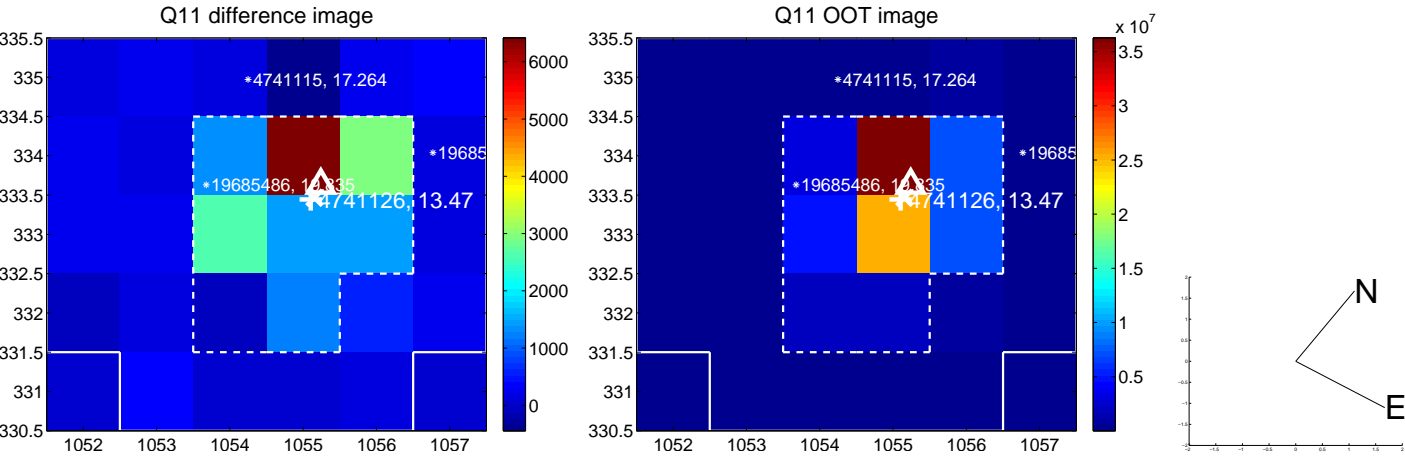
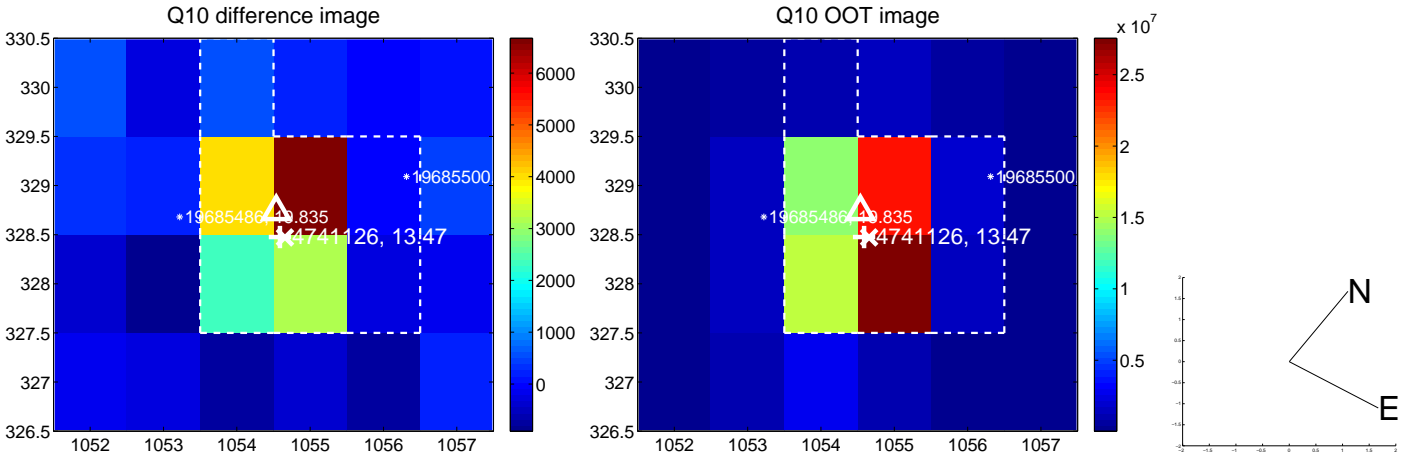
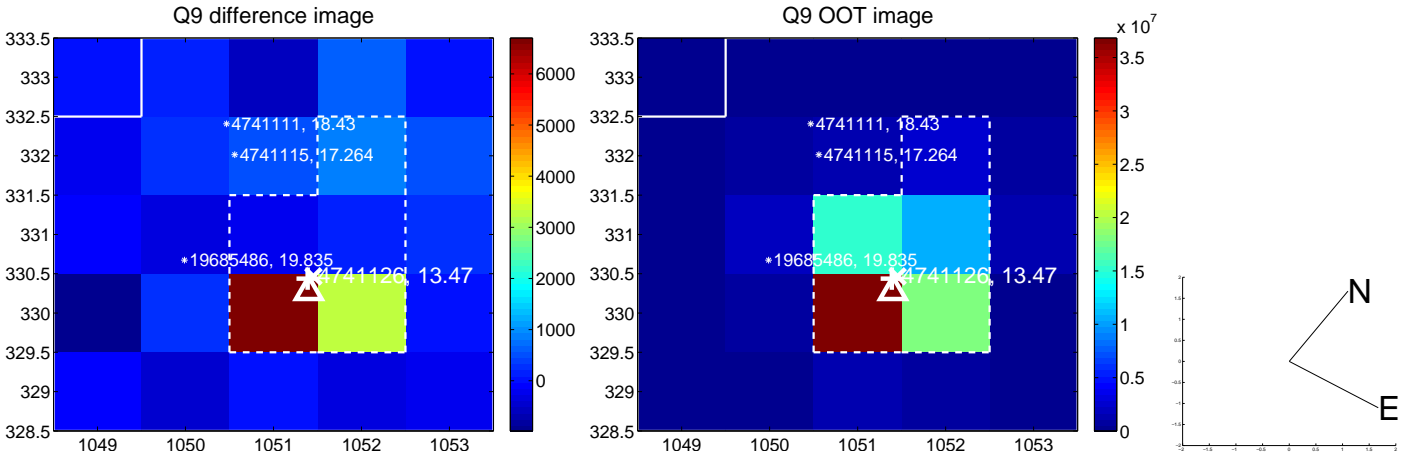
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



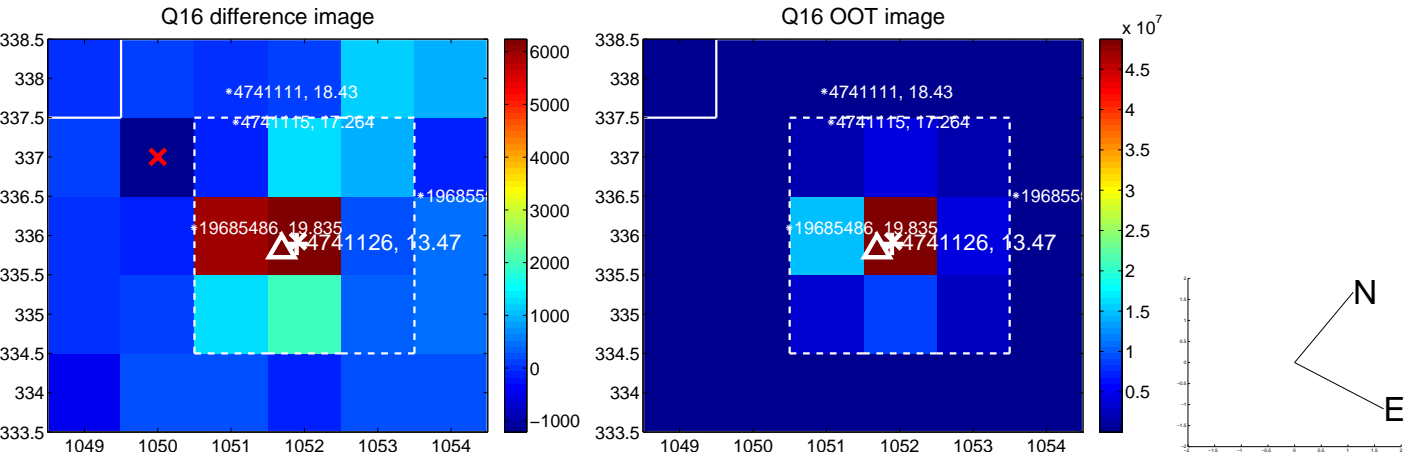
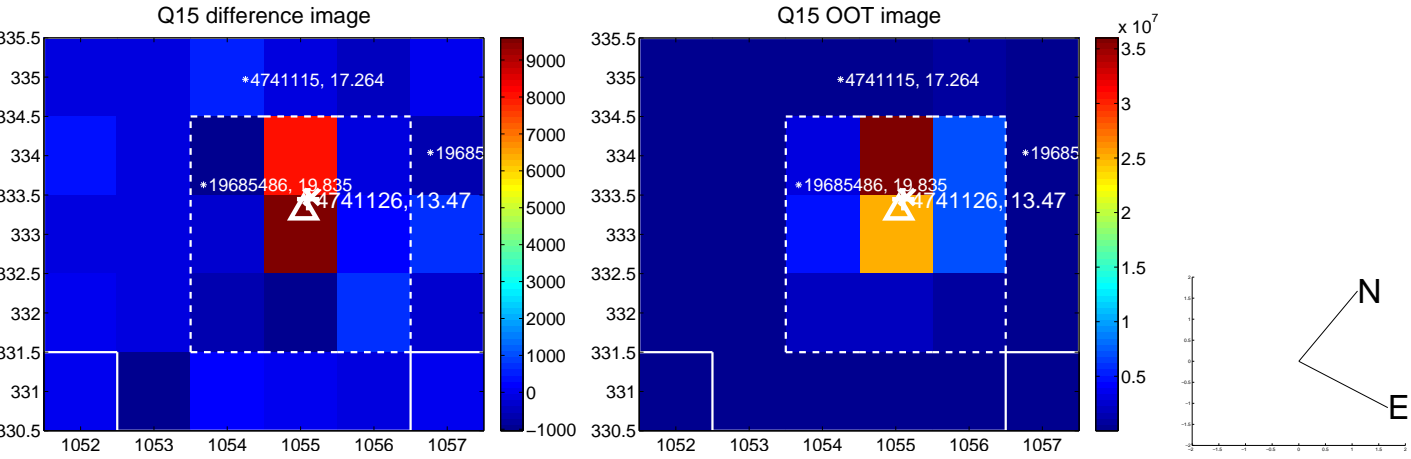
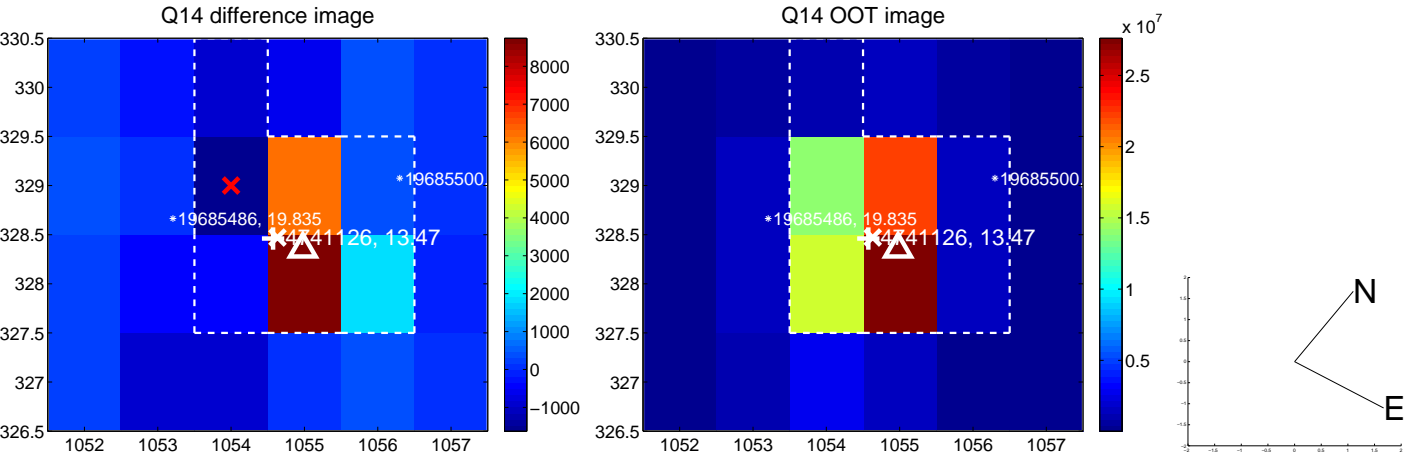
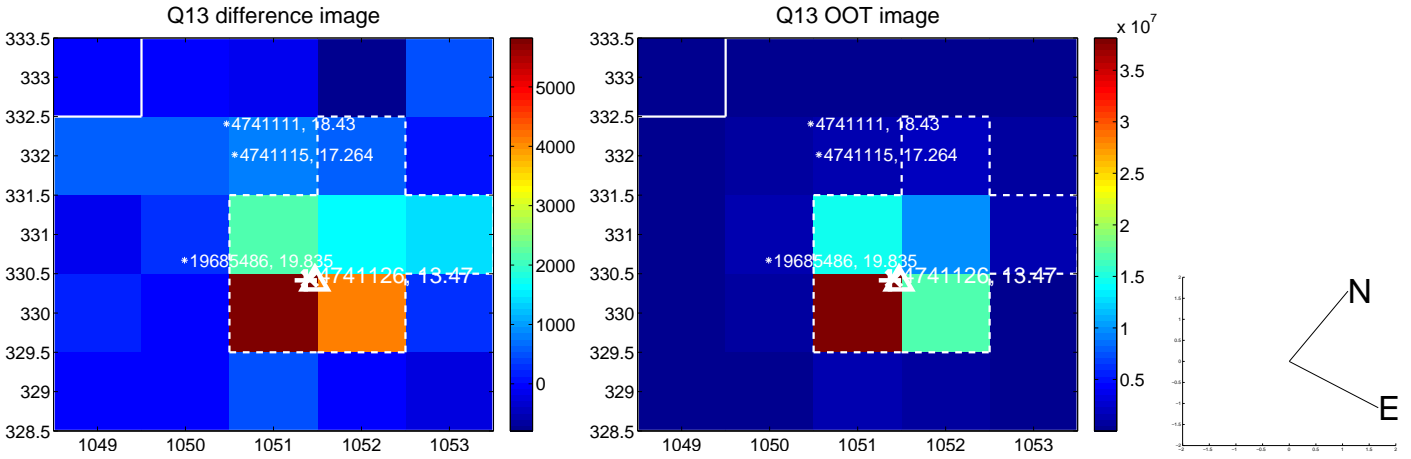
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

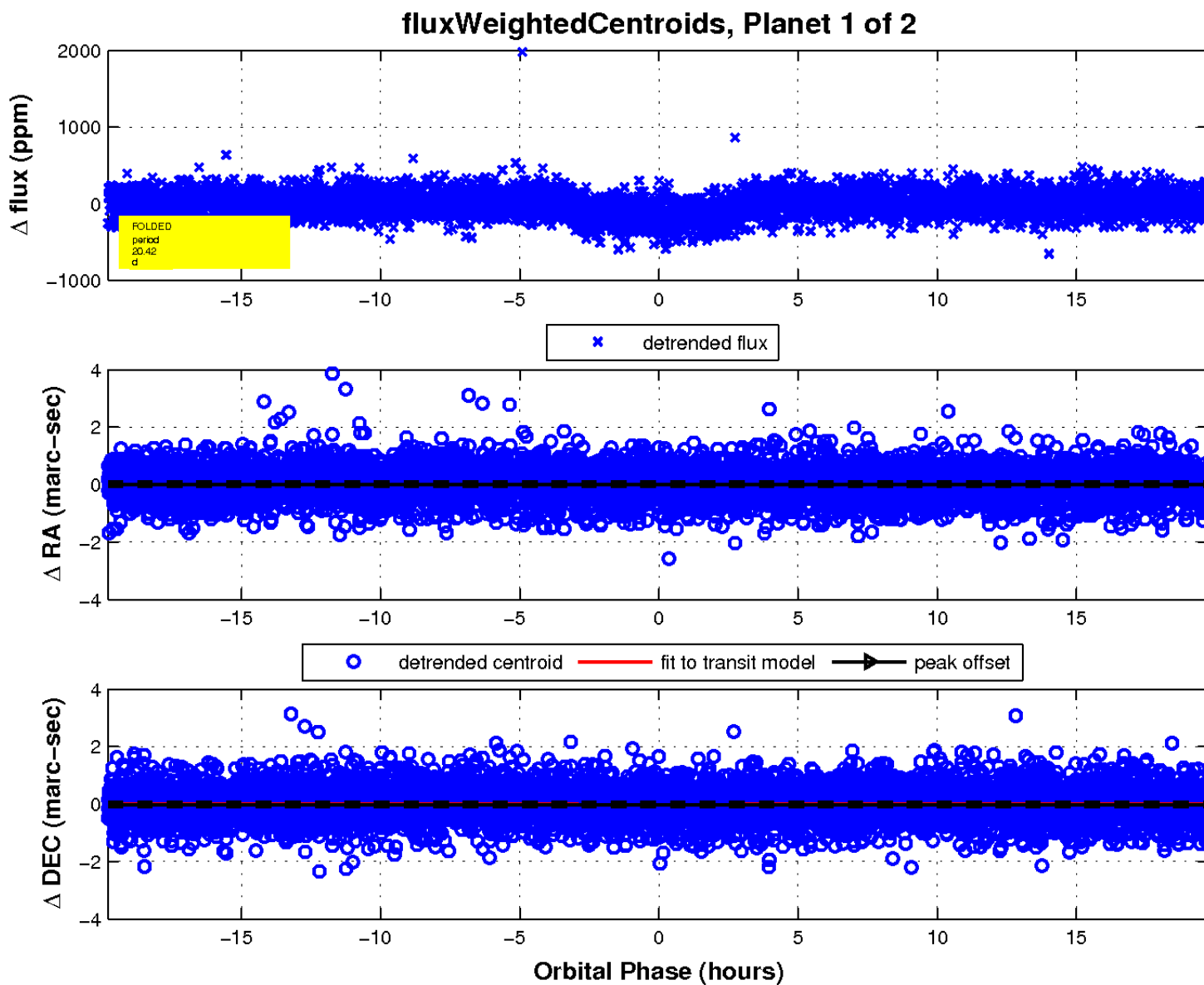
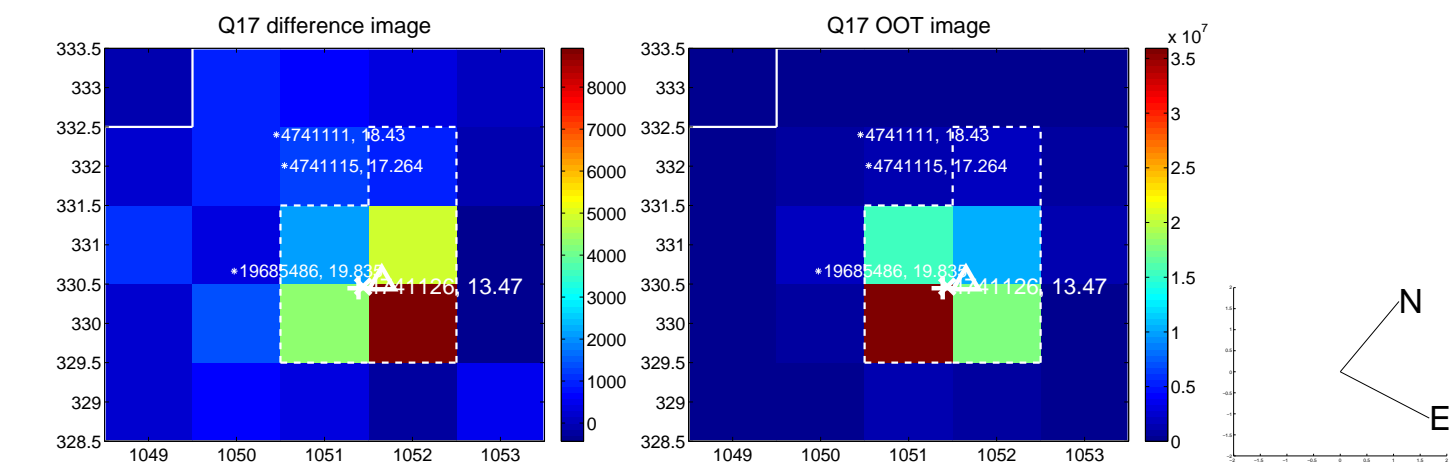


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



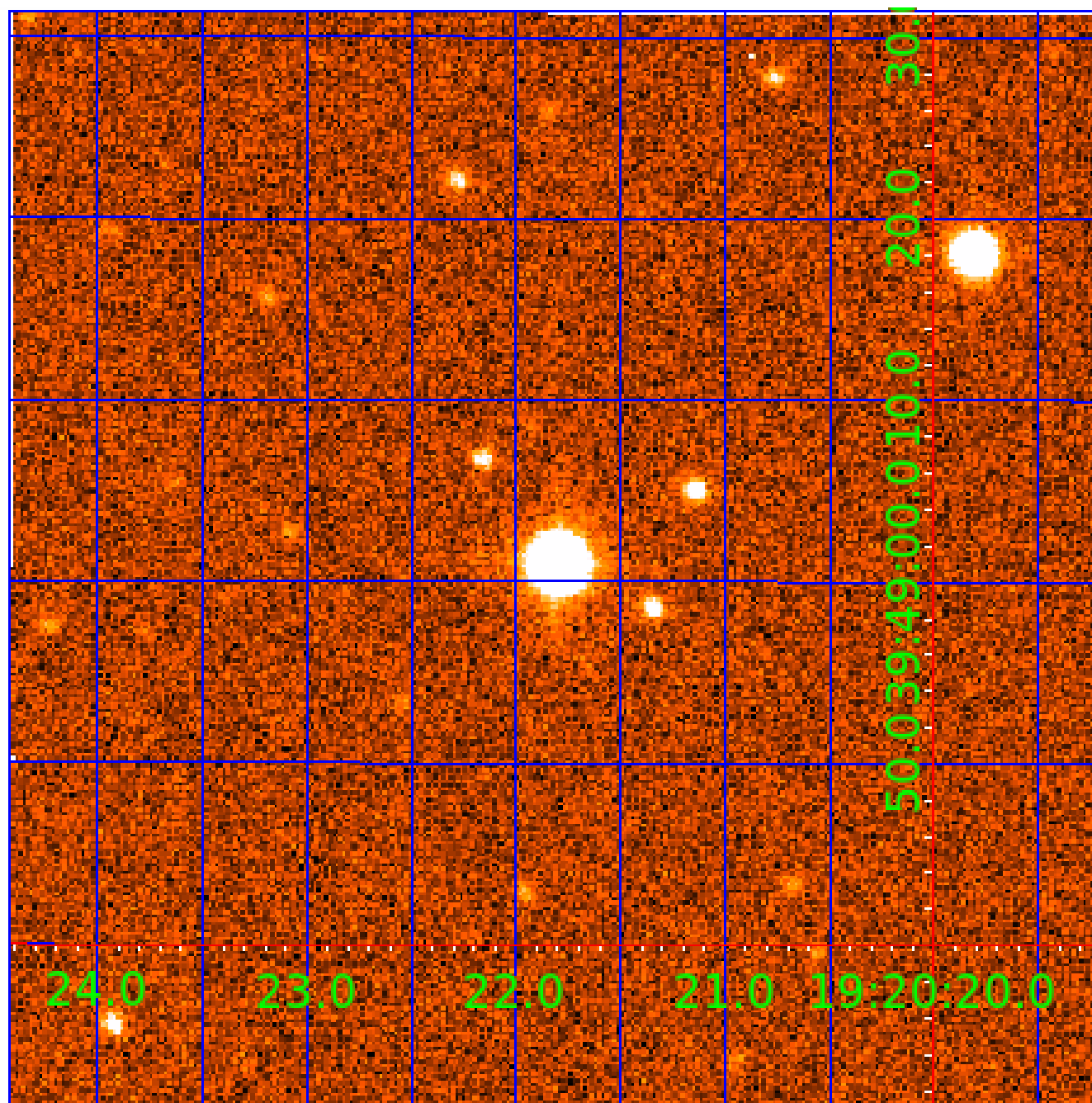


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004741126

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004741126-01	OBS	1534.01	20.422238	146.985022	186.8	6.597	26.8	27.7	1.30	6119	2.14	89.93
004741126-02	OBS	1534.02	7.638480	138.243360	69.5	4.178	13.6	14.4	1.30	6119	1.26	333.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741126-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004741126-02	OBS	PC	0.99	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.

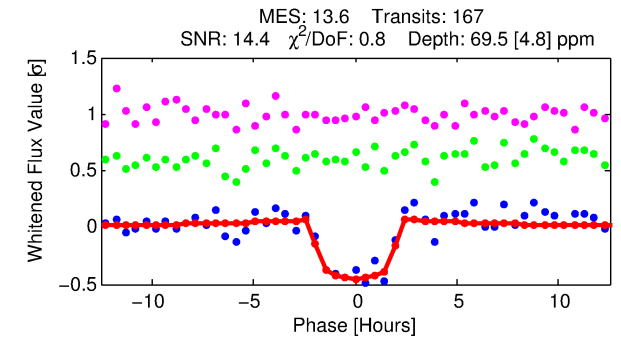
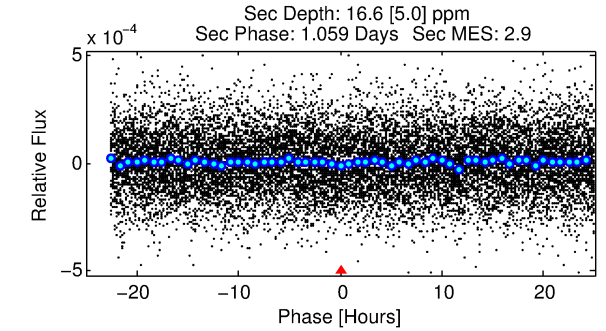
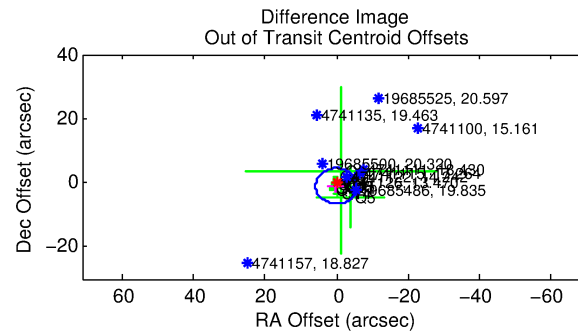
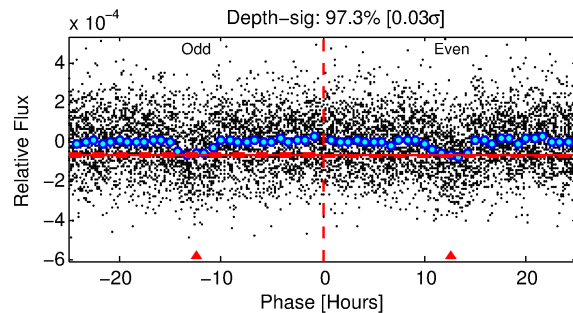
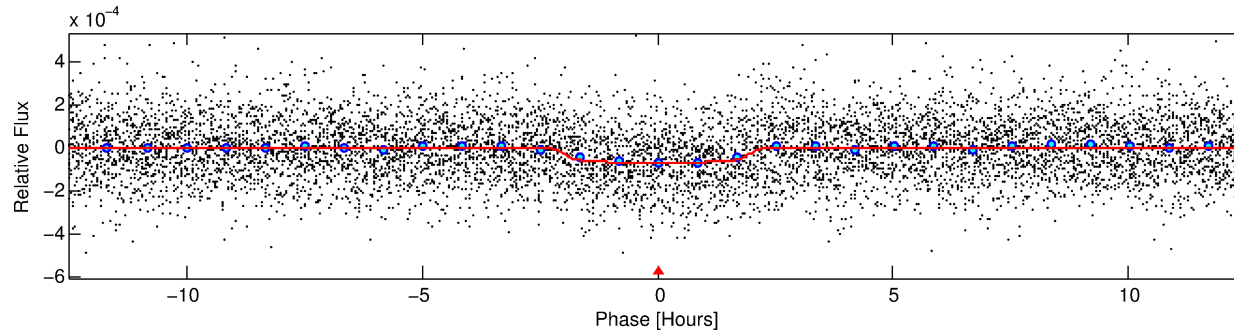
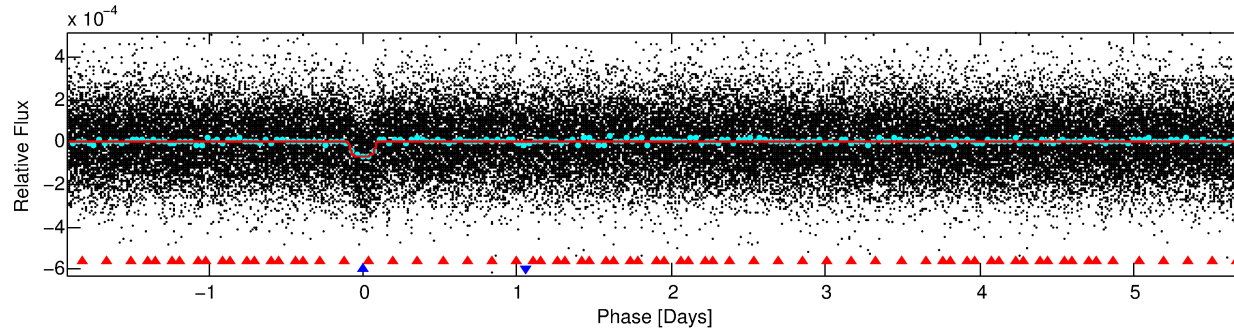
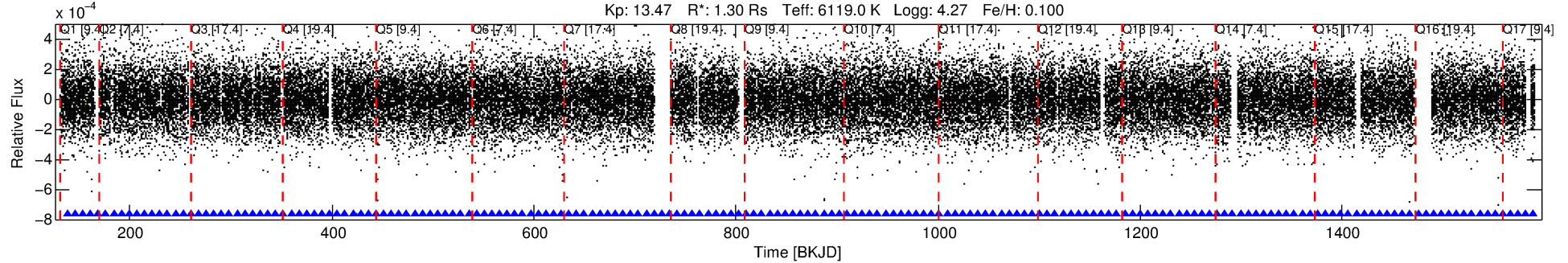
## Ephemeris Match Information For 004741126-02

No Significant Match Found

# DV One-Page Summary

KIC: 4741126 Candidate: 2 of 2 Period: 7.638 d  
KOI: K01534.02 Corr: 0.975

Kp: 13.47 R\*: 1.30 Rs Teff: 6119.0 K Logg: 4.27 Fe/H: 0.100



## DV Fit Results:

Period = 7.63848 [0.00005] d  
Epoch = 138.2434 [0.0049] BKJD  
Rp/R\* = 0.0089 [0.0031]  
a/R\* = 6.74 [11.71]  
b = 0.89 [0.43]  
Seff = 333.69 [76.30]  
Teq = 1090 [62] K  
Rp = 1.26 [0.49] Re  
a = 0.0797 [0.0116] AU  
Ag = 36.20 [28.19] [1.25σ]  
Teff = 4133 [780] K [3.89σ]

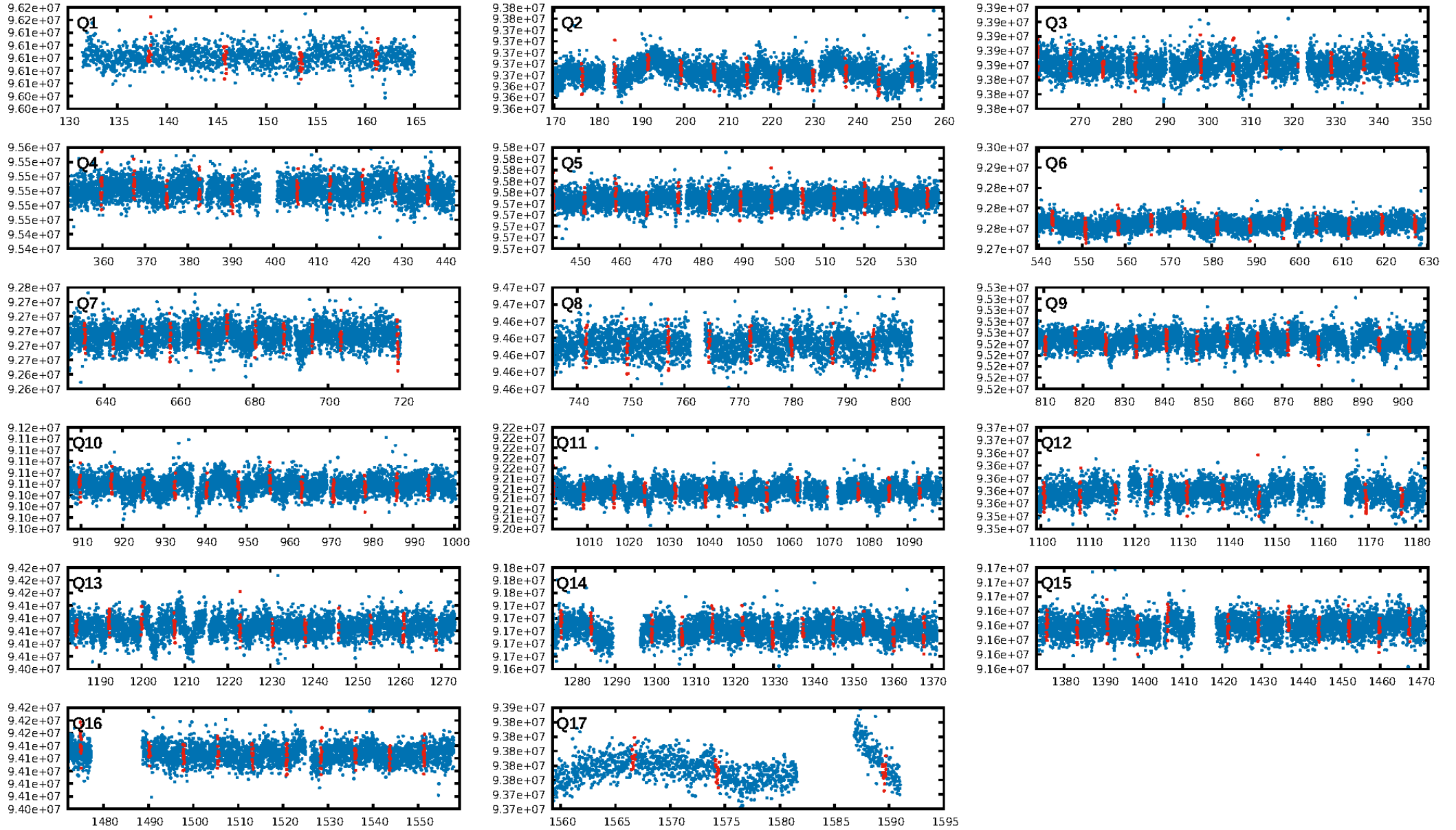
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [39.29σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.63e-40  
RollingBand-fgt: 1.00 [160/160]  
GhostDiagnostic-chr: 2.008  
Centroid-sig: 12.4%  
Centroid-so: 0.858 arcsec [1.09σ]  
OotOffset-rm: 1.144 arcsec [0.61σ]  
KicOffset-rm: 1.290 arcsec [0.69σ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.80 [12/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:08 Z

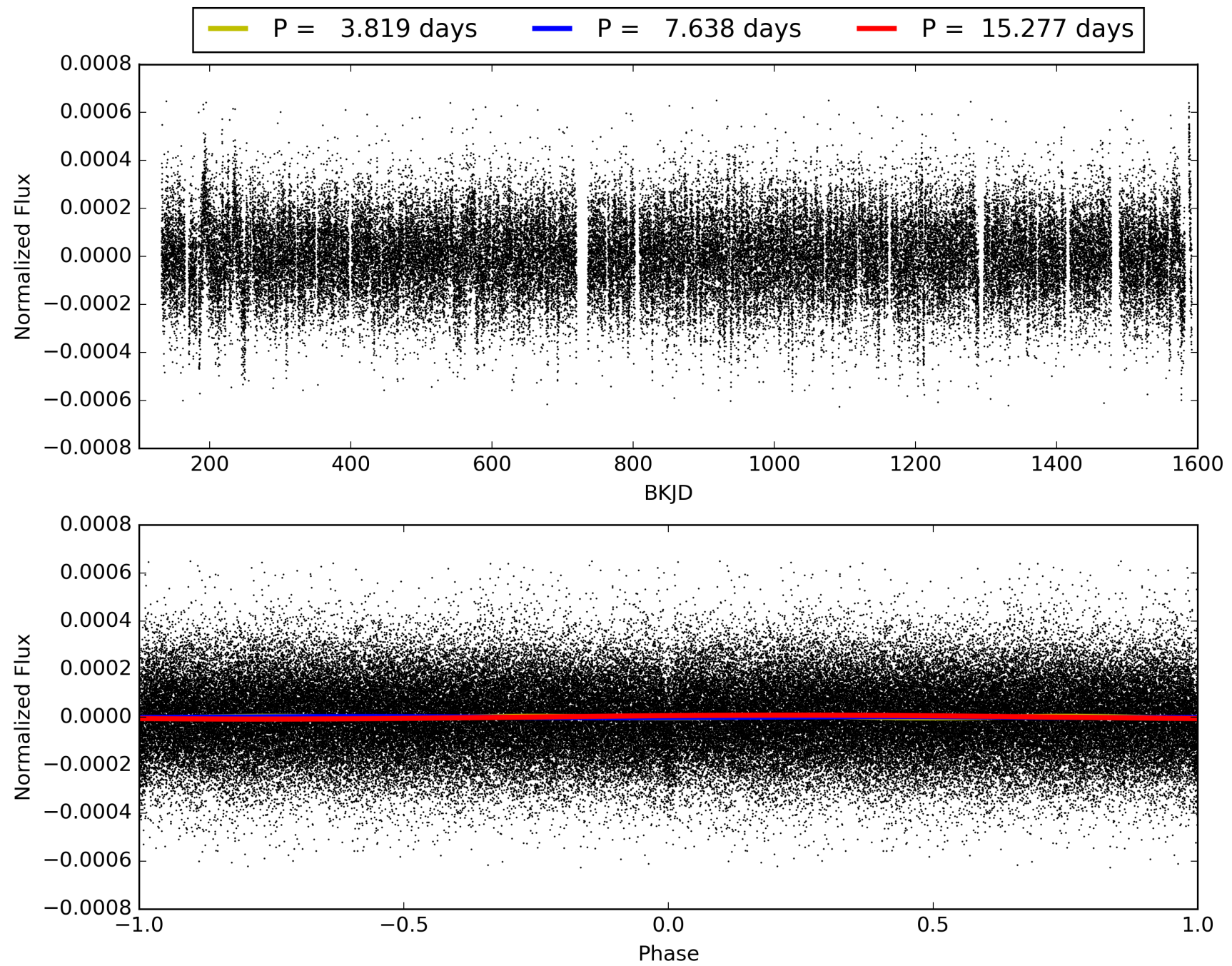
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004741126-02, PDC Light Curves



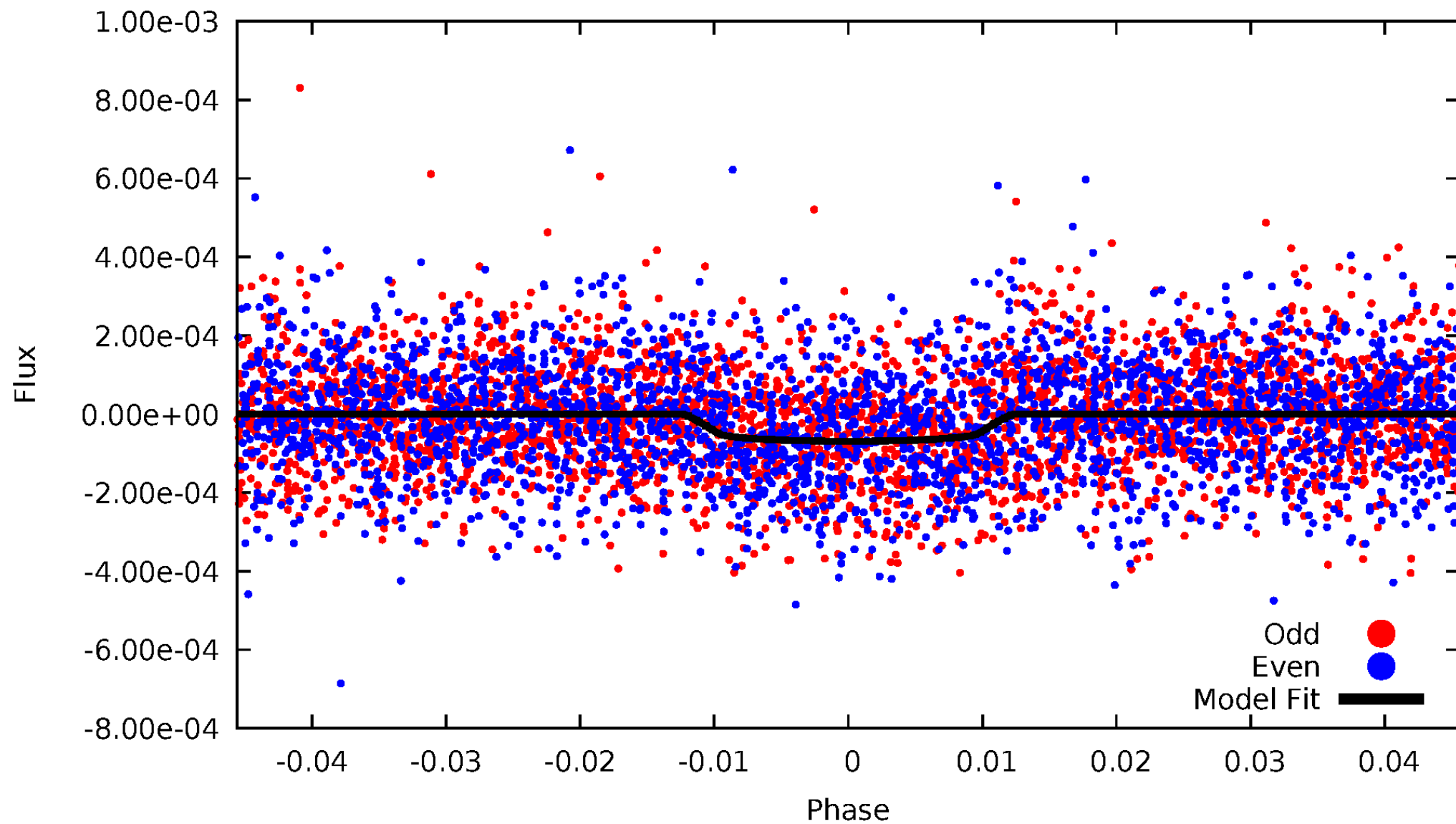


TCE 004741126-02



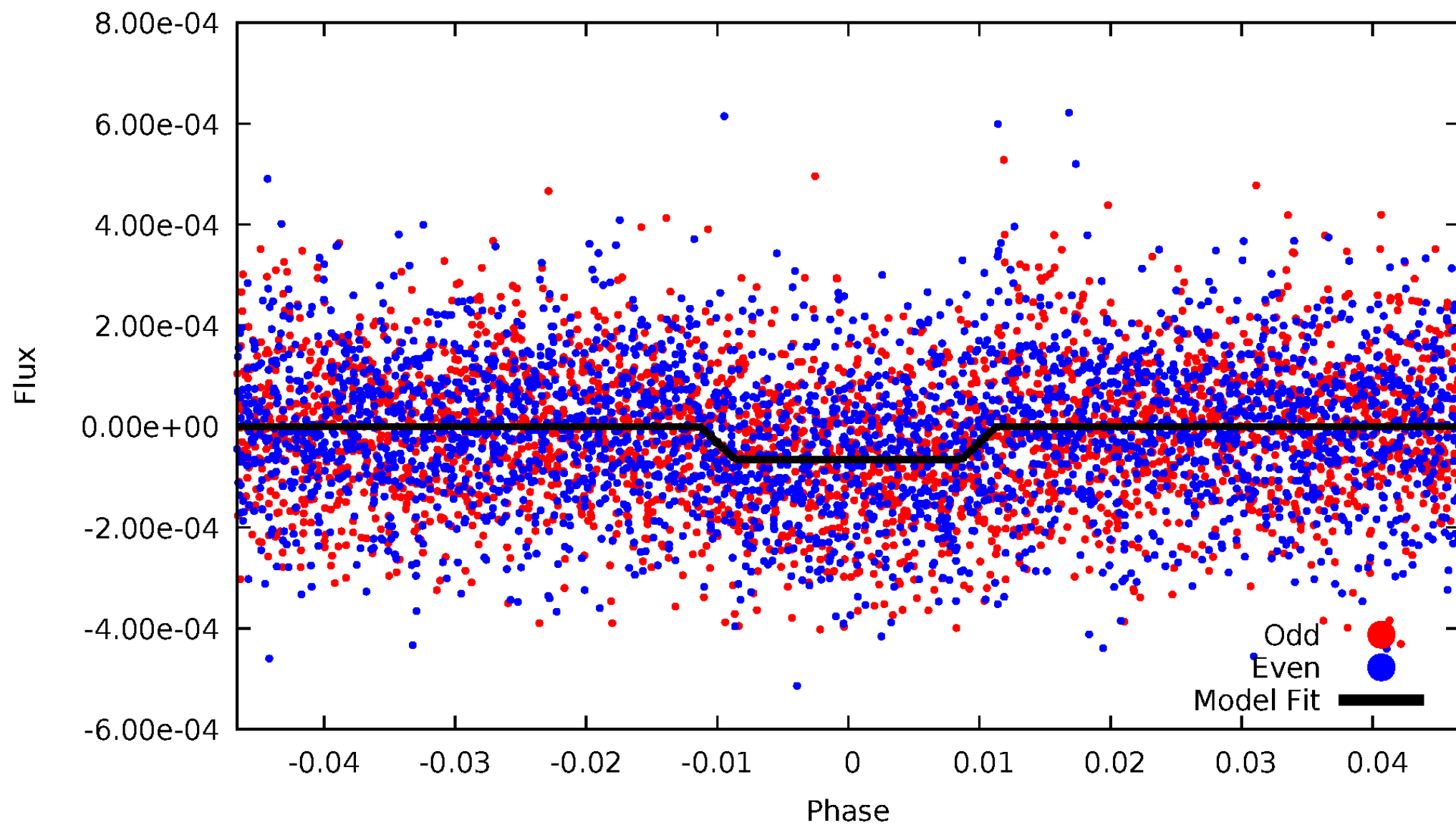
# DV Odd/Even

TCE 004741126-02



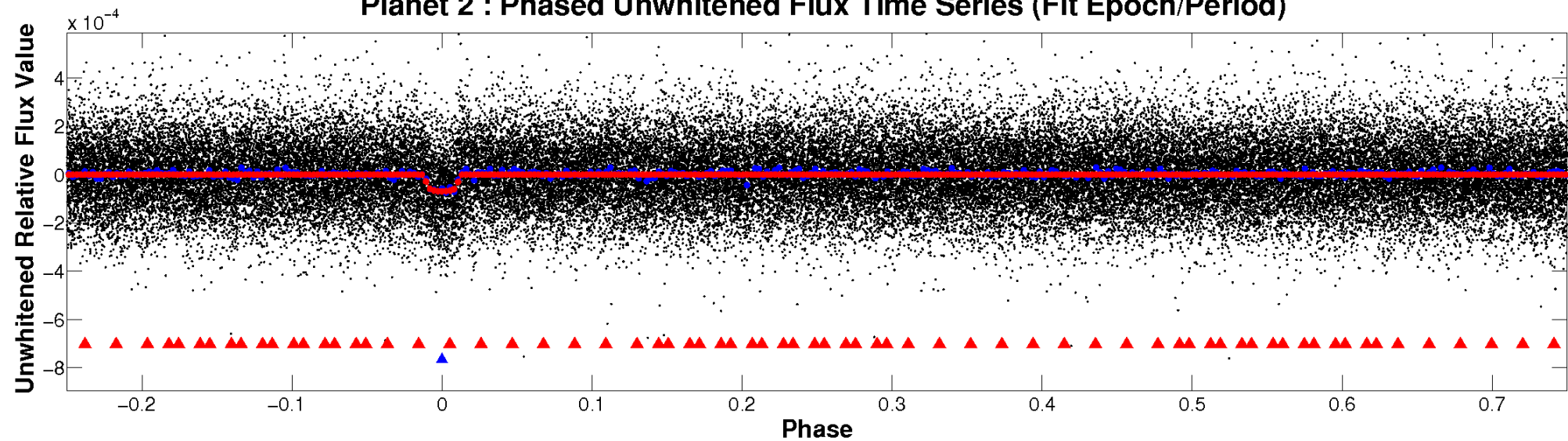
# ALT Odd/Even

TCE 004741126-02

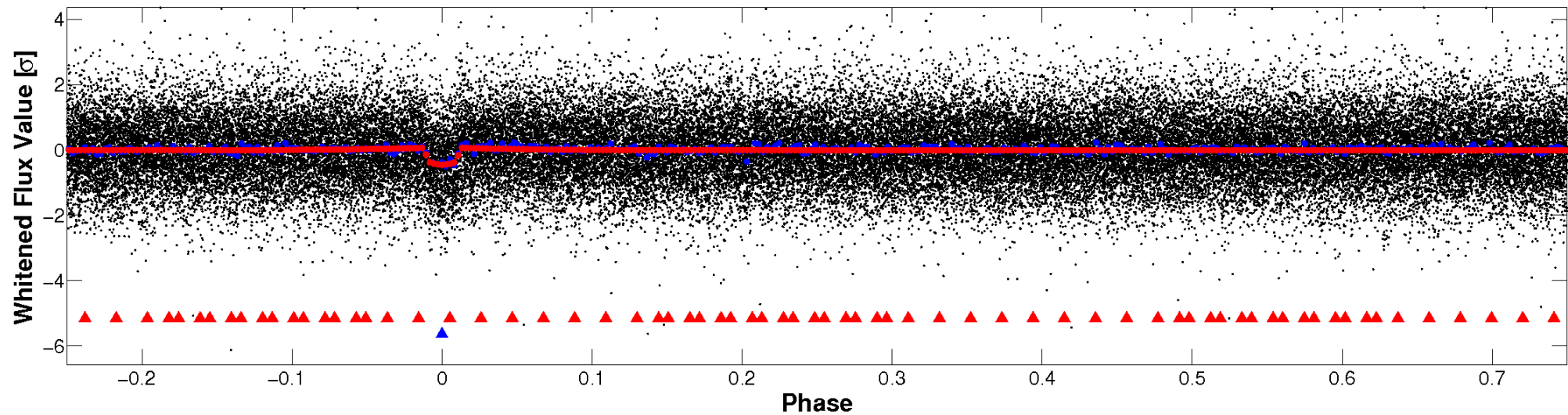


# Non-Whitened Vs. Whitened Light Curve

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



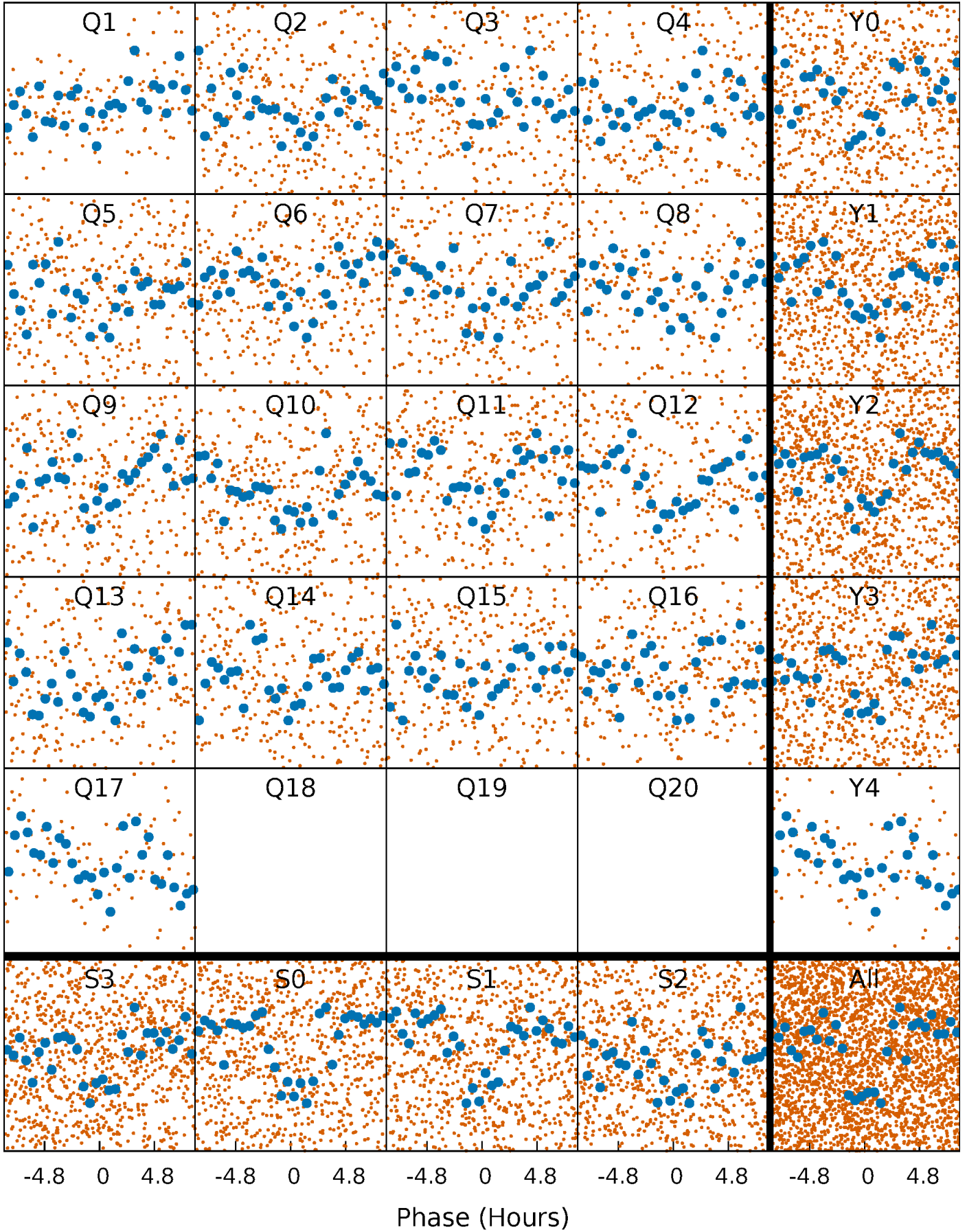
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





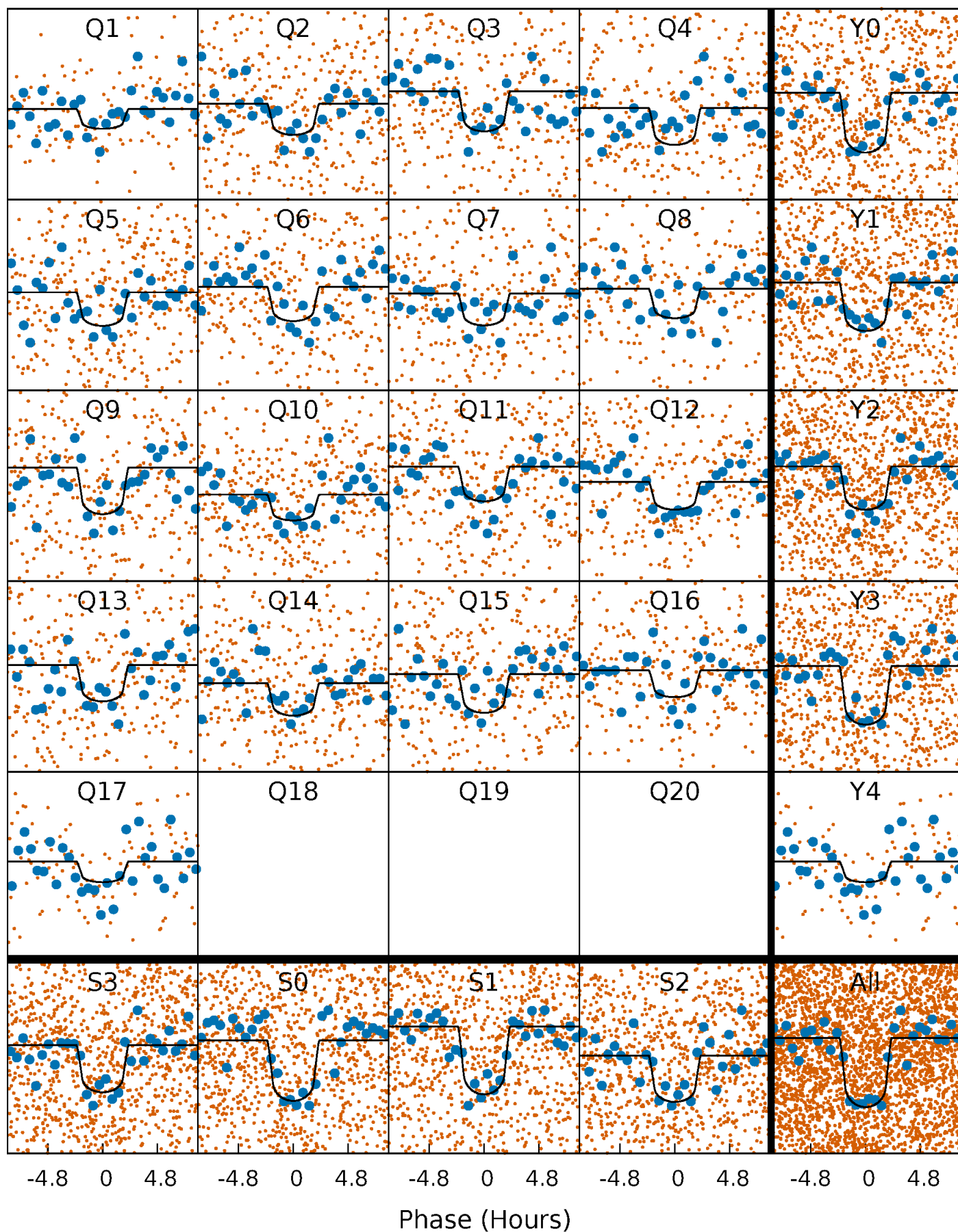
# PDC Quarter-Phased Transit Curves

TCE 004741126-02 P= 7.638480 Days  $T_0=138.243360$  (BKJD)



# DV Quarter-Phased Transit Curves

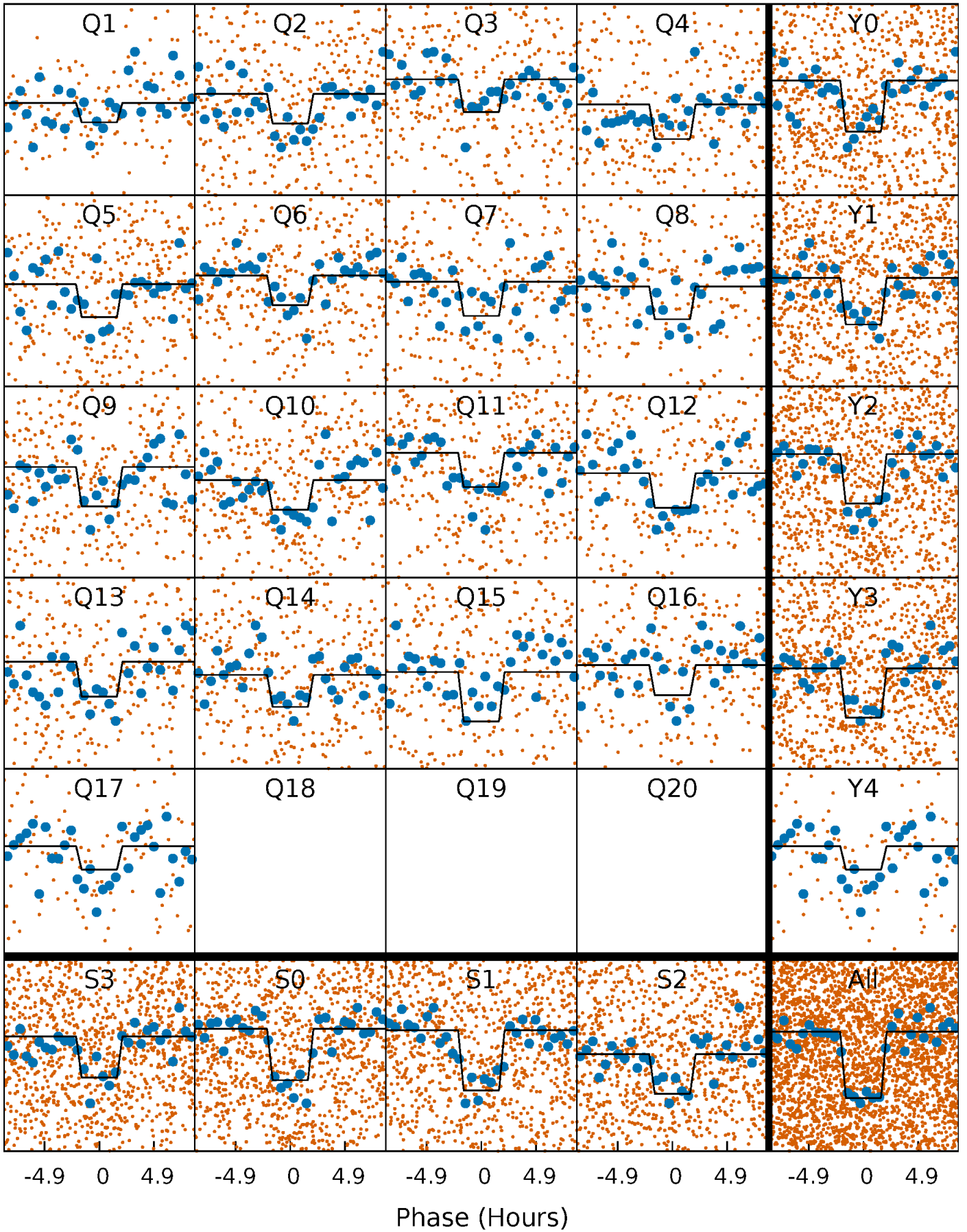
TCE 004741126-02 P= 7.638480 Days  $T_0=138.243360$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

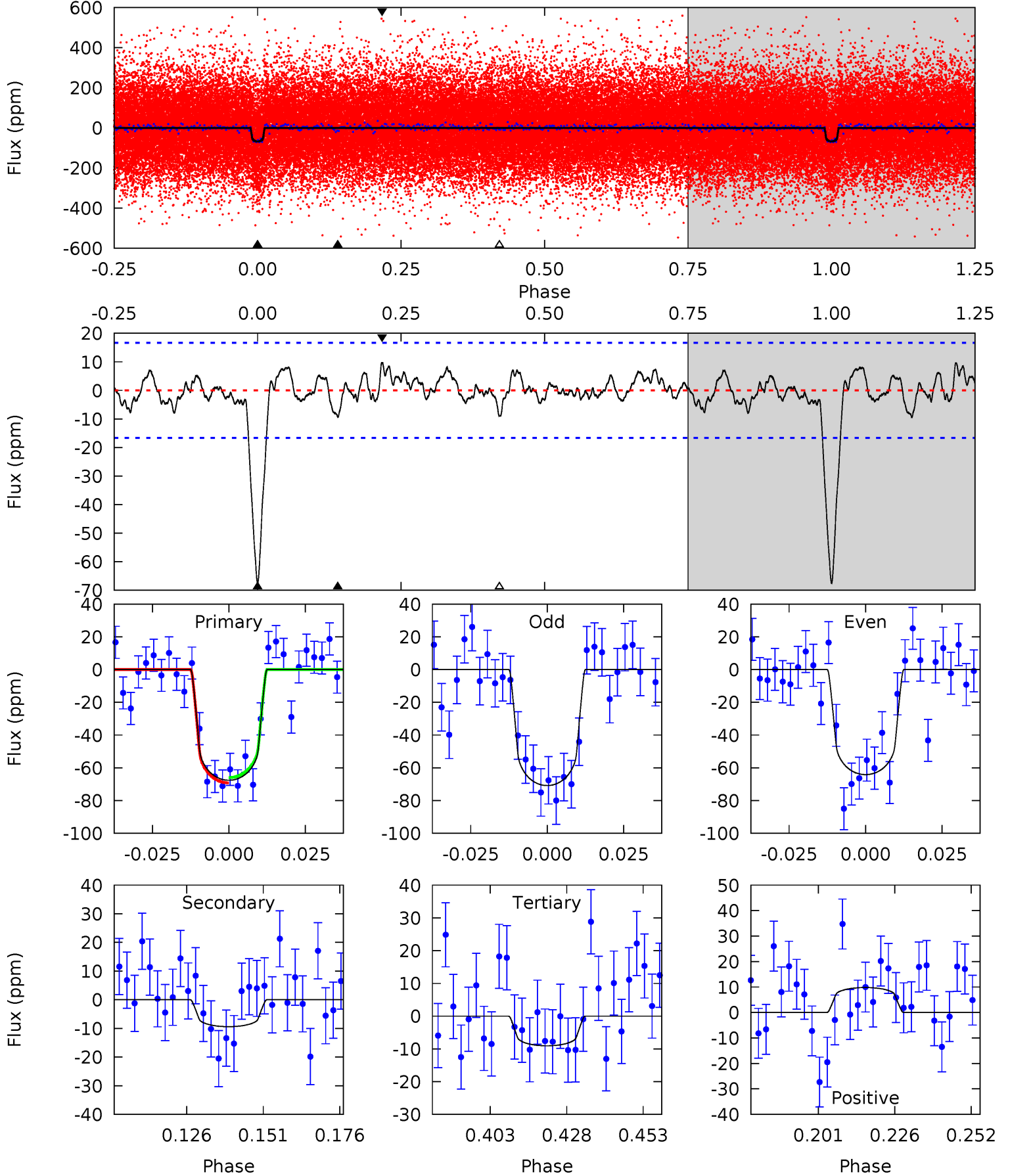
TCE 004741126-02 P= 7.638418 Days  $T_0=138.250140$  (BKJD)



# DV Model-Shift Uniqueness Test

004741126-02, P = 7.638480 Days, E = 130.604880 Days

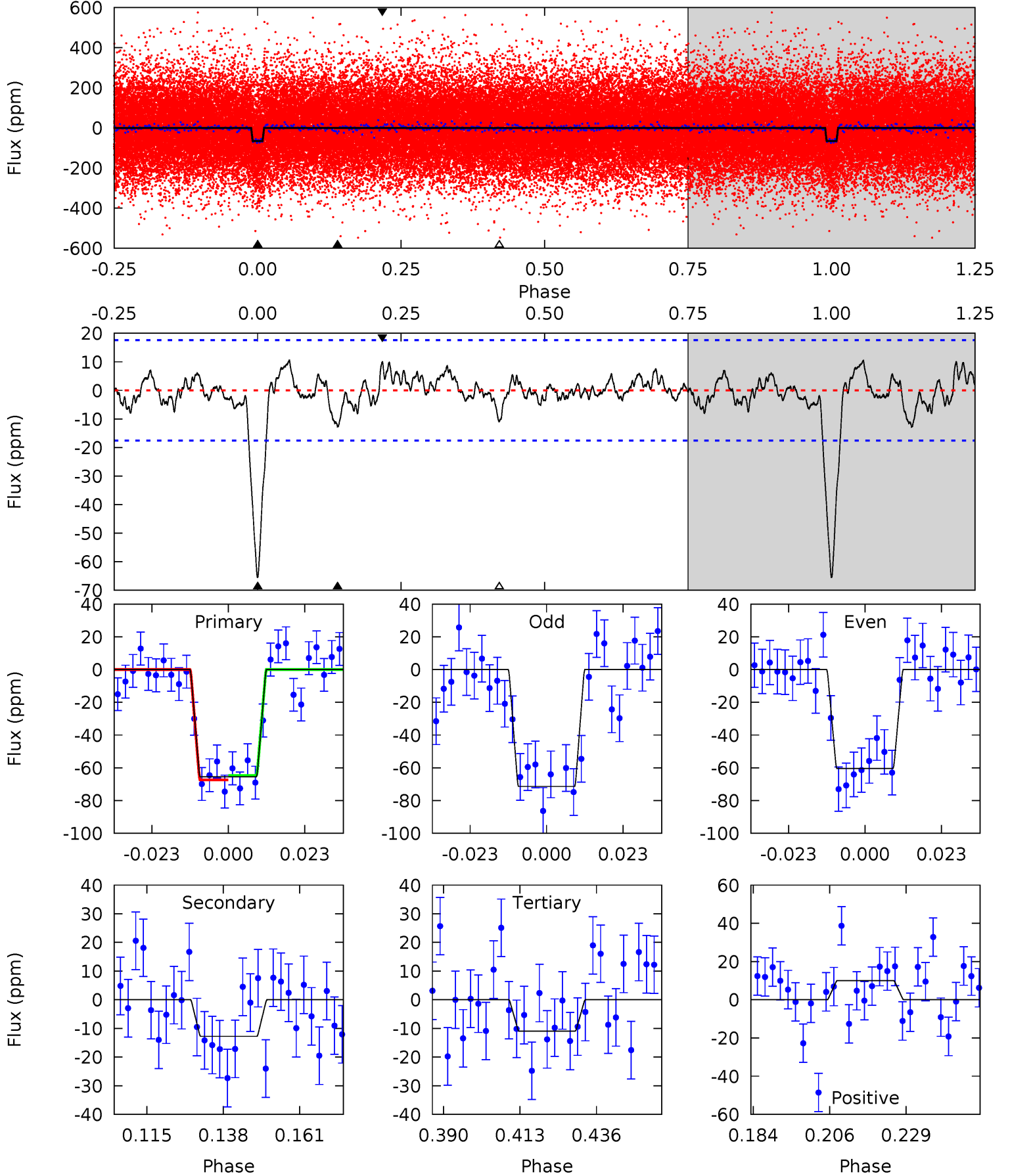
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	2.74	2.64	2.86	4.85	2.24	1.04	17.1	16.8	0.10	-0.12	0.97	1.00	0.13	0.47



# Alt Model-Shift Uniqueness Test

004741126-02, P = 7.638418 Days, E = 130.611722 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
18.2	3.53	3.03	2.79	4.86	2.27	1.03	15.1	15.4	0.50	0.75	1.52	0.97	0.14	0.38



### Stellar Parameters For KIC 004741126

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6119^{+110}_{-135}$	$4.274^{+0.115}_{-0.115}$	$0.100^{+0.150}_{-0.150}$	$1.299^{+0.225}_{-0.184}$	$1.157^{+0.093}_{-0.102}$	$0.744^{+0.393}_{-0.257}$
	+2%/-2%	+3%/-3%	+150%/-150%	+17%/-14%	+8%/-9%	+53%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 004741126-02 / KOI 1534.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 3$	$1.25^{+0.46}_{-0.42}$	$1517^{+72}_{-64}$	$3916^{+708}_{-490}$	$20^{+30}_{-11}$
Alt.	$-13 \pm 4$	$1.11^{+0.48}_{-0.40}$	$1519^{+73}_{-65}$	$4327^{+888}_{-547}$	$36^{+55}_{-19}$

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

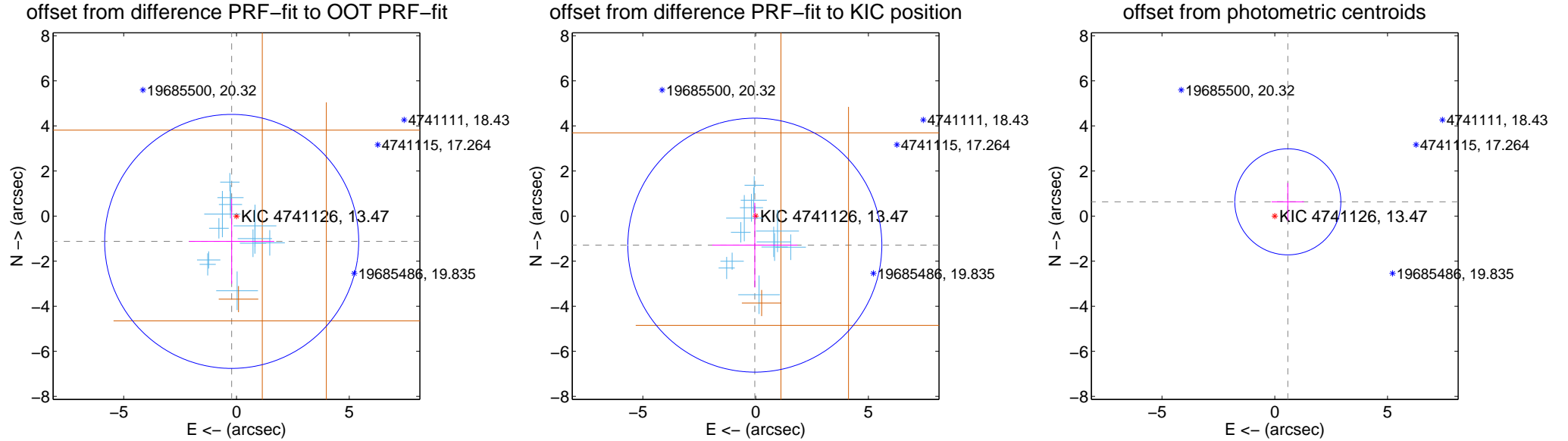
## DV Centroid Data

Supplemental centroid analysis for 004741126-02. Kepler magnitude: 13.47. Transit SNR 14.38

There are 12 quarters with good PRF difference image offsets

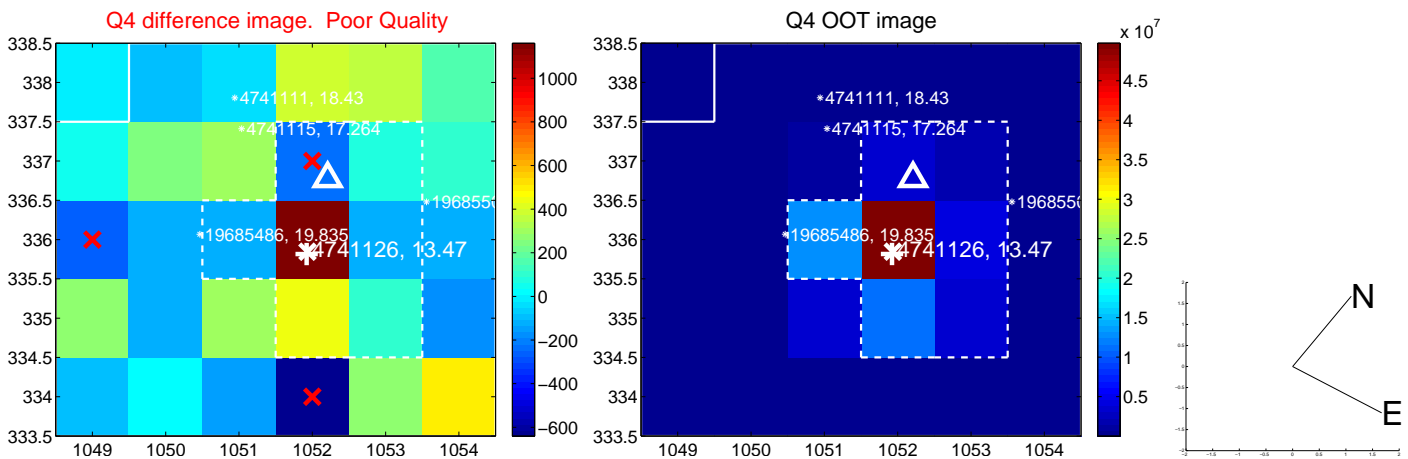
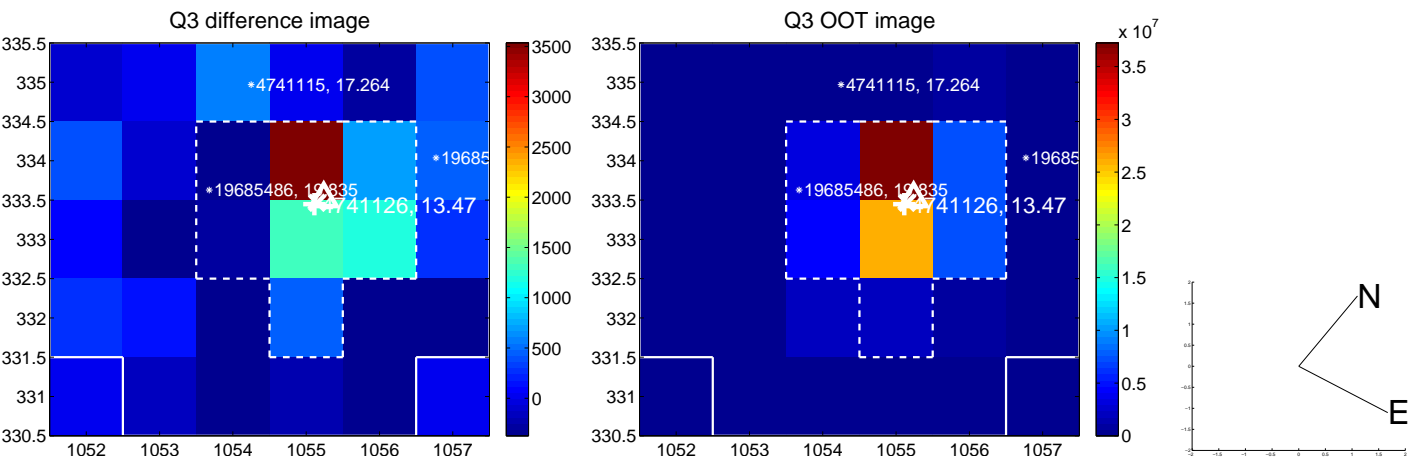
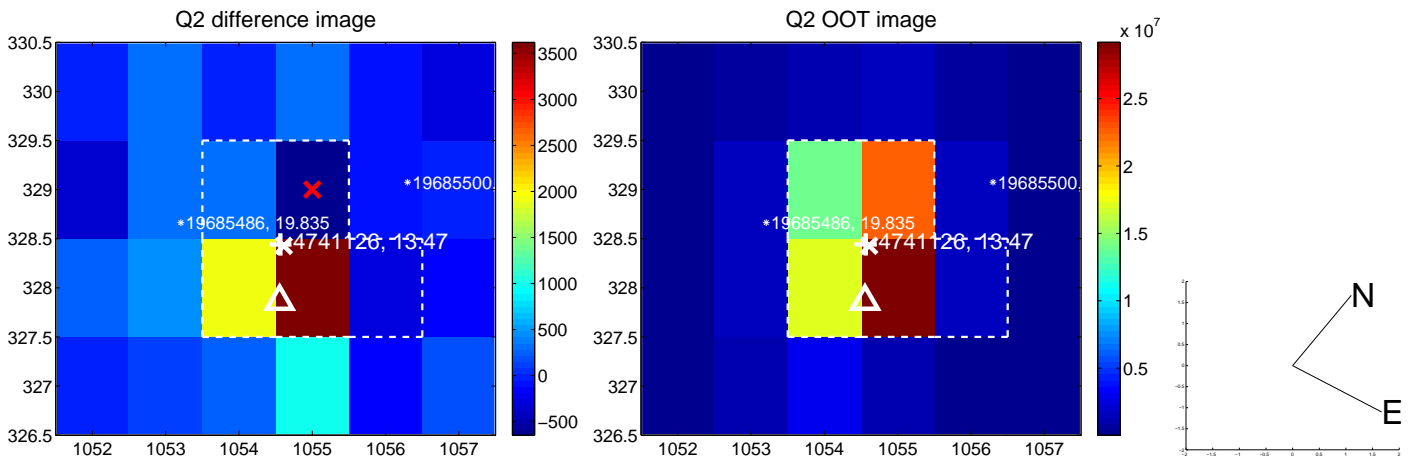
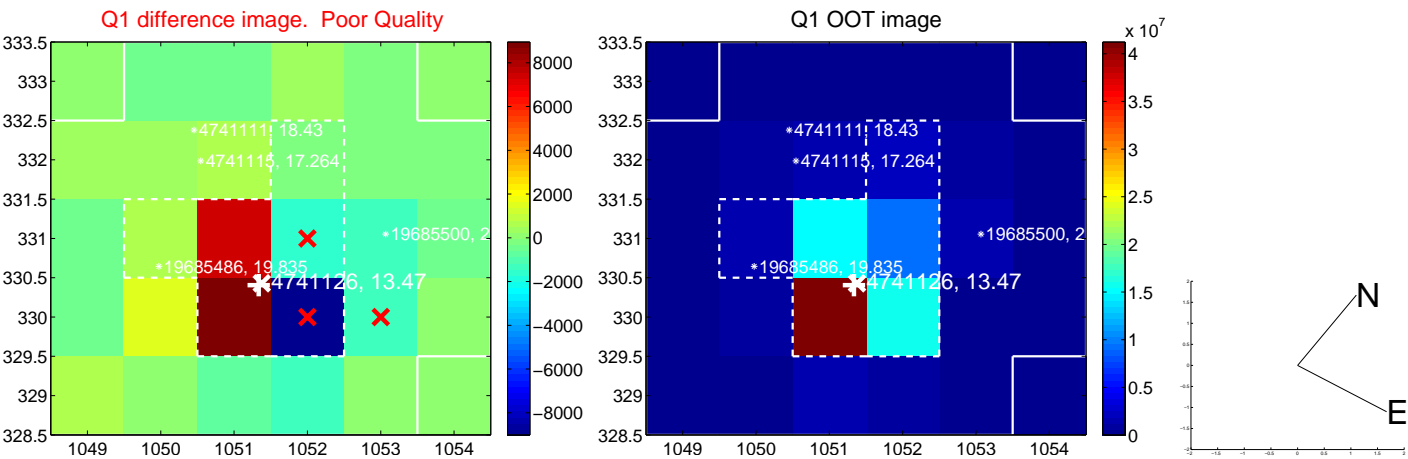
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.144 \pm 1.878$	0.61	$0.213 \pm 1.888$	$-1.124 \pm 1.877$
PRF-fit source offset from KIC position	$1.290 \pm 1.877$	0.69	$0.035 \pm 1.888$	$-1.289 \pm 1.877$
photometric centroid source offset	$0.86 \pm 0.78$	1.09	$-0.58 \pm 0.72$	$0.63 \pm 0.83$



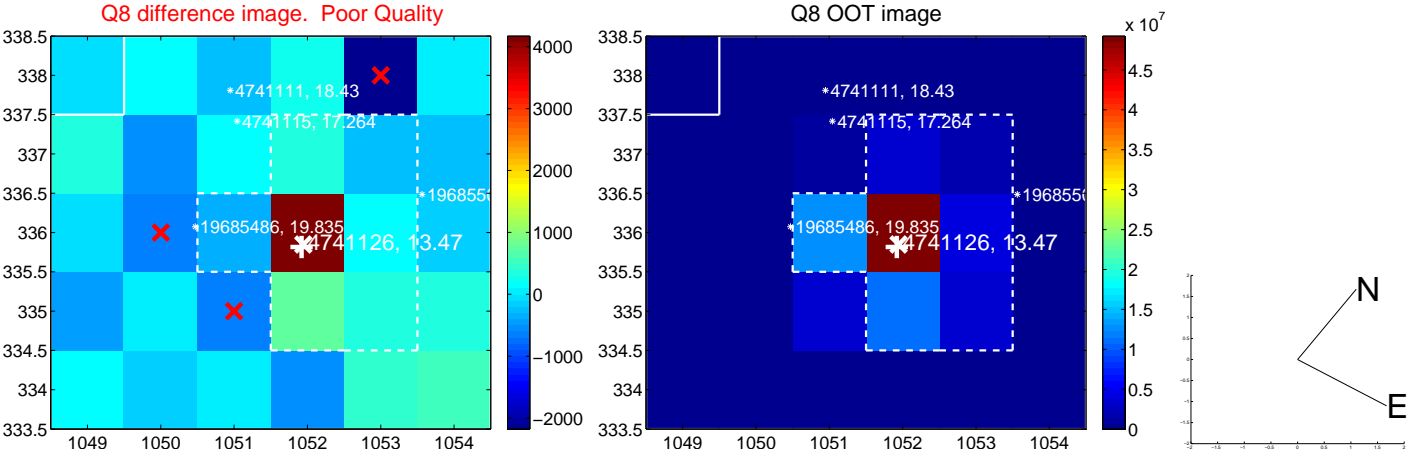
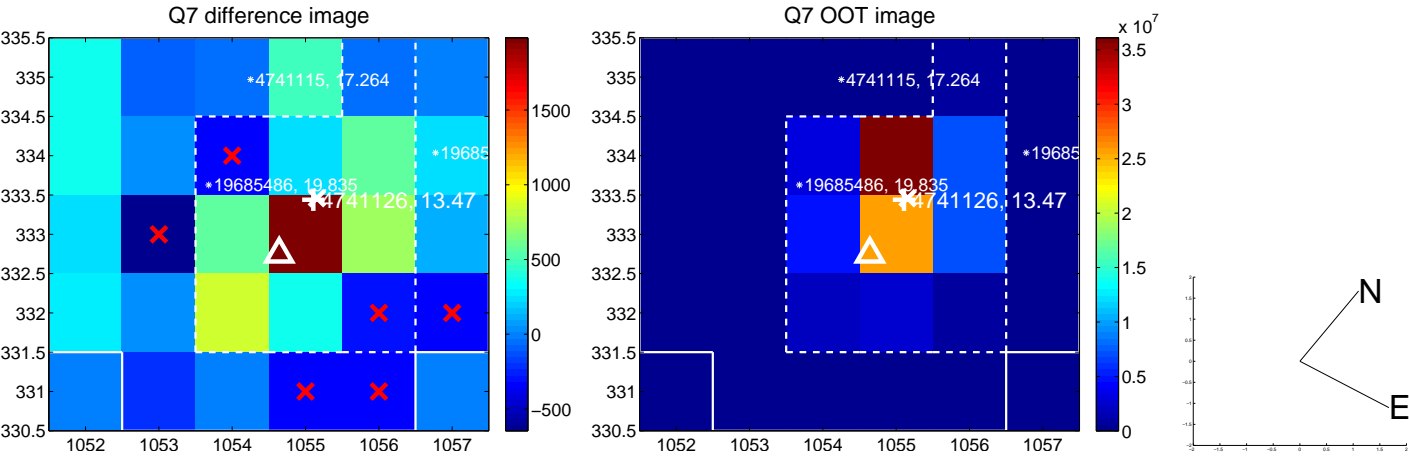
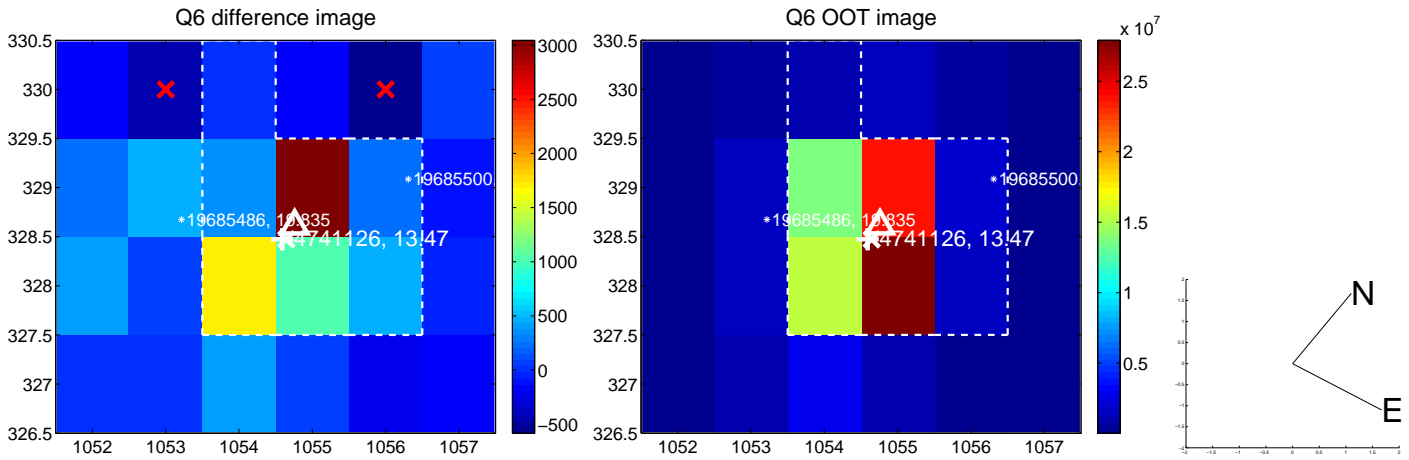
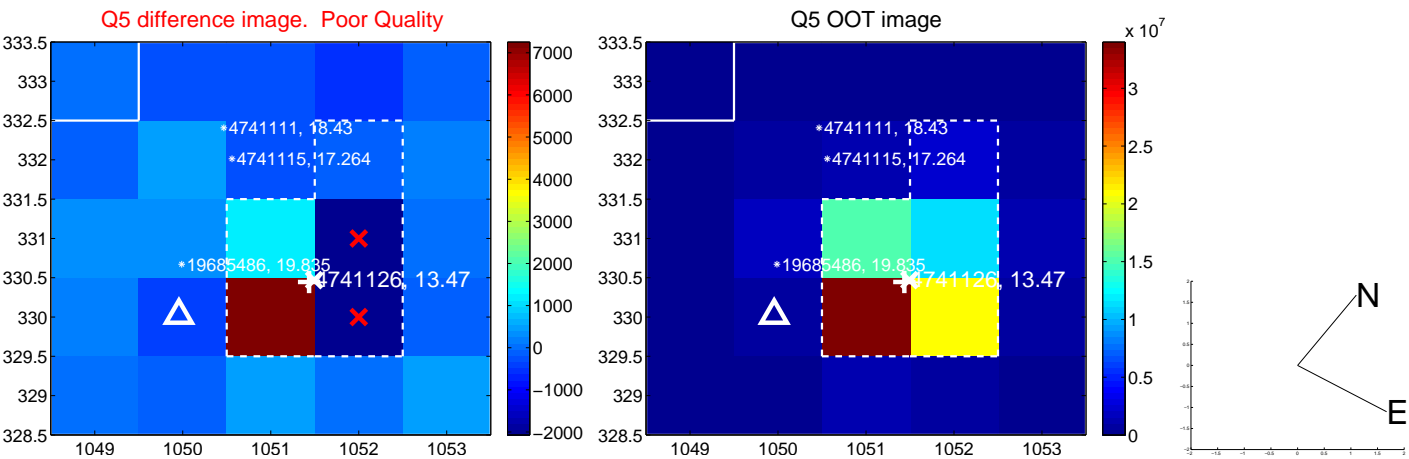
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

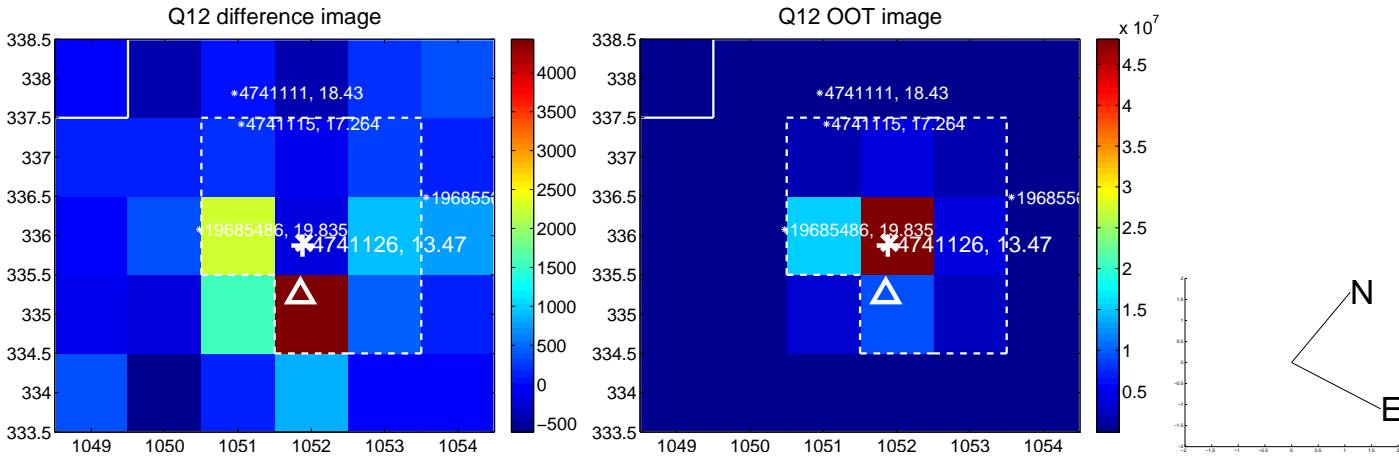
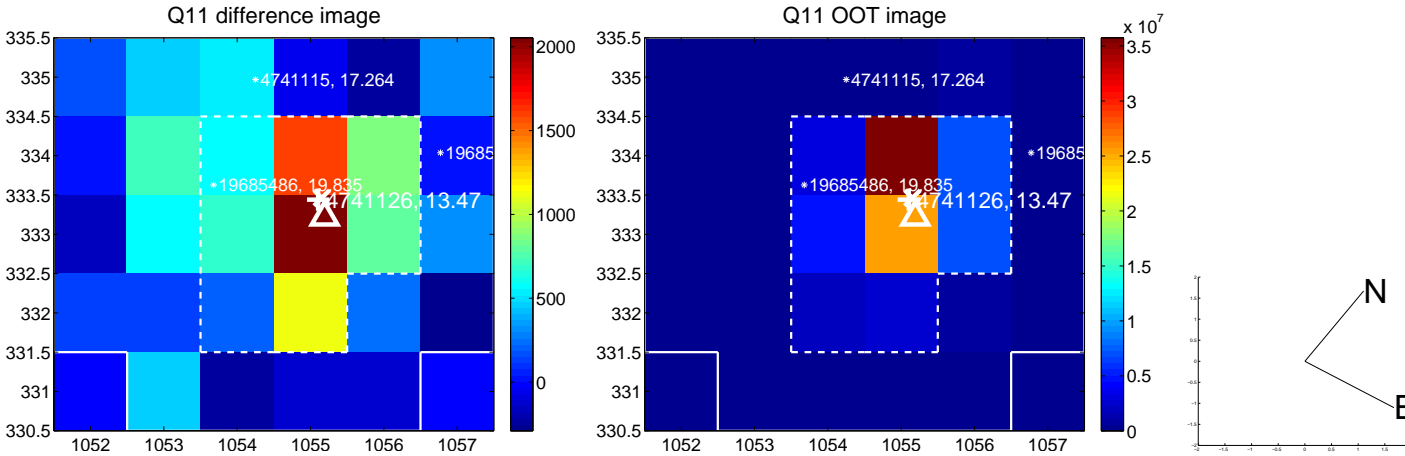
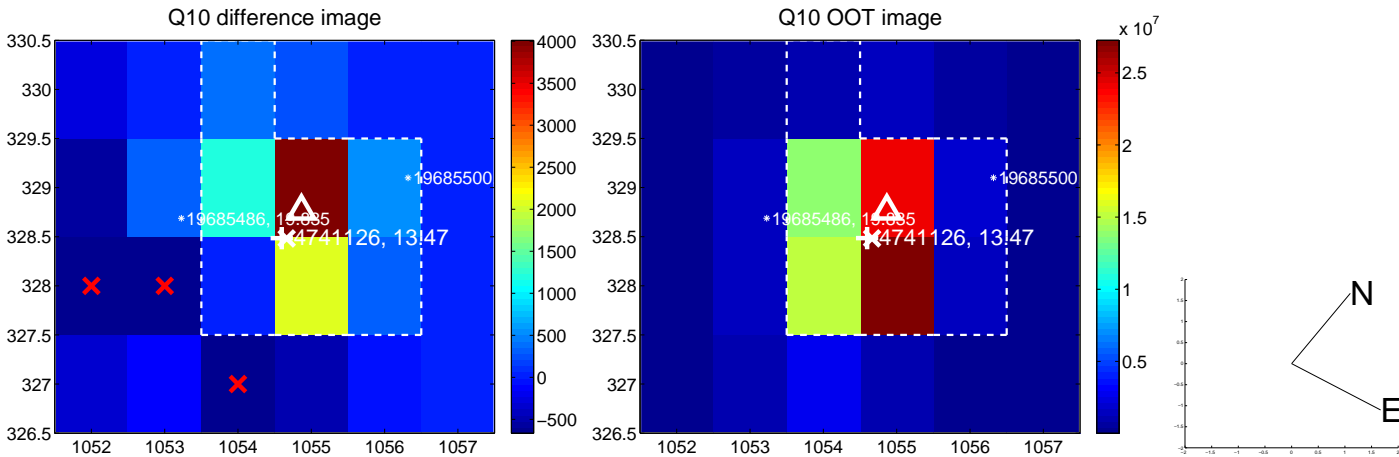
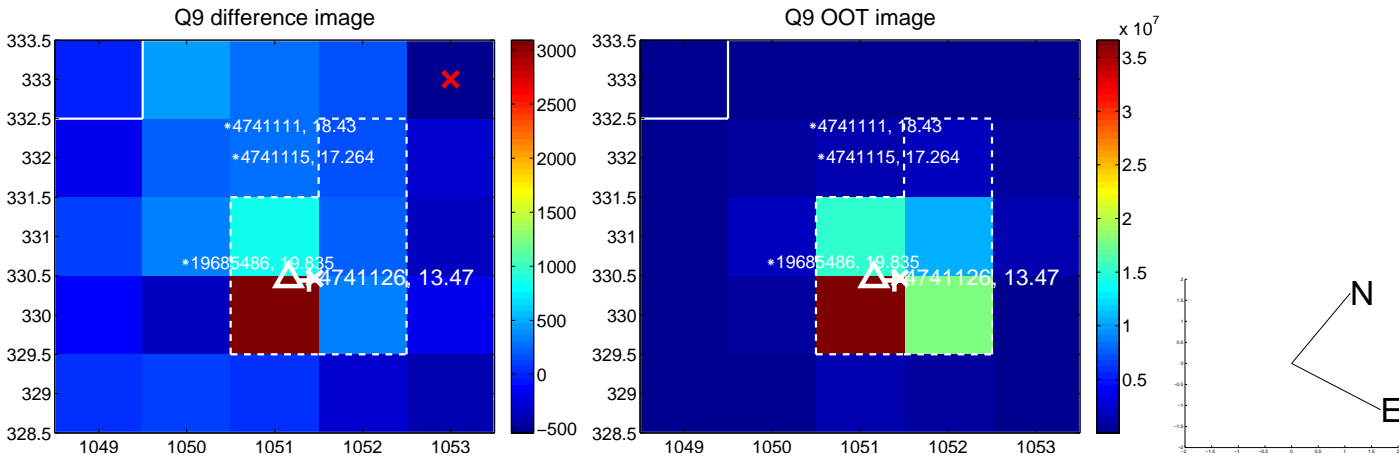




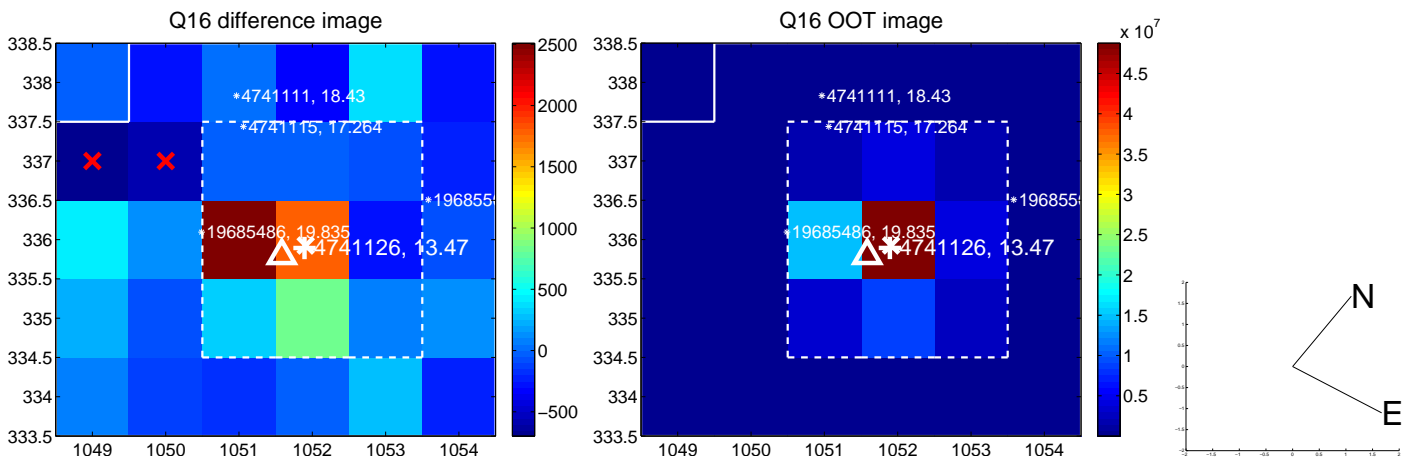
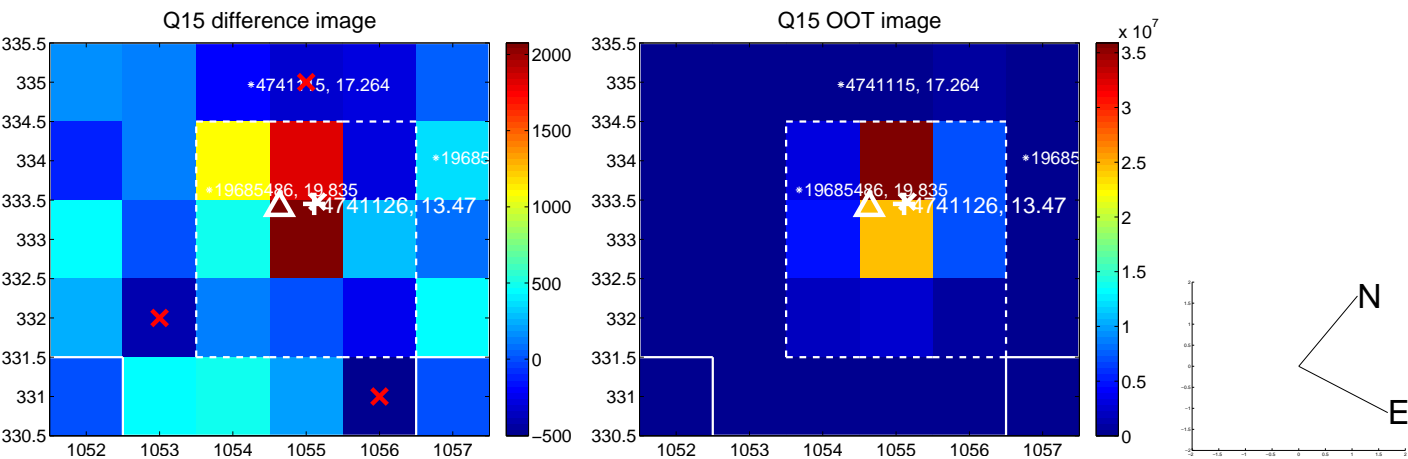
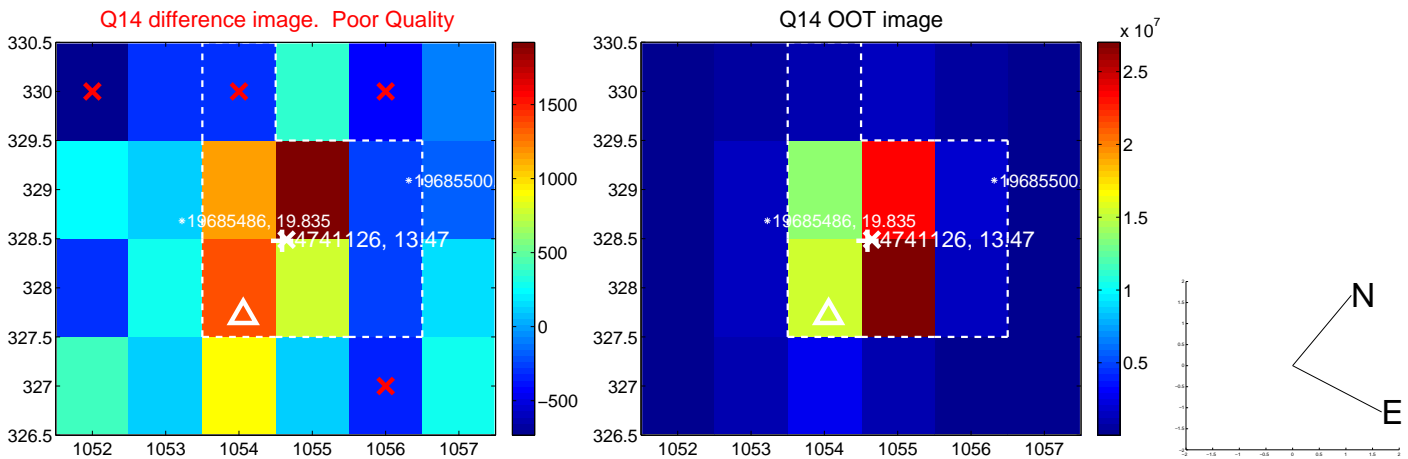
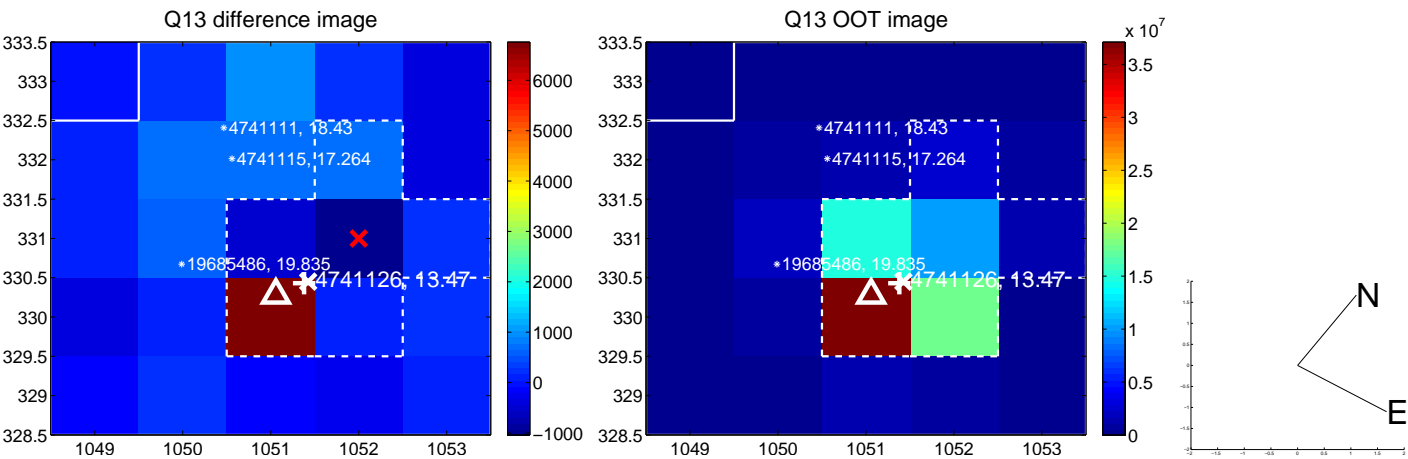
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



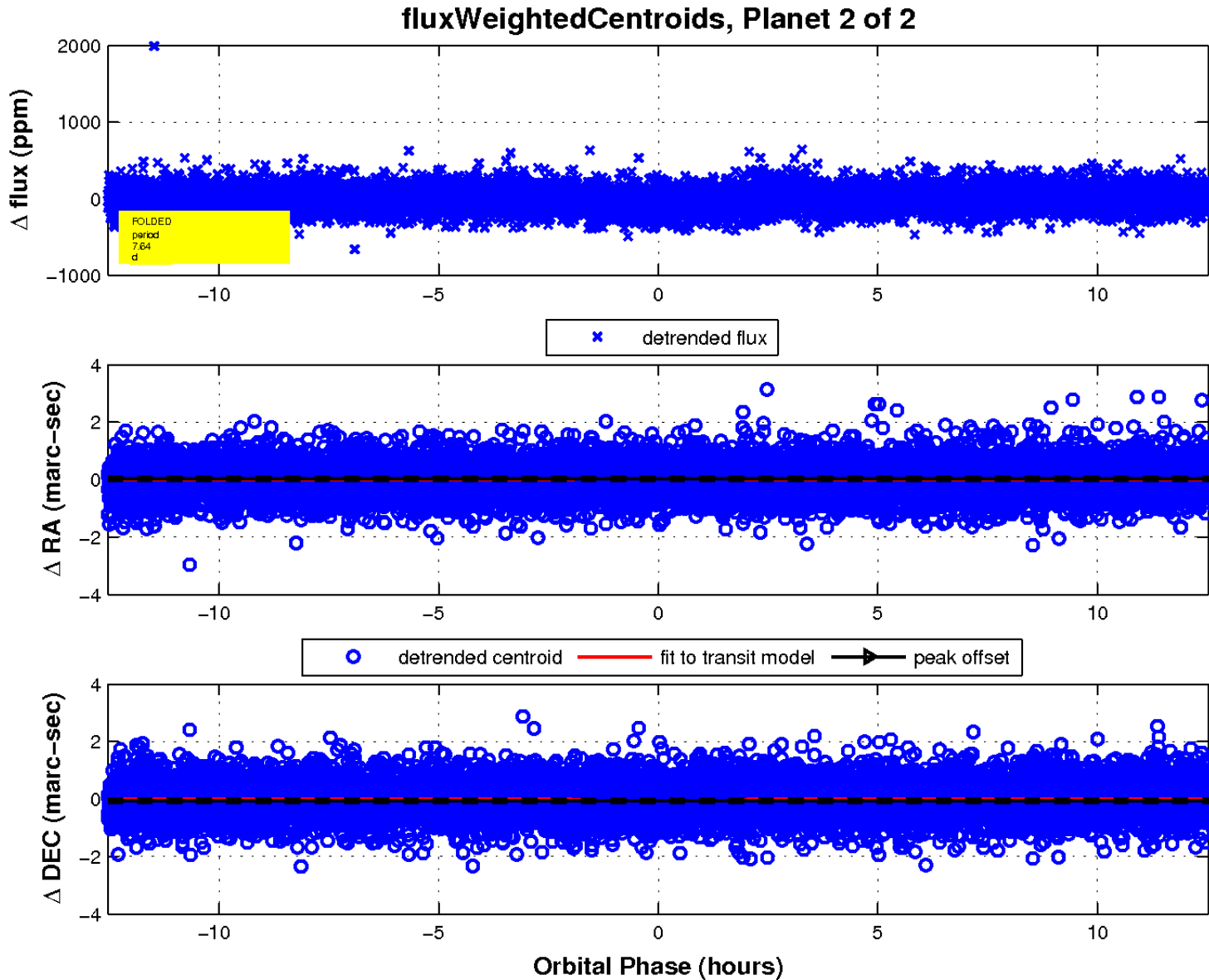
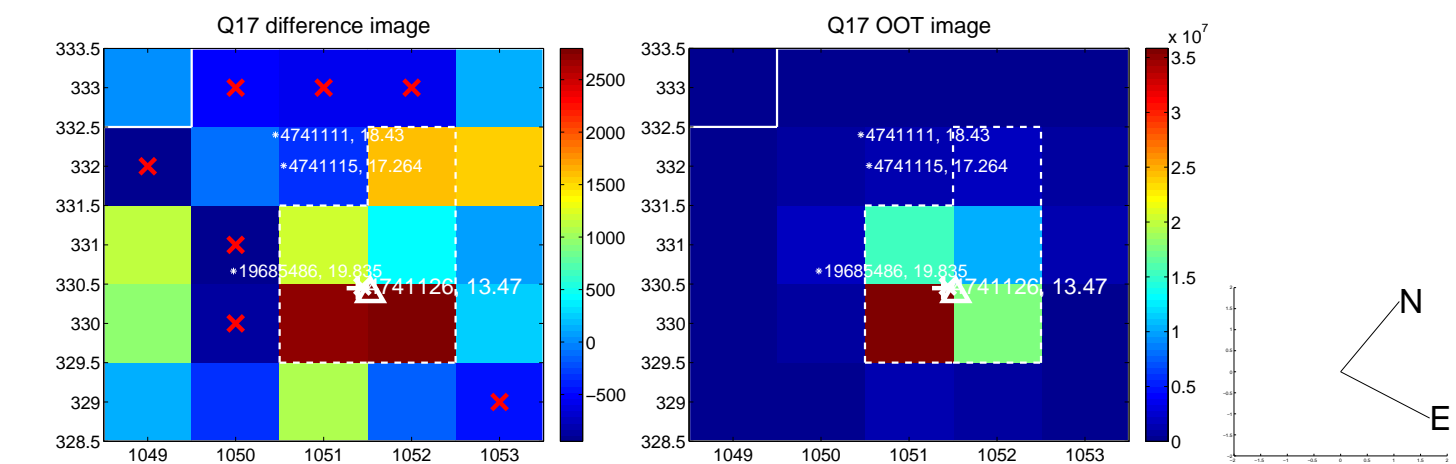
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

